



CHARTER TOWNSHIP OF CHOCOLAY

PLANNING COMMISSION AGENDA

Monday, February 12, 2024 – 7:00 PM

I. CALL TO ORDER

II. PLEDGE OF ALLEGIANCE

III. ROLL CALL

Ryan Soucy (Chair)

George Meister (Vice Chair)

Donna Mullen-Campbell (Secretary)

Rebecca Sloan (Vice Secretary)

Don Rhein (Board Representative)

Stephanie Gencheff

Kendell Milton

IV. ADDITIONAL AGENDA ITEMS / APPROVAL OF AGENDA

V. MINUTES

A. January 22, 2024

VI. PUBLIC COMMENT

Limit of three minutes per person.

VII. PRESENTATIONS

None

VIII. UNFINISHED BUSINESS

None

IX. NEW BUSINESS

A. Site Plan Review SP 24-03 – Dollar General Store # 30520

1. Staff introduction
2. Commissioner discussion
3. Commissioner decision

B. Joint Meeting Considerations

1. Staff introduction
2. Commissioner discussion
3. Commissioner decision

X. PUBLIC COMMENT

Any item of interest – limit 3 minutes per person

XI. COMMISSIONER’S COMMENTS

XII. DIRECTOR’S REPORT

XIII. INFORMATIONAL ITEMS AND CORRESPONDENCE

- A. Township Board Minutes – 01.08.24 draft
- B. Township newsletter – January 2024
- C. Marquette County Planning Commission minutes 01.10.24 draft
- D. City of Marquette Planning Commission minutes 01.16.24

XIV. ADJOURNMENT

Planning Commission Rules for Public Hearings and Public Comment

1. Please wait for the Planning Commission Chair to acknowledge you before speaking. Individuals not following this rule are subject to dismissal from the meeting.
2. Individuals must state their name and address for the record. Individuals representing an organization must state their name and the organization they represent for the record.
3. Give your comments, opinion and / or question on the issue being addressed. Please stay on topic or you may be ruled out of order.
4. Due to a full agenda, and to ensure that everyone has time to speak, the Commissioners will limit comments to a timed limit per person. For the same reasons, please be as brief as possible and try not to repeat what has been said by others before you.
5. No person can grant his or her time to another speaker.
6. Please be as factual as possible and do not make comments on the character of people.
7. Planning Commissioners and Township staff members are not required nor expected to respond to comments, opinions and/or questions from the floor.



**CHOCOLAY TOWNSHIP
PLANNING COMMISSION**

Monday, January 22, 2024 Minutes

I. Meeting Call to Order

Chair Ryan Soucy called the meeting to order at 6:00 PM.

II. Roll Call

Members present at roll call:

- Ryan Soucy (Chair)
- George Meister (Vice Chair)
- Rebecca Sloan (Vice Secretary)
- Don Rhein (Board)
- Stephanie Gencheff
- Kendall Milton

Members absent at roll call:

- Donna Mullen-Campbell (Secretary)

Staff present:

- Richard Bohjanen (Township Supervisor), Dale Throenle (Planning Director / Zoning Administrator)

III. Additional Agenda Items / Approval of Agenda

Soucy requested that the new business conditional use item be moved ahead of unfinished business on the agenda to accommodate the conditional use request.

Rhein moved, Meister seconded, to approve the agenda as changed.

Vote: Ayes: 6 Nays: 0 Motion carried

IV. Minutes

A. December 18, 2023 regular meeting

Rhein moved, Milton seconded, to approve the minutes as presented.

Vote: Ayes: 6 Nays: 0 Motion carried

V. Public Comment

None

VI. Presentations

None

VII. New Business

A. Conditional Use Permit CU 24-01 – Proposed School 1510 M-28 East

Staff Introduction

Throenle stated that the application in front of the Commissioners was from Marquette-Alger Regional Educational Services Agency (MARESA) for a proposed school to be located in the church located at 1510 M-28 East that is owned by the Marquette Unitarian Universalist Congregation. He added that the school use would begin after purchase of the church is completed.

Throenle stated that 48 notifications were sent out, with four being returned as undeliverable. He stated that there were no comments received either by phone, email or at the office regarding the project. He added that there were no open permit requests for the property, that lot size and frontage were in conformance with the zoning ordinance, and that staff did not have any concerns regarding the proposed project, and that no construction is proposed for the project.

Commissioner Discussion

Anthony Bertucci, MARESA Chief Financial Officer, introduced Dr. Jennifer Krzewina, MARESA Director of Mental Health Services, and Dr. Gregory Nyen, MARESA superintendent. He described the project as a school for students that had an individualized education plan, and that the building would be used as it is with no current intentions of adding on to the building. He added that a perimeter fence would be put up in the rear of the building to separate the school from the surrounding neighbors, and that no lighting or signage changes would occur.

Krzewina described the proposed school as one that would provide mental health services to students that needed additional resources. She stated that the school would be conducted in partnership with Great Lakes Recovery for therapy for the students. She stated that initially there will be 12 students in the building with a potential increase to 30 over time. She added that students will be coming in from the 13 school districts within MARESA's boundaries, and students would return to those schools after they progressed through the program. She added that there would be seven staff members on site, and that school would be open from 8 AM through 3 PM.

Soucy asked if the expected drop off and pickup of students was 8 AM and 3 PM; Krzewina replied that would be the scheduled times, and transportation would be provided by the student's home school.

Sloan asked how far away students would be coming from; Krzewina explained that MARESA covered schools both in Marquette and Alger County, and that students could come from any one of the 13 schools in that area.

Gencheff asked if the school would be operated in the summer; Krzewina responded that the school would operate on a school calendar, and generally would not be open in the summer.

Gencheff asked about the partnership with Great Lakes Recovery and if students would be those involved in drug rehabilitation; Krzewina stated that the students in the

program would be those students that struggled with mental health issues and would be students outside of the some of the services of Great Lakes Recovery. She added that they would not be coming for drug rehabilitation services.

Gencheff asked about staffing; Krzewina stated that the staffing would be seven initially.

Gencheff asked about the age range of the students; Krzewina responded that students would be eligible through the program only through senior year of high school.

Gencheff added that that she was looking forward to this program coming to the area.

Sloan asked about funding for the program; Bertucci responded that funding was in place for the program, and that MARESA would keep the program going well into the future. He added that the program was a pilot program and that they would be seeking additional funds in the future.

Sloan asked if MARESA was renting or purchasing the building; Bertucci responded that MARESA was purchasing the building.

Milton asked if MARESA has fire marshal approval for the building; Bertucci responded they were working with fire officials to address any concerns, and that MARESA would also be working with County Building Codes for additional permits for interior construction.

Meister asked if there were possibilities of expansion on the site; Bertucci stated that they are looking to expand to 30 students, and that there was sufficient building space remaining if the program grew larger. Krzewina added that the desire was for the program to become a model program that could be placed in other locations throughout Michigan.

Soucy asked about kitchen facilities; Bertucci stated that the kitchen would be utilized primarily to receive food prepared in other school districts.

Rhein stated that as a resident of the area near the building he was in support of the project.

Commissioner Decision

Meister moved, Sloan seconded, that after Commissioner and staff review and analysis in consideration of Conditional Use application CU 24-01, and the understanding that the proposed use is compliant with all terms of Section 16.2 Conditional Use Permits, the Planning Commission approves Conditional Use Permit 24-01 as presented.

Vote: Ayes: 6 Nays: 0 Motion carried

Throenle asked Soucy if the Commissioners could continue with new business to finish up those items; Soucy agreed.

B. Election of Planning Commission Officers

Staff Introduction

Throenle stated that elections of Planning Commission officers were required each year and added that Mullen-Campbell requested to be considered for the Secretary position even though she was unable to attend the meeting due to illness.

Commissioner Discussion

Rhein moved, Sloan seconded, to elect Soucy as Chair.

Vote: Ayes: 6 Nays: 0 Motion carried

Rhein moved, Milton seconded, to elect Meister as Vice Chair.

Vote: Ayes: 6 Nays: 0 Motion carried

Meister moved, Rhein seconded, to elect Mullen-Campbell as Secretary.

Vote: Ayes: 6 Nays: 0 Motion carried

Gencheff moved, Meister seconded, to elect Sloan as Vice Secretary.

Vote: Ayes: 6 Nays: 0 Motion carried

C. Planning Commission Bylaws and Procedures Review

Staff Introduction

Throenle stated Planning Commission bylaws and procedures were presented each year to see if there were any changes required.

Commissioner Discussion

Gencheff asked if there were any revisions in the packet; Throenle stated there were none.

Soucy stated that the Pledge of Allegiance should be added to the bylaws. Throenle stated that it could be added as Article IV, Section 9, and that it would read "Chocolate Township Planning Commission meetings, after being called to order, will have the Pledge of Allegiance".

Milton asked if the Pledge would be done twice if there was a joint meeting. Sloan suggested that the language be modified to say "with the exception of a joint meeting."

Commissioner Decision

Rhein moved, Sloan seconded, to accept the Bylaws with the changes discussed.

Vote: Ayes: 6 Nays: 0 Motion carried

D. 2023 Planning Commission Annual Report

Staff Introduction

Throenle stated the *Michigan Planning Enabling Act* requires a report to be put together and presented to the Board every year. He added that the report in the packet showed Planning Commission activities, Planning Director activities, and the Planning Commission decisions for 2023.

Commissioner Decision

Rhein moved, Milton seconded, to forward the 2023 Planning Commission Annual Report as presented to the Township Board.

Vote: Ayes: 6 Nays: 0 Motion carried

E. Joint Meeting Discussion

Staff Introduction

Throenle asked the Commissioners to provide items that they would like to have discussed at the joint meeting with the Board.

Commissioner Discussion

Gencheff asked if accessory dwelling units and FlashVote utilization could be added.

Soucy asked to add housing as a discussion; Gencheff asked to add where that housing would occur.

Gencheff asked to add discussion regarding base zoning for State lands.

Gencheff asked about Township ordinances regarding solar and wind. Meister stated that it should be a discussion item; Rhein stated that it was a question at the Board level already.

Gencheff asked how the email address setup was going to receive the newsletter; Meister stated that was a staff issue to address and not for Board discussion.

Both Meister and Sloan stated that the Board should provide more direction on the use of FlashVote.

Commissioner Decision

Rhein moved, Meister seconded, to present the following discussion items to the Board for consideration at the joint meeting:

- 1) Accessory dwelling units guidance*
- 2) FlashVote utilization and steps to use it*
- 3) Housing in the Township, with consideration for variety, perspective, location, etc.*
- 4) Base zoning for State lands*
- 5) Discussion of zoning for wind and solar ordinances*

Vote: Ayes: 6 Nays: 0 Motion carried

VIII. Unfinished Business

A. Proposed Zoning Ordinance Amendments for the Agriculture / Forestry (AF) Zoning District (34-23-02)

Staff introduction

Throenle stated that the maps in the packet were updated as the Commissioners requested at the December meeting, and they were open for another review. He requested that the Commissioners look at the maps to determine if there were any additional changes.

Commissioner discussion

Commissioners discussed the similarity between the 1977 zoning map and the proposed zoning map. Sloan pointed out that the growth areas were very similar to the presented maps.

Gencheff asked about conforming properties and the connection to the Township master plan. She stated concerns that some of the parcels would be put in districts that they should not be in, especially if they are already conforming.

Rhein stated that property owners should be permitted to do what they want on their property, particularly if splits are considered in the future; Gencheff expressed her concern that three acre parcels were too small. Throenle stated that in order to divide, the parcels had to have access to the parcel, and that the parcels would have to meet the minimum frontage for the split; Rhein added that splits would be limited over a ten year period to six.

Commissioners discussed extensively parcels in different locations throughout the Township (Mangum Road and Kawbawgam, Maple Road, Green Garden and County Road BR, Fassbender Road, and West Branch Road) to determine if they should be either AG 2 or AG 3.

During the discussion, Throenle asked Gencheff what her primary concern was; Gencheff responded that it was open space and the loss of forestry with the new districts; Meister stated that the designation was primarily wording, and that forestry was not going away. Additional discussion was added regarding PUDs, subdivisions, site condominiums, roads, and uses to address Gencheff's concern about development on three acre parcels.

Throenle later added that the Planning Commission was making recommendations only, and that the Board would make the final decision regarding the map. He showed the map changes from the previous month to the current map.

To further address Gencheff's concerns, Throenle added later that prior to the final decision that there will be a public hearing and two readings at the Board level where additional public comment can be heard, and that the affected parcel owners would be receiving a notification regarding the upcoming public hearing.

Meister asked Jill Bradford, who was in attendance, if she had concerns about the changes. She expressed that she felt she would be losing rights on her property;

Meister explained that her agricultural changes would not go away. Throenle pulled up the latest proposed uses table; Bradford realized that she did not have the latest version of the document, which calmed her concerns.

Commissioner decision

Rhein moved, Sloan seconded, that the map be accepted with the change of the two parcels at the end of County Road BR from AG 2 to AG 3.

Vote: Ayes: 6 Nays: 0 Motion carried

Throenle asked the Commissioners to vote on the public hearing for the map. He asked Rhein to rescind the motion for public hearing in February and reschedule the public hearing to March 18.

Rhein moved, Meister seconded, to rescind the motion for a public hearing on February 12.

Vote: Ayes: 6 Nays: 0 Motion carried

Rhein moved, Sloan seconded, to have the public hearing on March 18 at the Planning Commission meeting.

Vote: Ayes: 6 Nays: 0 Motion carried

Throenle added that the public hearing will include both the language and the map.

IX. Public Comment

Richard Bohjanen, Township Supervisor

Requested that the Planning Commission annual report be included in the packet materials for the joint meeting on February 12.

X. Commissioner's Comments

Rhein

Stated that it was a great job working on the language and the maps, and expressed hope that the public will be receptive to the work completed.

Sloan

Seconded Rhein's comments.

Milton

"Happy New Year" to everyone.

Gencheff

Expressed her appreciation of Chocolay Township and that the Township is different than the City of Marquette.

Soucy

Expressed a thanks to staff for the annual report.

Meister

Expressed that he was happy to complete the agriculture work and is looking forward to discussing other items.

XI. Director's Report

Planning / Zoning Administrator Throenle

He stated that there would be two meetings on February 12; the joint meeting would be at 5:30 PM, and the regular meeting at 7:00 PM. He added that there will be a formal site plan review for Dollar General as the only item on the regular agenda.

He thanked the Commissioners for all their hard work and discussion on the agriculture topic.

XII. Informational Items and Correspondence

- A. Township Board Minutes – 12.11.23
- B. Township newsletter – December 2023
- C. City of Marquette Planning Commission minutes 11.14.23
- D. City of Marquette Planning Commission minutes 12.19.23

XIII. Adjournment

Rhein moved, Meister seconded, to adjourn the meeting.

Vote: Ayes: 6 Nays: 0 Motion carried

Soucy adjourned the meeting at 7:33 PM

Submitted by:

Planning Commission Secretary

Donna Mullen-Campbell



Charter Township of Chocolay

Planning and Zoning Department

5010 US 41South

Marquette, MI 49855

Phone: 906-249-1448

Fax: 906-249-1313

**Agenda Item: IX.A Final Site Plan Review Application SR 24-03 – Dollar General Store
30520**

Suggested Motions

After Commissioner review, _____ moved, _____ seconded, that
Site Plan Review Application SR 24-03 be approved as presented.

or

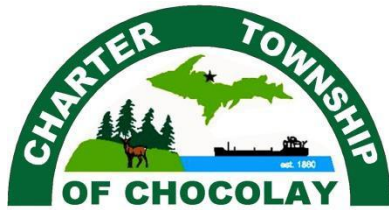
After Commissioner review, _____ moved, _____ seconded, that
Site Plan Review Application SR 24-03 be approved with the following conditions:

[list the conditions].

or

After Commissioner review, _____ moved, _____ seconded, that
Site Plan Review Application SR 24-03 be denied for the following reasons:

[list the reasons].



Charter Township of Chocolay

Planning and Zoning Department

5010 US 41 South

Marquette, MI 49855

Phone: 906-249-1448

Fax: 906-249-1313

Issue Brief: Site Plan Review Application SR 24-03 – Dollar General Store # 30520

Meeting: Planning Commission

Date: February 12, 2024

Issue Summary

The applicant is seeking approval of a site plan for a proposed retail store to be located at 4050 US 41 South.

Application Information

Applicant	DGOGHarveyMI09202023.LLC
Owner	Portage Street LLC
Parcel ID	52-02-106-041-00
Address	4050 US 41 South
Type of request	Site plan review
Date received	January 15, 2024
Base zoning district	Commercial (C)
Overlay zoning district	Mixed Use Overlay
Present land use	Vacant Commercial

Application Summary

Applicant is proposing a Dollar General retail store to be located on parcel 52-02-106-041-00 located at 4050 US 41 South.

Regulatory Analysis

Site Background

Lot size	1.804 acres, with 420 feet of lot frontage Acreage meets the minimum lot size requirement of 25,000 square feet and 125 feet of frontage for commercial properties as found in Section 6.1 in the Township <i>Zoning Ordinance</i> .
Legal Description	The property is legally described as extracted from the Township assessing record: “SEC 6 T47N R24W TH PRT OF TH SW1/4 OF TH SE1/4 LYG S OF VILLAGE OF HARVEY AND W OF US41; EXC CO RD R/WY AND US41 CLEAR VISION AREA”
Existing Non-Conformance	There are no non-conformances that exist on the parcel.

Zoning and Use History

The parcel has not changed in zoning use. Prior uses on the property include a church and a retail service business.

Project Zoning District

This project will be in the Commercial (C) zoning district, which is also included in the Mixed Use Overlay District and the US-41 / M-28 Access Management Overlay District.

Adjacent Zoning Districts and Land Uses

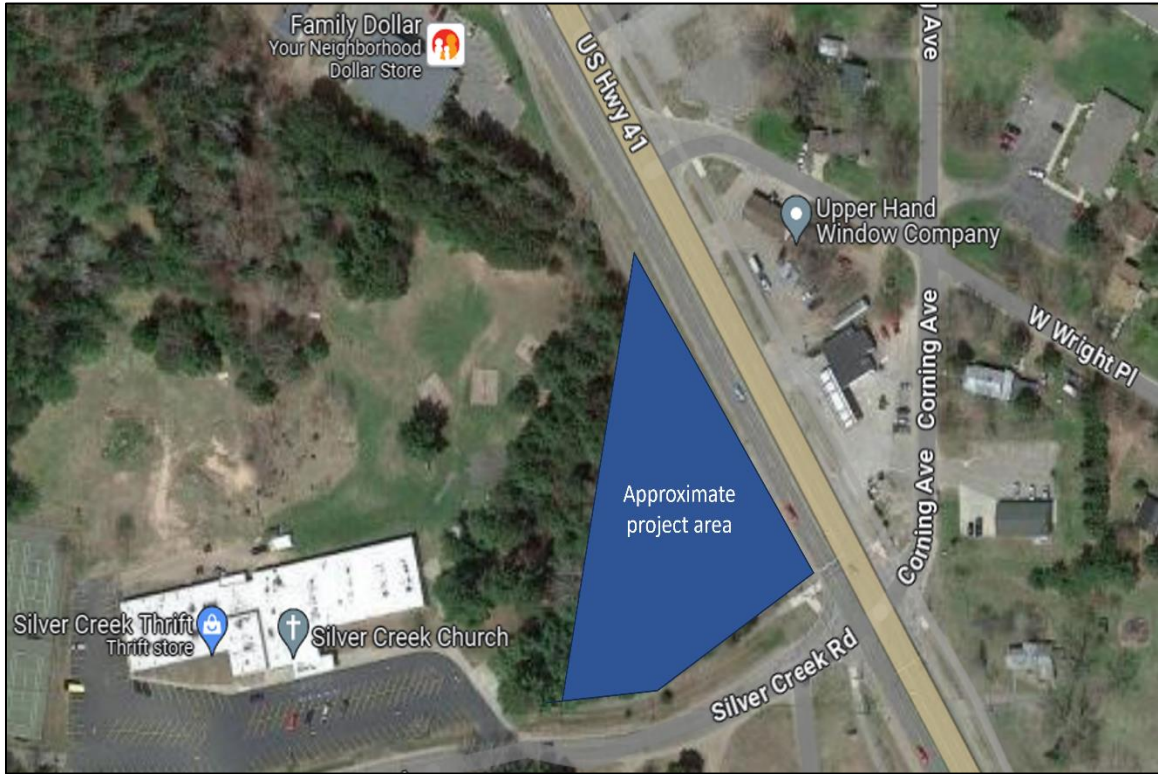
Direction	Zoning	Land Uses
North	R-1, C	Residential – church, Commercial – retail business
South	R-1, MP	Residential – occupied, Chocolay Township
East	C	Commercial – vacant commercial, retail business (east side of US 41 South)
West	R-1	Residential – church

The property will be accessed from US 41 South.

Aerial View



Aerial View – Project Location



Proposed Hours

Hours of use will generally be between 8 AM and 9 PM seven days per week.

Deliveries will be made to the site twice a week.

Parking Spaces

For parking purposes, the property will follow commercial parking requirements as detailed in Section 8.1 of the Township zoning ordinance, as listed under *Retail Stores and Establishments*

“1 per 200 sq. ft of floor space and outdoor sales space”.

Floor space as defined in the Township zoning ordinance:

“Means floor area of all floors, as measured from the inside surfaces of the walls enclosing the part of a building occupied by a single occupant or shared by a distinct group of occupants, excluding therefrom common halls, stairwells, sanitary facilities, and storage and other areas to which patrons do not have regular access.”

Based on this requirement, the site plan does not conform to this requirement. The site plan shows the building as 12,480 square feet, which indicates that 62 parking spaces are required; the site plan shows 49 parking spaces.

Staff Application Comments

Staff reviewed the submitted application (see attached) and related site plan (see attached) and has completed a site plan checklist for the project (see attached).

There will be minimal detrimental effect on surrounding properties as this will be a commercial project located along US 41 South, with tree buffers separating the project from adjoining parcels.

Lighting will be across the front of the project, with lighting shown along the US 41 South side of the property.

Staff notes that: 1) lighting will spill onto the bike path on US 41 South; 2) the rear door on southwest side of the building is not lit (assuming this is a building entry); 3) light on southeast corner of the building may cause glare for vehicles turning left onto Silver Creek Road, especially during snow season; 4) no lighting is shown at the rear of the building, which could be a potential security issue; and 5) lighting effect on adjacent parcels will be tempered with the tree buffer that will remain on the property.

There are no noise concerns, other than general vehicular noises, for this project.

Michigan Department of Transportation has issued a driveway permit for this project (see attached documents related to the permit).

No Township permits have been issued for any projects on this property.

Author: Dale Throenle
Date: February 7, 2024

Attachments

1. *Site Plan Review CU 24-03 application*
2. *Site plan - Dollar General*
3. *SP 24-03 site plan review – required elements checklist*
4. *Site photometric*
5. *MDOT driveway permit*
6. *TYPE D - JLECB2RWRC*
7. *TYPE F - JLRHWP-1*
8. *TYPE G - US-LED-WPR3-QubePAK-Regal3*
9. *TYPE G - WPR3_QubePAK_Regal3_Install_Guide*
10. *Standard_Const. Advisory Historical-Archaeological*
11. *TYPE S - QDXLE2-DoradoXLE-Plus-Install-Guide*
12. *TYPE S - US-LED-QDXLE2-DoradoXLE-Plus*
13. *Storm Water Mgmt Report*
14. *Additional_Geotech Report_Harvey MI*
15. *Additional_Harvey MI_012924*
16. *Additional_HydroCAD Report_012924*

SITE PLAN REVIEW APPLICATION



CHOCOLAY TOWNSHIP

5010 US-41 South
Marquette, MI 49855
Phone: 906-249-1448 Fax: 906-249-1313
www.chocolay.org

APPLICATION NUMBER

SP- 24-03

PROPERTY AUTHORIZATION

Date of application 1/15/2024 Project address 4050 US Hwy 41, Harvey, MI 49855

APPLICANT

Name DGOGHarveyMI092020223, LLC

Address 1906 E. Battlefield Rd

City / State / Zip Springfield MO 65806

Contact number [REDACTED]

E-mail [REDACTED]

PROPERTY OWNER (if different from applicant)

Name Portage St. LLC

Address P.O. Box 448

City / State / Zip Negaunee, MI 49866

Contact number [REDACTED]

E-mail [REDACTED]

If the applicant is not the property owner, the property owner grants permission for the applicant to act on the owner's behalf for this project [REDACTED]

Owner Signature [REDACTED] PORTAGE ST. LLC Date 1/15/2024

PROJECT INFORMATION

Zoning district R1 w /Mixed Use Overlay

Description of project


See attached

12,480 s.f. Dollar General retail building, with parking, drainage, and utilities.

Applications must be submitted to the Township Planning Director 21 calendar days prior to the next scheduled Township Planning Commission meeting.

APPLICATION CONDITIONS

1. I certify that the proposed work is authorized by the property owner of record, and that I have been authorized to make this application. I further certify that the proposed plans as shown are accurate to the best of my knowledge and contain an accurate description and specifications for all existing and proposed structures, utilities and landscaping.
2. I desire to apply for the site plan review indicated in this application with the attachments and that the information on this application is true and accurate to the best of my knowledge.
3. I certify the requested site plan review would not violate any deed restrictions attached to the property involved in the request.
4. I have read Section IX *Site Plan Review* in the Township *Zoning Ordinance* and understand the necessary requirements that must be completed.
5. I understand the fee is non-refundable and is to cover the costs associated with processing this application, and that it does not assure approval of the plan.
6. I acknowledge that this application is not considered filed and complete until all of the required information has been submitted and all required fees have been paid in full. Once my application is deemed complete, I will be assigned a date to meet with the Planning Commission and that may not be necessarily be the next scheduled meeting.
7. I acknowledge that this form is only an application for a site plan review and is valid only with procurement of applicable approvals.

Owner / Agent signature  Date 1/15/2024

Name (print) TRACY LYNN SANYM
FOR PORTAGE ST LLC

TOWNSHIP OFFICE

Parcel ID 52-02-106-041-00 Zoning District R1

Application Charge \$200.00

Date paid 1-19-24 Receipt number 48943

Application Information

Date site plan materials complete 1-19-24

Planning Commission Meeting Date

Minimum of 21 calendar days prior to the Planning Commission meeting

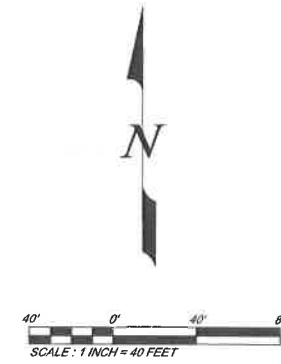
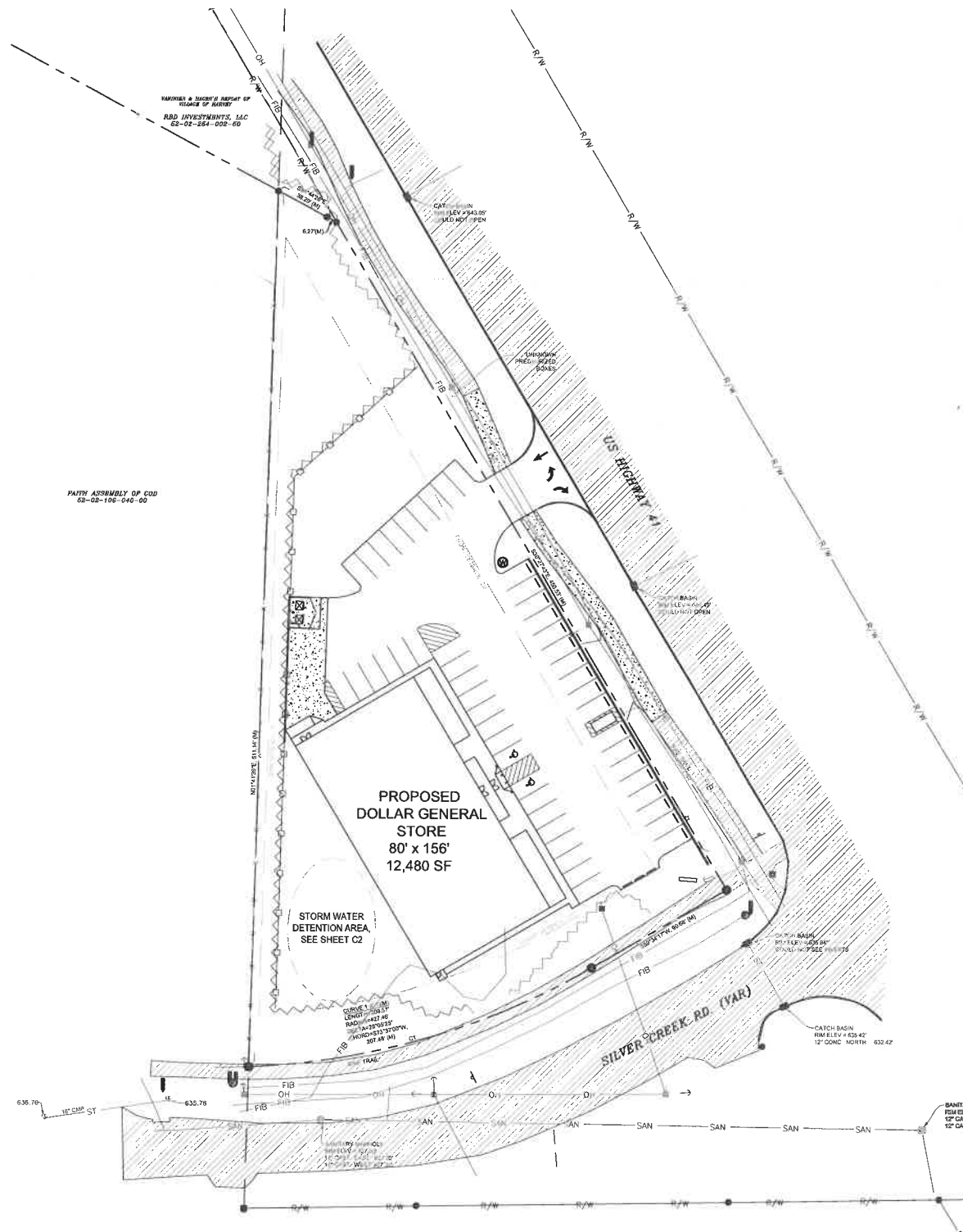
Scheduled Planning Commission meeting date 2-12-24

Zoning Administrator signature 

Date 1-19-24

DOLLAR GENERAL STORE #30520

4050 U.S. HIGHWAY 41
HARVEY, MICHIGAN 49855



SITE DEVELOPMENT DATA

LOT AREA = 1.804 ACRES
 PROPOSED BUILDING
 GROSS AREA = 12,480 S.F.
 SALES AREA = 9,868 S.F.
 HEIGHT = 21'-0"
 NUMBER OF STORIES = 1
 PARKING SPACES
 REQUIRED VEHICLE = 9,868 S.F. / 200 = 49 SPACES
 PROVIDED VEHICLE = 49 SPACES
 ZONING: R-1 WITH MIXED USE OVERLAY
 EXISTING USE: VACANT BUILDING
 FRONT SETBACK: 30' (REQUIRED)
 FRONT SETBACK: 67.4' (US41 - ACTUAL)
 FRONT SETBACK: 33.4' (SILVER CREEK RD - ACTUAL)
 SIDE SETBACK: 5' (REQUIRED)
 REAR SETBACK: 20.6' (ACTUAL)
 EXISTING IMPERVIOUS AREA = 6,778 S.F.
 PROPOSED IMPERVIOUS AREA = 39,056 S.F.
 NET IMPERVIOUS AREA = 32,280 S.F.

SYMBOL LIBRARY

- SIGN POST
- POWER POLE
- GUY ANCHOR
- LIGHT POLE
- WELL
- WELL
- [MB] - MAILBOX
- (S) - SANITARY MANHOLE
- (G) - GAS METER
- INVERT ELEVATION
- NATURAL GAS MARKER
- FIBER MARKER
- CONIFEROUS TREE
- DECIDUOUS TREE
- (F) - FIBER MANHOLE
- (M) - SET MAGNAIL W/WASHER
- (B) - BEEHIVE CATCH BASIN
- (IB) - CURB INLET CATCH BASIN

LINE LIBRARY

- BUILDING OUTLINE
- PROPERTY LINE
- RIGHT OF WAY LINE
- TREELINE
- UNDERGROUND SANITARY
- OVERHEAD ELECTRIC
- CULVERT
- FENCE LINE
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- STORM MAIN
- FIBER
- NATURAL GAS MAIN
- BUILDING SETBACKS

OWNER

PORTAGE ST, LLC
 P.O. BOX 448
 NEGAUNEE, MICHIGAN 49866
 906-250-9632 (VOICE)

DEVELOPER

DGOGHARVEYMI09202023 LLC
 1906 EAST BATTLEFIELD ROAD
 SPRINGFIELD, MISSOURI 65804
 417-256-4790 (VOICE)

ENGINEER

OVERLAND ENGINEERING, LLC
 1598 IMPERIAL CENTER, SUITE 2009
 WEST PLAINS, MISSOURI 65775
 417-256-8150 (VOICE)

UTILITY DISCLAIMER

EXISTING UNDERGROUND UTILITIES AND BURIED STRUCTURES IN THE VICINITY OF THE WORK TO BE PERFORMED HEREIN ARE INDICATED ON THE DRAWINGS ONLY TO THE EXTENT THAT SUCH INFORMATION HAS BEEN MADE AVAILABLE TO OR DISCOVERED BY THE ENGINEER IN THE PREPARATION OF THE DRAWINGS. THERE IS NO GUARANTEE AS TO THE ACCURACY OR THE COMPLETENESS OF SUCH INFORMATION AND ALL RESPONSIBILITY FOR THE ACCURACY AND COMPLETENESS THEREOF IS EXPRESSLY DISCLAIMED.



DOLLAR GENERAL
 USA 1 & SILVER CREEK ROAD, HARVEY, MICHIGAN

NO.	DATE	DESCRIPTION	BY



Overland
ENGINEERING, LLC
 1598 IMPERIAL CTR., STE. 2009 WEST PLAINS, MO 65775
 PHONE: (417) 256-8150 FAX: (417) 256-8152
 rustj@overlandeng.com

DOLLAR GENERAL
HARVEY, MICHIGAN
COVER SHEET

SHEET
CVR

ALTA/NSPS LAND TITLE SURVEY
 PART OF THE SOUTHWEST 1/4 OF SOUTHEAST 1/4, SECTION 6, T47N-R24W,
 CHOCOLAY TOWNSHIP, MARQUETTE COUNTY, MICHIGAN



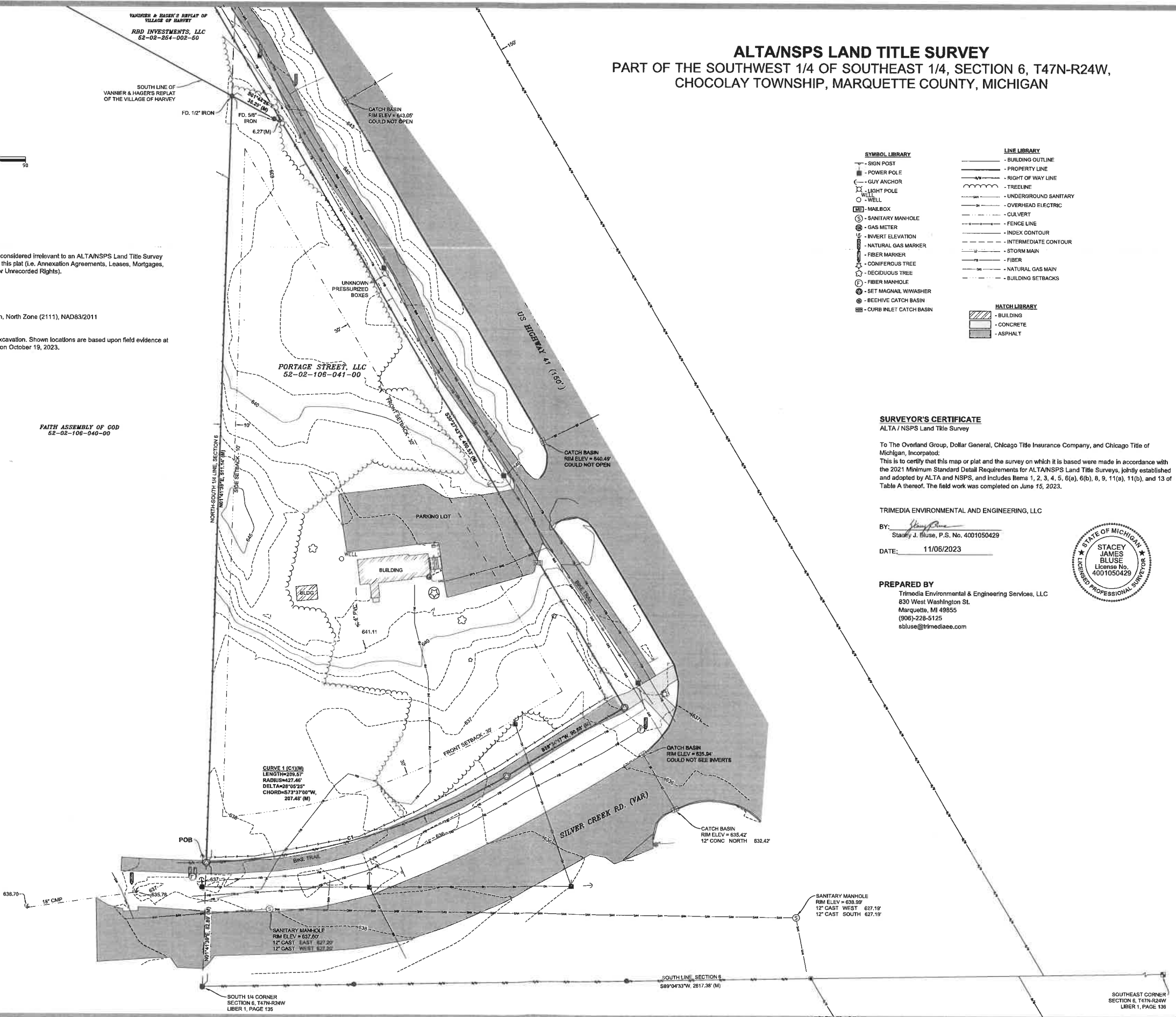
SURVEY NOTES

- Other commitment items not specified hereon may have been considered irrelevant to an ALTA/NSPS Land Title Survey and have not been reviewed in conjunction with preparation of this plat (i.e. Annexation Agreements, Leases, Mortgages, Liens, Special Assessments, Covenants, Trusts, Unspecified or Unrecorded Rights).
- (M) - Indicates Trimedia measured dimensions
 (R) - Indicates record dimensions
 (C) - Indicates calculated dimensions
- Units: International Feet
- Vertical Datum: NAVD88
- Bearings based upon Michigan State Plane Coordinate System, North Zone (2111), NAD83/2011
- Field survey completed October 10, 2023
- 1-Foot Contour Interval
- Connectivity of underground utilities must be verified prior to excavation. Shown locations are based upon field evidence at time of survey and private utility locate performed by Trimedia on October 19, 2023.

FAITH ASSEMBLY OF GOD
 62-02-106-040-00

VANNER & HAGER'S REPLAT OF
 VILLAGE OF HARVEY
 RBD INVESTMENTS, LLC
 52-02-254-002-60

PORTAGE STREET, LLC
 52-02-106-041-00



SYMBOL LIBRARY

- SIGN POST
- POWER POLE
- GUY ANCHOR
- LIGHT POLE
- WELL
- MAILBOX
- SANITARY MANHOLE
- GAS METER
- INVERT ELEVATION
- NATURAL GAS MARKER
- FIBER MARKER
- CONIFEROUS TREE
- DECIDUOUS TREE
- FIBER MANHOLE
- SET MAGNAIL W/WASHER
- BEEHIVE CATCH BASIN
- CURB INLET CATCH BASIN

LINE LIBRARY

- BUILDING OUTLINE
- PROPERTY LINE
- RIGHT OF WAY LINE
- TREELINE
- UNDERGROUND SANITARY
- OVERHEAD ELECTRIC
- CULVERT
- FENCE LINE
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- STORM MAIN
- FIBER
- NATURAL GAS MAIN
- BUILDING SETBACKS

HATCH LIBRARY

- BUILDING
- CONCRETE
- ASPHALT

SURVEYOR'S CERTIFICATE

ALTA / NSPS Land Title Survey

To The Overland Group, Dollar General, Chicago Title Insurance Company, and Chicago Title of Michigan, Incorporated:
 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), 8, 9, 11(a), 11(b), and 13 of Table A thereof. The field work was completed on June 15, 2023.

TRIMEDIA ENVIRONMENTAL AND ENGINEERING, LLC

BY: *Stacey J. Bluse*
 Stacey J. Bluse, P.S. No. 4001050429

DATE: 11/06/2023

PREPARED BY

Trimedia Environmental & Engineering Services, LLC
 630 West Washington St.
 Marquette, MI 49855
 (906)-228-5125
 sbluse@trimediaee.com



DOLLAR GENERAL
 VILLAGE OF HARVEY
 CHOCOLAY TOWNSHIP, MARQUETTE CO., MI

DATE	SUBMITTAL	DESCRIPTION	ISSUED
11/06/23			

DESIGNED: JBS
 DRAWN: JBS
 CHECKED: SJB
 APPROVED: SJB

TRIMEDIA
 JOB NUMBER:
 2023-3160
 SHEET TITLE:
 ALTA/NSPS
 Land Title
 Survey

SHEET NUMBER:
 1 OF 2

P:\2023\2023-3160 The Overland Group - Harvey ALTA Survey\Drawings\2023-3160 DGD Harvey ALTA Survey.dwg

SURVEYED LEGAL DESCRIPTION

A parcel of land being part of the Southwest Quarter (SW 1/4) of the Southeast Quarter (SE 1/4), Section 6, T47N-R24W, Chocolay Township, Marquette County, Michigan described as:
Commencing at the Southeast corner of Section 6; thence S89°04'33"W, 2617.38 feet along the South line of Section 6 to the South 1/4 corner of Section 6; thence N01°41'39"E, 82.89 feet along the North-South 1/4 line of Section 6 to the North right of way line of Silver Creek Road and the Point of Beginning; thence continuing N01°41'39"E, 511.14 feet along the North-South 1/4 line; thence S61°44'26"E, 38.29 feet to the West right of way line of Highway US-41; thence S30°27'43"E, 450.53 feet along the West right of way line of Highway US-41 to the North right of way line of Silver Creek Road; thence S59°34'17"W, 90.68 feet along the North right of way line of Silver Creek Road to a curve; thence 209.57 feet on a curve to the Right along the North right of way line of Silver Creek Road having a Radius of 427.46 feet, a Delta angle of 28°05'25" and a Chord bearing S73°37'00"W, 207.48 feet to the Point of Beginning, containing 1.804 acres and subject to restrictions, reservations, rights of way and easements of record.

SCHEDULE A, LEGAL DESCRIPTION

Land Situated in the State of Michigan, County of Marquette, Township of Chocolay.

All that part of the Southwest 1/4 of Southeast 1/4 of Section 6, Township 47 North, Range 24 West, which lies South of the Village of Harvey and West of the West line of Highway US 41 right of way as now laid out and in use (1/4a Corning Avenue produced as said Avenue is now located and used), Except Silver Creek Road right of way and except clear vision area.

SCHEDULE B, PART II - Exceptions

Issued through Chicago Title Insurance Company, Commitment Number 521213865NTS, with an effective date of August 29, 2023, has been reviewed in conjunction with the preparation of this survey. Notes related to the review of this title policy, Schedule B, Part II Exceptions are as follows:

Some historical land records contain Discriminatory Covenants that are illegal and unenforceable by law. This Commitment and the Policy treat any Discriminatory Covenant in a document referenced in Schedule B as if each Discriminatory Covenant is redacted, repudiated, removed, and not republished or recirculated. Only the remaining provisions of the document will be excepted from coverage.
The Policy will not insure against loss or damage resulting from the terms and conditions of any lease or easement identified in Schedule A, and will include the following Exceptions unless cleared to the satisfaction of the Company:

- Any defect, lien, encumbrance, adverse claim, or other matter that appears for the first time in the Public Records or is created, attaches, or is disclosed between the Commitment Date and the date on which all of the Schedule B, Part I-Requirements are met. - **None found**
- a. Rights or claims of parties in possession not shown by the Public Records.
b. Any encroachment, encumbrance, violation, variation or adverse circumstance affecting the Title that would be disclosed by an accurate and complete survey of the Land. - **None found**
c. Easements or claims of easements not shown by the Public Records and existing water, mineral, oil and exploration rights. - **None found**
d. Any lien, or right to a lien, for services, labor, or material, heretofore or hereafter furnished, imposed by law and not shown by the Public Records. - **None found**
e. Any and all oil, gas, mineral, mining rights and/or reservations thereof. - **None found**
f. Taxes or special assessments which are not shown as existing liens by the Public Records. - **None found**
- Intentionally omitted.
- Intentionally omitted.
- Intentionally omitted.
- Easement rights in favor of any and all utility companies, public or otherwise, over and across the Land for the location, servicing and maintenance of facilities located on, over or under said Land, if any. - **Not mappable**
- Rights of tenants under unrecorded leases and any and all parties claiming by, through and thereunder. - **Not mappable**
- Any and all oil, gas and mineral rights and reservations of every kind and nature whether recorded or unrecorded and all rights pertinent thereto. - **Not mappable**
- Rights of the public to any portion of the Land lying within the bounds of any street, road, alley or highway. - **Public right of ways shown on page 1 of 2**
- Taxes and/or assessments which become a lien or become due and payable subsequent to the effective date herein. - **Not mappable**

TABLE A NOTES

- Monuments placed (or a reference monument or witness to the corner) at all major corners of the boundary of the surveyed property, unless already marked or referenced by existing monuments or witnesses in close proximity to the corner. - **Shown on page 1 of 2**
- Address(es) of the surveyed property if disclosed in documents provided to or obtained by the surveyor, or observed while conducting the fieldwork.
Provided address of surveyed property is: 4050 U.S. Highway 41 S, Marquette, MI 49855
- Flood zone classification (with proper annotation based on federal Flood Insurance Rate Maps or the state or local equivalent) depicted by scaled map location and graphic plotting only. Flood zone Classification: Zone "X"
- Gross land area (and other areas if specified by the client: Gross land area is 1.804 acres.
- Vertical relief with the source of information (e.g., ground survey, aerial map), contour interval, datum, with original benchmark, when appropriate. - **Shown on page 1 of 2**
- (a) If the current zoning classification, setback requirement, the height and floor space area restrictions, and parking requirements specific to the surveyed property are set forth in a zoning report or letter provided to the surveyor by the client or the client's designated representative, list the above items on the plat or map and identify the date and source of the report or letter.
Zoned: Residential (R-1)
Setbacks: Front - 30', Side - 10', (No Rear setback on this property)
Height Restrictions: 30'
Parking requirements: 1 per 200 Square Feet of floor space and outdoor sales space
(b) If the zoning setback requirements specific to the surveyed property are set forth in a zoning report or letter provided to the surveyor the client or the client's designated representative, and if those requirements do not require an interpretation by the surveyor, graphically depict those requirements on the plat or map and identify the date and source of the report or letter. - **Shown on page 1 of 2**
- Substantial features observed in the process of conducting the fieldwork (in addition to the Improvements and features required pursuant to Section 5 above) (e.g., parking lots, billboards, signs, swimming pools, landscaped areas, substantial areas of refuse). - **Shown on page 1 of 2**
- Number and type (e.g., disabled, motorcycle, regular, and other marked specialized types) of clearly identifiable parking spaces on surface parking areas, lots, and in parking structures. Striping of clearly identifiable parking spaces on surface parking areas and lots.
The property is has a paved parking area, but there are no visible parking spaces.

- Evidence of underground utilities existing on or serving the surveyed property (in addition to the observed evidence of utilities required pursuant to Section 5.E.iv.) as determined by:
(a) plans and/or reports provided by client (with reference as to the sources of information) - **Utilities shown on Page 1 of 2**
(b) markings coordinated by the surveyor pursuant to a private utility locate request - **A Miss Dig Design Ticket #2023100200798-000 was submitted for this survey and a private utility locate was performed. The results are shown on page 1 of 2.**

Note to the client, insurer, and lender - With regard to Table A, item 11, information from the utility company sources 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, in which case the surveyor shall note on the plat or map how this affected the surveyor's assessment of the location of the utilities. Where additional or more detailed information is required, the client is advised that excavation may be necessary.

- Names of adjoining owners according to current tax records. If more than one owner, identify the first owner's name listed in the tax records followed by "et al."
- **Shown on Page 1 of 2**

- Rectified orthophotography, photogrammetric mapping, remote sensing, airborne/mobile laser scanning and other similar products, tools or technologies as the basis for showing the location of certain features (excluding boundaries) where ground measurements are not otherwise necessary to locate those features to an appropriate and acceptable accuracy relative to a nearby boundary. The surveyor must (a) discuss the ramifications of such methodologies (e.g., the potential precision and completeness of the data gathered thereby) with the insurer, lender, and client prior to the performance of the survey, and (b) place a note on the face of the survey explaining the source, date, precision, and other relevant qualifications of any such data.



ALTA/NSPS LAND TITLE SURVEY
PART OF THE SOUTHWEST 1/4 OF SOUTHEAST 1/4, SECTION 6, T47N-R24W,
CHOCOLAY TOWNSHIP, MARQUETTE COUNTY, MICHIGAN

SURVEY NOTES

- Other commitment items not specified hereon may have been considered irrelevant to an ALTA/NSPS Land Title Survey and have not been reviewed in conjunction with preparation of this plat (i.e. Annexation Agreements, Leases, Mortgages, Liens, Special Assessments, Covenants, Trusts, Unspecified or Unrecorded Rights).
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(C) - Indicates calculated dimensions
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Vertical Datum: NAVD88
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- Field survey completed October 10, 2023
- 1-Foot Contour Interval
- Connectivity of underground utilities must be verified prior to excavation. Shown locations are based upon field evidence at time of survey and private utility locate performed by Trimedia on October 19, 2023.

SURVEYOR'S CERTIFICATE
ALTA / NSPS Land Title Survey

To The Overland Group, Dollar General, Chicago Title Insurance Company, Chicago Title of Michigan, Incorporated, and Portage Street LLC, a Michigan Limited Liability Company:
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), 8, 9, 11(a), 11(b), and 13 of Table A thereof. The field work was completed on October 10, 2023.

TRIMEDIA ENVIRONMENTAL AND ENGINEERING, LLC

By: *Stacey J. Bluse*
Stacey J. Bluse, P.S. No. 4001050429

DATE: 11/08/2023

PREPARED BY
Trimedia Environmental & Engineering Services, LLC
830 West Washington St.
Marquette, MI 49855
(906)-228-5125
sbluse@trimediaee.com

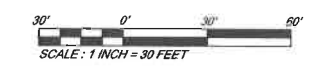
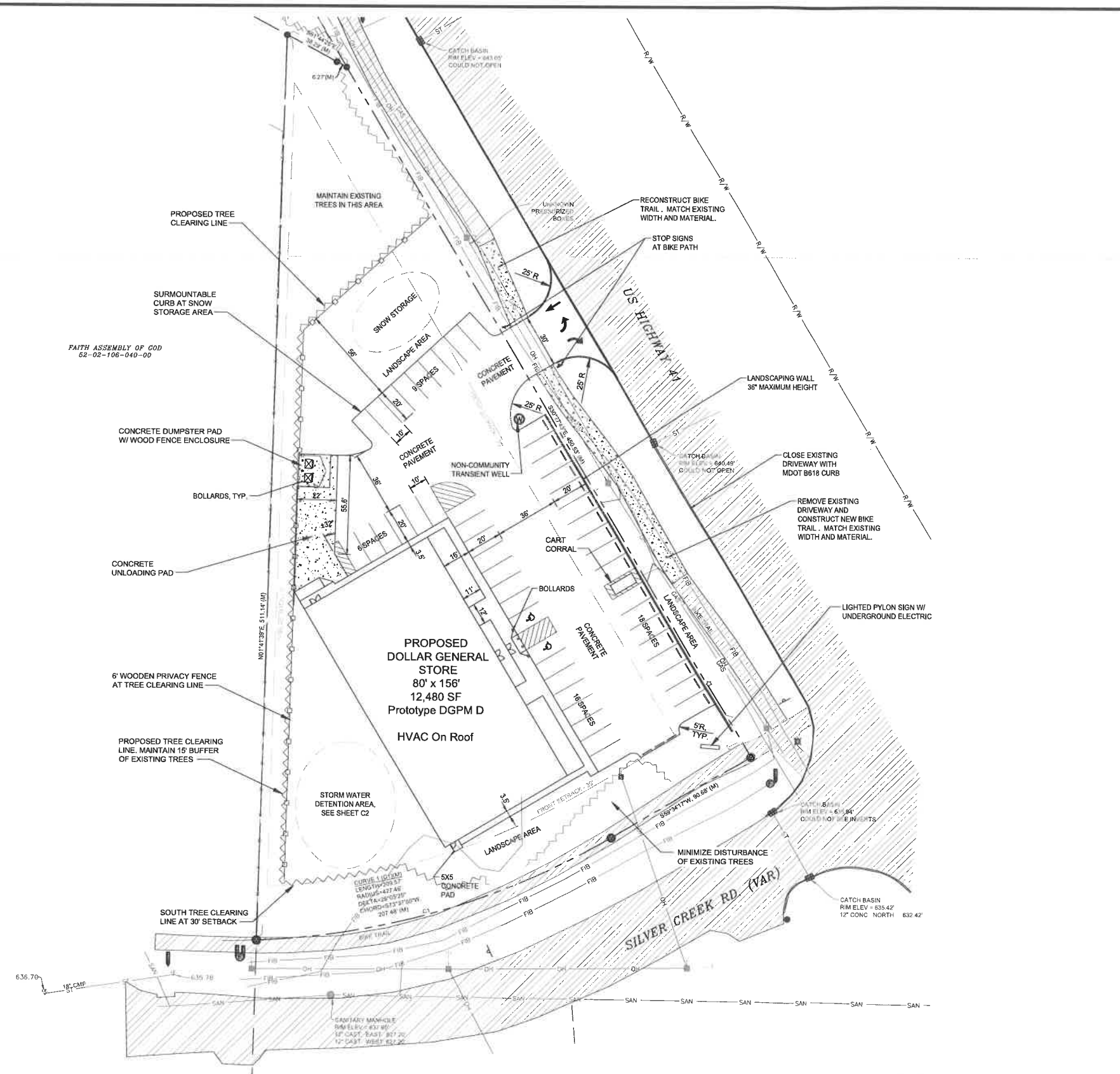


DATE	SUBMITTAL	DESCRIPTION	ISSUED
11/08/23			

DESIGNED: JBS
DRAWN: JBS
CHECKED: SJB
APPROVED: SJB

TRIMEDIA
JOB NUMBER:
2023-3160
SHEET TITLE:
ALTA/NSPS
Land Title
Survey
SHEET NUMBER:
2 OF 2

P:\2023\2023-3160 The Overland Group - Harvey ALTA Survey\Drawings\2023-3160 Dollar General ALTA Survey.dwg



SYMBOL LIBRARY

- SIGN POST
- POWER POLE
- GUY ANCHOR
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LINE LIBRARY

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- INTERMEDIATE CONTOUR
- STORM MAIN
- FIBER
- NATURAL GAS MAIN
- BUILDING SETBACKS



3 WORKING DAYS
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1-800-482-7171
(TOLL FREE)

UTILITY DISCLAIMER

EXISTING UNDERGROUND UTILITIES AND BURIED STRUCTURES IN THE VICINITY OF THE WORK TO BE PERFORMED HEREIN ARE INDICATED ON THE DRAWINGS ONLY TO THE EXTENT THAT SUCH INFORMATION HAS BEEN MADE AVAILABLE TO OR DISCOVERED BY THE ENGINEER IN THE PREPARATION OF THE DRAWINGS. THERE IS NO GUARANTEE AS TO THE ACCURACY OR THE COMPLETENESS OF SUCH INFORMATION AND ALL RESPONSIBILITY FOR THE ACCURACY AND COMPLETENESS THEREOF IS EXPRESSLY DISCLAIMED.

