MEETING:	**REGULAR MEETING OF THE PLAN COMMISSION**
DATE & TIME:	**Monday, December 9, 2024 at 6:30 PM**
LOCATION:	**Germantown Village Hall Board Room** **N112 W17001 Mequon Road**

Any member of the body and/or citizen also attend the meeting virtually through the WebEx platform, Meeting #: **2553 216 2843** Password: **qRNiKJrY345** which can be accessed by phone at **408-418-9388** or by logging on at **https://villageofgermantown.my.webex.com/villageofgermantown.my/j.php?MTID=m3e60c9657945a5ad89155bdbfd3c356f**

Citizens not wishing to attend the meeting personally or virtually may submit any public comments by sending an email to comments@germantownwi.gov by 4 p.m. on the day of the meeting so that it can be provided to the members of the body for their consideration.
Previously recorded Village Board Meeting Videos can be viewed at **https://www.youtube.com/channel/UCOYp0EgELzTCa9X_iCohyhQ.**

AGENDA

I. CALL TO ORDER: *This meeting has been given public notice in accordance with Section 19.83 and 19.84, Wis. Stats, in such form that will apprise the general public and news media of subject matter that is intended for consideration and action.*

II. ROLL CALL:

III. APPROVAL OF MINUTES:

A. PC Minutes 11/11/24

IV. UNFINISHED BUSINESS:

A. OneEnergy Development, LLC, Agent for Wayne Lutynski, Property Owner. Certified Survey Map (CSM) to combine parcels and Site Plan Review for a 30-acre Solar Energy Facility located at approximately N132W18100 Rockfield Road. (ACTION)

V. NEW BUSINESS:

A. Sunstarr Real Estate Ventures LLC, Agent for Victory Place LLC, Property Owner - Application to Rezone a 7-acre parcel located at approximately W140 N9915 Fond du Lac Avenue from the I: Institutional to the Rm-3: Multifamily Residential Zoning District. (PUBLIC HEARING & ACTION)

B. Jeff Osgood, Agent for Kwik Trip, Inc., and Ben Venue Properties, Property Owner, N112W18741 Mequon Road (former PNC Bank). Kwik Trip Convenience Store Relocation from W188N10963 Maple Road. Conditional Use Permits (CUPs), Site/Sign Plan, and Rezone from B-3 to B-5. (PUBLIC HEARING & ACTION)

C. Village of Germantown Community Development Department - Proposed Text Amendments to Section 14 (Building Code), Section (17 (Zoning Code), and Section 18 (Subdivision & Platting Code) of the Village of Germantown Municipal Code.(STAFF REQUEST TO TABLE PRESENTATION & PUBLIC HEARING TO JANUARY 13, 2025)

D. Briohn Building Corp. Agent for TDC Willow Creek LLC Property Owner - N102 W19200 Willow Creek Way. Site Development & Building Plan Application for a 1.55-acre Outdoor Storage Area. (ACTION)

E. Monches Engineering, Agent for Store Master Funding XIII LLC, Property Owner and Systems LLC - W194 N11481 McCormick Drive. Revised Site Plan Application for a 21-stall parking lot expansion and outdoor storage area improvement. (ACTION)

VI. CITIZEN INPUT/PUBLIC APPEARANCE: *(Please be advised per 19.84(2) that information and comment will be received from the public. It is the policy of this municipality that public input be limited to a three (3) minute period per person with a time extension granted at the discretion of the Chairperson. Be advised that there may be limited discussion of the information received but no action will be taken under public comments.)*

VII. ANNOUNCEMENTS:

VIII. ADJOURNMENT:

UPON REASONABLE NOTICE, efforts will be made to accommodate the needs of disabled individuals through appropriate aids and services. For additional information or to request this service, please contact the Village Clerk at (262)250-4745 at least 2 days prior to the meeting. Notice is given that a majority of the Village Board may attend this meeting to gather information about an item over which they have decision-making responsibility. This may constitute a meeting of the Village Board per State ex rel.Badke v Greendale Village Board, even though the Village Board will not take formal action at this meeting.

MEETING:	**REGULAR MEETING OF THE PLAN COMMISSION**
DATE AND TIME:	**Monday, November 11, 2024 6:30 PM**
LOCATION:	**Germantown Village Hall Board Room** **N112 W17001 Mequon Road**

MINUTES

I. CALL TO ORDER: *This meeting has been given public notice in accordance with Section 19.83 and 19.84, Wis. Stats, in such form that will apprise the general public and news media of subject matter that is intended for consideration and action.*
President Wolter called the meeting to order at 6:30pm.

II. ROLL CALL: *Chairman Wolter and Committee Members Baum, Tarantino, Shadid, Williams, Henk and Ewert were all present. Also, present were Community Development Director Retzlaff and Associate Planner Jordan Yanke.*

III. APPROVAL OF MINUTES:

A. PC Minutes 10/14/24
Motion: Approve as presented
Motioned By: David Baum
Seconded By: William Shadid
Yes: Dean Wolter, David Baum, Josh Tarantino, William Shadid, Bridget Henk
No: None
Abstain: Robert Williams
Motion Passed (Yes 5, No 0, Abstained 1)

IV. UNFINISHED BUSINESS:

A. Neumann Developments, Agent for Wrenwood North LLC, Property Owner, property south of Freistadt Road and Pleasant View Drive. Final Subdivision Plat for the Wrenwood North Addition No. 1 Subdivision (Wrenwood North-Phase 2 containing 26 single-family lots). (ACTION)

Associate Planner Yanke reviewed the proposal from the October 14th, 2024 Plan Commission meeting briefly. The punchlist remains the same. Staff recommends the approval of the final subdivision plat for Wrenwood North Addition No. 1/Phase 2 containing 26 single-family residential lots located south of Freistadt Road, west of Pleasant View Drive, subject to the following conditions:

1. A letter of “no objection” from the WI Department of Administration (DOA) shall be submitted to the Village prior to recording the final plat.
2. All technical issues and revisions identified in the “Punch List Report” provided on R.A. Smith, Inc. letterhead, dated October 11, 2024, shall be fulfilled/completed prior to recording of the final plat, unless otherwise specified in the applicable Development Agreement, or prior to release of the Letter of Credit (LOC) on file with the Village.

3. All technical issues and plat corrections identified by the Village Surveyor (see September 30, 2024, memo from Bob Beilfuss, PLS) shall be addressed and reflected in a revised final plat reviewed and approved by Village staff prior to recording.
4. The landscape and buffer plan for Outlots 7 and 8 be approved and accepted by the Village Forester prior to issuance of any building permits.

Motion: Approve as presented with 4 conditions
Motioned By: David Baum
Seconded By: Bridget Henk
Discussion Followed: Trustee Baum stated that last month's discussion included the berm and plantings along outlot 8. He noticed that there have been significant changes made there in the past several weeks and asked if they comply with the original requirements? Yanke stated that the final inspections have not been done, but the original landscape plans were approved and the berm complies with the original plan. Baum stated that the berm was not intended to provide a complete screen for the outlot and as long it complies with the plans that were presented and approved, the developer is in conformance with what they were expected to do. Kevin Anderson, a representative from Neumann Development spoke briefly, explaining that they added substantially to the berm, it's now approximately 1,350 ft long, and they raised it 6-8", which was as much as their landscaper was confident with to keep the existing trees healthy.
Results of Motion:
Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, William Shadid, Bridget Henk
No: None
Abstain: None
Motion Passed (Yes 6, No 0, Abstained 0)

B. OneEnergy Development, LLC, Agent for Wayne Lutynski, Property Owner. Certified Survey Map (CSM) to combine parcels and Site Plan Review for a 30-acre Solar Energy Facility located at approximately N132W18100 Rockfield Road. (ACTION)

Trustee Baum stated that he thought the Town of Germantown was also having a meeting tonight to discuss this item. Chairman Wolter stated that he has been in communication with the Town of Germantown Chairman, and it was confirmed that this topic would be on their agenda tonight. Baum does not want to have this discussion until he hears the outcome of their meeting, so he would like to postpone this until next month's meeting.
Motion: Postpone this topic until the next Plan Commission Meeting
Motioned By: David Baum
Seconded By: William Shadid
Discussion Followed: Attending community members were disappointed that this was not going to be discussed, and they were not going to be allowed to speak. Baum stated that without hearing what the Town of Germantown had decided, they would have no perspective to make a decision or even listen to opinions. Chairman Wolter stated that the development proposal is within the Village of Germantown jurisdiction, but it affects Rockfield Road, which is in the Town of Germantown, which they have the responsibility for maintaining. We discussed the impact on the school across the street, the surrounding neighbors as well as health considerations and concerns

during last month's Plan Commission meeting. There is no public hearing tonight, but for those that would like to express their comments to this body, you are free to stay until the end of the meeting and speak during citizen input. This commission heard a fair number of these comments during the last meeting and multiple emails were also received.

Results of Motion:
Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, William Shadid, Bridget Henk
No: None
Abstain: None
Motion Passed (Yes 6, No 0, Abstained 0)

V. NEW BUSINESS:

A. Harter's Lakeside Disposal Agent for Skyline Development Corp./Lakeside Property Mgmt Current & New Property Owner, on the corner of FDL Ave. and Spaten Ct. Rezone from M1 to M2 and Conditional Use Permit (CUP) for a new Solid Waste Disposal, Collection and Transportation Operations business. (PUBLIC HEARING & ACTION)

Community Development Director Retzlaff went over the proposal, displayed a map of the site and stated that the proposed use would be a solid waste disposal, collection and transportation operation. This project is proposed to happen in 3 phases over a 3-5 year period depending on demand.

- Phase 1 includes minimal site development with a partially fenced gravel storage area for trucks, employee vehicles, dumpsters, a temporary job trailer and a portable restroom. Up to 10 trucks and dumpsters would be kept onsite and operation hours would be from 3am-6pm.
- Phase 2 would be developed between 2025 & 2026 and would include the expansion of the gravel storage area, construction of an approximate 14,000sqft metal office and maintenance building. Up to 50 trucks and dumpsters would be kept onsite, 57 employee vehicle stalls would be provided on the property. Trucking operations would occur from 3am-6pm and 4pm-11pm for maintenance services. No activity is planned between 11pm-3am except for emergency situations.
- Phase 3 would be developed between 2028 & 2030 and would include further expansion of the gravel storage area, construction of an approximate 10,000sqft addition to the office and maintenance building and construction of a separate employee parking lot with 93 stalls. Up to 100 trucks and dumpsters would be kept onsite. Operational hours would remain the same.

The proposal includes 3 parcels that would ultimately be combined via a Certified Survey Map. Staff is of the opinion that this site is not appropriate for intense uses under the M-2 Industrial Development District and that the property is best suited for commercial and less intense industrial uses consistent with the Victory Center Corridor.

Staff recommends the denial of the request to rezone 12.7 acres from M-1: Limited Industrial to the M-2: General Industrial Zoning District

and the conditional use permit application Conditional Use Permit (CUP) to develop and operate a "Solid Waste Disposal, Collection and Transportation Operation" from the property.
***NOTE**: If the Plan Commission decides to forward a positive recommendation to the Village Board in favor of rezoning the property and granting a conditional use permit as requested, Staff recommends that action be **TABLED** or **POSTPONED** so the Plan Commission can:*

1. Provide direction to staff concerning stipulations or conditions of approval that the Plan Commission deems are necessary to address/mitigate negative impacts associated with the proposed uses of the property, e.g. noise, vibration, glare, odor, traffic, etc.; and
2. Provide direction to staff and the applicant regarding the level of detail that will need to be incorporated into the site development & building plans that will need to be prepared and submitted for Plan Commission approval prior to commencing any development and/or uses on the property.

Attorney Brian Randall and Mike Thun, a representative of Harter's Lakeside Disposal, went over the proposal and presented their points regarding the proposed use in relation to the Village's M-1 and M-2 Industrial Districts. Attorney Randall submitted a handout to the Plan Commission supplementing his presentation on the use and the unclassified nature of it within the Village Zoning Code. He also stated that this is a small family-owned business that they are hoping to expand. In the first years, the use will be for truck parking. They are not a landfill. He wants the neighbors to know that.

President Wolter opened the Public Hearing at 7:13pm.
The following residents spoke:
Sarah Larson who lives on Butternut Rd, feels that the noise from this type of facility would be extensive and would increase traffic on FDL.
Melanie Smyth who lives on Cedar Lane, stated that this would be more appropriate along the freeway near Truck Country. She believes the noise complaints about Waste Management will continue with this type of business.
Zack Sowin who lives on Robinhood Dr, also agrees that the noise from this type of business will be a problem.
Jan Miller who lives on Windsong Circle agrees that the noise is a problem.
Public hearing was been closed at 7:21pm.
Motion 1: Approve as presented
Motioned By: David Baum
Seconded By: William Shadid
Discussion followed and Motion 1 was rescinded.
Sahdid stated that he had a problem with the hours of operation. Any noise at 3am is not acceptable. Retzlaff stated that he only agrees with Attorney Randall's statement that the use is in no-mans land and falls under the category of unclassified use. He went over the M-1 zoning district specifications. He stated that this is a trucking business, with a fleet service that ships out between 3-6am and arrives back between 4-7pm every day; so no, it's not a landfill or a transfer station, but the trucking operation is constant. This proposal is identical to the Waste Management operation just down the road on County Line Q, which does the same thing: with a fleet service in the early AM, employees arrive at 4am and get together for meetings, and then they all drive off in their trucks. Neighbors are complaining that the employees are talking loudly outside in the early AM and generally making alot of noise. So there have been multiple discussions regarding noise in a similar type of operation in the same area. If this were rezoned to M-2, that does not mean this would be an approved use. He does not agree with the conclusion of the presenter that this unclassified use is similar to a

permitted use in the M-1 District. This is identical to Waste Management located in the M-2 District, it's his interpretation as the zoning administrator with regard to what's proposed and what the code is intended to provide for. The Plan Commission decides where an unclassified use goes. Retzlaff's recommendation is that you conclude that it's similar to the landfills and solid waste disposal recovery uses in the M-2 District and, as such, requires rezoning into that District and a Conditional Use Permit.

Williams stated that he read through the M1 code and came to the same conclusion as Retzlaff that the intent is to be a warehousing, manufacturing, fabrication operation if you read through the permitted uses and the permitted accessory uses. He read through the permitted uses, and they all state manufacturing and industrial uses. Not just storing vehicles, and he does not see the fit into M1, nor a need to rezone the location to try to fit a business that doesn't fit with the long-term vision of the Village just to get it into a permittable use. Baum concurred with both Williams and Director Retzlaff that this is not an M1 use and would need to be rezoned. We rezoned the Waste Management site because we believed it was far enough away and that the tree buffer would help with the noise and it hasn't. The noise from this business right next to residential areas is going to be a problem, so he does not support this proposal. Chairman Wolter stated that he received 3 emails from residents with concerns regarding this development. He went over them briefly.

Motion 2: Recognize the presented use as equal to the Waste Management facility in the M-2 district. It's similar to the use allowed under sect 17.34 (3)(c) which is landfills and solid waste disposal and recovery uses.
Motioned By: David Baum
Seconded By: William Shadid
Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, William Shadid, Bridget Henk
No: None
Abstain: None
Motion Passed

Motion 3: Approve both the rezone and the conditional use permit as presented.
Motioned By: David Baum
Seconded By: William Shadid
Yes: None
No: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, William Shadid, Bridget Henk
Abstain: None
Motion Failed

B. Village of Germantown Community Development Department - Proposed Text Amendments to Chapter 17.41 (Accessory Use, Building & Structures), Section 17.43 (Site Plan Approval Requirements), Section 17.45 (Traffic, Parking, Loading & Access), and Section 17.46 (Signs) of the Village of Germantown Municipal Code. (PUBLIC HEARING & ACTION)

Director Retzlaff stated that a series of 10 text amendments to zoning code sections 17.41, 17.43, 17.45 & 17.46 were brought forward in October and had to be continued pending completion of some of the language and getting it verified by the Village Attorney. He read through all 10 text amendments briefly.

President Wolter opened the Public Hearing at 7:46pm.
The following residents spoke:
Melanie Smythe who lives on Cedar Lane spoke regarding the planting of trees along the road.
Michael Anderson who lives on Country Aire Drive asked for some clarifications regarding the parking changes.
President Wolters closed the PH at 7:51pm.

Motion: Approve as presented
Motioned By: David Baum
Seconded By: Josh Tarantino
Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, William Shadid, Bridget Henk
No: None
Abstain: None
Motion Passed (Yes 6, No 0, Abstained 0)

C. Shaun Bowe, FCH Germantown LLC Agent for Stube Land LLC, Property Owner - N116W15841 Main Street. Sign Review for Two Wall Signs for the Relish Supper Club (ACTION)

Director Retzlaff described the two wall signs that are being proposed and showed pictures of both and their locations. The applicant states that they have no intention of illuminating the signs. The two signs are both east-facing, so they are not street-facing and require Plan Commission approval. The sign regulations generally prohibit manual reader boards versus electronic message centers and the electronic message centers are required to be integrated as a component of an overall ground sign. The background must be opaque or dark to prevent glare, so these types of reader boards violate both of those parameters.

Staff recommends the approval of one (1) proposed wall sign displaying the “R” logo mounted on the east elevation of the Relish Supper Club building located at N166 W15841 Main Street subject to the following condition:

1. The 4’x8’ manual reader board sign installed on the east elevation shall be removed.

Retzlaff also stated that he had communicated with the business owner, and he was in agreement with the condition and intends to remove the reader board sign later this week.

Motion 1: Approve as presented
Motioned By: David Baum
Seconded By: Bridget Henk
Discussion Followed. Trustee Baum asked what type of sign would be acceptable as a replacement for the reader board sign? Retzlaff stated that we just ask that the signs aren't internally illuminated, glare producing and if it's white it needs to be opaque. Baum stated that there are other versions of this sign that would be acceptable. Such as the church style on a couple of posts with glass on either side, could be internally illuminated if it's opaque. The electronic message centers are allowed as a component

of a larger sign. Generally they are ground mounted, but they could be wall mounted. The reader board can't be more than 40% of the overall sign. Chairman Wolter stated that this type of reader board is to correlate with supper club-type signs of the past, so he is trying to bring that back in a nostalgic way. It's a look they are purposely trying to obtain which is something to consider. Tarantino asked if they could leave it up there until they came up with an alternative.

Motion 2: Amend Motion 1 to allow the sign to stay in place until the applicant can come forward with another sign.
Motioned By: David Baum
Seconded By: William Shadid
Retzlaff stated that staff's objection to the display sign is based on the enforcement of the code as written, and it's difficult to tell other property owners, applicants and developers what the rules are when they can point to what other businesses have gotten away with. Staff is just enforcing the code as it is written. Chairman Wolter stated that it is Director Retzlaff's job to stand up and uphold the code as it's presented, and that's what we expect him to do. Retzlaff stated that part of the problem is that the signs are already installed, which complicates it. It's one thing to come forward and discuss what the requirements are in advance so we could help them come up with something appropriate, as we require everyone to get permit approval first before doing the work. Baum elaborated on what would be acceptable, saying that a sign with a frame around it, a glass enclosure on the front of it with illuminated lights inside the frame to slightly illuminate that panel. That would be an enclosed sign frame that can be changed, behind closed and locked glass. Retzlaff said that would help.

Friendly addition to Motion 2: To include a stipulation that the sign has a frame, cover and dim illumination.
Motioned By: David Baum
Seconded By: William Shadid

Results of Motion 2:
Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, William Shadid, Bridget Henk
No: None
Abstain: None
Motion to Amend Passed

Results of Motion 1:
Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, William Shadid, Bridget Henk
No: None
Abstain: None
Motion Passed

D. Lisa Wakeman, Property Owner - W151N11811 Mistletoe Road. Zoning Permit Application to Install 4' Fence in Storm Sewer & Drainage Easement. (ACTION)

Associate Planner Yanke stated that this item and the next one on the agenda are abutting neighbors and are exactly the same. Both properties are off Mistletoe Road and were built in the last year or two. There is a 20' wide public storm sewer and

drainage easement on the east side of the property, 10' of which are on this property and 10' on the neighbor's property and this fence goes around the entire rear yard and would extend about 8' into the easement. There is an HOA approval letter included in the packet. This fence would not impede water flow and our Highway Superintendent recommends the property owner use caution when installing the fence so as not to cause damage to the underground sewer pipe. Staff recommends the approval of the zoning permit application to install a 4' aluminum picket fence within the storm sewer and drainage easement along the eastern lot line of the Wakeman property located at W151 N11811 Mistletoe Road, subject to the following 5 conditions:

1. It shall be the responsibility of the homeowner to maintain a free flow of water within the private easement at all times.
2. A fence permit is required from the Building Inspection Services. The property owner is required to contact SAFEBuilt for more information.
3. If the fence needs to be removed to make improvements and/or conduct maintenance within the easement, the property owner shall be responsible for all costs associated with removing the fence to the extent necessary within seven (7) days of being notified by the Village (or another mutually agreeable deadline). The property owner shall be responsible for any and all costs associated with any damage, removal, or re-installation of said fence.
4. The property owner shall enter into an encroachment agreement with the Village for purposes of attaching the requirements of Condition No. 3 above to ensure that the property owner and any successors in interest are aware of these requirements.
5. The property owner and/or fence installer shall be liable for any and all damage to the public storm sewer pipe within the easement and all site restoration within the easement.
6. If the property owner receives written approval from the HOA stating that the owner can share a common fence with their neighbor to the east and that the fence can be installed along/on the eastern property line, Village staff may approve that administratively.

Motion: Approve as presented
Motioned By: David Baum
Seconded By: William Shadid
Discussion: Baum asked if the property owner was aware that the Village has the right to take down this fence anytime at their cost, it is up to them to replace it and maintenance is also required? The resident was online and stated yes, that was understood. Henk asked if there would be 2 parallel fences? Or if the 2 properties were sharing one fence? Yanke answered that these proposals are for 2 separate fences with 4-5' between them. Baum asked why they couldn't share one fence instead of having 2 fences? The residents were online and stated that the bylaws of their subdivision HOA do not allow it. The bylaws state that they must have at least 2' between the fences. Retzlaff stated that the Village itself does not require that. Baum stated that the Village would accept sharing one fence if the HOA would also accept it. He will state that in our approval condition 6; if both owners agree to a single fence and the HOA approves it, then staff will be allowed to approve that.
Motion 2: Amend to state that if the residents would like a shared fence on that property line and their HOA would accept it, then the Plan Commission would also accept it, and then Staff would be allowed to approve it.
Motioned By: David Baum
Seconded By: Bridget Henk
Henke stated that the space in the no man's land between the fences will create an opportunity for weeds and create difficult maintenance over time. It would be beneficial to both sets of neighbors to work together to have a single fence line. Chairman Wolter stated that there has to be a way to

go about getting HOA approval for the shared fence. Tarantino stated that the corner lot also has the same fence, and maybe they could join them all together. The third fence is not located in a village easement.

Results of Motion 1:

Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, William Shadid, Bridget Henk

No: None

Abstain: None

Motion Passed (Yes 6, No 0, Abstained 0)

Results of Motion 2:

Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, William Shadid, Bridget Henk
No: None
Abstain: None
Motion Passed (Yes 6, No 0, Abstained 0)

E. James Bengtson, Property Owner - W151N11793 Mistletoe Road. Zoning Permit Application to Install 4' Fence in Storm Sewer & Drainage Easement. (ACTION)

Staff recommends the approval of the zoning permit application to install a 4' aluminum picket fence within the storm sewer and drainage easement along the western lot line of the Bengtson property located at W151 N11793 Mistletoe Road, subject to the same 6 conditions as the last one:

1. It shall be the responsibility of the homeowner to maintain a free flow of water within the private easement at all times.
2. A fence permit is required from the Building Inspection Services. The property owner is required to contact SAFEBuilt for more information.
3. If the fence needs to be removed to make improvements and/or conduct maintenance within the easement, the property owner shall be responsible for all costs associated with removing the fence to the extent necessary within seven (7) days of being notified by the Village (or another mutually agreeable deadline). The property owner shall be responsible for any and all costs associated with any damage, removal, or re-installation of said fence.
4. The property owner shall enter into an encroachment agreement with the Village for purposes of attaching the requirements of Condition No. 3 above to ensure that the property owner and any successors in interest are aware of these requirements.
5. The property owner and/or fence installer shall be liable for any and all damage to the public storm sewer pipe within the easement and all site restoration within the easement.
6. If the property owner receives written approval from the HOA stating that the owner can share a common fence with their neighbor to the east and that the fence can be installed along/on the eastern property line, Village staff may approve that administratively.

Motion: Approve with same 6 conditions as the last topic as presented
Motioned By: David Baum
Seconded By: William Shadid
Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, William Shadid, Bridget Henk
No: None
Abstain: None
Motion Passed (Yes 6, No 0, Abstained 0)

F. Virtus Development LLC, Agent for District One LLC, Property Owner of W140 N10363 Fond du Lac Avenue and the Robert & Mary Elizabeth Hacker Trust,

Property Owners of a .66-Acre Lot on Fond du Lac Avenue. Site Plan Approval Deadline Extension Request. (ACTION)

Trustee Baum asked to be recused from this item. Chairman Wolter recused him. Director Retzlaff went over the background of the approved project and the reasons for the extension request. The developer submitted a letter on November 5th, 2024 requesting an extension of the approvals. They included a tentative timeline for commencement and completion of the project.

APPROVE the request to extend site development & building plan for the commercial parking lot and 4-unit multifamily townhouse development proposed by Victory Center LLC subject to the following conditions, which are a compilation of the previously approved conditions for the site and landscape plans except for one, condition 8 in the list, which is essentially specifying the deadline for commencement and completion to be November 13th, 2025:

1. This approval is subject to all the conditions and requirements set forth herein and adopted by the Plan Commission. Approval is granted for the following plans unless superseded by subsequent plan sheets approved by Village Staff pursuant to revisions required herein and/or by the Plan Commission:

   Architectural plans dated July 20, 2023;
   Civil Engineering plans July 20, 2023;
   Lighting plans (photometric plan) dated July 18, 2023;
   Storm Water Management Report dated July 21, 2023;
   Landscape Planting Plan dated November 3, 2023.

   If revised plan sheets are necessary, each revised sheet shall contain the date of said revision clearly stamped in the lower right corner.

~~2. Site Plan approval is subject to creation of the "Kuhberg District" Planned Development District as proposed by Victory Center LLC.~~

~~3. The Developer shall reduce the size of the commercial parking lot by eliminating or reconfiguring stalls along the south side (closest to the townhouse building) in order to reconfigure the size of the two parcels to allow the townhouse building to be shifted up to 15 feet north. The goal is to create more building and driveway setback (and in turn more landscaping buffer and/or fencing) between the townhouse and the single-family property to the south meeting the following minimum requirement:~~

~~The minimum building setback from the nearest point of any townhouse building to the south property line shall be 30 feet;~~
~~The minimum parking lot/driveway setback from the nearest edge of the driveway curb to the south property line shall be 15 feet if a significant landscape screen/buffer is installed along the entire length of the paved driveway and parking stall area, or, 10 feet if a decorative privacy fence and landscape screen/buffer is installed along the entire length of the paved driveway and parking stall area~~

2. All landscaping, screening, grading, and paving improvements shown on the approved site plans shall be installed as proposed prior to issuance of an occupancy permit unless a cash bond or letter of credit in an amount equal to 120 percent of the estimated installation and material costs reviewed and approved by the Village is submitted to the Village as necessary to ensure that installation of the proposed features and improvements will be completed within one (1) year after issuance of the occupancy permit for the shell building.

3. All outstanding items and issues identified by Village Staff in the following review memos shall be resolved and reflected in additional information and/or revised plans submitted to Staff for further review, comment, and approval prior to commencing construction or issuance of

building permits (excluding "early start" site clearing and footing/foundation work approved by the Village and/or WI DSPS):

October 20, 2023 ~~July 31, 2023~~, memo from Brad Seubert, Harwood Engineering

4. State agency (DSPS) approved plans and a $20,000 occupancy bond are required by Inspection Services at the time of building permit application. The Village of Germantown is an authorized delegated agent of DSPS to provide all commercial plan review and inspection services through SAFEBuilt of WI and the Village of Germantown.

5. Dumpster enclosures shall be designed to meet the Village's dumpster enclosure guidelines. The Developer shall provide dumpster enclosure plans for review and approval by the Village Planner prior to issuance of an occupancy permit for the townhouse building.

~~6. A complete landscape plan for both the commercial parking lot and townhouse development shall be reviewed and approved by the Village Forester and Plan Commission prior to final site grading or issuance of an occupancy permit for the townhouse building. Said plan shall include a tree survey as required under Section 17.43(5) of the Zoning Code and a complete landscaping plan that indicates the proposed species, quantities, and planting sizes. The plan should include the Village's street tree requirements for both the commercial parking lot and the townhouse development.~~

6. Right-of-way permits are required for any/all construction conducted in the Donges Bay and STH145/Fond du Lac Ave ~~, Wasaukee Road and Town 9 Parkway~~ rights-of-way. Contact the Public Works Department/Highway Superintendent for permit submittal requirements.

7. The Developer shall install a privacy fence along the west property line adjacent to the commercial parking lot and connect to the existing privacy fence to the north.

8. This approval shall become null and void if construction has not commenced by November 13, 2025, and continued toward completion as provided under Section 17.43(11) of the Zoning Code. **[This is a new condition added on November 11, 2024]**

~~9. As required under Condition #3 of the August 14, 2023 Plan Commission Site Plan approval a,~~ A decorative privacy fence and landscape screen/buffer shall be installed along the entire length of the paved driveway and parking stall area abutting the south property line. The decorative privacy fence shall be a minimum of 6 feet height and not be a simple board-on-board wood picket fence. The landscaping shall also be installed along the south side of the fence. **[This condition carried over from Landscape Plan approval granted by Plan Commission on November 13, 2023]**

10. The four (4) street trees proposed to be planted in the Fond du Lac Ave right-of-way shall be included in a right-of-way permit issued by WisDOT to allow installation in the right-of-way. If the street trees cannot be added to the existing or new agreement the developer has with WisDOT to permit these trees in the ROW, the trees shall be relocated onto the townhouse & parking lot properties. **[This condition carried over from Landscape Plan approval granted by Plan Commission on November 13, 2023]**

11. The proposed landscaping along the south side of the parking lot shall be supplemented with evergreen trees and/or shrubs to enhance screening of car headlight glare on the townhouses. Said plan to be reviewed and approved by the Village Planner and Plan Commissioner Tarantino. **[This condition was added by the Plan Commission within the motion to approve the landscape planting plans on November 13, 2023; see meeting minutes for details]**

Motion: Approve as presented
Motioned By: William Shadid
Seconded By: Robert Williams
Yes: Dean Wolter, Josh Tarantino, Robert Williams, William Shadid, Bridget Henk
No: None
Abstain: David Baum
Motion (Yes 5, No 0, Abstained 1)

VI. CITIZEN INPUT/PUBLIC APPEARANCE: *(Please be advised per 19.84(2) that information and comment will be received from the public. It is the policy of this municipality that public input be limited to a three (3) minute period per person with a time extension granted at the discretion of the Chairperson. Be advised that there may be limited discussion of the information received but no action will be taken under public comments.)*

Residents who spoke included:
Lynn Bednarz who lives on Pawnee Court.

VII. ANNOUNCEMENTS:

Director Retzlaff stated that the Farmland Preservation District topic from last month was incorrect. He stated that at least 80% of the farmland shown on the map would have to be interested in getting in. We can't just wait for the owners to come forward and add them in. We would need 80% to move forward, and he feels that would not be the case. There are a couple of options: 1-attempt to get the 80% or modify the county map to only show those properties that meet the initial criteria, show the properties that want to be included but only rezone the area where 80% are interested. Our County representative stated that he would be willing to try to revise the map. Retzlaff feels that we should send out a survey to see if a significant number of property owners would be interested. Then move forward with possibly redrawing the map. Chairman Wolter stated that this is what happened last time, that we didn't have enough property owners that were interested in participating. Ewert stated that this is drifting into a discussion that is not on the agenda for tonight.

Chairman Wolter stated that there are 2 listening sessions coming up this week on Thursday:
November 14th at 4pm there is an information meeting with the WisDot to discuss some enhancements to STH145 from STH167 to STH100 and at 6pm there is a visioning session for the Village Center for which we will have citizen input but are in the Village Hall Boardroom
Tarantino stated that the Germantown Christmas Parade is this Saturday at 10am, festivities in the park and tree lighting at 4:30pm. Santa will be at the Fireman's Park pavilion!

VIII. ADJOURNMENT:

President Wolter adjourned the meeting at 8:35pm.

CERTIFIED SURVEY MAP (CSM) & SITE PLAN REVIEW

12/09/24 Plan Commission Meeting

OneEnergy Development, LLC / Wayne Lutynski

Village Staff Report & Recommendation ***Germantown, Wisconsin***

SUMMARY

OneEnergy Development, LLC, agent for Wayne Lutynski, property owner, is seeking approval of a Certified Survey Map (CSM) and site development plan to allow for an approximate 30-acre solar energy facility (i.e. “solar farm”). The site is zoned Agricultural (A-1) and is located at approximately N132 W18100 Rockfield Road in the Rural Preservation District.

Location: N132 W18100 Rockfield Road (Approximate Address)

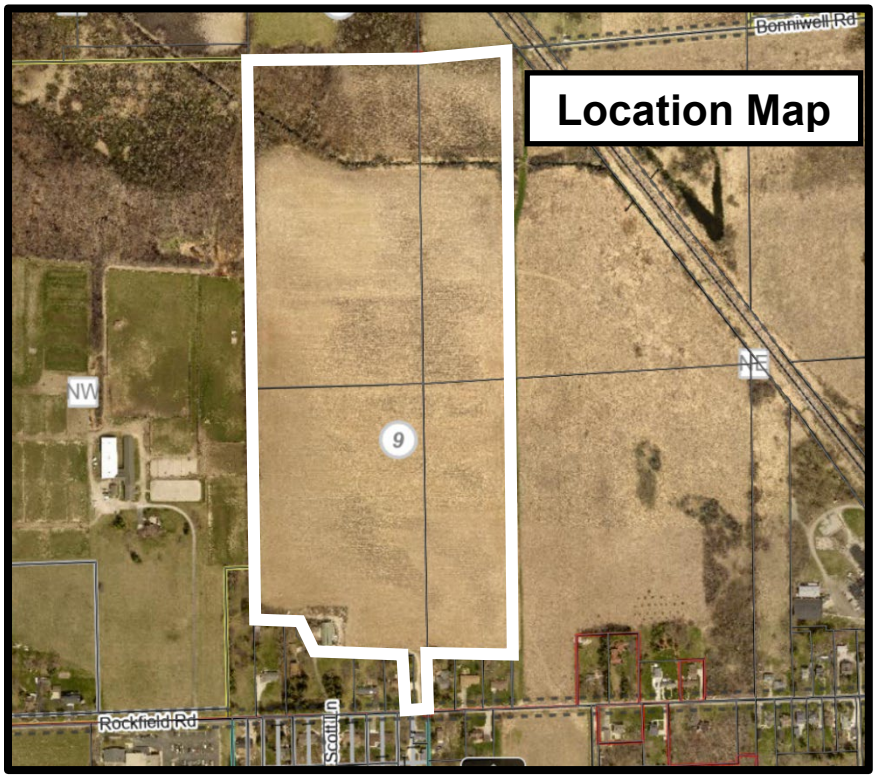
Applicant/ Owner:

OneEnergy Development, LLC
10 N Livingston Street, Suite 201
Madison, WI 53703

Wayne Lutynski
W167 N11183 Queens Court
Germantown, WI 53022

Zoning: A-1: Agricultural

Adjacent Land Uses		**Zoning**
North	Agricultural	A-1/A-2
South	Residential (Village & Town of Germ.)	RS-3/RS-4
East	Agricultural	A-1
West	Agricultural (Equestrian Center)	A-1



Background/Proposal

OneEnergy Development, LLC, agent for Wayne Lutynski, property owner, is seeking approval of a Certified Survey Map (CSM) and site development plan to allow for an approximate 30-acre solar energy project. The site is zoned Agricultural (A-1) and is located at approximately N132 W18100 Rockfield Road in the Rural Preservation District. As designated in the Comprehensive Plan institutional type uses are allowable in the Rural Preservation District, and the proposed use is a permitted use within the A-1 District requiring site plan review and approval.

As presented in the application, the proposed solar energy facility will consist of solar modules and associated collection equipment that delivers power to the electric grid serving local We Energies customers. The solar facility will have a capacity of six (6) megawatts (MW) capable of serving 1,400 average Wisconsin households. The on-site equipment will consist primarily of solar modules mounted on single-axis tracking racking. These panels generate direct current (DC) electricity. Approximately 24 inverters, situated throughout the array area, convert the DC electricity to alternating current (AC) electricity to allow it to be delivered to the existing electric distribution system. Two (2) transformers increase the AC voltage produced by the inverters to the grid voltage of the existing 3-phase distribution line to which the project connects.

The facility will be an unmanned plant that will operate through local and remote control and monitoring. The solar photovoltaic (PV) system will be monitored remotely through the Utility Energy Management System and the integrated Data Acquisition System (DAS), which signals alerts for any irregular operating condition. Scheduled maintenance will occur once annually to inspect all elements of the project to ensure optimal performance. After construction is complete (typically 4-6 months from start date and targeted for late 2025), there will be limited access to the site for periodic inspections (monthly), maintenance and vegetation management. Per submittal documents, the following are additional details associated with the proposal:

- Hours of Operation: The solar facility will operate during daylight hours. This facility will not be continuously staffed and will not be open to the public. It is anticipated that once construction is complete, operations and maintenance personnel (one or two people) will access the site once or twice per month for inspection or minor maintenance.
- Number of Employees: There will be no employees stationed at the facility. As noted in Item No. 1 above, one or two people will visit the site a once or twice each month for inspection and minor maintenance, as needed.
- Anticipated Customers: No customers will be served at the facility, and there will be no traffic associated with such customers. The renewable electricity generated from the facility will be used to serve the needs of local utility customers.
- Outside Storage: None proposed.
- Outdoor Activities: Inspection of the solar electric system and periodic maintenance as described above.
- Outdoor Lighting: No permanent outdoor lighting is proposed.
- Outside Loudspeakers: None.

- Proposed Signs: The site will only include necessary safety signage with contact information for the Project Operations team and an entrance sign.
- Trash Removal: There will not be trash generated at this site.

As it pertains to this proposal, the expected useful lifespan of the project is 30-50 years, meaning the project will be decommissioned and the site restored after there is no longer an economical reason for the solar facility to keep operating. Note that a Solar Generating Facility Decommissioning Plan was provided by the applicant and is attached. During the project's existence the property owner intends to continue farming the portion of land unaffiliated with the solar facility.

According to their website (link), *"OneEnergy is a Public Benefit Corporation with a mission to fight climate change by making clean energy the number one source of electricity for consumers and utilities."* The company has five (5) listed office locations with a regional office in Madison, WI. OneEnergy has a portfolio that includes implementation of solar energy projects across the country, including 42 projects in the Midwest and 31 of those being in Wisconsin. More information on the company and their profile statistics are included in the attachments section.

Certified Survey Map (CSM)
The development site is currently comprised of four (4) parcels totaling 54 acres. The applicant submitted a Certified Survey Map (CSM) to combine the parcels to create one (1) lot for development purposes (i.e. applicable setbacks and development standards). Below are the parcels that would be combined into an individual lot:

- GTNV_091986 (10.0 Acres) – Vacant
- GTNV_091987 (8.37 Acres) – Vacant
- GTNV_092979 (20.0 Acres) – Vacant
- GTNV_092994 (16.0 Acres) – Existing Barn Structure

Site Plan
As indicated in the application and site plan, the proposed solar energy facility is approximately 30 acres in size and will contain the primary components of bifacial solar panels, inverters and transformers, access drive (16' width), perimeter 8' fencing, and vegetative screening. These components and additional details are spelled out further in this section.

Site & Land Use Summary

Total property acreage:	54.25
Solar facility acreage:	27.69
Access road acreage:	0.61
Module count:	11,960
Inverter count:	24
Solar Array Height:	8' (Average); 10' (Maximum)

Landscape and Buffering

The applicant submitted a landscape plan that includes vegetative screening along the southern boundary of the solar facility, running parallel to and on the outside of the perimeter fence/enclosed area. The screening is shown to run the entire width of the property with evergreen trees planted every 25'. It is understood the screening is proposed along the southern boundary of the facility as there are nearby homes, although several hundred feet away, to the south of the facility. The property to the west, which contains an equestrian center, is buffered by a natural tree line between the properties, while the properties to the north and east are large undeveloped plots of land. Finally, an 8' tall agricultural (i.e. deer-exclusion style) fence will enclose the site where the solar array panels are located.

Access and Traffic Circulation

Access to the site will be provided through a private driveway entrance (existing) from Rockfield Road. The drive will extend several hundred feet straight north from Rockfield Road until its terminus in the center of the solar panel area. The drive is proposed at 16' in width and made of aggregate material. Note that a separate property owner shares access to the driveway from Rockfield Road to gain entry into his/her private property where their home is located. The entry to this resident's property is roughly 80-100 feet north of Rockfield Road, meaning shared access is for that distance until the separate property owner's drive breaks off to the west.

Minimal traffic is anticipated in relation to the solar energy facility, as the applicant states the facility will not be continuously staffed and will not be open to the public. It is anticipated that once construction is complete, operations and maintenance personnel (one or two people) will access the site once or twice per month for inspection or minor maintenance. There will be no employees stationed at the facility and no customers will be served at the facility.

Vegetation Installation and Stormwater Management

The project proposal includes the installation of native prairie plants on site. A vegetation plan was submitted specifying that the site will be managed for native pollinator habitat after the construction of the solar arrays. According to the submitted vegetation plan, there are several benefits of pollinator habitats with native plantings on solar sites, including but not limited to the following:

- Restores soil by preventing erosion.
- Improves soil structure and fertility.
- Increases carbon storage.
- Diversifies microbial communities.
- Increase value of soil for future agricultural production.

In order to implement the pollinator habitat, the plan lays out site preparation tasks, temporary/permanent seeding timing, management and monitoring guidelines, which includes invasive species management. While native prairie plants are known to prevent stormwater runoff and improve surrounding water quality, the applicant is required to supplement the submitted vegetation plan with a stormwater management plan. The applicant will be required to submit a stormwater management plan subject to review

and approval by the Village Engineer prior to any construction activity or issuance of an Erosion Control Permit.

Utilities
As the purpose of this project is for the solar facility to produce and deliver power to the electric grid, there is a proposed point of connection with the electric grid at the site's entrance at Rockfield Road. Sanitary and water utilities are not needed/required to serve the proposed solar energy facility.

Signage Plan
Staff understands the only signage proposed is safety/wayfinding signage that includes contact information for the Project Operations team and an entrance sign.

Lighting
According to the application, no permanent outdoor lighting is proposed.

Recap/Update – 10/14/24 & 11/11/24 Plan Commission Meetings
This case was heard by the Plan Commission at its October 14 meeting, and the case was tabled/continued by the Plan Commission. During the meeting there was an abundance of questions from the Plan Commission, Town of Germantown, and the public, which the applicant responded to. For a summary of the discussion please refer to the meeting minutes from the 10/14 meeting, but for a list of the main questions brought up and the response provided by the applicant please see below:

- *Town of Germantown Road (Rockfield Road) and Potential Damages from Use*
  "We often have a road agreement with jurisdictions in which we work, committing us to repair any damage caused by construction traffic. As part of this, we often have a haul route that all deliveries must follow, which usually minimizes traffic along subject Town roads… The haul route I drafted keeps trucks to the east of the project and uses about 0.5 miles of town road before turning onto county and state roads..."
- *Noise/Traffic During Construction and Consideration of the Nearby School*
  "Project construction takes 4-6 months, and the majority of our work takes place over 2 months in the summer when school is not in session. We have natural limits to how many deliveries we can accept because of the number of staff on site. We can receive one or two trucks that are similar in size to a grain hauler delivering equipment per day. The greatest amount of traffic would be at the very beginning, with dump trucks hauling aggregate in to build the access drive, similar to constructing the access to a home that's set back a ways from the road. Long term, the project would have maybe one truck per month on the high side."
- *Power Route and Ending Location*
  "The electricity produced by the solar project would be used by the nearest load (i.e. the people who live and work near to the project). The electricity will connect to the existing distribution lines along Rockfield Road with minimal upgrades. The plan shows an underground medium voltage line connecting from the project to an existing pole just west of the existing driveway."
- *Chemical Use to Clean Solar Panels and Potential Impact*

"The solar panels do not get cleaned because it rains frequently enough in this area that they do not experience significant soiling. Chemicals are not applied to the solar panels."

- *Glare from Solar Panels*
  "The Glare Analysis we submitted shows no glare. The solar panels track the sun, and any reflection would therefore be angled back at the sun and not at neighboring properties."
- *Site Remediation Plan after Lease Contract*
  "The project is required to be decommissioned at the end of its useful life or after any period of 12 months that it is not operational. This is guaranteed in the lease as well as our permit application materials. The Decommissioning Plan details the process for removal. These obligations are required of any future owner of the project, if for example OneEnergy went out of business or if the project was purchased by the utility company."

After the public comment period and applicant responses to the questions asked, the Plan Commission tabled/continued the case and directed staff to engage with the Town of Germantown regarding a Road Use Agreement for Rockfield Road in consideration of the project implementation process. The direction provided by the Plan Commission was that all parties (Village, Town, and OneEnergy) shall be involved in formulating a Road Use Agreement, so Village staff and the applicant reached out to Town officials and provided a draft Road Use Agreement for their review.

The Plan Commission heard this case again at its November 11 meeting. Due to the fact no formal meeting had taken place between the aforementioned parties by that time, the Plan Commission tabled/continued the case again. Since then, Village and Town officials were able to meet and discuss the draft Road Use Agreement. At this time the Road Use Agreement remains under review but progress has been made in terms of the communication between the parties and concerns with the initial draft being conveyed to the applicant (OneEnergy) so they can be addressed.

Staff Comments

Community Development: Planning and Zoning

The project site is in the "Rural Preservation District" under the Village's 2050 Comprehensive Plan and is zoned A-1 Agricultural. The Comprehensive Plan designation lists institutional type uses as allowable and the A-1 District is intended to provide for the continuation of general farming and related uses in those areas of the Village that are not committed to urban development. It is further the intent of the district to protect rural lands in the Village from urban development until their orderly transition into urban-oriented districts is required. Therefore, the proposed use of "solar energy conversion system" is a permitted use within the A-1 District.

Wisconsin has enacted statutes that protect solar development and limit municipal oversight. Wisconsin Statute § 66.0401 explicitly limits the authority of municipalities to regulate solar energy systems. Under Wis. Stat. § 66.0401(1m), municipalities may not place any restriction on the installation or use of solar energy systems unless the restriction satisfies one of the following conditions:

- Serves to preserve or protect the public health or safety;
- Does not significantly increase system cost or decrease efficiency; or
- Allows for an alternative system of comparable costs and efficiency.

The above-mentioned statute is not superseded by municipal zoning powers. As proposed, however, the project complies with the A-1 District zoning standards. The solar array structures comply with setbacks, building height, and the proposed agricultural fence complies with code. While there is no applicable lot coverage standard in the A-1 District, there is little change to the amount of impervious surface quantity through implementation of the project.

OneEnergy has committed through its lease agreement with the landowner to remove the system at the end of the project life, including provisions to ensure that there is adequate financial security set aside to perform such decommissioning. When the project is decommissioned, all infrastructure will be removed, and the site will be restored to predevelopment conditions for continued agricultural use with rested and restored soils. Please see attached Decommissioning Plan.

Additionally, the applicant submitted a Glare Analysis performed by ForgeSolar. According to the analysis there was no glare found for all photovoltaic (PV) solar arrays.

Community Development: Inspection Services
State agency (DSPS) approved plans and a $20,000 bond are required by Inspection Services. The Village of Germantown is an authorized delegated agent of DSPS to provide all commercial plan review and inspection services through SAFEBuilt of Wisconsin and the Village of Germantown.

Public Works/Village Engineer/Village Surveyor
The Village Engineer and Village Surveyor have identified technical issues and plan revisions that need to be resolved or otherwise addressed by the applicant prior to commencing construction activities. The applicant will be required to submit a stormwater management plan subject to review and approval by the Village Engineer prior to any construction activity or issuance of an Erosion Control Permit. Staff is recommending a condition requiring all outstanding items and issues identified in the following review memos be resolved and reflected in additional information and/or revised plans submitted to staff for further review, comment, and approval prior to commencing any site construction:

- September 14, 2024 – Review Memo from Village Surveyor
- September 25, 2024 – Review Memo from Village Engineer

Village Forester
After review of the landscape screening and vegetation plan, the Village Forester had one comment for the applicant to address as follows: “Include evergreen tree species selection, nursery stock selection, and caliper sizes. Additionally, include planting/tree installation specifications.” The applicant acknowledged this review comment and has submitted a response and revised plan for staff review.

Fire and Police Departments
The Fire Department is requiring an additional ingress/egress point to the solar facility on the northeast side. The additional access point can be provided by installing a gate per the Fire Department, which the applicant since has acknowledged and agreed to. No comments were made by the Police Department.

Legal
The Village received two (2) petitions in opposition of this project. The petitions have been signed and notarized and were submitted to the Plan Commission and Village Board. Both petitions are attached to this memo.

Staff has requested the Village Attorney to review each petition and advise if they have any legal impact or standing as it applies to the subject zoning applications. The attorney review is pending.

VILLAGE STAFF RECOMMENDATIONS

APPROVE the proposed 1-lot Certified Survey Map (CSM) for OneEnergy Renewables solar project located at approximately N132 W18100 Rockfield Road, subject to the following conditions:

1. All technical issues and corrections identified by the Village Surveyor (see September 14, 2024, memo from Bob Beilfuss, PLS) shall be addressed and reflected in a revised CSM reviewed and approved by Village staff prior to recording.
2. The CSM be revised to denote a front setback of 60’ in accordance with the A-1 District. Any pre-existing structures found to be within this setback shall be noted as “nonconforming” on the CSM.

APPROVE the site development plan submitted by OneEnergy Development, LLC for a solar energy facility approximately 30 acres in size containing bifacial solar panels, inverters and transformers, access drive (16’ width), perimeter 8’ fencing, and vegetative screening for property located at approximately N132 W18100 Rockfield Road, subject to the following conditions:

1. This approval is for the plan sheets that comprise the site plan set as noted below and is subject to compliance with all the conditions and requirements set forth herein and subsequently adopted and/or revised by the Plan Commission. Approval is granted for the following unless superseded by subsequent plan sheets approved by Village Staff pursuant to revisions required herein and/or by the Plan Commission:
    a. *Site Development Plan dated October 2, 2024.*
    b. *Vegetative Screening Plan dated August 26, 2024.*

    If revised plan sheets are necessary, each revised sheet shall contain the date of said revision clearly stamped in the lower right corner.

2. The Vegetative Screening Plan shall be subject to final acceptance by the Village Forester and Community Development staff prior to commencement of construction.
3. The technical issues and plan revisions identified in the September 25, 2024, memo from the Village Engineer shall be addressed in revised plan sheets and/or supplemental documents as necessary prior to commencing construction activities or issuance of an Erosion Control Permit.
4. Site operations are limited to the proposed activity by the applicant per the submitted/attached “Solar Generating Facility Operations Plan”.
5. State agency (DSPS) approved plans and a $20,000 bond are required by Inspection Services. The Village of Germantown is an authorized delegated agent of DSPS and may be used as an alternative to provide all commercial plan review and inspection services through SAFEBuilt of WI and the Village of Germantown.
6. A gate shall be installed providing another ingress/egress point into the solar array facility on the northeast side of the development site. The gate installation and specifications shall be approved and inspected by the Fire Department prior to commencement of facility operations.
7. Applicant shall install the agricultural/wildlife perimeter fence with openings at the bottom (i.e. at-grade) to allow greater wildlife movement.
8. The maximum height of the solar array panels (i.e. structures) shall be 10’ from established grade.
9. All temporary and permanent exterior signs require a permit and shall comply with all current Village sign regulations and requires a permit if/when allowed.
10. Applicant shall provide a commitment to the Village including provisions to ensure that there is adequate financial security set aside to perform the specified decommissioning of the project and any restoration needed to be performed to the shared access drive after construction of the project or its decommissioning. Said commitment shall be reviewed and approved/accepted by the Village Attorney.
11. Applicant/company shall enter into (i.e. sign) a road use/maintenance agreement with/between the Town of Germantown and Village of Germantown specifying terms of use of Rockfield Road during the construction and implementation process for the project. Such agreement shall stipulate terms for any use of Class A weight vehicles on Rockfield Road and shall be approved/accepted by the Village Attorney prior to commencement of construction or issuance of any permits, including an Erosion Control Permit.
12. Pursuant to Section 17.47 of the Zoning Code, if the Village observes and/or receives complaints regarding negative impacts associated with and/or created by construction activities or the facility’s day-to-day operation on the property, including but not limited to glare, noise, or dust, among other things, the Property Owner/Operator shall work with the Village to identify the source of such impact(s), evaluate alternative mitigation measures, and implement a mutually-agreeable solution to mitigating the impact(s).

Village of Germantown
Willkommen

Fee must accompany application
☐ $2,900 with public improvements
☒ $1,960 no public improvements
Paid DR Date 8/9/24
chk #004856

CERTIFIED SURVEY MAP APPLICATION

Pursuant to Section 18.06 of the Municipal Code

Please read and complete this application carefully. **All applications must be signed and dated.**

1

APPLICANT OR AGENT
OneEnergy Development, LLC

Phone (262) 573-3089
Fax ( )
E-Mail peter@oneenergyrenewables.com

PROPERTY OWNER
Wayne Lutynski

Phone (414) 659-8901

2

PROPERTY ADDRESS OR GENERAL LOCATION	TAX KEY NUMBER
Approximately 43.257821, - 88.131597	091986, 091987, 092979, 092994

3

PURPOSE OF LAND SPLIT

Combine parcels	Will the land split require rezoning? No	
	From	To

4

READ AND INITIAL THE FOLLOWING:

X I understand that the Certified Survey Map is not valid until recorded at the Washington County Register of Deeds. The Village will record the document and charge the applicant all applicable recording fees.

X I understand that the Map will not be placed on the Village Board agenda until all the technical corrections to the CSM are made, the payment of any outstanding impact fees are paid to the Village Clerk's Department, and the original signed and stamped copy of the Map is submitted on the proper paper.

X I understand that parcels created outside the Sewer Service Area will require a soil test. I also understand that all properties abutting a State Highway will require DOT approval and I will be responsible for securing such approval prior to recording.

X I understand all delinquent property taxes on any of the properties involved shall be paid prior to recording.

5

SIGNATURES -- ALL APPLICATIONS MUST BE SIGNED BY OWNER!

Applicant — Date 8/6/2024
Owner — Wayne Lutynski (Aug 6, 2024 13:27 CDT) — Date 8/6/24

RECEIVED
AUG - 9 2024
OFFICE OF THE VILLAGE PLANNER
VILLAGE OF GERMANTOWN

Village of Germantown ...Willkommen

Fee must accompany application

- ☐ $700 Minor Addition
- ☐ $1,240 Construction <10,000 SF
- ☐ $2,095 Construction 10,000 SF to 50,000
- ☐ $3,460 Industrial Construction >50,000 SF
- ☐ $3,460 Commercial Construction >50,000
- ☒ $200 Plan Commission Consultation
- ☐ $125 Fire Department Plan Review

PAID DR DATE 8/9/24
chk#004856

SITE PLAN REVIEW APPLICATION

Pursuant to Section 17.43 of the Municipal Code

Please read and complete this application carefully. **All applications must be signed and dated.**

1

APPLICANT OR AGENT
OneEnergy Development, LLC

Phone (262) 573 - 3089
E-Mail peter.murphy@oneenergyrenewables.com

PROPERTY OWNER
Wayne Lutynski

Phone (414) 659 - 8901
E-Mail

2

PROPERTY ADDRESS

To be assigned. Approximately 43.257821°, -88.131597°

3

NEIGHBORING USES – Specify name and type of use, e.g. Enviro Tech – Industrial, Smith – Residential, etc.

North	South	East	West
Saddle Up LLC, A-2, Agricultural (Horse Stable), MARLENE KASTEN, MARY LYNN PROST ET AL, A-1, Agricultural	Residential homes, RS-3 & RS-4	Milwaukee Metropolitan Sewerage District, A-1, Agricultural	Saddle Up LLC, A-1, Agricultural (Horse Stable)

4

READ AND INITIAL THE FOLLOWING:

X I am aware of the Village of Germantown ordinance requiring fire sprinklers in most new construction.

X I understand that all new development is subject to Impact and/or Connection Fees that must be paid before building permits will be issued.

X I understand that an incomplete application will be withdrawn from the Plan Commission agenda and that all resubmissions to the Plan Commission are subject to a new application fee.

5

SIGNATURES – ALL APPLICATION MUST BE SIGNED BY OWNER!

Applicant 8/6/2024 Date

Wayne Lutynski (Aug 6, 2024 13:28 CDT) Owner 8/6/24 Date

RECEIVED AUG – 9 2024 OFFICE OF THE VILLAGE PLANNER VILLAGE OF GERMANTOWN

OneEnergy RENEWABLES

GERMANTOWN SOLAR
Project Overview

OneEnergy Renewables is in the process of developing a 6 MW solar project in the Village of Germantown, Washington County, WI. The project is located north of Rockfield Road (Please see site plan on reverse). OneEnergy Renewables will develop, design, and construct the solar project, and electricity from the project will serve local We Energies customers.

The project will occupy approximately 30 acres, and has an expected useful life of 30-50 years, providing clean, local renewable energy for years to come. At the height of construction, roughly 30 people will be employed on this project. *Solar installer* is one of the fastest growing jobs in the USA.

SYSTEM STATISTICS

6 Megawatts
~30 acres
~12,000,000 kWh per year

MAIN SYSTEM COMPONENTS

- Single-axis tracker (tracks the sun from east to west throughout the day)
- Bifacial solar panels
- Inverters
- Transformers

12,000,000 kWh of electricity per year, equivalent to…

1,400
AVERAGE WISCONSIN HOUSEHOLDS

9,241
TONS OF CO_2 AVOIDED, LIKE TAKING 1,600+ CARS OFF THE ROAD*

9,787
ACRES OF U.S. FOREST CARBON SEQUESTRATION*

**Source*: EPA Greenhouse Gas Equivalencies Calculator

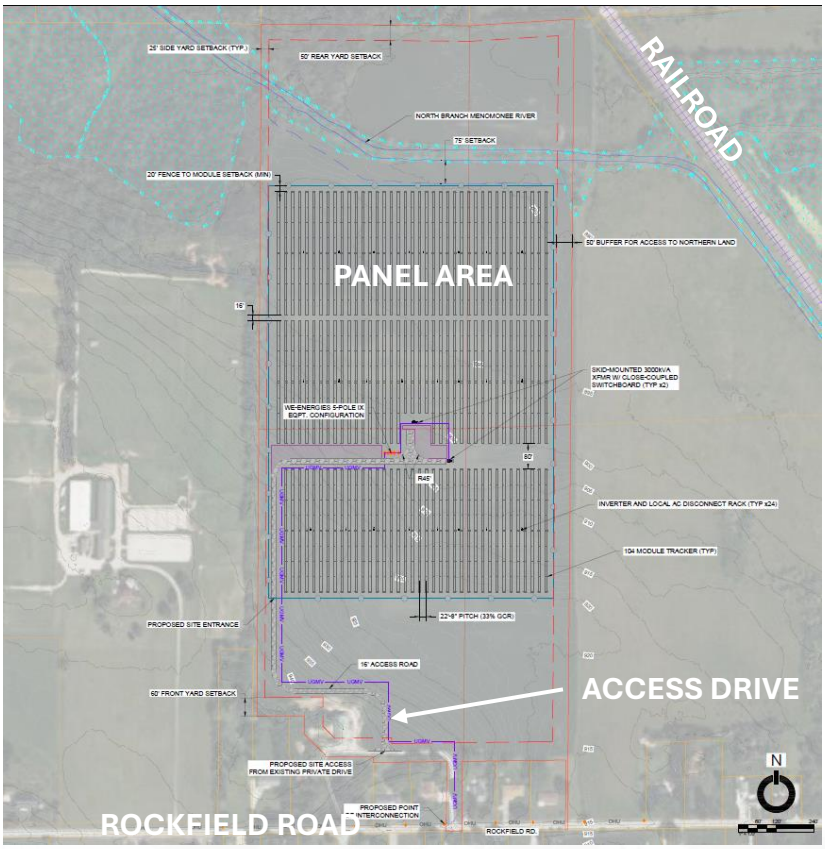
Sustainable Design and Construction

The area beneath and around the panels will be planted to a low-growing perennial pollinator mix. This increases water infiltration relative to conventional row-cropping. Water that flows off solar panels is safe for people and wildlife.

The project area will be fenced within an 8’ tall deer-exclusion style fence, similar to what one might find around an orchard. The area surrounding the project will continue to be farmed.

When the project is decommissioned, all infrastructure will be removed, and the site restored to pre-development conditions for continued agricultural use with rested and restored soils.

PROPOSED GERMANTOWN SOLAR PROJECT SITE PLAN



Contact

PETER MURPHY
PROJECT MANAGER

(414) 768-2590 |C

peter@oneenergyrenewables.com

10 N. Livingston St, Suite 201
Madison, WI 53703

Village of Germantown, WI

Germantown Solar Project

Applicant:
OneEnergy Development, LLC
10 N. Livingston St., Suite 201
Madison, WI 53703

Contents

A. General Land Use Description 3
B. Description of Equipment 3
C. Scale Map of the Project Site 7
D. Landscaping 7
E. Wetland and Drainage Facilities 7
F. Construction Schedule 8
G. Operations & Vehicular Traffic Description 8
H. Decommissioning and Removal 9
I. About OneEnergy 9

Exhibits

Exhibit A – Site Plan

Exhibit B – Operations Plan

Exhibit C – Vegetation Management Plan

Exhibit D – Project Profile

Exhibit E – Decommissioning Plan

Exhibit F – Survey Map

Exhibit G – Glare Analysis

Background

The Germantown Solar Project (the "Project") is a proposed 6 Megawatt solar generation facility. OneEnergy Development, LLC ("OneEnergy" or "the Applicant") will develop, engineer, and construct the Project.

The Applicant will complete all environmental studies and surveys required to construct the Project, including the following: wetland delineation, Phase I Environmental Site Assessment, soil analysis, Wisconsin State Historical Preservation Office, and endangered resources review. The Project is not expected to impact natural resources.

The Applicant intends to start construction on the Project in the spring of 2025, pending receipt of all required permits and approvals and availability of key equipment for the project. Construction of the project is expected to take approximately 4-6 months. If construction starts in spring of 2025, the Project is expected to be completed by the end of 2025. If construction is delayed due to key equipment availability or other issues until spring of 2026, the project is expected to be constructed and operational by the end of 2026. Once complete, the Project will generate local power for local customers within We Energies' service territory.

Strobus Solar Project in Black River Falls, WI

A. General Land Use Description

Location

The Project is located on approximately 30 acres of vacant land in the Village of Germantown known as parcels 092994, 092979, 091987, and 091986 at the north of Rockfield Road and east of Maple Road. The land is part of a larger 54-acre group of parcels owned by Wayne Lutynski.

Zoning

The proposed Project is situated on land that is zoned A-1 Agricultural Preservation District. Adjacent parcels are farms, several homes, and a horse training facility, zoned A-1, A-2, RS-4, and RS-3.

Setbacks

OneEnergy commits to following all applicable Setbacks (please see Village of Germantown Ordinance 17.12(5) and 24.04)

(a) Front Setback. 60 feet, minimum.
(b) Side Yards. 25 feet, minimum, except that bee hives and buildings used for keeping livestock and poultry, and all new buildings constructed after the effective date of this Code shall have yards of not less than 50 feet.

(c) Rear Yard. 50 feet, minimum.
Setback from navigable waterway located to the north: 75'

Description of Equipment

Racking and Panels

The racking for the proposed project consists of driven steel I-Beams that are embedded approximately 10’ into the ground, and extend approximately 5’ above ground. A torque tube connects to the top of the I-Beams, and the panels are mounted to the top of the torque tube. All components of the racking system are galvanized steel.

Below is a depiction of the horizontal profile view of the panels and racking, which will run in rows from north to south throughout the site and will track the sun from east to west throughout the day. At their maximum angle in morning and evening, the panels are 50 degrees from horizontal facing either east (morning) or west (evening). At mid-day, the panels are flat. At their maximum tilt angle in morning and evening, the tallest part of the panel is ~8’ above ground level.

Figure 1 – Example of Horizontal Profile View panels and racking

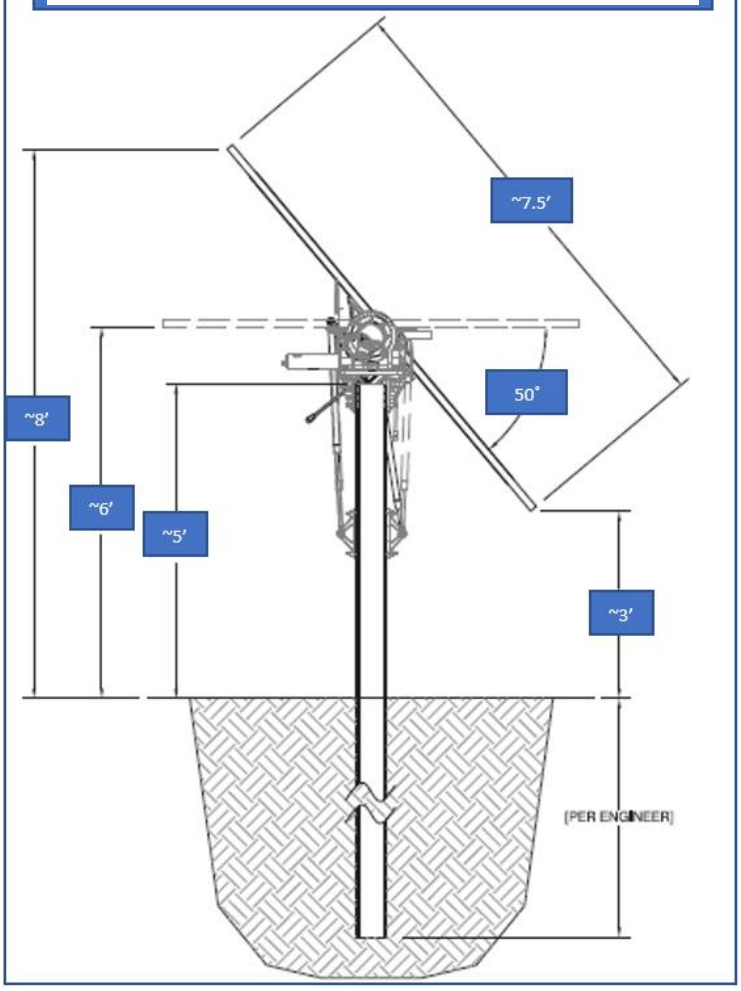


Image 2 - Strobus Solar Project in Merrillan, WI

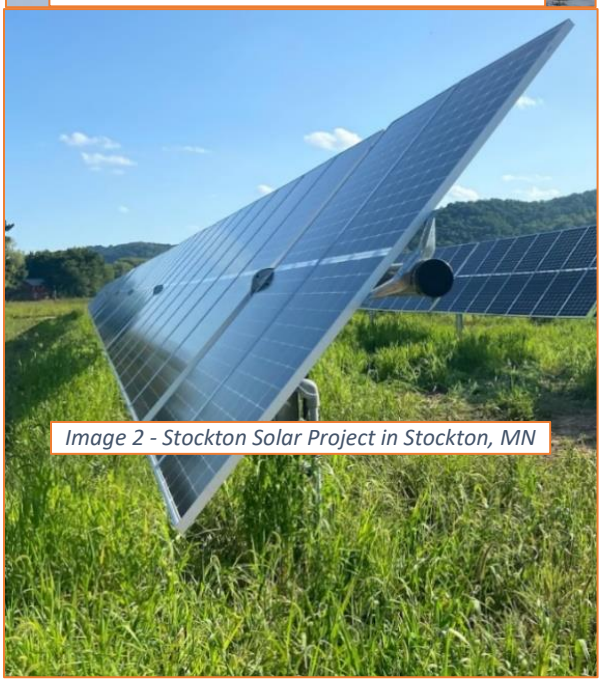


Image 2 - Stockton Solar Project in Stockton, MN

Solar Panels

Crystalline silicon solar PV panels, which represent ~95% of the installed solar panels in the US, consist primarily of tempered glass, silicon wafers, anodized aluminum, and wiring, all of which can recovered and recycled at the end of their useful life. PV panels are extremely durable and built for long service life, as indicated by their 30-year warranty.

Inverters, Transformer, Electrical Rack

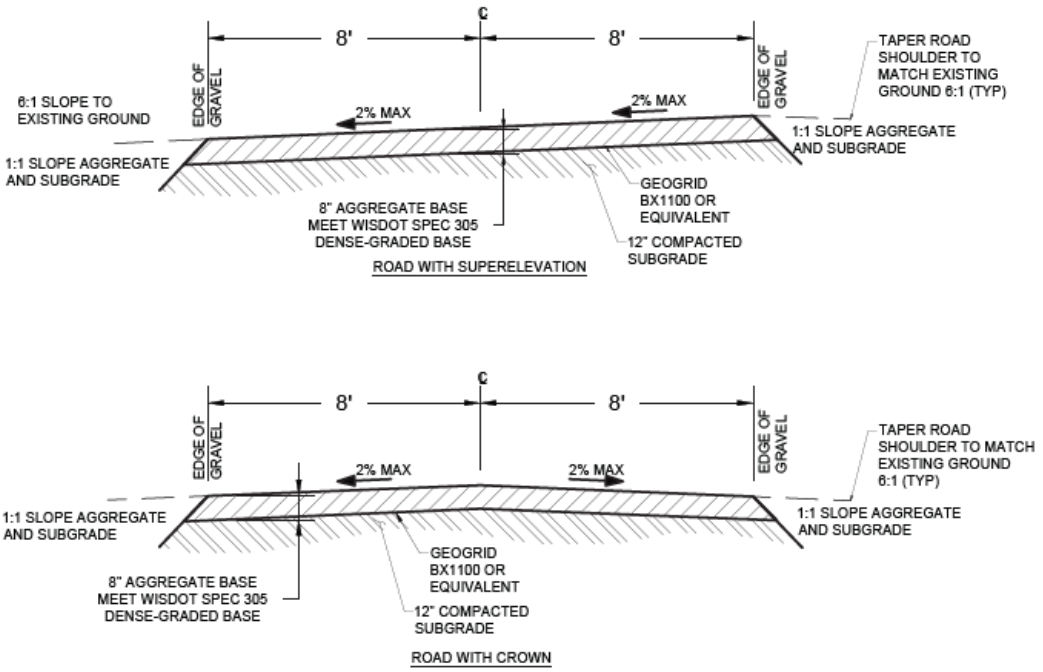
The inverters, electrical panels and transformers will be located in the middle of the project as depicted in the site plan. Most equipment (inverters, electrical panel, etc.) will be mounted on driven pilings similar to the pilings that support the solar panels and racking with a maximum height of 8 feet. The transformers and disconnects will be mounted on a concrete pad. These pieces of electrical equipment look similar to what you would see at a large load service like a grocery store.

Image 3 - Hodag Solar Project in Rhinelander, WI

Access Drive

The access drive is proposed to be 16' wide and will come off of Rockfield Road. The access drive will be installed below depending on the slope. The access drive is installed at-grade to minimize changes to existing drainage patterns.

Figure 2 – Example of Access Drive Design Detail



Fence

A fence will surround the solar project and will be an 8’ tall agricultural-style fixed knot wildlife exclusion fence similar to what you might see around an orchard. The fence will have either wood or steel posts.

Image 4 – Fence at Rushford Village Solar Project in Rushford Village, MN

Image 5 – Fence at Blue Prairie Solar Project in Black River Falls, WI

B. Scale Map of the Project Site

Please see **Exhibit A - Proposed Site Plan** for dimensions and location of proposed facilities. OneEnergy designs our projects using highly efficient bifacial solar panels and single-axis tracking racking. Using this equipment, a 6 Megawatt solar system can be located on approximately 30 acres of relatively flat topography and, most importantly, consistent elevations in the north-south direction.

The proposed project is expected to produce enough electricity for approximately 1,400 average Wisconsin residences, or almost 17% of the electricity needs of the Village of Germantown's approximately 8,280 households.

C. Landscaping

Image 6 - Stockton Solar Project in Stockton, MN

The Project will be developed in a manner that complements the agricultural setting by using an agricultural-style fence, either a pasture for grazing sheep or a pollinator seed mix to attract bees and birds. Topsoil integrity will be preserved throughout construction by pre-seeding a cover crop prior to construction to minimize erosion and compaction, as well as by minimizing grading within the site. The permanent seeding will take place after construction is complete, and will conform with Wisconsin DNR recommendations for solar projects. The final landscape plan will be developed in partnership with the Wisconsin DNR and in compliance with all applicable stormwater requirements. By planting dense perennial vegetation beneath and around the solar panels, the project provides ecosystem services associated with pollinator benefits, soil building, increased water infiltration and reduced stormwater runoff compared to regularly tilled farmland. Please see **Exhibit C –Vegetation Management Plan**.

D. Wetland and Drainage Facilities

The project is designed to minimize soil disturbance and drainage alterations as much as possible. OneEnergy anticipates limited ground disturbance for the installation of the solar array and will ensure all grading is done in compliance with recommended best practices for stormwater and sediment erosion control. Because the project will occupy more than one acre, OneEnergy will be required to comply with the Wisconsin Department of Natural Resources NPDES Construction General Permit, which has the following requirements:

- Implement Best Management Practices to control sedimentation during construction, i.e. silt fencing, fiber logs, temporary stabilization, etc.
- Submittal of a Water Resource Application for Project Permits (WRAPP)
- Develop a Stormwater Management Plan approved by the Wisconsin DNR prior to commencement of construction

Sedimentation will be controlled from leaving the project area after construction by changing the land use of the project area from cultivated agricultural land to nearly 100% vegetated ground cover. The pollinator meadow growing beneath and around the solar panels acts as a vegetative buffer that covers ~95% of the site. Runoff from the access roads and concrete pads will travel through the vegetative cover prior to leaving the project area. Water that runs off panels into the proposed dense pollinator planting below will act as a natural vegetative buffer which will increase infiltration and act as erosion control to help the site meet required standards.

OneEnergy solicited records from the landowner on any known drain tile on the property, reviewed aerial photographs available on Google Earth, and studied the Project Area for evidence of drain tile. OneEnergy then contracted environmental resource specialists Emmons & Olivier Resources (EOR), to evaluate the Project site for evidence of drain tile. Based on all available information and EOR's expert opinion, there is not expected to be drain tile within the project area

E. Construction Schedule

OneEnergy's goal is to finalize engineering in the winter of 2024-2025, to enable purchasing of long-lead equipment in early 2025 and construction during the months of May to October, 2025. If construction is delayed due to key equipment availability or other issues until spring of 2026, the project is expected to be constructed and operational by the end of 2026.

A project of this size typically takes 4-6 months to construct. The Project is intended to start construction in the summer of 2025 and be complete by the end of 2025. A tentative construction schedule is as follows:

Civil Work and Fencing Install	5/1/2025	5/31/2025
Pile Installation	6/1/2025	7/1/2025
Racking and Module Installation	7/1/2025	9/1/2025
Wiring and Transformer Installation	9/1/2025	10/15/2025
Pollinator Seeding and Revegetation	10/15/2025	11/1/2025
Target In-service Date	11/1/2025	

F. Operations & Vehicular Traffic Description

During operation, the Facility will be an unmanned plant that will operate through local and remote control/monitoring. Please see **Exhibit B –Operations Plan**. During construction, we anticipate that there will be between 5 and 30 construction workers on-site for the 6-month period (May-October) during which the bulk of construction will take place. Adequate provision for parking of such construction staff has been included in the design of the laydown area within the site perimeter. Additionally, deliveries will be expected during business hours. It is not expected that more than 3-4 delivery trucks will arrive at the site per day during construction. Following construction, traffic will be very limited. We typically expect approximately one pickup truck to visit the site per month during the operational period for routine site maintenance and mowing.

G. Decommissioning and Removal

OneEnergy has committed through its lease agreement with the landowner to remove the system at the end of the project life, including provisions to ensure that there is adequate financial security set aside to perform such decommissioning. When the Project is decommissioned, all infrastructure will be removed, and the site will be restored to predevelopment conditions for continued agricultural use with rested and restored soils. Please see **Exhibit E – Decommissioning Plan.**

H. About OneEnergy

OneEnergy is the leading developer of community-scale solar projects in Wisconsin, having developed 42 projects in Wisconsin and adjacent states totaling 155 MW, and 31 projects totaling 125 MW in Wisconsin that are currently operating or under construction. Our regional team, consisting of developers, engineers, legal and construction managers based out of our Madison office, completed development, engineering and in 2023 managed the construction of 16 projects in Wisconsin, including:

- A series of four 7.5 Megawatt projects for WE Energies located in Kenosha, Washington, Walworth and Shawano Counties
- A portfolio of 10 projects for rural electric cooperatives in Western Wisconsin.

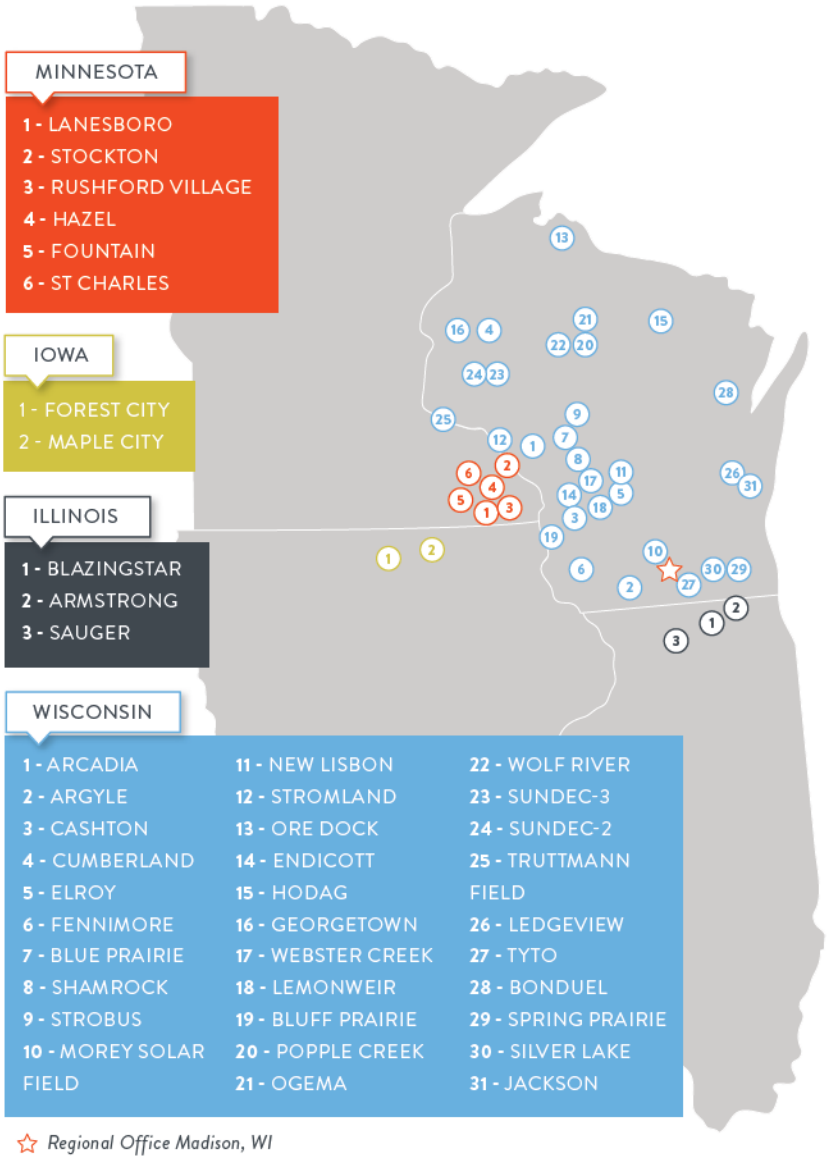


Figure 3 – OneEnergy Midwest Solar Projects

OneEnergy Renewables

Germantown Solar Project

Solar Generating Facility Operations Plan

Type of Activity Proposed: OneEnergy Development, LLC is proposing to build a solar generation project (the "Facility" or "Project") located on approximately 30 acres, consisting of solar modules and associated collection equipment that delivers power to the electric grid. The Facility will have a maximum capacity of 6 MW AC. The on-site equipment at the Facility will consist primarily of solar modules mounted on single-axis tracking racking. These panels generate direct current (DC) electricity. Approximately 24 inverters, situated throughout the array area, convert the DC electricity to alternating current (AC) electricity to allow it to be delivered to the existing electric distribution system. Two transformers increase the AC voltage produced by the inverters to the grid voltage of the existing three-phase distribution line to which the Project connects.

The Facility will be an unmanned plant that will operate through local and remote control and monitoring. The PV system will be monitored remotely through the Utility Energy Management System and the integrated Data Acquisition System (DAS), which signals alerts for any irregular operating condition. Scheduled maintenance will occur once annually to inspect all elements of the project to ensure optimal performance. After construction is complete, there will be limited access to the site for periodic inspections (monthly), maintenance and vegetation management.

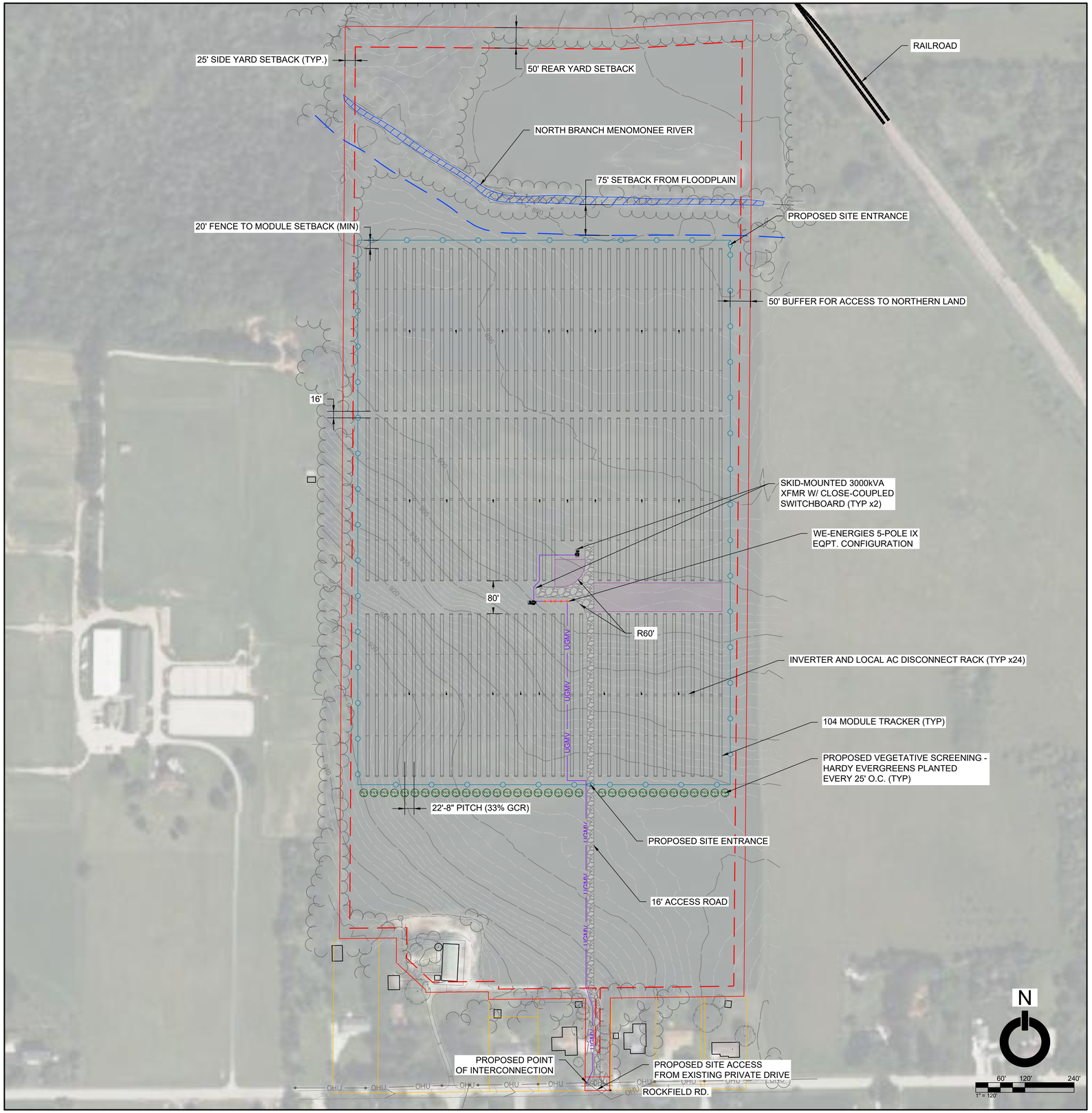
The Facility will provide solar electricity to serve the needs of local utility customers.

1. **Hours of Operation**: The solar facility will operate during daylight hours. This Facility will not be continuously staffed and will not be open to the public. It is anticipated that once construction is complete, operations and maintenance personnel (one or two people) will access the site once or twice per month for inspection or minor maintenance.
2. **Number of Employees**: There will be no employees stationed at the Facility. As noted in Item No. 1 above, one or two people will visit the site a once or twice each month for inspection and minor maintenance, as needed.
3. **Anticipated Customers**: No customers will be served at the Facility, and there will be no traffic associated with such customers. The renewable electricity generated from the Facility will be used to serve the needs of local utility customers.
4. **Outside Storage**: None proposed.
5. **Outdoor Activities**: Inspection of the solar electric system and periodic maintenance as described above.
6. **Outdoor Lighting**: No permanent outdoor lighting is proposed.
7. **Outside Loudspeakers**: None.
8. **Proposed Signs**: The site will only include necessary safety signage with contact information for the Project Operations team and an entrance sign.
9. **Trash Removal**: There will not be trash generated at this site.

GERMANTOWN SOLAR

WASHINGTON COUNTY, WISCONSIN

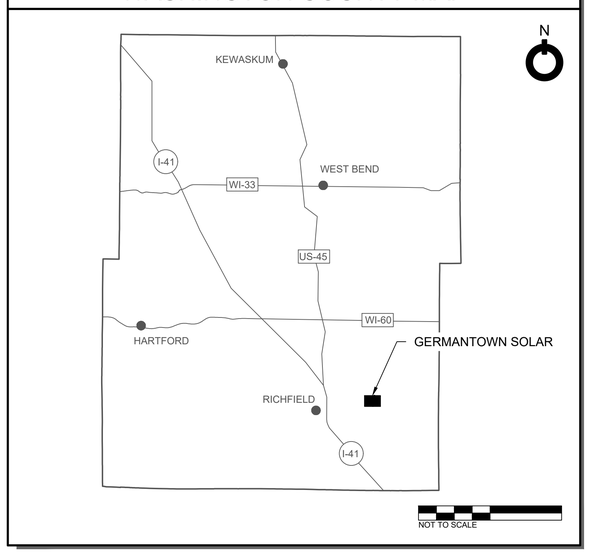
SOLAR PV PROJECT
6.877 MWDC / 6.000 MWAC



LEGEND

- PROJECT AREA PARCEL BOUNDARY
- ZONING SETBACK
- RIGHT-OF-WAY
- NEIGHBORING PARCEL
- TREELINE (E)
- FEMA FLOODPLAIN
- FLOODPLAIN SETBACK
- PERIMETER FENCE (P)
- GRAVEL ACCESS ROAD
- STAGING AREA
- UGMV — UG MV
- OHU — OH ELECTRICAL (P)
- OHU — OH ELECTRICAL (E)
- UTILITY POLE (E)
- UTILITY POLE (P)

WASHINGTON COUNTY MAP



PROJECT DETAILS

THIS PROJECT CONSISTS OF THE DESIGN AND INSTALLATION OF 6.000 MWAC SOLAR PHOTOVOLTAIC SYSTEM. MODULES ARE TO BE MOUNTED IN A SINGLE AXIS TRACKERS, WHICH FOLLOW THE SUN FROM EAST TO WEST THROUGHOUT THE DAY.

SITE DETAILS:

PARCEL ID	092994, 092979, 091987, 091986
OWNER:	WAYNE LUTYNSKI
ACREAGE:	54.25
EXISTING ZONE:	A-1

LAND USE SUMMARY:

TOTAL PARCEL AREA (ACRES):	54.25
TOTAL LEASED AREA (ACRES):	TBD
TOTAL FENCED AREA (ACRES):	27.69
GRAVEL ACCESS ROAD (ACRES):	0.61
LAYDOWN AREA (ACRES):	0.59

DESIGN SUMMARY:

MODULE POWER:	575 W
MODULE COUNT:	11960
ARRAY DC VOLTAGE:	1500 V
INVERTER SIZE:	250 kW / 250 kVA
INVERTER COUNT:	24
DC SIZE:	6.877 MWdc
AC SIZE:	6.000 MWac
DC/AC RATIO:	1.146
GROUND COVERAGE RATIO:	33.0 %
ASCE 7-16 GSL:	30 PSF
ASCE 7-16 WIND SPEED:	100 MPH

ADDITIONAL NOTES:

- BASEMAP DEVELOPED FROM ALTA FIELD SURVEY
- PARCEL DATA TAKEN FROM ALTA FIELD SURVEY
- FEMA FLOOD HAZARD ZONE FROM GIS DATA

OneEnergy RENEWABLES
2003 Western Ave, Suite 225
Seattle, WA 98121
oneenergyrenewables.com
206 922 7072

WRITTEN DIMENSIONS ON THIS PLAN SHALL SUPERCEDE SCALED DIMENSIONS. CONTRACTORS ARE RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS. THIS DRAWING, DESIGN, CONCEPT AND ARRANGEMENT REMAIN THE PROPERTY OF ONEENERGY RENEWABLES AND SHALL NOT BE COPIED, DISCLOSED OR REPRODUCED WITHOUT CONSENT.

REVISION LOG

REV	DESCRIPTION	DATE	BY	CK'D	SME
00	5% DEVELOPMENT LAYOUT	10/02/2024	AMB	AK	

PRELIMINARY

NOT FOR CONSTRUCTION

GERMANTOWN SOLAR
ONEENERGY RENEWABLES
43.257821°, -88.131597°
WASHINGTON COUNTY, WISCONSIN

SHEET TITLE:
DEVELOPMENT LAYOUT

SHEET NO:
D-100

CERTIFIED SURVEY MAP NO. _____

A division of a part of the Northeast 1/4 and Southeast 1/4 of the Northwest 1/4 and part of the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 of Section 9, in Township 9 North, Range 20 East, in the Village of Germantown, Washington County, Wisconsin.

▲ INDICATES FOUND 3/4" IRON ROD, UNLESS NOTED

● INDICATES FOUND 1" IRON PIPE, UNLESS NOTED

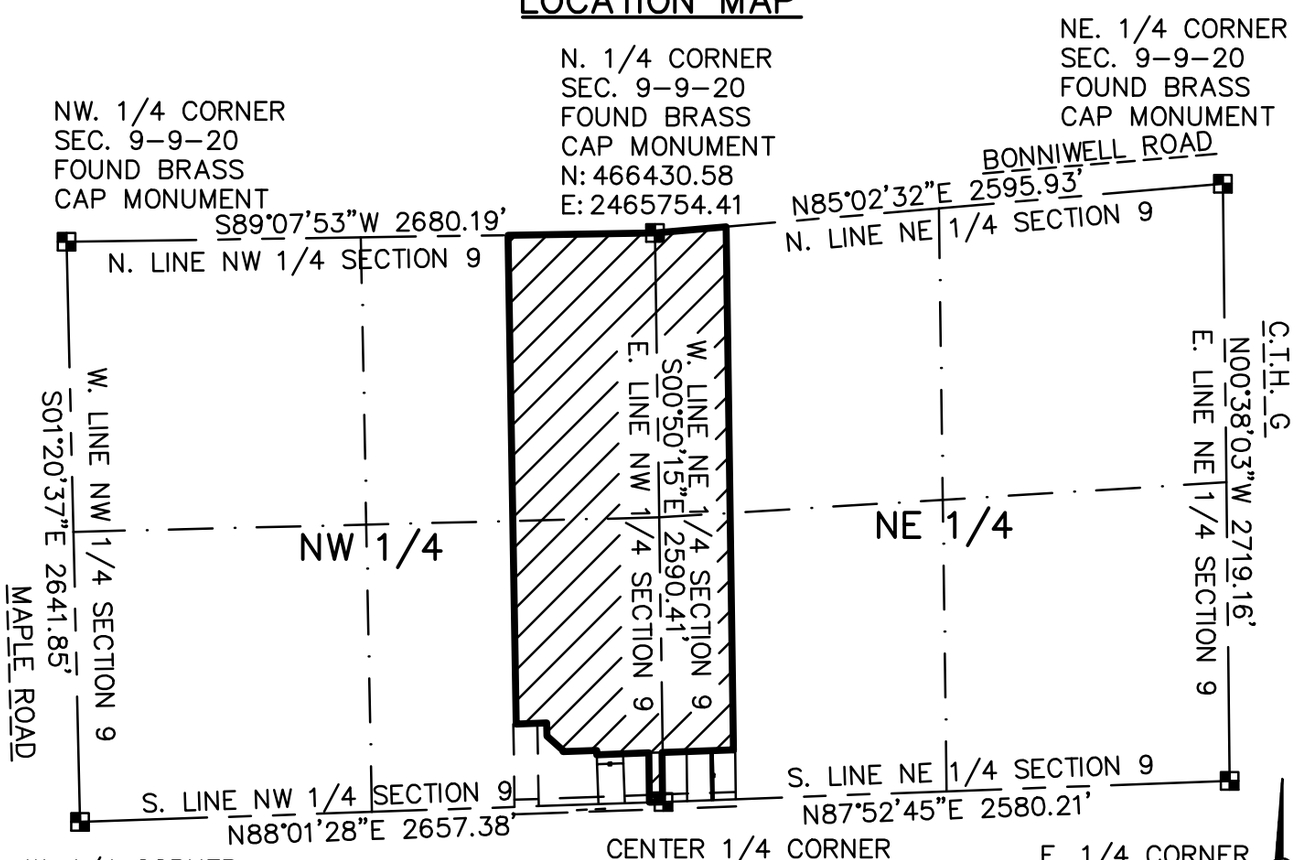
△ INDICATES SET MAG NAIL

○ INDICATES SET 1.315" O.D. IRON PIPE AT LEAST 18" IN LENGTH, 1.68 LBS. PER LINEAL FOOT.

Ⓓ INDICATES DEDICATED TO THE VILLAGE OF GERMANTOWN FOR PUBLIC ROAD PIRPOSES

ALL DIMENSIONS SHOWN ARE MEASURED TO THE NEAREST HUNDREDTH OF A FOOT.
ALL BEARINGS ARE REFERENCED TO THE WEST LINE OF THE NE 1/4 OF SECTION 9, T 9 N, R 20 E, WHICH BEARS S00°50'15"E. WISCONSIN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE (NAD 83/2011).

LOCATION MAP



10/07/2024

WISCONSIN
MICHAEL J. RATZBURG
S-2236
WAUKESHA
WI
LAND SURVEYOR

OWNER:
WAYNE LUTYNSKI
W167 N11183 QUEENS CT.
GREMANTOWN, WI., 53022

SURVEYOR:
MICHAEL J. RATZBURG
R.A. SMITH, INC.
BROOKFIELD, WI., 53005
262-781-1000

GRAPHIC SCALE
0 400 800
1" = 800'

raSmith
CREATIVITY BEYOND ENGINEERING
16745 W. Bluemound Road
Brookfield, WI 53005-5938
(262) 781-1000
rasmith.com

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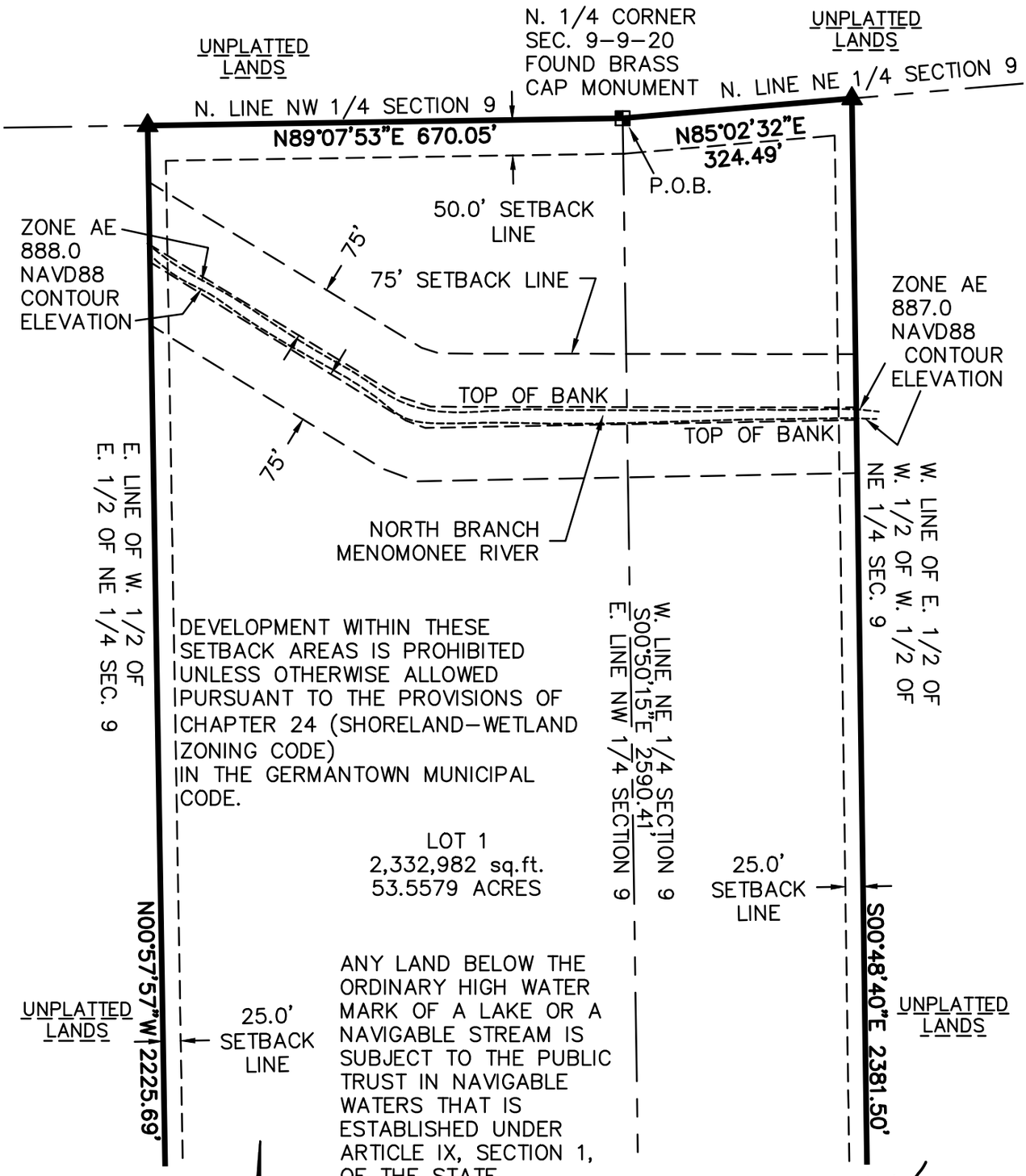

10/07/2024

WISCONSIN
MICHAEL J. RATZBURG
S-2236
WAUKESHA WI
LAND SURVEYOR

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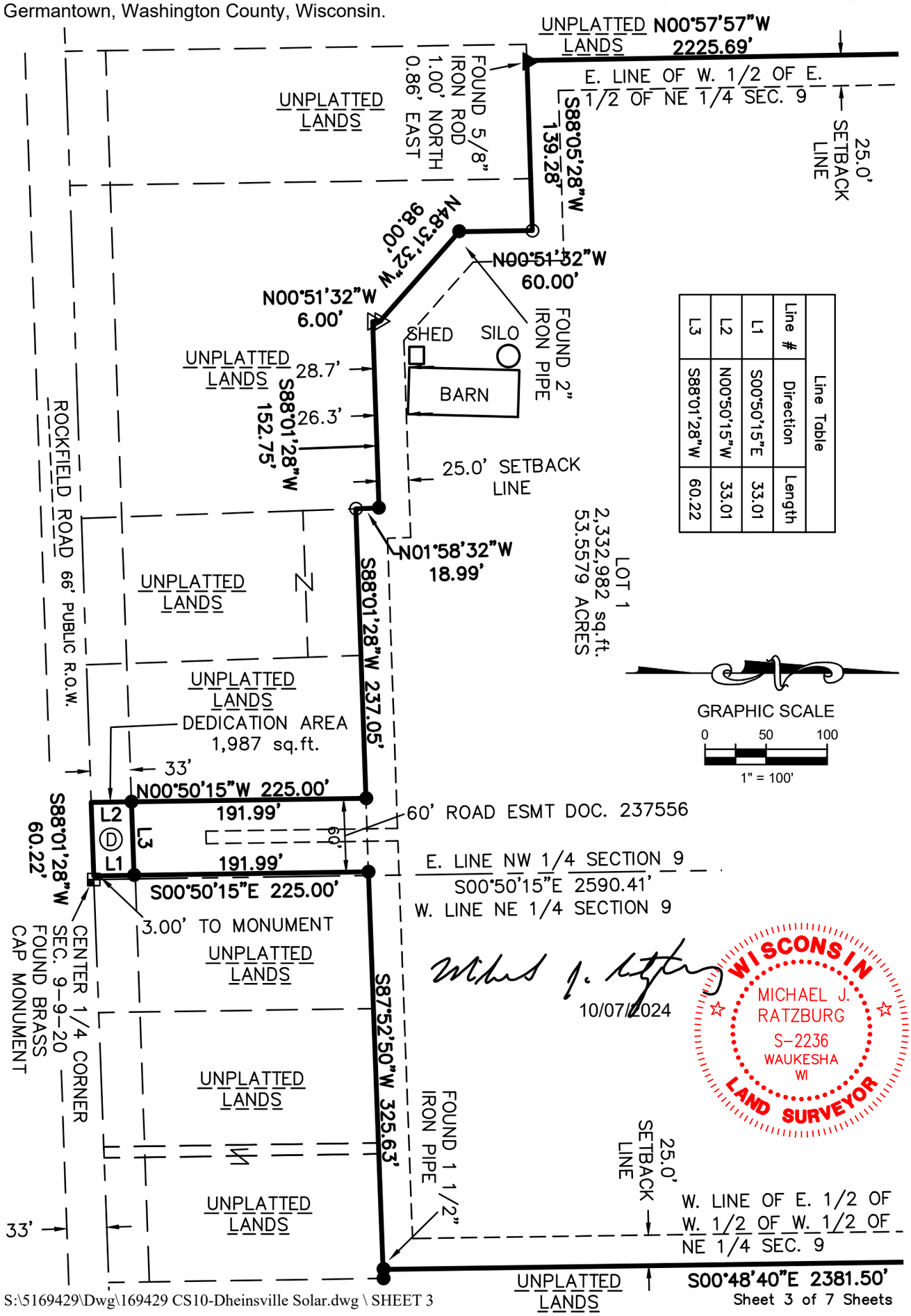
CERTIFIED SURVEY MAP NO. _____

A division of a part of the Northeast 1/4 and Southeast 1/4 of the Northwest 1/4 and part of the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 of Section 9, in Township 9 North, Range 20 East, in the Village of Germantown, Washington County, Wisconsin.



Line Table		
Line #	Direction	Length
L1	S00°50'15"E	33.01
L2	N00°50'15"W	33.01
L3	S88°01'28"W	60.22

S:\5169429\Dwg\169429 CS10-Dheinsville Solar.dwg \ SHEET 3

Sheet 3 of 7 Sheets

CERTIFIED SURVEY MAP NO. _____

A division of a part of the Northeast 1/4 and Southeast 1/4 of the Northwest 1/4 and part of the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 of Section 9, in Township 9 North, Range 20 East, in the Village of Germantown, Washington County, Wisconsin.

SURVEYOR'S CERTIFICATE

STATE OF WISCONSIN }
:SS
WAUKESHA COUNTY }

I, MICHAEL J. RATZBURG, Professional Land Surveyor, do hereby certify:

THAT I have surveyed, divided and mapped a division of a part of the Northeast 1/4 and Southeast 1/4 of the Northwest 1/4 and part of the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 of Section 9, in Township 9 North, Range 20 East, in the Village of Germantown, Washington County, Wisconsin, which is bounded and described as follows:

BEGINNING at the North 1/4 corner of said Section 9; thence North 85° 02' 32" East along the North line of the Northeast 1/4 of said Section 324.49 feet to a point in the West line of the East 1/2 of the West 1/2 of the West 1/2 of the Northeast 1/4 of said Section; thence South 00° 48' 40" East along said west line 2381.50 feet to a point; thence South 87° 52' 50" West 325.63 feet to a point; thence South 00° 50' 15" East 225.00 feet to a point in the South line of the Northwest 1/4 of said Section; thence South 88° 01' 28" West along said South line 60.22 feet to a point; thence North 00° 50' 15" West 225.00 feet to a point; thence South 88° 01' 28" West 237.05 feet to a point; thence North 01° 58' 32" West 18.99 feet to a point; thence South 88° 01' 28" West 152.75 feet to a point; thence North 00° 51' 32" West 6.00 feet to a point; thence North 48° 31' 32" West 98.00 feet to a point; thence North 00° 51' 32" West 60.00 feet to a point; thence South 88° 05' 28" West 139.28 feet to a point in the East line of the West 1/2 of the East 1/2 of the Northwest 1/4 of said Section; thence North 00° 57' 57" West along said East line 2225.69 feet to a point in the North line of the Northwest 1/4 of said Section; thence North 89° 07' 53" East along said North line 670.05 feet to the point of beginning.

Said land contains 2,334,969 square feet or 53.6035 acres.

THAT I have made the survey, land division and map by the direction of WAYNE LUTYNSKI, owner.

THAT the map is a correct representation of all the exterior boundaries of the land surveyed and the land division thereof made.

THAT I have fully complied with provisions of Chapter 236.34 of the Wisconsin Statutes and Chapter 18 of the Village of Germantown Subdivision Control Ordinances in surveying, dividing and mapping the same.

10/07/2024
Field date

MIKE J. RATZBURG
PROFESSIONAL LAND SURVEYOR S-2236

WISCONSIN
MICHAEL J.
RATZBURG
S-2236
WAUKESHA
WI
LAND SURVEYOR

raSmith
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16745 W. Bluemound Road
Brookfield, WI 53005-5938
(262) 781-1000
rasmith.com

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OWNER CERTIFICATE

WAYNE LUTYNSKI, as owner, certifies that said corporation has caused the land described on this map to be surveyed, divided, dedicated, and mapped as represented on this map in accordance with the Ordinances of the Village of Sussex.

WAYNE LUTYNSKI, does further certify that this map is required by S.236.10 or S.236.12 to be submitted to the following for approval or objection: Village of Germantown.

As Owners, we hereby dedicate that part of Rockfield Road to the Village of Germantown for public road purposes as represented on this Certified Survey Map.

IN Witness Whereof, WAYNE LUTYNSKI, has caused these presents to be signed

this _____ day of _____, 2024.

WAYNE LUTYNSKI

_____

PERSONALLY came before me this _____day of _____, 2024, WAYNE LUTYNSKI, to me known as the person who executed the foregoing instrument and acknowledged the same.

(Notary Seal)

_____

_____
(print name)
Notary Public, State of Wisconsin
My commission expires_____

10/07/2024

WISCONSIN
MICHAEL J. RATZBURG
S-2236
WAUKESHA
WI
LAND SURVEYOR

CERTIFIED SURVEY MAP NO. _____

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CONSENT OF CORPORATE MORTGAGEE

_____, a national banking association, duly organized and existing under

and by virtue of the laws of the State of _____, as mortgagee of the above described land, consents to the surveying, dividing, mapping and restricting of the land described on this map and in the surveyor's certificate, and to the certificate of the owner of said land.

Date: _____

Entity Name: _____

Signature: _____

Print Name: _____

Title: _____

STATE OF _____}
}SS
_____ COUNTY }

PERSONALLY came before me this_____day of_____, 20_____,

_____, the _____ of the above named organization, to me known to be the person who executed the foregoing instrument and acknowledged that he/she executed the foregoing instrument as such officer on behalf of the entity, by its authority.

(Notary Seal)

_____

_____
(print name)
Notary Public, State of Wisconsin

My commission expires_____

10/07/2024

WISCONSIN
MICHAEL J. RATZBURG
S-2236
WAUKESHA
WI
LAND SURVEYOR

raSmith
CREATIVITY BEYOND ENGINEERING
16745 W. Bluemound Road
Brookfield, WI 53005-5938
(262) 781-1000
rasmith.com

CERTIFIED SURVEY MAP NO. _____

A division of a part of the Northeast 1/4 and Southeast 1/4 of the Northwest 1/4 and part of the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 of Section 9, in Township 9 North, Range 20 East, in the Village of Germantown, Washington County, Wisconsin.

VILLAGE OF GERMANTOWN PLANNING COMMISSION APPROVAL

This Certified Survey Map is hereby APPROVED by the Planning Commission of the of the Village of Germantown on

this _____ day of _____,2024.

Date:_____ _____
Dean Wolter, Chairman

Date:_____ _____
Deborah J. Remich, Secretary

VILLAGE OF GERMANTOWN BOARD APPROVAL

This Certified Survey Map, being a division of a part of the Northeast 1/4 and Southeast 1/4 of the Northwest 1/4 and part of the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 of Section 9, in Township 9 North, Range 20 East, in the Village of Germantown, Washington County, Wisconsin, having been approved by the Planning Commission being the same, is hereby approved and the dedication of that part of Rockfield Road for public road purposes as shown on this Certified Survey Map is hereby accepted by the Village Board of Trustees of the Village of Germantown

on this _____ day of _____,2024.

Date:_____ _____
Dean Wolter, Village President

Date:_____ _____
Donna Ott, Village Clerk

10/07/2024

WISCONSIN
MICHAEL J.
RATZBURG
S-2236
WAUKESHA
WI
LAND SURVEYOR

THIS INSTRUMENT DRAFTED BY MICHAEL J. RATZBURG, S-2236

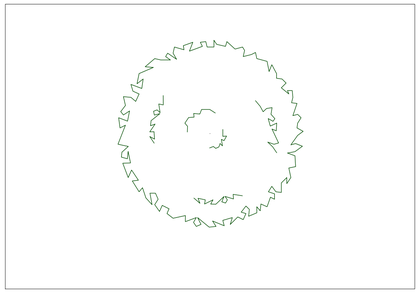
S:\5169429\Dwg\169429 CS10-Dheinsville Solar.dwg \ SHEET 7

1 SITE PLAN VIEW
SCALE: 1" = 100'

LEGEND

- PROJECT AREA PARCEL BOUNDARY
- ZONING SETBACK
- RIGHT-OF-WAY
- NEIGHBORING PARCEL
- FEMA FLOODPLAIN
- FLOODPLAIN SETBACK
- PERIMETER FENCE (P)
- GRAVEL ACCESS ROAD
- STAGING AREA
- UGMV — UG MV
- OHU — OH ELECTRICAL (P)
- OHU — OH ELECTRICAL (E)
- UTILITY POLE (E)
- UTILITY POLE (P)
- TREE LINE (E)
- TREE (E)
- EVERGREEN TREE (P)

2 VEGETATION ELEVATION VIEW
SCALE: NTS



3 VEGETATION PLAN VIEW
SCALE: NTS

GENERAL NOTE(S):

1. HARDY EVERGREEN TREES WILL BE PLANTED AT 25' INCREMENTS ON CENTER WITH AN APPROXIMATE HEIGHT OF 4' AT PLANTING. SPECIES MAY INCLUDE BUT ARE NOT LIMITED TO BLUE SPRUCE, WHITE SPRUCE, BLACK HILLS SPRUCE, OR EASTERN RED CEDAR.

2003 Western Ave, Suite 225
Seattle, WA 98121
oneenergyrenewables.com
206 922 7072

OneEnergy RENEWABLES

WRITTEN DIMENSIONS ON THIS PLAN SHALL SUPERCEDE SCALED DIMENSIONS. CONTRACTORS ARE RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS. THIS DRAWING, DESIGN, CONCEPT AND ARRANGEMENT REMAIN THE PROPERTY OF ONEENERGY RENEWABLES AND SHALL NOT BE COPIED, DISCLOSED OR REPRODUCED WITHOUT CONSENT.

GERMANTOWN SOLAR
ONEENERGY RENEWABLES
ROCKFIELD RD.
GERMANTOWN, WI 53022
43.257821°, -88.131597°

PRELIMINARY
NOT FOR CONSTRUCTION

REVISION LOG

REV	DESCRIPTION	DATE	BY	CKD	SME
A	VEGETATION SCREENING PLAN	08/26/2024	AMB		

SHEET TITLE:
VEGETATION SCREENING PLAN

SHEET NO:
EX-100

Germantown Solar

Vegetation Installation and Management Plan

Date: 7/26/2024
Site Location: 43.257821, -88.131597

ONEENERGY RENEWABLES • 2003 WESTERN AVE • STE 225 • SEATTLE, WA 98121
WWW.ONEENERGYRENEWABLES.COM

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1 Site Overview 3
2 Benefits of Pollinator-Friendly Solar 3
3 Site Preparation and Temporary Seeding 3
4 Permanent Seeding 4
5 Vegetation Management and Monitoring 4
6 Invasive and Weed Species Management 5
7 Vegetation Management Timeline 6
8 References 7
9 Appendix A – Pollinator Seed Mixes 8

1 Site Overview

Germantown Solar is a 6 MWac solar project located north of Germantown in Washington County, Wisconsin. The 30-acre project site is currently used for agricultural production. The site does not contain wetlands and the predominant soils on site are well drained loam, well drained silt loam, and somewhat poorly drained silt loam. Following construction of the solar array, the site will be managed for native pollinator habitat.

2 Benefits of Pollinator-Friendly Solar

There are many benefits to installing native prairie plant communities on solar sites. Pollinator friendly solar sequesters carbon into the soil through plants, while carbon emissions are simultaneously reduced by using renewable solar energy. Planting native prairie species restores soil by preventing erosion, improving soil structure, increasing carbon storage, diversifying microbial communities, and increasing soil fertility. In addition to supporting native wildlife, these improvements to the soil will increase the value of the soil for future agricultural production once the solar panels are removed. Agricultural benefits are not limited to future land use. Supporting native pollinator populations can increase yields of nearby pollinator-dependent crops such as soybeans, apples, and many vegetables.

The aesthetic benefits of pollinator habitat provide additional services to the local community for those who appreciate observing the wildflowers, birds, butterflies, and other species that are drawn to the solar site. Native prairie plants prevent stormwater runoff and improve surrounding water quality, which is an important consideration following the construction of solar projects. While the initial costs and amount of planning needed for installing and managing native pollinator habitat may be greater than turfgrass, the benefits outweigh the costs. Following the first five years of management, as the hardier native plant communities become established, reduced maintenance needs are anticipated for the remainder of the time the solar array is in operation.

3 Site Preparation and Temporary Seeding

Construction debris and building materials will be cleared from the seeding area. An herbicide application may be required to remove undesirable vegetation from the site. The type of herbicide used will depend on the target species observed during initial site inspections by environmental specialists. If an herbicide such as glyphosate is used, this would necessitate a 10-day waiting period before disturbing the soil or seeding.

The environmental specialist overseeing site preparation activities and selecting herbicide treatments for noxious and invasive species suppression will have comprehensive knowledge and experience selecting and applying herbicides for restricting invasive species and managing vegetation to encourage native plant communities. Additionally, the environmental specialist

will have detailed knowledge of Wisconsin flora, excellent vegetation identification skills, and experience in ecological restoration that includes overseeing and conducting native prairie restoration and vegetation assessments.

Winter wheat or oats will be used as a cover crop depending on the time of year and based on the WDNR Technical Standard (1059) and the WisDOT seeding specification (630). For example, construction may delay seeding from fall until the following spring, in which case a cover crop would be used. A cover crop is also used during construction as part of the Stormwater Pollution Prevention Plan.

4 Permanent Seeding

The soil will be disced and then either harrowed or raked to prepare the soil for seeding. Native grasses will be seeded using a mechanical broadcast spreader at a depth of ¼ to ½-inch. Depending on site conditions, a nurse crop such as winter wheat will be seeded to stabilize the soil. Following grass seeding, the site will be raked and harrowed. Wildflowers and sedges will be seeded using a mechanical broadcast spreader and covered by raking the site.

The primary seed mix used will be a diverse mix of around thirty plant species designed by environmental specialists to suit site-specific soil and microclimate conditions and to provide continuous forage and habitat for pollinators. The seed mix includes flowering species with a wide range of bloom times to cover each season pollinators are active. Additionally, a lowland seed mix will be used where hydric soils are located. The upland and lowland seed mix examples can be found in Appendix A.

Changes to plant species and their proportions in the mix may be necessary depending on seed availability at the time of planting. The diversity of species and quality of the mix will be maintained.

5 Vegetation Management and Monitoring

Vegetation will be managed to achieve the following objectives:

1. Establish native vegetation cover as prescribed in the selected pollinator seed mixes.
2. Maintain complete vegetation cover while limiting noxious and invasive species.
3. Encourage the growth of flowering species to provide continuous forage and habitat for pollinators.

During the germination year, the site will be mowed to reduce competition and control weed growth. Additional mowing may be required to prevent annual and biennial weeds from setting seed. Vegetation will be mowed to a height of 8” and clippings will be mulched in place. During the establishment period, which spans 2 to 5 years after seeding, mowing should occur 2 to 3 times per year subject to the recommendations of the environmental specialist. Following the

establishment period, the site will be mowed as needed for weed and invasive species control and to intermittently remove biomass. A suggested timeline for vegetation management is provided in Section 7.

The following objectives will be achieved through vegetation monitoring:

1. Document the presence of targeted native species.
2. Document the presence of noxious and invasive species.
3. Provide recommendations for appropriate corrective actions to promote and maintain the planned vegetative cover and limit noxious and invasive species.

Specific maintenance activities and timelines will depend on observations during seasonal site inspections to determine vegetation growth progress and whether undesirable species are present. Following a fall seeding, these inspections would begin in late April to mid-June. Following a spring seeding, inspections should begin by mid-May.

Vegetation Management Reports (VMR) will be completed during each site visit to record the amount of vegetation cover, vegetation height, and presence of noxious and invasive species and targeted native species. Recommended next steps will be noted, and management plans will remain flexible to reflect changes in vegetation and noxious and invasive species pressure.

6 Invasive and Weed Species Management

In addition to the removal of invasive species, plant species will be suppressed if they are likely to either outcompete the native species planted or grow to a height that would potentially shade the solar panels. Noting noxious and invasive species through well-timed site inspections and proactively controlling these species during the establishment phase is critical for the long-term success of native vegetation establishment. Control of noxious and invasive species may include spot-spraying, spot-mowing, hand weeding, wicking, or other methods selected by the environmental specialist and depending on the target species and time of year.

If necessary, the following herbicides may be used for spot-treatment: glyphosate, triclopyr, clopyralid, or aminopyralid. Glyphosate is a non-selective systemic herbicide used to treat broadleaf weeds, grasses, and woody plants, and triclopyr is a selective systemic herbicide used to control woody and herbaceous broadleaf species. Clopyralid and aminopyralid are selective herbicides used to target broadleaf weeds, especially clover and thistle. Herbicide contact with native species will be limited and herbicides will not be used when wind speeds exceed 10 mph to prevent drift.

Other herbicides may be utilized based on the target species observed and identified for management. Environmental specialists will identify actual herbicide prescriptions based on observations during site inspections. The site will be inspected at least twice a year – once from

late April to mid-May, and again in mid-June. Site inspections may be needed at other times, depending on the life cycle of the species targeted for removal. Spot-mowing and removal of invasive species and other weeds will be completed as needed. If biomass removal is needed, the site can be mowed every three years using a flail mower. After the initial 5-year establishment period, the site should not be mowed more than once per year.

7 Vegetation Management Timeline

Year 0		
Seedbed Preparation	Herbicide application, soil bed preparation	Sep-Oct
Seeding	Site may be seeded with a temporary cover crop (see Section 3), followed by seeding with pollinator mix.	November
Years 1-3		
Site Inspections	Three site inspections to monitor vegetation and complete VMR. Plans will be made for any necessary reseeding, erosion mitigation, or weed/invasive species management. Site inspection may take place at the same time as management visit.	Late April to early May, mid-June, and late July
1st Mow	Site mowed to 8” vegetation height. Spot-treat weed/invasive species as needed. Timing of mowing is dependent on plant phenology and weed/invasive species pressure, which will be evaluated during site inspections. Herbicide treatment types will depend on the target species observed during site inspection.	Late June to early July
2nd Mow	Site mowed to 8” height. Spot-treatment of weed/invasive species as needed. Timing of mowing is dependent on observations during site assessments.	Late July to early August
Year 4		
Site Inspection	Vegetation will be monitored and VMR will be completed.	Late April to early May & mid-June
Spot treatment of invasives/weeds	Herbicide treatment types will depend on the target species observed during site inspections.	Variable
Dormant Mow	Mulch biomass by mowing in the spring to reduce competition and encourage native plant growth.	Spring
Years 5-25		
Site Inspection	Two annual visits to monitor vegetation in the spring and early summer. Spot-mowing or weed/invasive species removal will be completed as needed based on site inspections. If biomass removal is needed, sites can be mowed every three years using a flail mower. Site should	Late April to early May & mid-June

	not be mowed more than once per year, and mowing should occur from Mar-Apr 15th or Sept-Oct to avoid disturbing nesting birds. Rotating halves or thirds of the site while mowing will increase plant diversity and structure and provide adjacent refuge for wildlife.	

8 References

Siegner, K., Wentzell, S., Urrutia, M., Mann, W., & Kennan, H. (2019) Maximizing land use benefits from utility scale solar: A cost benefit analysis of pollinator-friendly solar in Minnesota. *Yale Center for Business and the Environment*. https://cbey.yale.edu/research/maximizing-land-use-benefits-from-utility-scale-solar.

Walston, L. et al. (2018) Examining the potential for agricultural benefits from pollinator habitat at solar facilities in the United States. *Environmental Science & Technology 52* (13), 7566-7576. https://doi.org/10.1021/acs.est.8b00020.

Walston, L. et al. (2020) Modeling the ecosystem services of native vegetation management practices at solar energy facilities in Midwestern United States. *Ecosystem Services* (47), 101227. https://doi.org/10.1016/j.ecoser.2020.101227.

9 Appendix A – Pollinator Seed Mixes

Upland Mix

Scientific Name	Common Name	% of Mix	Seeds/ft^2
Grasses			
Sideoats Grama	Bouteloua curtipendula	27.27%	6.61
Blue Grama	Bouteloua gracilis	7.27%	11.75
Plains Oval Sedge	Carex brevior	2.55%	2.98
June Grass	Koeleria macrantha	1.82%	14.69
Little Bluestem	Schizachyrium scoparium	33.45%	20.28
Prairie Dropseed	Sporobolus heterolepis	0.36%	0.24
Forbs			
Common Yarrow	Achillea millefolium	0.36%	2.62
Anise Hyssop	Agastache foeniculum	0.09%	0.33
Prairie Onion	Allium stellatum	0.73%	0.32
Lead Plant	Amorpha canescens	1.36%	0.88
Wild Columbine	Aquilegia canadensis	0.18%	0.28
Common Milkweed	Asclepias syriaca	0.36%	0.06
Butterfly Milkweed	Asclepias tuberosa	0.91%	0.16
Sky Blue Aster	Symphyotrichum oolentangiense	0.18%	0.59
Upland White Goldenrod	Solidago ptarmicoides	0.73%	1.88
Partridge Pea	Chamaecrista fasciculata	2.73%	0.30
Lanceleaf Coreopsis	Coreopsis lanceolata	1.09%	0.88
White Prairie Clover	Dalea candida	4.55%	3.49
Purple Prairie Clover	Dalea purpurea	5.82%	4.23
Rough Blazing Star	Liatris aspera	0.27%	0.18
Spotted Bee Balm	Monarda punctata	0.18%	0.66
Large-flowered Beardtongue	Penstemon grandiflorus	0.73%	0.41
Prairie Wild Rose	Rosa arkansana	0.09%	0.01
Black-eyed Susan	Rudbeckia hirta	2.09%	7.77
Gray Goldenrod	Solidago nemoralis	0.09%	1.10
Ohio Spiderwort	Tradescantia ohiensis	0.45%	0.15
Hoary Vervain	Verbena stricta	1.73%	1.95
Heartleaf Alexanders	Zizia aptera	0.36%	0.18
Golden Alexanders	Zizia aurea	2.18%	0.97

Seeding Rate: 11 lbs/acre (85.9 seeds/square foot)

Lowland Mix

Scientific Name	Common Name	% of Mix	Seeds/ft^2
Grasses			
Carex scoparia	Pointed-broom Sedge	1.40%	2.81
Carex stipata	Common Fox Sedge	6.85%	5.56
Carex vulpinoidea	Brown Fox Sedge	4.65%	11.1
Juncus dudleyi	Dudley's Rush	0.15%	11.46
Juncus effusus	Common Rush	0.40%	9.55
Elymus virginicus	Virginia Wild Rye	55.60%	5.58
Poa palustris	Fowl Bluegrass	9.00%	27.93
Forbs			
Anemone canadensis	Canada Anemone	3.65%	0.7
Symphyotrichum novae-angliae	New England Aster	1.30%	2.05
Verbena hastata	Blue Vervain	0.90%	2
Lobelia siphilitica	Great Blue Lobelia	0.35%	4.18
Lycopus americanus	Water Horehound	0.45%	1.4
Lythrum alatum	Winged Loosestrife	0.01%	0.72
Mimulus ringens	Monkey Flower	0.10%	5.49
Alisma subcordatum	Water Plantain	1.95%	2.79
Pycnanthemum virginianum	Virginia Mountain Mint	0.65%	3.41
Tradescantia ohiensis	Ohio Spiderwort	7.29%	1.39
Zizia aurea	Golden Alexanders	5.30%	1.39

Seeding rate: 99.50 seeds/ft^2

FORGESOLAR GLARE ANALYSIS

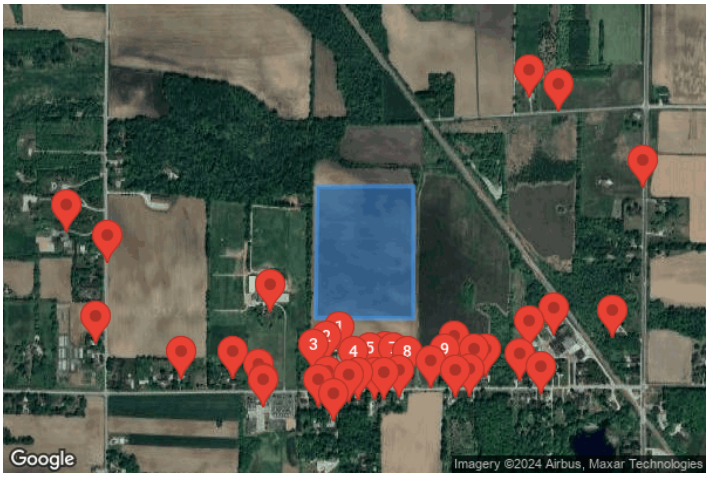
Project: **Germantown Solar**

Germantown Solar is a proposed 6 MWac solar photovoltaic facility located on approximately 30 acres of agricultural land in the Village of Germantown, Washington County, Wisconsin. Some light grading and clearing may take place but there will be little change to the quantity of impervious surface.

Site configuration: **Germantown Solar**

Created 26 Jul, 2024
Updated 26 Jul, 2024
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 125282.21473

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2



Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Germantown Solar	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

Component Data

PV Arrays

Name: Germantown Solar
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 52.0°
Ground Coverage Ratio: 0.32
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.259323	-88.135360	938.13	8.00	946.13
2	43.259307	-88.131770	920.33	8.00	928.33
3	43.262839	-88.131772	889.80	8.00	897.80
4	43.262825	-88.135300	896.85	8.00	904.85

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	43.258322	-88.134489	947.43	15.00
OP 2	2	43.258093	-88.134955	948.25	15.00
OP 3	3	43.257851	-88.135401	950.57	15.00
OP 4	4	43.257671	-88.133952	936.29	15.00
OP 5	5	43.257781	-88.133368	936.88	15.00
OP 6	6	43.257813	-88.132812	933.23	15.00
OP 7	7	43.257759	-88.132501	929.45	15.00
OP 8	8	43.257688	-88.131976	921.31	15.00
OP 9	9	43.257747	-88.130608	921.52	15.00
OP 10	10	43.258071	-88.130259	924.90	15.00
OP 11	11	43.257738	-88.129537	918.82	15.00
OP 12	12	43.257746	-88.129107	918.85	15.00
OP 13	13	43.257214	-88.129708	916.68	15.00
OP 14	14	43.257168	-88.130234	919.62	15.00
OP 15	15	43.257175	-88.132294	919.57	15.00
OP 16	16	43.257113	-88.132841	928.08	15.00
OP 17	17	43.257121	-88.133174	931.27	15.00
OP 18	18	43.257097	-88.133764	932.01	15.00
OP 19	19	43.257043	-88.134107	932.93	15.00
OP 20	20	43.257128	-88.134890	937.90	15.00
OP 21	21	43.256535	-88.134690	934.47	15.00
OP 22	22	43.256922	-88.135243	934.16	15.00
OP 23	23	43.256957	-88.137238	939.52	15.00
OP 24	24	43.256934	-88.137243	939.39	15.00
OP 25	25	43.257671	-88.138374	950.57	15.00
OP 26	26	43.257627	-88.127843	911.35	15.00
OP 27	27	43.257260	-88.127092	912.77	15.00
OP 28	28	43.258495	-88.127510	902.10	15.00
OP 29	29	43.258823	-88.126609	894.71	15.00
OP 30	30	43.258770	-88.124465	891.87	15.00
OP 31	31	43.259441	-88.137021	954.22	15.00
OP 32	32	43.257346	-88.137440	941.28	10.00
OP 33	33	43.257420	-88.131124	914.31	10.00
OP 34	34	43.260781	-88.142954	943.58	10.00
OP 35	35	43.262781	-88.123363	892.90	10.00
OP 36	36	43.264813	-88.126432	890.04	10.00
OP 37	37	43.257681	-88.140282	953.94	10.00
OP 38	38	43.258603	-88.143394	956.23	10.00
OP 39	39	43.261572	-88.144467	942.80	10.00
OP 40	40	43.265182	-88.127536	896.64	10.00

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Germantown Solar	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV: Germantown Solar no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

Germantown Solar and OP 1

No glare found

Germantown Solar and OP 2

No glare found

Germantown Solar and OP 3

No glare found

Germantown Solar and OP 4

No glare found

Germantown Solar and OP 5

No glare found

Germantown Solar and OP 6

No glare found

Germantown Solar and OP 7

No glare found

Germantown Solar and OP 8

No glare found

Germantown Solar and OP 9

No glare found

Germantown Solar and OP 10

No glare found

Germantown Solar and OP 11

No glare found

Germantown Solar and OP 12

No glare found

Germantown Solar and OP 13

No glare found

Germantown Solar and OP 14

No glare found

Germantown Solar and OP 15

No glare found

Germantown Solar and OP 16

No glare found

Germantown Solar and OP 17

No glare found

Germantown Solar and OP 18

No glare found

Germantown Solar and OP 19

No glare found

Germantown Solar and OP 20

No glare found

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Germantown Solar and OP 22

No glare found

Germantown Solar and OP 23

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No glare found

Germantown Solar and OP 25

No glare found

Germantown Solar and OP 26

No glare found

Germantown Solar and OP 27

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Germantown Solar and OP 28

No glare found

Germantown Solar and OP 29

No glare found

Germantown Solar and OP 30

No glare found

Germantown Solar and OP 31

No glare found

Germantown Solar and OP 32

No glare found

Germantown Solar and OP 33

No glare found

Germantown Solar and OP 34

No glare found

Germantown Solar and OP 35

No glare found

Germantown Solar and OP 36

No glare found

Germantown Solar and OP 37

No glare found

Germantown Solar and OP 38

No glare found

Germantown Solar and OP 39

No glare found

Germantown Solar and OP 40

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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OneEnergy Renewables

Germantown Solar Project

Solar Generating Facility Decommissioning Plan

1. Introduction

The Decommissioning Plan provides an overview of activities that will occur during the decommissioning phase of the Germantown Solar Project, the "Project," including activities related to the restoration of land and management of materials and waste.

The Project has an estimated useful lifetime of 40 years. This Decommissioning Plan assumes at the point it is no longer economical or prudent to continue operating, the Project will be dismantled, and the site restored to a state similar to its pre-construction condition.

Decommissioning activities include but are not limited to, disconnecting the Solar Facility from the electrical grid and removal of all components, including:

- Photovoltaic (PV) modules, panel racking, and supports
- Inverter units, transformers, and other electrical equipment
- Wiring cables, communications, and perimeter fence
- Concrete pads

The Decommissioning Plan is based on current best management practices and procedures. This Plan may be subject to revision based on new standards and best management practices at the time of decommissioning. Permits will be obtained as required and notification will be given to stakeholders prior to decommissioning.

Project Information

Address: To be assigned

County: Washington, Wisconsin

AHJ: Village of Germantown

Project Size: 6 MWac

2. Decommissioning Process

At the time of decommissioning, the installed components will be removed, reused, disposed, and recycled where possible. The site will be restored to a state similar to its pre-construction condition. All removal of equipment will be done in accordance with any applicable regulations and manufacturer recommendations. All applicable permits will be acquired before decommissioning activities begin.

Equipment Dismantling and Removal

Generally, the decommissioning of a Solar Project proceeds in the reverse order of the installation.

1. The Project will be disconnected from the utility power grid.
2. PV modules will be disconnected, collected, and disposed at an approved solar module recycler or reused/resold on the market. Although the PV modules will not be cutting edge technology at the time of decommissioning, they are expected to produce approximately 80% of the original electricity output at year 40 and offer value for many years.
3. All aboveground and underground electrical interconnection and distribution cables will be removed and disposed off-site at an approved facility.
4. Galvanized steel PV module support and racking system support posts will be removed and disposed off-site at an approved facility.
5. Electrical and electronic devices, including transformers and inverters will be removed and disposed off-site at an approved facility.
6. Concrete pads will be removed and disposed off-site at an approved facility.
7. Fencing will be removed and disposed off-site at an approved facility.

Environmental Effects

Decommissioning activities, particularly the removal of project components, could result in environmental effects similar to construction such as ground disturbance (erosion/sedimentation). Mitigation measures employed during the construction phase of the Project will be implemented. These will remain in place to mitigate erosion and silt/sediment runoff and prevent any impact to the natural features located adjacent to the site.

Road traffic will temporarily increase due to the movement of decommissioning crews and equipment. Work will be undertaken during daylight hours to conform to any applicable restrictions.

Site Restoration

Upon completion of the decommissioning phase, the site will be restored to a state similar to its pre-construction condition. Rehabilitated lands may be seeded with native seed mixes to help stabilize soil conditions, enhance soil structure, and increase soil fertility.

Managing Materials and Waste

During the decommissioning phase, a variety of excess materials and wastes (listed in the table below) will be generated. Most of the materials used in a Solar Project are reusable or recyclable and some equipment may have manufacturer take-back and recycling requirements. Any remaining materials will be removed and disposed of off site at an appropriate facility. Policies and procedures will be established to maximize recycling and reuse and project owners will work with manufacturers, local subcontractors, and waste firms to segregate material to be disposed of, recycled, or reused.

Solar module manufacturers are looking for ways to recycle and/or reuse solar modules when they have reached the end of their lifespan. OneEnergy works with The Retrofit Companies, Inc. (TRC) in Minnesota to recycle panels that are damaged during shipping or installation and intends to partner with TRC or another similar panel recycler to recycle any panels that require disposal in the future. Modules will be disposed in the best way possible using best management practices at the time of decommissioning.

Material / Waste	Means of Managing Excess Materials and Waste
PV Panels	If there is no possibility for reuse, the panels will either be returned to the manufacturer for appropriate disposal or will be transported to a recycling facility where the glass, metal, and semiconductor materials will be separated and recycled.
Mounting racks and supports	These steel and other metal materials will be disposed off-site at an approved facility
Transformer	The small amount of oil from the transformer will be removed on-site to reduce the potential for spills and will be transported to an approved facility for disposal. The transformers will be sent back to the manufacturer, recycled, reused, or safely disposed off-site in accordance with current standards of the day.
Inverters	The metal components of the inverters will be disposed of or recycled, where possible. Remaining components will be disposed of in accordance with the standards of the day.

Concrete Pad	Concrete pads will be broken down and transported by a certified and licensed contractor to a recycling or approved disposal facility.
Cables and Wiring	All electrical wiring will be disconnected and disposed of at an approved facility, associated electronic equipment (isolation switches, fuses, metering) will either be returned to the manufacturer for recycling or disposed off-site in accordance with current standards and best practices.
Fencing	Fencing will be removed and recycled at a metal recycling facility.
Debris	Any remaining debris on the site will be separated into recyclables/residual wastes and will be transported from the site and managed as appropriate.

Decommissioning Notification

Decommissioning activities will require the notification of stakeholders given the nature of the works at the site. Twelve months prior to the start of decommissioning activities the list of stakeholders will be updated and notified. Federal, county, and local authorities will be notified as needed to discuss the potential approvals required to engage in decommissioning activities.

Approvals

Well-planned and well-managed renewable energy facilities are not expected to pose environmental risks at the time of decommissioning. Decommissioning of the Project will follow all standards of the day. Any required permits will be obtained prior to the start of any decommissioning activities.

This Decommissioning Report will be updated as necessary in the future to ensure that changes in technology and site restoration methods are taken into consideration.

Engineering Department Memorandum

To: **Jeff W. Retzlaff, AICP, Community Development Director**

From: **Kevin R. Driscoll, PE, Village Engineer**

Date: **September 25, 2024**

Re: **Site Plan Review – Solar GTNV_092979, GTNV_092994, GTNV_091986, GTNV_091987**

Items Reviewed:

1. Site Plan Review Application Dated: 9/13/2024

General Comments:

1. Please respond to each item below. **A written response addressing each item shall be included in your submittal**.
2. The submitted plans have been reviewed for general conformance with State and Village design guidelines identified in the Village Code of Ordinances, Section 17.43. Additional comments could arise as a result of the plan completion and modifications. The items listed below will need to be fully resolved before the Engineering Dept. can recommend a formal approval of the plans and permit for construction.
3. This project will require a WRAPP/NOI from the DNR. Please submit a copy of the approved permit prior to final approval.
4. As-builts prepared to Village standards shall be prepared and provided to the Village post-construction (for all applicable items).
5. A professional engineer's original seal is to be affixed, signed and dated on the final set of construction plans.
6. Permits for work within the ROW are required. Contact the Village Engineering Department to obtain a driveway permit and permit for excavation in the right of way.
7. As a guide to the review response: Items in *italics* are resolved or acknowledged, items in regular font are to be addressed yet, items in **Bold** are additional feedback to remaining original comment.

Storm Water Management

1. Sheet D-100 – Identify area of disturbance. Identify area of new impervious surface.
2. Provide storm water management plan, as identified in your site plan application addendum (page 7).
3. Provide a wetland delineation, or copies of any approved wetland exemptions.
4. Provide grading plan that avoids impacts to the floodplain. Clarify note "C.Flood Note" Note references falling into Zone X. Zone AE identified on mapped area.
5. Provide erosion control plan.

Road Plan

1. Complete a driveway permit and permit for excavation in the right of way.
2. Identify depth of proposed point of interconnection.
3. Provide plan at scale of 1:30 as listed in the attached checklist and per Village Code of Ordinance Section 17.43 (3).

To: Kevin Driscoll, Village Engineer

CC: Jeff Retzlaff Village Planner

From: Bob Beilfuss, PLS

Date: September 14, 2024

Re: Germantown Solar CSM

Kevin,

Here are my review comments for the CSM received from Anderson-Klosett/ Greenhills Contracting.

Kevin and Jeff,

Here are my review comments for the CSM received 9/13/2024.

Certified Survey Map

Applicant or Owner: Greenhills Contracting, Inc.
Land Surveyor/Firm: Mike Ratzburg, PLS – RA Smith

1. The Village Clerks name is Donna Ott. Please correct the Village Board approval certificate accordingly. Page 7 of 7.

2. The secretary of the Planning Commission is Deborah J. Remich. Please correct the Village Planning Commission approval certificate accordingly. Page 7 of 7.

3. In the Village Board Approval certificate on page 7 of 7, there are references to "the dedication of that part of Meeker Hills Lane and State Trunk Highway 175 for public road purposes". These two roads are not located in this Section and do not adjoin these properties. The road dedication should be for Rockfield Road.

4. Were there any wetlands located along the North Branch of the Menomonee River? The DNR Wetland Viewer does show wetlands along the North Branch and should be delineated, mapped and added to the CSM. The wetland setback should also be included and dimensioned. The wetlands should be dimensionally tied to both boundary lines on Lot 1 in a north-south direction from where those lines intersect the exterior boundary.

5. There were no professional seals and signatures of the professional land surveyor affixed to any of the 7 sheets of the document.

No further review comments.

Document Approval and Recording

For this CSM to be approved by the Village Board and recorded at the Washington County Register of Deeds, the document must be provided to the Village Clerk's office in a completed format including all original signatures of the owner and lending institution, original seals and signature of the professional land surveyor on the recordable media the Wednesday prior to the scheduled Village Board meeting.

This includes the CADD file.

Any documents or digital files not submitted by the due date or contain outstanding technical review comments that have not be addressed, will be moved to the next scheduled Village Board meeting agenda.

Document Submittals and Data Conversion

As of October 2005, the Village of Germantown requires a digital copy of all Certified Survey Maps, Condominium Plats and Subdivision Plats in addition to the documents as required by Wisconsin Statute and Village Ordinances as part of the land division approval.

Prior to Recording the Certified Survey Map or Subdivision Plat
The professional land surveyor is responsible for submitting a copy of the AutoCAD drawing file (.dwg) of the document in version 2023 via email to the Village Surveyor for mapping purposes.

All digital professional land surveyor seals and signatures will be purged from the digital copy prior to submittal

Sincerely,

Point Land Surveying & Mapping

Bob Beilfuss

Bob Beilfuss, P.L.S.
Principle

Community Development Department
Jordan Yanke, Associate Planner
N112 W17001 Mequon Road P.O. Box 337
Germantown, WI 53022-0337
(262) 250-4734
www.germantownwi.gov

OCTOBER 2024

NEIGHBORHOOD NOTICE

You are receiving this notice because our records indicate that you are the owner and/or occupant of property located in the vicinity of a proposed solar farm located at approximately N132W18100 Rockfield Road (GTNV_091986/091987/092979/092994).

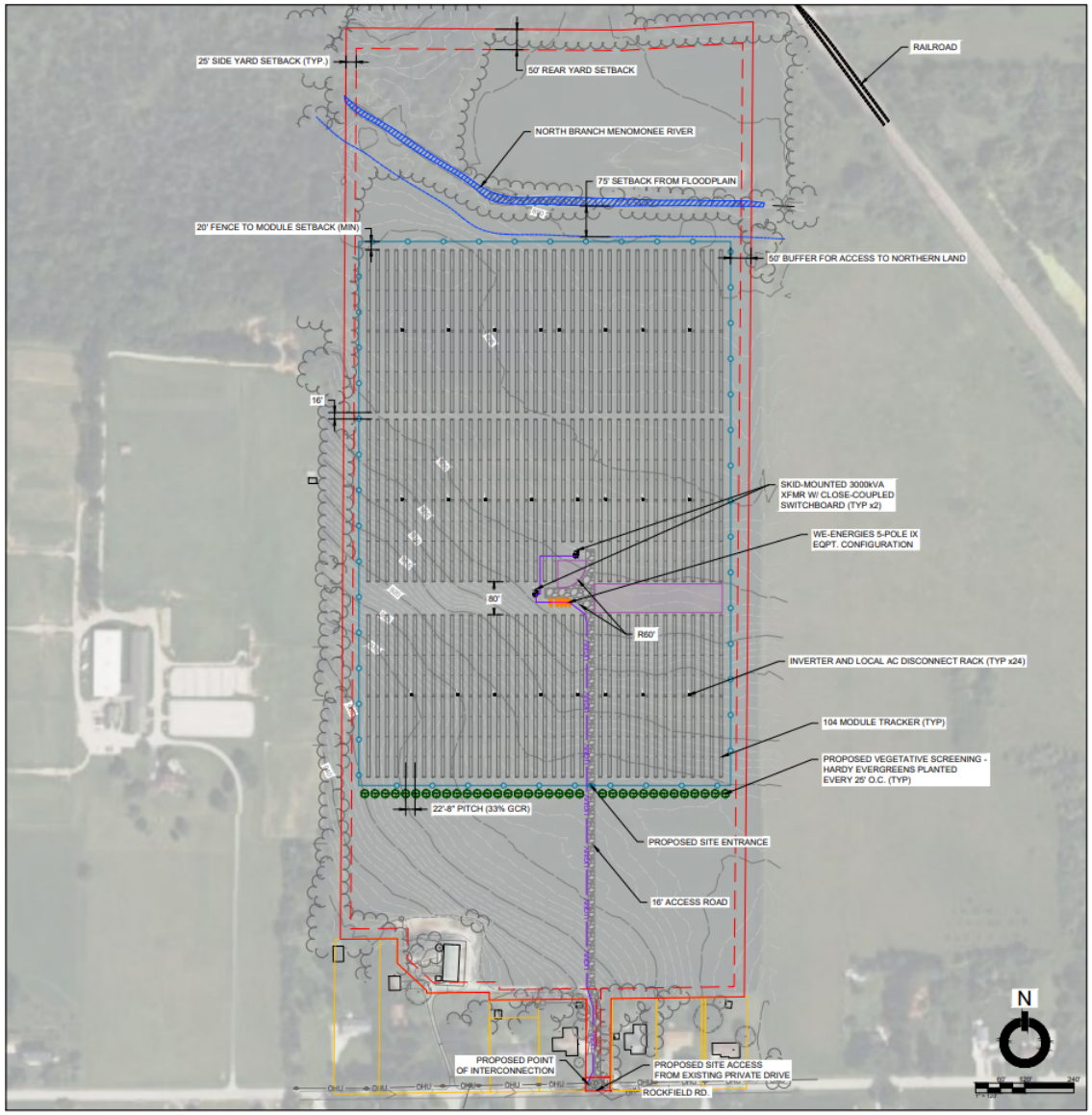
As shown on the included site plan, One Energy is proposing to construct a solar farm of approximately 30 acres in size on subject property to the north of Rockfield Road, west of Division Road.

One Energy has submitted detailed plans for the project, which include the solar farm, access drive, and fencing, among other details. Those plans will be reviewed and considered for approval by the Village Plan Commission at their October 14TH meeting @ 6:30pm at Village Hall. At that time, the proposal will be formally presented by Village staff, discussed with One Energy and their consultants, and a decision will be made to either approve or deny the proposal (approval with certain stipulations or other requirements is also a possibility based on the discussion).

Also, this proposal does not require a formal public hearing. However, at the discretion of the Plan Commission Chairman, public comments may be received as part of the Plan Commission discussion. Given the proposed implementation of the solar farm and its size, the Village wants you to know what is being proposed and how it may impact your neighborhood.

You are not required to do anything nor are you expected to attend any meetings. However, you are welcome to attend the October 14TH meeting to hear first-hand what is discussed and what action is taken.

Comments from the public may be taken during the meeting (remember, it's not a mandatory public hearing), but you can provide written comments regarding the One Energy proposal by sending your comments via email to comments@germantownwi.gov before 4:00pm on the day of the meeting so they can be provided to Village staff and the Plan Commission for their consideration.



GERMANTOWN SOLAR

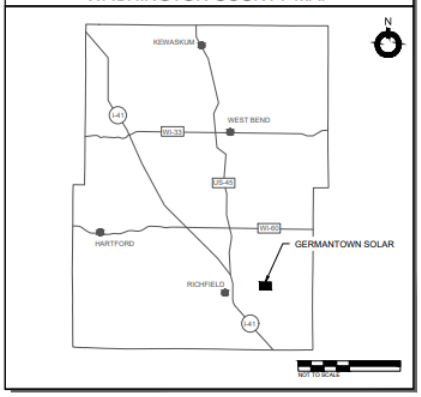
WASHINGTON COUNTY, WISCONSIN

SOLAR PV PROJECT
6.877 MWDC / 6.000 MWAC

LEGEND

- PROJECT AREA PARCEL BOUNDARY
- ZONING SETBACK
- RIGHT-OF-WAY
- NEIGHBORING PARCEL
- TREELINE (E)
- FEMA FLOODPLAIN
- FLOODPLAIN SETBACK
- PERIMETER FENCE (P)
- GRAVEL ACCESS ROAD
- STAGING AREA
- UGMV — UG MV
- OHU — OH ELECTRICAL (P)
- OHU — OH ELECTRICAL (E)
- UTILITY POLE (E)
- UTILITY POLE (P)

WASHINGTON COUNTY MAP



PROJECT DETAILS

THIS PROJECT CONSISTS OF THE DESIGN AND INSTALLATION OF 6.000 MWAC SOLAR PHOTOVOLTAIC SYSTEM. MODULES ARE TO BE MOUNTED IN A SINGLE AXIS TRACKERS, WHICH FOLLOW THE SUN FROM EAST TO WEST THROUGHOUT THE DAY.

SITE DETAILS:

PARCEL ID	092994, 092979, 091987, 091986
OWNER:	WAYNE LUTYNSKI
ACREAGE:	54.25
EXISTING ZONE:	A-1

LAND USE SUMMARY:

TOTAL PARCEL AREA (ACRES):	54.25
TOTAL LEASED AREA (ACRES):	TBD
TOTAL FENCED AREA (ACRES):	27.69
GRAVEL ACCESS ROAD (ACRES):	0.61
LAYDOWN AREA (ACRES):	0.59

DESIGN SUMMARY:

MODULE POWER:	575 W
MODULE COUNT:	11960
ARRAY DC VOLTAGE:	1500 V
INVERTER SIZE:	250 kW / 250 kVA
INVERTER COUNT:	24
DC SIZE:	6.877 MWdc
AC SIZE:	6.000 MWac
DC/AC RATIO:	1.146
GROUND COVERAGE RATIO:	33.0 %
ASCE 7-16 GSL:	30 PSF
ASCE 7-16 WIND SPEED:	100 MPH

ADDITIONAL NOTES:

- BASEMAP DEVELOPED FROM ALTA FIELD SURVEY
- PARCEL DATA TAKEN FROM ALTA FIELD SURVEY
- FEMA FLOOD HAZARD ZONE FROM GIS DATA

OneEnergy RENEWABLES
2003 Western Ave, Suite 225
Seattle, WA 98121
oneenergyrenewables.com
206 922 7072

WRITTEN DIMENSIONS ON THIS PLAN SHALL SUPERCEDE SCALED DIMENSIONS. CONTRACTORS ARE RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS. THIS DRAWING, DESIGN, CONCEPT AND ARRANGEMENT REMAIN THE PROPERTY OF ONEENERGY RENEWABLES AND SHALL NOT BE COPIED, DISCLOSED OR REPRODUCED WITHOUT CONSENT.

PRELIMINARY
NOT FOR CONSTRUCTION

REVISION LOG

REV	DESCRIPTION	DATE	BY	CK'D	SME
00	EPC BID SUBMITTAL	07/26/2024	JL	AC	
01	DEVELOPMENT LAYOUT	08/23/2024	AMB	AK	

GERMANTOWN SOLAR
ONEENERGY RENEWABLES
43.257821°, -88.131597°
WASHINGTON COUNTY, WISCONSIN

SHEET TITLE: DEVELOPMENT LAYOUT

SHEET NO: D-100

	Name	Address	City, State Zip	Tax Key	Site Address
1	SADDLE UP LLC	1975 WISCONSIN AVE	GRAFTON, WI 53024	GTNV_092981, 043980, 043998	Site Address:N132W18350 ROCKFIELD RD
2	MILWAUKEE METROPOLITAN SEWERAGE DIS	260 W SEEBOTH ST	MILWAUKEE, WI 53204-1440	GTNV_091985, 091988, 091983	Site Address:N136W17795 BONNIWELL RD
3	WIS & SOUTHERN RAILROAD LLC	315 W 3RD ST	PITTSBURG, KS 66762	GTNV_044999, 094999	Site Address:BONNIWELL RD
4	LDF HOLDINGS LLC	3471 CTY HWY NN	WEST BEND, WI 53095	GTNV_092997	Site Address:N132W18286 ROCKFIELD RD
5	JOEL PIPKORN	921 BELL AVE	SHEBOYGAN, WI 53083	GTNV_091980	Site Address:N132W17558 ROCKFIELD RD
6	LEROY RUTTINGER LIVING TRUST	9538 N SUNDUNE DR	SUN LAKE, AZ 85248	T5_0255034, 0255033, 0255036, 02	Site Address:WOODLAND AVE
7	GERMANTOWN SCHOOL	N104W13840 DONGES BAY RD	GERMANTOWN, WI 53022	T5_025500A	Site Address:N132W18473 ROCKFIELD RD
8	RICHARD STEPHAN LIVING TRUST	N121W20344 NEULAND DR	RICHFIELD, WI 53076	GTNV_092974	Site Address:MAPLE RD
9	THOMAS HAPKA	N128W17714 HOLY HILL RD	GERMANTOWN, WI 53022	T5_0280	Site Address:ROCKFIELD RD
10	MARY PROST	N128W19734 HOLY HILL RD	RICHFIELD, WI 53076	GTNV_043999	Site Address:BONNIWELL RD
11	MARLENE KASTEN	N128W19734 HOLY HILL RD	RICHFIELD, WI 53076	GTNV_044997	Site Address:N136W17798 BONNIWELL RD
12	JOHN KOELLER	N131W18155 WOODLAND AVE	RICHFIELD, WI 53076	T5_025500B, 0255029, 0255025	Site Address:
13	GARY ZARTNER	N131W18279 WOODLAND AVE	GERMANTOWN, WI 53022	T5_0255019, 0255021, 0255020	Site Address:WOODLAND AVE
14	ANDREW KLUMB	N132W17573 ROCKFIELD RD	RICHFIELD, WI 53076	GTNV_094008	Site Address:N132W17573 ROCKFIELD RD
15	GERALD KISER	N132W17655 ROCKFIELD RD	GERMANTOWN, WI 53022	GTNV_094981	Site Address:N132W17655 ROCKFIELD RD
16	LARA SOLTIS	N132W17668 ROCKFIELD RD	GERMANTOWN, WI 53022	T5_023500D	Site Address:N132W17668 ROCKFIELD RD
17	JAMES KLEINMANN	N132W17684 ROCKFIELD RD	GERMANTOWN, WI 53022	GTNV_091004	Site Address:N132W17684 ROCKFIELD RD
18	CRAIG JOHNSON	N132W17711 ROCKFIELD RD	GERMANTOWN, WI 53022	T5_028000A	Site Address:N132W17711 ROCKFIELD RD
19	TODD HETZEL	N132W17857 ROCKFIELD RD	GERMANTOWN, WI 53022	GTNV_094982, T5_028000B	Site Address:N132W17857 ROCKFIELD RD
20	KRISTINE CRAMER	N132W17858 ROCKFIELD RD	GERMANTOWN, WI 53022	T5_023500C	Site Address:N132W17858 ROCKFIELD RD
21	SUSAN HOLMES	N132W18002 ROCKFIELD RD	GERMANTOWN, WI 53022	GTNV_091003	Site Address:N132W18002 ROCKFIELD RD
22	RYAN TURDO	N132W18005 ROCKFIELD RD	RICHFIELD, WI 53076	T5_028100B	Site Address:N132W18005 ROCKFIELD RD
23	ANGELA LAFOUNTAIN	N132W18021 ROCKFIELD RD	GERMANTOWN, WI 53022	T5_028100A	Site Address:N132W18021 ROCKFIELD RD
24	HEIDI BENEDUM	N132W18065 ROCKFIELD RD	GERMANTOWN, WI 53022	T5_0255001	Site Address:N132W18065 ROCKFIELD RD
25	PATRICIA ATHERTON REVOCABLE LIV TRUST	N132W18066 ROCKFIELD RD	RICHFIELD, WI 53076	GTNV_091001	Site Address:N132W18066 ROCKFIELD RD
26	MICHAEL HUG	N132W18067 ROCKFIELD RD	GERMANTOWN, WI 53022	T5_0255002	Site Address:N132W18067 ROCKFIELD RD
27	KARL GRIFFITHS	N132W18136 ROCKFIELD RD	GERMANTOWN, WI 53022	GTNV_092999	Site Address:N132W18136 ROCKFIELD RD
28	KEVIN OLSON	N132W18153 ROCKFIELD RD	RICHFIELD, WI 53076	T5_0255009	Site Address:SCOTT LN
29	WENDY PRITZLAFF	N132W18172 ROCKFIELD RD	RICHFIELD, WI 53076	GTNV_092998	Site Address:N132W18172 ROCKFIELD RD
30	ANDERSON IRREVOCABLE TRUST	N132W18187 ROCKFIELD RD	RICHFIELD, WI 53076	T5_0255005, 0255007	Site Address:N132W18187 ROCKFIELD RD
31	ANTHONY WAGLER	N132W18201 ROCKFIELD RD	RICHFIELD, WI 53076	T5_0255013	Site Address:N132W18201 ROCKFIELD RD
32	MARK LUCKA	N132W18297 ROCKFIELD RD	GERMANTOWN, WI 53022	T5_0255015	Site Address:N132W18297 ROCKFIELD RD
33	COLLEEN BRUSHABER TRUST	N132W18312 ROCKFIELD RD	RICHFIELD, WI 53076	GTNV_092996, 092995	Site Address:N132W18312 ROCKFIELD RD
34	TIMOTHY TRAPP	N132W18335 ROCKFIELD RD	GERMANTOWN, WI 53022	T5_0255017, 0255018	Site Address:ROCKFIELD RD
35	TYLER KOWALCHUK	N132W18474 ROCKFIELD RD	GERMANTOWN, WI 53076	GTNV_092978	Site Address:N132W18474 ROCKFIELD RD
36	KENNETH KLUMB	N132W18560 ROCKFIELD RD	RICHFIELD, WI 53076	GTNV_092991	Site Address:N132W18560 ROCKFIELD RD
37	PHILIP BARBER	N136W17560 BONNIWELL RD	GERMANTOWN, WI 53022	GTNV_044991	Site Address:N136W17560 BONNIWELL RD
38	ANDREW KLUMB	N140W12553 CEDAR LN	GERMANTOWN, WI 53022	GTNV_094007	Site Address:ROCKFIELD RD
39	DIANE BRADEN	N140W17595 CEDAR LN	RICHFIELD, WI 53076	GTNV_044992	Site Address:BONNIWELL RD
40	JEFFREY STEPHAN LIVING TRUST	N140W18726 CEDAR LN	RICHFIELD, WI 53076	GTNV_043982, 043981	Site Address:ROCKFIELD RD
41	JAMES SIEBERS	N47W7880 PARKLAND RD	CEDARBURG, WI 53012	GTNV_091002	Site Address:N132W18040 ROCKFIELD RD
42	TROY WETTERAU LIV TR	W130N11414 EQUINE TRL	GERMANTOWN, WI 53022	T5_0281	Site Address:ROCKFIELD RD
43	KEVIN OLSON	W132N18153 ROCKFIELD RD	GERMANTOWN, WI 53022	T5_0255003	Site Address:N132W18153 ROCKFIELD RD
44	WAYNE LUTYNSKI	W167N11183 QUEENS CT	GERMANTOWN, WI 53022	GTNV_091986, 091987, 092979, 092	Site Address:ROCKFIELD RD
45	BRIAN STEPHAN LIVING TRUST	W182N13087 SCOTT LN	GERMANTOWN, WI 53022	T5_025500C	Site Address:W182N13087 SCOTT LN
46	RICHARD BIRA	W182N13151 SCOTT LN	GERMANTOWN, WI 53022	T5_0255024, 0255023	Site Address:W182N13151 SCOTT LN
47	DALE DHEIN	W188N13102 MAPLE RD	RICHFIELD, WI 53076	T5_0256	Site Address:W188N13102 MAPLE RD
48	DANIEL STEPHAN	W188N13488 MAPLE RD	RICHFIELD, WI 53076	GTNV_092973	Site Address:W188N13488 MAPLE RD
49	FRANK WIEDMEYER	W204N13164 GOLDENDALE RD	RICHFIELD, WI 53076	T5_023500A	Site Address:N132W17882 ROCKFIELD RD
50	SARA GLASZCZ	W640 SAYLESVILLE RD	RUBICON, WI 53078	T5_0255031	Site Address:W182N13117 SCOTT LN

PETITION
TO THE VILLAGE OF GERMANTOWN – PLAN COMMISSION

To the Village of Germantown, N112 W17001 Mequon Road
Germantown, WI 53022

WE, THE UNDERSIGNED, HEREBY PETITION the Village of Germantown Board to halt the OneEnergy Development, LLC Agent for Wayne Lutynski, Property Owner. Certified Survey Map (CSM) to combine parcels and Site Plan Review for a 30-acre Solar Energy Facility located at approximately N132W180100 Rockfield Road by the Village pursuant to authority vested in it by Chapter 33, Wisconsin Statutes.

WE STATE OR BELIEVE:

1. Industrial-scale solar power plants should not be placed on land already zoned for A-1(agricultural) and RA (Rural area) use.

2. The land (forest, farmland, vegetation, soil) is forever destroyed.

3. Solar Projects should not be placed near wetlands, rivers, streams, tributaries to avoid immediate damage to water quality, and possible contamination-ecological disasters.

4. Solar power plants destroy wildlife habitats.

5. Solar power plants threaten preservation and should not destroy historic sites.

6. Solar power plants cause a decline in eco and historical tourism.

7. Solar power generation is very inefficient with looking at the amount of land "consumed".

8. The bill for decommissioning Solar Projects will likely be passed on to taxpayers.

9. Solar Projects can undermine local residents' property values.

10. The local community has clearly expressed concern and opposition to the OneEnergy Solar Project.

See attached CSM dated 10/7/2024.

SIGNATURE PAGES TO FOLLOW

(PRINT AS MANY AS NEEDED AND FILL IN THE PAGE # AT TOP RIGHT)

Signature of Signer	Name	Legal Address	Date
1. – Sandi Budiac	Sandi Budiac	3349 S. Shore Dr Hubertus Wi	11/11/24
2. – Leonard Budiac	EDWARD Budiac	3349 South Shore Dr. Hubertus WI 53033	11/11/24
3. – Sarah Larson	Sarah Larson	W159N9737 Butternut Rd Germantown	11/11/24
4. – Jan Miller	JAN MILLER	W151N10297 WINDSONG CIR, W.	11/11/24
5. – Kathy Mannion	Kathy Mannion	N106W16212 Fieldstone Pass, G.T.	11-11-24
6. – Emma Wood	Emma Wood	W148N13797 Maple Rd RICHFIELD, WI 53076	11-11-24
7. – Cheryl Chybowski	Cheryl Chybowski	W188N13467 Maple Rd	
8. – Rita Fitzgerald	Rita Fitzgerald	W148N13247 Windsong Cir Richfield WI 53076 Germantown	
9. – Elizabeth Barber	Elizabeth Barber	N136W17500 Bonniwell Rd. Germantown, WI 53022	
10. – Pat Tasker	Pat Tasker	N97W14909 Berry Bush Ct-GTN,	
11. – Zachary L Sowin	Zachary L SOWIN	W209N13524 Robinhood Dr	11/11/24
12. –			
13. –			
14. –			
15. –			

STATE OF WISCONSIN
COUNTY OF WASHINGTON

Affidavit of Petition Circulator RICK SCHLEIN

_____, being duly sworn, deposes and says that he or she is an owner of land within the boundaries of the proposed district; that to the best of his or her knowledge, all persons who have signed the foregoing petition are landowners within the boundaries of the proposed district and that the accompanying map and description indicates the territory to be included in the proposed district and that the petition has been signed by persons constituting 51 percent or more of the landowners within the proposed district.

Signature of Petition Circulator Rick Schlein PO Address
City N132 W18350 ROCKFIELD RD.
GERMANTOWN, WI 53022

Subscribed and sworn to before me this 12 day of November, 2024.

Mary E. Bauer
Signature of Notary
My commission expires 9/20/2027

MARY E BAUER
NOTARY PUBLIC
STATE OF WISCONSIN

PAGE X2

Signature of Signer	Name	Legal Address	Date
1. – Lynne Schaum	Bedzny	10121 Parker GT Ct	11/11/24
2. –			
3. – Maureen Fitzgerald	Maureen Fitzgerald	W164N10253 Clock Hill Ln	11/11/24
4. – PHILIP BARBER		N136W17560 Bonniwell RD GERMANTOWN WI	
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STATE OF WISCONSIN
COUNTY OF WASHINGTON

Affidavit of Petition Circulator RICK SCHLEHLEIN

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Rick Schlehlein

Signature of Petition Circulator Rick Schlehlein PO Address
City N132W18350 ROCKFIELD ROAD
GERMANTOWN, WI 53022

Subscribed and sworn to before me this 12 day of November, 2024.

Mary E Bauer
Signature of Notary
My commission expires 9/20/2027

MARY E BAUER
NOTARY PUBLIC
STATE OF WISCONSIN

PETITION
TO THE VILLAGE OF GERMANTOWN BOARD

To the Village of Germantown, N112 W17001 Mequon Road
Germantown, WI 53022

WE, THE UNDERSIGNED, HEREBY PETITION the Village of Germantown Board to halt the construction of a solar panel facility in Rockfield, Village of Germantown, WI

WE STATE OR BELIEVE:

1. Industrial-scale solar power plants should not be placed on land already zoned for A-1 (agricultural) and RA (rural area) use.
The local planning commission and boards of supervisors should vote to reject industrial-scale solar power plants based on this reason alone.

2. The land (forest, farmland, vegetation, soil) is forever destroyed.
Despite current discussions regarding decommissioning, the reality is that this rural land will be lost forever. Industrial-scale solar projects are typically for 30-40 years.

Construction of an industrial-scale solar power plant requires removal of trees, brush and root balls prior to installation of the arrays, creating an ecological wasteland. Grading, pile driving, blasting, electric cable trenching and road construction will compact the soil, likely delaying agricultural use for years after the project's end.

Stripping and compaction removes topsoil, destroys healthy soil organisms and allows for invasion of exotic plants that choke out native species.

3. Solar projects should not be placed near wetlands, rivers, streams, tributaries to avoid immediate damage to water quality, and possible contamination-ecological disasters.
Uncontrolled runoff of water and topsoil is a well-documented byproduct of industrial-scale solar site development. This massive increase in watershed sedimentation impacts all downstream rivers and estuaries. Water contamination doesn't stop with the end of construction. Removal of all trees and deep-rooted plants, along with inadequate stormwater controls lead to long-term runoff and water contamination issues. Local municipalities usually do not have adequate resources to monitor construction and stormwater violations and, even when properly monitored, site developers have no problem paying fines, and there is no effective check on environmental damage.

4. Solar power plants destroy wildlife habitat.
Perimeter fencing, often 6-feet high and topped with barbed wire, will restrict movement of wildlife in the area. Removal of vegetation will impact bird population and other wildlife.

5. Solar power plants threaten preservation and should not destroy historic sites.
Many rural areas are the last undeveloped sites that contain prehistoric and historic archaeological deposits. Industrial development of these sites results in the irreversible loss of our history. In the Virginia Piedmont, this includes evidence of Native American settlements, early American settlement, Revolutionary and Civil War encampments and battlefields. Industrial development of these sites results in the irreversible loss of our history

6. A decline in eco and historical tourism.
Destruction of rural landscapes and areas of historic interest result in the decline in eco and historical-tourism (or may prevent the development of these industries), reducing the prosperity of the local community.

7. Solar power generation is very inefficient when looking at the amount of land "consumed."

Solar power's inefficiency argues for proper siting on brownfields, industrial areas, and commercial and residential rooftops - not on open or forested, agricultural and rural land.

8. Undermining of local residents' property values.
Based on recent studies, the expected reduction in property value ranged from 5-25% depending on proximity.
9. The bill for decommissioning projects will likely be passed on to taxpayers.
Insufficient surety fund by the developer could result in county responsibility for decommissioning costs. Net Decommissioning costs can range from $43,584/MW to $101,915/MW. No plan and cost should ever be approved without a full understanding of the cost to return the land to its original condition, and the county should not be responsible for this cost.
10. When the local community has clearly expressed concern and opposition.
Local planning commissions and boards of supervisors should vote to reject industrial-scale solar power plants when people in the community oppose it. With time, greater awareness of solar issues and accountability will take place.

SIGNATURE PAGES TO FOLLOW

Signature of Signer	Print Name	Legal Address	Date
1.	Timothy Trapp	N132 W18375 Rockfield Rd Germantown, WI 53022	11/10/24
2.	Roxanne Bira	W182N13151 Scottish Germantown WI 53022	11/10/24
3.	Richard Bira		
4.	LeeAnn Zartner	N131W18279 Woodland Ave Germantown, WI 53022	11/10/24
5.	Gary Zartner	N131 W18279 Woodland Germantown	11/10/24
6.	JOHN KOELLER	N131 W18155 WOODLAND AVE	
7.	Kimberly Anderson	N132 W18187 Rockfield Rd G-town	
8.	STEVE DeQuardo	N132W18187 Rockfield Rd	
9.	Kevin Olson	TOWN of Germantown	11/10/24
10.	Joey Waldoch	N132W18153 Rockfield rd N132W18153 Rockfield Rd	
11.	Kim Olson	N132W18153 Rockfield Rd	
12.	Ryan Turdo	N132 W18009 Rockfield RD	
13.	DERRICK ROME	N132W18040 ROCKFIELD RD	
14.	Angela Hedeshaw	N132W18040 ROCKFIELD RD	
15.	Peter Rite-Jones	12980 Mill Pond RD	
16.	Colleen Brushaber	N132W18312 Rockfield Rd	

17. -

18. - Thalia Haseotes 14168 Woodlawn Cr. Elmbrook, WI 53122 (Boarder) 11/10/24

19. - ~~angelaaudley Angela Audley 4267 W Brown Deer LN~~

20. - angelaaudley Angela Audley 4267 W Cherrywood LN Brown Deer, WI 53209 11/10/24

21. - Kristin Awenceel Kristin Awenceel W79 N423 Ridgeway Ln Cedarburg WI 53012 11/10/24

22. - Kristina Hoskins Kristina Hoskins 1336 Western Ave Jackson WI 53037 11/10/24

23. - Karin Murdock 6544 N Dauphin St Milwaukee 53224 11/10/24

24. - Frances Gartner 1595 Sherman Rd 53037 11/10/24

25. - Nina Christman N96W21392 Carmel Dr Colgate, 53013 11/10/24

26. - Linda Prochnow 5965 Deer Rd Hartford Linda Prochnow 11/10/24

27. - Philip Fiorentino 7 Jay Crest Dr. Kewaskum, WI 53040 11/11/24

28. - Alicia Steffenhagen 2629 S. 60th Milwaukee, WI 53219 11/11/24

29. - Heidi Hokenstad HEIDI HOKENSTAD 3560 Circle Drive Hubertus, WI 53033 11/11/24

30. - Kenneth Klumb Kenneth R Klumb N132W18560 Rockfield Rd Richfield WI 11/11/24

31. - Will Wright Will Wright N132W17711 Rockfield 11/11/24

32. - Jean Johnson Jean Johnson

33. - Katie Wiedmeyer Katie Wiedmeyer N132W17882 Rockfield

34. - Heidi Benedun Heidi Benedun N132W18065 Rockfield Rd Rd 11/11/24

35. - Nicole Trapp Nicole Trapp 8234 Broadview Ln, Kewaskum, WI 53040 11/11/24

36. - Beth G. Seep N7575 Doyle Rd Thiensville WI 53092 11/11/24

37. - Michelle Johnson 2301 W Glen Hills Ct Glendale WI 53209 11/11/24

38. - Todd M Gillis 1899 Conestoga Ct Richfield WI 11/11/24

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STATE OF WISCONSIN
COUNTY OF_____

Affidavit of Petition Circulator

_____, being duly sworn, deposes and says that he or she is an owner of land within the boundaries of the proposed district; that to the best of his or her knowledge, all persons who have signed the

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STATE OF WISCONSIN
COUNTY OF WASHINGTON

Affidavit of Petition Circulator RICK SCHLEHLEIN

_____, being duly sworn, deposes and says that he or she is an owner of land within the boundaries of the proposed district; that to the best of his or her knowledge, all persons who have signed the foregoing petition are landowners within the boundaries of the proposed district and that the accompanying map and description

indicates the territory to be included in the proposed district and that the petition has been signed by persons constituting 51 percent or more of the landowners within the proposed district.

Signature of Petition Circulator _____ PO Address N132 W18350 ROCKFIELD RD
City GERMANTOWN, WI 53022

Subscribed and sworn to before me this 12 day of November, 2024.

Mary E. Bauer
Signature of Notary
My commission expires 9/20/2027

MARY E BAUER
NOTARY PUBLIC
STATE OF WISCONSIN

Village of Germantown
...Willkommen

VILLAGE ATTORNEY
Wesolowski, Reidenbach & Sajdak, S.C.
11402 W. Church Street
Franklin, WI 53132
Phone: 414-529-8900

M E M O R A N D U M

TO: Plan Commission
FROM: Brian C, Sajdak, Village Attorney
DATE: December 6, 2024
RE: OneEnergy Development LLC Solar Farm Proposal

I have been asked to provide some input on two issues related to the OneEnergy solar farm proposal.

First, in the packet you will note that there is a petition included. The language of the petition suggests that there is some desire to have this considered as a protest petition under § 17.51(7) of the Municipal Code. However, in this case, the use of a protest petition is inapplicable. Under the code, a protest petition can be utilized when there is a change in a zoning district, or the regulations associated with a district. In this case, there is no change to the zoning district, nor is there any change to the regulations of a district. This proposal involves only the consideration of a permitted use within the A-1 District.[1] Because this does not qualify as a protest petition, there is no impact to the petition on the voting requirements, and a standard simply majority vote is all that is required.

The second issue centers on the impact of the Legislature's adoption of Wis. Stat. § 66.0401(1m). That provision provides:

> No political subdivision may place any restriction, either directly or in effect, on the installation or use of a solar energy system, as defined in s. 13.48 (2) (h) 1. g., or a wind energy system, unless the restriction satisfies one of the following conditions:
>
> (a) Serves to preserve or protect the public health or safety.
> (b) Does not significantly increase the cost of the system or significantly decrease its efficiency.
> (c) Allows for an alternative system of comparable cost and efficiency.

Under this statute, the Legislature has significantly limited the ability of local governments to regulate solar energy projects. Indeed, the Courts have expressly held that even where a solar energy system is a conditional use that a plan commission is "duty bound to confine its consideration of the conditional use applications *in light of the restrictions placed on local*

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[1] Note: In addition to the general inapplicability of protest petitions discussed above, the Legislature in 2023 Wis. Act 16 amended section 66.10015(3) of the Statutes to effectively prohibit protest petitions except in very rare circumstances (none of which are applicable here). This change goes into effect on January 1.

regulations pursuant to § [66.0401]." Numrich v. City of Mequon Board of Zoning Appeals, 2001 WI App 88, ¶23, 242 Wis. 2d 677, 626 N.W.2d 366 (emphasis in original). As such, even under a more strict conditional use review, any conditions placed on a solar energy proposal must meet those requirements. Here, however, the review is not even a conditional use review.

This is merely the consideration of an application for a permitted use. Under this standard, there are virtually no instances where denial of a permitted used would comply with the statute. Safety would be the only possible area where a denial might meet the statute (e.g., deny the application because of public safety concerns), however if the use was deemed unsafe why would it be permitted? Accordingly, the only regulations that appear to be acceptable under the statute and the zoning code would be those standard considerations when reviewing a site plan — setbacks, density, height, etc.

REZONING APPLICATION

12/9/24 Plan Commission Meeting

SunStarr Real Estate Ventures LLC / Victory Place LLC

Village Staff Report & Recommendation **Germantown, Wisconsin**

Summary

SunStarr Real Estate Ventures LLC, agent for Victory Place LLC, property owner, is requesting approval to rezone 6.99 acres from the I: Institutional to the Rm-3: Multi-Family Residential Zoning District to develop a 66-unit multi-family residential development on Fond du Lac Ave in the "Victory Center Corridor".

Location: Fond du Lac Ave @ Crimson Road (future)

Applicant/ Owner:

Scott Stevlingson SunStarr Fond du Lac, WI 54935	Victory Place LLC 840 S Main St Fond du Lac, WI

Current Zoning: I: Institutional

Proposed Zoning: Rm-3: Multi-Family Residential (up to 10.0 DU/acre)

Adjacent Land Uses		**Zoning**
North	Residential	Rm-1 PDD
South	Residential	Rs-1
East	Residential/Agricultural	Rs-1/A-2
West	Residential (Autumn Ridge Subdivision)	Rd-2

Location Map

Background

This parcel was created in 2000 and rezoned into the I: Institutional Zoning District in anticipation of a new Christian Life Center church development. Christian Life Center Inc. received site development and building plan approval for a new church & school facility in 2003. The proposed development of this 6.99-acre parcel was supposed to include a 39,700 sqft church, Sunday school, daycare and gymnasium with associated on-site parking and storm water facilities. Development was planned to occur in two (2) phases with Phase 1 consisting of a 17,380 sqft church, parking, on-site storm water management facilities, and an extension of Crimson Road from the Autumn Ridge Subdivision easterly to Fond du Lac Avenue. At that time, the right-of-way for the Crimson Road extension was dedicated and a development agreement with the Village was made that assigned responsibility for constructing the Crimson Road extension to Christian Life Center Inc. However, after years of no development activity, in 2008 Christian Life Center Inc. requested that the Village terminate their development agreement and withdrew their development plans.

In June of 2024, SunStarr Real Estate Ventures LLC, agent for Victory Place LLC, property owner, presented a concept plan to the Plan Commission for a potential 68-unit multi-family residential development proposal to be called “Victory Place”. At that time, the PC and staff expressed concerns with the building layout, traffic circulation within the development, single access into the development, and landscape buffering along the west property line from Autumn Ridge.

Proposal

At this time, SunStarr Real Estate Ventures LLC is requesting approval to rezone the 6.99-acre parcel from the I: Institutional to the Rm-3: Multi-Family Residential Zoning District to develop “Victory Place” with the following characteristics (see proposed site plan dated 9-24-2024):

- Sixty-six (66) total dwelling units in (6) two-story buildings (5 buildings w/ 12 DU’s & one building w/ 6 DU’s)
- 9.5 DU’s/acre
- 2-bed/2 bath units w/ private patios or balconies
- 2-story buildings w/ private entry w/ 1-car attached garage
- (165) total parking stalls - 2.5 stalls per unit (66 1-car garages + 99 surface stalls)
- Wood-frame const w/ vinyl shake & horizontal siding, brick veneer wainscoting & architectural shingles
- Landscaping berming & plantings around site perimeter
- On-site storm water management pond
- Center “amenity area” (non-specific amenities)
- Emergency access road to Crimson Road w/ gate
- 60’ wide cross-access easement @ FDL driveway entrance for possible access to future development on parcel to south

As discussed, in June, the proposal is contingent on eliminating the Crimson Road extension and vacating the existing 60’ wide right-of-way along the southern portion of the property.

Staff Comments
The property is located in the "Victory Center Corridor" under the 2050 Plan. As noted therein, the "…Victory Center corridor is intended to further develop as a mixed-use area with commercial, mixed-use commercial, institutional, and residential development in a traditional or conservation design pattern with average single-family densities of 2.2 to 2.9 DU's/acre on 15-20,000 sqft lots, two to four family densities up to 6 DU's/acre, and multi-family densities up to 10.0 DU's/acre.

As discussed in June, the number of dwelling units and density (66 units at a density of 9.5 units/acre) are on the high end of the allowable range but generally consistent with the parameters for residential development allowed in the "Victory Center Corridor" (a maximum density up to 10 units/acre may be allowed). Although commercial land use is the only "desirable" land use, "acceptable" land uses include all the residential uses outlined in the revised concept plan.

In addition, this proposal can also be considered generally consistent with the market demand for new rental housing in the target household annual income range ($40k-$150k) identified in the Village's recent residential market analysis prepared by Tracy Cross & Associates, Inc. The developer indicated in June that the price range for these 2-story, 2-bed/2-bath private entrance "walk-up" apartments w/ attached garage rental units will be from $1700-$2200/month.

Staff supports the proposed multi-family rezoning for this 7-acre property for the following reasons:

<u>Land Use</u>
With respect to land use, Staff believes this property is better suited for residential (vs. commercial) development as an allowable use in the "Victory Center Corridor". The property abuts existing single-family residential development to the west (Autumn Ridge is zoned Rd-2 One & Two-Family Residential) and multi-family condominiums to the north (Rm-1: Multi-Family Residential).

<u>Density</u>
The maximum density for multi-family residential development allowed in the "Victory Center Corridor" is 10 units/acre, regardless if it is for-sale condominiums, rental apartments, or any other multi-unit building types providing rental or ownership units. Staff's vision for future residential development in the "Victory Center Corridor" as well as other corridors and districts in the Village is one where the type of dwelling units and buildings will vary within the corridor or district and not necessarily be all of one type or density (unlike the existing residential "neighborhoods" designated in the 2050 Plan). Other than the 65-acre Frenz Trust property to the north, most if not all the remaining developable or potentially re-developable parcels in the "Victory Center Corridor" are under 10 acres in size with many in the 5-to-10-acre range... including this property. In order to foster and encourage infill development and re-development of previously subdivided parcels that have challenging characteristics or land use compatibility concerns that may have hindered development in the past, Staff believes that the

Village should allow development with a higher residential density. A good example of this is the recently approved 4-unit townhouse development by Virtus Development (Greg Nagel) as part of the Kuhburg PDD that includes the former Kuhburg Junction tavern and new Kaffeehaus coffee shop. If not for the higher density (6 DU/ac) and flexible "planned development district" (PDD) zoning requirements created specifically for that area, it is unlikely that the area would not have been re-developed in the manner and timeframe that it has.

Like the Kuhburg property, the size and proximity of the Christian Life property along the corridor is not conducive to single-family uses at the same low density as the residential neighborhoods to the west of and beyond Fond du Lac Ave/STH145. Moreover, this property is situated relatively close to and topographically higher than the Waste Management facilities located east of Fond du Lac Ave/STH 145. It's size, relative location, and (as will be discussed later) the public right-of-way that bisects the property, are challenging characteristics that have impeded development. Therefore, it is reasonable to assume that this and other parcels like it can benefit from the Village allowing higher density and dwelling unit types that serve market demand and are economically feasible. In Staff's opinion, a higher density allowance for multi-family development for the Christian Life property is warranted.

<u>Crimson Road Right-of-Way</u>
With that said, the developer has stated that if they are required to complete Crimson Road from Amber Drive to Fond du Lac Ave/STH145, the project will not be economically feasible. Although the previous owner, Christian Life Center Inc., had originally agreed to dedicate the right-of-way for and construct the remaining segment of Crimson Road as part of their original church and school campus proposal, subsequent developers that have discussed this property with staff and consulted with the Plan Commission have all indicated that the cost of road construction and location of the right-of-way are/would be significant impediments to development of this 7-ac parcel.

Contrary to what is stated in the developer's October 4 "project narrative", and as discussed during the Plan Commission consultation in June, Department of Public Works, Fire Department, and Police Department Staff do NOT support eliminating the Crimson Road extension nor vacating the right-of-way. Police and Fire Department staff agree that, for purposes of providing improved traffic circulation and more convenient emergency vehicle access to the Autumn Ridge subdivision, Crimson Road should be completed as originally planned. However, all agree that completing this road extension from Amber Drive to Fond du Lac Ave/STH145 is not a critical, high priority road improvement. With that said, when the last multi-family development was proposed in 2010, residents from the Autumn Ridge subdivision expressed opposition to extending Crimson Road (that proposal was withdrawn before a decision regarding the Crimson Road extension was made).

The Plan Commission recommendation should address the Crimson Road extension; specifically, should Crimson Road be completed/extended to Fond du Lac Ave/STH145 and should the developer be required to pay for or otherwise construct the Crimson Road extension.

Finally, the proposed site plan submitted by the developer in support of the rezoning application (dated September 24, 2024) is conceptual and does not necessarily depict the final arrangement of buildings, access & internal circulation, storm water management, landscaping, nor the type and number of buildings and dwelling units that will be determined through the Site Development & Building Plan review and approval process.

Other Staff Comments

1. A detailed set of Site Development & Building plans will need to be submitted and reviewed/approved by the Plan Commission pursuant to Section 17.43 of the Zoning Code;
2. Certified Survey Map (CSM) #5268 establishes a 50' highway setback line from Fond du Lac Ave/STH145 that prohibits development;
3. If Crimson Road is not extended and the right-of-way through the subject parcel is vacated, the developer and Village will have to determine what will be done with the existing Crimson Road dead end;
4. Subject to detail plans submitted as part of the Site Development & Building plans, sanitary sewer connection will need to be made to the existing sewer near the Crimson Road @ Amber Drive; connection to the interceptor sewer in Fond du Lac Ave/STH145 should not be allowed;
5. Watermain will need to be installed through the development and connect/loop the existing services that dead-end in Crimson Road (southwest) and Fond du Lac Ave/STH145 as a "betterment of service" for the Village;

VILLAGE STAFF RECOMMENDATION

APPROVE the request to rezone 6.99 acres from the I: Institutional to the Rm-3: Multi-Family Residential Zoning District for purposes of developing a multi-family residential development subject to the following conditions:

1. The final arrangement of buildings, parking, access & internal circulation, storm water management facilities, public & private utilities, landscaping & lighting, sidewalks, trails and other amenities, the type and number of buildings and dwelling units, architecture, and materials will be determined through the Site Development & Building Plan review and approval process for the Village. Detailed Site Development & Building plans shall be submitted and reviewed/approved by the Plan Commission pursuant to Section 17.43 of the Zoning Code prior to the issuance of any permits authorizing construction;
2. If the Village does not require the developer to construct the Crimson Road extension to Fond du Lac Ave/STH145 and agrees to vacate the Crimson Road right-of-way through the property, the developer shall:
    a. work cooperatively with the Village and pay all cost associated with said

right-of-way vacation;

   b. accommodate any/all utility connections deemed necessary by the Village to/from the existing segment of Crimson Road;
   c. provide a mutually acceptable emergency access to/from Crimson Road if deemed necessary as part of the Site Development & Building Plan approval process;
   d. submit detailed development plan generally consistent with the Proposed Site Plan (date September 24, 2024)

3. If the Village does require the developer to construct the Crimson Road extension to Fond du Lac Ave/STH145 and does not agree to vacate the Crimson Road right-of-way through the property, the developer shall:
   a. submit a revised site plan for review and discussion with the Plan Commission prior to submitting detailed Site Development & Building Plans.
4. As deemed necessary through the Site Development & Building Plan approval process, the developer may be required to enter into a Development Agreement with the Village pursuant to section 17.43 of the Zoning Code to address the responsibility for and timing of public and private improvements, including but not limited to the installation of utilities, landscaping and street trees, and storm water management facilities.

NOTE: If the Plan Commission decides to forward a positive recommendation to the Village Board in favor of rezoning the property as requested, the Plan Commission should also give further feedback and direction to the developer regarding the proposed site plan and other aspects of the proposed development, e.g., architecture & materials, type, number & density of residential units types, amenities, etc.

Village of Germantown ...Willkommen

FEES MUST BE PAID AT TIME OF APPLICATION

$200 Plan Commission Consultation
$1,085 Rezoning
$1,240 PDD < 5 acres
$2,095 PDD 5-20 acre site
$3,460 PDD > 20 acre site

Date Paid: 10/07/24 Received by:

chk#1160

REZONING & PDD APPLICATION

Pursuant to Section 17.51 of the Municipal Code

Please read and complete this application carefully. **All applications must be signed and dated.**

1

APPLICANT OR AGENT

SUNSTARR REAL ESTATE VENTURES LLC

Phone (920) 929-8600

E-Mail SSTEVLINGSON@SUNSTARR.COM

PROPERTY OWNER

CHRISTIAN LIFE CENTER, INC

Phone (817) 925 8828

E-Mail pastor@clcwi.com

2

PROPERTY ADDRESS OR GENERAL LOCATION	TAX KEY NUMBER
PT OF NE SE CSM 5268 LOT 3 DOC 863461+864169 AND PT OF NE SE CSM 5268 OL 1 DOC 863461+864169 EXC PT SOLD	354978 AND 354963

3

REZONING REQUEST

FROM	TO
INSTITUTIONAL	RM-3 MULTI-FAMILY RESIDENTIAL

4

METES AND BOUNDS LEGAL DESCRIPTION OF PROPERTY – REQUIRED

Attach pages as necessary

SEE ATTACHED PAGE

5 PURPOSE OF REZONING REQUEST

Briefly describe why the applicant is rezoning the property. Include a description of the proposed use, including any new construction and number of employees, if applicable.

6 SUPPORTING DOCUMENTATION:

☒ Plat of Survey (1:100)

☒ Site Plan and elevations for new construction (can be conceptual)

7 READ AND INITIAL THE FOLLOWING:

SS I understand that the Village is under no obligation to rezone property and that density and lot coverages provided in the Zoning Code are maximums. Actual build out will depend on myriad factors including topography and other natural conditions, surrounding neighborhood context and the detailed design of a project.

SS I understand that Village Staff, Plan Commission and/or Village Board may request additional information to properly evaluate this request and failure to provide such information may in itself by sufficient cause to deny the petition.

SS I am aware that this rezoning shall go into effect immediately upon the final approval of the Village Board and its execution of the rezoning ordinance

SS I understand that Village Staff is required to post one or more signs along the street frontage of and/or on the property subject of this application that indicate to nearby property owners and the general public that a public hearing of my application will be held before the Village Plan Commission and/or Village Board prior to action taken on this application; I hereby grant Village Staff permission to enter onto the property for the expressed purpose of installing said sign(s) provided Village Staff is responsible for installing, maintaining and removing said signs in a reasonable manner and time frame.

8 SIGNATURES – ALL APPLICATIONS MUST BE SIGNED BY OWNER!

Applicant 10/4/24 Date

Scott Sterling

Owner 10/4/24 Date

LEGAL DESCRIPTION:

Being all of Lot 3, a part of Outlot 1, and a platted Right-of-Way of "Crimson Road" all on Certified Survey Map Number 5268, located in the Northeast 1/4 of the Southeast 1/4 of Section 35, Town 9 North, Range 20 East, Village of Germantown, County of Washington, State of Wisconsin, now being more particularly bounded and described as follows:

Commencing at the Northeast Corner of the Southeast 1/4 Section, Thence South 01°25'41" East along the East line of Said Southeast 1/4 Section, 529.00 feet to a point; Thence South 88°20'13" West 60.00 feet the Northeast corner of Lot 3 of Said Certified Survey Map Number 5268 and the West Right-of-Way of "Fond Du Lac Avenue (State Highway "145")" and the place of beginning of lands hereinafter described;

Thence South 01°25'41" East along said West line, 582.10 feet to a point; Thence South 88°20'13" West 522.50 feet to a point on the East line of "Autumn Ridge" a subdivision of record; Thence North 01°25'41" West along said East line, 582.10 feet to a point on the North line of said Lot 3; Thence North 88°20'13" East along said North line, 522.50 feet to the point of beginning of this description.

Containing 304,146 Square Feet (or 6.9822 Acres) of land, more or less.

SunStarr
REAL ESTATE VENTURES LLC

October 4, 2024

Mr. Jeffry Retzlaff
Community Development Director
Village of Germantown
N112 W17001 Mequon Road
Germantown, WI 53022

Re: Project Narrative – Crimson
Proposed Multi-Family Project

Dear Mr. Retzlaff:

SunStarr Real Estate Ventures, LLC is proposing to develop the property currently known as tax parcels 354978 AND 354963 Outlet 1 by constructing a 66-unit multi-family development on the site and to be known as Victory Place. The property consists of 6.98 acres (6.25 acres plus .73 acres of to-be -vacated Crimson Rd. right of way). Furthermore, the property is located within the Victory Center Corridor and is presently zoned Institutional. As part of this application, we are requesting the property be rezoned from Institutional to RM-3 Multifamily Residential District. Our request for a total of 66 units on approximately 6.98 acres, or 9.5 DU/acre is consistent with the RM-3 Multifamily Residential District which allows a maximum of 10 DU/acre. Furthermore, as part of Germantown's 2050 Comprehensive Plan, the Preferred Future Land Use within the Victory Center Corridor lists RM-3 as an "Allowable Use".

Presently Crimson Road is a dead-end stub located in the Autumn Ridge Subdivision and abutting our west property line. It is our understanding, that both the Village of Germantown as well as the Autumn Ridge neighbors to the west prefer that Crimson Road not continue as a throughfare to the east and with a connection to Fond Du Lac Avenue.

Victory Place will consist of a total of six (6) 2-story buildings. Five (5) of the buildings will have 12 units per building and one (1) building with 6 units. All units will have individual entrances with direct access from an attached one car garage. Since there are no common corridors, it will give a feeling of entering a single private residence. All units will be 2-bedroom units with 2 full bathrooms each and have private patios or balconies. There will be a total of 2.5 parking spaces per unit including the attached garages, driveway and surface guest spaces for a total of 165 spaces or 2.5 spaces per unit.

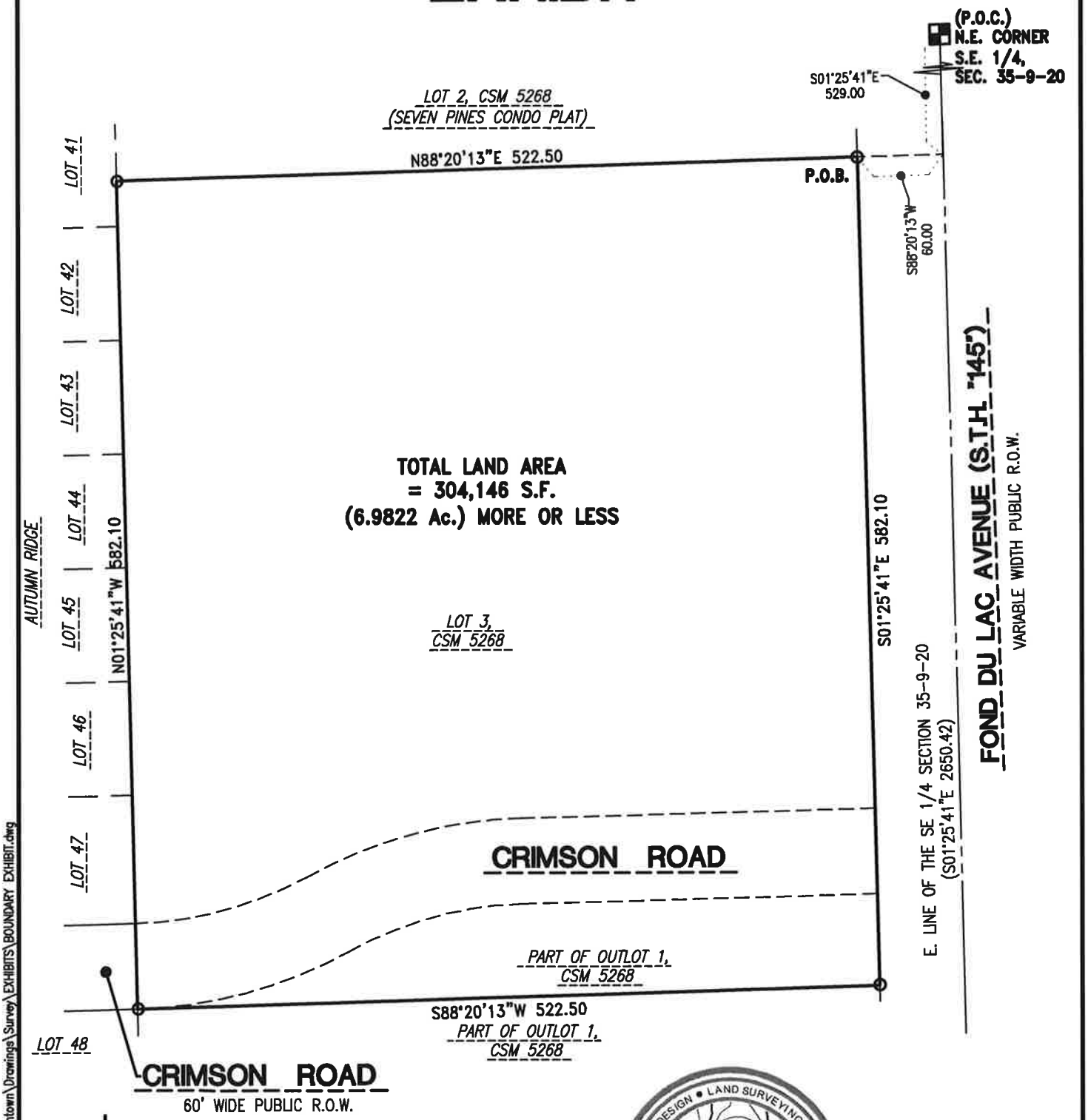
845 South Main Street • Suite 100 • Fond du Lac, WI 54935
920/929-8600 • Mobile: 920/539-0388 • Email: sstevlingson@sunstarr.com

In summary, we feel this rezoning is a fitting and appropriate use given the property's location in the Victory Center Corridor as well as the substantial need for more residential housing evidenced by the recent Residential Market Analysis prepared for the Village of Germantown by Tracy Cross & Associates.

Thank you for your consideration.

Scott Stevingson
Sunstarr Real Estate Ventures, LLC

EXHIBIT



NORTH

SCALE: 1"=100

0 50 100

4100 N. Calhoun Rd.
Suite 300
Brookfield, WI 53005
Phone: (262) 790-1480

TRIO
DESIGN • LAND SURVEYING
CIVIL ENGINEERING

THIS EXHIBIT WAS PREPARED BY TRIO ENGINEERING, LLC.

DATE: 10-3-2024

X:\2024\24-46-1237 Crimson Rd - Germantown\Drawings\Survey\EXHIBITS\BOUNDARY EXHIBIT.dwg

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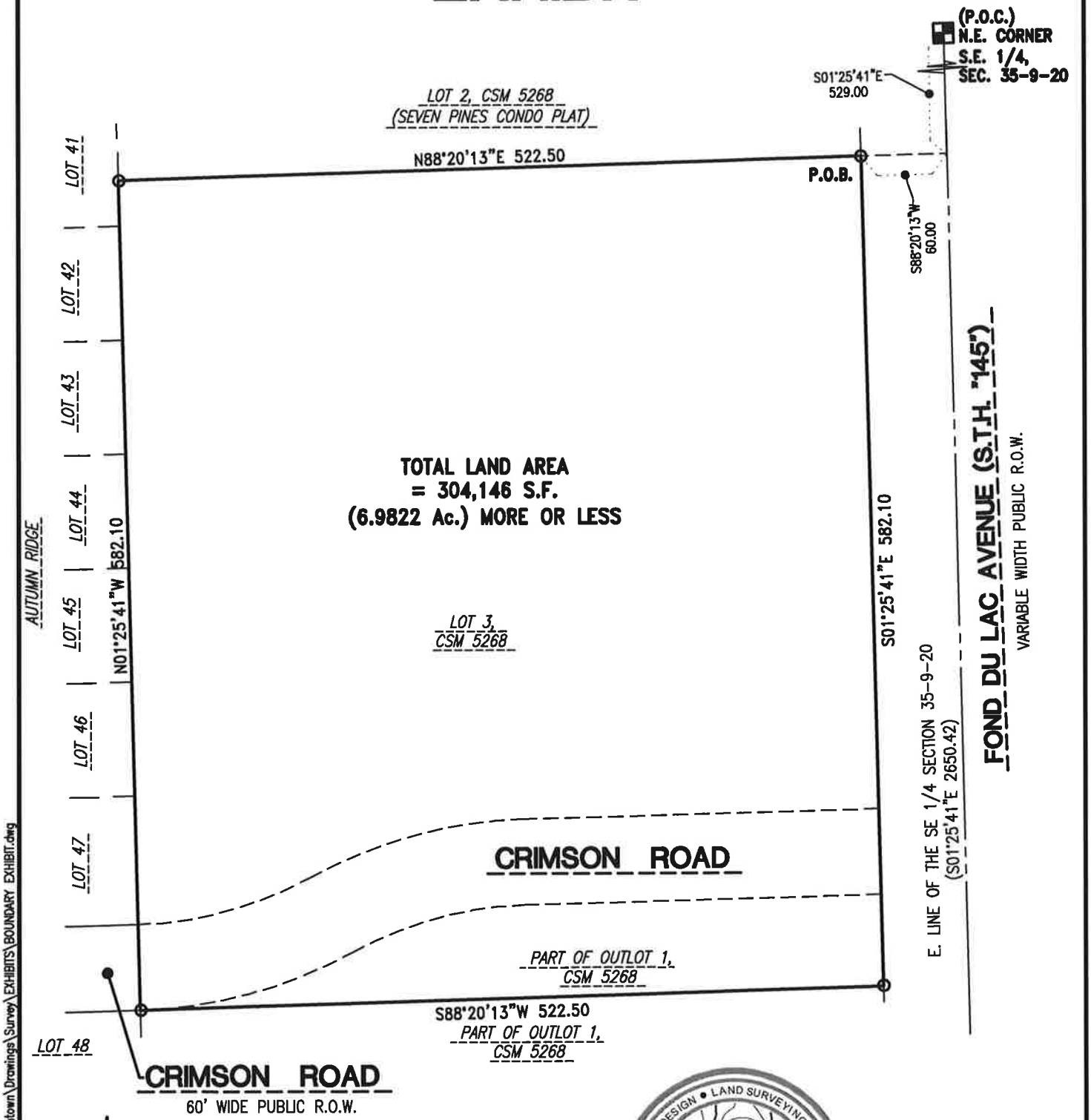

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SCALE: 1"=100

0 50 100

4100 N. Calhoun Rd.
Suite 300
Brookfield, WI 53005
Phone: (262) 790-1480

TRIO

DESIGN • LAND SURVEYING • CIVIL ENGINEERING

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DATE: 10-3-2024

X:\2024\24-46-1237 Crimson Rd - Germantown\Drawings\Survey\EXHIBITS\BOUNDARY EXHIBIT.dwg

Village of Germantown

Village of Germantown
Clerk Treasurer
N112W17001 MEQUON ROAD
Germantown, WI 53022
(262)250-4700
Welcome

10/08/2024 09:45AM Mary S.
000731-0009
Payment Effective Date 10/08/2024

MISCELLANEOUS
ZONING FEES (GENZON)
2024 Item: GENZON
1 @ $1,085.0000
ZONING FEES (GENZON) $1,085.00

$1,085.00

Subtotal	$1,085.00
Total	$1,085.00
CHECK	$1,085.00
Check Number1160	
Change due	$0.00

Thank you for your payment

CUSTOMER COPY

SunStarr
REAL ESTATE VENTURES LLC

October 4, 2024

Mr. Jeffry Retzlaff
Community Development Director
Village of Germantown
N112 W17001 Mequon Road
Germantown, WI 53022

Re: Project Narrative – Crimson
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920/929-8600 • Mobile: 920/539-0388 • Email: sstevlingson@sunstarr.com

In summary, we feel this rezoning is a fitting and appropriate use given the property's location in the Victory Center Corridor as well as the substantial need for more residential housing evidenced by the recent Residential Market Analysis prepared for the Village of Germantown by Tracy Cross & Associates.

Thank you for your consideration.

Scott Stevlingson
Sunstarr Real Estate Ventures, LLC

Landscaping shown herein provided for illustrative purposes only.

TRIO
DESIGN • LAND SURVEYING
CIVIL ENGINEERING
4100 N Calhoun Road
Brookfield, Wisconsin
t: 262.790-1480
info@trioeng.com

Site Data

- **Total Area**
  - Lot 3 CSM 5268 = 5.68 ac
  - OL 1 CSM 5268 = 0.59 ac
  - Sub-total = 6.27 ac
  - Vacated Crimson Rd = 0.72 ac
  - **TOTAL AREA = 6.99 ac**
- Proposed Zoning: Rm-3
- **Proposed Project: 66 unit Multi-Family**
  (5) - 12 unit buildings + (1) 6-unit building
- Density: 66 un / 6.99 ac = 9.44 un/ac
- Lot Coverage:
  - Building Coverage = 1.36 ac (19.4% of site)
  - Pavement = 2.0 ac
  - Sidewalk & Patio = 0.25 ac
  - TOTAL IMPERVIOUS = 3.61 ac (52% of site)
  - TOTAL OPEN SPACE = 3.38 ac (48% of site)
- Proposed Parking:
  - Garage = > 66 spaces (1 per unit)
  - Driveway = > 66 spaces (1 per unit)
  - Surface Guest = ±33 spaces
  - TOTAL PARKING = 165 spaces (2.5 per unit)

PROPOSED SITE PLAN

W140N9935 Fond du Lac Ave

Village of Germantown, WI

Proposed Development By:

SunStarr
845 South Main Street, Suite 100
Fond du Lac, WI 54935
t: 920-929-8600
contact@SunStarr.com

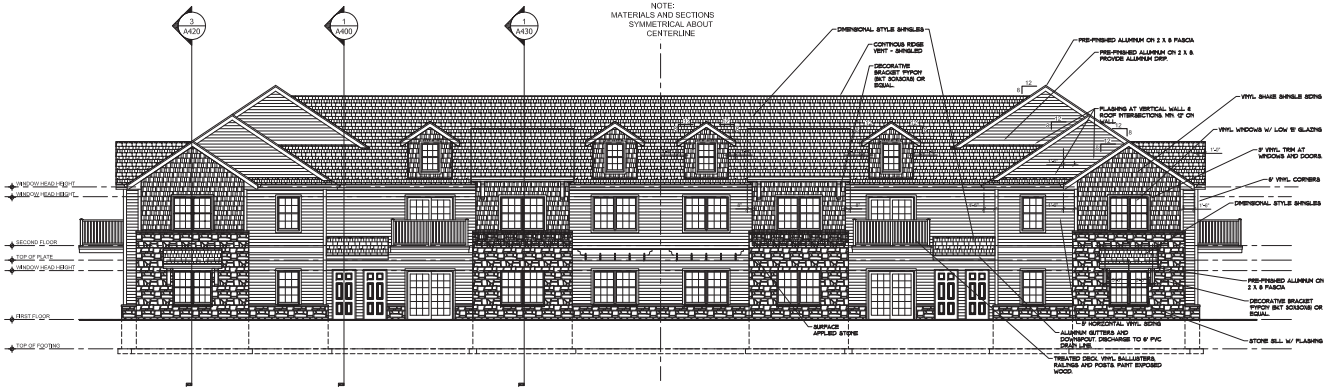
Proposed Zoning:
Rm-3 Multiple-Family Residential District

- Lot Size: 0.8 acre (min)
- Lot Width: 150' (at setback)
- Zoning Setbacks:
  - Front: 35' (50' to STH 145)
  - Side: 25'
  - Rear: 35'
- Percent Building Coverage = 25%
- Parking = 2 spaces per unit
  (1 of which is in a garage)

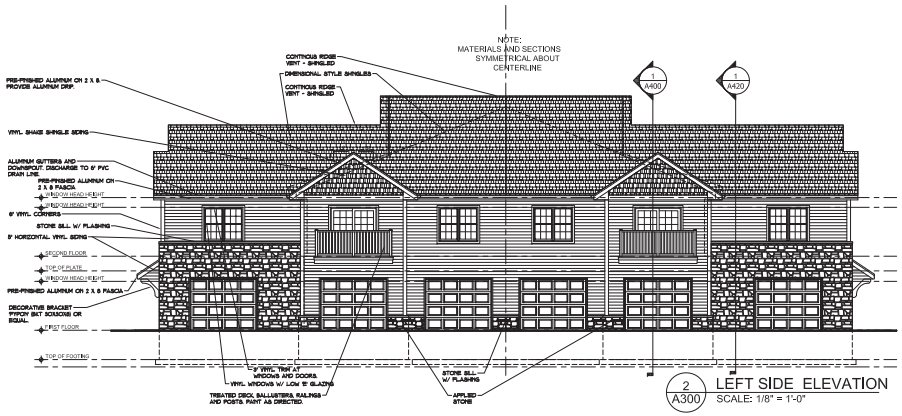
NORTH
0 25 50 100
Scale: 1" = 50' (22"X34")
Scale: 1" = 100' (11"X17")

Date: 09-24-2024

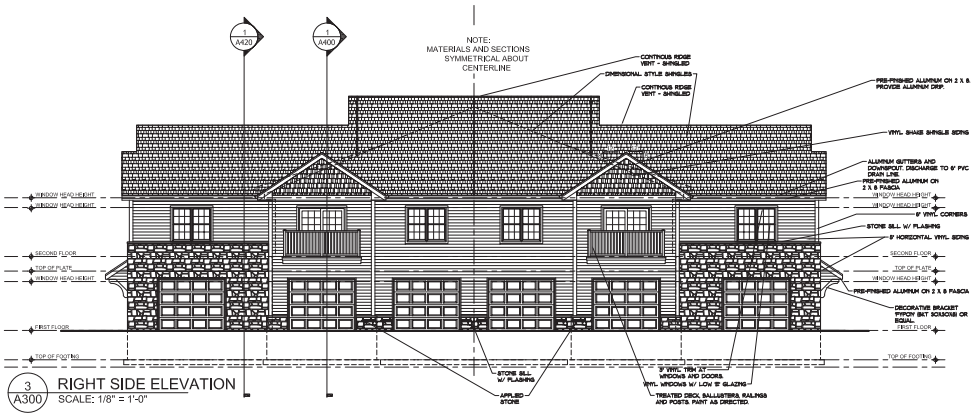
h:\prejob\washington county\germantown 9-20\section 35-9-20 christian life site\drawings\site plan.dwg



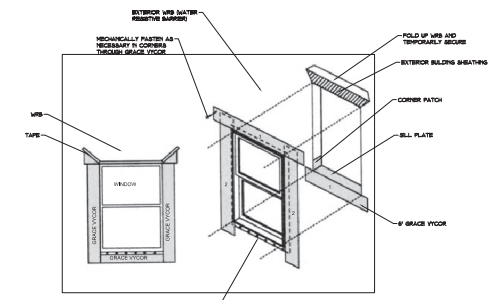
1 A300 FRONT ELEVATION
SCALE: 1/8" = 1'-0"



2 A300 LEFT SIDE ELEVATION
SCALE: 1/8" = 1'-0"



3 A300 RIGHT SIDE ELEVATION
SCALE: 1/8" = 1'-0"

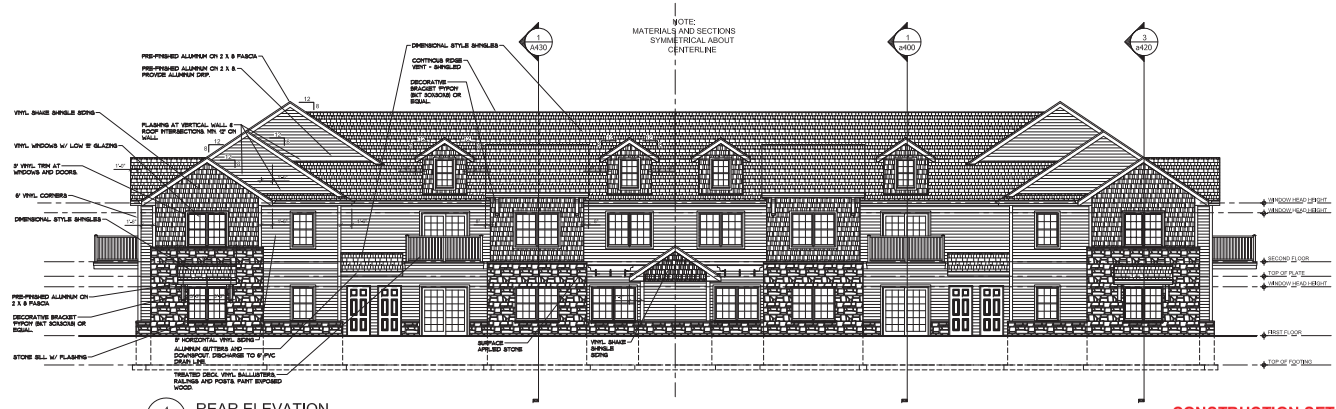


HEAD FLASHING TIE-IN INSTRUCTIONS:

1. CUT FOLD UP WRB TEMPORARILY SECURE WRB ABOVE HEADER TO ALLOW FOR FLASHING INSTALLATION.
2. INSTALL GRACE VYCOR HEAD FLASHING OVER WRB ALONG HEADER.
3. FOLD WRB BACK OVER HEAD FLASHING AND SEAL WITH TAPE AS SHOWN ABOVE.

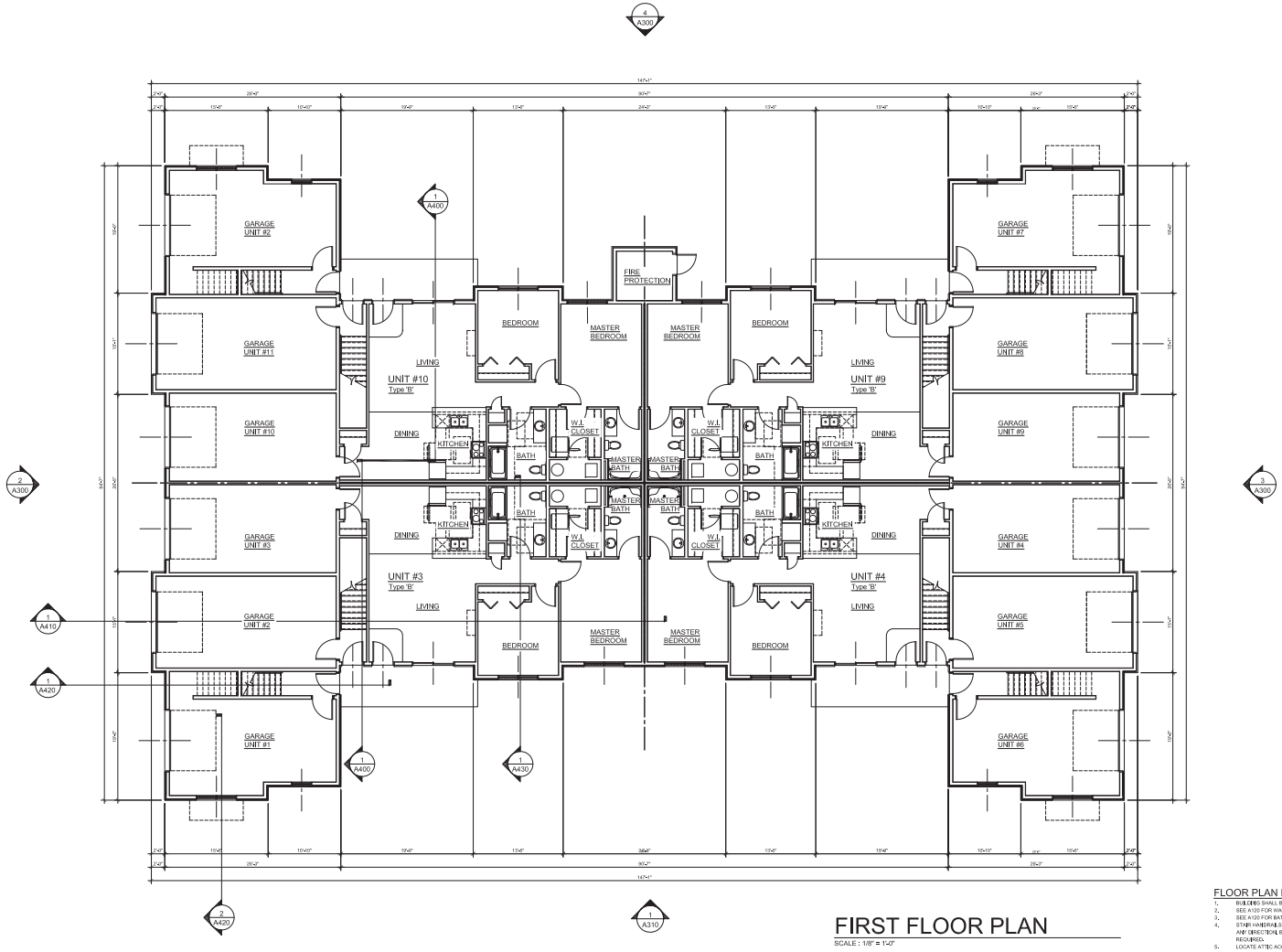
NOTES:

A. FLASHING IS GRACE VYCOR OR EQUAL.
B. INSTALL 6" GRACE VYCOR (OR EQUAL) AS SHOWN BY NUMBERS
C. INSTALL GRACE VYCOR AND WRB TO FORM WATER-SHEDDING LAPS.



4 A300 REAR ELEVATION
SCALE: 1/8" = 1'-0"

CONSTRUCTION SET
ISSUED 7.1.2015



FIRST FLOOR PLAN

SCALE : 1/8" = 1'-0"

FLOOR PLAN NOTES:

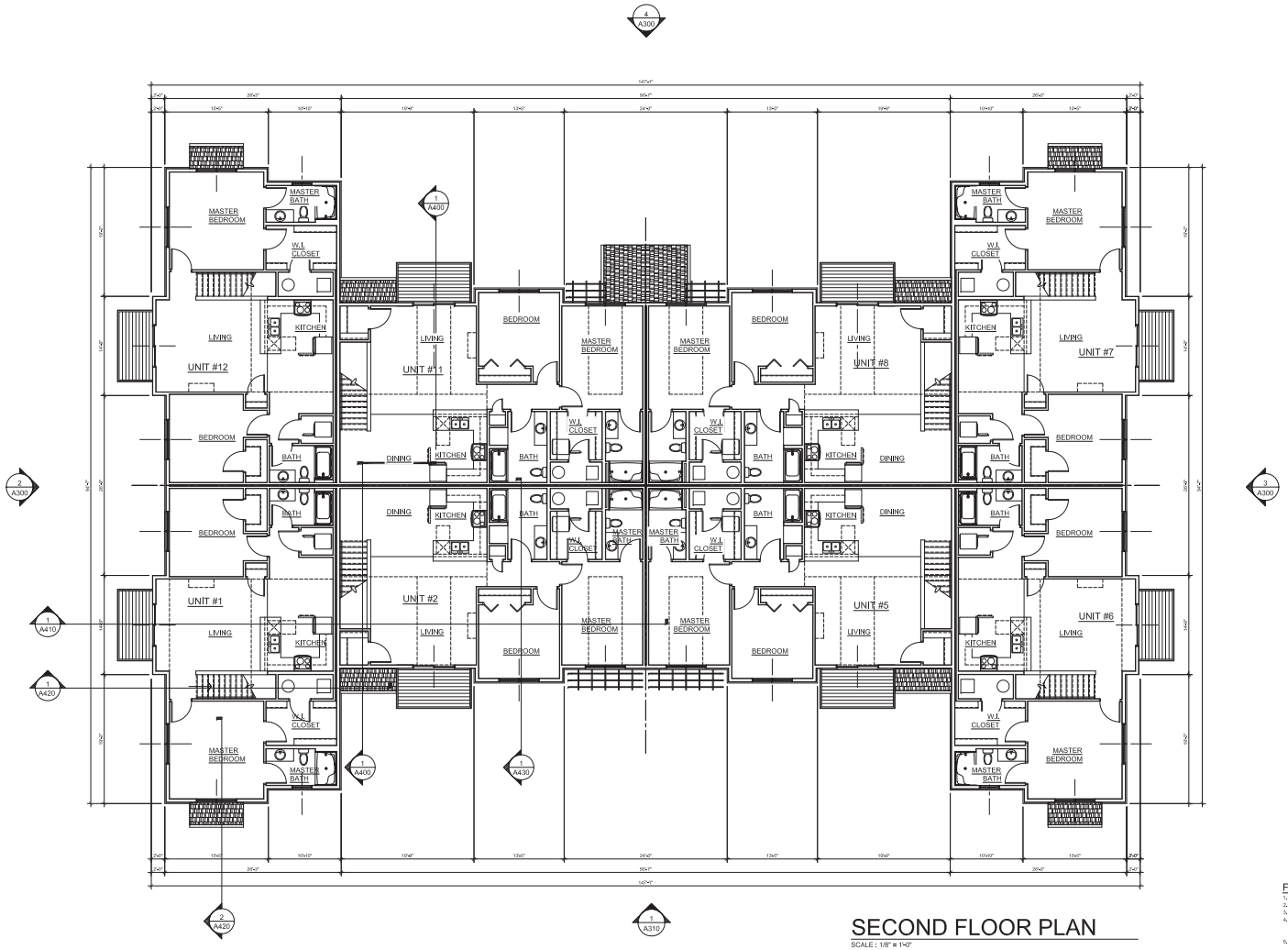
1. BUILDING SHALL BE SPRINKLERED PER NFPA13R.
2. SEE A120 FOR WALL TYPES.
3. SEE A120 FOR BATH TUB AT UNIT WALL DETAIL.
4. STAIR HANDRAILS ALL HANDRAILS SHALL WITHSTAND 200# LOAD APPLIED IN ANY DIRECTION, BRACKETS HALL BE 32" O.C. PROVIDE BLOCKING AS REQUIRED.
5. LOCATE ATTIC ACCESS ON SECOND FLOOR AS INDICATED. SEE DETAIL FOR CONSTRUCTION.
6. ALL SECOND FLOOR WATER HEATERS AND WASHERS SHALL BE PROVIDED WITH AN OVERFLOW PAN WITH DRAIN TO PREVENT DISCHARGE WATER FROM ENTERING UNIT.
7. PLUMBER TO INSTALL 5/8" FIRECODE GYP. BD. ON BOTTOM OF FLOOR SHEATHING BELOW ANY HOLE CUT OUT AT TUB OR SHOWER BEFORE RUNNING DRAIN LINE THRU FLOOR. FIRCAULK OPENING.
8. ALL LUMBER USED IN THE CONSTRUCTION OF SECOND FLOOR DECKS SHALL BE TREATED DECAY RESISTANT LUMBER. VERIFY RAILINGS AND BALLUSTER MATERIALS WITH OWNER. RAILINGS TO WITHSTAND 200# LOAD APPLIED IN ANY DIRECTION. BALLUSTERS DESIGNED TO PREVENT PASSAGE OF OBECT 4" IN DIAMETER.
9. SEE DETAIL AT TUB OR SHOWER. ASSURE 1 HOUR RATING AT WALLS AND SECOND FLOOR BY INSTALLING FIRE RATED GYP. BD. AT WALLS OR PLYWOOD SHEATHING PER UL LISS.
10. FIRE WALL PENETRATIONS NO OPENINGS AROUND PIPE, ELECTRIC BOXES, CONDUITS, DUCTS OR OTHER PENETRATING ITEMS THROUGH A FIRE-PROTECTIVE MEMBRANE (EITHER GYP. BD. OR SHEATHING) SHALL BE MORE THAN 1/8", IF MORE THAN 1/8", SEAL ALL OPENINGS WITH A FIRE-STOP PRODUCT OR DEVICE THAT IS TESTED AND LISTED BY AN APROVED TESTING LAB UNDER ASTM E814. IN ALL FIRE WALLS, ELECTRICAL BOXES MUST BE CLASSIFIED FOR FIRE RESISTANCE OR "METALIC OUTLET BOXES THAT ARE LISTED BY AN APPROVED TESTING LABORATORY, BOXES MUST NOTT BE MORE THAN 16 SQ.IN. DO NOT INSTALL ON OPPOSITE SIDES OF WALLS, SPACE BOXES 24" MIN. HORIZONTALLY ON OPPOSITE SIDES OF WALLS, TOTAL AGGREGATE OF ALL SUCH OPENINGS SHALL NOT EXCEED 100 SQ.IN. DUCT OPENINGS LARGER THAN 20 SQ.IN. SHALL BE PROTECTED WITH A FIRE DAMPER. A LISTED DUCT OUTLET PENETRATION OR 50 FEET (6') OF CONTINUOUS STEEL DUCTWORK FROM THE MEMBRANE PNETRATION TOWARD THE AIR HANDLING UNIT.

FIRE ALARM SYSTEM NOTES:

1. VERIFY ALL LOCAL AND STAE REQUIREMENTS
2. EACH LIVING UNIT SHALL HAVE A FIRE ALARM STATION LOCATED AT THE EXIT OF THE UNIT ON FIRST FLOOR AND AT THE TOP OF THE STAIRS AT SECOND FLOOR UNITS AND A HORN LOCATED IN HALL BY BEDROOMS.
3. ALL SMOKE DETECTORS SHALL BE DIRECTLY AND PERMANENTLY WIRED TO A PROPER UNSWITCHED CIRCUIT AND BE PROVIDED WITH A BACKUP POWER SOURCE.
4. ALL SMOKE DETECTORS SHALL BE LOCATED IN HALL 0' BEDROOM DOOR AND IN EACH BEDROOM.
5. SMOKE DETECTORS SHALL BE LOCATED IN THE UTILITY ROOM AND SHALL BE WIRED TO AN UNSWITCHED CIRCUIT W/ EMERGENCY POWER BACKUP.

SD SMOKE ALARM
H FIRE ALARM HORN
FA FIRE ALARM PULL STATION
CO COMBINATION SMOKE & CARBON MONOXIDE DETECTOR.

CONSTRUCTION SET
ISSUED 7.1.2015



SECOND FLOOR PLAN

SCALE : 1/8" = 1'-0"

FLOOR PLAN NOTES:

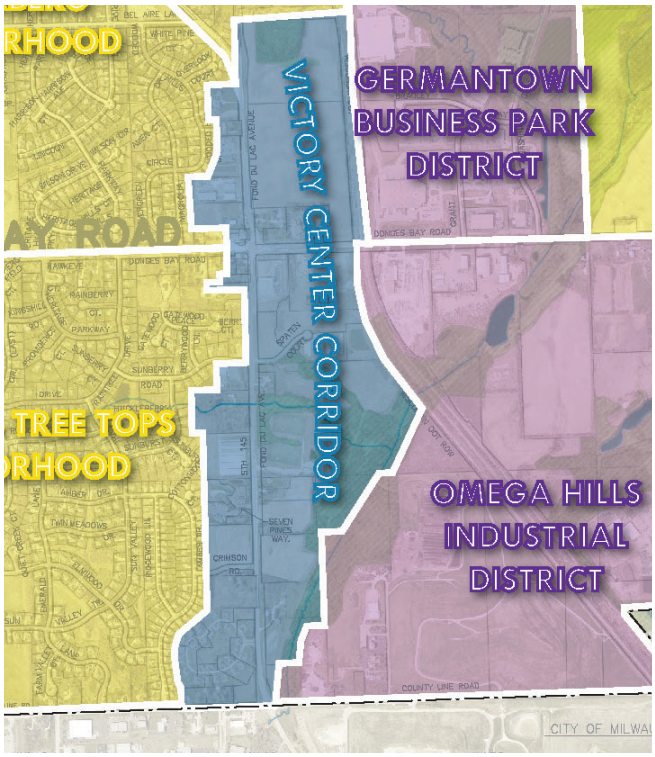
1. BUILDING SHALL BE SPRINKLERED PER NFPA 13R.
2. SEE A120 FOR WALL TYPES.
3. SEE A120 FOR BATH TUB AT UNIT WALL DETAIL.
4. STAIR HANDRAILS: ALL HANDRAILS SHALL WITHSTAND 200# LOAD APPLIED IN ANY DIRECTION. BRACKETS HALL BE 32" O.C. PROVIDE BLOCKING AS REQUIRED.
5. LOCATE ATTIC ACCESS ON SECOND FLOOR AS INDICATED. SEE DETAIL FOR CONSTRUCTION.
6. ALL SECOND FLOOR WATER HEATERS AND WASHERS SHALL BE PROVIDED WITH AN OVERFLOW PAN WITH DRAIN TO PREVENT DISCHARGE WATER FROM ENTERING UNIT.
7. PLUMBER TO INSTALL 5/8" FIRECODE GYP. BD. ON BOTTOM OF FLOOR SHEATHING BELOW ANY HOLE CUT OUT AT TUB OR SHOWER BEFORE RUNNING DRAIN LINE THRU FLOOR, FINGALKX OPENING.
8. ALL LUMBER USED IN THE CONSTRUCTION OF SECOND FLOOR DECKS SHALL BE TREATED DECAY RESISTANT LUMBER. VERIFY HANDRAILS AND BALLUSTER MATERIALS WITH OWNER. HANDRAILS TO WITHSTAND 200# LOAD APPLIED IN ANY DIRECTION. BALLUSTERS DESIGNED TO PREVENT PASSAGE OF OBECT 4" IN DIAMETER.
9. SEE DETAIL AT TUB OR SHOWER. ASSURE 1 HOUR RATING AT WALLS AND SECOND FLOOR BY INSTALLING FIRE RATED GYP. BD. AT WALLS OR PLYWOOD SHEATHING PER UL L999.
10. FIRE WALL PENETRATIONS: NO OPENINGS AROUND PIPE, ELECTRIC BOXES, CONDUITS, DUCTS OR OTHER PENETRATING ITEMS THROUGH A FIRE-PROTECTIVE MEMBRANE. EITHER GYP. BD OR SHEATHING SHALL BE MORE THAN 5/8" IN MORE THAN 5/8". SEAL ALL OPENINGS WITH A FIRE-STOP PRODUCT OR DEVICE THAT IS TESTED AND LISTED BY AN APROVED TESTING LAB UNDER ASTM E814. IN ALL FIRE WALLS, ELECTRICAL BOXES MUST BE CLASSIFIED FOR FIRE RESISTANCE OR "METALIC OUTLET BOXES THAT ARE LISTED BY AN APPROVED TESTING LABORATORY. BOXES MUST NOTT BE MORE THAN 16 SQ.IN. DO NOT INSTALL ON OPPOSITE SIDES OF WALLS. SPACE BOXES 24" MIN. HORIZONTALLY ON OPPOSITE SIDES OF WALLS. TOTAL AGGREGATE OF ALL SUCH OPENINGS SHALL NOT EXCEED 100 SQ.IN. DUCT OPENINGS LARGER THAN 20 SQ.IN. SHALL BE PROTECTED WITH A FIRE DAMPER. A LISTED DUCT OUTLET PENETRATION, OR 6ft FEET (6') OF CONTINUOUS STEEL DUCTWORK FROM THE MEMBRANE PRNETRATION TOWARD THE AIR HANDLING UNIT.

FIRE ALARM SYSTEM NOTES:

1. VERIFY ALL LOCAL AND STAE REQUIREMENTS
2. EACH LIVING UNIT SHALL HAVE A FIRE ALARM STATION LOCATED AT THE EXIT OF THE UNIT ON FIRST FLOOR AND AT THE TOP OF THE STAIRS AT SECOND FLOOR UNITS AND A HORN LOCATED IN HALL BY BEDROOMS.
3. ALL SMOKE DETECTORS SHALL BE DIRECTLY AND PERMANENTLY WIRED TO A PROPER UNSWITCHED CIRCUIT AND BE PROVIDED WITH A BACKUP POWER SOURCE.
4. ALL SMOKE DETECTORS SHALL BE LOCATED IN HALL 6' BEDROOM DOOR AND IN EACH BEDROOM.
5. SMOKE DETECTORS SHALL BE LOCATED IN THE UTILIY ROOM AND SHALL BE WIRED TO AN UNSWITCHED CIRCUIT W/ EMERGENCY POWER BACKUP.
   - (SD) SMOKE ALARM
   - (FH) FIRE ALARM HORN
   - FIRE ALARM PULL STATION
   - (S/C) COMBINATION SMOKE & CARBON MONOXIDE DETECTOR.

CONSTRUCTION SET
ISSUED 7.1.2015

Victory Center CORRIDOR



GENERAL CHARACTER

The Victory Center Corridor is predominantly a mixed-use commercial corridor with service-oriented uses, including auto and truck repair services, personal storage uses, a local bar, and a coffee shop. Sports Specialists, a wholesaler of fishing equipment, has a large warehouse near the Donges Bay @ Fond du Lac Ave intersection.

A portion of the corridor is in Tax Incremental district (TID) No. 4, including approximately 60 acres of vacant land east of Fond du Lac Ave.

SPECIAL FEATURES

Transportation The Victory Center corridor includes land abutting a portion of Fond Du Lac Avenue (STH 145) from the Country Aire Drive intersection south to County Line Road. The corridor is bounded on the east by the WSOR railroad, Nor-X-Way Channel and Omega Hills landfill.

Environmental, Natural & Agricultural The Nor-X-Way Channel and associated secondary environmental corridor is located along the eastern edge of the corridor.

Public Park, Education, Safety & Utility The Germantown School District office is in the corridor. The FC Wisconsin soccer organization has play and practice fields at their facility on the east side of Fond du Lac Ave. The corridor is served by Village sewer and water.

Historical & Cultural The Victory Center, also known as "Kuhberg", was one of seven unincorporated hamlets within what is now the Village of Germantown.

PREFERRED FUTURE LAND USE

Victory Center Corridor

Preferred Future Land Uses												Enviro Corr.	SSA	Preferred Site Design			Maximum Density (residential uses)
Existing Uses (+ existing non-conforming zoning) See NOTE 5 for details	Residential: Single Family	Residential: Two to Four Family	Residential: Multi-family / Senior	Mixed-Use: Commercial / Residential	Mixed-Use: Commercial / Industrial	Commercial (includes "Activity Centers")	Institutional	Open Space & Recreational	Mineral Extraction	Industrial	Agricultural / Hobby Farming / Agribusiness	Contains an Environmental Corridor?	Sewered? (Y/N/Partial)	Traditional Neighborhood	Suburban Subdivision	Conservation Subdivision**	Dwelling Units / Acre See NOTE 4 for details
A	A	A	A	A	A	D	A	A	u	A	u	Yes	Yes	D	U	U	SF: 2.9 units/ac 2-4F: 6 units/ac MF: 10 units/ac

The Victory Center corridor is intended to further develop as a mixed-use area with commercial, mixed-use commercial, institutional, and residential development in a traditional or conservation design pattern with average single-family densities of 2.2 to 2.9 DU's/acre on 15-20,000 sqft lots, two- to four-family densities up to 6 DU's/acre, and multi-family densities up to 10.0 DU's/acre.

Future commercial uses are desirable including retail, office and other service-oriented uses. Industrial uses are also acceptable in those areas currently zoned M-1 and/or located within the TID No. 4 boundary.

D =	**Desirable** – These uses should be encouraged because they are consistent with, support, and enhance the desired character of the area.
A =	**Allowable** – These uses are generally considered appropriate for the area, but may require additional consideration and/or specific modification or developed features to be compatible with other uses in the area.
u =	**Undesirable** – These uses should not be encouraged but may still be acceptable for the area under special circumstances.

See all notes on page 42.

Residential Market Analysis - Final
-- Strategy Planning Guidelines --
Germantown, Wisconsin

Prepared on behalf of:

Village of Germantown
N112 W17001 Mequon Road
Germantown, WI 53022

February 9, 2024

TRACY CROSS & ASSOCIATES, INC.
REAL ESTATE MARKET ANALYSIS
1375 E. WOODFIELD ROAD, SUITE 520
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EXECUTIVE SUMMARY

At the request of the Village of Germantown, Tracy Cross & Associates, Inc. evaluated the market potential for residential development in Germantown, Washington County, Wisconsin. Specifically, this analysis provides a comprehensive evaluation of the housing market in and around Germantown, together with detailed conclusions regarding the demand/need for new construction housing. It also identifies opportunities that exist (or voids that need to be filled) for certain types of homes, along with the specific direction that should be taken to address/meet demand.

Based upon a thorough evaluation of all relevant economic, demographic, socio-economic and residential market conditions in the village of Germantown and surrounding areas (both today and going forward), it was concluded that the state of the new construction home market throughout the area shows a significant opportunity for the development of, primarily, mainstream or workforce housing (i.e., the middle of the market). The words *mainstream*, *workforce* or *middle of the market*, as used throughout the body of this report, refer to new housing units that target households earning between roughly 50 and 150 percent of the area's $86,185 median income, or approximately $40,000 to $125,000+ annually).

The identified need for new mainstream housing is founded on the basis of supply deficiencies (both rental and for sale) that exist in the market, along with the extreme price disparity that can be found in the for sale sector between new construction alternatives and resale units. In other words, given current market conditions in both the rental apartment and for sale/ownership sectors, the potential or need for properly positioned housing targeting renters earning, primarily, between $40,000 and $125,000 annually and ownership households earning from $75,000 to $150,000+ is viewed as *significant.*

Because new/newer apartment developments throughout Germantown and surrounding areas are, for the most part, already offering product that targets the threshold of renter households earning between $40,000 and $125,000, the area simply needs more properly positioned rental product given the tightness of this market and only marginal new/newer supply.

In the for sale sector, however, the large disparity that exists between new construction price points and those incomes represented by the middle of the market (again, those earning between roughly 50 and 150 percent of median), reflects the reality that a different approach must be taken for the introduction of new for sale housing in the marketplace. This new approach will require discipline by all stakeholders and builders/developers as it relates to land planning, densities, product design, and most importantly, implementation. *Note: the rising cost of land, development, materials and labor is the primary reason new for sale housing prices have risen so dramatically, coupled with the lack of new product initiatives.*

As outlined in our full report, the introduction of ***new apartment product*** can occur within a reasonable time period simply by following our recommendations for three specific products, all of which are efficient to build from a construction cost standpoint and have proven successful throughout the Midwest and southeast Wisconsin. These products can be readily produced (with a manageable level of discipline) at rental rates generally consistent with the new/newer offerings in the market today.

As it relates to ***new for sale housing***, our recommendations represent a departure from the status quo in the new construction ownership sector in and around Germantown and will require a *much greater* level of discipline to produce properly positioned new homes – homes that the workforce can afford, but still represent a comparable quality to that which Germantown is accustomed. To achieve this objective, it will be imperative for the Village of Germantown, and other stakeholders, to work closely with builders/developers so that our recommendations regarding four (4) very specific ownership product lines are understood and embraced. Specifically, builders/developers (and governing bodies) will need to think differently in terms of land planning, densities, development, approvals, product design (and possibly some

form of incentives) in order to *substantially reduce costs*, a key component to meeting the price requirements for the local workforce or middle of the market.

In addition to the disparity that exists between local area incomes and the current price alignment of new construction for sale housing, demand potentials for ownership housing over the next five years in the Germantown Primary Market Area (PMA), which includes Washington County, along with the neighboring areas of northeast Waukesha County, southern Ozaukee County and the northern edge of Milwaukee County, are expected to exceed supply given what is formally in the planning pipeline at this time. For example, a total of at least 2,975 for sale housing units could be absorbed in the Germantown PMA through 2028 (595 yearly), although just 1,139 for sale housing units are currently in the planning pipeline, many of which may never come to fruition. Likewise, demand for new rental housing in the Germantown PMA stands at 2,075 total units through 2028 (415 annually), yet only 1,271 units are in the pipeline, some of which may not move forward. *Moreover, not only is "derived demand" likely to outstrip supply near term, but the overall base of residential construction requirements could actually be much higher (i.e., double) during any given year where properly positioned supply is made available. This doubling of demand factors pent-up demand; upside household growth potentials if properly positioned development were actually to occur; the limited amount of new construction housing alternatives throughout the PMA (to be discussed later); and spillover potentials from areas outside the local market area.*

Focusing on the for sale/ownership sector, and to highlight the importance of working diligently in order to cost-effectively produce mainstream/workforce ownership housing units, the following text table outlines the qualitative distribution of annual for sale housing demand based solely on incomes, then cast against where new construction closings are occurring today. This table shows the need for new for sale housing largely concentrated at price points below $400,000, which corresponds with the mainstream, workforce or middle of the market. Currently, the majority of new construction offerings in the market are concentrated at prices between $400,000 and $700,000, thus leaving workforce ownership households disenfranchised by the current alignment of new construction for sale product. *Note: single family closing prices in Germantown itself are currently 10 percent higher than those reflected throughout the PMA as a whole.*

THE CURRENT DISCONNECT IN THE FOR SALE SECTOR OF THE NEW CONSTRUCTION HOUSING MARKET
GERMANTOWN PRIMARY MARKET AREA (PMA)

	Annual For Sale Housing Demand (Based Upon Current Incomes)		Qualitative Distribution of New Construction Residential Closings[1]	
Price Range	**Number**	**Percent**	**Number**	**Percent**
Under 250,000	30	5.0	---	---
250,000 - 299,999	108	18.1	5	1.2
300,000 - 349,999	100	16.8	6	1.5
350,000 - 399,999	84	14.1	36	8.8
400,000 - 449,999	66	11.1	67	16.3
450,000 - 499,999	48	8.1	76	18.5
500,000 - 549,999	38	6.4	65	15.9
550,000 - 599,999	26	4.4	53	12.9
600,000 - 699,999	20	3.4	59	14.4
700,000 & Above	75	12.6	43	10.5
Total	***595***	***100.0***	***410***	***100.0***
Median	***- - - - - - - $385,815 - - - - - - -***		***- - - - - - - $511,634 - - - - - - -***	

[1] Reflects new construction townhome/duplex/condominium and single family closings recorded in 2023

Source: Tracy Cross & Associates, Inc. and Southeast Wisconsin Multiple Listing Service

For Sale Housing Price Points Required for Mainstream/Workforce/Middle Market Households

Current Threshold of Homes Being Produced, Which Cannot be Afforded by the Bulk of the Market

NEXT GENERATION HOUSING INITIATIVE – WASHINGTON COUNTY

With the village of Germantown situated within the boundaries of Washington County, the municipality is in a position to benefit from the county's *Next Generations Housing* initiative, which aims to assist communities, developers, builders, etc. in filling voids that exist in the market relative to ownership housing forms. As highlighted in this executive summary, and detailed throughout the full report, recent price escalation among virtually all new construction for sale developments throughout Germantown and surrounding areas has created a significant void for more properly positioned for sale housing. As such, our analysis, which independently and objectively identified this void, provides specific product/price recommendations in order to fill it – recommendations that conform to the goals of the Next Generation Housing initiative. With this said, and because several of Germantown's identified development/redevelopment properties are already being considered for Next Generation Housing, *the municipality should continue to consider this opportunity.* Note: our detailed recommendations can be found in Section I of the full report.

All told, the effort involved with bringing for sale housing product to market in Germantown (at the prices outlined in Section I), along with a variety of new rental products, will be rewarded by significant sales/absorption volumes per development, which will translate to increases in population and households and, in turn, foster economic growth locally that will have a measurable fiscal impact.

INTRODUCTION

At the request of the Village of Germantown, Tracy Cross & Associates, Inc. evaluated the market potential for residential development in Germantown, Washington County, Wisconsin – a northwest suburb of Milwaukee. Specifically focusing upon *new construction housing* opportunities throughout the village, this analysis establishes the following:

- ❑ Conclusions regarding the depth of the market (demand) for new construction residential development throughout Germantown based upon pertinent economic, demographic, and residential trends which define the marketplace.

- ❑ Conclusions regarding highest-and-best residential uses within the village over the next 5+ years. These conclusions are based upon factors associated with the location of Germantown, depth of market, demographic and socio-economic characteristics of existing and future households, and the alignment of residential developments, both existing and planned.

- ❑ Detailed recommendations regarding those housing forms viewed to hold measurable market support near- to mid-term. Investigative uses range from a variety of rental housing idioms to all forms of for sale housing such as condominiums, townhomes, villas/duplexes, single family, etc. These recommendations address specific product types, plan styles/sizes, features/amenities, etc., along with benchmark rent/pricing strategies necessary to achieve acceptable levels of absorption. Please note that these recommendations will focus on all segments of the conventional market ranging from younger (entry level) profiles to active adult (55+) households.

- ❑ A detailed development matrix summarizing the most marketable mix of residential uses (and their absorption/sales potentials) in order to facilitate/inform future planning efforts, architecture, financial modeling, approvals, marketing, builder/developer participation, etc.

- ❑ A geographic positioning strategy for the introduction of new housing development in Germantown.

WORK PLAN

The work plan for this assignment involved a series of inter-related research investigations as summarized below:

- ❑ A thorough investigation of Germantown and surrounding areas to determine geographic boundaries of the local market area; identify factors which may impact residential potentials within the municipality: and examine areas that may be suitable for residential development.

- ❑ A detailed analysis of all relevant employment, demographic, and residential trends/statistics including a comprehensive evaluation of key socio-economic and income variables of area households.

- ❑ A thorough assessment of both the *for rent* and *for sale* sectors of the local housing market (and adjoining areas as applicable).

- ❑ A demand forecast for residential development in and around Germantown over the next 5+ years.

- ❑ A case study evaluation of "like" residential initiatives throughout similar markets in the Midwest in order to assess trends, products, performance levels, etc.

THE REPORT

This report is divided into four sections. Of particular importance is **Section 1** which forwards detailed conclusions and recommendations regarding the highest-and-best housing options for development in Germantown over the next several years. Not to be dismissed, however, are the remaining three sections which can be defined as *fundamentals.* **Section 2**, for instance, provides an outlook for future residential development in the market area based upon all demand-related variables, while **Sections 3 and 4** present a thorough analysis of market's current and future residential marketplace, i.e., both the rental and for sale.

CERTIFICATION AND SIGNATURE

This analysis represents our objective and independent opinion regarding the market potential for new construction housing development within Germantown, Washington County, Wisconsin as certified below:

TRACY CROSS & ASSOCIATES, INC.
An Illinois Corporation

By: _____
Erik A. Doersching
Its: President & CEO

Date: January 4, 2024

1. *A FRAMEWORK FOR PLANNING*

The demand/need for ***properly positioned*** new construction housing product in the village of Germantown is considered *substantial.* In other words, future new construction housing potentials in the village of Germantown (and throughout Washington County and other adjoining areas to the south and east) are *ample* provided specific criteria can be met relative to product and price. Specifically, the market is showing a clear need for both *market rate and mainstream/workforce housing* ranging from additional rental idioms to various forms of conventional for sale offerings.

This favorable conclusion, which is supported in Sections 2, 3 and 4 of this report, is based upon: 1) more than adequate demand support for a variety of new construction housing alternatives; 2) notable supply-side constraints, especially for product that targets the mainstream of the market, i.e., those households earning between 50 and 150 percent of the market area's $86,185 median annual income; 3) an ample base of existing (and future) households with strong demographic profiles; 4) tightness (and certain disjointedness) in both the rental and for sale sectors of the market; 5) an excellent localized environment characterized by in-place employment, transportation, shopping/services, entertainment and recreation, along with quality schools; and 6) the opportunity to introduce new and differentiated housing product in a market where such product is definitely needed.

Overall, the village of Germantown is in a unique position to help guide future residential development efforts in a direction of discipline and insight as it relates to specific products that meet the demands of the market relative to densities/lot sizes, product forms, unit types/styles, and most importantly, rent/price positioning. At the same, the village of Germantown has land available within its boundaries for multiple residential development initiatives.

A PLANNING STRATEGY: THE PRODUCT

Because supply-side issues throughout Germantown and adjoining areas are largely driven by the type of product being offered, together with current density allocations for such product idioms (and the cost to produce it), the village of Germantown must think *strategically* in order guide future development efforts to meet the demands/needs of the market, primarily as it relates to the rather large gap that exists between area incomes and new residential development, especially in the for sale sector.

With this said, the following bullet-point summary provides specific product guidelines for establishing the most practical and marketable hierarchy of conventional, mainstream and/or workforce housing – to serve as a guide for future planning and implementation efforts:

- ❑ Mirroring a number of successful mainstream rental housing communities throughout the Midwest, including southern Wisconsin, strong consideration should be given to the introduction of three different market rate rental housing series, one consisting of a two-story garden-style walkup idiom directed to all renter households; one representing a ranch villa rental program targeting the active adult aged 55-74, but not restricted to this segment since other profiles will find this product desirable; and one reflecting a single family detached alternative appealing to a cross-section of the market. Together, these three product forms, which are extremely efficient and cost effective to build, will allow for a broad and varied mix of unit types, sizes, and rents capable of penetrating the threshold of mainstream conventional renter households in the marketplace – and those emanating to Germantown in the years to come. In other words, the introduction of these three new construction product lines in Germantown would allow the full breadth of mainstream renter profiles to be targeted. These include Millennials, also known and Echo Boomers or Generation Y, along with Centennials, also known as Generation Z (i.e., younger singles and couples without

children), together with traditional and non-traditional households such as divorcees, middle-age singles, never-nested couples, singles living together as couples in a roommate condition, young families, etc., and, of course, the move-down empty-nester/active adult/pre-retiree/retiree aged 55 to 74 – *a segment which shows substantial growth near term – many of which desire a rental alternative in lieu of home ownership.*

- The ***two-story garden apartment program*** would consist of a "private entry" product with a component of attached, direct-access garages. In this regard, one of the most successful garden-style developments in the Midwest (and in other portions of southern Wisconsin) consists of a series of eight-unit buildings (each with four direct-access one-car garages) or 16-unit buildings (each with eight direct-access one-car garages). With just 50 percent direct-access garages suggested per structure, two different versions of the garden apartment building should be designed in order for each of the individual floorplans to be offered *with a direct access garage* in one of the two building types. By following this formula, each plan offering would have a 50 percent representation of direct-access one-car garages.

- Individual designs for the garden apartment product should be broad and varied consisting of eight (8) plan offerings including one-, two- and three-bedroom options ranging in size from 600 to 1,250 square feet. Please note that this product line would also be accompanied by buildings with optional detached garages. As such, renter profiles could elect either surface parking only; a detached garage; or a unit with an attached garage, thus giving future residents a full continuum of rental options to choose from as it relates to their choice of parking cast against their desired (or needed) monthly payment based upon income. This scenario will also provide competitive consistency with other developments in the market, current and future.

- The ***ranch villa apartment program***, which would target households aged 55+, although not be restricted to this consumer segment, would consist of direct-entry single-level ranch-type townhome plans, most with one-car attached garages, but also including a two-car garage offering. Modeled, in part, after very successful empty nester ranches in other parts of Wisconsin and elsewhere throughout the Midwest, this product line would consist of four different plan designs ranging from a one-bedroom residence at 725 square feet to a three-bedroom unit with 1,275 square feet. This product line would be configured in 3-, 4-, 5- and 6-unit buildings (duplexed where necessary).

- Representing a compliment to both the garden apartments and attached ranch villa rentals, and as an extension of the overall continuum of rental housing product within Germantown, strong consideration should be given to introducing a ***small-lot single family detached rental program***. Targeting a broad range of consumer profiles ranging from younger households to empty-nesters not interested in homeownership, but desirous of a new detached single family housing form, this product line would include one ranch plan at 1,300 square feet and three two-story offerings in the 1,500-1,700 square foot band (all with two-car garages).

- Mirroring competitive counterparts overall, size increments between floorplans (for all three rental products) should not exceed 200 square feet (and be narrower in many instances). This discipline will keep lease rate differentials between plans small and in concert with the gradual upward movement of mainstream (and workforce) household incomes.

- If elevated properly, the three rental housing products can exemplify tasteful suburban architecture and be very complimentary to other development initiatives (including for sale developments) both internal to an individual community and elsewhere throughout the municipality.

- Representing the first of four product lines in the "for sale" sector of the market, and in an effort to establish an overall hierarchy of ownership product starting with an alternative that should be able to achieve price points directly in-line with the lower-end of the qualitative distribution of mainstream/workforce incomes, is an efficiently designed mid-density ***townhome/rowhome series***. This product line would include three separate three-story plan types, each with two main living areas configured over an integral two-car garage and a finished lower level, all with two-car garages. Plan sizes for this series, which will average 1,400 square feet, should range from 1,200 to 1,550 square feet including finished lower levels. This can be achieved in very efficient and cost effective 20' wide modules. With rear-entry garages, individual buildings are generally designed to face one another, thus allowing for a small pedestrian greenway between buildings, or they can be configured fronting a street. Combined, the three individual plan offerings will be capable of attracting a broad range of buyer profiles, with attentive focus directed toward young singles and couples without children, couples in their initial stages of family formation and young families.

- Architecturally, the townhome/rowhome product line can support either a traditional elevation scheme, or it can command something more contemporary/urban oriented, i.e., at the builder's discretion and dependent upon cost. Overall, this product line can achieve a density of 12+ units per acre, thus allowing builders to distribute land and development costs across more units – in an attempt to bring prices down from the current representation of condominium products (i.e., luxury duplexes/fourplexes) that dot the landscape throughout the market.

- Representing a more "cost conscious" or "value-oriented" age-targeted alternative to the highly stylized ranch duplex/fourplex condominiums currently found in Germantown and surrounding areas, yet still directed toward the more mature, move-down home purchasers aged 55-74+, a very efficient ***attached ranch villa*** for sale series is recommended. This product line, which could be configured in 3-, 4-, 5 and/or 6-unit linear buildings (duplexed only where necessary) would consist exclusively of single-level ranch plans, each with a front-load two-car garage and a small, but usable, back-yard or patio area. Ranging in size from 1,375 to 1,675 square feet, the average attached villa unit would carry 1,525 square feet of living space. These homes would be configured slab-on-grade, although a modicum of lots could/should be designated to accommodate optional basements. While directed toward the move-down consumer or empty-nester, this product line would be capable of attracting other segments of the market as well. Ultimately, the goal of creating a villa product slab on grade (as opposed to straight duplex or fourplex buildings with full basements) would be to achieve a higher-density and construction efficiencies which, again, would allow lower costs to be distributed across more units – ultimately leading to more competitive (and appropriate) prices.

- In the single family sector, and representing a departure from the current larger-lot semi-custom/custom home development currently represented among new developments in and around Germantown, would be an urban/suburban detached product line with rear-load garages. Representing a derivation of the neo-traditional planning concept, i.e. Traditional Neighborhood Development (TND), this single family series, ideally, would be comprised of two single-level "ranch" plans, two traditional two-story units (with second floor master bedrooms) and one two-story unit with a first-floor master bedroom, all with optional basements. Ranging in size from 1,500 to 1,900 square feet, and averaging roughly 1,700 square feet across the group, homes in this series should be approximately 30'-35' wide configured on 40'-45' wide homesites. At the Harmony community in Westfield, Indiana, this particular product line has been extremely successful as it has allowed new construction single family housing (through density and unit sizes) to meet a mainstream or workforce price point – one not typically seen among more traditional counterparts on larger lots. In Madison, Wisconsin, Veridian Homes carries a similar style of homes, which allows the builder to offer more mainstream price points. Because of the escalation of new construction single family prices throughout the local market, a similar strategy is warranted. The TND single family product line will be able to attract a broad spectrum of mainstream detached home purchasers including young childless married couples, couples in their initial stages of family formation, and young families. And, with the incorporation of several ranch plans and a two-story master-down design, this program will be in a position to also appeal to the 55 and older empty-nester segment desirous of detached ownership housing.

- The second single family product line should consist of a smaller-lot, more traditional single family series with front-access, two-car garages and optional basements. This product line should be comprised of two single-level "ranch" plans and four traditional two-story units. Ranging in size from 1,750 to 2,400 square feet, and averaging roughly 2,050 square feet across the group, homes in this program should be configured on 50'-55" wide homesites. The smaller lot sizes would, once again, assist in reducing costs, thus allowing for a more competitive price position. Together, the six single family plans will also appeal to a broad spectrum of single family home purchasers including young childless married couples, couples in their initial stages of family formation, and first- and second-time move up families. And, with the inclusion of two ranch plans on small low-maintenance lots, this series will appeal to the 55 and older empty-nester segment as well. *While the price points for this product line align the upper end of mainstream incomes, they more closely align the resale sector. As such, this series will provide a reasonably priced move-up alternative in an effort to alleviate pressure among area resales and open up more options for the mainstream of the market or workforce in the existing home market as well.*

- It is important to note that with proper land planning and architecture, smaller single family lots (both TND and traditional) can still provide for aesthetically appealing community orientation and, most importantly, at the price points not widely represented in the new construction single family sector of the market – price points necessary for the bulk of the market.

For a detailed outline of each recommended mainstream housing idiom including individual product/plan criteria, unit sizes, *current dollar* rents/prices, features, etc., consult **Exhibits 1.1 through 1.7**. As depicted, plan offerings are broad and varied, and reflect some of the best-selling floorplan alternatives among successful "like" products throughout the Midwest.

It is important to note that the detailed planning guidelines and benchmark rent/price suggestions for the various housing products are not arbitrary, but rather *strategic.* Specially, these guidelines will allow five important goals to be met. First, the continuum of home types, styles and rents/prices will directly align mainstream household incomes in the market. Second, the for sale product lines (and their prices) will assist builders in bridging the rather large price gap that exists between area resales and new construction alternatives which, in turn, will provide for "above average" absorption/sales rates. Third, the suggested products (and their typical density allocations) will allow each home series to improve upon total unit counts per acre, which will help minimize raw land costs per unit. Fourth, each suggested product line and plan offering can be built in an efficient manner, which will assist in keeping direct construction costs at a minimum. Finally, the rents/prices assigned to each product line will allow each housing idiom to draw consumers from both the village of Germantown itself, as well as other areas throughout the Milwaukee region, primarily its north/northwest/west suburbs.

Because each product line has been positioned competitively (and strategically) relative to the market, absorption rates for the rental products and sales rates for the ownership offerings are expected to be "at" or "above the market average." And, while absorption and sales are dependent upon other factors such as the scale of a development, i.e., number of total units; site location; community amenities, etc., the following text table offers a general outline of what an individual location would be capable of attaining per product series:

ABSORPTION / SALES SUMMARY - A GUIDE
SUGGESTED HOUSING PRODUCTS: GERMANTOWN, WISCONSIN

Product Line	Estimated Total Units For a Typical Development or Phase (of Relative Scale)	Annual Absorption/ Sales Potential (In Units) At Benchmark Rents/Prices	Marketing Life (In Years)
Two-Story Garden Apts	240	144	1.7 [(1)]
Ranch Villa Rentals	140	84	1.7 [(1)]
Single Family Rentals	100	60	1.7 [(1)]
Townhomes/Rowhomes	60	30	2.0
Attached Ranch Villas	60	30	2.0
TND Single Family	60	30	2.0
Conventional Single Family	40	20	2.0

[(1)] Marketing life will actually be slightly shorter to get to a stabilized occupancy level of 95 percent.

Source: Tracy Cross & Associates, Inc.

The absorption/sales volumes outlined above are reflective of a series of residential product lines that will appeal to households earning incomes, generally, in the $50,000 to $125,000 range for the rental products and in the $75,000 to $150,000+ range for the ownership idioms. These income segments, which are some of the deepest in the village of Germantown and surrounding communities (including all of Washington County), have been disenfranchised of late relative to new construction alternatives.

1.1

PRODUCT CRITERIA AND BENCHMARK RENTS - TWO-STORY GARDEN APARTMENTS
-- CONVENTIONAL/MAINSTREAM HOUSING --
GERMANTOWN, WISCONSIN

Product Line Summary

Product Form:	***Two-Story Garden Apartments (8- or 16-Unit Buildings with 4 or 8 Direct Access One-Car Garages Per Building)***
Density in Units Per Acre:	***20.0***
Average Plan Size (Sq. Ft.):	***925***
Average Benchmark Base Rent w/50 % Garages:	***$1,716***
Per Sq. Ft.: [1]	***$1.86***

Plan Detail

Plan Designation	A-1	A-2	A-3	B	C-1	C-2	C-3	D
Percent Distribution	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Plan Type	1BR	1BR	1BR	1BR DEN	2BR	2BR	2BR	3BR
Bedroom/Bath Mix	1/1.0	1/1.0	1/1.0	1+Den/1.0	2/2.0	2/2.0	2/2.0	3/2.0
Unit Size (Sq. Ft.)	600	700	775	875	975	1,075	1,150	1,250
Benchmark Base Rent w/o Garage:[1]	$1,245	$1,370	$1,465	$1,590	$1,715	$1,840	$1,935	$2,060
Per Sq. Ft.:[1]	$2.08	$1.96	$1.89	$1.82	$1.76	$1.71	$1.68	$1.65
Benchmark Base Rent w/ Garage:[2]	**$1,370**	**$1,495**	**$1,590**	**$1,715**	**$1,840**	**$1,965**	**$2,060**	**$2,185**
Per Sq. Ft.:[2]	**$2.28**	**$2.14**	**$2.05**	**$1.96**	**$1.89**	**$1.83**	**$1.79**	**$1.75**

Unit Features and Community Amenities

UNIT STANDARDS

- Painted Trim
- Plank Flooring in Living Areas
- "White" Interior Paint Finish
- Direct Wire Smoke Detectors
- Cable/Satellite Access
- High-Speed Internet Connectivity
- USB Ports
- Air Conditioning
- Quality Door Hardware
- Quality Lighting Package
- Private Balcony/Patio

KITCHEN FEATURES

- Quality Wood Cabinetry
- Plank Flooring
- Self Clean Range Oven
- Built-In Dishwasher
- Refrigerator with Ice-Maker
- Garbage Disposal
- Microwave with Vent
- Hard Surface Countertops
- Stainless Steel Sink

BATH/POWDER ROOM STANDARDS

- Plank Flooring
- Hard Surface Vanity Tops
- Quality Cabinetry
- Ceramic Tub/Shower Surround
- Framed Glass Mirror Over Vanity

CLOSETS, UTILITIES, AND STORAGE

- Walk-In MBR Closet (Per Plan)
- Wire Closet Shelving
- Full Size Washer/Dryer (Stacked or Side-by-Side)
- Storage Area (Either In-Unit or Separate)
- Linen Closet(s)
- Programmable Thermostat

COMMUNITY FEATURES/AMENITIES (LARGE-SCALE DEVELOPMENTS) (SHARED W/RANCH VILLA AND/OR SF RENTALS)

- Architecturally-enhanced Exteriors
- Secured Access Entry Per Unit
- Clubhouse w/ Community Room, Kitchen, Fitness Center, E-Lounge, Etc.
- Outdoor Fireside Lounge & Grilling Stations
- Outdoor Swimming Pool/Deck Area
- Dog Park & Dog Washing Station
- Trail System
- Sport Courts/Playground
- Extensive Landscaping/Hardscaping
- Wi-Fi in all Common Areas
- Direct Access Garages at 50%
- Adequate Surface Parking
- Detached Garages @ $65 Monthly Per Space

[1] Benchmark base monthly rents, which are presented in January 2024 dollars, reflect the posted base rents for units without direct access garages. They do not include potential premiums for corner units, floor or view. They also do not include application/administration fees, pet fees, storage rental, utilities, or detached garages.

[2] Benchmark base monthly rents, which are presented in January 2024 dollars, reflect the posted base rents for units with direct access garages. They do not include potential premiums for corner units, floor or view. They also do not include application/administration fees, pet fees, storage rental, utilities, or detached garages.

Source: Tracy Cross & Associates, Inc.

1.2

PRODUCT CRITERIA AND BENCHMARK RENTS - RANCH VILLA RENTALS
-- CONVENTIONAL/MAINSTREAM HOUSING --
GERMANTOWN, WISCONSIN

Product Line Summary

Product Form: ***Single-Level Ranch Villas w/Attached Garages - Slab on Grade/No Basements (3-, 4-, 5- and/or 6-Unit Buildings-Duplexed Where Necessary)***

Density in Units Per Acre: ***12.0***

Average Plan Size (Sq. Ft.): ***1,000***

Average Benchmark Base Rent: ***$1,981***
Per Sq. Ft.: [1] ***$1.98***

Plan Detail

Plan Designation	A	B	C	D
Percent Distribution	25.0	25.0	25.0	25.0
Plan Type	1BR	1BR DEN	2BR	3BR
Garage Condition	1-Car	1-Car	1-Car	2-Car
Bedroom/Bath Mix	1/1.0	1+Den/1.0	2/2.0	3/2.0
Unit Size (Sq. Ft.)	725	925	1,075	1,275
Benchmark Base Rent:[1]	$1,625	$1,850	$2,050	$2,400
Per Sq. Ft.:[1]	$2.24	$2.00	$1.91	$1.88

Unit Features and Community Amenities

UNIT STANDARDS

- Painted Trim
- Plank Flooring in Living Areas
- "White" Interior Paint Finish
- Direct Wire Smoke Detectors
- Cable/Satellite Access
- High-Speed Internet Connectivity
- USB Ports
- Air Conditioning
- Quality Door Hardware and Lighting Package
- Private Patio

KITCHEN FEATURES

- Quality Wood Cabinetry
- Plank Flooring
- Self Clean Range Oven
- Built-In Dishwasher
- Refrigerator with Ice-Maker
- Garbage Disposal
- Microwave with Vent
- Hard Surface Countertops
- Stainless Steel Sink

BATH/POWDER ROOM STANDARDS

- Plank Flooring
- Hard Surface Vanity Tops
- Quality Cabinetry
- Ceramic Tub/Shower Surround
- Framed Glass Mirror Over Vanity

CLOSETS, UTILITIES, AND STORAGE

- Walk-In MBR Closet (Per Plan)
- Wire Closet Shelving
- Full Size Washer/Dryer (Stacked or Side-by-Side)
- Storage Area (Either In-Unit or Separate)
- Linen Closet(s)
- Programmable Thermostat

COMMUNITY FEATURES/AMENITIES (LARGE-SCALE DEVELOPMENTS) (SHARED W/GARDEN APARTMENTS AND/OR SF RENTALS)

- Architecturally-enhanced Exteriors
- Secured Access Entry Per Unit
- Clubhouse w/ Community Room, Kitchen, Fitness Center, E-Lounge, Etc.
- Outdoor Fireside Lounge & Grilling Stations
- Outdoor Swimming Pool/Deck Area
- Trail System
- Dog Park
- Dog Washing Station
- Sport Courts/Playground
- Extensive Landscaping/Hardscaping
- Wi-Fi in all Common Areas
- Direct Access Garages at 100%
- Additional Surface Parking

[1] Benchmark base monthly rents, which are presented in January 2024 dollars, reflect the posted base rents, each of which includes an attached garage. They do not include potential premiums for end units or view. They also do not include application/administration fees, pet fees, storage rental, or utilities.

Source: Tracy Cross & Associates, Inc.

1.3

PRODUCT CRITERIA AND BENCHMARK RENTS - SINGLE FAMILY RENTALS
-- CONVENTIONAL/MAINSTREAM HOUSING --
GERMANTOWN, WISCONSIN

Product Line Summary

Product Form:	***Single Family Rentals w/Attached Garages - Slab on Grade/No Basements (35'-40' Wide Homes on 45'-50' Wide Homesites)***
Density in Units Per Acre:	***8.0***
Average Plan Size (Sq. Ft.):	***1,525***
Average Benchmark Base Rent:	***$2,906***
Per Sq. Ft.: [1]	***$1.91***

Plan Detail

Plan Designation	A	B	C	D
Percent Distribution	25.0	25.0	25.0	25.0
Plan Type	Ranch	2-Story	2-Story	2-Story
Garage Condition	2-Car	2-Car	2-Car	2-Car
Bedroom/Bath Mix	2+Den/2.0	3/2.5	3/2.5	3+Loft/2.5
Unit Size (Sq. Ft.)	1,300	1,500	1,600	1,700
Benchmark Base Rent:[1]	$2,625	$2,875	$3,000	$3,125
Per Sq. Ft.:[1]	$2.02	$1.92	$1.88	$1.84

Unit Features and Community Amenities

UNIT STANDARDS

- Painted Trim
- Plank Flooring in Living Areas
- "White" Interior Paint Finish
- Direct Wire Smoke Detectors
- Cable/Satellite Access
- High-Speed Internet Connectivity
- USB Ports
- Air Conditioning
- Quality Door Hardware and Lighting Package
- Private Patio

KITCHEN FEATURES

- Quality Wood Cabinetry
- Plank Flooring
- Self Clean Range Oven
- Built-In Dishwasher
- Refrigerator with Ice-Maker
- Garbage Disposal
- Microwave with Vent
- Hard Surface Countertops
- Stainless Steel Sink

BATH/POWDER ROOM STANDARDS

- Plank Flooring
- Hard Surface Vanity Tops
- Quality Cabinetry
- Ceramic Tub/Shower Surround
- Framed Glass Mirror Over Vanity

CLOSETS, UTILITIES, AND STORAGE

- Walk-In MBR Closet (Per Plan)
- Wire Closet Shelving
- Full Size Washer/Dryer (Stacked or Side-by-Side)
- Storage Area (Either In-Unit or Separate)
- Linen Closet(s)
- Programmable Thermostat

COMMUNITY FEATURES/AMENITIES (LARGE-SCALE DEVELOPMENTS) (SHARED W/GARDEN APARTMENTS AND/OR RANCH VILLA RENTALS)

- Architecturally-enhanced Exteriors
- Secured Access Entry Per Unit
- Clubhouse w/ Community Room, Kitchen, Fitness Center, E-Lounge, Etc.
- Outdoor Fireside Lounge & Grilling Stations
- Outdoor Swimming Pool/Deck Area
- Trail System
- Dog Park
- Dog Washing Station
- Sport Courts/Playground
- Extensive Landscaping/Hardscaping
- Wi-Fi in all Common Areas
- Direct Access Garages at 100%
- Additional Surface Parking

[1] Benchmark base monthly rents, which are presented in January 2024 dollars, reflect the posted base rents, each of which includes an attached garage. They do not include potential premiums for end units or view. They also do not include application/administration fees, pet fees, storage rental, or utilities.

Source: Tracy Cross & Associates, Inc.

1.4

PRODUCT CRITERIA AND BENCHMARK PRICES - FOR SALE TOWNHOMES/ROWHOMES
-- CONVENTIONAL/MAINSTREAM HOUSING --
GERMANTOWN, WISCONSIN

Product Line Summary

Product Form:	***Townhomes/Rowhomes***
Garage Condition:	***2-Car (Rear Load)***
Lower Level of Townhomes/Rowhomes	***Finished***
Average Plan Size (Sq. Ft.):	***1,400***
Average Benchmark Base Price: [1]	***$266,990***
Per Sq. Ft.:	***$190.71***
Average Anticipated Closing Price: [2]	***$283,000***
Per Sq. Ft.:	***$202.14***

Plan Detail

Plan Designation	A	B	C
Plan Style	3-Story	3-Story	3-Story
Bedrooms	2	2+Loft+Flex	3+Flex
Baths	2.5	2.5	2.5
Unit Size (Sq. Ft.)	1,200	1,450	1,550
Benchmark Base Price:[1]	$254,990	$269,990	$275,990
Per Sq. Ft.:	$212.49	$186.20	$178.06
Anticipated Closing Price: [2]	***$270,300***	***$286,200***	***$292,500***
Per Sq. Ft.:	***$225.25***	***$197.38***	***$188.71***

Features and Amenities

UNIT STANDARDS

- Luxury Plank Flooring in Main Living Areas
- Carpeting in Bedroom Areas
- "White" Interior Paint Finish
- Painted Trim
- Direct-Wire Smoke Detectors Per Code
- Cable/Satellite/Telephone Prewire
- Paneled Doors
- High-Speed Internet Connectivity
- Air Conditioning
- Designer Door Hardware
- Designer Lighting Package
- Private Balcony

KITCHEN FEATURES

- Quality Cabinetry
- Luxury Plank Flooring
- Four Burner Cooktop
- Self Clean Single Oven-Stainless Steel
- Built-In 5-Cycle Dishwasher-Stainless Steel
- Refrigerator with Ice-Maker-Stainless Steel
- Garbage Disposal
- Microwave with Vent
- Granite or Quartz Countertops
- Double Bowl Stainless Steel Sink

BATH/POWDER ROOM STANDARDS

- Ceramic Flooring
- Granite or Quartz Vanity Tops
- Quality Cabinetry
- Ceramic Tub/Shower Surround
- Framed Glass Mirror Over Vanity

CLOSETS, UTILITIES, AND LAUNDRY

- Walk-In MBR Closet (Per Plan)
- Laminate Closet Shelving
- Washer/Dryer Hook-Up
- Linen Closet(s)
- Programmable Thermostat

BUILDING FEATURES/AMENITIES

- Architecturally-Enhanced Exteriors
- Extensive Hardscaping/Landscaping
- Finished Lower Level
  (Note: Lower Level in the Smallest Unit is Limited to A Laundry Room, Closet, Etc.)
- Front-Oriented Sidewalks
- Modest, But Desirable Community Amenities (Depends on Size of Development)

[1] Benchmark base sales prices, which are presented in January 2024 dollars, do not include options, upgrades or premiums.

[2] Includes an estimate for options, upgrades and premiums, i.e. 6.0 percent above the base sales price.

Source: Tracy Cross & Associates, Inc.

1.5

PRODUCT CRITERIA AND BENCHMARK PRICES - FOR SALE ATTACHED RANCH VILLAS
-- CONVENTIONAL/MAINSTREAM HOUSING --
GERMANTOWN, WISCONSIN

Product Line Summary

Product Form:	***Attached Ranch Villas (3-, 4-, 5 and 6-Unit Buildings - Duplexed Where Necessary)***
Garage Condition:	***2-Car (Front)***
Average Plan Size (Sq. Ft.):	***1,525***
Average Benchmark Base Price: [1] ***Per Sq. Ft.:***	***$288,990*** ***$189.50***
Average Anticipated Closing Price: [2] ***Per Sq. Ft.:***	***$309,200*** ***$202.75***

Plan Detail

Plan Designation	A	B	C
Plan Style	Ranch	Ranch	Ranch
Bedrooms	2	2+Den	3
Baths	2	2	2
Unit Size (Sq. Ft.)	1,375	1,525	1,675
Benchmark Base Price:[1] Per Sq. Ft.:	$279,990 $203.63	$288,990 $189.50	$297,990 $177.90
Anticipated Closing Price: [2] ***Per Sq. Ft.:***	***$299,600*** ***$217.89***	***$309,200*** ***$202.75***	***$318,800*** ***$190.33***

Features and Amenities

UNIT STANDARDS

- Luxury Plank Flooring in Main Living Areas
- Carpeting in Bedroom Areas
- "White" Interior Paint Finish
- Painted Trim
- Direct-Wire Smoke Detectors Per Code
- Cable/Satellite/Telephone Prewire
- Paneled Doors
- High-Speed Internet Connectivity
- Air Conditioning
- Designer Door Hardware
- Designer Lighting Package
- Private Patio Area

KITCHEN FEATURES

- Quality Cabinetry
- Luxury Plank Flooring
- Four Burner Cooktop
- Self Clean Single Oven-Stainless Steel
- Built-In 5-Cycle Dishwasher-Stainless Steel
- Refrigerator with Ice-Maker-Stainless Steel
- Garbage Disposal
- Microwave with Vent
- Hard Surface Countertops
- Double Bowl Stainless Steel Sink

BATH/POWDER ROOM STANDARDS

- Ceramic Flooring
- Hard Surface Vanity Tops
- Quality Cabinetry
- Ceramic Tub/Shower Surround
- Framed Glass Mirror Over Vanity

CLOSETS, UTILITIES, AND LAUNDRY

- Walk-In MBR Closet (Per Plan)
- Laminate Closet Shelving
- Washer/Dryer Hook-Up
- Linen Closet(s)
- Programmable Thermostat

HOME FEATURES/AMENITIES

- Architecturally-Enhanced Exteriors
- Extensive Hardscaping/Landscaping
- Basements Optional on Select Lots
- Front-Oriented Sidewalks
- Modest, But Desirable Community Amenities (Depends on Size of Development)

[1] Benchmark base sales prices, which are presented in January 2024 dollars, do not include options, upgrades or premiums.
[2] Includes an estimate for options, upgrades and premiums, i.e. 7.0 percent above the base sales price.

Source: Tracy Cross & Associates, Inc.

1.6

PRODUCT CRITERIA AND BENCHMARK PRICES - SMALL LOT TND FOR SALE SINGLE FAMILY
-- CONVENTIONAL/MAINSTREAM HOUSING --
GERMANTOWN, WISCONSIN

Product Line Summary

Product Form:	***Single Family***
Lot Dimensions:	***40'-45" x 100'-110'***
Garage Condition:	***2-Car (Rear Load)*** ***(Front-Load As Necessary)***
Average Plan Size (Sq. Ft.):	***1,700***
Average Benchmark Base Price: [1] ***Per Sq. Ft.:***	***$329,990*** ***$194.11***
Average Anticipated Closing Price: [2] ***Per Sq. Ft.:***	***$353,100*** ***$207.71***

Plan Detail

Plan Designation	A	B	C	D	E
Plan Style	Ranch	Ranch	2-Story	2-Story	2-Story (1st Floor MBR)
Bedrooms	2 + Den	2 + Flex	3	3 + Flex	3 + Loft
Baths	2	2	2.5	2.5	2.5
Unit Size (Sq. Ft.)	1,500	1,600	1,700	1,800	1,900
Benchmark Base Price:[1] Per Sq. Ft.:	$311,990 $207.99	$320,990 $200.62	$329,990 $194.11	$338,990 $188.33	$347,990 $183.15
Anticipated Closing Price: [2] ***Per Sq. Ft.:***	***$333,800*** ***$222.53***	***$343,500*** ***$214.69***	***$353,100*** ***$207.71***	***$362,700*** ***$201.50***	***$372,300*** ***$195.95***

Features and Amenities

UNIT STANDARDS

- Luxury Plank Flooring in Main Living Areas
- Carpeting in Bedroom Areas
- "White" Interior Paint Finish
- Painted Trim
- Direct-Wire Smoke Detectors Per Code
- Cable/Satellite/Telephone Prewire
- Paneled Doors
- High-Speed Internet Connectivity
- Air Conditioning
- Designer Door Hardware
- Designer Lighting Package
- Private Patio Area

KITCHEN FEATURES

- Quality Cabinetry
- Luxury Plank Flooring
- Four Burner Cooktop
- Self Clean Single Oven-Stainless Steel
- Built-In 5-Cycle Dishwasher-Stainless Steel
- Refrigerator with Ice-Maker-Stainless Steel
- Garbage Disposal
- Microwave with Vent
- Hard Surface Countertops
- Double Bowl Stainless Steel Sink

BATH/POWDER ROOM STANDARDS

- Ceramic Flooring
- Hard Surface Vanity Tops
- Quality Cabinetry
- Ceramic Tub/Shower Surround
- Framed Glass Mirror Over Vanity

CLOSETS, UTILITIES, AND LAUNDRY

- Walk-In MBR Closet (Per Plan)
- Laminate Closet Shelving
- Washer/Dryer Hook-Up
- Linen Closet(s)
- Programmable Thermostat

HOME FEATURES/AMENITIES

- Architecturally-Enhanced Exteriors
- Extensive Hardscaping/Landscaping
- Optional Basements
- Front-Oriented Sidewalks
- Modest, But Desirable Community Amenities (Depends on Size of Development)

[1] Benchmark base sales prices, which are presented in January 2024 dollars, do not include options, upgrades or premiums.
[2] Includes an estimate for options, upgrades and premiums, i.e. 7.0 percent above the base sales price.

Source: Tracy Cross & Associates, Inc.

1.7

PRODUCT CRITERIA AND BENCHMARK PRICES - CONVENTIONAL FOR SALE SINGLE FAMILY
-- CONVENTIONAL/MAINSTREAM/MOVE-UP HOUSING --
GERMANTOWN, WISCONSIN

Product Line Summary

Product Form:	***Single Family***
Lot Dimensions:	***55'-60' x 120'***
Garage Condition:	***2-Car (Front)***
Average Plan Size (Sq. Ft.):	***2,050***
Average Benchmark Base Price: [1]	***$386,490***
Per Sq. Ft.:	***$188.53***
Average Anticipated Closing Price: [2]	***$413,600***
Per Sq. Ft.:	***$201.76***

Plan Detail

Plan Designation	A	B	C	D	E	F
Plan Style	Ranch	Ranch	2-Story	2-Story	2-Story	2-Story
Bedrooms	3	3	3+Flex	4	4 + Loft	4 + Den
Baths	2.0	2.0	2.5	2.5	2.5	2.5
Unit Size (Sq. Ft.)	1,750	1,850	1,950	2,100	2,250	2,400
Benchmark Base Price:[1]	$359,990	$368,990	$377,990	$390,990	$403,990	$416,990
Per Sq. Ft.:	$205.71	$199.45	$193.84	$186.19	$179.55	$173.75
Anticipated Closing Price: [2]	***$385,200***	***$394,800***	***$404,400***	***$418,400***	***$432,300***	***$446,200***
Per Sq. Ft.:	***$220.11***	***$213.41***	***$207.38***	***$199.24***	***$192.13***	***$185.92***

Features and Amenities

UNIT STANDARDS

- Luxury Plank Flooring in Main Living Areas
- Carpeting in Bedroom Areas
- "White" Interior Paint Finish
- Painted Trim
- Direct-Wire Smoke Detectors Per Code
- Cable/Satellite/Telephone Prewire
- Paneled Doors
- High-Speed Internet Connectivity
- Air Conditioning
- Designer Door Hardware
- Designer Lighting Package
- Large Private Patio Area

KITCHEN FEATURES

- Quality Cabinetry
- Luxury Plank Flooring
- Four Burner Cooktop
- Self Clean Single Oven-Stainless Steel
- Built-In 5-Cycle Dishwasher-Stainless Steel
- Refrigerator with Ice-Maker-Stainless Steel
- Garbage Disposal
- Microwave with Vent
- Hard Surface Countertops
- Double Bowl Stainless Steel Sink

BATH/POWDER ROOM STANDARDS

- Ceramic Flooring
- Hard Surface Vanity Tops
- Quality Cabinetry
- Ceramic Tub/Shower Surround
- Framed Glass Mirror Over Vanity

CLOSETS, UTILITIES, AND LAUNDRY

- Walk-In MBR Closet (Per Plan)
- Laminate Closet Shelving
- Washer/Dryer Hook-Up
- Linen Closet(s)
- Programmable Thermostat

HOME FEATURES/AMENITIES

- Architecturally-Enhanced Exteriors
- Extensive Hardscaping/Landscaping
- Optional Basements
- Modest, But Desirable Community Amenities (Depends on Size of Development)

[1] Benchmark base sales prices, which are presented in January 2024 dollars, do not include options, upgrades or premiums.
[2] Includes an estimate for options, upgrades and premiums, i.e. 7.0 percent above the base sales price.

Source: Tracy Cross & Associates, Inc.

Please keep in mind that the product recommendations outlined in the previous paragraphs (and in Exhibits 1.1 through 1.7) reflect the most strategic approach for filling the voids that exist in Germantown and surrounding areas and for penetrating the threshold or mainstream of the market. This is not to suggest that the higher-end of the new construction for sale home market (at price points of $450,000 and above) will not still have its place locally (it will), but with lower sales volumes much akin to those currently being generated by area builders, i.e., 12 units annually per product line. Nevertheless, highly-stylized duplex/fourplex residences and larger-lot single family homes (with more square footage, three-car garages, etc.) will continue to reflect and important part of the hierarchy of new construction product in the market and should also be viewed as viable (at the appropriate scale).

MARKET POSITIONING

It is important to reiterate that the benchmark rents/prices outlined in Exhibits 1.1 through 1.7 have been *carefully* established so that each product line can penetrate the mainstream of the new construction housing market based, primarily, on incomes, while at the same time supporting a value position necessary to appeal to consumers from inside and outside the local area. For example, the three rental products will each occupy an appropriate (and competitive) rent/value variance when cast against some of the newer, most proximate apartment communities of scale, i.e., those developments of 100+ units introduced in the last 10 years within 4-5 miles of Germantown (see **Exhibits 1.8 and 1.9**).

The various for sale products, in turn, will occupy much lower/more competitive value positions in the market considering the higher price points currently represented in the new construction sector (see **Exhibits 1.10 and 1.11).** As such, these product lines can expect higher absorption rates than what is typically seen among area developments, especially considering the lack of competitive substitution at benchmark prices. In other words, the more value-oriented nature of the for sale products will allow for 20-30 sales annually per series – in a market where the typical annual sales rate hovers at 12 units annually *or lower*.

A DISCIPLINE APPROACH TO PRODUCT DEVELOPMENT

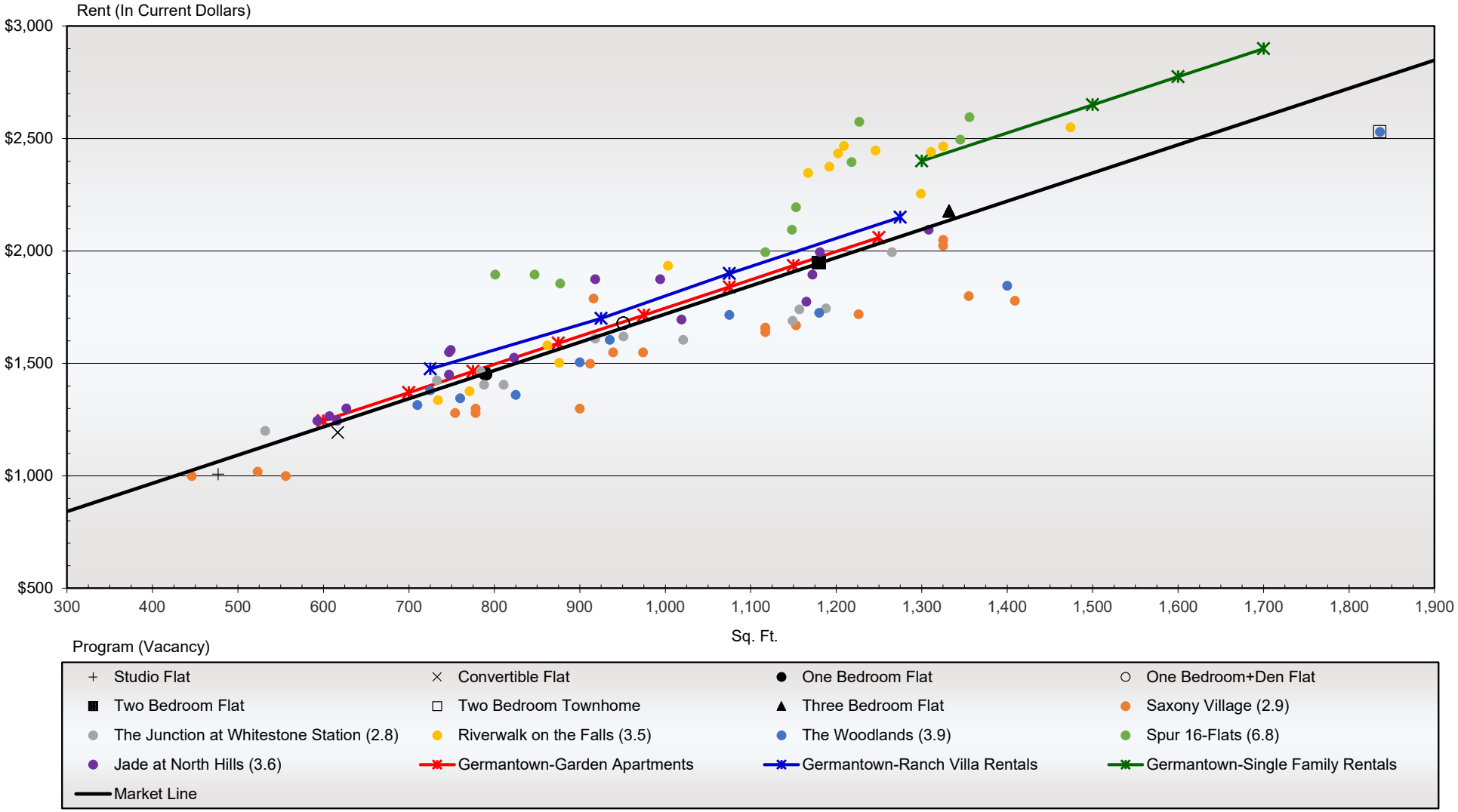
To achieve the rents/prices (and absorption) outlined for each product line, and apart from the requirement of higher densities, it will be imperative for the Village of Germantown, and other stakeholders, to work closely with builders/developers so that the recommendations are understood and embraced. Specifically, builders/developers (and governing bodies) will need to think differently in terms of land planning, development, and product design in order to *substantially reduce costs*, a key component to meeting the rent/price requirements. Provided below are number of guiding principles for bringing properly positioned conventional, mainstream and/or workforce housing to market, especially as it relates to the ownership products:

- ❑ Each product line must be efficient and cost effective to build from a design standpoint (value engineered). This can be achieved while still offering functional and desirable floorplan alternatives.

- ❑ The basis for design should be modeled after box-on-box/four-corner construction with no wasted space; however, exterior elevations should still be very appealing. Referencing the latter, a strong use of colors *not materials* is but one example of how quality can be portrayed to the consumer. This has been accomplished in numerous communities throughout the U.S. with specific reference made to re-development efforts at Stapleton Airport in Denver, among others. To reiterate, by creating value-oriented floorplans, we are not suggesting that quality be minimized, nor is there implication that overall curb appeal be comprised. It simply needs to be accomplished strategically "behind the scenes."

1.8

Rent/Value Analysis
Selected Rental Housing Communities
Germantown Primary Market Area (PMA)



Rent/value analysis uses a scatter diagram to graphically represent a set of observations found in today's marketplace, specifically the square footage of units offered and their associated rent levels. Regression analysis is then used to fit a line through the set of market observations that represent the "best fit" or average market line. This market line can then be used to predict the performance of a new, untested product line or offer explanations regarding the occupancy/absorption rates of currently available product lines.

Source: Tracy Cross & Associates, Inc.

Rent/Value Analysis
Selected Rental Housing Communities
Germantown Primary Market Area (PMA)

Plan Size (Sq. Ft.)	Average Market Rent
300	$844
400	969
500	1,094
600	1,219
700	1,344
800	1,469
900	1,594
1,000	1,719
1,100	1,844
1,200	1,969
1,300	2,094
1,400	2,219
1,500	2,344
1,600	2,469
1,700	2,594
1,800	2,719
1,900	2,844

Slope: $1.25 per sq. ft.

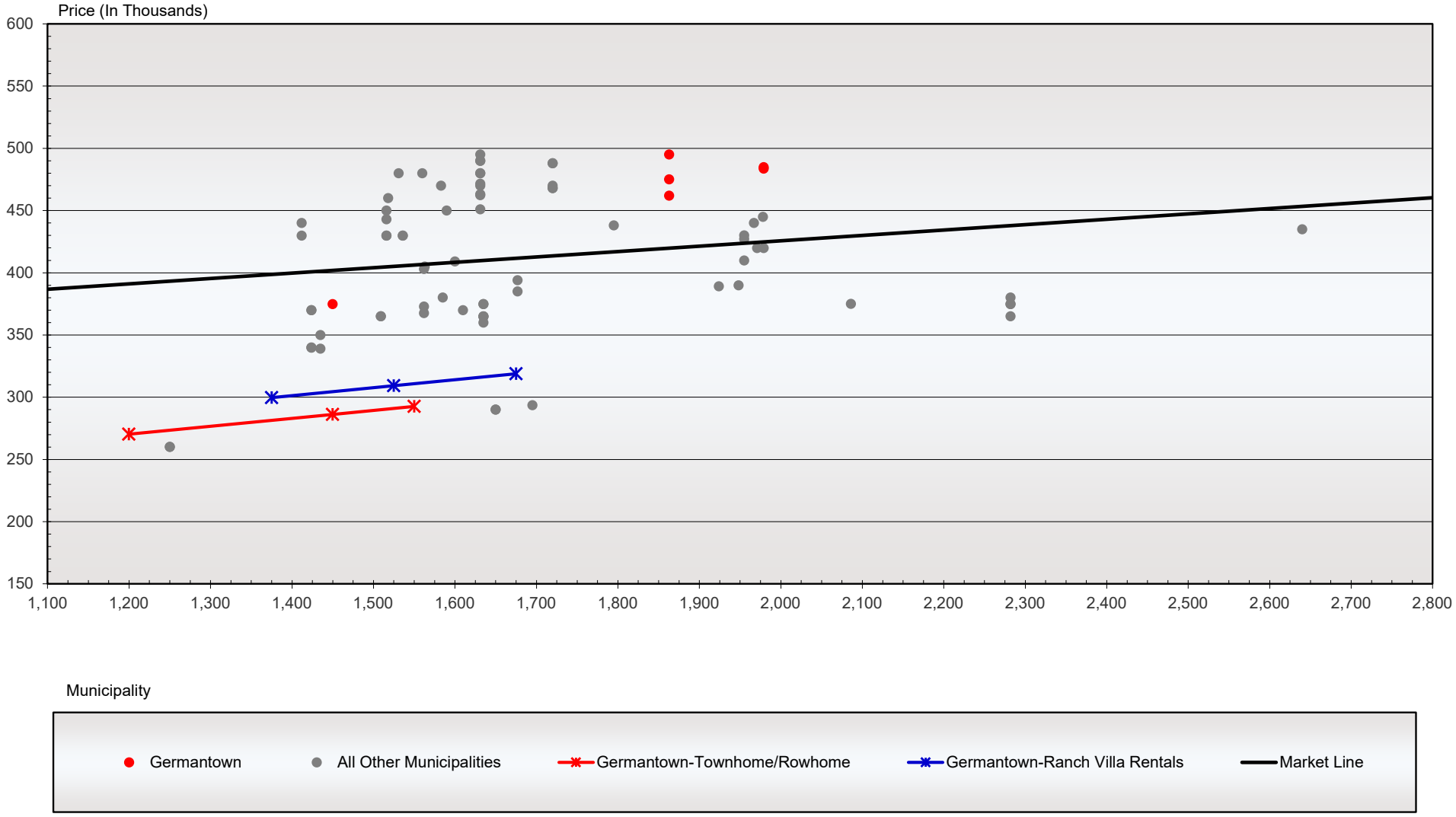
Program/Location	Year Built	Total Units	Average Plan Size (Sq. Ft.)	Average Posted Base Rent: Dollars	Average Posted Base Rent: Rent per Sq. Ft.	Average Base Market Rent	Price Variance From Market	Vacancy Rate
Spur 16-Flats/Mequon	2019	146	1,163	$2,257	$1.94	$1,923	+$334	6.8
(1) ***Germantown-Single Family Rentals***	*---*	*---*	*1,525*	*2,681*	*1.76*	*2,375*	*+306*	*---*
(1) Riverwalk on the Falls/Menomonee Falls	2018	114	1,057	1,973	1.87	1,791	+182	3.5
(1) ***Germantown-Ranch Villa Rentals***	*---*	*---*	*1,000*	*1,831*	*1.83*	*1,719*	*+112*	*---*
Jade at North Hills/Menomonee Falls	2018	139	874	1,593	1.82	1,562	+31	3.6
(1) ***Germantown-Garden Apartments***	*---*	*---*	*925*	*1,653*	*1.79*	*1,625*	*+28*	*---*
---- Market Average ----	*---*	*---*	*1,003*	*1,723*	*1.72*	*1,723*	*0*	*3.7*
(1) The Junction at Whitestone Station/Menomonee Falls	2016	318	954	1,589	1.67	1,662	-73	2.8
(1) Saxony Village/Germantown	2018	172	972	1,533	1.58	1,684	-151	2.9
(1) The Woodlands/Menomonee Falls	2015	153	1,066	1,649	1.55	1,802	-153	3.9

(1) Development includes one enclosed parking space in some or all of its units. As such, an adjustment has been made (for analytical purposes only) so each development can be assessed as if garages were optional.

Source: Tracy Cross & Associates, Inc.

1.10

Price/Value Analysis
New Construction Duplex/Fourplex/Condominium Closings (Priced from $250,000 - $499,999)
Germantown Primary Market Area (PMA): Last 12 Months

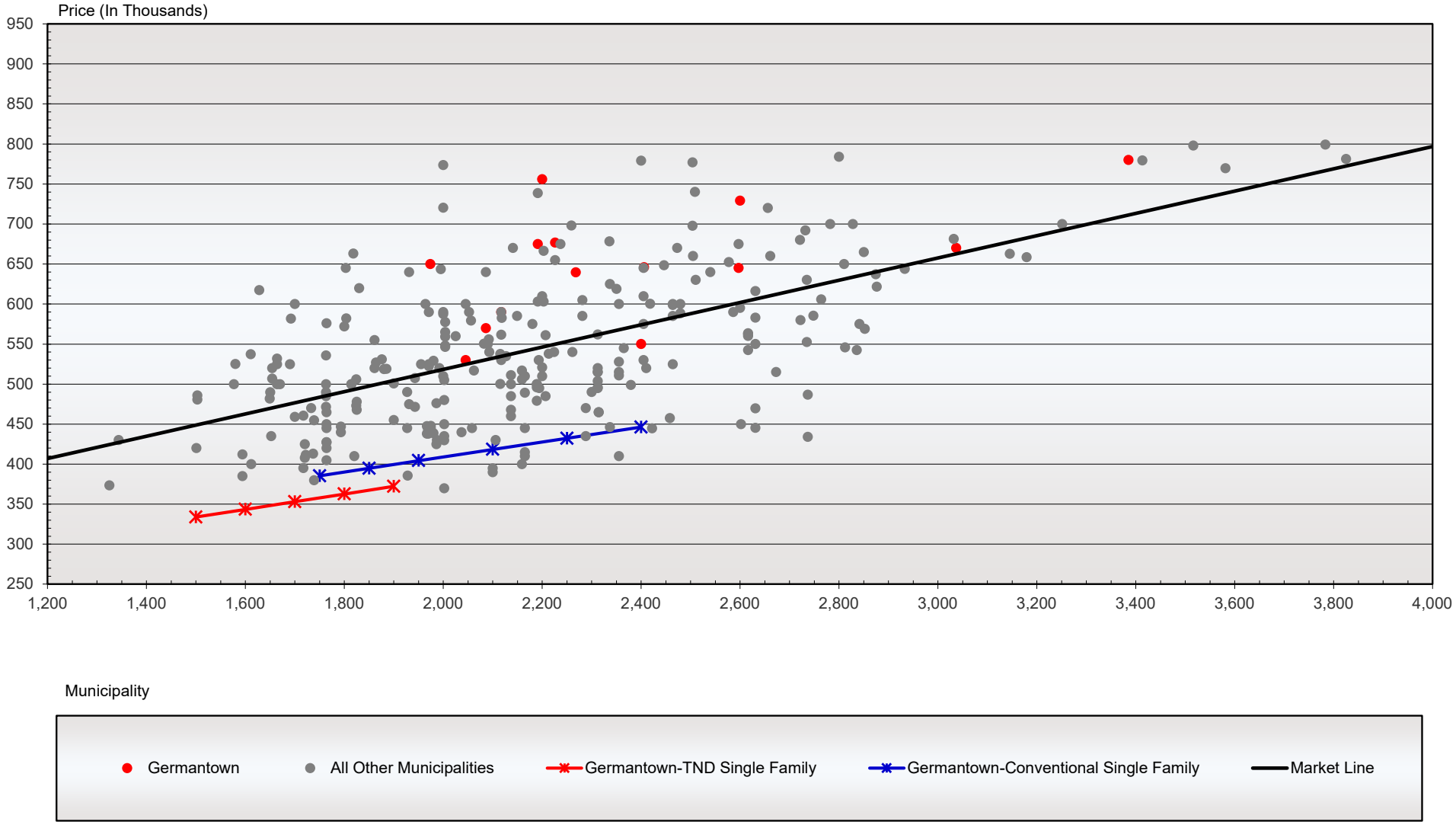


Price/value analysis uses a scatter diagram to graphically represent a set of observations found in today's marketplace, specifically the square footage of models offered and their associated sales prices. Regression analysis is then used to fit a line through the set of market observations that represent the "best fit" or average market line. This market line can then be used to predict the performance of a new, untested product line or offer explanations regarding the sales rate of currently available product lines.

Source: Tracy Cross & Associates, Inc.

1.11

Price/Value Analysis
New Construction Single Family Closings (Priced from $350,000 - $799,999)
Germantown Primary Market Area (PMA): Last 12 Months



Price/value analysis uses a scatter diagram to graphically represent a set of observations found in today's marketplace, specifically the square footage of models offered and their associated sales prices. Regression analysis is then used to fit a line through the set of market observations that represent the "best fit" or average market line. This market line can then be used to predict the performance of a new, untested product line or offer explanations regarding the sales rate of currently available product lines.

Source: Tracy Cross & Associates, Inc.

- ❑ Once value-engineering has taken place, and efficient/cost effective housing units/buildings are designed, these efficiencies must be conveyed to all subcontractors for bidding purposes.

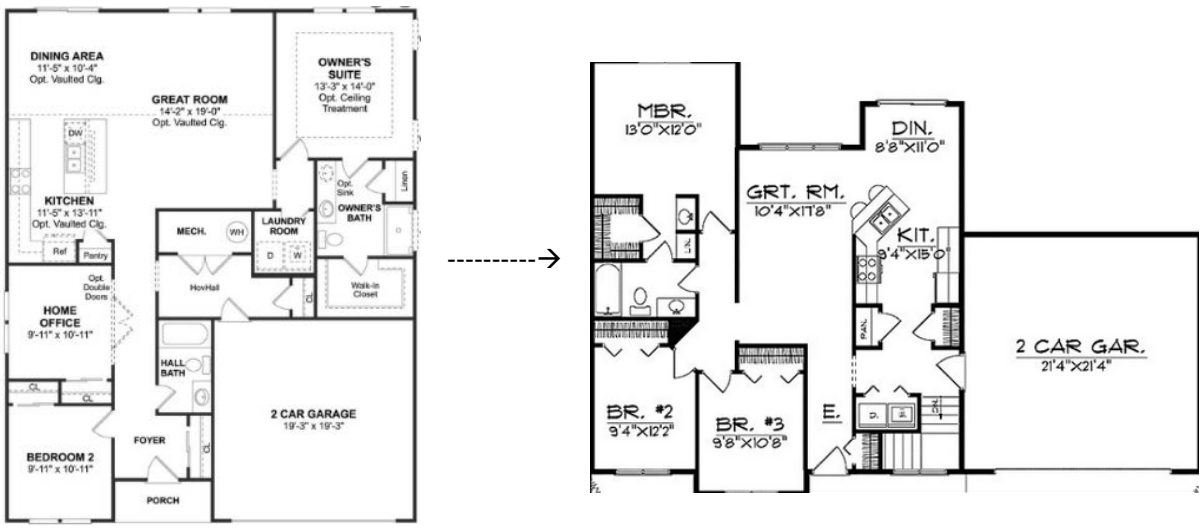
- ❑ None of the product lines should offer standard (included) basements, although the option for a basement can be made available in certain series (as indicated).

- ❑ Additionally, outdoor living space for each residence (within each product line) is essential, but need not be extensive. Specifically, private balconies for both apartment series and the townhomes/rowhomes will be sufficient, along with private courtyards/patios/backyard areas for the attached ranch villas and most single family homes.

Provided below are a few floorplan examples that portray efficiency in design:

Efficient Three-Story Townhome/Rowhome Plan

Efficient Conventional SF Ranch Plan (Left) – As Opposed to Inefficient SF Ranch Plan (Right)



Finally, in achieving higher densities across the various product lines, strong consideration should be placed on "to the street" product, smaller lots, along with front-to-back living (i.e., narrower units). At the same time, the mixing of products within neighborhood areas will help improve densities, while also establishing a desirable architectural landscape. In reference to this latter point, in many instances, higher-density communities (with strong exterior elevations) can create an architectural landscape that is much more desirable in terms of community orientation compared to larger-lot developments with minimal landscaping and/or natural amenities.

PRODUCT CLARIFICATION

Please keep in mind that while our product guidelines are very specific, there are a number of derivatives to each of the recommended generic forms that could evolve through the design efforts of individual builders/developers – or through the overall implementation process. However, when considering any derivatives during the course of the planning process, it is still important to follow the general parameters outlined for each of the recommended products relative to unit types, bedroom counts, rents, prices, etc., in order to insure acceptable absorption and/or sales, and most importantly, the appeal to the mainstream or middle of the market.

In addition, consideration can certainly be given to the introduction of other generic forms on the basis of the imbalance that exists market-wide between supply and demand – but done so with the same general planning strategy in mind – that being differentiation, efficiency, tasteful architecture, and rent/price positioning.

GEOGRAPHIC AND COMMUNITY POSITIONING

Given such severe supply-side constraints in the new construction housing market (i.e., deficiencies in supply for properly positioned product), practically any suitable location within Germantown could be considered for residential development or redevelopment. With this said, the Village of Germantown is in a position to move rather swiftly with its planning efforts considering the municipality has already identified 12 initial sites (both large and small) that could potentially contain a component (or components) of residential units (see **Exhibit 1.12**). In fact, with the Village getting close to securing the Grosenick parcel, which contains roughly five (5) total acres, the introduction of, say, the suggested for sale townhome/rowhome product line (as depicted earlier in Exhibit 1.4) could bring a much needed new construction price point to the village. In this regard, it is likely that 60+/- units could be configured within this parcel and, at the price points indicated earlier, a development of this scale could achieve full sellout in just two short years at 30 sales annually.

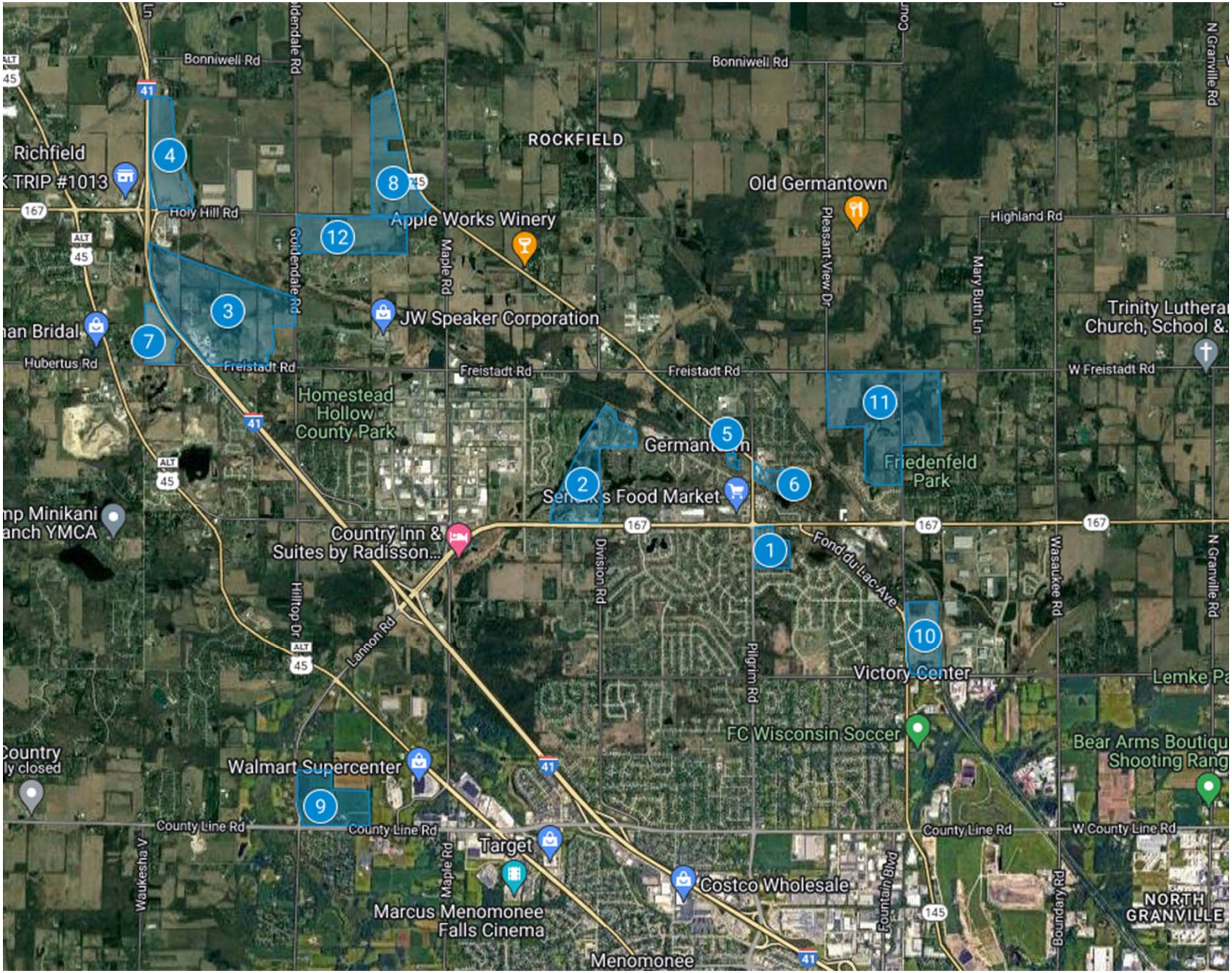
Most of the other properties identified by the Village could contain multiple product lines given their size (and the higher density allocations of each recommended home series). As a general guide, among the various larger assemblages that are proximate to Interstate 41 and/or align some of Germantown's most prominent business/industrial areas, communities offering a combination of the various rental products should be considered. For example, the Holy Hill Gateway District assemblage carries enough acreage for all three rental housing products to be introduced in a planned and be marketed concurrently. At the same time, larger assemblages on the east side of the municipality like the Country Aire North Neighborhood, which are more aesthetically appealing relative to surrounding residential uses and/or open space, should be earmarked for larger-scale ownership communities with multiple product lines/neighborhood areas.

1.12

GEOGRAPHIC DELINEATION OF POTENTIAL DEVELOPMENT / REDEVELOPMENT SITES
GERMANTOWN, WISCONSIN

Potential Development/Redevelopment Sites

1. Pilgrim Rd & Mequon Rd
2. Blackstone Crk Golf Course
3. Freistadt District-E of I-41
4. Holy Hill Gateway District
5. Grosenick Parcel
6. Fond du Lac Ave & Pilgrim
7. Freistadt District-W of I-41
8. Dheinsville Neighborhood
9. Lannon Rd & County Line Rd
10. Victory Center Corridor
11. Country Aire North Nghbrhd
12. Isabelle Farms Nghbrhd



Source: Village of Germantown, Tracy Cross & Associates, Inc. and Google Maps

With this said, and again considering the size of many of the identified development/redevelopment sites, strong consideration should be given to the creation of a true master-planned community (or two) whereby multiple product lines would be introduced within an amenity enhanced environment. Such a community could become a ***destination point development*** whereby a full hierarchy of residential products are combined with heavy landscaping and hardscaping, together with amenities such as pocket parks, walking/jogging/biking trails, playgrounds, sport courts, open space areas, etc. – *representing a true lifestyle environment.* Such a development in the new construction sector is generally absent in northwest suburban Milwaukee, especially with the product and price points recommended, and would most certainly allow the village of Germantown to capture a *disproportionate share of market-wide demand*, while also inducing spillover from other areas.

Provided below are several items to consider if planning a destination-point master-planned community:

- To provide strong community infrastructure created around a theme of livability, functionality, walkability, and recreation/convenience.

- To create a community where emphasis is placed on all segments of the market ranging from younger childless singles and couples to families living, playing, and growing together; and where active adult residents can see and experience the vibrancy of youth. Establishing this reality includes the combination of all products with appropriate, but minimally expensive, amenities.

- To create a community in which a variety of densities are carefully combined with pocket parks and other recreational uses – and that all are highly integrated and exposed for everyone to enjoy. *Like the architecture and design of the homes, the land plan must be very efficient as well.*

OTHER CONSIDERATIONS

Even with a disciplined planning and design approach, it is possible that some incentives or concessions from the municipality might also be necessary to bring the *for sale products* (as positioned) to market, especially in larger-scale communities. While this will need to be determined through the planning process, it should be given due consideration. For the rental products, it is unlikely that incentives/concessions would be required at benchmark rents as they are more consistent with new/newer market comparables, although rising construction costs may also require some assistance in this regard.