GENERAL NOTES

1. THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO ALL CURRENT APPLICABLE STANDARDS AND SPECIFICATIONS OF CHOCOLAY TOWNSHIP, MICHIGAN, UNLESS OTHERWISE NOTED.
2. ALL WORKMANSHIP AND MATERIALS SHALL BE SUBJECT TO THE INSPECTION AND APPROVAL OF CHOCOLAY TOWNSHIP, MICHIGAN.
3. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL NOTIFY ALL THOSE COMPANIES WHICH HAVE FACILITIES IN THE NEAR VICINITY OF THE CONSTRUCTION TO BE PERFORMED.
4. THE CONTRACTOR MAY UTILIZE THE FOLLOWING TOLL FREE PHONE NUMBER: 1-(800)-482-7171. THIS PHONE NUMBER IS APPLICABLE ANYWHERE WITHIN THE STATE OF MICHIGAN.
5. ALL DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED BY AND AT THE EXPENSE OF THE CONTRACTOR.
6. THE CONTRACTOR SHALL UNDER NO CIRCUMSTANCES CLEAR OR DAMAGE ANY TREES OUTSIDE THE CLEARING LIMIT LINE SET BY THE CITY WITHOUT THE WRITTEN PERMISSION OF THE ENGINEER OR PROPERTY OWNER.
7. CLEARING AND GRUBBING OPERATIONS AND DISPOSAL OF ALL DEBRIS THEREFROM SHALL BE PERFORMED BY THE CONTRACTOR IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND ORDINANCES.
8. THE CONTRACTOR SHALL KEEP THE STREETS CLEAN OF MUD AND DEBRIS.
9. THE CONTRACTOR SHALL PLACE MIN. 4" TOPSOIL AND SEED & MULCH ALL DISTURBED AREAS AT THE DIRECTION OF THE ENGINEER.

DOLLAR GENERAL
US81 & SILVER CREEK ROAD, HARVEY, MICHIGAN

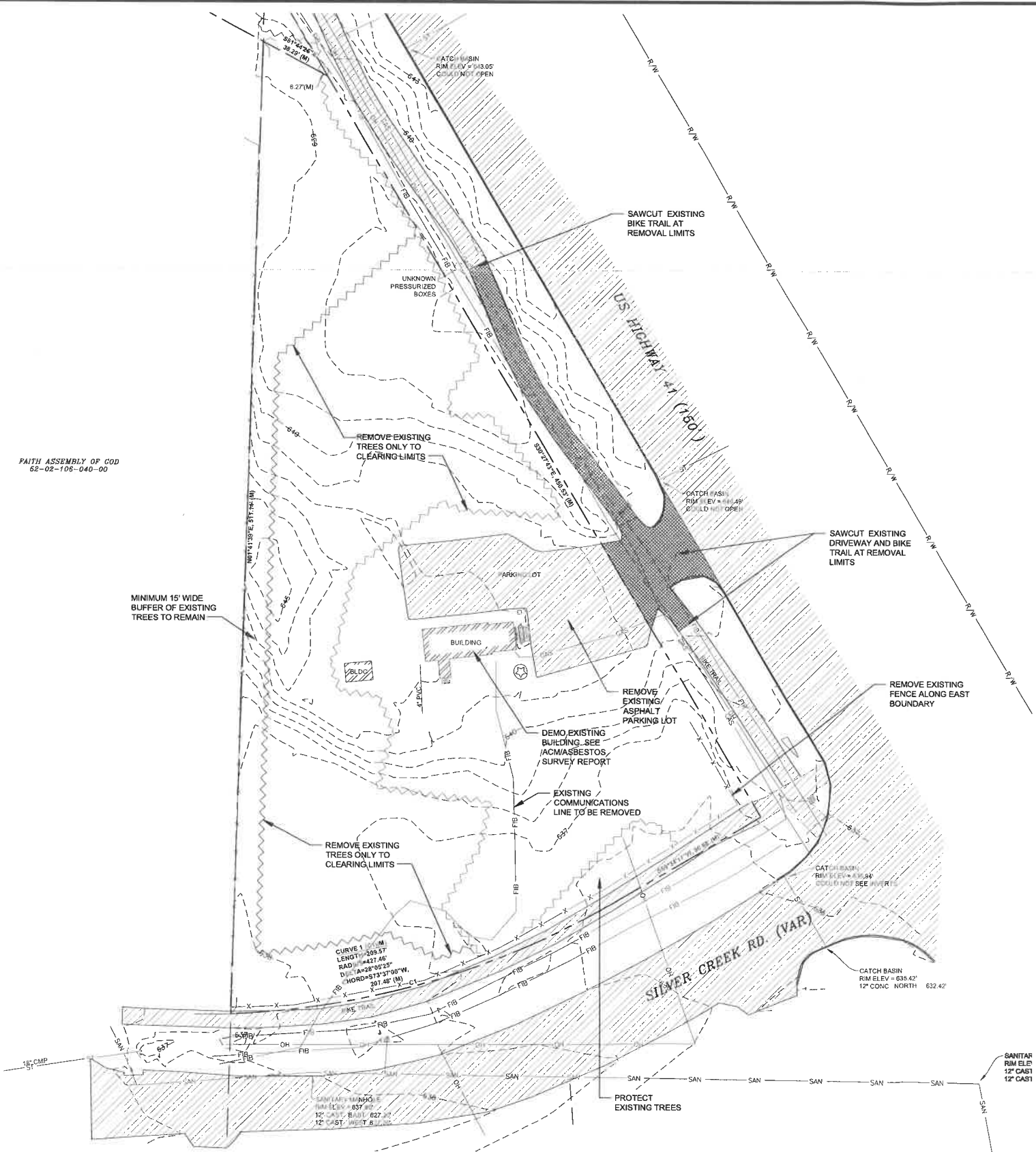
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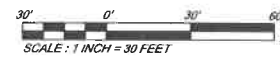
Overland
ENGINEERING, LLC
1598 WINDSOR CTR. STE. 2000 WEST PLAINS, MO. 65775
PHONE: (417) 258-8550 FAX: (417) 258-8102
rust@overlandeng.com

DOLLAR GENERAL
HARVEY, MICHIGAN
SITE PLAN

SHEET
C1



PAITH ASSEMBLY OF COD
62-02-106-040-00



SYMBOL LIBRARY

- SIGN POST
- POWER POLE
- GUY ANCHOR
- LIGHT POLE
- WELL
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BUILDING DEMOLITION NOTES:

- 1) BUILDING DEMOLITION SHALL CONFORM TO ALL OSHA, EPA, STATE OF MICHIGAN, AND CHOCOLAY TOWNSHIP REQUIREMENTS.
- 2) GEOTECHNICAL/ENVIRONMENTAL CONSULTANTS SHALL BE GRANTED ACCESS TO THE SITE.
- 3) EXCESS MATERIALS SHALL BE DISPOSED OF PROPERLY, AND IN A TIMELY MANNER.
- 4) PRIOR TO BUILDING DEMOLITION, CONTRACTOR SHALL COORDINATE WITH LOCAL UTILITIES BEFORE REMOVING ANY SERVICE CONNECTIONS.
- 5) SEE THE ENVIRONMENTAL SITE INVESTIGATION REPORT PREPARED BY NOVA CONSULTING GROUP.
- 6) ALL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO DEMOLITION.
- 7) AN ASBESTOS SURVEY HAS BEEN COMPLETED FOR THIS SITE. IF ASBESTOS CONTAINING MATERIALS ARE PRESENT, THESE MATERIALS ARE REGULATED AND MUST BE REMOVED PRIOR TO DEMOLITION IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS.

DOLLAR GENERAL
10841 & SILVER CREEK ROAD, HARVEY, MICHIGAN
www.dollargeneral.com

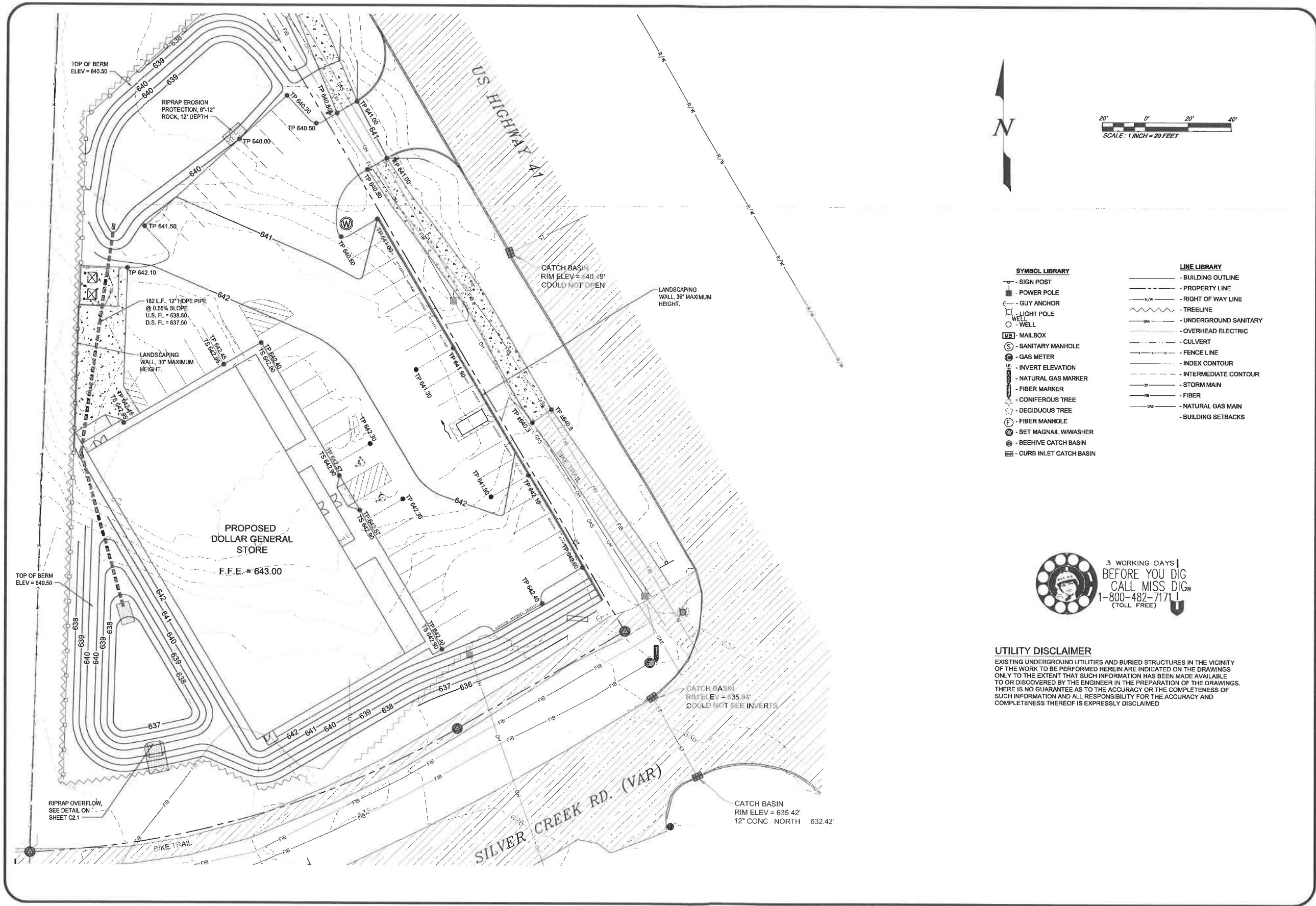
NO.	DATE	DESCRIPTION	BY



Overland
ENGINEERING, LLC
1088 MEDICAL CTR. STE. 2009 WEST PLAINS, MO 65775
PHONE: (417) 258-8150 FAX: (417) 258-8152
rust@overlandeng.com

DOLLAR GENERAL
HARVEY, MICHIGAN
DEMOLITION PLAN

SHEET
C1.1



SYMBOL LIBRARY

- SIGN POST
- POWER POLE
- GUY ANCHOR
- LIGHT POLE
- WELL
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UTILITY DISCLAIMER

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DOLLAR GENERAL
US-1 & SILVER CREEK ROAD, HARVEY, MICHIGAN

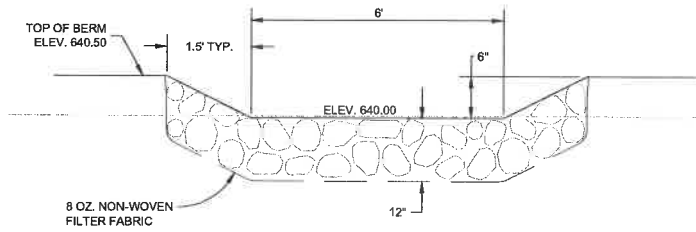
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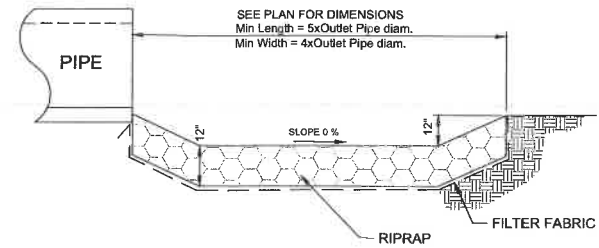
Overland
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1598 IMPERIAL CTR., STE. 2003 WEST PLAINS, MO 65775
PHONE: (417) 766-8850 FAX: (417) 256-8142
rust@overlandeng.com

DOLLAR GENERAL
HARVEY, MICHIGAN
GRADING PLAN

SHEET
C2



RIPRAP OVERFLOW SECTION
NO SCALE



RIPRAP OUTLET DETAIL
NO SCALE

SITE PLAN GENERAL NOTES:

1. STANDARD PARKING SPACES SHALL HAVE MINIMUM SIZE OF 10'X 20' UNLESS LOCAL JURISDICTION REQUIRE LARGER SPACES. PARKING SPACE STRIPING SHALL BE STANDARD 90 DEGREE STYLE. MINIMUM SIZE OF H.C. PARKING SPACES AND ACCESS AISLE ARE SHOWN ON DETAILS.
2. PAINTED STANDARD PARKING SPACE AND ISLAND STRIPE COLOR SHALL BE YELLOW FOR ASPHALT PAVEMENT AND CONCRETE PAVEMENT. COLOR FOR PAINTED H.C. ACCESSIBLE PARKING SPACE STRIPES, ACCESS AISLE OR ISLAND STRIPES, H.C. SYMBOLS, SHALL BE PAINTED PER THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION. BOLLARDS SHALL BE PAINTED YELLOW. PAINT SHALL BE REFLECTIVE TYPE.
3. PAINTED FIRE LANE STRIPING OR PAINTED CURBS SHALL BE PROVIDED AS REQUIRED BY JURISDICTIONAL REQUIREMENTS.
4. CONCRETE PARKING STOPS SHALL BE USED AT PARKING SPACES ALONG THE OUTER PERIMETER OF PARKING LOT WHEN CONCRETE CURBS ARE NOT USED.
5. CONCRETE PARKING STOPS SHALL NOT BE USED AT THE FRONT OF THE BUILDING OR ALONG THE PERIMETER (ADJACENT) TO THE BUILDING.
6. THE SIDEWALK AT THE FRONT OF THE BUILDING SHALL BE A MINIMUM OF 9-FOOT WIDE. THE SIDEWALK SHALL INCLUDE A 10-FOOT MINIMUM WIDE ADA ACCESSIBLE RAMP CLOSE TO THE STORE MAIN ENTRANCE. SIDEWALKS ALONG OTHER SIDES OF BUILDING SHALL BE MINIMUM 3'-6" WIDE. SIDEWALKS ADJACENT TO BUILDING SLABS SHALL HAVE SEALED ISOLATION JOINTS AND SHALL BE 6" HIGH ABOVE EXTERIOR OR PAVEMENT FINISH GRADES. ALL EXTERIOR SIDEWALKS SHALL HAVE A BROOM FINISH.
7. PORTLAND CEMENT SIDEWALKS SHALL BE MINIMUM 4" THICK WITH WELDED WIRE FABRIC REINFORCING.
8. SIDEWALKS ADJOINING THE BUILDING MUST HAVE A 6" HIGH INTEGRAL CURB.
9. SLOPE CONCRETE SIDEWALKS AWAY FROM BUILDING AT A MINIMUM SLOPE OF 1/8" PER FOOT, INCLUDING RECESSED ENTRY.
10. THE ACTUAL LOCATION FOR THE PYLON SIGN SHALL BE SITUATED FOR OPTIMUM VISIBILITY ALONG THE MAIN FRONT TRAFFIC CORRIDOR.
11. BUILDING CORNERS ADJACENT TO PAVED AREAS SHALL BE BOLLARD PROTECTED. ABOVE GROUND UTILITY APPURTENANCES, SUCH AS METERS, TRANSFORMERS, FIRE HYDRANTS IN PAVED AREAS, ETC. SHALL BE BOLLARD PROTECTED.
12. DOWNSPOUTS SHALL NOT BE ALLOWED TO DISCHARGE ON CONCRETE SIDEWALKS. ROUTE DOWNSPOUTS UNDER SIDEWALKS AT ALL SIDEWALK LOCATIONS.
13. ALL DOWNSPOUTS DISCHARGING ON TO NON PAVED AREAS ARE TO HAVE A MINIMUM FIVE FOOT PERFORATED LANDSCAPE PIPE STRAPPED TO A MINIMUM 12 INCH X 24 INCH CONCRETE SPLASH BLOCK.
14. FINISH FLOOR TO BE A MINIMUM OF 12 INCHES ABOVE 100 YEAR FLOOD PLAIN.
15. FINISHED GRADE AT EXTERIOR WALLS SHALL BE A MINIMUM OF 6" BELOW FINISHED FLOOR AT ALL NON-PAVED AREAS.

DOLLAR GENERAL

USA 1 & SILVER CREEK ROAD, HARVEY, MICHIGAN
48037-1000

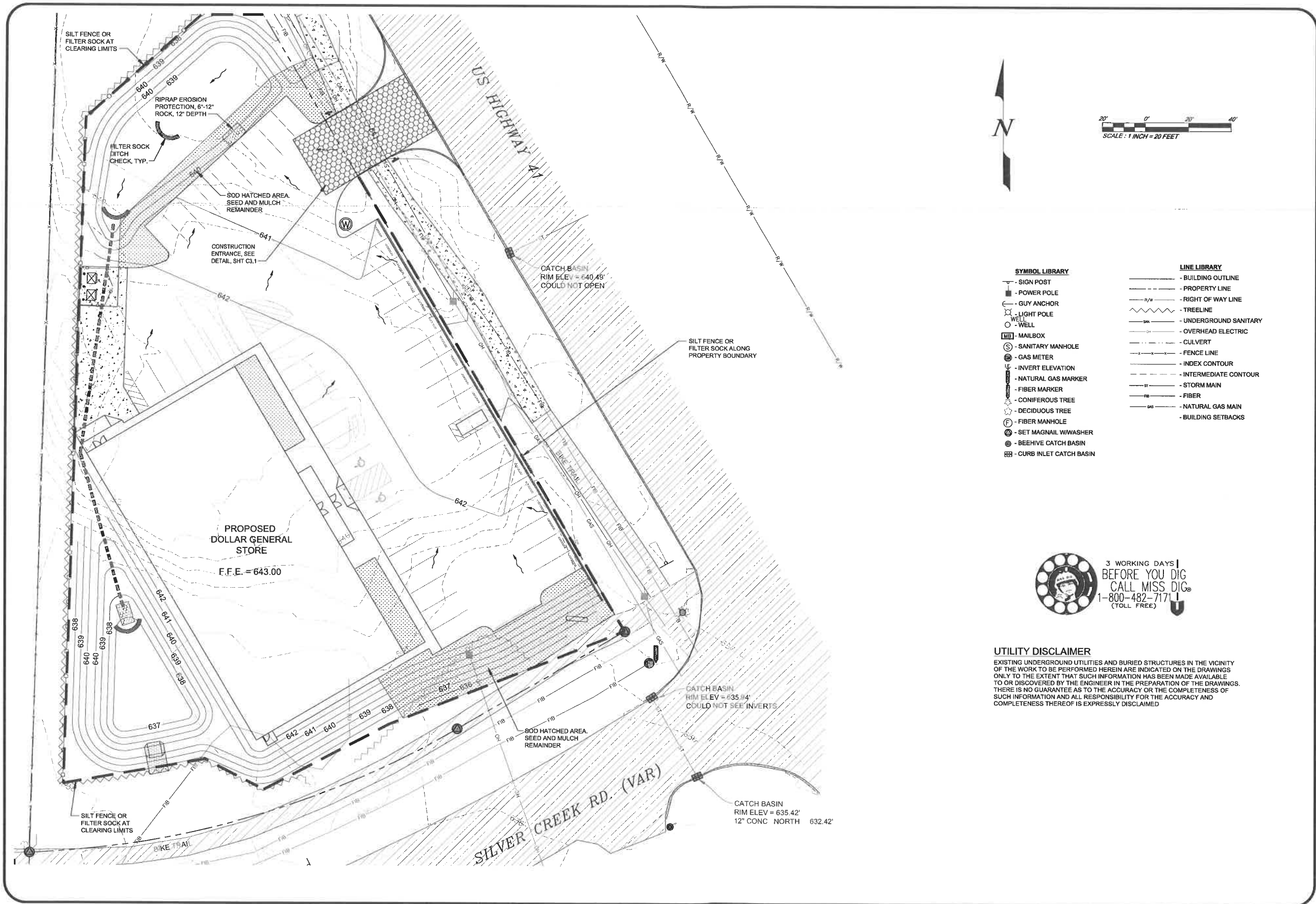
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rusty@overlandeng.com

DOLLAR GENERAL
HARVEY, MICHIGAN
GRADING DETAILS

SHEET
C2.1



SYMBOL LIBRARY

- SIGN POST
- POWER POLE
- GUY ANCHOR
- LIGHT POLE
- WELL
- MAILBOX
- SANITARY MANHOLE
- GAS METER
- INVERT ELEVATION
- NATURAL GAS MARKER
- FIBER MARKER
- CONIFEROUS TREE
- DECIDUOUS TREE
- FIBER MANHOLE
- SET MAGNAIL WWASHER
- BEEHIVE CATCH BASIN
- CURB INLET CATCH BASIN

LINE LIBRARY

- BUILDING OUTLINE
- PROPERTY LINE
- RIGHT OF WAY LINE
- TREELINE
- UNDERGROUND SANITARY
- OVERHEAD ELECTRIC
- CULVERT
- FENCE LINE
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- STORM MAIN
- FIBER
- NATURAL GAS MAIN
- BUILDING SETBACKS



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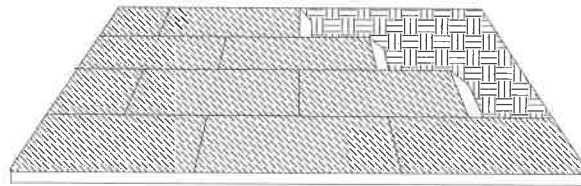
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DOLLAR GENERAL
HARVEY, MICHIGAN
SEDIMENT & EROSION
CONTROL PLAN

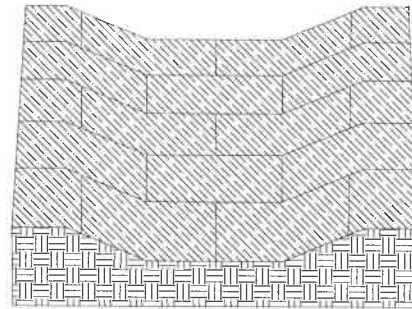
SHEET
C3



LAY SOD IN A STAGGERED PATTERN WITH STRIPS BUTTED TIGHTLY AGAINST EACH OTHER

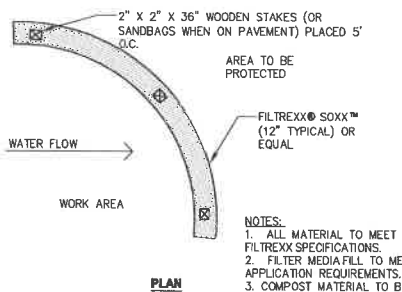
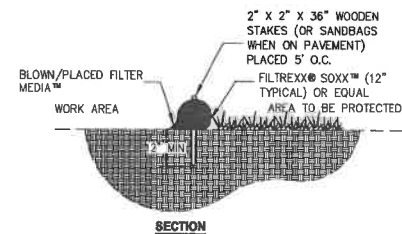
ON SLOPE > 3:1 USE PEGS OR STAPLES TO FASTEN SOD FIRMLY AT THE CORNERS AND CENTERS.

INSTALLATION OF GRASS SOD



LAY SOD PERPENDICULAR TO THE DIRECTION OF FLOW. USE PEGS OR STAPLES TO FASTEN SOD FIRMLY AT THE CORNERS AND CENTERS

INSTALLATION OF SOD IN WATERWAYS



FILTER SOCK SEDIMENT CONTROL

N.T.S.

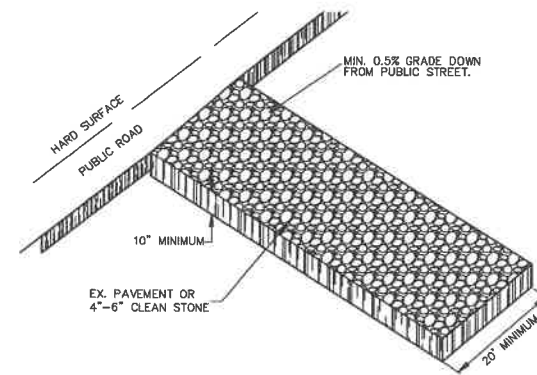
NOTES:
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPENSED ON SITE, AS DETERMINED BY ENGINEER.

SODDING SPECIFICATIONS

1. GENERAL
The sodding and related operations may be performed at any time of the year except frozen sod shall not be placed nor shall sod be placed on frozen soil.
2. LIME
Limestone, where required, shall be standard agricultural ground limestone with a moisture content not in excess of 10 percent. The rate of application shall be as necessary to raise pH to a minimum of 6.0.
3. FERTILIZER
The fertilizer shall be a regular commercial fertilizer (including liquid form) meeting the requirements of the applicable state laws, and shall be in such physical condition to insure uniform application over the area to be fertilized. Rates of application shall be as specified by MDOT.
4. SOD
The sod shall consist of strips or blocks of a vigorous growing dense perennial grass turf. The minimum thickness for cultured sod is one inch. The minimum thickness for other grass sod is two inches. The sod shall be sufficiently dense so that when a square 12 x 12 inches is cut to the required thickness and suspended by one corner, it will not tear apart. Sod shall be taken from soils similar to that upon which it is to be placed, except sod from light sand will not be accepted. The sod shall be indigenous to the general locality where it is to be used and shall be reasonably free from weeds. The sod shall be cut in strips of a uniform width, not less than 10 inches, and in lengths of not less than 18 inches. Lay sod within 48 hours of harvest.
5. PREPARING THE SOD BED
The entire surface to be sodded shall be reasonably smooth and free from stones, roots or other debris, and conform to the alignments, grade and cross-section indicated on the drawings. At this stage, unless otherwise specified, the Contractor shall apply the fertilizer and/or lime as required, and mix them with the surface soil material to a depth of 3 inches. Prior to laying the sod, the area to be sodded will be dampened if it is not already in a sufficiently moist condition. The sod bed soil shall be moist, but not saturated, to a minimum depth of six inches.
6. PLACING THE SOD
Sod shall be carefully placed and tamped. On slopes steeper than 3 horizontal to 1 vertical, the sod shall be pegged with wooden pegs. The pegs shall be spaced not over 2 feet apart in any direction and shall be driven flush with the surface of the sod.
7. ESTABLISHING THE SOD
The Contractor shall maintain the sod in a growing condition by watering when necessary, after completing each part of the sodding work, for at least 30 days.

SEEDING AND MULCHING SPECIFICATIONS

1. GENERAL
Liming, fertilizing, seeding and mulching shall be performed within 20 days from disturbance any time during the year except during the period October 1 to November 1 South of US 10, September 20 to October 25 North of US 10 and any other time of the year that the seedbed cannot be properly prepared due to wetness, snow or frozen soil.
2. FERTILIZER AND LIME
Lime shall be standard agricultural ground limestone. Fertilizer shall meet the requirements of the applicable Michigan state laws, and shall be in such physical condition to insure uniform application over the area to be fertilized. Lime is required only as necessary to adjust pH to a minimum of 6.0. Fertilizer shall be applied at the rate specified by MDOT for TGM seed mixture.
3. SEED
The seed shall conform to the latest seed laws of the United States and of Michigan. Seed mixture shall be MDOT TGM mixture, and rate of seeding shall be 220 pounds per acre or per MDOT specifications.
4. PREPARATION OF SEEDBED
The entire area to be seeded shall be reasonably smooth and all washes and gullies shall be filled to conform to the desired cross-section before actual seedbed preparation is begun. Scarify subsoil areas perpendicular to water flow before they are filled. After final grading, the required fertilizer (except that applied with a hydraulic seeding) and/or lime shall be applied uniformly and incorporated into the top 3 inches of the soil. The seedbed preparation operation shall be suspended when the soil is too wet or too dry. On side slopes steeper than 3:1, the 3 inch minimum depth of seedbed preparation is not required, but the soil shall be worked enough to insure sufficient loose soil to provide adequate seed cover.
5. SOWING THE SEED
Seed immediately after preparation of the seedbed. Uniform seed distribution shall be accomplished by drilling, broadcasting or hydraulically seeding. If a hydraulic seeder is used, the seed, fertilizer and mulch may be applied together with water. Immediately after seeding, except in the case of hydraulic seeding, the soil shall be firmed with a cultipacker or other approved equipment to give the seed a cover of not more than 1/2 inch. Where broadcast seeding, the seed will be covered by use of hand rake or by dragging harrows, chains, or other suitable equipment over the surface or mulch to cover the seed. On slopes steeper than 3:1, the seed may be covered by hand without cultipacking.
6. MULCHING
The required mulching shall be performed with hydraulic seeding or immediately after seeding. The mulch shall be applied uniformly over the area. The type and rate shall be 2 tons per acre. The mulch, except for hydraulically placed mulch, shall be anchored. Anchoring of the mulch shall be performed by application of a commercially available tackifier at the rate recommended by the manufacturer, a mulch anchoring tool, tandem disk weighted and set nearly straight, track type tractor, or by installation of mulch netting. Mechanical anchoring shall be performed in a manner that creates ridges perpendicular to flow of water.



CONSTRUCTION ENTRANCE

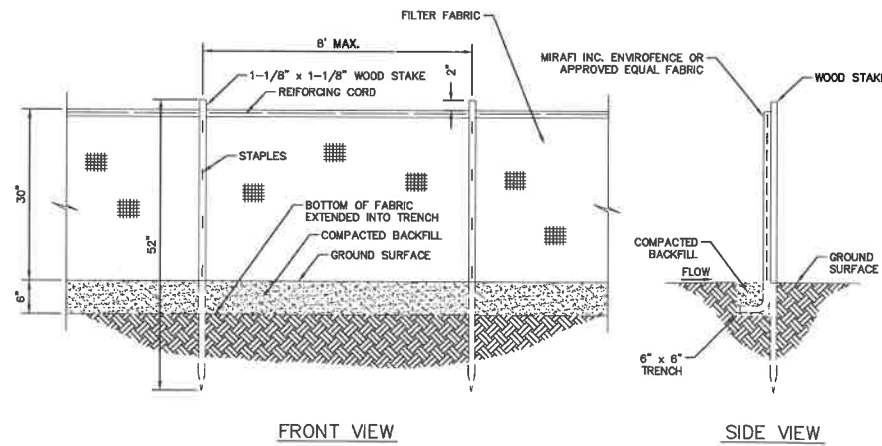
N.T.S.

EROSION CONTROL SCHEDULE AND SEQUENCING:

- I. ROUGH GRADING
CONSTRUCTION ENTRANCE/EXIT, SILT FENCE PROTECTION, CONCRETE WASHOUT AREA AND TREE PROTECTION SHALL BE INSTALLED PRIOR TO THE INITIATION OF ROUGH GRADING. AS NEEDED, TEMPORARY EROSION CONTROL MEASURES TO BE INSTALLED UPON COMPLETION OF ROUGH GRADING AND AS NECESSARY THROUGHOUT CONSTRUCTION.
- II. UTILITY INSTALLATION
ALL PRIOR EROSION CONTROL MEASURES INSTALLED ABOVE TO BE MAINTAINED AS NECESSARY DURING UTILITY INSTALLATION. STORM STRUCTURE INLET PROTECTION SHALL BE INSTALLED AS STORM DRAINAGE SYSTEM IS CONSTRUCTED.
- III. PAVING
ALL PRIOR EROSION CONTROL MEASURES INSTALLED ABOVE TO BE MAINTAINED AS NECESSARY DURING PAVING AND THROUGHOUT THE REMAINDER OF THE PROJECT.
- IV. FINAL GRADING/SOIL STABILIZATION/LANDSCAPING
ALL TEMPORARY EROSION CONTROL MEASURES TO BE REMOVED AT THE CONCLUSION OF THE PROJECT AS DIRECTED BY THE LOCAL MUNICIPALITY.

PERMANENT EROSION CONTROL MEASURES

PERMANENT SEEDING & SOD -- PERMANENT SEEDING & SOD PREVENTS EROSION OF SOIL DUE TO STORMWATER RUNOFF. THE VEGETATION SHALL BE PROPERLY MOWED AND MAINTAINED UPON FINAL STABILIZATION.



SEDIMENTATION/SILT FENCE

N.T.S.

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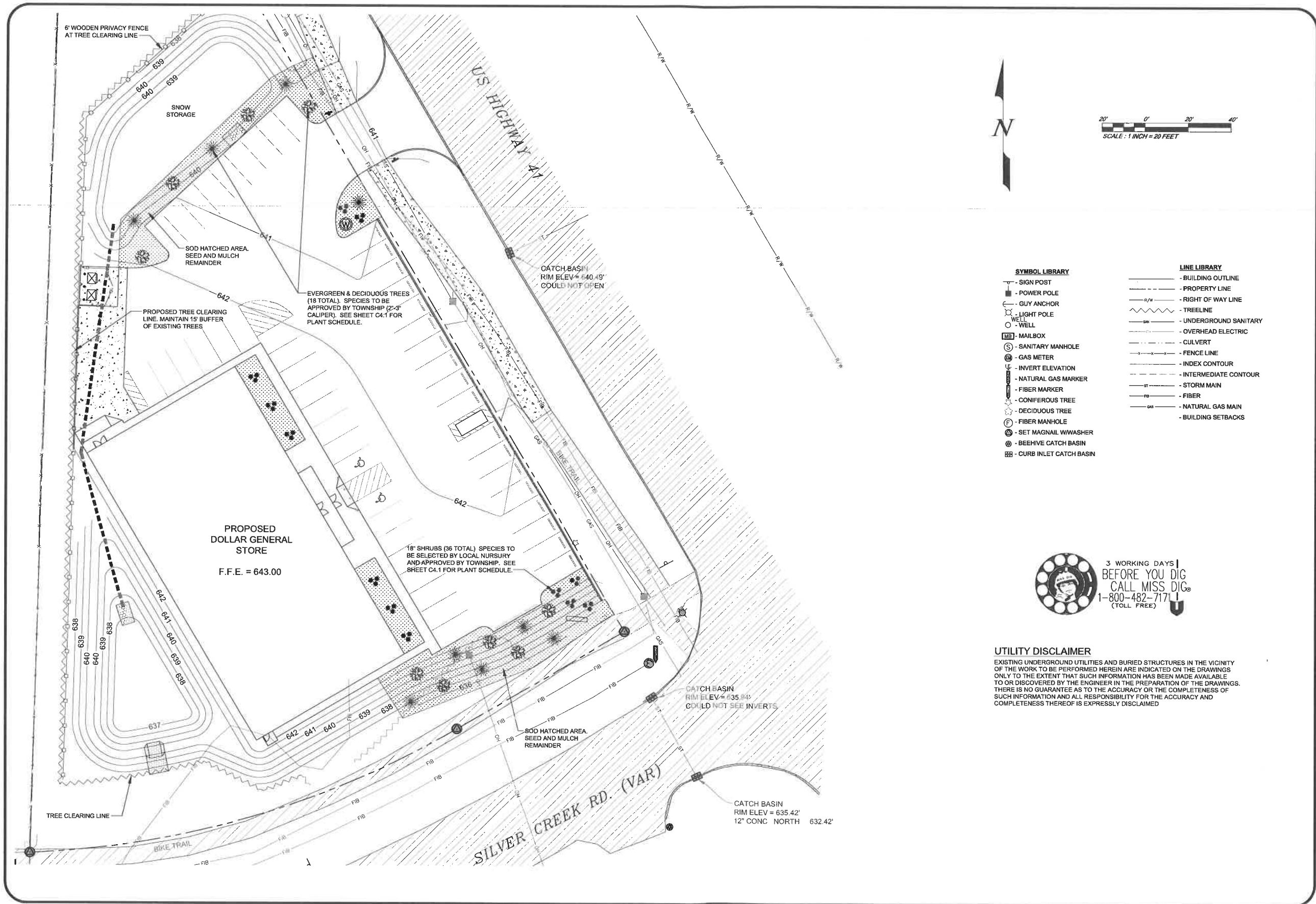


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HARVEY, MICHIGAN
SEDIMENT & EROSION
CONTROL DETAILS

SHEET
C3.1

NO.	DATE	DESCRIPTION	BY



SYMBOL LIBRARY

- SIGN POST
- POWER POLE
- GUY ANCHOR
- LIGHT POLE
- WELL
- MAILBOX
- SANITARY MANHOLE
- GAS METER
- INVERT ELEVATION
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LINE LIBRARY

- BUILDING OUTLINE
- PROPERTY LINE
- RIGHT OF WAY LINE
- TREELINE
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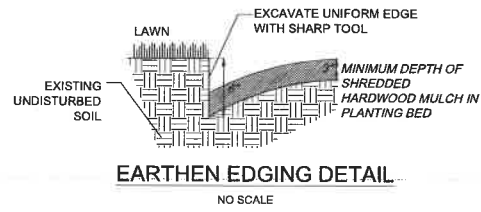
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DOLLAR GENERAL
HARVEY, MICHIGAN
LANDSCAPING PLAN

SHEET
C4

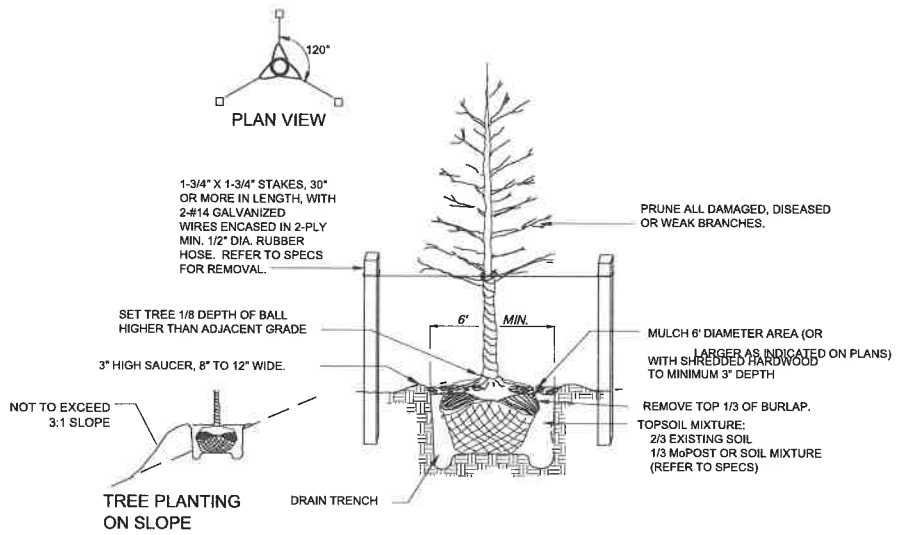


EARTHEN EDGING DETAIL

NO SCALE

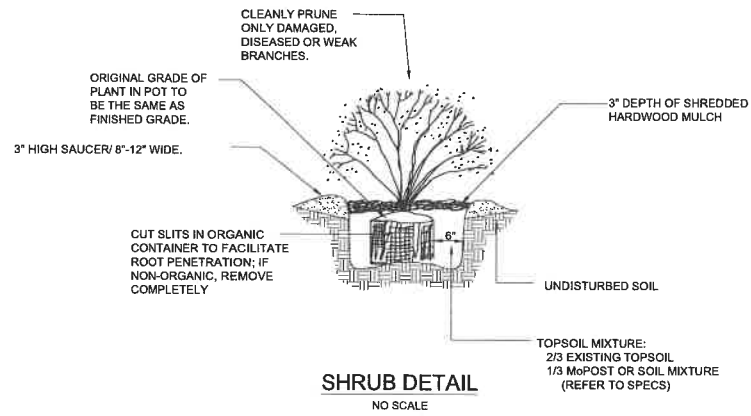
PLANT SCHEDULE:

QTY	BOTANICAL NAME	COMMON NAME
TREES		
5	ACER RUBRUM	RED MAPLE
4	QUERCUS RUBRA	NORTHERN RED OAK
5	PINUS STROBUS	WHITE PINE
4	PICEA GLAUCA	WHITE SPRUCE
SHRUBS		
12	COTONEASTER DIVARICATUS	COTONEASTER
12	VIBURNUM TRILOBUM	HIGHBUSH CRANBERRY
12	SYRINGA MEYERI	PALIBIN LILAC



TREE DETAIL- LESS THAN 3 1/2" CALIPER

NO SCALE



SHRUB DETAIL

NO SCALE

LANDSCAPING REQUIREMENTS:

- 18 S.F. PER PARKING SPACE
- 18 S.F. * 49 PARKING SPACES = 882 S.F. (REQUIRED)
- SODDED LANDSCAPING = 4,472 S.F. (PROVIDED)

LANDSCAPE NOTES:

1. ALL PLANTING BEDS SHALL HAVE A MINIMUM 3" DEPTH OF MULCH, WITH EDGING AS REQUIRED.
2. ALL TREES LOCATED IN SOD AREAS SHALL HAVE A MULCH RING AROUND THEM WITH EDGING.
3. ALL PLANTINGS SHALL BE THOROUGHLY WATERED BY THE LANDSCAPE CONTRACTOR AT THE TIME OF THE PLANTINGS.
4. MAXIMUM GRADING IN NON-DETENTION AREAS SHALL NOT EXCEED 4:1.
5. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING ALL VEGETATION AND REGIONAL APPROPRIATE LANDSCAPING.

IRRIGATION NOTES:

1. IRRIGATION SYSTEM FOR SODDED AND LANDSCAPED AREAS IS NOT SHOWN BUT SHALL BE DESIGNED AND INSTALLED BY CONTRACTOR. SPRINKLER HEADS SHALL NOT BE LOCATED WITHIN THE ROAD RIGHT OF WAY.
2. IRRIGATION SYSTEM TO INCLUDE ALL SPRAY HEADS, VALVES AND CONTROLLERS.
3. LOCATE HEADS A MINIMUM OF 2'-0" FROM EDGE OF PAVEMENT / CURB. HOWEVER, UNDER NO CIRCUMSTANCE SHALL SPRINKLER HEADS BE CONSTRUCTED WITHIN THE ROAD RIGHT OF WAY.

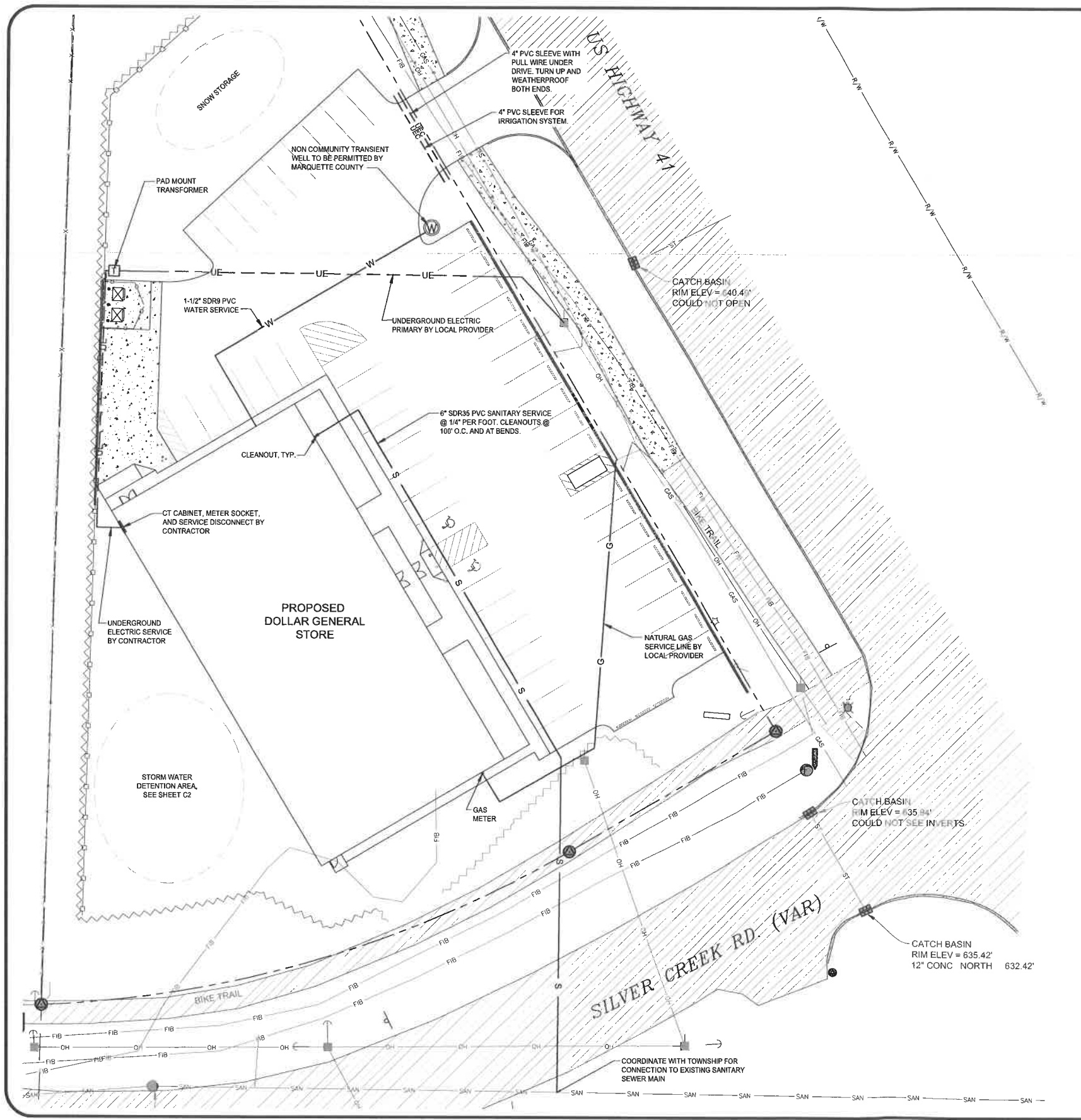


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DOLLAR GENERAL
HARVEY, MICHIGAN
LANDSCAPING DETAILS



- SYMBOL LIBRARY**
- SIGN POST
 - POWER POLE
 - GUY ANCHOR
 - LIGHT POLE
 - WELL
 - MAILBOX
 - SANITARY MANHOLE
 - GAS METER
 - INVERT ELEVATION
 - NATURAL GAS MARKER
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 - CURB INLET CATCH BASIN
- LINE LIBRARY**
- BUILDING OUTLINE
 - PROPERTY LINE
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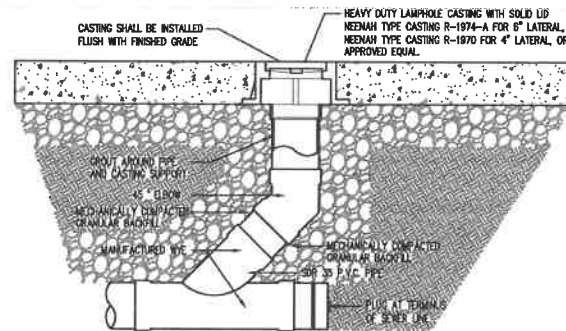
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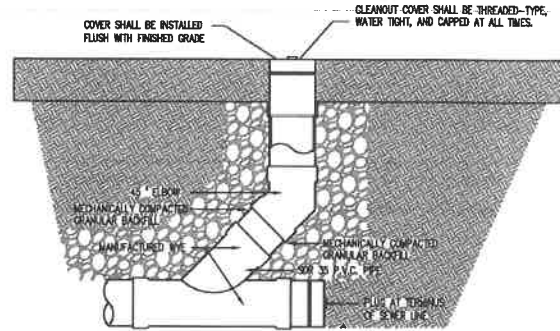
DOLLAR GENERAL HARVEY, MICHIGAN
 SITE UTILITY PLAN

SHEET
C5



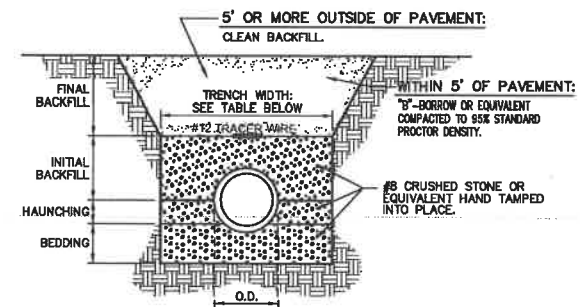
CLEAN OUT DETAIL (IN CONCRETE AREA)

NOT TO SCALE



CLEAN OUT DETAIL (IN GRASS AREA)

NOT TO SCALE



MINIMUM BEDDING, HAUNCHING, AND INITIAL BACKFILL DEPTHS		
PIPE SIZE	BEDDING (BELOW PIPE BARREL)	HAUNCHING AND INITIAL BACKFILL (ABOVE TOP OF PIPE)
UNDER 8"	4" MIN.	4" MIN.
8" TO 15"	4" MIN.	12" MIN.
18" & OVER	8" MIN.	12" MIN.

MINIMUM TRENCH WIDTHS	
PIPE SIZE	MINIMUM WIDTH
UP TO 18"	O.D. + 16"
18" & OVER	(O.D. x 1.25) + 12"

FLEXIBLE PIPE BEDDING & BACKFILL REQUIREMENTS DETAIL

NOT TO SCALE

WATER CONNECTION NOTES:

- 1) CONTRACTOR SHALL CONNECT WATER SERVICE LINE TO PROPOSED WELL AT OR NEAR THE LOCATION SHOWN.
- 2) CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF THE WELL AND ADJUST CONNECTION POINT AS NECESSARY.
- 3) CONTRACTOR SHALL REPAIR ANY EXISTING SIDEWALK OR PAVEMENT THAT IS REMOVED OR DAMAGED FOR THE CONNECTION.
- 4) WELL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STATE OF MICHIGAN AND MARQUETTE COUNTY HEALTH DEPARTMENT DESIGN AND CONSTRUCTION SPECIFICATIONS.

SANITARY SEWER CONNECTION NOTES:

- 1) BUILDING SEWER SHALL BE AT 1/4" PER 1' SLOPE WITH CLEANOUT TO GRADE WITHIN 5' OF THE BUILDING AND EVERY 100' THEREAFTER AND AT EVERY HORIZONTAL CHANGE IN DIRECTION GREATER THAN 45 DEGREES.
- 2) ALL SANITARY SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF CHOCOLAY TOWNSHIP DESIGN AND CONSTRUCTION SPECIFICATIONS.

UTILITY NOTES:

- 1) ALL UTILITY WORK SHALL CONFORM TO THE LATEST STANDARD DETAILS AND SPECIFICATIONS FOR THE CITY OF GLADWIN.
- 2) PROMPTLY PATCH AND REPAIR ADJACENT CONSTRUCTION DISTURBED BY UTILITY INSTALLATION OR CONNECTION.
- 3) CONTRACTOR SHALL COORDINATE WITH LOCAL UTILITIES BEFORE REMOVING ANY EXISTING SERVICE CONNECTIONS.
- 4) MAINTAIN EXISTING UTILITIES THAT ARE TO REMAIN IN SERVICE AND PROTECT THEM AGAINST DAMAGE DURING UTILITY INSTALLATION.
- 5) DO NOT INTERRUPT EXISTING UTILITIES, EXCEPT WHEN AUTHORIZED IN WRITING BY AUTHORITY HAVING JURISDICTION. PROVIDE TEMPORARY SERVICES DURING ANY INTERRUPTION TO EXISTING FACILITIES, AS ACCEPTABLE TO GOVERNING AUTHORITIES.
- 6) ALL WATER LINES SHALL BE SDR9 PVC WITH 60" MINIMUM COVER.
- 7) ALL SANITARY SEWER LINES SHALL BE SDR35 PVC WITH 60" MINIMUM COVER.
- 8) ALL ELECTRIC, TELEPHONE, AND GAS SERVICE LINES SHALL BE CONSTRUCTED TO THE APPROPRIATE UTILITY COMPANY SPECIFICATIONS.
- 9) PRIOR TO CONSTRUCTION OF OR CONNECTION TO ANY STORM DRAIN, SANITARY SEWER, WATER MAIN, OR OTHER UTILITY, THE CONTRACTOR SHALL EXCAVATE, VERIFY, AND CALCULATE ALL POINTS OF CONNECTION AND ALL UTILITY CROSSINGS. CONTRACTOR SHALL NOTIFY THE OWNER/DEVELOPER OF ANY CONFLICT OR REQUIRED DEVIATION FROM THE PLAN.
- 10) ALL UTILITIES WITHIN THE INFLUENCE OF PAVEMENT SHALL REQUIRE COMPLETE SAND BACKFILL COMPACTED TO 95% OF THE MATERIAL'S MAXIMUM DENSITY.