Examples of the types of incentives being utilized by other municipalities to bring the gap between costs and "needed" housing prices include Tax Increment Financing (TIF) and/or land subsidies or land subordination, i.e., reducing the cost of land or eliminating the cost whatsoever.

Also, it is important to note that when considering parcels for the introduction of properly priced, mainstream housing throughout the village, vacant sites typically represent a stronger alternative as there are added costs associated with redevelopment sites including demolition and debris removal.

NEXT GENERATION HOUSING INITIATIVE – WASHINGTON COUNTY

With the village of Germantown situated within the boundaries of Washington County, the municipality is in a position to benefit from the county's *Next Generations Housing* initiative, which aims to assist communities, developers, builders, etc. in filling voids that exist in the market relative to ownership housing forms. As highlighted thus far in this report, and detailed more thoroughly in Sections 2, 3 and 4 that follow, the recent price escalation among virtually all new construction for sale developments throughout Germantown and surrounding areas has created a significant void for properly positioned for sale idioms. As such, our analysis empirically identified this void and made specific product/price recommendations to fill it – recommendations that conform to the goals of the Next Generation Housing initiative. With this said, and because several of Germantown's identified development/redevelopment properties are already being considered for Next Generation Housing, *the municipality should continue to consider this opportunity.*

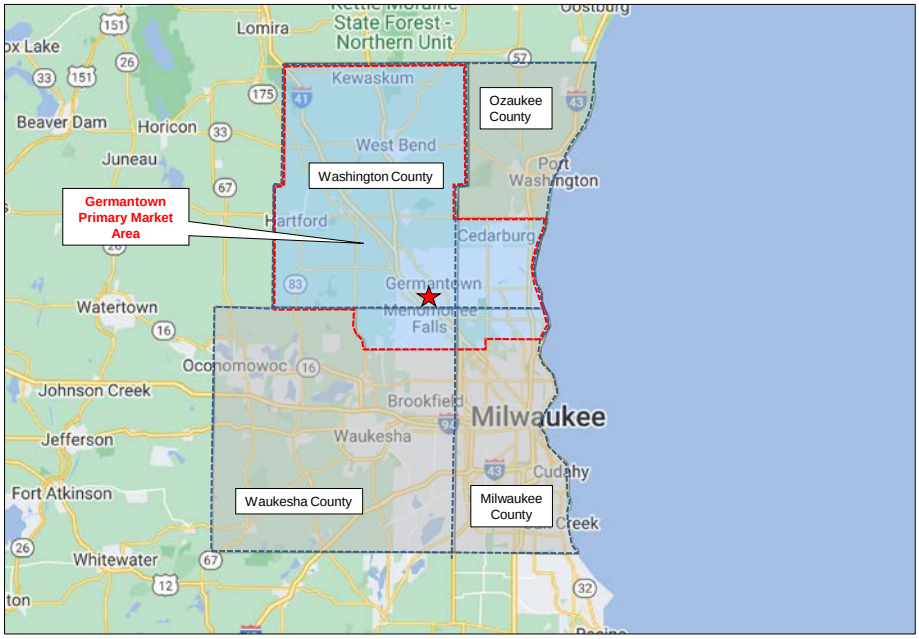
One only has to look at the first Pilot program under the Next Generation Housing banner to see the impact it is having and the success in terms of sales. In Jackson, roughly eight miles north of Germantown, Harbor Homes and Hillcrest Builders recently introduced new construction single family homes starting in the low $300,000s (in a market where this price point is virtually non-existent). Within the first six months, 14 homes have been sold with closings pending – a sales rate stronger than any other development locally.

All told, the effort involved with bringing for sale housing product to market in Germantown (at the prices suggested), along with the variety of new rental products, will be rewarded by significant sales/absorption volumes per development, which will translate to increases in population and households and, in turn, foster economic growth locally that will have a measurable fiscal impact.

2. *MARKET FUNDAMENTALS FOR NEW CONSTRUCTION HOUSING*

Any new residential development within the village of Germantown will receive its primary demand support from its host county, Washington, along with several municipalities within the nearby areas of northeast Waukesha County, southern Ozaukee County, and the northern edge of Milwaukee County. Defined for the purposes of this analysis as the Germantown Primary Market Area (PMA), this combined area shares commonalities relative to household composition, commutation patterns to major concentrations of employment and/or the alignment of residential developments which will serve as sources of competitive influence, both direct and indirect. As illustrated below, the Germantown PMA is a component of the Milwaukee-Waukesha-West Allis, WI Metropolitan Statistical Area (MSA) which includes Milwaukee, Ozaukee, Washington and Waukesha counties in their entirety.

GEOGRAPHIC DELINEATION OF THE GERMANTOWN PRIMARY MARKET AREA



Source: Google Maps and Tracy Cross & Associates, Inc.

Note: while the Germantown PMA includes the whole of Washington County, 90 percent of its population is concentrated in the central and southern portions of the county (from West Bend south to the county line). As such, this portion of the county, combined with the adjoining areas of northeast Waukesha County, southern Ozaukee County and the northern tip of Milwaukee County, represents the heart of the PMA.

As summarized in this section of the report, new residential development in Germantown *can clearly be supported* by empirical evidence found in the key demand variables of population, household, incomes, employment, residential construction, etc. throughout both the Milwaukee region and the PMA.

POPULATION AND HOUSEHOLDS

During the 2010-2020 time period, household additions in the Germantown PMA were *healthy* totaling 7,836, or 784 yearly. And, while not immune to the impacts of the recent Covid-19 pandemic, the PMA added another 381 households annually between 2020 and 2023. The village of Germantown, too, has witnessed continual household growth moving from a base of 7,773 in 2010 to a current estimated level of

8,583. As highlighted in the following text table, the village of Germantown has seen its share of total households in PMA grow slightly from 6.9 percent in 2010 to 7.1 percent in 2023.

POPULATION AND HOUSEHOLD TRENDS
GERMANTOWN PMA AND THE VILLAGE OF GERMANTOWN, WISCONSIN

Area	2010	2020	2023 (Estimate)	2028 (Projected)	Average Annual Change 2010 - 2020	2020 - 2023	2023 - 2028
Population							
Germantown PMA	281,258	292,587	293,822	298,266	+1,133	+412	+889
Village of Germantown	19,783	20,917	21,054	21,424	+113	+46	+74
Percent of PMA	7.0	7.1	7.2	7.2	---	---	---
Households							
Germantown PMA	112,429	120,265	121,407	124,889	+784	+381	+696
Village of Germantown	7,773	8,472	8,583	8,839	+70	+37	+51
Percent of PMA	6.9	7.0	7.1	7.1	---	---	---

Source: U.S. Census Bureau, Environics Analytics and Tracy Cross & Associates, Inc.

According to recent estimates provided by Environics Analytics through its evaluation of the Census Bureau's annual American Community surveys, household growth in the Germantown PMA over the next five years will total another 3,480 new households, or 696 annually. As a result, the PMA will approach the 125,000-household mark by 2028.

HOUSEHOLD COMPOSITION

Relative to households by age group, not only is there a rather large base of existing households in each of the PMA's various age categories, but all segments show growth over the next five years – led by the 65-74 segment and the Under 35 group.

Likewise, the village of Germantown shows growth in each of its various household age classifications as highlighted in the adjacent text table.

HOUSEHOLD GROWTH BY AGE GROUP
-- GERMANTOWN PMA AND THE VILLAGE OF GERMANTOWN, WISCONSIN --

Age Range	Germantown PMA 2023	Germantown PMA 2028	Village of Germantown 2023	Village of Germantown 2028
Under 35	17,385	17,920	1,129	1,154
35-44	18,687	18,772	1,315	1,320
45-54	19,948	19,987	1,467	1,470
55-64	25,573	26,203	1,939	1,958
65-74	22,372	24,069	1,610	1,760
75 and over	17,442	17,938	1,123	1,177
Total	***121,407***	***124,889***	***8,583***	***8,839***

Source: Environics Analytics: 2023 Demographic Snapshot Report.

The current composition of area households lends support to the development of a variety of residential product forms at various locations throughout the PMA and the village of Germantown in particular. As highlighted in the adjacent table, there is an ample number of one- and two- person households (for rental apartments and for sale townhomes, duplexes and/or condominiums), and also a significant number of three-, four- and five-person households (for both attached for sale housing products and single family detached homes).

Most notable are one- and two-person occupied housing units which, together, comprise 64.4 percent of the PMA's household base and 64.5 percent in the village of Germantown.

2023 COMPOSITION OF AREA HOUSEHOLDS:
GERMANTOWN PMA AND THE VILLAGE OF GERMANTOWN, WISCONSIN

Attribute	Germantown PMA	Village of Germantown
Total Households	**121,407**	**8,583**
1-Person Household	31,776	2,114
2-Person Household	46,353	3,422
3-Person Household	17,908	1,231
4-Person Household	16,134	1,072
5-Person Household	6,313	574
6 or More Person Household	2,923	170
1 Person Households		
Percent	26.2	24.6
Number	31,776	2,114
2 Person Households		
Percent	38.2	39.9
Number	46,353	3,422

Source: Environics Analytics; *2023 Demographic Snapshot*

INCOMES

Households in the Germantown PMA support higher incomes than the overall region as evidenced by an estimated 2023 median of $86,185, a level 19.2 percent higher than the $72,303 median noted for the entire Milwaukee-Waukesha-West Allis, WI MSA. *Market wide, 52.5 percent of all current households earn between $40,000 and $124,999 annually, which generally represents the mainstream or middle of the market (the workforce), i.e., those earning between 50 and 150 percent of the PMA's median. Another 30.9 percent of all households earn $125,000 or more annually with the balance (16.6 percent) earning less than $40,000 per year. Overall, the concentration of household incomes in the $40,000-$124,999 and $125,000+ categories signifies significant income support locally for new construction mainstream/workforce and market rate housing development, both rental and for sale.*

HOUSEHOLDERS BY AGE AND INCOME: 2023
-- GERMANTOWN PMA --

	Number of Households by Age of Householder						
Income Range	**Total Households**	**Under 35**	**35 - 44**	**45 - 54**	**55 - 64**	**65 - 74**	**75 and Over**
Under $15,000	6,389	1,196	549	466	989	1,380	1,809
15,000 - 24,999	6,227	635	457	381	703	1,616	2,435
25,000 - 39,999	7,821	1,403	640	654	970	1,829	2,325
40,000 - 49,999	12,842	2,104	1,426	1,333	2,012	3,090	2,877
50,000 - 74,999	19,602	3,258	2,778	2,487	3,330	4,437	3,312
75,000 - 99,999	16,779	2,789	3,070	2,610	3,421	3,195	1,694
100,000 - 124,999	14,558	1,827	2,727	3,062	3,539	2,278	1,125
125,000 - 149,999	11,043	1,525	2,318	2,310	2,774	1,383	733
150,000 - 199,999	12,144	1,672	2,603	2,886	3,274	1,233	476
200,000 and Over	14,002	976	2,119	3,759	4,561	1,931	656
Total	***121,407***	***17,385***	***18,687***	***19,948***	***25,573***	***22,372***	***17,442***
Median	***$86,185***	***$75,926***	***$103,674***	***$116,392***	***$109,412***	***$67,776***	***$46,023***

Sources: U.S. Bureau of the Census; Environics Analytics; and Tracy Cross & Associates, Inc.

Note: The median household income in the host Washington County currently stands at $84,794, generally consistent with the defined Germantown PMA.

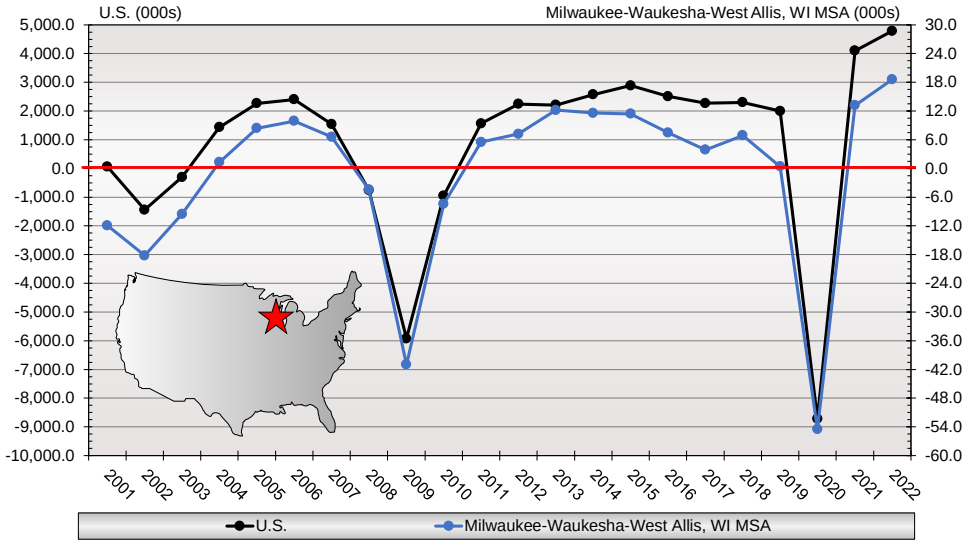
EMPLOYMENT

Germantown, while supporting its own internal economy and concentrations of localized employment (i.e., the community's major business/industrial parks and standalone office buildings/retail centers), is also within a reasonable driving distance to employment clusters in other areas of the Milwaukee region given its immediate access to the US-45/I-41 expressway system, and their connection with other major arterials. Overall, employment sources throughout much of the Milwaukee metropolitan area are accessible to Germantown residents, especially those situated in the northwestern and western suburban areas including Menomonee Falls, Wauwatosa, and Brookfield.

While one cannot discount the effect that the Great Recession had on the region's economy, not to mention the more recent Covid-19 pandemic, employment growth throughout the four-county Milwaukee-Waukesha-West Allis, WI MSA had been on the positive side for nine years in a row through 2019. For example, after losing 6.1 percent of its total nonagricultural wage and salary employed workforce from 2007 through 2010 (during the heart of the Great Recession), the metropolitan area saw its job rosters grow by 66,600 workers during the subsequent 2011-2019 period, averaging 7,400 annually, and equal to a growth rate of approximately 1.1 percent.

Most recently, and due entirely to the global/national pandemic and its impact on the economy, the MSA witnessed job losses of 54,500 in 2020 – erasing roughly 80 percent of the net gains witnessed during the 2011-2019 period. However, this severe loss of jobs is/was temporary, and primarily affected those sectors of the economy most impacted by the pandemic. Moreover, this most recent Covid-related downturn reversed course quickly – bolstering the economy. As illustrated in the following graphic, most of the employment losses in 2020 were replenished in 2021 and 2002.

YEAR-OVER-YEAR CHANGE IN NONFARM EMPLOYMENT
-- MILWAUKEE-WAUKESHA-WEST ALLIS, WI MSA AND THE U.S. --



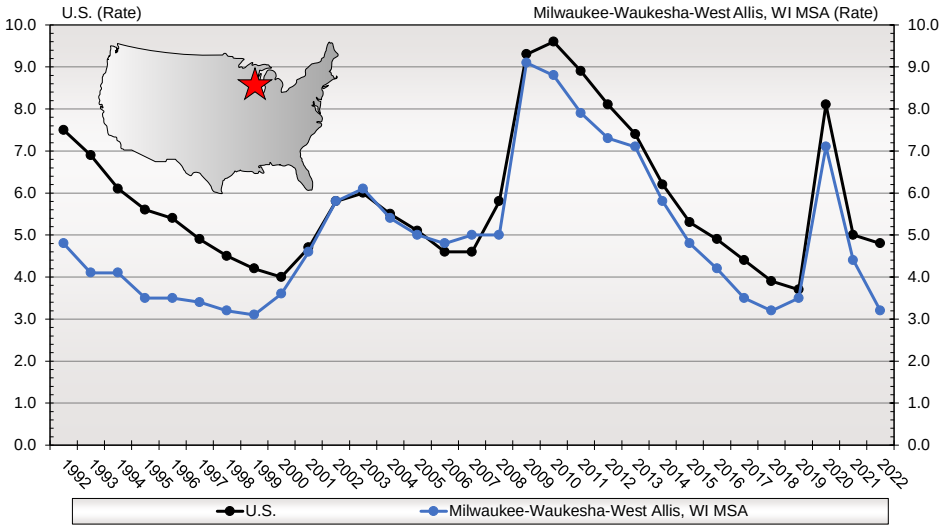
Source: U.S. Department of Labor, Bureau of Labor Statistics

Moreover, year-over-year employment gains during the January-November 2023 period totaled over 3,200 jobs. In addition, the Wisconsin Department of Revenue, the Job Center of Wisconsin, and the Wisconsin

Department of Workforce Development expect the Milwaukee region's employment rosters to increase by an average of 0.9 percent annually over the next five years. As such, the four-county MSA is expected to witness the addition of at least 38,000 total new jobs through 2028, once again supporting the development of new housing throughout the area.

During the Milwaukee region's economic growth period of 2011 through 2019 (prior to the pandemic), the area's unemployment rate had been dropping steadily. As highlighted in the following graphic, the Milwaukee area unemployment rate decreased from 8.8 percent in 2010 to just 3.5 in 2019. During this entire timeframe, the four-county MSA's unemployment rate remained at or *below* the nation as a whole. In addition, while unemployment in Milwaukee rose to 7.1 percent in 2020, i.e., the Covid-19 crisis, it remained lower than the 8.1 percent unemployment rate posted nationally. In addition, by 2022, Milwaukee's unemployment rate had already retreated to 3.3 percent compared to a national average of 4.8 percent during the same period.

UNEMPLOYMENT RATES BY YEAR
-- MILWAUKEE-WAUKESHA-WEST ALLIS, WI MSA AND THE U.S. --



Source: U.S. Department of Labor, Bureau of Labor Statistics

Recently, the MSA's unemployment rate during the first 11 months of 2023 averaged just 3.1 percent.

RESIDENTIAL BUILDING ACTIVITY

Since 2000, the Germantown PMA has recorded an average of 1,020 residential building permits per year ranging from a recessionary-impacted low of 313 units in 2011 to a high of 1,839 units during the boom period of 2003 (see **Exhibit 2.1**).

Historically, single family permit authorizations have outpaced multifamily issuances at a ratio of roughly two-to-one. For example, between 2000 and 2022, single family permits, which include single-address duplex/townhome/villa units, averaged 696 units yearly, while multifamily volumes, which include both rental apartments and high-density condominiums, averaged 324 units per annum. More recently, and due to an increase in apartment construction over the last few years, primarily in Menomonee Falls and Mequon, the PMA's ratio between single family and multifamily permits narrowed to a level of less than two-to-one during the 2015-2022 timeframe.

2.1

RESIDENTIAL BUILDING PERMIT TRENDS
GERMANTOWN PMA
2000 - 2022

Year	Total	Single Family	Multi-Family
2000	1,445	977	468
2001	1,683	1,084	599
2002	1,530	1,054	476
2003	1,839	1,314	525
2004	1,709	1,284	425
2005	1,719	1,143	576
2006	1,453	905	548
2007	907	741	166
2008	506	414	92
2009	399	324	75
2010	436	348	88
2011	313	244	69
2012	386	346	40
2013	581	507	74
2014	660	472	188
2015	875	522	353
2016	1,213	616	597
2017	946	662	284
2018	854	627	227
2019	1,077	572	505
2020	1,033	621	412
2021	915	687	228
2022	983	542	441
Averages			
2000 - 2022	1,020	696	324

Source: U.S. Department of Commerce, Bureau of the Census: *C-40 Construction Reports*

From a regional capture rate perspective, between 2000 and 2022, the Germantown PMA accounted for a healthy 28.5 percent of all residential permit activity in the four-county Milwaukee metropolitan region, with the Washington County portion of the PMA accounting for a 17.1 percent share by itself. However, during the eight-year period from 2015 through 2022, as the PMA's regional capture rate jumped to 30.5 percent, the Washington County portion of the PMA dropped to 14.7 percent. In other words, residential development in areas of the PMA just outside of Washington County (i.e., Cedarburg, Grafton, Mequon, and Menomonee Falls) gained significant momentum relative to residential construction on a regional basis, while Washington County failed to keep pace with other portions of the PMA and the region. All told, as the four-county MSA moved upward in overall residential construction volumes during the last eight years (compared to the eight years prior), as did those areas of the PMA near Germantown outside of Washington County, municipalities in the host county (including the village of Germantown) did not increase proportionately (see **Exhibit 2.2**). This resulted, primarily, from supply-side constraints (not demand) – as will be discussed in more detail in Sections 3 and 4 of this report.

HOUSING DEMAND – AN OUTLOOK

During the 2023-2028 timeframe, construction requirements for new housing in the Germantown PMA will average 1,010 units annually. This forecast can be tied to household growth levels estimated at 696 per annum through 2026, along with 300+/- units representing the replacement of residences lost to demolition and abandonment and the need to provide a vacancy allowance for filtering or movement from one residence to another.

Of the 1,010 units expected to be constructed annually in the PMA during the five-year forecast period, 595 will occur among for sale housing forms with 415 represented in the rental housing sector. As detailed in the adjacent text table, for sale housing demand will be distributed among 395 single family detached homes and 200 in the attached sector, i.e., duplexes, fourplexes, and condominiums.

RESIDENTIAL ABSORPTION POTENTIALS BY PRODUCT TYPE
-- GERMANTOWN PMA --
2023 - 2028

Product Type	Annual	Total Through 2028
Total	***1,010***	***5,050***
For Sale	**595**	**2,975**
Single Family Detached	395	1,975
Duplex/Fourplex/Condominium	200	1,000
For Rent	**415**	**2,075**

Source: Tracy Cross & Associates, Inc.

Given the supply-side constraints throughout the PMA (which, again, will be discussed in the following sections of the report), it is highly likely that demand will exceed supply near term, especially in the for sale sector, but also among multifamily rental forms as well. This market reality bodes extremely well for housing initiatives in the village of Germantown, if properly planned and executed.

In addition, not only is "derived demand" likely to outstrip supply near term, but the overall base of residential construction requirements could actually be *much higher* (i.e., double) during any given year where properly positioned supply is made available. This *doubling of demand* factors pent-up demand; upside household growth potentials if properly positioned development were actually to occur; the limited amount of new construction housing alternatives throughout the PMA (again, to be discussed later); and spillover potentials from areas outside the defined primary market area.

2.2

RESIDENTIAL BUILDING PERMIT TRENDS
MILWAUKEE-WAUKESHA-WEST ALLIS, WI METROPOLITAN STATISTICAL AREA (MSA)
2000 - 2022

Year	*Milwaukee-Waukesha-West Allis, WI MSA*			Milwaukee County, WI			Ozaukee County, WI			Washington County, WI			Waukesha County, WI		
	Total	Single Family	Multi-Family	Total	Single Family	Multi-Family	Total	Single Family	Multi-Family	Total	Single Family	Multi-Family	Total	Single Family	Multi-Family
2000	5,631	3,581	2,050	1,750	736	1,014	502	360	142	931	637	294	2,448	1,848	600
2001	5,879	3,564	2,315	1,524	671	853	737	335	402	890	736	154	2,728	1,822	906
2002	5,936	3,456	2,480	2,061	645	1,416	502	353	149	1,006	682	324	2,367	1,776	591
2003	6,467	3,939	2,528	2,138	742	1,396	596	406	190	1,226	929	297	2,507	1,862	645
2004	5,902	3,840	2,062	2,117	773	1,344	380	302	78	1,205	921	284	2,200	1,844	356
2005	5,444	3,361	2,083	1,697	785	912	406	277	129	1,371	850	521	1,970	1,449	521
2006	4,290	2,624	1,666	1,436	550	886	304	256	48	995	609	386	1,555	1,209	346
2007	3,266	2,082	1,184	1,230	378	852	252	232	20	661	501	160	1,123	971	152
2008	2,444	1,234	1,210	1,032	247	785	166	142	24	356	270	86	890	575	315
2009	1,443	891	552	584	160	424	163	107	56	263	233	30	433	391	42
2010	1,941	967	974	1,006	178	828	121	105	16	328	242	86	486	442	44
2011	1,593	915	678	802	231	571	132	110	22	202	133	69	457	441	16
2012	1,793	1,064	729	654	164	490	123	113	10	242	206	36	774	581	193
2013	2,000	1,326	674	411	154	257	279	181	98	383	309	74	927	682	245
2014	2,416	1,318	1,098	795	138	657	264	176	88	337	291	46	1,020	713	307
2015	3,048	1,416	1,632	1,269	128	1,141	170	170	0	444	315	129	1,165	803	362
2016	4,055	1,671	2,384	1,721	146	1,575	443	213	230	585	356	229	1,306	956	350
2017	3,693	1,588	2,105	1,579	101	1,478	376	230	146	504	360	144	1,234	897	337
2018	3,791	1,734	2,057	1,535	127	1,408	260	221	39	416	344	72	1,580	1,042	538
2019	2,440	1,509	931	548	170	378	452	234	218	460	294	166	980	811	169
2020	2,753	1,586	1,167	749	218	531	396	219	177	407	345	62	1,201	804	397
2021	2,981	1,811	1,170	371	145	226	298	247	51	520	410	110	1,792	1,009	783
2022	3,127	1,603	1,524	882	167	715	345	293	52	461	232	229	1,439	911	528
Averages															
2000 - 2022	3,580	2,047	1,533	1,213	337	876	333	230	104	617	444	173	1,417	1,036	380

Source: U.S. Department of Commerce, Bureau of the Census: *C-40 Construction Reports*

3. *THE RENTAL HOUSING MARKET*

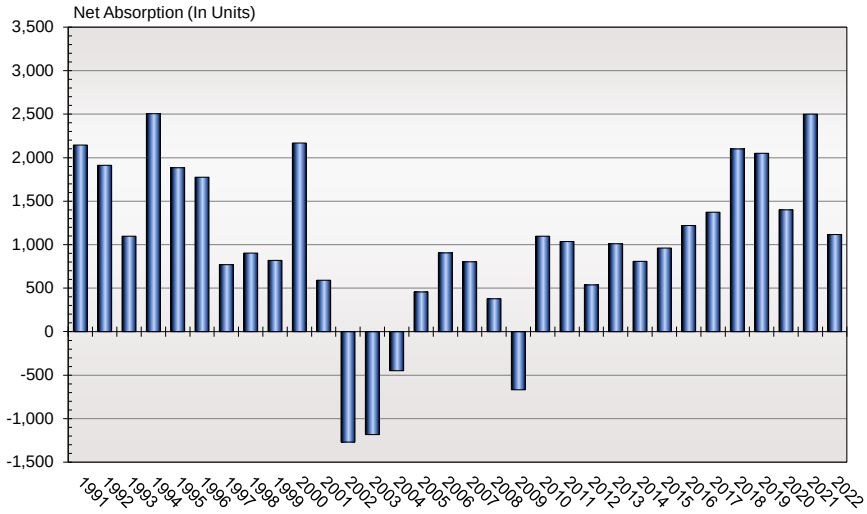
The current condition of the rental housing market in and around Germantown *lends full support* to the development of additional units throughout the area and within the village of Germantown in particular. Specifically, given the overall strength of this sector of the market (as highlighted in the following bullet-point summary), the introduction of additional *for rent* housing product is *definitely warranted.*

THE REGIONAL APARTMENT MARKET

- Serving as a backdrop to rental housing potentials within the Germantown PMA is the overall health of the market in the greater Milwaukee region. For example, according to Moody's Analytics, among all asset classifications of apartments in the two core counties of the greater Milwaukee region, i.e., Milwaukee and Waukesha, a vacancy rate of 3.6 percent was reported at the close of the 3rd Quarter 2023, reflecting tight market conditions. For reference, in a normal (or balanced) market, vacancies of 5.0 to 6.0 percent are typically required for filtering, or movement between developments. In addition, the overall 3.6 percent vacancy rate includes new "un-leased" units among those developments still undergoing their initial absorption periods. When these communities are excluded, the vacancy rate in Milwaukee and Waukesha counties drops to an even tighter 3.1 percent.

- At the same time, net rental absorption in the two core counties of the Milwaukee region has averaged over 1,400 units annually during the last 12 years – reaching or exceeding the 2,000-unit mark in three of the last five including 2,500 units in 2021. For perspective, during the 11-year period from 1990 through 2000, Waukesha and Milwaukee counties saw their occupied apartment stock, among all asset classifications, increase by a total of 19,191 units, or an annual average of 1,745. Following this period of positive absorption, the 2001-2009 timeframe saw net absorption drop into negative territory for four of the eight years during the period due to recessionary overtones during the first part of the decade, a dramatic increase in home ownership at the time, and a fair amount of rental-to-condominium conversion activity.

RENTAL APARTMENT ABSORPTION TRENDS: 1991-2022
-- MILWAUKEE & WAUKESHA COUNTIES, WI --



Source: Moody's Analytics

THE LOCAL APARTMENT MARKET

- Not only are vacancies among all asset classifications of apartments in nearby Milwaukee and Waukesha counties in a relatively tight condition at 3.6 percent (3.1 percent excluding new/unabsorbed units), but vacancies are *even tighter* in the Germantown PMA. For example, among 40 conventional rental housing communities that have been constructed market-wide in the last 10 years, i.e., since 2013, 35 developments (containing 3,587 total units) have reached stabilized occupancy and reported a vacancy rate of just 2.1 percent at the time of our December 2023 survey.

- In Washington County alone, newer stabilized developments in the communities of Germantown, Hartford, Jackson, Slinger and West Bend reported a vacancy rate of only 1.3 percent.

- The five communities in the Germantown PMA still undergoing their initial lease-up periods at the time of our recent survey have performed well. These developments, which include Fox Run-Flats and Fox Run-Townhomes in Grafton; Creekside Crossing and Highlands/Aero Park-Flats-AA in Menomonee Falls; and The District-Lithia Lofts in West Bend, are absorbing units at an average per-project rate of 10.0 monthly.

- While 40 market rate apartment communities have opened in the Germantown PMA since 2013, only two developments were constructed from 2000-2012 in this broad geographic area. Given the lack of supply during this timeframe, which has led to significant levels of pent-up demand for new apartment product throughout the area, the 40 developments that have been introduced in the market area over the last ten years have all been well received. In fact, despite the introduction of the 40 newest developments, vacancies remain *extremely tight* among stabilized communities. In other words, the amount of new development activity in the PMA over the past 10 years has not been sufficient enough to provide balance in the market and satisfy both pent-up and net-new demand.

- In Germantown itself, only two apartment communities with a combined 190 total units have been introduced in the last 10 years, i.e., Hillstone (18 units) and Saxony (172 units). These apartments were all absorbed quickly and are currently at a collective occupancy level of nearly 98.0 percent.

- As highlighted in **Exhibit 3.1**, the average posted base rent level among new/newer apartment communities in the Germantown PMA, not including premiums or extras, currently stands at $1,779 monthly which includes a typical 1,104 square foot apartment. This translates to a value ratio of $1.61 per square foot. The effective rent is nearly the same as only a handful of developments were offering any type of incentive or concession at the time of our survey. Base rents are the highest in the highly desirable Cedarburg, Mequon and Menomonee Falls areas where rents approach or exceed the $2.00 per-square-foot mark in several instances.

FUTURE SUPPLY

- It is important to note that the *demand for rental housing in the Germantown PMA will likely exceed supply* near term given the fact that just six communities (1,271 total units) are currently in the planning pipeline or under construction and not yet leasing. This compares with net-new demand of 2,075+ units through 2028 as highlighted earlier in Section 2. *In Germantown itself, there are currently no multifamily developments formally in the pipeline.*

3.1

COMPOSITE RENTAL SUMMARY: APARTMENT COMMUNITIES CONSTRUCTED IN 2013 OR AFTER
GERMANTOWN PMA
DECEMBER 2023

Development	Municipality	Year Built	Total Units	Number Vacant	Percent Vacant (Absorption Rate in Units)	Average Unit Size (Sq. Ft.)	Average Posted Base Monthly Rent	
							$	$/Sq. Ft.
The Bevy	Brown Deer	2020	175	0	0.0	979	$1,608	$1.64
Arabelle	Cedarburg	2019	69	3	4.3	1,147	2,358	2.06
Cedar Place	Cedarburg	2019	192	4	2.1	1,102	1,739	1.58
Fox Run-Flats[1]	Cedarburg	2023	160	154	96.3 (12.0/Mo)	1,110	2,118	1.91
Fox Run-Townhomes[1]	Cedarburg	2023	44	40	90.9 (8.0/Mo)	2,040	3,084	1.51
Hillstone	Germantown	2015	18	0	0.0	1,211	1,802	1.49
Saxony Village	Germantown	2018	172	5	2.9	972	1,583	1.63
1505	Grafton	2017	130	5	3.8	889	1,640	1.84
2185 On Wisconsin-THR	Grafton	2023	18	0	0.0	1,424	2,495	1.75
Birch Crossing	Hartford	2017	84	1	1.2	1,152	1,539	1.34
Oriole Pond	Hartford	2017	156	0	0.0	1,051	1,130	1.08
Rincon 225	Hartford	2020	82	1	1.2	804	1,326	1.65
Wilson Heights	Hartford	2017	82	1	1.2	1,305	1,493	1.14
Cranberry Creek	Jackson	2013	16	1	6.3	1,269	1,550	1.22
Rosewood Commons	Jackson	2021	72	2	2.8	1,088	1,531	1.41
Sherman Heights	Jackson	2020	36	0	0.0	1,280	1,488	1.16
Rock Pointe Village	Lannon	2021	264	1	0.4	972	1,559	1.60
Creekside Crossing[1]	Menomonee Falls	2022	120	13	10.8 (11.6/Mo)	1,409	2,123	1.51
Highlands/Aero Park CO-AA	Menomonee Falls	2021	32	0	0.0	1,384	2,938	2.12
Highlands/Aero Park Flt-AA[1]	Menomonee Falls	2023	95	56	58.9 (9.2/Mo)	1,177	2,178	1.85
Jade at North Hills	Menomonee Falls	2018	139	5	3.6	874	1,593	1.82
Junction at Whitestone Stn	Menomonee Falls	2016	318	9	2.8	954	1,639	1.72
Riverwalk on the Falls	Menomonee Falls	2018	114	4	3.5	1,057	2,023	1.91
Tamarack Springs	Menomonee Falls	2021	152	6	3.9	1,429	2,094	1.47
The Woodlands	Menomonee Falls	2015	153	6	3.9	1,066	1,699	1.59
Artesa	Mequon	2017	33	3	9.1	1,215	2,114	1.74
Encore	Mequon	2015	28	0	0.0	1,733	2,931	1.69
The Reserve	Mequon	2017	81	4	4.9	1,200	2,202	1.84
Spur 16-Flats	Mequon	2019	146	10	6.8	1,163	2,257	1.94
Spur 16-THs	Mequon	2019	10	0	0.0	2,368	4,995	2.11
West House at Foxtown-Apt	Mequon	2020	96	0	0.0	1,245	2,146	1.72
West House at Foxtown-TH	Mequon	2023	42	1	2.4	1,751	2,662	1.52
Ridge View Terrace	Slinger	2019	48	0	0.0	1,220	1,369	1.12
Stonefield Terrace	Slinger	2021	80	3	3.8	1,224	1,481	1.21
Mammoth Springs-Ph 1	Sussex	2014	153	0	0.0	976	1,521	1.56
Mammoth Springs-Ph 2	Sussex	2017	107	2	1.9	1,285	2,018	1.57
Mammoth Springs-Ph 3	Sussex	2020	40	0	0.0	855	1,498	1.75
Cast Iron (Conversion)	West Bend	2016	129	0	0.0	950	1,288	1.36
The District-Lithia Lofts[1]	West Bend	2022	46	6	13.0 (8.9/Mo)	1,046	1,766	1.69
Trails Edge	West Bend	2022	120	0	0.0	912	1,500	1.64
Total/ Weighted Average	---	---	***4,052 / 3,587*** [2]	***346 / 77*** [2]	***8.5 / 2.1*** [2]	***1,104***	***$1,779***	***$1.61***

[1] Community is still undergoing its initial absorption period.
[2] Excludes communities still undergoing their initial absorption periods.

Source: Tracy Cross & Associates, Inc.

4. *THE FOR SALE HOUSING MARKET*

New construction for sale development throughout the Germantown PMA is generally characterized by smaller- to moderate-scale broker- or builder-represented communities reflecting single family and duplex/fourplex/condominium subdivisions directed to both primary and lifestyle consumer segments which (in many cases) have been marketed in phases over extended periods of time, although some larger-scale communities of 100+ units have been developed in recent years, primarily in areas of Menomonee Falls and Cedarburg (outside of Washington County). Overall, however, there has been a limited number of recently introduced developments *of significant scale* actively marketing new units in proprietary communities throughout the PMA, yet some scattered site/lot sale development and/or larger-scale, more custom-oriented product is also evident.

In the entirety of the PMA, single family building permits which, again, include single family detached homes as well as single-address duplexes, fourplexes and condominium/villa units, has generally ranged from 450 to 675 units annually over the last ten years *in this very broad geographic area*, despite "upside" demand potentials being stronger. This current level of new construction for sale development activity is due, in large part, to the higher price points that now accompany newly built for sale developments which, in turn, has resulted in more modest per-project sales volumes. In fact, most proprietary subdivisions throughout the county are generating sales volumes at or below 12 homes per year – a rate viewed as modest by most standards, i.e., a typical builder, in most instances, desires 18-24+ sales annually per product series.

In Germantown itself, active for sale development currently includes just a few condominium and single family communities priced in the higher ranges and generating sales volumes viewed as moderate. As highlighted in the following table, notable new construction for sale communities in Germantown generated a total of 17 sales/closings over the last 12 months, or roughly 4-5 per development during the period, on average.

NOTABLE NEW CONSTRUCTION FOR SALE RESIDENTIAL DEVELOPMENTS
-- GERMANTOWN, WISCONSIN --

Development / Builder(s)	Product Type	Number of Sales/Closings (Last 12 Months)	Average Plan Size (Sq. Ft.)	Average Sales/Closing Price	Average Price Per Sq. Ft.
The Reserve at Wrenwood / Harbor	Fourplex/Condo	7	1,921	$484,267	$252.09
Wrenwood North / Tim O'Brien & Aspen	Single Family	5	2,320	740,175	319.04
Prairie Glen / Bielinski	Single Family	3	2,393	767,900	320.89
Heritage Park North / Stepping Stone	Single Family	2	2,209	675,858	305.96

Source: Tracy Cross & Associates, Inc.

Note: Not included in the above table are a few recently completed developments such as Veridian Homes' Kinderberg Estates community, i.e., single family homes priced primarily in the $600,000s, along with smaller-scale attached projects such as Stepping Stone's Seven Pines condominiums.

SINGLE FAMILY DETACHED ACTIVITY – GERMANTOWN PMA

In the entirety of the Germantown PMA, new construction ***single family*** closing activity has been generally steady over the last three years, with little improvement, mainly because of the overall limited number of new developments entering the market—and, most importantly, *escalating prices.* As highlighted in the

following text table, roughly 300 new single family detached homes are sold/closed annually in the PMA (through the local multiple listing service), at price points now supporting a median above $500,000. In fact, with the median closing price of a new construction single family home in the PMA approaching $550,000 in 2023, and considering a less-than-favorable interest rate environment, the average marketing time of a new single family home (days on market) rose precipitously between 2022 and 2023.

NEW CONSTRUCTION SINGLE FAMILY CLOSINGS
GERMANTOWN PMA
2021-2023

Price Range	2021		2022		2023	
	Number of Closings	Percent of Total	Number of Closings	Percent of Total	Number of Closings	Percent of Total
Under $250,000	---	---	---	---	---	---
250,000 - 299,999	1	0.3	---	---	---	---
300,000 - 349,999	10	3.3	---	---	---	---
350,000 - 399,999	43	14.1	20	6.8	10	3.2
400,000 - 449,999	47	15.4	47	15.9	45	14.4
450,000 - 499,999	63	20.7	46	15.6	48	15.3
500,000 - 549,999	29	9.5	57	19.3	60	19.2
550,000 - 599,999	40	13.1	36	12.2	48	15.3
600,000 - 699,999	35	11.5	51	17.3	59	18.8
700,000 & Above	37	12.1	38	12.9	43	13.8
Total	***305***	***100.0***	***295***	***100.0***	***313***	***100.0***
Median	***- - - - - $490,820 - - - - -***		***- - - - - $530,310 - - - - -***		***- - - - - $544,530 - - - - -***	
Avg. Days on Market	***- - - - - - - 45 - - - - - - -***		***- - - - - - - 41 - - - - - - -***		***- - - - - - - 67 - - - - - - -***	

Source: Southeast Wisconsin Multiple Listing Service

Please note that new construction closings recorded by the multiple listing service, while representing the majority, do not include all proprietary subdivision activity among single family developments, especially where individual lots are sold directly to the end consumer, who in turn, builds a semi-custom or custom home.

While the overall limited amount of new single family development (of scale) is keeping volumes in the more modest ranges, especially when demand could be stronger, so, too, is the overall higher price position of the new construction homes being built (as mentioned earlier). In fact, with the median price of a new/newer single family closing (as recorded through the multiple listing service) standing at $544,530 in 2023, there is a disconnect with the distribution of household incomes, which is putting extreme pressure on the existing home market, i.e. the resale sector. For example, the median closing price among new construction units in the PMA is now almost $150,000 higher than that of a resale counterpart. As a result, prices in the existing home market have been increasing even more rapidly and the average "days on market" in the resale sector are extremely low. Moreover, the volume of resale closings has dropped each year since 2021 as inventory continues to wane.

As highlighted in the following text table, the average market time of an older-stock single family resale closing in 2023 period stood at just 15 days, down from an already-low 16 days in 2022 and 20 days in 2021. For reference, the typical marketing time for a single family detached resale in the Midwest ranges from 72-90 days. *In the village of Germantown, the average market time of a single family resale during the last six months stood at just 11 days, and at closing prices 10 percent higher than to those reflected throughout the PMA as a whole.*

SINGLE FAMILY RESALE CLOSINGS
GERMANTOWN PMA
2021-2023

Price Range	2021		2022		2023	
	Number of Closings	Percent of Total	Number of Closings	Percent of Total	Number of Closings	Percent of Total
Under $200,000	200	6.6	68	2.8	39	2.0
200,000 - 249,999	310	10.3	233	9.7	129	6.6
250,000 - 299,999	536	17.8	332	13.8	228	11.7
300,000 - 349,999	478	15.9	382	15.9	288	14.7
350,000 - 399,999	337	11.2	310	12.9	298	15.3
400,000 - 449,999	244	8.1	290	12.1	216	11.1
450,000 - 499,999	204	6.8	166	7.0	175	9.0
500,000 - 549,999	169	5.6	127	5.3	118	6.0
550,000 - 599,999	126	4.2	106	4.4	75	3.8
600,000 - 699,999	165	5.5	147	6.2	151	7.7
700,000 & Above	242	8.0	237	9.9	237	12.1
Total	***3,011***	***100.0***	***2,398***	***100.0***	***1,954***	***100.0***
Median	***- - - - - $348,112 - - - - -***		***- - - - - $380,232 - - - - -***		***- - - - - $399,019 - - - - -***	
Avg. Days on Market	***- - - - - - - 20 - - - - - - -***		***- - - - - - - 16 - - - - - - -***		***- - - - - - - 15 - - - - - - -***	

Source: Southeast Wisconsin Multiple Listing Service

DUPLEX/FOURPLEX/CONDOMINIUM ACTIVITY

In the ***duplex/fourplex/condominium*** sector, a similar condition exists in the Germantown PMA relative to pricing differentials between new construction units and resales. As highlighted in the adjacent table, there are currently roughly 100 new attached units being sold annually market-wide, again a relatively modest volume because of limited supply in this sector, coupled with a median price point that now exceeds $425,000.

NEW CONSTRUCTION DUPLEX/FOURPLEX/CONDOMINIUM CLOSINGS
GERMANTOWN PMA
2021-2023

Price Range	2021		2022		2023	
	Number of Closings	Percent of Total	Number of Closings	Percent of Total	Number of Closings	Percent of Total
Under $100,000	---	---	---	---	---	---
100,000 - 149,999	---	---	---	---	---	---
150,000 - 199,999	1	0.9	---	---	---	---
200,000 - 249,999	13	11.6	1	1.0	---	---
250,000 - 299,999	22	19.6	17	17.7	5	5.1
300,000 - 349,999	29	25.9	12	12.5	6	6.2
350,000 - 399,999	16	14.3	22	22.9	26	26.8
400,000 - 449,999	15	13.4	28	29.2	22	22.7
450,000 - 499,999	7	6.3	6	6.3	28	28.9
500,000 & Above	9	8.0	10	10.4	10	10.3
Total	***112***	***100.0***	***96***	***100.0***	***97***	***100.0***
Median	***- - - - - $334,555 - - - - -***		***- - - - - $391,047 - - - - -***		***- - - - - $426,210 - - - - -***	
Avg. Days on Market	***- - - - - - - 99 - - - - - - -***		***- - - - - - - 54 - - - - - - -***		***- - - - - - - 80 - - - - - - -***	

Source: Southeast Wisconsin Multiple Listing Service

Again, the higher price position found in the new construction attached sector is putting tremendous pressure on the existing home market as evidenced by duplex/fourplex/condominium resale closings averaging just 12 days on market in 2023, down from 18 and 16 days in 2021 and 2022, respectively. As highlighted in the following text table (compared to the table on the previous page), the difference in price between typical resale and new construction attached sector units is approximately $175,000.

DUPLEX/FOURPLEX/CONDOMINIUM RESALE CLOSINGS
GERMANTOWN PMA
2021-2023

Price Range	2021		2022		2023	
	Number of Closings	Percent of Total	Number of Closings	Percent of Total	Number of Closings	Percent of Total
Under $100,000	73	9.3	39	5.4	31	5.1
100,000 - 149,999	116	14.9	69	9.7	60	9.9
150,000 - 199,999	173	22.2	179	25.0	92	15.2
200,000 - 249,999	156	20.1	140	19.6	119	19.6
250,000 - 299,999	91	11.7	113	15.8	93	15.3
300,000 - 349,999	72	9.3	65	9.1	63	10.4
350,000 - 399,999	35	4.5	40	5.6	57	9.4
400,000 - 449,999	25	3.2	28	3.9	39	6.4
450,000 - 499,999	20	2.6	17	2.4	22	3.7
500,000 & Above	17	2.2	25	3.5	30	5.0
Total	***778***	***100.0***	***715***	***100.0***	***606***	***100.0***
Median	***- - - - - $208,954 - - - - -***		***- - - - - $225,254 - - - - -***		***- - - - - $250,653 - - - - -***	
Avg. Days on Market	***- - - - - - - 18 - - - - - - -***		***- - - - - - - 16 - - - - - - -***		***- - - - - - - 12 - - - - - - -***	

Source: Southeast Wisconsin Multiple Listing Service

The moderate amount of *new construction* product in the overall market, especially at price points more in-line with typical "new versus resale" differentials, is also having an impact on overall inventory levels among both newly built homes and resale units. For example, among all residential activity in the PMA (both detached and attached, and including both new construction and resales), *inventory levels are low*. With only 429 single family listings reported at the beginning of January 2024, and with overall closing activity totaling 2,267 units in 2023, single family inventory levels in PMA stand at just 2.27 months, which falls below the typical three-month inventory period that exists in more normal, or balanced, home markets. In the attached sector, a similar level of inventory exists at just 2.30 months (see **Exhibit 4.1**). *The most notable areas of imbalance in the detached sector can be found at price points below $500,000, and in the attached sector, below $400,000 where little (if any) new construction listings are represented. In fact, at the higher price points (where new construction listings are concentrated), inventory levels exceed three months in all instances.*

FUTURE FOR SALE COMPETITION

According to planning and zoning officials throughout the PMA's constituent municipalities, just a modicum of for sale housing communities are in the pipeline, i.e., less 1,139 units market-wide. These proposed developments, which consist of various single family and duplex/fourplex/condominium projects, appear to be very similar to other new construction products that exist today. Overall, future "known" supply further indicates a clear imbalance relative to underlying demand potentials.

4.1

RESIDENTIAL INVENTORY ANALYSIS IN MONTH'S SUPPLY
GERMANTOWN PMA

Price Range	Closings 2023	Current Listings As of 1/1/2023	Months of Inventory
Single Family Detached			
Under $200,000	39	6	1.85
200,000 - 249,999	129	18	1.67
250,000 - 299,999	228	32	1.68
300,000 - 349,999	288	42	1.75
350,000 - 399,999	308	32	1.25
400,000 - 449,999	261	28	1.29
450,000 - 499,999	223	37	1.99
500,000 - 549,999	178	46	3.10
550,000 - 599,999	123	42	4.10
600,000 - 699,999	210	56	3.20
700,000 & Above	280	90	3.86
Total	***2,267***	***429***	***2.27***
Duplex/Fourplex/Condominium			
Under $100,000	31	1	0.39
100,000 - 149,999	60	3	0.60
150,000 - 199,999	92	13	1.70
200,000 - 249,999	119	17	1.71
250,000 - 299,999	98	11	1.35
300,000 - 349,999	69	12	2.09
350,000 - 399,999	83	16	2.31
400,000 - 449,999	61	17	3.34
450,000 - 499,999	50	18	4.32
500,000 & Above	40	27	8.10
Total	***703***	***135***	***2.30***

Source: Southeast Wisconsin Multiple Listing Service

GENERAL LIMITING CONDITIONS

Tracy Cross & Associates, Inc. has made extensive efforts to confirm the accuracy and timeliness of the information contained in this study. Such information was compiled from a variety of sources, including interviews with developers/property managers and their agents, government officials, and other third parties. Although Tracy Cross & Associates, Inc. believes all information in this study is correct, it does not warrant the accuracy of such information and assumes no responsibility for inaccuracies in the information provided by third parties.

Conclusions and recommendations established in this analysis represent a professional opinion and are based upon forecasts into the future which could be significantly altered by outside occurrences. These include, among others, the possible interplay of unforeseen social, economic, physical/environmental, and governmental actions. In this regard, Tracy Cross & Associates, Inc., its owners, and its employees shall be held harmless of changes in conditions that may materially result from these occurrences.

MEETING:	**REGULAR MEETING OF THE PLAN COMMISSION**
DATE AND TIME:	**Monday, June 10, 2024 6:30 PM**
LOCATION:	**Germantown Village Hall Board Room** **N112 W17001 Mequon Road**

MINUTES

I. CALL TO ORDER: *This meeting has been given public notice in accordance with Section 19.83 and 19.84, Wis. Stats, in such form that will apprise the general public and news media of subject matter that is intended for consideration and action.*

Chairman Wolter called the meeting to order at 6:30pm.

II. ROLL CALL:

Chairman Wolter, Trustee Baum and Commissioners Tarantino, Williams and Henk were all present. Commissioner Shadid was absent/excused and Frank Lord was absent. Also present were Community Development Director Retzlaff and Associate Planner Yanke.

III. APPROVAL OF MINUTES:

A. May 13, 2024

Motion: Approve as presented
Motioned By: David Baum
Seconded By: Josh Tarantino

Motion: Amend Minutes to correct Commissioner Henk's name
Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, Bridget Henk
No: None
Abstain: None
Motion Passed

IV. NEW BUSINESS:

A. Mark Brooks, Agent for Das Barrel Room Tavern & Grill, and Doctors LLC, Property Owner of W201 N10466 Appleton Avenue. Site Plan Review of a 14-stall, off-site parking lot expansion (ACTION; TABLED from October 9, 2023 & March 11th, 2024)

Director Retzlaff stated that there are 2 parcels owned by Doctors LLC and operated by Mark Brooks for Das Barrel Room. He reviewed the history regarding CUP Amendments to expand the parking for the business to the adjacent parcel with multiple options. And stated that we are here to review a finely tuned Option 1 Site Plan from those previous submissions, that includes the paved parking area of 14 stalls, the vegetation buffer around the perimeter as well as a post & rope fence as a barrier to contain the parking area. Staff recommendation is to approve the Site Plan (Revised Option 1) with 4 conditions.

Motion: Approve as presented with discussion and 4 conditions
Motioned By: David Baum
Seconded By: Bridget Henk
Discussion Followed. Director Retzlaff stated that if this area is approved and roped off as instructed, it still will not meet the demand for parking for music events at the locale. The CUP would probably need to be amended again to include parking in the BP parking lot across the street, and we would have to evaluate issues such as safety with the crossing of Hwy 175 by patrons. Committee Member Henk stated that with 50 total parking stalls there has to be 2 ADA parking stalls. Mr. Brooks verbally agreed to add (1) one more ADA parking stall on the west side of the building.

APPROVE the Site Plan for a 4,948 sqft expansion of the existing off-site parking area located on the 2.1-acre parcel adjacent to the Das Barrel Room bar/restaurant located at W201N10466 Appleton Avenue pursuant to the conditions of approval in Conditional Use Permit #13-2019 subject to the following amendments to the adopted conditions:

1. This approval is for the plan sheet(s) noted below and is subject to compliance with all the conditions and requirements set forth herein and other conditions subsequently adopted and/or revisions required by the Plan Commission:
    a. Civil Engineering sheet #1 dated 5/2/2024
2. In cooperation with Village Staff, the operator/owner of the Das Barrel Room property shall appear before the Plan Commission after the outdoor event season in 2024 but not later than March 1, 2025, to discuss adequacy of the new off-site parking area, the post and rope fence in terms of deterring/prohibiting parking beyond the paved parking areas, and the overall parking situation for the Das Barrel Room operation.
3. The post and rope fence shall be installed as proposed except that the maximum spacing between posts shall be six (6) feet and extended to include the north side of the (12) parking stalls in the existing paved parking area and along the east side of the driveway connecting the two parking areas.
4. The operator/owner shall obtain an erosion control permit from the Village prior to commencing construction and/or restoration activities associated with the new 14-stall off-site parking area.

Yes: Dean Wolter, David Baum, Josh Tarantino, Bridget Henk
No: Robert Williams
Abstain: None
Motion (Yes 4, No 1, Abstained 0)

B. Crew Carwash, Property Owner - N96 W17500 County Line Road. Sign Review for a new Crew Carwash facility. (ACTION)

Director Retzlaff reviewed the sign package for the new Crew Carwash. Staff indicates this package is code compliant and recommend:
APPROVAL of the proposed monument, wall, directional and face replacement signs for the new 4,512 sqft carwash facility located at N96 W17500 County Line Road subject to the following conditions:

1. An electrical permit is required for all electrical installations or modifications prior to installation of all signs requiring electrical service. Contact Inspection Services staff (SAFEBuilt) for code and permit application requirements.

Motion: Approve as presented
Motioned By: David Baum
Seconded By: Josh Tarantino
Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, Bridget Henk
No: None
Abstain: None
Motion Passed (Yes 5, No 0, Abstained 0)

C. Innovative Signs, Inc. Agent for TDC Willow Creek LLC, Property Owner - N102W19200 Willow Creek Way. Sign Review for Diamond Vogel (ACTION)

Associate Planner Yanke stated that Diamond Vogel is a new tenant in the Willow Creek Business Park and is requesting approval of 1 new wall sign as proposed by the application photos presented. The sign faces SW and is roughly 81.5 sqft. It complies with code and will be illuminated at night. Staff recommends:
APPROVAL of the proposed wall sign for Diamond Vogel located at N102W19200 Willow Creek Way, subject to the following conditions:

1. Applicant/owner shall obtain an electrical permit from building inspection services for the sign installation.
2. Prior to permit issuance and the sign installation, applicant/owner shall obtain written approval from the Willow Creek Business Park Review Board for the sign, as specified in the Declaration of Protective Covenants Section 5.11 applicable to the subject property (Recorded Document No. 1439286).

Motion: Approve with 2 conditions as presented
Motioned By: David Baum
Seconded By: Josh Tarantino
Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, Bridget Henk
No: None
Abstain: None
Motion Passed (Yes 5, No 0, Abstained 0)

D. Briohn Building Corp. Agent for Green Bay Packaging, Inc. Property Owner - NE Quadrant Holy Hill Road / Highway 41. Certified Survey Map (CSM) application to combine (3) parcels into one for construction of a new 270,000 sqft light manufacturing/office facility. (ACTION)

Associate Planner Yanke stated that this site was rezoned to M1 and this CSM would combine 3 parcels into 1 for construction of the new facility for Green Bay Packaging. The land use plan change and rezone was approved for this site in 2023 to support the new facility and the site plan was approved in 2024.
APPROVAL of the proposed 1-lot Certified Survey Map (CSM) for the Green Bay Packaging property located at N128W21600 Holy Hill Road in the Holy Hill Gateway District, subject to the following conditions:

1. All technical issues and corrections identified by the Village Surveyor (see May 17, 2024, memo from Burt Naumann, GRAEF) shall be addressed and reflected in a revised CSM reviewed and approved by Village staff prior to recording.
2. All technical issues and corrections identified by the Village Surveyor (see May 20, 2024, memo from Bob Beilfuss, Point Land Surveying and Mapping) shall be addressed and reflected in a revised CSM reviewed and approved by Village staff prior to recording.

Motion: Approve with 2 conditions as presented
Motioned By: David Baum
Seconded By: Josh Tarantino
Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, Bridget Henk
No: None
Abstain: None
Motion Passed (Yes 5, No 0, Abstained 0)

E. Briohn Building Corp. Agent for Goldendale Road IV, LLC Property Owner - N206W12880 Gateway Court. Certified Survey Map (CSM) for a property line adjustment to accommodate expansion of the Golden Pet Manufacturing facility. (ACTION)

Associate Planner Yanke stated that this proposal is to adjust the property line 10' north to accommodate the expansion of the Golden Pet Manufacturing facility. The movement of the property to 10' north would accommodate the expansion to meet an International Building Code (IBC) setback requirement.
APPROVAL of the proposed 2-lot Certified Survey Map (CSM) for the Golden Pet Manufacturing and Kapco Metal Stamping properties located at W206N12880 Gatewood Court and W204N13035 Goldendale Road subject to the following condition:

1. All technical issues and corrections identified by the Village Surveyor (see April 26, 2024, memo from Burt Naumann, GRAEF) shall be addressed and reflected in a revised CSM reviewed and approved by Village staff prior to recording.

Motion: Approve CSM as presented with 1 condition as presented
Motioned By: David Baum
Seconded By: Robert Williams
Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, Bridget Henk
No: None
Abstain: None
Motion Passed (Yes 5, No 0, Abstained 0)

F. Keller Inc., Agent for Orange Blossom LLC, Property Owner of David J. Frank Landscaping - N120 W21350 Freistadt Road. Site Plan Review applications for a 5,200 sqft corporate office building addition, a 1,552 sqft Landscape Maintenance Division (LMD) office building, and Sign Permit application for wall and monument signs. (ACTION)

Director Retzlaff stated that David J Frank Landscaping is in the midst of expanding and making improvements to their property. He went over the background of the project and stated that an office addition, maintenance building, wall and monument

signs and a green roof are all proposed in the detailed plans. The buildings will have stone veneer. The green roof is an interesting addition with Hwy 41 nearby to see activity on the roof. The sign is double-sided and visible from the highway, as well as a new monument sign at Freistadt Road. Staff review included encroachment of the parking lot onto Hwy 41 right-of-way, so it would need approval from the DOT. He believes the DOT will reissue an irrevocable occupancy agreement that will have to be resolved before the sign can be constructed. We are waiting for confirmation from the Village Engineer that the Stormwater pond maintenance agreement is in place and that the ponds are suitable to handle the minimum water containment for the site. The areas that are proposed to be paved are already compacted gravel, so there shouldn't be a significant increase in runoff. Staff recommendation is:
APPROVAL of the site development and building plans for the proposed 5,250 sqft office building addition and new 1,550 sqft landscape maintenance division (LMD) office building for the DJ Frank landscape contracting services operation located at N120W21350 Freistadt Road subject to the following conditions:
This approval is for the proposed corporate office building addition and landscape maintenance division (LMD) building and site areas immediately adjacent to said buildings as shown on the following plans. Approval is subject to all the conditions and requirements set forth herein and adopted by the Plan Commission. Approval is granted for the following plans unless superseded by subsequent plan sheets approved by the Village Planner or Engineer pursuant to revisions required herein and/or by the Plan Commission:

1. Corporate Office Building Addition
    1. Architectural plan set w/revised date March 11, 2024
    2. Civil Engineering plan set w/revised date March 11, 2024
    3. Exterior lighting plan set dated March 11, 2024
    4. Landscape plan set dated March 11, 2024
2. Landscape Maintenance Division (LMD) Building
    1. Architectural plan set w/revised date March 7, 2024
    2. Civil Engineering plan set w/revised date March 11, 2024
    3. Exterior lighting plan set dated March 11, 2024
    4. Landscape plan set dated March 11, 2024
3. All landscaping, grading, paving, storm water management, utility and other improvements shown on the approved plans shall be installed as approved prior to issuance of an occupancy permit for the building addition unless a cash bond or letter of credit in an amount equal to 120 percent of the estimated installation and material costs reviewed and approved by the Village is submitted to the Village as necessary to ensure that installation of the proposed features and improvements will be completed within one (1) year after issuance of the occupancy permit.
4. The Property Owner shall provide verification from Washington County that the existing on-site sanitary system (i.e. holding tanks) is adequate to handle the potential increase in loading expected because of the office addition and LMD office construction. Said verification shall be provided to the Community Development Department prior to issuing building permits for the corporate office building addition and LMD building.
5. No improvement to the existing gravel parking area located south of the corporate office building that encroaches onto the US41 right-of-way shall

commence until the Property Owner has provided documentation to the Community Development Department from the WisDOT authorizing the use of and improvements to said parking area located on US41 right-of-way (e.g. encroachment agreement, revocable occupancy agreement, etc.).

6. The Property Owner and engineer shall coordinate with the Village Engineer to provide all storm water management plan and/or analysis documentation necessary to verify that the existing storm water facilities on the DJ Frank property meet the current Village of Germantown, MMSD and other applicable standards and are sufficient to accommodate the amount of additional storm water run-off associated with the proposed corporate office building addition, landscape maintenance division (LMD) building construction, and associated pavement improvements on the property. Said verification shall be reviewed and approved by the Village Engineer prior to issuing building permits for the corporate office building addition and LMD building.
7. The landscaping plan shall be revised to meet the Village's code requirements as set forth below:
    1. Page L1.0. Per municipal code 17.43(c). Interior parking lot landscaping shall include (one) 2" caliper tree for every ten parking spaces.
    2. Page L1.0. Per municipal code 17.43(c). Parking lot landscaping of perimeter with plantings around the parking lot for screening from adjacent properties.

Said plan revisions shall be submitted to the Community Development Department and Village Forester for review and approval prior to issuing occupancy for the corporate office building addition.
Motion: Approve as presented with 6 conditions. We are not approving floor plans at this time.
Motioned By: David Baum
Seconded By: Josh Tarantino
Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, Bridget Henk
No: None
Abstain: None
Motion Passed (Yes 5, No 0, Abstained 0)

APPROVAL of the proposed wall, building entrance and monument signs for the DJ Frank landscape contracting services operation located at N120W21350 Freistadt Road subject to the following conditions:

1. This approval is for the proposed wall and monument signage as shown on the following plans. Approval is subject to all the conditions and requirements set forth herein and adopted by the Plan Commission. Approval is granted for the following plans unless superseded by subsequent plan sheets approved by the Village Planner or Engineer pursuant to revisions required herein and/or by the Plan Commission:
    1. Conceptual Design Sign package by Appleton Sign dated November 28, 2023
2. The monument sign base is required to be constructed of a masonry material that matches or is complimentary to the exterior wall material of the primary building on the property and not aluminum as proposed. A revised sign plan

sheet indicating a code compliant material will be used shall be submitted for review and approval to the Community Development Department prior to issuance of any building or electrical permit for the monument sign.

3. The monument sign proposed to be installed on US41 right-of-way at the driveway entrance on Freistadt Road shall not be installed and no building or electrical permits issued until the Property Owner has provided documentation to the Community Development Department from the WisDOT authorizing installation of the monument sign on the US41 right-of-way (e.g. encroachment agreement, revocable occupancy agreement, etc.).

Motion: Approve Signs with 3 conditions as presented
Motioned By: David Baum
Seconded By: Josh Tarantino
Yes: Dean Wolter, David Baum, Josh Tarantino, Robert Williams, Bridget Henk
No: None
Abstain: None
Motion Passed

G. Sunstarr Real Estate Ventures LLC, Agent for Christian Life Center, Inc., Property Owner - Site Plan consultation for a 68-unit multi-family residential development (CONSULTATION)

Discussion only. Director Retzlaff stated that this consultation was to present the intentions of Sunstarr for the property owned by Christian Life Inc. at Fond du Lac Avenue & Crimson Road. He gave some background, described surrounding properties and stated that the zoning is currently institutional. Sunstarr is proposing a development with a total of 68 multifamily units, each with a private entry and 1 car attached garage. The density would be just under 10 units per acre. This is a corridor that does allow multifamily development with that density. There would be perimeter landscaping and an onsite stormwater pond, as well as an open/activity space in the center. They do not propose extending Crimson Road and would vacate the right-of-way on the south side of the property. A rezoning would be required to change the property to RM-3 and site & building plans would be required. Staff does not support not extending Crimson Road, but residents were against that happening in the past. Trustee Baum liked the plan compared to others in the past and agrees with the vacating of Crimson Road, but was concerned with the design that funnels all traffic on a circuitous route going through the center, which was described as more for esthetics than activities, i.e. a pergola. Commissioner Henk also disliked the circulation of the site. Trustee Baum stated concern about families with children living there that could possibly overload the school system. Commissioner Williams asked about the price point for the units: $1700-$2200 with full rentals, no ownership. Chairman Wolters expressed concern about only having (1) one access via Fond du Lac Avenue into the facility with roughly 140 resident vehicles. Trustee Baum also suggested a potential temporary gravel access route be added in case of the need for multiple rescue vehicles being dispatched to the area. Commissioner Tarantino brought up the potential that residents will park alongside the parking lot and in front of the garages which they will use for storage instead of parking vehicles, which would cause further congestion. He feels this plan is way too constrictive with both ends shut off and with the potential for snowpiles in winter making it even worse.
Director Retzlaff stated that the need for the extension of Crimson Road would be to provide enhanced circulation for traffic in the area. But if the development of Crimson

Road is important to the Village, we will need to decide if it's important enough to pay for the road ourselves. Because developers will continue to pull out if they are also required to construct Crimson Road. He also recommended moving the building corners closest to the west property line further into the site with more landscaping along the property line to buffer the adjacent single-family subdivision.

V. CITIZEN INPUT/PUBLIC APPEARANCE: *(Please be advised per 19.84(2) that information and comment will be received from the public. It is the policy of this municipality that public input be limited to a three (3) minute period per person with a time extension granted at the discretion of the Chairperson. Be advised that there may be limited discussion of the information received but no action will be taken under public comments.)*

Melanie Smythe, who lives on Cedar Lane, spoke regarding the history of the 2050 plan and feels it is incomplete.
Jason Giguere who lives on Appleton Avenue spoke negatively about the Das Barrel Room parking issue.
Scott Hefle who lives on Old Farm Road spoke negatively regarding the Crimson Road Consultation and discussion about the property to the south.
Jan Miller who lives on Windsong Cir. W spoke negatively about cookie cutter developments and would like a lot more citizen input.
Joey Carini, who lives on Amber Drive spoke negatively about the Crimson Road multifamily development.

VI. ANNOUNCEMENTS:

Chairman Wolter announced the upcoming 4th of July festivities. The parade starts at 4pm with food, drink, kids' activities, a band and fireworks at 9pm, which will close the day's festivities. Please consider volunteering.

VII. ADJOURNMENT:

Chairman Wolter adjourned the meeting at 8:20pm.

REZONING, CONDITIONAL USE PERMIT (CUP), SITE PLAN, & SIGN PERMIT APPLICATIONS

12/09/24 Plan Commission Meeting

Jeff Osgood / Kwik Trip, Inc. / Ben Venue Properties

Village Staff Report & Recommendation ***Germantown, Wisconsin***

SUMMARY

Jeff Osgood, Agent for Kwik Trip, Inc., and Ben Venue Properties, Property Owner, is seeking approval of a Rezone, Conditional Use Permits (CUPs), and site development/building/sign plans to allow for a *Convenience Food Store* and *Motor Vehicle Filling/Petroleum Service Station* with *Self-Service Carwash*. The site is located at N112 W18741 Mequon Road in the Lannon-Mequon Road Corridor and is located within a Groundwater Protection Overlay District.

Location: N112 W18741 Mequon Road

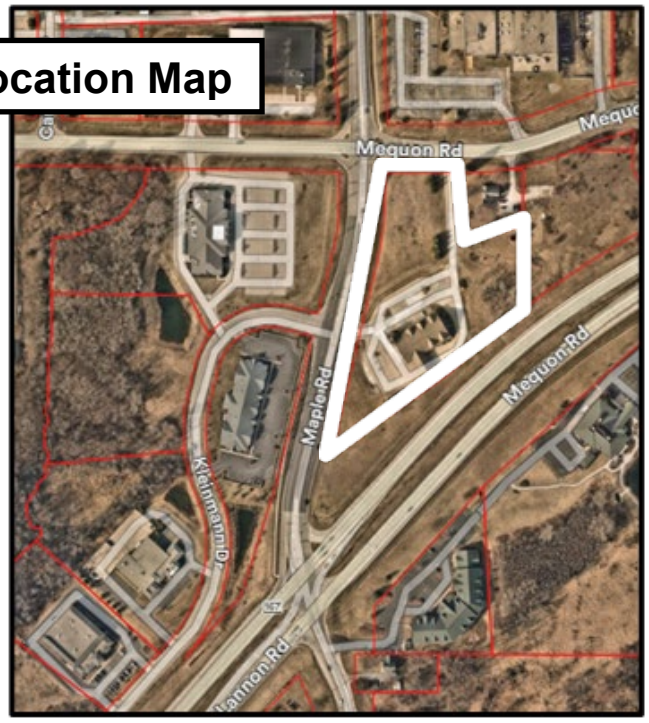
Applicant/
Property Owner: Kwik Trip, Inc.
1626 Oak St
La Crosse, WI 54602

Ben Venue Properties
W240N777 Deerfield Ct
Sussex, WI 53089

Current Zoning: B-3: General Business District
Proposed Zoning: B-5: Highway Business District

Adjacent Land Uses		Zoning
North	Industrial	M-1
South	Highway Business	B-5
East	General Business	B-3
West	Highway Business	B-5

Location Map



Background/Proposal

Jeff Osgood, Agent for Kwik Trip, Inc., and Ben Venue Properties, Property Owner, is seeking approval of a Rezone, Conditional Use Permits (CUPs), and site development/building/sign plans to allow for a *Convenience Food Store* and *Motor Vehicle Filling/Petroleum Service Station* with *Self-Service Carwash*. The site is located at N112 W18741 Mequon Road in the Lannon-Mequon Road Corridor and is located within a Groundwater Protection Overlay District.

Kwik Trip is proposing to relocate its existing convenience store and fueling station to the former PNC Bank property across Lannon Road. The new site at (4.37 acres) is larger than the existing site at W188 N10963 Maple Road (2.5 acres) and provides an opportunity to develop a new state-of-the-art facility approximately 12,000 square feet in area with improved/enlarged restrooms, increased store space with higher ceilings, more gasoline fueling positions, a 2-bay drive-through carwash, a separate diesel fueling area and canopy, and additional parking.

The existing office building at the prospective site would be removed and replaced with the subject development proposal. Access to the site would remain the same with driveway access to/from both Maple Road on the west and Mequon Road on the north side of the property. If approved, the existing Kwik Trip store would be decommissioned and put up for sale (subject to a deed restriction that prohibits future use as a convenience store and fueling station).

Rezone

The property is in the "Lannon-Mequon Road Corridor" under the Village's 2050 Comprehensive Plan and the current zoning is B-3: General Business. The applicant has filed a Rezone requesting the parcel be zoned into the B-5: Highway Business District. The B-5 District permits convenience food stores and petroleum service stations, while also allowing a self-service carwash as a conditional use.

Conditional Use Permits (CUPs)

This project includes two (2) Conditional Use Permit (CUP) applications. Each application is described in greater detail on the following pages, please refer to the below that lists each CUP for this case individually:

- <u>Conditional Use in B-5 District</u>
  - Self-Service Carwash
- <u>Conditional Use in Groundwater Protection District (Relocation Clause)</u>
  - Motor Vehicle Filling Station

Site Plan

As indicated in the applications and site/engineering plans, the proposed development includes a newly constructed building with 2-bay attached carwash, gas and diesel fueling positions and canopies, parking lot improvements, dumpster enclosure, stormwater pond, landscaping, and signage. More specifically the new Kwik Trip site will include the following features:

- <u>Building Plans</u>
  - 12,167 sq ft convenience store with attached 2-bay carwash
  - Brick façade with asphalt shingled roof
  - Gasoline and diesel fuel canopies

    - Building and canopy fascia to tie in with franchise colors
    - 20.0' building height and 19.5' canopy height
- Parking Lot Improvements
    - 42 parking spaces
    - Two (2) ADA space
    - Designated truck parking area (no overnight parking)
    - Picnic tables
    - Carwash vacuum pad
- Landscape Plan
    - New perimeter lot landscaping with trees, shrubs, and perennials
    - Interior lot landscaping including parking lot and island landscaping
- Sign Plan
    - Two (2) freestanding monument signs
    - Building and canopy signs
    - Directional/wayfinding signs
    - Parking signs
- Storm Water Management
    - New on-site stormwater pond in southern portion of property

Parking, Access, and Traffic Circulation
As stated in the application, the new Kwik Trip facility is proposed to be constructed on the subject 4.37-acre site. The existing/vacant building will be removed and replaced with a convenience food store, twenty (20) regular fueling positions, diesel fueling positions, and a 2-bay car wash. Access to the site will remain at one location to Maple Road, directly across from Kleinmann Drive and one location to Mequon Road, just east of the Maple Road intersection. Both access driveways are unrestricted with full access turning movements to and from the mainline roadways. For reference, a site circulation plan was included in the site development plan and a Traffic Impact Analysis supplementing the application was also submitted and is attached.

Storm Water Management
The proposal is a redevelopment project including a new Kwik Trip convenience food store, gas and diesel fueling, self-service carwash, parking and driving surfaces, and other amenities. Hydrology as proposed will be similar to the existing condition. The total impervious surface area for the site is roughly 60%, and runoff from the majority of the proposed development will be conveyed to a wet detention pond in the southwest corner of the property, which will provide stormwater management for the site. Stormwater management requirements will be achieved utilizing overland flow coupled with a storm sewer conveyance system that routes stormwater runoff to a proposed wet detention pond. The wet detention pond will treat and detain the stormwater runoff prior to discharging it the public storm sewer system in Maple Road.

Utilities
Sanitary and water utilities serve the existing site. While no major changes or upgrades are anticipated by staff as part of this project, there are conditions of approval included requiring the applicant to address recommendations by the Superintendent of Water Utility and Superintendent of Wastewater Utility.

Landscaping and Buffering
New perimeter lot landscaping with trees, shrubs, and perennials is proposed per the landscape plan submitted. The bulk of the proposed landscaping is located in a narrow landscape strip along Lannon Road and in another strip along Maple Road. Interior lot landscaping is also proposed around perimeter parking lot areas and parking islands.

Lighting
A photometric lighting plan was submitted and is included with the site development plan. The site will include the following key lighting components:

- (19) Light poles at a height of sixteen (16) feet providing LED lighting throughout the vehicular circulation areas and exterior parking lot areas
- (44) Recessed LED downlight fixtures around building
- (28) LED mounted fixtures under gas and diesel canopies

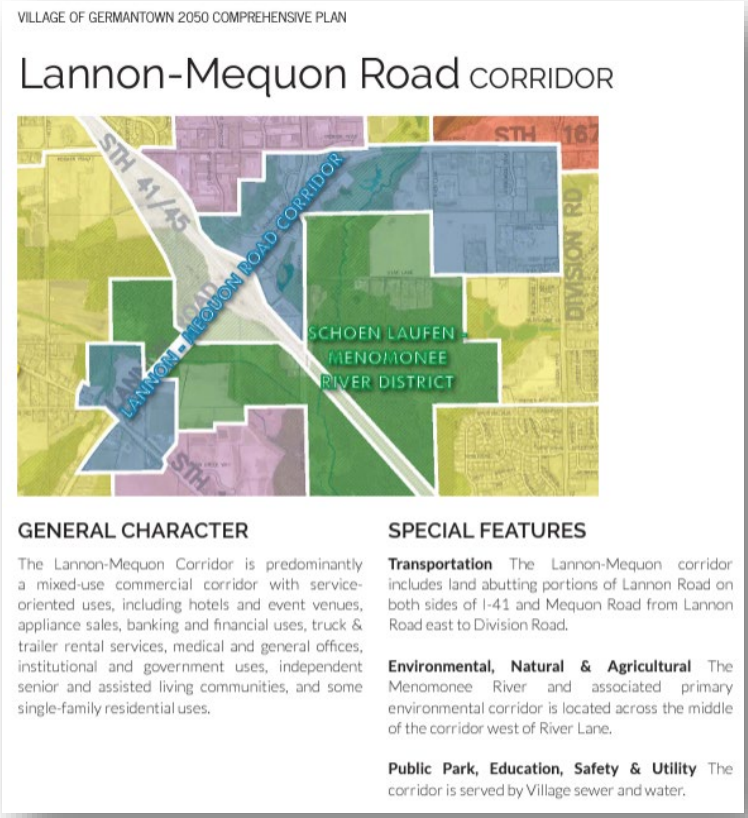
Sign Plan
The applicant has proposed a total of (31) signs for the site. A sign plan was submitted illustrating the proposed signage. Please refer to the following list that provides a summary of the signs included in the submittal:

- (2) 24” LED Kwik Trip building sign
- (1) Carwash building directional sign
- (1) 18” LED Kwik Trip and 24” carwash building sign
- (1) Carwash enter sign
- (1) Carwash exit sign
- (2) Carwash informational signs
- (2) 24” LED Kwik Trip canopy signs
- (1) 18” LED diesel enter canopy sign
- (1) 18” LED diesel exit canopy sign
- (2) Driveway directional signs
- (6) 2-Hour parking signs
- (2) Employee parking signs
- (7) No parking signs
- (2) Freestanding monument signs

Staff Comments
Community Development: Planning and Zoning
The project site is in the “Lannon-Mequon Road Corridor” under the Village’s 2050 Comprehensive Plan and is currently zoned B-3 General Business District. The applicant requested a rezone of the property to B-5 Highway Business District, as the B-5 District “is intended to provide for the orderly and attractive grouping at appropriate locations along principal highway routes of those businesses and customer service establishments which are logically related to and dependent upon highway traffic or which are specifically designed to serve the needs of such traffic.”

The proposed Kwik Trip facility meets the intent of the requested zone (B-5), and its land use elements are more permissible in the district in comparison to the current zoning designation (B-3). A self-service carwash is a conditional use in both zoning districts, but the B-5 District allows petroleum service stations by right rather than requiring a conditional use permit. Additionally, the intent of the B-3 District is clearly

geared towards revitalizing an established area such as Main Street. According to the zoning code, the B-3 District "is intended to provide for the orderly continuation and revitalization of the older established Main Street (central business district) area of the Village where uses are not exclusively of one type but, rather, mixed and include retail sales shops, wholesale and warehousing outlets, and institutional, recreational, and residential uses."



The proposed Kwik Trip facility and requested zoning district are in line with the 2050 Comp. Plan designation for the site, which is the "Lannon-Mequon Road Corridor". As stated above, the current zoning district is intended to support uses and business within a more traditional neighborhood or central business district, such as the Village Center District, whereas the proposed use and zoning designation is best served to be within a highway corridor and off a major thoroughfare that is near an interchange with Interstate 41.

In July 2024, the applicant brought forward the subject development to the Plan Commission for a consultation. The primary points of discussion included site design, traffic circulation, and architectural details of the Kwik Trip building and canopies. One of the points made to the applicant was to amend the standard Kwik Trip architectural appearance of the building and canopies and create a proposal upholding the Village's "Germanic Theme" through the Mequon Road corridor. The before and after renderings are provided on the following page to show the changes made.

Staff recommends that the brick work on the gas and diesel canopy support poles extend to the base of each canopy roof to provide enhanced aesthetic detail. While this has been added as a condition of approval by staff, the Plan Commission shall decide and recommend on the final architectural details that should be incorporated into the building and canopy structures.

Building Rendering (Before Plan Commission Consultation)

Building Rendering (After Plan Commission Consultation)

Canopy Rending (Before Plan Commission Consultation)

Canopy Rendering (After Plan Commission Consultation)

Given the nature of this proposal, site circulation and traffic impacts were discussed by the Plan Commission during the consultation. The applicant has since provided a detailed site circulation plan, which is included in the overall site development plan. A Traffic Impact Analysis was also submitted to supplement the application. These documents illustrate truck traffic movement as proposed throughout the site and also show that the driveway entrances will be improved and widened where allowed. The code permits a maximum of 40 feet in width for driveways at the right-of-way line and a maximum of 45 feet in width where they meet the adjoining roadway. The applicant will widen each driveway where permitted, which will improve the turning allowance and spacing for cars/trucks entering/exiting the site.

The Village Engineer reviewed the traffic study and concurred with the recommendation of adding a northbound right turn lane at the site entrance on Maple Road. This will eliminate the potential for stacking or sudden movements by vehicles trying to go around larger trucks that are making a right turn into the facility while going northbound on Maple Road.

As shown on the submitted site plan, a retaining wall is proposed along Lannon Road and is setback from the property line a distance that appears to be equal to or less than the height of the wall (at certain points along the wall where the height is 7 feet to 8 feet). Village code requires retaining walls to be setback a minimum distance equal to the height of the retaining wall from the base of the wall to the property line. Staff has a concern with the proximity of the retaining wall to the property line and has added a condition that the applicant clarify the setback and confirm compliance with code. This code requirement is a minimum standard, so discussion is warranted on if the distance of the wall to the property line should be increased. Staff also recommends that a fence or other barrier structure be added on top of the wall to prevent drivers from inadvertently driving over the edge of the wall.

The landscape screening along Lannon Road should be increased in height in order to buffer the height of the retaining wall. Currently the tree plantings in front of the wall are listed as six (6) foot plantings per plan, whereas the height of the wall is 8 feet in certain points.

On August 19, 2024, the Village Board passed a series of zoning code amendments to the Wellhead Protection ordinance under Section 17.40 of the zoning code. Included with the amendments is a provision allowing the relocation of pre-existing uses or facilities that are prohibited by the Wellhead Protection regulations. The relocation of such uses can be allowed through a Conditional Use Permit (CUP). The prohibited “motor vehicle filling station” is proposed in accordance with the relocation clause, thus requiring a CUP. Note that the owner of the property from which the pre-existing use or facility is relocating from (i.e. existing Kwik Trip property) shall record a deed restriction against the property that prohibits future uses and/or facilities that require a conditional use permit or are listed as a prohibited use per Wellhead Protection requirements.

Community Development: Inspection Services

State agency (DSPS) approved plans and a $20,000 occupancy bond are required by Inspection Services. The Village of Germantown is an authorized delegated agent of DSPS to provide all commercial plan review and inspection services through SAFEBuilt of Wisconsin and the Village of Germantown.

Public Works/Village Engineer

The Village Engineer has identified several technical issues and plan revisions that need to be resolved or otherwise addressed by the applicant prior to commencing construction activities. Staff is recommending conditional approval of the submitted applications subject to all outstanding items and issues identified in the following review memo being resolved and reflected in additional information and/or revised plan submitted to staff for further review, comment, and approval prior to commencing any site construction:

- November 26, 2024 – Review Memo from Village Engineer

Village Forester

The Village Forester has reviewed the submitted landscape plan and provided the comments below. A condition of approval has been included requiring the applicant to address the review comments and make the landscape plan contingent upon final approval/acceptance from the Village Forester. Review comments are as follows:

- *Identify if the trees off the southeast edge of the storm pond will be removed. If not, the grade changes to accommodate the pond, and planting a new border of trees under the canopy of the existing trees will negatively impact the health of the existing trees.*
- *Tree species diversity – The Village is trying to limit the planting of maple trees due to the high prevalence of this tree species in urban areas. This plan includes (29) maple trees. Additionally, the evergreen choices of white spruce and black hill spruce are both highly susceptible to needlecast diseases that impact the future health and aesthetics of these trees. Consider the following alternatives for maple trees, white spruce, and black hills spruce.*
    - *Deciduous trees (maple alternatives)*
        - *Kentucky Coffeetree (Gymnocladus dioicus)*
        - *London planetree (Platanus x acerifolia)*
        - *Tuliptree (Liriodendron tulipifera)*
    - *Evergreen Trees (spruce alternatives)*
        - *Norway spruce (Picea abies)*
        - *Serbian spruce (Picea omorika)*
        - *Concolor fir (Abies concolor)*
- *The location/spacing of newly planted trees along Maple Road, on private property, are acceptable in lieu of new development R-O-W street tree planting requirements.*

Fire and Police Departments

No Comments.

Groundwater Technical Review Committee

As previously mentioned, on August 19, 2024, the Village Board passed a series of code amendments to the Wellhead Protection provisions under Section 17.40 of the zoning code. Included with the amendments is a provision allowing the relocation of a pre-existing use or facility prohibited within a Groundwater Protection Overlay District. The relocation of such uses within a Groundwater Protection Overlay District can be allowed through a Conditional Use Permit.

In this instance, Kwik Trip, Inc. has requested a Conditional Use Permit to relocate their existing facility, which is classified as a "motor vehicle filling station" and prohibited under the Village's Wellhead Protection regulations. The current Kwik Trip facility is located at W188 N10963 Maple Road while the proposed relocation property is located roughly 650 feet north at the subject development site addressed N112 W18741 Mequon Road (former PNC Bank). Both properties are within the same Groundwater Protection Overlay District.

Per Code Section 17.40, the applicant submitted the required documents for review by the Groundwater Technical Review Committee at its meeting on November 25, 2024. Those documents are attached to this memo and the Committee's recommendation on the case is detailed at the end of this document. For reference, the Groundwater Technical Review Committee's purpose and responsibilities are to:

- Provide objective and scientific technical review of request for conditional use permits and make recommendations to the Plan Commission and ultimately to the Village Board to grant or deny conditional use permits based upon the facts discovered in that review.
- To make recommendations on any and all conditions placed on a conditional use permit.
- To interpret the provisions of Code Section 17.40 (Wellhead Protection) and to provide guidance to the Village Planner/Zoning Administrator regarding potential amendments to and the administration and enforcement of the provisions under Section 17.40.
- To give advice on matters concerning the protection of Germantown's groundwater resources.

VILLAGE STAFF RECOMMENDATIONS

APPROVE the Rezone of one (1) parcel comprised of 4.37 acres from B-3: General Business District to B-5: Highway Business District, as proposed.

APPROVE the Conditional Use Permit (CUP) for a *Self-Service Carwash* for Kwik Trip, Inc. for property located at N112 W18741 Mequon Road, subject to the following conditions:

1. The uses and activities allowed on the property shall be limited to those uses and activities specified in the Conditional Use Permit (CUP) application and project narrative dated October 14, 2024, and October 17, 2024, and supporting site plan documents revised dated September 5, 2024. Days and hours of operation shall be in accordance with those specified in the CUP supporting documents submitted to the Village.
2. The Owner/Operator is responsible for reporting any significant changes in the type, intensity, amount, or location of the land use and activities, days and hours of operation, size or location or other operational characteristics of said uses and activities authorized under this CUP to the Village Zoning Administrator.
3. If the use, activities and/or operation subject of this permit falls out of conformity with the conditions herein, or, where there is a change in the nature, character, intensity or extent of the activities or uses which causes problems or harmful effects that were not anticipated at the time of approval of this CUP, the Conditional Use Permit (CUP) may be modified or terminated by the Village Board by the amendment to or addition of conditions after public hearing thereon.
4. All temporary and permanent exterior signs require a permit and shall comply with all current sign regulations. Off-premises advertising and directional signage is regulated by the Village and requires a permit if/when allowed.
5. All future site improvements, including all building, parking area, landscaping, storm water management facilities, signage, exterior lighting, and any other improvements made to or on the property that are necessary for the land use and activities authorized under this CUP shall be submitted for review and approval by the Village through the Zoning Permit or Site Plan application process as determined by the Village Zoning Administrator. If required, Site Plan review and approval will include Plan Commission review and approval.
6. Building permits and commercial building code plan approval are required for the planned building and canopy construction. Contact SAFEbuilt staff in Inspection Services at Village Hall prior to any work for more information.
7. No overnight parking of semi-trailer trucks shall be permitted on site.
8. Pursuant to Section 17.47 of the Zoning Code, if the Village observes and/or receives complaints regarding negative impacts associated with and/or created by business-related activities conducted on the property, including but not limited to noise, dust or other airborne materials, the Property Owner/Operator shall work with the Village to identify the source of such impact(s), evaluate

alternative mitigation measures, and implement a mutually-agreeable solution to mitigating the impact(s).

APPROVE the site development and building plans submitted by Kwik Trip, Inc. for a 12,167 square foot convenience food store with 2-bay attached carwash, gas and diesel fuel canopies, parking lot and driveway improvements, and landscaping installation for property is located at N112 W18741 Mequon Road, subject to the following conditions:

1. This approval is for the various plan sheets that comprise the site development plan set as noted below and is subject to compliance with all the conditions and requirements set forth herein and subsequently adopted and/or revised by the Plan Commission. Approval is granted for the following unless superseded by subsequent plan sheets approved by Village Staff pursuant to revisions required herein and/or by the Plan Commission:
    a. *Civil engineering plans dated October 9, 2024.*
    b. *Landscaping plans dated October 9, 2024.*
    c. *Photometric lighting plan dated October 9, 2024.*
    d. *Architectural rendering set received October 21, 2024 (3 pages).*

    If revised plan sheets are necessary, each revised sheet shall contain the date of said revision clearly stamped in the lower right corner.
2. Additional and/or altered landscaping shall be shown in a revised landscape plan review and approved by the Village Forester, including:
    a. Taller landscape plantings (i.e. trees) shall be installed in front of the retaining wall along Lannon Road to better screen/buffer the view of the wall from drivers on Lannon Road.
    b. Identify if the trees off the southeast edge of the storm pond will be removed. If not, the grade changes to accommodate the pond, and planting a new border of trees under the canopy of the existing trees will negatively impact the health of the existing trees.
    c. Consider the following alternatives for maple trees, white spruce, and black hills spruce.
        i. Deciduous trees (maple alternatives)
            - Kentucky Coffeetree (Gymnocladus dioicus)
            - London planetree (Platanus x acerifolia)
            - Tuliptree (Liriodendron tulipifera)
        ii. Evergreen Trees (spruce alternatives)
            - Norway spruce (Picea abies)
            - Serbian spruce (Picea omorika)
            - Concolor fir (Abies concolor)
3. The technical issues and plan revisions identified in the November 26, 2024, memo from the Village Engineer shall be addressed in revised plan sheets and/or supplemental documents as necessary prior to commencing construction activities (excluding site demolition, early start site preparation, and footing & foundation installation).
4. State agency (DSPS) approved plans and a $20,000 occupancy bond are required by Inspection Services. The Village of Germantown is an authorized delegated agent of DSPS and may be used as an alternative to provide all commercial plan review and inspection services through SAFEBuilt of WI and the Village of Germantown.
5. Site plan shall be revised (or clarified) to denote a 40-foot maximum width for the driveway openings at the right-of-way line pursuant to Code Section

17.45(4)(c). This applies to the driveway entrances to and from the site at Maple Road and Mequon Road.

6. Site plan shall be revised (or clarified) to verify the proposed retaining wall meets minimum setback requirement from the base of the wall to the property line at all points. A fence or other barrier structure shall be added to the top of the retaining wall to prevent drivers from inadvertently driving over the wall.
7. Per the Village's Superintendent of Wastewater Utility, the existing sample manhole shall be reconstructed to current Village requirements and detail.
8. The final architectural building/canopy plans shall include brick work on the gas and diesel canopy support poles extending to the base of each canopy roofline.
9. Applicant/owner/operator shall construct a right turn northbound lane at the driveway entrance approach off Maple Road. An agreement for work within the Village right-of-way shall be signed and executed between the applicant/owner/operator and Village prior to work commencing, subject to Village Attorney review and approval.

APPROVE the Sign Plan for Kwik Trip, Inc. for property located at N112 W18741 Mequon Road, subject to the following conditions:

1. Applicant/owner shall obtain electrical/building permits from Building Inspection Services for sign installation.
2. Prior to permit issuance and sign installation, applicant/owner shall submit a revised sign plan illustrating that the wayfinding/directional signs comply with code and are no higher than four (4) feet from grade (as applicable to each sign).

GROUNDWATER TECHNICAL REVIEW COMMITTEE RECOMMENDATION

Based discussion and testimony at its November 25, 2024, meeting, the Groundwater Technical Review Committee recommended to **APPROVE** the Conditional Use Permit (CUP) to allow a *Motor Vehicle Filling Station* within a Groundwater Protection Overlay District, subject to the following conditions:

1. Applicant/owner shall provide current copies of all federal, state, and local facility operation approval or certificates and on-going environmental monitoring results to the Village.
2. Applicant/owner shall establish environmental or safety structures/monitoring to include an operation safety plan, material processes and containment, operations monitoring, best management practices, stormwater runoff management, and groundwater monitoring.
3. Replace equipment or expand in a manner that improves the environmental and safety technologies in existence.
4. Prepare, file, and maintain a current contingency plan which details the response to any emergency which occurs at the facility, including notifying municipal, county, and state officials. Provide a current copy to the Village.
5. To the extent feasible, based upon scientific, engineering and economic factors, all site, building and other improvements shall be repaired, rebuilt,

expanded, relocated, or substituted using best management practices, designs and technologies which are state of the art, such that they diminish the potential for wellhead contamination.

6. To the extent feasible, based upon scientific, engineering, and economic factors, the replacement, substitution, or augmentation of equipment and machinery and the installation thereof shall utilize state of the art equipment and machinery which diminishes potential for wellhead contamination.
7. The relocation of pre-existing uses or facilities is allowed provided all the following are met:
    a. The pre-existing use or facility is relocated within the same Groundwater Protection Overlay District.
    b. The new location meets all applicable separation distance requirements set forth under subsection 17.40.09.
    c. The use or facility can obtain all applicable Federal, State and Local approvals and permits.
    d. The owner of the property or current site from which the pre-existing use or facility is relocating from records a deed restriction against the property that prohibits future uses and/or facilities that require a conditional use permit under subsection 17.40.11 or are listed as a prohibited use in subsection 17.40.11. A copy of the recorded deed restriction shall be submitted to the Village.
    e. The owner of the property or operator of the pre-existing use or facility being relocated causes the property and all structures, equipment, and systems located thereon to be altered and/or restored to a physical condition that can be reasonably expect to not cause groundwater contamination, including but not limited to the removal of storage tanks, pipes, and systems that previously contained or utilized hazardous, flammable, or other liquids or materials that had the potential to contaminate the Village's groundwater resources. Such alteration and restoration shall meet all applicable Federal, State, and Local agency requirements (e.g. Wisconsin's Cleanup Rules and Laws). Documentation providing proof of meeting this condition shall be submitted to the Village.

Village of Germantown ...Willkommen

FEES MUST BE PAID AT TIME OF APPLICATION

$200 Plan Commission Consultation
$1,085 Rezoning
$1,240 PDD < 5 acres
$2,095 PDD 5-20 acre site
$3,460 PDD > 20 acre site

Date Paid: 11/13/24 Received by: DR

CHK# 2002347

REZONING & PDD APPLICATION

Pursuant to Section 17.51 of the Municipal Code

Please read and complete this application carefully. **All applications must be signed and dated.**

1

APPLICANT OR AGENT

KWIK TRIP, INC - JEFF OSGOOD
1626 OAK ST
LA CROSSE, WI 54602

Phone (608) 793-5547
E-Mail

PROPERTY OWNER

STEVEN A. SCHELLIN
BEN VENUE PROPERTIES - GERMANTOWN

Phone (262) 391-8490
E-Mail saschellin@gmail.com

2

PROPERTY ADDRESS OR GENERAL LOCATION	TAX KEY NUMBER
N112W18741 MEQUON RD	#GTNV282990

3

REZONING REQUEST

FROM	TO
B-3	B-5

4

METES AND BOUNDS LEGAL DESCRIPTION OF PROPERTY – REQUIRED

Attach pages as necessary

SEE ATTACHED SURVEY

5 PURPOSE OF REZONING REQUEST

Briefly describe why the applicant is rezoning the property. Include a description of the proposed use, including any new construction and number of employees, if applicable.

WE ARE PROPOSING TO REZONE FROM B-3 GENERAL BUSINESS TO B-5 HIGHWAY BUSINESS DISTRICT. REZONING IS REQUIRED TO ALLOW FOR PROPOSED CONVENIENCE STORE, GASOLINE + DIESEL FUELING STATION, AND CAR WASH USES.

6 SUPPORTING DOCUMENTATION:

☒ Plat of Survey (1:100)

☒ Site Plan and elevations for new construction (can be conceptual)

7 READ AND INITIAL THE FOLLOWING:

SO I understand that the Village is under no obligation to rezone property and that density and lot coverages provided in the Zoning Code are maximums. Actual build out will depend on myriad factors including topography and other natural conditions, surrounding neighborhood context and the detailed design of a project.

SO I understand that Village Staff, Plan Commission and/or Village Board may request additional information to properly evaluate this request and failure to provide such information may in itself by sufficient cause to deny the petition.

SO I am aware that this rezoning shall go into effect immediately upon the final approval of the Village Board and its execution of the rezoning ordinance

SO I understand that Village Staff is required to post one or more signs along the street frontage of and/or on the property subject of this application that indicate to nearby property owners and the general public that a public hearing of my application will be held before the Village Plan Commission and/or Village Board prior to action taken on this application; I hereby grant Village Staff permission to enter onto the property for the expressed purpose of installing said sign(s) provided Village Staff is responsible for installing, maintaining and removing said signs in a reasonable manner and time frame.

8 SIGNATURES – ALL APPLICATIONS MUST BE SIGNED BY OWNER!

[signature] 11/13/2024
Applicant Date

Steven A. Schellin 10/20/2024
Owner Date

SCANNED

Village of Germantown ...Willkommen

Fee must accompany application

☒ $1460 Paid SR Date 10/21/24

Chk # 2000216

CONDITIONAL USE PERMIT APPLICATION

Pursuant to Section 17.42 of the Municipal Code

Please read and complete this application carefully. **All applications must be signed and dated.**

1 APPLICANT OR AGENT

KWIK TRIP, INC - JEFF OSGOOD
1626 OAK ST
LA CROSSE, WI 54602

Phone (608) 793-5547
Fax ( )
E-Mail josgood@kwiktrip.com

PROPERTY OWNER

STEVEN A. SCHELLIN
BEN VENUE PROPERTIES - GERMANTOWN

Phone (262) 391-8490
saschellin@gmail.com

2 TO WHOM SHOULD THE PERMIT BE ISSUED?

APPLICANT

3 PROPERTY ADDRESS / TAX KEY NUMBER

SE CORNER OF STH 167 AND MAPLE RD - N112W18741 Meguon Rd

TAX KEY NUMBER: #GTNU 282990

4 DESCRIPTION OF EXISTING OPERATION

Briefly describe the use as it exists today, including use, size, number of employees, hours of operation, etc. If this permit involves new construction, describe the current status of the property, e.g. "vacant." Use additional pages as necessary.

CURRENTLY VACANT OFFICE BUILDING

5 DESCRIPTION OF PROPOSED OPERATION

Write the name of the proposed conditional use exactly as it appears in the Municipal Code

WE ARE REQUESTING A CONDITIONAL USE FOR OUR CARWASH AND FOR WELLHEAD PROTECTION TEXT AMENDMENTS

Describe the proposed use, including size, number of employees, hours of operation and extent of any new construction/alterations.

PLEASE ATTACHED COVER LETTER CONTAINING THE ADDITIONAL REQUESTED INFO.
WE ARE PROPOSING A NEW RETAIL CONVENIENCE STORE W/ ATTACHED 2-BAY CARWASH.

RECEIVED
OCT 17 2024
OFFICE OF THE VILLAGE PLANNER
VILLAGE OF GERMANTOWN

METES AND BOUNDS LEGAL DESCRIPTION OF PROPERTY – REQUIRED

Attach pages as necessary

PLEASE SEE ATTACHED ALTA SURVEY

7 SUPPORTING DOCUMENTATION:

- ☑ Site Plan and elevations for new construction (can be conceptual)
- ☑ Photos of existing use and/or proposed use operating elsewhere
- ☐ _____
- ☐ _____

8 READ AND INITIAL THE FOLLOWING:

SJS I understand that the Village is under no obligation to issue a Conditional Use Permit and will do so only if the applicant successfully demonstrates that the proposed use is harmonious with the neighborhood and the long range goals of the Village.

SJS I will notify the Village if <u>any</u> aspects of the conditional use changes. I understand that failure to do so may result in the revocation of the CUP.

SJS I understand that a Conditional Use Permit is valid only if the conditions and restrictions of the permit are met. I understand that failure to comply with any aspect of the permit may result in revocation.

SJS I understand that Village Staff is required to post one or more signs along the street frontage of and/or on the property subject of this application that indicate to nearby property owners and the general public that a public hearing of my application will be held before the Village Plan Commission and/or Village Board prior to action being taken on this application; I hereby grant Village Staff permission to enter onto the property for the expressed purpose of installing said sign(s) provided Village Staff is responsible for installing, maintaining and removing said signs in a reasonable manner and timeframe.

9 SIGNATURES – ALL APPLICATIONS MUST BE SIGNED BY OWNER!

Matthew W. Ozgood 10/14/2024
Applicant Date

Steven J. Schellin 10/20/2024
Owner Date

Village of Germantown ...Willkommen

Fee must accompany application
- ☐ $700 Minor Addition
- ☐ $1,240 Construction <10,000 SF
- ☐ $2,095 Construction 10,000 SF to 50,000
- ☐ $3,460 Industrial Construction >50,000 SF
- ☐ $3,460 Commercial Construction >50,000
- ☐ $200 Plan Commission Consultation
- ☐ $125 Fire Department Plan Review

PAID DR DATE 10/21/2024

CHK# 2000215

SITE PLAN REVIEW APPLICATION

Pursuant to Section 17.43 of the Municipal Code

Please read and complete this application carefully. **All applications** must be signed and dated.

1

APPLICANT OR AGENT

Jeff Osgood
Kwik Trip, Inc.

Phone (608) 793-5547
E-Mail josgood@kwiktrip.com

PROPERTY OWNER

Steven A. Schellin
Ben Venue Properties - Germantown

Phone (262) 391-8490
E-Mail saschellin@gmail.com

2

PROPERTY ADDRESS

Southeast corner of Maple Road and Mequon Road

N112W18741 Mequon Road
Germantown, WI 53022

3

NEIGHBORING USES – Specify name and type of use, e.g. Enviro Tech – Industrial, Smith – Residential, etc.

North	South	East	West
GKN Sinter Metals - Industrial Fire station	STH 167	B-3 Zoned	GSC, Valley Cabinet, Northwestern Mutual, Milwaukee Laser & Body, Mequon Vein - Business

4

READ AND INITIAL THE FOLLOWING:

X I am aware of the Village of Germantown ordinance requiring fire sprinklers in most new construction.

X I understand that all new development is subject to Impact and/or Connection Fees that must be paid before building permits will be issued.

X I understand that an incomplete application will be withdrawn from the Plan Commission agenda and that all resubmissions to the Plan Commission are subject to a new application fee.

5

SIGNATURES – ALL APPLICATION MUST BE SIGNED BY OWNER!

Jeff W. Osgood 07/02/2024
Applicant Date

Steven A. Schellin July 8, 2024
Owner Date

KWIK TRIP INC.

Store Engineering

FAX 608-793-6237

1626 Oak St., P.O. Box 2107
La Crosse, WI 54602

www.kwiktrip.com

Village of Germantown
Jeff Retzlaff
N112W17001 Mequon Rd
Germantown, WI 53022

October 14th, 2024

CUP Submittal

Mr. Retzlaff,

This letter is intended to accompany our submittal for our application to the Village of Germantown for the requested Conditional Use Permit applications for our proposed project located at the SE Corner of STH 167 and Maple Rd.

Kwik Trip, Inc. is proposing the construction of a 12,167 S.F. convenience store w/ attached 2-Bay attached Carwash and a detached dumpster enclosure and both gas and diesel Fueling Canopies. I have submitted this in digital format as well as one paper copy as requested. I have included a check for $1460.00 per CUP application fee. If there is anything additional needed, please don't hesitate to reach out to me any time.

The proposed method of operation for this development will be consistent with that for our existing convenience stores within the area. The requested hours of operation will be 24 hours for all uses. The type of products that will be sold will be similar to that of our existing stores: gasoline, in line diesel, E-85, Unleaded 88, groceries, bakery and dairy, hot and cold food and beverages, tobacco products, off-sale alcohol products, lotto, convenience store merchandise, ice, and propane. The outside merchandising of products is being requested next to the store (ice and propane) and miscellaneous merchandising under the gas canopy. The proposed store is projected to have between 28-35 full and part time employees, with 2-8 on staff at any given time.

The proposed architectural plan will consist of a brick facade with asphalt shingled roof. The building and canopy fascia will tie in with franchise colors. We have also adjusted our normal architectural renderings to incorporate the requested German themed buildings. The prototype building is larger than previous years building. We have expanded the retail floor area as well as kitchen and mechanical space all on the main level with no basement. The total estimated project costs are $2,500,000.

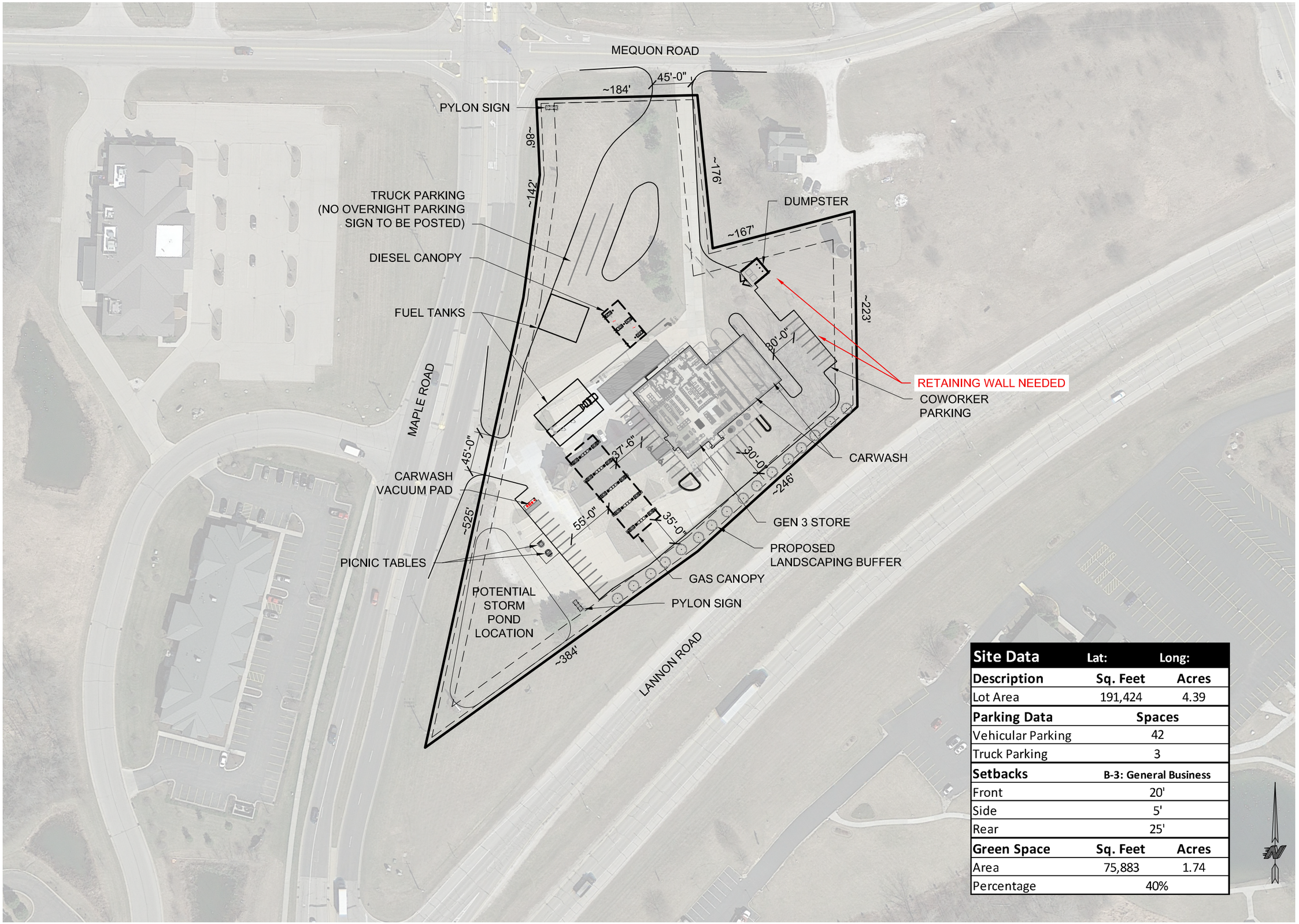
Kwik Trip would be happy to provide any additional information or answer any questions or concerns you may have with our submission. Please feel free to call me with any questions.

Sincerely,

Jeff Osgood – Sr. Development Manager - Store Engineering - Kwik Trip, Inc.
608-793-5547 - josgood@kwiktrip.com 1626 Oak St | P.O. Box 2107 | La Crosse, WI 54602

OUR MISSION

To serve our customers and community more effectively than anyone else by treating our customers, co-workers and suppliers as we, personally, would like to be treated, and to make a difference in someone's life.



Site Data	Lat:	Long:
Description	**Sq. Feet**	**Acres**
Lot Area	191,424	4.39
Parking Data	**Spaces**	
Vehicular Parking	42	
Truck Parking	3	
Setbacks	**B-3: General Business**	
Front	20'	
Side	5'	
Rear	25'	
Green Space	**Sq. Feet**	**Acres**
Area	75,883	1.74
Percentage	40%	

KWIK TRIP

KWIK STAR

KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960

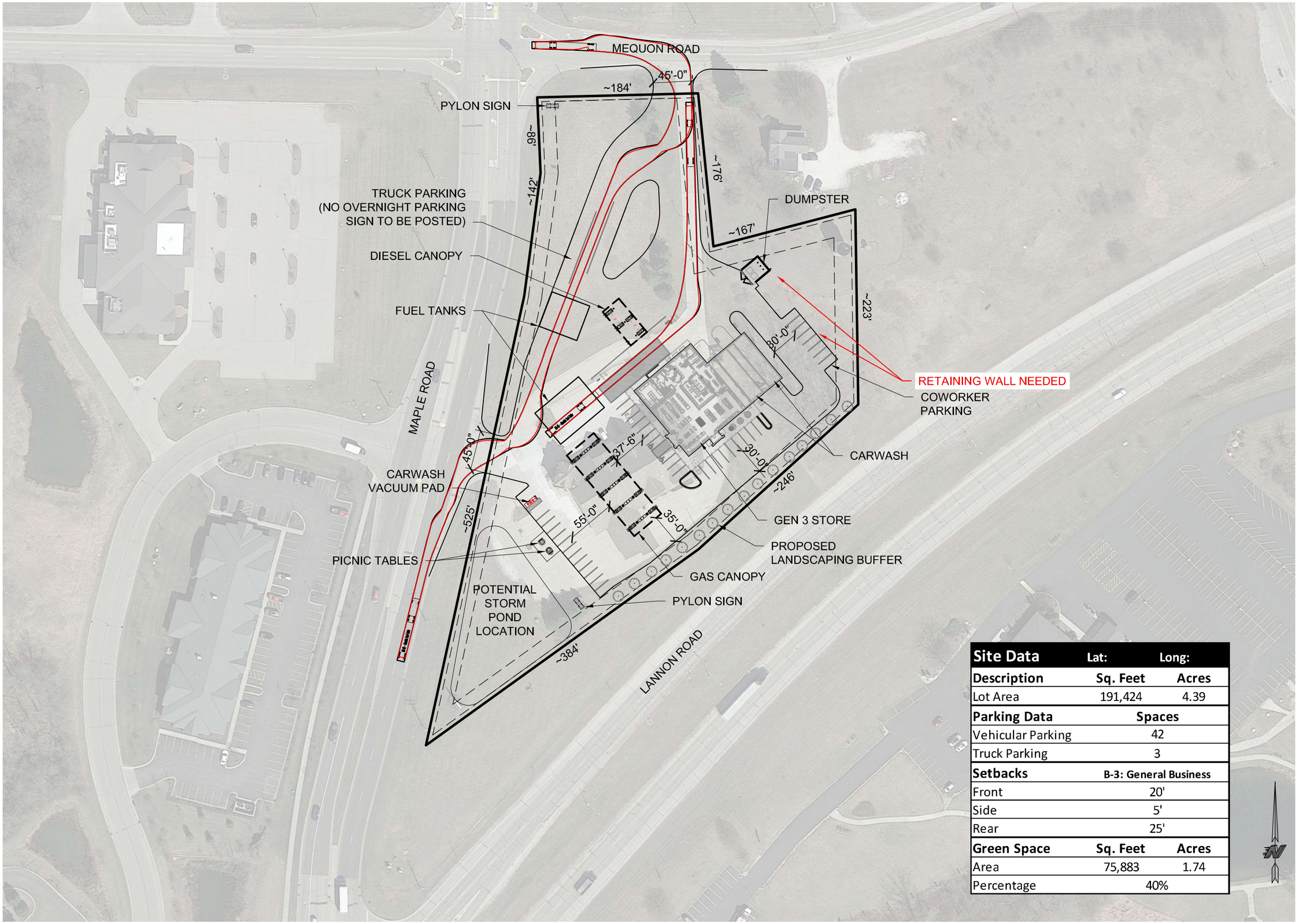
SITE PLAN

CONVENIENCE STORE #XXX
WITH 2 BAY CARWASH AND
2 LANE SIDE DIESEL
MAPLE ROAD
GEMANTOWN, WI

#	DATE	DESCRIPTION

DRAWN BY	ERR
SCALE	1" = 100'-0"
PROJ. NO.	0001
DATE	2024-8-23
SHEET	SP9

K:\RealEstate\BuildingOperations_Shared\Store Engineering_Shared\Development\Potential Sites\Germantown, WI 631 relocation\Project XXXX\Plans\Site Plans\SP9.dwg, 8/23/2024 11:00:00 AM



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SITE PLAN

CONVENIENCE STORE #XXX
WITH 2 BAY CARWASH AND
2 LANE SIDE DIESEL
MAPLE ROAD
GEMANTOWN, WI

#	DATE	DESCRIPTION

DRAWN BY	ERR
SCALE	1" = 100'-0"
PROJ. NO.	0001
DATE	2024-8-23
SHEET	SP9 (TM)

K:\RetailBuildingOperations_Shared\Store Engineering_Shared\Development\Potential Sites\Germantown, WI 631 relocation\Project XXXX\Plans\Site Plans\SP9.dwg, 8/23/2024 10:41:16 AM

REVIEW PLANS FOR:

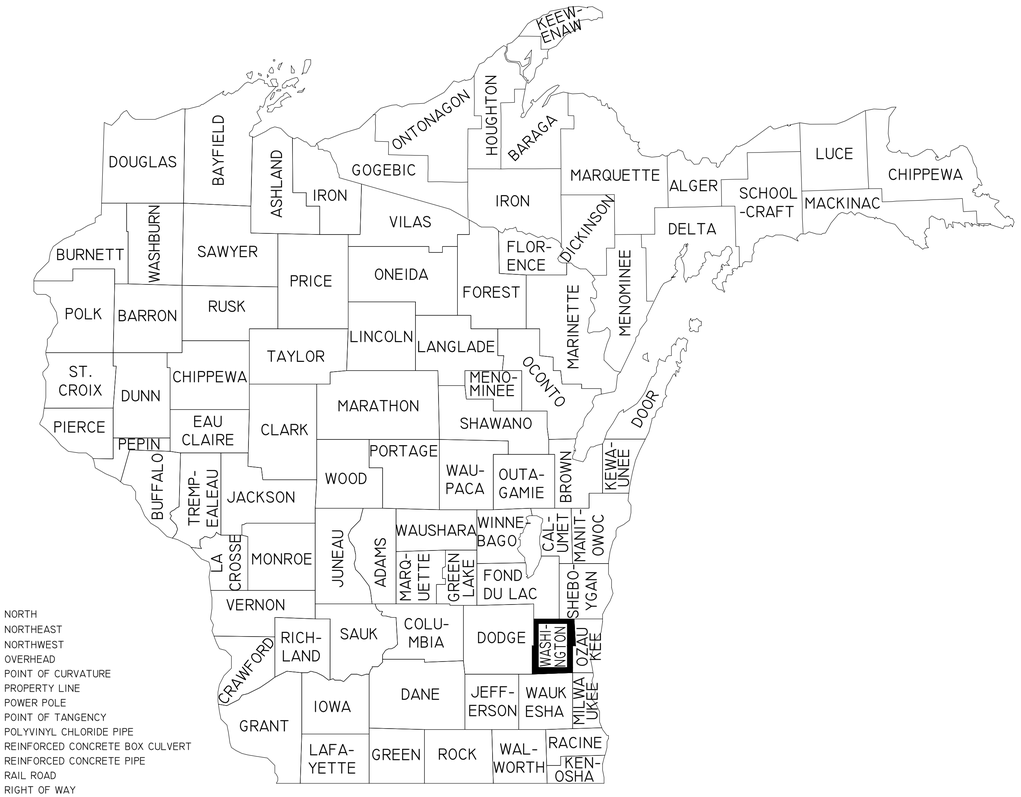
KWIK TRIP #631

VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WISCONSIN

INDEX OF SHEETS

C001	TITLE SHEET
C010	ALTA
C020	DEMO PLAN
C100	SITE KEYNOTE PLAN
C180	SITE CIRCULATION PLAN
C181	SITE DIMENSION PLAN
C200	GRADING PLAN
C201	GRADING PLAN DETAIL - SOUTH
C201.1	GRADING PLAN DETAIL - NORTH
C202	GRADING PLAN SPOT DETAIL - SOUTH
C202.1	GRADING PLAN SPOT DETAIL - NORTH
C203	CANOPY AND TANK GRADING DETAILS
C204	ACCESSIBILITY PLAN
C300	STORM SEWER PLAN
C400	UTILITY PLAN
C401	UTILITY NOTES
C500	SITE PLAN DETAILS
C501	SITE PLAN DETAILS
C502	SITE PLAN DETAILS
C600	EROSION CONTROL PLAN
C601	EROSION CONTROL NOTES
C602	EROSION CONTROL DETAILS
C603	EROSION CONTROL DETAILS
C700	LANDSCAPE PLAN
C701	LANDSCAPE PLAN
C702	LANDSCAPE PLAN
C703	LANDSCAPE DETAILS
C800	PHOTOMETRIC LIGHTING PLAN

TOTAL SHEETS = 28



LIST OF STANDARD ABBREVIATIONS

&	AND	(N)	NORTH
AB	AUGER BORING	(NE)	NORTHEAST
ADT	AVERAGE DAILY TRAFFIC	(NW)	NORTHWEST
BC	BOTTOM OF CURB	OH	OVERHEAD
BM	BENCHMARK	PC	POINT OF CURVATURE
BOC	BACK OF CURB	P/L	PROPERTY LINE
BR	BOTTOM OF RAMP	PP	POWER POLE
BS	BOTTOM OF STEPS	PT	POINT OF TANGENCY
BW	BOTTOM OF WALL	PVC	POLYVINYL CHLORIDE PIPE
CB	CATCH BASIN	RCB	REINFORCED CONCRETE BOX CULVERT
CMAC	CORRUGATED METAL ARCH CULVERT	RCP	REINFORCED CONCRETE PIPE
CMBC	CORRUGATED METAL BOX CULVERT	RR	RAIL ROAD
CMP	CORRUGATED METAL PIPE	R/W	RIGHT OF WAY
CO	CLEANOUT	(S)	SOUTH
CONC.	CONCRETE	SAN	SANITARY SEWER
CPP	CORRUGATED PLASTIC PIPE	SB	SOIL BORING
DGB	DENSE GRADED BASE	SS	STORM SEWER
DIP	DUCTILE IRON PIPE	STM	STORM
D/S	DOWNSTREAM	(SW)	SOUTHWEST
(E)	EAST	TC	TOP OF CURB
ELEV.	ELEVATION	TBR	TO BE REMOVED
EOG	EDGE OF GRAVEL	TLE	TEMPORARY LIMITED EASEMENT
FFE	FINISHED FLOOR ELEVATION	TNH	TOP NUT FIRE HYDRANT
FG	FINISH GRADE	TP	TEST PIT
F.O.	FIBER OPTIC	TR	TOP OF RAMP
INL	INLET	TYP.	TYPICAL
HDPE	HIGH DENSITY POLYETHYLENE PIPE	TS	TOP OF STEPS
HMA	HOT MIX ASPHALT	TW	TOP OF WALL
HP	HIGH POINT	U/S	UPSTREAM
IE	INVERT ELEVATION	VAR.	VARIES
LF	LINEAL FEET	(W)	WEST
LP	LOW POINT		
MEG	MATCH EXISTING GRADE		
MH	MANHOLE		

LEGEND

- BENCHMARK
- 1" IRON BAR
- EXISTING MANHOLE
- EXISTING TELEPHONE MANHOLE
- EXISTING STORM SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING HYDRANT
- EXISTING WATER VALVE
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING WATER SHUTOFF
- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- EXISTING GAS VALVE
- EXISTING CURB INLET
- EXISTING WELL
- TEST PIT LOCATION
- SBI SOIL BORING
- AC EXISTING AIR CONDITIONING UNIT
- GM EXISTING GAS METER
- EM EXISTING ELECTRIC METER
- EXISTING UTILITY PEDESTAL
- EXISTING RAILROAD TRACKS
- EXISTING TREE LINE
- EXISTING GUY POLE
- TV EXISTING CABLE TV
- FO EXISTING FIBER OPTIC CABLE
- G EXISTING UNDERGROUND GAS
- E EXISTING UNDERGROUND ELECTRIC
- T EXISTING UNDERGROUND TELEPHONE
- OH EXISTING OVERHEAD UTILITIES
- W EXISTING WATER MAIN
- SS EXISTING STORM SEWER
- SAN EXISTING SANITARY SEWER
- EXISTING PROPERTY LINE
- PROPOSED HANDICAP PARKING
- PROPOSED CURB STOP
- PROPOSED HYDRANT
- PROPOSED WATER VALVE
- SAN PROPOSED SANITARY SEWER
- SS PROPOSED STORM SEWER
- F.M. PROPOSED FORCE MAIN
- SAN. LAT. PROPOSED SANITARY SEWER LATERAL
- W.S. PROPOSED WATER LATERAL
- W PROPOSED WATER MAIN
- PS PROPOSED PUMP STATION
- MS PROPOSED SANITARY MANHOLE
- MS PROPOSED STORM MANHOLE
- PROPOSED CURB INLET
- PROPOSED CATCH BASIN
- CO PROPOSED CLEANOUT
- PROPOSED DRAINAGE FLOW
- 3% PROPOSED SLOPE
- PROPOSED CURB & GUTTER
- PROPOSED REJECT CURB & GUTTER
- PROPOSED MOUNTABLE CURB & GUTTER
- 1178 EXISTING GROUND CONTOUR(INTERVAL-1 FT.)
- 1180 PROPOSED GROUND CONTOUR(INTERVAL-1 FT.)
- 1256.50 PROPOSED SPOT ELEVATION (TOP OF CURB)
- 1256.00 PROPOSED SPOT ELEVATION (BOTTOM OF CURB)
- PROPOSED SILT FENCE
- PROPOSED INLET PROTECTION
- PROPOSED RIPRAP
- PROPOSED EROSION MAT
- PROPOSED SAWCUT
- PROPOSED DRAINAGE SWALE

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KWIK TRIP STORES

KWIK STAR STORES

KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960

REI
CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING
REI Engineering, INC.
4080 N. 20TH AVENUE
WAUSAU, WISCONSIN 54401
PHONE: 715.675.9784 FAX: 715.675.4060
EMAIL: MAIL@REIENGINEERING.COM

TITLE SHEET

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C001

DRAWING FILE: Q:\1700-1799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C001-TITLE SHEET.DWG LAYOUT: TITLE
PLOTTED: OCT 08, 2024 - 3:28PM PLOTTED BY: TODDW

ALTA/NSPS LAND TITLE SURVEY
STORE 631 - GERMANTOWN

Known as N112 W18741 Mequon Road and W188N1116, W188N11758 & W188 N11762 Maple Road, in the village of Germantown, Washington County, Wisconsin.

Lot Two (2) of CERTIFIED SURVEY MAP No. 2890 recorded in the Office of the Register of Deeds for Washington County, Wisconsin on April 29, 1986, in Volume 16, Pages 129-132, as Document No. 490681, said certified survey map being a part of the Northwest 1/4 of the Northwest 1/4 of Section 28 and Northeast 1/4 of the Northeast 1/4 of Section 29, Township 9 North, Range 20 East, in the Village of Germantown, Washington County, Wisconsin.

Prepared for: Kwik Trip, Inc.
Survey No. 157610-RMK

A. Basis of Bearings
Bearings are based on the North line of the Northeast 1/4 of Section 28-9-20, which bears North 88°36'30" East, Wisconsin State Plane Coordinate System, South Zone (NAD83/2011).

B. Title Commitment
This survey was prepared based on First American Title Insurance Company National Commercial Services title commitment number NCS-1212460-MAD, commitment date March 19, 2024, which lists the following easements and/or restrictions from schedule B-II:

1-3, 5, 10. Visible evidence shown, if any.

4, 6-9, 19. Not survey related.

11. Rights for entrance to, maintenance, construction, or repair of any utility structures, improvements or services which may be under the surface of the portion of the insured premises laying within vacated Maple Road, pursuant to Section 66.1005(2) (a) Wisconsin Statues.

Resolution No. 13-86, resolution regarding discontinued portion of Maple Road as set contained in Quit Claim Deed recorded May 09, 1986 in Volume 889 of Records, Page 586 as Document No. 491363. Lies within or crosses the surveyed property - its location is shown.

12. Easements, dedications, reservations, provisions, relinquishments, recitals, certificates, and any other matters as provided for or delineated on Certified Survey Map No. 2890 recorded April 29, 1986, in Volume 16, Pages 129-132, as Document No. 490681 referenced in the legal description contained herein. Reference is hereby made to said plat for particulars. Lies within or crosses the surveyed property - its location is shown.

13. Covenants, Conditions and Restrictions as set forth in document recorded on April 07, 1969 in Volume 463, Page 617 as Document No. 306921. Lies within or crosses the surveyed property - its location is shown.

14. Covenants, Conditions and Restrictions as set forth in Quit Claim Deed recorded on May 07, 1983 in Volume 790 of Records, Page 86 as Document No. 452033. Does not lie within or cross the surveyed property - its location is shown-see detail. Access point is on the South side of Lannon Road, East of Surveyed property.

15. Covenants, Conditions and Restrictions as set forth in deed recorded on May 14, 1984 in Volume 827, Page 126 as Document No. 467059. Lies within or crosses the surveyed property - its location is shown.

16. Holding Tank Agreement:
Dated: September 15, 1986
Parties: Village of Germantown, Washington County, State of Wisconsin and Ron Robbins a/k/a Ronald W. Robbins
Recorded: September 23, 1986 in Volume 910 of Records, Page 119
Instrument No.: 498649. Lies within or crosses the surveyed property - it is a blanket easement - location of tank, vent and cleanout shown per 1989 survey by Robert Pagels.

17. Holding Tank Agreement:
Dated: September 13, 1991
Parties: Village of Germantown, Washington County, State of Wisconsin and Kilbourn State Bank
Recorded: September 30, 1991 in Volume 1144, Page 552
Instrument No.: 585808. Lies within or crosses the surveyed property - it is a blanket easement - location of tank, vent and cleanout shown per 1989 survey by Robert Pagels.

18. Utility Easement to Wisconsin Electric Power Company and Wisconsin Bell, Inc., dated October 07, 1991, recorded/filed October 25, 1991 in Volume 1149, Page 649 as Document No. 587363. Lies within or crosses the surveyed property - its location is shown.

C. Flood Note
According to flood insurance rate map of the Village of Germantown, community panel number 55131C0357D, effective date of 11/20/2013, this site falls in zone X (areas determined to be outside the 0.2% annual chance floodplain).

D. Parking Spaces
There are 33 total parking spaces consisting of 31 regular and 2 handicapped parking spaces marked on this site.

E. Elevations
Elevations refer to NAVD88 Datum. Starting benchmark - Northwest 1/4 corner Section 28-9-20. Brass cap monument elevation 877.87'

F. Municipal Zoning
The zoning information listed below is taken from a Zoning Report prepared by The Village of Germantown, dated May 30, 2024.

Zoning Classification: B-3 General Business; Highway Interchange Over lay District (HIA)
Setback Requirements, not specified in letter. Listed setbacks per Zoning code provided with Letter as follows:

Principle structures

Lot Frontage at Setback	Minimum 50 ft.
Front yard	None, except that the front yard for newly constructed principal buildings shall be the average of the front yard of adjoining or neighboring properties.
Side yards	None, except as required in Sections 17.07 and 17.50
Rear yards	Minimum 25 ft.
Number of stories	Maximum 2 1/2

Accessory Building:

Front yard	Minimum 5 ft.
Side yards	Minimum 5 ft.
Rear yard	Minimum 5 ft.

Building Height:

Principal building	Maximum 45 ft.
Accessory building	Maximum 15 ft.

HIA - Highway Interchange Area District (Overlay District)
Setback: Setback from intersecting highway shall be 160' from Centerline or 100' from the right of way line (SHOWN), whichever is greater, or 50 feet from the right-of-way of a frontage road

Parking Requirements 1 space for each 200 square feet of floor area, plus 1 space for each 2 employees.
The subject parcel is located within a wellhead protection area, which may impact sign design and placement.

G. Notes
As to table A item 11
Surveyor's responsibility to coordinate markings shall be limited to one marking request to 811 (national "call before you dig" number) based on the property address, as provided by the client.
Note to the client, insurer, and lender - With regard to Table A, item 11, information from the sources checked within will be combined with observed evidence of utilities pursuant to Section 5.E.iv. to develop a view of the underground utilities. However, lacking excavation, the exact location of underground features cannot be accurately, completely, and reliably depicted. In addition, in some jurisdictions, 811 or other similar utility locate requests from surveyors may be ignored or result in an incomplete response.
As of the field date indicated below in certificate (most recent site visit/inspection), it appears some underground utilities were not marked. This affected the surveyor's assessment of the location of the utilities resulting in partial illustration and/or mapping per plan. Where additional or more detailed information is required, the client is advised that excavation may be necessary.

There are proposed changes in street right of way lines. Document 467059 (Exception 15 - blue hatch) indicates area subject to dedication upon request.

There is no visible evidence of recent street or sidewalk construction or repairs observed in the process of conducting the fieldwork.

The area computed land area of Lot 2 does not match CSM 2890, and is less than the platted Lot by 1,956 s.f. or 0.045 ac.

Sanitary manhole note - from Timothy Zimmerman at Village (tmmmerman@germantownwi.gov)
- Misc Manhole near entrance to Maple Road is a Sampling manhole. We find the manhole full of water.

To: Kwik Trip, Inc., a Wisconsin corporation
First American Title Insurance Company National Commercial Services

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS and includes items 1, 2, 3, 4, 5, 6(a), 6(b), 7(a), 7(c), 8, 9, 11(a), 11(b), 14, 17, 18, 20(a) and 20(b) of Table A thereof. The fieldwork was completed on May 23, 2024.

Date of Plat or Map: June 12, 2024

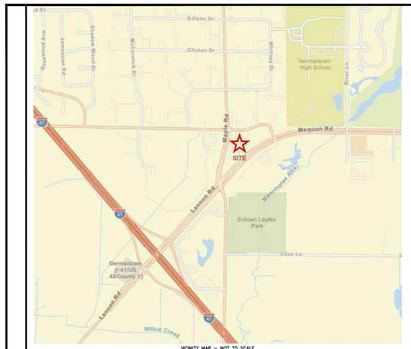
I CERTIFY, that this survey was prepared under my supervision and is correct to the best of my professional knowledge and belief and complies with Chapter A-E 7 of the Wisconsin Administrative Code.

John P. Casucci
Professional Land Surveyor
Registration Number S-2055
john.casucci@rasmith.com

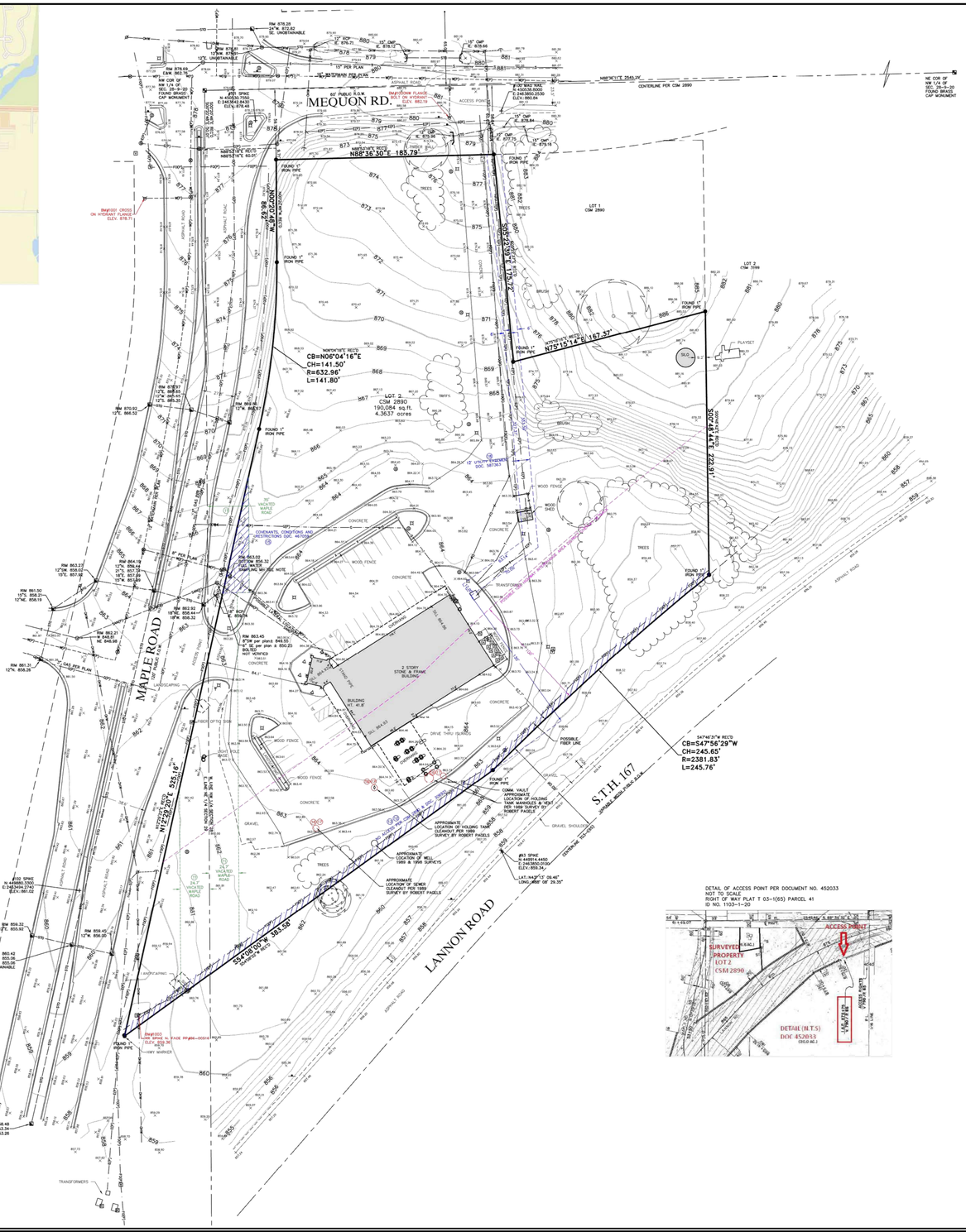
WISCONSIN JOHN P. CASUCCI S-2055 OCONOMOWOC LAND SURVEYOR

raSmith
CREATIVITY BEYOND ENGINEERING
16745 W. Bluemound Road
Brookfield, WI 53005-5938
(262) 781-1000
rasmith.com

SHEET 1 OF 1

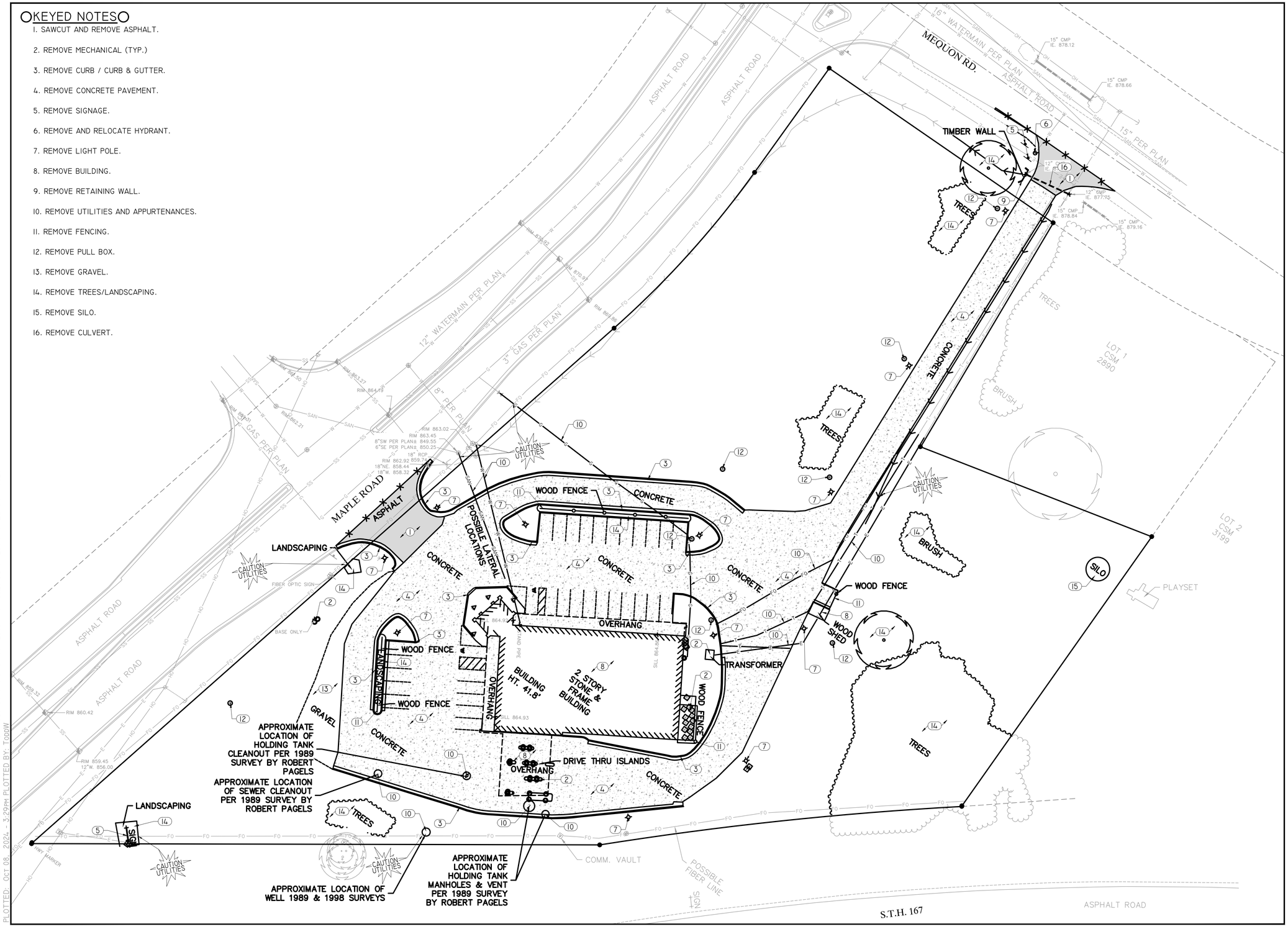


VICINITY MAP – NOT TO SCALE


MEQUON RD.
MAPLE ROAD
LANNON ROAD
S.T.H. 167
N88°36'30"E 185.79'
S00°26'30"E 222.91'
N75°15'14"E 157.37'
N00°26'30"W 535.64'
S54°00'00"W 365.58'
CB=N06°04'16"E
CH=141.50'
R=632.96'
L=141.80'
CB=S47°56'29"W
CH=245.65'
R=2381.83'
L=245.76'
LOT 2
CSM 2890
190,084 sq.ft.
4.3637 acres
LOT 1
CSM 2890
LOT 2
CSM 1199
2-STORY STONE & FRAME BUILDING
BUILDING HT.: 41.8'
VACATED MAPLE ROAD
COVENANTS, CONDITIONS AND RESTRICTIONS DOC. 467059
12' UTILITY EASEMENT DOC. 587363
CENTERLINE PER CSM 2890
N88°36'11"E 2545.JW
NE COR OF NW 1/4 OF SEC. 28-9-20 FOUND BRASS CAP MONUMENT
NW COR OF NW 1/4 OF SEC. 28-9-20 FOUND BRASS CAP MONUMENT
SW COR OF NW 1/4 OF SEC. 28-9-20 FOUND BRASS CAP MONUMENT
SE COR OF NW 1/4 OF SEC. 28-9-20 FOUND BRASS CAP MONUMENT
FOUND 1" IRON PIPE
FOUND 3" IRON PIPE
SET 1" IRON PIPE
SET 3" IRON PIPE
FOUND 1" IRON PIPE
FOUND 3" IRON PIPE
FOUND 1" IRON PIPE
FOUND 1" IRON PIPE
FOUND 1

KEYED NOTES

1. SAWCUT AND REMOVE ASPHALT.
2. REMOVE MECHANICAL (TYP.)
3. REMOVE CURB / CURB & GUTTER.
4. REMOVE CONCRETE PAVEMENT.
5. REMOVE SIGNAGE.
6. REMOVE AND RELOCATE HYDRANT.
7. REMOVE LIGHT POLE.
8. REMOVE BUILDING.
9. REMOVE RETAINING WALL.
10. REMOVE UTILITIES AND APPURTENANCES.
11. REMOVE FENCING.
12. REMOVE PULL BOX.
13. REMOVE GRAVEL.
14. REMOVE TREES/LANDSCAPING.
15. REMOVE SILO.
16. REMOVE CULVERT.



KWIK TRIP STORES

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SCALE
0 30 60

DEMO PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C020

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C020-DEMO PLAN.DWG LAYOUT: C020
PLOTTED: OCT 08, 2024 - 3:29PM PLOTTED BY: TODDW

KEYED NOTES

0 SF — 1. ASPHALT PAVEMENT. SEE DETAIL 1/C500.

37,161 SF — 2. 6" DEPTH (MIN.) CONCRETE SLAB-ON-GRADE WITH #3 REBAR, 3' O.C. CONCRETE SEALER: TK-26UV. SEE DETAIL 6/C500.

61,322 SF — 3. 8" DEPTH (MIN.) CONCRETE SLAB-ON-GRADE WITH #4 REBAR, 4' O.C. CONCRETE SEALER: TK-26UV. SEE DETAIL 6/C500.

4. NOT USED.

4,627 SF — 5. 6" CONCRETE WALK. SEE DETAIL 2/C500. CONCRETE SEALER: TK-26UV

73,095 SF / UNDISTURBED=22,357 SF — 6. LANDSCAPE AREA. SEE SHEET L1.

7. CURB TYPE CHANGE.

8. 18" CURB AND GUTTER, SEE DETAIL 9/C500.

9. 18" REJECT CURB AND GUTTER, SEE DETAIL 9/C500.

10. TRANSITION CURB & GUTTER. SEE DETAIL 4/C500.

11. STANDARD CURB & GUTTER TERMINATION. SEE DETAIL 5/C500.

12. TAPER CURB FROM FLUSH TO FULL HEIGHT OVER 6' LENGTH. SEE DETAIL 5A/C500.

13. A.D.A. ACCESSIBLE PARKING SPACE WITH LOADING ZONE. PROVIDE APPROPRIATE STRIPING AND PAVEMENT MARKINGS. SEE SHEET C204.

14. OFF-STREET PARKING STALLS
STRIPING - 4" WIDE STALL LINES, USE HIGH VISIBILITY YELLOW PAINT.
SPACES PROVIDED
(3) 8.9' x 20.0' (MIN.) GENERAL PARKING
(7) 9.1' X 20.0' (MIN.) GENERAL PARKING
(19) 9.5' X 20.0' (MIN.) GENERAL PARKING
(10) 9.7' X 20.0' (MIN.) GENERAL PARKING
(2) 8.0' X 20.0' ACCESSIBLE PARKING WITH
(1) 11.0' X 20.0' LOADING ZONE
(2) 12.9' x 20.0' ACCESSIBLE PARKING WITH
(1) 5.0' x 20.0' LOADING ZONE

15. EXTERNAL TRASH ENCLOSURE TO MATCH BUILDING. SEE ARCHITECTURAL DETAILS.

16. KWIK TRIP TRADEMARK SIGN SUBJECT TO SEPARATE REVIEW AND APPROVAL (VERIFY FINAL LOCATION WITH SIGN PERMIT). SEE DETAIL 12/C501.

17. 4" WIDE, HIGH VISIBILITY, PAVEMENT STRIPING, LANE MARKINGS AND TEXT. COLOR: HC MARKINGS- YELLOW, ALL OTHERS- YELLOW.

18. SIDEWALK RAMP (12:1 SLOPE MAX). SEE DETAIL 12/C500.

19. GAS TANK VENT STAND, SEE PIPING PLANS.

20. 30" HT., 6" DIA. CONCRETE FILLED PIPE BOLLARD INSTALLED AT EACH PARKING STALL ALONG BUILDING. SEE DETAIL 10/C500.

21. 40'-0" x 120'-0" DISPENSER ISLAND CANOPY. VERIFY SIZE, PLACEMENT, COLUMN AND FOOTING SIZE WITH CANOPY AND STRUCTURAL PLANS. CANOPY GRAPHICS PER OWNER.

22. CONCRETE ISLANDS W/ 6" EXPOSURE WITH FUEL DISPENSERS. DISPENSER PER OWNER.

23. 36" HT., 6" DIA. CONCRETE FILLED PIPE BOLLARD SIMILAR TO DETAIL 10/C500.

24. OUTDOOR MERCHANDISING AREA.

25. UNDERGROUND FUEL STORAGE TANKS PER OWNER. PROVIDE PIPING AND VENTING PER OWNER'S SPECIFICATIONS. SEE DETAIL 1/C501.

26. HC PVC BOLLARD SLEEVE PER OWNER. VAN ACCESS SIGNAGE AT 48" HT. STALL PARKING AT 60" HT. SEE SHEET C204.

27. STORM STRUCTURE. SEE SHEET SP3 FOR FURTHER STORM SEWER INFORMATION.

28. LP CAGE.

29. 'FREE AIR' COMPRESSOR. PROVIDE SIGNAGE PER OWNER.

30. SITE AREA LIGHT WITH CONCRETE BASE. SEE DETAIL 11/C500.

31. PVC IRRIGATION SLEEVE UNDER PAVEMENT. VERIFY W/ IRRIGATION PLAN FOR EXACT SIZE AND LOCATION BEFORE INSTALLATION. SEE DETAIL 3/C500.

32. 24'-0" x 50'-0" DISPENSER ISLAND CANOPY. VERIFY SIZE, PLACEMENT, COLUMN AND FOOTING SIZE WITH CANOPY AND STRUCTURAL PLANS. CANOPY GRAPHICS PER OWNER.

33. BIKE RACK.

34. VACUUM. SEE DETAIL 14/C500.

35. 18" EPOXY STOP BAR (YELLOW).

36. TRANSFORMER PAD.

37. DISCONNECT PAD.

38. NOT USED.

39. NOT USED.

40. NOT USED.

41. OUTDOOR ICE MERCHANDISING AREA.

42. PROPOSED GREASE INTERCEPTOR.

43. PICNIC AREA. SIMILAR TO DETAIL 2/C500. CONCRETE SEALER: TK-26UV

44. NOT USED.

45. PROPOSED COIN BOX. SEE DETAIL 13/C501.

46. PROPOSED REFUSE CONTAINER.

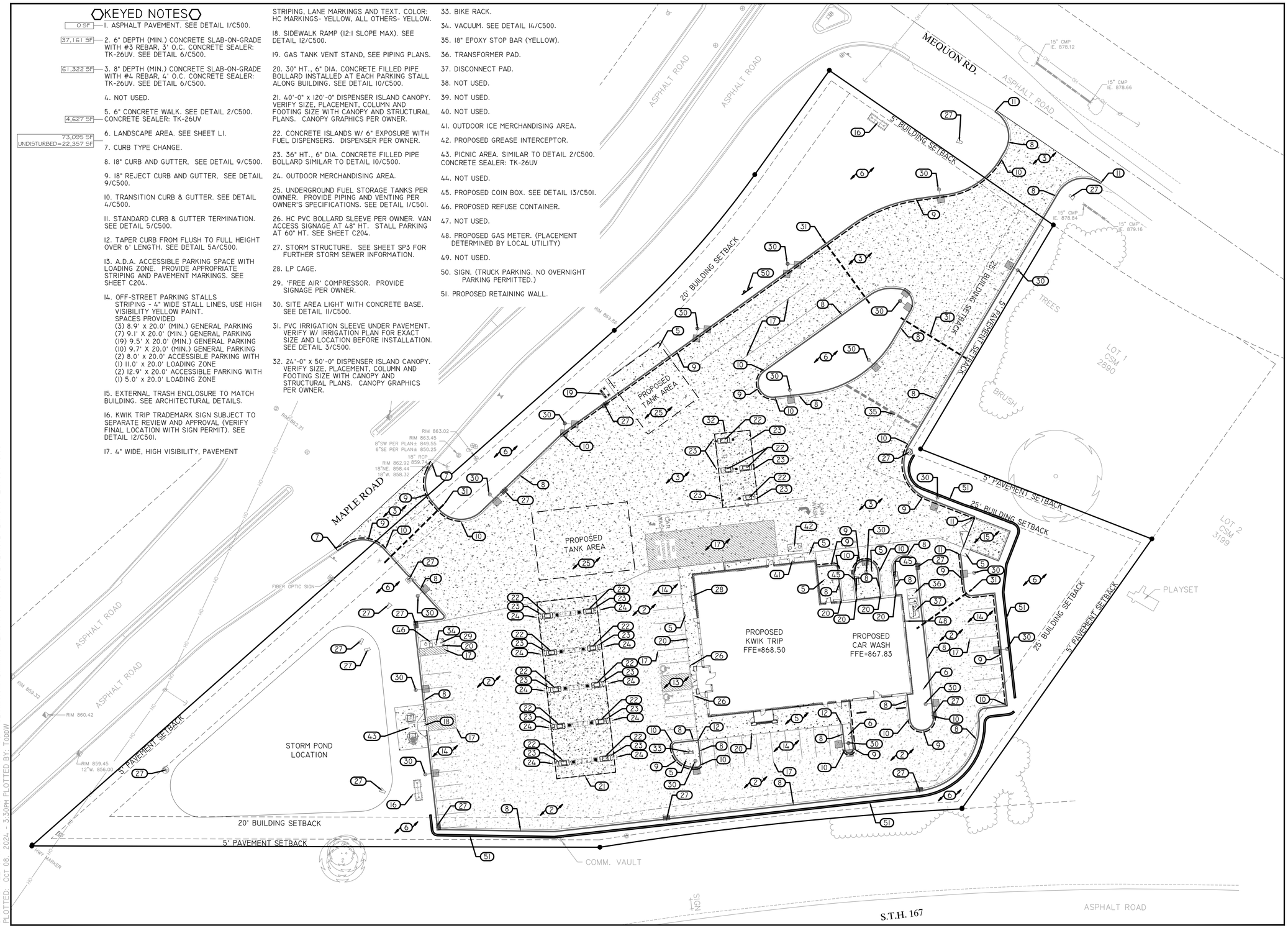
47. NOT USED.

48. PROPOSED GAS METER. (PLACEMENT DETERMINED BY LOCAL UTILITY)

49. NOT USED.

50. SIGN. (TRUCK PARKING. NO OVERNIGHT PARKING PERMITTED.)

51. PROPOSED RETAINING WALL.



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SCALE
0 30 60

SITE KEYNOTE PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY NAP
SCALE GRAPHIC
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C100

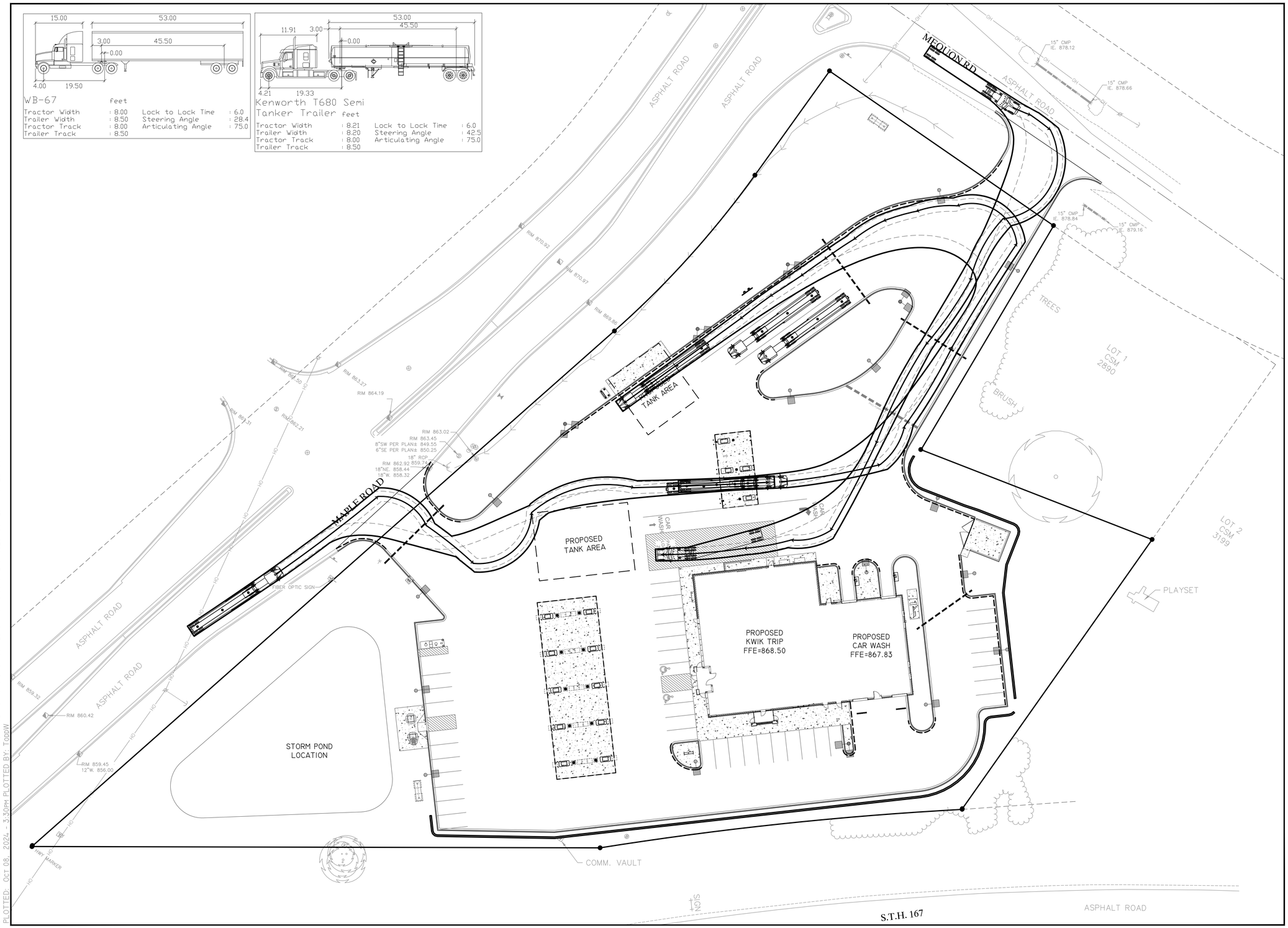
DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C100-SITE KEYNOTE PLAN.DWG LAYOUT: C100
PLOTTED: OCT 08, 2024 - 3:30PM PLOTTED BY: TODDW

WB-67 feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

Kenworth T680 Semi Tanker Trailer feet

Tractor Width	: 8.21	Lock to Lock Time	: 6.0
Trailer Width	: 8.20	Steering Angle	: 42.5
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		



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PLOTTED: Oct 08, 2024 - 3:30PM PLOTTED BY: TODDW

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SCALE
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SITE CIRCULATION PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

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DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C180

LAYOUT NOTES:

1. PLAN PREPARED FROM AN ALTA/ACSM LAND TITLE SURVEY BY:
   R.A. SMITH, INC.
   262-781-1000
2. CURBS ARE DIMENSIONED TO BACK OF CURB.
3. CONVENIENCE STORE, AND ISLAND COMPLEXES ARE LOCATED FROM THE NORTHEASTERN MOST PROPERTY CORNER AND ALIGNED PARALLEL/PERPENDICULAR TO THE REFERENCE LINE LABELED N47°37'24"E, UNLESS OTHERWISE INDICATED ON THIS PLAN.
4. UNLESS SHOWN OTHERWISE ON THIS DRAWING, CONTRACTOR SHALL PROVIDE CONTROL JOINTS, CONSTRUCTION JOINTS, AND EXPANSION JOINTS IN SLAB ON GRADE, SIDEWALKS AND DRIVES. CONTROL JOINT MAXIMUM DISTANCE: WALKS- 8' O.C., ALL OTHERS- 15' O.C. SAW CUT CONTROL JOINTS MINIMUM ONE-QUARTER CONCRETE THICKNESS. EXPANSION JOINT MAXIMUM DISTANCE: WALKS- 24' O.C., ALL OTHERS- 40' O.C. DOWEL ALL EXPANSION JOINTS- MAXIMUM 24" O.C.
5. CONCRETE IN ISLAND COMPLEX SHALL BE SMOOTH FINISHED.
6. EXTERIOR CONCRETE SURFACES TO BE SEALED. CONCRETE SEALER:
   APR 15- OCT 31 USE: TK-26UV
   NOV 1- DEC 31 USE: TK-290
7. EXPANSION JOINTS SHALL BE DECK-O-FOAMED AND CAULKED WITH SLI.
8. DIAGONAL STRIPING LINES (HATCHING) IN THE " NO PARKING LOADING ZONE" AREA AND ANY OTHER AREA THAT IS HATCHED SHALL BE SPACED 5' ON CENTER.
9. LETTERING FOR ALL WORDING SUCH AS " NO PARKING LOADING ZONE" AND CARWASH SHOULD BE 12" TALL.
10. ALL DIAGONAL STRIPING SHALL BE ANGLED AS CLOSE TO DIMENSIONED ANGLE AS POSSIBLE.
11. CURBS AROUND THE RAISED FILLS SHALL BE PAINTED YELLOW.

- FOR INFORMATIONAL PURPOSES ONLY

SITE DATA:

ZONING DISTRICT:	B3
TOTAL SITE AREA - EXISTING/PROPOSED:	190,357 SF
EX. IMPERVIOUS:	61,276 SF (32%)
EX. PERVIOUS:	129,081 SF (68%)
PARKING REQUIREMENTS	
PARKING REQUIRED	SERVICE STATION = 1 STALL PER 2 EMPLOYEES +1
PARKING PROVIDED	42 STALLS
BUILDING HEIGHTS	
CONVENIENCE STORE	20.0'
CANOPY	19.5'

BUILDING SETBACKS
FRONT: 20'
REAR: 25'
SIDE: 5'

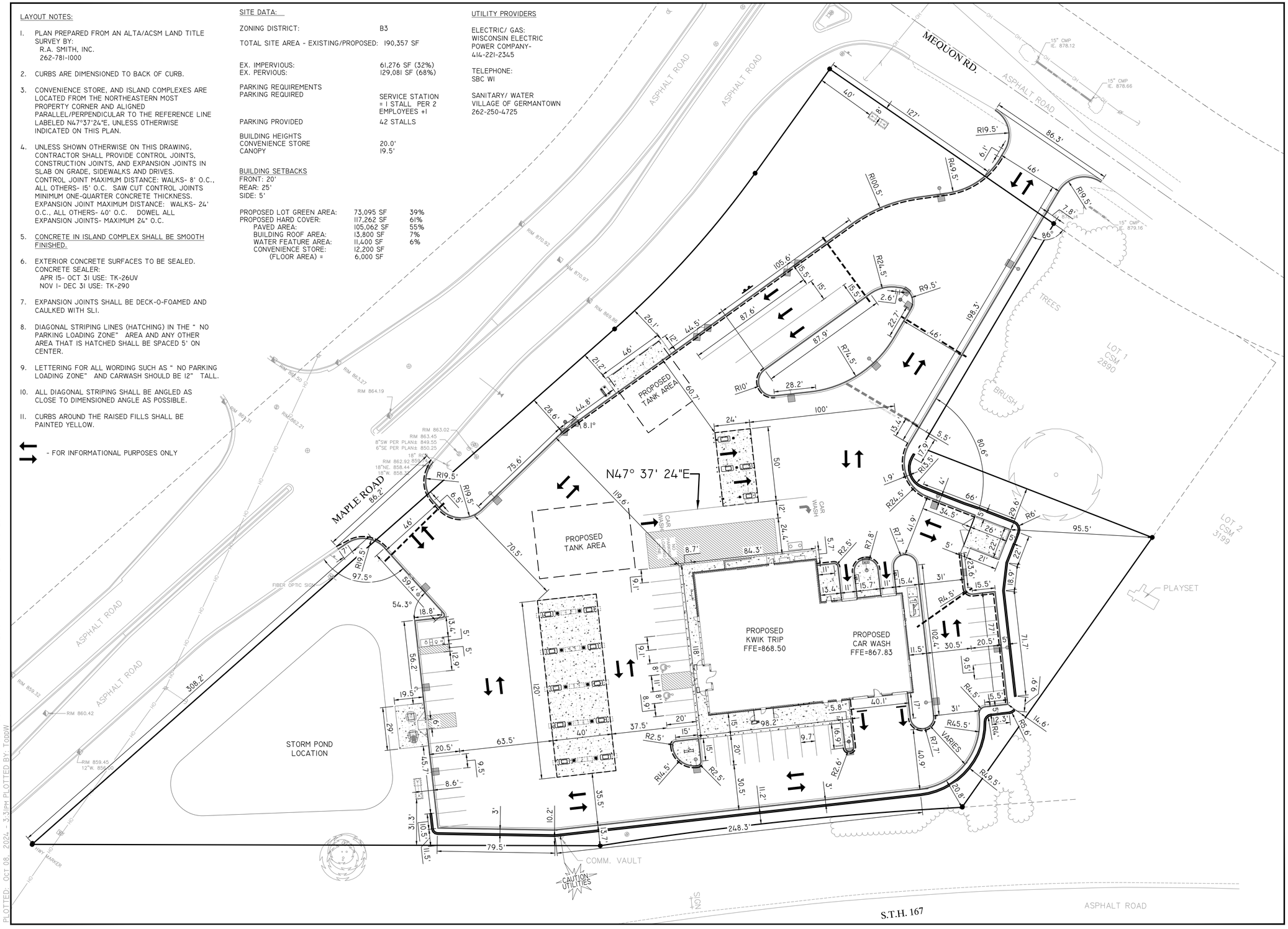
PROPOSED LOT GREEN AREA:	73,095 SF	39%
PROPOSED HARD COVER:	117,262 SF	61%
PAVED AREA:	105,062 SF	55%
BUILDING ROOF AREA:	13,800 SF	7%
WATER FEATURE AREA:	11,400 SF	6%
CONVENIENCE STORE:	12,200 SF	
(FLOOR AREA) =	6,000 SF	

UTILITY PROVIDERS

ELECTRIC/ GAS:
WISCONSIN ELECTRIC POWER COMPANY-
414-221-2345

TELEPHONE:
SBC WI

SANITARY/ WATER
VILLAGE OF GERMANTOWN
262-250-4725



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EMAIL: MAIL@REIENGINEERING.COM

SCALE
0 30 60

SITE DIMENSION PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C181

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C181-SITE PLAN.DWG LAYOUT: C181
PLOTTED: Oct 08, 2024 - 3:31PM PLOTTED BY: TodbW

NOTE: CONTRACTOR TO OBTAIN RIGHT-OF-WAY EXCAVATION PERMIT PRIOR TO BEGINNING SITE WORK.

CALL DIGGERS HOTLINE @ 1-800-242-8511 AT LEAST 3 WORKING DAYS PRIOR TO EXCAVATING.

CONSTRUCTION NOTE:

COORDINATE WITH OWNER FOR POSSIBLE CONSTRUCTION FENCING AND GATE LOCATIONS AND APPROPRIATE SIGNAGE INSTALLATION.

NOTES:

- REFER TO OTHER PROJECT PLANS AND INFORMATION RELATED TO THIS PROJECT PRIOR TO BEGINNING ANY GRADING WORK.

- PLAN PREPARED FROM ALTA/ACSM LAND TITLE SURVEY BY:
  R.A. SMITH, INC.
  262.781.1000

- CONTRACTOR SHALL LOCATE ALL UTILITIES WHICH MAY AFFECT THIS WORK AND NOTIFY OWNER OF ANY CONFLICTS.

- CONTRACTOR SHALL VERIFY ALL EXISTING AND PROPOSED ELEVATIONS PRIOR TO START OF CONSTRUCTION. VERIFY CRITICAL ELEVATIONS TO ENSURE CONFORMANCE WITH GRADING PLAN, PARTICULARLY WITH WALK AND/ OR PAVEMENTS TO REMAIN. MEET EXISTING GRADES ALONG STREETS, PROPERTY LINES AND DRIVEWAY ENTRANCES. RESTORE ALL EXISTING PAVEMENTS THAT REMAIN TO THEIR ORIGINAL, IF NOT BETTER CONDITION. NOTIFY OWNER OF ANY CONFLICTS.

- AREAS NOT PAVED AND TO BE LANDSCAPED SHALL RECEIVE MINIMUM OF 4" DEPTH COMPACTED TOPSOIL.

- CONTRACTOR SHALL COORDINATE GRADING AND INSTALLATION OF DRIVES IN R.O.W. WITH APPROPRIATE GOVERNMENT AGENCIES. OBTAIN APPROPRIATE PERMITS FOR GRADING AND DRAINAGE IN ALL R.O.W.

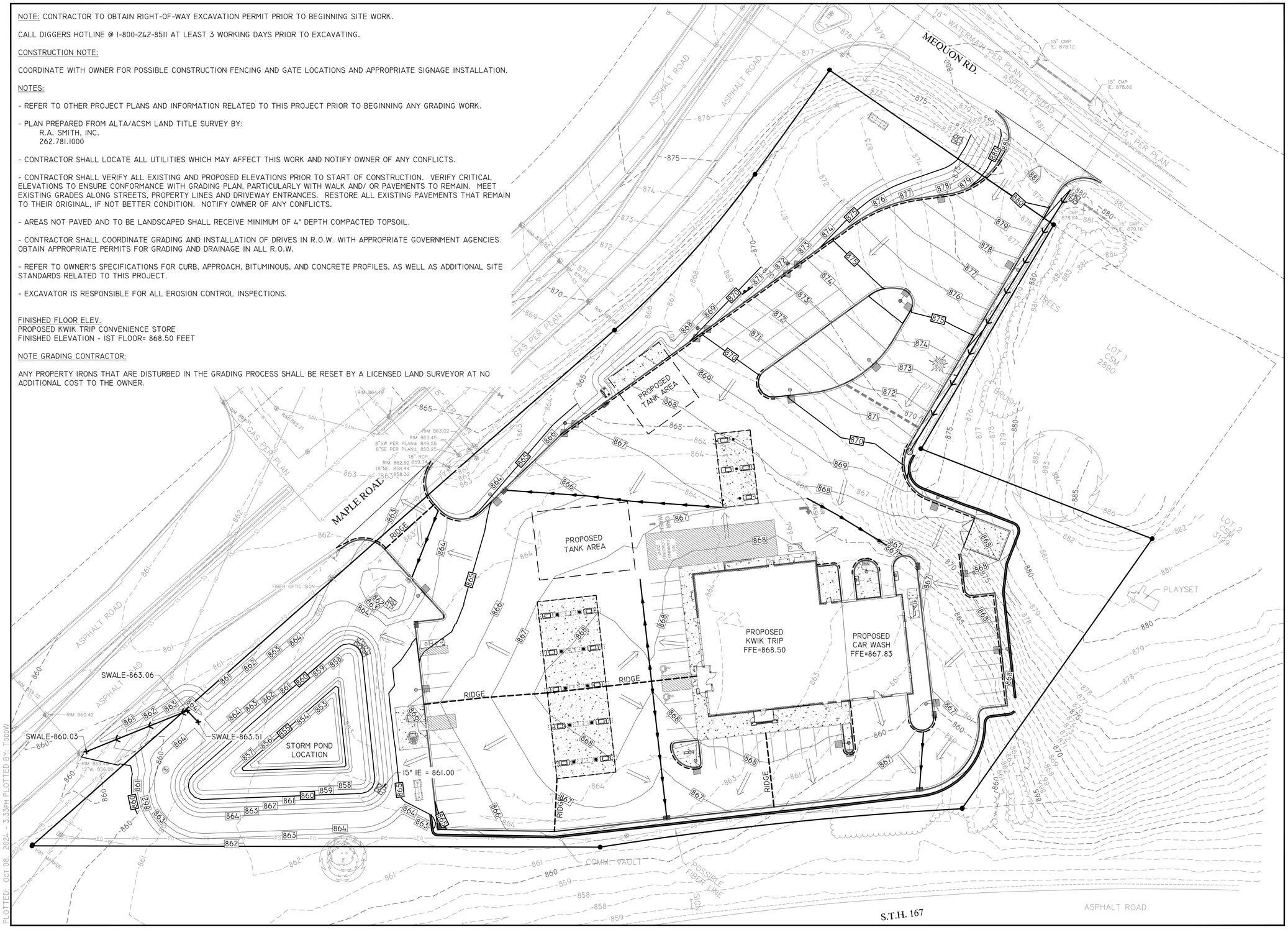
- REFER TO OWNER'S SPECIFICATIONS FOR CURB, APPROACH, BITUMINOUS, AND CONCRETE PROFILES, AS WELL AS ADDITIONAL SITE STANDARDS RELATED TO THIS PROJECT.

- EXCAVATOR IS RESPONSIBLE FOR ALL EROSION CONTROL INSPECTIONS.

FINISHED FLOOR ELEV.
PROPOSED KWIK TRIP CONVENIENCE STORE
FINISHED ELEVATION - 1ST FLOOR= 868.50 FEET

NOTE GRADING CONTRACTOR:

ANY PROPERTY IRONS THAT ARE DISTURBED IN THE GRADING PROCESS SHALL BE RESET BY A LICENSED LAND SURVEYOR AT NO ADDITIONAL COST TO THE OWNER.



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PLOTTED: Oct 08, 2024 - 3:33PM PLOTTED BY: TODDW

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SCALE
0 30 60

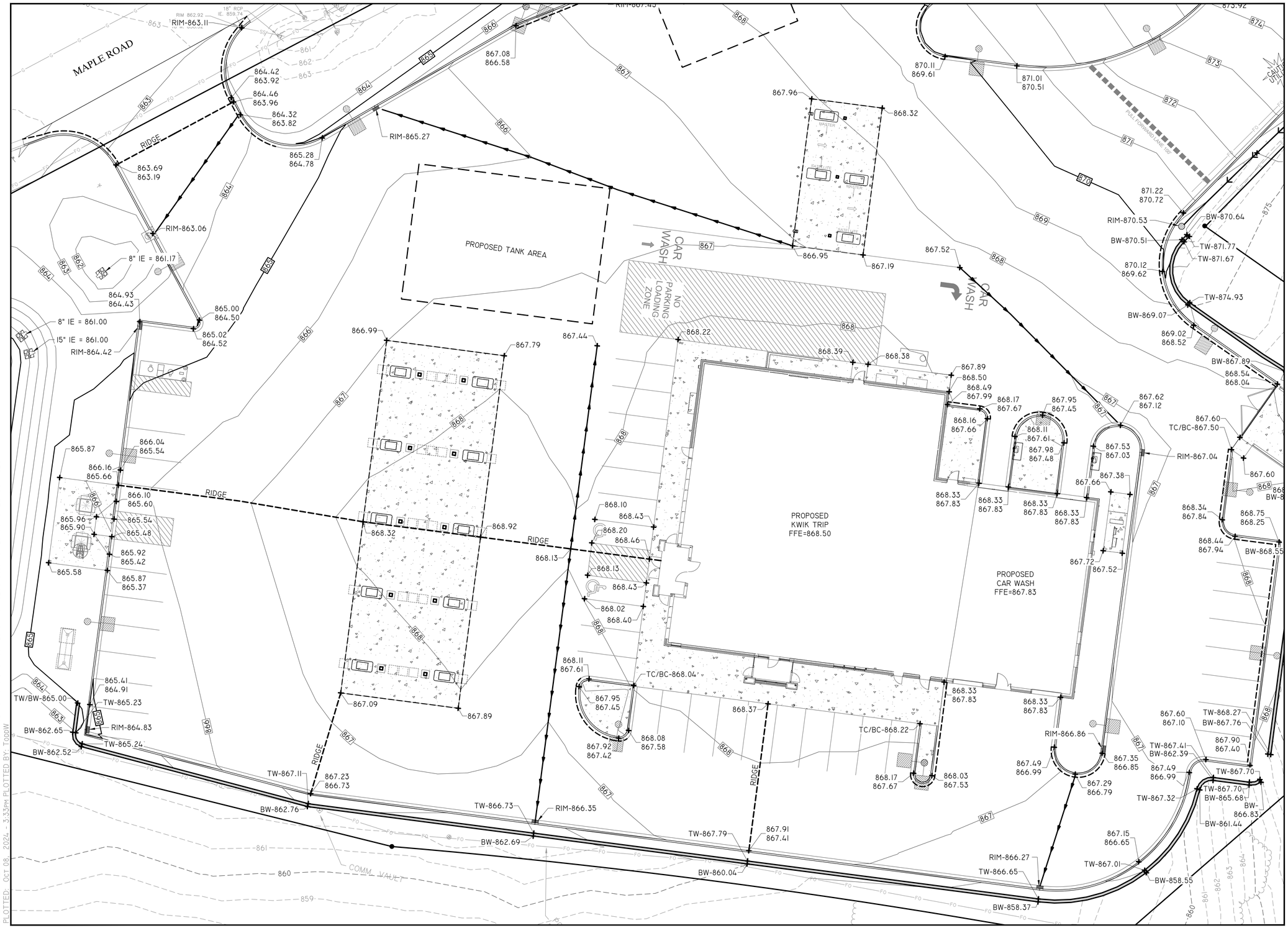
GRADING PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C200



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SCALE
0 15 30

GRADING PLAN DETAIL - SOUTH

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C201

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C200-GRADING PLANS.DWG LAYOUT: C201
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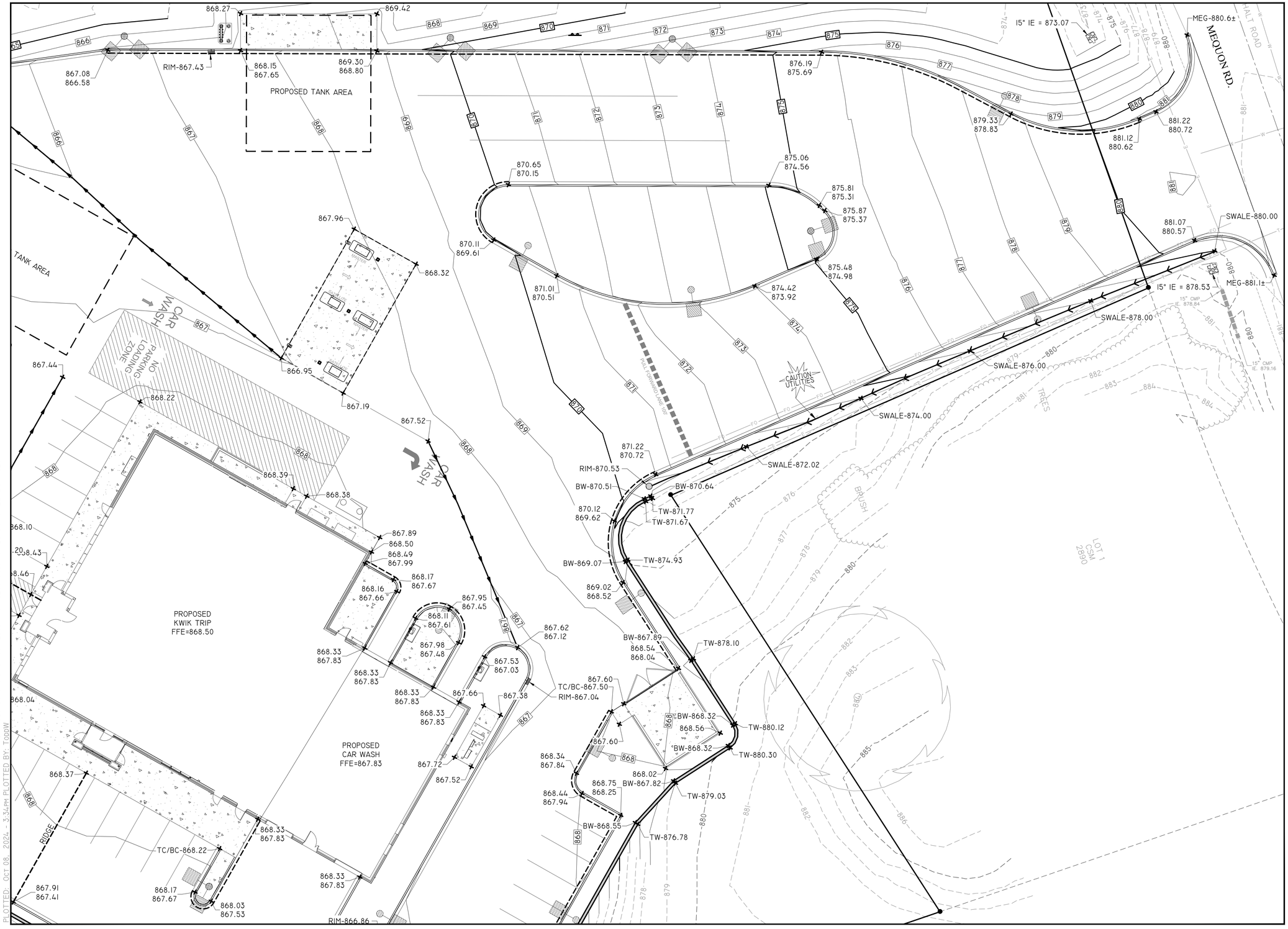

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SCALE
0 15 30

GRADING PLAN DETAIL - NORTH

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C201.1

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PLOTTED: Oct 08, 2024 - 3:34PM PLOTTED BY: ToddW

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SCALE
0 15 30

GRADING PLAN SPOT DETAIL - SOUTH

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY NAP
SCALE GRAPHIC
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C202

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SCALE
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GRADING PLAN SPOT DETAIL - NORTH

CONVENIENCE STORE #631

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GERMANTOWN, WI

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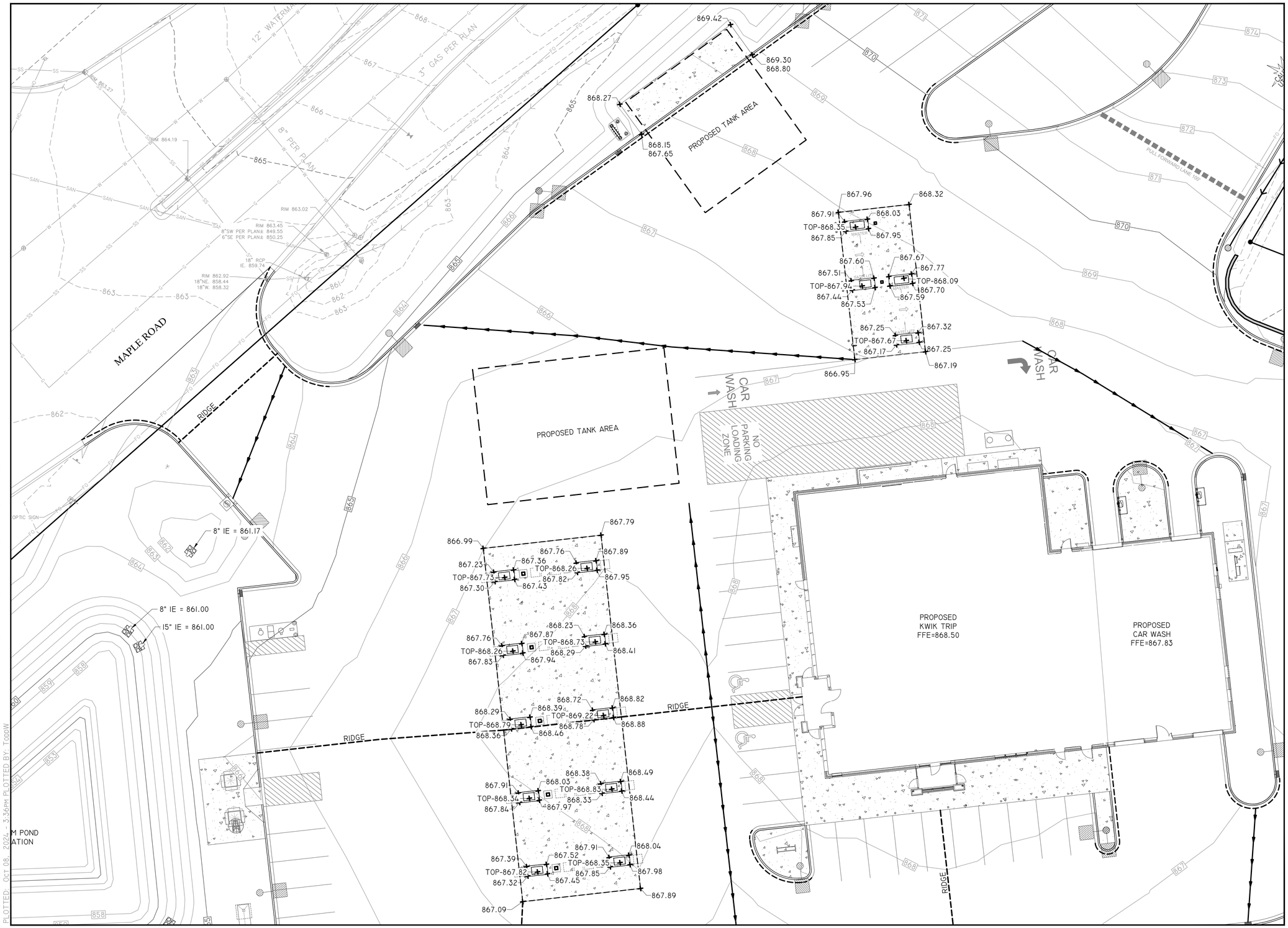

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PLOTTED: Oct 08, 2024 - 3:36PM PLOTTED BY: TODDW

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SCALE
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CANOPY AND TANK GRADING DETAILS

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

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SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
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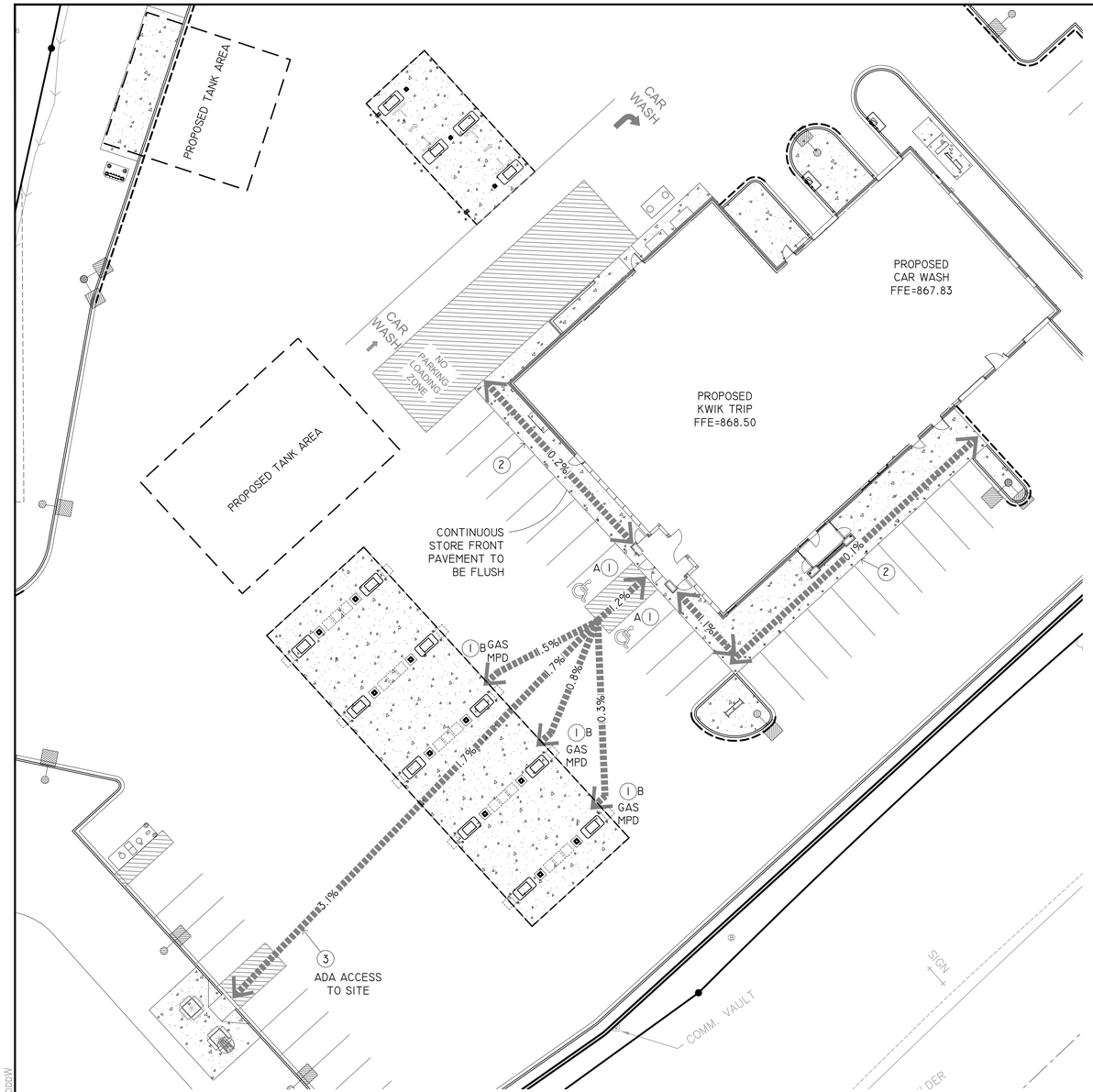


NOTES:

-REFER TO THE DOCUMENT FROM THE DEPARTMENT OF JUSTICE ON "2010 ADA STANDARDS FOR ACCESSIBLE DESIGN". CONTRACTOR SHALL REFERENCE CURRENT A.D.A. GUIDELINES AND LOCAL REGULATIONS FOR SITE ACCESSIBILITY. IN ALL CASES THE MINIMUM REQUIREMENTS SHALL BE PROVIDED ON SITE TO ENSURE COMPLIANCE TO ALL REGULATIONS.

- KWIK TRIP STANDARD ENTRANCE DOOR IS AUTOMATIC SLIDING DOOR SYSTEM DESIGNED TO COMPLY WITH ALL ACCESS CODES AND LAWS. ENTRANCE DOORS FOR ACCESSIBLE ROUTES WILL HAVE A MINIMUM CLEAR OPENING OF 32"

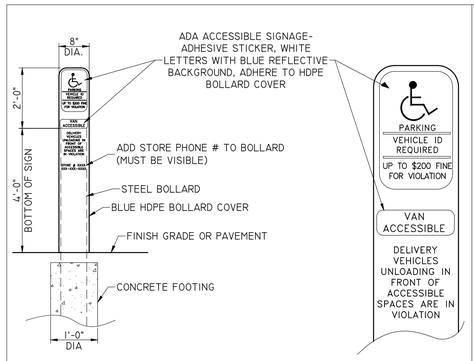
-STORE FRONTS WILL PROVIDE FLUSH PAVEMENTS ALONG ACCESSIBLE ROUTES WITH PROTECTIVE SECURITY BOLLARDS INDICATED AND SPACED BETWEEN PARKING SURFACES AND BUILDING WALK PER PLAN.

-NO OBJECTS OR DISPLAYS SHOULD PROTRUDE INTO THE MINIMUM CLEAR SPACE OF THE ACCESSIBLE ROUTES TO THE STORE ENTRANCE. THIS WILL INCLUDE SEASONAL DISPLAY VENDING AREAS AS WELL AS OTHER OUTDOOR STORAGE UNITS FOR PROPANE AND ICE, ETC.

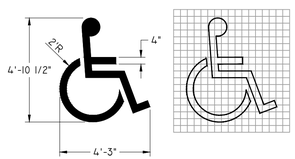
-PER A.D.A GUIDELINES- CLEAR WIDTH OF ACCESSIBLE ROUTES SHALL BE 36" AND PERMITTED TO BE REDUCED TO 32" FOR A LENGTH OF 24".

- ACCESS ISLES SERVING WHEEL CHAIR LIFTS OR CHAIR ACCESS FROM VEHICLES ARE REQUIRED TO BE NEARLY LEVEL IN ALL DIRECTIONS TO PROVIDE SAFE TRANSFER OF WHEELCHAIRS TO AND FROM VEHICLES. THE EXCEPTION WOULD BE FOR DRAINAGE. MAXIMUM SLOPE FOR THE ACCESS ISLE IS 1:48. NO CURB RAMPS SHALL BE A PART OF THE ACCESS ISLE.

-IDENTIFICATION SIGNS SHALL INCLUDE THE INTERNATIONAL SYMBOL OF ACCESSIBILITY WITH THE DESIGNATION OF 1 "VAN ACCESSIBLE' IN EVERY 8 ACCESSIBLE SPACES ON SITE.



ADA BOLLARD SIGNAGE
NOT TO SCALE

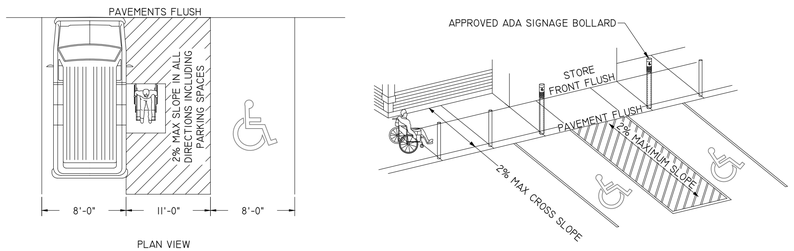


ACCESSIBILITY SYMBOL PAINTED ON PAVEMENT

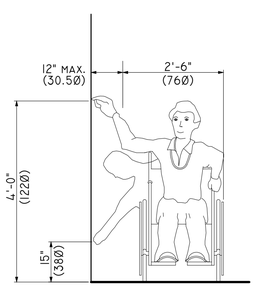
PROPORTIONING GUIDE

* TO BE YELLOW IN COLOR, UNLESS OTHERWISE SPECIFIED.

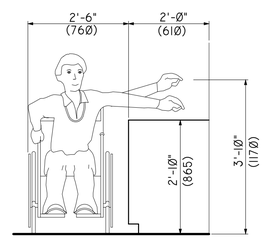
HANDICAP SYMBOL
NOT TO SCALE



VAN ACCESSIBLE PARKING
NOT TO SCALE



HIGH AND LOW - SIDE REACH LIMITS



MAXIMUM SIDE REACH OVER OBSTRUCTION

ACCESSIBLE REACH DIMENSIONS
NOT TO SCALE

PLAN KEYNOTES

1. ACCESSIBLE STALLS
   A. STRIPING - 4" WIDE STALL LINES, USE HIGH VISIBILITY BLUE PAINT.

   SPACES PROVIDED
   (2) 8'-0"X 20'-0" ACCESSIBLE PARKING WITH
   (1) 11'-0"X 20'-0" LOADING ZONE

   B. ACCESSIBLE FUELING POINT AND DISPENSER AND VALET. VALET AND KEY PAD ON PUMP SHALL CONFORM TO ADA REACH DIMENSIONS AS SHOWN IN DETAIL. SEE NOTES FOR CONVENIENCE STORE ACCESSIBILITY.

2. PAVEMENTS FLUSH FOR ACCESSIBILITY.

3. ACCESSIBLE ROUTE TO STORE.

811 Know what's below. Call before you dig.

NOTES FOR CONVENIENCE STORE ACCESSIBILITY

AT LEAST 1 MPD (MULTI PRODUCT DISPENSER) COVERING ALL GRADES OF FUEL MUST BE ACCESSIBLE IN A 30X48" CLEAR LEVEL FLOOR AREA (CLF).

ALL PUMP CONTROLS SHALL BE < 48" (2010 STANDARD). WINDOW WASHER, PAPER TOWEL DISPENSER, LITERATURE, FIRE EXTINGUISHER, EMERGENCY FUEL STOPS, ETC. BE ACCESSIBLE 30"X48" CLF SPACE AND WITHIN A FORWARD OR SIDE APPROACH REACH RANGE.

PROVIDE ISA (INDUSTRY STANDARD ARCHITECTURE) AT EACH ACCESSIBLE FUEL POSITION ON FACE OF PUMP.

PROVIDE ISA AT EACH ACCESSIBLE FUELING POSITION VISIBLE TO APPROACHING VEHICLES.

PROVIDE A SIGN AT EACH ACCESSIBLE FUELING POSITION WITH STORE TELEPHONE NUMBER, ADVISING AVAILABLE FUELING ASSISTANCE.

ANY PAY FUNCTION- I.E. AIR/VACUUM ETC. ARE REQUIRED TO HAVE AN ACCESSIBLE ROUTE TO STORE ENTRANCE. CONTROLS SHALL BE ACCESSIBLE 30"X48" CLF SPACE AND WITHIN A FORWARD OR SIDE APPROACH REACH RANGE.

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ACCESSIBILITY PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C204

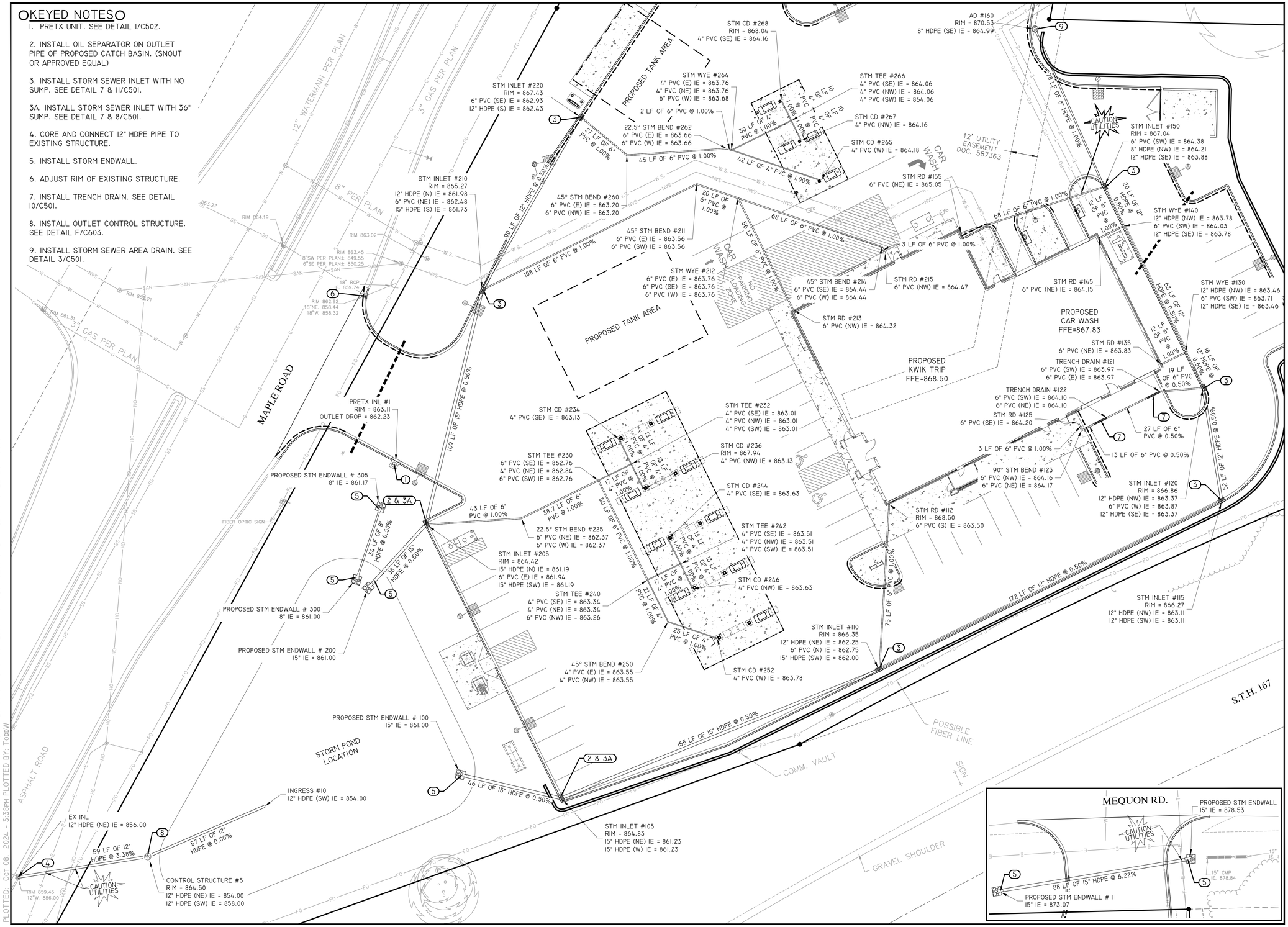
DRAWING FILE: Q:\1700-1799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C204-ACCESSIBILITY PLAN.DWG LAYOUT: C204
PLOTTED: OCT 08, 2024 - 3:37PM PLOTTED BY: TODDW

KEYED NOTES

1. PRETX UNIT. SEE DETAIL 1/C502.
2. INSTALL OIL SEPARATOR ON OUTLET PIPE OF PROPOSED CATCH BASIN. (SNOUT OR APPROVED EQUAL)
3. INSTALL STORM SEWER INLET WITH NO SUMP. SEE DETAIL 7 & 11/C501.

3A. INSTALL STORM SEWER INLET WITH 36" SUMP. SEE DETAIL 7 & 8/C501.

4. CORE AND CONNECT 12" HDPE PIPE TO EXISTING STRUCTURE.
5. INSTALL STORM ENDWALL.
6. ADJUST RIM OF EXISTING STRUCTURE.
7. INSTALL TRENCH DRAIN. SEE DETAIL 10/C501.
8. INSTALL OUTLET CONTROL STRUCTURE. SEE DETAIL F/C603.
9. INSTALL STORM SEWER AREA DRAIN. SEE DETAIL 3/C501.



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STORM SEWER PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
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SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C300

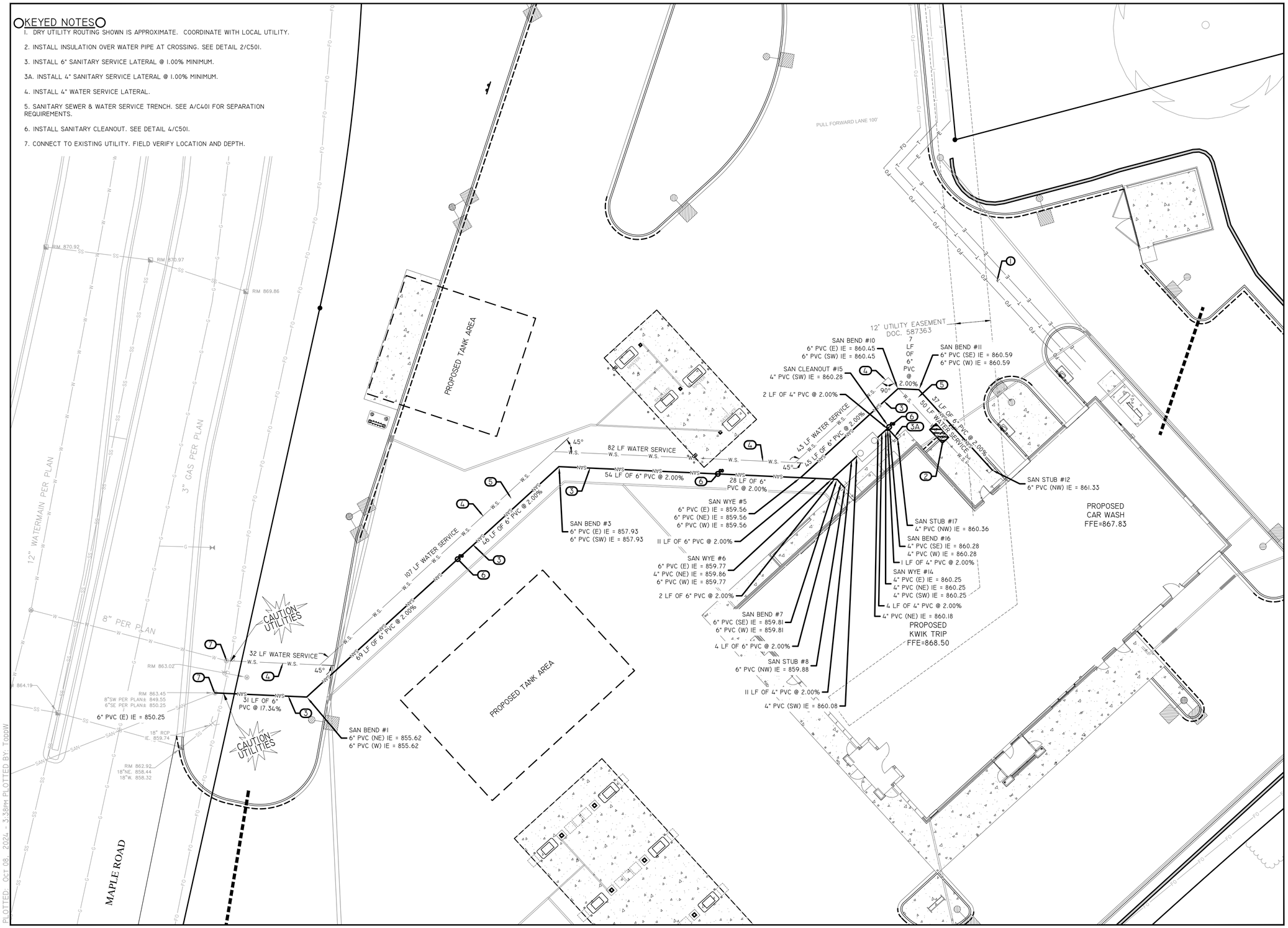
DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C300-C400-UTILITY PLANS.DWG LAYOUT: C300
PLOTTED: Oct 08, 2024 - 3:38PM PLOTTED BY: ToddW

KEYED NOTES

1. DRY UTILITY ROUTING SHOWN IS APPROXIMATE. COORDINATE WITH LOCAL UTILITY.
2. INSTALL INSULATION OVER WATER PIPE AT CROSSING. SEE DETAIL 2/C501.
3. INSTALL 6" SANITARY SERVICE LATERAL @ 1.00% MINIMUM.

3A. INSTALL 4" SANITARY SERVICE LATERAL @ 1.00% MINIMUM.

4. INSTALL 4" WATER SERVICE LATERAL.
5. SANITARY SEWER & WATER SERVICE TRENCH. SEE A/C401 FOR SEPARATION REQUIREMENTS.
6. INSTALL SANITARY CLEANOUT. SEE DETAIL 4/C501.
7. CONNECT TO EXISTING UTILITY. FIELD VERIFY LOCATION AND DEPTH.



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PLOTTED: OCT 08, 2024 - 3:36PM PLOTTED BY: TODDW

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UTILITY PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
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SHEET	C400

GENERAL :

1. COMPLY WITH THE WORK SAFETY PRACTICES SPECIFIED BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA). COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS. OSHA PROHIBITS ENTRY INTO "CONFINED SPACES," SUCH AS MANHOLES AND INLETS (SEE 29 CFR SECTION 1910.146), WITHOUT UNDERTAKING CERTAIN SPECIFIC PRACTICES AND PROCEDURES. CONSTRUCTION SAFETY IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR, WHO IS ALSO SOLELY RESPONSIBLE FOR THE MEANS, METHODS, AND SEQUENCING OF THE CONSTRUCTION OPERATIONS.

2. EXISTING BOUNDARY, LOCATION, TOPOGRAPHIC, AND UTILITY INFORMATION SHOWN ON THIS PLAN IS FROM A FIELD SURVEY BY R.A. SMITH, INC. DATED JUNE 12, 2024.

3. PERFORM ALL UTILITY WORK IN ACCORDANCE WITH STATE AND CITY REQUIREMENTS.

4. CONNECT TO EXISTING SANITARY SEWER MH'S BY CORE DRILLING. CONNECT TO EXISTING STORM SEWER MH'S BY EITHER SAWCUTTING OR CORE DRILLING. USE SAWS OR DRILLS THAT PROVIDE WATER TO THE BLADE. MEET ALL CITY STANDARDS AND SPECIFICATIONS FOR THE THE CONNECTION. RECONSTRUCT INVERTS AFTER INSTALLATION. USE WATER STOP GASKETS IN ORDER TO PROVIDE WATERTIGHT SEALS WHEN PENETRATING A STRUCTURE WALL WITH A PIPE. TAKE MEASUREMENTS BEFORE BEGINNING CONSTRUCTION TO ENSURE THAT SERVICE CONNECTIONS DO NOT CUT INTO MAINTENANCE ACCESS STRUCTURE JOINTS OR PIPE BARREL JOINTS.

5. PERFORM TRENCH EXCAVATIONS FOR ALL UTILITIES IN ACCORDANCE WITH THE REQUIREMENTS OF O.S.H.A. 29 CFR, PART 1926, SUBPART P, "EXCAVATIONS AND TRENCHES." (WWW.OSHA.GOV)

6. COORDINATE BUILDING UTILITY CONNECTION LOCATIONS AT 5 FT. OUT FROM THE PROPOSED BUILDING WITH THE WITH THE INTERIOR PLUMBING CONTRACTOR PRIOR TO CONSTRUCTION. VERIFY WATER AND SEWER SERVICE LOCATIONS AND ELEVATIONS WITH THE MECHANICAL ENGINEER PRIOR TO CONSTRUCTION.

7. THE SUBSURFACE UTILITY INFORMATION SHOWN ON THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

8. THE LOCATIONS OF EXISTING UTILITIES SHOWN ON THIS PLAN ARE FROM RECORD INFORMATION. THE ENGINEER DOES NOT GUARANTEE THAT ALL EXISTING UTILITIES ARE SHOWN OR, IF SHOWN, EXIST IN THE LOCATIONS INDICATED ON THE PLAN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN THE FINAL VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UTILITIES (INCLUDING WATER AND SEWER LINES AND APPURTENANCES). NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

9. CONTACT UTILITY COMPANIES FOR LOCATIONS OF ALL PUBLIC AND PRIVATE UTILITIES WITHIN THE WORK AREA PRIOR TO BEGINNING CONSTRUCTION. CONTACT DIGGER'S HOTLINE AT (414) 259-1181 IN THE MILWAUKEE METRO AREA, OR 1-800-242-8511 ELSEWHERE IN WISCONSIN FOR EXACT LOCATIONS OF EXISTING UTILITIES AT LEAST 72 HOURS (NOT INCLUDING WEEKENDS AND HOLIDAYS) BEFORE BEGINNING ANY CONSTRUCTION. OBTAIN TICKET NUMBER AND MEET WITH REPRESENTATIVES OF THE VARIOUS UTILITIES AT THE SITE. PROVIDE THE OWNER WITH THE TICKET NUMBER INFORMATION. DIGGER'S HOTLINE IS A FREE SERVICE THAT LOCATES MUNICIPAL AND UTILITY COMPANY LINES, BUT DOES NOT LOCATE PRIVATE UTILITY LINES. USE AN INDEPENDENT LOCATOR SERVICE OR OTHER MEANS IN ORDER TO OBTAIN LOCATIONS OF PRIVATE UTILITY LINES INCLUDING, BUT NOT LIMITED TO, UNDERGROUND ELECTRIC CABLES, TELEPHONE, TV, AND LAWN SPRINKLER LINES.

10. POTHOLE TO VERIFY THE POSITIONS OF EXISTING UNDERGROUND FACILITIES AT A SUFFICIENT NUMBER OF LOCATIONS IN ORDER TO ASSURE THAT NO CONFLICT WITH THE PROPOSED WORK EXISTS AND THAT SUFFICIENT CLEARANCE IS AVAILABLE.

11. WHERE EXISTING GAS, ELECTRIC, CABLE, OR TELEPHONE UTILITIES CONFLICT WITH THE WORK, COORDINATE THE ABANDONMENT, RELOCATION, OFFSET, OR SUPPORT OF THE EXISTING UTILITIES WITH THE APPROPRIATE LOCAL UTILITY COMPANIES. COORDINATE NEW GAS METER AND GAS LINE INSTALLATION, ELECTRIC METER AND ELECTRIC SERVICE INSTALLATION, CABLE SERVICE, AND TELEPHONE SERVICE INSTALLATION WITH THE LOCAL UTILITY COMPANIES.

12. ARRANGE FOR AND SECURE SUITABLE DISPOSAL AREAS OFF-SITE. DISPOSE OF ALL EXCESS SOIL, WASTE MATERIAL, DEBRIS, AND ALL MATERIALS NOT DESIGNATED FOR SALVAGE. WASTE MATERIAL AND DEBRIS INCLUDES TREES, STUMPS, PIPE, CONCRETE, ASPHALTIC CONCRETE, CANS, OR OTHER WASTE MATERIAL FROM THE CONSTRUCTION OPERATIONS. OBTAIN THE RIGHTS TO ANY WASTE AREA FOR DISPOSAL OF UNSUITABLE OR SURPLUS MATERIAL EITHER SHOWN OR NOT SHOWN ON THE PLANS. ALL WORK IN DISPOSING OF SUCH MATERIAL SHALL BE CONSIDERED INCIDENTAL TO THE WORK. ALL DISPOSAL MUST CONFORM TO APPLICABLE SOLID WASTE DISPOSAL PERMIT REGULATIONS. OBTAIN ALL NECESSARY PERMITS AT NO COST TO THE OWNER.

13. STRAIGHT LINE SAW-CUT EXISTING BITUMINOUS OR CONCRETE SURFACING AT THE PERIMETER OF PAVEMENT REMOVAL AREAS. USE SAWS THAT PROVIDE WATER TO THE BLADE. TACK, AND MATCH ALL CONNECTIONS TO EXISTING BITUMINOUS PAVEMENT.

14. RELOCATE OVERHEAD POWER, TELEPHONE, AND CABLE LINES AS REQUIRED.

15. ALL MATERIALS REQUIRED FOR THIS WORK SHALL BE NEW MATERIAL CONFORMING TO THE REQUIREMENTS FOR CLASS, KIND, GRADE, SIZE, QUALITY, AND OTHER DETAILS SPECIFIED HEREIN OR AS SHOWN ON THE PLANS. DO NOT USE RECYCLED OR SALVAGED AGGREGATE, ASPHALTIC PAVEMENT, CRUSHED CONCRETE, OR SCRAP SHINGLES. UNLESS OTHERWISE INDICATED, THE CONTRACTOR SHALL FURNISH ALL REQUIRED MATERIALS.

16. RESTORE THE PUBLIC RIGHT-OF-WAY. REPLACE ANY CONCRETE CURB AND GUTTER, BITUMINOUS PAVEMENT, SIDEWALK, OR VEGETATIVE COVER DAMAGED BY THE CONSTRUCTION ACTIVITY. RESTORE DAMAGED TURF WITH SOD WITHIN THE PUBLIC RIGHT-OF-WAY. THE WORK AREA SHOWN IS GENERAL AND MAY NEED TO BE ADJUSTED IN THE FIELD.

17. WHEN SAWING OR DRILLING CONCRETE OR MASONRY, USE SAWS THAT PROVIDE WATER TO THE BLADE. DO NOT ALLOW THE SLURRY PRODUCED BY THIS PROCESS TO BE TRACKED OUTSIDE OF THE IMMEDIATE WORK AREA OR DISCHARGED INTO THE SEWER SYSTEM.

18. ADJUST ALL CURB STOPS, VALVE BOXES, MAINTENANCE HOLE CASTINGS, CATCH BASIN CASTINGS, CLEANOUT COVERS, AND SIMILAR ITEMS TO FINISHED GRADE.

19. INSTALL ALL PIPE WITH THE ASTM IDENTIFICATION NUMBERS ON THE TOP FOR INSPECTION. COMMENCE PIPE LAYING AT THE LOWEST POINT IN THE PROPOSED SEWER LINE. LAY THE PIPE WITH THE BELL END OR RECEIVING GROOVE END OF THE PIPE POINTING UPGRADE. WHEN CONNECTING TO AN EXISTING PIPE, UNCOVER THE EXISTING PIPE IN ORDER TO ALLOW ANY ADJUSTMENTS IN THE PROPOSED LINE AND GRADE BEFORE LAYING ANY PIPE.

20. OBTAIN AND PAY FOR ALL PERMITS, TESTS, INSPECTIONS, ETC. REQUIRED BY AGENCIES THAT HAVE JURISDICTION OVER THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR ALL BONDS, LETTERS OF CREDIT, OR CASH SURETIES RELATED TO THE WORK. EXECUTE AND INSPECT WORK IN ACCORDANCE WITH ALL LOCAL AND STATE CODES, RULES, ORDINANCES, OR REGULATIONS PERTAINING TO THE PARTICULAR TYPE OF WORK INVOLVED.

21. OBTAIN PERMITS FROM THE CITY FOR WORK IN THE PUBLIC RIGHT-OF-WAY.

22. CONSTRUCT SANITARY SEWER, WATERMAIN, AND STORM SEWER UTILITIES IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR SEWER AND WATER CONSTRUCTION IN WISCONSIN, SIXTH EDITION, OR THE LATEST REVISED EDITION.

23. TRACER WIRE: LOCATING REQUIREMENTS - A MEANS TO LOCATE BURIED UNDERGROUND EXTERIOR NON METALLIC SEWERS/MAINS MUST BE PROVIDED WITH TRACER WIRE OR OTHER METHODS IN ORDER TO BE LOCATED IN ACCORD WITH THE PROVISIONS OF THESE CODE SECTIONS AS PER 182.0715(2R) OF THE STATUTES.

24. INSTALL ALL PIPE WITH THE ASTM IDENTIFICATION NUMBERS ON THE TOP FOR INSPECTION. COMMENCE PIPE LAYING AT THE LOWEST POINT IN THE PROPOSED SEWER LINE. LAY THE PIPE WITH THE BELL END OR RECEIVING GROOVE END OF THE PIPE POINTING UPGRADE. WHEN CONNECTING TO AN EXISTING PIPE, UNCOVER THE EXISTING PIPE IN ORDER TO ALLOW ANY ADJUSTMENTS IN THE PROPOSED LINE AND GRADE BEFORE LAYING ANY PIPE. DO NOT LAY PIPES IN WATER OR WHEN THE TRENCH CONDITIONS ARE UNSUITABLE FOR SUCH WORK.

WATER DISTRIBUTION SYSTEM :

1. BRING ALL SITE UTILITIES TO 5' OUTSIDE OF THE BUILDING LINE WITH THE EXCEPTION OF THE WATER SERVICE. EXTEND WATER SERVICE INTO THE BUILDING AND UP TO THE FLANGE FOR THE WATER METER.

2. SEPARATION OF WATER AND SEWER: PROVIDE HORIZONTAL AND VERTICAL SEPARATIONS AS REQUIRED BY CODE. SEE DETAIL A/C401.

3. WATERMAIN DEPTH: MAINTAIN 7.5 FEET OF COVER OVER THE TOP OF THE WATER LINES TO THE FINISHED GRADE. VERIFY ELEVATION OF PROPOSED AND EXISTING WATER LINES AT ALL UTILITY CROSSINGS. INSTALL THE WATER LINES AT GREATER DEPTHS IN ORDER TO CLEAR STORM SEWERS, SANITARY SEWERS, OR OTHER UTILITIES AS REQUIRED. INCLUDE COSTS TO LOWER WATER LINES IN THE BASE BID.

4. DISINFECTION: DISINFECT ALL COMPLETED WATERMAINS IN ACCORDANCE WITH AWWA STANDARD C651. IF THE TABLET OR CONTINUOUS FEED METHODS ARE USED, DISINFECT USING WITH WATER THAT CONTAINS AT LEAST 50 PPM OF AVAILABLE CHLORINE. DO NOT USE THE TABLET METHOD ON SOLVENT-WELDED PLASTIC OR ON SCREWED-JOINT STEEL PIPE BECAUSE OF THE DANGER OF FIRE OR EXPLOSION FROM THE REACTION OF THE JOINT COMPOUNDS WITH THE CALCIUM HYPOCHLORITE. RETAIN THE TREATED WATER IN THE PIPELINE FOR AT LEAST 24 HOURS. MEASURE THE CHLORINE RESIDUAL AT THE END OF THE 24 HOUR PERIOD. THE FREE CHLORINE RESIDUAL MUST BE AT LEAST 10 MG/L MEASURED AT ANY POINT IN THE LINE. MEASUREMENT OF THE CHLORINE CONCENTRATION AT REGULAR INTERVALS SHALL BE IN ACCORDANCE WITH STANDARD METHODS, AWWA M-12, OR USING APPROPRIATE CHLORINE TEST KITS.

5. TESTING: PRESSURE TEST AND PERFORM BACTERIOLOGICAL TESTS ON ALL WATER LINES UNDER THE SUPERVISION OF THE CITY PUBLIC WORKS DEPARTMENT. NOTIFY THE CITY AT LEAST 24 WORKING HOURS PRIOR TO ANY TESTING. PRESSURIZE THE WATERLINE TO 1034-KPA (150-PSI) GAUGE PRESSURE (MEASURED AT THE POINT OF LOWEST ELEVATION) BY MEANS OF A PUMP CONNECTED TO THE PIPE IN A SATISFACTORY MANNER. MAINTAIN THE TEST PRESSURE FOR A MINIMUM OF 2 HOURS. DO NOT ADD WATER TO THE WATERMAIN IN ORDER TO MAINTAIN THE REQUIRED PRESSURE DURING THE WATER MAIN PRESSURE TESTING. THE TEST SECTION OF PIPE IS ACCEPTABLE WITH A PRESSURE DROP OF 14 KPA (2 PSI) OR LESS.

6. USE MUELLER H 10300 OR FORD EM 2 7057, OR APPROVED EQUAL, AT ALL CURB STOP LOCATIONS. STATIONARY ROD IS REQUIRED ON ALL CURB STOPS.

7. BUILDING WATER SERVICES: WATER SERVICE PIPE SHALL MEET THE FOLLOWING SPECIFICATIONS AND BE APPROVED BY THE LOCAL GOVERNING AGENCY. 2.5 INCH OR LESS: HDPE PER ASTM D2737 SDR 9 OR TYPE K COPPER PER ASTM B - 88. 4 INCH OR GREATER: DIP PER AWWA C151 OR PVC PER AWWA C-900.

8. TRACER WIRE: LOCATING REQUIREMENTS - A MEANS TO LOCATE BURIED UNDERGROUND EXTERIOR NON METALLIC SEWERS/MAINS MUST BE PROVIDED WITH TRACER WIRE OR OTHER METHODS IN ORDER TO BE LOCATED IN ACCORD WITH THE PROVISIONS OF THE WISCONSIN STATUTES 182.0175(2R) AND THE WISCONSIN DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES SPS 382.30(11)(H).

STORM DRAINAGE :

1. UNLESS OTHERWISE INDICATED, USE REINFORCED, PRECAST, CONCRETE MAINTENANCE HOLES AND CATCH BASINS CONFORMING TO ASTM C478, FURNISHED WITH WATER STOP RUBBER GASKETS AND PRECAST BASES. JOINTS FOR ALL PRECAST MAINTENANCE HOLE SECTIONS SHALL HAVE CONFINED, RUBBER "O"-RING GASKETS IN ACCORDANCE WITH ASTM C923. THE INSIDE BARREL DIAMETER SHALL NOT BE LESS THAN 48 INCHES.

2. ALL JOINTS AND CONNECTIONS TO CATCH BASINS OR MANHOLES SHALL BE WATERTIGHT OR APPROVED CONNECTION. USE RESILIENT RUBBER SEALS, WATERSTOP GASKETS, OR APPROVED EQUAL. CEMENT MORTAR JOINTS ARE NOT ALLOWED UNLESS OTHERWISE PERMITTED BY LOCAL MUNICIPALITY.

3. INSTALL CATCH BASIN CASTINGS WITH SPECIFIED TOP ELEVATION AT THE FLOWLINE OF RIM.

4. PVC PIPE: USE SOLID-CORE, SDR-35, ASTM D3034 POLYVINYL CHLORIDE (PVC) PIPE FOR DESIGNATED PVC STORM SEWER SERVICES 4 TO 15-INCHES IN DIAMETER. USE SOLID-CORE, SDR-35, ASTM F679 POLYVINYL CHLORIDE (PVC) PIPE FOR DESIGNATED PVC STORM SEWER SERVICES 18 TO 27-INCHES IN DIAMETER. JOINTS FOR ALL STORM SEWER SHALL HAVE PUSH-ON JOINTS WITH ELASTOMERIC GASKETS. USE OF SOLVENT CEMENT JOINTS IS ALLOWED FOR BUILDING SERVICES. SOLVENT CEMENT JOINTS IN PVC PIPE MUST INCLUDE USE OF A PRIMER WHICH IS OF CONTRASTING COLOR TO THE PIPE AND CEMENT. PIPE WITH SOLVENT CEMENT JOINTS SHALL BE JOINED WITH PVC CEMENT CONFORMING TO ASTM D2564. LAY ALL PVC PIPE ON A CONTINUOUS GRANULAR BED. INSTALLATION MUST COMPLY WITH ASTM D2321.

5. TESTING: TEST ALL PORTIONS OF STORM SEWER THAT ARE WITHIN 10 FEET OF BUILDINGS, WITHIN 10 FEET OF BURIED WATER, LINES, WITHIN 50 FEET OF WATER WELLS, OR THAT PASS THROUGH SOIL OR WATER IDENTIFIED AS BEING CONTAMINATED. TEST ALL FLEXIBLE STORM SEWER LINES FOR DEFLECTION AFTER THE SEWER LINE HAS BEEN INSTALLED AND BACKFILL HAS BEEN IN PLACE FOR AT LEAST 30 DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF 5%. IF THE TEST FAILS, MAKE NECESSARY REPAIRS AND RETEST.

6. USE NEENAH R-1550A FRAME WITH 2050D GRATE ON ALL PROPOSED CATCH BASINS.

7. INSTALL DETECTABLE UNDERGROUND MARKING TAPE DIRECTLY ABOVE ALL PVC, POLYETHYLENE, AND OTHER NONCONDUCTIVE UNDERGROUND UTILITIES AT A DEPTH OF 457 MM (18 INCHES) BELOW FINISHED GRADE, UNLESS OTHERWISE INDICATED. BRING THE TAPE TO THE SURFACE AT VARIOUS LOCATIONS IN ORDER TO PROVIDE CONNECTION POINTS FOR LOCATING UNDERGROUND UTILITIES. INSTALL BLUE RHINO TRIVIEW FLEX TEST STATIONS, OR APPROVED EQUAL, WITH BLACK CAPS AT EACH SURFACE LOCATION.

8. TRACER WIRE: LOCATING REQUIREMENTS - A MEANS TO LOCATE BURIED UNDERGROUND EXTERIOR NON METALLIC SEWERS/MAINS MUST BE PROVIDED WITH TRACER WIRE OR OTHER METHODS IN ORDER TO BE LOCATED IN ACCORD WITH THE PROVISIONS OF THESE CODE SECTIONS AS PER 182.0715(2R) OF THE STATUTES.

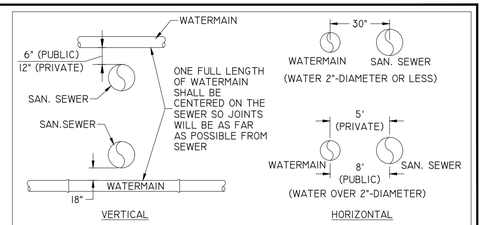
9. THE MINIMUM DEPTH OF COVER FOR BUILDING AND CANOPY ROOF DRAIN LEADERS WITHOUT INSULATION IS 5 FEET. INSULATE ROOF DRAIN LEADERS AT LOCATIONS WHERE THE DEPTH OF COVER IS LESS THAN 5 FEET. PROVIDE A MINIMUM INSULATION THICKNESS OF 2 INCHES. THE INSULATION MUST BE AT LEAST 4 FEET WIDE AND CENTERED ON THE PIPE. INSTALL THE INSULATION BOARDS 6 INCHES ABOVE THE TOPS OF THE PIPES ON MECHANICALLY COMPACTED AND LEVELED PIPE BEDDING MATERIAL. USE HIGH DENSITY, CLOSED CELL, RIGID BOARD MATERIAL EQUIVALENT TO DOW STYROFOAM HI-40 PLASTIC FOAM INSULATION.

10. CLEANOUTS: INSTALL CLEANOUTS ON ALL ROOF DRAINS IN ACCORDANCE WITH S.P.S 382.35 (3)(C)(1.). THE DISTANCE BETWEEN CLEANOUTS IN HORIZONTAL PIPING SHALL NOT EXCEED 100 FEET FOR PIPES 10-INCHES AND UNDER IN SIZE. CLEANOUTS SHALL BE OF THE SAME NOMINAL SIZE AS THE PIPES THEY SERVE OR 6-INCH DIAMETER MINIMUM FOR PIPES 6 INCHES IN DIAMETER OR GREATER. INSTALL A METER BOX FRAME AND SOLID LID (NEENAH R-1914-A, OR APPROVED EQUAL) OVER ALL CLEANOUTS.

11. INSTALL ALL PIPE WITH THE ASTM IDENTIFICATION NUMBERS ON THE TOP FOR INSPECTION. COMMENCE PIPE LAYING AT THE LOWEST POINT IN THE PROPOSED SEWER LINE. LAY THE PIPE WITH THE BELL END OR RECEIVING GROOVE END OF THE PIPE POINTING UPGRADE. WHEN CONNECTING TO AN EXISTING PIPE, UNCOVER THE EXISTING PIPE IN ORDER TO ALLOW ANY ADJUSTMENTS IN THE PROPOSED LINE AND GRADE BEFORE LAYING ANY PIPE. DO NOT LAY PIPES IN WATER OR WHEN THE TRENCH CONDITIONS ARE UNSUITABLE FOR SUCH WORK.

12. INSTALL STORM SEWER IN ACCORDANCE WITH SECTION 608 OF THE WISDOT STANDARD SPECIFICATIONS.

13. INSTALL CATCH BASINS, MANHOLES, AND INLETS IN ACCORDANCE WITH SECTION 611 OF THE WISDOT STANDARD SPECIFICATIONS.



NOTES:
1. WHEN THE ABOVE SEPARATIONS CANNOT BE MAINTAINED, THE ENGINEER MAY REQUIRE THE CONTRACTOR TO ENCASE THE SEWER IN CONCRETE.

2. NO PRIVATE WATER MAIN OR WATER SERVICE SHALL BE INSTALLED WITHIN 6" OF A STORM SEWER. PUBLIC WATER MAIN MUST MEET THE SAME HORIZONTAL AND VERTICAL SEPARATION DISTANCES AS REQUIRED FOR SANITARY SEWER.

A / C401 SEWER / WATERMAIN SEPARATION DISTANCE
NTS

SANITARY SEWER :

1. PIPE: USE SOLID-CORE, SDR-35, ASTM D3034 (OR APPROVED EQUAL) POLYVINYL CHLORIDE (PVC) PLASTIC PIPE FOR ALL DESIGNATED PVC SANITARY SEWER SERVICES. JOINTS FOR ALL SANITARY SEWER SHALL HAVE PUSH-ON JOINTS WITH ELASTOMERIC GASKETS. USE OF SOLVENT CEMENT JOINTS IS ALLOWED FOR BUILDING SERVICES. SOLVENT CEMENT JOINTS IN PVC PIPE MUST INCLUDE USE OF A PRIMER WHICH IS OF CONTRASTING COLOR TO THE PIPE AND CEMENT. PIPE WITH SOLVENT CEMENT JOINTS SHALL BE JOINED WITH PVC CEMENT CONFORMING TO ASTM D2564. LAY ALL PVC PIPE ON A CONTINUOUS GRANULAR BED. INSTALLATION MUST COMPLY WITH ASTM D2321.

2. CLEANOUTS: INSTALL CLEANOUTS ON ALL SANITARY SEWER SERVICES. THE DISTANCE BETWEEN CLEANOUTS IN HORIZONTAL PIPING SHALL NOT EXCEED 100 FEET FOR PIPES 4-INCH AND OVER IN SIZE. CLEANOUTS SHALL BE OF THE SAME NOMINAL SIZE AS THE PIPES THEY SERVE OR 6-INCH DIAMETER MINIMUM FOR PIPES 6 INCHES IN DIAMETER OR GREATER. INCLUDE FROST SLEEVES AND CONCRETE FRAME AND PIPE SUPPORT. INSTALL A METER BOX FRAME AND SOLID LID (NEENAH R-1914-A, OR APPROVED EQUAL) OVER ALL CLEANOUTS.

3. TESTING: PRESSURE TEST ALL SANITARY SEWER LINES. TEST ALL FLEXIBLE SANITARY SEWER LINES FOR DEFLECTION AFTER THE SEWER LINE HAS BEEN INSTALLED AND BACKFILL HAS BEEN IN PLACE FOR AT LEAST 30 DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF 5%. IF THE TEST FAILS, MAKE NECESSARY REPAIRS AND RETEST.

4. UNLESS OTHERWISE INDICATED, USE REINFORCED, PRECAST, CONCRETE MAINTENANCE HOLES CONFORMING TO ASTM C478, FURNISHED WITH PRECAST BASES. SANITARY SEWER MAINTENANCE HOLES SHALL BE SUPPLIED WITH PRE-FORMED INVERTS AND FLEXIBLE NEOPRENE SLEEVE CONNECTIONS FOR ALL LATERAL LINES 375 MM (15 INCHES) IN DIAMETER OR LESS, UNLESS OTHERWISE INDICATED. JOINTS FOR ALL PRECAST MAINTENANCE HOLE SECTIONS SHALL HAVE CONFINED, RUBBER "O"-RING GASKETS IN ACCORDANCE WITH ASTM C923. THE INSIDE BARREL DIAMETER SHALL NOT BE LESS THAN 48 INCHES.

5. INSTALL FLEXIBLE WATERTIGHT OR APPROVED CONNECTION FRAME/CHIMNEY SEALS ON ALL SANITARY SEWER MAINTENANCE HOLES. USE EITHER MANUFACTURED MAINTENANCE HOLE FRAME/CHIMNEY SEALS OR ELASTOMERIC WATERPROOFING FRAME/CHIMNEY SEALS.

6. USE NEENAH FOUNDRY CO. R-1642 CASTING WITH SELF-SEALING, SOLID, TYPE B LID, OR APPROVED EQUAL, ON ALL SANITARY SEWER MAINTENANCE HOLES. COVERS SHALL BEAR THE "SANITARY SEWER" LABEL.

7. THE MINIMUM DEPTH OF COVER FOR SANITARY SEWER WITHOUT INSULATION IS 5 FEET. INSULATE SANITARY SEWER SERVICES AT LOCATIONS WHERE THE DEPTH OF COVER IS LESS THAN 5 FEET. PROVIDE A MINIMUM INSULATION THICKNESS OF 2 INCHES. THE INSULATION MUST BE AT LEAST 4 FEET WIDE AND CENTERED ON THE PIPE. INSTALL THE INSULATION BOARDS 6 INCHES ABOVE THE TOPS OF THE PIPES ON MECHANICALLY COMPACTED AND LEVELED PIPE BEDDING MATERIAL. USE HIGH DENSITY, CLOSED CELL, RIGID BOARD MATERIAL EQUIVALENT TO DOW STYROFOAM HI-40 PLASTIC FOAM INSULATION.

8. TRACER WIRE: LOCATING REQUIREMENTS - A MEANS TO LOCATE BURIED UNDERGROUND EXTERIOR NON METALLIC SEWERS/MAINS MUST BE PROVIDED WITH TRACER WIRE OR OTHER METHODS IN ORDER TO BE LOCATED IN ACCORD WITH THE PROVISIONS OF THE WISCONSIN STATUTES 182.0175(2R) AND THE WISCONSIN DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES SPS 82.30(11)(H).

HDPE REQUIREMENTS :

1. INSTALL DUAL-WALL, SMOOTH INTERIOR, CORRUGATED HIGH-DENSITY POLYETHYLENE (HDPE) PIPE AT LOCATIONS INDICATED ON THE PLAN.

2. DUAL-WALL, SMOOTH INTERIOR, CORRUGATED HIGH-DENSITY POLYETHYLENE (HDPE) PIPE SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M252 FOR PIPE SIZES 4-INCH TO 10-INCH DIAMETER.

3. DUAL-WALL, SMOOTH INTERIOR, CORRUGATED HIGH-DENSITY POLYETHYLENE (HDPE) PIPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2306 FOR PIPE SIZES 12-INCH TO 60-INCH DIAMETER.

4. ALL FITTINGS MUST COMPLY WITH ASTM STANDARD D3212.

5. WATER-TIGHT JOINTS MUST BE USED AT ALL CONNECTIONS INCLUDING STRUCTURES.

6. LAY ALL HDPE PIPE ON A CONTINUOUS GRANULAR BED. INSTALLATION MUST COMPLY WITH ASTM D2321. ALL SECTIONS OF THE CORRUGATED HDPE PIPE SHALL BE COUPLED IN ORDER TO PROVIDE WATER TIGHT JOINTS.

7. PERFORM DEFLECTION TESTS ON ALL HDPE PIPE AFTER THE SEWER LINES HAVE BEEN INSTALLED AND BACKFILL HAS BEEN IN PLACE FOR AT LEAST 30 DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF 5%. IF THE TEST FAILS, MAKE NECESSARY REPAIRS AND PERFORM THE TEST AGAIN UNTIL ACCEPTABLE. SUPPLY THE MANDREL FOR DEFLECTION TESTING. IF THE DEFLECTION TEST IS TO BE RUN USING A RIGID BALL OR MANDREL, IT SHALL HAVE A DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE. THE BALL OR MANDREL SHALL BE CLEARLY STAMPED WITH THE DIAMETER. PERFORM THE TESTS WITHOUT MECHANICAL PULLING DEVICES.

KWIK TRIP™ STORES
KWIK STAR™ STORES

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NO SCALE

UTILITY NOTES
CONVENIENCE STORE #631
STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY NAP
SCALE GRAPHIC
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C401

DRAWING FILE: Q:\1700-1799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C300-C400-UTILITY PLANS.DWG LAYOUT: C401
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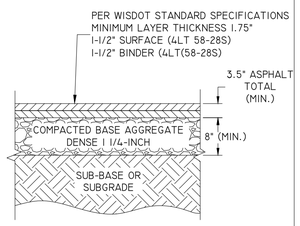
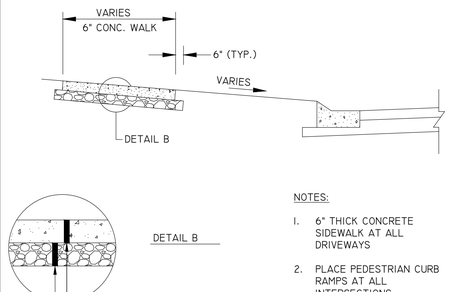


NOTE:
ASPHALT PAVEMENT SECTION SHOWN IS MINIMUM. MATCH IN KIND WITH EXISTING.

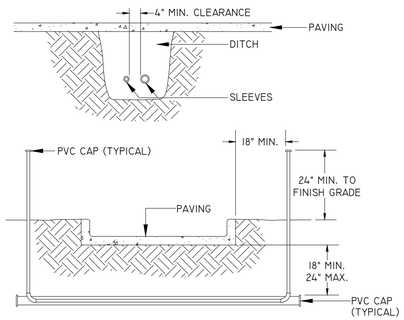
1 C500 ASPHALT PAVEMENT DETAIL
NOT TO SCALE



NOTES:

1. 6" THICK CONCRETE SIDEWALK AT ALL DRIVEWAYS
2. PLACE PEDESTRIAN CURB RAMPS AT ALL INTERSECTIONS.
3. PROVIDE EXPANSION JOINT MATERIAL AT MAX. 60 FOOT SPACING.
4. PROVIDE EXPANSION JOINT MATERIAL ALONG BOTH EDGES OF WALK, WHERE WALK IS CONTAINED BETWEEN FIXED OBJECTS.

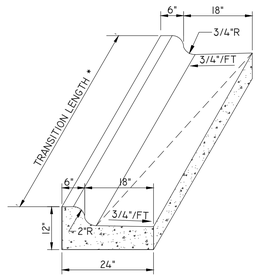
2 C500 CONCRETE WALK/ PAD DETAIL
NOT TO SCALE



NOTES:

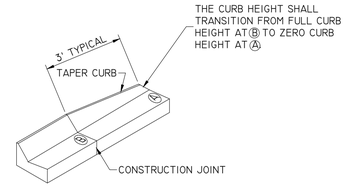
1. ALL PVC IRRIGATION SLEEVES TO BE SCH 40 PVC PIPE.
2. ALL JOINTS TO BE SOLVENT WELDED AND WATERTIGHT.
3. WHERE THERE IS MORE THAN ONE SLEEVE, EXTEND THE SMALLER SLEEVE TO 24-INCHES MINIMUM ABOVE FINISH GRADE.
4. MECHANICALLY TAMP BACKFILL TO 95% PROCTOR.

3 C500 TYPICAL SLEEVING DETAIL
NOT TO SCALE

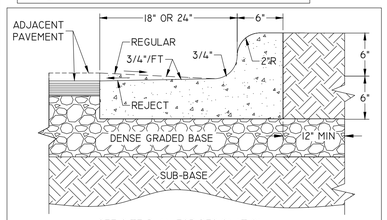


* TRANSITION LENGTH SHALL BE 12 LF ON TANGENTS GREATER THAN 18 LF, OR BETWEEN RADIUS POINTS ON TANGENTS LESS THAN 18 LF, OR BETWEEN RADIUS MID POINTS WHERE TANGENTS ARE LESS THAN 12 LF, OR ACROSS THE RADIUS/RADII WHERE TANGENTS ARE LESS THAN 2 LF.

4 C500 TRANSITION CURB & GUTTER DETAIL
NOT TO SCALE

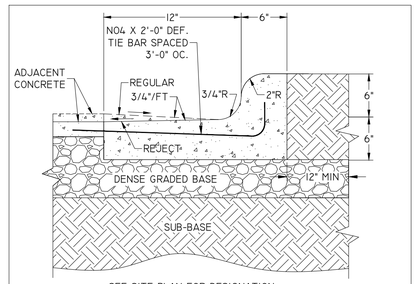


5 C500 STD CURB & GUTTER TERMINI DETAIL
NOT TO SCALE



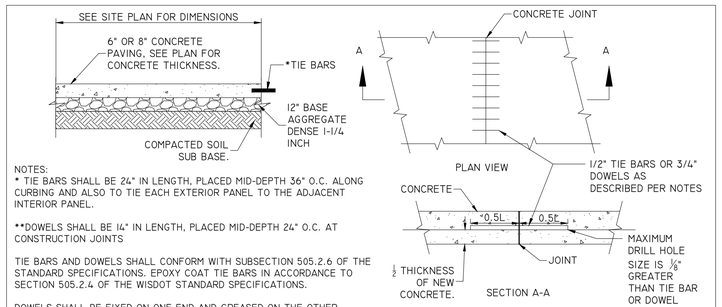
SEE SITE PLAN FOR DESIGNATION

8 C500 24" OR 30" CURB & GUTTER DETAIL
NOT TO SCALE



SEE SITE PLAN FOR DESIGNATION

9 C500 18" CURB & GUTTER / 18" REJECT CURB & GUTTER DETAIL
NOT TO SCALE



NOTES:
* TIE BARS SHALL BE 24" IN LENGTH, PLACED MID-DEPTH 36" O.C. ALONG CURBING AND ALSO TO TIE EACH EXTERIOR PANEL TO THE ADJACENT INTERIOR PANEL.

**DOWELS SHALL BE 14" IN LENGTH, PLACED MID-DEPTH 24" O.C. AT CONSTRUCTION JOINTS

TIE BARS AND DOWELS SHALL CONFORM WITH SUBSECTION 505.2.6 OF THE STANDARD SPECIFICATIONS. EPOXY COAT TIE BARS IN ACCORDANCE TO SECTION 505.2.4 OF THE WISDOT STANDARD SPECIFICATIONS.

DOWELS SHALL BE FIXED ON ONE END AND GREASED ON THE OTHER

CONCRETE PANELS SHALL NOT BE GREATER THAN 15' IN LENGTH IN ANY DIRECTION AND CONTRACTION JOINTS SHALL BE TO A MINIMUM DEPTH OF 1/4 THE CONCRETE DEPTH

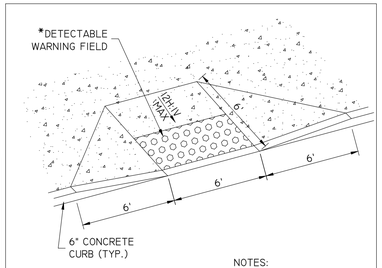
6" DEPTH (MIN.) CONCRETE SLAB-ON-GRADE WITH #3 REBAR, 3' O.C. IN BOTH DIRECTIONS, CONCRETE SEALER: TK-26UV

8" DEPTH (MIN.) CONCRETE SLAB-ON-GRADE WITH #4 REBAR, 4' O.C. IN BOTH DIRECTIONS, CONCRETE SEALER: TK-26UV

NOTES:
BASE AGGREGATE TO EXTEND 12" BEYOND BACK OF CURB OR EDGE OF PAVEMENT.

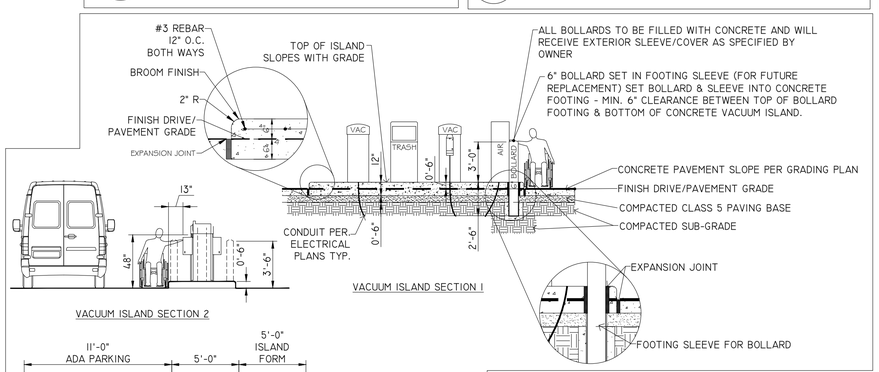
CONCRETE PAVEMENT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI AND AN AIR CONTENT OF 6% +/- 1.5%

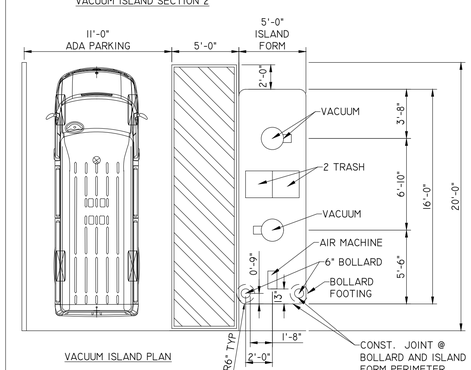
6 C500 CONCRETE PAVEMENT DETAIL
NOT TO SCALE



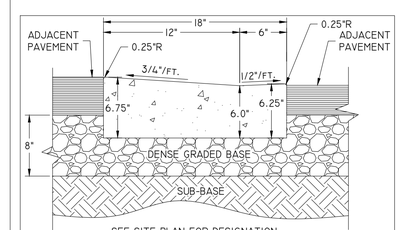
NOTES:
* DETECTABLE WARNING FIELD SHALL EXTEND FULL WIDTH ACROSS RAMP SURFACE

12 C500 SIDEWALK RAMP DETAIL
NOT TO SCALE



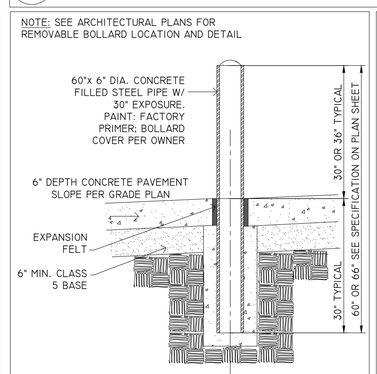


14 C500 VACUUM ISLAND DETAILS
NOT TO SCALE



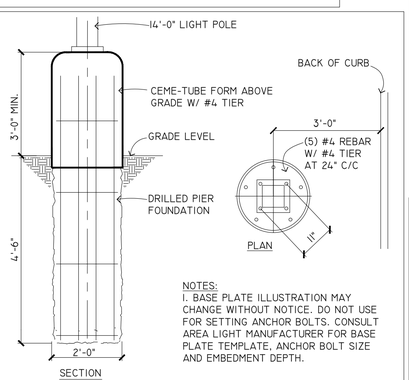
SEE SITE PLAN FOR DESIGNATION

15 C500 18" MOUNTABLE CURB & GUTTER DETAIL
NOT TO SCALE



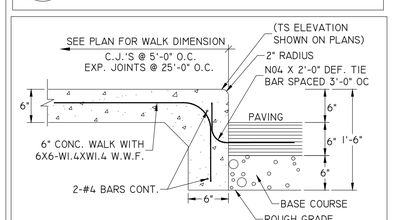
10 C500 6" PIPE BOLLARD DETAIL
NOT TO SCALE

NOTE: SEE ARCHITECTURAL PLANS FOR REMOVABLE BOLLARD LOCATION AND DETAIL



NOTES:
1. BASE PLATE ILLUSTRATION MAY CHANGE WITHOUT NOTICE. DO NOT USE FOR SETTING ANCHOR BOLTS. CONSULT AREA LIGHT MANUFACTURER FOR BASE PLATE TEMPLATE, ANCHOR BOLT SIZE AND EMBEDMENT DEPTH.

11 C500 ROUND AREA LIGHT FOUNDATION DETAIL
NOT TO SCALE



13 C500 INTEGRAL CURB WITH SIDEWALK DETAIL
NOT TO SCALE

KWIK TRIP STORES
KWIK STAR STORES

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EMAIL: MAIL@REIENGINEERING.COM

NO SCALE

SITE PLAN DETAILS

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

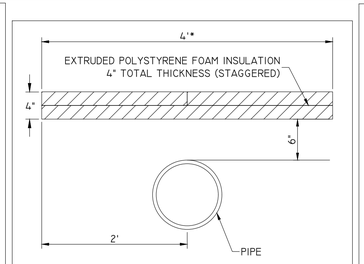
#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	NOT TO SCALE
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C500

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C500-SITE DETAILS.DWG LAYOUT: C500
PLOTTED: OCT 08, 2024 - 3:39PM PLOTTED BY: TODDW.

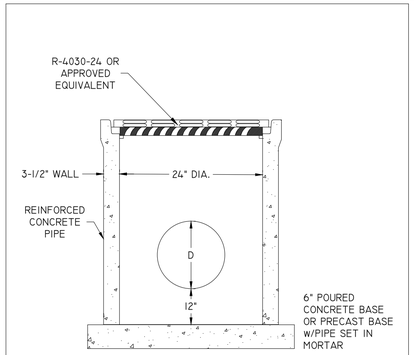
SEE PETROLEUM DETAILS

1 / C501 STORAGE TANKS COMPLEX DETAIL
NOT TO SCALE



*WIDTH OF INSULATION SHALL INCREASE x FT. PER EVERY x FT. OF VERTICAL SEPARATION.

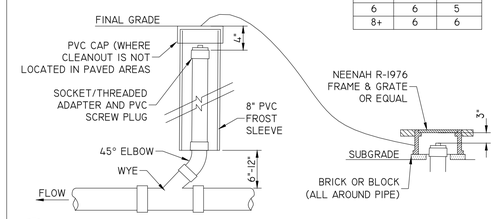
2 / C501 PIPE INSULATION DETAIL
NOT TO SCALE



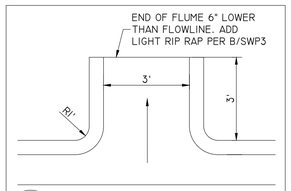
3 / C501 PRECAST REINFORCED CONC. MANHOLE DETAIL
NOT TO SCALE

ALTERNATE FOR TRAFFIC/PAVED AREAS

DIA. OF PIPE SERVED BY CLEANOUT	MIN. DIA. OF CLEANOUT EXTENSION	MIN. DIA. OF CLEANOUT OPENING
INCHES	INCHES	INCHES
4	4	3 1/2
5	5	4
6	6	5
8+	6	6



4 / C501 SANITARY & STORM SEWER CLEANOUT CLEANOUT
NOT TO SCALE



5 / C501 CONCRETE FLUME DETAIL
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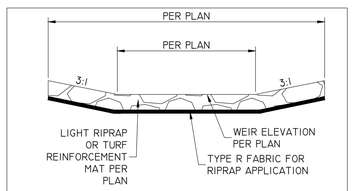
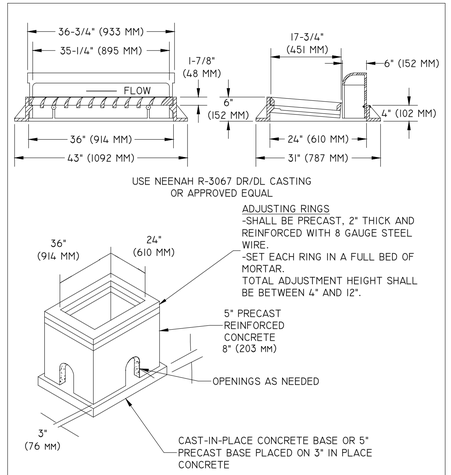


NOTE:
WEIRS TO USE PERMANENT TURF REINFORCEMENT MAT

6 / C501 OVERFLOW WEIR DETAIL
NOT TO SCALE



7 / C501 24"x 36" CURB INLET AND CASTING DETAIL
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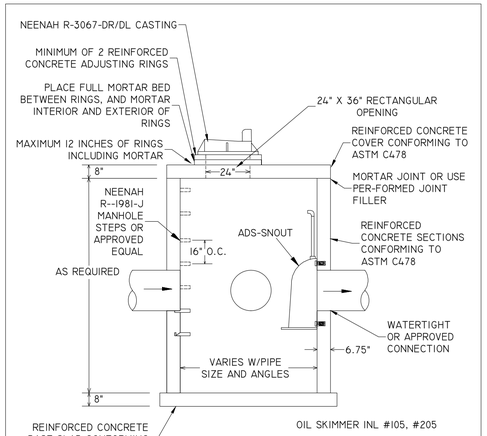
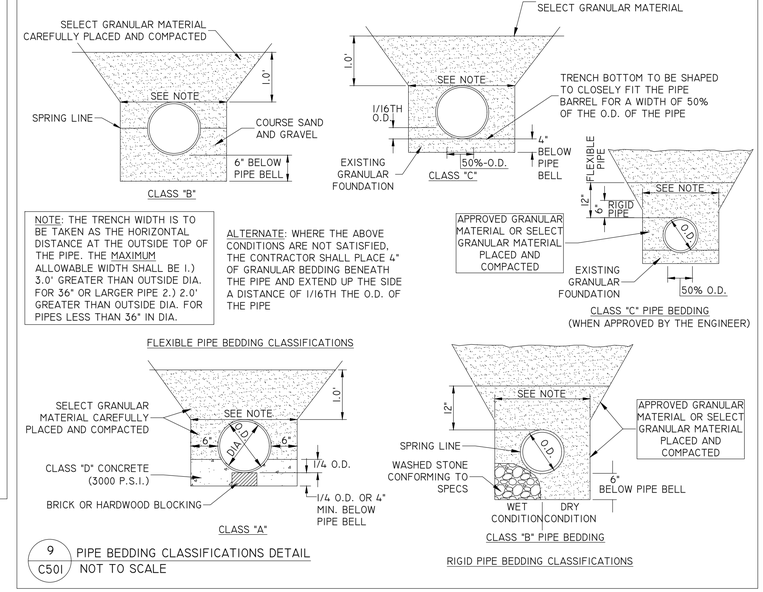
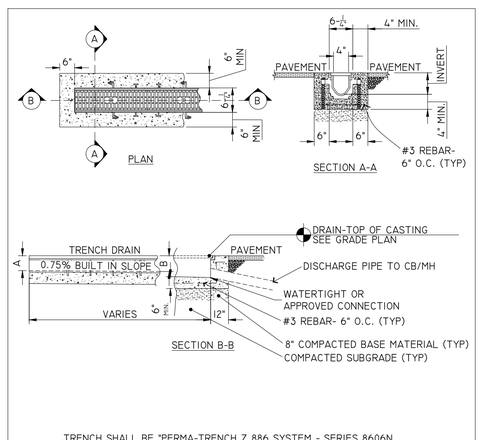


8 / C501 STORM SEWER INLET WITH SUMP DETAIL
NOT TO SCALE

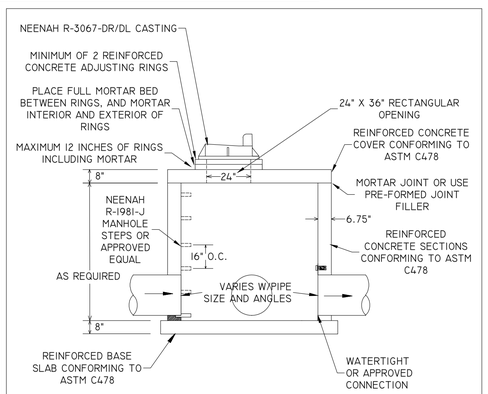


9 / C501 PIPE BEDDING CLASSIFICATIONS DETAIL
NOT TO SCALE



TRENCH SHALL BE "PERMA-TRENCH Z 886 SYSTEM - SERIES 8606N

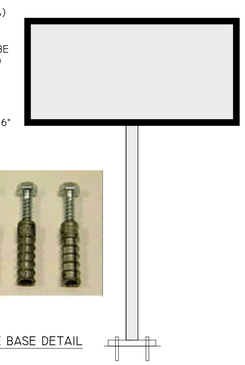
10 / C501 Z 886 TRENCH DRAIN DETAIL
NOT TO SCALE



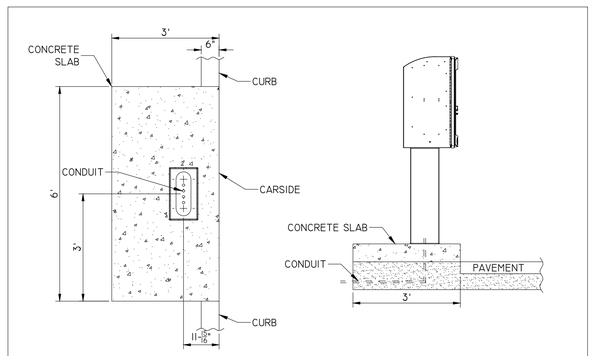
11 / C501 STORM SEWER INLET WITHOUT SUMP DETAIL
NOT TO SCALE

NOTES:
- SIGN VENDOR TO ANCHOR SIGN/S TO CONCRETE PAD
- SIGN VENDOR TO ANCHOR SIGNS WITH (4) 3/8" X 4" LAGS & SHIELD ANCHORS. USE STAINLESS STEEL HARDWARE
- STAINLESS STEEL FLAT WASHERS MAY BE USED UNDER BASE PLATE AS NEEDED TO SHIM SIGN TO BE PLUMB
- CONCRETE PAD INSTALLED BY OTHERS (KWIK TRIP/KWIK STAR CONCRETE VENDOR)
  - CONCRETE PAD TO BE 5'X 36'X 36"

SINGLE SIDED DIRECTIONAL SIGN



12 / C501 DIRECTIONAL SIGN CONCRETE BASE DETAIL
NOT TO SCALE



13 / C501 CAR WASH PAY STATION DETAIL
NOT TO SCALE

KWIK TRIP STORES

KWIK STAR STORES

KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
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EMAIL: MAIL@REIENGINEERING.COM

NO SCALE

SITE PLAN DETAILS

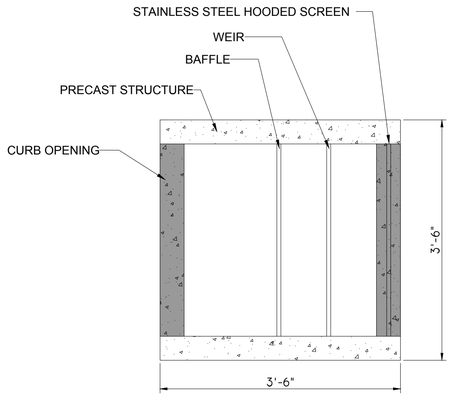
CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

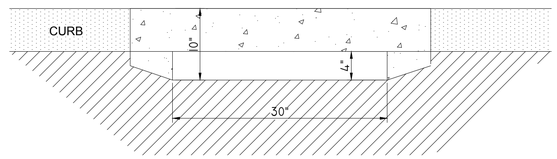
#	DATE	DESCRIPTION
1		

DRAWN BY NAP
SCALE NOT TO SCALE
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C501

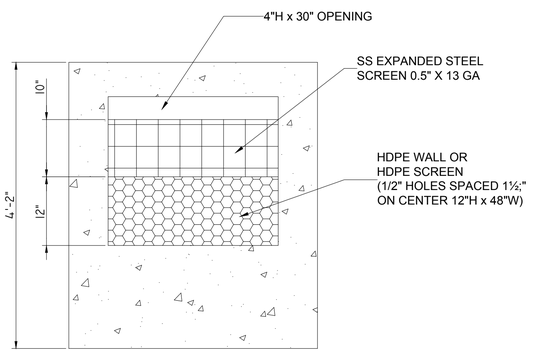
DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C500-SITE DETAILS.DWG LAYOUT: C501
PLOTTED: OCT 08, 2024 - 3:40PM PLOTTED BY: TODDW



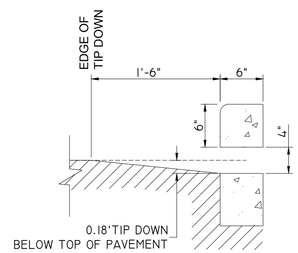
PLAN VIEW



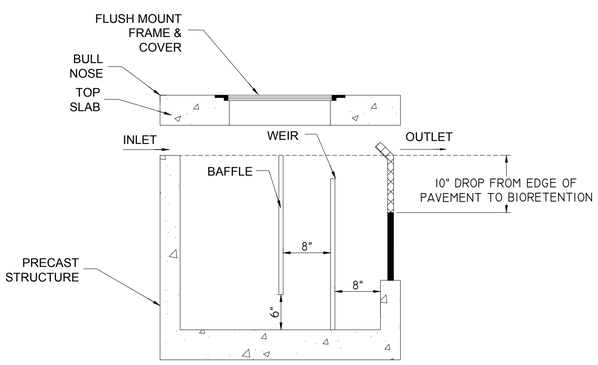
CURB FACE



BACK VIEW

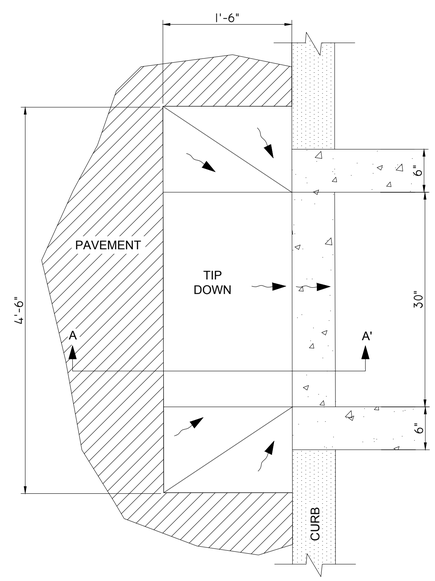


SECTION A-A



ELEVATION VIEW

1 / C502 PRETX 30X30 UNIT DETAIL
NOT TO SCALE



PLAN

PRETX - 8" CURB REVEAL DETAIL
NOT TO SCALE

PRETX SPECIFICATIONS

A. GENERAL

1. PRETX SYSTEMS ARE A PRE-FILTER AND CRITICAL MAINTENANCE DEVICE THAT EXTENDS THE OPERATING LIFE AND REDUCES THE MAINTENANCE BURDEN OF BIORETENTION SYSTEMS, RAIN GARDENS, BIOSWALES AND OTHER TYPES OF SURFACE BEST MANAGEMENT PRACTICES BY FILTERING OUT SEDIMENT, TRASH AND DEBRIS AT THE INLET.

B. PRODUCTS

1. ACCEPTABLE SYSTEM SUPPLIER:
   CONVERGENT WATER TECHNOLOGIES, INC. OR ITS
   AUTHORIZED VALUE-ADDED RESELLER
   P: (800) 711-5428; W: WWW.CONVERGENTWATER.COM

C. CONSTRUCTION AND SEQUENCING

1. EXCAVATION AND INSTALLATION
   a. ROUGH GRADE THE PRE-TX SYSTEM AREA DURING GENERAL CONSTRUCTION. EXCAVATE THE PRE-TX SYSTEM FACILITIES TO WITHIN 1 FOOT OF STRUCTURE BOTTOM .
   b. PLACE 1 FOOT BED OF COARSE STONE TO ELEVATION OF BASE OF STRUCTURE.
   c. ESTABLISH ELEVATIONS FOR ADJACENT CURBS, EDGE OF PAVEMENT AND TIP DOWN, SIDEWALK, PIPE INVERTS FOR INLETS AND OUTLETS AS INDICATED ON DRAWINGS.
2. INSTALLATION
   a. PLACE THE PRECAST SYSTEM TO NECESSARY ELEVATION.
   b. FOR PRETX-SURFACE:
      - VERIFY ELEVATIONS FOR ADJACENT CURBS.
      - VERIFY EDGE OF PAVEMENT TIP DOWN PAVEMENT GRADING FOR INLET GRATE.
      - VERIFY CURB ELEVATION IN RELATION TO PAVEMENT AND TIP DOWN.
      - VERIFY OUTLET INVERT FOR KNEE WALL IN RELATION TO FILTER MEDIA.
   C. INSTALL BAFFLES, WEIR, AND SCREENS AS INDICATED ON DRAWINGS.
   D. VERIFY MAINTENANCE ACCESS THROUGH GRATE OR COVER AND CLEARANCE FOR VACTOR.
   e. INSTALL TOP OF STRUCTURE LEVEL WITH ADJACENT CURB OR SIDEWALK AS PER MANUFACTURERS SPECIFICATIONS. ENGINEER FIELD VISIT REQUIRED PRIOR TO BACKFILLING.
6. BACKFILLING
   a. BACKFILL WITH APPROVED SOIL AND STONE TO THE DESIGN GRADE AS SPECIFIED IN THE DRAWINGS.
   b. BACKFILL WITH 12" OF NO. 57 STONE AROUND REAR, LEFT, AND RIGHT SIDES TO LEVEL WITH TOP OF HDPE SCREEN.
   c. BACKFILL WITH BIORETENTION SOIL MIX BEYOND STONE BACKFILL TO EQUAL ELEVATION OF THE TOP OF HDPE SCREEN.
   d. DO NOT BACKFILL SOIL OR STONE AGAINST STAINLESS SCREEN.
   e. DO NOT COMPACT ADJACENT FILTRATION SYSTEM SOIL WITH MECHANICAL EQUIPMENT.
   f. STABILIZE All REMAINING DISTURBED AREAS AND SIDE SLOPES WITH SEEDING, HYDROSEEDING, AND/ OR EROSION CONTROL BLANKETS AS INDICATED ON DRAWINGS.
4. CLEAN UP
   a. AFTER COMPLETION OF THE WORK, REMOVE AND PROPERLY DISPOSE ALL DEBRIS, CONSTRUCTION MATERIALS, RUBBISH, EXCESS SOIL, ETC., FROM THE PROJECT SITE. REPAIR PROMPTLY ANY IDENTIFIED DEFICIENCIES AND LEAVE THE PROJECT SITE IN A CLEAN AND SATISFACTORY CONDITION.

KWIK TRIP STORES

KWIK STAR STORES

KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
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WAUSAU, WISCONSIN 54401
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EMAIL: MAIL@REIENGINEERING.COM

NO SCALE

SITE PLAN DETAILS

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY NAP
SCALE NOT TO SCALE
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C502

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C500-SITE DETAILS.DWG LAYOUT: C502
PLOTTED: OCT 08, 2024 - 3:40PM PLOTTED BY: TODDW

PROJECT DATA

PROJECT START DATE	APRIL 2025
PROJECT COMPLETION DATE	OCT 2025

SITE AREA DATA

PRE-CONSTRUCTION IMPERVIOUS AREA	61,276 SF
POST-CONSTRUCTION IMPERVIOUS AREA	117,262 SF
APPROX. AREA OF LAND DISTURBANCE	168,000 SF

SITE RUNOFF COEFFICIENT

PRE-CONSTRUCTION	NA
POST-CONSTRUCTION	90

SOIL DATA

SURFACE SOIL	PAVED
SUB-SURFACE SOIL	SILT
DEPTH OF GROUND WATER	±8 FT
DOWN-STREAM TRIBUTARY	MENOMINEE RIVER

NOTES:

(A) CONTRACTOR SHALL ABIDE BY THE WDNR CONSERVATION PRACTICE STANDARDS FOR INSTALLATION AND MAINTENANCE OF EROSION CONTROL. REFER TO C603 FOR TECHNICAL STANDARDS EMPLOYED.

(B) CONTRACTOR SHALL PROVIDE CONCRETE WASHOUT AREAS ON-SITE. SEE DETAIL E/C603.

(C) DEWATERING BAGS SHALL BE READILY AVAILABLE AND SHALL BE USED AT ALL TIMES IN THE PROCESS OF DEWATERING.

INSTALL WISDOT URBAN TYPE B EROSION CONTROL BLANKET ON SIDE SLOPES OF 4:1 OR GREATER. SEE DETAIL E/C602 FOR INSTALLATION.

ESTIMATED PRELIMINARY EROSION CONTROL QUANTITIES
(ACTUAL QUANTITIES SUBJECT TO CHANGE)

ITEM	QUANTITY
ROCK CONSTRUCTION ENTRANCE	400 SQ.YD.
INLET PROTECTION	12
EROSION CONTROL BLANKET	2,000 SQ.YD.
RIP RAP	30 CU. YD.
SILT FENCE	870 L.F.
CULVERT PROTECTION	0
DITCH CHECK	AS NEEDED
BIO ROLL/EROSION LOG	AS NEEDED

NOTE: FOR MAINTENANCE PURPOSES CONTRACTOR SHALL PROVIDE ALL SUFFICIENT QUANTITIES FOR REPAIR AND REPLACEMENT OF EROSION CONTROL DEVICES THROUGHOUT ALL PHASES OF THE PROJECTS CONSTRUCTION.

-SITE EROSION CONTROL MEASURES MUST BE IN PLACE AT ALL TIMES. SHOULD DEVICES BE REMOVED FOR WORK ACCESS, THEY SHALL BE REINSTALLED AT THE END OF EACH WORK DAY UNTIL PAVEMENTS HAVE BEEN INSTALLED AND ALL LANDSCAPE AREAS HAVE BEEN MULCHED AND SODDED. SEEDED AREAS MUST EXHIBIT MINIMUM OF 70% SOIL COVERAGE.

-REFER TO THE SWP PLAN NOTES AND DETAIL SHEETS SWP2-4 FOR MORE INFORMATION.

CONTACT:
KWIK TRIP, INC
P0 BOX 2107
LACROSSE, WI 54602

KEYED NOTES

1. TEMPORARY ROCK CONSTRUCTION ENTRANCE/EXIT. SEE DETAIL A/C602.

2. INSTALL SILT FENCE. SEE DETAIL D/C602.

3. PROVIDE INLET PROTECTION. REFER TO SWP2 FOR ACCEPTABLE PRODUCTS.

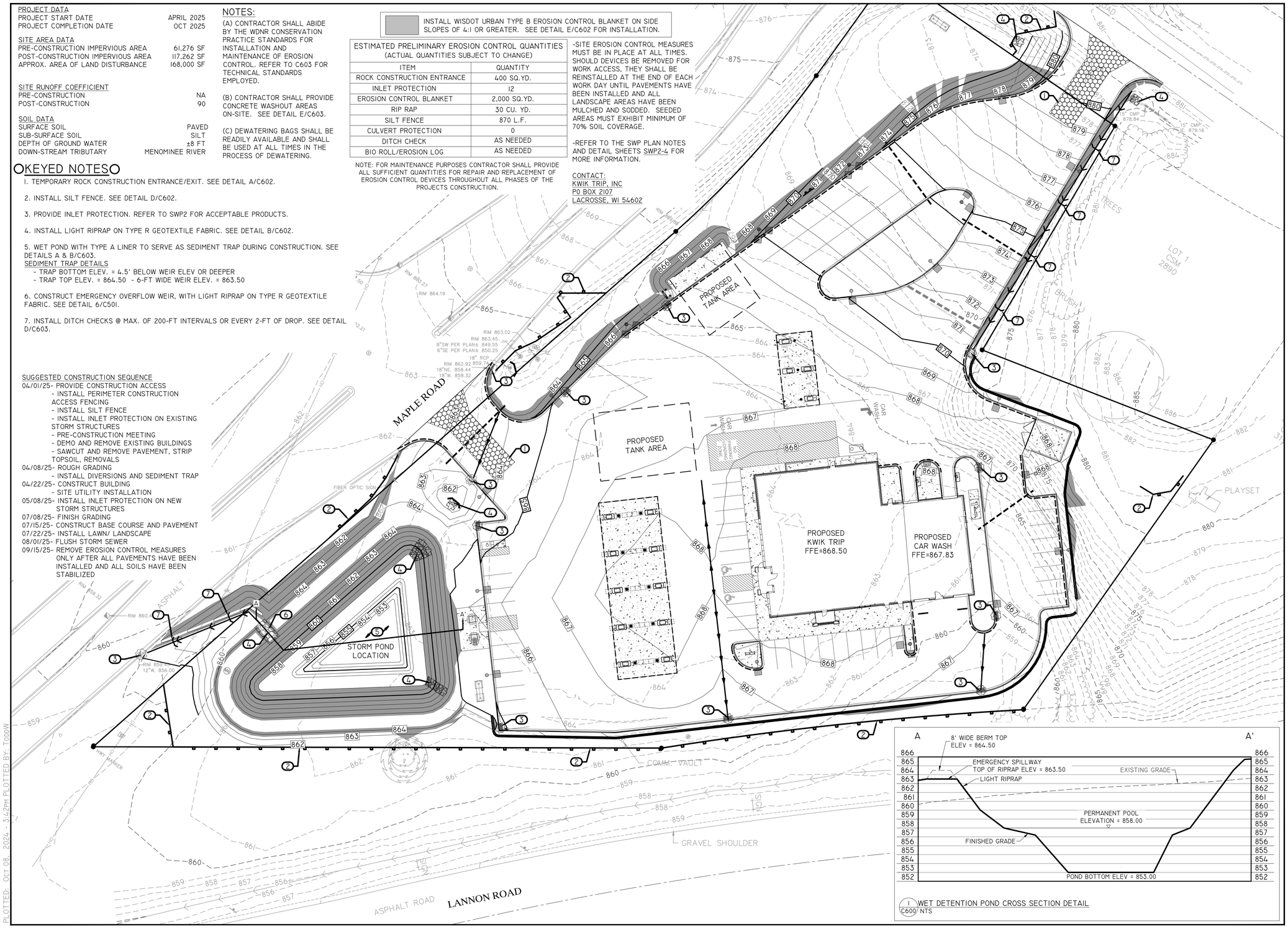
4. INSTALL LIGHT RIPRAP ON TYPE R GEOTEXTILE FABRIC. SEE DETAIL B/C602.

5. WET POND WITH TYPE A LINER TO SERVE AS SEDIMENT TRAP DURING CONSTRUCTION. SEE DETAILS A & B/C603.
SEDIMENT TRAP DETAILS
- TRAP BOTTOM ELEV. = 4.5' BELOW WEIR ELEV OR DEEPER
- TRAP TOP ELEV. = 864.50 - 6-FT WIDE WEIR ELEV. = 863.50

6. CONSTRUCT EMERGENCY OVERFLOW WEIR, WITH LIGHT RIPRAP ON TYPE R GEOTEXTILE FABRIC. SEE DETAIL 6/C501.

7. INSTALL DITCH CHECKS @ MAX. OF 200-FT INTERVALS OR EVERY 2-FT OF DROP. SEE DETAIL D/C603.

SUGGESTED CONSTRUCTION SEQUENCE
04/01/25- PROVIDE CONSTRUCTION ACCESS
- INSTALL PERIMETER CONSTRUCTION ACCESS FENCING
- INSTALL SILT FENCE
- INSTALL INLET PROTECTION ON EXISTING STORM STRUCTURES
- PRE-CONSTRUCTION MEETING
- DEMO AND REMOVE EXISTING BUILDINGS
- SAWCUT AND REMOVE PAVEMENT, STRIP TOPSOIL, REMOVALS
04/08/25- ROUGH GRADING
- INSTALL DIVERSIONS AND SEDIMENT TRAP
04/22/25- CONSTRUCT BUILDING
- SITE UTILITY INSTALLATION
05/08/25- INSTALL INLET PROTECTION ON NEW STORM STRUCTURES
07/08/25- FINISH GRADING
07/15/25- CONSTRUCT BASE COURSE AND PAVEMENT
07/22/25- INSTALL LAWN/ LANDSCAPE
08/01/25- FLUSH STORM SEWER
09/15/25- REMOVE EROSION CONTROL MEASURES ONLY AFTER ALL PAVEMENTS HAVE BEEN INSTALLED AND ALL SOILS HAVE BEEN STABILIZED



1 C600 WET DETENTION POND CROSS SECTION DETAIL
NTS

KWIK TRIP STORES

KWIK STAR STORES

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EMAIL: MAIL@REIENGINEERING.COM

SCALE
0 30 60

EROSION CONTROL PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C600

DRAWING FILE: Q:\1700-1799\1757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\1757-C600-EROSION CONTROL PLAN.DWG LAYOUT: C600
PLOTTED: OCT 08, 2024 - 3:42PM PLOTTED BY: TODDW

STORM WATER POLLUTION PREVENTION PLAN

POLLUTION PREVENTION PLAN
ALL CONTRACTORS / SUBCONTRACTORS SHALL CONDUCT THEIR OPERATIONS IN A MANNER THAT MINIMIZES EROSION AND PREVENTS SEDIMENTS FROM LEAVING THE PROJECT SITE. THE PRIME CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLIANCE AND IMPLEMENTATION OF THE POLLUTION PREVENTION PLAN (PPP) FOR THEIR ENTIRE CONTRACT. THE RESPONSIBILITY SHALL BE FURTHER SHARED WITH SUBCONTRACTORS WHOSE WORK IS A SOURCE OF POTENTIAL POLLUTION AS DEFINED IN THE PPP.

I. SITE DESCRIPTION
THIS POLLUTION PREVENTION PLAN IS FOR THE CONSTRUCTION OF THE KWIK TRIP CONVENIENCE STORE #631 PROJECT. THE PROJECT IS LOCATED IN SECTION 28, TOWNSHIP 09, RANGE 20, WASHINGTON COUNTY, WISCONSIN.

THIS PPP COVERS 4.37 ACRES WITH AN ESTIMATED 3.86 ACRES BEING DISTURBED THROUGH EXCAVATION, GRADING, AND PAVING. THE PORTION OF THE PPP COVERED BY THIS CONTRACT HAS 4.37 ACRES BEING DISTURBED.

THE PROJECT IS LOCATED IN AN AREA OF (HMB2 - HOCHHEIM LOAM, HMC2 - HOCHHEIM LOAM, HMD2 - HOCHHEIM LOAM, OUB2 - OZAUKEE SILT LOAM, SF - SANDY AND GRAVELLY LAND, USA - VIRGIL SILTY LOAM). THE ESTIMATED CURVE NUMBER FOR THIS PPP AFTER CONSTRUCTION IS XX.

REFER TO PLANS: KWIK TRIP CONVENIENCE STORE #631 FOR LOCATIONS OF TYPICAL SLOPES, DITCH GRADES, AND MAJOR STRUCTURAL AND NON-STRUCTURAL CONTROLS. A COPY OF THIS PLAN WILL BE ON FILE AT THE PROJECT ENGINEER'S OFFICE AND ON-SITE. RUNOFF FROM THIS WORK WILL OVERLAND FLOW THROUGH DETENTION POND, DITCHES, STORM SEWER TO MENOMINEE RIVER.

THIS PROJECT IS NOT LOCATED WITHIN A 100-YEAR FLOODPLAIN.

POTENTIAL SOURCES OF POLLUTION:
SITE SOURCES OF POLLUTION GENERATED AS A RESULT OF THIS WORK RELATE TO SILTS AND SEDIMENT WHICH MAY BE TRANSPORTED AS A RESULT OF A STORM EVENT. HOWEVER, THIS PPP PROVIDES CONVEYANCE FOR OTHER (NON-PROJECT RELATED) OPERATIONS. THESE OTHER OPERATIONS HAVE STORM WATER RUNOFF, THE REGULATION OF WHICH IS BEYOND THE CONTROL OF THIS PPP. POTENTIALLY THIS RUNOFF CAN CONTAIN POLLUTANTS RELATED TO SITE-SPECIFIC LAND USES.
EXAMPLES ARE:

RURAL AGRICULTURAL ACTIVITIES:
RUNOFF FROM AGRICULTURAL LAND USE CAN POTENTIALLY CONTAIN CHEMICALS INCLUDING HERBICIDES, PESTICIDES, FUNGICIDES, AND FERTILIZERS.

CONSTRUCTION ACTIVITIES:
RUNOFF FROM CONSTRUCTION ACTIVITIES CAN POTENTIALLY CONTAIN FUELS, OILS, AND CHEMICALS FROM SPECIFIC CONSTRUCTION RELATED ACTIVITIES.

2. CONTROLS

INLET PROTECTION DEVICES SHALL BE PLACED AROUND INTAKES. SILT FENCE SHALL BE PLACED AT LOCATIONS WHERE RUNOFF CAN MOVE OFFSITE. VEGETATION IN AREAS NOT NEEDED FOR CONSTRUCTION SHALL BE PRESERVED. AS AREAS REACH THEIR FINAL GRADE, ADDITIONAL SILT FENCES, SILT BASINS, INTERCEPTING DITCHES, SOD FLUMES, LETDOWNS, BRIDGE END DRAINS, AND EARTH DIKES SHALL BE INSTALLED AS SPECIFIED IN THE PLANS AND / OR AS REQUIRED BY PROJECT ENGINEER. THIS MAY INCLUDE USING SILT FENCE AS DITCH CHECKS. TEMPORARY STABILIZING SHALL BE COMPLETED AS THE DISTURBED AREAS ARE CONSTRUCTED. IF CONSTRUCTION ACTIVITY IS NOT PLANNED TO OCCUR IN A DISTURBED AREA IMMEDIATELY, THE AREA SHALL BE STABILIZED BY TEMPORARY SEEDING OR MULCHING WITHIN 14 DAYS. OTHER STABILIZING METHODS SHALL BE USED OUTSIDE THE SEEDING PERIOD.

THIS WORK SHALL BE DONE IN ACCORDANCE WITH THE WISCONSIN TRANSPORTATION STANDARD SPECIFICATIONS. CONTRACTOR SHALL ALSO FOLLOW ALL REQUIREMENTS OF THE WASHINGTON COUNTY EROSION AND SEDIMENT CONTROL REGULATIONS.

AS THE WORK PROGRESSES, ADDITIONAL EROSION CONTROL ITEMS SUCH AS SOD FLUMES, DITCH CHECKS, ROCK OUTLET PROTECTION, AND LETDOWN STRUCTURES AND OTHER APPROPRIATE MEASURES SHALL BE INSTALLED BY THE CONTRACTOR AS DETERMINED BY THE ENGINEER AFTER FIELD INVESTIGATION. THE CONSTRUCTION WILL BE COMPLETED WITH THE ESTABLISHMENT OF PERMANENT PERENNIAL VEGETATION OF ALL DISTURBED AREAS BY THE CONTRACTOR.

3. OTHER CONTROLS

CONTRACTOR DISPOSAL OF UNUSED CONSTRUCTION MATERIALS AND CONSTRUCTION MATERIAL WASTE SHALL COMPLY WITH APPLICABLE STATE AND LOCAL WASTE DISPOSAL, SANITARY SEWER, OR SEPTIC SYSTEM REGULATIONS. IN THE EVENT OF A CONFLICT WITH OTHER GOVERNMENT LAWS, RULES, AND REGULATIONS, THE MORE RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.

MUD TRACK-OUT SHALL BE CLEANED OFF THE ROADWAY NIGHTLY AND BEFORE ANY RAINFALL EVENT. WATER MAY NOT BE USED TO CLEAN THE ROADWAY.

CONTRACTOR SHALL KEEP PERMIT, INSPECTION LOGS, SITE PLAN, AND OTHER PERMIT DATA ON SITE AT ALL TIMES. MATERIAL SHALL BE PLACED IN AN EASILY ACCESSIBLE MAILBOX THAT IS CLEARLY MARKED "SWPPP".

ALL FUELS AND OILS SHALL BE CONTAINED BY A SECONDARY CONTAINMENT BERM OR WITHIN A TRAILER.

ALL SILT FENCE AND INLET PROTECTION DEVICES AS SHOWN SHALL BE INSTALLED PRIOR TO COMMENCING CONSTRUCTION WHENEVER POSSIBLE.

A NOTICE OF DISCONTINUATION MUST BE FILED WITH THE WDNR ONCE VEGETATION HAS BEEN ESTABLISHED TO A MINIMUM COVERAGE OF 70%.

CONTRACTOR SHALL MARK ON THE INITIAL STORM WATER POLLUTION PREVENTION PLAN THE LOCATION OF STORAGE AREAS FOR FUELS AND OILS, PORTA-POTTY, DUMPSTER OR WASTE CONTAINMENT BINS, CONCRETE WAS OUT AREA, AND OTHER NECESSARY ITEMS.

ENTRANCES SHALL BE MAINTAINED TO CONTROL MUD TRACK-OUT FROM THE SITE.

THE STORMWATER POLLUTION PREVENTION PLAN SHALL BE UPDATED AS NECESSARY DURING CONSTRUCTION.

APPROVED STATE OF LOCAL PLANS:
DURING THE COURSE OF THIS CONSTRUCTION, IT IS POSSIBLE THAT SITUATIONS WILL ARISE WHERE UNKNOWN MATERIALS WILL BE ENCOUNTERED. WHEN SUCH SITUATIONS ARE ENCOUNTERED, THEY WILL BE HANDLED ACCORDING TO ALL FEDERAL, STATE, AND LOCAL REGULATIONS IN EFFECT AT THE TIME.

4. MAINTENANCE

THE CONTRACTOR IS REQUIRED TO MAINTAIN ALL TEMPORARY EROSION CONTROL MEASURES IN PROPER WORKING ORDER, INCLUDING CLEANING, REPAIRING, OR REPLACING THEM THROUGHOUT THE CONTRACT PERIOD. CLEANING OF SILT CONTROL DEVICES SHALL BEGIN WHEN THE FEATURES HAVE LOST 50% OF THEIR CAPACITY.

5. INSPECTIONS

INSPECTIONS SHALL BE MADE JOINTLY BY THE CONTRACTOR AND THE CONTRACTING AUTHORITY EVERY SEVEN CALENDAR DAYS. THE CONTRACTOR SHALL IMMEDIATELY BEGIN CORRECTIVE ACTION ON ALL DEFICIENCIES FOUND. THE FINDINGS OF THIS INSPECTION SHALL BE RECORDED IN THE PROJECT DIARY. THIS PPP MAY BE REVISED BASED ON THE FINDING OF THE INSPECTION. THE CONTRACTOR SHALL IMPLEMENT ALL REVISIONS. ALL CORRECTIVE ACTIONS SHALL BE COMPLETED WITHIN 3 CALENDAR DAYS OF THE INSPECTION.

6. NON-STORM DISCHARGES

THIS INCLUDES SUBSURFACE DRAINS (I.E. FIELD TILE, SUBDRAINS), SLOPE DRAINS, AND BRIDGE END DRAINS. THE VELOCITY OF THE DISCHARGE FROM THESE FEATURES MAY BE CONTROLLED BY THE USE OF PATIO BLOCKS, CLASS A STONE, OR EROSION STONE.

7. SEQUENCE OF CONSTRUCTION ACTIVITIES

ALL EROSION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO COMMENCING ANY CONSTRUCTION ON-SITE. FIRST, ALL NOTED REMOVALS SHALL BE COMPLETED. SECOND, GRADING CAN COMMENCE TO BRING SOIL TO FINAL GRADE.. NEXT, INSTALLATION OF UTILITIES AND PAVING SHALL BE COMPLETED. FINALLY, THE DISTURBED AREAS SHALL BE SEEDED, FERTILIZED, AND MULCHED AS SHOWN IN THE PLANS.

OWNER CERTIFICATION:

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

NAME (PRINTED OR TYPED): _____

TITLE: _____

SIGNATURE: _____

DATE: _____

NAME OF COMPANY, IF APPLICABLE: _____

ADDRESS: _____

CITY, STATE, ZIP CODE: _____

TELEPHONE NUMBER: _____

ADDRESS OF THE SITE: _____

CONTRACTOR / SUBCONTRACTOR CERTIFICATION:

"I CERTIFY UNDER PENALTY OF LAW THAT I UNDERSTAND THE TERMS AND CONDITIONS OF THE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT THAT AUTHORIZES THE STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY FROM THE CONSTRUCTION SITE AS PART OF THIS CERTIFICATION. FURTHER, BY MY SIGNATURE, I UNDERSTAND THAT I AM BECOMING CO-PERMITTEE, ALONG WITH THE OWNER(S) AND OTHER CONTRACTORS AND SUBCONTRACTORS SIGNING SUCH CERTIFICATIONS, TO THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES NPDES GENERAL PERMIT NO. 2 FOR "STORM WATER DISCHARGE ASSOCIATED WITH INDUSTRIAL ACTIVITY FOR CONSTRUCTION ACTIVITIES" AT THE IDENTIFIED SITE. AS A CO-PERMITTEE, I UNDERSTAND THAT I, AND MY COMPANY, ARE LEGALLY REQUIRED UNDER THE CLEAN WATER ACT AND THE CODE OF WISCONSIN, TO ENSURE COMPLIANCE WITH THE TERMS AND CONDITIONS OF THE STORM WATER POLLUTION PREVENTION PLAN DEVELOPED UNDER THE NPDES PERMIT AND THE TERMS OF THE NPDES PERMIT."

NAME (PRINTED OR TYPED): _____

TITLE: _____

SIGNATURE: _____

DATE: _____

NAME OF CONTRACTING FIRM: _____

ADDRESS: _____

CITY, STATE, ZIP CODE: _____

TELEPHONE NUMBER: _____

ADDRESS OF THE SITE: _____

CONTRACTORS/SUBCONTRACTORS WHO WILL IMPLEMENT EACH EROSION CONTROL MEASURE:

SILT FENCE: CONTRACTOR (WITH ADDRESS AND TELEPHONE NUMBER)

_____

TOPSOIL BERM: CONTRACTOR (WITH ADDRESS AND TELEPHONE NUMBER)

_____

STABILIZED CONSTRUCTION ENTRANCE: CONTRACTOR (WITH ADDRESS AND TELEPHONE NUMBER)

_____

CONCRETE WASH-OUT AREA: CONTRACTOR (WITH ADDRESS AND TELEPHONE NUMBER)

_____

DUMPSTER: CONTRACTOR (WITH ADDRESS AND TELEPHONE NUMBER)

_____

PORT-A-POTTY: CONTRACTOR (WITH ADDRESS AND TELEPHONE NUMBER)

_____

INLET PROTECTION DEVICE: CONTRACTOR (WITH ADDRESS AND TELEPHONE NUMBER)

_____

KWIK TRIP STORES

KWIK STAR STORES

KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960

REI
CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING
REI Engineering, INC.
4080 N. 20TH AVENUE
WAUSAU, WISCONSIN 54401
PHONE: 715.675.9784 FAX: 715.675.4060
EMAIL: MAIL@REIENGINEERING.COM

EROSION CONTROL NOTES

CONVENIENCE STORE #631

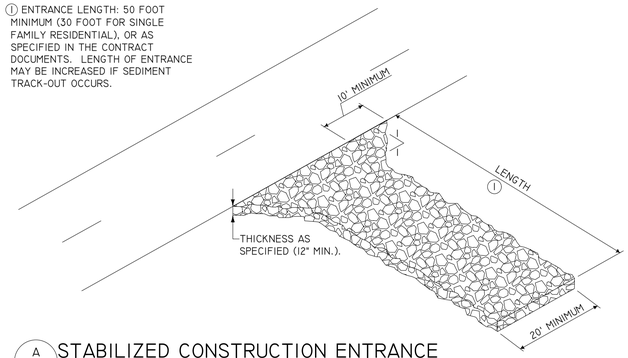
STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP XXX
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C601

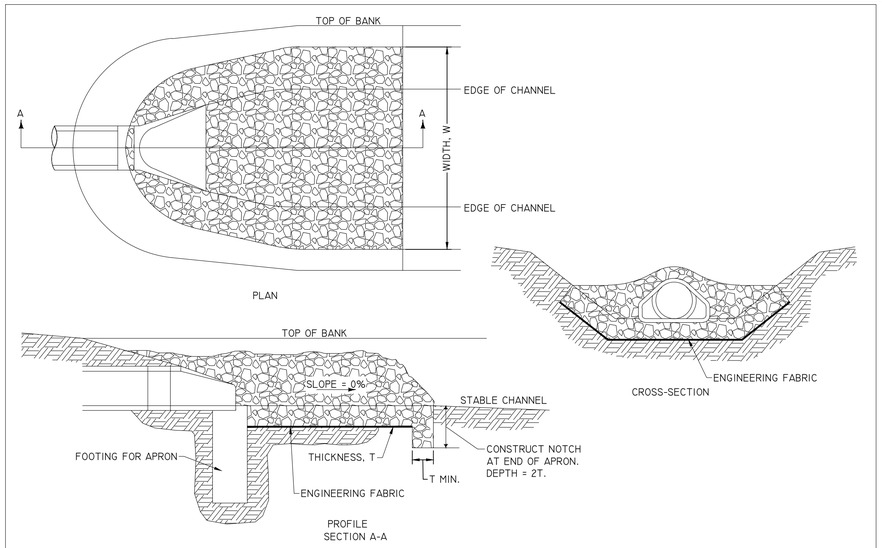
DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C600-EROSION CONTROL PLAN.DWG LAYOUT: C601
PLOTTED: OCT 08, 2024 - 3:42PM PLOTTED BY: TODDW

(1) ENTRANCE LENGTH: 50 FOOT MINIMUM (30 FOOT FOR SINGLE FAMILY RESIDENTIAL), OR AS SPECIFIED IN THE CONTRACT DOCUMENTS. LENGTH OF ENTRANCE MAY BE INCREASED IF SEDIMENT TRACK-OUT OCCURS.



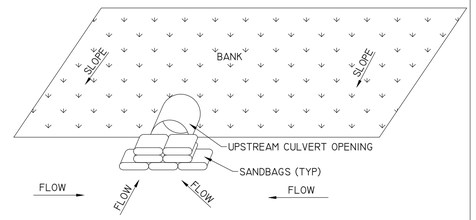
(A) C602 STABILIZED CONSTRUCTION ENTRANCE

FOR CONSTRUCTION EGRESS POINTS
NTS



(B) C602 RIP RAP APRON FOR PIPE OUTLET INTO CHANNEL

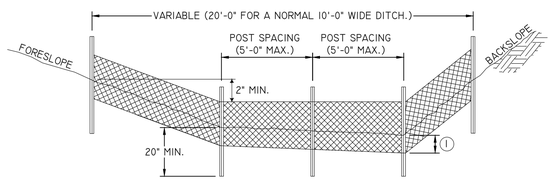
NTS



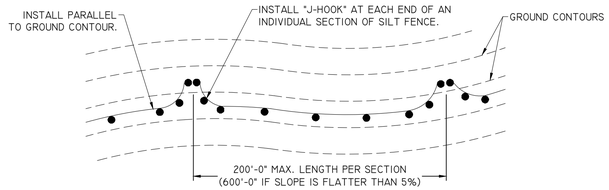
(C) C602 CULVERT PROTECTION

NTS

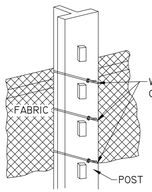
(1) INSERT 12 INCHES OF FABRIC A MINIMUM OF 6 INCHES DEEP (FABRIC MAY BE FOLDED BELOW THE GROUND LINE).



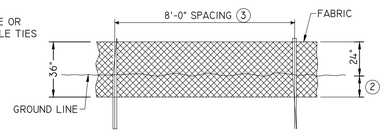
TYPICAL SILT FENCE DITCH CHECK



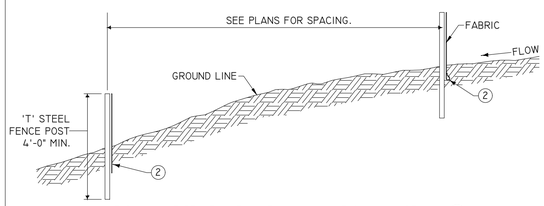
TYPICAL SILT FENCE INSTALLATION ON LONGITUDINAL SLOPES
(PLAN VIEW)



ATTACHMENT TO POST



DETAILS OF SILT FENCE ON LONGITUDINAL SLOPES



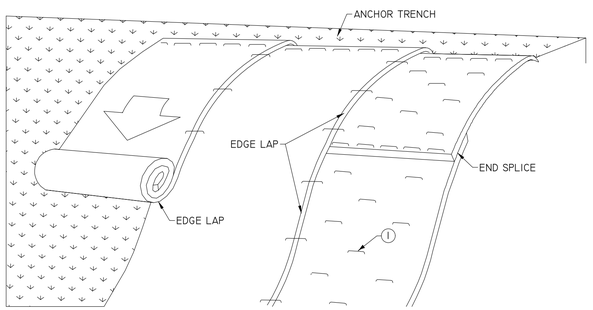
TYPICAL SILT FENCE INSTALLATION ON LONGITUDINAL SLOPES
(PROFILE VIEW)

(D) C602 SILT FENCE

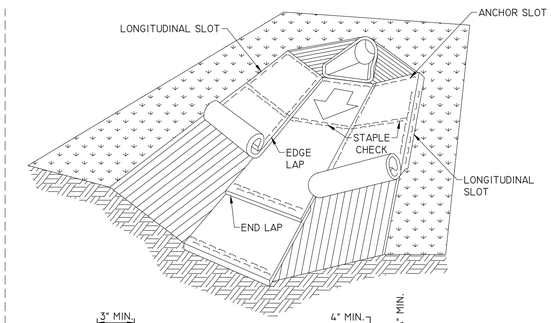
NTS

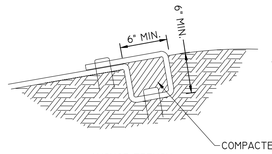
(2) INSERT 12 INCHES OF FABRIC A MINIMUM OF 6 INCHES DEEP (FABRIC MAY BE FOLDED BELOW THE GROUND LINE).

(3) REDUCE POST SPACING TO 5'-0" AT WATER CONCENTRATION AREAS, OR AS REQUIRED TO ADEQUATELY SUPPORT FENCE.

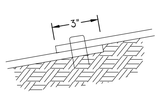


(1) SECURE BLANKET TO GROUND ACCORDING TO MANUFACTURER'S RECOMMENDED ANCHORING PATTERN AND MINIMUM SHOWN IN TABLE I.

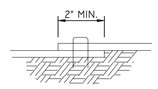




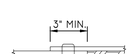
ANCHOR TRENCH
(12" MIN. ANCHOR SPACING)



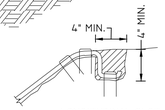
END SPLICE
(18" MIN. ANCHOR SPACING)



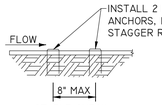
EDGE LAP
(4'-0" MIN. ANCHOR SPACING)



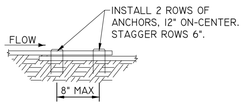
EDGE LAP
(4'-0" MAX. ANCHOR SPACING)



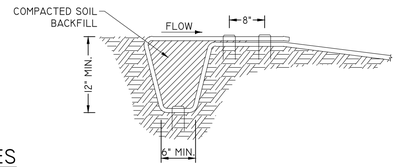
LONGITUDINAL SLOT
(3'-0" MAX. ANCHOR SPACING)



STAPLE CHECK



END LAP



ANCHOR SLOT
(1'-0" MAX. ANCHOR SPACING)

TABLE I

MAX. SLOPE	MIN. ANCHORS
≤3:1	1.5/YD²
2:1	2/YD²
1:1	2.5/YD²

(E) C602 ROLLED EROSION CONTROL (RECP) INSTALLATION ON SLOPES

NTS

ALL EROSION CONTROL MEASURES TO BE INSTALLED AND MAINTAINED PER WDNR STANDARDS
HTTP://DNR.WI.GOV/ORG/WATER/WM/NPS/STORMWATER/TECHSTDS.HTM

KWIK TRIP STORES

KWIK STAR STORES

KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960

REI
CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING
REI Engineering, INC.
4080 N. 20TH AVENUE
WAUSAU, WISCONSIN 54401
PHONE: 715.675.9784 FAX: 715.675.4060
EMAIL: MAIL@REIENGINEERING.COM

EROSION CONTROL DETAILS

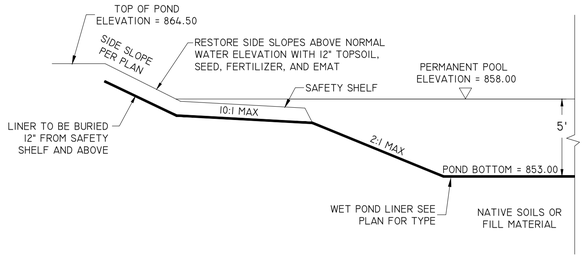
CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY NAP XXX
SCALE GRAPHIC
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C602

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C600-EROSION CONTROL PLAN.DWG LAYOUT: C602
PLOTTED: OCT 08, 2024 - 3:43PM PLOTTED BY: TODDW



GENERAL POND LINER SPECIFICATIONS
(REFER TO APPENDIX D OF WDNR TECHNICAL STANDARD 1001 FOR DETAILED SPECIFICATIONS)

*1. TYPE A LINER (ANY OF THE FOLLOWING)
- CLAY LINER: MINIMUM THICKNESS OF 2 FEET WITH AN IN-PLACE HYDRAULIC CONDUCTIVITY OF 1×10^{-7} CM/SEC OR LESS.
- HDPE: MINIMUM THICKNESS OF 60 MIL.
- GCL: GEOSYNTHETIC CLAY LINER PER NRCS SPECIFICATIONS OUTLINED IN APPENDIX D.

TYPE B LINER (ANY OF THE FOLLOWING)
- CLAY LINER: MINIMUM THICKNESS OF 2 FEET WITH AN IN-PLACE HYDRAULIC CONDUCTIVITY OF 1×10^{-6} CM/SEC OR LESS.
- HDPE: MINIMUM THICKNESS OF 40 MIL.
- PPL: MINIMUM THICKNESS OF 30 MIL.

TYPE C LINER (ANY OF THE FOLLOWING)
- SILT/CLAY LINER: MINIMUM THICKNESS OF 2 FEET
- HDPE: ANY THICKNESS
- PPL: MINIMUM THICKNESS OF 20 MIL
- PVC: MINIMUM THICKNESS OF 30 MIL
- EPDM: MINIMUM THICKNESS OF 45 MIL

NOTE:
1. SHOULD THE CONTRACTOR ENCOUNTER SEASONAL OR PERCHED GROUNDWATER DURING CONSTRUCTION OF THE POND AND IT'S LINER, CONTACT ENGINEER FOR UNDERDRAIN RECOMMENDATIONS.

2. MANUFACTURED LINERS SHALL BE PROVIDED WITH AIR-RELEASE VENTS TO PREVENT FLOATING.

3. CONTRACTOR TO PROVIDE POND LINER DOCUMENTATION TO OWNER PRIOR TO FINAL ACCEPTANCE.

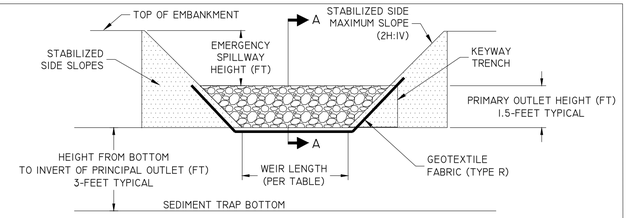
A / C603 WET POND LINER
NTS

NOTES:
1. SIDE SLOPES AND FACES OF EARTHEN EMBANKMENT AROUND OUTLET SHALL BE ARMORED WITH RIPRAP OR STABILIZED WITH EROSION MAT SUFFICIENT TO HANDLE FLOWS FROM THE 10-YEAR STORM.

2. STONE (SHORT DURATION): 3-6" WELL GRADED ANGULAR CLEAR STONE.

3. STONE (6+ MONTHS): COMBINATION OF LIGHT RIPRAP WITH 12"-THICK LAYER OF 1" ANGULAR CLEAR STONE.

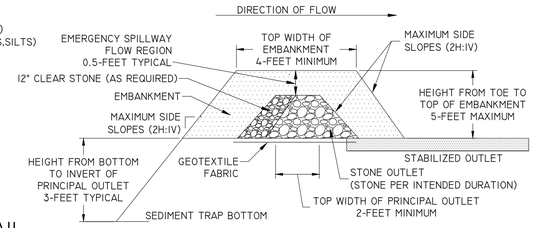
4. REFER TO WDNR TECH STD 1063 FOR ADDITIONAL INFORMATION.



CROSS-SECTION VIEW OF PRINCIPAL OUTLET

* AS = 625 X ADR (COARSE GRAINED SOILS + SANDS)
AS = 1560 X ADR (MEDIUM GRAINED SOILS + LOAMS,SILTS)
AS = 5300 X ADR (FINE GRAINED SOILS + CLAYS)

ADR (OC)	WEIR LENGTH (FT)
1	4
2	6
3	8
4	10
5	12



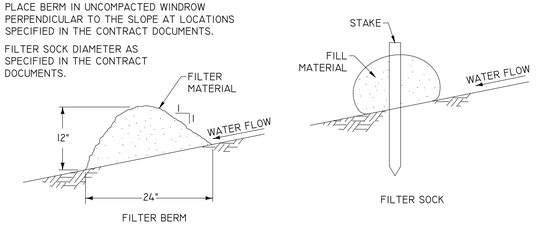
VIEW A-A OF PRINCIPAL OUTLET

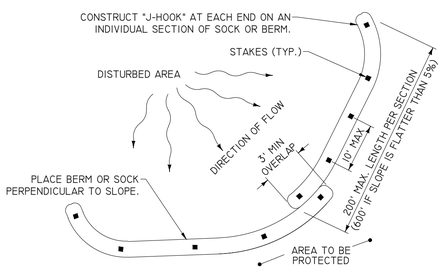
B / C603 SEDIMENT TRAP DETAIL
NTS

BERM SHOWN IS TYPICAL FOR SLOPES FLATTER THAN 3:1. FOR STEEPER SLOPES, INCREASE BERM SIZE AS DIRECTED BY THE ENGINEER.

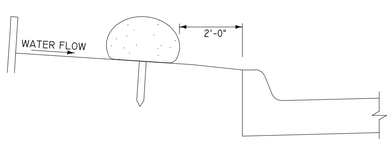
PLACE BERM IN UNCOMPACTED WINDROW PERPENDICULAR TO THE SLOPE AT LOCATIONS SPECIFIED IN THE CONTRACT DOCUMENTS.

FILTER SOCK DIAMETER AS SPECIFIED IN THE CONTRACT DOCUMENTS.





PLAN VIEW OF SLOPE
(FOR SEDIMENT AND SLOPE CONTROL)



SECTION VIEW AT STREET
(FOR PERIMETER CONTROL ALONG STREET)

TYPICAL PLACEMENT OF BERM OR SOCK

C / C603 FILTER BERM AND FILTER SOCK
NTS

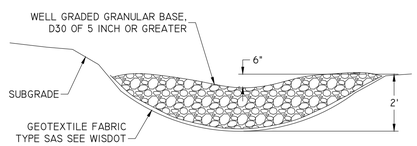
INSTALL & MAINTAIN IN ACCORDANCE WITH DNR TECHNICAL STANDARD 1062.

DITCH CHECKS TO BE REMOVED AFTER THE DITCH IS VEGETATED AND STABILIZED.

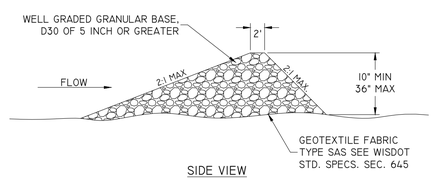
AREA UNDER THE DITCH CHECK TO BE SEEDED AFTER THE DITCH CHECK IS REMOVED.

PLACE EROSION MAT OVER THESE SEEDED AREAS.

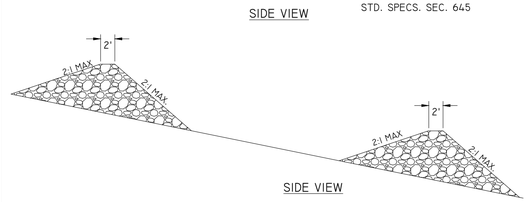
NOTE:
CONTRACTOR MAY REFER TO THE WISDOT PAL FOR OTHER APPROVED DITCH CHECKS AND THEIR INSTALLATION



CROSS SECTION VIEW

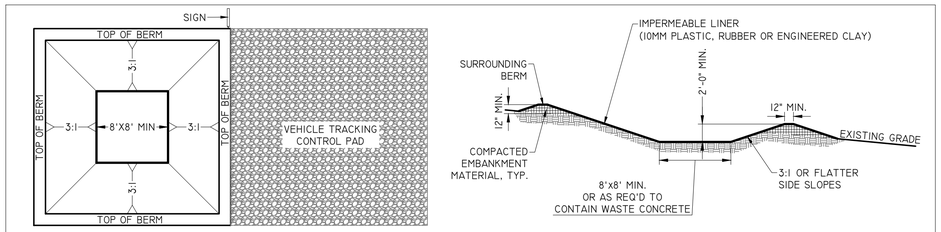


SIDE VIEW



SIDE VIEW

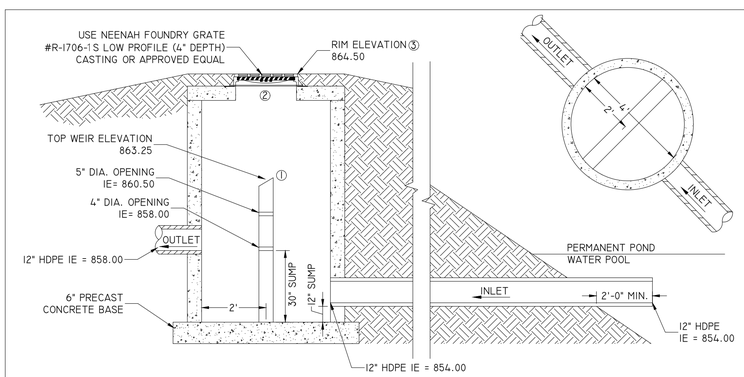
D / C603 STONE DITCH CHECKS
NTS



CONCRETE WASHOUT AREA INSTALLATION NOTES
1. SEE EROSION CONTROL PLAN FOR LOCATIONS OF CONCRETE WASHOUT AREA(S). TO BE PLACED A MIN. OF 50' FROM DRAINAGEWAYS, BODIES OF WATER, AND INLETS.)
2. THE CONCRETE WASHOUT AREA(S) SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
3. VEHICLE TRACKING CONTROL PAD IS REQ'D AT THE ACCESS POINT(S).
4. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA(S), AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREAS TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
5. EXCAVATED MATERIAL SHALL BE UTILIZED IN PERIMETER BERM CONSTRUCTION.

CONCRETE WASHOUT AREA MAINTENANCE NOTES
6. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE
7. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM SITE AND DISPOSED OF AT AN APPROVED WASTE SITE.
8. WHEN CONCRETE WASHOUT AREA(S) IS REMOVED, THE DISTURBED AREA SHALL BE STABILIZED PER SITE EROSION CONTROL MEASURES.
9. INSPECT WEEKLY AND DURING AND AFTER ALL STORM EVENTS. CLEAN-OUT OR COVER WASHOUT AREA PRIOR TO PREDICTED STORM EVENTS TO PREVENT OVER-FLOW.

E / C603 CONCRETE WASHOUT AREA
NTS



① 4" THICK MASONRY WALL OR ¼"STEEL PLATE. GROUT OR SEAL ALONG SIDES OF MANHOLE
② FORM OPENING IN TOP SLAB TO FIT CASTING
③ ADJUST GRADING AT THE OUTLET STRUCTURE TO COVER CASTING TO THE PROPOSED RIM ELEVATION

F / C603 OUTLET CONTROL STRUCTURE
NTS

KWIK TRIP STORES

KWIK STAR STORES

KWIK TRIP, Inc.
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EMAIL: MAIL@REIENGINEERING.COM

EROSION CONTROL DETAILS

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

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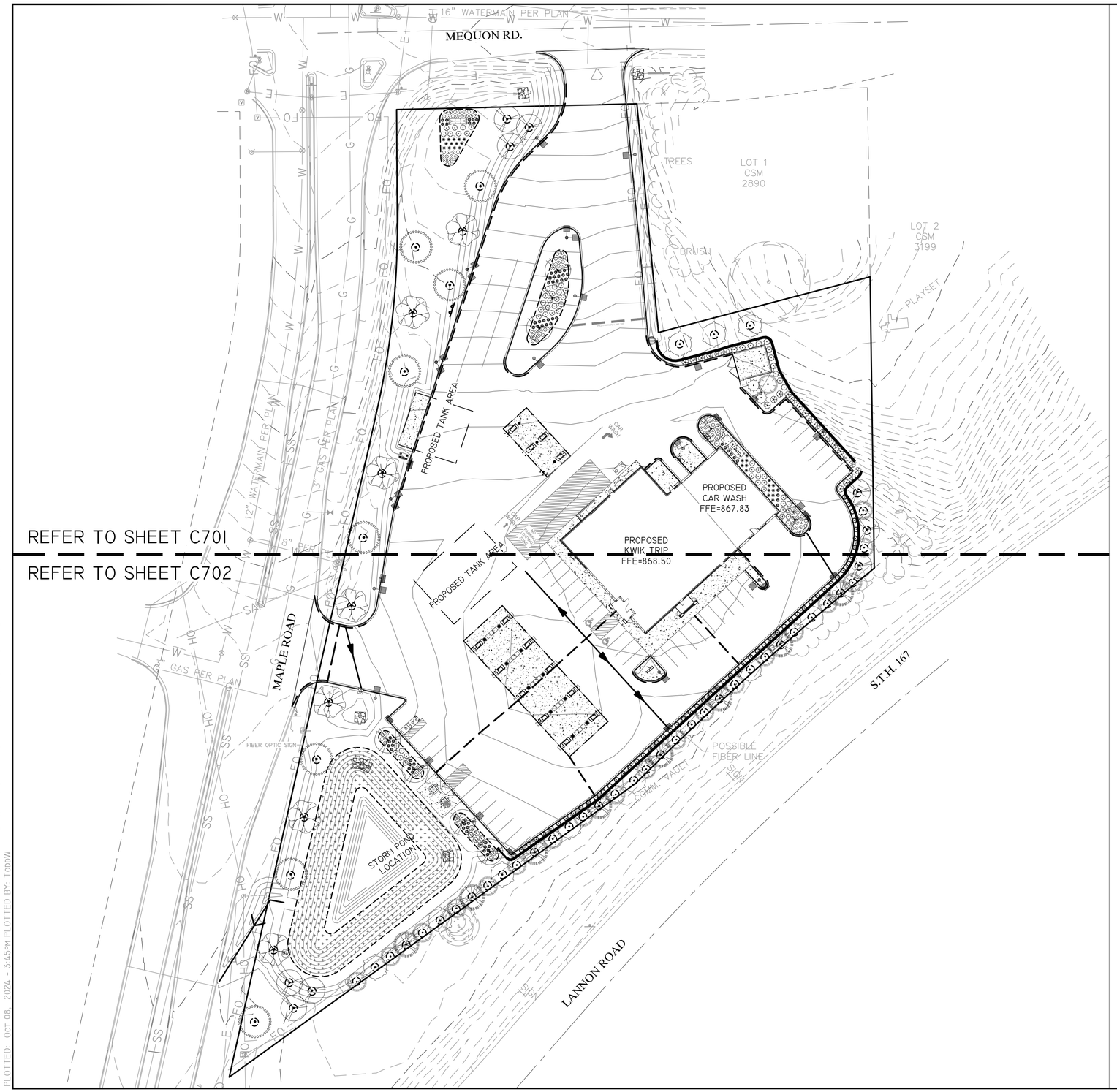
SCALE GRAPHIC
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C603

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C600-EROSION CONTROL PLAN.DWG LAYOUT: C603
PLOTTED: OCT 08, 2024 - 3:44PM PLOTTED BY: TODDW



GENERAL NOTES:

(A) LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR LOCATING & VERIFYING ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION, AND IS RESPONSIBLE FOR ANY DAMAGE TO THEM DURING CONSTRUCTION.