DOLLAR GENERAL

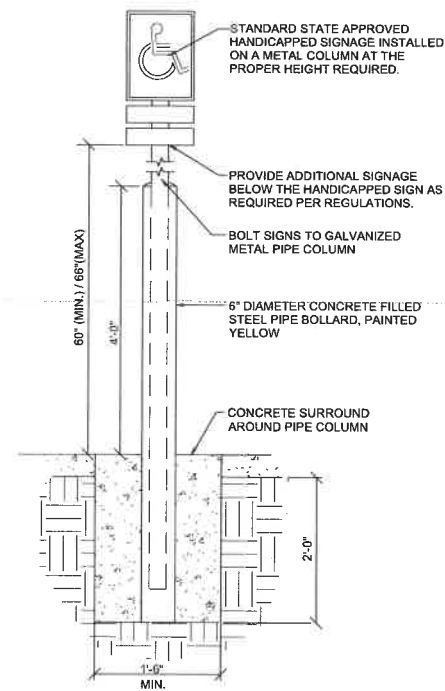
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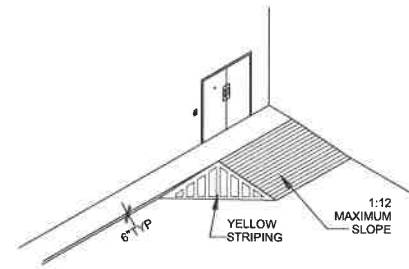
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DOLLAR GENERAL
HARVEY, MICHIGAN
SITE UTILITY DETAILS

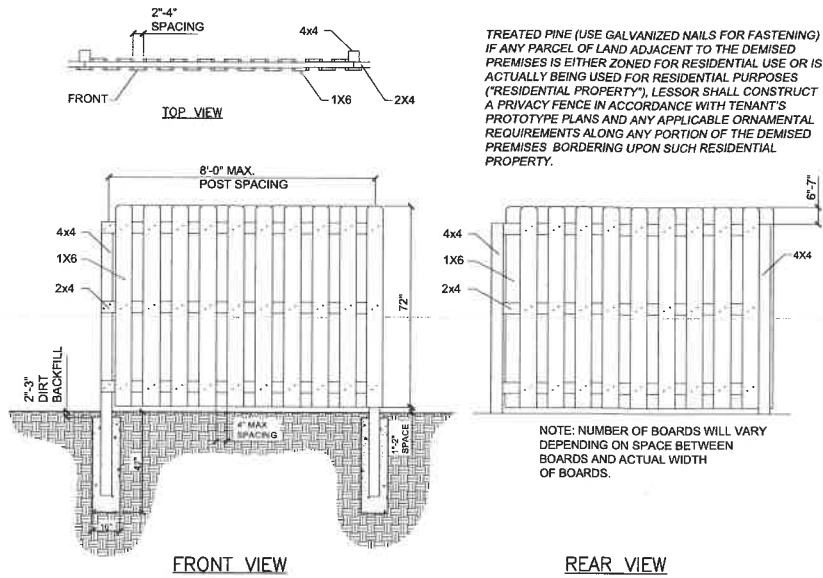
SHEET
C5.1



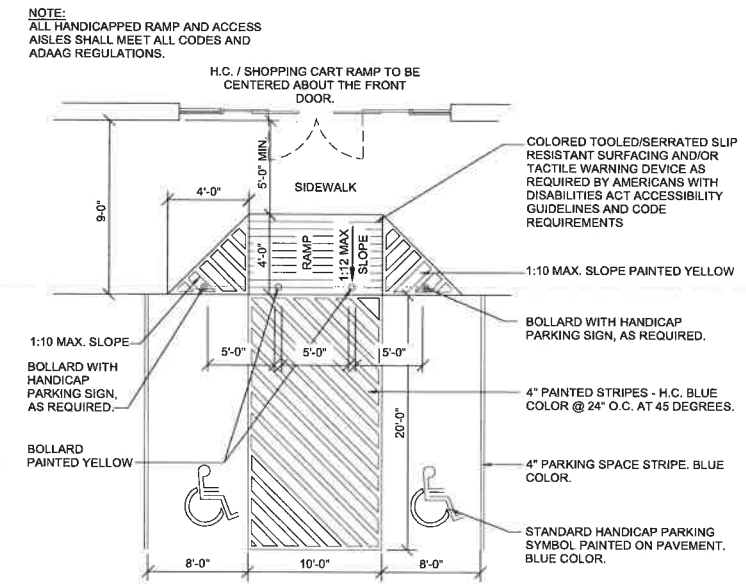
BOLLARD DETAIL
NOT TO SCALE



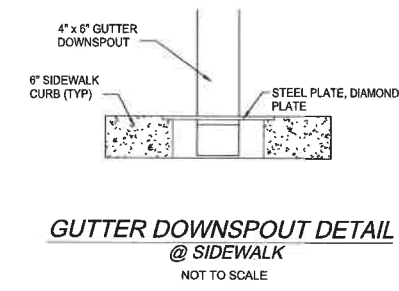
SIDE ENTRY DETAIL
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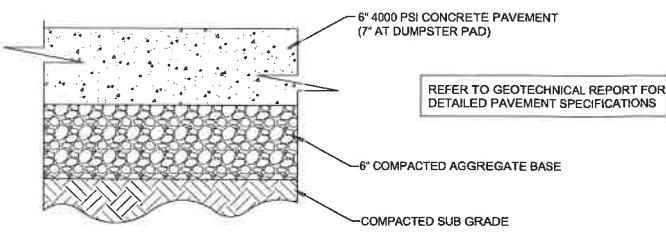
WOOD FENCE DETAIL
NOT TO SCALE



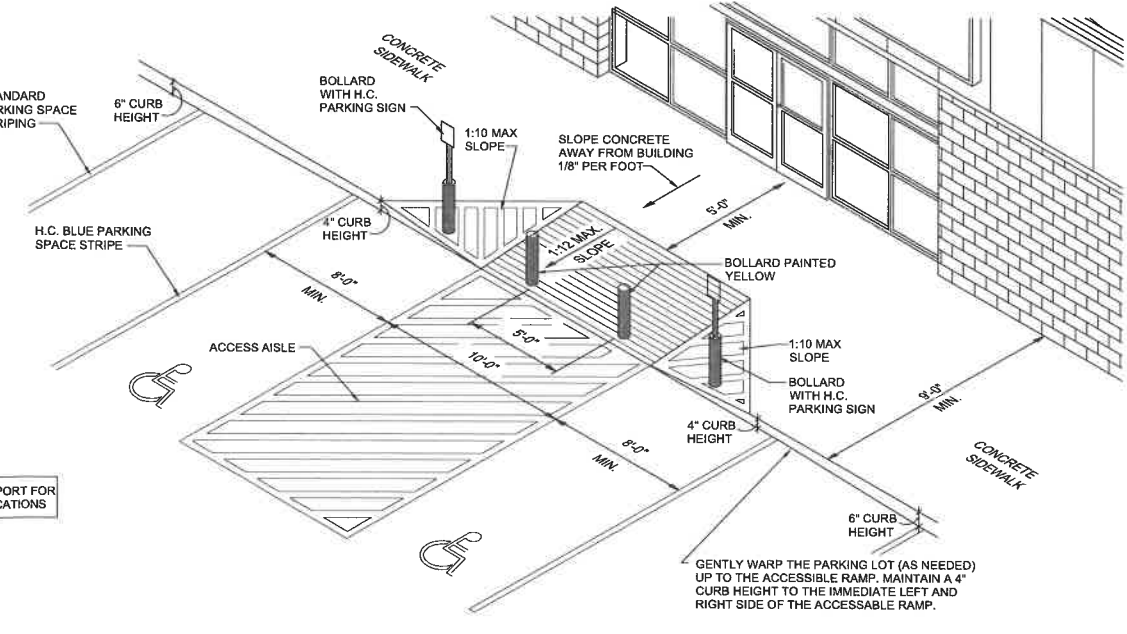
FRONT ENTRY PLAN
NOT TO SCALE



GUTTER DOWNSPOUT DETAIL @ SIDEWALK
NOT TO SCALE



CONCRETE PAVEMENT SECTION
NOT TO SCALE



FRONT ENTRY ISOMETRIC
NOT TO SCALE

- STRIPING NOTES**
- YELLOW CURBING AND BOLLARDS** SURFACES SHOULD BE CLEAN, DRY AND METAL SURFACES FREE OF HEAVY RUST 2 COATS SHERWIN WILLIAMS - KEM 4000 ACRYLIC ALKYD ENAMEL SAFETY YELLOW BSSY300
 - STRIPING - PARKING LOT** SURFACES SHOULD BE CLEAN, DRY. TOP COAT SHERWIN WILLIAMS - PROMAR TRAFFIC MARKING PAINT YELLOW TM5495
 - HANDICAP STRIPING - PARKING LOT** SURFACES SHOULD BE CLEAN, DRY. TOP COAT SHERWIN WILLIAMS - PROMAR TRAFFIC MARKING PAINT "H.C." BLUE

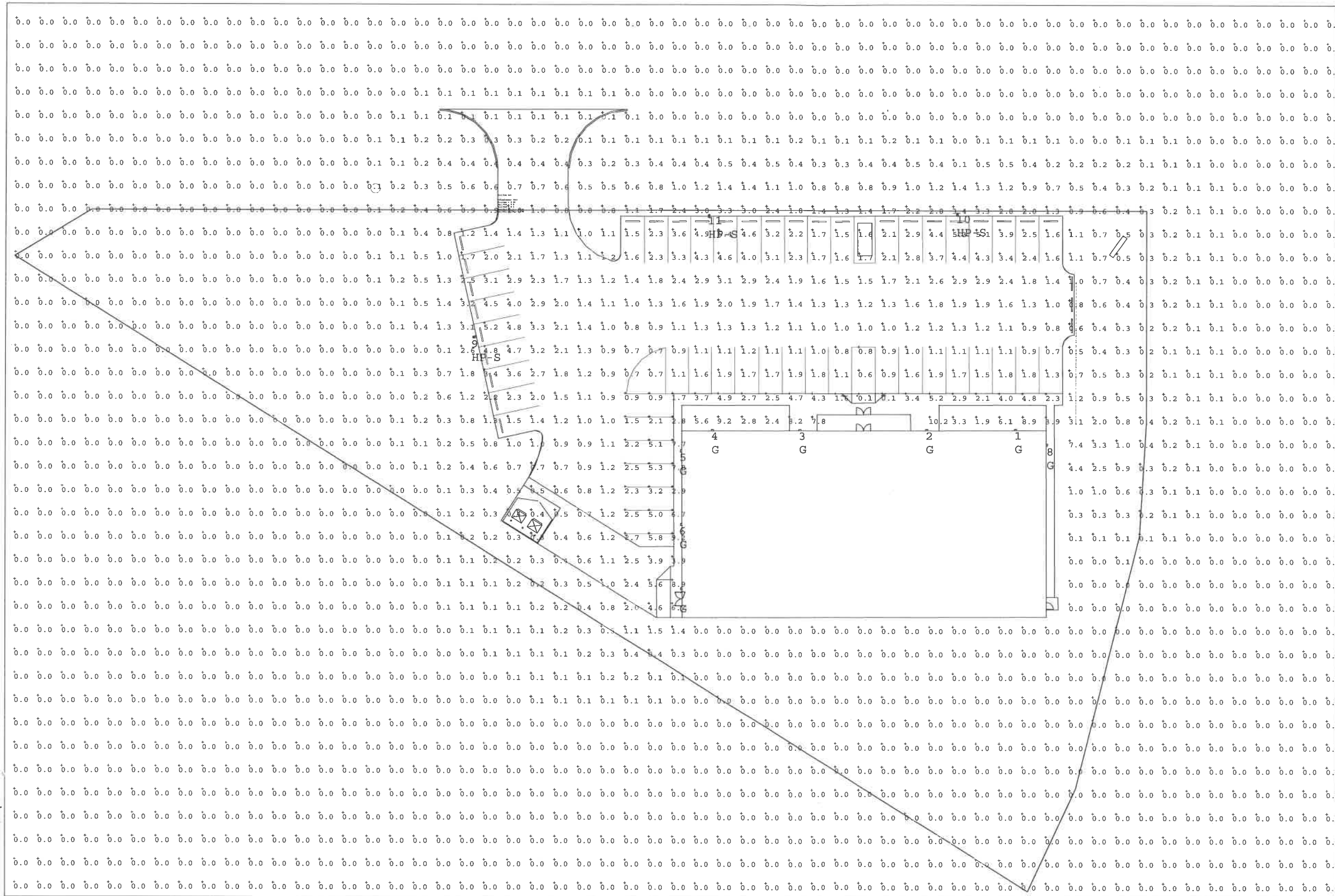
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NO.	DATE	DESCRIPTION	BY



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rusty@overlandeng.com

DOLLAR GENERAL HARVEY, MICHIGAN
DETAILS



Luminaire Location Summary		
LumNo	Label	Z
1	G	12
2	G	12
3	G	12
4	G	12
5	G	12
6	G	12
7	G	12
8	G	12
9	HP-S	27
10	HP-S	27
11	HP-S	27

Luminaire Schedule								
Symbol	Qty	Label	Arrangement	Description	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
	8	G	Single	LEDS - WP4053 Wall Pack	0.950	5359	39.8284	318.627
	3	HP-S	Single	LEDS - AL1211SH - TS - SL075-150W-H3-40K-Shielded	0.950	17436	147.901	443.703

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Site	Illuminance	Fc	0.40	10.2	0.0	N.A.	N.A.
Parking Lot	Illuminance	Fc	2.08	9.2	0.1	20.80	92.00

SITE PLAN REVIEW CHECKLIST

Required Elements

Location _____ Project _____

Plan Item Found				Item Description
Yes	No	N/A	Plan Sheet Number	
Project Information				
				Project name
				Project location
				Project description
				Vicinity map of the project
Plan Preparer Information				
				Date of preparation or revision
				Name and address of the preparer – must be a registered engineer, land surveyor, landscape architect, community planner, architect, or related professional
				Scale not greater than one inch equals twenty feet, nor less than one inch equals 200 feet
				Drawing is easily interpreted
Property Dimensions and Legal Information				
				Property owner(s), developer(s) and designer(s)
				Dimensions and number of proposed lots
				Locations and dimensions of property lines and structure setbacks
				Easements, if any
				Scale and north point
				Property legal description(s)



Plan Item Found				Item Description
Yes	No	N/A	Plan Sheet Number	
Property Access				
				Street right-of-ways, indicating proposed access routes, internal circulation, relationship to existing rights-of ways, and curb cuts within one hundred feet of the property
				Neighboring driveways and other vehicular circulation features within and adjacent properties, including turn lanes
Existing Structure Locations				
				Location of existing man-made features
				Locations of existing buildings or structures within one hundred feet of the boundaries of the property
				Locations, heights, area and dimension of existing buildings and structures
				Location of existing trash collection, outdoor storage, service and loading areas
Proposed Structure Locations				
				Dwelling units per acre
				Floor area of each proposed dwelling unit
				Location of proposed trash collection, outdoor storage, service and loading areas
				Locations, heights, area and dimension of proposed buildings and structures
				Proposed sidewalks, trails, roads, and other vehicle and pedestrian circulation within or adjacent to the site



Plan Item Found				Item Description
Yes	No	N/A	Plan Sheet Number	
Parking				
				Proposed parking and unloading areas and drives – designated by lines showing individual spaces and show all elements applicable to required parking calculations per Section 8 of the zoning ordinance, such as number of dwelling units, number of occupants, number of rooms, floor area, floor space, seating capacity, area of outdoor sales space or other applicable element
				Proposed driveways and roads
				Off-site parking
Landscape and Utilities				
				Significant natural features, and other natural characteristics, including but not limited to open space, stands of trees, brooks, ponds, creeks, rivers (Chocolay and Sands), flood plains, hills, slopes over 25% and similar natural assets
				Existing and proposed topography of the size at a minimum of two foot intervals and its relationship to adjoining land
				Proposed grading or fill
				Existing location, sizes, and type of drainage, sanitary sewers, water services, storm sewers, fire hydrants and snow storage area
				Location, sizes, and type of fences, landscaping, buffer strips, and screening
				Proposed connections to existing utilities and proposed utility extension(s)
				Proposed snow storage areas



Plan Item Found				Item Description
Yes	No	N/A	Plan Sheet Number	
				Proposed alterations to the topography and other natural features
				County soil analysis
				Soil erosion and sediment control measures
Groundwater Protection				
				Location and size of interior and exterior areas and structures to be used for storage, use, loading / unloading, recycling, or disposal of hazardous materials
				Location of all underground and above ground storage tanks for such uses as fuel storage, waste oil holding tanks, chemical storage, hazardous waste storage, collection of contaminated stormwater or wash water and other similar uses
				Location of exterior and interior drains, on-site sewage systems, dry wells, catch basins, retention / detention areas, sumps or other facilities designed to collect, store or transport stormwater or wastewater – point of discharge is shown on the site plan
				Location of water wells on the site and within 150 feet surrounding the project boundaries
				Location of septic systems and related drain fields on the site
Lighting				
				Description of each illumination device, luminaire, support, reflector, timing device, and other device (such as style, manufacturer’s part number, wattage, lumens, type of bulb, photometric data)
				Manufacturer specifications including photographs of the fixtures indicating certified “cut off” characteristics

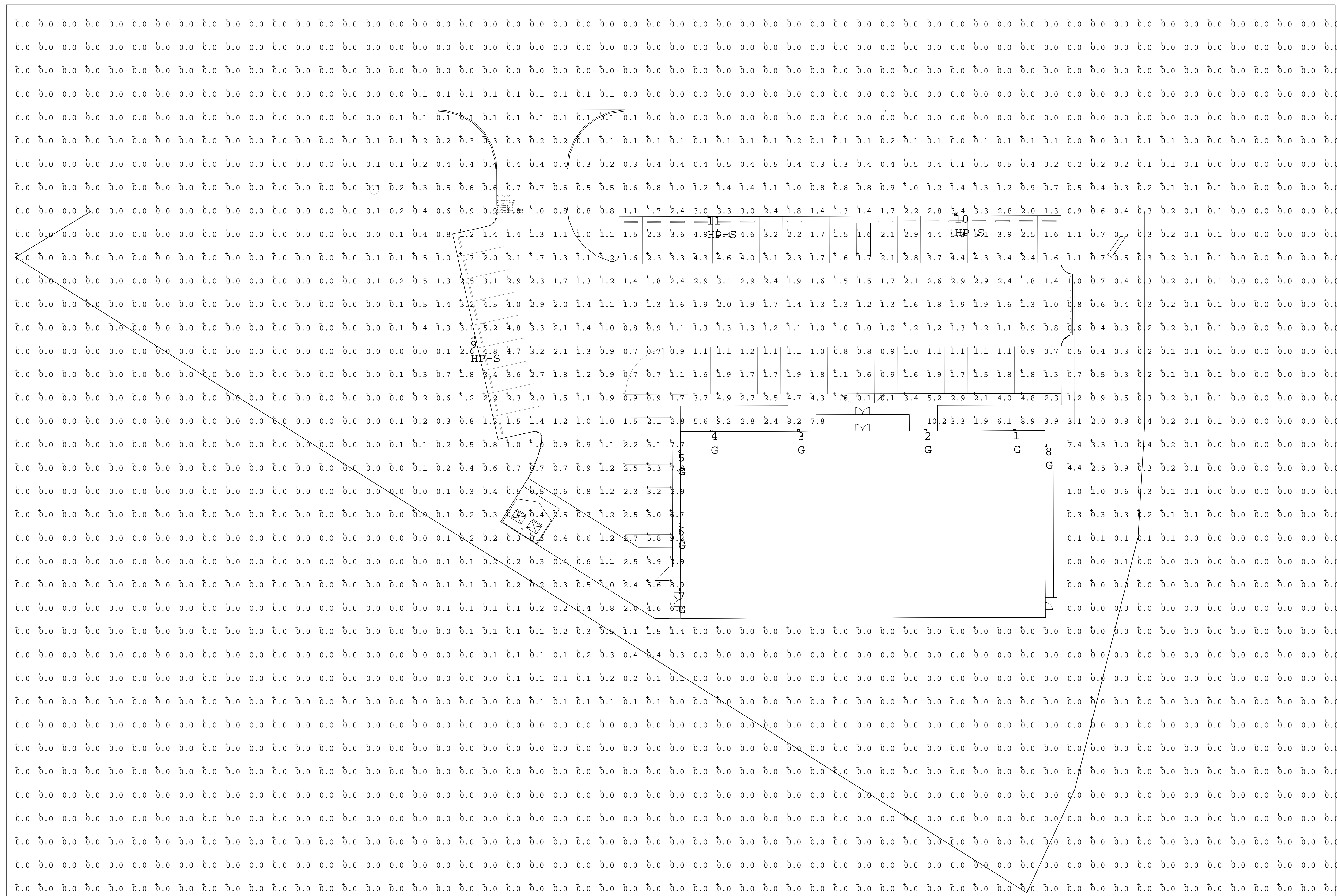


Plan Item Found				Item Description
Yes	No	N/A	Plan Sheet Number	
				Proposed location, mounting height, mounting angle, direction, and hours of illumination of each outdoor light fixture (new and existing), including distance from property lines
Additional Information or Documents				
				Additional Township permit requirements
				Other agency permit requirements
				Any other information required by applicable sections of the Zoning Ordinance

Comments

Reviewed by _____ Review Date _____





Luminaire Location Summary		
LumNo	Label	Z
1	G	12
2	G	12
3	G	12
4	G	12
5	G	12
6	G	12
7	G	12
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Luminaire Schedule								
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Parking Lot	Illuminance	Fc	2.08	9.2	0.1	20.80	92.00

**IX.A.7**

INDIVIDUAL CONSTRUCTION PERMIT
For Operations within State Highway Right-of-Way

Issued To:
RSBR Investments, LLC

1598 Imperial Center, Suite 2001
West Plains MO 65775

Contact:
Rusty Doss
417-256-8150(O)
rusty@overlandeng.com

Permit Number: 52042-099713-24-020524

Permit Type: Individual Application

Permit Fee: \$275.00

Effective Date: Feb 05, 2024 to Feb 05, 2025

Bond Numbers:

Liability Insurance Expiration Date: Jul 22, 2024

THIS PERMIT IS VALID ONLY FOR THE FOLLOWING PROPOSED OPERATIONS:

PURPOSE:

Relocation of existing entrance for Dollar General retail store access.

STATE ROUTE: US-41 **TOWNSHIP OF:** Chocolay **COUNTY:** Marquette County

NEAREST INTERSECTION:	SIDE OF ROAD:	DISTANCE TO NEAREST INTERSECTION:	(in feet)	DIRECTION TO NEAREST INTERSECTION:
Silver Creek Road	W	325.00		South

CONTROL SECTION:	MILE POINT FROM:	MILE POINT TO:	LOCATION:			
			LEFT	MEDIAN	RIGHT	TRANSVERSE
52042	0.510	0.510	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

REQUISITION NUMBER: **WORK ORDER NUMBER:** **MDOT JOB NUMBER:** **ORG JOB NUMBER:**

52042-099713-24-020524 Issued To:RSBR Investments, LLC

This permit is incomplete without "General Conditions and Supplemental Specifications"

I certify that I accept the following:

1. I am the legal owner of this property or facility, the owner's authorized representative, or have statutory authority to work within state highway Right-of-Way.
2. Commencement of work set forth in the permit application constitutes acceptance of the permit as issued.
3. Failure to object, ***within ten (10) days*** to the permit as issued constitutes acceptance of the permit as issued.
4. If this permit is accepted by either of the above methods, I will comply with the provisions of the permit.
5. I agree that Advance Notice for Permitted Activities for shall be submitted **5 days prior** to the commencement of the proposed work.

I agree that Advance Notice for Permitted Utility Tree Trimming and Tree Removal Activities shall be submitted **15 days prior** to the commencement of the proposed work for an annual permit.

CAUTION

**Work shall NOT begin until the Advance Notice has been approved.
Failure to submit the advance notice may result in a Stop Work Order.**

RSBR Investments, LLC

Benjamin Carrigan
MDOT

February 05, 2024
Approved Date

TSC Contact Info

Ishpeming TSC

(906) 485-4270

THE STANDARD ATTACHMENTS, ATTACHMENTS AND SPECIAL CONDITIONS MARKED BELOW ARE A PART OF THIS PERMIT.

STANDARD ATTACHMENTS:

- 1 Mobility Flowchart for Permit Activities (2204C)
- 2 Special Conditions For Underground Construction (2205C)
- 3 MDOT's Storm Drainage System Tap-Ins (3718)
- 4 ENVIRONMENTAL REQUIREMENTS FORACTIVITIES WITHIN MDOT RIGHT-OF-WAY (2486)
- 5 Bat Nonfederal External Map 6-13-23 (Bat Advisory)
- 6 Historical and Archaeological Discoveries During Construction Operations Updated 03/22 (Const. Advisory H
- 7 Special Conditions For Tree Removal, Tree Trimming & Herbicide Application (2240)
- 8 General Conditions (General Conditions)
- 9 MDOT UNDERGROUND INFRASTRUCTURE STAKING REQUEST FORM (12-18) (5300)

52042-099713-24-020524 Issued To:RSBR Investments, LLC**ADDITIONAL ATTACHMENTS:**

- 1 Harvey MI_012924.pdf
- 2 Additional_Work Zone Traffic Control.pdf
- 3 Geotech Report_Harvey MI.pdf
- 4 Visibility,Electronic Insurance, and Mobility.pdf
- 5 Soil & Sed Control (R-96-E).pdf
- 6 Permit #99713 Special Conditions.pdf
- 7 Permit #99713 ROW Map.pdf
- 8 Storm Water Mgmt Report.pdf
- 9 2484_signed_012924.pdf
- 10 HydroCAD Report_012924.pdf

AMENDMENT ATTACHMENTS:**SPECIAL CONDITIONS:**

- 1 The Department of Transportation does not, by issuance of this permit, assume any liability claims or maintenance costs resulting from the activity or facility placed by this permit. The Department reserves the right to require removal of all or any portion of this facility as needed for highway maintenance or construction purposes without replacement or reimbursement of any costs incurred by the permitted or other party. The permitted will defend, indemnify and hold harmless the Department for any claims whatsoever resulting from the construction or the removal of the authorized by this permit.
- 2 All disturbed areas within the right of way shall be top-soiled, seeded and mulched to match existing areas per current MDOT standards and specifications.
- 3 Attention is directed to the referenced "attachments" that specify several items of importance associated with this MDOT permit.
- 4 All work within MDOT ROW shall meet all requirements of the current Department Standard Specifications for Construction & the Supplemental Specifications incorporated as a part of this permit in addition to complying with all respective industry standards established for utility installation.
- 5 MDOT is not part of the Miss Dig system. Fill out the attached 5300 form to arrange for the staking of MDOT underground facilities related to ITS, Traffic Signals, Roadway Lighting and other Electrical. Email the completed form and a set of plans at least 5 work days prior to the start date of digging work to MDOT-ITS-Staking-Superior@michigan.gov

Search

Enter keywords

Go

Feituo Products

Emergency Light >

Exit Sign & Combo >

- SALIDA exit signs

- Running man exit sign

- Exit Light

- Emergency exit sign combo

Portable Lamp >

Battery Pack & Ballast >

Table Lamp >

Parts & Accessories >



Model: JLECB2RWRC

Features:

IX.A.8

New slim EXIT/Emergency COMBO

- Injection-molded thermoplastic ABS housing, UL 94V-0 flame rating
- Innovative, easy installation in minutes
- Letters 6" height with 3/4" stroke. Optional RED letters
- SALIDA faceplate available
- Single or double face(Universal)
- Universal J-box mounting pattern
- 120V/277VAC dual voltage operation
- 2X1W SMT LED lamp heads for emergency mode
- Built-in 3.6V2000mAh Nickel cadmium battery for minimum 90 minutes emergency operation.(Remote capability up to 2W)
- Maximum 24 hours for full recharge time
- Test switch and charge indicator
- UL and cULus listed
- 0° to 40°C indoor damp location listed
- The emergency exit sign combo models are the perfect solution for applications that require both an exit sign and an emergency light.
- This emergency exit light batteries can be paired with remote heads to better spread out the light without needing as many fully integrated fixtures.

[Send Inquiry >](#)

INQUIRY FORM

We will reply in 24 hours!

Interesting Products/Service

Your Name

Your Email

Your Message

[Submit >](#)

Description	Comments				
Product Name:	New slim EXIT/Emergency COMBO				
Model No.:	JLECB2RWRC				
Main Specification:	2X1W SMT LED, 90mins, Ni-cad 3.6V 2000mAh				
Product Size:					
MOQ:	1000PCS				
Lead Time:	35 days				
Sample Delivery Time:	3~10 days				
Remarks: Sign SALIDA available; cULus Approved.		Packing Information			
		Packing:	White box		
		Carton:	L(cm)	W(cm)	H(cm)
		Carton Size:	40	33	23
		Carton CBM:	0.03M3		
Q'TY/INNER BOX:	PCS				
Q'TY/CTN:	6PCS				
Gross Weight:	8.6KGS				
Net Weight:	7.6KGS				
Container Loading	1*20'	1*40'	1*40'HQ		
Q'TY(PCS):	5500	11500	13400		

Search

Enter keywords

Go

Feituo Products

Emergency Light >

light

|- Rechargeable LED emergency

light
|- Emergency downlight

|- Twin spot emergency light

|- Remote head emergency light

|- Bulkhead emergency light

|- Dual head emergency light

Exit Sign & Combo >

Portable Lamp >

Battery Pack & Ballast >

Table Lamp >

Parts & Accessories >

INQUIRY FORM

We will reply in 24 hours!

Interesting Products/Service



Model: JLRHWP-1 **IX.A.9**

Features:

LED Indoor/outdoor single remote lamp head

*Injection-molded thermoplastic ABS housing, UL 94V-0 flame rating

*3.6V/9.6, 1.2W ultra bright white LED lamps available

*Five years warranty for the electrical parts and housing

*This Outdoor Remote Head is a stand-alone lamp with no internal power supply, battery powered led emergency lights provide an efficient means of providing additional lighting.

Send Inquiry >

Description

Comments

Product Name	LED Indoor/outdoor single remote lamp head	Packing Information			
Model No.	LE-JLRHWP-1	Packing:	White box		
Main Specification	1.2W 3.6/9.6V	Carton:	L(cm)	W(cm)	
Product Size		Carton Size:	37	26	
MOQ	1000PCS	Carton CBM:	0.035M3		
Lead Time	35 days	Q'TY/INNER BOX:	PCS		
Sample Delivery Time	3~10 days	Q'TY/CTN:	12PCS		
Remarks:		Gross Weight:	4KGS		
		Net Weight:	3KGS		
		Container Loading Q'TY(PCS):	1*20'	1*40'	1*40' HQ
			9429	19714	22971

QubePAK® Regal 3

Architectural Outdoor LED Wall Pack



Key Features

- Modern LED replacement for traditional fluorescent or HID fixtures.
- Elegant yet rugged construction effortlessly integrates with existing architecture.
- Adjustable, full-cutoff design with a tilt mechanism that allows for precise aiming.
- Night sky friendly: eliminates light pollution and minimizes glare.

Electrical

- 120-277VAC 0-10V dimming standard. ²
- System power factor >90% and THD <20%.
- Operating temperature: -40°C to 40°C (-40°F to 104°F)

Mounting

- Luminaire is ready to be surface mounted.

Construction

- Robust die-cast aluminum housing protects integral components from harsh environments and optimizes thermal management.
- Housing is protected by a corrosion resistant bronze powder coat finish.
- IP65 rated enclosure prevents intrusion from environmental elements that could degrade performance.

Optics

- Type II or Type IV optical distribution.
- Industry-leading LEDs with 3000K, 4000K, and 5000K CCT (minimum 70 CRI).
- Lumen Maintenance: 100,000 hours (L70) ¹

Warranty

- Backed by US LED's industry-leading Ten-Year Warranty.

Ordering Information

Series	Input Voltage	Power	Optics	CCT	Finish	Accessories
WPR3						
UNVL	120-277V	37 37W ²	2 Type 2	30 3000K	BZ Bronze	PC Photocell
		58 58W	4 Type 4	40 4000K		
		70 70W		50 5000K		
		100 100W				

Project	Date
Catalog Number	Type

Product Performance Summary

Lumen Output	Up to 14,007 lumens
Efficacy	Up to 142 LPW
CRI	≥ 70 CRI
Available CCT	3000K, 4000K & 5000K
Warranty	Ten-Year Warranty

Product Overview

The Qube®PAK Regal 3 LED wall pack is designed to easily integrate into any existing architecture and provide superior illumination. With two optical distributions, the QubePAK Regal 3 provides a complete site-wide solution for commercial exterior applications. Its elegant aesthetics combined with first-class performance make it a popular choice with specifiers and lighting designers.

Product Applications

- Perimeter Areas
- Building Exteriors
- Security Lighting
- Wall Washing
- Parking Lots
- Educational Facilities
- Business Campuses
- Industrial Facilities
- Mall/Retail Exteriors
- General Lighting

Product Certifications/Approvals

- UL Listed
- Complies with UL1598 and CSA C22.2
- DLC Listed
- Suitable for Wet Locations
- IP65 Rated Enclosure
- RoHS Compliant



Example: WPR3-UNVL-37W-2-50-BZ

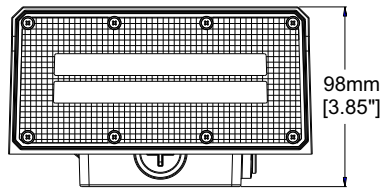
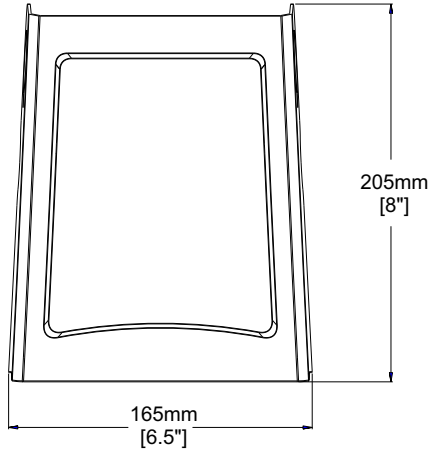
1. US LED product 'Lifetimes' refer only to the LED light engine, not the power source, and are based on the Illuminating Engineering Society's TM21 Projected Lumen Maintenance methodology at a 25° C / 77° F ambient temperature. The lifetimes are solely meant to be a guide for expected LED degradation and not a warranty or predictive of their actual life, which can be affected by ambient temperatures and other factors.
2. 37W model is non-dimmable.

QubePAK Regal3

Architectural Outdoor LED Wall Pack

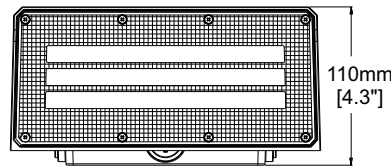
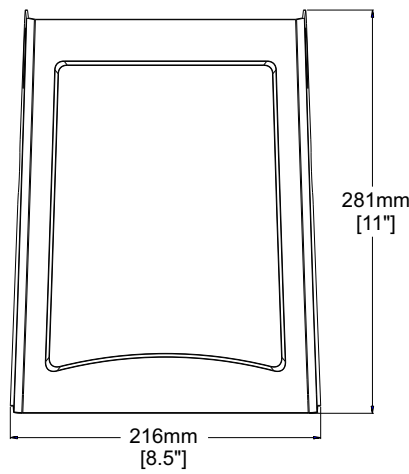
Dimensions

37W Model



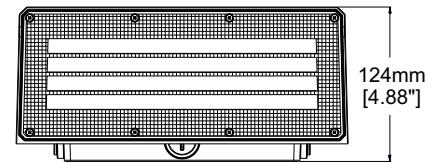
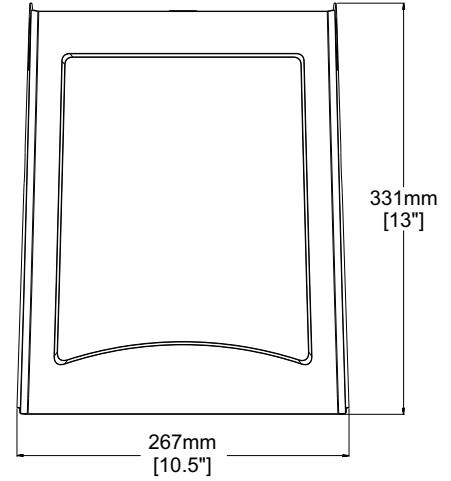
Model	Net Weight
37W	2.87 lbs. (1.3kg)

58W Model



Model	Net Weight
58W	4.63 lbs. (2.1kg)

70-100W Models



Model	Net Weight
70-100W	5.95 lbs. (2.7kg)

Performance Data

Model	Available CCT	System Level Power	Delivered Lumens	Efficacy	L70 Calculate Life
WPR3-UNVL-37-X-XX-BZ	3000K/4000K/5000K	37.1W	4,701	126 LPW	100,000 Hours
WPR3-UNVL-58-X-XX-BZ	3000K/4000K/5000K	58.4W	7,695	132 LPW	100,000 Hours
WPR3-UNVL-70-X-XX-BZ	3000K/4000K/5000K	71.8W	10,201	142 LPW	100,000 Hours
WPR3-UNVL-100-X-XX-BZ	3000K/4000K/5000K	104.5W	14,007	134 LPW	100,000 Hours

IX.A.11

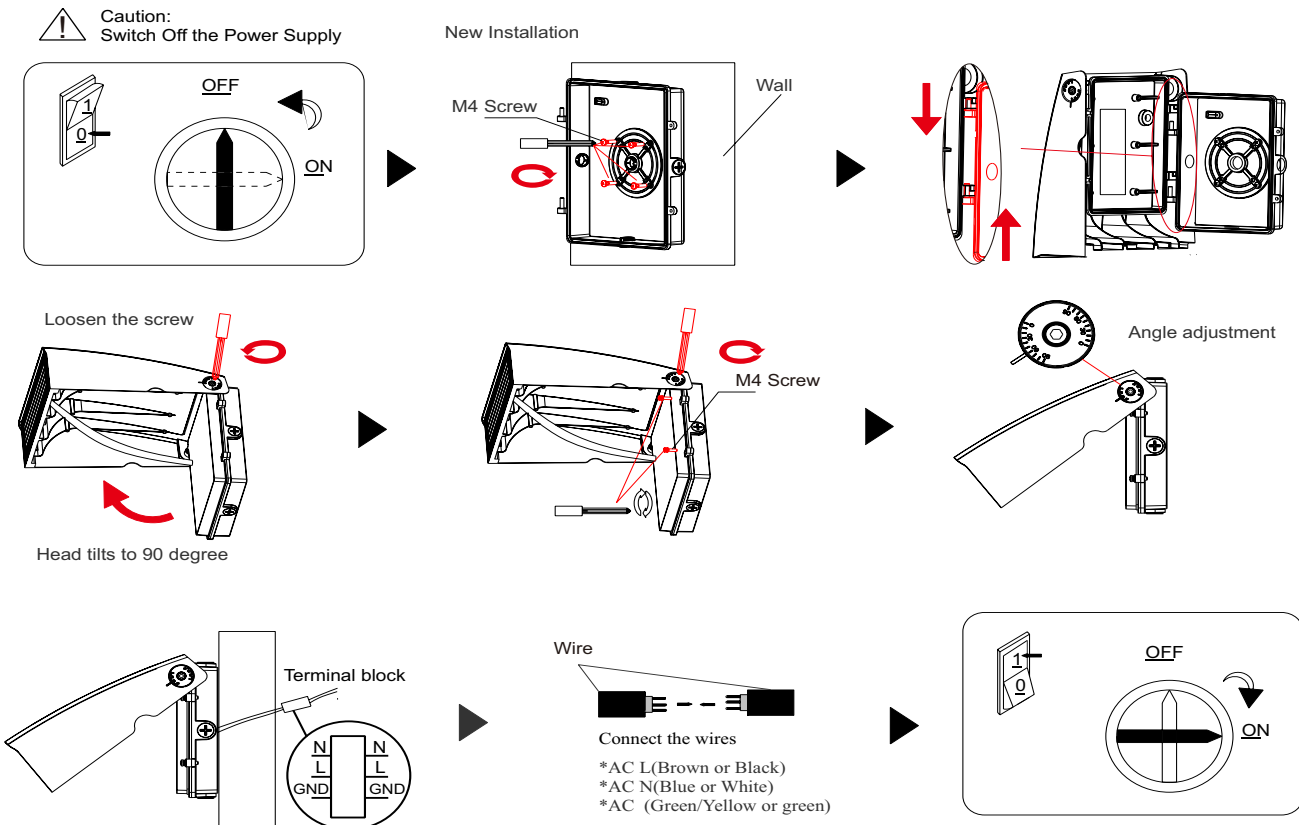
WARNING



- The installation must only be performed by a licensed electrician.
- To prevent death, injury or damage to property, this product must be installed in accordance to National Electric Code (NFPA70 in the US or Canadian Electrical Code (CSA22.1) in Canada.
- Disconnect power before installing the product or servicing it.
- Wait until fixture has cooled down before installing or servicing the fixture.
- Make sure that the fixture is grounded.
- Modification to the WPR3 fixture voids its warranty and UL Listing.
- Caution - Risk of fire.
- Min. 75°C supply conductor.
- Suitable for wet locations.
- Suitable for operation in ambient not exceeding 50°C.

INSTALLATION INSTRUCTIONS

1. Verify power is disabled.
2. Remove fixture from carton.
3. Loosen the two captive screws opposite the hinge side.
4. With hing to the left, open cover approximately 120 degrees and slide cover away, to remove cover from the hinge pins.
5. Feed wires from line power through applicable conduit holes and mount fixture base to wall according to local codes using appropriate mounting hardware. Junction box, conduit, conduit fittings and mounting hardware are not supplied. Use fittings suitable for wet location (Type 4 or 4x). Use UL Listed fittings.
6. Slide cover onto base by aligning hinges.
7. Mate LED module wire connections.
8. Reconnect ground wire.
9. Close cover, use caution not to pinch wires, and secure with two screws opposite the hinge.
10. Adjust angle as appropriate.
11. Energize fixture.



Specifications and dimensions subject to change without notice.

107.09 Archeological and Historical Findings

IX.A.12

Email this Page (mailto:Change?body=http://mdotwiki.state.mi.us/construction/index.php/107.09_Archeological_and_Historical_Findings)

ARCHEOLOGICAL AND HISTORICAL FINDINGS

MDOT's archaeologist, Environmental Services Section, is solely responsible for administration of MDOT Trunkline cultural resources preservation requirements, in accordance with applicable federal, state and local laws, regulations and rules, including the National Environmental Protection Act (NEPA) and the National Historic Preservation Act (NHPA).

In accordance with subsection 107.09 of the Standard Specifications for Construction the following procedure must take place if items of potentially historical significance (such as bones, artifacts or buried foundations) are encountered during construction. **All project personnel shall treat any discovery as confidential. Photographs of finds may not be taken.**

The laws include, but are not limited to, the following:

- Contacting the appropriate law enforcement/medical agency in the case of human remains discovery in compliance with Section 2853 of the Public Health Code, MCL 333.2853 ([http://www.legislature.mi.gov/\(S\(lpeygpssc0qtdad5texio4mb0\)\)/mileg.aspx?page=GetObject&objectname=mcl-333-2853](http://www.legislature.mi.gov/(S(lpeygpssc0qtdad5texio4mb0))/mileg.aspx?page=GetObject&objectname=mcl-333-2853)); MSA 14.15 (2853); 1982 AACRS, R 325.8051.
- No further construction in the area of discovery will proceed until the requirements of 36 CFR 800.13 (<https://www.ecfr.gov/current/title-36/chapter-VIII/part-800/subpart-B/section-800.13>) have been satisfied.
- Information about historic properties, potential historic properties, or properties considered historic are or may be subject to the provisions of Section 304 of The National Historic Preservation Act (NHPA) (<https://www.gsa.gov/cdnstatic/NHPA.pdf>) and the Michigan Compiled Laws § 399.4a; § 15.231(l)(p) (Freedom of Information Act) ([http://www.legislature.mi.gov/\(S\(u2bbr3jgzq3h3s3sir3kf3ci\)\)/mileg.aspx?page=GetObject&objectname=mcl-15-231](http://www.legislature.mi.gov/(S(u2bbr3jgzq3h3s3sir3kf3ci))/mileg.aspx?page=GetObject&objectname=mcl-15-231)). These statutes allow MDOT to withhold from disclosure to the public. Information about the location, character, or ownership of a historic resource if MDOT determines that disclosure may:
 - 1) cause a significant invasion of privacy;
 - 2) risk harm to the historic resource; or
 - 3) impede the use of a traditional religious site by practitioners.
- Michigan law states, any person who willfully digs up, disinters, or moves human remains from their place of burial, or who aids in such activities without being lawfully authorized to do so can be found guilty of a felony punishable by up to 10 years in prison and a fine of up to \$5000.

Engineer will:

- Immediately direct the Contractor to cease operations and preserve the location/s of the item discovery (per specification)
- Immediately contact MDOT's archeologist (https://www.michigan.gov/mdot/0,4616,7-151-9623_11154-22167--,00.html) for consultation.
- Immediately contact local law enforcement if discovery appears to be human remains
- Provide plan of action to the Contractor, in consultation with MDOT's Archeologist.
- Order Contractor to resume operations in the affected work area only after approval from the MDOT Archeologist.
- Review any Contractor requests for extension of time and/or adjustments.

MDOT's Archeologist will:

- Provide the Engineer direction as deemed prudent and necessary, including how to maintain compliance with applicable laws, regulations, and rules
- Immediately consultant with state archaeologist, SHPO, Tribes, and others, if necessary, to determine an appropriate course of action.
- Arrange a site visit with appropriate parties, if needed, to make determination.
- If necessary, coordinate cultural resource work which may include obtaining disinterment/reinterment court orders/permits for human remains or any other necessary clearances.
- Provide Engineer with appropriate course of action if suspension of work in discovery area is necessary. Assist in designing a plan for avoiding, minimizing, or mitigating adverse effects to the discovery area.
- Provide Engineer with approval to resume operations.

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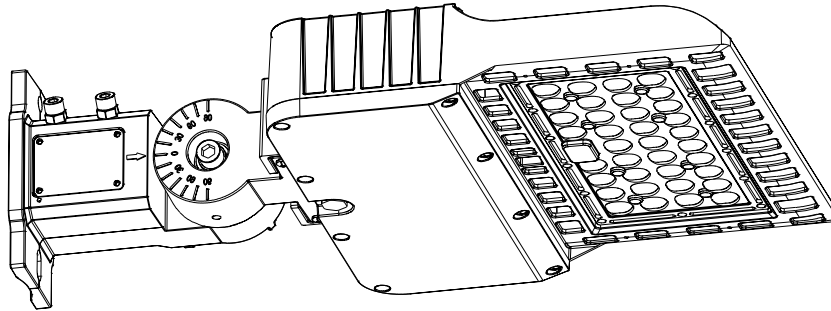
LAP Project Considerations

LAP Projects are subject to the same guidance (https://mdotwiki.state.mi.us/construction/index.php/107.09_Archeological_and_Historical_Findings) except the following procedures must be followed: The Engineer must immediately notify the MRC/DR and LRC ([https://mdotwiki.state.mi.us/construction/index.php/Local_Agency_Program_\(LAP\)#Definitions](https://mdotwiki.state.mi.us/construction/index.php/Local_Agency_Program_(LAP)#Definitions)). In lieu of contacting the MDOT Archeologist, the Engineer is to contact the State Historical Preservation Office (SHPO) Archeologist (<https://www.miplace.org/historic-preservation/about-shpo/contact-shpo/>) for consultation and direction. The DR may consult with the MDOT Archeologist.

Retrieved from "https://mdotwiki.state.mi.us/construction/index.php?title=107.09_Archeological_and_Historical_Findings&oldid=6478"

This page was last edited on 4 January 2022, at 10:25.

IX.A.13



IMPORTANT SAFETY INSTRUCTIONS

- To reduce the risk of death, personal injury or property damage from fire, electric shock, falling parts, cuts/abrasions, and other hazards please read all warnings and instructions included with and on the fixture box and all fixture labels.
- Before installing, servicing, or performing routine maintenance up on this equipment, follow these general precautions.
- Installation and service of luminaires should be performed by a qualified licensed electrician.
- Maintenance of the luminaires should be performed by person(s) familiar with the luminaires' construction and operation and any hazards involved. Regular fixture maintenance programs are recommended.
- It will occasionally be necessary to clean the outside of the refractor/lens. Frequency of cleaning will depend on ambient dirt level and minimum light output which is acceptable to user. Refractor/lens should be washed in a solution of warm water and any mild, non-abrasive household detergent, rinsed with clean water and wiped dry.
- Should optical assembly become dirty on the inside, wipe refractor/lens and clean in above manner, replacing damaged gaskets as necessary.
- DO NOT INSTALL DAMAGED PRODUCT! This luminaire has been properly packed so that no parts should have been damaged during transit. Inspect to confirm. Any part damaged or broken during or after assembly should be replaced.
- These instructions do not purport to cover all details or variations in equipment nor to provide every possible contingency to meet in connection with installation, operation, or maintenance.



WARNING RISK OF INJURY

- Wear gloves and safety glasses at all times when removing luminaire from carton, installing, servicing or performing maintenance.
- Avoid direct eye exposure to the light source while it is on.



WARNING RISK OF ELECTRIC SHOCK

- Disconnect or turn off power before installation or servicing.
- Verify that supply voltage is correct by comparing it with the luminaire label information.
- Make all electrical and grounded connections in accordance with the National Electrical Code (NEC) and any applicable local code requirements.
- All wiring connections should be capped with UL approved recognized wire connectors.



WARNING RISK OF BURN

- Allow lamp/fixture to cool before handling.
- Do not touch enclosure or light source.
- Do not exceed maximum wattage marked on luminaire label.
- Follow all manufacturer's warnings, recommendations and restrictions for: driver type, burning position, mounting locations/methods, replacement and recycling.

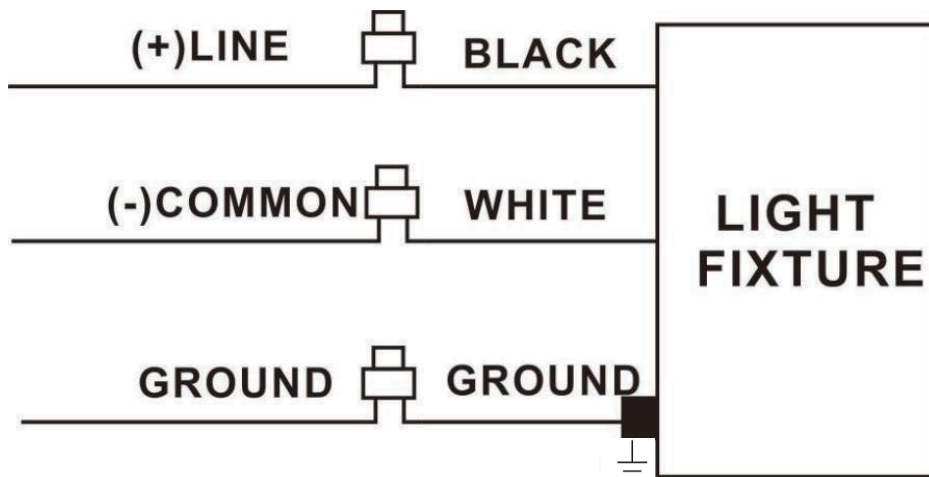
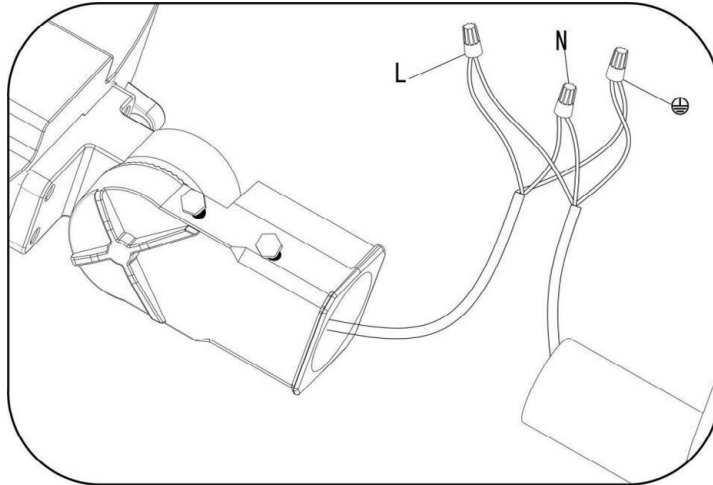


WARNING RISK OF FIRE

- Keep combustible and other materials that can burn, away from lamp/lens.
- Do not operate in close proximity to persons, combustible materials or substances affected by heat or drying.

Specifications and dimensions subject to change without notice.

ON-OFF WIRING



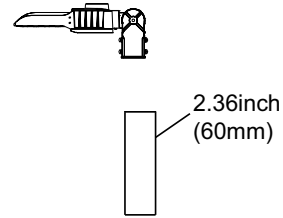
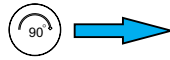
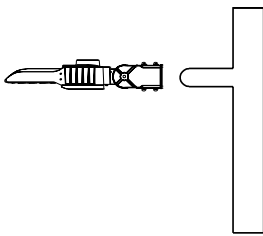
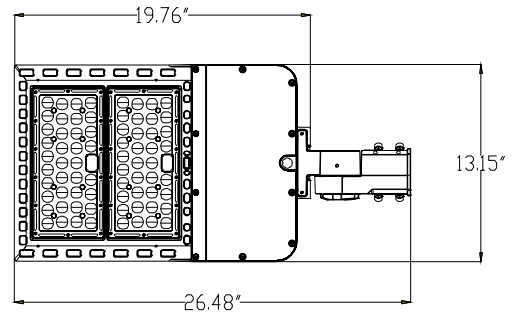
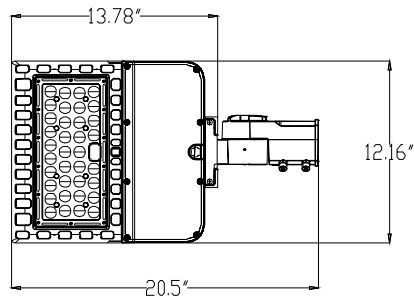
Make the wire connections outside the mounting arm. Refer to the wire diagram for power connections.

Step1: Connect the black fixture lead to the (+)LINE supply lead.

Step2: Connect the white fixture lead to the (-)COMMON supply lead.

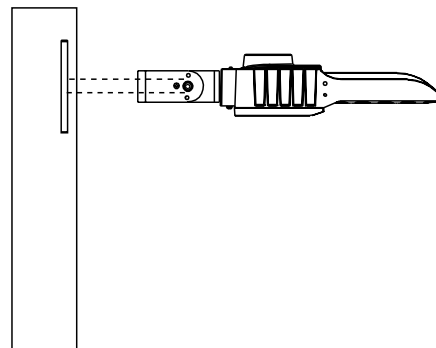
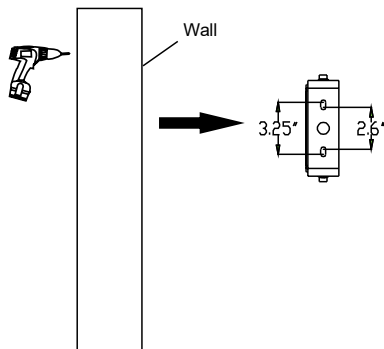
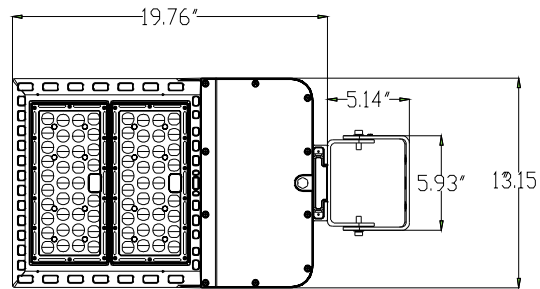
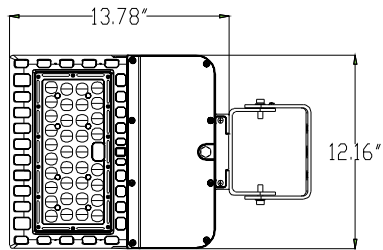
Step3: Connect the GROUND wire from fixture to supply lead.

SLI (Slip Fitter):



- Step 1: Install the fixture with SLI to the tenon which is on the pole.
- Step 2: Then tighten the screws.

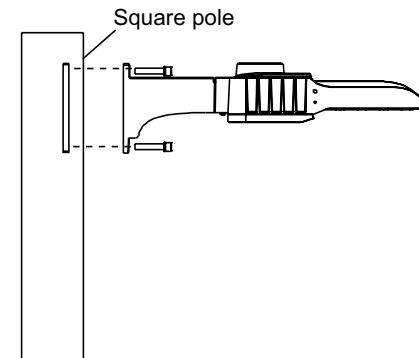
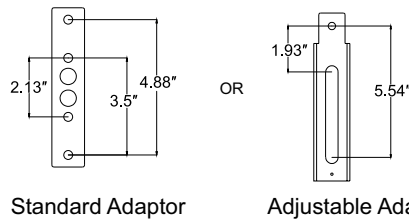
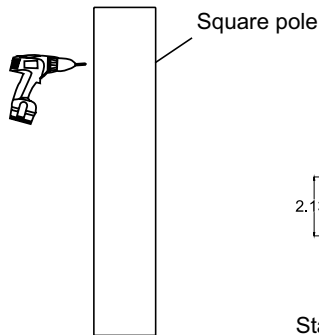
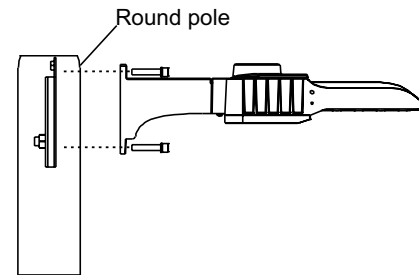
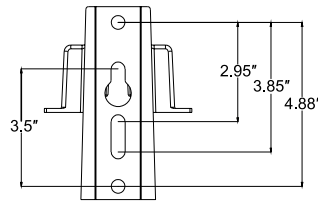
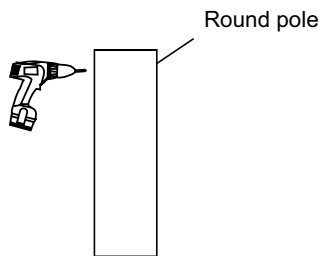
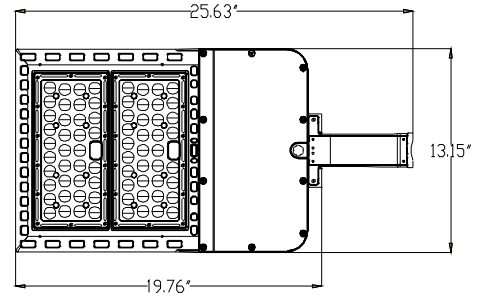
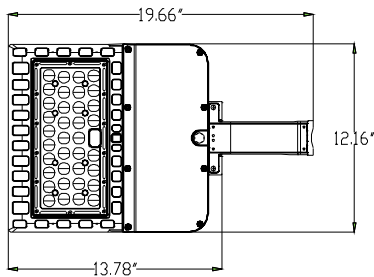
TRU(Trunnion):



- Step 1: Drilled on the wall or pole according to the measurement of hole on the bracket.
- Step 2: Put the fixture with TRU on the wall and tighten the screws.

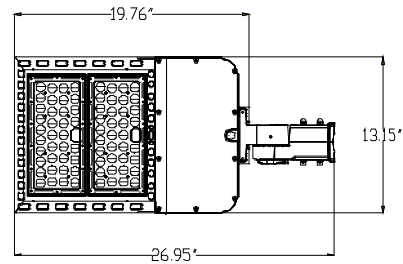
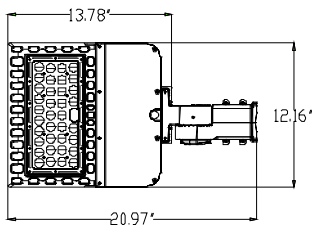
Specifications and dimensions subject to change without notice.

DAM-A/DAM-S (For 4" diameter round pole & square pole):

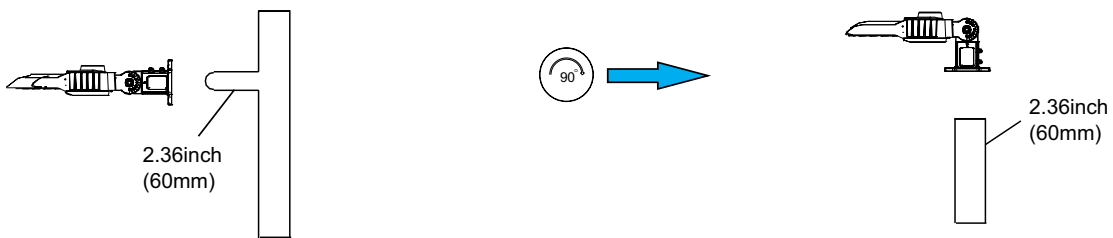


- Step 1: Drilled on the pole according to the measurement of hole on the bracket.
- Step 2: Put the adaptor (standard adaptor or adjustable adaptor) into the pole, then put the fixture with DAM on the pole and tighten the screws.

SH(All in one Mount):



SHA(For 60mm round tenon):



- Step 1: Put the fixture with SHA on the bar which is on the pole.
- Step 2: Then tighten the screws.

SHB(For 40mm round tenon):



- Step 1: Put the fixture with SHB on the bar which is on the pole.
- Step 2: Then tighten the screws.

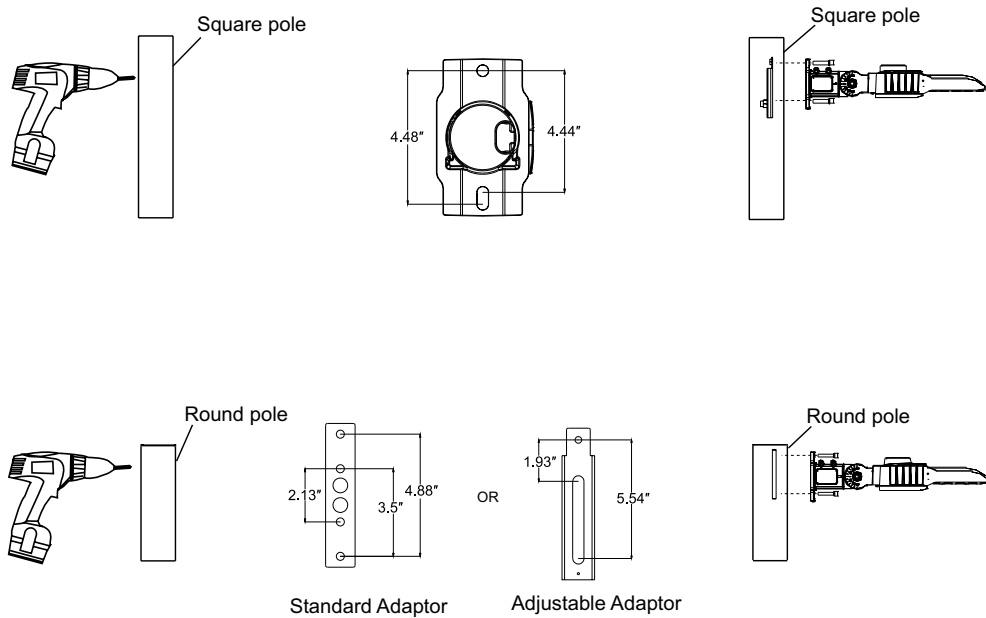
SHC(For 50mm round tenon):



- Step 1: Put the fixture with SHC on the bar which is on the pole.
- Step 2: The tighten the screws.

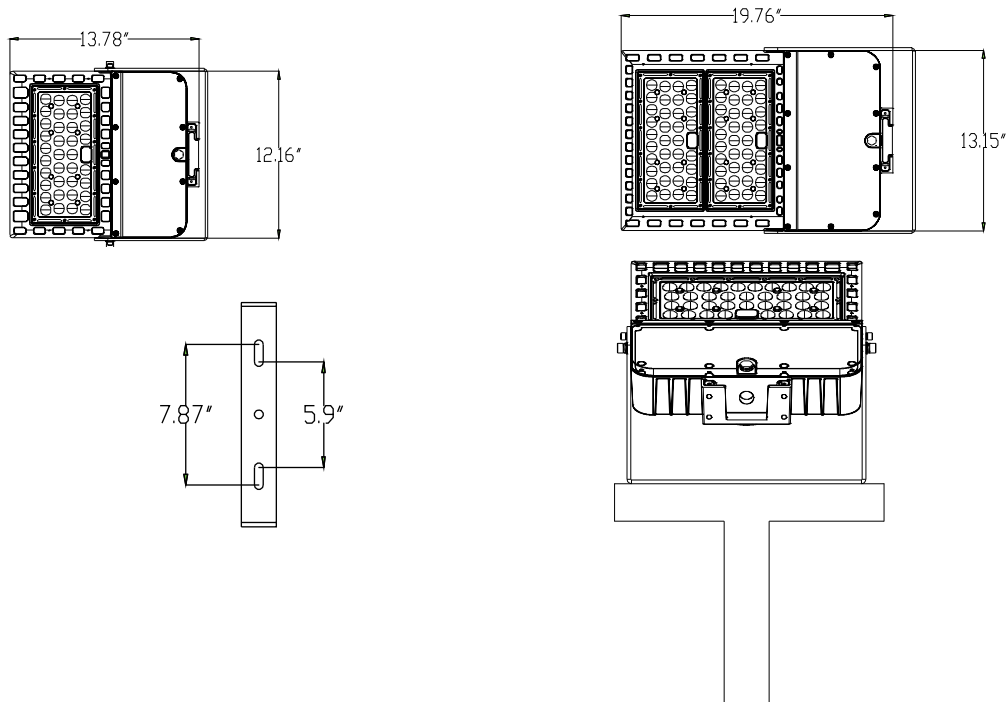
Specifications and dimensions subject to change without notice.

SHD&SHE(For 4" diameter round pole&square pole):



Step 1: Drilled on the pole according to the measurement of hole on the bracket.
Step 2: Put the fixture with SHD or SHE on the Pole and tighten the screws.

U Bracket:



Step 1: Drilled on the pole according to the measurement of hole on the bracket.
Step 2: Put the fixture with U Bracket on the Pole and tighten the screws.

Specifications and dimensions subject to change without notice.



Always the Right Choice!

IX.A.14

DoradoXLE Plus

Outdoor LED Area/Site & Flood



Key Features

- Outdoor applications benefit from superior photometric performance and uniformity.
- Low-profile design provides a contemporary appearance and is night sky friendly.
- Precision molded optics are sealed to protect against environmental contaminants.
- Easy installation by one person in the field.
- Photocell and motion sensor accessories are available to be installed.

Electrical

- 120-277V or 347-480V available.
- 0-10V dimming standard.
- 10KV surge protection standard.
- System power factor >90% and THD <20%.
- Operating temperature: -30°C to 40°C (-30°F to 104°F).

Mounting

- Slip fitter, pole mount, or trunnion mounting options available.

Construction

- Robust die-cast aluminum housing protects integral components from harsh environments and optimizes thermal management.
- Housing is protected by a corrosion resistant powder coat finish.
- Standard dark bronze finish. Custom colors available upon request. ²
- IP66 rated enclosure prevents environmental elements from degrading performance.

Optics

- IP67 rated LED light engine prevents dust or moisture from degrading performance.
- Precision molded optics available in IES Type II, Type III, Type IV, or Type V distributions. NEMA 4 and NEMA 6 also available.
- Industry-leading LEDs with 3000K, 4000K, and 5000K CCT (minimum 70 CRI).
- Lumen Maintenance: >200,000 hours (L70) ¹

Warranty

- Backed by US LED's industry-leading Ten-Year Warranty.

Project	Date
---------	------

Catalog Number	Type
----------------	------

Product Performance Summary

Lumen Output	Up to 20,790 lumens
Efficacy	Up to 150 LPW
CRI	≥ 70 CRI
Available CCT	3000K, 4000K & 5000K
Warranty	Ten-Year Warranty

Product Overview

The DoradoXLE Plus delivers an outstanding end-user experience by effortlessly combining outstanding photometric performance and long-lasting quality. It's designed to provide a superior one-to-one solution for replacing existing legacy lighting technology. With multiple lumen packages and mounting options available, the DoradoXLE Plus can be a complete lighting solution for any outdoor application.

Product Applications

- Auto Dealerships
- Parking Lots
- Educational Facilities
- Business Campuses
- Recreational Areas
- Mall/Retail Areas
- Commercial Exteriors
- Industrial Facilities
- Security Areas
- Site Pathway Areas

Product Certifications/Approvals

- ETL Listed for US & Canada.
- Complies with UL1598 and CSA C22.2.
- DLC Premium Listed.
- Suitable for Wet Locations.
- IP66 Rated Enclosure.
- RoHS Compliant.



Ordering Information

Series	Model	CCT	Input Voltage	Finish	Optics	Photocell	Product Code					
100	100W	30	3000K	UNVL	120-277V	1	Bronze	2	Type 2	N	No Photocell	Z5
120	120W	40	4000K	UNVH	347-480V	C	Custom ²	3	Type 3	D1	Photocell	
150	150W	50	5000K					4	Type 4	D2	Motion Sensor	
								5	Type 5			
								N4	NEMA Type 4			
								N6	NEMA Type 6			

Example: QDXLE2-150-50-UNVL-1-3-N-Z5

Mounting		Accessories	
Z1	Adjustable For Square Pole and Round Pole - 4" Nominal	BLS	Back Light Shield
Z2	Slip Fitter	HSS	House Side Shield
Z3	Trunnion		
Z4	For 2 3/8" Round Tenon		

1. US LED product 'Lifetimes' refer only to the LED light engine, not the power source, and are based on the Illuminating Engineering Society's TM21 Reported Lumen Maintenance methodology at a 25° C / 77° F ambient temperature. The lifetimes are solely meant to be a guide for expected LED degradation and not a warranty or predictive of their actual life, which can be affected by ambient temperatures and other factors.

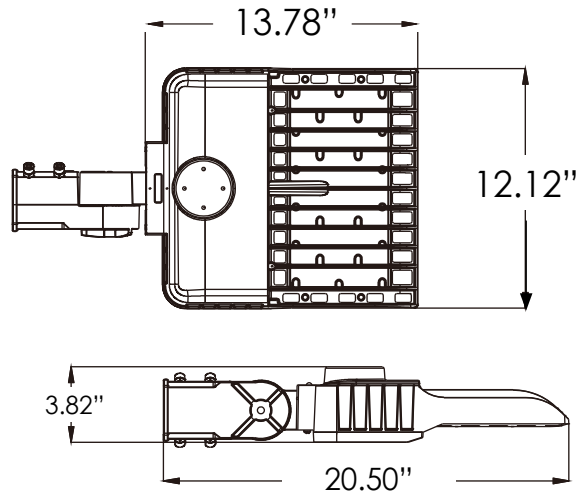
2. Custom colors available upon request. Please consult and specify color finish with the factory.

DoradoXLE Plus

Outdoor LED Area/Site Luminaire

Dimensions

Models 100W / 120W / 150W



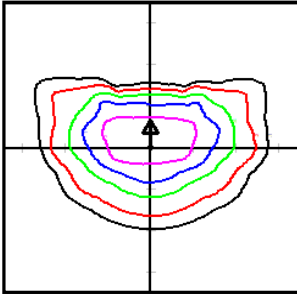
Net Weight	EPA Rating
10.46 lbs.	0.36

EPA (FT. ²)	Configuration	Weight (lbs.)
0.36	1	11.46
0.72	2@180	22.92
0.62	2@90	22.92
0.98	3@90	34.38
0.87	3@120	34.38
0.98	4@90	45.84

Optical Distributions

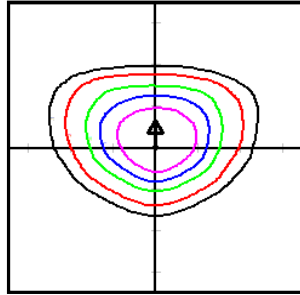
All photometric testing performed to IESNA LM-79 standards by a NVLAP® accredited testing facility. ISO footcandle plots below demonstrate examples of the general distribution patterns based on a 25' mounting height. Please visit www.usled.com for complete specifications, IES files, and detailed photometric data.

Type II Distribution



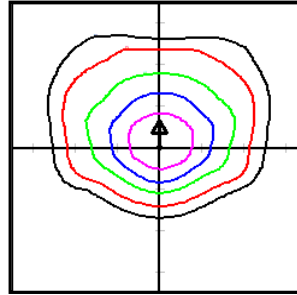
Type II distribution forms a wide, lateral asymmetric pattern typically used for applications needing narrow lighting. Examples might include car lot front rows, walkways, side streets, jogging paths, and entrances from the roadway.

Type III Distribution



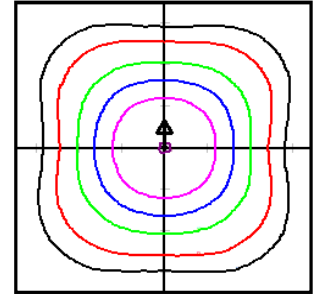
Type III distribution projects light evenly and equally forward on both sides in an "asymmetric" pattern. Commonly used in parking lots, wider roadways, and other applications where a larger area of lighting is required.

Type IV Distribution



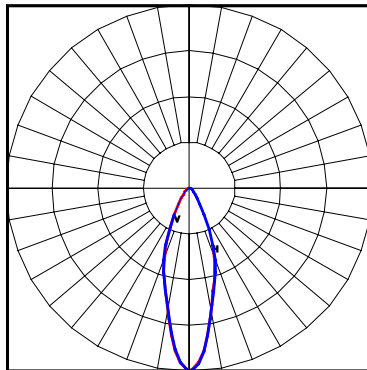
Type IV distribution is intended to maximize the amount of light going forward in a longer "semicircular" pattern. This optic is used around the perimeters of parking lots where there is no desire for wasted light behind the pole. It's also used for sport applications and parking areas on the sides of buildings.

Type V Distribution



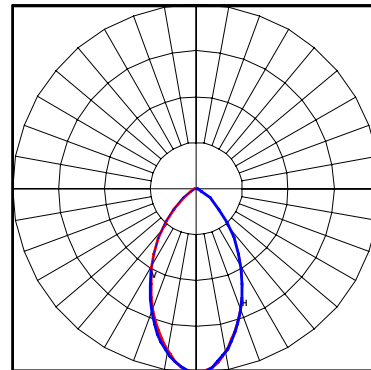
Type V distribution forms a symmetrical round or square pattern that allows the light to have the same intensity at all angles. Primarily used in parking lot interiors, crossroads, and roadway centers. It is also meant for large commercial parking lots where evenly distributed lighting is necessary.

NEMA Type 4H x 4V



NEMA Type 4 beam spread is ideal for landscape, facade, and accent lighting with farther setbacks. This narrow/medium flood distribution provides a tight and symmetrical beam.

NEMA Type 6H x 6V



NEMA Type 6 beam spread provides a wider and uniform light pattern. Ideal for applications that require a shorter setback, this beam spread can be used for signage, larger facades, and broader landscape. It can also be used for pole mounted applications.

DoradoXLE Plus

Outdoor LED Area/Site Luminaire



Performance Data

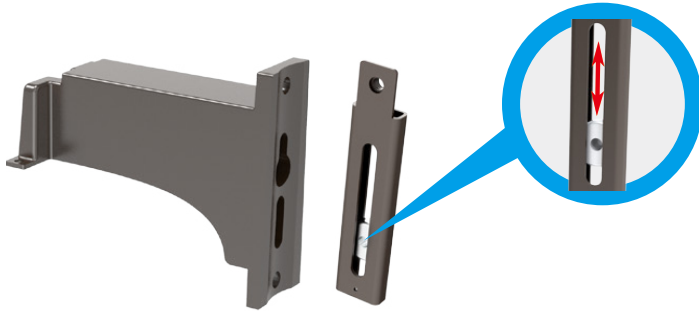
Model	CCT	System Level Power	Delivered Lumens	Efficacy	L70 Calculate Life
100W	3000K	105.2W	13,275	126 LPW	>200,000 Hours
	4000K	105.2W	14,070	134 LPW	>200,000 Hours
	5000K	105.2W	14,860	141 LPW	>200,000 Hours
120W	3000K	120.2W	14,590	121 LPW	>200,000 Hours
	4000K	120.2W	15,470	129 LPW	>200,000 Hours
	5000K	120.2W	16,340	136 LPW	>200,000 Hours
150W	3000K	148.6W	18,570	125 LPW	>200,000 Hours
	4000K	148.6W	19,680	132 LPW	>200,000 Hours
	5000K	148.6W	20,790	140 LPW	>200,000 Hours

Performance Data (NEMA Flood Optics)

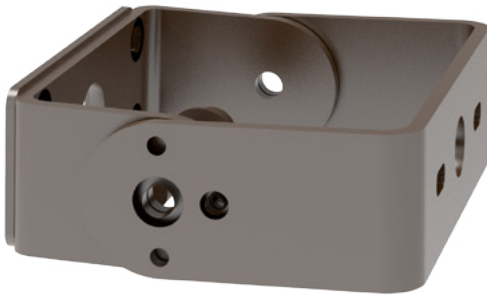
Model	Optic	CCT	System Level Power	Delivered Lumens	Efficacy	L70 Calculate Life
100W	NEMA 4HX4V	4000K	105.2W	13,043	124 LPW	>60,000 Hours
		5000K	94.3W	14,165	150 LPW	>60,000 Hours
	NEMA 6HX6V	4000K	105.2W	12,409	118 LPW	>60,000 Hours
		5000K	94.3W	13,476	143 LPW	>60,000 Hours
120W	NEMA 4HX4V	4000K	120.2W	16,105	134 LPW	>60,000 Hours
		5000K	120.2W	17,491	146 LPW	>60,000 Hours
	NEMA 6HX6V	4000K	120.2W	14,683	122 LPW	>60,000 Hours
		5000K	119.8W	15,705	131 LPW	>60,000 Hours
150W	NEMA 4HX4V	4000K	148.6W	18,590	125 LPW	>60,000 Hours
		5000K	148.8W	20,190	136 LPW	>60,000 Hours
	NEMA 6HX6V	4000K	148.6W	18,456	124 LPW	>60,000 Hours
		5000K	148.6W	19,566	131 LPW	>60,000 Hours

Mounting Options

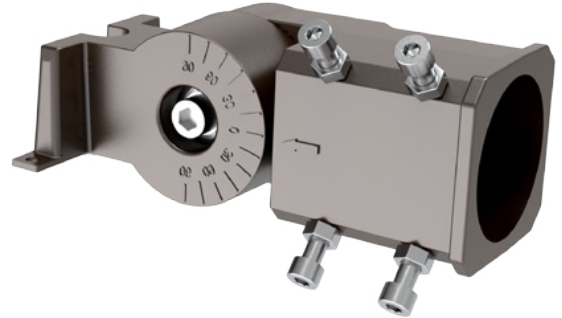
Z1 | Mount for Square Pole & Round Pole - 4" Nominal



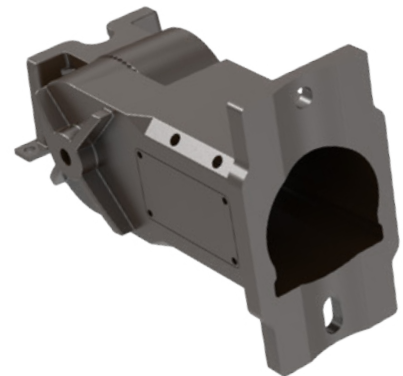
Z3 | Trunnion Mount



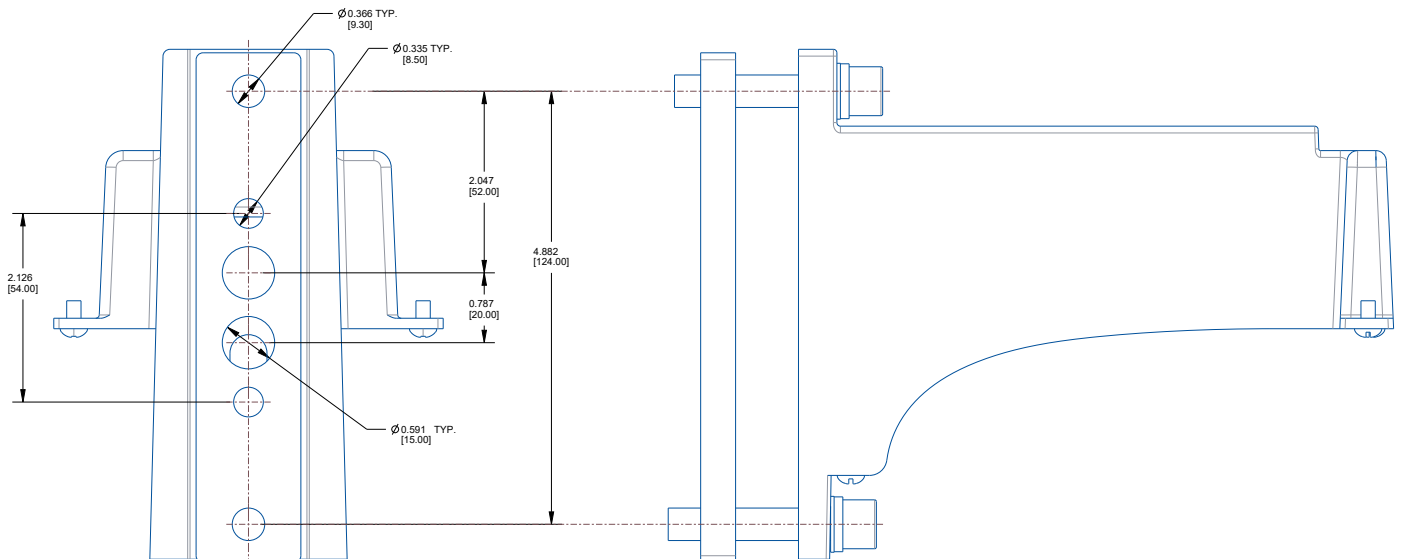
Z2 | Adjustable Slip Fitter Mount



Z4 | Mount For 2 3/8" Round Tenon



Z1 Mount for Square Pole & Round Pole - Bolt Pattern



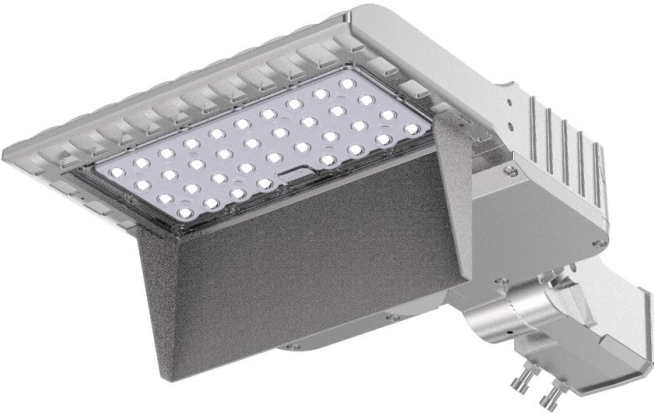
DoradoXLE Plus

Outdoor LED Area/Site Luminaire

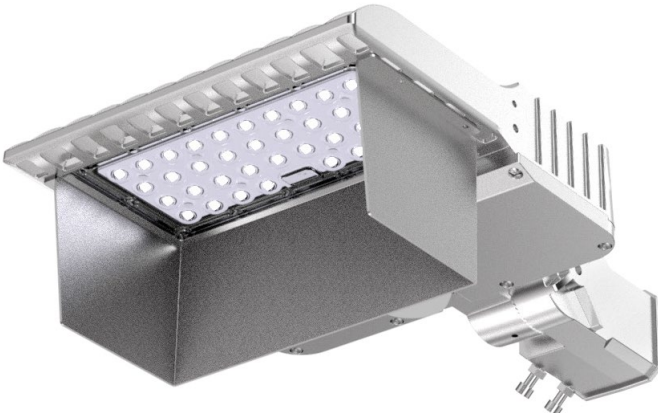


Accessories

BLS | Back Light Shield



HSS | House Side Shield



Dollar General Store – Harvey, MI US Highway 41 & Silver Creek Road Stormwater Detention Calculations January 5, 2024

Total Area to Detention = 50,932 s.f. = 1.17 acres

Runoff Coefficient:

100% Type A Soil

Pre-Project

44,118 s.f. pervious (CN=50)
6,814 s.f. impervious (CN=98)

$$CN = (44,118 \text{ s.f.} * 50 + 6,814 \text{ s.f.} * 98) / 50,932 = 56$$

Post-Project

40,202 s.f. of building and pavement (CN=98)
10,730 s.f. of grass (CN=50)

$$CN = (40,202 \text{ s.f.} * 98 + 10,730 \text{ s.f.} * 50) / 50,932 = 88$$

Time of Concentration:

Pre-project = 12.8 minutes (see HydroCad Report)

Post-project = 5.0 minutes (see HydroCad Report)

Detention Volume:

Detention Summary:

Elevation/Area Data

<u>Elev</u>	<u>Area (s.f.)</u>	<u>Cumulative Volume (c.f.)</u>
637.00	1,257	0
638.00	1,839	1,548
639.00	5,603	5,269
640.00	7,150	11,646
640.50	8,222	15,489

Design Volume of +/-11,646 c.f. @ Elev 640.00

Peak Flow Summary

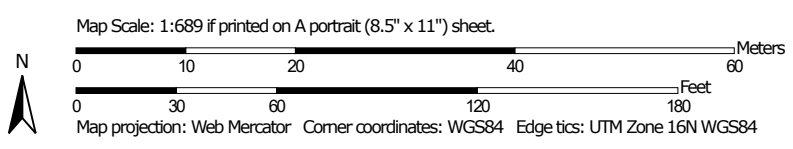
	10yr	50yr	100yr
Pre-Project	0.23	0.92	1.34
Post-Project	4.21	6.19	7.08
Detained Post	0.00	0.00	0.00
Pool Elevation	639.02	639.56	639.79

See HydroCAD results in Appendix

Hydrologic Soil Group—Marquette County, Michigan



Soil Map may not be valid at this scale.



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 1:24,000.

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: Marquette County, Michigan
 Survey Area Data: Version 18, Sep 1, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

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
66B	Udipsamments-Urban land complex, nearly level and gently sloping	A	1.4	100.0%
Totals for Area of Interest			1.4	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



NOAA Atlas 14, Volume 8, Version 2
Location name: Marquette, Michigan, USA*
Latitude: 46.49°, Longitude: -87.3533°
Elevation: 635 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffrey Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

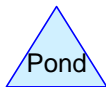
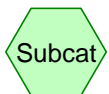
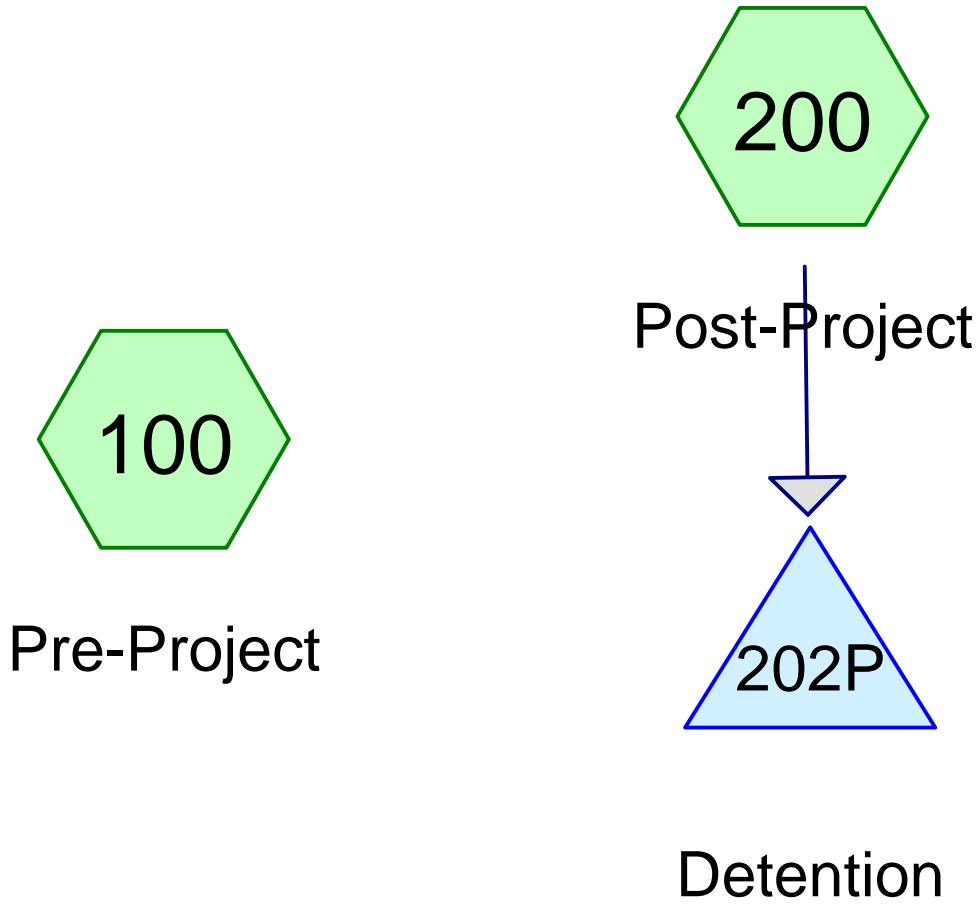
PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.282 (0.241-0.331)	0.332 (0.284-0.390)	0.413 (0.352-0.487)	0.481 (0.407-0.569)	0.574 (0.467-0.697)	0.645 (0.513-0.793)	0.716 (0.549-0.900)	0.788 (0.578-1.02)	0.883 (0.621-1.17)	0.955 (0.654-1.28)
10-min	0.413 (0.354-0.485)	0.486 (0.416-0.572)	0.605 (0.516-0.714)	0.704 (0.596-0.833)	0.840 (0.684-1.02)	0.944 (0.751-1.16)	1.05 (0.804-1.32)	1.15 (0.846-1.49)	1.29 (0.909-1.71)	1.40 (0.957-1.87)
15-min	0.504 (0.431-0.592)	0.593 (0.507-0.697)	0.738 (0.629-0.870)	0.859 (0.727-1.02)	1.02 (0.834-1.24)	1.15 (0.916-1.42)	1.28 (0.980-1.61)	1.41 (1.03-1.81)	1.58 (1.11-2.08)	1.70 (1.17-2.28)
30-min	0.678 (0.580-0.797)	0.800 (0.684-0.941)	0.998 (0.850-1.18)	1.16 (0.983-1.37)	1.38 (1.12-1.68)	1.55 (1.23-1.91)	1.72 (1.32-2.16)	1.89 (1.38-2.43)	2.11 (1.48-2.78)	2.27 (1.55-3.04)
60-min	0.851 (0.728-1.00)	0.999 (0.854-1.18)	1.24 (1.06-1.47)	1.45 (1.23-1.72)	1.74 (1.42-2.12)	1.97 (1.57-2.43)	2.20 (1.69-2.78)	2.44 (1.79-3.15)	2.77 (1.95-3.66)	3.02 (2.06-4.04)
2-hr	1.02 (0.881-1.19)	1.20 (1.03-1.40)	1.49 (1.28-1.74)	1.74 (1.48-2.05)	2.10 (1.73-2.55)	2.39 (1.92-2.94)	2.69 (2.08-3.37)	3.00 (2.22-3.86)	3.43 (2.43-4.51)	3.76 (2.59-5.01)
3-hr	1.14 (0.983-1.32)	1.32 (1.14-1.54)	1.64 (1.41-1.91)	1.92 (1.64-2.25)	2.34 (1.94-2.83)	2.67 (2.16-3.27)	3.02 (2.35-3.78)	3.40 (2.53-4.36)	3.92 (2.79-5.14)	4.33 (3.00-5.74)
6-hr	1.38 (1.20-1.59)	1.59 (1.38-1.83)	1.96 (1.70-2.26)	2.29 (1.97-2.66)	2.78 (2.32-3.36)	3.19 (2.59-3.88)	3.62 (2.83-4.50)	4.08 (3.05-5.20)	4.72 (3.39-6.17)	5.24 (3.65-6.90)
12-hr	1.68 (1.47-1.92)	1.93 (1.69-2.21)	2.37 (2.06-2.71)	2.75 (2.38-3.16)	3.30 (2.77-3.94)	3.76 (3.07-4.53)	4.23 (3.33-5.22)	4.73 (3.57-5.98)	5.44 (3.93-7.04)	5.99 (4.20-7.84)
24-hr	2.02 (1.78-2.29)	2.32 (2.04-2.64)	2.82 (2.47-3.21)	3.25 (2.83-3.72)	3.87 (3.26-4.56)	4.36 (3.58-5.20)	4.86 (3.85-5.94)	5.39 (4.08-6.74)	6.10 (4.44-7.83)	6.66 (4.71-8.66)
2-day	2.37 (2.10-2.67)	2.71 (2.40-3.05)	3.28 (2.89-3.70)	3.76 (3.29-4.26)	4.43 (3.75-5.18)	4.96 (4.10-5.87)	5.50 (4.38-6.66)	6.06 (4.62-7.52)	6.81 (4.98-8.67)	7.39 (5.26-9.54)
3-day	2.60 (2.31-2.91)	2.95 (2.62-3.31)	3.55 (3.14-3.99)	4.06 (3.56-4.58)	4.77 (4.05-5.55)	5.33 (4.42-6.28)	5.91 (4.72-7.12)	6.50 (4.98-8.04)	7.31 (5.37-9.27)	7.93 (5.67-10.2)
4-day	2.79 (2.49-3.12)	3.16 (2.81-3.53)	3.77 (3.34-4.23)	4.30 (3.79-4.84)	5.05 (4.30-5.86)	5.64 (4.69-6.63)	6.25 (5.02-7.52)	6.89 (5.29-8.50)	7.76 (5.72-9.81)	8.43 (6.04-10.8)
7-day	3.31 (2.96-3.67)	3.70 (3.31-4.12)	4.38 (3.90-4.88)	4.96 (4.40-5.55)	5.80 (4.98-6.71)	6.48 (5.43-7.58)	7.19 (5.80-8.60)	7.93 (6.13-9.73)	8.95 (6.64-11.3)	9.75 (7.03-12.4)
10-day	3.80 (3.41-4.20)	4.22 (3.79-4.67)	4.94 (4.42-5.48)	5.57 (4.95-6.20)	6.48 (5.59-7.46)	7.22 (6.06-8.41)	7.98 (6.47-9.52)	8.79 (6.82-10.8)	9.91 (7.38-12.4)	10.8 (7.80-13.7)
20-day	5.26 (4.75-5.76)	5.77 (5.21-6.33)	6.63 (5.97-7.30)	7.37 (6.60-8.15)	8.43 (7.30-9.60)	9.27 (7.84-10.7)	10.1 (8.26-12.0)	11.0 (8.62-13.4)	12.3 (9.20-15.3)	13.2 (9.63-16.7)
30-day	6.50 (5.90-7.10)	7.11 (6.45-7.77)	8.12 (7.33-8.89)	8.96 (8.04-9.85)	10.1 (8.79-11.4)	11.0 (9.36-12.6)	12.0 (9.78-14.0)	12.9 (10.1-15.5)	14.2 (10.6-17.5)	15.1 (11.1-19.0)
45-day	8.10 (7.38-8.80)	8.85 (8.06-9.63)	10.1 (9.13-11.0)	11.1 (9.96-12.1)	12.4 (10.8-13.9)	13.4 (11.4-15.2)	14.4 (11.8-16.7)	15.3 (12.0-18.3)	16.6 (12.5-20.4)	17.5 (12.9-21.9)
60-day	9.47 (8.65-10.3)	10.4 (9.46-11.2)	11.8 (10.7-12.8)	12.9 (11.7-14.1)	14.4 (12.5-16.0)	15.5 (13.2-17.5)	16.5 (13.5-19.1)	17.5 (13.7-20.8)	18.7 (14.1-22.9)	19.6 (14.4-24.4)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical



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Project Notes

Defined 10 rainfall events from Ellsworth MI PF_Depth_English_PDS IDF

Rainfall events imported from "TP-40-Rain.txt" for 2657 MI Antrim

Defined 3 rainfall events from Michigan - Norway IDF

Rainfall events imported from "NRCS-Rain.txt" for 5235 MI Gladwin

Rainfall events imported from "NRCS-Rain.txt" for 5217 MI Clare

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	10-Year 24hr	Type II 24-hr		Default	24.00	1	3.25	2
2	50-Year 24hr	Type II 24-hr		Default	24.00	1	4.36	2
3	100-Year 24hr	Type II 24-hr		Default	24.00	1	4.86	2

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
54,848	50	(100, 200)
47,016	98	(100, 200)
101,864	72	TOTAL AREA

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Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
0	HSG C	
0	HSG D	
101,864	Other	100, 200
101,864		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatchmen Numbers
0	0	0	0	101,864	101,864		1
							0
							0
							,
							2
							0
							0
0	0	0	0	101,864	101,864	TOTAL AREA	

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Type II 24-hr 10-Year 24hr Rainfall=3.25"

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Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: Pre-Project

Runoff Area=50,932 sf 13.38% Impervious Runoff Depth=0.30"
Flow Length=170' Tc=12.8 min CN=56 Runoff=0.23 cfs 1,254 cf

Subcatchment 200: Post-Project

Runoff Area=50,932 sf 78.93% Impervious Runoff Depth=2.04"
Tc=5.0 min CN=88 Runoff=4.21 cfs 8,667 cf

Pond 202P: Detention

Peak Elev=639.02' Storage=5,361 cf Inflow=4.21 cfs 8,667 cf
Discarded=0.11 cfs 6,287 cf Primary=0.00 cfs 0 cf Outflow=0.11 cfs 6,287 cf

Total Runoff Area = 101,864 sf Runoff Volume = 9,921 cf Average Runoff Depth = 1.17"
53.84% Pervious = 54,848 sf 46.16% Impervious = 47,016 sf

Summary for Subcatchment 100: Pre-Project

Runoff = 0.23 cfs @ 12.11 hrs, Volume= 1,254 cf, Depth= 0.30"

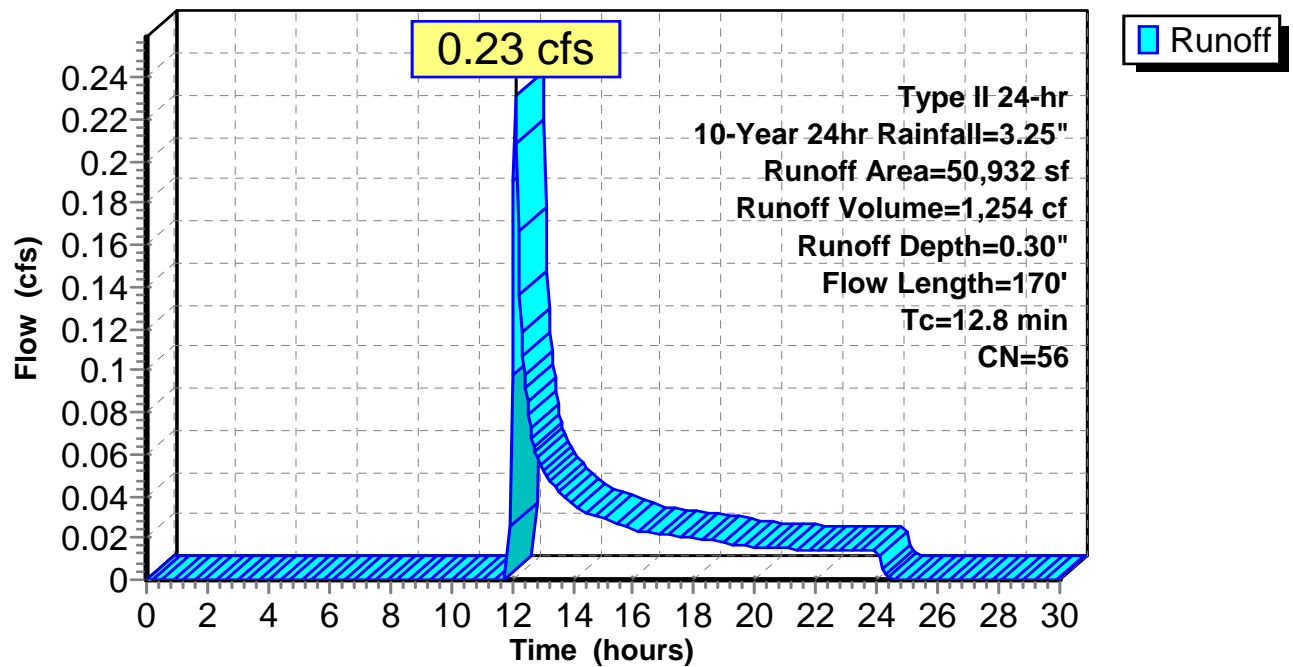
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-Year 24hr Rainfall=3.25"

Area (sf)	CN	Description
* 44,118	50	
* 6,814	98	
50,932	56	Weighted Average
44,118		86.62% Pervious Area
6,814		13.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	70	0.0100	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 2.32"
1.4	100	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
12.8	170	Total			

Subcatchment 100: Pre-Project

Hydrograph



Summary for Subcatchment 200: Post-Project

[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 4.21 cfs @ 11.95 hrs, Volume= 8,667 cf, Depth= 2.04"
 Routed to Pond 202P : Detention

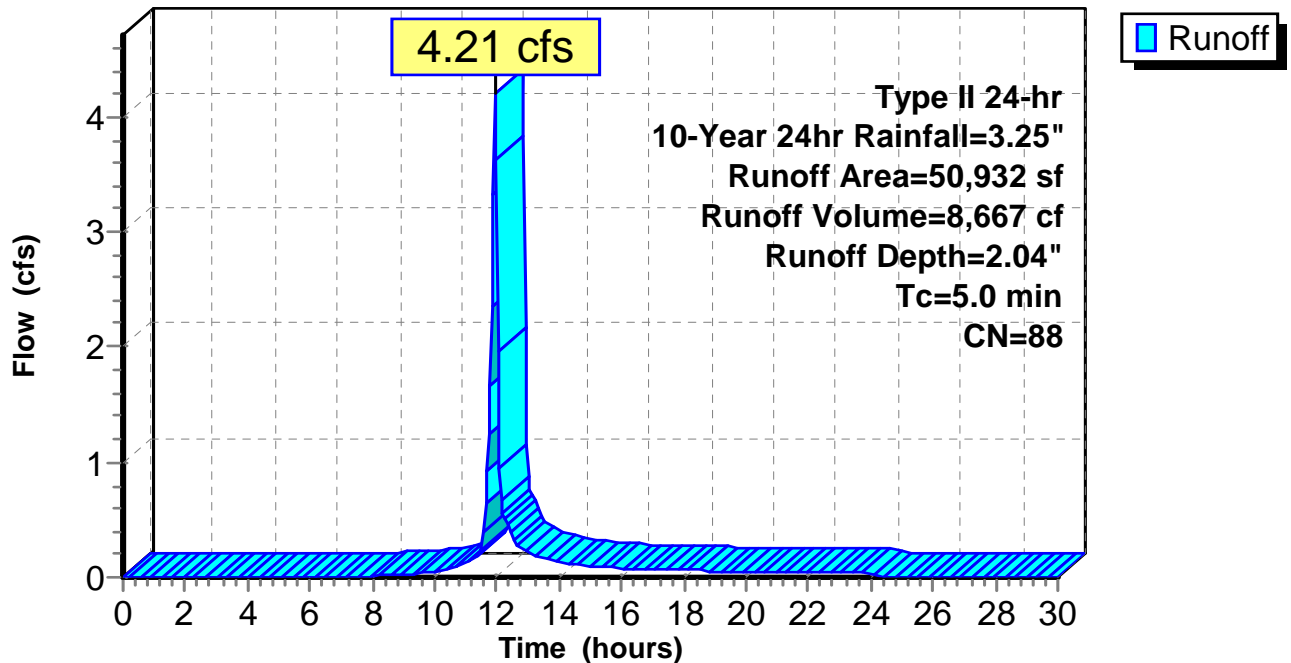
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-Year 24hr Rainfall=3.25"

	Area (sf)	CN	Description
*	40,202	98	
*	10,730	50	
	50,932	88	Weighted Average
	10,730		21.07% Pervious Area
	40,202		78.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 200: Post-Project

Hydrograph



Summary for Pond 202P: Detention

Inflow Area = 50,932 sf, 78.93% Impervious, Inflow Depth = 2.04" for 10-Year 24hr event
 Inflow = 4.21 cfs @ 11.95 hrs, Volume= 8,667 cf
 Outflow = 0.11 cfs @ 14.80 hrs, Volume= 6,287 cf, Atten= 97%, Lag= 171.0 min
 Discarded = 0.11 cfs @ 14.80 hrs, Volume= 6,287 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to nonexistent node 204R

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 639.02' @ 14.80 hrs Surf.Area= 5,628 sf Storage= 5,361 cf

Plug-Flow detention time= 465.2 min calculated for 6,277 cf (72% of inflow)
 Center-of-Mass det. time= 369.9 min (1,180.3 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1	637.00'	15,489 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
637.00	1,257	0	0
638.00	1,839	1,548	1,548
639.00	5,603	3,721	5,269
640.00	7,150	6,377	11,646
640.50	8,222	3,843	15,489

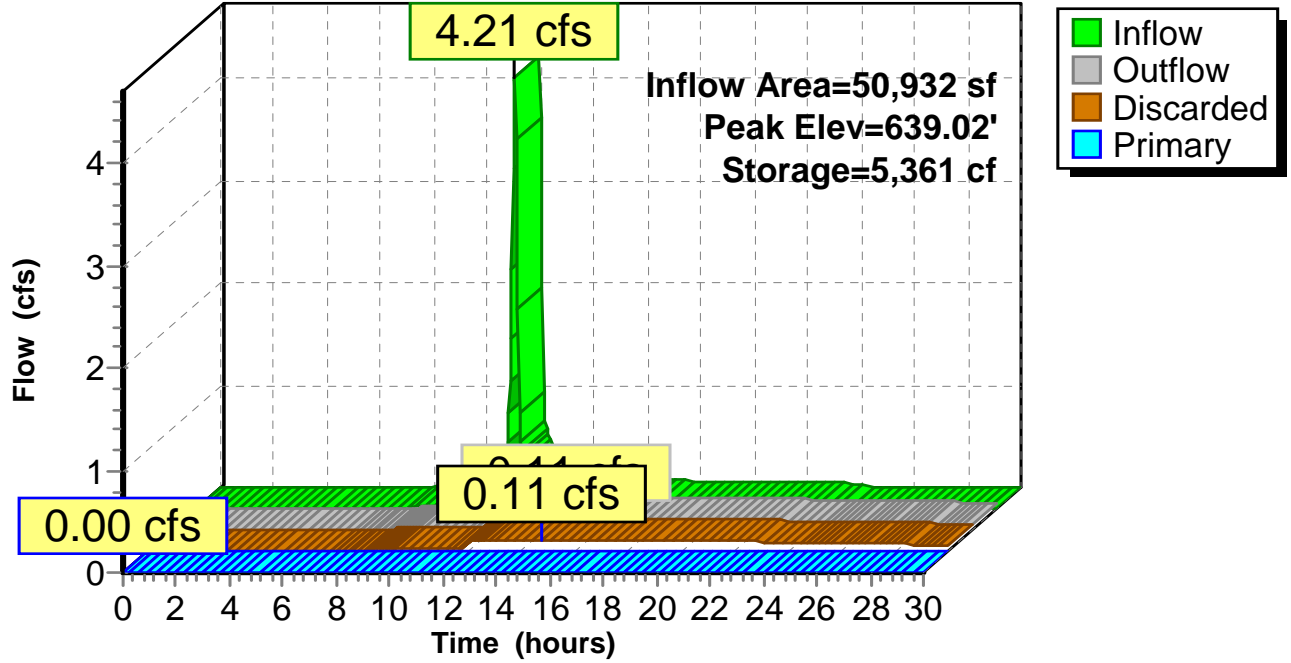
Device	Routing	Invert	Outlet Devices
#1	Primary	640.00'	6.0' long + 3.0 ' SideZ x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#2	Discarded	637.00'	0.800 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 600.00'

Discarded OutFlow Max=0.11 cfs @ 14.80 hrs HW=639.02' (Free Discharge)
 ↑2=Exfiltration (Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=637.00' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 202P: Detention