(B) CALL DIGGERS HOTLINE @ 811 OR 1-800-242-8511 AT LEAST 5 WORKING DAYS PRIOR TO DEMOLITION, EXCAVATION OR ANY CONSTRUCTION ACTIVITY.

(C) ALL PLANT MATERIAL SHALL BE GUARANTEED ONE (1) FULL YEAR UPON TOTAL COMPLETION OF PROJECT AND ACCEPTANCE BY OWNER, WITH A ONE TIME REPLACEMENT WARRANTY UPON REQUEST BY OWNER. WARRANTY EXPIRES AFTER FIRST FULL YEAR FOLLOWING PROJECT COMPLETION.

(D) LANDSCAPE CONTRACTOR SHALL VERIFY MINIMUM 6" TOPSOIL DEPTH FOR ALL AREAS TO BE SEEDED/SODDED THROUGHOUT PROJECT SITE. CONTRACTOR IS REQUIRED TO CORRECT ANY DEFICIENCIES PRIOR TO SEED/SOD. TOPSOIL SHALL BE CLEAN AND FREE OF STONES, WEEDS AND OTHER UNDESIRABLE DEBRIS.

(E) LANDSCAPE CONTRACTOR SHALL VERIFY MINIMUM 12" PLANTING SOIL DEPTH FOR ALL PROPOSED PLANTING BED AREAS THROUGHOUT THE PROJECT SITE. CONTRACTOR IS REQUIRED TO CORRECT ANY DEFICIENCIES PRIOR TO PLANT INSTALLATION. PLANTING SOIL & AREA SHALL BE CLEAN AND FREE OF STONES, WEEDS, CONCRETE WASTE AND OTHER UNDESIRABLE DEBRIS.

(F) LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR REPAIRING TOPSOIL AND SODDING ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITY, INCLUDING ALL R.O.W. AND ADJACENT PROPERTIES.

(G) CONTRACTOR SHALL CLEAN ALL PAVEMENT AREAS AFTER LANDSCAPE CONSTRUCTION ACTIVITIES ARE COMPLETE AND APPROVED BY OWNER. *THIS TO BE DONE DAILY AS DEEMED NECESSARY BY MUNICIPALITY.

PLANT SCHEDULE

SYMBOL	COMMON NAME	BOTANICAL NAME	SIZE	CONT.	QTY
DECIDUOUS TREES					
	Autumn Blaze® Freeman Maple	Acer x freemanii 'Jeffersred'	2.5" Cal.	B&B	11
	Fall Fiesta® Sugar Maple	Acer saccharum 'Bailsta'	2" Cal.	B&B	18
	Red Oak	Quercus rubra	3" Cal.	B&B	8
	Swamp White Oak	Quercus bicolor	3" Cal.	B&B	7
EVERGREEN TREES					
	Black Hills White Spruce	Picea glauca 'Densata'	6` Ht.	B&B	2
	White Pine	Pinus alba	6` Ht.	B&B	8
	White Spruce	Picea glauca	6` Ht.	B&B	20
DECIDUOUS SHRUBS					
	Tiny Wine® Ninebark	Physocarpus opulifolius 'SMPOTW'	3 gal.	Pot	62
EVERGREEN SHRUBS					
	Dark Green Anglo-Japanese Yew	Taxus x media 'Dark Green'	5 gal.	Pot	11
	Kallay Compact Pfitzer Juniper	Juniperus chinensis 'Kallays Compact'	3 gal.	Pot	25
	Mini Arcade Juniper	Juniperus sabina 'Mini Arcade'	3 gal.	Pot	58
PERENNIALS					
	Karl Foerster Feather Reed Grass	Calamagrostis x acutiflora 'Karl Foerster'	1 gal.	Pot	27
	Prairie Dropseed	Sporobolus heterolepis	1 gal.	Pot	104
	Shenandoah Switch Grass	Panicum virgatum 'Shenandoah'	1 gal.	Pot	68

KWIK TRIP™ STORES

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LANDSCAPE PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY NAP
SCALE GRAPHIC
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C700

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C700-LANDSCAPE PLAN.DWG LAYOUT: C700
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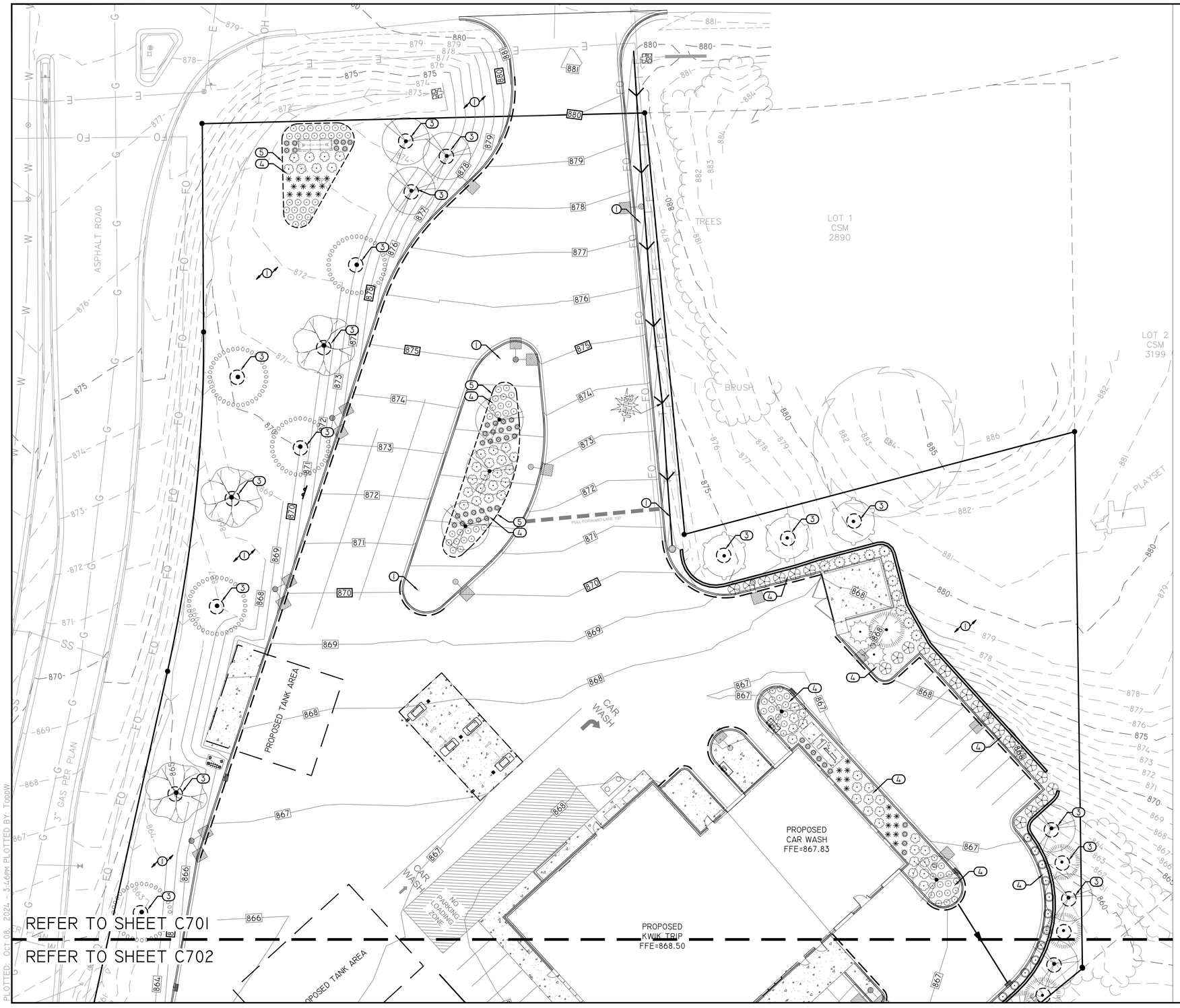

KEYED NOTES

1. SOD, *ALL AREAS NOTED ON PLAN & ALL DISTURBED AREAS DUE TO CONSTRUCTION ACTIVITY.

2. (9,900 SF TOTAL) AGRECOL, SHORTGRASS PRAIRIE FOR DRY SOILS, APPLY GLYPHOSATE HERBICIDE TO AREA WHEN MAJORITY OF WEEDS ARE 2"-3" TALL. WAIT 10 DAYS THEN FINELY TILL THE SOIL ONLY 1"-2" DOWN AND PLANT IMMEDIATELY BY HAND BROADCASTING AT A RATE OF 11 LBS/ACRE. RAKE OR DRAG AREA LIGHTLY, COVERING THE SEED WITH ABOUT $\frac{1}{4}$" TO $\frac{1}{2}$" OF SOIL. ROLL AREA FIRMLY AFTER RAKING. MULCH PRAIRIE SEEDED AREAS LESS THAN 4:1 SLOPE WITH 1" OF WEED FREE STRAW MULCH. APPLY WISDOT NET-FREE CLASS I, URBAN TYPE B EROSION MAT ON SLOPING AREAS STEEPER THAN 4:1. *REFER TO AGRECOL'S "NATIVE SEEDING INSTRUCTIONS" ON THEIR WEBSITE FOR DETAILED INSTRUCTIONS/GUIDELINES FOR SUCCESSFUL SEED ESTABLISHMENT AND MANAGEMENT. (LINK BELOW)

   HTTPS://WWW.AGRECOL.COM/NATIVE-SEEDING-INSTRUCTIONS_EP_44.HTML

3. 6' DIAMETER WOOD MULCH TREE RING, 3"-4" DEPTH, DARK BROWN COLOR, *ALL TREES PLANTED WITHIN SOD AREAS.

4. SHREDDED HARDWOOD MULCH, 3"-4" DEPTH, DARK BROWN COLOR.

5. SHOVEL CUT EDGE, 4"-6" DEPTH CLEAN CUT EDGE AROUND PLANTING BEDS & PRAIRIE SEEDING WITHIN SOD AREAS.

PLANT SCHEDULE

SYMBOL	BOTANICAL NAME
DECIDUOUS TREES	
	Acer saccharum 'Bailsta'
	Acer x freemanii 'Jeffersred'
	Quercus bicolor
	Quercus rubra
EVERGREEN TREES	
	Picea glauca
	Picea glauca 'Densata'
	Pinus alba
DECIDUOUS SHRUBS	
	Physocarpus opulifolius 'SMPOTW'
EVERGREEN SHRUBS	
	Juniperus chinensis 'Kallays Compact'
	Juniperus sabina 'Mini Arcade'
	Taxus x media 'Dark Green'
PERENNIALS	
	Calamagrostis x acutiflora 'Karl Foerster'
	Panicum virgatum 'Shenandoah'
	Sporobolus heterolepis

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LANDSCAPE PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

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SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C701

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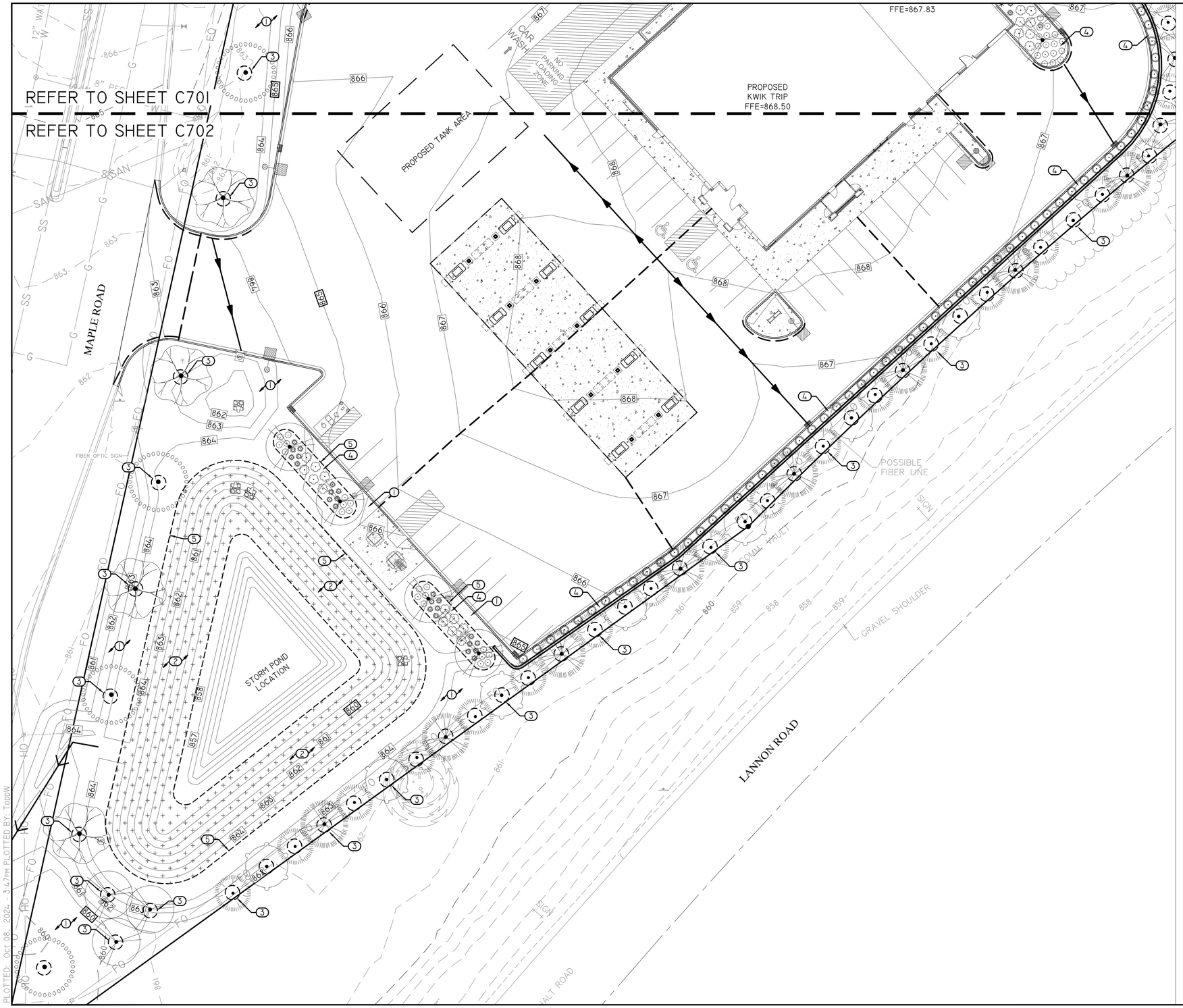

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	Quercus rubra
EVERGREEN TREES	
	Picea glauca
	Picea glauca 'Densata'
	Pinus alba
DECIDUOUS SHRUBS	
	Physocarpus opulifolius 'SMPOTW'
EVERGREEN SHRUBS	
	Juniperus chinensis 'Kallays Compact'
	Juniperus sabina 'Mini Arcade'
	Taxus x media 'Dark Green'
PERENNIALS	
	Calamagrostis x acutiflora 'Karl Foerster'
	Panicum virgatum 'Shenandoah'
	Sporobolus heterolepis

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EMAIL: MAIL@REIENGINEERING.COM

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LANDSCAPE PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
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PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C702

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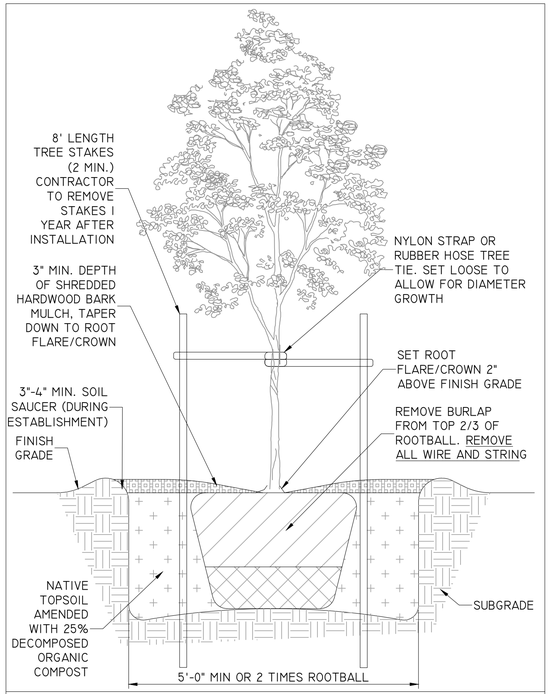
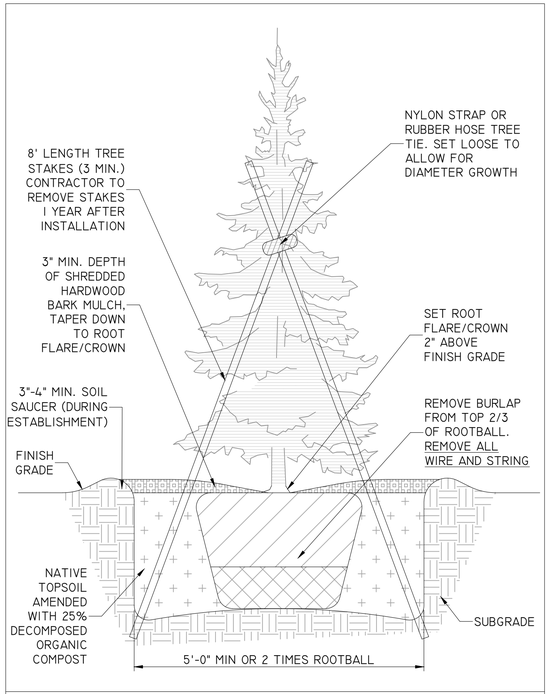
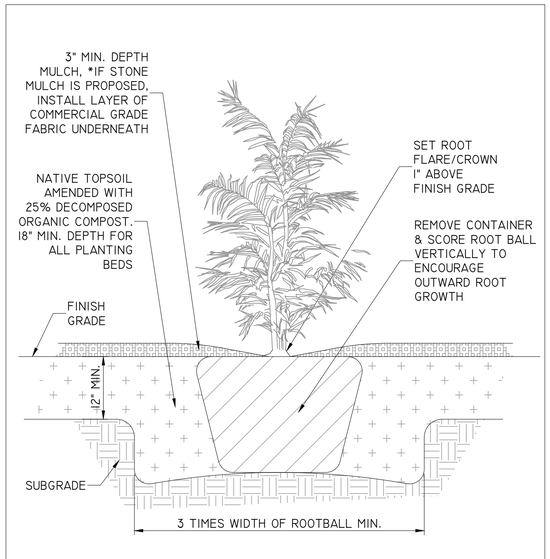


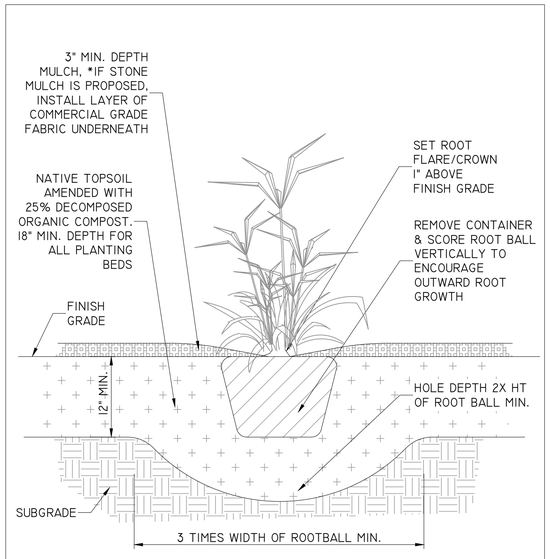
DECIDUOUS TREE - PLANTING DETAIL



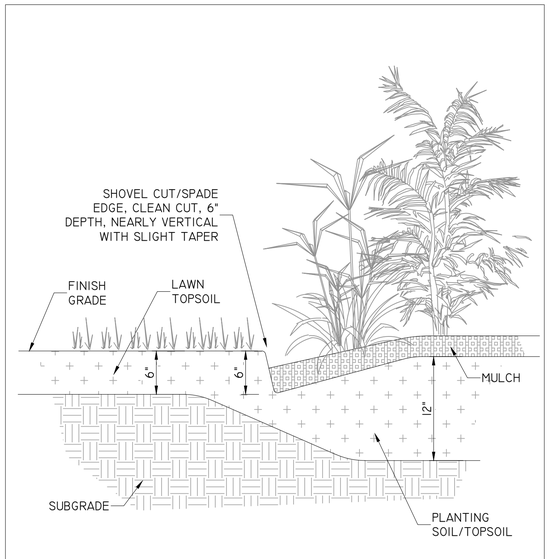
EVERGREEN TREE - PLANTING DETAIL



SHRUB - PLANTING DETAIL



PERENNIAL - PLANTING DETAIL



SHOVEL CUT EDGE - DETAIL

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LANDSCAPE DETAILS

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

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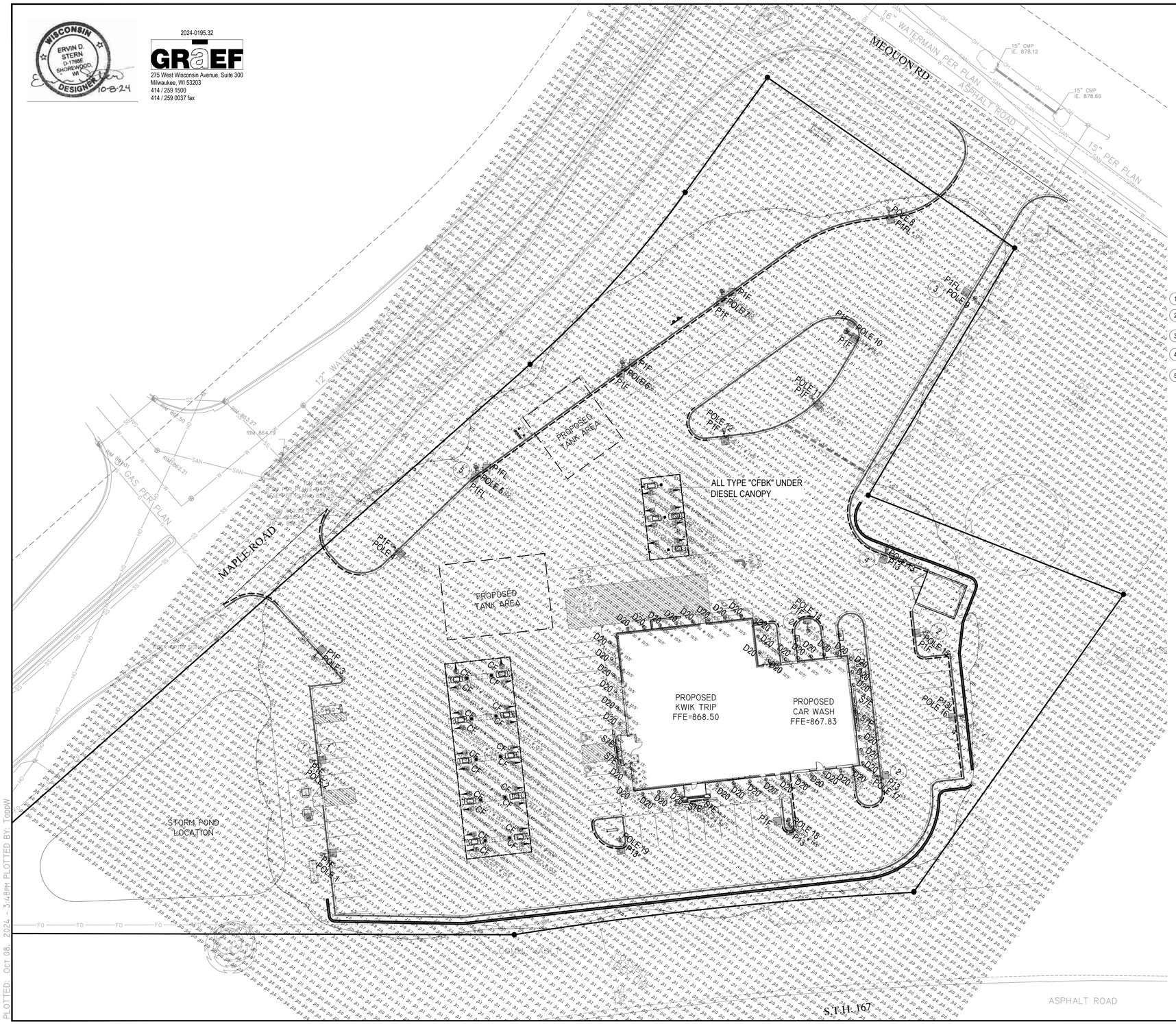
PLOTTED: OCT 08, 2024 - 3:47PM PLOTTED BY: TODDW

WISCONSIN
ERVIN D. STERN
D-17686
SHOREWOOD, WI
DESIGNER
10-8-24

2024-0195.32
GRAEF
275 West Wisconsin Avenue, Suite 300
Milwaukee, WI 53203
414 / 259 1500
414 / 259 0037 fax



CALCULATION STATISTICS

OVERALL SITE:
AVERAGE: 3.2
MAXIMUM: 78.7
MINIMUM: 0.0

FIXTURE QUANTITIES

D20 - 44
S7E - 6
CF - 20
CFBK - 8
P13 - 5
P13L - 1
P1F - 14
P1FL - 4

PROVIDE (19) 16' POLES.

GENERAL NOTES:

1. FOOTCANDLE LEVELS SHOWN ON THIS PLAN ARE CALCULATED AT GRADE LEVEL.
2. ALL POLES SHALL BE INSTALLED A MINIMUM OF 3'-0" FROM BACK OF CURB TO EDGE OF POLE BASE UNLESS NOTED.
3. POLE THAT ARE LOCATED AT CORNER OF ISLAND SHALL BE A MINIMUM OF 6'-0" FROM BACK OF CURB TO EDGE OF POLE BASE. POLES THAT MUST BE INSTALLED LESS THAN 6'-0" FROM BACK OF CURB TO EDGE OF POLE BASE SHALL HAVE PROTECTIVE BOLLARDS INSTALLED AROUND THE POLE BASE. COORDINATE WITH KWIK TRIP PRIOR TO INSTALLATION.

KEYED NOTES:

1. COORDINATE LOCATION AND MOUNTING HEIGHT OF SECURITY CAMERA WITH OWNER.
2. CONTRACTOR SHALL POLE MOUNT FIXTURE 6'-0" FROM BACK OF CURB TO EDGE OF POLE BASE.
3. CONTRACTOR SHALL POLE MOUNT FIXTURE 2'-0" FROM BACK OF CURB TO EDGE OF POLE BASE TO AVOID UNDERGROUND UTILITIES.
4. CONTRACTOR SHALL POLE MOUNT FIXTURE 3'-0" FROM BACK OF CURB TO EDGE OF POLE BASE NEAR RETAINING WALL.
5. CONTRACTOR SHALL POLE MOUNT FIXTURE 5'-0" FROM BACK OF CURB TO EDGE OF POLE BASE TO AVOID UNDERGROUND UTILITIES.

FIXTURE TYPES:

D20 - RECESSED LED DOWNLIGHT
GOTHAM EVO-35/30-8AR-WD-120-TRW

S7E - LED STRIP LIGHT MOUNTED IN GABLE LITHONIA
TZL1N-L96-10000LM-FST-MVOLT

CF - LSI LIGHTING: SCV-LED-23L-SCFT-UNV-DIM-50-WHT MOUNTED UNDER GAS CANOPY MOUNT FIXTURES WITH FORWARD THROW OPTIC AIMING IN DIRECTION OF ARROW.

CFBK - LSI LIGHTING: SCV-LED-23L-SCFT-UNV-DIM-50-BLK MOUNTED UNDER DIESEL CANOPY MOUNT FIXTURES WITH FORWARD THROW OPTIC AIMING IN DIRECTION OF ARROW.

P13- LSI LIGHTING: MRS-LED-18L-SIL-3-UNV-50-70CRI-WHT

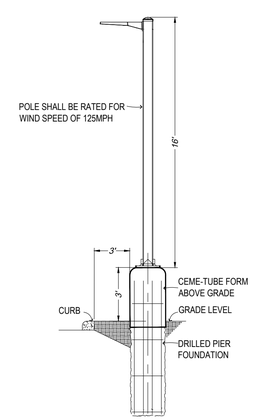
P13L- LSI LIGHTING: MRS-LED-18L-SIL-3-UNV-50-70CRI-WHT-IL

P1F- LSI LIGHTING: MRS-LED-18L-SIL-FT-UNV-50-70CRI-WHT

P1FL- LSI LIGHTING: MRS-LED-18L-SIL-FT-UNV-50-70CRI-WHT-IL

FIXTURE SYMBOLS:

LED LIGHT MOUNTED UNDER FUEL CANOPIES
LED STRIP LIGHT MOUNTED IN GABLE
RECESSED LED DOWNLIGHT
POLE MOUNTED LED FIXTURE
CAMERA



LOT LIGHT ELEVATION DETAIL

NOT TO SCALE

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PHOTOMETRIC LIGHTING PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

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PLOTTED: OCT 08, 2024 - 3:48PM PLOTTED BY: TODDW

Kwik Trip
Kwik Trip
NATIONAL BRAT DAY
PREMIUM MEATS

KWIK TRIP

KWIK STAR

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LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960

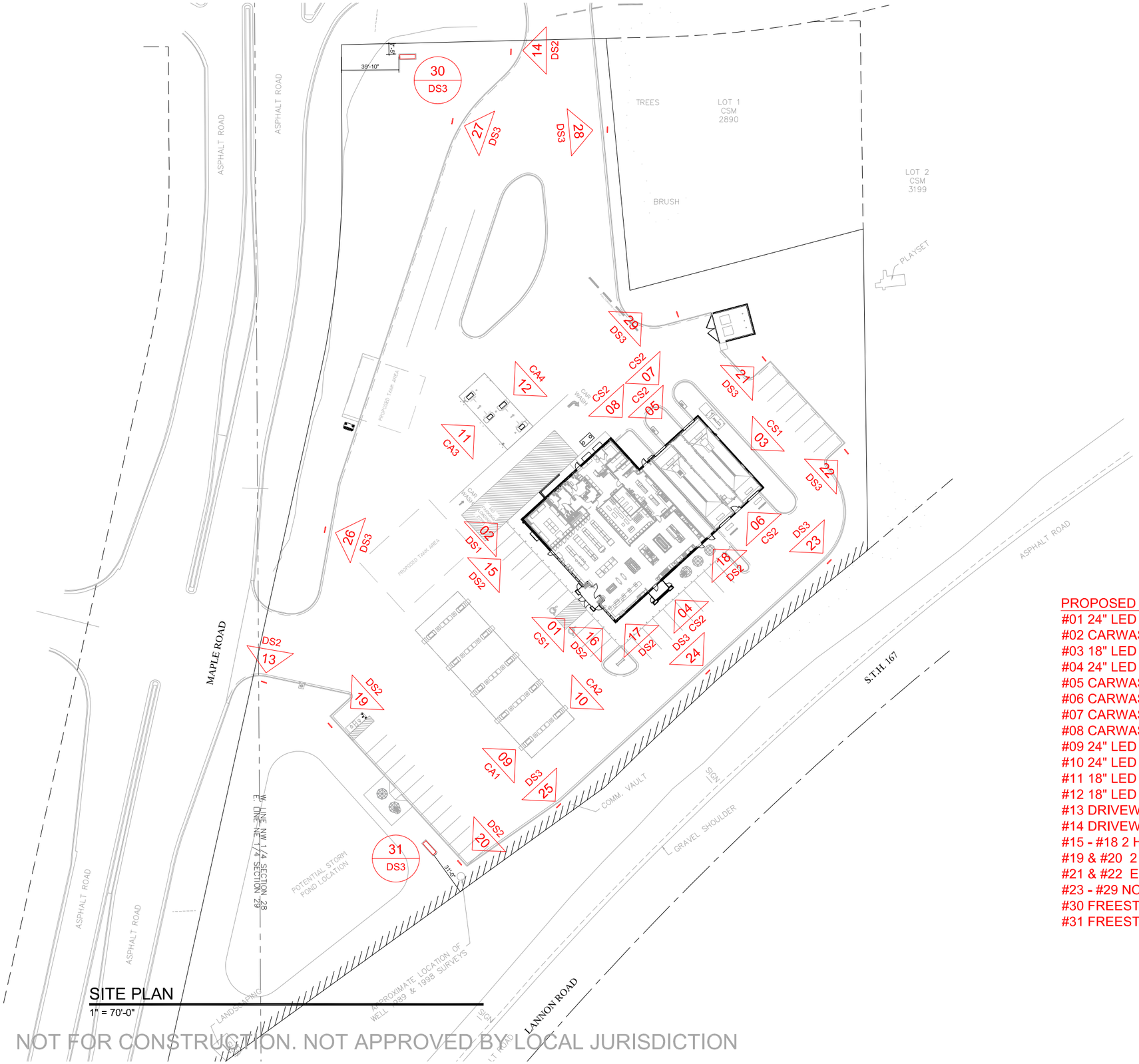
10 MPD

KWIK TRIP

KWIK STAR

KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960

DIESEL



SITE PLAN
1" = 70'-0"

NOT FOR CONSTRUCTION. NOT APPROVED BY LOCAL JURISDICTION

PROPOSED SIGNS:
#01 24" LED KWIK TRIP BUILDING LETTERS
#02 CARWASH BUILDING DIRECTIONAL SIGN
#03 18" LED KWIK TRIP & 24" CARWASH BUILDING LETTERS
#04 24" LED KWIK TRIP BUILDING LETTERS
#05 CARWASH ENTER
#06 CARWASH EXIT
#07 CARWASH INFORMATIONAL SIGN
#08 CARWASH INFORMATIONAL SIGN
#09 24" LED KWIK TRIP CANOPY LETTERS
#10 24" LED KWIK TRIP CANOPY LETTERS
#11 18" LED DIESEL ENTER CANOPY SIGN
#12 18" LED DIESEL EXIT CANOPY SIGN
#13 DRIVEWAY DIRECTIONAL
#14 DRIVEWAY DIRECTIONAL
#15 - #18 2 HOUR PARKING SIGNS
#19 & #20 2 HOUR PARKING SIGNS
#21 & #22 EMPLOYEE PARKING SIGNS
#23 - #29 NO PARKING SIGNS
#30 FREESTANDING MONUMENT SIGN
#31 FREESTANDING MONUMENT SIGN

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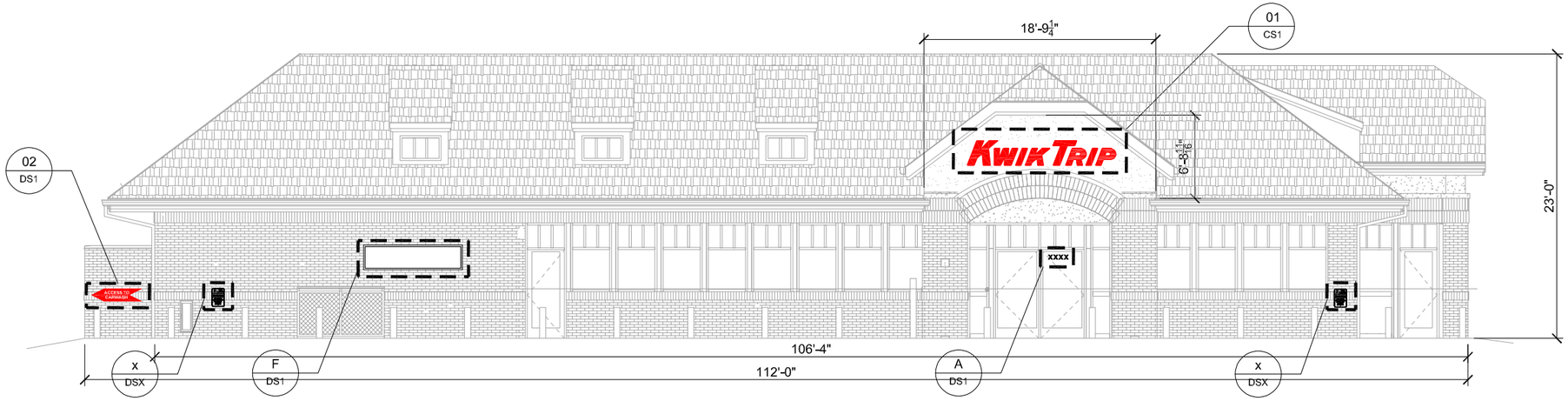
SITE PLAN

CONVENIENCE STORE #631
W. 2BAY CW & SIDE DIESEL

Mequon Rd & Maple Rd
Germantown, WI

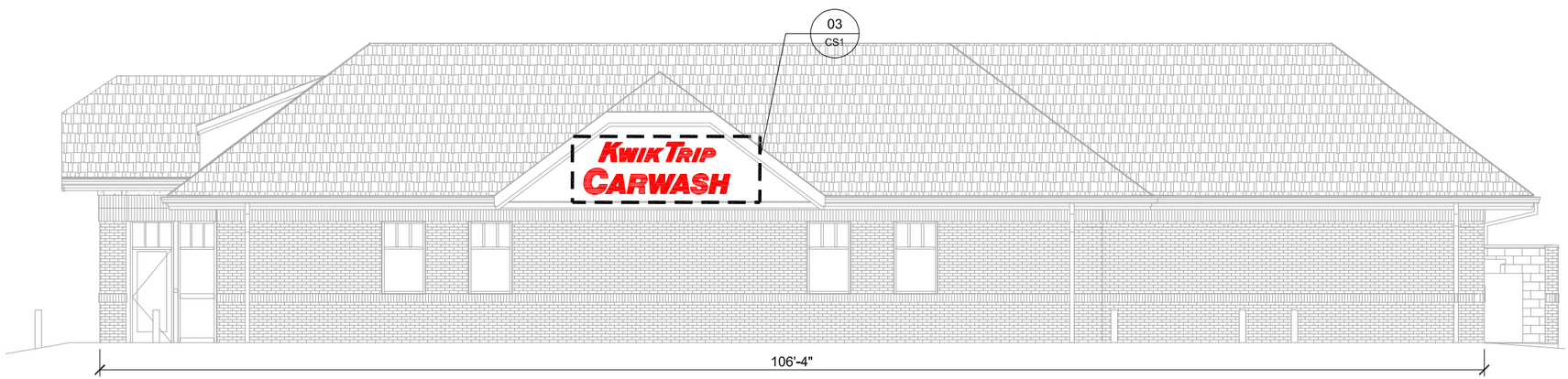
#	DATE	DESCRIPTION

DRAWN BY	X.XXXXX
SCALE	MULTIPLE
PROJ. NO.	0001
DATE	2024 10-11
SHEET	SP1



STORE ELEVATION

SCALE: 3/32" = 1'-0"

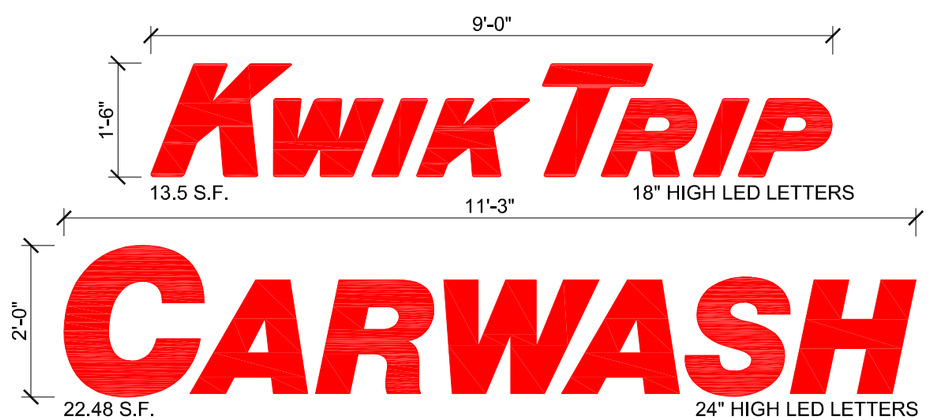


STORE ELEVATION

SCALE: 3/32" = 1'-0"

LOGO DETAIL - SIGN #01

SCALE: 1/2" = 1'-0"



LOGO DETAIL - SIGN #03

SCALE: 1/2" = 1'-0"

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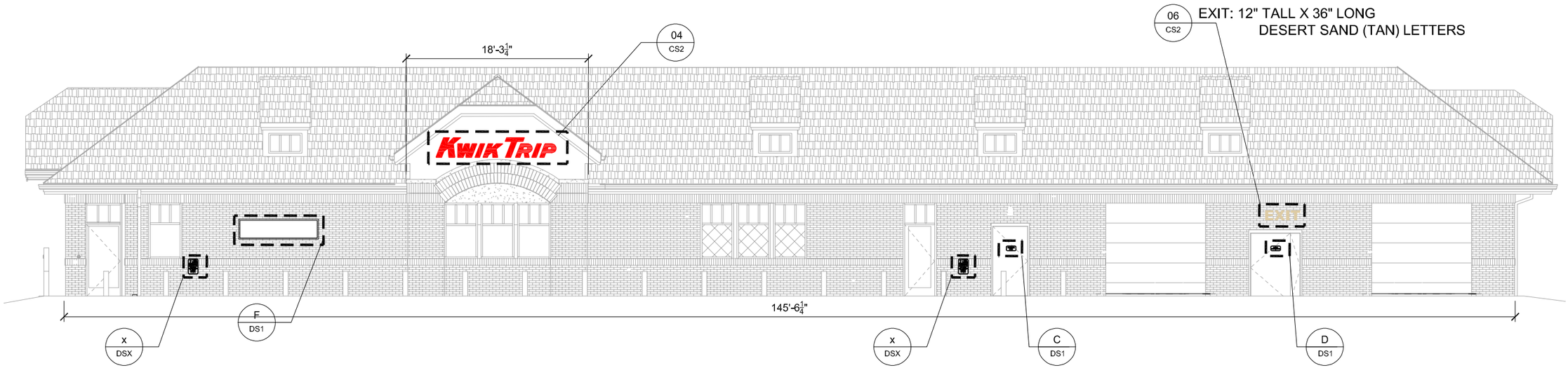
CONVENIENCE STORE SIGNAGE

CONVENIENCE STORE #631
W. 2BAY CW & SIDE DIESEL

Mequon Rd & Maple Rd
Germantown, WI

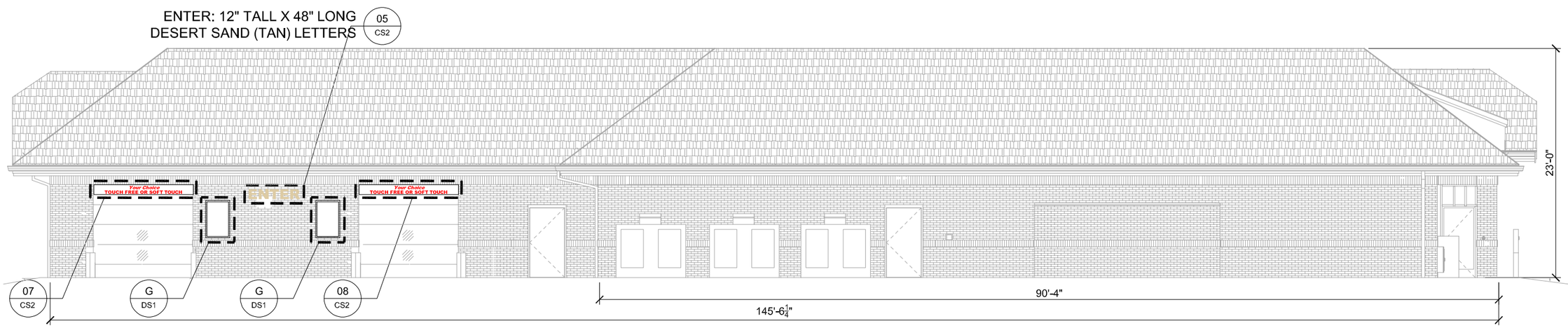
#	DATE	DESCRIPTION

DRAWN BY	X.XXXXX
SCALE	MULTIPLE
PROJ. NO.	0001
DATE	2024 10-11
SHEET	CS1



STORE ELEVATION

SCALE: 3/32" = 1'-0"



STORE ELEVATION

SCALE: 3/32" = 1'-0"

LOGO DETAIL - SIGN #04

SCALE: 1/2" = 1'-0"

Your Choice
TOUCH FREE OR SOFT TOUCH

NON-LIT INFORMATIONAL SIGN
RED VINYL ON WHITE ALUMINUM
1'-0"H X 10'-0"W = 10.0 SQ FT

INFORMATIONAL SIGNS #07 & #08

SCALE: 1/2" = 1'-0"

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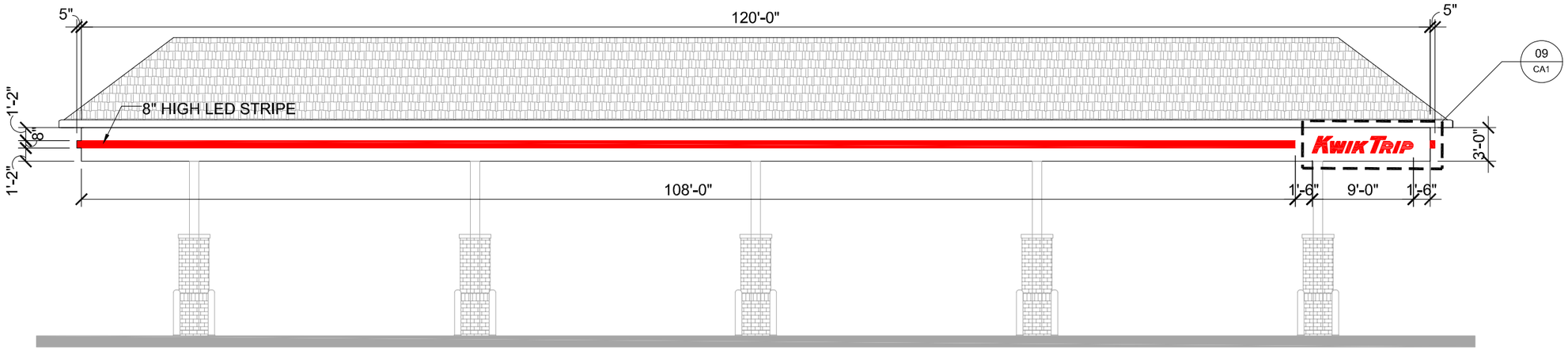
CONVENIENCE STORE SIGNAGE

CONVENIENCE STORE #631
W. 2BAY CW & SIDE DIESEL

Mequon Rd & Maple Rd
Germantown, WI

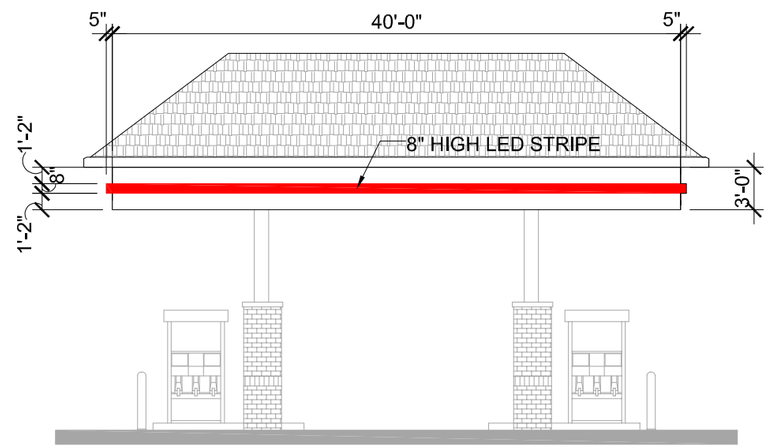
#	DATE	DESCRIPTION

DRAWN BY	XXXXXX
SCALE	MULTIPLE
PROJ. NO.	0001
DATE	2024 10-11
SHEET	CS2



CANOPY ELEVATION

SCALE: 3/32" = 1'-0"



CANOPY ELEVATION

SCALE: 3/32" = 1'-0"

LOGO DETAIL - SIGN #08

SCALE: 1/2" = 1'-0"

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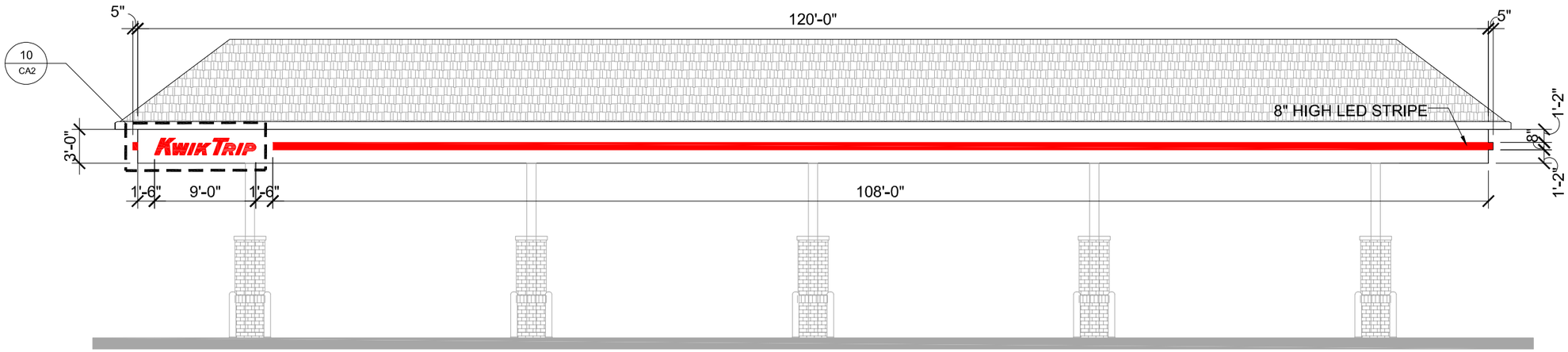
CANOPY SIGNAGE

CONVENIENCE STORE #631
W. 2BAY CW & SIDE DIESEL

Mequon Rd & Maple Rd
Germantown, WI

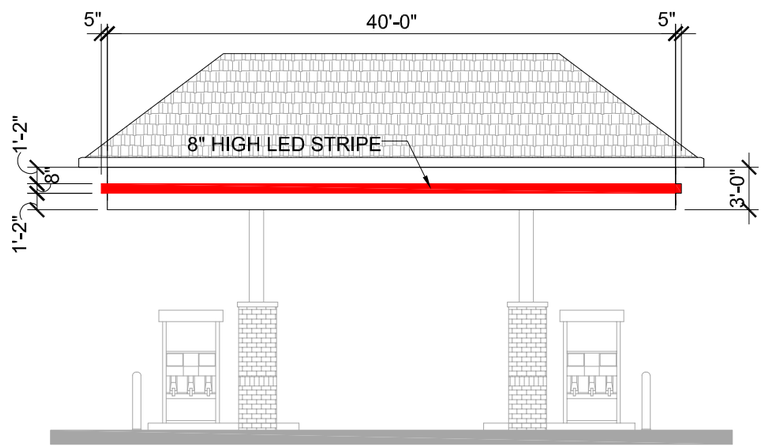
#	DATE	DESCRIPTION

DRAWN BY	XXXXXX
SCALE	MULTIPLE
PROJ. NO.	0001
DATE	2024 10-11
SHEET	CA1



CANOPY ELEVATION

SCALE: 3/32" = 1'-0"



CANOPY ELEVATION

SCALE: 3/32" = 1'-0"

LOGO DETAIL - SIGN #09

SCALE: 1/2" = 1'-0"

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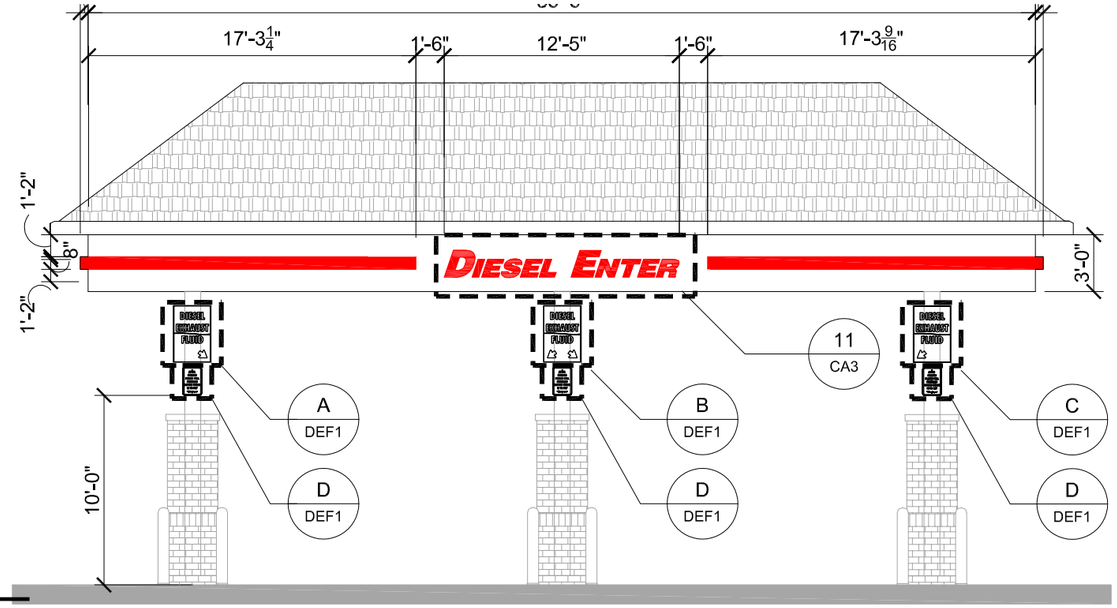
CANOPY SIGNAGE

CONVENIENCE STORE #631
W. 2BAY CW & SIDE DIESEL

Mequon Rd & Maple Rd
Germantown, WI

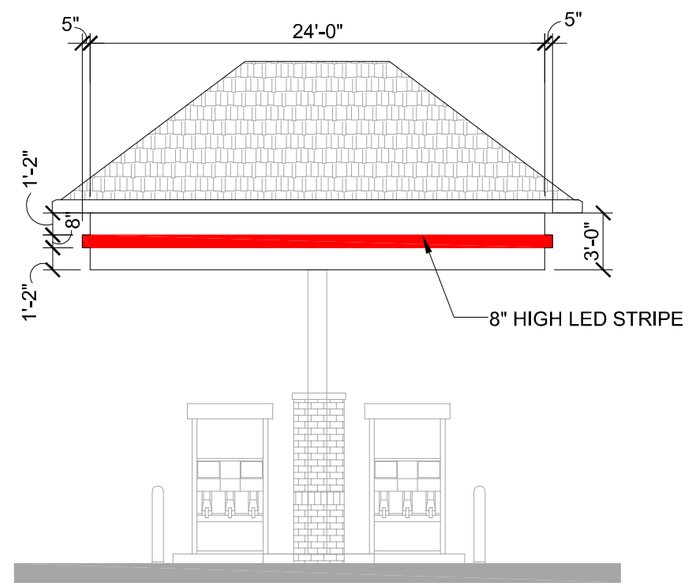
#	DATE	DESCRIPTION

DRAWN BY	XXXXXX
SCALE	MULTIPLE
PROJ. NO.	0001
DATE	2024 10-11
SHEET	CA2



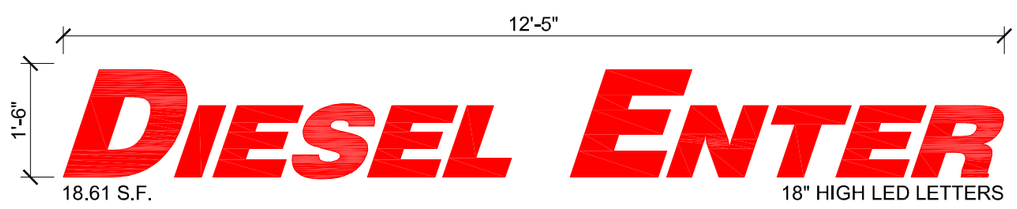
CANOPY ELEVATION

SCALE: 1/8" = 1'-0"



CANOPY ELEVATION

SCALE: 1/8" = 1'-0"



LOGO DETAIL - SIGN #10

SCALE: 1/2" = 1'-0"

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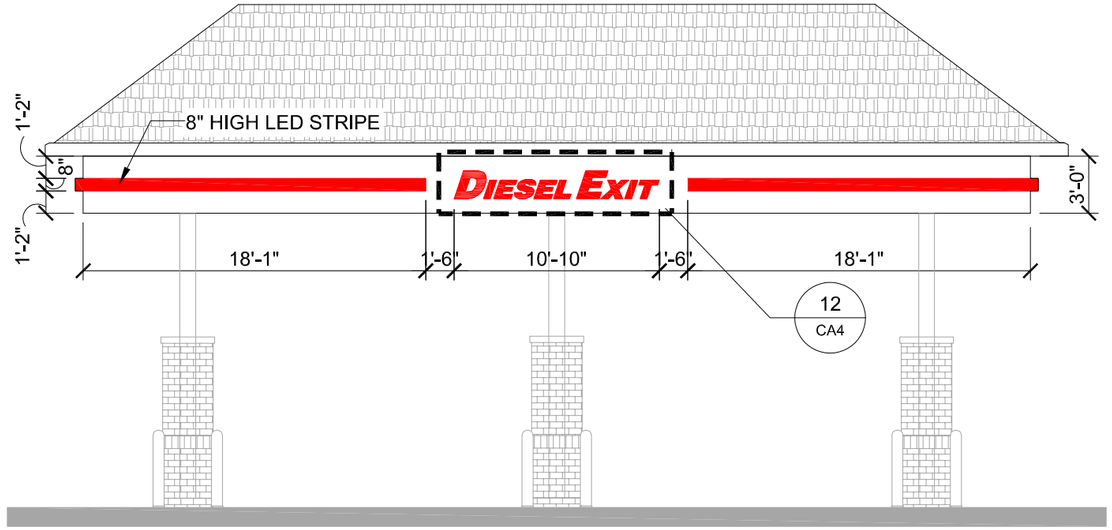
CANOPY SIGNAGE

CONVENIENCE STORE #631
W. 2BAY CW & SIDE DIESEL

Mequon Rd & Maple Rd
Germantown, WI

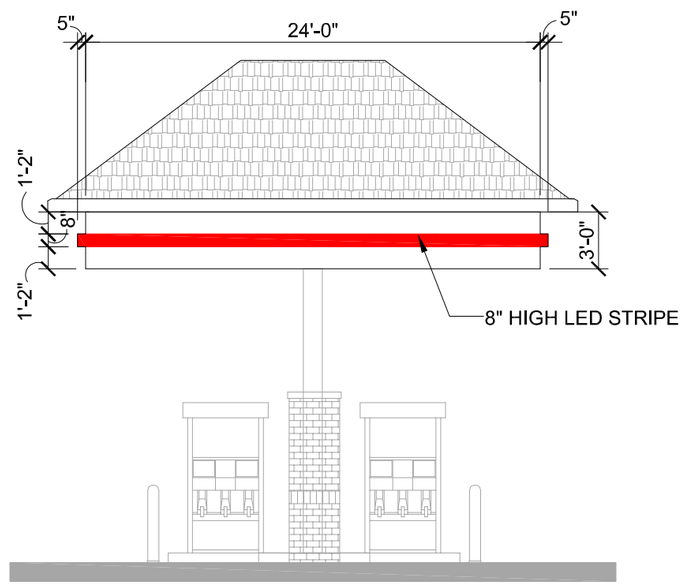
#	DATE	DESCRIPTION

DRAWN BY	X.XXXXX
SCALE	MULTIPLE
PROJ. NO.	0001
DATE	2024 10-11
SHEET	CA3



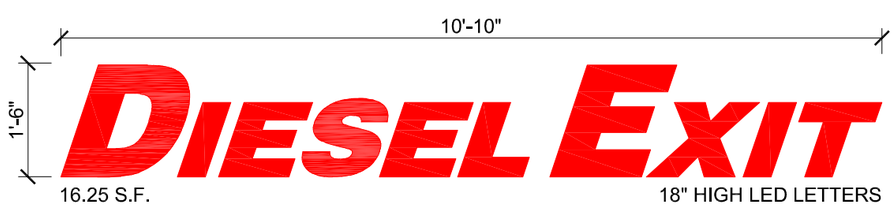
CANOPY ELEVATION

SCALE: 1/8" = 1'-0"



CANOPY ELEVATION

SCALE: 1/8" = 1'-0"



LOGO DETAIL - SIGN #11

SCALE: 1/2" = 1'-0"

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CANOPY SIGNAGE

CONVENIENCE STORE #631
W. 2BAY CW & SIDE DIESEL

Mequon Rd & Maple Rd
Germantown, WI

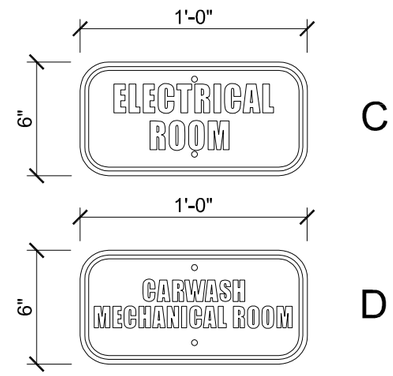
#	DATE	DESCRIPTION

DRAWN BY	X.XXXXX
SCALE	MULTIPLE
PROJ. NO.	0001
DATE	2024 10-11
SHEET	CA4

5" WHITE VINYL ADDRESS LETTERS
ON GLASS DOOR AS SHOWN ABOVE
(VERIFY ACTUAL NUMBERS WITH PROJECT MANAGER)

ADDRESS SIGN A

SCALE: 3/4" = 1'-0"



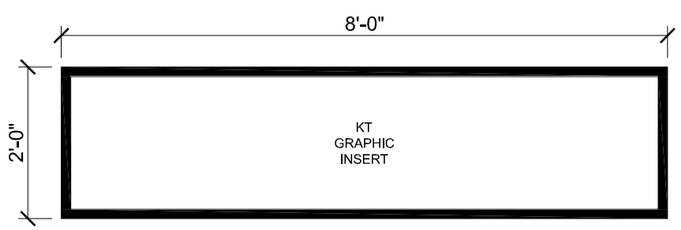
INFORMATIONAL SIGNS C & D

SCALE: 1 1/2" = 1'-0"

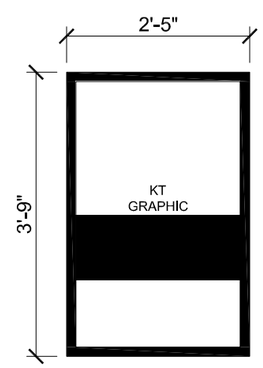
GENERAL SPECIFICATIONS

ROOM SIGNS
Qty: 3 total (different copy on each)
Size: per art
Material: white sign blank
Finish: cut vinyl

Install along with various signs for same site, crew to give to KT trim guys to install.



"SIGN F"
BLACK ALUMINUM FRAME



"SIGN G"
BLACK ALUMINUM FRAME

INFORMATIONAL SIGNS F & G

SCALE: 1/2" = 1'-0"

NON-LIT DIRECTIONAL SIGN
WHITE VINYL ON RED ALUMINUM
1'-0"H X 4'-0"W = 4.0 SQ FT
SIGN TO BE MOUNTED 48" AFF

DIRECTIONAL SIGN #02

SCALE: 3/4" = 1'-0"

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DIRECTIONAL SIGNAGE

CONVENIENCE STORE #631
W. 2BAY CW & SIDE DIESEL

Mequon Rd & Maple Rd
Germantown, WI

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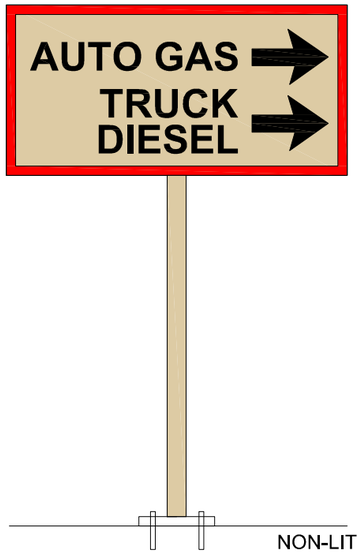
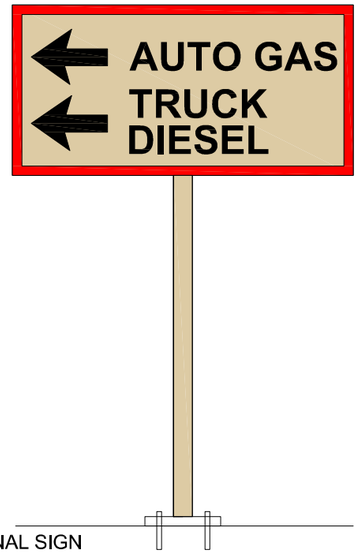
SCALE	MULTIPLE
PROJ. NO.	0001
DATE	2024 10-11
SHEET	DS1

DOUBLE SIDED DIRECTIONAL SIGN

SOUTH SIDE



NORTH SIDE



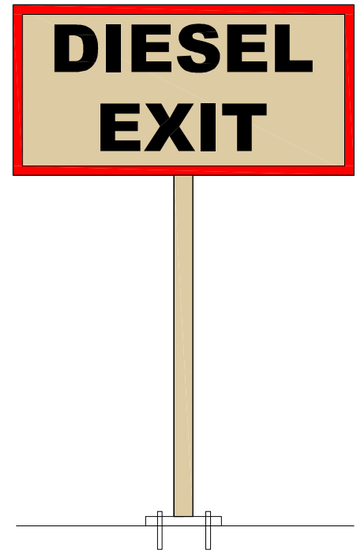
NON-LIT DIRECTIONAL SIGN
RED & BLACK VINYL ON LIGHT BEIGE ALUMINUM
1'-6"H X 3'-0"W X 4'-6"T= 4.50 SQ FT

DIRECTIONAL SIGN #13

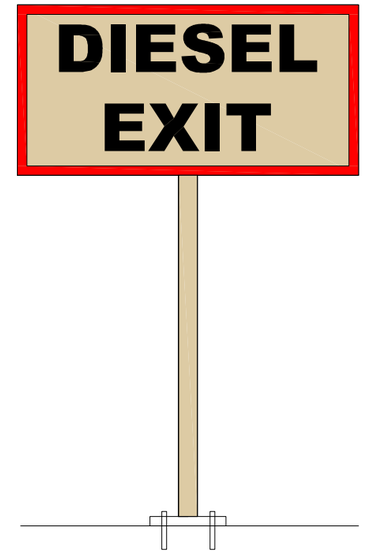
SCALE: 3/4" = 1'-0"

DOUBLE SIDED DIRECTIONAL SIGN

EAST SIDE



WEST SIDE



NON-LIT DIRECTIONAL SIGN
RED & BLACK VINYL ON LIGHT BEIGE ALUMINUM
1'-6"H X 3'-0"W X 4'-6"T= 4.50 SQ FT

DIRECTIONAL SIGN #14

SCALE: 3/4" = 1'-0"

SINGLE SIDED SIGN

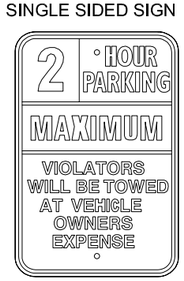
12" X 18" ALUMINUM SIGN
QTY: 4

SIGNS TO BE MOUNTED ON BUILDING NO HIGHER THAN 48" AFF

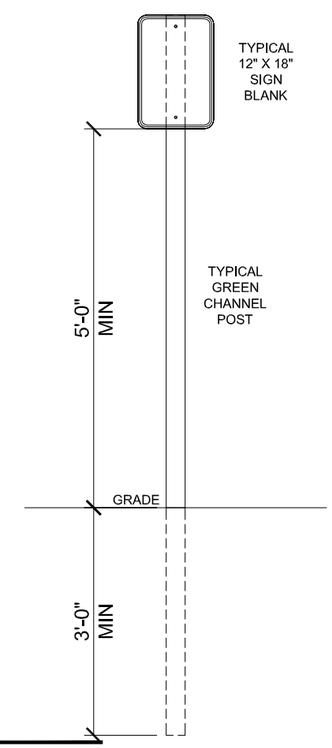
PARKING SIGN #15 - #18

SCALE: 1/2" = 1'-0"

SINGLE SIDED SIGN



12" X 18" ALUMINUM SIGN
QTY: 2



PARKING SIGNS # 19 & #20

SCALE: 1/2" = 1'-0"

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DIRECTIONAL SIGNAGE

CONVENIENCE STORE #631
W. 2BAY CW & SIDE DIESEL

Mequon Rd & Maple Rd
Germantown, WI

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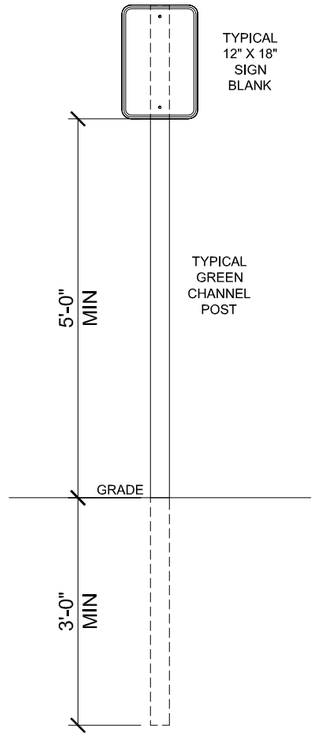
DRAWN BY	XXXXXX
SCALE	MULTIPLE
PROJ. NO.	0001
DATE	2024 10-11
SHEET	DS2

SINGLE SIDED SIGN

12" X 18" ALUMINUM SIGN
QTY: 2

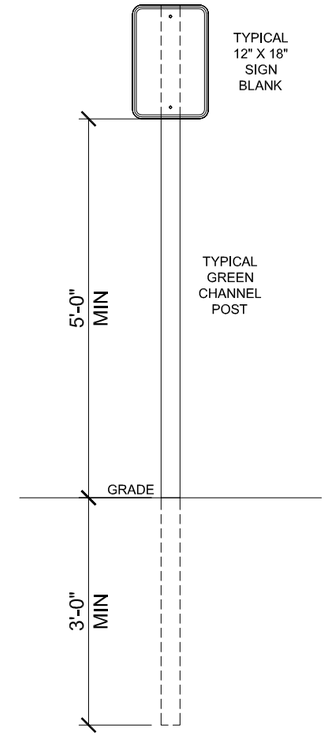


PARKING SIGNS #21 & #22

SCALE: 1/2" = 1'-0"

SINGLE SIDED SIGN

12" X 18" ALUMINUM SIGN
QTY: 7



PARKING SIGNS #23 - #29

SCALE: 1/2" = 1'-0"

#30 KWIK TRIP FREESTANDING MONUMENT SIGN

SEE ATTACHED ARTWORK

#31 KWIK TRIP FREESTANDING MONUMENT SIGN

SEE ATTACHED ARTWORK

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DIRECTIONAL SIGNAGE

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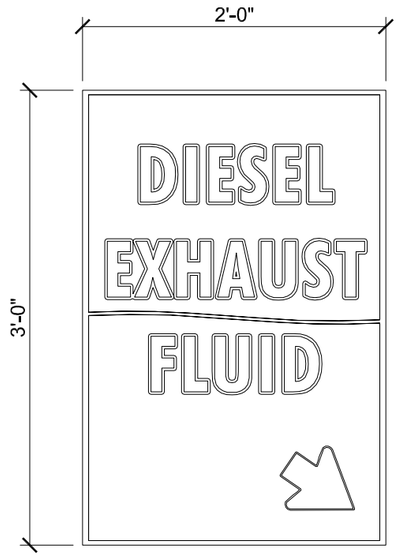
Mequon Rd & Maple Rd
Germantown, WI

#	DATE	DESCRIPTION

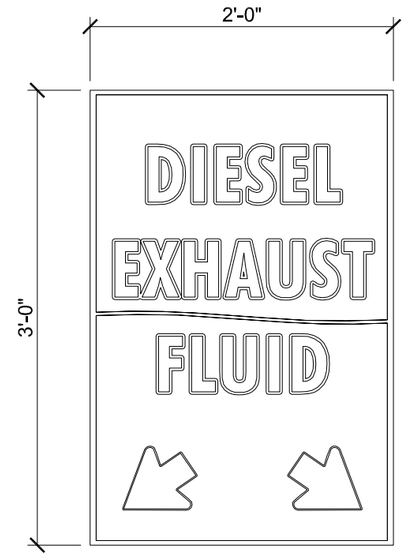
DRAWN BY	XXXXXX
SCALE	MULTIPLE
PROJ. NO.	0001
DATE	2024 10-11
SHEET	DS3



QTY: X

DEF SIGN A

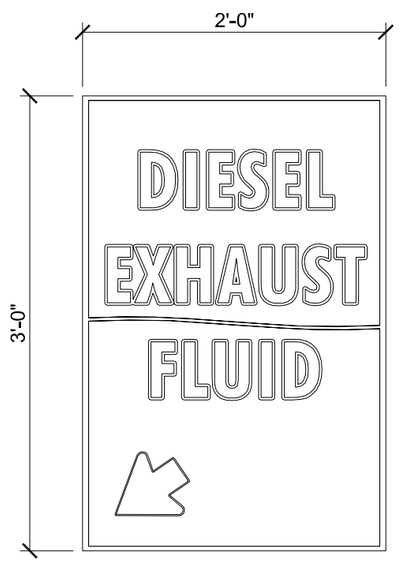
SCALE: 3/4" = 1'-0"



QTY: X

DEF SIGN B

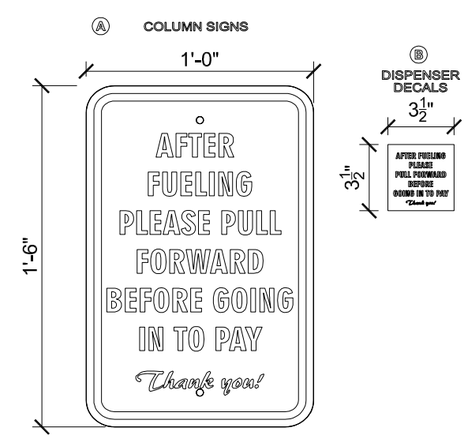
SCALE: 3/4" = 1'-0"



QTY: X

DEF SIGN C

SCALE: 3/4" = 1'-0"



PULL AHEAD SIGN D

SCALE: 1 1/2" = 1'-0"

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DEF / DSL SIGNAGE

CONVENIENCE STORE #631
W. 2BAY CW & SIDE DIESEL

Mequon Rd & Maple Rd
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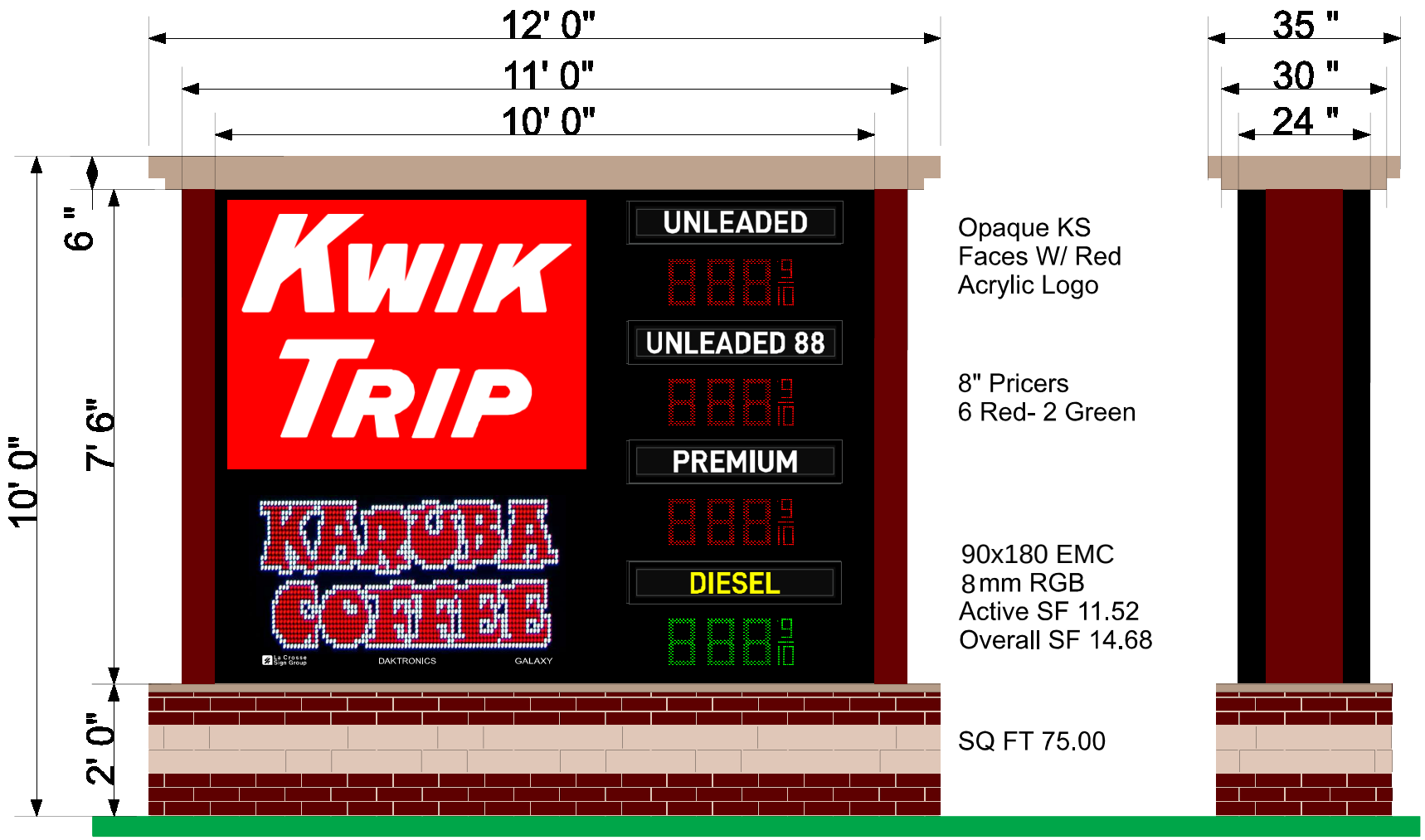
#	DATE	DESCRIPTION

DRAWN BY	XXXXXX
SCALE	MULTIPLE
PROJ. NO.	0001
DATE	2024 10-11
SHEET	DEF1

NEW DOUBLE FACED MONUMENT

#631 GERMANTOWN, WI



Opaque KS Faces W/ Red Acrylic Logo

8" Pricers
6 Red- 2 Green

90x180 EMC
8mm RGB
Active SF 11.52
Overall SF 14.68

SQ FT 75.00

Approved by:_____ Date:_____ Landlord:_____ Date:_____

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La Crosse Sign Group
1450 Oak Forest Drive • Onalaska, WI 54650 • 608-781-1450
2242 Mustang Way • Madison, WI 53718 • 608-222-5353
2502 Melby Street • Eau Claire, WI 54703 • 715-835-6189

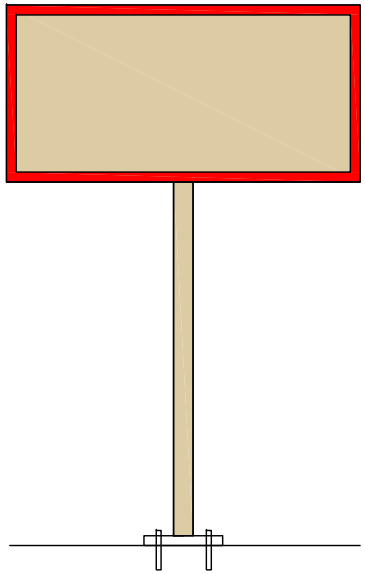
DESIGN	SALES	FILE
Drawing by: Danielle Hadley	Job Name: Kwik Trip	Revision Number:
Sign Type: Monument	Job Address:	Job File Location:
Date Created: 10/7/2018		
Last Modified: 3/28/2019	Salesperson: Cindy Bluske	
Scale: 3/8" = 1' 0"	Job Number: 102023	

COLOR KEY

*COLORS ON SKETCH ARE ONLY A REPRESENTATION. ACTUAL COLOR OF FINISHED PRODUCT MAY DIFFER

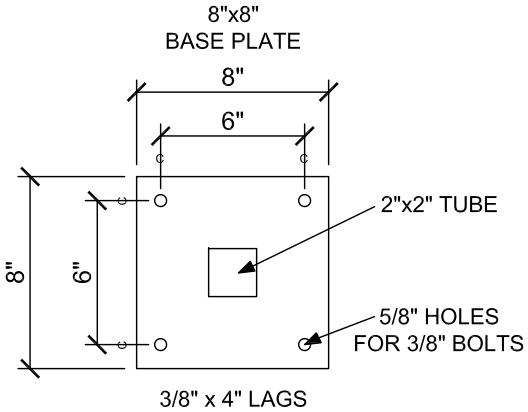
1. PPG NA 208400
2. Black S/G paint
3. NA 208080 Beige
4. #2283 Red Acrylic
5. White of Acrylic
6. Black (230-22)
7.
8.
9.
10.
11.
12.

SINGLE SIDED NON-LIT DIRECTIONAL SIGN



DIRECTIONAL SIGN EXAMPLE

SCALE: NTS



NOTES:

- Sign vendor to anchor sign/s to concrete pad
- Sign vendor to anchor signs with (4) 3/8" x 4" lags & shield anchors. Use stainless steel hardware
- Stainless steel flat washers may be used under base plate as needed to shim sign to be plumb
- Concrete Pad installed by others (Kwik Trip/Kwik Star Concrete Vendor)
  - Concrete Pad to be 5"x 36"x 36"
  - Center of footing to be installed 48" from face of curb

DIRECTIONAL SIGN BASE PLATE

SCALE: 1 1/2" = 1'-0"

KWIK TRIP	KWIK STAR	KWIK TRIP, Inc. P.O. BOX 2107 1626 OAK STREET LA CROSSE, WI 54602-2107 PH. (608) 781-8988 FAX (608) 781-8960	PROJECT: Store- All Stores Date - 08/31/2023 DESCRIPTION: All Directional signs will have a single post per the detail above	SCB #1

TRAFFIC IMPACT ANALYSIS

DATE: October 14, 2024

FOR: Jeff Osgood
Kwik Trip, Inc.

FROM: Tammi Czewski, P.E., PTOE
Traffic Analysis & Design, Inc.

SUBJECT: **Maple Road Kwik Trip Relocation Traffic Impact Analysis**
Germantown, WI

INTRODUCTION

A Kwik Trip gas station/convenience store is currently located in the southwest quadrant of the Maple Road/Lannon Road intersection in the Village of Germantown, Wisconsin (Exhibit 1). Kwik Trip, Inc. proposes to build a new, larger Kwik Trip gas station/convenience store in the northeast quadrant of the intersection, redeveloping the existing Kwik Trip site with a different commercial use. This study evaluates the traffic impacts of these development plans to study intersections along Maple Road and Mequon Road.

STUDY AREA

The study intersections are identified on Exhibit 1 and listed below:

- Maple Road & Mequon Road
- Maple Road & Kleinmann Drive/Commercial (Future Kwik Trip) Driveway
- Maple Road & Lannon Road
- Maple Road & Commerce Circle
- Mequon Road & Commercial (Future Kwik Trip) Driveway

The Maple Road/Mequon Road intersection operates with all-way stop control and the Maple Road/Lannon Road intersection operates with traffic signal control. All other study intersections operate with two-way stop control, where the stop signs are on the minor street approaches. A transportation detail illustrating the intersection lane configurations, speed limits, and approximate intersection spacing is on Exhibit 2.

Descriptions of the roadways within the study area are below.

- Lannon Road (also designated as STH 167) is a four-lane divided northeast/southwest arterial highway with a posted speed limit of 45 miles per hour (mph) within the limits of the study area. It is part of the state trunk highway network as a connecting highway under the jurisdiction of the Village of Germantown. According to WisDOT, the Year 2023 annual average daily traffic (AADT) volumes on Lannon Road were 24,300 vehicles per day (vpd) southwest of Maple Road and 18,300 vpd to the northeast. Sidewalks do not currently exist along Lannon Road within the limits of the study area.
- Maple Road is a two-lane undivided north/south roadway south of Lannon Road and a four-lane divided roadway to the north of Lannon Road with a posted speed limit of 40 mph within the limits of the study area. The Year 2023 AADT volumes along Maple Road were 8,100 vpd north of Mequon Road and 6,200 vpd south of Commerce Circle. A sidewalk exists on the west side of Maple Road between Kleinmann Drive and Lannon Road, and on the east side of Maple Road north of Mequon Road.
- Mequon Road is a two-lane undivided east/west roadway that has a 40-mph speed limit and 2023 AADT of 4,400 vpd west of Maple Road and a 30-mph speed limit and 2016 AADT of 2,800 vpd east of Maple Road.
- Kleinmann Drive and Commerce Circle are two-lane undivided roadways that connect to the west side of Maple Road and provide access for commercial developments along the roadway.

PROPOSED DEVELOPMENT

The existing Kwik Trip on Maple Road has 10 fueling positions, a convenience store, and two-bay car wash, with two access driveways to Commerce Circle. Kwik Trip will maintain ownership of this property and replace development on this site with other commercial that is not a competing land use (e.g. gas station, coffee shop, restaurant, etc.). For the purposes of this study, a bank with three drive-through lanes was estimated to replace the Kwik Trip on the existing site.

A larger, new Kwik Trip is proposed to be constructed on the now vacant 4.3-acre site previously occupied by Wisconsin Mutual Insurance (Exhibit 3). The existing insurance building will be removed and replaced with a large convenience store, 20 regular fueling positions, two diesel fueling positions, and a two-bay car wash. Access to the site remains at one location to Maple Road, directly across from Kleinmann Drive and one location to Mequon Road, just east of the Maple Road intersection. Both access driveways are unrestricted with full-access turning movements to and from the mainline roadways. This study evaluates the Maple Road access for two conditions:

- Alternative 1: Full access driveway at Maple Road
- Alternative 2: Partial access driveway (right-out only) at Maple Road

The partial access alternative assumes a physical barrier would be installed in the median on Maple Road that allows left-turns into both Kleinmann Drive and the proposed Kwik Trip driveway but restricts outbound traffic from both locations to right-out only movements.

PEAK HOUR TRAFFIC VOLUMES – NO DEVELOPMENT

Data Collection/Existing Traffic Volumes

TADI collected weekday traffic counts at the study intersections between September 23 and September 24, 2024. Traffic counts were also collected at the existing Kwik Trip driveways on Commerce Circle. Traffic counts at the Maple Road/Mequon Road intersection were collected from 6:00 a.m. to 7:00 p.m. for signal warrant studies. All other traffic counts were collected from 6:00-9:00 a.m. and from 3:00-6:00 p.m.

During the traffic count at Maple Road/Commerce Circle, field staff noted that a road closure was in place on Maple Road, south of the study area. As this road closure may have affected through traffic volumes on Maple Road, as well as turning movement patterns at the Maple Road/Lannon Road intersection, TADI obtained and compared the following additional data:

- May 2021 traffic count collected for a previous study.
- Hourly traffic volumes from the WisDOT 2023 AADT data on Maple Road and Lannon Road.
- AM peak hour verification recount at the Maple Road/Mequon Road intersection on October 11, 2024 (when the Maple Road closure was no longer in place).

Using these sets of data, it was concluded that the Maple Road closure did not significantly impact turning volumes at the Maple Road/Mequon Road intersection, as the original September count and October verification count resulted in similar traffic volumes and traffic patterns. It was also concluded that the May 2021 traffic count at the Maple Road/Lannon Road intersection had similar approach volumes on Maple Road and Lannon Road to the hourly volumes from the 2023 AADT data. Therefore, the May 2021 Maple Road/Lannon Road turning movement count replaced the September 2024 turning movement count in this study. All other turning movement counts from September 2024 were used, but through volumes on Maple Road were balanced (increased) from the May 2021 Maple Road/Lannon Road count. All traffic count data used for this study is included in Appendix A.

The combined peak hours from the turning movement counts were determined to occur from 6:45-7:45 a.m. (AM peak hour) and from 4:00-5:00 p.m. (PM peak hour). Traffic counts were compiled for these peak hours, balanced between intersections, and are shown as the Year 2024 Existing Traffic Volumes on Exhibit 4.

Forecasted Traffic Volumes

WisDOT historical AADT data available on Maple Road, Mequon Road, and Lannon Road were compiled to determine historical traffic growth trends in the study area. From the available data (2004 to 2023), traffic growth on Maple Road ranges from 0.5% (north of Mequon Road) to 2.0% (south of Commerce Circle) per year, traffic growth on Lannon Road averages at 1.0% per year, and traffic growth on Mequon Road averages at 0.% per year (traffic volumes have consistently declined over time). The historical AADT data and growth trend graph is on Exhibit 5.

These growth rates were applied to the study area roadways for a five-year period and traffic was balanced between intersections. The resulting Year 2029 Future Traffic Volumes evaluated in this study are on Exhibit 6.

PEAK HOUR TRAFFIC VOLUMES – RELOCATED KWIK TRIP DEVELOPMENT

Existing Kwik Trip Traffic Removals

Build traffic volumes evaluated in this study include the removal of the existing Kwik Trip development volumes from the roadway system, additional traffic from proposed new commercial (bank) development on the existing Kwik Trip site, and additional traffic from the larger, new Kwik Trip development north of Lannon Road.

Based on the Kwik Trip driveway counts at Commerce Circle, the existing Kwik Trip development generates 305 trips during the weekday AM peak hour and 260 trips during the weekday PM peak hour (Exhibit 7A). Gas station developments typically generate a relatively high volume of pass-by trips (trips that are already on the roadway system but divert into the site before continuing on their original route). Using WisDOT pass-by trip allowances, pass-by trips for the existing Kwik Trip site were estimated as 55% of the total site trips.

Trip distributions for the Kwik Trip site were first based on the distribution of traffic turning at the Maple Road/Commerce Circle intersection, and then on the distribution of traffic turning at the remaining study intersections. So as not to generate negative trips for any one movement (after removing the Kwik Trip trips from the study intersections), different trip distributions were developed separately for the AM and PM peak hours. The new and pass-by trip distributions estimated for the existing Kwik Trip site are shown below the trip generation table on Exhibit 7A. These trip removals were assigned to the intersections as shown on Exhibit 7B (Existing Kwik Trip New Trips) and on Exhibit 7C (Existing Kwik Trip Pass-by Trips).

Future Commercial (Bank) Traffic

At this time, no specific commercial development user has been identified for the existing Kwik Trip site in the southwest quadrant of the Maple Road/Lannon Road intersection. For this study, a bank was estimated as a potential future development use. Trips for the bank development were generated from the *ITE Trip Generation Manual, 11th Edition*. Based on ITE, a bank with three drive-through lanes generates 390 weekday daily trips, with 25 trips in the AM peak hour and 80 trips in the PM peak hour (Exhibit 8A). Using WisDOT pass-by trip allowances, pass-by trips for the bank were estimated at 35% of the total site trips.

The new and pass-by trip distributions estimated for the existing Kwik Trip development were applied to the new bank trips (Exhibit 8A). The new and pass-by bank trips were assigned to the study intersections based on these trips distributions and are shown on Exhibit 8B (Bank Development New Trips) and on Exhibit 7C (Bank Development Pass-by Trips).

Relocated Kwik Trip Traffic

Trip generation for the relocated Kwik Trip was based on WisDOT fitted curve equations applied to the 22 total fueling stations proposed for the site. The WisDOT fitted curve equations are from the October 20, 2022 trip generation guidance for Convenience Store/Gas Station Land Use. Based on WisDOT equations, a 22-fueling position gas station/convenience store with a store size greater than 6,000 square feet, and in an area with a population greater than 300,000 generates 4,640 trips during a typical weekday with 335 trips in the weekday AM peak hour and 335 trips in the weekday PM peak hour (Exhibit 9A). Compared to the existing Kwik Trip site, the larger, relocated Kwik Trip generates about 10% (30) more trips during the weekday AM peak hour and about 29% (75) more trips during the weekday PM peak hour. Using WisDOT pass-by trip allowances, pass-by trips for the relocated Kwik Trip site were estimated as 55% of the total site trips.

The new trip distributions estimated for the existing Kwik Trip development were applied to the relocated Kwik Trip trips (Exhibit 9A). Pass-by trips, however, were recalculated based on existing peak hour traffic patterns on Mequon Road and Maple Road north of Lannon Road. The higher traffic volumes on Maple Road, north of Lannon Road, the proximity to the Maple Road/Mequon Road intersection, and the secondary access via the Mequon Road/Lannon Road intersection are expected to result in different pass-by trip patterns that is generated by the existing Kwik Trip store.

The new and pass-by bank trips were assigned to the study intersections based on the estimated trip distributions and are shown Exhibit 9B (Relocated Kwik Trip New Trips – Alternative 1), Exhibit 9C (Relocated Kwik Trip Pass-by Trips – Alternative 1), Exhibit 9D (Relocated Kwik Trip New Trips – Alternative 2), and Exhibit 9E (Relocated Kwik Trip Pass-by Trips – Alternative 2).

Driveway Traffic Volumes

The existing new and pass-by Kwik Trip trips (to be removed), bank trips, and relocated Kwik Trip trips were added together to identify the total trip impact with the proposed development plans. These are identified as the Development Driveway trips. The Development Driveway Trips are on Exhibit 10 (Alternative 1) and on Exhibit 11 (Alternative 2).

Build Traffic Volumes

The Development Driveway Trips for Alternatives 1 and 2 were added to the Year 2029 Future Traffic Volumes to generate the Year 2029 Build Traffic Volumes. The Year 2029 Build Traffic Volumes are on Exhibit 12 (Alternative 1) and on Exhibit 13 (Alternative 2).

PEAK HOUR TRAFFIC OPERATIONS & QUEUES

The study intersections were analyzed using the Synchro 12 traffic analysis model (outputs based on the *Highway Capacity Manual, 7th Edition*) and the peak hour turning movement volumes estimated for each intersection. Intersection operation is defined by "level of service." Level of Service (LOS) is a quantitative measure that refers to the overall quality of flow at an intersection ranging from very good, represented by LOS 'A', to very poor, represented by LOS 'F'. For the purposes of this study, LOS D or better was used to define acceptable peak hour operating conditions. The LOS definitions for signalized and unsignalized intersections are included before the Year 2024 Existing analysis output in Appendix B.

The analyses were completed using the existing geometrics and traffic control, existing peak hour factors and heavy vehicles, WisDOT right-turn on red adjustment factors and WisDOT Saturation Flow Rate values (Appendix B).

Traffic Operations – Existing & Future Traffic Volumes (No Development)

The peak hour traffic operations (LOS, delays, and 95th percentile queues) with the existing transportation system are in tables on Exhibit 14 (Year 2024 Existing Traffic) and on Exhibit 15 (Year 2929 Future Traffic). The Maple Road/Mequon Road intersection operates with movements over capacity and at LOS E/F conditions during the weekday AM peak hour, and the Maple Road/Lannon Road intersection operates with a westbound left-turn movement that is at LOS E during the weekday PM peak hour. Queues for the eastbound left-turn movement at this intersection are reported as 300 feet during the weekday AM peak hour, but theoretically infinite.

Adding additional green time to the left-turn lanes at the Maple Road/Lannon Road intersection mitigates delays and queues to acceptable levels. Reversing eastbound and westbound lane configurations on Mequon Road and installing traffic signals at the Maple Road/Mequon Road intersection mitigates the LOS E and F delays. Based on a signal warrant analysis (see the Warrant Analysis section of this report), peak hour and crash warrants are currently met, justifying traffic signal installation at this intersection.

The Year 2029 Future Traffic Volumes were evaluated with the modified geometrics and traffic control. These improvements result in acceptable queues and delays (LOS D or better) with all movements under capacity during the weekday AM and PM peak hours (Exhibit 16).

The Synchro analysis files for the Year 2024 Existing Traffic Volumes are in Appendix B. The Synchro analysis files for the Year 2029 Future Traffic Volumes are in Appendix C.

Traffic Operations – Build Volumes (Relocated Kwik Trip)

The Year 2029 Build Traffic Volumes for access Alternatives 1 and 2 were modeled with the recommended modifications for the Existing and Future traffic conditions. Based on right-turn lane warrants (see the Warrant Analysis section of this report), a northbound right-turn lane was modeled on Maple Road at the relocated Kwik Trip driveway across from Kleinmann Drive. With the Existing/Future and Build modifications, all study intersections operate with all movements under capacity and with acceptable peak hour queues and delays for both Alternative 1 (Exhibit 17) and Alternative 2 (Exhibit 18). The Synchro analysis files for the Year 2029 Build Traffic Volumes are in Appendix C.

WARRANT ANALYSIS

Right-Turn Lane Warrant – Maple Road/Relocated Kwik Trip Driveway

A right-turn lane warrant analysis was completed to determine if a northbound right-turn lane should be added on Maple Road at the relocated Kwik Trip driveway across from Kleinmann Drive. The turn lane warrant is based approaching and right-turn traffic volumes and a 45-mph roadway design speed (five mph over the posted speed limit). Based on the warrant analysis, a right-turn lane is warranted and recommended to be constructed on Maple Road with buildout of the relocated Kwik Trip development.

Traffic Signal Warrant Analysis – Maple Road/Mequon Road

A traffic signal warrant analysis was completed for the Maple Road/Mequon Road intersection to determine if signals are warranted for mitigating existing and future delays and crashes. Traffic signal warrant studies are based on traffic volume and other warranting criterion from the *Manual on Uniform Traffic Control Devices* (MUTCD). Chapter 4C of the MUTCD outlines the standards for determining the need for traffic signals at a particular location.

The parameters used for the warrant analyses at the Maple Road/Mequon Road intersection are:

- Volume warrant thresholds were based on a four-leg intersection with two-lane major street approaches and one-lane minor street approaches. Due to the presence of an eastbound and westbound right-turn lane, 0% of the minor street right-turn volumes were included.
- The posted speed limit on the major street (Maple Road) is 40 mph; therefore, no reduction of volume thresholds was applied.

The intersection currently operates with all-way stop sign control, and with four-lane northbound and southbound approaches. Due to the wide multi-lane approaches, the high peak traffic volumes to and from the light industrial development to the north, and the comparatively low eastbound and westbound traffic volumes, a relatively high number of crashes occur during a 12-month period.

During the traffic counts, field staff noted that northbound and southbound traffic on Maple Road frequently did not stop at the stop signs when traveling through the intersection. Crash reports at this intersection (collected from January 2019 through September 2024) confirmed that this behavior caused right and left-angle crashes that are correctable with traffic signal control. Other causes of the angle crashes were from vehicles in adjacent lanes blocking visibility, or confusion over right-of-way (who's turn to go). Since at least five crashes of the type susceptible to correction by signal in a 12-month period have occurred, Warrant 7, Crash Experience is met.

Although traffic volumes aren't high enough to meet volume requirements for Warrants 1, 2, or 3, the major street approach experiences nearly 10 vehicle-hours of delay during the weekday AM peak hour, exceeding the delay threshold for Warrant 3, Peak Hour Volume. Note that the delay threshold for Warrant 3 typically applies to the stop-controlled, minor street approach, but is applied to the major street in this case since all approaches operate with stop control. Warrant 3 is applicable for warranting traffic signals as traffic flow through the intersection is highly impacted by the traffic surges to and from the light industrial development, which creates significant shift-work traffic patterns during the peak hours.

The hourly traffic volumes, signal warrant analysis, and crash analysis for the Maple Road/Mequon Road intersection are in Appendix E.

RECOMMENDATIONS

Based on the results of the traffic analysis, the following modifications are recommended (shown graphically on Exhibit 19). Modifications are divided into two categories: modifications required to mitigate existing/non-development issues and modifications required to accommodate the proposed development changes with the relocation of Kwik Trip to the north side of Lannon Road.

Recommended modifications are for jurisdictional consideration and are not legally binding. The Village of Germantown reserves the right to determine alternative solutions.

Existing/Future (No Development) Recommendations

- Install traffic signal control at the Maple Road/Mequon Road intersection that is coordinated during the peak hours with the adjacent traffic signal at Maple Road/Lannon Road.
- With traffic signal control at the Maple Road/Mequon Road intersection, reverse the eastbound and westbound approach lanes from a shared left-turn/through plus right-turn lane to a left-turn lane plus shared through/right-turn lane.

Build (Relocated Kwik Trip Development) Recommendations

- Allow full-access turning movements at the relocated Kwik Trip driveways to both Maple Road and Mequon Road.
- Provide a northbound right-turn lane on Maple Road at the relocated Kwik Trip driveway across from Kleinmann Drive.

CONCLUSIONS

With the above modifications, the study intersections operate under capacity, with acceptable delays and queues during the peak hours.

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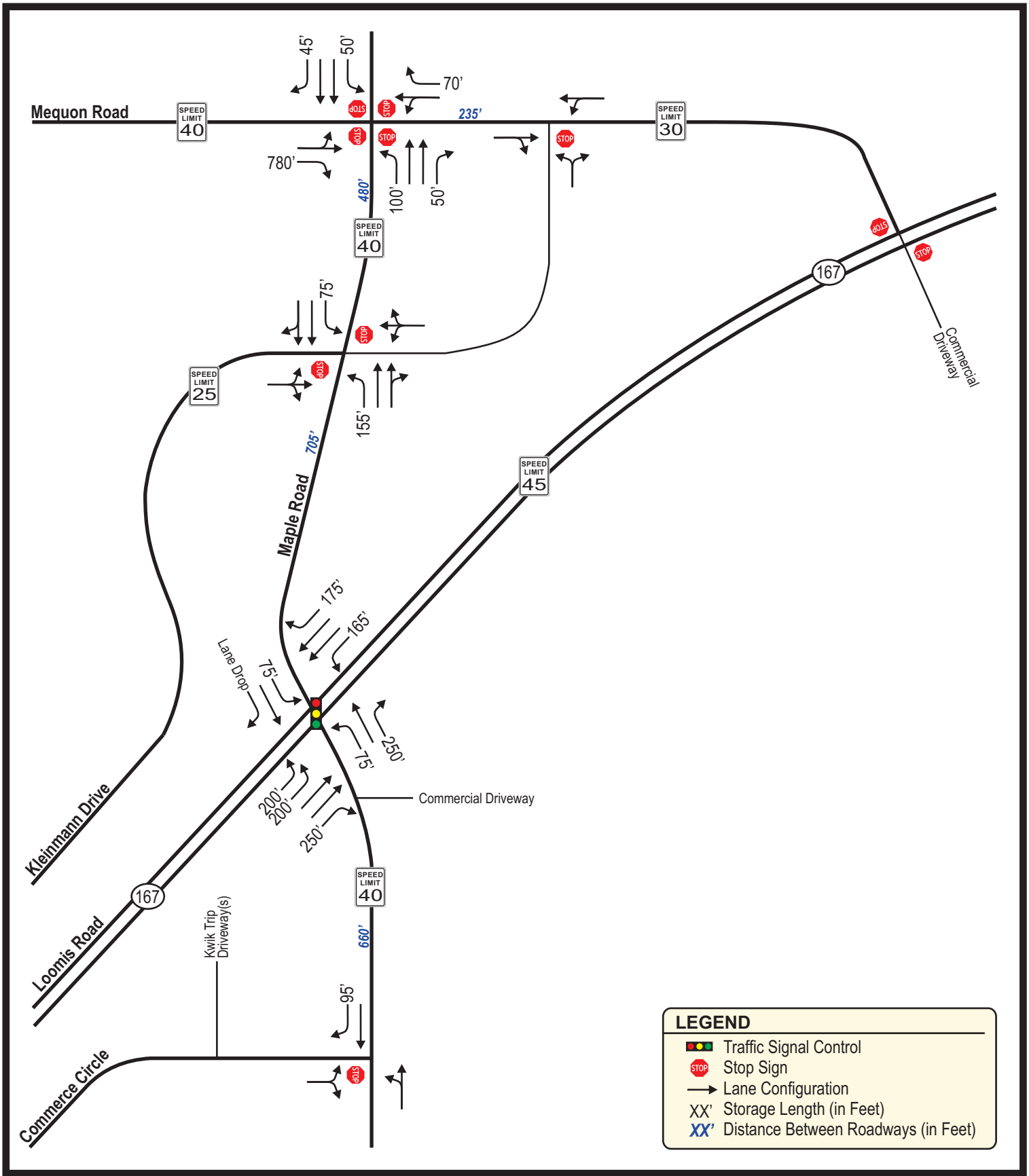
#3347 - 10/14/24

N
NOT TO SCALE

EXHIBIT 1
STUDY AREA MAP

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN



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N
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EXHIBIT 2
EXISTING TRANSPORTATION SYSTEM

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

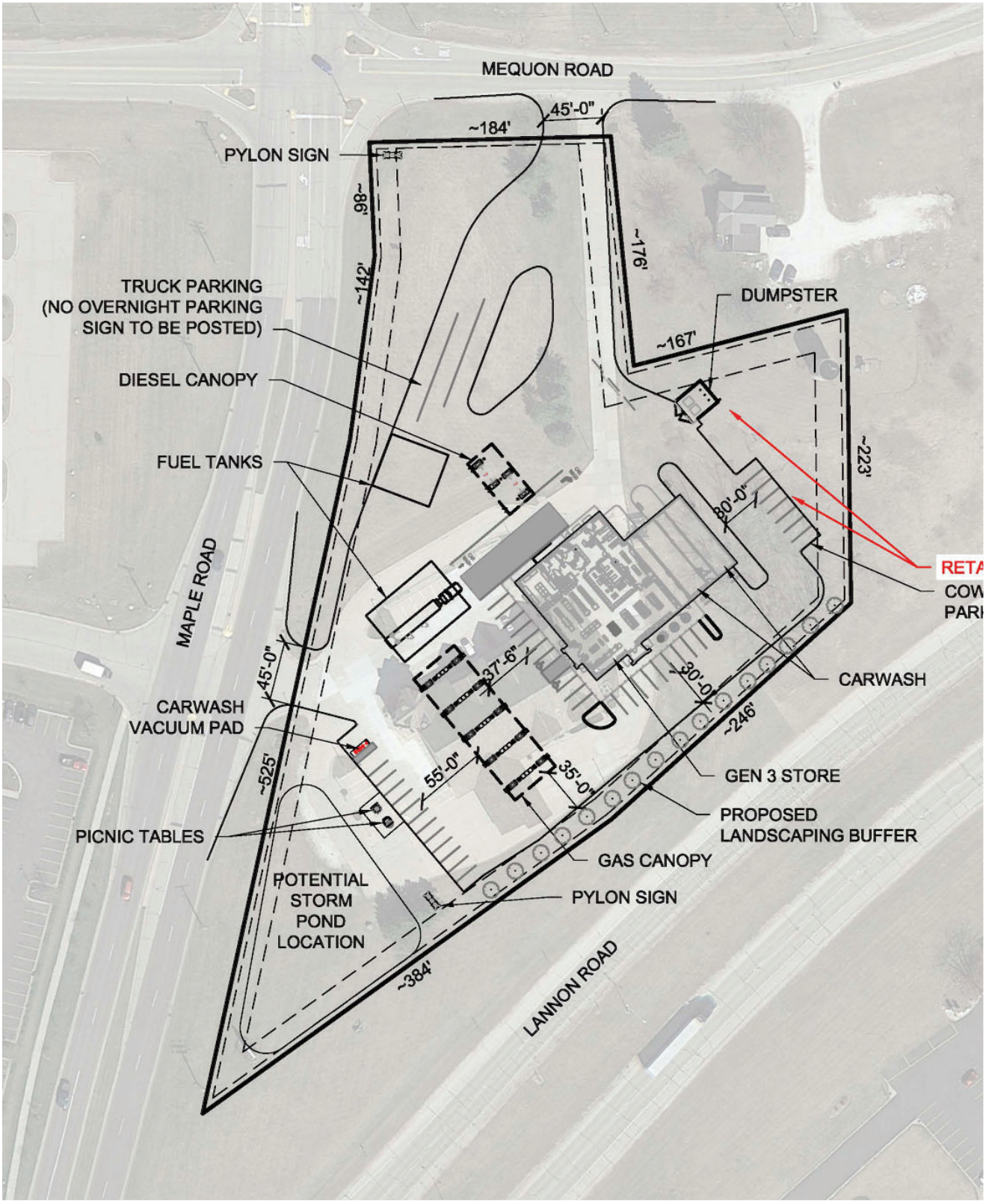

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EXHIBIT 3
CONCEPTUAL SITE PLAN

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

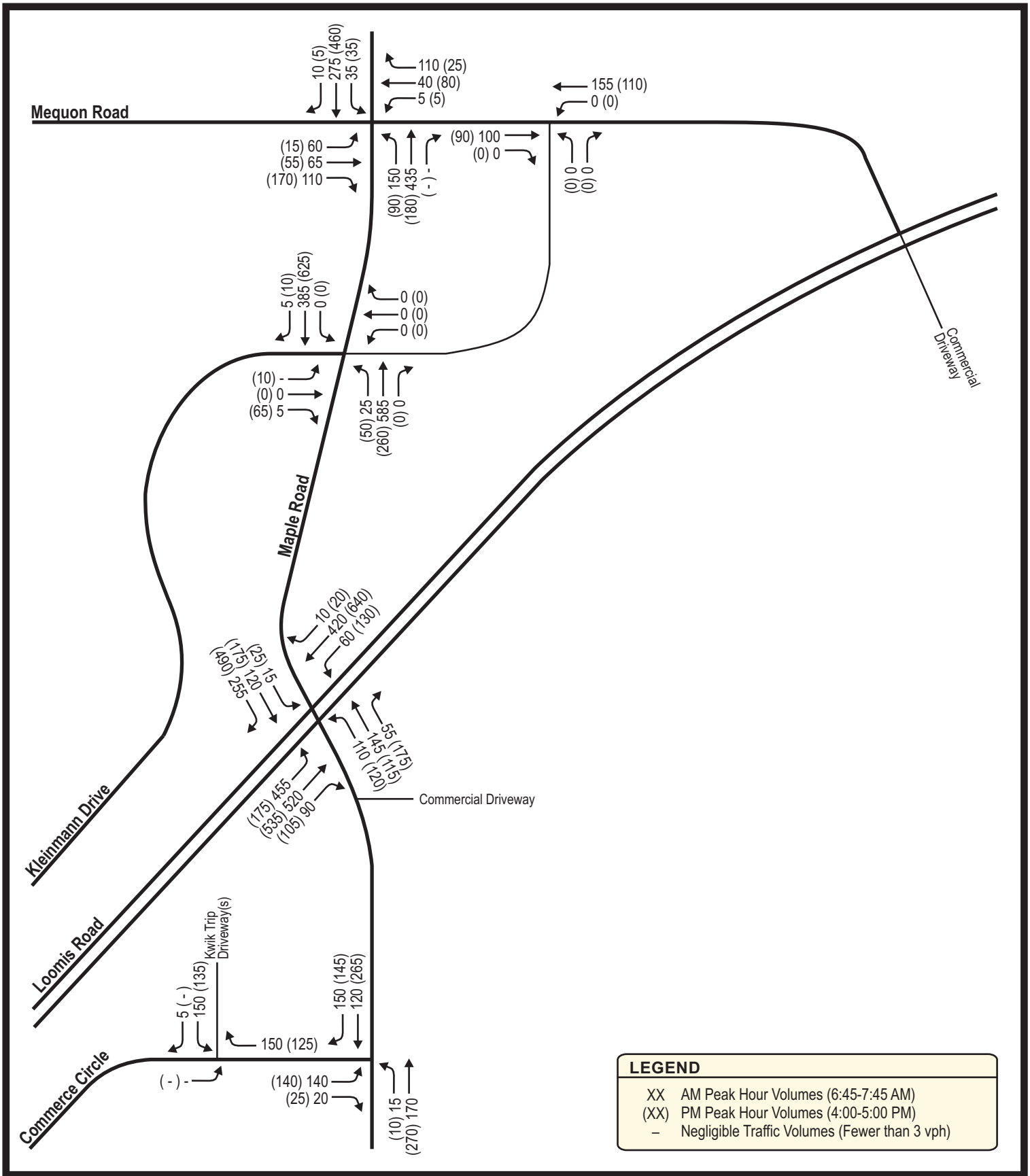

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EXHIBIT 4
YEAR 2024 EXISTING TRAFFIC VOLUMES
(NO RELOCATED KWIK TRIP)

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

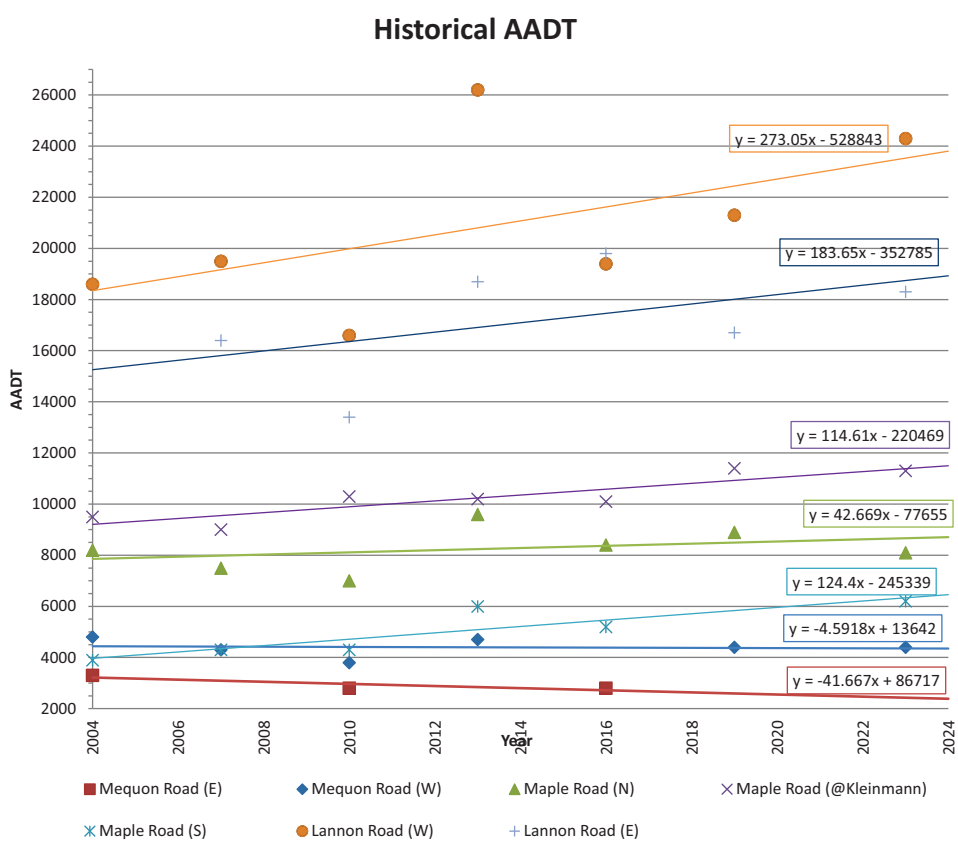
Historical AADT							
Year	Mequon Road (W)	Mequon Road (E)	Maple Road (N)	Maple Road (@Kleinmann)	Maple Road (S)	Lannon Road (W)	Lannon Road (E)
2000							
2001							
2002							
2003							
2004	4800	3300	8200	9500	3900	18600	
2005							
2006							
2007	4300		7500	9000	4300	19500	16400
2008							
2009							
2010	3800	2800	7000	10300	4300	16600	13400
2011							
2012							
2013	4700		9600	10200	6000	26200	18700
2014							
2015							
2016		2800	8400	10100	5200	19400	19800
2017							
2018							
2019	4400		8900	11400		21300	16700
2020							
2021							
2022							
2023	4400		8100	11300	6200	24300	18300
2024							

Trendline Growth Rate							
	Mequon Road (W)	Mequon Road (E)	Maple Road (N)	Maple Road (@Kleinmann)	Maple Road (S)	Lannon Road (W)	Lannon Road (E)
Liner Eqn.	y = -4.592x13642	y = -41.667x86717	y = 42.669x-77655	y = 114.610x-220469	y = 124.400x-245339	y = 273.050x-528843	y = 183.650x-352785
2024	4350	2380	8710	11500	6450	23810	18920
2029	4330	2170	8920	12070	7070	25180	19840
5-Yr Increase	-0.5%	-8.8%	2.4%	5.0%	9.6%	5.8%	4.9%
Growth/year	-0.09%	-1.76%	0.48%	0.99%	1.92%	1.15%	0.97%
Study %GR	**0.00%**	**0.00%**	**0.50%**	**1.00%**	**2.00%**	**1.00%**	**1.00%**

Notes:

2029 AADT volumes were calculated from linear trendline equations from historical AADT values.

Study %GR was applied to the Existing 2024 turning movement traffic counts in the Germantown Kwik Trip TIA.

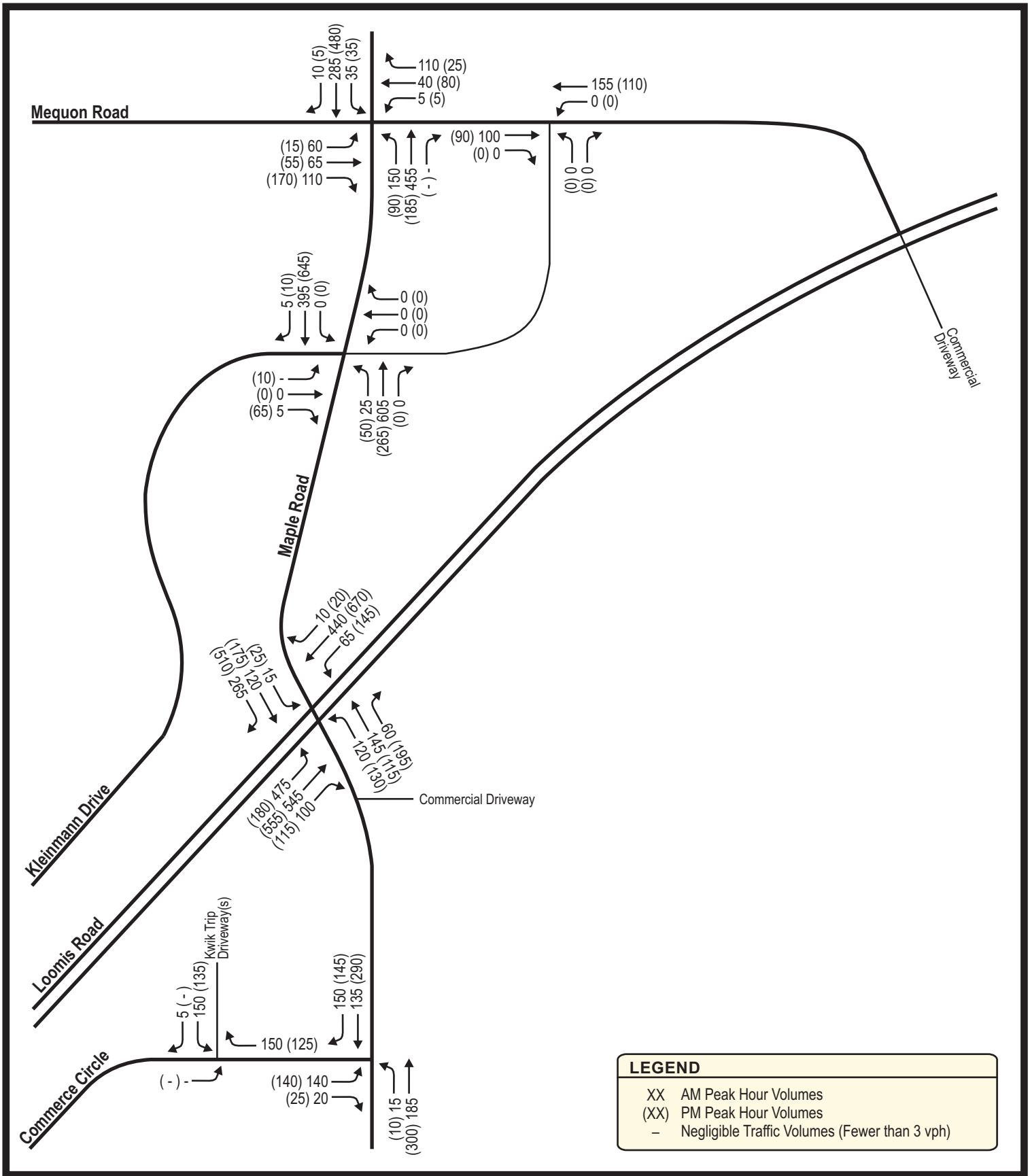


TADI TRAFFIC ANALYSIS & DESIGN, INC.

#3347 - 10/14/24

EXHIBIT 5
TRAFFIC FORECASTING

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN



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#3347 - 10/14/24

N
NOT TO SCALE

EXHIBIT 6
YEAR 2029 FUTURE TRAFFIC VOLUMES
(NO RELOCATED KWIK TRIP)

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

Existing Kwik Trip - Trip Generation

Land Use	ITE Code	Proposed Size	Weekday Daily	AM Peak In	AM Peak Out	AM Peak Total	PM Peak In	PM Peak Out	PM Peak Total
Existing Kwik Trip	N/A	10 Fuel Positions		150	155	305	125	135	260
Total Driveway Trips			**2,910**	**150**	**155**	**305**	**125**	**135**	**260**
Pass-by Trips[2]	*N/A*	*55%*	1,600	85	85	170	70	70	140
New Trips			1,310	65	70	135	55	65	120

TRIP DISTRIBUTION (New Trips)					
W. on Mequon Road	11% (9%)	10	10	5	5
E. on Mequon Road	0% (0%)	0	0	0	0
W. on Lannon Road	31% (24%)	25	25	15	15
E. on Lannon Road	18% (33%)	5	0	20	20
N. on Maple Road	30% (22%)	20	25	10	15
S. on Maple Road	11% (11%)	5	5	5	10
W. on Commerce Circle	0% (0%)	0	5	0	0
	AM (PM)	***65***	***70***	***55***	***65***

TRIP DISTRIBUTION (Pass-by Trips)					
EB Lannon Road	40% (35%)	35	35	25	25
WB Lannon Road	30% (45%)	25	25	30	30
NB on Maple Road	10% (5%)	10	10	5	5
SB on Maple Road	20% (15%)	15	15	10	10
	AM (PM)	***85***	***85***	***70***	***70***

TADI
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#3347 - 10/14/24

N
NOT TO SCALE

EXHIBIT 7A
TRIP GENERATION & TRIP DISTRIBUTION
EXISTING KWIK TRIP (TO BE REMOVED)

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

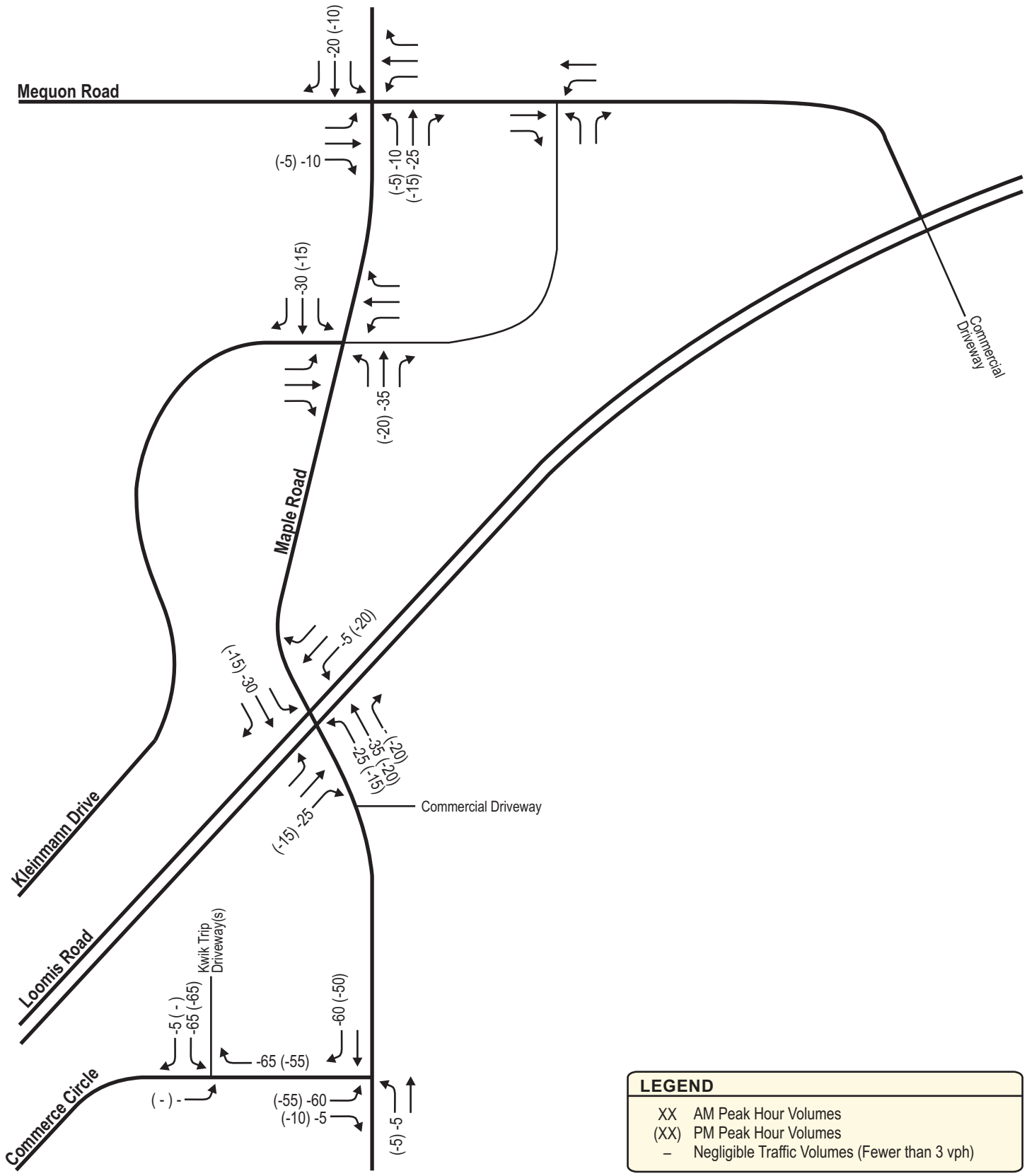

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EXHIBIT 7B
EXISTING PEAK KWIK TRIP NEW TRIPS REMOVED FROM THE STUDY INTERSECTIONS

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

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EXHIBIT 7C
EXISTING PEAK KWIK TRIP PASS-BY TRIPS REMOVED FROM THE STUDY INTERSECTIONS

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

New Bank (Existing Kwik Trip Site) - Trip Generation[1]

Land Use	ITE Code	Proposed Size	Weekday Daily	AM Peak In	AM Peak Out	AM Peak Total	PM Peak In	PM Peak Out	PM Peak Total
Drive-in Bank	912	3 Lanes	390 FCE	15 (61%)	10 (39%)	25 FCE	40 (49%)	40 (51%)	80 (27.07)
Total Driveway Trips			**390**	**15**	**10**	**25**	**40**	**40**	**80**
Pass-by Trips[2]		35%	140	5	5	10	15	15	30
New Trips			250	10	5	15	25	25	50

[1] *Trip Rates (X.XX) and/or Fitted Curve Equations (FCE) are from the ITE Trip Generation Manual, 11th Edition.*
[2] *Pass-by trip percentages are based on the maximum WisDOT values for the land use type.*
[3] *New trips distribution based on distribution calculated for the existing Kwik Trip on the same site.*

TRIP DISTRIBUTION (New Trips)[3]

W. on Mequon Road	11% (9%)	0	0	5	5
E. on Mequon Road	0% (0%)	0	0	0	0
W. on Lannon Road	31% (24%)	5	5	5	5
E. on Lannon Road	18% (33%)	0	0	5	5
N. on Maple Road	30% (22%)	5	0	5	5
S. on Maple Road	11% (11%)	0	0	5	5
	AM (PM)	***10***	***5***	***25***	***25***

TRIP DISTRIBUTION (Pass-by Trips)

EB Lannon Road	40% (35%)	5	5	5	5
WB Lannon Road	30% (45%)	0	0	5	5
NB on Maple Road	10% (5%)	0	0	0	0
SB on Maple Road	20% (15%)	0	0	5	5
	AM (PM)	***5***	***5***	***15***	***15***

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EXHIBIT 8A
TRIP GENERATION & TRIP DISTRIBUTION
BANK DEVELOPMENT

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

LEGEND

XX	AM Peak Hour Volumes
(XX)	PM Peak Hour Volumes
–	Negligible Traffic Volumes (Fewer than 3 vph)

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EXHIBIT 8B
BANK DEVELOPMENT NEW TRIPS

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

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EXHIBIT 8C
BANK DEVELOPMENT PASS-BY TRIPS

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

New Kwik Trip - Trip Generation Table [1]

Land Use	ITE Code	Proposed Size	Weekday Daily	AM Peak In	AM Peak Out	AM Peak Total	PM Peak In	PM Peak Out	PM Peak Total
Super Convenience Market/Gas Station (Store Category 3, Pop≥300k)	WisDOT	22 Fuel Positions	4,640 FCE	170 (51%)	165 (49%)	335 FCE	170 (50%)	165 (50%)	335 FCE
Total Driveway Trips			**4,640**	**170**	**165**	**335**	**170**	**165**	**335**
Pass-by Trips[2]		55%	2,550	90	90	180	90	90	180
New Trips			7,190	80	75	155	80	75	155
Existing Kwik Trip				150	155	305	125	135	260
Trip Difference				20	10	30	45	30	75
% Change						10%			29%

[1] Fitted Curve Equations (FCE) are from the October 20, 2022 trip generation guidance for the Convenience Store/Gas Station Land Use.

[2] Pass-by trip percentages are based on the maximum WisDOT values for the land use type.

[3] New trips distribution based on distribution calculated for the existing Kwik Trip. Pass-by trips were recalculated based on existing traffic patterns

TRIP DISTRIBUTION (New Trips) [3]

W. on Mequon Road	11% (9%)	10	10	5	5
W. on Lannon Road	31% (24%)	25	25	20	20
E. on Lannon & Mequon Rds	18% (33%)	15	15	25	25
N. on Maple Road	30% (22%)	25	20	20	15
S. on Maple Road	11% (11%)	5	5	10	10
	100%	***80***	***75***	***80***	***75***

TRIP DISTRIBUTION (Pass-by Trips) [3]

NB on Maple Road	25% (10%)	20	20	10	10
SB on Maple Road	10% (25%)	10	10	20	20
EB on Lannon Road	35% (25%)	30	30	25	25
WB on Lannon Road	20% (30%)	20	20	25	25
EB Mequon Road	5% (5%)	5	5	5	5
WB Mequon Road	5% (5%)	5	5	5	5
	AM (PM)	***90***	***90***	***90***	***90***

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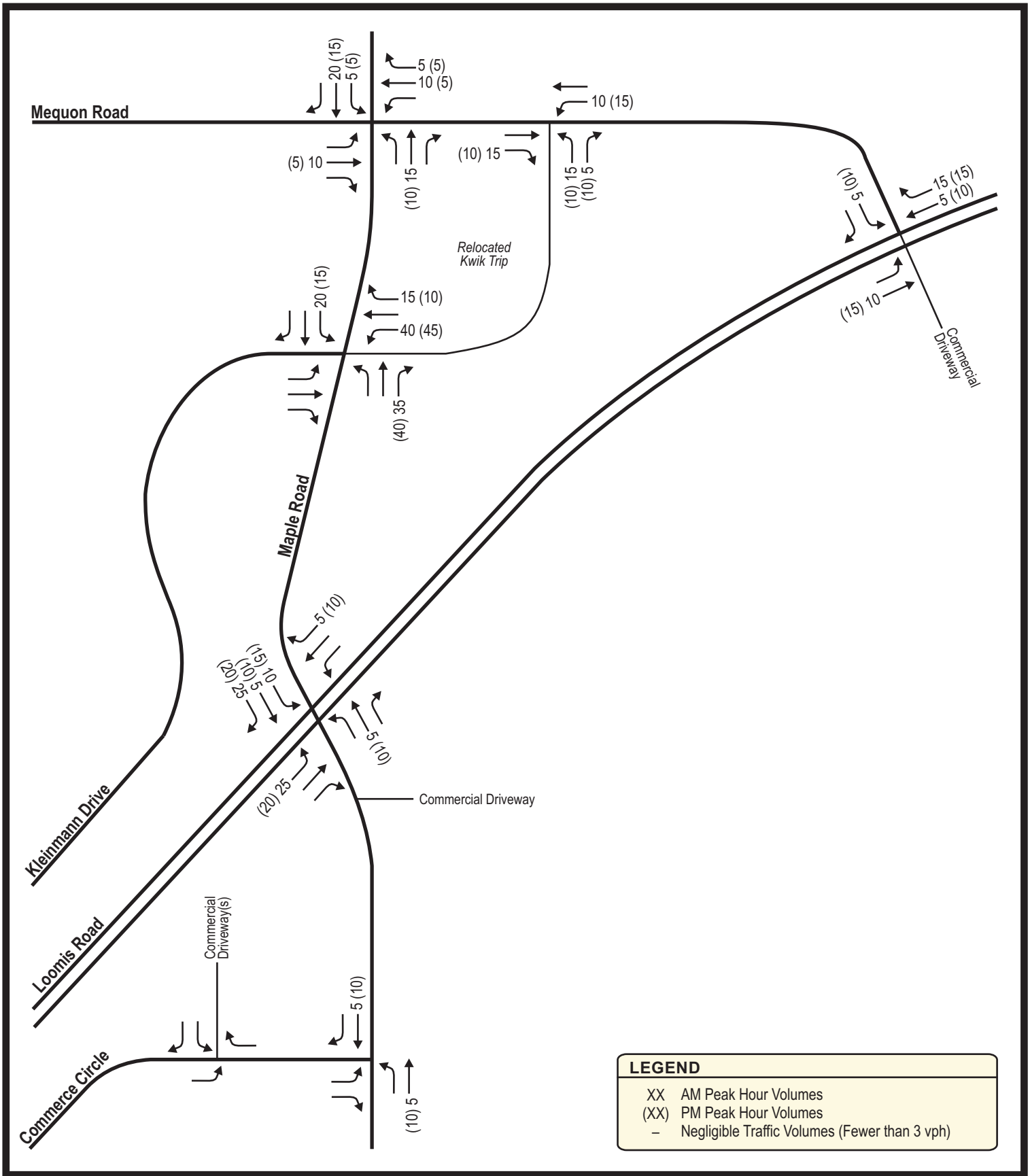
EXHIBIT 9A
TRIP GENERATION & TRIP DISTRIBUTION
RELOCATED KWIK TRIP

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN



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#3347 - 10/14/24

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EXHIBIT 9B
RELOCATED KWIK TRIP DEVELOPMENT NEW TRIPS
ALTERNATIVE 1: FULL ACCESS AT MAPLE ROAD

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

LEGEND

XX	AM Peak Hour Volumes
(XX)	PM Peak Hour Volumes
–	Negligible Traffic Volumes (Fewer than 3 vph)

TADI
TRAFFIC ANALYSIS & DESIGN, INC.
#3347 - 10/14/24

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NOT TO SCALE

EXHIBIT 9C
RELOCATED KWIK TRIP DEVELOPMENT PASS-BY TRIPS
ALTERNATIVE 1: FULL ACCESS AT MAPLE ROAD

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

TADI
TRAFFIC ANALYSIS & DESIGN, INC.
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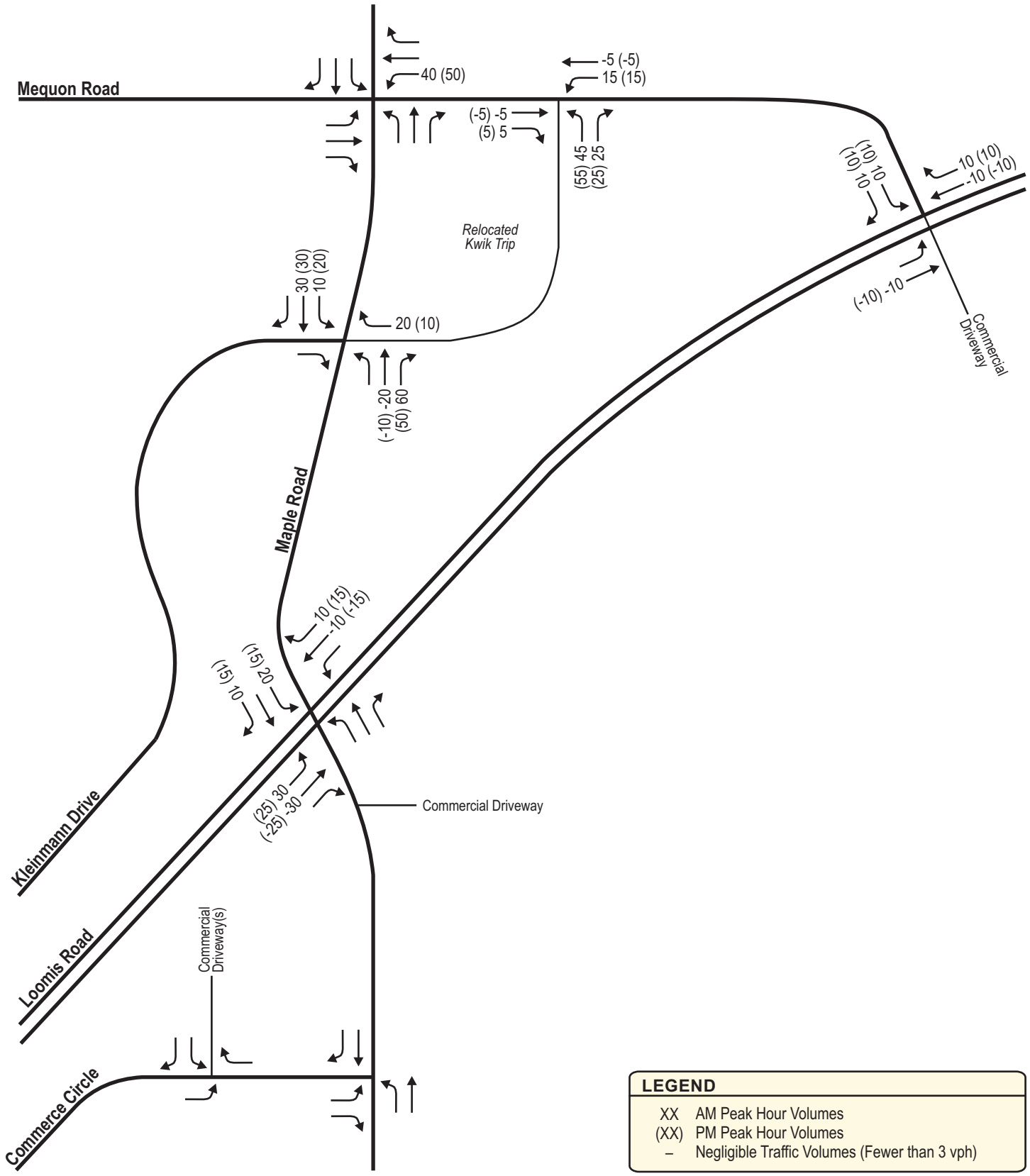
EXHIBIT 9D
RELOCATED KWIK TRIP DEVELOPMENT NEW TRIPS
ALTERNATIVE 2: PARTIAL ACCESS AT MAPLE ROAD

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN



LEGEND

XX	AM Peak Hour Volumes
(XX)	PM Peak Hour Volumes
–	Negligible Traffic Volumes (Fewer than 3 vph)

TADI
TRAFFIC ANALYSIS & DESIGN, INC.
#3347 - 10/14/24

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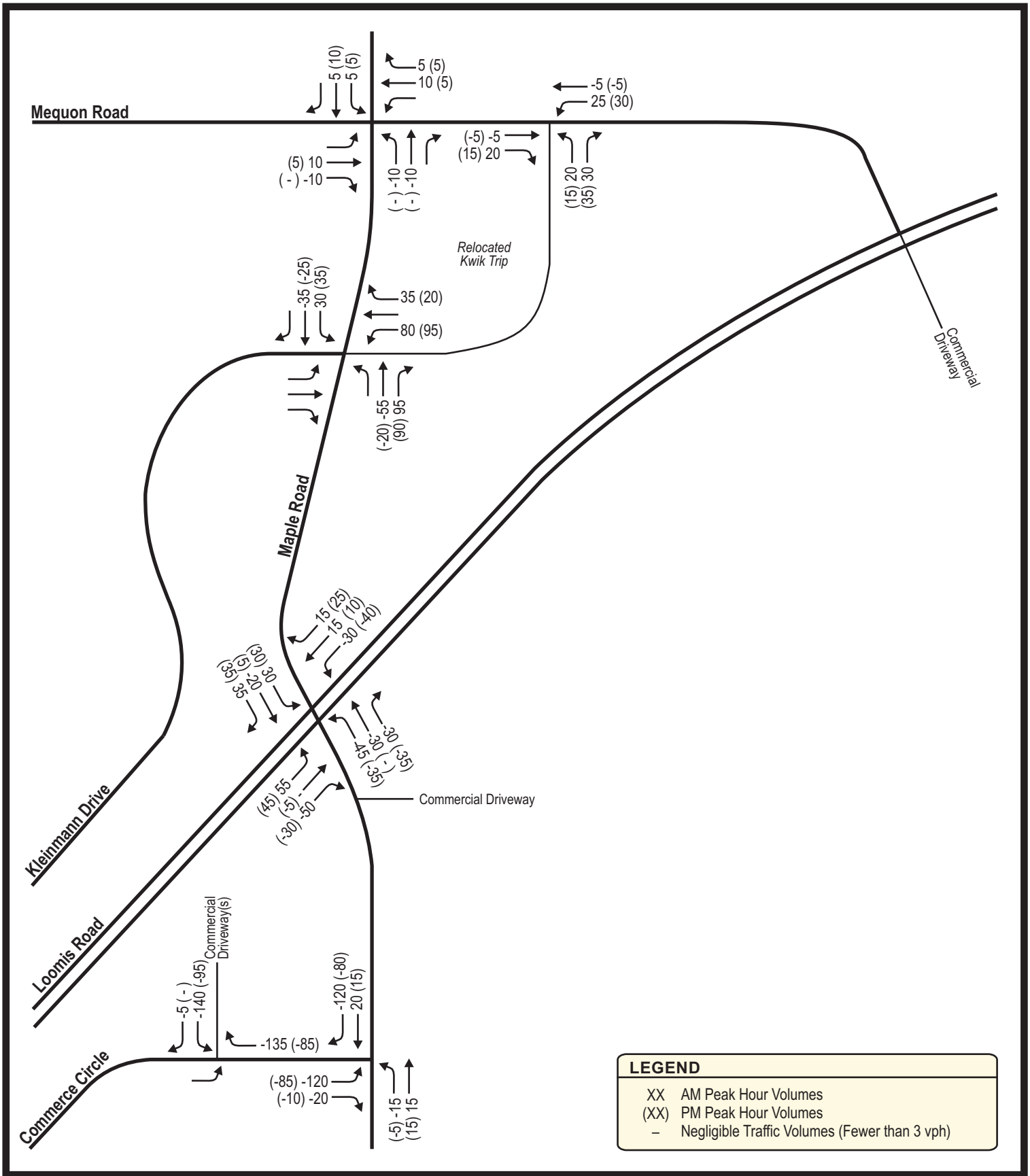
NOT TO SCALE

EXHIBIT 9E
RELOCATED KWIK TRIP DEVELOPMENT PASS-BY TRIPS
ALTERNATIVE 2: PARTIAL ACCESS AT MAPLE ROAD

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN



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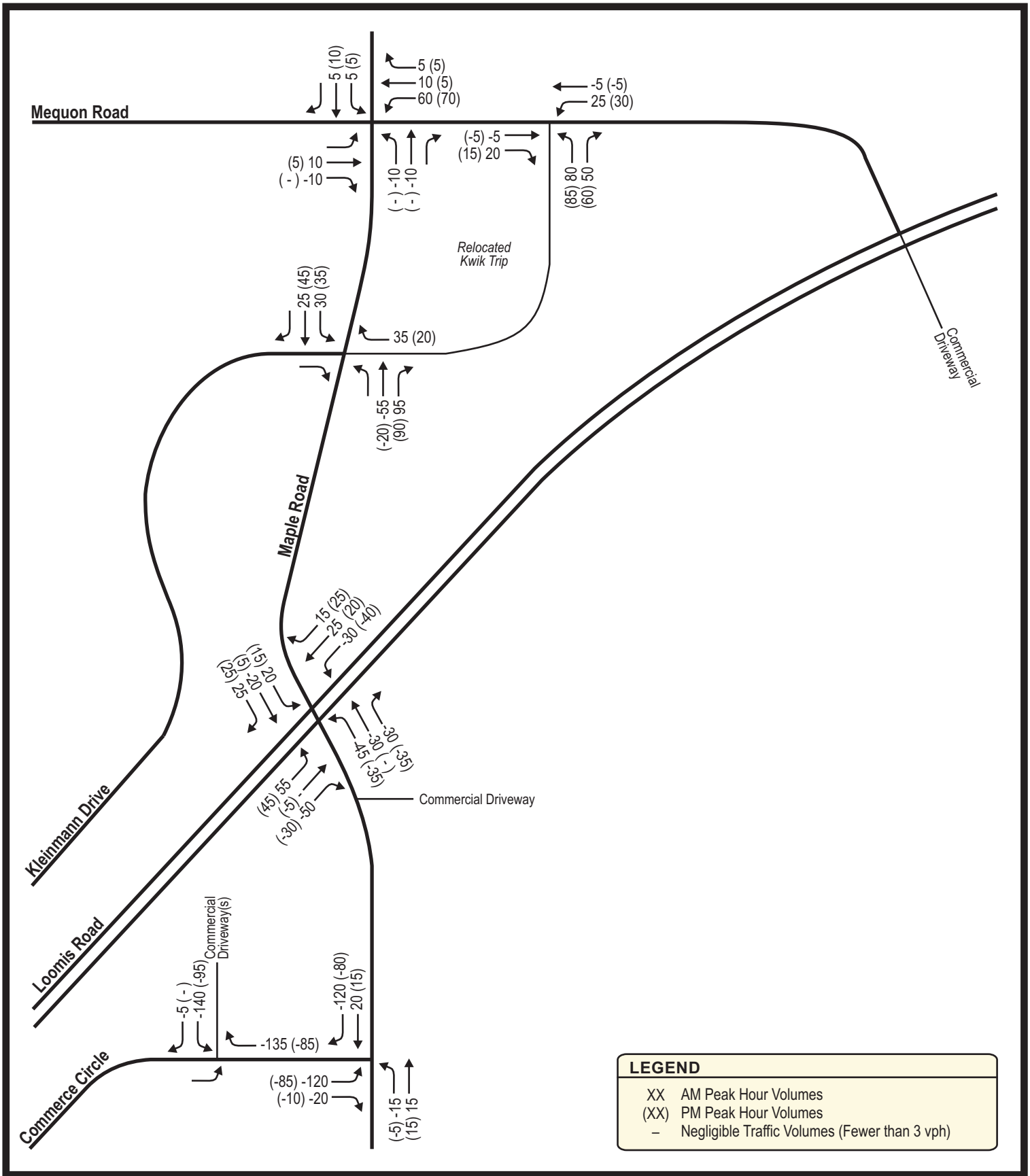
TRAFFIC ANALYSIS & DESIGN, INC.
#3347 - 10/14/24

N
NOT TO SCALE

EXHIBIT 10
DEVELOPMENT DRIVEWAY TRIPS
(BANK - EXISTING KWIK TRIP + NEW KWIK TRIP)
ALTERNATIVE 1: FULL ACCESS AT MAPLE ROAD

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN



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#3347 - 10/14/24

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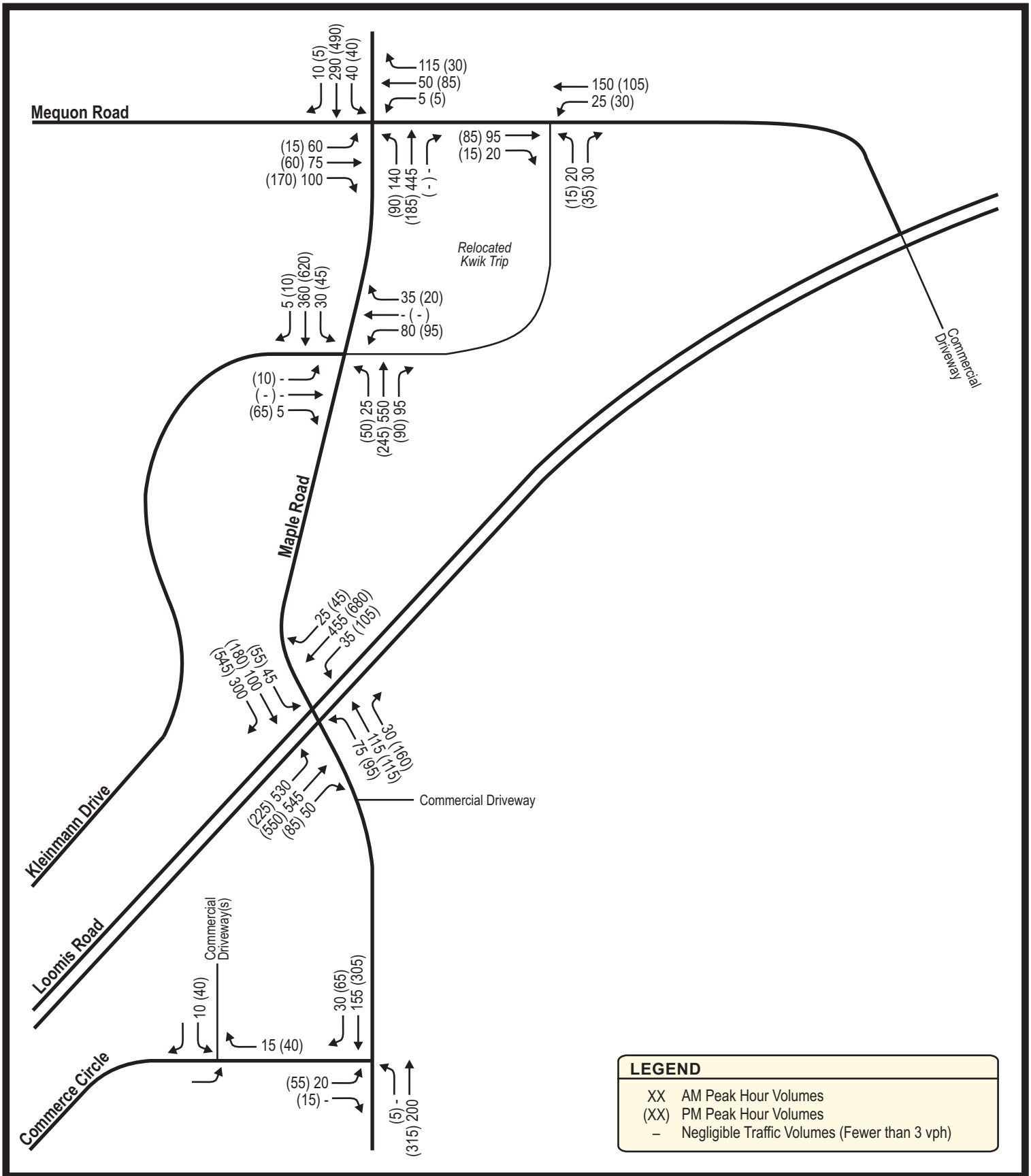
NOT TO SCALE

EXHIBIT 11
DEVELOPMENT DRIVEWAY TRIPS
(BANK - EXISTING KWIK TRIP + NEW KWIK TRIP)
ALTERNATIVE 2: PARTIAL ACCESS AT MAPLE ROAD

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN



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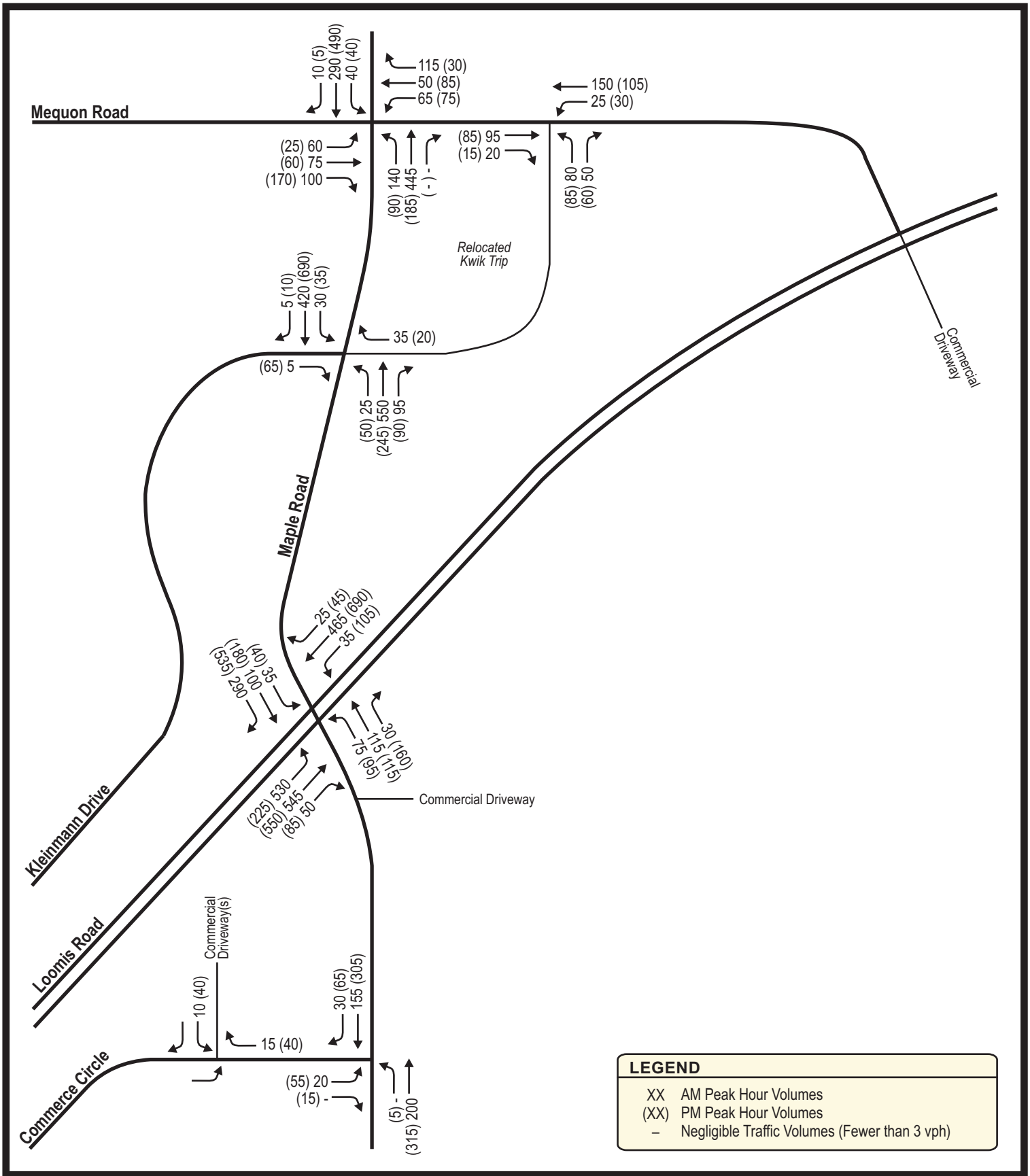
N
NOT TO SCALE

EXHIBIT 12
YEAR 2029 BUILD TRAFFIC VOLUMES
ALTERNATIVE 1: FULL ACCESS AT MAPLE ROAD

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN



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#3347 - 10/14/24

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NOT TO SCALE

EXHIBIT 13
YEAR 2029 BUILD TRAFFIC VOLUMES
ALTERNATIVE 2: PARTIAL ACCESS AT MAPLE ROAD

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

Year 2024 Existing Traffic Peak Hour Operating Conditions

Existing Transportation System

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
(100) Maple Road & Mequon Road *Stop Sign Control (All-Way)*		*Lanes->*	*<1*		*1*	*<1*		*1*	*1*	*2>*		*1*	*2>*		
	AM	LOS	C		C	C		C	C	F		C	D		E
		Delay	23.6		18.6	16.0		19.9	23.8	81.7		15.0	33.5		36.1
		v/c	0.51		0.41	0.19		0.43	0.56	1.01		0.14	0.71		
		Queue	70'		50'	20'		50'	85'	325'		15'	130'		
	PM	LOS	B		C	B		B	B	B		B	D		C
		Delay	12.7		15.0	13.9		11.0	14.1	14.4		11.3	27.9		17.7
		v/c	0.19		0.41	0.24		0.07	0.25	0.32		0.09	0.73		
		Queue	20'		50'	25'		5'	25'	35'		10'	155'		
(200) Maple Road & Kleinmann Drive/Commercial Driveway *Stop Sign Control (EB/WB)*		*Lanes->*	*<1>*			*<1>*			*1*	*2>*		*1*	*2>*		
	AM	LOS	B			A			A	*		A	*		A
		Delay	12.0			0.0			8.6	*		0.0	*		0.3
		v/c	0.02			0.00			0.03	*		0.00	*		
		Queue	0'			0'			5'	*		0'	*		
	PM	LOS	B			A			A	*		A	*		A
		Delay	14.5			0.0			9.8	*		0.0	*		1.6
		v/c	0.19			0.00			0.07	*		0.00	*		
		Queue	20'			0'			5'	*		0'	*		
(300) Maple Road & Lannon Road (STH 167) *Traffic Signal Control*		*Lanes->*	*2*	*2*	*1*	*1*	*2*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	
	AM	LOS	D	B	A	D	B	B	D	C	C	D	C	A	C
		Delay	43.0	11.0	9.6	45.1	17.0	14.5	39.2	33.2	30.9	36.4	32.7	0.0	26.0
		v/c	0.80	0.28	0.07	0.68	0.29	0.01	0.51	0.46	0.13	0.08	0.40	0.00	
		Queue	~285	140'	40'	70'	110'	10'	110'	135'	40'	25'	115'	0'	
	PM	LOS	C	B	B	E	C	C	D	C	C	C	C	A	C
		Delay	26.6	15.7	13.6	56.0	28.8	21.6	38.5	29.3	29.6	32.0	30.6	0.0	27.3
		v/c	0.21	0.35	0.10	0.81	0.61	0.03	0.54	0.30	0.33	0.10	0.46	0.00	
		Queue	85'	175'	55'	130'	200'	15'	125'	105'	105'	35'	155'	0'	
(400) Maple Road & Commerce Circle *Stop Sign Control (EB)*		*Lanes->*	*< >*			*-*			*<1*		*-*	*-*	*1*	*1*	
	AM	LOS	B			-			A		-	-	*	*	A
		Delay	13.2			-			8.0		-	-	*	*	3.6
		v/c	0.30			-			0.01		-	-	*	*	
		Queue	30'			-			0'		-	-	*	*	
	PM	LOS	C			-			A		-	-	*	*	A
		Delay	17.1			-			8.3		-	-	*	*	3.4
		v/c	0.38			-			0.01		-	-	*	*	
		Queue	45'			-			0'		-	-	*	*	

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement; (< or >) indicates a shared lane movement.

(~) indicates a queue is theoretically infinite.

Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

TADI TRAFFIC ANALYSIS & DESIGN, INC.

#3347 - 10/14/24

EXHIBIT 14
2024 EXISTING TRAFFIC
PEAK HOUR TRAFFIC CAPACITY/LOS ANALYSIS

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

Year 2029 Future Traffic Peak Hour Operating Conditions

Existing Transportation System

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
(100) Maple Road & Mequon Road *Stop Sign Control (All-Way)*		*Lanes->*	*<1*		*1*	*<1*		*1*	*1*	*2>*		*1*	*2>*		
	AM	LOS	C		C	C		C	C	F		C	E		E
		Delay	24		19	16.2		20.3	24.1	97.9		15.2	36.6		40.9
		v/c	0.52		0.42	0.19		0.44	0.56	1.06		0.15	0.75		
		Queue	70'		50'	20'		55'	85'	370'		15'	140'		
	PM	LOS	B		C	B		B	B	B		B	D		C
		Delay	12.9		15.3	14.1		11.2	14.3	14.8		11.4	31.0		18.9
		v/c	0.19		0.42	0.24		0.07	0.26	0.33		0.09	0.77		
		Queue	20'		50'	25'		5'	25'	35'		10'	175'		
(200) Maple Road & Kleinmann Drive/Commercial Driveway *Stop Sign Control (EB/WB)*		*Lanes->*	*<1>*			*<1>*			*1*	*2>*		*1*	*2>*		
	AM	LOS	B			A			A	*		A	*		A
		Delay	12.2			0.0			8.7	*		0.0	*		0.3
		v/c	0.02			0.00			0.03	*		0.00	*		
		Queue	0'			0'			5'	*		0'	*		
	PM	LOS	B			A			A	*		A	*		A
		Delay	14.9			0.0			9.9	*		0.0	*		1.5
		v/c	0.20			0.00			0.08	*		0.00	*		
		Queue	20'			0'			5'	*		0'	*		
(300) Maple Road & Lannon Road (STH 167) *Traffic Signal Control*		*Lanes->*	*2*	*2*	*1*	*1*	*2*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	
	AM	LOS	D	B	B	D	B	B	D	C	C	D	C	A	C
		Delay	50.2	11.6	10.0	45.4	17.2	14.5	38.9	32.6	30.4	35.8	32.1	0.0	27.7
		v/c	0.87	0.29	0.08	0.71	0.30	0.01	0.53	0.44	0.13	0.08	0.38	0.00	
		Queue	~300	155'	45'	75'	115'	10'	120'	130'	45'	25'	110'	0'	
	PM	LOS	C	B	B	E	C	C	D	C	C	C	C	A	C
		Delay	27.2	16.9	14.6	59.9	29.4	21.6	38.1	28.7	29.2	31.4	29.9	0.0	28.1
		v/c	0.23	0.37	0.11	0.82	0.64	0.03	0.56	0.29	0.36	0.10	0.44	0.00	
		Queue	85'	190'	65'	140'	220'	15'	130'	105'	110'	35'	150'	0'	
(400) Maple Road & Commerce Circle *Stop Sign Control (EB)*		*Lanes->*	*< >*			*-*			*<1*		*-*	*-*	*1*	*1*	
	AM	LOS	B			-			A		-	-	*	*	A
		Delay	13.7			-			8.0		-	-	*	*	3.6
		v/c	0.31			-			0.02		-	-	*	*	
		Queue	35'			-			0'		-	-	*	*	
	PM	LOS	C			-			A		-	-	*	*	A
		Delay	18.7			-			8.4		-	-	*	*	3.5
		v/c	0.41			-			0.01		-	-	*	*	
		Queue	50'			-			0'		-	-	*	*	

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement; (< or >) indicates a shared lane movement.

(~) indicates a queue is theoretically infinite.

Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

TADI TRAFFIC ANALYSIS & DESIGN, INC.

#3347 - 10/14/24

EXHIBIT 15
2029 FUTURE TRAFFIC
PEAK HOUR TRAFFIC CAPACITY/LOS ANALYSIS

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

Year 2029 Future Traffic Peak Hour Operating Conditions
Modified Transportation System

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
(100) Maple Road & Mequon Road *Traffic Signal Control*		*Lanes->*	*1*	*1>*		*1*	*1>*		*1*	*2*	*1*	*1*	*2*	*1*	
	AM	LOS	D	C		D	C		A	A	A	A	A	A	B
		Delay	39.9	33.8		37.7	32.4		1.6	0.3	0.0	6.6	6.9	5.9	12.1
		v/c	0.42	0.67		0.04	0.58		0.33	0.29	0.00	0.09	0.19	0.01	
		Queue	60'	140'		10'	120'		15'	20'	0'	25'	60'	5'	
	PM	LOS	C	D		D	C		A	A	A	A	A	A	B
		Delay	34.3	40.4		42.0	31.9		1.1	0.1	0.0	5.2	6.1	4.9	14.3
		v/c	0.07	0.83		0.05	0.36		0.19	0.10	0.00	0.05	0.24	0.00	
		Queue	20'	185'		10'	90'		10'	10'	0'	25'	105'	5'	
(200) Maple Road & Kleinmann Drive/Commercial Driveway *Stop Sign Control (EB/WB)*		*Lanes->*	*<1>*			*<1>*			*1*	*2>*		*1*	*2>*		
	AM	LOS	A			A			A	*		A	*		A
		Delay	9.4			0.0			8.2	*		0.0	*		0.3
		v/c	0.01			0.00			0.03	*		0.00	*		
		Queue	0'			0'			5'	*		0'	*		
	PM	LOS	B			A			A	*		A	*		A
		Delay	10.6			0.0			9.0	*		0.0	*		1.2
		v/c	0.12			0.00			0.06	*		0.00	*		
		Queue	10'			0'			5'	*		0'	*		
(300) Maple Road & Lannon Road (STH 167) *Traffic Signal Control*		*Lanes->*	*2*	*2*	*1*	*1*	*2*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	
	AM	LOS	C	B	B	D	C	B	D	C	C	D	D	A	C
		Delay	34.4	11.9	10.3	45.4	20.8	17.5	39.0	32.1	30.0	40.8	37.0	0.0	25.2
		v/c	0.67	0.30	0.08	0.71	0.35	0.01	0.53	0.43	0.13	0.07	0.37	0.00	
		Queue	240'	155'	45'	75'	130'	10'	120'	130'	45'	20'	85'	0'	
	PM	LOS	C	B	B	D	C	C	D	C	C	D	D	A	C
		Delay	27.9	17.6	15.2	52.3	29.4	21.6	38.1	27.9	28.5	37.0	35.7	0.0	28.3
		v/c	0.24	0.38	0.12	0.82	0.64	0.03	0.56	0.28	0.34	0.09	0.42	0.00	
		Queue	85'	190'	65'	140'	220'	15'	130'	105'	110'	25'	115'	0'	
(400) Maple Road & Commerce Circle *Stop Sign Control (EB)*		*Lanes->*	*< >*			-			*<1*		-	-	*1*	*1*	
	AM	LOS	B			-			A		-	-	*	*	A
		Delay	13.7			-			8.0		-	-	*	*	3.6
		v/c	0.31			-			0.02		-	-	*	*	
		Queue	35'			-			0'		-	-	*	*	
	PM	LOS	C			-			A		-	-	*	*	A
		Delay	18.7			-			8.4		-	-	*	*	3.5
		v/c	0.41			-			0.01		-	-	*	*	
		Queue	50'			-			0'		-	-	*	*	

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement; (< or >) indicates a shared lane movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

TADI
TRAFFIC ANALYSIS & DESIGN, INC.
#3347 - 10/14/24

EXHIBIT 16
2029 FUTURE TRAFFIC - WITH MODIFICATIONS
PEAK HOUR TRAFFIC CAPACITY/LOS ANALYSIS

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

Year 2029 Build - Alternative 1 (Full Kwik Trip Access) Traffic Peak Hour Operating Conditions
with Year 2029 Future Traffic Recommended Modifications

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
(100) Maple Road & Mequon Road *Traffic Signal Control*		*Lanes->*	*1*	*1>*		*1*	*1>*		*1*	*2*	*1*	*1*	*2*	*1*	
	AM	LOS	D	C		D	C		A	A	A	A	A	A	B
		Delay	39.9	32.3		36.4	31.9		1.6	0.3	0.0	7.2	7.4	6.3	12.3
		v/c	0.42	0.63		0.04	0.60		0.31	0.29	0.00	0.10	0.20	0.01	
		Queue	60'	140'		10'	135'		20'	25'	0'	25'	60'	5'	
	PM	LOS	C	D		D	C		A	A	A	A	A	A	B
		Delay	34.5	40.3		41.9	32.0		1.1	0.1	0.0	5.3	6.2	5.0	14.5
		v/c	0.07	0.84		0.05	0.39		0.19	0.10	0.00	0.06	0.25	0.00	
		Queue	20'	190'		10'	95'		15'	15'	0'	25'	110'	5'	
(200) Maple Road & Kleinmann Drive/Commercial Driveway *Stop Sign Control (EB/WB)*		*Lanes->*	*<1>*			*<1>*			*1*	*1*	*1*	*1*	*2>*		
	AM	LOS	B			C			A	*	*	A	*		A
		Delay	12.2			21.5			8.1	*	*	9.5	*		2.6
		v/c	0.02			0.41			0.03	*	*	0.05	*		
		Queue	5'			50'			5'	*	*	5'	*		
	PM	LOS	B			C			A	*	*	A	*		A
		Delay	11.2			16.7			8.9	*	*	8.1	*		2.8
		v/c	0.14			0.31			0.06	*	*	0.03	*		
		Queue	15'			35'			5'	*	*	5'	*		
(300) Maple Road & Lannon Road (STH 167) *Traffic Signal Control*		*Lanes->*	*2*	*2*	*1*	*1*	*2*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	
	AM	LOS	C	A	A	D	C	C	D	D	C	D	D	A	C
		Delay	25.0	8.9	7.4	44.6	25.1	21.0	40.5	35.6	33.3	43.9	39.5	0.0	23.0
		v/c	0.50	0.27	0.04	0.52	0.42	0.03	0.42	0.46	0.09	0.26	0.41	0.00	
		Queue	215'	125'	25'	50'	135'	20'	85'	115'	30'	45'	80'	0'	
	PM	LOS	C	B	B	D	C	C	D	C	C	D	D	A	C
		Delay	26.4	14.3	12.2	45.0	29.7	22.0	39.4	30.0	30.0	39.9	37.5	0.0	27.0
		v/c	0.27	0.34	0.08	0.79	0.65	0.06	0.48	0.31	0.32	0.23	0.49	0.00	
		Queue	105'	165'	45'	110'	205'	25'	105'	110'	100'	60'	150'	0'	
(400) Maple Road & Commerce Circle *Stop Sign Control (EB)*		*Lanes->*	*< >*			-			*<1*		-	-	*1*	*1*	
	AM	LOS	B			-			A		-	-	*	*	A
		Delay	11.5			-			7.7		-	-	*	*	0.6
		v/c	0.04			-			0.00		-	-	*	*	
		Queue	5'			-			0'		-	-	*	*	
	PM	LOS	B			-			A		-	-	*	*	A
		Delay	14.8			-			8.2		-	-	*	*	1.4
		v/c	0.17			-			0.01		-	-	*	*	
		Queue	15'			-			0'		-	-	*	*	
(500) Mequon Road & Commercial Driveway *Stop Sign Control (NB)*		*Lanes->*	-	*1>*		*<1*		-	*< >*			-			
	AM	Volume	-	-	-	-	-	-	-	-	-	-	-	-	
		LOS	-	*		A		-	B			-			A
		Delay	-	*		7.7		-	10.5			-			2.1
		v/c	-	*		0.03		-	0.10			-			
		Queue	-	*		5'		-	10'			-			
	PM	Volume	-	-	-	-	-	-	-	-	-	-	-	-	
		LOS	-	*		A		-	A			-			A
		Delay	-	*		7.5		-	9.6			-			2.5
		v/c	-	*		0.02		-	0.07			-			
		Queue	-	*		5'		-	5'			-			

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement; (< or >) indicates a shared lane movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

TADI TRAFFIC ANALYSIS & DESIGN, INC.
#3347 - 10/14/24

EXHIBIT 17
2029 BUILD TRAFFIC - WITH MODIFICATIONS
ALTERNATIVE 1: FULL ACCESS AT MAPLE ROAD
PEAK HOUR TRAFFIC CAPACITY/LOS ANALYSIS

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

Year 2029 Build - Alternative 2 (Partial Kwik Trip Access) Traffic Peak Hour Operating Conditions
with Year 2029 Future Traffic Recommended Modifications

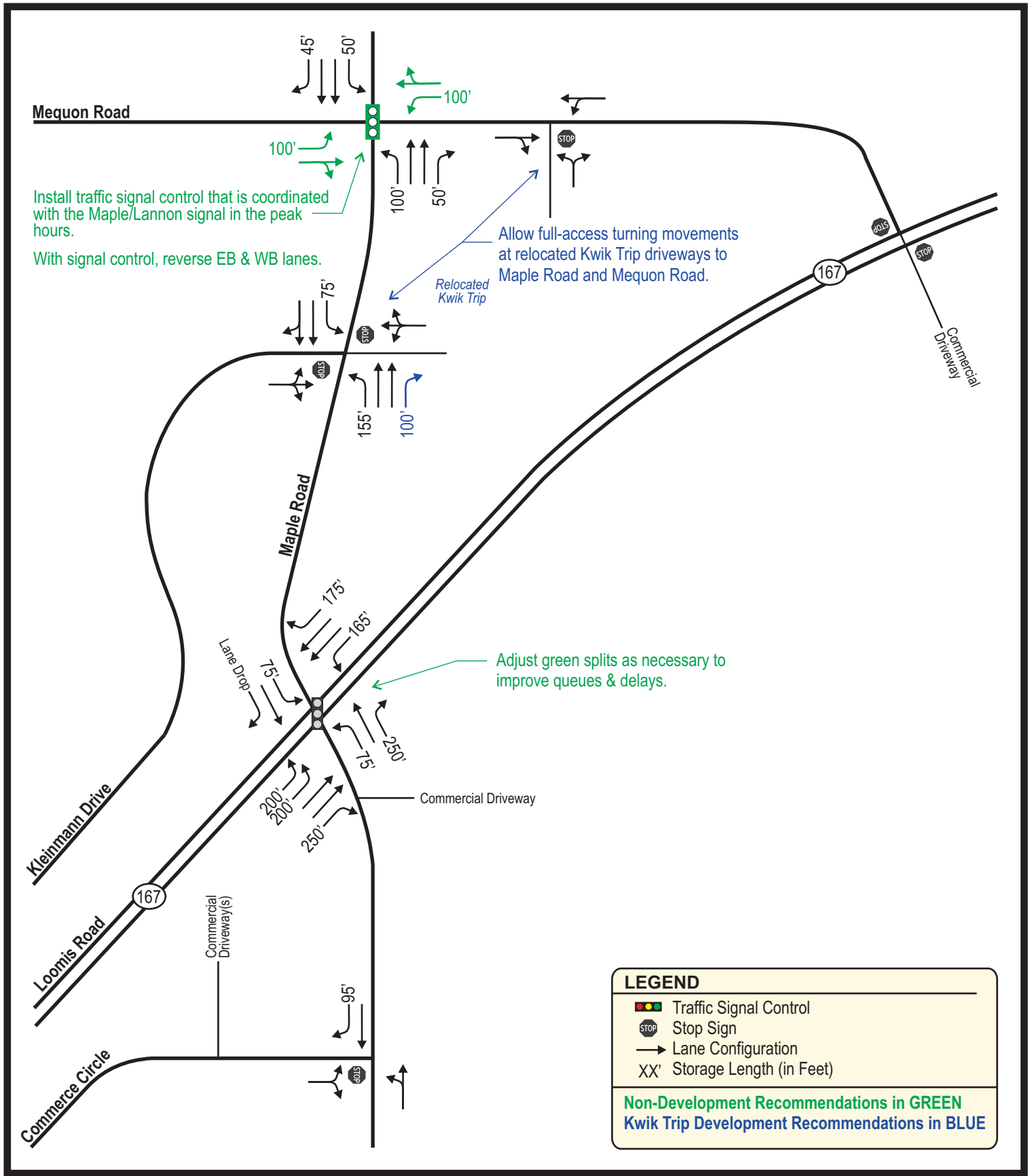
Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
(100) Maple Road & Mequon Road *Traffic Signal Control*		*Lanes->*	*1*	*1>*		*1*	*1>*		*1*	*2*	*1*	*1*	*2*	*1*	
	AM	LOS	D	C		D	C		A	A	A	A	A	A	B
		Delay	38.5	31.1		39.7	30.8		1.7	0.3	0.0	7.6	7.9	6.7	13.3
		v/c	0.39	0.60		0.44	0.58		0.32	0.29	0.00	0.11	0.20	0.01	
		Queue	60'	140'		65'	135'		20'	25'	0'	25'	60'	5'	
	PM	LOS	C	C		D	C		A	A	A	A	A	A	B
		Delay	29.9	31.3		40.3	27.2		1.6	0.1	0.0	7.4	8.6	6.9	15.0
		v/c	0.09	0.65		0.44	0.30		0.22	0.11	0.00	0.06	0.27	0.00	
		Queue	30'	190'		75'	95'		15'	15'	0'	25'	110'	5'	
(200) Maple Road & Kleinmann Drive/Commercial Driveway *Stop Sign Control (EB/WB)*		*Lanes->*	-		*1*	-		*1*	*1*	*1*	*1*	*1*	*2>*		
	AM	LOS	-		A	-		A	A	*	*	A	*		A
		Delay	-		8.7	-		9.0	8.4	*	*	9.5	*		0.7
		v/c	-		0.01	-		0.05	0.03	*	*	0.05	*		
		Queue	-		0'	-		5'	5'	*	*	5'	*		
	PM	LOS	-		A	-		A	A	*	*	A	*		A
		Delay	-		9.4	-		8.6	9.1	*	*	8.1	*		1.3
		v/c	-		0.09	-		0.02	0.06	*	*	0.03	*		
		Queue	-		10'	-		5'	5'	*	*	5'	*		
(300) Maple Road & Lannon Road (STH 167) *Traffic Signal Control*		*Lanes->*	*2*	*2*	*1*	*1*	*2*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	
	AM	LOS	C	A	A	D	C	C	D	D	C	D	D	A	C
		Delay	25.0	8.9	7.4	44.6	25.2	21.0	40.5	35.6	33.3	43.4	39.5	0.0	23.0
		v/c	0.50	0.27	0.04	0.52	0.43	0.03	0.42	0.46	0.09	0.21	0.41	0.00	
		Queue	215'	125'	25'	50'	140'	20'	85'	115'	30'	35'	80'	0'	
	PM	LOS	C	B	B	D	C	C	D	C	C	D	D	A	C
		Delay	26.4	14.3	12.2	45.0	29.9	22.0	39.4	30.0	30.0	39.3	37.5	0.0	27.0
		v/c	0.27	0.34	0.08	0.79	0.66	0.06	0.48	0.31	0.32	0.17	0.49	0.00	
		Queue	105'	165'	45'	110'	210'	25'	105'	110'	100'	40'	125'	0'	
(400) Maple Road & Commerce Circle *Stop Sign Control (EB)*		*Lanes->*	< >			-			*<1*		-	-	*1*	*1*	
	AM	LOS	B			-			A		-	-	*	*	A
		Delay	11.5			-			7.7		-	-	*	*	0.6
		v/c	0.04			-			0.00		-	-	*	*	
		Queue	5'			-			0'		-	-	*	*	
	PM	LOS	B			-			A		-	-	*	*	A
		Delay	14.8			-			8.2		-	-	*	*	1.4
		v/c	0.17			-			0.01		-	-	*	*	
		Queue	15'			-			0'		-	-	*	*	
(500) Mequon Road & Commercial Driveway *Stop Sign Control (NB)*		*Lanes->*	-	*1>*		*<1*		-	< >			-			
	AM	Volume	-	-	-	-	-	-	-	-	-	-	-	-	
		LOS	-	*		A		-	B			-			A
		Delay	-	*		7.7		-	12.5			-			4.3
		v/c	-	*		0.03		-	0.28			-			
		Queue	-	*		5'		-	30'			-			
	PM	Volume	-	-	-	-	-	-	-	-	-	-	-	-	
		LOS	-	*		A		-	B			-			A
		Delay	-	*		7.5		-	11.1			-			4.8
		v/c	-	*		0.02		-	0.23			-			
		Queue	-	*		5'		-	25'			-			

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement; (< or >) indicates a shared lane movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

TADI TRAFFIC ANALYSIS & DESIGN, INC.
#3347 - 10/14/24

EXHIBIT 18
2029 BUILD TRAFFIC - WITH MODIFICATIONS
ALTERNATIVE 2: PARTIAL ACCESS AT MAPLE ROAD
PEAK HOUR TRAFFIC CAPACITY/LOS ANALYSIS

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN



TADI
TRAFFIC ANALYSIS & DESIGN, INC.
#3347 - 10/14/24

N
NOT TO SCALE

EXHIBIT 19
RECOMMENDATIONS

MAPLE ROAD KWIK TRIP TIA - GERMANTOWN, WISCONSIN

APPENDIX A

TRAFFIC COUNT DATA

Intersection Traffic Volume Report

Count Basics	Version 2024.04		Page 1 of 13
Start Date:	Friday, October 11, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 1.25		Non-Holiday	No Special Events

Base Information, Observed (1.25) Hour and Estimated (24) Hour Volume Summaries

Major St: **Maple Road**
Minor St: **Mequon Road**
Intersection of: ***Maple Road & Mequon Road*** **IX_ID:**

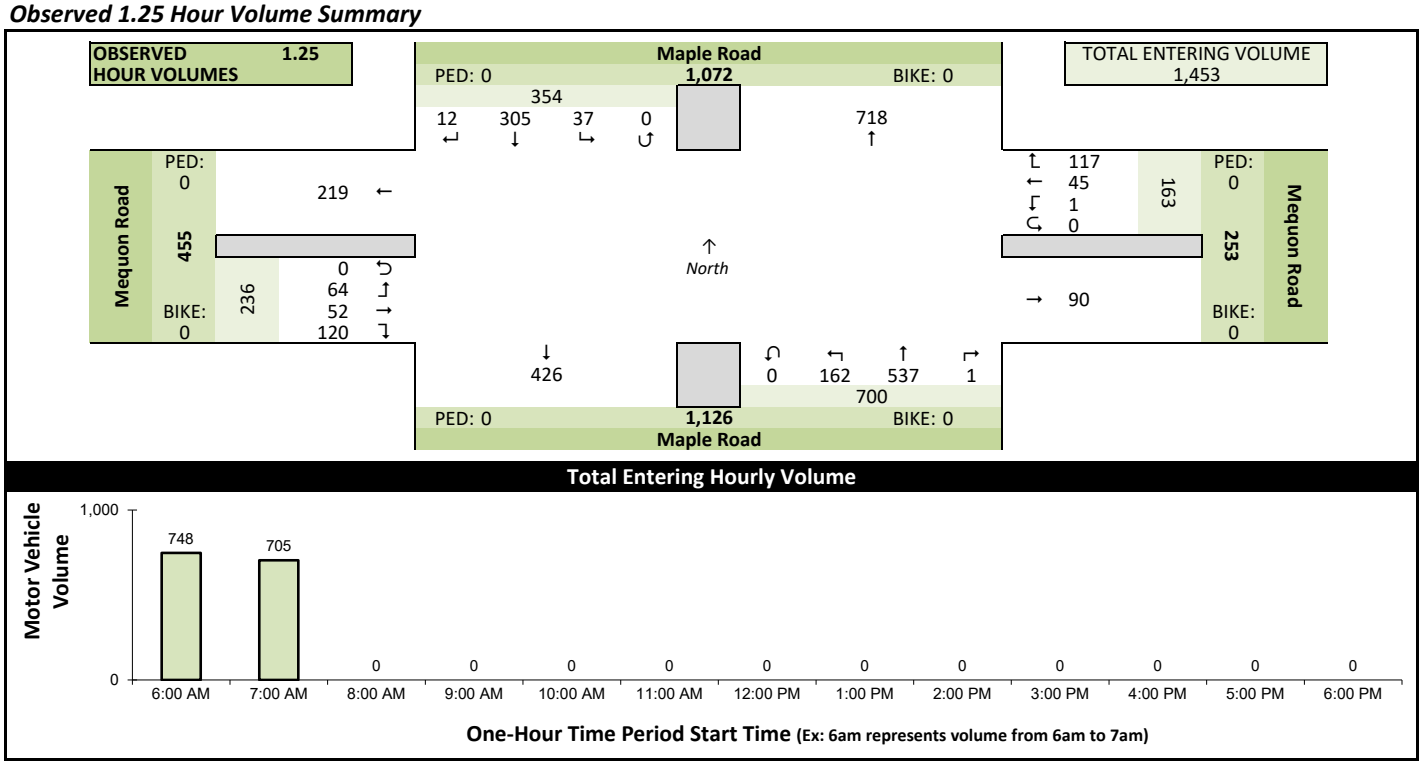
Site Information

Municipality	Village of Germantown		
County	66 - Washington	WisDOT Region	SE
Traffic Control	All-Way Stop		
Roadway Names		North Direction	↑
North Leg	Maple Road		
East Leg	Mequon Road		
South Leg	Maple Road		
West Leg	Mequon Road		
Special Considerations			
Schools	In Session		
Holidays	None		
Special Events	None		
Special Pedestrians Observed			
Pre-school children		None	
Elementry school age children		None	
Visually impaired (white cane/helper dog)		None	
Elderly/disabled (except wheelchairs)		None	
Wheelchairs/electric scooters		None	
Other (describe)	None	None	

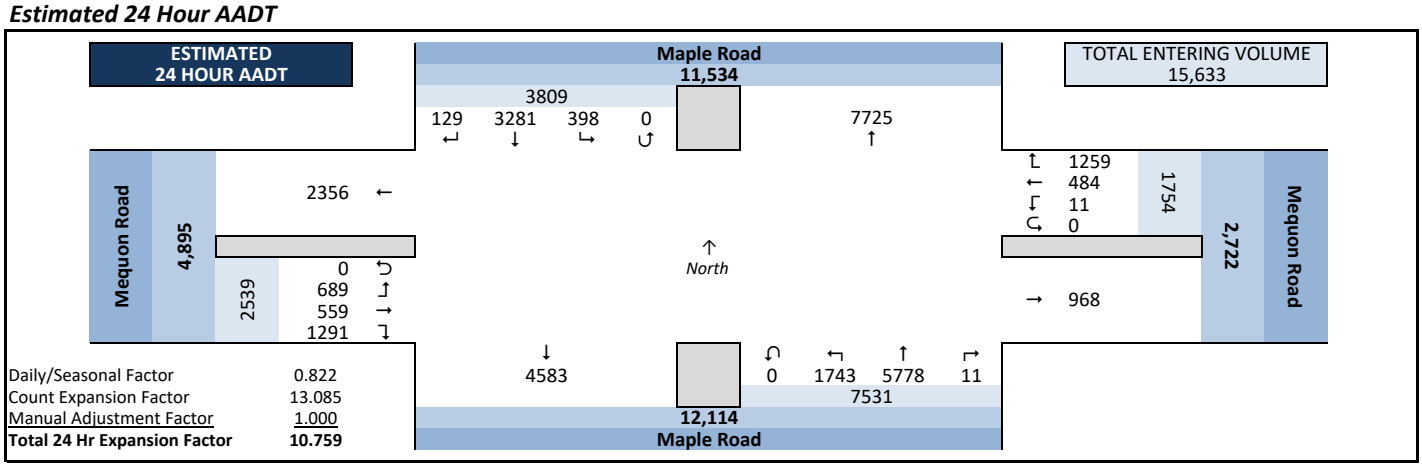
Count Information

Hrs Counted:	06:30 AM-07:45 AM				
1st Day of Count	Friday, October 11, 2024			Weather	
AM Peak Period	Friday, October 11, 2024			Clear & Dry	
Midday Peak Period	Friday, October 11, 2024			Clear & Dry	
PM Peak Period	Friday, October 11, 2024			Clear & Dry	
Calculated Peak Hours					
AM	6:30-7:30am	MD		PM	
Peak Hours Selected for Analysis					
AM	6:30-7:30am	MD		PM	4:00-5:00pm
Daily/Seasonal Adjustment Group	(2) Urban Arterials & Collectors				
Count Expansion Group	(2) Urban Arterials & Collectors				
Daily/Seasonal Adjustment Factor	0.822		Count Expansion Factor	13.085	
Company Name	TADI, Inc.			Manual Adj.	1.000
Observers	AM Peak Period	Amy Scheuerlein			
	Midday Peak Period	None			
	PM Peak Period	None			
Comments	2021 DOT Daily & Seasonal Factors				

Observed 1.25 Hour Volume Summary



Estimated 24 Hour AADT



Intersection Traffic Volume Report

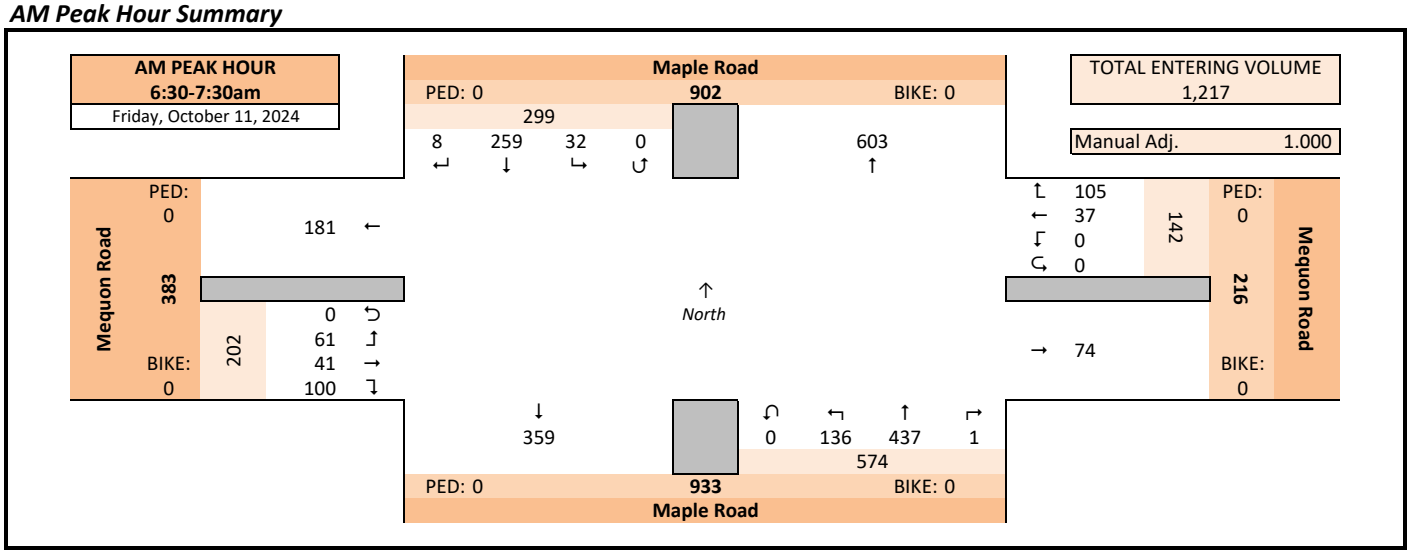
Peak Hour Volume Graphical Summary

Count Basics			*Page 2 of 13*
Start Date:	Friday, October 11, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 1.25		Non-Holiday	No Special Events

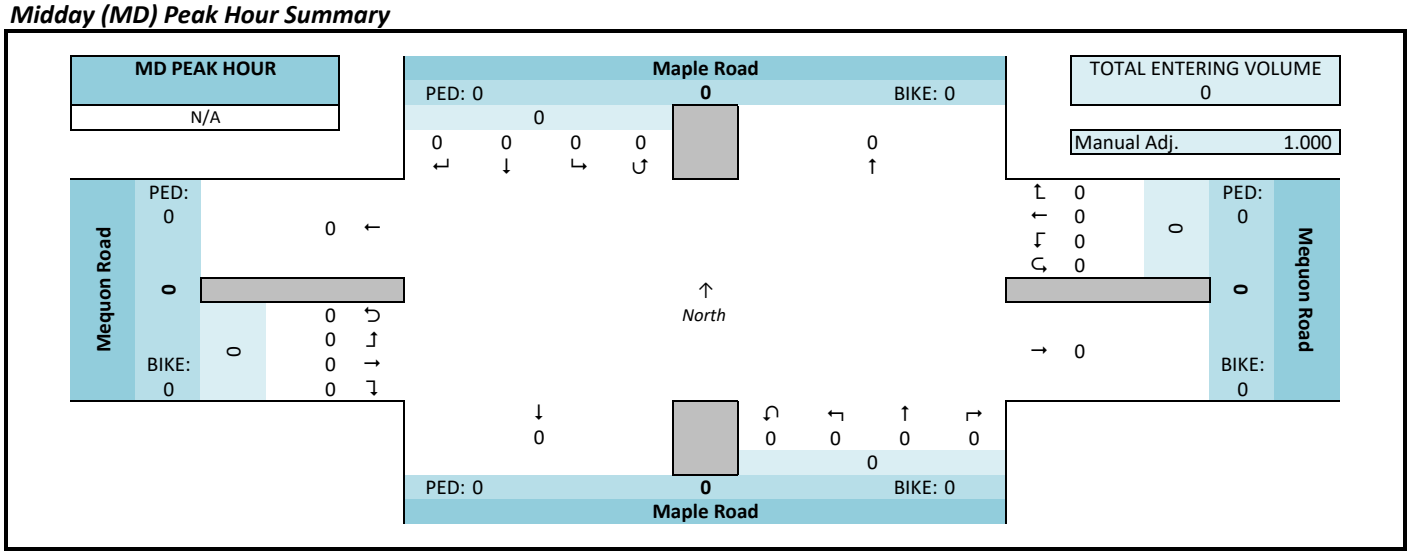
All Motor Vehicles

Maple Road & Mequon Road

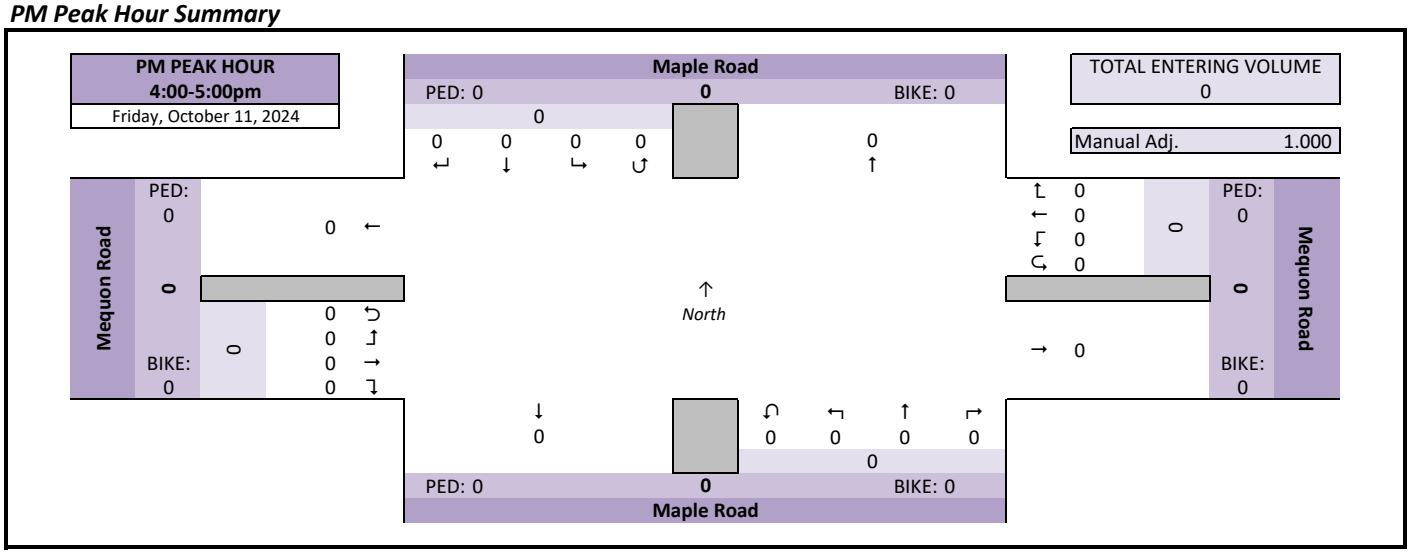
AM Peak Hour Summary



Midday (MD) Peak Hour Summary



PM Peak Hour Summary



Intersection Traffic Volume Report

Count Basics	Version 2024.04		Page 1 of 13
Start Date:	Monday, September 23, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 13		Non-Holiday	No Special Events

Base Information, Observed (13) Hour and Estimated (24) Hour Volume Summaries

Major St: **Maple Road**
Minor St: **Mequon Road**
Intersection of: ***Maple Road & Mequon Road*** **IX_ID:**

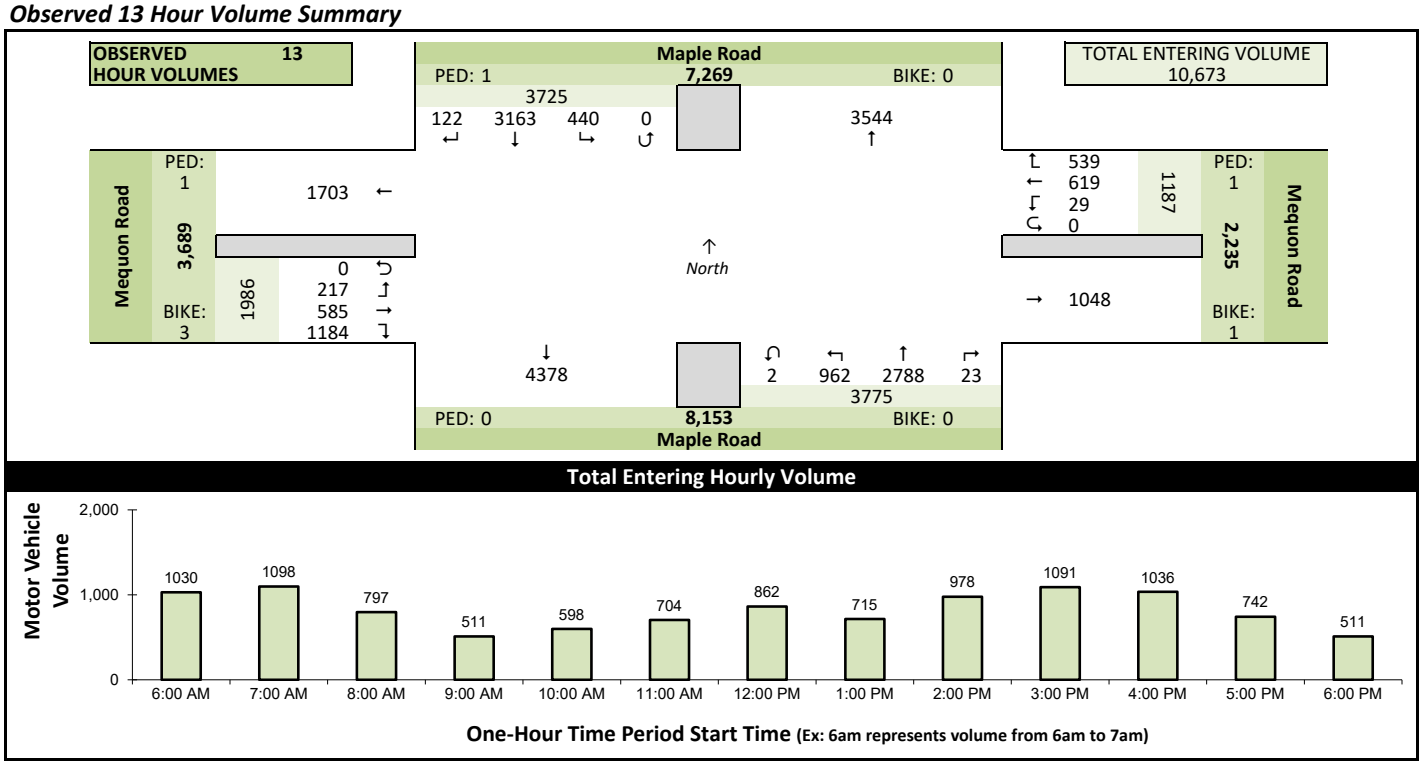
Site Information

Municipality	Village of Germantown		
County	66 - Washington	WisDOT Region	SE
Traffic Control	All-Way Stop		
Roadway Names		North Direction	↑
North Leg	Maple Road		
East Leg	Mequon Road		
South Leg	Maple Road		
West Leg	Mequon Road		
Special Considerations			
Schools	In Session		
Holidays	None		
Special Events	None		
Special Pedestrians Observed			
Pre-school children	None		
Elementry school age children	None		
Visually impaired (white cane/helper dog)	None		
Elderly/disabled (except wheelchairs)	None		
Wheelchairs/electric scooters	None		
Other (describe)	None	None	

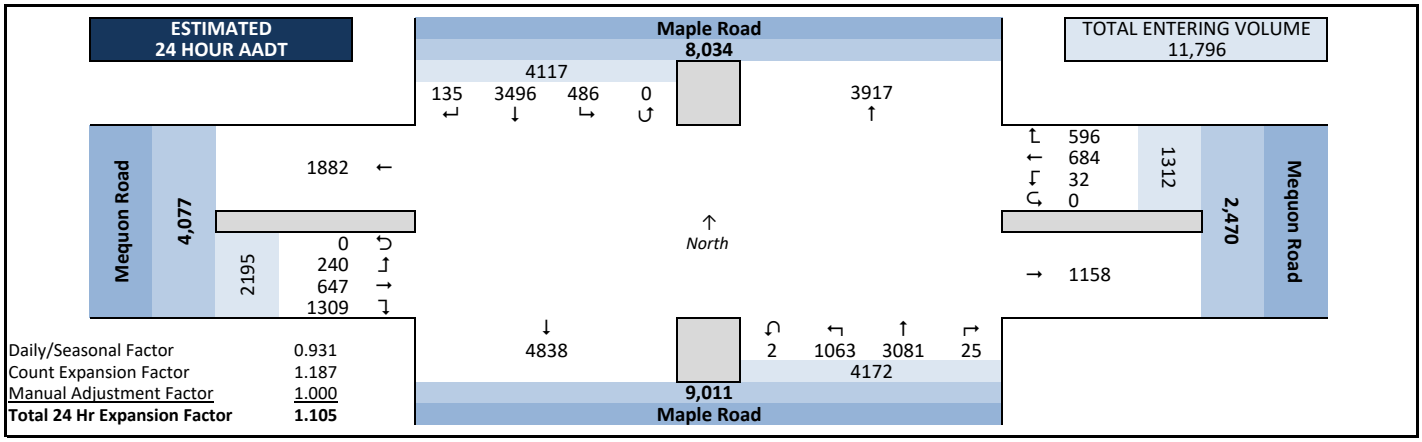
Count Information

Hrs Counted:	06:00 AM-07:00 PM				
1st Day of Count	Monday, September 23, 2024			Weather	
AM Peak Period	Tuesday, September 24, 2024			Clear & Dry	
Midday Peak Period	Tuesday, September 24, 2024			Clear & Dry	
PM Peak Period	Monday, September 23, 2024			Clear & Dry	
Calculated Peak Hours					
AM	6:30-7:30am	MD	12:00-1:00pm	PM	2:45-3:45pm
Peak Hours Selected for Analysis					
AM	6:45-7:45am	MD	12:00-1:00pm	PM	4:00-5:00pm
Daily/Seasonal Adjustment Group	(2) Urban Arterials & Collectors				
Count Expansion Group	(2) Urban Arterials & Collectors				
Daily/Seasonal Adjustment Factor	0.931			Count Expansion Factor	1.187
Company Name	TADI, Inc.			Manual Adj.	1.000
Observers	AM Peak Period	Wendy Picard			
	Midday Peak Period	Jane Fait			
	PM Peak Period	Wendy Picard			
Comments	2021 DOT Daily & Seasonal Factors				

Observed 13 Hour Volume Summary



Estimated 24 Hour AADT



Intersection Traffic Volume Report

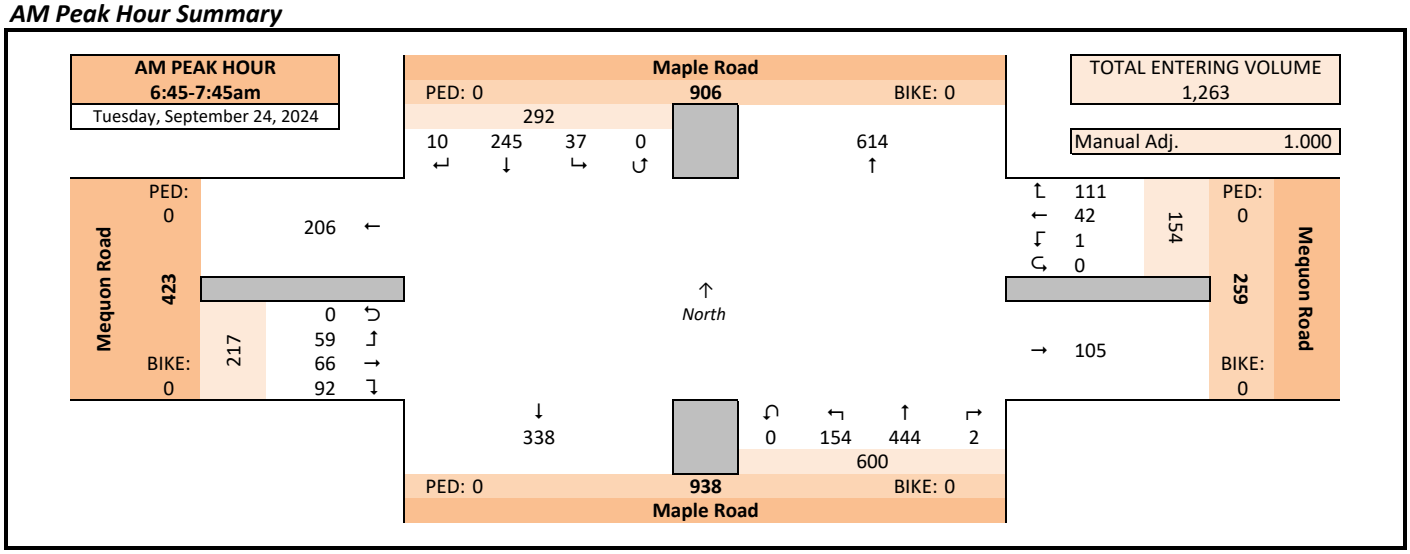
Peak Hour Volume Graphical Summary

Count Basics			*Page 2 of 13*
Start Date:	Monday, September 23, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 13		Non-Holiday	No Special Events

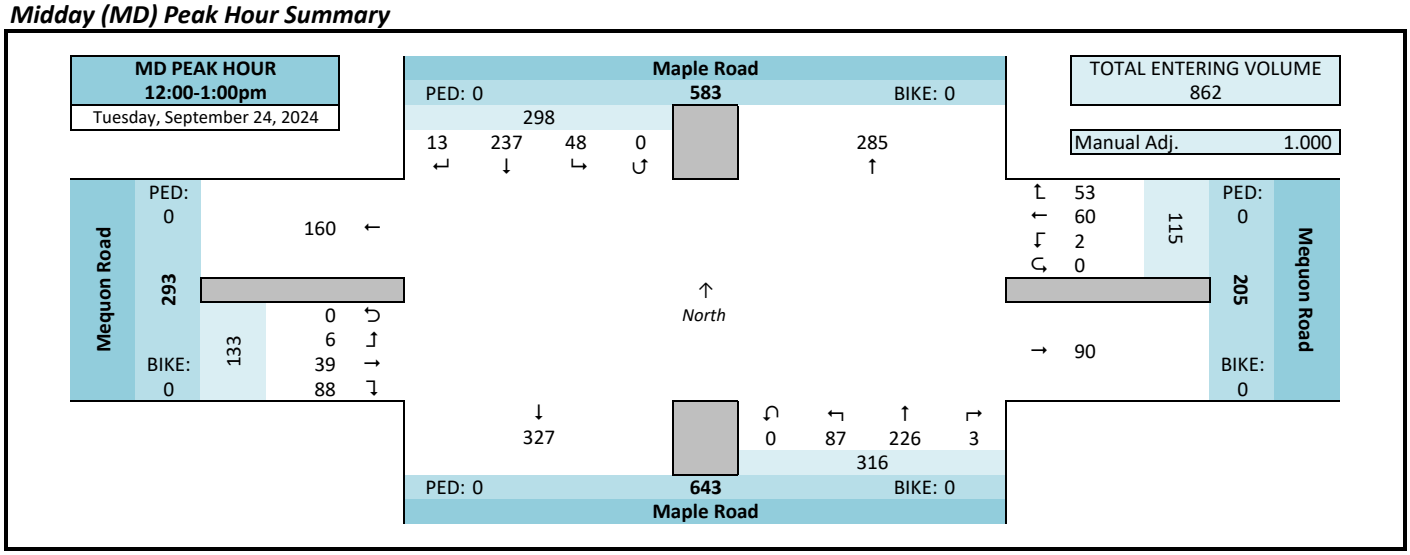
All Motor Vehicles

Maple Road & Mequon Road

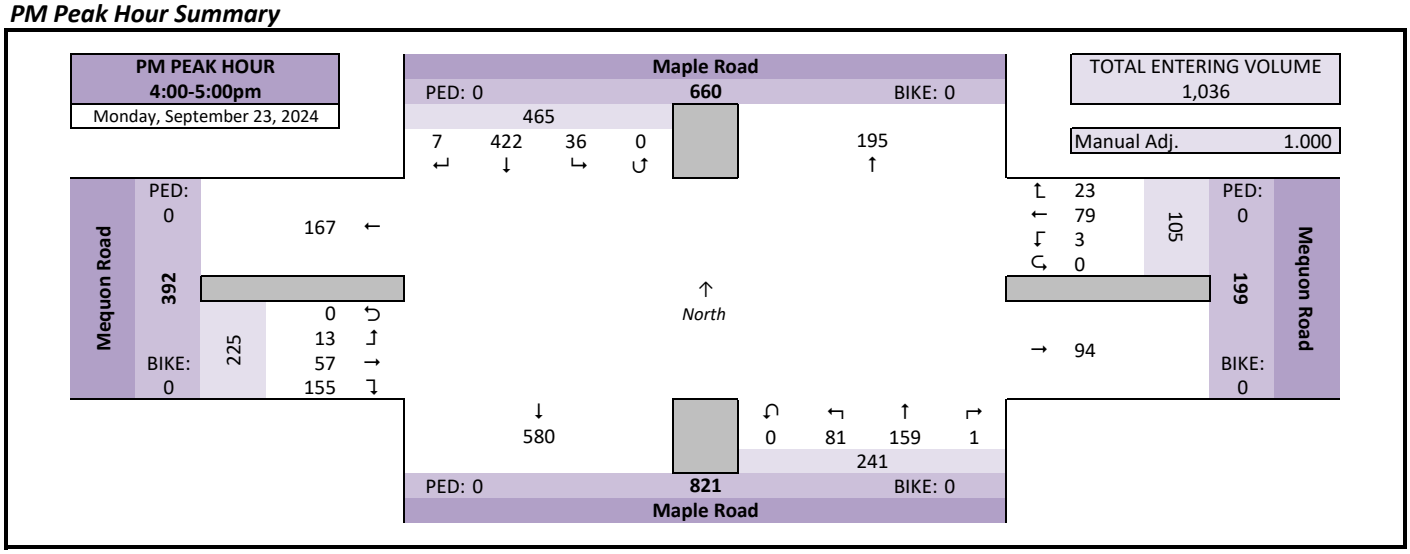
AM Peak Hour Summary



Midday (MD) Peak Hour Summary



PM Peak Hour Summary



Intersection Traffic Volume Report

Count Basics			Page 3 of 13
Start Date:	Monday, September 23, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 13		Non-Holiday	No Special Events

Peak Hour Volume Summary

Maple Road & Mequon Road

All Motor Vehicles

Peak Hour Volumes, Truck Percentages, and PHFs

Tuesday, September 24, 2024	From North					From East					From South					From West					
AM Peak Hour	Maple Road					Mequon Road					Maple Road					Mequon Road					
Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
6:45 AM	3	38	4	0	45	69	9	0	0	78	0	209	60	0	269	7	12	35	0	54	446
7:00 AM	2	101	22	0	125	21	10	0	0	31	0	72	34	0	106	42	18	15	0	75	337
7:15 AM	2	57	6	0	65	12	13	0	0	25	0	73	20	0	93	19	12	6	0	37	220
7:30 AM	3	49	5	0	57	9	10	1	0	20	2	90	40	0	132	24	24	3	0	51	260
Peak Hour Volume	10	245	37	0	292	111	42	1	0	154	2	444	154	0	600	92	66	59	0	217	1263
Rounded Hourly Volume	10	245	35	0	290	110	40	0	0	150	0	445	155	0	600	90	65	60	0	215	1255
% Single Unit Trucks	10.0	11.8	13.5	0.0	12.0	2.7	7.1	0.0	0.0	3.9	0.0	3.6	1.9	0.0	3.2	2.2	4.5	10.2	0.0	5.1	5.6
% Heavy Trucks	0.0	2.4	0.0	0.0	2.1	2.7	0.0	100.0	0.0	2.6	0.0	2.0	3.9	0.0	2.5	5.4	0.0	0.0	0.0	2.3	2.4
% Trucks (Total)	10.0	14.3	13.5	0.0	14.0	5.4	7.1	100.0	0.0	6.5	0.0	5.6	5.8	0.0	5.7	7.6	4.5	10.2	0.0	7.4	8.0
Peak Hour Factor (PHF)	0.83	0.61	0.42	0.00	0.58	0.40	0.81	0.25	0.00	0.49	0.25	0.53	0.64	0.00	0.56	0.55	0.69	0.42	0.00	0.72	0.71

Tuesday, September 24, 2024	From North					From East					From South					From West					
MD Peak Hour	Maple Road					Mequon Road					Maple Road					Mequon Road					
Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
12:00 PM	5	90	17	0	112	8	8	0	0	16	0	51	16	0	67	28	16	2	0	46	241
12:15 PM	1	50	12	0	63	22	18	0	0	40	2	66	24	0	92	25	9	2	0	36	231
12:30 PM	2	51	9	0	62	11	12	1	0	24	0	52	25	0	77	19	6	1	0	26	189
12:45 PM	5	46	10	0	61	12	22	1	0	35	1	57	22	0	80	16	8	1	0	25	201
Peak Hour Volume	13	237	48	0	298	53	60	2	0	115	3	226	87	0	316	88	39	6	0	133	862
Rounded Hourly Volume	15	235	50	0	300	55	60	0	0	115	5	225	85	0	315	90	40	5	0	135	865
% Single Unit Trucks	23.1	9.7	6.2	0.0	9.7	5.7	10.0	0.0	0.0	7.8	0.0	8.8	6.9	0.0	8.2	3.4	2.6	33.3	0.0	4.5	8.1
% Heavy Trucks	7.7	7.6	0.0	0.0	6.4	1.9	3.3	0.0	0.0	2.6	0.0	9.7	8.0	0.0	9.2	9.1	2.6	0.0	0.0	6.8	7.0
% Trucks (Total)	30.8	17.3	6.2	0.0	16.1	7.5	13.3	0.0	0.0	10.4	0.0	18.6	14.9	0.0	17.4	12.5	5.1	33.3	0.0	11.3	15.1
Peak Hour Factor (PHF)	0.65	0.66	0.71	0.00	0.67	0.60	0.68	0.50	0.00	0.72	0.37	0.86	0.87	0.00	0.86	0.79	0.61	0.75	0.00	0.72	0.89

Monday, September 23, 2024	From North					From East					From South					From West					
PM Peak Hour	Maple Road					Mequon Road					Maple Road					Mequon Road					
Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
4:00 PM	2	117	3	0	122	3	20	0	0	23	1	46	23	0	70	32	15	3	0	50	265
4:15 PM	0	94	8	0	102	8	19	3	0	30	0	40	19	0	59	18	15	5	0	38	229
4:30 PM	1	114	15	0	130	6	21	0	0	27	0	38	23	0	61	71	15	3	0	89	307
4:45 PM	4	97	10	0	111	6	19	0	0	25	0	35	16	0	51	34	12	2	0	48	235
Peak Hour Volume	7	422	36	0	465	23	79	3	0	105	1	159	81	0	241	155	57	13	0	225	1036
Rounded Hourly Volume	5	420	35	0	460	25	80	5	0	110	0	160	80	0	240	155	55	15	0	225	1035
% Single Unit Trucks	14.3	2.8	2.8	0.0	3.0	4.3	2.5	0.0	0.0	2.9	0.0	8.8	6.2	0.0	7.9	1.9	0.0	7.7	0.0	1.8	3.9
% Heavy Trucks	0.0	1.4	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	3.1	2.5	0.0	2.9	1.9	0.0	0.0	0.0	1.3	1.5
% Trucks (Total)	14.3	4.3	2.8	0.0	4.3	4.3	2.5	0.0	0.0	2.9	0.0	11.9	8.6	0.0	10.8	3.9	0.0	7.7	0.0	3.1	5.4
Peak Hour Factor (PHF)	0.44	0.90	0.60	0.00	0.89	0.72	0.94	0.25	0.00	0.87	0.25	0.86	0.88	0.00	0.86	0.55	0.95	0.65	0.00	0.63	0.84

Peak Hour Pedestrian and Bicyclist Volumes

Pedestrians and Bicyclists	Crossing North Approach			Crossing East Approach			Crossing South Approach			Crossing West Approach			Total Ped & Bike Volume
	Maple Road			Mequon Road			Maple Road			Mequon Road			
15-Minute Start Time	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	
AM: 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
AM: 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
AM: 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
AM: 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
AM: Total	0	0	0	0	0	0	0	0	0	0	0	0	0
MD: 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
MD: 12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
MD: 12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
MD: 12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
MD: Total	0	0	0	0	0	0	0	0	0	0	0	0	0
PM: 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
PM: 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
PM: 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
PM: 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
PM: Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Traffic Volume Report

15-Minute Motor Vehicle Data

Count Basics		*Page 5 of 13*
Start Date: Monday, September 23, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 13	Non-Holiday	No Special Events

Maple Road & Mequon Road

All Motor Vehicles

15-Minute Motor Vehicle Data

15-Minute Time Period		From North (Maple Road)					From East (Mequon Road)					From South (Maple Road)					From West (Mequon Road)					15-Min	Hourly	
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals	Sum	PHF
AM Peak Period	6:00 AM	1	30	3	0	34	10	3	1	0	14	0	48	18	0	66	9	4	4	0	17	131	1030	0.58
	6:15 AM	3	34	3	0	40	10	4	0	0	14	1	78	20	0	99	13	5	2	0	20	173	1236	0.69
	6:30 AM	3	41	3	0	47	29	4	0	0	33	0	132	40	0	172	13	8	7	0	28	280	1283	0.72
	6:45 AM	3	38	4	0	45	69	9	0	0	78	0	209	60	0	269	7	12	35	0	54	446	1263	0.71
	7:00 AM	2	101	22	0	125	21	10	0	0	31	0	72	34	0	106	42	18	15	0	75	337	1098	0.81
	7:15 AM	2	57	6	0	65	12	13	0	0	25	0	73	20	0	93	19	12	6	0	37	220	1019	0.91
	7:30 AM	3	49	5	0	57	9	10	1	0	20	2	90	40	0	132	24	24	3	0	51	260	1006	0.90
	7:45 AM	0	59	7	0	66	14	8	0	0	22	2	88	29	0	119	41	29	4	0	74	281	931	0.83
	8:00 AM	5	43	6	0	54	17	8	0	0	25	1	102	21	0	124	35	18	2	0	55	258	797	0.77
	8:15 AM	3	44	1	0	48	13	13	1	0	27	0	64	25	0	89	23	10	10	0	43	207	670	0.81
	8:30 AM	3	53	4	0	60	8	8	0	0	16	0	59	8	0	67	31	9	2	0	42	185	591	0.80
	8:45 AM	3	34	4	0	41	8	9	0	0	17	0	47	13	0	60	13	9	7	0	29	147	521	0.89
	9:00 AM	1	41	3	0	45	3	8	1	0	12	2	37	16	0	55	12	5	2	0	19	131	511	0.93
	9:15 AM	2	28	3	0	33	11	6	2	0	19	1	49	5	0	55	14	6	1	0	21	128	528	0.89
	9:30 AM	0	38	8	0	46	4	4	0	0	8	1	23	16	0	40	15	6	0	0	21	115	553	0.90
	9:45 AM	1	37	10	0	48	3	6	2	0	11	0	41	13	0	54	13	10	1	0	24	137	565	0.92
Midday Peak Period	10:00 AM	2	28	7	0	37	5	12	1	0	18	0	41	16	0	57	29	5	2	0	36	148	598	0.88
	10:15 AM	2	47	9	0	58	5	10	0	0	15	0	36	12	0	48	18	11	3	0	32	153	622	0.90
	10:30 AM	0	30	4	0	34	10	9	0	0	19	0	37	15	0	52	13	7	2	0	22	127	625	0.91
	10:45 AM	3	38	5	0	46	10	8	0	0	18	1	49	14	0	64	17	19	6	0	42	170	683	0.92
	11:00 AM	2	59	13	0	74	7	6	2	0	15	0	35	13	0	48	19	13	3	0	35	172	704	0.92
	11:15 AM	0	45	5	0	50	11	12	0	0	23	1	42	7	1	51	18	10	4	0	32	156	773	0.80
	11:30 AM	3	61	11	0	75	7	12	1	0	20	0	39	14	0	53	24	10	3	0	37	185	848	0.88
	11:45 AM	1	65	17	0	83	12	7	0	0	19	0	37	13	0	50	16	21	2	0	39	191	852	0.88
	12:00 PM	5	90	17	0	112	8	8	0	0	16	0	51	16	0	67	28	16	2	0	46	241	862	0.89
	12:15 PM	1	50	12	0	63	22	18	0	0	40	2	66	24	0	92	25	9	2	0	36	231	820	0.89
	12:30 PM	2	51	9	0	62	11	12	1	0	24	0	52	25	0	77	19	6	1	0	26	189	765	0.95
	12:45 PM	5	46	10	0	61	12	22	1	0	35	1	57	22	0	80	16	8	1	0	25	201	738	0.92
	1:00 PM	2	65	9	0	76	15	19	1	0	35	0	49	12	0	61	19	7	1	0	27	199	715	0.90
	1:15 PM	3	42	9	0	54	10	11	0	0	21	0	48	20	0	68	18	11	4	0	33	176	741	0.82
	1:30 PM	5	47	6	0	58	12	8	0	0	20	2	46	14	0	62	8	11	3	0	22	162	778	0.86
	1:45 PM	2	50	6	0	58	9	14	0	0	23	0	51	15	0	66	18	10	3	0	31	178	884	0.82
PM Peak Period	2:00 PM	0	82	10	0	92	12	9	3	0	24	0	48	15	0	63	32	13	1	0	46	225	978	0.90
	2:15 PM	3	57	11	0	71	12	10	3	0	25	0	63	23	0	86	19	7	5	0	31	213	1094	0.80
	2:30 PM	2	82	13	0	97	14	15	0	0	29	0	66	29	0	95	31	10	6	0	47	268	1118	0.82
	2:45 PM	6	114	20	0	140	6	19	1	0	26	0	59	21	0	80	14	8	4	0	26	272	1149	0.84
	3:00 PM	4	137	24	0	165	3	25	1	0	29	1	71	18	0	90	44	10	3	0	57	341	1091	0.80
	3:15 PM	2	90	9	0	101	7	15	0	0	22	0	48	19	0	67	27	15	5	0	47	237	1015	0.85
	3:30 PM	1	141	14	0	156	1	14	0	0	15	0	30	12	0	42	67	14	5	0	86	299	1007	0.84
	3:45 PM	1	83	11	0	95	4	18	1	0	23	1	26	24	0	51	32	11	2	0	45	214	1015	0.83
	4:00 PM	2	117	3	0	122	3	20	0	0	23	1	46	23	0	70	32	15	3	0	50	265	1036	0.84
	4:15 PM	0	94	8	0	102	8	19	3	0	30	0	40	19	0	59	18	15	5	0	38	229	1017	0.83
	4:30 PM	1	114	15	0	130	6	21	0	0	27	0	38	23	0	61	71	15	3	0	89	307	997	0.81
	4:45 PM	4	97	10	0	111	6	19	0	0	25	0	35	16	0	51	34	12	2	0	48	235	836	0.85
	5:00 PM	2	101	9	0	112	7	16	1	0	24	0	42	16	0	58	29	17	6	0	52	246	742	0.75
	5:15 PM	1	67	8	0	76	6	24	0	0	30	1	41	14	0	56	21	20	6	0	47	209	661	0.79
	5:30 PM	4	57	6	0	67	5	9	0	0	14	0	32	11	0	43	11	11	0	0	22	146	579	0.88
	5:45 PM	7	37	6	0	50	9	22	0	0	31	0	29	8	0	37	9	6	8	0	23	141	544	0.82
	6:00 PM	5	59	8	0	72	7	10	0	0	17	1	34	8	0	43	24	8	1	0	33	165	511	0.77
	6:15 PM	3	35	11	0	49	9	6	0	0	15	1	28	11	0	40	15	7	1	0	23	127		
	6:30 PM	1	27	1	0	29	4	11	1	0	16	0	34	11	1	46	11	5	4	0	20	111		
	6:45 PM	0	31	2	0	33	3	6	0	0	9	0	30	11	0	41	14	7	4	0	25	108		
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Totals		122	3163	440	0	3725	539	619	29	0	1187	23	2788	962	2	3775	1184	585	217	0	1986	10673		

Peak Hour All Vehicle Volume Summary

Hourly Time Period		From North (Maple Road)					From East (Mequon Road)					From South (Maple Road)					From West (Mequon Road)					Total Hourly	
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Volume	PHF
AM	6:45 AM	10	245	37	0	292	111	42	1	0	154	2	444	154	0	600	92	66	59	0	217	1263	0.71
MD	12:00 PM	13	237	48	0	298	53	60	2	0	115	3	226	87	0	316	88	39	6	0	133	862	0.89
PM	4:00 PM	7	422	36	0	465	23	79	3	0	105	1	159	81	0	241	155	57	13	0	225	1036	0.84

Intersection Traffic Volume Report

Count Basics			Page 9 of 13
Start Date:	Monday, September 23, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 13		Non-Holiday	No Special Events

15-Minute Heavy Vehicle Data

Maple Road & Mequon Road

Heavy Vehicles (Single-Unit Trucks, Buses & Semi-Trucks)

15-Minute Heavy Vehicle Data

	15-Minute	↓ From North					← From East					↑ From South					→ From West						
	Time Period	Maple Road					Mequon Road					Maple Road					Mequon Road					15-Min	Hourly
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals	Sum
AM Peak Period	6:00 AM	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	3	0	1	0	4	10	70
	6:15 AM	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	3	1	0	0	4	8	83
	6:30 AM	0	11	1	0	12	1	0	0	0	1	0	2	3	0	5	2	0	0	0	2	20	93
	6:45 AM	0	10	0	0	10	2	2	0	0	4	0	11	1	0	12	1	0	5	0	6	32	101
	7:00 AM	0	7	3	0	10	1	0	0	0	1	0	6	1	0	7	2	2	1	0	5	23	101
	7:15 AM	0	11	1	0	12	1	1	0	0	2	0	1	2	0	3	1	0	0	0	1	18	109
	7:30 AM	1	7	1	0	9	2	0	1	0	3	0	7	5	0	12	3	1	0	0	4	28	123
	7:45 AM	0	14	3	0	17	0	1	0	0	1	0	6	3	0	9	2	3	0	0	5	32	117
	8:00 AM	0	11	1	0	12	4	1	0	0	5	0	6	3	0	9	2	3	0	0	5	31	106
	8:15 AM	0	13	0	0	13	1	1	0	0	2	0	5	3	0	8	7	1	1	0	9	32	108
	8:30 AM	0	6	1	0	7	4	3	0	0	7	0	4	2	0	6	2	0	0	0	2	22	103
	8:45 AM	0	8	0	0	8	0	1	0	0	1	0	7	3	0	10	2	0	0	0	2	21	106
	9:00 AM	0	10	1	0	11	0	1	1	0	2	0	10	7	0	17	3	0	0	0	3	33	120
	9:15 AM	0	9	1	0	10	3	0	0	0	3	0	10	0	0	10	4	0	0	0	4	27	120
	9:30 AM	0	6	2	0	8	2	0	0	0	2	1	7	4	0	12	2	1	0	0	3	25	127
	9:45 AM	0	6	2	0	8	1	1	1	0	3	0	16	4	0	20	4	0	0	0	4	35	130
Midday Peak Period	10:00 AM	1	6	0	0	7	3	1	0	0	4	0	16	3	0	19	3	0	0	0	3	33	135
	10:15 AM	0	13	1	0	14	2	1	0	0	3	0	8	5	0	13	4	0	0	0	4	34	135
	10:30 AM	0	9	1	0	10	1	1	0	0	2	0	11	2	0	13	3	0	0	0	3	28	131
	10:45 AM	0	15	2	0	17	1	0	0	0	1	0	12	4	0	16	2	2	2	0	6	40	132
	11:00 AM	0	9	1	0	10	3	1	2	0	6	0	11	3	0	14	2	0	1	0	3	33	118
	11:15 AM	0	12	0	0	12	0	2	0	0	2	0	11	1	0	12	3	0	1	0	4	30	115
	11:30 AM	0	10	2	0	12	0	0	0	0	0	0	13	3	0	16	1	0	0	0	1	29	113
	11:45 AM	0	12	1	0	13	3	0	0	0	3	0	4	3	0	7	3	0	0	0	3	26	121
	12:00 PM	1	12	0	0	13	1	0	0	0	1	0	10	3	0	13	3	0	0	0	3	30	130
	12:15 PM	0	8	1	0	9	0	2	0	0	2	0	8	4	0	12	3	1	1	0	5	28	130
	12:30 PM	1	11	1	0	13	2	3	0	0	5	0	10	4	0	14	3	1	1	0	5	37	131
	12:45 PM	2	10	1	0	13	1	3	0	0	4	0	14	2	0	16	2	0	0	0	2	35	127
	1:00 PM	1	10	1	0	12	1	3	0	0	4	0	9	1	0	10	3	1	0	0	4	30	131
	1:15 PM	1	11	0	0	12	0	1	0	0	1	0	9	2	0	11	2	1	2	0	5	29	130
	1:30 PM	3	10	1	0	14	1	0	0	0	1	0	8	5	0	13	2	2	1	0	5	33	129
	1:45 PM	1	13	2	0	16	1	2	0	0	3	0	10	3	0	13	5	1	1	0	7	39	120
PM Peak Period	2:00 PM	0	9	1	0	10	3	0	0	0	3	0	11	1	0	12	2	2	0	0	4	29	109
	2:15 PM	0	10	0	0	10	2	0	0	0	2	0	10	5	0	15	0	0	1	0	1	28	109
	2:30 PM	0	4	0	0	4	2	0	0	0	2	0	11	2	0	13	3	2	0	0	5	24	110
	2:45 PM	1	5	0	0	6	1	2	0	0	3	0	7	6	0	13	2	1	3	0	6	28	100
	3:00 PM	0	10	1	0	11	0	3	0	0	3	0	13	1	0	14	1	0	0	0	1	29	85
	3:15 PM	0	6	1	0	7	0	4	0	0	4	0	12	2	0	14	1	2	1	0	4	29	73
	3:30 PM	0	7	0	0	7	0	1	0	0	1	0	3	1	0	4	2	0	0	0	2	14	58
	3:45 PM	0	2	0	0	2	1	1	0	0	2	0	5	1	0	6	3	0	0	0	3	13	58
	4:00 PM	1	5	0	0	6	0	0	0	0	0	0	5	2	0	7	4	0	0	0	4	17	56
	4:15 PM	0	5	0	0	5	1	0	0	0	1	0	6	1	0	7	0	0	1	0	1	14	49
	4:30 PM	0	3	1	0	4	0	1	0	0	1	0	5	3	0	8	1	0	0	0	1	14	41
	4:45 PM	0	5	0	0	5	0	1	0	0	1	0	3	1	0	4	1	0	0	0	1	11	33
	5:00 PM	0	5	0	0	5	1	0	0	0	1	0	3	1	0	4	0	0	0	0	0	10	27
	5:15 PM	0	3	0	0	3	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	6	28
	5:30 PM	0	0	1	0	1	0	1	0	0	1	0	2	1	0	3	1	0	0	0	1	6	30
	5:45 PM	1	2	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	5	29
	6:00 PM	0	4	0	0	4	0	1	0	0	1	0	5	1	0	6	0	0	0	0	0	11	25
	6:15 PM	1	2	0	0	3	1	0	0	0	1	0	2	0	0	2	1	0	1	0	2	8	
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4	1	0	0	0	1	5	
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		16	395	37	0	448	55	47	5	0	107	1	371	121	0	493	111	28	26	0	165	1213	

Peak Hour Heavy Vehicle Volume Summary

	Hourly	↓ From North					← From East					↑ From South					→ From West					Total
	Time Period	Maple Road					Mequon Road					Maple Road					Mequon Road					Hourly
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Volume
AM	6:45 AM	1	35	5	0	41	6	3	1	0	10	0	25	9	0	34	7	3	6	0	16	101
MD	12:00 PM	4	41	3	0	48	4	8	0	0	12	0	42	13	0	55	11	2	2	0	15	130
PM	4:00 PM	1	18	1	0	20	1	2	0	0	3	0	19	7	0	26	6	0	1	0	7	56

Intersection Traffic Volume Report

Count Basics	Version 2024.04		Page 1 of 13
Start Date:	Monday, September 23, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

Base Information, Observed (6) Hour and Estimated (24) Hour Volume Summaries

Major St: **Maple Road**
Minor St: **Kleimmann Drive**
Intersection of: ***Maple Road & Kleimmann Drive*** **IX_ID:**

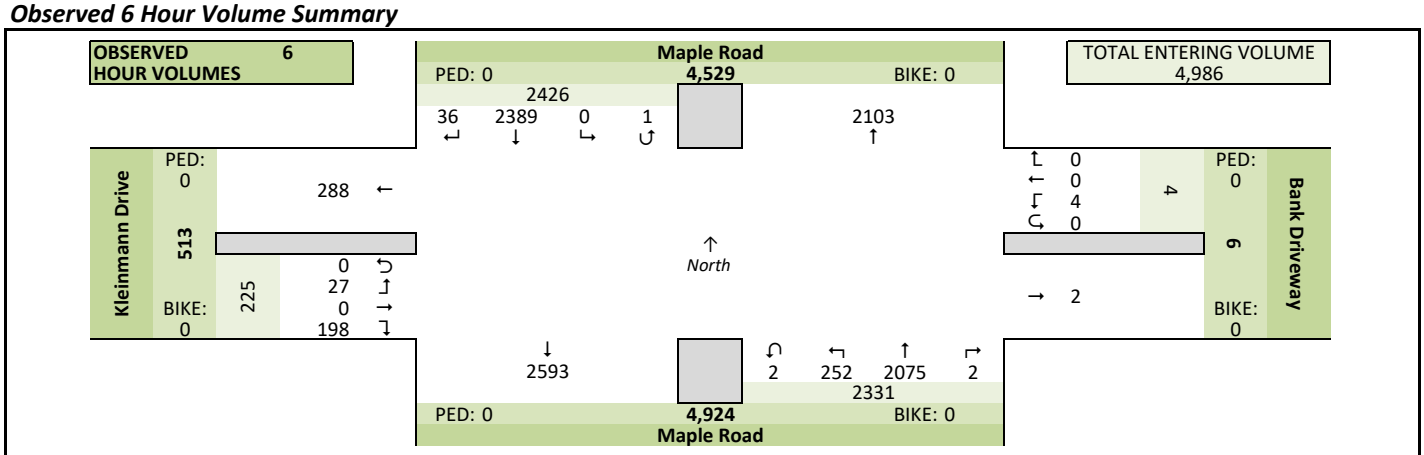
Site Information

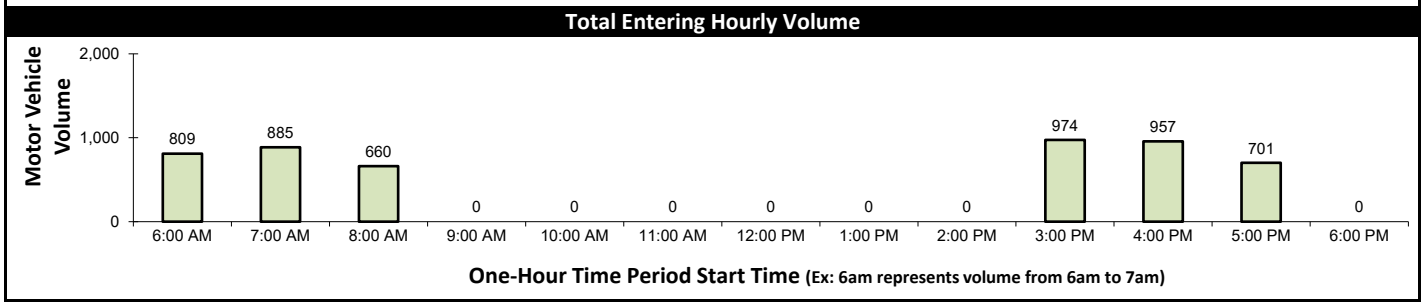
Municipality	Village of Germantown		
County	66 - Washington	WisDOT Region	SE
Traffic Control	Partial Stop Control		
Roadway Names		North Direction	↑
North Leg	Maple Road		
East Leg	Bank Driveway		
South Leg	Maple Road		
West Leg	Kleinmann Drive		
Special Considerations			
Schools	In Session		
Holidays	None		
Special Events	None		
Special Pedestrians Observed			
Pre-school children	None		
Elementry school age children	None		
Visually impaired (white cane/helper dog)	None		
Elderly/disabled (except wheelchairs)	None		
Wheelchairs/electric scooters	None		
Other (describe)	None	None	

Count Information

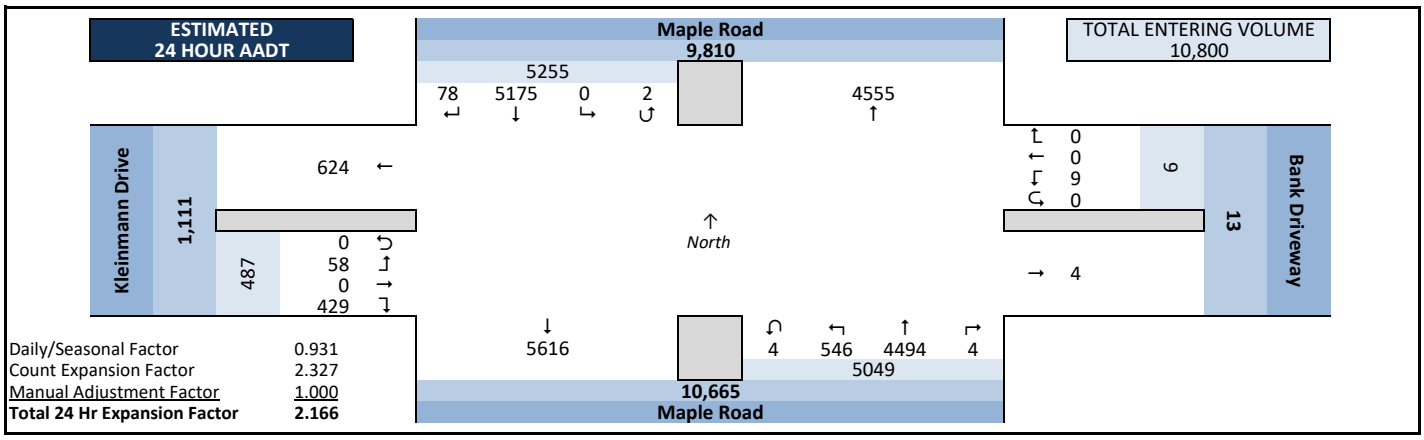
Hrs Counted:	06:00 AM-09:00 AM and 03:00 PM-06:00 PM				
1st Day of Count	Monday, September 23, 2024			Weather	
AM Peak Period	Tuesday, September 24, 2024			Clear & Dry	
Midday Peak Period	Tuesday, September 24, 2024			Clear & Dry	
PM Peak Period	Monday, September 23, 2024			Clear & Dry	
Calculated Peak Hours					
AM	6:30-7:30am	MD		PM	3:00-4:00pm
Peak Hours Selected for Analysis					
AM	6:45-7:45am	MD		PM	4:00-5:00pm
Daily/Seasonal Adjustment Group	(2) Urban Arterials & Collectors				
Count Expansion Group	(2) Urban Arterials & Collectors				
Daily/Seasonal Adjustment Factor	0.931	Count Expansion Factor	2.327		
Company Name	TADI, Inc.			Manual Adj.	1.000
Observers	AM Peak Period	LuAnn Gaertner			
	Midday Peak Period	None			
	PM Peak Period	Jane Fait			
Comments	2021 DOT Daily & Seasonal Factors				

Observed 6 Hour Volume Summary





Estimated 24 Hour AADT



Intersection Traffic Volume Report

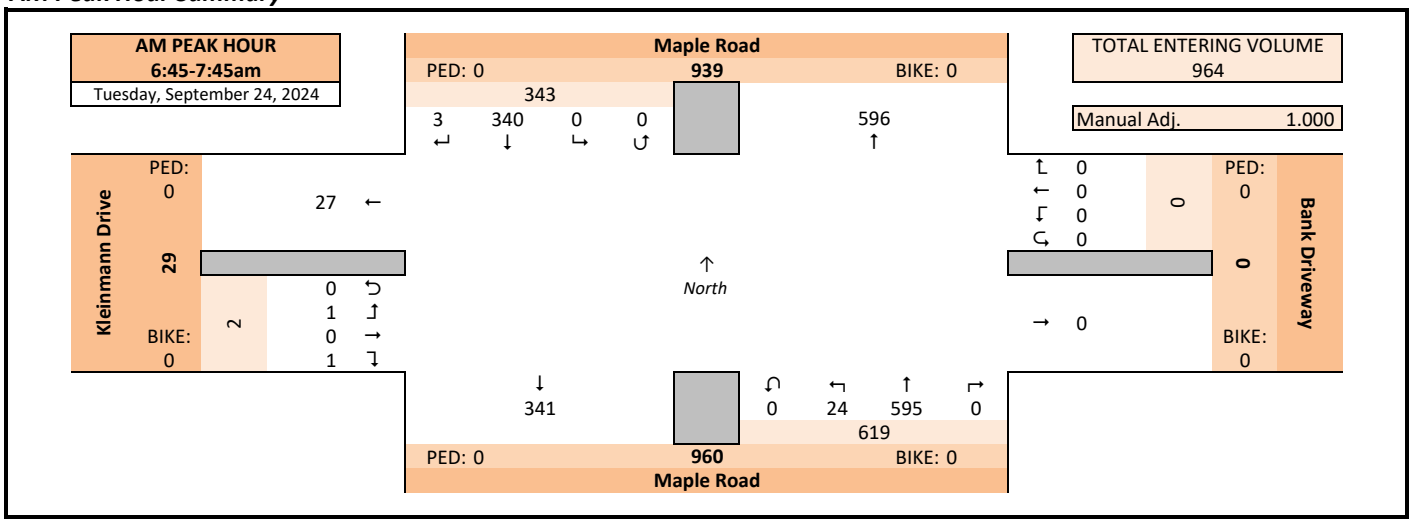
Peak Hour Volume Graphical Summary

Count Basics			*Page 2 of 13*
Start Date:	Monday, September 23, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

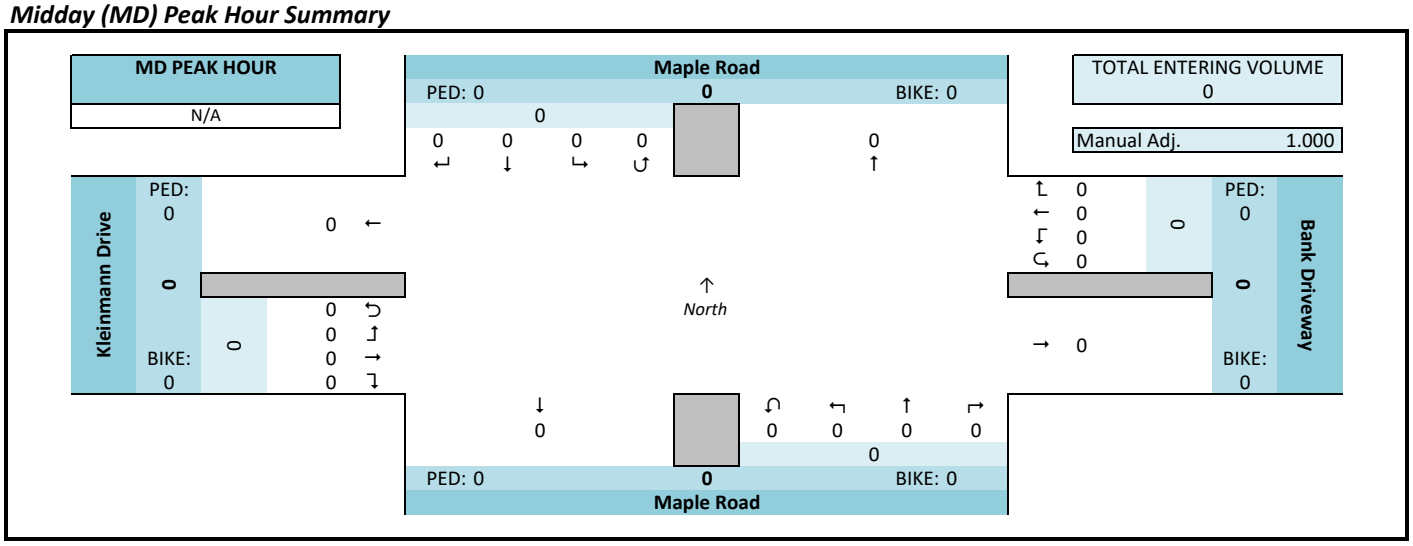
Maple Road & Kleimmann Drive

All Motor Vehicles

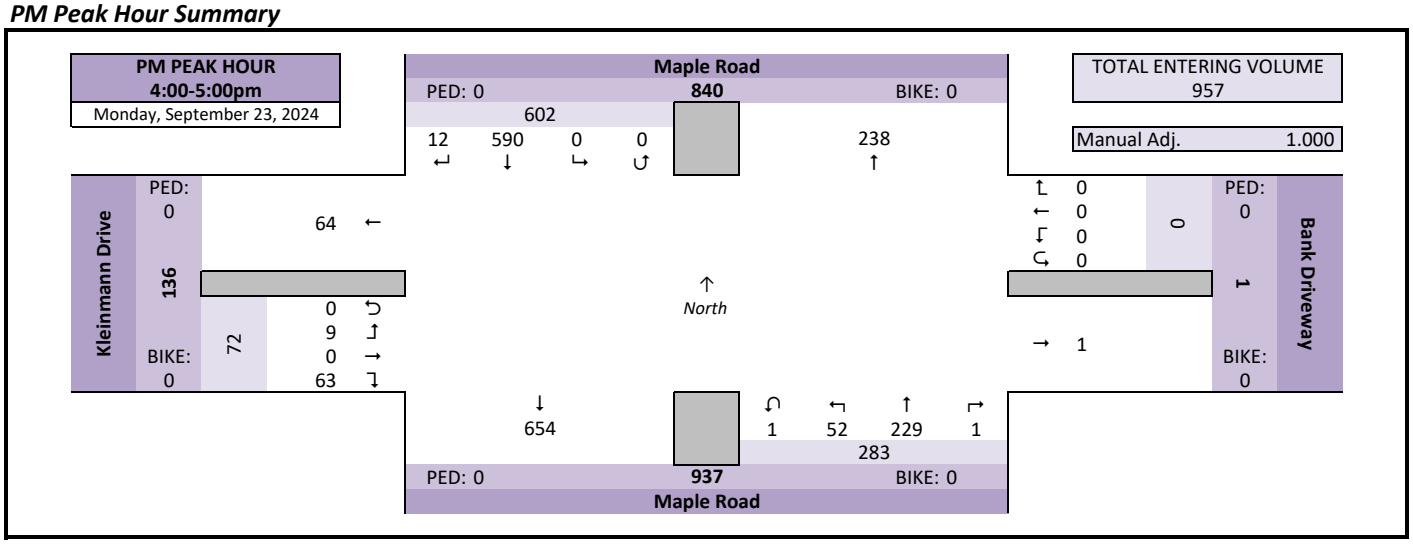
AM Peak Hour Summary



Midday (MD) Peak Hour Summary



PM Peak Hour Summary



Intersection Traffic Volume Report

Count Basics			Page 3 of 13
Start Date:	Monday, September 23, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

Peak Hour Volume Summary

Maple Road & Kleimmann Drive

All Motor Vehicles

Peak Hour Volumes, Truck Percentages, and PHFs

Tuesday, September 24, 2024		From North					From East					From South					From West					
AM Peak Hour	AM Peak Hour	Maple Road					Bank Driveway					Maple Road					Kleinmann Drive					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
	6:45 AM	0	46	0	0	46	0	0	0	0	0	0	267	3	0	270	0	0	0	0	0	316
	7:00 AM	0	142	0	0	142	0	0	0	0	0	0	104	6	0	110	0	0	0	0	0	252
	7:15 AM	2	75	0	0	77	0	0	0	0	0	0	94	7	0	101	0	0	0	0	0	178
	7:30 AM	1	77	0	0	78	0	0	0	0	0	0	130	8	0	138	1	0	1	0	2	218
	Peak Hour Volume	3	340	0	0	343	0	0	0	0	0	0	595	24	0	619	1	0	1	0	2	964
	Rounded Hourly Volume	5	340	0	0	345	0	0	0	0	0	0	595	25	0	620	0	0	0	0	0	965
	% Single Unit Trucks	33.3	7.9	0.0	0.0	8.2	0.0	0.0	0.0	0.0	0.0	0.0	2.5	4.2	0.0	2.6	0.0	0.0	0.0	0.0	0.0	4.6
	% Heavy Trucks	0.0	3.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	2.8
	% Trucks (Total)	33.3	11.8	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	4.2	0.0	4.8	0.0	0.0	0.0	0.0	0.0	7.4
	Peak Hour Factor (PHF)	0.37	0.60	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.56	0.75	0.00	0.57	0.25	0.00	0.25	0.00	0.25	0.76

N/A		From North					From East					From South					From West					
Midday (MD) Peak Hour	MD Peak Hour	Maple Road					Bank Driveway					Maple Road					Kleinmann Drive					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Peak Hour Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rounded Hourly Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	% Single Unit Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	% Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	% Trucks (Total)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Peak Hour Factor (PHF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Monday, September 23, 2024		From North					From East					From South					From West					
PM Peak Hour	PM Peak Hour	Maple Road					Bank Driveway					Maple Road					Kleinmann Drive					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
	4:00 PM	4	149	0	0	153	0	0	0	0	0	0	66	24	0	90	15	0	5	0	20	263
	4:15 PM	2	112	0	0	114	0	0	0	0	0	0	57	8	1	66	15	0	1	0	16	196
	4:30 PM	5	202	0	0	207	0	0	0	0	0	0	56	4	0	60	17	0	1	0	18	285
	4:45 PM	1	127	0	0	128	0	0	0	0	0	1	50	16	0	67	16	0	2	0	18	213
	Peak Hour Volume	12	590	0	0	602	0	0	0	0	0	1	229	52	1	283	63	0	9	0	72	957
	Rounded Hourly Volume	10	590	0	0	600	0	0	0	0	0	0	230	50	0	280	65	0	10	0	75	955
	% Single Unit Trucks	0.0	2.2	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	6.6	3.8	0.0	6.0	1.6	0.0	0.0	0.0	1.4	3.2
	% Heavy Trucks	0.0	1.9	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	2.1
	% Trucks (Total)	0.0	4.1	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	10.5	3.8	0.0	9.2	1.6	0.0	0.0	0.0	1.4	5.3
	Peak Hour Factor (PHF)	0.60	0.73	0.00	0.00	0.73	0.00	0.00	0.00	0.00	0.00	0.25	0.87	0.54	0.25	0.79	0.93	0.00	0.45	0.00	0.90	0.84

Peak Hour Pedestrian and Bicyclist Volumes

Pedestrians and Bicyclists		Crossing North Approach			Crossing East Approach			Crossing South Approach			Crossing West Approach			Total Ped & Bike Volume
		Maple Road			Bank Driveway			Maple Road			Kleinmann Drive			
	15-Minute Start Time	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	
AM	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Traffic Volume Report

15-Minute Motor Vehicle Data

Count Basics		*Page 5 of 13*
Start Date: Monday, September 23, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6	Non-Holiday	No Special Events

Maple Road & Kleimmann Drive

All Motor Vehicles

15-Minute Motor Vehicle Data

15-Minute Time Period		From North (Maple Road)					From East (Bank Driveway)					From South (Maple Road)					From West (Kleinmann Drive)					15-Min Totals	Hourly Sum	PHF
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total			
AM Peak Period	6:00 AM	0	39	0	0	39	0	0	0	0	0	0	64	2	0	66	0	0	0	0	0	105	809	0.64
	6:15 AM	0	43	0	0	43	0	0	0	0	0	0	99	3	0	102	0	0	0	0	0	145	956	0.76
	6:30 AM	0	56	0	0	56	0	0	0	0	0	0	184	3	0	187	0	0	0	0	0	243	989	0.78
	6:45 AM	0	46	0	0	46	0	0	0	0	0	0	267	3	0	270	0	0	0	0	0	316	964	0.76
	7:00 AM	0	142	0	0	142	0	0	0	0	0	0	104	6	0	110	0	0	0	0	0	252	885	0.88
	7:15 AM	2	75	0	0	77	0	0	0	0	0	0	94	7	0	101	0	0	0	0	0	178	840	0.89
	7:30 AM	1	77	0	0	78	0	0	0	0	0	0	130	8	0	138	1	0	1	0	2	218	834	0.88
	7:45 AM	1	101	0	1	103	0	0	0	0	0	0	126	7	0	133	1	0	0	0	1	237	780	0.82
	8:00 AM	2	72	0	0	74	0	0	0	0	0	0	117	15	0	132	1	0	0	0	1	207	660	0.80
	8:15 AM	1	69	0	0	70	0	0	1	0	1	0	88	11	0	99	2	0	0	0	2	172		
	8:30 AM	0	81	0	0	81	0	0	0	0	0	0	70	9	0	79	4	0	0	0	4	164		
	8:45 AM	0	46	0	0	46	0	0	0	0	0	0	54	14	0	68	3	0	0	0	3	117		
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	3:00 PM	2	189	0	0	191	0	0	0	0	0	0	88	5	0	93	6	0	3	0	9	293	974	0.83
	3:15 PM	1	117	0	0	118	0	0	0	0	0	0	72	9	0	81	8	0	0	0	8	207	944	0.90
	3:30 PM	1	206	0	0	207	0	0	1	0	1	1	43	7	0	51	2	0	0	0	2	261	933	0.89
	3:45 PM	6	109	0	0	115	0	0	1	0	1	0	51	29	0	80	15	0	2	0	17	213	957	0.84
	4:00 PM	4	149	0	0	153	0	0	0	0	0	0	66	24	0	90	15	0	5	0	20	263	957	0.84
	4:15 PM	2	112	0	0	114	0	0	0	0	0	0	57	8	1	66	15	0	1	0	16	196	937	0.82
	4:30 PM	5	202	0	0	207	0	0	0	0	0	0	56	4	0	60	17	0	1	0	18	285	933	0.82
	4:45 PM	1	127	0	0	128	0	0	0	0	0	1	50	16	0	67	16	0	2	0	18	213	792	0.81
	5:00 PM	1	132	0	0	133	0	0	0	0	0	0	62	18	0	80	28	0	2	0	30	243	701	0.72
	5:15 PM	3	86	0	0	89	0	0	1	0	1	0	52	15	0	67	31	0	4	0	35	192		
	5:30 PM	1	68	0	0	69	0	0	0	0	0	0	44	16	1	61	11	0	3	0	14	144		
	5:45 PM	2	45	0	0	47	0	0	0	0	0	0	37	13	0	50	22	0	3	0	25	122		
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Totals		36	2389	0	1	2426	0	0	4	0	4	2	2075	252	2	2331	198	0	27	0	225	4986		

Peak Hour All Vehicle Volume Summary

Hourly Time Period		From North (Maple Road)					From East (Bank Driveway)					From South (Maple Road)					From West (Kleinmann Drive)					Total Hourly Volume	PHF
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
AM	6:45 AM	3	340	0	0	343	0	0	0	0	0	0	595	24	0	619	1	0	1	0	2	964	0.76
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM	4:00 PM	12	590	0	0	602	0	0	0	0	0	1	229	52	1	283	63	0	9	0	72	957	0.84

Intersection Traffic Volume Report

Count Basics			Page 9 of 13
Start Date:	Monday, September 23, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

15-Minute Heavy Vehicle Data

Maple Road & Kleimmann Drive

Heavy Vehicles (Single-Unit Trucks, Buses & Semi-Trucks)

15-Minute Heavy Vehicle Data

	15-Minute Time Period Start Time	From North (Maple Road) Right	Thru	Left	U-Tn	Total	From East (Bank Driveway) Right	Thru	Left	U-Tn	Total	From South (Maple Road) Right	Thru	Left	U-Tn	Total	From West (Kleinmann Drive) Right	Thru	Left	U-Tn	Total	15-Min Totals	Hourly Sum
AM Peak Period	6:00 AM	0	8	0	0	8	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	9	55
	6:15 AM	0	5	0	0	5	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	7	61
	6:30 AM	0	14	0	0	14	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	20	68
	6:45 AM	0	10	0	0	10	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	19	71
	7:00 AM	0	9	0	0	9	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	15	78
	7:15 AM	1	9	0	0	10	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	14	84
	7:30 AM	0	12	0	0	12	0	0	0	0	0	0	10	1	0	11	0	0	0	0	0	23	96
	7:45 AM	0	15	0	0	15	0	0	0	0	0	0	10	1	0	11	0	0	0	0	0	26	90
	8:00 AM	0	14	0	0	14	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	21	83
	8:15 AM	0	18	0	0	18	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	26	
	8:30 AM	0	9	0	0	9	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	17	
	8:45 AM	0	10	0	0	10	0	0	0	0	0	0	8	1	0	9	0	0	0	0	0	19	
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:00 PM	0	11	0	0	11	0	0	0	0	0	0	13	0	0	13	0	0	1	0	1	25	69
	3:15 PM	0	6	0	0	6	0	0	0	0	0	0	15	0	0	15	0	0	0	0	0	21	60
	3:30 PM	0	8	0	0	8	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	12	50
	3:45 PM	0	5	0	0	5	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	11	51
	4:00 PM	0	9	0	0	9	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	16	51
	4:15 PM	0	5	0	0	5	0	0	0	0	0	0	5	1	0	6	0	0	0	0	0	11	44
	4:30 PM	0	4	0	0	4	0	0	0	0	0	0	8	0	0	8	1	0	0	0	1	13	38
	4:45 PM	0	6	0	0	6	0	0	0	0	0	0	4	1	0	5	0	0	0	0	0	11	29
	5:00 PM	0	5	0	0	5	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	9	22
	5:15 PM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5	
	5:30 PM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4	
	5:45 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	4	
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		1	198	0	0	199	0	0	0	0	0	0	151	5	0	156	2	0	1	0	3	358	

Peak Hour Heavy Vehicle Volume Summary

	Hourly Time Period Start Time	From North (Maple Road) Right	Thru	Left	U-Tn	Total	From East (Bank Driveway) Right	Thru	Left	U-Tn	Total	From South (Maple Road) Right	Thru	Left	U-Tn	Total	From West (Kleinmann Drive) Right	Thru	Left	U-Tn	Total	Total Hourly Volume
AM	6:45 AM	1	40	0	0	41	0	0	0	0	0	0	29	1	0	30	0	0	0	0	0	71
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	24	0	0	24	0	0	0	0	0	0	24	2	0	26	1	0	0	0	1	51

Intersection Traffic Volume Report

Count Basics	Version 2013.J4.1		Page 1 of 13
Start Date:	Tuesday, May 18, 2021	Weekday	Schools in Session
Total Number of Hours Counted: 13		Non-Holiday	No Special Events

Base Information, Observed (13) Hour and Estimated (24) Hour Volume Summaries

Intersection of: Maple Road and STH 167/Lannon Road

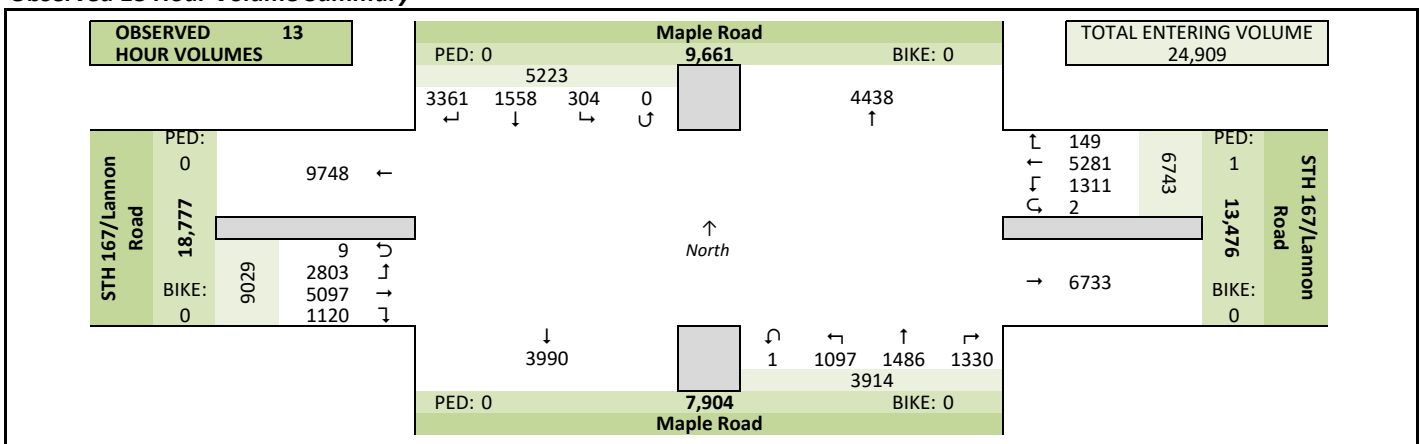
Site Information

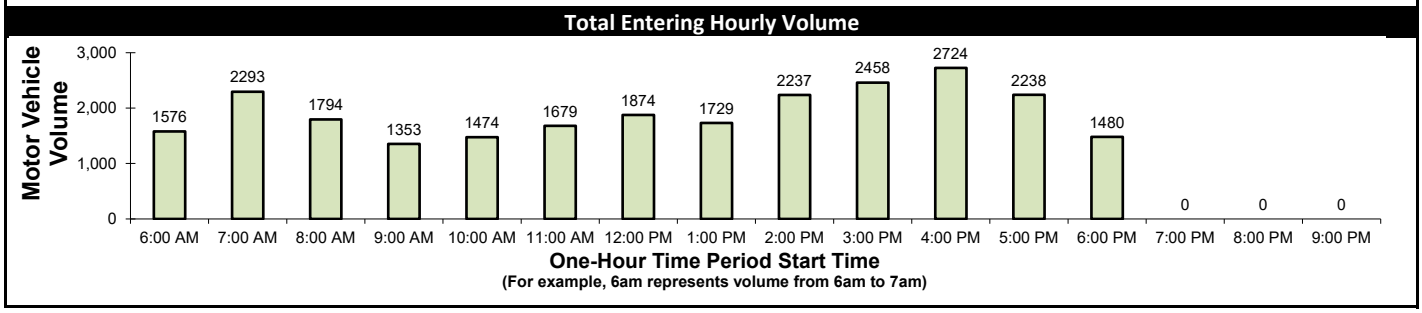
Municipality	Village of Germantown		
County	Washington	WisDOT Region	SE
Traffic Control	Traffic Signal		
Roadway Names		North Direction	↑
North Leg	Maple Road		
East Leg	STH 167/Lannon Road		
South Leg	Maple Road		
West Leg	STH 167/Lannon Road		
Special Considerations			
Schools	In Session		
Holidays	None		
Special Events	None		
Special Pedestrians Observed			
Pre-school children		None	
Elementry school age children		None	
Visually impaired (white cane/helper dog)		None	
Elderly/disabled (except wheelchairs)		None	
Wheelchairs/electric scooters		None	
Other (describe)	None	None	

Count Information

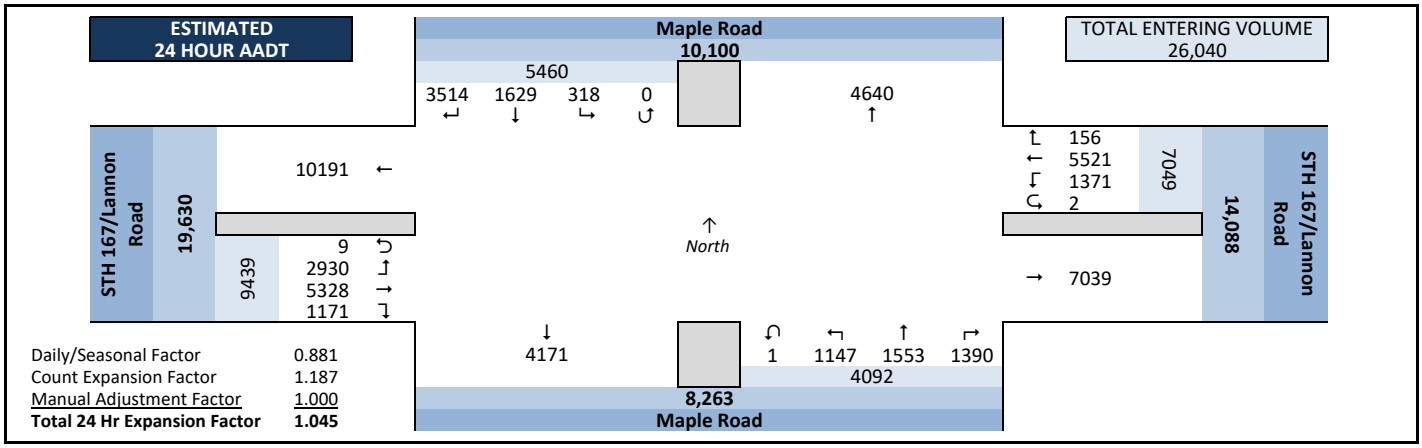
Hrs Counted:	6:00 AM-7:00 PM				
1st Day of Count	Tuesday, May 18, 2021			Weather	
AM Peak Period	Tuesday, May 18, 2021			Clear & Dry	
Midday Peak Period	Tuesday, May 18, 2021			Clear & Dry	
PM Peak Period	Tuesday, May 18, 2021			Clear & Dry	
Calculated Peak Hours					
AM	7:00-8:00am	MD	12:00-1:00pm	PM	4:00-5:00pm
Peak Hours Selected for Analysis					
AM	6:45-7:45am	MD	12:00-1:00pm	PM	4:00-5:00pm
Daily/Seasonal Adjustment Group	(2) Urban Arterials & Collectors				
Count Expansion Group	(2) Urban Arterials & Collectors				
Daily/Seasonal Adjustment Factor	0.881		Count Expansion Factor	1.187	
Company Name	TADI			Manual Adj.	1.000
Observers	AM Peak Period	TADI			
	Midday Peak Period	TADI			
	PM Peak Period	TADI			
Comments	2019 DOT Seasonal Factors				

Observed 13 Hour Volume Summary





Estimated 24 Hour AADT



Intersection Traffic Volume Report

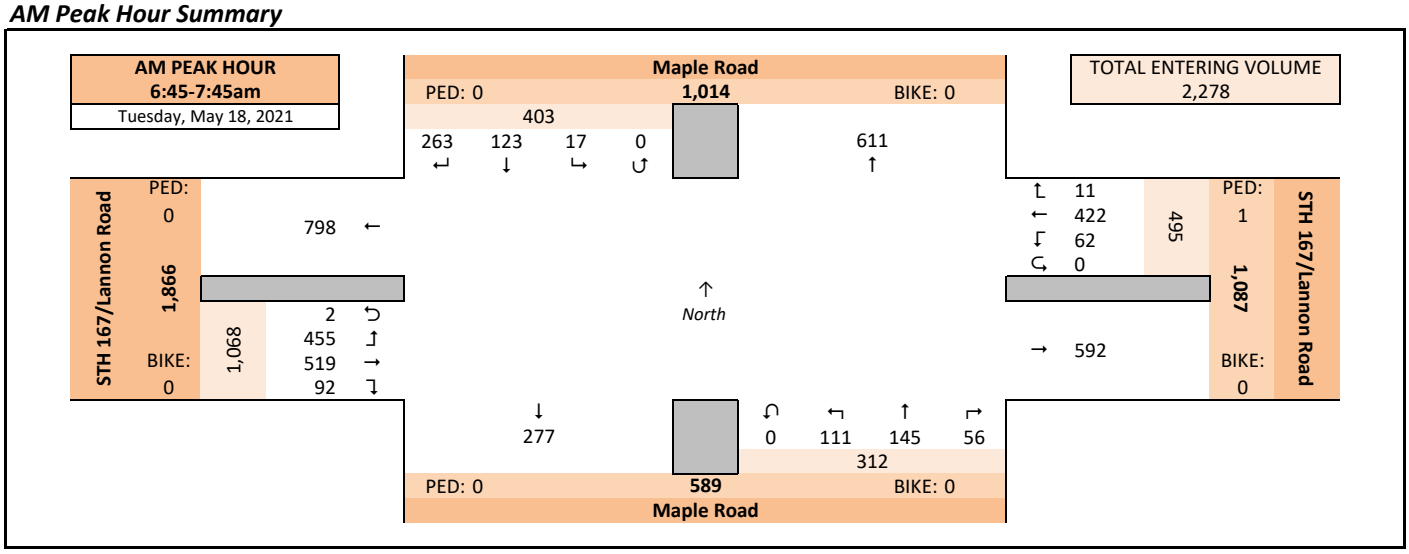
Count Basics			Page 2 of 13
Start Date:	Tuesday, May 18, 2021	Weekday	Schools in Session
Total Number of Hours Counted: 13		Non-Holiday	No Special Events

Peak Hour Volume Graphical Summary

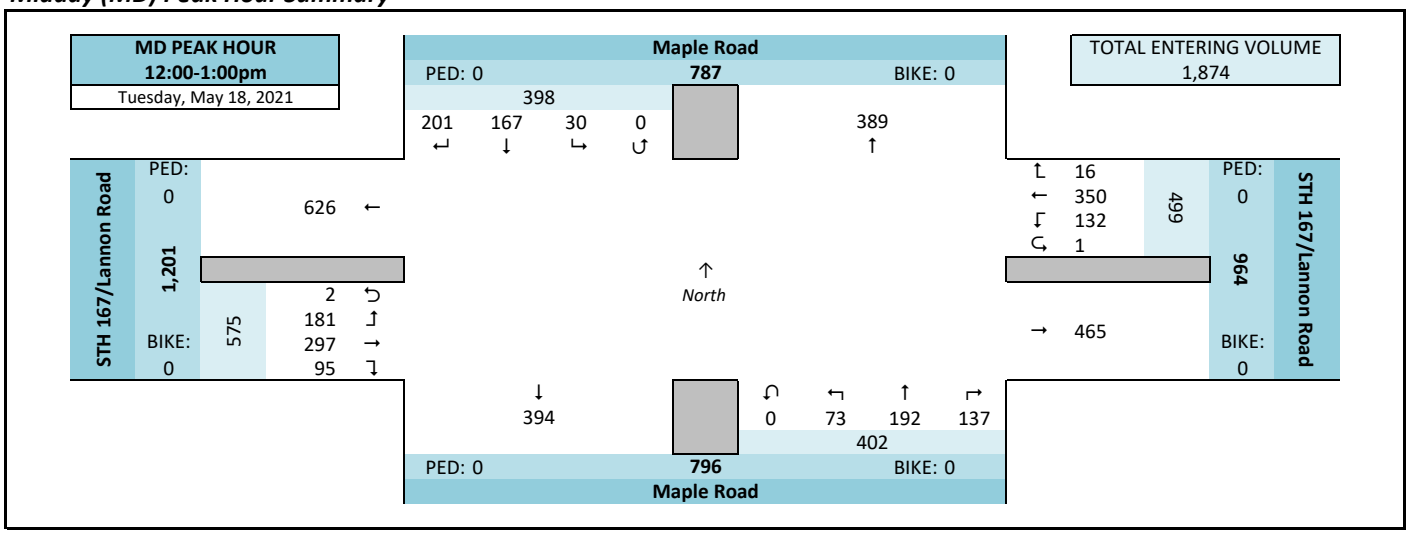
All Motor Vehicles

Maple Road and STH 167/Lannon Road

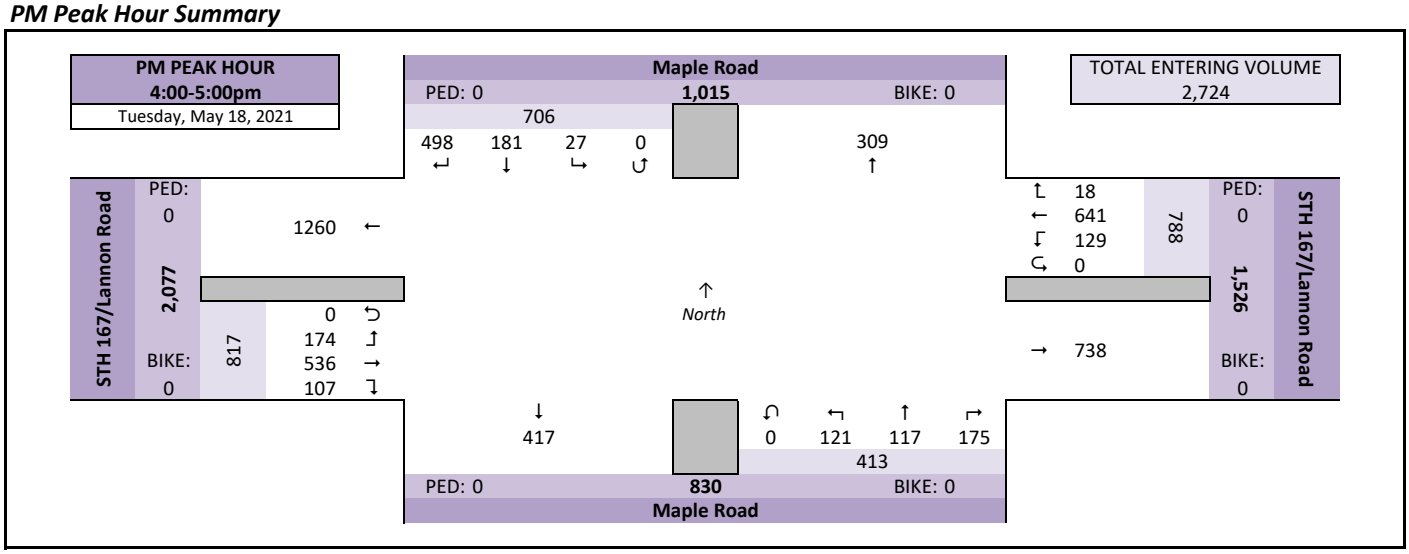
AM Peak Hour Summary



Midday (MD) Peak Hour Summary



PM Peak Hour Summary



Intersection Traffic Volume Report

Count Basics			Page 3 of 13
Start Date:	Tuesday, May 18, 2021	Weekday	Schools in Session
Total Number of Hours Counted: 13		Non-Holiday	No Special Events

Peak Hour Volume Summary

All Motor Vehicles

Maple Road and STH 167/Lannon Road

Peak Hour Volumes, Truck Percentages, and PHFs

Tuesday, May 18, 2021		From North					From East					From South					From West					
	AM Peak Hour	Maple Road					STH 167/Lannon Road					Maple Road					STH 167/Lannon Road					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
AM Peak Hour	6:45 AM	40	17	5	0	62	2	76	12	0	90	13	32	24	0	69	26	128	164	0	318	539
	7:00 AM	109	48	8	0	165	4	111	11	0	126	13	62	23	0	98	14	118	131	1	264	653
	7:15 AM	56	31	3	0	90	2	130	20	0	152	22	23	33	0	78	27	135	78	1	241	561
	7:30 AM	58	27	1	0	86	3	105	19	0	127	8	28	31	0	67	25	138	82	0	245	525
	Peak Hour Volume	263	123	17	0	403	11	422	62	0	495	56	145	111	0	312	92	519	455	2	1068	2278
	Rounded Hourly Volume	265	125	15	0	405	10	420	60	0	490	55	145	110	0	310	90	520	455	0	1065	2270
	% Single Unit Trucks	7.6	11.4	35.3	0.0	9.9	9.1	5.5	4.8	0.0	5.5	10.7	2.1	7.2	0.0	5.4	10.9	7.7	5.7	0.0	7.1	7.0
	% Heavy Trucks	7.2	0.0	5.9	0.0	5.0	18.2	1.7	0.0	0.0	1.8	0.0	0.7	0.0	0.0	0.3	0.0	4.2	3.1	0.0	3.4	2.9
	% Trucks (Total)	14.8	11.4	41.2	0.0	14.9	27.3	7.1	4.8	0.0	7.3	10.7	2.8	7.2	0.0	5.8	10.9	11.9	8.8	0.0	10.5	9.9
	Peak Hour Factor (PHF)	0.60	0.64	0.53	0.00	0.61	0.69	0.81	0.77	0.00	0.81	0.64	0.58	0.84	0.00	0.80	0.85	0.94	0.69	0.50	0.84	0.87

Tuesday, May 18, 2021		From North					From East					From South					From West					
	MD Peak Hour	Maple Road					STH 167/Lannon Road					Maple Road					STH 167/Lannon Road					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
Midday (MD) Peak Hour	12:00 PM	72	63	12	0	147	3	94	33	0	130	33	67	22	0	122	21	74	40	0	135	534
	12:15 PM	44	41	7	0	92	6	90	34	0	130	34	46	17	0	97	25	72	47	1	145	464
	12:30 PM	48	29	4	0	81	4	71	29	1	105	34	46	13	0	93	19	74	46	0	139	418
	12:45 PM	37	34	7	0	78	3	95	36	0	134	36	33	21	0	90	30	77	48	1	156	458
	Peak Hour Volume	201	167	30	0	398	16	350	132	1	499	137	192	73	0	402	95	297	181	2	575	1874
	Rounded Hourly Volume	200	165	30	0	395	15	350	130	0	495	135	190	75	0	400	95	295	180	0	570	1860
	% Single Unit Trucks	7.0	6.0	20.0	0.0	7.5	6.2	9.4	3.0	0.0	7.6	2.9	3.1	9.6	0.0	4.2	5.3	10.8	13.3	0.0	10.6	7.8
	% Heavy Trucks	14.4	0.6	6.7	0.0	8.0	6.2	4.6	0.8	0.0	3.6	0.0	1.0	0.0	0.0	0.5	0.0	5.1	16.6	0.0	7.8	5.2
	% Trucks (Total)	21.4	6.6	26.7	0.0	15.6	12.5	14.0	3.8	0.0	11.2	2.9	4.2	9.6	0.0	4.7	5.3	15.8	29.8	0.0	18.4	13.0
	Peak Hour Factor (PHF)	0.70	0.66	0.62	0.00	0.68	0.67	0.92	0.92	0.25	0.93	0.95	0.72	0.83	0.00	0.82	0.79	0.96	0.94	0.50	0.92	0.88

Tuesday, May 18, 2021		From North					From East					From South					From West					
	PM Peak Hour	Maple Road					STH 167/Lannon Road					Maple Road					STH 167/Lannon Road					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
PM Peak Hour	4:00 PM	140	47	6	0	193	7	151	29	0	187	40	30	36	0	106	27	129	47	0	203	689
	4:15 PM	89	50	1	0	140	2	161	29	0	192	47	27	24	0	98	36	135	37	0	208	638
	4:30 PM	165	52	11	0	228	6	182	30	0	218	40	32	32	0	104	22	137	44	0	203	753
	4:45 PM	104	32	9	0	145	3	147	41	0	191	48	28	29	0	105	22	135	46	0	203	644
	Peak Hour Volume	498	181	27	0	706	18	641	129	0	788	175	117	121	0	413	107	536	174	0	817	2724
	Rounded Hourly Volume	500	180	25	0	705	20	640	130	0	790	175	115	120	0	410	105	535	175	0	815	2720
	% Single Unit Trucks	2.0	2.2	3.7	0.0	2.1	5.6	3.0	0.8	0.0	2.7	1.7	3.4	2.5	0.0	2.4	4.7	2.6	8.0	0.0	4.0	2.9
	% Heavy Trucks	2.4	0.6	0.0	0.0	1.8	0.0	0.8	2.3	0.0	1.0	0.0	0.0	0.8	0.0	0.2	0.0	1.7	8.0	0.0	2.8	1.7
	% Trucks (Total)	4.4	2.8	3.7	0.0	4.0	5.6	3.7	3.1	0.0	3.7	1.7	3.4	3.3	0.0	2.7	4.7	4.3	16.1	0.0	6.9	4.6
	Peak Hour Factor (PHF)	0.75	0.87	0.61	0.00	0.77	0.64	0.88	0.79	0.00	0.90	0.91	0.91	0.84	0.00	0.97	0.74	0.98	0.93	0.00	0.98	0.90

Peak Hour Pedestrian and Bicyclist Volumes

Pedestrians and Bicyclists		Crossing North Approach			Crossing East Approach			Crossing South Approach			Crossing West Approach			Total Ped & Bike Volume
		Maple Road			STH 167/Lannon Road			Maple Road			STH 167/Lannon Road			
	15-Minute Start Time	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	
AM	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	1	0	1	0	0	0	0	0	0	1
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	1	0	1	0	0	0	0	0	0	1
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Traffic Volume Report

Count Basics		*Page 5 of 13*
Start Date: Tuesday, May 18, 2021	Weekday	Schools in Session
Total Number of Hours Counted: 13	Non-Holiday	No Special Events

15-Minute Motor Vehicle Data

All Motor Vehicles

Maple Road and STH 167/Lannon Road

15-Minute Motor Vehicle Data

	15-Minute Time Period Start Time	From North (Maple Road) Right	Thru	Left	U-Tn	Total	From East (STH 167/Lannon Road) Right	Thru	Left	U-Tn	Total	From South (Maple Road) Right	Thru	Left	U-Tn	Total	From West (STH 167/Lannon Road) Right	Thru	Left	U-Tn	Total	15-Min Totals	Hourly Sum	PHF
AM Peak Period	6:00 AM	36	8	0	0	44	0	43	6	0	49	7	16	12	0	35	12	53	58	0	123	251	1576	0.73
	6:15 AM	43	9	2	0	54	0	46	11	0	57	11	21	10	0	42	20	83	79	1	183	336	1978	0.76
	6:30 AM	48	15	0	0	63	1	74	16	0	91	14	32	15	0	61	30	87	118	0	235	450	2203	0.84
	6:45 AM	40	17	5	0	62	2	76	12	0	90	13	32	24	0	69	26	128	164	0	318	539	2278	0.87
	7:00 AM	109	48	8	0	165	4	111	11	0	126	13	62	23	0	98	14	118	131	1	264	653	2293	0.88
	7:15 AM	56	31	3	0	90	2	130	20	0	152	22	23	33	0	78	27	135	78	1	241	561	2135	0.95
	7:30 AM	58	27	1	0	86	3	105	19	0	127	8	28	31	0	67	25	138	82	0	245	525	2015	0.91
	7:45 AM	61	18	4	0	83	2	75	9	0	86	17	36	22	0	75	23	166	121	0	310	554	1927	0.87
	8:00 AM	46	22	5	0	73	2	83	20	0	105	20	22	13	0	55	16	144	102	0	262	495	1794	0.91
	8:15 AM	31	20	8	0	59	1	84	15	0	100	17	17	21	0	55	18	148	61	0	227	441	1625	0.92
	8:30 AM	38	25	3	0	66	1	83	21	0	105	18	15	20	0	53	21	137	55	0	213	437	1515	0.87
	8:45 AM	36	24	4	0	64	2	74	26	0	102	21	16	12	0	49	12	139	55	0	206	421	1406	0.83
	9:00 AM	40	23	2	0	65	1	72	10	0	83	10	19	14	0	43	16	71	48	0	135	326	1353	0.92
	9:15 AM	38	20	3	0	61	3	79	23	0	105	15	21	17	0	53	13	68	31	0	112	331	1383	0.94
	9:30 AM	32	28	5	0	65	0	62	28	0	90	13	23	15	0	51	15	72	35	0	122	328	1393	0.95
	9:45 AM	40	20	4	0	64	6	68	29	1	104	17	22	19	0	58	13	87	41	1	142	368	1420	0.96
Midday Peak Period	10:00 AM	47	15	11	0	73	1	80	21	0	102	27	23	15	0	65	15	69	32	0	116	356	1474	0.87
	10:15 AM	48	22	4	0	74	0	72	30	0	102	21	15	15	0	51	12	64	37	1	114	341	1535	0.91
	10:30 AM	41	24	2	0	67	0	72	26	0	98	21	18	22	0	61	14	88	27	0	129	355	1581	0.94
	10:45 AM	30	26	8	0	64	6	89	29	0	124	26	26	19	0	71	26	100	37	0	163	422	1672	0.94
	11:00 AM	51	38	4	0	93	1	95	30	0	126	39	27	18	0	84	25	60	29	0	114	417	1679	0.94
	11:15 AM	39	31	8	0	78	2	84	30	0	116	35	26	25	0	86	13	68	26	0	107	387	1796	0.84
	11:30 AM	41	45	13	0	99	3	87	27	0	117	31	35	22	0	88	21	87	34	0	142	446	1873	0.88
	11:45 AM	45	48	6	0	99	5	95	30	0	130	22	35	21	0	78	14	66	42	0	122	429	1845	0.86
	12:00 PM	72	63	12	0	147	3	94	33	0	130	33	67	22	0	122	21	74	40	0	135	534	1874	0.88
	12:15 PM	44	41	7	0	92	6	90	34	0	130	34	46	17	0	97	25	72	47	1	145	464	1795	0.97
	12:30 PM	48	29	4	0	81	4	71	29	1	105	34	46	13	0	93	19	74	46	0	139	418	1737	0.95
	12:45 PM	37	34	7	0	78	3	95	36	0	134	36	33	21	0	90	30	77	48	1	156	458	1741	0.95
	1:00 PM	60	29	10	0	99	0	92	31	0	123	29	32	31	0	92	24	87	30	0	141	455	1729	0.95
	1:15 PM	46	18	2	0	66	3	99	26	0	128	32	23	11	0	66	24	81	41	0	146	406	1783	0.88
	1:30 PM	57	23	3	0	83	3	87	28	0	118	33	33	14	0	80	19	88	34	0	141	422	1889	0.92
	1:45 PM	45	33	7	0	85	2	100	33	0	135	24	30	19	0	73	20	95	38	0	153	446	2051	0.88
PM Peak Period	2:00 PM	85	31	6	0	122	2	110	29	0	141	37	35	21	0	93	26	77	50	0	153	509	2237	0.88
	2:15 PM	56	32	4	0	92	5	107	34	0	146	31	45	20	0	96	22	93	62	1	178	512	2361	0.93
	2:30 PM	90	43	9	0	142	7	114	24	0	145	30	32	24	0	86	38	106	67	0	211	584	2410	0.95
	2:45 PM	123	38	11	0	172	4	140	29	0	173	29	21	31	0	81	28	99	79	0	206	632	2500	0.93
	3:00 PM	157	36	14	0	207	4	152	30	0	186	25	32	28	0	85	22	79	54	0	155	633	2458	0.91
	3:15 PM	101	30	6	0	137	7	131	26	0	164	25	18	31	0	74	26	114	46	0	186	561	2514	0.91
	3:30 PM	152	49	7	0	208	4	145	28	0	177	31	19	44	0	94	25	125	45	0	195	674	2591	0.94
	3:45 PM	98	31	12	0	141	4	105	36	0	145	37	31	30	0	98	32	124	50	0	206	590	2670	0.89
	4:00 PM	140	47	6	0	193	7	151	29	0	187	40	30	36	0	106	27	129	47	0	203	689	2724	0.90
	4:15 PM	89	50	1	0	140	2	161	29	0	192	47	27	24	0	98	36	135	37	0	208	638	2709	0.90
	4:30 PM	165	52	11	0	228	6	182	30	0	218	40	32	32	0	104	22	137	44	0	203	753	2651	0.88
	4:45 PM	104	32	9	0	145	3	147	41	0	191	48	28	29	0	105	22	135	46	0	203	644	2438	0.90
	5:00 PM	120	52	6	0	178	2	179	29	0	210	31	38	23	0	92	25	124	45	0	194	674	2238	0.83
	5:15 PM	83	35	8	0	126	2	125	34	0	161	30	38	27	1	96	25	128	44	0	197	580	1949	0.84
	5:30 PM	57	23	3	0	83	3	156	41	0	200	28	32	19	0	79	18	111	49	0	178	540	1764	0.82
	5:45 PM	58	22	5	0	85	3	118	24	0	145	30	20	15	0	65	22	84	43	0	149	444	1578	0.89
	6:00 PM	44	20	4	0	68	2	111	14	0	127	21	21	18	0	60	14	76	40	0	130	385	1480	0.94
	6:15 PM	47	17	5	0	69	4	117	15	0	136	27	24	6	0	57	21	74	38	0	133	395		
	6:30 PM	51	26	5	0	82	1	89	15	0	105	13	20	15	0	48	21	68	30	0	119	354		
	6:45 PM	38	18	7	0	63	5	74	25	0	104	17	23	18	0	58	25	55	40	1	121	346		
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Totals		3361	1558	304	0	5223	149	5281	1311	2	6743	1330	1486	1097	1	3914	1120	5097	2803	9	9029	24909		

Peak Hour All Vehicle Volume Summary

	Hourly Time Period Start Time	From North (Maple Road) Right	Thru	Left	U-Tn	Total	From East (STH 167/Lannon Road) Right	Thru	Left	U-Tn	Total	From South (Maple Road) Right	Thru	Left	U-Tn	Total	From West (STH 167/Lannon Road) Right	Thru	Left	U-Tn	Total	Total Hourly Volume	PHF
AM	6:45 AM	263	123	17	0	403	11	422	62	0	495	56	145	111	0	312	92	519	455	2	1068	2278	0.87
MD	12:00 PM	201	167	30	0	398	16	350	132	1	499	137	192	73	0	402	95	297	181	2	575	1874	0.88
PM	4:00 PM	498	181	27	0	706	18	641	129	0	788	175	117	121	0	413	107	536	174	0	817	2724	0.90

Intersection Traffic Volume Report

Count Basics			*Page 9 of 13*
Start Date:	Tuesday, May 18, 2021	Weekday	Schools in Session
Total Number of Hours Counted: 13		Non-Holiday	No Special Events

15-Minute Heavy Vehicle Data

Heavy Vehicles (Single-Unit Trucks, Buses & Semi-Trucks)

Maple Road and STH 167/Lannon Road

15-Minute Heavy Vehicle Data

15-Minute Time Period Start Time		From North (Maple Road)					From East (STH 167/Lannon Road)					From South (Maple Road)					From West (STH 167/Lannon Road)					15-Min Totals	Hourly Sum
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
AM Peak Period	6:00 AM	9	1	0	0	10	0	4	0	0	4	0	0	1	0	1	0	4	4	0	8	23	124
	6:15 AM	11	0	0	0	11	0	3	1	0	4	0	0	0	0	0	0	8	2	0	10	25	168
	6:30 AM	14	2	0	0	16	0	6	1	0	7	0	0	1	0	1	0	6	4	0	10	34	207
	6:45 AM	7	2	1	0	10	0	7	1	0	8	1	0	1	0	2	1	14	7	0	22	42	226
	7:00 AM	9	7	4	0	20	0	8	2	0	10	3	1	2	0	6	0	13	18	0	31	67	237
	7:15 AM	13	4	1	0	18	1	9	0	0	10	0	1	1	0	2	4	25	5	0	34	64	231
	7:30 AM	10	1	1	0	12	2	6	0	0	8	2	2	4	0	8	5	10	10	0	25	53	237
	7:45 AM	15	2	0	0	17	0	7	0	0	7	5	0	4	0	9	2	11	7	0	20	53	242
	8:00 AM	13	3	2	0	18	0	11	2	0	13	2	2	2	0	6	0	15	9	0	24	61	253
	8:15 AM	9	6	3	0	18	1	15	0	0	16	0	1	4	0	5	3	16	12	0	31	70	244
	8:30 AM	15	1	0	0	16	0	9	1	0	10	2	1	3	0	6	3	12	11	0	26	58	239
	8:45 AM	11	2	2	0	15	0	12	2	0	14	2	0	5	0	7	2	17	9	0	28	64	231
	9:00 AM	15	0	1	0	16	1	11	0	0	12	0	1	0	0	1	1	9	13	0	23	52	224
	9:15 AM	14	5	2	0	21	1	12	1	0	14	0	2	1	0	3	1	16	10	0	27	65	225
	9:30 AM	12	0	1	0	13	0	10	1	0	11	0	1	2	0	3	0	12	11	0	23	50	212
	9:45 AM	12	2	0	0	14	0	12	0	0	12	1	2	2	0	5	2	8	16	0	26	57	213
Midday Peak Period	10:00 AM	10	1	4	0	15	0	13	1	0	14	2	2	0	0	4	1	12	7	0	20	53	242
	10:15 AM	16	0	2	0	18	0	6	3	0	9	0	3	1	0	4	1	9	11	0	21	52	241
	10:30 AM	9	3	0	0	12	0	15	0	0	15	0	1	1	0	2	4	10	8	0	22	51	245
	10:45 AM	13	1	3	0	17	2	14	1	0	17	2	0	5	0	7	8	28	9	0	45	86	249
	11:00 AM	12	4	2	0	18	0	11	3	0	14	2	0	4	0	6	3	4	7	0	14	52	222
	11:15 AM	9	1	2	0	12	1	7	1	0	9	6	2	5	0	13	2	10	10	0	22	56	232
	11:30 AM	6	2	0	0	8	0	7	5	0	12	1	0	9	0	10	1	10	14	0	25	55	225
	11:45 AM	12	1	2	0	15	0	11	0	0	11	0	1	5	0	6	1	9	17	0	27	59	228
	12:00 PM	10	3	2	0	15	0	14	0	0	14	2	1	1	0	4	2	14	13	0	29	62	243
	12:15 PM	10	3	1	0	14	0	8	0	0	8	1	1	0	0	2	2	11	12	0	25	49	244
	12:30 PM	12	2	2	0	16	1	10	1	0	12	1	1	4	0	6	0	9	15	0	24	58	255
	12:45 PM	11	3	3	0	17	1	17	4	0	22	0	5	2	0	7	1	13	14	0	28	74	241
	1:00 PM	17	2	1	0	20	0	14	3	0	17	3	3	4	0	10	1	7	8	0	16	63	219
	1:15 PM	14	1	0	0	15	0	22	0	0	22	0	2	0	0	2	0	9	12	0	21	60	206
	1:30 PM	15	1	0	0	16	1	11	0	0	12	1	0	0	0	1	4	3	8	0	15	44	197
	1:45 PM	8	3	2	0	13	0	10	0	0	10	0	1	4	0	5	3	15	6	0	24	52	202
PM Peak Period	2:00 PM	11	2	1	0	14	0	7	2	0	9	2	2	1	0	5	1	10	11	0	22	50	202
	2:15 PM	10	1	0	0	11	0	7	3	0	10	2	1	1	0	4	0	17	9	0	26	51	189
	2:30 PM	9	2	0	0	11	0	7	3	0	10	0	2	3	0	5	1	11	11	0	23	49	182
	2:45 PM	10	0	0	0	10	0	16	0	0	16	0	2	0	0	2	1	10	13	0	24	52	180
	3:00 PM	9	0	1	0	10	0	8	0	0	8	1	2	1	0	4	0	6	9	0	15	37	169
	3:15 PM	7	2	3	0	12	2	10	1	0	13	1	1	1	0	3	0	11	5	0	16	44	159
	3:30 PM	11	0	1	0	12	0	8	1	0	9	1	0	3	0	4	3	8	11	0	22	47	153
	3:45 PM	10	1	1	0	12	0	9	1	0	10	2	0	1	0	3	0	10	6	0	16	41	129
	4:00 PM	6	0	0	0	6	1	6	1	0	8	0	1	2	0	3	0	6	4	0	10	27	124
	4:15 PM	4	2	0	0	6	0	8	2	0	10	2	2	0	0	4	3	4	11	0	18	38	128
	4:30 PM	6	1	0	0	7	0	5	0	0	5	0	0	2	0	2	0	5	4	0	9	23	102
	4:45 PM	6	2	1	0	9	0	5	1	0	6	1	1	0	0	2	2	8	9	0	19	36	94
	5:00 PM	7	1	0	0	8	0	6	1	0	7	1	0	2	0	3	3	5	5	0	13	31	75
	5:15 PM	1	0	0	0	1	0	3	1	0	4	0	0	2	0	2	0	1	4	0	5	12	59
	5:30 PM	2	0	0	0	2	0	7	1	0	8	0	0	0	0	0	1	2	2	0	5	15	61
	5:45 PM	2	0	0	0	2	0	4	1	0	5	1	0	0	0	1	3	3	3	0	9	17	53
	6:00 PM	1	0	0	0	1	0	2	0	0	2	0	0	3	0	3	2	1	6	0	9	15	44
	6:15 PM	3	0	0	0	3	0	1	1	0	2	0	2	1	0	3	0	3	3	0	6	14	
	6:30 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	3	0	5	7	
	6:45 PM	1	0	0	0	1	0	4	0	0	4	0	0	1	0	1	0	0	2	0	2	8	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		490	84	52	0	626	15	455	54	0	524	53	53	102	0	208	78	492	450	0	1020	2378	

Peak Hour Heavy Vehicle Volume Summary

Hourly Time Period Start Time		From North (Maple Road)					From East (STH 167/Lannon Road)					From South (Maple Road)					From West (STH 167/Lannon Road)					Total Hourly Volume
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	6:45 AM	39	14	7	0	60	3	30	3	0	36	6	4	8	0	18	10	62	40	0	112	226
MD	12:00 PM	43	11	8	0	62	2	49	5	0	56	4	8	7	0	19	5	47	54	0	106	243
PM	4:00 PM	22	5	1	0	28	1	24	4	0	29	3	4	4	0	11	5	23	28	0	56	124

Intersection Traffic Volume Report

Count Basics	Version 2024.04		Page 1 of 13
Start Date:	Monday, September 23, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

Base Information, Observed (6) Hour and Estimated (24) Hour Volume Summaries

Major St: **STH 167 - Lannon Road**
Minor St: **Maple Road**
Intersection of: ***STH 167 - Lannon Road & Maple Road*** **IX_ID:**

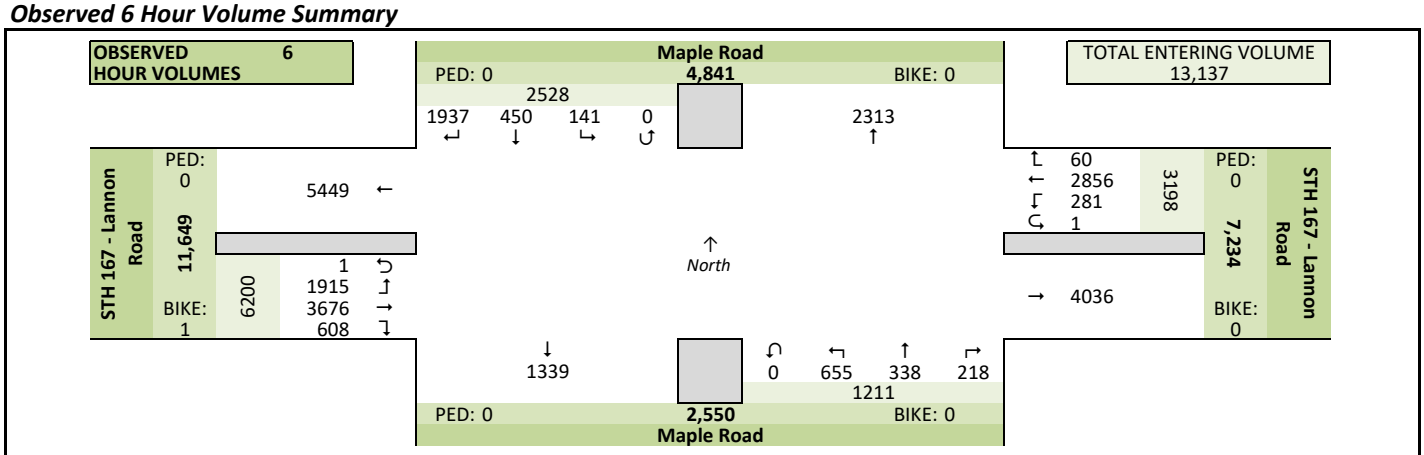
Site Information

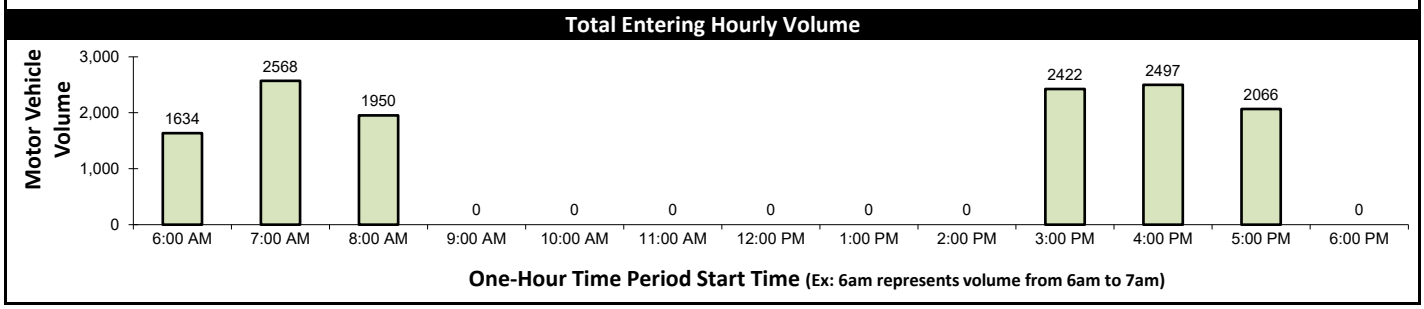
Municipality	Village of Germantown		
County	66 - Washington	WisDOT Region	SE
Traffic Control	Traffic Signal		
Roadway Names		North Direction	↑
North Leg	Maple Road		
East Leg	STH 167 - Lannon Road		
South Leg	Maple Road		
West Leg	STH 167 - Lannon Road		
Special Considerations			
Schools	In Session		
Holidays	None		
Special Events	None		
Special Pedestrians Observed			
Pre-school children	None		
Elementry school age children	None		
Visually impaired (white cane/helper dog)	None		
Elderly/disabled (except wheelchairs)	None		
Wheelchairs/electric scooters	None		
Other (describe)	None	None	

Count Information

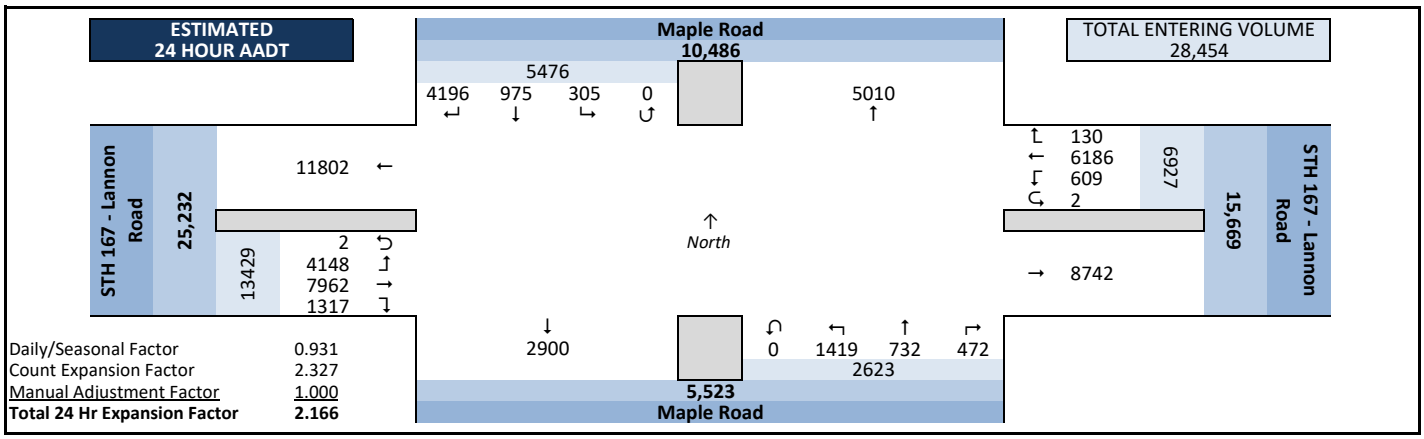
Hrs Counted:	06:00 AM-09:00 AM and 03:00 PM-06:00 PM				
1st Day of Count	Monday, September 23, 2024			Weather	
AM Peak Period	Tuesday, September 24, 2024			Clear & Dry	
Midday Peak Period	Tuesday, September 24, 2024			Clear & Dry	
PM Peak Period	Monday, September 23, 2024			Clear & Dry	
Calculated Peak Hours					
AM	7:00-8:00am	MD		PM	4:15-5:15pm
Peak Hours Selected for Analysis					
AM	6:45-7:45am	MD		PM	4:00-5:00pm
Daily/Seasonal Adjustment Group	(2) Urban Arterials & Collectors				
Count Expansion Group	(2) Urban Arterials & Collectors				
Daily/Seasonal Adjustment Factor	0.931	Count Expansion Factor	2.327		
Company Name	TADI, Inc.			Manual Adj.	1.000
Observers	AM Peak Period	Amy Scheuerlein			
	Midday Peak Period	None			
	PM Peak Period	Amy Scheuerlein			
Comments	2021 DOT Daily & Seasonal Factors				

Observed 6 Hour Volume Summary





Estimated 24 Hour AADT



Intersection Traffic Volume Report

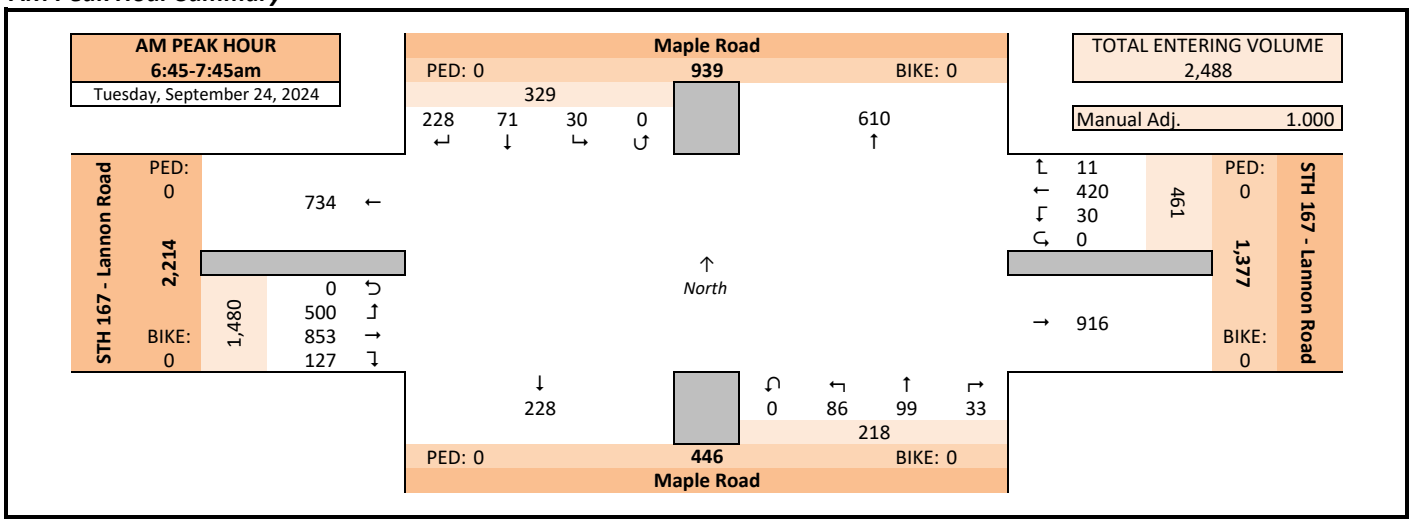
Peak Hour Volume Graphical Summary

Count Basics			*Page 2 of 13*
Start Date:	Monday, September 23, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

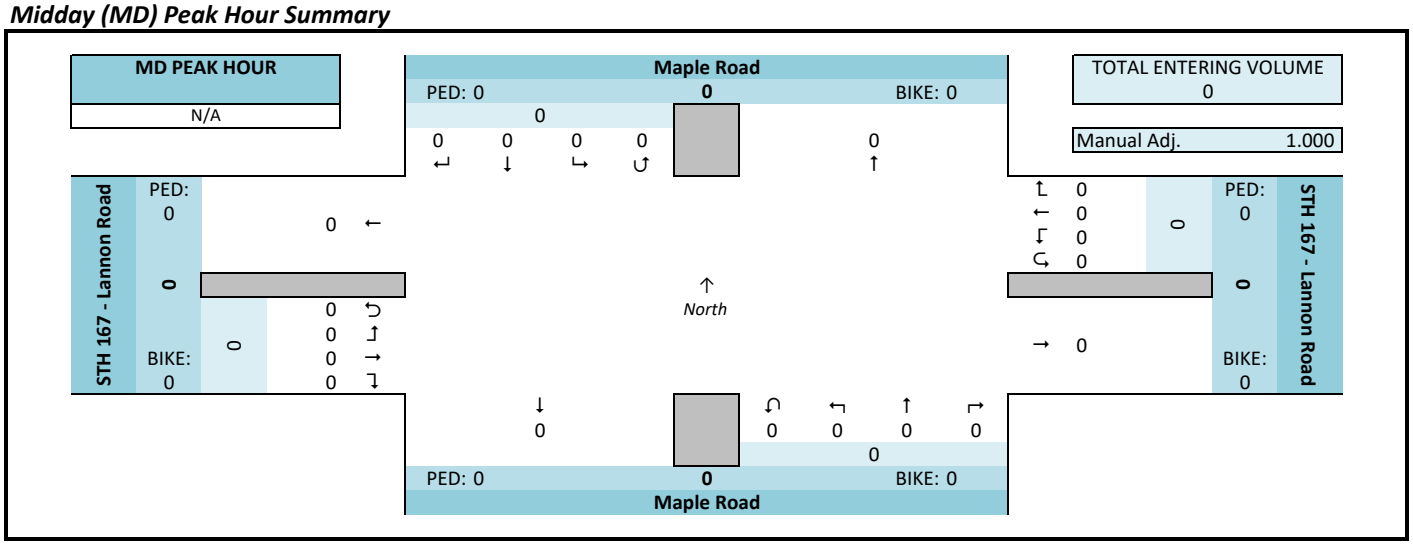
All Motor Vehicles

STH 167 - Lannon Road & Maple Road

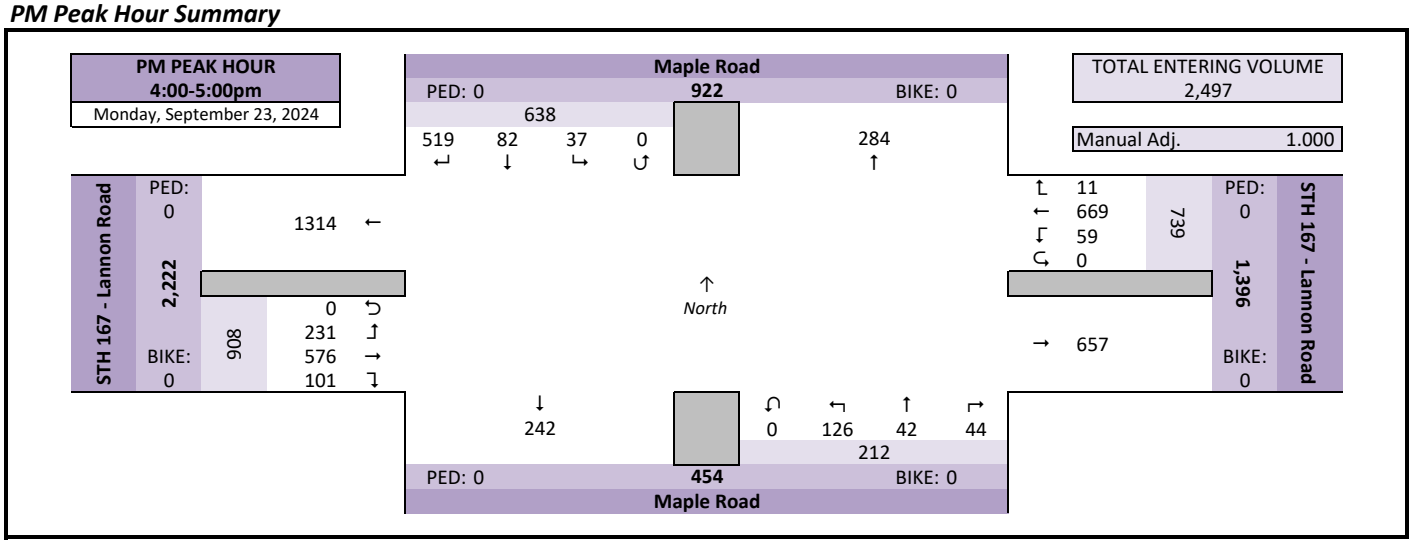
AM Peak Hour Summary



Midday (MD) Peak Hour Summary



PM Peak Hour Summary



Intersection Traffic Volume Report

Count Basics			Page 3 of 13
Start Date:	Monday, September 23, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

Peak Hour Volume Summary

STH 167 - Lannon Road & Maple Road

All Motor Vehicles

Peak Hour Volumes, Truck Percentages, and PHFs

Tuesday, September 24, 2024	From North					From East					From South					From West					
AM Peak Hour	Maple Road					STH 167 - Lannon Road					Maple Road					STH 167 - Lannon Road					
Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
6:45 AM	32	9	3	0	44	3	70	4	0	77	9	56	13	0	78	16	163	212	0	391	590
7:00 AM	97	29	8	0	134	3	119	8	0	130	10	12	18	0	40	37	211	86	0	334	638
7:15 AM	48	16	10	0	74	3	114	11	0	128	10	13	29	0	52	35	229	86	0	350	604
7:30 AM	51	17	9	0	77	2	117	7	0	126	4	18	26	0	48	39	250	116	0	405	656
Peak Hour Volume	228	71	30	0	329	11	420	30	0	461	33	99	86	0	218	127	853	500	0	1480	2488
Rounded Hourly Volume	230	70	30	0	330	10	420	30	0	460	35	100	85	0	220	125	855	500	0	1480	2490
% Single Unit Trucks	6.6	8.5	6.7	0.0	7.0	18.2	5.5	13.3	0.0	6.3	6.1	4.0	8.1	0.0	6.0	2.4	3.6	2.0	0.0	3.0	4.4
% Heavy Trucks	4.4	0.0	10.0	0.0	4.0	9.1	1.7	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	2.9	2.6	0.0	2.6	2.4
% Trucks (Total)	11.0	8.5	16.7	0.0	10.9	27.3	7.1	13.3	0.0	8.0	6.1	4.0	8.1	0.0	6.0	2.4	6.6	4.6	0.0	5.5	6.8
Peak Hour Factor (PHF)	0.59	0.61	0.75	0.00	0.61	0.92	0.88	0.68	0.00	0.89	0.82	0.44	0.74	0.00	0.70	0.81	0.85	0.59	0.00	0.91	0.95

N/A	From North					From East					From South					From West					
Midday (MD) Peak Hour	Maple Road					STH 167 - Lannon Road					Maple Road					STH 167 - Lannon Road					
Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rounded Hourly Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Single Unit Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% Trucks (Total)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peak Hour Factor (PHF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Monday, September 23, 2024	From North					From East					From South					From West					
PM Peak Hour	Maple Road					STH 167 - Lannon Road					Maple Road					STH 167 - Lannon Road					
Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
4:00 PM	136	18	5	0	159	2	158	15	0	175	11	12	35	0	58	30	136	73	0	239	631
4:15 PM	107	14	8	0	129	4	155	15	0	174	11	9	24	0	44	18	147	58	0	223	570
4:30 PM	176	25	10	0	211	0	189	13	0	202	12	11	33	0	56	34	128	46	0	208	677
4:45 PM	100	25	14	0	139	5	167	16	0	188	10	10	34	0	54	19	165	54	0	238	619
Peak Hour Volume	519	82	37	0	638	11	669	59	0	739	44	42	126	0	212	101	576	231	0	908	2497
Rounded Hourly Volume	520	80	35	0	635	10	670	60	0	740	45	40	125	0	210	100	575	230	0	905	2490
% Single Unit Trucks	1.9	1.2	0.0	0.0	1.7	0.0	2.7	3.4	0.0	2.7	0.0	2.4	2.4	0.0	1.9	2.0	3.1	7.8	0.0	4.2	2.9
% Heavy Trucks	1.9	0.0	2.7	0.0	1.7	0.0	0.6	0.0	0.0	0.5	2.3	0.0	0.0	0.0	0.5	0.0	1.9	3.5	0.0	2.1	1.4
% Trucks (Total)	3.9	1.2	2.7	0.0	3.4	0.0	3.3	3.4	0.0	3.2	2.3	2.4	2.4	0.0	2.4	2.0	5.0	11.3	0.0	6.3	4.3
Peak Hour Factor (PHF)	0.74	0.82	0.66	0.00	0.76	0.55	0.88	0.92	0.00	0.91	0.92	0.87	0.90	0.00	0.91	0.74	0.87	0.79	0.00	0.95	0.92

Peak Hour Pedestrian and Bicyclist Volumes

Pedestrians and Bicyclists	Crossing North Approach			Crossing East Approach			Crossing South Approach			Crossing West Approach			Total Ped & Bike Volume
	Maple Road			STH 167 - Lannon Road			Maple Road			STH 167 - Lannon Road			
15-Minute Start Time	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	
AM													
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
MD													
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
PM													
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Traffic Volume Report

15-Minute Motor Vehicle Data

Count Basics		*Page 5 of 13*
Start Date: Monday, September 23, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6	Non-Holiday	No Special Events

All Motor Vehicles

STH 167 - Lannon Road & Maple Road

15-Minute Motor Vehicle Data

15-Minute Time Period		↓ From North					← From East					↑ From South					→ From West							
		Maple Road					STH 167 - Lannon Road					Maple Road					STH 167 - Lannon Road					15-Min	Hourly	
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals	Sum	PHF
AM Peak Period	6:00 AM	38	1	1	0	40	0	53	4	0	57	4	14	12	0	30	17	44	49	0	110	237	1634	0.69
	6:15 AM	37	3	0	0	40	1	61	10	0	72	4	14	17	0	35	23	75	84	0	182	329	2035	0.80
	6:30 AM	42	14	0	0	56	0	72	4	1	77	6	28	19	0	53	11	118	163	0	292	478	2310	0.91
	6:45 AM	32	9	3	0	44	3	70	4	0	77	9	56	13	0	78	16	163	212	0	391	590	2488	0.95
	7:00 AM	97	29	8	0	134	3	119	8	0	130	10	12	18	0	40	37	211	86	0	334	638	2568	0.96
	7:15 AM	48	16	10	0	74	3	114	11	0	128	10	13	29	0	52	35	229	86	0	350	604	2537	0.95
	7:30 AM	51	17	9	0	77	2	117	7	0	126	4	18	26	0	48	39	250	116	0	405	656	2399	0.90
	7:45 AM	42	41	13	0	96	2	81	7	0	90	9	19	24	0	52	35	279	118	0	432	670	2209	0.82
	8:00 AM	41	29	3	0	73	2	92	10	0	104	14	11	24	0	49	25	238	118	0	381	607	1950	0.80
	8:15 AM	47	14	6	0	67	1	112	10	0	123	6	12	19	0	37	18	144	77	0	239	466		
	8:30 AM	70	15	5	0	90	2	84	16	0	102	7	8	32	0	47	20	135	72	0	227	466		
	8:45 AM	32	11	8	0	51	4	74	5	0	83	6	10	24	0	40	24	154	59	0	237	411		
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	3:00 PM	160	22	5	0	187	3	177	19	0	199	6	14	44	0	64	32	131	74	0	237	687	2422	0.88
	3:15 PM	89	21	7	0	117	2	136	20	0	158	14	10	39	0	63	19	141	64	0	224	562	2366	0.94
	3:30 PM	176	24	5	0	205	2	133	14	0	149	10	5	36	0	51	21	117	46	1	185	590	2374	0.94
	3:45 PM	98	22	3	0	123	7	112	18	0	137	12	8	42	0	62	30	168	63	0	261	583	2461	0.91
	4:00 PM	136	18	5	0	159	2	158	15	0	175	11	12	35	0	58	30	136	73	0	239	631	2497	0.92
	4:15 PM	107	14	8	0	129	4	155	15	0	174	11	9	24	0	44	18	147	58	0	223	570	2518	0.93
	4:30 PM	176	25	10	0	211	0	189	13	0	202	12	11	33	0	56	34	128	46	0	208	677	2495	0.92
	4:45 PM	100	25	14	0	139	5	167	16	0	188	10	10	34	0	54	19	165	54	0	238	619	2305	0.88
	5:00 PM	122	25	5	0	152	3	178	17	0	198	15	12	25	0	52	23	163	64	0	250	652	2066	0.79
	5:15 PM	85	27	5	0	117	6	147	14	0	167	11	9	27	0	47	26	140	50	0	216	547		
	5:30 PM	67	12	1	0	80	2	153	17	0	172	7	15	23	0	45	35	107	48	0	190	487		
	5:45 PM	44	16	7	0	67	1	102	7	0	110	10	8	36	0	54	21	93	35	0	149	380		
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Totals		1937	450	141	0	2528	60	2856	281	1	3198	218	338	655	0	1211	608	3676	1915	1	6200	13137		

Peak Hour All Vehicle Volume Summary

Hourly Time Period		↓ From North					← From East					↑ From South					→ From West					Total	
		Maple Road					STH 167 - Lannon Road					Maple Road					STH 167 - Lannon Road					Hourly	
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Volume	PHF
AM	6:45 AM	228	71	30	0	329	11	420	30	0	461	33	99	86	0	218	127	853	500	0	1480	2488	0.95
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM	4:00 PM	519	82	37	0	638	11	669	59	0	739	44	42	126	0	212	101	576	231	0	908	2497	0.92

Intersection Traffic Volume Report

Count Basics			Page 9 of 13
Start Date:	Monday, September 23, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

15-Minute Heavy Vehicle Data

STH 167 - Lannon Road & Maple Road

Heavy Vehicles (Single-Unit Trucks, Buses & Semi-Trucks)

15-Minute Heavy Vehicle Data

	15-Minute Time Period Start Time	↓ From North Maple Road Right	Thru	Left	U-Tn	Total	← From East STH 167 - Lannon Road Right	Thru	Left	U-Tn	Total	↑ From South Maple Road Right	Thru	Left	U-Tn	Total	→ From West STH 167 - Lannon Road Right	Thru	Left	U-Tn	Total	15-Min Totals	Hourly Sum
AM Peak Period	6:00 AM	8	0	0	0	8	0	3	0	0	3	0	1	1	0	2	1	4	0	0	5	18	117
	6:15 AM	4	0	0	0	4	0	3	1	0	4	0	0	1	0	1	0	7	1	0	8	17	136
	6:30 AM	12	2	0	0	14	0	3	1	0	4	0	0	2	0	2	0	7	7	0	14	34	150
	6:45 AM	7	2	0	0	9	1	9	0	0	10	1	2	1	0	4	1	17	7	0	25	48	168
	7:00 AM	6	0	2	0	8	1	9	0	0	10	1	0	2	0	3	1	11	4	0	16	37	174
	7:15 AM	5	1	2	0	8	0	2	2	0	4	0	0	1	0	1	1	13	4	0	18	31	189
	7:30 AM	7	3	1	0	11	1	10	2	0	13	0	2	3	0	5	0	15	8	0	23	52	222
	7:45 AM	10	5	1	0	16	1	11	1	0	13	1	0	6	0	7	0	9	9	0	18	54	206
	8:00 AM	11	0	1	0	12	1	9	2	0	12	4	0	1	0	5	3	13	7	0	23	52	202
	8:15 AM	14	1	2	0	17	0	10	2	0	12	2	1	5	0	8	3	17	7	0	27	64	
	8:30 AM	6	1	3	0	10	0	6	1	0	7	0	0	2	0	2	1	8	8	0	17	36	
	8:45 AM	9	0	1	0	10	1	13	0	0	14	0	0	1	0	1	4	12	9	0	25	50	
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:00 PM	11	0	0	0	11	0	9	2	0	11	1	0	3	0	4	0	8	12	0	20	46	131
	3:15 PM	5	0	1	0	6	0	4	1	0	5	1	0	1	0	2	0	10	13	0	23	36	115
	3:30 PM	6	1	1	0	8	0	4	0	0	4	1	0	1	0	2	1	2	5	0	8	22	111
	3:45 PM	4	0	0	0	4	1	8	2	0	11	0	0	1	0	1	1	6	4	0	11	27	113
	4:00 PM	8	0	0	0	8	0	5	0	0	5	1	0	1	0	2	1	7	7	0	15	30	108
	4:15 PM	5	1	0	0	6	0	5	0	0	5	0	1	1	0	2	0	11	8	0	19	32	96
	4:30 PM	4	0	0	0	4	0	7	1	0	8	0	0	1	0	1	1	4	6	0	11	24	74
	4:45 PM	3	0	1	0	4	0	5	1	0	6	0	0	0	0	0	0	7	5	0	12	22	63
	5:00 PM	2	0	0	0	2	0	8	0	0	8	0	0	0	0	0	0	4	4	0	8	18	51
	5:15 PM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	1	4	2	0	7	10	
	5:30 PM	0	0	0	0	0	0	6	0	0	6	0	1	1	0	2	2	1	2	0	5	13	
	5:45 PM	2	1	0	0	3	0	3	0	0	3	0	1	1	0	2	0	1	1	0	2	10	
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		152	18	16	0	186	7	152	19	0	178	13	9	37	0	59	22	198	140	0	360	783	

Peak Hour Heavy Vehicle Volume Summary

	Hourly Time Period Start Time	↓ From North Maple Road Right	Thru	Left	U-Tn	Total	← From East STH 167 - Lannon Road Right	Thru	Left	U-Tn	Total	↑ From South Maple Road Right	Thru	Left	U-Tn	Total	→ From West STH 167 - Lannon Road Right	Thru	Left	U-Tn	Total	Total Hourly Volume
AM	6:45 AM	25	6	5	0	36	3	30	4	0	37	2	4	7	0	13	3	56	23	0	82	168
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	20	1	1	0	22	0	22	2	0	24	1	1	3	0	5	2	29	26	0	57	108

Intersection Traffic Volume Report

Count Basics	Version 2024.04		Page 1 of 13
Start Date:	Wednesday, September 25, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

Base Information, Observed (6) Hour and Estimated (24) Hour Volume Summaries

Major St: **Maple Road**
Minor St: **Commerce Circle**
Intersection of: ***Maple Road & Commerce Circle*** **IX_ID:**

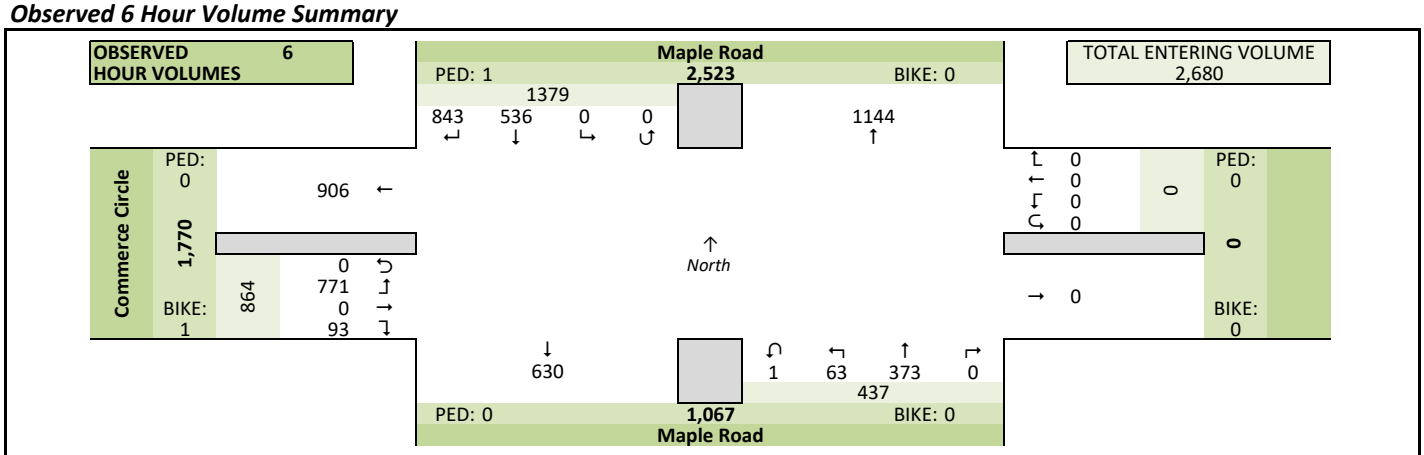
Site Information

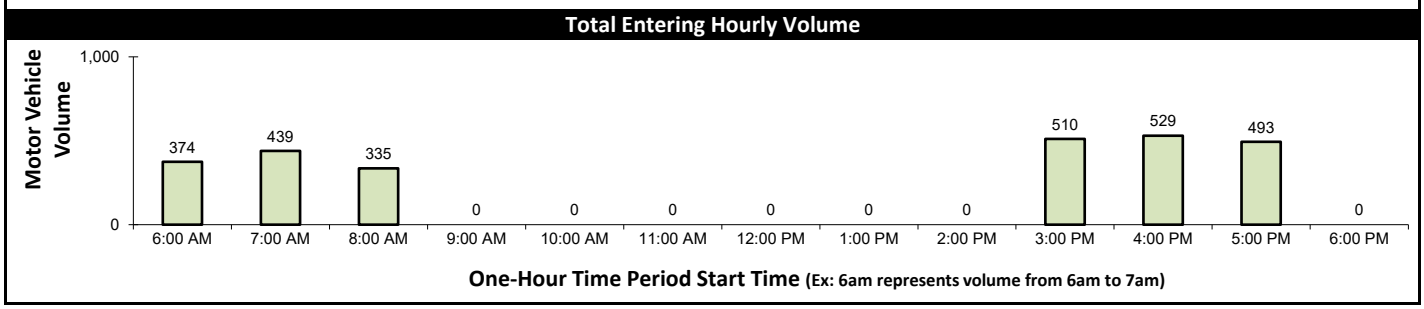
Municipality	Village of Germantown		
County	66 - Washington	WisDOT Region	SE
Traffic Control	Partial Stop Control		
Roadway Names		North Direction	↑
North Leg	Maple Road		
East Leg			
South Leg	Maple Road		
West Leg	Commerce Circle		
Special Considerations			
Schools	In Session		
Holidays	None		
Special Events	None		
Special Pedestrians Observed			
Pre-school children	None		
Elementry school age children	None		
Visually impaired (white cane/helper dog)	None		
Elderly/disabled (except wheelchairs)	None		
Wheelchairs/electric scooters	None		
Other (describe)	None	None	

Count Information

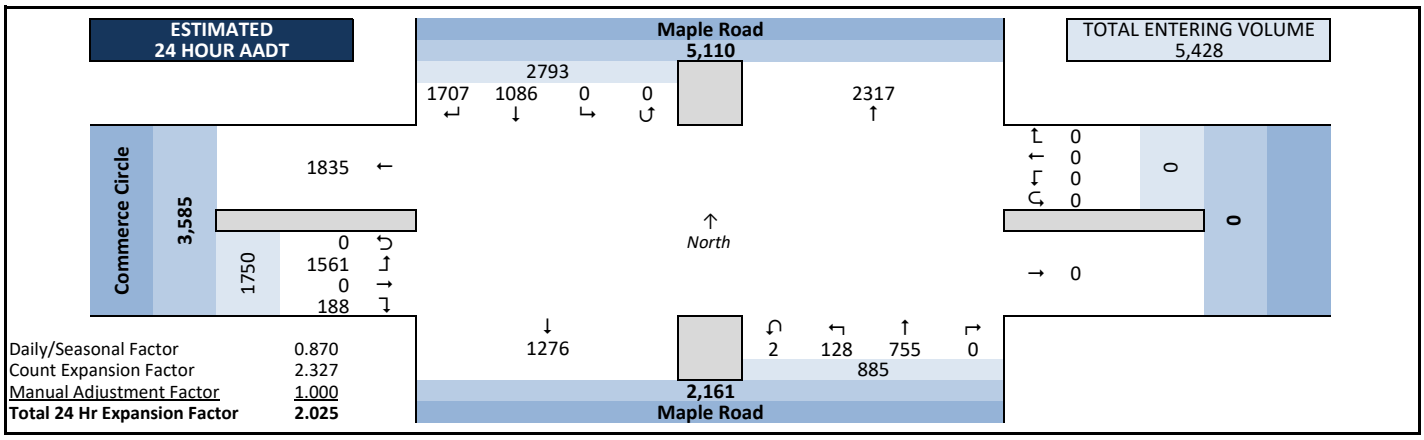
Hrs Counted:	06:00 AM-09:00 AM and 03:00 PM-06:00 PM				
1st Day of Count	Wednesday, September 25, 2024			Weather	
AM Peak Period	Wednesday, September 25, 2024			Clear & Dry	
Midday Peak Period	Wednesday, September 25, 2024			Clear & Dry	
PM Peak Period	Wednesday, September 25, 2024			Clear & Dry	
Calculated Peak Hours					
AM	6:30-7:30am	MD		PM	3:30-4:30pm
Peak Hours Selected for Analysis					
AM	6:45-7:45am	MD		PM	4:00-5:00pm
Daily/Seasonal Adjustment Group	(2) Urban Arterials & Collectors				
Count Expansion Group	(2) Urban Arterials & Collectors				
Daily/Seasonal Adjustment Factor	0.870	Count Expansion Factor	2.327		
Company Name	TADI, Inc.			Manual Adj.	1.000
Observers	AM Peak Period	Luann Gaertner			
	Midday Peak Period	None			
	PM Peak Period	Jane Fait			
Comments	2021 DOT Daily & Seasonal Factors				

Observed 6 Hour Volume Summary





Estimated 24 Hour AADT



Intersection Traffic Volume Report

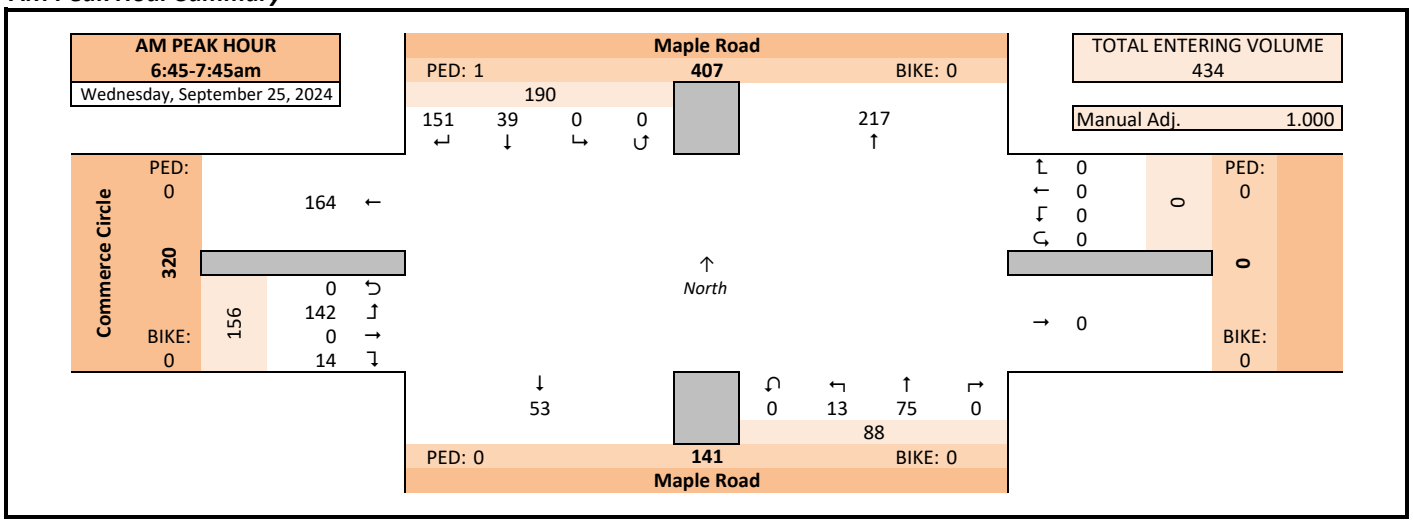
Peak Hour Volume Graphical Summary

Count Basics			*Page 2 of 13*
Start Date:	Wednesday, September 25, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

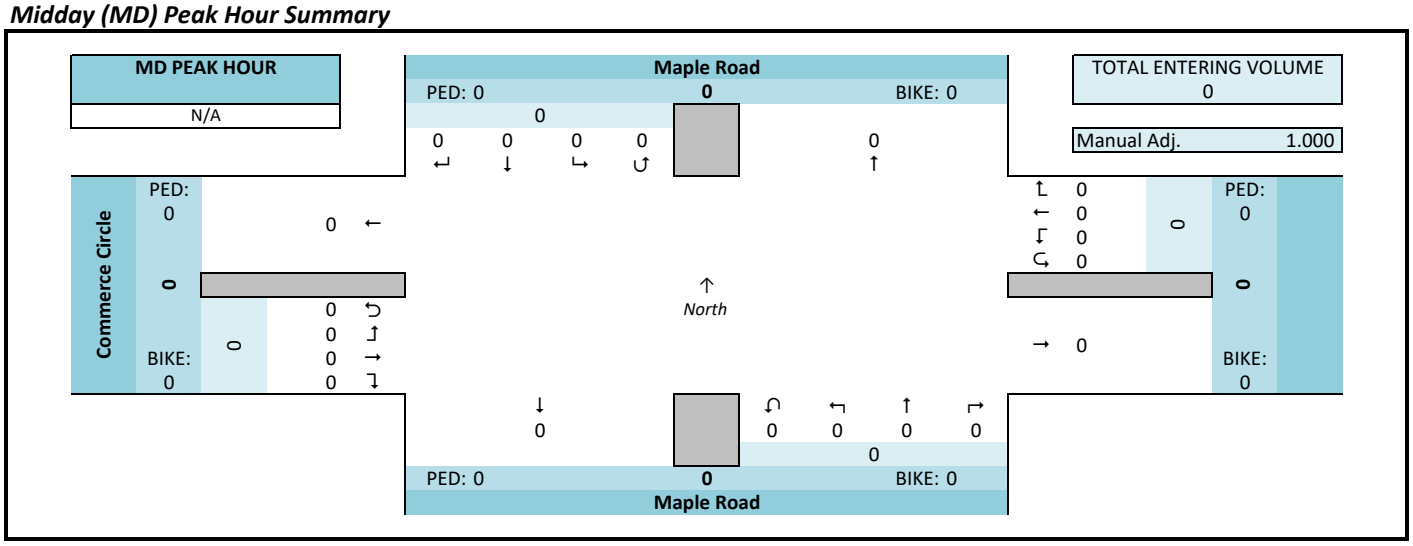
All Motor Vehicles

Maple Road & Commerce Circle

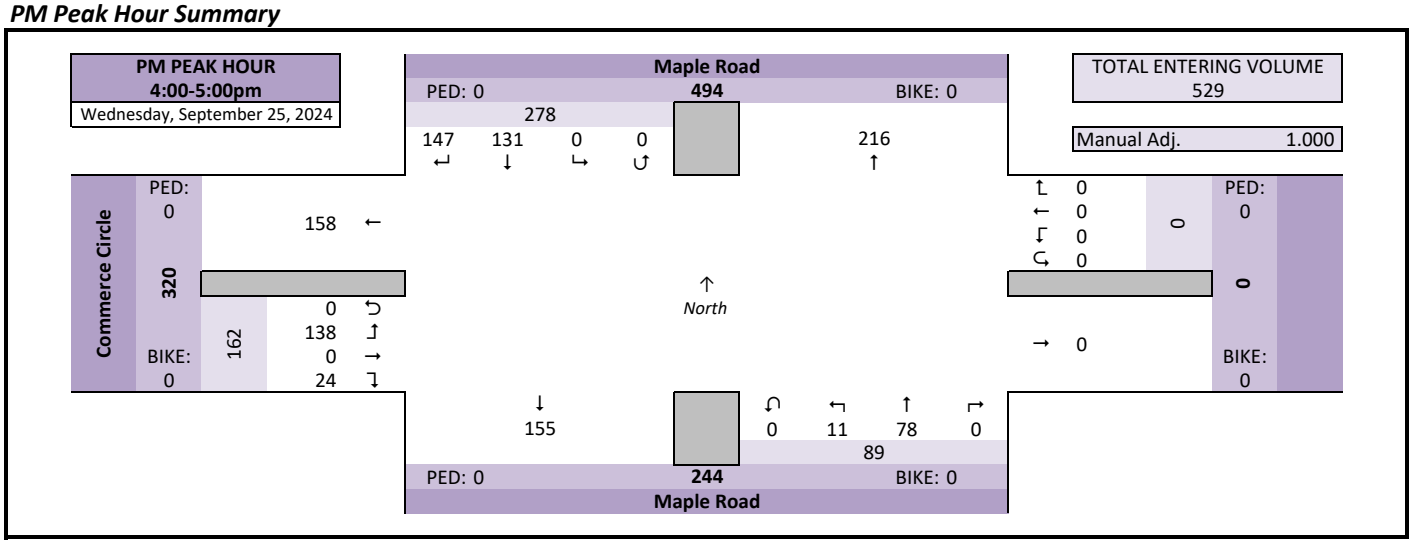
AM Peak Hour Summary



Midday (MD) Peak Hour Summary



PM Peak Hour Summary



Intersection Traffic Volume Report

Count Basics			Page 3 of 13
Start Date:	Wednesday, September 25, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

Peak Hour Volume Summary

Maple Road & Commerce Circle

All Motor Vehicles

Peak Hour Volumes, Truck Percentages, and PHFs

Wednesday, September 25, 2024		From North					From East					From South					From West					
	AM Peak Hour	Maple Road										Maple Road					Commerce Circle					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
AM Peak Hour	6:45 AM	27	5	0	0	32	0	0	0	0	0	0	37	1	0	38	4	0	27	0	31	101
	7:00 AM	38	15	0	0	53	0	0	0	0	0	0	13	3	0	16	4	0	35	0	39	108
	7:15 AM	50	13	0	0	63	0	0	0	0	0	0	10	6	0	16	4	0	41	0	45	124
	7:30 AM	36	6	0	0	42	0	0	0	0	0	0	15	3	0	18	2	0	39	0	41	101
	Peak Hour Volume	151	39	0	0	190	0	0	0	0	0	0	75	13	0	88	14	0	142	0	156	434
	Rounded Hourly Volume	150	40	0	0	190	0	0	0	0	0	0	75	15	0	90	15	0	140	0	155	435
	% Single Unit Trucks	17.9	2.6	0.0	0.0	14.7	0.0	0.0	0.0	0.0	0.0	0.0	6.7	7.7	0.0	6.8	14.3	0.0	14.8	0.0	14.7	13.1
	% Heavy Trucks	1.3	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.7
	% Trucks (Total)	19.2	2.6	0.0	0.0	15.8	0.0	0.0	0.0	0.0	0.0	0.0	8.0	7.7	0.0	8.0	14.3	0.0	14.8	0.0	14.7	13.8
	Peak Hour Factor (PHF)	0.75	0.65	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.54	0.00	0.58	0.87	0.00	0.87	0.00	0.87	0.87

N/A		From North					From East					From South					From West					
	MD Peak Hour	Maple Road										Maple Road					Commerce Circle					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
Midday (MD) Peak Hour	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Peak Hour Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rounded Hourly Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	% Single Unit Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	% Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	% Trucks (Total)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Peak Hour Factor (PHF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Wednesday, September 25, 2024		From North					From East					From South					From West					
	PM Peak Hour	Maple Road										Maple Road					Commerce Circle					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
PM Peak Hour	4:00 PM	47	38	0	0	85	0	0	0	0	0	0	23	0	0	23	5	0	33	0	38	146
	4:15 PM	38	29	0	0	67	0	0	0	0	0	0	20	0	0	20	8	0	36	0	44	131
	4:30 PM	37	33	0	0	70	0	0	0	0	0	0	19	5	0	24	6	0	40	0	46	140
	4:45 PM	25	31	0	0	56	0	0	0	0	0	0	16	6	0	22	5	0	29	0	34	112
	Peak Hour Volume	147	131	0	0	278	0	0	0	0	0	0	78	11	0	89	24	0	138	0	162	529
	Rounded Hourly Volume	145	130	0	0	275	0	0	0	0	0	0	80	10	0	90	25	0	140	0	165	530
	% Single Unit Trucks	6.1	1.5	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0	3.4	0.0	0.0	3.6	0.0	3.1	3.6
	% Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.6	0.2
	% Trucks (Total)	6.1	1.5	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0	3.4	0.0	0.0	4.3	0.0	3.7	3.8
	Peak Hour Factor (PHF)	0.78	0.86	0.00	0.00	0.82	0.00	0.00	0.00	0.00	0.00	0.00	0.85	0.46	0.00	0.93	0.75	0.00	0.86	0.00	0.88	0.91

Peak Hour Pedestrian and Bicyclist Volumes

Pedestrians and Bicyclists		Crossing North Approach			Crossing East Approach			Crossing South Approach			Crossing West Approach			Total Ped & Bike Volume
		Maple Road						Maple Road			Commerce Circle			
	15-Minute Start Time	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	
AM	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	1	0	1	0	0	0	0	0	0	0	0	0	1
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	1	0	1	0	0	0	0	0	0	0	0	0	1
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Traffic Volume Report

15-Minute Motor Vehicle Data

Count Basics		*Page 5 of 13*
Start Date: Wednesday, September 25, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6	Non-Holiday	No Special Events

Maple Road & Commerce Circle

All Motor Vehicles

15-Minute Motor Vehicle Data

15-Minute Time Period		From North (Maple Road)					From East					From South (Maple Road)					From West (Commerce Circle)					15-Min Totals	Hourly Sum	PHF
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total			
AM Peak Period	6:00 AM	30	2	0	0	32	0	0	0	0	0	0	4	0	0	4	1	0	24	0	25	61	374	0.79
	6:15 AM	42	2	0	0	44	0	0	0	0	0	0	5	3	0	8	0	0	41	0	41	93	421	0.88
	6:30 AM	44	9	0	0	53	0	0	0	0	0	0	13	6	0	19	6	0	41	0	47	119	452	0.91
	6:45 AM	27	5	0	0	32	0	0	0	0	0	0	37	1	0	38	4	0	27	0	31	101	434	0.88
	7:00 AM	38	15	0	0	53	0	0	0	0	0	0	13	3	0	16	4	0	35	0	39	108	439	0.89
	7:15 AM	50	13	0	0	63	0	0	0	0	0	0	10	6	0	16	4	0	41	0	45	124	407	0.82
	7:30 AM	36	6	0	0	42	0	0	0	0	0	0	15	3	0	18	2	0	39	0	41	101	370	0.87
	7:45 AM	38	20	0	0	58	0	0	0	0	0	0	13	0	0	13	4	0	31	0	35	106	343	0.81
	8:00 AM	20	13	0	0	33	0	0	0	0	0	0	11	4	1	16	7	0	20	0	27	76	335	0.85
	8:15 AM	36	17	0	0	53	0	0	0	0	0	0	9	1	0	10	2	0	22	0	24	87		
	8:30 AM	20	12	0	0	32	0	0	0	0	0	0	16	0	0	16	3	0	23	0	26	74		
	8:45 AM	44	14	0	0	58	0	0	0	0	0	0	9	2	0	11	5	0	24	0	29	98		
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	3:00 PM	36	29	0	0	65	0	0	0	0	0	0	18	4	0	22	1	0	33	0	34	121	510	0.87
	3:15 PM	36	33	0	0	69	0	0	0	0	0	0	11	2	0	13	4	0	34	0	38	120	535	0.92
	3:30 PM	34	44	0	0	78	0	0	0	0	0	0	21	6	0	27	3	0	38	0	41	146	546	0.93
	3:45 PM	35	32	0	0	67	0	0	0	0	0	0	11	4	0	15	7	0	34	0	41	123	540	0.92
	4:00 PM	47	38	0	0	85	0	0	0	0	0	0	23	0	0	23	5	0	33	0	38	146	529	0.91
	4:15 PM	38	29	0	0	67	0	0	0	0	0	0	20	0	0	20	8	0	36	0	44	131	517	0.92
	4:30 PM	37	33	0	0	70	0	0	0	0	0	0	19	5	0	24	6	0	40	0	46	140	516	0.92
	4:45 PM	25	31	0	0	56	0	0	0	0	0	0	16	6	0	22	5	0	29	0	34	112	503	0.94
	5:00 PM	33	50	0	0	83	0	0	0	0	0	0	19	1	0	20	3	0	28	0	31	134	493	0.92
	5:15 PM	37	35	0	0	72	0	0	0	0	0	0	20	3	0	23	4	0	31	0	35	130		
	5:30 PM	34	30	0	0	64	0	0	0	0	0	0	19	1	0	20	4	0	39	0	43	127		
	5:45 PM	26	24	0	0	50	0	0	0	0	0	0	21	2	0	23	1	0	28	0	29	102		
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Totals		843	536	0	0	1379	0	0	0	0	0	0	373	63	1	437	93	0	771	0	864	2680		

Peak Hour All Vehicle Volume Summary

Hourly Time Period		From North (Maple Road)					From East					From South (Maple Road)					From West (Commerce Circle)					Total Hourly Volume	PHF
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
AM	6:45 AM	151	39	0	0	190	0	0	0	0	0	0	75	13	0	88	14	0	142	0	156	434	0.88
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM	4:00 PM	147	131	0	0	278	0	0	0	0	0	0	78	11	0	89	24	0	138	0	162	529	0.91

Intersection Traffic Volume Report

Count Basics			Page 9 of 13
Start Date:	Wednesday, September 25, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

15-Minute Heavy Vehicle Data

Maple Road & Commerce Circle

Heavy Vehicles (Single-Unit Trucks, Buses & Semi-Trucks)

15-Minute Heavy Vehicle Data

15-Minute Time Period Start Time		From North (Maple Road) Right	Thru	Left	U-Tn	Total	From East Right	Thru	Left	U-Tn	Total	From South (Maple Road) Right	Thru	Left	U-Tn	Total	From West (Commerce Circle) Right	Thru	Left	U-Tn	Total	15-Min Totals	Hourly Sum
AM Peak Period	6:00 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	22
	6:15 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	5	34
	6:30 AM	4	0	0	0	4	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	8	49
	6:45 AM	3	1	0	0	4	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	6	60
	7:00 AM	5	0	0	0	5	0	0	0	0	0	0	1	1	0	2	1	0	7	0	8	15	63
	7:15 AM	12	0	0	0	12	0	0	0	0	0	0	1	0	0	1	1	0	6	0	7	20	54
	7:30 AM	9	0	0	0	9	0	0	0	0	0	0	3	0	0	3	0	0	7	0	7	19	44
	7:45 AM	3	2	0	0	5	0	0	0	0	0	0	1	0	0	1	0	0	3	0	3	9	33
	8:00 AM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	4	0	4	6	37
	8:15 AM	6	2	0	0	8	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	10	
	8:30 AM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	5	0	6	8	
	8:45 AM	6	2	0	0	8	0	0	0	0	0	0	1	1	0	2	0	0	3	0	3	13	
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:00 PM	3	3	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	9	18
	3:15 PM	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4	11
	3:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	4	9
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	13
	4:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	20
	4:15 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	23
	4:30 PM	4	1	0	0	5	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	8	25
	4:45 PM	2	1	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	4	0	4	8	21
	5:00 PM	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	5	17
	5:15 PM	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	4	
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	0	0	1	0	1	4	
	5:45 PM	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	4	
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		70	19	0	0	89	0	0	0	0	0	0	23	4	0	27	4	0	57	0	61	177	

Peak Hour Heavy Vehicle Volume Summary

Hourly Time Period Start Time		From North (Maple Road) Right	Thru	Left	U-Tn	Total	From East Right	Thru	Left	U-Tn	Total	From South (Maple Road) Right	Thru	Left	U-Tn	Total	From West (Commerce Circle) Right	Thru	Left	U-Tn	Total	Total Hourly Volume
AM	6:45 AM	29	1	0	0	30	0	0	0	0	0	0	6	1	0	7	2	0	21	0	23	60
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	9	2	0	0	11	0	0	0	0	0	0	3	0	0	3	0	0	6	0	6	20

Intersection Traffic Volume Report

Count Basics	Version 2024.04		Page 1 of 13
Start Date:	Wednesday, September 25, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

Base Information, Observed (6) Hour and Estimated (24) Hour Volume Summaries

Major St: **Commerce Circle**
Minor St: **KT DWs**
Intersection of: ***Commerce Circle & KT DWs*** **IX_ID:**

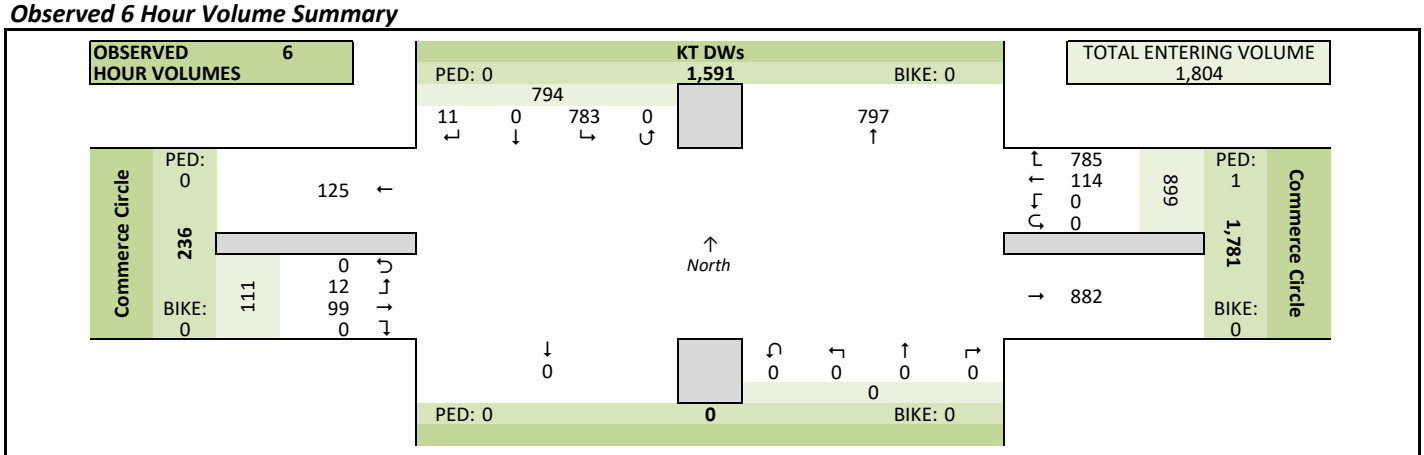
Site Information

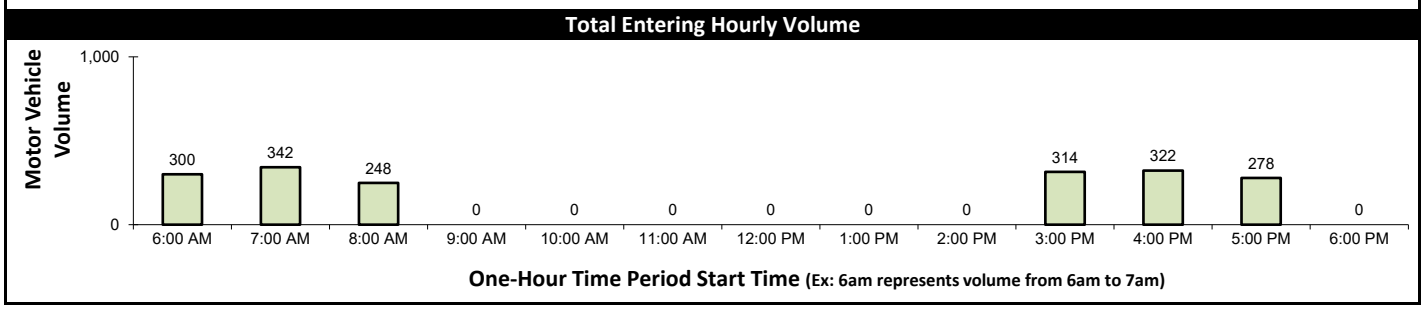
Municipality	Village of Germantown		
County	66 - Washington	WisDOT Region	SE
Traffic Control	Uncontrolled		
Roadway Names		North Direction	↑
North Leg	KT DWs		
East Leg	Commerce Circle		
South Leg			
West Leg	Commerce Circle		
Special Considerations			
Schools	In Session		
Holidays	None		
Special Events	None		
Special Pedestrians Observed			
Pre-school children	None		
Elementry school age children	None		
Visually impaired (white cane/helper dog)	None		
Elderly/disabled (except wheelchairs)	None		
Wheelchairs/electric scooters	None		
Other (describe)	None	None	

Count Information

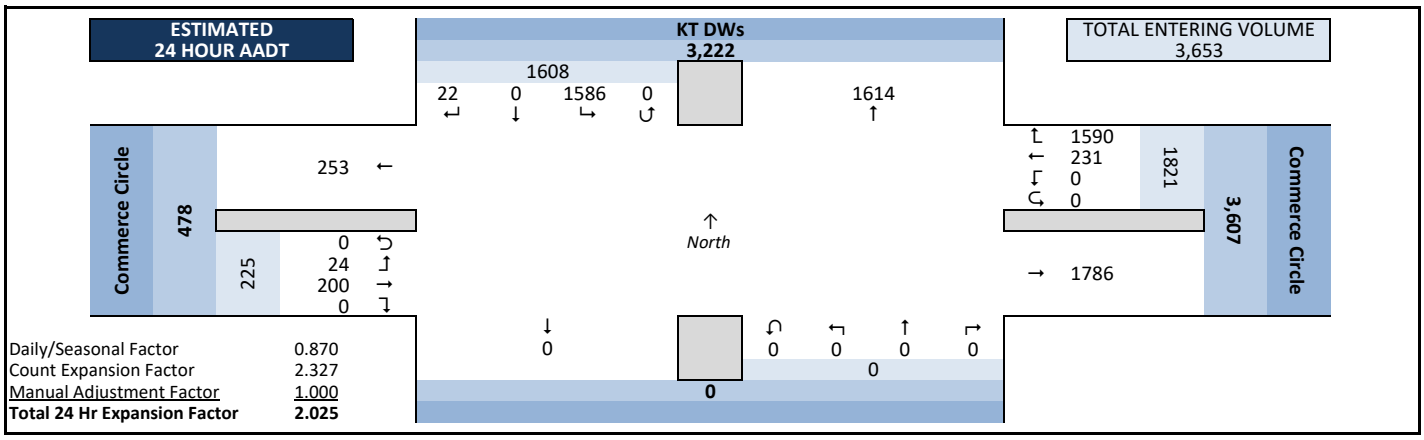
Hrs Counted:	06:00 AM-09:00 AM and 03:00 PM-06:00 PM				
1st Day of Count	Wednesday, September 25, 2024			Weather	
AM Peak Period	Wednesday, September 25, 2024			Clear & Dry	
Midday Peak Period	Wednesday, September 25, 2024			Clear & Dry	
PM Peak Period	Wednesday, September 25, 2024			Clear & Dry	
Calculated Peak Hours					
AM	6:30-7:30am	MD		PM	3:45-4:45pm
Peak Hours Selected for Analysis					
AM	6:45-7:45am	MD		PM	4:00-5:00pm
Daily/Seasonal Adjustment Group	(2) Urban Arterials & Collectors				
Count Expansion Group	(2) Urban Arterials & Collectors				
Daily/Seasonal Adjustment Factor	0.870	Count Expansion Factor	2.327		
Company Name	TADI, Inc.			Manual Adj.	1.000
Observers	AM Peak Period	Amy Scheuerlein			
	Midday Peak Period	None			
	PM Peak Period	Amy Scheuerlein			
Comments	2021 DOT Daily & Seasonal Factors				

Observed 6 Hour Volume Summary





Estimated 24 Hour AADT



Intersection Traffic Volume Report

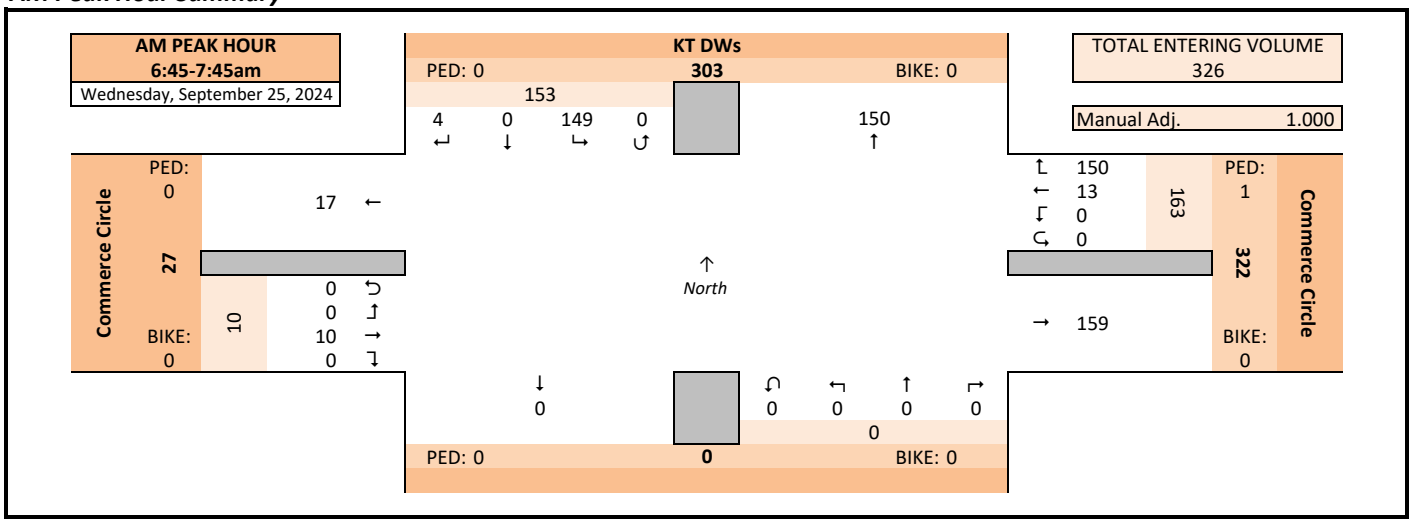
Peak Hour Volume Graphical Summary

Count Basics			*Page 2 of 13*
Start Date:	Wednesday, September 25, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

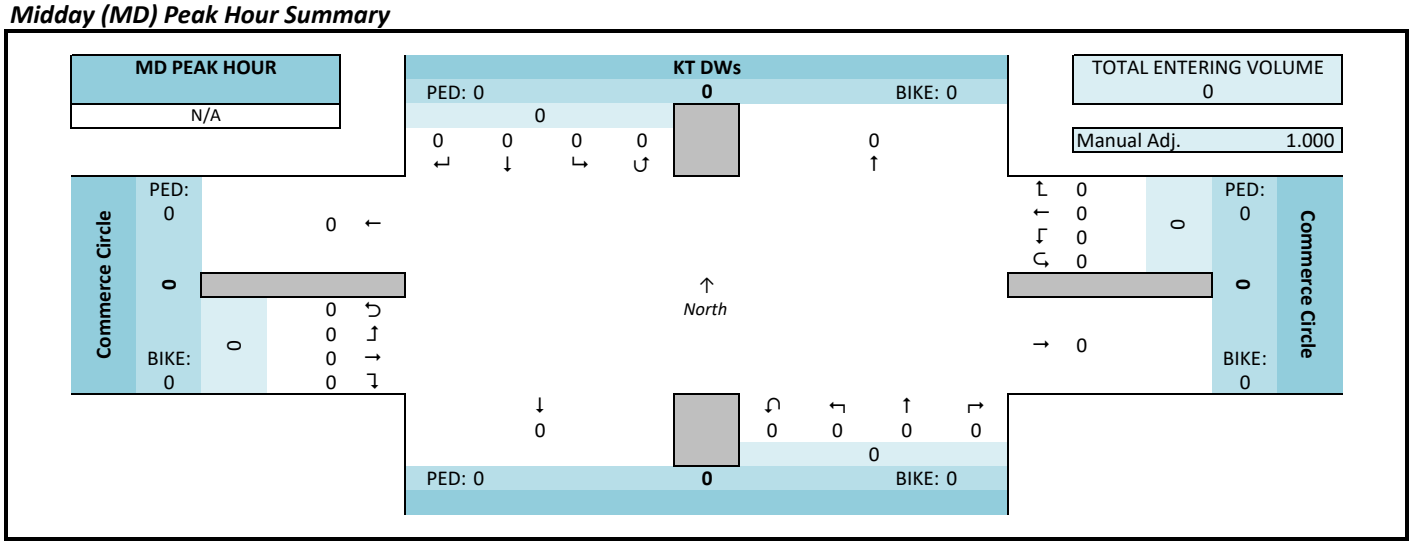
All Motor Vehicles

Commerce Circle & KT DWs

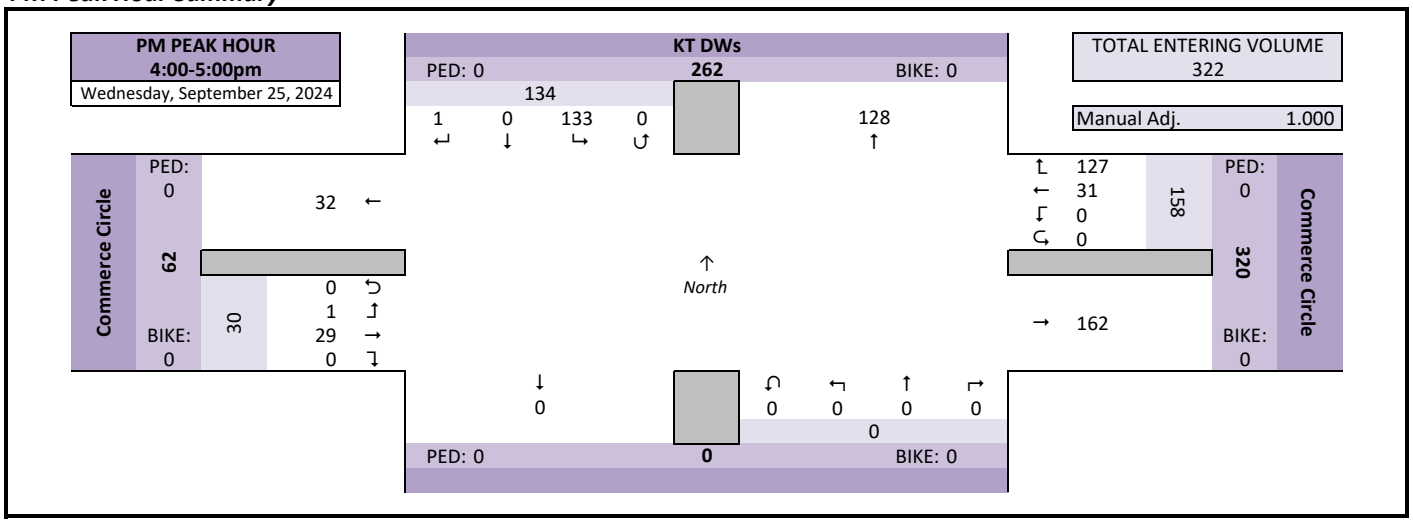
AM Peak Hour Summary



Midday (MD) Peak Hour Summary



PM Peak Hour Summary



Intersection Traffic Volume Report

Count Basics			Page 3 of 13
Start Date:	Wednesday, September 25, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

Peak Hour Volume Summary

Commerce Circle & KT DWs

All Motor Vehicles

Peak Hour Volumes, Truck Percentages, and PHFs

Wednesday, September 25, 2024		From North					From East					From South					From West					
AM Peak Hour	AM Peak Hour	KT DWs					Commerce Circle										Commerce Circle					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
	6:45 AM	0	0	30	0	30	25	1	0	0	26	0	0	0	0	0	0	1	0	0	1	57
	7:00 AM	0	0	34	0	34	37	3	0	0	40	0	0	0	0	0	0	4	0	0	4	78
	7:15 AM	2	0	42	0	44	51	6	0	0	57	0	0	0	0	0	0	3	0	0	3	104
	7:30 AM	2	0	43	0	45	37	3	0	0	40	0	0	0	0	0	0	2	0	0	2	87
	Peak Hour Volume	4	0	149	0	153	150	13	0	0	163	0	0	0	0	0	0	10	0	0	10	326
	Rounded Hourly Volume	5	0	150	0	155	150	15	0	0	165	0	0	0	0	0	0	10	0	0	10	330
	% Single Unit Trucks	50.0	0.0	12.8	0.0	13.7	15.3	53.8	0.0	0.0	18.4	0.0	0.0	0.0	0.0	0.0	0.0	60.0	0.0	0.0	60.0	17.5
	% Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
	% Trucks (Total)	50.0	0.0	12.8	0.0	13.7	15.3	61.5	0.0	0.0	19.0	0.0	0.0	0.0	0.0	0.0	0.0	60.0	0.0	0.0	60.0	17.8
	Peak Hour Factor (PHF)	0.50	0.00	0.87	0.00	0.85	0.74	0.54	0.00	0.00	0.71	0.00	0.00	0.00	0.00	0.00	0.00	0.62	0.00	0.00	0.62	0.78

N/A		From North					From East					From South					From West					
Midday (MD) Peak Hour	MD Peak Hour	KT DWs					Commerce Circle										Commerce Circle					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Peak Hour Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rounded Hourly Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	% Single Unit Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	% Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	% Trucks (Total)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Peak Hour Factor (PHF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Wednesday, September 25, 2024		From North					From East					From South					From West					
PM Peak Hour	PM Peak Hour	KT DWs					Commerce Circle										Commerce Circle					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
	4:00 PM	0	0	33	0	33	35	10	0	0	45	0	0	0	0	0	0	5	0	0	5	83
	4:15 PM	0	0	35	0	35	31	7	0	0	38	0	0	0	0	0	0	9	0	0	9	82
	4:30 PM	1	0	36	0	37	34	6	0	0	40	0	0	0	0	0	0	11	0	0	11	88
	4:45 PM	0	0	29	0	29	27	8	0	0	35	0	0	0	0	0	0	4	1	0	5	69
	Peak Hour Volume	1	0	133	0	134	127	31	0	0	158	0	0	0	0	0	0	29	1	0	30	322
	Rounded Hourly Volume	0	0	135	0	135	125	30	0	0	155	0	0	0	0	0	0	30	0	0	30	320
	% Single Unit Trucks	100.0	0.0	1.5	0.0	2.2	3.9	12.9	0.0	0.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	10.3	0.0	0.0	10.0	4.7
	% Heavy Trucks	0.0	0.0	0.8	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
	% Trucks (Total)	100.0	0.0	2.3	0.0	3.0	3.9	12.9	0.0	0.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	10.3	0.0	0.0	10.0	5.0
	Peak Hour Factor (PHF)	0.25	0.00	0.92	0.00	0.91	0.91	0.77	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.66	0.25	0.00	0.68	0.91

Peak Hour Pedestrian and Bicyclist Volumes

Pedestrians and Bicyclists		Crossing North Approach			Crossing East Approach			Crossing South Approach			Crossing West Approach			Total Ped & Bike Volume
		KT DWs			Commerce Circle						Commerce Circle			
	15-Minute Start Time	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	
AM	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	1	0	1	0	0	0	0	0	0	1
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	1	0	1	0	0	0	0	0	0	1
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Traffic Volume Report

15-Minute Motor Vehicle Data

Count Basics		*Page 5 of 13*
Start Date: Wednesday, September 25, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6	Non-Holiday	No Special Events

Commerce Circle & KT DWs

All Motor Vehicles

15-Minute Motor Vehicle Data

15-Minute Time Period Start Time	From North (KT DWs) Right	Thru	Left	U-Tn	Total	From East (Commerce Circle) Right	Thru	Left	U-Tn	Total	From South Right	Thru	Left	U-Tn	Total	From West (Commerce Circle) Right	Thru	Left	U-Tn	Total	15-Min Totals	Hourly Sum	PHF
AM Peak Period																							
6:00 AM	0	0	26	0	26	29	0	0	0	29	0	0	0	0	0	0	0	0	0	0	55	300	0.72
6:15 AM	0	0	41	0	41	43	0	0	0	43	0	0	0	0	0	0	0	0	0	0	84	323	0.78
6:30 AM	0	0	50	0	50	51	2	0	0	53	0	0	0	0	0	0	1	0	0	1	104	343	0.82
6:45 AM	0	0	30	0	30	25	1	0	0	26	0	0	0	0	0	0	1	0	0	1	57	326	0.78
7:00 AM	0	0	34	0	34	37	3	0	0	40	0	0	0	0	0	0	4	0	0	4	78	342	0.82
7:15 AM	2	0	42	0	44	51	6	0	0	57	0	0	0	0	0	0	3	0	0	3	104	320	0.77
7:30 AM	2	0	43	0	45	37	3	0	0	40	0	0	0	0	0	0	2	0	0	2	87	279	0.80
7:45 AM	1	0	34	0	35	35	2	0	0	37	0	0	0	0	0	0	1	0	0	1	73	243	0.83
8:00 AM	0	0	29	0	29	22	3	0	0	25	0	0	0	0	0	0	1	1	0	2	56	248	0.79
8:15 AM	0	0	27	0	27	34	1	0	0	35	0	0	0	0	0	0	0	1	0	1	63		
8:30 AM	0	0	29	0	29	18	2	0	0	20	0	0	0	0	0	0	1	1	0	2	51		
8:45 AM	0	0	26	0	26	39	7	0	0	46	0	0	0	0	0	0	3	3	0	6	78		
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Midday Peak Period																							
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
PM Peak Period																							
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
3:00 PM	1	0	26	0	27	30	8	0	0	38	0	0	0	0	0	0	8	1	0	9	74	314	0.96
3:15 PM	2	0	29	0	31	28	11	0	0	39	0	0	0	0	0	0	9	0	0	9	79	323	0.97
3:30 PM	0	0	28	0	28	31	8	0	0	39	0	0	0	0	0	0	12	0	0	12	79	326	0.98
3:45 PM	0	0	35	0	35	29	11	0	0	40	0	0	0	0	0	0	6	1	0	7	82	335	0.95
4:00 PM	0	0	33	0	33	35	10	0	0	45	0	0	0	0	0	0	5	0	0	5	83	322	0.91
4:15 PM	0	0	35	0	35	31	7	0	0	38	0	0	0	0	0	0	9	0	0	9	82	302	0.86
4:30 PM	1	0	36	0	37	34	6	0	0	40	0	0	0	0	0	0	11	0	0	11	88	296	0.84
4:45 PM	0	0	29	0	29	27	8	0	0	35	0	0	0	0	0	0	4	1	0	5	69	289	0.89
5:00 PM	0	0	27	0	27	28	5	0	0	33	0	0	0	0	0	0	3	0	0	3	63	278	0.86
5:15 PM	0	0	31	0	31	34	6	0	0	40	0	0	0	0	0	0	4	1	0	5	76		
5:30 PM	0	0	39	0	39	31	3	0	0	34	0	0	0	0	0	0	6	2	0	8	81		
5:45 PM	2	0	24	0	26	26	1	0	0	27	0	0	0	0	0	0	5	0	0	5	58		
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Totals	11	0	783	0	794	785	114	0	0	899	0	0	0	0	0	0	99	12	0	111	1804		

Peak Hour All Vehicle Volume Summary

Hourly Time Period Start Time	From North (KT DWs) Right	Thru	Left	U-Tn	Total	From East (Commerce Circle) Right	Thru	Left	U-Tn	Total	From South Right	Thru	Left	U-Tn	Total	From West (Commerce Circle) Right	Thru	Left	U-Tn	Total	Total Hourly Volume	PHF
AM 6:45 AM	4	0	149	0	153	150	13	0	0	163	0	0	0	0	0	0	10	0	0	10	326	0.78
MD 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM 4:00 PM	1	0	133	0	134	127	31	0	0	158	0	0	0	0	0	0	29	1	0	30	322	0.91

Intersection Traffic Volume Report

Count Basics			Page 9 of 13
Start Date:	Wednesday, September 25, 2024	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

15-Minute Heavy Vehicle Data

Commerce Circle & KT DWs

Heavy Vehicles (Single-Unit Trucks, Buses & Semi-Trucks)

15-Minute Heavy Vehicle Data

15-Minute Time Period Start Time		From North (KT DWs) Right	Thru	Left	U-Tn	Total	From East (Commerce Circle) Right	Thru	Left	U-Tn	Total	From South Right	Thru	Left	U-Tn	Total	From West (Commerce Circle) Right	Thru	Left	U-Tn	Total	15-Min Totals	Hourly Sum
AM Peak Period	6:00 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	16
	6:15 AM	0	0	3	0	3	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5	28
	6:30 AM	0	0	2	0	2	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0	6	45
	6:45 AM	0	0	1	0	1	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	4	58
	7:00 AM	0	0	5	0	5	5	0	0	0	5	0	0	0	0	0	0	3	0	0	3	13	60
	7:15 AM	1	0	5	0	6	10	4	0	0	14	0	0	0	0	0	0	2	0	0	2	22	54
	7:30 AM	1	0	8	0	9	6	3	0	0	9	0	0	0	0	0	0	1	0	0	1	19	34
	7:45 AM	0	0	3	0	3	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	6	22
	8:00 AM	0	0	5	0	5	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	7	24
	8:15 AM	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	
	8:30 AM	0	0	4	0	4	2	0	0	0	2	0	0	0	0	0	0	1	0	0	1	7	
	8:45 AM	0	0	1	0	1	4	2	0	0	6	0	0	0	0	0	0	1	0	0	1	8	
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:00 PM	0	0	2	0	2	3	0	0	0	3	0	0	0	0	0	0	1	0	0	1	6	11
	3:15 PM	1	0	1	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	7
	3:30 PM	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	6
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
	4:00 PM	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	16
	4:15 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	2	17
	4:30 PM	1	0	0	0	1	1	3	0	0	4	0	0	0	0	0	0	1	0	0	1	6	17
	4:45 PM	0	0	2	0	2	2	0	0	0	2	0	0	0	0	0	0	2	0	0	2	6	13
	5:00 PM	0	0	2	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	9
	5:15 PM	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	
	5:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2	
	5:45 PM	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		4	0	48	0	52	54	17	0	0	71	0	0	0	0	0	0	13	0	0	13	136	

Peak Hour Heavy Vehicle Volume Summary

Hourly Time Period Start Time		From North (KT DWs) Right	Thru	Left	U-Tn	Total	From East (Commerce Circle) Right	Thru	Left	U-Tn	Total	From South Right	Thru	Left	U-Tn	Total	From West (Commerce Circle) Right	Thru	Left	U-Tn	Total	Total Hourly Volume
AM	6:45 AM	2	0	19	0	21	23	8	0	0	31	0	0	0	0	0	0	6	0	0	6	58
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	1	0	3	0	4	5	4	0	0	9	0	0	0	0	0	0	3	0	0	3	16

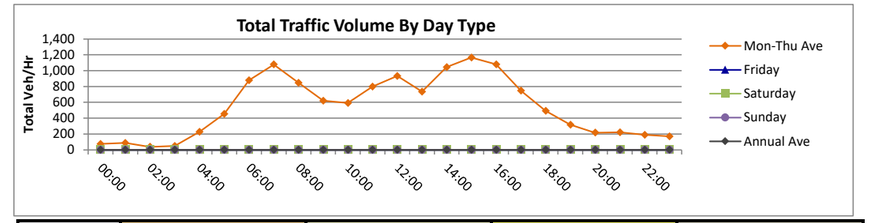
Wisconsin Department of Transportation

Hourly Traffic Volume Report **2023-Aug-07 to 2023-Aug-09**

Coverage Count

50 Hour Count - Averages and Graphs Do Not Include All Days

Location	**MAPLE RD SOUTH OF W MEQUON RD GERMANTOWN**	Segment ID	
Site #	660448	Seasonal Factor Group	2
Region	SE	Daily Factor Group	2
County	WASHINGTON	Axle Factor Group	6
Funct. Class	U Minor Arterial	Growth Factor Group	



Hour	Sun			Mon 2023-08-07			Tues 2023-08-08			Wed 2023-08-09			Thur			Fri			Sat		
	Pos Dir	Neg Dir	Total	Pos Dir	Neg Dir	Total	Pos Dir	Neg Dir	Total	Pos Dir	Neg Dir	Total	Pos Dir	Neg Dir	Total	Pos Dir	Neg Dir	Total	Pos Dir	Neg Dir	Total
00:00-00:59			-			-	17	48	*65*	22	60	*82*			-			-			-
01:00-01:59			-			-	15	67	*82*	28	64	*92*			-			-			-
02:00-02:59			-			-	12	18	*30*	15	30	*45*			-			-			-
03:00-03:59			-			-	29	27	*56*	24	17	*41*			-			-			-
04:00-04:59			-			-	180	57	*237*	175	43	*218*			-			-			-
05:00-05:59			-			-	342	119	*461*	335	114	*449*			-			-			-
06:00-06:59			-			-	654	237	*891*	611	254	*865*			-			-			-
07:00-07:59			-			-	594	521	*1,115*	528	512	*1,040*			-			-			-
08:00-08:59			-	438	388	*826*	460	382	*842*	510	360	*870*			-			-			-
09:00-09:59			-	287	321	*608*	286	336	*622*	286	339	*625*			-			-			-
10:00-10:59			-	270	346	*616*	230	338	*568*			-			-			-			-
11:00-11:59			-	314	435	*749*	398	450	*848*			-			-			-			-
12:00-12:59			-	433	457	*890*	462	513	*975*			-			-			-			-
13:00-13:59			-	363	395	*758*	349	365	*714*			-			-			-			-
14:00-14:59			-	428	599	*1,027*	440	623	*1,063*			-			-			-			-
15:00-15:59			-	348	839	*1,187*	346	800	*1,146*			-			-			-			-
16:00-16:59			-	294	752	*1,046*	325	786	*1,111*			-			-			-			-
17:00-17:59			-	278	459	*737*	313	447	*760*			-			-			-			-
18:00-18:59			-	250	239	*489*	231	263	*494*			-			-			-			-
19:00-19:59			-	121	186	*307*	120	207	*327*			-			-			-			-
20:00-20:59			-	120	94	*214*	122	96	*218*			-			-			-			-
21:00-21:59			-	76	139	*215*	78	148	*226*			-			-			-			-
22:00-22:59			-	126	59	*185*	136	55	*191*			-			-			-			-
23:00-23:59			-	38	131	*169*	42	128	*170*			-			-			-			-
Daily Total	-	-	-	-	-	-	**6,181**	**7,031**	***13,212***	-	-	-	-	-	-	-	-	-	-	-	-
AM Peak	-	-	-	-	-	-	**654**	**521**	***1,115***	**611**	**512**	***1,040***	-	-	-	-	-	-	-	-	-
Hour	-	-	-	-	-	-	06:00	07:00	*07:00*	06:00	07:00	*07:00*	-	-	-	-	-	-	-	-	-
MD Peak	-	-	-	**433**	**599**	***1,027***	**462**	**623**	***1,063***	-	-	-	-	-	-	-	-	-	-	-	-
Hour	-	-	-	12:00	14:00	*14:00*	12:00	14:00	*14:00*	-	-	-	-	-	-	-	-	-	-	-	-
PM Peak	-	-	-	**348**	**839**	***1,187***	**346**	**800**	***1,146***	-	-	-	-	-	-	-	-	-	-	-	-
Hour	-	-	-	15:00	15:00	*15:00*	15:00	15:00	*15:00*	-	-	-	-	-	-	-	-	-	-	-	-
Daily Peak	-	-	-	-	-	-	**654**	**800**	***1,146***	-	-	-	-	-	-	-	-	-	-	-	-
Hour	-	-	-	-	-	-	06:00	15:00	*15:00*	-	-	-	-	-	-	-	-	-	-	-	-
% of Total	-	-	-	-	-	-	10.6%	11.4%	*8.7%*	-	-	-	-	-	-	-	-	-	-	-	-
Daily Ave	-	-	-	-	-	-	**258**	**293**	***551***	-	-	-	-	-	-	-	-	-	-	-	-

Hour	Mon-Thurs Average			Mon-Fri Average			7 Day Average			Estimated Annual Ave		
	Pos Dir	Neg Dir	Total	Pos Dir	Neg Dir	Total	Pos Dir	Neg Dir	Total	Pos Dir	Neg Dir	Total
00:00-00:59	20	54	*74*	-	-	-	-	-	-	0	0	*0*
01:00-01:59	22	66	*87*	-	-	-	-	-	-	0	0	*0*
02:00-02:59	14	24	*38*	-	-	-	-	-	-	0	0	*0*
03:00-03:59	27	22	*49*	-	-	-	-	-	-	0	0	*0*
04:00-04:59	178	50	*228*	-	-	-	-	-	-	0	0	*0*
05:00-05:59	339	117	*455*	-	-	-	-	-	-	0	0	*0*
06:00-06:59	633	246	*878*	-	-	-	-	-	-	0	0	*0*
07:00-07:59	561	517	*1,078*	-	-	-	-	-	-	0	0	*0*
08:00-08:59	469	377	*846*	-	-	-	-	-	-	0	0	*0*
09:00-09:59	286	332	*618*	-	-	-	-	-	-	0	0	*0*
10:00-10:59	250	342	*592*	-	-	-	-	-	-	0	0	*0*
11:00-11:59	356	443	*799*	-	-	-	-	-	-	0	0	*0*
12:00-12:59	448	485	*933*	-	-	-	-	-	-	0	0	*0*
13:00-13:59	356	380	*736*	-	-	-	-	-	-	0	0	*0*
14:00-14:59	434	611	*1,045*	-	-	-	-	-	-	0	0	*0*
15:00-15:59	347	820	*1,167*	-	-	-	-	-	-	0	0	*0*
16:00-16:59	310	769	*1,079*	-	-	-	-	-	-	0	0	*0*
17:00-17:59	296	453	*749*	-	-	-	-	-	-	0	0	*0*
18:00-18:59	241	251	*492*	-	-	-	-	-	-	0	0	*0*
19:00-19:59	121	197	*317*	-	-	-	-	-	-	0	0	*0*
20:00-20:59	121	95	*216*	-	-	-	-	-	-	0	0	*0*
21:00-21:59	77	144	*221*	-	-	-	-	-	-	0	0	*0*
22:00-22:59	131	57	*188*	-	-	-	-	-	-	0	0	*0*
23:00-23:59	40	130	*170*	-	-	-	-	-	-	0	0	*0*
Daily Total	**6,072**	**6,977**	***13,049***	-	-	-	-	-	-	**0**	**0**	**0**
AM Peak	**633**	**517**	***1,078***	-	-	-	-	-	-	**0**	**0**	***0***
Hour	06:00	07:00	*07:00*	-	-	-	-	-	-	00:00	00:00	*00:00*
MD Peak	**448**	**611**	***1,045***	-	-	-	-	-	-	**0**	**0**	***0***
Hour	12:00	14:00	*14:00*	-	-	-	-	-	-	10:00	10:00	*10:00*
PM Peak	**347**	**820**	***1,167***	-	-	-	-	-	-	**0**	**0**	***0***
Hour	15:00	15:00	*15:00*	-	-	-	-	-	-	15:00	15:00	*15:00*
Daily Peak	**633**	**820**	***1,167***	-	-	-	-	-	-	**0**	**0**	***0***
Hour	06:00	15:00	*15:00*	-	-	-	-	-	-	00:00	00:00	*00:00*
% of Total	10.4%	11.7%	*8.9%*	-	-	-	-	-	-	#DIV/0!	#DIV/0!	######
Daily Ave	**253**	**291**	***544***	-	-	-	-	-	-	**0**	**0**	***0***

Seasonal Fctr																					
Daily Fctr																					
Axle Factor																					
Pulse Fctr																					
Overall Fctr	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	

AM	579	449
PM	310	769

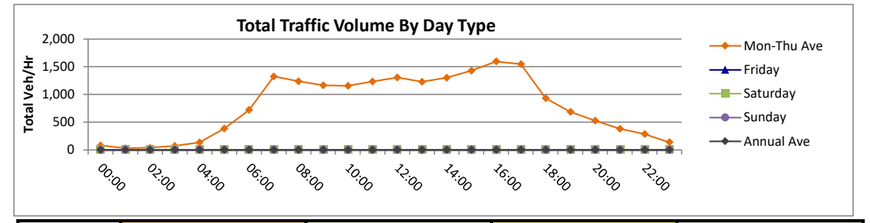
Wisconsin Department of Transportation

Hourly Traffic Volume Report **2023-Jul-24 to 2023-Jul-26**

Coverage Count

49 Hour Count - Averages and Graphs Do Not Include All Days

Location	**STH 167 EAST OF MAPLE RD GERMANTOWN**	Segment ID	3712
Site #	660449	Seasonal Factor Group	2
Region	SE	Daily Factor Group	2
County	WASHINGTON	Axle Factor Group	5
Funct. Class	U Principal Arterial - Other	Growth Factor Group	1



Hour	Sun			Mon 2023-07-24			Tues 2023-07-25			Wed 2023-07-26			Thur			Fri			Sat		
	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*
00:00-00:59			-			-	47	30	*77*	43	34	*77*			-			-			-
01:00-01:59			-			-	12	14	*26*	20	15	*35*			-			-			-
02:00-02:59			-			-	25	6	*31*	25	18	*43*			-			-			-
03:00-03:59			-			-	45	32	*77*	30	36	*66*			-			-			-
04:00-04:59			-			-	72	61	*133*	70	66	*136*			-			-			-
05:00-05:59			-			-	210	160	*370*	235	165	*400*			-			-			-
06:00-06:59			-			-	425	298	*723*	394	321	*715*			-			-			-
07:00-07:59			-			-	774	554	*1,328*	769	552	*1,321*			-			-			-
08:00-08:59			-			-	720	518	*1,238*	743	494	*1,237*			-			-			-
09:00-09:59			-	634	581	*1,215*	578	574	*1,152*	589	536	*1,125*			-			-			-
10:00-10:59			-	570	579	*1,149*	546	612	*1,158*			-			-			-			-
11:00-11:59			-	545	676	*1,221*	586	653	*1,239*			-			-			-			-
12:00-12:59			-	653	656	*1,309*	614	682	*1,296*			-			-			-			-
13:00-13:59			-	579	631	*1,210*	593	647	*1,240*			-			-			-			-
14:00-14:59			-	638	662	*1,300*	583	720	*1,303*			-			-			-			-
15:00-15:59			-	626	780	*1,406*	664	781	*1,445*			-			-			-			-
16:00-16:59			-	717	850	*1,567*	721	901	*1,622*			-			-			-			-
17:00-17:59			-	673	831	*1,504*	691	898	*1,589*			-			-			-			-
18:00-18:59			-	439	497	*936*	433	491	*924*			-			-			-			-
19:00-19:59			-	328	335	*663*	346	362	*708*			-			-			-			-
20:00-20:59			-	277	225	*502*	278	270	*548*			-			-			-			-
21:00-21:59			-	200	144	*344*	245	169	*414*			-			-			-			-
22:00-22:59			-	170	111	*281*	172	112	*284*			-			-			-			-
23:00-23:59			-	60	52	*112*	82	77	*159*			-			-			-			-
Daily Total	-	-	-	-	-	-	**9,462**	**9,622**	***19,084***	-	-	-	-	-	-	-	-	-	-	-	-
AM Peak	-	-	-	-	-	-	**774**	**574**	***1,328***	**769**	**552**	***1,321***	-	-	-	-	-	-	-	-	-
Hour	-	-	-	-	-	-	07:00	09:00	*07:00*	07:00	07:00	*07:00*	-	-	-	-	-	-	-	-	-
MD Peak	-	-	-	**653**	**676**	***1,309***	**614**	**720**	***1,303***	-	-	-	-	-	-	-	-	-	-	-	-
Hour	-	-	-	12:00	11:00	*12:00*	12:00	14:00	*14:00*	-	-	-	-	-	-	-	-	-	-	-	-
PM Peak	-	-	-	**717**	**850**	***1,567***	**721**	**901**	***1,622***	-	-	-	-	-	-	-	-	-	-	-	-
Hour	-	-	-	16:00	16:00	*16:00*	16:00	16:00	*16:00*	-	-	-	-	-	-	-	-	-	-	-	-
Daily Peak	-	-	-	-	-	-	**774**	**901**	***1,622***	-	-	-	-	-	-	-	-	-	-	-	-
Hour	-	-	-	-	-	-	07:00	16:00	*16:00*	-	-	-	-	-	-	-	-	-	-	-	-
% of Total	-	-	-	-	-	-	8.2%	9.4%	*8.5%*	-	-	-	-	-	-	-	-	-	-	-	-
Daily Ave	-	-	-	-	-	-	**394**	**401**	***795***	-	-	-	-	-	-	-	-	-	-	-	-

Seasonal Fctr																					
Daily Fctr																					
Axle Factor																					
Pulse Fctr																					
Overall Fctr	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	

Hour	Mon-Thurs Average			Mon-Fri Average			7 Day Average			Estimated Annual Ave		
	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*
00:00-00:59	45	32	*77*	-	-	-	-	-	-	0	0	*0*
01:00-01:59	16	15	*31*	-	-	-	-	-	-	0	0	*0*
02:00-02:59	25	12	*37*	-	-	-	-	-	-	0	0	*0*
03:00-03:59	38	34	*72*	-	-	-	-	-	-	0	0	*0*
04:00-04:59	71	64	*135*	-	-	-	-	-	-	0	0	*0*
05:00-05:59	223	163	*385*	-	-	-	-	-	-	0	0	*0*
06:00-06:59	410	310	*719*	-	-	-	-	-	-	0	0	*0*
07:00-07:59	772	553	*1,325*	-	-	-	-	-	-	0	0	*0*
08:00-08:59	732	506	*1,238*	-	-	-	-	-	-	0	0	*0*
09:00-09:59	600	564	*1,164*	-	-	-	-	-	-	0	0	*0*
10:00-10:59	558	596	*1,154*	-	-	-	-	-	-	0	0	*0*
11:00-11:59	566	665	*1,230*	-	-	-	-	-	-	0	0	*0*
12:00-12:59	634	669	*1,303*	-	-	-	-	-	-	0	0	*0*
13:00-13:59	586	639	*1,225*	-	-	-	-	-	-	0	0	*0*
14:00-14:59	611	691	*1,302*	-	-	-	-	-	-	0	0	*0*
15:00-15:59	645	781	*1,426*	-	-	-	-	-	-	0	0	*0*
16:00-16:59	719	876	*1,595*	-	-	-	-	-	-	0	0	*0*
17:00-17:59	682	865	*1,547*	-	-	-	-	-	-	0	0	*0*
18:00-18:59	436	494	*930*	-	-	-	-	-	-	0	0	*0*
19:00-19:59	337	349	*686*	-	-	-	-	-	-	0	0	*0*
20:00-20:59	278	248	*525*	-	-	-	-	-	-	0	0	*0*
21:00-21:59	223	157	*379*	-	-	-	-	-	-	0	0	*0*
22:00-22:59	171	112	*283*	-	-	-	-	-	-	0	0	*0*
23:00-23:59	71	65	*136*	-	-	-	-	-	-	0	0	*0*
Daily Total	**9,444**	**9,453**	***18,897***	-	-	-	-	-	-	**0**	**0**	**0**
AM Peak	**772**	**564**	***1,325***	-	-	-	-	-	-	**0**	**0**	***0***
Hour	07:00	09:00	*07:00*	-	-	-	-	-	-	00:00	00:00	*00:00*
MD Peak	**634**	**691**	***1,303***	-	-	-	-	-	-	**0**	**0**	***0***
Hour	12:00	14:00	*12:00*	-	-	-	-	-	-	10:00	10:00	*10:00*
PM Peak	**719**	**876**	***1,595***	-	-	-	-	-	-	**0**	**0**	***0***
Hour	16:00	16:00	*16:00*	-	-	-	-	-	-	15:00	15:00	*15:00*
Daily Peak	**772**	**876**	***1,595***	-	-	-	-	-	-	**0**	**0**	***0***
Hour	07:00	16:00	*16:00*	-	-	-	-	-	-	00:00	00:00	*00:00*
% of Total	8.2%	9.3%	*8.4%*	-	-	-	-	-	-	#DIV/0!	#DIV/0!	######
Daily Ave	**394**	**394**	***787***	-	-	-	-	-	-	**0**	**0**	***0***

AM	681	492
PM	719	876

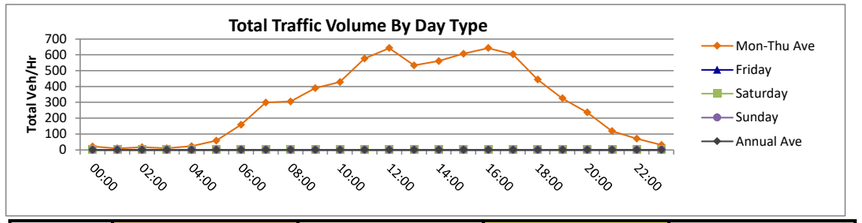
Wisconsin Department of Transportation

Hourly Traffic Volume Report **2023-Aug-14 to 2023-Aug-16**

Coverage Count

49 Hour Count - Averages and Graphs Do Not Include All Days

Location	**MAPLE RD NORTH OF STH 175 GERMANTOWN**	Segment ID	
Site #	660466	Seasonal Factor Group	2
Region	SE	Daily Factor Group	2
County	WASHINGTON	Axle Factor Group	6
Funct. Class	U Minor Arterial	Growth Factor Group	



Hour	Sun			Mon 2023-08-14			Tues 2023-08-15			Wed 2023-08-16			Thur			Fri			Sat		
	Undivided Hwy		*Total*	Undivided Hwy		*Total*	Undivided Hwy		*Total*	Undivided Hwy		*Total*	Undivided Hwy		*Total*	Undivided Hwy		*Total*	Undivided Hwy		*Total*
00:00-00:59			-			-		17	*17*		24	*24*			-			-			-
01:00-01:59			-			-		9	*9*		10	*10*			-			-			-
02:00-02:59			-			-		15	*15*		19	*19*			-			-			-
03:00-03:59			-			-		11	*11*		9	*9*			-			-			-
04:00-04:59			-			-		22	*22*		22	*22*			-			-			-
05:00-05:59			-			-		56	*56*		61	*61*			-			-			-
06:00-06:59			-			-		158	*158*		160	*160*			-			-			-
07:00-07:59			-			-		282	*282*		315	*315*			-			-			-
08:00-08:59			-		284	*284*		322	*322*		311	*311*			-			-			-
09:00-09:59			-		374	*374*		405	*405*			-			-			-			-
10:00-10:59			-		371	*371*		484	*484*			-			-			-			-
11:00-11:59			-		468	*468*		683	*683*			-			-			-			-
12:00-12:59			-		592	*592*		694	*694*			-			-			-			-
13:00-13:59			-		465	*465*		602	*602*			-			-			-			-
14:00-14:59			-		481	*481*		640	*640*			-			-			-			-
15:00-15:59			-		546	*546*		668	*668*			-			-			-			-
16:00-16:59			-		552	*552*		734	*734*			-			-			-			-
17:00-17:59			-		493	*493*		713	*713*			-			-			-			-
18:00-18:59			-		383	*383*		506	*506*			-			-			-			-
19:00-19:59			-		273	*273*		377	*377*			-			-			-			-
20:00-20:59			-		175	*175*		298	*298*			-			-			-			-
21:00-21:59			-		106	*106*		130	*130*			-			-			-			-
22:00-22:59			-		52	*52*		88	*88*			-			-			-			-
23:00-23:59			-		24	*24*		37	*37*			-			-			-			-
Daily Total	-	-	-	-	-	-	-	**7,951**	***7,951***	-	-	-	-	-	-	-	-	-	-	-	-
AM Peak	-	-	-	-	-	-	-	**405**	***405***	-	-	-	-	-	-	-	-	-	-	-	-
Hour	-	-	-	-	-	-	-	09:00	*09:00*	-	-	-	-	-	-	-	-	-	-	-	-
MD Peak	-	-	-	-	**592**	***592***	-	**694**	***694***	-	-	-	-	-	-	-	-	-	-	-	-
Hour	-	-	-	-	12:00	*12:00*	-	12:00	*12:00*	-	-	-	-	-	-	-	-	-	-	-	-
PM Peak	-	-	-	-	**552**	***552***	-	**734**	***734***	-	-	-	-	-	-	-	-	-	-	-	-
Hour	-	-	-	-	16:00	*16:00*	-	16:00	*16:00*	-	-	-	-	-	-	-	-	-	-	-	-
Daily Peak	-	-	-	-	-	-	-	**734**	***734***	-	-	-	-	-	-	-	-	-	-	-	-
Hour	-	-	-	-	-	-	-	16:00	*16:00*	-	-	-	-	-	-	-	-	-	-	-	-
% of Total	-	-	-	-	-	-	-	9.2%	*9.2%*	-	-	-	-	-	-	-	-	-	-	-	-
Daily Ave	-	-	-	-	-	-	-	**331**	***331***	-	-	-	-	-	-	-	-	-	-	-	-

Seasonal Fctr																					
Daily Fctr																					
Axle Factor																					
Pulse Fctr																					
Overall Fctr	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	

Hour	Mon-Thurs Average			Mon-Fri Average			7 Day Average			Estimated Annual Ave		
	Undivided Hwy		*Total*	Undivided Hwy		*Total*	Undivided Hwy		*Total*	Undivided Hwy		*Total*
00:00-00:59	-	21	*21*	-	-	-	-	-	-	-	0	*0*
01:00-01:59	-	10	*10*	-	-	-	-	-	-	-	0	*0*
02:00-02:59	-	17	*17*	-	-	-	-	-	-	-	0	*0*
03:00-03:59	-	10	*10*	-	-	-	-	-	-	-	0	*0*
04:00-04:59	-	22	*22*	-	-	-	-	-	-	-	0	*0*
05:00-05:59	-	59	*59*	-	-	-	-	-	-	-	0	*0*
06:00-06:59	-	159	*159*	-	-	-	-	-	-	-	0	*0*
07:00-07:59	-	299	*299*	-	-	-	-	-	-	-	0	*0*
08:00-08:59	-	306	*306*	-	-	-	-	-	-	-	0	*0*
09:00-09:59	-	390	*390*	-	-	-	-	-	-	-	0	*0*
10:00-10:59	-	428	*428*	-	-	-	-	-	-	-	0	*0*
11:00-11:59	-	576	*576*	-	-	-	-	-	-	-	0	*0*
12:00-12:59	-	643	*643*	-	-	-	-	-	-	-	0	*0*
13:00-13:59	-	534	*534*	-	-	-	-	-	-	-	0	*0*
14:00-14:59	-	561	*561*	-	-	-	-	-	-	-	0	*0*
15:00-15:59	-	607	*607*	-	-	-	-	-	-	-	0	*0*
16:00-16:59	-	643	*643*	-	-	-	-	-	-	-	0	*0*
17:00-17:59	-	603	*603*	-	-	-	-	-	-	-	0	*0*
18:00-18:59	-	445	*445*	-	-	-	-	-	-	-	0	*0*
19:00-19:59	-	325	*325*	-	-	-	-	-	-	-	0	*0*
20:00-20:59	-	237	*237*	-	-	-	-	-	-	-	0	*0*
21:00-21:59	-	118	*118*	-	-	-	-	-	-	-	0	*0*
22:00-22:59	-	70	*70*	-	-	-	-	-	-	-	0	*0*
23:00-23:59	-	31	*31*	-	-	-	-	-	-	-	0	*0*
Daily Total	-	**7,108**	***7,108***	-	-	-	-	-	-	-	**0**	**0**
AM Peak	-	**390**	***390***	-	-	-	-	-	-	-	**0**	***0***
Hour	-	09:00	*09:00*	-	-	-	-	-	-	-	00:00	*00:00*
MD Peak	-	**643**	***643***	-	-	-	-	-	-	-	**0**	***0***
Hour	-	12:00	*12:00*	-	-	-	-	-	-	-	10:00	*10:00*
PM Peak	-	**643**	***643***	-	-	-	-	-	-	-	**0**	***0***
Hour	-	16:00	*16:00*	-	-	-	-	-	-	-	15:00	*15:00*
Daily Peak	-	**643**	***643***	-	-	-	-	-	-	-	**0**	***0***
Hour	-	12:00	*12:00*	-	-	-	-	-	-	-	00:00	*00:00*
% of Total	-	9.0%	*9.0%*	-	-	-	-	-	-	-	#DIV/0!	######
Daily Ave	-	**296**	***296***	-	-	-	-	-	-	-	**0**	***0***

AM	264
PM	643

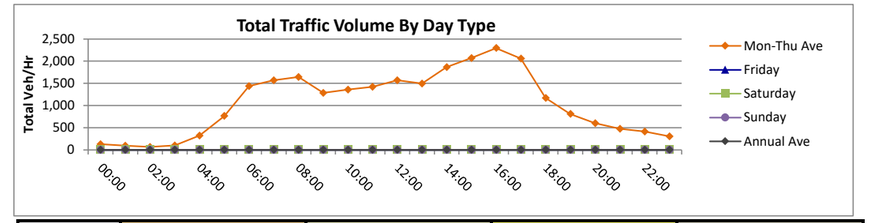
Wisconsin Department of Transportation

Hourly Traffic Volume Report **2023-Jul-24 to 2023-Jul-26**

Coverage Count

51 Hour Count - Averages and Graphs Do Not Include All Days

Location	**STH 167 BTWN USH USH 41-45 & MAPLE RD GERMANTOWN**	Segment ID	9137
Site #	660588	Seasonal Factor Group	2
Region	SE	Daily Factor Group	2
County	WASHINGTON	Axle Factor Group	5
Funct. Class	U Principal Arterial - Other	Growth Factor Group	1



Hour	Sun			Mon 2023-07-24			Tues 2023-07-25			Wed 2023-07-26			Thur			Fri			Sat		
	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*
00:00-00:59			-			-	49	74	*123*	49	84	*133*			-			-			-
01:00-01:59			-			-	25	62	*87*	28	73	*101*			-			-			-
02:00-02:59			-			-	28	34	*62*	33	35	*68*			-			-			-
03:00-03:59			-			-	58	40	*98*	48	46	*94*			-			-			-
04:00-04:59			-			-	220	90	*310*	229	101	*330*			-			-			-
05:00-05:59			-			-	498	281	*779*	495	250	*745*			-			-			-
06:00-06:59			-			-	934	487	*1,421*	954	501	*1,455*			-			-			-
07:00-07:59			-	343	202	*545*	1,212	914	*2,126*	1,121	918	*2,039*			-			-			-
08:00-08:59			-	875	684	*1,559*	956	762	*1,718*	938	709	*1,647*			-			-			-
09:00-09:59			-	746	699	*1,445*	725	708	*1,433*	512	466	*978*			-			-			-
10:00-10:59			-	638	651	*1,289*	689	732	*1,421*			-			-			-			-
11:00-11:59			-	635	768	*1,403*	680	756	*1,436*			-			-			-			-
12:00-12:59			-	795	774	*1,569*	766	801	*1,567*			-			-			-			-
13:00-13:59			-	690	782	*1,472*	741	775	*1,516*			-			-			-			-
14:00-14:59			-	839	1,001	*1,840*	838	1,050	*1,888*			-			-			-			-
15:00-15:59			-	745	1,275	*2,020*	799	1,320	*2,119*			-			-			-			-
16:00-16:59			-	872	1,325	*2,197*	931	1,462	*2,393*			-			-			-			-
17:00-17:59			-	825	1,169	*1,994*	869	1,257	*2,126*			-			-			-			-
18:00-18:59			-	543	621	*1,164*	541	633	*1,174*			-			-			-			-
19:00-19:59			-	366	436	*802*	349	464	*813*			-			-			-			-
20:00-20:59			-	307	272	*579*	295	329	*624*			-			-			-			-
21:00-21:59			-	215	221	*436*	266	242	*508*			-			-			-			-
22:00-22:59			-	220	170	*390*	267	169	*436*			-			-			-			-
23:00-23:59			-	85	200	*285*	95	224	*319*			-			-			-			-
Daily Total	-	-	-	-	-	-	**12,831**	**13,666**	***26,497***	-	-	-	-	-	-	-	-	-	-	-	-
AM Peak	-	-	-	-	-	-	**1,212**	**914**	***2,126***	**1,121**	**918**	***2,039***	-	-	-	-	-	-	-	-	-
Hour	-	-	-	-	-	-	07:00	07:00	*07:00*	07:00	07:00	*07:00*	-	-	-	-	-	-	-	-	-
MD Peak	-	-	-	**839**	**1,001**	***1,840***	**838**	**1,050**	***1,888***	-	-	-	-	-	-	-	-	-	-	-	-
Hour	-	-	-	14:00	14:00	*14:00*	14:00	14:00	*14:00*	-	-	-	-	-	-	-	-	-	-	-	-
PM Peak	-	-	-	**872**	**1,325**	***2,197***	**931**	**1,462**	***2,393***	-	-	-	-	-	-	-	-	-	-	-	-
Hour	-	-	-	16:00	16:00	*16:00*	16:00	16:00	*16:00*	-	-	-	-	-	-	-	-	-	-	-	-
Daily Peak	-	-	-	-	-	-	**1,212**	**1,462**	***2,393***	-	-	-	-	-	-	-	-	-	-	-	-
Hour	-	-	-	-	-	-	07:00	16:00	*16:00*	-	-	-	-	-	-	-	-	-	-	-	-
% of Total	-	-	-	-	-	-	9.4%	10.7%	*9.0%*	-	-	-	-	-	-	-	-	-	-	-	-
Daily Ave	-	-	-	-	-	-	**535**	**569**	***1,104***	-	-	-	-	-	-	-	-	-	-	-	-

Seasonal Fctr																					
Daily Fctr																					
Axle Factor																					
Pulse Fctr																					
Overall Fctr	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	

Hour	Mon-Thurs Average			Mon-Fri Average			7 Day Average			Estimated Annual Ave		
	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*	Pos Dir	Neg Dir	*Total*
00:00-00:59	49	79	*128*	-	-	-	-	-	-	0	0	*0*
01:00-01:59	27	68	*94*	-	-	-	-	-	-	0	0	*0*
02:00-02:59	31	35	*65*	-	-	-	-	-	-	0	0	*0*
03:00-03:59	53	43	*96*	-	-	-	-	-	-	0	0	*0*
04:00-04:59	225	96	*320*	-	-	-	-	-	-	0	0	*0*
05:00-05:59	497	266	*762*	-	-	-	-	-	-	0	0	*0*
06:00-06:59	944	494	*1,438*	-	-	-	-	-	-	0	0	*0*
07:00-07:59	892	678	*1,570*	-	-	-	-	-	-	0	0	*0*
08:00-08:59	923	718	*1,641*	-	-	-	-	-	-	0	0	*0*
09:00-09:59	661	624	*1,285*	-	-	-	-	-	-	0	0	*0*
10:00-10:59	664	692	*1,355*	-	-	-	-	-	-	0	0	*0*
11:00-11:59	658	762	*1,420*	-	-	-	-	-	-	0	0	*0*
12:00-12:59	781	788	*1,568*	-	-	-	-	-	-	0	0	*0*
13:00-13:59	716	779	*1,494*	-	-	-	-	-	-	0	0	*0*
14:00-14:59	839	1,026	*1,864*	-	-	-	-	-	-	0	0	*0*
15:00-15:59	772	1,298	*2,070*	-	-	-	-	-	-	0	0	*0*
16:00-16:59	902	1,394	*2,295*	-	-	-	-	-	-	0	0	*0*
17:00-17:59	847	1,213	*2,060*	-	-	-	-	-	-	0	0	*0*
18:00-18:59	542	627	*1,169*	-	-	-	-	-	-	0	0	*0*
19:00-19:59	358	450	*808*	-	-	-	-	-	-	0	0	*0*
20:00-20:59	301	301	*602*	-	-	-	-	-	-	0	0	*0*
21:00-21:59	241	232	*472*	-	-	-	-	-	-	0	0	*0*
22:00-22:59	244	170	*413*	-	-	-	-	-	-	0	0	*0*
23:00-23:59	90	212	*302*	-	-	-	-	-	-	0	0	*0*
Daily Total	**12,251**	**13,039**	***25,290***	-	-	-	-	-	-	**0**	**0**	**0**
AM Peak	**944**	**718**	***1,641***	-	-	-	-	-	-	**0**	**0**	***0***
Hour	06:00	08:00	*08:00*	-	-	-	-	-	-	00:00	00:00	*00:00*
MD Peak	**839**	**1,026**	***1,864***	-	-	-	-	-	-	**0**	**0**	***0***
Hour	14:00	14:00	*14:00*	-	-	-	-	-	-	10:00	10:00	*10:00*
PM Peak	**902**	**1,394**	***2,295***	-	-	-	-	-	-	**0**	**0**	***0***
Hour	16:00	16:00	*16:00*	-	-	-	-	-	-	15:00	15:00	*15:00*
Daily Peak	**944**	**1,394**	***2,295***	-	-	-	-	-	-	**0**	**0**	***0***
Hour	06:00	16:00	*16:00*	-	-	-	-	-	-	00:00	00:00	*00:00*
% of Total	7.7%	10.7%	*9.1%*	-	-	-	-	-	-	#DIV/0!	#DIV/0!	######
Daily Ave	**510**	**543**	***1,054***	-	-	-	-	-	-	**0**	**0**	***0***

AM	905	632
PM	902	1,394

APPENDIX B

SYNCHRO INTERSECTION CAPACITY ANALYSIS

Year 2024 Existing Traffic Volumes

plus

LOS Definitions

Saturation Flow Rate Calculations

Level of Service Definitions

LOS	Signalized Intersections Control Delay/Vehicle (sec/veh)	Unsignalized Intersections Avg. Control Delay (sec/veh)	Relative Delay
A	≤10	≤10	Short Delays
	Free-flow traffic operations at avearge travel speeds. Vehicles completely unimpeded in ability to maneuver. Minimal delay at signalized intersections.		
B	> 10 - 20	> 10 - 15	
	Reasonably unimpeded traffic operations at average travel speeds. Vehicle maneuverability slightly restricted. Low traffic delays.		
C	> 20 - 35	> 15 - 25	
	Stable traffic operations. Lane changes becoming more restricted. Travel speeds reduced to half of average free flow travel speeds. Longer intersection delays.		
D	> 35 - 55	> 25 - 35	Moderate Delays
	Small increases in traffic flow can cause increased delays. Delays likely attributable to increased traffic, reduced signal progression, and adverse timing.		
E	> 55 - 80	> 35 - 50	
	Significant delays. Travel speeds reduced to one-third of average free flow travel speed.		
F	> 80	> 50	Long Delays
	Extremely low speeds. Intersection congestion. Long delays. Extensive traffic queues at intersections.		

Source: Highway Capacity Manual, Transportation Research Board, Washington, D.C., 2010

Date: October 10, 2024

BASE SATURATION FLOW RATE CALCULATIONS

Intersection Name
Maple Road & STH 167/Lannon Road

Urbanized Area/Cluster Population
1,376,476

Exit Ramp:	No
Speed Limit:	40

Sat. Flow Rate (pc/h/ln)				
1900		1910		1910

N

# of Lanes				
Lane Type				
1		1		1
R	T-R	T	L-T	L

Exit Ramp:	Sat. Flow (pc/h/ln)	# of Lanes	Lane Type						Lane Type	# of Lanes	Sat. Flow (pc/h/ln)	Exit Ramp:
No	1985	2	L				R	1			1900	No
Speed Limit:			L-T				T-R					Speed Limit:
	1985	2	T	Traffic Signal			T	2			1972	
			T-R				L-T					
45	1900	1	R				L	1			1972	45

L	L-T	T	T-R	R
1		1		1
Lane Type				
# of Lanes				

1910		1910		1900
Sat. Flow Rate (pc/h/ln)				

Speed Limit:	40
Exit Ramp:	No

Bureau of Traffic Operations

Last Updated: 4/7/2022

Date: October 10, 2024

BASE SATURATION FLOW RATE CALCULATIONS

Intersection Name
Maple Road & STH 167/Mequon Road

Urbanized Area/Cluster Population
1,376,476

Exit Ramp:	No
Speed Limit:	40

Sat. Flow Rate (pc/h/ln)				
1900		1931		1931

N

# of Lanes				
Lane Type				
1		2		1
R	T-R	T	L-T	L

Exit Ramp:	Sat. Flow (pc/h/ln)	# of Lanes	Lane Type		Lane Type	# of Lanes	Sat. Flow (pc/h/ln)	Exit Ramp:
No			L	R	1	1900		No
Speed Limit:	1900	1	L-T	T-R				Speed Limit:
			T	T				
			T-R	L-T	1	1900		
40	1900	1	R	L				30

Traffic Signal

L	L-T	T	T-R	R
1		2		1
Lane Type				
# of Lanes				

Sat. Flow Rate (pc/h/ln)				
1931		1931		1900

Speed Limit:	40
Exit Ramp:	No

Bureau of Traffic Operations
Last Updated: 4/7/2022

Intersection	
Intersection Delay, s/veh	36.1
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	65	110	5	40	110	150	435	1	35	275	10
Future Vol, veh/h	60	65	110	5	40	110	150	435	1	35	275	10
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles, %	7	7	7	7	7	7	6	6	6	14	14	14
Mvmt Flow	85	92	155	7	56	155	211	613	1	49	387	14
Number of Lanes	0	1	1	0	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay, s/veh	21.3	18.8	51.8	26.8
HCM LOS	C	C	F	D

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	48%	0%	11%	0%	100%	0%	0%
Vol Thru, %	0%	100%	99%	52%	0%	89%	0%	0%	100%	90%
Vol Right, %	0%	0%	1%	0%	100%	0%	100%	0%	0%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	150	290	146	125	110	45	110	35	183	102
LT Vol	150	0	0	60	0	5	0	35	0	0
Through Vol	0	290	145	65	0	40	0	0	183	92
RT Vol	0	0	1	0	110	0	110	0	0	10
Lane Flow Rate	211	408	206	176	155	63	155	49	258	143
Geometry Grp	6	6	6	6	6	6	6	6	6	6
Degree of Util (X)	0.56	1.023	0.515	0.507	0.405	0.187	0.424	0.141	0.704	0.387
Departure Headway (Hd)	9.537	9.019	9.014	10.523	9.563	10.795	10.02	10.607	10.087	10.015
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	380	404	401	345	378	335	361	340	362	362
Service Time	7.267	6.749	6.744	8.223	7.263	8.495	7.72	8.307	7.787	7.715
HCM Lane V/C Ratio	0.555	1.01	0.514	0.51	0.41	0.188	0.429	0.144	0.713	0.395
HCM Control Delay, s/veh	23.8	81.7	21	23.6	18.6	16	19.9	15	33.5	18.9
HCM Lane LOS	C	F	C	C	C	C	C	B	D	C
HCM 95th-tile Q	3.3	12.9	2.8	2.7	1.9	0.7	2	0.5	5.1	1.8

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	5	0	0	0	25	585	0	0	385	5
Future Vol, veh/h	1	0	5	0	0	0	25	585	0	0	385	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	155	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0	5	5	5	12	12	12
Mvmt Flow	1	0	7	0	0	0	33	770	0	0	507	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	961	1345	257	1089	1349	385	513	0	0	770	0	0
Stage 1	510	510	-	836	836	-	-	-	-	-	-	-
Stage 2	451	836	-	253	513	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.2	-	-	4.34	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.25	-	-	2.32	-	-
Pot Cap-1 Maneuver	214	153	749	173	152	619	1028	-	-	778	-	-
Stage 1	520	541	-	332	385	-	-	-	-	-	-	-
Stage 2	563	385	-	735	539	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	207	148	749	166	147	619	1028	-	-	778	-	-
Mov Cap-2 Maneuver	207	148	-	166	147	-	-	-	-	-	-	-
Stage 1	520	541	-	322	373	-	-	-	-	-	-	-
Stage 2	545	373	-	728	539	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	12.01	0	0.35	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1028	-	-	521	-	778	-	-
HCM Lane V/C Ratio	0.032	-	-	0.015	-	-	-	-
HCM Control Delay (s/veh)	8.6	-	-	12	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	479	547	59	63	442	7	116	153	36	16	126	166
v/c Ratio	1.39	0.27	0.07	0.41	0.24	0.01	0.63	0.56	0.16	0.09	0.48	0.11
Control Delay (s/veh)	225.1	11.8	12.0	46.2	12.2	11.7	50.5	42.8	32.9	31.8	40.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	225.1	11.8	12.0	46.2	12.2	11.7	50.5	42.8	32.9	31.8	40.5	0.2
Queue Length 50th (ft)	~188	80	14	35	65	2	63	83	18	8	67	0
Queue Length 95th (ft)	#285	141	41	72	108	9	111	133	42	24	113	0
Internal Link Dist (ft)		674			679			287			626	
Turn Bay Length (ft)	200		250	165		175	75		250	75		
Base Capacity (vph)	345	2039	873	462	1856	800	308	456	386	287	435	1455
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.39	0.27	0.07	0.14	0.24	0.01	0.38	0.34	0.09	0.06	0.29	0.11

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	455	520	90	60	420	10	110	145	55	15	120	255
Future Volume (veh/h)	455	520	90	60	420	10	110	145	55	15	120	255
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1892	1892	1811	1847	1847	1781	1821	1821	1811	1746	1746	1737
Adj Flow Rate, veh/h	479	547	59	63	442	7	116	153	36	16	126	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	6	8	8	8	6	6	6	11	11	11
Cap, veh/h	598	1982	846	93	1521	654	226	332	280	200	318	
Arrive On Green	0.17	0.55	0.55	0.05	0.43	0.43	0.18	0.18	0.18	0.18	0.18	0.00
Sat Flow, veh/h	3496	3595	1535	1759	3509	1510	1231	1821	1535	1115	1746	1472
Grp Volume(v), veh/h	479	547	59	63	442	7	116	153	36	16	126	0
Grp Sat Flow(s),veh/h/ln	1748	1797	1535	1759	1755	1510	1231	1821	1535	1115	1746	1472
Q Serve(g_s), s	11.8	7.2	1.6	3.2	7.3	0.2	8.3	6.8	1.8	1.2	5.7	0.0
Cycle Q Clear(g_c), s	11.8	7.2	1.6	3.2	7.3	0.2	14.0	6.8	1.8	7.9	5.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	598	1982	846	93	1521	654	226	332	280	200	318	
V/C Ratio(X)	0.80	0.28	0.07	0.68	0.29	0.01	0.51	0.46	0.13	0.08	0.40	
Avail Cap(c_a), veh/h	598	1982	846	469	1521	654	314	461	389	279	442	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.8	10.7	9.4	41.9	16.5	14.5	38.6	32.8	30.8	36.4	32.4	0.0
Incr Delay (d2), s/veh	7.1	0.3	0.2	3.2	0.5	0.0	0.7	0.4	0.1	0.1	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	2.6	0.5	1.4	2.8	0.1	2.4	2.9	0.6	0.3	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.0	11.0	9.6	45.1	17.0	14.5	39.2	33.2	30.9	36.4	32.7	0.0
LnGrp LOS	D	B	A	D	B	B	D	C	C	D	C	
Approach Vol, veh/h		1085			512			305			142	
Approach Delay, s/veh		25.1			20.4			35.2			33.1	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.4	45.0		23.6	10.8	55.6		23.6
Change Period (Y+Rc), s	6.0	6.0		7.2	6.0	6.0		7.2
Max Green Setting (Gmax), s	9.0	39.0		22.8	24.0	24.0		22.8
Max Q Clear Time (g_c+I1), s	13.8	9.3		9.9	5.2	9.2		16.0
Green Ext Time (p_c), s	0.0	6.2		0.3	0.1	5.9		0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	26.0
HCM 7th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	140	20	15	170	120	150
Future Vol, veh/h	140	20	15	170	120	150
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	95
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	15	15	8	8	16	16
Mvmt Flow	161	23	17	195	138	172

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	368	138	310	0	-	0
Stage 1	138	-	-	-	-	-
Stage 2	230	-	-	-	-	-
Critical Hdwy	6.55	6.35	4.18	-	-	-
Critical Hdwy Stg 1	5.55	-	-	-	-	-
Critical Hdwy Stg 2	5.55	-	-	-	-	-
Follow-up Hdwy	3.635	3.435	2.272	-	-	-
Pot Cap-1 Maneuver	607	877	1217	-	-	-
Stage 1	858	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	598	877	1217	-	-	-
Mov Cap-2 Maneuver	598	-	-	-	-	-
Stage 1	844	-	-	-	-	-
Stage 2	779	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	13.19	0.65	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	146	-	622	-	-
HCM Lane V/C Ratio	0.014	-	0.296	-	-
HCM Control Delay (s/veh)	8	0	13.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1.2	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	101	0	0	155	0	0
Future Vol, veh/h	101	0	0	155	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	7	7	7	7	2	2
Mvmt Flow	142	0	0	218	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	142	0	361	142
Stage 1	-	-	-	-	142	-
Stage 2	-	-	-	-	218	-
Critical Hdwy	-	-	4.17	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.263	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1410	-	638	905
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	818	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1410	-	638	905
Mov Cap-2 Maneuver	-	-	-	-	638	-
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	818	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1410	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Intersection Delay, s/veh	17.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	55	170	5	80	25	90	180	1	35	460	5
Future Vol, veh/h	15	55	170	5	80	25	90	180	1	35	460	5
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	3	3	3	3	3	3	11	11	11	4	4	4
Mvmt Flow	18	65	202	6	95	30	107	214	1	42	548	6
Number of Lanes	0	1	1	0	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay, s/veh	14.3	13.2	13.8	22.5
HCM LOS	B	B	B	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	21%	0%	6%	0%	100%	0%	0%
Vol Thru, %	0%	100%	98%	79%	0%	94%	0%	0%	100%	97%
Vol Right, %	0%	0%	2%	0%	100%	0%	100%	0%	0%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	120	61	70	170	85	25	35	307	158
LT Vol	90	0	0	15	0	5	0	35	0	0
Through Vol	0	120	60	55	0	80	0	0	307	153
RT Vol	0	0	1	0	170	0	25	0	0	5
Lane Flow Rate	107	143	73	83	202	101	30	42	365	188
Geometry Grp	6	6	6	6	6	6	6	6	6	6
Degree of Util (X)	0.253	0.317	0.161	0.187	0.409	0.238	0.064	0.09	0.737	0.379
Departure Headway (Hd)	8.488	7.976	7.965	8.097	7.283	8.478	7.739	7.777	7.267	7.244
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	422	450	450	442	494	423	461	460	497	496
Service Time	6.252	5.739	5.727	5.861	5.047	6.251	5.512	5.533	5.023	5
HCM Lane V/C Ratio	0.254	0.318	0.162	0.188	0.409	0.239	0.065	0.091	0.734	0.379
HCM Control Delay, s/veh	14.1	14.4	12.3	12.7	15	13.9	11	11.3	27.9	14.4
HCM Lane LOS	B	B	B	B	B	B	B	B	D	B
HCM 95th-tile Q	1	1.3	0.6	0.7	2	0.9	0.2	0.3	6.1	1.8

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	65	0	0	0	50	260	0	0	625	10
Future Vol, veh/h	10	0	65	0	0	0	50	260	0	0	625	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	155	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	0	0	0	9	9	9	4	4	4
Mvmt Flow	12	0	77	0	0	0	60	310	0	0	744	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1024	1179	378	801	1185	155	756	0	0	310	0	0
Stage 1	750	750	-	429	429	-	-	-	-	-	-	-
Stage 2	274	429	-	372	756	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.5	6.5	6.9	4.28	-	-	4.18	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.5	4	3.3	2.29	-	-	2.24	-	-
Pot Cap-1 Maneuver	191	191	623	279	191	870	806	-	-	1233	-	-
Stage 1	372	419	-	580	588	-	-	-	-	-	-	-
Stage 2	712	585	-	626	419	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	177	177	623	226	177	870	806	-	-	1233	-	-
Mov Cap-2 Maneuver	177	177	-	226	177	-	-	-	-	-	-	-
Stage 1	372	419	-	537	544	-	-	-	-	-	-	-
Stage 2	659	542	-	548	419	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	14.55	0	1.58	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	806	-	-	466	-	1233	-	-
HCM Lane V/C Ratio	0.074	-	-	0.192	-	-	-	-
HCM Control Delay (s/veh)	9.8	-	-	14.5	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.7	-	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	190	582	71	141	696	13	130	125	118	27	190	330
v/c Ratio	0.38	0.33	0.09	0.60	0.40	0.02	0.75	0.41	0.45	0.13	0.62	0.21
Control Delay (s/veh)	37.4	16.0	15.5	47.4	16.9	14.8	60.0	36.4	38.4	31.2	43.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.4	16.0	15.5	47.4	16.9	14.8	60.0	36.4	38.4	31.2	43.3	0.3
Queue Length 50th (ft)	51	99	20	77	127	4	72	65	62	13	102	0
Queue Length 95th (ft)	83	174	55	130	199	16	124	107	104	34	156	0
Internal Link Dist (ft)		674			679			287			626	
Turn Bay Length (ft)	200		250	165		175	75		250	75		
Base Capacity (vph)	498	1753	751	246	1734	748	350	620	524	415	613	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.33	0.09	0.57	0.40	0.02	0.37	0.20	0.23	0.07	0.31	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	535	105	130	640	20	120	115	175	25	175	490
Future Volume (veh/h)	175	535	105	130	640	20	120	115	175	25	175	490
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1892	1892	1811	1924	1924	1856	1880	1880	1870	1865	1865	1856
Adj Flow Rate, veh/h	190	582	71	141	696	13	130	125	118	27	190	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	3	3	3	2	2	2	3	3	3
Cap, veh/h	884	1686	720	174	1137	489	241	419	353	270	415	
Arrive On Green	0.25	0.47	0.47	0.10	0.31	0.31	0.22	0.22	0.22	0.22	0.22	0.00
Sat Flow, veh/h	3496	3595	1535	1832	3655	1572	1200	1880	1585	1134	1865	1572
Grp Volume(v), veh/h	190	582	71	141	696	13	130	125	118	27	190	0
Grp Sat Flow(s),veh/h/ln	1748	1797	1535	1832	1828	1572	1200	1880	1585	1134	1865	1572
Q Serve(g_s), s	3.9	9.2	2.3	6.8	14.6	0.5	9.5	5.0	5.6	1.8	7.9	0.0
Cycle Q Clear(g_c), s	3.9	9.2	2.3	6.8	14.6	0.5	17.4	5.0	5.6	6.8	7.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	884	1686	720	174	1137	489	241	419	353	270	415	
V/C Ratio(X)	0.21	0.35	0.10	0.81	0.61	0.03	0.54	0.30	0.33	0.10	0.46	
Avail Cap(c_a), veh/h	884	1686	720	204	1137	489	371	623	525	393	618	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.6	15.1	13.3	39.9	26.4	21.5	37.8	29.1	29.4	32.0	30.3	0.0
Incr Delay (d2), s/veh	0.0	0.6	0.3	16.1	2.5	0.1	0.7	0.1	0.2	0.1	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	3.5	0.8	3.7	6.2	0.2	2.7	2.2	2.1	0.5	3.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.6	15.7	13.6	56.0	28.8	21.6	38.5	29.3	29.6	32.0	30.6	0.0
LnGrp LOS	C	B	B	E	C	C	D	C	C	C	C	
Approach Vol, veh/h		843			850			373			217	
Approach Delay, s/veh		18.0			33.2			32.6			30.7	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	28.8	34.0		27.2	14.6	48.2		27.2
Change Period (Y+Rc), s	6.0	6.0		7.2	6.0	6.0		7.2
Max Green Setting (Gmax), s	13.0	28.0		29.8	10.0	31.0		29.8
Max Q Clear Time (g_c+I1), s	5.9	16.6		9.9	8.8	11.2		19.4
Green Ext Time (p_c), s	0.2	5.9		0.6	0.0	7.5		0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	27.3
HCM 7th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	140	25	10	270	265	145
Future Vol, veh/h	140	25	10	270	265	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	95
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	4	4	3	3	4	4
Mvmt Flow	154	27	11	297	291	159

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	610	291	451	0	-	0
Stage 1	291	-	-	-	-	-
Stage 2	319	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.13	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.227	-	-	-
Pot Cap-1 Maneuver	455	743	1105	-	-	-
Stage 1	754	-	-	-	-	-
Stage 2	733	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	449	743	1105	-	-	-
Mov Cap-2 Maneuver	449	-	-	-	-	-
Stage 1	745	-	-	-	-	-
Stage 2	733	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	17.07	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	64	-	478	-	-
HCM Lane V/C Ratio	0.01	-	0.38	-	-
HCM Control Delay (s/veh)	8.3	0	17.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	1.8	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	91	0	0	110	0	0
Future Vol, veh/h	91	0	0	110	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	2	2
Mvmt Flow	108	0	0	131	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	108	0	239	108
Stage 1	-	-	-	-	108	-
Stage 2	-	-	-	-	131	-
Critical Hdwy	-	-	4.13	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.227	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1476	-	749	945
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	895	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1476	-	749	945
Mov Cap-2 Maneuver	-	-	-	-	749	-
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	895	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1476	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

APPENDIX C

SYNCHRO INTERSECTION CAPACITY ANALYSIS

Year 2029 Future Traffic Volumes

Intersection	
Intersection Delay, s/veh	40.9
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	65	110	5	40	110	150	455	1	35	285	10
Future Vol, veh/h	60	65	110	5	40	110	150	455	1	35	285	10
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles, %	7	7	7	7	7	7	6	6	6	14	14	14
Mvmt Flow	85	92	155	7	56	155	211	641	1	49	401	14
Number of Lanes	0	1	1	0	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay, s/veh	21.7	19.1	60.5	28.9
HCM LOS	C	C	F	D

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	48%	0%	11%	0%	100%	0%	0%
Vol Thru, %	0%	100%	99%	52%	0%	89%	0%	0%	100%	90%
Vol Right, %	0%	0%	1%	0%	100%	0%	100%	0%	0%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	150	303	153	125	110	45	110	35	190	105
LT Vol	150	0	0	60	0	5	0	35	0	0
Through Vol	0	303	152	65	0	40	0	0	190	95
RT Vol	0	0	1	0	110	0	110	0	0	10
Lane Flow Rate	211	427	215	176	155	63	155	49	268	148
Geometry Grp	6	6	6	6	6	6	6	6	6	6
Degree of Util (X)	0.563	1.077	0.542	0.51	0.409	0.188	0.428	0.142	0.736	0.404
Departure Headway (Hd)	9.592	9.073	9.069	10.695	9.734	10.967	10.192	10.713	10.193	10.124
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	376	402	398	340	372	329	355	337	356	358
Service Time	7.348	6.829	6.824	8.395	7.434	8.667	7.892	8.413	7.893	7.824
HCM Lane V/C Ratio	0.561	1.062	0.54	0.518	0.417	0.191	0.437	0.145	0.753	0.413
HCM Control Delay, s/veh	24.1	97.9	22.1	24	19	16.2	20.3	15.2	36.6	19.5
HCM Lane LOS	C	F	C	C	C	C	C	C	E	C
HCM 95th-tile Q	3.3	14.7	3.1	2.8	1.9	0.7	2.1	0.5	5.6	1.9

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	5	0	0	0	25	605	0	0	395	5
Future Vol, veh/h	1	0	5	0	0	0	25	605	0	0	395	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	155	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0	5	5	5	12	12	12
Mvmt Flow	1	0	7	0	0	0	33	796	0	0	520	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	987	1385	263	1122	1388	398	526	0	0	796	0	0
Stage 1	523	523	-	862	862	-	-	-	-	-	-	-
Stage 2	464	862	-	260	526	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.2	-	-	4.34	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.25	-	-	2.32	-	-
Pot Cap-1 Maneuver	205	145	741	163	144	607	1016	-	-	760	-	-
Stage 1	510	534	-	320	375	-	-	-	-	-	-	-
Stage 2	553	375	-	728	532	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	198	140	741	157	139	607	1016	-	-	760	-	-
Mov Cap-2 Maneuver	198	140	-	157	139	-	-	-	-	-	-	-
Stage 1	510	534	-	310	363	-	-	-	-	-	-	-
Stage 2	535	363	-	722	532	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	12.19	0	0.34	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1016	-	-	509	-	760	-	-
HCM Lane V/C Ratio	0.032	-	-	0.016	-	-	-	-
HCM Control Delay (s/veh)	8.7	-	-	12.2	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	500	574	65	68	463	7	126	153	39	16	126	173
v/c Ratio	1.45	0.29	0.08	0.43	0.25	0.01	0.65	0.53	0.16	0.09	0.46	0.12
Control Delay (s/veh)	250.0	12.5	12.7	46.5	12.7	12.1	50.9	41.0	32.3	30.9	38.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	250.0	12.5	12.7	46.5	12.7	12.1	50.9	41.0	32.3	30.9	38.9	0.2
Queue Length 50th (ft)	~201	87	16	37	70	2	69	82	20	8	66	0
Queue Length 95th (ft)	#300	153	46	76	116	10	118	131	44	24	111	0
Internal Link Dist (ft)		674			679			287			626	
Turn Bay Length (ft)	200		250	165		175	75		250	75		
Base Capacity (vph)	345	2004	858	462	1830	789	308	456	386	287	435	1455
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.45	0.29	0.08	0.15	0.25	0.01	0.41	0.34	0.10	0.06	0.29	0.12

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	475	545	100	65	440	10	120	145	60	15	120	265
Future Volume (veh/h)	475	545	100	65	440	10	120	145	60	15	120	265
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1892	1892	1811	1847	1847	1781	1821	1821	1811	1746	1746	1737
Adj Flow Rate, veh/h	500	574	65	68	463	7	126	153	39	16	126	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	6	8	8	8	6	6	6	11	11	11
Cap, veh/h	572	1951	833	96	1521	654	236	345	291	208	331	
Arrive On Green	0.16	0.54	0.54	0.05	0.43	0.43	0.19	0.19	0.19	0.19	0.19	0.00
Sat Flow, veh/h	3496	3595	1535	1759	3509	1510	1231	1821	1535	1112	1746	1472
Grp Volume(v), veh/h	500	574	65	68	463	7	126	153	39	16	126	0
Grp Sat Flow(s),veh/h/ln	1748	1797	1535	1759	1755	1510	1231	1821	1535	1112	1746	1472
Q Serve(g_s), s	12.6	7.8	1.8	3.4	7.8	0.2	9.0	6.7	1.9	1.2	5.7	0.0
Cycle Q Clear(g_c), s	12.6	7.8	1.8	3.4	7.8	0.2	14.6	6.7	1.9	7.9	5.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	572	1951	833	96	1521	654	236	345	291	208	331	
V/C Ratio(X)	0.87	0.29	0.08	0.71	0.30	0.01	0.53	0.44	0.13	0.08	0.38	
Avail Cap(c_a), veh/h	572	1951	833	469	1521	654	314	461	389	279	442	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.7	11.2	9.8	41.8	16.6	14.5	38.2	32.3	30.3	35.7	31.9	0.0
Incr Delay (d2), s/veh	13.5	0.4	0.2	3.6	0.5	0.0	0.7	0.3	0.1	0.1	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	2.8	0.6	1.5	2.9	0.1	2.6	2.9	0.7	0.3	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.2	11.6	10.0	45.4	17.2	14.5	38.9	32.6	30.4	35.8	32.1	0.0
LnGrp LOS	D	B	B	D	B	B	D	C	C	D	C	
Approach Vol, veh/h		1139			538			318			142	
Approach Delay, s/veh		28.5			20.7			34.8			32.5	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	20.7	45.0		24.3	10.9	54.8		24.3
Change Period (Y+Rc), s	6.0	6.0		7.2	6.0	6.0		7.2
Max Green Setting (Gmax), s	9.0	39.0		22.8	24.0	24.0		22.8
Max Q Clear Time (g_c+I1), s	14.6	9.8		9.9	5.4	9.8		16.6
Green Ext Time (p_c), s	0.0	6.5		0.3	0.1	6.0		0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	27.7
HCM 7th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	140	20	15	185	135	150
Future Vol, veh/h	140	20	15	185	135	150
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	95
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	15	15	8	8	16	16
Mvmt Flow	161	23	17	213	155	172

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	402	155	328	0	-	0
Stage 1	155	-	-	-	-	-
Stage 2	247	-	-	-	-	-
Critical Hdwy	6.55	6.35	4.18	-	-	-
Critical Hdwy Stg 1	5.55	-	-	-	-	-
Critical Hdwy Stg 2	5.55	-	-	-	-	-
Follow-up Hdwy	3.635	3.435	2.272	-	-	-
Pot Cap-1 Maneuver	580	858	1199	-	-	-
Stage 1	842	-	-	-	-	-
Stage 2	765	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	570	858	1199	-	-	-
Mov Cap-2 Maneuver	570	-	-	-	-	-
Stage 1	829	-	-	-	-	-
Stage 2	765	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	13.73	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	135	-	595	-	-
HCM Lane V/C Ratio	0.014	-	0.309	-	-
HCM Control Delay (s/veh)	8	0	13.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1.3	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	101	0	0	155	0	0
Future Vol, veh/h	101	0	0	155	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	7	7	7	7	2	2
Mvmt Flow	142	0	0	218	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	142	0	361	142
Stage 1	-	-	-	-	142	-
Stage 2	-	-	-	-	218	-
Critical Hdwy	-	-	4.17	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.263	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1410	-	638	905
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	818	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1410	-	638	905
Mov Cap-2 Maneuver	-	-	-	-	638	-
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	818	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1410	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Intersection Delay, s/veh	18.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	55	170	5	80	25	90	185	1	35	480	5
Future Vol, veh/h	15	55	170	5	80	25	90	185	1	35	480	5
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	3	3	3	3	3	3	11	11	11	4	4	4
Mvmt Flow	18	65	202	6	95	30	107	220	1	42	571	6
Number of Lanes	0	1	1	0	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay, s/veh	14.6	13.4	14.1	24.5
HCM LOS	B	B	B	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	21%	0%	6%	0%	100%	0%	0%
Vol Thru, %	0%	100%	98%	79%	0%	94%	0%	0%	100%	97%
Vol Right, %	0%	0%	2%	0%	100%	0%	100%	0%	0%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	123	63	70	170	85	25	35	320	165
LT Vol	90	0	0	15	0	5	0	35	0	0
Through Vol	0	123	62	55	0	80	0	0	320	160
RT Vol	0	0	1	0	170	0	25	0	0	5
Lane Flow Rate	107	147	75	83	202	101	30	42	381	196
Geometry Grp	6	6	6	6	6	6	6	6	6	6
Degree of Util (X)	0.255	0.329	0.167	0.19	0.415	0.241	0.065	0.091	0.774	0.398
Departure Headway (Hd)	8.567	8.055	8.044	8.194	7.38	8.584	7.845	7.82	7.31	7.288
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	418	445	445	437	486	417	455	458	495	493
Service Time	6.34	5.828	5.816	5.964	5.149	6.365	5.625	5.582	5.071	5.049
HCM Lane V/C Ratio	0.256	0.33	0.169	0.19	0.416	0.242	0.066	0.092	0.77	0.398
HCM Control Delay, s/veh	14.3	14.8	12.4	12.9	15.3	14.1	11.2	11.4	31	14.8
HCM Lane LOS	B	B	B	B	C	B	B	B	D	B
HCM 95th-tile Q	1	1.4	0.6	0.7	2	0.9	0.2	0.3	6.9	1.9

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	65	0	0	0	50	265	0	0	645	10
Future Vol, veh/h	10	0	65	0	0	0	50	265	0	0	645	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	155	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	0	0	0	9	9	9	4	4	4
Mvmt Flow	12	0	77	0	0	0	60	315	0	0	768	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1051	1208	390	818	1214	158	780	0	0	315	0	0
Stage 1	774	774	-	435	435	-	-	-	-	-	-	-
Stage 2	277	435	-	384	780	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.5	6.5	6.9	4.28	-	-	4.18	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.5	4	3.3	2.29	-	-	2.24	-	-
Pot Cap-1 Maneuver	183	183	612	271	183	866	789	-	-	1227	-	-
Stage 1	360	409	-	575	584	-	-	-	-	-	-	-
Stage 2	709	582	-	616	409	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	169	169	612	219	169	866	789	-	-	1227	-	-
Mov Cap-2 Maneuver	169	169	-	219	169	-	-	-	-	-	-	-
Stage 1	360	409	-	532	540	-	-	-	-	-	-	-
Stage 2	655	538	-	538	409	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	14.88	0	1.58	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	789	-	-	453	-	1227	-	-
HCM Lane V/C Ratio	0.075	-	-	0.197	-	-	-	-
HCM Control Delay (s/veh)	9.9	-	-	14.9	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.7	-	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	196	603	78	158	728	13	141	125	131	27	190	344
v/c Ratio	0.39	0.36	0.11	0.62	0.43	0.02	0.75	0.38	0.48	0.12	0.59	0.22
Control Delay (s/veh)	37.6	17.6	17.0	46.4	17.9	15.7	58.8	34.9	38.0	30.0	40.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.6	17.6	17.0	46.4	17.9	15.7	58.8	34.9	38.0	30.0	40.8	0.3
Queue Length 50th (ft)	52	109	24	85	137	4	78	64	68	13	101	0
Queue Length 95th (ft)	86	191	63	142	218	16	130	104	111	33	152	0
Internal Link Dist (ft)		674			679			287			626	
Turn Bay Length (ft)	200		250	165		175	75		250	75		
Base Capacity (vph)	498	1676	717	264	1700	733	355	620	524	415	613	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.36	0.11	0.60	0.43	0.02	0.40	0.20	0.25	0.07	0.31	0.22

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	555	115	145	670	20	130	115	195	25	175	510
Future Volume (veh/h)	180	555	115	145	670	20	130	115	195	25	175	510
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1892	1892	1811	1924	1924	1856	1880	1880	1870	1865	1865	1856
Adj Flow Rate, veh/h	196	603	78	158	728	13	141	125	131	27	190	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	3	3	3	2	2	2	3	3	3
Cap, veh/h	855	1622	692	192	1137	489	252	434	366	277	431	
Arrive On Green	0.24	0.45	0.45	0.10	0.31	0.31	0.23	0.23	0.23	0.23	0.23	0.00
Sat Flow, veh/h	3496	3595	1535	1832	3655	1572	1200	1880	1585	1121	1865	1572
Grp Volume(v), veh/h	196	603	78	158	728	13	141	125	131	27	190	0
Grp Sat Flow(s),veh/h/ln	1748	1797	1535	1832	1828	1572	1200	1880	1585	1121	1865	1572
Q Serve(g_s), s	4.0	10.0	2.6	7.6	15.4	0.5	10.3	4.9	6.2	1.8	7.9	0.0
Cycle Q Clear(g_c), s	4.0	10.0	2.6	7.6	15.4	0.5	18.1	4.9	6.2	6.8	7.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	855	1622	692	192	1137	489	252	434	366	277	431	
V/C Ratio(X)	0.23	0.37	0.11	0.82	0.64	0.03	0.56	0.29	0.36	0.10	0.44	
Avail Cap(c_a), veh/h	855	1622	692	204	1137	489	373	623	525	390	618	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.2	16.3	14.3	39.5	26.7	21.5	37.4	28.5	29.0	31.3	29.6	0.0
Incr Delay (d2), s/veh	0.1	0.7	0.3	20.4	2.8	0.1	0.7	0.1	0.2	0.1	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	3.8	0.9	4.3	6.6	0.2	2.9	2.1	2.3	0.5	3.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.2	16.9	14.6	59.9	29.4	21.6	38.1	28.7	29.2	31.4	29.9	0.0
LnGrp LOS	C	B	B	E	C	C	D	C	C	C	C	
Approach Vol, veh/h		877			899			397			217	
Approach Delay, s/veh		19.0			34.7			32.2			30.1	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	28.0	34.0		28.0	15.4	46.6		28.0
Change Period (Y+Rc), s	6.0	6.0		7.2	6.0	6.0		7.2
Max Green Setting (Gmax), s	13.0	28.0		29.8	10.0	31.0		29.8
Max Q Clear Time (g_c+I1), s	6.0	17.4		9.9	9.6	12.0		20.1
Green Ext Time (p_c), s	0.2	5.8		0.6	0.0	7.6		0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	28.1
HCM 7th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	140	25	10	300	290	145
Future Vol, veh/h	140	25	10	300	290	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	95
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	4	4	3	3	4	4
Mvmt Flow	154	27	11	330	319	159

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	670	319	478	0	-	0
Stage 1	319	-	-	-	-	-
Stage 2	352	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.13	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.227	-	-	-
Pot Cap-1 Maneuver	419	717	1079	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	414	717	1079	-	-	-
Mov Cap-2 Maneuver	414	-	-	-	-	-
Stage 1	723	-	-	-	-	-
Stage 2	708	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	18.69	0.27	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	58	-	442	-	-
HCM Lane V/C Ratio	0.01	-	0.41	-	-
HCM Control Delay (s/veh)	8.4	0	18.7	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	2	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	91	0	0	110	0	0
Future Vol, veh/h	91	0	0	110	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	2	2
Mvmt Flow	108	0	0	131	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	108	0	239	108
Stage 1	-	-	-	-	108	-
Stage 2	-	-	-	-	131	-
Critical Hdwy	-	-	4.13	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.227	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1476	-	749	945
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	895	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1476	-	749	945
Mov Cap-2 Maneuver	-	-	-	-	749	-
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	895	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1476	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	247	7	211	211	641	1	49	401	9
v/c Ratio	0.43	0.72	0.04	0.62	0.34	0.28	0.00	0.11	0.19	0.01
Control Delay (s/veh)	36.0	43.9	25.2	39.4	3.6	1.9	2.0	8.3	7.3	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	36.0	43.9	25.2	39.4	3.6	1.9	2.0	8.3	7.3	7.5
Queue Length 50th (ft)	42	131	3	110	10	16	0	9	42	2
Queue Length 95th (ft)	60	141	10	122	m16	21	m0	23	60	7
Internal Link Dist (ft)		1001		145		397			293	
Turn Bay Length (ft)	100		100		100		50	50		45
Base Capacity (vph)	315	554	269	544	612	2255	993	441	2097	923
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.45	0.03	0.39	0.34	0.28	0.00	0.11	0.19	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	65	110	5	40	110	150	455	1	35	285	10
Future Volume (veh/h)	60	65	110	5	40	110	150	455	1	35	285	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1840	1840	1811	1719	1719	1693
Adj Flow Rate, veh/h	85	92	155	7	56	155	211	641	1	49	401	9
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	7	7	7	7	7	7	6	6	6	14	14	14
Cap, veh/h	204	137	231	177	96	266	644	2232	980	542	2085	916
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	1.00	1.00	1.00	0.64	0.64	0.64
Sat Flow, veh/h	1124	601	1013	1088	421	1165	960	3495	1535	724	3267	1434
Grp Volume(v), veh/h	85	0	247	7	0	211	211	641	1	49	401	9
Grp Sat Flow(s),veh/h/ln	1124	0	1614	1088	0	1586	960	1748	1535	724	1633	1434
Q Serve(g_s), s	6.6	0.0	12.6	0.5	0.0	10.7	2.4	0.0	0.0	2.4	4.6	0.2
Cycle Q Clear(g_c), s	17.2	0.0	12.6	13.1	0.0	10.7	6.9	0.0	0.0	2.4	4.6	0.2
Prop In Lane	1.00		0.63	1.00		0.73	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	204	0	368	177	0	362	644	2232	980	542	2085	916
V/C Ratio(X)	0.42	0.00	0.67	0.04	0.00	0.58	0.33	0.29	0.00	0.09	0.19	0.01
Avail Cap(c_a), veh/h	334	0	556	303	0	546	644	2232	980	542	2085	916
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.6	0.0	31.6	37.6	0.0	30.9	0.3	0.0	0.0	6.3	6.7	5.9
Incr Delay (d2), s/veh	1.4	0.0	2.1	0.1	0.0	1.5	1.4	0.3	0.0	0.3	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	4.9	0.1	0.0	4.1	0.2	0.1	0.0	0.3	1.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.9	0.0	33.8	37.7	0.0	32.4	1.6	0.3	0.0	6.6	6.9	5.9
LnGrp LOS	D		C	D		C	A	A	A	A	A	A
Approach Vol, veh/h		332			218			853			459	
Approach Delay, s/veh		35.3			32.6			0.6			6.9	
Approach LOS		D			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		63.5		26.5		63.5		26.5				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		47.0		31.0		47.0		31.0				
Max Q Clear Time (g_c+I1), s		8.9		19.2		6.6		15.1				
Green Ext Time (p_c), s		6.0		1.3		3.2		1.1				

Intersection Summary			
HCM 7th Control Delay, s/veh		12.1	
HCM 7th LOS		B	

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	5	0	0	0	25	605	0	0	395	5
Future Vol, veh/h	1	0	5	0	0	0	25	605	0	0	395	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	155	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0	5	5	5	12	12	12
Mvmt Flow	1	0	7	0	0	0	33	796	0	0	520	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	987	1385	263	1122	1388	398	526	0	0	796	0	0
Stage 1	523	523	-	862	862	-	-	-	-	-	-	-
Stage 2	464	862	-	260	526	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.2	-	-	4.34	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.25	-	-	2.32	-	-
Pot Cap-1 Maneuver	451	222	*994	*337	221	*922	1142	-	-	925	-	-
Stage 1	645	621	-	*463	476	-	-	-	-	-	-	-
Stage 2	869	476	-	*937	619	-	-	-	-	-	-	-
Platoon blocked, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Cap-1 Maneuver	438	216	*994	*325	215	*922	1142	-	-	925	-	-
Mov Cap-2 Maneuver	438	216	-	*325	215	-	-	-	-	-	-	-
Stage 1	645	621	-	*450	462	-	-	-	-	-	-	-
Stage 2	844	462	-	*931	619	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	9.43	0	0.33	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1142	-	-	820	-	925	-	-
HCM Lane V/C Ratio	0.029	-	-	0.01	-	-	-	-
HCM Control Delay (s/veh)	8.2	-	-	9.4	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	500	574	65	68	463	7	126	153	39	16	126	173
v/c Ratio	0.93	0.29	0.08	0.43	0.28	0.01	0.65	0.53	0.16	0.09	0.46	0.12
Control Delay (s/veh)	64.3	12.5	12.7	46.5	15.8	15.0	50.9	41.0	32.3	23.6	30.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	64.3	12.5	12.7	46.5	15.8	15.0	50.9	41.0	32.3	23.6	30.1	0.2
Queue Length 50th (ft)	146	87	16	37	80	2	69	82	20	6	54	0
Queue Length 95th (ft)	#241	153	46	76	130	11	118	131	44	m18	84	0
Internal Link Dist (ft)		674			679			287			626	
Turn Bay Length (ft)	200		250	165		175	75		250	75		
Base Capacity (vph)	536	2004	858	462	1637	706	308	456	386	287	435	1455
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.29	0.08	0.15	0.28	0.01	0.41	0.34	0.10	0.06	0.29	0.12

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	475	545	100	65	440	10	120	145	60	15	120	265
Future Volume (veh/h)	475	545	100	65	440	10	120	145	60	15	120	265
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1892	1892	1811	1847	1847	1781	1821	1821	1811	1746	1746	1737
Adj Flow Rate, veh/h	500	574	65	68	463	7	126	153	39	16	126	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	6	8	8	8	6	6	6	11	11	11
Cap, veh/h	746	1929	824	96	1326	570	236	356	300	215	341	
Arrive On Green	0.21	0.54	0.54	0.05	0.38	0.38	0.20	0.20	0.20	0.06	0.06	0.00
Sat Flow, veh/h	3496	3595	1535	1759	3509	1510	1231	1821	1535	1112	1746	1472
Grp Volume(v), veh/h	500	574	65	68	463	7	126	153	39	16	126	0
Grp Sat Flow(s),veh/h/ln	1748	1797	1535	1759	1755	1510	1231	1821	1535	1112	1746	1472
Q Serve(g_s), s	11.8	7.9	1.8	3.4	8.5	0.3	9.0	6.6	1.9	1.2	6.2	0.0
Cycle Q Clear(g_c), s	11.8	7.9	1.8	3.4	8.5	0.3	15.2	6.6	1.9	7.9	6.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	746	1929	824	96	1326	570	236	356	300	215	341	
V/C Ratio(X)	0.67	0.30	0.08	0.71	0.35	0.01	0.53	0.43	0.13	0.07	0.37	
Avail Cap(c_a), veh/h	746	1929	824	469	1326	570	307	461	389	280	442	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.5	11.5	10.1	41.8	20.1	17.5	38.3	31.8	29.9	40.8	36.8	0.0
Incr Delay (d2), s/veh	1.9	0.4	0.2	3.6	0.7	0.0	0.7	0.3	0.1	0.1	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	2.8	0.6	1.5	3.3	0.1	2.6	2.8	0.7	0.4	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.4	11.9	10.3	45.4	20.8	17.5	39.0	32.1	30.0	40.8	37.0	0.0
LnGrp LOS	C	B	B	D	C	B	D	C	C	D	D	
Approach Vol, veh/h		1139			538			318			142	
Approach Delay, s/veh		21.7			23.9			34.6			37.5	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	25.2	40.0		24.8	10.9	54.3		24.8
Change Period (Y+Rc), s	6.0	6.0		7.2	6.0	6.0		7.2
Max Green Setting (Gmax), s	14.0	34.0		22.8	24.0	24.0		22.8
Max Q Clear Time (g_c+I1), s	13.8	10.5		9.9	5.4	9.9		17.2
Green Ext Time (p_c), s	0.0	5.9		0.3	0.1	6.0		0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	25.2
HCM 7th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	140	20	15	185	135	150
Future Vol, veh/h	140	20	15	185	135	150
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	95
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	15	15	8	8	16	16
Mvmt Flow	161	23	17	213	155	172

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	402	155	328	0	-	0
Stage 1	155	-	-	-	-	-
Stage 2	247	-	-	-	-	-
Critical Hdwy	6.55	6.35	4.18	-	-	-
Critical Hdwy Stg 1	5.55	-	-	-	-	-
Critical Hdwy Stg 2	5.55	-	-	-	-	-
Follow-up Hdwy	3.635	3.435	2.272	-	-	-
Pot Cap-1 Maneuver	580	858	1199	-	-	-
Stage 1	842	-	-	-	-	-
Stage 2	765	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	570	858	1199	-	-	-
Mov Cap-2 Maneuver	570	-	-	-	-	-
Stage 1	829	-	-	-	-	-
Stage 2	765	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	13.73	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	135	-	595	-	-
HCM Lane V/C Ratio	0.014	-	0.309	-	-
HCM Control Delay (s/veh)	8	0	13.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1.3	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	101	0	0	155	0	0
Future Vol, veh/h	101	0	0	155	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	7	7	7	7	2	2
Mvmt Flow	142	0	0	218	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	142	0	361	142
Stage 1	-	-	-	-	142	-
Stage 2	-	-	-	-	218	-
Critical Hdwy	-	-	4.17	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.263	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1410	-	638	905
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	818	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1410	-	638	905
Mov Cap-2 Maneuver	-	-	-	-	638	-
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	818	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1410	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	18	267	6	125	107	220	1	42	571	4
v/c Ratio	0.06	0.73	0.04	0.31	0.22	0.10	0.00	0.06	0.25	0.00
Control Delay (s/veh)	25.0	43.5	24.2	29.6	3.2	1.6	2.0	7.9	8.0	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.0	43.5	24.2	29.6	3.2	1.6	2.0	7.9	8.0	8.0
Queue Length 50th (ft)	8	141	3	60	4	4	0	8	65	1
Queue Length 95th (ft)	21	186	11	89	10	8	m0	23	104	5
Internal Link Dist (ft)		1001		145		397			293	
Turn Bay Length (ft)	100		100		100		50	50		45
Base Capacity (vph)	485	636	296	691	484	2121	934	731	2264	997
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.42	0.02	0.18	0.22	0.10	0.00	0.06	0.25	0.00

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	55	170	5	80	25	90	185	1	35	480	5
Future Volume (veh/h)	15	55	170	5	80	25	90	185	1	35	480	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1764	1764	1737	1870	1870	1841
Adj Flow Rate, veh/h	18	65	202	6	95	30	107	220	1	42	571	4
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	11	11	11	4	4	4
Cap, veh/h	250	78	242	123	265	84	560	2248	987	858	2383	1046
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	1.00	1.00	1.00	0.67	0.67	0.67
Sat Flow, veh/h	1256	398	1236	1104	1352	427	790	3352	1472	1160	3553	1560
Grp Volume(v), veh/h	18	0	267	6	0	125	107	220	1	42	571	4
Grp Sat Flow(s),veh/h/ln	1256	0	1633	1104	0	1779	790	1676	1472	1160	1776	1560
Q Serve(g_s), s	1.1	0.0	14.1	0.5	0.0	5.5	1.4	0.0	0.0	1.1	5.7	0.1
Cycle Q Clear(g_c), s	6.6	0.0	14.1	14.6	0.0	5.5	7.1	0.0	0.0	1.1	5.7	0.1
Prop In Lane	1.00		0.76	1.00		0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	250	0	320	123	0	349	560	2248	987	858	2383	1046
V/C Ratio(X)	0.07	0.00	0.83	0.05	0.00	0.36	0.19	0.10	0.00	0.05	0.24	0.00
Avail Cap(c_a), veh/h	492	0	635	336	0	692	560	2248	987	858	2383	1046
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	0.0	34.8	41.8	0.0	31.3	0.3	0.0	0.0	5.1	5.8	4.9
Incr Delay (d2), s/veh	0.1	0.0	5.7	0.2	0.0	0.6	0.8	0.1	0.0	0.1	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	5.9	0.1	0.0	2.4	0.1	0.0	0.0	0.2	1.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.3	0.0	40.4	42.0	0.0	31.9	1.1	0.1	0.0	5.2	6.1	4.9
LnGrp LOS	C		D	D		C	A	A	A	A	A	A
Approach Vol, veh/h		285			131			328			617	
Approach Delay, s/veh		40.1			32.4			0.4			6.0	
Approach LOS		D			C			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	66.4	23.6	66.4	23.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	43.0	35.0	43.0	35.0
Max Q Clear Time (g_c+I1), s	9.1	16.1	7.7	16.6
Green Ext Time (p_c), s	2.2	1.5	4.2	0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	14.3
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	65	0	0	0	50	265	0	0	645	10
Future Vol, veh/h	10	0	65	0	0	0	50	265	0	0	645	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	155	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	0	0	0	9	9	9	4	4	4
Mvmt Flow	12	0	77	0	0	0	60	315	0	0	768	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1051	1208	390	818	1214	158	780	0	0	315	0	0
Stage 1	774	774	-	435	435	-	-	-	-	-	-	-
Stage 2	277	435	-	384	780	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.5	6.5	6.9	4.28	-	-	4.18	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.5	4	3.3	2.29	-	-	2.24	-	-
Pot Cap-1 Maneuver	329	269	*922	*530	267	1015	954	-	-	1311	-	-
Stage 1	527	525	-	*651	633	-	-	-	-	-	-	-
Stage 2	810	631	-	*872	523	-	-	-	-	-	-	-
Platoon blocked, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Cap-1 Maneuver	308	252	*922	*455	251	1015	954	-	-	1311	-	-
Mov Cap-2 Maneuver	308	252	-	*455	251	-	-	-	-	-	-	-
Stage 1	527	525	-	*611	594	-	-	-	-	-	-	-
Stage 2	760	592	-	*799	523	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	10.63	0	1.43	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	954	-	-	728	-	1311	-	-
HCM Lane V/C Ratio	0.062	-	-	0.123	-	-	-	-
HCM Control Delay (s/veh)	9	-	-	10.6	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	-	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	196	603	78	158	728	13	141	125	131	27	190	344
v/c Ratio	0.39	0.36	0.11	0.64	0.43	0.02	0.75	0.38	0.48	0.12	0.59	0.22
Control Delay (s/veh)	37.6	17.4	16.9	48.2	17.9	15.7	58.8	34.9	38.0	23.6	32.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.6	17.4	16.9	48.2	17.9	15.7	58.8	34.9	38.0	23.6	32.8	0.3
Queue Length 50th (ft)	52	107	23	86	137	4	78	64	68	11	80	0
Queue Length 95th (ft)	86	192	63	142	218	16	130	104	111	m25	115	0
Internal Link Dist (ft)		674			679			287			626	
Turn Bay Length (ft)	200		250	165		175	75		250	75		
Base Capacity (vph)	498	1695	726	272	1700	733	355	620	524	415	613	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.36	0.11	0.58	0.43	0.02	0.40	0.20	0.25	0.07	0.31	0.22

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	555	115	145	670	20	130	115	195	25	175	510
Future Volume (veh/h)	180	555	115	145	670	20	130	115	195	25	175	510
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1892	1892	1811	1924	1924	1856	1880	1880	1870	1865	1865	1856
Adj Flow Rate, veh/h	196	603	78	158	728	13	141	125	131	27	190	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	3	3	3	2	2	2	3	3	3
Cap, veh/h	822	1586	677	193	1137	489	252	452	381	289	448	
Arrive On Green	0.24	0.44	0.44	0.11	0.31	0.31	0.24	0.24	0.24	0.08	0.08	0.00
Sat Flow, veh/h	3496	3595	1535	1832	3655	1572	1200	1880	1585	1121	1865	1572
Grp Volume(v), veh/h	196	603	78	158	728	13	141	125	131	27	190	0
Grp Sat Flow(s),veh/h/ln	1748	1797	1535	1832	1828	1572	1200	1880	1585	1121	1865	1572
Q Serve(g_s), s	4.1	10.1	2.7	7.6	15.4	0.5	10.3	4.9	6.2	2.1	8.7	0.0
Cycle Q Clear(g_c), s	4.1	10.1	2.7	7.6	15.4	0.5	19.0	4.9	6.2	6.9	8.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	822	1586	677	193	1137	489	252	452	381	289	448	
V/C Ratio(X)	0.24	0.38	0.12	0.82	0.64	0.03	0.56	0.28	0.34	0.09	0.42	
Avail Cap(c_a), veh/h	822	1586	677	244	1137	489	361	623	525	390	618	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.9	16.9	14.8	39.4	26.7	21.5	37.4	27.8	28.3	37.0	35.5	0.0
Incr Delay (d2), s/veh	0.1	0.7	0.3	12.9	2.8	0.1	0.7	0.1	0.2	0.1	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	3.9	0.9	3.9	6.6	0.2	2.9	2.1	2.3	0.6	4.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.9	17.6	15.2	52.3	29.4	21.6	38.1	27.9	28.5	37.0	35.7	0.0
LnGrp LOS	C	B	B	D	C	C	D	C	C	D	D	
Approach Vol, veh/h		877			899			397			217	
Approach Delay, s/veh		19.7			33.3			31.8			35.9	
Approach LOS		B			C			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	27.2	34.0		28.8	15.5	45.7		28.8
Change Period (Y+Rc), s	6.0	6.0		7.2	6.0	6.0		7.2
Max Green Setting (Gmax), s	13.0	28.0		29.8	12.0	29.0		29.8
Max Q Clear Time (g_c+I1), s	6.1	17.4		10.7	9.6	12.1		21.0
Green Ext Time (p_c), s	0.2	5.8		0.6	0.0	7.1		0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	28.3
HCM 7th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	140	25	10	300	290	145
Future Vol, veh/h	140	25	10	300	290	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	95
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	4	4	3	3	4	4
Mvmt Flow	154	27	11	330	319	159

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	670	319	478	0	-	0
Stage 1	319	-	-	-	-	-
Stage 2	352	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.13	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.227	-	-	-
Pot Cap-1 Maneuver	419	717	1079	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	414	717	1079	-	-	-
Mov Cap-2 Maneuver	414	-	-	-	-	-
Stage 1	723	-	-	-	-	-
Stage 2	708	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	18.69	0.27	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	58	-	442	-	-
HCM Lane V/C Ratio	0.01	-	0.41	-	-
HCM Control Delay (s/veh)	8.4	0	18.7	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	2	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	91	0	0	110	0	0
Future Vol, veh/h	91	0	0	110	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	2	2
Mvmt Flow	108	0	0	131	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	108	0	239	108
Stage 1	-	-	-	-	108	-
Stage 2	-	-	-	-	131	-
Critical Hdwy	-	-	4.13	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.227	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1476	-	749	945
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	895	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1476	-	749	945
Mov Cap-2 Maneuver	-	-	-	-	749	-
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	895	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1476	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

APPENDIX D

SYNCHRO INTERSECTION CAPACITY ANALYSIS

Year 2029 Build Traffic Volumes
Alternatives 1 & 2

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	247	7	232	197	627	1	56	408	9
v/c Ratio	0.48	0.71	0.04	0.68	0.32	0.28	0.00	0.12	0.19	0.01
Control Delay (s/veh)	38.5	43.8	25.2	42.3	3.7	2.5	3.0	8.4	7.3	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	38.5	43.8	25.2	42.3	3.7	2.5	3.0	8.4	7.3	7.5
Queue Length 50th (ft)	43	131	3	123	12	20	0	11	42	2
Queue Length 95th (ft)	61	141	10	133	21	27	m0	25	61	7
Internal Link Dist (ft)		1001		145		397			293	
Turn Bay Length (ft)	100		100		100		50	50		45
Base Capacity (vph)	297	577	277	564	608	2259	995	449	2101	925
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.43	0.03	0.41	0.32	0.28	0.00	0.12	0.19	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	75	100	5	50	115	140	445	1	40	290	10
Future Volume (veh/h)	60	75	100	5	50	115	140	445	1	40	290	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1840	1840	1811	1719	1719	1693
Adj Flow Rate, veh/h	85	106	141	7	70	162	197	627	1	56	408	9
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	7	7	7	7	7	7	6	6	6	14	14	14
Cap, veh/h	203	168	224	194	116	268	626	2189	961	539	2046	898
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	1.00	1.00	1.00	0.63	0.63	0.63
Sat Flow, veh/h	1103	699	930	1088	481	1114	954	3495	1535	733	3267	1434
Grp Volume(v), veh/h	85	0	247	7	0	232	197	627	1	56	408	9
Grp Sat Flow(s),veh/h/ln	1103	0	1629	1088	0	1596	954	1748	1535	733	1633	1434
Q Serve(g_s), s	6.7	0.0	12.2	0.5	0.0	11.6	2.4	0.0	0.0	2.8	4.8	0.2
Cycle Q Clear(g_c), s	18.3	0.0	12.2	12.7	0.0	11.6	7.2	0.0	0.0	2.8	4.8	0.2
Prop In Lane	1.00		0.57	1.00		0.70	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	203	0	392	194	0	384	626	2189	961	539	2046	898
V/C Ratio(X)	0.42	0.00	0.63	0.04	0.00	0.60	0.31	0.29	0.00	0.10	0.20	0.01
Avail Cap(c_a), veh/h	330	0	579	319	0	567	626	2189	961	539	2046	898
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	0.0	30.6	36.3	0.0	30.4	0.3	0.0	0.0	6.8	7.2	6.3
Incr Delay (d2), s/veh	1.4	0.0	1.7	0.1	0.0	1.5	1.3	0.3	0.0	0.4	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	4.7	0.1	0.0	4.5	0.2	0.1	0.0	0.4	1.5	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.9	0.0	32.3	36.4	0.0	31.9	1.6	0.3	0.0	7.2	7.4	6.3
LnGrp LOS	D		C	D		C	A	A	A	A	A	A
Approach Vol, veh/h		332			239			825			473	
Approach Delay, s/veh		34.2			32.0			0.6			7.4	
Approach LOS		C			C			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	62.4	27.6	62.4	27.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	46.0	32.0	46.0	32.0
Max Q Clear Time (g_c+I1), s	9.2	20.3	6.8	14.7
Green Ext Time (p_c), s	5.8	1.3	3.3	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	12.3
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	1	5	80	1	35	25	550	95	30	360	5
Future Vol, veh/h	1	1	5	80	1	35	25	550	95	30	360	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	155	-	100	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0	5	5	5	12	12	12
Mvmt Flow	1	1	7	105	1	46	33	724	125	39	474	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	984	1470	240	1106	1349	362	480	0	0	849	0	0
Stage 1	556	556	-	789	789	-	-	-	-	-	-	-
Stage 2	428	914	-	316	559	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.2	-	-	4.34	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.25	-	-	2.32	-	-
Pot Cap-1 Maneuver	414	182	*994	321	225	*946	1193	-	-	847	-	-
Stage 1	614	599	-	489	499	-	-	-	-	-	-	-
Stage 2	853	430	-	872	597	-	-	-	-	-	-	-
Platoon blocked, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Cap-1 Maneuver	363	169	*994	293	209	*946	1193	-	-	847	-	-
Mov Cap-2 Maneuver	363	169	-	293	209	-	-	-	-	-	-	-
Stage 1	586	571	-	475	485	-	-	-	-	-	-	-
Stage 2	787	418	-	824	569	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	12.18	21.5	0.3	0.72
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1193	-	-	511	369	847	-	-
HCM Lane V/C Ratio	0.028	-	-	0.018	0.414	0.047	-	-
HCM Control Delay (s/veh)	8.1	-	-	12.2	21.5	9.5	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	2	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	558	574	33	37	479	16	79	121	20	47	105	196
v/c Ratio	0.77	0.25	0.03	0.28	0.31	0.02	0.50	0.52	0.10	0.31	0.48	0.13
Control Delay (s/veh)	41.5	8.9	9.1	44.1	17.1	15.3	47.0	44.5	34.6	33.4	36.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	41.5	8.9	9.1	44.1	17.1	15.3	47.0	44.5	34.6	33.4	36.0	0.2
Queue Length 50th (ft)	155	75	7	20	86	5	43	66	10	21	46	0
Queue Length 95th (ft)	213	127	23	50	135	18	84	115	30	43	79	0
Internal Link Dist (ft)		674			679			287			626	
Turn Bay Length (ft)	200		250	165		175	75		250	75		
Base Capacity (vph)	728	2256	966	462	1548	667	314	456	386	295	435	1455
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.25	0.03	0.08	0.31	0.02	0.25	0.27	0.05	0.16	0.24	0.13

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	530	545	50	35	455	25	75	115	30	45	100	300
Future Volume (veh/h)	530	545	50	35	455	25	75	115	30	45	100	300
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1892	1892	1811	1847	1847	1781	1821	1821	1811	1746	1746	1737
Adj Flow Rate, veh/h	558	574	33	37	479	16	79	121	20	47	105	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	6	8	8	8	6	6	6	11	11	11
Cap, veh/h	1113	2159	922	71	1131	486	190	266	224	179	255	
Arrive On Green	0.32	0.60	0.60	0.04	0.32	0.32	0.15	0.15	0.15	0.05	0.05	0.00
Sat Flow, veh/h	3496	3595	1535	1759	3509	1510	1255	1821	1535	1165	1746	1472
Grp Volume(v), veh/h	558	574	33	37	479	16	79	121	20	47	105	0
Grp Sat Flow(s),veh/h/ln	1748	1797	1535	1759	1755	1510	1255	1821	1535	1165	1746	1472
Q Serve(g_s), s	11.7	6.8	0.8	1.9	9.6	0.7	5.5	5.5	1.0	3.6	5.3	0.0
Cycle Q Clear(g_c), s	11.7	6.8	0.8	1.9	9.6	0.7	10.8	5.5	1.0	9.0	5.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1113	2159	922	71	1131	486	190	266	224	179	255	
V/C Ratio(X)	0.50	0.27	0.04	0.52	0.42	0.03	0.42	0.46	0.09	0.26	0.41	
Avail Cap(c_a), veh/h	1113	2159	922	469	1131	486	325	461	389	304	442	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.9	8.5	7.3	42.3	23.9	20.9	40.0	35.2	33.3	43.6	39.1	0.0
Incr Delay (d2), s/veh	0.1	0.3	0.1	2.2	1.2	0.1	0.5	0.5	0.1	0.3	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	2.3	0.2	0.8	3.9	0.2	1.7	2.4	0.4	1.1	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.0	8.9	7.4	44.6	25.1	21.0	40.5	35.6	33.3	43.9	39.5	0.0
LnGrp LOS	C	A	A	D	C	C	D	D	C	D	D	
Approach Vol, veh/h		1165			532			220			152	
Approach Delay, s/veh		16.5			26.3			37.2			40.8	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	34.7	35.0		20.3	9.6	60.0		20.3
Change Period (Y+Rc), s	6.0	6.0		7.2	6.0	6.0		7.2
Max Green Setting (Gmax), s	19.0	29.0		22.8	24.0	24.0		22.8
Max Q Clear Time (g_c+I1), s	13.7	11.6		11.0	3.9	8.8		12.8
Green Ext Time (p_c), s	0.6	5.4		0.3	0.0	6.1		0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	23.0
HCM 7th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	1	1	200	155	30
Future Vol, veh/h	20	1	1	200	155	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	95
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	15	15	8	8	16	16
Mvmt Flow	23	1	1	230	178	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	410	178	213	0	-	0
Stage 1	178	-	-	-	-	-
Stage 2	232	-	-	-	-	-
Critical Hdwy	6.55	6.35	4.18	-	-	-
Critical Hdwy Stg 1	5.55	-	-	-	-	-
Critical Hdwy Stg 2	5.55	-	-	-	-	-
Follow-up Hdwy	3.635	3.435	2.272	-	-	-
Pot Cap-1 Maneuver	573	832	1323	-	-	-
Stage 1	822	-	-	-	-	-
Stage 2	777	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	573	832	1323	-	-	-
Mov Cap-2 Maneuver	573	-	-	-	-	-
Stage 1	821	-	-	-	-	-
Stage 2	777	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11.46	0.04	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	9	-	581	-	-
HCM Lane V/C Ratio	0.001	-	0.042	-	-
HCM Control Delay (s/veh)	7.7	0	11.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	95	20	25	150	20	30
Future Vol, veh/h	95	20	25	150	20	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	7	7	7	7	2	2
Mvmt Flow	134	28	35	211	28	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	162	0	430	148
Stage 1	-	-	-	-	148	-
Stage 2	-	-	-	-	282	-
Critical Hdwy	-	-	4.17	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.263	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1387	-	582	899
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	766	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1387	-	566	899
Mov Cap-2 Maneuver	-	-	-	-	566	-
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	744	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.09	10.48
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	728	-	-	257	-
HCM Lane V/C Ratio	0.097	-	-	0.025	-
HCM Control Delay (s/veh)	10.5	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	18	273	6	137	107	220	1	48	583	4
v/c Ratio	0.06	0.73	0.04	0.34	0.23	0.10	0.00	0.07	0.26	0.00
Control Delay (s/veh)	24.7	43.3	24.0	29.9	4.1	2.6	4.0	8.1	8.2	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.7	43.3	24.0	29.9	4.1	2.6	4.0	8.1	8.2	8.0
Queue Length 50th (ft)	8	144	3	66	6	6	0	9	67	1
Queue Length 95th (ft)	21	189	11	97	17	14	m0	26	108	5
Internal Link Dist (ft)		1001		145		397			293	
Turn Bay Length (ft)	100		100		100		50	50		45
Base Capacity (vph)	479	637	291	689	474	2111	929	727	2253	992
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.43	0.02	0.20	0.23	0.10	0.00	0.07	0.26	0.00

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	60	170	5	85	30	90	185	1	40	490	5
Future Volume (veh/h)	15	60	170	5	85	30	90	185	1	40	490	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1764	1764	1737	1870	1870	1841
Adj Flow Rate, veh/h	18	71	202	6	101	36	107	220	1	48	583	4
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	11	11	11	4	4	4
Cap, veh/h	244	85	242	123	260	93	551	2237	982	854	2371	1041
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	1.00	1.00	1.00	0.67	0.67	0.67
Sat Flow, veh/h	1242	426	1212	1097	1306	466	782	3352	1472	1160	3553	1560
Grp Volume(v), veh/h	18	0	273	6	0	137	107	220	1	48	583	4
Grp Sat Flow(s),veh/h/ln	1242	0	1637	1097	0	1772	782	1676	1472	1160	1776	1560
Q Serve(g_s), s	1.1	0.0	14.4	0.5	0.0	6.0	1.5	0.0	0.0	1.3	5.9	0.1
Cycle Q Clear(g_c), s	7.2	0.0	14.4	14.9	0.0	6.0	7.4	0.0	0.0	1.3	5.9	0.1
Prop In Lane	1.00		0.74	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	244	0	326	123	0	353	551	2237	982	854	2371	1041
V/C Ratio(X)	0.07	0.00	0.84	0.05	0.00	0.39	0.19	0.10	0.00	0.06	0.25	0.00
Avail Cap(c_a), veh/h	480	0	637	331	0	689	551	2237	982	854	2371	1041
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.4	0.0	34.6	41.8	0.0	31.3	0.4	0.0	0.0	5.2	6.0	5.0
Incr Delay (d2), s/veh	0.1	0.0	5.6	0.2	0.0	0.7	0.8	0.1	0.0	0.1	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	6.0	0.1	0.0	2.6	0.1	0.0	0.0	0.3	1.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.5	0.0	40.3	41.9	0.0	32.0	1.1	0.1	0.0	5.3	6.2	5.0
LnGrp LOS	C		D	D		C	A	A	A	A	A	A
Approach Vol, veh/h		291			143			328			635	
Approach Delay, s/veh		39.9			32.4			0.4			6.1	
Approach LOS		D			C			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	66.1	23.9	66.1	23.9
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	43.0	35.0	43.0	35.0
Max Q Clear Time (g_c+I1), s	9.4	16.4	7.9	16.9
Green Ext Time (p_c), s	2.2	1.5	4.3	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	14.5
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	1	65	95	1	20	50	245	90	35	620	10
Future Vol, veh/h	10	1	65	95	1	20	50	245	90	35	620	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	155	-	100	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	0	0	0	9	9	9	4	4	4
Mvmt Flow	12	1	77	113	1	24	60	292	107	42	738	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1093	1345	375	864	1244	146	750	0	0	399	0	0
Stage 1	827	827	-	411	411	-	-	-	-	-	-	-
Stage 2	265	518	-	453	833	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.5	6.5	6.9	4.28	-	-	4.18	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.5	4	3.3	2.29	-	-	2.24	-	-
Pot Cap-1 Maneuver	301	214	*922	*484	255	1034	984	-	-	1216	-	-
Stage 1	484	492	-	*674	649	-	-	-	-	-	-	-
Stage 2	823	577	-	*872	490	-	-	-	-	-	-	-
Platoon blocked, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Cap-1 Maneuver	266	194	*922	*400	231	1034	984	-	-	1216	-	-
Mov Cap-2 Maneuver	266	194	-	*400	231	-	-	-	-	-	-	-
Stage 1	467	475	-	*633	610	-	-	-	-	-	-	-
Stage 2	754	542	-	*769	474	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	11.2	16.73	1.15	0.42
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	984	-	-	671	444	1216	-	-
HCM Lane V/C Ratio	0.06	-	-	0.135	0.311	0.034	-	-
HCM Control Delay (s/veh)	8.9	-	-	11.2	16.7	8.1	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.5	1.3	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	245	598	57	114	739	30	103	125	108	60	196	367
v/c Ratio	0.49	0.31	0.07	0.56	0.42	0.04	0.64	0.42	0.43	0.30	0.67	0.23
Control Delay (s/veh)	39.3	13.9	13.8	48.2	16.7	14.1	52.6	37.5	38.6	33.0	41.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	39.3	13.9	13.8	48.2	16.7	14.1	52.6	37.5	38.6	33.0	41.8	0.3
Queue Length 50th (ft)	67	97	15	63	136	9	56	65	56	26	87	0
Queue Length 95th (ft)	104	167	43	111	206	26	103	110	99	59	148	0
Internal Link Dist (ft)		674			679			287			626	
Turn Bay Length (ft)	200		250	165		175	75		250	75		
Base Capacity (vph)	498	1932	827	237	1756	757	337	620	524	415	613	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.31	0.07	0.48	0.42	0.04	0.31	0.20	0.21	0.14	0.32	0.23

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	225	550	85	105	680	45	95	115	160	55	180	545
Future Volume (veh/h)	225	550	85	105	680	45	95	115	160	55	180	545
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1892	1892	1811	1924	1924	1856	1880	1880	1870	1865	1865	1856
Adj Flow Rate, veh/h	245	598	57	114	739	30	103	125	108	60	196	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	3	3	3	2	2	2	3	3	3
Cap, veh/h	915	1776	758	145	1137	489	214	402	339	261	399	
Arrive On Green	0.26	0.49	0.49	0.08	0.31	0.31	0.21	0.21	0.21	0.07	0.07	0.00
Sat Flow, veh/h	3496	3595	1535	1832	3655	1572	1193	1880	1585	1144	1865	1572
Grp Volume(v), veh/h	245	598	57	114	739	30	103	125	108	60	196	0
Grp Sat Flow(s),veh/h/ln	1748	1797	1535	1832	1828	1572	1193	1880	1585	1144	1865	1572
Q Serve(g_s), s	5.0	9.1	1.8	5.5	15.7	1.2	7.5	5.0	5.2	4.6	9.1	0.0
Cycle Q Clear(g_c), s	5.0	9.1	1.8	5.5	15.7	1.2	16.7	5.0	5.2	9.6	9.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	915	1776	758	145	1137	489	214	402	339	261	399	
V/C Ratio(X)	0.27	0.34	0.08	0.79	0.65	0.06	0.48	0.31	0.32	0.23	0.49	
Avail Cap(c_a), veh/h	915	1776	758	224	1137	489	354	623	525	395	618	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.4	13.8	12.0	40.7	26.8	21.8	38.8	29.8	29.8	39.8	37.1	0.0
Incr Delay (d2), s/veh	0.1	0.5	0.2	4.3	2.9	0.2	0.6	0.2	0.2	0.2	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	3.4	0.6	2.5	6.8	0.4	2.2	2.2	1.9	1.4	4.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.4	14.3	12.2	45.0	29.7	22.0	39.4	30.0	30.0	39.9	37.5	0.0
LnGrp LOS	C	B	B	D	C	C	D	C	C	D	D	
Approach Vol, veh/h		900			883			336			256	
Approach Delay, s/veh		17.5			31.4			32.9			38.0	
Approach LOS		B			C			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	29.6	34.0		26.4	13.1	50.5		26.4
Change Period (Y+Rc), s	6.0	6.0		7.2	6.0	6.0		7.2
Max Green Setting (Gmax), s	13.0	28.0		29.8	11.0	30.0		29.8
Max Q Clear Time (g_c+I1), s	7.0	17.7		11.6	7.5	11.1		18.7
Green Ext Time (p_c), s	0.2	5.8		0.7	0.0	7.4		0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	27.0
HCM 7th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	15	5	315	305	65
Future Vol, veh/h	55	15	5	315	305	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	95
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	4	4	3	3	4	4
Mvmt Flow	60	16	5	346	335	71

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	692	335	407	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	357	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.13	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.227	-	-	-
Pot Cap-1 Maneuver	407	702	1147	-	-	-
Stage 1	720	-	-	-	-	-
Stage 2	704	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	404	702	1147	-	-	-
Mov Cap-2 Maneuver	404	-	-	-	-	-
Stage 1	716	-	-	-	-	-
Stage 2	704	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	14.78	0.13	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	28	-	445	-	-
HCM Lane V/C Ratio	0.005	-	0.173	-	-
HCM Control Delay (s/veh)	8.2	0	14.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	85	15	30	105	15	35
Future Vol, veh/h	85	15	30	105	15	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	2	2
Mvmt Flow	101	18	36	125	18	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	119	0	307	110
Stage 1	-	-	-	-	110	-
Stage 2	-	-	-	-	196	-
Critical Hdwy	-	-	4.13	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.227	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1463	-	686	943
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	837	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1463	-	668	943
Mov Cap-2 Maneuver	-	-	-	-	668	-
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	815	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.67	9.62
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	839	-	-	400	-
HCM Lane V/C Ratio	0.071	-	-	0.024	-
HCM Control Delay (s/veh)	9.6	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	247	92	232	197	627	1	56	408	9
v/c Ratio	0.48	0.71	0.55	0.68	0.32	0.28	0.00	0.12	0.19	0.01
Control Delay (s/veh)	38.5	43.8	43.0	42.3	3.7	2.5	3.0	8.4	7.3	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	38.5	43.8	43.0	42.3	3.7	2.5	3.0	8.4	7.3	7.5
Queue Length 50th (ft)	43	131	47	123	12	20	0	11	42	2
Queue Length 95th (ft)	61	141	65	133	21	27	m0	25	61	7
Internal Link Dist (ft)		1001		145		397			293	
Turn Bay Length (ft)	100		100		100		50	50		45
Base Capacity (vph)	297	577	277	564	608	2259	995	449	2101	925
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.43	0.33	0.41	0.32	0.28	0.00	0.12	0.19	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	75	100	65	50	115	140	445	1	40	290	10
Future Volume (veh/h)	60	75	100	65	50	115	140	445	1	40	290	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1840	1840	1811	1719	1719	1693
Adj Flow Rate, veh/h	85	106	141	92	70	162	197	627	1	56	408	9
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	7	7	7	7	7	7	6	6	6	14	14	14
Cap, veh/h	218	176	234	209	121	281	614	2148	943	531	2008	882
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	1.00	1.00	1.00	0.61	0.61	0.61
Sat Flow, veh/h	1103	699	930	1088	481	1114	954	3495	1535	733	3267	1434
Grp Volume(v), veh/h	85	0	247	92	0	232	197	627	1	56	408	9
Grp Sat Flow(s),veh/h/ln	1103	0	1629	1088	0	1596	954	1748	1535	733	1633	1434
Q Serve(g_s), s	6.6	0.0	12.0	7.3	0.0	11.5	2.5	0.0	0.0	2.9	5.0	0.2
Cycle Q Clear(g_c), s	18.0	0.0	12.0	19.4	0.0	11.5	7.5	0.0	0.0	2.9	5.0	0.2
Prop In Lane	1.00		0.57	1.00		0.70	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	218	0	411	209	0	402	614	2148	943	531	2008	882
V/C Ratio(X)	0.39	0.00	0.60	0.44	0.00	0.58	0.32	0.29	0.00	0.11	0.20	0.01
Avail Cap(c_a), veh/h	332	0	579	321	0	567	614	2148	943	531	2008	882
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.3	0.0	29.7	38.2	0.0	29.5	0.3	0.0	0.0	7.2	7.6	6.7
Incr Delay (d2), s/veh	1.1	0.0	1.4	1.5	0.0	1.3	1.4	0.3	0.0	0.4	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	4.6	2.0	0.0	4.4	0.2	0.1	0.0	0.4	1.5	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	38.5	0.0	31.1	39.7	0.0	30.8	1.7	0.3	0.0	7.6	7.9	6.7
LnGrp LOS	D		C	D		C	A	A	A	A	A	A
Approach Vol, veh/h		332			324			825			473	
Approach Delay, s/veh		33.0			33.3			0.7			7.8	
Approach LOS		C			C			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	61.3	28.7	61.3	28.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	46.0	32.0	46.0	32.0
Max Q Clear Time (g_c+I1), s	9.5	20.0	7.0	21.4
Green Ext Time (p_c), s	5.8	1.3	3.3	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	13.3
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	5	0	0	35	25	550	95	30	420	5
Future Vol, veh/h	0	0	5	0	0	35	25	550	95	30	420	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	155	-	100	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0	5	5	5	12	12	12
Mvmt Flow	0	0	7	0	0	46	33	724	125	39	553	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	280	-	-	362	559	0	0	849	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	4.2	-	-	4.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	2.25	-	-	2.32	-	-
Pot Cap-1 Maneuver	0	0	974	0	0	*946	1107	-	-	847	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			0			0	0	-	-	0	-	-
Mov Cap-1 Maneuver	-	-	974	-	-	*946	1107	-	-	847	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.72	9	0.31	0.62
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1107	-	-	974	946	847	-	-
HCM Lane V/C Ratio	0.03	-	-	0.007	0.049	0.047	-	-
HCM Control Delay (s/veh)	8.4	-	-	8.7	9	9.5	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0.2	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	558	574	33	37	489	16	79	121	20	37	105	189
v/c Ratio	0.77	0.25	0.03	0.28	0.32	0.02	0.50	0.52	0.10	0.25	0.48	0.13
Control Delay (s/veh)	41.5	8.9	9.1	44.1	17.1	15.3	47.0	44.5	34.6	29.1	33.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	41.5	8.9	9.1	44.1	17.1	15.3	47.0	44.5	34.6	29.1	33.5	0.2
Queue Length 50th (ft)	155	75	7	20	88	5	43	66	10	16	46	0
Queue Length 95th (ft)	213	127	23	50	138	18	84	115	30	m37	79	0
Internal Link Dist (ft)		674			679			287			626	
Turn Bay Length (ft)	200		250	165		175	75		250	75		
Base Capacity (vph)	728	2256	966	462	1548	667	314	456	386	295	435	1455
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.25	0.03	0.08	0.32	0.02	0.25	0.27	0.05	0.13	0.24	0.13

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	530	545	50	35	465	25	75	115	30	35	100	290
Future Volume (veh/h)	530	545	50	35	465	25	75	115	30	35	100	290
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1892	1892	1811	1847	1847	1781	1821	1821	1811	1746	1746	1737
Adj Flow Rate, veh/h	558	574	33	37	489	16	79	121	20	37	105	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	6	8	8	8	6	6	6	11	11	11
Cap, veh/h	1113	2159	922	71	1131	486	190	266	224	179	255	
Arrive On Green	0.32	0.60	0.60	0.04	0.32	0.32	0.15	0.15	0.15	0.05	0.05	0.00
Sat Flow, veh/h	3496	3595	1535	1759	3509	1510	1255	1821	1535	1165	1746	1472
Grp Volume(v), veh/h	558	574	33	37	489	16	79	121	20	37	105	0
Grp Sat Flow(s),veh/h/ln	1748	1797	1535	1759	1755	1510	1255	1821	1535	1165	1746	1472
Q Serve(g_s), s	11.7	6.8	0.8	1.9	9.9	0.7	5.5	5.5	1.0	2.8	5.3	0.0
Cycle Q Clear(g_c), s	11.7	6.8	0.8	1.9	9.9	0.7	10.8	5.5	1.0	8.3	5.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1113	2159	922	71	1131	486	190	266	224	179	255	
V/C Ratio(X)	0.50	0.27	0.04	0.52	0.43	0.03	0.42	0.46	0.09	0.21	0.41	
Avail Cap(c_a), veh/h	1113	2159	922	469	1131	486	325	461	389	304	442	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.9	8.5	7.3	42.3	24.0	20.9	40.0	35.2	33.3	43.2	39.1	0.0
Incr Delay (d2), s/veh	0.1	0.3	0.1	2.2	1.2	0.1	0.5	0.5	0.1	0.2	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	2.3	0.2	0.8	4.0	0.2	1.7	2.4	0.4	0.8	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.0	8.9	7.4	44.6	25.2	21.0	40.5	35.6	33.3	43.4	39.5	0.0
LnGrp LOS	C	A	A	D	C	C	D	D	C	D	D	
Approach Vol, veh/h		1165			542			220			142	
Approach Delay, s/veh		16.5			26.4			37.2			40.5	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	34.7	35.0		20.3	9.6	60.0		20.3
Change Period (Y+Rc), s	6.0	6.0		7.2	6.0	6.0		7.2
Max Green Setting (Gmax), s	19.0	29.0		22.8	24.0	24.0		22.8
Max Q Clear Time (g_c+I1), s	13.7	11.9		10.3	3.9	8.8		12.8
Green Ext Time (p_c), s	0.6	5.4		0.3	0.0	6.1		0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	23.0
HCM 7th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	1	1	200	155	30
Future Vol, veh/h	20	1	1	200	155	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	95
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	15	15	8	8	16	16
Mvmt Flow	23	1	1	230	178	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	410	178	213	0	-	0
Stage 1	178	-	-	-	-	-
Stage 2	232	-	-	-	-	-
Critical Hdwy	6.55	6.35	4.18	-	-	-
Critical Hdwy Stg 1	5.55	-	-	-	-	-
Critical Hdwy Stg 2	5.55	-	-	-	-	-
Follow-up Hdwy	3.635	3.435	2.272	-	-	-
Pot Cap-1 Maneuver	573	832	1323	-	-	-
Stage 1	822	-	-	-	-	-
Stage 2	777	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	573	832	1323	-	-	-
Mov Cap-2 Maneuver	573	-	-	-	-	-
Stage 1	821	-	-	-	-	-
Stage 2	777	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11.46	0.04	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	9	-	581	-	-
HCM Lane V/C Ratio	0.001	-	0.042	-	-
HCM Control Delay (s/veh)	7.7	0	11.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	95	20	25	150	80	50
Future Vol, veh/h	95	20	25	150	80	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	7	7	7	7	2	2
Mvmt Flow	134	28	35	211	113	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	162	0	430	148
Stage 1	-	-	-	-	148	-
Stage 2	-	-	-	-	282	-
Critical Hdwy	-	-	4.17	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.263	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1387	-	582	899
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	766	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1387	-	566	899
Mov Cap-2 Maneuver	-	-	-	-	566	-
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	744	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.09	12.54
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	660	-	-	257	-
HCM Lane V/C Ratio	0.278	-	-	0.025	-
HCM Control Delay (s/veh)	12.5	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0.1	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	30	273	89	137	107	220	1	48	583	4
v/c Ratio	0.11	0.73	0.52	0.34	0.23	0.10	0.00	0.07	0.26	0.00
Control Delay (s/veh)	25.7	43.3	40.3	29.9	4.3	2.8	4.0	8.1	8.2	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.7	43.3	40.3	29.9	4.3	2.8	4.0	8.1	8.2	8.0
Queue Length 50th (ft)	14	144	45	66	8	8	0	9	67	1
Queue Length 95th (ft)	30	189	77	97	17	14	m0	26	108	5
Internal Link Dist (ft)		1001		145		397			293	
Turn Bay Length (ft)	100		100		100		50	50		45
Base Capacity (vph)	479	637	291	689	474	2111	929	727	2253	992
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.43	0.31	0.20	0.23	0.10	0.00	0.07	0.26	0.00

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	60	170	75	85	30	90	185	1	40	490	5
Future Volume (veh/h)	25	60	170	75	85	30	90	185	1	40	490	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1764	1764	1737	1870	1870	1841
Adj Flow Rate, veh/h	30	71	202	89	101	36	107	220	1	48	583	4
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	11	11	11	4	4	4
Cap, veh/h	324	110	313	201	338	120	495	2039	895	785	2160	949
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	1.00	1.00	1.00	0.61	0.61	0.61
Sat Flow, veh/h	1242	426	1212	1097	1306	466	782	3352	1472	1160	3553	1560
Grp Volume(v), veh/h	30	0	273	89	0	137	107	220	1	48	583	4
Grp Sat Flow(s),veh/h/ln	1242	0	1637	1097	0	1772	782	1676	1472	1160	1776	1560
Q Serve(g_s), s	1.8	0.0	13.4	7.1	0.0	5.6	2.0	0.0	0.0	1.5	6.9	0.1
Cycle Q Clear(g_c), s	7.4	0.0	13.4	20.4	0.0	5.6	8.9	0.0	0.0	1.5	6.9	0.1
Prop In Lane	1.00		0.74	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	324	0	423	201	0	458	495	2039	895	785	2160	949
V/C Ratio(X)	0.09	0.00	0.64	0.44	0.00	0.30	0.22	0.11	0.00	0.06	0.27	0.00
Avail Cap(c_a), veh/h	486	0	637	344	0	689	495	2039	895	785	2160	949
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.8	0.0	29.7	38.8	0.0	26.8	0.6	0.0	0.0	7.2	8.3	6.9
Incr Delay (d2), s/veh	0.1	0.0	1.7	1.5	0.0	0.4	1.0	0.1	0.0	0.1	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	5.2	2.0	0.0	2.4	0.1	0.0	0.0	0.4	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	29.9	0.0	31.3	40.3	0.0	27.2	1.6	0.1	0.0	7.4	8.6	6.9
LnGrp LOS	C		C	D		C	A	A	A	A	A	A
Approach Vol, veh/h		303			226			328			635	
Approach Delay, s/veh		31.2			32.3			0.6			8.5	
Approach LOS		C			C			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	60.7	29.3	60.7	29.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	43.0	35.0	43.0	35.0
Max Q Clear Time (g_c+I1), s	10.9	15.4	8.9	22.4
Green Ext Time (p_c), s	2.2	1.6	4.3	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	15.0
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	65	0	0	20	50	245	90	35	690	10
Future Vol, veh/h	0	0	65	0	0	20	50	245	90	35	690	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	155	-	100	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	0	0	0	9	9	9	4	4	4
Mvmt Flow	0	0	77	0	0	24	60	292	107	42	821	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	417	-	-	146	833	0	0	399	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.92	-	-	6.9	4.28	-	-	4.18	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.31	-	-	3.3	2.29	-	-	2.24	-	-
Pot Cap-1 Maneuver	0	0	*899	0	0	1034	932	-	-	1216	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			0			0	0	-	-	0	-	-
Mov Cap-1 Maneuver	-	-	*899	-	-	1034	932	-	-	1216	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	9.38	8.56	1.19	0.38
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	932	-	-	899	1034	1216	-	-
HCM Lane V/C Ratio	0.064	-	-	0.086	0.023	0.034	-	-
HCM Control Delay (s/veh)	9.1	-	-	9.4	8.6	8.1	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	0.1	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	245	598	57	114	750	30	103	125	108	43	196	361
v/c Ratio	0.49	0.31	0.07	0.56	0.43	0.04	0.64	0.42	0.43	0.22	0.67	0.23
Control Delay (s/veh)	39.3	13.9	13.8	48.2	16.7	14.1	52.6	37.5	38.6	26.2	37.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	39.3	13.9	13.8	48.2	16.7	14.1	52.6	37.5	38.6	26.2	37.7	0.3
Queue Length 50th (ft)	67	97	15	63	138	9	56	65	56	18	83	0
Queue Length 95th (ft)	104	167	43	111	210	26	103	110	99	39	123	0
Internal Link Dist (ft)		674			679			287			626	
Turn Bay Length (ft)	200		250	165		175	75		250	75		
Base Capacity (vph)	498	1932	827	237	1756	757	337	620	524	415	613	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.31	0.07	0.48	0.43	0.04	0.31	0.20	0.21	0.10	0.32	0.23

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	225	550	85	105	690	45	95	115	160	40	180	535
Future Volume (veh/h)	225	550	85	105	690	45	95	115	160	40	180	535
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1892	1892	1811	1924	1924	1856	1880	1880	1870	1865	1865	1856
Adj Flow Rate, veh/h	245	598	57	114	750	30	103	125	108	43	196	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	3	3	3	2	2	2	3	3	3
Cap, veh/h	915	1776	758	145	1137	489	214	402	339	261	399	
Arrive On Green	0.26	0.49	0.49	0.08	0.31	0.31	0.21	0.21	0.21	0.07	0.07	0.00
Sat Flow, veh/h	3496	3595	1535	1832	3655	1572	1193	1880	1585	1144	1865	1572
Grp Volume(v), veh/h	245	598	57	114	750	30	103	125	108	43	196	0
Grp Sat Flow(s),veh/h/ln	1748	1797	1535	1832	1828	1572	1193	1880	1585	1144	1865	1572
Q Serve(g_s), s	5.0	9.1	1.8	5.5	16.0	1.2	7.5	5.0	5.2	3.2	9.1	0.0
Cycle Q Clear(g_c), s	5.0	9.1	1.8	5.5	16.0	1.2	16.7	5.0	5.2	8.3	9.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	915	1776	758	145	1137	489	214	402	339	261	399	
V/C Ratio(X)	0.27	0.34	0.08	0.79	0.66	0.06	0.48	0.31	0.32	0.16	0.49	
Avail Cap(c_a), veh/h	915	1776	758	224	1137	489	354	623	525	395	618	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.4	13.8	12.0	40.7	26.9	21.8	38.8	29.8	29.8	39.1	37.1	0.0
Incr Delay (d2), s/veh	0.1	0.5	0.2	4.3	3.0	0.2	0.6	0.2	0.2	0.1	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	3.4	0.6	2.5	6.9	0.4	2.2	2.2	1.9	0.9	4.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.4	14.3	12.2	45.0	29.9	22.0	39.4	30.0	30.0	39.3	37.5	0.0
LnGrp LOS	C	B	B	D	C	C	D	C	C	D	D	
Approach Vol, veh/h		900			894			336			239	
Approach Delay, s/veh		17.5			31.5			32.9			37.8	
Approach LOS		B			C			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	29.6	34.0		26.4	13.1	50.5		26.4
Change Period (Y+Rc), s	6.0	6.0		7.2	6.0	6.0		7.2
Max Green Setting (Gmax), s	13.0	28.0		29.8	11.0	30.0		29.8
Max Q Clear Time (g_c+I1), s	7.0	18.0		11.1	7.5	11.1		18.7
Green Ext Time (p_c), s	0.2	5.7		0.6	0.0	7.4		0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	27.0
HCM 7th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	15	5	315	305	65
Future Vol, veh/h	55	15	5	315	305	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	95
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	4	4	3	3	4	4
Mvmt Flow	60	16	5	346	335	71

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	692	335	407	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	357	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.13	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.227	-	-	-
Pot Cap-1 Maneuver	407	702	1147	-	-	-
Stage 1	720	-	-	-	-	-
Stage 2	704	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	404	702	1147	-	-	-
Mov Cap-2 Maneuver	404	-	-	-	-	-
Stage 1	716	-	-	-	-	-
Stage 2	704	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	14.78	0.13	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	28	-	445	-	-
HCM Lane V/C Ratio	0.005	-	0.173	-	-
HCM Control Delay (s/veh)	8.2	0	14.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection	
Int Delay, s/veh	4.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	85	15	30	105	85	60
Future Vol, veh/h	85	15	30	105	85	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	2	2
Mvmt Flow	101	18	36	125	101	71

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	119	0	307	110
Stage 1	-	-	-	-	110	-
Stage 2	-	-	-	-	196	-
Critical Hdwy	-	-	4.13	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.227	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1463	-	686	943
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	837	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1463	-	668	943
Mov Cap-2 Maneuver	-	-	-	-	668	-
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	815	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.67	11.13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	759	-	-	400	-
HCM Lane V/C Ratio	0.227	-	-	0.024	-
HCM Control Delay (s/veh)	11.1	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

APPENDIX E

WARRANT STUDIES

Right-Turn Lane Warrants
Traffic Signal Warrants
Crash Analysis

TRAFFIC SIGNAL WARRANT VOLUME CALCULATIONS:

Maple Road & Mequon Road

By: TSC
Date: 10/10/2024

Year 2024 Existing Traffic

Start Time	Maple Road Right	Maple Road Thru	Maple Road Left	Maple Road U-Turn	Mequon Road Right	Mequon Road Thru	Mequon Road Left	Mequon Road U-Turn	Maple Road Right	Maple Road Thru	Maple Road Left	Maple Road U-Turn	Mequon Road Right	Mequon Road Thru	Mequon Road Left	Mequon Road U-Turn	Intersection Totals
6-7am	10	143	13	0	118	20	1	0	1	467	138	0	42	29	48	0	1030
7-8am	7	266	40	0	56	41	1	0	4	323	123	0	126	83	28	0	1098
8-9am	14	174	15	0	46	38	1	0	1	272	67	0	102	46	21	0	797
9-10am	4	144	24	0	21	24	5	0	4	150	50	0	54	27	4	0	511
10-11am	7	143	25	0	30	39	1	0	1	163	57	0	77	42	13	0	598
11am-12pm	6	230	46	0	37	37	3	0	1	153	47	1	77	54	12	0	704
12-1pm	13	237	48	0	53	60	2	0	3	226	87	0	88	39	6	0	862
1-2pm	12	204	30	0	46	52	1	0	2	194	61	0	63	39	11	0	715
2-3pm	11	335	54	0	44	53	7	0	0	236	88	0	96	38	16	0	978
3-4pm	8	451	58	0	15	72	2	0	2	175	73	0	170	50	15	0	1091
4-5pm	7	422	36	0	23	79	3	0	1	159	81	0	155	57	13	0	1036
5-6pm	14	262	29	0	27	71	1	0	1	144	49	0	70	54	20	0	742
6-7pm	9	152	22	0	23	33	1	0	2	126	41	1	64	27	10	0	511
7-8pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes
Traffic Counts collected September 23, 2024.

Year 2029 Background Traffic

Start Time	Maple Road Right	Maple Road Thru	Maple Road Left	Maple Road U-Turn	Mequon Road Right	Mequon Road Thru	Mequon Road Left	Mequon Road U-Turn	Maple Road Right	Maple Road Thru	Maple Road Left	Maple Road U-Turn	Mequon Road Right	Mequon Road Thru	Mequon Road Left	Mequon Road U-Turn	Intersection Totals
6-7am	10	143	13	0	118	20	1	0	1	467	138	0	42	29	48	0	1030
7-8am	7	266	40	0	56	41	1	0	4	323	123	0	126	83	28	0	1098
8-9am	14	174	15	0	46	38	1	0	1	272	67	0	102	46	21	0	797
9-10am	4	144	24	0	21	24	5	0	4	150	50	0	54	27	4	0	511
10-11am	7	143	25	0	30	39	1	0	1	163	57	0	77	42	13	0	598
11am-12pm	6	230	46	0	37	37	3	0	1	153	47	1	77	54	12	0	704
12-1pm	13	237	48	0	53	60	2	0	3	226	87	0	88	39	6	0	862
1-2pm	12	204	30	0	46	52	1	0	2	194	61	0	63	39	11	0	715
2-3pm	11	335	54	0	44	53	7	0	0	236	88	0	96	38	16	0	978
3-4pm	8	451	58	0	15	72	2	0	2	175	73	0	170	50	15	0	1091
4-5pm	7	422	36	0	23	79	3	0	1	159	81	0	155	57	13	0	1036
5-6pm	14	262	29	0	27	71	1	0	1	144	49	0	70	54	20	0	742
6-7pm	9	152	22	0	23	33	1	0	2	126	41	1	64	27	10	0	511
7-8pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM Growth Rates	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	
PM Growth Rates	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	

Notes

	AADT IN	AADT OUT
	0	0
	0%	0%
	0	0
	% AADT IN	% AADT OUT

<- % Reduction, Sensitivity Test

Trip Distribution from ITE LU #154

Start Time	Maple Road Right	Maple Road Thru	Maple Road Left	Maple Road U-Turn	Mequon Road Right	Mequon Road Thru	Mequon Road Left	Mequon Road U-Turn	Maple Road Right	Maple Road Thru	Maple Road Left	Maple Road U-Turn	Mequon Road Right	Mequon Road Thru	Mequon Road Left	Mequon Road U-Turn	Intersection Totals	IN	OUT
6-7am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-8am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8-9am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9-10am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-11am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11am-12pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-1pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-2pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-3pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-4pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4-5pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5-6pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-7pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-8pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IN %																	IN %		
OUT %																	OUT %		

% AADT IN	% AADT OUT	Notes
		Trip Distribution from ITE LU #154

Wisconsin Department of Transportation Traffic Signal Warrant Summary Worksheet

100%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: #100 - Maple Road & Mequon Road
County: Washington County
Village: Germantown, WI

Major Street: Maple Road
Critical Approach Speed: 40 mph
Lanes: 2 or more lanes

Minor Street: Mequon Road
Critical Approach Speed: 30 mph
Lanes: 1 lane

% Right Turns Included
From North (SB) 100%
From East (WB) 0%
From South (NB) 100%
From West (EB) 0%

In built-up area of isolated community of < 10,000 population? No
Total number of approaches at intersection? 4 or more
If it is a "T" intersection, inflate minor threshold to 150%? No
Manually set volume level?

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
Year 2024 Existing Traffic		6:00	AM	6:00	PM

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	**No**
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	**No**
Warrant 3: Peak Hour Volume	**Yes**
Warrant 4: Pedestrian Volume	**N/A**
Criterion A: Four-Hour	
Criterion B: Peak-Hour	
Warrant 5: School Crossing	**N/A**
Warrant 6: Coordinated Signal System	**N/A**
Warrant 7: Crash Experience	**Yes**
Warrant 8: Roadway Network	**N/A**
Warrant 9: Intersection Near a Grade Crossing	**N/A**

Warrant Analysis Conducted By:
Name: Tammi Czewski
Agency: TADI
Date: 10/10/2024

Warrant 1: Eight - Hour Vehicular Volume 100%

Warrant Evaluated? Yes **Warrant Satisfied? No** **Manually Set To:**

Condition A : Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	150	120
Number of Hours	0	0

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	75	60
Number of Hours	0	4

Satisfied? No

Condition C: Combination of A & B at 80%

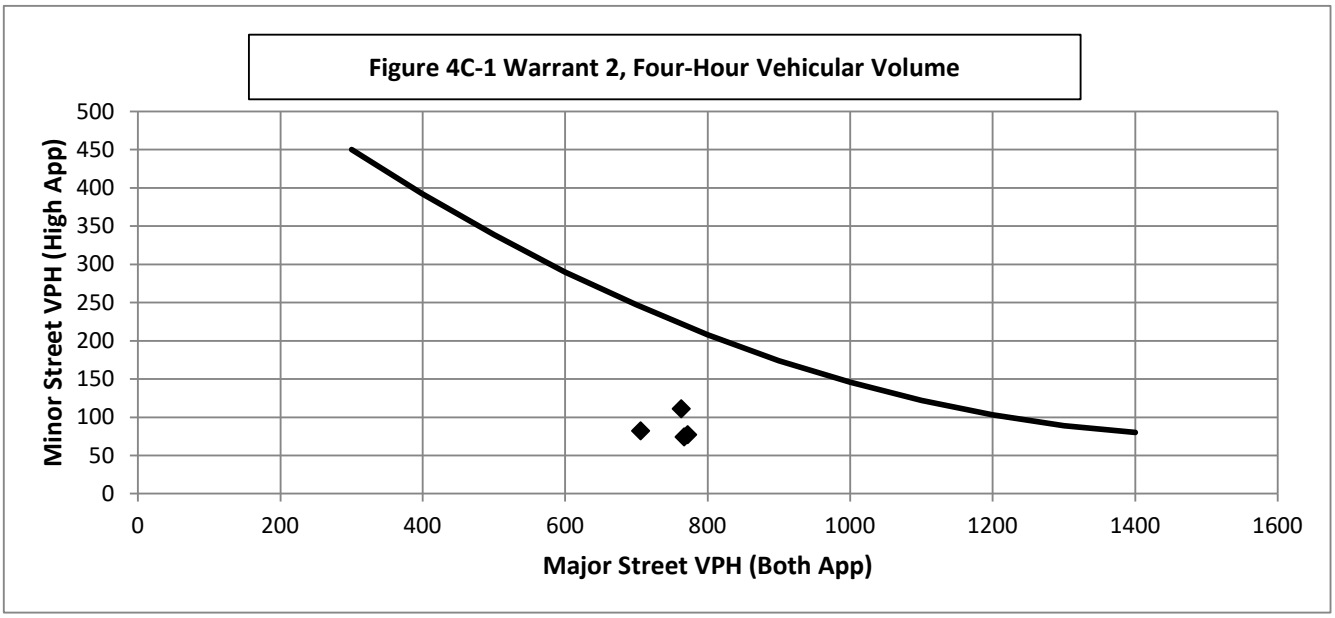
Satisfied? No

6:00 AM		Enter Start Time (Military Time) (HH:MM)			
Time Period	**From**	**To**	**Major Road: Both App. (VPH)**	**Minor Road: High App. (VPH)**	**Total**
1	6:00	7:00	772	77	849
2	7:00	8:00	763	111	874
3	8:00	9:00	543	67	610
4	9:00	10:00	376	31	407
5	10:00	11:00	396	55	451
6	11:00	12:00	484	66	550
7	12:00	13:00	614	62	676
8	13:00	14:00	503	53	556
9	14:00	15:00	724	60	784
10	15:00	16:00	767	74	841
11	16:00	17:00	706	82	788
12	17:00	18:00	499	74	573
13	18:00	19:00	353	37	390
14	19:00	20:00	0	0	0
15	20:00	21:00	0	0	0
16	21:00	22:00	0	0	0

Warrant 2: Four-Hour Volume 100%

Warrant Evaluated? Yes
Warrant Satisfied? No
Manually Set To:

Hour Start	7:00	6:00	15:00	16:00
Major Road Vol.	763	772	767	706
Minor Road Vol.	111	77	74	82



Warrant 3: Peak Hour Volume 100%

Warrant Evaluated? Yes **Warrant Satisfied? Yes** **Manually Set To:**

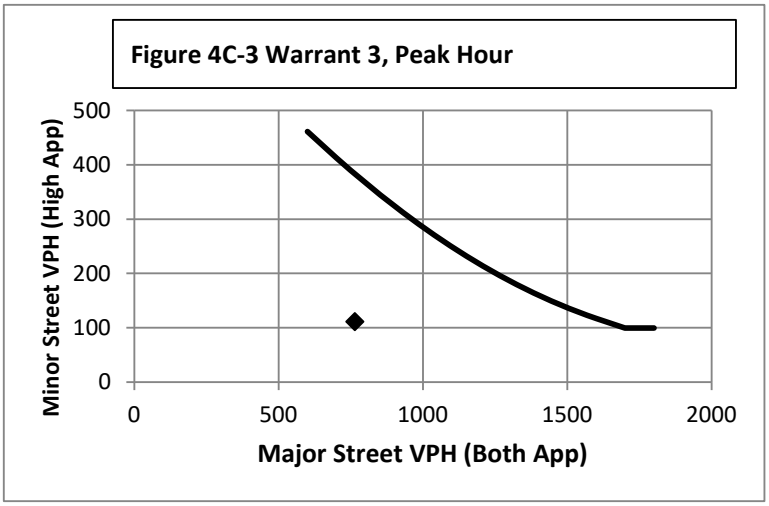
Condition justifying use of warrant:

Light industrial development creates significant peaking.
9.9 veh-hours of delay in the AM peak hour.

Criteria		Met?
Delay on Minor Approach	4	Yes
Volume on Minor Approach	100	Yes
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour?

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
7:00	763	111



Warrant 4: Pedestrian Volume 100%

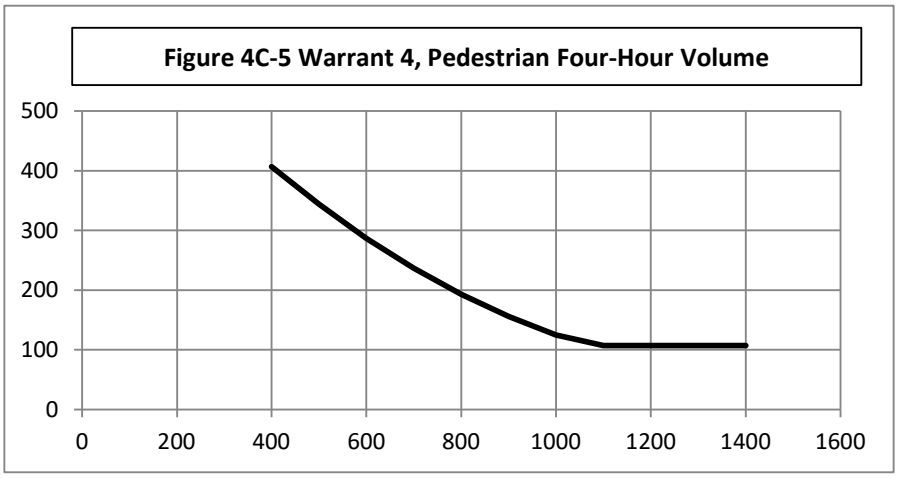
Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criterion A: Four Hour

Hour (Start)	Pedestrian Volume	Major Road Vol.
		0
		0
		0
		0

Manually Set Major Rd Vol?
Avg. walk speed less than 3.5 ft/s?

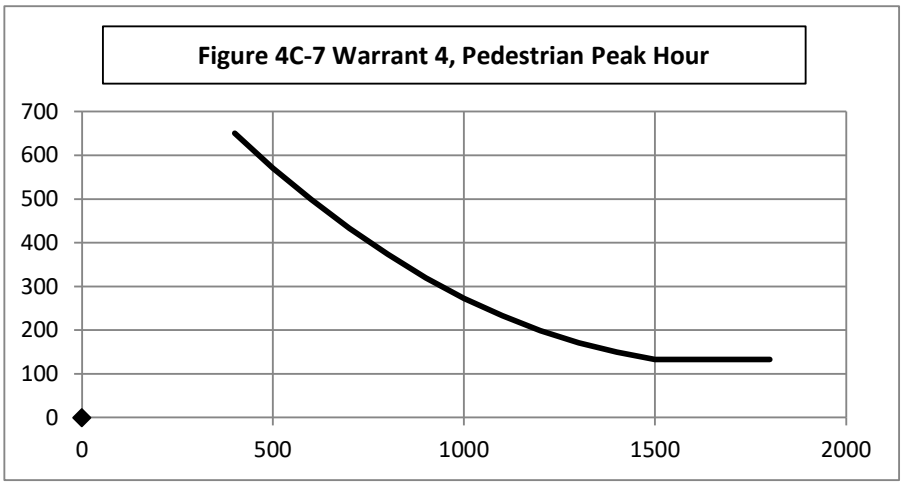
Criterion A Satisfied?



Criterion B: Peak Hour

Peak Hour	Pedestrian Vol.	Major Road Vol.
0:00	0	0

Criterion B Satisfied?



Warrant 5: School Crossing 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

	Criteria	Fulfilled?
1	There are a MINIMUM of 20 school children during the highest crossing hour.	
2	There are fewer adequate gaps in the major road traffic stream during the period when the school children are using the crossing than the number of minutes in the same period.	
3	The nearest traffic signal along the major road is located more than 300 ft away. Or, the nearest traffic signal is within 300 ft but the proposed traffic signal will not restrict the progressive movement of traffic.	

Warrant 6: Coordinated Signal System 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

	Criteria	Fulfilled?
1	Signal spacing > 1000 ft	
2	On a one-way road or a road that has traffic predominantly in one direction, the adjacent signals are so far apart that they do not provide the necessary degree of vehicle platooning.	
3	On a two-way road, adjacent signals do not provide the necessary degree of platooning and the proposed and the adjacent signals will collectively provide a progressive operation.	

Warrant 7: Crash Experience 100%

Warrant Evaluated? Yes **Warrant Satisfied? Yes** **Manually Set To:**

	Criteria		Met?	Fulfilled?
1	Adequate trial of other remedial measures has failed to reduce crash frequency.			Yes
	Measures Tried:	Install AWSC		
2	Five or more reported crashes, of types susceptible to correction by signal, have occurred within a 12 month period.	# of crashes per 12 months		Yes
		5		
3	Warrant 1, Condition A (80%)		No	Yes
	Warrant 1, Condition B (80%)		No	
	Warrant 4, Criterion A (80%)		No	
	Warrant 4, Criterion B (80%)		Yes	

Warrant 8: Roadway Network 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

	Criteria					Met?	Fulfilled?
1	Total entering volume of at least 1,000 veh/h during typical weekday peak hour				874	No	No
	Five-year projected volumes that satisfy one or more of Warrants 1, 2, or 3.					No	
2	Total entering vol. of at least 1,000 veh/h for each of any 5 hrs of non-normal business day (Sat. or Sun.)						
		Hour					
		Volume					

	Characteristics of Major Routes - Select yes if all intersecting routes have characteristic		Fulfilled?
1	Part of the road or highway system that serves as the principal roadway network for through traffic flow		
2	Rural or suburban highway outside of, entering, or traversing a city		
3	Appears as a major route on an official plan		

Warrant 9: Intersection Near a Grade Crossing 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Adjustment Factors			Manually Set Peak Hour?				
Rail Traffic per Day	% High Occupancy Buses on Minor Road	% Tractor-Trailer Trucks on Minor Road	D	Peak Hour	Major Road Vol.	Minor Road Vol.	Adjusted Minor Vol.
1	0	0% to 2.5%	660	7:00	763	111	37.185

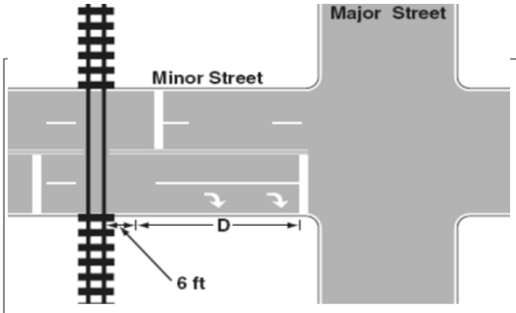
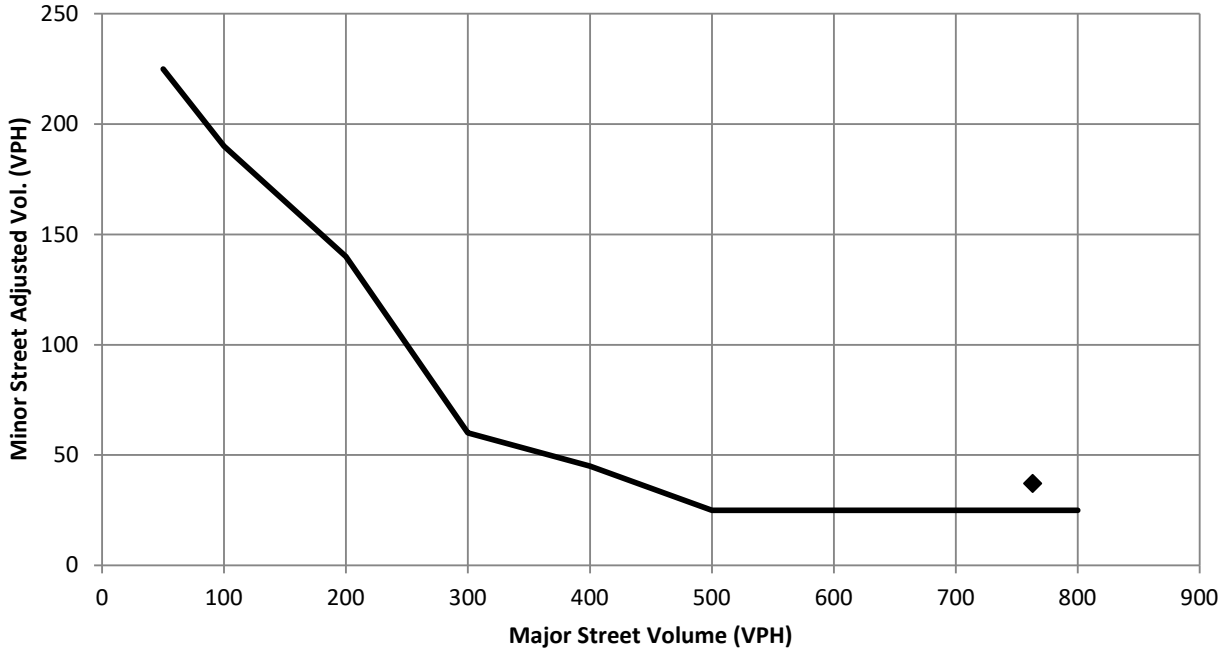


Figure 4C-9 Warrant9, Intersection Near a grade Crossing (One Approach Lane at the Track Crossing)



Conclusions/Comments:

Updated: 12/6/2017

Hourly Volume Data

One Hour Time Period Start Time		↓ From North (SB)					← From East (WB)					↑ From South (NB)					→ From West (EB)					Total Vehicle Volume
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	6:00	10	143	13	0	166	118	20	1	0	139	1	467	138	0	606	42	29	48	0	119	1030
	7:00	7	266	40	0	313	56	41	1	0	98	4	323	123	0	450	126	83	28	0	237	1098
	8:00	14	174	15	0	203	46	38	1	0	85	1	272	67	0	340	102	46	21	0	169	797
	9:00	4	144	24	0	172	21	24	5	0	50	4	150	50	0	204	54	27	4	0	85	511
MD	10:00	7	143	25	0	175	30	39	1	0	70	1	163	57	0	221	77	42	13	0	132	598
	11:00	6	230	46	0	282	37	37	3	0	77	1	153	47	1	202	77	54	12	0	143	704
	12:00	13	237	48	0	298	53	60	2	0	115	3	226	87	0	316	88	39	6	0	133	862
	13:00	12	204	30	0	246	46	52	1	0	99	2	194	61	0	257	63	39	11	0	113	715
PM	14:00	11	335	54	0	400	44	53	7	0	104	0	236	88	0	324	96	38	16	0	150	978
	15:00	8	451	58	0	517	15	72	2	0	89	2	175	73	0	250	170	50	15	0	235	1091
	16:00	7	422	36	0	465	23	79	3	0	105	1	159	81	0	241	155	57	13	0	225	1036
	17:00	14	262	29	0	305	27	71	1	0	99	1	144	49	0	194	70	54	20	0	144	742
	18:00	9	152	22	0	183	23	33	1	0	57	2	126	41	1	170	64	27	10	0	101	511
	19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	20:00																					0
	21:00																					0
Totals		122	3163	440	0	3725	539	619	29	0	1187	23	2788	962	2	3775	1184	585	217	0	1986	10673

Note: Copy volume data and paste into cells using paste special -> values

Note: U-Turns are counted as Left Turns in the Volume Totals

Please Select the Major Road: N/S

Major Road Left Turn as Minor Approach?

% Right Turns Included (Default 0%)

From North (SB)	100%
From East (WB)	0%
From South (NB)	100%
From West (EB)	0%

Major Road Volume Totals: North/South				
Right	Thru	Left	T+LT	Total
11	610	151	761	772
11	589	163	752	763
15	446	82	528	543
8	294	74	368	376
8	306	82	388	396
7	383	94	477	484
16	463	135	598	614
14	398	91	489	503
11	571	142	713	724
10	626	131	757	767
8	581	117	698	706
15	406	78	484	499
11	278	64	342	353
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
145	5951	1404	7355	7500

Minor Road Highest Volume: East/West				
Right	Thru	Left	T+LT	Total
0	29	48	77	77
0	83	28	111	111
0	46	21	67	67
0	27	4	31	31
0	42	13	55	55
0	54	12	66	66
0	60	2	62	62
0	52	1	53	53
0	53	7	60	60
0	72	2	74	74
0	79	3	82	82
0	54	20	74	74
0	27	10	37	37
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	678	171	849	849

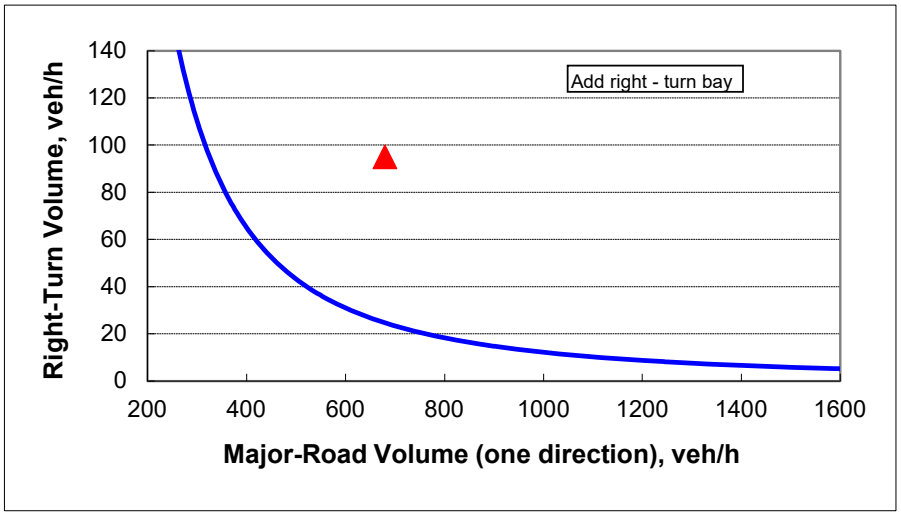
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadw ay
Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	680
Right-turn volume, veh/h:	95

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	25
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Add right-turn bay.	



Intersection Collision Diagram

TRAFFIC ANALYSIS & DESIGN, INC.

Location:	**Maple Rd & Mequon Rd**	**From:**	**1/1/2019**	**Duration 5 Years**
Municipality:	**Germantown**	**To:**	**9/30/2024**	**9 Months**
County:	**Washington**	**AADT:**	**13,300**	MAP
Traffic Control:	**All-Way Stop**	**Area Type:**	**Urban**	
		GPS Coordinates:	**43.221069, -88.142373**	

TOTAL CRASHES: 24

AVG. CRASHES/YEAR: 4.2

CRASH RATE: 0.86 per MEV

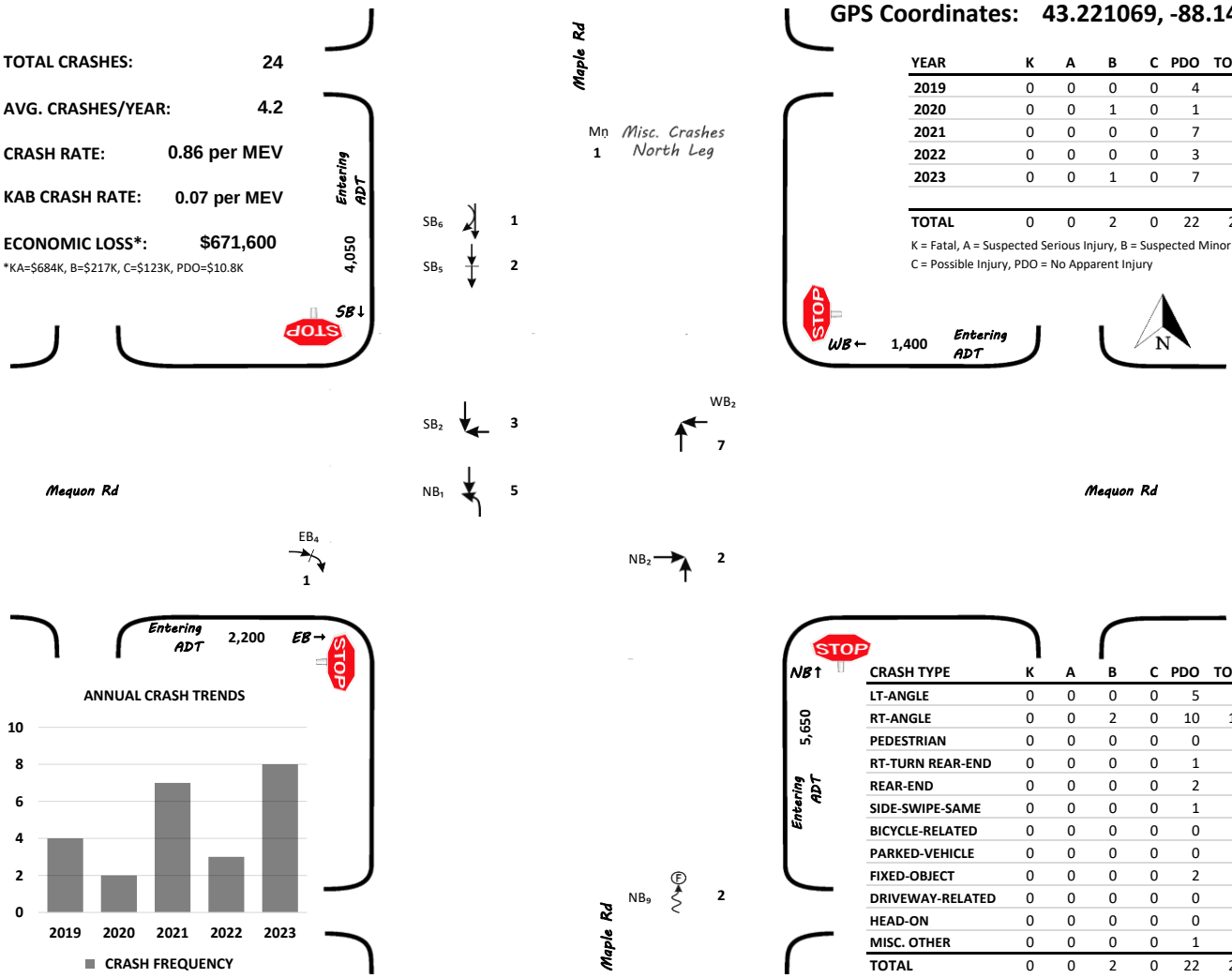
KAB CRASH RATE: 0.07 per MEV

ECONOMIC LOSS*: $671,600

*KA=$684K, B=$217K, C=$123K, PDO=$10.8K

YEAR	K	A	B	C	PDO	TOT.	ECON. LOSS
2019	0	0	0	0	4	4	$ 43,200
2020	0	0	1	0	1	2	$ 227,800
2021	0	0	0	0	7	7	$ 75,600
2022	0	0	0	0	3	3	$ 32,400
2023	0	0	1	0	7	8	$ 292,600
TOTAL	0	0	2	0	22	24	$ 671,600

K = Fatal, A = Suspected Serious Injury, B = Suspected Minor Injury,
C = Possible Injury, PDO = No Apparent Injury



ECON. LOSS COLOR SCALE

- > $1 M
- > $500 K
- Ped/Bike

ANNUAL CRASH TRENDS

CRASH TYPE	K	A	B	C	PDO	TOT.	ECON. LOSS
LT-ANGLE	0	0	0	0	5	5	$ 54,000
RT-ANGLE	0	0	2	0	10	12	$ 542,000
PEDESTRIAN	0	0	0	0	0	0	$ -
RT-TURN REAR-END	0	0	0	0	1	1	$ 10,800
REAR-END	0	0	0	0	2	2	$ 21,600
SIDE-SWIPE-SAME	0	0	0	0	1	1	$ 10,800
BICYCLE-RELATED	0	0	0	0	0	0	$ -
PARKED-VEHICLE	0	0	0	0	0	0	$ -
FIXED-OBJECT	0	0	0	0	2	2	$ 21,600
DRIVEWAY-RELATED	0	0	0	0	0	0	$ -
HEAD-ON	0	0	0	0	0	0	$ -
MISC. OTHER	0	0	0	0	1	1	$ 10,800
TOTAL	0	0	2	0	22	24	$ 671,600

ROAD CONDITIONS		
DRY	17	71%
WET	6	25%
SNOW	1	4%
ICE	0	0%
OTH.	0	0%
TOT.	24	

LIGHT CONDITIONS		
DAY	20	83%
DARK	4	17%
TOT.	24	

DRIVER BEHAVIOR		
ALCOHOL	0	0%
DRUGS	0	0%
SPEED	1	4%

SEASON		
SPRING	4	17%
SUMMER	5	21%
FALL	5	21%
WINTER	10	42%
TOT.	24	

FAILURE TO YIELD		
NB	3	13%
SB	4	17%
EB	1	4%
WB	1	4%
TBD	0	0%
TOT.	9	38%

DISRGRD. CONTROL		
NB	3	13%
SB	1	4%
EB	0	0%
WB	0	0%
TBD	0	0%
TOT.	4	17%

TBD = verification from crash report needed for direction

VEHICLE DAMAGE		
OTHER/UNK.	0	0%
NONE	1	2%
VERY MINOR	0	0%
MINOR	18	40%
MODERATE	18	40%
SEVERE	8	18%
VERY SEVERE	0	0%
TOTAL VEHICLES	45	

NOTES:

Injury crashes have been vetted.

DAY/TIME TRENDS

	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	UNK		TOT.
MON	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	MON	4
TUE	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	TUE	4
WED	1	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	2	1	0	0	0	0	0	0	0	WED	7
THU	0	0	0	0	0	0	0	2	1	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	THU	6
FRI	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	FRI	1
SAT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	SAT	1
SUN	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	SUN	1
	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	UNK		TOT.
TOT.	1	0	0	0	0	0	1	5	2	0	0	0	4	0	2	1	4	1	0	1	1	0	1	0	0	TOT.	24

Crash Data

Corresponds to Collision Diagram

Location:	**Maple Rd & Mequon Rd**	**From:**	**1/1/2019**		
Municipality:	**Germantown**	**To:**	**9/30/2024**	**Duration**	
County:	**Washington**	**AADT:**	**13,300**	**5**	**Years**
Traffic Control:	**All-Way Stop**	**Area Type:**	**Urban**	**9**	**Months**

Ref #	Label	Doc. #	Date	Crash Type	Time	Severity	Road Cond.	Light Cond.	Alc. Flag	Drug Flag	Speed Flag	Notes
1	EB_4	C9L0F7HX3D	10/2/2023	RT-TURN REAR-END	7 AM							Looking away
2	WB_2	C9L09H5JTW	9/4/2019	RT-ANGLE	4 PM							NB ran stop
3	WB_2	C9L0F1BQC7	10/31/2019	RT-ANGLE	7 AM		WET	DAY				WBR into NBT
4	WB_2	C9L0F1BQGH	9/23/2020	RT-ANGLE	12 PM	B						NB ran stop
5	WB_2	C9L09B7DHK	2/5/2021	RT-ANGLE	7 AM		SNOW	DAY				NB failed to yield
6	WB_2	C9L0FB0078	12/20/2021	RT-ANGLE	8 AM							Unknown fault
7	WB_2	C9L0JH1TKX	7/12/2022	RT-ANGLE	8 PM			DARK				Unknown fault
8	WB_2	C9L0JJ8VN4	5/17/2023	RT-ANGLE	4 PM	B						NB thought yield
9	NB_1	C9L09H5JSV	2/20/2019	LT-ANGLE	12 PM		WET					NBL failed to yield
10	NB_1	C9L0F1BQ9M	7/18/2019	LT-ANGLE	2 PM							SB slow but no stop
11	NB_1	C9L09CGFP6	1/23/2022	LT-ANGLE	12 PM		WET					SB failed to yield
12	NB_1	C9L09JDL2V	1/10/2023	LT-ANGLE	6 AM		WET	DAY				SB did not see NB
13	NB_1	C9L09DPGP9	8/8/2023	LT-ANGLE	3 PM							SB did not see NB
14	NB_2	C9L0F7HWZ3	2/23/2021	RT-ANGLE	10 PM			DARK				NB failed to yield
15	NB_2	C9L1NSNQ8B	12/14/2023	RT-ANGLE	8 AM							EB failed to yield
16	NB_9	C9L0F1BQJX	4/15/2021	FIXED-OBJECT	12 PM							WBL-Median sign
17	NB_9	C9L09DPGP7	7/19/2023	FIXED-OBJECT	12 AM			DAY				NB median sign
18	SB_2	C9L09JDL0D	3/13/2021	RT-ANGLE	4 PM							SB did not see stop
19	SB_2	C9L0FB00CX	12/14/2022	RT-ANGLE	5 PM		WET	DARK				SB failed to yield
20	SB_2	C9L0FB00DH	1/4/2023	RT-ANGLE	2 PM							SB failed to yield
21	SB_5	C9L0F7HWXQ	12/14/2020	REAR-END	7 PM			DARK				Looking away
22	SB_5	C9L09DPGLN	9/30/2021	REAR-END	4 PM							Brake issue
23	SB_6	C9L0990C49	6/24/2021	SIDE-SWIPE-SAME	7 AM							Changing lanes
24	M_0	C9L0JH1TLP	3/13/2023	MISC. OTHER	7 AM		WET				Y	SB Spin out icy road

Ref #	Label	Doc. #	Date	Crash Type	Time	Severity	Road Cond.	Light Cond.	Alc. Flag	Drug Flag	Speed Flag	Notes

REI

CIVIL & ENVIRONMENTAL
ENGINEERING, SURVEYING

Stormwater Management Plan

Kwik Trip Store #631
STH 167 & Maple Rd
Village of Germantown
Washington County, WI

REI # 11757

COMPREHENSIVE
SERVICES WITH
PRACTICAL
SOLUTIONS

Stormwater Management Plan For:

Kwik Trip Store #631
STH 167 & Maple Rd
Village of Germantown
Washington County, WI

REI # 11757

Prepared For:
Kwik Trip, Inc.
1813 Kramer Street
La Crosse, WI 54602

10/9/2024

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2.0 Site Soils Evaluation
3.0 Water Quality
4.0 Peak Flow Reduction
5.0 Infiltration Performance
6.0 Protective Area Setbacks
7.0 Erosion Control Plan
8.0 Long Term Maintenance
9.0 References

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Sheet STM-1 (Appendix 3&4): Post Development Watershed Areas

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Appendix 2 Site Soils Information
Appendix 3 Water Quality Calculations & WinSLAMM Inputs
Appendix 4 Post-Development Conditions Peak Flow Analysis
Appendix 5 Detention Pond Safe Passage Analysis
Appendix 6 USLE Map & Calculations
Appendix 7 Storm Water Management Maintenance Schedule and Procedures

Executive Summary

The proposed project consists of constructing a new Kwik Trip convenience store, vehicle fueling, parking and driving surfaces, and miscellaneous other amenities. The development will occur on a 4.36-acre property located at 607 E Pioneer Street within the City of Crandon, Forest County, Wisconsin. Land disturbance associated with the project is estimated to at 3.8 acres. The project site is a redevelopment and is subject to the post-construction stormwater requirements for a redevelopment site found within NR 151.121 - NR 151.126. The development will also require compliance defined within the *Village of Germantown Post-Stormwater Ordinance* [1] and runoff management requirements defined within the *MMSD Rules and Regulations* [2].

Stormwater Management requirements will be achieved utilizing overland flow coupled with a storm sewer conveyance system that routes stormwater runoff to a proposed wet detention pond. The wet detention pond will treat and detain the stormwater runoff prior to discharging it the public storm sewer system in Maple Road.

Although the overall site exceeds the peak flow requirements defined in the *MMSD Rules and Regulations* [2], the peak flow leaving the wet detention pond meets said requirement. The exceedance of the overall site is due to undetained perimeter area (almost entirely greenspace) having a higher peak flow than what is required for the overall site. However, the perimeter greenspace, in all likelihood, would meet the peak volume requirements stated in the *MMSD Rules and Regulations* [2]. For this reason, REI's professional opinion is that the site meets all required post-construction stormwater management performance standards. Additional detail relative to the stormwater management system design can be found within the report, appendices, stormwater figures, and plan set.

1.0 Introduction and Overview of the Proposed Project

Project Owner: Kwik Trip, Inc.

Project Location: STH 167 & Maple Road

Project City: Village of Germantown

Project County/State: Washington County, WI

Property Area: 4.36 Acres

Area of Land Disturbance: 3.8 Acres

Existing Site Description: The existing site consists of a 9,200 sq. ft. building with associated parking and driving surfaces. Runoff is generally in the southwest direction towards Maple Road.

Proposed Development: The proposed development consists of a new Kwik Trip convenience store, vehicle fueling, parking and driving surfaces, and miscellaneous other amenities. Hydrology in the proposed condition will be similar to the existing condition. Runoff of the majority of the proposed development will be conveyed to a wet detention pond in the southwest corner of the property, which will provide stormwater management for the site.

WDNR Compliance: Wisconsin Administrative Code ch. NR 151 and NR 216

Development Classification: Re-Development
(Refer to Appendix 1 for NR 151 post-construction performance standards)

Local Compliance: *Village of Germantown Post-Construction Stormwater Ordinance* [1]
MMSD Rules and Regulations [2]

Anticipated Construction Start Date: 4/1/2025

2.0 Site Soils Evaluation

Additional data regarding the site soils can be found in **Appendix 2** of this report.

Table 1A
Soils Summary per the *Web Soil Survey* [3]

Soil Type	USGS Classification	Infiltration Rate (in/hr)	Hydro Group	Water Table	Restrictive Depth
HmB2, HmC2	Loam	0.06 - 0.20	D	>80 in.	20 - 40 in.
HmD2	Loam	0.06 - 0.20	D	>80 in.	20 - 36 in.
OuB2	Silt Loam	0.06 - 0.20	C	~24 - 42 in.	22 - 40 in.
Sf	Sand	-	D	~60 - 80 in.	>80 in.
VsA	Silt Loam	0.60 - 2.00	B/D	~0 - 24 in.	>80 in.

Table 1B
Soils Summary per Onsite Exploration

Boring/Test Pit #	Stormwater Facility	Stormwater Facility Bottom Elv	Infiltration Rate (in/hr)	Water Table Elv	Bedrock Elv
9	Wet Det. Pond	853.00	0.04	856.4*	N/A

note: infiltration rate is based off of the limiting soil layer
***Per Geotech report, the water table elevation at B-9 is 8-ft below existing grade. Existing grade at the wet detention pond location is elevation 862± (existing grade per Geotech report is 864.4 is same location). Elevation shown on Table 1B is based on Geotech report.**

3.0 Water Quality

Calculation Reference: Appendix 3

Figure Reference: STM-1

Software: WinSLAMM Version 10.5

Rainfall: Green Bay, 1969 (March 29 - November 25)

State Stormwater Requirements (WDNR) 40% Total Suspended Solids (TSS) reduction of parking lots and roads in the post-development conditions as compared to no controls.

Local Stormwater Requirements (Village of Germantown) *Village of Germantown Post-Construction Stormwater Ordinance* [1] refers to current state standards for water quality requirements.

Table 2
Water Quality Device Summary

Water Quality Device	Permanent Pool Area (sf)	Storage Depth (in)	Control Structure
Wet Detention Pond	5,564	78	Manhole with weir plate having a primary 4"-dia. orifice and a secondary 5"-dia. orifice

Table 3
Total Suspended Solids (TSS) Removal Summary

Development Type	Required (% of No Control)	TSS Generated (lbs)	TSS Leaving Site (lbs)	% TSS Removed
Redevelopment	40	1,854	506.6	72.68

4.0 Peak Flow Reduction

Post-development Runoff Calculation Reference: Appendix 4

Post-development Runoff Figure Reference: STM-1

Software: HydroCAD Version 10.20-5a

Rainfall Reference: NRCS Rainfall Distributions and 24-hour Duration Rainfall Depths for each Wisconsin County[5]

Rainfall Distribution: MSE 3

State Stormwater Requirements: (WDNR) Since the project is classified as a redevelopment site it qualifies for the peak flow exemption as found within NR 151.123 (2) (b).

Local Stormwater Requirements (Village of Germantown) *Village of Germantown Post-Construction Stormwater Ordinance* [1] refers to runoff management requirements defined within the *MMSD Rules and Regulations* [2] which states that redevelopment sites having greater than one-half acre of new impervious are to have peak flow no higher than 0.15 cfs and 0.5 cfs multiplied by the area of the site for the 2-year and 100-year storm events, respectively.

Stormwater Device Summary: Refer to Table 2

Table 4
Peak Flow Summary

Development Condition	2-yr Storm Peak Flow	100-yr Storm Peak Flow
Peak Flow Runoff Requirment (Site Area = 4.364 ac.)	0.65	2.18
Post-Development w/o detention	12.54	35.17
Post-Development (Total Site)	1.35	5.92
Post-Development (From Wet Det. Pond)	*0.63*	*2.01*

note: peak flow units are in cfs

Table 5 summarizes the results of the maximum water surface elevation in each pond
Infiltration rates for each device (if applicable) were ignored for this analysis

Calculation Reference: Appendix 5

Figure Reference: STM-1 (Appendix 4)

Table 5
100-year Peak Water Elevation

Stormwater Device	100-Year Peak Elevation	Top of Pond Elevation	Overflow Elevation
Wet Det. Pond	863.49	864.50	863.50

5.0 Infiltration Performance

Since the project site is classified as a redevelopment site, it qualifies for the infiltration exemption as found within NR 151.123 (3) (b) 3. The *Village of Germantown Post-Construction Stormwater Ordinance* [1] refers to NR 151 regulation.

6.0 Protective Area Setbacks

There are no natural features located near the proposed project improvements that require special consideration for this project.

7.0 Erosion Control Plan

An erosion control plan, and associated details, were developed for the proposed construction and are included within the construction plan set. The site contractor will be responsible for implementing and maintaining the erosion control measures throughout construction until they may be removed following site stabilization.

Plan Sheet Reference: Sheets C600-603

A Soil Loss & Sediment Discharge Calculation Tool (USLE) and accompanying Figure were completed to assure WDNR erosion control compliance and is included within **Appendix 6.**

8.0 Long Term Maintenance

Inspection and routine maintenance of the proposed structural and non-structural stormwater best-management practices will be required to ensure they continue to function following completion of the construction project. A maintenance schedule has been prepared and is included within **Appendix 7**. It will be the landowner's respsonsibility to document the inspections and ensure any followup action is completed in a timely manner.

9.0 References

1) Village of Germantown Post-Construction Stormwater Ordinance. Chapter 27. Post-Construction Stormwater Management. Village of Germantown. Code of Ordinances. June 2023.

2) MMSD Rules and Regulations. Chapter 13. Surface Water and Stormwater. Subchapter III. Stormwater Runoff Management Requirements. Milwaukee Metropolitan Sewerage District. March 2023.

3) Web Soil Survey of Washington County, Wisconsin. United States Department of Agriculture. Soil Conservation Service. **http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.**

4) Site Evaluation for Stormwater Infiltration. Technical Standard 1002. Wisconsin Department of Natural Resources. Conservation Practice Standards February 2004.

5) NRCS Rainfall Distributions and 24-hour Duration Rainfall Depths for each Wisconsin County. National Engineering Handbook (NEH) Part 650. Chapter 2. Appendix 1. United States Department of Agriculture.

REVIEW PLANS FOR:

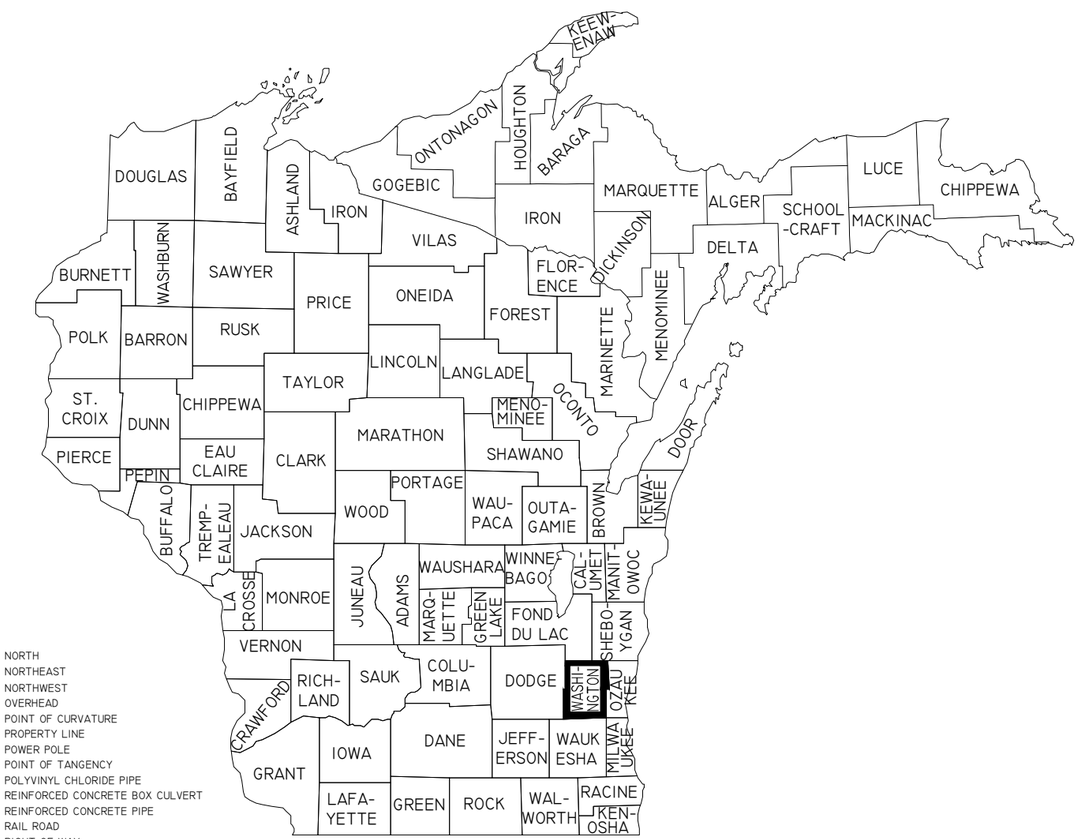
KWIK TRIP #631

VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WISCONSIN

INDEX OF SHEETS

C001	TITLE SHEET
C010	ALTA
C020	DEMO PLAN
C100	SITE KEYNOTE PLAN
C180	SITE CIRCULATION PLAN
C181	SITE DIMENSION PLAN
C200	GRADING PLAN
C201	GRADING PLAN DETAIL - SOUTH
C201.1	GRADING PLAN DETAIL - NORTH
C202	GRADING PLAN SPOT DETAIL - SOUTH
C202.1	GRADING PLAN SPOT DETAIL - NORTH
C203	CANOPY AND TANK GRADING DETAILS
C204	ACCESSIBILITY PLAN
C300	STORM SEWER PLAN
C400	UTILITY PLAN
C401	UTILITY NOTES
C500	SITE PLAN DETAILS
C501	SITE PLAN DETAILS
C502	SITE PLAN DETAILS
C600	EROSION CONTROL PLAN
C601	EROSION CONTROL NOTES
C602	EROSION CONTROL DETAILS
C603	EROSION CONTROL DETAILS
C700	LANDSCAPE PLAN
C701	LANDSCAPE PLAN
C702	LANDSCAPE PLAN
C703	LANDSCAPE DETAILS
C800	PHOTOMETRIC LIGHTING PLAN

TOTAL SHEETS = 28



LIST OF STANDARD ABBREVIATIONS

&	AND	(N)	NORTH
AB	AUGER BORING	(NE)	NORTHEAST
ADT	AVERAGE DAILY TRAFFIC	(NW)	NORTHWEST
BC	BOTTOM OF CURB	OH	OVERHEAD
BM	BENCHMARK	PC	POINT OF CURVATURE
BOC	BACK OF CURB	P/L	PROPERTY LINE
BR	BOTTOM OF RAMP	PP	POWER POLE
BS	BOTTOM OF STEPS	PT	POINT OF TANGENCY
BW	BOTTOM OF WALL	PVC	POLYVINYL CHLORIDE PIPE
CB	CATCH BASIN	RCB	REINFORCED CONCRETE BOX CULVERT
CMAC	CORRUGATED METAL ARCH CULVERT	RCP	REINFORCED CONCRETE PIPE
CMBC	CORRUGATED METAL BOX CULVERT	RR	RAIL ROAD
CMP	CORRUGATED METAL PIPE	R/W	RIGHT OF WAY
CO	CLEANOUT	(S)	SOUTH
CONC.	CONCRETE	SAN	SANITARY SEWER
CPP	CORRUGATED PLASTIC PIPE	SB	SOIL BORING
DGB	DENSE GRADED BASE	SS	STORM SEWER
DIP	DUCTILE IRON PIPE	STM	STORM
D/S	DOWNSTREAM	(SW)	SOUTHWEST
(E)	EAST	TC	TOP OF CURB
ELEV.	ELEVATION	TBR	TO BE REMOVED
EOG	EDGE OF GRAVEL	TLE	TEMPORARY LIMITED EASEMENT
FFE	FINISHED FLOOR ELEVATION	TNH	TOP NUT FIRE HYDRANT
FG	FINISH GRADE	TP	TEST PIT
F.O.	FIBER OPTIC	TR	TOP OF RAMP
INL	INLET	TYP.	TYPICAL
HDPE	HIGH DENSITY POLYETHYLENE PIPE	TS	TOP OF STEPS
HMA	HOT MIX ASPHALT	TW	TOP OF WALL
HP	HIGH POINT	U/S	UPSTREAM
IE	INVERT ELEVATION	VAR.	VARIES
LF	LINEAL FEET	(W)	WEST
LP	LOW POINT		
MEG	MATCH EXISTING GRADE		
MH	MANHOLE		

LEGEND

- BENCHMARK
- 1" IRON BAR
- EXISTING MANHOLE
- EXISTING TELEPHONE MANHOLE
- EXISTING STORM SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING HYDRANT
- EXISTING WATER VALVE
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING WATER SHUTOFF
- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- EXISTING GAS VALVE
- EXISTING CURB INLET
- EXISTING WELL
- TEST PIT LOCATION
- SB1 SOIL BORING
- AC EXISTING AIR CONDITIONING UNIT
- GM EXISTING GAS METER
- EM EXISTING ELECTRIC METER
- EXISTING UTILITY PEDESTAL
- EXISTING RAILROAD TRACKS
- EXISTING TREE LINE
- EXISTING GUY POLE
- TV EXISTING CABLE TV
- FO EXISTING FIBER OPTIC CABLE
- G EXISTING UNDERGROUND GAS
- E EXISTING UNDERGROUND ELECTRIC
- T EXISTING UNDERGROUND TELEPHONE
- OH EXISTING OVERHEAD UTILITIES
- W EXISTING WATER MAIN
- SS EXISTING STORM SEWER
- SAN EXISTING SANITARY SEWER
- EXISTING PROPERTY LINE
- PROPOSED HANDICAP PARKING
- PROPOSED CURB STOP
- PROPOSED HYDRANT
- WV PROPOSED WATER VALVE
- SAN PROPOSED SANITARY SEWER
- SS PROPOSED STORM SEWER
- F.M. PROPOSED FORCE MAIN
- SAN. LAT. PROPOSED SANITARY SEWER LATERAL
- W.S. PROPOSED WATER LATERAL
- W PROPOSED WATER MAIN
- PS PROPOSED PUMP STATION
- MS PROPOSED SANITARY MANHOLE
- MR PROPOSED STORM MANHOLE
- PROPOSED CURB INLET
- PROPOSED CATCH BASIN
- CO PROPOSED CLEANOUT
- PROPOSED DRAINAGE FLOW
- 3% PROPOSED SLOPE
- PROPOSED CURB & GUTTER
- PROPOSED REJECT CURB & GUTTER
- PROPOSED MOUNTABLE CURB & GUTTER
- 1178 EXISTING GROUND CONTOUR(INTERVAL-1 FT.)
- 1180 PROPOSED GROUND CONTOUR(INTERVAL-1 FT.)
- 1256.50 PROPOSED SPOT ELEVATION (TOP OF CURB)
- 1256.00 PROPOSED SPOT ELEVATION (BOTTOM OF CURB)
- PROPOSED SILT FENCE
- PROPOSED INLET PROTECTION
- PROPOSED RIPRAP
- PROPOSED EROSION MAT
- PROPOSED SAWCUT
- PROPOSED DRAINAGE SWALE

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TITLE SHEET
CONVENIENCE STORE #631
STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY NAP
SCALE GRAPHIC
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C001

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C001-TITLE SHEET.DWG LAYOUT: TITLE
PLOTTED: OCT 08, 2024 - 3:23PM PLOTTED BY: NATHANP

VICINITY MAP – NOT TO SCALE

DETAIL OF ACCESS POINT PER DOCUMENT NO. 452033
NOT TO SCALE
RIGHT OF WAY PLAT T 03-1(85) PARCEL 41
ID NO. 1103-1-30

ALTA/NSPS LAND TITLE SURVEY
STORE 631 - GERMANTOWN

Known as N112 W18741 Mequon Road and W188N1116, W188N1175B & W188 N11762 Maple Road, in the Village of Germantown, Washington County, Wisconsin.

Lot Two (2) of CERTIFIED SURVEY MAP No. 2890 recorded in the Office of the Register of Deeds for Washington County, Wisconsin on April 29, 1986, in Volume 16, Pages 129-132, as Document No. 490661, said certified survey map being a part of the Northwest 1/4 of the Northwest 1/4 of Section 28 and Northeast 1/4 of the Northeast 1/4 of Section 29, Township 9 North, Range 20 East, in the Village of Germantown, Washington County, Wisconsin.

Prepared for: Kwik Trip, Inc.
Survey No. 157610-RMK

A. Basis of Bearings
Bearings are based on the North line of the Northwest 1/4 of Section 28-9-20, which bears North 88°36'30" East, Wisconsin State Plane Coordinate System, South Zone (NAD83/2011).

B. Title Commitment
This survey was prepared based on First American Title Insurance Company National Commercial Services title commitment number NCS-1212460-MAD, commitment date March 19, 2024, which lists the following easements and/or restrictions from schedule B-II:

1-3, 5, 10. Visible evidence shown, if any.

4, 6-9, 19. Not survey related.

11. Rights for entrance to, maintenance, construction, or repair of any utility structures, improvements or services which may be under the surface of the portion of the insured premises laying within vacated Maple Road, pursuant to Section 66.1005(2) (a) Wisconsin Statuas.

Resolution No. 13-96, resolution regarding discontinued portion of Maple Road as set contained in Quit Claim Deed recorded May 09, 1996 in Volume 889 of Records, Page 586 as Document No. 491363. Lies within or crosses the surveyed property - Its location is shown.

12. Easements, dedications, reservations, provisions, relinquishments, recitals, certificates, and any other matters as provided for or delineated on Certified Survey Map No. 2890 recorded April 29, 1986, in Volume 16, Pages 129-132, as Document No. 490661 referenced in the legal description contained herein. Reference is hereby made to said plat for particulars. Lies within or crosses the surveyed property - Its location is shown.

13. Covenants, Conditions and Restrictions as set forth in document recorded on April 07, 1969 in Volume 463, Page 617 as Document No. 306921. Lies within or crosses the surveyed property - Its location is shown.

14. Covenants, Conditions and Restrictions as set forth in Quit Claim Deed recorded on May 07, 1993 in Volume 790 of Records, Page 86 as Document No. 452033. Does not lie within or cross the surveyed property - Its location is shown-see detail. Access point is on the South side of Lannon Road, East of Surveyed property.

15. Covenants, Conditions and Restrictions as set forth in deed recorded on May 14, 1964 in Volume 827, Page 126 as Document No. 467059. Lies within or crosses the surveyed property - Its location is shown.

16. Holding Tank Agreement:
Dated: September 15, 1986
Parties: Village of Germantown, Washington County, State of Wisconsin and Ron Robbins a/k/a Ronald W. Robbins
Recorded: September 23, 1986 in Volume 910 of Records, Page 119
Instrument No.: 498849. Lies within or crosses the surveyed property - It is a blanket easement - location of tank, vent and cleanout shown per 1989 survey by Robert Pagels.

17. Holding Tank Agreement:
Dated: September 13, 1991
Parties: Village of Germantown, Washington County, State of Wisconsin and Kilbourn State Bank
Recorded: September 30, 1991 in Volume 1144, Page 552
Instrument No.: 585808. Lies within or crosses the surveyed property - it is a blanket easement - location of tank, vent and cleanout shown per 1989 survey by Robert Pagels.

18. Utility Easement to Wisconsin Electric Power Company and Wisconsin Bell, Inc., dated October 07, 1991, recorded/filed October 25, 1991 in Volume 1149, Page 649 as Document No. 587363. Lies within or crosses the surveyed property - Its location is shown.

C. Flood Note
According to flood insurance rate map of the Village of Germantown, community panel number 55131C0357D, effective date of 11/20/2013, this site falls in zone X (areas determined to be outside the 0.2% annual chance floodplain).

D. Parking Spaces
There are 33 total parking spaces consisting of 31 regular and 2 handicapped parking spaces marked on this site.

E. Elevations
Elevations refer to NAVD88 Datum. Starting benchmark - Northwest 1/4 corner Section 28-9-20. Brass cap monument elevation 877.87'

F. Municipal Zoning
The zoning information listed below is taken from a Zoning Report prepared by The Village of Germantown, dated May 30, 2024.

Zoning Classification: B-3 General Business; Highway Interchange Over lay District (HIA)
Setback Requirements, not specified in letter. Listed setbacks per Zoning code provided with Letter as follows:

Principle structures	
Lot Frontage at Setback	Minimum 50 ft.
Front yard	None, except that the front yard for newly constructed principal buildings shall be the average of the front yard of adjoining or neighboring properties.
Side yards	None, except as required in Sections 17.07 and 17.50
Rear yards	Minimum 25 ft.
Number of stories	Maximum 2 1/2
Accessory Building:	
Front yard	Minimum 5 ft.
Side yards	Minimum 5 ft.
Rear yard	Minimum 5 ft.
Building Height:	
Principal building	Maximum 45 ft.
Accessory building	Maximum 15 ft.
HIA - Highway Interchange Area District (Overlay District)	
Setback	Setback from intersecting highway shall be 160' from Centerline or 100' from the right of way line (SHOWN), whichever is greater, or 50 feet from the right-of-way of a frontage road

Parking Requirements 1 space for each 200 square feet of floor area, plus 1 space for each 2 employees.
The subject parcel is located within a wellhead protection area, which may impact sign design and placement.

G. Notes
As to table A item 11
Surveyor's responsibility to coordinate markings shall be limited to one marking request to 811 (national "call before you dig" number) based on the property address, as provided by the client.
Note to the client, insurer, and lender - With regard to Table A, item 11, information from the sources checked within will be combined with observed evidence of utilities pursuant to Section 5.E.iv. to develop a view of the underground utilities. However, lacking excavation, the exact location of underground features cannot be accurately, completely, and reliably depicted. In addition, in some jurisdictions, 811 or other similar utility locate requests from surveyors may be ignored or result in an incomplete response.
As of the field date indicated below in certificate (most recent site visit/inspection), it appears some underground utilities were not marked. This affected the surveyor's assessment of the location of the utilities resulting in partial illustration and/or mapping per plan. Where additional or more detailed information is required, the client is advised that excavation may be necessary.

There are proposed changes in street right of way lines. Document 467059 (Exception 15 - blue hatch) indicates area subject to dedication upon request.

There is no visible evidence of recent street or sidewalk construction or repairs observed in the process of conducting the fieldwork.

The area computed land area of Lot 2 does not match CSM 2890, and is less than the platted Lot by 1,956 s.f. or 0.045 ac.

Sanitary manhole note - from Timothy Zimmerman at Village (tzimmerman@germantownwi.gov)
- Misc Manhole near entrance to Maple Road is a Sampling manhole. We find the manhole full of water.

To: Kwik Trip, Inc., a Wisconsin corporation
First American Title Insurance Company National Commercial Services

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS and includes Items 1, 2, 3, 4, 5, 6(a), 6(b), 7(a), 7(c), 8, 9, 11(a), 11(b), 14, 17, 18, 20(a) and 20(b) of Table A thereof. The fieldwork was completed on May 23, 2024.

Date of Plat or Map: June 12, 2024

I CERTIFY, that this survey was prepared under my supervision and is correct to the best of my professional knowledge and belief and complies with Chapter A-E 7 of the Wisconsin Administrative Code.

John P. Casucci
Professional Land Surveyor
Registration Number S-2055
john.casucci@rasmith.com

WISCONSIN JOHN P. CASUCCI S-2055 DOUGLAS WI LAND SURVEYOR

raSmith 10145 W. Brewster Road Brookfield, WI 53005-5938 (262) 783-1000

SHEET 1 OF 1

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SCALE
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ALTA
CONVENIENCE STORE #631
STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

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SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C010

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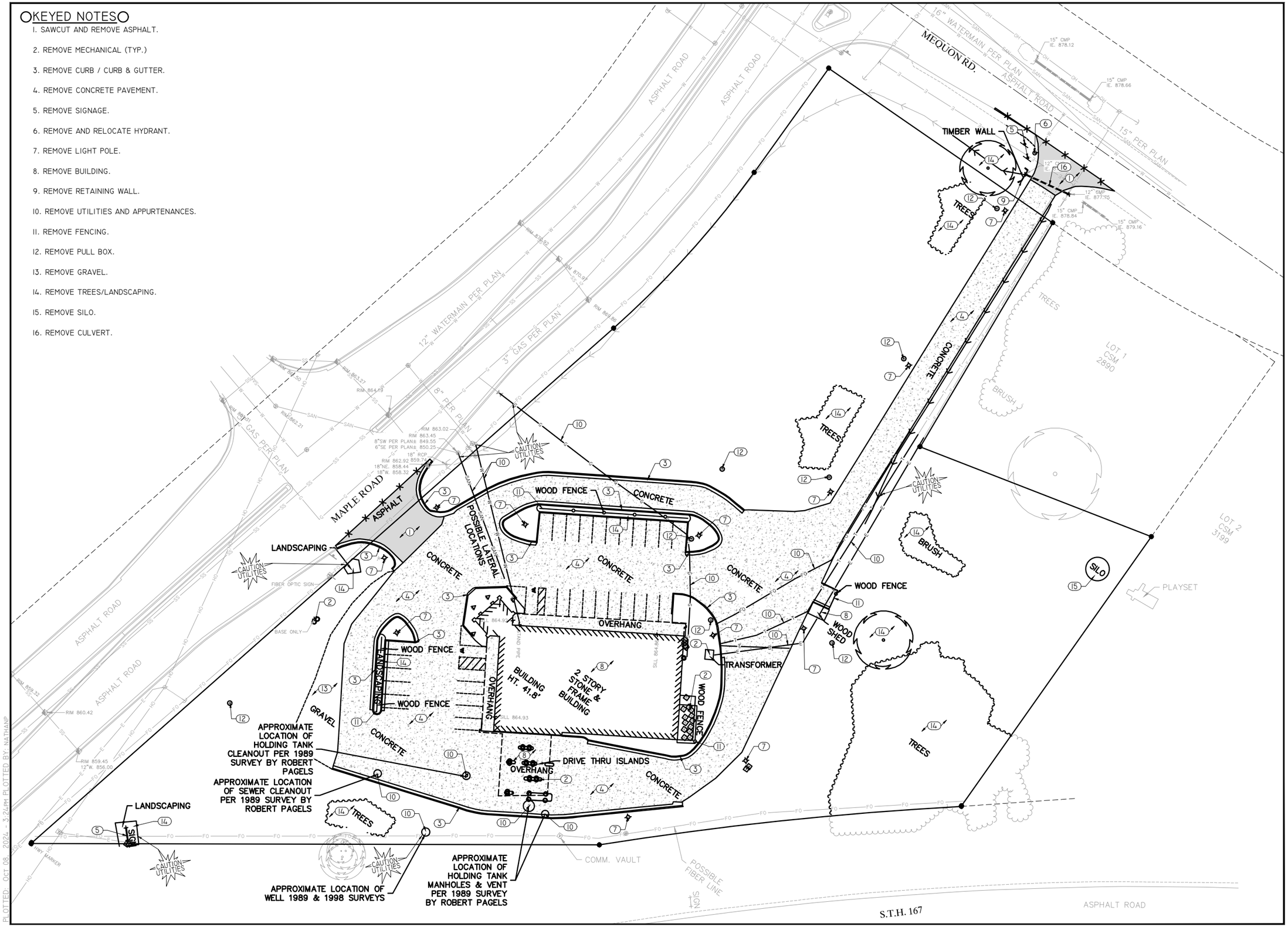
PLOTTED: OCT 08, 2024 - 3:23PM PLOTTED BY: NATHANP

KEYED NOTES

1. SAWCUT AND REMOVE ASPHALT.
2. REMOVE MECHANICAL (TYP.)
3. REMOVE CURB / CURB & GUTTER.
4. REMOVE CONCRETE PAVEMENT.
5. REMOVE SIGNAGE.
6. REMOVE AND RELOCATE HYDRANT.
7. REMOVE LIGHT POLE.
8. REMOVE BUILDING.
9. REMOVE RETAINING WALL.
10. REMOVE UTILITIES AND APPURTENANCES.
11. REMOVE FENCING.
12. REMOVE PULL BOX.
13. REMOVE GRAVEL.
14. REMOVE TREES/LANDSCAPING.
15. REMOVE SILO.
16. REMOVE CULVERT.



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KWIK STAR STORES

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SCALE
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DEMO PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

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PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C020

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PLOTTED: OCT 08, 2024 - 3:24PM PLOTTED BY: NATHANP

KEYED NOTES

0 SF — 1. ASPHALT PAVEMENT. SEE DETAIL 1/C500.

37,161 SF — 2. 6" DEPTH (MIN.) CONCRETE SLAB-ON-GRADE WITH #3 REBAR, 3' O.C. CONCRETE SEALER: TK-26UV. SEE DETAIL 6/C500.

61,322 SF — 3. 8" DEPTH (MIN.) CONCRETE SLAB-ON-GRADE WITH #4 REBAR, 4' O.C. CONCRETE SEALER: TK-26UV. SEE DETAIL 6/C500.

4. NOT USED.

4,627 SF — 5. 6" CONCRETE WALK. SEE DETAIL 2/C500. CONCRETE SEALER: TK-26UV

73,095 SF / UNDISTURBED=22,357 SF — 6. LANDSCAPE AREA. SEE SHEET L1.

7. CURB TYPE CHANGE.

8. 18" CURB AND GUTTER, SEE DETAIL 9/C500.

9. 18" REJECT CURB AND GUTTER, SEE DETAIL 9/C500.

10. TRANSITION CURB & GUTTER. SEE DETAIL 4/C500.

11. STANDARD CURB & GUTTER TERMINATION. SEE DETAIL 5/C500.

12. TAPER CURB FROM FLUSH TO FULL HEIGHT OVER 6' LENGTH. SEE DETAIL 5A/C500.

13. A.D.A. ACCESSIBLE PARKING SPACE WITH LOADING ZONE. PROVIDE APPROPRIATE STRIPING AND PAVEMENT MARKINGS. SEE SHEET C204.

14. OFF-STREET PARKING STALLS STRIPING - 4" WIDE STALL LINES, USE HIGH VISIBILITY YELLOW PAINT.
SPACES PROVIDED
(3) 8.9' x 20.0' (MIN.) GENERAL PARKING
(7) 9.1' X 20.0' (MIN.) GENERAL PARKING
(19) 9.5' X 20.0' (MIN.) GENERAL PARKING
(10) 9.7' X 20.0' (MIN.) GENERAL PARKING
(2) 8.0' x 20.0' ACCESSIBLE PARKING WITH
(1) 11.0' x 20.0' LOADING ZONE
(2) 12.9' x 20.0' ACCESSIBLE PARKING WITH
(1) 5.0' x 20.0' LOADING ZONE

15. EXTERNAL TRASH ENCLOSURE TO MATCH BUILDING. SEE ARCHITECTURAL DETAILS.

16. KWIK TRIP TRADEMARK SIGN SUBJECT TO SEPARATE REVIEW AND APPROVAL (VERIFY FINAL LOCATION WITH SIGN PERMIT). SEE DETAIL 12/C501.

17. 4" WIDE, HIGH VISIBILITY, PAVEMENT STRIPING, LANE MARKINGS AND TEXT. COLOR: HC MARKINGS- YELLOW, ALL OTHERS- YELLOW.

18. SIDEWALK RAMP (12:1 SLOPE MAX). SEE DETAIL 12/C500.

19. GAS TANK VENT STAND, SEE PIPING PLANS.

20. 30" HT., 6" DIA. CONCRETE FILLED PIPE BOLLARD INSTALLED AT EACH PARKING STALL ALONG BUILDING. SEE DETAIL 10/C500.

21. 40'-0" x 120'-0" DISPENSER ISLAND CANOPY. VERIFY SIZE, PLACEMENT, COLUMN AND FOOTING SIZE WITH CANOPY AND STRUCTURAL PLANS. CANOPY GRAPHICS PER OWNER.

22. CONCRETE ISLANDS W/ 6" EXPOSURE WITH FUEL DISPENSERS. DISPENSER PER OWNER.

23. 36" HT., 6" DIA. CONCRETE FILLED PIPE BOLLARD SIMILAR TO DETAIL 10/C500.

24. OUTDOOR MERCHANDISING AREA.

25. UNDERGROUND FUEL STORAGE TANKS PER OWNER. PROVIDE PIPING AND VENTING PER OWNER'S SPECIFICATIONS. SEE DETAIL 1/C501.

26. HC PVC BOLLARD SLEEVE PER OWNER. VAN ACCESS SIGNAGE AT 48" HT. STALL PARKING AT 60" HT. SEE SHEET C204.

27. STORM STRUCTURE. SEE SHEET SP3 FOR FURTHER STORM SEWER INFORMATION.

28. LP CAGE.

29. 'FREE AIR' COMPRESSOR. PROVIDE SIGNAGE PER OWNER.

30. SITE AREA LIGHT WITH CONCRETE BASE. SEE DETAIL 11/C500.

31. PVC IRRIGATION SLEEVE UNDER PAVEMENT. VERIFY W/ IRRIGATION PLAN FOR EXACT SIZE AND LOCATION BEFORE INSTALLATION. SEE DETAIL 3/C500.

32. 24'-0" x 50'-0" DISPENSER ISLAND CANOPY. VERIFY SIZE, PLACEMENT, COLUMN AND FOOTING SIZE WITH CANOPY AND STRUCTURAL PLANS. CANOPY GRAPHICS PER OWNER.

33. BIKE RACK.

34. VACUUM. SEE DETAIL 14/C500.

35. 18" EPOXY STOP BAR (YELLOW).

36. TRANSFORMER PAD.

37. DISCONNECT PAD.

38. NOT USED.

39. NOT USED.

40. NOT USED.

41. OUTDOOR ICE MERCHANDISING AREA.

42. PROPOSED GREASE INTERCEPTOR.

43. PICNIC AREA. SIMILAR TO DETAIL 2/C500. CONCRETE SEALER: TK-26UV

44. NOT USED.

45. PROPOSED COIN BOX. SEE DETAIL 13/C501.

46. PROPOSED REFUSE CONTAINER.

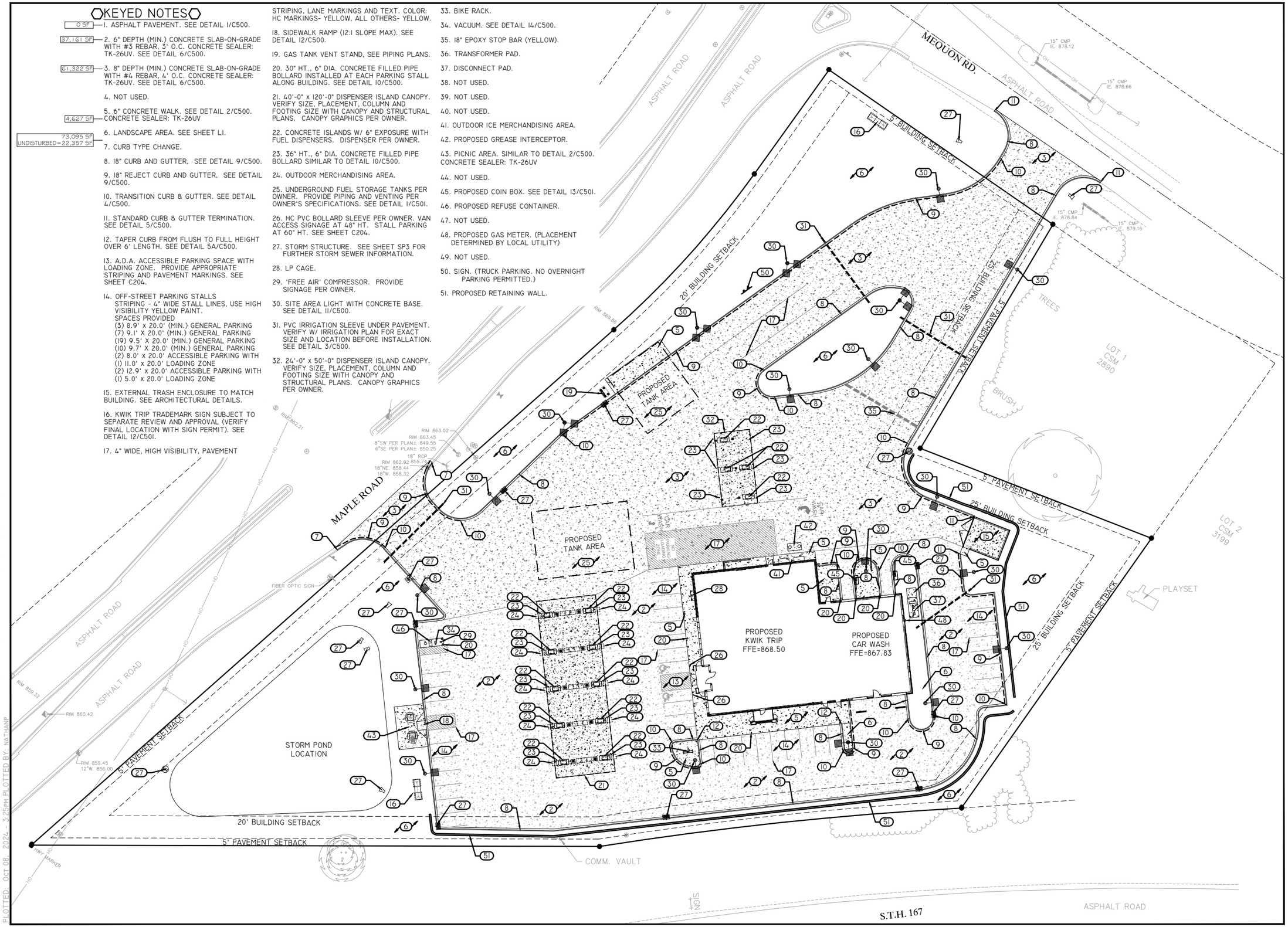
47. NOT USED.

48. PROPOSED GAS METER. (PLACEMENT DETERMINED BY LOCAL UTILITY)

49. NOT USED.

50. SIGN. (TRUCK PARKING. NO OVERNIGHT PARKING PERMITTED.)

51. PROPOSED RETAINING WALL.



DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C100-SITE KEYNOTE PLAN.DWG LAYOUT: C100
PLOTTED: OCT 08, 2024 - 3:25PM PLOTTED BY: NATHANP

KWIK TRIP STORES

KWIK STAR STORES

KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960

REI
CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING
REI Engineering, INC.
4080 N. 20TH AVENUE
WAUSAU, WISCONSIN 54401
PHONE: 715.675.9784 FAX: 715.675.4060
EMAIL: MAIL@REIENGINEERING.COM

SCALE
0 30 60

SITE KEYNOTE PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

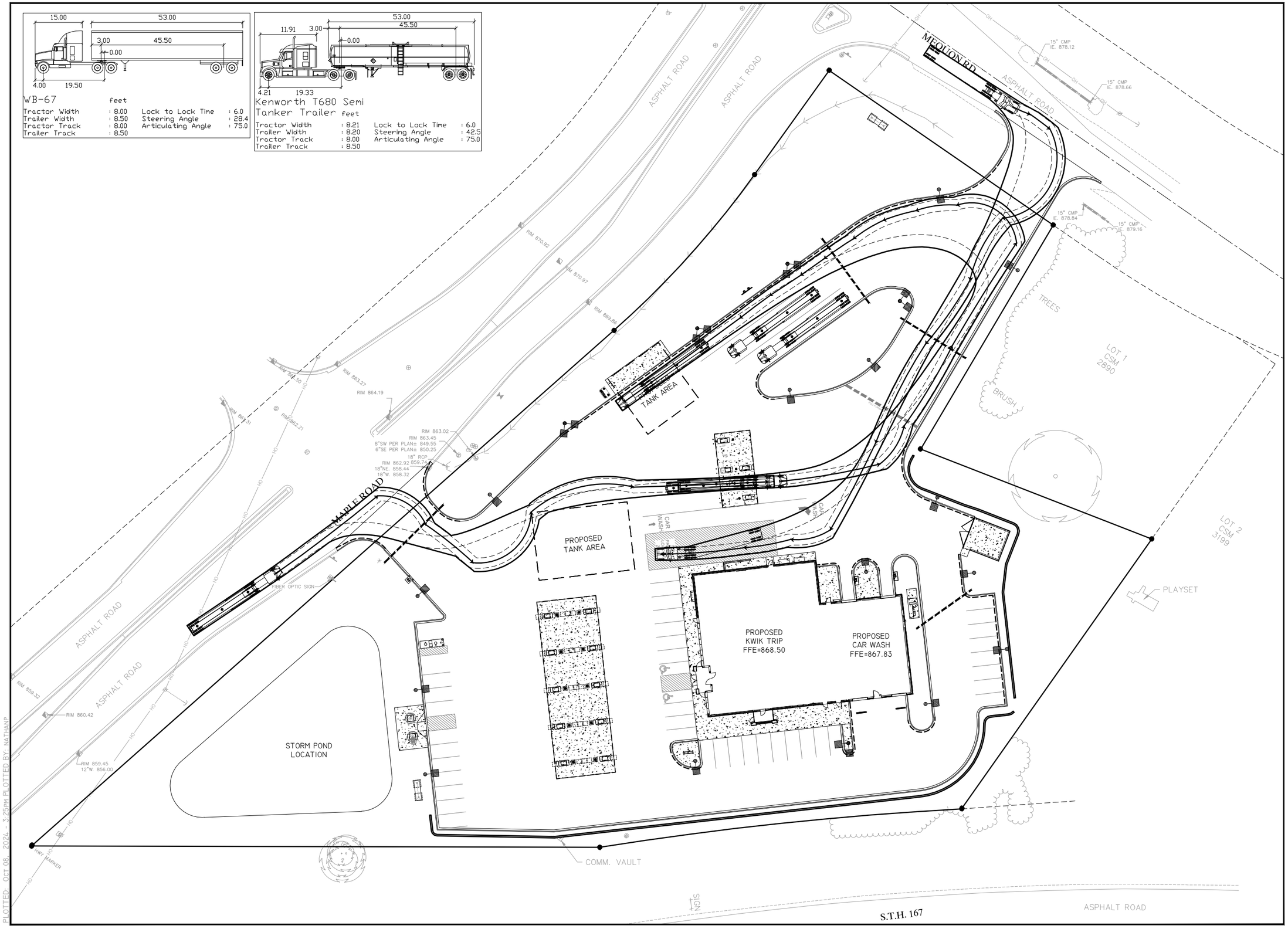
DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C100

WB-67 feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

Kenworth T680 Semi
Tanker Trailer feet

Tractor Width	: 8.21	Lock to Lock Time	: 6.0
Trailer Width	: 8.20	Steering Angle	: 42.5
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		



DRAWING FILE: Q:\I700-I1799\I1757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\I1757-C180-SITE CIRCULATION PLAN.DWG LAYOUT: C180
PLOTTED: OCT 08, 2024 - 3:25PM PLOTTED BY: NATHAMP

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SCALE
0 30 60

SITE CIRCULATION PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C180

LAYOUT NOTES:

1. PLAN PREPARED FROM AN ALTA/ACSM LAND TITLE SURVEY BY:
   R.A. SMITH, INC.
   262-781-1000
2. CURBS ARE DIMENSIONED TO BACK OF CURB.
3. CONVENIENCE STORE, AND ISLAND COMPLEXES ARE LOCATED FROM THE NORTHEASTERN MOST PROPERTY CORNER AND ALIGNED PARALLEL/PERPENDICULAR TO THE REFERENCE LINE LABELED N47°37'24"E, UNLESS OTHERWISE INDICATED ON THIS PLAN.
4. UNLESS SHOWN OTHERWISE ON THIS DRAWING, CONTRACTOR SHALL PROVIDE CONTROL JOINTS, CONSTRUCTION JOINTS, AND EXPANSION JOINTS IN SLAB ON GRADE, SIDEWALKS AND DRIVES. CONTROL JOINT MAXIMUM DISTANCE: WALKS- 8' O.C., ALL OTHERS- 15' O.C. SAW CUT CONTROL JOINTS MINIMUM ONE-QUARTER CONCRETE THICKNESS. EXPANSION JOINT MAXIMUM DISTANCE: WALKS- 24' O.C., ALL OTHERS- 40' O.C. DOWEL ALL EXPANSION JOINTS- MAXIMUM 24" O.C.
5. CONCRETE IN ISLAND COMPLEX SHALL BE SMOOTH FINISHED.
6. EXTERIOR CONCRETE SURFACES TO BE SEALED. CONCRETE SEALER:
   APR 15- OCT 31 USE: TK-26UV
   NOV 1- DEC 31 USE: TK-290
7. EXPANSION JOINTS SHALL BE DECK-O-FOAMED AND CAULKED WITH SLI.
8. DIAGONAL STRIPING LINES (HATCHING) IN THE " NO PARKING LOADING ZONE" AREA AND ANY OTHER AREA THAT IS HATCHED SHALL BE SPACED 5' ON CENTER.
9. LETTERING FOR ALL WORDING SUCH AS " NO PARKING LOADING ZONE" AND CARWASH SHOULD BE 12" TALL.
10. ALL DIAGONAL STRIPING SHALL BE ANGLED AS CLOSE TO DIMENSIONED ANGLE AS POSSIBLE.
11. CURBS AROUND THE RAISED FILLS SHALL BE PAINTED YELLOW.

- FOR INFORMATIONAL PURPOSES ONLY

SITE DATA:

ZONING DISTRICT:	B3
TOTAL SITE AREA - EXISTING/PROPOSED:	190,357 SF
EX. IMPERVIOUS:	61,276 SF (32%)
EX. PERVIOUS:	129,081 SF (68%)
PARKING REQUIREMENTS	
PARKING REQUIRED	SERVICE STATION = 1 STALL PER 2 EMPLOYEES +1
PARKING PROVIDED	42 STALLS
BUILDING HEIGHTS	
CONVENIENCE STORE	20.0'
CANOPY	19.5'

BUILDING SETBACKS
FRONT: 20'
REAR: 25'
SIDE: 5'

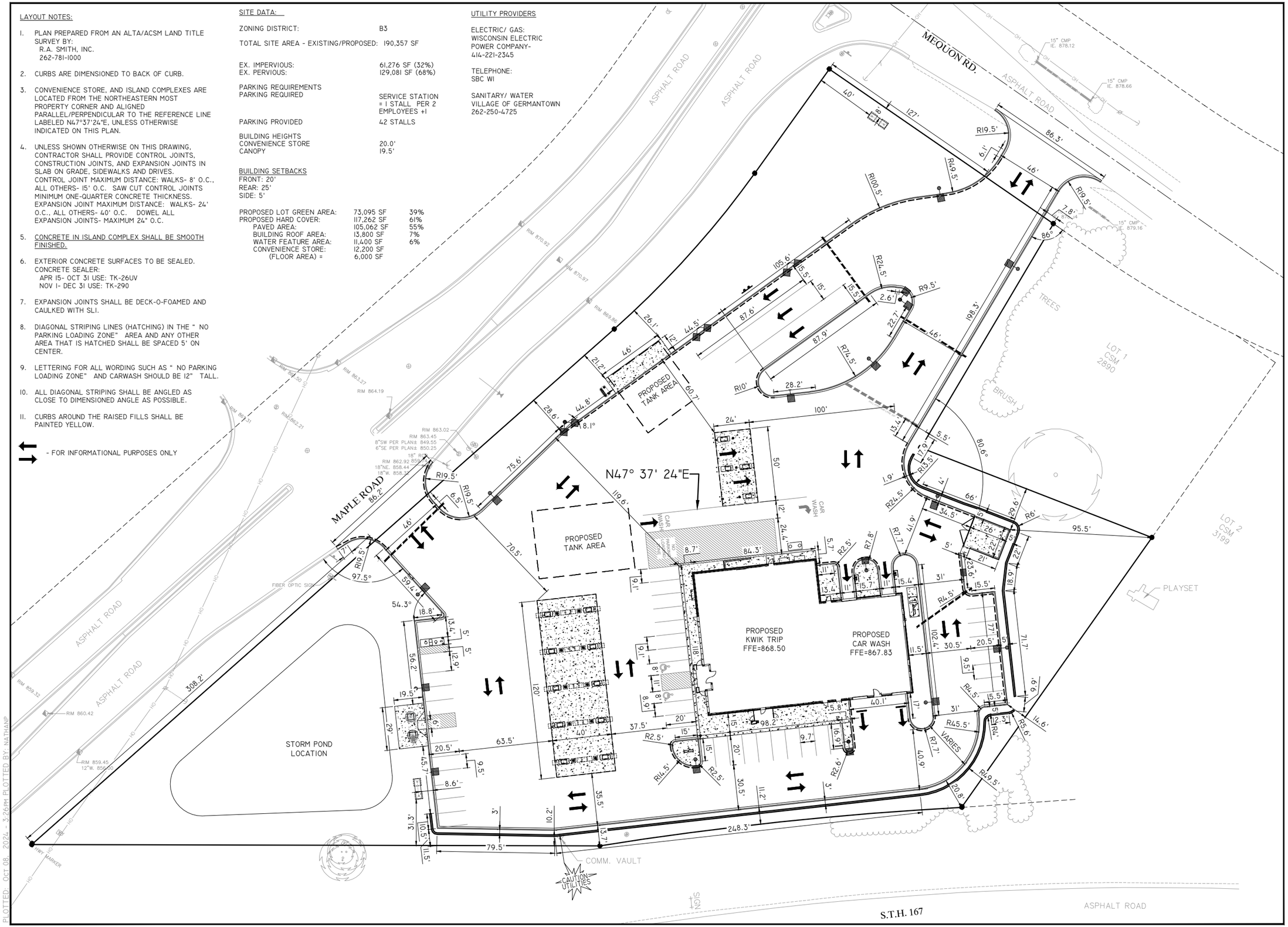
PROPOSED LOT GREEN AREA:	73,095 SF	39%
PROPOSED HARD COVER:	117,262 SF	61%
PAVED AREA:	105,062 SF	55%
BUILDING ROOF AREA:	13,800 SF	7%
WATER FEATURE AREA:	11,400 SF	6%
CONVENIENCE STORE:	12,200 SF	
(FLOOR AREA) =	6,000 SF	

UTILITY PROVIDERS

ELECTRIC/ GAS:
WISCONSIN ELECTRIC POWER COMPANY-
414-221-2345

TELEPHONE:
SBC WI

SANITARY/ WATER
VILLAGE OF GERMANTOWN
262-250-4725



DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C181-SITE PLAN.DWG LAYOUT: C181
PLOTTED: OCT 08, 2024 - 3:26PM PLOTTED BY: NATHANP

KWIK TRIP STORES

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EMAIL: MAIL@REIENGINEERING.COM

SCALE
0 30 60

SITE DIMENSION PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C181

NOTE: CONTRACTOR TO OBTAIN RIGHT-OF-WAY EXCAVATION PERMIT PRIOR TO BEGINNING SITE WORK.

CALL DIGGERS HOTLINE @ 1-800-242-8511 AT LEAST 3 WORKING DAYS PRIOR TO EXCAVATING.

CONSTRUCTION NOTE:

COORDINATE WITH OWNER FOR POSSIBLE CONSTRUCTION FENCING AND GATE LOCATIONS AND APPROPRIATE SIGNAGE INSTALLATION.

NOTES:

- REFER TO OTHER PROJECT PLANS AND INFORMATION RELATED TO THIS PROJECT PRIOR TO BEGINNING ANY GRADING WORK.

- PLAN PREPARED FROM ALTA/ACSM LAND TITLE SURVEY BY:
  R.A. SMITH, INC.
  262.781.1000

- CONTRACTOR SHALL LOCATE ALL UTILITIES WHICH MAY AFFECT THIS WORK AND NOTIFY OWNER OF ANY CONFLICTS.

- CONTRACTOR SHALL VERIFY ALL EXISTING AND PROPOSED ELEVATIONS PRIOR TO START OF CONSTRUCTION. VERIFY CRITICAL ELEVATIONS TO ENSURE CONFORMANCE WITH GRADING PLAN, PARTICULARLY WITH WALK AND/ OR PAVEMENTS TO REMAIN. MEET EXISTING GRADES ALONG STREETS, PROPERTY LINES AND DRIVEWAY ENTRANCES. RESTORE ALL EXISTING PAVEMENTS THAT REMAIN TO THEIR ORIGINAL, IF NOT BETTER CONDITION. NOTIFY OWNER OF ANY CONFLICTS.

- AREAS NOT PAVED AND TO BE LANDSCAPED SHALL RECEIVE MINIMUM OF 4" DEPTH COMPACTED TOPSOIL.

- CONTRACTOR SHALL COORDINATE GRADING AND INSTALLATION OF DRIVES IN R.O.W. WITH APPROPRIATE GOVERNMENT AGENCIES. OBTAIN APPROPRIATE PERMITS FOR GRADING AND DRAINAGE IN ALL R.O.W.

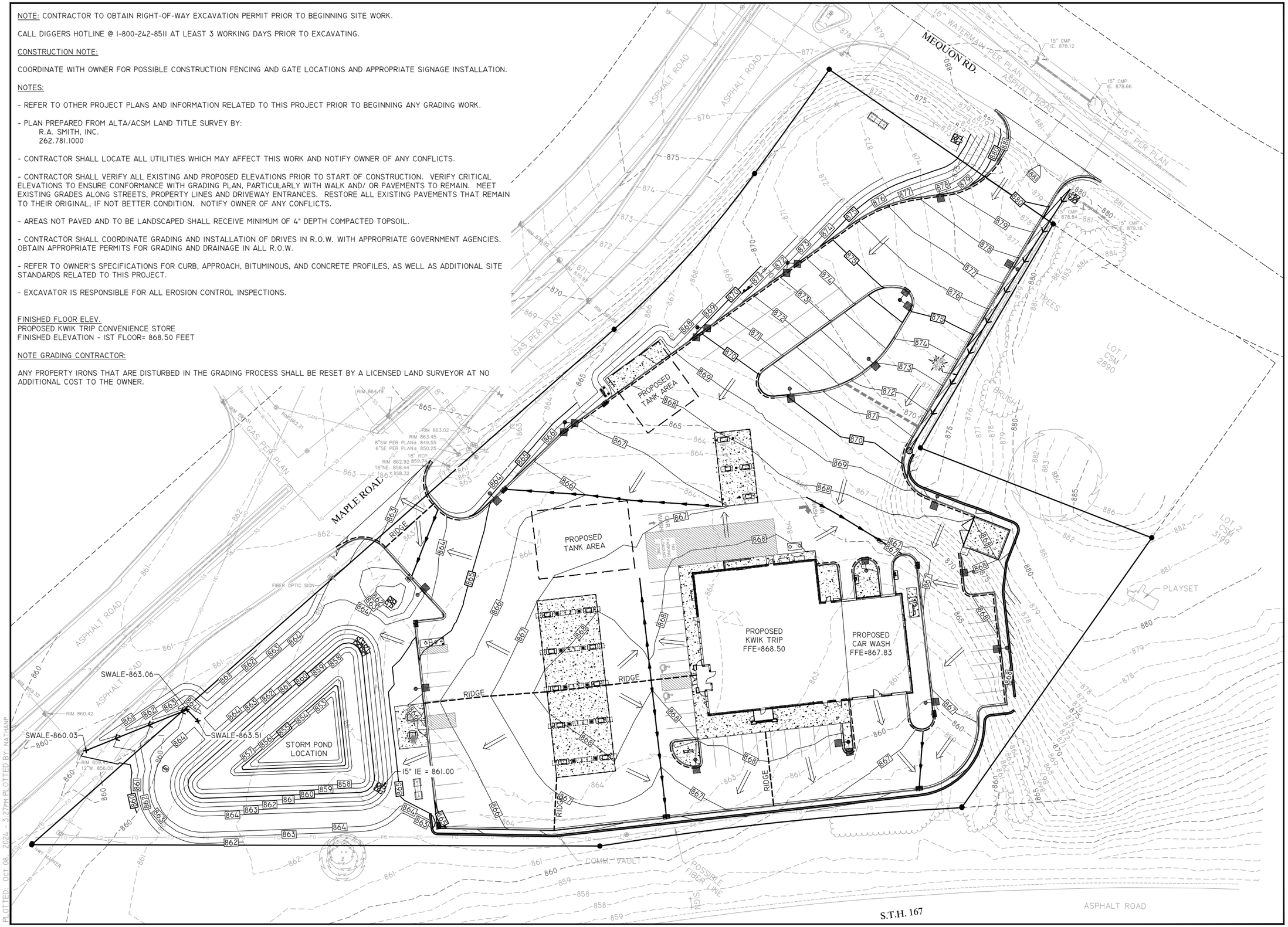
- REFER TO OWNER'S SPECIFICATIONS FOR CURB, APPROACH, BITUMINOUS, AND CONCRETE PROFILES, AS WELL AS ADDITIONAL SITE STANDARDS RELATED TO THIS PROJECT.

- EXCAVATOR IS RESPONSIBLE FOR ALL EROSION CONTROL INSPECTIONS.

FINISHED FLOOR ELEV.
PROPOSED KWIK TRIP CONVENIENCE STORE
FINISHED ELEVATION - IST FLOOR= 868.50 FEET

NOTE GRADING CONTRACTOR:

ANY PROPERTY IRONS THAT ARE DISTURBED IN THE GRADING PROCESS SHALL BE RESET BY A LICENSED LAND SURVEYOR AT NO ADDITIONAL COST TO THE OWNER.



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PLOTTED: OCT 08, 2024 - 3:27PM PLOTTED BY: NATHANP

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EMAIL: MAIL@REIENGINEERING.COM

SCALE
0 30 60

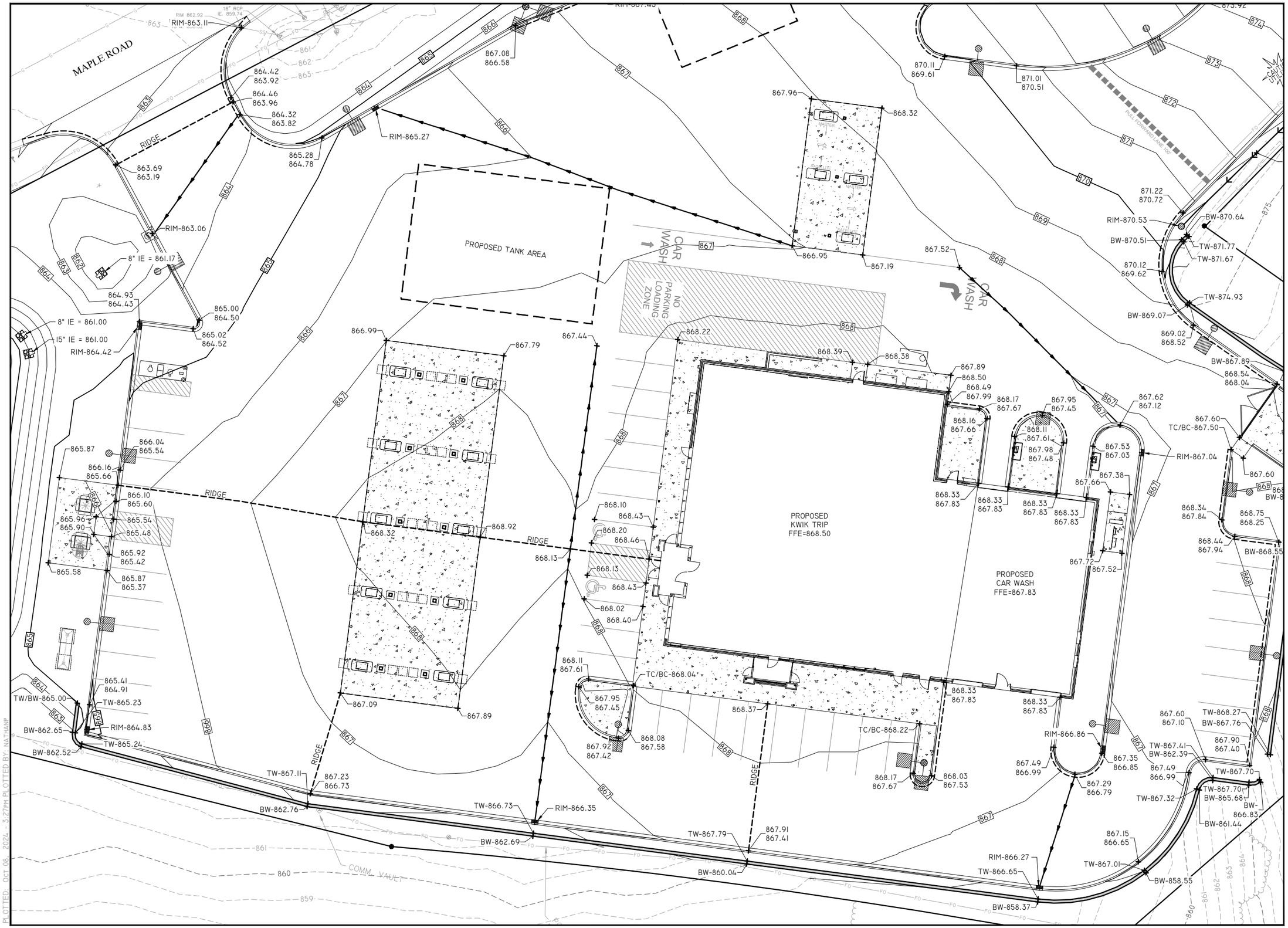
GRADING PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C200



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SCALE
0 15 30

GRADING PLAN DETAIL - SOUTH

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

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SCALE GRAPHIC
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C201

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C200-GRADING PLANS.DWG LAYOUT: C201
PLOTTED: OCT 08, 2024 - 3:27PM PLOTTED BY: NATHANP

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SCALE
0 15 30

GRADING PLAN DETAIL - NORTH

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C201.1

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C200-GRADING PLANS.DWG LAYOUT: C201.1
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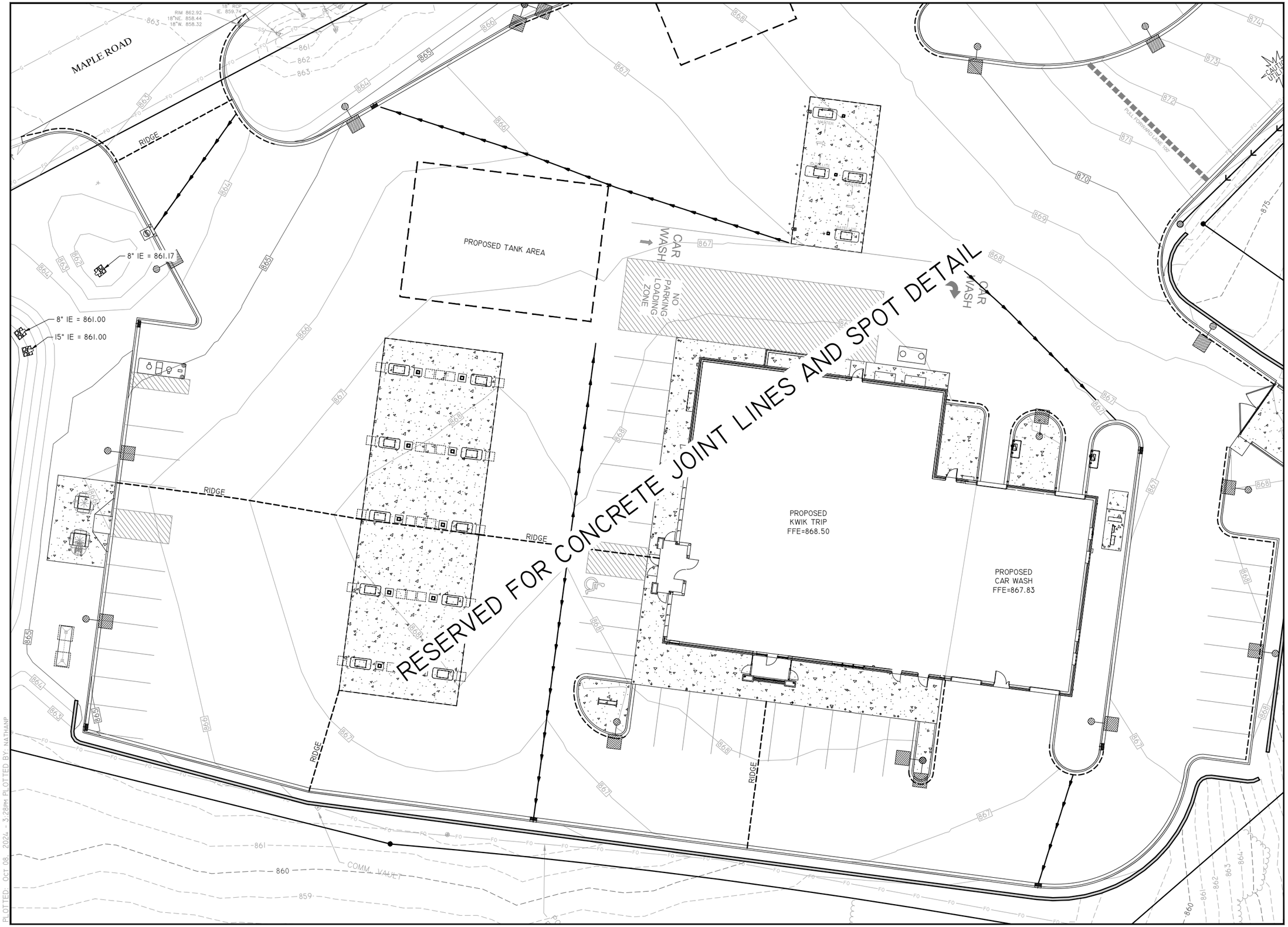

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EMAIL: MAIL@REIENGINEERING.COM

SCALE
0 15 30

GRADING PLAN SPOT DETAIL - SOUTH

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

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SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C202

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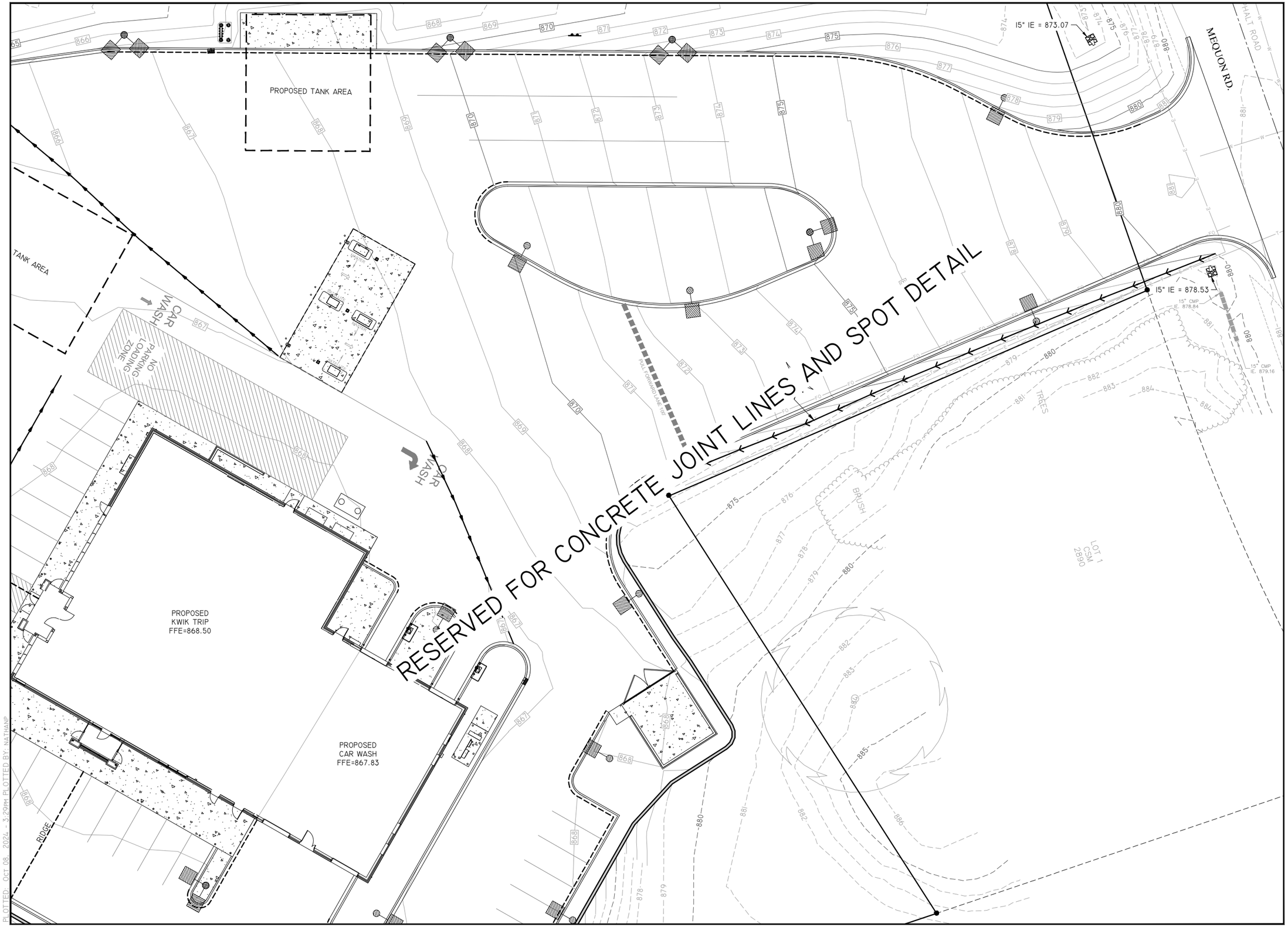

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SCALE
0 15 30

GRADING PLAN SPOT DETAIL - NORTH

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

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DATE 10/09/24 - REVIEW DOCUMENTS
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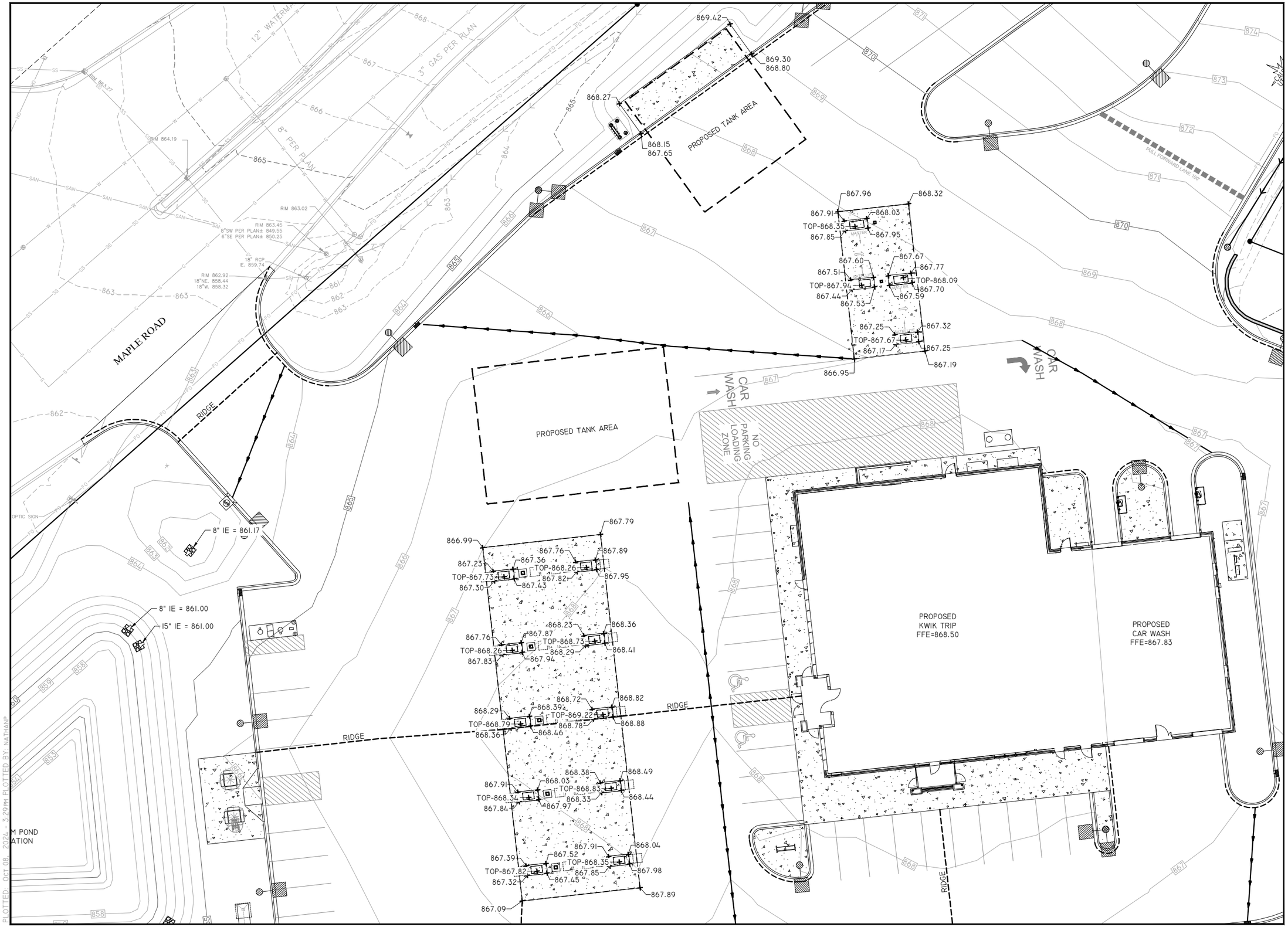

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SCALE
0 15 30

CANOPY AND TANK GRADING DETAILS

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C203

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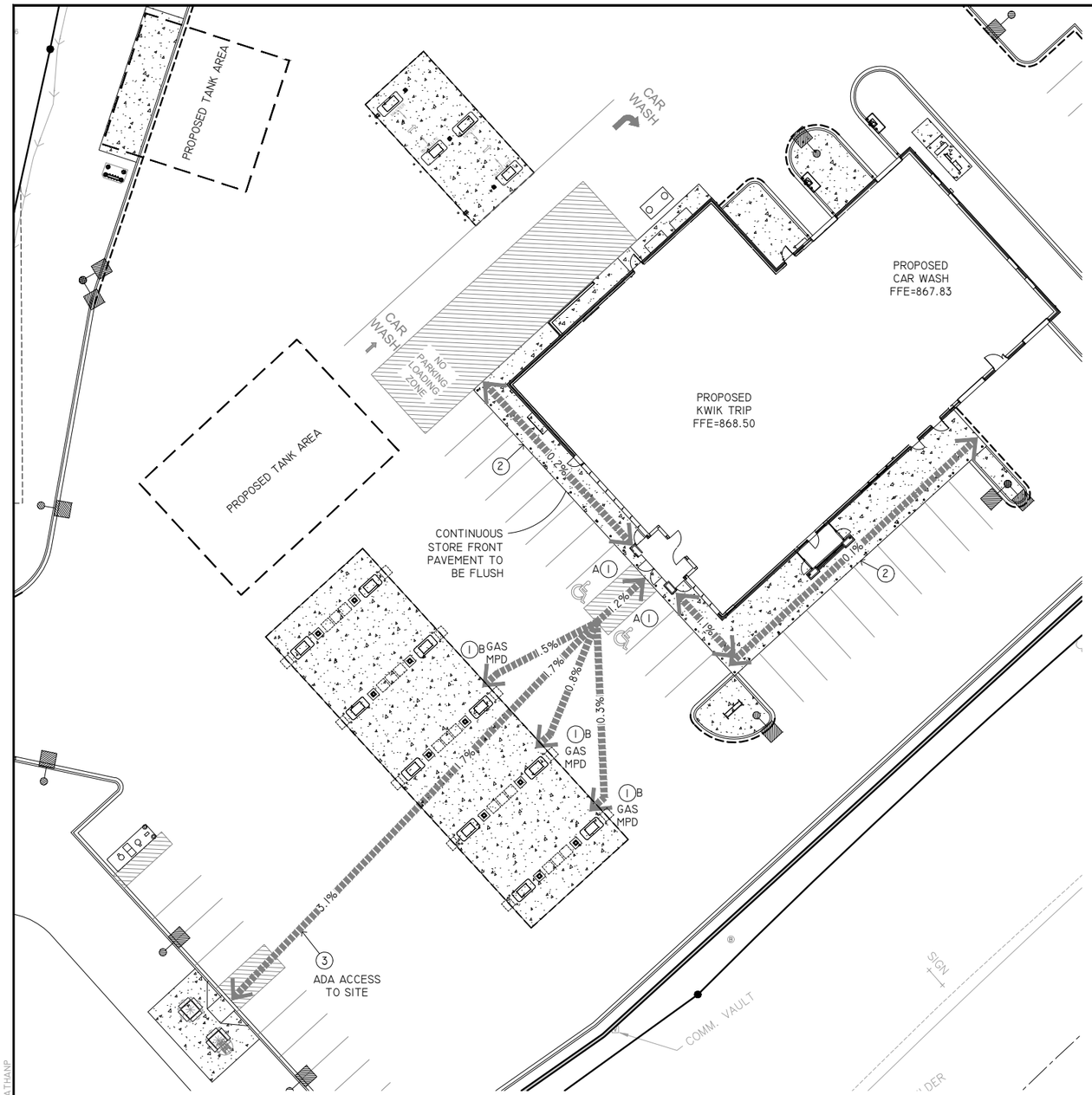


PLAN KEYNOTES

1. ACCESSIBLE STALLS
   A. STRIPING - 4" WIDE STALL LINES, USE HIGH VISIBILITY BLUE PAINT.

   SPACES PROVIDED
   (2) 8'-0"X 20'-0" ACCESSIBLE PARKING WITH
   (1) 11'-0"X 20'-0" LOADING ZONE

   B. ACCESSIBLE FUELING POINT AND DISPENSER AND VALET. VALET AND KEY PAD ON PUMP SHALL CONFORM TO ADA REACH DIMENSIONS AS SHOWN IN DETAIL. SEE NOTES FOR CONVENIENCE STORE ACCESSIBILITY.