Hydrograph



Harvey MI

Type II 24-hr 50-Year 24hr Rainfall=4.36"

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Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: Pre-Project

Runoff Area=50,932 sf 13.38% Impervious Runoff Depth=0.73"
Flow Length=170' Tc=12.8 min CN=56 Runoff=0.92 cfs 3,100 cf

Subcatchment 200: Post-Project

Runoff Area=50,932 sf 78.93% Impervious Runoff Depth=3.06"
Tc=5.0 min CN=88 Runoff=6.19 cfs 13,008 cf

Pond 202P: Detention

Peak Elev=639.56' Storage=8,624 cf Inflow=6.19 cfs 13,008 cf
Discarded=0.12 cfs 8,164 cf Primary=0.00 cfs 0 cf Outflow=0.12 cfs 8,164 cf

Total Runoff Area = 101,864 sf Runoff Volume = 16,108 cf Average Runoff Depth = 1.90"
53.84% Pervious = 54,848 sf 46.16% Impervious = 47,016 sf

Summary for Subcatchment 100: Pre-Project

Runoff = 0.92 cfs @ 12.08 hrs, Volume= 3,100 cf, Depth= 0.73"

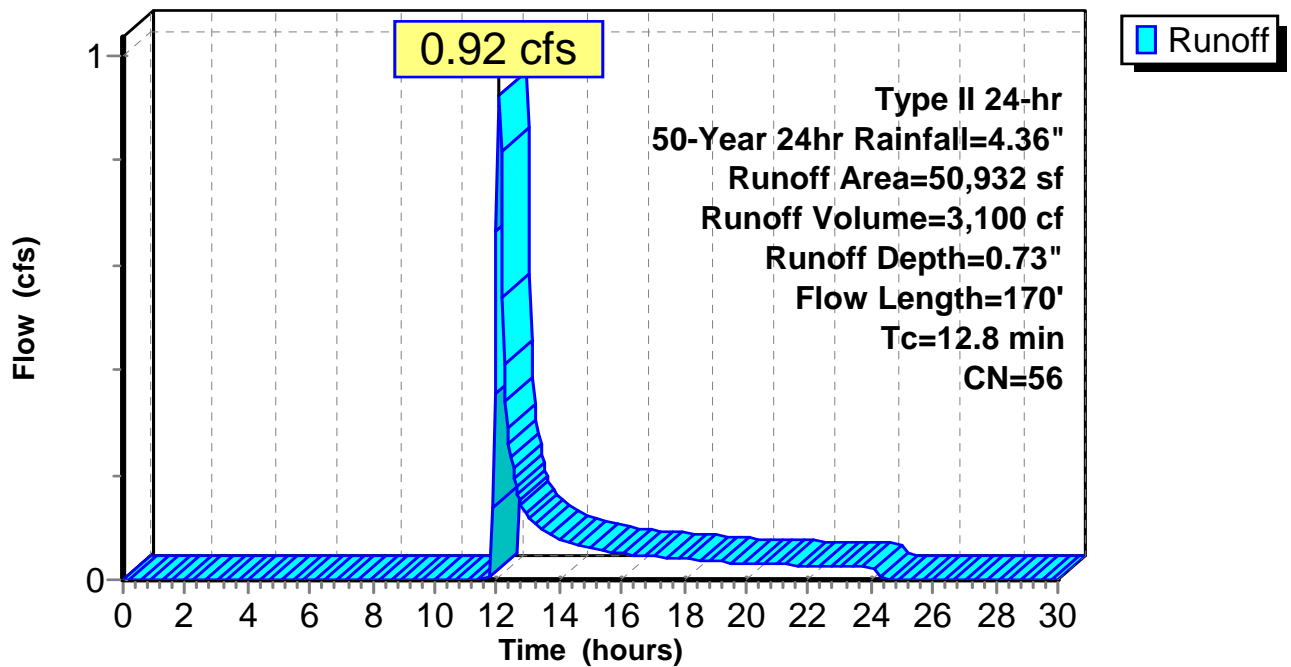
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Type II 24-hr 50-Year 24hr Rainfall=4.36"

Area (sf)	CN	Description
* 44,118	50	
* 6,814	98	
50,932	56	Weighted Average
44,118		86.62% Pervious Area
6,814		13.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	70	0.0100	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 2.32"
1.4	100	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
12.8	170	Total			

Subcatchment 100: Pre-Project

Hydrograph



Summary for Subcatchment 200: Post-Project

[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 6.19 cfs @ 11.95 hrs, Volume= 13,008 cf, Depth= 3.06"
 Routed to Pond 202P : Detention

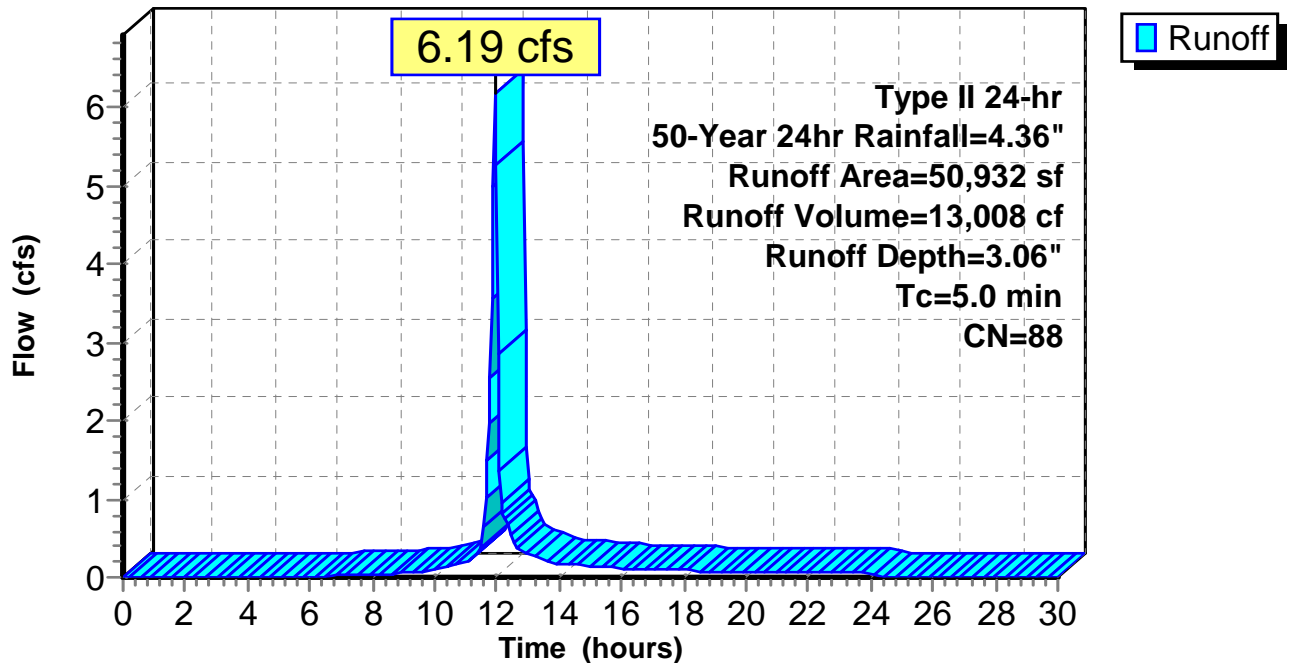
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Type II 24-hr 50-Year 24hr Rainfall=4.36"

	Area (sf)	CN	Description
*	40,202	98	
*	10,730	50	
	50,932	88	Weighted Average
	10,730		21.07% Pervious Area
	40,202		78.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 200: Post-Project

Hydrograph



Summary for Pond 202P: Detention

Inflow Area = 50,932 sf, 78.93% Impervious, Inflow Depth = 3.06" for 50-Year 24hr event
 Inflow = 6.19 cfs @ 11.95 hrs, Volume= 13,008 cf
 Outflow = 0.12 cfs @ 15.63 hrs, Volume= 8,164 cf, Atten= 98%, Lag= 220.5 min
 Discarded = 0.12 cfs @ 15.63 hrs, Volume= 8,164 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to nonexistent node 204R

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 639.56' @ 15.63 hrs Surf.Area= 6,463 sf Storage= 8,624 cf

Plug-Flow detention time= 507.4 min calculated for 8,151 cf (63% of inflow)
 Center-of-Mass det. time= 403.8 min (1,202.7 - 798.9)

Volume	Invert	Avail.Storage	Storage Description
#1	637.00'	15,489 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
637.00	1,257	0	0
638.00	1,839	1,548	1,548
639.00	5,603	3,721	5,269
640.00	7,150	6,377	11,646
640.50	8,222	3,843	15,489

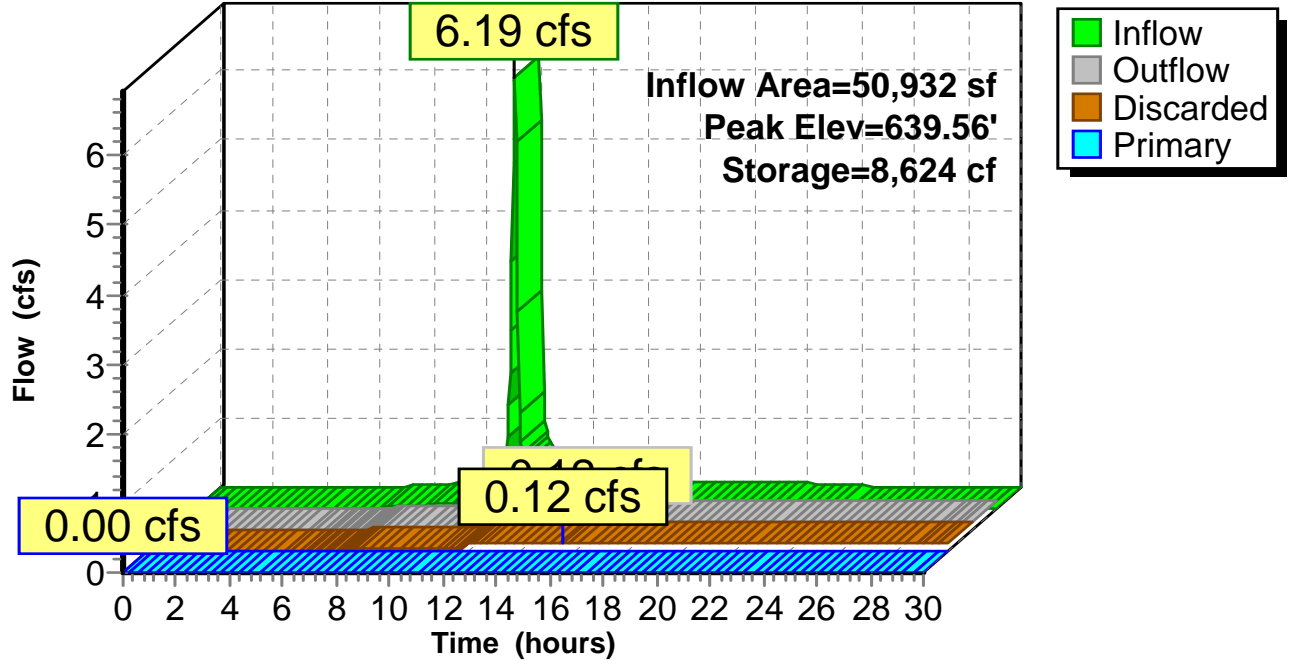
Device	Routing	Invert	Outlet Devices
#1	Primary	640.00'	6.0' long + 3.0 ' SideZ x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#2	Discarded	637.00'	0.800 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 600.00'

Discarded OutFlow Max=0.12 cfs @ 15.63 hrs HW=639.56' (Free Discharge)
 ↑2=Exfiltration (Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=637.00' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 202P: Detention

Hydrograph



Harvey MI

Type II 24-hr 100-Year 24hr Rainfall=4.86"

Prepared by Overland Engineering AKA Pathway

Printed 1/5/2024

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Page 17

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: Pre-Project

Runoff Area=50,932 sf 13.38% Impervious Runoff Depth=0.97"
Flow Length=170' Tc=12.8 min CN=56 Runoff=1.34 cfs 4,118 cf

Subcatchment 200: Post-Project

Runoff Area=50,932 sf 78.93% Impervious Runoff Depth=3.54"
Tc=5.0 min CN=88 Runoff=7.08 cfs 15,008 cf

Pond 202P: Detention

Peak Elev=639.79' Storage=10,172 cf Inflow=7.08 cfs 15,008 cf
Discarded=0.13 cfs 8,745 cf Primary=0.00 cfs 0 cf Outflow=0.13 cfs 8,745 cf

Total Runoff Area = 101,864 sf Runoff Volume = 19,127 cf Average Runoff Depth = 2.25"
53.84% Pervious = 54,848 sf 46.16% Impervious = 47,016 sf

Summary for Subcatchment 100: Pre-Project

Runoff = 1.34 cfs @ 12.07 hrs, Volume= 4,118 cf, Depth= 0.97"

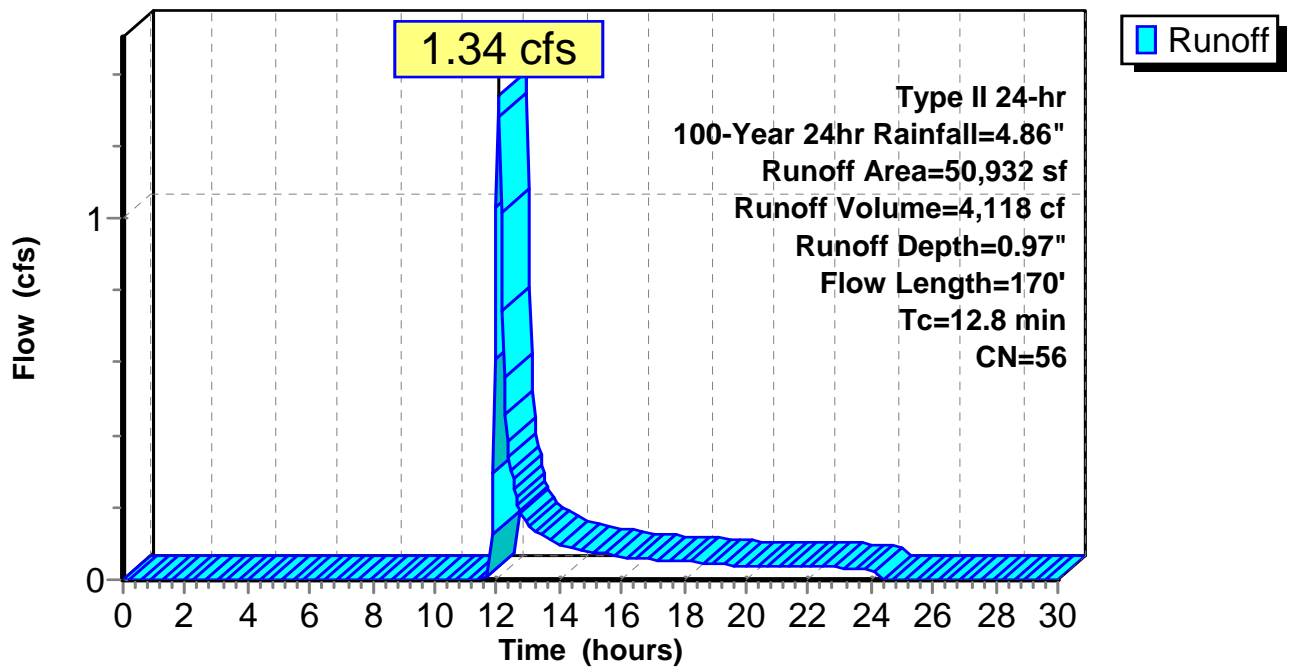
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-Year 24hr Rainfall=4.86"

Area (sf)	CN	Description
* 44,118	50	
* 6,814	98	
50,932	56	Weighted Average
44,118		86.62% Pervious Area
6,814		13.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	70	0.0100	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 2.32"
1.4	100	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
12.8	170	Total			

Subcatchment 100: Pre-Project

Hydrograph



Summary for Subcatchment 200: Post-Project

[49] Hint: Tc<2dt may require smaller dt

Runoff = 7.08 cfs @ 11.95 hrs, Volume= 15,008 cf, Depth= 3.54"
 Routed to Pond 202P : Detention

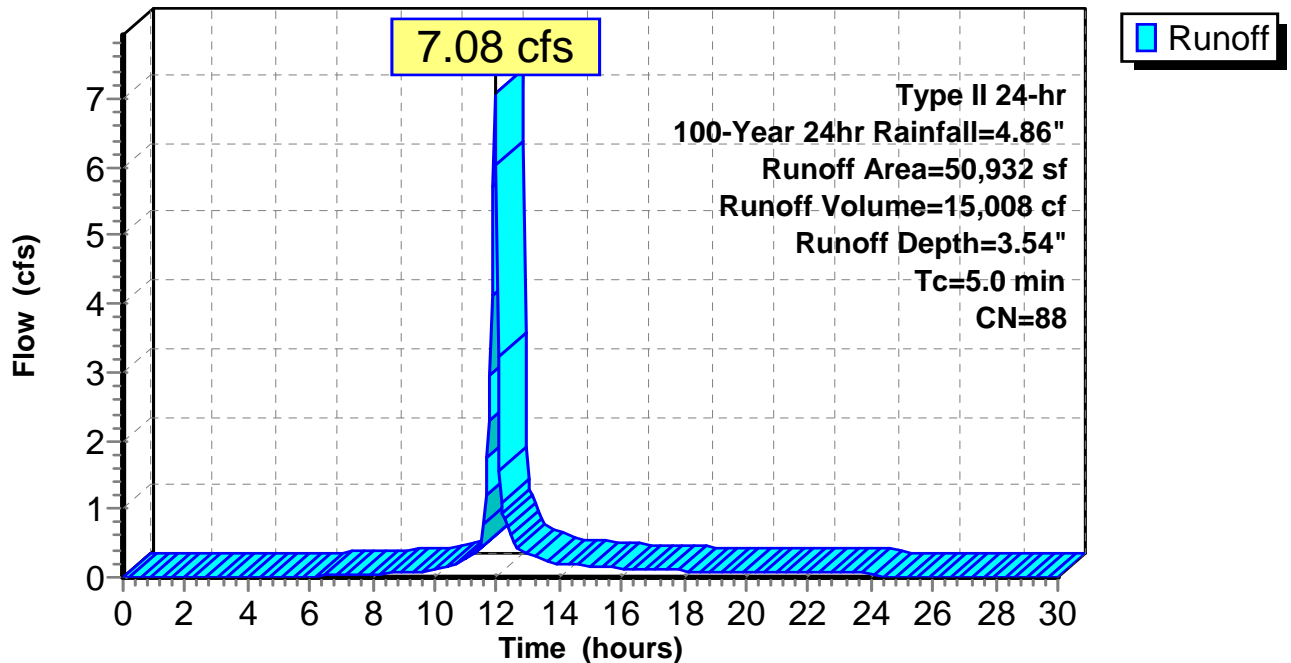
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-Year 24hr Rainfall=4.86"

	Area (sf)	CN	Description
*	40,202	98	
*	10,730	50	
	50,932	88	Weighted Average
	10,730		21.07% Pervious Area
	40,202		78.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 200: Post-Project

Hydrograph



Summary for Pond 202P: Detention

Inflow Area = 50,932 sf, 78.93% Impervious, Inflow Depth = 3.54" for 100-Year 24hr event
 Inflow = 7.08 cfs @ 11.95 hrs, Volume= 15,008 cf
 Outflow = 0.13 cfs @ 15.86 hrs, Volume= 8,745 cf, Atten= 98%, Lag= 234.5 min
 Discarded = 0.13 cfs @ 15.86 hrs, Volume= 8,745 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to nonexistent node 204R

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 639.79' @ 15.86 hrs Surf.Area= 6,824 sf Storage= 10,172 cf

Plug-Flow detention time= 512.5 min calculated for 8,730 cf (58% of inflow)
 Center-of-Mass det. time= 406.3 min (1,201.2 - 794.8)

Volume	Invert	Avail.Storage	Storage Description
#1	637.00'	15,489 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
637.00	1,257	0	0
638.00	1,839	1,548	1,548
639.00	5,603	3,721	5,269
640.00	7,150	6,377	11,646
640.50	8,222	3,843	15,489

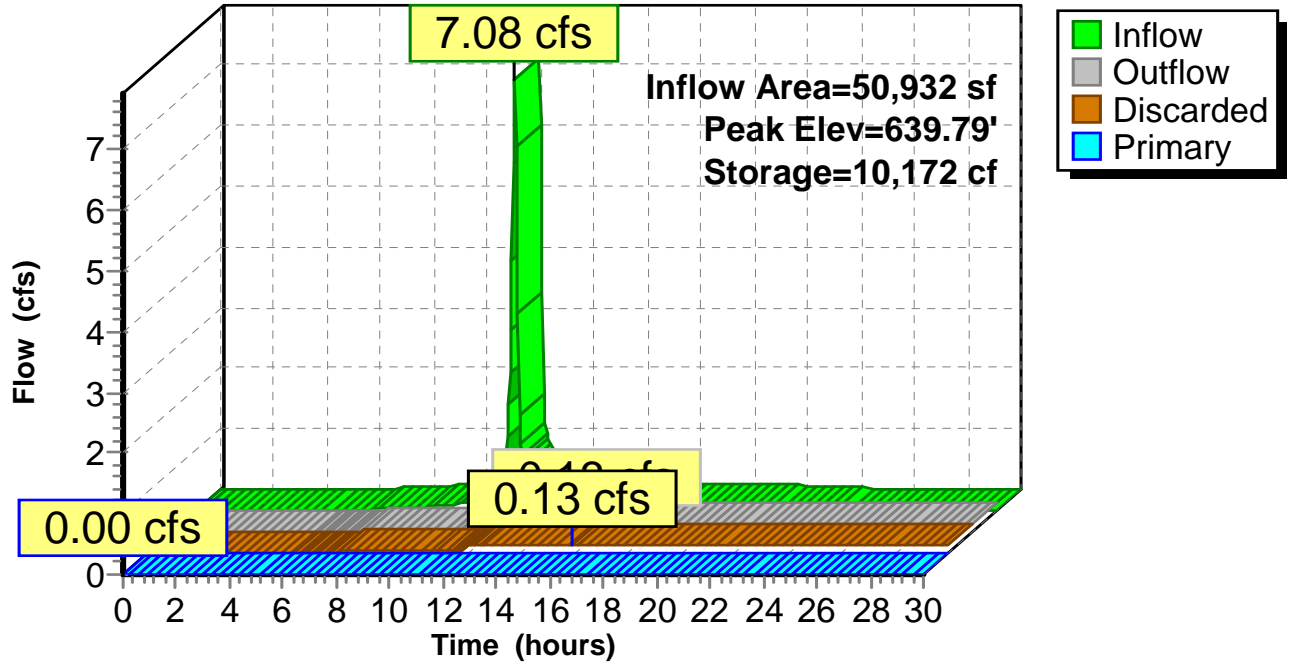
Device	Routing	Invert	Outlet Devices
#1	Primary	640.00'	6.0' long + 3.0 ' SideZ x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#2	Discarded	637.00'	0.800 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 600.00'

Discarded OutFlow Max=0.13 cfs @ 15.86 hrs HW=639.79' (Free Discharge)
 ↑2=Exfiltration (Controls 0.13 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=637.00' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 202P: Detention

Hydrograph



November 29, 2023

IX.A.16

Mrs. Mallory Johnson
Overland Engineering, LLC
1598 Imperial Center, Suite 2009
West Plains, Missouri 65775

RE: Geotechnical Engineering Services Report
Proposed Dollar General Retail Store
4050 US-41
Harvey, Michigan
Kilo Project No.: 23-1460

Dear Mrs. Johnson:

Kilo Engineering, LLC (Kilo) is pleased to transmit this Geotechnical Engineering Services Report for the proposed retail development to be located at 4050 US-41 in Harvey, Michigan. This report includes the results of field and laboratory testing, recommendations for foundations, pavement section design, and general site development.

Kilo appreciates the opportunity to perform this Geotechnical Study and looks forward to continuing our participation during the design phases of this project. If you have questions pertaining to this report, or if Kilo may be of further service, please contact us.

Respectfully submitted,


KILO ENGINEERING



Joseph M. Rozmiarek, P.E.
President and Principal Engineer
Michigan PE #6201311737



Zack Pilz
Staff Engineer

LICENSEE STATEMENT	
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision, and that I am a duly licensed Professional Engineer under the laws of the state of Michigan.	
Signature:	
Name:	Joseph M. Rozmiarek, P.E.
MI P.E. #	6201311737
Date:	November 29, 2023

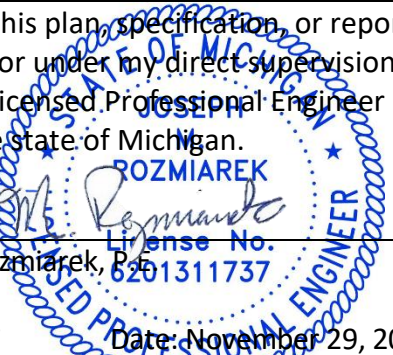


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EXECUTIVE SUMMARY

Kilo Engineering, LLC (Kilo) completed a geotechnical exploration for the proposed Retail Store in Harvey, Michigan. Based on the findings of the field and laboratory work, the following geotechnical hazards will likely impact the design and construction of the project.

Surficial Organic Materials

A deposit of surficial organic soil was encountered within the building and pavement areas extending to depths of ½± to 1± feet below existing site grades. Organic soil depths and consistencies should be anticipated to vary across the site. The surficial organic soil is not suitable for support of foundations or foundation supporting fill in its current condition due to the presence of roots and organics. The organic-containing soils should be used in green areas or disposed of offsite.

Very Loose to Medium Dense Sand Soils

The near-surface soils consist of very loose to medium dense sand and silty sand soils in six of the eight borings completed on site. These soils are generally suitable for use as engineered fill and for supporting the proposed development but should be moisture conditioned and compacted prior to the placement of fill or final surface cover. If shallow groundwater is encountered during mass grading, static compaction methods may be required in lieu of conventional vibratory compaction methods.

Existing Building on Site

The existing building on site is to be demolished as part of this project. The above grade materials should be removed from the site and properly disposed of at a solid waste facility. The building slab, foundations, and foundations walls should be removed, and the associated excavations backfilled with engineered fill as described in the “Subgrade Preparation” section of this report.

Kilo has provided this executive summary for the convenience of the client, and this information should not be relied upon in lieu a full review of the contents of this report. Should variance in recommendations be present, the recommendations in the body of this report shall govern over those in this executive summary.

PROJECT INFORMATION

Project Authorization and Provided Documentation

The following Table summarizes, in chronological order, the Project Authorization History for the services performed and represented in this report by Kilo Engineering, LLC.

DOCUMENT AND REFERENCE NUMBER	DATE	REPRESENTATIVE & COMPANY
Email Request for Proposal	9/27/2023	Mrs. Mallory Johnson Overland Engineering, LLC
Kilo Proposal 23e-1279	10/3/2023	Mr. Joseph Rozmiarek Kilo Engineering, LLC
Notice to Proceed	10/3/2023	Mr. Jacob Stauffer Overland Engineering, LLC

The following documents were provided by the client for this project.

DESCRIPTION OF MATERIAL	PROVIDER/SOURCE	DATE
Proposed Site Plan and Overlay	Mrs. Mallory Johnson Overland Engineering, LLC	9/1/2023

Project Description

Kilo understands that the project includes the design and construction of a new Dollar General retail store with associated pavements. The project site is located at 4050 US-41 in Harvey, Michigan. A formal site address was not provided at the time of this report. The site is currently a partially developed commercial lot with a small church located on the property. There also appears to be multiple mature trees on site. The proposed building has a footprint of 10,640 square feet with one planned above-grade level and no below-grade levels.

The proposed finished floor elevation for the new building has not been provided to Kilo at the time of this report. The boring elevations during the field exploration ranged from 94± to 99± feet relative to the temporary benchmark utilized by Kilo's subcontractor field crew, the existing well cover located to the northwest of the existing building on site. This report is based on the finished floor of the new building being set at 99± feet relative to Kilo's temporary benchmark, based on the highest elevations observed in the building pad during this exploration and grading the site to drain. **Should these elevations be incorrect, Kilo should be contacted to amend this report with proper elevations and modified recommendations, as appropriate.**

The elevation differences between the borings completed for the project are on the order of 5± feet within the building footprint, and 5± feet across the site. Based upon these elevations, cuts on the order of up to ½± to 1± feet to remove the existing surficial organic soils and newly placed fills of 1± to 6± feet will be required to reach final grades in the proposed building pad. Kilo's recommendations for the pavements are based on cuts and fills on the order of up to 6± feet to achieve design site grades.

The table below provides information regarding the proposed development.

PROPOSED DEVELOPMENT		
PROPERTY	DESCRIPTION	SOURCE
STRUCTURES		
Number of Buildings	One, Southwest Portion of Site	Site Plan
Stories Above Grade	1	RFP
Stories Below Grade	0	RFP
Construction Type	Light-Gauge Steel Framing	NP
Maximum Wall Load	3.0 kips per lineal foot (klf)	NP
Maximum Column Load	75 kips	NP
Maximum Floor Slab Load	125 pounds per square foot (psf)	NP
Load Source		NP
Proposed FFE	99± feet TBM	Site Plan
PAVEMENTS AND STORMWATER MANAGEMENT		
Pavement Types	Light-Duty Automobile Parking Heavy-Duty Auto and Truck Drive Lanes	Site Plan
Pavement Traffic Loads	Light-Duty – 30,000 ESALs Heavy-Duty – 60,000 ESALs	NP
Pavement Locations	North and East of the Building	Site Plan
Pavement Access	US-41, Northeast of Site	Site Plan
Stormwater Features	-	NP
Stormwater Location	-	NP
PROPOSED GRADE CHANGES		
Unsuitable Soil Depth	½± to 1± feet of existing surficial organic soils	Boring Logs
Grade Changes – Borings	6± foot in building and 6± across the site	Field Survey
Grade Changes – Plan	-	NP

NP – Information not provided to Kilo. This report is based on Kilo’s experience with similar developments in lieu of client-provided information. This information should be verified by the client.

RFP – Information provided by the client in the project Request for Proposal

The geotechnical recommendations presented in this report are based on the available project information, building location, and the subsurface materials described in this report. If the noted information is incorrect, please inform Kilo in writing so that we may amend the recommendations presented in this report as appropriate and if desired by the client. Kilo will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

Purpose and Scope of Services

The purpose of this study was to explore the subsurface conditions at the site and develop geotechnical design criteria regarding foundations, floor slabs, pavements, stormwater management, and construction recommendations for the proposed project. Kilo’s scope of services included drilling a total of eight (8) soil test borings, select laboratory testing, and preparation of this Geotechnical Report. A pre-demolition

asbestos and lead-based paint survey was completed by a Kilo subcontractor under a separate report and cover.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, groundwater, or air on or below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes. Kilo is not nor does it advertise to be an environmental professional firm. In the event that the geotechnical recommendations in this report and environmental recommendations by others vary, the more stringent recommendation should be followed, or the relevant design professionals be contacted for clarification.

SITE AND SUBSURFACE CONDITIONS

Site Location and Description

The project site is located at 4050 US-41 in Harvey, Michigan. The site is bounded to the north by tree cover and US-41 beyond; to the east by US-41 and commercial properties beyond; to the south by Silver Creek Road with residential properties beyond; and to the west by commercial buildings with pavements and recreational areas beyond. The site is currently a partially developed commercial lot with what appears to be a small church located on the property. There also appears to be multiple trees on site.

Publicly available historical aerial photographs were used to explore the site history. Historical aerial photos were observed dating to 1985 in Google Earth. Sometime between the years of 1985 to 1993 the small church may have been constructed, but cannot be confirmed in that time frame with Google Earth historical aerial photos. The site appears relatively unchanged since 1993, as a partially developed commercial lot with a small church building appearing in each of the photographs between 1993 and the present. The site Latitude and Longitude coordinates are approximately 46.4924°N and 87.3562°W, respectively. The site topography is relatively flat to gently sloping, with elevation differences of 4± feet between the borings.

Potential Flood Impacts

As part of the due diligence for the site, Kilo reviewed the publicly available flood zone maps produced by the Federal Emergency Management Agency (FEMA), which includes several designations related to flood potential. For areas without designated levee protection, Zones A or AE designate an area within the 1000-year floodplain, Zone B (Zone X - shaded) is the area between the 100-year and 500-year floodplain, and Zone C (Zone X - unshaded) is the area beyond the 500-year floodplain. Areas that have not been mapped for flood potential are noted as Zone D. An image pulled from the relevant FEMA flood map is shown in the figure below.



Based on the data in the site map above, the site is designated as Zone X, and is outside the 100-year and 500-year floodplain. The nearest body of water is Silver Creek located approximately one quarter mile south of the site. The nearest area of Zone A, AE, and B is near Silver Creek approximately one quarter mile south and southeast of the site. An additional Zone A and AE area is present to the east of the site near the Chocolay River. The approximate base flood elevations of Silver Creek are 639± to 645± feet MSL, while the base flood elevation near the Chocolay River is approximately 612± feet MSL. The site grades range from approximately 632± to 636± MSL, approximately 7± feet higher than Silver Creek and 20± feet higher than the Chocolay River. Given the grade changes and distance to the nearest surface water, the risk of large-scale flood potential is considered to be low.

Field Exploration Summary

The following locations were sampled with soil borings to explore the subsurface conditions at the site:

BORING	BORING TYPE	LOCATION	SURFACE ELEVATION (FT TBM)	DEPTH OF BORING (FT)
B-1	Building	Northwest Corner	99±	21
B-2	Building	Northeast Corner	99±	21
B-3	Building	Southeast Corner	94±	21
B-4	Building	Southwest Corner	94±	21
B-5	Pavement	North Drive Lane	99±	11
B-6	Pavement	Southeast Drive Lane	94±	11
B-7	Pavement	East Drive Lane	98±	11
B-8	Pavement	Drive Apron to US-41	98±	11

The borings were located in the field utilizing conventional taping techniques and estimating right angles

from existing site features. The horizontal accuracy of the borings is estimated to be 10± feet. The surface elevation at each boring location was estimated using publicly available topographic data at the conclusion of drilling activities. No field elevation measurements were completed. If the mean sea level of the borings can be more accurately determined and communicated to Kilo, this report will be revised to account for this updated information. The vertical accuracy of the boring locations is estimated to be 1± foot.

Kilo engaged Michigan Independent Drilling of Mohawk, Michigan as a drilling subcontractor on this project. Soil borings for the site were completed on November 18, 2023. Hollow-stem augers were used to advance the borings. Samples were taken at half-flight intervals to a depth of 10 feet below existing site grades, and every 5 feet thereafter. Samples were recovered using split-spoon sampling techniques in general accordance with ASTM D1586. Field data, including boring number, sample depth, soil classification, and SPT N-value were recorded in the field and a representative soil sample was placed in a glass jar to minimize moisture loss.

The soil samples were delivered to Kilo’s soil engineering laboratory for a limited number of engineering property tests. These tests included:

- USCS Soil Classification (ASTM D2487 and D2488)
- Moisture Content (ASTM D2216)
- Percent Passing the #200 Sieve (ASTM D1140)

The soil stratigraphy encountered in the field exploration is generalized in the table below:

SOIL (USCS)	SOIL DESCRIPTION	SOIL COLOR	DEPTH RANGE (FT)	MOISTURE CONTENT RANGE (%)	SPT N-VALUE RANGE (BPF)*
OL	Surficial Organic Soils	Dark Brown	0± to 1± feet	-	-
ASP, BASE	Asphalt and Aggregate Base	Black	0± to 1± feet	-	-
SP-SM	Sand with Silt	Brown, Light Brown	5± to 15± feet	4% to 19%	7 to 105
SM	Silty Sand	Brown	7± to 21± feet (termination depth)	16% to 23%	8 to 54
SP	Sand	Brown, Light Brown	½± to 15± feet	1% to 19%	2 to 123

*BPF – blows per foot

The shallow site soils encountered in the field exploration were compared to the mapped Web Soil Survey prepared by the Natural Resources Conservation Service. This service has mapped soil properties for 95% of the United States. At this location, the mapped soils on site consist of the Udipsammments-Urban Land Complex. This stratum consists of approximately 90% sand-sized particles in the upper soil profile, remaining steady with depth. These soils are generally consistent with the materials encountered within the upper soil profile, but have been disturbed prior to this field exploration. The NRCS soil descriptions consider these soils “not limited” for supporting small commercial buildings and “poor” materials for construction reclamation. It should be noted that the soil sampling for this database was originally intended for agricultural purposes and only covers the

upper 80 inches of the soil profile.

Soils are not homogenous and may change both vertically and laterally between the boring locations. Clear separation between strata may not be observed in the field, with gradual transitions between soil types encountered. The general soil description above is generalized for convenience. Full details regarding the soils encountered during this exploration are included in the boring logs in the appendix of this report, including soil descriptions, penetration resistances, moisture contents, and completed laboratory testing to define soil engineering properties. Water level observations are only valid for the time and locations sampled and may vary substantially with time. The samples not altered by laboratory testing will be stored for 30 days from the date of this report and then disposed of unless retention is requested by the client. Storage fees for soils retained beyond 30 days may apply.

Groundwater Observations

Groundwater was encountered during or at the completion of drilling activities in all of the completed borings in the building pad on site at depths $13\frac{1}{2}\pm$ to $18\frac{1}{2}\pm$ feet below grades (elevations $80\pm$ to $84\pm$ feet TBM). Based on the soil types encountered and observed moisture contents, the observed groundwater level is anticipated to be indicative of the static groundwater level on site. This elevation is anticipated to be below the zone of construction, but may impact deeper excavations for site utilities. If groundwater seepage is encountered during construction above the groundwater level, it is anticipated that it can be controlled using conventional sumping techniques. If excavations are planned below the static groundwater level, well points or other more intensive dewatering techniques may be required. If larger or uncontrollable amounts of seepage are encountered, Kilo should be contacted for additional recommendations. Kilo recommends that the contractor determine the actual groundwater level on site at the time of construction if seepage is encountered.

The groundwater observations noted on the boring logs represent the groundwater conditions at the test boring locations at the time of sampling. It should be expected that the groundwater levels will fluctuate at least several feet seasonally and depending on climatic conditions and precipitation. The possibility of groundwater level fluctuation should be considered when developing the design and construction plans for the project. Short-term dewatering may be required to facilitate foundation construction, depending on climatic conditions at the time of construction.

GEOTECHNICAL HAZARDS RECOMMENDATIONS

Geotechnical Hazard Identification

The following table summarizes the potential geotechnical hazards observed on site with a limited description of the potential remedial actions included. Full descriptions of the remedial actions are included below the table.

GEOTECHNICAL HAZARD	PRESENT?	REMEDIATION METHOD
Surficial Organic Soil	Yes	Cuts of ½± to 1± feet to remove; can reuse on site in green spaces
Organic Soils at Depth	No	
Undocumented Fill	No	
Previous Site Disturbance	Yes	Surficial soils disturbed by development on site
Previous Site Structures	Yes	Existing structure on site to be removed
Loose Granular Soils	Yes	Moisture condition and recompact
Soft Cohesive Soils	No	
Moisture-Sensitive Soils	Yes	Protect exposed subgrade from moisture entry
Limited Reuse of Site Soils	No	
Mass Grading	No	Raise Grade to FFE
Shallow Bedrock	No	
Shallow Groundwater	Yes	Groundwater at 13 ½± to 18 ½± feet, anticipated to be below zone of construction
Perched Groundwater	No	
Flood Risk	No	
Unsuitable Soils at Foundation Level	No	
Wet Soils at Foundation Level	No	
Building Additions	No	
Buried Obstructions	No	
Deep Foundations Recommended	No	
High Settlement Potential	No	
Swell, Shrinkage, or Collapse	No	
Karst or Subsidence	No	Site is not in a known karst zone
Pavement Drainage Concerns	Yes	Grade site to drain
Infiltration Limitations	No	
Seismic Concerns	No	
Liquefaction Concerns	No	
Earth Retention Concerns	No	
Slope Stability Concerns	No	

Geotechnical Hazard Remediation

A deposit of surficial organic soil was encountered within the building and pavement areas extending to depths of ½± feet to 1± feet below existing site grades. Organic soil depths and consistencies should be anticipated to vary across the site. The term “surficial organic soil” is used here in lieu of the word “topsoil” since the material was not tested for suitability for landscaping or agricultural purposes. The surficial organic soil generally consisted of sandy soils with roots and organic material. The surficial organic soil is not suitable for supporting foundations or foundation supporting fill in its current condition due to the presence of roots and organics. The organic-containing soils should be used in green areas or disposed of offsite. The depth and extent required for unsuitable soil removal should be determined by a representative of a qualified special inspections firm at the time of construction.

The existing building on site is to be demolished as part of this project. The above grade materials should be removed from the site and properly disposed of at a solid waste facility. The building slab, foundations, and foundations walls should be removed, and the associated excavations backfilled with engineered fill as described in the “Subgrade Preparation” section of this report. Any debris larger than three inches in diameter should be removed or separated from final surface cover with a minimum of one foot of engineered fill to reduce the risk of punching shear failures. Below-grade slabs should be broken into pieces no larger than six inches in diameter to facilitate drainage if these materials are not removed in their entirety. The exposed subgrade after the demolition removals should be moisture conditioned and compacted prior to the placement of engineered fill to achieve design site grades.

Some of the near-surface soils have been disturbed as part of the existing development of the site, including areas that have been previously graded, and near existing site utilities (if present). Existing utilities (if present) that are not planned to be part of the proposed development should be properly sealed and removed from the site. “Undocumented Fills” are soils that have been previously disturbed by man-made activities and have an unknown or undocumented history of compaction as part of the previous site disturbance. These materials can be highly variable in material composition and compaction quality. Due to this unknown condition, these soils should be either removed and replaced with engineered fill as described in the “Subgrade Preparation” section of this report or may be stabilized in place under proposed pavement areas, depending on the condition of the materials at the time of construction. Undocumented fill soils below foundation elements should be removed and replaced by engineered fill prior to foundation construction. The materials should be evaluated by a qualified special inspections firm at the time of construction.

Very loose to medium dense sand soils were encountered at some of the borings at the proposed foundation elevation. These soils will be easily disturbed by construction traffic and the loss of confining pressure. The soils in a very loose or loose condition will require moisture conditioning and recompaction in order to achieve desirable strength and deformation characteristics. These soils should be compacted in place using a smooth-drum roller or other heavy compaction equipment prior to the placement of engineered fill soils or the placement of concrete. Any rutting or deformations of the surface should be repaired prior to the placement of additional fill or concrete.

Care should be taken during the compaction of granular soils, especially if the soils are at or near saturation. Granular soils subjected to vibratory loads when at or near saturation may rapidly lose strength through a phenomenon call shear-induced pore-water pressure, sometimes referred to as liquefaction. This consideration should be evaluated in the field by a representative of the special inspections firm under the direction of a qualified geotechnical engineer at the time of construction.

The silty sand soils will be highly moisture susceptible and will quickly lose strength if they are allowed to become saturated and become disturbed by construction activities. Therefore, the subgrade soils should be protected from the entry of moisture once exposed. Soils that become excessively wet should be allowed to dry and may be recompacted in place. Soils that cannot be dried to within their compactible limits should be removed and replaced with engineered fill as noted in the “Subgrade Preparation” section of this report.

Kilo was not provided a proposed grading plan for the site. This report is based on a finished floor elevation of 99± feet TBM. This report is based on cuts on the order of up to 1± feet to remove surficial

fill materials and surficial organic soils and newly placed fills on the order of 1± to 6± feet to achieve design site grades within the proposed building. Cuts and fills on the order of 6± feet are planned to achieve design site grades in the pavement areas. Due to the presence of organics and deleterious material, some of the existing material on site may not be reusable as engineered fill for grading and imported fill soils may be required. The proposed stormwater feature may also be used as a source of engineered fill.

BORING	BUILDING LOCATION	SURFACE ELEVATION	DEPTH OF SOIL TO REMOVE (FT)	BOTTOM OF CUT ELEVATION	FILL REQUIRED TO 99± FFE (FT)
B-1	Northwest Corner	99±	1±	98±	1±
B-2	Northeast Corner	99±	½±	98±	1±
B-3	Southeast Corner	94±	½±	93±	6±
B-4	Southwest Corner	94±	½±	93±	6±

The site hydrology will be modified by the development of the site. Precipitation that previously would be infiltrated into the soil will instead generate runoff when an impervious surface, such as a building, slab, or pavement, is encountered. This additional peak runoff may require temporary site storage and treatment, depending on local regulations. Moisture should not be allowed to collect near the building foundations, and the site should be sloped to drain. It may be possible to grade the site to drain to stormwater features directly, or a private storm sewer system with catchments and pipelines to the stormwater feature may be necessary. No stormwater management recommendations were authorized by the client.

The following geotechnical related recommendations have been developed in order to minimize the risk of the hazards identified above and to accommodate the proposed construction as described in this report. These recommendations are based on the owner and their design team incorporating these recommendations into the project plans and specifications and that appropriate construction quality control is utilized and verified with independent construction material testing under the direction of a licensed professional engineer in the state of Michigan. If changes in the planned construction occur, Kilo should review the scope and magnitude of the proposed changes with revised recommendations as appropriate.

CONSTRUCTION RECOMMENDATIONS

Subgrade Preparation

Preparation of the subgrade is an important prerequisite to foundation, slab, and pavement performance. The subgrade preparation generally consists of four major components as described below:

- Removal of unsuitable soils
- Scarification, moisture-conditioning, and compaction of the final cut subgrade
- Placement, compaction, and testing of new engineered fill to achieve site grades
- Protection of the subgrade from moisture, ruts, and loosening prior to final surface cover

Prior to the placement of new fill or preparation of the construction area subgrade, Kilo recommends the existing structure is demolished and the associated rubble is properly disposed of offsite. Kilo then recommends the surficial fill materials, vegetation, trees including root bulbs (if encountered), debris larger than three inches in diameter, and frozen soils (if present during construction) be removed from within and a minimum of 10 feet beyond the proposed building and pavement areas. Soils containing organic material will be unsuitable for reuse on site due to their deleterious nature and unfavorable settlement characteristics. Soils containing organics should be disposed of offsite or used in landscaped areas. Unsuitable soils that do not contain organics, such as wet, soft, or loose mineral soils encountered should be selectively undercut and/or stabilized in place. The undocumented fill soils, if encountered, shall be removed below the building foundations, but may remain in place below building floor slabs and pavements, provided that the materials pass proofroll operations as described below. A representative of a qualified special inspections firm working under the direction of a qualified geotechnical engineer should determine the need for and means of stabilization at the time of construction.

After stripping and excavating the unsuitable soils described above, the subgrade should be compacted to a minimum of 95% relative compaction (to the standard proctor, ASTM D698) or to more stringent requirements as described in the table below. The compaction of the exposed subgrade should be tested prior to the placement of engineered fill, foundations, or final surface cover. One means of testing large areas such as the slab on grade and pavement areas is a proofroll test. Proofrolling should be performed with a steel drummed vibratory roller where granular soils are present at subgrade elevations, or a fully loaded tandem axle dump truck or rubber-tired vehicle with a minimum axle load of 18 kips where cohesive soils are encountered. Soils that are observed to rut in excess of one inch under the moving load or have elastic deformations in excess of one-half inch should be remediated prior to placement of engineered fill. Remediation may consist of either moisture conditioning, scarification and recompaction, or placement of new engineered fill. Cut material generated by these operations may be moisture-conditioned and compacted as a source of engineered fill, used in landscape areas, or disposed of offsite.

The compaction, proofrolling, and undercutting activities should be witnessed by a representative of the special inspections firm under the direction of a qualified geotechnical engineer licensed in the state of Michigan. Kilo does not provide construction observation or special inspections services. Proofrolling should be performed following a warm and dry period, which may limit the need for surface repairs to localized areas. If subgrade preparation, compaction, or fill placement activities occur during wet periods or during cool weather, additional remedial actions to repair the proofrolled surface should be anticipated.

Newly placed engineered fill required to establish site grades should be free of organics, frozen soils, ice, debris in excess of three inches, and other deleterious materials. Predominantly silt soils are not recommended for use as engineered fill due to concerns with moisture control and material workability. Due to the underlying granular soils, newly placed clay fill is not recommended due to the risk of moisture ponding above the newly placed fill above the higher-permeability soils below. For this reason, sand soils with a maximum of 12% of the material passing the #200 sieve by mass are recommended for imported engineered fill. A qualified special inspections firm or accredited soil engineering laboratory should test the proposed import soils for gradation or plasticity characteristics as appropriate prior to import. Approved soil imports should be tested for optimum moisture content and maximum laboratory dry density in accordance with the Standard Proctor, ASTM D698. Depending on the proposed use of the

newly placed engineered fill, the soils should be compacted to the relative densities noted in the table below.

MATERIAL TESTED	MIN % DRY DENSITY (D698)	MOISTURE CONTENT RANGE	FREQUENCY OF TESTING
Pavement Subgrade - Top 3 feet	100%	-2 to +2%	1 per 200 cy of fill placed or 1 per 5,000 square feet minimum of three tests per lift
Fill under Foundation Elements Lateral Oversize under Foundation Elements	98%	-2 to +2%	1 per 200 cy of fill placed or 1 per 2,500 square feet minimum of three tests per lift
Mass Grading Fill not covered above Utility Trench Backfill Below-Grade Wall Backfill Floor Slab Subgrade Pavement Subgrade Deeper than 3'	95%	-3 to +3 %	1 per 200 cy of fill placed or 1 per 5,000 square feet minimum of three tests per lift
Random Fill (non-load bearing/Green Space)	92%	-3 to +3 %	1 per 3,000 cy of fill placed or 1 per 10,000 square feet minimum 1 test per lift

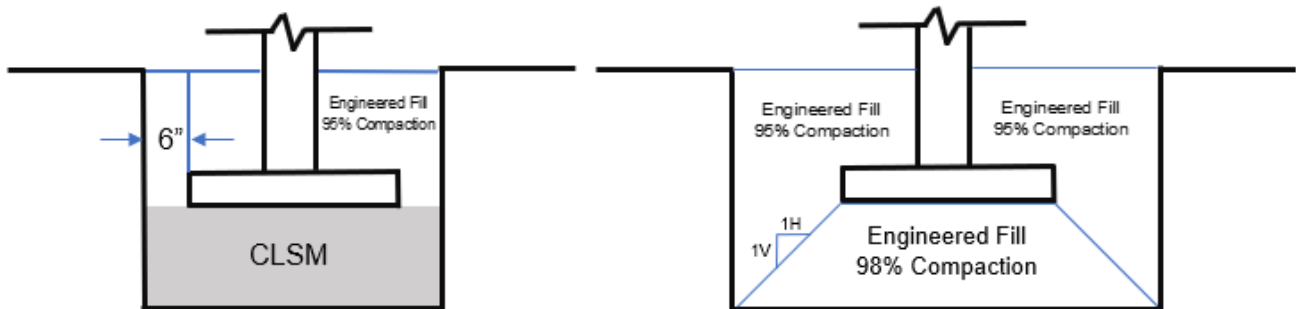
To achieve the design relative compaction values noted in the table above, the compaction equipment should be matched to the proposed material and proposed use. Granular soils subject to full-size, smooth-drum compaction equipment (minimum ten tons) may be placed in 12-inch loose lifts prior to compaction. Saturated granular soils or soils within two feet of the static groundwater level should be compacted using static compaction techniques rather than vibratory compaction techniques. Cohesive soils subject to full-size, sheepsfoot compaction equipment (minimum ten tons) should be placed in 8-inch loose lifts prior to compaction. Material subject to lightweight compaction equipment, including walk-behind compactors, jumping jacks, or plate compactors should be placed in 6-inch loose lifts prior to compaction. All newly placed engineered fill should be placed and compacted in horizontal lifts. Moisture control should be exercised during material placement to maintain moisture contents within the ranges of the optimum moisture content noted above. If soils are not within the recommended moisture contents, these soils should be spread thinly and allowed to dry, or water should be added uniformly through the material by disking or scarifying. Compaction tests should be performed by a qualified special inspections firm on every lift of new engineered fill at the frequencies noted in the table above. Newly placed engineered fill should extend a minimum of 10 feet beyond the edges of proposed building areas and a minimum of 5 feet beyond the edges of pavement areas.

Conventional Shallow Foundation Recommendations

Kilo has based this report on the proposed finished floor elevation of 99± feet TBM, a proposed grade change on the order of 1± to 6± feet from existing site grades. If the proposed building elevation varies from this elevation, Kilo should be contacted in writing to verify the validity of the recommendations provided in this report. Based on this proposed finished floor elevation, the associated bottom of footing elevations accounting for local frost depth requirements are estimated to be 95± feet relative to the TBM. The soils at this elevation are anticipated to consist of either the native sandy soils or newly placed engineered fill after the removal of existing unsuitable soils as noted in this report.

Based on the reported structural loads, the soils observed in the field exploration, and the engineering properties noted in the laboratory testing, the proposed building can be supported by conventional continuous shallow foundations at the proposed walls and columns. Kilo recommends foundations be designed to bear upon either the existing native granular soils or newly placed engineered fill that has been placed and compacted as recommended in this report. Prior to any new engineered fill placement, the soils at the base of excavations should be observed and tested by a qualified special inspections firm prior to engineered fill placement. Suitable bearing soils were observed at depths of 1± feet below existing site grades but may vary between boring locations. Moisture conditioning and compaction to achieve desirable strength and settlement potential characteristics should be anticipated for the site.

If unsuitable soils are encountered at a foundation excavation, a soil correction will be required. This excavation should be extended to competent soils that meet field strength testing requirements. The resulting overexcavation can be backfilled with controlled low-strength material (CLSM), sometimes referred to as lean fill, that extends six inches beyond the face of the proposed foundation element in each direction. Alternatively, the overexcavation can be backfilled with engineered fill as defined in this report extending at a minimum one horizontal to one vertical (1H:1V) ratio beyond the face of the foundation element. This new engineered fill should be compacted to a minimum of 98% relative compaction as noted in the “Subgrade Preparation” section of this report. This will require widening and deepening the area to be corrected with engineered fill from conventional foundation excavations. Alternatively, foundations can bear at the bottom of excavation with additional structural materials (foundation walls or column bearing piers) to proposed surface grades.



The proposed building can be supported on conventional shallow foundations with allowable bearing pressures as noted in the table below. These bearing capacities are based on the soil materials at proposed bearing elevations above with appropriate testing of the subgrade, newly placed engineered fill, and overexcavations as noted. Excavations should extend to the depths noted for adequate frost protection in accordance with local frost depths. The minimum foundation size for column foundations of 30 inches square and wall foundations of 18 inches wide should be followed to minimize the risk of punching shear failures. This minimum foundation size should be utilized even if narrower foundations would be allowable given the allowable bearing pressures noted below.