2. PAVEMENTS FLUSH FOR ACCESSIBILITY.

3. ACCESSIBLE ROUTE TO STORE.

811 Know what's **below.** **Call** before you dig.

NOTES FOR CONVENIENCE STORE ACCESSIBILITY

AT LEAST 1 MPD (MULTI PRODUCT DISPENSER) COVERING ALL GRADES OF FUEL MUST BE ACCESSIBLE IN A 30X48" CLEAR LEVEL FLOOR AREA (CLF).

ALL PUMP CONTROLS SHALL BE < 48" (2010 STANDARD). WINDOW WASHER, PAPER TOWEL DISPENSER, LITERATURE, FIRE EXTINGUISHER, EMERGENCY FUEL STOPS, ETC. BE ACCESSIBLE 30"X48" CLF SPACE AND WITHIN A FORWARD OR SIDE APPROACH REACH RANGE.

PROVIDE ISA (INDUSTRY STANDARD ARCHITECTURE) AT EACH ACCESSIBLE FUEL POSITION ON FACE OF PUMP.

PROVIDE ISA AT EACH ACCESSIBLE FUELING POSITION VISIBLE TO APPROACHING VEHICLES.

PROVIDE A SIGN AT EACH ACCESSIBLE FUELING POSITION WITH STORE TELEPHONE NUMBER, ADVISING AVAILABLE FUELING ASSISTANCE.

ANY PAY FUNCTION- I.E. AIR/VACUUM ETC. ARE REQUIRED TO HAVE AN ACCESSIBLE ROUTE TO STORE ENTRANCE. CONTROLS SHALL BE ACCESSIBLE 30"X48" CLF SPACE AND WITHIN A FORWARD OR SIDE APPROACH REACH RANGE.

NOTES:

-REFER TO THE DOCUMENT FROM THE DEPARTMENT OF JUSTICE ON "2010 ADA STANDARDS FOR ACCESSIBLE DESIGN". CONTRACTOR SHALL REFERENCE CURRENT A.D.A. GUIDELINES AND LOCAL REGULATIONS FOR SITE ACCESSIBILITY. IN ALL CASES THE MINIMUM REQUIREMENTS SHALL BE PROVIDED ON SITE TO ENSURE COMPLIANCE TO ALL REGULATIONS.

- KWIK TRIP STANDARD ENTRANCE DOOR IS AUTOMATIC SLIDING DOOR SYSTEM DESIGNED TO COMPLY WITH ALL ACCESS CODES AND LAWS. ENTRANCE DOORS FOR ACCESSIBLE ROUTES WILL HAVE A MINIMUM CLEAR OPENING OF 32"

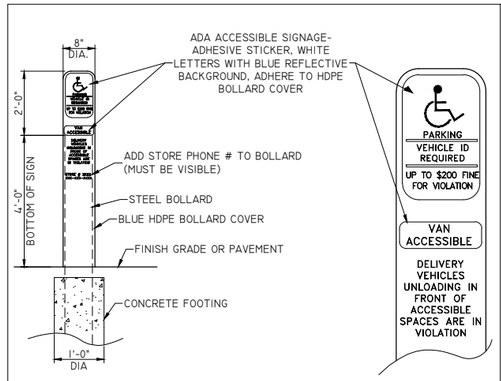
-STORE FRONTS WILL PROVIDE FLUSH PAVEMENTS ALONG ACCESSIBLE ROUTES WITH PROTECTIVE SECURITY BOLLARDS INDICATED AND SPACED BETWEEN PARKING SURFACES AND BUILDING WALK PER PLAN.

-NO OBJECTS OR DISPLAYS SHOULD PROTRUDE INTO THE MINIMUM CLEAR SPACE OF THE ACCESSIBLE ROUTES TO THE STORE ENTRANCE. THIS WILL INCLUDE SEASONAL DISPLAY VENDING AREAS AS WELL AS OTHER OUTDOOR STORAGE UNITS FOR PROPANE AND ICE, ETC.

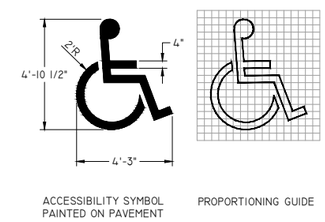
-PER A.D.A GUIDELINES- CLEAR WIDTH OF ACCESSIBLE ROUTES SHALL BE 36" AND PERMITTED TO BE REDUCED TO 32" FOR A LENGTH OF 24".

- ACCESS ISLES SERVING WHEEL CHAIR LIFTS OR CHAIR ACCESS FROM VEHICLES ARE REQUIRED TO BE NEARLY LEVEL IN ALL DIRECTIONS TO PROVIDE SAFE TRANSFER OF WHEELCHAIRS TO AND FROM VEHICLES. THE EXCEPTION WOULD BE FOR DRAINAGE. MAXIMUM SLOPE FOR THE ACCESS ISLE IS 1:48. NO CURB RAMPS SHALL BE A PART OF THE ACCESS ISLE.

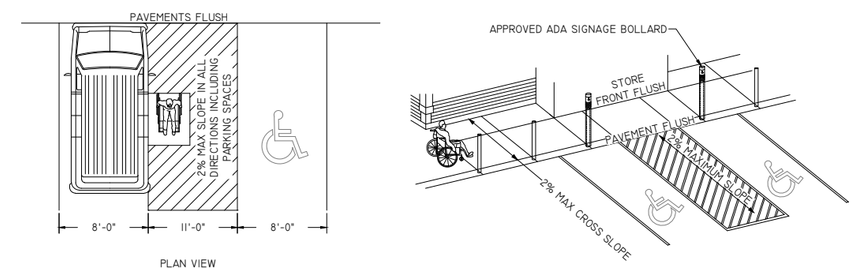
-IDENTIFICATION SIGNS SHALL INCLUDE THE INTERNATIONAL SYMBOL OF ACCESSIBILITY WITH THE DESIGNATION OF 1 "VAN ACCESSIBLE' IN EVERY 8 ACCESSIBLE SPACES ON SITE.



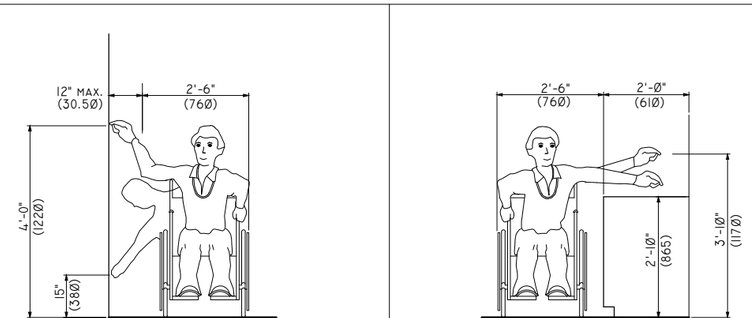
ADA BOLLARD SIGNAGE
NOT TO SCALE



HANDICAP SYMBOL
NOT TO SCALE



VAN ACCESSIBLE PARKING
NOT TO SCALE



HIGH AND LOW - SIDE REACH LIMITS

MAXIMUM SIDE REACH OVER OBSTRUCTION

ACCESSIBLE REACH DIMENSIONS
NOT TO SCALE

KWIK TRIP STORES

KWIK STAR STORES

KWIK TRIP, Inc.
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1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
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4080 N. 20TH AVENUE
WAUSAU, WISCONSIN 54401
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SCALE
0 20 40

ACCESSIBILITY PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY NAP
SCALE GRAPHIC
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C204

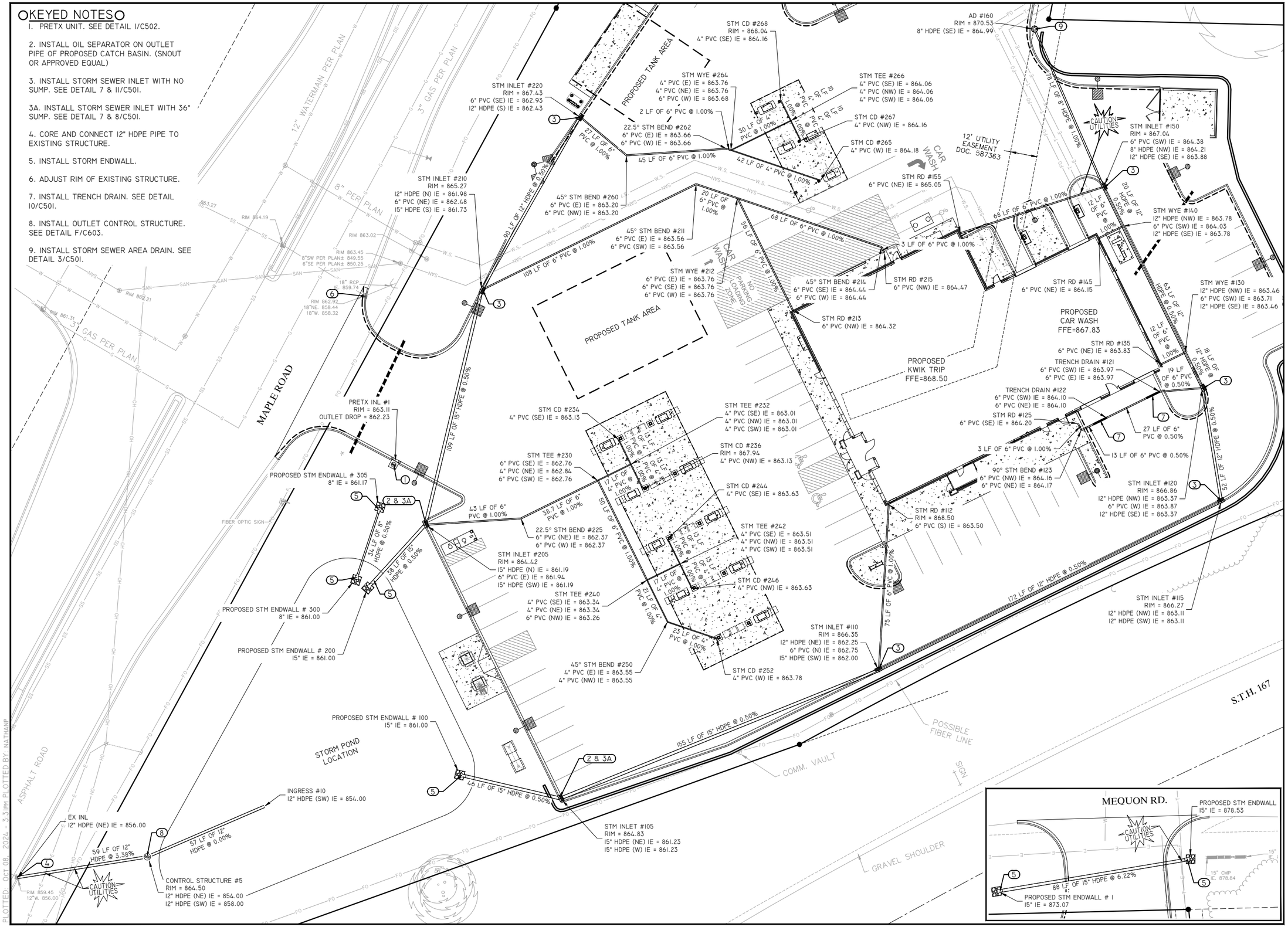
DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C204-ACCESSIBILITY PLAN.DWG LAYOUT: C204
PLOTTED: OCT 08, 2024 - 3:30PM PLOTTED BY: NATHANP

KEYED NOTES

1. PRETX UNIT. SEE DETAIL 1/C502.
2. INSTALL OIL SEPARATOR ON OUTLET PIPE OF PROPOSED CATCH BASIN. (SNOUT OR APPROVED EQUAL)
3. INSTALL STORM SEWER INLET WITH NO SUMP. SEE DETAIL 7 & 11/C501.

3A. INSTALL STORM SEWER INLET WITH 36" SUMP. SEE DETAIL 7 & 8/C501.

4. CORE AND CONNECT 12" HDPE PIPE TO EXISTING STRUCTURE.
5. INSTALL STORM ENDWALL.
6. ADJUST RIM OF EXISTING STRUCTURE.
7. INSTALL TRENCH DRAIN. SEE DETAIL 10/C501.
8. INSTALL OUTLET CONTROL STRUCTURE. SEE DETAIL F/C603.
9. INSTALL STORM SEWER AREA DRAIN. SEE DETAIL 3/C501.



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SCALE
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STORM SEWER PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
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SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C300

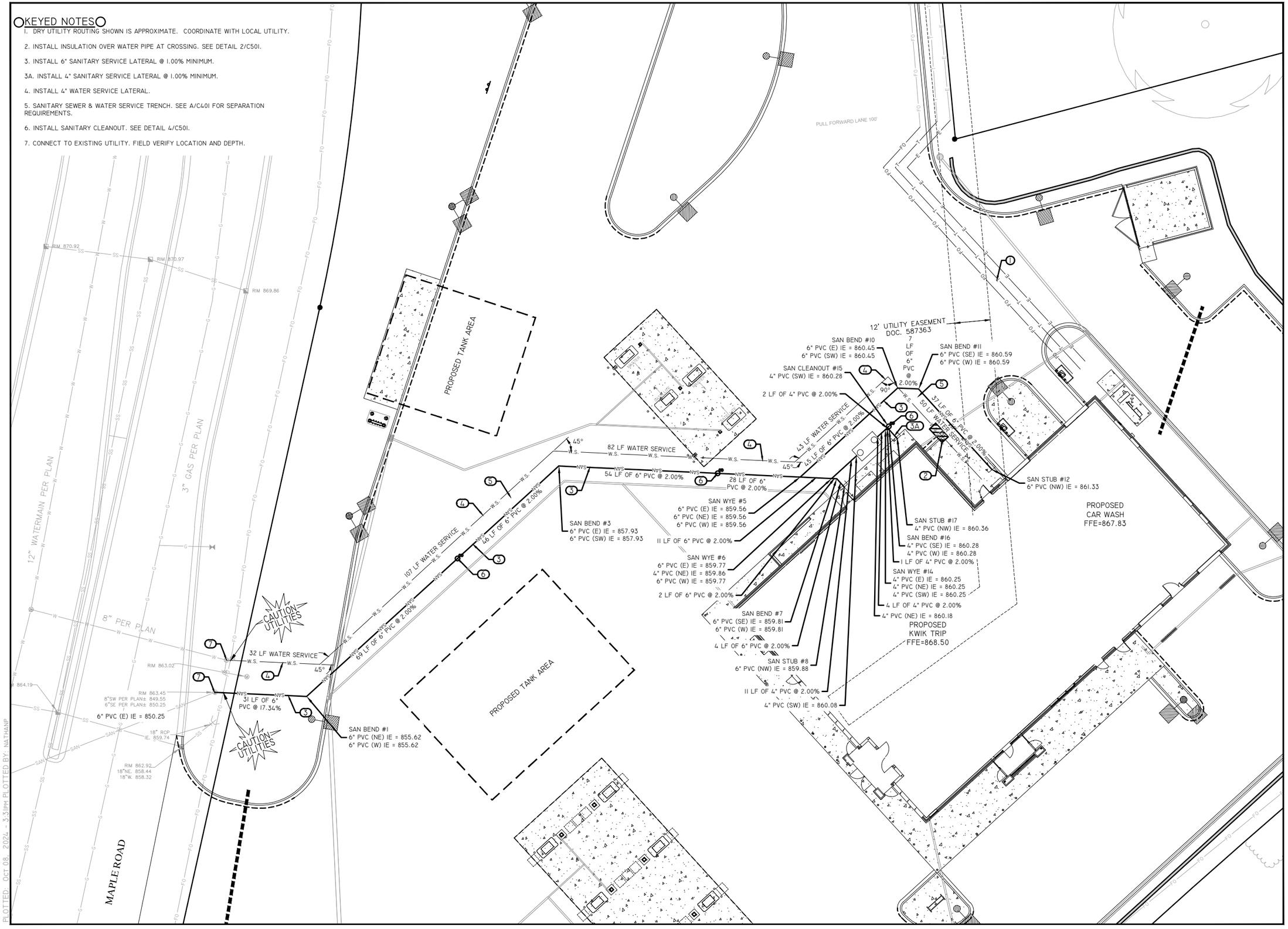
DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C300-C400-UTILITY PLANS.DWG LAYOUT: C300
PLOTTED: OCT 08, 2024 - 3:31PM PLOTTED BY: NATHANP

KEYED NOTES

1. DRY UTILITY ROUTING SHOWN IS APPROXIMATE. COORDINATE WITH LOCAL UTILITY.
2. INSTALL INSULATION OVER WATER PIPE AT CROSSING. SEE DETAIL 2/C501.
3. INSTALL 6" SANITARY SERVICE LATERAL @ 1.00% MINIMUM.

3A. INSTALL 4" SANITARY SERVICE LATERAL @ 1.00% MINIMUM.

4. INSTALL 4" WATER SERVICE LATERAL.
5. SANITARY SEWER & WATER SERVICE TRENCH. SEE A/C401 FOR SEPARATION REQUIREMENTS.
6. INSTALL SANITARY CLEANOUT. SEE DETAIL 4/C501.
7. CONNECT TO EXISTING UTILITY. FIELD VERIFY LOCATION AND DEPTH.



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SCALE 0 15 30

UTILITY PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY NAP
SCALE GRAPHIC
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C400

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C300-C400-UTILITY PLANS.DWG LAYOUT: C400
PLOTTED: OCT 08, 2024 - 3:31PM PLOTTED BY: NATHANP

GENERAL :

1. COMPLY WITH THE WORK SAFETY PRACTICES SPECIFIED BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA). COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS. OSHA PROHIBITS ENTRY INTO "CONFINED SPACES," SUCH AS MANHOLES AND INLETS (SEE 29 CFR SECTION 1910.146), WITHOUT UNDERTAKING CERTAIN SPECIFIC PRACTICES AND PROCEDURES. CONSTRUCTION SAFETY IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR, WHO IS ALSO SOLELY RESPONSIBLE FOR THE MEANS, METHODS, AND SEQUENCING OF THE CONSTRUCTION OPERATIONS.

2. EXISTING BOUNDARY, LOCATION, TOPOGRAPHIC, AND UTILITY INFORMATION SHOWN ON THIS PLAN IS FROM A FIELD SURVEY BY R.A. SMITH, INC. DATED JUNE 12, 2024.

3. PERFORM ALL UTILITY WORK IN ACCORDANCE WITH STATE AND CITY REQUIREMENTS.

4. CONNECT TO EXISTING SANITARY SEWER MH'S BY CORE DRILLING. CONNECT TO EXISTING STORM SEWER MH'S BY EITHER SAWCUTTING OR CORE DRILLING. USE SAWS OR DRILLS THAT PROVIDE WATER TO THE BLADE. MEET ALL CITY STANDARDS AND SPECIFICATIONS FOR THE THE CONNECTION. RECONSTRUCT INVERTS AFTER INSTALLATION. USE WATER STOP GASKETS IN ORDER TO PROVIDE WATERTIGHT SEALS WHEN PENETRATING A STRUCTURE WALL WITH A PIPE. TAKE MEASUREMENTS BEFORE BEGINNING CONSTRUCTION TO ENSURE THAT SERVICE CONNECTIONS DO NOT CUT INTO MAINTENANCE ACCESS STRUCTURE JOINTS OR PIPE BARREL JOINTS.

5. PERFORM TRENCH EXCAVATIONS FOR ALL UTILITIES IN ACCORDANCE WITH THE REQUIREMENTS OF O.S.H.A. 29 CFR, PART 1926, SUBPART P, "EXCAVATIONS AND TRENCHES." (WWW.OSHA.GOV)

6. COORDINATE BUILDING UTILITY CONNECTION LOCATIONS AT 5 FT. OUT FROM THE PROPOSED BUILDING WITH THE WITH THE INTERIOR PLUMBING CONTRACTOR PRIOR TO CONSTRUCTION. VERIFY WATER AND SEWER SERVICE LOCATIONS AND ELEVATIONS WITH THE MECHANICAL ENGINEER PRIOR TO CONSTRUCTION.

7. THE SUBSURFACE UTILITY INFORMATION SHOWN ON THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

8. THE LOCATIONS OF EXISTING UTILITIES SHOWN ON THIS PLAN ARE FROM RECORD INFORMATION. THE ENGINEER DOES NOT GUARANTEE THAT ALL EXISTING UTILITIES ARE SHOWN OR, IF SHOWN, EXIST IN THE LOCATIONS INDICATED ON THE PLAN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN THE FINAL VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UTILITIES (INCLUDING WATER AND SEWER LINES AND APPURTENANCES). NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

9. CONTACT UTILITY COMPANIES FOR LOCATIONS OF ALL PUBLIC AND PRIVATE UTILITIES WITHIN THE WORK AREA PRIOR TO BEGINNING CONSTRUCTION. CONTACT DIGGER'S HOTLINE AT (414) 259-1181 IN THE MILWAUKEE METRO AREA, OR 1-800-242-8511 ELSEWHERE IN WISCONSIN FOR EXACT LOCATIONS OF EXISTING UTILITIES AT LEAST 72 HOURS (NOT INCLUDING WEEKENDS AND HOLIDAYS) BEFORE BEGINNING ANY CONSTRUCTION. OBTAIN TICKET NUMBER AND MEET WITH REPRESENTATIVES OF THE VARIOUS UTILITIES AT THE SITE. PROVIDE THE OWNER WITH THE TICKET NUMBER INFORMATION. DIGGER'S HOTLINE IS A FREE SERVICE THAT LOCATES MUNICIPAL AND UTILITY COMPANY LINES, BUT DOES NOT LOCATE PRIVATE UTILITY LINES. USE AN INDEPENDENT LOCATOR SERVICE OR OTHER MEANS IN ORDER TO OBTAIN LOCATIONS OF PRIVATE UTILITY LINES INCLUDING, BUT NOT LIMITED TO, UNDERGROUND ELECTRIC CABLES, TELEPHONE, TV, AND LAWN SPRINKLER LINES.

10. POTHOLE TO VERIFY THE POSITIONS OF EXISTING UNDERGROUND FACILITIES AT A SUFFICIENT NUMBER OF LOCATIONS IN ORDER TO ASSURE THAT NO CONFLICT WITH THE PROPOSED WORK EXISTS AND THAT SUFFICIENT CLEARANCE IS AVAILABLE.

11. WHERE EXISTING GAS, ELECTRIC, CABLE, OR TELEPHONE UTILITIES CONFLICT WITH THE WORK, COORDINATE THE ABANDONMENT, RELOCATION, OFFSET, OR SUPPORT OF THE EXISTING UTILITIES WITH THE APPROPRIATE LOCAL UTILITY COMPANIES. COORDINATE NEW GAS METER AND GAS LINE INSTALLATION, ELECTRIC METER AND ELECTRIC SERVICE INSTALLATION, CABLE SERVICE, AND TELEPHONE SERVICE INSTALLATION WITH THE LOCAL UTILITY COMPANIES.

12. ARRANGE FOR AND SECURE SUITABLE DISPOSAL AREAS OFF-SITE. DISPOSE OF ALL EXCESS SOIL, WASTE MATERIAL, DEBRIS, AND ALL MATERIALS NOT DESIGNATED FOR SALVAGE. WASTE MATERIAL AND DEBRIS INCLUDES TREES, STUMPS, PIPE, CONCRETE, ASPHALTIC CONCRETE, CANS, OR OTHER WASTE MATERIAL FROM THE CONSTRUCTION OPERATIONS. OBTAIN THE RIGHTS TO ANY WASTE AREA FOR DISPOSAL OF UNSUITABLE OR SURPLUS MATERIAL EITHER SHOWN OR NOT SHOWN ON THE PLANS. ALL WORK IN DISPOSING OF SUCH MATERIAL SHALL BE CONSIDERED INCIDENTAL TO THE WORK. ALL DISPOSAL MUST CONFORM TO APPLICABLE SOLID WASTE DISPOSAL PERMIT REGULATIONS. OBTAIN ALL NECESSARY PERMITS AT NO COST TO THE OWNER.

13. STRAIGHT LINE SAW-CUT EXISTING BITUMINOUS OR CONCRETE SURFACING AT THE PERIMETER OF PAVEMENT REMOVAL AREAS. USE SAWS THAT PROVIDE WATER TO THE BLADE. TACK, AND MATCH ALL CONNECTIONS TO EXISTING BITUMINOUS PAVEMENT.

14. RELOCATE OVERHEAD POWER, TELEPHONE, AND CABLE LINES AS REQUIRED.

15. ALL MATERIALS REQUIRED FOR THIS WORK SHALL BE NEW MATERIAL CONFORMING TO THE REQUIREMENTS FOR CLASS, KIND, GRADE, SIZE, QUALITY, AND OTHER DETAILS SPECIFIED HEREIN OR AS SHOWN ON THE PLANS. DO NOT USE RECYCLED OR SALVAGED AGGREGATE, ASPHALTIC PAVEMENT, CRUSHED CONCRETE, OR SCRAP SHINGLES. UNLESS OTHERWISE INDICATED, THE CONTRACTOR SHALL FURNISH ALL REQUIRED MATERIALS.

16. RESTORE THE PUBLIC RIGHT-OF-WAY. REPLACE ANY CONCRETE CURB AND GUTTER, BITUMINOUS PAVEMENT, SIDEWALK, OR VEGETATIVE COVER DAMAGED BY THE CONSTRUCTION ACTIVITY. RESTORE DAMAGED TURF WITH SOD WITHIN THE PUBLIC RIGHT-OF-WAY. THE WORK AREA SHOWN IS GENERAL AND MAY NEED TO BE ADJUSTED IN THE FIELD.

17. WHEN SAWING OR DRILLING CONCRETE OR MASONRY, USE SAWS THAT PROVIDE WATER TO THE BLADE. DO NOT ALLOW THE SLURRY PRODUCED BY THIS PROCESS TO BE TRACKED OUTSIDE OF THE IMMEDIATE WORK AREA OR DISCHARGED INTO THE SEWER SYSTEM.

18. ADJUST ALL CURB STOPS, VALVE BOXES, MAINTENANCE HOLE CASTINGS, CATCH BASIN CASTINGS, CLEANOUT COVERS, AND SIMILAR ITEMS TO FINISHED GRADE.

19. INSTALL ALL PIPE WITH THE ASTM IDENTIFICATION NUMBERS ON THE TOP FOR INSPECTION. COMMENCE PIPE LAYING AT THE LOWEST POINT IN THE PROPOSED SEWER LINE. LAY THE PIPE WITH THE BELL END OR RECEIVING GROOVE END OF THE PIPE POINTING UPGRADE. WHEN CONNECTING TO AN EXISTING PIPE, UNCOVER THE EXISTING PIPE IN ORDER TO ALLOW ANY ADJUSTMENTS IN THE PROPOSED LINE AND GRADE BEFORE LAYING ANY PIPE.

20. OBTAIN AND PAY FOR ALL PERMITS, TESTS, INSPECTIONS, ETC. REQUIRED BY AGENCIES THAT HAVE JURISDICTION OVER THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR ALL BONDS, LETTERS OF CREDIT, OR CASH SURETIES RELATED TO THE WORK. EXECUTE AND INSPECT WORK IN ACCORDANCE WITH ALL LOCAL AND STATE CODES, RULES, ORDINANCES, OR REGULATIONS PERTAINING TO THE PARTICULAR TYPE OF WORK INVOLVED.

21. OBTAIN PERMITS FROM THE CITY FOR WORK IN THE PUBLIC RIGHT-OF-WAY.

22. CONSTRUCT SANITARY SEWER, WATERMAIN, AND STORM SEWER UTILITIES IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR SEWER AND WATER CONSTRUCTION IN WISCONSIN, SIXTH EDITION, OR THE LATEST REVISED EDITION.

23. TRACER WIRE: LOCATING REQUIREMENTS - A MEANS TO LOCATE BURIED UNDERGROUND EXTERIOR NON METALLIC SEWERS/MAINS MUST BE PROVIDED WITH TRACER WIRE OR OTHER METHODS IN ORDER TO BE LOCATED IN ACCORD WITH THE PROVISIONS OF THESE CODE SECTIONS AS PER 182.0715(2R) OF THE STATUTES.

24. INSTALL ALL PIPE WITH THE ASTM IDENTIFICATION NUMBERS ON THE TOP FOR INSPECTION. COMMENCE PIPE LAYING AT THE LOWEST POINT IN THE PROPOSED SEWER LINE. LAY THE PIPE WITH THE BELL END OR RECEIVING GROOVE END OF THE PIPE POINTING UPGRADE. WHEN CONNECTING TO AN EXISTING PIPE, UNCOVER THE EXISTING PIPE IN ORDER TO ALLOW ANY ADJUSTMENTS IN THE PROPOSED LINE AND GRADE BEFORE LAYING ANY PIPE. DO NOT LAY PIPES IN WATER OR WHEN THE TRENCH CONDITIONS ARE UNSUITABLE FOR SUCH WORK.

WATER DISTRIBUTION SYSTEM :

1. BRING ALL SITE UTILITIES TO 5' OUTSIDE OF THE BUILDING LINE WITH THE EXCEPTION OF THE WATER SERVICE. EXTEND WATER SERVICE INTO THE BUILDING AND UP TO THE FLANGE FOR THE WATER METER.

2. SEPARATION OF WATER AND SEWER: PROVIDE HORIZONTAL AND VERTICAL SEPARATIONS AS REQUIRED BY CODE. SEE DETAIL A/C401.

3. WATERMAIN DEPTH: MAINTAIN 7.5 FEET OF COVER OVER THE TOP OF THE WATER LINES TO THE FINISHED GRADE. VERIFY ELEVATION OF PROPOSED AND EXISTING WATER LINES AT ALL UTILITY CROSSINGS. INSTALL THE WATER LINES AT GREATER DEPTHS IN ORDER TO CLEAR STORM SEWERS, SANITARY SEWERS, OR OTHER UTILITIES AS REQUIRED. INCLUDE COSTS TO LOWER WATER LINES IN THE BASE BID.

4. DISINFECTION: DISINFECT ALL COMPLETED WATERMAINS IN ACCORDANCE WITH AWWA STANDARD C651. IF THE TABLET OR CONTINUOUS FEED METHODS ARE USED, DISINFECT USING WITH WATER THAT CONTAINS AT LEAST 50 PPM OF AVAILABLE CHLORINE. DO NOT USE THE TABLET METHOD ON SOLVENT-WELDED PLASTIC OR ON SCREWED-JOINT STEEL PIPE BECAUSE OF THE DANGER OF FIRE OR EXPLOSION FROM THE REACTION OF THE JOINT COMPOUNDS WITH THE CALCIUM HYPOCHLORITE. RETAIN THE TREATED WATER IN THE PIPELINE FOR AT LEAST 24 HOURS. MEASURE THE CHLORINE RESIDUAL AT THE END OF THE 24 HOUR PERIOD. THE FREE CHLORINE RESIDUAL MUST BE AT LEAST 10 MG/L MEASURED AT ANY POINT IN THE LINE. MEASUREMENT OF THE CHLORINE CONCENTRATION AT REGULAR INTERVALS SHALL BE IN ACCORDANCE WITH STANDARD METHODS, AWWA M-12, OR USING APPROPRIATE CHLORINE TEST KITS.

5. TESTING: PRESSURE TEST AND PERFORM BACTERIOLOGICAL TESTS ON ALL WATER LINES UNDER THE SUPERVISION OF THE CITY PUBLIC WORKS DEPARTMENT. NOTIFY THE CITY AT LEAST 24 WORKING HOURS PRIOR TO ANY TESTING. PRESSURIZE THE WATERLINE TO 1034-KPA (150-PSI) GAUGE PRESSURE (MEASURED AT THE POINT OF LOWEST ELEVATION) BY MEANS OF A PUMP CONNECTED TO THE PIPE IN A SATISFACTORY MANNER. MAINTAIN THE TEST PRESSURE FOR A MINIMUM OF 2 HOURS. DO NOT ADD WATER TO THE WATERMAIN IN ORDER TO MAINTAIN THE REQUIRED PRESSURE DURING THE WATER MAIN PRESSURE TESTING. THE TEST SECTION OF PIPE IS ACCEPTABLE WITH A PRESSURE DROP OF 14 KPA (2 PSI) OR LESS.

6. USE MUELLER H 10300 OR FORD EM 2 7057, OR APPROVED EQUAL, AT ALL CURB STOP LOCATIONS. STATIONARY ROD IS REQUIRED ON ALL CURB STOPS.

7. BUILDING WATER SERVICES: WATER SERVICE PIPE SHALL MEET THE FOLLOWING SPECIFICATIONS AND BE APPROVED BY THE LOCAL GOVERNING AGENCY. 2.5 INCH OR LESS: HDPE PER ASTM D2737 SDR 9 OR TYPE K COPPER PER ASTM B - 88. 4 INCH OR GREATER: DIP PER AWWA C151 OR PVC PER AWWA C-900.

8. TRACER WIRE: LOCATING REQUIREMENTS - A MEANS TO LOCATE BURIED UNDERGROUND EXTERIOR NON METALLIC SEWERS/MAINS MUST BE PROVIDED WITH TRACER WIRE OR OTHER METHODS IN ORDER TO BE LOCATED IN ACCORD WITH THE PROVISIONS OF THE WISCONSIN STATUTES 182.0175(2R) AND THE WISCONSIN DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES SPS 382.30(11)(H).

STORM DRAINAGE :

1. UNLESS OTHERWISE INDICATED, USE REINFORCED, PRECAST, CONCRETE MAINTENANCE HOLES AND CATCH BASINS CONFORMING TO ASTM C478, FURNISHED WITH WATER STOP RUBBER GASKETS AND PRECAST BASES. JOINTS FOR ALL PRECAST MAINTENANCE HOLE SECTIONS SHALL HAVE CONFINED, RUBBER "O"-RING GASKETS IN ACCORDANCE WITH ASTM C923. THE INSIDE BARREL DIAMETER SHALL NOT BE LESS THAN 48 INCHES.

2. ALL JOINTS AND CONNECTIONS TO CATCH BASINS OR MANHOLES SHALL BE WATERTIGHT OR APPROVED CONNECTION. USE RESILIENT RUBBER SEALS, WATERSTOP GASKETS, OR APPROVED EQUAL. CEMENT MORTAR JOINTS ARE NOT ALLOWED UNLESS OTHERWISE PERMITTED BY LOCAL MUNICIPALITY.

3. INSTALL CATCH BASIN CASTINGS WITH SPECIFIED TOP ELEVATION AT THE FLOWLINE OF RIM.

4. PVC PIPE: USE SOLID-CORE, SDR-35, ASTM D3034 POLYVINYL CHLORIDE (PVC) PIPE FOR DESIGNATED PVC STORM SEWER SERVICES 4 TO 15-INCHES IN DIAMETER. USE SOLID-CORE, SDR-35, ASTM F679 POLYVINYL CHLORIDE (PVC) PIPE FOR DESIGNATED PVC STORM SEWER SERVICES 18 TO 27-INCHES IN DIAMETER. JOINTS FOR ALL STORM SEWER SHALL HAVE PUSH-ON JOINTS WITH ELASTOMERIC GASKETS. USE OF SOLVENT CEMENT JOINTS IS ALLOWED FOR BUILDING SERVICES. SOLVENT CEMENT JOINTS IN PVC PIPE MUST INCLUDE USE OF A PRIMER WHICH IS OF CONTRASTING COLOR TO THE PIPE AND CEMENT. PIPE WITH SOLVENT CEMENT JOINTS SHALL BE JOINED WITH PVC CEMENT CONFORMING TO ASTM D2564. LAY ALL PVC PIPE ON A CONTINUOUS GRANULAR BED. INSTALLATION MUST COMPLY WITH ASTM D2321.

5. TESTING: TEST ALL PORTIONS OF STORM SEWER THAT ARE WITHIN 10 FEET OF BUILDINGS, WITHIN 10 FEET OF BURIED WATER, LINES, WITHIN 50 FEET OF WATER WELLS, OR THAT PASS THROUGH SOIL OR WATER IDENTIFIED AS BEING CONTAMINATED. TEST ALL FLEXIBLE STORM SEWER LINES FOR DEFLECTION AFTER THE SEWER LINE HAS BEEN INSTALLED AND BACKFILL HAS BEEN IN PLACE FOR AT LEAST 30 DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF 5%. IF THE TEST FAILS, MAKE NECESSARY REPAIRS AND RETEST.

6. USE NEENAH R-1550A FRAME WITH 2050D GRATE ON ALL PROPOSED CATCH BASINS.

7. INSTALL DETECTABLE UNDERGROUND MARKING TAPE DIRECTLY ABOVE ALL PVC, POLYETHYLENE, AND OTHER NONCONDUCTIVE UNDERGROUND UTILITIES AT A DEPTH OF 457 MM (18 INCHES) BELOW FINISHED GRADE, UNLESS OTHERWISE INDICATED. BRING THE TAPE TO THE SURFACE AT VARIOUS LOCATIONS IN ORDER TO PROVIDE CONNECTION POINTS FOR LOCATING UNDERGROUND UTILITIES. INSTALL BLUE RHINO TRIVIEW FLEX TEST STATIONS, OR APPROVED EQUAL, WITH BLACK CAPS AT EACH SURFACE LOCATION.

8. TRACER WIRE: LOCATING REQUIREMENTS - A MEANS TO LOCATE BURIED UNDERGROUND EXTERIOR NON METALLIC SEWERS/MAINS MUST BE PROVIDED WITH TRACER WIRE OR OTHER METHODS IN ORDER TO BE LOCATED IN ACCORD WITH THE PROVISIONS OF THESE CODE SECTIONS AS PER 182.0715(2R) OF THE STATUTES.

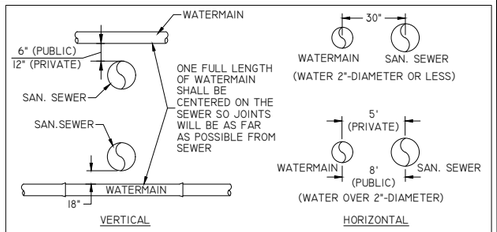
9. THE MINIMUM DEPTH OF COVER FOR BUILDING AND CANOPY ROOF DRAIN LEADERS WITHOUT INSULATION IS 5 FEET. INSULATE ROOF DRAIN LEADERS AT LOCATIONS WHERE THE DEPTH OF COVER IS LESS THAN 5 FEET. PROVIDE A MINIMUM INSULATION THICKNESS OF 2 INCHES. THE INSULATION MUST BE AT LEAST 4 FEET WIDE AND CENTERED ON THE PIPE. INSTALL THE INSULATION BOARDS 6 INCHES ABOVE THE TOPS OF THE PIPES ON MECHANICALLY COMPACTED AND LEVELED PIPE BEDDING MATERIAL. USE HIGH DENSITY, CLOSED CELL, RIGID BOARD MATERIAL EQUIVALENT TO DOW STYROFOAM HI-40 PLASTIC FOAM INSULATION.

10. CLEANOUTS: INSTALL CLEANOUTS ON ALL ROOF DRAINS IN ACCORDANCE WITH S.P.S 382.35 (3)(C)(1.). THE DISTANCE BETWEEN CLEANOUTS IN HORIZONTAL PIPING SHALL NOT EXCEED 100 FEET FOR PIPES 10-INCHES AND UNDER IN SIZE. CLEANOUTS SHALL BE OF THE SAME NOMINAL SIZE AS THE PIPES THEY SERVE OR 6-INCH DIAMETER MINIMUM FOR PIPES 6 INCHES IN DIAMETER OR GREATER. INSTALL A METER BOX FRAME AND SOLID LID (NEENAH R-1914-A, OR APPROVED EQUAL) OVER ALL CLEANOUTS.

11. INSTALL ALL PIPE WITH THE ASTM IDENTIFICATION NUMBERS ON THE TOP FOR INSPECTION. COMMENCE PIPE LAYING AT THE LOWEST POINT IN THE PROPOSED SEWER LINE. LAY THE PIPE WITH THE BELL END OR RECEIVING GROOVE END OF THE PIPE POINTING UPGRADE. WHEN CONNECTING TO AN EXISTING PIPE, UNCOVER THE EXISTING PIPE IN ORDER TO ALLOW ANY ADJUSTMENTS IN THE PROPOSED LINE AND GRADE BEFORE LAYING ANY PIPE. DO NOT LAY PIPES IN WATER OR WHEN THE TRENCH CONDITIONS ARE UNSUITABLE FOR SUCH WORK.

12. INSTALL STORM SEWER IN ACCORDANCE WITH SECTION 608 OF THE WISDOT STANDARD SPECIFICATIONS.

13. INSTALL CATCH BASINS, MANHOLES, AND INLETS IN ACCORDANCE WITH SECTION 611 OF THE WISDOT STANDARD SPECIFICATIONS.



NOTES:
1. WHEN THE ABOVE SEPARATIONS CANNOT BE MAINTAINED, THE ENGINEER MAY REQUIRE THE CONTRACTOR TO ENCASE THE SEWER IN CONCRETE.

2. NO PRIVATE WATER MAIN OR WATER SERVICE SHALL BE INSTALLED WITHIN 6" OF A STORM SEWER. PUBLIC WATER MAIN MUST MEET THE SAME HORIZONTAL AND VERTICAL SEPARATION DISTANCES AS REQUIRED FOR SANITARY SEWER.

A / C401 SEWER / WATERMAIN SEPARATION DISTANCE
NTS

SANITARY SEWER :

1. PIPE: USE SOLID-CORE, SDR-35, ASTM D3034 (OR APPROVED EQUAL) POLYVINYL CHLORIDE (PVC) PLASTIC PIPE FOR ALL DESIGNATED PVC SANITARY SEWER SERVICES. JOINTS FOR ALL SANITARY SEWER SHALL HAVE PUSH-ON JOINTS WITH ELASTOMERIC GASKETS. USE OF SOLVENT CEMENT JOINTS IS ALLOWED FOR BUILDING SERVICES. SOLVENT CEMENT JOINTS IN PVC PIPE MUST INCLUDE USE OF A PRIMER WHICH IS OF CONTRASTING COLOR TO THE PIPE AND CEMENT. PIPE WITH SOLVENT CEMENT JOINTS SHALL BE JOINED WITH PVC CEMENT CONFORMING TO ASTM D2564. LAY ALL PVC PIPE ON A CONTINUOUS GRANULAR BED. INSTALLATION MUST COMPLY WITH ASTM D2321.

2. CLEANOUTS: INSTALL CLEANOUTS ON ALL SANITARY SEWER SERVICES. THE DISTANCE BETWEEN CLEANOUTS IN HORIZONTAL PIPING SHALL NOT EXCEED 100 FEET FOR PIPES 4-INCH AND OVER IN SIZE. CLEANOUTS SHALL BE OF THE SAME NOMINAL SIZE AS THE PIPES THEY SERVE OR 6-INCH DIAMETER MINIMUM FOR PIPES 6 INCHES IN DIAMETER OR GREATER. INCLUDE FROST SLEEVES AND CONCRETE FRAME AND PIPE SUPPORT. INSTALL A METER BOX FRAME AND SOLID LID (NEENAH R-1914-A, OR APPROVED EQUAL) OVER ALL CLEANOUTS.

3. TESTING: PRESSURE TEST ALL SANITARY SEWER LINES. TEST ALL FLEXIBLE SANITARY SEWER LINES FOR DEFLECTION AFTER THE SEWER LINE HAS BEEN INSTALLED AND BACKFILL HAS BEEN IN PLACE FOR AT LEAST 30 DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF 5%. IF THE TEST FAILS, MAKE NECESSARY REPAIRS AND RETEST.

4. UNLESS OTHERWISE INDICATED, USE REINFORCED, PRECAST, CONCRETE MAINTENANCE HOLES CONFORMING TO ASTM C478, FURNISHED WITH PRECAST BASES. SANITARY SEWER MAINTENANCE HOLES SHALL BE SUPPLIED WITH PRE-FORMED INVERTS AND FLEXIBLE NEOPRENE SLEEVE CONNECTIONS FOR ALL LATERAL LINES 375 MM (15 INCHES) IN DIAMETER OR LESS, UNLESS OTHERWISE INDICATED. JOINTS FOR ALL PRECAST MAINTENANCE HOLE SECTIONS SHALL HAVE CONFINED, RUBBER "O"-RING GASKETS IN ACCORDANCE WITH ASTM C923. THE INSIDE BARREL DIAMETER SHALL NOT BE LESS THAN 48 INCHES.

5. INSTALL FLEXIBLE WATERTIGHT OR APPROVED CONNECTION FRAME/CHIMNEY SEALS ON ALL SANITARY SEWER MAINTENANCE HOLES. USE EITHER MANUFACTURED MAINTENANCE HOLE FRAME/CHIMNEY SEALS OR ELASTOMERIC WATERPROOFING FRAME/CHIMNEY SEALS.

6. USE NEENAH FOUNDRY CO. R-1642 CASTING WITH SELF-SEALING, SOLID, TYPE B LID, OR APPROVED EQUAL, ON ALL SANITARY SEWER MAINTENANCE HOLES. COVERS SHALL BEAR THE "SANITARY SEWER" LABEL.

7. THE MINIMUM DEPTH OF COVER FOR SANITARY SEWER WITHOUT INSULATION IS 5 FEET. INSULATE SANITARY SEWER SERVICES AT LOCATIONS WHERE THE DEPTH OF COVER IS LESS THAN 5 FEET. PROVIDE A MINIMUM INSULATION THICKNESS OF 2 INCHES. THE INSULATION MUST BE AT LEAST 4 FEET WIDE AND CENTERED ON THE PIPE. INSTALL THE INSULATION BOARDS 6 INCHES ABOVE THE TOPS OF THE PIPES ON MECHANICALLY COMPACTED AND LEVELED PIPE BEDDING MATERIAL. USE HIGH DENSITY, CLOSED CELL, RIGID BOARD MATERIAL EQUIVALENT TO DOW STYROFOAM HI-40 PLASTIC FOAM INSULATION.

8. TRACER WIRE: LOCATING REQUIREMENTS - A MEANS TO LOCATE BURIED UNDERGROUND EXTERIOR NON METALLIC SEWERS/MAINS MUST BE PROVIDED WITH TRACER WIRE OR OTHER METHODS IN ORDER TO BE LOCATED IN ACCORD WITH THE PROVISIONS OF THE WISCONSIN STATUTES 182.0175(2R) AND THE WISCONSIN DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES SPS 82.30(11)(H).

HDPE REQUIREMENTS :

1. INSTALL DUAL-WALL, SMOOTH INTERIOR, CORRUGATED HIGH-DENSITY POLYETHYLENE (HDPE) PIPE AT LOCATIONS INDICATED ON THE PLAN.

2. DUAL-WALL, SMOOTH INTERIOR, CORRUGATED HIGH-DENSITY POLYETHYLENE (HDPE) PIPE SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M252 FOR PIPE SIZES 4-INCH TO 10-INCH DIAMETER.

3. DUAL-WALL, SMOOTH INTERIOR, CORRUGATED HIGH-DENSITY POLYETHYLENE (HDPE) PIPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2306 FOR PIPE SIZES 12-INCH TO 60-INCH DIAMETER.

4. ALL FITTINGS MUST COMPLY WITH ASTM STANDARD D3212.

5. WATER-TIGHT JOINTS MUST BE USED AT ALL CONNECTIONS INCLUDING STRUCTURES.

6. LAY ALL HDPE PIPE ON A CONTINUOUS GRANULAR BED. INSTALLATION MUST COMPLY WITH ASTM D2321. ALL SECTIONS OF THE CORRUGATED HDPE PIPE SHALL BE COUPLED IN ORDER TO PROVIDE WATER TIGHT JOINTS.

7. PERFORM DEFLECTION TESTS ON ALL HDPE PIPE AFTER THE SEWER LINES HAVE BEEN INSTALLED AND BACKFILL HAS BEEN IN PLACE FOR AT LEAST 30 DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF 5%. IF THE TEST FAILS, MAKE NECESSARY REPAIRS AND PERFORM THE TEST AGAIN UNTIL ACCEPTABLE. SUPPLY THE MANDREL FOR DEFLECTION TESTING. IF THE DEFLECTION TEST IS TO BE RUN USING A RIGID BALL OR MANDREL, IT SHALL HAVE A DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE. THE BALL OR MANDREL SHALL BE CLEARLY STAMPED WITH THE DIAMETER. PERFORM THE TESTS WITHOUT MECHANICAL PULLING DEVICES.

KWIK TRIP STORES

KWIK STAR STORES

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LA CROSSE, WI 54602-2107
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FAX (608) 781-8960

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CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING
REI Engineering, INC.
4080 N. 20TH AVENUE
WAUSAU, WISCONSIN 54401
PHONE: 715.675.9784 FAX: 715.675.4060
EMAIL: MAIL@REIENGINEERING.COM

NO SCALE

UTILITY NOTES

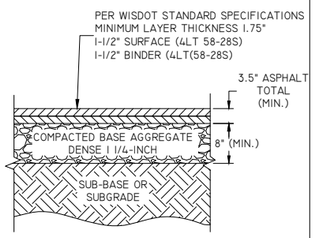
CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

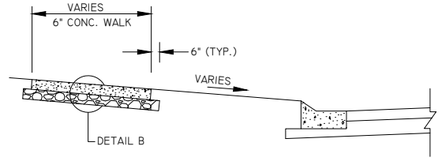
DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C401

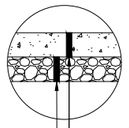
DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C300-C400-UTILITY PLANS.DWG LAYOUT: C401
PLOTTED: OCT 08, 2024 - 3:32PM PLOTTED BY: NATHANP



NOTE:
ASPHALT PAVEMENT SECTION SHOWN IS MINIMUM. MATCH IN KIND WITH EXISTING.

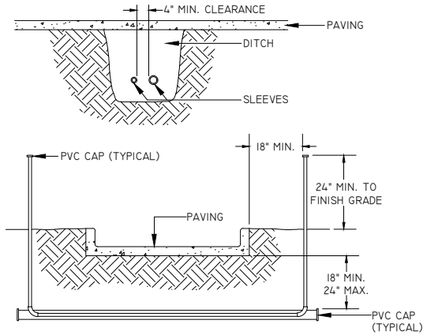
1 / C500 ASPHALT PAVEMENT DETAIL
NOT TO SCALE





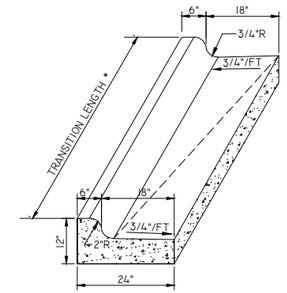
NOTES:
1. 6" THICK CONCRETE SIDEWALK AT ALL DRIVEWAYS
2. PLACE PEDESTRIAN CURB RAMPS AT ALL INTERSECTIONS.
3. PROVIDE EXPANSION JOINT MATERIAL AT MAX. 60 FOOT SPACING.
4. PROVIDE EXPANSION JOINT MATERIAL ALONG BOTH EDGES OF WALK, WHERE WALK IS CONTAINED BETWEEN FIXED OBJECTS.

2 / C500 CONCRETE WALK/ PAD DETAIL
NOT TO SCALE



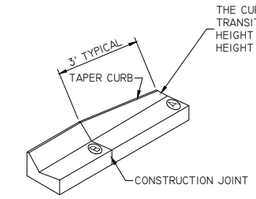
NOTES:
1. ALL PVC IRRIGATION SLEEVES TO BE SCH 40 PVC PIPE.
2. ALL JOINTS TO BE SOLVENT WELDED AND WATERTIGHT.
3. WHERE THERE IS MORE THAN ONE SLEEVE, EXTEND THE SMALLER SLEEVE TO 24-INCHES MINIMUM ABOVE FINISH GRADE.
4. MECHANICALLY TAMP BACKFILL TO 95% PROCTOR.

3 / C500 TYPICAL SLEEVING DETAIL
NOT TO SCALE

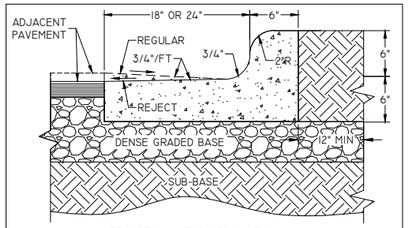


* TRANSITION LENGTH SHALL BE 12 LF ON TANGENTS GREATER THAN 18 LF, OR BETWEEN RADIUS POINTS ON TANGENTS LESS THAN 18 LF, OR BETWEEN RADIUS MID POINTS WHERE TANGENTS ARE LESS THAN 12 LF, OR ACROSS THE RADIUS/RADII WHERE TANGENTS ARE LESS THAN 2 LF.

4 / C500 TRANSITION CURB & GUTTER DETAIL
NOT TO SCALE

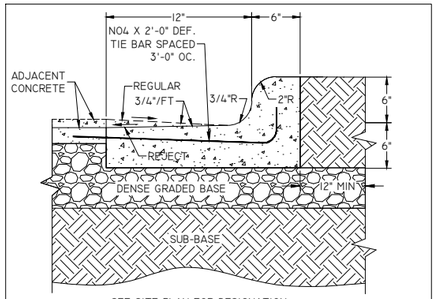


5 / C500 STD CURB & GUTTER TERMINI DETAIL
NOT TO SCALE



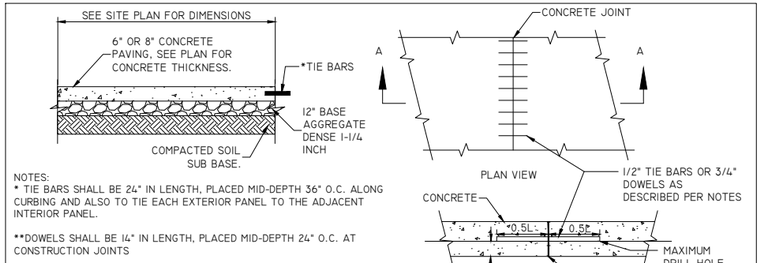
SEE SITE PLAN FOR DESIGNATION

8 / C500 24" OR 30" CURB & GUTTER DETAIL
NOT TO SCALE



SEE SITE PLAN FOR DESIGNATION

9 / C500 18" CURB & GUTTER / 18" REJECT CURB & GUTTER DETAIL
NOT TO SCALE



NOTES:
* TIE BARS SHALL BE 24" IN LENGTH, PLACED MID-DEPTH 36" O.C. ALONG CURBING AND ALSO TO TIE EACH EXTERIOR PANEL TO THE ADJACENT INTERIOR PANEL.

**DOWELS SHALL BE 14" IN LENGTH, PLACED MID-DEPTH 24" O.C. AT CONSTRUCTION JOINTS

TIE BARS AND DOWELS SHALL CONFORM WITH SUBSECTION 505.2.6 OF THE STANDARD SPECIFICATIONS. EPOXY COAT TIE BARS IN ACCORDANCE TO SECTION 505.2.4 OF THE WISDOT STANDARD SPECIFICATIONS.

DOWELS SHALL BE FIXED ON ONE END AND GREASED ON THE OTHER

CONCRETE PANELS SHALL NOT BE GREATER THAN 15' IN LENGTH IN ANY DIRECTION AND CONTRACTION JOINTS SHALL BE TO A MINIMUM DEPTH OF 1/4 THE CONCRETE DEPTH

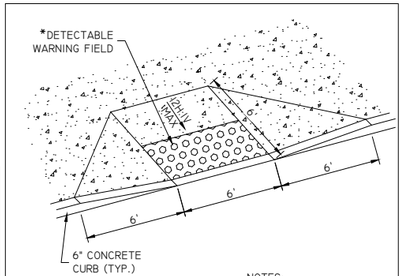
6" DEPTH (MIN.) CONCRETE SLAB-ON-GRADE WITH #3 REBAR, 3' O.C. IN BOTH DIRECTIONS, CONCRETE SEALER: TK-26UV

8" DEPTH (MIN.) CONCRETE SLAB-ON-GRADE WITH #4 REBAR, 4' O.C. IN BOTH DIRECTIONS, CONCRETE SEALER: TK-26UV

NOTES:
BASE AGGREGATE TO EXTEND 12" BEYOND BACK OF CURB OR EDGE OF PAVEMENT.

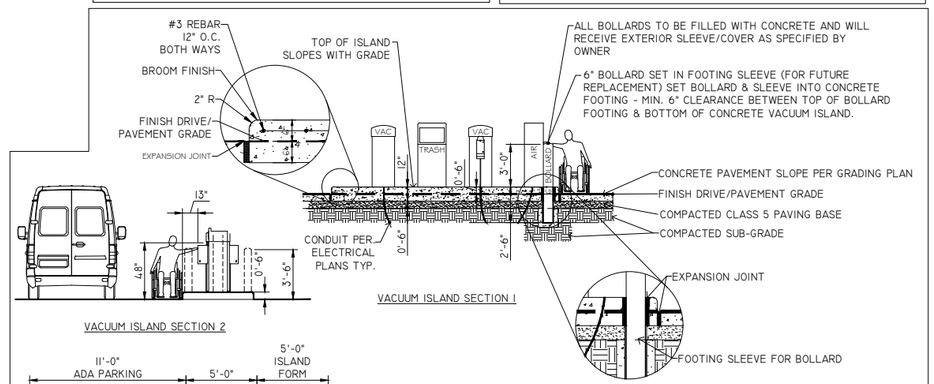
CONCRETE PAVEMENT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI AND AN AIR CONTENT OF 6% +/- 1.5%

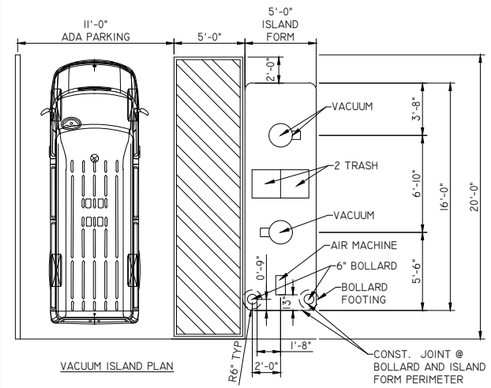
6 / C500 CONCRETE PAVEMENT DETAIL
NOT TO SCALE



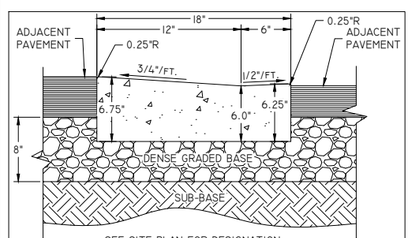
NOTES:
* DETECTABLE WARNING FIELD SHALL EXTEND FULL WIDTH ACROSS RAMP SURFACE

12 / C500 SIDEWALK RAMP DETAIL
NOT TO SCALE





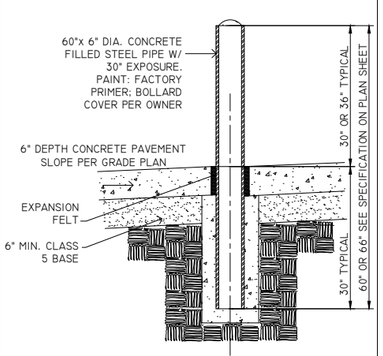
14 / C500 VACUUM ISLAND DETAILS
NOT TO SCALE



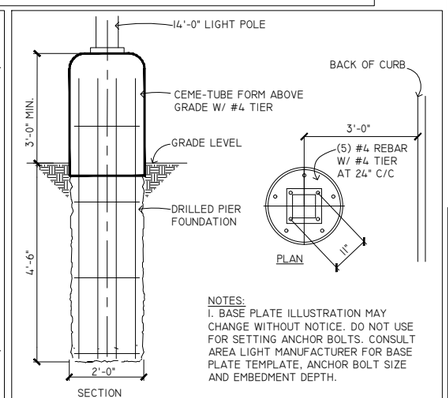
SEE SITE PLAN FOR DESIGNATION

15 / C500 18" MOUNTABLE CURB & GUTTER DETAIL
NOT TO SCALE

NOTE: SEE ARCHITECTURAL PLANS FOR REMOVABLE BOLLARD LOCATION AND DETAIL

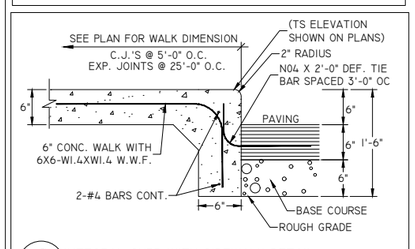


10 / C500 6" PIPE BOLLARD DETAIL
NOT TO SCALE



NOTES:
1. BASE PLATE ILLUSTRATION MAY CHANGE WITHOUT NOTICE. DO NOT USE FOR SETTING ANCHOR BOLTS. CONSULT AREA LIGHT MANUFACTURER FOR BASE PLATE TEMPLATE, ANCHOR BOLT SIZE AND EMBEDMENT DEPTH.

11 / C500 ROUND AREA LIGHT FOUNDATION DETAIL
NOT TO SCALE



13 / C500 INTEGRAL CURB WITH SIDEWALK DETAIL
NOT TO SCALE

KWIK TRIP STORES

KWIK STAR STORES

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REI
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4080 N. 20TH AVENUE
WAUSAU, WISCONSIN 54401
PHONE: 715.675.9784 FAX: 715.675.4060
EMAIL: MAIL@REIENGINEERING.COM

NO SCALE

SITE PLAN DETAILS
CONVENIENCE STORE #631
STH 167 & MAPLE ROAD
GERMANTOWN, WI

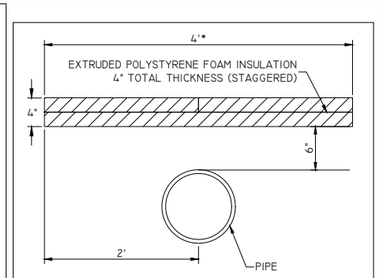
#	DATE	DESCRIPTION
1		

DRAWN BY NAP
SCALE NOT TO SCALE
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C500

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C500-SITE DETAILS.DWG LAYOUT: C500
PLOTTED: OCT 08, 2024 - 3:33PM PLOTTED BY: NATHANP

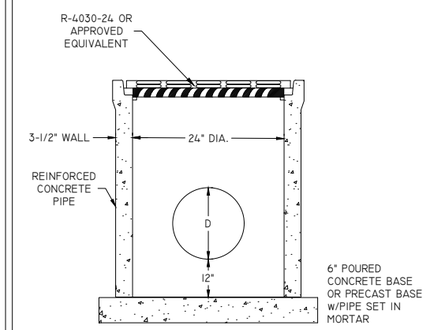
SEE PETROLEUM DETAILS

1 / C501 STORAGE TANKS COMPLEX DETAIL
NOT TO SCALE



*WIDTH OF INSULATION SHALL INCREASE x FT. PER EVERY x FT. OF VERTICAL SEPARATION.

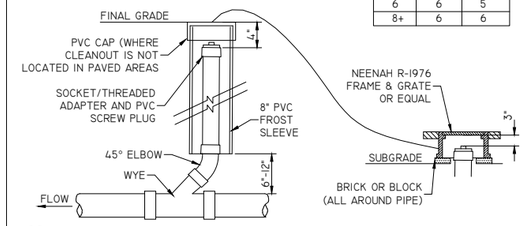
2 / C501 PIPE INSULATION DETAIL
NOT TO SCALE



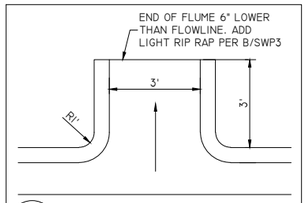
3 / C501 PRECAST REINFORCED CONC. MANHOLE DETAIL
NOT TO SCALE

ALTERNATE FOR TRAFFIC/PAVED AREAS

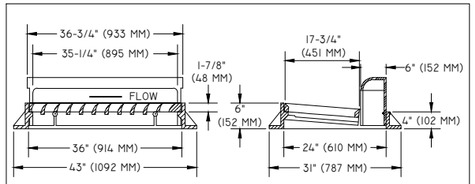
DIA. OF PIPE SERVED BY CLEANOUT	MIN. DIA. OF CLEANOUT EXTENSION	MIN. DIA. OF CLEANOUT OPENING
INCHES	INCHES	INCHES
4	4	3 1/2
5	5	4
6	6	5
8+	6	6



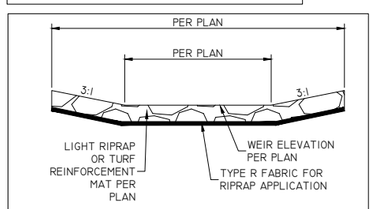
4 / C501 SANITARY & STORM SEWER CLEANOUT CLEANOUT
NOT TO SCALE



5 / C501 CONCRETE FLUME DETAIL
NOT TO SCALE

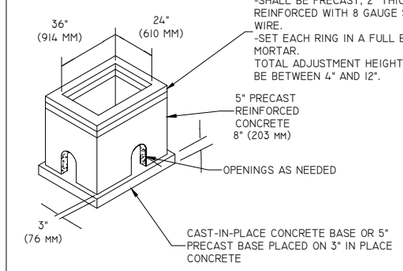


USE NEENAH R-3067 DR/DL CASTING OR APPROVED EQUAL

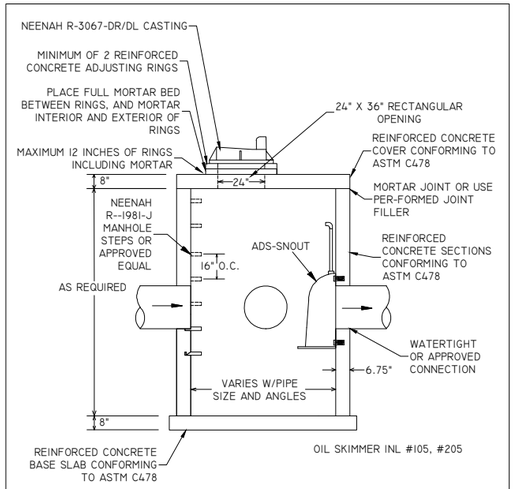


6 / C501 OVERFLOW WEIR DETAIL
NOT TO SCALE

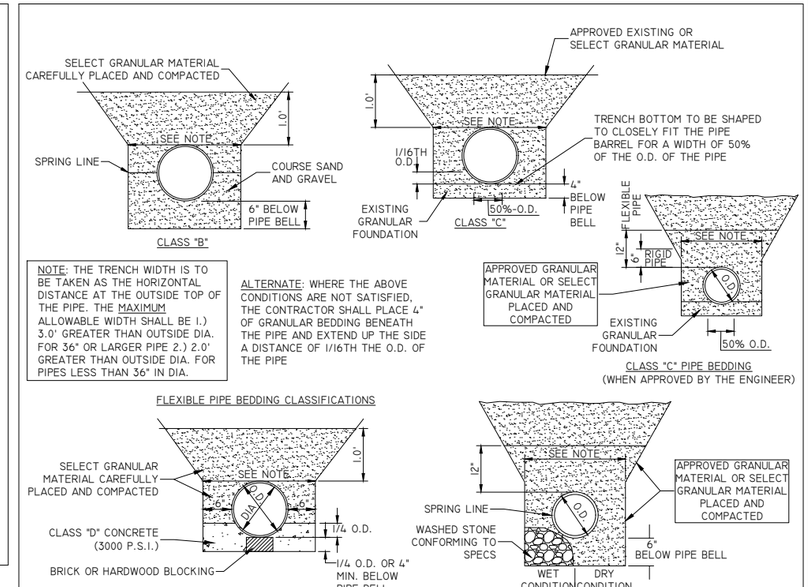
NOTE:
WEIRS TO USE PERMANENT TURF REINFORCEMENT MAT



7 / C501 24"x 36" CURB INLET AND CASTING DETAIL
NOT TO SCALE



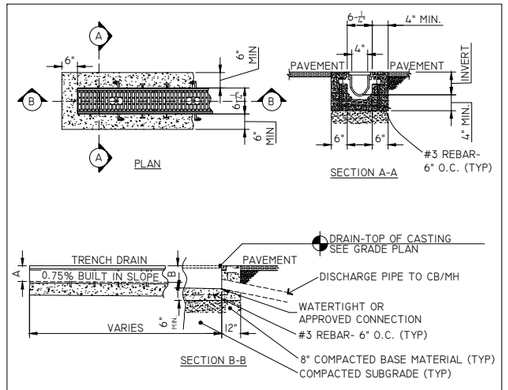
8 / C501 STORM SEWER INLET WITH SUMP DETAIL
NOT TO SCALE



NOTE: THE TRENCH WIDTH IS TO BE TAKEN AS THE HORIZONTAL DISTANCE AT THE OUTSIDE TOP OF THE PIPE. THE MAXIMUM ALLOWABLE WIDTH SHALL BE 1.) 3.0' GREATER THAN OUTSIDE DIA. FOR 36" OR LARGER PIPE 2.) 2.0' GREATER THAN OUTSIDE DIA. FOR PIPES LESS THAN 36" IN DIA.

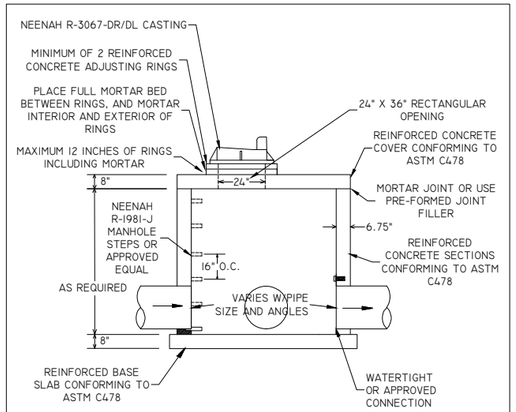
ALTERNATE: WHERE THE ABOVE CONDITIONS ARE NOT SATISFIED, THE CONTRACTOR SHALL PLACE 4" OF GRANULAR BEDDING BENEATH THE PIPE AND EXTEND UP THE SIDE A DISTANCE OF 1/16TH THE O.D. OF THE PIPE

9 / C501 PIPE BEDDING CLASSIFICATIONS DETAIL
NOT TO SCALE



TRENCH SHALL BE "PERMA-TRENCH Z 886 SYSTEM - SERIES 8606N

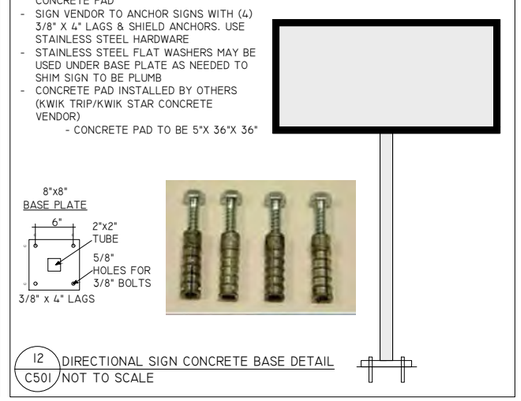
10 / C501 Z 886 TRENCH DRAIN DETAIL
NOT TO SCALE



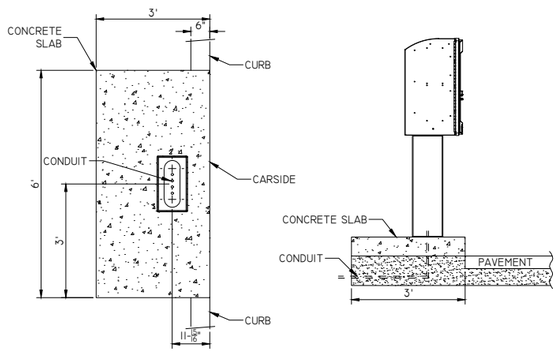
11 / C501 STORM SEWER INLET WITHOUT SUMP DETAIL
NOT TO SCALE

NOTES:
- SIGN VENDOR TO ANCHOR SIGN/S TO CONCRETE PAD
- SIGN VENDOR TO ANCHOR SIGNS WITH (4) 3/8" X 4" LAGS & SHIELD ANCHORS. USE STAINLESS STEEL HARDWARE
- STAINLESS STEEL FLAT WASHERS MAY BE USED UNDER BASE PLATE AS NEEDED TO SHIM SIGN TO BE PLUMB
- CONCRETE PAD INSTALLED BY OTHERS (KWIK TRIP/KWIK STAR CONCRETE VENDOR)
  - CONCRETE PAD TO BE 5"X 36"X 36"

SINGLE SIDED DIRECTIONAL SIGN



12 / C501 DIRECTIONAL SIGN CONCRETE BASE DETAIL
NOT TO SCALE



13 / C501 CAR WASH PAY STATION DETAIL
NOT TO SCALE

KWIK TRIP STORES

KWIK STAR STORES

KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
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REI
CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING
REI Engineering, INC.
4080 N. 20TH AVENUE
WAUSAU, WISCONSIN 54401
PHONE: 715.675.9784 FAX: 715.675.4060
EMAIL: MAIL@REIENGINEERING.COM

NO SCALE

SITE PLAN DETAILS

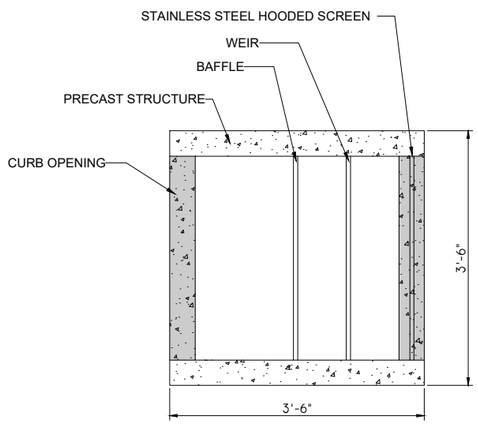
CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

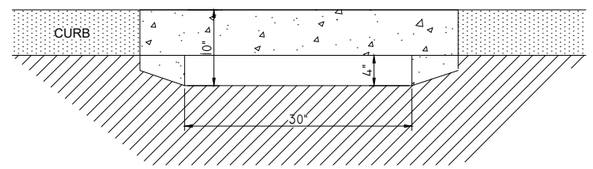
#	DATE	DESCRIPTION
1		

DRAWN BY NAP
SCALE NOT TO SCALE
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C501

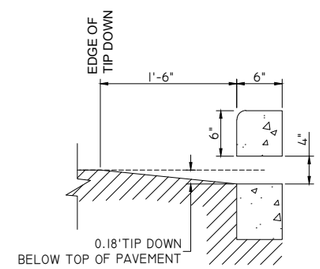
DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C500-SITE DETAILS.DWG LAYOUT: C501
PLOTTED: OCT 08, 2024 - 3:33PM PLOTTED BY: NATHANP



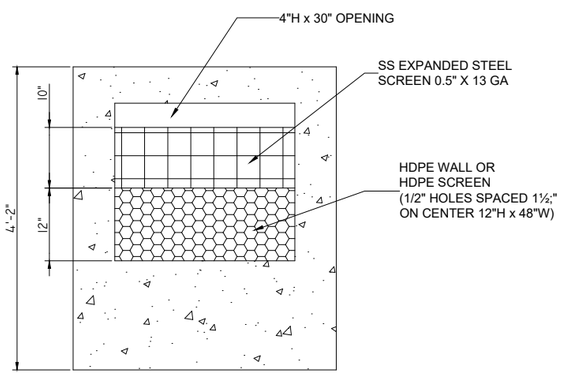
PLAN VIEW



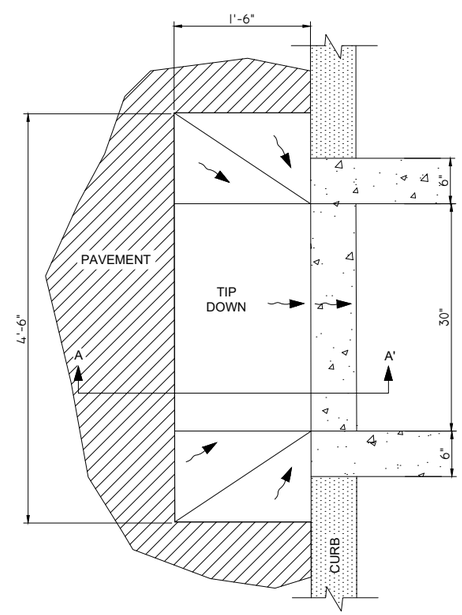
CURB FACE



SECTION A-A

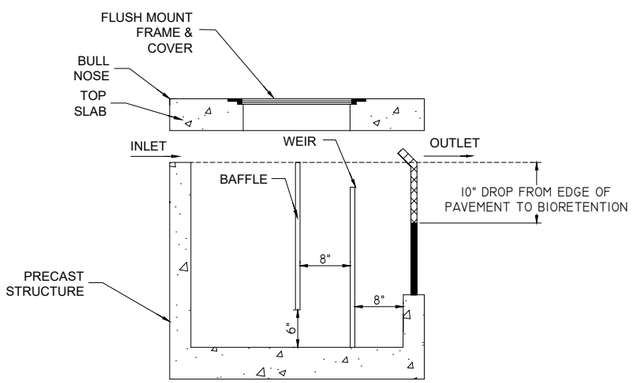


BACK VIEW



PLAN

PRETX - 8" CURB REVEAL DETAIL
NOT TO SCALE



ELEVATION VIEW

1 / C502 PRETX 30X30 UNIT DETAIL
NOT TO SCALE

PRETX SPECIFICATIONS

A. GENERAL

1. PRETX SYSTEMS ARE A PRE-FILTER AND CRITICAL MAINTENANCE DEVICE THAT EXTENDS THE OPERATING LIFE AND REDUCES THE MAINTENANCE BURDEN OF BIORETENTION SYSTEMS, RAIN GARDENS, BIOSWALES AND OTHER TYPES OF SURFACE BEST MANAGEMENT PRACTICES BY FILTERING OUT SEDIMENT, TRASH AND DEBRIS AT THE INLET.

B. PRODUCTS

1. ACCEPTABLE SYSTEM SUPPLIER:
   CONVERGENT WATER TECHNOLOGIES, INC. OR ITS
   AUTHORIZED VALUE-ADDED RESELLER
   P: (800) 711-5428; W: WWW.CONVERGENTWATER.COM

C. CONSTRUCTION AND SEQUENCING

1. EXCAVATION AND INSTALLATION
   a. ROUGH GRADE THE PRE-TX SYSTEM AREA DURING GENERAL CONSTRUCTION. EXCAVATE THE PRE-TX SYSTEM FACILITIES TO WITHIN 1 FOOT OF STRUCTURE BOTTOM .
   b. PLACE 1 FOOT BED OF COARSE STONE TO ELEVATION OF BASE OF STRUCTURE.
   c. ESTABLISH ELEVATIONS FOR ADJACENT CURBS, EDGE OF PAVEMENT AND TIP DOWN, SIDEWALK, PIPE INVERTS FOR INLETS AND OUTLETS AS INDICATED ON DRAWINGS.
2. INSTALLATION
   a. PLACE THE PRECAST SYSTEM TO NECESSARY ELEVATION.
   b. FOR PRETX-SURFACE:
      - VERIFY ELEVATIONS FOR ADJACENT CURBS.
      - VERIFY EDGE OF PAVEMENT TIP DOWN PAVEMENT GRADING FOR INLET GRATE.
      - VERIFY CURB ELEVATION IN RELATION TO PAVEMENT AND TIP DOWN.
      - VERIFY OUTLET INVERT FOR KNEE WALL IN RELATION TO FILTER MEDIA.
   C. INSTALL BAFFLES, WEIR, AND SCREENS AS INDICATED ON DRAWINGS.
   D. VERIFY MAINTENANCE ACCESS THROUGH GRATE OR COVER AND CLEARANCE FOR VACTOR.
   e. INSTALL TOP OF STRUCTURE LEVEL WITH ADJACENT CURB OR SIDEWALK AS PER MANUFACTURERS SPECIFICATIONS. ENGINEER FIELD VISIT REQUIRED PRIOR TO BACKFILLING.
6. BACKFILLING
   a. BACKFILL WITH APPROVED SOIL AND STONE TO THE DESIGN GRADE AS SPECIFIED IN THE DRAWINGS.
   b. BACKFILL WITH 12" OF NO. 57 STONE AROUND REAR, LEFT, AND RIGHT SIDES TO LEVEL WITH TOP OF HDPE SCREEN.
   c. BACKFILL WITH BIORETENTION SOIL MIX BEYOND STONE BACKFILL TO EQUAL ELEVATION OF THE TOP OF HDPE SCREEN.
   d. DO NOT BACKFILL SOIL OR STONE AGAINST STAINLESS SCREEN.
   e. DO NOT COMPACT ADJACENT FILTRATION SYSTEM SOIL WITH MECHANICAL EQUIPMENT.
   f. STABILIZE All REMAINING DISTURBED AREAS AND SIDE SLOPES WITH SEEDING, HYDROSEEDING, AND/ OR EROSION CONTROL BLANKETS AS INDICATED ON DRAWINGS.
4. CLEAN UP
   a. AFTER COMPLETION OF THE WORK, REMOVE AND PROPERLY DISPOSE ALL DEBRIS, CONSTRUCTION MATERIALS, RUBBISH, EXCESS SOIL, ETC., FROM THE PROJECT SITE. REPAIR PROMPTLY ANY IDENTIFIED DEFICIENCIES AND LEAVE THE PROJECT SITE IN A CLEAN AND SATISFACTORY CONDITION.

KWIK TRIP STORES

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EMAIL: MAIL@REIENGINEERING.COM

NO SCALE

SITE PLAN DETAILS

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	NOT TO SCALE
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C502

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C500-SITE DETAILS.DWG LAYOUT: C502
PLOTTED: OCT 08, 2024 - 3:34PM PLOTTED BY: NATHANIP

PROJECT DATA

PROJECT START DATE	APRIL 2025
PROJECT COMPLETION DATE	OCT 2025

SITE AREA DATA

PRE-CONSTRUCTION IMPERVIOUS AREA	61,276 SF
POST-CONSTRUCTION IMPERVIOUS AREA	117,262 SF
APPROX. AREA OF LAND DISTURBANCE	168,000 SF

SITE RUNOFF COEFFICIENT

PRE-CONSTRUCTION	NA
POST-CONSTRUCTION	90

SOIL DATA

SURFACE SOIL	PAVED
SUB-SURFACE SOIL	SILT
DEPTH OF GROUND WATER	±8 FT
DOWN-STREAM TRIBUTARY	MENOMINEE RIVER

NOTES:

(A) CONTRACTOR SHALL ABIDE BY THE WDNR CONSERVATION PRACTICE STANDARDS FOR INSTALLATION AND MAINTENANCE OF EROSION CONTROL. REFER TO C603 FOR TECHNICAL STANDARDS EMPLOYED.

(B) CONTRACTOR SHALL PROVIDE CONCRETE WASHOUT AREAS ON-SITE. SEE DETAIL E/C603.

(C) DEWATERING BAGS SHALL BE READILY AVAILABLE AND SHALL BE USED AT ALL TIMES IN THE PROCESS OF DEWATERING.

INSTALL WISDOT URBAN TYPE B EROSION CONTROL BLANKET ON SIDE SLOPES OF 4:1 OR GREATER. SEE DETAIL E/C602 FOR INSTALLATION.

ESTIMATED PRELIMINARY EROSION CONTROL QUANTITIES
(ACTUAL QUANTITIES SUBJECT TO CHANGE)

ITEM	QUANTITY
ROCK CONSTRUCTION ENTRANCE	400 SQ.YD.
INLET PROTECTION	12
EROSION CONTROL BLANKET	2,000 SQ.YD.
RIP RAP	30 CU. YD.
SILT FENCE	870 L.F.
CULVERT PROTECTION	0
DITCH CHECK	AS NEEDED
BIO ROLL/EROSION LOG	AS NEEDED

NOTE: FOR MAINTENANCE PURPOSES CONTRACTOR SHALL PROVIDE ALL SUFFICIENT QUANTITIES FOR REPAIR AND REPLACEMENT OF EROSION CONTROL DEVICES THROUGHOUT ALL PHASES OF THE PROJECTS CONSTRUCTION.

-SITE EROSION CONTROL MEASURES MUST BE IN PLACE AT ALL TIMES. SHOULD DEVICES BE REMOVED FOR WORK ACCESS, THEY SHALL BE REINSTALLED AT THE END OF EACH WORK DAY UNTIL PAVEMENTS HAVE BEEN INSTALLED AND ALL LANDSCAPE AREAS HAVE BEEN MULCHED AND SODDED. SEEDED AREAS MUST EXHIBIT MINIMUM OF 70% SOIL COVERAGE.

-REFER TO THE SWP PLAN NOTES AND DETAIL SHEETS SWP2-4 FOR MORE INFORMATION.

CONTACT:
KWIK TRIP, INC
P0 BOX 2107
LACROSSE, WI 54602

OKEYED NOTESO

1. TEMPORARY ROCK CONSTRUCTION ENTRANCE/EXIT. SEE DETAIL A/C602.
2. INSTALL SILT FENCE. SEE DETAIL D/C602.
3. PROVIDE INLET PROTECTION. REFER TO SWP2 FOR ACCEPTABLE PRODUCTS.
4. INSTALL LIGHT RIPRAP ON TYPE R GEOTEXTILE FABRIC. SEE DETAIL B/C602.
5. WET POND WITH TYPE A LINER TO SERVE AS SEDIMENT TRAP DURING CONSTRUCTION. SEE DETAILS A & B/C603.
   SEDIMENT TRAP DETAILS
   - TRAP BOTTOM ELEV. = 4.5' BELOW WEIR ELEV OR DEEPER
   - TRAP TOP ELEV. = 864.50 - 6-FT WIDE WEIR ELEV. = 863.50
6. CONSTRUCT EMERGENCY OVERFLOW WEIR, WITH LIGHT RIPRAP ON TYPE R GEOTEXTILE FABRIC. SEE DETAIL 6/C501.
7. INSTALL DITCH CHECKS @ MAX. OF 200-FT INTERVALS OR EVERY 2-FT OF DROP. SEE DETAIL D/C603.

SUGGESTED CONSTRUCTION SEQUENCE

04/01/25- PROVIDE CONSTRUCTION ACCESS
- INSTALL PERIMETER CONSTRUCTION ACCESS FENCING
- INSTALL SILT FENCE
- INSTALL INLET PROTECTION ON EXISTING STORM STRUCTURES
- PRE-CONSTRUCTION MEETING
- DEMO AND REMOVE EXISTING BUILDINGS
- SAWCUT AND REMOVE PAVEMENT, STRIP TOPSOIL, REMOVALS

04/08/25- ROUGH GRADING
- INSTALL DIVERSIONS AND SEDIMENT TRAP

04/22/25- CONSTRUCT BUILDING
- SITE UTILITY INSTALLATION

05/08/25- INSTALL INLET PROTECTION ON NEW STORM STRUCTURES

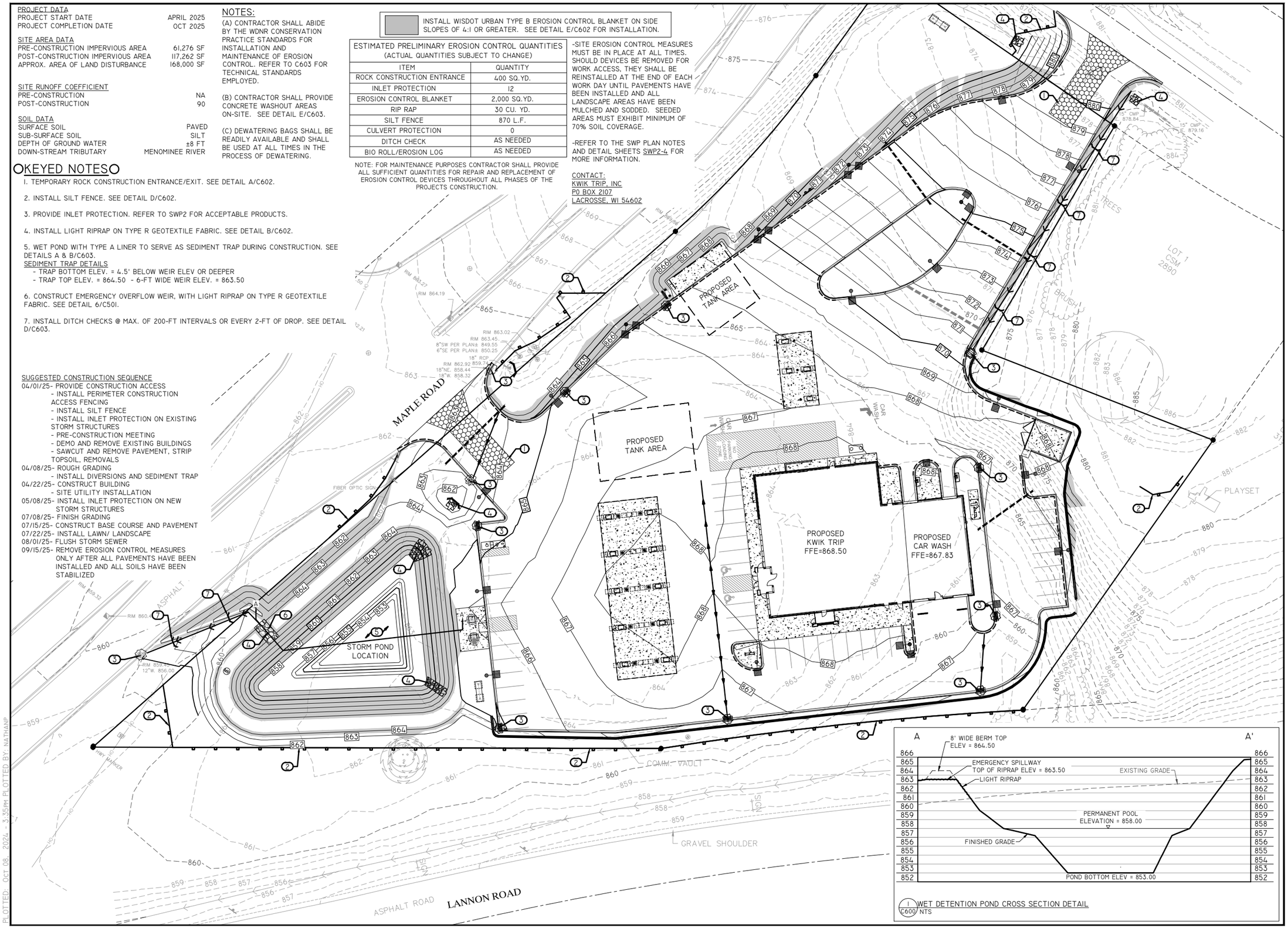
07/08/25- FINISH GRADING

07/15/25- CONSTRUCT BASE COURSE AND PAVEMENT

07/22/25- INSTALL LAWN/ LANDSCAPE

08/01/25- FLUSH STORM SEWER

09/15/25- REMOVE EROSION CONTROL MEASURES ONLY AFTER ALL PAVEMENTS HAVE BEEN INSTALLED AND ALL SOILS HAVE BEEN STABILIZED



1 C600 WET DETENTION POND CROSS SECTION DETAIL
NTS

KWIK TRIP STORES

KWIK STAR STORES

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CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING
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4080 N. 20TH AVENUE
WAUSAU, WISCONSIN 54401
PHONE: 715.675.9784 FAX: 715.675.4060
EMAIL: MAIL@REIENGINEERING.COM

SCALE
0 30 60

EROSION CONTROL PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C600

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C600-EROSION CONTROL PLAN.DWG LAYOUT: C600
PLOTTED: OCT 08, 2024 - 3:35PM PLOTTED BY: NATHANP

STORM WATER POLLUTION PREVENTION PLAN

POLLUTION PREVENTION PLAN
ALL CONTRACTORS / SUBCONTRACTORS SHALL CONDUCT THEIR OPERATIONS IN A MANNER THAT MINIMIZES EROSION AND PREVENTS SEDIMENTS FROM LEAVING THE PROJECT SITE. THE PRIME CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLIANCE AND IMPLEMENTATION OF THE POLLUTION PREVENTION PLAN (PPP) FOR THEIR ENTIRE CONTRACT. THE RESPONSIBILITY SHALL BE FURTHER SHARED WITH SUBCONTRACTORS WHOSE WORK IS A SOURCE OF POTENTIAL POLLUTION AS DEFINED IN THE PPP.

I. SITE DESCRIPTION
THIS POLLUTION PREVENTION PLAN IS FOR THE CONSTRUCTION OF THE KWIK TRIP CONVENIENCE STORE #631 PROJECT. THE PROJECT IS LOCATED IN SECTION 28, TOWNSHIP 09, RANGE 20, WASHINGTON COUNTY, WISCONSIN.

THIS PPP COVERS 4.37 ACRES WITH AN ESTIMATED 3.86 ACRES BEING DISTURBED THROUGH EXCAVATION, GRADING, AND PAVING. THE PORTION OF THE PPP COVERED BY THIS CONTRACT HAS 4.37 ACRES BEING DISTURBED.

THE PROJECT IS LOCATED IN AN AREA OF (HMB2 - HOCHHEIM LOAM, HMC2 - HOCHHEIM LOAM, HMD2 - HOCHHEIM LOAM, OUB2 - OZAUKEE SILT LOAM, SF - SANDY AND GRAVELLY LAND, USA - VIRGIL SILTY LOAM). THE ESTIMATED CURVE NUMBER FOR THIS PPP AFTER CONSTRUCTION IS XX.

REFER TO PLANS: KWIK TRIP CONVENIENCE STORE #631 FOR LOCATIONS OF TYPICAL SLOPES, DITCH GRADES, AND MAJOR STRUCTURAL AND NON-STRUCTURAL CONTROLS. A COPY OF THIS PLAN WILL BE ON FILE AT THE PROJECT ENGINEER'S OFFICE AND ON-SITE. RUNOFF FROM THIS WORK WILL OVERLAND FLOW THROUGH DETENTION POND, DITCHES, STORM SEWER TO MENOMINEE RIVER.

THIS PROJECT IS NOT LOCATED WITHIN A 100-YEAR FLOODPLAIN.

POTENTIAL SOURCES OF POLLUTION:
SITE SOURCES OF POLLUTION GENERATED AS A RESULT OF THIS WORK RELATE TO SILTS AND SEDIMENT WHICH MAY BE TRANSPORTED AS A RESULT OF A STORM EVENT. HOWEVER, THIS PPP PROVIDES CONVEYANCE FOR OTHER (NON-PROJECT RELATED) OPERATIONS. THESE OTHER OPERATIONS HAVE STORM WATER RUNOFF, THE REGULATION OF WHICH IS BEYOND THE CONTROL OF THIS PPP. POTENTIALLY THIS RUNOFF CAN CONTAIN POLLUTANTS RELATED TO SITE-SPECIFIC LAND USES.
EXAMPLES ARE:

RURAL AGRICULTURAL ACTIVITIES:
RUNOFF FROM AGRICULTURAL LAND USE CAN POTENTIALLY CONTAIN CHEMICALS INCLUDING HERBICIDES, PESTICIDES, FUNGICIDES, AND FERTILIZERS.

CONSTRUCTION ACTIVITIES:
RUNOFF FROM CONSTRUCTION ACTIVITIES CAN POTENTIALLY CONTAIN FUELS, OILS, AND CHEMICALS FROM SPECIFIC CONSTRUCTION RELATED ACTIVITIES.

2. CONTROLS

INLET PROTECTION DEVICES SHALL BE PLACED AROUND INTAKES. SILT FENCE SHALL BE PLACED AT LOCATIONS WHERE RUNOFF CAN MOVE OFFSITE. VEGETATION IN AREAS NOT NEEDED FOR CONSTRUCTION SHALL BE PRESERVED. AS AREAS REACH THEIR FINAL GRADE, ADDITIONAL SILT FENCES, SILT BASINS, INTERCEPTING DITCHES, SOD FLUMES, LETDOWNS, BRIDGE END DRAINS, AND EARTH DIKES SHALL BE INSTALLED AS SPECIFIED IN THE PLANS AND / OR AS REQUIRED BY PROJECT ENGINEER. THIS MAY INCLUDE USING SILT FENCE AS DITCH CHECKS. TEMPORARY STABILIZING SHALL BE COMPLETED AS THE DISTURBED AREAS ARE CONSTRUCTED. IF CONSTRUCTION ACTIVITY IS NOT PLANNED TO OCCUR IN A DISTURBED AREA IMMEDIATELY, THE AREA SHALL BE STABILIZED BY TEMPORARY SEEDING OR MULCHING WITHIN 14 DAYS. OTHER STABILIZING METHODS SHALL BE USED OUTSIDE THE SEEDING PERIOD.

THIS WORK SHALL BE DONE IN ACCORDANCE WITH THE WISCONSIN TRANSPORTATION STANDARD SPECIFICATIONS. CONTRACTOR SHALL ALSO FOLLOW ALL REQUIREMENTS OF THE WASHINGTON COUNTY EROSION AND SEDIMENT CONTROL REGULATIONS.

AS THE WORK PROGRESSES, ADDITIONAL EROSION CONTROL ITEMS SUCH AS SOD FLUMES, DITCH CHECKS, ROCK OUTLET PROTECTION, AND LETDOWN STRUCTURES AND OTHER APPROPRIATE MEASURES SHALL BE INSTALLED BY THE CONTRACTOR AS DETERMINED BY THE ENGINEER AFTER FIELD INVESTIGATION. THE CONSTRUCTION WILL BE COMPLETED WITH THE ESTABLISHMENT OF PERMANENT PERENNIAL VEGETATION OF ALL DISTURBED AREAS BY THE CONTRACTOR.

3. OTHER CONTROLS

CONTRACTOR DISPOSAL OF UNUSED CONSTRUCTION MATERIALS AND CONSTRUCTION MATERIAL WASTE SHALL COMPLY WITH APPLICABLE STATE AND LOCAL WASTE DISPOSAL, SANITARY SEWER, OR SEPTIC SYSTEM REGULATIONS. IN THE EVENT OF A CONFLICT WITH OTHER GOVERNMENT LAWS, RULES, AND REGULATIONS, THE MORE RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.

MUD TRACK-OUT SHALL BE CLEANED OFF THE ROADWAY NIGHTLY AND BEFORE ANY RAINFALL EVENT. WATER MAY NOT BE USED TO CLEAN THE ROADWAY.

CONTRACTOR SHALL KEEP PERMIT, INSPECTION LOGS, SITE PLAN, AND OTHER PERMIT DATA ON SITE AT ALL TIMES. MATERIAL SHALL BE PLACED IN AN EASILY ACCESSIBLE MAILBOX THAT IS CLEARLY MARKED "SWPPP".

ALL FUELS AND OILS SHALL BE CONTAINED BY A SECONDARY CONTAINMENT BERM OR WITHIN A TRAILER.

ALL SILT FENCE AND INLET PROTECTION DEVICES AS SHOWN SHALL BE INSTALLED PRIOR TO COMMENCING CONSTRUCTION WHENEVER POSSIBLE.

A NOTICE OF DISCONTINUATION MUST BE FILED WITH THE WDNR ONCE VEGETATION HAS BEEN ESTABLISHED TO A MINIMUM COVERAGE OF 70%.

CONTRACTOR SHALL MARK ON THE INITIAL STORM WATER POLLUTION PREVENTION PLAN THE LOCATION OF STORAGE AREAS FOR FUELS AND OILS, PORTA-POTTY, DUMPSTER OR WASTE CONTAINMENT BINS, CONCRETE WAS OUT AREA, AND OTHER NECESSARY ITEMS.

ENTRANCES SHALL BE MAINTAINED TO CONTROL MUD TRACK-OUT FROM THE SITE.

THE STORMWATER POLLUTION PREVENTION PLAN SHALL BE UPDATED AS NECESSARY DURING CONSTRUCTION.

APPROVED STATE OF LOCAL PLANS:
DURING THE COURSE OF THIS CONSTRUCTION, IT IS POSSIBLE THAT SITUATIONS WILL ARISE WHERE UNKNOWN MATERIALS WILL BE ENCOUNTERED. WHEN SUCH SITUATIONS ARE ENCOUNTERED, THEY WILL BE HANDLED ACCORDING TO ALL FEDERAL, STATE, AND LOCAL REGULATIONS IN EFFECT AT THE TIME.

4. MAINTENANCE

THE CONTRACTOR IS REQUIRED TO MAINTAIN ALL TEMPORARY EROSION CONTROL MEASURES IN PROPER WORKING ORDER, INCLUDING CLEANING, REPAIRING, OR REPLACING THEM THROUGHOUT THE CONTRACT PERIOD. CLEANING OF SILT CONTROL DEVICES SHALL BEGIN WHEN THE FEATURES HAVE LOST 50% OF THEIR CAPACITY.

5. INSPECTIONS

INSPECTIONS SHALL BE MADE JOINTLY BY THE CONTRACTOR AND THE CONTRACTING AUTHORITY EVERY SEVEN CALENDAR DAYS. THE CONTRACTOR SHALL IMMEDIATELY BEGIN CORRECTIVE ACTION ON ALL DEFICIENCIES FOUND. THE FINDINGS OF THIS INSPECTION SHALL BE RECORDED IN THE PROJECT DIARY. THIS PPP MAY BE REVISED BASED ON THE FINDING OF THE INSPECTION. THE CONTRACTOR SHALL IMPLEMENT ALL REVISIONS. ALL CORRECTIVE ACTIONS SHALL BE COMPLETED WITHIN 3 CALENDAR DAYS OF THE INSPECTION.

6. NON-STORM DISCHARGES

THIS INCLUDES SUBSURFACE DRAINS (I.E. FIELD TILE, SUBDRAINS), SLOPE DRAINS, AND BRIDGE END DRAINS. THE VELOCITY OF THE DISCHARGE FROM THESE FEATURES MAY BE CONTROLLED BY THE USE OF PATIO BLOCKS, CLASS A STONE, OR EROSION STONE.

7. SEQUENCE OF CONSTRUCTION ACTIVITIES

ALL EROSION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO COMMENCING ANY CONSTRUCTION ON-SITE. FIRST, ALL NOTED REMOVALS SHALL BE COMPLETED. SECOND, GRADING CAN COMMENCE TO BRING SOIL TO FINAL GRADE.. NEXT, INSTALLATION OF UTILITIES AND PAVING SHALL BE COMPLETED. FINALLY, THE DISTURBED AREAS SHALL BE SEEDED, FERTILIZED, AND MULCHED AS SHOWN IN THE PLANS.

OWNER CERTIFICATION:

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

NAME (PRINTED OR TYPED): _____

TITLE: _____

SIGNATURE: _____

DATE: _____

NAME OF COMPANY, IF APPLICABLE: _____

ADDRESS: _____

CITY, STATE, ZIP CODE: _____

TELEPHONE NUMBER: _____

ADDRESS OF THE SITE: _____

CONTRACTOR / SUBCONTRACTOR CERTIFICATION:

"I CERTIFY UNDER PENALTY OF LAW THAT I UNDERSTAND THE TERMS AND CONDITIONS OF THE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT THAT AUTHORIZES THE STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY FROM THE CONSTRUCTION SITE AS PART OF THIS CERTIFICATION. FURTHER, BY MY SIGNATURE, I UNDERSTAND THAT I AM BECOMING CO-PERMITTEE, ALONG WITH THE OWNER(S) AND OTHER CONTRACTORS AND SUBCONTRACTORS SIGNING SUCH CERTIFICATIONS, TO THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES NPDES GENERAL PERMIT NO. 2 FOR "STORM WATER DISCHARGE ASSOCIATED WITH INDUSTRIAL ACTIVITY FOR CONSTRUCTION ACTIVITIES" AT THE IDENTIFIED SITE. AS A CO-PERMITTEE, I UNDERSTAND THAT I, AND MY COMPANY, ARE LEGALLY REQUIRED UNDER THE CLEAN WATER ACT AND THE CODE OF WISCONSIN, TO ENSURE COMPLIANCE WITH THE TERMS AND CONDITIONS OF THE STORM WATER POLLUTION PREVENTION PLAN DEVELOPED UNDER THE NPDES PERMIT AND THE TERMS OF THE NPDES PERMIT."

NAME (PRINTED OR TYPED): _____

TITLE: _____

SIGNATURE: _____

DATE: _____

NAME OF CONTRACTING FIRM: _____

ADDRESS: _____

CITY, STATE, ZIP CODE: _____

TELEPHONE NUMBER: _____

ADDRESS OF THE SITE: _____

CONTRACTORS/SUBCONTRACTORS WHO WILL IMPLEMENT EACH EROSION CONTROL MEASURE:

SILT FENCE: CONTRACTOR (WITH ADDRESS AND TELEPHONE NUMBER)

_____

TOPSOIL BERM: CONTRACTOR (WITH ADDRESS AND TELEPHONE NUMBER)

_____

STABILIZED CONSTRUCTION ENTRANCE: CONTRACTOR (WITH ADDRESS AND TELEPHONE NUMBER)

_____

CONCRETE WASH-OUT AREA: CONTRACTOR (WITH ADDRESS AND TELEPHONE NUMBER)

_____

DUMPSTER: CONTRACTOR (WITH ADDRESS AND TELEPHONE NUMBER)

_____

PORT-A-POTTY: CONTRACTOR (WITH ADDRESS AND TELEPHONE NUMBER)

_____

INLET PROTECTION DEVICE: CONTRACTOR (WITH ADDRESS AND TELEPHONE NUMBER)

_____

KWIK TRIP STORES

KWIK STAR STORES

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EROSION CONTROL NOTES

CONVENIENCE STORE #631

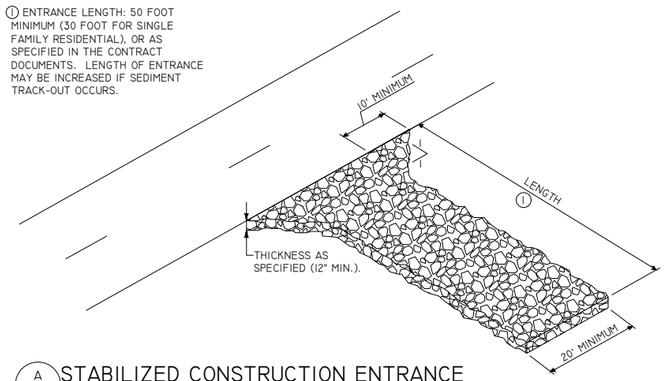
STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP XXX
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C601

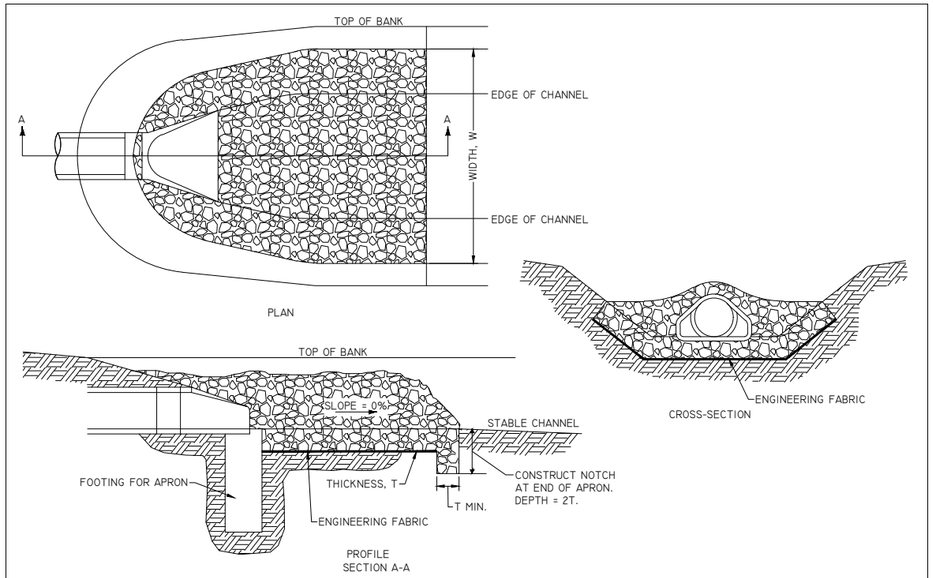
DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C600-EROSION CONTROL PLAN.DWG LAYOUT: C601
PLOTTED: OCT 08, 2024 - 3:35PM PLOTTED BY: NATHANP

① ENTRANCE LENGTH: 50 FOOT MINIMUM (30 FOOT FOR SINGLE FAMILY RESIDENTIAL), OR AS SPECIFIED IN THE CONTRACT DOCUMENTS. LENGTH OF ENTRANCE MAY BE INCREASED IF SEDIMENT TRACK-OUT OCCURS.



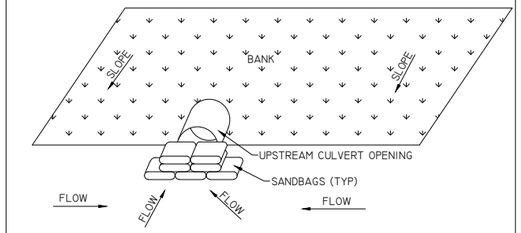
A / C602 STABILIZED CONSTRUCTION ENTRANCE

FOR CONSTRUCTION EGRESS POINTS
NTS



B / C602 RIP RAP APRON FOR PIPE OUTLET INTO CHANNEL

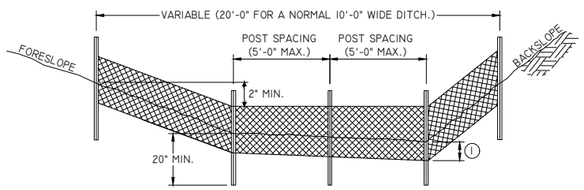
NTS



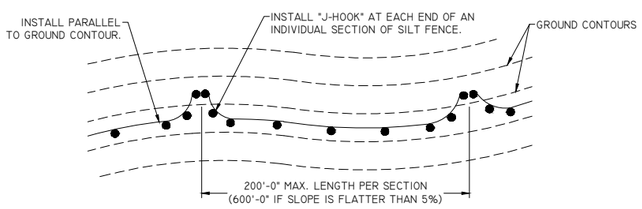
C / C602 CULVERT PROTECTION

NTS

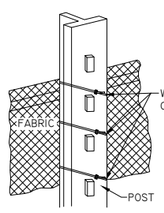
① INSERT 12 INCHES OF FABRIC A MINIMUM OF 6 INCHES DEEP (FABRIC MAY BE FOLDED BELOW THE GROUND LINE).



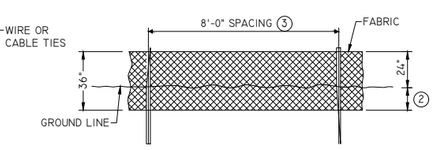
TYPICAL SILT FENCE DITCH CHECK



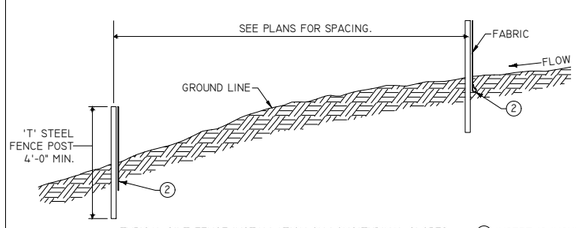
TYPICAL SILT FENCE INSTALLATION ON LONGITUDINAL SLOPES (PLAN VIEW)



ATTACHMENT TO POST



DETAILS OF SILT FENCE ON LONGITUDINAL SLOPES



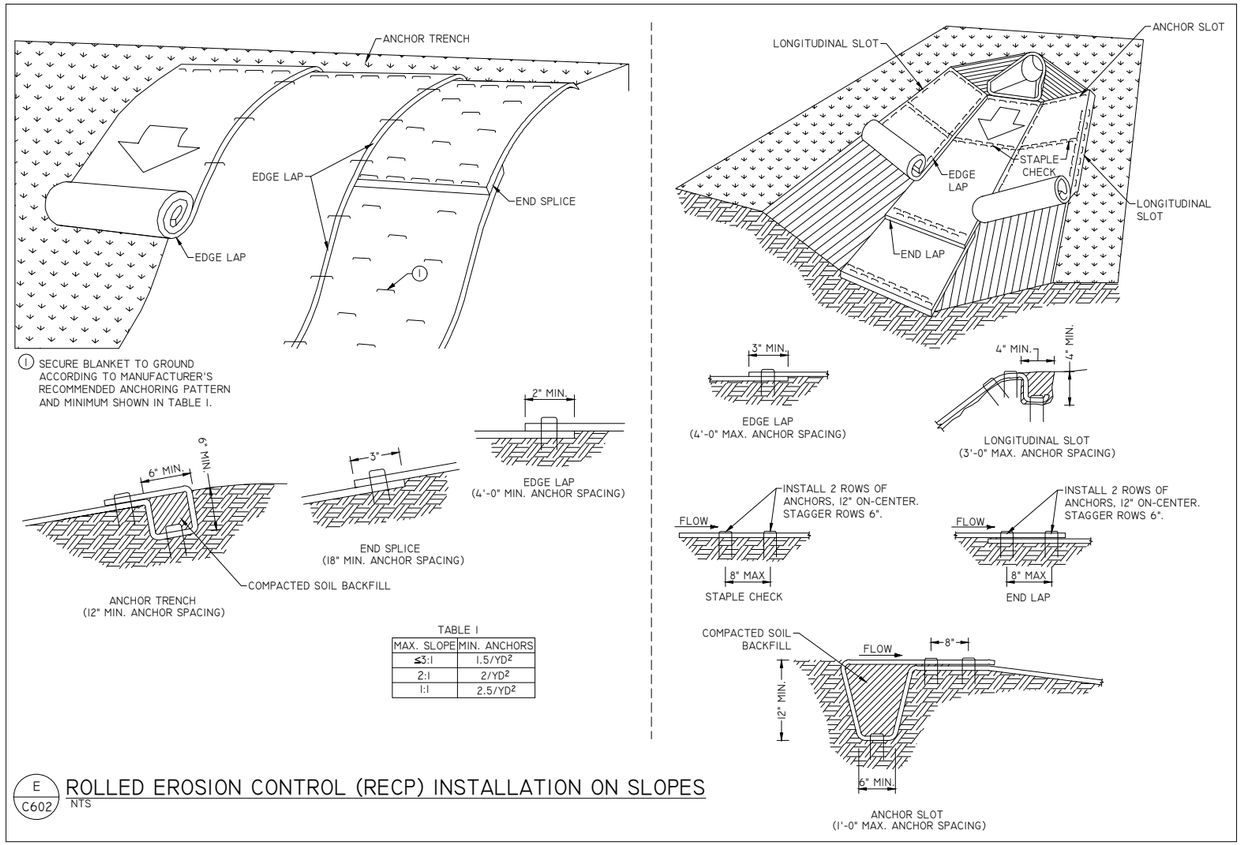
TYPICAL SILT FENCE INSTALLATION ON LONGITUDINAL SLOPES (PROFILE VIEW)

② INSERT 12 INCHES OF FABRIC A MINIMUM OF 6 INCHES DEEP (FABRIC MAY BE FOLDED BELOW THE GROUND LINE).

③ REDUCE POST SPACING TO 5'-0" AT WATER CONCENTRATION AREAS, OR AS REQUIRED TO ADEQUATELY SUPPORT FENCE.

D / C602 SILT FENCE

NTS



① SECURE BLANKET TO GROUND ACCORDING TO MANUFACTURER'S RECOMMENDED ANCHORING PATTERN AND MINIMUM SHOWN IN TABLE I.

TABLE I

MAX. SLOPE	MIN. ANCHORS
≤3:1	1.5/YD²
2:1	2/YD²
1:1	2.5/YD²

E / C602 ROLLED EROSION CONTROL (RECP) INSTALLATION ON SLOPES

NTS

ALL EROSION CONTROL MEASURES TO BE INSTALLED AND MAINTAINED PER WDNR STANDARDS
HTTP://DNR.WI.GOV/ORG/WATER/WM/NPS/STORMWATER/TECHSTDS.HTM

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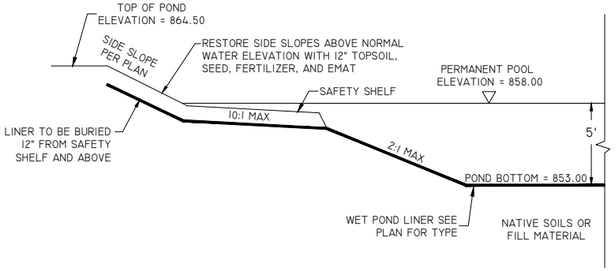


GENERAL POND LINER SPECIFICATIONS
(REFER TO APPENDIX D OF WDNR TECHNICAL STANDARD 1001 FOR DETAILED SPECIFICATIONS)

*1. TYPE A LINER (ANY OF THE FOLLOWING)
- CLAY LINER: MINIMUM THICKNESS OF 2 FEET WITH AN IN-PLACE HYDRAULIC CONDUCTIVITY OF 1 X 10^{-7} CM/SEC OR LESS.
- HDPE: MINIMUM THICKNESS OF 60 MIL.
- GCL: GEOSYNTHETIC CLAY LINER PER NRCS SPECIFICATIONS OUTLINED IN APPENDIX D.

TYPE B LINER (ANY OF THE FOLLOWING)
- CLAY LINER: MINIMUM THICKNESS OF 2 FEET WITH AN IN-PLACE HYDRAULIC CONDUCTIVITY OF 1 X 10^{-6} CM/SEC OR LESS.
- HDPE: MINIMUM THICKNESS OF 40 MIL.
- PPL: MINIMUM THICKNESS OF 30 MIL.

TYPE C LINER (ANY OF THE FOLLOWING)
- SILT/CLAY LINER: MINIMUM THICKNESS OF 2 FEET
- HDPE: ANY THICKNESS
- PPL: MINIMUM THICKNESS OF 20 MIL
- PVC: MINIMUM THICKNESS OF 30 MIL
- EPDM: MINIMUM THICKNESS OF 45 MIL

NOTE:
1. SHOULD THE CONTRACTOR ENCOUNTER SEASONAL OR PERCHED GROUNDWATER DURING CONSTRUCTION OF THE POND AND IT'S LINER, CONTACT ENGINEER FOR UNDERDRAIN RECOMMENDATIONS.

2. MANUFACTURED LINERS SHALL BE PROVIDED WITH AIR-RELEASE VENTS TO PREVENT FLOATING.

3. CONTRACTOR TO PROVIDE POND LINER DOCUMENTATION TO OWNER PRIOR TO FINAL ACCEPTANCE.

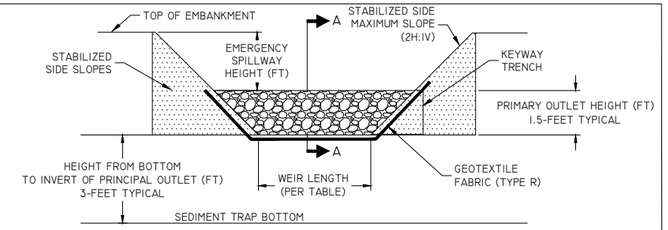
A / C603 WET POND LINER
NTS

NOTES:
1. SIDE SLOPES AND FACES OF EARTHEN EMBANKMENT AROUND OUTLET SHALL BE ARMORED WITH RIPRAP OR STABILIZED WITH EROSION MAT SUFFICIENT TO HANDLE FLOWS FROM THE 10-YEAR STORM.

2. STONE (SHORT DURATION): 3-6" WELL GRADED ANGULAR CLEAR STONE.

3. STONE (6+ MONTHS): COMBINATION OF LIGHT RIPRAP WITH 12"-THICK LAYER OF 1" ANGULAR CLEAR STONE.

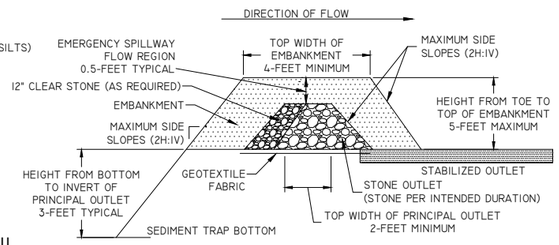
4. REFER TO WDNR TECH STD 1063 FOR ADDITIONAL INFORMATION.



CROSS-SECTION VIEW OF PRINCIPAL OUTLET

* AS = 625 X ADR (COARSE GRAINED SOILS + SANDS)
AS = 1560 X ADR (MEDIUM GRAINED SOILS + LOAMS,SILTS)
AS = 5300 X ADR (FINE GRAINED SOILS + CLAYS)

ADR (OC)	WEIR LENGTH (FT)
1	4
2	6
3	8
4	10
5	12



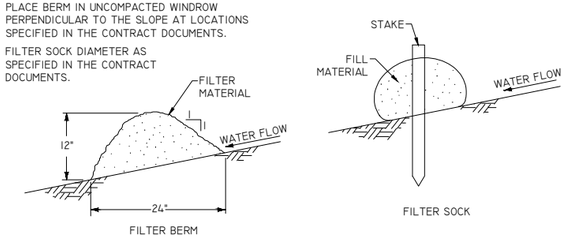
VIEW A-A OF PRINCIPAL OUTLET

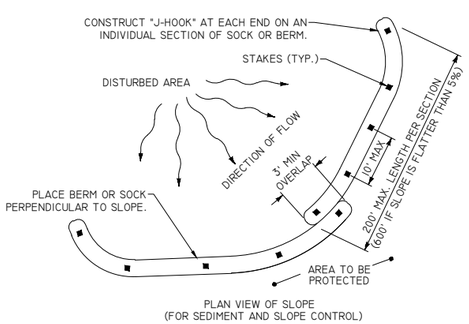
B / C603 SEDIMENT TRAP DETAIL
NTS

BERM SHOWN IS TYPICAL FOR SLOPES FLATTER THAN 3:1. FOR STEEPER SLOPES, INCREASE BERM SIZE AS DIRECTED BY THE ENGINEER.

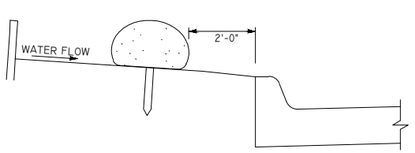
PLACE BERM IN UNCOMPACTED WINDROW PERPENDICULAR TO THE SLOPE AT LOCATIONS SPECIFIED IN THE CONTRACT DOCUMENTS.

FILTER SOCK DIAMETER AS SPECIFIED IN THE CONTRACT DOCUMENTS.





PLAN VIEW OF SLOPE
(FOR SEDIMENT AND SLOPE CONTROL)



SECTION VIEW AT STREET
(FOR PERIMETER CONTROL ALONG STREET)

TYPICAL PLACEMENT OF BERM OR SOCK

C / C603 FILTER BERM AND FILTER SOCK
NTS

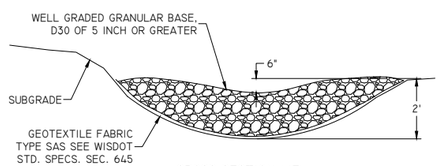
INSTALL & MAINTAIN IN ACCORDANCE WITH DNR TECHNICAL STANDARD 1062.

DITCH CHECKS TO BE REMOVED AFTER THE DITCH IS VEGETATED AND STABILIZED.

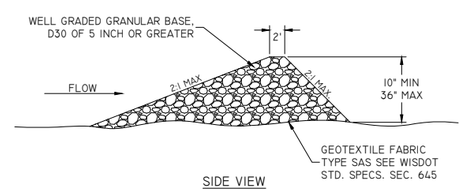
AREA UNDER THE DITCH CHECK TO BE SEEDED AFTER THE DITCH CHECK IS REMOVED.

PLACE EROSION MAT OVER THESE SEEDED AREAS.

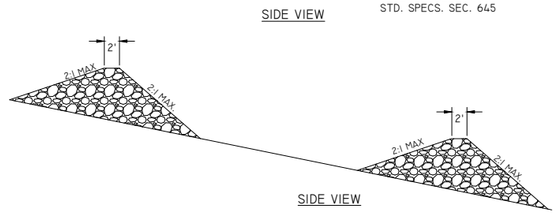
NOTE:
CONTRACTOR MAY REFER TO THE WISDOT PAL FOR OTHER APPROVED DITCH CHECKS AND THEIR INSTALLATION



CROSS SECTION VIEW

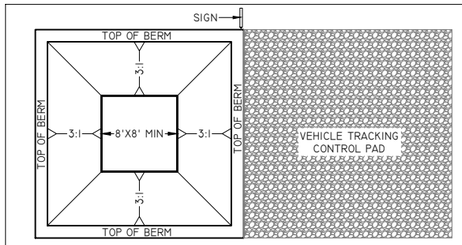


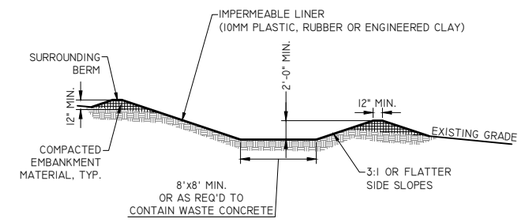
SIDE VIEW



SIDE VIEW

D / C603 STONE DITCH CHECKS
NTS

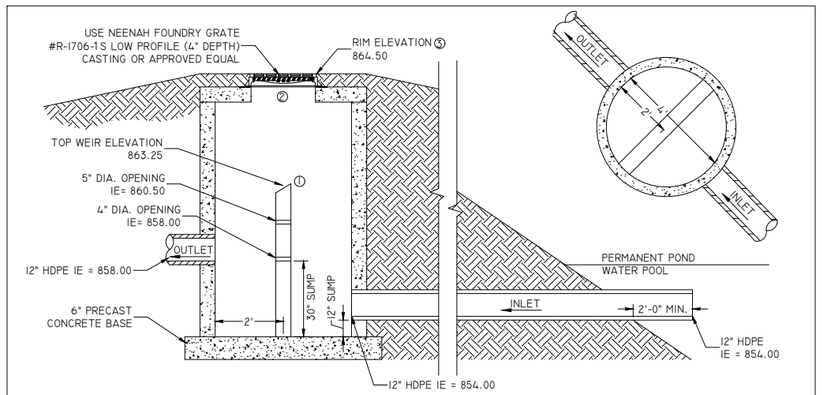




CONCRETE WASHOUT AREA INSTALLATION NOTES
1. SEE EROSION CONTROL PLAN FOR LOCATIONS OF CONCRETE WASHOUT AREA(S). TO BE PLACED A MIN. OF 50' FROM DRAINAGEWAYS, BODIES OF WATER, AND INLETS.)
2. THE CONCRETE WASHOUT AREA(S) SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
3. VEHICLE TRACKING CONTROL PAD IS REQ'D AT THE ACCESS POINT(S).
4. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA(S), AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREAS TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
5. EXCAVATED MATERIAL SHALL BE UTILIZED IN PERIMETER BERM CONSTRUCTION.

CONCRETE WASHOUT AREA MAINTENANCE NOTES
6. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE
7. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM SITE AND DISPOSED OF AT AN APPROVED WASTE SITE.
8. WHEN CONCRETE WASHOUT AREA(S) IS REMOVED, THE DISTURBED AREA SHALL BE STABILIZED PER SITE EROSION CONTROL MEASURES.
9. INSPECT WEEKLY AND DURING AND AFTER ALL STORM EVENTS. CLEAN-OUT OR COVER WASHOUT AREA PRIOR TO PREDICTED STORM EVENTS TO PREVENT OVER-FLOW.

E / C603 CONCRETE WASHOUT AREA
NTS



① 4" THICK MASONRY WALL OR ¼"STEEL PLATE. GROUT OR SEAL ALONG SIDES OF MANHOLE
② FORM OPENING IN TOP SLAB TO FIT CASTING
③ ADJUST GRADING AT THE OUTLET STRUCTURE TO COVER CASTING TO THE PROPOSED RIM ELEVATION

F / C603 OUTLET CONTROL STRUCTURE
NTS

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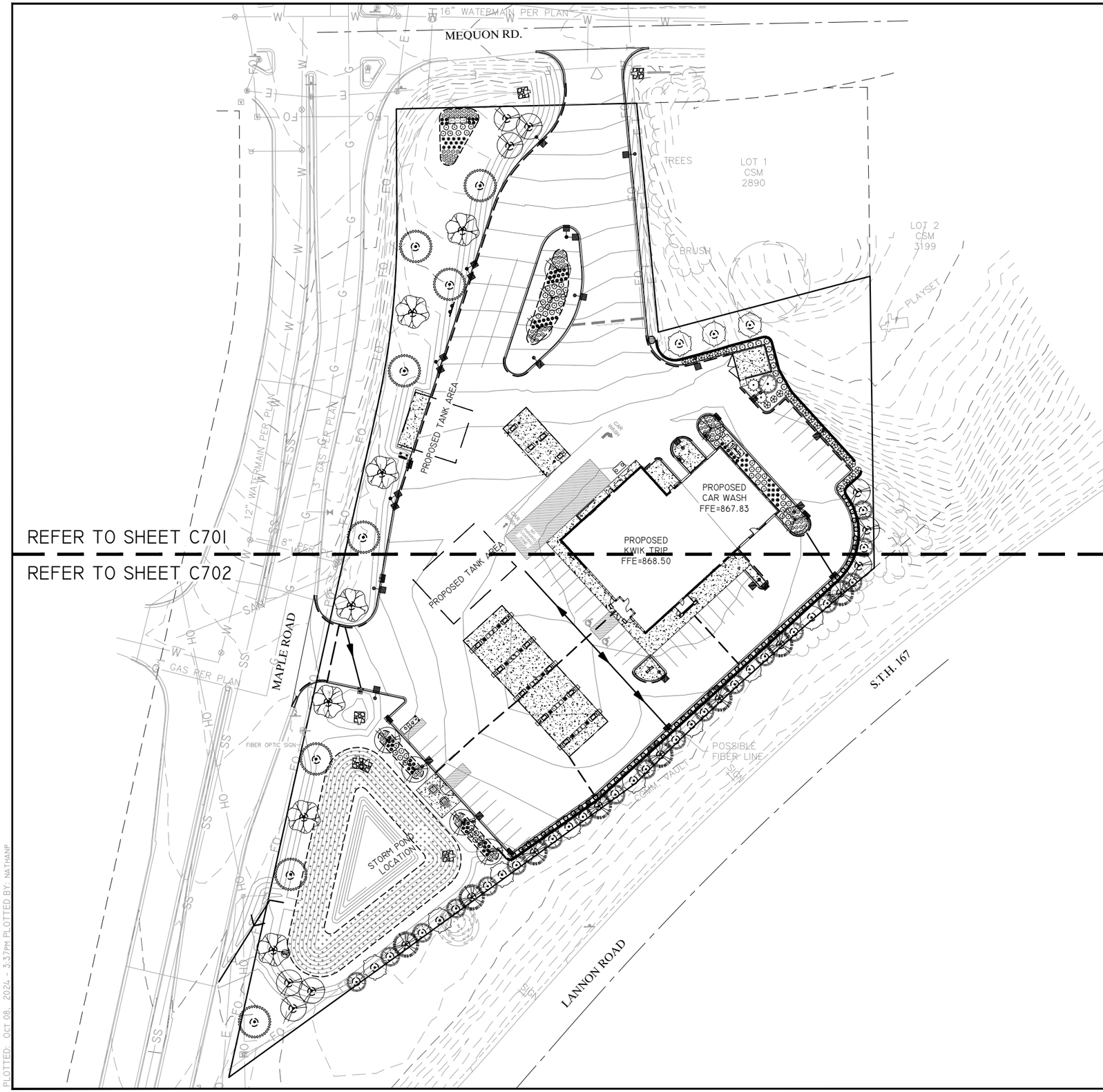

GENERAL NOTES:

(A) LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR LOCATING & VERIFYING ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION, AND IS RESPONSIBLE FOR ANY DAMAGE TO THEM DURING CONSTRUCTION.

(B) CALL DIGGERS HOTLINE @ 811 OR 1-800-242-8511 AT LEAST 5 WORKING DAYS PRIOR TO DEMOLITION, EXCAVATION OR ANY CONSTRUCTION ACTIVITY.

(C) ALL PLANT MATERIAL SHALL BE GUARANTEED ONE (1) FULL YEAR UPON TOTAL COMPLETION OF PROJECT AND ACCEPTANCE BY OWNER, WITH A ONE TIME REPLACEMENT WARRANTY UPON REQUEST BY OWNER. WARRANTY EXPIRES AFTER FIRST FULL YEAR FOLLOWING PROJECT COMPLETION.

(D) LANDSCAPE CONTRACTOR SHALL VERIFY MINIMUM 6" TOPSOIL DEPTH FOR ALL AREAS TO BE SEEDED/SODDED THROUGHOUT PROJECT SITE. CONTRACTOR IS REQUIRED TO CORRECT ANY DEFICIENCIES PRIOR TO SEED/SOD. TOPSOIL SHALL BE CLEAN AND FREE OF STONES, WEEDS AND OTHER UNDESIRABLE DEBRIS.

(E) LANDSCAPE CONTRACTOR SHALL VERIFY MINIMUM 12" PLANTING SOIL DEPTH FOR ALL PROPOSED PLANTING BED AREAS THROUGHOUT THE PROJECT SITE. CONTRACTOR IS REQUIRED TO CORRECT ANY DEFICIENCIES PRIOR TO PLANT INSTALLATION. PLANTING SOIL & AREA SHALL BE CLEAN AND FREE OF STONES, WEEDS, CONCRETE WASTE AND OTHER UNDESIRABLE DEBRIS.

(F) LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR REPAIRING TOPSOIL AND SODDING ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITY, INCLUDING ALL R.O.W. AND ADJACENT PROPERTIES.

(G) CONTRACTOR SHALL CLEAN ALL PAVEMENT AREAS AFTER LANDSCAPE CONSTRUCTION ACTIVITIES ARE COMPLETE AND APPROVED BY OWNER. *THIS TO BE DONE DAILY AS DEEMED NECESSARY BY MUNICIPALITY.

PLANT SCHEDULE

SYMBOL	COMMON NAME	BOTANICAL NAME	SIZE	CONT.	QTY
DECIDUOUS TREES					
	Autumn Blaze® Freeman Maple	Acer x freemanii 'Jeffersred'	2.5" Cal.	B&B	11
	Fall Fiesta® Sugar Maple	Acer saccharum 'Bailsta'	2" Cal.	B&B	18
	Red Oak	Quercus rubra	3" Cal.	B&B	8
	Swamp White Oak	Quercus bicolor	3" Cal.	B&B	7
EVERGREEN TREES					
	Black Hills White Spruce	Picea glauca 'Densata'	6` Ht.	B&B	2
	White Pine	Pinus alba	6` Ht.	B&B	8
	White Spruce	Picea glauca	6` Ht.	B&B	20
DECIDUOUS SHRUBS					
	Tiny Wine® Ninebark	Physocarpus opulifolius 'SMPOTW'	3 gal.	Pot	62
EVERGREEN SHRUBS					
	Dark Green Anglo-Japanese Yew	Taxus x media 'Dark Green'	5 gal.	Pot	11
	Kallay Compact Pfitzer Juniper	Juniperus chinensis 'Kallays Compact'	3 gal.	Pot	25
	Mini Arcade Juniper	Juniperus sabina 'Mini Arcade'	3 gal.	Pot	58
PERENNIALS					
	Karl Foerster Feather Reed Grass	Calamagrostis x acutiflora 'Karl Foerster'	1 gal.	Pot	27
	Prairie Dropseed	Sporobolus heterolepis	1 gal.	Pot	104
	Shenandoah Switch Grass	Panicum virgatum 'Shenandoah'	1 gal.	Pot	68

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N

SCALE
0 40 80

LANDSCAPE PLAN

CONVENIENCE STORE #631

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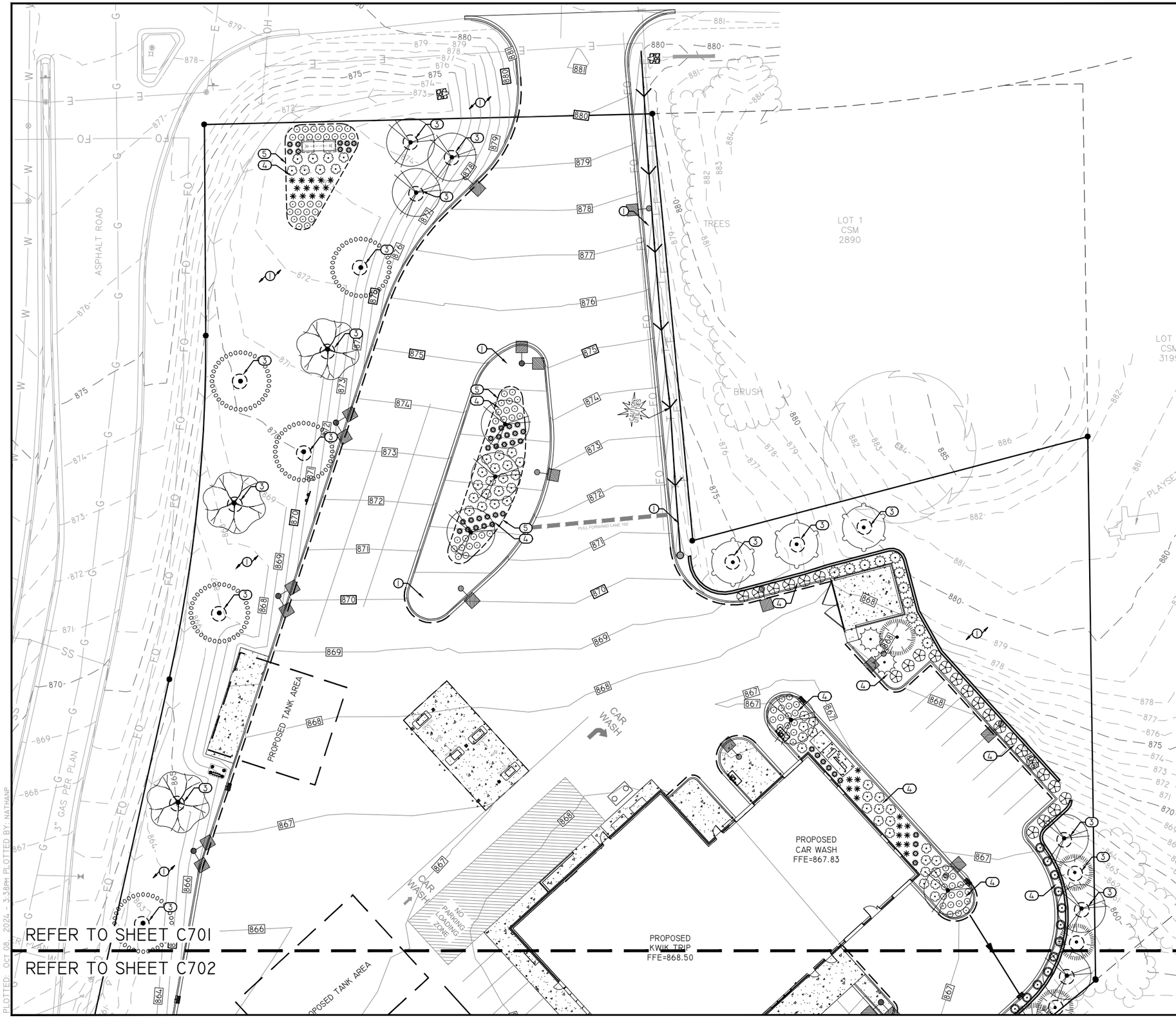

KEYED NOTES

1. SOD, *ALL AREAS NOTED ON PLAN & ALL DISTURBED AREAS DUE TO CONSTRUCTION ACTIVITY.

2. (9,900 SF TOTAL) AGRECOL, SHORTGRASS PRAIRIE FOR DRY SOILS, APPLY GLYPHOSATE HERBICIDE TO AREA WHEN MAJORITY OF WEEDS ARE 2"-3" TALL. WAIT 10 DAYS THEN FINELY TILL THE SOIL ONLY 1"-2" DOWN AND PLANT IMMEDIATELY BY HAND BROADCASTING AT A RATE OF 11 LBS/ACRE. RAKE OR DRAG AREA LIGHTLY, COVERING THE SEED WITH ABOUT $\frac{1}{4}$" TO $\frac{1}{2}$" OF SOIL. ROLL AREA FIRMLY AFTER RAKING. MULCH PRAIRIE SEEDED AREAS LESS THAN 4:1 SLOPE WITH 1" OF WEED FREE STRAW MULCH. APPLY WISDOT NET-FREE CLASS 1, URBAN TYPE B EROSION MAT ON SLOPING AREAS STEEPER THAN 4:1. *REFER TO AGRECOL'S "NATIVE SEEDING INSTRUCTIONS" ON THEIR WEBSITE FOR DETAILED INSTRUCTIONS/GUIDELINES FOR SUCCESSFUL SEED ESTABLISHMENT AND MANAGEMENT. (LINK BELOW)

   HTTPS://WWW.AGRECOL.COM/NATIVE-SEEDING-INSTRUCTIONS_EP_44.HTML

3. 6' DIAMETER WOOD MULCH TREE RING, 3"-4" DEPTH, DARK BROWN COLOR, *ALL TREES PLANTED WITHIN SOD AREAS.

4. SHREDDED HARDWOOD MULCH, 3"-4" DEPTH, DARK BROWN COLOR.

5. SHOVEL CUT EDGE, 4"-6" DEPTH CLEAN CUT EDGE AROUND PLANTING BEDS & PRAIRIE SEEDING WITHIN SOD AREAS.

PLANT SCHEDULE	
SYMBOL	BOTANICAL NAME
DECIDUOUS TREES	
	Acer saccharum 'Bailsta'
	Acer x freemanii 'Jeffersred'
	Quercus bicolor
	Quercus rubra
EVERGREEN TREES	
	Picea glauca
	Picea glauca 'Densata'
	Pinus alba
DECIDUOUS SHRUBS	
	Physocarpus opulifolius 'SMPOTW'
EVERGREEN SHRUBS	
	Juniperus chinensis 'Kallays Compact'
	Juniperus sabina 'Mini Arcade'
	Taxus x media 'Dark Green'
PERENNIALS	
	Calamagrostis x acutiflora 'Karl Foerster'
	Panicum virgatum 'Shenandoah'
	Sporobolus heterolepis

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KWIK TRIP, Inc.
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PHONE: 715.675.9784 FAX: 715.675.4060
EMAIL: MAIL@REIENGINEERING.COM

N
SCALE
0 20 40

LANDSCAPE PLAN

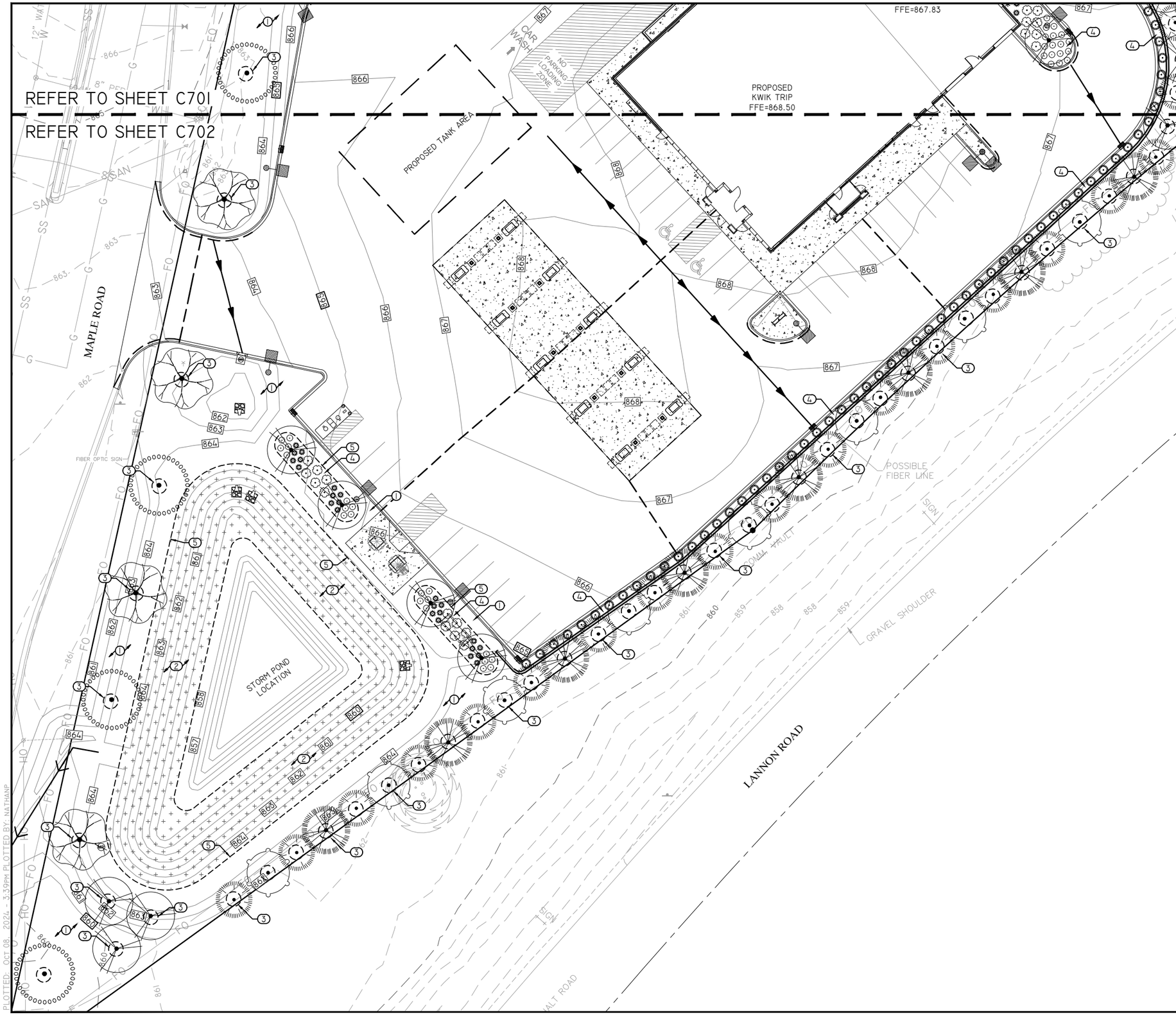
CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C701

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C700-LANDSCAPE PLAN.DWG LAYOUT: C701
PLOTTED: OCT 08, 2024 - 3:38PM PLOTTED BY: NATHANP



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3. 6' DIAMETER WOOD MULCH TREE RING, 3"-4" DEPTH, DARK BROWN COLOR, *ALL TREES PLANTED WITHIN SOD AREAS.

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PLANT SCHEDULE	
SYMBOL	BOTANICAL NAME
DECIDUOUS TREES	
	Acer saccharum 'Bailsta'
	Acer x freemanii 'Jeffersred'
	Quercus bicolor
	Quercus rubra
EVERGREEN TREES	
	Picea glauca
	Picea glauca 'Densata'
	Pinus alba
DECIDUOUS SHRUBS	
	Physocarpus opulifolius 'SMPOTW'
EVERGREEN SHRUBS	
	Juniperus chinensis 'Kallays Compact'
	Juniperus sabina 'Mini Arcade'
	Taxus x media 'Dark Green'
PERENNIALS	
	Calamagrostis x acutiflora 'Karl Foerster'
	Panicum virgatum 'Shenandoah'
	Sporobolus heterolepis

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SCALE
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LANDSCAPE PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C702

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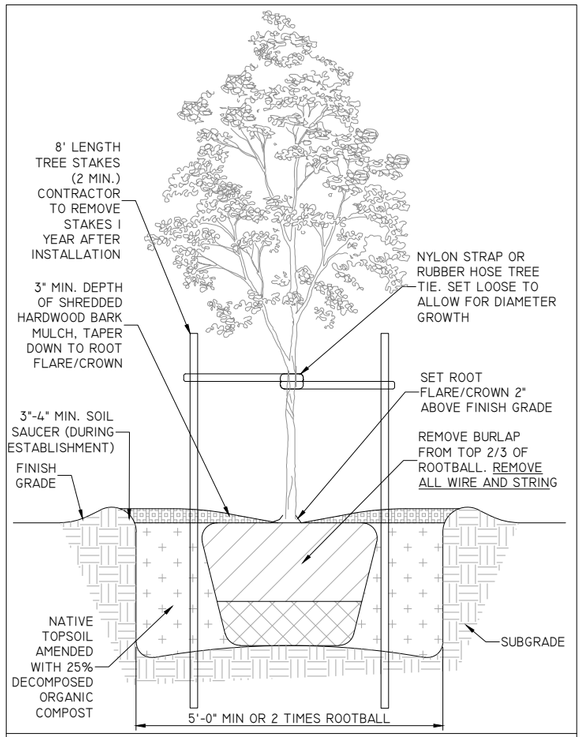
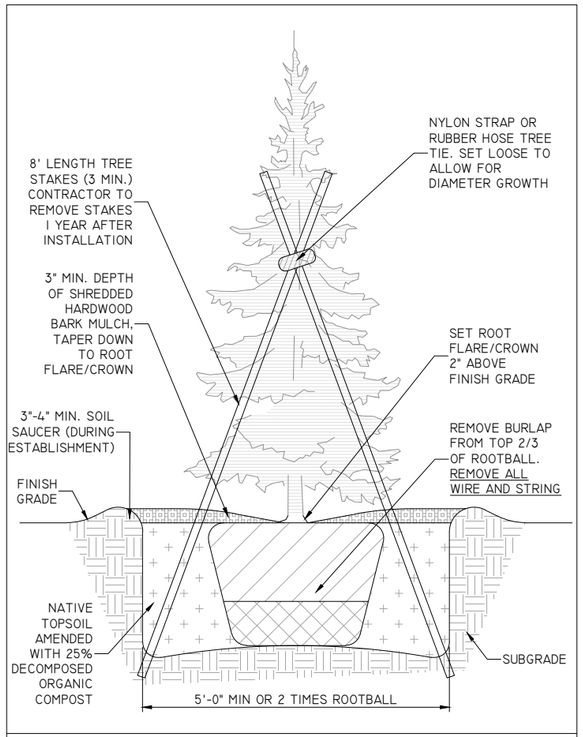
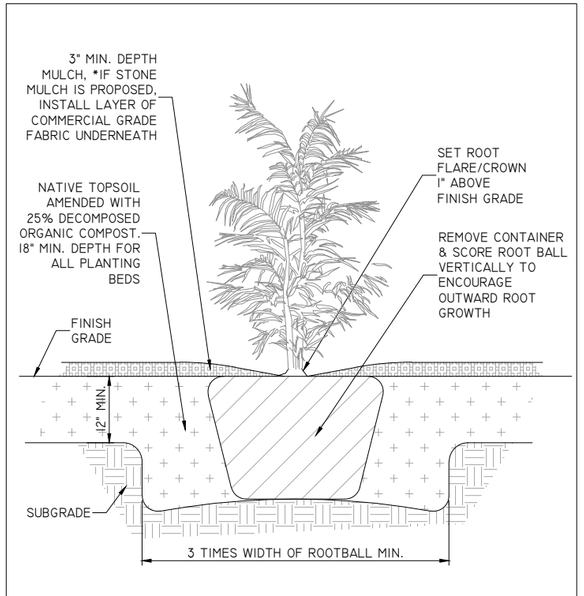


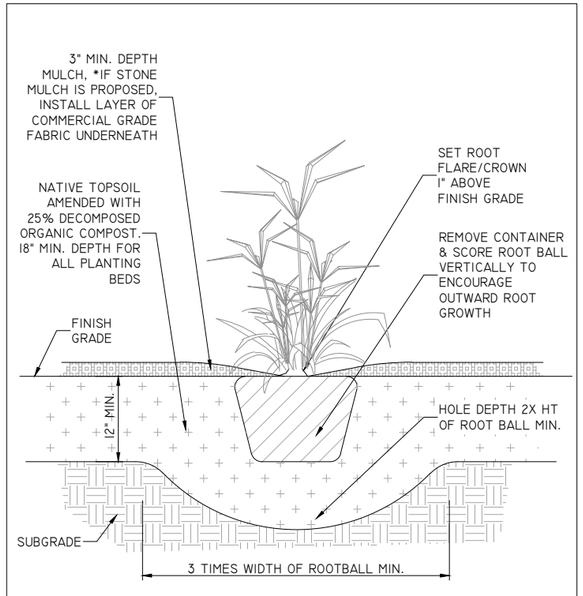
DECIDUOUS TREE - PLANTING DETAIL



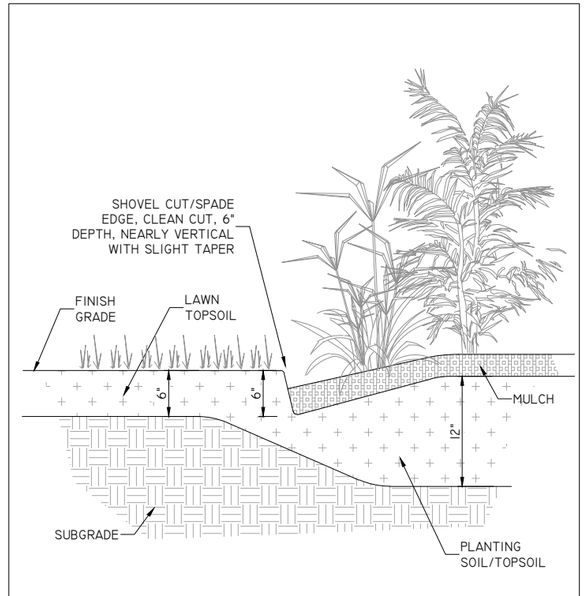
EVERGREEN TREE - PLANTING DETAIL



SHRUB - PLANTING DETAIL



PERENNIAL - PLANTING DETAIL



SHOVEL CUT EDGE - DETAIL

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LANDSCAPE DETAILS

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

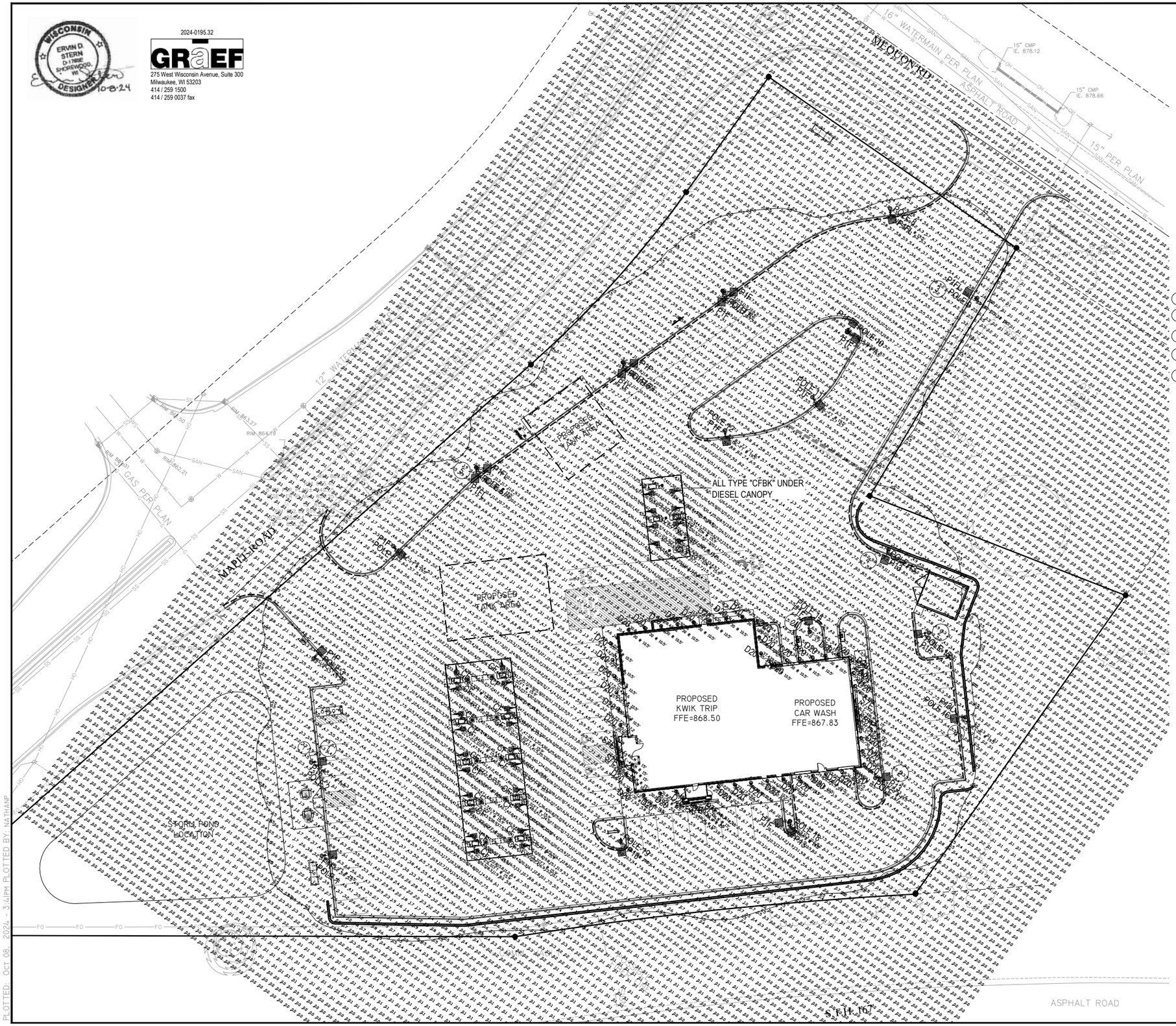
DRAWN BY NAP
SCALE GRAPHIC
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C703

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C700-LANDSCAPE PLAN.DWG LAYOUT: C703
PLOTTED: OCT 08, 2024 - 3:39PM PLOTTED BY: NATHANP

WISCONSIN
ERVIN D. STERN
D-1 RISE
SHOREWOOD, WI
DESIGNER
10-8-24

2024-0195.32

GRAEF
275 West Wisconsin Avenue, Suite 300
Milwaukee, WI 53203
414 / 259 1500
414 / 259 0037 fax



CALCULATION STATISTICS

OVERALL SITE:
AVERAGE: 3.2
MAXIMUM: 78.7
MINIMUM: 0.0

FIXTURE QUANTITIES

D20	- 44
S7E	- 6
CF	- 20
CFBK	- 8
P13	- 5
P13L	- 1
P1F	- 14
P1FL	- 4

PROVIDE (19) 16' POLES.

GENERAL NOTES:

1. FOOTCANDLE LEVELS SHOWN ON THIS PLAN ARE CALCULATED AT GRADE LEVEL.
2. ALL POLES SHALL BE INSTALLED A MINIMUM OF 3'-0" FROM BACK OF CURB TO EDGE OF POLE BASE UNLESS NOTED.
3. POLE THAT ARE LOCATED AT CORNER OF ISLAND SHALL BE A MINIMUM OF 6'-0" FROM BACK OF CURB TO EDGE OF POLE BASE. POLES THAT MUST BE INSTALLED LESS THAN 6'-0" FROM BACK OF CURB TO EDGE OF POLE BASE SHALL HAVE PROTECTIVE BOLLARDS INSTALLED AROUND THE POLE BASE. COORDINATE WITH KWIK TRIP PRIOR TO INSTALLATION.

KEYED NOTES:

1. COORDINATE LOCATION AND MOUNTING HEIGHT OF SECURITY CAMERA WITH OWNER.
2. CONTRACTOR SHALL POLE MOUNT FIXTURE 6'-0" FROM BACK OF CURB TO EDGE OF POLE BASE.
3. CONTRACTOR SHALL POLE MOUNT FIXTURE 2'-0" FROM BACK OF CURB TO EDGE OF POLE BASE TO AVOID UNDERGROUND UTILITIES.
4. CONTRACTOR SHALL POLE MOUNT FIXTURE 3'-0" FROM BACK OF CURB TO EDGE OF POLE BASE NEAR RETAINING WALL.
5. CONTRACTOR SHALL POLE MOUNT FIXTURE 5'-0" FROM BACK OF CURB TO EDGE OF POLE BASE TO AVOID UNDERGROUND UTILITIES.

FIXTURE TYPES:

D20 - RECESSED LED DOWNLIGHT
GOTHAM EVO-35/30-8AR-WD-120-TRW

S7E - LED STRIP LIGHT MOUNTED IN GABLE LITHONIA
TZL1N-L96-10000LM-FST-MVOLT

CF - LSI LIGHTING: SCV-LED-23L-SCFT-UNV-DIM-50-WHT MOUNTED UNDER GAS CANOPY MOUNT FIXTURES WITH FORWARD THROW OPTIC AIMING IN DIRECTION OF ARROW.

CFBK - LSI LIGHTING: SCV-LED-23L-SCFT-UNV-DIM-50-BLK MOUNTED UNDER DIESEL CANOPY MOUNT FIXTURES WITH FORWARD THROW OPTIC AIMING IN DIRECTION OF ARROW.

P13- LSI LIGHTING: MRS-LED-18L-SIL-3-UNV-50-70CRI-WHT

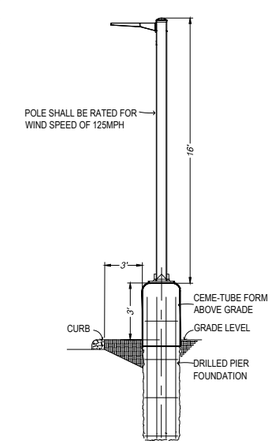
P13L- LSI LIGHTING: MRS-LED-18L-SIL-3-UNV-50-70CRI-WHT-IL

P1F- LSI LIGHTING: MRS-LED-18L-SIL-FT-UNV-50-70CRI-WHT

P1FL- LSI LIGHTING: MRS-LED-18L-SIL-FT-UNV-50-70CRI-WHT-IL

FIXTURE SYMBOLS:

- LED LIGHT MOUNTED UNDER FUEL CANOPIES
- LED STRIP LIGHT MOUNTED IN GABLE
- RECESSED LED DOWNLIGHT
- POLE MOUNTED LED FIXTURE
- CAMERA



LOT LIGHT ELEVATION DETAIL

NOT TO SCALE

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PHOTOMETRIC LIGHTING PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY XXX
SCALE GRAPHIC
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C800

DRAWING FILE: Q:\11700-11799\11757 - KWIK TRIP #631 - GERMANTOWN\DRAWING\PLANS\11757-C800-PHOTOMETRIC PLAN.DWG LAYOUT: C800
PLOTTED: OCT 08, 2024, 3:41PM PLOTTED BY: NATHANP

Appendix 1

NR 151 Post Construction Standards

WISCONSIN DNR NR 151 STORMWATER PERFORMANCE STANDARDS APPLICABLE TO PROJECTS WITH ONE OR MORE ACRES OF DISTURBANCE (After January 1, 2011)				
DEVELOPMENT TYPE	**TOTAL SUSPENDED SOLIDS (TSS)**	**PEAK FLOW**	**INFILTRATION**	**PROTECTIVE AREA SETBACKS**
New Development Infill ≥ 5 ac Redevelopment of Sites Permitted after October 1, 2004 New Transportation Facilities	Reduce by 80% compared to no controls	Peak discharge matches pre-dev. discharge rate for 1-yr and 2-yr, 24-hr storm events	Low Impervious (up to 40% connected - eg parks, cemeteries, low density residential) – infiltrate 90% pre-development infiltration volume, w/ 1% device area cap	75 ft for outstanding resource waters and highly-susceptible wetlands
			Moderate Impervious (up to 40-80% connected - eg single- and multi-family residential, industrial, institutional, office parks) – infiltrate 75% pre-development infiltration volume w/ 2% device area cap	50 ft for lakes, perrenial and intermittent streams, and wetlands that are neither classified as highly susceptible nor less susceptible
			High Impervious (Over 80% connected - eg commercial strips, shopping centers, commercial downtown) – infiltrate 60% pre-development infiltration volume w/ 2% device area cap	10-30 feet for less susceptible wetlands based upon average wetland width
			Most New Transportation Facilities (above the local residential classification) are Exempt	10 feet for concentrated flow channels with drainage areas over 130 acres
Infill < 5 acres	Reduce by 40% compared to no controls (80% on/after October 1, 2012)	Exempt	Exempt	Exempt
Highway Reconstruction	Reduce by 40% compared to no controls	Exempt	Exempt	Exempt
Redevelopment of Sites Permitted Prior to October 1, 2004	Reduce parking areas and roads by 40% compared to no controls	Exempt	Exempt	Exempt
Post-Construction Site or Transportation Facility w/ Less than 10% Connected Impervious (assuming cumulative impervious is beneath 1 acre)	Exempt	Exempt	Exempt	Follow as if New Construction

Appendix 2

Site Soils Information

Map Scale: 1:2,630 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County, Wisconsin
Survey Area Data: Version 24, Sep 3, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 4, 2022—Sep 13, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CeC2	Casco loam, 6 to 12 percent slopes, eroded	0.1	0.2%
GP	Gravel pit	0.7	1.9%
GrB	Grays silt loam, 2 to 6 percent slopes	1.5	3.9%
HmB2	Hochheim loam, 2 to 6 percent slopes, eroded	2.7	7.3%
HmC2	Hochheim loam, 6 to 12 percent slopes, eroded	8.0	21.4%
HmD2	Hochheim loam, 12 to 20 percent slopes, eroded	2.0	5.2%
LmA	Lamartine silt loam, 0 to 3 percent slopes	0.1	0.2%
MgA	Martinton silt loam, 1 to 3 percent slopes	2.3	6.2%
MtA	Mequon silt loam, 1 to 3 percent slopes	2.3	6.0%
Mzb	Montgomery silty clay loam	1.4	3.7%
OuB2	Ozaukee silt loam, high carbonate substratum, 2 to 6 percent slopes, eroded	3.5	9.4%
Pc	Palms mucky peat, 0 to 2 percent slopes	0.1	0.2%
Sf	Sandy and gravelly land	5.9	15.8%
ThB2	Theresa silt loam, 2 to 6 percent slopes, eroded	0.3	0.8%
VsA	Virgil silt loam, gravelly substratum, 0 to 3 percent slopes	6.7	17.8%
Totals for Area of Interest		**37.6**	**100.0%**

Washington County, Wisconsin

HmB2—Hochheim loam, 2 to 6 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2t03w
Elevation: 820 to 1,330 feet
Mean annual precipitation: 29 to 36 inches
Mean annual air temperature: 43 to 46 degrees F
Frost-free period: 135 to 175 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hochheim, eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hochheim, Eroded

Setting

Landform: Drumlins
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy till and/or calcareous, dense loamy till

Typical profile

Ap - 0 to 7 inches: loam
Bt - 7 to 16 inches: loam
C - 16 to 33 inches: gravelly sandy loam
Cd - 33 to 79 inches: gravelly sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 20 to 40 inches to densic material
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 60 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: D
Ecological site: F095XB007WI - Loamy Upland with Carbonates
Forage suitability group: Mod AWC, adequately drained (G095BY005WI)
Other vegetative classification: Mod AWC, adequately drained (G095BY005WI)
Hydric soil rating: No

Minor Components

Theresa, eroded
Percent of map unit: 10 percent
Landform: Till plains
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F095XB007WI - Loamy Upland with Carbonates
Hydric soil rating: No

Lamartine
Percent of map unit: 5 percent
Landform: Drumlins
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F095XB005WI - Moist Loamy or Clayey Lowland
Hydric soil rating: No

Data Source Information

Soil Survey Area: Washington County, Wisconsin
Survey Area Data: Version 24, Sep 3, 2024

Washington County, Wisconsin

HmC2—Hochheim loam, 6 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2t03r
Elevation: 900 to 1,340 feet
Mean annual precipitation: 31 to 33 inches
Mean annual air temperature: 43 to 46 degrees F
Frost-free period: 135 to 175 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hochheim, eroded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hochheim, Eroded

Setting

Landform: Drumlins
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy till and/or calcareous, dense loamy till

Typical profile

Ap - 0 to 7 inches: loam
Bt - 7 to 16 inches: clay loam
C - 16 to 33 inches: gravelly sandy loam
Cd - 33 to 79 inches: gravelly sandy loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 20 to 40 inches to densic material
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 60 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D

Ecological site: F095XB007WI - Loamy Upland with Carbonates
Forage suitability group: Mod AWC, adequately drained (G095BY005WI)
Other vegetative classification: Mod AWC, adequately drained (G095BY005WI)
Hydric soil rating: No

Minor Components

Theresa
Percent of map unit: 5 percent
Landform: Drumlins
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F095XB007WI - Loamy Upland with Carbonates
Hydric soil rating: No

Hochheim
Percent of map unit: 5 percent
Landform: Drumlins
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F095XB006WI - Shallow Upland
Hydric soil rating: No

Data Source Information

Soil Survey Area: Washington County, Wisconsin
Survey Area Data: Version 24, Sep 3, 2024

Washington County, Wisconsin

HmD2—Hochheim loam, 12 to 20 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2t72w
Elevation: 820 to 1,330 feet
Mean annual precipitation: 28 to 36 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 130 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Hochheim, eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hochheim, Eroded

Setting

Landform: Drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy till and/or calcareous, dense loamy till

Typical profile

Ap - 0 to 6 inches: loam
Bt - 6 to 16 inches: clay loam
C - 16 to 30 inches: gravelly loam
Cd - 30 to 79 inches: gravelly loam

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: 20 to 36 inches to densic material
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 60 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D

Ecological site: F095XB007WI - Loamy Upland with Carbonates
Forage suitability group: Mod AWC, adequately drained with limitations (G095BY006WI)
Other vegetative classification: Mod AWC, adequately drained with limitations (G095BY006WI)
Hydric soil rating: No

Minor Components

Theresa
Percent of map unit: 10 percent
Landform: Drumlins
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F095XB007WI - Loamy Upland with Carbonates
Hydric soil rating: No

Hochheim
Percent of map unit: 5 percent
Landform: Drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F095XB006WI - Shallow Upland
Hydric soil rating: No

Data Source Information

Soil Survey Area: Washington County, Wisconsin
Survey Area Data: Version 24, Sep 3, 2024

Washington County, Wisconsin

OuB2—Ozaukee silt loam, high carbonate substratum, 2 to 6 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2sn0c
Elevation: 650 to 1,010 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 44 to 49 degrees F
Frost-free period: 125 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Ozaukee, high carbonate substratum, eroded, and similar soils: 96 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ozaukee, High Carbonate Substratum, Eroded

Setting

Landform: Ground moraines, end moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Thin mantle of loess over silty and clayey till

Typical profile

Ap - 0 to 7 inches: silt loam
Bt1 - 7 to 11 inches: silty clay loam
2Bt2 - 11 to 22 inches: silty clay
2Bt3 - 22 to 27 inches: silty clay loam
2Cd - 27 to 60 inches: silty clay loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 22 to 40 inches to densic material
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 60 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F110XY012IL - Moist Glacial Drift Upland Forest
Forage suitability group: Mod AWC, adequately drained with limitations (G095BY006WI)
Other vegetative classification: Mod AWC, adequately drained with limitations (G095BY006WI)
Hydric soil rating: No

Minor Components

Ashkum, drained

Percent of map unit: 2 percent
Landform: End moraines, ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R110XY024IL - Ponded Depressional Sedge Meadow
Hydric soil rating: Yes

Urban land

Percent of map unit: 1 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Orthents, clayey

Percent of map unit: 1 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F095XB010WI - Loamy and Clayey Upland
Hydric soil rating: No

Data Source Information

Soil Survey Area: Washington County, Wisconsin
Survey Area Data: Version 24, Sep 3, 2024

Washington County, Wisconsin

Sf—Sandy and gravelly land

Map Unit Setting

National map unit symbol: g91m
Elevation: 790 to 1,250 feet
Mean annual precipitation: 32 to 35 inches
Mean annual air temperature: 37 to 55 degrees F
Frost-free period: 145 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Sandy and gravelly land and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sandy And Gravelly Land

Setting

Parent material: Sandy and gravelly outwash

Typical profile

C - 0 to 10 inches: sand

Properties and qualities

Slope: 0 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Depth to water table: About 60 to 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydrologic Soil Group: D
Ecological site: F095XB010WI - Loamy and Clayey Upland
Hydric soil rating: No

Data Source Information

Soil Survey Area: Washington County, Wisconsin
Survey Area Data: Version 24, Sep 3, 2024

Washington County, Wisconsin

VsA—Virgil silt loam, gravelly substratum, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2wsqx
Elevation: 750 to 1,150 feet
Mean annual precipitation: 31 to 35 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 171 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Virgil, gravelly substratum, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Virgil, Gravelly Substratum

Setting

Landform: Drainageways on outwash plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loess over calcareous, stratified sandy and gravelly outwash

Typical profile

Ap - 0 to 9 inches: silt loam
E - 9 to 13 inches: silt loam
Bt - 13 to 44 inches: silty clay loam
2BC - 44 to 49 inches: sandy loam
2C - 49 to 79 inches: stratified gravel to sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 24 inches
Frequency of flooding: None
Frequency of ponding: Occasional
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F095XB005WI - Moist Loamy or Clayey Lowland
Forage suitability group: High AWC, high water table (G095BY007WI)
Other vegetative classification: High AWC, high water table (G095BY007WI)
Hydric soil rating: No

Minor Components

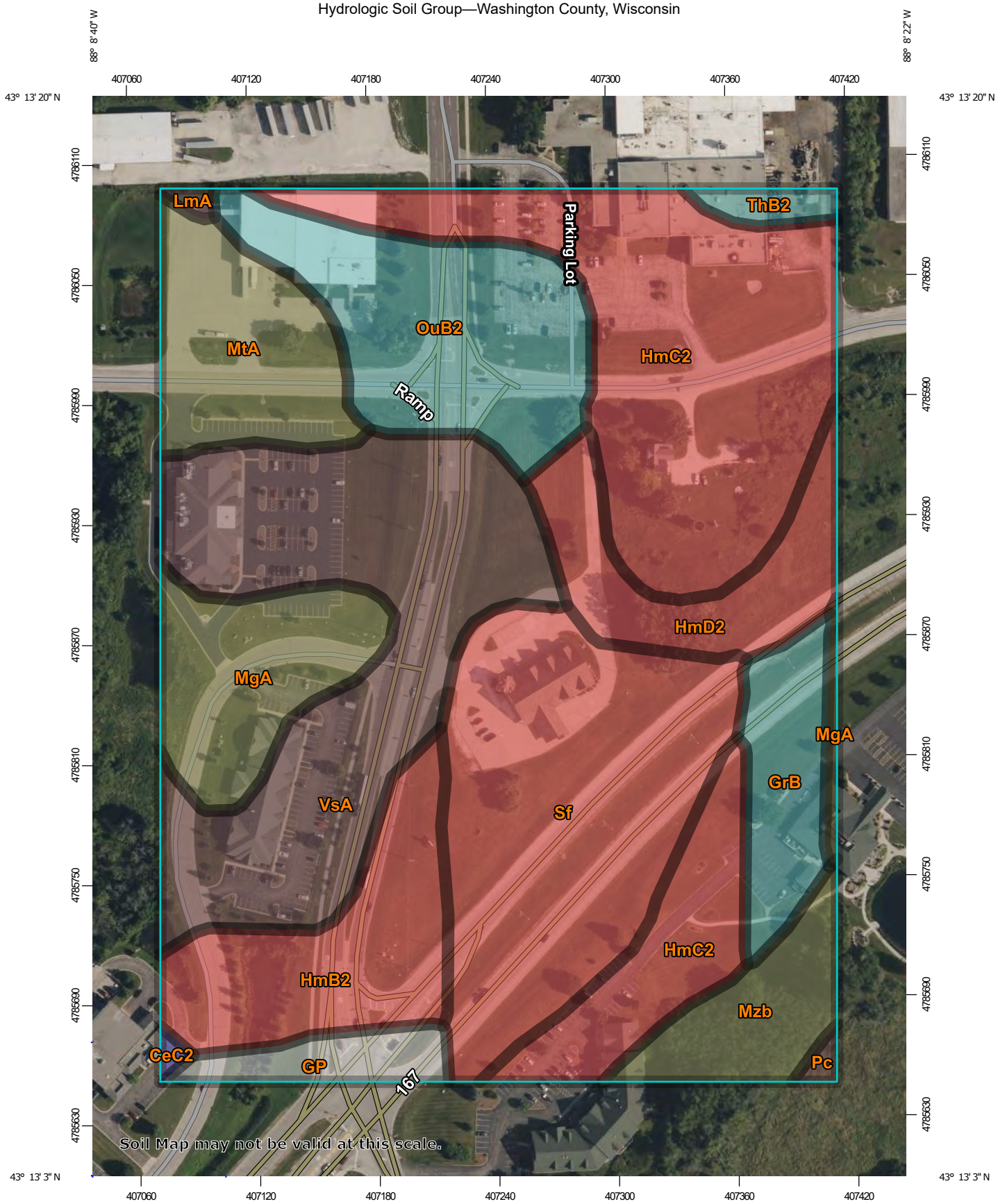
Sebewa
Percent of map unit: 4 percent
Landform: Depressions on outwash plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave
Across-slope shape: Concave, linear
Ecological site: F095XB004WI - Wet Loamy or Clayey Lowland
Hydric soil rating: Yes

Drummer, drained
Percent of map unit: 4 percent
Landform: Depressions on outwash plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave
Across-slope shape: Concave, linear
Ecological site: F095XB004WI - Wet Loamy or Clayey Lowland
Hydric soil rating: Yes

Sable
Percent of map unit: 2 percent
Landform: Depressions on outwash plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave
Across-slope shape: Concave, linear
Ecological site: F095XB004WI - Wet Loamy or Clayey Lowland
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Washington County, Wisconsin
Survey Area Data: Version 24, Sep 3, 2024



Map Scale: 1:2,630 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County, Wisconsin
Survey Area Data: Version 24, Sep 3, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 4, 2022—Sep 13, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CeC2	Casco loam, 6 to 12 percent slopes, eroded	B	0.1	0.2%
GP	Gravel pit		0.7	1.9%
GrB	Grays silt loam, 2 to 6 percent slopes	C	1.5	3.9%
HmB2	Hochheim loam, 2 to 6 percent slopes, eroded	D	2.7	7.3%
HmC2	Hochheim loam, 6 to 12 percent slopes, eroded	D	8.0	21.4%
HmD2	Hochheim loam, 12 to 20 percent slopes, eroded	D	2.0	5.2%
LmA	Lamartine silt loam, 0 to 3 percent slopes	B/D	0.1	0.2%
MgA	Martinton silt loam, 1 to 3 percent slopes	C/D	2.3	6.2%
MtA	Mequon silt loam, 1 to 3 percent slopes	C/D	2.3	6.0%
Mzb	Montgomery silty clay loam	C/D	1.4	3.7%
OuB2	Ozaukee silt loam, high carbonate substratum, 2 to 6 percent slopes, eroded	C	3.5	9.4%
Pc	Palms mucky peat, 0 to 2 percent slopes	B/D	0.1	0.2%
Sf	Sandy and gravelly land	D	5.9	15.8%
ThB2	Theresa silt loam, 2 to 6 percent slopes, eroded	C	0.3	0.8%
VsA	Virgil silt loam, gravelly substratum, 0 to 3 percent slopes	B/D	6.7	17.8%
Totals for Area of Interest			**37.6**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

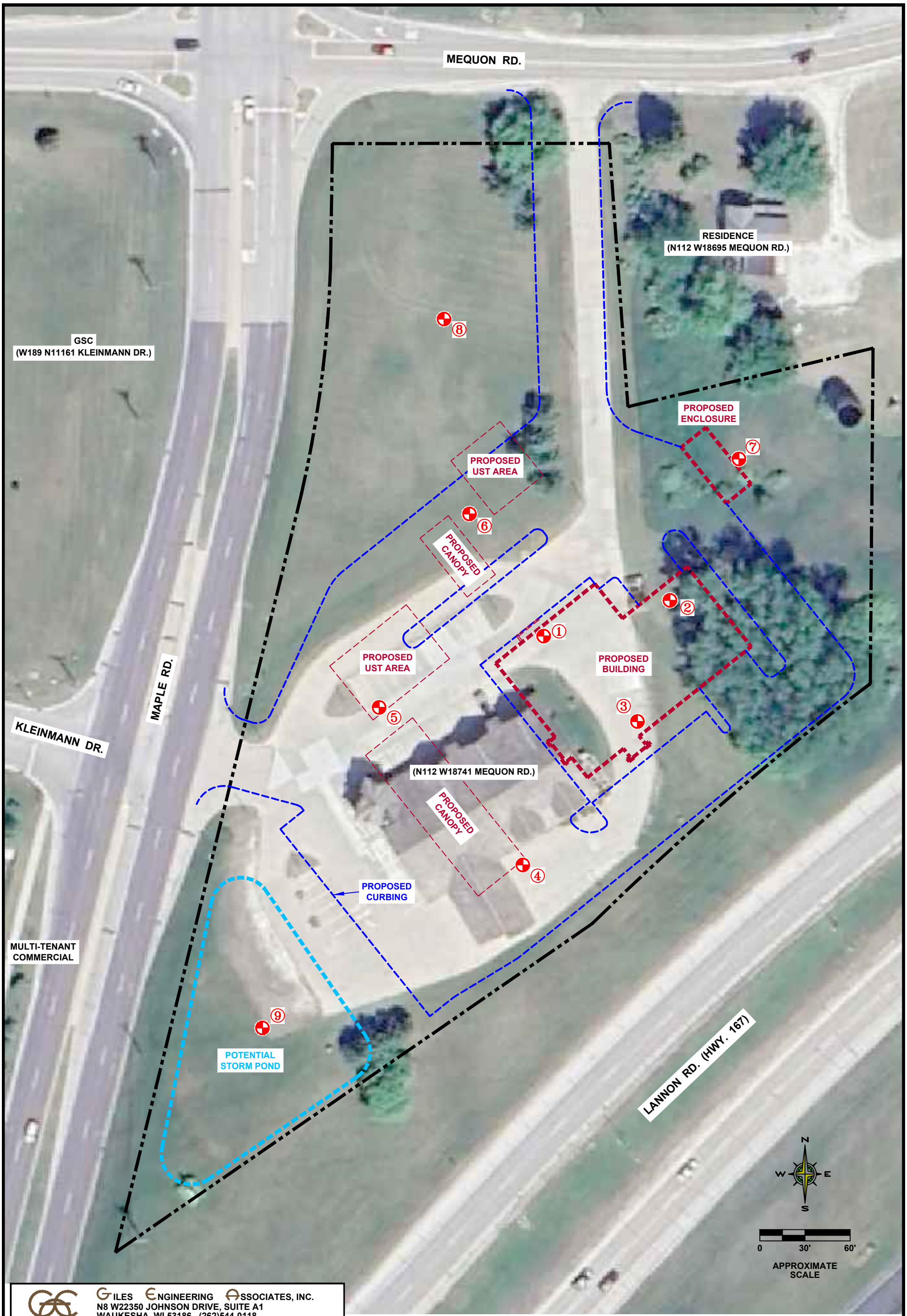
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



GILES ENGINEERING ASSOCIATES, INC.
N8 W22350 JOHNSON DRIVE, SUITE A1
WAUKESHA, WI 53186 (262)544-0118
www.gilesengr.com

FIGURE 1
TEST BORING LOCATION PLAN
PROPOSED KWIK TRIP KT631 RELOCATION
N112 W18741 MEQUON ROAD
GERMANTOWN, WISCONSIN

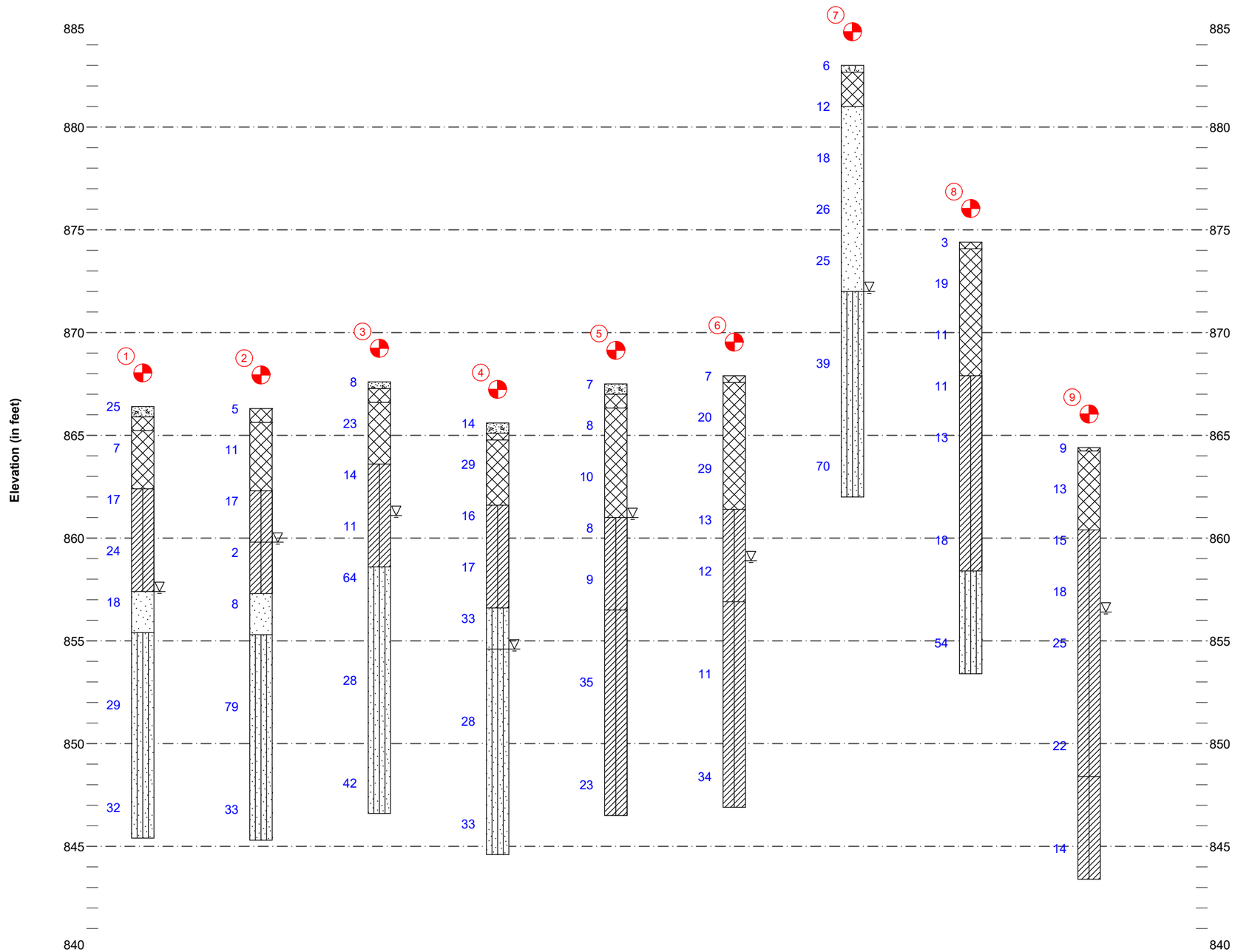
DESIGNED	DRAWN	SCALE	DATE	REVISED
GDB/AJG	JDid	approx. 1"=60'	06-13-24	--
PROJECT NO.: 1G-2405020			CAD No. 1g2405020-blp	

NOTES:
1.) TEST BORING LOCATIONS ARE APPROXIMATE AND WERE DRILLED AT THE LOCATIONS STAKED IN THE FIELD BY PIONEER ENVIRONMENTAL GROUP.
2.) PROPOSED FEATURES ARE APPROXIMATE BASED ON THE FILE (KT631 proposed BLM map.pdf), UNDATED, PROVIDED BY THE CLIENT.

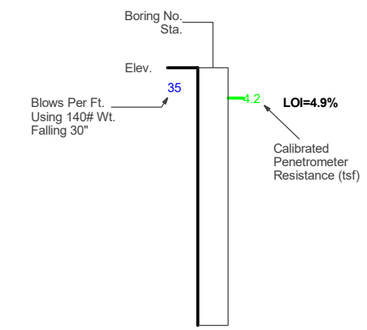
LEGEND:
① GEOTECHNICAL TEST BORING
PROPERTY LINE

FENCE DIAGRAM

SCALE: VERTICAL: 1" = 5.45'
HORIZONTAL: N.T.S.



LEGEND OF BORING



Unless otherwise specified, the blows per foot at the locations indicated are based on driving a 2" O.D.x 1. 4" I.D. split spoon sampler with a 140# hammer having a free fall of 30". The blow count is taken in undisturbed soil immediately below a cased or open hole eliminating side friction on the drive pipe.

MATERIAL SYMBOLS

- CONCRETE - Concrete
- CL-ML - USCS Low Plasticity Silty Clay
- MLS - USCS Sandy Silt
- FILL - Fill (made ground)
- SP - USCS Poorly-graded Sand
- TOPSOIL - Topsoil

FIGURE 2
Proposed Kwik Trip 631 Relocation
N112 W18741 Mequon Road
Germantown, Wisconsin
Project No. 1G-2405020

GILES ENGINEERING ASSOCIATES, INC.

GILES FENCE REPORT 11 X 17 1G2405020.GPJ GILES.GDT 6/20/24

NOTES:

BORING NO. & LOCATION: 1	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 866.4 feet	PROPOSED KWIK TRIP 631 RELOCATION	
COMPLETION DATE: 06/06/24	N112 W18741 MEQUON ROAD GERMANTOWN, WISCONSIN	
FIELD REP: JAMES BLAIR	PROJECT NO: 1G-2405020	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
±6" Portland Cement Concrete										
±8" Base Course										
Fill: Brown Silty Clay, little Sand-Moist		865	1-SS	25		1.5		17	*BDL	
			2-SS	7		3.0		24	*BDL	
Brown Silty Clay, little Sand-Moist	5		3-SS	17				22	*BDL	
		860	4-SS	24				15	*BDL	
Brown fine to medium Sand, trace Silt-Wet	10		5-SS	18					*BDL	
Gray Sandy Silt-Wet		855								
	15		6-SS	29				15	*BDL	
		850								
	20		7-SS	32				16	*BDL	

Boring Terminated at about 21 feet (EL. 845.4')

Water Observation Data	Remarks:
Water Encountered During Drilling: 9 ft.	*PID Results are lab screened results that may reflect differently from field screened results.
Water Level At End of Drilling:	*BDL = Below Detection Limit
Cave Depth At End of Drilling:	
Water Level After Drilling:	
Cave Depth After Drilling:	

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

PRELIMINARY

BORING NO. & LOCATION: 2	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 866.3 feet	PROPOSED KWIK TRIP 631 RELOCATION	
COMPLETION DATE: 06/06/24	N112 W18741 MEQUON ROAD GERMANTOWN, WISCONSIN	
FIELD REP: JAMES BLAIR	PROJECT NO: 1G-2405020	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
±8" Topsoil Fill: Dark Gray Silty Clay, little Sand and Organic Matter-Moist			1-SS	5		1.5		18	*BDL	
Fill: Brown Silty Clay, little Sand, trace Gravel-Moist		865	2-SS	11					*BDL	
Brown Silty Clay, little Sand, trace Gravel-Moist	5		3-SS	17					*BDL	
		860								
Brown Silty Clay with Silty fine to medium Sand lenses-Wet			4-SS	2				15	*BDL	
Brown fine to medium Sand, trace Silt-Wet	10		5-SS	8					*BDL	
Gray Sandy Silt, trace Gravel-Wet		855								
	15		6-SS	79					*BDL	
		850								
	20		7-SS	33				16	*BDL	

Boring Terminated at about 21 feet (EL. 845.3')

Water Observation Data	Remarks:
Water Encountered During Drilling: 6.5 ft. Water Level At End of Drilling: Cave Depth At End of Drilling: Water Level After Drilling: Cave Depth After Drilling:	*PID Results are lab screened results that may reflect differently from field screened results. *BDL = Below Detection Limit

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

PRELIMINARY

BORING NO. & LOCATION: 3	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 867.6 feet	PROPOSED KWIK TRIP 631 RELOCATION	
COMPLETION DATE: 06/06/24	N112 W18741 MEQUON ROAD GERMANTOWN, WISCONSIN	
FIELD REP: JAMES BLAIR	PROJECT NO: 1G-2405020	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
±4" Portland Cement Concrete **±8" Base Course** **Fill:** Brown Silty fine to medium Sand, trace Silt and Gravel-Moist			1-SS	8					*BDL	
		865	2-SS	23					*BDL	
Brown Silty Clay, little Sand-Moist to Wet at ±6½ feet	5		3-SS	14		3.0		13	*BDL	
		860	4-SS	11				20	*BDL	
Brown Sandy Silt-Wet	10		5-SS	64					*BDL	
		855								
	15		6-SS	28					*BDL	
		850								
	20		7-SS	42					*BDL	
Boring Terminated at about 21 feet (EL. 846.6')										

Water Observation Data	Remarks:
Water Encountered During Drilling: 6.5 ft. Water Level At End of Drilling: Cave Depth At End of Drilling: Water Level After Drilling: Cave Depth After Drilling:	*PID Results are lab screened results that may reflect differently from field screened results. *BDL = Below Detection Limit

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

PRELIMINARY

BORING NO. & LOCATION: 4	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 865.6 feet	PROPOSED KWIK TRIP 631 RELOCATION	
COMPLETION DATE: 06/06/24	N112 W18741 MEQUON ROAD GERMANTOWN, WISCONSIN	
FIELD REP: JAMES BLAIR	PROJECT NO: 1G-2405020	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
±6" Portland Cement Concrete **±4" Base Course** **Fill:** Brown Silty Clay, little Sand, trace Gravel-Moist		865	1-SS	14					*BDL	
			2-SS	29					*BDL	
Brown Silty Clay, little Sand-Moist	5	860	3-SS	16					*BDL	
			4-SS	17					*BDL	
Brown Sandy Silt-Moist	10	855	5-SS	33					*BDL	
Gray Sandy Silt-Wet	15	850	6-SS	28					*BDL	
	20	845	7-SS	33					*BDL	
Boring Terminated at about 21 feet (EL. 844.6')										

Water Observation Data	Remarks:
Water Encountered During Drilling: 11 ft. Water Level At End of Drilling: Cave Depth At End of Drilling: Water Level After Drilling: Cave Depth After Drilling:	*PID Results are lab screened results that may reflect differently from field screened results. *BDL = Below Detection Limit

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

PRELIMINARY

BORING NO. & LOCATION: 5	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 867.5 feet	PROPOSED KWIK TRIP 631 RELOCATION	
COMPLETION DATE: 06/06/24	N112 W18741 MEQUON ROAD GERMANTOWN, WISCONSIN	
FIELD REP: JAMES BLAIR	PROJECT NO: 1G-2405020	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
±6" Portland Cement Concrete										
±8" Base Course			1-SS	7					*BDL	
Fill: Dark Brown and Brown Silty Clay, little Sand-Moist		865	2-SS	8		3.0		15	*BDL	
(Includes Silty fine to medium Sand lenses at ±4 feet)	5		3-SS	10		1.0		6	*BDL	
Brown Silty Clay, little Sand-Wet		860	4-SS	8		1.0		15	*BDL	
	10		5-SS	9				15	*BDL	
Gray Silty Clay, little Sand-Wet		855								
(Includes Sandy Silt lenses between ±14 feet and ±16 feet)	15		6-SS	35					*BDL	
		850								
	20		7-SS	23					*BDL	

Boring Terminated at about 21 feet (EL. 846.5')

Water Observation Data	Remarks:
Water Encountered During Drilling: 6.5 ft.	*PID Results are lab screened results that may reflect differently from field screened results.
Water Level At End of Drilling:	*BDL = Below Detection Limit
Cave Depth At End of Drilling:	
Water Level After Drilling:	
Cave Depth After Drilling:	

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

PRELIMINARY

BORING NO. & LOCATION: 6	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 867.9 feet	PROPOSED KWIK TRIP 631 RELOCATION	
COMPLETION DATE: 06/06/24	N112 W18741 MEQUON ROAD GERMANTOWN, WISCONSIN	
FIELD REP: JAMES BLAIR	PROJECT NO: 1G-2405020	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
±4" Topsoil Fill: Dark Brown Silty Clay, little Sand and Organic Matter-Moist			1-SS	7					*BDL	
Fill: Brown Silty fine to medium Sand-Moist		865	2-SS	20					*BDL	
	5		3-SS	29					*BDL	
Brown Silty Clay, little Sand-Moist to Wet at ±9 feet		860	4-SS	13		2.0		10	*BDL	
	10		5-SS	12		2.0		15	*BDL	
Gray Silty Clay with Sandy Silt lenses-Wet		855								
	15		6-SS	11		1.3		10	*BDL	
		850								
	20		7-SS	34		2.3		11	*BDL	

Boring Terminated at about 21 feet (EL. 846.9')

Water Observation Data	Remarks:
Water Encountered During Drilling: 9 ft.	*PID Results are lab screened results that may reflect differently from field screened results.
Water Level At End of Drilling:	*BDL = Below Detection Limit
Cave Depth At End of Drilling:	
Water Level After Drilling:	
Cave Depth After Drilling:	

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

PRELIMINARY

BORING NO. & LOCATION: 7	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 883 feet	PROPOSED KWIK TRIP 631 RELOCATION	
COMPLETION DATE: 06/06/24	N112 W18741 MEQUON ROAD GERMANTOWN, WISCONSIN	
FIELD REP: JAMES BLAIR	PROJECT NO: 1G-2405020	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
±4" Topsoil: Dark Brown Silty Clay, little Sand and Organic Matter-Moist			1-SS	6					*BDL	
Fill: Brown Silty fine to medium Sand, trace Silt-Moist										
Brown fine to medium Sand, trace Silt-Moist		880	2-SS	12					*BDL	
	5		3-SS	18					*BDL	
		875	4-SS	26					*BDL	
	10		5-SS	25					*BDL	
Brown Sandy Silt-Wet		870								
	15		6-SS	39					*BDL	
		865								
	20		7-SS	70					*BDL	

Boring Terminated at about 21 feet (EL. 862')

Water Observation Data	Remarks:
Water Encountered During Drilling: 11 ft.	*PID Results are lab screened results that may reflect differently from field screened results.
Water Level At End of Drilling:	*BDL = Below Detection Limit
Cave Depth At End of Drilling:	
Water Level After Drilling:	
Cave Depth After Drilling:	

PRELIMINARY

GILES LOG REPORT 1G2405020.GPJ GILES.GDT 6/18/24

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

BORING NO. & LOCATION: 8	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 874.4 feet	PROPOSED KWIK TRIP 631 RELOCATION	
COMPLETION DATE: 06/06/24	N112 W18741 MEQUON ROAD GERMANTOWN, WISCONSIN	
FIELD REP: JAMES BLAIR	PROJECT NO: 1G-2405020	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
±4" Topsoil Fill: Dark Brown Silty Clay, little Sand and Organic Matter-Moist			1-SS	3					*BDL	
Fill: Dark Brown Silty Clay, little Sand, trace Gravel-Moist			2-SS	19					*BDL	
	5	870	3-SS	11		1.3		16	*BDL	
Brown Silty Clay, little Sand-Moist			4-SS	11		3.3		10	*BDL	
	10	865	5-SS	13	1.7	1.3		17	*BDL	
	15	860	6-SS	18		2.0		5	*BDL	
Gray Sandy Silt-Wet	20	855	7-SS	54				9	*BDL	
Boring Terminated at about 21 feet (EL. 853.4')										

Water Observation Data	Remarks:
Water Encountered During Drilling:	*PID Results are lab screened results that may reflect differently from field screened results.
Water Level At End of Drilling:	*BDL = Below Detection Limit
Cave Depth At End of Drilling:	
Water Level After Drilling:	
Cave Depth After Drilling:	

PRELIMINARY

GILES LOG REPORT 1G2405020.GPJ GILES.GDT 6/18/24

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

BORING NO. & LOCATION: 9	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 864.4 feet	PROPOSED KWIK TRIP 631 RELOCATION	
COMPLETION DATE: 06/06/24	N112 W18741 MEQUON ROAD GERMANTOWN, WISCONSIN	
FIELD REP: JAMES BLAIR	PROJECT NO: 1G-2405020	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
±2" Topsoil Fill: Dark Brown Silty Clay, little Sand and Organic Matter-Moist			1-SS	9					*BDL	
Fill: Brown Silty fine to medium Sand-Moist			2-SS	13					*BDL	
Brown Silty Clay, little Sand-Moist to Wet at ±8 feet	5	860	3-SS	15		1.0		11	*BDL	
			4-SS	18					*BDL	
	10	855	5-SS	25		2.0		16	*BDL	
	15	850	6-SS	22				14	*BDL	
Gray Silty Clay, little Sand-Wet	20	845	7-SS	14		1.8		12	*BDL	
Boring Terminated at about 21 feet (EL. 843.4')										

Water Observation Data	Remarks:
Water Encountered During Drilling: 8 ft.	*PID Results are lab screened results that may reflect differently from field screened results.
Water Level At End of Drilling:	*BDL = Below Detection Limit
Cave Depth At End of Drilling:	
Water Level After Drilling:	
Cave Depth After Drilling:	

PRELIMINARY

GILES LOG REPORT 1G2405020.GPJ GILES.GDT 6/18/24

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

Wisconsin Department of Safety and Professional Services
Division of Industry Services
4822 Madison Yards Way
PO Box 7302
Madison, WI 53707

Phone: 608-266-2112
Web: http://dsps.wi.gov
Email: dsps@wisconsin.gov

Program: Plumbing
Web: https://dsps.wi.gov/Pages/Programs/Plumbing

Soil and Site Evaluation – Stormwater Infiltration

In accordance with SPS 382.365, 385, Wis. Adm. Code, and WDNR Standard 1002

Personal information you provide may be used for secondary purposes [Privacy Law, s. 15.04(1)(m)]

Attach a complete site plan on paper not less than 8 ½ x 11 inches in size. Plan must include, but is not limited to: vertical and horizontal reference point (BM); direction and percent of slope; scale or dimensions; north arrow; and BM referenced to nearest road. **PLEASE PRINT ALL INFORMATION**	COUNTY Washington PARCEL ID

PROPERTY OWNER	PROPERTY LOCATION Govt. Lot_NW ¼ NW ¼, S28, T9N,R20E Lot #, Block #, Subd. Name or CSM #: CSM 2890 Municipality: Germantown ☐ City ☒ Village ☐ Town Nearest Road: Maple Road
PROPERTY OWNER'S MAILING ADDRESS	
CITY, STATE, ZIP CODE PHONE	

Drainage area_____ ☐sq. ft. ☐acres Test site suitable for (check all that apply): ☐ Site not suitable ☐Bioretention ☐ Reuse ☐Subsurface Dispersal System ☐ Irrigation ☐Other _____	HYDRAULIC APPLICATION TEST METHOD ☐ Morphological Evaluation ☐ Double Ring Infiltrometer ☐ Other: (specify) _____	SOIL MOISTURE Date of soil borings: 6/6/24 USDA-NRCS WETS VALUE: ☐ Dry = 1 ☐ Normal = 2 ☐ Wet = 3

1 #OBS. ☐ Pit ☒ Boring Ground Surface Elevation 866.4 ft. Elevation of Limiting Factor 857.4 ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
PVMT	0-14	--	--	--	--	--	--	--	--	--
FILL	14-48	10 YR 5/4	--	SICL	1, F, SBK	M, FI	C, W	<5%	90%	0.04
B	48-108	10 YR 5/4	--	SICL	MA	M, FI	C, W	<5%	90%	0.04
C	108-132	10 YR 5/4	--	LS	1, M, GR	M, FI	G, S	<5%	20%	1.63
C	132-252	10 YR 6/1	--	SIL	1, F GR	M, FI	--	<5%	55%	0.13

Comments: Water encountered at 9 feet below ground surface.

2 #OBS. ☐ Pit ☒ Boring Ground Surface Elevation 866.3 ft. Elevation of Limiting Factor 859.8 ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
FILL	0-8	10 YR 3/1	--	SICL	1, VF, SBK	M, FR	C, W	<5%	90%	0.04
FILL	8-48	10 YR 5/4	--	SICL	1, F, SBK	M, FI	C, W	10%	90%	0.04
B	48-108	10 YR 5/4	--	SICL	MA	M, FI	C, W	10%	90%	0.04
C	108-132	10 YR 5/4	--	LS	1, M, GR	M, FI	G, S	<5%	20%	1.63
C	132-252	10 YR 6/1	--	SIL	1, F GR	M, FI	--	10%	55%	0.13

Comments: Water encountered at 6½ feet below ground surface.

3 #OBS. ☐ Pit ☒ Boring Ground Surface Elevation 867.6 ft. Elevation of Limiting Factor 861.1 ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
PVMT	0-12	--	--	--	--	--	--	--	--	--
FILL	12-48	10 YR 5/4	--	LS	1, M, GR	M, FI	C, W	10%	20%	1.63
B	48-108	10 YR 5/4	--	SICL	1, F, SBK	M, FI	C, W	<5%	90%	0.04
C	108-252	10 YR 6/1	--	SIL	1, F GR	M, FI	--	<5%	55%	0.13

Comments: Water encountered at 6½ feet below ground surface.

4 #OBS. ☐ Pit ☒ Boring Ground Surface Elevation 865.6 ft. Elevation of Limiting Factor 854.6 ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
PVMT	0-10	--	--	--	--	--	--	--	--	--
FILL	10-48	10 YR 5/4	--	SICL	1, F, SBK	M, FI	C, W	10%	90%	0.04
B	48-108	10 YR 5/4	--	SICL	MA	M, FI	C, W	<5%	90%	0.04
C	108-132	10 YR 5/4	--	SIL	1, F GR	M, FI	--	<5%	55%	0.13
C	132-252	10 YR 6/1	--	SIL	1, F GR	M, FI	--	<5%	55%	0.13

Comments: Water encountered at 11 feet below ground surface.

5 #OBS. ☐ Pit ☒ Boring Ground Surface Elevation 867.5 ft. Elevation of Limiting Factor 861 ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
PVMT	0-14	--	--	--	--	--	--	--	--	--
FILL	14-78	10 YR 5/4	--	SICL	1, F, SBK	M, FI	C, W	<5%	90%	0.04
B	78-132	10 YR 5/4	--	SICL	MA	M, FI	C, W	<5%	90%	0.04
C	132-192	10 YR 6/1	--	SIL	1, F GR	M, FI	C, W	<5%	55%	0.13
C	192-252	10 YR 6/1	--	SICL	1, F, SBK	M, FI	--	<5%	90%	0.04

Comments: Water encountered at 6½ feet below ground surface.

6 #OBS. ☐ Pit ☒ Boring Ground Surface Elevation 867.9 ft. Elevation of Limiting Factor 868.9 ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
FILL	0-4	10 YR 3/3	--	SICL	1, VF, SBK	M, FR	C, W	<5%	90%	0.04
FILL	4-78	10 YR 5/4	--	SICL	1, F, SBK	M, FI	C, W	<5%	90%	0.04
B	78-132	10 YR 5/4	--	SICL	MA	M, FI	C, W	<5%	90%	0.04
C	132-252	10 YR 6/1	--	SICL	1, M, SBK	M, FI	--	<5%	90%	0.04

Comments: Water encountered at 9 feet below ground surface.

7 #OBS. ☐ Pit ☒ Boring Ground Surface Elevation 883 ft. Elevation of Limiting Factor 872 ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
FILL	0-4	10 YR 3/3	--	SICL	1, VF, SBK	M, FR	C, W	<5%	90%	0.04
FILL	4-24	10 YR 5/4	--	SL	1, M, GR	M, FI	C, W	<5%	10%	0.50
C	24-132	10 YR 5/4	--	LS	1, M, GR	M, FI	C, W	<5%	20%	1.63
C	132-252	10 YR 5/4	--	SIL	1, F, GR	M, FI	--	<5%	55%	0.13

Comments: Water encountered at 11 feet below ground surface.

8 #OBS. ☐ Pit ☒ Boring Ground Surface Elevation 874.4 ft. Elevation of Limiting Factor 858.4 ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
FILL	0-4	10 YR 5/4	--	SICL	1, VF, SBK	M, FR	C, W	<5%	90%	0.04
FILL	4-78	10 YR 3/3	--	SICL	1, F, SBK	M, FI	C, W	10%	90%	0.04
B	78-192	10 YR 5/4	--	SICL	MA	M, FI	C, W	<5%	90%	0.04
C	192-252	10 YR 6/1	--	SIL	1, F GR	M, FI	--	<5%	55%	0.13

Comments: Wet soil encountered at 16 feet below ground surface.

9 #OBS. ☐ Pit ☒ Boring Ground Surface Elevation 864.4 ft. Elevation of Limiting Factor 856.4 ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
FILL	0-2	10 YR 3/3	--	SICL	1, VF, SBK	M, FR	C, W	<5%	90%	0.04
FILL	2-48	10 YR 5/4	--	SICL	1, M, SBK	M, FI	C, W	<5%	90%	0.04
B	48-192	10 YR 5/4	--	SICL	MA	M, FI	C, W	<5%	90%	0.04
C	192-252	10 YR 6/1	--	SICL	1, F, SBK	M, FI	--	<5%	90%	0.04

Comments: Water encountered at 8 feet below ground surface.

Overall Site Comments:

Benjamin M. Stark, P.E.		P.E. No.: 48164-6
Name (Please Print)	Signature	Credential Number
N8 W22350 Johnson Drive, Waukesha, WI	June 6, 2024	(262) 544-0118
Address	Date Evaluation Conducted	Phone Number

Appendix 3

Water Quality Calculations & WinSLAMM Inputs

POST DEVELOPMENT WATERSHED AREA

4.806 AC.
XX% IMPERVIOUS
CN= 90

SUB-AREA 1

AREA = 3.522 AC.
79% IMPERVIOUS
CN = 94
TC = 6.0 MIN.

SUB-AREA 1A

AREA = 0.442 AC.
XX% IMPERVIOUS
CN = XX
TC = 6.0 MIN.

SUB-AREA 2

AREA = 0.842 AC.
1% IMPERVIOUS
CN = 72
TC = 6.0 MIN.

SUB-AREA 1

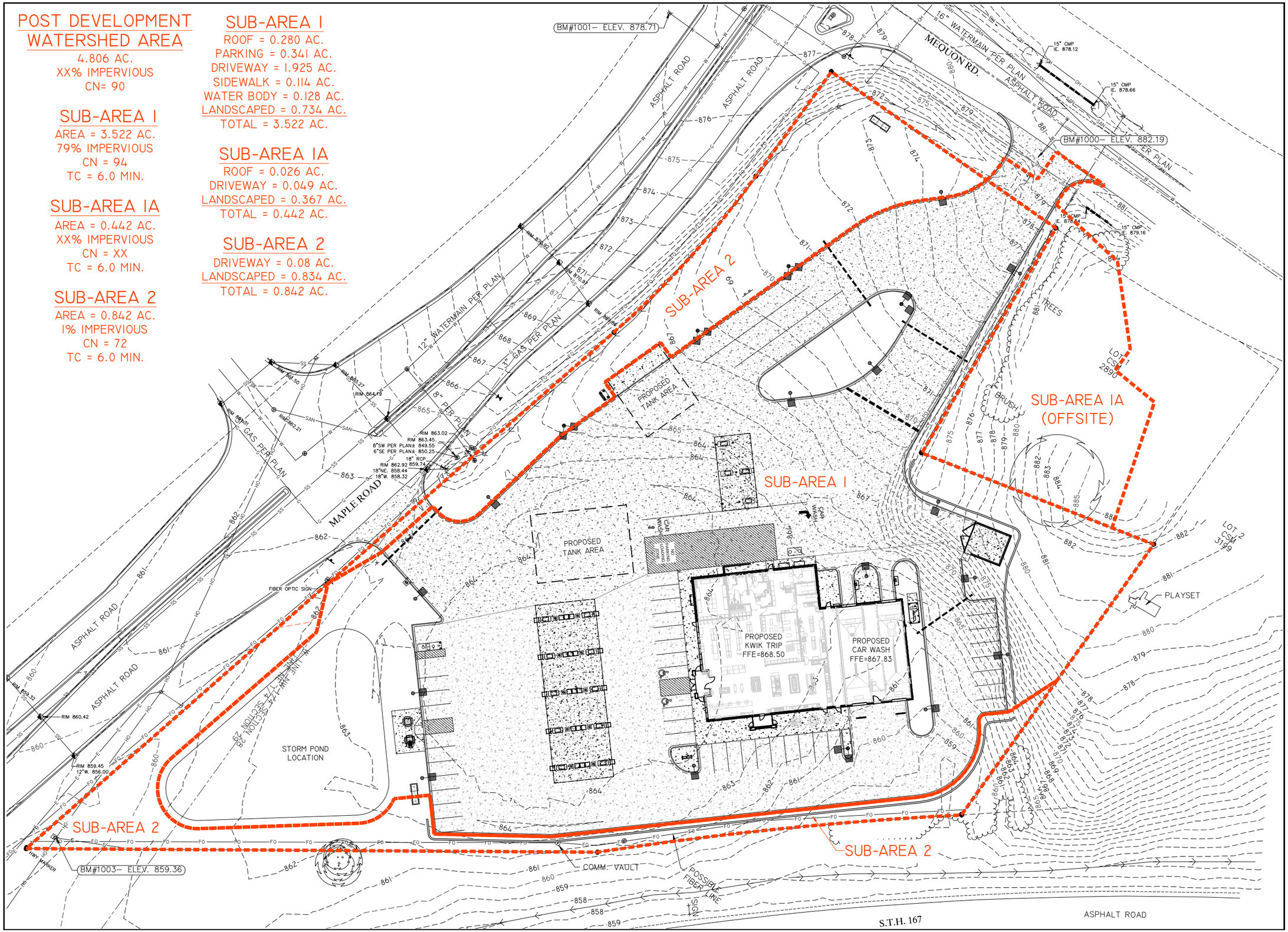
ROOF = 0.280 AC.
PARKING = 0.341 AC.
DRIVEWAY = 1.925 AC.
SIDEWALK = 0.114 AC.
WATER BODY = 0.128 AC.
LANDSCAPED = 0.734 AC.
TOTAL = 3.522 AC.

SUB-AREA 1A

ROOF = 0.026 AC.
DRIVEWAY = 0.049 AC.
LANDSCAPED = 0.367 AC.
TOTAL = 0.442 AC.

SUB-AREA 2

DRIVEWAY = 0.08 AC.
LANDSCAPED = 0.834 AC.
TOTAL = 0.842 AC.



KWIK TRIP STORES

KWIK STAR STORES

WI 54602-2107
(608) 781-8988
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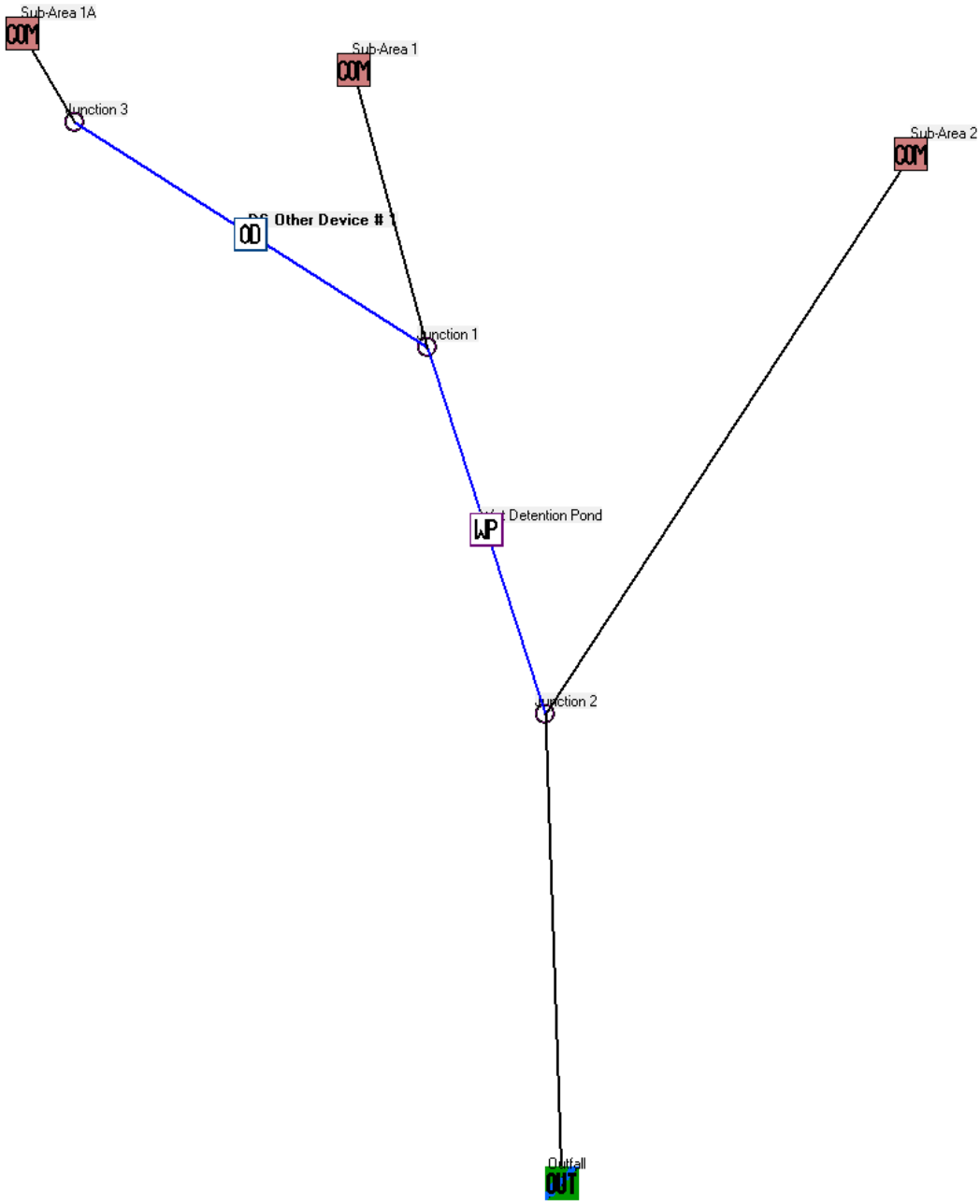
REI
CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING
REI Engineering, INC.
4080 N. 20TH AVENUE
WAUSAU, WISCONSIN 54401
PHONE: 715.675.9784 FAX: 715.675.4060
EMAIL: MAIL@REIENGINEERING.COM

SCALE
0 30 60

STORE #631
67 & MAPLE ROAD
ERMANTOWN, WI

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	STM-1

SITE TSS REMOVAL WINSLAMM INPUT



WET DETENTION POND INPUT

Wet Detention Control Device

Pond Number 1

Drainage System Control Practice

Initial Stage Elevation (ft): 5.00

Maximum Inflow into Pond (cfs)
Enter 0 or leave blank for no limit:

Enter Two Stage Area Values in Rows 1 and 2, and Press to Interpolate

Create Pond Stage-Area Values | Refresh Schematic

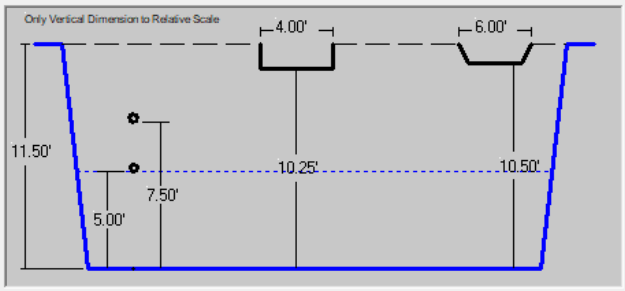
Enter fraction (greater than 0) that you want to modify all pond areas by and then select 'Modify Pond Areas' button: 0.00

Modify Pond Areas

Copy Pond Data | Paste Pond Data | Recalculate Cumulative Volume

Save or Delete Pond Data to Database File | Get Pond Data From Database File

	Stage (ft)	Area (acres)	Cumulative Volume (ac-ft)
0	0.00	0.0000	0.0000
1	0.01	0.0284	0.000
2	1.00	0.0368	0.032
3	2.00	0.0462	0.074
4	3.00	0.0567	0.125
5	4.00	0.0677	0.188
6	4.20	0.0700	0.201
7	5.00	0.1277	0.280
8	6.00	0.1520	0.420
9	7.00	0.1775	0.585
10	8.00	0.2043	0.776
11	9.00	0.2322	0.994
12	10.00	0.2615	1.241
13	11.00	0.2922	1.518
14	11.50	0.3080	1.668
15			
16			
17			



Remove | **Sharp Crested Weir**

Weir Length (ft)	4.00
Height from datum to bottom of weir opening (ft)	10.25

Add | **V-Notch Weir**

Weir Angle (<180 degrees)	
Height from datum to bottom of weir opening (ft)	
Number of V-Notch weirs	

Remove | **Orifice Set 1**

Orifice Diameter (ft)	0.33
Invert elevation above datum (ft)	5.00
Number of orifices in set	1

Remove | **Orifice Set 2**

Orifice Diameter (ft)	0.42
Invert elevation above datum (ft)	7.50
Number of orifices in set	1

Add | **Orifice Set 3**

Orifice Diameter (ft)	
Invert elevation above datum (ft)	
Number of orifices in set	

Add | **Stone Weeper**

Width at bottom of weeper (ft)	
Weeper side slope (_H:1V)	
Upstream side slope (_H:1V)	
Downstream side slope (_H:1V)	
Horizontal flow path length at top of weeper (ft)	
Average rock diameter (ft)	
Distance from bottom to top of weeper (ft)	
Height from datum to bottom of weeper (ft)	

Add | **Vertical Stand Pipe**

Pipe diameter (ft)	
Height above datum (ft)	

Add | Add

Month	Evaporation (in/day)	Water Withdraw Rate (ac-ft/day)
Jan	0.00	0.000
Feb	0.00	0.000
Mar	0.00	0.000
Apr	0.00	0.000
May	0.00	0.000
Jun	0.00	0.000
Jul	0.00	0.000
Aug	0.00	0.000
Sep	0.00	0.000
Oct	0.00	0.000
Nov	0.00	0.000
Dec	0.00	0.000

Add | Add

Stage (ft)	Natural Seepage Rate (in/hr)	Other Outflow Rate (cfs)
0.00	0.00	0.000
0.01	0.00	0.000
1.00	0.00	0.000
2.00	0.00	0.000
3.00	0.00	0.000
4.00	0.00	0.000
4.20	0.00	0.000

Remove | **Broad Crested Weir (Required)**

Weir crest length (ft)	6.00
Weir crest width (ft)	14.00
Height from datum to bottom of weir opening (ft)	10.50

Add | **Seepage Basin**

Infiltration rate (in/hr)	
Width of device (ft)	
Length of device (ft)	
Invert elevation of seepage basin inlet above datum (ft)	

Add | **Pump**

To Delete This Practice, Right Mouse Click on Icon and Select Delete

Cancel | Continue | **Press 'F1' for Help**

Control Practice # : 1 | CP Index # : 1

WINSLAMM OUTPUT

File Name:

Q:\11700-11799\11757 - Kwik Trip #631 - Germantown\Engineer\Stormwater Management\Modeling-WinSlamm\11757-Water Quality Analysis.mdb

Outfall Output Summary

	Runoff Volume (cu. ft.)	Percent Runoff Reduction	Runoff Coefficient (Rv)	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of All Land Uses without Controls	240500		0.42	123.5 (1)	1854 (1)	
Outfall Total with Controls	240753	-0.11 %	0.42	33.70	506.6	72.68 %
Current File Output: Annualized Total After Outfall Controls	244097	Years in Model Run:	0.99		513.6	

(1) Values reduced to remove off-site loadings due to setting Other Control Device Concentration Reduction values to 1.

Print Output Summary to .csv File

Print Output Summary to Text File

Print Output Summary to Printer

Total Area Modeled (ac): 4.806

Total Control Practice Costs

Capital Cost	N/A
Land Cost	N/A
Annual Maintenance Cost	N/A
Present Value of All Costs	N/A
Annualized Value of All Costs	N/A

Perform Outfall Flow Duration Curve Calculations

Receiving Water Impacts Due To Stormwater Runoff

(CWP Impervious Cover Model)

	Calculated Rv	Approximate Urban Stream Classification
Without Controls	0.42	Poor
With Controls	0.42	Poor

ANNUAL YIELD OF TSS (NO CONTROL) = 1,854 lbs

ANNUAL YIELD OF TSS AFTER CONTROLS = 506.6 lbs

PERCENT TSS REDUCTION = 72.68%

Data file name: Q:\11700-11799\11757 - Kwik Trip #631 - Germantown\Engineer\Stormwater Management\Modeling-WinSlamm\11757-Water Quality Analysis.mdb
WinSLAMM Version 10.5.0
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/06 End of Winter Season: 03/28
Date: 10-09-2024 Time: 12:41:33
Site information:

LU# 1 - Commercial: Sub-Area 1 Total area (ac): 3.522
1 - Roofs 1: 0.280 ac. Pitched Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
13 - Paved Parking 1: 0.341 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 1.925 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.114 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.020 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
46 - Large Landscaped Areas 2: 0.714 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 0.128 ac. PSD File: Source Area PSD File:

LU# 2 - Commercial: Sub-Area 2 Total area (ac): 0.842
25 - Driveways 1: 0.008 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.290 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
46 - Large Landscaped Areas 2: 0.159 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
47 - Large Landscaped Areas 3: 0.385 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 3 - Commercial: Sub-Area 1A Total area (ac): 0.442
1 - Roofs 1: 0.026 ac. Pitched Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.049 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.367 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Wet Detention Pond CP# 1 (DS) - Wet Detention Pond

Particle Size Distribution file name: Not needed - calculated by program

Initial stage elevation (ft): 5

Peak to Average Flow Ratio: 3.8

Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Sharp Crested Weir

1. Sharp crested weir length (ft): 4
2. Sharp crested weir height from invert: 1.25
3. Sharp crested weir invert elevation above datum (ft): 10.25

Outlet type: Orifice 1

1. Orifice diameter (ft): 0.33
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Orifice 2

1. Orifice diameter (ft): 0.42
2. Number of orifices: 1
3. Invert elevation above datum (ft): 7.5

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 6
2. Weir crest width (ft): 14
3. Height from datum to bottom of weir opening: 10.5

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.0284	0.00	0.00
2	1.00	0.0368	0.00	0.00
3	2.00	0.0462	0.00	0.00
4	3.00	0.0567	0.00	0.00
5	4.00	0.0677	0.00	0.00
6	4.20	0.0700	0.00	0.00
7	5.00	0.1277	0.00	0.00
8	6.00	0.1520	0.00	0.00
9	7.00	0.1775	0.00	0.00
10	8.00	0.2043	0.00	0.00
11	9.00	0.2322	0.00	0.00
12	10.00	0.2615	0.00	0.00
13	11.00	0.2922	0.00	0.00
14	11.50	0.3080	0.00	0.00

Control Practice 2: Other Device CP# 1 (DS) - DS Other Device # 1

Fraction of drainage area served by device (ac) = 1.00

Particulate Concentration reduction fraction = 1.00

Filterable Concentration reduction fraction = 0.00

Runoff volume reduction fraction = 0

Appendix 4

Post-Development Conditions Peak Flow Analysis

POST DEVELOPMENT WATERSHED AREA

4.806 AC.
XX% IMPERVIOUS
CN= 90

SUB-AREA 1

AREA = 3.522 AC.
79% IMPERVIOUS
CN = 94
TC = 6.0 MIN.

SUB-AREA 1A

AREA = 0.442 AC.
XX% IMPERVIOUS
CN = XX
TC = 6.0 MIN.

SUB-AREA 2

AREA = 0.842 AC.
1% IMPERVIOUS
CN = 72
TC = 6.0 MIN.

SUB-AREA 1

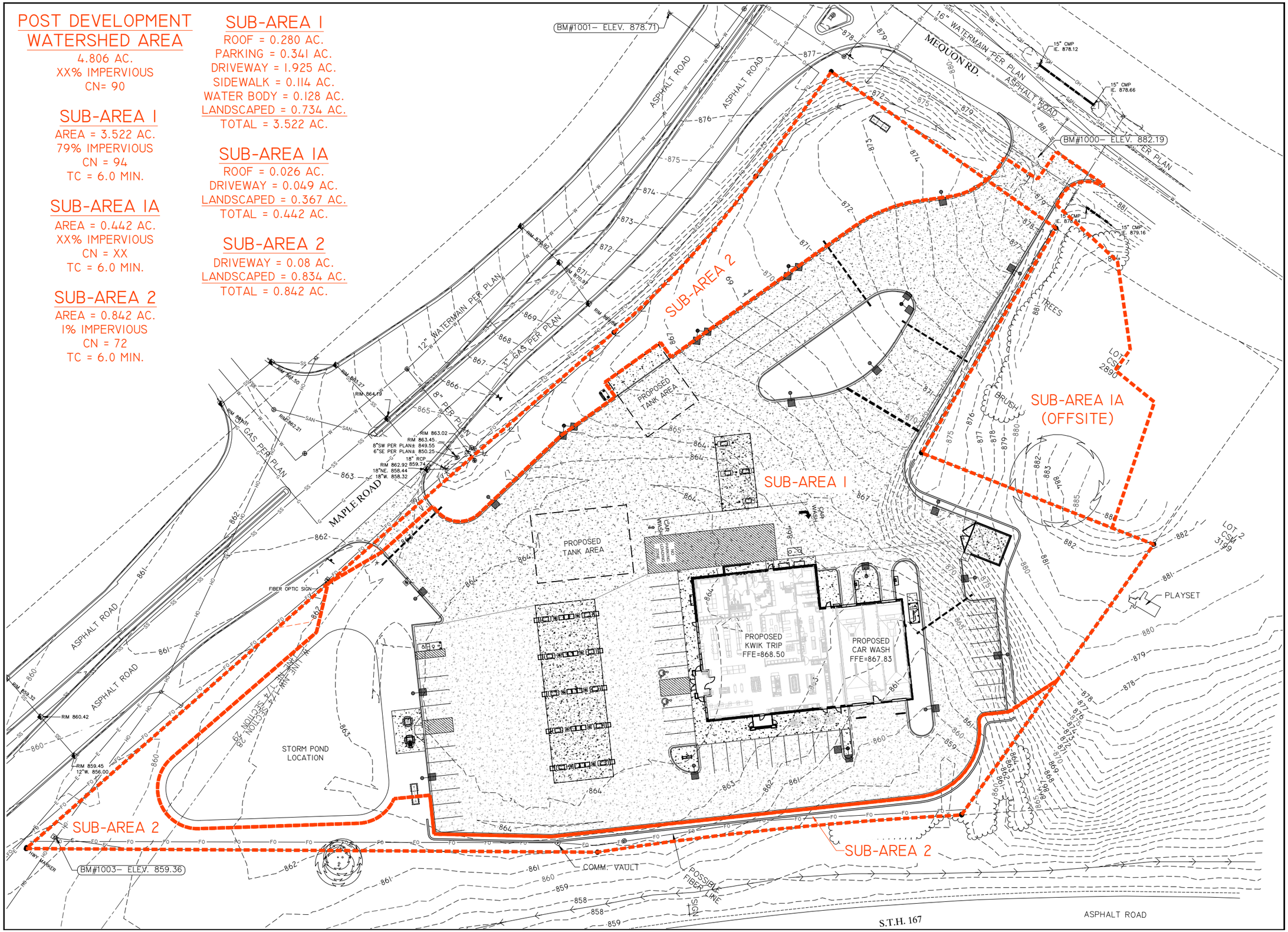
ROOF = 0.280 AC.
PARKING = 0.341 AC.
DRIVEWAY = 1.925 AC.
SIDEWALK = 0.114 AC.
WATER BODY = 0.128 AC.
LANDSCAPED = 0.734 AC.
TOTAL = 3.522 AC.

SUB-AREA 1A

ROOF = 0.026 AC.
DRIVEWAY = 0.049 AC.
LANDSCAPED = 0.367 AC.
TOTAL = 0.442 AC.

SUB-AREA 2

DRIVEWAY = 0.08 AC.
LANDSCAPED = 0.834 AC.
TOTAL = 0.842 AC.



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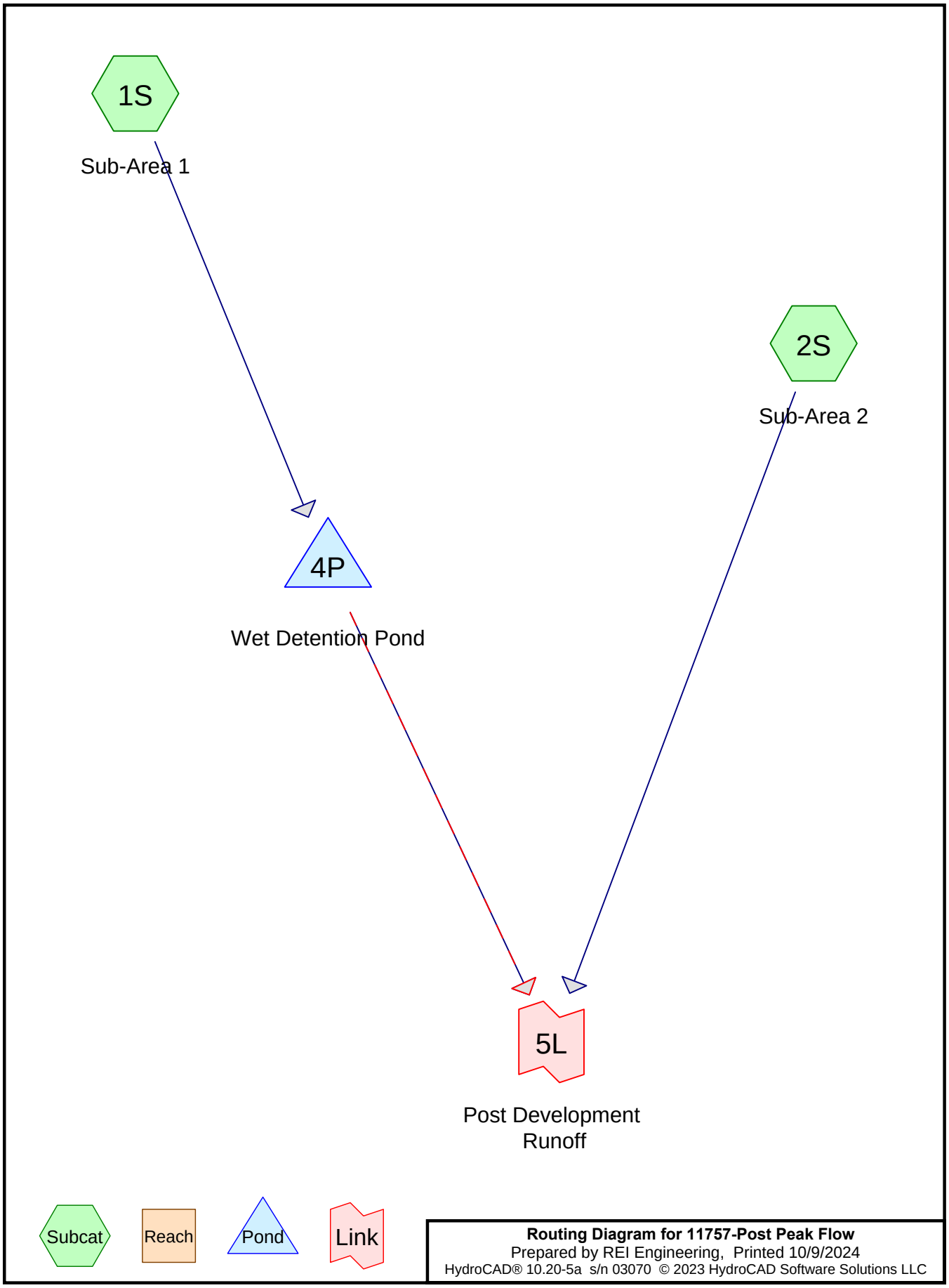
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	STM-1


1S
Sub-Area 1
2S
Sub-Area 2
4P
Wet Detention Pond
5L
Post Development
Runoff
Subcat
Reach
Pond
Link
Routing Diagram for 11757-Post Peak Flow
Prepared by REI Engineering, Printed 10/9/2024
HydroCAD® 10.20-5a s/n 03070 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	MSE 24-hr	3	Default	24.00	1	2.65	2

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Sub-Area 1 Runoff Area=3.522 ac 79.16% Impervious Runoff Depth=2.13"
Tc=6.0 min CN=WQ Runoff=11.75 cfs 0.624 af

Subcatchment 2S: Sub-Area 2 Runoff Area=0.842 ac 0.95% Impervious Runoff Depth=0.69"
Flow Length=396' Tc=10.6 min CN=WQ Runoff=0.79 cfs 0.049 af

Pond 4P: Wet Detention Pond Peak Elev=860.44' Storage=16,795 cf Inflow=11.75 cfs 0.624 af
Primary=0.63 cfs 0.622 af Secondary=0.00 cfs 0.000 af Outflow=0.63 cfs 0.622 af

Link 5L: Post Development Runoff Inflow=1.35 cfs 0.671 af
Primary=1.35 cfs 0.671 af

Total Runoff Area = 4.364 ac Runoff Volume = 0.673 af Average Runoff Depth = 1.85"
35.93% Pervious = 1.568 ac 64.07% Impervious = 2.796 ac

Summary for Subcatchment 1S: Sub-Area 1

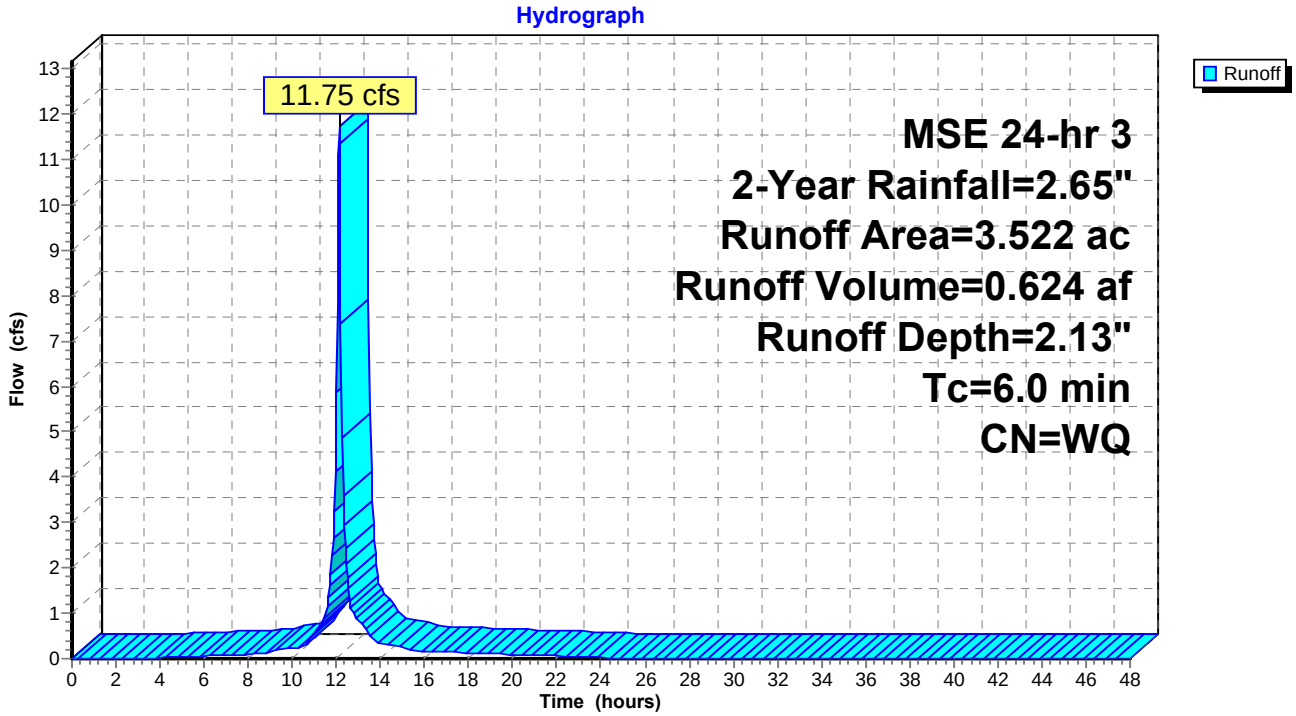
Runoff = 11.75 cfs @ 12.13 hrs, Volume= 0.624 af, Depth= 2.13"
Routed to Pond 4P : Wet Detention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.65"

	Area (ac)	CN	Description
*	0.280	98	Roof
*	0.341	98	Parking
*	1.925	98	Driveway
*	0.114	98	Sidewalk
	0.020	61	>75% Grass cover, Good, HSG B
	0.714	80	>75% Grass cover, Good, HSG D
*	0.128	100	Water Body
	3.522		Weighted Average
	0.734		20.84% Pervious Area
	2.788		79.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: Sub-Area 1



Summary for Subcatchment 2S: Sub-Area 2

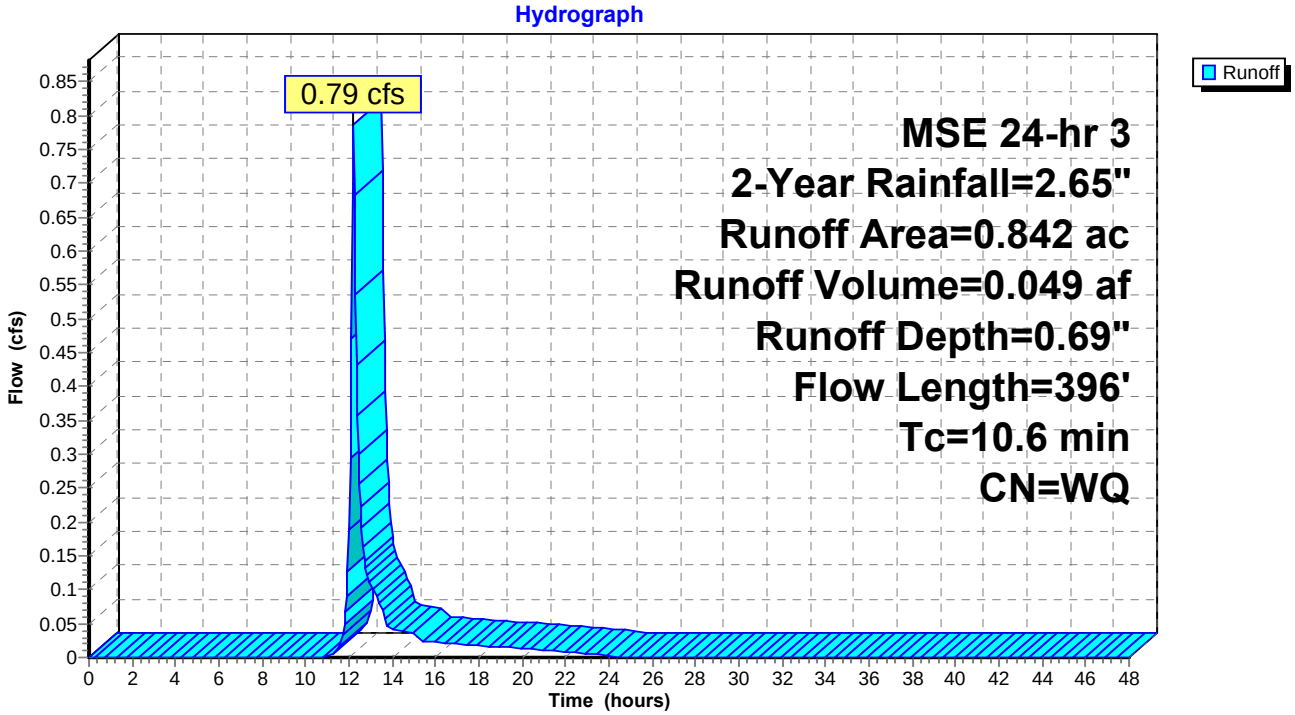
Runoff = 0.79 cfs @ 12.20 hrs, Volume= 0.049 af, Depth= 0.69"
Routed to Link 5L : Post Development Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.65"

	Area (ac)	CN	Description
*	0.008	98	Driveway
	0.290	61	>75% Grass cover, Good, HSG B
	0.159	74	>75% Grass cover, Good, HSG C
	0.385	80	>75% Grass cover, Good, HSG D
	0.842		Weighted Average
	0.834		99.05% Pervious Area
	0.008		0.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.0310	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.65"
1.6	296	0.0360	3.05		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
10.6	396	Total			

Subcatchment 2S: Sub-Area 2



Summary for Pond 4P: Wet Detention Pond

Inflow Area = 3.522 ac, 79.16% Impervious, Inflow Depth = 2.13" for 2-Year event
Inflow = 11.75 cfs @ 12.13 hrs, Volume= 0.624 af
Outflow = 0.63 cfs @ 13.33 hrs, Volume= 0.622 af, Atten= 95%, Lag= 72.3 min
Primary = 0.63 cfs @ 13.33 hrs, Volume= 0.622 af
Routed to Link 5L : Post Development Runoff
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : Post Development Runoff

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 860.44' @ 13.33 hrs Surf.Area= 8,240 sf Storage= 16,795 cf

Plug-Flow detention time= 328.0 min calculated for 0.622 af (100% of inflow)
Center-of-Mass det. time= 327.0 min (1,087.2 - 760.1)

Volume	Invert	Avail.Storage	Storage Description
#1	858.00'	60,396 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

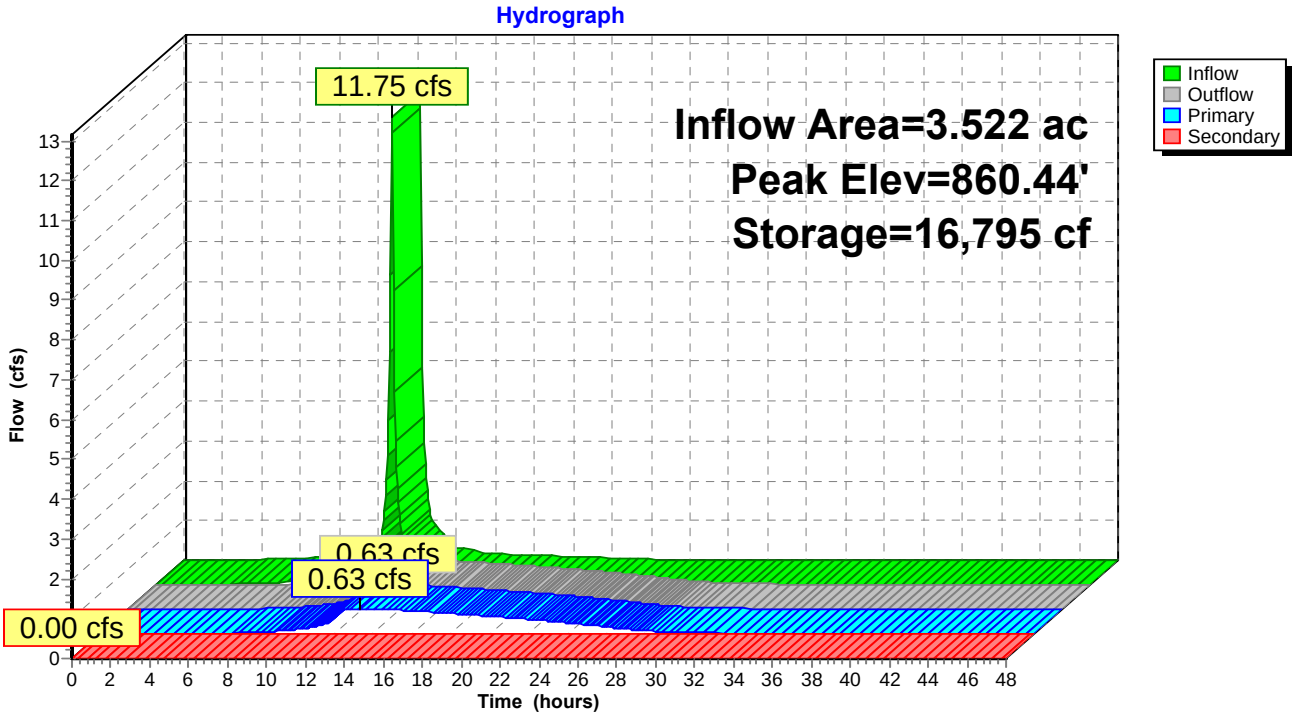
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
858.00	5,564	342.3	0	0	5,564
859.00	6,619	361.2	6,084	6,084	6,679
860.00	7,731	380.0	7,168	13,252	7,848
861.00	8,900	398.9	8,309	21,560	9,083
862.00	10,113	417.3	9,500	31,060	10,346
863.00	11,392	436.1	10,746	41,807	11,692
864.00	12,728	454.9	12,054	53,860	13,097
864.50	13,417	464.4	6,535	60,396	13,829

Device	Routing	Invert	Outlet Devices
#1	Primary	858.00'	**12.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 858.00' / 856.00' S= 0.0333 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	858.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	860.50'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	863.25'	**4.0' long x 1.25' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Secondary	863.50'	**6.0' long + 3.0 '/' SideZ x 14.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

Primary OutFlow Max=0.63 cfs @ 13.33 hrs HW=860.44' (Free Discharge)
└─**1=Culvert** (Passes 0.63 cfs of 4.16 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.63 cfs @ 7.27 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=858.00' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: Wet Detention Pond

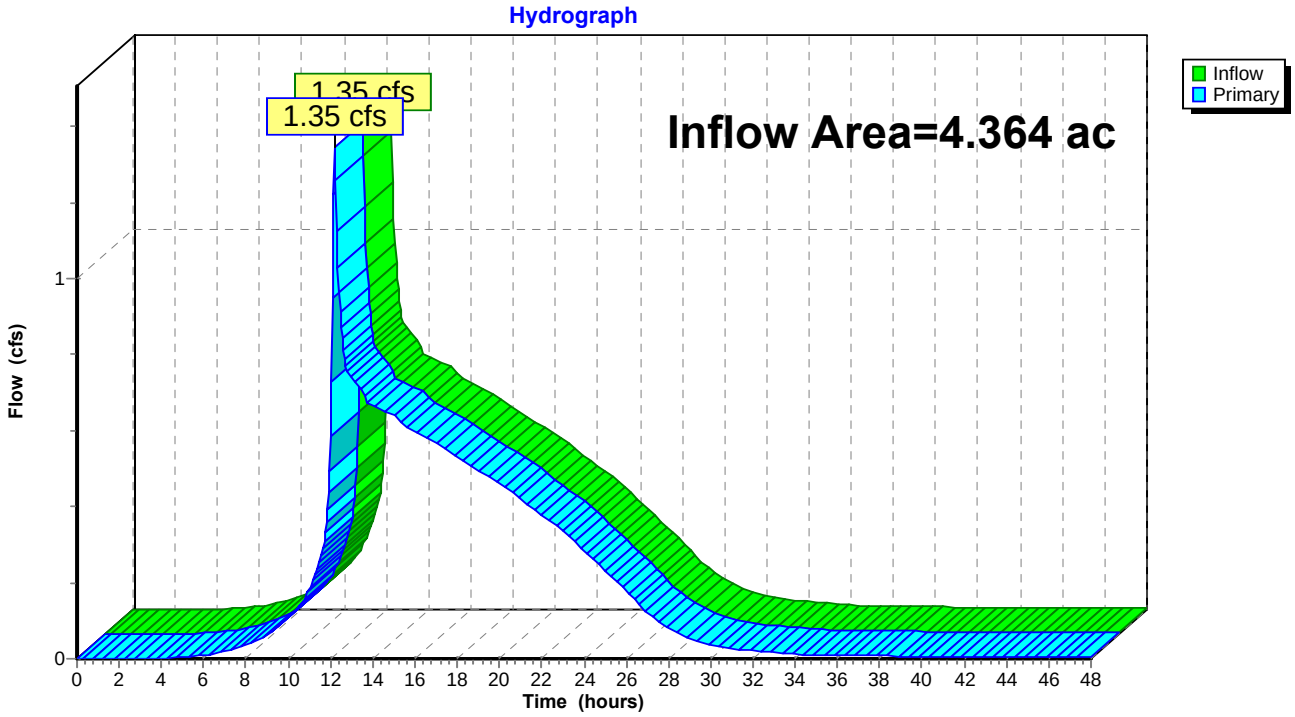


Summary for Link 5L: Post Development Runoff

Inflow Area = 4.364 ac, 64.07% Impervious, Inflow Depth > 1.84" for 2-Year event
Inflow = 1.35 cfs @ 12.20 hrs, Volume= 0.671 af
Primary = 1.35 cfs @ 12.20 hrs, Volume= 0.671 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 5L: Post Development Runoff



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Sub-Area 1 Runoff Area=3.522 ac 79.16% Impervious Runoff Depth=5.75"
Tc=6.0 min CN=WQ Runoff=30.96 cfs 1.687 af

Subcatchment 2S: Sub-Area 2 Runoff Area=0.842 ac 0.95% Impervious Runoff Depth=3.41"
Flow Length=396' Tc=10.6 min CN=WQ Runoff=4.21 cfs 0.239 af

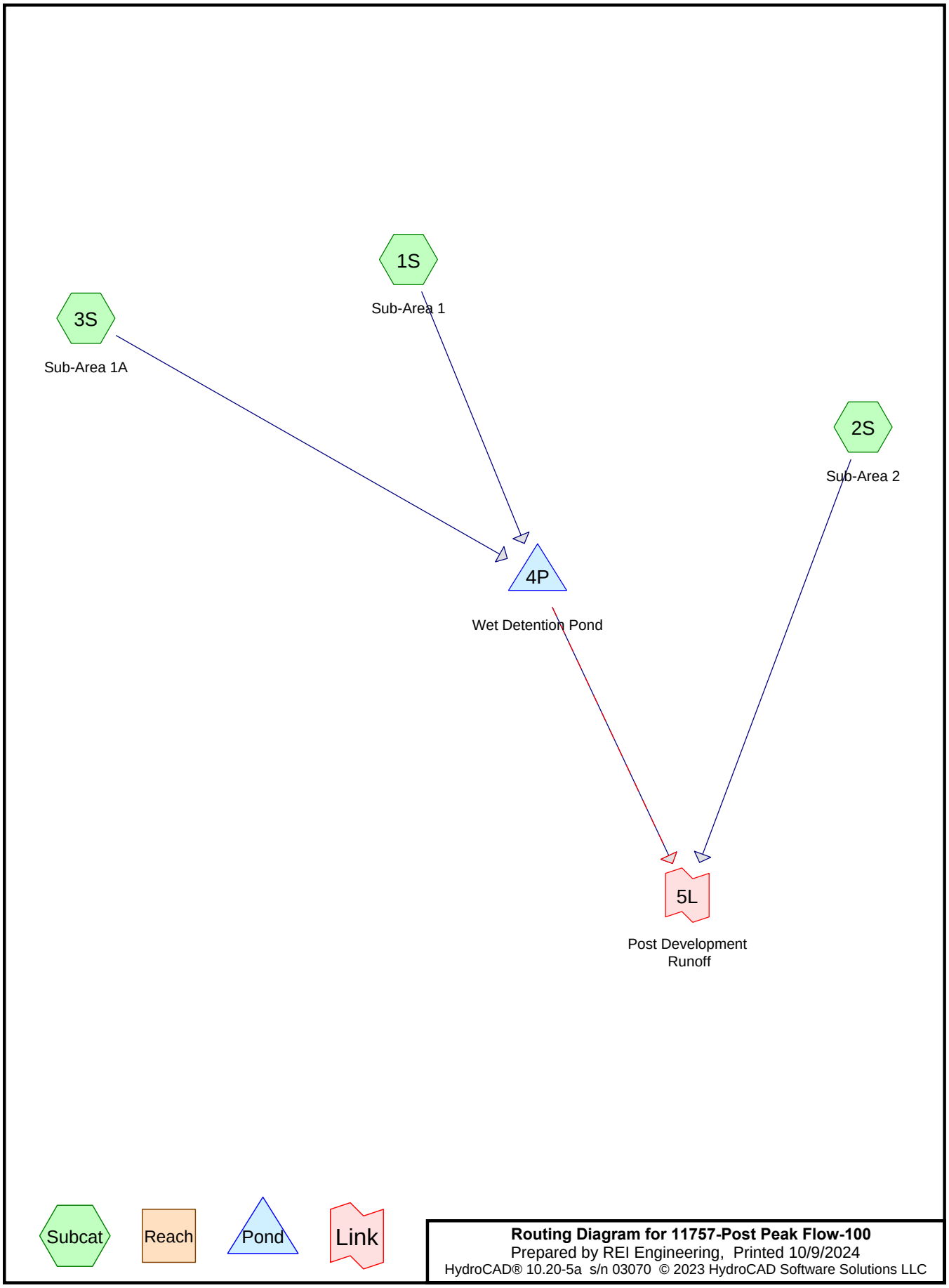
Pond 4P: Wet Detention Pond Peak Elev=863.26' Storage=44,800 cf Inflow=30.96 cfs 1.687 af
Primary=2.01 cfs 1.683 af Secondary=0.00 cfs 0.000 af Outflow=2.01 cfs 1.683 af

Link 5L: Post Development Runoff Inflow=5.92 cfs 1.923 af
Primary=5.92 cfs 1.923 af

Total Runoff Area = 4.364 ac Runoff Volume = 1.927 af Average Runoff Depth = 5.30"
35.93% Pervious = 1.568 ac 64.07% Impervious = 2.796 ac

Appendix 5

Detention Pond Safe Passage Analysis


1S
Sub-Area 1
3S
Sub-Area 1A
2S
Sub-Area 2
4P
Wet Detention Pond
5L
Post Development
Runoff
Subcat
Reach
Pond
Link
Routing Diagram for 11757-Post Peak Flow-100
Prepared by REI Engineering, Printed 10/9/2024
HydroCAD® 10.20-5a s/n 03070 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	100-Year	MSE 24-hr	3	Default	24.00	1	6.41	2

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Sub-Area 1 Runoff Area=3.522 ac 79.16% Impervious Runoff Depth=5.75"
Tc=6.0 min CN=WQ Runoff=30.96 cfs 1.687 af

Subcatchment 2S: Sub-Area 2 Runoff Area=0.842 ac 0.95% Impervious Runoff Depth=3.41"
Flow Length=396' Tc=10.6 min CN=WQ Runoff=4.21 cfs 0.239 af

Subcatchment 3S: Sub-Area 1A Runoff Area=0.442 ac 16.97% Impervious Runoff Depth=4.50"
Tc=6.0 min CN=WQ Runoff=3.36 cfs 0.166 af

Pond 4P: Wet Detention Pond Peak Elev=863.49' Storage=47,517 cf Inflow=34.32 cfs 1.853 af
Primary=3.56 cfs 1.849 af Secondary=0.00 cfs 0.000 af Outflow=3.56 cfs 1.849 af

Link 5L: Post Development Runoff Inflow=6.03 cfs 2.088 af
Primary=6.03 cfs 2.088 af

Total Runoff Area = 4.806 ac Runoff Volume = 2.092 af Average Runoff Depth = 5.22"
40.26% Pervious = 1.935 ac 59.74% Impervious = 2.871 ac

Summary for Subcatchment 1S: Sub-Area 1

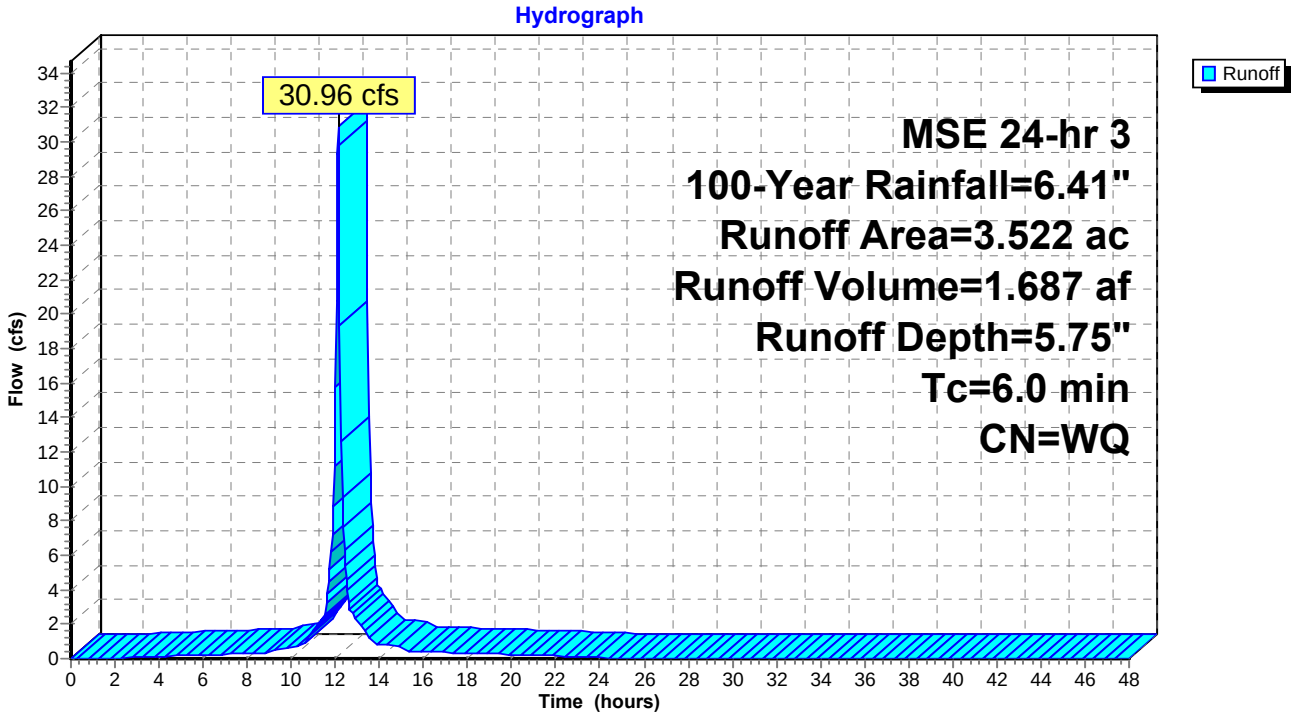
Runoff = 30.96 cfs @ 12.13 hrs, Volume= 1.687 af, Depth= 5.75"
Routed to Pond 4P : Wet Detention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.41"

	Area (ac)	CN	Description
*	0.280	98	Roof
*	0.341	98	Parking
*	1.925	98	Driveway
*	0.114	98	Sidewalk
	0.020	61	>75% Grass cover, Good, HSG B
	0.714	80	>75% Grass cover, Good, HSG D
*	0.128	100	Water Body
	3.522		Weighted Average
	0.734		20.84% Pervious Area
	2.788		79.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: Sub-Area 1



Summary for Subcatchment 2S: Sub-Area 2

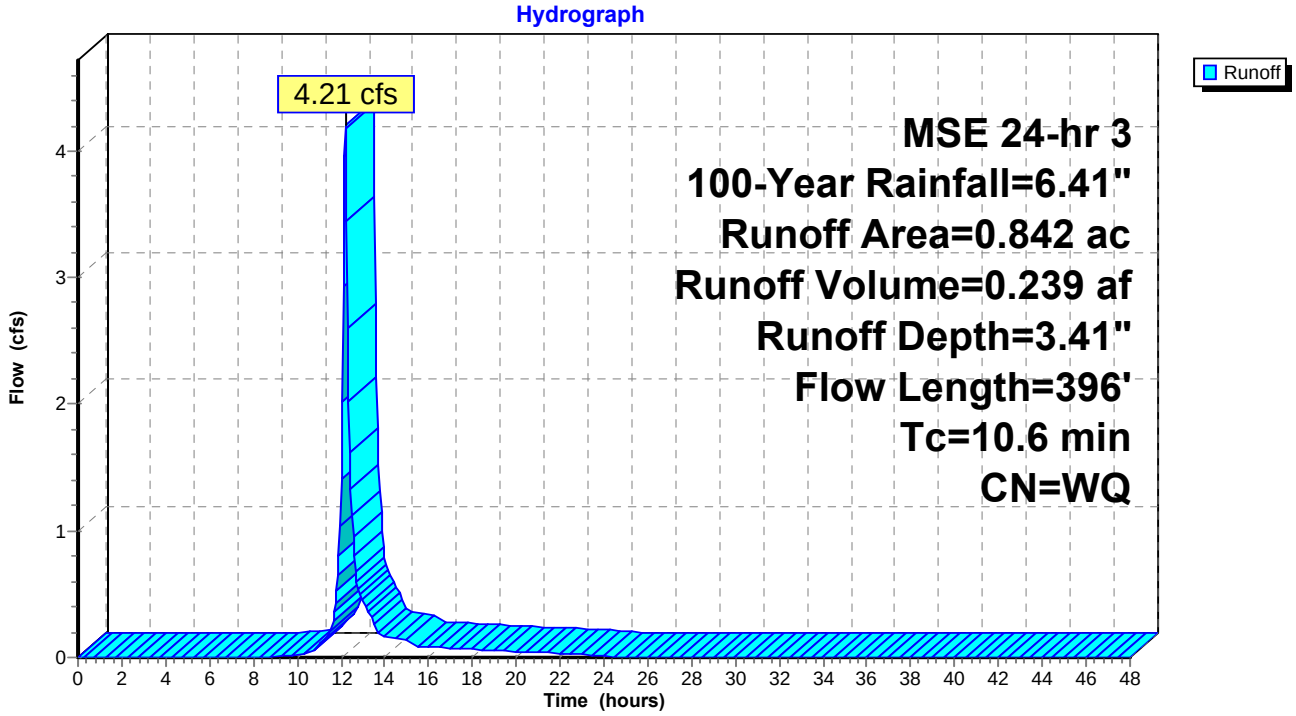
Runoff = 4.21 cfs @ 12.19 hrs, Volume= 0.239 af, Depth= 3.41"
Routed to Link 5L : Post Development Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.41"

	Area (ac)	CN	Description
*	0.008	98	Driveway
	0.290	61	>75% Grass cover, Good, HSG B
	0.159	74	>75% Grass cover, Good, HSG C
	0.385	80	>75% Grass cover, Good, HSG D
	0.842		Weighted Average
	0.834		99.05% Pervious Area
	0.008		0.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.0310	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.65"
1.6	296	0.0360	3.05		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
10.6	396	Total			

Subcatchment 2S: Sub-Area 2



Summary for Subcatchment 3S: Sub-Area 1A

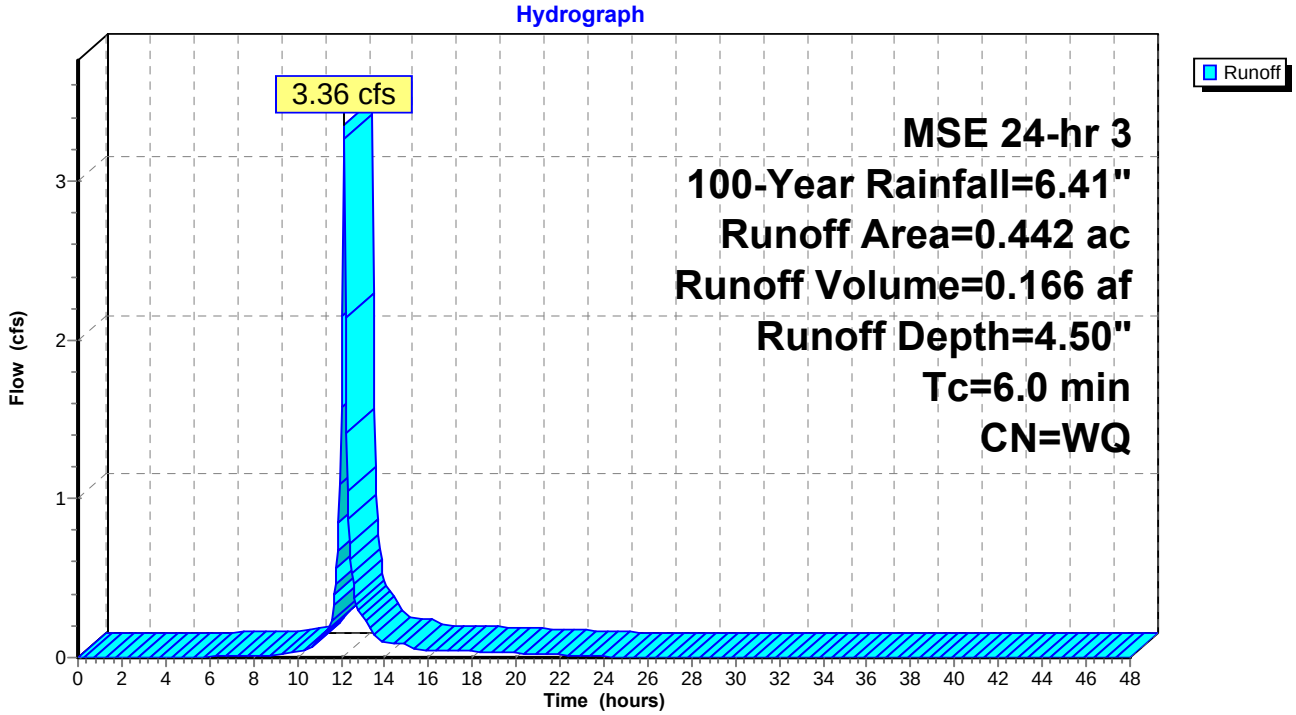
Runoff = 3.36 cfs @ 12.13 hrs, Volume= 0.166 af, Depth= 4.50"
Routed to Pond 4P : Wet Detention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.41"

	Area (ac)	CN	Description
*	0.026	98	Roof
*	0.049	98	Driveway
	0.367	80	>75% Grass cover, Good, HSG D
	0.442		Weighted Average
	0.367		83.03% Pervious Area
	0.075		16.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S: Sub-Area 1A



Summary for Pond 4P: Wet Detention Pond

Inflow Area = 3.964 ac, 72.23% Impervious, Inflow Depth = 5.61" for 100-Year event
Inflow = 34.32 cfs @ 12.13 hrs, Volume= 1.853 af
Outflow = 3.56 cfs @ 12.62 hrs, Volume= 1.849 af, Atten= 90%, Lag= 29.3 min
Primary = 3.56 cfs @ 12.62 hrs, Volume= 1.849 af
Routed to Link 5L : Post Development Runoff
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : Post Development Runoff

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 863.49' @ 12.62 hrs Surf.Area= 12,034 sf Storage= 47,517 cf

Plug-Flow detention time= 320.8 min calculated for 1.849 af (100% of inflow)
Center-of-Mass det. time= 319.4 min (1,071.2 - 751.8)

Volume	Invert	Avail.Storage	Storage Description
#1	858.00'	60,396 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

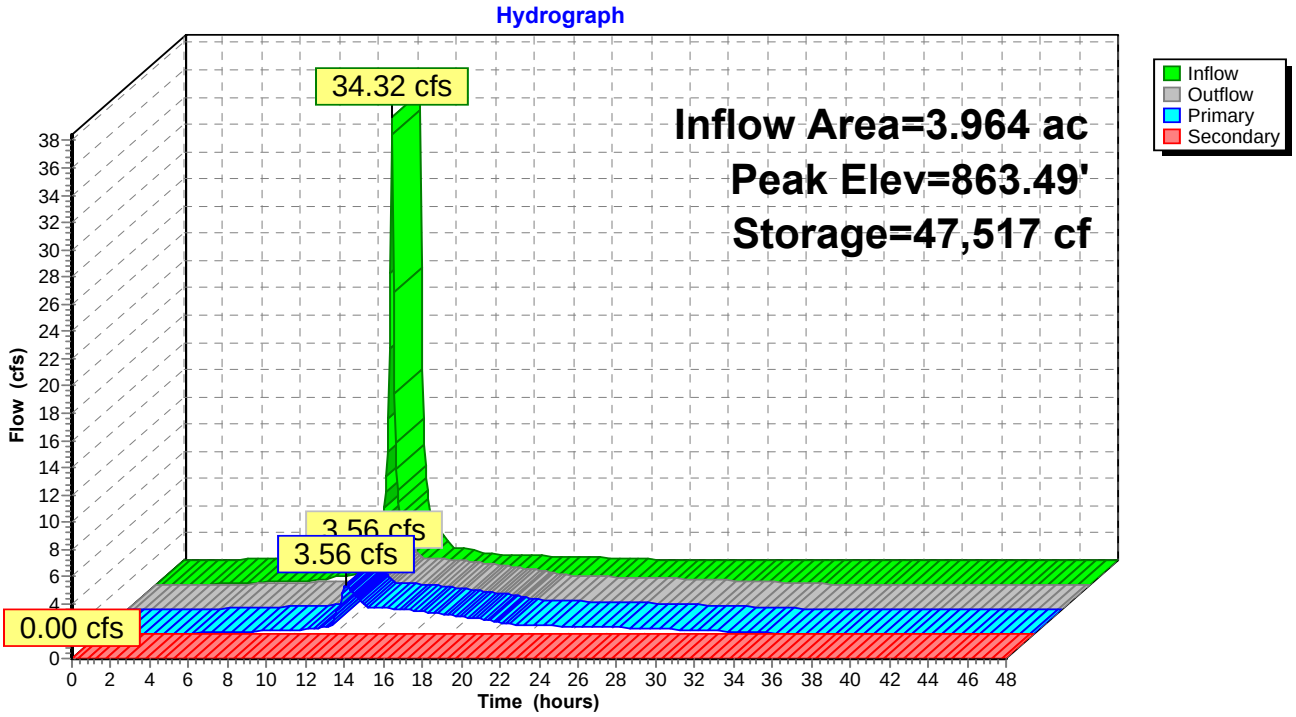
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
858.00	5,564	342.3	0	0	5,564
859.00	6,619	361.2	6,084	6,084	6,679
860.00	7,731	380.0	7,168	13,252	7,848
861.00	8,900	398.9	8,309	21,560	9,083
862.00	10,113	417.3	9,500	31,060	10,346
863.00	11,392	436.1	10,746	41,807	11,692
864.00	12,728	454.9	12,054	53,860	13,097
864.50	13,417	464.4	6,535	60,396	13,829

Device	Routing	Invert	Outlet Devices
#1	Primary	858.00'	**12.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 858.00' / 856.00' S= 0.0333 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	858.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	860.50'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	863.25'	**4.0' long x 1.25' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Secondary	863.50'	**6.0' long + 3.0 '/' SideZ x 14.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

Primary OutFlow Max=3.55 cfs @ 12.62 hrs HW=863.49' (Free Discharge)
└─**1=Culvert** (Passes 3.55 cfs of 6.67 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.97 cfs @ 11.11 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 1.09 cfs @ 8.03 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Weir Controls 1.49 cfs @ 1.59 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=858.00' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: Wet Detention Pond

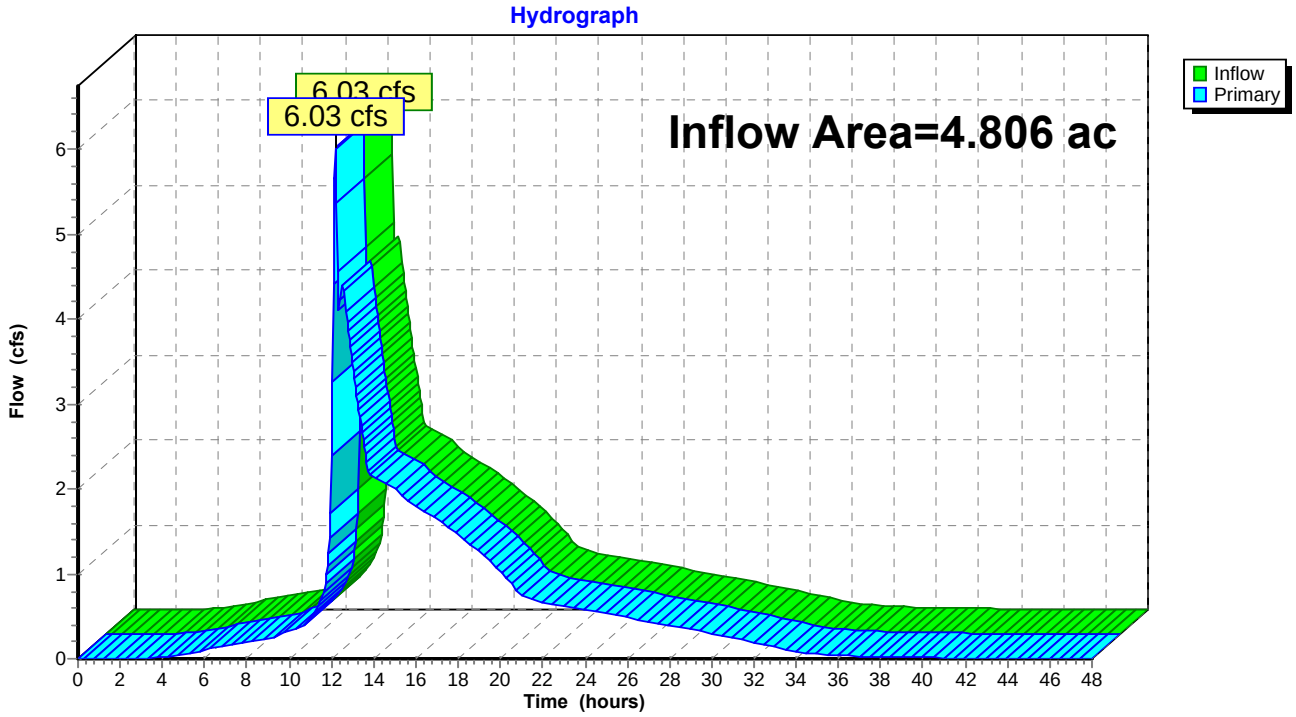


Summary for Link 5L: Post Development Runoff

Inflow Area = 4.806 ac, 59.74% Impervious, Inflow Depth > 5.21" for 100-Year event
Inflow = 6.03 cfs @ 12.19 hrs, Volume= 2.088 af
Primary = 6.03 cfs @ 12.19 hrs, Volume= 2.088 af, Atten= 0%, Lag= 0.0 min

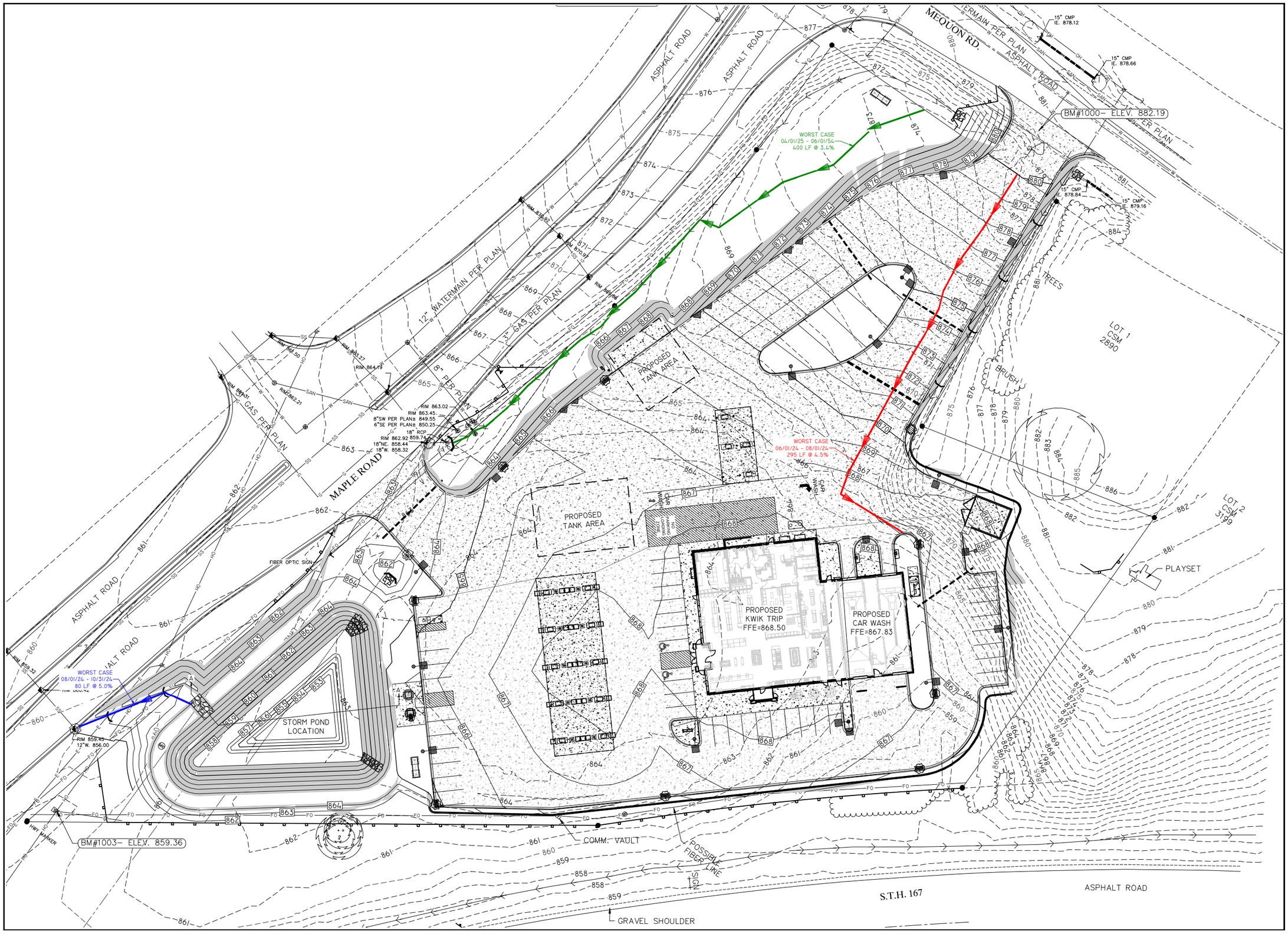
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 5L: Post Development Runoff



Appendix 6

USLE Map & Calculations



NOTES:
(A)

AWIK TRIP STORES

KWIK STAR STORES

WI 54602-2107
(608) 781-8988
FAX (608) 781-8960

REI
CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING
REI Engineering, INC.
4080 N. 20TH AVENUE
WAUSAU, WISCONSIN 54401
PHONE: 715.675.9784 FAX: 715.675.4060
EMAIL: MAIL@REIENGINEERING.COM

SCALE
0 30 60

STORE #631
67 & MAPLE ROAD
ERMANTOWN, WI

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	USLE

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

WDNR Version 2.0 (06-29-2017)

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer: Kwik Trip, Inc.

Project: Kwik Trip #631

Date: 10/09/24

County: Washington

Version 1.0

Activity (1)	Begin Date (2)	End Date (3)	Period % R (4)	Annual R Factor (5)	Sub Soil Texture (6)	Soil Erodibility K Factor (7)	Slope (%) (8)	Slope Length (ft) (9)	LS Factor (10)	Land Cover C Factor (11)	Soil loss A (tons/acre) (12)	SDF (13)	Sediment Control Practice (14)	Sediment Discharge (t/ac) (15)
Bare Ground	04/01/25	06/01/25	16.4%	120	Sandy Loam	0.28	3.4%	400	0.59	1.00	3.2	1.043	Silt Fence	2.0
Bare Ground	06/01/25	08/01/25	43.1%	120	Sandy Loam	0.28	4.5%	295	0.81	1.00	11.7	0.956	Sediment Basin	2.2
Seed with Mulch or Er	08/01/25	10/31/25	33.4%	120	Sandy Loam	0.28	5.0%	80	0.48	0.10	0.5	0.906	Silt Fence	0.3
End	10/31/25	-----	-----	-----	-------	-----			-----	------	-----	0.000		0.0
		-----	-----	-----	-------	-----			-----	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----			-----	-----	-----	0.000		0.0
										TOTAL	**15.5**		**TOTAL**	**4.6**
													% Reduction Required	**NONE**

Notes:

See Help Page for further descriptions of variables and items in drop-down boxes.
The last land disturbing activity on each sheet must be 'End'. This is either 12 months from the start of construction or final stabilization.
For periods of construction that exceed 12 months, please demonstrate that 5 tons/acre/year is not exceeded in any given 12 month period.

NOTE: THIS TOOL ONLY ADDRESSED SOIL EROSION DUE TO SHEET FLOW. MEASURES TO CONTROL CHANNEL EROSION MAY ALSO BE REQUIRED TO MEET SEDIMENT DISCHARGE REQUIREMENTS.

Recommended Permanent Seeding Dates:

4/15-6/1	and	8/1-8/21	Turf, introduced grasses and legumes
Thaw-6/30			Native Grasses, forbs, and legumes

Designed By:	GSW
Date	10/8/2024

Q:\11700-11799\11757 - Kwik Trip #631 - Germantown\Engineer\Stormwater Management\Stormwater Management Report\11757-USLE Worksheet.xlsm

Appendix 7

Storm Water Management
Maintenance Schedule and Procedures

KWIK TRIP INC.

Store Engineering

FAX 608-793-6237

1626 Oak St., P.O. Box 2107
La Crosse, WI 54602

www.kwiktrip.com

Post Construction Long Term Maintenance Plan for
Kwik Trip # 631 Village of Germantown, Washington County, Wisconsin

System Description:

The property is located at STH 167 & Maple Road, Village of Germantown, Washington County, Wisconsin. The site consists of a series of storm water conveyances through sheet draining, piping, and a wet detention pond.

System Maintenance

Catch Basin / Manhole and Oil Skimmer

- The facility structures should be checked annually for signs of damage and cracks to top slab, walls and bottom.
- The structure's cover or grate should be fully in place.
- Metal grates shall be free of debris and vegetation.
- Grates should be checked for missing or broken members of the grate.
- Ladder should be inspected for missing rungs, wall attachments, rust, cracks or sharp edges.
- The structure bottom and pipes should be clear of vegetation and debris.
- Remove sediment when it is within 12 inches from the lowest pipe invert or 50% of sump depth.

Trench Drain

- The facility structures should be checked annually for signs of damage and cracks to top grate.
- The structure's bottom and walls to be checked for cracks.
- Metal grates shall be free of debris and vegetation.
- Grates should be checked for missing or broken members of the grate.
- The structure bottom and pipes should be clear of sediment and debris.

OUR MISSION

To serve our customers and community more effectively than anyone else by treating our customers, co-workers and suppliers as we, personally, would like to be treated, and to make a difference in someone's life.

Outflow Control Structures

- The facility structures should be checked annually for signs of damage and cracks to top slab, walls and bottom.
- The structure's cover or grate should be fully in place.
- Metal grates shall be free of debris and vegetation.
- Grates should be checked for missing or broken members of the grate.
- Ladder should be inspected for missing rungs, wall attachments, misalignment, rust, cracks or sharp edges.
- Removed debris from interior trash rack (if present).
- The connection of the interior steel plates to the structure should be inspection for cracks.
- The structure bottom and pipes should be clear of vegetation and debris.
- Remove sediment when it within 12 inches from the lowest pipe invert.

Apron and Riprap

- The facility structures should be checked annually for signs of damage to apron.
- The end of pipe, apron and surrounding riprap should be free of debris.
- Inspect for erosion around apron.
- Inspect for erosion and sediment accumulation with in the riprap.

Storm Detention Areas/Infiltration Ponds

- The facility should be checked annually for signs of erosion or bare soil along the perimeter, inlet pipe or swale, side slopes and at the inlet/outlet devices.
- Remove any dead or invasive vegetation and trees.
- Keep all areas free of debris.
- Remove sediment by hand with a flat-bottomed shovel during dry periods. Remove only the amount of sediment necessary to restore hydraulic capacity, leaving as much of the vegetation in place as possible. Reseed or unplug any damaged turf or vegetation.

**NOTE

- Some sediment may contain contaminants that requires special disposal. If there is uncertainty about what the sediment contains or it is known to contain contaminants, the Department of Natural Resources should be consulted through Kwik Trip's Environmental Department. Generally, special attention or sampling should be given to sediment accumulated in fueling areas, large parking lots, or other areas where pollutants (other than clean soil) are suspected to accumulate and be conveyed by storm runoff.
- Some sediment collected may be free of pollutants and can be used as fill material. It is vital that this material not be placed in any way that will promote or allow re-suspension in the storm runoff.

Tasks	Street Clean	Underground Storm Sewer System	Catch Basin	Apron/ Rip Rap	Wet Pond	Outflow Control Structure	Schedule
Inspection		X	X	X	X	X	Annual
Clean Streets	X						Annual
Mowing					X		0-2 times per year
System Clean Out		X				X	1 Time per 4 years

KWIK TRIP INC.

Kwik Trip Stormwater BMP Inspection

Store #: 1732 | Number of BMPs: 15

Location (City, State): City of Green Bay, Brown County, WI | Weather: _____

Inspection date: _____ | Inspection By: _____

Inspection Results:

Maintenance Required:	YES	NO	N/A	Maintenance Required:	YES	NO	N/A
Infall Erosion	☐	☐	☐	Trench Drain	☐	☐	☐
Outfall Erosion	☐	☐	☐	Oil/Debris Separator	☐	☐	☐
Outlet Structure	☐	☐	☐	Catch Basin/Manhole	☐	☐	☐
Depth/Sediment Accumulation	☐	☐	☐	Apron	☐	☐	☐
Infiltration Pond	☐	☐	☐	Rip Rap	☐	☐	☐
Other Structure	☐	☐	☐	Other			

_____ _____

Attach pictures on last page

Communication Notes

Phone ☐ Fax ☐ Written ☐ E-Mail ☐ Personal Discussion ☐

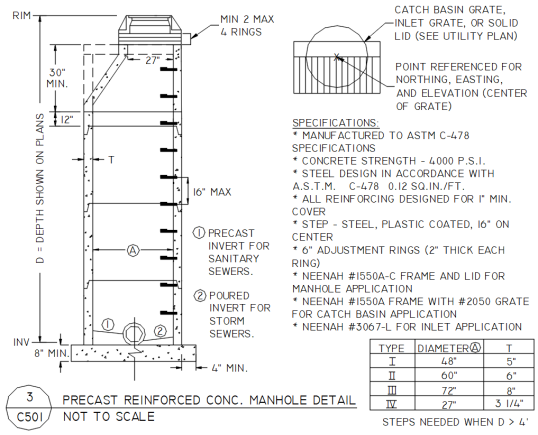
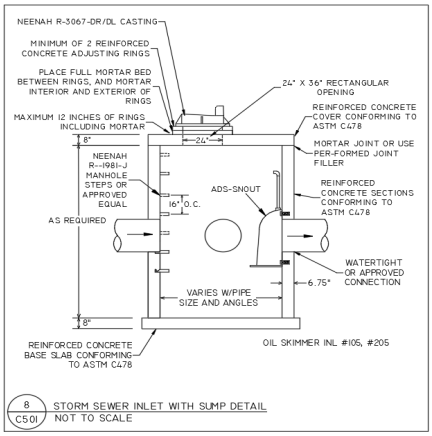
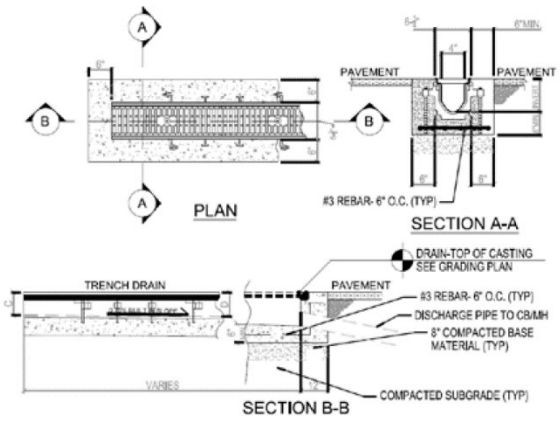
To whom: _____

Comments: _____

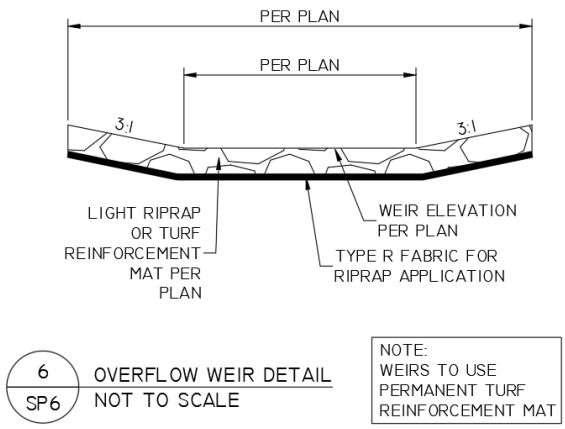
_____

_____

_____

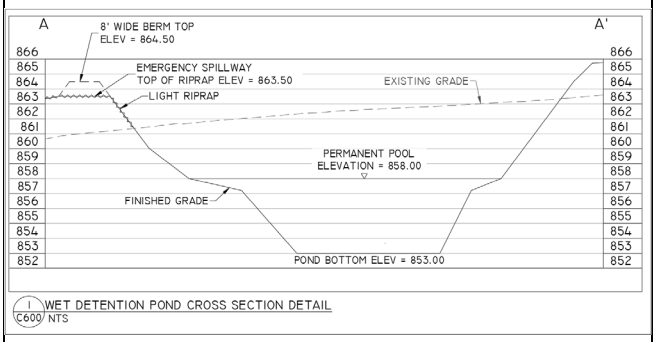
Structure **Quantity: 09**  	• Casting • Adjustment rings and mortar • Concrete cover and mortar • Steps (if present), wall and floor • Pipes and seals • If sediment is present, use a rod to determine depth and if it needs to be removed
Oil Skimmer **Quantity: 02**  	• Casting • Adjustment rings and mortar • Concrete cover and mortar • Steps (if present), wall and floor • Pipes, snout and seals • If sediment is present, use a rod to determine depth and if it needs to be removed
Trench Drain **Quantity: 01**  	• Casting • Surrounding concrete / pavement • Trench condition • Pipes and seals • Sediment depth

Outfall / Overflow — Quantity: 1



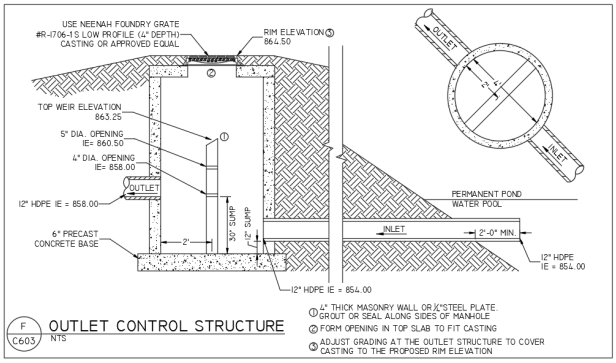
- Sides
- Sediment depth
- Signs of erosion

Wet Detention Pond — Quantity: 1

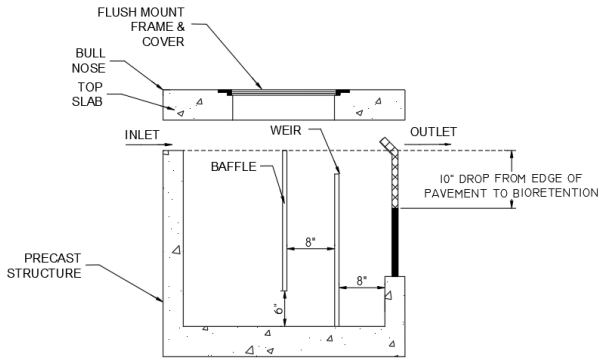


- Vegetation (weeds or bare spots)
- Sediment depth / odor
- Erosion
- Emergency spill way
- Side Slopes

Outlet Control Structure — Quantity: 1



- Vegetation (weeds or bare spots)
- Sediment depth / odor
- Erosion
- Emergency spill way
- Side Slopes

PRETX 30x30 Unit **Quantity: 1**  ELEVATION VIEW	• Casting • Adjustment rings and mortar • Concrete cover and mortar • Steps (if present), wall and floor • Pipes, snout and seals • If sediment is present, use a rod to determine depth and if it needs to be removed

Photos Before Maintenance	Photos After Maintenance (if required)
Structure:	
Structure:	

Structure:	
Structure:	
Structure:	

Structure:	

Wellhead Protection CUP Checklist

	Application Document Ref & Page #
17.40.11 **CONDITIONAL USES.**	
(3) All requests for a conditional use permit shall be submitted in writing to the Germantown Village Planning and Zoning Department, and shall include all of the following:	
(a) A site plan map with all building and structure footprints, driveways, sidewalks, parking lots, stormwater management structures, groundwater monitoring wells, and 2-foot ground elevation contours.	Section 3.0 (Page 3) & Pages 12-15
(b) A business plan and/or other documentation which describes in detail the use, activities, and structures proposed.	Section 4.0 (Page 3
(c) An environmental assessment report prepared by a licensed environmental engineer which details the risk to, and potential impact of, the proposed use, activities, and structures on groundwater quality. In the event of a substitution or relocation of a pre-existing use under this section, the report shall address the ways that the substituted or relocated use will reduce the risk to groundwater compared to the pre-existing use.	Section 5.0 (Pages 4-5)
(d) An operational safety plan, which details the operational procedures for material processes and containment, best management practices, stormwater runoff management, and groundwater monitoring.	Section 6.0 (Pages 5-6) & stand-alone Spill Response Plan
(e) A contingency plan which addresses in detail the actions that will be taken should a contamination event caused by the proposed use, activities, or structures occur.	Section 7.0 (Page 6) & stand-alone Spill Response Plan
(4) All applicants submitting a request for a conditional use permit shall reimburse the Village for all consultant fees and expenses and technical review committee expenses associated with this review, plus administrative costs and processing fees.	
(5) All conditional use permits granted shall be subject to conditions that will include environmental and safety monitoring determined necessary to afford adequate protection of the public water supply. These conditions shall include all of the following:	
(a) Provide current copies of all federal, state and local facility operation approval or certificates and on-going environmental monitoring results to the Village.	Section 8.0 (Page 6, last paragraph)
(b) Establish environmental or safety structures/monitoring to include an operational safety plan, material processes and containment, operations monitoring, best management practices, stormwater runoff management, and groundwater monitoring.	Section 6.0 (Pages 5-6) & stand-alone Spill Response Plan
(c) Replace equipment or expand in a manner that improves the environmental and safety technologies in existence.	Section 5.0 (Pages 4-5)
(d) Prepare, file and maintain a current contingency plan which details the response to any emergency which occurs at the facility, including notifying municipal, county and state officials. Provide a current copy to the Village.	Section 7.0 (Page 6) & stand-alone Spill Response Plan
(6) The Germantown Village Board shall decide upon a request for a conditional use permit only after full consideration of the recommendations made by the Germantown Groundwater Technical Review Committee. Any conditions above and beyond those specified in conditional uses, subsection (5) herein that are recommended by the Germantown Groundwater Technical Review Committee may be applied to the granting of the conditional use permit.	

17.40.12 **PROVISIONS AND REQUIREMENTS FOR PRE-EXISTING USES OR FACILITIES REQUIRING A CONDITIONAL USE PERMIT OR LISTED AS A PROHIBITED USE.**	**Application Document Ref & Page #**
(4) Conditional Use Permit Requirements. At a minimum, conditional use permits granted by the Village pursuant to subsection 17.40.12(3) above shall include conditions that require the following:	
(a) to the extent feasible, based upon scientific, engineering and economic factors, all site, building and other improvements shall be repaired, rebuilt, expanded, relocated, or substituted using best management practices, designs and technologies which are state of the art, such that they diminish the potential for wellhead contamination; and	Section 5.0 (Pages 4-5) & Section 8.0 (Page 6, first paragraph)
(b) to the extent feasible, based upon scientific, engineering, and economic factors, the replacement, substitution, or augmentation of equipment and machinery and the installation thereof shall utilize state of the art equipment and machinery which diminishes potential for wellhead contamination; and	Section 5.0 (Pages 4-5) & Section 8.0 (Page 6, first paragraph)
(c) The relocation of pre-existing uses or facilities is allowed provided all the following are met:	
(i) The pre-existing use or facility is relocated within the same Groundwater Protection Overlay District;	Section 8.0 (Page 6, second paragraph & Page 11
(ii) The new location meets all applicable separation distance requirements set forth under subsection 17.40.09;	Section 8.0 (Page 6, second paragraph & Page 11
(iii) The use or facility can obtain all applicable Federal, State and Local approvals and permits;	Section 8.0 (Page 6, last paragraph)
(iv) The owner of the property or current site from which the pre-existing use or facility is relocating from records a deed restriction against the property that prohibits future uses and/or facilities that require a conditional use permit under subsection 17.40.11 or are listed as a prohibited use in subsection 17.40.11; and	Section 8.0 (Page 7, first paragraph)
(v) The owner of the property or operator of the pre-existing use or facility being relocated causes the property and all structures, equipment, and systems located thereon to be altered and/or restored to a physical condition that can be reasonably expect to not cause groundwater contamination, including but not limited to the removal of storage tanks, pipes, and systems that previously contained or utilized hazardous, flammable, or other liquids or materials that had the potential to contaminate the Village's groundwater resources. Such alteration and restoration shall meet all applicable Federal, State, and Local agency requirements (e.g. Wisconsin's Cleanup Rules and Laws).	Section 8.0 (Page 7, second paragraph)

Environmental

PHONE 608-793-6283
FAX 608-781-8960
EMAIL environmental@kwiktrip.com

1626 Oak St., P.O. Box 2107
La Crosse, WI 54602

www.kwiktrip.com

Conditional Use Permit Request
Wellhead Protection
Proposed Kwik Trip #631 Relocation
N112W18741 Mequon Rd.
Germantown, WI 53022

Date: October 11, 2024

1.0 Introduction

This request is intended to accompany our submittal to the Village of Germantown for the requested conditional use permit (CUP) application for our proposed project located at N112W18741 Mequon Rd. This proposed location is within a current wellhead protection area within the Village, so a CUP is required.

1.1 Site Location and Legal Description

The subject property is located in a part of the NW ¼ of the NW ¼ of Section 28 and the NE ¼ of the NE ¼ of Section 29, Township 9 North, Range 20 East, Village of Germantown, Washington County, Wisconsin. The subject property consists of 1 parcel of land totaling approximately 4.37 acres located on the western side of the Village of Germantown. Specifically, the subject property is at N112W18741 Mequon Rd, Germantown, WI 53022. A Site Location Map is included as Figure 1.

1.2 Site Description

The subject property is located in an area of residential and commercial properties adjacent to a business park in the western portion of the Village of Germantown. The subject property consists of a two-story commercial bank property. There is a concrete parking lot connecting to public roads in two locations with the rest of the land being undeveloped green space. An Aerial Map is included as Figure 2.

1.3 Physical Setting

The subject property is located in an area of Washington County that is typified by glacial outwash sediments consisting of unsorted mixtures of clay, sand, gravel, and boulders. Beneath the sediments,

OUR MISSION

To serve our customers and community more effectively than anyone else by treating our customers, co-workers and suppliers as we, personally, would like to be treated, and to make a difference in someone's life.

sedimentary bedrock units, predominantly limestone/dolomite underlined by sandstone and shale is found in the area.

Based on a review of USGS topographical maps of the area, the vicinity surrounding the subject property is relatively flat, with rolling hills, and with low lying areas with associated wetland/rivers. The property and STH 167 rides along an elevated flute of land that slopes off to the northwest and southeast. The subject property slopes off towards the Menomonee River a 1/3 of a mile to the southeast.

Washington County is characterized by two groundwater systems: a shallow "water-table" system, within the glacial deposits, and a deeper sandstone aquifer. The general direction of shallow groundwater flow in the vicinity of the subject property was not determined in the field as part of the recent Phase I or II Environmental Site Assessments. However, the depth to ground water based on adjoining site information is approximately 10 feet below grade. Shallow groundwater flow in glacial deposits typically mimics surface water drainage. Anticipated groundwater flow direction at the subject property is likely to occur towards southeast, towards the Menomonee River.

1.4 Wellhead Protection Area

The current Kwik Trip located at W188N10963 Maple Road is right on the outskirts of the 5-year travel time for the Graef Wellhead Protection area. Village Well #3 is located approximately 4,800 feet northeast and Village Wells #5 and #7 are located approximately 1.2 miles east/northeast from the site. The proposed new Kwik Trip parcel is diagonally across HWY 167 from the current location, which is still within the same Graef Wellhead Protection area. This new location is approximately 3,800 feet from Well #3 and 1.1 miles from Wells #5 and #7. See attached Wellhead Protection Area Map (Figure 3) for reference.

2.0 Conditional Use Permit Request

As specified in the Village of Germantown Wellhead Protection ordinance, all requests for a conditional use permit shall be submitted in writing to the Germantown Village Planning and Zoning Department, and shall include all of the following:

(a) A site plan map with all building and structure footprints, driveways, sidewalks, parking lots, stormwater management structures, groundwater monitoring wells, and 2-foot ground elevation contours.
(b) A business plan and/or other documentation which describes in detail the use, activities, and structures proposed.
(c) An environmental assessment report prepared by a licensed environmental engineer which details the risk to, and potential impact of, the proposed use, activities, and structures on groundwater quality. In the event of a substitution or relocation of a pre-existing use under this section, the report shall address the ways that the substituted or relocated use will reduce the risk to groundwater compared to the pre-existing use.
(d) An operational safety plan, which details the operational procedures for material processes and containment, best management practices, stormwater runoff management, and groundwater monitoring.
(e) A contingency plan which addresses in detail the actions that will be taken should a contamination event caused by the proposed use, activities, or structures occur.

The following sections provide further details on these items.

3.0 Site Plan Map

Refer to attached civil plan sheet C100 (Site Keynote Plan) for the proposed Kwik Trip building footprint, driveways, sidewalks, parking lot area.

Plan sheet C200 (Grade Plan) details the proposed final ground elevation contours.

Plan sheet C300 (Storm Sewer Plan) details the stormwater management structures. Of note are the oil skimmer structures located prior to the on-site stormwater pond. Two of these structures are proposed since there are two outfall locations into the stormwater pond. These structures are designed to capture any surface fuel spills that enter the stormwater system. It acts as an oil-water separator and is able to contain approximately 100-200 gallons of product. Refer to attached plan sheet C501 (Site Plan Details) for a schematic of the storm sewer inlet with sump detail.

An on-site stormwater pond is also proposed for the new development. The pond not only provides suspended solids removal prior to discharge, but it also provides another location to detect and recover a large fuel spill. Having an onsite stormwater pond is more protective for the environment versus if the stormwater system is connected directly to the village mains underground where surface spills and discharges can go unnoticed.

Please note that installation of groundwater monitoring wells are not proposed during development. It is not common practice to install monitoring wells solely as a contingency when there has not been any signs of a petroleum release. Refer to later sections that further detail the petroleum system leak prevention and leak detection technologies which are state of the art, such that they diminish the potential for wellhead contamination.

4.0 Business Plan

Kwik Trip, Inc. is proposing the construction of a 11,120 square-foot convenience store with attached 1-bay carwash and an attached dumpster enclosure with fueling canopy and separate diesel fuel canopy. The proposed method of operation for this development will be consistent with that for our existing convenience stores within the area. The requested hours of operation will be 24 hours for all uses. The type of products that will be sold will be similar to that of our existing stores: gasoline, in line diesel, E-85, Unleaded 88, groceries, bakery and dairy, hot and cold food and beverages, tobacco products, off-sale alcohol products, lotto, convenience store merchandise, ice, and propane. The outside merchandising of products is being requested next to the store (ice and propane) and miscellaneous merchandising under the gas canopy. The proposed store is projected to have between 28-35 full and part time employees, with 2-8 on staff at any given time.

5.0 Environmental Assessment Report

Several improvements are planned for the new Kwik Trip fueling system to reduce the risk to groundwater compared to the pre-existing use. Kwik Trip in some areas exceeds state and federal guidelines for what is required to operate a retail gas operation with respect to monitoring fuel systems. Kwik Trip also has a documented spill response plan in place to handle any situation that may arise. Below are additional details on the primary environmental protection improvements.

5.1 Double-Wall Flexible Fuel Piping

The proposed new fuel system will utilize double-wall flexible fuel piping from the underground storage tanks to the fuel dispensers. Double-wall design allows for a means to contain a release from the primary pipe if it were to occur. If product would happen to be released from the primary pipe, it would travel through the outer secondary pipe and be contained in a liquid tight sump. Sumps are located at the submersible head on each tank and under each product dispenser. These sumps are designed to contain and alert the operator of a release. All sumps are also equipped with a liquid sensor, which alerts our coworkers and the 24/7 Kwik Trip Operation Support Center immediately of any liquid that has entered the sump. Kwik Trip has an in-house fuel service technician team who would then receive a work order to investigate the alarms and make immediate corrective action, if needed.

Current Kwik Trip fuel piping is double-wall fiberglass piping that was installed in 1995. Fiberglass piping comes in straight sections that have to be joined together by fittings to create bends or for long sections. These fittings and joints are much more susceptible to have leaks that can contribute to groundwater contamination versus the new flexible fuel piping systems. Existing joints are not located within a containment, whereas the new flexible piping would have no joints outside a containment structure. Additionally, double-wall fiberglass piping is susceptible on getting moisture or water within the annular space that can undergo freeze-thaw cycles and result in cracking. This is especially true in the Wisconsin climate.

Below is summary of advantages that new proposed flexible fuel piping has versus old fiberglass piping:

- Eliminates the need to hand-build joints in the field;
- No cutting, fitting and welding of underground fittings;
- Termination points can be contained safely inside containment sumps, no need to bury joints underground;
- Reduction in or elimination of potential leak points;
- No need to use adhesives or glue kits to connect pipe to fittings;
- Flexible piping can withstand freeze-thaw if moisture gets in annular space, and;
- Can be installed in any type of weather conditions.

5.2 Line Leak Detection

Not only will the new underground fuel lines be flexible double-wall piping, but they will also be equipped with electronic line leak detection (ELLD). This ELLD system is installed in the pipe run for each product dispensed and is designed to shut down flow to the dispenser if there is a pressure loss in the product pipe. An alert is then sent to the Kwik Trip 24-hr Operation Support team to send out a fuel technician to evaluate if there is an issue.

Current Kwik Trip fuel lines are not equipped with this type of precise leak detection.

5.3 Double-Wall Fiberglass Tanks

The proposed new underground fuel tanks work on the same premise as the double-wall piping. Tanks will be constructed as a double-wall fiberglass tank. There is a membrane between the two layers that allows for monitoring of liquid in the event it is released from the primary tank. This membrane space is called the interstitial space. Within the interstitial space is a riser pipe that allows the space to be continuously monitored with a liquid sensor. These sensors also alert our coworkers and the 24/7 Kwik Trip Operation Support Center immediately of any liquid that has entered this interstitial space. Kwik Trip has an in-house fuel service technician team who would then receive a work order to investigate the alarms and make immediate corrective action if needed. If product is found within the interstitial space, the tank will be shut down and fuel removed until a repair can be made.

Current Kwik Trip underground fuel tanks are double-wall fiberglass tanks installed in 1995. This older style fiberglass tank is not equipped with interstitial monitoring for leak detection. Rather, their means for leak detection is statistical inventory reconciliation (SIR). That leak detection method relies on comparing fuel sales to how much fuel is left in the underground tank to determine if there is unaccounted for fuel that may be due to a leak. This leak detection does not provide the immediate notification that the new proposed interstitial monitoring would provide. Leaks detected from SIR monitoring also comes after the fact and can be several days or even weeks after a leak has started.

5.4 Double-Wall Spill Buckets

The proposed new fuel system will also utilize double-wall spill buckets to further enhance spill prevention. A spill bucket is in place where the fuel delivery tanker connects to the underground fuel tank for filling. If any product is inadvertently spilled while connecting or disconnecting to the tank, it is captured by this spill bucket. These spill buckets can hold approximately 5-gallons of product. The spill bucket also has a secondary wall, or secondary containment, as another layer of protection if there is a crack in the primary spill bucket. There is a visual gauge that shows if any fuel is accumulating in this secondary containment.

Current Kwik Trip fills only have a single-wall spill bucket, which are much more susceptible to have leaks that go unnoticed.

6.0 Operational Safety Plan

Many items discussed in the above Environmental Assessment Report section are also applicable to this section on operational safety. The proposed new fuel system will have secondary containment present by utilizing double-wall flexible fuel piping, double-wall fiberglass tanks, and double-wall spill buckets. Additionally, liquid-tight containment sumps will be present beneath each fuel dispenser and where fuel piping comes out of the underground fuel tank (called the submersible turbine pump sump). All containment sumps are also equipped with a liquid sensor, which alerts our coworkers immediately of any liquid that has entered the sump.

Spill response best management practices are further outlined within the Spill Response Plan in the following Contingency Plan section.

Stormwater runoff management is previously discussed in Site Plan Map section. A highlight of that section are inclusion of an oil-skimmer structure that is capable of capturing a fuel spill prior to leaving the Kwik Trip property. Additionally, an on-site stormwater pond will be present to provide another location to detect and recover a large fuel spill.

As previously mentioned in the Site Plan Map section, installation of groundwater monitoring wells are not proposed during development. It is not common practice to install monitoring wells solely as a contingency when there has not been any signs of a petroleum release.

7.0 Contingency Plan

Kwik Trip has an established Spill Response Plan outlining how fuel spill situations are handled. The plan is included as a separate stand-alone document. Information contained in the plan describes response actions, identifies the chain of command, gives information on spill reporting requirements, and lists the companies and phone numbers of the people that can respond to a spill.

This spill response plan has proven to be effective over the years from a tanker accident down to a small spill. Kwik Trip has an internal call center (called Operation Support Center) that is staffed 24 hours a day, 365 days a year, to take calls from retail stores in the event of a spill. If a call comes in from a store, operations support staff gathers information about the spill, then they can determine the severity of the situation and contact the appropriate people or teams to respond. We have 24/7 on-call spill response vendors set up in all geographic locations that Kwik Trip has stores.

All Kwik Trip store locations are also equipped with the basic spill response material. Absorbent material packaged in 25 pound bags are kept at store level and can be ordered from our warehouse. Each store also has a 55 gallon drum for containerizing the absorbent material after the clean-up. A separate company is then contracted to pick up and properly disposed of the used absorbent material.

All Kwik Trip retail co-workers are also Class C certified, which means they have been training in basic understanding of gas equipment and operation, tank monitors and alarms, and spill response.

8.0 Conclusion

Based on information provided in this document, the proposed Kwik Trip relocation project will reduce the risk to groundwater compared to the pre-existing store location. The new location will utilize state of the art equipment to diminish the potential for wellhead contamination.

The pre-existing facility is also being relocated within the same Groundwater Protection Overlay District (Graef Wellhead Protection Area). It's being relocated approximately 1,000 feet northeast of the existing location. This new location is approximately 3,800 feet from Village of Germantown Well #3 and 1.1 miles from Wells #5 and #7, which also meets all separation distance requirements as set forth under subsection 17.40.09 of the Village of Germantown Wellhead Protection ordinance.

Prior to commencing operation, Kwik trip will obtain all applicable Federal, State, and Local approvals and permits to operate a retail fuel station/convenience store.

Once the new Kwik Trip location development is complete, the pre-existing store location will file a deed restriction against the property that prohibits future uses and/or facilities that require a conditional use permit under subsection 17.40.11 or are listed as prohibited use in subsection 17.40.11 of the Village of Germantown Wellhead Protection ordinance.

Lastly, once the new Kwik Trip is complete, the pre-existing location will have all fuel equipment removed to prevent the potential for any future groundwater contamination. This includes removal of the underground storage tanks and piping.

Please contact Kevin Nestingen at 608.793.6464 or knestingen@kwiktrip.com if you have questions or require further information on this Conditional Use Permit request.

Sincerely,

KWIK TRIP, INC.

Kevin D. Nestingen, PE
Environmental Compliance Manager
Wisconsin PE License #44284-6

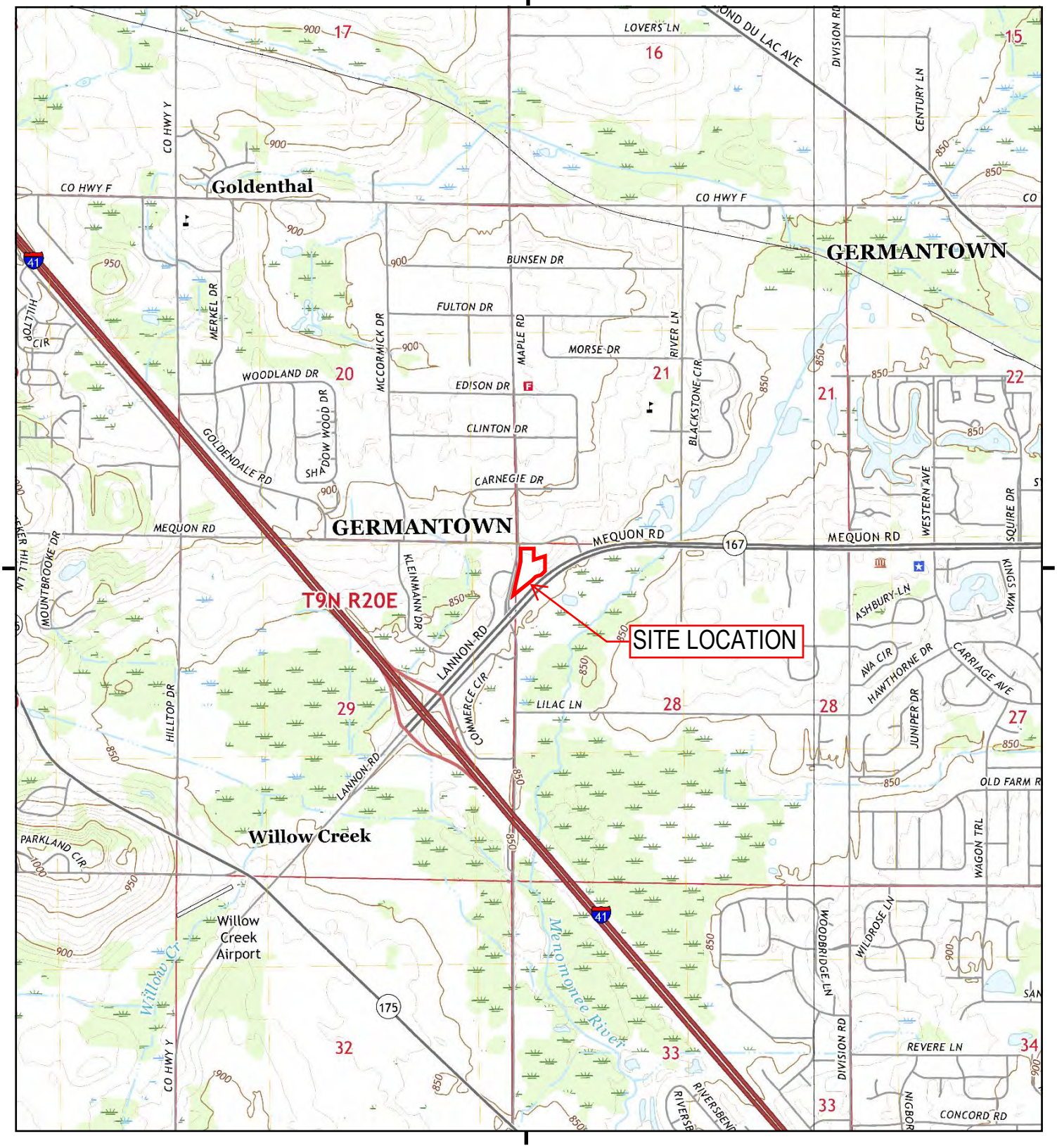
WISCONSIN
KEVIN
D.
NESTINGEN
44284-6
LA CROSSE
WIS.
PROFESSIONAL ENGINEER

Attachments:
Figures
Spill Response Plan (stand-alone document)

Figures

Historical Topo Map

2022



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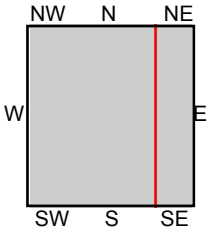


TP, Sussex, 2022, 7.5-minute
SE, Menomonee Falls, 2022, 7.5-minute

0 Miles 0.25 0.5 1 1.5

FIGURE 1 - SITE LOCATION MAP
PROPOSED KWIK TRIP #631 RELOCATION
N112 W18741 MEQUON ROAD
GERMANTOWN, WISCONSIN

N

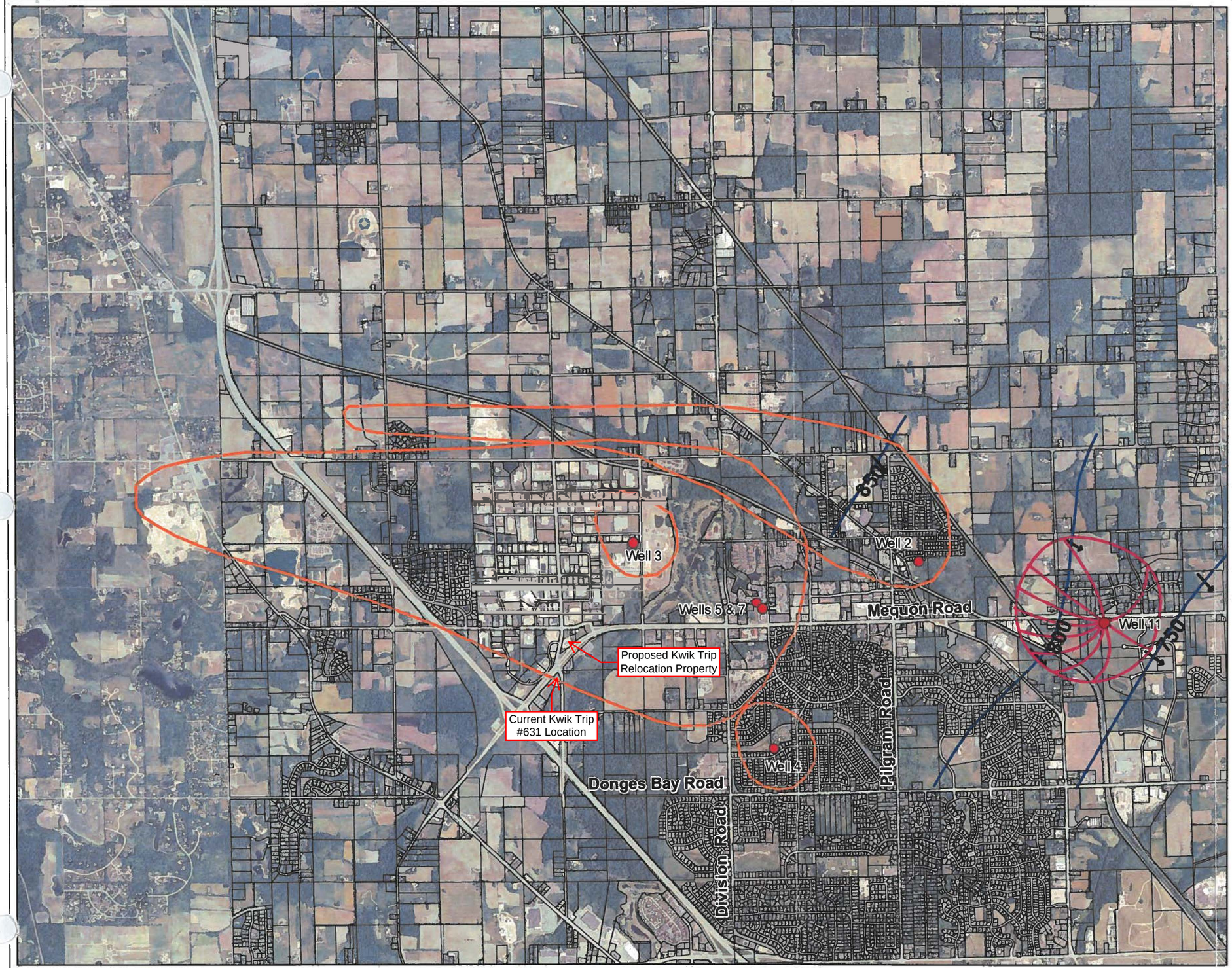
FIGURE 2 - 2020 AERIAL MAP
PROPOSED KWIK TRIP #631 RELOCATION
N112 W18741 MEQUON ROAD
GERMANTOWN, WISCONSIN

FIGURE 3

Wellhead Protection Areas for Germantown Well No. 11*

Village of Germantown
Washington County, Wisconsin

*WHPA for Well 11 delineated by Ruekert-Mielke, 2010 in Amendment No. 1 to Wellhead Protection Plan for Municipal Well Nos. 2, 3, 3, 5, & 7 delineated by Graef, 2008



Legend

- Village Well Sites
- Direction of Groundwater Flow
- 800 Potentiometric Surface Elevation of Sandstone Aquifer (Static Condition)
- Wellhead Protection Area Well 11 (Based on 5-Year TOT)
- Graef Wellhead Protection Areas Wells 2-5 & 7 (Based on 5-Year TOT)

N W E S

0 1,500 3,000 6,000 9,000
Feet

I:\Projects\07\054\300\WellHeadProtectionArea.MXD

KEYED NOTES

0 SF — 1. ASPHALT PAVEMENT. SEE DETAIL 1/C500.

37,161 SF — 2. 6" DEPTH (MIN.) CONCRETE SLAB-ON-GRADE WITH #3 REBAR, 3' O.C. CONCRETE SEALER: TK-26UV. SEE DETAIL 6/C500.

61,322 SF — 3. 8" DEPTH (MIN.) CONCRETE SLAB-ON-GRADE WITH #4 REBAR, 4' O.C. CONCRETE SEALER: TK-26UV. SEE DETAIL 6/C500.

4. NOT USED.

4,627 SF — 5. 6" CONCRETE WALK. SEE DETAIL 2/C500. CONCRETE SEALER: TK-26UV

73,095 SF / UNDISTURBED=22,357 SF — 6. LANDSCAPE AREA. SEE SHEET L1.

7. CURB TYPE CHANGE.

8. 18" CURB AND GUTTER, SEE DETAIL 9/C500.

9. 18" REJECT CURB AND GUTTER, SEE DETAIL 9/C500.

10. TRANSITION CURB & GUTTER. SEE DETAIL 4/C500.

11. STANDARD CURB & GUTTER TERMINATION. SEE DETAIL 5/C500.

12. TAPER CURB FROM FLUSH TO FULL HEIGHT OVER 6' LENGTH. SEE DETAIL 5A/C500.

13. A.D.A. ACCESSIBLE PARKING SPACE WITH LOADING ZONE. PROVIDE APPROPRIATE STRIPING AND PAVEMENT MARKINGS. SEE SHEET C204.

14. OFF-STREET PARKING STALLS
STRIPING - 4" WIDE STALL LINES, USE HIGH VISIBILITY YELLOW PAINT.
SPACES PROVIDED
(3) 8.9' x 20.0' (MIN.) GENERAL PARKING
(7) 9.1' X 20.0' (MIN.) GENERAL PARKING
(19) 9.5' X 20.0' (MIN.) GENERAL PARKING
(10) 9.7' X 20.0' (MIN.) GENERAL PARKING
(2) 8.0' X 20.0' ACCESSIBLE PARKING WITH
(1) 11.0' X 20.0' LOADING ZONE
(2) 12.9' x 20.0' ACCESSIBLE PARKING WITH
(1) 5.0' x 20.0' LOADING ZONE

15. EXTERNAL TRASH ENCLOSURE TO MATCH BUILDING. SEE ARCHITECTURAL DETAILS.

16. KWIK TRIP TRADEMARK SIGN SUBJECT TO SEPARATE REVIEW AND APPROVAL (VERIFY FINAL LOCATION WITH SIGN PERMIT). SEE DETAIL 12/C501.

17. 4" WIDE, HIGH VISIBILITY, PAVEMENT STRIPING, LANE MARKINGS AND TEXT. COLOR: HC MARKINGS- YELLOW, ALL OTHERS- YELLOW.

18. SIDEWALK RAMP (12:1 SLOPE MAX). SEE DETAIL 12/C500.

19. GAS TANK VENT STAND, SEE PIPING PLANS.

20. 30" HT., 6" DIA. CONCRETE FILLED PIPE BOLLARD INSTALLED AT EACH PARKING STALL ALONG BUILDING. SEE DETAIL 10/C500.

21. 40'-0" x 120'-0" DISPENSER ISLAND CANOPY. VERIFY SIZE, PLACEMENT, COLUMN AND FOOTING SIZE WITH CANOPY AND STRUCTURAL PLANS. CANOPY GRAPHICS PER OWNER.

22. CONCRETE ISLANDS W/ 6" EXPOSURE WITH FUEL DISPENSERS. DISPENSER PER OWNER.

23. 36" HT., 6" DIA. CONCRETE FILLED PIPE BOLLARD SIMILAR TO DETAIL 10/C500.

24. OUTDOOR MERCHANDISING AREA.

25. UNDERGROUND FUEL STORAGE TANKS PER OWNER. PROVIDE PIPING AND VENTING PER OWNER'S SPECIFICATIONS. SEE DETAIL 1/C501.

26. HC PVC BOLLARD SLEEVE PER OWNER. VAN ACCESS SIGNAGE AT 48" HT. STALL PARKING AT 60" HT. SEE SHEET C204.

27. STORM STRUCTURE. SEE SHEET SP3 FOR FURTHER STORM SEWER INFORMATION.

28. LP CAGE.

29. 'FREE AIR' COMPRESSOR. PROVIDE SIGNAGE PER OWNER.

30. SITE AREA LIGHT WITH CONCRETE BASE. SEE DETAIL 11/C500.

31. PVC IRRIGATION SLEEVE UNDER PAVEMENT. VERIFY W/ IRRIGATION PLAN FOR EXACT SIZE AND LOCATION BEFORE INSTALLATION. SEE DETAIL 3/C500.

32. 24'-0" x 50'-0" DISPENSER ISLAND CANOPY. VERIFY SIZE, PLACEMENT, COLUMN AND FOOTING SIZE WITH CANOPY AND STRUCTURAL PLANS. CANOPY GRAPHICS PER OWNER.

33. BIKE RACK.

34. VACUUM. SEE DETAIL 14/C500.

35. 18" EPOXY STOP BAR (YELLOW).

36. TRANSFORMER PAD.

37. DISCONNECT PAD.

38. NOT USED.

39. NOT USED.

40. NOT USED.

41. OUTDOOR ICE MERCHANDISING AREA.

42. PROPOSED GREASE INTERCEPTOR.

43. PICNIC AREA. SIMILAR TO DETAIL 2/C500. CONCRETE SEALER: TK-26UV

44. NOT USED.

45. PROPOSED COIN BOX. SEE DETAIL 13/C501.

46. PROPOSED REFUSE CONTAINER.

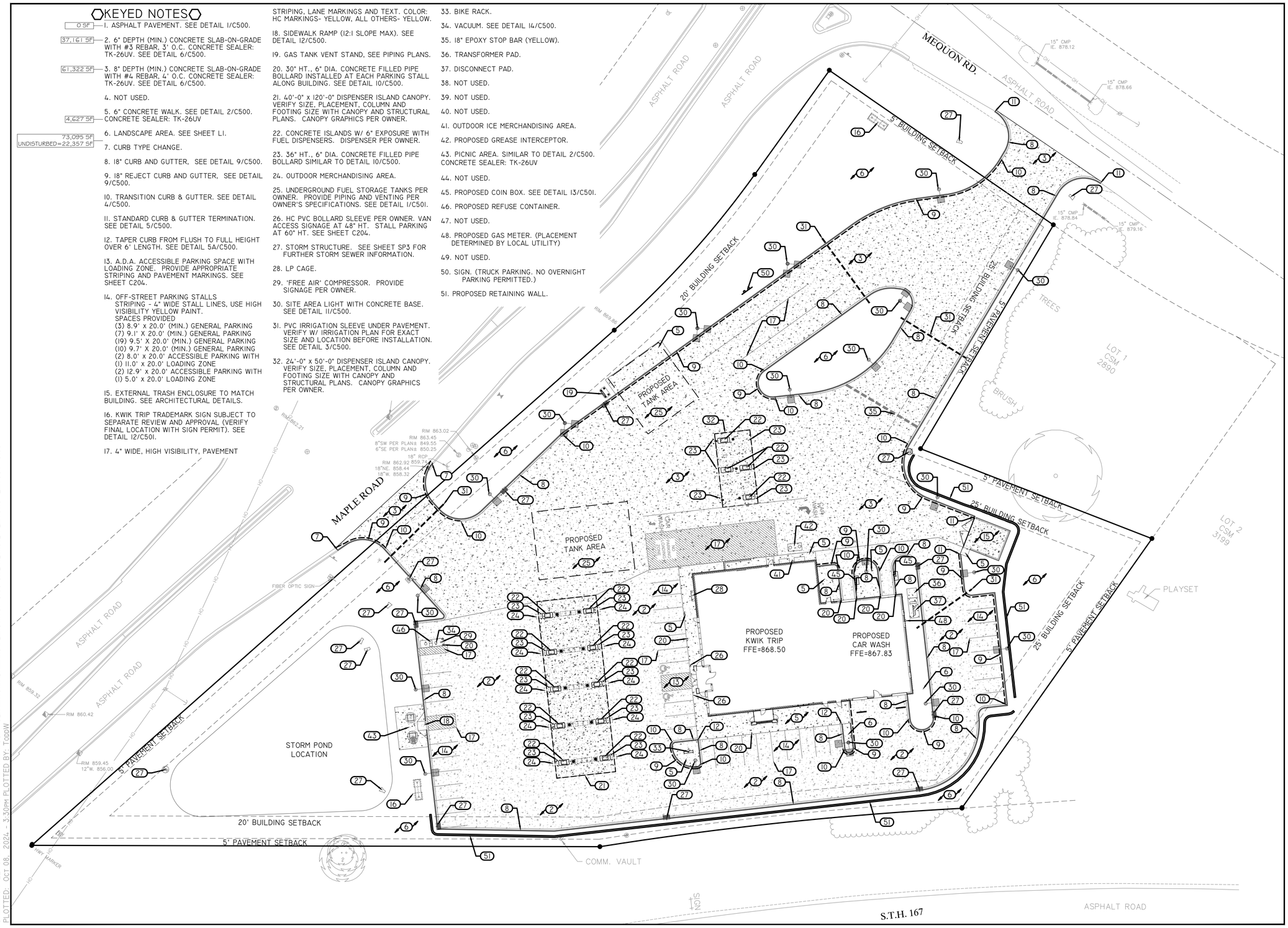
47. NOT USED.

48. PROPOSED GAS METER. (PLACEMENT DETERMINED BY LOCAL UTILITY)

49. NOT USED.

50. SIGN. (TRUCK PARKING. NO OVERNIGHT PARKING PERMITTED.)

51. PROPOSED RETAINING WALL.



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PLOTTED: OCT 08, 2024 - 3:30PM PLOTTED BY: TODDW

KWIK TRIP STORES

KWIK STAR STORES

KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960

REI
CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING
REI Engineering, INC.
4080 N. 20th AVENUE
WAUSAU, WISCONSIN 54401
PHONE: 715.675.9784 FAX: 715.675.4060
EMAIL: MAIL@REIENGINEERING.COM

SCALE
0 30 60

SITE KEYNOTE PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C100

NOTE: CONTRACTOR TO OBTAIN RIGHT-OF-WAY EXCAVATION PERMIT PRIOR TO BEGINNING SITE WORK.

CALL DIGGERS HOTLINE @ 1-800-242-8511 AT LEAST 3 WORKING DAYS PRIOR TO EXCAVATING.

CONSTRUCTION NOTE:

COORDINATE WITH OWNER FOR POSSIBLE CONSTRUCTION FENCING AND GATE LOCATIONS AND APPROPRIATE SIGNAGE INSTALLATION.

NOTES:

- REFER TO OTHER PROJECT PLANS AND INFORMATION RELATED TO THIS PROJECT PRIOR TO BEGINNING ANY GRADING WORK.

- PLAN PREPARED FROM ALTA/ACSM LAND TITLE SURVEY BY:
  R.A. SMITH, INC.
  262.781.1000

- CONTRACTOR SHALL LOCATE ALL UTILITIES WHICH MAY AFFECT THIS WORK AND NOTIFY OWNER OF ANY CONFLICTS.

- CONTRACTOR SHALL VERIFY ALL EXISTING AND PROPOSED ELEVATIONS PRIOR TO START OF CONSTRUCTION. VERIFY CRITICAL ELEVATIONS TO ENSURE CONFORMANCE WITH GRADING PLAN, PARTICULARLY WITH WALK AND/ OR PAVEMENTS TO REMAIN. MEET EXISTING GRADES ALONG STREETS, PROPERTY LINES AND DRIVEWAY ENTRANCES. RESTORE ALL EXISTING PAVEMENTS THAT REMAIN TO THEIR ORIGINAL, IF NOT BETTER CONDITION. NOTIFY OWNER OF ANY CONFLICTS.

- AREAS NOT PAVED AND TO BE LANDSCAPED SHALL RECEIVE MINIMUM OF 4" DEPTH COMPACTED TOPSOIL.

- CONTRACTOR SHALL COORDINATE GRADING AND INSTALLATION OF DRIVES IN R.O.W. WITH APPROPRIATE GOVERNMENT AGENCIES. OBTAIN APPROPRIATE PERMITS FOR GRADING AND DRAINAGE IN ALL R.O.W.

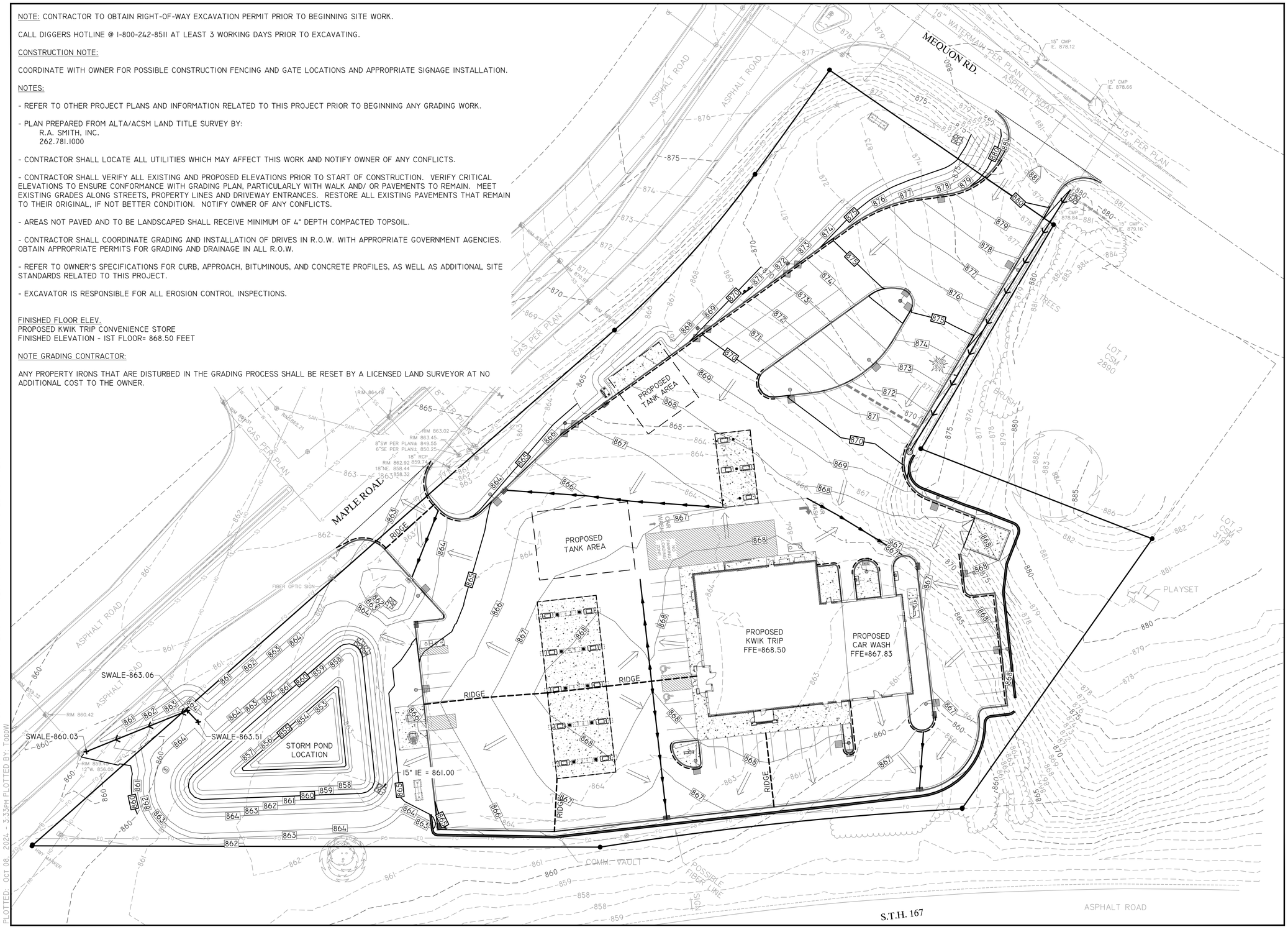
- REFER TO OWNER'S SPECIFICATIONS FOR CURB, APPROACH, BITUMINOUS, AND CONCRETE PROFILES, AS WELL AS ADDITIONAL SITE STANDARDS RELATED TO THIS PROJECT.

- EXCAVATOR IS RESPONSIBLE FOR ALL EROSION CONTROL INSPECTIONS.

FINISHED FLOOR ELEV.
PROPOSED KWIK TRIP CONVENIENCE STORE
FINISHED ELEVATION - 1ST FLOOR= 868.50 FEET

NOTE GRADING CONTRACTOR:

ANY PROPERTY IRONS THAT ARE DISTURBED IN THE GRADING PROCESS SHALL BE RESET BY A LICENSED LAND SURVEYOR AT NO ADDITIONAL COST TO THE OWNER.



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PLOTTED: Oct 08, 2024 - 3:33PM PLOTTED BY: TODDW

KWIK TRIP™ STORES

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4080 N. 20TH AVENUE
WAUSAU, WISCONSIN 54401
PHONE: 715.675.9784 FAX: 715.675.4060
EMAIL: MAIL@REIENGINEERING.COM

SCALE
0 30 60

GRADING PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

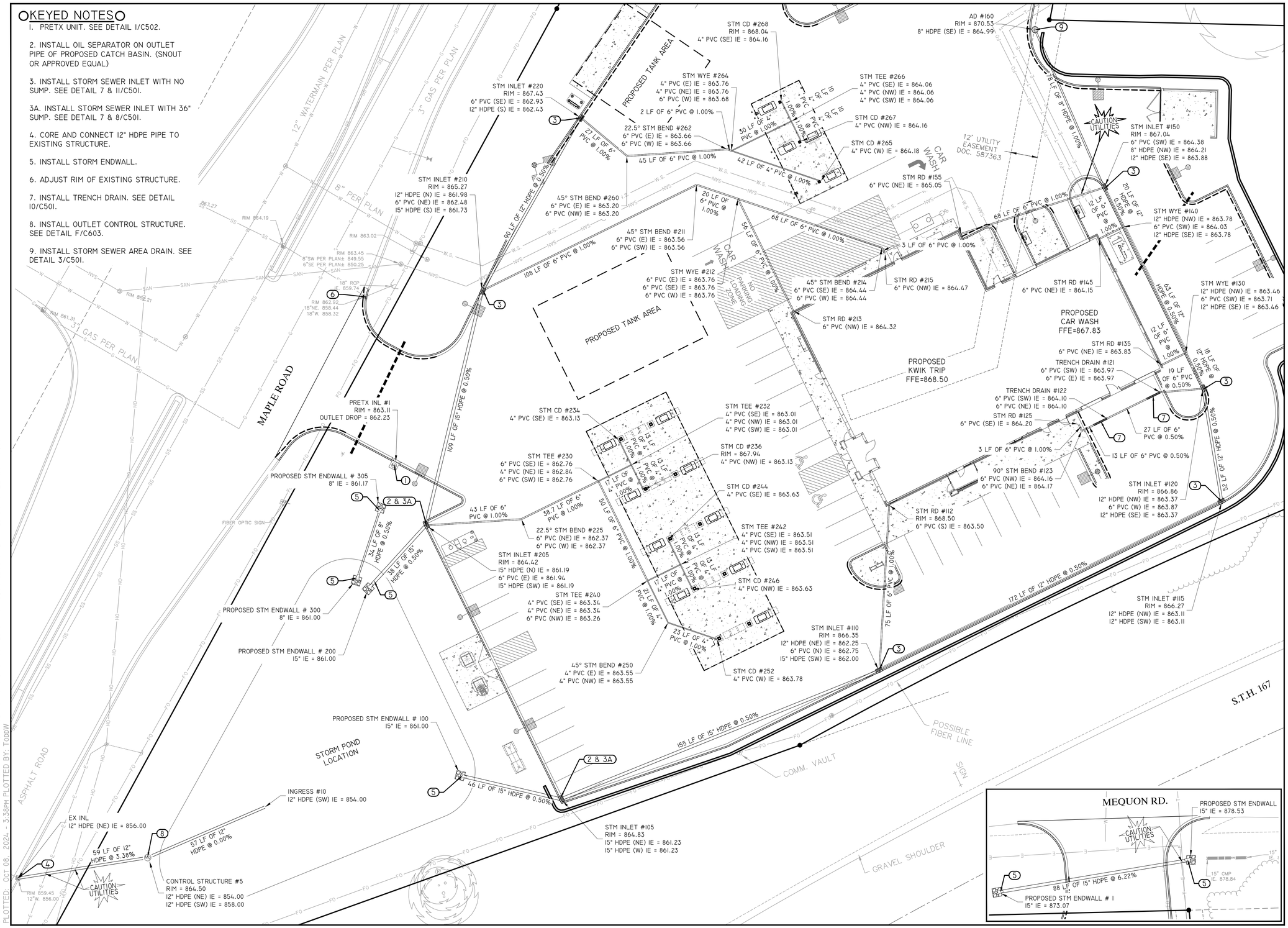
DRAWN BY	NAP
SCALE	GRAPHIC
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C200

KEYED NOTES

1. PRETX UNIT. SEE DETAIL 1/C502.
2. INSTALL OIL SEPARATOR ON OUTLET PIPE OF PROPOSED CATCH BASIN. (SNOUT OR APPROVED EQUAL)
3. INSTALL STORM SEWER INLET WITH NO SUMP. SEE DETAIL 7 & 11/C501.

3A. INSTALL STORM SEWER INLET WITH 36" SUMP. SEE DETAIL 7 & 8/C501.

4. CORE AND CONNECT 12" HDPE PIPE TO EXISTING STRUCTURE.
5. INSTALL STORM ENDWALL.
6. ADJUST RIM OF EXISTING STRUCTURE.
7. INSTALL TRENCH DRAIN. SEE DETAIL 10/C501.
8. INSTALL OUTLET CONTROL STRUCTURE. SEE DETAIL F/C603.
9. INSTALL STORM SEWER AREA DRAIN. SEE DETAIL 3/C501.



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PLOTTED: Oct 08, 2024 - 3:38PM PLOTTED BY: ToddW

KWIK TRIP STORES

KWIK STAR STORES

KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960

REI
CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING
REI Engineering, INC.
4080 N. 20TH AVENUE
WAUSAU, WISCONSIN 54401
PHONE: 715.675.9784 FAX: 715.675.4060
EMAIL: MAIL@REIENGINEERING.COM

N

SCALE
0 20 40

STORM SEWER PLAN

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

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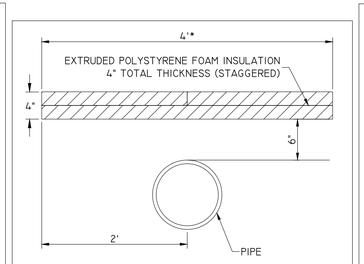
PROJ. NO.	11757
DATE	10/09/24 - REVIEW DOCUMENTS
SHEET	C300

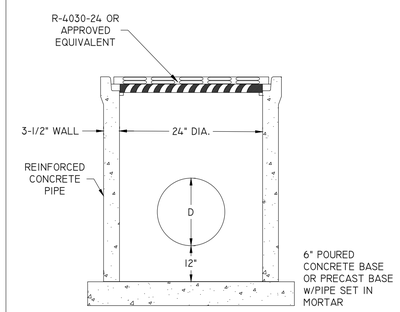
SEE PETROLEUM DETAILS

1 / C501 STORAGE TANKS COMPLEX DETAIL
NOT TO SCALE



*WIDTH OF INSULATION SHALL INCREASE x FT. PER EVERY x FT. OF VERTICAL SEPARATION.

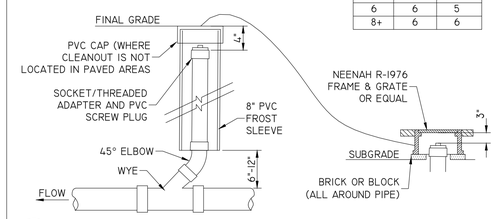
2 / C501 PIPE INSULATION DETAIL
NOT TO SCALE



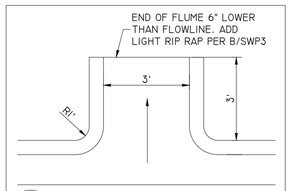
3 / C501 PRECAST REINFORCED CONC. MANHOLE DETAIL
NOT TO SCALE

ALTERNATE FOR TRAFFIC/PAVED AREAS

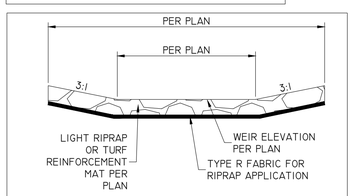
DIA. OF PIPE SERVED BY CLEANOUT	MIN. DIA. OF CLEANOUT EXTENSION	MIN. DIA. OF CLEANOUT OPENING
INCHES	INCHES	INCHES
4	4	3 1/2
5	5	4
6	6	5
8+	6	6



4 / C501 SANITARY & STORM SEWER CLEANOUT CLEANOUT
NOT TO SCALE

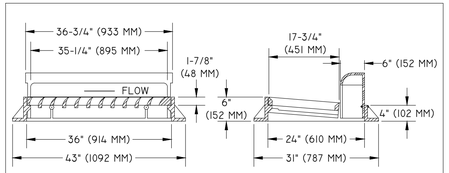


5 / C501 CONCRETE FLUME DETAIL
NOT TO SCALE

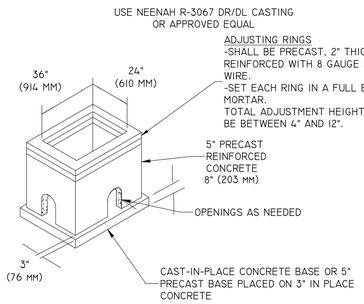


NOTE:
WEIRS TO USE PERMANENT TURF REINFORCEMENT MAT

6 / C501 OVERFLOW WEIR DETAIL
NOT TO SCALE

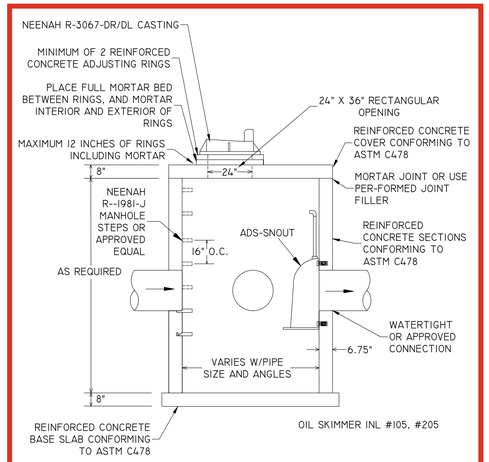


USE NEENAH R-3067 DR/DL CASTING OR APPROVED EQUAL

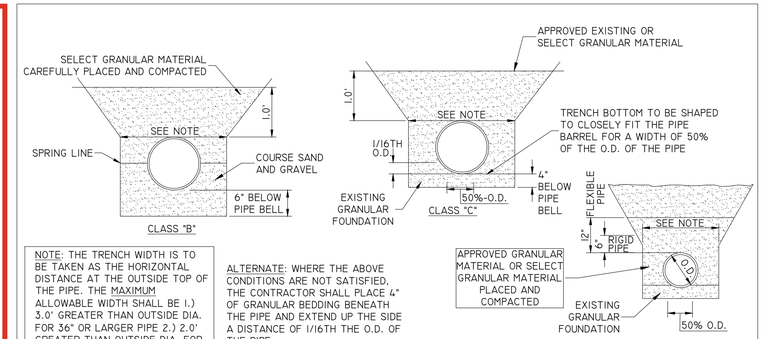


ADJUSTING RINGS
-SHALL BE PRECAST, 2" THICK AND REINFORCED WITH 8 GAUGE STEEL WIRE.
-SET EACH RING IN A FULL BED OF MORTAR.
TOTAL ADJUSTMENT HEIGHT SHALL BE BETWEEN 4" AND 12".

7 / C501 24"x 36" CURB INLET AND CASTING DETAIL
NOT TO SCALE



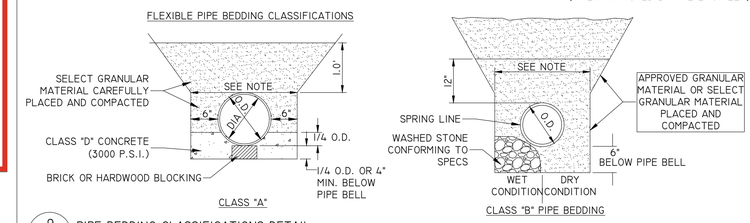
8 / C501 STORM SEWER INLET WITH SUMP DETAIL
NOT TO SCALE



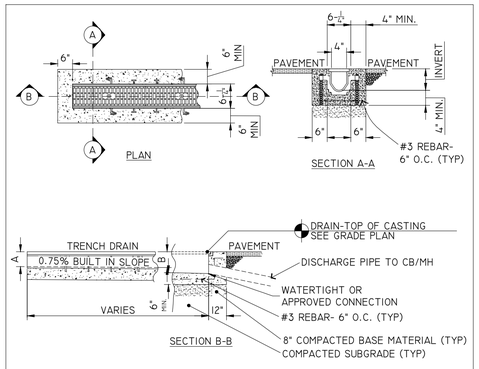
NOTE: THE TRENCH WIDTH IS TO BE TAKEN AS THE HORIZONTAL DISTANCE AT THE OUTSIDE TOP OF THE PIPE. THE MAXIMUM ALLOWABLE WIDTH SHALL BE 1.) 3.0' GREATER THAN OUTSIDE DIA. FOR 36" OR LARGER PIPE 2.) 2.0' GREATER THAN OUTSIDE DIA. FOR PIPES LESS THAN 36" IN DIA.

ALTERNATE: WHERE THE ABOVE CONDITIONS ARE NOT SATISFIED, THE CONTRACTOR SHALL PLACE 4" OF GRANULAR BEDDING BENEATH THE PIPE AND EXTEND UP THE SIDE A DISTANCE OF 1/16TH THE O.D. OF THE PIPE

FLEXIBLE PIPE BEDDING CLASSIFICATIONS

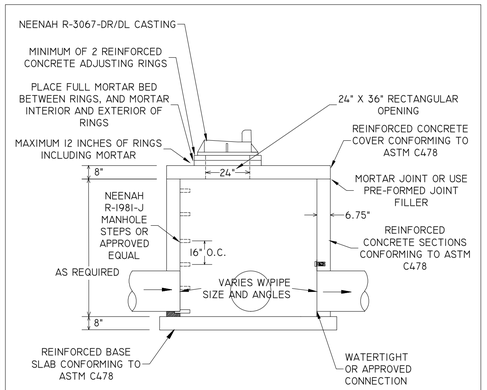


9 / C501 PIPE BEDDING CLASSIFICATIONS DETAIL
NOT TO SCALE



TRENCH SHALL BE "PERMA-TRENCH Z 886 SYSTEM - SERIES 8606N

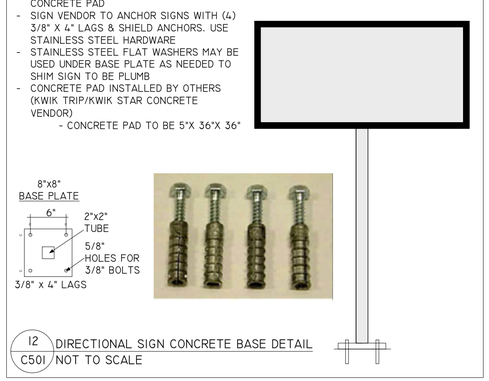
10 / C501 Z 886 TRENCH DRAIN DETAIL
NOT TO SCALE



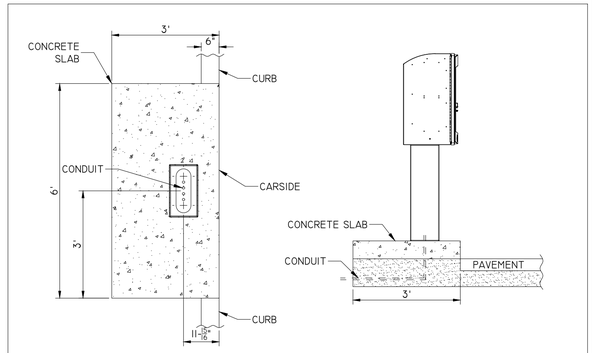
11 / C501 STORM SEWER INLET WITHOUT SUMP DETAIL
NOT TO SCALE

NOTES:
- SIGN VENDOR TO ANCHOR SIGN/S TO CONCRETE PAD
- SIGN VENDOR TO ANCHOR SIGNS WITH (4) 3/8" X 4" LAGS & SHIELD ANCHORS. USE STAINLESS STEEL HARDWARE
- STAINLESS STEEL FLAT WASHERS MAY BE USED UNDER BASE PLATE AS NEEDED TO SHIM SIGN TO BE PLUMB
- CONCRETE PAD INSTALLED BY OTHERS (KWIK TRIP/KWIK STAR CONCRETE VENDOR)
  - CONCRETE PAD TO BE 5'X 36'X 36"

SINGLE SIDED DIRECTIONAL SIGN



12 / C501 DIRECTIONAL SIGN CONCRETE BASE DETAIL
NOT TO SCALE



13 / C501 CAR WASH PAY STATION DETAIL
NOT TO SCALE

KWIK TRIP STORES

KWIK STAR STORES

KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960

REI
CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING
REI Engineering, INC.
4080 N. 20TH AVENUE
WAUSAU, WISCONSIN 54401
PHONE: 715.675.9784 FAX: 715.675.4060
EMAIL: MAIL@REIENGINEERING.COM

NO SCALE

SITE PLAN DETAILS

CONVENIENCE STORE #631

STH 167 & MAPLE ROAD
GERMANTOWN, WI

#	DATE	DESCRIPTION
1		

DRAWN BY NAP
SCALE NOT TO SCALE
PROJ. NO. 11757
DATE 10/09/24 - REVIEW DOCUMENTS
SHEET C501

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PLOTTED: OCT 08, 2024 - 3:40PM PLOTTED BY: TODDW

Environmental Standard Operating Procedure (SOP)
Spill Response Plan

Rev. 10 (Sep. 12, 24

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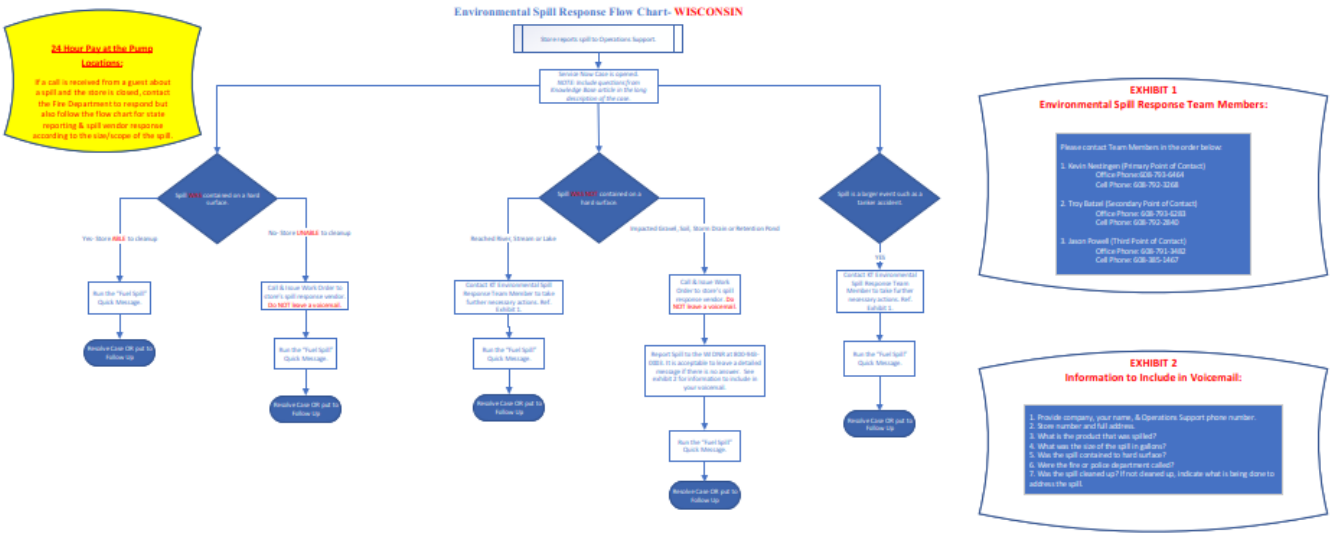
13.1 REQUIRED REPORTING 59

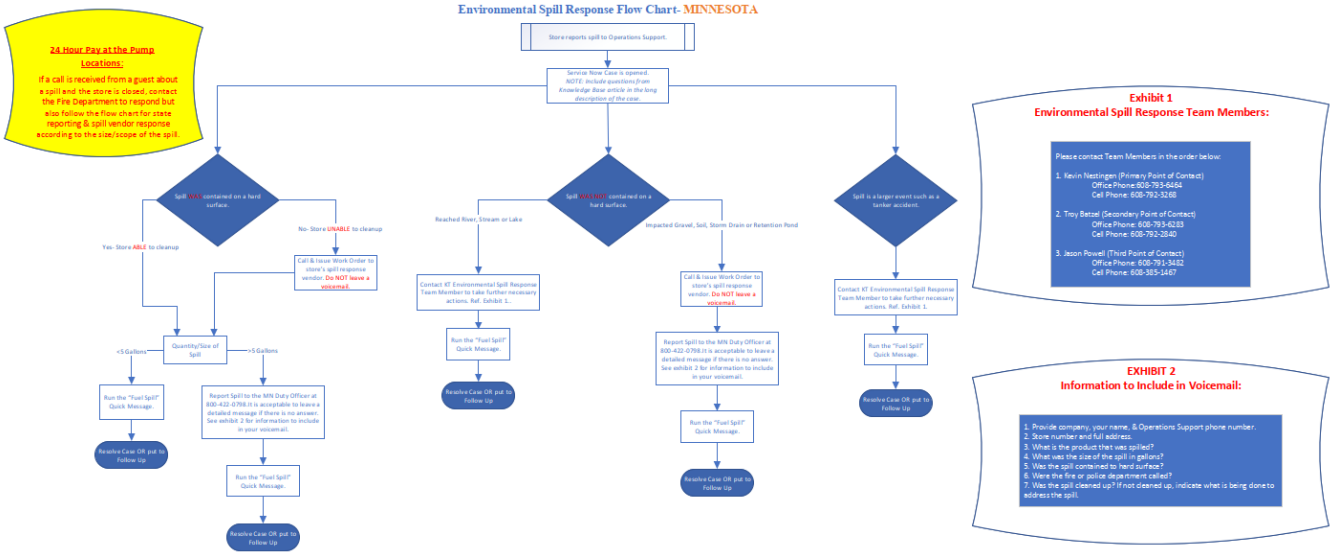
1.0 Purpose

The purpose of the Spill Response Plan is to comply with Minnesota State Statutes 2002 Chapters 115E.04 and 115E.045. It also is to be utilized as a tool for Kwik Trip in having a documented procedure on how to respond to a spill situation. The information contained in this booklet describes response actions, identifies the chain of command, gives information on spill reporting requirements, and lists the companies and phone numbers of the people that can respond to a spill.

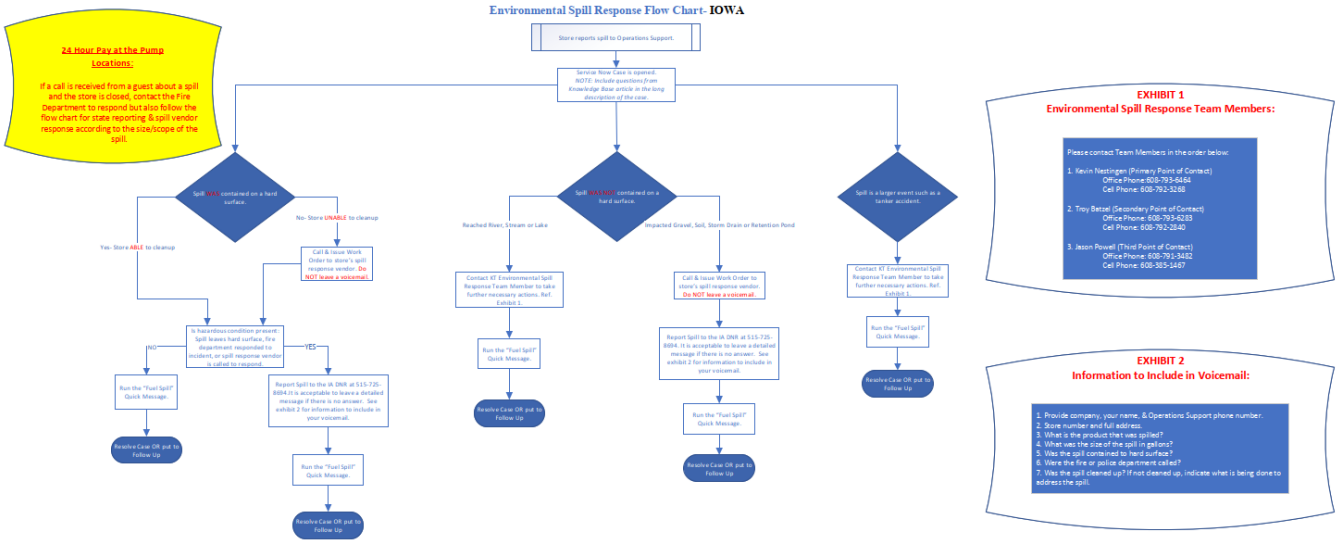
Chapter 115E of Minnesota Rules describes the requirements for what is to be included in the spill response plans. A copy of Chapter 115E.02, 115E.03, 115E.04 and 115E.045 are included in Section 10.2 in this booklet.

2.0 Spill Response Flow Chart by State

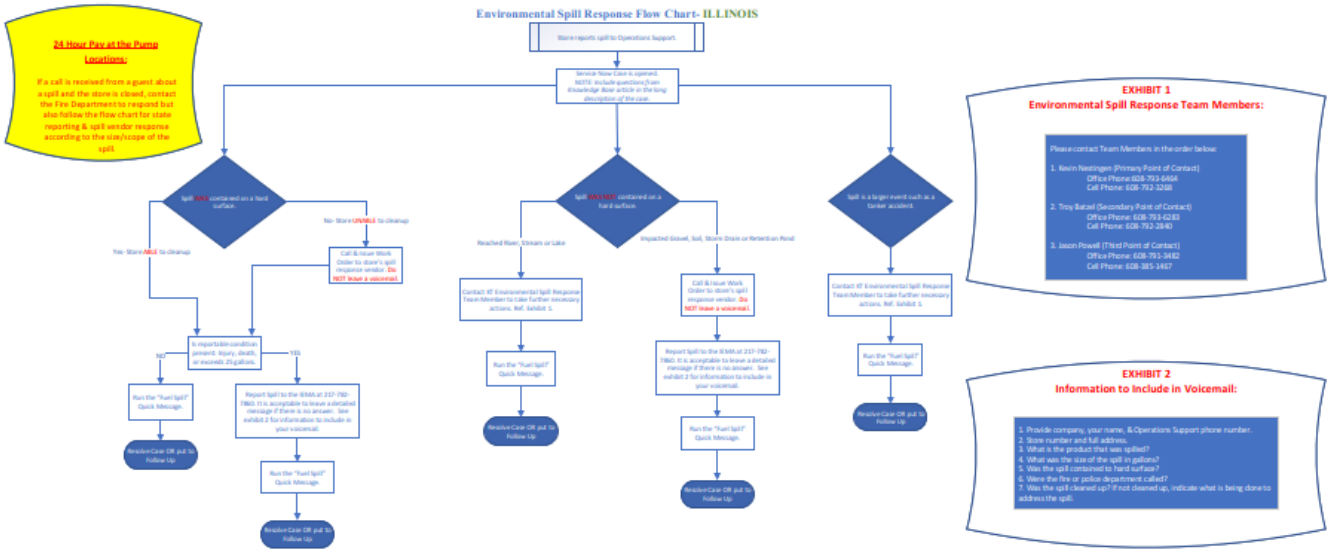




Environmental Spill Response Flow Chart- IOWA



Environmental Spill Response Flow Chart- ILLINOIS



Environmental Spill Response Flow Chart- MICHIGAN

24 Hour Pay at the Pump Locations:
If a call is received from a guest about a spill and the store is closed, contact the Fire Department to respond but also follow the flow chart for state reporting & spill vendor response according to the size/scope of the spill.

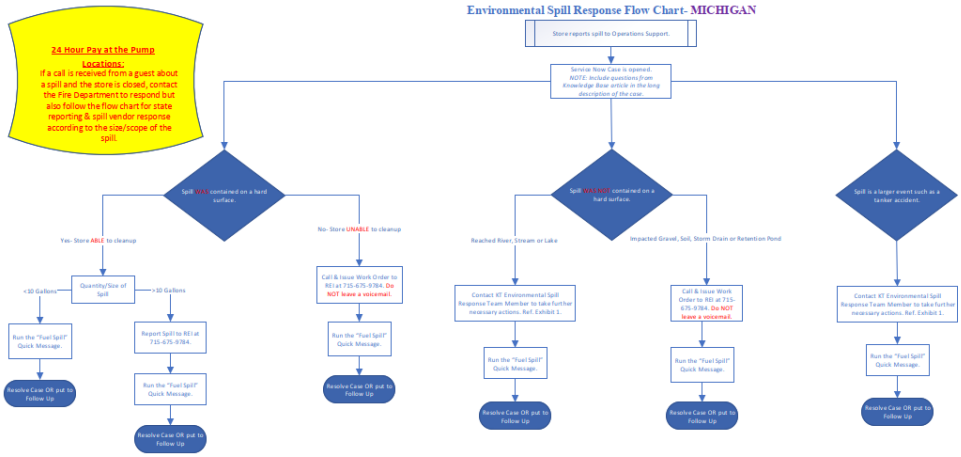


EXHIBIT 1
Environmental Spill Response Team Members:

Please contact Team Members in the order below:

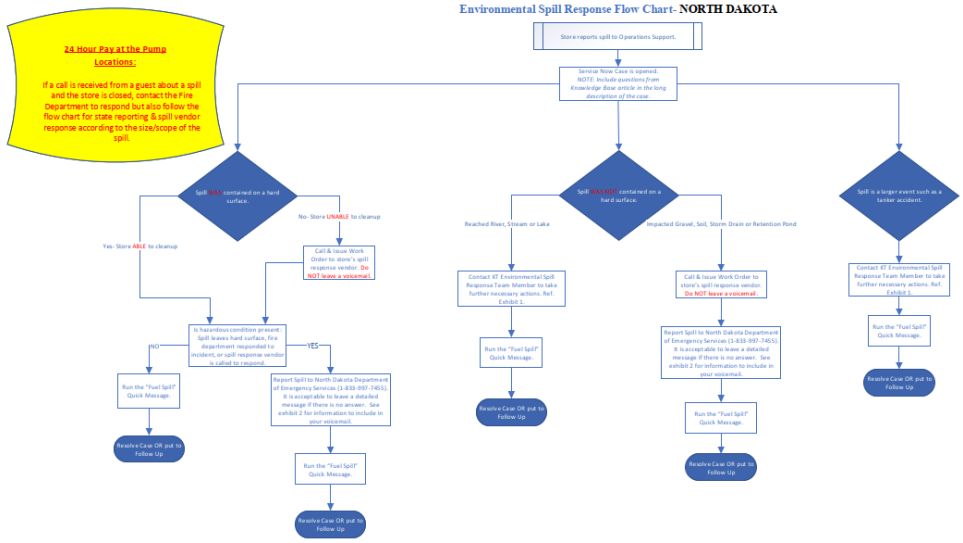
1. Kevin Nestingen (Primary Point of Contact)
   Office Phone: 608-793-6464
   Cell Phone: 608-792-3268
2. Troy Betzel (Secondary Point of Contact)
   Office Phone: 608-793-6283
   Cell Phone: 608-792-2840
3. Jason Powell (Third Point of Contact)
   Office Phone: 608-791-3482
   Cell Phone: 608-385-1487

EXHIBIT 2
Information to Include in Voicemail:

1. Provide company, your name, & Operations Support phone number.
2. Store number and full address.
3. What is the product that was spilled?
4. What was the size of the spill in gallons?
5. Was the spill contained to hard surface?
6. Were the fire or police department called?
7. Was the spill cleaned up? If not cleaned up, indicate what is being done to address the spill.

Environmental Spill Response Flow Chart- NORTH DAKOTA

24 Hour Pay at the Pump Locations:
If a call is received from a guest about a spill and the store is closed, contact the Fire Department to respond but also follow the flow chart for state reporting & spill vendor response according to the size/scope of the spill.



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Environmental Spill Response Team Members:

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   Office Phone: 608-793-6464
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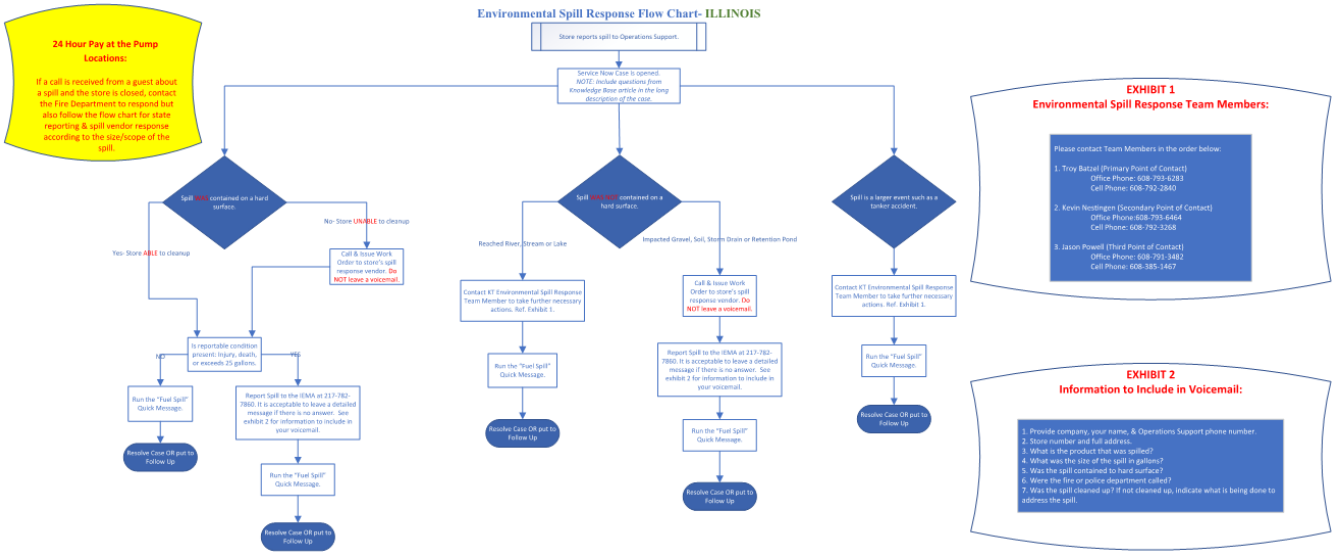
5. Was the spill contained to hard surface?
6. Were the fire or police department called?
7. Was the spill cleaned up? If not cleaned up, indicate what is being done to address the spill.


Environmental Spill Response Flow Chart- ILLINOIS
24 Hour Pay at the Pump Locations:
If a call is received from a guest about a spill and the store is closed, contact the Fire Department to respond but also follow the flow chart for state reporting & spill vendor response according to the size/scope of the spill.
Store reports spill to Operations Support.
Service Now Case is opened.
NOTE: Include questions from Knowledge Base article in the long description of the case.
Spill WAS contained on a hard surface.
Yes- Store ABLE to cleanup
No- Store UNABLE to cleanup
Call & Issue Work Order to store's spill response vendor. Do NOT leave a voicemail.
Is reportable condition present: Injury, death, or exceeds 25 gallons.
NO
YES
Run the "Fuel Spill" Quick Message.
Resolve Case OR put to Follow Up
Report Spill to the IEMA at 217-782-7860. It is acceptable to leave a detailed message if there is no answer. See exhibit 2 for information to include in your voicemail.
Run the "Fuel Spill" Quick Message.
Resolve Case OR put to Follow Up
Spill WAS NOT contained on a hard surface.
Reached River, Stream or Lake
Impacted Gravel, Soil, Storm Drain or Retention Pond
Contact KT Environmental Spill Response Team Member to take further necessary actions. Ref. Exhibit 1.
Run the "Fuel Spill" Quick Message.
Resolve Case OR put to Follow Up
Call & Issue Work Order to store's spill response vendor. Do NOT leave a voicemail.
Report Spill to the IEMA at 217-782-7860. It is acceptable to leave a detailed message if there is no answer. See exhibit 2 for information to include in your voicemail.
Run the "Fuel Spill" Quick Message.
Resolve Case OR put to Follow Up
Spill is a larger event such as a tanker accident.
Contact KT Environmental Spill Response Team Member to take further necessary actions. Ref. Exhibit 1.
Run the "Fuel Spill" Quick Message.
Resolve Case OR put to Follow Up
EXHIBIT 1
Environmental Spill Response Team Members:
Please contact Team Members in the order below:
1. Troy Batzel (Primary Point of Contact)
Office Phone: 608-793-6283
Cell Phone: 608-792-2840
2. Kevin Nestingen (Secondary Point of Contact)
Office Phone:608-793-6464
Cell Phone: 608-792-3268
3. Jason Powell (Third Point of Contact)
Office Phone: 608-791-3482
Cell Phone: 608-385-1467
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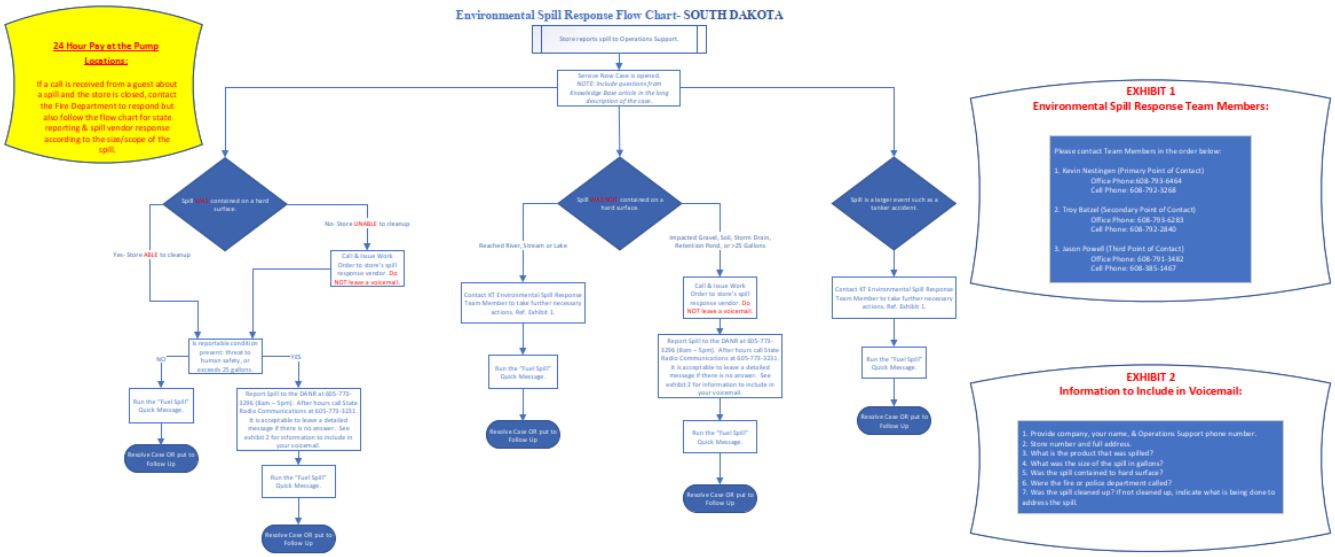
4. What was the size of the spill in gallons?
5. Was the spill contained to hard surface?
6. Were the fire or police department called?
7. Was the spill cleaned up? If not cleaned up, indicate what is being done to address the spill.


Environmental Spill Response Flow Chart- SOUTH DAKOTA
24 Hour Pay at the Pump Locations:
If a call is received from a guest about a spill and the store is closed, contact the Fire Department to respond but also follow the flow chart for state reporting & spill vendor response according to the size/scope of the spill.
Store reports spill to Operations Support.
Service Now Case is opened.
NOTE: Include questions from Knowledge Base article in the long description of the case.
Spill WAS contained on a hard surface.
Yes- Store ABLE to cleanup
No- Store UNABLE to cleanup
Call & Issue Work Order to store's spill response vendor. Do NOT leave a voicemail.
Is reportable condition present: threat to human safety, or exceeds 25 gallons.
NO
YES
Run the "Fuel Spill" Quick Message.
Resolve Case OR put to Follow Up
Report Spill to the DANR at 605-773-3296 (8am – 5pm). After hours call State Radio Communications at 605-773-3231. It is acceptable to leave a detailed message if there is no answer. See exhibit 2 for information to include in your voicemail.
Run the "Fuel Spill" Quick Message.
Resolve Case OR put to Follow Up
Spill WAS NOT contained on a hard surface.
Reached River, Stream or Lake
Impacted Gravel, Soil, Storm Drain, Retention Pond, or >25 Gallons
Contact KT Environmental Spill Response Team Member to take further necessary actions. Ref. Exhibit 1.
Run the "Fuel Spill" Quick Message.
Resolve Case OR put to Follow Up
Call & Issue Work Order to store's spill response vendor. Do NOT leave a voicemail.
Report Spill to the DANR at 605-773-3296 (8am – 5pm). After hours call State Radio Communications at 605-773-3231. It is acceptable to leave a detailed message if there is no answer. See exhibit 2 for information to include in your voicemail.
Run the "Fuel Spill" Quick Message.
Resolve Case OR put to Follow Up
Spill is a larger event such as a tanker accident.
Contact KT Environmental Spill Response Team Member to take further necessary actions. Ref. Exhibit 1.
Run the "Fuel Spill" Quick Message.
Resolve Case OR put to Follow Up
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Cell Phone: 608-792-2840
3. Jason Powell (Third Point of Contact)
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Cell Phone: 608-385-1467
EXHIBIT 2
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5. Was the spill contained to hard surface?
6. Were the fire or police department called?
7. Was the spill cleaned up? If not cleaned up, indicate what is being done to address the spill.

3.0 Response Implementation Authority Information

This section identifies the individual or individuals within Kwik Trip that have the authority to implement a response action along with their title. Contact phone numbers are included in Section 13.5.

Primary:	Kevin Nestingen
Title:	Environmental Compliance Manager
Name:	Troy Batzel
Title:	Principal of Environmental Compliance
Name:	Jason Powell
Title:	Environmental Project Coordinator
Name:	Bryan Novy
Title:	Director or Retail Projects
Name:	Erik Peterson
Title:	Vice President of Store Engineering
Name:	Operations Support staff
Title:	

4.0 How To Respond To Discharges

4.1 Small Fuel Discharges

Small discharges that occur from our facilities or our transport trucks are addressed in a similar manner as a large discharge, the differences would be in the order in which they would contact the local authorities or Operations Support.

In the event of a small spill (gasoline, diesel, E85 or diesel exhaust fluid (DEF)), the store co-worker would assess the size or quantity of the spill and determine the required response based on their assessment. If the co-worker determines that the spill is of a small quantity and does not pose a threat to safety or the environment, they will move to clean up. The first rule is to always make sure that the situation is safe, this means they need to keep all customers clear of the spill area. They then would apply absorbent material to the spill. Once the material has been applied to the spill area they would sweep up the material and containerize it for pick up. At that point they would contact Operations Support to notify them of the spill and the material that would need to be picked up for disposal.

4.2 Large Fuel Discharges

Large discharges follow a different chain of events due to the threat to safety and the environment.

In the case of a large spill (gasoline diesel, E85), or an anticipated release to the environment, the assessment would have been made that safety or environment were compromised. The first step would be to hit the emergency shut off button, which kills power to the dispenser islands and canopy. The next step is to keep people clear of the area. If the co-worker is able to safely contain the spill they would do so at this time. The local authorities would be the first point of contact, which would be the local fire department and police department. Once the local authorities have been alerted to the discharge the next call would be to our Operations Support, which is staffed 24 hours a day. Ops Support would gather the information regarding the spill and immediately contact the Environmental Manager or the person in authority (PIN). The PIN has the responsibility to determine the appropriate response to the spill based on the information provided by store co-workers, fire department and/or police department. This would also include state and sometimes federal reporting of the spill.

There are several companies that are equipped to respond to large discharges and are listed in the Contact Information (Section 9.0). These companies have access to vacuum trucks, absorbent booms, floor dry, absorbent towels and trained personnel along with many other tools and equipment. Many times the local authorities have the capabilities to contain the spill and remove the threat to safety. In the event they are not able to contain the product, or it has been released to a sensitive area, the hazmat teams would be notified and be asked to respond.

4.3 DEF Spill Response

Spills or leaks involving DEF will follow the same basic procedure as petroleum products even though DEF is mostly water based. Spilled DEF still needs to be recovered and should be prevented from leaving a hard surface. DEF does have the potential to impact groundwater, rivers, and streams if released to the environment.

Below are minimum requirements for the initial spill response assessment:

- Take pictures of the dispenser and area of the spill
- Take pictures of the lot
- Determine what direction things may have flowed from the leak area
- Check the areas it may have flowed to such as: ponds, ditches, storm inlets, green space, etc.
- Utilize a field urea meter to assess areas it may have flowed
- Note weather conditions and what they were during the time of the spill and also at the time of your site visit
- Look for signs of crystallization that occurs from DEF drying
- Complete a short report that covers all findings from the visit, including urea field meter results
- Send to KT and the State

4.4 CNG Spill Response

The purpose of the compressed natural gas (CNG) spill response plan is to lay out the process that needs to be followed to ensure the safety of our co-workers and guests. We also want to make sure that there is a clear plan with regard to response and reporting to applicable agencies.

A leak from a CNG system will be discovered as a result of an odor (mercaptin, or rotten egg smell), fire coming from the system, or an alarm condition from the system.

If a leak is discovered (store response)

- Hit the emergency stop button
- Call Operations Support
- Keep co-workers and customers away from the area
- Do not reset Emergency stop switch until leak is stopped, repairs have been made and the system is verified tight

Operations Support Protocol

- If there is a fire, instruct the store to call 911 and to keep people clear of the area
- Instruct Fire Department to close main valve to eliminate gas coming from supply line
- If damage or injury, follow accident protocol and contact Stephanie Fox
- Notify people on the spill call list

- Do not reset Emergency stop switch until leak is stopped, repairs have been made and the system is verified tight
- If the leak is coming from the Utility provider service line call the Utility provider emergency number provided
- Instruct the store to lock out and tag the dispenser as out of order until repair is made

Store Engineering service/repair protocol

- Contact regional service or appropriate service contractor

4.5 Fuel Blending Sites (SPCC Plans)

Each Kwik Trip fuel blending/biodiesel site will have its own Spill Prevention, Control, and Countermeasure (SPCC) Plan. The purpose of the SPCC Plan is to describe measures implemented by facility management employees to prevent oil discharges from occurring, and to prepare facility management employees to respond in a safe, effective, and timely manner to mitigate the impacts of a discharge. Additionally, the SPCC Plans are used as a reference for oil storage information and testing records, as a tool to communicate practices on preventing and responding to discharges with employees, as a guide to facility inspections, and as a resource during emergency response.

The Plans will be prepared to meet the requirements of Title 40, Code of Federal Regulations, part 112 (40 CFR part 112). The United States Environmental Protection Agency (US EPA) has established regulations for oil pollution prevention in the Code of Federal Regulations, Title 40 (40 CFR), Parts 110 through 112. The regulations require that a SPCC Plan be prepared if it could reasonably be expected that a harmful quantity of oil could be discharged into navigable waters of the United States or adjoining shorelines. The SPCC regulations apply to owners or operators of facilities that meet the following three primary criteria:

- The facility must be non-transportation related and engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, using, or consuming oil and oil products.
- The facility must have an aggregate aboveground storage capacity greater than 1,320 gallons (excluding those tanks and oil filled equipment below 55 gallons in capacity, the capacity of a container that is “permanently closed”, and the capacity of a “motive power container”) or an aggregate underground storage capacity greater than 42,000 gallons (excluding those that are currently subject to all of the technical requirements of 40 CFR Part 280 or all of the technical requirements of state programs approved under 40 CFR Part 281).
- There must be reasonable expectation that, due to its location, the facility could discharge oil into or upon the navigable waters or adjoining shorelines of the United States.

The US EPA requires that a complete copy of the SPCC Plan be maintained at the facility if it is attended at least four hours per day or at the nearest office if the facility is not attended.

4.6 Indoor Air Quality Response

These pages outline the process that will be followed by Operations Support in the event of an indoor air quality issue or complaint.

Problem:
Unknown smell or odor inside the store

Questions to ask regarding odor:

- When did you first notice this smell?
- Where in the building is the smell the strongest?
- Do you smell it outside as well?
- Has anyone complained of ill effects and what are the symptoms?
    - If yes, create another call for the co-worker illness and assign it to HR Daily, this will create a call for HR to follow up with the co-worker. (If after hours/weekend, then call Jill Rettler (HR) to make her aware of the situation and determine if immediate action is needed.)
- Have we had any service vendors out recently and for what?
- What does it smell like? Natural Gas (Rotten Eggs) or Gasoline?
    - If yes, do we have a gas container in the store or does this store have natural gas service to the store (see attached list to see where we pay for natural gas)?
- Have we had any fuel deliveries recently?

----- If they feel that it is a natural gas, gasoline, or propane type smell then the Fire Department should be called out to investigate to determine if it is an explosive environment. If there is a threat of fire or explosion and the area needs to be evacuated, please refer to evacuation procedures listed on the Kwik Net HR Services/Safety Manual/Emergency Procedures.

Other known smell or odor sources could be:

- Do we have any dry drain traps in the floor in the following store areas: bathrooms, fountain pop machines, kitchen floor drains? If this area has the strongest odor have the store pour approximately a gallon of water down the drain. This will fill the trap and prevent air from coming back up through the pipe.
- Paint or open cleaning chemicals in the store, have they been closed back up? Do we need to open up the back and front door of the store to air it out?

If the smell/odor cannot be confirmed to a known source, store personnel should contact Ops Support for further direction.

Last step is to e-mail the District Leader and Zone Leader to make them aware of the situation.

5.0 Description of Training

Kwik Trip has developed a training program as part of a state and federal requirement for staff to be Class C certified, All retail co-workers complete this training. This training covers the following information:

1) Where to find emergency stop switch.
2) Who to call and when.
3) Information you need to gather in the event of a spill.
4) Equipment and materials needed in a response action.
5) How to assess a spill and how respond accordingly.

All retail co-workers are required to complete the training module which is available on the KwikNet 24/7.

All people considered to be PIN's (persons in authority) have gone through a training session with the Environmental Compliance Manager.

6.0 Communication and Incident Command

Communication and incident command are very important when trying to accomplish a successful spill response action. It is very important to have one point of contact during this type of situation to ensure a smooth response. Our point of contact is the person in authority (PIN) listed on the "Response Implementation Authority Information" section who is handling the response action. This person will be responsible for communicating with local authorities to better understand the spill situation in progress until a representative from the company can arrive on site. They will also be in contact with the necessary Federal and State agencies for reporting purposes.

The PIN will coordinate the response action based on the report from the incident commander on site. The PIN will contact the appropriate response persons and inform the incident commander of those peoples role in the response action.

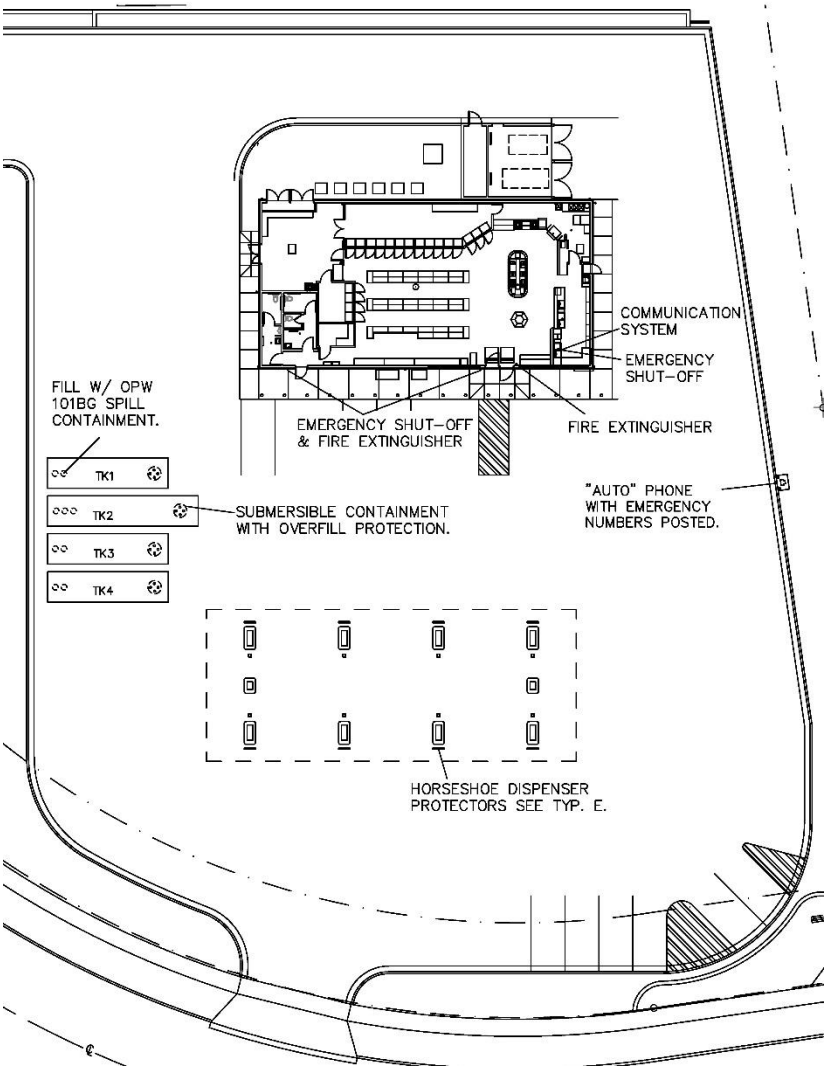
Hazmat teams responding to the incident should always have a team leader, this person would communicate with the PIN during the course of the response action.

It is the job of the PIN to be the center of communication between the local authorities, hazmat teams and State and/or Federal agencies.

In many cases, the incident command role will be a shared duty based on the experience of the on-site personnel.

7.0 Facility Description

Kwik Trip stores are all relatively similar in construction. Most locations consist of a convenience store that is approximately 7,000 - 9,000 square feet in size. They all have a gasoline operation that typically has 4-10 multi-product dispensers that are supplied by pressurized piping coming from underground storage tanks. The underground tanks that store the product range in size from 10,000 gallons capacity to 30,000 gallons. The products that are usually sold at our facilities are Unleaded, Plus and Premium gasoline, as well as diesel. In addition to selling E85, biodiesel and in some cases electric vehicle charging, Kwik Trip has CNG (Compressed Natural Gas) infrastructure throughout Minnesota, Wisconsin and Iowa. A typical site diagram is shown below.



This is a typical site layout, which shows the location of the emergency stop switch, telephone and fire extinguishers. It also depicts the layout of the gas operation and underground storage tanks.

8.0 Transport Vessel Description

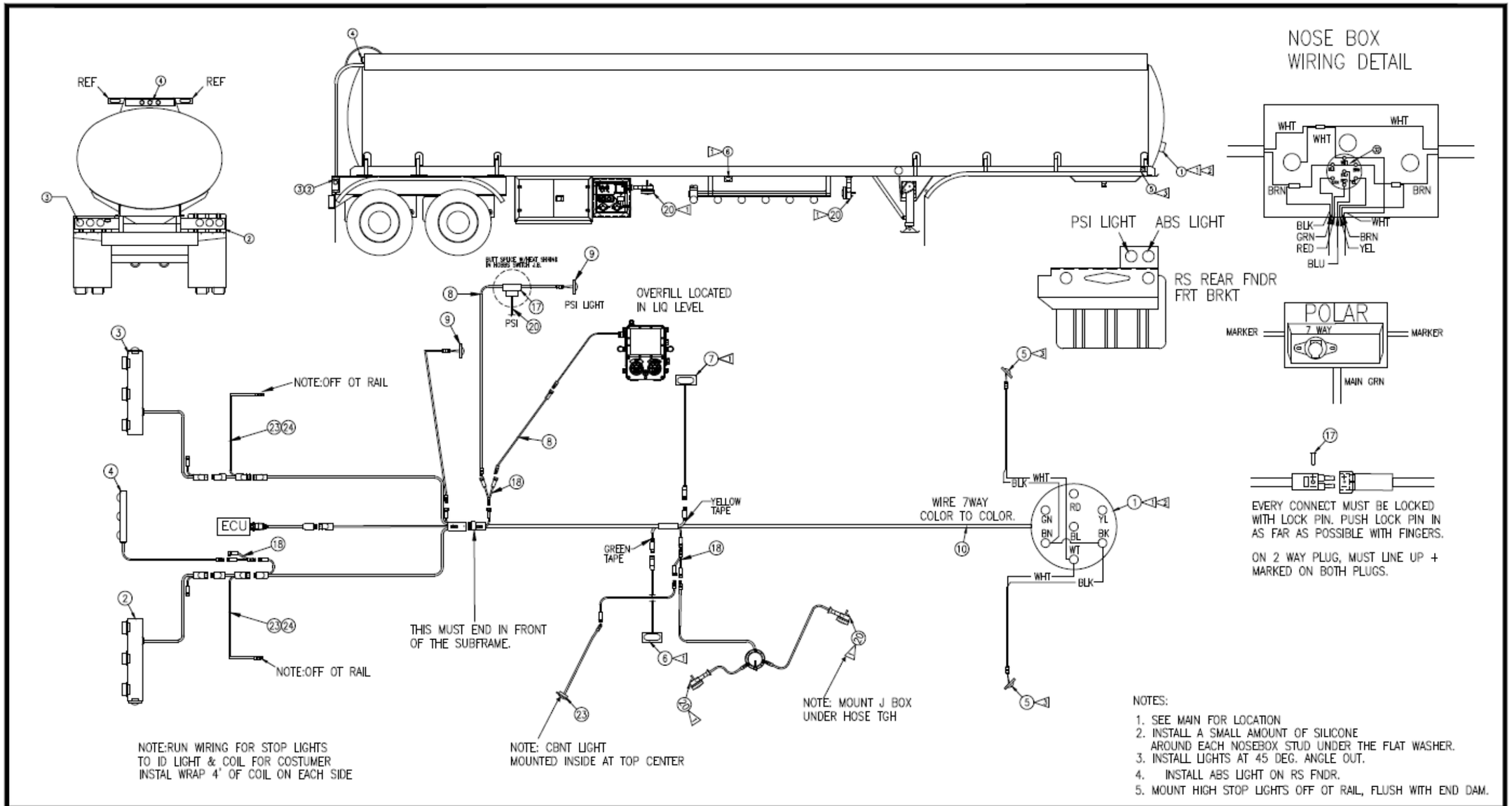
Our transports that haul product to our sites are made of aluminum and are divided into 3 compartments. The compartments have the following capacities 4,400 gallons, 2,300 gallons and 3,000 gallons. Each transport is equipped with an emergency shut off switch located at the front of the transport trailer. They also all carry spill response kits located under the belly of the transport trailer. These kits include drain mats, booms, floor dry and absorbent towels.

8.1 Transport Spill Kit Contents

- 1 spill kit bag
- 1 drain blocker
- 4 bags of Sphag-Sorb absorbent
- 4 Sphag-Sorb absorbent snakes
- 20-50 absorbent pads in the cabinet on truck

8.2 Transport Trailer Spec Sheet

The following page shows specifications of the typical transport. Click HERE for link to a .pdf document with additional specification information.



REV	DESCRIPTION	DATE / BY	REV	DESCRIPTION	DATE / BY
			A	FIXED BUBBLES FOR Y ADPTS.	3/11/15 DJ

① *DO NOT SCALE PRINT*
TOLERANCES AS FOLLOWS
UNLESS OTHERWISE NOTED:
A. MACHINING ±1/32"
B. SHEET METAL SHEARING
THRU 10 GA. ±1/32
HEAVIER THAN 10 GA. ±1/16"
C. STRUCTURAL LENGTH ±1/8"
D. BREAK PARTS ±2"
E. PUNCHING LOCATION ±1/64"
② WELD SYM. PER A.W.S. STDS.

DRAWN BY DJ
CHECKED BY
SEPIA OF _

POLAR
Tank Trailer, Inc.
4825 E Kearney
Springfield MO. 65803
Phone: 1-417-862-5526
Fax: 1-417-862-5564

THIS DRAWING IS THE PROPERTY OF POLAR TANK TRAILER, INC. & IS SUBJECT TO RETURN UPON REQUEST. IT IS NOT TO BE USED IN ANY WAY DETRIMENTAL TO THE INTERESTS OF POLAR TANK TRAILER, INC.

TITLE SM1334515
ELECT COMPT

SCALE	DATE		DWG. NO.	REV
NTS	1/29/15	B	S-139791	A

F421 REV 1 05/12/98

9.0 Contact Information

9.1 State Spill Reporting

WI DNR
1-800-943-0003

MN Duty Officer
1-800-422-0798

IA DNR
515-725-8694

National Response Center
1-800-424-8802

9.2 Hazmat Response Contacts

Wisconsin
Clean Harbors Southeast and South-Central Region : 1-800-645-8265
SET (Secondary): 877-437-7455
REI North and Central Region: 715-675-9784
UP Environmental NE Region (Secondary): 906-466-9900
WCEC (Secondary) Central to North Region: 1-888-923-2778
WCEC West-central Region : 1-888-923-2778
Clean Harbors West-central region: (Secondary): 1-800-645-8265

Minnesota
WCEC: 1-888-923-2778
Clean Harbors (secondary): 1-800-645-8265

Iowa
All of Iowa except SE region: Hazmat Response: 1-800-229-5252
Seneca SE region: (secondary): 1-800-369-5500

Michigan
REI: 715-675-9784
UP Environmental (secondary): 906-466-9900 (O) 906-280-8908 ©

Illinois
Clean Harbors covers east region: 1-800-645-8265
Seneca covers west region: 1-800-369-5500
SET (secondary): 877-437-7455

South Dakota
WCEC: 1-888-923-2778
Clean Harbors (Secondary): 1-800-645-8265

North Dakota
WCEC: 1-888-369-5500
Clean Harbors (Secondary): 1-800-645-8265

9.3 Emergency Spill Response Contacts

Primary Contacts

WCEC
24-hr Spill Hotline: 1-888-544-9481

SET
24-hr Hotline: 1-877-437-7455

Clean Harbors
24-hr Spill Hotline: 1-800-645-8265

REI - Ken Lassa
Office: 715-675-9784
Cell: 715-574-3430

Bay West - Jim Stockinger
24-hr Spill Hotline: 1-800-279-0456
Cell: 612-207-0561

SCS Engineers - Eric Oelkers
Office: 608-224-2830
Cell: 608-444-3934

HMR (Hazmat Response - John Towle
W: (515) 297-8664
C: (913) 333-8985

Seneca
24-hr Hotline: 1-800-369-5500

9.7 Store Engineering Phone List

Store Engineering Delivery		---------	---------	---------
Store Engineering Service Desk		---------	---------	---------
Store Engineering Ship Outs		---------	---------	---------
Aaron Asp		608-604-4983	---------	---------
Aaron Bowen		262-282-9609	---------	---------
Aaron Bradle		---------	608-799-6963	---------
Aaron Bright		608-792-9407	---------	---------
Aaron Harmon		---------	---------	---------
Aaron Sill		608-317-7109	---------	---------
Adam Cook		---------	---------	---------
Adam Gibbs		262-770-0309	---------	---------
Adam Kleine		920-946-7755	---------	---------
Adam Raisanen		920-309-7280	---------	---------
Adam Schwartz		---------	---------	---------
Adam Vettel		319-830-0797	---------	---------
Addison Skeels			920-251-4627	
AJ Loken		608-864-0618	---------	---------
Alex Lenzer		608-225-4416	---------	---------
Alex Pollex		---------	608-769-7442	---------
Alex Polnaszek		---------	608-385-5491	---------
Alex Will		608-317-6197	---------	---------
Ali Van Dalen		---------	320-761-4908	---------
Allison Christianson		---------	608-385-4994	---------
Alyx Bushnell		---------	608-397-4103	---------
Amy Wermager		---------	608-518-9230	---------

Anden Schieldt		--------	---------	---------
Andre Larsen		920-680-1365	-------	---------
Andrew Tauzell		712-754-2500	---------	---------
Andrew Wegner		---------	319-533-7658	---------
Andy Logue		---------	319-431-8497	---------
Andy Martell		715-586-0735	-------	---------
Andy Norton		608-633-1192	-------	---------
Barbara McIntyre		---------	608-669-3073	---------
Ben Hendrickson		---------	---------	---------
Ben Hyland		920-918-0920	---------	---------
Ben Ipsen		---------	978-257-5007	---------
Ben Krause		---------	715-207-5522	---------
Ben Patten		715-252-6259	---------	---------
Bill Eastman		608-317-6141	---------	608-489-2236
Bill Glauner		715-891-7527	-------	---------
Bill Horihan		608-317-8669	---------	---------
Bill Sanderson		608-386-0684	---------	---------
Bjorn Berg		608-606-3998	---------	---------
Bob Alf		920-295-2586	---------	---------
Bob Lynch		262-470-4085	---------	---------
Bo Collins		---------	---------	---------
Brad Chambers		507-340-2839	---------	---------
Brad Fry		608-792-7450	---------	---------
Brandon Bohnert		563-676-0936	---------	---------
Brett Attlen		---------	---------	---------
Brett Needham		608-216-1149	---------	---------
Brian Arntsen		920-585-0296	---------	---------
Brian Barter		262-909-4148	---------	---------
Brian Kruk		608-487-3005	---------	608-487-7724
Brian Nighbor		---------	715-299-3658	---------
Brittani Devine		---------	608-519-6397	---------
Brittany Erler		---------	608-792-8287	---------
Brock White		920-699-2922	---------	---------

Bruce Henslin		608-386-6423	---------	---------
Bryan Novy		608-317-0530	---------	608-786-4975
Cameron Stowe		218-760-1710	---------	---------
Carl Klemp		---------	608-385-9233	---------
Carla Lang		---------	608-769-2438	---------
Chad Feyen		608-386-0682	---------	---------
Chad Juel		---------	608-738-2492	---------
Chad Nienow		507-990-3114	---------	---------
Charlotte Gonyo		---------	608-738-7252	---------
Charles Redbird		-------	715-538-5104	------
Chase Jacobson		608-548-7425	---------	---------
Chelsey George		---------	608-386-9603	---------
Chris Fenske		920-969-8169	---------	---------
Chris Johnson		507-459-5132	---------	---------
Chris Nutini		---------	608-518-8254	---------
Christian Niemi		---------	---------	---------
Cody Flury		608-343-0899	---------	---------
Cody Miles		-----	414-533-1446	------
Corey Hoffman		319-296-8589	---------	---------
Corey Kessel		763-229-3732	---------	---------
Cory Joas		---------	---------	---------
Cory Lang		608-769-5264	---------	---------
Coty Tonne				
Dalton Treanor		---------	608-790-5308	---------
Dan Covart		608-790-0571	952-807-2987	952-707-9825
Dan Heath		608-769-3413	---------	---------
Dan Perreault		608-632-4029	---------	---------
Dan Steele		---------	608-386-3527	---------
Daniel Nusse		818-915-6226	---------	---------
Daniel Schmaltz		715-236-9998	---------	715-736-6615
Darrion Marquardt		---------	---------	---------
Dave Cedarblade		763-334-0146	---------	---------
Dave McDowell		608-518-0077	---------	--------

Dave Piggott		608-658-3397	---------	---------
Dave Powell		608-504-6009	---------	---------
David Forrest		414-595-4773	ony	---------
David Gryskiewicz		608-572-3467	---------	---------
David J Johnson		262-397-6426	---------	---------
David Kirchner		608-343-1325	---------	---------
David Link		920-210-2767	---------	---------
David Mottl		262-719-9784	---------	---------
David Thompson		---------	---------	---------
David Zweibohmer		641-229-5720	---------	---------
Derec Koch		641-224-5934	---------	---------
Derek Rieber		608-738-3459	---------	---------
Devin Boynton		507-990-8172	---------	---------
Desmond Gerdes		507-514-3792	---------	---------
Dirk Hagedorn		262-323-6148	---------	---------
Drake Evers		507-208-5608	---------	---------
Duane Bennett		---------	920-253-7226	---------
Dustin Ditzman		309-945-8158	---------	---------
Dustin Wilkening		651-706-1771	---------	---------
Dylan Noel		-----	608-397-5737	-----
Elias Johnson		-------	608-863-6407	------
Eli Ruff		507-327-7461	---------	---------
Emily Helwig		---------	507-458-0628	---------
Emma Jagodka		------	952-451-0563	-----
Emma Reber		---------	---------	---------
Eric Matthews		920-213-5916	---------	---------
Eric Presuhn		715-969-4920	---------	---------
Eric Thompson		507-438-6470	---------	---------
Eric Valentine		---------	---------	---------
Erica Lampert		---------	---------	---------
Erik Culver		608-793-6087	715-379-0665	---------
Erik Peterson		608-792-5370	---------	608-786-3199
Ethan Niles		---------	608-797-5458	---------

Evan Oeltjenbruns		507-841-4895	------	-----
Garrett Spafford		608-451-4258		
Gary Boynton		507-259-5024	---------	---------
Genevieve Mortenson		---------	---------	---------
Greg Guenther		608-790-3767	---------	---------
Heather Servais		---------	---------	--------
Holly Daines				
Isaac Eastling		715-421-0165	---------	---------
Isaac Laube		608-498-0926	---------	---------
Isaiah Schwinn		920-449-8596	---------	---------
Isaiah Graewin		-----	608-498-2909	----
Jacob Beckel		---------	507-279-4526	---------
Jacob Johnson		612-229-3144	---------	---------
Jacob Nordstrom		------	608-738-8211	-----
Jakob Hallback-Kettner		------	608-797-3084	-----
Jake Stern		---------	---------	---------
Jamal Holmes		319-464-2287	---------	---------
James Oldenburg		608-317-0346	---------	---------
Jamie Olson		---------	608-386-5878	--------
Jared Nordaas		---------	507-995-1786	---------
Jarred Koss		507-269-2772	---------	---------
Jason Martin		---------	---------	---------
Jason Mozena		712-363-7614	---------	---------
Jason Powell		---------	608-385-1467	---------
Jason Smothers			262-865-1099	
Jason Wucki		608-780-7663	----------	---------
Jay Marco		608-396-1228	---------	---------
Jean Drinkman		---------	608-387-0769	---------
Jeff Anderson		---------	218-428-3750	---------
Jeff Benvenuto		262-620-0651	---------	---------
Jeff Dahl		---------	---------	---------
Jeff Fontano		-----	651-329-5181	-----
Jeff Groth		320-333-0285	---------	---------

Jeff Kerska		---------	---------	
Jeff Osgood		608-792-2136	---------	---------
Jeremy Turben		608-606-9333	---------	---------
Jill Langrehr		---------	608-486-4980	---------
Jill McDonah		---------	---------	---------
Jim Coblentz		608-386-2639	---------	608-489-4591
Jim Freitag		507-469-0497	---------	---------
Jim Lopez		952-693-3062	---------	---------
Jim Smith		715-697-0063	---------	---------
Joe Bechle		608-317-2363	---------	---------
Joe Gauthier		920-901-9826	---------	---------
Joe Kappers		651-785-8949	---------	---------
Joe Theisen		715-271-5210	---------	---------
Joe Tomman		563-219-1744	---------	---------
Joel Krueger		---------	608-385-5756	---------
Joey Hafemann		262-384-1596	---------	---------
John Halverson		---------	507-450-7115	---------
John Prunty		262-501-9691	---------	---------
John Vandagriff		651-212-1055	---------	---------
John Wahl		---------	608-317-5550	---------
Jordan Stricker		920-542-8053	920-542-8053	-----
Jordan Skilling		319-333-9922	---------	---------
Jordan Wilke		940-287-4605	---------	---------
Jon Davis		715-220-0740		
Josh Johnson		715-392-2954	---------	---------
Josh Merrell		608-386-8350	---------	---------
Josh Meyer		319-230-1103	---------	---------
Justin Gilbertson		608-865-0029	---------	---------
Justin Lowrance		262-818-8411	---------	---------
Kat Watson		612-390-4669	---------	---------
Kayla Kyser		---------	715-316-7151	---------
Keith McIntyre		608-635-5809	---------	---------
Ken Seidel		---------	---------	608-779-9469

Kendon Thurk		608-792-4120	---------	---------
Kevin Boldt		---------	507-429-6102	---------
Kevin Brathall		715-222-1097	---------	---------
Kevin Harris		-----	608-790-2226	------
Kevin King		920-583-0400	---------	---------
Kevin Nestingen		---------	608-792-3268	---------
Kevin Tassoul		920-845-5070		
Kim Lovejoy		---------	---------	---------
Kim Sake		---------	---------	---------
Kollin Hemenway		920-202-0565	---------	---------
Kristen Gran			608-797-9686	------
Kristine Kish		---------	608-738-1236	---------
Kurtis Huber		---------	608-848-9040	---------
Kyle Bourget		---------	---------	---------
Kyle Drysdale		715-581-2331	---------	---------
Lacey Baum		---------	608-317-5005	---------
Larry Zielke		608-797-1520	---------	---------
Lauren Fortin		---------	---------	---------
Lauren Mueller		---------	608-881-1597	---------
Leah Berlin		608-797-1547	---------	---------
Lincoln Beery		507-216-2581	---------	---------
Logan Schlough		---------	715-308-8420	---------
Lon Anderson		715-815-0821	---------	---------
Lucas Walz		608-317-7444	---------	---------
Luke Christenson		507-273-4145	---------	---------
Lyle Antony		608-317-6140	---------	608-526-4963
Lynette Dickie-Privet		---------	507-450-6489	---------
Malia Kirchner		507-676-2601	---------	---------
Mandy Dale		---------	---------	---------
Manuel Carpenter		---------	608-498-7450	---------
Mark Ervin		715-344-7774	---------	---------
Mark Graff		-------	608-797-2335	--------
Mark Lukken		571-481-1464	---------	---------

Mark Parsneau		608-792-6121	---------	---------
Mark Reps		608-780-4051	---------	---------
Mark Thesing		608-317-6143	---------	507-895-6730
Mark Vinz		---------	608-397-5540	---------
Mary Semrow		---------	608-558-4526	---------
Marty Putz		---------	608-317-0195	---------
Mason Reed		608-633-1645	---------	---------
Matt Bartlett		608-780-7276	---------	---------
Matt Franklin		715-305-3819	---------	---------
Matt Franzini		704-677-4718	---------	---------
Matt Gran		608-780-0744	---------	---------
Matt Massie		608-385-9864	---------	---------
Matt Theisen		608-865-0944	---------	---------
Matt Thony		608-381-4836	---------	---------
Matthew Lepke		---------	---------	---------
Matthew Vetsch		5075009073	608-797-7216	---------
Max Merrell		608-799-4895	---------	---------
McKayla Haldorson		---------	608-385-5286	---------
Melissa Gabrielson				
Michael Nelson		---------	---------	
Michelle Scanlan		---------	507-429-1812	507-482-7052
Mike Clark		608-797-2200	---------	---------
Mike Ferron		715-574-5310	---------	---------
Mike Ideker		---------	---------	---------
Mike McDermott		608-778-6180	---------	---------
Mike Miles		---------	---------	---------
Mike Mellom		608-212-5962	---------	---------
Mike Rochester		---------	608-397-4142	---------
Mike Schaefer		920-960-8194	---------	---------
Mike Welsh		608-317-6145	---------	---------
Mitch Luster		------	608-412-2145	-------
Mitch Williams		608-498-3786	608-669-6322	---------
Nate Byom		---------	608-792-7780	---------

Nathan Best		---------	715-379-0959	---------
Nick Newman		---------	608-317-9446	608-783-7623
Nick Spors		608-921-2670	---------	---------
Pang Vang		---------	608-764-0390	---------
Patrick Klopotek		608-495-1738	---------	---------
Pao Xiong		651-457-5622	---------	---------
Paul Evers		507-269-1703	---------	---------
Paul Stanhope		---------	---------	---------
Paul Van Keulen		507-226-7302	---------	---------
Peter Bergrud		507-458-1280	---------	---------
Peter Seich		---------	920-287-1826	---------
Phillip Tennant		---------	608-799-9290	---------
Raider Yang		---------	---------	---------
Randy LeBeau		701-471-5603	---------	---------
Rich Williams		920-993-9089	---------	---------
Rich Wolfert		608-797-9424	---------	---------
Rob Mickow		608-317-3728	763-228-1253	---------
Robbie Olson		262-720-2622	---------	---------
Robert Dinkle		608-239-0682	---------	---------
Robert Preston		815-708-4471	---------	---------
Ron Humm		---------	---------	608-518-2365
Ron Kind		715-512-1373	---------	---------
Ron McAtee		---------	319-331-9898	---------
Rory Severson		608-279-5913	---------	---------
Ross Weber		---------	612-327-3651	---------
Ryan Allen		218-729-7004	---------	---------
Ryan Bader		---------	608-385-0385	---------
Ryan Keeney		---------	608-397-4101	---------
Ryan Philippi		320-557-8054	---------	---------
Ryan Roberts		608-343-3447	---------	---------
Ryan Thorne		---------	608-385-2439	---------
Sadie Mashak		---------	920-222-1941	---------
Sam Bratz		262-631-9116	---------	---------

Sam Rusch			---------	---------
Sarah Sweet		---------	608-797-1115	---------
Scott Dus		---------	---------	608-781-2919
Scott Murtz		---------	---------	---------
Scott Teigen		715-556-4444	---------	715-235-6626
Scott Zietlow		608-385-6938	---------	---------
Sierra Bahr		---------	608-498-9915	---------
Seth Waddell		---------	608-343-0978	---------
Shane Easton		---------	612-619-8273	---------
Shane Enos		------	319-252-7555	------
Shannon Jandt		608-385-6295	---------	---------
Sharon Schmelzer		---------	---------	---------
Stacy McArdle		---------	608-790-4422	---------
Steve Boldt		608-790-3977	---------	---------
Steve Lowe		608-780-9157	---------	---------
Steven Linberg		715-440-1059		
Taylor Keehn		-------	608-604-8204	----
Tanner Sampson		319-240-4277	---------	---------
Ted Cone		608-792-2539	---------	---------
Terry Path		608-633-0327	---------	---------
Terry Roesler		608-498-0739	608-498-0739	608-779-9519
Terry Sanders		608-769-4234	---------	---------
Tim Farrell		507-440-3455	---------	---------
Tina Friedl		---------	---------	---------
Thomas Nelson		---------	---------	---------
Tim Woxland		608-799-3359	---------	608-534-5625
TJ Alioto		262-370-4168	---------	---------
Todd Bornholdt		608-406-0375	---------	---------
Todd Crogan		---------	---------	----------
Todd Fox		---------	608-498-2106	---------
Tom Bartel		920-418-4322	---------	---------
Tom Winters		---------	563-568-1985	---------
Tom Witzke		---------	---------	---------

Tony Kissinger		920-205-1186	---------	---------
Tony Streicher		608-317-2852	---------	---------
Tony Towbridge		612-298-5186	---------	---------
Tony Xiong		651-212-1409	---------	---------
Tony Zeman		608-386-1148	---------	---------
Tracy Christopherson		---------	608-797-5709	---------
Tracey Schmidt		---------	608-397-3387	507-725-8227
Travis Hutzenbuhler		---------	----------	---------
Travis Lockington		608-498-0562	---------	---------
Travis Swarthout		507-269-3350	---------	---------
Trent Kastenschmidt		---------	---------	---------
Trevor Swarthout		507-990-1998	---------	---------
Troy Batzel		608-792-2840	---------	608-526-1132
Troy Cutsforth		563-379-1686	----------	----------
Tucker Kunkel		608-449-4857	----------	----------
Tyler Brones		952-217-6263	---------	---------
Tyler Hannah		------	608-632-0958	------
Vero Saylor		---------	---------	---------
Vicki Kruse		608-780-7142	---------	---------
Vicky Mueller		---------	608-780-9425	---------
Vince Hildestad		608-834-9390	---------	---------
Wayne Fox		---------	608-558-6864	---------
Wendy Sutton		---------	608-792-2965	---------
Yazan Mahmoud		507-589-8581	---------	---------
Zach Ferron		715-297-7300	---------	---------
Zach Stackhouse		---------	---------	---------
Zoe Katrichis		---------	---------	---------
378				
Campus Maint Shop		---------	---------	---------
Brandon Batzel		---------	608-792-4307	---------
David Woodliff		608-792-9789	---------	---------
Mike Massoth		608-792-9667	---------	---------
Mike Schultz		608-317-8276	---------	608-781-0752

Mitchell Iverson		---------	715-299-9307	---------
Peter Sinnett		608-604-4447	---------	---------
Ric Tuma		608-487-4059	---------	---------
Scott Berg		608-790-7452	---------	608-452-3322
Scott Sill		---------	608-386-2185	---------
Tim Pralle		---------	608-386-7914	---------
Todd Stafslein		---------	608-780-7218	---------
Wade Resac		608-397-3940	---------	---------
Other Office				
Cindy Allen		---------	---------	---------
Brad Fogarty		608-498-6542	---------	---------
Sandy Malay		608-769-4416	---------	---------
Joan Elsing		608-792-7124	---------	---------
Chuck Thoftne		608-792-4861	---------	---------
Greg Olson		608-792-3461	---------	---------
Contractors			---------	507-498-3722
Aaron (Concrete Solutions)		608- 792-0438		
J.D. (Call Const.)		608-792-2999	---------	---------
Mike McGregor(CallConst.)		608-792-3204	---------	---------
Shawn Burkhardt(Call Const)		608-792-7865	---------	---------
Stafferd Call		608-792-3251	---------	---------
Tim Padesky		608-780-1322	---------	608-783-8168
Store Engineering Delivery		---------	---------	783-0737 OFFICE
Store Engineering Service Desk		---------	---------	---------
			---------	---------

10.0 Reporting Requirements

Don't be afraid to report spills to state agencies, the situation will not become worse for doing so but not reporting can have huge consequences.

When to Report

MN 800-422-0798

If spill is off of an impervious surface, has made its way to soil or storm sewer or is greater than 5 gallons.

WI 800-943-0003

If spill is off of the impervious surface, has made its way to soil or storm sewer or can adversely impact or threaten to adversely impact public health, welfare or the environment.

IA 515-281-8694

If spill is off of the impervious surface, has made its way to soil or storm sewer or creates a hazardous condition.

MI Email: EGLE-stdtanks@michigan.gov For further information contact EGLE-RRD or phone 800-MICHUST

Releases of a regulated substance of any amount from underground storage tank (UST) systems (includes the emergency shutoff valve on down) subject to registration; overfill from UST fill pipe or vent onto ground;

IL Illinois Emergency Management Agency (IEMA)/State Emergency Response Commission (SERC) at 1-800-782-7860 (within state) or (217) 782-7860 (when calling from out-ofstate)

If a spill meets the minimum reporting limits, if someone is injured or killed, there was an evacuation, a motor vehicle was overturned on a hwy, any spill of petroleum that results in a release to the environment that is >25 gallons

SD DANR at 605-773-3296

The discharge threatens or is in a position to threaten the waters of the state (surface water or ground water); The discharge causes an immediate danger to human health or

safety; The discharge exceeds 25 gallons; if you release a gaseous substance and need help converting to gallons

ND North Dakota Department of Environmental Quality (1-701-328-5210)

If a spill or discharge of liquid or solid waste which may cause pollution of waters of the state must be reported immediately

Federal

NRC 800-424-8802

When spill reaches a creek, lake, or river you must report to the NRC. Also, if a transport tanker is involved in an accident that causes a spill.

10.1 Spill Reporting Law – Federal (National Response Center)

Below is from the United States Environmental Protection Agency (US EPA) website on December 16, 2016 (https://www.epa.gov/emergency-response/when-are-you-required-report-oil-spill-and-hazardous-substance-release).

When are you required to report a spill or release?

Any person or organization responsible for a release or spill is required to notify the federal government when the amount reaches a federally-determined limit. Separate reporting requirements exist for:

- Oil spills
- Hazardous substance releases

States also may have separate reporting requirements. However, anyone who discovers a hazardous substance release or oil spill is encouraged to contact the federal government, regardless of whether they are the responsible party. All it takes is a single telephone call to the National Response Center at (800) 424-8802.

Oil Spills

EPA has established requirements to report spills to navigable waters or adjoining shorelines. EPA has determined that discharges of oil in quantities that may be harmful to public health or the environment include those that:

- Violate applicable water quality standards;
- Cause a film or "sheen" upon, or discoloration of the surface of the water or adjoining shorelines; or
- Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

Any person in charge of vessels or facilities that discharge oil in such quantities is required to report the spill to the federal government. EPA provides several exemptions from the oil spill reporting requirements.

The requirement for reporting oil spills stems from the Discharge of Oil Regulation, known as the "sheen rule." Under this regulation, oil spill reporting does not depend on the specific amount of oil spilled, but on the presence of a visible sheen created by the spilled oil. Reporting an oil discharges may also be required under the Spill Prevention, Control, and Countermeasure (SPCC) Rule. For more information on reporting oil discharges, please see: Oil Discharge Reporting Requirements: How to Report to the National Response Center and EPA.

Hazardous Substances

For releases of hazardous substances, the federal government has established Superfund Reportable Quantities (RQs). If a hazardous substance is released to the environment in an amount that equals or exceeds its RQ, the release must be reported to federal authorities, unless certain reporting exemptions for hazardous substance releases also apply.

Under the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986, the federal government has designated several hundred substances as "extremely hazardous substances" based on their acute lethal toxicity. Under the law, releases of these extremely hazardous substances trigger reporting requirements to state and local authorities, as well as the federal authorities. The owner or operator of a facility that releases an extremely hazardous substance in an amount greater than its established RQ must follow requirements on how to report to the appropriate authorities (in many cases, the State Emergency Response Commission (SERC) and the Local Emergency Planning Committee (LEPC)) for the location where the incident occurs.

What information is needed when reporting a spill or release?

Reporting a hazardous substance release or oil spill takes only a few minutes. To report a release or spill, contact the federal government's centralized reporting center, the National Response Center (NRC), at 1-800-424-8802. The NRC is staffed 24 hours a day by personnel who will ask you to provide as much information about the incident as possible. Please include the following:

- Your name, location, organization, and telephone number
- Name and address of the party responsible for the incident; or name of the carrier or vessel, the railcar/truck number, or other identifying information
- Date and time of the incident
- Location of the incident
- Source and cause of the release or spill
- Types of material(s) released or spilled
- Quantity of materials released or spilled

- Medium (e.g. land, water) affected by release or spill
- Danger or threat posed by the release or spill
- Number and types of injuries or fatalities (if any)
- Weather conditions at the incident location
- Whether an evacuation has occurred
- Other agencies notified or about to be notified
- Any other information that may help emergency personnel respond to the incident

If reporting directly to the NRC is not possible, reports also can be made to the EPA Regional office or the U.S. Coast Guard Marine Safety Office in the area where the incident occurred. In general, EPA should be contacted if the incident involves a release to inland areas or inland waters. The U.S. Coast Guard should be contacted for releases to coastal waters, the Great Lakes, ports and harbors, or the Mississippi River. EPA or the U.S. Coast Guard will relay release and spill reports to the NRC promptly.

For more information, please see: Reporting Spills and Environmental Violations

10.2 Spill Reporting Law – Minnesota

Reporting of petroleum releases

Petroleum Remediation Program

Minnesota state law requires immediate reporting upon the discovery of a spill, leak, overfill, or other signs of a petroleum release to the environment. Minnesota Statute 115.061 Duty to Notify; Avoiding Water Pollution, in effect since 1969, describes requirement to notify the Minnesota Pollution Control Agency (MPCA) of spills and leaks.

What and how much has to be reported?

For petroleum products:

- Report all releases known to be greater than five gallons.
- Report any detectable past releases because a volume greater than five gallons was likely released. If contamination is encountered at a previously closed petroleum tank release sites, please refer to Assessment of petroleum contamination at closed leak sites for assistance.

Evidence of a petroleum release includes:

- Organic vapor readings above background levels
- Visual soil staining or petroleum odors
- Free product and/or petroleum sheen
- Analytical data indicating petroleum contaminants are present

Who is required to report?

Anyone who encounters a petroleum spill or release must notify the MPCA, such as:

- Property owners
- Individuals, partnerships, companies, and corporations
- Government entities
- Owners of substances being stored or transported by another company
- Contractors and/or consultants

When to report?

The Minnesota Department of Public Safety operates a 24-hour duty officer service for all state reporting requirements. Immediately report spills and releases to the Minnesota duty officer upon discovery. The duty officer records all pertinent information about the release and then makes the appropriate notifications to all necessary state and local governments.

To report a spill or leak – call the Minnesota duty officer at
651-649-5451 or 800-422-0798

Webpages and Phone Numbers

MPCA General Line	651-296-6300 or 1-800-657-3864
MPCA Staff	http://www.pca.state.mn.us/wfhy3ec
Petrofund Webpage	http://mn.gov/commerce/topics/Petrofund/
Petrofund Phone	651-539-1515 or 1-800-638-0418
Emergency Response Webpage	http://www.pca.state.mn.us/yhiz7fd
Minnesota State Duty Officer	651-649-5451 or 1-800-422-0798

2016 Minnesota Statutes – Chapter 115E

Chapter 115E of Minnesota Rules describes the requirements for what is to be included in the spill response plans. A copy of Chapter 115E.02, 115E.03, 115E.04 and 115E.045 are included in Section 10.2 in this booklet.

115E.02 DUTY TO PREVENT DISCHARGES.

A person who owns or operates a vessel or facility transporting, storing, or otherwise handling hazardous substances or oil or who is otherwise in control of hazardous substances or oil shall take reasonable steps to prevent the discharge of those materials in a place or manner that might cause pollution of the land, waters, or air of the state or that might threaten the public's safety or health.

History: *1991 c 305 s 2*

115E.03 DUTY TO PREPARE FOR RESPONSE TO DISCHARGES.

Subdivision 1. **General preparedness.** A person who owns or operates a vessel or facility transporting, storing, or otherwise handling hazardous substances or oil or who is otherwise in control of hazardous substances or oil shall be prepared at all times to rapidly and thoroughly recover discharged hazardous substances or oil that were under that person's control and to take all other actions necessary to minimize or abate pollution of land, waters, and air of the state and to protect the public's safety and health.

Subd. 2. **Specific preparedness.** The following persons shall comply with the specific requirements of subdivisions 3 and 4 and section 115E.04:

(1) persons who own or operate a vessel that is constructed or adapted to carry, or that carried, oil or hazardous substances in bulk as cargo or cargo residue;
(2) persons who own or operate railroad car rolling stock transporting an aggregate total of more than 100,000 gallons of oil or hazardous substance as cargo in Minnesota in any calendar month;
(3) persons who own or operate facilities containing 1,000,000 gallons or more of oil or hazardous substance in tank storage at any time;
(4) persons who own or operate facilities where there is transfer of an average monthly aggregate total of more than 1,000,000 gallons of oil or hazardous substances to or from vessels, tanks, rolling stock, or pipelines, except for facilities where the primary transfer activity is the retail sales of motor fuels;
(5) persons who own or operate hazardous liquid pipeline facilities through which more than 100,000 gallons of oil or hazardous substance is transported in any calendar month; and
(6) persons required to demonstrate preparedness under section 115E.05.

Subd. 3. **Level of preparedness.** A person described in subdivision 2 shall maintain a level of preparedness that ensures that effective response can reliably be made to worst case discharges.

Subd. 4. **Demonstrating satisfactory preparedness.** A person required to maintain preparedness under subdivision 2 may demonstrate satisfactory preparedness to the commissioner of the lead agency through one or a combination of the following means:

(1) adequate response personnel and equipment in the usual employ of the person;
(2) adequate response personnel and equipment available from for-hire cleanup contractors with arrangements made for their deployment;
(3) adequate response personnel and equipment from a response cooperative or community awareness and emergency response organization meeting guidelines prepared by the lead agency with arrangements made for their deployment; or
(4) adequate response personnel and equipment of local, state, or federal public sector response organizations with arrangements made for their deployment.

Subd. 5. **Department of Transportation.** The commissioner of transportation may examine the evidence of financial responsibility required under section 1016 of the Oil Pollution Act of 1990 for a vessel and may apply the sanctions in that section.

History: *1991 c 305 s 3; 1993 c 341 art 2 s 1*

115E.04 PREVENTION AND RESPONSE PLANS.

Subdivision 1. **Plan contents.** Persons required to show specific preparedness under section 115E.03, subdivision 2, shall prepare and maintain a prevention and response plan for a worst case discharge. The plan must:

(1) describe how it is consistent with the requirements of the national or area contingency plans developed under the Oil Pollution Act of 1990;
(2) describe the measures taken to prevent discharges from occurring, including prevention of a worst case discharge, prevention of discharges of lesser magnitude, and prevention of discharges similar to those that have occurred from the vessel or facility during its history of operation;
(3) identify the individual or individuals having full authority to implement response actions, and those individuals' qualifications and titles;
(4) identify how communication and incident command relationships will be established between the individuals in command of a vessel or facility response and the following persons:
(i) individuals in the employ of the owner or operator of the vessel or facility who are responding to the discharge;
(ii) appropriate federal, state, and local officials; and
(iii) other persons providing emergency response equipment and personnel;
(5) describe the facility or vessel and identify the locations and characteristics of potential worst case discharges from the vessel or facility;
(6) identify the means under section 115E.03, subdivision 4, that will be used to satisfy the requirement to have adequate equipment and personnel to respond to a worst case discharge;
(7) contain copies of contracts, correspondence, or other documents showing that adequate personnel and equipment as described in section 115E.03, subdivision 4, will be available to respond to a worst case discharge;
(8) describe the actions that will be taken by the persons described in section 115E.03, subdivision 4, in the event of a worst case discharge; and
(9) describe the training, equipment testing, periodic drills, and unannounced drills that will be used to ensure that the persons and equipment described in section 115E.03, subdivision 4, are ready for response.

A plan submitted to the federal government under the Oil Pollution Act of 1990 or prepared under other law may be used to satisfy the requirements in clauses (1) to (9) provided that the information required by clauses (1) to (9) is included in the plan.

Subd. 2. **Timing.** (a) A person required to be prepared under section 115E.03, other than a person who owns or operates a motor vehicle, rolling stock, or a facility that stores less than 250,000 gallons of oil or a hazardous substance, shall complete the response plan required by this section by March 1, 1993, unless one of the commissioners orders the person to demonstrate preparedness at an earlier date under section 115E.05.
(b) A person who owns or operates a motor vehicle, rolling stock, or a facility that stores less than 250,000 gallons of oil or a hazardous substance shall complete the response plan required by this section by January 1, 1994.
(c) Plans required under section 115E.04 or 115E.045 must be updated every three years. Plans must be updated before three years following a significant discharge, upon significant change in vessel or facility operation or ownership, upon significant change in the national or area contingency plans under the Oil Pollution Act of 1990, or upon change in the capabilities or role of a person named in a plan who has an important response role.

Subd. 3. **Notification.** (a) The commissioner of public safety must be notified when any of the following takes place:

(1) submission of the plan to the federal government;
(2) granting of exemptions or extensions of time by the federal government for submission of the plan; or
(3) completion of the plan if submission to the federal government is not required.
(b) Notification under this subdivision must be on a form prescribed by the commissioner of public safety and must include:
(1) a description of the facility or vessel;
(2) a description of the activities involving oil or hazardous substances;
(3) a description of the types of materials being handled, including whether agricultural chemicals are involved; and
(4) other information required by the commissioner.
(c) The commissioner of public safety shall transmit a copy of the notification to the other commissioners as appropriate, depending on the types of materials involved.

Subd. 4. **Review of prevention and response plan.** (a) A person required to show specific preparedness under section 115E.03, subdivision 2, must submit a copy of the prevention and response plan to any of the commissioners who request it and to an official of a political subdivision with appropriate jurisdiction upon the official's request, or the plan and equipment and material named in the plan may be examined upon the request of an authorized agent of a commissioner or official.
(b) Upon the request of one or more of the commissioners, a person shall demonstrate the adequacy of prevention and response plans and preparedness measures by conducting announced or unannounced drills, calling persons and organizations named in a prevention and response plan and verifying roles and capabilities, locating and testing response equipment, questioning response personnel, or other means that in the judgment of the requesting commissioner demonstrate preparedness. Before requesting an unannounced drill, the requesting commissioner shall notify the other commissioners that a drill will be requested and invite them to participate in or witness the drill. If an unannounced drill is conducted to the satisfaction of the commissioners, the person conducting the drill may not be required to conduct an additional unannounced drill in the same calendar year.

Subd. 5. **Citizens advisory groups.** The commissioner of the Pollution Control Agency, the Department of Agriculture, or the Department of Public Safety may establish, or a local official may request a commissioner to establish, a citizens advisory group following a discharge of oil or a hazardous substance. The purpose of the citizens advisory group is to facilitate exchange of information and concerns related to the discharge and response between the owner or operator of the vessel or facility, the governmental responders, and the affected members of the public.

History: *1991 c 305 s 4; 1992 c 593 art 2 s 1; 1993 c 341 art 2 s 2; 1995 c 240 art 2 s 6*

115E.045 RESPONSE PLANS FOR TRUCKS AND CERTAIN TANK FACILITIES.

Subdivision 1. **Response plan for trucks.** (a) By June 1, 1994, a person who owns or operates trucks or cargo trailer rolling stock transporting an average monthly aggregate total of more than 10,000 gallons of oil or hazardous substances as bulk cargo in this state shall prepare and maintain a prevention and response plan in accordance with this subdivision. The plan must include:
(1) the name and business and nonbusiness telephone numbers of the individual or individuals having full authority to implement response action;
(2) the telephone number of the local emergency response organizations, as defined in section 299K.01, subdivision 3, if the organizations cannot be reached by calling 911;
(3) a description of the type of rolling stock and the maximum potential discharge that could occur from the equipment;
(4) the telephone number of the single answering point system established under section 115E.09;
(5) the telephone number of an individual or company with adequate personnel and equipment available to respond to a discharge, along with evidence that the individual or company and the individual responsible for preparing the plan have made arrangements for such response;
(6) a description of the training that the owner or operator's truck or cargo trailer operators have received in handling hazardous materials and the emergency response information available in the vehicle; and
(7) a description of the action that will be taken by a truck or cargo trailer owner or operator in response to a discharge.
(b) The response plan must be retained on file at the person's principal place of business.

Subd. 2. **Response plan for certain tank facilities.** (a) By June 1, 1994, a person who owns or operates a facility that stores more than 10,000 gallons but less than 1,000,000 gallons of oil or hazardous substances in aboveground tanks shall prepare and maintain a prevention and response plan in accordance with this subdivision. The abbreviated plan must include:
(1) the name and business and nonbusiness telephone numbers of the individual or individuals having full authority to implement response action;
(2) the telephone number of the local emergency response organizations, as defined in section 299K.01, subdivision 3, if the organizations cannot be reached by calling 911;
(3) a description of the facility, tank capacities, spill prevention and secondary containment measures at the facility, and the maximum potential discharge that could occur at the facility;
(4) the telephone number of the single answering point system established under section 115E.09;
(5) documentation that adequate personnel and equipment will be available to respond to a discharge, along with evidence that prearrangements for such response have been made;
(6) a description of the training employees at the facility receive in handling hazardous materials and in emergency response information; and
(7) a description of the action that will be taken by the facility owner or operator in response to a discharge.
(b) The response plan must be retained on file at the person's principal place of business.

Subd. 3. **Notice of plan completion.** A person required to prepare a response plan under this section shall notify the commissioner of public safety when the plan has been completed. Upon request, the person shall provide a copy of the plan to the commissioner of the Pollution Control Agency.

Subd. 4. **Agricultural chemicals exempt.** This section does not apply to agricultural chemicals, as defined in section 18D.01, subdivision 3, that are subject to chapter 18B or 18C.

History: *1993 c 341 art 2 s 3; 1994 c 589 s 2*

10.3 Spill Reporting Law – Wisconsin

Below is from the Wisconsin Department of Natural Resources (WDNR) website on December 16, 2016 (http://dnr.wi.gov/topic/Spills/define.html).

What is a spill?

Spill are discharges of hazardous substances that adversely impact, or threaten to adversely impact, human health, welfare or the environment and require an immediate response.

For detailed information on spill reporting requirements, see Section 292.11, Wis. Stats. [PDF exit DNR] and Chapter NR 706, Wis. Admin. Code [PDF exit DNR].

Do I have to report my spill?

Your spill **is reportable** to the DNR if:

- **there is an impact to human health;**
  Note: An evacuation is considered a threat to human health.
- **there is an impact to the environment;**
  Note: Water of the state includes a threat or spill into a sanitary sewer, storm sewer, and/or surface water.
- **there is a fire, explosion or safety hazard;**
  Note: A slippery road condition is considered a safety hazard.
- **you have not immediately cleaned up the spill;**
  Note: Has it evaporated or been cleaned up in accordance with NR700-726?
- **the spill was more than the reportable quantities listed below.***

*A hazardous substance that is "discharged" into a secondary containment structure, that is completely contained and can be recovered with no discharge to the environment, is not subject to the discharge notification requirements.

Reportable quantities

If your spill is **more** than the amounts listed below, you **must** report it to the DNR.

Petroleum compounds

- Petroleum product completely contained on an impervious surface.
- Less than 1 gallon of gasoline or light grade petroleum product onto a pervious surface or runs off an impervious surface.
- Less than 5 gallons of medium or heavy grade petroleum products onto a pervious surface or runs off an impervious surface.

Agrichemical compounds

- Less than 250 pounds dry fertilizer.
- Less than 25 gallons of a liquid fertilizer.
- Pesticides that would cover less than 1 acre of land if applied according to label instructions.

Federal reportable quantities

The federal reportable quantity for a specific substance as outlined in the CERCLA RQ column of the Sara Title 3 list of lists [exit DNR].

How to report a spill

Discharges of hazardous substances generally fall into one of two broad categories:

1. **Spills** - Spills that need an immediate response. These can include a tank truck rollover, failure of a storage tank valve or failure of a wall in a manure storage lagoon. **Call the 24-hour spill hotline at 1-800-943-0003.**
2. **Discovery of Spills Through Analysis** - Soil or groundwater contamination that is discovered via sampling. The best way to report discovery of a discharge that is identified through analysis of soil or water is to use DNR's Notification For Hazardous Substance Discharge (Non-Emergency Only) (Form 4400-225) [PDF]. This form includes information about how to fax or email the form DNR. Please include a summary of the laboratory data with the form. Don't wait for a written report describing the contamination – immediately fax or email the form, or make a phone call to a DNR regional office, immediately.

Federal reporting requirements

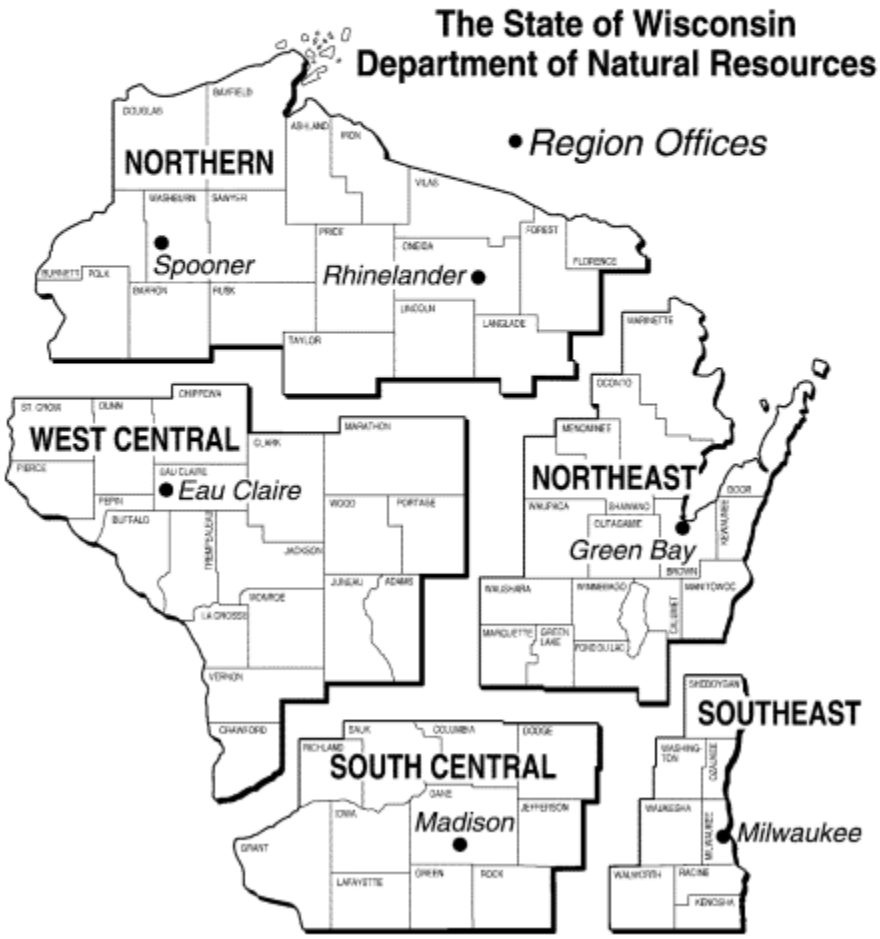
A responsible party may also have to comply with other state and/or federal reporting requirements relating to the Emergency Planning and Community Right to Know Act (EPCRA) or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). To report a spill, contact the The Federal Government National Response Center [exit DNR] (800-424-8802).
To determine if you have a reportable spill, please check either of these two EPA resources.

- EPA's Sara Title III Consolidated Lists of Lists [exit DNR]
- EPA's Searchable Database for the Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to-Know Act (EPCRA) and Section 112(r) of the Clean Air Act [exit DNR]

Regional Spill Coordinators - WDNR contacts

DNR Spill Coordinator Telephone Numbers

Name	Region	Office
24 Hour Hotline	Statewide	800-943-0003
Cody Heinze	Northeast	920-883-9383
Jeff Paddock	Northern	715-828-8544
Trevor Bannister	South Central	608-347-0058
Riley Neumann	Southeast	414-750-7030
Jayson Schrank	West Central	715-410-8841



10.4 Spill Reporting Law – Iowa

Below is from the Iowa Department of Natural Resources (IDNR) Environmental Services Division Field Services & Compliance Bureau guidance document, Iowa Administrative Code Chapter 131 Notification of Hazardous Conditions, revised July 2015.

Notification of Hazardous Conditions

Summary of Key Points and Definitions

"Hazardous Condition" means any situation involving the actual, imminent or probable spillage, leakage, or release of a hazardous substance onto the land, into a water of the state or into the atmosphere which, because of quantity, strength and toxicity of the hazardous substance, its mobility in the environment and its persistence, creates an immediate or potential danger to the public health or safety or to the environment.

"Hazardous Substance" means any substance or mixture of substance that presents a danger to the public health or safety and includes, but is not limited to, a substance that is toxic, corrosive, or flammable, or that is an irritant or that, in confinement, generates pressure through decomposition, heat, or other means. The following are examples of substances which, in sufficient quantity, may be hazardous: acids; alkalis; explosives; fertilizers; heavy metals such as chromium, arsenic, mercury, lead, and cadmium; industrial chemicals; paint thinners; paints; pesticides; petroleum products; poisons; radioactive materials; sludges; and organic solvents.

"Hazardous substances" may include any hazardous waste identified or listed by the administrator of the United States Environmental Protection Agency under the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976, or any toxic pollutant listed under Section 307 of the federal Water Pollution Control Act as amended to January 1, 1977, or any hazardous substance designated under Section 311 of the federal Water Pollution Control Act as amended to January 1, 1977, or any hazardous material designated by the secretary of transportation under the Hazardous Materials Transportation Act (49 CFR 172.101)

Key Points

Who is Required to Report Hazardous Conditions
Any person manufacturing, storing, handling, transporting, or disposing of a hazardous substance shall notify the department at (515) 725-8694 and the local police department or the office of the sheriff of the affected county of the occurrence of a hazardous condition as soon as possible but not later than six hours after the onset of the hazardous condition or the discovery of the hazardous condition. A sheriff or police chief who has been notified of a hazardous condition shall immediately notify the department. Reports made pursuant to this rule shall be confirmed in writing as provided in 131.2(2).

Reporting Subsequent Findings
All subsequent finding and laboratory results should be reported and submitted in writing to the department as soon as they become available.

Reminder: VERBAL REPORTS ARE REQUIRED WITHIN 6 HOURS OF INCIDENCE OCCURRENCE OR DISCOVERY.

Guidelines for Reporting Hazardous Conditions Verbal Reporting

Report the Condition if:

- The hazardous substance has the potential to leave the property by run-off, sewers, tile lines, culverts, drains, utility lines, or some other conduit, or,
- The hazardous substance has the potential to reach a water of the state – either surface water or groundwater or,
- The hazardous substance can be detected in the air at the boundaries of the facility property by the senses (sight and smell) or by monitoring equipment or,
- There is a potential threat to the public health and safety or,
- Local officials (Fire department, law enforcement, Hazmat, public health, and emergency management) respond to the incident or,
- The release exceeds a Federal Reportable Quantity (RQ).

~ If in Doubt, Report It ~

IDNR REQUIRES VERBAL REPORTS WITHIN 6 HOURS OF
INCIDENCE OCCURRENCE OR DISCOVERY

- It is recommended that all spills be cleaned up although a particular spill may not be reportable. A series of small spills over time can result in one big cleanup.
- Department rules stress the immediate or potential danger that a spill may cause.
- A written report of the Hazardous Condition is required within 30 days of the verbal notification.

In general, Iowa reporting requirements are more stringent than Federal reporting requirements. However, the **time limit** for reporting at the Federal level is more immediate.

Guidelines for Reporting Hazardous Conditions Written Report Requirements

The Iowa Department of Natural Resources Requires a written report of any Hazardous Condition. (VERBAL REPORT REQUIRED WITHIN 6 HOURS)

Written Report
The written report of such a hazardous condition shall be submitted to the department within 30 days and contain the following information:

a. The exact location of the hazardous condition.
b. The time and date of onset or discovery of the hazardous condition.
c. The name of the material, the manufacturer's name, and the volume of each material involved in the hazardous condition in addition to contaminants within the material if they by themselves could cause a hazardous condition.
d. The medium (land, water, or air) in which the hazardous condition occurred or exists.
e. The name, address, and telephone number of the party responsible for the hazardous condition.
f. The time and date of the verbal report to the department of the hazardous condition.
g. The weather conditions at the time of the hazardous condition onset of discovery.
h. The name, mailing address, and telephone number of the person reporting the hazardous condition.
i. The name and telephone of the person closest to the scene of the hazardous condition who can be contacted for further information and action.
j. Any other information, such as the circumstances leading to the hazardous condition, visible effects, and containment measures taken that may assist in the proper evaluation by the department.

The written report should include the IDNR Spill Number (assigned at the time of the verbal report) and be addressed to the duty officer responding to the spill. Reports can be sent via mail, fax, or electronic mail to the addresses listed below.

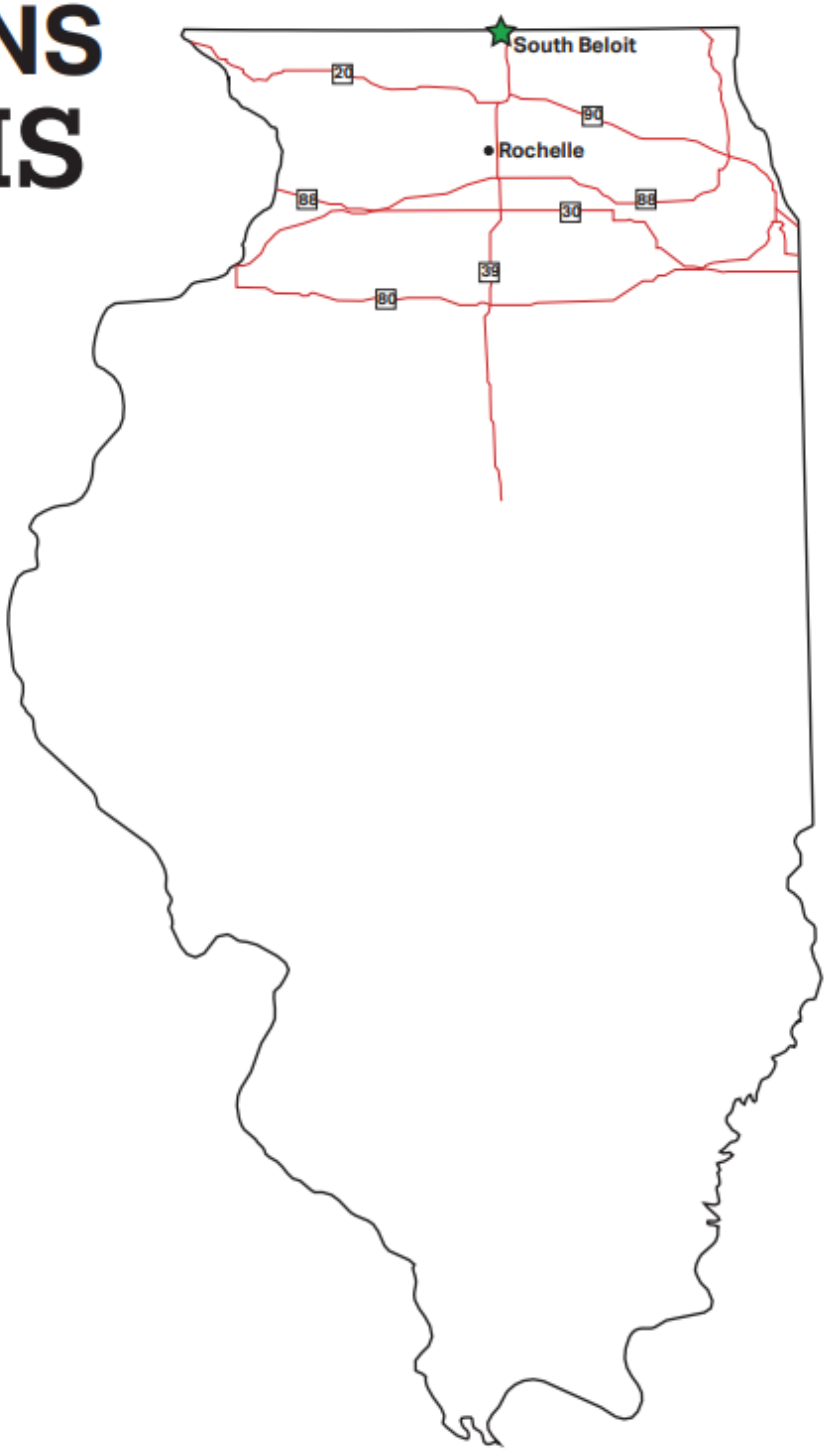
Mail	Fax	E-Mail
Iowa DNR Field Services Emergency Response 7900 Hickman Rd. Suite 200 Windsor Heights, IA 50324	515/281-7229	Emergency_Response@dnr.iowa.gov

11.0 Kwik Trip Locations

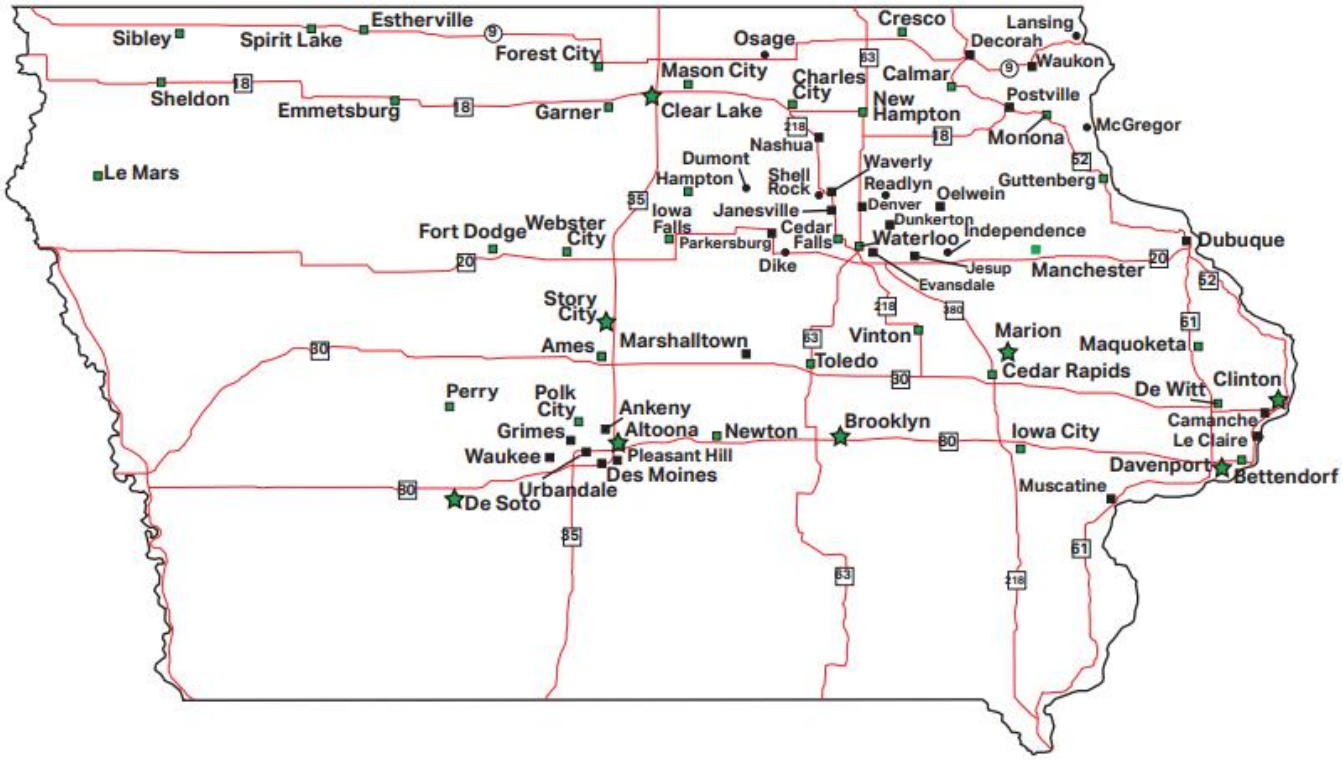
KWIK STAR

LOCATIONS

ILLINOIS



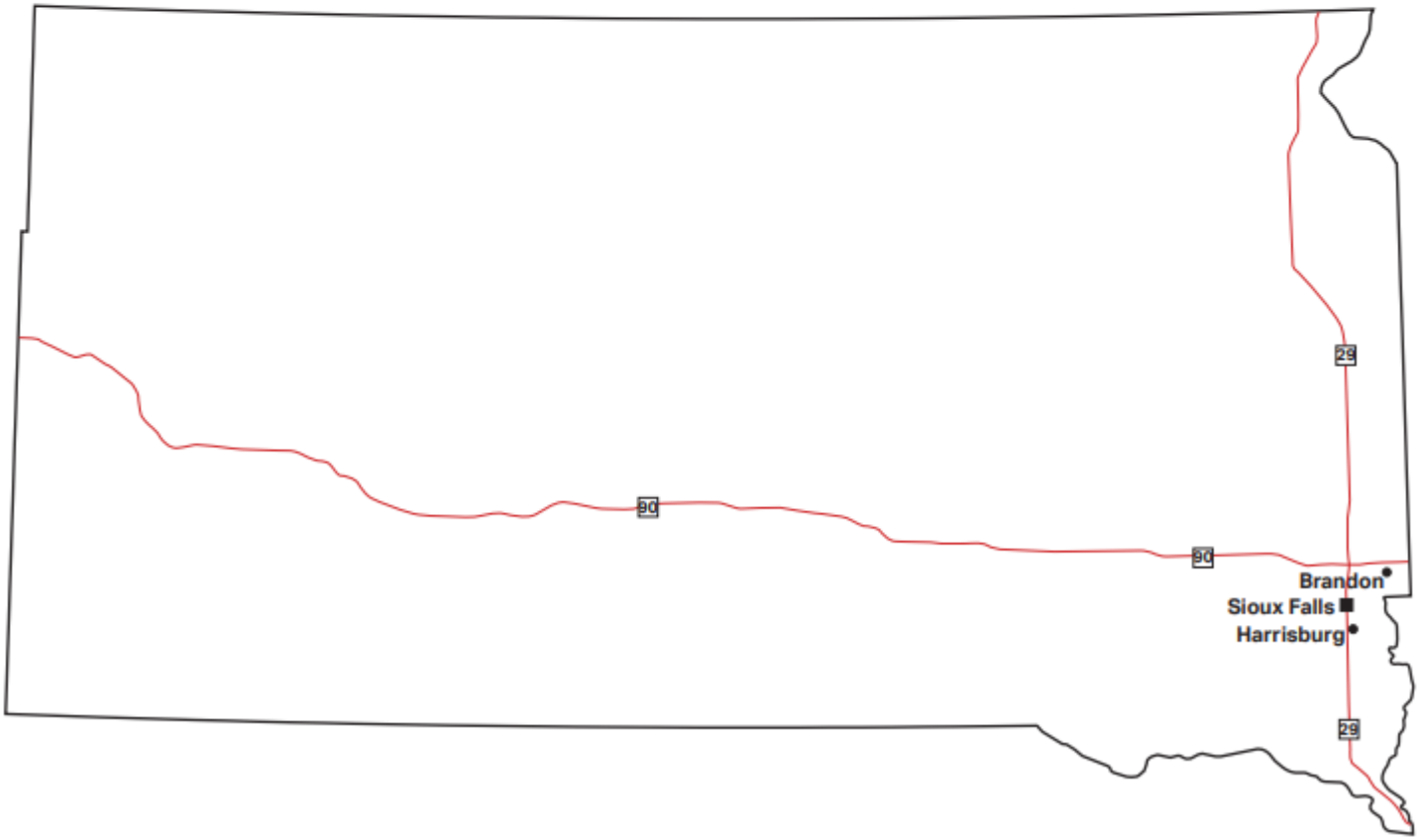
KWIK STAR LOCATIONS IOWA



KWIK TRIP LOCATIONS MICHIGAN

KWIK TRIP
LOCATIONS
MINNESOTA
Two Harbors
Hermantown
Duluth
Cloquet
Carlton
Moose Lake
Hinckley
Mora
Milaca
Rush City
Cambridge
Princeton
Isanti
North Branch
Saint Joseph
Sartell
Sauk Rapids
Waite Park
Saint Cloud
Cold Spring
Clearwater
Paynesville
Big Lake
Saint Francis
Stacy
Otsego
Andover
Chisago City
Monticello
Albertville
Anoka
Forest Lake
East Bethel
Lino Lakes
Circle Pines
Willmar
Cokato
Buffalo
Rockford
Hugo
Vadnais Heights
Stillwater
Delano
Oakdale
Oak Park Heights
Lake Elmo
Hutchinson
St. Bonifacious
Plymouth
Eagan
North St. Paul
Woodbury
Glencoe
Waconia
Chanhassen
Shakopee
Savage
South St. Paul
Hastings
Norwood Young America
Chaska
Carver
Burnsville
Apple Valley
Prior Lake
Rosemount
Lakeville
Farmington
Red Wing
Redwood Falls
Belle Plaine
New Prague
Elko New Market
Northfield
Wabasha
Lake City
Saint Peter
Dundas
Zumbrota
Kellogg
New Ulm
North Mankato
Faribault
Minnesota City
Pine Island
Plainview
Mankato
Owatonna
Kasson
Rochester
Winona
Waseca
Dodge Center
Byron
Eyota
Lewiston
Stewartville
Saint Charles
Dakota/Nodine
Windom
Chatfield
Rushford
La Crescent
Spring Valley
Hokah
Caledonia
Worthington
Fairmont
Blue Earth
Albert Lea
Austin
Harmony
Spring Grove

LOCATIONS
SOUTH DAKOTA



KWIK TRIP LOCATIONS WISCONSIN

12.0 Safety Data Sheets

A complete list of Safety Data Sheets (SDSs) for products present at a Kwik Trip properties are located on the Damarco Solutions searchable website using the hyperlink HERE.

13.0 Spill Response Summary Report Requirements

The responding consultant should provide a summary report at the conclusion including the following, at a minimum:

1.0 Introduction
2.0 Hazardous Substance Discharged, Toxicity, Mobility and Volume
3.0 Duration of Discharge
4.0 Time discharge was Responded to and Properly Contained
5.0 Mitigation Efforts (including if efforts may have accelerated migration of pollution of hazardous substances)
6.0 Weather Conditions
7.0 Migration Potential of the Contamination
8.0 Nature and Scope of Immediate Response Actions
9.0 Sampling Results to Confirm Adequacy of Response
10.0 Visual and Olfactory Evidence of Contamination
11.0 Actual or Potential Environmental Impacts
12.0 Proximity of Contamination to Receptors
13.0 Present and Anticipated Future Land Use
14.0 Exposure Routes Evaluation and Summary of Remediation to the Extent Practicable
15.0 Other Relevant Information
16.0 Conclusions and Recommendations

Figures
Figure 1 – Site Vicinity Map
Figure 2 – Site Map (note: show release area)

Appendices
Appendix A – Photographs
Appendix B – Disposal Documentation
Appendix C – WTM Coordinates of Spill

Note: Report should be submitted to Kwik Trip electronically and to the appropriate state agency according to their requirements. Iowa requires a specific form be completed within 30 days of the release.

13.1 Required Reporting

Iowa

Written Report for Hazardous Conditions
The Iowa Department of Natural Resources
Requires a written report of any Hazardous Condition.

(VERBAL REPORT REQUIRED WITHIN 6 HOURS)

Written Report. The written report of a hazardous condition shall be submitted to the department within 30 days and contain the following information (Please complete as much as possible):

DNR Spill Number for hazardous condition:	

Location of hazardous condition:

Physical Address		city			
Legal Address	*Lat/Long or Twn/Rng*			zip	
Other description					

Time and Date of *onset or discovery* of hazardous condition:

Time _____ ☐ AM ☐ PM _____ Date _____

Time and Date of *verbal report* to the department of the hazardous condition:

Time _____ ☐ AM ☐ PM _____ Date _____

The Hazardous Condition:

Name of material/substance(s)	Manufacturer	Volume

If more space is needed add additional pages. Attach a Material Safety Data Sheet (MSDS) if possible.

The medium in which the hazardous condition occurred/existed (Check all that apply):
☐ Ground Water ☐ Surface Water ☐ Land ☐ Air

Weather Conditions during the time of the hazardous condition onset or discovery:

Temperature	Wind Direction	Wind Speed	Humidity	Precipitation

Contact Information:

	Name	Company	Mailing Address	Telephone
Person Reporting (if known)				
Party Responsible				
Site Contact				

Cause of the Incident: Write a narrative of the events leading to the incident

Initial Actions Taken: Write a narrative of the initial actions and instructions taken or required.

Written reports should include the DNR spill number and be addressed to the duty officer responding to the spill. Reports can be sent via mail, fax, or electronic mail.

Mail	Fax	Email
IDNR Emergency Response 7900 Hickman Rd Ste 200 Windsor Heights, IA 50324-4432	515/281-7229	Emergency_Response@dnr.iowa.gov

South Dakota

INCIDENT FOLLOW-UP REPORT

(Page 1 of 2)

DANR CASE FILE #: _____

RETURN COMPLETED FORM TO:

SOUTH DAKOTA DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES (DANR)
INSPECTION, COMPLIANCE, AND REMEDIATION PROGRAM
JOE FOSS BUILDING
523 EAST CAPITOL AVENUE
PIERRE SD 57501-3182

NAME/TYPE OF PRODUCT SPILLED: _____

TOTAL AMOUNT OF PRODUCT SPILLED: _____

POUNDS OF ACTIVE INGREDIENT SPILLED (fertilizer/pesticide spills): _____

AMOUNT OF PRODUCT RECOVERED: _____

WAS SURFACE WATER OR GROUND WATER IMPACTED BY THE SPILL?: _____

SPILL DATE: _____ DATE CLEANUP OCCURRED: _____

SPILL LOCATION (physical address, directions, distance to nearest intersection or landmark, etc.): _____

_____

LATITUDE/LONGITUDE: _____

LAND USE (Residential, Commercial, Agricultural, Industrial, Other – describe): _____

RESPONSIBLE PARTY: _____

MAILING ADDRESS: _____

CITY/STATE: _____ TELEPHONE NUMBER: _____

PROPERTY OWNER: _____

MAILING ADDRESS: _____

CITY/STATE: _____ TELEPHONE NUMBER: _____

CONSULTANT / CLEANUP CONTRACTOR (if applicable): _____

MAILING ADDRESS _____

CITY/STATE: _____ TELEPHONE NUMBER: _____

INSURANCE PROVIDER (if applicable): _____

NAME OF INSURED: _____

POLICY NUMBER: _____ CLAIM NUMBER: _____

MAILING ADDRESS: _____

CITY/STATE: _____ TELEPHONE NUMBER: _____

INCIDENT FOLLOW-UP REPORT (Page 2 of 2)

DANR CASE FILE #: _____

WAS SOIL EXCAVATED?: _____ DIMENSIONS OF EXCAVATION: _____

CUBIC YARDS EXCAVATED: _____

DISPOSAL SITE (Name of Facility): _____

DISPOSAL DATE: _____

*****If soil was disposed, attach copies of disposal receipts*****

FERTILIZER/PESTICIDE SPILLS ONLY **!!REQUIRES DANR PRE-APPROVAL!!**

WILL THE CONTAMINATED SOIL/MATERIAL BE LAND APPLIED?: _____

WHAT CROP IS/WILL BE GROWN ON THE LAND APPLICATION SITE?: _____

LEGAL DESCRIPTION OF THE LAND APPLICATION SITE: _____

TOTAL ACRES SOIL/MATERIAL WILL BE APPLIED TO: _____

YARDS/POUNDS/ETC. OF SOIL/MATERIAL TO BE APPLIED: _____

CONCENTRATION OF CHEMICAL IN THE SOIL/MATERIAL TO BE APPLIED?: _____

THIS SECTION FOR DANR OFFICE USE ONLY

LAND APPLICATION APPROVAL DATE: _____

APPLICATION APPROVED BY: _____

WAS SPILL CONTAINED TO IMMEDIATE AREA?: _____

DISTANCE TO AND NAME OF NEAREST SURFACE WATER (include currently dry perennial streams): _____

_____

DISTANCE TO NEAREST WATER WELL (if applicable): _____

OWNER OF NEAREST WATER WELL (if applicable): _____

DESCRIBE RESPONSE ACTION AND ADDITIONAL WORK PLANNED: _____

_____

_____

_____

_____

_____

_____

_____

FORM COMPLETED BY: _____ DATE: _____

E-MAIL ADDRESS: _____

Village of Germantown

Engineering Department Memorandum

To: **Jeff Retzlaff, Director of Community Development**

From: **Kevin Driscoll, Village Engineer**

Date: **November 26, 2024**

Re: **N112 W18741 Mequon Road - Kwik Trip Relocation**

Items Reviewed:

1. Civil Plan Set — Dated: 10/09/24
2. Stormwater Management Plan — Dated: 10/09/24

General Comments:

1. Please respond to each item below. **A written response addressing each item shall be included in your submittal**.
2. The submitted plans have been reviewed for general conformance with State and Village design guidelines. Additional comments could arise as a result of the plan completion and modifications. The items listed below will need to be fully resolved before the Engineering Dept. can recommend a formal approval of the plans and permit for construction.
3. This project will require a WRAPP/NOI from the DNR. Please submit a copy of the approved permit prior to final approval.
4. As-builts prepared to Village standards shall be prepared and provided to the Village post-construction (for all applicable items).
5. A professional engineer's original seal is to be affixed, signed and dated on the final set of construction plans.
6. A Permit for Excavation of Roadway for Utility Work within the ROW is required, along with a Village Erosion Control Permit. Contact the Village Engineering Department to obtain permits.
7. As a guide to the review response: Items in *italics* are resolved or acknowledged, items in regular font are to be addressed yet, items in **Bold** are additional feedback to remaining original comment.

C-200 Grading Plan

1. Plans show a berm and swale being created in the Maple Avenue ROW. Its not clear what the purpose of the berm is and a berm is not desired within the ROW. Remove the berm or provide more information on the purpose for review.
2. Show overland flow path through the site with large bold arrows.
3. Recommend showing storm sewer pipes on grading plans.
4. Show pond overflow elevation and top of berm elevations.
5. Show storm sewer diameters. Show inlet connections and how they are connected to the retention pond.

C-201 Grading Plan Detail – South

1. Review grading around storm inlet 150. Rim elevation is shown higher than contours.

C-300 Grading Plan Detail – South

1. Existing inlet catch basin has 12-inch dia. to collect road runoff, and drains into storm sewer main. Proposed Discharge pipe diameter is 12-inch dia. from proposed storm water pond. Connect storm water pond discharge pipe to existing storm sewer with new manhole in the median.

C-400 Water

1. Sheet C400 – Add NOTE #8. install tracer wire per Germantown specification in the Development Handbook.
2. Sheet C400 – Shows 32 LF Water Service - Remove existing 6" or 8" gate valve. Install 8" x 4" reducer, install 4" R/W Mueller gate valve at ROW line
3. Sheet C401 – NOTES for Water Distribution System #6. – No station rods allowed
4. Sheet C401 – NOTES for Water Distribution System #7.

C603 Erosion Control Details

1. Specify liner type that will be used for this project (Type A, B or C).
2. Clay liner to extend to 2 year water elevation. Note elevation on detail.
3. Show required keyway under berm on the details.
4. Outlet control structure (inlet invert 854, outlet invert 858, allows for 4-ft pond fluctuation. Plus additional 6-ft fluctuation to 864. Emergency spillway is 863.5 for 100yr

Stormwater Management Plan

1. Executive summary references a different project. A Storm Water Management Plan refers to Crandon, and Green Bay data set from 1969. Update with relevant information.
2. Section 3 of the report references the Green Bay rainfall file but the SLAMM model is using the correct Milwaukee rainfile file.
3. Section 3, table 2 list a storage depth of 78". Provide information as to what this represents. The proposed basin has a depth of 60"
4. Clarify the Executive Summary statement, where, the overall site exceeds the peak flow requirements defined in the *MMSD Rules and Regulations. The* Project must meet MMSD unit rate or volumetric requirements, including undetained areas. Portions of the site that are undetained and undisturbed do not need to be included. Parcel is 4.37 acres. Inflow area is identified as 4.806 acres. Clarify drainage analysis.
5. Show proposed grading on exhibit STM-1.
6. Show Tc paths on exhibit STM-1
7. Provide information on how the 100 year storm event will be routed to the basin. It appears some inlets will overflow offsite and not make it to the basin.
8. Revise SLAMM model to clayey for Type C and D soils per WDNR guidance.
9. Provide storm sewer calculations.

Traffic

1. Traffic Study identified right turn northbound lane. Coordinate with staff to prepare agreement for work in the public right of way.
2. Traffic Study to Clarify anticipated trips generated, and requirements for acceleration and deceleration lanes, and potentially any stop signs or signals.

SITE PLAN REVIEW

12/9/24 Plan Commission Meeting

TDC Willow Creek LLC / Xylem Water Solutions

Village Planner Report **Germantown, Wisconsin**

Summary

Briohn Building Corp, agent for TDC Willow Creek LLC, property owner, and Xylem Water Solutions, is seeking approval of a site development plan for a 1.55-acre outdoor storage enclosure in the rear yard of the multi-tenant industrial building located at N102 W19200 Willow Creek Way in the Germantown Willow Creek Business Park.

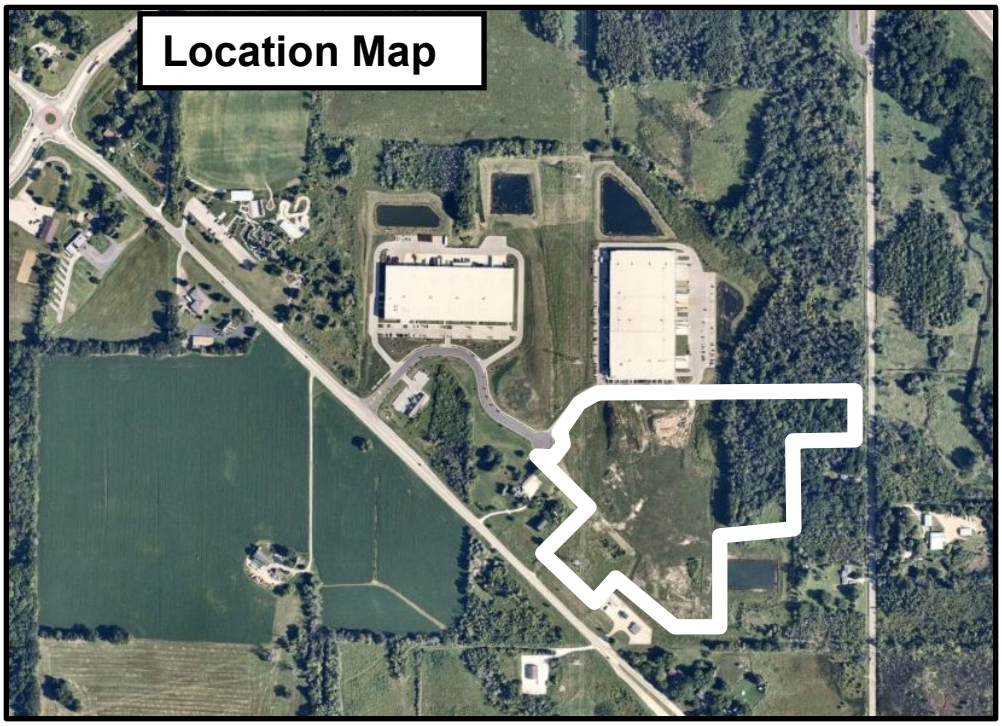
Location: N102 W19200 Willow Creek Way

Applicant/ Property Owner:

Brad Wondra	Sam Dickman Jr.
Briohn Building Corp	TDC Willow Creek LLC
3885 Brookfield Road	626 E Wisconsin Ave
Brookfield, WI	Milwaukee, WI

Current Zoning: M-1: Limited Industrial

Adjacent Land Uses		Zoning
North	Industrial	M-1
South	Industrial / Residential	M-1 / Rs-3
East	Agricultural / Residential	A-1 / Rs-3
West	Industrial	M-1



Background

In 2023, TDC Willow Creek LLC, property owner, and Dickman Development LLC, received Plan Commission approval for site development and building plans for a 209,329 sqft multi-tenant industrial building located at N102 W19200 Willow Creek Way in the Germantown Willow Creek Business Park. The building was completed in early 2024 and is partially occupied.

Protective covenants (see copy enclosed) for the Willow Creek Business Park were adopted in October, 2017, by MLG Investment LLC, owner and developer of the Business Park in cooperation with the Village as part of Tax Incremental District (TID) No. 6. The Village and developer agreed that the Willow Creek Business Park is intended to be developed as a "high-end" business park having more office spaces and service-based businesses vs. an industrial park with tenants providing more production, manufacturing, and heavy industrial services. To that end, the developer proposed and the Village "approved" a set of covenants intended to facilitate physical development of the property, construction of the buildings, and set parameters for the types of tenants and business operations that would satisfy those intentions. For example, Section 5.06 of the covenants specifically prohibits *"…outdoor storage of waste or recycling containers or any articles, goods, materials, finished or semi-finished products, incinerators, storage tanks, or any other items..."*

The covenants provide that enforcement is the responsibility of an "association" comprised of all property owners in the Business Park and that the "declarant", i.e. MLG Investment LLC, shall control the Association, including the appointment of a "Review Board" to approve or disapprove building design and architecture, tenants, and make all other decisions called for under the covenants.

With respect to outdoor storage, Section 7.01 (Screening) provides that *"No other articles, goods, materials, finished or semi-finished products, incinerators, storage tanks, or other items shall be kept outdoors or exposed to public view, or to view from adjacent sites. A variance may be granted by the Review Board upon written application and prior written approval, as provided in Section 4…".*

Section 4.02 (Review Board Variance) states that *"upon written application to it, the Review Board shall have the authority to waive or vary these protective covenants when such waiver or variance is consistent with the purposes of the protective covenants and where exact adherence to a specified standard will create an undue burden on the owner of the affected site. Such waivers or variances shall be in writing, shall apply only to these protective covenants and shall not pertain to Village of Germantown Zoning Ordinances."*

Proposal

At this time, the property owner, TDC Willow Creek LLC, on behalf of a prospective tenant, Xylem Water Solutions, is seeking approval of a minor site development plan for a 1.55-acre outdoor storage enclosure in the rear yard of the multi-tenant industrial building located at N102 W19200 Willow Creek Way in the Germantown Willow Creek Business Park.

Xylem is an industrial equipment supplier and the proposed outdoor storage area will be used to store various pumps, pipes & hose in 10 & 20' lengths, parts and other equipment used in municipal and other large-scale water & wastewater treatment systems.

As detailed in the site plans and described in the November 11 letter, the outdoor storage area will have the following features:

- 1.55-acre total area w/ 39,996 sqft of additional concrete pavement
- 8' high chain link fence w/ privacy slats & manual gate
- 6'-7' high modular block retaining wall along southern perimeter
- (3) existing light poles w/ fixtures @ 25' to remain
- Additional evergreen landscaping (see Sheet L1.0 & L2.0)
- Expansion of existing regional storm basin
- New drive-up ramp at rear of building (see Sheet A5.0)

Access & Parking. The storage area will be enclosed with an 8' high privacy fence w/ manual gate access for the tenant only. Forty-one (41) existing trailer parking stalls in the court behind the building will be converted into the storage area.

Storm Water Management. The proposed outdoor storage area is situated behind the existing trailer parking court and abuts an environmental corridor comprised primarily of forested wetland. A wetland delineation was update for the area (copy enclosed). With one small exception, the storage area has been designed to be beyond the 25' wetland setback area around the delineated wetland and will not impact any wetland. Minimal tree removal will be necessary at the edge of the environmental corridor but outside the wetland. The small area of wetland located at the inlet to the existing storm pond has been declared to be an artificial wetland that is exempt from DNR and Village regulation.

The original storm water management plan for the Business Park has been revised to account for the additional impervious area resulting from the proposed outdoor storage area. Storm water runoff will be directed to the existing wet "regional" detention pond owned by the Village located southeast of the property via a new private storm sewer system installed within the outdoor storage area. The storm water management plan verifies that with minor modifications to the pond outlet and increased height of the berm around the pond, the additional outdoor storage development will comply with the peak discharge and total suspended solids removal requirements of the original 2016 Storm Water Management Plan prepared for Willow Creek Business Park. As detailed in the November 11, 2024 storm water management plan report, the pond berm and emergency spillway need to be raised to maintain the 100-year pond elevation within the pond to elevation an elevation of 850.00 and 850.50, respectively (1'-1.5' higher), with an 8-inch diameter plate opening to be installed at the Pond 2 outlet pipe.

It should be noted that the Village Engineer and the owner are discussing the possibility of transferring ownership and/or maintenance responsibility for this storm water basin from the Village to the owner because the basin only serves this property.

Landscaping. As shown on the landscape plan (Sheet L1.0 & L2.0), approximately fifty (50) additional evergreen trees, e.g. White Fir, Juniper, Black Hills Spruce, White Pine, are proposed to be installed at the corners of the storage area around the existing parking lot edge. This landscaping will provide a significant screening from the adjacent properties and supplement the screening provided by the existing forested wetland south of the storage area.

Lighting. Existing exterior lighting in the parking area will remain in place and be incorporated into the enclosed storage area:

- (4) 149W LED 4000K "neutral white" exterior lights mounted at a height of 22' (20' pole w/ 2' base) located in the trailer parking area

Signage. No signage is proposed. Any wayfinding signage will have to comply with the Village's sign regulations and may require a permit.

Staff Comments

Planning & Zoning

Although compliant with the Village's M-1: Limited Industrial Zoning District regulations, Staff is concerned that the proposed outdoor storage area does not meet the original intent that the Willow Creek Business Park will not have outdoor storage. Despite the proposed design, location, and amount of screening that exists and will be provided, the ability for one owner to request a variance from the other owners from the covenants that prohibit outdoor storage establishes a precedent that may result in other tenants wanting outdoor storage areas, too, and in locations around the Business Park that are not so easily screened from view from adjacent property and Appleton Ave.

Further, while the owner and tenant indicate that no testing of pumps, assembly, repairs, or other services will be conducted outside the building or within the storage area, the fact that the items stored in the enclosed area will be transported back-and-forth from the tenant space inside the building, it's possible that these activities will generate noise levels more typical for an industrial park (e.g. fork-lift back-up beepers for example) that may impact the small residentially zoned area to the east.

With that said, written proof required under Section 4.01 has not yet been provided that a variance from Sections 5.06 & 7.01 of the Business Park covenants has been granted (although the agent for the Review Board has indicated that a variance will be granted if the Village approves the Site Plan application).

The owner has indicated that loss of (41) trailer parking stalls will not affect the overall ability to serve the existing and future tenants of the building given the number of remaining stalls on the site.

A separate Zoning/Occupancy Permit application for the Xylem operation has been submitted to Staff for review and approval. Based on the information provided in that application and additional operational details provided as part of the Site Plan application, Staff has determined that the proposed uses & activities for the tenant space and outdoor storage area comply with the M-1: Limited Industrial Zoning District regulations.

Public Works Department/Engineering
The Village Engineer has reviewed the civil engineering plans and storm water management plan and has identified the need for a storm water maintenance agreement, erosion control plan and permit, and a number of minor plan corrections and issues that will need to be addressed and approved by the Village Engineer prior to the issuance of an erosion control permit (see copy enclosed dated December 5, 2024). Consequently, no building or erosion control permits shall be issued until such time as the items identified in the December 5, 2024 Village Engineer memo have been reviewed and approved.

Fire & Police Departments
The tenant shall coordinate with Fire Department to provide emergency access to the outdoor storage area if/when the enclosure gate is locked.

Village Forester
The Village Forester has reviewed the proposed landscape plan and approves the proposed tree types, sizes, and locations.

VILLAGE STAFF RECOMMENDATION

APPROVE the site development plan for a 1.55-acre outdoor storage enclosure in the rear yard of the multi-tenant industrial building located at N102 W19200 Willow Creek Way in the Germantown Willow Creek Business Park subject to the following conditions:

1. This approval is subject to all the conditions and requirements set forth herein and adopted by the Plan Commission. Approval is granted for the following architectural and engineering plans unless superseded by subsequent plan sheets approved by Village Staff pursuant to revisions required herein and/or by the Plan Commission:
    a. Civil engineering plans dated November 11, 2024;
    b. Storm water management plans dated November 11, 2024;
    c. Architectural plans dated October 29, 2024;
    d. Landscaping plans dated November 7, 2024

2. All landscaping, screening, grading, and paving improvements shown on the approved site plans shall be installed as proposed prior to issuance of an occupancy permit unless a cash bond or letter of credit in an amount equal to 120 percent of the estimated installation and material costs reviewed and approved by the Village is submitted to the Village as necessary to ensure that installation of the proposed features and improvements will be completed within one (1) year after issuance of the occupancy permit.

3. All exterior doors (except primary entrance) shall be clearly marked with reflective 5” or larger letters/numbers to aid emergency personnel access as required by the Police Department.

4. The Developer shall coordinate with the Village Fire Department to provide the means of emergency access to the outdoor storage area enclosure.

5. The Developer shall be responsible for ongoing and regular maintenance of the emergency access driveway as needed to keep the driveway accessible at all times of the day and through the year.

6. The enclosed outdoor storage area shall be used exclusively for the storage of pumps, pipes, hose, parts and other equipment used in the conduct of the business. No testing of pumps, assembly, repairs, or other activities and services shall be conducted outside the building or within the enclosed storage area.

7. The owner shall provide written proof required under Section 4.01 of the Willow Creek Business Park covenants that a variance from Sections 5.06 & 7.01 of the Business Park covenants has been granted. Said document shall be provided to the Community Development Department prior to the issuance of any Village permit needed to commence construction of the outdoor storage area (excluding any building permit required for buildout of the tenant building space).

8. The Village Engineer and Public Works Department has not completed its review of the civil plans, sewer & water easement utility realignment or storm water management plan and report (copy enclosed dated March 9, 2023). Consequently, no permits shall be issued by the Village for construction of the building until such time as Public Works & engineering staff have reviewed and approved the civil engineering, utility, and storm water management plans and reports for Village and other applicable code compliance (excluding “early start” site clearing and footing/foundation work approved by the Village and/or WI DSPS).

9. State agency (DSPS) approved plans and a $20,000 occupancy bond are required by Inspection Services at the time of building permit application required for the tenant space buildout. The Village of Germantown is an authorized delegated agent of DSPS to provide all commercial plan review and inspection services through SAFEBuilt of WI and the Village of Germantown.

10. All proposed exterior signage, including temporary, monument and wall-mounted signs, require review and approval by the Village staff or the Plan Commission.

11. A storm water maintenance agreement, erosion control plan and permit, and all plan corrections and issues identified by the Village Engineer in the December 5, 2024 review memo shall be addressed and approved by the Village Engineer prior to commencement of construction of and issuance of an erosion control permit for the outdoor storage area.

Docusign Envelope ID: CC29D60C-D425-4890-9E38-09862080DD9E

Village of Germantown ...Willkommen

Fee must accompany application

- X $700 Minor Addition
- ☐ $1,240 Construction <10,000 SF
- ☐ $2,095 Construction 10,000 SF to 50,000
- ☐ $3,460 Industrial Construction >50,000 SF
- ☐ $3,460 Commercial Construction >50,000
- ☐ $200 Plan Commission Consultation
- ☐ $125 Fire Department Plan Review

PAID DR DATE 10/10/24 ChK#124629

SITE PLAN REVIEW APPLICATION

Pursuant to Section 17.43 of the Municipal Code

Please read and complete this application carefully. **All applications must be signed and dated.**

1 APPLICANT OR AGENT

Briohn Building Corp
Caitlin LaJoie
3885 N Brookfield Rd
Brookfield, WI 53045

Phone (262) 307-8792
E-Mail clajoie@briohn.com

PROPERTY OWNER

TDC Willow Creek LLC
626 E Wisconsin Ave #1200
Milwaukee, WI 53201

Phone ( )
E-Mail

RECEIVED SEP 09 2024 OFFICE OF THE VILLAGE PLANNER VILLAGE OF GERMANTOWN

2 PROPERTY ADDRESS

N102W19200 Willow Creek Way

3 NEIGHBORING USES – Specify name and type of use, e.g. Enviro Tech – Industrial, Smith – Residential, etc.

North	South	East	West
M1	M1	RS3 and RS4	B5 and I

4 READ AND INITIAL THE FOLLOWING:

X I am aware of the Village of Germantown ordinance requiring fire sprinklers in most new construction.

X I understand that all new development is subject to Impact and/or Connection Fees that must be paid before building permits will be issued.

X I understand that an incomplete application will be withdrawn from the Plan Commission agenda and that all resubmissions to the Plan Commission are subject to a new application fee.

5 SIGNATURES – ALL APPLICATION MUST BE SIGNED BY OWNER!

DocuSigned by: Caitlin LaJoie AB31E8AA9F4E48E... 9/9/2024
Applicant Date

Signed by: Samuel D Dickman 7935E532B8874B5... 9/9/2024
Owner Date

BRIOHN BUILDING CORPORATION

DESIGN / BUILD CONSTRUCTION

ARCHITECTURAL DESIGN

DEVELOPMENT

PROPERTY MANAGEMENT

Caitlin LaJoie
Briohn Building Corporation
3885 N Brookfield Rd, Suite 200
Brookfield, WI 53045

November 11, 2024

Village of Germantown
N112W17001 Mequon Road
Germantown, WI 53022

VIA Email: Jeff Retzlaff (jretzlaff@germantownwi.gov)

RE: Site Plan Amendment
N102W19200 Willow Creek Way

Dear Village Staff,

Briohn Building Corporation ("Briohn") is pleased to present the following proposal on behalf of TDC Willow Creek, LLC ("Developer") to the Village of Germantown ("Village") for a minor site plan amendment to the recent facility within the Willow Creek Business Park.

Subject Site

The subject site ("Site") is located at N102W19200 Willow Creek Way and was recently developed with a 209,329 square foot light industrial multitenant building by TDC Willow Creek, LLC. The Site is zoned M-1 (Limited Industrial) and in the Willow Creek Business Park future land use district.

Nature of the Request

The Developer is seeking approval of a minor site plan amendment from Plan Commission to construct a fenced outdoor storage area for the benefit of a new tenant ("Tenant"). The Tenant has facilities globally and is looking to expand its local presence by increasing warehouse and storage due to continued business growth. The Tenant proposes to occupy approximately 39,188 square feet within the facility plus 39,996 square feet of outdoor storage. There is no impact to DNR mapped wetlands or the Village 25' wetland setback; a retaining wall along the edge of the outdoor storage has been added to avoid any and all wetland impact, permitting or variance.

The warehouse is proposed for storage of Godwin, Flygt, and Evoqua standard product normal warehousing, cylinder and vessel exchanges, pump repairs and services. There will not be assembly of any pumps within the facility.

The proposed outside storage area will be concrete, secured with fencing (8' privacy chain link with manual gates) and adequate site lighting. Materials within the outdoor storage area include Godwin & Flyget rental pumps, pipe, and accessory storage. Outdoor storage heights will not exceed 8'. Larger stored materials will be moved with forklifts, as needed. There will not be continuous engines running, repair work or assembly work completed outside. The area will be strictly storage.

There are no above ground storages facilities proposed; the previously discussed fuel tank is a component of the pump and will not have any fuel in the tank when on-site. Please see Exhibit A for cut sheets of the proposed Transcube Global model 20TCG. During staff review, the below conversation was exchanged via email between the Village and Briohn, providing clarity on the proposed operation:

1. For what specific purpose are the fuel tanks needed? Where will the fuel tanks be placed/stored?

   Response: The DOT approved fuel tanks are part of the pump and required for operation. Pumps with tanks will be stored outside. The pumps are used by many municipalities throughout the nation and Wisconsin, including Germantown. These are small-medium sized water and wastewater pumps used to move fresh water or wastewater. Similar to a fuel-based vehicle, the pump has a diesel engine. The fuel tank is a self-contained unit within the water pump. Operation of the pump (therefore fuel tank) will occur off-site.

2. What activities will be conducted and/or what services will be provided within the outdoor storage enclosure?

   Response: No services will be performed outside. The outside enclosure is strictly storage with the occasional fork truck moving items around.

3. Will there be any services, e.g. equipment testing or repairs, conducted anywhere outside of the building? If so, what services and where?

   Response: No, all testing and repairs will be performed inside.

4. Can you provide a photograph or other image of a similar storage area from other Xylem facilities so we have a better idea of what is going to be stored outside and what it will look like?

   Response: The enclosed pictures, Exhibit B, were taken October 2024 at the facility in Mokena, IL, with a 6' privacy fence. The outdoor yard is for storage only; there will be

no assembly outside. Inside the warehouse, minor repair to pumps as needed. There will not be any new manufacturing of pumps as that process is entirely in the New Jersey facility.

5. The description mentions "rental pumps, pipe and accessory storage".
    a. Is this location a "retail" location where customers come to pick-up/drop-off rental equipment?
       Response: No, this is not a retail location.

    b. What accessories will be stored outside?
       Response: Pumps, pipe and hose.
    c. What type of pipe will be stored outside?
       Response: Various types of pipe and hose in lengths of 10' and 20' sections. Wire baskets with fittings and accessories.

6. Will there be racking installed in the outdoor storage area? If so, what type and how high?

   Response: No. All racking will be inside. To clarify, the outside carriers are 53" tall and used to hold hose and pipe. This is an effective method to maintain cleanliness, organization, and employee safety. The carriers are semi-permanent and can be moved via forklift, however, they are intentionally stored adjacent to the fence to ensure materials are stable. Inside the warehouse, pallet racking may reach up to 25'

Please review enclosed compliance letters, Ex C, from Reinhart, State of Wisconsin – Department of Natural Resources, and the March 13, 2023, Notification of Action by the Plan Commission for the original building approval.

Business Plan of Operations

In connection with the above-mentioned operations, the Tenant anticipates the following needs:

- Hours of Operation
    - Typically, Monday – Friday from 7:00am to 5:00pm
    - Emergency response for customer emergencies 24/7/365; this equates to less than 10% of normal operations
- Number of employees – fulltime and parttime
    - Less than 20 Full Time Employees
- Number of shifts
    - One day shift with some OT based on customer demands and needs

Conclusion

Thank you for reviewing and discussing the proposed development with our design team. We look forward to continuing the conversation with the Village. Should you have any further questions, please do not hesitate to contact me.

Sincerely,

Caitlin LaJoie, Director of Land Development
Briohn Building Corporation
clajoie@briohn.com
262-307-8792

Exhibit A
Transcube Global
Model 20 TCG Specifications

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251-1,204 USG | 949-4,448 L

TRANSCUBE GLOBAL

TRANSPORTABLE FULL OF FUEL

The TransCube Global is a transportable, environmentally secure, double-walled fuel storage tank that offers an efficient solution for on-site fueling and auxiliary supply. Extend equipment run times and fuel up to 3 pieces of equipment simultaneously to save time and money.

BENEFITS

TRANSPORTABLE
UN-IBC, USDOT & Transport Canada recognized for safe fuel storage & transport.

110% CONTAINED
Built-in double-walled containment eliminates the need for spill pans or basins.

READY TO MOVE
Four-way fork pockets & full-load lifting eyes for easy transport when full of fuel.

TURNKEY
Built for your fueling needs with pre-installed accessories. Arrives onsite ready to go.

SECURE
Lockable equipment cabinet keeps fuel, ports and equipment safe.

GUARANTEED
Industry leading 8-year tank warranty. We've got you covered.

WESTERN GLOBAL®

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APPLICATION USES

- Onsite fleet refueling
- Remote & mega jobsites
- Extended runtime
  - Generators
  - Pumps
  - Heaters
- Disaster relief
- Mining

Proposed model for Xylem at TDC Willow Creek

MODELS & SPECIFICATIONS

	10TCG	20TCG	30TCG	40TCG	50TCG
BRIM FILL	251 USG / 949 L	551 USG / 2,091 L	787 USG / 2,980 L	1,000 USG / 3,786 L	1,204 USG / 4,558 L
95% SAFE FILL	238 USG / 902 L	525 USG / 1,986 L	748 USG / 2,832 L	950 USG / 3,597 L	1,154 USG / 4,331 L
WEIGHT (EMPTY)	1,190 lbs / 540 kg	1,814 lbs / 823 kg	2,425 lbs / 1,100 kg	5,070 lbs / 1,580 kg	6,209 lbs / 1,679 kg
WEIGHT (FULL)	3,178 lbs / 1,442 kg	6,194 lbs / 2,809 kg	8,666 lbs / 3,930 kg	11,177 lbs / 5,175 kg	13,867 lbs / 6,599 kg
DIMENSIONS (L x W x H)	45 x 45 x 52 in 1,155 x 1,155 x 1,324 mm	90 x 45 x 52 in 2,280 x 1,150 x 1,320 mm	90 x 61 x 52 in 2,286 x 1,550 x 1,321 mm	91 x 91 x 45 in 2,312 x 2,312 x 1,143 mm	91 x 91 x 52 in 2,312 x 2,312 x 1,321 mm

NFPA Transport Canada UL LISTED Sourcewell

Exhibit B
Mokena (Greater Chicago Area), IL

Exhibit C

Compliance Letters from Reinhart, State of Wisconsin – Department of Natural Resources, and the March 13, 2023, Notification of Action by the Plan Commission for the original building approval

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Reinhart Boerner Van Deuren s.c.
1000 North Water Street, Suite 1700
Milwaukee, WI 53202-3197

Telephone: 414.298.1000
Facsimile: 414.298.8097
reinhartlaw.com

November 11, 2024

Deborah C. Tomczyk
Direct Dial: 414-298-8331
dtomczyk@reinhartlaw.com

Jeffrey Retzlaff, Director
Community Development Department
Village of Germantown
N112 W17001 Mequon Road
Germantown, WI 53022

Dear Jeff:

Re: Site Plan Approval for Xylem Water Solutions at N102 W19200 Willow Creek Way

TDC Willow Creek, LLC ("TDC") has asked me to confirm that there are no outstanding zoning issues with respect to proposed occupancy by Xylem Water Solutions of a portion of the new development at N102 W19200 Willow Creek Way. On behalf of TDC, I also want to apologize for any confusion and anxiety that our multiple and piecemeal submittals may have created for you and Village staff.

First, no wetland filling or encroachment into any wetland setback is proposed. Plans have been redesigned (adding retaining walls to preserve existing grades) to avoid development activity within delineated wetlands, with just one exception. Minor regrading is proposed beyond the northwest corner of the existing stormwater pond to improve safety and enhance landscaping and screening. Peter Wood from the Wisconsin Department of Natural Resources ("DNR") confirmed in writing (letter enclosed) that the impacted area is a constructed stormwater feature which DNR considers an artificial wetland, so that no additional DNR review or wetland permit is needed. Accordingly, DNR's determination that this area is an artificial wetland exempt from DNR permits also exempts it from the Village's Shoreland-Wetland Zoning District under Village Code sec. 24.04(2)(d).

Second, no above ground storage facility is proposed. As you know, various goods or materials are intended to be stored in an open area visually screened from public streets and adjacent industrial uses consistent with Village Code sec. 17.33(1)(a) and (2)(a). None of the stored materials will be explosive and no above ground storage facility of more than 1,000 gallons is proposed. Accordingly, no above ground storage facility operating permit is required under Village Code sec. 11.07.

In summary, TDC intends to comply with all applicable provisions of the Village Zoning Code in Xylem's site plans approval request.

As you have pointed out, Xylem's occupancy also must comply with the Declaration of Protective Covenants for Willow Creek Business Park Germantown (the "Declaration") which is privately enforced by a review board. As Brian Sajdak and I have discussed, TDC understands that any site plan approval granted by the Village of Germantown's Plan Commission will include a condition that TDC must provide written evidence to your department that the review board also has granted any necessary variances from the terms of the Declaration.

Thank you for your continuing professionalism and diligence in reviewing TDC and Xylem's plans. We, like you, are committed to ensuring a high quality and successful development. Please feel free to contact me, Sam Dickman Sr. or Sam Dickman Jr. with any additional questions or concerns.

Yours very truly

Deborah C. Tomczyk

52833474

Encs.

cc Brian Sajdak (by email)
Samuel D. Dickman (by email)
Samuel M. Dickman (by email)

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
1027 W. Saint Paul Avenue
Milwaukee WI 53233

Tony Evers, Governor

Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

November 8, 2024

Rizal W. Iskandarsjach
Briohn Building Coporation
3885 N Brookfield Road, Suite 200
Brookfield WI 53045

SUBJECT: Willow Creek Business Park Wetland A

Dear Riz,

Existing Pond 2 (delineated wetland A) at Willow Creek Business Park is a constructed storm water feature. Constructed storm water features are considered artificial wetlands unless there is evidence the area was a wetland prior to construction. In this case, a wetland delineation was conducted prior to initial development of the Willow Creek Business Park. No wetlands were identified in the area were the pond (delineated wetland A) is currently located. No additional DNR review or wetland permits are required to impact the pond.

Feel free to contact me at 262-822-8227 if you have questions.

Sincerely,

Peter C. Wood, P.E.
Storm Water Engineer

Village of Germantown

COMMUNITY DEVELOPMENT
PLANNING DEPARTMENT
N112 W17001 Mequon Road/ P O Box 337
Germantown WI 53022-0337
Phone: (262) 250-4735

March 24, 2023

NOTIFICATION OF ACTION BY THE PLAN COMMISSION

Meeting Date March 13, 2023

Applicant: Briohn Building Corp for TDC Willow Creek LLC & BV Ryan Willow Creek

Address of Property: N102 W19200 Willow Creek Way

ACTION TAKEN:

MOTION Baum second Tarantino to Approve the site development and building plans for a 209,329 sqft industrial building located at N102 W19200 Willow Creek Way in the Germantown Willow Creek Business Park subject to the following conditions:

1. ***This approval is subject to all the conditions and requirements set forth herein and adopted by the Plan Commission. Approval is granted for the following architectural and engineering plans unless superseded by subsequent plan sheets approved by Village Staff pursuant to revisions required herein and/or by the Plan Commission:***
    a. ***Civil engineering, utility, erosion control, and storm water management plans dated February 13, 2023;***
    b. ***Architectural plans dated February 13, 2023;***
    c. ***Exterior lighting plans dated February 13, 2023;***
    d. ***Landscaping plans dated February 13, 2023***
2. ***All landscaping, screening, grading, and paving improvements shown on the approved site plans shall be installed as proposed prior to issuance of an occupancy permit unless a cash bond or letter of credit in an amount equal to 120 percent of the estimated installation and material costs reviewed and approved by the Village is submitted to the Village as necessary to ensure that installation of the proposed features and improvements will be completed within one (1) year after issuance of the occupancy permit.***
3. ***All exterior doors (except primary entrance) shall be clearly marked with reflective 5" or larger letters/numbers to aid emergency personnel access as required by the Police Department.***
4. ***The Developer shall coordinate with the Village Public Works and Fire Department to design and install the secondary "emergency vehicle" access driveway to Appleton Avenue. In the event said emergency access driveway is not installed within one (1) year after issuance of the first occupancy permit, or, not allowed as planned within the ATC 125' transmission line easement or the ANR-TC Energy 100' pipeline easement, the Developer shall cooperate with the Village to identify a mutually acceptable alternative***

location and design for the required emergency access driveway. Once final details for the location and design, including the security fence and gate, have been determined, the Developer shall prepare and submit a revised site plan indicating how the emergency drive will interface with the parking lot to the Village Fire and Public Works Departments for review and approval.

5. ***The Developer shall be responsible for ongoing and regular maintenance of the emergency access driveway as needed to keep the driveway accessible at all times of the day and through the year.***
6. ***The Village Engineer and Public Works Department has not completed its review of the civil plans, sewer & water easement utility realignment or storm water management plan and report (copy enclosed dated March 9, 2023). Consequently, no permits shall be issued by the Village for construction of the building until such time as Public Works & engineering staff have reviewed and approved the civil engineering, utility, and storm water management plans and reports for Village and other applicable code compliance (excluding "early start" site clearing and footing/foundation work approved by the Village and/or WI DSPS).***
7. ***State agency (DSPS) approved plans and a $20,000 occupancy bond are required by Inspection Services at the time of building permit application. The Village of Germantown is an authorized delegated agent of DSPS to provide all commercial plan review and inspection services through SAFEBuilt of WI and the Village of Germantown.***
8. ***The Developer/Owner shall notify prospective tenants that said tenants are responsible for providing a roof plan with the location of all roof-mounted HVAC units and any other roof-mounted equipment along with sightline diagrams as part of all future building "build out" plans at the time a Zoning/Occupancy Permit is obtained. If RTU's cannot be hidden from view, screen walls or other mutually acceptable features intended to shield the view of said RTU's shall be submitted to the Village Planner (or Plan Commission if determined necessary by the Village Planner) for review and approval prior to build out construction and issuance of an occupancy permit.***
9. ***All proposed exterior signage, including temporary, monument and wall-mounted signs, require review and approval by the Village staff or the Plan Commission.***
10. ***Copies of any/all final approval by American Transmission Company (ATC) and TC Energy (ANR Pipeline) shall be provided to the Village prior to commencement of any construction or other development activity within the ATC and TC Energy utility easements.***
11. ***The Developer/Owner shall notify all prospective tenants of the proposed industrial building that they are required to obtain a Zoning Compliance/Occupancy permit from the Village prior to occupancy of the building.***

MOTION to Amend Baum second Shadid to add Condition #12 that the canopy should be lowered down to the top of the windows and also extended in both directions through the next window panel, through the pilaster and the next window.

MOTION to Amend carried unanimously.
MOTION to Approve as Amended carried unanimously.

The above actions and conditions are excerpts from the Plan Commission meeting minutes which will be formally approved at the next regularly scheduled meeting. A copy of the draft minutes for your agenda item are attached. If you have any questions or concerns regarding the minutes, please feel free to contact me.

Sincerely,

Lori Johnson
Planning Assistant

superseded by subsequent plan sheets approved by Village Staff pursuant to revisions required herein and/or by the Plan Commission:

a. Architectural plans dated October 20, 2022;
b. Civil Engineering plans dated October 17, 2022;
c. Landscaping plans dated October 17, 2022;

2. All landscaping, screening, grading, and paving improvements shown on the approved site plans shall be installed within one (1) year after issuance of the occupancy permit for the shell building.

3. The landscape plan shall be revised to include a more continuous area of plantings along the entire Rockfield Road frontage with higher & wider berms. The revised plan shall be submitted to the Village Planner & Public Works Director for review and approval prior to issuance of an occupancy permit.

Commissioner Shadid questioned the reason for the second driveway at Rockfield Road. Director Retzlaff stated the second driveway provides additional access without having to turn around on the site. But it dissects the berm along Rockfield Road. Commissioner Shadid supported the idea to eliminate the second driveway. Trustee Baum mentioned the water tower on Mequon Road that has turnaround capacity on site. He said he was OK with staff figuring it out. Chairman Wolter said he would prefer a single driveway and a landscape plan to match what we tell others to do. If we have certain criteria for other businesses, we should follow the same. He also prefers the landscaping be cohesive and to not hold ourselves to a different standard than everyone else that builds in that area.

MOTION Baum second Shadid to Amend Comment #3 to work with staff and look at a scenario of the paved access similar to the water tower on Mequon Road with a single entrance and work with staff to revise the berming and landscaping to match the landscaping and berming on the Illing property.

MOTION to Amend carried unanimously.
MOTION to Approve as Amended carried unanimously.

TDC Willow Creek for BV Ryan Willow Creek II, property owner and Dickman Development – N102 W19200 Willow Creek Way. Site plan review for a 209,329 sqft industrial building in the Willow Creek Business Park. Director Retzlaff summarized the proposal.

MOTION Baum second Tarantino to Approve the site development and building plans for a 209,329 sqft industrial building located at N102 W19200 Willow Creek Way in the Germantown Willow Creek Business Park subject to the following conditions:

1. This approval is subject to all the conditions and requirements set forth herein and adopted by the Plan Commission. Approval is granted for the following architectural and engineering plans unless superseded by subsequent plan sheets approved by Village Staff pursuant to revisions required herein and/or by the Plan Commission:

a. Civil engineering, utility, erosion control, and storm water management plans dated February 13, 2023;
b. Architectural plans dated February 13, 2023;
c. Exterior lighting plans dated February 13, 2023;
d. Landscaping plans dated February 13, 2023

2. ***All landscaping, screening, grading, and paving improvements shown on the approved site plans shall be installed as proposed prior to issuance of an occupancy permit unless a cash bond or letter of credit in an amount equal to 120 percent of the estimated installation and material costs reviewed and approved by the Village is submitted to the Village as necessary to ensure that installation of the proposed features and improvements will be completed within one (1) year after issuance of the occupancy permit.***
3. ***All exterior doors (except primary entrance) shall be clearly marked with reflective 5" or larger letters/numbers to aid emergency personnel access as required by the Police Department.***
4. ***The Developer shall coordinate with the Village Public Works and Fire Department to design and install the secondary "emergency vehicle" access driveway to Appleton Avenue. In the event said emergency access driveway is not installed within one (1) year after issuance of the first occupancy permit, or, not allowed as planned within the ATC 125' transmission line easement or the ANR-TC Energy 100' pipeline easement, the Developer shall cooperate with the Village to identify a mutually acceptable alternative location and design for the required emergency access driveway. Once final details for the location and design, including the security fence and gate, have been determined, the Developer shall prepare and submit a revised site plan indicating how the emergency drive will interface with the parking lot to the Village Fire and Public Works Departments for review and approval.***
5. ***The Developer shall be responsible for ongoing and regular maintenance of the emergency access driveway as needed to keep the driveway accessible at all times of the day and through the year.***
6. ***The Village Engineer and Public Works Department has not completed its review of the civil plans, sewer & water easement utility realignment or storm water management plan and report (copy enclosed dated March 9, 2023). Consequently, no permits shall be issued by the Village for construction of the building until such time as Public Works & engineering staff have reviewed and approved the civil engineering, utility, and storm water management plans and reports for Village and other applicable code compliance (excluding "early start" site clearing and footing/foundation work approved by the Village and/or WI DSPS).***
7. ***State agency (DSPS) approved plans and a $20,000 occupancy bond are required by Inspection Services at the time of building permit application. The Village of Germantown is an authorized delegated agent of DSPS to provide all commercial plan review and inspection services through SAFEBuilt of WI and the Village of Germantown.***
8. ***The Developer/Owner shall notify prospective tenants that said tenants are responsible for providing a roof plan with the location of all roof-mounted HVAC units and any other roof-mounted equipment along with sightline diagrams as part of all future building "build out" plans at the time a Zoning/Occupancy Permit is obtained. If RTU's cannot be hidden from view, screen walls or other mutually acceptable features intended to shield the view of said RTU's shall be submitted to the Village Planner (or Plan Commission if determined necessary by the Village Planner) for review and approval prior to build out construction and issuance of an occupancy permit.***
9. ***All proposed exterior signage, including temporary, monument and wall-mounted signs, require review and approval by the Village staff or the Plan Commission.***

10. ***Copies of any/all final approval by American Transmission Company (ATC) and TC Energy (ANR Pipeline) shall be provided to the Village prior to commencement of any construction or other development activity within the ATC and TC Energy utility easements.***
11. ***The Developer/Owner shall notify all prospective tenants of the proposed industrial building that they are required to obtain a Zoning Compliance/Occupancy permit from the Village prior to occupancy of the building.***

Trustee Baum commented that the canopy above the doorway at each corner of the building is too high and too small to provide any protection for the door.

MOTION to Amend Baum second Shadid to add Condition #12 that the canopy should be lowered down to the top of the windows and also extended in both directions through the next window panel, through the pilaster and the next window.

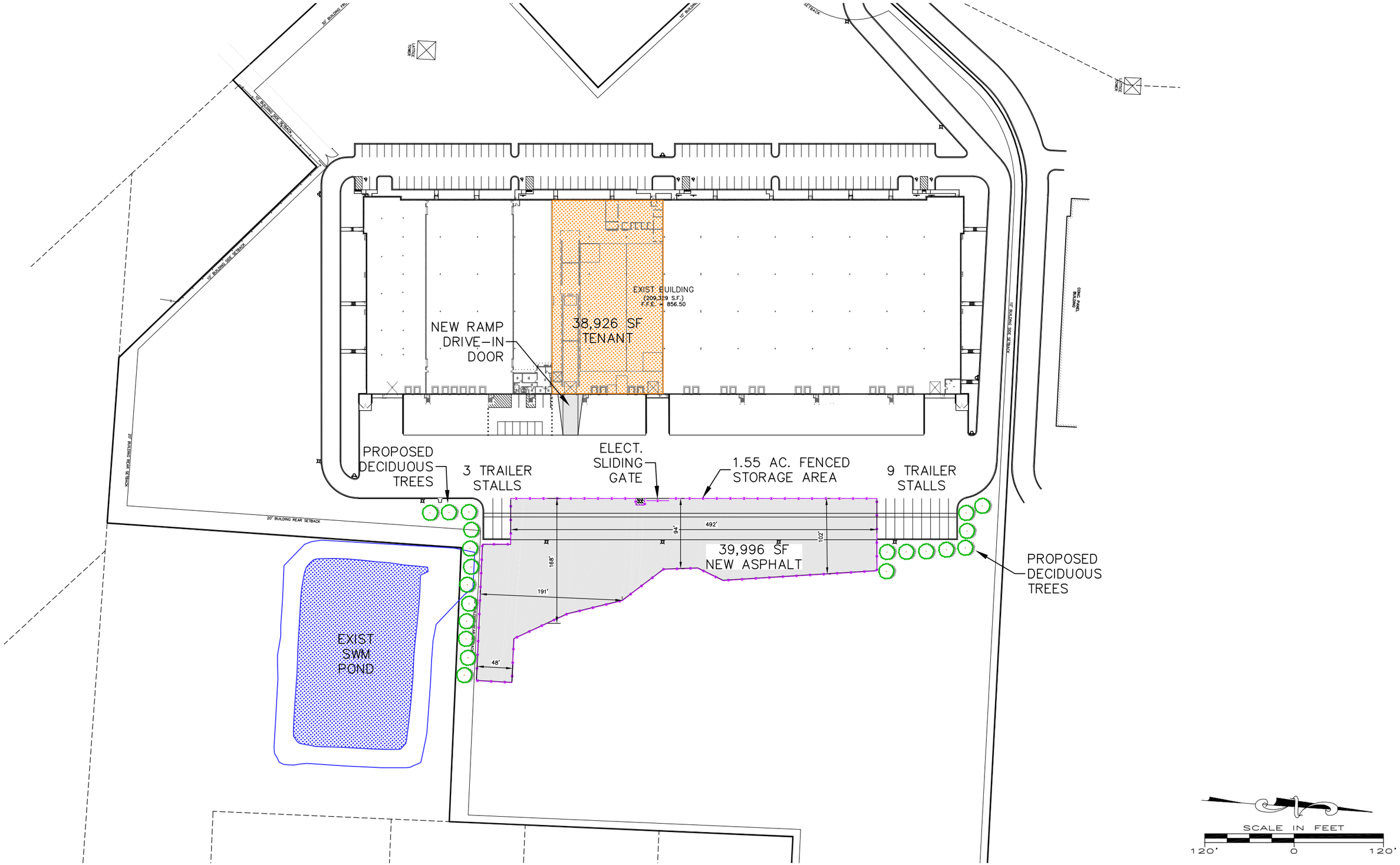
Sam Dickman Jr. asked if the canopy could be at the height of what the ceiling would be so it is not lower than what the office ceiling would be. Trustee Baum was agreeable to bring the canopy down one tier. Chris Wenzler, Briohn, confirmed they will make all building canopies align.

MOTION to Amend carried unanimously.
MOTION to Approve as Amended carried unanimously.

2050 Comprehensive Plan: Implementation Objectives & Action Steps: Director Retzlaff continued discussion on the table of objectives and action steps. He reviewed priorities as part of the comments he received. Discussion included:

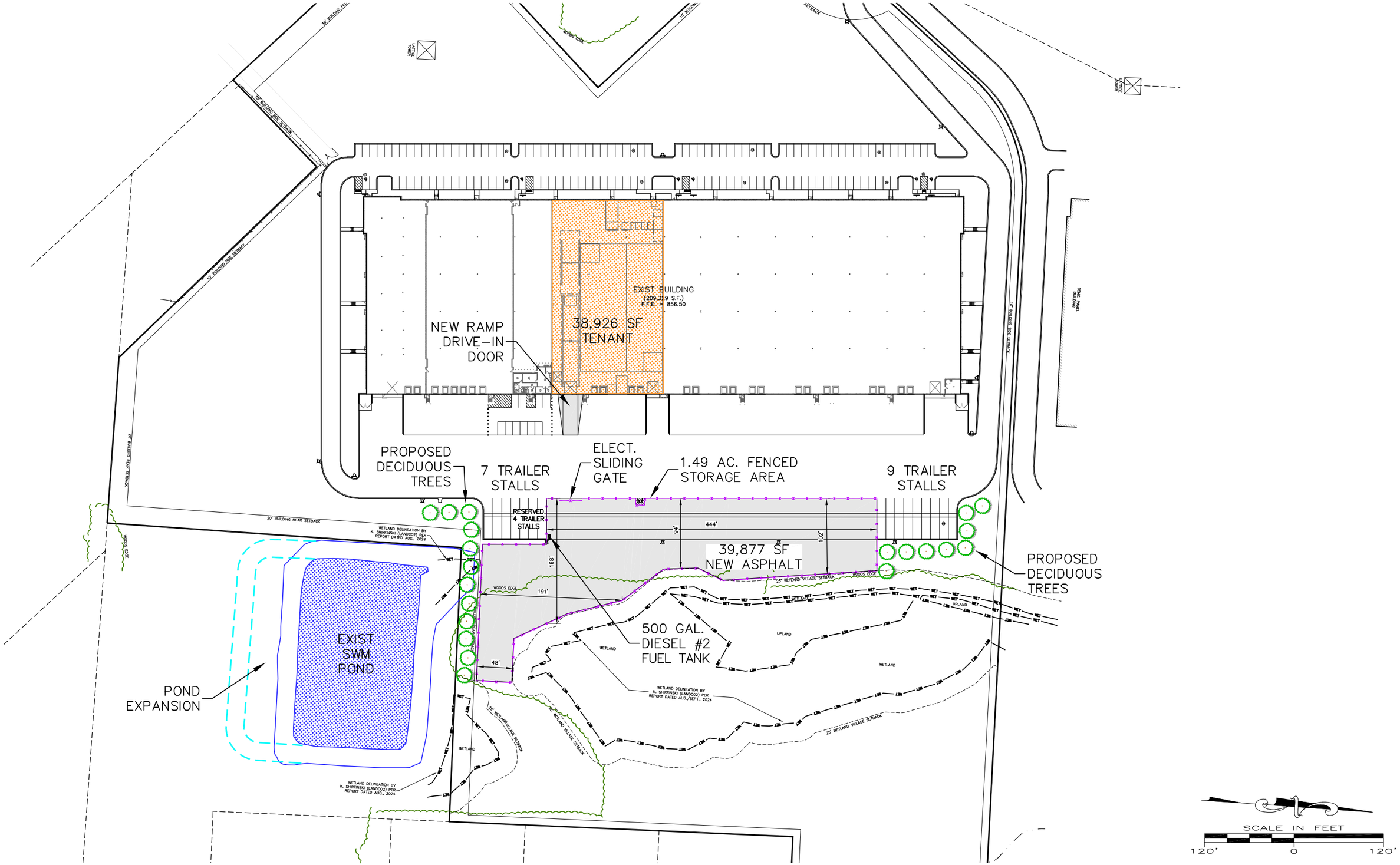
- Village Center District and Holy Hill Gateway are top priorities, start meeting with residents and put plans together for these areas. Look at all the issues, plan a bike path, potential of next generation housing, develop zoning regulations including buffers between industrial and residential to the north. Continue to include working with the school district, regional trails development.
- Pathway development, Holy Hill to Goldendale to JW Speaker - connect to Freistadt and create a path to the old downtown area. Include an easement area as part of Richfield utility project for part of the trail system. Park Commission has a trail master plan under way. See what's planned, include a plan for future development. Trail plan is part of the outdoor recreation plan – should coordinate to discuss common issues.
- Development is coming in, push to get something planned sooner than later.
- Germanic theme – what is it, what does it look like, no specific standards, need better definition. Should be some type of standard to follow.
- Discussed how to proceed, define zoning. Identify parcels, areas or blocks to be preserved and protected for Village Center and redevelopment. Connectivity Plan, get public input and create a zoning district so everyone knows what is expected.
- Start with Freistadt District then Village Center.
- Meeting planned for March 27th, RFP for Village Center District, pull together discussion points, area north of Rockfield Road east of Goldendale Road across from Industrial Park.

ANNOUNCEMENTS: Chairman Wolter announced the candidate forum tomorrow night from 5:30 to 7:00 pm in the Village Hall board room.



BRIOHN
www.briohn.com PHONE: 262.790.0500

WILLOW CREEK TENANT
N102W19200 WILLOW CREEK WAY, GERMANTOWN, WISCONSIN
OCT. 29, 2024



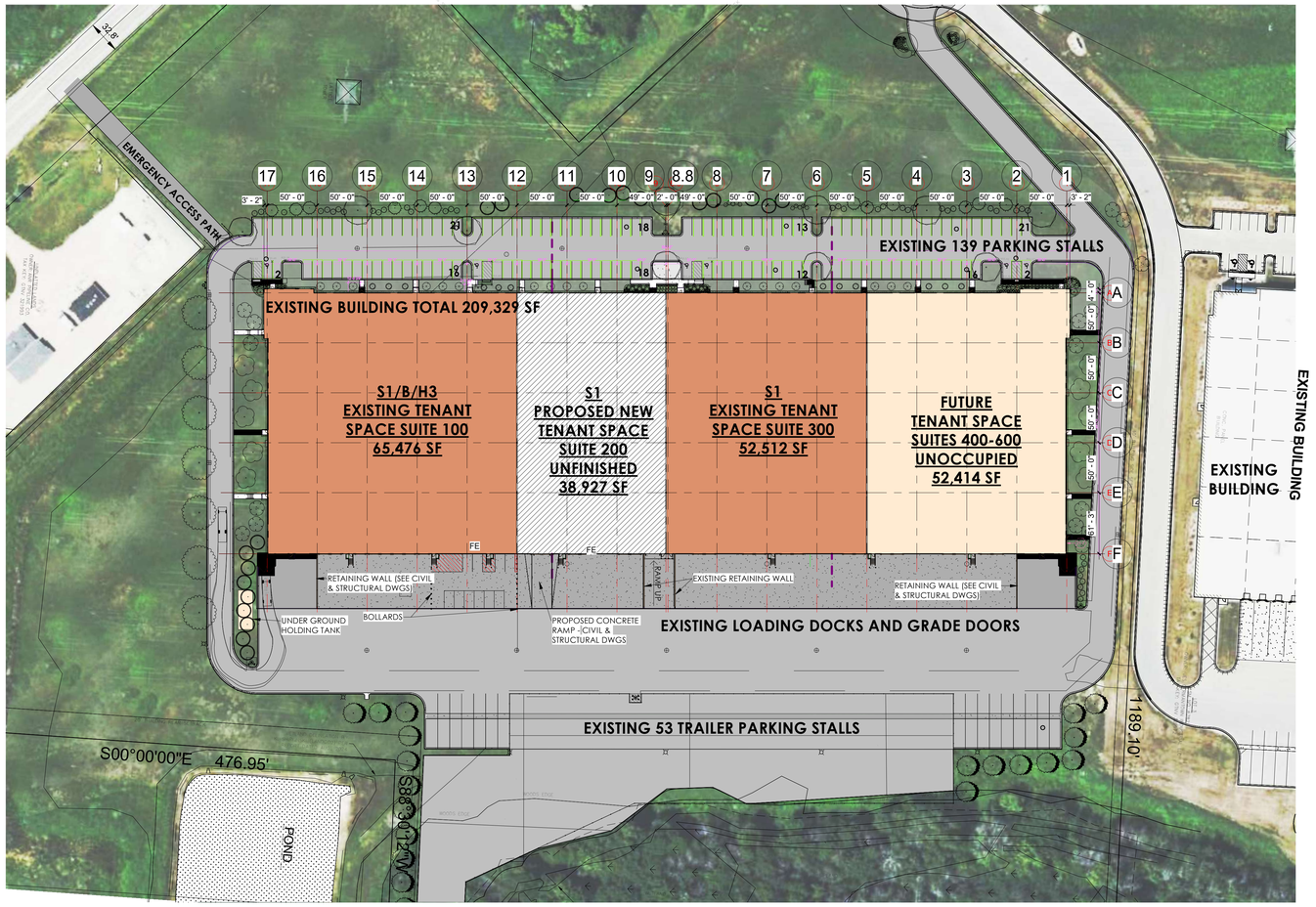
BRIOHN
www.briohn.com PHONE: 262.790.0500

WILLOW CREEK TENANT
N102W19200 WILLOW CREEK WAY, GERMANTOWN, WISCONSIN
OCT. 22, 2024

PROPOSED NEW TENANT BUILDOUT LEVEL 2 ALTERATION FOR : XYLEM

DICKMAN WILLOW CREEK MULTI-TENANT BUILDING

N102 W19200 WILLOW CREEK PARKWAY, SUITE 200
GERMANTOWN, WISCONSIN 53022



PLAN COMMISSION RESUBMITTAL SET

NOVEMBER 11, 2024

OWNER :

TDC Willow Creek, LLC
SAM DICKMAN JR.
626 E. WISCONSIN AVE., SUITE 1200
MILWAUKEE, WISCONSIN 53202
(414) 271-6100 PHONE
(414) 271-5125 FAX
Sam-jr@dickmanrealestate.com

TENANT :

XYLEM
KENNETH ALBAUGH
84 FLOODGATE ROAD
BRIDGEPORT, NJ 08014
(856) 467-3636 PHONE
(615) 975-5410 CELL
ken.albaugh@xylem.com

GENERAL CONTRACTOR :

BRIOHN BUILDING CORPORATION
BRAD WONDRA, PM
3885 N. BROOKFIELD RD., SUITE 200
BROOKFIELD, WISCONSIN 53045
(262) 790-0500 PHONE
(262) 790-0505 FAX
bwondra@briohn.com

CIVIL ENGINEER:

BRIOHN DESIGN GROUP LLC
RIZAL W. ISKANDARSJACH, P.E., P.L.S.
3885 N. BROOKFIELD RD., SUITE 200
BROOKFIELD, WISCONSIN 53045
(262) 790-0500 PHONE
(262) 790-0505 FAX
riz@briohn.com

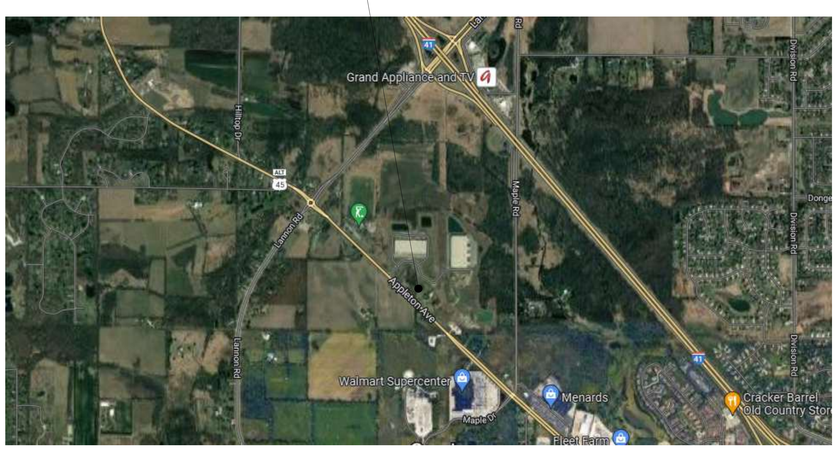
STRUCTURAL ENGINEER:

BRIOHN DESIGN GROUP LLC
KEVIN JANKOWSKI, PE
3885 N. BROOKFIELD RD., SUITE 200
BROOKFIELD, WISCONSIN 53045
(262) 790-0500 PHONE
(262) 790-0505 FAX
kjankowski@briohn.com

ARCHITECT :

BRIOHN DESIGN GROUP LLC
DOMENIC FERRANTE, AIA
3885 N. BROOKFIELD RD., SUITE 200
BROOKFIELD, WISCONSIN 53045
(262) 790-0500 PHONE
(262) 790-0505 FAX
dferrante@briohn.com

PROJECT LOCATION:



PROJECT BUILDING INFORMATION:

CODE:
BUILDING CODE: 2015 IBC - INTERNATIONAL BUILDING CODE WITH WISCONSIN AMENDMENTS SPS 362
EXISTING BUILDING CODE: 2015 IEBC - INTERNATIONAL EXISTING BUILDING CODE WITH WISCONSIN AMENDMENTS SPS 366
ACCESSIBILITY CODE: 2009 ICC/ANSI A117.1 ACCESSIBLE AND USABLE
BUILDINGS AND FACILITIES ENERGY CODE: 2015 IECC - INTERNATIONAL ENERGY CONSERVATION CODE WITH WISCONSIN AMENDMENTS SPS 363
MECHANICAL CODE: 2015 IMC - INTERNATIONAL MECHANICAL CODE WITH WISCONSIN AMENDMENTS SPS 364
PLUMBING CODE: 2018 WISCONSIN PLUMBING CODE SPS 381-387
ELECTRICAL CODE: 2017 NFPA 70 NATIONAL ELECTRICAL CODE WITH WISCONSIN AMENDMENTS SPS316
FIRE CODE: SPS 314 FIRE PREVENTION

OCCUPANCY:	PRIMARY	S-1 (MODERATE HAZARD STORAGE) PROPOSED NEW TENANT SPACE SUITE 200
	PRIMARY	S-1 (MODERATE HAZARD STORAGE) PROPOSED EXISTING TENANT SPACE SUITE 200
	SECONDARY	B & H-3 (HIGH HAZARD STORAGE) EXISTING TENANT SPACE SUITE 200)
CLASS OF CONSTRUCTION:	TYPE 2B	
SPRINKLER SYSTEM:	NFPA 13 AUTOMATIC ESFR SPRINKLER SYSTEM	
FLOOR LEVELS:	1	
NUMBER OF STORIES	1	
EXISTING BUILDING FOOTPRINT:	209,329 SF	
EXISTING BUILDING AREA:	207,537 SF	
PROPOSED TENANT SPACE:	38,927 SF WORK AREA	
ZONING:	M-1	LIMITED BUSINESS & INDUSTRIAL PARK
SETBACKS:	30'	STREET
	10'	SIDE
	25'	REAR
PARKING:	133	STANDARD STALLS
	6	HC STALLS
TOTAL PARKING (TOTAL ON-SITE):	139 TOTAL PARKING STALLS	

NOTE:
ALL MECHANICAL, ELECTRICAL, PLUMBING AND FIRE SPRINKLER ENGINEERING BY DESIGN-BUILD CONTRACTORS

APPLICABLE TO ALL PLAN VIEWS

SHEET INDEX

Sheet Number	Sheet Name
T1.0	TITLE SHEET
T1.1	PERSPECTIVES
CS-1	EXISTING CONDITION MAP
C1.0	PROPERTY SITE PLAN
C2.0	PROJECT GRADING AND DRAINAGE PLAN
C3.0	PROJECT EROSION CONTROL PLAN
C4.0	SITE NOTES AND DETAILS
C4.1	SITE NOTES AND DETAILS
L1.0	LANDSCAPE PLAN
L2.0	LANDSCAPE NOTES, SCHEDULE & DETAILS
A1.0	OVERALL FLOOR PLAN & NOTES
A5.0	ENLARGED PARTIAL EAST ELEVATION @ SUITE 200, WALL SECTIONS & NOTES

BRIOHN
DESIGN GROUP
3885 N BROOKFIELD ROAD, SUITE 200
BROOKFIELD WISCONSIN 53045-1950
(262) 790-0500 PHONE
(262) 790-0505 FAX

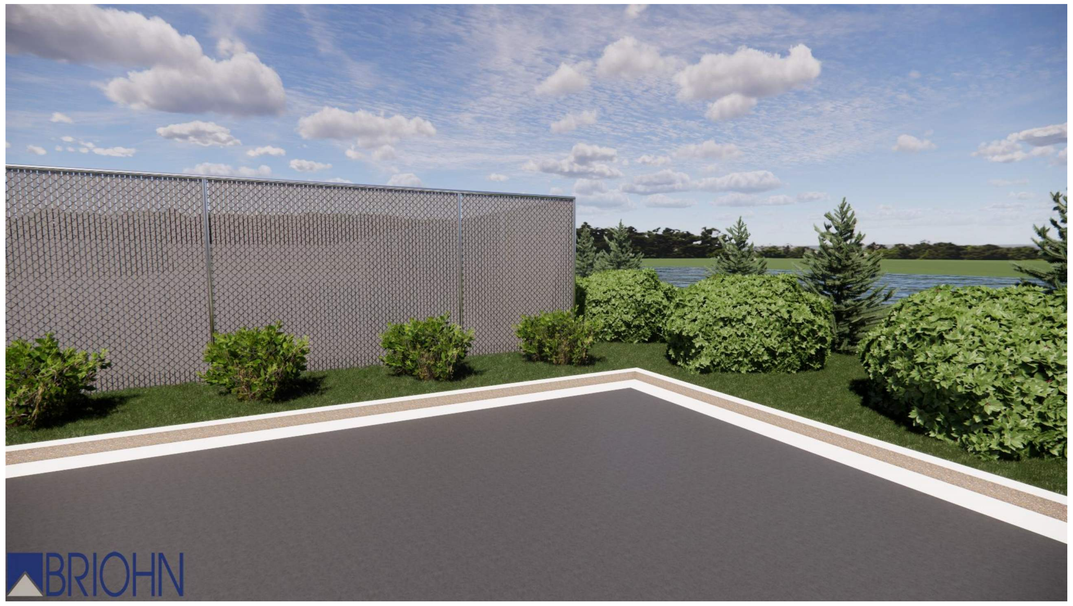
SHEET TITLE
TITLE SHEET

NEW TENANT BUILDOUT:
THE DICKMAN COMPANY
WILLOW CREEK PKWY.
GERMANTOWN, WI

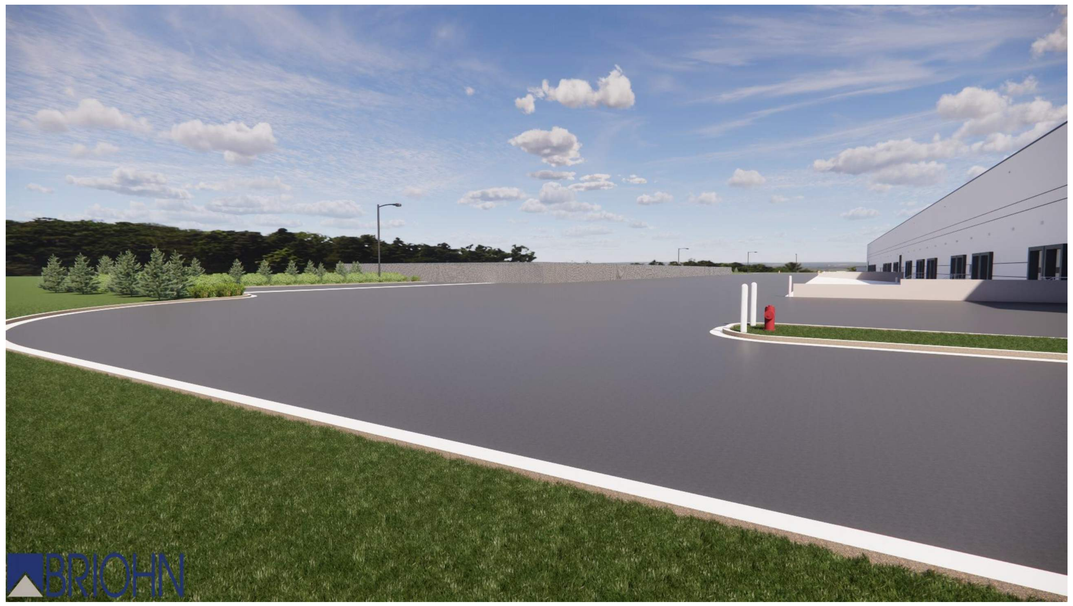
Revision
Date

JOB: 240101
DRAWN: CK/CJR
CHECKED: DF/CW
DATE: NOVEMBER 11, 2024
SHEET:
T1.0

NORTHEAST CORNER - OUTDOOR STORAGE



SOUTHEAST CORNER - OUTDOOR STORAGE



NORTHEAST CORNER - OUTDOOR STORAGE

SOUTHEAST CORNER - OUTDOOR STORAGE

BRIOHN
DESIGN GROUP
3880 N BROOKFIELD ROAD, SUITE 200
BROOKFIELD WISCONSIN 53045-1950
(262) 790-0500 PHONE
(262) 790-0505 FAX

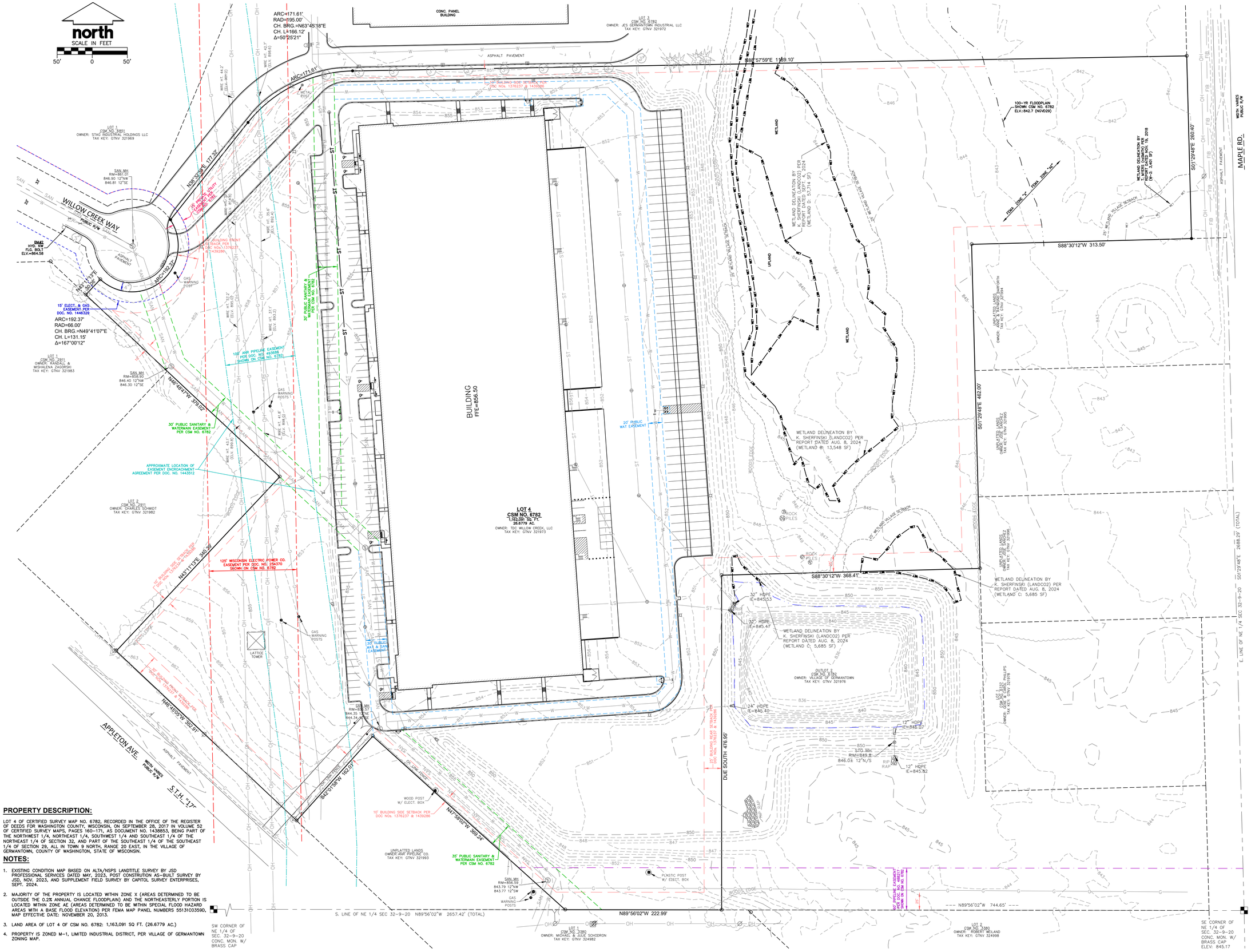
SHEET TITLE
PERSPECTIVES

NEW TENANT BUILDOUT:
THE DICKMAN COMPANY
WILLOW CREEK PKWY.
GERMANTOWN, WI

Date	Revision

JOB:	240101
DRAWN:	CW/CK
CHECKED:	DF
DATE:	NOVEMBER 11, 2024

SHEET:
T1.1



PROPERTY DESCRIPTION:

LOT 4 OF CERTIFIED SURVEY MAP NO. 6782, RECORDED IN THE OFFICE OF THE REGISTER OF DEEDS FOR WASHINGTON COUNTY, WISCONSIN, ON SEPTEMBER 28, 2017 IN VOLUME 52 OF CERTIFIED SURVEY MAPS, PAGES 160–171, AS DOCUMENT NO. 1438853, BEING PART OF THE NORTHWEST 1/4, NORTHEAST 1/4, SOUTHWEST 1/4 AND SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 32, AND PART OF THE SOUTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 29, ALL IN TOWN 9 NORTH, RANGE 20 EAST, IN THE VILLAGE OF GERMANTOWN, COUNTY OF WASHINGTON, STATE OF WISCONSIN.

NOTES:

1. EXISTING CONDITION MAP BASED ON ALTA/NSPS LANDTITLE SURVEY BY JSD PROFESSIONAL SERVICES DATED MAY, 2023, POST CONSTRUTION AS–BUILT SURVEY BY JSD, NOV. 2023, AND SUPPLEMENT FIELD SURVEY BY CAPITOL SURVEY ENTERPRISES, SEPT. 2024.
2. MAJORITY OF THE PROPERTY IS LOCATED WITHIN ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AND THE NORTHEASTERLY PORTION IS LOCATED WITHIN ZONE AE (AREAS DETERMINED TO BE WITHIN SPECIAL FLOOD HAZARD AREAS WITH A BASE FLOOD ELEVATION) PER FEMA MAP PANEL NUMBERS 55131C0359D, MAP EFFECTIVE DATE: NOVEMBER 20, 2013.
3. LAND AREA OF LOT 4 OF CSM NO. 6782: 1,163,091 SQ FT. (26.6779 AC.)
4. PROPERTY IS ZONED M–1, LIMITED INDUSTRIAL DISTRICT, PER VILLAGE OF GERMANTOWN ZONING MAP.

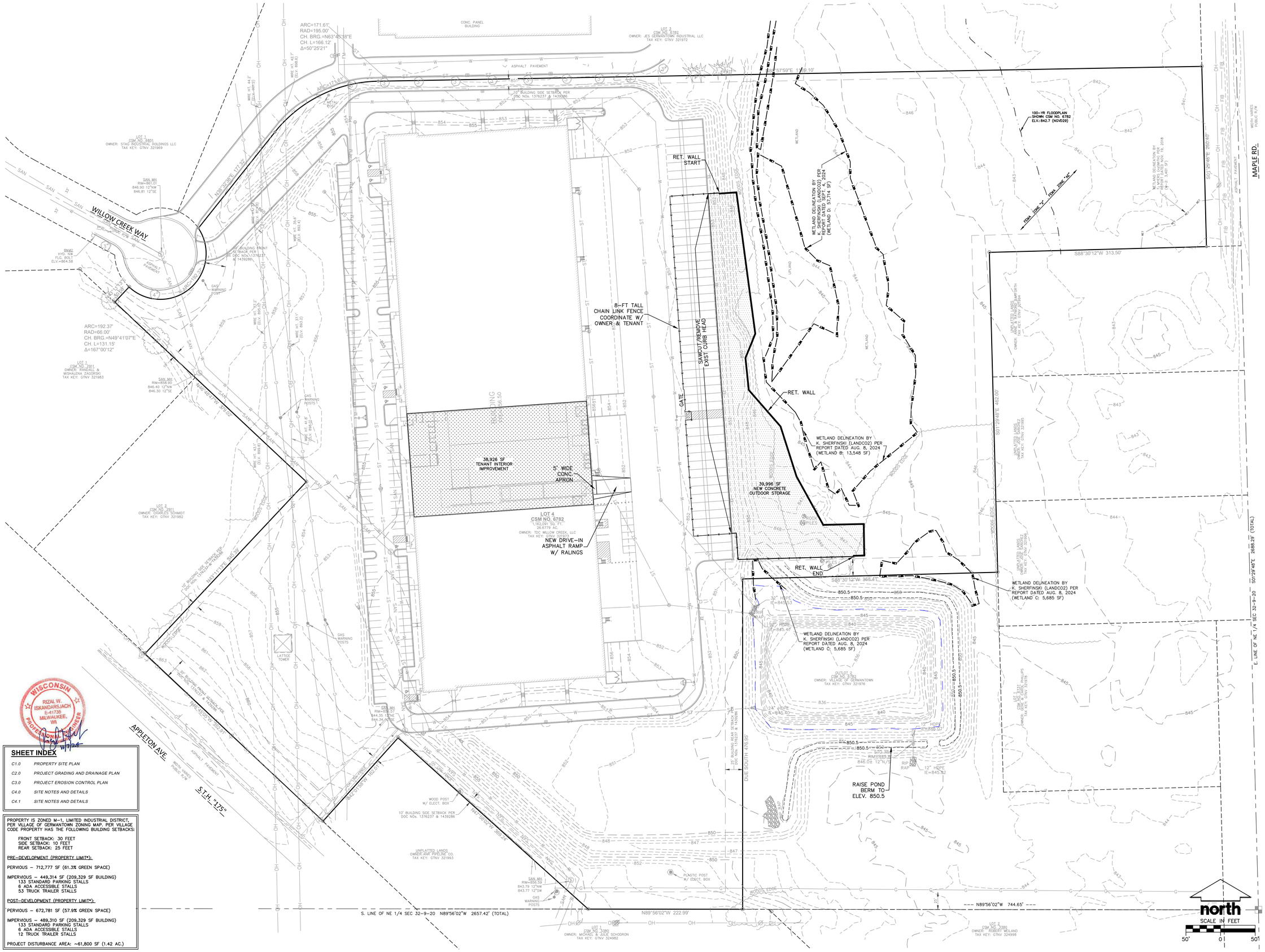
BRIOHN DESIGN GROUP
3885 N BROOKFIELD ROAD, SUITE 200
BROOKFIELD WISCONSIN 53045-1950
(262) 790-0500 PHONE
(262) 790-0505 FAX

SHEET TITLE
EXISTING CONDITION MAP

PROPOSED IMPROVEMENTS FOR:
TDC WILLOW CREEK, LLC
N102W19200 WILLOW CREEK WAY
VILLAGE OF GERMANTOWN, WISCONSIN

Revision	Date

JOB:	240101
DRAWN:	RWI
CHECKED:	BDG
DATE:	11-11-2024
SHEET:	CS-1



WISCONSIN
RIZAL W. ISKANDARSJACH
E-41735
MILWAUKEE, WI
PROFESSIONAL ENGINEER

SHEET INDEX

C1.0	PROPERTY SITE PLAN
C2.0	PROJECT GRADING AND DRAINAGE PLAN
C3.0	PROJECT EROSION CONTROL PLAN
C4.0	SITE NOTES AND DETAILS
C4.1	SITE NOTES AND DETAILS

PROPERTY IS ZONED M-1; LIMITED INDUSTRIAL DISTRICT, PER VILLAGE OF GERMANTOWN ZONING MAP. PER VILLAGE CODE PROPERTY HAS THE FOLLOWING BUILDING SETBACKS:

FRONT SETBACK: 30 FEET
SIDE SETBACK: 10 FEET
REAR SETBACK: 25 FEET

PRE-DEVELOPMENT (PROPERTY LIMIT*):

PERVIOUS – 712,777 SF (61.3% GREEN SPACE)

IMPERVIOUS – 449,314 SF (209,329 SF BUILDING)
133 STANDARD PARKING STALLS
6 ADA ACCESSIBLE STALLS
53 TRUCK TRAILER STALLS

POST-DEVELOPMENT (PROPERTY LIMIT*):

PERVIOUS – 672,781 SF (57.9% GREEN SPACE)

IMPERVIOUS – 489,310 SF (209,329 SF BUILDING)
133 STANDARD PARKING STALLS
6 ADA ACCESSIBLE STALLS
12 TRUCK TRAILER STALLS

PROJECT DISTURBANCE AREA: ~61,800 SF (1.42 AC.)

*LOT 4 OF CSM NO. 6782

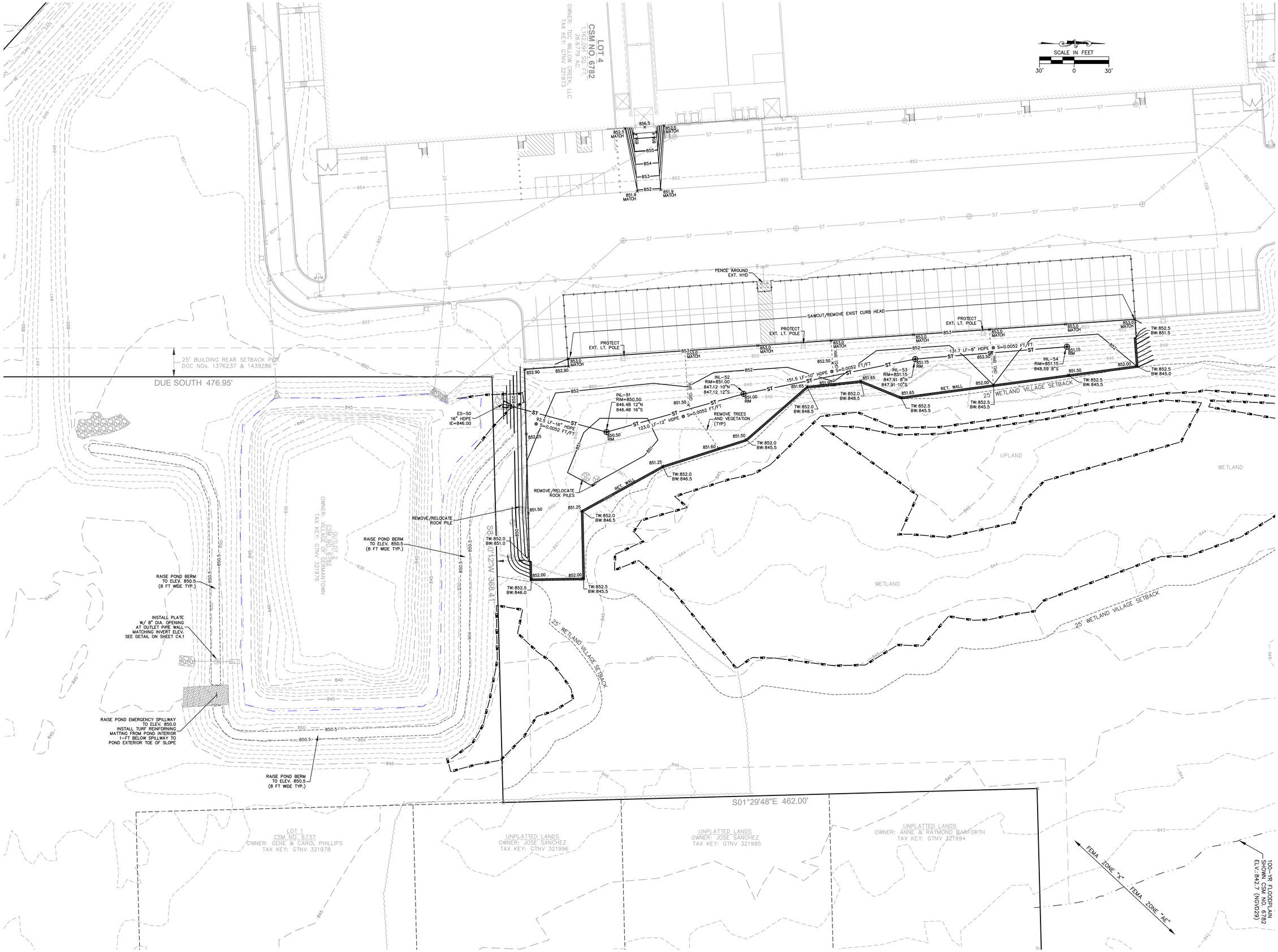
BRIOHN DESIGN GROUP
3885 N BROOKFIELD ROAD, SUITE 200
BROOKFIELD WISCONSIN 53045-1950
(262) 790-0500 PHONE
(262) 790-0505 FAX

SHEET TITLE
PROPERTY SITE PLAN

PROPOSED IMPROVEMENTS FOR:
TDC WILLOW CREEK, LLC
N102W19200 WILLOW CREEK WAY
VILLAGE OF GERMANTOWN, WISCONSIN

Date	Revision

JOB:	240101
DRAWN:	RWI
CHECKED:	BDG
DATE:	11-11-2024
SHEET:	C1.0



BRIOHN DESIGN GROUP
3885 N BROOKFIELD ROAD, SUITE 200
BROOKFIELD WISCONSIN 53045-1950
(262) 790-0500 PHONE
(262) 790-0505 FAX

SHEET TITLE
PROJECT GRADING AND DRAINAGE PLAN

PROPOSED IMPROVEMENTS FOR:
TDC WILLOW CREEK, LLC
N102W19200 WILLOW CREEK WAY
VILLAGE OF GERMANTOWN, WISCONSIN

Date	Revision

JOB:	240101
DRAWN:	RWI
CHECKED:	BDG
DATE:	11-11-2024
SHEET:	C2.0

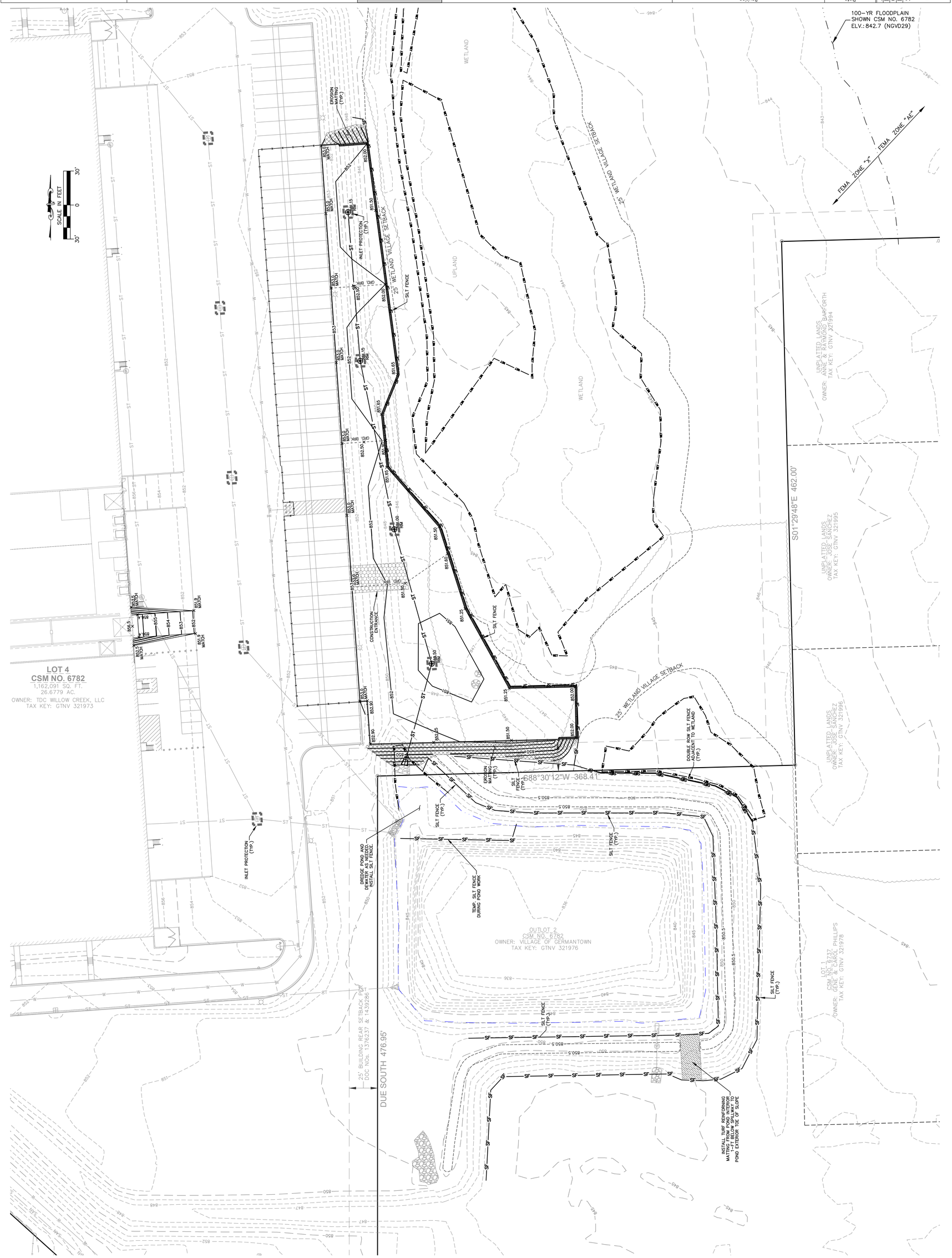
BRIOHN DESIGN GROUP
2885 BROOKFIELD ROAD, SUITE 230
BROOKFIELD WISCONSIN, 53045-1660
(262) 790-0500 VOICE
(262) 790-0505 FAX

SHEET TITLE
PROJECT EROSION CONTROL PLAN

PROPOSED IMPROVEMENTS FOR:
TDC WILLOW CREEK, LLC
N102W19200 WILLOW CREEK WAY
VILLAGE OF GERMANTOWN, WISCONSIN

Revision	Date

JOB:	240101
DRAWN:	RWI
CHECKED:	BDG
DATE:	11-11-2024
SHEET:	C3.0



GENERAL NOTES AND SPECIFICATIONS

1. THE INTENTION OF THE PLANS AND SPECIFICATIONS IS TO SET FORTH PERFORMANCE AND CONSTRUCTION MATERIAL STANDARDS FOR THE PROPER EXECUTION OF WORK. ALL WORKS CONTAINED WITHIN THE PLANS AND SPECIFICATIONS SHALL BE COMPLETED IN ACCORDANCE WITH ALL REQUIREMENTS FROM LOCAL, STATE, FEDERAL OR OTHER GOVERNING AGENCY'S LAWS, REGULATIONS, JURISDICTIONAL ORDINANCES/CODES/RULES/ETC., AND THE OWNER'S DIRECTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING ANY ADDITIONAL SOILS INVESTIGATIONS THEY FEEL IS NECESSARY FOR THE PROPER EVALUATION OF THE SITE FOR PURPOSES OF PLANNING, BIDDING, OR CONSTRUCTING THE PROJECT AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR IS RESPONSIBLE TO REVIEW AND UNDERSTAND ALL COMPONENTS OF THE PLANS AND SPECIFICATIONS, INCLUDING FIELD VERIFYING SOIL CONDITIONS, PRIOR TO SUBMISSION OF A BID PROPOSAL.
4. THE CONTRACTOR SHALL PROMPTLY REPORT ANY ERRORS OR AMBIGUITIES DISCOVERED AS PART OF THEIR REVIEW OF PLANS, SPECIFICATIONS, REPORTS AND FIELD INVESTIGATIONS.
5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE COMPUTATION OF QUANTITIES AND WORK REQUIRED TO COMPLETE THIS PROJECT. THE CONTRACTOR'S BID SHALL BE BASED ON THEIR OWN COMPUTATIONS AND UNDER NO CIRCUMSTANCES BE BASED ON THE ENGINEER'S ESTIMATE.
6. QUESTIONS/CLARIFICATIONS WILL BE INTERPRETED BY ENGINEER/OWNER PRIOR TO THE AWARD OF CONTRACT. ENGINEER/OWNER WILL SUBMIT OFFICIAL RESPONSES IN WRITING. INTERPRETATIONS PRESENTED IN OFFICIAL RESPONSES SHALL BE BINDING ON ALL PARTIES ASSOCIATED WITH THE CONTRACT. IN NO WAY SHALL WORD-OF-MOUTH DIALOG CONSTITUTE AN OFFICIAL RESPONSE.
7. PRIOR TO START OF WORK, CONTRACTOR SHALL BE COMPLETELY FAMILIAR WITH ALL CONDITIONS OF THE SITE, AND SHALL ACCOUNT FOR CONDITIONS THAT AFFECT, OR MAY AFFECT CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, LIMITATIONS OF WORK ACCESS, SPACE LIMITATIONS, OVERHEAD OBSTRUCTIONS, TRAFFIC PATTERNS, LOCAL REQUIREMENTS, ADJACENT ACTIVITIES, ETC. FAILURE TO CONSIDER SITE CONDITIONS SHALL NOT BE CAUSE FOR CLAIM OF JOB EXTRAS.
8. COMMENCEMENT OF CONSTRUCTION SHALL EXPLICITLY CONFIRM THAT THE CONTRACTOR HAS REVIEWED THE PLANS AND SPECIFICATIONS IN THEIR ENTIRETY AND CERTIFIES THAT THEIR SUBMITTED BID PROPOSAL CONTAINS PROVISIONS TO COMPLETE THE PROJECT, WITH THE EXCEPTION OF UNFORESEEN FIELD CONDITIONS; ALL APPLICABLE PERMITS HAVE BEEN OBTAINED; AND CONTRACTOR UNDERSTANDS ALL OF THE REQUIREMENTS OF THE PROJECT.
9. SHOULD ANY DISCREPANCIES OR CONFLICTS IN THE PLANS OR SPECIFICATIONS BE DISCOVERED AFTER THE AWARD OF CONTRACT, ENGINEER SHALL BE NOTIFIED IN WRITING IMMEDIATELY AND CONSTRUCTION OF ITEMS AFFECTED BY THE DISCREPANCIES/CONFLICTS SHALL NOT COMMENCE, OR CONTINUE, UNTIL A WRITTEN RESPONSE FROM ENGINEER/OWNER IS DISTRIBUTED. IN THE EVENT OF A CONFLICT BETWEEN REFERENCED CODES, STANDARDS, SPECIFICATIONS AND PLANS, THE ONE ESTABLISHING THE MOST STRINGENT REQUIREMENTS SHALL BE FOLLOWED.
10. THE CONTRACTOR SHALL, AT ITS OWN EXPENSE, OBTAIN ALL NECESSARY PERMITS AND LICENSES TO COMPLETE THE PROJECT. OBTAINING PERMITS, OR DELAYS IN OBTAINING PERMITS, IS NOT CAUSE FOR DELAY OF THE CONTRACT OR SCHEDULE. CONTRACTOR SHALL COMPLY WITH ALL PERMIT REQUIREMENTS.
11. THE CONTRACTOR SHALL NOTIFY ALL INTERESTED GOVERNING AGENCIES, UTILITY COMPANIES AFFECTED BY THIS CONSTRUCTION PROJECT, AND "DIGGER'S HOTLINE" IN ADVANCE OF CONSTRUCTION TO COMPLY WITH ALL JURISDICTIONAL ORDINANCES/CODES/RULES/ETC., PERMIT STIPULATIONS, AND OTHER APPLICABLE STANDARDS. CONTRACTOR IS RESPONSIBLE TO DETERMINE WHICH ORDINANCES/CODES/RULES/ETC. ARE APPLICABLE.
12. SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE TO INITIATE, INSTITUTE, ENFORCE, MAINTAIN, AND SUPERVISE ALL SAFETY PRECAUTIONS AND JOB SITE SAFETY PROGRAMS IN CONNECTION WITH THE WORK.
13. CONTRACTOR SHALL KEEP THE JOBSITE CLEAN AND ORDERLY AT ALL TIMES. ALL LOCATIONS OF THE SITE SHALL BE KEPT IN A WORKING MANNER SUCH THAT DEBRIS IS REMOVED CONTINUOUSLY AND ALL RESPECTIVE CONTRACTORS OPERATE UNDER GENERAL "GOOD HOUSEKEEPING."
14. THE CONTRACTOR SHALL INDEMNIFY THE OWNER, BDG, AND THEIR AGENTS FROM ALL LIABILITY INVOLVED WITH THE CONSTRUCTION, INSTALLATION, AND TESTING OF THE WORK ON THIS PROJECT.
15. ALL FIELD/DRAIN TILE ENCOUNTERED DURING CONSTRUCTION OPERATIONS SHALL BE IMMEDIATELY REPORTED TO ENGINEER/OWNER. TILES ORIGINATING OUTSIDE THE PROJECT LIMITS SHALL BE RECONNECTED OR REROUTED TO MAINTAIN DRAINAGE. ENGINEER/OWNER SHALL DETERMINE THE MOST FAVORABLE METHOD OF RE-ESTABLISHMENT OF OFFSITE DRAINAGE. IF TILE IS ENCOUNTERED DURING TRENCH EXCAVATIONS, RE-ESTABLISHING TILE FUNCTIONALITY SHALL BE CONSIDERED AN INCIDENTAL EXPENSE.

DEMOLITION NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR DEMOLITION, REMOVAL, AND DISPOSAL (IN A LOCATION APPROVED BY ALL GOVERNING AUTHORITIES) OF ALL VEGETATION, STRUCTURES, PADS, WALLS, PARKING, DRIVES, DRAINAGE STRUCTURES, UTILITIES, ETC., IN A LAWFUL MANNER, SUCH THAT THE IMPROVEMENTS SHOWN ON THE REMAINING PLANS CAN BE CONSTRUCTED. ALL FACILITIES TO BE REMOVED SHALL BE UNDERCUT TO SUITABLE MATERIAL AND BROUGHT TO GRADE WITH SUITABLE COMPACTED FILL MATERIAL PER THE SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR DEMOLITION AND DISPOSAL.
2. THE CONTRACTOR SHALL COORDINATE WITH RESPECTIVE UTILITY COMPANIES PRIOR TO THE REMOVAL AND/OR RELOCATION OF UTILITIES. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANY CONCERNING PORTIONS OF WORK WHICH MAY BE PERFORMED BY THE UTILITY COMPANY'S FORCES AND ANY FEES WHICH ARE TO BE PAID TO THE UTILITY COMPANY FOR THEIR SERVICES. THE CONTRACTOR IS RESPONSIBLE FOR PAYING FOR ALL FEES AND CHARGES. COORDINATION REQUIRED PRIOR TO CONSTRUCTION.
3. THIS PLAN INDICATES ITEMS ON THE PROPERTY INTENDED FOR DEMOLITION BASED ON THE CURRENT SITE DESIGN THAT HAVE BEEN IDENTIFIED BY A REASONABLE OBSERVATION OF THE EXISTING CONDITIONS THROUGH FIELD SURVEY RECONNAISSANCE, "DIGGER'S HOTLINE" LOCATION, AND GENERAL "STANDARD OF CARE". THERE MAY BE ADDITIONAL ITEMS THAT CAN NOT BE IDENTIFIED BY A REASONABLE ABOVE GROUND OBSERVATION, OF WHICH THE ENGINEER WOULD HAVE NO KNOWLEDGE OR MAY BE A PART OF ANOTHER DESIGN DISCIPLINE. IT IS THE CONTRACTOR'S/BIDDER'S RESPONSIBILITY TO REVIEW THE PLANS, INSPECT THE SITE AND PROVIDE THEIR OWN DUE DILIGENCE TO INCLUDE IN THEIR BID WHAT ADDITIONAL ITEMS, IN THEIR OPINION, MAY BE NECESSARY FOR DEMOLITION. ANY ADDITIONAL ITEMS IDENTIFIED BY THE CONTRACTOR/BIDDER SHALL BE IDENTIFIED IN THE BID AND REPORTED TO THE ENGINEER OF RECORD. BRIOHN DESIGN GROUP, INC (BDG) TAKES NO RESPONSIBILITY FOR ITEMS ON THE PROPERTY THAT COULD NOT BE LOCATED BY A REASONABLE OBSERVATION OF THE PROPERTY OR OF WHICH THEY WOULD HAVE NO KNOWLEDGE.
4. ALL PERIMETER EROSION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO THE START OF DEMOLITION ACTIVITIES. CONTRACTOR SHALL KEEP ALL STREETS, PRIVATE DRIVES AND PAVEMENT FREE AND CLEAR OF ALL CONSTRUCTION RELATED DIRT, DUST AND DEBRIS.
5. ALL VEGETATION WITHIN THE PROJECT AREA TO BE REMOVED SHALL BE REMOVED BE REMOVED IN THEIR ENTIRETY.
6. ALL LIGHT POLES TO BE REMOVED/RELOCATED SHALL BE REMOVED IN THEIR ENTIRETY, INCLUDING BASE AND ALL APPURTENANCES. SALVAGE FOR RELOCATION. COORDINATE RELOCATION AND/OR ABANDONMENT OF ALL ELECTRIC LINES WITH ELECTRICAL ENGINEER AND OWNER PRIOR TO DEMOLITION.
7. ABANDONED/REMOVED ITEMS SHALL BE DISPOSED OF OFF-SITE UNLESS OTHERWISE NOTED.
8. CONTRACTOR TO REPLACE ALL SIDEWALK AND CURB AND GUTTER WHICH IS DAMAGED BY THE CONSTRUCTION.
9. PRIOR TO CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR:
   - 9.1. EXAMINE ALL SITE CONDITIONS RELATIVE TO THE CONDITIONS INDICATED ON THE ENGINEERING DRAWINGS. ANY DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE DESIGN ENGINEER AND RESOLVED PRIOR TO THE START OF CONSTRUCTION.
   - 9.2. VERIFYING UTILITY ELEVATIONS AND NOTIFYING THE DESIGN ENGINEER OF ANY DISCREPANCIES. NO WORK SHALL BE PERFORMED UNTIL THE DISCREPANCIES ARE RESOLVED.
   - 9.3. NOTIFYING ALL UTILITIES PRIOR TO THE REMOVAL OF ANY UNDERGROUND UTILITIES.
   - 9.4. NOTIFYING THE DESIGN ENGINEER AND LOCAL CONTROLLING MUNICIPALITY 48 HOURS PRIOR TO THE START OF CONSTRUCTION TO ARRANGE FOR APPROPRIATE CONSTRUCTION INSPECTION.
   - 9.5. PERFORMING UTILITY LOCATE OBSERVATIONS (ULO) ON ALL UTILITY CROSSINGS. CONTRACTOR TO REPORT ANY PLAN DISCREPANCIES OR CONFLICTS PRIOR TO THE START OF UTILITY CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE APPROPRIATE UTILITY COMPANIES TO CONDUCT ULO'S.
10. ALL EXISTING UTILITIES TO BE FIELD LOCATED AND FLAGGED BY CONTRACTOR.
11. ANY SANITARY SEWER, SANITARY SEWER SERVICES, WATER MAIN, WATER SERVICES, STORM SEWER, OR OTHER UTILITIES, WHICH ARE TO REMAIN, THAT ARE DAMAGED BY THE CONTRACTORS, SHALL BE REPAIRED TO THE OWNER'S SATISFACTION AT THE CONTRACTOR'S EXPENSE.
12. CONTRACTOR SHALL NOTIFY BDG OF ANY STORM DRAIN LINES ENCOUNTERED DURING DEMOLITION WHICH ARE NOT SHOWN ON THE PLANS PRIOR TO ABANDONMENT OR REMOVAL.
13. CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY DURING THE CONSTRUCTION OF THESE IMPROVEMENTS.
14. ALL DEMOLITION SHALL BE IN ACCORDANCE WITH THE APPROVED MUNICIPALITY RECYCLING PLAN.
15. ANY CONTAMINATED SOILS SHALL BE REMOVED IN ACCORDANCE WITH FEDERAL AND STATE REGULATIONS TO AN APPROVED LANDFILL.
16. CONTRACTOR MAY LIMIT SAW-CUT AND PAVEMENT REMOVAL TO ONLY THOSE AREAS WHERE IT IS REQUIRED AS SHOWN ON THESE CONSTRUCTION PLANS BUT IF ANY DAMAGE IS INCURRED ON ANY OF THE SURROUNDING PAVEMENT, CURB, SIDEWALK, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IT'S REMOVAL AND REPAIR. DAMAGE TO ALL EXISTING CONDITIONS TO REMAIN WILL BE REPLACED AT CONTRACTOR'S EXPENSE.

GRADING NOTES

1. CONTRACTOR SHALL VERIFY ALL GRADES, ENSURE ALL AREAS DRAIN PROPERLY AND REPORT ANY DISCREPANCIES TO BRIOHN DESIGN GROUP (BDG) PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES.
2. ALL EXISTING CONTOURS REPRESENT EXISTING SURFACE GRADES UNLESS OTHERWISE NOTED. ALL PROPOSED GRADES SHOWN ARE FINISH SURFACE GRADES UNLESS OTHERWISE NOTED.
3. ALL EXCAVATIONS AND MATERIAL PLACEMENT SHALL BE COMPLETED TO DESIGN ELEVATIONS AS DEPICTED IN THE PLANS.
   - CONTRACTOR SHALL ASSUME SOLE RESPONSIBILITY FOR THE COMPUTATION(S) OF ALL GRADING QUANTITIES. WHILE BDG ATTEMPTS TO PROVIDE A COST EFFECTIVE APPROACH TO BALANCE EARTHWORK, GRADING DESIGN IS BASED ON MANY FACTORS, INCLUDING SAFETY, AESTHETICS, AND COMMON ENGINEERING STANDARD OF CARE, THEREFORE NO GUARANTEE CAN BE MADE FOR A BALANCED SITE.
   - THE CONTRACTOR MAY SOLICIT APPROVAL FROM ENGINEER/OWNER TO ADJUST FINAL GRADES FROM DESIGN GRADES TO PROVIDE AN OVERALL SITE BALANCE AS A RESULT OF FIELD CONDITIONS.
4. GRADING ACTIVITIES SHALL BE IN A MANNER TO ALLOW POSITIVE DRAINAGE ACROSS DISTURBED SOILS, WHICH MAY INCLUDE EXCAVATION OF TEMPORARY DITCHES TO PREVENT PONDING, AND IF NECESSARY PUMPING TO ALLEVIATE PONDING. CONTRACTOR SHALL PREVENT SURFACE WATER FROM ENTERING INTO EXCAVATIONS. IN NO WAY SHALL OWNER BE RESPONSIBLE FOR REMEDIATION OF UNSUITABLE SOILS CREATED/ORIGINATED AS A RESULT OF IMPROPER SITE GRADING OR SEQUENCING. CONTRACTOR SHALL SEQUENCE GRADING ACTIVITIES TO LIMIT EXPOSURE OF DISTURBED SOILS DUE TO WEATHER.
5. THE CONTRACTOR IS RESPONSIBLE FOR MEETING MINIMUM COMPACTION STANDARDS AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. THE CONTRACTOR SHALL NOTIFY ENGINEER/OWNER IF PROPER COMPACTION CANNOT BE OBTAINED. THE PROJECT'S GEOTECHNICAL CONSULTANT SHALL DETERMINE WHICH IN-SITU SOILS ARE TO BE CONSIDERED UNSUITABLE SOILS. THE ENGINEER/OWNER AND GEOTECHNICAL TESTING CONSULTANT WILL DETERMINE IF REMEDIAL MEASURES WILL BE NECESSARY.
6. IN THE EVENT THAT ANY MOISTURE-DENSITY TEST(S) FAIL TO MEET SPECIFICATION REQUIREMENTS, THE CONTRACTOR SHALL PERFORM CORRECTIVE WORK AS NECESSARY TO BRING THE MATERIAL INTO COMPLIANCE AND RETEST THE FAILED AREA AT NO COST TO THE OWNER.
7. WITH THE AUTHORIZATION OF THE ENGINEER/OWNER, MATERIAL THAT IS TOO WET TO PERMIT PROPER COMPACTION MAY BE SPREAD ON FILL AREAS IN AN EFFORT TO DRY. CONTRACTOR SHALL CLEARLY FIELD MARK THE EXTERIOR LIMITS OF SPREAD MATERIAL WITH PAINTED LATH AND SUBMIT A PLAN TO THE ENGINEER/OWNER THAT IDENTIFIES THE LIMITS. UNDER NO CONDITION SHALL THE SPREAD MATERIAL DEPTH EXCEED THE MORE RESTRICTIVE OF: THE EFFECTIVE TREATMENT DEPTH OF MACHINERY THAT WILL BE USED TO TURNOVER THE SPREAD MATERIAL; OR THE MAXIMUM COMPACTION LIFT DEPTH.
8. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER/OWNER IF GROUNDWATER IS ENCOUNTERED DURING EXCAVATION.
9. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF ADEQUATE AND SAFE TEMPORARY SHORING, BRACING, RETENTION STRUCTURES, AND EXCAVATIONS.
10. THE SITE SHALL BE COMPLETED TO WITHIN 0.10-FT (+/-) OF THE PROPOSED GRADES AS INDICATED WITHIN THE PLANS PRIOR TO PLACEMENT OF TOPSOIL OR STONE. CONTRACTOR IS ENCOURAGED TO SEQUENCE CONSTRUCTION SUCH THAT THE SITE IS DIVIDED INTO SMALLER AREAS TO ALLOW STABILIZATION OF DISTURBED SOILS IMMEDIATELY UPON COMPLETION OF INDIVIDUAL SMALLER AREAS.
11. CONTRACTOR SHALL CONTACT "DIGGER'S HOTLINE" FOR LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES AND SHALL BE RESPONSIBLE FOR PROTECTING SAID UTILITIES FROM ANY DAMAGE DURING CONSTRUCTION.
12. CONTRACTOR SHALL PROTECT INLETS AND ADJACENT PROPERTIES WITH SILT FENCING OR APPROVED EROSION CONTROL METHODS UNTIL CONSTRUCTION IS COMPLETED. CONTRACTOR SHALL PLACE SILT FENCING AT DOWN SLOPE SIDE OF GRADING LIMITS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ANY EXISTING FACILITIES OR UTILITIES. ANY DAMAGE SHALL BE REPAIRED TO THE OWNER□S SATISFACTION AT THE EXPENSE OF THE CONTRACTOR.
14. WORK WITHIN ANY ROADWAY RIGHT-OF-WAY SHALL BE COORDINATED WITH THE APPROPRIATE MUNICIPAL OFFICIAL PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FEES. GRADING WITHIN RIGHT-OF-WAY IS SUBJECT TO APPROVAL BY SAID OFFICIALS. RESTORATION OF RIGHT-OF-WAY IS CONSIDERED INCIDENTAL AND SHALL BE INCLUDED IN THE COST OF GRADING. RESTORATION SHALL INCLUDE ALL ITEMS NECESSARY TO RESTORE RIGHT-OF-WAY IN-KIND INCLUDING LANDSCAPING.
15. CONTRACTOR SHALL COMPLY WITH ALL CITY AND/OR STATE CONSTRUCTION STANDARDS/ORDINANCES.

CONSTRUCTION SITE SEQUENCING

1. INSTALL PERIMETER SILT FENCE, EXISTING INLET PROTECTION, AND TEMPORARY CONSTRUCTION ENTRANCE.
2. STRIP AND STOCKPILE TOPSOIL, INSTALL SILT FENCE AROUND PERIMETER OF STOCKPILE.
3. CONDUCT GRADING FOR POND AS TEMPORARY SEDIMENT TRAP. INSTALL DIVERSION BERM, AS NEEDED.
4. CONDUCT ROUGH GRADING EFFORTS.
5. INSTALL UTILITY PIPING AND STRUCTURES, IMMEDIATELY INSTALL INLET PROTECTION.
6. COMPLETE FINAL GRADING, INSTALLATION OF GRAVEL BASE COURSES, PAVEMENTS, FENCING, ETC.
7. REMOVE TRAPPED SEDIMENT FROM ROUGH GRADING IN POND, IF NEEDED.
8. PLACE TOPSOIL AND IMMEDIATELY STABILIZE DISTURBED AREAS WITH EROSION CONTROLS.
9. EROSION CONTROL MEASURES SHALL BE REMOVED ONLY AFTER SITE CONSTRUCTION IS COMPLETE WITH ALL SOIL SURFACES HAVING AN ESTABLISHED VEGETATIVE COVER THAT MEETS OR EXCEEDS THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES DEFINITION OF 'FINAL STABILIZATION'.

   CONTRACTOR MAY MODIFY SEQUENCING AFTER ITEM 1 AS NEEDED TO COMPLETE CONSTRUCTION IF EROSION CONTROLS ARE MAINTAINED IN ACCORDANCE WITH THE CONSTRUCTION SITE EROSION CONTROL REQUIREMENTS.

EROSION AND SEDIMENT CONTROL NOTES:

1. ALL CONSTRUCTION SHALL ADHERE TO THE REQUIREMENTS SET FORTH IN WISCONSIN'S NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORMWATER GENERAL PERMIT FOR CONSTRUCTION SITE LAND DISTURBANCE ACTIVITIES. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES (WDNR) TECHNICAL STANDARDS (REFERRED TO AS BMP'S) AND VILLAGE OF GERMANTOWN ORDINANCE. THESE PROCEDURES AND STANDARDS SHALL BE REFERRED TO AS BEST MANAGEMENT PRACTICES (BMP'S). IT IS THE RESPONSIBILITY OF ALL CONTRACTORS ASSOCIATED WITH THE PROJECT TO OBTAIN A COPY OF, AND UNDERSTAND, THE BMP'S PRIOR TO THE START OF CONSTRUCTION ACTIVITIES.
2. THE EROSION CONTROL MEASURES INDICATED ON THE PLANS ARE THE MINIMUM REQUIREMENTS. ADDITIONAL CONTROL MEASURES AS DIRECTED BY BRIOHN DESIGN GROUP (BDG) OR GOVERNING AGENCIES SHALL BE INSTALLED WITHIN 24 HOURS OF REQUEST.
3. MODIFICATIONS TO THE APPROVED EROSION CONTROL PLAN IN ORDER TO MEET UNFORESEEN FIELD CONDITIONS ARE ALLOWED IF MODIFICATIONS CONFORM TO BMP'S. ALL MODIFICATIONS MUST BE APPROVED BY BDG/MUNICIPALITY PRIOR TO DEVIATION OF THE APPROVED PLAN.
4. INSTALL PERIMETER EROSION CONTROL MEASURES (SUCH AS CONSTRUCTION ENTRANCES, SILT FENCE AND EXISTING INLET PROTECTION) PRIOR TO ANY SITE WORK, INCLUDING GRADING OR DISTURBANCE OF EXISTING SURFACE COVER, AS SHOWN ON PLAN IN ORDER TO PROTECT ADJACENT PROPERTIES/STORM SEWER SYSTEMS FROM SEDIMENT TRANSPORT.
5. CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT ALL LOCATIONS OF VEHICLE INGRESS/EGRESS POINTS. CONTRACTOR IS RESPONSIBLE TO COORDINATE LOCATION(S) WITH THE PROPER AUTHORITIES, PROVIDE NECESSARY FEES AND OBTAIN ALL REQUIRED APPROVALS OR PERMITS. ADDITIONAL CONSTRUCTION ENTRANCES OTHER THAN AS SHOWN ON THE PLANS MUST BE PRIOR APPROVED BY THE APPLICABLE GOVERNING AGENCIES PRIOR TO INSTALLATION.
6. PAVED SURFACES ADJACENT TO CONSTRUCTION ENTRANCES SHALL BE SWEPT AND/OR SCRAPED TO REMOVE ACCUMULATED SOIL, DIRT AND/OR DUST AFTER THE END OF EACH WORK DAY AND AS REQUESTED BY THE GOVERNING AGENCIES.
7. ALL EXISTING STORM SEWER FACILITIES THAT WILL COLLECT RUNOFF FROM DISTURBED AREAS SHALL BE PROTECTED TO PREVENT SEDIMENT DEPOSITION WITHIN STORM SEWER SYSTEMS. INLET PROTECTION SHALL BE IMMEDIATELY FITTED AT THE INLET OF ALL INSTALLED STORM SEWER. ALL INLETS, STRUCTURES, PIPES, AND SWALES SHALL BE KEPT CLEAN AND FREE OF SEDIMENTATION AND DEBRIS.
8. EROSION CONTROL FOR UTILITY CONSTRUCTION (STORM SEWER, SANITARY SEWER, WATER MAIN, ETC.) OUTSIDE OF THE PERIMETER CONTROLS SHALL INCORPORATE THE FOLLOWING:
   - PLACE EXCAVATED TRENCH MATERIAL ON THE HIGH SIDE OF THE TRENCH.
   - BACKFILL, COMPACT, AND STABILIZE THE TRENCH IMMEDIATELY AFTER PIPE CONSTRUCTION.
   - DISCHARGE TRENCH WATER INTO A SEDIMENTATION BASIN OR FILTERING TANK IN ACCORDANCE WITH BMP'S PRIOR TO RELEASE INTO STORM SEWER OR DITCHES.
9. AT A MINIMUM, SEDIMENT BASINS AND NECESSARY TEMPORARY DRAINAGE PROVISIONS SHALL BE CONSTRUCTED AND OPERATIONAL BEFORE BEGINNING OF SIGNIFICANT MASS GRADING OPERATIONS TO PREVENT OFFSITE DISCHARGE OF UNTREATED RUNOFF.
10. ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES MUST BE MAINTAINED AND REPAIRED AS NEEDED. THE GENERAL CONTRACTOR WILL BE RESPONSIBLE FOR INSPECTION AND REPAIR DURING CONSTRUCTION. THE OWNER WILL BE RESPONSIBLE IF EROSION CONTROL IS REQUIRED AFTER THE CONTRACTOR HAS COMPLETED THE PROJECT.
11. TOPSOIL STOCKPILES SHALL HAVE A BERM OR TRENCH AROUND THE CIRCUMFERENCE AND PERIMETER SILT FENCE TO CONTROL SILT. IF TOPSOIL STOCKPILE REMAINS UNDISTURBED FOR MORE THAN SEVEN (7) DAYS, TEMPORARY SEEDING AND STABILIZATION IS REQUIRED.
12. EROSION CONTROL MEASURES TEMPORARILY REMOVED FOR UNAVOIDABLE CONSTRUCTION ACTIVITIES SHALL BE IN WORKING ORDER PRIOR TO THE COMPLETION OF EACH WORK DAY.
13. MAINTAIN SOIL EROSION CONTROL DEVICES THROUGH THE DURATION OF THIS PROJECT. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN THIRTY (30) DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED. DISTURBANCES ASSOCIATED WITH EROSION CONTROL REMOVAL SHALL BE IMMEDIATELY STABILIZED.
14. PUMPS MAY BE USED AS BYPASS DEVICES. IN NO CASE SHALL PUMPED WATER BE DIVERTED OUTSIDE THE PROJECT LIMITS.
15. GRADING EFFORTS SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE EROSION. EROSION AND SEDIMENT CONTROL MEASURES SHALL CONSIDER THE TIME OF YEAR, SITE CONDITIONS, AND THE USE OF TEMPORARY OR PERMANENT MEASURES. ALL DISTURBED AREAS THAT WILL NOT BE WORKED FOR A PERIOD OF THIRTY (30) DAYS REQUIRE TEMPORARY SEEDING FOR EROSION CONTROL. SEEDING FOR EROSION CONTROL SHALL BE IN ACCORDANCE WITH TECHNICAL STANDARDS.
16. ALL DISTURBED SLOPES EXCEEDING 4:1 YET LESS THAN 3:1, SHALL BE STABILIZED WITH NORTH AMERICAN GREEN S75BN EROSION MATTING (OR APPROVED EQUAL) AND DISTURBED SLOPES EXCEEDING 3:1 YET LESS THAN 2:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN C125BN (OR APPROVED EQUAL) OR APPLICATION OF AN APPROVED POLYMER SOIL STABILIZATION TREATMENT OR A COMBINATION THEREOF, AS REQUIRED. EROSION MATTING AND/OR NETTING USED ONSITE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES.
17. DURING PERIODS OF EXTENDED DRY WEATHER, THE CONTRACTOR SHALL KEEP A WATER TRUCK ON SITE FOR THE PURPOSE OF WATERING DOWN SOILS WHICH MAY OTHERWISE BECOME AIRBORNE. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING WIND EROSION (DUST) DURING CONSTRUCTION AT HIS/HER EXPENSE.
18. DISTURBED AREAS AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION SHALL BE VISUALLY INSPECTED FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM ON A DAILY BASIS.
19. QUALIFIED PERSONNEL (PROVIDED BY THE GENERAL/PRIME CONTRACTOR) SHALL INSPECT DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED AND EROSION AND SEDIMENT CONTROLS WITHIN 24 HOURS OF ALL 0.5-INCH, OR MORE, PRECIPITATION EVENTS WITH A MINIMUM INSPECTION INTERVAL OF ONCE EVERY SEVEN (7) CALENDAR DAYS IN THE ABSENCE OF A QUALIFYING RAIN OR SNOWFALL EVENT. REPORTING SHALL BE IN ACCORDANCE WITH PART IV D.4. (a-f). OF THE NPDES GENERAL PERMIT. CONTRACTOR SHALL IMMEDIATELY ARRANGE TO HAVE ANY DEFICIENT ITEMS REVEALED DURING INSPECTIONS REPAIRED/REPLACED.
20. THE FOLLOWING MAINTENANCE PRACTICES SHALL BE USED TO MAINTAIN, IN GOOD AND EFFECTIVE OPERATING CONDITIONS, VEGETATION, EROSION AND SEDIMENT CONTROL MEASURES, AND OTHER PROTECTIVE MEASURES IDENTIFIED IN THIS PLAN. UPON IDENTIFICATION, DEFICIENCIES IN STORMWATER CONTROLS SHALL BE ADDRESSED IMMEDIATELY. THE MAINTENANCE PROCEDURES FOR THIS DEVELOPMENT SHALL INCLUDE, BUT NOT BE LIMITED TO THE BELOW.
   - SILT FENCE – REPAIR OR REPLACE ANY DAMAGED FILTER FABRIC AND/OR STAKES. REMOVE ACCUMULATED SEDIMENT WHEN IT HAS REACHED ONE-HALF THE ABOVE GROUND HEIGHT OF THE FENCE.
   - CONSTRUCTION ENTRANCE – AS NEEDED, ADD STONE TO MAINTAIN CONSTRUCTION ENTRANCE DIMENSIONS AND EFFECTIVENESS.
   - DITCH CHECK (STRAW BALES) – RE-SECURE STAKES; ADJUST OR REPOSITION BALES TO ADDRESS PROPER FLOW OF STORMWATER; AND REMOVE ACCUMULATED SEDIMENT WHEN IT HAS REACHED ONE-HALF THE HEIGHT OF THE BALE.
   - EROSION CONTROL MATTING – REPAIR MATTING IMMEDIATELY IF INSPECTION REVEALS BREACHED OR FAILED CONDITIONS. REPAIR AND RE-GRADE SOIL WHERE CHANNELIZATION HAS OCCURRED.
   - DIVERSION BERM/SWALE – REPLACE OR RE-COMPACT THE CONSTRUCTION MATERIALS AS NECESSARY.
   - INLET PROTECTION – CLEAN, REPAIR OR REPLACE FILTER FABRIC AND/OR STONE WHEN CONTROL MEASURE IS CLOGGED. INLET FILTER BAGS SHALL BE REPLACED ONCE BAG BECOMES ONE-HALF FULL OF SEDIMENT.

   ADDITIONAL POLLUTANT CONTROL MEASURES TO BE IMPLEMENTED DURING CONSTRUCTION ACTIVITIES SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING.

   - CONSTRUCTION WASTE SHALL BE PROPERLY DISPOSED OF. THIS INCLUDES ALL CONSTRUCTION SITE WASTE MATERIAL, SANITARY WASTE, AND WASTE FROM VEHICLE TRACKING OF SEDIMENTS. THE CONTRACTOR SHALL ENSURE THAT NO MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, BURNED, OR DISCHARGED TO THE WATERS OF THE STATE. VEHICLES HAULING MATERIAL AWAY FROM THE SITE SHALL BE COVERED WITH A TARPAULIN TO PREVENT BLOWING DEBRIS.
   - DUST CONTROL SHALL BE ACCOMPLISHED BY ONE OR MORE OF THE FOLLOWING METHODS:
     A. COVERING 30% OR MORE OF THE SOIL SURFACE WITH A NON-ERODIBLE MATERIAL.
     B. ROUGHENING THE SOIL TO PRODUCE RIDGES PERPENDICULAR TO THE PREVAILING WIND. RIDGES SHALL BE AT LEAST SIX (6) INCHES IN HEIGHT.
     C. FREQUENT WATERING OF EXCAVATION AND FILL AREAS.
     D. PROVIDING GRAVEL OR PAVING AT ENTRANCE/EXIT DRIVES, PARKING AREAS AND TRANSIT PATHS.
   - STREET SWEEPING SHALL BE PERFORMED TO IMMEDIATELY REMOVE ANY SEDIMENT TRACKED ON PAVEMENTS.

UTILITY NOTES

1. EXISTING UTILITIES ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE TYPE, LOCATION, SIZE AND ELEVATION OF UNDERGROUND UTILITIES AS THEY DEEM NECESSARY FOR PROPOSED UTILITY CONNECTIONS AND/OR TO AVOID DAMAGE THERETO. CONTRACTOR SHALL CALL "DIGGER'S HOTLINE" PRIOR TO ANY CONSTRUCTION.
2. ALL UTILITY WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR SEWER AND WATER CONSTRUCTION IN (WISCONSIN LATEST EDITION AND ADDENDUM) AND ALL STATE AND LOCAL CODES AND SPECIFICATIONS. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE WHICH SPECIFICATIONS AND CODES APPLY, AND TO COORDINATE ALL CONSTRUCTION ACTIVITIES WITH THE APPROPRIATE LOCAL AND STATE AUTHORITIES.
3. UTILITY CONSTRUCTION AND SPECIFICATIONS SHALL COMPLY WITH THE VILLAGE OF GERMANTOWN PROVISIONS AND WISCONSIN DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES DSPS 382.
4. TRACER WIRES SHALL BE INSTALLED AS NECESSARY IN ACCORD WITH 182.0715(2R) OF THE STATE STATUTES AND VILLAGE OF GERMANTOWN REQUIREMENTS.
5. LENGTHS OF PROPOSED UTILITIES ARE TO CENTER OF STRUCTURES OR FITTINGS AND MAY VARY SLIGHTLY FROM PLAN. LENGTHS ARE SHOWN FOR CONTRACTOR CONVENIENCE ONLY. CONTRACTOR IS SOLELY RESPONSIBLE FOR COMPUTATIONS OF MATERIALS REQUIRED TO COMPLETE WORK. LENGTHS SHALL BE FIELD VERIFIED DURING CONSTRUCTION.
6. CONTRACTOR SHALL ADJUST AND/OR RECONSTRUCT EXISTING UTILITY COVERS (SUCH AS MANHOLE COVERS, VALVE BOX COVERS, ETC.) TO MATCH FINISHED GRADES OF THE AREAS DISTURBED DURING CONSTRUCTION.
7. CONTRACTOR SHALL FIELD VERIFY LOCATIONS, ELEVATIONS, AND SIZES OF PROPOSED UTILITIES AND CHECK ALL UTILITY CROSSINGS FOR CONFLICTS PRIOR TO ATTEMPTING CONNECTIONS AND BEGINNING UTILITY CONSTRUCTION.
8. STORM SEWER SPECIFICATIONS –

   PIPE – REINFORCED CONCRETE PIPE (RCP) SHALL MEET THE REQUIREMENTS OF ASTM CLASS IV (MINIMUM) C-76 WITH RUBBER GASKET JOINTS CONFORMING TO ASTM C-443; HIGH DENSITY DUAL-WALL POLYETHYLENE N-12 CORRUGATED PIPE (HDPE) SHALL BE AS MANUFACTURED BY ADS OR EQUAL WITH WATER TIGHT JOINTS, AND SHALL MEET THE REQUIREMENTS OF AASHTO DESIGNATION M-294 TYPE "S", OR POLYVINYL CHLORIDE (PVC) – CLASS PS46 MEETING AASHTO M278, AS NOTED.

   INLETS/CATCH BASINS – INLETS/CATCH BASINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FILE NO. 25 OF THE "STANDARD SPECIFICATIONS" WITH A 1'-8" X 2'-6" MAXIMUM OPENING. FRAME & GRATE SHALL BE NEENAH R-1580 WITH TYPE G GRATE, OR EQUAL. CURB FRAME & GRATE SHALL BE NEENAH R-3067, OR EQUAL.

   BACKFILL AND BEDDING – STORM SEWER SHALL BE CONSTRUCTED WITH GRAVEL BACKFILL AND CLASS "B" BEDDING IN ALL PAVED AREAS AND TO A POINT 5 FEET BEYOND THE EDGE OF PAVEMENT. TRENCHES RUNNING PARALLEL TO AND LESS THAN 5 FEET FROM THE EDGE OF PAVEMENT SHALL ALSO REQUIRE GRAVEL BACKFILL. LANDSCAPED AREAS MAY BE BACKFILLED WITH EXCAVATED MATERIAL IN CONFORMANCE WITH SECTION 8.43.5 OF THE "STANDARD SPECIFICATIONS".

   MANHOLE FRAMES AND COVERS – MANHOLE FRAMES AND COVERS SHALL BE NEENAH R-1642 WITH TYPE "B" SELF SEALING LIDS, NON-ROCKING OR EQUAL .

   FIELD TILE CONNECTION – ALL FIELD TILE ENCOUNTERED DURING CONSTRUCTION SHALL BE INCLUDED IN THE UNIT PRICE(S) FOR STORM SEWER. TILE LINES CROSSED BY THE TRENCH SHALL BE REPLACED WITH THE SAME MATERIAL AS THE STORM SEWER.
9. ALL NEW ON-SITE STORM UTILITIES SHALL BE PRIVATELY OWNED AND MAINTAINED BY THE PROPERTY OWNER.

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SHEET TITLE

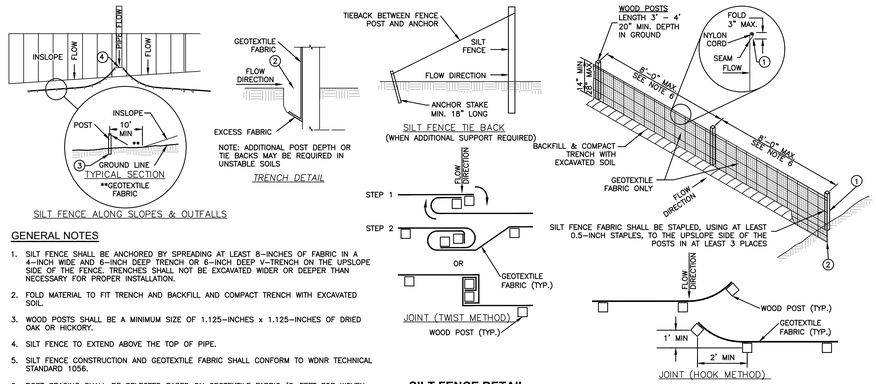
SITE NOTES AND DETAILS

PROPOSED IMPROVEMENTS FOR:
TDC WILLOW CREEK, LLC
N102W19200 WILLOW CREEK WAY
VILLAGE OF GERMANTOWN, WISCONSIN

Date	Revision

JOB:	240101
DRAWN:	RWI
CHECKED:	BDG
DATE:	11-11-2024

SHEET:
C4.0



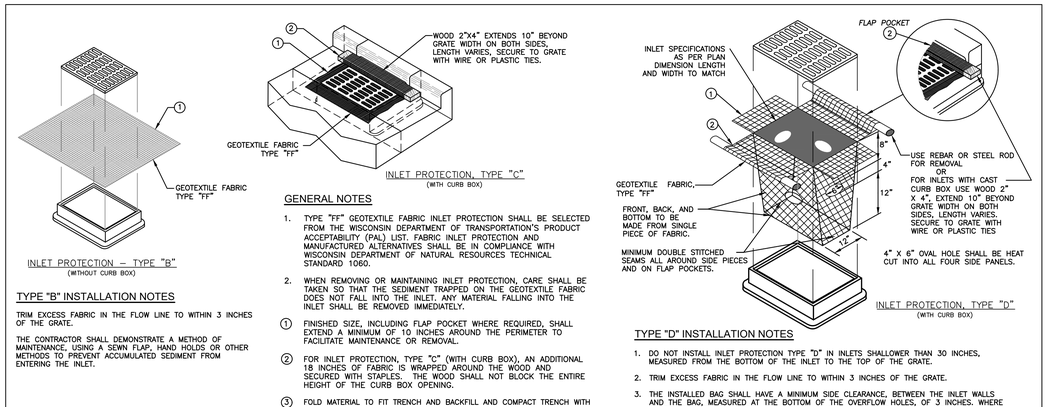
SILT FENCE ALONG SLOPES & OUTFALLS

GENERAL NOTES

1. SILT FENCE SHALL BE ANCHORED BY SPREADING AT LEAST 8–INCHES OF FABRIC IN A 4–INCH WIDE AND 6–INCH DEEP TRENCH OR 6–INCH DEEP V–TRENCH ON THE UPSLOPE SIDE OF THE FENCE. TRENCHES SHALL NOT BE EXCAVATED WIDER OR DEEPER THAN NECESSARY FOR PROPER INSTALLATION.
2. FOLD MATERIAL TO FIT TRENCH AND BACKFILL AND COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL BE A MINIMUM SIZE OF 1.125–INCHES x 1.125–INCHES OF DRIED OAK OR HICKORY.
4. SILT FENCE TO EXTEND ABOVE THE TOP OF PIPE.
5. SILT FENCE CONSTRUCTION AND GEOTEXTILE FABRIC SHALL CONFORM TO WDNR TECHNICAL STANDARD 1056.
6. POST SPACING SHALL BE SELECTED BASED ON GEOTEXTILE FABRIC (8–FEET FOR WOVEN & 3–FEET FOR NON–WOVEN)

SILT FENCE DETAIL

N.T.S.



TYPE "B" INSTALLATION NOTES

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3 INCHES OF THE GRATE.

THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHODS TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

GENERAL NOTES

1. TYPE "FF" GEOTEXTILE FABRIC INLET PROTECTION SHALL BE SELECTED FROM THE WISCONSIN DEPARTMENT OF TRANSPORTATION'S PRODUCT ACCEPTABILITY (PAL) LIST. FABRIC INLET PROTECTION AND MANUFACTURED ALTERNATIVES SHALL BE IN COMPLIANCE WITH WISCONSIN DEPARTMENT OF NATURAL RESOURCES TECHNICAL STANDARD 1060.
2. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

(1) FINISHED SIZE, INCLUDING FLAP POCKET WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

(2) FOR INLET PROTECTION, TYPE "C" (WITH CURB BOX), AN ADDITIONAL 18 INCHES OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.

(3) FOLD MATERIAL TO FIT TRENCH AND BACKFILL AND COMPACT TRENCH WITH EXCAVATED SOIL.

TYPE "D" INSTALLATION NOTES

1. DO NOT INSTALL INLET PROTECTION TYPE "D" IN INLETS SHALLOWER THAN 30 INCHES, MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.
2. TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3 INCHES OF THE GRATE.
3. THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3 INCHES. WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCHES CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4 INCHES FROM THE BOTTOM OF THE BAG.

INLET PROTECTION

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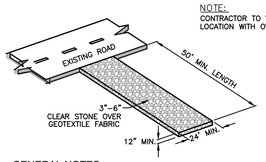

GENERAL NOTES

1. TRACKING PADS SHALL BE INSTALLED PRIOR TO ANY TRAFFIC LEAVING THE SITE.
2. THE AGGREGATE FOR TRACKING PADS SHALL BE 3 TO 6–INCH CLEAR OR WASHED STONE. ALL MATERIAL TO BE RETAINED ON A 3–INCH SIEVE.
3. THE AGGREGATE SHALL BE PLACED IN A LAYER AT LEAST 12–INCHES THICK. ON SITES WHERE SATURATED CONDITIONS ARE EXPECTED DURING THE LIFE OF THE PAD, THE PAD SHALL BE UNDERLAIN WITH WisDOT TYPE "R" GEOTEXTILE FABRIC TO PREVENT MIGRATION OF UNDERLYING SOILS INTO THE STONE LAYER.
4. THE TRACKING PAD SHALL BE THE FULL WIDTH OF THE EGRESS POINT. THE TRACKING PAD SHALL BE A MINIMUM 50–FEET LONG.
5. ANY SEDIMENT TRACKED ONTO A PUBLIC OR PRIVATE ROAD SHOULD BE REMOVED BY STREET CLEANING, NOT FLUSHING, AT THE END OF EACH WORKING DAY.
6. TRACKING PADS SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24–HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5–INCHES OF RAIN OR MORE DURING A 24–HOUR PERIOD.
7. THE TRACKING PAD PERFORMANCE SHALL BE MAINTAINED BY SCRAPING OR TOP–DRESSING WITH ADDITIONAL AGGREGATE.

CONSTRUCTION ENTRANCE

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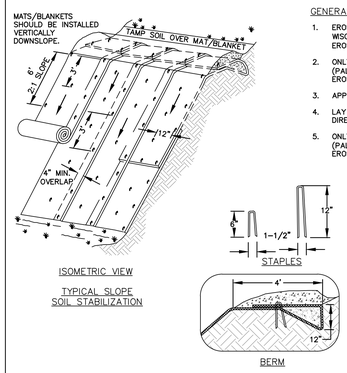

GENERAL NOTES:

1. EROSION MAT CONSTRUCTION SHALL BE IN ACCORDANCE WITH WISCONSIN DNR TECHNICAL STANDARD 1052 "NON–CHANNEL EROSION MAT".
2. ONLY WisDOT EROSION CONTROL PRODUCT ACCEPTABILITY LIST (PAL) APPROVED MATS SHALL BE ALLOWED. REFER TO EROSION CONTROL PLAN FOR EXACT MAT CLASSIFICATION.
3. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
4. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
5. ONLY WisDOT EROSION CONTROL PRODUCT ACCEPTABILITY LIST (PAL) APPROVED MATS SHALL BE ALLOWED. REFER TO EROSION CONTROL PLAN FOR EXACT MAT CLASSIFICATION.

EROSION MATTING

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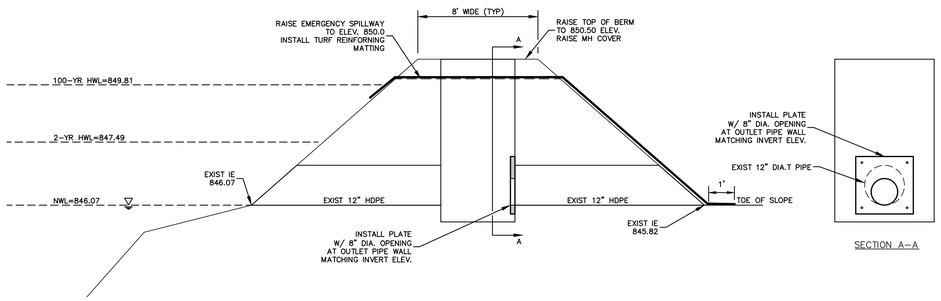

POND OUTLET MODIFICATION DETAIL

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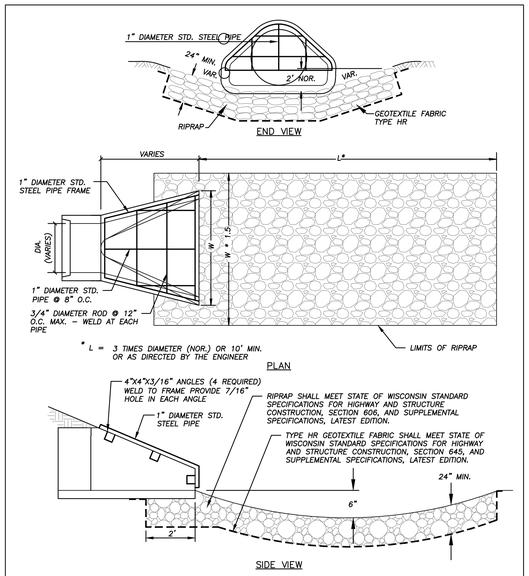

APRON ENDWALL WITH GRATE

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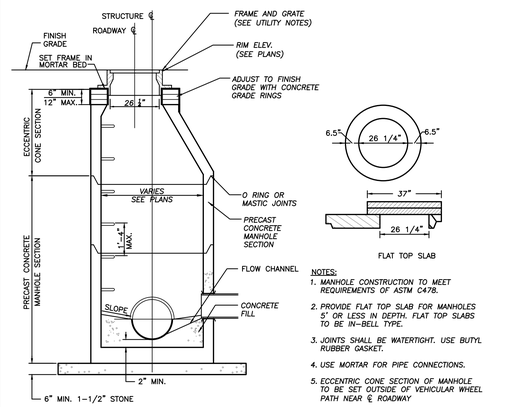
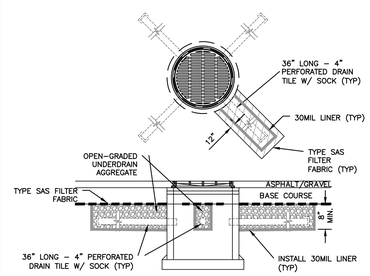


NOTES:

1. MANHOLE CONSTRUCTION TO MEET REQUIREMENTS OF ASTM C478.
2. PROVIDE FLAT TOP SLAB FOR MANHOLES 5' OR LESS IN DEPTH. FLAT TOP SLABS TO BE IN–BELL TYPE.
3. JOINTS SHALL BE WATERTIGHT. USE BUTYL RUBBER GASKET.
4. USE MORTAR FOR PIPE CONNECTIONS.
5. ECCENTRIC CONE SECTION OF MANHOLE TO BE SET OUTSIDE OF VEHICULAR WHEEL PATH NEAR ℄ ROADWAY

STANDARD STORM INLET/MH DETAIL

N.T.S.



NOTE:

1. UNDERDRAINS SHALL BE INSTALLED ON ALL INLET/CATCH BASINS LOCATED WITHIN IMPERVIOUS PAVEMENTS.
2. UNDERDRAIN CONNECTIONS SHALL BE CORED ONSITE OR PRECAST.
3. UNDERDRAIN VERTICAL LOCATION MAY VARY DEPENDING ON STORM SEWER PIPE LOCATION.
4. ALTERNATIVE DESIGN MAY BE SUBSTITUTED IF SHOP DRAWINGS ARE SUBMITTED AND APPROVED BY BDG AND THE VILLAGE.

CATCH BASIN UNDERDRAIN DETAIL

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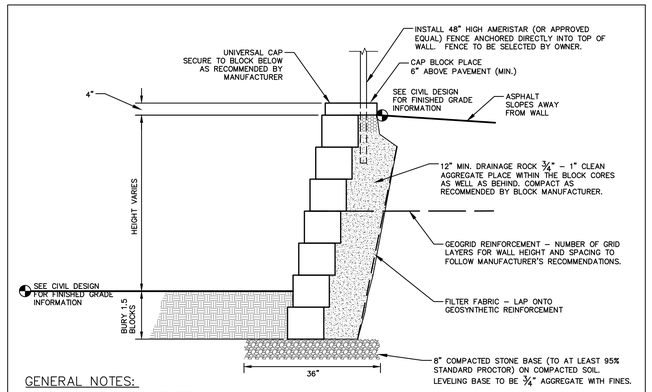

GENERAL NOTES:

1. COLOR TO BE SPECIFIED BY ARCHITECT.
2. CONTRACTOR TO FOLLOW ALL OF MANUFACTURER'S GUIDELINES AND DIRECTIONS FOR INSTALLATION OF MODULAR RETAINING WALL SYSTEM. INSTALLATION INSTRUCTIONS REPRESENTED ON DETAIL ARE NOT MEANT TO SUPPLANT DIRECTIONS OF MODULAR SYSTEM MANUFACTURER/SUPPLIER.

MODULAR RETAINING WALL

N.T.S.

BRIOHN DESIGN GROUP
3885 N BROOKFIELD ROAD, SUITE 200
BROOKFIELD WISCONSIN 53045-1950
(262) 790-0500 PHONE
(262) 790-0505 FAX

SHEET TITLE
SITE NOTES AND DETAILS

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N102W19200 WILLOW CREEK WAY
VILLAGE OF GERMANTOWN, WISCONSIN

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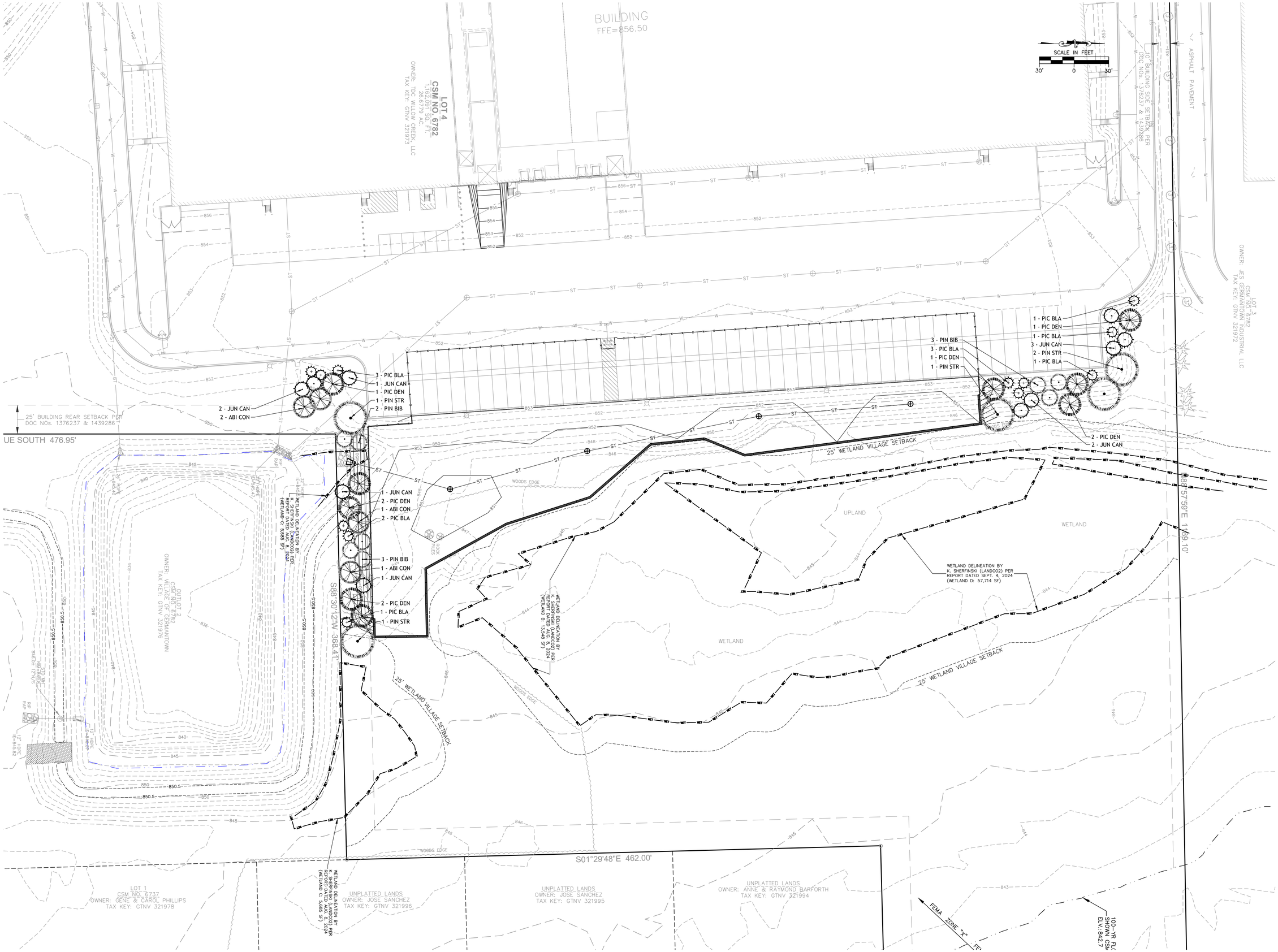

BRIOHN DESIGN GROUP
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LANDCO2
5032 W. FOREST HOME AVE. #5
MILWAUKEE, WI 53219
www.LANDCO2.com

SHEET TITLE
LANDSCAPE PLAN

PROPOSED IMPROVEMENTS FOR:
TDC WILLOW CREEK, LLC
N102W19200 WILLOW CREEK WAY
VILLAGE OF GERMANTOWN, WISCONSIN

Revision	Date

JOB:	240101
DRAWN:	JS
CHECKED:	HG
DATE:	11-07-2024
SHEET:	L1.0

GENERAL

LANDSCAPE NOTES

1. CONTRACTOR SHALL VERIFY ALL EXISTING AND PROPOSED SITE ELEMENTS AND NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES. SURVEY DATA OF EXISTING CONDITIONS WAS SUPPLIED BY OTHERS.
2. CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES AND NOTIFY LANDSCAPE ARCHITECT OF ANY CONFLICTS. CONTRACTOR SHALL EXERCISE CAUTION WHEN WORKING IN THE VICINITY OF UNDERGROUND UTILITIES.
3. CONTRACTOR SHALL PROVIDE MINIMUM 2% SLOPE AWAY FROM ALL STRUCTURES.
4. CONTRACTOR SHALL FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS AS INDICATED. LEAVE AREAS TO RECEIVE TOPSOIL 3" BELOW FINAL FINISHED GRADE IN PLANTING AREAS AND 1" BELOW FINAL FINISHED GRADE IN LAWN AREAS.
5. TOP OF MULCH SHALL BE ½" MINIMUM BELOW THE TOP OF WALKS AND CURBS
6. ALL REQUIRED LANDSCAPE AREAS SHALL BE PROVIDED WITH AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM WITH RAIN AND FREEZE SENSORS AND EVAPOTRANSPIRATION (ET) WEATHER-BASED CONTROLLERS AND SAID IRRIGATION SYSTEM SHALL BE DESIGNED BY A QUALIFIED PROFESSIONAL AND INSTALLED BY A LICENSED IRRIGATOR.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED LANDSCAPE AND IRRIGATION PERMITS.

MAINTENANCE NOTES

1. THE OWNER, TENANT AND THEIR AGENT, IF ANY, SHALL BE JOINTLY AND SEVERALLY RESPONSIBLE FOR THE MAINTENANCE OF ALL LANDSCAPE.
2. THE LANDSCAPE SHALL BE MAINTAINED IN A MANNER COMMON TO THE PRACTICE, INCLUDING MOWING, EDGING, PRUNING, FERTILIZING, WATERING, WEEDING, TRASH REMOVAL, AND OTHER SUCH ACTIVITIES.
3. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL WORK FROM THE TIME OF PLANTING FOR 60 DAYS, OR UNTIL FINAL ACCEPTANCE BY THE OWNER. AN ON-SITE INSPECTION BY THE OWNER'S AGENT WILL BE COMPLETED PRIOR TO FINAL ACCEPTANCE.
4. DURING WORK, PREMISES SHALL BE KEPT NEAT AND ORDERLY AT ALL TIMES. ALL TRASH AND DEBRIS SHALL BE REMOVED FROM THE SITE AS THE WORK PROGRESSES. KEEP PAVED AREAS CLEAN BY SWEEPING OR HOSING THEM AT THE END OF EACH WORK DAY.
5. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANTS THROUGH ONE (1) YEAR AFTER FINAL ACCEPTANCE BY THE OWNER'S AGENT. PLANTS SHALL BE IN HEALTHY CONDITION AT THE END OF THE GUARANTEE PERIOD. ALL PLANT MATERIALS WHICH DIE SHALL BE REPLACED WITH PLANT MATERIAL OF EQUAL OR BETTER VALUE AT NO COST TO OWNER. RESTORE BEDS AS NECESSARY FOLLOWING PLANT REPLACEMENT.
6. THE OWNER SHALL BE RESPONSIBLE FOR THE CONTINUED MAINTENANCE, REPAIR AND REPLACEMENT OF ALL LANDSCAPING MATERIALS AS NECESSARY FOLLOWING THE 60 DAY CONTRACTOR MAINTENANCE PERIOD.