FOUNDATION TYPE	DEPTH BELOW ADJACENT GRADES (IN)	PROPOSED LOAD	MAXIMUM ALLOWABLE BEARING CAPACITY (PSF)
Interior Column Foundations	24	75 kips	3,000
Exterior Column Foundations	48	75 kips	3,000
Continuous Wall Foundations	48	3.0 kips/foot	3,000

The depth of code-required frost penetration design is dependent on whether the structure is designed to be heated or unheated. Exterior footings in heated areas, such as permanently climate-controlled buildings, should be located at a depth of at least 48 inches below the final exterior grades. Isolated unheated foundations for unheated structures, signage, canopies, and exposed vestibules should be located at least 60 inches below the final exterior grades. If the foundation soils will be exposed to freezing temperatures during or after foundation construction, then the footings and concrete should be adequately protected from freezing. Soils should be allowed to thaw prior to the placement of additional foundations or slabs. Otherwise, interior footings can be located on the native soils or newly placed engineered fill at shallower depths below the floor slab, compatible with architectural and structural considerations.

Foundation excavations should be tested prior to concrete placement to verify the field conditions are consistent with those recommended in this report. One means of testing native, undisturbed soils is the use of the dynamic cone penetrometer in accordance with ASTM Special Technical Publication (STP) 399, "Dynamic Cone for Shallow Penetration Testing" by George F. Sowers. This test method correlates the results of a specific dynamic cone penetrometer testing apparatus to SPT N-values and associated allowable bearing capacities. Testing should be completed at spacing no greater than every 25 feet along continuous foundations and a minimum of one test per every isolated column foundation. Based on the allowable bearing pressures noted in the table above, the penetrometer values should be consistent with a SPT N-value of 9 blows per foot or greater, respectively, at each test location.

During excavations, soils should be protected from changes in moisture content. The addition of water into soil subgrades can negatively impact the shear strength of the soil and material workability. Subgrade soils should be protected from site runoff by maintaining proper site drainage from prepared site subgrades to non-structural areas of the site. Wet soils should be properly moisture conditioned prior to the placement of new engineered fill soils. Foundation, slab, and pavement concrete should be placed as quickly as possible to minimize degradation of the subgrade surface due to wetting and drying. Wicking of moisture from the shallow groundwater table may increase the need for moisture conditioning at the surface or require the use of static compaction techniques for the near-surface subgrade soils and newly placed engineered fill.

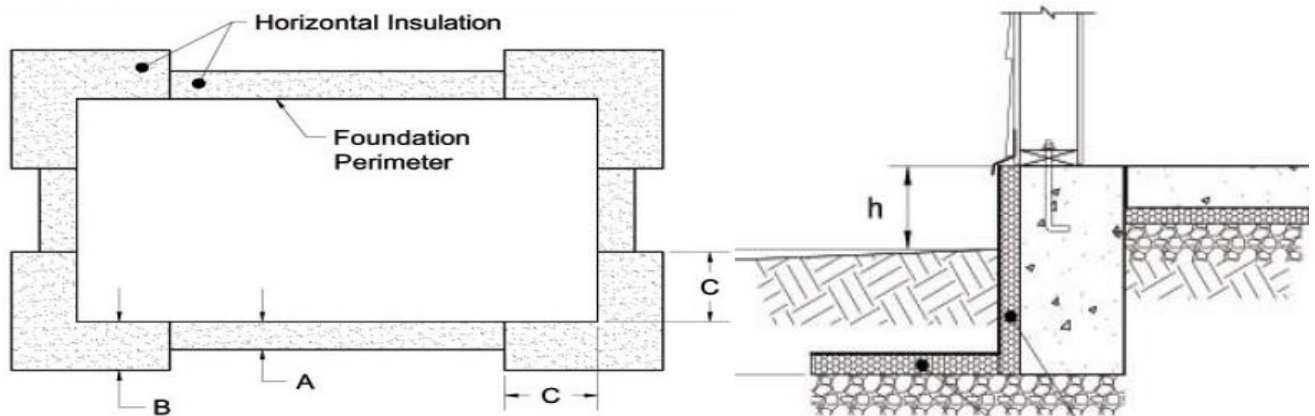
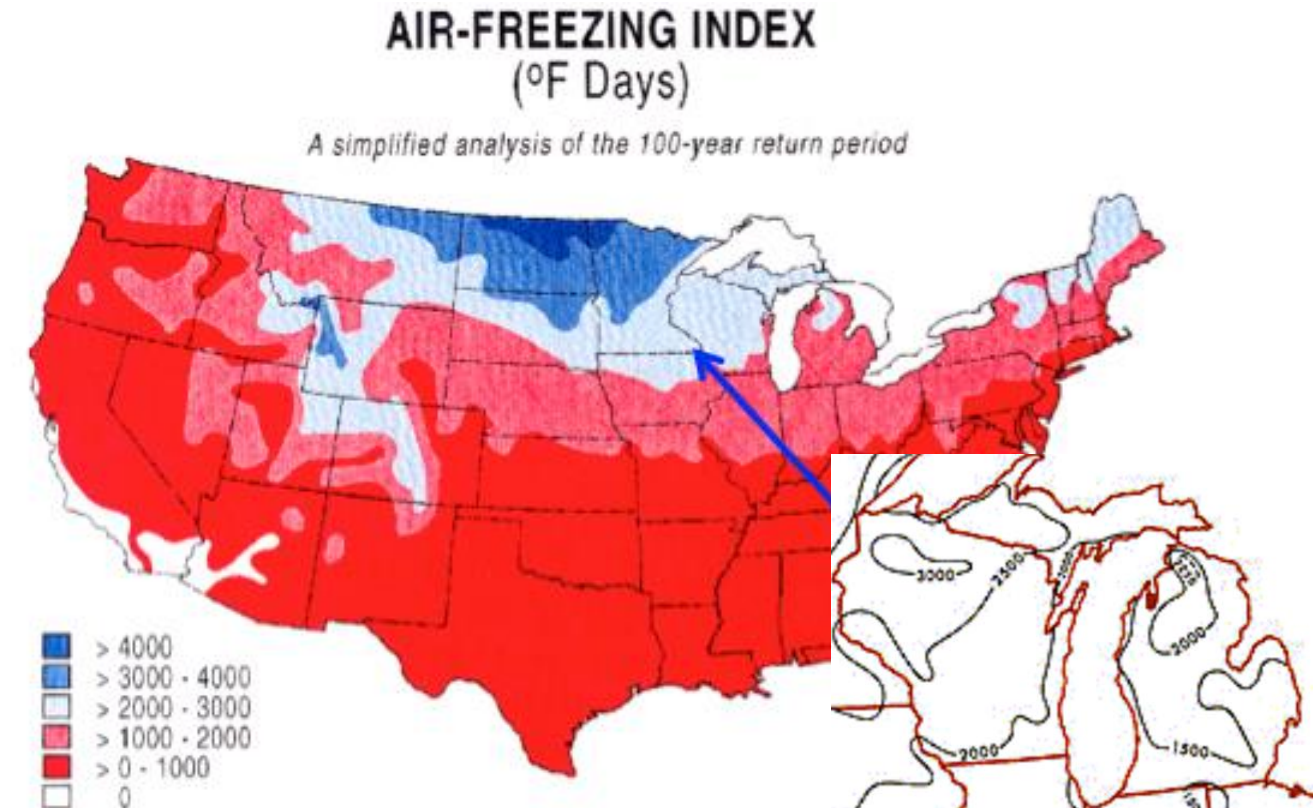
The proposed foundation system has been evaluated for settlement potential based on the soil properties described in this report. Kilo estimates that total foundation settlement for the foundation system is one inch. Differential settlement between adjacent column foundations or between 30-foot spans of continuous is estimated to be one-half inch. This settlement estimate is based on the subgrade materials being prepared as noted in the "Subgrade Preparation" of this report. Generally, this level of differential settlement is tolerable but should be verified by the structural engineer of record.

Sensitive materials such as masonry walls should be designed to minimize cosmetic damage from differential settlement with properly placed control joints.

Frost-Protected Shallow Foundation Recommendations

As an alternative to conventional shallow foundations, Kilo understands that the lightly-loaded structures are frequently designed as frost-protected shallow foundations (FPSF) utilizing a thickened slab at the perimeter of the building to support the wall loads, with the majority of the structure bearing on column foundations at both interior and exterior locations. Based on the soil conditions observed in this exploration, this structural system may be utilized given the parameters noted below.

The site is located in northwest Michigan, with an estimated air-freezing index of 2,500°F-days based on the map below. This air-freezing index dictates the required insulation R-value, depth of thickened slab bearing, and dimensions of the installed insulation for the FPSF system.



The values recommended below are based on ASCE 32-01, “Design and Construction of Frost-Protected Shallow Foundations”. The insulation should be placed on properly compacted, unfrozen ground, and protected during installation from damage. Backfill should be placed using light equipment above the horizontal insulation. The values listed in the table below are minimum values for design. The area should be graded for proper drainage away from the foundation. The foundation should be embedded a minimum of 18 inches below the exterior grades, and the horizontal insulation should have a minimum cover depth of 12 inches below exterior grades. No more than 12 inches of vertical insulation should be exposed above exterior grades. Exposed insulation should be adequately adhered to the foundation and protected from environmental damage.

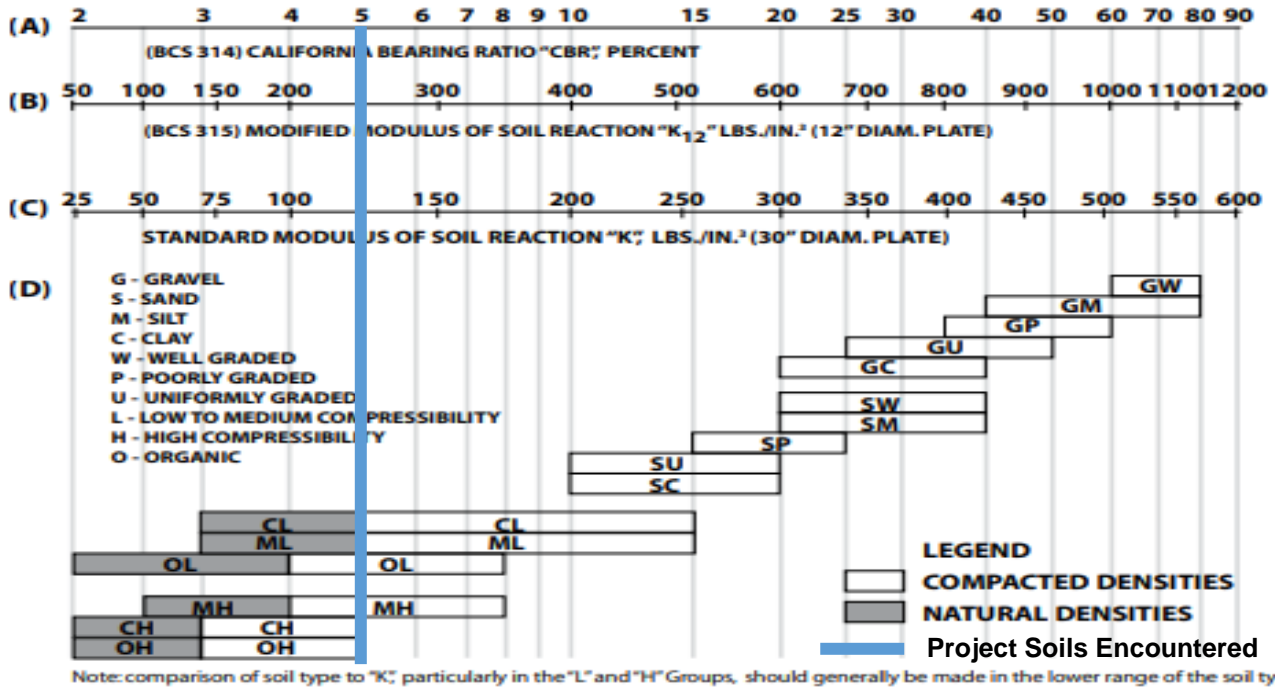
DESIGN PARAMETER	VALUE	UNIT
Minimum Vertical Insulation R-Value	6.7	UL
Minimum Horizontal Insulation R-Value Along Walls	1.7	UL
Minimum Horizontal Insulation R-Value at Corners	4.9	UL
Horizontal Dimension A	12	Inches
Horizontal Dimension B	24	Inches
Horizontal Dimension C	40	Inches
Minimum Foundation Depth	16	Inches
Allowable Bearing Pressure	2,500	Psf

Floor Slab Recommendations

The building floor slab is anticipated to be supported upon either properly compacted native soils or newly placed engineered fill. Both the subgrade and fill soils should be tested as noted in the “Construction Recommendations” section of this report. The chart below is an excerpt from “Slab Thickness Design for Industrial Concrete Floors on Grade” by Robert G. Packard (1976) with the Portland Cement Association, a commonly referenced chart in the Civil Engineering Body of Knowledge that correlates soil types to a range of subgrade modulus and California Bearing Ratio (CBR) values.

Utilizing this chart, Kilo recommends the following values be used for floor slab design.

DESIGN PARAMETER	VALUE	UNIT
Subgrade Modulus k_{12} , 12-inch square plate load test	250	lb/in ³
Subgrade Modulus k_{30} , 30-inch circular plate load test	125	lb/in ³
California Bearing Ratio (CBR)	5	Percent
Select Granular Fill Minimum Thickness Below Slab	4	Inches
On-site soils suitable for reuse as Select Granular Fill	Yes, if tested	



Kilo recommends that select granular fill be placed below the floor slab with the minimum thickness noted in the table above. Select granular fill should be a free-draining material with a maximum of 5% of the material retained on the #200 sieve and a minimum of 50% of the material retained on the #40 sieve by mass. Floor slabs should have a vapor retarder in accordance with ACI 302 "Guide to Concrete Floor and Slab Construction". This guidance document recommends polyethylene sheeting placed directly under the floor slab to minimize moisture penetration from the soil subgrade below if sensitive floor finishes are present and that the vapor retarder is below the select granular fill if slab curling or deformation is a concern. Properly spaced control joints should be utilized to minimize random cracking of the slab due to shrinkage, curing, and curling forces.

The existing sand soils have a low frost susceptibility. In the event that clay, silt, or organic soils are encountered during construction, these materials are moderately to highly susceptible to frost heave if not removed from the subgrade. Slabs placed in unheated areas, such as sidewalks, should be designed to resist frost heave, or the subgrade should be replaced with non-frost susceptible soil to minimize the potential differential movement of the slab. The subgrade should be overexcavated 6 inches below the planned bottom of slab elevation and replaced with select granular fill, consisting of sand soils with less than 50% of the material passing the #40 sieve by weight and less than 5% of the material passing the #200 sieve by weight. The newly placed fill should be compacted to a minimum of 95% of the maximum dry density as determined by the Standard Proctor test (ASTM D698). The sand soils on site may meet this gradation if tested.

Seismic Design Recommendations

Although the site is in a region with low seismicity, the site is in a municipality that employs the 2018 International Building Code (IBC). The 2018 International Building Code (IBC) requires that a site class be determined based on soil type for the calculation of earthquake design forces in structures. Based on the estimated depth to rock and the estimated shear strength of the soil at the boring locations,

Site Class “D” is recommended. If shallower rock or stiffer soils are encountered deeper than the depth of Kilo’s borings, Kilo should be notified in writing in order to make appropriate modifications to the seismic design recommendations contained in this report. The USGS-NEHRP probabilistic ground motion values interpolated between the nearest four grid points from latitude 45.2737°N and longitude 84.6235°W are as follows:

PERIOD (S)	2% PROBABILITY OF EVENT IN 50 YEARS	SITE COEFFICIENT	MAXIMUM SPECTRAL DESIGN ACCELERATION	SPECTRAL DESIGN ACCELERATION PARAMETERS	
0.2 (S _s)	4.3	F _a = 1.6	S _{ms} = 6.8	S _{Ds} = 4.5	T ₀ = 0.13
1.0 (S ₁)	1.9	F _v = 2.4	S _{m1} = 4.5	S _{D1} = 3.0	T _s = 0.66

$S_{ms} = F_a S_s$ $S_{Ds} = \frac{2}{3} * S_{ms}$ $T_0 = 0.2 * S_{D1} / S_{Ds}$
 $S_{m1} = F_v S_1$ $S_{D1} = \frac{2}{3} * S_{m1}$ $T_s = S_{D1} / S_{Ds}$

The seismic parameters for this report were accessed via SeismicMaps.org, which is based on USGS seismic data for the contiguous United States. The site coefficients, maximum spectral accelerations, and design parameters are based solely on this source and the underlying USGS data. The risk category utilized is based on occupied, non-essential structures but should be verified with the architect, structural engineer, or building official as appropriate. This determination is beyond Kilo’s scope of services.

Pavement Recommendations

Kilo has provided recommendations for pavement construction based on the existing unsuitable soils being removed from the surface, properly compacted subgrades, and properly compacted engineered fill to achieve design site grades. If the existing site soils are not prepared in this manner, undesirable performance of the pavements may result. Any observed soft or loose locations should be selectively subcut and replaced with suitable engineered fill, or stabilized in place using engineered fill, aggregate base, or open-graded clean crushed stone.

Kilo has based the pavement sections in the table below on the traffic loadings noted in this report and the soil conditions noted in this report. If traffic loadings vary from those stated, modifications to the pavement sections may be required. The site soils are anticipated to be fair to poor materials with a minimum CBR value of 5. If higher quality materials are used for engineered fill that exceed this value, Kilo should be contacted to value-engineer the pavement sections if appropriate. These pavements have been designed only for the anticipated garbage and delivery truck service. The following pavement sections have been recommended based on AASHTO 1993 methodologies and the following design parameters:

- Design Life - 20 years
- Initial Serviceability - 4.2
- Terminal Serviceability - 2.0
- Reliability - 85%
- Standard Deviation - 0.45
- Drainage Factor – 1.0

If during the final design phase these values are determined to be incorrect, Kilo must be contacted to provide revised pavement recommendations. Based upon the soil borings, laboratory data and provided the subgrade soils are prepared as outlined in this report, the following flexible and rigid pavement section thicknesses are recommended for parking lot and drive areas in general accordance with AASHTO 1993 methodologies.

PAVEMENT TYPE	WEAR COURSE THICKNESS (IN)	BASE COURSE THICKNESS (IN)	AGGREGATE BASE THICKNESS (IN)
Light-Duty Asphalt*	1-1/2	1-1/2	6
Heavy-Duty Asphalt	1-1/2	1-1/2	8
Concrete	5		4

*Minimum design section of 3" HMA/6" Base recommended

The pavement sections noted above are based on the traffic loadings noted in this report, which account for typical parking lot traffic from light-duty automobiles, retail deliveries, and garbage surface. Sites in northern climates can see significant truck traffic from snowplowing activities depending on the types of equipment used. If pickup-mounted snowplows are used, the effect may be minor, but heavy-duty trucks or front-end loaders used for snow clearing activities would increase the traffic loads on the pavements. If heavy-duty trucks or front-end loaders are planned for snow clearing activities, it may be advisable to add an additional half-inch of wear-course asphalt to the design section.

The granular base course should consist of well-graded crushed stone meeting the requirements from Section 902, Table 902-1 of the State of Michigan DOT Standard Specifications for Construction. The granular base course material should be placed and compacted to a minimum of 100% of maximum density as determined by the standard Proctor (ASTM D698). Also, a representative of a qualified geotechnical engineer should test and document the base course material for gradation prior to and during placement.

Asphaltic binder and surface courses should meet the gradation requirements from Section 902, Table 902-5 of the State of Michigan DOT Standard Specifications for Construction. Asphaltic courses should be placed and compacted to the minimum required density contained within Section 501 of the State of Michigan DOT Standard Specifications for Construction. An adequate number of in-place density tests should be performed during construction to document the placement compaction as recommended in the Standard Specifications for Construction.

The pavements should be sloped to provide positive surface drainage. Otherwise, a storm sewer system may be appropriate to carry away storm run-off water. Water should not be allowed to pond on or adjacent to the pavement as this could saturate the subgrade and cause premature pavement deterioration. The granular base course should be protected from water inflow along drainage paths. Additionally, the granular base course should extend beyond the edges of the pavement in low areas to allow any water that enters the base course stone a path for exit. Construction of the subgrade and pavements should be in accordance with the project specifications and the recommendations of this report.

A flexible pavement system is not recommended in dumpster pad areas and areas where heavy trucks will turn frequently or will be parked due to concerns about plastic deformations of the surface course. Based upon the anticipated traffic volumes, Kilo recommends a concrete pavement section consisting of 6 inches of crushed aggregate base course and 4 inches of Portland cement concrete as a rigid pavement replacement. The concrete should have a minimum compressive strength of 4,000 psi at 28 days and should be properly air entrained. The concrete must be properly reinforced and must have appropriately spaced control joints.

RISK MANAGEMENT CONSIDERATIONS

Special Inspections During Construction

A qualified special inspections firm under the supervision of a professional engineer licensed in the state of Michigan should be retained to provide observation and testing of construction activities involved in the foundation, earthwork, and related activities of this project. Kilo does not provide these services but can advise the client regarding firms who can perform these services. Kilo will not accept responsibility for conditions that deviated from those described in this report, nor for the performance of the foundation or pavement if a qualified special inspections firm is not engaged to also provide construction observation and testing for this project in accordance with the recommended testing frequencies in this report.

Moisture Sensitive Soils/Weather Related Concerns

Protection of the subgrade from changes in moisture content will be necessary for the subgrade to perform as designed. Increases in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. To minimize this risk, the exposed surface should be compacted prior to anticipated precipitation events and should be sloped to drain away from building and pavement areas until final surface wear courses (pavements and floor slab) are in place. Failure to maintain surface drainage may slow the progress of earthwork activities. Water should not be allowed to pond in excavations or upon prepared soil surfaces. Wet soils should be scarified, allowed to dry, and recompact, or should be replaced by properly placed engineered fill. It will be advantageous to perform earthwork during dry weather to minimize moisture-related impacts on soil subgrades and associated strength loss.

Excavation Safety

This report was written to address the technical hazards anticipated for the site and the proposed project conditions. During the execution of the work, excavation work involving utility trenches, foundation excavations, and other below-grade penetrations. It is mandated that excavations be constructed in accordance with current Occupational Safety and Health Administration (OSHA) guidelines to protect workers and others during construction. Kilo recommends that these regulations be strictly enforced; otherwise, workers could be in danger and the owner(s) and the contractor(s) could be liable for substantial penalties. Kilo is providing this information solely as a service to our client. Kilo does not assume responsibility for construction site safety or the contractor's or other parties' compliance with local, state, and federal safety or other regulations.

Given that Kilo is not involved with the means and methods of construction, the contractor is solely responsible for designing and constructing stable, temporary excavations for the protection of workers and the general public. These responsibilities may include shoring, sloping, or benching the sides of the excavations as required to maintain stability of both the excavation sides and bottom. All soils should be considered “Type C” soils requiring the maximum protection requirements unless dictated otherwise by the contractor’s “Competent Person” as defined in OSHA regulations for excavation safety. The contractor’s “Competent Person” should evaluate the soil exposed in the excavations as part of the contractor’s safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

Utilities Trenching

Backfill for utility trenches is as important as the original subgrade preparation or engineered fill placed to support either a foundation or slab. Utility trench excavations have the potential to degrade the properties of the adjacent fill materials. Utility trench walls that are allowed to move laterally can lead to reduced bearing capacity and increased settlement of adjacent structural elements and overlying slabs and pavements. Therefore, it is imperative that the backfill for utility trenches be placed to meet the project specifications for the engineered fill of this project. Due to the narrow nature of utility trenches, larger compaction equipment cannot typically be used. Unless otherwise specified, the backfill for the utility trenches should be placed in 4 to 6 inch loose lifts and compacted to a minimum of 95 percent of the maximum dry density and within 2 percent of the optimum moisture content achieved by the standard Proctor test (ASTM D698). It may be advisable to utilize granular fill in utility trenches to allow for compaction with the lighter equipment typically utilized. Up to 4 inches of bedding material placed directly under the pipes or conduits placed in the utility trench can be compacted to 90 percent relative compaction with respect to the standard Proctor. Compaction testing should be completed at the minimum rates noted in the “Subgrade Preparation” section of this report, including testing each lift placed.

REPORT LIMITATIONS

The concept of risk is an important aspect of the geotechnical evaluation. Soils are non-homogenous and material properties may change across the project site and between locations sampled in the field exploration. Geotechnical engineers use a variety of analyses that include theoretical, mathematical, and empirical models to estimate the performance of a given set of soils under a given set of loads. Given the nature of the materials, these analyses do not always comprise an exact science. The analyses must be combined with engineering judgment and experience when developing recommendations. Due to potential variations in material properties on site at and away from Kilo’s field exploration, this geotechnical evaluation should not be considered risk-free. The interaction between the soils and the proposed structure may not perform as planned. The engineering recommendations presented in this report constitute Kilo’s professional estimate of those measures that are necessary for the proposed structure to perform according to the proposed design based on the information generated and referenced during this evaluation, and Kilo’s experience in working with similar conditions.

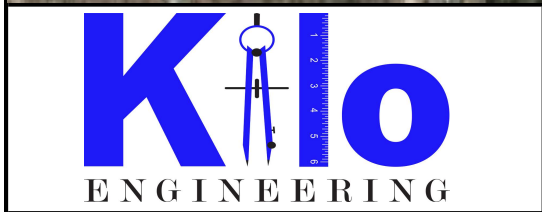
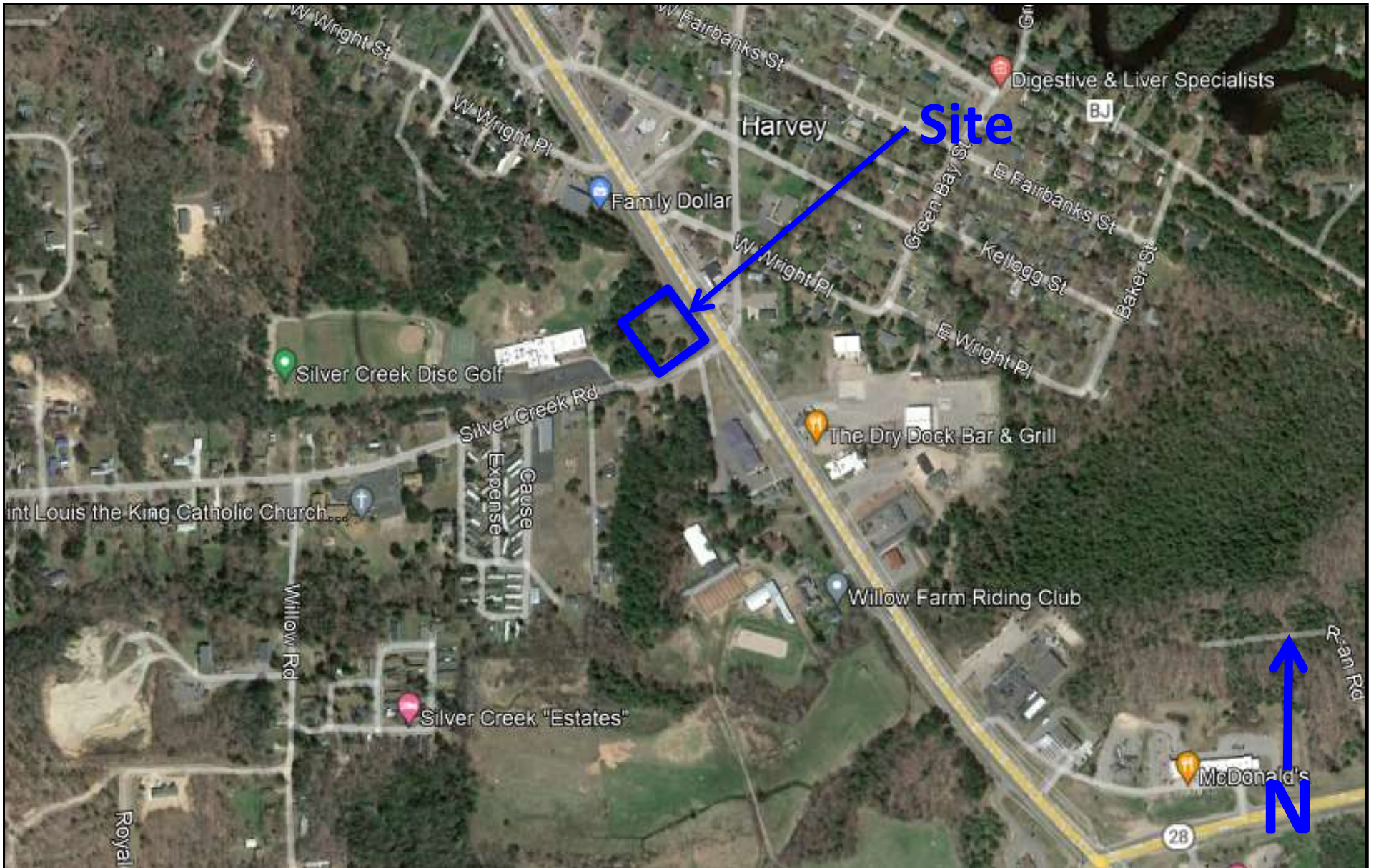
The recommendations submitted are based on the project information provided by the client, the subsurface information acquired during the field exploration, and Kilo's engineering experience with similar projects. If project details were to change, including the type of construction, building loads, or location of features, Kilo should be contacted to verify the validity of their recommendations. If changes do not occur without Kilo having the opportunity to review the changes and revise their recommendations accordingly, Kilo accepts no responsibility for the impact of the changes on the project.

The geotechnical engineer has endeavored to adhere to generally accepted professional geotechnical engineering practices in the local area with the findings, recommendations, specifications, or professional advice contained in this report. No other warranties are implied or expressed. This report is based on the recommendations contained herein being incorporated into the project plans and specifications, adequate construction quality control measures are utilized, and that third-party special inspections or construction material testing is completed as noted in this report and as required by section 1705 of the International Building Code (IBC).

This report may be used only by the client, their design team, and only for the purposes stated, within three years from its issuance. Land use, site conditions (both on site and off site) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use this report shall notify Kilo of such intended use. Based on the intended use of the report, Kilo may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Kilo from any liability resulting from the use of this report by any unauthorized party.

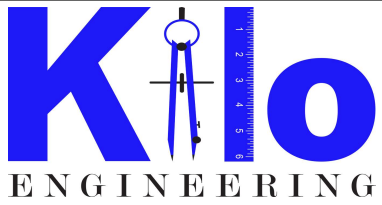
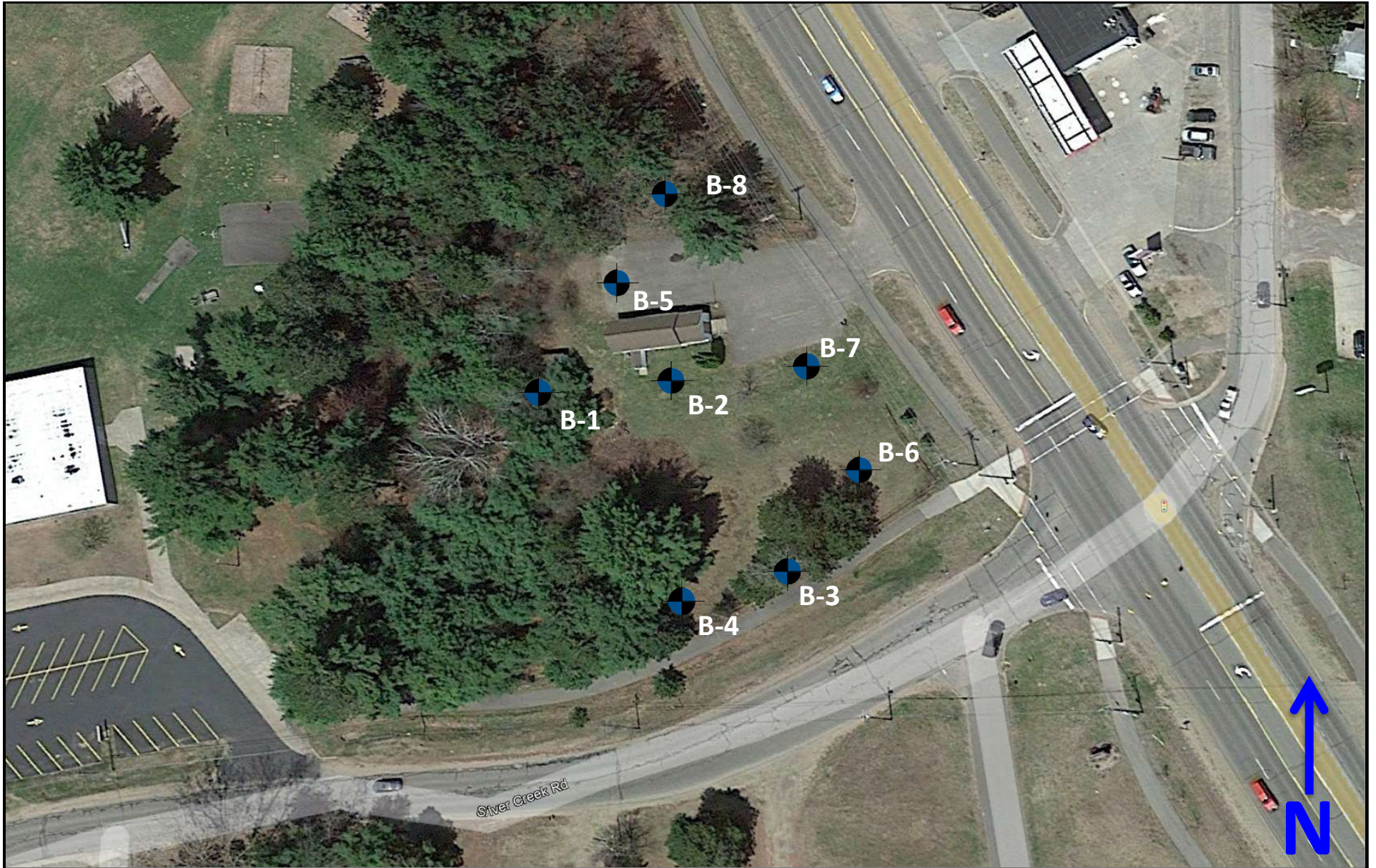
LIST OF APPENDICES

Site Vicinity Plan
Boring Location Plan
Boring Logs
Geotechnical General Notes



Project Name:	Proposed Dollar General
Project Address:	4050 U.S. Highway 41
City, State:	Harvey, Michigan
Project Number:	23-1460

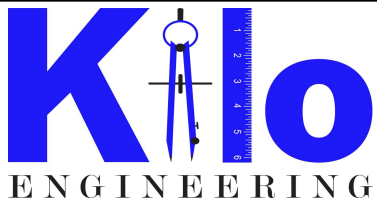
Proposed Site
Vicinity Plan



Project Name:
Project Address:
City, State:
Project Number:

Proposed Dollar General
4050 U.S. Highway 41
Harvey, Michigan
23-1460

Proposed Boring
Location Plan



Project Name:
 Project Address:
 City, State:
 Project Number:

Proposed Dollar General
 4050 U.S. Highway 41
 Harvey, Michigan
 23-1460

Proposed Boring
 Location Plan



Kilo Engineering

Marine on Saint Croix, MN

Boring B-1

Drilling Crew: MID	Boring Depth: 21 ft	Project Name: Dollar General
Drilling Rig: CME-45C	Elevation: 99 ft TBM	Project Address: 4050 U.S. Highway 41
Drilling Date: 10/18/2023	GW During Drilling: 18.17 ft	City, State: Harvey, Michigan
Drilling Method: H.S.A.	GW At Completion: Not Observed	Project Number: 23-1460
Sampling Type: Split Spoon	GW At Delay: --	Boring Location: Proposed Building Northwest Corner
Drilling Foreman: EJB	Latitude: 46.49758°N	
Logged By: Z. Pilz	Longitude: 87.36236°W	

Depth	Sample	Recovery (in)	Symbol	Soil or Rock Description:	N-value	MC	PL	LL	PI	P200
0			OL	Surficial Organic Soil (7" thick)						
1				SAND, Fine Grained, Light Brown, Moist, Medium Dense	3-5-7 N=12	1				
2		15	SP							
3				SAND, Fine Grained, Light Brown, Moist, Medium Dense	4-7-9 N=16	3				
4		14	SP							
5				SAND, Fine Grained, Light Brown, Moist, Medium Dense	4-8-9 N=17	2				
6		14	SP							
7				SAND with Silt, Fine Grained, Light Brown, Moist, Very Dense	39-46-52 N=98	4				
8		13	SP-SM							
9				SAND, Fine Grained, trace Silt, Light Brown, Moist, Very Dense	36-48-54 N=102	6				
10		15	SP							
11				Silty SAND, Fine Grained, Brown, Wet, Very Dense	16-22-32 N=54	18				
12		18	SM							

End of Boring at 21 feet - Boring backfilled with auger cuttings



Kilo Engineering

Marine on Saint Croix, MN

Boring B-2

Drilling Crew: MID	Boring Depth: 21 ft	Project Name: Dollar General
Drilling Rig: CME-45C	Elevation: 99 ft TBM	Project Address: 4050 U.S. Highway 41
Drilling Date: 10/18/2023	GW During Drilling: 15 ft	City, State: Harvey, Michigan
Drilling Method: H.S.A.	GW At Completion: 16.5 ft	Project Number: 23-1460
Sampling Type: Split Spoon	GW At Delay: --	Boring Location: Proposed Building Northeast Corner
Drilling Foreman: EJB	Latitude: 46.49781°N	
Logged By: Z. Pilz	Longitude: 87.35956°W	

Depth	Sample	Recovery (in)	Symbol	Soil or Rock Description:	N-value	MC	PL	LL	PI	P200
0			OL	Surficial Organic Soil (3" thick)						
1				SAND, Fine Grained, Light Brown, Moist, Medium Dense	1-3-8 N=11	3				
2		14	SP							
3				SAND, Fine Grained, Light Brown, Moist, Medium Dense	5-13-16 N=29	5				
4		16	SP							
5				SAND, Fine Grained, Light Brown, Moist, Very Dense	21-27-26 N=53	4				
6		15	SP							
7				SAND, Fine Grained, trace Silt, Light Brown, Moist, Very Dense	16-27-41 N=68	6				
8		16	SP							
9				SAND, Fine Grained, trace Silt, Brown, Wet, Very Dense	16-32-44 N=76	19				
10		18	SP							
11				Sandy SILT, Brown, Wet, Loose	3-4-5 N=9	19				
12		17	ML							
13										
14										
15										
16										
17										
18										
19										
20										

End of Boring at 21 feet - Boring backfilled with auger cuttings



Kilo Engineering

Marine on Saint Croix, MN

Boring B-3

Drilling Crew: MID	Boring Depth: 21 ft	Project Name: Dollar General
Drilling Rig: CME-45C	Elevation: 94 ft TBM	Project Address: 4050 U.S. Highway 41
Drilling Date: 10/18/2023	GW During Drilling: 14 ft	City, State: Harvey, Michigan
Drilling Method: H.S.A.	GW At Completion: 12.5 ft	Project Number: 23-1460
Sampling Type: Split Spoon	GW At Delay: --	Boring Location: Proposed Building Southeast Corner
Drilling Foreman: EJB	Latitude: 46.49511°N	
Logged By: Z. Pilz	Longitude: 87.35747°W	

Depth	Sample	Recovery (in)	Symbol	Soil or Rock Description:	N-value	MC	PL	LL	PI	P200
0			OL	Surficial Organic Soil (5" thick)						
1				SAND, Fine Grained, Light Brown, Moist, Dense						
2		12	SP		2-17-19 N=36	1				
3										
4										
5		16	SP- SM	SAND with Silt, Fine Grained, Light Brown, Moist, Very Dense	21-51-54 N=105	4				
6										
7		16	SP	SAND, Fine Grained, trace Silt, Light Brown, Moist, Medium Dense	3-6-7 N=13	4				
8										
9										
10		15	ML	Sandy SILT, Brown, Wet, Very Dense	13-26-26 N=52	19				
11										
12										
13										
14										
15		18	SP- SM	SAND with Silt, Medium Grained, Brown, Wet, Loose	3-3-4 N=7	19				
16										
17										
18										
19										
20		18	SM	Silty SAND, Medium Grained, Brown, Wet, Loose	4-4-4 N=8	16				

End of Boring at 21 feet - Boring backfilled with auger cuttings



Kilo Engineering

Marine on Saint Croix, MN

Boring B-4

Drilling Crew: MID	Boring Depth: 21 ft	Project Name: Dollar General
Drilling Rig: CME-45C	Elevation: 94 ft TBM	Project Address: 4050 U.S. Highway 41
Drilling Date: 10/18/2023	GW During Drilling: 13.67 ft	City, State: Harvey, Michigan
Drilling Method: H.S.A.	GW At Completion: Not Observed	Project Number: 23-1460
Sampling Type: Split Spoon	GW At Delay: --	Boring Location: Proposed Building Southwest Corner
Drilling Foreman: EJB	Latitude: 46.49444°N	
Logged By: Z. Pilz	Longitude: 87.35956°W	

Depth	Sample	Recovery (in)	Symbol	Soil or Rock Description:	N-value	MC	PL	LL	PI	P200
0			OL	Surficial Organic Soil (3" thick)						
1				SAND, Fine Grained, Light Brown, Moist, Dense						
2		14	SP		11-17-22 N=39	1				
3										
4										
5		15	SP	SAND, Fine Grained, trace Silt, Light Brown, Moist, Dense	7-17-18 N=35	2				
6										
7										
8		16	SP	SAND, Fine Grained, trace Silt, Light Brown, Moist, Very Dense	33-41-39 N=80	5				
9										
10		16	SM	Silty SAND, Fine Grained, Brown, Wet, Dense	6-15-22 N=37	23				
11										
12										
13										
14										
15		18	ML	SILT with Sand, Brown, Wet, Medium Dense	5-8-7 N=15	23				
16										
17										
18										
19										
20		16	CL-ML	Silty LEAN CLAY, trace Sand, Brown, Wet, Hard	16-14-17 N=31	23				

End of Boring at 21 feet - Boring backfilled with auger cuttings



Kilo Engineering

Marine on Saint Croix, MN

Boring B-5

Drilling Crew: <u>MID</u>	Boring Depth: <u>11 ft</u>	Project Name: <u>Dollar General</u>
Drilling Rig: <u>CME-45C</u>	Elevation: <u>99 ft TBM</u>	Project Address: <u>4050 U.S. Highway 41</u>
Drilling Date: <u>10/18/2023</u>	GW During Drilling: <u>Not Observed</u>	City, State: <u>Harvey, Michigan</u>
Drilling Method: <u>H.S.A.</u>	GW At Completion: <u>Not Observed</u>	Project Number: <u>23-1460</u>
Sampling Type: <u>Split Spoon</u>	GW At Delay: <u>--</u>	
Drilling Foreman: <u>EJB</u>	Latitude: <u>46.49914°N</u>	Boring Location: <u>Proposed Pavements</u>
Logged By: <u>Z. Pilz</u>	Longitude: <u>87.36083°W</u>	<u>North Drive Lane</u>

Depth	Sample	Recovery (in)	Symbol	Soil or Rock Description:	N-value	MC	PL	LL	PI	P200
0			ASP	ASPHALT (2" thick) No Aggregate Base Observed	No					
1				SAND, Medium Grained, Brown, Moist, Medium Dense						
2		18	SP		3-6-7	4				
3					N=13					
4										
5		15	SP	SAND, Medium Grained, trace Silt, Brown, Moist, Loose	2-4-5	13				
6					N=9					
7		17	SM	Silty SAND, Fine Grained, Brown, Moist, Dense	13-15-16	19				
8					N=31					
9										
10		16	SP	SAND, Fine Grained, trace Silt, Light Brown, Moist, Dense	6-17-18	10				
					N=35					

End of Boring at 11 feet - Boring backfilled with auger cuttings



Kilo Engineering

Marine on Saint Croix, MN

Boring B-6

Drilling Crew: MID	Boring Depth: 11 ft	Project Name: Dollar General
Drilling Rig: CME-45C	Elevation: 94 ft TBM	Project Address: 4050 U.S. Highway 41
Drilling Date: 10/18/2023	GW During Drilling: Not Observed	City, State: Harvey, Michigan
Drilling Method: H.S.A.	GW At Completion: Not Observed	Project Number: 23-1460
Sampling Type: Split Spoon	GW At Delay: --	Boring Location: Proposed Pavements Southeast Drive Lane
Drilling Foreman: EJB	Latitude: 46.49639°N	
Logged By: Z. Pilz	Longitude: 87.35608°W	

Depth	Sample	Recovery (in)	Symbol	Soil or Rock Description:	N-value	MC	PL	LL	PI	P200
0			OL	Surficial Organic Soil (2" thick)						
1				SAND, Medium Grained, Light Brown, Moist, Loose	2-3-4 N=7	3				
2		16	SP							
3				SAND with Silt, Fine Grained, Light Brown, Moist, Medium Dense	6-12-11 N=23	6				
4			SP- SM							
5		17		SAND, Fine Grained, trace Silt, Light Brown, Moist, Medium Dense	4-5-5 N=10	7				
6			SP							
7		18		Silty SAND, Fine Grained, Brown, Wet, Loose	3-4-5 N=9	18				
8			SM							
9										
10		18								

End of Boring at 11 feet - Boring backfilled with auger cuttings



Kilo Engineering

Marine on Saint Croix, MN

Boring B-7

Drilling Crew: MID	Boring Depth: 11 ft	Project Name: Dollar General
Drilling Rig: CME-45C	Elevation: 98 ft TBM	Project Address: 4050 U.S. Highway 41
Drilling Date: 10/18/2023	GW During Drilling: Not Observed	City, State: Harvey, Michigan
Drilling Method: H.S.A.	GW At Completion: Not Observed	Project Number: 23-1460
Sampling Type: Split Spoon	GW At Delay: --	Boring Location: Proposed Pavements East Drive Lane
Drilling Foreman: EJB	Latitude: 46.49789°N	
Logged By: Z. Pilz	Longitude: 87.35681°W	

Depth	Sample	Recovery (in)	Symbol	Soil or Rock Description:	N-value	MC	PL	LL	PI	P200
0			OL	Surficial Organic Soil (4" thick)						
1				SAND, Fine Grained, Light Brown, Moist, Very Loose	1-1-1 N=2	5				
2		12	SP							
3				SAND, Fine Grained, Light Brown, Moist, Very Loose	1-2-2 N=4	5				
4		15	SP							
5				SAND, Fine Grained, trace Silt, Light Brown, Moist, Very Dense	35-56-62 N=118	11				
6		16	SP							
7				SAND, Fine Grained, trace Silt, Light Brown, Moist, Very Dense	44-58-65 N=123	6				
8		17	SP							
9										
10										

End of Boring at 11 feet - Boring backfilled with auger cuttings



Kilo Engineering

Marine on Saint Croix, MN

Boring B-8

Drilling Crew: <u>MID</u>	Boring Depth: <u>11 ft</u>	Project Name: <u>Dollar General</u>
Drilling Rig: <u>CME-45C</u>	Elevation: <u>98 ft TBM</u>	Project Address: <u>4050 U.S. Highway 41</u>
Drilling Date: <u>10/18/2023</u>	GW During Drilling: <u>Not Observed</u>	City, State: <u>Harvey, Michigan</u>
Drilling Method: <u>H.S.A.</u>	GW At Completion: <u>Not Observed</u>	Project Number: <u>23-1460</u>
Sampling Type: <u>Split Spoon</u>	GW At Delay: <u>--</u>	Boring Location: <u>Proposed Pavements</u> <u>Apron to US HWY 41</u>
Drilling Foreman: <u>EJB</u>	Latitude: <u>46.50058°N</u>	
Logged By: <u>Z. Pilz</u>	Longitude: <u>87.35983°W</u>	

Depth	Sample	Recovery (in)	Symbol	Soil or Rock Description:	N-value	MC	PL	LL	PI	P200
0			OL	Surficial Organic Soil (2" thick)						
1				SAND, Fine Grained, trace Silt, Light Brown, Moist, Medium Dense	4-7-10 N=17	2				
2		14	SP							
3				SAND with Silt, Fine Grained, Light Brown, Moist, Dense	6-16-18 N=34	4				
4		15	SP- SM							
5				SAND, Fine Grained, trace Silt, Light Brown, Moist, Dense	7-18-18 N=36	3				
6		15	SP							
7				SAND with Silt, Fine Grained, Light Brown, Moist, Medium Dense	5-10-12 N=22	7				
8		15	SP- SM							
9										
10										

End of Boring at 11 feet - Boring backfilled with auger cuttings

GENERAL NOTES

DRILLING & SAMPLING SYMBOLS:

SS:	Split Spoon - 1- ³ / ₈ " I.D., 2" O.D., unless otherwise noted	HS:	Hollow Stem Auger
ST:	Thin-Walled Tube - 2" O.D., 3" O.D., unless otherwise noted	PA:	Power Auger (Solid Stem)
RS:	Ring Sampler - 2.42" I.D., 3" O.D., unless otherwise noted	HA:	Hand Auger
DB:	Diamond Bit Coring - 4", N, B	RB:	Rock Bit
BS:	Bulk Sample or Auger Sample	WB:	Wash Boring or Mud Rotary

The number of blows required to advance a standard 2-inch O.D. split-spoon sampler (SS) the last 12 inches of the total 18-inch penetration with a 140-pound hammer falling 30 inches is considered the "Standard Penetration" or "N-value".

WATER LEVEL MEASUREMENT SYMBOLS:

WL:	Water Level	WS:	While Sampling	BCR:	Before Casing Removal
WCI:	Wet Cave in	WD:	While Drilling	ACR:	After Casing Removal
DCI:	Dry Cave in	AB:	After Boring	N/E:	Not Encountered

Water levels indicated on the boring logs are the levels measured in the borings at the times indicated. Groundwater levels at other times and other locations across the site could vary. In pervious soils, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of groundwater levels may not be possible with only short-term observations.

DESCRIPTIVE SOIL CLASSIFICATION: Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

CONSISTENCY OF FINE-GRAINED SOILS

<u>Unconfined Compressive Strength, Qu, psf</u>	<u>Standard Penetration or N-value (SS) Blows/Ft.</u>	<u>Consistency</u>
< 500	0 - 1	Very Soft
500 - 1,000	2 - 4	Soft
1,000 - 2,000	4 - 8	Medium Stiff
2,000 - 4,000	8 - 15	Stiff
4,000 - 8,000	15 - 30	Very Stiff
8,000+	> 30	Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS

<u>Standard Penetration or N-value (SS) Blows/Ft.</u>	<u>Relative Density</u>
0 - 3	Very Loose
4 - 9	Loose
10 - 29	Medium Dense
30 - 50	Dense
> 50	Very Dense

RELATIVE PROPORTIONS OF SAND AND GRAVEL

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 15
With	15 - 29
Modifier	≥ 30

GRAIN SIZE TERMINOLOGY

<u>Major Component of Sample</u>	<u>Particle Size</u>
Boulders	Over 12 in. (300mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75mm)
Sand	#4 to #200 sieve (4.75 to 0.075mm)
Silt or Clay	Passing #200 Sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

<u>Term</u>	<u>Plasticity Index</u>
Non-plastic	0
Low	1-10
Medium	11-30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests^a

				Soil Classification	
				Group Symbol	Group Name ^b
Coarse Grained Soils More than 50% retained on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines ^c	$Cu \geq 4$ and $1 \leq Cc \leq 3^e$	GW	Well-graded gravel ^f
		Gravels with Fines More than 12% fines ^c	Fines classify as ML or MH	GP	Poorly graded gravel ^f
			Fines classify as CL or CH	GM	Silty gravel ^{f,g,h}
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines ^c	$Cu \geq 6$ and $1 \leq Cc \leq 3^e$	SW	Well-graded sand ^f
		Sands with Fines More than 12% fines ^c	Fines classify as ML or MH	SP	Poorly graded sand ^f
			Fines Classify as CL or CH	SM	Silty sand ^{f,i,j}
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silt and Clays Liquid limit less than 50	inorganic	$PI > 7$ and plots on or above "A" line ^f	CL	Lean clay ^{k,l,m}
			$PI < 4$ or plots below "A" line ^f	ML	Silt ^{k,l,m}
			Liquid limit - oven dried < 0.75	OL	Organic clay ^{k,l,m,n}
			Liquid limit - not dried	OH	Organic silt ^{k,l,m,o}
	Silt and Clays Liquid limit 50 or more	inorganic	PI plots on or above "A" line	CH	Fat clay ^{k,l,m}
			PI plots below "A" line	MH	Elastic Silt ^{k,l,m}
		organic	Liquid limit - oven dried < 0.75	OH	Organic clay ^{k,l,m,p}
			Liquid limit - not dried	OH	Organic silt ^{k,l,m,q}
Highly organic soils	Primarily organic matter, dark in color, and organic odor		PT	Peat	

^aBased on the material passing the 3-in. (75-mm) sieve

^bIf field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^cGravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

^dSands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

$$^e Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^fIf soil contains $\geq 15\%$ sand, add "with sand" to group name.

^gIf fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^hIf fines are organic, add "with organic fines" to group name.

ⁱIf soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^jIf Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

^kIf soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

^lIf soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

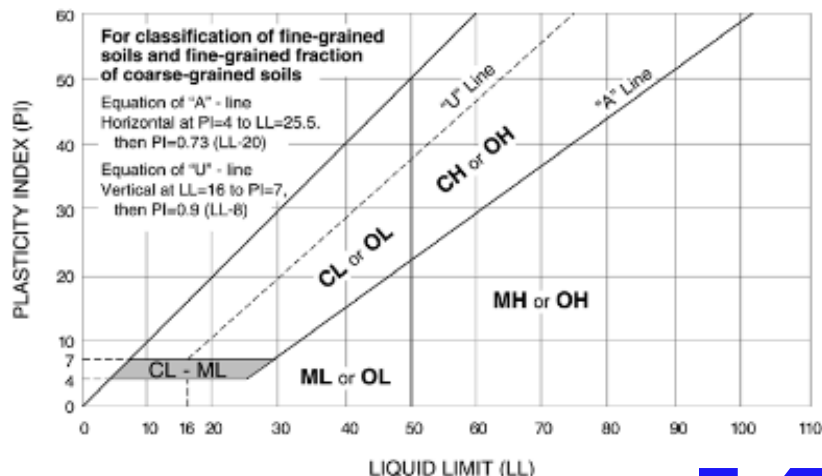
^mIf soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

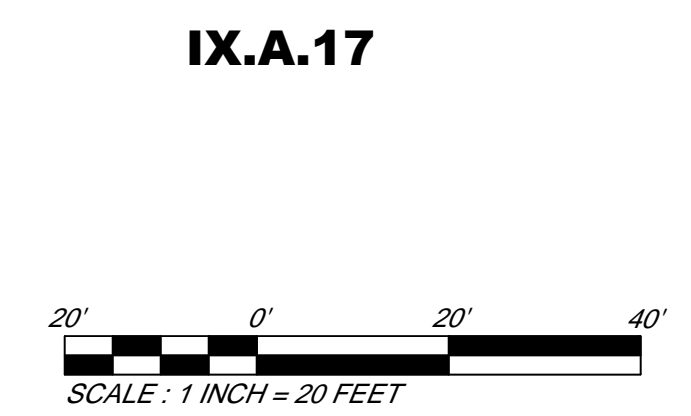
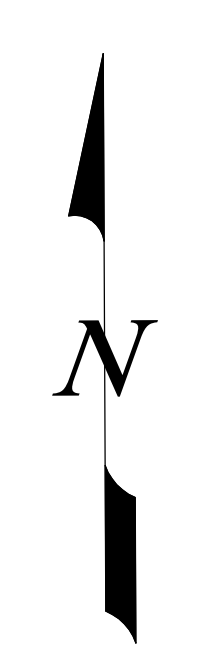
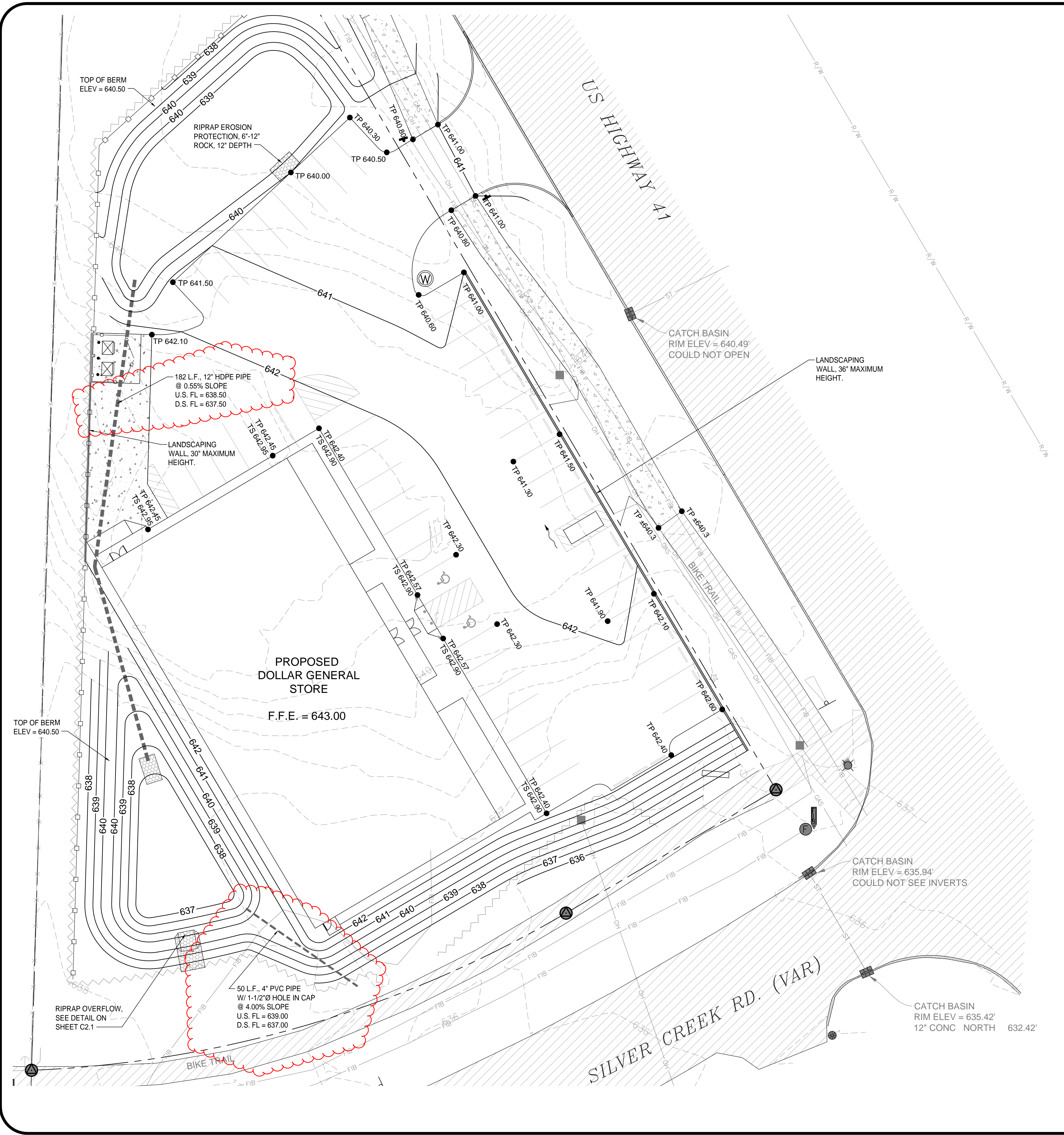
ⁿ $PI \geq 4$ and plots on or above "A" line.

^o $PI < 4$ or plots below "A" line.

^p PI plots on or above "A" line.

^q PI plots below "A" line.





- SYMBOL LIBRARY**
- SIGN POST
 - POWER POLE
 - GUY ANCHOR
 - LIGHT POLE
 - WELL
 - MAILBOX
 - SANITARY MANHOLE
 - GAS METER
 - INVERT ELEVATION
 - NATURAL GAS MARKER
 - FIBER MARKER
 - CONIFEROUS TREE
 - DECIDUOUS TREE
 - FIBER MANHOLE
 - SET MAGNAIL WWASHER
 - BEEHIVE CATCH BASIN
 - CURB INLET CATCH BASIN
- LINE LIBRARY**
- BUILDING OUTLINE
 - PROPERTY LINE
 - RIGHT OF WAY LINE
 - TREELINE
 - UNDERGROUND SANITARY
 - OVERHEAD ELECTRIC
 - CULVERT
 - FENCE LINE
 - INDEX CONTOUR
 - INTERMEDIATE CONTOUR
 - STORM MAIN
 - FIBER
 - NATURAL GAS MAIN
 - BUILDING SETBACKS



UTILITY DISCLAIMER

EXISTING UNDERGROUND UTILITIES AND BURIED STRUCTURES IN THE VICINITY OF THE WORK TO BE PERFORMED HEREIN ARE INDICATED ON THE DRAWINGS ONLY TO THE EXTENT THAT SUCH INFORMATION HAS BEEN MADE AVAILABLE TO OR DISCOVERED BY THE ENGINEER IN THE PREPARATION OF THE DRAWINGS. THERE IS NO GUARANTEE AS TO THE ACCURACY OR THE COMPLETENESS OF SUCH INFORMATION AND ALL RESPONSIBILITY FOR THE ACCURACY AND COMPLETENESS THEREOF IS EXPRESSLY DISCLAIMED.

DOLLAR GENERAL

US 41 & SILVER CREEK ROAD HARVEY, MICHIGAN

NO.	DATE	DESCRIPTION	BY

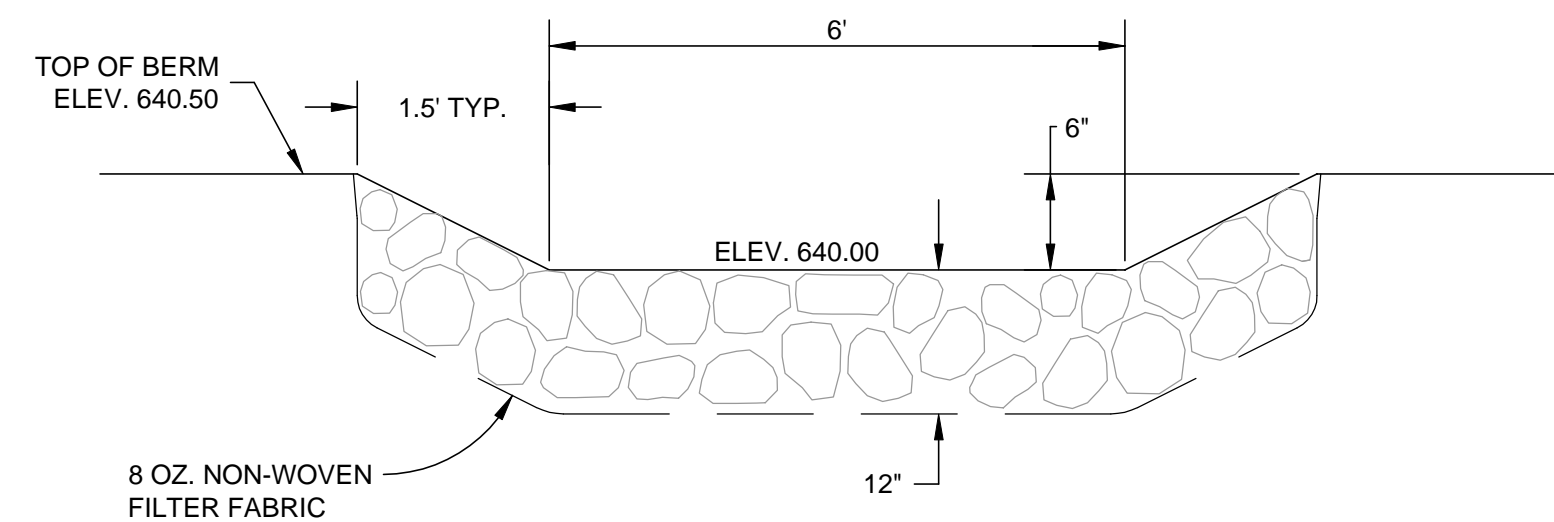
Overland
ENGINEERING, LLC

1598 IMPERIAL CIR., STE. 2009 WEST PLAINS, MO 65775
PHONE: (417) 296-8100 FAX: (417) 296-8102
rso@overlandeng.com

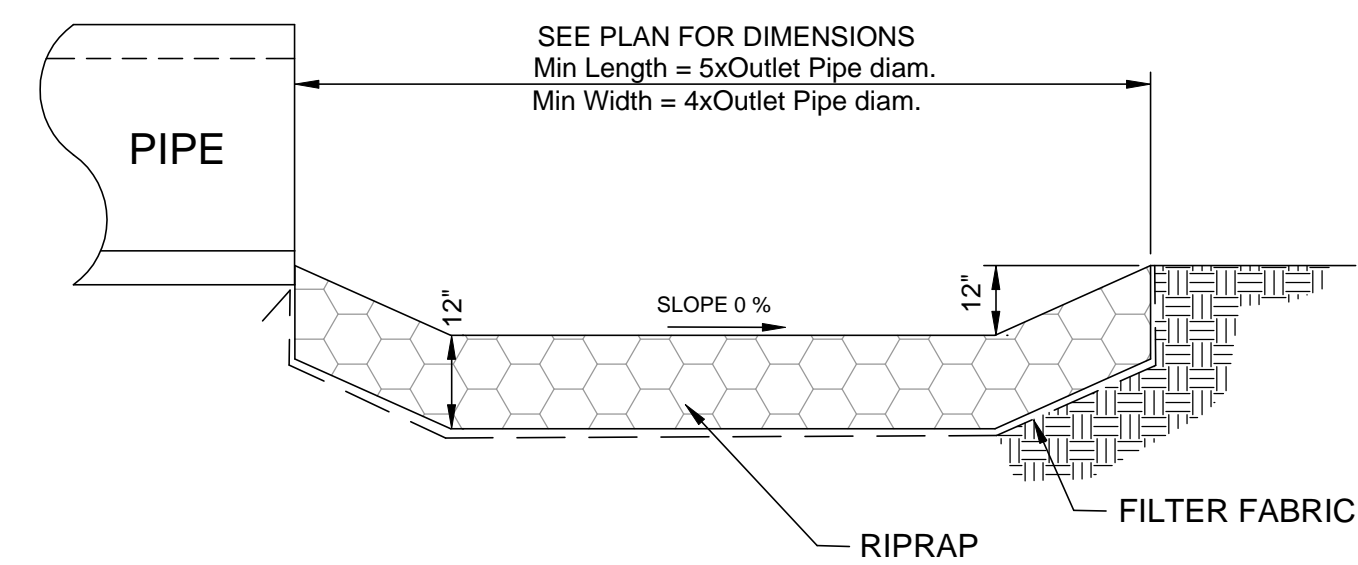
DOLLAR GENERAL
HARVEY, MICHIGAN

GRADING PLAN

SHEET
C2



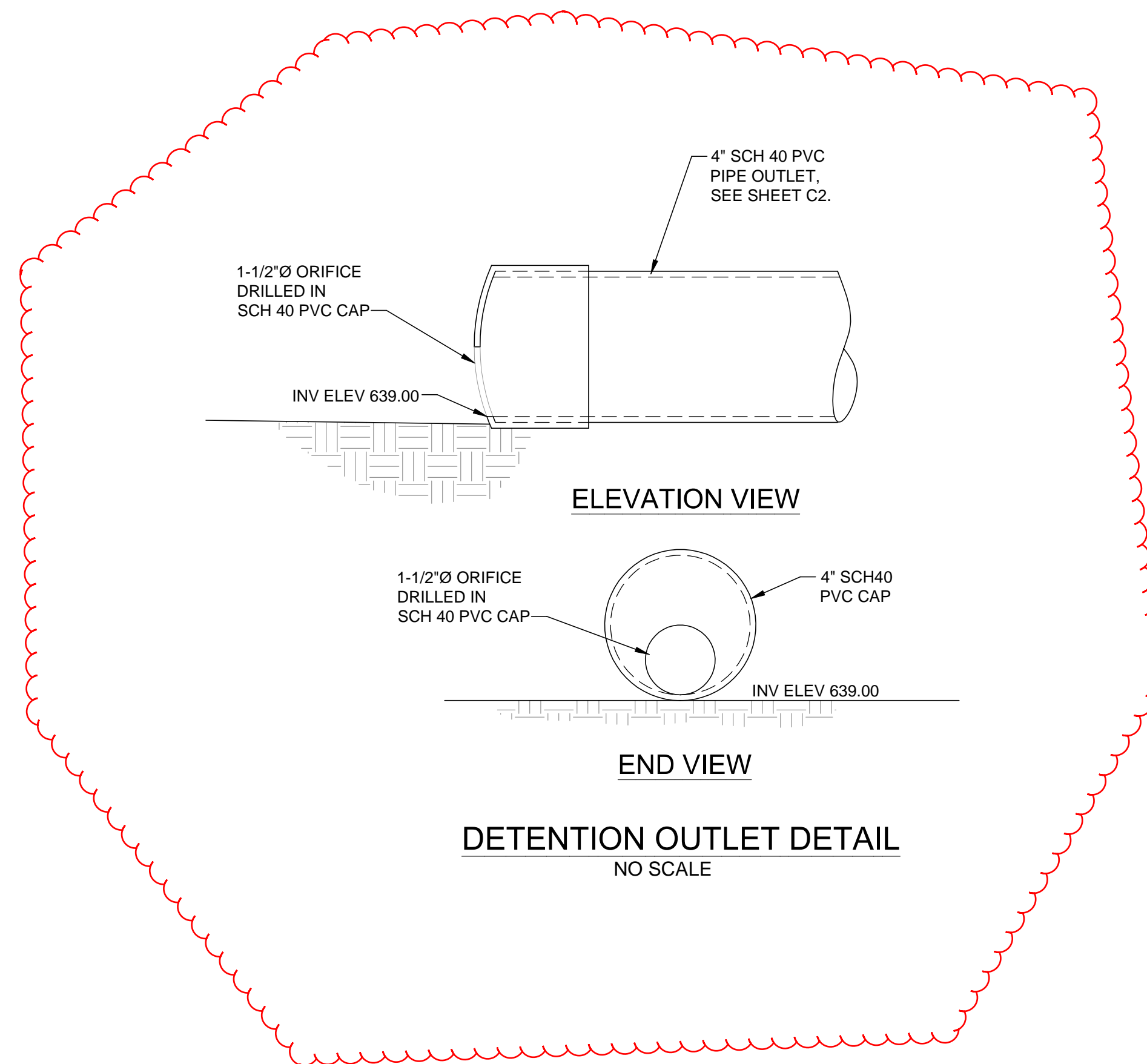
RIPRAP OVERFLOW SECTION
NO SCALE



RIPRAP OUTLET DETAIL
NO SCALE

SITE PLAN GENERAL NOTES:

- STANDARD PARKING SPACES SHALL HAVE MINIMUM SIZE OF 10'X 20' UNLESS LOCAL JURISDICTION REQUIRE LARGER SPACES. PARKING SPACE STRIPING SHALL BE STANDARD 90 DEGREE STYLE. MINIMUM SIZE OF H.C. PARKING SPACES AND ACCESS AISLE ARE SHOWN ON DETAILS.
- PAINTED STANDARD PARKING SPACE AND ISLAND STRIPE COLOR SHALL BE YELLOW FOR ASPHALT PAVEMENT AND CONCRETE PAVEMENT. COLOR FOR PAINTED H.C. ACCESSIBLE PARKING SPACE STRIPES, ACCESS AISLE OR ISLAND STRIPES, H.C. SYMBOLS, SHALL BE PAINTED PER THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION. BOLLARDS SHALL BE PAINTED YELLOW. PAINT SHALL BE REFLECTIVE TYPE.
- PAINTED FIRE LANE STRIPING OR PAINTED CURBS SHALL BE PROVIDED AS REQUIRED BY JURISDICTIONAL REQUIREMENTS.
- CONCRETE PARKING STOPS SHALL BE USED AT PARKING SPACES ALONG THE OUTER PERIMETER OF PARKING LOT WHEN CONCRETE CURBS ARE NOT USED.
- CONCRETE PARKING STOPS SHALL NOT BE USED AT THE FRONT OF THE BUILDING OR ALONG THE PERIMETER (ADJACENT) TO THE BUILDING.
- THE SIDEWALK AT THE FRONT OF THE BUILDING SHALL BE A MINIMUM OF 9- FEET WIDE. THE SIDEWALK SHALL INCLUDE A 10-FOOT MINIMUM WIDE ADA ACCESSIBLE RAMP CLOSE TO THE STORE MAIN ENTRANCE. SIDEWALKS ALONG OTHER SIDES OF BUILDING SHALL BE MINIMUM 3'-6" WIDE. SIDEWALKS ADJACENT TO BUILDING SLABS SHALL HAVE SEALED ISOLATION JOINTS AND SHALL BE 6" HIGH ABOVE EXTERIOR OR PAVEMENT FINISH GRADES. ALL EXTERIOR SIDEWALKS SHALL HAVE A BROOM FINISH.
- PORTLAND CEMENT SIDEWALKS SHALL BE MINIMUM 4" THICK WITH WELDED WIRE FABRIC REINFORCING.
- SIDEWALKS ADJOINING THE BUILDING MUST HAVE A 6" HIGH INTEGRAL CURB.
- SLOPE CONCRETE SIDEWALKS AWAY FROM BUILDING AT A MINIMUM SLOPE OF 1/8" PER FOOT, INCLUDING RECESSED ENTRY.
- THE ACTUAL LOCATION FOR THE PYLON SIGN SHALL BE SITUATED FOR OPTIMUM VISIBILITY ALONG THE MAIN FRONT TRAFFIC CORRIDOR.
- BUILDING CORNERS ADJACENT TO PAVED AREAS SHALL BE BOLLARD PROTECTED. ABOVE GROUND UTILITY APPURTENANCES, SUCH AS METERS, TRANSFORMERS, FIRE HYDRANTS IN PAVED AREAS, ETC. SHALL BE BOLLARD PROTECTED.
- DOWNSPOUTS SHALL NOT BE ALLOWED TO DISCHARGE ON CONCRETE SIDEWALKS. ROUTE DOWNSPOUTS UNDER SIDEWALKS AT ALL SIDEWALK LOCATIONS.
- ALL DOWNSPOUTS DISCHARGING ONTO NON PAVED AREAS ARE TO HAVE A MINIMUM FIVE FOOT PERFORATED LANDSCAPE PIPE STRAPPED TO A MINIMUM 12 INCH X 24 INCH CONCRETE SPLASH BLOCK.
- FINISH FLOOR TO BE A MINIMUM OF 12 INCHES ABOVE 100 YEAR FLOOD PLAIN.
- FINISHED GRADE AT EXTERIOR WALLS SHALL BE A MINIMUM OF 6" BELOW FINISHED FLOOR AT ALL NON-PAVED AREAS.

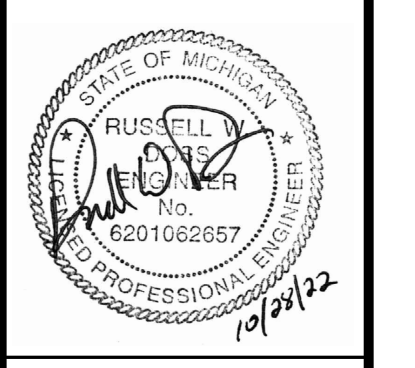


DETENTION OUTLET DETAIL
NO SCALE

DOLLAR GENERAL

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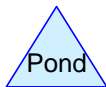
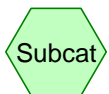
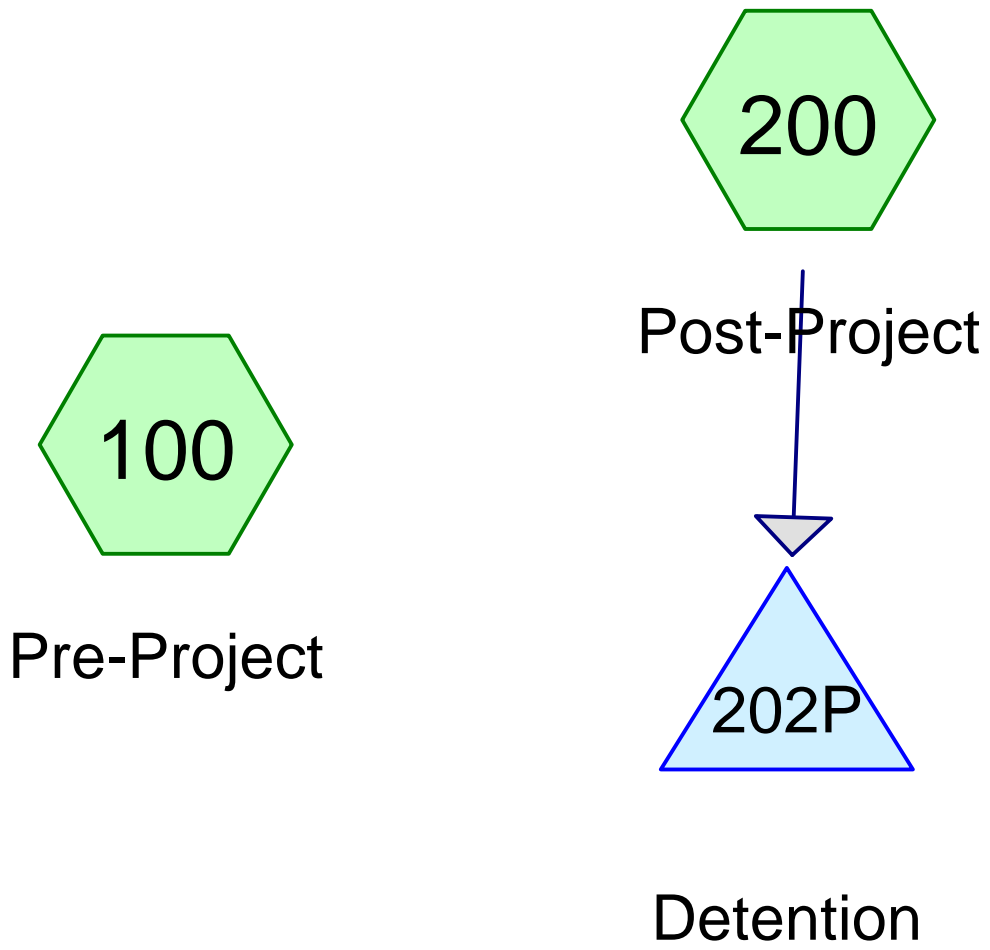
NO.	DATE	DESCRIPTION	BY



Overland
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1598 IMPERIAL CIR., STE. 2009 WEST PLAINS, MO 65775
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DOLLAR GENERAL
HARVEY, MICHIGAN
GRADING DETAILS

SHEET
C2.1



Project Notes

Defined 10 rainfall events from Ellsworth MI PF_Depth_English_PDS IDF

Rainfall events imported from "TP-40-Rain.txt" for 2657 MI Antrim

Defined 3 rainfall events from Michigan - Norway IDF

Rainfall events imported from "NRCS-Rain.txt" for 5235 MI Gladwin

Rainfall events imported from "NRCS-Rain.txt" for 5217 MI Clare

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year 24hr	Type II 24-hr		Default	24.00	1	2.32	2
2	10-Year 24hr	Type II 24-hr		Default	24.00	1	3.25	2
3	50-Year 24hr	Type II 24-hr		Default	24.00	1	4.36	2
4	100-Year 24hr	Type II 24-hr		Default	24.00	1	4.86	2

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
54,848	50	(100, 200)
47,016	98	(100, 200)
101,864	72	TOTAL AREA

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Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
0	HSG C	
0	HSG D	
101,864	Other	100, 200
101,864		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatchmen Numbers
0	0	0	0	101,864	101,864		1
							0
							0
							,
							2
							0
							0
0	0	0	0	101,864	101,864	TOTAL AREA	

Harvey MI_012924

Type II 24-hr 2-Year 24hr Rainfall=2.32"

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Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: Pre-Project

Runoff Area=50,932 sf 13.38% Impervious Runoff Depth=0.07"
Flow Length=170' Tc=12.8 min CN=56 Runoff=0.01 cfs 276 cf

Subcatchment 200: Post-Project

Runoff Area=50,932 sf 78.93% Impervious Runoff Depth=1.23"
Tc=5.0 min CN=88 Runoff=2.58 cfs 5,215 cf

Pond 202P: Detention

Peak Elev=638.99' Storage=5,215 cf Inflow=2.58 cfs 5,215 cf
Outflow=0.00 cfs 0 cf

Total Runoff Area = 101,864 sf Runoff Volume = 5,492 cf Average Runoff Depth = 0.65"
53.84% Pervious = 54,848 sf 46.16% Impervious = 47,016 sf

Summary for Subcatchment 100: Pre-Project

Runoff = 0.01 cfs @ 13.37 hrs, Volume= 276 cf, Depth= 0.07"

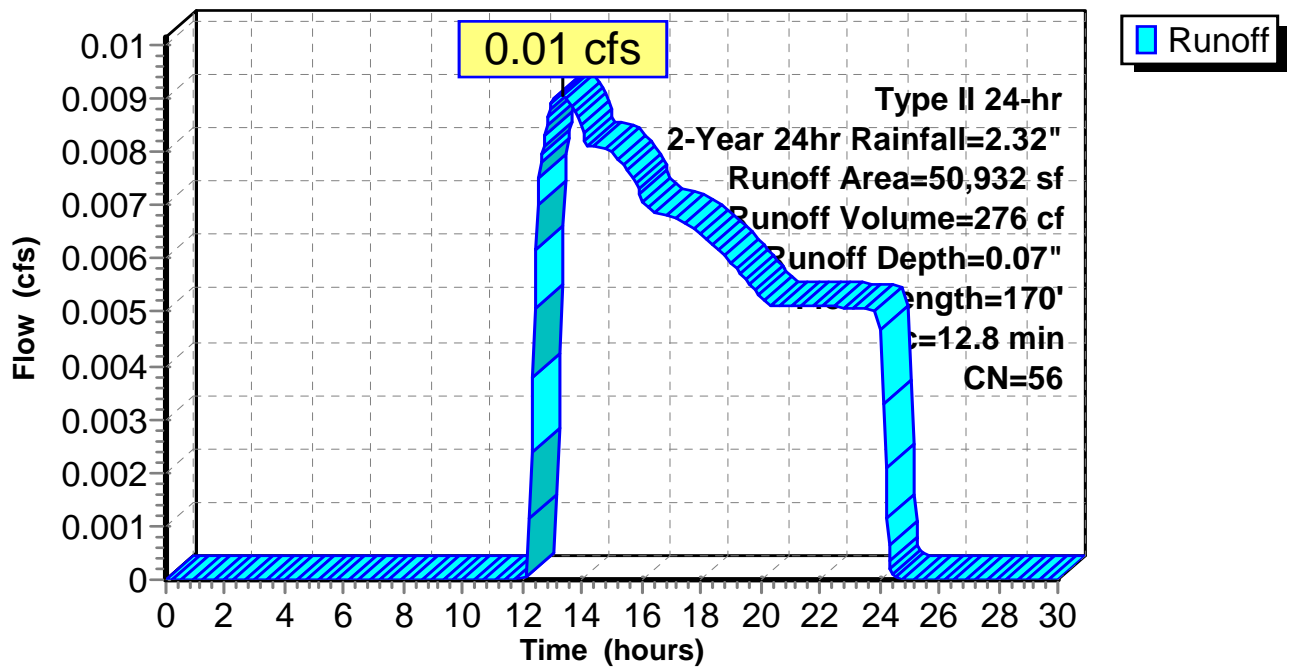
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-Year 24hr Rainfall=2.32"

	Area (sf)	CN	Description
*	44,118	50	
*	6,814	98	
	50,932	56	Weighted Average
	44,118		86.62% Pervious Area
	6,814		13.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	70	0.0100	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 2.32"
1.4	100	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
12.8	170	Total			

Subcatchment 100: Pre-Project

Hydrograph



Summary for Subcatchment 200: Post-Project

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.58 cfs @ 11.96 hrs, Volume= 5,215 cf, Depth= 1.23"
 Routed to Pond 202P : Detention

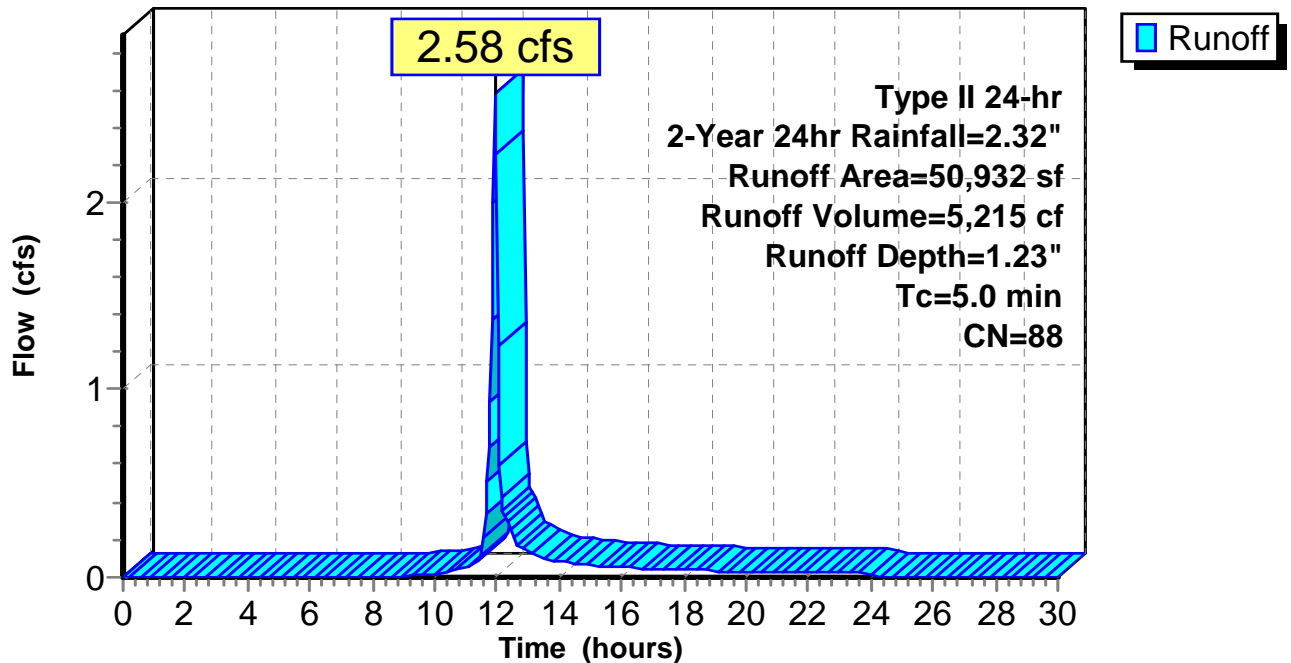
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-Year 24hr Rainfall=2.32"

	Area (sf)	CN	Description
*	40,202	98	
*	10,730	50	
	50,932	88	Weighted Average
	10,730		21.07% Pervious Area
	40,202		78.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 200: Post-Project

Hydrograph



Summary for Pond 202P: Detention

Inflow Area = 50,932 sf, 78.93% Impervious, Inflow Depth = 1.23" for 2-Year 24hr event
 Inflow = 2.58 cfs @ 11.96 hrs, Volume= 5,215 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to nonexistent node 204R

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 638.99' @ 24.35 hrs Surf.Area= 5,567 sf Storage= 5,215 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	637.00'	15,489 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
637.00	1,257	0	0
638.00	1,839	1,548	1,548
639.00	5,603	3,721	5,269
640.00	7,150	6,377	11,646
640.50	8,222	3,843	15,489

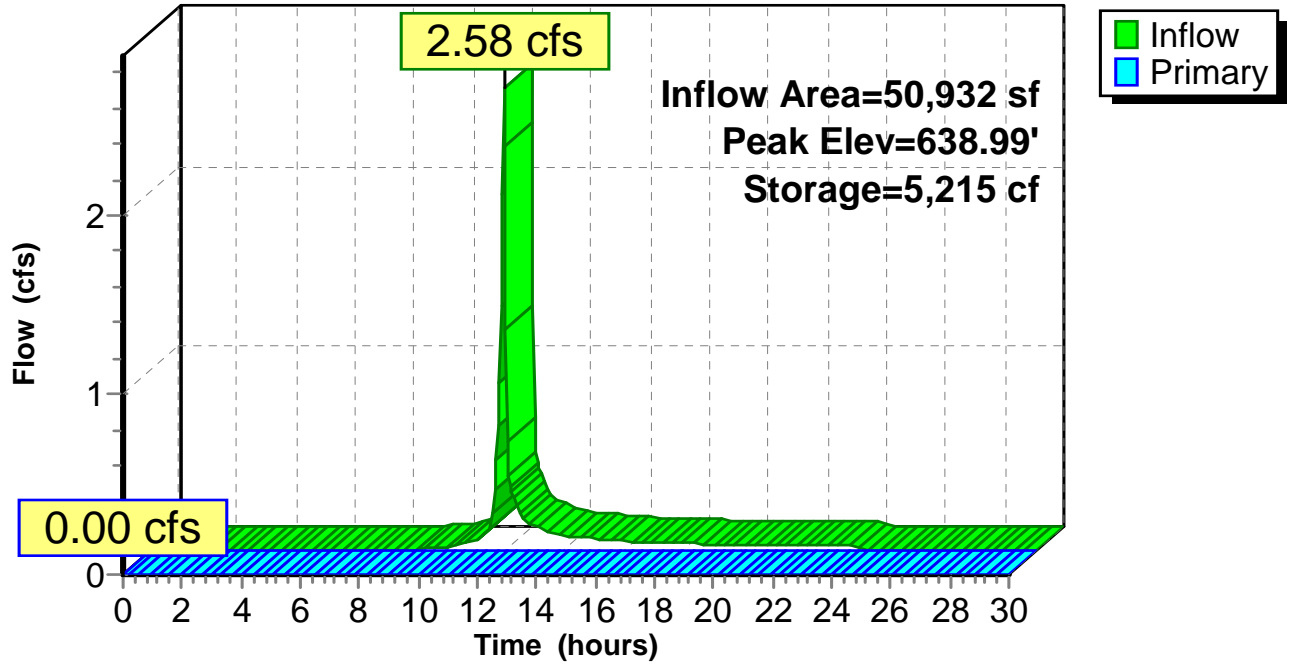
Device	Routing	Invert	Outlet Devices
#1	Primary	640.00'	6.0' long + 3.0 ' SideZ x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#2	Primary	639.00'	1.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=637.00' (Free Discharge)

- 1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
- 2=Orifice/Grate (Controls 0.00 cfs)

Pond 202P: Detention

Hydrograph



Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: Pre-Project

Runoff Area=50,932 sf 13.38% Impervious Runoff Depth=0.30"
Flow Length=170' Tc=12.8 min CN=56 Runoff=0.23 cfs 1,254 cf

Subcatchment 200: Post-Project

Runoff Area=50,932 sf 78.93% Impervious Runoff Depth=2.04"
Tc=5.0 min CN=88 Runoff=4.21 cfs 8,667 cf

Pond 202P: Detention

Peak Elev=639.38' Storage=7,497 cf Inflow=4.21 cfs 8,667 cf
Outflow=0.03 cfs 1,814 cf

Total Runoff Area = 101,864 sf Runoff Volume = 9,921 cf Average Runoff Depth = 1.17"
53.84% Pervious = 54,848 sf 46.16% Impervious = 47,016 sf

Summary for Subcatchment 100: Pre-Project

Runoff = 0.23 cfs @ 12.11 hrs, Volume= 1,254 cf, Depth= 0.30"

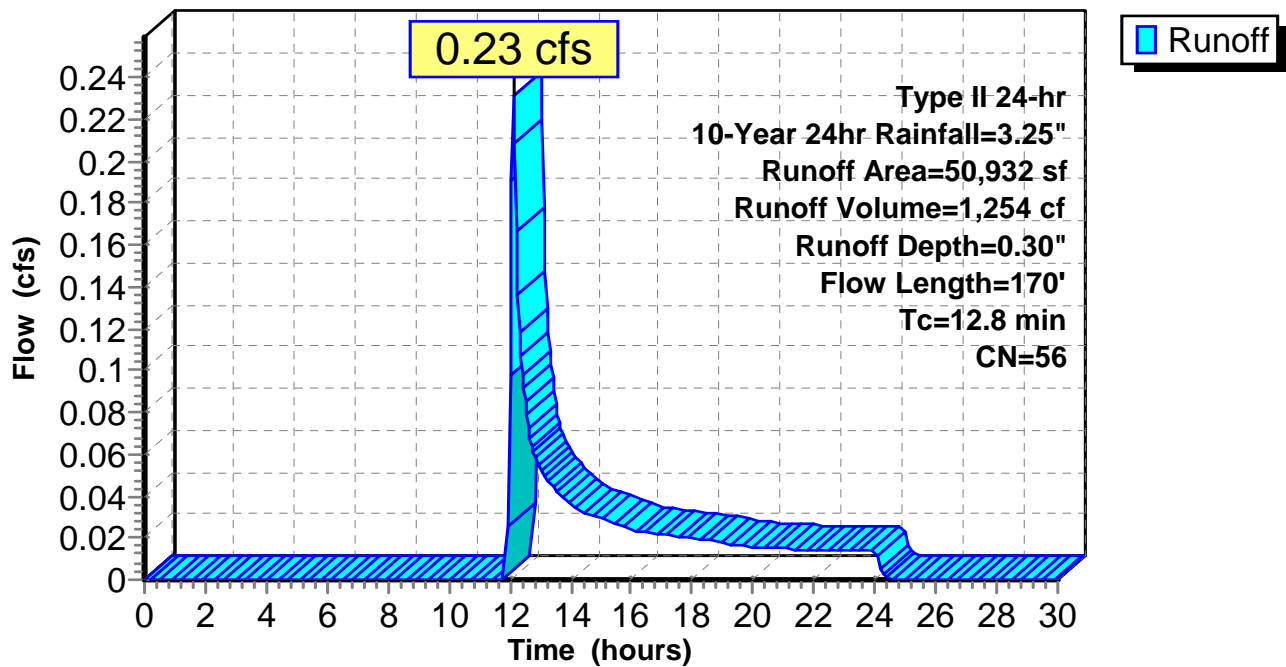
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-Year 24hr Rainfall=3.25"

Area (sf)	CN	Description
* 44,118	50	
* 6,814	98	
50,932	56	Weighted Average
44,118		86.62% Pervious Area
6,814		13.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	70	0.0100	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 2.32"
1.4	100	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
12.8	170	Total			

Subcatchment 100: Pre-Project

Hydrograph



Summary for Subcatchment 200: Post-Project

[49] Hint: Tc<2dt may require smaller dt

Runoff = 4.21 cfs @ 11.95 hrs, Volume= 8,667 cf, Depth= 2.04"
 Routed to Pond 202P : Detention

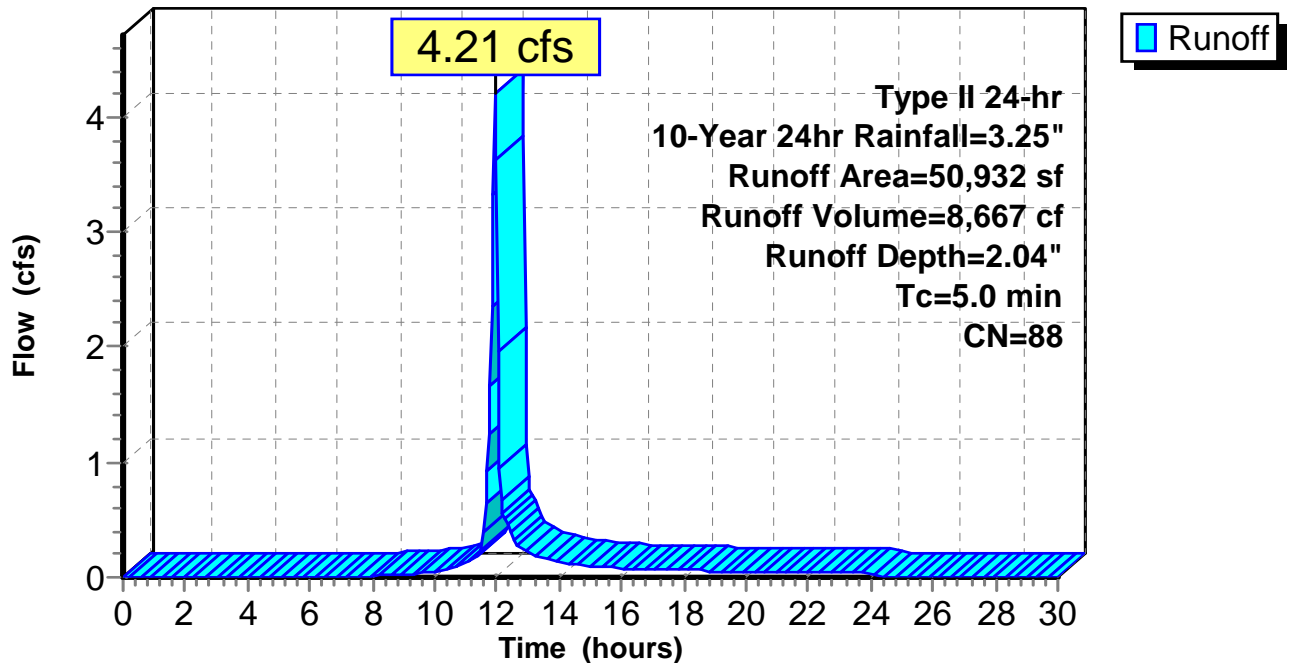
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-Year 24hr Rainfall=3.25"

	Area (sf)	CN	Description
*	40,202	98	
*	10,730	50	
	50,932	88	Weighted Average
	10,730		21.07% Pervious Area
	40,202		78.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 200: Post-Project

Hydrograph



Summary for Pond 202P: Detention

Inflow Area = 50,932 sf, 78.93% Impervious, Inflow Depth = 2.04" for 10-Year 24hr event
 Inflow = 4.21 cfs @ 11.95 hrs, Volume= 8,667 cf
 Outflow = 0.03 cfs @ 24.03 hrs, Volume= 1,814 cf, Atten= 99%, Lag= 724.2 min
 Primary = 0.03 cfs @ 24.03 hrs, Volume= 1,814 cf
 Routed to nonexistent node 204R

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 639.38' @ 24.03 hrs Surf.Area= 6,188 sf Storage= 7,497 cf

Plug-Flow detention time= 640.9 min calculated for 1,814 cf (21% of inflow)
 Center-of-Mass det. time= 497.2 min (1,307.6 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1	637.00'	15,489 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
637.00	1,257	0	0
638.00	1,839	1,548	1,548
639.00	5,603	3,721	5,269
640.00	7,150	6,377	11,646
640.50	8,222	3,843	15,489

Device	Routing	Invert	Outlet Devices
#1	Primary	640.00'	6.0' long + 3.0 'l' SideZ x 7.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#2	Primary	639.00'	1.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

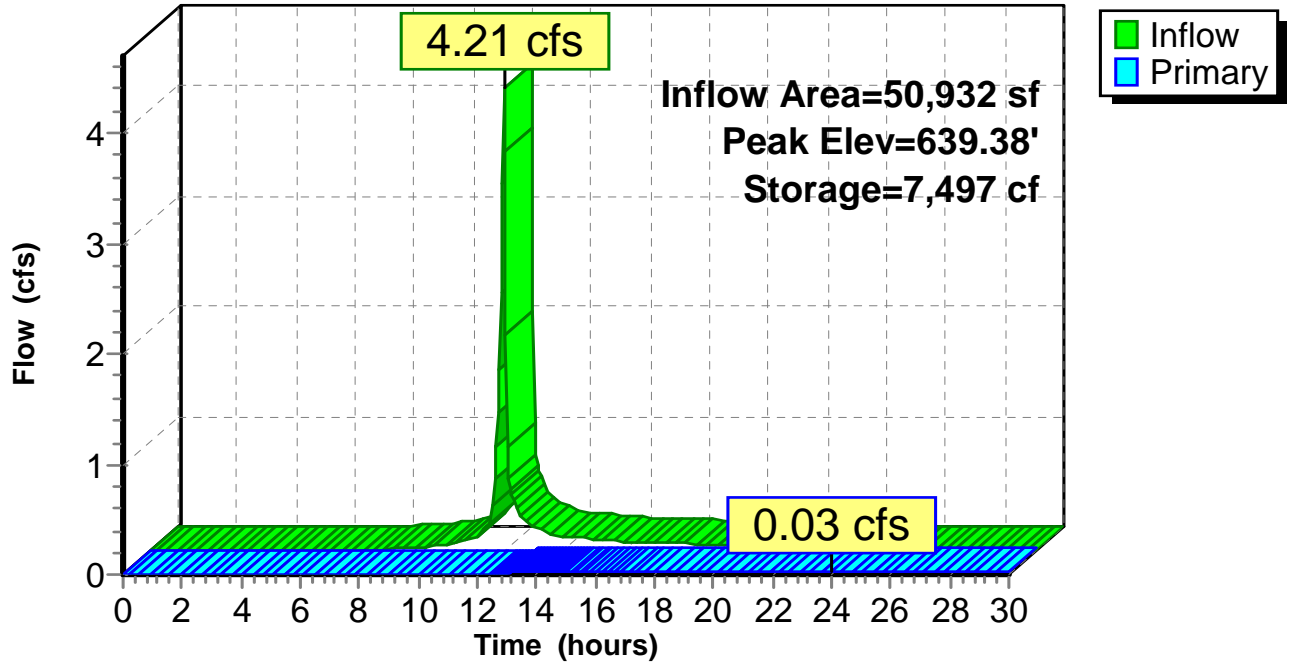
Primary OutFlow Max=0.03 cfs @ 24.03 hrs HW=639.38' (Free Discharge)

1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

2=Orifice/Grate (Orifice Controls 0.03 cfs @ 2.70 fps)

Pond 202P: Detention

Hydrograph



Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: Pre-Project

Runoff Area=50,932 sf 13.38% Impervious Runoff Depth=0.73"
Flow Length=170' Tc=12.8 min CN=56 Runoff=0.92 cfs 3,100 cf

Subcatchment 200: Post-Project

Runoff Area=50,932 sf 78.93% Impervious Runoff Depth=3.06"
Tc=5.0 min CN=88 Runoff=6.19 cfs 13,008 cf

Pond 202P: Detention

Peak Elev=639.88' Storage=10,815 cf Inflow=6.19 cfs 13,008 cf
Outflow=0.05 cfs 3,280 cf

Total Runoff Area = 101,864 sf Runoff Volume = 16,108 cf Average Runoff Depth = 1.90"
53.84% Pervious = 54,848 sf 46.16% Impervious = 47,016 sf

Summary for Subcatchment 100: Pre-Project

Runoff = 0.92 cfs @ 12.08 hrs, Volume= 3,100 cf, Depth= 0.73"

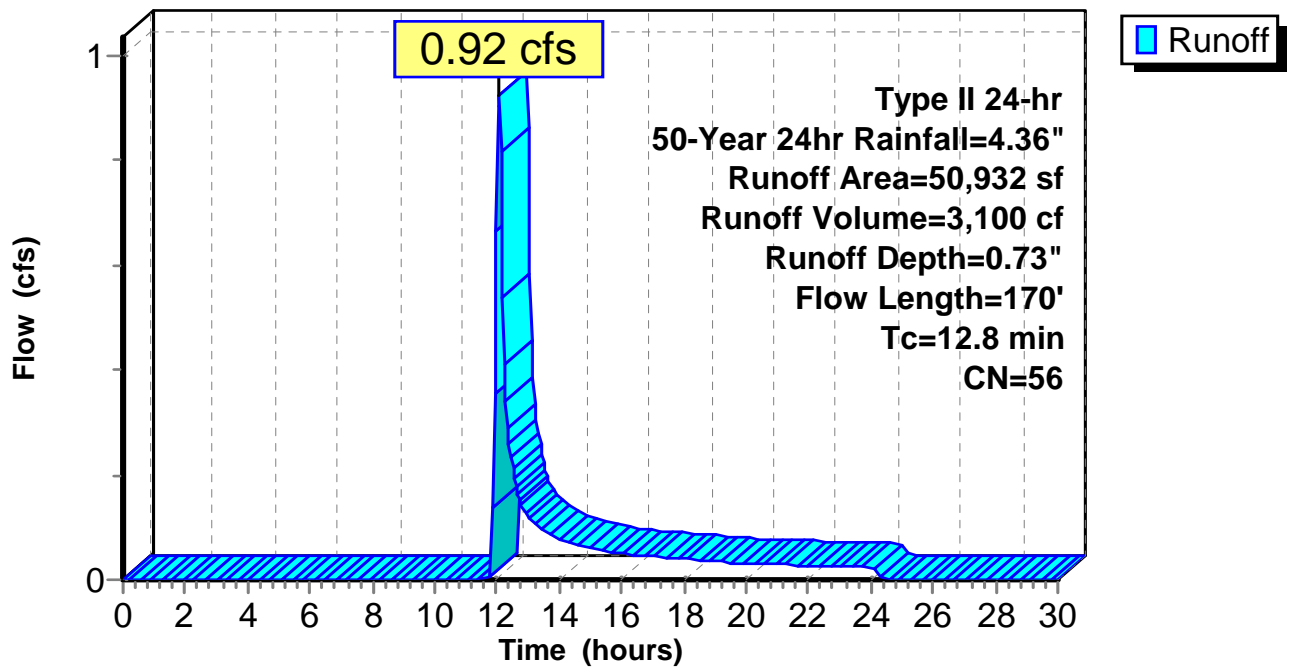
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Type II 24-hr 50-Year 24hr Rainfall=4.36"

Area (sf)	CN	Description
* 44,118	50	
* 6,814	98	
50,932	56	Weighted Average
44,118		86.62% Pervious Area
6,814		13.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	70	0.0100	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 2.32"
1.4	100	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
12.8	170	Total			

Subcatchment 100: Pre-Project

Hydrograph



Summary for Subcatchment 200: Post-Project

[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 6.19 cfs @ 11.95 hrs, Volume= 13,008 cf, Depth= 3.06"
 Routed to Pond 202P : Detention

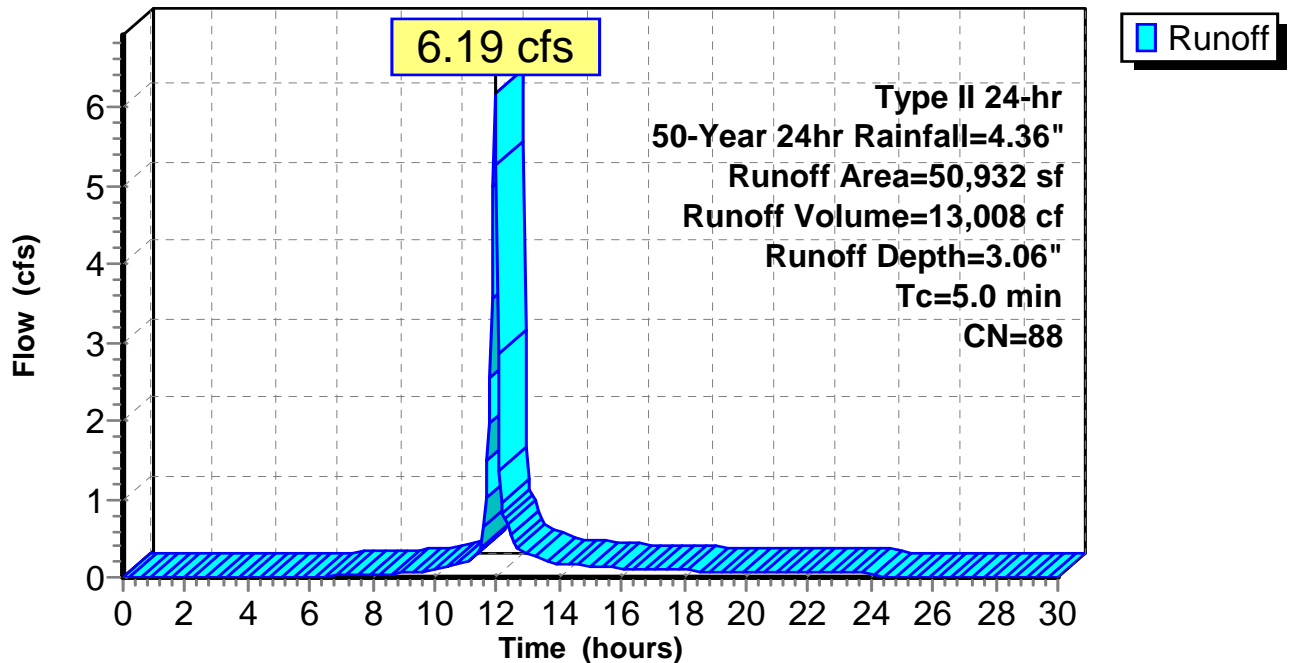
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Type II 24-hr 50-Year 24hr Rainfall=4.36"