QUALITY ASSURANCE

1. LANDSCAPE CONTRACTOR SHALL COMPLY WITH APPLICABLE FEDERAL, STATE, COUNTY, AND LOCAL REGULATIONS GOVERNING LANDSCAPE MATERIALS AND WORK.
2. SELECTION OF PLANT MATERIAL: MAKE CONTACT WITH SUPPLIERS IMMEDIATELY UPON NOTICE OF CONTRACT ACCEPTANCE TO SELECT AND BOOK MATERIALS.
3. SUBSTITUTIONS: DO NOT MAKE PLANT MATERIAL SUBSTITUTIONS. IF THE SPECIFIED LANDSCAPE MATERIAL IS NOT OBTAINABLE, SUBMIT PROOF OF NON-AVAILABILITY TO LANDSCAPE ARCHITECT, TOGETHER WITH PROPOSAL FOR USE OF EQUIVALENT MATERIAL. WRITTEN VERIFICATION WILL BE REQUIRED DOCUMENTING MATERIAL SELECTION, SOURCE AND DELIVERY SCHEDULE TO SITE.
4. MEASUREMENTS: TAKE CALIPER MEASUREMENTS OF TREES SIX INCHES ABOVE GROUND. MEASURE MAIN BODY OF ALL PLANT MATERIAL FOR HEIGHT AND SPREAD DIMENSIONS, NOT FROM TIP-TO-TIP.
5. LANDSCAPE ARCHITECT OR OWNER, SHALL INSPECT ALL PLANT MATERIAL WITH RESPECT TO GENUS, SPECIES, CULTIVAR/VARIETY, SIZE AND QUALITY, INCLUDING SIZE AND CONDITION OF ROOT SYSTEMS, LIMBS, BRANCHING HABIT, INSECTS, INJURIES, OR OTHER LATENT DEFECTS UPON ARRIVAL TO SITE OR DURING INSTALLATION.
6. LANDSCAPE ARCHITECT OR OWNER MAY REJECT UNSATISFACTORY OR DEFECTIVE MATERIAL AT ANY TIME DURING THE WORK PROCESS. REMOVE REJECTED MATERIALS FROM SITE AND REPLACE WITH ACCEPTABLE MATERIAL AT NO ADDITIONAL COST TO THE OWNER. PLANTS DAMAGED IN TRANSIT OR AT THE JOB SITE SHALL BE REJECTED.

PRODUCT DELIVERY, STORAGE AND HANDLING

1. DELIVER ONLY PLANT MATERIALS THAT CAN BE PLANTED IN ONE DAY UNLESS ADEQUATE STORAGE AND WATERING FACILITIES ARE AVAILABLE ON THE JOB SITE.
2. PROTECT PLANTS DURING DELIVERY TO PREVENT DAMAGE TO ROOT BALLS OR DESICCATION OF LEAVES. KEEP PLANTS MOIST AT ALL TIMES. COVER ALL MATERIALS DURING TRANSPORT. PROTECT ROOT BALLS BY HEELING IN WITH SAWDUST OR OTHER APPROVED MOISTURE RETAINING MATERIAL IF NO PLANTED WITHIN 24 HOURS OF DELIVERY.
3. TO AVOID DAMAGE OR STRESS, DO NOT LIFT, MOVE, ADJUST TO PLUMB, OR OTHERWISE MANIPULATE PLANTS BY TRUNK OR STEMS.
4. DELIVER PLANTS WITH LEGIBLE IDENTIFICATION LABELS.

MATERIALS

PLANTS

1. ALL PLANTS SHALL CONFORM TO THE AMERICAN STANDARD FOR NURSERY STOCK ANSI Z60.1, MOST RECENT EDITION.
2. PLANTS SHALL CONFORM TO THE SIZE GIVEN ON THE PLAN, AND SHALL BE HEALTHY, SYMMETRICAL, WELL-SHAPED, FULL BRANCHED AND FREE OF DISEASE AND INSECTS.
3. ALL PLANTS WHICH ARE FOUND UNSUITABLE IN GROWTH, OR ARE IN ANY UNHEALTHY, BADLY SHAPED, OR UNDERSIZED CONDITION WILL BE REJECTED BY THE LANDSCAPE ARCHITECT EITHER BEFORE OR AFTER PLANTING AND SHALL BE REMOVED AT THE EXPENSE OF THE LANDSCAPE CONTRACTOR AND REPLACED WITH ACCEPTABLE PLANT AS SPECIFIED AT NO ADDITIONAL COST TO THE OWNER.
4. PLANTS SHALL NURSERY GROWN IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICES UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT FOR AT LEAST 2 YEARS.
5. PLANTS SHALL BE FRESHLY DUG FROM DURING THE MOST RECENT APPROPRIATE HARVEST SEASON.
6. PRUNING SHALL BE LIMITED TO DEAD BRANCHES, LIMBS DAMAGED OR BROKEN DURING THE PLANTING PROCESS. PRUNING SHALL CONFORM TO AMERICAN STANDARD FOR TREE CARE OPERATIONS ANSI A300.

SOILS

1. PLANTING SOIL AND TOPSOIL TO BE A CLEAN, FRIABLE LOAM FROM A LOCAL SOURCE, FREE FROM STONES OR DEBRIS OVER ¾" IN DIAMETER, AND FREE FROM TOXINS AND WEEDS. TOPSOIL SHALL HAVE A pH VALUE BETWEEN 5.5 AND 7. ORGANIC MATERIAL SHALL BE 2.0-5.0% OF TOTAL DRY WEIGHT. SOLUBLE SALT LEVELS SHALL BE LESS THAN 2 mmho/cm. PLANTING SOIL AND TOPSOIL SHALL BE TESTED AND AMENDED TO MEET THESE SPECIFICATIONS.
2. COMPOST SHALL BE COMMERCIALLY PREPARED, PEAT-FREE COMPOST AND MEET US COMPOST COUNCIL STA/TMECC CRITERIA AND SHALL CONSIST OF PLANT-BASED MATERIALS, COMPOSTED FOR A MINIMUM OF 9 MONTHS AT TEMPERATURES SUFFICIENT TO BREAK DOWN ALL WOODY FIBERS, SEEDS, AND LEAF STRUCTURES.
3. ALL PLANTING AREAS WITHIN THE DRIP LINE OF EXISTING TREES SHALL BE PREPARED BY TILLING EXISTING SOIL TO A DEPTH OF SIX (6") INCHES PRIOR TO PLACING COMPOST AND FERTILIZER. APPLY FERTILIZER AS PER MANUFACTURER'S RECOMMENDATIONS. ADD THREE (3") INCHES OF COMPOST AND TILL INTO A DEPTH OF SIX (6") INCHES OF THE TOPSOIL. ALL PLANTING AREAS WITHOUT EXISTING TREES SHALL BE PREPARED BY TILLING EXISTING SOIL TO A DEPTH OF EIGHTEEN (18") INCHES PRIOR TO PLACING COMPOST AND FERTILIZER. APPLY FERTILIZER AS PER MANUFACTURER'S RECOMMENDATIONS. ADD SIX (6") INCHES OF COMPOST AND TILL INTO A DEPTH OF EIGHTEEN (18") INCHES OF THE TOPSOIL.
4. BACKFILL FOR TREE PITS SHALL CONSIST OF EXISTING TOPSOIL ON SITE (OR IMPORTED AS NEEDED) FREE FROM LARGE CLUMPS, ROCKS, DEBRIS, SUBSOILS, ETC., PLACED IN NINE (9") LAYERS AND WATERED IN THOROUGHLY.

OTHER MATERIALS

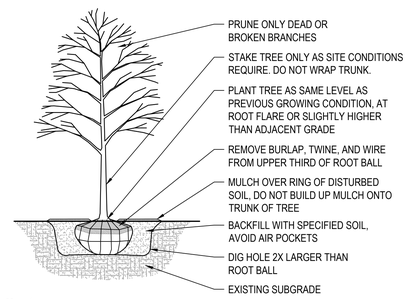
1. SHREDDED HARDWOOD BARK MULCH: ALL PLANTING AREAS LABELED ON PLAN SHALL RECEIVE CERTIFIED WEED-FREE SHREDDED HARDWOOD BARK MULCH SPREAD TO A DEPTH OF FOUR (4") INCHES OVER ALL PLANTING AREAS. SHREDDED HARDWOOD BARK MULCH, SIZE AND COLOR TO BE APPROVED BY OWNER'S AGENT PRIOR TO INSTALLATION. MULCHED AREAS SHALL NOT RECEIVE A WOVEN WEED BARRIER FABRIC.
2. EDGING:EDGING SHALL BE 5" DEEP, POLYETHYLENE EDGING, TO BE APPROVED BY OWNER'S AGENT.
3. SOD: ALL AREAS SPECIFIED ON PLAN AS SOD (IF APPLICABLE) SHALL BE A PREMIUM GRADE APPROVED TURFGRASS SOD. ONLY IMPROVED TYPES OF SOD (ELITE) ARE ACCEPTABLE. STANDARD SIZE SECTIONS OF TURFGRASS SOD SHALL BE STRONG ENOUGH SO THAT THEY CAN BE PICKED UP AND HANDLED WITHOUT DAMAGE. TURFGRASS SOD SHALL NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT IS EXCESSIVELY DRY OR WET, AS THIS MAY ADVERSELY AFFECT ITS SURVIVAL. TURFGRASS SOD SHALL BE REASONABLY FREE OF DISEASES, NEMATODES, INSECTS, GRASSY AND BROAD-LEAF WEEDS.
4. LAWN SEED: DISTURBED LAWN AREAS LABELED AS SUCH ON PLAN, SHALL BE SPREAD BY HAND BROADCAST METHOD OR APPROPRIATE SPREADER EQUIPMENT WITH 'MADISON PARKS' OR EQUIVALENT SEED MIX AS APPROVED BY OWNER'S AGENT, AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. IN ADDITION TO LAWN SEED, ANNUAL RYE SHALL BE APPLIED TO ALL DISTURBED AREAS WITH SLOPES EXCEEDING 3:1 AT A RATE OF 1 ½ POUNDS PER 1000 SQUARE FEET. FERTILIZE AND MULCH PER MANUFACTURER'S RECOMMENDATIONS.

INSTALLATION

1. PLANT MATERIALS SHALL BE DELIVERED TO THE SITE ONLY AFTER THE BEDS ARE PREPARED AND AREAS ARE READY FOR PLANTING.
2. EXCAVATE PITS WITH VERTICAL SIDES AND HORIZONTAL BOTTOM. TREE PITS SHALL BE LARGE ENOUGH TO PERMIT HANDLING AND PLANTING WITHOUT INJURY TO THE ROOT BALLS, AND SHALL BE PLACED AT THE SAME DEPTH RELATIVE TO FINISH GRADE AS IT DID TO THE SOIL SURFACE IN THE ORIGINAL PLACE OF GROWTH.
3. SHRUB AND TREE PITS SHALL BE NO LESS THAN TWO TIMES WIDER THAN THE LATERAL DIMENSIONS OF THE EARTH BALL AND NO DEEPER THAN ITS VERTICAL DIMENSION. THE SIDES OF THE HOLE SHALL BE ROUGH AND JAGGED, NEVER SLICK AND GLAZED, ROUGH UP WITH SHOVEL IF NEEDED.
4. BACKFILL HOLE WITH 5 PARTS EXISTING SOIL AND 1 PART PLANT BED PREPARATION SOIL. CAREFULLY SETTLE BY WATERING TO PREVENT AIR POCKETS. REMOVE THE BURLAP, NYLON, STRING, AND WIRE FROM THE TOP ⅓ OF THE BALL. MULCH THE TOP OF THE BALL WITH A MINIMUM OF TWO (2") INCHES OF SPECIFIED MULCH OVER THE PLANTING PIT.
5. DO NOT WRAP TREES. STAKE TREES AND LARGE SHRUBS ONLY AS SITE CONDITIONS REQUIRE.
6. TURFGRASS SOD SHALL BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 24 HOURS. ENSURE EDGES OF SOD ARE STAGGERED AND TOUCHING. TOP DRESS JOINTS BY HAND WITH TOPSOIL TO FILL VOIDS. POST-PLANT IRRIGATION WILL BE NECESSARY TO ENSURE SOD STAYS ALIVE AND ROOTS INTO THE SOIL. THE CONTRACTOR IS RESPONSIBLE FOR WATERING SOD UNTIL TIME OF ACCEPTANCE BY OWNER. THE SOD SUPPLIER MAY MAKE RECOMMENDATIONS REGARDING THE WATERING SCHEDULE. THE WATERING SCHEDULE SHOULD BEGIN IMMEDIATELY AFTER THE SOD IS INSTALLED.

PLANT SCHEDULE

SYMBOL	CODE	BOTANICAL / COMMON NAME	CONT	PLANTING SIZE	MATURE HT	MATURE SP	QTY
TREES							
	ABI CON	Abies concolor / White Fir	B & B	6 FT. Tall Min.	40`	25`	4
	JUN CAN	Juniperus virginiana `Canaertii` / Canaerti Juniper	B & B	6 FT. Tall Min.	25`	15`	10
	PIC DEN	Picea glauca `Densata` / Black Hills Spruce	B & B	6 FT. Tall Min.	30`	25`	9
	PIC BLA	Picea mariana / Black Spruce	B & B	4 FT. Tall Min.	20`	10`	12
	PIN BIB	Pinus cembra `Big Blue` / Big Blue Swiss Stone Pine	B & B	6 FT. Tall Min.	35`	15`	8
	PIN STR	Pinus strobus / White Pine	B & B	6 FT. Tall Min.	80`	40`	5



01 DECIDUOUS TREE PLANTING
NTS

BRIOHN DESIGN GROUP
3885 N BROOKFIELD ROAD, SUITE 200
BROOKFIELD WISCONSIN 53045-1950
(262) 790-0500 PHONE
(262) 790-0505 FAX

LANDCO2
5032 W. FOREST HOME AVE. #5
MILWAUKEE, WI 53219
www.LANDCO2.com

SHEET TITLE
LANDSCAPE NOTES, SCHEDULE & DETAILS

PROPOSED IMPROVEMENTS FOR:
TDC WILLOW CREEK, LLC
N102W19200 WILLOW CREEK WAY
VILLAGE OF GERMANTOWN, WISCONSIN

Date	Revision

JOB:	240101
DRAWN:	JS
CHECKED:	HG
DATE:	11-07-2024

SHEET:
L2.0

GENERAL NOTES - NEW FLOOR PLAN

1	VERIFY ALL CONDITIONS, DIMENSIONS AND ALIGNMENT OF WALLS. BRING ANY DISCREPANCIES TO BRIOHN'S ATTENTION PRIOR TO FABRICATION/CONSTRUCTION BEGINS.
2	VERIFY LOCATION OF ACCESS PANELS WITH MECHANICAL AND ELECTRICAL DRAWINGS.
3	AREA SHALL BE KEPT BROOM CLEAN AND FREE OF DEBRIS DURING CONSTRUCTION.
4	SEE EXTERIOR ELEVATIONS FOR WINDOW TYPES.
5	SEE SHEET A0.1 FOR ADA REQUIREMENTS AND MOUNTING HEIGHTS
6	SEE SHEET A1.1 FOR PARTITION TYPE.
7	EXTERIOR WALLS IN OFFICE AREA TO BE FURRED OUT WITH STUD HELD 1" OFF FACE OF EXTERIOR WALL, CAVITY FILLED WITH BATT INSULATION. SEE FLOOR PLAN FOR PARTITION TYPE.
8	FURNITURE AND APPLIANCES PROVIDED BY OWNER AND ARE SHOWN FOR REFERENCE ONLY.
9	ALL WALLS TO BE PAINTED
10	ALL FLOORS THROUGH OUT ARE TO BE SEALED CONCRETE WITH CAULKED CONTROL JOINTS.
11	EXPOSED STEEL DECK, JOISTS, GIRDERS AND COLUMNS ARE TO BE PRIME GREY.
12	SEE SHEET A2.0 FOR ROOM FINISHES

KEYNOTE LEGEND FLOOR PLAN

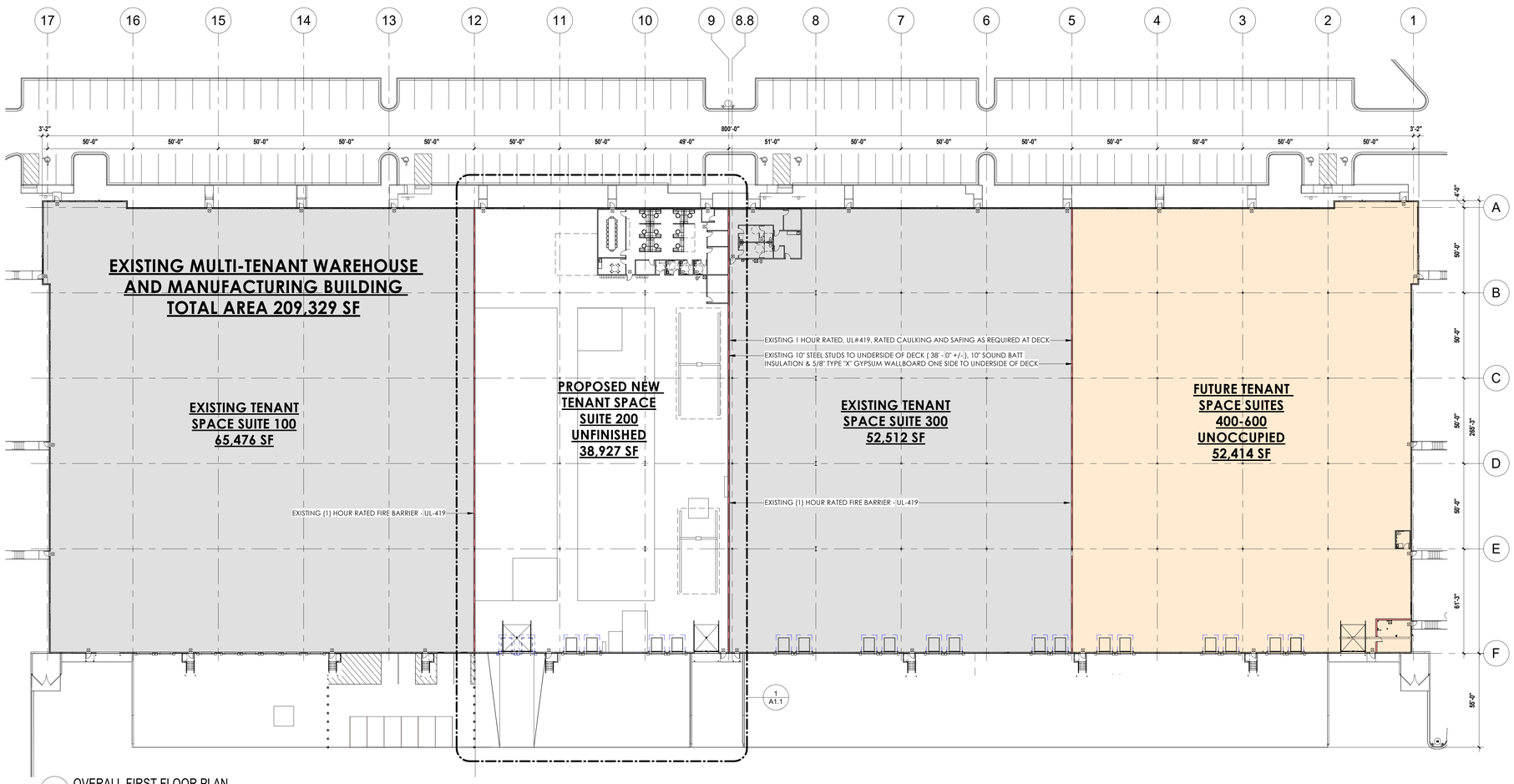
MARK	FLOOR PLAN CODED NOTES

FLOOR PLAN LEGEND

ROOM	ROOM NAME		PARTITION TO BE DEMOLISHED
100	ROOM NUMBER		DOOR AND FRAME TO BE REMOVED
100	DOOR NUMBER		EXISTING PARTITION TO REMAIN
A	PARTITION TYPE		EXISTING DOOR TO REMAIN
1	KEYNOTES		NEW CONSTRUCTION
F.E.	SURFACE MOUNTED FIRE EXTINGUISHER		NEW DOOR & FRAME
F.E.C.	RECESSED EXTINGUISHER CABINET & FIRE EXTINGUISHER	MATCHLINE 3 / A1.2	MATCHLINE WITH SHEET REFERENCE
	EXIT LIGHT		
	EXIT LIGHT (DIRECTIONAL)		
BL-1	BORROWED LIGHT TAG		
TP-1	TOILET ACCESSORY TAG		

RATED PARTITION LEGEND

- 1 HOUR RATED FIRE BARRIER WALL
- 2 HOUR RATED FIRE BARRIER WALL
- 4 HOUR RATED FIRE BARRIER WALL



1 OVERALL FIRST FLOOR PLAN
1" = 30'-0"

APPLICABLE TO ALL PLAN VIEWS

BRIOHN DESIGN GROUP
3880 N BROOKFIELD ROAD, SUITE 200
BROOKFIELD WISCONSIN 53045-1950
(262) 790-0500 PHONE
(262) 790-0505 FAX

SHEET TITLE
OVERALL FLOOR PLAN & NOTES

NEW TENANT BUILDOUT:
THE DICKMAN COMPANY
WILLOW CREEK PKWY.
GERMANTOWN, WI

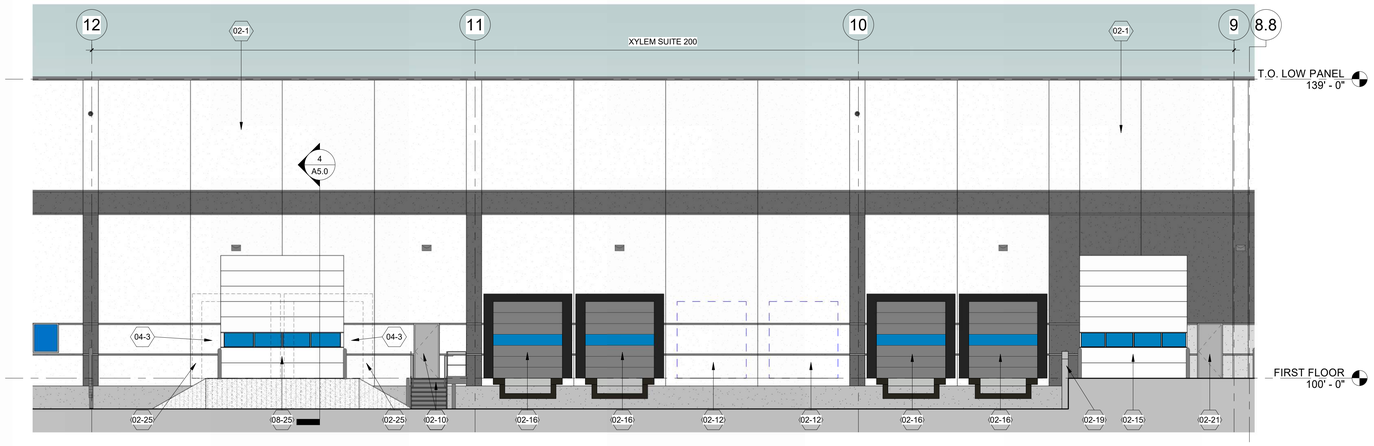
Date	Revision

JOB:	240101
DRAWN:	CK
CHECKED:	DF
DATE:	NOVEMBER 11, 2024

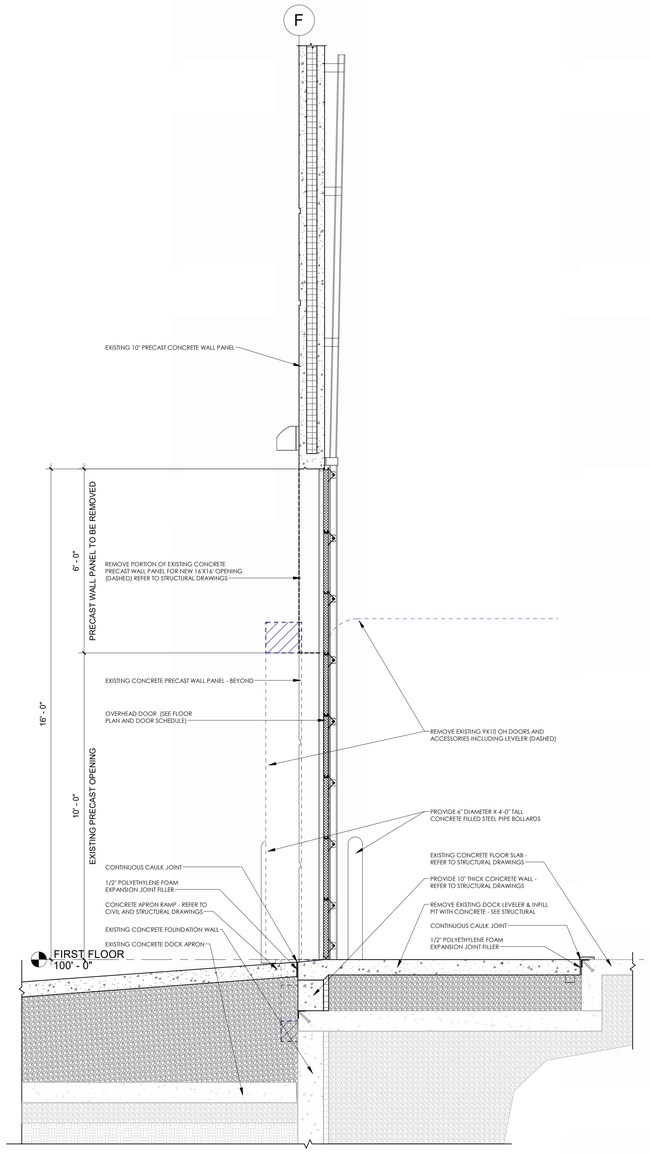
SHEET: A1.0

KEYNOTE LEGEND ELEVATION

MARK	RCP CODED NOTES
02-1	EXISTING CONSTRUCTION TO REMAIN
02-10	EXISTING DOOR AND STAIR
02-12	EXISTING KNOCK-OUT PANEL
02-15	EXISTING OVERHEAD DOOR
02-16	EXISTING DOCK DOOR
02-19	EXISTING ROOF DRAINS
02-21	EXISTING DOOR
02-25	REMOVE EXISTING 9X10 OH DOORS AND ACCESSORIES INCLUDING LEVELER (DASHED), & INFILL PIT WITH CONCRETE
04-3	USE CMU INFILL WITH STUCCO PLASTER AND PAINTED FINISH TO MAKE NEW 16'X16' FINISHED OPENING
08-25	PROVIDE 16'-0" X 16'-0" INSULATED FACTORY PRE-FINISHED STEEL OVERHEAD DOOR AND FRAME WITH WEATHER SEAL AND VISION WINDOWS (1-PANEL). PROVIDE CONCRETE FILLED STEEL BOLLARDS



1 ENLARGED PARTIAL EAST ELEVATION @ SUITE 200
1/8" = 1'-0"



4 WALL SECTION @ O.H DOOR
1/2" = 1'-0"

BRIOHN DESIGN GROUP
3880 N BROOKFIELD ROAD, SUITE 200
BROOKFIELD WISCONSIN 53045-1950
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(262) 790-0505 FAX

SHEET TITLE
ENLARGED PARTIAL EAST ELEVATION @ SUITE 200, WALL SECTIONS & NOTES

NEW TENANT BUILDOUT:
THE DICKMAN COMPANY
WILLOW CREEK PKWY.
GERMANTOWN, WI

Date	Revision

JOB: 240101
DRAWN: CK
CHECKED: DF
DATE: NOVEMBER 11, 2024
SHEET:
A5.0

WETLAND DELINEATION REPORT

WILLOW CREEK #2-NORTH
N102W19200 WILLOW CREEK WAY
GERMANTOWN, WI 53022

BRIOHN DESIGN GROUP
3885 N BROOKFIELD RD, STE. 200
BROOKFIELD, WI 53045

PROJECT #24-197
SEPTEMBER 9, 2024

LANDCO2
5032 W. Forest Home Ave. #5
Milwaukee, WI 53219
www.LANDCO2.com

INTRODUCTION

The subject area is an approximately 5-acre area located southeast of Willow Creek Way and northwest of the intersection of Maple Road and Appleton Avenue. The site is located in the Northeast 1/4 of Section 32, Township 9 North, Range 20 East, in the Village of Germantown, Washington County, Wisconsin. A map identifying the project location can be found in **FIGURE 1**. The closest waterbody to the site is the Menomonee River which is located approximately a quarter of a mile east of the project area.

The predominant land cover for this property is a forested area at the base of a hillslope bordering a parking lot. The purpose of the wetland delineation was to identify the existing wetlands on the property and to create a map of their boundaries. A delineation of a three-acre area adjacent to the current area of interest was conducted previously this season, but the area of interest was enlarged to include this new area. A map of the surveyed wetland boundary is found at the end of the report. Kristi Sherfinski and Emma Johnson of LANDCO2 conducted the wetland delineation field work on September 4, 2024. Field conditions on September 4 were sunny with air temperatures in the 70s (°F).

Kristi Sherfinski is certified as an Assured Wetland Delineator with the Wisconsin Department of Natural Resources (WIDNR). She has over 20 years of experience delineating wetlands in the Great Lakes Region. She received her initial basic wetland training at the Wetland Training Institute in Hastings, Michigan in 2002. Kristi worked as a project manager and wetland delineator at JFNew & Associates in Grand Haven, Michigan for six years, conducting wetland delineations in Michigan, Indiana, Illinois, and Wisconsin. Kristi then moved to Wisconsin to work for the Southeastern Wisconsin Regional Planning Commission (SEWRPC). At SEWRPC, Kristi updated the Wisconsin Wetland Inventory (WWI) in 2005 and in 2010 for the seven-county area of southeast Wisconsin. Kristi participated in the Advanced Wetland Delineation training in 2006. In 2009, she attended the Wetland Delineation USACE Regional Supplement training session, the Environmental Corridor Delineation Workshop, and the Farm Service Agency (FSA) Slide Review training session. After working at SEWRPC for seven years, Kristi went back to school for a degree in Landscape Architecture before starting LANDCO2 (formerly Helianthus). Emma obtained her B.S. in Conservation Biology and Environmental Science at the University of Wisconsin-Madison and assisted with the wetland delineation.

METHODS

The process of wetland delineation involves collecting information about the soils, vegetation, and hydrology of a site in order to determine where the wetland boundary is located. The methodology used to conduct the delineation followed the US Army Corps of Engineers Wetlands Delineation Manual (1987), and the appropriate Regional Supplement to the Corps of Engineers Wetland Delineation Manual. In general, in southeastern and western Wisconsin, the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0, August, 2010) is used. The remaining portions of the state follow the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0, January, 2012). At this site, the Northcentral and Northeast Regional Supplement was used.

Prior to the site visit, several sources of data are consulted to reveal information that will aid in locating the wetlands on the site. The sources reviewed include weather records to determine antecedent hydrologic conditions, the Wisconsin Wetland Inventory (WWI) map, the soil survey maps, a

topographic map, and historic aerial photographs of the project area. In areas that are under active cultivation as farmland, a Farm Service Agency (FSA) Slide Review is also conducted.

Data sample points are chosen based on the potential wetland areas identified by reviewing the above-referenced sources, and other sample points are added based on information gathered while in the field. Sample points are chosen on either side of the wetland line for their ability to reveal information about the actual location of the line, and upland reference data samples are chosen in order to show the contrast between wetland and upland field conditions.

Once a data sample point is chosen and located in the field, data is collected on the vegetation, the hydrology, and the soils of the site. Vegetation is identified by strata (tree, shrub/sapling, herbaceous, and vine layers), and an aerial coverage percent is determined for each species by strata. The plot size for the tree, shrub, and vine strata is a 30-foot radius circle, and the plot size for the herbaceous strata is a 5-foot radius circle. The scientific names and wetland status of each plant species follows the National Wetland Plant List (2022). Once all species have been assigned a cover percentage, the dominance by wetland indicator plant species is assessed.

Hydrological indicators, as described in the Regional Supplements, are then listed for the sample point. A soil pit is excavated to required depths and the depth of water, saturation, and the water table is recorded. The soil profile at the sample point is also described, using the Munsell Soil-Color Charts (2009) to assess the color of the soil, and a texture analysis to determine the predominant texture of each soil layer. This data is used to determine if the soil profile meets the hydric soil indicators as defined in the Regional Supplements and the Field Guide for Identifying Hydric Soils V. 8.2 (USDA, 2018).

If a data sample point has all three indicators for a wetland—hydrology, soils, and vegetation—then the sample point is determined to be within a wetland. In certain circumstances where one or more of the three factors is missing due to problematic conditions or recent disturbances, a sample may still be determined to be in wetland by following the procedures in Chapter 5 "Difficult Wetland Situations" in the regional supplements.

Once the location of the wetland line is determined from the data sampling effort, the edge of the wetland is flagged in the field and then surveyed in order to produce a map of the wetland that occurs on the subject property. Representative photographs of the sample points and of each wetland area were taken during the field visit. Any ditch, stream, pond or other water body that may be considered a Water of the U.S. and thus regulated by the U.S. Army Corps of Engineers (USACE) or the Wisconsin Department of Natural Resources (WDNR) is also identified.

RESULTS AND DISCUSSION

Antecedent Hydrologic Condition Analysis

Weather records were consulted from the Germantown WWTP to determine if precipitation levels were normal for the three months prior to the site visit. The antecedent hydrologic condition analysis for the site revealed that climatic conditions near the site were normal at the time of the site visit (**Table 1**). Drier than normal conditions means that hydrologic indicators may be absent from the wetland sample points and the data must be interpreted accordingly. Wetter than normal conditions must be accounted for when interpreting the data because saturation or the water table may be higher than it is during normal conditions, giving false positives for hydrological indicators.

Table 1 – Antecedent Hydrologic Condition Analysis

Month	3 yrs in 10 Less Than (inches)	3 yrs in 10 More Than (inches)	Rain Fall (inches)	Condition Dry, Wet, Normal	Condition Value	Month Weight Value	Product of Previous Two Columns
August	2.64	4.61	3.20	Normal	2	3	6
July	2.75	4.57	2.33	Dry	1	2	2
June	2.71	5.27	7.20	Wet	3	1	3
						Sum	11
If sum is:							
6-9	Then prior period has been drier than normal						
10-14	Then prior period has been normal						
15-18	Then prior period has been wetter than normal						
Conclusions:	A sum of 11 shows the prior period to the site visit to be normal.						

Note: Average rainfall data based on the years 1990-2020.

Review of Existing Data Sources

Existing data sources were reviewed to aid in the identification of wetland areas in the field.

The topographic map (**FIGURE 2**) shows a depression with an upland island and a berm, evident by the slight increase in elevation, located between two wetland areas. On the east side of the subject area there is an increase in elevation approaching the northeast corner.

The soil survey maps show an area of Colwood silt loam (Cw) which coincides with the majority of the subject area. The remaining soils are Ozaukee silt loam (OzaB) which is predominantly non-hydric and Ritchey silt loam (RkB) which is non-hydric (**FIGURE 3 & FIGURE 4**). All of the soil types occurring on the property are listed in **Table 2**.

Table 2 – Soil Types

Map Symbol	Map Unit Name	Hydric Soil Type
Cw	Colwood silt loam, 0-2%	Hydric
OuB	Ozaukee silt loam, 2-6%	Predominantly Non-hydric
RkB	Ritchey silt loam, 2-6%	Non-hydric

The Wisconsin Wetland Inventory identifies one wetland and two hydric soil indicators within the project area (**FIGURE 5**). The wetland is a T3K, forested wetland, in a majority of the subject site, excluding the hillslope on the western border of the site. The hydric soil indicators are Colwood silt loam (Cw) and Ozaukee silt loam (OuB) which cover most of the site, excluding a very small portion of the southwest corner.

Historic aerial photographs revealed that the forested area was used as pasture until the 1970s, after which the forest filled in and became thicker over time (**FIGURE 6**). The land surrounding the forest was formerly under agricultural production until it became altered between 2015 and 2017, with excavation of the storm water pond to the south and development of the property to the west.

A previous delineation was conducted by RASmith in 2018 (**FIGURE 7**). The wetlands flagged for this report closely match what was previously delineated.

Wetlands Identified During the Site Visit

A total of one wetland was identified on the property during the field visit, which was a continuation of forested Wetland B in the previous report. Site photos of the wetland are included in **FIGURE 8.** Field data sheets are included in **FIGURE 9**. The acreages of wetland that was identified and flagged in the subject area are shown in **FIGURE 10**. A description of the wetland area follows.

Wetland B

This wetland is a forested wetland with an upland island in between a drainage ditch and the rest of the wetland. A small upland berm also intrudes into the north end of the wetland. Two east-west transects were taken across the north side of the wetland and the south side of the wetland.

Data points # 4, 1, 2, and 3 were taken along a transect across the north side of the wetland. This transect was taken to help determine where the berm was separate from the rest of the wetland. Data point #4 was taken on the upland hillslope adjacent to the parking lot. The dominant species were bur oak, cottonwood, box elder, and Canada goldenrod, and with a Prevalence Index of 3.76, indicating an upland plant community. Soil hydric indicators and wetland hydrology were lacking. In the western forested wetland drainage ditch located at the base of the hillside, the dominant vegetation at #1 included American elm, common buckthorn, fowl manna grass, and riverbank grape vine. The soils met the hydric soils criteria for A11. Depleted Below Dark Surface, F2. Loamy Gleyed Matrix, and F6. Redox Dark Surface. Hydrology indicators included Drainage Patterns, Crayfish Burrows, Geomorphic Position, and FAC-Neutral Test. The additional upland point (#2) was located on the berm between the drainage channel and the rest of the wetland. The dominant vegetation on the berm included American elm, sugar maple, and common buckthorn. Even though the Dominance Test for hydrophytic vegetation was met, the area was lacking hydrology and hydric soil indicators, so this area was non-wetland. In the eastern part of the wetland on the other side of the berm (#3), the dominant species included American elm, common buckthorn, white avens, riverbank grape, and calico aster. Hydrology indicators included Saturation, Water Marks, Drainage Patterns, Dry Season Water Table, FAC Neutral Test, and Geomorphic Position. Soils met the hydric soils criteria for A11. Depleted Below Dark Surface, F2. Loamy Gleyed Matrix, and F6. Redox Dark Surface.

Data points #5, 6, 7, 9, and 8 were taken on a transect across the southern side of the wetland. This transect was taken to help determine where the upland forested island was within the larger wetland. The adjacent upland point (#5) was located on the hillslope to the west. The dominant species included eastern cottonwood shrubs, box elder shrubs, Canadian goldenrod. Soil hydric indicators and wetland hydrology were lacking. In the drainage ditch, the dominant vegetation at #6 was swamp white oak, common buckthorn, white avens, and green ash. Hydrology indicators included Saturation, Sediment Deposits, Drainage Patterns, Dry-Season Water Table, FAC Neutral Test, and Geomorphic Position. Soils met the hydric soils criteria for A12. Thick Dark Surface and F6. Redox Dark Surface. Data point #7 was taken on the upland island between the channel and the forested wetland. This area was approximately 18 inches in elevation above the wetland. The dominant species in this area included black cherry,

basswood, and common buckthorn shrubs and seedlings and the Prevalence Index was 3.34, indicating an upland plant community. Wetland hydrology and hydric soil indicators were not present. The next point (#9) was taken in forested wetland to the east of the upland island. The dominant species were swamp white oak, American elm, common buckthorn, and false nettle. Soils met the hydric indicators for A11. Depleted Below Dark Surface, F3. Depleted Matrix, and F6. Redox Dark Surface. Hydrology indicators included Water Marks, Water-Stained Leaves, Stunted or Stressed Plants, Geomorphic Position, and FAC-Neutral Test. The last point on the transect (#8) was taken on a slight hillslope in basswood-black cherry forest. The dominant species were basswood, bur oak, and common buckthorn. The Prevalence Index was 3.49, indicating an upland plant community. Hydric soils and wetland hydrology indicators were absent.

A third data set was taken along the east edge of the wetland. In the forested wetland (#10,) the dominant species included American elm, swamp white oak, common buckthorn, false nettle, and fowl manna grass. Hydrology indicators included Saturation, Water Marks, Water-Stained Leaves, Dry-Season Water Table, Stunted or Stressed Plants, FAC Neutral Test, and Geomorphic Position. Soils met the hydric soils criteria for A11. Depleted Dark Surface and F6. Redox Dark Surface. Th adjacent upland point (#11) was in the upland forest. The dominant species included basswood trees, and common buckthorn shrubs and seedlings. Even though the vegetation met the Dominance test for hydrophytic vegetation, the soil hydric indicators and wetland hydrology were lacking.

Additional Upland Points

An additional upland point (#12) was taken to verify the lack of wetland at that spot. This area appeared as a dark spot on the aerial imagery; however, the area did not meet any of the three wetland indicators. The dominant vegetation included basswood, sugar maple trees and saplings, and common buckthorn shrubs and seedlings. Hydric soil and wetland hydrology indicators were lacking.

CONCLUSION

LANDCO2 identified wetlands on the project site on September 4, 2024, using the standard practices described in this report and their best professional judgment. The wetland lines staked in the field and referred to in this report are the best estimate of the wetland boundaries based on the conditions present at the time of the delineation. The wetlands identified for this report may be subject to federal regulation under the jurisdiction of the U.S. Army Corps of Engineers, state regulation under the jurisdiction of Wisconsin DNR, and local jurisdiction under your local, county, town, city, or village. Because this delineation was conducted by Ms. Sherfinski, an Assured Wetland Delineator, obtaining a concurrence letter from the Wisconsin Department of Natural Resources is not necessary. It should be noted that all reports conducted by an Assured Delineator are required to be submitted to WDNR for their records, and may be subject to their review as part of an annual review process. Concurrence with these wetland lines by the U.S. Army Corps of Engineers, however, is not required. If a permit is applied for, the USACOE will review the wetland delineation report during the permit application process.

In addition, because a wetland delineation is considered to be a point in time determination, wetland delineations are considered to be valid for a period of only five years for federal wetlands and 15 years for nonfederal wetlands. Permit applications may be submitted at the federal and state levels after a delineation is completed, with the request to review the delineation report and make a determination as to which, if any, wetlands on the site are nonfederal wetlands. Weather patterns and site conditions can change over time, making a new delineation necessary.

Other environmental considerations include threatened or endangered species, environmental corridors, or local tree ordinances. It is recommended that an Endangered Resources (ER) Review request be submitted to the WDNR prior to pursuing any permits for proposed work.

Any impact, alteration, or fill to either the wetland areas or to waterways that are considered Waters of the U.S. are subject to state and federal regulations and permits may be required. The WDNR administers Chapters 30 and 281 of the Wisconsin State Statues, and the USACE administers Section 404 of the Clean Water Act. The wetlands may also require a WDNR construction site storm water permit and be subject to NR 151 Wetland Protective Area requirements if over one acre of land disturbance is proposed **(FIGURE 11)**. Additional county, city or village ordinances may also apply to wetlands or waterways. If any disturbance occurs on the property without obtaining wetland delineation concurrence or authorization from the USACE and WDNR, it should be considered at the owner's own risk and LANDCO2 shall not be considered responsible or liable for any resulting damages.

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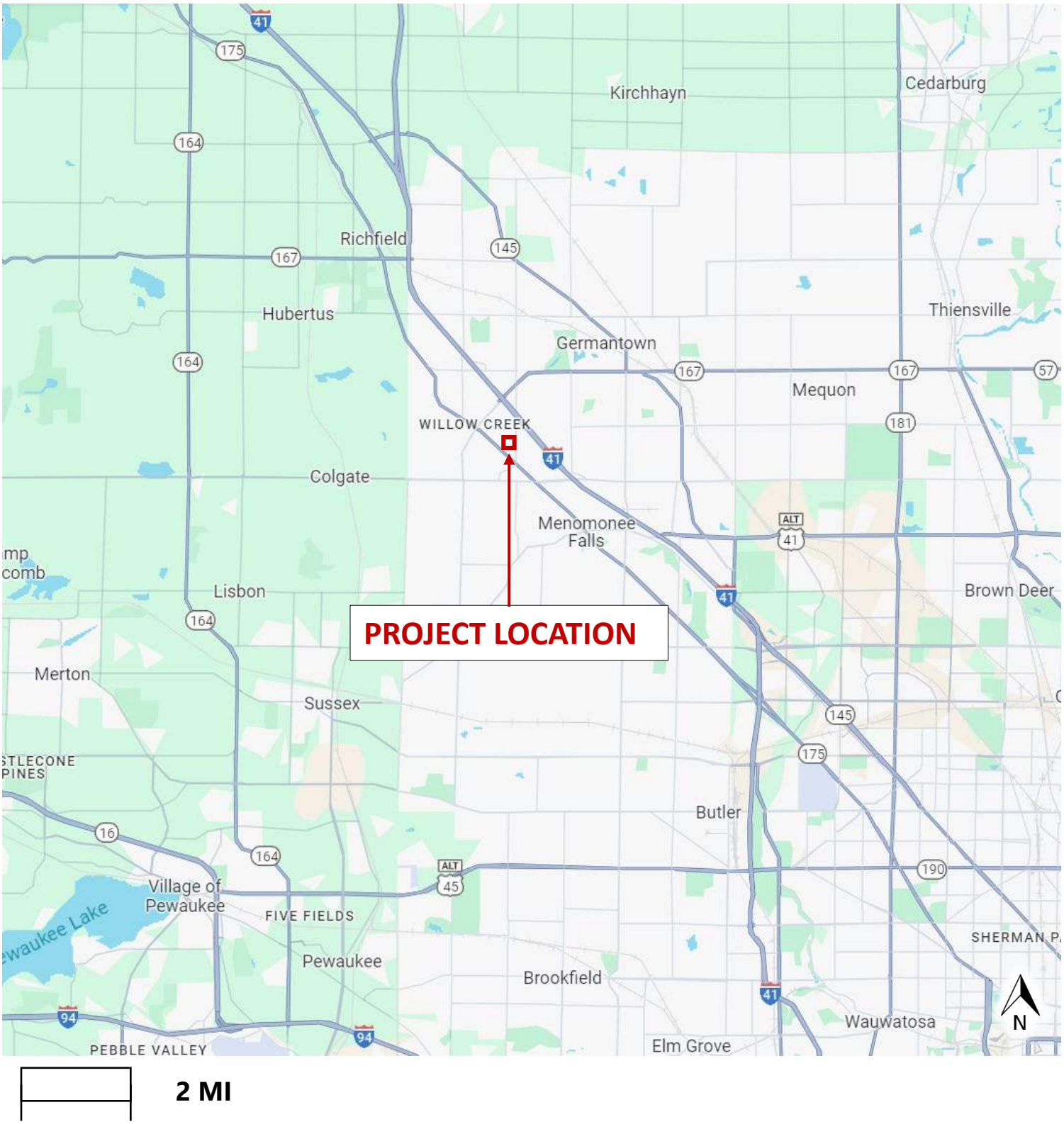
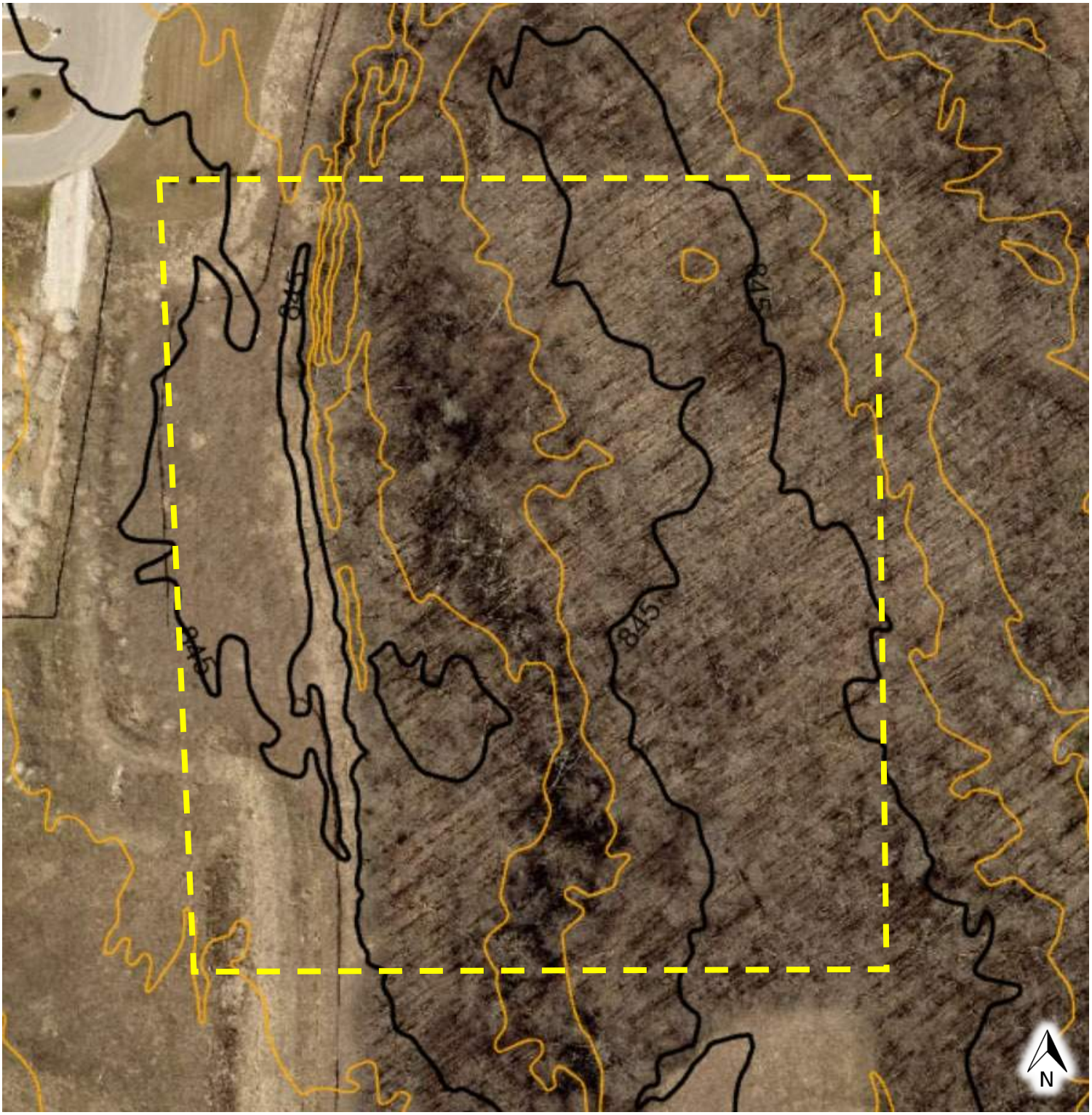


FIGURE 1. LOCATION MAP

Source: Google Maps, 2024



50 FT

FIGURE 2. TOPOGRAPHIC MAP

Source: Washington County GIS, 2024

50 FT

Map Unit Symbol	Map Unit Name
Cw	Colwood silt loam, 0-2%
OuB	Ozaukee silt loam, 2-6%
RkB	Ritchey silt loam, 2-6%

FIGURE 3. SOIL SURVEY MAP

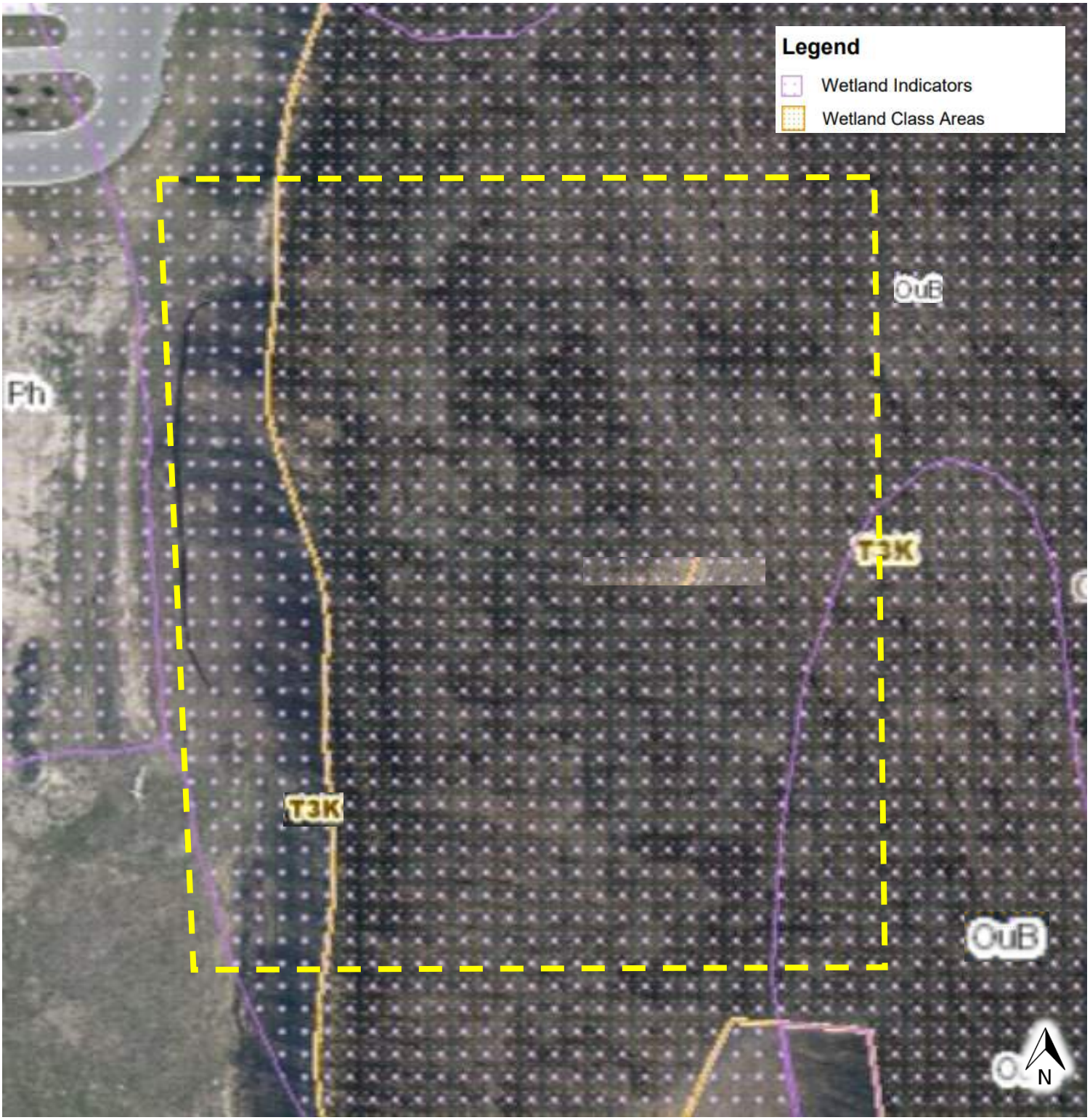
Source: NRCS Web Soil Survey, 2024

50 FT

Map Unit Symbol	Map Unit Name
Cw	Colwood silt loam, 0-2%
OuB	Ozaukee silt loam, 2-6%
RkB	Ritchey silt loam, 2-6%

FIGURE 4. NRCS WISCONSIN SOILS MAP

Source: WIDNR Surface Water Data Viewer, 2024



50 FT

FIGURE 5. WWI MAP

Source: WIDNR Surface Water Data Viewer, 2024

1937.

1970.

FIGURE 6. HISTORIC AERIAL PHOTOS

Source: WHAI & Washington County GIS, 2024

1985.

1995.

FIGURE 6. HISTORIC AERIAL PHOTOS

Source: Washington County GIS, 2024

2005.

2010.

FIGURE 6. HISTORIC AERIAL PHOTOS

Source: Washington County GIS, 2024

2015.

2017.

FIGURE 6. HISTORIC AERIAL PHOTOS

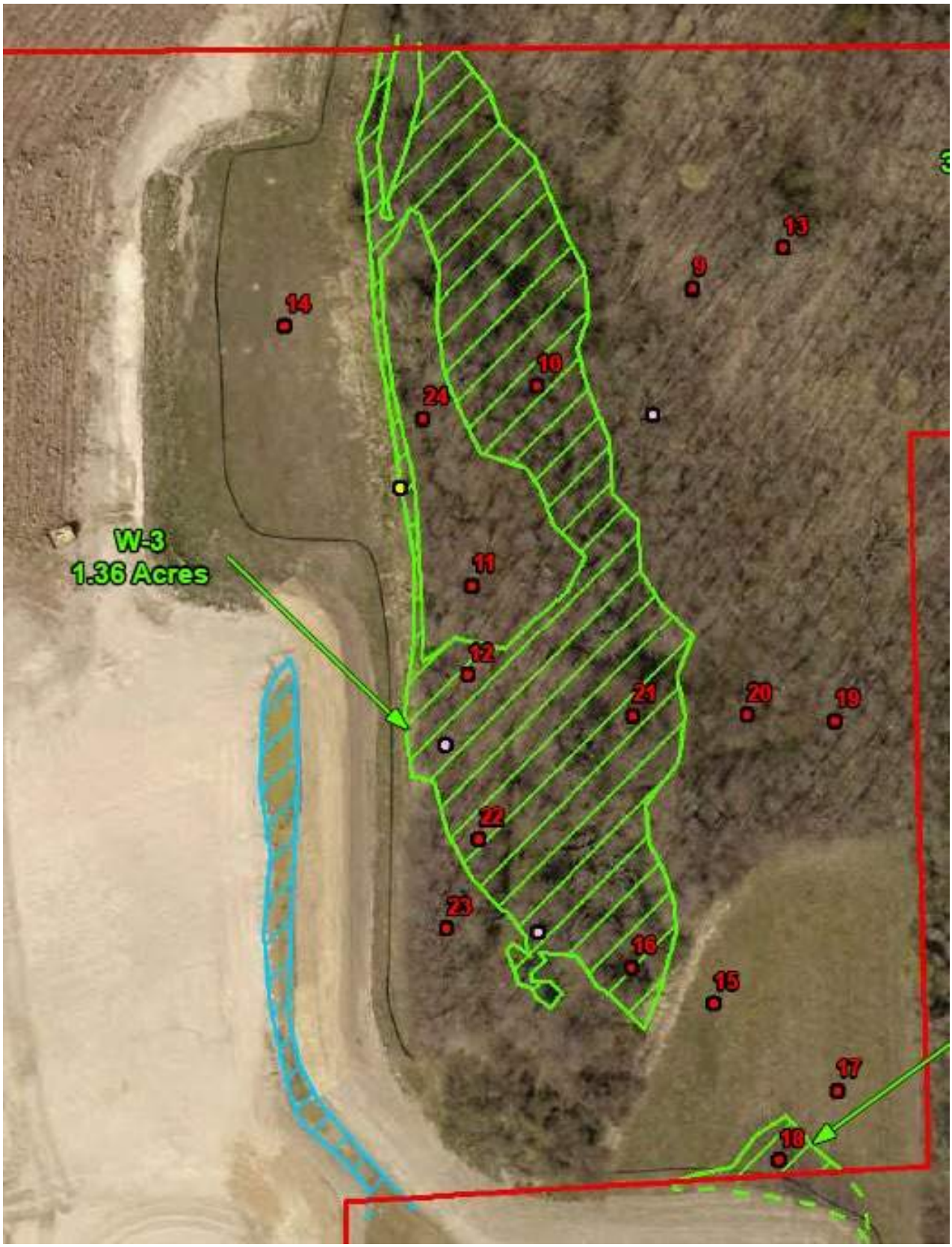
Source: Washington County GIS, 2024

2020.

2022.

FIGURE 6. HISTORIC AERIAL PHOTOS

Source: Washington County GIS, 2024



View of portion of a larger wetland delineation conducted by RASmith in 2018.

FIGURE 7. PREVIOUS DELINEATION MAP

Hillslope between Forested Wetland and parking lot.

View of drainage ditch portion of wetland with evidence of fallen dead ash trees.

FIGURE 8. SITE PHOTOS

View of Forested Wetland, with evidence of fallen dead ash.

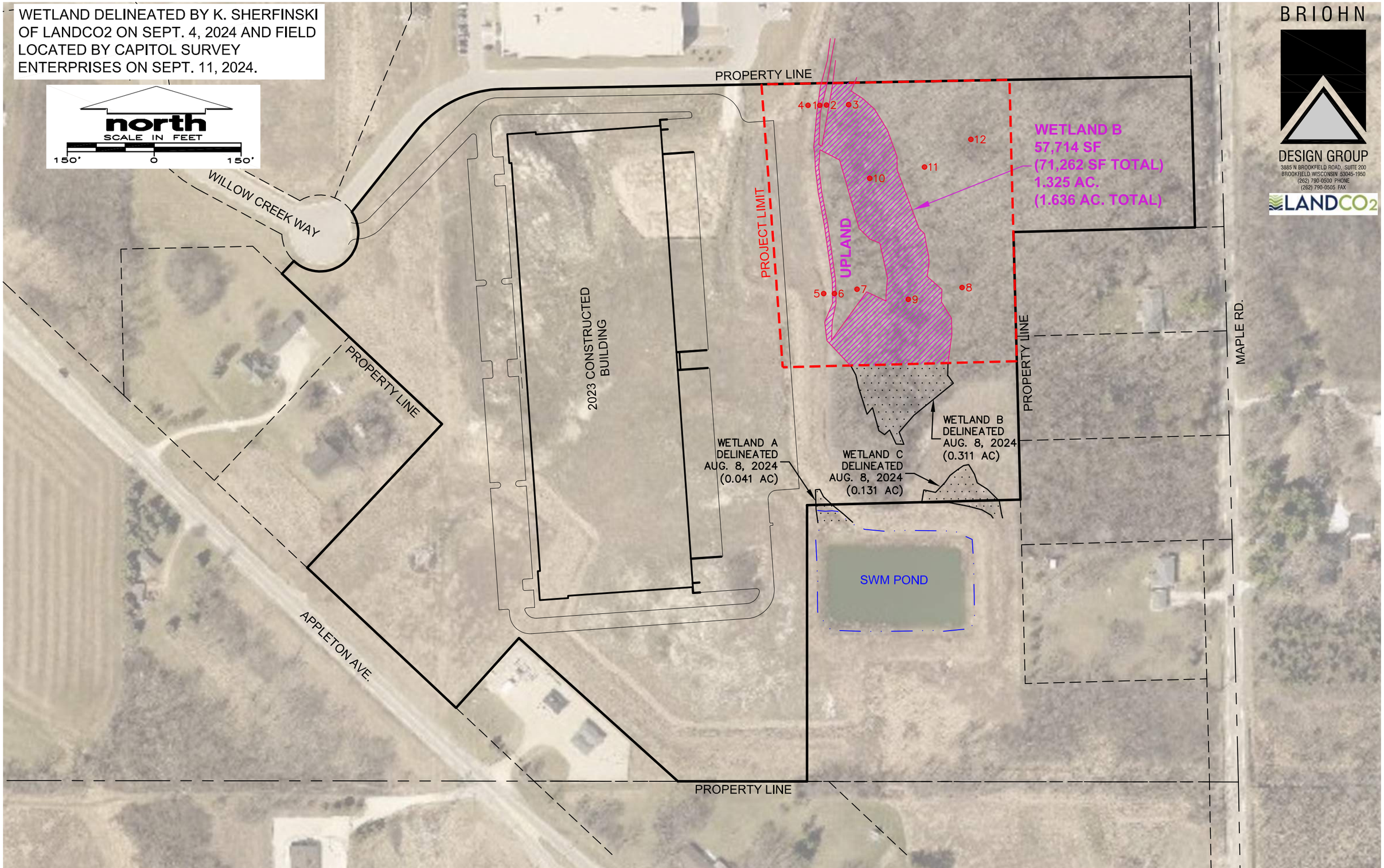
View of Forested Wetland interior.

FIGURE 8. SITE PHOTOS

View of upland forest area.

Dark patch on aerial map, near DP #12, located in upland forest

FIGURE 8. SITE PHOTOS


WETLAND DELINEATED BY K. SHERFINSKI OF LANDCO2 ON SEPT. 4, 2024 AND FIELD LOCATED BY CAPITOL SURVEY ENTERPRISES ON SEPT. 11, 2024.
north
SCALE IN FEET
150'
0
150'
BRIOHN
DESIGN GROUP
3885 N BROOKFIELD ROAD, SUITE 200
BROOKFIELD WISCONSIN 53045-1950
(262) 790-0500 PHONE
(262) 790-0505 FAX
LANDCO2
PROPERTY LINE
WILLOW CREEK WAY
PROPERTY LINE
APPLETON AVE.
2023 CONSTRUCTED BUILDING
PROJECT LIMIT
UPLAND
WETLAND B
57,714 SF
(71,262 SF TOTAL)
1.325 AC.
(1.636 AC. TOTAL)
1
2
3
4
5
6
7
8
9
10
11
12
WETLAND A DELINEATED AUG. 8, 2024 (0.041 AC)
WETLAND C DELINEATED AUG. 8, 2024 (0.131 AC)
WETLAND B DELINEATED AUG. 8, 2024 (0.311 AC)
SWM POND
PROPERTY LINE
MAPLE RD.
PROPERTY LINE

NR 151 Protective Areas*

Wetland Area	Wetland Class	Protective Area
Wetland B	Highly Susceptible	75 feet
Lakes		50 feet
Outstanding Resource Waters		50 feet
Perennial & Intermittent Streams On 7.5' USGS Survey		50 feet

* When applicable- generally for soil disturbances greater than one acre for non-agricultural purposes, but final authority for protective areas designation and application is with WDNR. NR 151 limits the area of impervious surfaces that can be built within the protective area.

FIGURE 11. NR151 PROTECTIVE AREAS

FIGURE 12. ASSURED WETLAND DELINEATOR LETTER

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
1027 W St Paul Ave
Milwaukee WI, WI, 53233

Tony Evers, Governor
Adam N. Payne, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

March 22, 2024

Kristi Sherfinski, PLA
Helianthus LLC.
247 W. Freshwater Way #210
Milwaukee, WI 53204

Subject: 2024 Assured Wetland Delineator Confirmation

Dear Ms. Sherfinski:

This letter provides Wisconsin Department of Natural Resources (WDNR) confirmation for the wetland delineations you conduct during the 2024 growing season. You and your clients will not need to wait for the WDNR to review your wetland delineations before moving forward with project planning. This will help expedite the review process for WDNR's wetland regulatory program. Your name and contact information will continue to be listed on our website at: http://dnr.wi.gov/topic/wetlands/assurance.html.

In the instance where a municipality may require a letter of confirmation for your work prior to moving forward in the local regulatory process, this letter shall serve as that confirmation. Although your wetland delineations do not require WDNR field review, inclusion of a Wetland Delineation Report is required for projects needing State authorized wetland, waterway and/or storm water permit approvals.

To comply with Chapter 23.321, State Statutes, please supply the department with a polygon shapefile of the wetland boundaries delineated within the project area. Please do not include data such as parcel boundaries, project limits, wetland graphic representation symbols, etc. If internal upland polygons are found within a wetland polygon, then please label as UPLAND. The shapefile should utilize a State Plane Projection and be overlain onto recent aerial photography. If a different projection system is used, please indicate in which system the data are projected. In the correspondence sent with the shapefile, please supply a brief description of each wetland's plant community (eg: wet meadow, floodplain forest, etc.). Please send these data to Calvin Lawrence (608-266-0756 or email at calvin.lawrence@wisconsin.gov).

If you or any client has a question regarding your status in the Wetland Delineation Professional Assurance Program, contact me by email at kara.brooks@wisconsin.gov or phone at 414-308-6780. Thank you for all your hard work and best wishes for the upcoming field season.

Sincerely,

Kara Brooks
Wetland Identification Coordinator
Bureau of Watershed Management

3885 N. Brookfield Rd, Ste. 200
Brookfield, WI 53045

ADDENDUM TO STORMWATER MANAGEMENT PLAN

FOR

TDC WILLOW CREEK, LLC

N102W19200 Willow Creek Way
Village of Germantown
Washington Co., WI

November 11, 2024

Prepared by:

Rizal W. Iskandarsjach, P.E., P.L.S.
Civil Engineer
riz@briohn.com
Phone: 262.790.0500
Direct: 262.790.0501 ext.404

Briohn Design Group, LLC
3885 N. Brookfield Road, Suite 200
Brookfield, WI 53045
www.briohn.com

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1.0 INTRODUCTION

TDC Willow Creek is proposing to construct an outdoor storage facility in their recently constructed (2023) commercial building located at N102W19200 Willow Creek Way in the Village of Germantown. The outdoor storage facility will be constructed on the eastern part of the property. The proposed outdoor storage facility project will disturb approximately 1.42 acres of lands and will involve the construction of a 0.92 acre of asphalt outdoor storage area and some existing pavement minor modification. The entire outdoor storage area will be fenced. Storm water runoff will be directed to an existing wet detention pond located southeast of the property, via a new private storm sewer system. The existing pond was included as part of a regional storm water management plan that was prepared for Willow Creek Business Park by the Village of Germantown in February 2016. In the TDC Willow Creek 2023 building project, the original 2016 Storm Water Management Plan (2016 SWMP) was re-analyzed and verified by JSD Professional Services, Inc (JSD) in a report dated May 25, 2023 (2023 SWMP). This proposed outdoor storage facility is outside of the subcatchment of the area designed to drain to the existing pond. An additional storm water analysis was prepared, adding the proposed outdoor storage facility to the subcatchment to the existing storm pond. A location map identifying the project site can be found in **Appendix 1**.

This Storm Water Management Plan has been created to verify that after pond outlet and berm modifications the additional outdoor storage development will comply with the peak discharge and total suspended solids removal requirements of the 2016 Storm Water Management Plan prepared for Willow Creek Business Park.

2.0 CONFORMANCE WITH 2016 AND 2023 STORM WATER MANAGEMENT PLANS

According to the 2016 storm water management plan, the Willow Creek Business Park was designed to reduce peak runoff rates and provide total suspended solids removal in accordance with Village of Germantown, Milwaukee Metropolitan Sewerage District, and Wisconsin Department of Natural Resources requirements. Several wet detention ponds were constructed throughout the business park to achieve these stormwater goals. The 2023 TDC Willow Creek facility site is located within drainage area “Pond 2”, which was designed to drain to detention Pond 2. The 2016 plan defines drainage area “Pond 2” as 12.665 acres, with an assumed impervious ratio of 80%, resulting in a curve number of 94. The 2023 TDC Willow Creek development caused a portion of drainage area “Pond 1” to now contribute to Pond 2, increasing the contributory area of Pond 2 to 14.427 acres. The former are that drains to Pond 1 that now drains to pond 2 was labeled as subcatchment “2B” and the existing area was labeled a s “2A” in the 2023 SWMP. That report reanalyzed Pond 2 for the updated drainage areas for conformance to the original plan. The 2023 SWMP reanalyzed result was that the calculated peak discharge rates and total suspended solids removal still conforms and no adjustment was needed for the existing Pond 2.

This outdoor facility addition adds acreage to the watershed boundary to the exiting Pond 2. In this report, additional hydrologic modeling is used to calculate peak discharge rates and total suspended solids removal to reflect the updated drainage area boundaries. The remodeling suggests that some modifications are needed to Pond 2 to continue to conform to the original 2016 plan.

3.0 UPDATED HYDROLIC MODELING

The drainage area 2A that drains to Pond 2 has increased from 13.507 acres to 14.427 acres. The Curve Number has not changed and remains at 94. The other drainage areas and pond in the 2023 SWMP are not affected by this improvement.

Table 1 – Proposed Pond 2 Source Areas

Surface	Curve Number	2023 Pond 2A Area (acres)	2024 Pond 2A Area (acres)
Water Surface	98	1.136	1.136
Grass, HSG C	74	0.691	0.691
Grass, HSG D	80	1.955	1.955
Paved Parking, HSG C	98	2.538	2.538
Paved Parking, HSG D	98	7.187	7.187
Outdoor Storage	98	--	**0.918**
Total	94	13.507	14.427

3.1 Water Quantity – Runoff Rate Control

Stormwater runoff peak rates in the 2016 SWMP were calculated using HydroCAD® version 10.00 software. Rainfall data was based on the SCS Type II rainfall distribution with a 2-year depth of 2.66-inches and a 100-year depth of 6.37-inches. In the 2013 SWMP and this addendum the models were recreated using HydroCAD® version 10.20 and current rainfall data to determine if the existing stormwater ponds will remain in compliance with current City of Germantown and Milwaukee Metropolitan Sewerage District (MMSD) standards after development of the proposed Dickman Company building. For reference, the peak runoff rates must not exceed 0.15 cfs/acre during the 2-year storm event and must not exceed 0.50 cfs/acre during the 100-year storm event. In addition to the revised 2A drainage boundary, the updated model also utilizes the current MSE3 rainfall distribution with a 2-year depth of 2.65-inches and a 100-year depth of 6.41-inches. As-built survey of Pond 2 was conducted by Capitol Survey Enterprises in August 2024. ***Based on the survey, the pond berm and emergency spillway will be required to be raised to maintain the 100-year pond elevation within the pond. The emergency spillway and pond berm will be raised to elevation 850.00 and 850.50, respectively.*** Results of the HydroCAD® models have been included in **Appendix 4.**

Table 2 – Pond 2 Source Characteristics

Storm Water Management Facility		2016 Plan	2024 As-Built	2024 Adjustment
P2	Normal Water Elevation	845.00	847.07	846.07
	Spillway Elevation	849.50	849.4	**850.00**
	100-yr Water Surface Elevation	848.75	-	*849.81*
	Berm Elevation	850.00	849.9	**850.50**

Table 3 – Post-development Peak Rate Summary

Area Description	Area (acres)	2-year		100-year	
		Allowable Peak Rate (cfs)	Peak Rate (cfs)	Allowable Peak Rate (cfs)	Peak Rate (cfs)
Pond 1	14.872	2.23	2.03	7.44	5.44
Pond 2	**15.842**	2.24	**1.81**	7.46	**3.14**
Undetained	0.397	0.06	0.79	0.20	3.00
East Subtotal	**31.111**	4.53	**3.86**	15.10	**8.64**
Pond 3	9.911	1.49	1.65	4.96	3.90
Pond 4	8.387	1.26	1.31	4.19	3.52
West Subtotal	18.298	2.74	2.96	9.15	7.41
Total	**49.409**	7.27	**6.81**	24.24	**16.03**

3.2 Water Quality – Total Suspended Solids Treatment Runoff Rate Control

The sediment reduction calculations in the 2016 SWMP were calculated using WinSLAMM® (version 10.1.1) Source Loading and Management Model. The water quality model has been recreated using WinSLAMM® (version 10.5.0) for the 2023 SWMP and this addendum to determine if the existing stormwater ponds and grass swales will continue to meet the 80% total suspended solids reduction required by the City of Germantown and Wisconsin Department of Natural Resources after development of the proposed Dickman Company building. Treatment practice data utilized in the updated model were based on the values used in the original 2016 modeling, but the drainage areas were updated to reflect the revised boundaries discussed earlier. The winter season dates were also revised to run from 12/06 to 03/28. Results of the WinSLAMM® models have been included in **Appendix 5.**

Calculation of TSS reduction for each drainage area has been determined based on the difference between the total mass of solids generated under the “without controls” and “with controls” conditions using WinSLAMM® software. Table 3 compares the TSS reductions calculated in the 2016 report with the updated WinSLAMM® modeling. Refer to **Appendix 5** for input and output data used in the water quality model.

A plate with 8-inch diameter opening will require to be installed at Pond 2 outlet structure pipe. The 8-inch opening will maintain a low flow for the 2-year event and maintain 80% TSS removal with the additional paved storage area and overall site.

Table 4 – Total Suspended Solids Loading

Area Description	2016 Storm Water Report			2024 Updated Modeling		
	Without Controls (lbs)	With Controls (lbs)	Percent Reduction (%)	Without Controls (lbs)	With Controls (lbs)	**Percent Reduction (%)**
Pond 1	5369	837.30	84.40	5998	1186	**80.23**
Pond 2	4001	646.70	83.84	8028	1233	***84.64***
Undetained	--	--	--	28	28	**0.00**
Pond 3	4250	584.00	86.26	6036	1131	**81.26**
Pond 4	3396	434.20	87.21	5755	837	**82.64**
Total	17016	2502.20	85.30	28276	4414	***84.39***

4.0 CONCLUSION

The proposed TDC Willow Creek outdoor storage development will drain to Pond 2. **Pond modification will be required to maintain conformance to the development of 2016 SWMP. Pond berm and emergency spillway will be required to be raised to maintain the 100-year pond elevation within the pond. The emergency spillway and pond berm will be raised to elevation 850.00 and 850.50, respectively. A plate with 8-inch diameter opening will be installed at Pond 2 outlet structure pipe.**

With the pond berm and outlet modifications, the additional paved storage area impervious drainage contributing to the pond will not exceed the 80% impervious area ratio or curve number of 94 as defined in the 2016 SWMP. Hydrologic modeling, updated with current rainfall data, confirms Pond 2 will remain below the allowable peak release rates for the 2-year and 100-year storm events in conformance with Village of Germantown and Milwaukee Metropolitan Sewerage District requirements. The high-water level in the pond will remain below the adjusted emergency spillway elevation, and the business park will continue to provide total suspended solids reduction in excess of 80%, as required by Village of Germantown and Wisconsin Department of Natural Resources. The proposed additional paved storage within the TDC Willow Creek development is in conformance with the 2016 storm water management plan prepared by the Village of Germantown. Please refer to the following appendix for further information regarding the proposed development, the 2016 storm water management plan, the updated hydrologic modeling, and updated water quality modeling.

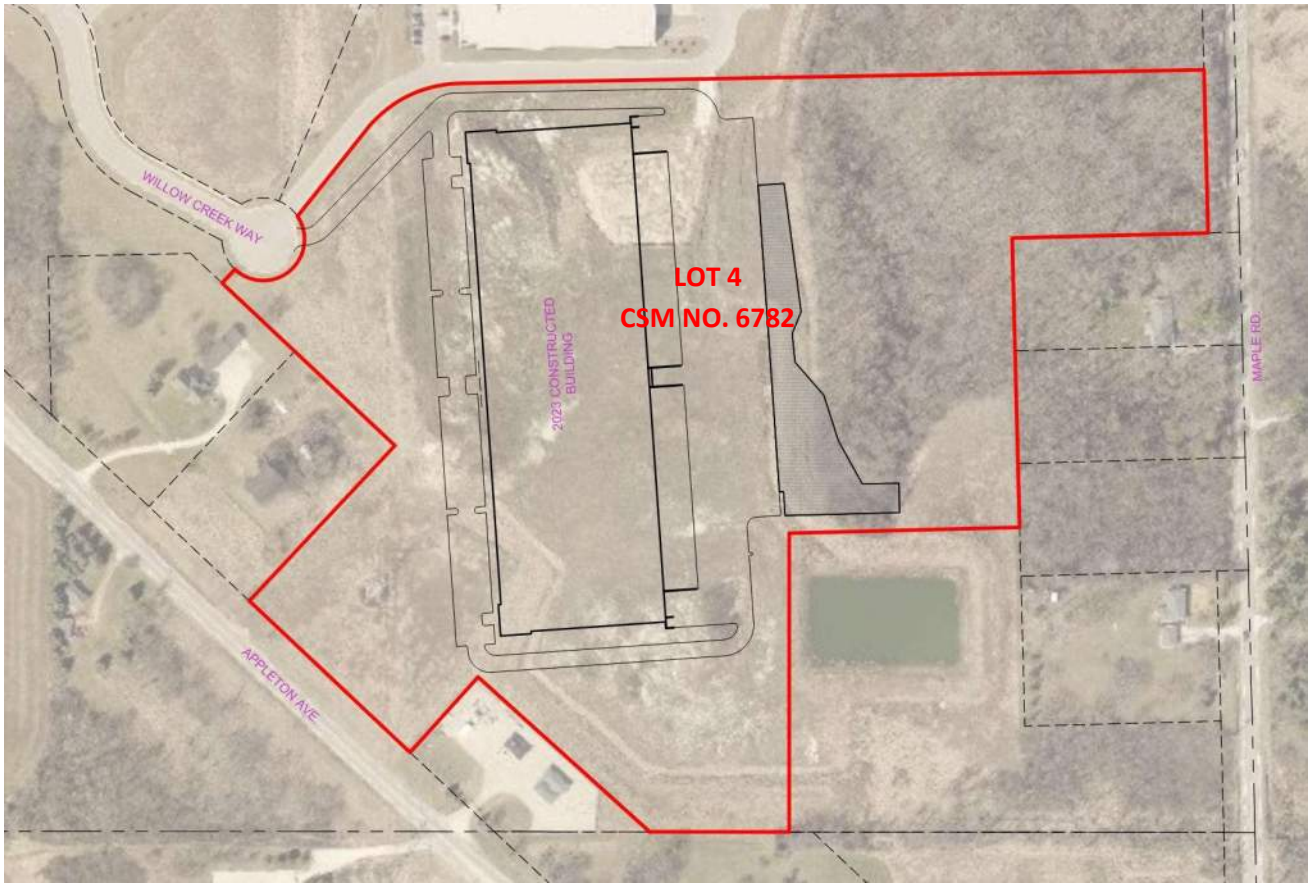
(Appendices Follow)

APPENDIX 1

Location Map

BRIOHN
DESIGN GROUP

TDC WILLOW CREEK, LLC



Location Map

Village of Germantown, Washington County, WI

(SE 1/4 of NE 1/4 of Section 32, Township 9 North, Range 20 East)

APPENDIX 2

Soil Data

- NRCS – Web Soil Survey
- 2024 Wetland Delineation Maps

BRIOHN DESIGN GROUP

88° 8' 55" W
88° 8' 42" W
43° 12' 11" N
43° 11' 58" N
406690
406730
406770
406810
406850
406890
406930
406970
4784000
4783960
4783920
4783880
4783840
4783800
4783760
4783720
4783680
4783640
RkC2
KwB
KwB
Ph
Cw
RkB
Cw
175
Soil Map may not be valid at this scale.
Map Scale: 1:1,910 if printed on A portrait (8.5" x 11") sheet.
Meters
0
25
50
100
150
Feet
0
50
100
200
300
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County, Wisconsin
Survey Area Data: Version 22, Sep 6, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 20, 2020—Aug 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Cw	Colwood silt loam, 0 to 2 percent slopes	C/D	1.0	7.3%
KwB	Knowles silt loam, 2 to 6 percent slopes	C	5.2	39.4%
Ph	Pella silt loam, 0 to 2 percent slopes	B/D	1.8	13.6%
RkB	Ritchey silt loam, 2 to 6 percent slopes	D	5.0	38.4%
RkC2	Ritchey silt loam, 6 to 12 percent slopes, eroded	D	0.2	1.3%
Totals for Area of Interest			**13.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

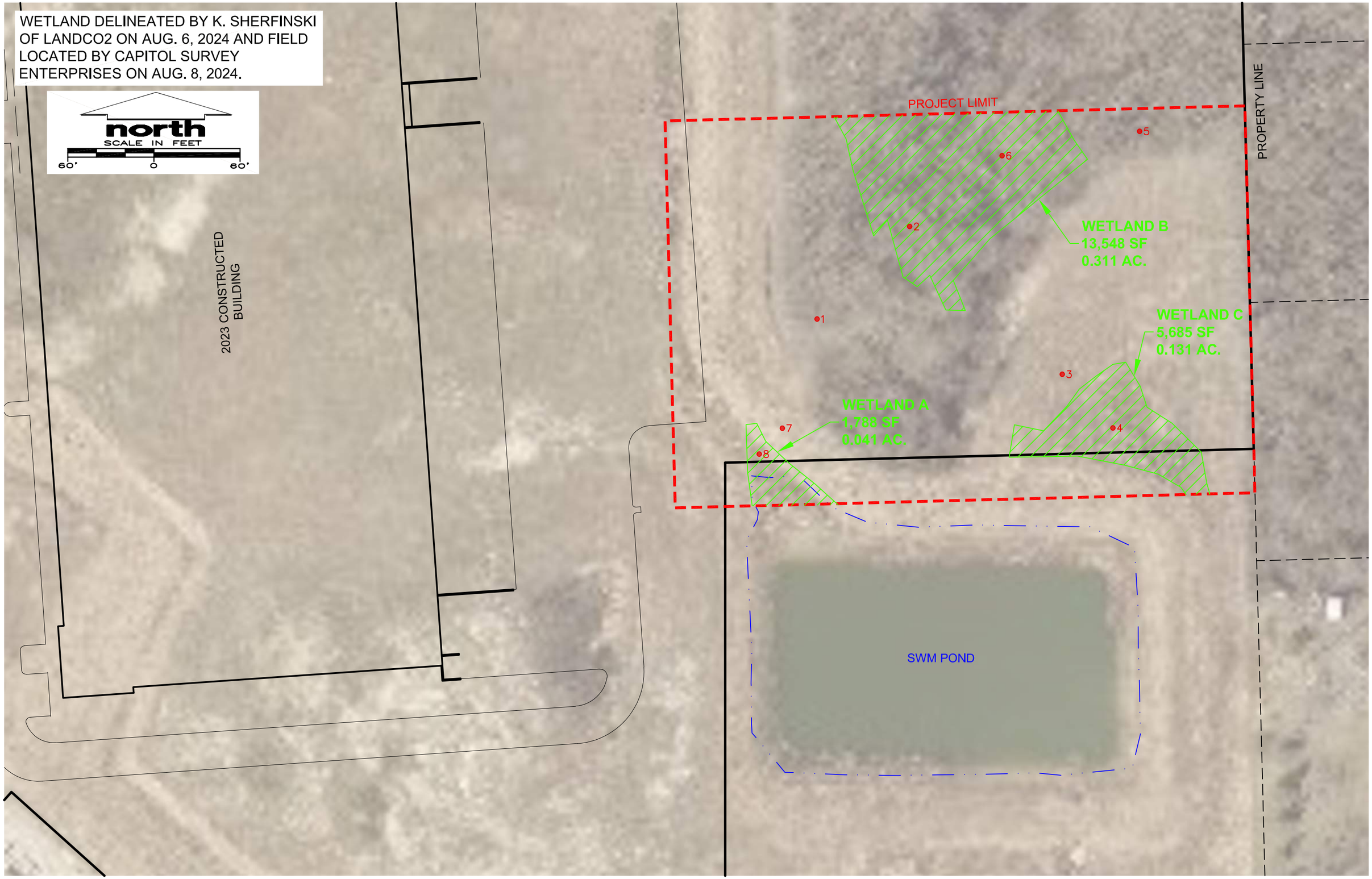
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

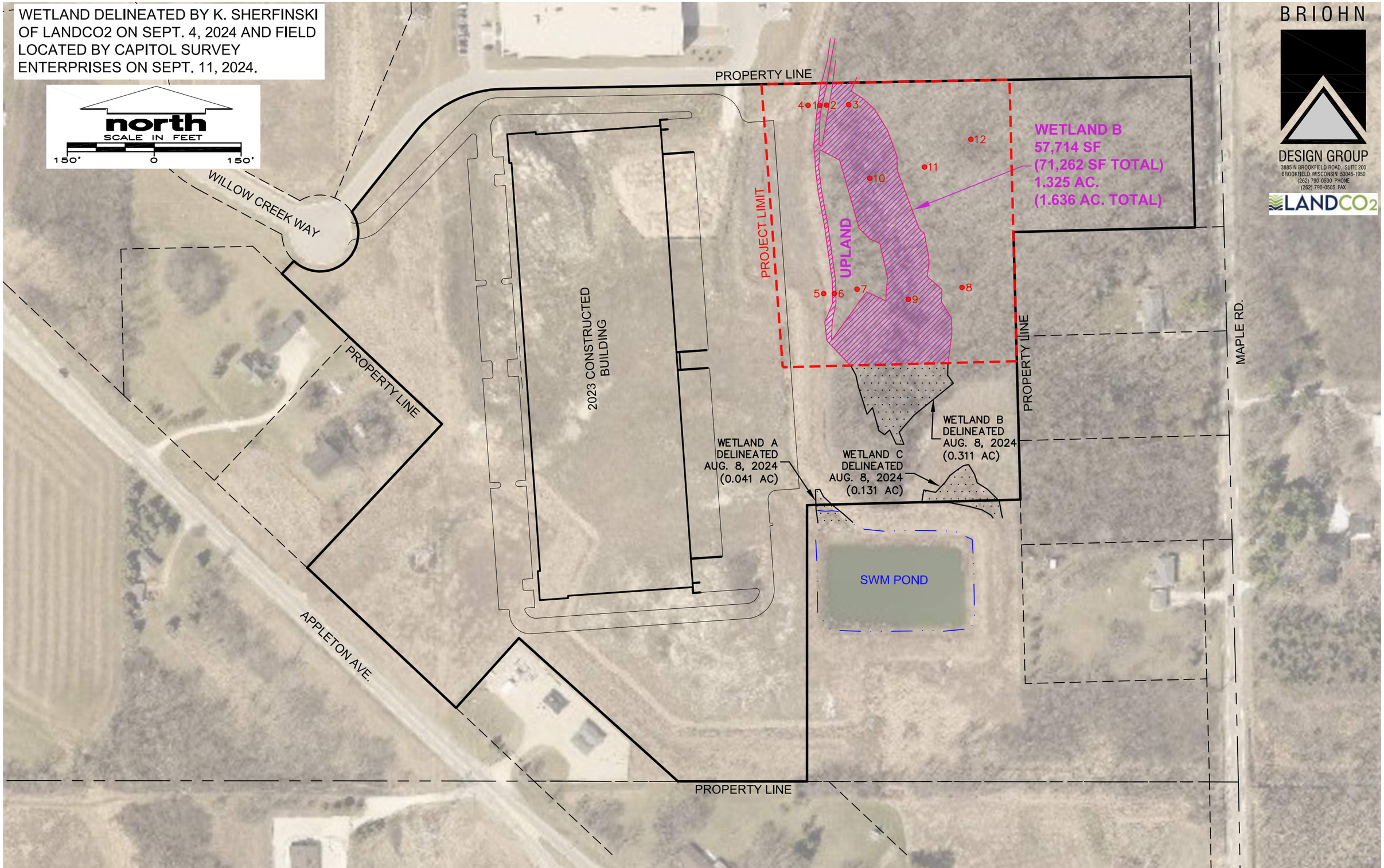
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher


WETLAND DELINEATED BY K. SHERFINSKI OF LANDCO2 ON AUG. 6, 2024 AND FIELD LOCATED BY CAPITOL SURVEY ENTERPRISES ON AUG. 8, 2024.
north
SCALE IN FEET
60'
0
60'
2023 CONSTRUCTED BUILDING
PROJECT LIMIT
PROPERTY LINE
WETLAND B
13,548 SF
0.311 AC.
WETLAND C
5,685 SF
0.131 AC.
WETLAND A
1,788 SF
0.041 AC.
1
2
3
4
5
6
7
8
SWM POND


WETLAND DELINEATED BY K. SHERFINSKI OF LANDCO2 ON SEPT. 4, 2024 AND FIELD LOCATED BY CAPITOL SURVEY ENTERPRISES ON SEPT. 11, 2024.
north
SCALE IN FEET
150'
0
150'
BRIOHN
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3885 N BROOKFIELD ROAD, SUITE 200
BROOKFIELD WISCONSIN 53045-1950
(262) 790-0500 PHONE
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LANDCO2
PROPERTY LINE
WILLOW CREEK WAY
PROPERTY LINE
APPLETON AVE.
2023 CONSTRUCTED BUILDING
PROJECT LIMIT
UPLAND
WETLAND B
57,714 SF
(71,262 SF TOTAL)
1.325 AC.
(1.636 AC. TOTAL)
WETLAND A DELINEATED AUG. 8, 2024 (0.041 AC)
WETLAND C DELINEATED AUG. 8, 2024 (0.131 AC)
WETLAND B DELINEATED AUG. 8, 2024 (0.311 AC)
SWM POND
PROPERTY LINE
MAPLE RD.
PROPERTY LINE

APPENDIX 3

Design Details

- Grading & Erosion Control Plans
- Wet Detention Pond Modification Plan
- Storm Sewer Sizing Calculations

BRIOHN DESIGN GROUP

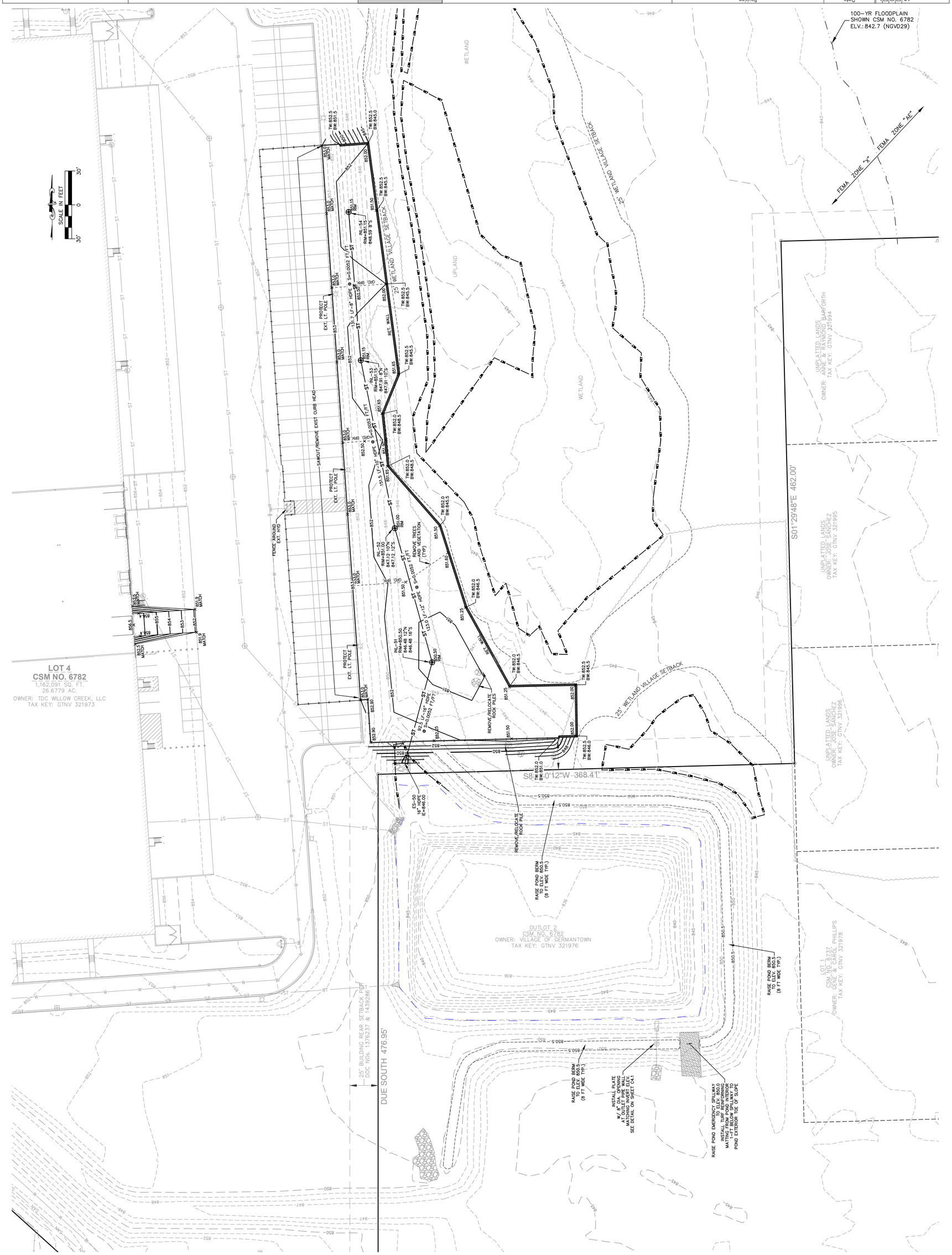
BRIOHN DESIGN GROUP
2885 BROOKFIELD ROAD, SUITE 230
BROOKFIELD WISCONSIN 53045-1660
(262) 790-0500 FAX

SHEET TITLE
PROJECT GRADING AND DRAINAGE PLAN

PROPOSED IMPROVEMENTS FOR:
TDC WILLOW CREEK, LLC
N102W19200 WILLOW CREEK WAY
VILLAGE OF GERMANTOWN, WISCONSIN

Date	Revision

JOB:	240101
DRAWN:	RWI
CHECKED:	BDG
DATE:	11-11-2024
SHEET:	C2.0



BRIOHN DESIGN GROUP
2885 BROOKFIELD ROAD, SUITE 230
BROOKFIELD WISCONSIN, 53045-1650
(262) 790-0500 VOICE
(262) 790-0505 FAX

SHEET TITLE
PROJECT EROSION CONTROL PLAN

PROPOSED IMPROVEMENTS FOR:
TDC WILLOW CREEK, LLC
N102W19200 WILLOW CREEK WAY
VILLAGE OF GERMANTOWN, WISCONSIN

Date	Revision

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CHECKED:	BDG
DATE:	11-11-2024
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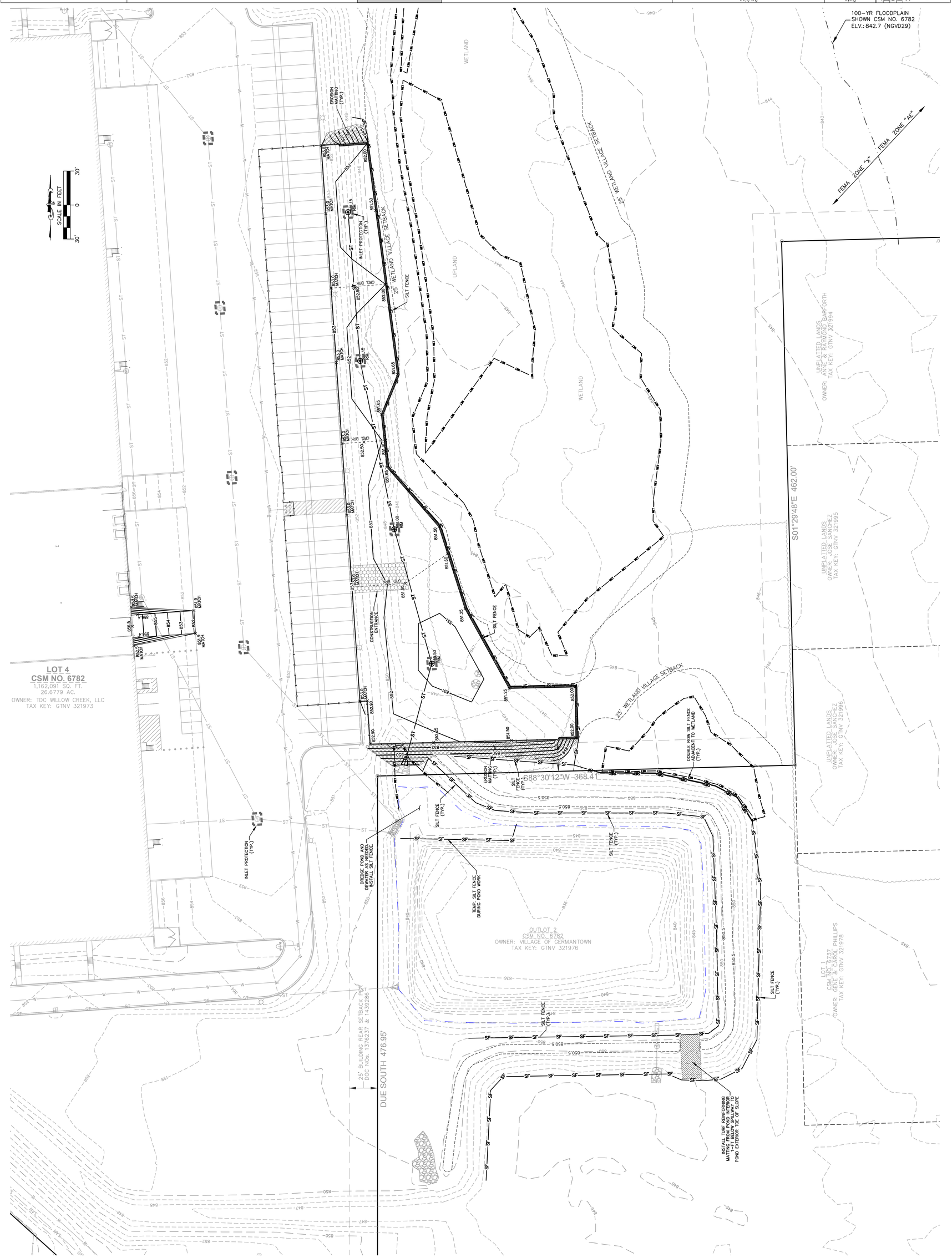
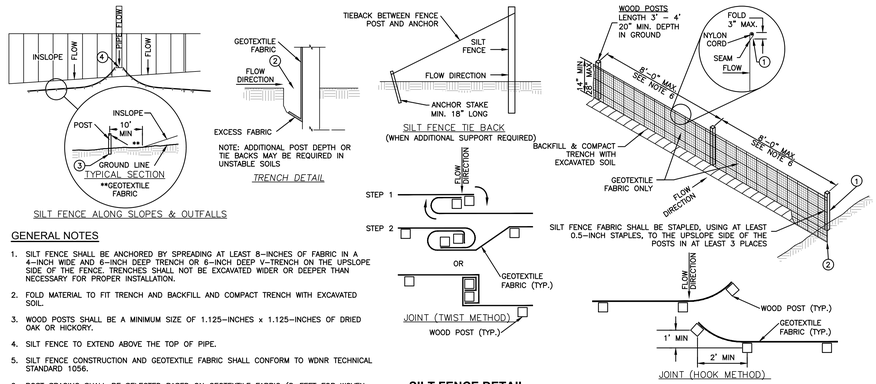




NOTE: ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS

TRENCH DETAIL

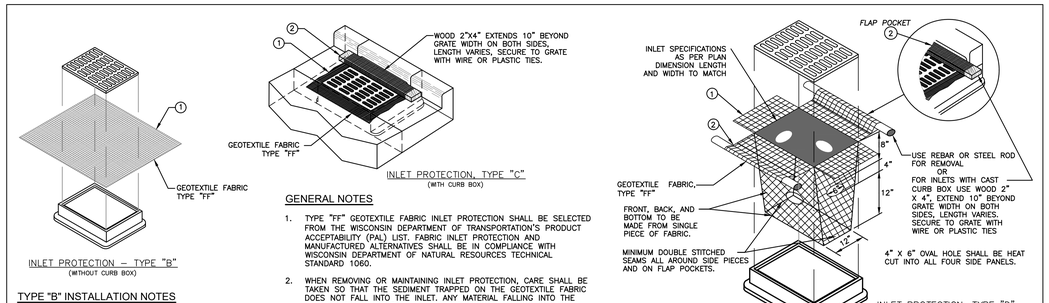
SILT FENCE ALONG SLOPES & OUTFALLS

GENERAL NOTES

1. SILT FENCE SHALL BE ANCHORED BY SPREADING AT LEAST 8–INCHES OF FABRIC IN A 4–INCH WIDE AND 6–INCH DEEP TRENCH OR 6–INCH DEEP V–TRENCH ON THE UPSLOPE SIDE OF THE FENCE. TRENCHES SHALL NOT BE EXCAVATED WIDER OR DEEPER THAN NECESSARY FOR PROPER INSTALLATION.
2. FOLD MATERIAL TO FIT TRENCH AND BACKFILL AND COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL BE A MINIMUM SIZE OF 1.125–INCHES x 1.125–INCHES OF DRIED OAK OR HICKORY.
4. SILT FENCE TO EXTEND ABOVE THE TOP OF PIPE.
5. SILT FENCE CONSTRUCTION AND GEOTEXTILE FABRIC SHALL CONFORM TO WDNR TECHNICAL STANDARD 1056.
6. POST SPACING SHALL BE SELECTED BASED ON GEOTEXTILE FABRIC (8–FEET FOR WOVEN & 3–FEET FOR NON–WOVEN)

SILT FENCE DETAIL

N.T.S.



TYPE "B" INSTALLATION NOTES

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3 INCHES OF THE GRATE.

THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHODS TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

GENERAL NOTES

1. TYPE "FF" GEOTEXTILE FABRIC INLET PROTECTION SHALL BE SELECTED FROM THE WISCONSIN DEPARTMENT OF TRANSPORTATION'S PRODUCT ACCEPTABILITY (PAL) LIST. FABRIC INLET PROTECTION AND MANUFACTURED ALTERNATIVES SHALL BE IN COMPLIANCE WITH WISCONSIN DEPARTMENT OF NATURAL RESOURCES TECHNICAL STANDARD 1060.
2. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

(1) FINISHED SIZE, INCLUDING FLAP POCKET WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

(2) FOR INLET PROTECTION, TYPE "C" (WITH CURB BOX), AN ADDITIONAL 18 INCHES OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.

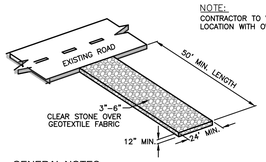
(3) FOLD MATERIAL TO FIT TRENCH AND BACKFILL AND COMPACT TRENCH WITH EXCAVATED SOIL.

TYPE "D" INSTALLATION NOTES

1. DO NOT INSTALL INLET PROTECTION TYPE "D" IN INLETS SHALLOWER THAN 30 INCHES, MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.
2. TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3 INCHES OF THE GRATE.
3. THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3 INCHES. WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCHES CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4 INCHES FROM THE BOTTOM OF THE BAG.

INLET PROTECTION

N.T.S.

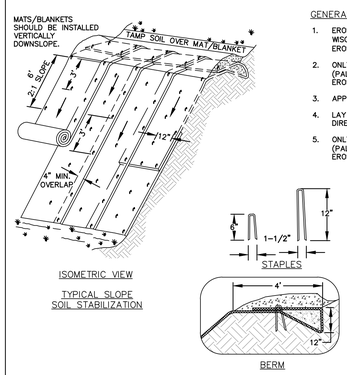


GENERAL NOTES

1. TRACKING PADS SHALL BE INSTALLED PRIOR TO ANY TRAFFIC LEAVING THE SITE.
2. THE AGGREGATE FOR TRACKING PADS SHALL BE 3 TO 6–INCH CLEAR OR WASHED STONE. ALL MATERIAL TO BE RETAINED ON A 3–INCH SIEVE.
3. THE AGGREGATE SHALL BE PLACED IN A LAYER AT LEAST 12–INCHES THICK. ON SITES WHERE SATURATED CONDITIONS ARE EXPECTED DURING THE LIFE OF THE PAD, THE PAD SHALL BE UNDERLAIN WITH WisDOT TYPE "R" GEOTEXTILE FABRIC TO PREVENT MIGRATION OF UNDERLYING SOILS INTO THE STONE LAYER.
4. THE TRACKING PAD SHALL BE THE FULL WIDTH OF THE EGRESS POINT. THE TRACKING PAD SHALL BE A MINIMUM 50–FEET LONG.
5. ANY SEDIMENT TRACKED ONTO A PUBLIC OR PRIVATE ROAD SHOULD BE REMOVED BY STREET CLEANING, NOT FLUSHING, AT THE END OF EACH WORKING DAY.
6. TRACKING PADS SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24–HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5–INCHES OF RAIN OR MORE DURING A 24–HOUR PERIOD.
7. THE TRACKING PAD PERFORMANCE SHALL BE MAINTAINED BY SCRAPING OR TOP–DRESSING WITH ADDITIONAL AGGREGATE.

CONSTRUCTION ENTRANCE

N.T.S.



GENERAL NOTES:

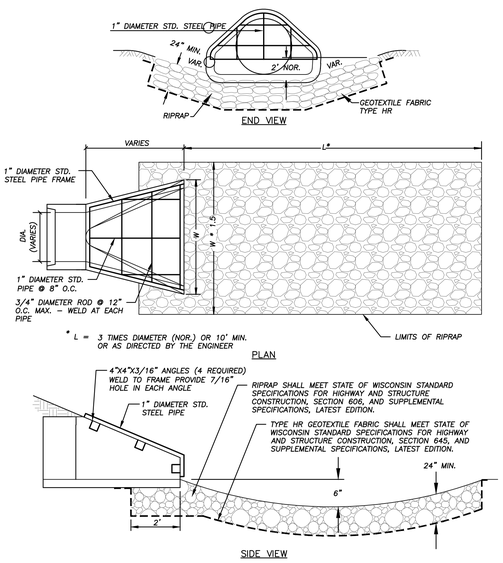
1. EROSION MAT CONSTRUCTION SHALL BE IN ACCORDANCE WITH WISCONSIN DNR TECHNICAL STANDARD 1052 "NON–CHANNEL EROSION MAT".
2. ONLY WisDOT EROSION CONTROL PRODUCT ACCEPTABILITY LIST (PAL) APPROVED MATS SHALL BE ALLOWED. REFER TO EROSION CONTROL PLAN FOR EXACT MAT CLASSIFICATION.
3. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
4. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
5. ONLY WisDOT EROSION CONTROL PRODUCT ACCEPTABILITY LIST (PAL) APPROVED MATS SHALL BE ALLOWED. REFER TO EROSION CONTROL PLAN FOR EXACT MAT CLASSIFICATION.

EROSION MATTING

N.T.S.

POND OUTLET MODIFICATION DETAIL

N.T.S.



APRON ENDWALL WITH GRATE

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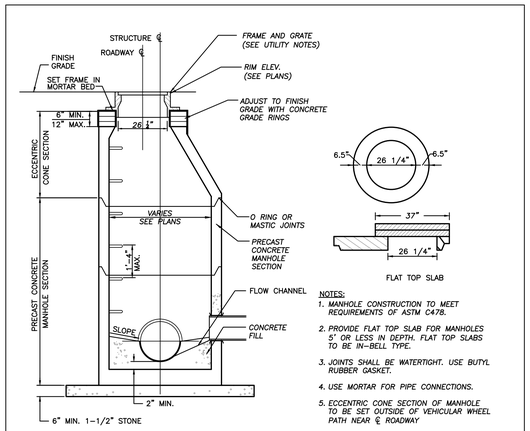
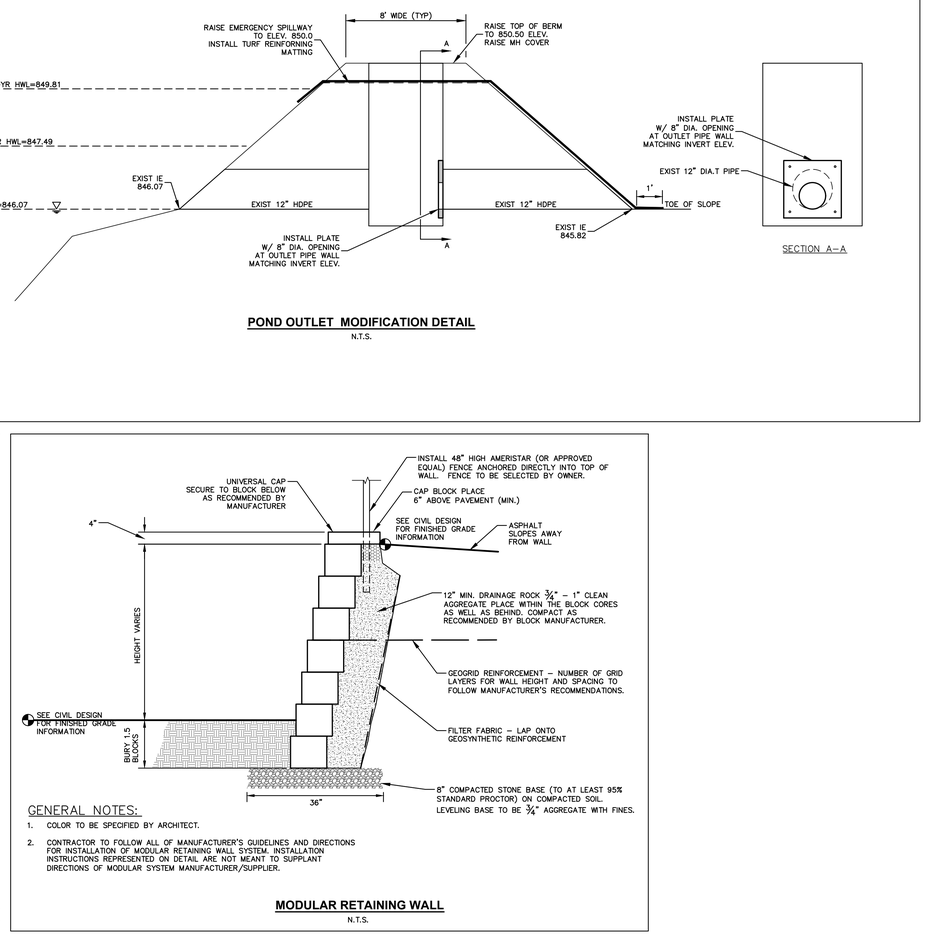


NOTES:

1. MANHOLE CONSTRUCTION TO MEET REQUIREMENTS OF ASTM C478.
2. PROVIDE FLAT TOP SLAB FOR MANHOLES 5' OR LESS IN DEPTH. FLAT TOP SLABS TO BE IN–BELL TYPE.
3. JOINTS SHALL BE WATERTIGHT. USE BUTYL RUBBER GASKET.
4. USE MORTAR FOR PIPE CONNECTIONS.
5. ECCENTRIC CONE SECTION OF MANHOLE TO BE SET OUTSIDE OF VEHICULAR WHEEL PATH NEAR ℄ ROADWAY

STANDARD STORM INLET/MH DETAIL

N.T.S.

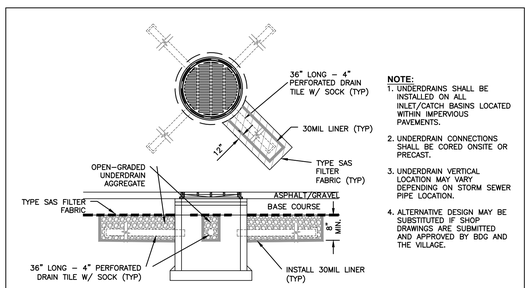


GENERAL NOTES:

1. COLOR TO BE SPECIFIED BY ARCHITECT.
2. CONTRACTOR TO FOLLOW ALL OF MANUFACTURER'S GUIDELINES AND DIRECTIONS FOR INSTALLATION OF MODULAR RETAINING WALL SYSTEM. INSTALLATION INSTRUCTIONS REPRESENTED ON DETAIL ARE NOT MEANT TO SUPPLANT DIRECTIONS OF MODULAR SYSTEM MANUFACTURER/SUPPLIER.

MODULAR RETAINING WALL

N.T.S.



NOTE:

1. UNDERDRAINS SHALL BE INSTALLED ON ALL INLET/CATCH BASINS LOCATED WITHIN IMPERVIOUS PAVEMENTS.
2. UNDERDRAIN CONNECTIONS SHALL BE CORED ONSITE OR PRECAST.
3. UNDERDRAIN VERTICAL LOCATION MAY VARY DEPENDING ON STORM SEWER PIPE LOCATION.
4. ALTERNATIVE DESIGN MAY BE SUBSTITUTED IF SHOP DRAWINGS ARE SUBMITTED AND APPROVED BY BDG AND THE VILLAGE.

CATCH BASIN UNDERDRAIN DETAIL

N.T.S.

BRIOHN DESIGN GROUP

3885 N BROOKFIELD ROAD, SUITE 200
BROOKFIELD WISCONSIN 53045-1950
(262) 790-0500 PHONE
(262) 790-0505 FAX

SHEET TITLE
SITE NOTES AND DETAILS

PROPOSED IMPROVEMENTS FOR:
TDC WILLOW CREEK, LLC
N102W19200 WILLOW CREEK WAY
VILLAGE OF GERMANTOWN, WISCONSIN

Date	Revision

JOB:	240101
DRAWN:	RWI
CHECKED:	BDG
DATE:	11-11-2024
SHEET:	C4.1

RATIONAL METHOD STORM SEWER CALCULATIONS

Project Name: **Willow Creek - Xylem**

Project Location: Germantown, WI
BDG Project Number: 240101

Performed by: RWI
Date: 10/28/2024

BRIOHN DESIGN GROUP
3885 N. Brookfield Road, Suite 200
Brookfield, Wisconsin 53045
Ph: (262) 790-0500 Fax: (262) 790-0505

Structure abbreviations are as follows: ES - End Section, MH - Manhole, FI - Field Inlet, TD - Trench Drain, BC - Building Connection, RD - Roof Drain, STB - Stub

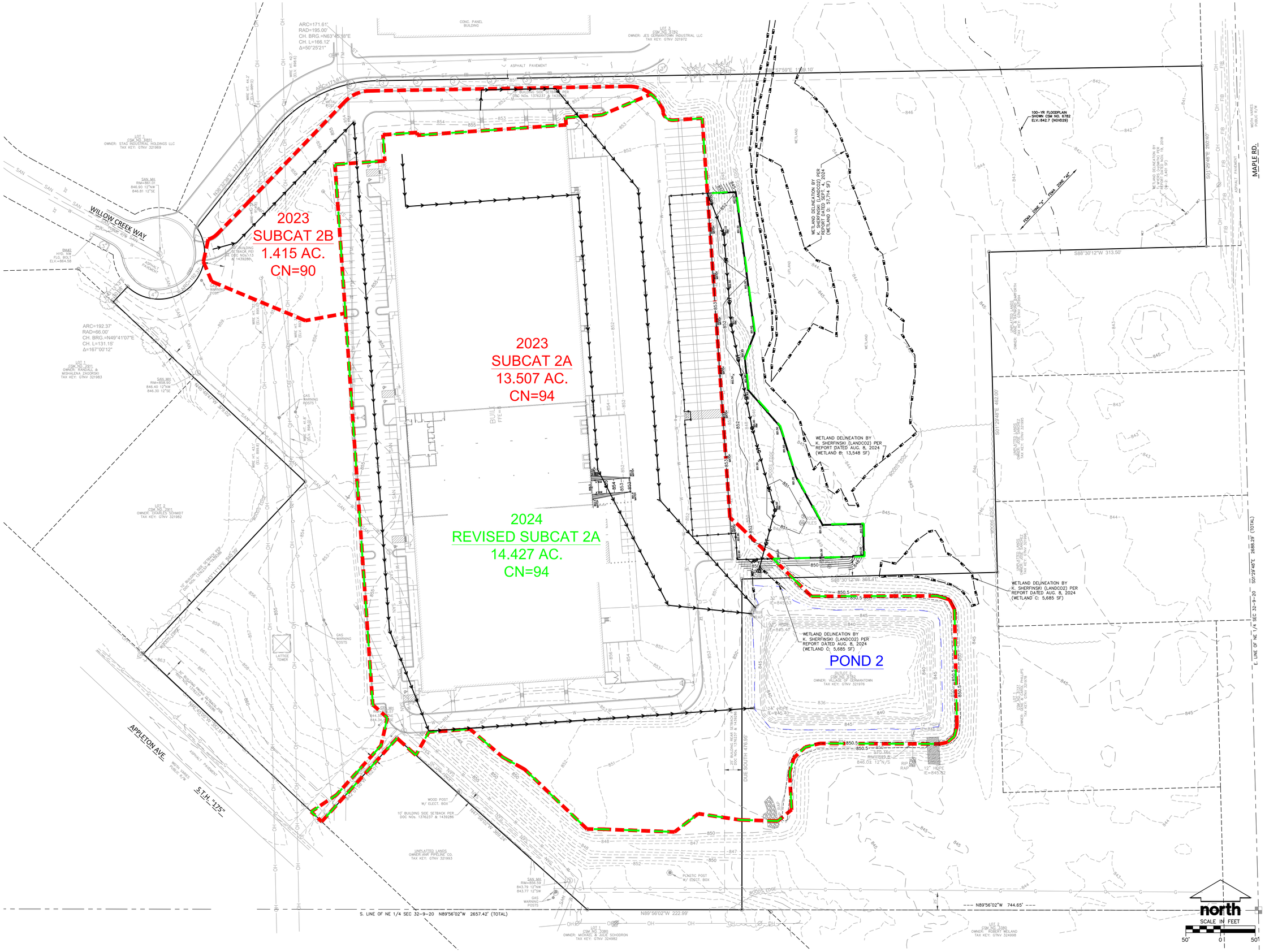
PIPE LOCATION		STRUCTURE CONTRIBUTING AREA					PIPE FLOW				PIPE DATA				PIPE CAPACITY INFORMATION							DROP	ELEVATIONS			COVER TO CROWN (FT)
															ACTUAL FLOW											
UP STRUCT	DOWN STRUCT	ROOF C = 0.95 (SQ FT)	PAVED C = 0.95 (SQ FT)	GRASS C = 0.20 (SQ FT)	INDIVID AREA (ACRES)	INDIV COMP C VALUE (UNITLESS)	STORM EVENT 2,5,10,25,50,100	INTENSITY I (IN/HR)	INDIV RUNOFF (CFS)	TOTAL FLOW (CFS)	LENGTH (FT)	DIA. (IN)	SLOPE (FT/FT)	Manning's n RCP=0.013 HDPE=0.012 PVC=0.011	REQD DROP	ACTUAL DROP	PARTS FULL	VEL (FPS)	FULL FLOW (CFS)	TIME TO STRUCT. (MIN)	TIME IN SEWER (MIN)	THRU STRUCT (FT)	RIM/(F/L) UP	INVERT UP	INVERT DOWN	
INL-54	**INL-53**	0	5,725	0	0.13	0.95	10	5.14	0.64	0.64	**131.7**	**8**	**0.0052**	**0.012**	0.32	0.68	0.66	2.95	0.94	10.00	10.75	0.00	**851.15**	**848.59**	**847.91**	1.82
INL-53	**INL-52**	0	6,630	0	0.15	0.95	10	5.01	0.72	1.37	**151.5**	**10**	**0.0052**	**0.012**	0.50	0.79	0.74	3.51	1.71	10.75	11.46	0.00	**851.15**	**847.91**	**847.12**	2.32
INL-52	**INL-51**	0	7,915	0	0.18	0.95	10	4.89	0.84	2.21	**123.0**	**12**	**0.0052**	**0.012**	0.40	0.64	0.72	3.94	2.78	11.46	11.98	0.00	**851.00**	**847.12**	**846.48**	2.78
INL-51	**ES-50**	0	19,415	0	0.45	0.95	10	4.80	2.03	4.24	**92.5**	**16**	**0.0052**	**0.012**	0.24	0.48	0.66	4.68	5.99	11.98	12.31	0.00	**850.50**	**846.48**	**846.00**	2.55

APPENDIX 4

Water Quantity Calculations

- Proposed Conditions Hydrology Exhibit
- Proposed Conditions HydroCAD Output

BRIOHN DESIGN GROUP



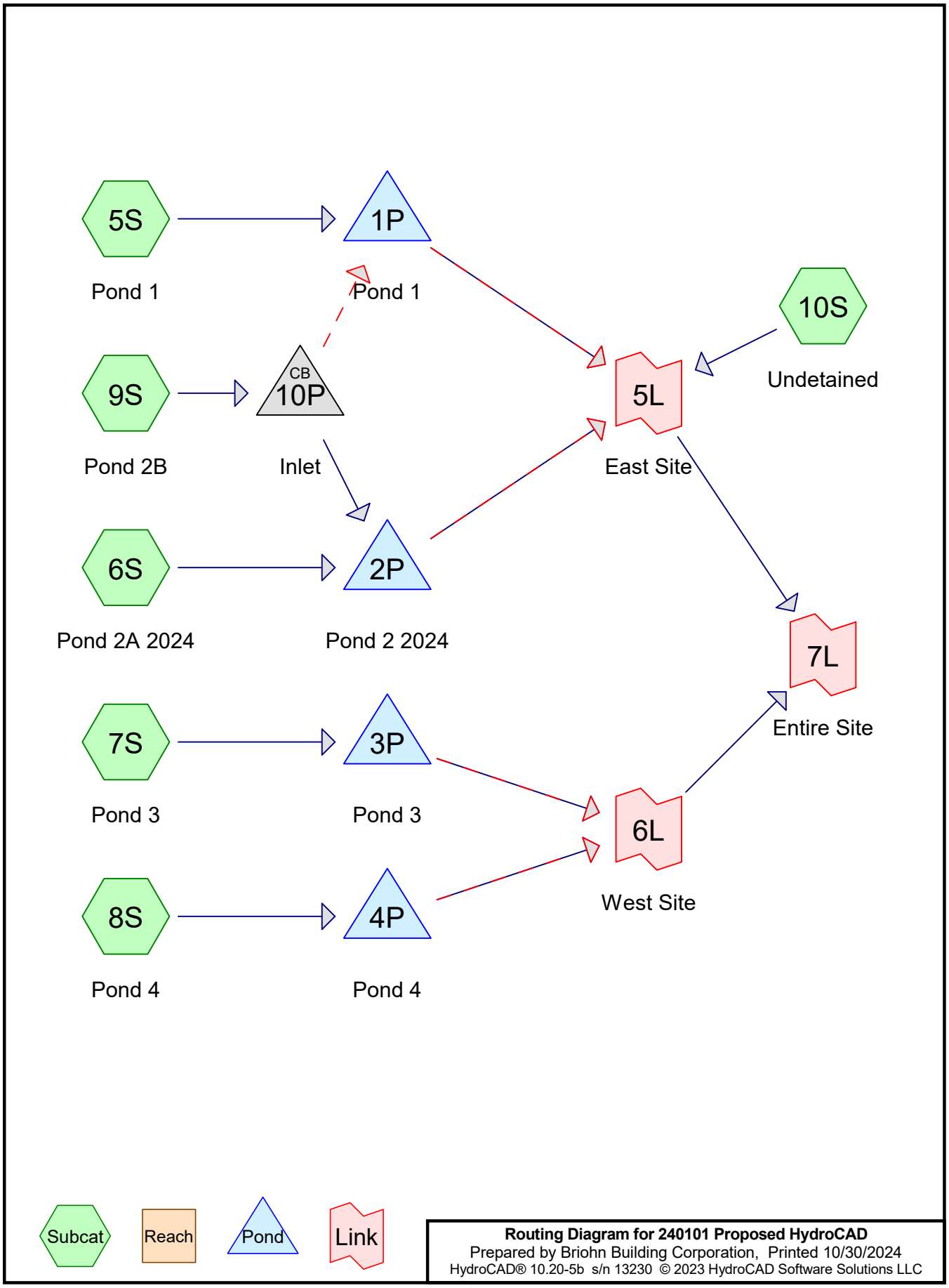
BRIOHN DESIGN GROUP
3885 N BROOKFIELD ROAD, SUITE 200
BROOKFIELD WISCONSIN 53045-1950
(262) 790-0500 PHONE
(262) 790-0505 FAX

SHEET TITLE
HYDROLOGY EXHIBIT

PROPOSED IMPROVEMENTS FOR:
TDC WILLOW CREEK, LLC
N102W19200 WILLOW CREEK WAY
VILLAGE OF GERMANTOWN, WISCONSIN

Revision	Date

JOB:	240101
DRAWN:	RWI
CHECKED:	BDG
DATE:	11-11-2024
SHEET:	H1.0


5S
Pond 1
1P
Pond 1
10S
Undetained
9S
Pond 2B
CB
10P
Inlet
5L
East Site
6S
Pond 2A 2024
2P
Pond 2 2024
7L
Entire Site
7S
Pond 3
3P
Pond 3
6L
West Site
8S
Pond 4
4P
Pond 4
Subcat
Reach
Pond
Link
Routing Diagram for 240101 Proposed HydroCAD
Prepared by Briohn Building Corporation, Printed 10/30/2024
HydroCAD® 10.20-5b s/n 13230 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-year	MSE 24-hr	3	Default	24.00	1	2.65	2
2	100-year	MSE 24-hr	3	Default	24.00	1	6.41	2

Summary for Subcatchment 5S: Pond 1

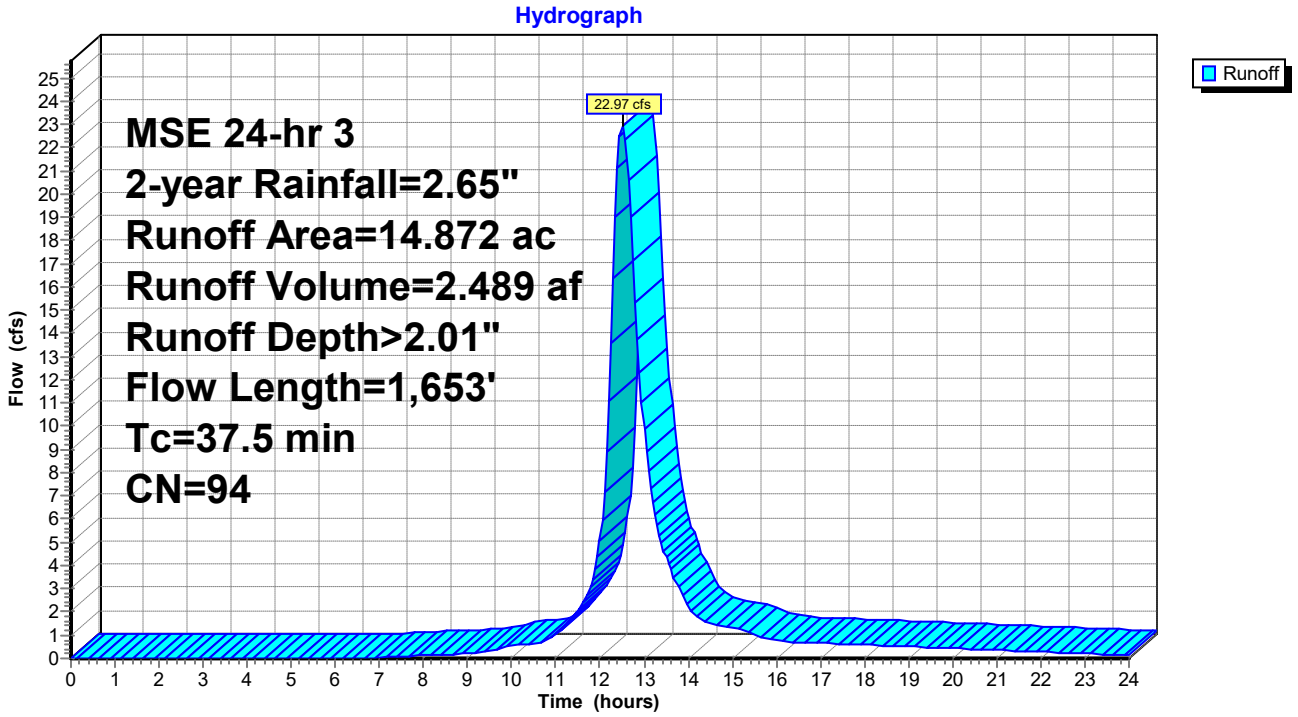
Runoff = 22.97 cfs @ 12.51 hrs, Volume= 2.489 af, Depth> 2.01"
Routed to Pond 1P : Pond 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-year Rainfall=2.65"

Area (ac)	CN	Description
1.418	98	Water Surface, HSG D
4.251	98	Paved parking, HSG C
1.063	74	>75% Grass cover, Good, HSG C
6.512	98	Paved parking, HSG D
1.628	80	>75% Grass cover, Good, HSG D
14.872	94	Weighted Average
2.691		18.09% Pervious Area
12.181		81.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6	150	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.65"
6.0	577	0.0100	1.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.9	926	0.0070	5.39	150.80	**Channel Flow,** Area= 28.0 sf Perim= 18.9' r= 1.48' n= 0.030 Earth, grassed & winding
37.5	1,653	Total			

Subcatchment 5S: Pond 1



Hydrograph for Subcatchment 5S: Pond 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.75	0.01	0.00	0.00
1.00	0.01	0.00	0.00
1.25	0.01	0.00	0.00
1.50	0.02	0.00	0.00
1.75	0.02	0.00	0.00
2.00	0.02	0.00	0.00
2.25	0.03	0.00	0.00
2.50	0.03	0.00	0.00
2.75	0.04	0.00	0.00
3.00	0.04	0.00	0.00
3.25	0.05	0.00	0.00
3.50	0.06	0.00	0.00
3.75	0.06	0.00	0.00
4.00	0.07	0.00	0.00
4.25	0.08	0.00	0.00
4.50	0.08	0.00	0.00
4.75	0.09	0.00	0.00
5.00	0.10	0.00	0.00
5.25	0.11	0.00	0.00
5.50	0.12	0.00	0.00
5.75	0.13	0.00	0.00
6.00	0.14	0.00	0.00
6.25	0.14	0.00	0.00
6.50	0.15	0.00	0.01
6.75	0.17	0.00	0.03
7.00	0.18	0.00	0.04
7.25	0.19	0.01	0.06
7.50	0.20	0.01	0.08
7.75	0.21	0.01	0.10
8.00	0.22	0.01	0.12
8.25	0.23	0.02	0.15
8.50	0.25	0.02	0.17
8.75	0.26	0.02	0.19
9.00	0.27	0.03	0.22
9.25	0.29	0.03	0.25
9.50	0.32	0.04	0.34
9.75	0.34	0.05	0.45
10.00	0.36	0.06	0.52
10.25	0.39	0.08	0.59
10.50	0.41	0.09	0.66
10.75	0.46	0.11	0.75
11.00	0.51	0.14	1.04
11.25	0.58	0.19	1.51
11.50	0.66	0.24	2.07
11.75	0.81	0.36	2.82
12.00	1.23	0.70	5.06
12.25	1.84	1.24	13.59
12.50	1.99	1.39	**22.95**
12.75	2.07	1.46	17.12
13.00	2.14	1.53	9.88
13.25	2.19	1.58	6.18
13.50	2.24	1.62	4.34
13.75	2.26	1.64	3.19
14.00	2.29	1.67	2.26
14.25	2.31	1.69	1.71
14.50	2.33	1.71	1.49
14.75	2.36	1.73	1.39
15.00	2.38	1.75	1.32
15.25	2.39	1.76	1.24
15.50	2.40	1.78	1.03
15.75	2.42	1.79	0.85
16.00	2.43	1.80	0.77
16.25	2.44	1.81	0.73
16.50	2.45	1.82	0.71
16.75	2.46	1.83	0.68
17.00	2.47	1.84	0.66
17.25	2.48	1.85	0.65
17.50	2.50	1.86	0.63
17.75	2.51	1.87	0.61
18.00	2.51	1.88	0.59
18.25	2.52	1.89	0.57
18.50	2.53	1.90	0.55
18.75	2.54	1.91	0.53
19.00	2.55	1.92	0.52
19.25	2.56	1.93	0.50
19.50	2.57	1.93	0.48
19.75	2.57	1.94	0.46
20.00	2.58	1.95	0.44
20.25	2.59	1.95	0.42
20.50	2.59	1.96	0.40
20.75	2.60	1.97	0.39
21.00	2.61	1.97	0.37
21.25	2.61	1.98	0.35
21.50	2.62	1.98	0.33
21.75	2.62	1.99	0.31
22.00	2.63	1.99	0.29
22.25	2.63	1.99	0.27
22.50	2.63	2.00	0.25
22.75	2.64	2.00	0.24
23.00	2.64	2.00	0.22
23.25	2.64	2.01	0.20
23.50	2.65	2.01	0.18
23.75	2.65	2.01	0.16
24.00	**2.65**	**2.01**	0.14

Summary for Subcatchment 6S: Pond 2A 2024

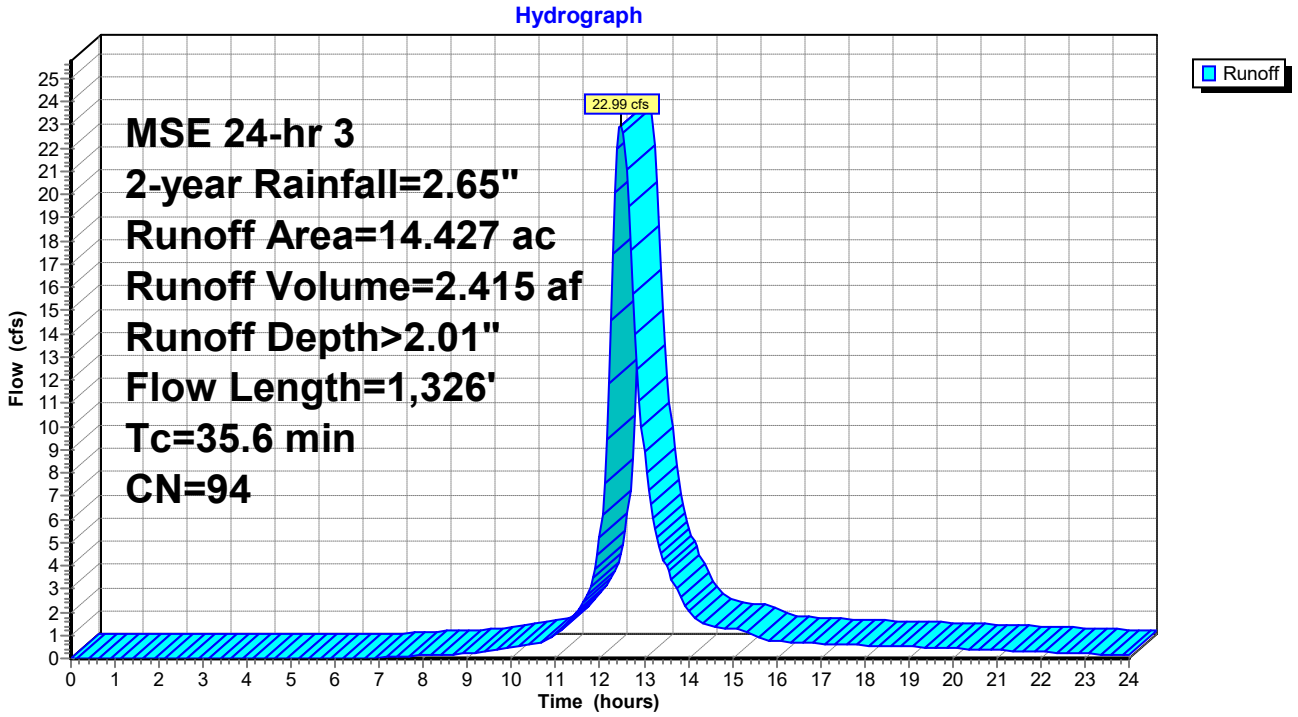
Runoff = 22.99 cfs @ 12.48 hrs, Volume= 2.415 af, Depth> 2.01"
Routed to Pond 2P : Pond 2 2024

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-year Rainfall=2.65"

	Area (ac)	CN	Description
	1.136	98	Water Surface, HSG D
	0.691	74	>75% Grass cover, Good, HSG C
	1.955	80	>75% Grass cover, Good, HSG D
	2.538	98	Paved parking, HSG C
	7.187	98	Paved parking, HSG D
*	0.920	98	Asphalt outdoor storage
	14.427	94	Weighted Average
	2.646		18.34% Pervious Area
	11.781		81.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6	150	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.65"
4.8	461	0.0100	1.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.2	715	0.0070	5.39	150.80	**Channel Flow,** Area= 28.0 sf Perim= 18.9' r= 1.48' n= 0.030
35.6	1,326	Total			

Subcatchment 6S: Pond 2A 2024



Hydrograph for Subcatchment 6S: Pond 2A 2024

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.75	0.01	0.00	0.00
1.00	0.01	0.00	0.00
1.25	0.01	0.00	0.00
1.50	0.02	0.00	0.00
1.75	0.02	0.00	0.00
2.00	0.02	0.00	0.00
2.25	0.03	0.00	0.00
2.50	0.03	0.00	0.00
2.75	0.04	0.00	0.00
3.00	0.04	0.00	0.00
3.25	0.05	0.00	0.00
3.50	0.06	0.00	0.00
3.75	0.06	0.00	0.00
4.00	0.07	0.00	0.00
4.25	0.08	0.00	0.00
4.50	0.08	0.00	0.00
4.75	0.09	0.00	0.00
5.00	0.10	0.00	0.00
5.25	0.11	0.00	0.00
5.50	0.12	0.00	0.00
5.75	0.13	0.00	0.00
6.00	0.14	0.00	0.00
6.25	0.14	0.00	0.00
6.50	0.15	0.00	0.01
6.75	0.17	0.00	0.03
7.00	0.18	0.00	0.04
7.25	0.19	0.01	0.06
7.50	0.20	0.01	0.08
7.75	0.21	0.01	0.10
8.00	0.22	0.01	0.12
8.25	0.23	0.02	0.14
8.50	0.25	0.02	0.17
8.75	0.26	0.02	0.19
9.00	0.27	0.03	0.21
9.25	0.29	0.03	0.25
9.50	0.32	0.04	0.34
9.75	0.34	0.05	0.44
10.00	0.36	0.06	0.52
10.25	0.39	0.08	0.58
10.50	0.41	0.09	0.65
10.75	0.46	0.11	0.74
11.00	0.51	0.14	1.05
11.25	0.58	0.19	1.52
11.50	0.66	0.24	2.07
11.75	0.81	0.36	2.84
12.00	1.23	0.70	5.18
12.25	1.84	1.24	14.58
12.50	1.99	1.39	**22.93**
12.75	2.07	1.46	15.69
13.00	2.14	1.53	8.91
13.25	2.19	1.58	5.61
13.50	2.24	1.62	3.99
13.75	2.26	1.64	2.94
14.00	2.29	1.67	2.07
14.25	2.31	1.69	1.60
14.50	2.33	1.71	1.42
14.75	2.36	1.73	1.33
15.00	2.38	1.75	1.27
15.25	2.39	1.76	1.19
15.50	2.40	1.78	0.98
15.75	2.42	1.79	0.81
16.00	2.43	1.80	0.74
16.25	2.44	1.81	0.71
16.50	2.45	1.82	0.68
16.75	2.46	1.83	0.66
17.00	2.47	1.84	0.64
17.25	2.48	1.85	0.62
17.50	2.50	1.86	0.61
17.75	2.51	1.87	0.59
18.00	2.51	1.88	0.57
18.25	2.52	1.89	0.55
18.50	2.53	1.90	0.53
18.75	2.54	1.91	0.52
19.00	2.55	1.92	0.50
19.25	2.56	1.93	0.48
19.50	2.57	1.93	0.46
19.75	2.57	1.94	0.44
20.00	2.58	1.95	0.43
20.25	2.59	1.95	0.41
20.50	2.59	1.96	0.39
20.75	2.60	1.97	0.37
21.00	2.61	1.97	0.35
21.25	2.61	1.98	0.34
21.50	2.62	1.98	0.32
21.75	2.62	1.99	0.30
22.00	2.63	1.99	0.28
22.25	2.63	1.99	0.26
22.50	2.63	2.00	0.24
22.75	2.64	2.00	0.23
23.00	2.64	2.00	0.21
23.25	2.64	2.01	0.19
23.50	2.65	2.01	0.17
23.75	2.65	2.01	0.15
24.00	**2.65**	**2.01**	0.14

Summary for Subcatchment 7S: Pond 3

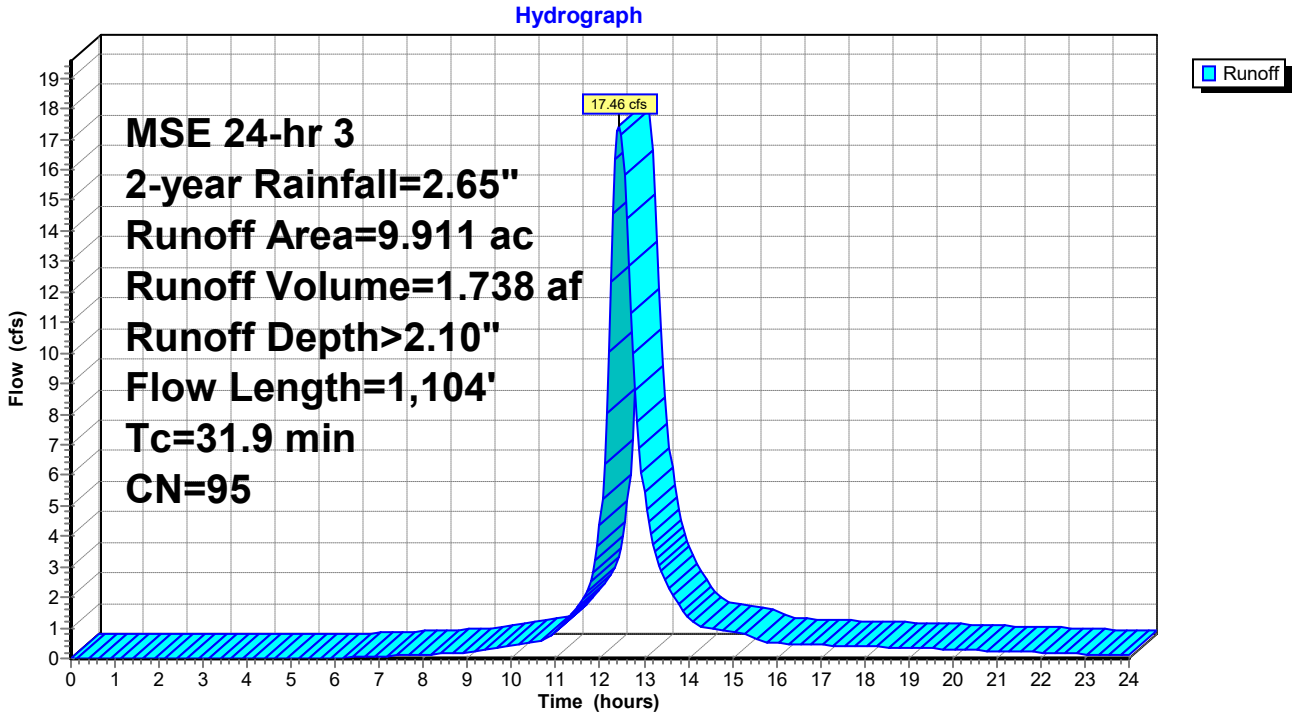
Runoff = 17.46 cfs @ 12.44 hrs, Volume= 1.738 af, Depth> 2.10"
Routed to Pond 3P : Pond 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-year Rainfall=2.65"

	Area (ac)	CN	Description
	0.907	98	Water Surface, HSG D
*	0.930	98	Nimitz Ct, HSG D
	3.694	98	Paved parking, HSG C
	0.924	74	>75% Grass cover, Good, HSG C
	2.765	98	Paved parking, HSG D
	0.691	80	>75% Grass cover, Good, HSG D
	9.911	95	Weighted Average
	1.615		16.30% Pervious Area
	8.296		83.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6	150	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.65"
0.5	49	0.0100	1.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.8	905	0.0070	5.39	150.80	**Channel Flow,** Area= 28.0 sf Perim= 18.9' r= 1.48' n= 0.030 Earth, grassed & winding
31.9	1,104	Total			

Subcatchment 7S: Pond 3



Hydrograph for Subcatchment 7S: Pond 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.75	0.01	0.00	0.00
1.00	0.01	0.00	0.00
1.25	0.01	0.00	0.00
1.50	0.02	0.00	0.00
1.75	0.02	0.00	0.00
2.00	0.02	0.00	0.00
2.25	0.03	0.00	0.00
2.50	0.03	0.00	0.00
2.75	0.04	0.00	0.00
3.00	0.04	0.00	0.00
3.25	0.05	0.00	0.00
3.50	0.06	0.00	0.00
3.75	0.06	0.00	0.00
4.00	0.07	0.00	0.00
4.25	0.08	0.00	0.00
4.50	0.08	0.00	0.00
4.75	0.09	0.00	0.00
5.00	0.10	0.00	0.00
5.25	0.11	0.00	0.00
5.50	0.12	0.00	0.00
5.75	0.13	0.00	0.01
6.00	0.14	0.00	0.02
6.25	0.14	0.00	0.03
6.50	0.15	0.00	0.04
6.75	0.17	0.01	0.05
7.00	0.18	0.01	0.07
7.25	0.19	0.01	0.08
7.50	0.20	0.01	0.10
7.75	0.21	0.02	0.11
8.00	0.22	0.02	0.13
8.25	0.23	0.03	0.14
8.50	0.25	0.03	0.16
8.75	0.26	0.04	0.18
9.00	0.27	0.04	0.19
9.25	0.29	0.05	0.23
9.50	0.32	0.06	0.32
9.75	0.34	0.07	0.39
10.00	0.36	0.09	0.44
10.25	0.39	0.10	0.49
10.50	0.41	0.11	0.54
10.75	0.46	0.14	0.62
11.00	0.51	0.18	0.89
11.25	0.58	0.22	1.26
11.50	0.66	0.28	1.68
11.75	0.81	0.41	2.29
12.00	1.23	0.76	4.33
12.25	1.84	1.33	**12.35**
12.50	1.99	1.48	**16.89**
12.75	2.07	1.55	9.97
13.00	2.14	1.62	5.44
13.25	2.19	1.67	3.48
13.50	2.24	1.71	2.53
13.75	2.26	1.73	1.86
14.00	2.29	1.76	1.31
14.25	2.31	1.78	1.06
14.50	2.33	1.80	0.96
14.75	2.36	1.82	0.91
15.00	2.38	1.84	0.88
15.25	2.39	1.86	0.81
15.50	2.40	1.87	0.65
15.75	2.42	1.88	0.55
16.00	2.43	1.89	0.51
16.25	2.44	1.91	0.49
16.50	2.45	1.92	0.47
16.75	2.46	1.93	0.46
17.00	2.47	1.94	0.44
17.25	2.48	1.95	0.43
17.50	2.50	1.96	0.42
17.75	2.51	1.97	0.41
18.00	2.51	1.98	0.39
18.25	2.52	1.99	0.38
18.50	2.53	2.00	0.37
18.75	2.54	2.00	0.36
19.00	2.55	2.01	0.34
19.25	2.56	2.02	0.33
19.50	2.57	2.03	0.32
19.75	2.57	2.03	0.31
20.00	2.58	2.04	0.29
20.25	2.59	2.05	0.28
20.50	2.59	2.05	0.27
20.75	2.60	2.06	0.26
21.00	2.61	2.07	0.24
21.25	2.61	2.07	0.23
21.50	2.62	2.08	0.22
21.75	2.62	2.08	0.21
22.00	2.63	2.09	0.19
22.25	2.63	2.09	0.18
22.50	2.63	2.09	0.17
22.75	2.64	2.10	0.15
23.00	2.64	2.10	0.14
23.25	2.64	2.10	0.13
23.50	2.65	2.10	0.12
23.75	2.65	2.11	0.10
24.00	**2.65**	**2.11**	0.09

Summary for Subcatchment 8S: Pond 4

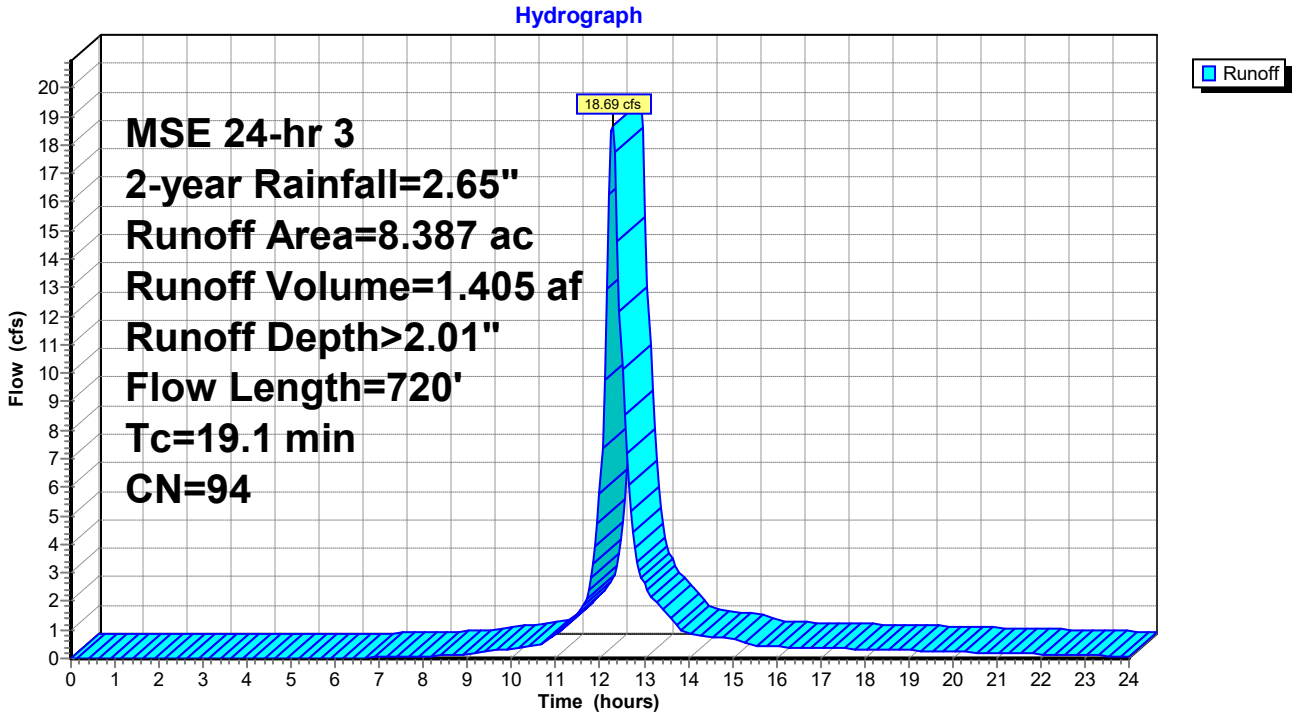
Runoff = 18.69 cfs @ 12.28 hrs, Volume= 1.405 af, Depth> 2.01"
Routed to Pond 4P : Pond 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-year Rainfall=2.65"

	Area (ac)	CN	Description
	0.922	98	Water Surface, HSG D
*	0.666	98	Nimitz Ct, HSG D
	3.416	98	Paved parking, HSG C
	0.854	74	>75% Grass cover, Good, HSG C
	2.023	98	Paved parking, HSG D
	0.506	80	>75% Grass cover, Good, HSG D
	8.387	94	Weighted Average
	1.360		16.22% Pervious Area
	7.027		83.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	117	0.0200	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.65"
1.3	603	0.0150	7.88	220.75	**Channel Flow,** Area= 28.0 sf Perim= 18.9' r= 1.48' n= 0.030 Earth, grassed & winding
19.1	720	Total			

Subcatchment 8S: Pond 4



Hydrograph for Subcatchment 8S: Pond 4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.75	0.01	0.00	0.00
1.00	0.01	0.00	0.00
1.25	0.01	0.00	0.00
1.50	0.02	0.00	0.00
1.75	0.02	0.00	0.00
2.00	0.02	0.00	0.00
2.25	0.03	0.00	0.00
2.50	0.03	0.00	0.00
2.75	0.04	0.00	0.00
3.00	0.04	0.00	0.00
3.25	0.05	0.00	0.00
3.50	0.06	0.00	0.00
3.75	0.06	0.00	0.00
4.00	0.07	0.00	0.00
4.25	0.08	0.00	0.00
4.50	0.08	0.00	0.00
4.75	0.09	0.00	0.00
5.00	0.10	0.00	0.00
5.25	0.11	0.00	0.00
5.50	0.12	0.00	0.00
5.75	0.13	0.00	0.00
6.00	0.14	0.00	0.00
6.25	0.14	0.00	0.01
6.50	0.15	0.00	0.02
6.75	0.17	0.00	0.03
7.00	0.18	0.00	0.04
7.25	0.19	0.01	0.05
7.50	0.20	0.01	0.06
7.75	0.21	0.01	0.07
8.00	0.22	0.01	0.08
8.25	0.23	0.02	0.10
8.50	0.25	0.02	0.11
8.75	0.26	0.02	0.12
9.00	0.27	0.03	0.14
9.25	0.29	0.03	0.19
9.50	0.32	0.04	0.26
9.75	0.34	0.05	0.31
10.00	0.36	0.06	0.34
10.25	0.39	0.08	0.38
10.50	0.41	0.09	0.41
10.75	0.46	0.11	0.56
11.00	0.51	0.14	0.87
11.25	0.58	0.19	1.19
11.50	0.66	0.24	1.56
11.75	0.81	0.36	2.43
12.00	1.23	0.70	5.80
12.25	1.84	1.24	**18.46**
12.50	1.99	1.39	**10.15**
12.75	2.07	1.46	4.43
13.00	2.14	1.53	2.63
13.25	2.19	1.58	2.02
13.50	2.24	1.62	1.61
13.75	2.26	1.64	1.13
14.00	2.29	1.67	0.85
14.25	2.31	1.69	0.79
14.50	2.33	1.71	0.76
14.75	2.36	1.73	0.74
15.00	2.38	1.75	0.71
15.25	2.39	1.76	0.58
15.50	2.40	1.78	0.45
15.75	2.42	1.79	0.42
16.00	2.43	1.80	0.40
16.25	2.44	1.81	0.39
16.50	2.45	1.82	0.38
16.75	2.46	1.83	0.37
17.00	2.47	1.84	0.36
17.25	2.48	1.85	0.35
17.50	2.50	1.86	0.34
17.75	2.51	1.87	0.33
18.00	2.51	1.88	0.32
18.25	2.52	1.89	0.31
18.50	2.53	1.90	0.30
18.75	2.54	1.91	0.29
19.00	2.55	1.92	0.28
19.25	2.56	1.93	0.27
19.50	2.57	1.93	0.26
19.75	2.57	1.94	0.25
20.00	2.58	1.95	0.24
20.25	2.59	1.95	0.23
20.50	2.59	1.96	0.22
20.75	2.60	1.97	0.21
21.00	2.61	1.97	0.19
21.25	2.61	1.98	0.18
21.50	2.62	1.98	0.17
21.75	2.62	1.99	0.16
22.00	2.63	1.99	0.15
22.25	2.63	1.99	0.14
22.50	2.63	2.00	0.13
22.75	2.64	2.00	0.12
23.00	2.64	2.00	0.11
23.25	2.64	2.01	0.10
23.50	2.65	2.01	0.09
23.75	2.65	2.01	0.08
24.00	**2.65**	**2.01**	0.07

Summary for Subcatchment 9S: Pond 2B

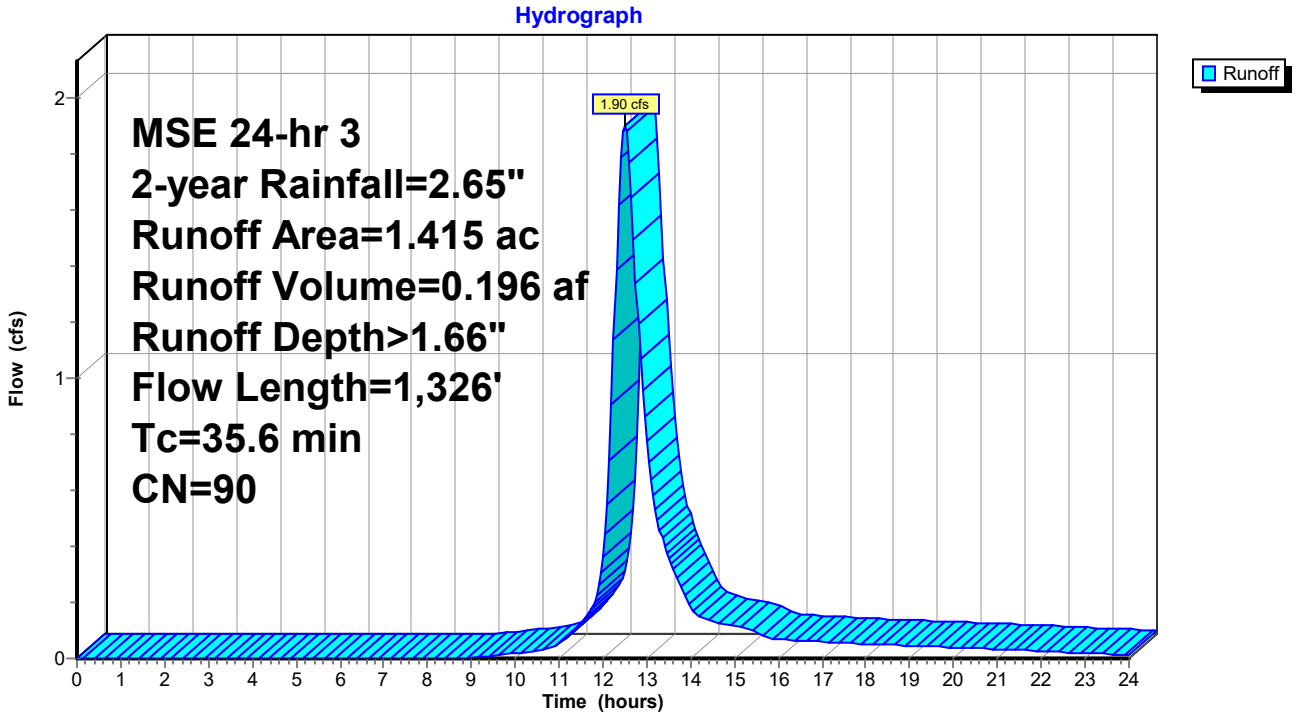
Runoff = 1.90 cfs @ 12.49 hrs, Volume= 0.196 af, Depth> 1.66"
Routed to Pond 10P : Inlet

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-year Rainfall=2.65"

Area (ac)	CN	Description
0.147	74	>75% Grass cover, Good, HSG C
0.416	80	>75% Grass cover, Good, HSG D
0.222	98	Paved parking, HSG C
0.630	98	Paved parking, HSG D
1.415	90	Weighted Average
0.563		39.79% Pervious Area
0.852		60.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6	150	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.65"
4.8	461	0.0100	1.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.2	715	0.0070	5.39	150.80	**Channel Flow,** Area= 28.0 sf Perim= 18.9' r= 1.48' n= 0.030 Earth, grassed & winding
35.6	1,326	Total			

Subcatchment 9S: Pond 2B



Hydrograph for Subcatchment 9S: Pond 2B

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.75	0.01	0.00	0.00
1.00	0.01	0.00	0.00
1.25	0.01	0.00	0.00
1.50	0.02	0.00	0.00
1.75	0.02	0.00	0.00
2.00	0.02	0.00	0.00
2.25	0.03	0.00	0.00
2.50	0.03	0.00	0.00
2.75	0.04	0.00	0.00
3.00	0.04	0.00	0.00
3.25	0.05	0.00	0.00
3.50	0.06	0.00	0.00
3.75	0.06	0.00	0.00
4.00	0.07	0.00	0.00
4.25	0.08	0.00	0.00
4.50	0.08	0.00	0.00
4.75	0.09	0.00	0.00
5.00	0.10	0.00	0.00
5.25	0.11	0.00	0.00
5.50	0.12	0.00	0.00
5.75	0.13	0.00	0.00
6.00	0.14	0.00	0.00
6.25	0.14	0.00	0.00
6.50	0.15	0.00	0.00
6.75	0.17	0.00	0.00
7.00	0.18	0.00	0.00
7.25	0.19	0.00	0.00
7.50	0.20	0.00	0.00
7.75	0.21	0.00	0.00
8.00	0.22	0.00	0.00
8.25	0.23	0.00	0.00
8.50	0.25	0.00	0.00
8.75	0.26	0.00	0.00
9.00	0.27	0.00	0.00
9.25	0.29	0.00	0.00
9.50	0.32	0.01	0.01
9.75	0.34	0.01	0.01
10.00	0.36	0.02	0.02
10.25	0.39	0.02	0.02
10.50	0.41	0.03	0.03
10.75	0.46	0.04	0.04
11.00	0.51	0.06	0.05
11.25	0.58	0.09	0.08
11.50	0.66	0.12	0.12
11.75	0.81	0.21	0.18
12.00	1.23	0.48	0.36
12.25	1.84	0.95	1.14
12.50	1.99	1.09	**1.90**
12.75	2.07	1.16	1.34
13.00	2.14	1.21	0.77
13.25	2.19	1.26	0.49
13.50	2.24	1.30	0.36
13.75	2.26	1.32	0.26
14.00	2.29	1.34	0.19
14.25	2.31	1.36	0.15
14.50	2.33	1.38	0.13
14.75	2.36	1.40	0.12
15.00	2.38	1.42	0.12
15.25	2.39	1.43	0.11
15.50	2.40	1.44	0.09
15.75	2.42	1.46	0.07
16.00	2.43	1.47	0.07
16.25	2.44	1.48	0.06
16.50	2.45	1.49	0.06
16.75	2.46	1.50	0.06
17.00	2.47	1.51	0.06
17.25	2.48	1.52	0.06
17.50	2.50	1.53	0.06
17.75	2.51	1.54	0.05
18.00	2.51	1.54	0.05
18.25	2.52	1.55	0.05
18.50	2.53	1.56	0.05
18.75	2.54	1.57	0.05
19.00	2.55	1.58	0.05
19.25	2.56	1.58	0.04
19.50	2.57	1.59	0.04
19.75	2.57	1.60	0.04
20.00	2.58	1.60	0.04
20.25	2.59	1.61	0.04
20.50	2.59	1.62	0.04
20.75	2.60	1.62	0.03
21.00	2.61	1.63	0.03
21.25	2.61	1.63	0.03
21.50	2.62	1.64	0.03
21.75	2.62	1.64	0.03
22.00	2.63	1.64	0.03
22.25	2.63	1.65	0.02
22.50	2.63	1.65	0.02
22.75	2.64	1.65	0.02
23.00	2.64	1.66	0.02
23.25	2.64	1.66	0.02
23.50	2.65	1.66	0.02
23.75	2.65	1.66	0.01
24.00	**2.65**	**1.67**	0.01

Summary for Subcatchment 10S: Undetained

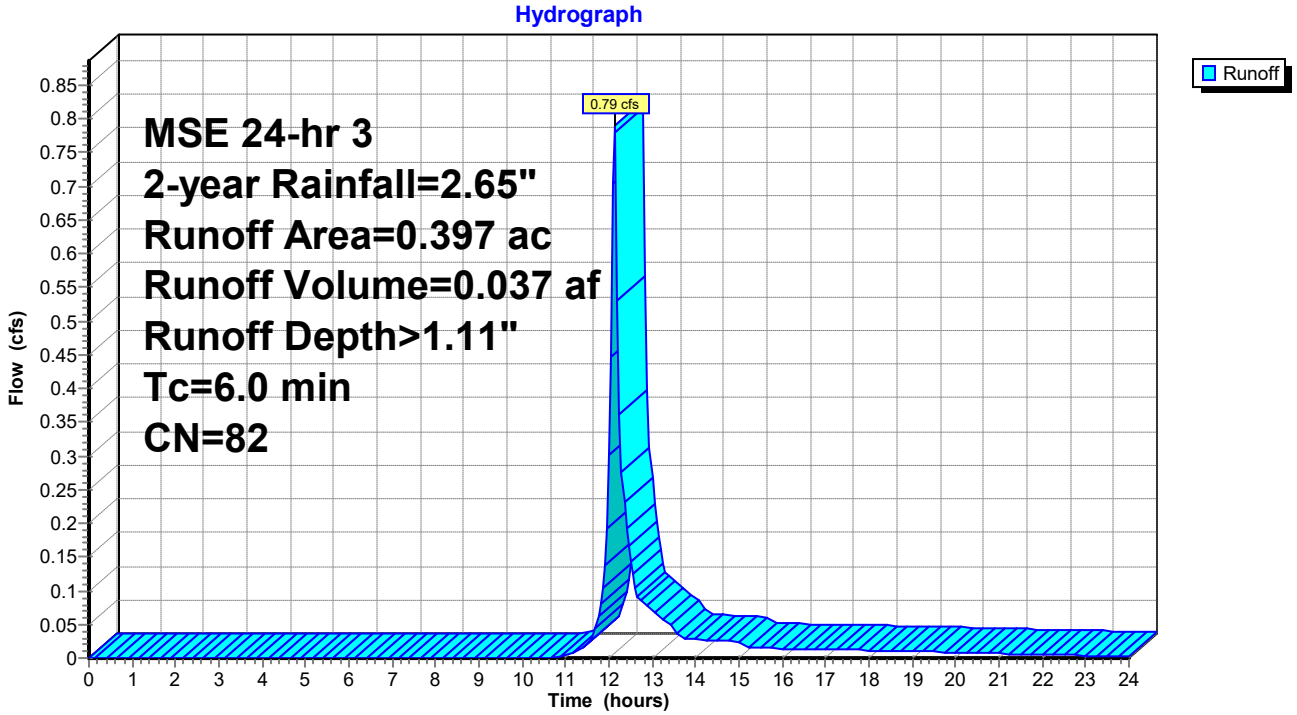
Runoff = 0.79 cfs @ 12.14 hrs, Volume= 0.037 af, Depth> 1.11"
Routed to Link 5L : East Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-year Rainfall=2.65"

Area (ac)	CN	Description
0.086	74	>75% Grass cover, Good, HSG C
0.245	80	>75% Grass cover, Good, HSG D
0.017	98	Paved parking, HSG C
0.049	98	Paved parking, HSG D
0.397	82	Weighted Average
0.331		83.38% Pervious Area
0.066		16.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Subcatchment 10S: Undetained



Hydrograph for Subcatchment 10S: Undetained

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.75	0.01	0.00	0.00
1.00	0.01	0.00	0.00
1.25	0.01	0.00	0.00
1.50	0.02	0.00	0.00
1.75	0.02	0.00	0.00
2.00	0.02	0.00	0.00
2.25	0.03	0.00	0.00
2.50	0.03	0.00	0.00
2.75	0.04	0.00	0.00
3.00	0.04	0.00	0.00
3.25	0.05	0.00	0.00
3.50	0.06	0.00	0.00
3.75	0.06	0.00	0.00
4.00	0.07	0.00	0.00
4.25	0.08	0.00	0.00
4.50	0.08	0.00	0.00
4.75	0.09	0.00	0.00
5.00	0.10	0.00	0.00
5.25	0.11	0.00	0.00
5.50	0.12	0.00	0.00
5.75	0.13	0.00	0.00
6.00	0.14	0.00	0.00
6.25	0.14	0.00	0.00
6.50	0.15	0.00	0.00
6.75	0.17	0.00	0.00
7.00	0.18	0.00	0.00
7.25	0.19	0.00	0.00
7.50	0.20	0.00	0.00
7.75	0.21	0.00	0.00
8.00	0.22	0.00	0.00
8.25	0.23	0.00	0.00
8.50	0.25	0.00	0.00
8.75	0.26	0.00	0.00
9.00	0.27	0.00	0.00
9.25	0.29	0.00	0.00
9.50	0.32	0.00	0.00
9.75	0.34	0.00	0.00
10.00	0.36	0.00	0.00
10.25	0.39	0.00	0.00
10.50	0.41	0.00	0.00
10.75	0.46	0.00	0.00
11.00	0.51	0.00	0.00
11.25	0.58	0.01	0.01
11.50	0.66	0.02	0.02
11.75	0.81	0.05	0.06
12.00	1.23	0.21	**0.30**
12.25	1.84	0.54	**0.36**
12.50	1.99	0.64	0.14
12.75	2.07	0.70	0.08
13.00	2.14	0.74	0.07
13.25	2.19	0.78	0.06
13.50	2.24	0.81	0.04
13.75	2.26	0.83	0.03
14.00	2.29	0.84	0.03
14.25	2.31	0.86	0.03
14.50	2.33	0.88	0.03
14.75	2.36	0.89	0.03
15.00	2.38	0.91	0.02
15.25	2.39	0.92	0.02
15.50	2.40	0.93	0.01
15.75	2.42	0.94	0.01
16.00	2.43	0.95	0.01
16.25	2.44	0.95	0.01
16.50	2.45	0.96	0.01
16.75	2.46	0.97	0.01
17.00	2.47	0.98	0.01
17.25	2.48	0.99	0.01
17.50	2.50	0.99	0.01
17.75	2.51	1.00	0.01
18.00	2.51	1.01	0.01
18.25	2.52	1.02	0.01
18.50	2.53	1.02	0.01
18.75	2.54	1.03	0.01
19.00	2.55	1.04	0.01
19.25	2.56	1.04	0.01
19.50	2.57	1.05	0.01
19.75	2.57	1.05	0.01
20.00	2.58	1.06	0.01
20.25	2.59	1.06	0.01
20.50	2.59	1.07	0.01
20.75	2.60	1.07	0.01
21.00	2.61	1.08	0.01
21.25	2.61	1.08	0.01
21.50	2.62	1.08	0.01
21.75	2.62	1.09	0.01
22.00	2.63	1.09	0.01
22.25	2.63	1.09	0.00
22.50	2.63	1.10	0.00
22.75	2.64	1.10	0.00
23.00	2.64	1.10	0.00
23.25	2.64	1.10	0.00
23.50	2.65	1.11	0.00
23.75	2.65	1.11	0.00
24.00	**2.65**	**1.11**	0.00

Summary for Pond 1P: Pond 1

Inflow Area = 14.872 ac, 81.91% Impervious, Inflow Depth > 2.01" for 2-year event
Inflow = 22.97 cfs @ 12.51 hrs, Volume= 2.489 af
Outflow = 2.03 cfs @ 14.08 hrs, Volume= 1.441 af, Atten= 91%, Lag= 94.3 min
Primary = 2.03 cfs @ 14.08 hrs, Volume= 1.441 af
Routed to Link 5L : East Site
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : East Site

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Starting Elev= 843.00' Surf.Area= 1.418 ac Storage= 5.526 af
Peak Elev= 844.17' @ 14.08 hrs Surf.Area= 1.602 ac Storage= 7.287 af (1.760 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 245.3 min (1,052.6 - 807.3)

Volume	Invert	Avail.Storage	Storage Description
#1	838.00'	12.667 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

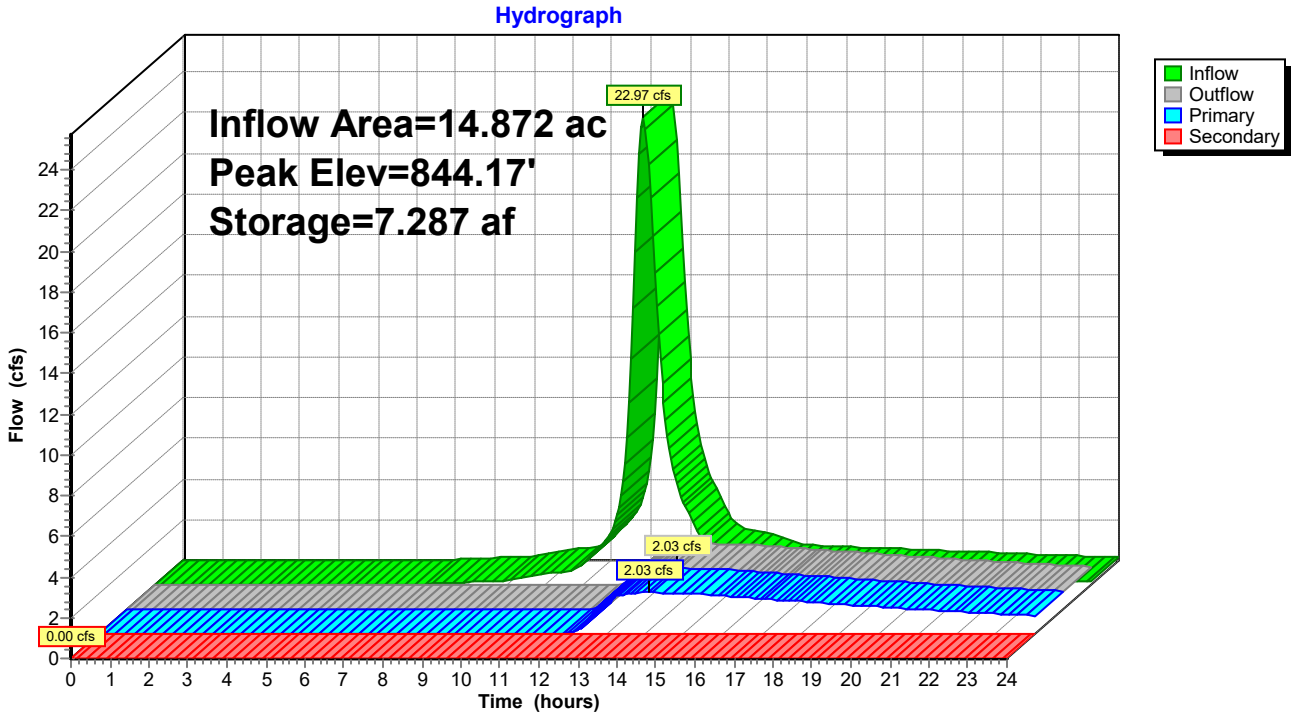
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
838.00	0.979	0.000	0.000
839.00	1.020	0.999	0.999
840.00	1.061	1.040	2.040
841.00	1.102	1.081	3.121
842.00	1.145	1.124	4.245
843.00	1.418	1.281	5.526
844.00	1.571	1.494	7.021
845.00	1.757	1.664	8.685
846.00	1.995	1.876	10.561
847.00	2.218	2.106	12.667

Device	Routing	Invert	Outlet Devices
#1	Primary	843.00'	**12.0" Round Culvert** L= 38.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 843.00' / 843.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Secondary	846.50'	**Asymmetrical Weir, C= 3.27** Offset (feet) 0.00 4.00 14.00 18.00 Height (feet) 0.50 0.00 0.00 0.50

Primary OutFlow Max=2.03 cfs @ 14.08 hrs HW=844.17' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 2.03 cfs @ 2.78 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=843.00' TW=0.00' (Dynamic Tailwater)
└─**2=Asymmetrical Weir** (Controls 0.00 cfs)

Pond 1P: Pond 1



Hydrograph for Pond 1P: Pond 1

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	5.526	843.00	0.00	0.00	**0.00**
0.50	0.00	5.526	843.00	0.00	0.00	0.00
1.00	0.00	5.526	843.00	0.00	0.00	0.00
1.50	0.00	5.526	843.00	0.00	0.00	0.00
2.00	0.00	5.526	843.00	0.00	0.00	0.00
2.50	0.00	5.526	843.00	0.00	0.00	0.00
3.00	0.00	5.526	843.00	0.00	0.00	0.00
3.50	0.00	5.526	843.00	0.00	0.00	0.00
4.00	0.00	5.526	843.00	0.00	0.00	0.00
4.50	0.00	5.526	843.00	0.00	0.00	0.00
5.00	0.00	5.526	843.00	0.00	0.00	0.00
5.50	0.00	5.526	843.00	0.00	0.00	0.00
6.00	0.00	5.527	843.00	0.00	0.00	0.00
6.50	0.01	5.527	843.00	0.00	0.00	0.00
7.00	0.04	5.528	843.00	0.00	0.00	0.00
7.50	0.08	5.530	843.00	0.00	0.00	0.00
8.00	0.12	5.535	843.01	0.00	0.00	0.00
8.50	0.17	5.541	843.01	0.00	0.00	0.00
9.00	0.22	5.549	843.02	0.00	0.00	0.00
9.50	0.34	5.559	843.02	0.00	0.00	0.00
10.00	0.52	5.578	843.04	0.00	0.00	0.00
10.50	0.66	5.602	843.05	0.00	0.00	0.00
11.00	1.04	5.635	843.08	0.00	0.00	0.00
11.50	2.07	5.697	843.12	0.02	0.02	0.00
12.00	5.06	5.823	843.21	0.06	0.06	0.00
12.50	**22.95**	6.391	843.59	0.62	0.62	0.00
13.00	9.88	7.043	844.01	1.66	1.66	0.00
13.50	4.34	7.235	844.14	1.96	1.96	0.00
14.00	2.26	**7.286**	**844.17**	**2.03**	**2.03**	0.00
14.50	1.49	**7.275**	**844.16**	**2.01**	**2.01**	0.00
15.00	1.32	7.250	844.14	1.98	1.98	0.00
15.50	1.03	7.220	844.13	1.94	1.94	0.00
16.00	0.77	7.177	844.10	1.87	1.87	0.00
16.50	0.71	7.131	844.07	1.80	1.80	0.00
17.00	0.66	7.087	844.04	1.73	1.73	0.00
17.50	0.63	7.043	844.01	1.66	1.66	0.00
18.00	0.59	7.001	843.99	1.59	1.59	0.00
18.50	0.55	6.960	843.96	1.53	1.53	0.00
19.00	0.52	6.921	843.94	1.46	1.46	0.00
19.50	0.48	6.882	843.91	1.40	1.40	0.00
20.00	0.44	6.845	843.89	1.33	1.33	0.00
20.50	0.40	6.808	843.86	1.27	1.27	0.00
21.00	0.37	6.773	843.84	1.21	1.21	0.00
21.50	0.33	6.738	843.82	1.16	1.16	0.00
22.00	0.29	6.705	843.80	1.10	1.10	0.00
22.50	0.25	6.672	843.78	1.05	1.05	0.00
23.00	0.22	6.639	843.75	0.99	0.99	0.00
23.50	0.18	6.607	843.73	0.94	0.94	0.00
24.00	0.14	6.576	843.71	0.89	0.89	0.00

Summary for Pond 2P: Pond 2 2024

Inflow Area = 15.842 ac, 79.74% Impervious, Inflow Depth > 1.98" for 2-year event
Inflow = 24.89 cfs @ 12.48 hrs, Volume= 2.611 af
Outflow = 1.81 cfs @ 14.21 hrs, Volume= 1.540 af, Atten= 93%, Lag= 103.6 min
Primary = 1.81 cfs @ 14.21 hrs, Volume= 1.540 af
Routed to Link 5L : East Site
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : East Site

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Starting Elev= 846.00' Surf.Area= 1.136 ac Storage= 4.194 af
Peak Elev= 847.49' @ 14.21 hrs Surf.Area= 1.364 ac Storage= 6.050 af (1.856 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 267.6 min (1,074.2 - 806.6)

Volume	Invert	Avail.Storage	Storage Description
#1	841.00'	11.135 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

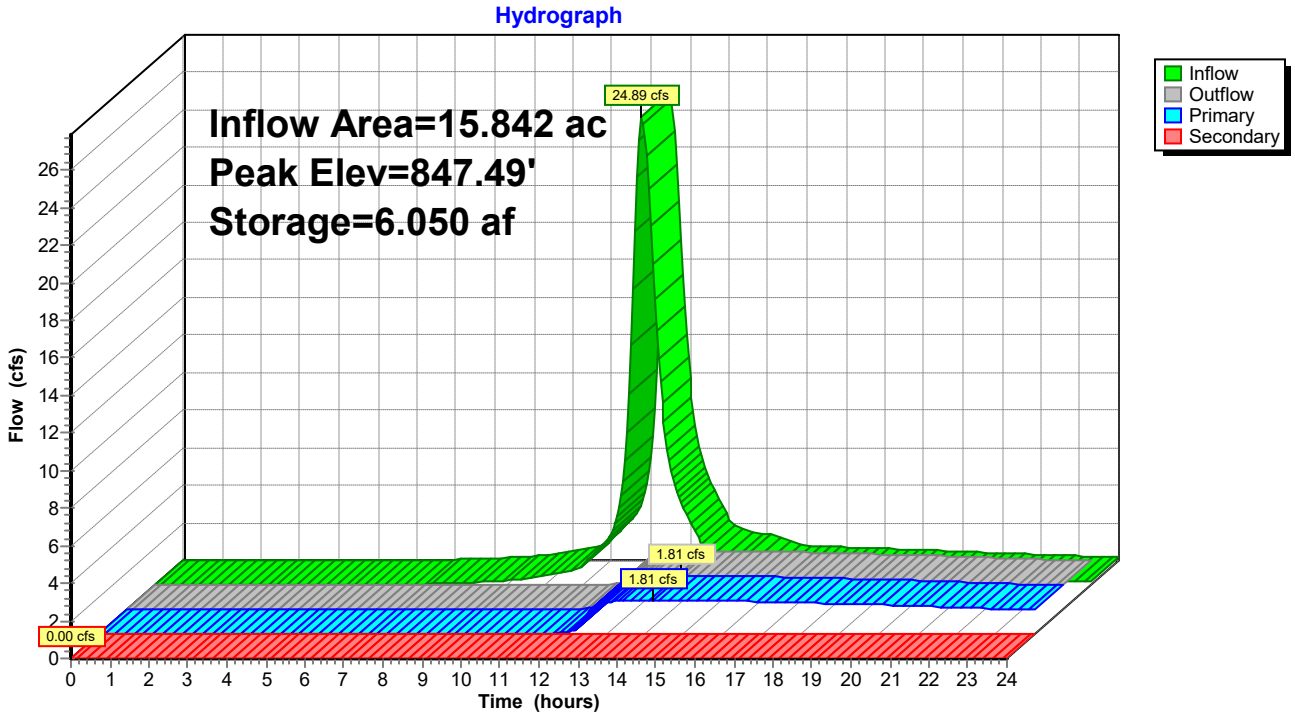
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
841.00	0.730	0.000	0.000
842.00	0.764	0.747	0.747
843.00	0.798	0.781	1.528
844.00	0.832	0.815	2.343
845.00	0.867	0.849	3.192
846.00	1.136	1.001	4.194
847.00	1.274	1.205	5.399
848.00	1.457	1.365	6.764
849.00	1.712	1.585	8.349
850.00	1.930	1.821	10.170
850.50	1.930	0.965	11.135

Device	Routing	Invert	Outlet Devices
#1	Primary	846.00'	**12.0" Round Culvert** L= 38.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 846.00' / 846.00' S= 0.0000 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf
#2	Device 1	846.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	850.00'	**Asymmetrical Weir, C= 3.27** Offset (feet) 0.00 4.00 14.00 18.00 Height (feet) 0.50 0.00 0.00 0.50

Primary OutFlow Max=1.81 cfs @ 14.21 hrs HW=847.49' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.81 cfs of 2.52 cfs potential flow)
└─**2=Orifice/Grate** (Orifice Controls 1.81 cfs @ 5.19 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=846.00' TW=0.00' (Dynamic Tailwater)
└─**3=Asymmetrical Weir** (Controls 0.00 cfs)

Pond 2P: Pond 2 2024



Hydrograph for Pond 2P: Pond 2 2024

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	4.194	846.00	0.00	0.00	**0.00**
0.50	0.00	4.194	846.00	0.00	0.00	0.00
1.00	0.00	4.194	846.00	0.00	0.00	0.00
1.50	0.00	4.194	846.00	0.00	0.00	0.00
2.00	0.00	4.194	846.00	0.00	0.00	0.00
2.50	0.00	4.194	846.00	0.00	0.00	0.00
3.00	0.00	4.194	846.00	0.00	0.00	0.00
3.50	0.00	4.194	846.00	0.00	0.00	0.00
4.00	0.00	4.194	846.00	0.00	0.00	0.00
4.50	0.00	4.194	846.00	0.00	0.00	0.00
5.00	0.00	4.194	846.00	0.00	0.00	0.00
5.50	0.00	4.194	846.00	0.00	0.00	0.00
6.00	0.00	4.194	846.00	0.00	0.00	0.00
6.50	0.01	4.194	846.00	0.00	0.00	0.00
7.00	0.04	4.195	846.00	0.00	0.00	0.00
7.50	0.08	4.198	846.00	0.00	0.00	0.00
8.00	0.12	4.202	846.01	0.00	0.00	0.00
8.50	0.17	4.208	846.01	0.00	0.00	0.00
9.00	0.21	4.216	846.02	0.00	0.00	0.00
9.50	0.35	4.227	846.03	0.00	0.00	0.00
10.00	0.54	4.246	846.05	0.00	0.00	0.00
10.50	0.68	4.271	846.07	0.00	0.00	0.00
11.00	1.10	4.304	846.10	0.01	0.01	0.00
11.50	2.20	4.371	846.15	0.03	0.03	0.00
12.00	5.55	4.505	846.27	0.10	0.10	0.00
12.50	**24.83**	5.140	846.79	1.03	1.03	0.00
13.00	9.69	5.795	847.30	1.66	1.66	0.00
13.50	4.35	5.988	847.45	1.77	1.77	0.00
14.00	2.25	**6.047**	**847.49**	**1.81**	**1.81**	0.00
14.50	1.55	**6.047**	**847.49**	**1.81**	**1.81**	0.00
15.00	1.39	6.032	847.48	1.80	1.80	0.00
15.50	1.07	6.011	847.46	1.79	1.79	0.00
16.00	0.81	5.975	847.44	1.77	1.77	0.00
16.50	0.74	5.934	847.41	1.74	1.74	0.00
17.00	0.70	5.892	847.38	1.72	1.72	0.00
17.50	0.66	5.850	847.35	1.69	1.69	0.00
18.00	0.62	5.807	847.31	1.66	1.66	0.00
18.50	0.58	5.764	847.28	1.64	1.64	0.00
19.00	0.54	5.720	847.25	1.61	1.61	0.00
19.50	0.50	5.676	847.21	1.58	1.58	0.00
20.00	0.47	5.632	847.18	1.55	1.55	0.00
20.50	0.43	5.587	847.15	1.52	1.52	0.00
21.00	0.39	5.542	847.11	1.48	1.48	0.00
21.50	0.35	5.496	847.08	1.45	1.45	0.00
22.00	0.31	5.451	847.04	1.41	1.41	0.00
22.50	0.27	5.405	847.00	1.38	1.38	0.00
23.00	0.23	5.359	846.97	1.34	1.34	0.00
23.50	0.19	5.313	846.93	1.30	1.30	0.00
24.00	0.15	5.267	846.90	1.26	1.26	0.00

Summary for Pond 3P: Pond 3

Inflow Area = 9.911 ac, 83.70% Impervious, Inflow Depth > 2.10" for 2-year event
Inflow = 17.46 cfs @ 12.44 hrs, Volume= 1.738 af
Outflow = 1.65 cfs @ 13.83 hrs, Volume= 1.139 af, Atten= 91%, Lag= 83.7 min
Primary = 1.65 cfs @ 13.83 hrs, Volume= 1.139 af
Routed to Link 6L : West Site
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 6L : West Site

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Starting Elev= 846.00' Surf.Area= 0.907 ac Storage= 3.504 af
Peak Elev= 847.26' @ 13.83 hrs Surf.Area= 1.000 ac Storage= 4.709 af (1.205 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 243.3 min (1,041.0 - 797.7)

Volume	Invert	Avail.Storage	Storage Description
#1	841.00'	7.835 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

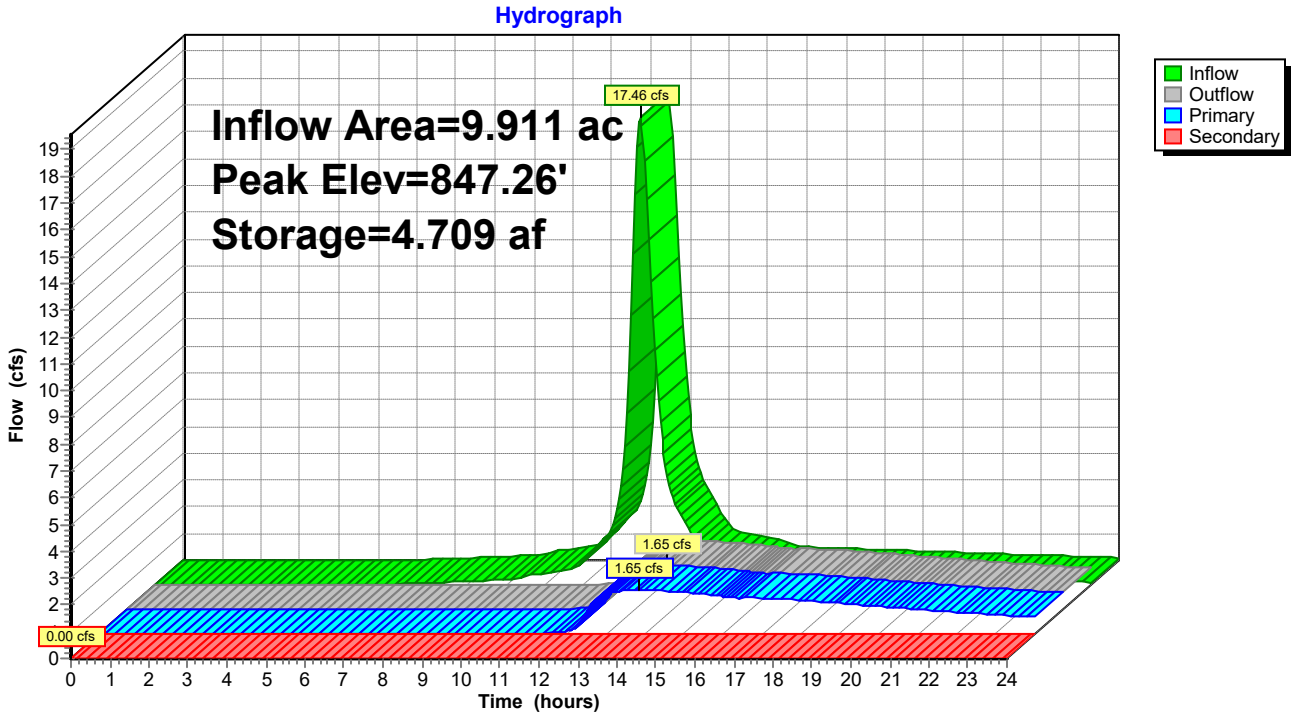
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
841.00	0.607	0.000	0.000
842.00	0.637	0.622	0.622
843.00	0.683	0.660	1.282
844.00	0.698	0.690	1.973
845.00	0.729	0.714	2.686
846.00	0.907	0.818	3.504
847.00	0.980	0.943	4.447
848.00	1.055	1.018	5.465
849.00	1.176	1.115	6.580
850.00	1.333	1.255	7.835

Device	Routing	Invert	Outlet Devices
#1	Primary	846.00'	**10.0" Round Culvert** L= 38.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 846.00' / 846.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.55 sf
#2	Secondary	849.50'	**Asymmetrical Weir, C= 3.27** Offset (feet) 0.00 4.00 14.00 18.00 Height (feet) 0.50 0.00 0.00 0.50

Primary OutFlow Max=1.65 cfs @ 13.83 hrs HW=847.26' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.65 cfs @ 3.03 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=846.00' TW=0.00' (Dynamic Tailwater)
└─**2=Asymmetrical Weir** (Controls 0.00 cfs)

Pond 3P: Pond 3



Hydrograph for Pond 3P: Pond 3

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	3.504	846.00	0.00	0.00	**0.00**
0.50	0.00	3.504	846.00	0.00	0.00	0.00
1.00	0.00	3.504	846.00	0.00	0.00	0.00
1.50	0.00	3.504	846.00	0.00	0.00	0.00
2.00	0.00	3.504	846.00	0.00	0.00	0.00
2.50	0.00	3.504	846.00	0.00	0.00	0.00
3.00	0.00	3.504	846.00	0.00	0.00	0.00
3.50	0.00	3.504	846.00	0.00	0.00	0.00
4.00	0.00	3.504	846.00	0.00	0.00	0.00
4.50	0.00	3.504	846.00	0.00	0.00	0.00
5.00	0.00	3.504	846.00	0.00	0.00	0.00
5.50	0.00	3.504	846.00	0.00	0.00	0.00
6.00	0.02	3.504	846.00	0.00	0.00	0.00
6.50	0.04	3.505	846.00	0.00	0.00	0.00
7.00	0.07	3.508	846.00	0.00	0.00	0.00
7.50	0.10	3.511	846.01	0.00	0.00	0.00
8.00	0.13	3.516	846.01	0.00	0.00	0.00
8.50	0.16	3.522	846.02	0.00	0.00	0.00
9.00	0.19	3.529	846.03	0.00	0.00	0.00
9.50	0.32	3.539	846.04	0.00	0.00	0.00
10.00	0.44	3.555	846.06	0.00	0.00	0.00
10.50	0.54	3.575	846.08	0.00	0.00	0.00
11.00	0.89	3.602	846.11	0.01	0.01	0.00
11.50	1.68	3.653	846.16	0.03	0.03	0.00
12.00	**4.33**	3.755	846.27	0.10	0.10	0.00
12.50	**16.89**	4.229	846.77	0.87	0.87	0.00
13.00	5.44	4.611	847.17	1.45	1.45	0.00
13.50	2.53	**4.697**	**847.25**	**1.63**	**1.63**	0.00
14.00	1.31	**4.707**	**847.26**	**1.65**	**1.65**	0.00
14.50	0.96	4.684	847.24	1.60	1.60	0.00
15.00	0.88	4.657	847.21	1.55	1.55	0.00
15.50	0.65	4.627	847.18	1.49	1.49	0.00
16.00	0.51	4.590	847.14	1.41	1.41	0.00
16.50	0.47	4.554	847.11	1.34	1.34	0.00
17.00	0.44	4.517	847.07	1.34	1.34	0.00
17.50	0.42	4.480	847.03	1.30	1.30	0.00
18.00	0.39	4.444	847.00	1.26	1.26	0.00
18.50	0.37	4.409	846.96	1.20	1.20	0.00
19.00	0.34	4.375	846.93	1.15	1.15	0.00
19.50	0.32	4.343	846.89	1.09	1.09	0.00
20.00	0.29	4.312	846.86	1.03	1.03	0.00
20.50	0.27	4.282	846.83	0.97	0.97	0.00
21.00	0.24	4.253	846.80	0.92	0.92	0.00
21.50	0.22	4.226	846.77	0.86	0.86	0.00
22.00	0.19	4.200	846.74	0.81	0.81	0.00
22.50	0.17	4.175	846.72	0.76	0.76	0.00
23.00	0.14	4.150	846.69	0.72	0.72	0.00
23.50	0.12	4.127	846.67	0.67	0.67	0.00
24.00	0.09	4.105	846.65	0.63	0.63	0.00

Summary for Pond 4P: Pond 4

Inflow Area = 8.387 ac, 83.78% Impervious, Inflow Depth > 2.01" for 2-year event
Inflow = 18.69 cfs @ 12.28 hrs, Volume= 1.405 af
Outflow = 1.31 cfs @ 13.67 hrs, Volume= 0.889 af, Atten= 93%, Lag= 83.3 min
Primary = 1.31 cfs @ 13.67 hrs, Volume= 0.889 af
Routed to Link 6L : West Site
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 6L : West Site

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Starting Elev= 852.00' Surf.Area= 0.922 ac Storage= 3.499 af
Peak Elev= 853.01' @ 13.67 hrs Surf.Area= 1.002 ac Storage= 4.475 af (0.975 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 238.5 min (1,029.5 - 791.0)

Volume	Invert	Avail.Storage	Storage Description
#1	847.00'	7.955 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

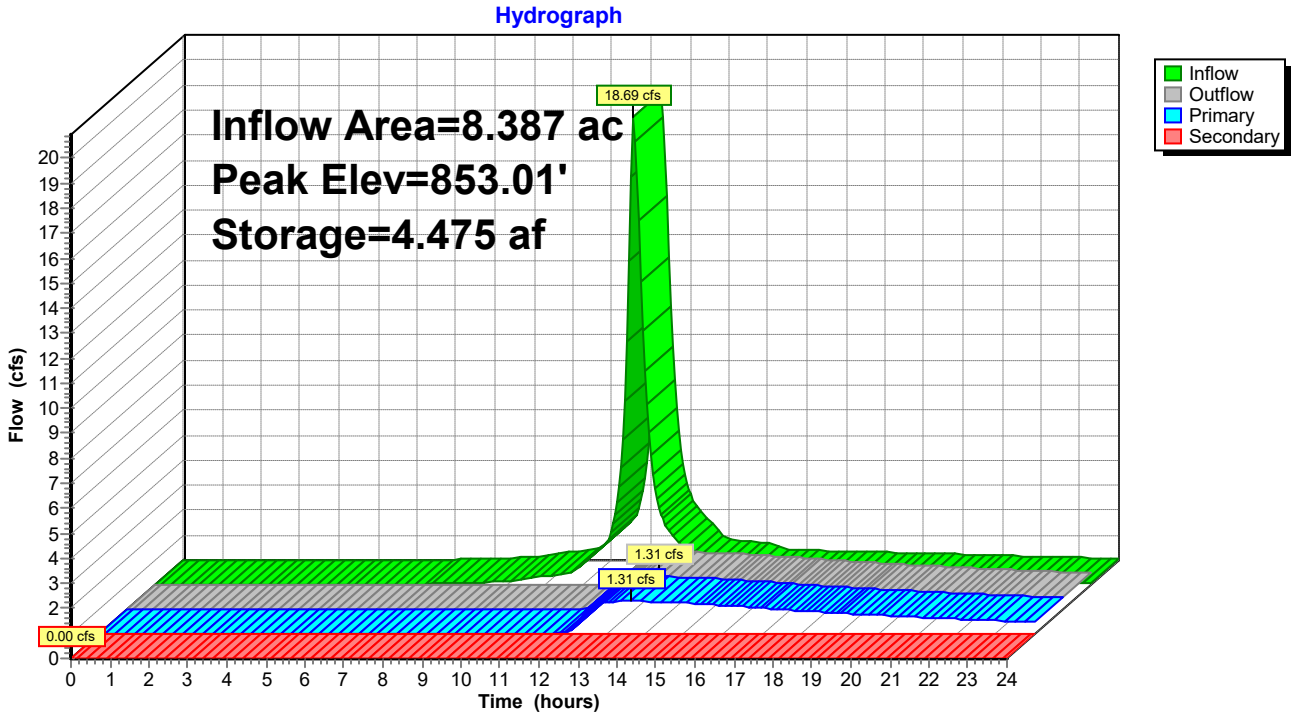
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
847.00	0.599	0.000	0.000
848.00	0.633	0.616	0.616
849.00	0.667	0.650	1.266
850.00	0.702	0.684	1.950
851.00	0.737	0.719	2.670
852.00	0.922	0.830	3.499
853.00	1.001	0.962	4.461
854.00	1.081	1.041	5.502
855.00	1.229	1.155	6.657
856.00	1.368	1.299	7.955

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**10.0" Round Culvert** L= 34.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 852.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.55 sf
#2	Secondary	855.50'	**Asymmetrical Weir, C= 3.27** Offset (feet) 0.00 4.00 14.00 18.00 Height (feet) 0.50 0.00 0.00 0.50

Primary OutFlow Max=1.31 cfs @ 13.67 hrs HW=853.01' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.31 cfs @ 2.51 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=852.00' TW=0.00' (Dynamic Tailwater)
└─**2=Asymmetrical Weir** (Controls 0.00 cfs)

Pond 4P: Pond 4



Hydrograph for Pond 4P: Pond 4

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	3.499	852.00	0.00	0.00	**0.00**
0.50	0.00	3.499	852.00	0.00	0.00	0.00
1.00	0.00	3.499	852.00	0.00	0.00	0.00
1.50	0.00	3.499	852.00	0.00	0.00	0.00
2.00	0.00	3.499	852.00	0.00	0.00	0.00
2.50	0.00	3.499	852.00	0.00	0.00	0.00
3.00	0.00	3.499	852.00	0.00	0.00	0.00
3.50	0.00	3.499	852.00	0.00	0.00	0.00
4.00	0.00	3.499	852.00	0.00	0.00	0.00
4.50	0.00	3.499	852.00	0.00	0.00	0.00
5.00	0.00	3.499	852.00	0.00	0.00	0.00
5.50	0.00	3.499	852.00	0.00	0.00	0.00
6.00	0.00	3.500	852.00	0.00	0.00	0.00
6.50	0.02	3.500	852.00	0.00	0.00	0.00
7.00	0.04	3.501	852.00	0.00	0.00	0.00
7.50	0.06	3.503	852.00	0.00	0.00	0.00
8.00	0.08	3.506	852.01	0.00	0.00	0.00
8.50	0.11	3.510	852.01	0.00	0.00	0.00
9.00	0.14	3.515	852.02	0.00	0.00	0.00
9.50	0.26	3.523	852.03	0.00	0.00	0.00
10.00	0.34	3.535	852.04	0.00	0.00	0.00
10.50	0.41	3.551	852.06	0.00	0.00	0.00
11.00	0.87	3.575	852.08	0.01	0.01	0.00
11.50	1.56	3.624	852.13	0.02	0.02	0.00
12.00	**5.80**	3.739	852.26	0.09	0.09	0.00
12.50	**10.15**	4.278	852.82	0.97	0.97	0.00
13.00	2.63	4.441	852.98	1.26	1.26	0.00
13.50	1.61	**4.472**	**853.01**	**1.31**	**1.31**	0.00
14.00	0.85	**4.467**	**853.01**	**1.30**	**1.30**	0.00
14.50	0.76	4.446	852.99	1.27	1.27	0.00
15.00	0.71	4.425	852.96	1.24	1.24	0.00
15.50	0.45	4.399	852.94	1.19	1.19	0.00
16.00	0.40	4.368	852.91	1.14	1.14	0.00
16.50	0.38	4.338	852.88	1.09	1.09	0.00
17.00	0.36	4.310	852.85	1.03	1.03	0.00
17.50	0.34	4.283	852.82	0.98	0.98	0.00
18.00	0.32	4.257	852.79	0.93	0.93	0.00
18.50	0.30	4.232	852.77	0.88	0.88	0.00
19.00	0.28	4.209	852.75	0.83	0.83	0.00
19.50	0.26	4.186	852.72	0.79	0.79	0.00
20.00	0.24	4.165	852.70	0.75	0.75	0.00
20.50	0.22	4.144	852.68	0.71	0.71	0.00
21.00	0.19	4.124	852.66	0.67	0.67	0.00
21.50	0.17	4.105	852.64	0.63	0.63	0.00
22.00	0.15	4.086	852.62	0.60	0.60	0.00
22.50	0.13	4.068	852.60	0.56	0.56	0.00
23.00	0.11	4.051	852.58	0.53	0.53	0.00
23.50	0.09	4.033	852.57	0.50	0.50	0.00
24.00	0.07	4.017	852.55	0.47	0.47	0.00

Summary for Pond 10P: Inlet

Inflow Area = 1.415 ac, 60.21% Impervious, Inflow Depth > 1.66" for 2-year event
Inflow = 1.90 cfs @ 12.49 hrs, Volume= 0.196 af
Outflow = 1.90 cfs @ 12.49 hrs, Volume= 0.196 af, Atten= 0%, Lag= 0.0 min
Primary = 1.90 cfs @ 12.49 hrs, Volume= 0.196 af
Routed to Pond 2P : Pond 2 2024
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 1P : Pond 1

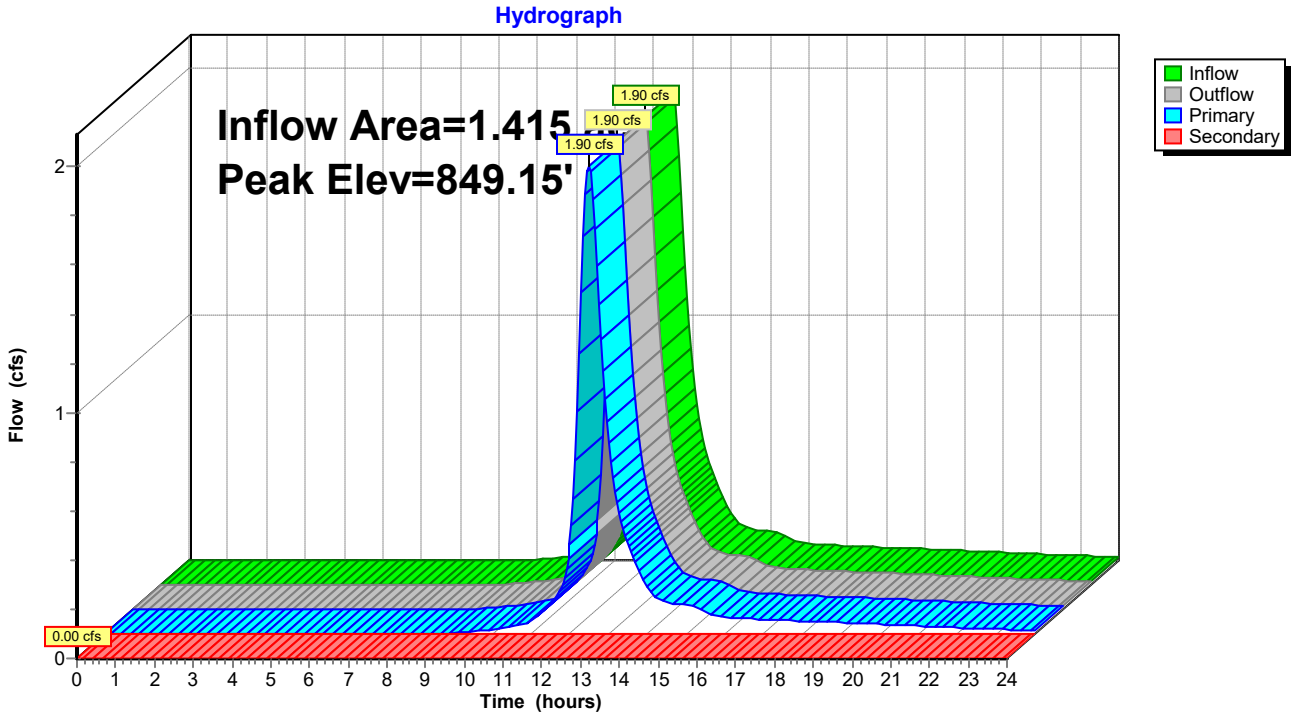
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 849.15' @ 12.49 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	848.27'	**12.0" Round Culvert** L= 187.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 848.27' / 847.30' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	851.50'	**20.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=1.90 cfs @ 12.49 hrs HW=849.14' TW=846.78' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.90 cfs @ 3.47 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=848.27' TW=843.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Inlet



Hydrograph for Pond 10P: Inlet

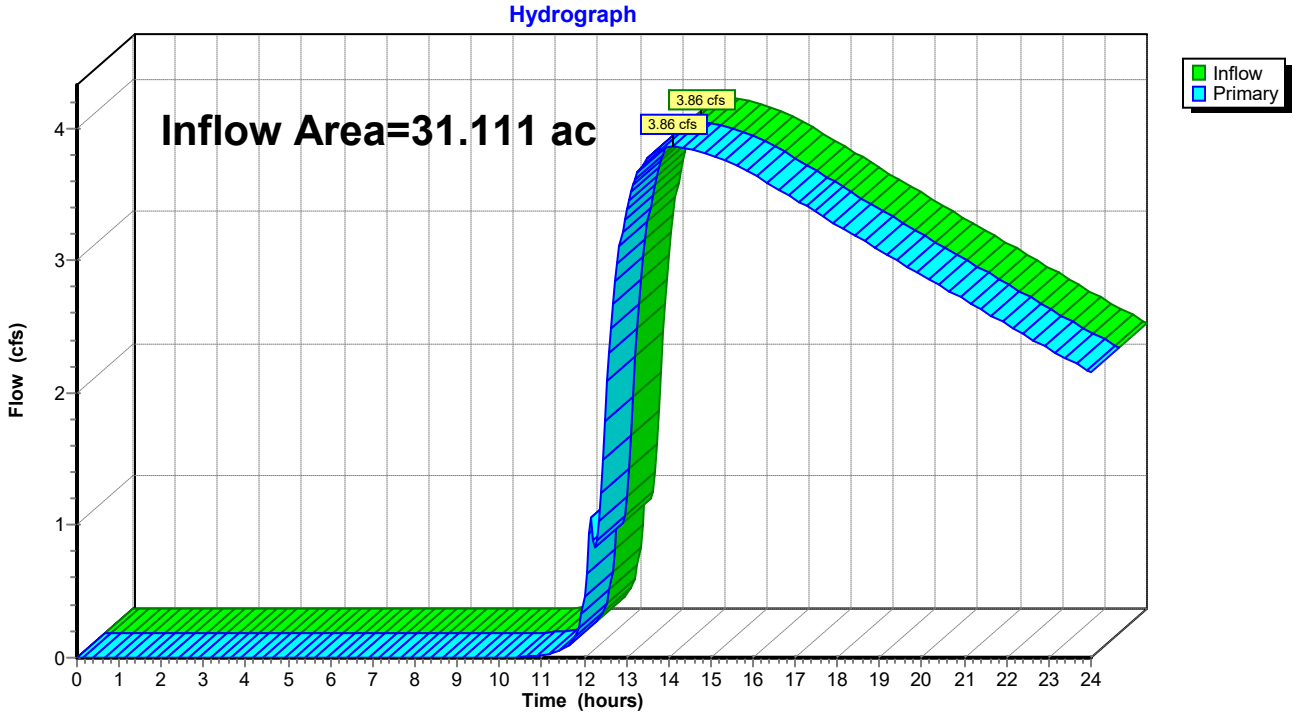
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	848.27	0.00	0.00	**0.00**
0.50	0.00	848.27	0.00	0.00	0.00
1.00	0.00	848.27	0.00	0.00	0.00
1.50	0.00	848.27	0.00	0.00	0.00
2.00	0.00	848.27	0.00	0.00	0.00
2.50	0.00	848.27	0.00	0.00	0.00
3.00	0.00	848.27	0.00	0.00	0.00
3.50	0.00	848.27	0.00	0.00	0.00
4.00	0.00	848.27	0.00	0.00	0.00
4.50	0.00	848.27	0.00	0.00	0.00
5.00	0.00	848.27	0.00	0.00	0.00
5.50	0.00	848.27	0.00	0.00	0.00
6.00	0.00	848.27	0.00	0.00	0.00
6.50	0.00	848.27	0.00	0.00	0.00
7.00	0.00	848.27	0.00	0.00	0.00
7.50	0.00	848.27	0.00	0.00	0.00
8.00	0.00	848.27	0.00	0.00	0.00
8.50	0.00	848.28	0.00	0.00	0.00
9.00	0.00	848.30	0.00	0.00	0.00
9.50	0.01	848.33	0.01	0.01	0.00
10.00	0.02	848.35	0.02	0.02	0.00
10.50	0.03	848.37	0.03	0.03	0.00
11.00	0.05	848.40	0.05	0.05	0.00
11.50	0.12	848.47	0.12	0.12	0.00
12.00	0.36	848.61	0.36	0.36	0.00
12.50	**1.90**	**849.15**	**1.90**	**1.90**	0.00
13.00	0.77	848.78	0.77	0.77	0.00
13.50	0.36	848.61	0.36	0.36	0.00
14.00	0.19	848.52	0.19	0.19	0.00
14.50	0.13	848.48	0.13	0.13	0.00
15.00	0.12	848.47	0.12	0.12	0.00
15.50	0.09	848.44	0.09	0.09	0.00
16.00	0.07	848.42	0.07	0.07	0.00
16.50	0.06	848.41	0.06	0.06	0.00
17.00	0.06	848.41	0.06	0.06	0.00
17.50	0.06	848.41	0.06	0.06	0.00
18.00	0.05	848.40	0.05	0.05	0.00
18.50	0.05	848.40	0.05	0.05	0.00
19.00	0.05	848.39	0.05	0.05	0.00
19.50	0.04	848.39	0.04	0.04	0.00
20.00	0.04	848.39	0.04	0.04	0.00
20.50	0.04	848.38	0.04	0.04	0.00
21.00	0.03	848.38	0.03	0.03	0.00
21.50	0.03	848.37	0.03	0.03	0.00
22.00	0.03	848.36	0.03	0.03	0.00
22.50	0.02	848.36	0.02	0.02	0.00
23.00	0.02	848.35	0.02	0.02	0.00
23.50	0.02	848.35	0.02	0.02	0.00
24.00	0.01	848.34	0.01	0.01	0.00

Summary for Link 5L: East Site

Inflow Area = 31.111 ac, 79.97% Impervious, Inflow Depth > 1.16" for 2-year event
Inflow = 3.86 cfs @ 14.10 hrs, Volume= 3.018 af
Primary = 3.86 cfs @ 14.10 hrs, Volume= 3.018 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Entire Site

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 5L: East Site



Hydrograph for Link 5L: East Site

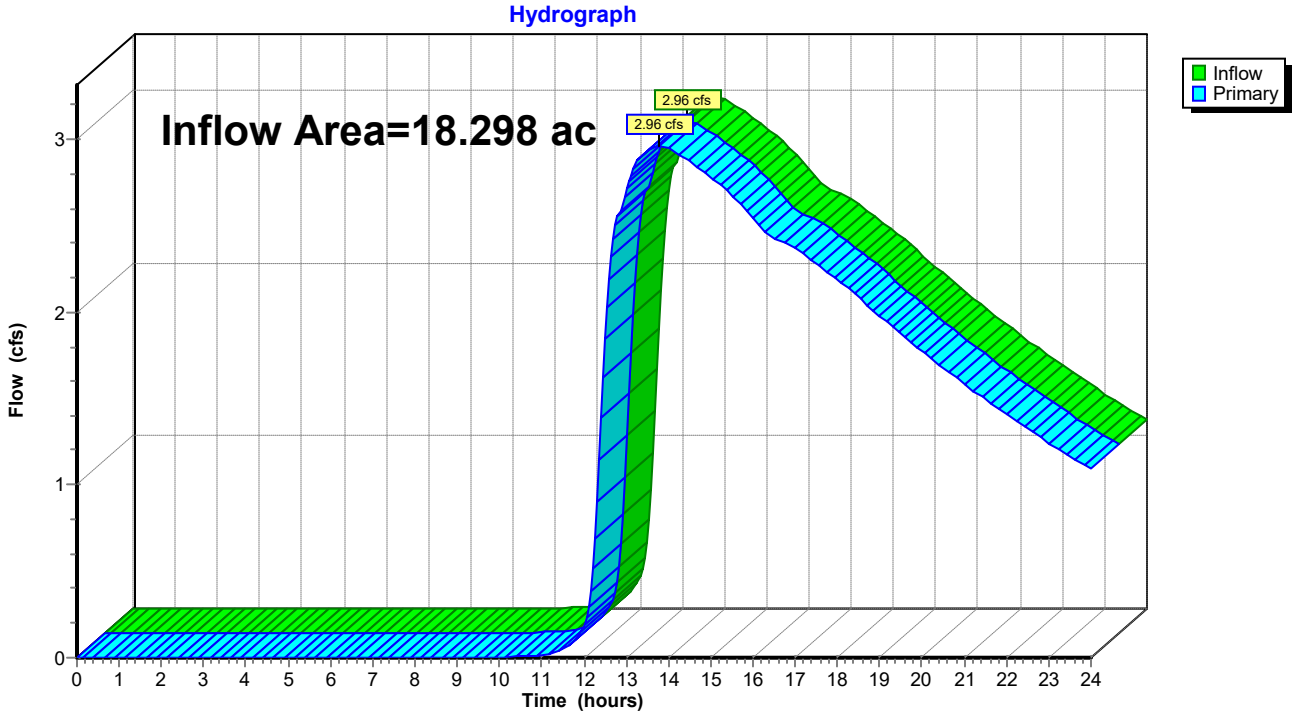
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	13.00	3.39	0.00	3.39
0.25	0.00	0.00	0.00	13.25	3.65	0.00	3.65
0.50	0.00	0.00	0.00	13.50	3.78	0.00	3.78
0.75	0.00	0.00	0.00	13.75	3.83	0.00	3.83
1.00	0.00	0.00	0.00	14.00	**3.86**	0.00	**3.86**
1.25	0.00	0.00	0.00	14.25	**3.86**	0.00	**3.86**
1.50	0.00	0.00	0.00	14.50	3.85	0.00	3.85
1.75	0.00	0.00	0.00	14.75	3.83	0.00	3.83
2.00	0.00	0.00	0.00	15.00	3.80	0.00	3.80
2.25	0.00	0.00	0.00	15.25	3.77	0.00	3.77
2.50	0.00	0.00	0.00	15.50	3.74	0.00	3.74
2.75	0.00	0.00	0.00	15.75	3.70	0.00	3.70
3.00	0.00	0.00	0.00	16.00	3.65	0.00	3.65
3.25	0.00	0.00	0.00	16.25	3.61	0.00	3.61
3.50	0.00	0.00	0.00	16.50	3.56	0.00	3.56
3.75	0.00	0.00	0.00	16.75	3.51	0.00	3.51
4.00	0.00	0.00	0.00	17.00	3.46	0.00	3.46
4.25	0.00	0.00	0.00	17.25	3.41	0.00	3.41
4.50	0.00	0.00	0.00	17.50	3.37	0.00	3.37
4.75	0.00	0.00	0.00	17.75	3.32	0.00	3.32
5.00	0.00	0.00	0.00	18.00	3.27	0.00	3.27
5.25	0.00	0.00	0.00	18.25	3.22	0.00	3.22
5.50	0.00	0.00	0.00	18.50	3.17	0.00	3.17
5.75	0.00	0.00	0.00	18.75	3.13	0.00	3.13
6.00	0.00	0.00	0.00	19.00	3.08	0.00	3.08
6.25	0.00	0.00	0.00	19.25	3.03	0.00	3.03
6.50	0.00	0.00	0.00	19.50	2.98	0.00	2.98
6.75	0.00	0.00	0.00	19.75	2.94	0.00	2.94
7.00	0.00	0.00	0.00	20.00	2.89	0.00	2.89
7.25	0.00	0.00	0.00	20.25	2.84	0.00	2.84
7.50	0.00	0.00	0.00	20.50	2.80	0.00	2.80
7.75	0.00	0.00	0.00	20.75	2.75	0.00	2.75
8.00	0.00	0.00	0.00	21.00	2.70	0.00	2.70
8.25	0.00	0.00	0.00	21.25	2.66	0.00	2.66
8.50	0.00	0.00	0.00	21.50	2.61	0.00	2.61
8.75	0.00	0.00	0.00	21.75	2.56	0.00	2.56
9.00	0.00	0.00	0.00	22.00	2.52	0.00	2.52
9.25	0.00	0.00	0.00	22.25	2.47	0.00	2.47
9.50	0.00	0.00	0.00	22.50	2.43	0.00	2.43
9.75	0.00	0.00	0.00	22.75	2.38	0.00	2.38
10.00	0.00	0.00	0.00	23.00	2.34	0.00	2.34
10.25	0.00	0.00	0.00	23.25	2.29	0.00	2.29
10.50	0.01	0.00	0.01	23.50	2.25	0.00	2.25
10.75	0.01	0.00	0.01	23.75	2.20	0.00	2.20
11.00	0.02	0.00	0.02	24.00	2.16	0.00	2.16
11.25	0.03	0.00	0.03				
11.50	0.06	0.00	0.06				
11.75	0.14	0.00	0.14				
12.00	0.46	0.00	0.46				
12.25	0.83	0.00	0.83				
12.50	1.78	0.00	1.78				
12.75	2.84	0.00	2.84				

Summary for Link 6L: West Site

Inflow Area = 18.298 ac, 83.74% Impervious, Inflow Depth > 1.33" for 2-year event
Inflow = 2.96 cfs @ 13.77 hrs, Volume= 2.028 af
Primary = 2.96 cfs @ 13.77 hrs, Volume= 2.028 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Entire Site

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 6L: West Site



Hydrograph for Link 6L: West Site

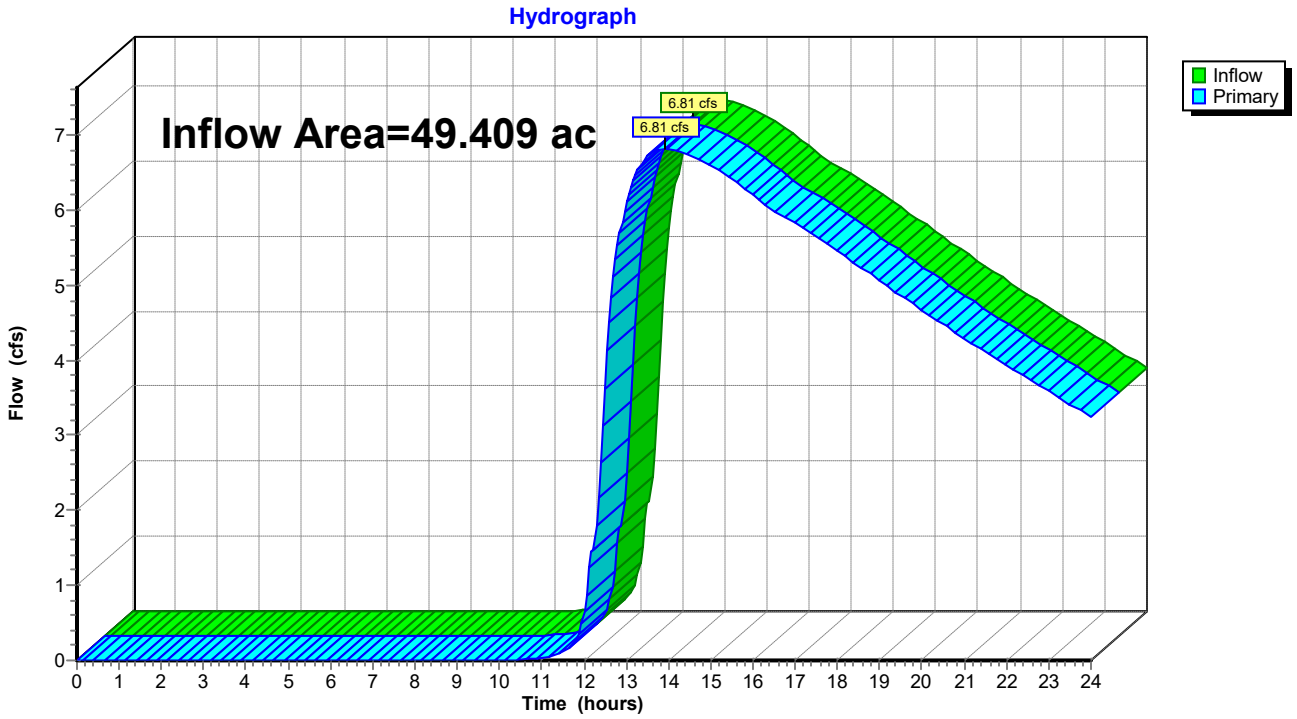
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	13.00	2.72	0.00	2.72
0.25	0.00	0.00	0.00	13.25	2.87	0.00	2.87
0.50	0.00	0.00	0.00	13.50	2.94	0.00	2.94
0.75	0.00	0.00	0.00	13.75	**2.96**	0.00	**2.96**
1.00	0.00	0.00	0.00	14.00	2.95	0.00	2.95
1.25	0.00	0.00	0.00	14.25	2.92	0.00	2.92
1.50	0.00	0.00	0.00	14.50	2.88	0.00	2.88
1.75	0.00	0.00	0.00	14.75	2.83	0.00	2.83
2.00	0.00	0.00	0.00	15.00	2.79	0.00	2.79
2.25	0.00	0.00	0.00	15.25	2.74	0.00	2.74
2.50	0.00	0.00	0.00	15.50	2.68	0.00	2.68
2.75	0.00	0.00	0.00	15.75	2.61	0.00	2.61
3.00	0.00	0.00	0.00	16.00	2.55	0.00	2.55
3.25	0.00	0.00	0.00	16.25	2.48	0.00	2.48
3.50	0.00	0.00	0.00	16.50	2.43	0.00	2.43
3.75	0.00	0.00	0.00	16.75	2.41	0.00	2.41
4.00	0.00	0.00	0.00	17.00	2.37	0.00	2.37
4.25	0.00	0.00	0.00	17.25	2.33	0.00	2.33
4.50	0.00	0.00	0.00	17.50	2.28	0.00	2.28
4.75	0.00	0.00	0.00	17.75	2.24	0.00	2.24
5.00	0.00	0.00	0.00	18.00	2.19	0.00	2.19
5.25	0.00	0.00	0.00	18.25	2.14	0.00	2.14
5.50	0.00	0.00	0.00	18.50	2.09	0.00	2.09
5.75	0.00	0.00	0.00	18.75	2.03	0.00	2.03
6.00	0.00	0.00	0.00	19.00	1.98	0.00	1.98
6.25	0.00	0.00	0.00	19.25	1.93	0.00	1.93
6.50	0.00	0.00	0.00	19.50	1.88	0.00	1.88
6.75	0.00	0.00	0.00	19.75	1.83	0.00	1.83
7.00	0.00	0.00	0.00	20.00	1.78	0.00	1.78
7.25	0.00	0.00	0.00	20.25	1.73	0.00	1.73
7.50	0.00	0.00	0.00	20.50	1.68	0.00	1.68
7.75	0.00	0.00	0.00	20.75	1.63	0.00	1.63
8.00	0.00	0.00	0.00	21.00	1.59	0.00	1.59
8.25	0.00	0.00	0.00	21.25	1.54	0.00	1.54
8.50	0.00	0.00	0.00	21.50	1.50	0.00	1.50
8.75	0.00	0.00	0.00	21.75	1.45	0.00	1.45
9.00	0.00	0.00	0.00	22.00	1.41	0.00	1.41
9.25	0.00	0.00	0.00	22.25	1.37	0.00	1.37
9.50	0.00	0.00	0.00	22.50	1.33	0.00	1.33
9.75	0.00	0.00	0.00	22.75	1.29	0.00	1.29
10.00	0.00	0.00	0.00	23.00	1.25	0.00	1.25
10.25	0.00	0.00	0.00	23.25	1.21	0.00	1.21
10.50	0.01	0.00	0.01	23.50	1.17	0.00	1.17
10.75	0.01	0.00	0.01	23.75	1.13	0.00	1.13
11.00	0.02	0.00	0.02	24.00	1.10	0.00	1.10
11.25	0.03	0.00	0.03				
11.50	0.05	0.00	0.05				
11.75	0.09	0.00	0.09				
12.00	0.19	0.00	0.19				
12.25	0.69	0.00	0.69				
12.50	1.84	0.00	1.84				
12.75	2.50	0.00	2.50				

Summary for Link 7L: Entire Site

Inflow Area = 49.409 ac, 81.37% Impervious, Inflow Depth > 1.23" for 2-year event
Inflow = 6.81 cfs @ 13.93 hrs, Volume= 5.046 af
Primary = 6.81 cfs @ 13.93 hrs, Volume= 5.046 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 7L: Entire Site



Hydrograph for Link 7L: Entire Site

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	13.00	6.11	0.00	6.11
0.25	0.00	0.00	0.00	13.25	6.52	0.00	6.52
0.50	0.00	0.00	0.00	13.50	6.71	0.00	6.71
0.75	0.00	0.00	0.00	13.75	**6.80**	0.00	**6.80**
1.00	0.00	0.00	0.00	14.00	**6.81**	0.00	**6.81**
1.25	0.00	0.00	0.00	14.25	6.78	0.00	6.78
1.50	0.00	0.00	0.00	14.50	6.72	0.00	6.72
1.75	0.00	0.00	0.00	14.75	6.66	0.00	6.66
2.00	0.00	0.00	0.00	15.00	6.59	0.00	6.59
2.25	0.00	0.00	0.00	15.25	6.51	0.00	6.51
2.50	0.00	0.00	0.00	15.50	6.42	0.00	6.42
2.75	0.00	0.00	0.00	15.75	6.31	0.00	6.31
3.00	0.00	0.00	0.00	16.00	6.20	0.00	6.20
3.25	0.00	0.00	0.00	16.25	6.08	0.00	6.08
3.50	0.00	0.00	0.00	16.50	5.98	0.00	5.98
3.75	0.00	0.00	0.00	16.75	5.92	0.00	5.92
4.00	0.00	0.00	0.00	17.00	5.83	0.00	5.83
4.25	0.00	0.00	0.00	17.25	5.74	0.00	5.74
4.50	0.00	0.00	0.00	17.50	5.65	0.00	5.65
4.75	0.00	0.00	0.00	17.75	5.55	0.00	5.55
5.00	0.00	0.00	0.00	18.00	5.46	0.00	5.46
5.25	0.00	0.00	0.00	18.25	5.36	0.00	5.36
5.50	0.00	0.00	0.00	18.50	5.26	0.00	5.26
5.75	0.00	0.00	0.00	18.75	5.16	0.00	5.16
6.00	0.00	0.00	0.00	19.00	5.06	0.00	5.06
6.25	0.00	0.00	0.00	19.25	4.96	0.00	4.96
6.50	0.00	0.00	0.00	19.50	4.86	0.00	4.86
6.75	0.00	0.00	0.00	19.75	4.76	0.00	4.76
7.00	0.00	0.00	0.00	20.00	4.67	0.00	4.67
7.25	0.00	0.00	0.00	20.25	4.57	0.00	4.57
7.50	0.00	0.00	0.00	20.50	4.48	0.00	4.48
7.75	0.00	0.00	0.00	20.75	4.38	0.00	4.38
8.00	0.00	0.00	0.00	21.00	4.29	0.00	4.29
8.25	0.00	0.00	0.00	21.25	4.20	0.00	4.20
8.50	0.00	0.00	0.00	21.50	4.11	0.00	4.11
8.75	0.00	0.00	0.00	21.75	4.02	0.00	4.02
9.00	0.00	0.00	0.00	22.00	3.93	0.00	3.93
9.25	0.00	0.00	0.00	22.25	3.84	0.00	3.84
9.50	0.00	0.00	0.00	22.50	3.75	0.00	3.75
9.75	0.00	0.00	0.00	22.75	3.67	0.00	3.67
10.00	0.00	0.00	0.00	23.00	3.58	0.00	3.58
10.25	0.01	0.00	0.01	23.25	3.50	0.00	3.50
10.50	0.01	0.00	0.01	23.50	3.42	0.00	3.42
10.75	0.02	0.00	0.02	23.75	3.33	0.00	3.33
11.00	0.03	0.00	0.03	24.00	3.25	0.00	3.25
11.25	0.06	0.00	0.06				
11.50	0.11	0.00	0.11				
11.75	0.23	0.00	0.23				
12.00	0.65	0.00	0.65				
12.25	1.52	0.00	1.52				
12.50	3.63	0.00	3.63				
12.75	5.34	0.00	5.34				

Summary for Subcatchment 5S: Pond 1

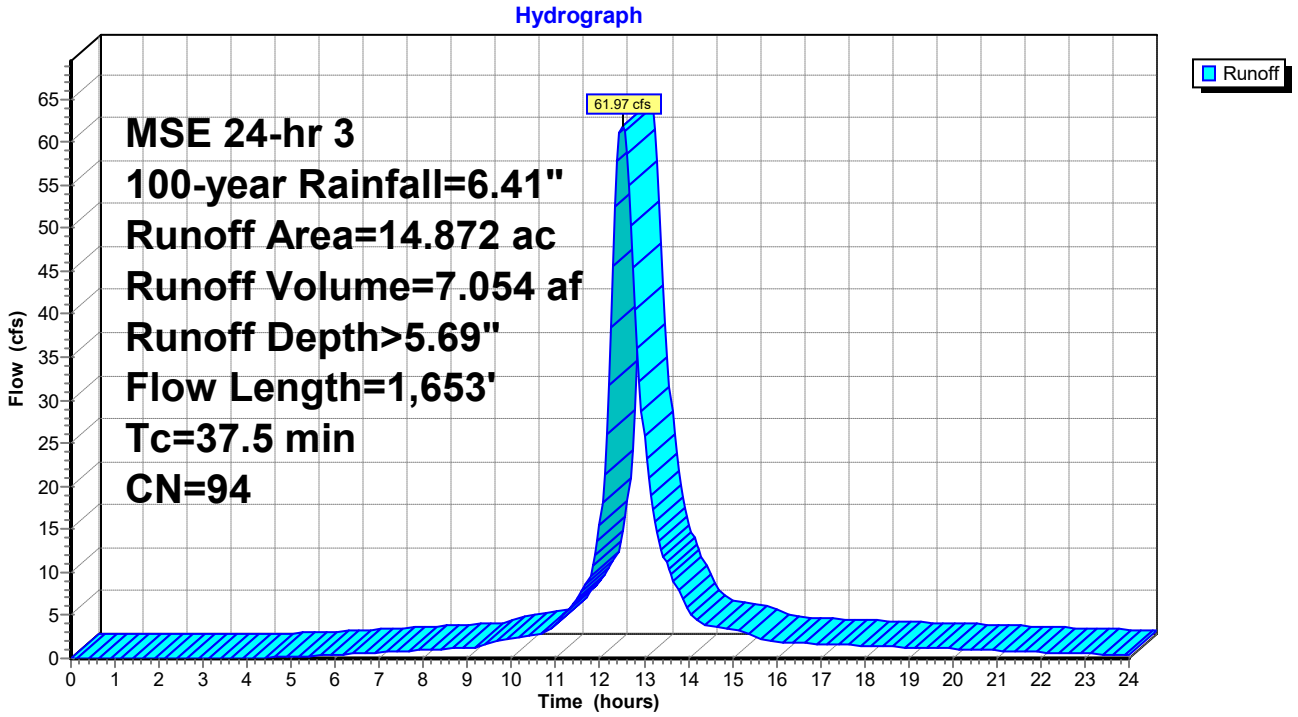
Runoff = 61.97 cfs @ 12.50 hrs, Volume= 7.054 af, Depth> 5.69"
Routed to Pond 1P : Pond 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-year Rainfall=6.41"

Area (ac)	CN	Description
1.418	98	Water Surface, HSG D
4.251	98	Paved parking, HSG C
1.063	74	>75% Grass cover, Good, HSG C
6.512	98	Paved parking, HSG D
1.628	80	>75% Grass cover, Good, HSG D
14.872	94	Weighted Average
2.691		18.09% Pervious Area
12.181		81.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6	150	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.65"
6.0	577	0.0100	1.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.9	926	0.0070	5.39	150.80	**Channel Flow,** Area= 28.0 sf Perim= 18.9' r= 1.48' n= 0.030 Earth, grassed & winding
37.5	1,653	Total			

Subcatchment 5S: Pond 1



Hydrograph for Subcatchment 5S: Pond 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.50	0.01	0.00	0.00
0.75	0.02	0.00	0.00
1.00	0.02	0.00	0.00
1.25	0.03	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.25	0.07	0.00	0.00
2.50	0.08	0.00	0.00
2.75	0.09	0.00	0.00
3.00	0.11	0.00	0.00
3.25	0.12	0.00	0.00
3.50	0.14	0.00	0.00
3.75	0.15	0.00	0.00
4.00	0.17	0.00	0.02
4.25	0.18	0.00	0.06
4.50	0.20	0.01	0.10
4.75	0.22	0.01	0.15
5.00	0.24	0.02	0.20
5.25	0.26	0.02	0.26
5.50	0.28	0.03	0.31
5.75	0.30	0.04	0.37
6.00	0.33	0.05	0.43
6.25	0.35	0.06	0.50
6.50	0.37	0.07	0.56
6.75	0.40	0.08	0.62
7.00	0.43	0.09	0.69
7.25	0.45	0.11	0.76
7.50	0.48	0.12	0.82
7.75	0.51	0.14	0.89
8.00	0.54	0.16	0.95
8.25	0.57	0.18	1.02
8.50	0.60	0.20	1.09
8.75	0.63	0.22	1.15
9.00	0.66	0.24	1.22
9.25	0.71	0.28	1.34
9.50	0.77	0.32	1.73
9.75	0.82	0.36	2.13
10.00	0.88	0.41	2.37
10.25	0.94	0.46	2.56
10.50	1.00	0.51	2.73
10.75	1.10	0.59	2.98
11.00	1.24	0.70	3.95
11.25	1.40	0.85	5.46
11.50	1.59	1.02	7.14
11.75	1.97	1.37	9.24
12.00	2.97	2.32	15.55
12.25	4.44	3.76	38.46
12.50	4.82	4.13	**61.97**
12.75	5.01	4.32	45.29
13.00	5.17	4.48	25.81
13.25	5.31	4.61	15.95
13.50	5.41	4.71	11.11
13.75	5.47	4.77	8.12
14.00	5.53	4.83	5.73
14.25	5.59	4.89	4.32
14.50	5.64	4.94	3.76
14.75	5.70	5.00	3.50
15.00	5.75	5.05	3.33
15.25	5.78	5.08	3.13
15.50	5.81	5.11	2.60
15.75	5.84	5.14	2.15
16.00	5.87	5.17	1.95
16.25	5.90	5.20	1.84
16.50	5.93	5.23	1.77
16.75	5.96	5.26	1.72
17.00	5.98	5.28	1.67
17.25	6.01	5.31	1.62
17.50	6.04	5.33	1.57
17.75	6.06	5.36	1.53
18.00	6.08	5.38	1.48
18.25	6.11	5.40	1.43
18.50	6.13	5.42	1.39
18.75	6.15	5.44	1.34
19.00	6.17	5.46	1.29
19.25	6.19	5.48	1.25
19.50	6.21	5.50	1.20
19.75	6.23	5.52	1.15
20.00	6.24	5.54	1.11
20.25	6.26	5.55	1.06
20.50	6.27	5.57	1.01
20.75	6.29	5.58	0.96
21.00	6.30	5.60	0.92
21.25	6.32	5.61	0.87
21.50	6.33	5.62	0.82
21.75	6.34	5.63	0.78
22.00	6.35	5.65	0.73
22.25	6.36	5.66	0.68
22.50	6.37	5.66	0.64
22.75	6.38	5.67	0.59
23.00	6.39	5.68	0.54
23.25	6.39	5.69	0.50
23.50	6.40	5.69	0.45
23.75	6.41	5.70	0.40
24.00	**6.41**	**5.70**	0.35

Summary for Subcatchment 6S: Pond 2A 2024

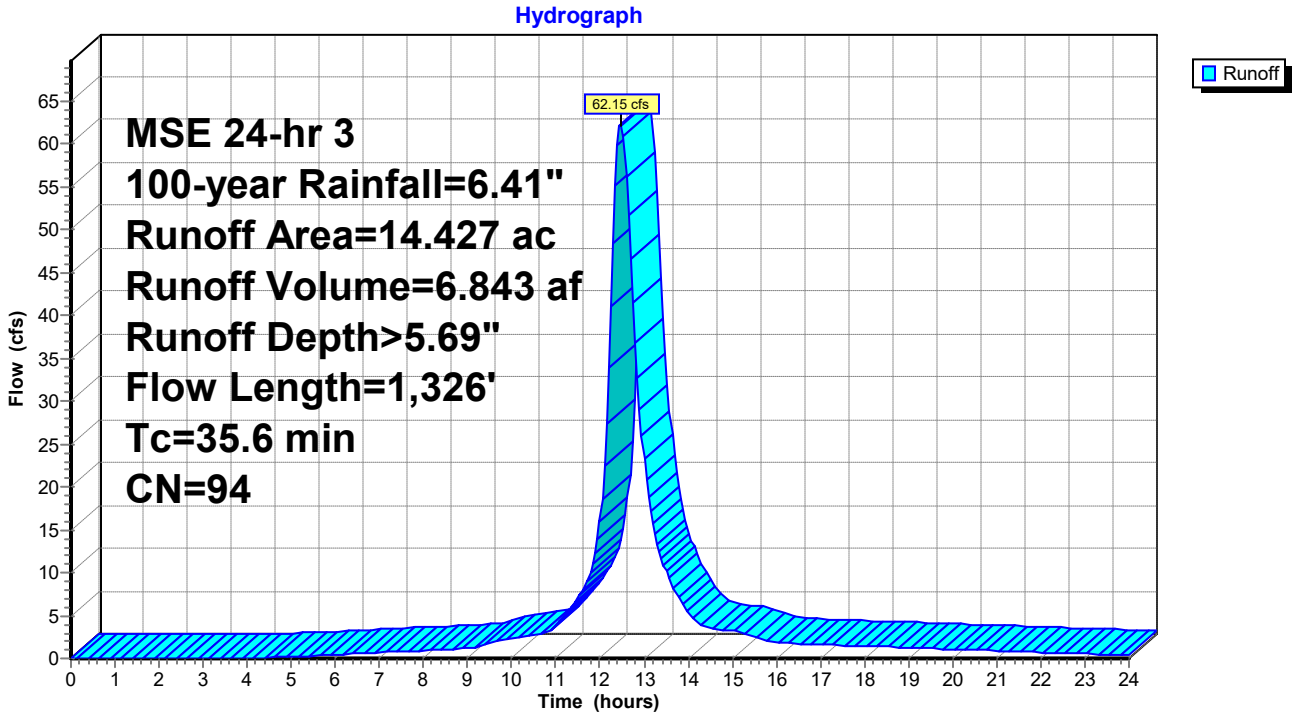
Runoff = 62.15 cfs @ 12.47 hrs, Volume= 6.843 af, Depth> 5.69"
Routed to Pond 2P : Pond 2 2024

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-year Rainfall=6.41"

	Area (ac)	CN	Description
	1.136	98	Water Surface, HSG D
	0.691	74	>75% Grass cover, Good, HSG C
	1.955	80	>75% Grass cover, Good, HSG D
	2.538	98	Paved parking, HSG C
	7.187	98	Paved parking, HSG D
*	0.920	98	Asphalt outdoor storage
	14.427	94	Weighted Average
	2.646		18.34% Pervious Area
	11.781		81.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6	150	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.65"
4.8	461	0.0100	1.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.2	715	0.0070	5.39	150.80	**Channel Flow,** Area= 28.0 sf Perim= 18.9' r= 1.48' n= 0.030
35.6	1,326	Total			

Subcatchment 6S: Pond 2A 2024



Hydrograph for Subcatchment 6S: Pond 2A 2024

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.50	0.01	0.00	0.00
0.75	0.02	0.00	0.00
1.00	0.02	0.00	0.00
1.25	0.03	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.25	0.07	0.00	0.00
2.50	0.08	0.00	0.00
2.75	0.09	0.00	0.00
3.00	0.11	0.00	0.00
3.25	0.12	0.00	0.00
3.50	0.14	0.00	0.00
3.75	0.15	0.00	0.00
4.00	0.17	0.00	0.02
4.25	0.18	0.00	0.06
4.50	0.20	0.01	0.10
4.75	0.22	0.01	0.15
5.00	0.24	0.02	0.20
5.25	0.26	0.02	0.26
5.50	0.28	0.03	0.31
5.75	0.30	0.04	0.37
6.00	0.33	0.05	0.43
6.25	0.35	0.06	0.49
6.50	0.37	0.07	0.55
6.75	0.40	0.08	0.61
7.00	0.43	0.09	0.68
7.25	0.45	0.11	0.74
7.50	0.48	0.12	0.80
7.75	0.51	0.14	0.87
8.00	0.54	0.16	0.93
8.25	0.57	0.18	1.00
8.50	0.60	0.20	1.06
8.75	0.63	0.22	1.13
9.00	0.66	0.24	1.19
9.25	0.71	0.28	1.32
9.50	0.77	0.32	1.73
9.75	0.82	0.36	2.10
10.00	0.88	0.41	2.33
10.25	0.94	0.46	2.51
10.50	1.00	0.51	2.67
10.75	1.10	0.59	2.94
11.00	1.24	0.70	3.95
11.25	1.40	0.85	5.47
11.50	1.59	1.02	7.11
11.75	1.97	1.37	9.27
12.00	2.97	2.32	15.87
12.25	4.44	3.76	**41.02**
12.50	4.82	4.13	**61.72**
12.75	5.01	4.32	41.39
13.00	5.17	4.48	23.22
13.25	5.31	4.61	14.45
13.50	5.41	4.71	10.20
13.75	5.47	4.77	7.47
14.00	5.53	4.83	5.24
14.25	5.59	4.89	4.05
14.50	5.64	4.94	3.59
14.75	5.70	5.00	3.36
15.00	5.75	5.05	3.21
15.25	5.78	5.08	3.00
15.50	5.81	5.11	2.46
15.75	5.84	5.14	2.05
16.00	5.87	5.17	1.87
16.25	5.90	5.20	1.77
16.50	5.93	5.23	1.71
16.75	5.96	5.26	1.66
17.00	5.98	5.28	1.61
17.25	6.01	5.31	1.57
17.50	6.04	5.33	1.52
17.75	6.06	5.36	1.48
18.00	6.08	5.38	1.43
18.25	6.11	5.40	1.39
18.50	6.13	5.42	1.34
18.75	6.15	5.44	1.29
19.00	6.17	5.46	1.25
19.25	6.19	5.48	1.20
19.50	6.21	5.50	1.16
19.75	6.23	5.52	1.11
20.00	6.24	5.54	1.07
20.25	6.26	5.55	1.02
20.50	6.27	5.57	0.98
20.75	6.29	5.58	0.93
21.00	6.30	5.60	0.89
21.25	6.32	5.61	0.84
21.50	6.33	5.62	0.79
21.75	6.34	5.63	0.75
22.00	6.35	5.65	0.70
22.25	6.36	5.66	0.66
22.50	6.37	5.66	0.61
22.75	6.38	5.67	0.57
23.00	6.39	5.68	0.52
23.25	6.39	5.69	0.47
23.50	6.40	5.69	0.43
23.75	6.41	5.70	0.38
24.00	**6.41**	**5.70**	0.34

Summary for Subcatchment 7S: Pond 3

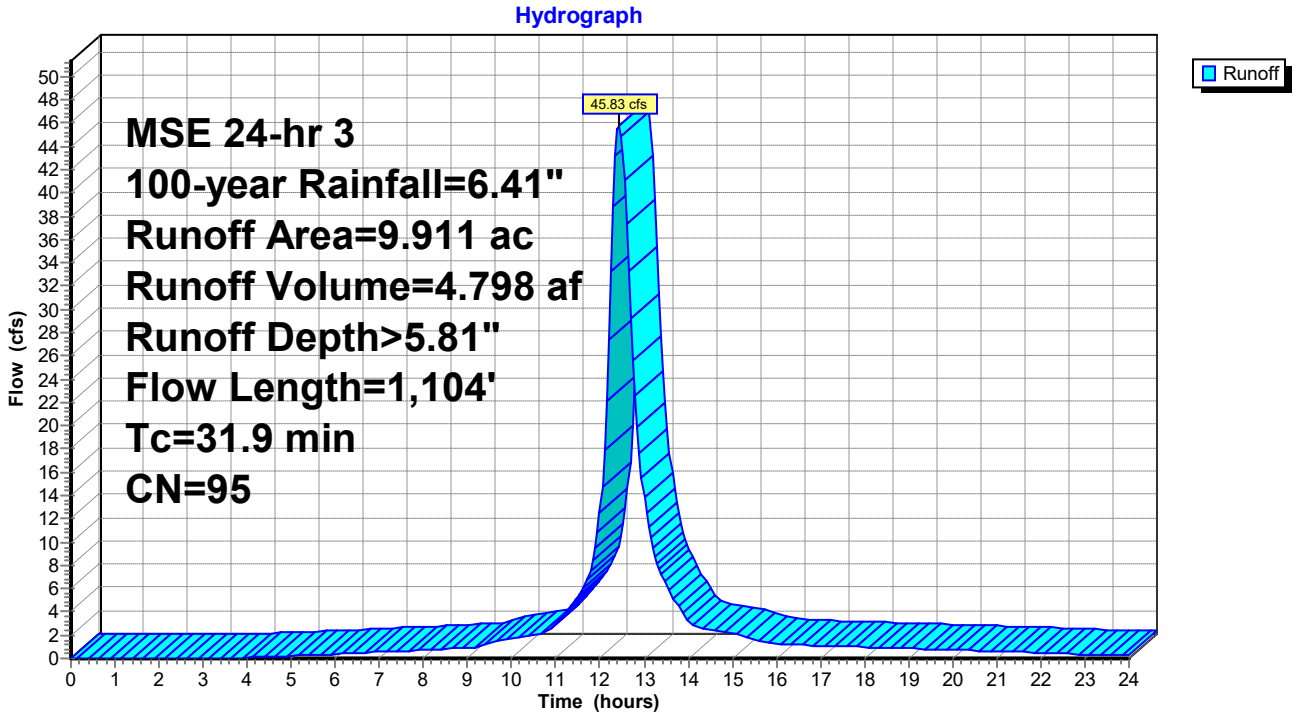
Runoff = 45.83 cfs @ 12.43 hrs, Volume= 4.798 af, Depth> 5.81"
Routed to Pond 3P : Pond 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-year Rainfall=6.41"

	Area (ac)	CN	Description
	0.907	98	Water Surface, HSG D
*	0.930	98	Nimitz Ct, HSG D
	3.694	98	Paved parking, HSG C
	0.924	74	>75% Grass cover, Good, HSG C
	2.765	98	Paved parking, HSG D
	0.691	80	>75% Grass cover, Good, HSG D
	9.911	95	Weighted Average
	1.615		16.30% Pervious Area
	8.296		83.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6	150	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.65"
0.5	49	0.0100	1.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.8	905	0.0070	5.39	150.80	**Channel Flow,** Area= 28.0 sf Perim= 18.9' r= 1.48' n= 0.030 Earth, grassed & winding
31.9	1,104	Total			

Subcatchment 7S: Pond 3



Hydrograph for Subcatchment 7S: Pond 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.50	0.01	0.00	0.00
0.75	0.02	0.00	0.00
1.00	0.02	0.00	0.00
1.25	0.03	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.25	0.07	0.00	0.00
2.50	0.08	0.00	0.00
2.75	0.09	0.00	0.00
3.00	0.11	0.00	0.00
3.25	0.12	0.00	0.00
3.50	0.14	0.00	0.01
3.75	0.15	0.00	0.04
4.00	0.17	0.01	0.07
4.25	0.18	0.01	0.10
4.50	0.20	0.02	0.14
4.75	0.22	0.02	0.17
5.00	0.24	0.03	0.21
5.25	0.26	0.04	0.25
5.50	0.28	0.04	0.29
5.75	0.30	0.05	0.34
6.00	0.33	0.07	0.38
6.25	0.35	0.08	0.42
6.50	0.37	0.09	0.47
6.75	0.40	0.11	0.51
7.00	0.43	0.12	0.56
7.25	0.45	0.14	0.60
7.50	0.48	0.16	0.64
7.75	0.51	0.17	0.69
8.00	0.54	0.19	0.73
8.25	0.57	0.22	0.78
8.50	0.60	0.24	0.82
8.75	0.63	0.26	0.87
9.00	0.66	0.29	0.91
9.25	0.71	0.33	1.02
9.50	0.77	0.37	1.36
9.75	0.82	0.41	1.61
10.00	0.88	0.46	1.75
10.25	0.94	0.51	1.87
10.50	1.00	0.57	1.97
10.75	1.10	0.65	2.19
11.00	1.24	0.77	3.04
11.25	1.40	0.92	4.16
11.50	1.59	1.10	5.33
11.75	1.97	1.46	6.95
12.00	2.97	2.42	12.49
12.25	4.44	3.86	**33.29**
12.50	4.82	4.24	**44.08**
12.75	5.01	4.43	25.63
13.00	5.17	4.59	13.86
13.25	5.31	4.72	8.78
13.50	5.41	4.82	6.36
13.75	5.47	4.88	4.66
14.00	5.53	4.94	3.27
14.25	5.59	5.00	2.64
14.50	5.64	5.06	2.40
14.75	5.70	5.11	2.28
15.00	5.75	5.16	2.19
15.25	5.78	5.19	2.03
15.50	5.81	5.23	1.61
15.75	5.84	5.26	1.36
16.00	5.87	5.29	1.26
16.25	5.90	5.31	1.21
16.50	5.93	5.34	1.17
16.75	5.96	5.37	1.14
17.00	5.98	5.40	1.10
17.25	6.01	5.42	1.07
17.50	6.04	5.45	1.04
17.75	6.06	5.47	1.01
18.00	6.08	5.49	0.98
18.25	6.11	5.52	0.95
18.50	6.13	5.54	0.92
18.75	6.15	5.56	0.89
19.00	6.17	5.58	0.85
19.25	6.19	5.60	0.82
19.50	6.21	5.62	0.79
19.75	6.23	5.64	0.76
20.00	6.24	5.65	0.73
20.25	6.26	5.67	0.70
20.50	6.27	5.68	0.67
20.75	6.29	5.70	0.63
21.00	6.30	5.71	0.60
21.25	6.32	5.73	0.57
21.50	6.33	5.74	0.54
21.75	6.34	5.75	0.51
22.00	6.35	5.76	0.48
22.25	6.36	5.77	0.45
22.50	6.37	5.78	0.41
22.75	6.38	5.79	0.38
23.00	6.39	5.80	0.35
23.25	6.39	5.80	0.32
23.50	6.40	5.81	0.29
23.75	6.41	5.81	0.26
24.00	**6.41**	**5.82**	0.23

Summary for Subcatchment 8S: Pond 4

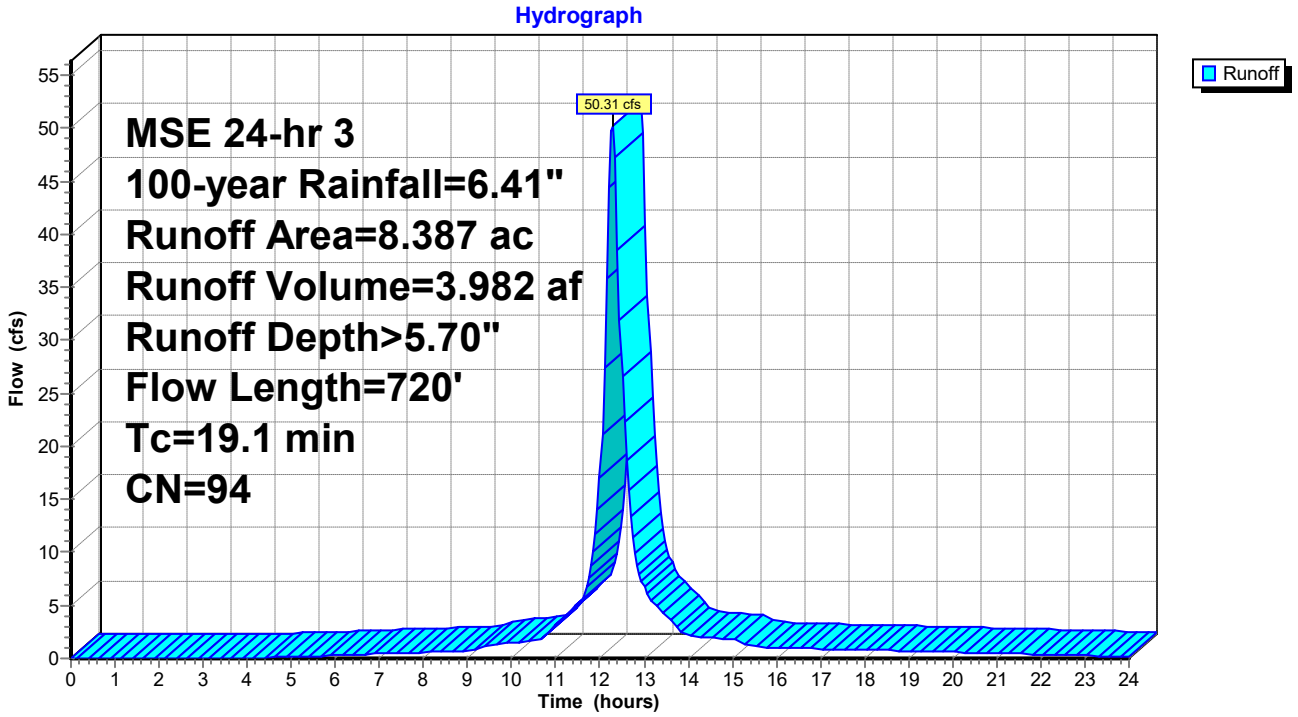
Runoff = 50.31 cfs @ 12.27 hrs, Volume= 3.982 af, Depth> 5.70"
Routed to Pond 4P : Pond 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-year Rainfall=6.41"

	Area (ac)	CN	Description
	0.922	98	Water Surface, HSG D
*	0.666	98	Nimitz Ct, HSG D
	3.416	98	Paved parking, HSG C
	0.854	74	>75% Grass cover, Good, HSG C
	2.023	98	Paved parking, HSG D
	0.506	80	>75% Grass cover, Good, HSG D
	8.387	94	Weighted Average
	1.360		16.22% Pervious Area
	7.027		83.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	117	0.0200	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.65"
1.3	603	0.0150	7.88	220.75	**Channel Flow,** Area= 28.0 sf Perim= 18.9' r= 1.48' n= 0.030 Earth, grassed & winding
19.1	720	Total			

Subcatchment 8S: Pond 4



Hydrograph for Subcatchment 8S: Pond 4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.50	0.01	0.00	0.00
0.75	0.02	0.00	0.00
1.00	0.02	0.00	0.00
1.25	0.03	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.25	0.07	0.00	0.00
2.50	0.08	0.00	0.00
2.75	0.09	0.00	0.00
3.00	0.11	0.00	0.00
3.25	0.12	0.00	0.00
3.50	0.14	0.00	0.00
3.75	0.15	0.00	0.01
4.00	0.17	0.00	0.03
4.25	0.18	0.00	0.06
4.50	0.20	0.01	0.09
4.75	0.22	0.01	0.12
5.00	0.24	0.02	0.15
5.25	0.26	0.02	0.18
5.50	0.28	0.03	0.22
5.75	0.30	0.04	0.25
6.00	0.33	0.05	0.28
6.25	0.35	0.06	0.32
6.50	0.37	0.07	0.36
6.75	0.40	0.08	0.39
7.00	0.43	0.09	0.43
7.25	0.45	0.11	0.47
7.50	0.48	0.12	0.51
7.75	0.51	0.14	0.54
8.00	0.54	0.16	0.58
8.25	0.57	0.18	0.62
8.50	0.60	0.20	0.66
8.75	0.63	0.22	0.69
9.00	0.66	0.24	0.73
9.25	0.71	0.28	0.97
9.50	0.77	0.32	1.26
9.75	0.82	0.36	1.38
10.00	0.88	0.41	1.47
10.25	0.94	0.46	1.55
10.50	1.00	0.51	1.64
10.75	1.10	0.59	2.12
11.00	1.24	0.70	3.14
11.25	1.40	0.85	4.13
11.50	1.59	1.02	5.14
11.75	1.97	1.37	7.59
12.00	2.97	2.32	16.95
12.25	4.44	3.76	**49.73**
12.50	4.82	4.13	26.55
12.75	5.01	4.32	11.39
13.00	5.17	4.48	6.72
13.25	5.31	4.61	5.14
13.50	5.41	4.71	4.08
13.75	5.47	4.77	2.85
14.00	5.53	4.83	2.15
14.25	5.59	4.89	1.99
14.50	5.64	4.94	1.92
14.75	5.70	5.00	1.85
15.00	5.75	5.05	1.79
15.25	5.78	5.08	1.46
15.50	5.81	5.11	1.13
15.75	5.84	5.14	1.05
16.00	5.87	5.17	1.02
16.25	5.90	5.20	0.99
16.50	5.93	5.23	0.96
16.75	5.96	5.26	0.94
17.00	5.98	5.28	0.91
17.25	6.01	5.31	0.88
17.50	6.04	5.33	0.86
17.75	6.06	5.36	0.83
18.00	6.08	5.38	0.80
18.25	6.11	5.40	0.78
18.50	6.13	5.42	0.75
18.75	6.15	5.44	0.73
19.00	6.17	5.46	0.70
19.25	6.19	5.48	0.67
19.50	6.21	5.50	0.65
19.75	6.23	5.52	0.62
20.00	6.24	5.54	0.59
20.25	6.26	5.55	0.57
20.50	6.27	5.57	0.54
20.75	6.29	5.58	0.51
21.00	6.30	5.60	0.49
21.25	6.32	5.61	0.46
21.50	6.33	5.62	0.43
21.75	6.34	5.63	0.41
22.00	6.35	5.65	0.38
22.25	6.36	5.66	0.36
22.50	6.37	5.66	0.33
22.75	6.38	5.67	0.30
23.00	6.39	5.68	0.28
23.25	6.39	5.69	0.25
23.50	6.40	5.69	0.22
23.75	6.41	5.70	0.20
24.00	**6.41**	**5.70**	0.17

Summary for Subcatchment 9S: Pond 2B

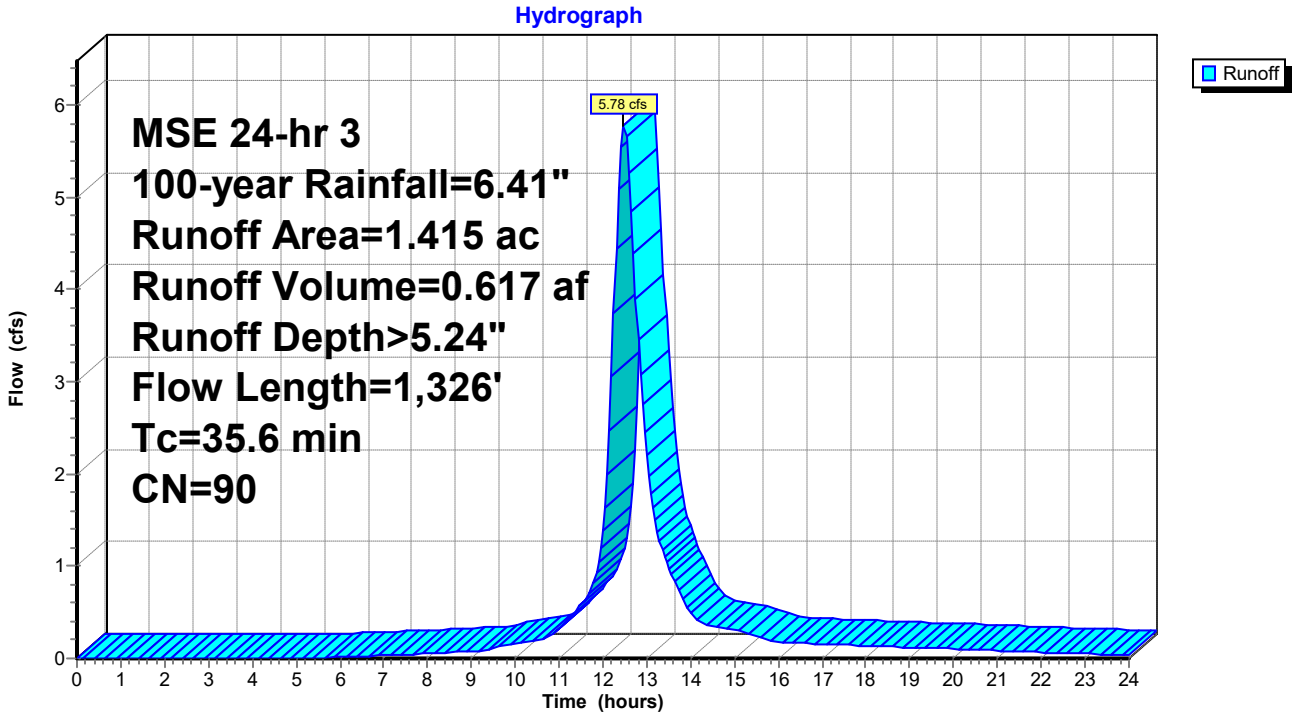
Runoff = 5.78 cfs @ 12.47 hrs, Volume= 0.617 af, Depth> 5.24"
Routed to Pond 10P : Inlet

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-year Rainfall=6.41"

Area (ac)	CN	Description
0.147	74	>75% Grass cover, Good, HSG C
0.416	80	>75% Grass cover, Good, HSG D
0.222	98	Paved parking, HSG C
0.630	98	Paved parking, HSG D
1.415	90	Weighted Average
0.563		39.79% Pervious Area
0.852		60.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6	150	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.65"
4.8	461	0.0100	1.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.2	715	0.0070	5.39	150.80	**Channel Flow,** Area= 28.0 sf Perim= 18.9' r= 1.48' n= 0.030 Earth, grassed & winding
35.6	1,326	Total			

Subcatchment 9S: Pond 2B



Hydrograph for Subcatchment 9S: Pond 2B

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.50	0.01	0.00	0.00
0.75	0.02	0.00	0.00
1.00	0.02	0.00	0.00
1.25	0.03	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.25	0.07	0.00	0.00
2.50	0.08	0.00	0.00
2.75	0.09	0.00	0.00
3.00	0.11	0.00	0.00
3.25	0.12	0.00	0.00
3.50	0.14	0.00	0.00
3.75	0.15	0.00	0.00
4.00	0.17	0.00	0.00
4.25	0.18	0.00	0.00
4.50	0.20	0.00	0.00
4.75	0.22	0.00	0.00
5.00	0.24	0.00	0.00
5.25	0.26	0.00	0.00
5.50	0.28	0.00	0.00
5.75	0.30	0.01	0.01
6.00	0.33	0.01	0.01
6.25	0.35	0.01	0.02
6.50	0.37	0.02	0.02
6.75	0.40	0.02	0.03
7.00	0.43	0.03	0.03
7.25	0.45	0.04	0.04
7.50	0.48	0.05	0.04
7.75	0.51	0.06	0.05
8.00	0.54	0.07	0.05
8.25	0.57	0.08	0.06
8.50	0.60	0.09	0.06
8.75	0.63	0.11	0.07
9.00	0.66	0.12	0.08
9.25	0.71	0.15	0.09
9.50	0.77	0.18	0.12
9.75	0.82	0.21	0.15
10.00	0.88	0.25	0.17
10.25	0.94	0.28	0.18
10.50	1.00	0.32	0.20
10.75	1.10	0.39	0.22
11.00	1.24	0.48	0.31
11.25	1.40	0.60	0.44
11.50	1.59	0.75	0.59
11.75	1.97	1.07	0.78
12.00	2.97	1.95	1.39
12.25	4.44	3.34	**3.74**
12.50	4.82	3.70	**5.75**
12.75	5.01	3.89	3.90
13.00	5.17	4.04	2.20
13.25	5.31	4.17	1.38
13.50	5.41	4.27	0.98
13.75	5.47	4.33	0.72
14.00	5.53	4.39	0.50
14.25	5.59	4.44	0.39
14.50	5.64	4.50	0.35
14.75	5.70	4.55	0.32
15.00	5.75	4.60	0.31
15.25	5.78	4.63	0.29
15.50	5.81	4.66	0.24
15.75	5.84	4.69	0.20
16.00	5.87	4.72	0.18
16.25	5.90	4.75	0.17
16.50	5.93	4.78	0.16
16.75	5.96	4.81	0.16
17.00	5.98	4.83	0.16
17.25	6.01	4.86	0.15
17.50	6.04	4.88	0.15
17.75	6.06	4.90	0.14
18.00	6.08	4.93	0.14
18.25	6.11	4.95	0.13
18.50	6.13	4.97	0.13
18.75	6.15	4.99	0.12
19.00	6.17	5.01	0.12
19.25	6.19	5.03	0.12
19.50	6.21	5.05	0.11
19.75	6.23	5.07	0.11
20.00	6.24	5.08	0.10
20.25	6.26	5.10	0.10
20.50	6.27	5.11	0.09
20.75	6.29	5.13	0.09
21.00	6.30	5.14	0.09
21.25	6.32	5.15	0.08
21.50	6.33	5.17	0.08
21.75	6.34	5.18	0.07
22.00	6.35	5.19	0.07
22.25	6.36	5.20	0.06
22.50	6.37	5.21	0.06
22.75	6.38	5.22	0.05
23.00	6.39	5.22	0.05
23.25	6.39	5.23	0.05
23.50	6.40	5.24	0.04
23.75	6.41	5.24	0.04
24.00	**6.41**	**5.25**	0.03

Summary for Subcatchment 10S: Undetained

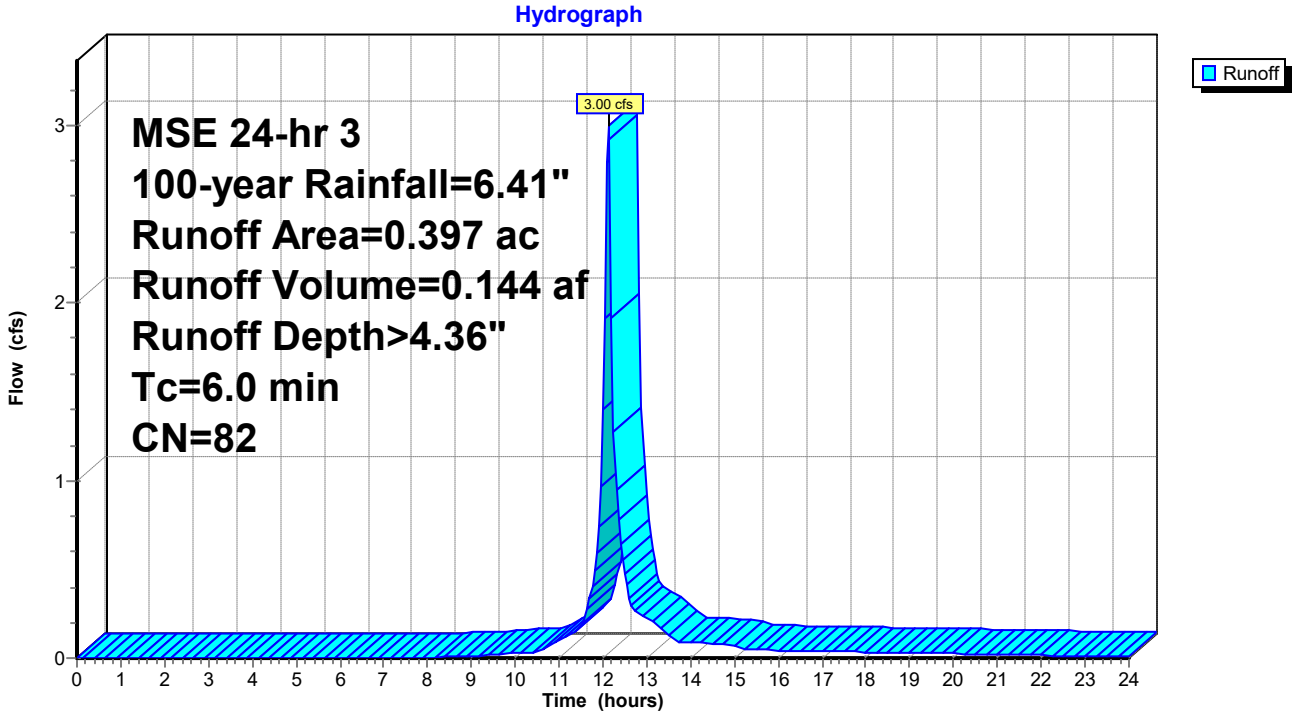
Runoff = 3.00 cfs @ 12.13 hrs, Volume= 0.144 af, Depth> 4.36"
Routed to Link 5L : East Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-year Rainfall=6.41"

Area (ac)	CN	Description
0.086	74	>75% Grass cover, Good, HSG C
0.245	80	>75% Grass cover, Good, HSG D
0.017	98	Paved parking, HSG C
0.049	98	Paved parking, HSG D
0.397	82	Weighted Average
0.331		83.38% Pervious Area
0.066		16.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Subcatchment 10S: Undetained



Hydrograph for Subcatchment 10S: Undetained

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.50	0.01	0.00	0.00
0.75	0.02	0.00	0.00
1.00	0.02	0.00	0.00
1.25	0.03	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.25	0.07	0.00	0.00
2.50	0.08	0.00	0.00
2.75	0.09	0.00	0.00
3.00	0.11	0.00	0.00
3.25	0.12	0.00	0.00
3.50	0.14	0.00	0.00
3.75	0.15	0.00	0.00
4.00	0.17	0.00	0.00
4.25	0.18	0.00	0.00
4.50	0.20	0.00	0.00
4.75	0.22	0.00	0.00
5.00	0.24	0.00	0.00
5.25	0.26	0.00	0.00
5.50	0.28	0.00	0.00
5.75	0.30	0.00	0.00
6.00	0.33	0.00	0.00
6.25	0.35	0.00	0.00
6.50	0.37	0.00	0.00
6.75	0.40	0.00	0.00
7.00	0.43	0.00	0.00
7.25	0.45	0.00	0.00
7.50	0.48	0.00	0.00
7.75	0.51	0.00	0.00
8.00	0.54	0.00	0.00
8.25	0.57	0.01	0.00
8.50	0.60	0.01	0.01
8.75	0.63	0.02	0.01
9.00	0.66	0.02	0.01
9.25	0.71	0.03	0.02
9.50	0.77	0.04	0.02
9.75	0.82	0.06	0.02
10.00	0.88	0.07	0.03
10.25	0.94	0.09	0.03
10.50	1.00	0.12	0.04
10.75	1.10	0.15	0.07
11.00	1.24	0.21	0.10
11.25	1.40	0.29	0.13
11.50	1.59	0.40	0.17
11.75	1.97	0.63	0.40
12.00	2.97	1.35	**1.40**
12.25	4.44	2.58	**1.27**
12.50	4.82	2.92	0.47
12.75	5.01	3.09	0.27
13.00	5.17	3.24	0.23
13.25	5.31	3.35	0.19
13.50	5.41	3.45	0.14
13.75	5.47	3.50	0.09
14.00	5.53	3.56	0.09
14.25	5.59	3.61	0.08
14.50	5.64	3.66	0.08
14.75	5.70	3.71	0.08
15.00	5.75	3.76	0.08
15.25	5.78	3.79	0.05
15.50	5.81	3.82	0.05
15.75	5.84	3.84	0.04
16.00	5.87	3.87	0.04
16.25	5.90	3.90	0.04
16.50	5.93	3.92	0.04
16.75	5.96	3.95	0.04
17.00	5.98	3.97	0.04
17.25	6.01	4.00	0.04
17.50	6.04	4.02	0.04
17.75	6.06	4.04	0.04
18.00	6.08	4.06	0.03
18.25	6.11	4.08	0.03
18.50	6.13	4.11	0.03
18.75	6.15	4.12	0.03
19.00	6.17	4.14	0.03
19.25	6.19	4.16	0.03
19.50	6.21	4.18	0.03
19.75	6.23	4.20	0.03
20.00	6.24	4.21	0.03
20.25	6.26	4.23	0.02
20.50	6.27	4.24	0.02
20.75	6.29	4.25	0.02
21.00	6.30	4.27	0.02
21.25	6.32	4.28	0.02
21.50	6.33	4.29	0.02
21.75	6.34	4.30	0.02
22.00	6.35	4.31	0.02
22.25	6.36	4.32	0.01
22.50	6.37	4.33	0.01
22.75	6.38	4.34	0.01
23.00	6.39	4.34	0.01
23.25	6.39	4.35	0.01
23.50	6.40	4.36	0.01
23.75	6.41	4.36	0.01
24.00	**6.41**	**4.37**	0.01

Summary for Pond 1P: Pond 1

Inflow Area = 14.872 ac, 81.91% Impervious, Inflow Depth > 5.72" for 100-year event
Inflow = 63.51 cfs @ 12.50 hrs, Volume= 7.093 af
Outflow = 5.44 cfs @ 14.04 hrs, Volume= 4.484 af, Atten= 91%, Lag= 92.4 min
Primary = 5.44 cfs @ 14.04 hrs, Volume= 4.484 af
Routed to Link 5L : East Site
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : East Site

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Starting Elev= 843.00' Surf.Area= 1.418 ac Storage= 5.526 af
Peak Elev= 846.00' @ 14.04 hrs Surf.Area= 1.996 ac Storage= 10.566 af (5.040 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 269.2 min (1,056.8 - 787.5)

Volume	Invert	Avail.Storage	Storage Description
#1	838.00'	12.667 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

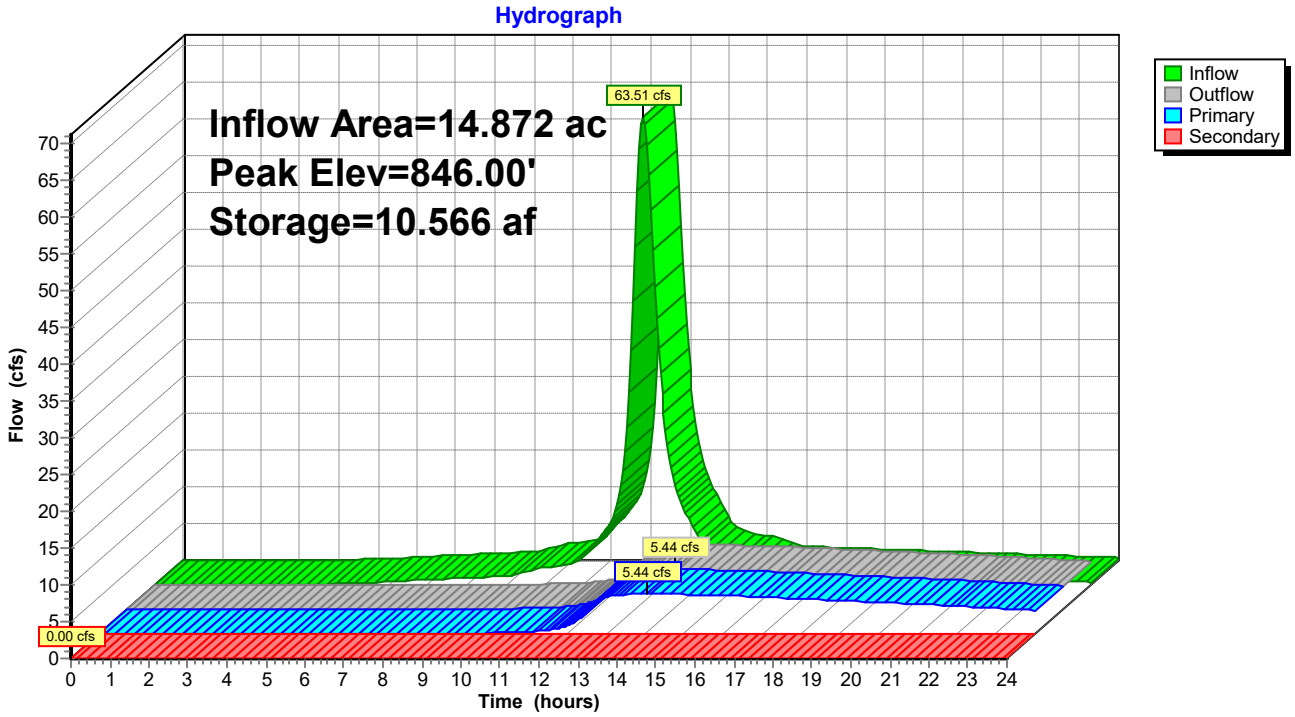
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
838.00	0.979	0.000	0.000
839.00	1.020	0.999	0.999
840.00	1.061	1.040	2.040
841.00	1.102	1.081	3.121
842.00	1.145	1.124	4.245
843.00	1.418	1.281	5.526
844.00	1.571	1.494	7.021
845.00	1.757	1.664	8.685
846.00	1.995	1.876	10.561
847.00	2.218	2.106	12.667

Device	Routing	Invert	Outlet Devices
#1	Primary	843.00'	**12.0" Round Culvert** L= 38.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 843.00' / 843.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Secondary	846.50'	**Asymmetrical Weir, C= 3.27** Offset (feet) 0.00 4.00 14.00 18.00 Height (feet) 0.50 0.00 0.00 0.50

Primary OutFlow Max=5.44 cfs @ 14.04 hrs HW=846.00' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 5.44 cfs @ 6.92 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=843.00' TW=0.00' (Dynamic Tailwater)
└─**2=Asymmetrical Weir** (Controls 0.00 cfs)

Pond 1P: Pond 1



Hydrograph for Pond 1P: Pond 1

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	5.526	843.00	0.00	0.00	**0.00**
0.50	0.00	5.526	843.00	0.00	0.00	0.00
1.00	0.00	5.526	843.00	0.00	0.00	0.00
1.50	0.00	5.526	843.00	0.00	0.00	0.00
2.00	0.00	5.526	843.00	0.00	0.00	0.00
2.50	0.00	5.526	843.00	0.00	0.00	0.00
3.00	0.00	5.526	843.00	0.00	0.00	0.00
3.50	0.00	5.527	843.00	0.00	0.00	0.00
4.00	0.02	5.527	843.00	0.00	0.00	0.00
4.50	0.10	5.529	843.00	0.00	0.00	0.00
5.00	0.20	5.535	843.01	0.00	0.00	0.00
5.50	0.31	5.546	843.01	0.00	0.00	0.00
6.00	0.43	5.562	843.02	0.00	0.00	0.00
6.50	0.56	5.582	843.04	0.00	0.00	0.00
7.00	0.69	5.608	843.06	0.00	0.00	0.00
7.50	0.82	5.639	843.08	0.01	0.01	0.00
8.00	0.95	5.675	843.10	0.01	0.01	0.00
8.50	1.09	5.717	843.13	0.02	0.02	0.00
9.00	1.22	5.763	843.17	0.03	0.03	0.00
9.50	1.73	5.819	843.20	0.06	0.06	0.00
10.00	2.37	5.903	843.26	0.10	0.10	0.00
10.50	2.73	6.003	843.33	0.18	0.18	0.00
11.00	3.95	6.122	843.41	0.29	0.29	0.00
11.50	7.14	6.333	843.55	0.54	0.54	0.00
12.00	15.55	6.711	843.80	1.11	1.11	0.00
12.50	**63.51**	8.267	844.76	3.35	3.35	0.00
13.00	25.81	9.972	845.70	5.01	5.01	0.00
13.50	11.11	10.450	845.94	5.36	5.36	0.00
14.00	5.73	**10.566**	**846.00**	**5.43**	**5.43**	0.00
14.50	3.76	**10.526**	**845.98**	**5.41**	**5.41**	0.00
15.00	3.33	10.449	845.94	5.35	5.35	0.00
15.50	2.60	10.356	845.90	5.29	5.29	0.00
16.00	1.95	10.230	845.83	5.20	5.20	0.00
16.50	1.77	10.093	845.76	5.10	5.10	0.00
17.00	1.67	9.956	845.69	4.99	4.99	0.00
17.50	1.57	9.819	845.62	4.89	4.89	0.00
18.00	1.48	9.682	845.55	4.78	4.78	0.00
18.50	1.39	9.546	845.47	4.66	4.66	0.00
19.00	1.29	9.411	845.40	4.55	4.55	0.00
19.50	1.20	9.277	845.33	4.43	4.43	0.00
20.00	1.11	9.144	845.26	4.31	4.31	0.00
20.50	1.01	9.013	845.18	4.18	4.18	0.00
21.00	0.92	8.883	845.11	4.05	4.05	0.00
21.50	0.82	8.754	845.04	3.92	3.92	0.00
22.00	0.73	8.627	844.97	3.78	3.78	0.00
22.50	0.64	8.502	844.90	3.63	3.63	0.00
23.00	0.54	8.379	844.82	3.49	3.49	0.00
23.50	0.45	8.259	844.75	3.34	3.34	0.00
24.00	0.35	8.141	844.69	3.18	3.18	0.00

Summary for Pond 2P: Pond 2 2024

Inflow Area = 15.842 ac, 79.74% Impervious, Inflow Depth > 5.62" for 100-year event
Inflow = 66.36 cfs @ 12.47 hrs, Volume= 7.421 af
Outflow = 3.14 cfs @ 15.33 hrs, Volume= 3.046 af, Atten= 95%, Lag= 171.4 min
Primary = 3.14 cfs @ 15.33 hrs, Volume= 3.046 af
Routed to Link 5L : East Site
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : East Site

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Starting Elev= 846.00' Surf.Area= 1.136 ac Storage= 4.194 af
Peak Elev= 849.81' @ 15.33 hrs Surf.Area= 1.890 ac Storage= 9.816 af (5.622 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 281.6 min (1,068.7 - 787.2)

Volume	Invert	Avail.Storage	Storage Description
#1	841.00'	11.135 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

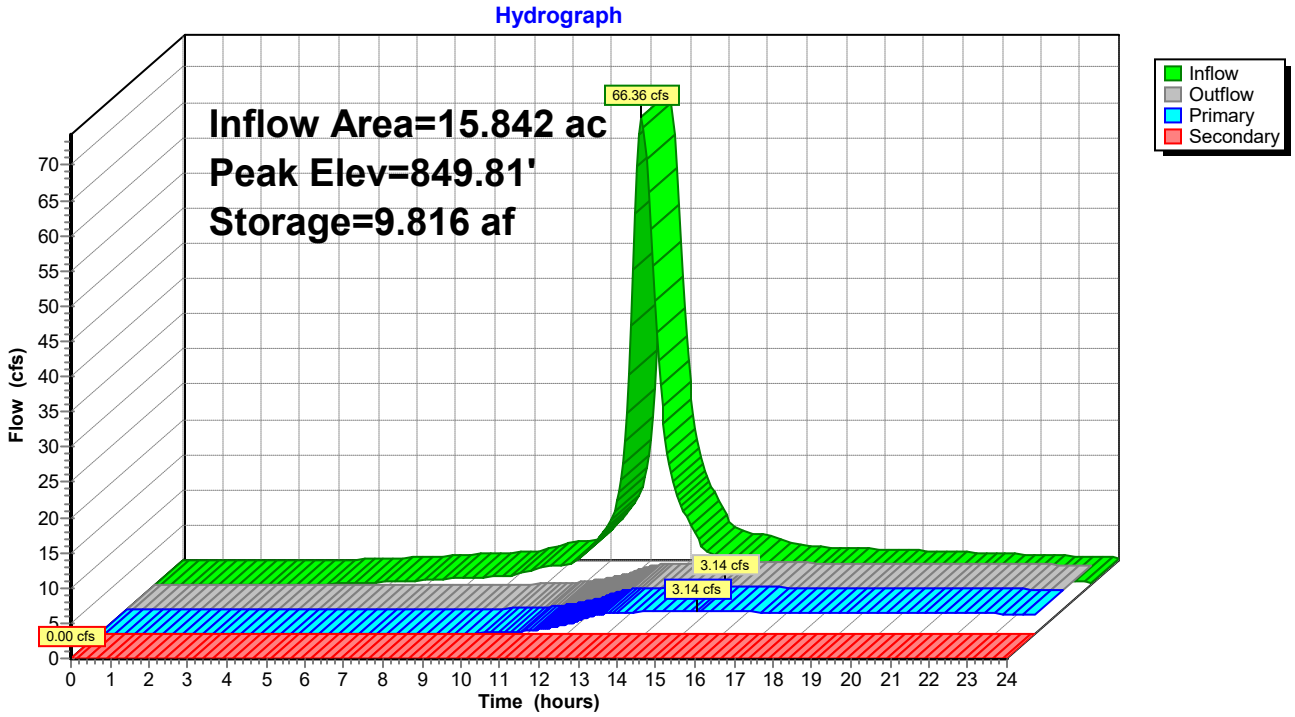
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
841.00	0.730	0.000	0.000
842.00	0.764	0.747	0.747
843.00	0.798	0.781	1.528
844.00	0.832	0.815	2.343
845.00	0.867	0.849	3.192
846.00	1.136	1.001	4.194
847.00	1.274	1.205	5.399
848.00	1.457	1.365	6.764
849.00	1.712	1.585	8.349
850.00	1.930	1.821	10.170
850.50	1.930	0.965	11.135

Device	Routing	Invert	Outlet Devices
#1	Primary	846.00'	**12.0" Round Culvert** L= 38.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 846.00' / 846.00' S= 0.0000 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf
#2	Device 1	846.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	850.00'	**Asymmetrical Weir, C= 3.27** Offset (feet) 0.00 4.00 14.00 18.00 Height (feet) 0.50 0.00 0.00 0.50

Primary OutFlow Max=3.14 cfs @ 15.33 hrs HW=849.81' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.14 cfs of 6.02 cfs potential flow)
└─**2=Orifice/Grate** (Orifice Controls 3.14 cfs @ 8.98 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=846.00' TW=0.00' (Dynamic Tailwater)
└─**3=Asymmetrical Weir** (Controls 0.00 cfs)

Pond 2P: Pond 2 2024



Hydrograph for Pond 2P: Pond 2 2024

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	4.194	846.00	0.00	0.00	**0.00**
0.50	0.00	4.194	846.00	0.00	0.00	0.00
1.00	0.00	4.194	846.00	0.00	0.00	0.00
1.50	0.00	4.194	846.00	0.00	0.00	0.00
2.00	0.00	4.194	846.00	0.00	0.00	0.00
2.50	0.00	4.194	846.00	0.00	0.00	0.00
3.00	0.00	4.194	846.00	0.00	0.00	0.00
3.50	0.00	4.194	846.00	0.00	0.00	0.00
4.00	0.02	4.194	846.00	0.00	0.00	0.00
4.50	0.10	4.197	846.00	0.00	0.00	0.00
5.00	0.20	4.203	846.01	0.00	0.00	0.00
5.50	0.32	4.214	846.02	0.00	0.00	0.00
6.00	0.44	4.229	846.03	0.00	0.00	0.00
6.50	0.57	4.250	846.05	0.00	0.00	0.00
7.00	0.71	4.277	846.07	0.00	0.00	0.00
7.50	0.85	4.308	846.10	0.01	0.01	0.00
8.00	0.99	4.346	846.13	0.02	0.02	0.00
8.50	1.13	4.388	846.17	0.03	0.03	0.00
9.00	1.27	4.436	846.21	0.05	0.05	0.00
9.50	1.84	4.494	846.26	0.09	0.09	0.00
10.00	2.50	4.580	846.33	0.16	0.16	0.00
10.50	2.87	4.683	846.42	0.27	0.27	0.00
11.00	4.26	4.805	846.52	0.44	0.44	0.00
11.50	7.70	5.025	846.70	0.81	0.81	0.00
12.00	**17.25**	5.427	847.02	1.39	1.39	0.00
12.50	**65.93**	7.170	848.27	2.34	2.34	0.00
13.00	25.42	8.949	849.34	2.92	2.92	0.00
13.50	11.18	9.512	849.65	3.06	3.06	0.00
14.00	5.74	9.726	849.77	3.11	3.11	0.00
14.50	3.93	9.786	849.80	3.13	3.13	0.00
15.00	3.52	**9.809**	**849.81**	**3.13**	**3.13**	0.00
15.50	2.70	**9.813**	**849.81**	**3.14**	**3.14**	0.00
16.00	2.05	9.778	849.79	3.13	3.13	0.00
16.50	1.88	9.730	849.77	3.12	3.12	0.00
17.00	1.77	9.677	849.74	3.10	3.10	0.00
17.50	1.67	9.620	849.71	3.09	3.09	0.00
18.00	1.57	9.559	849.68	3.07	3.07	0.00
18.50	1.47	9.495	849.64	3.06	3.06	0.00
19.00	1.37	9.428	849.61	3.04	3.04	0.00
19.50	1.27	9.357	849.57	3.02	3.02	0.00
20.00	1.17	9.283	849.53	3.00	3.00	0.00
20.50	1.07	9.206	849.49	2.98	2.98	0.00
21.00	0.97	9.125	849.44	2.96	2.96	0.00
21.50	0.87	9.041	849.39	2.94	2.94	0.00
22.00	0.77	8.954	849.35	2.92	2.92	0.00
22.50	0.67	8.864	849.30	2.89	2.89	0.00
23.00	0.57	8.770	849.24	2.87	2.87	0.00
23.50	0.47	8.674	849.19	2.84	2.84	0.00
24.00	0.37	8.575	849.13	2.81	2.81	0.00

Summary for Pond 3P: Pond 3

Inflow Area = 9.911 ac, 83.70% Impervious, Inflow Depth > 5.81" for 100-year event
Inflow = 45.83 cfs @ 12.43 hrs, Volume= 4.798 af
Outflow = 3.90 cfs @ 13.87 hrs, Volume= 3.248 af, Atten= 91%, Lag= 86.4 min
Primary = 3.90 cfs @ 13.87 hrs, Volume= 3.248 af
Routed to Link 6L : West Site
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 6L : West Site

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Starting Elev= 846.00' Surf.Area= 0.907 ac Storage= 3.504 af
Peak Elev= 849.23' @ 13.87 hrs Surf.Area= 1.212 ac Storage= 6.855 af (3.351 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 268.4 min (1,047.6 - 779.2)

Volume	Invert	Avail.Storage	Storage Description
#1	841.00'	7.835 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

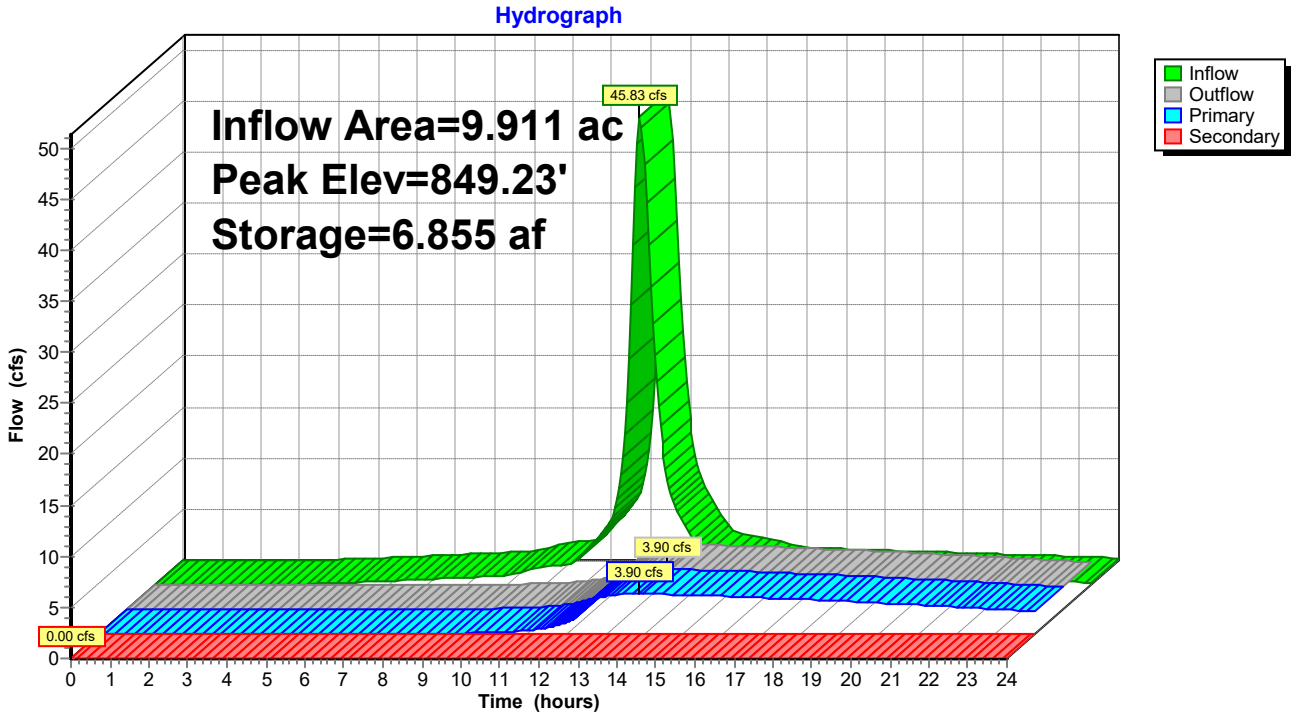
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
841.00	0.607	0.000	0.000
842.00	0.637	0.622	0.622
843.00	0.683	0.660	1.282
844.00	0.698	0.690	1.973
845.00	0.729	0.714	2.686
846.00	0.907	0.818	3.504
847.00	0.980	0.943	4.447
848.00	1.055	1.018	5.465
849.00	1.176	1.115	6.580
850.00	1.333	1.255	7.835

Device	Routing	Invert	Outlet Devices
#1	Primary	846.00'	**10.0" Round Culvert** L= 38.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 846.00' / 846.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.55 sf
#2	Secondary	849.50'	**Asymmetrical Weir, C= 3.27** Offset (feet) 0.00 4.00 14.00 18.00 Height (feet) 0.50 0.00 0.00 0.50

Primary OutFlow Max=3.90 cfs @ 13.87 hrs HW=849.23' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 3.90 cfs @ 7.15 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=846.00' TW=0.00' (Dynamic Tailwater)
└─**2=Asymmetrical Weir** (Controls 0.00 cfs)

Pond 3P: Pond 3



Hydrograph for Pond 3P: Pond 3

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	3.504	846.00	0.00	0.00	**0.00**
0.50	0.00	3.504	846.00	0.00	0.00	0.00
1.00	0.00	3.504	846.00	0.00	0.00	0.00
1.50	0.00	3.504	846.00	0.00	0.00	0.00
2.00	0.00	3.504	846.00	0.00	0.00	0.00
2.50	0.00	3.504	846.00	0.00	0.00	0.00
3.00	0.00	3.504	846.00	0.00	0.00	0.00
3.50	0.01	3.504	846.00	0.00	0.00	0.00
4.00	0.07	3.506	846.00	0.00	0.00	0.00
4.50	0.14	3.510	846.01	0.00	0.00	0.00
5.00	0.21	3.517	846.01	0.00	0.00	0.00
5.50	0.29	3.527	846.03	0.00	0.00	0.00
6.00	0.38	3.541	846.04	0.00	0.00	0.00
6.50	0.47	3.559	846.06	0.00	0.00	0.00
7.00	0.56	3.580	846.08	0.01	0.01	0.00
7.50	0.64	3.604	846.11	0.01	0.01	0.00
8.00	0.73	3.632	846.14	0.02	0.02	0.00
8.50	0.82	3.663	846.17	0.03	0.03	0.00
9.00	0.91	3.697	846.21	0.06	0.06	0.00
9.50	1.36	3.738	846.26	0.09	0.09	0.00
10.00	1.75	3.799	846.32	0.15	0.15	0.00
10.50	1.97	3.868	846.40	0.23	0.23	0.00
11.00	3.04	3.952	846.48	0.36	0.36	0.00
11.50	5.33	4.104	846.65	0.63	0.63	0.00
12.00	**12.49**	4.383	846.93	1.16	1.16	0.00
12.50	**44.08**	5.616	848.14	2.88	2.88	0.00
13.00	13.86	6.595	849.01	3.72	3.72	0.00
13.50	6.36	**6.818**	**849.20**	**3.87**	**3.87**	0.00
14.00	3.27	**6.851**	**849.23**	**3.90**	**3.90**	0.00
14.50	2.40	6.803	849.19	3.86	3.86	0.00
15.00	2.19	6.738	849.13	3.82	3.82	0.00
15.50	1.61	6.663	849.07	3.77	3.77	0.00
16.00	1.26	6.566	848.99	3.70	3.70	0.00
16.50	1.17	6.465	848.90	3.62	3.62	0.00
17.00	1.10	6.364	848.81	3.54	3.54	0.00
17.50	1.04	6.263	848.73	3.46	3.46	0.00
18.00	0.98	6.164	848.64	3.38	3.38	0.00
18.50	0.92	6.065	848.55	3.30	3.30	0.00
19.00	0.85	5.967	848.46	3.21	3.21	0.00
19.50	0.79	5.870	848.38	3.13	3.13	0.00
20.00	0.73	5.774	848.29	3.04	3.04	0.00
20.50	0.67	5.679	848.20	2.94	2.94	0.00
21.00	0.60	5.585	848.11	2.85	2.85	0.00
21.50	0.54	5.493	848.03	2.75	2.75	0.00
22.00	0.48	5.403	847.94	2.65	2.65	0.00
22.50	0.41	5.314	847.86	2.55	2.55	0.00
23.00	0.35	5.227	847.77	2.44	2.44	0.00
23.50	0.29	5.141	847.69	2.33	2.33	0.00
24.00	0.23	5.058	847.61	2.22	2.22	0.00

Summary for Pond 4P: Pond 4

Inflow Area = 8.387 ac, 83.78% Impervious, Inflow Depth > 5.70" for 100-year event
Inflow = 50.31 cfs @ 12.27 hrs, Volume= 3.982 af
Outflow = 3.52 cfs @ 13.63 hrs, Volume= 2.788 af, Atten= 93%, Lag= 81.3 min
Primary = 3.52 cfs @ 13.63 hrs, Volume= 2.788 af
Routed to Link 6L : West Site
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 6L : West Site

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Starting Elev= 852.00' Surf.Area= 0.922 ac Storage= 3.499 af
Peak Elev= 854.68' @ 13.63 hrs Surf.Area= 1.181 ac Storage= 6.270 af (2.771 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 264.3 min (1,035.7 - 771.4)

Volume	Invert	Avail.Storage	Storage Description
#1	847.00'	7.955 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

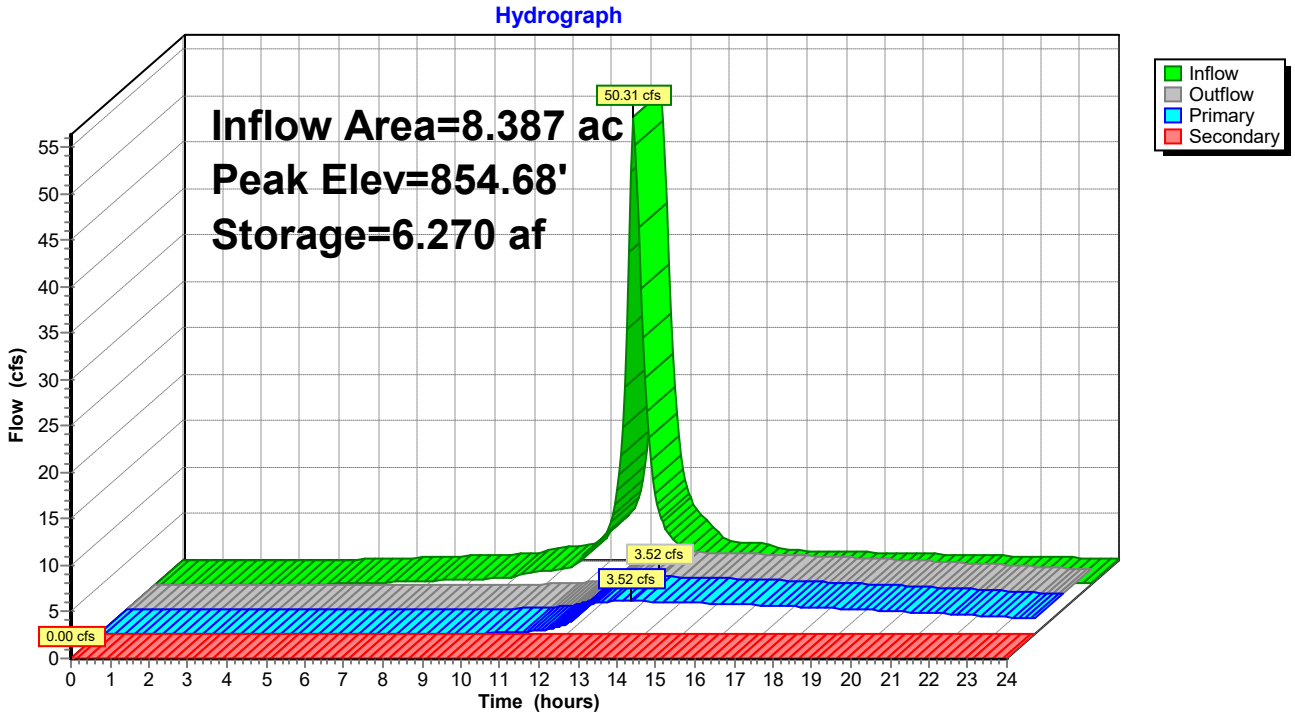
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
847.00	0.599	0.000	0.000
848.00	0.633	0.616	0.616
849.00	0.667	0.650	1.266
850.00	0.702	0.684	1.950
851.00	0.737	0.719	2.670
852.00	0.922	0.830	3.499
853.00	1.001	0.962	4.461
854.00	1.081	1.041	5.502
855.00	1.229	1.155	6.657
856.00	1.368	1.299	7.955

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**10.0" Round Culvert** L= 34.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 852.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.55 sf
#2	Secondary	855.50'	**Asymmetrical Weir, C= 3.27** Offset (feet) 0.00 4.00 14.00 18.00 Height (feet) 0.50 0.00 0.00 0.50

Primary OutFlow Max=3.52 cfs @ 13.63 hrs HW=854.68' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 3.52 cfs @ 6.45 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=852.00' TW=0.00' (Dynamic Tailwater)
└─**2=Asymmetrical Weir** (Controls 0.00 cfs)

Pond 4P: Pond 4



Hydrograph for Pond 4P: Pond 4

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	3.499	852.00	0.00	0.00	**0.00**
0.50	0.00	3.499	852.00	0.00	0.00	0.00
1.00	0.00	3.499	852.00	0.00	0.00	0.00
1.50	0.00	3.499	852.00	0.00	0.00	0.00
2.00	0.00	3.499	852.00	0.00	0.00	0.00
2.50	0.00	3.499	852.00	0.00	0.00	0.00
3.00	0.00	3.499	852.00	0.00	0.00	0.00
3.50	0.00	3.500	852.00	0.00	0.00	0.00
4.00	0.03	3.500	852.00	0.00	0.00	0.00
4.50	0.09	3.502	852.00	0.00	0.00	0.00
5.00	0.15	3.507	852.01	0.00	0.00	0.00
5.50	0.22	3.515	852.02	0.00	0.00	0.00
6.00	0.28	3.525	852.03	0.00	0.00	0.00
6.50	0.36	3.538	852.04	0.00	0.00	0.00
7.00	0.43	3.555	852.06	0.00	0.00	0.00
7.50	0.51	3.574	852.08	0.01	0.01	0.00
8.00	0.58	3.596	852.10	0.01	0.01	0.00
8.50	0.66	3.621	852.13	0.02	0.02	0.00
9.00	0.73	3.649	852.16	0.03	0.03	0.00
9.50	1.26	3.687	852.20	0.05	0.05	0.00
10.00	1.47	3.741	852.26	0.09	0.09	0.00
10.50	1.64	3.800	852.32	0.15	0.15	0.00
11.00	3.14	3.884	852.41	0.26	0.26	0.00
11.50	5.14	4.039	852.57	0.51	0.51	0.00
12.00	**16.95**	4.367	852.91	1.14	1.14	0.00
12.50	**26.55**	5.789	854.26	3.09	3.09	0.00
13.00	6.72	6.196	854.62	3.45	3.45	0.00
13.50	4.08	**6.267**	**854.68**	**3.51**	**3.51**	0.00
14.00	2.15	**6.244**	**854.66**	**3.49**	**3.49**	0.00
14.50	1.92	6.184	854.61	3.44	3.44	0.00
15.00	1.79	6.119	854.55	3.39	3.39	0.00
15.50	1.13	6.041	854.48	3.32	3.32	0.00
16.00	1.02	5.949	854.40	3.24	3.24	0.00
16.50	0.96	5.858	854.32	3.16	3.16	0.00
17.00	0.91	5.768	854.24	3.07	3.07	0.00
17.50	0.86	5.679	854.16	2.98	2.98	0.00
18.00	0.80	5.592	854.08	2.89	2.89	0.00
18.50	0.75	5.507	854.00	2.80	2.80	0.00
19.00	0.70	5.423	853.93	2.71	2.71	0.00
19.50	0.65	5.341	853.85	2.61	2.61	0.00
20.00	0.59	5.261	853.77	2.51	2.51	0.00
20.50	0.54	5.182	853.70	2.41	2.41	0.00
21.00	0.49	5.106	853.63	2.31	2.31	0.00
21.50	0.43	5.032	853.56	2.20	2.20	0.00
22.00	0.38	4.960	853.49	2.10	2.10	0.00
22.50	0.33	4.890	853.42	1.99	1.99	0.00
23.00	0.28	4.823	853.36	1.87	1.87	0.00
23.50	0.22	4.759	853.29	1.76	1.76	0.00
24.00	0.17	4.697	853.23	1.64	1.64	0.00

Summary for Pond 10P: Inlet

Inflow Area = 1.415 ac, 60.21% Impervious, Inflow Depth > 5.24" for 100-year event
Inflow = 5.78 cfs @ 12.47 hrs, Volume= 0.617 af
Outflow = 5.78 cfs @ 12.47 hrs, Volume= 0.617 af, Atten= 0%, Lag= 0.0 min
Primary = 4.21 cfs @ 12.47 hrs, Volume= 0.578 af
Routed to Pond 2P : Pond 2 2024
Secondary = 1.57 cfs @ 12.47 hrs, Volume= 0.040 af
Routed to Pond 1P : Pond 1

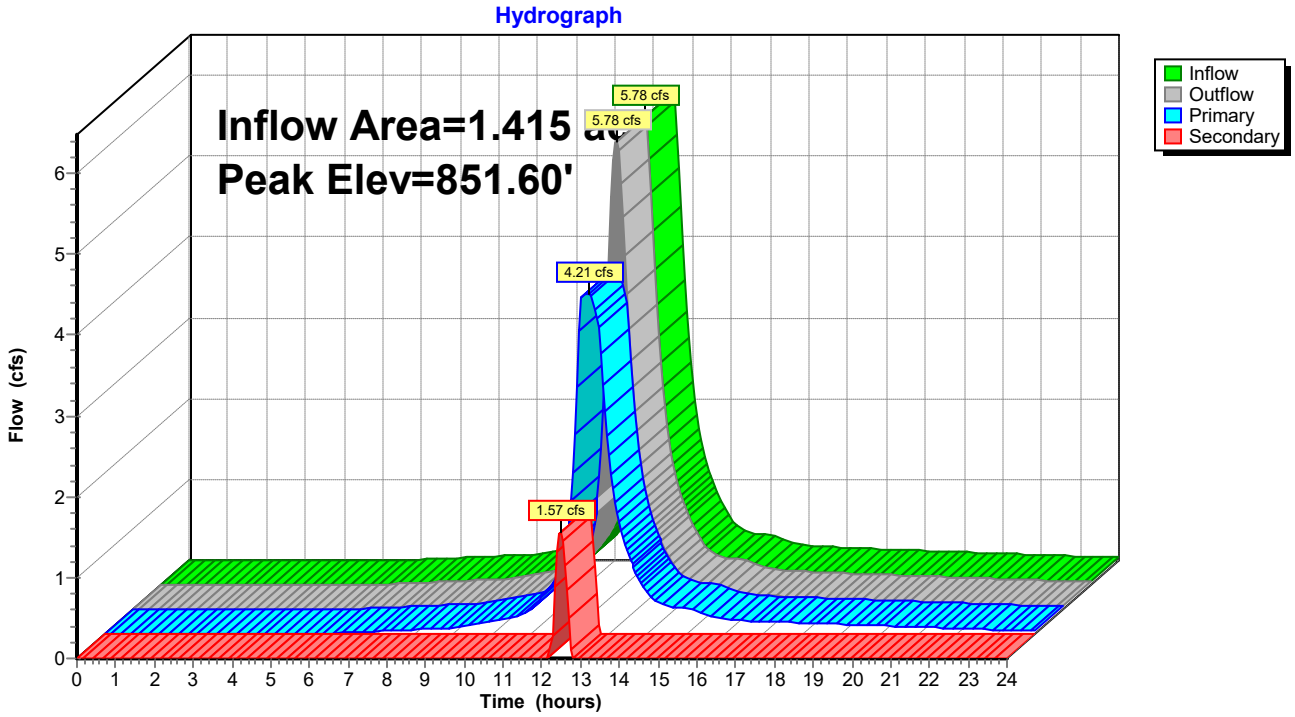
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 851.60' @ 12.47 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	848.27'	**12.0" Round Culvert** L= 187.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 848.27' / 847.30' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	851.50'	**20.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=4.21 cfs @ 12.47 hrs HW=851.60' TW=848.18' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 4.21 cfs @ 5.36 fps)

Secondary OutFlow Max=1.54 cfs @ 12.47 hrs HW=851.60' TW=844.68' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 1.54 cfs @ 0.79 fps)

Pond 10P: Inlet



Hydrograph for Pond 10P: Inlet

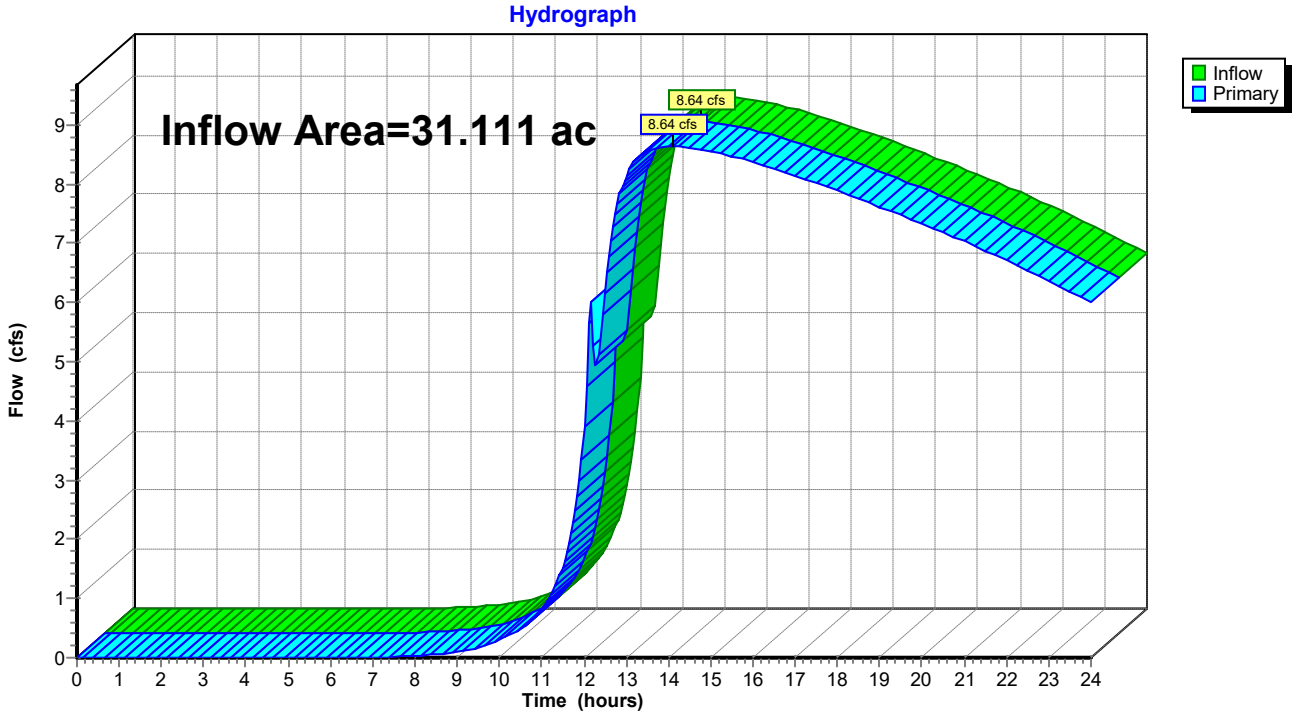
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	848.27	0.00	0.00	0.00
0.50	0.00	848.27	0.00	0.00	0.00
1.00	0.00	848.27	0.00	0.00	0.00
1.50	0.00	848.27	0.00	0.00	0.00
2.00	0.00	848.27	0.00	0.00	0.00
2.50	0.00	848.27	0.00	0.00	0.00
3.00	0.00	848.27	0.00	0.00	0.00
3.50	0.00	848.27	0.00	0.00	0.00
4.00	0.00	848.27	0.00	0.00	0.00
4.50	0.00	848.27	0.00	0.00	0.00
5.00	0.00	848.28	0.00	0.00	0.00
5.50	0.00	848.31	0.00	0.00	0.00
6.00	0.01	848.33	0.01	0.01	0.00
6.50	0.02	848.36	0.02	0.02	0.00
7.00	0.03	848.37	0.03	0.03	0.00
7.50	0.04	848.39	0.04	0.04	0.00
8.00	0.05	848.40	0.05	0.05	0.00
8.50	0.06	848.42	0.06	0.06	0.00
9.00	0.08	848.43	0.08	0.08	0.00
9.50	0.12	848.47	0.12	0.12	0.00
10.00	0.17	848.50	0.17	0.17	0.00
10.50	0.20	848.52	0.20	0.20	0.00
11.00	0.31	848.59	0.31	0.31	0.00
11.50	0.59	848.71	0.59	0.59	0.00
12.00	**1.39**	**848.98**	**1.39**	**1.39**	**0.00**
12.50	**5.75**	**851.60**	**5.75**	**4.21**	**1.54**
13.00	2.20	850.19	2.20	2.20	0.00
13.50	0.98	849.81	0.98	0.98	0.00
14.00	0.50	849.81	0.50	0.50	0.00
14.50	0.35	849.82	0.35	0.35	0.00
15.00	0.31	849.83	0.31	0.31	0.00
15.50	0.24	849.82	0.24	0.24	0.00
16.00	0.18	849.80	0.18	0.18	0.00
16.50	0.16	849.78	0.16	0.16	0.00
17.00	0.16	849.75	0.16	0.16	0.00
17.50	0.15	849.72	0.15	0.15	0.00
18.00	0.14	849.68	0.14	0.14	0.00
18.50	0.13	849.65	0.13	0.13	0.00
19.00	0.12	849.61	0.12	0.12	0.00
19.50	0.11	849.57	0.11	0.11	0.00
20.00	0.10	849.53	0.10	0.10	0.00
20.50	0.09	849.49	0.09	0.09	0.00
21.00	0.09	849.45	0.09	0.09	0.00
21.50	0.08	849.40	0.08	0.08	0.00
22.00	0.07	849.35	0.07	0.07	0.00
22.50	0.06	849.30	0.06	0.06	0.00
23.00	0.05	849.25	0.05	0.05	0.00
23.50	0.04	849.19	0.04	0.04	0.00
24.00	0.03	849.14	0.03	0.03	0.00

Summary for Link 5L: East Site

Inflow Area = 31.111 ac, 79.97% Impervious, Inflow Depth > 2.96" for 100-year event
Inflow = 8.64 cfs @ 14.11 hrs, Volume= 7.675 af
Primary = 8.64 cfs @ 14.11 hrs, Volume= 7.675 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Entire Site

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 5L: East Site



Hydrograph for Link 5L: East Site

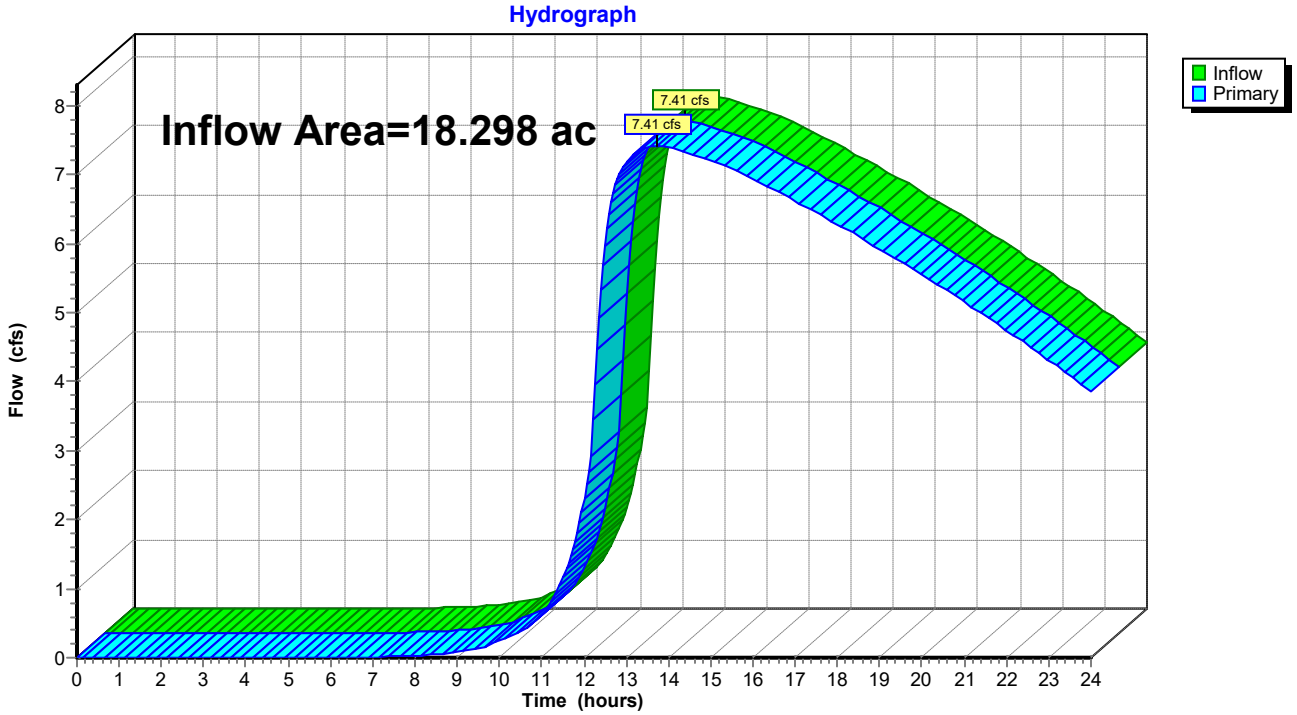
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	13.00	8.15	0.00	8.15
0.25	0.00	0.00	0.00	13.25	8.43	0.00	8.43
0.50	0.00	0.00	0.00	13.50	8.56	0.00	8.56
0.75	0.00	0.00	0.00	13.75	8.60	0.00	8.60
1.00	0.00	0.00	0.00	14.00	**8.64**	0.00	**8.64**
1.25	0.00	0.00	0.00	14.25	**8.64**	0.00	**8.64**
1.50	0.00	0.00	0.00	14.50	8.62	0.00	8.62
1.75	0.00	0.00	0.00	14.75	8.59	0.00	8.59
2.00	0.00	0.00	0.00	15.00	8.57	0.00	8.57
2.25	0.00	0.00	0.00	15.25	8.51	0.00	8.51
2.50	0.00	0.00	0.00	15.50	8.47	0.00	8.47
2.75	0.00	0.00	0.00	15.75	8.42	0.00	8.42
3.00	0.00	0.00	0.00	16.00	8.37	0.00	8.37
3.25	0.00	0.00	0.00	16.25	8.31	0.00	8.31
3.50	0.00	0.00	0.00	16.50	8.26	0.00	8.26
3.75	0.00	0.00	0.00	16.75	8.20	0.00	8.20
4.00	0.00	0.00	0.00	17.00	8.14	0.00	8.14
4.25	0.00	0.00	0.00	17.25	8.07	0.00	8.07
4.50	0.00	0.00	0.00	17.50	8.01	0.00	8.01
4.75	0.00	0.00	0.00	17.75	7.95	0.00	7.95
5.00	0.00	0.00	0.00	18.00	7.89	0.00	7.89
5.25	0.00	0.00	0.00	18.25	7.82	0.00	7.82
5.50	0.00	0.00	0.00	18.50	7.75	0.00	7.75
5.75	0.00	0.00	0.00	18.75	7.69	0.00	7.69
6.00	0.00	0.00	0.00	19.00	7.62	0.00	7.62
6.25	0.00	0.00	0.00	19.25	7.55	0.00	7.55
6.50	0.00	0.00	0.00	19.50	7.48	0.00	7.48
6.75	0.00	0.00	0.00	19.75	7.41	0.00	7.41
7.00	0.01	0.00	0.01	20.00	7.34	0.00	7.34
7.25	0.01	0.00	0.01	20.25	7.26	0.00	7.26
7.50	0.02	0.00	0.02	20.50	7.19	0.00	7.19
7.75	0.02	0.00	0.02	20.75	7.11	0.00	7.11
8.00	0.03	0.00	0.03	21.00	7.03	0.00	7.03
8.25	0.04	0.00	0.04	21.25	6.95	0.00	6.95
8.50	0.06	0.00	0.06	21.50	6.87	0.00	6.87
8.75	0.08	0.00	0.08	21.75	6.79	0.00	6.79
9.00	0.10	0.00	0.10	22.00	6.71	0.00	6.71
9.25	0.13	0.00	0.13	22.25	6.63	0.00	6.63
9.50	0.17	0.00	0.17	22.50	6.54	0.00	6.54
9.75	0.22	0.00	0.22	22.75	6.45	0.00	6.45
10.00	0.29	0.00	0.29	23.00	6.37	0.00	6.37
10.25	0.38	0.00	0.38	23.25	6.28	0.00	6.28
10.50	0.49	0.00	0.49	23.50	6.18	0.00	6.18
10.75	0.63	0.00	0.63	23.75	6.09	0.00	6.09
11.00	0.82	0.00	0.82	24.00	6.00	0.00	6.00
11.25	1.11	0.00	1.11				
11.50	1.52	0.00	1.52				
11.75	2.27	0.00	2.27				
12.00	3.91	0.00	3.91				
12.25	4.94	0.00	4.94				
12.50	6.16	0.00	6.16				
12.75	7.50	0.00	7.50				

Summary for Link 6L: West Site

Inflow Area = 18.298 ac, 83.74% Impervious, Inflow Depth > 3.96" for 100-year event
Inflow = 7.41 cfs @ 13.75 hrs, Volume= 6.037 af
Primary = 7.41 cfs @ 13.75 hrs, Volume= 6.037 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Entire Site

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 6L: West Site



Hydrograph for Link 6L: West Site

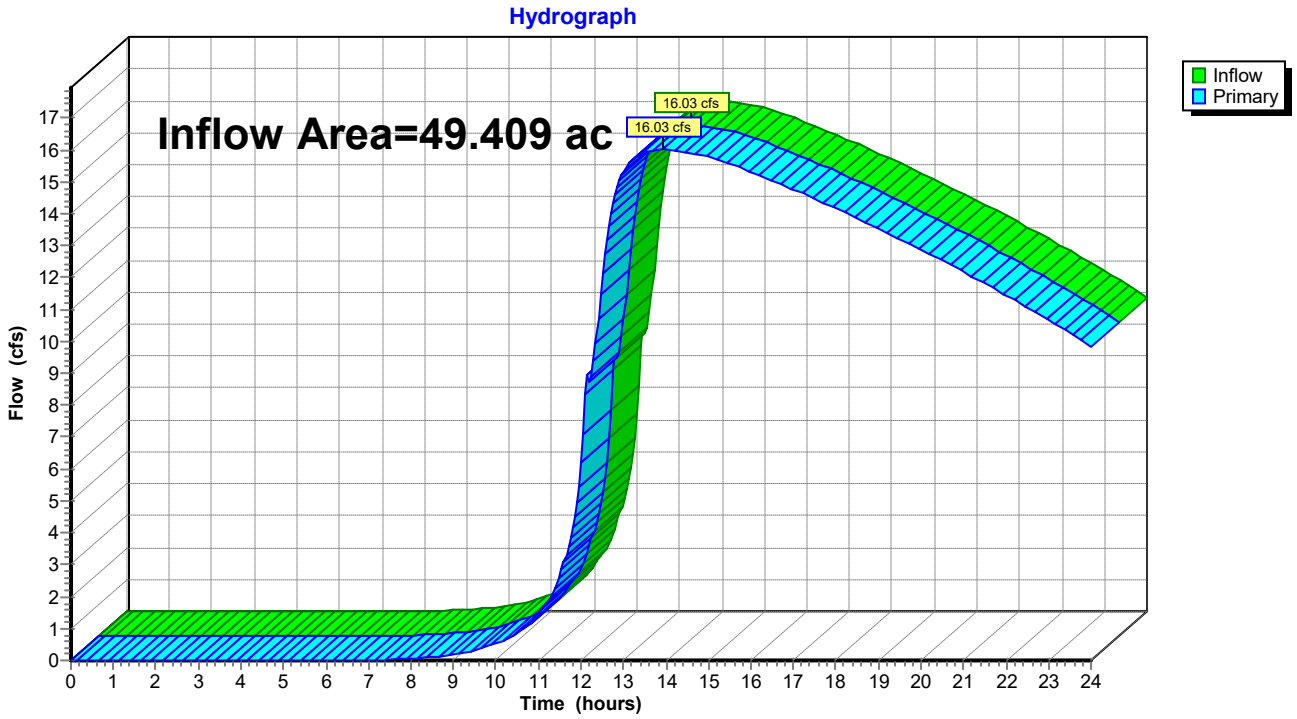
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	13.00	7.17	0.00	7.17
0.25	0.00	0.00	0.00	13.25	7.32	0.00	7.32
0.50	0.00	0.00	0.00	13.50	7.39	0.00	7.39
0.75	0.00	0.00	0.00	13.75	**7.41**	0.00	**7.41**
1.00	0.00	0.00	0.00	14.00	7.39	0.00	7.39
1.25	0.00	0.00	0.00	14.25	7.35	0.00	7.35
1.50	0.00	0.00	0.00	14.50	7.31	0.00	7.31
1.75	0.00	0.00	0.00	14.75	7.26	0.00	7.26
2.00	0.00	0.00	0.00	15.00	7.21	0.00	7.21
2.25	0.00	0.00	0.00	15.25	7.16	0.00	7.16
2.50	0.00	0.00	0.00	15.50	7.09	0.00	7.09
2.75	0.00	0.00	0.00	15.75	7.01	0.00	7.01
3.00	0.00	0.00	0.00	16.00	6.94	0.00	6.94
3.25	0.00	0.00	0.00	16.25	6.86	0.00	6.86
3.50	0.00	0.00	0.00	16.50	6.78	0.00	6.78
3.75	0.00	0.00	0.00	16.75	6.70	0.00	6.70
4.00	0.00	0.00	0.00	17.00	6.61	0.00	6.61
4.25	0.00	0.00	0.00	17.25	6.53	0.00	6.53
4.50	0.00	0.00	0.00	17.50	6.45	0.00	6.45
4.75	0.00	0.00	0.00	17.75	6.36	0.00	6.36
5.00	0.00	0.00	0.00	18.00	6.28	0.00	6.28
5.25	0.00	0.00	0.00	18.25	6.19	0.00	6.19
5.50	0.00	0.00	0.00	18.50	6.10	0.00	6.10
5.75	0.00	0.00	0.00	18.75	6.01	0.00	6.01
6.00	0.00	0.00	0.00	19.00	5.92	0.00	5.92
6.25	0.00	0.00	0.00	19.25	5.83	0.00	5.83
6.50	0.00	0.00	0.00	19.50	5.74	0.00	5.74
6.75	0.01	0.00	0.01	19.75	5.64	0.00	5.64
7.00	0.01	0.00	0.01	20.00	5.55	0.00	5.55
7.25	0.01	0.00	0.01	20.25	5.45	0.00	5.45
7.50	0.02	0.00	0.02	20.50	5.35	0.00	5.35
7.75	0.02	0.00	0.02	20.75	5.26	0.00	5.26
8.00	0.03	0.00	0.03	21.00	5.16	0.00	5.16
8.25	0.04	0.00	0.04	21.25	5.06	0.00	5.06
8.50	0.05	0.00	0.05	21.50	4.95	0.00	4.95
8.75	0.07	0.00	0.07	21.75	4.85	0.00	4.85
9.00	0.09	0.00	0.09	22.00	4.75	0.00	4.75
9.25	0.11	0.00	0.11	22.25	4.64	0.00	4.64
9.50	0.14	0.00	0.14	22.50	4.53	0.00	4.53
9.75	0.18	0.00	0.18	22.75	4.42	0.00	4.42
10.00	0.24	0.00	0.24	23.00	4.31	0.00	4.31
10.25	0.31	0.00	0.31	23.25	4.20	0.00	4.20
10.50	0.38	0.00	0.38	23.50	4.09	0.00	4.09
10.75	0.47	0.00	0.47	23.75	3.97	0.00	3.97
11.00	0.61	0.00	0.61	24.00	3.85	0.00	3.85
11.25	0.83	0.00	0.83				
11.50	1.14	0.00	1.14				
11.75	1.56	0.00	1.56				
12.00	2.30	0.00	2.30				
12.25	3.96	0.00	3.96				
12.50	5.97	0.00	5.97				
12.75	6.84	0.00	6.84				

Summary for Link 7L: Entire Site

Inflow Area = 49.409 ac, 81.37% Impervious, Inflow Depth > 3.33" for 100-year event
Inflow = 16.03 cfs @ 13.93 hrs, Volume= 13.711 af
Primary = 16.03 cfs @ 13.93 hrs, Volume= 13.711 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 7L: Entire Site



Hydrograph for Link 7L: Entire Site

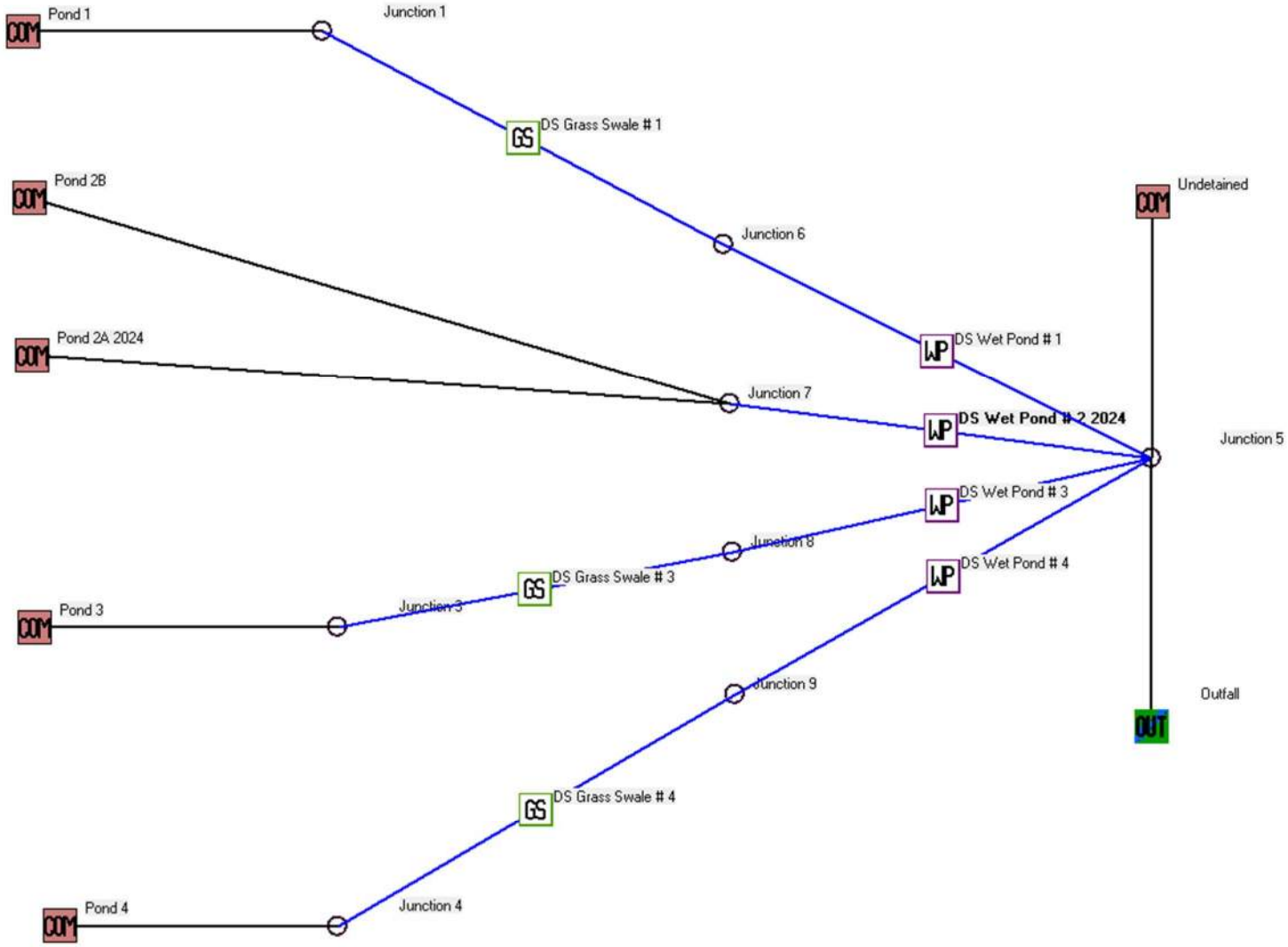
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	13.00	15.32	0.00	15.32
0.25	0.00	0.00	0.00	13.25	15.75	0.00	15.75
0.50	0.00	0.00	0.00	13.50	15.94	0.00	15.94
0.75	0.00	0.00	0.00	13.75	**16.01**	0.00	**16.01**
1.00	0.00	0.00	0.00	14.00	**16.03**	0.00	**16.03**
1.25	0.00	0.00	0.00	14.25	15.99	0.00	15.99
1.50	0.00	0.00	0.00	14.50	15.93	0.00	15.93
1.75	0.00	0.00	0.00	14.75	15.85	0.00	15.85
2.00	0.00	0.00	0.00	15.00	15.77	0.00	15.77
2.25	0.00	0.00	0.00	15.25	15.66	0.00	15.66
2.50	0.00	0.00	0.00	15.50	15.56	0.00	15.56
2.75	0.00	0.00	0.00	15.75	15.44	0.00	15.44
3.00	0.00	0.00	0.00	16.00	15.31	0.00	15.31
3.25	0.00	0.00	0.00	16.25	15.17	0.00	15.17
3.50	0.00	0.00	0.00	16.50	15.03	0.00	15.03
3.75	0.00	0.00	0.00	16.75	14.89	0.00	14.89
4.00	0.00	0.00	0.00	17.00	14.75	0.00	14.75
4.25	0.00	0.00	0.00	17.25	14.61	0.00	14.61
4.50	0.00	0.00	0.00	17.50	14.46	0.00	14.46
4.75	0.00	0.00	0.00	17.75	14.31	0.00	14.31
5.00	0.00	0.00	0.00	18.00	14.16	0.00	14.16
5.25	0.00	0.00	0.00	18.25	14.01	0.00	14.01
5.50	0.00	0.00	0.00	18.50	13.85	0.00	13.85
5.75	0.00	0.00	0.00	18.75	13.70	0.00	13.70
6.00	0.00	0.00	0.00	19.00	13.54	0.00	13.54
6.25	0.00	0.00	0.00	19.25	13.38	0.00	13.38
6.50	0.01	0.00	0.01	19.50	13.22	0.00	13.22
6.75	0.01	0.00	0.01	19.75	13.05	0.00	13.05
7.00	0.01	0.00	0.01	20.00	12.88	0.00	12.88
7.25	0.02	0.00	0.02	20.25	12.71	0.00	12.71
7.50	0.03	0.00	0.03	20.50	12.54	0.00	12.54
7.75	0.05	0.00	0.05	20.75	12.37	0.00	12.37
8.00	0.06	0.00	0.06	21.00	12.19	0.00	12.19
8.25	0.08	0.00	0.08	21.25	12.01	0.00	12.01
8.50	0.11	0.00	0.11	21.50	11.83	0.00	11.83
8.75	0.14	0.00	0.14	21.75	11.64	0.00	11.64
9.00	0.18	0.00	0.18	22.00	11.46	0.00	11.46
9.25	0.24	0.00	0.24	22.25	11.26	0.00	11.26
9.50	0.31	0.00	0.31	22.50	11.07	0.00	11.07
9.75	0.41	0.00	0.41	22.75	10.88	0.00	10.88
10.00	0.53	0.00	0.53	23.00	10.68	0.00	10.68
10.25	0.69	0.00	0.69	23.25	10.48	0.00	10.48
10.50	0.87	0.00	0.87	23.50	10.27	0.00	10.27
10.75	1.11	0.00	1.11	23.75	10.06	0.00	10.06
11.00	1.44	0.00	1.44	24.00	9.85	0.00	9.85
11.25	1.93	0.00	1.93				
11.50	2.66	0.00	2.66				
11.75	3.83	0.00	3.83				
12.00	6.21	0.00	6.21				
12.25	8.90	0.00	8.90				
12.50	12.13	0.00	12.13				
12.75	14.34	0.00	14.34				

APPENDIX 5

Water Quality Calculations

- WinSLAMM Diagram
- WinSLAMM Input
- WinSLAMM Output

BRIOHN DESIGN GROUP


Pond 1
Junction 1
DS Grass Swale # 1
Pond 2B
Undetained
Junction 6
Pond 2A 2024
DS Wet Pond # 1
Junction 7
DS Wet Pond # 2 2024
Junction 5
DS Wet Pond # 3
Junction 8
DS Wet Pond # 4
DS Grass Swale # 3
Pond 3
Junction 3
Junction 9
Outfall
DS Grass Swale # 4
Pond 4
Junction 4

Data file name: K:\Projects\240101 - Xylem\07 Design\Drawings\2024 CIVIL\SWMP\Parts\240101 WinSLAMM.mdb
WinSLAMM Version 10.5.0
Rain file name: C:\WinSLAMM Files\Rain Files\WI Milwaukee 69.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/06 End of Winter Season: 03/28
Date: 10-30-2024 Time: 16:10:41
Site information:

LU# 1 - Commercial: Pond 1 Total area (ac): 14.872
1 - Roofs 1: 5.381 ac. Flat Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
13 - Paved Parking 1: 5.382 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 2.691 ac. Severely Compacted Clayey PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM File
70 - Water Body Areas: 1.418 ac. PSD File: Source Area PSD File:

LU# 2 - Commercial: Pond 2A 2024 Total area (ac): 14.446
1 - Roofs 1: 4.805 ac. Flat Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
13 - Paved Parking 1: 4.920 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 2.646 ac. Severely Compacted Clayey PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM File
52 - Small Landscaped Areas 2: 0.019 ac. Severely Compacted Clayey PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM File
70 - Water Body Areas: 1.136 ac. PSD File: Source Area PSD File:
77 - Other Direct Con Imp Areas: 0.920 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 3 - Commercial: Pond 3 Total area (ac): 9.911
1 - Roofs 1: 3.229 ac. Flat Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
13 - Paved Parking 1: 3.230 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.930 ac. Smooth Street Length = 0.4409 mi Street Width = 17.40191 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.615 ac. Severely Compacted Clayey PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM File
70 - Water Body Areas: 0.907 ac. PSD File: Source Area PSD File:

LU# 4 - Commercial: Pond 4 Total area (ac): 8.387
1 - Roofs 1: 2.719 ac. Flat Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
13 - Paved Parking 1: 2.720 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.666 ac. Smooth Street Length = 0.3158 mi Street Width = 17.39867 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.360 ac. Severely Compacted Clayey PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM File
70 - Water Body Areas: 0.922 ac. PSD File: Source Area PSD File:

LU# 5 - Commercial: Pond 2B Total area (ac): 1.415
13 - Paved Parking 1: 0.852 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 0.563 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 6 - Commercial: Undetained Total area (ac): 0.397
13 - Paved Parking 1: 0.066 ac. Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.c
51 - Small Landscaped Areas 1: 0.331 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Wet Detention Control Device

Pond Number 2

Drainage System Control Practice

Initial Stage Elevation (ft): 5.00

Maximum Inflow into Pond (cfs)
Enter 0 or leave blank for no limit:

Enter Two Stage Area Values in Rows 1 and 2, and Press to Interpolate

Create Pond Stage-Area Values | Refresh Schematic

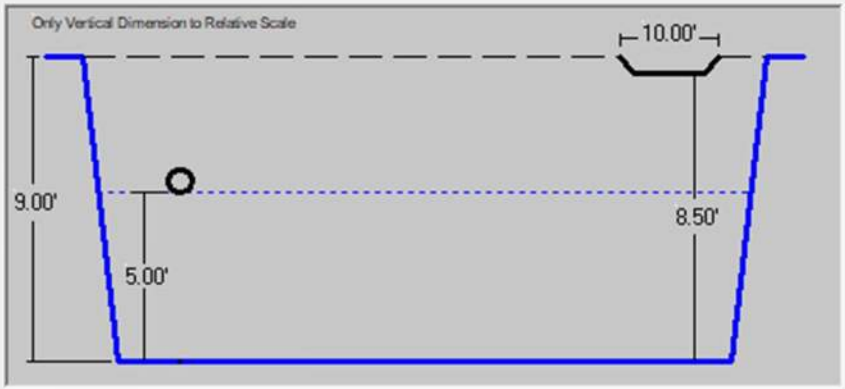
Enter fraction (greater than 0) that you want to modify all pond areas by and then select 'Modify Pond Areas' button: 0.00

Modify Pond Areas

	Stage (ft)	Area (acres)	Cumulative Volume (ac-ft)
0	0.00	0.0000	0.0000
1	0.01	0.7300	0.004
2	1.00	0.7640	0.743
3	2.00	0.7980	1.524
4	3.00	0.8320	2.339
5	4.00	0.8670	3.189
6	5.00	1.1360	4.190
7	6.00	1.2740	5.395
8	7.00	1.4570	6.761
9	8.00	1.7120	8.345
10	9.00	1.9300	10.166
11			
12			
13			
14			
15			
16			
17			

Copy Pond Data | Paste Pond Data | Recalculate Cumulative Volume

Save or Delete Pond Data to Database File | Get Pond Data From Database File



To Delete This Practice, Right Mouse Click on Icon and Select Delete

Cancel | Continue | Press 'F1' for Help

Control Practice # : 2 | CP Index # : 2

Add **Sharp Crested Weir**

Weir Length (ft)	
Height from datum to bottom of weir opening (ft)	

Add **V-Notch Weir**

Weir Angle (<180 degrees)	
Height from datum to bottom of weir opening (ft)	
Number of V-Notch weirs	

Remove **Orifice Set 1**

Orifice Diameter (ft)	0.67
Invert elevation above datum (ft)	5.00
Number of orifices in set	1

Add **Orifice Set 2**

Orifice Diameter (ft)	
Invert elevation above datum (ft)	
Number of orifices in set	

Add **Orifice Set 3**

Orifice Diameter (ft)	
Invert elevation above datum (ft)	
Number of orifices in set	

Add **Stone Weeper**

Width at bottom of weeper (ft)	
Weeper side slope (_H:1V)	
Upstream side slope (_H:1V)	
Downstream side slope (_H:1V)	
Horizontal flow path length at top of weeper (ft)	
Average rock diameter (ft)	
Distance from bottom to top of weeper (ft)	
Height from datum to bottom of weeper (ft)	

Add **Vertical Stand Pipe**

Pipe diameter (ft)	
Height above datum (ft)	

Add | Add

Month	Evaporation (in/day)	Water Withdraw Rate (ac-ft/day)
Jan	0.00	0.000
Feb	0.00	0.000
Mar	0.00	0.000
Apr	0.00	0.000
May	0.00	0.000
Jun	0.00	0.000
Jul	0.00	0.000
Aug	0.00	0.000
Sep	0.00	0.000
Oct	0.00	0.000
Nov	0.00	0.000
Dec	0.00	0.000

Add | Add

Stage (ft)	Natural Seepage Rate (in/hr)	Other Outflow Rate (cfs)
0.00	0.00	0.000
0.01	0.00	0.000
1.00	0.00	0.000
2.00	0.00	0.000
3.00	0.00	0.000
4.00	0.00	0.000
5.00	0.00	0.000

Remove **Broad Crested Weir (Required)**

Weir crest length (ft)	10.00
Weir crest width (ft)	10.00
Height from datum to bottom of weir opening (ft)	8.50

Add **Seepage Basin**

Infiltration rate (in/hr)	
Width of device (ft)	
Length of device (ft)	
Invert elevation of seepage basin inlet above datum (ft)	

Add **Pump**

Data File: K:\Projects\240101 - Xylem\07 Design\Drawings\2024 CIVIL\SWMP\Parts\240101 WinSLAMM.mdb

Rain File: WI Milwaukee 69.RAN

Date: 10-30-24 Time: 4:13:08 PM

Site Description:

Col. #:	2	3	4	5	6	7	8	9
Control Practice No.	Control Practice Type	Control Practice Name or Location	Total Inflow Volume (cf)	Total Outflow Volume (cf)	Percent Volume Reduction	Total Influent Load (lbs)	Total Effluent Load (lbs)	Percent Load Reduction
1	Wet Detention Pond	DS Wet Pond # 1	1.168E+06	1.169E+06	-0.0856	5998	1186	80.23
2	Wet Detention Pond	DS Wet Pond # 2 2024	1.233E+06	1.234E+06	-0.0811	8028	1233	84.64
3	Wet Detention Pond	DS Wet Pond # 3	788655	789549	-0.113	6036	1131	81.26
4	Wet Detention Pond	DS Wet Pond # 4	674496	675266	-0.114	4819	836.6	82.64
5	Grass Swales	DS Grass Swale # 1	1.208E+06	1.168E+06	3.311	7188	5998	16.56
6	Grass Swales	DS Grass Swale # 3	812451	788655	2.929	7277	6036	17.05
7	Grass Swales	DS Grass Swale # 4	690531	674496	2.322	5755	4819	16.26

SLAMM for Windows Version 10.5.0
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Data file name: K:\Projects\240101 - Xylem\07 Design\Drawings\2024 CIVIL\SWMP\Parts\240101 WinSLAMM.mdb
WinSLAMM Version 10.5.0
Rain file name: C:\WinSLAMM Files\Rain Files\WI Milwaukee 69.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/06 End of Winter Season: 03/28
Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69
Date of run: 10-30-2024 Time of run: 16:09:22
Total Area Modeled (acres): 49.428
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	3.946E+06	-	114.8	28276	-
Outfall Total with Controls:	3.871E+06	1.90%	18.27	4414	84.39%
Annualized Total After Outfall Controls:	3.924E+06			4475	

Control Practice 1: Wet Detention Pond CP# 1 (DS) - DS Wet Pond # 1

Particle Size Distribution file name: Not needed - calculated by program

Initial stage elevation (ft): 5

Peak to Average Flow Ratio: 3.8

Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 1
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8.5

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.9790	0.00	0.00
2	1.00	1.0200	0.00	0.00
3	2.00	1.0610	0.00	0.00
4	3.00	1.1020	0.00	0.00
5	4.00	1.1450	0.00	0.00
6	5.00	1.4180	0.00	0.00
7	6.00	1.5710	0.00	0.00
8	7.00	1.7570	0.00	0.00
9	8.00	1.9950	0.00	0.00
10	9.00	2.2180	0.00	0.00

Control Practice 2: Wet Detention Pond CP# 2 (DS) - DS Wet Pond # 2 2024

Particle Size Distribution file name: Not needed - calculated by program

Initial stage elevation (ft): 5

Peak to Average Flow Ratio: 3.8

Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 0.67
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8.5

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.7300	0.00	0.00
2	1.00	0.7640	0.00	0.00
3	2.00	0.7980	0.00	0.00
4	3.00	0.8320	0.00	0.00
5	4.00	0.8670	0.00	0.00
6	5.00	1.1360	0.00	0.00
7	6.00	1.2740	0.00	0.00
8	7.00	1.4570	0.00	0.00
9	8.00	1.7120	0.00	0.00
10	9.00	1.9300	0.00	0.00

Control Practice 3: Wet Detention Pond CP# 3 (DS) - DS Wet Pond # 3

Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 0.83
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8.5

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.6070	0.00	0.00
2	1.00	0.6370	0.00	0.00
3	2.00	0.6830	0.00	0.00
4	3.00	0.6980	0.00	0.00
5	4.00	0.7290	0.00	0.00
6	5.00	0.9070	0.00	0.00
7	6.00	0.9800	0.00	0.00
8	7.00	1.0550	0.00	0.00
9	8.00	1.1760	0.00	0.00
10	9.00	1.3330	0.00	0.00

Control Practice 4: Wet Detention Pond CP# 4 (DS) - DS Wet Pond # 4

Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 0.83
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8.5

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.5990	0.00	0.00
2	1.00	0.6330	0.00	0.00
3	2.00	0.6670	0.00	0.00
4	3.00	0.7020	0.00	0.00
5	4.00	0.7370	0.00	0.00
6	5.00	0.9220	0.00	0.00
7	6.00	1.0010	0.00	0.00
8	7.00	1.0810	0.00	0.00
9	8.00	1.2290	0.00	0.00
10	9.00	1.3680	0.00	0.00

Control Practice 5: Grass Swale CP# 1 (DS) - DS Grass Swale # 1

Total drainage area (acres)= 14.872
Fraction of drainage area served by swales (ac) = 0.90
Swale density (ft/ac) = 112.29
Total swale length (ft) = 1503
Average swale length to outlet (ft)= 1503
Typical bottom width (ft) = 10.0
Typical swale side slope (_H:1V) = 4.0
Typical longitudinal slope (ft.H/ft.V) = 0.007
Swale retardance factor: D
Typical grass height (in) = 3.0
Swale dynamic infiltration rate (in/hr)= 0.025
Typical swale depth (ft) for cost analysis (optional) = 2.0
Particle size distribution file name: Not needed - calculated by program
Use total swale length instead of swale density for infiltration calculations: True

Control Practice 6: Grass Swale CP# 2 (DS) - DS Grass Swale # 3
Total drainage area (acres)= 9.911
Fraction of drainage area served by swales (ac) = 0.90
Swale density (ft/ac) = 101.46
Total swale length (ft) = 905
Average swale length to outlet (ft)= 905
Typical bottom width (ft) = 10.0
Typical swale side slope (_H:1V) = 4.0
Typical longitudinal slope (ft.H/ft.V) = 0.007
Swale retardance factor: D
Typical grass height (in) = 3.0
Swale dynamic infiltration rate (in/hr)= 0.025
Typical swale depth (ft) for cost analysis (optional) = 2.0
Particle size distribution file name: Not needed - calculated by program
Use total swale length instead of swale density for infiltration calculations: True
Control Practice 7: Grass Swale CP# 3 (DS) - DS Grass Swale # 4
Total drainage area (acres)= 8.387
Fraction of drainage area served by swales (ac) = 0.90
Swale density (ft/ac) = 79.89
Total swale length (ft) = 603
Average swale length to outlet (ft)= 603
Typical bottom width (ft) = 10.0
Typical swale side slope (_H:1V) = 4.0
Typical longitudinal slope (ft.H/ft.V) = 0.007
Swale retardance factor: D
Typical grass height (in) = 3.0
Swale dynamic infiltration rate (in/hr)= 0.025
Typical swale depth (ft) for cost analysis (optional) = 2.0
Particle size distribution file name: Not needed - calculated by program
Use total swale length instead of swale density for infiltration calculations: True

Village of Germantown

Engineering Department Memorandum

To: **Jeff Retzlaff, Director of Community Development**

From: **Kevin Driscoll, Village Engineer**

Date: **December 5, 2024**

Re: **N102 W19200 Willow Creek Way (GTNV_321973)**

Items Reviewed:

1. Civil Site Plans — Dated: 10-30-2024, Revised 11-11-2024
2. Storm Water Management Plan — Dated: 10-30-2024, Revised 11-11-2024

General Comments:

1. Please respond to each item below. **A written response addressing each item shall be included in your submittal**.
2. The submitted plans have been reviewed for general conformance with State and Village design guidelines. Additional comments could arise as a result of the plan completion and modifications. The items listed below will need to be fully resolved before the Engineering Dept. can recommend a formal approval of the plans and permit for construction.
3. This project will require a WRAPP/NOI from the DNR. **A copy of the state's form is required to be attached with the Village's Erosion Control Permit application, prior to final approval.**
4. As-builts prepared to Village standards shall be prepared and provided to the Village post-construction (for all applicable items).
5. A professional engineer's original seal is to be affixed, signed and dated on the final set of construction plans.
6. A Permit for a Village Erosion Control Permit. Contact the Village Engineering Department to obtain permits.
7. As a guide to the review response: Items in *italics* are resolved or acknowledged, items in regular font are to be addressed yet, items in **Bold** are additional feedback to remaining original comment.
8. Provide an existing site survey with topography of proposed work areas stamped by a registered land surveyor.

Storm Water

1. Pond – C3.0 shows modifications to raise the pond berm to 850.5. Clarify the material proposed for fill (non-organic material) on Sheet C3.0 and/or C4.0.
2. Confirm existing berm width. And confirm minimum berm width of 8-ft is able to be maintained after the berm is raised. Revise and resubmit as necessary.
3. Proposed storm pipe from INL-51 is a 16" HDPE. This is not a common storm pipe size. Verify and confirm correct pipe size. The pond parcel is currently Village of Germantown. The Village of Germantown Development Handbook standards requires concrete pipe, per 4.1.1. - All storm sewers shall be constructed with a minimum Class III reinforced concrete pipe per SWS, Section 8.6.0.

4. It appears the overland flow route for the outdoor storage area will drain to the wetland area instead of pond 2. Adjust grading at the south end of the storage area to route the overflow to the pond or size the storm sewer for the 100 year event. Revise and resubmit.
5. Provide storm water maintenance agreement (SWMA) for applicant modifications to the pond, as this pond soley serves this site. The Village's SWMA template is available online and at Village Hall.
6. The pond is listed on parcel GTNV_32196. In the SWMA, applicant to commit to providing a CSM to become responsible for the pond, due to modifications caused by development.
7. SWMA required prior to Erosion control plan approval. Erosion control plan approval required prior to disturbance of pond berm.
8. Pond Certification – applicant to provide pond certification of construction per plan.
9. Pond As-builts to be prepared to Village standards and provided to the Village post- construction.

C4.1 Site Notes and Details of Outlet Control Structure

1. Clarify anchor details for flat orifice plate (proposed) on inside of cylindrical manhole structure (existing) on sheet C4.1, that includes on the proposed plate type, thickness with 8" orifice and method on securing proposed plate. That is a non-standard approach to modify public infrastructure. In lieu of non-standard structure, install new structure.
2. Inspection of outlet control structure required prior to installation of proposed plate.
3. Provide storm water maintenance agreement that addresses applicant's non-standard modifications to the pond with proposed orifice plate.
4. Erosion control plan approval required prior to disturbance of outlet control structure.

Parking

1. Address Parking Impact - Show updated count with respect to PC memo dated 3/13/2023
2. Erosion Control plan approval required prior to disturbance of parking lot area.

Wetlands

1. Show 25ft wetland setback on sheet C1.0 and address encroachment from proposed retaining wall at edge of proposed 39,995 SF of new concrete outdoor storage.
2. Provide wetland fill approval to address proposed rip rap in wetland area on sheet C2.0.

Tank

1. Spill Control – Provide spill control and countermeasures plan with adequate secondary containment.

DOCUMENT#: **1439286**
Date:**10-04-2017** Time:**01:39 PM** Pages: **42**
Fee:**$30.00** County:**WASHINGTON** State:**WI**

SHARON A MARTIN, REGISTER OF DEEDS
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Chicago Title Company - SPS Wisconsin***

Document Number	Document Title
	DECLARATION OF PROTECTIVE COVENANTS

Recording Area

Name and Return Address
MLG Capital
13400 Bishops Lane, Suite 270
Brookfield, WI 53005

Parcel Identification Number (PIN)

THIS PAGE IS PART OF THIS LEGAL DOCUMENT – DO NOT REMOVE.

This information must be completed by submitter: document title, name & return address, and PIN (if required). Other information such as the granting clause, legal description, etc., may be placed on this first page of the document or may be placed on additional pages of the document.
WRDA Rev. 12/22/2010

2/2/2017

Declaration of Protective Covenants for Willow Creek Business Park of Germantown

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DECLARATION OF PROTECTIVE COVENANTS
FOR
WILLOW CREEK BUSINESS PARK OF GERMANTOWN

THESE PROTECTIVE COVENANTS ("Protective Covenants") are made this 2nd day of October, 2017 by MLG Germantown Investment LLC ("Declarant");

WITNESSETH

WHEREAS, Declarant is the owner of the property described on Exhibit A attached hereto, which property is located in the Village of Germantown, Wisconsin.

WHEREAS, Declarant intends to create a high-quality office, industrial and commercial mixed use development on the property; and

WHEREAS, Declarant desires that the investment of each subsequent owner of any part of the property be protected and enhanced; and

WHEREAS, Declarant desires that development of the property generate sufficient property tax revenues to repay public expenditures incurred to provide infrastructure improvements to service the property; and

WHEREAS, an orderly and attractive grouping of well-designed, constructed and landscaped buildings contributes to those objectives; and

WHEREAS, subjecting such property to restrictions, covenants, and reservations is instrumental in achieving those objectives.

NOW, THEREFORE, Declarant hereby declares that the real property hereinafter described shall be held, sold, conveyed, transferred, used and improved only subject to the conditions, restrictions, covenants, reservations and easements hereinafter set forth, which shall bind and inure to the benefit of the Declarant, and its successors and assigns, and to all parties hereafter having any interest in the property:

1. The Property

The property described on Exhibit A attached hereto, shown on Exhibit B attached hereto and to be known as Willow Creek Business Park of Germantown (the "Park") is made subject to the provisions of these Protective Covenants. The Protective Covenants declared herein shall run with the land and shall affect the Park and each part thereof and any interest in the Park or any part thereof for all purposes and shall be binding upon and inure to the benefit of the landowners and all owners, lessees, and occupants of property in the Park, and their successors and assigns. Owners shall be fully responsible for compliance by their tenants with the provisions of these Protective Covenants.

2. The Business Park Association

2.01 *Formation and Function*

The Declarant shall incorporate a Wisconsin nonstock corporation called Willow Creek Business Park of Germantown, Inc. (the "Association"). All owners ("Owner") of any separate tract or parcel of land ("Site") in the Park shall be members of the Association. Declarant shall be considered an Owner as long as Declarant owns a parcel of land in the Business Park. The Association, through its Board of Directors, will be responsible for enforcing these Protective Covenants and maintaining any common areas and improvements in the Park and generally administering the Association.

2.02 *Board of Directors*

The Association will be governed by a board of three (3) directors (the "Directors") who will initially be designated by the Declarant. The qualifications, election and duties of Directors shall be as set forth in the By-Laws of the Association.

2.03 *Declarant Control*

Notwithstanding any other provisions contained in the By-Laws, Declarant, its successors and assigns, shall have the right at its option to appoint and remove the members of the Board of Directors and officers of the Association and to amend the By-Laws or rules and regulations of the Association until the earlier of: (a) thirty (30) years after the first sale of a Site in the Park by Declarant or (b) such earlier time as may be determined by Declarant. Each owner of a Site in the Park shall be deemed by acceptance of any deed to any Site to agree, approve and consent to the right of Declarant to so control the Association.

2.04 *Willow Creek Business Park Review Board*

The Declarant shall designate the Willow Creek Business Park Review Board (the "Review Board") which shall exist for the term of these Protective Covenants and shall review and approve, conditionally approve or disapprove any structure or improvement of any kind, the construction or placement of which is proposed upon any Site within the Park, including, without limitation, any building, paving, landscaping (including screening, walls and fences) or other improvement or modifications thereto. If the Review Board disapproves any such structure or improvement, it shall specify the deficiency in the submitted Application Plans (as defined in Section 4 herein) and the changes necessary to the Application Plans in order to obtain approval from the Review Board.

Before construction or placement of any of the foregoing shall begin on any Site, all plans and specifications therefore shall be submitted to and approved in writing by the Review Board in accordance with Section 4 herein.

Membership of the Review Board shall consist of at least three (3) persons. The Declarant shall designate the Review Board Members, who shall serve in perpetuity unless and until such time as they may be replaced by the Declarant or resign. Upon the resignation of a member of the Review Board, the Declarant shall appoint a replacement member. At such time as the Declarant no longer controls the Association, the Board of Directors shall elect replacement members.

Any party aggrieved by a decision of the Review Board shall have the right to make a written request to the Board of Directors for review of said decision. The Board of Directors shall accept or decline such request in writing within 15 days after receipt of the same. The Board of Directors may, in those cases it accepts for review, overrule the decisions of the Review Board. The determination of the Board of Directors shall be final and binding in all such review matters.

2.05 *Membership Voting*

For any matter to be voted upon by the Association membership, each Owner shall have the number of votes, including fractions thereof, equal to the number of Buildable Acres, as defined in Section 5.02 below, including fractions thereof, owned by said Owner in the Park. When a majority or percentage vote is required under these Protective Covenants, the requirement shall be calculated using the total number of votes available in the Park.

3. Use Restrictions

3.01 *Permitted Uses*

All building sites within the Park shall be used solely for office, commercial, laboratory, research, light manufacturing and processing, warehousing, wholesale distribution and service facilities and similar and ancillary uses approved by the Review Board and permitted under the Village of Germantown Zoning Ordinance.

3.02 *Precluded Uses*

No heavy manufacturing, junk or salvage, animal processing, recycling, incineration facility, or other similar uses will be permitted except on such Sites, if any, as the Review Board and Germantown Village Board of Trustees, in their joint sole discretion, shall first approve. Uses prohibited under the Village of Germantown Zoning Ordinance are prohibited.

3.03 *Additional Precluded Uses*

No nuisance or offensive or noxious odors, fumes, dust, smoke, noise, vibration, pollution, glare or other nuisance, or hazardous uses by reason of excessive danger of fire or explosion shall be permitted in the Park. Determinations of nuisance shall be made by the Board of Directors upon the basis of written complaint or on its own initiative. Standards for nuisance or offensive and noxious use shall be those of the Village of Germantown, Washington County, State of Wisconsin, and the United States of America. In addition, no lighting shall be permitted on any Site that, in the judgment of the Review Board, could serve as a nuisance or hazard to other sites or the general public, as described in Section 5.13.

4. Application Plans and Approvals

4.01 *Application Procedure*

Prior to constructing, expanding or altering of the shape, size or appearance of any building or other structure or improvement in the Park, or changing the use of any existing building or Site, the Owner shall submit to the Review Board for approval site and building plans and a written description of use and operations (the "Application Plans"). Each Owner shall obtain the services of an architect and/or an engineer in the development of the Application Plans. No building, structure, or other improvement shall be constructed, altered, or placed upon any Site until the appropriate Application Plans shall have been first approved in writing by the Review Board.

Application Plans shall be submitted by e-mail, or other manner agreed to by the Review Board, and shall include:

- Scaled site plan, showing building location and setbacks (including the location of any planned building expansion), parking layout and setbacks, driveway and access locations, loading docks, site lighting details and coverage, utility boxes and transformers and signage.

- Drawings showing all exterior building elevations, building heights and roof mounted equipment and utility meters (including size, location and proposed screening) and indicating building materials and colors. Also, a colored rendering or building elevations (showing the actual proposed colors) and samples of building materials and colors.

- Floor plan(s) indicating use.

- Landscaping plan, including sizes, quantities and types of plantings.

- Location, size and proposed screening for outside waste and recycling containers and the size and type of the proposed containers.

- Erosion control, grading and storm water drainage plans, including any existing trees to be removed and including all proposed water impoundments and finished grade levels.

- Written description of proposed use and operation, including number of employees, workshifts, products produced and/or services provided, manufacturing processes, materials handled (including anticipated truck traffic), any hazardous materials used in operations (including proposed safety precautions), any noise emitted and any air, water or solid waste material generated (including proposed methods for storing and disposing).

All plans submitted shall include the preparer's name, the date of preparation and the dates of any revisions. Any revisions to approved Application Plans must be approved in writing by the Review Board.

4.02 *Review Board Variance*

Upon written application to it, the Review Board shall have the authority to waive or vary these Protective Covenants when such waiver or variance is consistent with the purposes of these Protective Covenants and where exact adherence to a specified standard will create an undue burden on the owner of the affected Site. Such waivers or variances shall be in writing, shall apply only to these Protective Covenants and shall not pertain to Village of Germantown Zoning Ordinance.

4.03 *Guidelines*

In order to assist Owners in complying with these Protective Covenants, the Association or the Review Board may publish guidelines ("Guidelines") from time to time. The Guidelines may pertain to any matters included within the scope of review described in Section 4.01 above. The Guidelines may be updated at any time, in the sole discretion of the Association or the Review Board, to reflect developments in applicable technology or to include changes deemed necessary or advisable, and shall be available to any Owner upon request. To the extent such Guidelines are published, approval of Application Plans by the Review Board shall be in accordance with the Guidelines as updated from time to time. However, the Guidelines shall not constitute amendments or modifications of these Protective Covenants, and in the event of any conflict or inconsistency, these Protective Covenants shall control.

5. Site Restrictions

5.01 *Designation of Sites*

A "Site" is a parcel of land in the Park (a) that has been conveyed to a purchaser other than Declarant or (b) upon which Declarant intends to construct a building.

5.02 *Land/Building Ratio*

The initial construction on each Site shall equal or exceed the following minimums for the following types of facilities unless otherwise approved in writing by the Review Board:

Type of Facility	Minimum Square Feet/Buildable Acre
Commercial	3,000
Office	4,000
Industrial	5,000

"Office" facility shall mean a facility in which more than fifty percent of the floor space is intended for use as office space. The initial construction on a Site used for office or industrial purposes shall in no event be less than 5,000 square feet, unless otherwise approved in writing by the Review Board. "Buildable Acre" shall mean all areas of the Park except those areas designated as "Greenspace" on Exhibit B. The Declarant may from time to time identify additional unbuildable land in the Park as additional "Greenspace" by recording a supplement to these Protective Covenants. If and when the Declarant adds additional property to the Park pursuant to Section 17, the Declarant may designate any portion of such property as "Greenspace". No more than 80 percent of any Site shall be covered with buildings, surface pavement, or other covering materials that are impervious to surface water absorption unless otherwise approved in writing by the Review Board.

5.03 *Building Setbacks*

Building setbacks shall comply with Village of Germantown Zoning Ordinance.

No part of any building or other structure on a Site used for an office or industrial facility shall be located within the following distances from the following property lines of the Site, unless otherwise approved in writing by the Review Board:

Property Line	Distance (Feet)
Front Setback	30

Side Setbacks	10
Rear Setback	25

If a Site has two or more sides that face a public street, then the Review Board in its discretion may determine that only one side will be considered the "front" side. The Village of Germantown Zoning Ordinance may require larger setbacks.

5.04 *Parking Setbacks*

No parking on a Site used for an office or industrial facility shall be allowed within the following distances from the following property lines of the Site unless otherwise approved in writing by the Review Board:

Property Line	Distance (Feet)
Front Setback	25
Side Setbacks	10
Rear Setback	20

If a Site has two or more sides that face a public street, then the Review Board in its discretion may determine that only one side will be considered the "front" side. The Village of Germantown Zoning Ordinance may require larger setbacks.

Curbs shall be considered as part of the parking area for purposes of complying with parking setback requirements.

5.05 *Building Height*

No building or other structure, including chimneys, cooling towers, and antennae, shall be higher than permitted under the Village of Germantown Zoning Ordinance.

5.06 *Storage*

No fuel or chemical storage tank that is not in compliance with applicable Federal, State and Local laws and regulations shall be allowed in the Park. No outdoor storage of waste or recycling containers or any articles, goods, materials, finished or semi-finished products, incinerators, storage tanks, or any other items shall be permitted except as provided in Section 7.01 below.

5.07 *Fencing*

No fences shall be constructed on any Site without the written approval of the Review Board and the Germantown Village Board of Trustees. Fencing, where

permitted, shall be installed and designed in such a manner as to create an attractive appearance to the public and compliment the architecture of the principal building(s) on the subject property and does not detract from or compromise the overall appearance of the Business Park.

The type, style, design, dimensions, color and material composition, location, landscaping, method of installation, and other details of any proposed fence shall require review and approval by the Review Board and the Village of Germantown Plan Commission in accordance with the Village's site plan review and approval procedures.

At a minimum, a proposed security fence shall meet the following requirements:

A. Design, Dimensions, Materials.

1. The height of a fence shall not be less than four (4) feet and not more than ten (10) feet measured from the finished grade to the top of the highest horizontal rail or top of the pickets (whichever is higher). Vertical support rails or pillars may extend a maximum of six (6) inches above the height of the fence.

2. Fences shall be constructed from a combination of: (1) solid pillars (vertical) or short solid wall segments (horizontal) comprised of stone, brick, decorative block or other masonry material; and (2) wrought iron, steel or other solid or tubular metal rails and pickets.

3. Solid wall sections (horizontal) shall not exceed a height of three (3) feet above the natural finished grade.

4. Support pillars (vertical) shall be a minimum of sixteen (16) inches wide and should not be spaced less than twelve (12) feet and no more than twenty-four (24) feet apart.

5. Long expanses of fence should be avoided where possible or offset and architecturally designed to prevent monotony.

6. Posts and rails must be placed on the inside of the fence so that they are not facing a street.

7. The use of wood, vinyl, galvanized metal, cable, wire, wire woven or other mesh fabric (e.g. "chain link") fence material is prohibited.

8. Fences shall not be topped with or otherwise include barbed wire, razor wire, barbed tape concertina wire, electrified wire, or other similar material.

9. Access gates for pedestrian and vehicle ingress/egress shall be provided and integrated into the design of a fence where deemed necessary by the Village to allow reasonable and adequate access by police, fire and emergency medical personnel, vehicles and equipment. Said personnel shall be provided the necessary keys, pass codes or other means necessary to gain free and unencumbered access at their discretion in the event of an emergency.

10. Vehicle access gates shall be design and located in a manner that will not result in vehicles standing, parking or loading from the adjacent public right-of-way.

B. Landscaping. Landscaping comprised of a mix of deciduous and evergreen trees and shrubs should be provided adjacent to the street-facing (out) side of the fence along public right-of-ways and all yards. Landscaping shall be installed adjacent to a fence in either a continuous swath (not less than 6 feet in width) or intermittent "pockets" (not less than 15 square feet in area) of landscaping located and spaced in attractive groupings at intervals not less than twenty-four (24) feet apart along and adjacent to the fence.

C. Setback and Location.

1. Where possible, fences should be considered before and integrated into the design and layout of the principal buildings, parking areas, and access driveways.

2. The installation and location of fences shall meet all applicable building setbacks for the subject property as set forth in Section 5.03 herein and in the Village of Germantown Zoning Code.

D. Maintenance. Property owners are responsible for maintaining all fences in an attractive, neat, clean and safe condition and appearance, particularly the outward or street-facing side(s) of any security fence. Maintenance shall include, but is not limited to, landscape maintenance as set forth herein; maintain proper drainage along, around and through such fencing; prohibiting the accumulation of trash or other similar items; maintain the appearance and structural integrity of all fence materials in good condition, free of rust, broken components, etc.

5.08 *Temporary Structures*

No temporary structures or trailers are permitted without prior written approval of the Review Board, except those belonging to construction companies during periods of construction.

5.09 *Ancillary and Accessory Structures*

No water tower, storage tank, processing equipment, solar collector, telecommunications equipment, cooling tower, satellite disks or other ancillary or accessory structure or outside equipment shall be constructed, erected or placed in the Park without the prior written approval of the Review Board. To the extent permitted, such structures should be designed with the same color and material palette as the principal structure; and they should be located behind buildings where possible. Pole buildings, metal or wood structures will not be permitted.

5.10 *Freight Handling*

All freight loading and unloading shall be handled on those sides of a building that do not face a street except for situations where the constraints of the site make a side location unfeasible. Exceptions may be made at the sole discretion of the Review Board

5.11 *Signs/Mailbox*

All signs must be approved in writing by the Review Board. On-site directional signage will be allowed in any area needed to control traffic or parking provided such signage has received written approval from the Review Board. The Association shall have the right to enforce uniform sign and mailbox standards throughout the Park.

5.12 *Canopies*

Design of canopies shall be in keeping with the design of the building.

5.13 *Lighting*

All exterior lighting must be approved in writing by the Review Board. Lighting of a Site shall be of a design and height and shall be located so as to illuminate only the Site. No flashing, traveling, animated, or intermittent lighting shall be visible from the exterior of any building, whether such lighting is of temporary or long term duration. All lighting fixtures shall be maintained as originally approved. In addition, no lighting shall be permitted on any site which, in the judgment of the Review Board, would serve as a nuisance or hazard to other sites or to the general public. Lot lighting on street sides to be provided by pole mounted, down lighting fixtures.

5.14 *Erosion and Sediment Control*

The drainage pattern on any Site shall not be changed significantly and no change in the drainage pattern onto lands adjacent to the Site shall be allowed. Specific erosion control, grading and storm water drainage plans shall be submitted as part

of the Application Plans, and in addition to review and approval by the Review Board under Section 4 herein, must be approved by the Village of Germantown. Each Owner shall be responsible for 1) prevention of erosion of its Site, 2) control of runoff of silt debris or sedimentation from its Site onto adjacent drain systems or properties, 3) removal of any such runoff, erosion, or sedimentation and 4) repair of any damage to such Site or adjacent Site by such runoff, erosion or sedimentation. In the event that an Owner fails to comply with any of the foregoing obligations within 30 days after receipt of notice from the Association or from the Village of Germantown, the Association or Village may, in its sole discretion but without any obligation to do so, perform such obligations. If the Village performs the work, all costs incurred shall be assessed to the Owner and added to the Owner's property tax bill for the Site. If the Association performs the work, and the cost of the work remains unpaid for 30 days after the Owner is billed therefor, such charges may be collected pursuant to procedures set forth in Section 15.

Storm drainage from the completely developed Site shall be in compliance with all Federal, State and local rules and regulations.

5.15 *Building Design Standards*

In order to ensure the high quality of the Park and to maintain the property values for the Owners, the following design standards shall be incorporated into any structure constructed within the park:

A. The overall design concept for the Park is to create diversity through building design and not through a plethora of building colors and materials. The building's main entrance shall be architecturally highlighted with glass, overhangs or other obvious surface articulation. The sides and back of a building should use the same design theme as the primary elevations, and emphasis should be placed upon wrapping or carrying the primary building material to the sides or back of the building so as to avoid having a building that has three blank walls and only the primary elevation containing design elements. Architectural design and devices such as pilasters, reveals, windows and material changes shall be used to break up a building's mass and eliminate blank walls.

B. The preferred building material for the Park is masonry, although glass, glass block, EIFS and other accent materials are encouraged to create diversity. Wood and vinyl, in any form, is generally unacceptable for use in the Park. Appropriate materials include brick, decorative concrete masonry units, pre-cast or poured-in-place concrete, cut stone or stone-faced concrete block, Exterior Insulation and Finish Systems (EFIS) not exceeding 30% of wall area, Architectural metal wall panels with no exposed fasteners or corrugation not exceeding 30% of wall area, metal banding or trim used as an accent, structural steel used as part of an

exterior structural system, glass block used as an accent, glass spandrel panels, tile used as an accent, smooth-faced concrete black used as an accent, and any other materials, including materials not yet developed, approved by the Review Board as long as such material is compatible with the Park's design concept. Such other acceptable materials may be, from time to time, identified in the guidelines discussed in Section 4.

C. Building colors should be chosen so that buildings recede, rather than stand out, on the landscape. Muted earthtones including tans, beige, gray and other colors of natural tints are encouraged. Bright whites, primary colors and other "accent" colors shall be avoided.

5.16 Stormwater Pond Maintenance Access Easement

The Owner of a Site in the Park shall grant the Village of Germantown a permanent stormwater pond maintenance access easement to any pond that is adjacent to the Owner's Site upon submittal of a site development plan to the Village and a request for said easement from the Village. The purpose of the easement shall be to maintain, repair, replace and reconstruct as necessary the stormwater ponds owned by the Village. The Village shall repair all damage caused by the activities associated with exercising rights under such easement at the Village's sole cost and to the condition that existed prior to exercising the Village's rights.

6. Parking and Landscaping

6.01 *Parking Generally*

Each Site shall be provided with adequate paved off-street automobile parking as approved by the Review Board. No parking will be permitted on any street, driveway, or any place in the Park other than in approved parking spaces. Overnight parking of campers, mobile homes, boats, trailers and similar vehicles is prohibited unless prior written approval is obtained from the Association. Overnight parking of trucks and service vehicles shall be behind landscape screening so as to minimize visibility from the roadway unless prior written approval is secured from the Association.

6.02 *Parking Ratio*

Unless otherwise approved by the Review Board, areas for current and future parking needs shall be provided as follows:

A. For any Site used for an office or industrial facility, a minimum ratio of one off-street passenger car parking space for each 1,100 square feet of gross warehouse building area, for each 575 square feet of gross

manufacturing, production or service building area, and for each 250 square feet of gross office building area; and

B. Notwithstanding the foregoing, each Site shall have parking capacity adequate to serve the reasonably expected parking needs for the Site; and

C. No parking shall be permitted at any time upon any street or driveway in the Park or on any unpaved area of a Site; and

D. No continuing or extended use shall be made of a Site or any building constructed thereon which requires, or is reasonably expected to require, parking in excess of the capacity of the parking facilities available on said Site.

6.03 *Parking Location*

No parking shall be allowed within the parking setbacks described in Section 5.04 above unless otherwise approved in writing by the Review Board.

6.04 *Screening and Landscaping of Parking Areas*

In the event parking is approved within the parking setbacks described in Section 5.04 above, such parking shall be screened by berm and/or increased landscaping from public view in a manner approved by the Review Board. Paved parking areas larger than 20,000 square feet shall have landscaped areas equaling not less than 5% of the parking area intermittently placed throughout the parking area which serves to define vehicular and pedestrian circulation and provides additional screening of parking areas.

6.05 *Requirement to Pave Surfaces*

All parking surfaces, driveways and loading areas shall be paved with a bituminous or concrete surface within ninety (90) days after occupancy or substantial completion of the building, whichever comes first, weather permitting. Curbs shall be provided to the extent required by the Review Board.

6.06 *Driveways and Loading Areas*

Driveway and loading areas shall be large enough to accommodate all vehicle maneuvering on the Site. Truck turn-arounds are prohibited on all public streets in the Park. Driveway points of access to public streets must be approved by the Review Board. Areas on the site designed for truck/trailer storage are only allowed with approval of the Review Board and such approval will be contingent on such storage area being adequately screened as determined by the Review Board in its sole desecration.

6.07 *Open Spaces*

All open spaces shall be paved, landscaped, or planted as lawns. Not less than one-half of the required building setback area from any dedicated street shall be devoted solely to lawns, trees, shrubs, and walkways of a design approved by the Review Board. Landscaping, as approved by the Review Board, shall be installed within ninety (90) days after occupancy or substantial completion of the building, whichever comes first, weather and appropriate planting seasons permitting.

6.08 *Greenspace*

No buildings or improvements of any kind shall be permitted in the Greenspace and no buildings or improvements may damage or impair the Greenspace.

6.09 *Trees*

Trees may be cut on any Site only to the extent needed for construction and/or landscaping purposes and only following written approval from the Review Board.

6.10 *Right to Act on Owner's Behalf*:

If, in the opinion of the Association, any Owner fails to complete all required parking and landscaping as shown on approved Application Plans within the time periods specified in Sections 6.05 and 6.07 above, either the Association or the Village of Germantown or both may give such Owner written notice and such Owner must, within thirty (30) days after such notice, complete such improvements in accordance with the notice. In the event that such Owner fails to complete such improvements within such 30-day period, the Association or the Village shall have the right and power, but not the obligation, to complete such improvements. If the Village completes such improvements, all costs incurred may be assessed to the Owner by the Village and added to the Owner's property tax bill for the Site. If the Association completes such improvements and the cost of the work remains unpaid for 30 days after the Owner is billed therefore, such charges may be collected pursuant to the procedure set forth in Section 15.

7. Screening

7.01 *Storage*

Waste and recycling containers shall be screened from view from the streets and adjacent sites by completely opaque screens unless otherwise approved in writing by the Review Board. No other articles, goods, materials, finished or semi-finished products, incinerators, storage tanks, or other items shall be kept outdoors or exposed to public view, or to view from adjacent sites. A variance may be granted by the Review Board upon written application and prior written approval,

as provided in Section 4 provided that such written application makes an explicit and specific request for such variance (*e.g.*, plans approved that show outdoor storage do not authorize such storage unless the application expressly requests such variance).

7.02 *Roof Mounted Equipment*

Roof mounted equipment shall be so located and/or screened and/or painted to minimize visibility from streets and adjacent Sites.

7.03 *Loading Docks*

Outside loading docks shall be subject to prior written approval of Review Board.

7.04 *Utility Connections*

Unless otherwise approved in writing by the Review Board, all utility connections, including all electrical and telephone connections and other installation of wires to buildings, shall be made underground from the nearest available source. No transformer, electric, gas or other meter of any type or other apparatus shall be located on any power pole, nor hung on the outside of any building, without being screened from streets. All transformers and meters shall be placed on or below the surface of the property and where placed on the surface shall be screened and/or landscaped so as to minimize visibility from streets and adjacent sites. No electric utility boxes or transformers shall be located between a building and an abutting street.

8. Easements

8.01 *Utility Easements*

The Association shall have the right to grant easements for utilities within the building setback areas of any Site for the benefit of Owners of other Sites within the Park. Such easements shall be approved by a resolution of the Board of Directors and signed by officers of the Association and shall be recorded with the Register of Deeds for Washington County, Wisconsin.

8.02 *Other Easements*

Other easements affecting various Sites in the Park are set forth on pages 8-10 of Exhibit B. Those easements include a Utility Easement, Drainage Easement, Public Sanitary and Watermain Easement, Sanitary Sewer Easement, Landscape and Signage Easement and Temporary Access and Drainage Easement. See Exhibit B for more detail.

9. Construction Obligation and Repurchase Rights

9.01 *Construction Obligation*

Each Owner shall promptly begin, diligently pursue and ultimately complete construction of buildings and other improvements on its Site pursuant to approved Application Plans.

In the event that construction of improvements has not been commenced within one (1) year after the date of closing of (a) the initial sale of a Site by Declarant or (b) any resale by a subsequent Owner to an Unrelated Party, then, until such construction is commenced, the Village of Germantown, Wisconsin (the "Village") and the Declarant shall each have the option of repurchasing the Site from the Owner (the "Commencement Option"). Commencement of construction is defined to mean that footings and foundation have been poured, and construction of the outer shell of the building has begun, all in accordance with applicable, local, state and federal requirements. "Unrelated Party" is defined to mean a party that is not owned or controlled by any of the same persons. To exercise the Commencement Option, the Village or the Declarant shall provide written notice of exercise of option (the "Notice") to Owner at Owner's last known address, including the date of repurchase closing. Notice shall be deemed to be received two days after deposit of the notice, postage prepaid, in the U.S. mail. The Village shall have the exclusive right to exercise the Commencement Option during the first sixty (60) days of the Commencement Option. If the Village has not exercised the Commencement Option within sixty (60) days after the Commencement Option begins, then the Declarant may exercise the Commencement Option at any time thereafter until such time, if any, as the Village exercises the Commencement Option; provided, however, that the Village shall continue to have the right to exercise the Commencement Option until such time, if any, as the Declarant exercises the Commencement Option. The repurchase, as described in Section 9.02 below, shall occur within sixty (60) days after delivery of the Notice on the date specified in the Notice.

If after commencing construction work on any Site, construction ceases for a period of one hundred eight (180) consecutive days at any time before the completion of construction as provided in Owner's approved plans ("Cessation of Construction"), the Village and the Declarant shall each have the option to repurchase the Site from the Owner at any time within one (1) year after cessation of construction (the "Construction Option"). To exercise the Construction Option, the Village or the Declarant shall provide written Notice of Exercise of Option as described above. The Village shall have the exclusive right to exercise the Construction Option during the first sixty (60) days of the Construction Option. If the Village has not exercised the Construction Option within sixty (60) days after the Construction Option begins, then the Declarant may exercise the Construction Option at any time thereafter until such time, if any, as the Village exercises the Construction Option; provided, however, that the Village shall continue to have

the right to exercise the Construction Option until such time, if any, as the Declarant exercises the Construction Option. Repurchase, as described in Section 9.02 below, shall occur within sixty (60) days after delivery of the Notice on the date specified in the Notice. "Substantial completion of construction" means that construction has been completed to a point that a certificate of occupancy could be obtained.

If Owner does not complete construction of the improvements as described in the approved plans and obtain an occupancy permit for the improvements within three (3) years after the date of closing of Owner's purchase of the Site from Declarant or such Owner's resale of the Site to an Unrelated Party, the Village and the Declarant shall each have an option to repurchase the Site from the Owner (the "Completion Option"). To exercise the Completion Option, the Village or the Declarant shall provide written Notice as described above. The Village shall have the exclusive right to exercise the Completion Option during the first sixty (60) days of the Completion Option. If the Village has not exercised the Completion Option within sixty (60) days after the Completion Option begins, then the Declarant may exercise the Completion Option at any time thereafter until such time, if any, as the Village exercises the Completion Option; provided, however, that the Village shall continue to have the right to exercise the Completion Option until such time, if any, as the Declarant exercises the Completion Option. Repurchase, as described in Section 9.02, shall occur within sixty (60) days after delivery of the Notice on the date specified in the Notice.

9.02 *Terms of Repurchase*

If the Village or the Declarant exercises any of the options described in Section 9.01 above, at repurchase closing the Owner shall tender a warranty deed free and clear of all liens and encumbrances except municipal and zoning ordinances, recorded easements for public utilities and these Protective Covenants in exchange for a sum equal to Owner's purchase price for the Site less any unpaid real estate taxes, the proration for the then current year's real estate taxes, and the title insurance premium. Owner shall provide the party exercising the option with a title insurance policy for the full amount of Owner's purchase price.

In the event of repurchase as provided in this section, Owner shall also be liable to the Village or the Declarant, as appropriate, for all reasonable costs and expenses incurred in retaking and restoring the Site to marketable condition, and such costs and expenses shall be deducted from the amount of the purchase price paid to the Owner. Owner shall be deemed to consent to enforcement of the options described in Section 9.01 on the above terms by specific performance.

9.03 *Right of First Refusal to Repurchase Vacant Land*

In the event that any Owner shall wish to convey any vacant portion of a Site or a vacant Site (the "Vacant Site") at any time within three (3) years after closing

acquisition of the Vacant Site from Declarant, it shall first give the Declarant the right to purchase the Vacant Site at Owner's original purchase price and on the same terms and conditions as Owner's purchase. Within thirty (30) days after receipt of written notice that Owner wishes to convey a Vacant Site, Declarant shall notify Owner of its decision concerning repurchase. If Declarant decides to repurchase, closing shall occur within sixty (60) days after Declarant's receipt of Owner's written notice. If the Declarant is repurchasing a portion of a Site, the purchase price shall be prorated to reflect the total buildable square footage of the Vacant Site as compared to the total original buildable square footage of the Site purchased by Owner. "Buildable" shall mean that part of a Site not located within a Greenspace as described in Section 6.08 above.

10. Disclaimer of Liability

Neither the Association nor the Review Board shall be liable to any person or entity submitting Application Plans for approval, or seeking any other approval under these Protective Covenants, or to any other person or entity affected by these Protective Covenants, by reason of engineering, architectural or technical errors or omissions in the Application Plans or materials submitted for approval. The Association and the Review Board shall not be deemed to provide architectural or engineering services in the review and approval of Application Plans, or in any other manner. Neither the Association nor the Review Board shall be responsible for inspecting improvements during construction or for ensuring compliance with approved Application Plans. The Village of Germantown shall not be liable to any person or entity as a result of (a) having approved of the form of these Protective Covenants, or (b) the exercise or non-exercise of any right or discretion granted to the Village of Germantown under these Protective Covenants, or (c) the exercise of any authority granted or vested in the Village of Germantown by any applicable law, ordinance, rule or regulation pertaining to the Park.

11. Maintenance

11.01 *General Site Maintenance*

Except as otherwise provided in Section 14 below, the Owner of any Site shall have the duty of, and responsibility for, keeping the buildings, paving, landscaping, lighting and other improvements, on the Site in a well-maintained, safe, clean, and attractive condition at all times. Although the Owner may by contract require tenants or occupants to perform these duties, the Owner shall be responsible to the Association for the duties arising under this Section. All grass, trees, and shrubbery must be kept in good appearance at all times. All grass must be cut whenever necessary and weeds must be controlled up to the curbs of public rights-of-way. Each Owner shall be responsible for removal of any rubbish or trash of any character which may accumulate on a Site. Damaged or cracked areas of all parking lots, sidewalks, and other hard surfaces shall be promptly repaired or replaced.

11.02 *Site Maintenance During Construction*:

During construction it shall be the responsibility of each Owner to ensure that construction sites are kept free of unsightly accumulations of rubbish and scrap materials.

11.03 *Damage to Public Right-of-Ways and Common Areas*

No Owner or its employees, contractors or agents shall dispose of snow or any other materials in the public right-of-ways located in the Park. No Owner or its employees, contractors or agents shall damage any public right-of ways in the Park or any Common Area (as described in Section 14 below).

11.04 *Right to Act on Owner's Behalf*

If, in the opinion of the Association or the Village of Germantown, any Owner fails to comply with these maintenance and damage provisions, the Association or the Village or both may give such Owner written notice and such Owner must, within 15 days after such notice, undertake the care and maintenance required to restore said Owner's property to a well-maintained safe, clean, and attractive condition, as to repair any damage, in accordance with the notice. In the event that such Owner fails to remedy the condition after notice, the Association or Village shall have the right and power, but not the obligation, to perform such care and maintenance, or to repair any damage, as it deems necessary or desirable to remedy the violation. If the Village performs the work, all costs incurred may be assessed to the Owner by the Village and added to the Owner's property tax bill for the Site. If the Association performs the work, and the cost of the work remains unpaid for 30 days after the Owner is billed therefor, such charges may be collected pursuant to the procedure set forth in Section 15.

12. Inspection

The Association and the Village of Germantown may from time to time at any reasonable hour or hours, enter or inspect any Site or improvements to ascertain compliance with these Protective Covenants. The Association shall use its best efforts not to compromise security measures and shall strive not to interfere with normal conduct of business when inspecting property under this provision.

13. Enforcement

13.01 *By Legal Action*

These Protective Covenants may be enforced at law or in equity by the Association or the Village of Germantown. However, if the Owners of 50% or more of the Buildable Acres in the Park shall file with the Association a written petition for enforcement or commencement by the Association of proceedings to

enforce these Protective Covenants and the Association shall fail to act accordingly within 30 days, or shall refuse such petition, then such petitioners may within a period of six months after filing such petition commence an action or proceeding against the violating Owner in law or in equity for enforcement or for damages arising from any violation of these Protective Covenants. Neither the Association nor the Village of Germantown shall be liable to any person or entity for failure or refusal to enforce any provision of these Protective Covenants.

13.02 *Association May Levy Fines*

The Association may levy fines for continuing or flagrant violations of these Protective Covenants, including the parking provisions contained in Section 6. Fines shall be $50 per violation or per day of continuing violation, until such time as a different fine schedule is adopted by the Board of Directors. Fines shall be assessed by written notice from the Board of Directors and paid to the Association. Fines for continuing violations shall not commence earlier than 48 hours prior to delivery of written notice to the Owner. Such fines and penalties, if they remain unpaid for 30 days, may become a lien against the Site pursuant to the procedures set forth in Section 15.

13.03 *Right to Act on Owner's Behalf*

In addition to the foregoing remedies, the Association may undertake the obligations of any Owner arising under Section 5.14, Section 6.10 or Section 11 of these Protective Covenants. The right to act on Owner's behalf shall arise if the Owner has not acted to correct a violation of 5.14, concerning sediment and erosion control, Section 6.10, concerning parking and landscaping, or Section 11, concerning maintenance, after receipt of notice of violation from the Association and an opportunity to cure the violation, both as provided in Section 5.14, Section 6.10 and Section 11, respectively.

14. Park Maintenance

The Association shall be responsible for maintenance of the following (together, the "Common Areas"), to the extent that such maintenance is not provided by the Village of Germantown:

A. Any parcel of land or improvement designated as Common Areas on Exhibit B.

B. Any parcel of land or improvement located in Expansion Lands (as defined in Section 17 below) and designated by the Declarant as Common Areas at the time such Expansion Lands are added to the Park.

C. Any property owned by the Association.

D. Any other property that the Association agrees to be responsible for maintaining.

Except as otherwise provided in this Section 14, the Owners of Sites within the Park shall be responsible for maintenance of such Sites, including Greenspace within such Sites, as set forth in Section 11 of these Protective Covenants.

15. Association Assessments

15.01 *General Annual Assessment*

All Sites and the Owners thereof shall be subject to a general annual assessment, determined and levied by the Board of Directors, for the purpose of paying the costs and expenses incurred by the Association in performing its purposes and functions, including but not limited to the enforcement of these Protective Covenants. The Board of Directors shall prepare an annual budget and shall determine a general annual assessment based thereon which shall be sufficient to meet the estimated costs and expenses of the Association for the ensuing year.

If within fifteen (15) days after the annual budget is distributed to the Association members a petition is presented to the Board of Directors protesting such assessments or the budget upon which they are based, and the petition is signed by members having more than fifty percent (50%) of the total number of votes available in the Park, then the Directors shall notify all members of a meeting called for the sole purpose of reviewing such assessments or budget. At such meeting, the vote of more than fifty percent (50%) of the total number of votes available in the Park may revise the budget and assessments, and such revised budget and corresponding assessments shall replace for all purposes the ones previously established; provided, however, that the annual budget and assessments may not be revised downward to a point lower than the average total budget for the preceding two years and provided further, that if a budget and assessments have not been established and made for two preceding years, then the budget and assessments may not be revised downward until two years of experience exist.

The general annual assessment shall be allocated and prorated among the members of the Association in proportion to the Buildable Acres owned by each Owner, and shall be paid at the time and in the manner determined by the Board of Directors.

15.02 *Special Assessments*

Each Site and the Owners thereof shall be subject to special assessment by the Board of Directors to cover all or any part of any extraordinary expenses incurred by the Association but not included in the annual budget. Such special assessments shall be allocated among the Owners in proportion to the Buildable Acres owned by each Owner. Special assessments shall be due and payable sixty (60) days after the affirmative vote declaring such special assessments by the

Board of Directors of the Association. Special assessments levied in any one calendar year shall not exceed 20% of the annual budget for such year without approval of a majority of the total number of votes available in the Park.

15.03 *Collection and Enforcement*

The right to collect or enforce the collection of any assessments, special assessments, charges or fines assessed by the Association under these Protective Covenants is hereby delegated exclusively to the Association. The Owners shall be obligated to pay such charges, assessments, special assessments or fines, when due, and such charges, assessments, special assessments or fines shall also be and constitute a lien until paid, against the Site to which charged. All charges, assessments, special assessments and fines levied by the Association which are unpaid when due shall bear interest from such due date at a rate equal to three percent (3%) per annum above the prime interest rate reported in the Wall Street Journal, or if the Wall Street Journal in unavailable, the prime interest rate in a similar publication selected by the Association, until paid in full provided, however, that the interest rate shall be not less than twelve percent (12%) per annum ("Interest"). Such Interest, together with the underlying assessment or fine, shall from such time as the assessment or fine is unpaid when due become and remain a part of the lien upon such Site until paid.

15.04 *Lien Against Site*

In the event that any assessment, charge or fine levied against any Site hereunder remains unpaid for a period of sixty (60) days from the due date, the Board of Directors may, in its discretion, file an action at law or a claim pursuant to Section 779.70(4) of the Wisconsin Statutes for a lien against such Site at any time within six (6) months from the date of the levy, such claim to be filed in the office of the Clerk of the Circuit Court of Washington County. The resulting lien may be enforced by foreclosure proceedings brought by the Association. Any such foreclosure action shall be brought in the same manner as an action to foreclose a real estate mortgage, and there shall be added to the amount due the costs of suit and Interest, together with a reasonable attorney's fee.

Any lien upon a Site securing unpaid assessments, special assessments, charges or fines arising hereunder shall be subject to and subordinate to the lien of any first mortgage upon such Site whether the mortgage is executed or recorded prior to or after the creation of such lien. Nothing herein contained shall prevent or impede the collection of lawful charges, assessments and taxes by the Village of Germantown.

16. Amendment and Term of Protective Covenants

16.01 *Amendment of Protective Covenants*

These Protective Covenants may be terminated, extended or amended, with a written affirmative vote of 66-2/3% of the total number of votes available in the Park, except that so long as Declarant owns any portion of the Park, no such termination, extension or amendment shall be effective without the written approval of Declarant. These Protective Covenants may not be terminated, extended or amended without the consent of the Village of Germantown.

16.02 *Term of Protective Covenants*

These Protective Covenants shall remain in force for 30 years from the date hereof. Thereafter, these Protective Covenants shall renew automatically for successive periods of 5 years each unless terminated by a majority vote of the total number of votes available in the Park, provided that the Village of Germantown consents to termination.

17. Expansion of the Park

Declarant may from time to time during the term of these Protective Covenants, add property to the Park (the "Expansion Lands"), and by recorded supplement to these Protective Covenants, declare such Expansion Lands, and the owners of such property to be subject to the terms of these Protective Covenants. Declarant shall designate those parts, if any, of such Expansion Lands that will be "Greenspace" or "Common Areas".

18. Termination and Assignment of Declarant's Rights

The rights of Declarant under these Protective Covenants as set forth in Section 2.03, 2.04 and 16.01 and 17 shall terminate thirty (30) years after the date of these Protective Covenants. Declarant may assign all or part of its rights under these Protective Covenants.

19. Municipal Rights of Approval

The Declarant, the Association and all the Owners, together with their successors and assigns, are subject to all laws, ordinances, rules and regulations of the Village of Germantown (as the same may be amended from time to time), and the same may be more restrictive than these Protective Covenants. Nothing in these covenants shall be construed as waiving or releasing any person from compliance with such laws, ordinances, rules and regulations. Approvals gained from the Review Board and/or the Board of Directions on appeal are in no way binding upon the Village, and such approvals do not covey any rights to any Owners in relation to Village laws, ordinances, rules and regulations.

20. Waiver of Rights

The failure of the Association, the Review Board or the Village of Germantown, or any Owner to enforce any provision of these Protective Covenants shall not be deemed to be a waiver of the right to do so thereafter nor of the right to enforce any other restriction. Nor shall the failure of the Review Board or the Village of Germantown to exercise any option to purchase deemed a waiver of any other right under this Declaration or any applicable law, ordinance, rule or regulation.

21. Right to Re-Subdivide

At the time of purchase of a Site from Declarant, such Site shall be considered as a single building site for all purposes hereunder. Re-subdividing of such Site by an individual Owner shall not be permitted without prior approval by the Association and the Village of Germantown.

22. Fee In Lieu of Property Taxes

In the event that the Owner of a Site is exempt by law from payment of real or personal property taxes, then unless waived in writing by the Village of Germantown (the "Village"), the Owner hereby agrees to pay to the Village (for itself and as agent for the Other Taxing Authorities) a fee in lieu of property taxes (the "Property Fee") equal to the property taxes that would have been payable to the Village and Other Taxing Authorities by the Owner with respect to the Site (and any real or personal property located thereon) if the Owner were not so exempt. "Other Taxing Authorities" means Washington County and the local school district and Wisconsin vocational/technical school districts in which the Site is located. The Property Fee shall be payable on the same installment basis, and be subject to the same penalties for late payment, and be subject to the same enforcement procedures, as provided by law for payment of property taxes to the Village and the Other Taxing Authorities. In the event that the Village enters into an agreement with the Owner of a Site, which agreement is inconsistent with the preceding three sentences, then the provisions of such agreement shall control.

23. Effect of Invalidation of Any Provision

In the event that any provision of these Protective Covenants shall be held to be invalid by any court, the invalidity of such provision shall not affect the remaining provisions of these Protective Covenants, which shall continue in full force and effect to the extent enforceable.

IN WITNESS WHEREOF, the Declarant has signed these Protective Covenants as of the date first written above.

(Signatures follow on the next page)

MLG Germantown Investment LLC
By: MLG Investment Fund II LLC, Manager
By: RE Principals Investments II LLC, Manager

By: J. Michael Mooney
Name: J. Michael Mooney
Title: Exec. V.P.

By: Timothy J. Walton
Name: Timothy J. Walton
Title: President

STATE OF WISCONSIN)
) SS.
COUNTY OF Waukesha)

Personally came before me this 2nd day of October, 2017, the above-named J. Michael Mooney and Timothy J. Walton, to me known to be the Exec. V.P. and President respectively, of MLG GERMANTOWN INVESTMENT LLC, and who executed the foregoing instrument and acknowledged the same as the act and deed of said corporation.

PAUL J. HINKFUSS NOTARY PUBLIC STATE OF WISCONSIN

Notary Public, State of Wisconsin
My Commission ~~expires:~~
is Permanent

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APPROVAL OF PROTECTIVE COVENANTS

The undersigned Village of Germantown, Wisconsin hereby approves those certain Protective Covenants for Willow Creek Business Park of Germantown, made and entered into by MLG Germantown Investment LLC on September 29, 2017 and to be recorded in the public records of Washington County, Wisconsin.

IN WITNESS WHEREOF, this instrument has been executed on behalf of the Village of Germantown, Wisconsin, by its duly authorized representatives.

Village of Germantown, Wisconsin

By: Dean R. Wolter
Name: Dean R. Wolter
Title: Village President

ATTEST:

By: Kathleen M. Strebe
Name: Kathleen M. Strebe
Title: Deputy Clerk

STATE OF WISCONSIN)
) SS.
COUNTY OF WASHINGTON)

Personally came before me this 29 day of September, 2017, the above-named Dean R. Wolter and Kathleen M. Strebe the President and Deputy Clerk, respectively, of the Village of Germantown, Wisconsin and who executed the foregoing instrument and acknowledged the same as the act and deed of said entity.

Jackie M Schaefer
Notary Public, State of Wisconsin
My Commission expires: 12/19

NOTARY PUBLIC
JACKIE M. SCHAEFER
STATE OF WISCONSIN

This document was drafted by and after recording should be returned to:

Paul J. Hinkfuss
MLG Companies
13400 Bishop's Lane, Suite 270
Brookfield, WI 53005

EXHIBIT A

Legal Description
of
Willow Creek Business Park of Germantown

BEGINNING at the Southeast corner of said Northeast 1/4 Section, thence North 89°56'02" West along the South line of said Northeast 1/4 Section 967.64 feet to a point; thence North 47°58'02" West 369.24 feet to a point; thence South 42°01'58" West 222.02 feet to a point on the centerline of Appleton Avenue (S.T.H. " 175"); thence North 46°45'05" West along said centerline 354.12 feet to a point; thence North 43°11'13" East along the Southeasterly line of Certified Survey Map No. 2911 and its extension 400.39 feet to a point; thence North 46°48'47" West along the Northeasterly line of said Certified Survey Map 448.35 feet to a point; thence South 88°46'35" West along the Northerly line of said Certified Survey Map 227.59 feet to a point; thence South 01°13'25" East 336.97 feet to a point on the centerline of Appleton Avenue (S.T.H. " 175"); thence North 46°45'05" West along said centerline 339.22 feet to a point; thence North 47°52'41" West along said centerline 411.36 feet to a point; thence North 01°18'32" West 1098.81 feet to a point; thence North 89°35'20" East 550.07 feet to a point on the West line of the East 35 acres of the West 1/2 of the Northeast 1/4 of Section 32; thence North 01°18'32" West along said West line 150.06 feet to a point; thence North 89°35'20" East 652.58 feet to a point; thence North 01°18'32" West 330.00 feet to a point on the North line of the Northeast 1/4 of Section 32; thence North 89°35'20"East along said North line 577.34 feet to a point; thence North 00°30'22" West 1307.93 feet to a point; thence North 89°45'33" East 15.16 feet to a point; thence South 01°04'05" East 696.98 feet to a point; thence North 89°38'41" East 509.45 feet to a point on the West line of Maple Road; thence South 00°21'19" East along said West line 610.45 feet to a point on the North line of the Northeast 1/4 of Section 32; thence North 89°35'20" East along said North line 79.99 feet to a point on the West line of Maple Road; thence South 01°29'48"East along said West line 336.09 feet to a point; thence North 89°35'20"East 50.01 feet to a point on the East line of the Northeast 1/4 of Section 3; thence South 01°29'48" East along said East line 1393.10 feet to a point; thence South 88°30'12" West 363.50 feet to a point; thence South 01°29'48" East 779.67 feet to a point; thence North 88°30'12" East 363.50 feet to a point on the East line of the Northeast 1/4 of Section 32; thence South 01°29'48" East along said East line 179.43 feet to the point of beginning. Containing 5,215,935 or 119.7414 acres of land.

EXHIBIT B

Certified Survey Map of Willow Creek Business Park of Germantown

(Attached)

1438853

RECORDED
September 28, 2017 10:13 AM
SHARON A MARTIN
REGISTER OF DEEDS
WASHINGTON COUNTY, WI
Recording Fee Paid: $30.00
Exemption: 77.25(2R)

CERTIFIED SURVEY MAP NO._____

Part of the Northwest 1/4, Northeast 1/4, Southwest 1/4 and Southeast 1/4 of the Northeast 1/4 of Section 32, and part of the Southeast 1/4 of the Southeast 1/4 of Section 29 all in Town 9 North, Range 20 East, in the Village of Germantown, County of Washington, State of Wisconsin.

Bearings are referenced to the Wisconsin State Plane Coordinate System, South Zone (NAD 1927 datum) in which the South line of the NE 1 /4 of Section 32 bears N89°56'02"W.
All dimensions shown are measured to the nearest hundredth of a foot.
All bearings are measured to the nearest second.

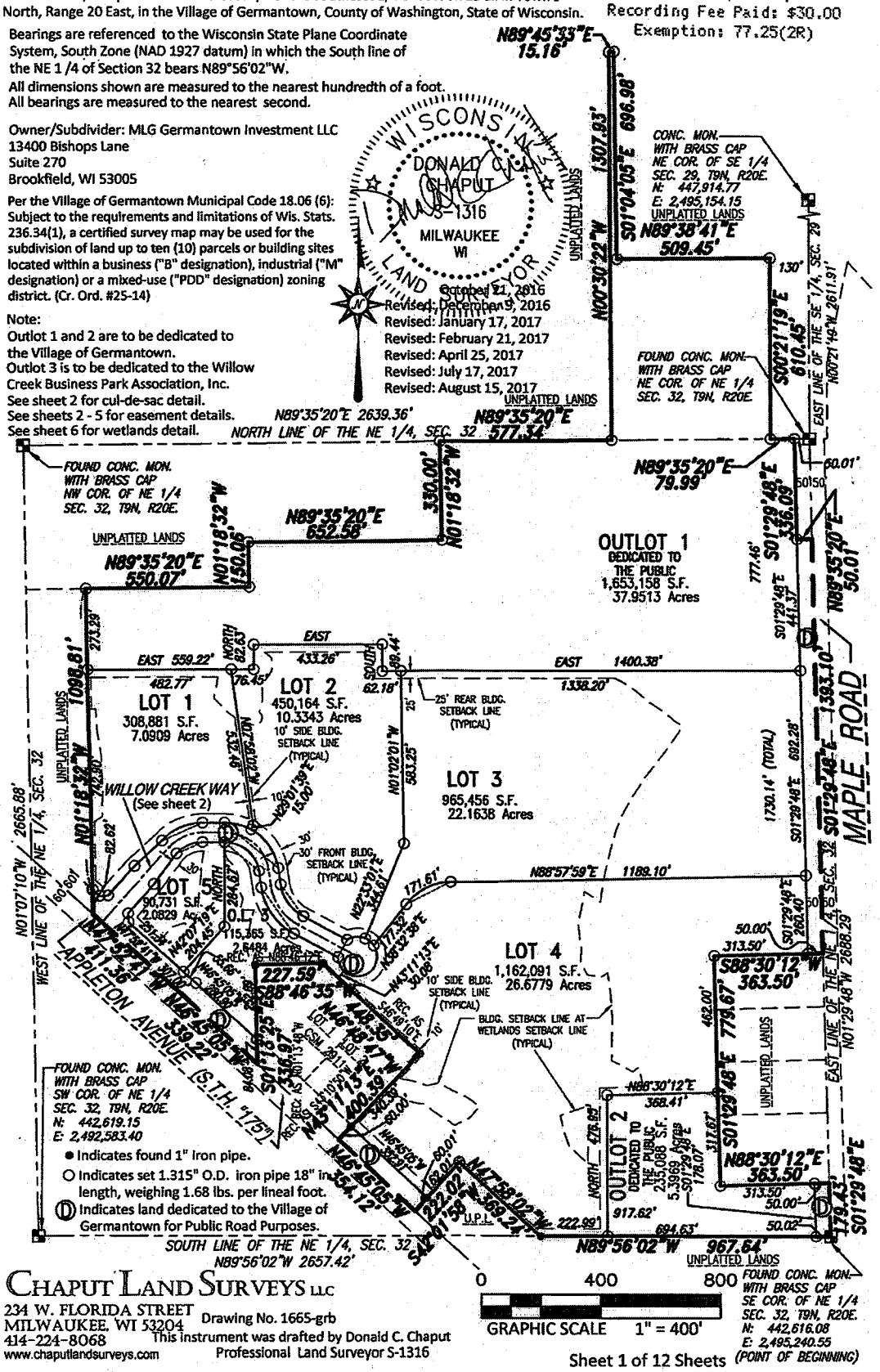
Owner/Subdivider: MLG Germantown Investment LLC
13400 Bishops Lane
Suite 270
Brookfield, WI 53005

Per the Village of Germantown Municipal Code 18.06 (6): Subject to the requirements and limitations of Wis. Stats. 236.34(1), a certified survey map may be used for the subdivision of land up to ten (10) parcels or building sites located within a business ("B" designation), industrial ("M" designation) or a mixed-use ("PDD" designation) zoning district. (Cr. Ord. #25-14)

Note:
Outlot 1 and 2 are to be dedicated to the Village of Germantown.
Outlot 3 is to be dedicated to the Willow Creek Business Park Association, Inc.
See sheet 2 for cul-de-sac detail.
See sheets 2 - 5 for easement details.
See sheet 6 for wetlands detail.

WISCONSIN DONALD C. CHAPUT S-1316 MILWAUKEE WI LAND SURVEYOR

October 21, 2016
Revised: December 9, 2016
Revised: January 17, 2017
Revised: February 21, 2017
Revised: April 25, 2017
Revised: July 17, 2017
Revised: August 15, 2017



CHAPUT LAND SURVEYS LLC
234 W. FLORIDA STREET
MILWAUKEE, WI 53204
414-224-8068
www.chaputlandsurveys.com

Drawing No. 1665-grb
This instrument was drafted by Donald C. Chaput
Professional Land Surveyor S-1316

Sheet 1 of 12 Sheets

Map No. 6782 Vol 52 Page 160

CERTIFIED SURVEY MAP NO._____

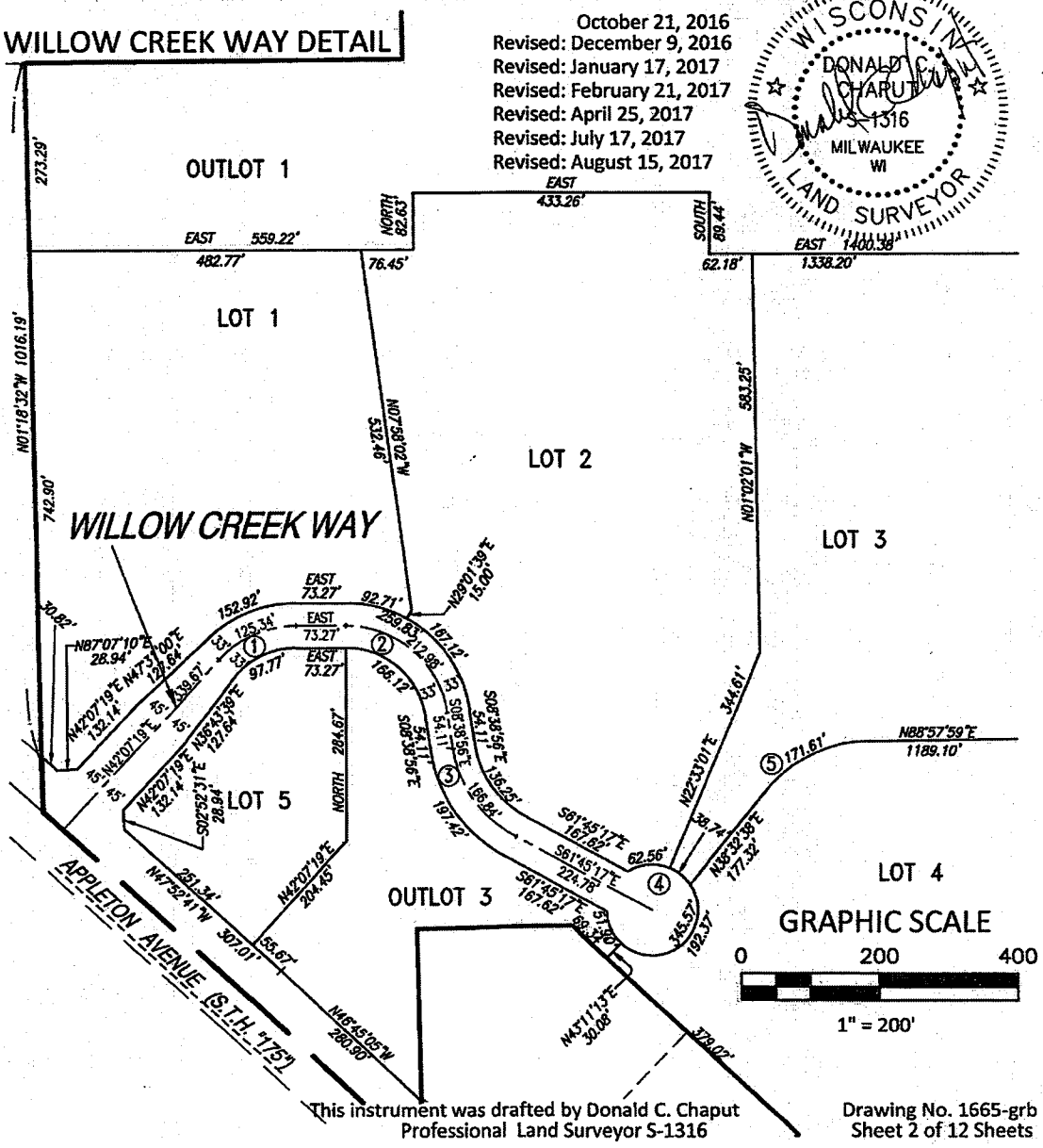
Part of the Northwest 1/4, Northeast 1/4, Southwest 1/4 and Southeast 1/4 of the Northeast 1/4 of Section 32, and part of the Southeast 1/4 of the Southeast 1/4 of Section 29 all in Town 9 North, Range 20 East, in the Village of Germantown, County of Washington, State of Wisconsin.

CURVE DATA

CURVE	LOT	ARC	RADIUS	CHORD BEARING	CHORD	DELTA	TANGENT BEARING	TANGENT BEARING
1	1	152.92'	183.00'	N66°03'39.5"E	148.51'	47°52'41"	N42°07'19"E	EAST
1	CL	125.34'	150.00'	N66°03'39.5"E	121.73'	47°52'41"	N42°07'19"E	EAST
1	5	97.77'	117.00'	N66°03'39.5"E	94.95'	47°52'41"	N42°07'19"E	EAST
2	TOTAL	259.83'	183.00'	S49°19'28"E	238.55'	81°21'04"	EAST	S08°38'56"E
2	1	92.71'	183.00'	S75°29'10.5"E	91.72'	29°01'39"	EAST	S60°58'21"E
2	2	167.12'	183.00'	S34°48'38.5"E	161.37'	52°19'25"	S60°58'21"E	S08°38'56"E
2	CL	212.98'	150.00'	S49°19'28"E	195.53'	81°21'04"	EAST	S08°38'56"E
2	OUTLOT 3	166.12'	117.00'	S49°19'28"E	152.52'	81°21'04"	EAST	S08°38'56"E
3	2	136.25'	147.00'	S35°12'06.5"E	131.43'	53°06'21"	S08°38'56"E	S61°45'17"E
3	CL	166.84'	180.00'	S35°12'06.5"E	160.93'	53°06'21"	S08°38'56"E	S61°45'17"E
3	OUTLOT 3	197.42'	213.00'	S35°12'06.5"E	190.43'	53°06'21"	S08°38'56"E	S61°45'17"E
4	TOTAL	345.57'	66.00'	N28°14'43"E	66.00'	300°00'00"	N58°14'43"E	S01°45'17"E
4	2	62.56'	66.00'	S85°23'52"W	60.24'	54°18'18"	N58°14'43"E	S67°26'59"E
4	3	38.74'	66.00'	N50°37'59"W	38.19'	33°38'00"	S67°26'59"E	S33°48'59"E
4	4	192.37'	66.00'	N49°41'07"E	131.15'	167°00'12"	S33°48'59"E	N46°48'47"W
4	OUTLOT 3	51.90'	66.00'	S24°17'02"E	50.58'	45°03'30"	N46°48'47"W	S01°45'17"E
5	3 & 4	171.61'	195.00'	S63°45'18"W	166.12'	50°25'21"	N38°32'38"E	N88°57'59"E

October 21, 2016
Revised: December 9, 2016
Revised: January 17, 2017
Revised: February 21, 2017
Revised: April 25, 2017
Revised: July 17, 2017
Revised: August 15, 2017

WISCONSIN DONALD C. CHAPUT S-1316 MILWAUKEE WI LAND SURVEYOR



This instrument was drafted by Donald C. Chaput
Professional Land Surveyor S-1316

Drawing No. 1665-grb
Sheet 2 of 12 Sheets

Map No. 6788 Vol 52 Page 161

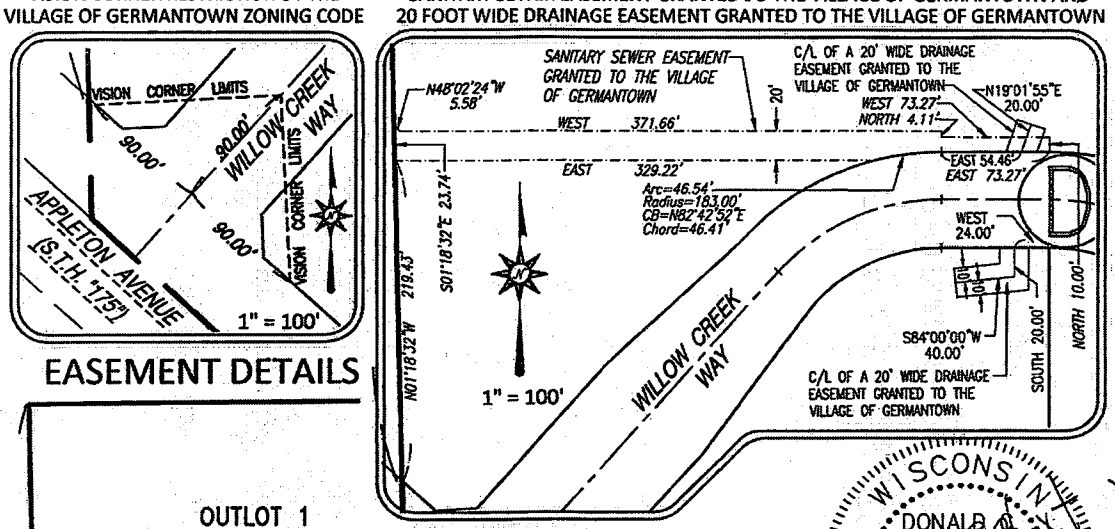
DOC# 1438853

CERTIFIED SURVEY MAP NO._____

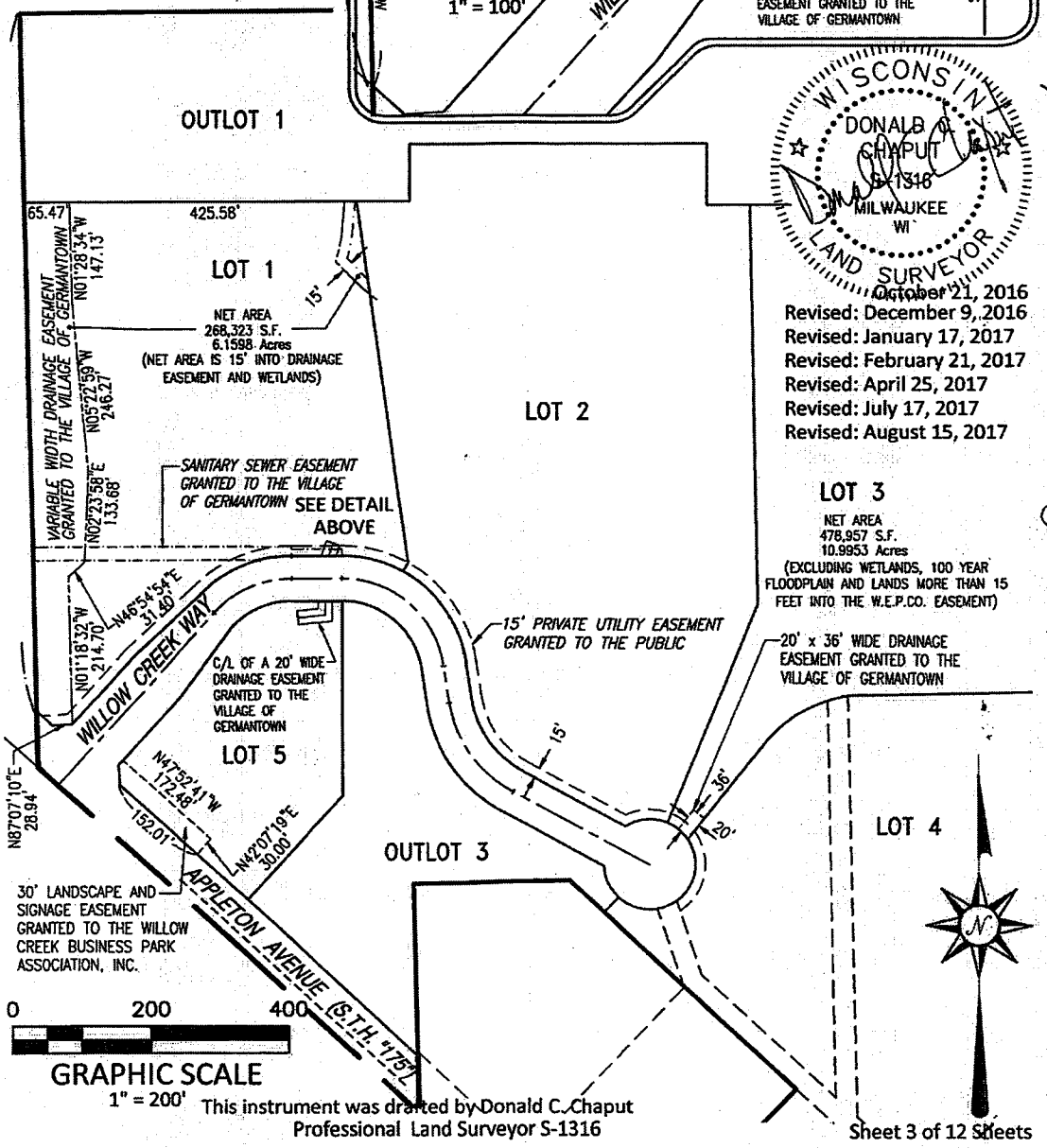
Part of the Northwest 1/4, Northeast 1/4, Southwest 1/4 and Southeast 1/4 of the Northeast 1/4 of Section 32, and part of the Southeast 1/4 of the Southeast 1/4 of Section 29 all in Town 9 North, Range 20 East, in the Village of Germantown, County of Washington, State of Wisconsin.

VISION CORNER RESTRICTION BY THE VILLAGE OF GERMANTOWN ZONING CODE

SANITARY SEWER EASEMENT GRANTED TO THE VILLAGE OF GERMANTOWN AND 20 FOOT WIDE DRAINAGE EASEMENT GRANTED TO THE VILLAGE OF GERMANTOWN



EASEMENT DETAILS



October 21, 2016
Revised: December 9, 2016
Revised: January 17, 2017
Revised: February 21, 2017
Revised: April 25, 2017
Revised: July 17, 2017
Revised: August 15, 2017

Map No. 6772 Vol 53 Page 162

DOC# 1438853

This instrument was drafted by Donald C. Chaput
Professional Land Surveyor S-1316

Sheet 3 of 12 Sheets

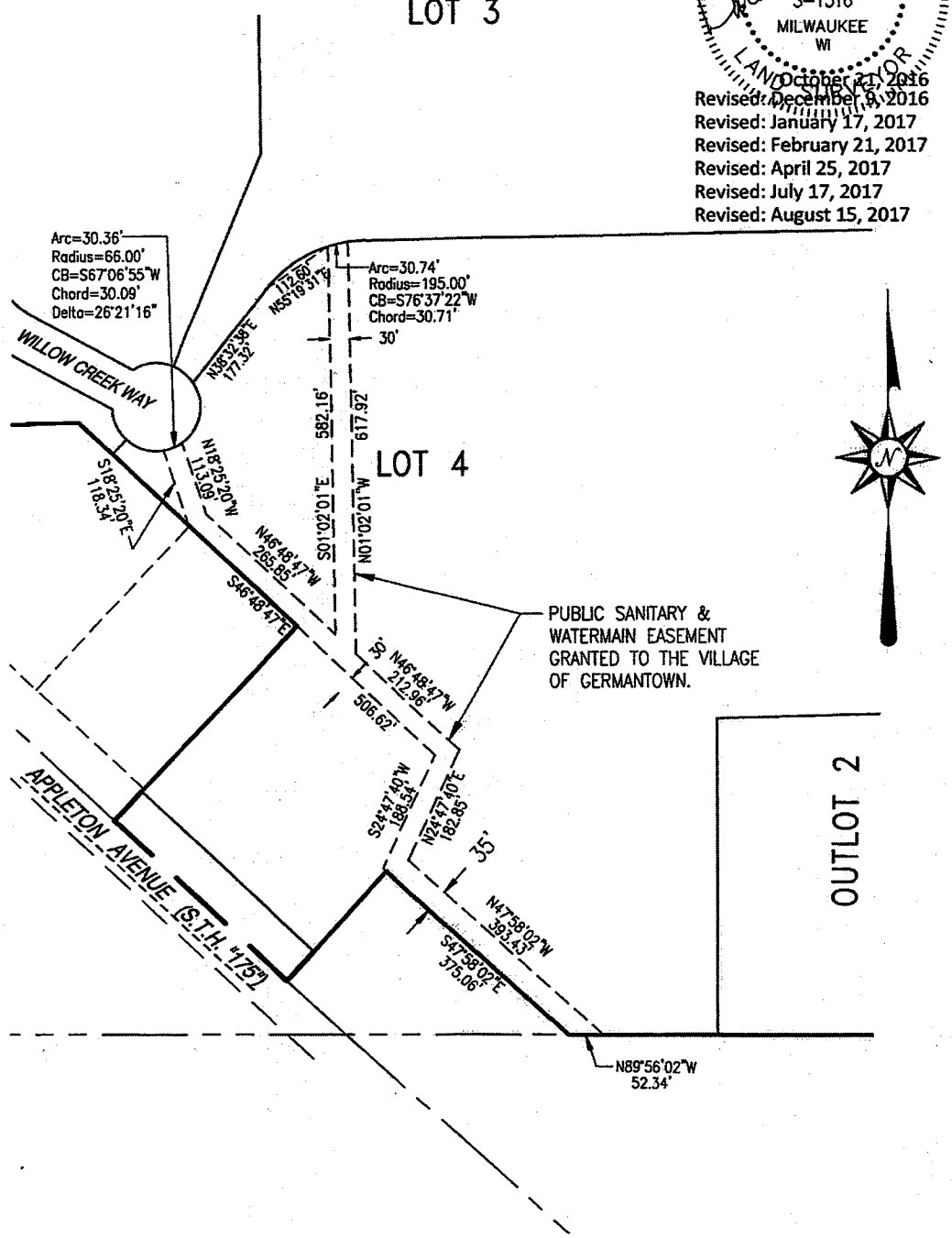
CERTIFIED SURVEY MAP NO._____

Part of the Northwest 1/4, Northeast 1/4, Southwest 1/4 and Southeast 1/4 of the Northeast 1/4 of Section 32, and part of the Southeast 1/4 of the Southeast 1/4 of Section 29 all in Town 9 North, Range 20 East, in the Village of Germantown, County of Washington, State of Wisconsin.

WISCONSIN
DONALD C. CHAPUT
S-1316
MILWAUKEE
WI
LAND SURVEYOR

October 21, 2016
Revised: December 9, 2016
Revised: January 17, 2017
Revised: February 21, 2017
Revised: April 25, 2017
Revised: July 17, 2017
Revised: August 15, 2017

EASEMENT DETAIL



0 200 400

GRAPHIC SCALE
1" = 200'

This instrument was drafted by Donald C. Chaput
Professional Land Surveyor S-1316

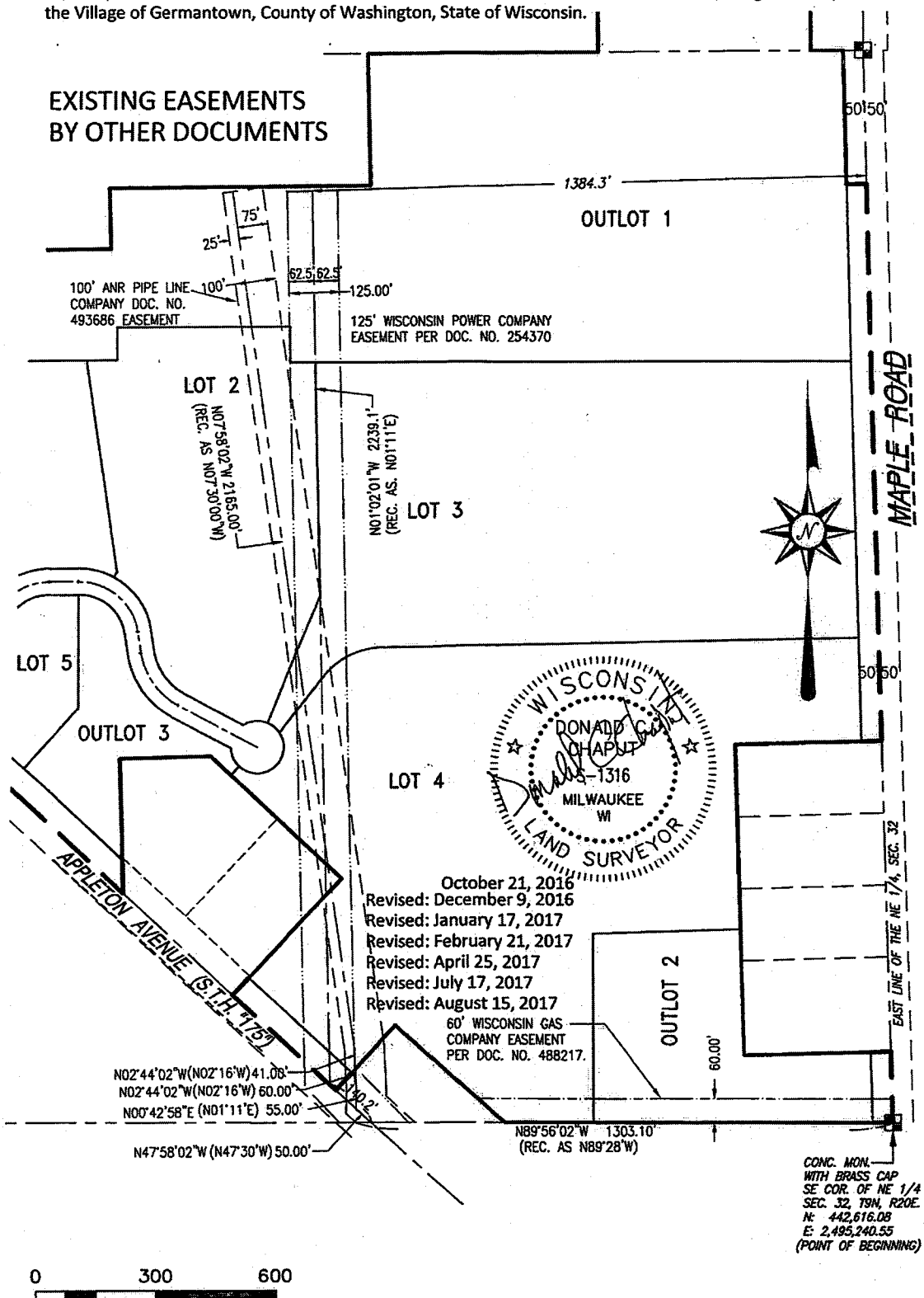
Drawing No. 1665-grb
Sheet 4 of 12 Sheets

Map No. 6783 Vol 52 Page 163

DOC# 1438853

CERTIFIED SURVEY MAP NO._____

Part of the Northwest 1/4, Northeast 1/4, Southwest 1/4 and Southeast 1/4 of the Northeast 1/4 of Section 32, and part of the Southeast 1/4 of the Southeast 1/4 of Section 29 all in Town 9 North, Range 20 East, in the Village of Germantown, County of Washington, State of Wisconsin.



This instrument was drafted by Donald C. Chaput
Professional Land Surveyor S-1316

Drawing No. 1665-grb
Sheet 5 of 12 Sheets

Map No. 6783 Vol 53 Page 164

DOC# 1438853

CERTIFIED SURVEY MAP NO._____

Part of the Northwest 1/4, Northeast 1/4, Southwest 1/4 and Southeast 1/4 of the Northeast 1/4 of Section 32, and part of the Southeast 1/4 of the Southeast 1/4 of Section 29 all in Town 9 North, Range 20 East, in the Village of Germantown, County of Washington, State of Wisconsin.

WETLANDS DETAIL

Wetlands delineated by Wetland & Waterway Consulting, LLC,
Dated: May 14, 2014

WISCONSIN
DONALD C. CHAPUT
S-1316
MILWAUKEE
WI
LAND SURVEYOR

October 21, 2016
Revised: December 9, 2016
Revised: January 17, 2017
Revised: February 21, 2017
Revised: April 25, 2017
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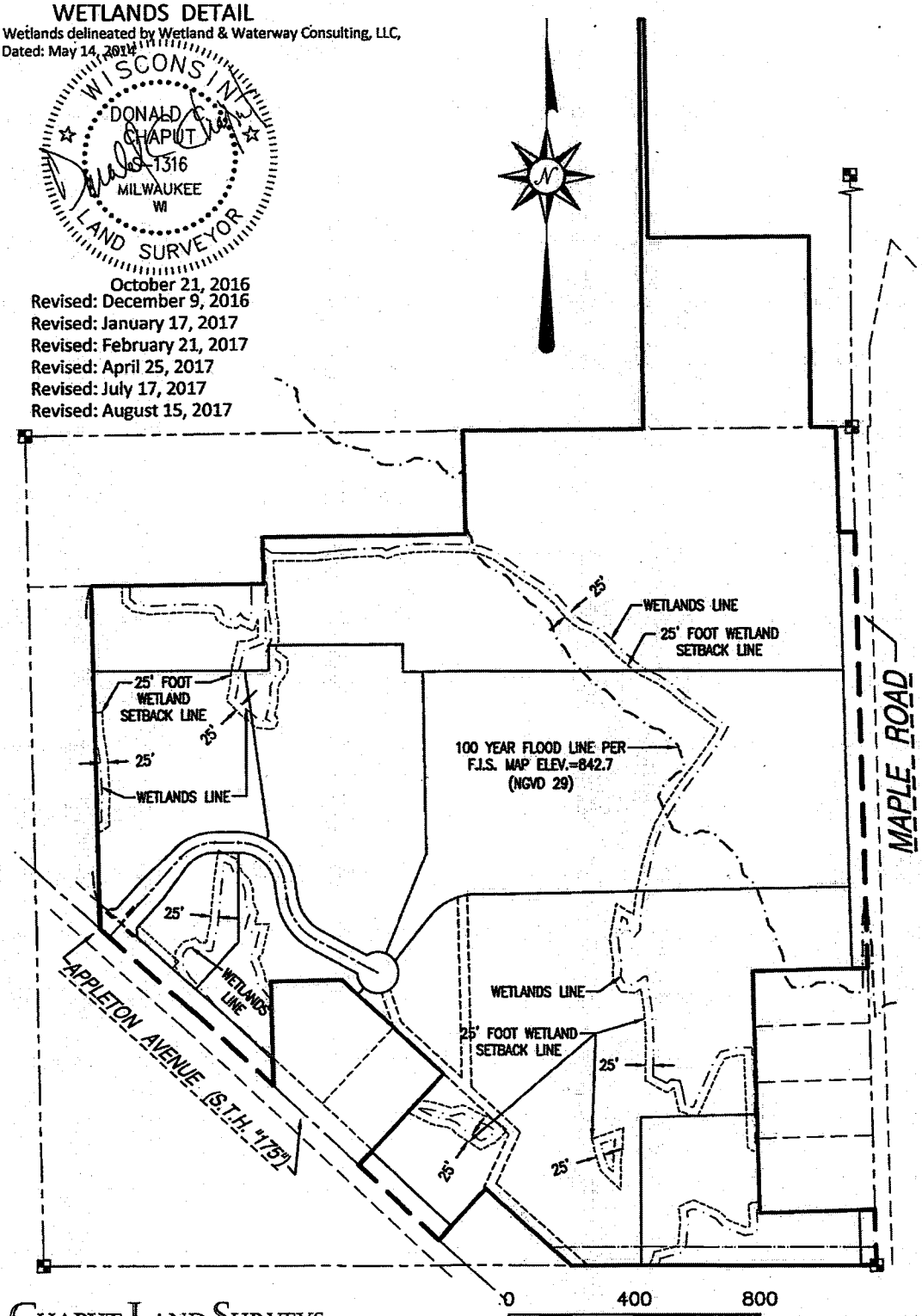


GRAPHIC SCALE
1" = 400'

Map No. 0184 Doc 52 Page 165

DOC# 1438853

CHAPUT LAND SURVEYS LLC
234 W. FLORIDA STREET
MILWAUKEE, WI 53204
414-224-8068
www.chaputlandsurveys.com

This instrument was drafted by Donald C. Chaput
Professional Land Surveyor S-1316

Drawing No. 1665-grb
Sheet 6 of 12 Sheets

CERTIFIED SURVEY MAP NO._____

Part of the Northwest 1/4, Northeast 1/4, Southwest 1/4 and Southeast 1/4 of the Northeast 1/4 of Section 32, and part of the Southeast 1/4 of the Southeast 1/4 of Section 29 all in Town 9 North, Range 20 East, in the Village of Germantown, County of Washington, State of Wisconsin.

I, DONALD C. CHAPUT, a professional land surveyor, do hereby certify:

THAT I have surveyed, divided and mapped a part of the Northwest 1/4, Northeast 1/4, Southwest 1/4 and Southeast 1/4 of the Northeast 1/4 of Section 32, and part of the Southeast 1/4 of the Southeast 1/4 of Section 29 all in Town 9 North, Range 20 East, in the Village of Germantown, County of Washington, State of Wisconsin, , bounded and described as follows:

BEGINNING at the Southeast corner of said Northeast 1/4 Section, thence North 89°56'02" West along the South line of said Northeast 1/4 Section 967.64 feet to a point; thence North 47°58'02" West 369.24 feet to a point; thence South 42°01'58" West 222.02 feet to a point on the centerline of Appleton Avenue (S.T.H. " 175"); thence North 46°45'05" West along said centerline 354.12 feet to a point; thence North 43°11'13" East along the Southeasterly line of Certified Survey Map No. 2911 and its extension 400.39 feet to a point; thence North 46°48'47" West along the Northeasterly line of said Certified Survey Map 448.35 feet to a point; thence South 88°46'35" West along the Northerly line of said Certified Survey Map 227.59 feet to a point; thence South 01°13'25" East 336.97 feet to a point on the centerline of Appleton Avenue (S.T.H. " 175"); thence North 46°45'05" West along said centerline 339.22 feet to a point; thence North 47°52'41" West along said centerline 411.36 feet to a point; thence North 01°18'32" West 1098.81 feet to a point; thence North 89°35'20" East 550.07 feet to a point on the West line of the East 35 acres of the West 1/2 of the Northeast 1/4 of Section 32; thence North 01°18'32" West along said West line 150.06 feet to a point; thence North 89°35'20" East 652.58 feet to a point; thence North 01°18'32" West 330.00 feet to a point on the North line of the Northeast 1/4 of Section 32; thence North 89°35'20"East along said North line 577.34 feet to a point; thence North 00°30'22" West 1307.93 feet to a point; thence North 89°45'33" East 15.16 feet to a point; thence South 01°04'05" East 696.98 feet to a point; thence North 89°38'41" East 509.45 feet to a point on the West line of Maple Road; thence South 00°21'19" East along said West line 610.45 feet to a point on the North line of the Northeast 1/4 of Section 32; thence North 89°35'20" East along said North line 79.99 feet to a point on the West line of Maple Road; thence South 01°29'48"East along said West line 336.09 feet to a point; thence North 89°35'20"East 50.01 feet to a point on the East line of the Northeast 1/4 of Section 3; thence South 01°29'48" East along said East line 1393.10 feet to a point; thence South 88°30'12" West 363.50 feet to a point; thence South 01°29'48" East 779.67 feet to a point; thence North 88°30'12" East 363.50 feet to a point on the East line of the Northeast 1/4 of Section 32; thence South 01°29'48" East along said East line 179.43 feet to the point of beginning. Containing 5,215,935 or 119.7414 acres of land.

THAT I have made this survey, land division and map by the direction of MLG Germantown Investment LLC, owner of said land.

THAT such map is a correct representation of all the exterior boundaries of the land surveyed and the land division thereof made.

THAT I have fully complied with the provisions of Section 236.34 of the Wisconsin Statutes, the Land Division Ordinance of the Village of Germantown in surveying, dividing and mapping the same.

WISCONSIN DONALD C. CHAPUT S-1316 MILWAUKEE WI LAND SURVEYOR

DONALD C. CHAPUT
PROFESSIONAL LAND SURVEYOR S-1316

DATE: October 21, 2016
Revised: December 9, 2016
Revised: January 17, 2017
Revised: February 21, 2017
Revised: April 25, 2017
Revised: July 17, 2017
Revised: August 15, 2017

The following "Dedication and Easement Provisions" were drafted by the Village of Germantown and are shown hereon as a condition of map approval. Inclusion thereof on this document is not to be considered practicing law in the State of Wisconsin by the above signed Land Surveyor, the Land Surveyor is not responsible for rights granted, perceived or otherwise stated herein.

CHAPUT LAND SURVEYS LLC
234 W. FLORIDA STREET
MILWAUKEE, WI 53204
414-224-8068
www.chaputlandsurveys.com

This instrument was drafted by Donald C. Chaput
Professional Land Surveyor S-1316

Drawing No. 1665-grb
Sheet 7 of 12 Sheets

Map No. 6783 Vol 57 Page 166
DOC# 1438853

CERTIFIED SURVEY MAP NO._____

Part of the Northwest 1/4, Northeast 1/4, Southwest 1/4 and Southeast 1/4 of the Northeast 1/4 of Section 32, and part of the Southeast 1/4 of the Southeast 1/4 of Section 29 all in Town 9 North, Range 20 East, in the Village of Germantown, County of Washington, State of Wisconsin.

Utility Easement

Lots 1, 2, 3 and 4 of the Certified Survey Map shall be subject to a 15' wide Private Utility Easement on, over, under, across and upon those parts of Lots 1, 2, 3 and 4 as more particularly identified on this Certified Survey Map as the "15' Private Utility Easement" ("Easement"). The Easement is granted for the purposes of permitting public utilities or private providers (collectively "Providers") to install, lay, operate, repair, maintain and reconstruct as necessary from time to time underground pipes and conduits and related appurtenances for cable television, internet, gas, telephone and electric service. The Easement is restricted to the use of the land as stated herein and shall run with the land and shall be binding upon any future owners of the land and their successors and assigns.

The right, permission and authority is also granted to Providers using the Easement to enter the Easement in order to trim and/or cut down trees and/or brush where said trees and/or brush interfere with the Easement and to perform such regular and customary, or extraordinary or emergency maintenance, repairs or replacement to the improvements as the Providers shall deem necessary and appropriate. Upon completion of any such work, the Provider undertaking such activity shall repair at its sole cost all damage caused by activities associated with such repairs or maintenance and restore the Easement to the condition existing prior to such entry by the Provider or its agents. The restoration, however, does not apply to any brush or trees that may be removed at any time pursuant to the rights herein granted.

The land included in the Easement shall be restricted as follows:

(1) The land will only be put to uses consistent with this Easement and may include lawn areas, parking areas and small and easily movable structures that will not interfere with access to the facilities or appurtenances.

(2) No obstruction of access to the Easement shall be created in the future and no trees or other structures or items that may interfere with inspection, maintenance or repair shall be located in the space over and within vertical planes located on both sides of the Easement and/or its appurtenances.

The Providers utilizing the Easement will indemnify and hold MLG Germantown Investment LLC ("Developer"), including its members, officer, employees, successors and assigns, harmless from and against any and all claims, litigation, liability, loss, injury, damage, cost and/or expense on account of injury to or death of any person or persons whomsoever in any way arising out of caused, connected with, or attributed to the Easement or the rights herein granted, and the Provider will defend by counsel satisfactory to Developer any suit or action brought against same based on any alleged injury, death, or damage and shall pay all damages, costs and expenses, including attorneys' fees connected therewith or resulting therefrom.

Drainage Easements

The Village of Germantown ("Village") is hereby granted Drainage Easements over, under, across and upon those parts of Lots 1, 3 and 5 as more particularly identified on this Certified Survey Map as "20' Wide Drainage Easement" and "Variable Width Drainage Easement" ("collectively identified as "Easement"). The Easement is granted for the purposes of installing, operating, maintaining, repairing, replacing and reconstructing as necessary from time to time, facilities used in connection with stormwater drainage and detention and retention, including, but not limited to, stormwater drainage pipes and surface swales. The Easement is restricted to the use of the land as stated herein and shall run with the land and shall be binding upon and inure to the benefit of the Village and its successors and assigns.

The right, permission and authority is also granted to the Village to enter the Easement in order to trim and/or cut down trees and/or brush where said trees and/or brush interfere with the Easement and to perform such regular and customary, or extraordinary or emergency maintenance, repairs or replacement to the improvements as the Village shall deem necessary and appropriate. Upon completion of any such work, the Village shall repair at is sole cost all damage caused by activities associated with such repairs or maintenance to the condition existing prior to such entry by the Village or its agents. The restoration, however, does not apply to any brush or trees that may be removed at any time pursuant to the rights herein granted.

The land included in the Easement shall be restricted as follows:

(1) The land will only be put to uses consistent with this Easement and no pavement, or improvements that will interfere with the use of the Easement shall be placed on or in the Easement without the prior written consent of the Village.

(2) No obstruction of access to the drainage facilities or its appurtenances shall be created in the future and no trees or other structures or items that may interfere with inspection, maintenance or repair shall be located in the space over and within vertical planes located on both sides of the Easement and/or its appurtenances.

(3) The surface elevation of the land within the Easement shall not be raised or lowered without the prior written approval of the Village Engineer of the Village of Germanrtown.

The Village will indemnify and hold MLG Germantown Investment LLC ("Developer"), including its members, officer, employees, successors and assigns, harmless from and against any and all claims, litigation, liability, loss, injury, damage, cost and/or expense on account of injury to or death of any person or persons whomsoever in any way arising out of caused, connected with, or attributed to the Easement or the rights herein granted, and the Village will defend by counsel satisfactory to Developer any suit or action brought against same based on any alleged injury, death, or damage and shall pay all damages, costs and expenses, including attorneys' fees connected therewith or resulting therefrom.

WISCONSIN DONALD C. CHAPUT S-1316 MILWAUKEE WI LAND SURVEYOR

Dated: October 21, 2016
Revised: December 9, 2016
Revised: January 17, 2017
Revised: February 21, 2017
Revised: April 25, 2017
Revised: July 17, 2017
Revised: August 15, 2017

CHAPUT LAND SURVEYS LLC
234 W. FLORIDA STREET
MILWAUKEE, WI 53204
414-224-8068
www.chaputlandsurveys.com

This instrument was drafted by Donald C. Chaput
Professional Land Surveyor S-1316

Drawing No. 1665-grb
Sheet 8 of 12 Sheets

Map No 6784 Vol 52 Page 161

DOC# 1438853

CERTIFIED SURVEY MAP NO._____

Part of the Northwest 1/4, Northeast 1/4, Southwest 1/4 and Southeast 1/4 of the Northeast 1/4 of Section 32, and part of the Southeast 1/4 of the Southeast 1/4 of Section 29 all in Town 9 North, Range 20 East, in the Village of Germantown, County of Washington, State of Wisconsin.

Public Sanitary and Watermain Easement

The Village of Germantown ("Village") is hereby granted a Public Sanitary and Watermain Easement over, under, across and upon that part of Lot 4 as more particularly identified on this Certified Survey Map as the "Public Sanitary and Watermain Easement" ("Easement"). The Easement is granted for the purposes of installing, operating, maintaining, repairing and replacing as necessary sanitary sewer and municipal water facilities including but not limited to laterals, connections, watermains and related facilities used to provide public sanitary sewer and municipal water services. The Easement is restricted to the use of the land as stated herein and shall run with the land and be binding upon and inure to the benefit of the Village and its successors and assigns.

The right, permission and authority is also granted to the Village to enter the Easement in order to trim and/or cut down certain trees and/or brush where said trees and/or brush interfere with the Easement and to perform such regular and customary, or extraordinary or emergency maintenance, repairs or replacement to the improvements as the Village shall deem necessary and appropriate. Upon completion of any such work, the Village shall repair at is sole cost all damage caused by activities associated with exercising rights under this Public Sanitary and Water Main Easement to the condition existing prior to such entry by the Village or its agents. The restoration, however, does not apply to any brush or trees that may be removed at any time pursuant to the rights herein granted.

The land included in the Easement shall be restricted as follows:

(1) The land will only be put to uses consistent with this Easement and may include lawn areas, driveways, paved parking areas and small and easily movable structures that will not interfere with access to the facilities or appurtenances.

(2) No obstruction of access to the sanitary sewer or water main or their appurtenances shall be created in the future and no trees or other structures or items that may interfere with inspection, maintenance or repair shall be located in the space over and within vertical planes located on both sides of the facility.

The Village will indemnify and hold MLG Germantown Investment LLC ("Developer"), including its members, officer, employees, successors and assigns, harmless from and against any and all claims, litigation, liability, loss, injury, damage, cost and/or expense on account of injury to or death of any person or persons whomsoever in any way arising out of caused, connected with, or attributed to the Easement or the rights herein granted, and the Village will defend by counsel satisfactory to Developer any suit or action brought against same based on any alleged injury, death, or damage and shall pay all damages, costs and expenses, including attorneys' fees connected therewith or resulting therefrom.

Sanitary Sewer Easement

The Village of Germantown ("Village") is hereby granted a Sanitary Sewer Easement over, under, across and upon that part of Lot 1 as more particularly identified on this Certified Survey Map as the "Sanitary Sewer Easement" ("Easement"). The Easement is granted for the purposes of installing, operating, maintaining, repairing, replacing and reconstructing as necessary sanitary sewer facilities including but not limited to laterals and connections used in connection with providing municipal sanitary sewer. The Easement is restricted to the use of the land as stated herein and shall run with the land and shall be binding upon and inure to the benefit of the Village and its successors and assigns.

The right, permission and authority is also granted to the Village to enter the Easement in order to trim and/or cut down certain trees and/or brush where said trees and/or brush interfere with the Easement and to perform such regular and customary, or extraordinary or emergency maintenance, repairs or replacement to the improvements as the Village shall deem necessary and appropriate. Upon completion of any such work, the Village shall repair at is sole cost all damage caused by activities associated with exercising rights under this Sanitary Sewer Easement to the condition existing prior to such entry by the Village or its agents. The restoration, however, does not apply to any brush or trees that may be removed at any time pursuant to the rights herein granted.

The land included in the Easement shall be restricted as follows:

(1) The land will only be put to uses consistent with this Easement and may include lawn areas, driveways, paved parking areas and small and easily movable structures that will not interfere with access to facility or its appurtenances.

(2) No obstruction of access to the sanitary sewer or its appurtenances shall be created in the future and no trees or other structures or items that may interfere with inspection, maintenance or repair shall be located in the space over and within vertical planes located on both sides of the facility and/or its appurtenances.

The Village will indemnify and hold MLG Germantown Investment LLC ("Developer"), including its members, officer, employees, successors and assigns, harmless from and against any and all claims, litigation, liability, loss, injury, damage, cost and/or expense on account of injury to or death of any person or persons whomsoever in any way arising out of caused, connected with, or attributed to the Easement or the rights herein granted, and the Village will defend by counsel satisfactory to Developer any suit or action brought against same based on any alleged injury, death, or damage and shall pay all damages, costs and expenses, including attorneys' fees connected therewith or resulting therefrom.

WISCONSIN DONALD C. CHAPUT S-1316 MILWAUKEE WI LAND SURVEYOR

Dated: October 21, 2016
Revised: December 9, 2016
Revised: January 17, 2017
Revised: February 21, 2017
Revised: April 25, 2017
Revised: July 17, 2017
Revised: August 15, 2017

CHAPUT LAND SURVEYS LLC
234 W. FLORIDA STREET
MILWAUKEE, WI 53204
414-224-8068
www.chaputlandsurveys.com

This instrument was drafted by Donald C. Chaput
Professional Land Surveyor S-1316

Drawing No. 1665-grb
Sheet 9 of 12 Sheets

Map No. 6788 Vol 52 Page 168

DOC# 1438853

CERTIFIED SURVEY MAP NO._____

Part of the Northwest 1/4, Northeast 1/4, Southwest 1/4 and Southeast 1/4 of the Northeast 1/4 of Section 32, and part of the Southeast 1/4 of the Southeast 1/4 of Section 29 all in Town 9 North, Range 20 East, in the Village of Germantown, County of Washington, State of Wisconsin.

Landscape and Signage Easement

The Willow Creek Business Park Association, Inc. ("Association") is hereby granted a Landscape and Signage Easement ("Easement") over and across that part of Lot 5 identified on this Certified Survey Map as the "30' Landscape and Signage Easement Granted to Willow Creek Business Park Association" ("Easement"). The Easement is granted for the purposes of constructing, installing, maintaining, repairing, replacing and reconstructing as necessary an entrance monument and adjacent landscaping and lighting. This Grant of Easements shall run with the land and shall be binding upon and inure to the benefit of the Association and its successors and assigns. The Association and its successors and assigns agree to restrict the use of the land included in the Easement consistent with uses as stated herein. The Association shall maintain and repair the entrance monument and adjacent landscaping at its expense as may be required from time to time. No structure or improvement other than the entrance monument and associated landscaping and lighting shall be placed on the Easement.

The Village and its agents shall have the right to enter upon the Easement in order to trim and/or cut down certain trees and/or brush where said trees and/or brush interfere with the Easement and to perform such regular and customary, or extraordinary or emergency maintenance, repairs or replacement to the improvements as the Village shall deem necessary and appropriate. Upon completion of any such work, the Village shall repair at is sole cost all damage caused by activities associated with exercising rights under this Sanitary Sewer Easement to the condition existing prior to such entry by the Village or its agents. The restoration, however, does not apply to any brush or trees that may be removed at any time pursuant to the rights herein granted.

Temporary Access and Drainage Easement

The Village of Germantown ("Village") is hereby granted a temporary access easement over, across and through Lots 1, 2, 3 and 4 for the purposes of ingress and egress to maintain, repair, replace and reconstruct as necessary the stormwater ponds owned by the Village on Outlots 1 and 2 ("Access Easement"). The Village shall repair all damage caused by activities associated with exercising rights under this Access Easement at its sole cost and to the condition that existed prior to exercising the Village's rights. The rights conveyed to the Village under this Access Easement shall terminate upon approval of a development plan for each lot and when a permanent stormwater access easement for each pond is recorded by the Village.

All drainage ditches located outside of the road right of way of Willow Creek Way on Lots 1, 2, 3 and 4 and future land divisions, are considered private. The individual property owners are responsible for the maintenance and upkeep if each drainage way at their cost whether it is an open drainage way or an enclosed drainage way with a storm pipe.

The Village of Germantown will be granted an access easement to each of the four (4) detention ponds from Willow Creek Way upon site development submittals from the future owners of Lots 1, 2, 3 and 4 and the future land divisions of these two Lots.

Map No. 6184 Vol 52 Page 169

DOC# 1438853

WISCONSIN DONALD C. CHAPUT S-1316 MILWAUKEE WI LAND SURVEYOR

Dated: October 21, 2016
Revised: December 9, 2016
Revised: January 17, 2017
Revised: February 21, 2017
Revised: April 25, 2017
Revised: July 17, 2017
Revised: August 15, 2017

CHAPUT LAND SURVEYS LLC
234 W. FLORIDA STREET
MILWAUKEE, WI 53204
414-224-8068
www.chaputlandsurveys.com

This instrument was drafted by Donald C. Chaput
Professional Land Surveyor S-1316

Drawing No. 1665-grb
Sheet 10 of 12 Sheets

CERTIFIED SURVEY MAP NO._____

Part of the Northwest 1/4, Northeast 1/4, Southwest 1/4 and Southeast 1/4 of the Northeast 1/4 of Section 32, and part of the Southeast 1/4 of the Southeast 1/4 of Section 29 all in Town 9 North, Range 20 East, in the Village of Germantown, County of Washington, State of Wisconsin.

OWNER'S CERTIFICATE

MLG Germantown Investment LLC, a Wisconsin limited liability company, duly organized and existing under and by virtue of the laws of the State of Wisconsin, as owner, hereby certifies that said limited liability company caused the land described on this Certified Survey Map to be surveyed, divided, mapped and dedicated as represented on this map in accordance with the requirements of the Village of Germantown.

MLG Germantown Investment LLC, as owner, does further certify that this map is required to be submitted to the following for approval: Village of Germantown.

MLG Germantown Investment LLC, as owner, hereby dedicate Willow Creek Way, that part of Maple Road and Appleton Avenue (S.T.H. "175") to the Village of Germantown for public road purposes as represented on Sheet 1 of 12 of this Certified Survey Map.

IN WITNESS WHEREOF, MLG Germantown Investment LLC, has caused these presents to be signed by the hand of ANDREW C. TESKE, Vice President, on this 19th day of September, 2017

In the presence of:

Joseph A. Bukovich
(Witness) Joseph A Bukovich

Andrew C. Teske
ANDREW C. TESKE, Vice President

STATE OF WISCONSIN}
:SS
WASHINGTON COUNTY}

Personally came before me this 19 day of September, 2017, ANDREW C. TESKE, Vice President of MLG Germantown Investment LLC, to me known as the person who executed the foregoing instrument and acknowledged that he executed the foregoing instrument as such officer as the deed of said limited liability company, by its authority.

LISA A. JUTZ NOTARY PUBLIC STATE OF WISCONSIN

Notary Public Lisa A. Jutz
State of Wisconsin
My commission expires. 3/24/20
My commission is permanent.

CONSENT OF CORPORATE MORTGAGEE

Gloria A. Neu Revocable Living Trust, mortgagee of the above described land, does hereby consent to the surveying, dividing and mapping the land described on this map and does hereby consent to the above certificate of MLG Germantown Investment LLC, OWNER.

By: Gloria A Neu
Gloria A. Neu, Trustee

STATE OF WISCONSIN}
:SS
WAUKESHA COUNTY}

Personally came before me this 14th day of September, 2017, Gloria A. Neu, Trustee of Germantown, to me known as the person who executed the foregoing instrument and acknowledged that he executed the foregoing instrument as such officer as the deed of said corporation, by its authority.

WISCONSIN DONALD C. CHAPUT S-1316 MILWAUKEE WI LAND SURVEYOR

Notary Public John H. Niebler
State of Wisconsin
~~My commission expires.~~
My commission is permanent.

October 21, 2016
Revised: December 9, 2016
Revised: January 11, 2017
Revised: February 21, 2017
Revised: April 25, 2017
Revised: July 17, 2017
Revised: August 15, 2017

This instrument was drafted by Donald C. Chaput Professional Land Surveyor S-1316

CHAPUT LAND SURVEYS LLC
234 W. FLORIDA STREET
MILWAUKEE, WI 53204
414-224-8068
www.chaputlandsurveys.com

Drawing No. 1665-grb
Sheet 11 of 12 Sheets

Map No. 6484 Vol 53 Page 170

DOC# 1438853

CERTIFIED SURVEY MAP NO._____

Part of the Northwest 1/4, Northeast 1/4, Southwest 1/4 and Southeast 1/4 of the Northeast 1/4 of Section 32, and part of the Southeast 1/4 of the Southeast 1/4 of Section 29 all in Town 9 North, Range 20 East, in the Village of Germantown, County of Washington, State of Wisconsin.

CONSENT OF CORPORATE MORTGAGEE

NMMR & Associates, mortgagee of the above described land, does hereby consent to the surveying, dividing and mapping the land described on this map and does hereby consent to the above certificate of MLG Germantown Investment LLC, OWNER.

By: NMMR

Name: Norbert Weyer

Title: Norbert Weyer Partner

STATE OF WISCONSIN}
:SS
Washington COUNTY}

Personally came before me this 18 day of September, 2017, Norbert Weyer of NMMR, to me known as the person who executed the foregoing instrument and acknowledged that he executed the foregoing instrument as such officer as the deed of said corporation, by its authority.

Lee Becker
Notary Public
State of Wisconsin
My commission expires. 8/28/2020
My commission is permanent.

VILLAGE OF GERMANTOWN PLANNING COMMISSION APPROVAL

This Certified Survey Map is hereby approved by the Planning Commission of the Village of Germantown this 10th day of JULY, 2017.

Dean Wolter, Chairperson — Date: 9-27-17

Laura A. Johnson, Secretary — Date: 9-20-17

VILLAGE OF GERMANTOWN BOARD APPROVAL

This Certified Survey Map being a division of part of the Northwest 1/4, Northeast 1/4, Southwest 1/4 and Southeast 1/4 of the Northeast 1/4 of Section 32, and part of the Southeast 1/4 of the Southeast 1/4 of Section 29 all in Town 9 North, Range 20 East, in the Village of Germantown, County of Washington, State of Wisconsin. having been approved by the Planning Commission being the same, is hereby approved and the dedication of Willow Creek Way and part of Maple Road and Appleton Avenue (S.T.H. "175") for public road purposes as shown on Sheet 1 of 12 is hereby accepted by the Village Board of Trustees of the Village of Germantown on this 17th day of JULY, 2017.

Dean Wolter, Village President — Date: 9-27-17

~~Barbara K. D. Goeckner, Village Clerk~~
Kathleen M. Strobe, Deputy Clerk — Date: 9/28/17

WISCONSIN
DONALD C. CHAPUT
S-1316
MILWAUKEE
WI
LAND SURVEYOR

October 21, 2016
Revised: December 9, 2016
Revised: January 17, 2017
Revised: February 21, 2017
Revised: April 25, 2017
Revised: July 17, 2017
Revised: August 15, 2017

This instrument was drafted by Donald C. Chaput Professional Land Surveyor S-1316

CHAPUT LAND SURVEYS LLC
234 W. FLORIDA STREET
MILWAUKEE, WI 53204
414-224-8068
www.chaputlandsurveys.com

Drawing No. 1665-grb
Sheet 12 of 12 Sheets

Map No. 6785 Vol 53 Page 171

DOC# 1438853

251-1,204 USG | 949-4,448 L

TRANSCUBE GLOBAL

TRANSPORTABLE FULL OF FUEL

The TransCube Global is a transportable, environmentally secure, double-walled fuel storage tank that offers an efficient solution for on-site fueling and auxiliary supply. Extend equipment run times and fuel up to 3 pieces of equipment simultaneously to save time and money.

BENEFITS

TRANSPORTABLE
UN-IBC, USDOT & Transport Canada recognized for safe fuel storage & transport.

110% CONTAINED
Built-in double-walled containment eliminates the need for spill pans or basins.

READY TO MOVE
Four-way fork pockets & full-load lifting eyes for easy transport when full of fuel.

TURNKEY
Built for your fueling needs with pre-installed accessories. Arrives onsite ready to go.

SECURE
Lockable equipment cabinet keeps fuel, ports and equipment safe.

GUARANTEED
Industry leading 8-year tank warranty. We've got you covered.

WESTERN GLOBAL®

T: +1 866 814 2470 **W:** western-global.com

APPLICATION USES

- Onsite fleet refueling
- Remote & mega jobsites
- Extended runtime
  - Generators
  - Pumps
  - Heaters
- Disaster relief
- Mining

MODELS & SPECIFICATIONS

	10TCG	20TCG	30TCG	40TCG	50TCG
BRIM FILL	251 USG / 949 L	551 USG / 2,091 L	787 USG / 2,980 L	1,000 USG / 3,786 L	1,204 USG / 4,558 L
95% SAFE FILL	238 USG / 902 L	525 USG / 1,986 L	748 USG / 2,832 L	950 USG / 3,597 L	1,154 USG / 4,331 L
WEIGHT (EMPTY)	1,190 lbs / 540 kg	1,814 lbs / 823 kg	2,425 lbs / 1,100 kg	5,070 lbs / 1,580 kg	6,209 lbs / 1,679 kg
WEIGHT (FULL)	3,178 lbs / 1,442 kg	6,194 lbs / 2,809 kg	8,666 lbs / 3,930 kg	11,177 lbs / 5,175 kg	13,867 lbs / 6,599 kg
DIMENSIONS (L x W x H)	45 x 45 x 52 in 1,155 x 1,155 x 1,324 mm	90 x 45 x 52 in 2,280 x 1,150 x 1,320 mm	90 x 61 x 52 in 2,286 x 1,550 x 1,321 mm	91 x 91 x 45 in 2,312 x 2,312 x 1,143 mm	91 x 91 x 52 in 2,312 x 2,312 x 1,321 mm

NFPA Transport Canada UL LISTED Sourcewell

Docusign Envelope ID: 33539BAB-4FC3-43AE-883F-6E7966EA531B

Village of Germantown ...Willkommen

ZONING COMPLIANCE/ OCCUPANCY PERMIT

Date of Application: 11/04/24

Fee Received By: JY

Please read and print legibly. List name of actual contact person (NOT just business name).

APPLICANT OR AGENT:

Name: Caitlin LaJoie, Briohn Building Corp

Address: 3885 N Brookfield Rd

City/State/Zip: Brookfield, WI 53045

Phone: 262-307-8792

E-Mail: clajoie@briohn.com

PROPERTY or Business OWNER:

Name: Ken Albaugh, Sr Dir Sales & Services, Xylem

Address: 84 Floodgate Road

City/State/Zip: Bridgeport, NJ 08014

Phone: 615-975-5410

E-Mail: ken.albaugh@xylem.com

PROPERTY ADDRESS OR Tax Parcel ID#: GTNV_321973 (N102W19200 Willow Creek Way, Suite 200)

DESCRIPTION OF PROPOSED USE (Describe improvements, structures, uses and activities conducted, services provided, products made or sold, # of employees, hours of operation, etc. that will enable Zoning Administrator to determine if the proposed use or operation complies with the applicable zoning district and/or other use restrictions that may apply to the subject property. Use back side or additional sheets as needed):

This request relates to the site plan and business operations for Xylem. Indoor warehouse area will be used for storage of Godwin, Flygt and Evoqua standard products normal warehousing, cylinder & vessel exchanges, pump repairs and services. The outdoor storage area will be used for Godwin and Flygt rental pumps, pipe, and accessory storage. Normal hours of operation are Monday through Friday from 7:00a - 5:00p; emergency response for customer emergencies require access 24/7/365 and accounts for less than 10% of normal operations. One day shift with limited overtime based on customer demand, served by approximately 20 full time employees. While fuel tanks are occasionally used, there will be no permanent tanks on site. Any and all tanks used will be temporary storage in nature and 100% DOT approved / double walled tanks.

READ AND INITIAL THE FOLLOWING:

- ☑ I understand that Village Staff may request additional information to properly evaluate this request and failure to provide such information may in itself by sufficient cause to deny the petition.
- ☑ I understand that Village Staff can impose conditions or other requirements necessary in order to meet and/or remain in compliance with the Village's Zoning Codes and/or other Village requirements that may apply to the subject property.

INCLUDE THE FOLLOWING WITH YOUR APPLICATION:

- ☑ A scaled site plan showing location of proposed use on the property (not required if within building).
- ☑ $175 Application Fee
- ☑ Other Information required by Zoning Administrator

VILLAGE USE ONLY

SIGNATURES: ALL APPLICATIONS MUST BE SIGNED

DocuSigned by: Caitlin LaJoie — 10/30/2024

Applicant — Date

DocuSigned by: Samuel D Dickman — 10/30/2024

Property Owner — Date

SITE PLAN REVIEW

12/09/24 Plan Commission Meeting

Monches Engineering / Systems LLC

Village Staff Report & Recommendation ***Germantown, Wisconsin***

SUMMARY

Monches Engineering, Agent for Store Master Funding XIII LLC, Property Owner, and Systems LLC, is seeking approval of a site development plan for the construction of twenty-one (21) additional parking spaces and new paved/asphalt area to the west of the existing manufacturing facility. The site is located at W194 N11481 McCormick Drive in the Germantown Industrial Park.

Location: W194 N11481 McCormick Drive

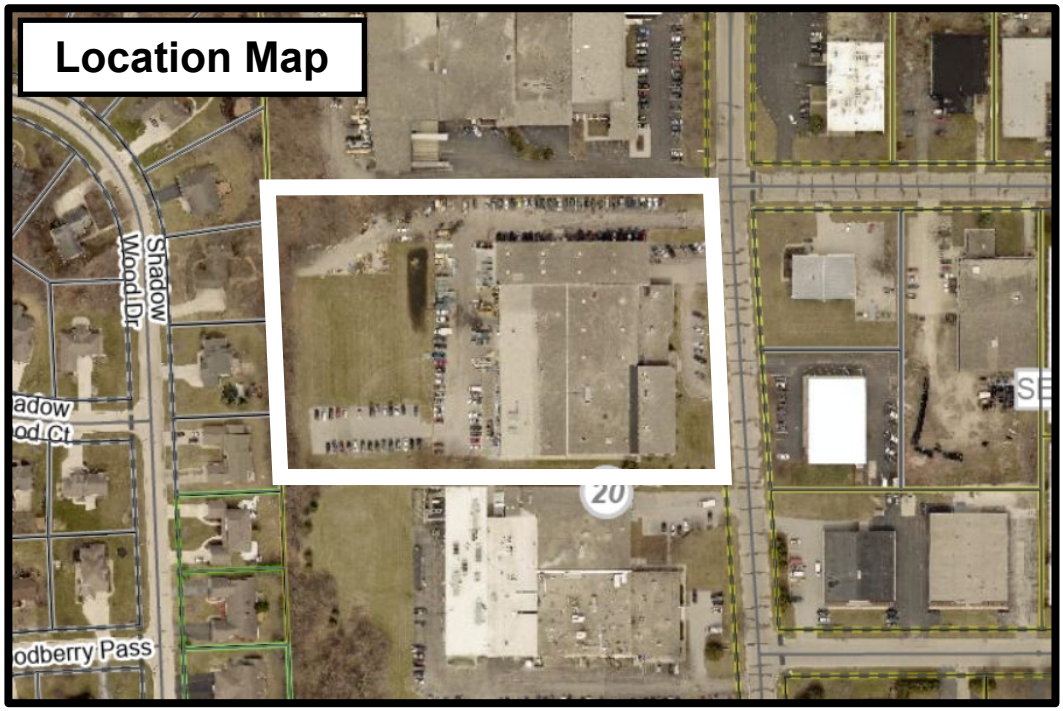
Applicant/ Owner:

Monches Engineering
W296 N9405 Riverview Ln
Colgate, WI 53017

Store Master Funding XIII LLC
W194 N11481 McCormick Dr
Germantown, WI 53022

Current Zoning: M-1: Limited Industrial

Adjacent Land Uses		**Zoning**
North	Industrial	M-1
South	Industrial	M-1
East	Industrial	M-1
West	Residential	Rs-4/Rd-2



Background/Proposal
Monches Engineering, Agent for Store Master Funding XIII LLC, Property Owner, and Systems LLC, is seeking approval of a site development plan for the construction of twenty-one (21) additional parking spaces and new paved/asphalt area to the west of the existing manufacturing facility. The site is located at W194 N11481 McCormick Drive in the Germantown Industrial Park.

Systems LLC is a leader in the design and manufacturing of loading dock equipment. The Systems LLC facility in Germantown has been the corporate headquarters since 1979 with another manufacturing facility in Malvern, Arkansas. Hours of operation are 6:00 am to 4:00 pm for production and 8:00 am to 5:00 pm for business operations. Most recent information the Village has shows 95 employees at Systems LLC operating a single shift.

The site is 6.0 acres in area with an existing 72,467 square foot manufacturing facility and offices, in addition to off-street parking areas around the building's north, east, and west sides. As presented on the site plan, the proposed construction includes the following features:

- Twenty-one (21) additional parking stalls.
- Paved/asphalt area for outdoor storage of materials with screening.
- Perimeter lot landscaping in rear yard (along western property line).

The Plan Commission approved a site plan for an 8,763 square foot building addition to the existing facility in April of 2020. Approval was also granted for a parking lot expansion in 2019 through a zoning permit application. Based on review of the current application, the building addition was constructed and completed along with the parking lot expansion. **In July 2024, the Plan Commission approved a site plan similar to the one presented under this application (reference initial site plan attached), but the applicant has since needed to revise the layout of the new parking stalls due to stipulations from ANR Pipeline Company who has an easement running through the rear portion of the property. The applicant ran into complications with ANR Pipeline Company regarding the asphalt surface parking stalls that were proposed within the easement after the initial site plan was approved by the Village. Thus, the applicant needed to modify the site configuration and staff determined the revised site plan requires another review by Plan Commission.**

Staff Comments
Access to the facility will not change. The twenty-one (21) additional parking spaces and outdoor storage area are proposed to be added to the west of the existing manufacturing facility. In order to meet code requirements for screening of the outdoor storage area, the applicant has proposed a 6-foot high chain link fence with privacy slats to enclose the area and screen it from surrounding properties.

Landscaping associated with the improvements has been proposed and is subject to final approval/acceptance from the Village Forester, who provided the following review comments on the plan:

> *"Per municipal code 17.43(c) – Interior parking lot landscaping shall include (one) 2" caliper tree for every ten parking spaces. This plan does not meet*

this requirement. New border planting tree/shrub species diversity is approved."

The zoning for this parcel in the Industrial Park is M-1: Limited Industrial, and the proposed development plan complies with the M-1 zoning district regulations. Although the proposed development complies with district regulations, staff recommends and has added a condition of approval for the removal of two (2) parking stalls in the far northwestern corner of the existing parking lot where the expansion is proposed. Currently, the applicant has proposed the removal of only one (1) stall in that area. Staff recommends an additional stall be removed to eliminate any complications with parking and vehicular movement in that part of the lot.

The proposed improvements are partially located within a gas pipeline easement owned by the ANR Pipeline Company. The applicant/owner has entered into an encroachment agreement with ANR Pipeline Company for the improvements within their easement.

Public Works/Village Engineer/Utilities
The Village Engineer has identified several minor technical requirements and plan corrections that will need to be resolved in revised plans and/or supplemental documents (i.e. Erosion Control Permit) prior to commencing construction activities in the December 4, 2024, review memo (copy attached).

VILLAGE STAFF RECOMMENDATION

APPROVE the site development plan for the new construction of twenty-one (21) additional parking spaces and new paved/asphalt area to the west of the existing manufacturing facility located at W194 N11481 McCormick Drive in the Germantown Industrial Park, subject to the following conditions:

1. Approval is for the site plan with revised date October 30, 2024, grading plan dated December 3, 2024, and landscaping plan with revised date November 8, 2024 (unless either is otherwise revised by a subsequent plan set approved by the Village Planner pursuant to revisions required herein or by the Plan Commission).
2. All issues, both minor technical/plan corrections and other storm water management issues identified in the December 4, 2024, review memo from the Village Engineer shall be resolved and reflected in additional information and/or revised plans submitted to staff for further review, comment, and approval prior to commencing construction or issuance of an Erosion Control Permit.
3. The landscaping plan shall be subject to final approval/acceptance from the Village Forester prior to commencing construction activities.
4. Applicant/owner shall remove the first two (2) parking stalls in the far northwestern corner of the existing parking lot leading to the proposed expansion area.

Village of Germantown ...Willkommen

Fee must accompany application

- ☒ $700 Minor Addition
- ☐ $1,240 Construction <10,000 SF
- ☐ $2,095 Construction 10,000 SF to 50,000
- ☐ $3,460 Industrial Construction >50,000 SF
- ☐ $3,460 Commercial Construction >50,000
- ☐ $200 Plan Commission Consultation
- ☐ $125 Fire Department Plan Review

PAID SR DATE 11/11/24
chk #018574

SITE PLAN REVIEW APPLICATION

Pursuant to Section 17.43 of the Municipal Code

Please read and complete this application carefully. **All applications must be signed and dated.**

1 APPLICANT OR AGENT

PAUL SEUL
MONCHES' ENGINEERING LLC
W296N9405 RIVERVIEW LANE
COLGATE, WI 53017

Phone (414) 254-1861
E-Mail paul@monches.net

PROPERTY OWNER

SYSTEMS LLC
W194 N11481 McCORMICK DR.
GERMANTOWN, WI 53022

Phone (262) 257-7334
E-Mail michelledellemann@loadingdocksystems.com

2 PROPERTY ADDRESS

W194 N11481 McCORMICK DRIVE

3 NEIGHBORING USES – Specify name and type of use, e.g. Enviro Tech – Industrial, Smith – Residential, etc.

North	South	East	West
HAMPEL CORP	DSM FOOD SPECIALTIES	NELCO ELECTRIC PRO WOODCARE	RESIDENTIAL

4 READ AND INITIAL THE FOLLOWING:

PS I am aware of the Village of Germantown ordinance requiring fire sprinklers in most new construction.

PS I understand that all new development is subject to Impact and/or Connection Fees that must be paid before building permits will be issued.

PS I understand that an incomplete application will be withdrawn from the Plan Commission agenda and that all resubmissions to the Plan Commission are subject to a new application fee.

RECEIVED NOV 11 2024 OFFICE OF THE VILLAGE PLANNER VILLAGE OF GERMANTOWN

5 SIGNATURES – ALL APPLICATION MUST BE SIGNED BY OWNER!

Paul Seul 11/11/24 — Applicant, Date

Michelle Delle 11/11/24 — Owner, Date

MONCHES ENGINEERING, LLC
W296N9405 RIVERVIEW LANE
COLGATE, WI 53017
414-254-1861
November 11, 2024

Village of Germantown
Germantown, WI

Regarding: Systems, LLC

Gentlemen,

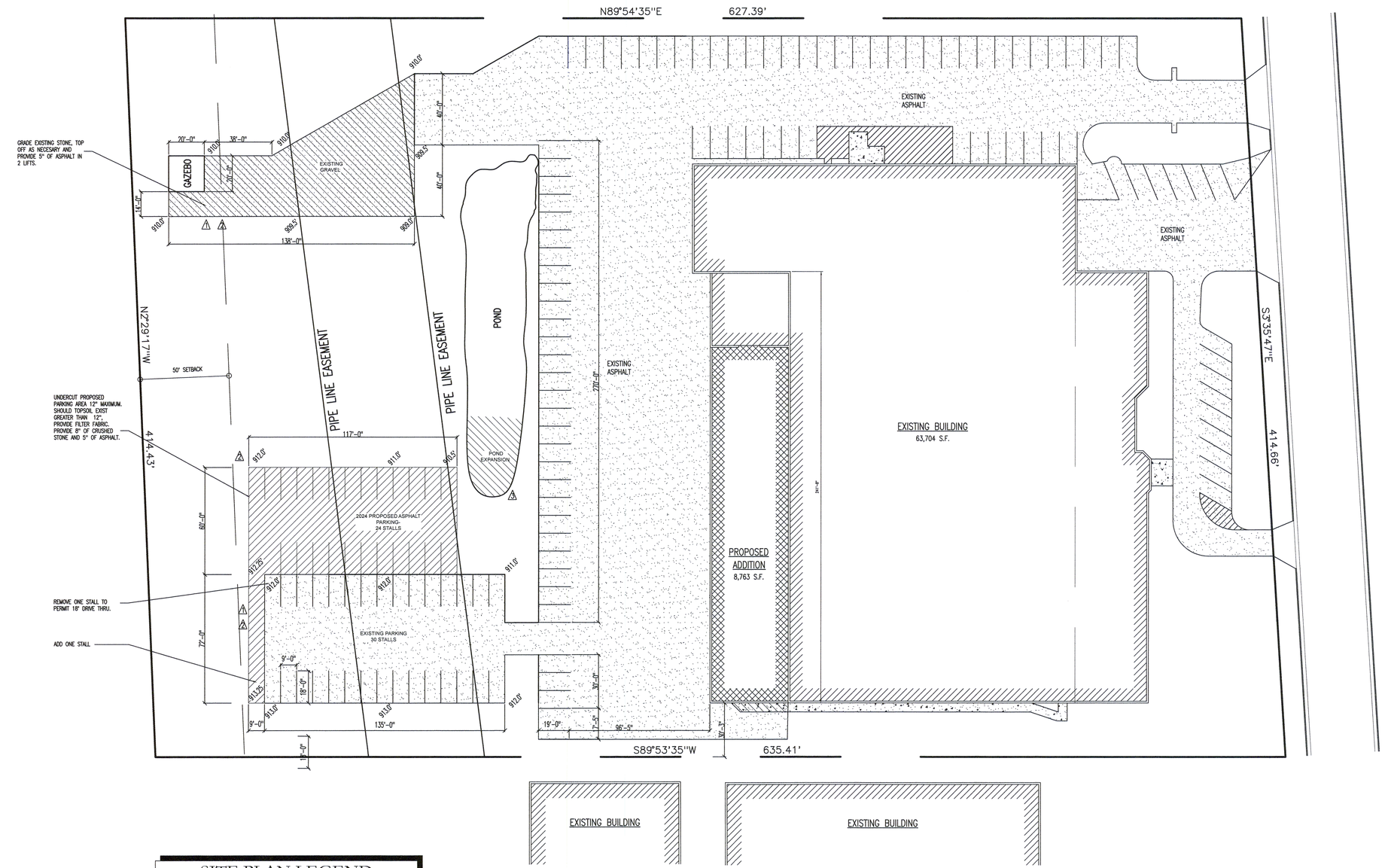
Attached is a revised Site Plan Application for the proposed parking lot expansion as well as the proposed paving and fencing of an existing gravel material/product storage area. In addition, the following plans are included:

1 Revised Site Plan dated March 12, 2024, with latest revision dated 10-30-24.
2 Revised Storm Water Management Plan.
3 Revised Landscape Plan.
4 Original TC Energy Encroachment Agreement, Exhibit A- Engineering Guidelines & Exhibit B Application Information.
5 Revised easement agreement conditions with corresponding plan (marked up in red).

The above information will also be submitted electronically. Should you need additional information, please contact me.

Sincerely,
Monches Engineering

Paul Seul, P.E.



SITE PLAN LEGEND

	PROPERTY LINE
	EXISTING ASPHALT PAVING
	EXISTING CONCRETE
	PROPOSED ASPHALT PAVING (OVER EXISTING STONE)
	PROPOSED ASPHLAT PAVING

NORTH

SITE PLAN
1" = 30'-0"

WISCONSIN PAUL E. SEUL E-20477 COLGATE, WISCONSIN 3-11-24 PROFESSIONAL ENGINEER

REVISIONS		BY
1	1-10-20	PS
2	7-1-24	PS
3	7-1-24	PS

MONCHES ENGINEERING, LLC
W296 N9405 Riverview Lane , Colgate, WI 53017
414-254-1861

SYSTEMS, LLC
W194 N11481 McCormick Drive
Germantown, WI

DRAWN	PS
DATE	03-12-24
SCALE	1"=30'
JOB NO.	JOBNO.
SHEET	A1.0
OF	1 SHEETS

"As Built" dimensions may vary slightly

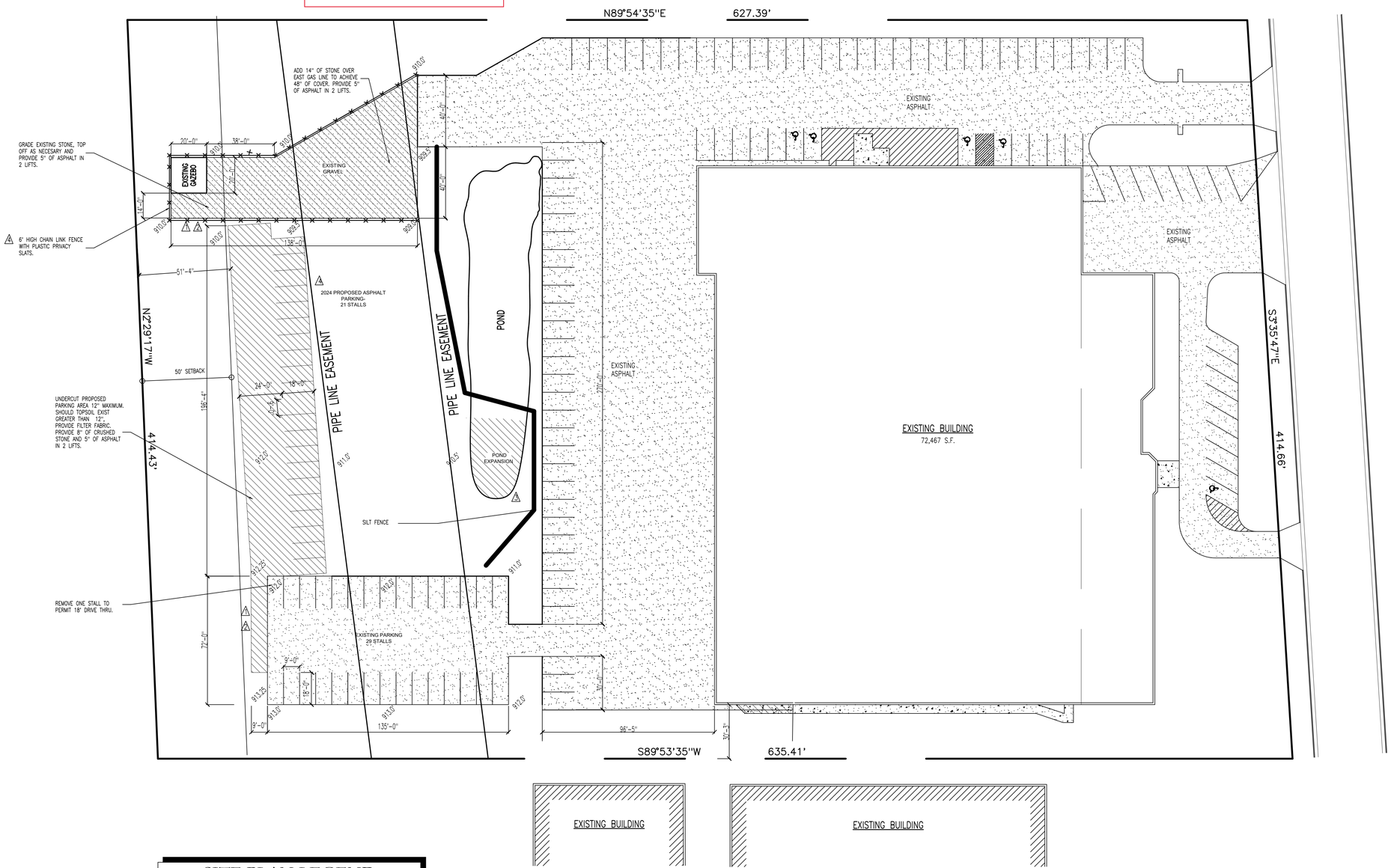
No permanent storage permitted within TCE ROW.

Reviewed & Approved as noted
TC Energy Engineering
Benjamin Acheampong
October 30, 2024

4ft minimum depth of cover over pipline required.

△4 SITE AREA: 261,386 S.F.
BUILDING & PARKING: 166,704 S.F.
GREEN SPACE: 36.2%

PARKING: 136 REGULAR
5 HANDICAP
TOTAL: 141 STALLS



SITE PLAN LEGEND

	PROPERTY LINE
	EXISTING ASPHALT PAVING
	EXISTING CONCRETE
	PROPOSED ASPHALT PAVING (OVER EXISTING STONE)
	PROPOSED ASPHLAT PAVING

NORTH

SITE PLAN
1" = 30'-0"

REVISIONS		BY
△1	1-10-20	PS
△2	4-1-24	PS
△3	4-1-24	PS
△4	10-30-24	PS

MONCHES ENGINEERING, LLC
W296 N9405 Riverview Lane , Colgate, WI 53017
414-254-1861

SYSTEMS, LLC
W194 N11481 McCormick Drive
Germantown, WI

DRAWN: PS
DATE: 03-12-24
SCALE: 1"=30'
JOB NO.: JOBNO.
SHEET: A1.1
OF 1 SHEETS

"As-Built" dimensions may vary slightly

LEGEND

- SECTION CORNER MONUMENT
- FOUND 1" IRON PIPE OR AS NOTED
- POST
- UTILITY POLE
- GUY POLE
- GUY WIRE
- CULVERT
- UTILITY PEDESTAL
- ELECTRIC PEDESTAL
- TV MANHOLE
- YARD LIGHT
- INLET
- SOIL TEST LOCATION
- —x—x— FENCE
- (XXXXXX) RECORD DIMENSION
- —ST— STORM SEWER
- —OH— OVERHEAD POWER/UTILITY
- —G— UNDERGROUND GAS
- —E— UNDERGROUND ELECTRIC
- —C— UNDERGROUND CABLE
- × 900.00 EXISTING SPOT ELEVATION
- —900— EXISTING CONTOUR
- × 900.00 PROPOSED SPOT ELEVATION
- —900— PROPOSED CONTOUR
- PROPOSED DRAINAGE DIRECTION
- FF 100.0 PROPOSED FIRST FLOOR GRADE

GENERAL CONSTRUCTION NOTES:

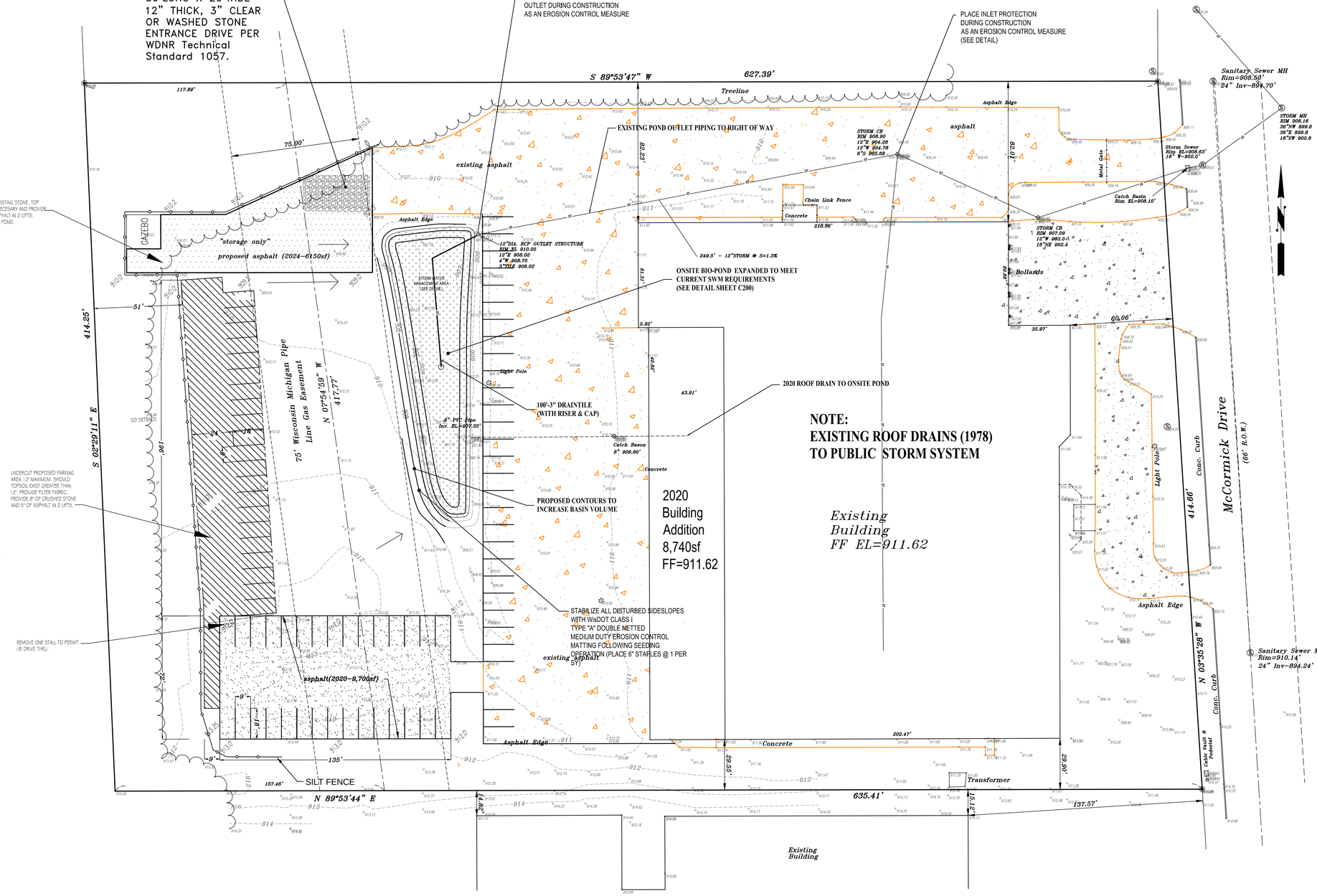
1. All work shall be in accordance with the Standard Specifications for Highway and Structure Construction, State of Wisconsin, Latest Edition; the State of Wisconsin Plumbing Code AND the Village of Germantown Ordinances, unless otherwise called for on the plans, specifications or special provisions.
2. Contractor shall obtain all permits prior to commencing any construction on the site. Any Work within the right of way will require additional permits from the State, County or City. Contractor is required to contact all agencies for applicable permits.
3. All erosion control measures specified on this plan shall meet the design criteria, standards and specifications as set forth in the Department of Natural Resources Wisconsin Technical Standards.
4. All erosion control devices (i.e., gravel access, silt fence, etc.), shall be installed prior to commencing any site work on the property.
5. All activities on the site shall be conducted in a logical sequence to minimize the area of bare soil exposed at any one time.
6. The owner will provide all surveying and construction staking for this contract. The contractor shall exercise care and diligence in protecting the same.
7. The contractor shall notify Diggers Hotline, all utilities City Departments, and government units whose property may be affected by the contractor's operations at least three (3) days before breaking ground. Diggers Hotline number is 811.
8. Public roads shall not be closed to traffic at any time. All ingress and egress traffic to the project shall be limited to the TRACKING PAD entrance to the property.
9. Contractor shall be responsible for maintaining the Streets. The Streets shall be kept free of silt or dirt tracked from areas under construction by sweeping within 24hrs.
10. Upon completion of the work as specified, respread four (4") inches of salvaged topsoil over all disturbed areas and provide seed, fertilizer and erosion control fabric per the WDNR Technical Standards.
11. Stabilization of all disturbed areas must follow NR151 erosion control prescriptive standards which require immediate temporary stabilization of disturbed areas which remain inactive longer than 14 working days and within 7 days of final stabilization. Highway mix #40 shall be used for permanent seeding with an application rate of 4.0 lbs/1000 sf.
12. All erosion control devices shall be routinely inspected every seven days or within 24 hours of a rainfall greater than 0.5 inches. INSPECTION BY GENERAL CONTRACTOR.
13. IF PERMANENT SEEDING (WisDOT#40) IS NOT COMPLETED BY SEPTEMBER 15, APPLY TEMPORARY SEEDING (SEE BELOW). IF TEMPORARY SEEDING IS NOT COMPLETED BY OCTOBER 15, DORMANT SEED WITH EROSION CONTROL MATTING OR HYDROMULCH SHALL BE APPLIED TO INACTIVE DISTURBED SOILS BETWEEN OCTOBER 15TH AND MAY 1ST AS A TEMPORARY SOIL STABILIZATION MEASURE DURING THE NON-GROWING SEASON.

CONSTRUCTION PHASING SEQUENCING:

THE GRADING AND UNDERGROUND CONTRACTORS MUST FOLLOW THIS CONSTRUCTION SEQUENCE AS REQUIRED BY THE WDNR AND THE VILLAGE:

1. INSTALL SILT FENCE, INLET PROTECTION AND STONE ENTRANCE PAD.
2. PLACE TEMPORARY OUTLET PROTECTION AND EXPAND POND.
3. CONSTRUCT PARKING LOT AREAS. HAUL OFF EXCESS TOPSOIL.
4. RESTORE ALL DISTURBED AREAS WITH TOPSOIL, SEED AND EROSION CONTROL MATTING.
5. FOLLOWING COMPLETE SITE STABILIZATION AND AS-BUILT APPROVAL BY THE CITY REMOVE ALL TEMPORARY BMPs.

THE BOUNDARY & TOPOGRAPHIC SURVEY WAS PROVIDED BY METROPOLITAN SURVEYING. UNDERGROUND UTILITY INFORMATION AS SHOWN HEREON IS BASED, IN PART, UPON INFORMATION FURNISHED BY UTILITY COMPANIES AND THE LOCAL MUNICIPALITY. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, ITS ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED NOR CERTIFIED TO.



DATE	DESCRIPTION

ELLENA ENGINEERING CONSULTANTS, LLC
SITE CIVIL ENGINEERING & STORMWATER MANAGEMENT
700 Pilgrim Parkway - Suite 100 Elm Grove, WI 53122
Phone: 262-719-6183 Fax: 866-457-2584 Email: mellena@eecengi.com

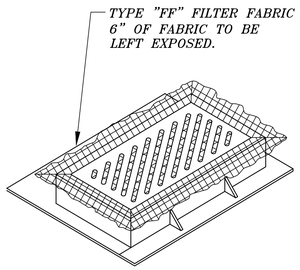
SYSTEMS, INC.
W194 N11481 McCORMICK DRIVE, GERMANTOWN, WI

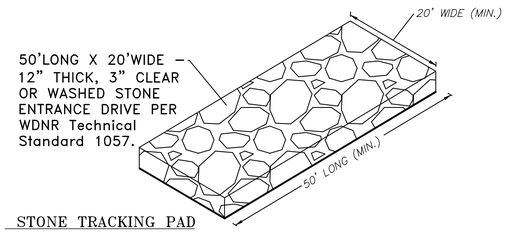
GRADING & DRAINAGE PLAN
WITH EROSION CONTROL

WISCONSIN MARK R. ELLENA E-24090 WALES, WI PROFESSIONAL ENGINEER

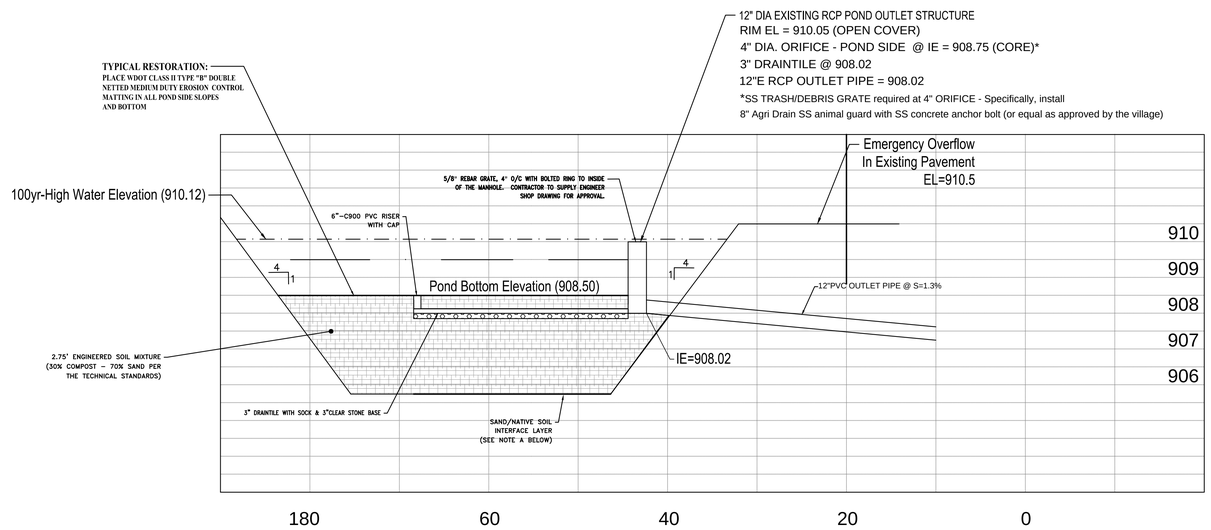
DATE: 12-03-24
BY: MARK R. ELLENA,PE
SCALE: 1"= 30'

SHEET NUMBER
C100





STONE TRACKING PAD
PER WDNR TECH STANDARD 1057
(NOT TO SCALE)



PLANTING SCHEDULE FOR
RAIN GARDEN (*)

LIVE PLANTS
2" PLUGS ON 18" CENTERS

BOTANIC NAME	COMMON NAME
Carex vulpinoidea	Brown fox sedge
Juncus effusus	Soft rush
Scirpus atrovirens	Dark green bulrush
Asclepias incarnata	Marsh milkweed
Eupatorium maculatum	Joe Pye weed
Eupatorium perfoliatum	Common boneset
Silphium perfoliatum	Cup plant
Verbena hastata	Blue Vervain

(*) +/- 160 LIVE PLANTS SHALL BE PLACED THROUGHOUT THE INFILTRATION AREA IN GROUPINGS OF +/-20 EACH. ALSO, PLANTS CAN BE PRE-APPROVED FOR SUBSTITUTION FROM A WDNR APPROVED UPLAND NATIVE PLANT LIST AND SHALL BE 2" PLUGS, 18" ON CENTER.

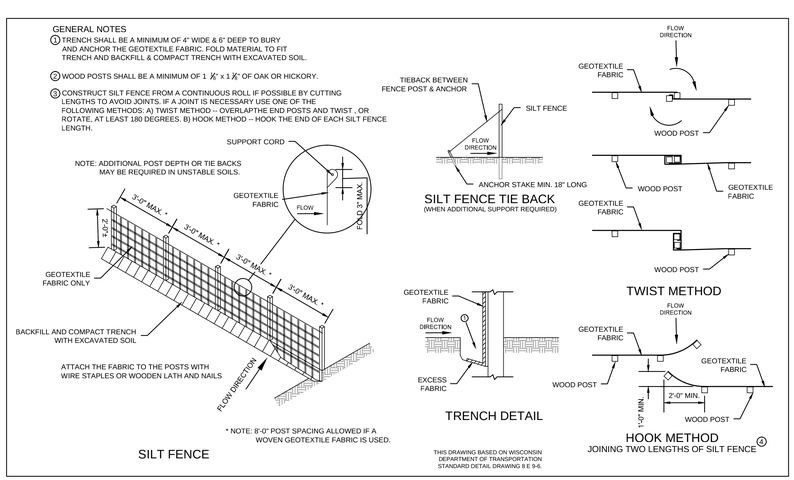
NOTE A – SAND/NATIVE SOIL INTERFACE LAYER:
THREE INCHES OF SAND SHALL BE PLACED BELOW THE STONE STORAGE LAYER, AND VERTICALLY MIXED WITH THE NATIVE SOIL INTERFACE TO A DEPTH OF 2-4 INCHES. SAND SHALL MEET THE SPECIFICATIONS SET FORTH IN SECTION V.B.6.d.(2) OF THE WDNR TECHNICAL STANDARD FOR BIORETENTION 1004.

NOTE FOR BIO-FILTRATION BASIN:
THE BIO-INFILTATION AREA CANNOT BE CONSTRUCTED WITHIN 400 FEET OF A COMMUNITY WATER SYSTEM WELL AS SPECIFIED IN S. NR 811.16 (4) OR WITHIN 100 FEET OF A PRIVATE WELL AS SPECIFIED IN S. NR 812.08 (4) FOR RUNOFF INFILTRATED FROM COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL LAND USES OR REGIONAL DEVICES FOR RESIDENTIAL DEVELOPMENT. ANY NEW WELL CONSTRUCTION SHALL BE 100' FROM THIS PROPOSED BASIN.

Construction Specifications for Using Native Plantings for Storm Water Bio-Pond Bottom:
The following information is provided to serve as a general guide for establishing native plantings especially for storm water infiltration. It has been compiled from information provided by staff at Retzer Nature Center - Waukesha County Department of Parks and Land Use. A qualified professional to has prepared a site-specific plan and to direct or perform the plan implementation.

Following full site restoration, plant the basin in accordance with the following standards (if possible, keep the majority of the basin out of use for a growing season with the use of a diversion swale within the basin, to give the plants a chance to germinate and become established):
Phase I - Site Preparation
Site is completely restored and the temporary siltation basin is no longer required. The bottom of the Bio-Infiltration basin is rough graded with a backhoe to minimize compaction of the basin.
Phase II - Planting
A compost mix is applied to the proposed subgrade by backhoe and disked to the required sub-grade elevation. The planting plugs are then placed at the specified spacing shown hereon. ***Plugs will require at least weekly watering for the first couple of months, especially in sandy or engineered soils,*** unless adequate water is provided by precipitation. Note: Planting plugs gives quicker results than planting from seed. A site may be well established after two years by plant plugs instead of three or four for areas that are seeded.

Quantity
20
20
20
20
20
20
20



NOTES:
SILT FENCE AND TRACKING PAD SHALL CONFORM TO TECHNICAL STANDARDS 1056 & 1057 RESPECTIVELY.

INLET PROTECTION REQUIRED ON ALL EXISTING INLETS ONSITE AND ADJACENT PUBLIC ROADWAY.

IF DEWATERING IS NECESSARY DURING EXCAVATION, THE PRACTICES IDENTIFIED IN THE TECH. STD. 1061 SHALL BE UTILIZED TO MEET THE DE-WATERING PERFORMANCE STANDARD TO PREVENT THE DISCHARGE OF SEDIMENT TO THE MAXIMUM EXTENT PRACTICABLE (MEP) AS DEFINED IN NR 151.11(6)(C). ALL PUMPED EFFLUENT FROM DEWATERING OPERATIONS (TRENCH DEWATERING OR OTHERWISE SHALL BE DISCHARGED TO A GEOTEXTILE FILTER BAG CONFORMING TO WDNR CONSERVATION PRACTICE STANDARD 1061. THE GEOTEXTILE BAG SHALL BE PLACE ON VEGETATED / STABILIZED GROUND AND DISCHARGE TO A SEDIMENT BASIN OR TRAP. SHOULD NO BASIN / TRAP EXIST, THE GEOTEXTILE BAG SHALL BE PLACED ON FILTER FABRIC AND SURROUNDED BY A SEDIMENT BALE BARRIER CONFORMING TO CONSERVATION PRACTICE STANDARD 1055. THE FILTER FABRIC SHALL BE BROUGHT UP THE SIDES AND OVER THE TOP OF THE HAY BALES AND SECURED. DISCHARGE SHALL NOT BE ALLOWED TO FLOW OVER UNPROTECTED GROUND. IN NO CASE SHALL PUMPED WATER BE DIVERTED OUTSIDE THE PROJECT LIMITS PRIOR TO SEDIMENT REMOVAL.

THIS GRADING PLAN MUST BE REVIEWED AND APPROVED BY THE VILLAGE ENGINEERING DEPARTMENT.

DATE	DESCRIPTION

ELLENA ENGINEERING CONSULTANTS, LLC
SITE CIVIL ENGINEERING & STORMWATER MANAGEMENT
700 Pilgrim Parkway - Suite 100 Elm Grove, WI 53122
Phone: 262-719-6183 Fax: 866-457-2584 Email: mellena@eeceng.com

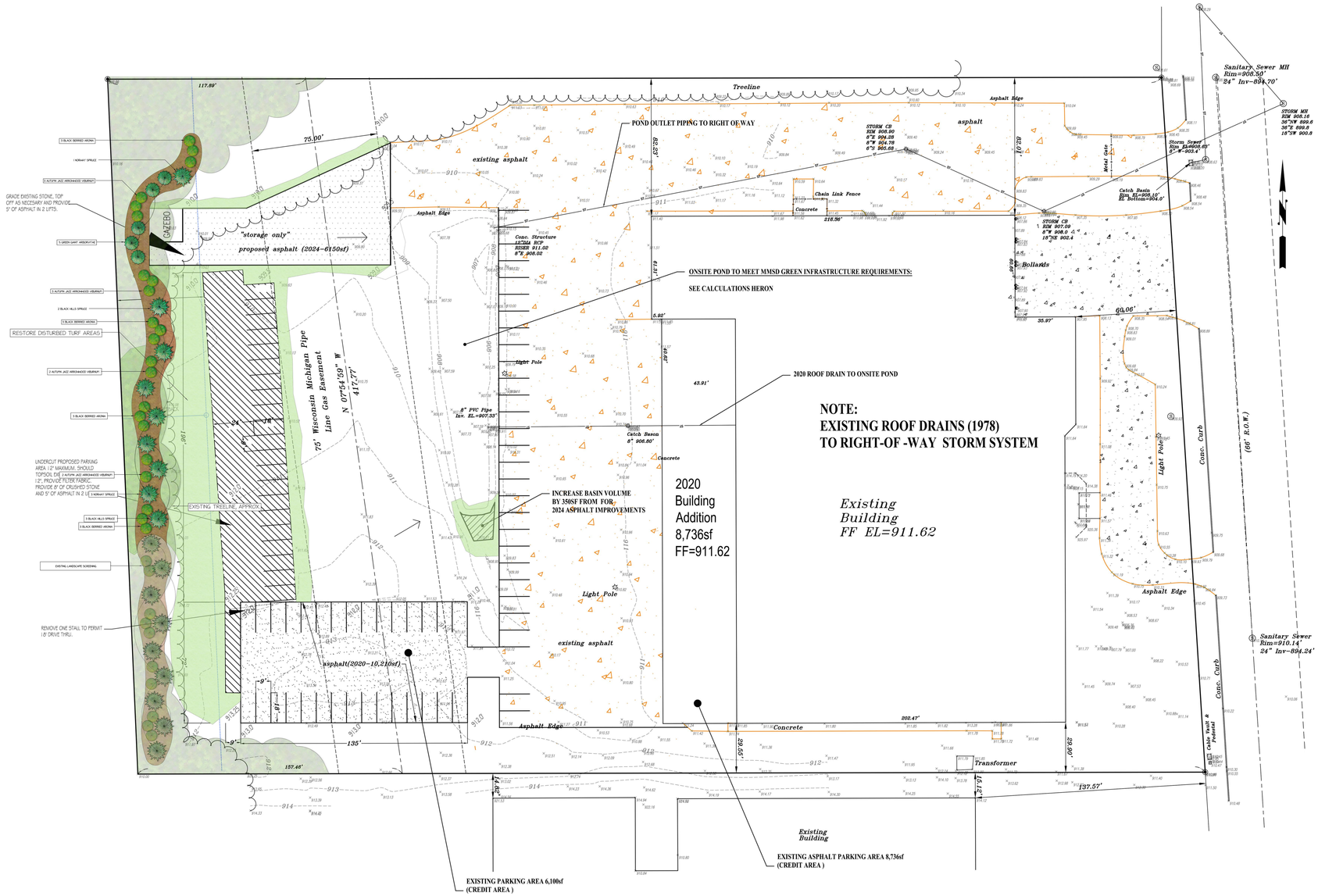
SYSTEMS, INC.
W194 N11481 McCORMICK DRIVE, GERMANTOWN, WI

DETAILS

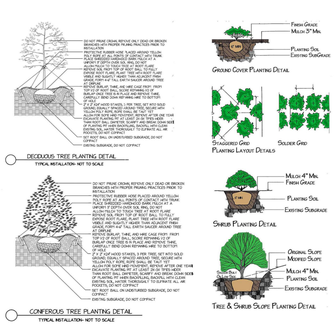
WISCONSIN
MARK R. ELLENA
E-24090
WALES, WI
PROFESSIONAL ENGINEER

DATE: 12-03-24
BY: MARK R. ELLENA,PE

SHEET NUMBER
C200

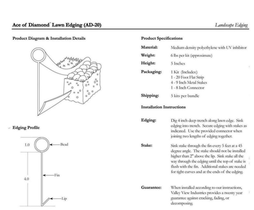


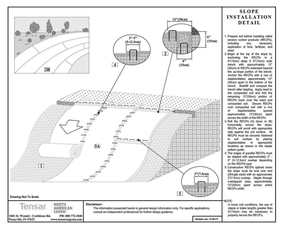
Qty	Botanical Name	Common Name	Size/Condition
Trees			
4	Picea abies	NORWAY SPRUCE	5/b. b.
5	Picea glauca var. densata	BLACK HILLS SPRUCE	5/b. b.
5	Thuja plicata 'Green Giant'	GREEN GIANT ARBORVITAE	5/b. b.
Shrubs			
12	Aronia melanocarpa	BLACK BERRIED ARONIA	3/b. b.
10	Viburnum dentatum 'Ralph Senior'	AUTUMN JAZZ ARROWWOOD VIBURNUM	3/b. b.



Planting Notes:

1. Contractor shall verify location of all on-site utilities prior to commencing any work on-site. WI State Statute 182.0175 requires three work days notice before you excavate. Call Digger's Hotline at 1-800-242-8511.
2. Supply and install all Wisconsin grown nursery stock. Guarantee all stock for a period of one year. All planting material is to meet American Standards for Nursery Stock ANSI Z60.1-2004. All plant material is to be planted immediately after arrival and unloading on site. Plant types, sizes, and quantities are according to the proposed plans. If any discrepancies are present between plant legend and graphic depiction, graphically depicted quantities shall hold precedence.
3. Actual locations of plant material are subject to final site layout and conditions and may be adjusted accordingly.
4. Guy and stake all large trees and evergreens.
5. All plants are to be backfilled with a 50/50 mix of plant starter and topsoil blend and is to be free of roots, rocks larger than 1" in diameter, subsoil, debris, and weeds.
6. Open and remove the top burlap and twine or string from all balled and burlapped plants and set all plants at finished grade.
7. Supply and install 3-4" of shredded hardwood bark mulch in all planting beds, and 1-1/2" in all perennial beds. Treat all areas with a pre-emergent herbicide (granular form 1 Treflan or approved equal following all manufacturer's written installation instructions prior to placing mulch.
8. Supply and install 3-4" of shredded hardwood mulch 1 foot the drip line of all individual trees. Do not place mulch against trunk of tree.
9. Supply and install black vinyl edging "Ace of Diamond" manufactured by Valleyview Industries or approved equal in all planting beds that adjoin turf areas according to the manufacturer's written installation instructions.
10. All turf areas are to be pre-graded. All turf areas are to be seeded, areas are to be sown at the manufacturer's recommended rates and covered with a clean oat straw. Turf areas are to be sown with Nelson Landscape's Custom Blended Seed for Lawns and is to be applied at the recommended rate, a starter fertilizer applied, and covered with a clean oat straw. Any areas where potential erosion exists due to wind or water or other means including all slopes of 3:1 or greater shall be covered with straw erosion control blanket 75-75 manufactured by North American Green, installed to manufacturer's written installation instructions.





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SHEET L200 2 OF 1

NELSON LANDSCAPE INC.

Post Office Box 823
Waukesha, WI 53187-0823
262-549-6111
262-549-9229
www.nelsonlandscape.com

Sheet Title:

PARKING ADDITION-PHASE TWO

Project:

SYSTEMS LLC

W194 N11481 MC CORMICK DRIVE
Germantown, WI

Client:

MONCHES Construction Co.

Monches Construction Company
N60 W14361 Kaul Avenue
Menomonee Falls, WI 53051

Plan Notes:

Designed By: C. J. N.
Drawn By: C. J. N.
Date: 4-05-24
Revisions: 7-02-24, 8-19-24, 11-08-24

Notice:

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Nelson Landscape Incorporated

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This plan is subject to final on-site conditions and may be modified to account for unforseen obstacles, other changes, or site modifications that were not made known at the time of preparation dated on this plan.

STORM WATER MANAGEMENT REPORT

For

SYSTEMS LLC
Germantown, WI

Submitted By: ***ELLENA ENGINEERING CONSULTANTS, LLC***
700 Pilgrim Parkway - Suite 100
Elm Grove, WI 53122
Ph: 262-719-6183
Fax: 866-457-2584
Email: mellena@eeceng.com

December 3, 2024

Village Engineer
Village of Germantown
N112 W17007 Mequon Road
Germantown, WI 53022-0337

Re: Storm Water Management Report
Germantown Storage
Germantown, WI

Dear Village Engineer,

On behave of the Owners of the above parcel of land and in accordance with the Village's Storm Water Management Program, Wisconsin DNR and MMSD Chapter 13, we are submitting the following Storm Water Management Report for your review and approval. The report contains hydrologic data to meet or exceed your requirements for water quantity and quality. The storm water design includes a bio-retention pond designed to collect and treat runoff from the project area (building & parking addition). The eastern portion of the building and site was developed prior to storm water regulations and is not included in this report. This water quality feature has been designed in accordance with the WDNR technical standards. Furthermore, this storm water feature has been designed to remove, on an average annual basis, a minimum of 80% of the total suspended solids loading per the WDNR requirements set forth in Chapter NR151.

Specifically, we have designed a single bio-retention pond to collect and treat the current building & parking and the proposed parking areas.

As previously stated, the storm water facility has been designed to meet or exceed the storm water requirements of the Village, the WDNR and MMSD Storm Water Management Program. The computer model used in our analysis is based on the TR-55 runoff curve number methodology, MMSD precipitation depths and NOAA Atlas 14, Precipitation-Frequency Atlas of the United States, Volume 8, and Version 2.0 precipitation distribution. The following data summarizes our findings:

STORM EVENT	TOTAL DESIGN PRECIPITATION (inches)
2	2.66
10	3.82
100	6.37

EXISTING CONDITIONS:

Drainage Area (onsite)	Area (Ac)	CURVE NUMBER (CN)	Tc	MMSD 2yr Release Rate	MMSD 100yr Release Rate
EX1	2.60	81	13.50	0.39	1.30

Note: The release rates for the developable portion of the site are the maximum allowed by MMSD (0.15 cfs/ac for 2yr and 0.50 cfs/ac for 100yr).

PROPOSED CONDITION:

Drainage Area	Area (Ac)	CN	Tc
PR1	2.60	87*	13.50

*The proposed cumulative runoff curve number has been determined as detailed in the following table:

AREA PR1				
LAND USE	AREA (Ac)	CURVE NUMBER (CN)	AREA X CN	COMPOSITE CN NUMBER
Open Space Good Condition (Type C Soils)	0.98	70	68.60	
Building Area	0.20	98	19.60	
Parking Area	1.42	98	139.16	
Totals:	2.60	-	227.36	227.36/2.60=87.45 = 87

Runoff hydrographs were developed for the 2, 10 and 100 year storm events and the result of our analysis are as shown in Table No. 2.

TABLE NO. 2

STORM EVENT	EXISTING CONDITIONS (cfs)	PROPOSED CONDITIONS Area PR1 (cfs)
2	3.43	4.77
10	6.53	8.12
100	13.96	15.68

The storm water management facility was designed using the above results and design criteria per your regulations. The following tables present the results of our storm water facility:

TABLE NO. 3

2 YEAR DESIGN FREQUENCY			
BMP	**POND OUTLET FLOWRATE (cfs)**	**WATER SURFACE ELEVATIONS (ft)**	**STORAGE VOLUME (Ac-Ft)**
Bio-Pond P1	0.32	908.98	0.238

10 YEAR DESIGN FREQUENCY			
BMP	**POND OUTLET FLOWRATE (cfs)**	**WATER SURFACE ELEVATIONS (ft)**	**STORAGE VOLUME (Ac-Ft)**
Bio-Pond P1	0.56	909.38	0.343

100 YEAR DESIGN FREQUENCY			
BMP	**POND OUTLET FLOWRATE (cfs)**	**WATER SURFACE ELEVATIONS (ft)**	**STORAGE VOLUME (Ac-Ft)**
Bio-Pond P1	1.26	910.02	0.689

TABLE NO. 4 (Summary Table)

STORM EVENT	MMSD MAXIMUM RELEASE RATE	PROPOSED DISCHARGE RATE
2	0.39	0.32
100	1.30	1.26

In conclusion, the total release rate from the 2 and 100-year, 24 hour event under proposed conditions is equal to runoff criteria listed in the Village Ordinances and MMSD Chapter 13. The stage-storage discharge information for these facilities has been included along with the hydrologic report data for you use.

WATER QUALITY DESIGN:

The storm water facility has been designed to also serve as the water quality feature of the project modeled with WDNR WinSLAMM V10 to remove, on an average annual basis, a minimum of 80% of the total suspended solids loading per the WDNR requirements set forth in Chapter NR151. Please see the attached analysis approved by the WDNR.

Please advise of you should need further information to complete your review.

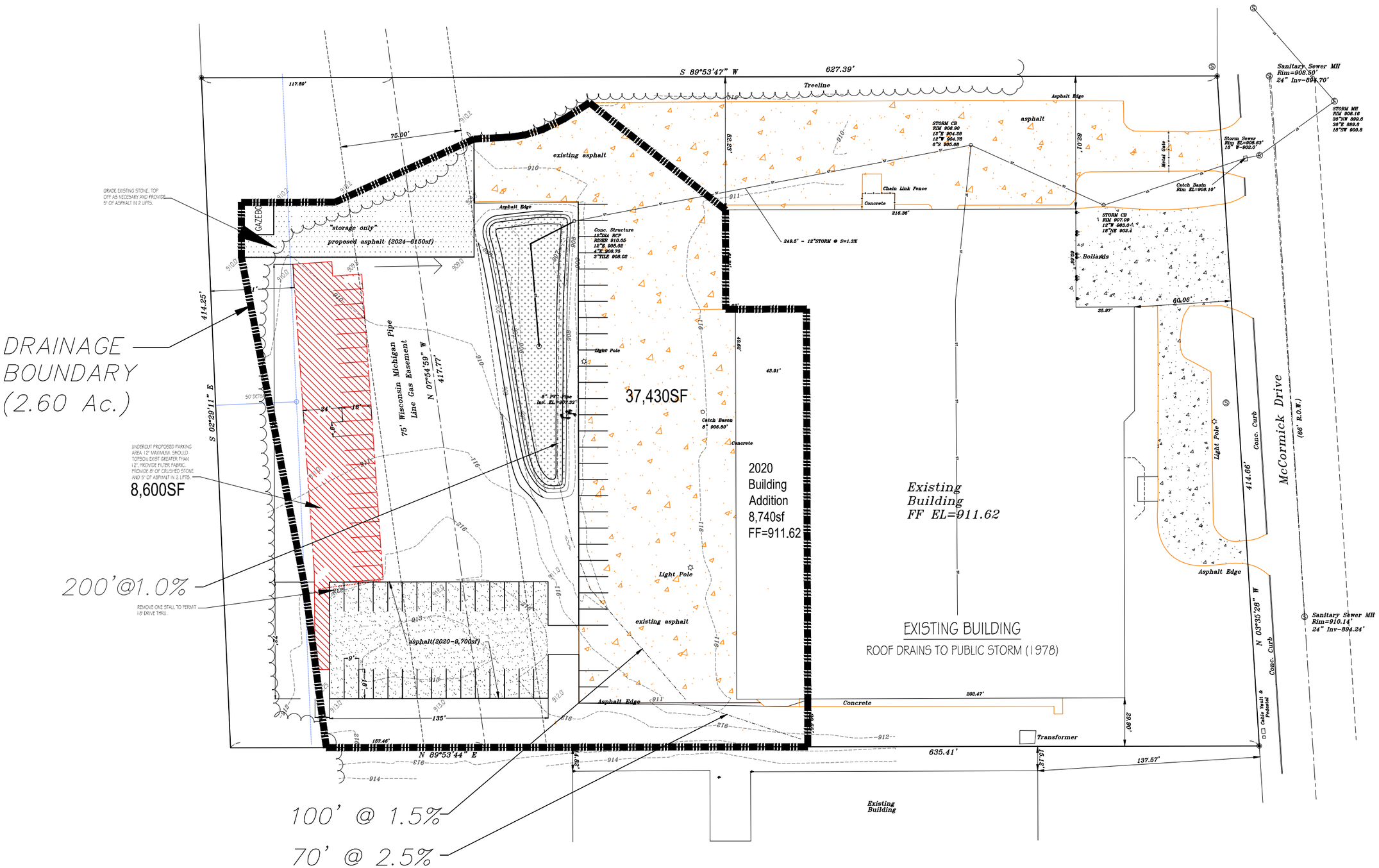
Sincerely,

Ellena Engineering Consultants, LLC

Mark R Ellena, P.E.
President
ELLENA ENGINEERING CONSULTANTS, LLC

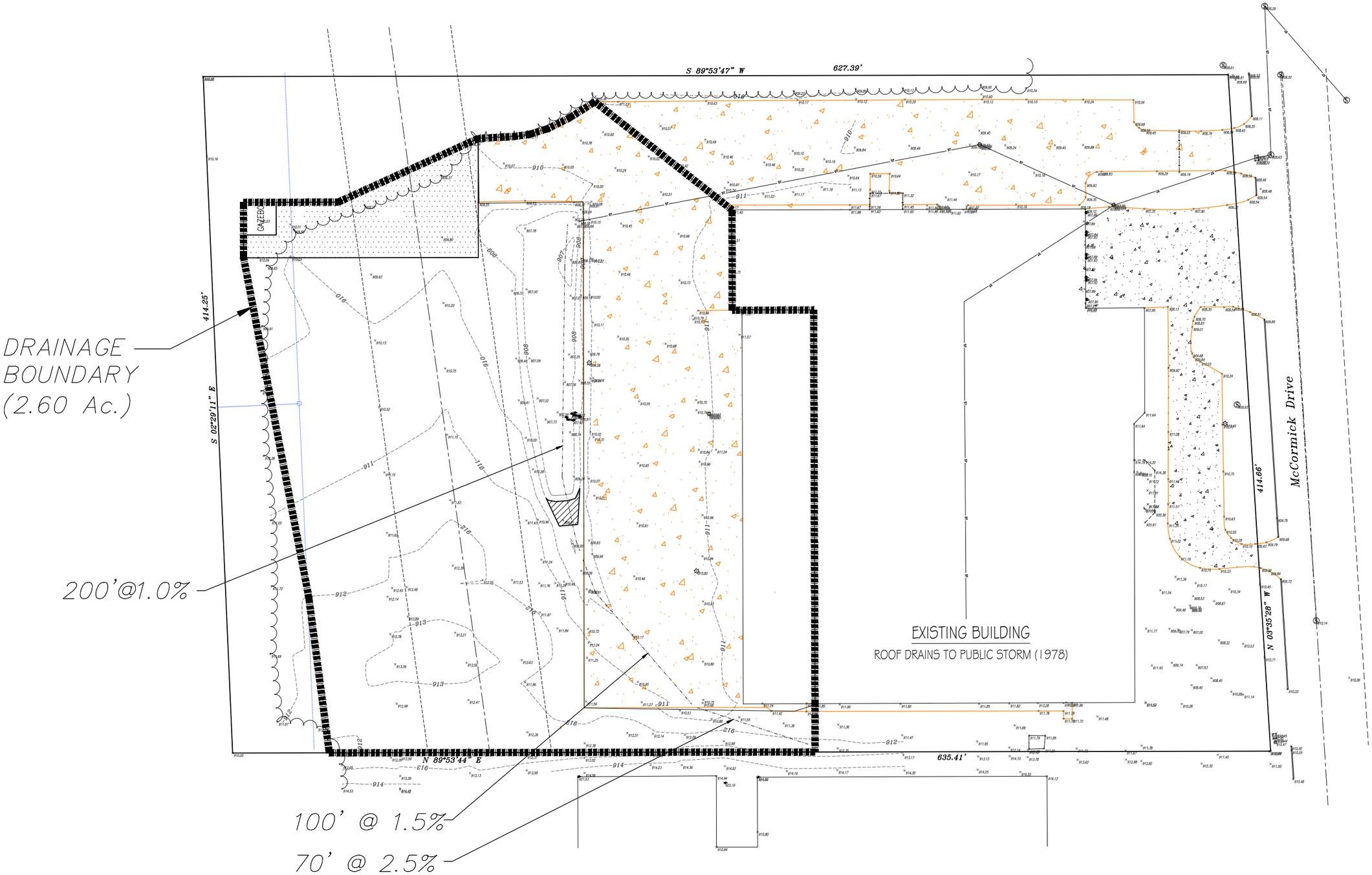
PROPOSED DRAINAGE MAP

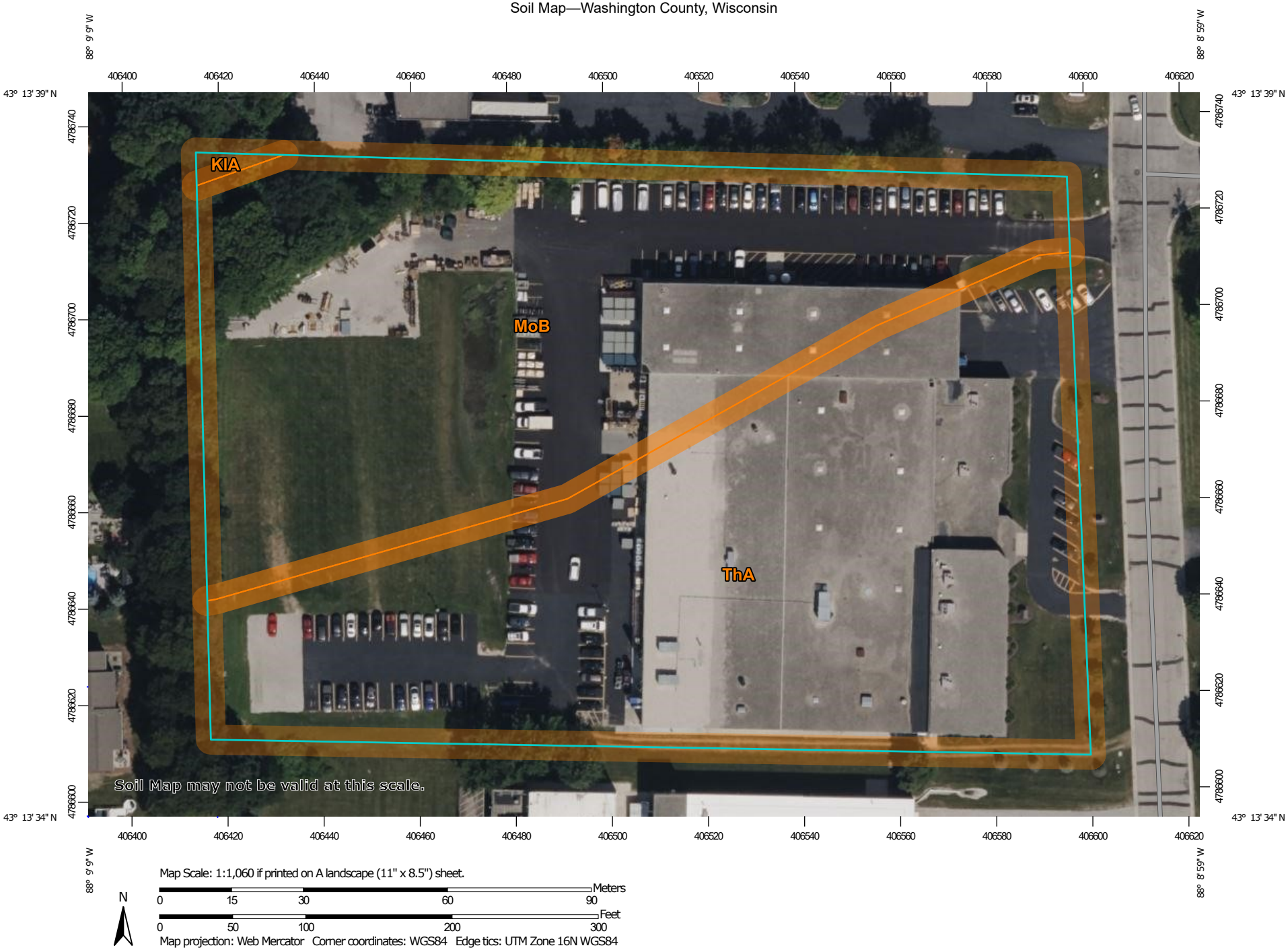
SCALE: 1"= 60'



EXISTING DRAINAGE MAP

SCALE: 1"= 60'





Map Scale: 1:1,060 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County, Wisconsin
Survey Area Data: Version 24, Sep 3, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 4, 2022—Sep 13, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
KlA	Kendall silt loam, 1 to 3 percent slopes	0.0	0.3%
MoB	Mayville silt loam, 2 to 6 percent slopes	2.6	47.0%
ThA	Theresa silt loam, 0 to 2 percent slopes	2.9	52.7%
Totals for Area of Interest		**5.5**	**100.0%**

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Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-------	-------	3.43	-------	-------	6.53	-------	-------	13.96	EX1
3	SCS Runoff	-------	-------	4.77	-------	-------	8.12	-------	-------	15.68	PR1
4	Reservoir	3	-------	0.32	-------	-------	0.56	-------	-------	1.26	POND PR1

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description
1	SCS Runoff	3.43	2	734	0.222	----	------	------	EX1
3	SCS Runoff	4.77	2	732	0.304	----	------	------	PR1
4	Reservoir	0.32	2	816	0.238	3	908.98	0.198	POND PR1

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

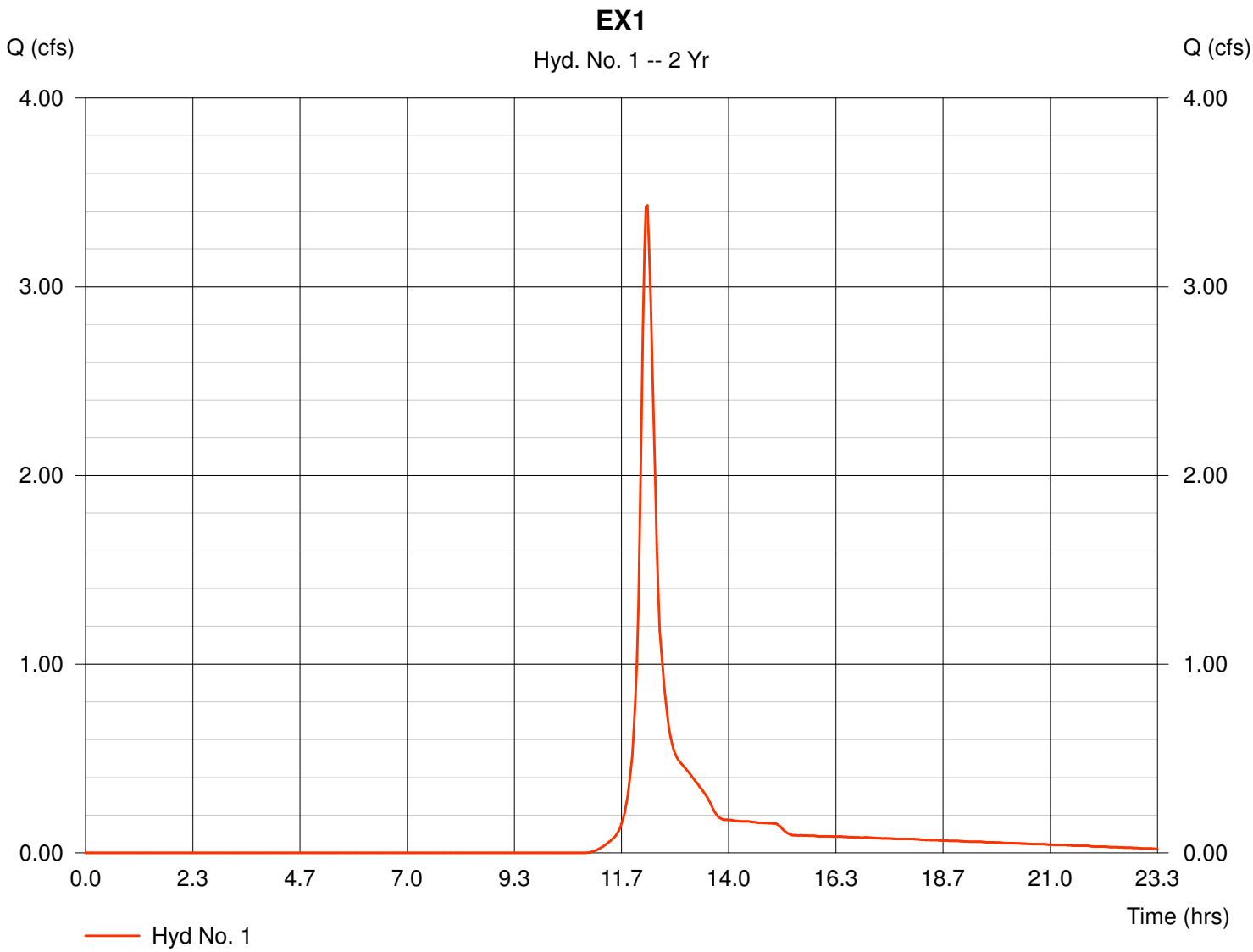
Tuesday, Dec 3 2024, 2:15 PM

Hyd. No. 1

EX1

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.43 cfs
Storm frequency	=	2 yrs	Time interval	=	2 min
Drainage area	=	2.60 ac	Curve number	=	81
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.5 min
Total precip.	=	2.65 in	Distribution	=	Custom
Storm duration	=	MSE3 Distribution 2min.cds	Shape factor	=	484

Hydrograph Volume = 0.222 acft



TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

EX1

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	70.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	2.65		0.00		0.00		
Land slope (%)	=	2.50		0.00		0.00		
Travel Time (min)	**=**	**10.78**	**+**	**0.00**	**+**	**0.00**	**=**	**10.78**
Shallow Concentrated Flow								
Flow length (ft)	=	100.00		200.00		0.00		
Watercourse slope (%)	=	1.50		1.00		0.00		
Surface description	=	Paved		Unpaved		Paved		
Average velocity (ft/s)	=	2.49		1.61		0.00		
Travel Time (min)	**=**	**0.67**	**+**	**2.07**	**+**	**0.00**	**=**	**2.74**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 13.50 min

Precipitation Report

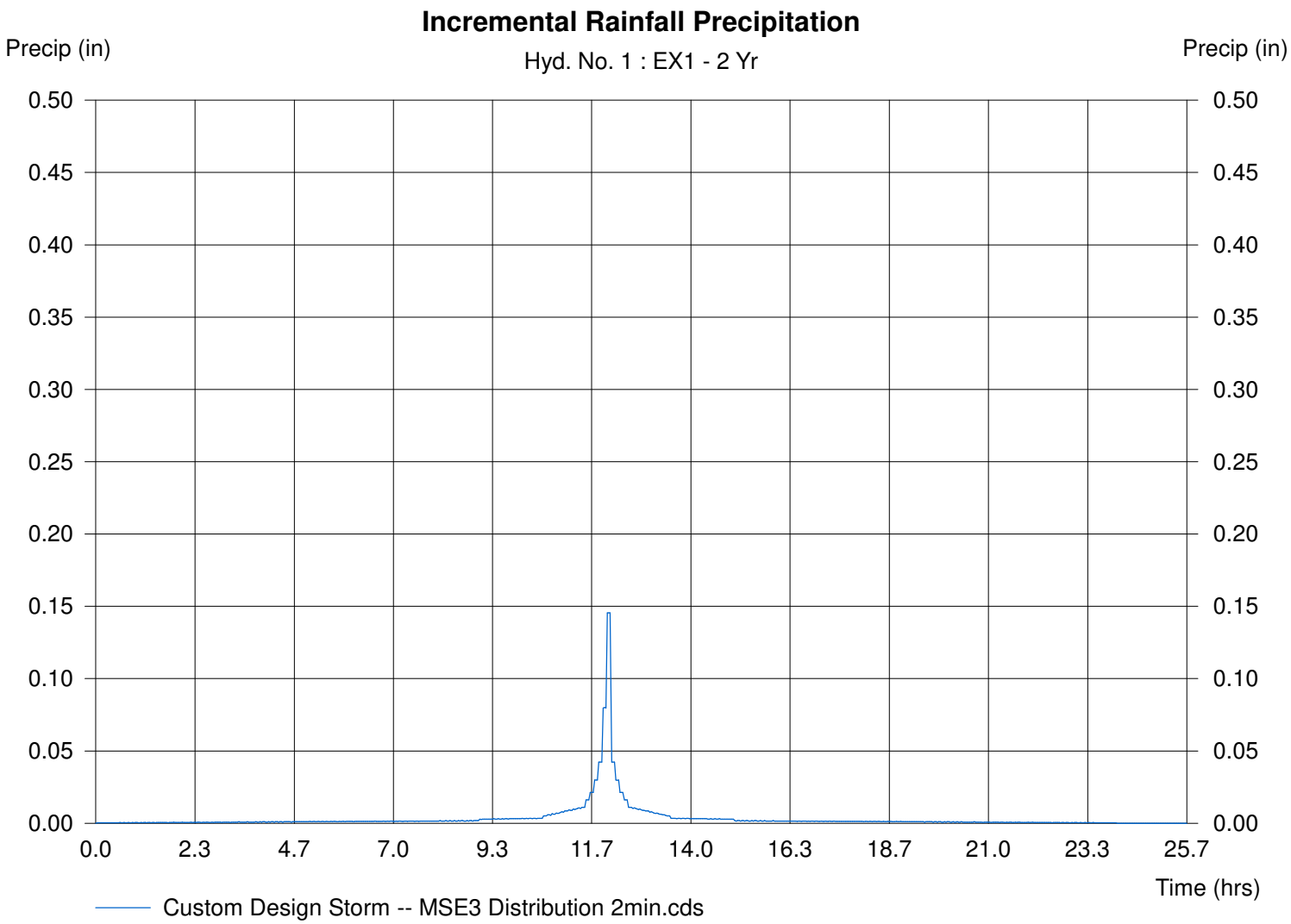
Hydraflow Hydrographs by Intelisolve

Tuesday, Dec 3 2024, 2:15 PM

Hyd. No. 1

EX1

Storm Frequency	= 2 yrs	Time interval	= 2 min
Total precip.	= 2.65 in	Distribution	= Custom
Storm duration	= MSE3 Distribution 2min.cds		



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

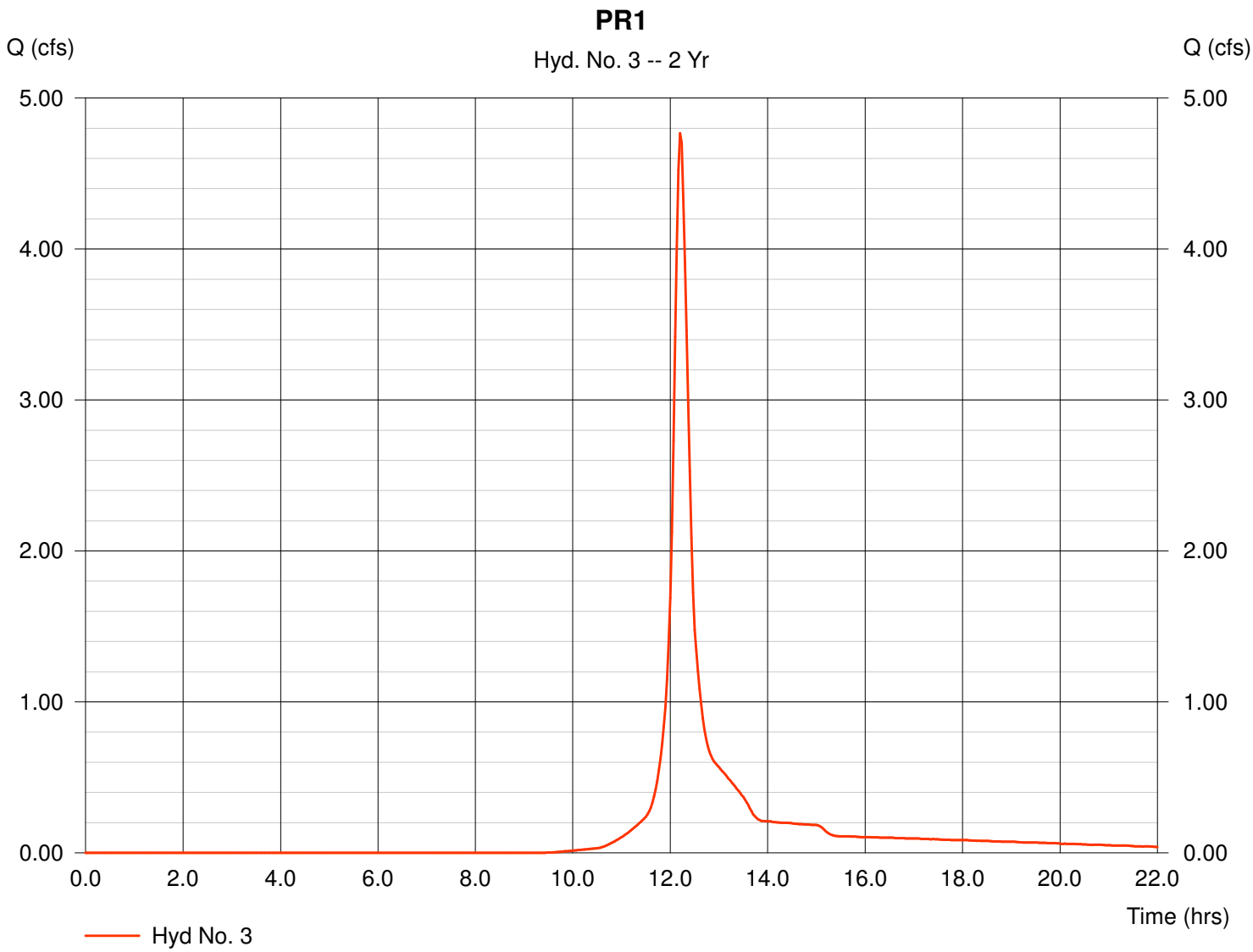
Tuesday, Dec 3 2024, 2:15 PM

Hyd. No. 3

PR1

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.77 cfs
Storm frequency	=	2 yrs	Time interval	=	2 min
Drainage area	=	2.60 ac	Curve number	=	87
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.5 min
Total precip.	=	2.65 in	Distribution	=	Custom
Storm duration	=	MSE3 Distribution 2min.cds	Shape factor	=	484

Hydrograph Volume = 0.304 acft



TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve

Hyd. No. 3

PR1

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	70.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	2.65		0.00		0.00		
Land slope (%)	=	2.50		0.00		0.00		
Travel Time (min)	**=**	**10.78**	**+**	**0.00**	**+**	**0.00**	**=**	**10.78**
Shallow Concentrated Flow								
Flow length (ft)	=	100.00		200.00		0.00		
Watercourse slope (%)	=	1.50		1.00		0.00		
Surface description	=	Paved		Unpaved		Paved		
Average velocity (ft/s)	=	2.49		1.61		0.00		
Travel Time (min)	**=**	**0.67**	**+**	**2.07**	**+**	**0.00**	**=**	**2.74**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 13.50 min

Precipitation Report

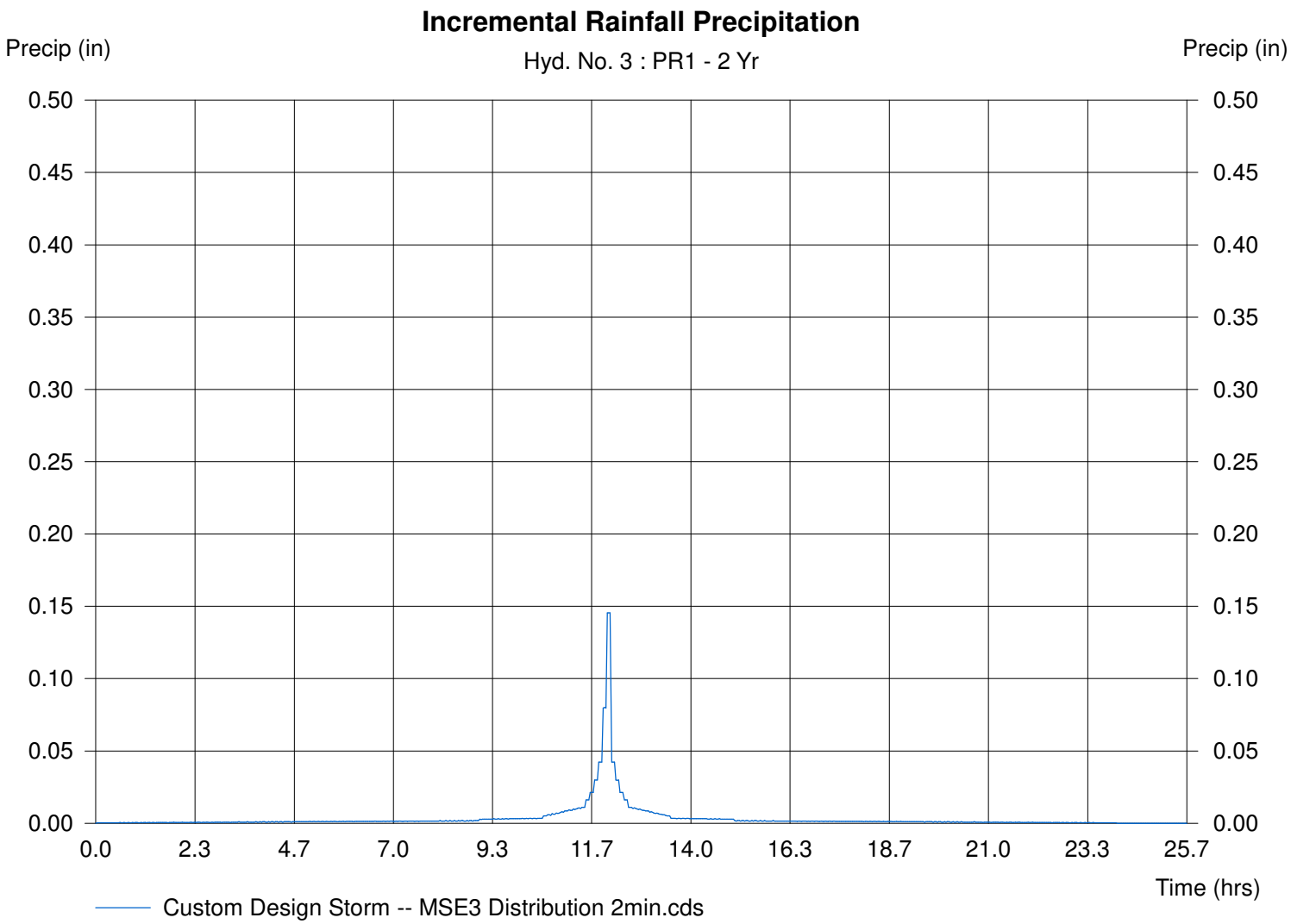
Hydraflow Hydrographs by Intelisolve

Tuesday, Dec 3 2024, 2:15 PM

Hyd. No. 3

PR1

Storm Frequency	=	2 yrs	Time interval	=	2 min
Total precip.	=	2.65 in	Distribution	=	Custom
Storm duration	=	MSE3 Distribution 2min.cds			



Hydrograph Plot

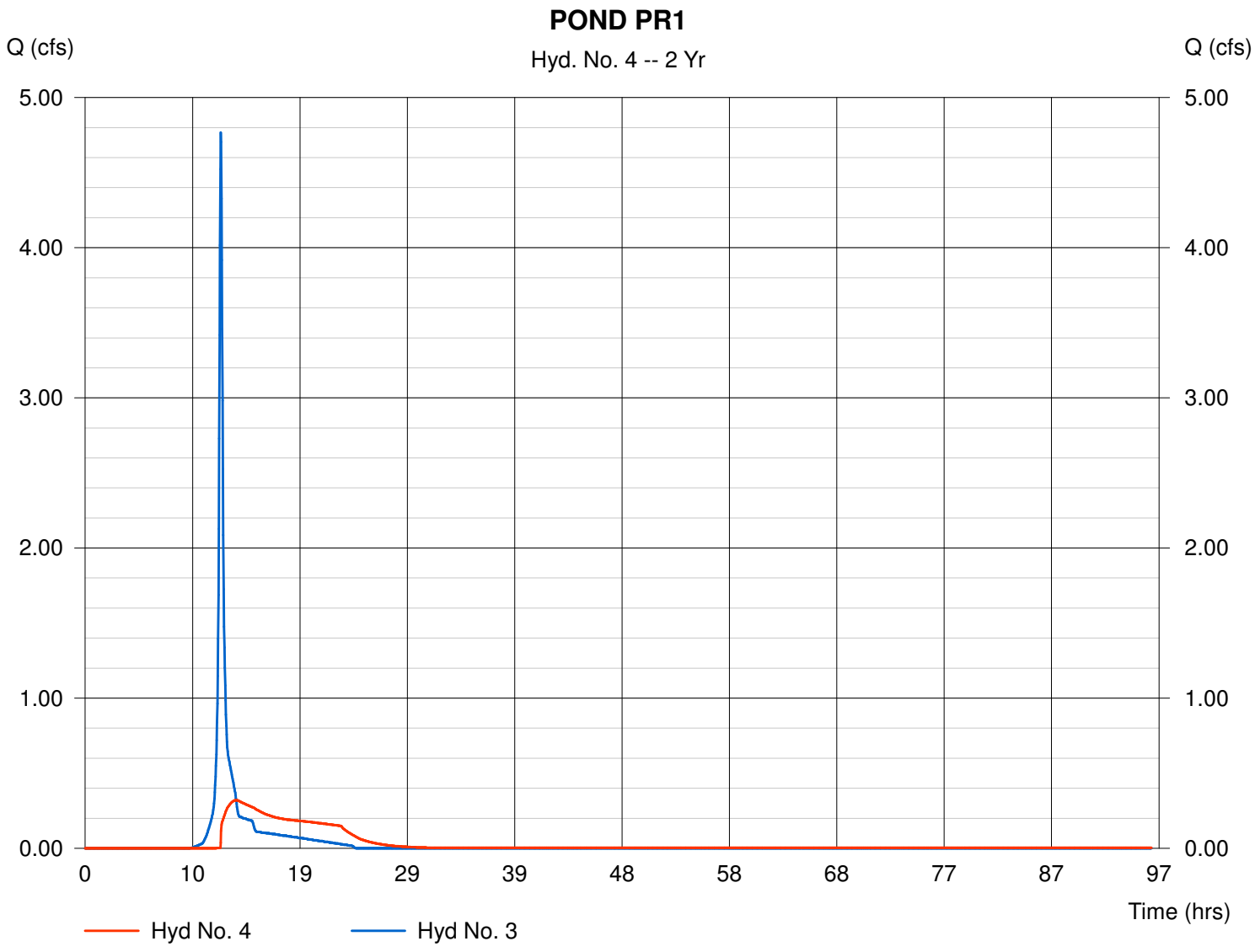
Hydraflow Hydrographs by Intelisolve | Tuesday, Dec 3 2024, 2:15 PM

Hyd. No. 4

POND PR1

Hydrograph type	=	Reservoir	Peak discharge	=	0.32 cfs
Storm frequency	=	2 yrs	Time interval	=	2 min
Inflow hyd. No.	=	3	Max. Elevation	=	908.98 ft
Reservoir name	=	P1	Max. Storage	=	0.198 acft

Storage Indication method used. | Hydrograph Volume = 0.238 acft



Pond Report

Hydraflow Hydrographs by Intelisolve

Tuesday, Dec 3 2024, 2:15 PM

Pond No. 1 - P1

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	905.75	1,125	0.000	0.000
2.74	908.49	2,300	0.108	0.108
2.75	908.50	7,710	0.001	0.109
3.25	909.00	8,570	0.093	0.202
4.25	910.00	23,200	0.365	0.567
5.25	911.00	64,860	1.011	1.578

Culvert / Orifice Structures

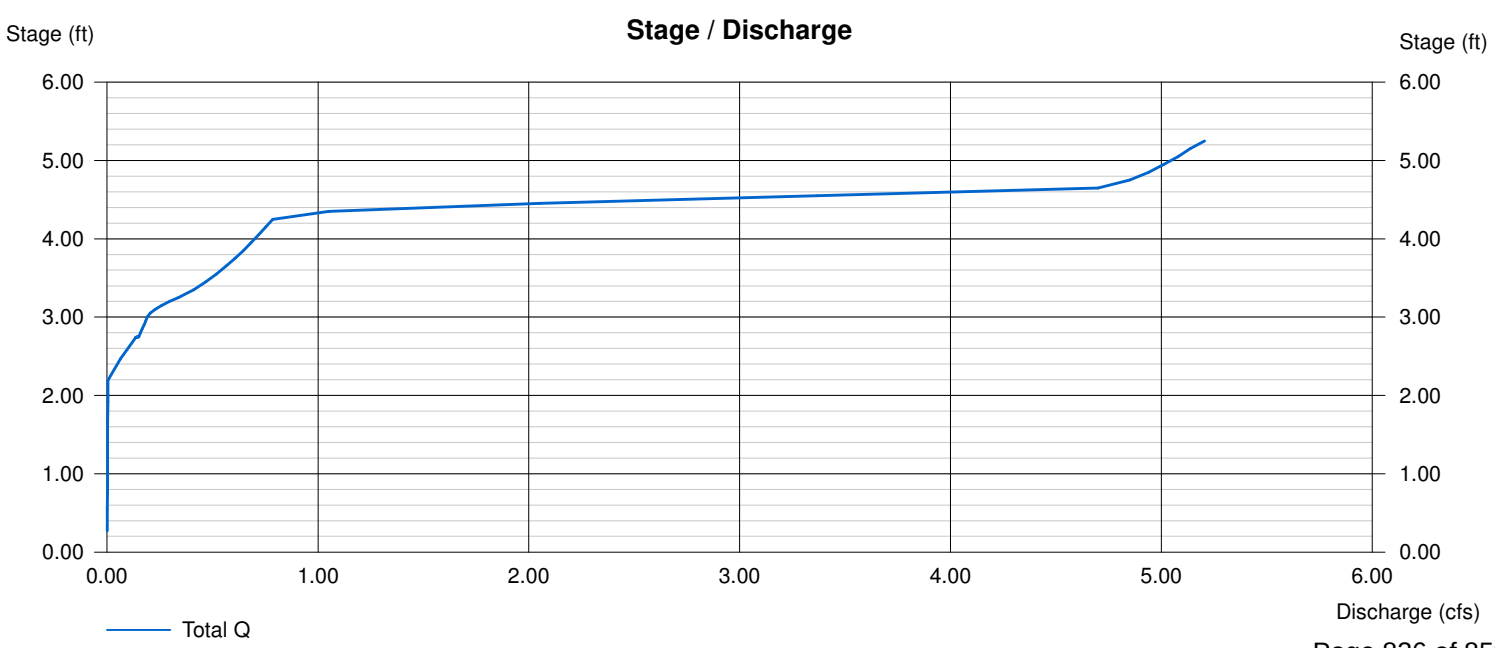
	[A]	[B]	[C]	[D]
Rise (in)	= 12.00	3.00	4.00	0.00
Span (in)	= 12.00	3.00	4.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 908.02	908.02	908.75	0.00
Length (ft)	= 249.50	0.00	0.00	0.00
Slope (%)	= 1.30	0.00	0.00	0.00
N-Value	= .012	.013	.012	.013
Orif. Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 6.30	0.00	0.00	0.00
Crest El. (ft)	= 910.05	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	No	No	No

Exfiltration = 0.100 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description
1	SCS Runoff	6.53	2	732	0.416	----	------	------	EX1
3	SCS Runoff	8.12	2	732	0.522	----	------	------	PR1
4	Reservoir	0.56	2	812	0.455	3	909.38	0.343	POND PR1

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

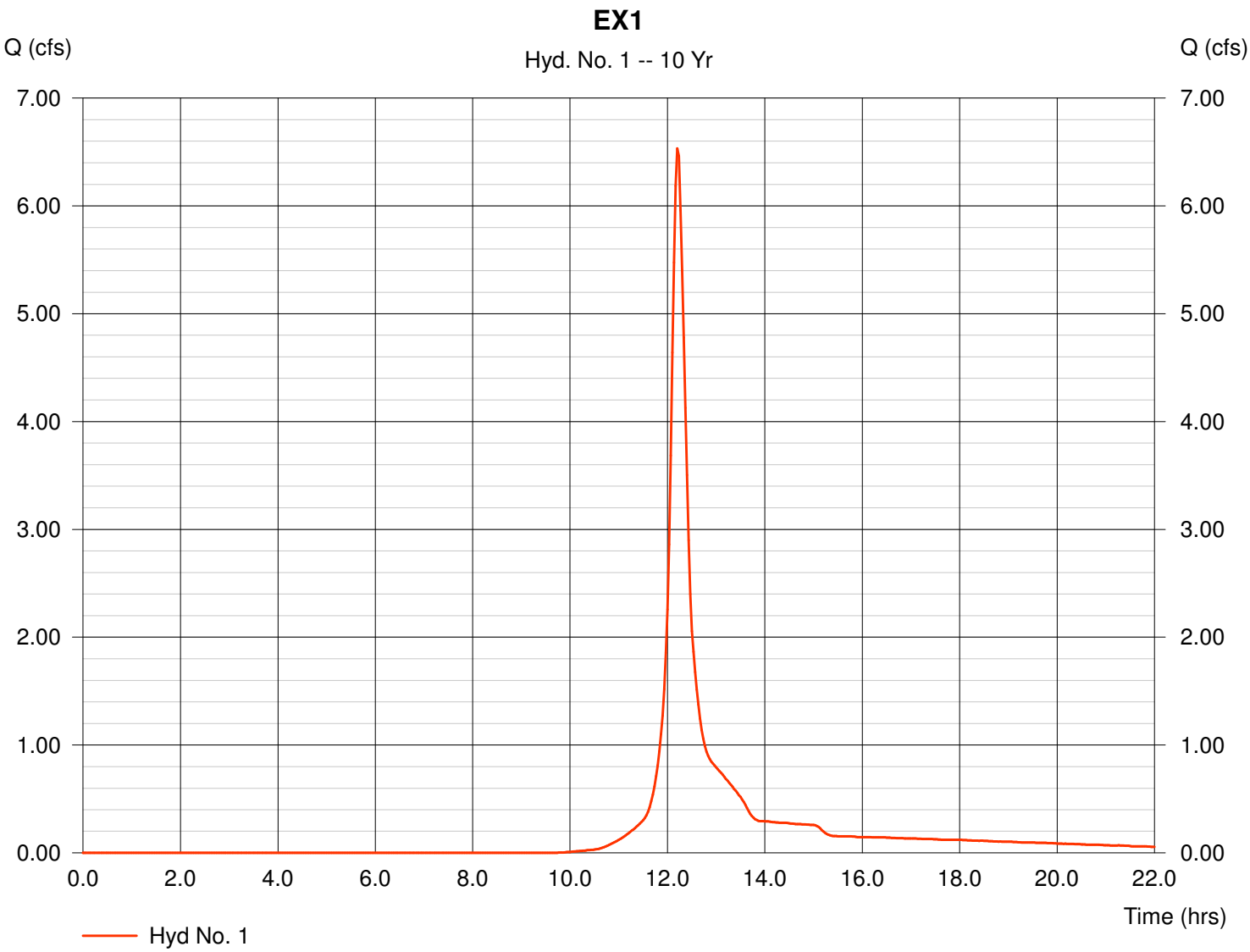
Tuesday, Dec 3 2024, 2:15 PM

Hyd. No. 1

EX1

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.53 cfs
Storm frequency	=	10 yrs	Time interval	=	2 min
Drainage area	=	2.60 ac	Curve number	=	81
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.5 min
Total precip.	=	3.82 in	Distribution	=	Custom
Storm duration	=	MSE3 Distribution 2min.cds	Shape factor	=	484

Hydrograph Volume = 0.416 acft



TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

EX1

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	70.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	2.65		0.00		0.00		
Land slope (%)	=	2.50		0.00		0.00		
Travel Time (min)	**=**	**10.78**	**+**	**0.00**	**+**	**0.00**	**=**	**10.78**
Shallow Concentrated Flow								
Flow length (ft)	=	100.00		200.00		0.00		
Watercourse slope (%)	=	1.50		1.00		0.00		
Surface description	=	Paved		Unpaved		Paved		
Average velocity (ft/s)	=	2.49		1.61		0.00		
Travel Time (min)	**=**	**0.67**	**+**	**2.07**	**+**	**0.00**	**=**	**2.74**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 13.50 min

Precipitation Report

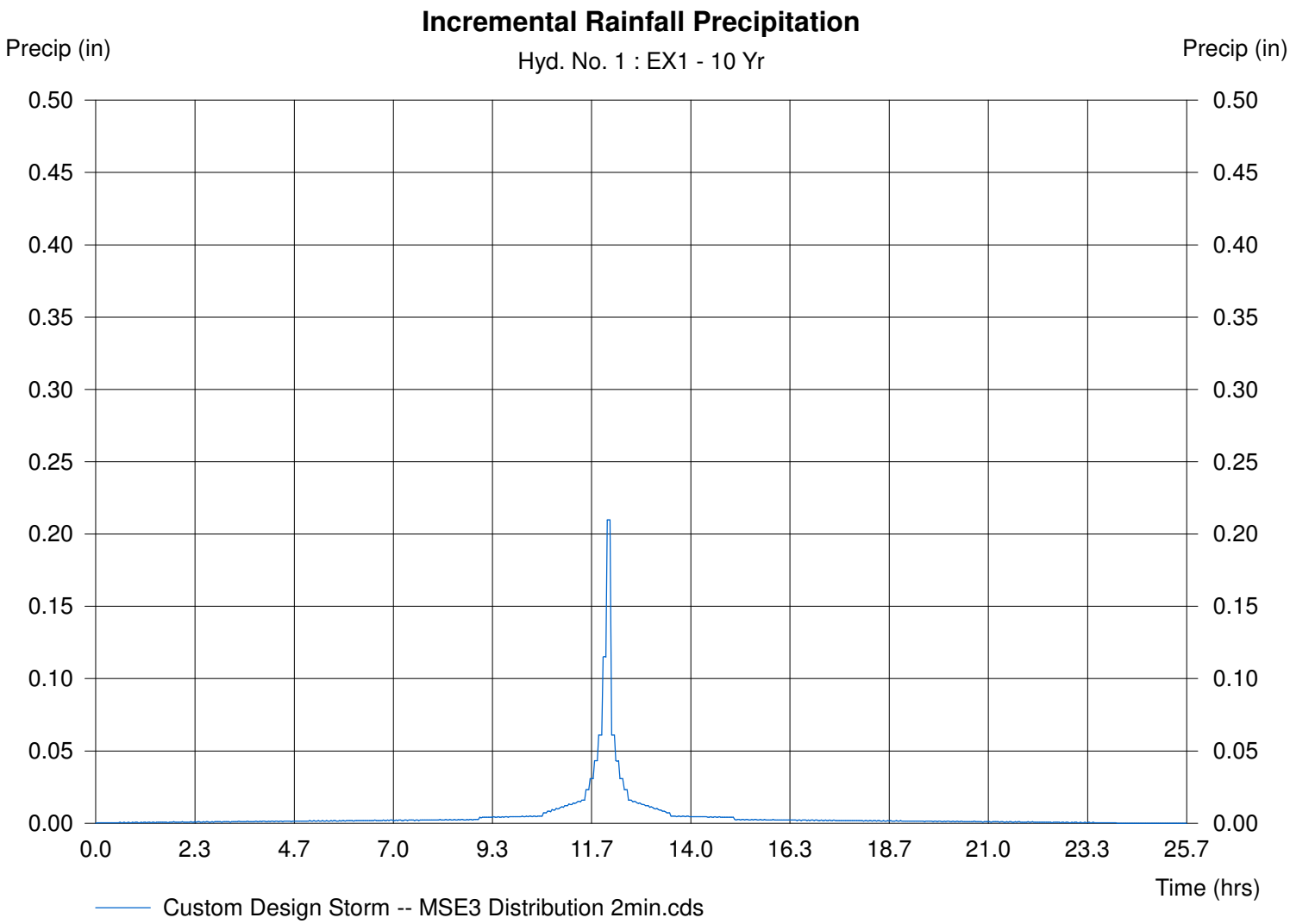
Hydraflow Hydrographs by Intelisolve

Tuesday, Dec 3 2024, 2:15 PM

Hyd. No. 1

EX1

Storm Frequency	= 10 yrs	Time interval	= 2 min
Total precip.	= 3.82 in	Distribution	= Custom
Storm duration	= MSE3 Distribution 2min.cds		



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

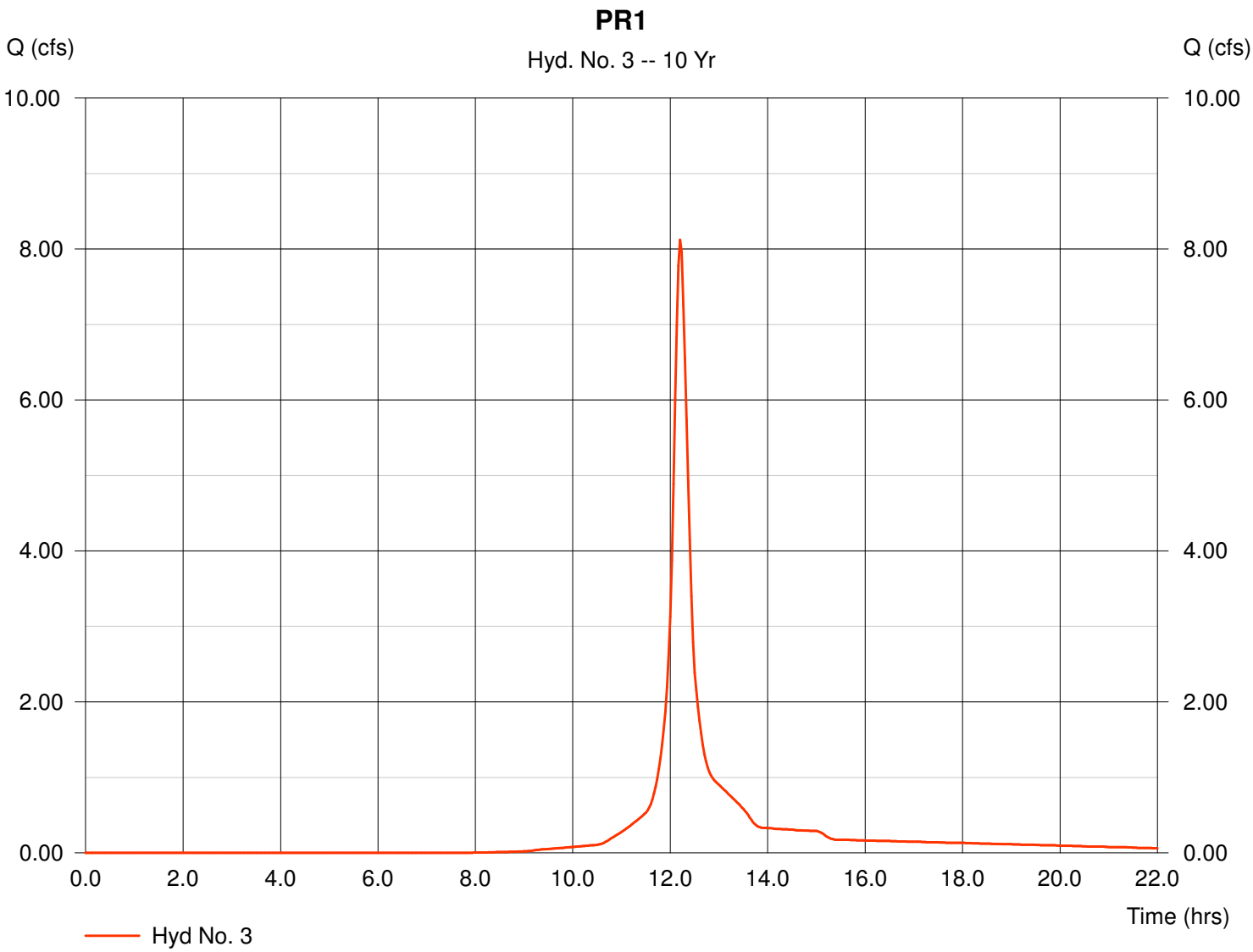
Tuesday, Dec 3 2024, 2:15 PM

Hyd. No. 3

PR1

Hydrograph type	=	SCS Runoff	Peak discharge	=	8.12 cfs
Storm frequency	=	10 yrs	Time interval	=	2 min
Drainage area	=	2.60 ac	Curve number	=	87
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.5 min
Total precip.	=	3.82 in	Distribution	=	Custom
Storm duration	=	MSE3 Distribution 2min.cds	Shape factor	=	484

Hydrograph Volume = 0.522 acft



TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve

Hyd. No. 3

PR1

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	70.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	2.65		0.00		0.00		
Land slope (%)	=	2.50		0.00		0.00		
Travel Time (min)	**=**	**10.78**	**+**	**0.00**	**+**	**0.00**	**=**	**10.78**
Shallow Concentrated Flow								
Flow length (ft)	=	100.00		200.00		0.00		
Watercourse slope (%)	=	1.50		1.00		0.00		
Surface description	=	Paved		Unpaved		Paved		
Average velocity (ft/s)	=	2.49		1.61		0.00		
Travel Time (min)	**=**	**0.67**	**+**	**2.07**	**+**	**0.00**	**=**	**2.74**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 13.50 min

Precipitation Report

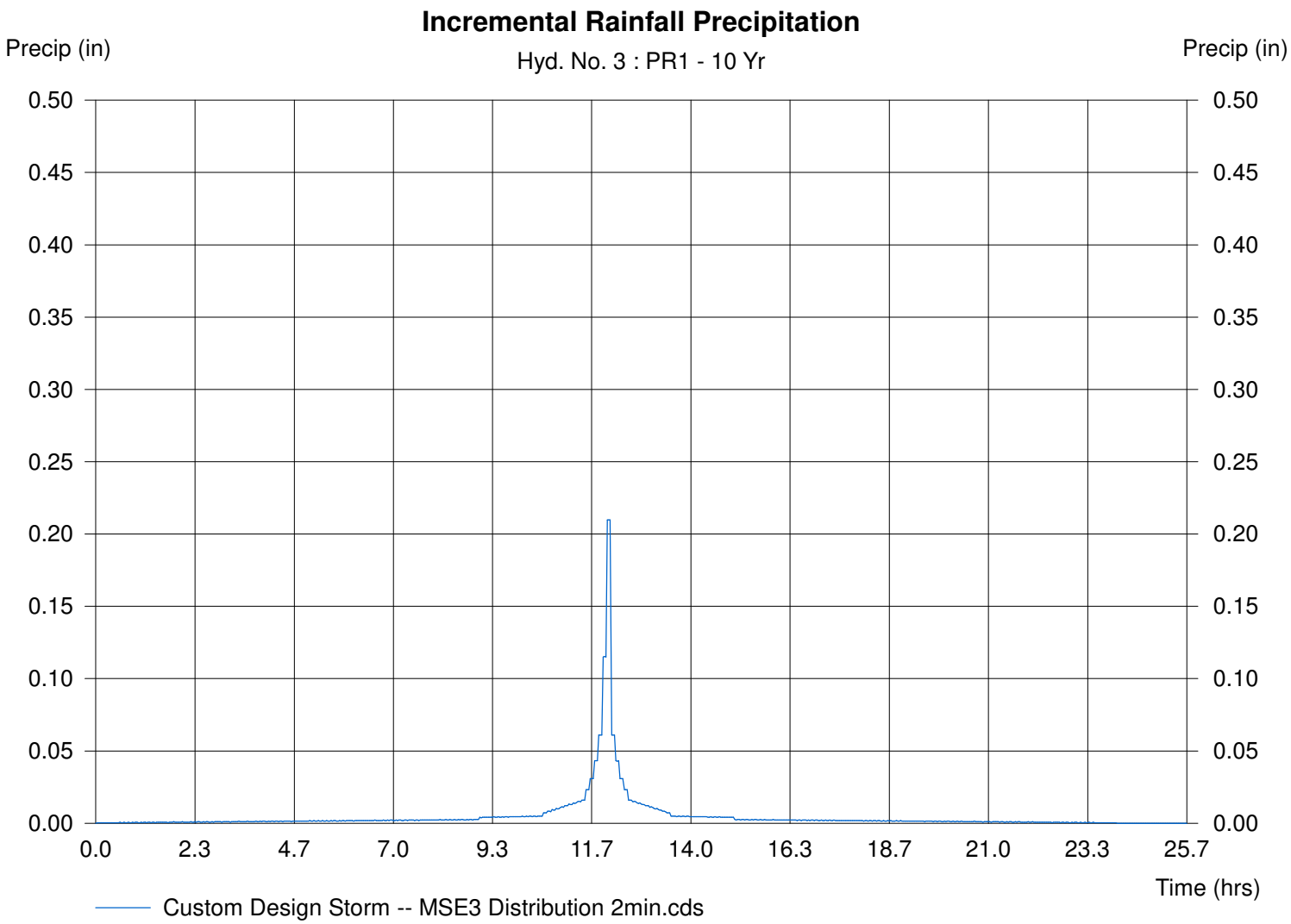
Hydraflow Hydrographs by Intelisolve

Tuesday, Dec 3 2024, 2:15 PM

Hyd. No. 3

PR1

Storm Frequency	= 10 yrs	Time interval	= 2 min
Total precip.	= 3.82 in	Distribution	= Custom
Storm duration	= MSE3 Distribution 2min.cds		



Hydrograph Plot

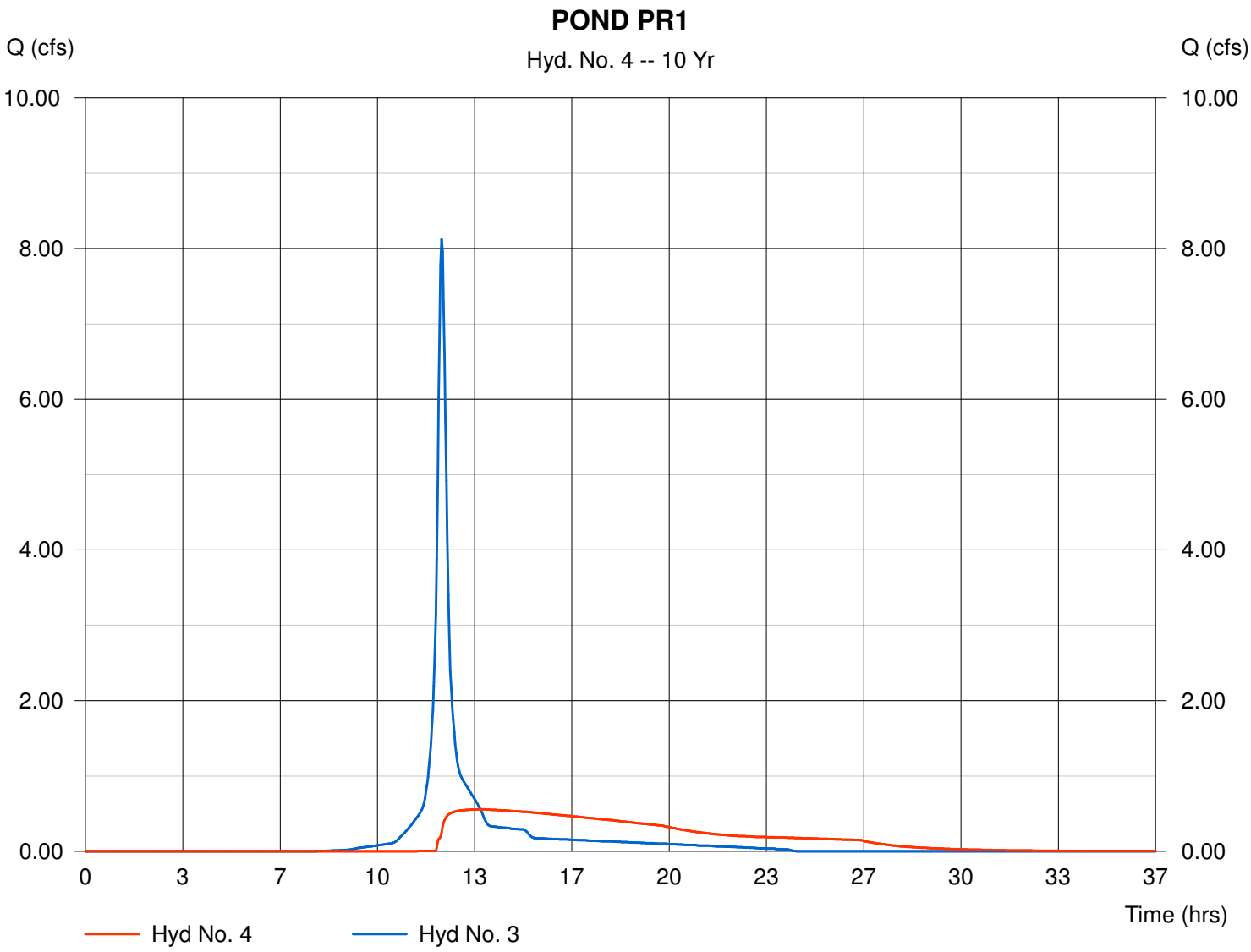
Hydraflow Hydrographs by Intelisolve | Tuesday, Dec 3 2024, 2:15 PM

Hyd. No. 4

POND PR1

Hydrograph type	=	Reservoir	Peak discharge	=	0.56 cfs
Storm frequency	=	10 yrs	Time interval	=	2 min
Inflow hyd. No.	=	3	Max. Elevation	=	909.38 ft
Reservoir name	=	P1	Max. Storage	=	0.343 acft

Storage Indication method used. | Hydrograph Volume = 0.455 acft



Pond Report

Hydraflow Hydrographs by Intelisolve

Tuesday, Dec 3 2024, 2:15 PM

Pond No. 1 - P1

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	905.75	1,125	0.000	0.000
2.74	908.49	2,300	0.108	0.108
2.75	908.50	7,710	0.001	0.109
3.25	909.00	8,570	0.093	0.202
4.25	910.00	23,200	0.365	0.567
5.25	911.00	64,860	1.011	1.578

Culvert / Orifice Structures

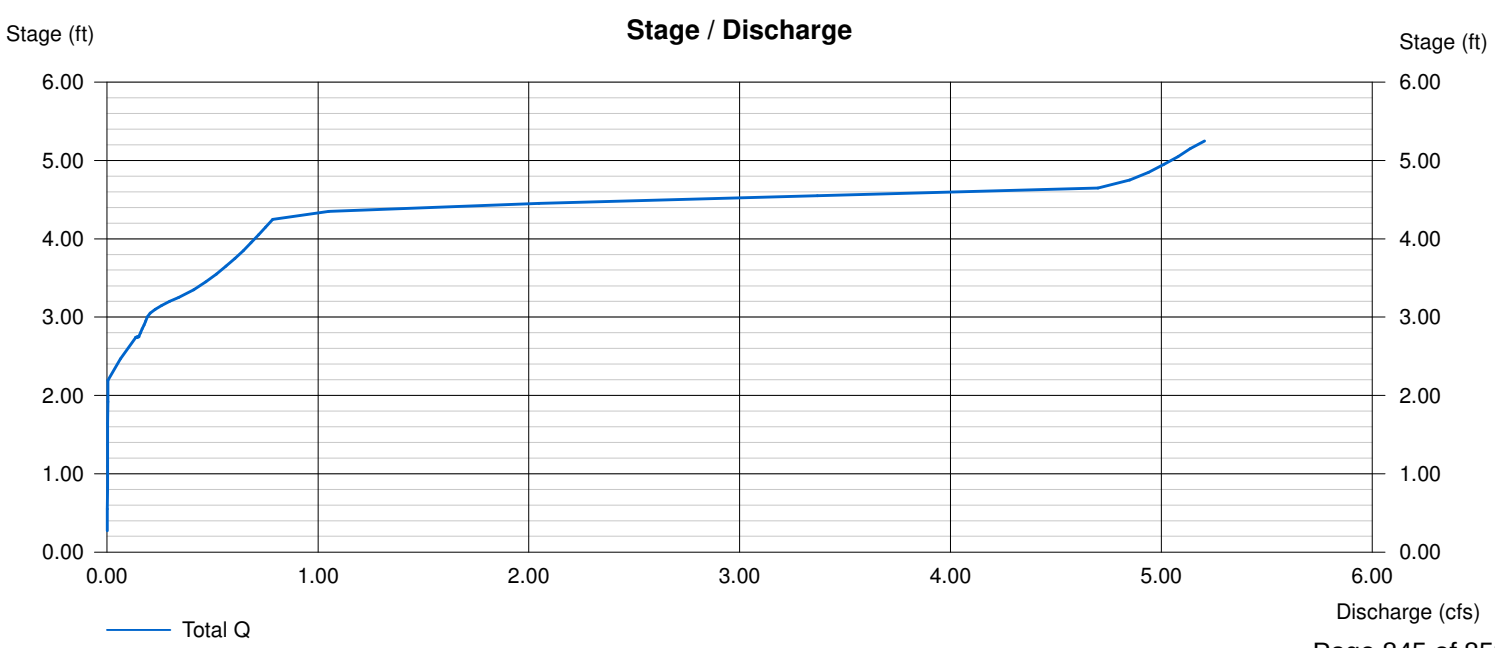
		[A]	[B]	[C]	[D]
Rise (in)	=	12.00	3.00	4.00	0.00
Span (in)	=	12.00	3.00	4.00	0.00
No. Barrels	=	1	1	1	0
Invert El. (ft)	=	908.02	908.02	908.75	0.00
Length (ft)	=	249.50	0.00	0.00	0.00
Slope (%)	=	1.30	0.00	0.00	0.00
N-Value	=	.012	.013	.012	.013
Orif. Coeff.	=	0.60	0.60	0.60	0.60
Multi-Stage	=	n/a	Yes	Yes	No

Weir Structures

		[A]	[B]	[C]	[D]
Crest Len (ft)	=	6.30	0.00	0.00	0.00
Crest El. (ft)	=	910.05	0.00	0.00	0.00
Weir Coeff.	=	3.33	3.33	0.00	0.00
Weir Type	=	Riser	---	---	---
Multi-Stage	=	Yes	No	No	No

Exfiltration = 0.100 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description
1	SCS Runoff	13.96	2	732	0.900	----	------	------	EX1
3	SCS Runoff	15.68	2	732	1.037	----	------	------	PR1
4	Reservoir	1.26	2	800	0.969	3	910.12	0.689	POND PR1

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

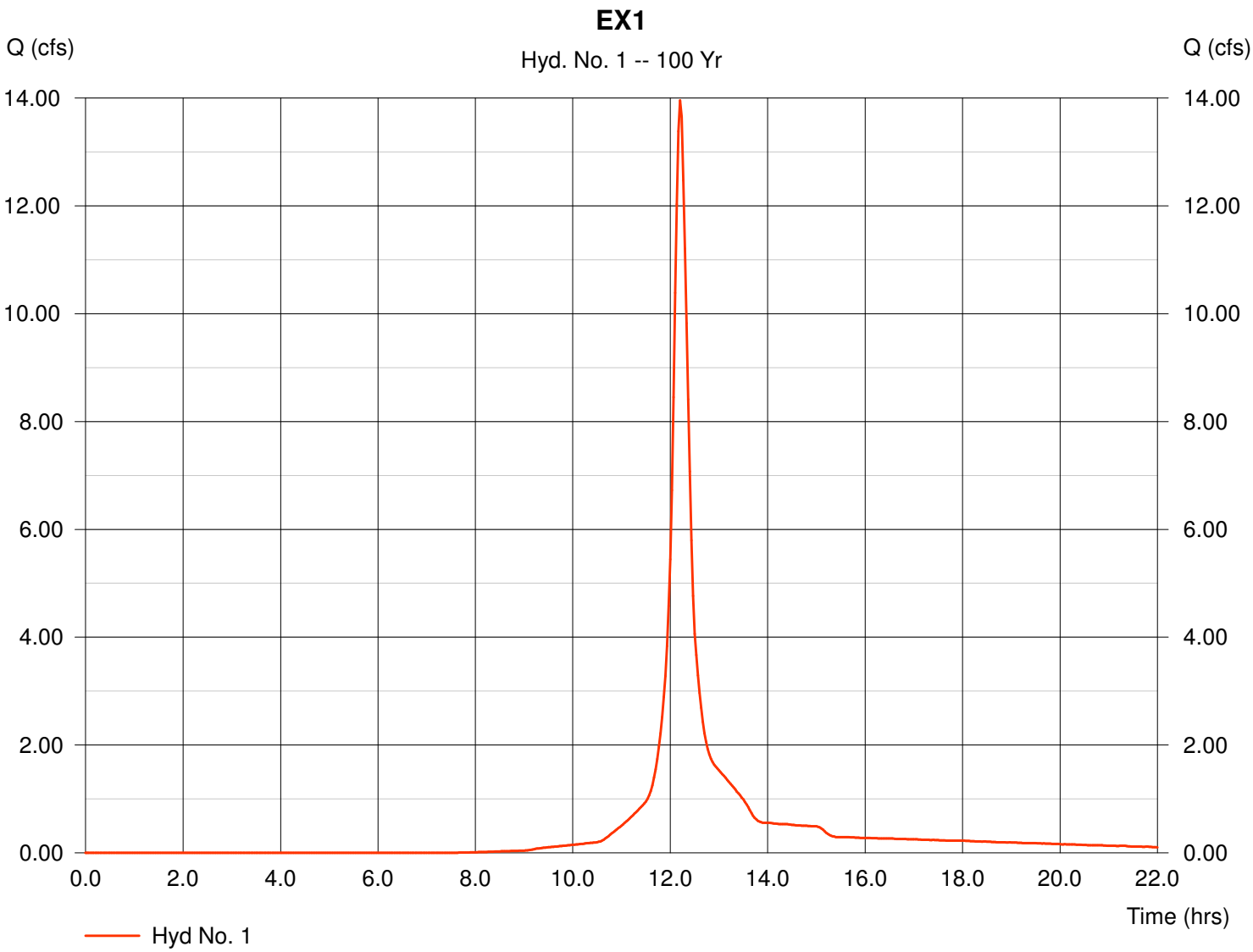
Tuesday, Dec 3 2024, 2:15 PM

Hyd. No. 1

EX1

Hydrograph type	=	SCS Runoff	Peak discharge	=	13.96 cfs
Storm frequency	=	100 yrs	Time interval	=	2 min
Drainage area	=	2.60 ac	Curve number	=	81
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.5 min
Total precip.	=	6.41 in	Distribution	=	Custom
Storm duration	=	MSE3 Distribution 2min.cds	Shape factor	=	484

Hydrograph Volume = 0.900 acft



TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

EX1

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	70.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	2.65		0.00		0.00		
Land slope (%)	=	2.50		0.00		0.00		
Travel Time (min)	**=**	**10.78**	**+**	**0.00**	**+**	**0.00**	**=**	**10.78**
Shallow Concentrated Flow								
Flow length (ft)	=	100.00		200.00		0.00		
Watercourse slope (%)	=	1.50		1.00		0.00		
Surface description	=	Paved		Unpaved		Paved		
Average velocity (ft/s)	=	2.49		1.61		0.00		
Travel Time (min)	**=**	**0.67**	**+**	**2.07**	**+**	**0.00**	**=**	**2.74**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 13.50 min

Precipitation Report

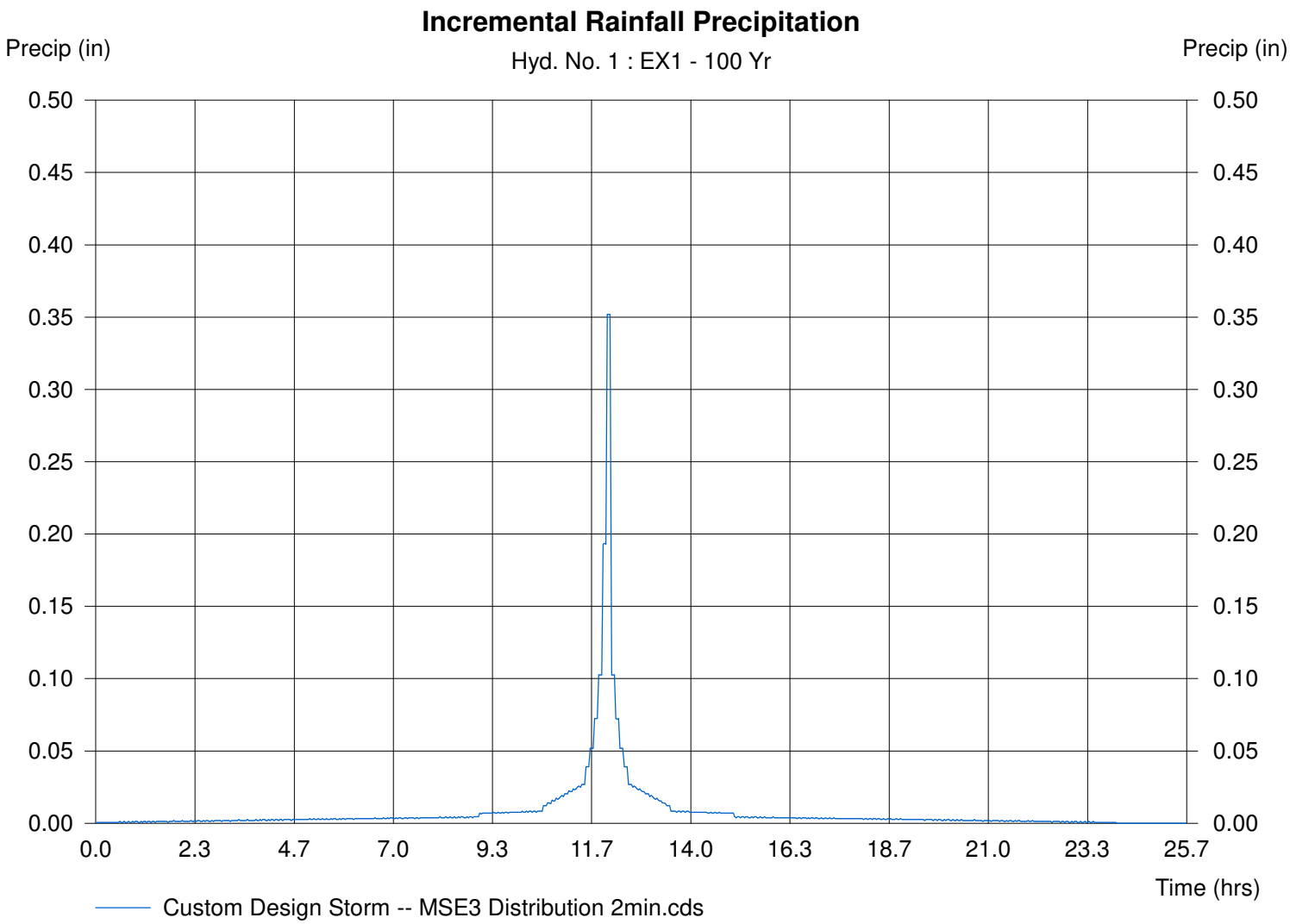
Hydraflow Hydrographs by Intelisolve

Tuesday, Dec 3 2024, 2:15 PM

Hyd. No. 1

EX1

Storm Frequency	= 100 yrs	Time interval	= 2 min
Total precip.	= 6.41 in	Distribution	= Custom
Storm duration	= MSE3 Distribution 2min.cds		



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

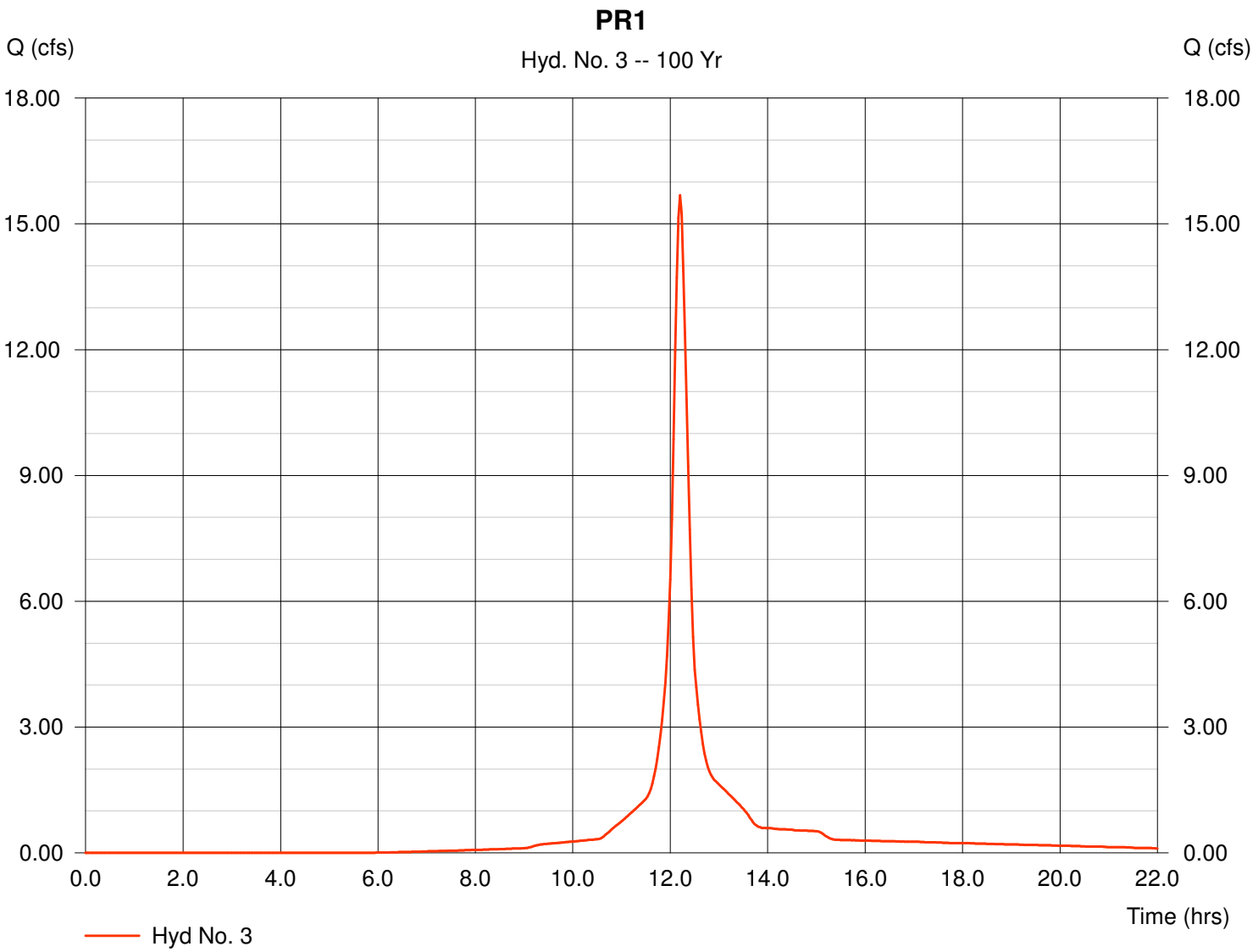
Tuesday, Dec 3 2024, 2:15 PM

Hyd. No. 3

PR1

Hydrograph type	=	SCS Runoff	Peak discharge	=	15.68 cfs
Storm frequency	=	100 yrs	Time interval	=	2 min
Drainage area	=	2.60 ac	Curve number	=	87
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.5 min
Total precip.	=	6.41 in	Distribution	=	Custom
Storm duration	=	MSE3 Distribution 2min.cds	Shape factor	=	484

Hydrograph Volume = 1.037 acft



TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve

Hyd. No. 3

PR1

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	70.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	2.65		0.00		0.00		
Land slope (%)	=	2.50		0.00		0.00		
Travel Time (min)	**=**	**10.78**	**+**	**0.00**	**+**	**0.00**	**=**	**10.78**
Shallow Concentrated Flow								
Flow length (ft)	=	100.00		200.00		0.00		
Watercourse slope (%)	=	1.50		1.00		0.00		
Surface description	=	Paved		Unpaved		Paved		
Average velocity (ft/s)	=	2.49		1.61		0.00		
Travel Time (min)	**=**	**0.67**	**+**	**2.07**	**+**	**0.00**	**=**	**2.74**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 13.50 min

Precipitation Report

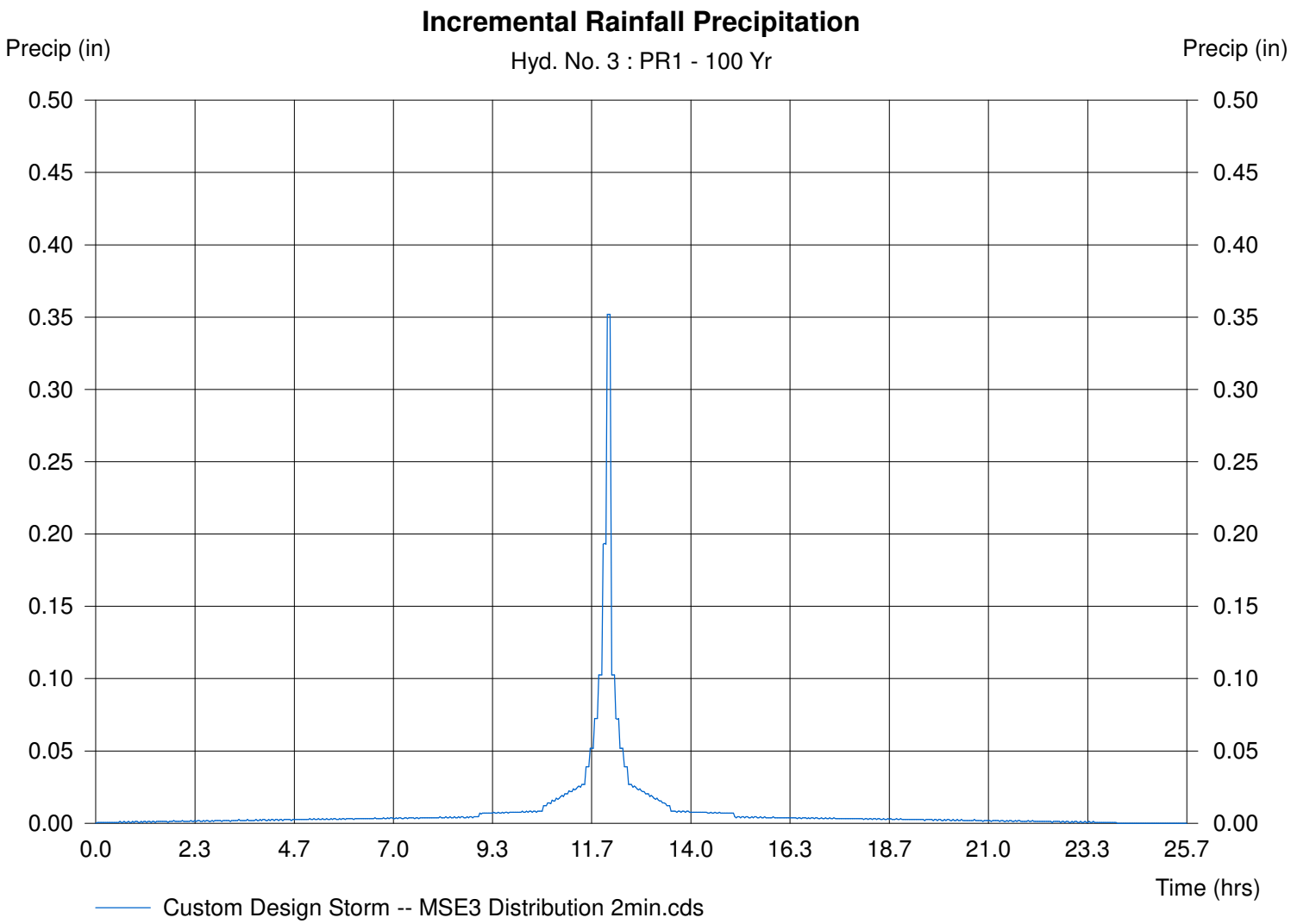
Hydraflow Hydrographs by Intelisolve

Tuesday, Dec 3 2024, 2:15 PM

Hyd. No. 3

PR1

Storm Frequency	= 100 yrs	Time interval	= 2 min
Total precip.	= 6.41 in	Distribution	= Custom
Storm duration	= MSE3 Distribution 2min.cds		



Hydrograph Plot

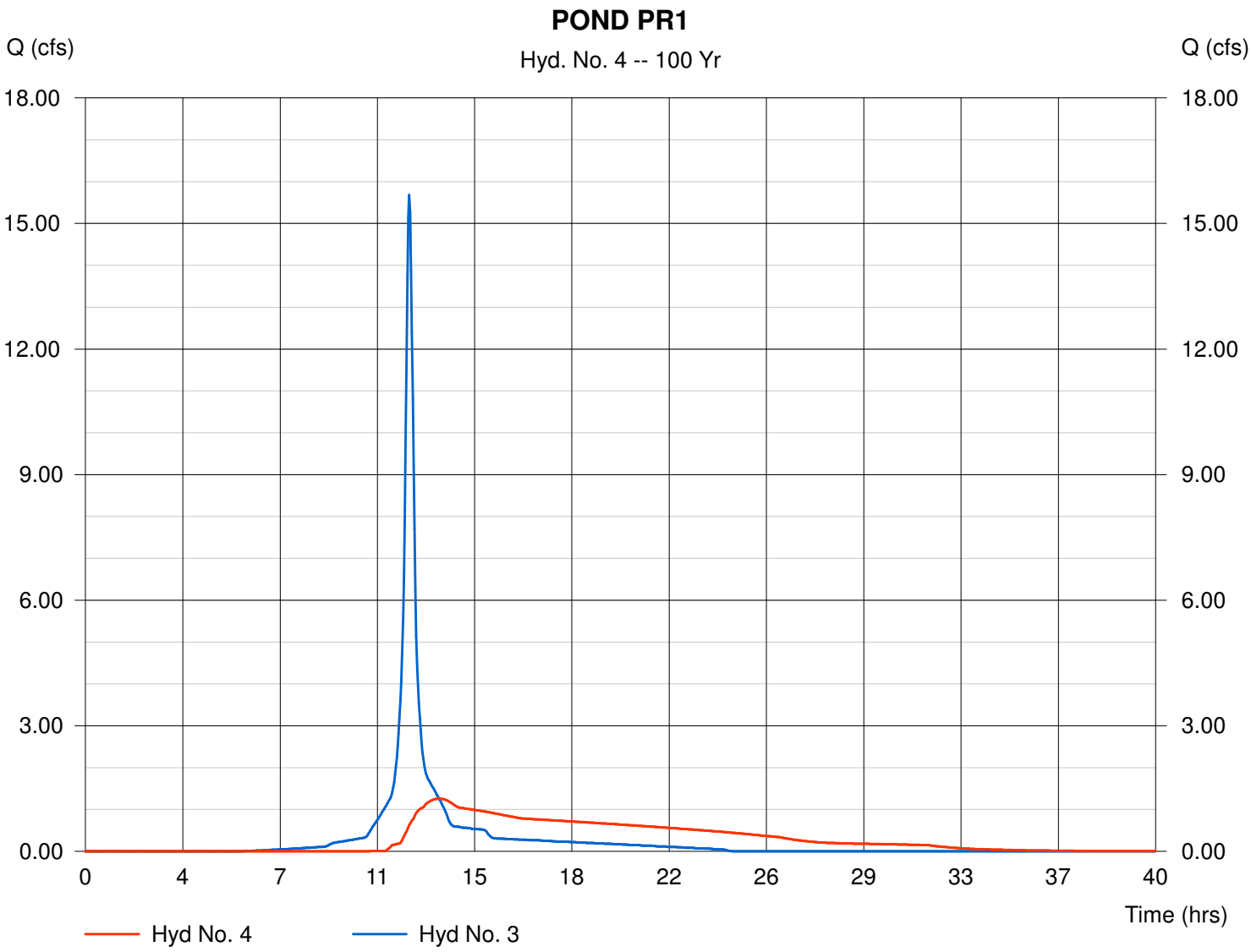
Hydraflow Hydrographs by Intelisolve | Tuesday, Dec 3 2024, 2:15 PM

Hyd. No. 4

POND PR1

Hydrograph type	=	Reservoir	Peak discharge	=	1.26 cfs
Storm frequency	=	100 yrs	Time interval	=	2 min
Inflow hyd. No.	=	3	Max. Elevation	=	910.12 ft
Reservoir name	=	P1	Max. Storage	=	0.689 acft

Storage Indication method used. | Hydrograph Volume = 0.969 acft



Pond Report

Hydraflow Hydrographs by Intelisolve

Tuesday, Dec 3 2024, 2:15 PM

Pond No. 1 - P1

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	905.75	1,125	0.000	0.000
2.74	908.49	2,300	0.108	0.108
2.75	908.50	7,710	0.001	0.109
3.25	909.00	8,570	0.093	0.202
4.25	910.00	23,200	0.365	0.567
5.25	911.00	64,860	1.011	1.578

Culvert / Orifice Structures

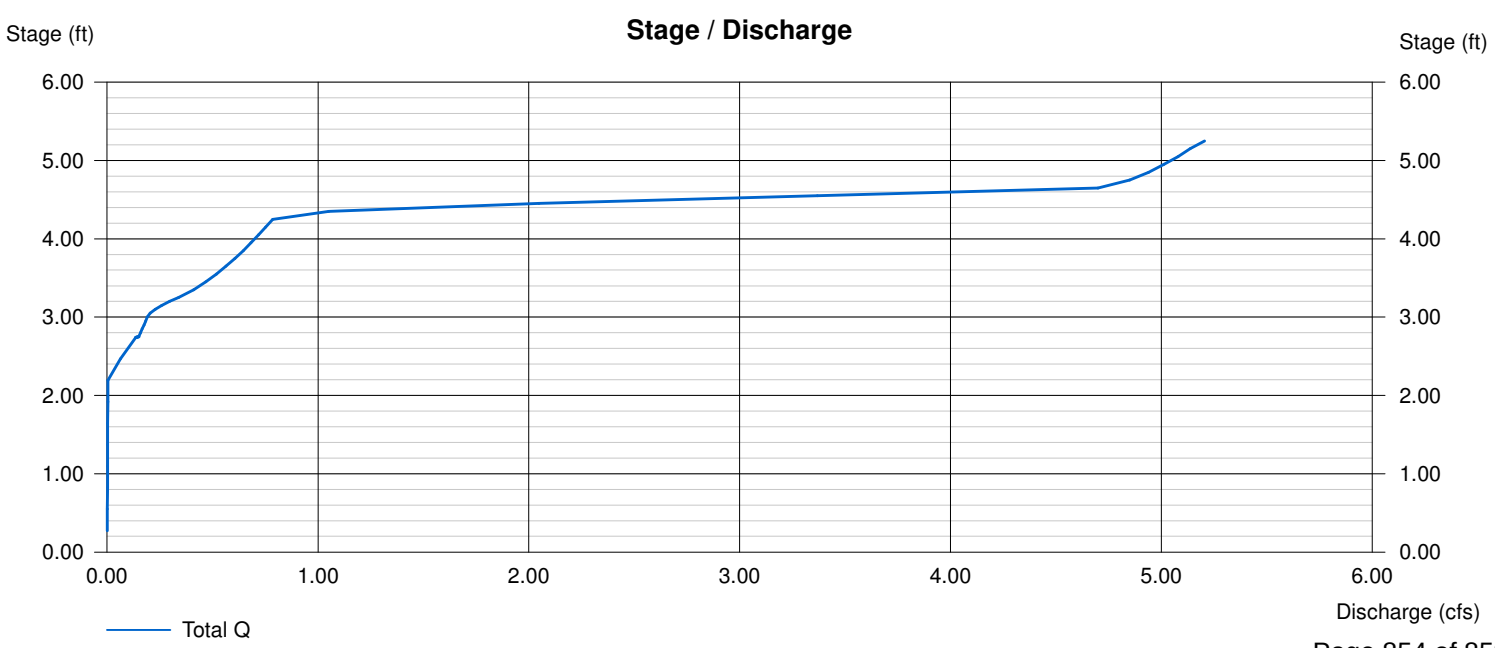
		[A]	[B]	[C]	[D]
Rise (in)	=	12.00	3.00	4.00	0.00
Span (in)	=	12.00	3.00	4.00	0.00
No. Barrels	=	1	1	1	0
Invert El. (ft)	=	908.02	908.02	908.75	0.00
Length (ft)	=	249.50	0.00	0.00	0.00
Slope (%)	=	1.30	0.00	0.00	0.00
N-Value	=	.012	.013	.012	.013
Orif. Coeff.	=	0.60	0.60	0.60	0.60
Multi-Stage	=	n/a	Yes	Yes	No

Weir Structures

		[A]	[B]	[C]	[D]
Crest Len (ft)	=	6.30	0.00	0.00	0.00
Crest El. (ft)	=	910.05	0.00	0.00	0.00
Weir Coeff.	=	3.33	3.33	0.00	0.00
Weir Type	=	Riser	---	---	---
Multi-Stage	=	Yes	No	No	No

Exfiltration = 0.100 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



SLAMM for Windows Version 10.4.0
(c) Copyright Robert Pitt and John Voorhees 2012
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Data file name: M:\Paul Seul\System LLC-Germantown\WinSLAMM\WinSLAMM v10-Systems LLC BIO POND 12-03-24.mdb
Data file description: BIO INFILTRATION POND
Rain file name: C:\WinSLAMM Files\Rain Files\WI Milwaukee 69.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Start of Winter Season: 12/06 End of Winter Season: 03/28
Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69
Date of run: 12-03-2024 Time of run: 13:57:06
Total Area Modeled (acres): 2.600
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	130521	-	121.7	991.7	-
Outfall Total with Controls:	60082	53.97%	41.23	154.6	84.41%
Annualized Total After Outfall Controls:	60916			156.8	

Data file name: M:\Paul Seul\System LLC-Germantown\WinSLAMM\WinSLAMM v10-Systems LLC BIO POND 12-03-24.mdb
WinSLAMM Version 10.4.0
Rain file name: C:\WinSLAMM Files\Rain Files\WI Milwaukee 69.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/06 End of Winter Season: 03/28
Date: 12-03-2024 Time: 13:57:23
Site information:
BIO INFILTRATION POND
LU# 1 - Commercial: Commercial 1 Total area (ac): 2.600
1 - Roofs 1: 0.200 ac. Flat Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
13 - Paved Parking 1: 1.420 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.980 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Biofilter CP# 1 (DS) - DS Biofilters # 1

1. Top area (square feet) = 64860
2. Bottom aea (square feet) = 3750
3. Depth (ft): 5.25
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 0.1
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 1
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0.25
10. Porosity of rock filled volume = 0.33
11. Engineered soil infiltration rate: 3.6
12. Engineered soil depth (ft) = 2.52
13. Engineered soil porosity = 0.27
14. Percent solids reduction due to flow through engineered soil = 80
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data Soil Type Fraction in Eng. Soil
User-Defined Soil Type 1.000
Saturation water content percent (Porosity) = 0
Field capacity (%) = 0

Permanent Wilting Point (%) = 0
Infiltration rate (in/hr) = 3.6

Biofilter Outlet/Discharge Characteristics:

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 5
3. Height of datum to bottom of weir opening: 4.5

Outlet type: Vertical Stand Pipe

1. Stand pipe diameter (ft): 1
2. Stand pipe height above datum (ft): 4.3

Outlet type: Surface Discharge Pipe

1. Surface discharge pipe outlet diameter (ft): 0.33
2. Pipe invert elevation above datum (ft): 3
3. Number of surface pipe outlets: 1

Outlet type: Drain Tile/Underdrain

1. Underdrain outlet diameter (ft): 0.25
2. Invert elevation above datum (ft): 2.27
3. Number of underdrain outlets: 1

Village of Germantown

Engineering Department Memorandum

To: **Jeff Retzlaff, Director of Community Development**

From: **Kevin Driscoll, Village Engineer**

Date: **December 4, 2024**

Re: **W194 N11481 McCormick Drive – Sytems, Inc.**

Items Reviewed:

1. Application with Civil Site Plans — Dated: 10-30-2024, revised 12-03-2024
2. Storm Water Management Plan — Dated: 12-03-2024

General Comments:

1. Please respond to each item below. **A written response addressing each item shall be included in your submittal**.
2. The submitted plans have been reviewed for general conformance with State and Village design guidelines. Additional comments could arise as a result of the plan completion and modifications. The items listed below will need to be fully resolved before the Engineering Dept. can recommend a formal approval of the plans and permit for construction.
3. This project will require a WRAPP/NOI from the DNR. Please submit a copy of the approved permit prior to final approval.
4. As-builts prepared to Village standards shall be prepared and provided to the Village post-construction (for all applicable items).
5. A professional engineer's original seal is to be affixed, signed and dated on the final set of construction plans.
6. A Permit for a Village Erosion Control Permit. Contact the Village Engineering Department to obtain permits.
7. As a guide to the review response: Items in *italics* are resolved or acknowledged, items in regular font are to be addressed yet, items in **Bold** are additional feedback to remaining original comment.
8. Provide an existing site survey with topography stamped by a registered land surveyor.

Storm Water Management Plan:

1. Updates units in tables for consistency, label flow, areas, Tc, etc.
2. Clarify basis for HL=0, and update Hydraulic Lengths so as not to equal zero where appropriate.
3. Provide completed Storm Water Maintenance Agreement for recording with the Washington County Register of Deeds. The Village of Germantown SWMA template is available online and available at Village Hall.
4. Provide volumetric design existing conditions
    a. 2-year existing conditions volume: _____cu-ft
    b. 100-year existing conditions volume: _____cu-ft

Pond Detail – Sheet C200

1. Drain tile call out appears below flowline of outlet control structure. Revise and resubmit with updated legend.
2. Clarify overlapping text in the section on native plantings.

DRAFT