	Area (sf)	CN	Description
*	40,202	98	
*	10,730	50	
	50,932	88	Weighted Average
	10,730		21.07% Pervious Area
	40,202		78.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 200: Post-Project

Hydrograph



Summary for Pond 202P: Detention

Inflow Area = 50,932 sf, 78.93% Impervious, Inflow Depth = 3.06" for 50-Year 24hr event
 Inflow = 6.19 cfs @ 11.95 hrs, Volume= 13,008 cf
 Outflow = 0.05 cfs @ 23.87 hrs, Volume= 3,280 cf, Atten= 99%, Lag= 714.8 min
 Primary = 0.05 cfs @ 23.87 hrs, Volume= 3,280 cf
 Routed to nonexistent node 204R

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 639.88' @ 23.87 hrs Surf.Area= 6,968 sf Storage= 10,815 cf

Plug-Flow detention time= 613.5 min calculated for 3,275 cf (25% of inflow)
 Center-of-Mass det. time= 471.6 min (1,270.5 - 798.9)

Volume	Invert	Avail.Storage	Storage Description
#1	637.00'	15,489 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
637.00	1,257	0	0
638.00	1,839	1,548	1,548
639.00	5,603	3,721	5,269
640.00	7,150	6,377	11,646
640.50	8,222	3,843	15,489

Device	Routing	Invert	Outlet Devices
#1	Primary	640.00'	6.0' long + 3.0 ' SideZ x 7.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#2	Primary	639.00'	1.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

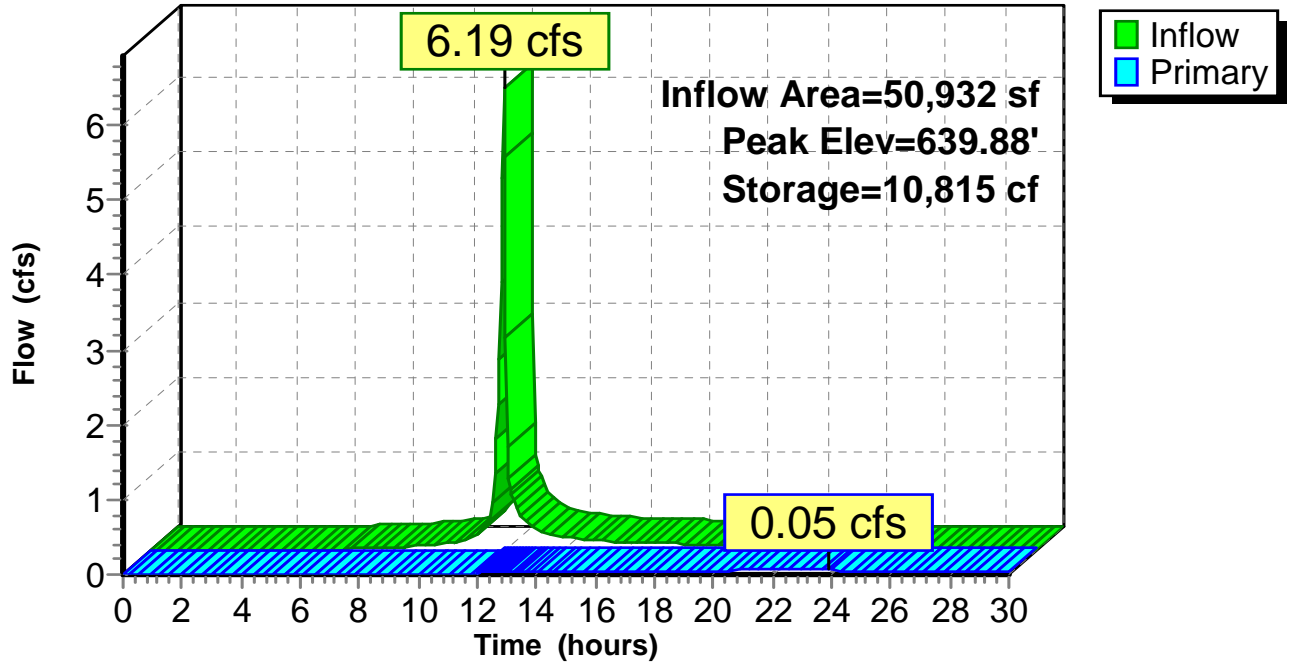
Primary OutFlow Max=0.05 cfs @ 23.87 hrs HW=639.88' (Free Discharge)

1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

2=Orifice/Grate (Orifice Controls 0.05 cfs @ 4.36 fps)

Pond 202P: Detention

Hydrograph



Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: Pre-Project

Runoff Area=50,932 sf 13.38% Impervious Runoff Depth=0.97"
Flow Length=170' Tc=12.8 min CN=56 Runoff=1.34 cfs 4,118 cf

Subcatchment 200: Post-Project

Runoff Area=50,932 sf 78.93% Impervious Runoff Depth=3.54"
Tc=5.0 min CN=88 Runoff=7.08 cfs 15,008 cf

Pond 202P: Detention

Peak Elev=640.02' Storage=11,805 cf Inflow=7.08 cfs 15,008 cf
Outflow=0.12 cfs 4,506 cf

Total Runoff Area = 101,864 sf Runoff Volume = 19,127 cf Average Runoff Depth = 2.25"
53.84% Pervious = 54,848 sf 46.16% Impervious = 47,016 sf

Summary for Subcatchment 100: Pre-Project

Runoff = 1.34 cfs @ 12.07 hrs, Volume= 4,118 cf, Depth= 0.97"

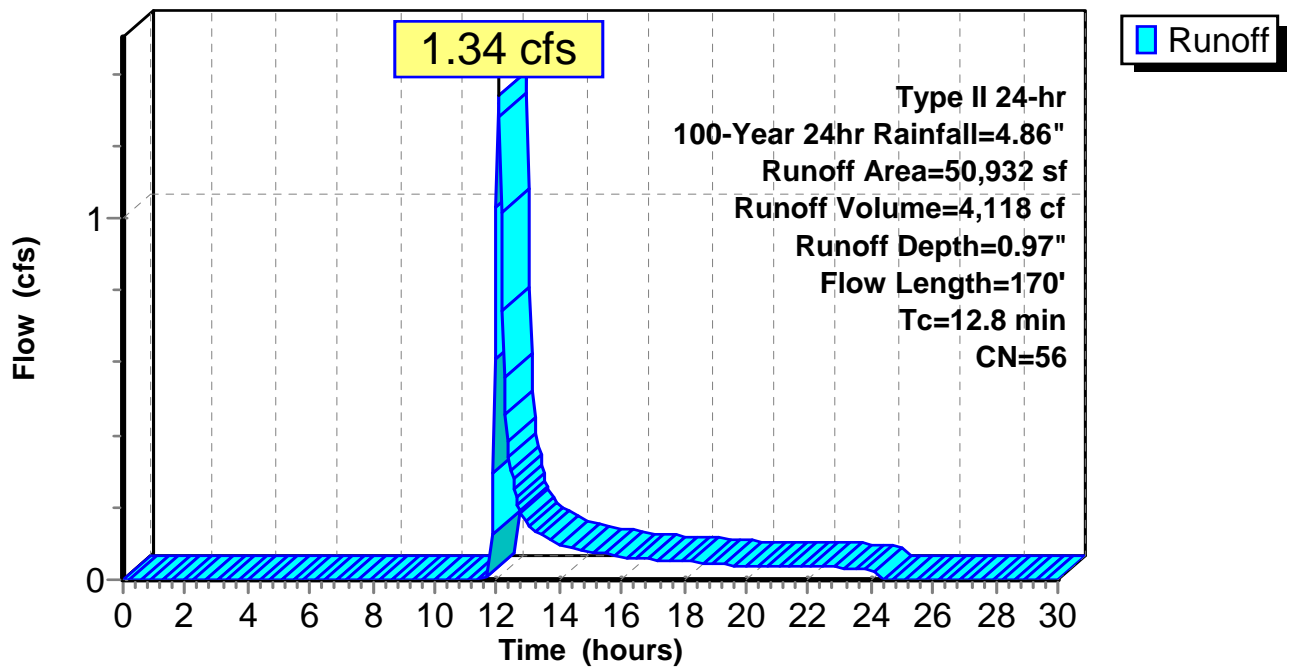
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-Year 24hr Rainfall=4.86"

Area (sf)	CN	Description
* 44,118	50	
* 6,814	98	
50,932	56	Weighted Average
44,118		86.62% Pervious Area
6,814		13.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	70	0.0100	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 2.32"
1.4	100	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
12.8	170	Total			

Subcatchment 100: Pre-Project

Hydrograph



Summary for Subcatchment 200: Post-Project

[49] Hint: Tc<2dt may require smaller dt

Runoff = 7.08 cfs @ 11.95 hrs, Volume= 15,008 cf, Depth= 3.54"
 Routed to Pond 202P : Detention

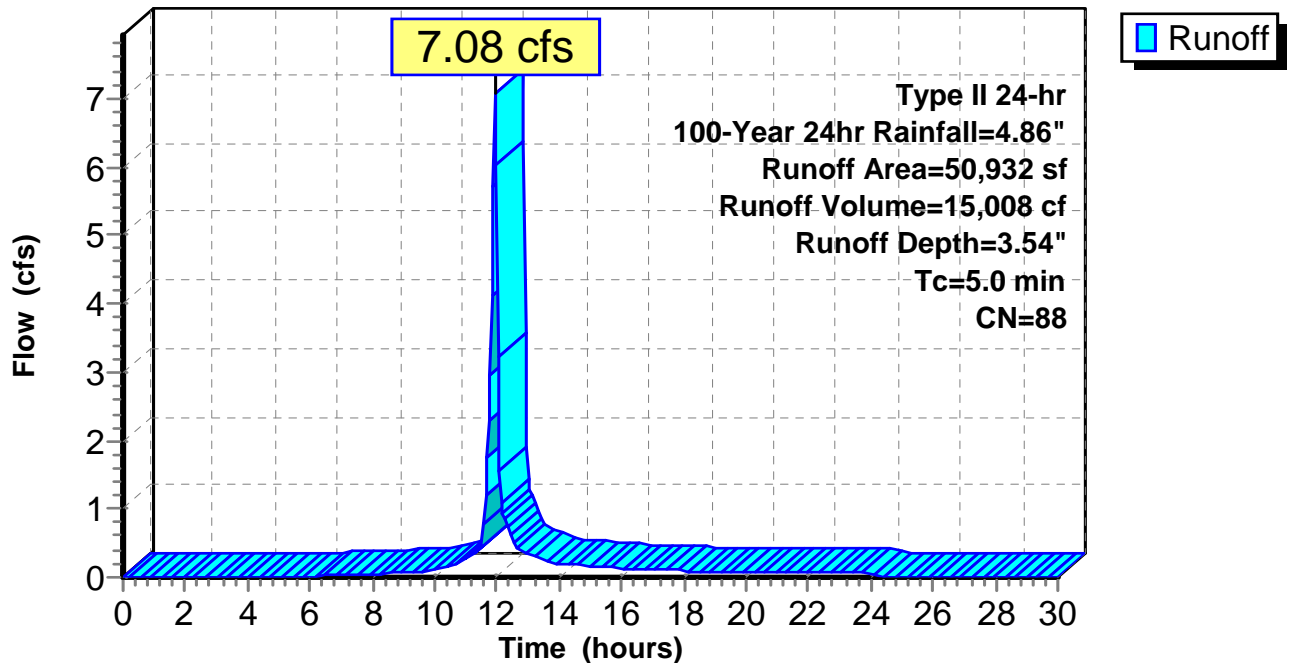
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-Year 24hr Rainfall=4.86"

	Area (sf)	CN	Description
*	40,202	98	
*	10,730	50	
	50,932	88	Weighted Average
	10,730		21.07% Pervious Area
	40,202		78.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 200: Post-Project

Hydrograph



Summary for Pond 202P: Detention

Inflow Area = 50,932 sf, 78.93% Impervious, Inflow Depth = 3.54" for 100-Year 24hr event
 Inflow = 7.08 cfs @ 11.95 hrs, Volume= 15,008 cf
 Outflow = 0.12 cfs @ 16.60 hrs, Volume= 4,506 cf, Atten= 98%, Lag= 279.0 min
 Primary = 0.12 cfs @ 16.60 hrs, Volume= 4,506 cf
 Routed to nonexistent node 204R

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 640.02' @ 16.60 hrs Surf.Area= 7,198 sf Storage= 11,805 cf

Plug-Flow detention time= 569.7 min calculated for 4,506 cf (30% of inflow)
 Center-of-Mass det. time= 433.9 min (1,228.8 - 794.8)

Volume	Invert	Avail.Storage	Storage Description
#1	637.00'	15,489 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
637.00	1,257	0	0
638.00	1,839	1,548	1,548
639.00	5,603	3,721	5,269
640.00	7,150	6,377	11,646
640.50	8,222	3,843	15,489

Device	Routing	Invert	Outlet Devices
#1	Primary	640.00'	6.0' long + 3.0 'l SideZ x 7.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#2	Primary	639.00'	1.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

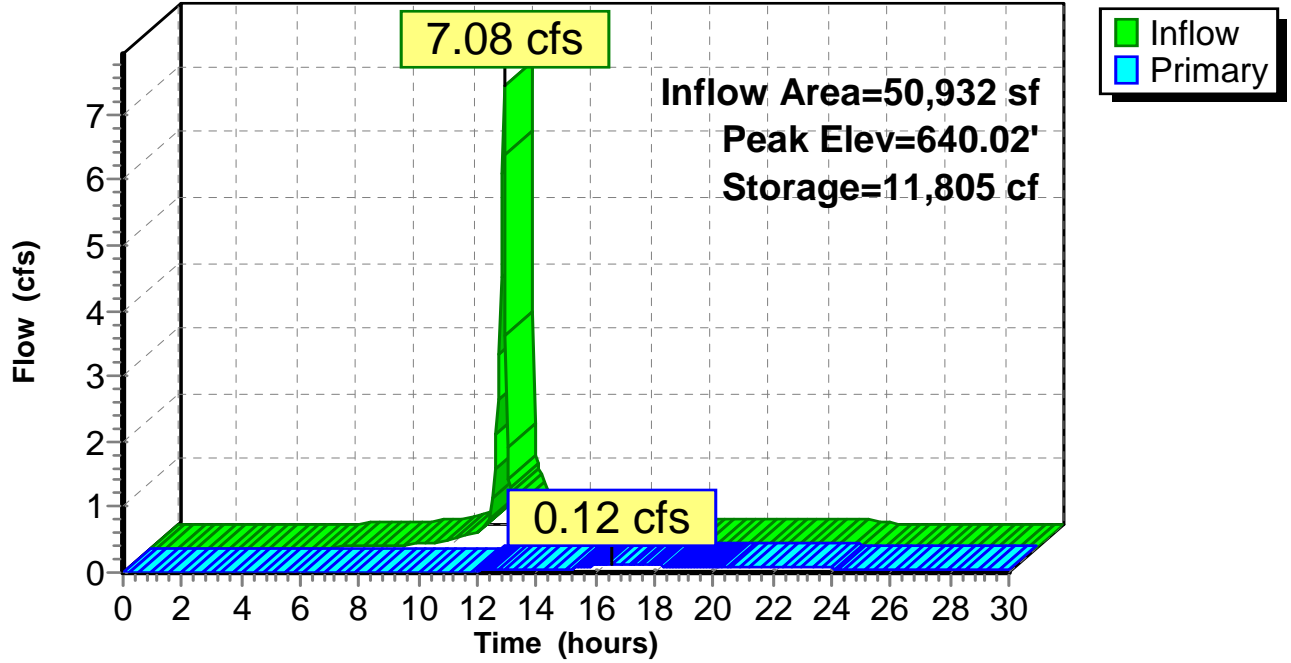
Primary OutFlow Max=0.11 cfs @ 16.60 hrs HW=640.02' (Free Discharge)

1=Broad-Crested Rectangular Weir (Weir Controls 0.05 cfs @ 0.36 fps)

2=Orifice/Grate (Orifice Controls 0.06 cfs @ 4.72 fps)

Pond 202P: Detention

Hydrograph





Charter Township of Chocolay

Planning and Zoning Department

5010 US 41South

Marquette, MI 49855

Phone: 906-249-1448

Fax: 906-249-1313

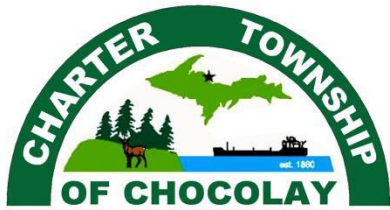
Agenda Item: IX.B Joint Meeting Considerations

Suggested Motion

_____ moved, and _____ seconded

that the following items considered for the Planning Commission 2024 meeting calendar:

[listed items]



Charter Township of Chocolay

Planning and Zoning Department

5010 US 41 South

Marquette, MI 49855

Phone: 906-249-1448

Fax: 906-249-1313

Issue Brief: Joint Meeting Considerations

Meeting: Planning Commission Meeting

Date: February 12, 2024

Issue Summary

Discussion regarding items discussed at the joint meeting with the Township Board.

Background

Prior to the regular meeting, the Planning Commission will meet with the Township Board. Commissioners will discuss various topics at that meeting, and will receive direction and comments about the direction for 2024.

Staff Recommendations for Commissioner Discussion

Staff is asking the Commissioners to take the opportunity to decide on topics, dates, and other considerations for the 2024 meeting calendar.

Commissioners are asked to respond to the following questions, with the intent of presenting this information to the Board for consideration:

- 1) What are the priority items for 2024?
- 2) When should topics be discussed and when should decisions be made?
- 3) Potential for future townhall meetings?

Author: Dale Throenle

Date: February 8, 2024



January 8, 2024

The regular meeting of the Chocolay Township Board was held on Monday, January 8, 2024, in the Chocolay Township Fire Hall. Supervisor Bohjanen called the meeting to order at 5:30 p.m.

PLEDGE OF ALLEGIANCE.

TOWNSHIP BOARD.

PRESENT: Richard Bohjanen, Max Engle, Ben Zyburt, David Lynch, Judy White, Don Rhein

ABSENT: Kendra Symbol

STAFF PRESENT: William De Groot, Suzanne Sundell

APPROVAL OF AGENDA.

Supervisor Bohjanen stated that the agenda item for Presentations was to present the findings from the 2023 Sewer Main and Lateral inspection. The presenter is unable to be at the meeting, so he would suggest that this be moved to the March meeting.

White moved, Lynch supported to approve the agenda as amended, to postpone the Sewer presentation to the March meeting.

MOTION CARRIED

PUBLIC COMMENT

Sam Elder, 125 East Main – spoke on House Bill 5120 and Senate Bill 271 regarding solar farms. He feels these decisions should be made by the township and not by people downstate. Elder stated that Senate Bill 271 directly affects the Board of Light and Power. Elder questioned if the Michigan Townships were involved in this.

Supervisor Bohjanen indicated that the legislature has gone ahead with this and the Michigan Townships Association is fighting against it. At this point, it would take a change of legislators to change this.

CONSENT AGENDA

- A. Approve Minutes of Previous Meeting – Regular Meeting December 11, 2023.
- B. Approve Revenue and Expenditure Reports – December 2023 (Unaudited).
- C. Approve Bills Payable, Check Register Reports – December 12, 2023 (Check #26520 – 26543, in the amount of \$88,306.13) and December 28, 2023 (Check # 26544 – 26574, in the amount of \$397,626.91).
- D. Approve Bills Payable – Longevity Payroll of December 4, 2023 (Check #'s DD3778 – DD3786, Federal, State, and MERS in the amount of \$4,941.30), Regular Payroll of December 7, 2023 (Check #'s DD3787 – DD3820 and Check #'s 11447 – 11452, Federal, State, and MERS in the amount of \$45,419.06), and Regular Payroll of December 21, 2023 (Check #'s DD3821 –

DD3867 and Check #'s 11453 – 11458, Federal, State, and MERS in the amount of \$49,001.92).

Rhein moved, Engle supported to approve the consent agenda as presented.
MOTION CARRIED

SUPERVISOR'S REPORT

Supervisor Bohjanen continues to meet with the Assessor monthly. Everything is on schedule. There will be a need to look for an Assessing Assistant in the spring.

CLERK'S REPORT

Clerk Engle indicated that the Absentee Ballot applications have gone out for the Presidential Primary on February 27, 2024. Voters are now starting to change to the Permanent Ballot list.

TREASURER'S REPORT

Treasurer Zybert indicated that there were no maturities over the last quarter.

PUBLIC HEARING – NONE

PRESENTATIONS – 2023 SEWER MAIN AND LATERAL INSPECTION FINDINGS (Postponed until March Township Board Meeting)

CONSIDER FY 2023 BUDGET ADJUSTMENTS TO START YEAR END CLOSURE

General Fund Budget Amendment # 9

ARPA Year End Adjustment – 2023

Lynch moved, White supported that:

Whereas, a budget was adopted by the Chocolay Township Board to govern the anticipated General Fund expenditures of the Township on December 12, 2022 for fiscal year 2023; and

Whereas, as a result of unanticipated changes in revenues and / or expenditures, it is necessary to modify the aforesaid budget between revenues and expenditures,

Now Therefore, Be It Hereby Resolved, that the FY 2023 budget be modified as follows:

	PREVIOUS	CHANGE (+ / -)	AMENDED
REVENUE			
GF - ARPA			
101.528.001	\$0.00	\$53,886.56	\$53,886.56
EXPENDITURES			
GF - TRAINING & EDUCATION			
101.285.840	\$27,380.00	53,886.00	\$81,266.00
GF - TRAINING & EDUCATION			
101.285.840	\$81,266.00	(53,886.00)	\$27,380.00
HEALTH INSURANCE			
101.285.925	\$225,195.00	53,886.00	\$279,081.00
REVENUE			
SEWER FUND - ARPA			
571.571.528.001	\$0.00	80,345.00	\$80,345.00
EXPENDITURES			
LIFT STATION PROJECT			
571.571.973.001	\$0.00	80,345.00	\$80,345.00

ROLL CALL VOTE

AYES: Rhein, White, Lynch, Zyburt, Engle, Bohjanen

NAYS: None

ABSENT: Symbal

MOTION CARRIED

Capital Fund Budget Amendment #9
KBIC 2% Funds Allocation

White moved, Zybert supported that:

Whereas, a budget was adopted by the Chocolay Township Board to govern the anticipated General Fund expenditures of the Township on December 12, 2022 for fiscal year 2023; and

Whereas, as a result of unanticipated changes in revenues and / or expenditures, it is necessary to modify the aforesaid budget between revenues and expenditures,

Now Therefore, Be It Hereby Resolved, that the FY 2023 budget be modified as follows:

	PREVIOUS	CHANGE (+ / -)	AMENDED
REVENUE			
KBIC 2% Gaming Money			
401.000.582	\$ 170,000.00	\$ 88,444.46	\$ 258,444.46
EXPENDITURE			
Police Dept. Equipment			
401.305.977	\$ 78,705.00	\$ 10,000.00	\$ 88,705.00
Fire Department Equipment			
401.340.977	\$ 81,386.00	\$ 70,000.00	\$ 151,386.00
Capital Outlay			
401.958.957	\$ 147,120.00	\$ 8,444.46	\$ 155,564.46

ROLL CALL VOTE

AYES: Rhein, White, Lynch, Zybert, Engle, Bohjanen

NAYS: None

ABSENT: Symbal

MOTION CARRIED

CONSIDER CHANGES TO BOARDS AND COMMISSIONS MEETING DATES

Lynch moved, Rhein supported to approve the revised Planning Commission Meeting Schedule for calendar year 2024.

MOTION CARRIED

PREPARATION REVIEW FOR JOINT MEETING IN FEBRUARY

Supervisor Bohjanen stated there will be a short agenda for the Township Board Meeting at 5:30 followed by the Joint Meeting with the Planning Commission. The Board is hoping for a presentation from the Planning Commission on the progress of the rezoning of the AF district. Trustee Rhein indicated that the language is wrapped up and they are now working on the maps, which should be ready for the February meeting.

Township Manager De Groot asked about having a presentation prepared – would go through the public hearing process, the Township Board rights, possibly a diagram of the process and next steps. The Board agreed this would be a good idea.

Supervisor Bohjanen indicated that this was the major item for the meeting. There are other ordinances that should be looked at going forward, such as a brief look at renewable energy as our language is inadequate at this point (solar panels and wind). Clerk Engle indicated that as far as renewable energy goes, if we do not have an ordinance then it will definitely go to the State. Supervisor Bohjanen indicated that unlike some areas, the township does not have the acreage needed for this – a utility grade would need approximately 600 acres. Trustee Lynch indicated that transmission lines would also be needed at \$5 million per mile.

Manager De Groot indicated that the MTA will be putting out a draft “opposition ordinance” within the next few weeks so that we are able to control what we can.

Supervisor Bohjanen stated that in going over the bills, he has not seen anything on “eminent domain”. Basically, you would need a utility company that is willing to put these up, a landowner that is willing to provide the land, and depending on size, the State may or may not be a part of this. Clerk Engle indicated that in order to implement something like this, they would need to approach the townships first.

MANAGER UPDATE OF WORK PLAN AND CORPORATE STATUS

Manager De Groot stated that we are currently working on the budget numbers and providing the information to the departments. We are also working on getting RFP’s out the door for projects for the coming year. We are waiting to sign for the \$150,000 from the State. The radios are nine months out and we would be looking at advance pay.

Corporate - Staff is preparing the soft close and looking at adjustments that are needed. One more adjustment will be coming to the Board once all entries have been processed. We expect the auditors to be in sometime in February.

Work Plan – the siding is done and the building is quieter. There are no numbers yet on heating savings, but we anticipate the costs to go down. Looking at putting a small solar collector for the Fire Hall and DPW building. There is an initial quote of \$80,000 with the ability to possibly get a 50% match by the Federal government. This is still being researched.

The sewer presentation that was rescheduled is the results of the video inspection conducted last year. Everything was videoed – no crushed parts. The pipes were laid from 1974 – 1979 and it is now a matter of protection. Will be putting together an Asset Management Plan.

BOARD MEMBER COMMENTS

Don Rhein – none

Kendra Symbal – absent

Judy White – has been going to the meetings at the Landfill – does not feel like the meetings are always conducted properly and the meetings are all over the place. Nothing major at the moment.

Dave Lynch – none

Ben Zyburt – none

Max Engle – none

Richard Bohjanen – none

PUBLIC COMMENT

Stephanie Gencheff, 597 Lakewood Lane – likes the new siding. Would also like to discuss accessory dwelling units at the joint meeting to get board input on pros and cons.

Zyburt moved, Engle supported that the meeting be adjourned.

MOTION CARRIED

The meeting was adjourned at 6:09 p.m.

INFORMATIONAL REPORTS AND COMMUNICATIONS.

- A. Minutes - Marquette County Solid Waste Management Authority, Work Session of December 11, 2023, Draft.
- B. Minutes – Marquette County Solid Waste Management Authority, Work Session of December 15, 2023, Draft.
- C. Minutes – Marquette Area Wastewater Advisory Board; Regular Meeting of November 9, 2023.
- D. Information – Chocology Township Newsletter – December 2023.
- E. Information – Marquette Area Wastewater Advisory Board 2024 Meeting Schedule.
- F. Information – Iron Ore Heritage Trail 2023 Municipal Report.

Max Engle, Clerk

Richard Bohjanen, Supervisor

DRAFT

CHOCOLAY TOWNSHIP NEWSLETTER

January 2024

DEPARTMENT REPORTS

Assessing

By John Gehres

The numbers are being finalized for the 2024 database. The change notices will go out this month reflecting the assessed and taxable value increases over last year. It’s anticipated that Chocolay will have a higher turnout at the annual March Board of Review because of the significant changes.

Clerk

By Lisa Perry

The 2024 Election(s) have begun! There will be three elections this year with the possibility of a fourth. The dates are as follows:

February 27, 2024 - Presidential Primary

Early Voting for Presidential Primary election will be Saturday, February 17 through Sunday, February 25 from 10 AM to 6 PM at the Chocolay Township meeting room.

May 7, 2024 - Special Election (Nothing scheduled at this time)

There will be no early voting for a Special Election

August 6, 2024 - Primary Election

Early Voting for the Primary election will be Saturday, July 27 through Sunday, August 4 from 10 AM to 6 PM at the Chocolay Township meeting room.

November 5, 2024 - General Election

Early Voting for the General election will be Saturday, October 26 through Sunday, November 3 from 10 AM to 6 PM at the Chocolay Township meeting room.

January 8, 2024, we sent out 2194 Absentee Applications and by January 27, 1014 were returned. We mailed out 1014 Absentee Ballots on 1/27 and received 12 by the end of the month.

To check the status of your application/ballot please go to <https://mVIC.sos.state.mi.us/>

This will be a very busy election season, please make sure you are registered to vote in your jurisdiction. If you move, please change your address on your driver’s license to reflect the move, this is the best way to keep your registration current.

Fire Department

By Lee Gould

The Fire Department continues to work on our Wildland/Rescue truck replacement. In the fall of 2022, our former Wildland truck was taken out of service due to major mechanical repair. The truck was formerly a Department of Public Works truck that we got when our Public Works upgraded their truck. After extensive research, the fire department recommended a new Wildland/Rescue truck for replacement that would meet the needs of the department and last for 20 plus years. This truck would serve as not only our Wildland Fire truck, it would also assist on structure fires or structure fire protection in remote areas, rescue calls and any other call when needed. This truck would be used more than our previous wildland truck due to improved storage capabilities and the ability to carry more equipment. This can also allow the department to use this truck on calls where larger fire apparatus



is not needed, thus saving wear and tear on the larger apparatus and adding longevity to them.

Our call volume has been steady since the start of January. 2023 saw our call volume dip slightly due to the lack of weather-related calls. With this warm and unpredictable weather for the start of 2024, weather related calls are more likely if this continues.

Public Works

By Brad Johnson

I have been working on RFP's for contracted work that needs to be done for this year. The first RFP is let and is due on February 1 at 1:00. This one is for work on sewer mains and laterals. The second one is in four phases that will all be completed this year. This first and second part can happen simultaneously with the installation of a new vault toilet at Beaver grove and the removal of the existing vault toilet. The next phase will be to pour a concrete slab in front of the vault toilets. The last phase will be to relocate the underground power and hook the water shed back up to power.

The ice rink was open for about 2 weeks before we lost it again. This is the second year in a row for very poor weather for the rink. Watching the long-term forecast, odds are not in our favor that we will be trying to get it back.

Planning / Zoning

By Dale Throenle

Planning Commission

The Planning Commissioners participated in a regular meeting on January 22 in the Township Fire Hall.

There was one unfinished business item and five new business items on the agenda; the Commissioners decided to do new business prior to unfinished business:

New Business

1) Conditional Use Permit CU 24-01 – Proposed School 1510 M-28 East

Commissioners discussed and approved a conditional use permit for a change of use from a church to a school at 1510 M-28 East. The new school will be operated by the Marquette-Alger Regional Educational Service Agency (MARESA) students that need additional assistance to complete their instruction at their local school.

2) Election of Planning Commission Officers
Commissioners elected the officers for the 2024 calendar year. Elected officers are:

Ryan Soucy – Chair

George Meister – Vice Chair

Donna Mullen-Campbell – Secretary

Rebecca Sloan – Vice Secretary

3) Planning Commission Bylaws and Procedures Review

Commissioners reviewed the bylaws and procedures that the Commissioners use for Planning Commission responsibilities. They added the Pledge of Allegiance to the document; the Pledge of Allegiance will now be part of the agenda at each Planning Commission meeting.

4) 2023 Planning Commission Annual Report
The Commissioners reviewed the annual report that outlined Planning Commission accomplishments during 2023. The Commissioners approved the report and forwarded it to the Board for consideration.

5) Joint Meeting Discussion

The Commissioners proposed items that they would like to discuss with the Township Board at the joint meeting with the Board in February.



Unfinished Business

1) Proposed Zoning Ordinance Map for the Agriculture / Forestry (AF) Zoning District (34-23-02)

Commissioners discussed the proposed zoning ordinance map for the proposed AG 1, AG 2, and AG 3 zoning districts. Commissioners made minor changes to the map and recommended the language and the map be put forward into a public hearing at the March meeting.

The Planning Commission will participate in two meetings on February 12 in the Township Fire Hall. The first one, starting at 5:30 PM, will be a joint meeting with the Township Board. The second one, starting at 7 PM, will be the regular monthly meeting.

Zoning Board of Appeals

The Zoning Board of Appeals did not meet for its regular meeting in January and will not meet in February.

Police

By Liz Norris-Harr

Happy New Year! While we are enjoying the mild weather it has put a damper on the snowmobile training for Officers Harvala and Mitchell. It was cancelled this month and rescheduled for February. We have only been able to do snowmobile patrol once for the season.

The Police and Fire Ball was this month. It was a beautiful set up and very successful.

Prescription Drug Collection

Prescription drug collection through the drop-off box at the Township Police Station.

Month 2019	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Pounds To-Date	19											
Pounds Year To-Date	19											

FOIA

REQ #	Date Rec	Res by Date	Invoice Sent	48 Days Invoice	10 day Ext Sent	10 day Ext	Response Date	Link to Documentation	Description	First Name	Last Name
24-01	1/5/2024	1/11/2024					1/8/2024	24-01 Carlson 01.05.24	Police Reports	Britta	Carlson
24-02	1/8/2024	1/12/2024			1/9/2024	01/26/2024	1/24/2024	24-02 Mulcahey 01.08.24	Employee Information Salaries/Benefits	Deborah	Mulcahey
24-03	1/5/2024	1/11/2024			1/9/2024	1/26/2024	Cancelled	24-03 Gencheff 01.05.24	Voting Information	Stephanie	Gencheff
24-04	1/8/2024	1/12/2024			01/09/2024	1/26/2024	1/24/2024	24-04 Mulcahey 01.08.24	Employee Information email address	Deborah	Mulcahey
24-05	1/11/2024	1/17/2024					1/15/2024	24-05 Heidtman 01.11.24	Police Reports	Travis	Heidtman
24-06	1/26/2024	2/1/2024					1/30/2024	24-06 Hughes 01.26.24	Police Reports	Brittany	Hughes
24-07	1/30/2024	2/5/2024			01/30/2024	2/19/2024		24-07 Kanerva 01.30.24	Police Reports	John	Kanerva



Web Page Statistics

Year to date totals through January are shown in the table.

Month	Sessions	Page Views
January	1,889	6,150
Totals	1,889	6,150
Averages	1,889	6,150

Zoning Permit Counts

Zoning permit counts through January, 2024:

2024 Reviewed Permits by Month		2024 Reviewed Permits by Type		
Month	Number of Permits		Approved	Denied
		Permit Type	Number	Number
January	3	Addition	0	0
		Alteration	0	0
		Commercial Outbuilding	0	0
		Conditional Use	1	0
		Deck	0	0
		Fence	0	0
		Garage	0	0
		Grading	0	0
		Home	0	0
		Home / Garage	1	0
		Home Occupation	0	0
		New Commercial	0	0
		Outbuilding	0	0
		Pole Building	0	0
		Rezoning Application	0	0
		Sign	0	0
		Site Plan Review	1	0
		Zoning Variance Request	0	0
Total	3	Total	3	0



**MARQUETTE COUNTY PLANNING COMMISSION
MEETING MINUTES
JANUARY 10, 2024**

1. Call to Order: The meeting of the Marquette County Planning Commission was called to order by Senior Planner, Ms. Leach at 6:30pm in preparation of election of officers.
2. Roll Call: Commissioners present: Karen Alholm, Dave Slater, Ken Kaiser, Bob Struck, and Eric Swisher. Commissioners Bergdahl and Vermaat were not in attendance. Staff present: Emily Leach and Jen Sides. Public Present: None.

Election of Officers: Ms. Leach opened nominations for the 2024 Chairperson seat. Commissioner Alholm nominated Commissioner Kaiser, supported by Commissioner Struck. The motion carried unanimously. Commissioner Kaiser accepted the nomination. Ms. Leach turned the meeting over to Commissioner Kaiser

Commissioner Kaiser opened nominations for the Vice Chairperson position. Commissioner Struck nominated Commissioner Vermaat, supported by Commissioner Slater. The motion carried unanimously.

Commissioner Kaiser then opened nominations for the Secretary position. Commissioner Kaiser nominated Commissioner Struck, supported by Commissioner Slater. The motion carried unanimously.

Commissioner Kaiser welcomed new board member Commissioner Swisher to the Planning Commission.

3. Approval of the Minutes: Commissioner Alholm motioned to approve the November 1, 2023 minutes, supported by Commissioner Slater. The motion carried unanimously.
4. Public Comment: None.
5. Approval of Agenda: Commissioner Kaiser requested a late addition be added to the agenda called "10 e. Forestry Management Plan Update." Commissioner Struck motioned, supported by Commissioner Slater to approve the agenda as modified.
6. Public Hearings: none
7. Communications: Commissioner Alholm motioned, supported by Commissioner Slater to accept and file the communications. The motion carried unanimously.
8. Monthly Reports: Commissioner Struck motioned, supported by Commissioner Swisher to accept and file the monthly reports. The motion carried unanimously.
9. Old Business:
 - a. Materials Management Planning: Ms. Leach explained that the new Materials Management laws require that existing County Solid Waste Plans be replaced with new Materials Management Plans (MMP) that focus on sustainable materials management approaches such as recycling and composting instead of just landfilling waste. The EGLE Director initiated the process for MMP on January 8th, which started a 180-day time frame for the County Board to accept the authority as the County Approval Agency, consult with adjacent counties about the option of preparing a multicounty plan via written correspondence and submit a Notice of Intent (NOI) to prepare an MMP including the interlocal agreement if creating a multi-county plan.

10. New Business:

- a. Ely Township Zoning Map Amendment #1: Ms. Leach relayed that the proposed zoning amendment is to rezone and divide a 40 acre parcel from Resource Production to Residential-5. The future land use map shows the parcel that is planned to be rezoned is adjacent to other residentially zoned areas. Ms. Leach reported that staff supports the rezoning. Commissioner Alholm motioned, supported by Commissioner Struck to support the proposed map amendment and to forward any staff and Commissioner comments to the Ely Township Board and Planning Commission. The motion carried unanimously.
- b. Ely Township Zoning Map Amendment #2: Ms. Leach informed that the proposed zoning amendment is to rezone and divide a 100 acre parcel from Resource Production to Public Lands. She stated that a public hearing notice was published listing the original parcel under an incorrect zoning designation. Since this rezoning also does not align with Ely Township's future land use map, staff do not support the proposed map amendment and suggests Ely Township follow proper notification procedures. Commissioner Struck motioned, seconded by Commissioner Slater to not support the proposed map amendment and to forward any staff and Commission comments to the Ely Township Board and Planning Commission. The motion carried unanimously.
- c. 2023 Planning Commission Report: Commissioner Struck motioned, supported by Commissioner Alholm to share the 2023 Planning Commission Report with the County Board as an informational item. The motion carried unanimously.
- d. 2024 Proposed Meeting Schedule: Commissioner Alholm motioned, supported by Commissioner Swisher to adopt the 2024 proposed Planning Commission Meeting Schedule along with moving the 2024 meeting site to Room 41 of the Courthouse Annex. The motion carried unanimously.
- e. Forest Management Plan Presentation (Late Addition): Ms. Leach presented a power point of the Forest Management Plan draft. She explained key aspects of the plan and the importance of Forestry revenue to the support and maintenance other County recreation areas. Commissioner Struck made a motion to accept the Plan, supported by Commissioner Slater. The motion carried unanimously.

11. Announcements:

Commissioner Swisher introduced himself and shared his background. He previously served on the Zoning Board of Appeals and the Planning Commission in the community of Hillsdale, downstate.

Commissioner Kaiser thanked staff for putting together the holiday get together and send off for Mike Touchinski and suggested we do more events in the future.

Ms. Leach stated that the Prime Professional request for proposals for the DNR SPARK grant at Little Trout Lake has been extended to January 18th. The Planning Division received a \$500,000 Michigan State Housing Development Authority (MSHDA) grant to support home repairs and energy efficiency upgrades for low income households within the County. The Division is currently advertising for an AmeriCorps member to support the MSHDA grant objectives and to draft a climate and sustainability plan for Marquette County. Service term is full time, March 18- November 15, 2024. The stipend is administered through the Community Economic Development Association of Michigan (CEDAM) and is approximately \$3,000 a month with an education award of over \$5,000 after successful completion that can be used to pay student loans or towards future education.

12. Public Comment: None.

13. Adjournment: Commissioner Slater motioned, seconded by Commissioner Swisher to adjourn the meeting. The motion carried unanimously. Commissioner Kaiser adjourned the meeting at 7:31pm.

Respectfully submitted,
Jen Sides, R/M/D Support Staff

**OFFICIAL PROCEEDINGS OF THE
MARQUETTE CITY PLANNING
COMMISSION
January 16th, 2024**

A regular meeting of the Marquette City Planning Commission was duly called and held at 6:00 p.m. on Tuesday, January 16th, 2024, in the Commission Chambers at City Hall.

ROLL CALL

Planning Commission (PC) members present: W. Premeau, M. Rayner, K. Clegg, C. Gottlieb, S. Lawry, D. Fetter, Chair S. Mittlefehldt.

PC members absent: A. Andres, Vice-Chair N. Williams (both excused).

Staff present: Zoning Official A. Landers, City Planner & Zoning Administrator D. Stensaas

AGENDA

It was moved by S. Lawry, seconded by K. Clegg, and carried 7-0 to approve the agenda as presented.

MINUTES

The minutes of 01-09-24 were approved by consensus, with noted minor corrections to be made.

CONFLICT of INTEREST

There were no conflicts of interest stated.

PUBLIC HEARINGS

There were no public hearings.

PUBLIC COMMENT ON AGENDA ITEMS

No comments were provided.

NEW BUSINESS

A. 01-SPR-01-24 - Site Plan Review for a 50-unit Multiple Family building at 1502 W. Ridge St., 1303 and 1400 Grant Ave. (PIN: 0513670, 0513810, 0513811, 0513812)

A. Landers stated:

Staff has reviewed the proposed site plan is for the construction of a three-story building for a total of 50 residential units (Black Rock Crossing's unit mix will be 26 one-bedroom and 24 two bedroom units), new parking lot areas, site grading, dumpster enclosure, landscaping, picnic and grill area, playground area, bike shelters, and site improvements for 1502 W. Ridge St., 1303 and 1400 Grant Ave, and has provided comments regarding the plan. On March 21, 2023, the Planning Commission reviewed a sketch plan for this property. On the screen is the Staff File Report, which is in the agenda packet, the application and the applicant's attached documents, staff comments and the applicant's responses, the area and block map with the parcels outlined in blue, photos of the area, and the site plan set. Staff recommends the following condition of approval – that an amended site plan is submitted meet staff comments.

S. Mittlefehldt asked if the applicant wants to present the project to us, a bit of an overview or background context.

Mr. Craig Patterson, Senior Vice President of Woda-Cooper Companies, stated:

Good evening. We had a change. When I was here a year ago, we talked about the development of 50 units, and it needed to be funded by MSHDA in order to develop the property. At that time, we had two buildings, because we thought two buildings was the best choice for this property. This property is a bit challenging due to topography and so we set back in the northwest corner (inaudible) ...our buildings there. But once we got a

funding reservation letter from MSHDA they said a contingency would be that we'd have to put in elevators. Well, the type of design that we had, the two buildings would have required four elevators. Our budget had been submitted to MSHDA and they approved the budget as is, but when the marketing group at MSHDA required elevators it wasn't that simple, because for four elevators the design change was going to add about \$600,000 and the budget was already locked in. So we did our best to try to challenge MSHDA, we consulted our partners, which is the Keewenaw Bay Indian Community, they're a general partner in it, and they said they felt we were okay. We took some additional steps to add cost, like enclosed stairways. But the short of it is that MSHDA said that we still had to have the elevators. So we quickly responded with the building you see in the site layout. I think it's a better building. It only has one elevator. The only difference between what you see tonight and what you saw a year ago is one building, the unit mix is the same, the square footages of the units are roughly the same. The access drive off of Ridge has been moved a little bit, but it is basically the same. We were dealing with the storm issues on this site before we went to MSHDA with our application with two buildings, and our civil engineer and land consultants have recalculated all the storm, etcetera. Parking spaces are per the required number, and the amenity package is the same - with the playground, outdoor eating area, benches, etcetera. And with that I am asking that you, if there are any points of clarification that you need as to why we did this and what we think the overall benefit is, I'm more than happy to answer those, but I'm hopeful for a vote to go forward. Our goal is to once the frost is off the ground or out of the roadways, to bring in the heavy equipment. We do have a building on the site that needs to be demolished. We have had an environmental group look at that and if we can get approval on a NEPA environmental, which is required before we do any work on the property, and that would be the first thing we'd do - we think we can tear down that building, pile it up, take it out, even before the frost is off the ground so we can find the right way to do that. That will give us an early start, but we're hopeful to be started by May 1st, sooner if we can so we can get framed up before next winter.

S. Mittlefehldt asked if anyone had any questions for the applicant at this time. She also asked if there was any correspondence, and having none she said that the Planning Commission could move on to discussion.

It was moved by K. Clegg, seconded by S. Lawry, and carried 7-0 to suspend the rules for discussion.

W. Premeau said that he noticed that the dumpster enclosure changed from a chain link fence with slats, and that disappeared and became a big masonry structure. And then there was a point that it still doesn't meet the Code because the gates are slightly forward, which would allow people to squeeze in and throw their stuff in the dumpster even though you can walk in the back.

A. Landers said that is incorrect.

W. Premeau said the other thing, again, is a deciduous tree. They have (inaudible), and one of them is a 36-inch tree, so there's some good-sized trees there but they still have to plant another one. To me, that's a little on the ridiculous side, because all that stuff costs and adds to the per-unit cost. When they've got 50 its divided by 50, but a lot of people building four-unit buildings in residential area - we maintain the same rules and you know, they're going to have four-or-five-thousand dollars added to their cost. And then the other one that I asked Commission Lawry about, is a 6-inch line feeding an 8-inch line. He doesn't seem to think there is a problem, and he would know, I don't.

S. Mittlefehldt said that maybe we could stick to, our task then is to see if this meets the standards of section 54.1402, and I think that some of your issues [directed to W. Premeau] might be in here, so maybe we could look through these and see if we agree if they've met the standards or not.

A. Landers stated that if she may speak, she would like to correct some incorrect statements.

S. Mittlefehldt said yes, please.

A. Landers stated that for dumpster enclosures, one of the enclosures doesn't meet the code and one does, so they just need to match, whatever they wish to do to meet Code. And that's what they said they would do, match it to meet the Code, and then as far as the deciduous trees - they have them on the plan, they just need

to call out the areas so that I know which areas they are calling interior. So that's all they need to do for that. The only thing that they have to add is screening for mechanical equipment, which is a requirement because its next to residential. I've talked to them about that, and they will be adding the shrubs to screen the mechanical equipment.

S. Mittlefehldt said let's quickly run through these standards. She began reading the subheadings of Section 54.1402(E), starting with the with (1) Health, Safety and Welfare. She also said that you can see how the applicant has responded to these, but we'll go over them to make sure we're all in agreement on these. She and the Planning Commission went through all eleven items.

S. Mittlefehldt said that she was curious about Storm Water Management (item 5) and mentioned the consultants comments in the Staff Report, that they said they would comply and provide further information about their calculations. She asked Mr. Patterson if he could explain a bit about how stormwater is going to be managed on the site.

Mr. Patterson stated:

Well, there's a couple areas where water is flowing from the northwest, underneath the dog park that is there at Tourville, it just flows off and puddles there. We always knew that was there and we knew we had to have some sort of detention. When we moved the building, we realized the building was going to go in that corner and the civil engineers designed a way to catch that storm there and then pipe it down in a way to this retention basin. That retention basin basin was recalculated and is now larger than what we had originally. We also know, a little bit east of the parking lot, at about the eastern edge of that parking lot, there's some water coming off of the ridge, and they've taken that into account in their storm calculations and how they're running their piping through. My understanding is there are still more calculations that they have to do in their final engineering which is required for permitting and it will all be calculated out and it will meet the standards.

The other thing, just as an FYI, there is a drainage easement that runs from the west that comes across from Tourville, and I was out there today, and they stack up all their snow on the property line. Well, I made sure today when I talked to our main engineer, and I took pictures – and I saw it last year too, it gets bigger, that pile will get bigger and when it melts its going to flow the way of that easement. We're respecting the easement and maintaining it and all of the calculations will take into account that flow. I might mention one thing about trees, I'm glad you brought that up and thank you for your comments because that is a cost (directed to W. Premeau), we are trying to save as many of those beautiful trees as we can. There are some towering Whites and some of the trees have to come down where the building is, but we're trying to save as many of those as we can. So, that is on the list of things to do, the (inaudible) looked and we tried to set in our driveway to leave as much of that as we can.

S. Mittlefehldt said okay, thank you - appreciate that. She continued asking if anyone had questions or concerns about section 54.1402(E) standards, from Emergency Vehicle Access (#6) to City Engineering Design and Construction Standards (#11).

S. Lawry said that their narrative mentions that Light and Power to install the lighting, and typically their lighting is area-wide lighting, it's not really focused, downcast. But we were provided with a lighting-footcandle diagram of the whole lot, even though we didn't have the information that you usually see on specific fixtures. That lighting plan certainly meets the standards, so I think we can accept that as long as the desired fixtures meet that lighting plan that should be fine.

S. Lawry said that he had a comment that is directed primarily to staff and that is it was noted on the surveyor's plan that he found evidence of the vacation of those two parcels of Grant Ave. beyond the West End Addition and that was part of our discussion last time we looked at this. I think he dates it as September 16, 2006, and yet the City's GIS system is not reflecting that vacation.

A. Landers stated that is in the queue for them to fix it.

S. Lawry stated that he would like to make sure that gets done before we get the new Master Plan.

A. Landers said it was on the surveyor's to-do list.

S. Lawry said that's wonderful, great.

S. Lawry said that, as Commissioner Premeau pointed out, the City installed a 6-inch fire hydrant leading into the Hancock St. right of way back in 1978 when that area was developed, and 6-inch was considered adequate at that time for all means. The State's drinking water division has upgraded that to an 8-inch minimum, but as long as their fire protection people have done the calculations to make sure that that short section of 6 inch is not going to hamper their flows and pressures, I guess its on them to make sure they're getting what they need at the sprinklers in the buildings and its entirely possible to do that through that short section of 6-inch, somebody just has to verify it with calculations.

S. Mittlefehldt said okay, excellent point.

S. Mittlefehldt said that she had a general question that isn't relevant to these standards. She said she noticed in the packet it mentioned that the project may meet LEED [Leadership in Energy and Environmental Design] status of that and if it is going to be LEED certified?

Mr. Patterson stated that it will be LEED Silver, net zero energy (inaudible), that's what we planned. That's what we committed to MSHDA and our investors and we've already had preliminary discussions on how to facilitate all that with our third party.

S. Mittlefehldt said that's great, we don't see many of those in Marquette and that could be a nice demonstration site. She asked if anyone had any other questions.

W. Premeau said he was just curious about how MSHDA property and Brownfield stuff play together, do they at all?

D. Stensaas stated that is a question that he can't answer the question because he doesn't know if there is any linkage on this project and that he isn't aware of any Brownfield involvement.

Mr. Patterson stated that our funding comes strictly through MSHDA, through housing tax credits. We did nothing with Brownfield, we don't expect to initiate anything related to Brownfields. (inaudible) that was granted by the City Commission had no tie to Brownfield at all.

W. Premeau said he was just curious about how they mesh together.

S. Mittlefehldt stated:

I know that you can't pinpoint right now because the cost of construction might change the price on these, but do you have any sense how much one of the one- or two-bedroom units might go for?

Mr. Patterson stated:

I don't have my rent matrix handy, but between 30 and 80 percent of the AMI incomes for the county, which means that a family of four could be earning up to probably \$65,000/year and still qualify to live there. And the rents range is sometimes on the low end, in the 30-percents they range around \$400 net rent, which means that's what we collect, but there's a buffer in there that allows them to pay their utilities, so there's less rent to us so they can pay their utilities, that's low end. And I would suspect there could be some rents at the 80-percent AMI that could be approaching \$1100 for the two-bedrooms. But many of them range in the \$600-\$800 range, which makes them very affordable and achievable. One of the advantages that the Keewenaw Bay Indian Community has said about our partnership is we've set aside nine units for tribal members and their descendants that desperately need affordable housing. That means nobody can go into those units until prequalified tribal members can go in, but the good thing about it is that right now within the City, in their own housing they have units where there's maybe a couple in a two-bedroom or a senior in a three-bedroom and they won't move them out because there's no place in the City they can go. So, the way our rent structure is, is such that those individuals that they choose will be able and live in a new unit and that opens up the higher capacity units for those who need larger units. So, it's a win-win I think not only for our prospective tenants but

the tribal members and the community at large because this new housing will be accessible for those who pre-qualify and need it.

S. Lawry stated:

I think there was one other point I noticed where there appeared to be maybe a misunderstanding between the City and the developer. It's on page 51 of the packet, I think the last response to the Engineering Department's comments. The Engineering Department was asking for an additional valve to be placed on the water service at the property line and that was basically to be the terminal point for the City's responsibility and from that point onto the property would be the developers for ownership and maintenance, yet the response kind of indicates that they're willing to accept ownership on the City right-of-way. And they're also showing on their maps a 20-ft. wide easement over the water main. I believe the policy is still the same as it was when I worked here 20 years ago, that the City ownership will end at the right of way line and they will not accept ownership within (inaudible) easement over the water main that is on private property, so that will be theirs to maintain. The narrative kind of indicated there was some confusion about that.

S. Mittlefehldt asked if there was anything else.

D. Stensaas stated that the Code allows them to keep existing trees and substitute them for required vegetation in specific circumstances, so hopefully they'll be able to do that, and that's an administrative approval in all likelihood, and so is the dumpster issue. So if the LDC is revised before they get to that point they can submit site plan changes for the dumpster.

S. Mittlefehldt said, okay, great. Does anyone else have anything or does someone want to make a motion?

It was moved by S. Lawry, seconded by K. Clegg, and carried 7-0 that after review of the site plan and the supplemental documentation dated 12-18-23, and the Staff Report for 01-SPR-01-24, the Planning Commission finds substantial compliance with the City of Marquette Land Development Code, the Site Plan Review Standards in Section 54.1402(E), and the Multiple Family Dwelling and Apartments standards in Section 54.616, and hereby approves the site plan with the following condition that an amended plan is submitted to meet staff comments.

B. Planning Commission Member to Serve on the Board of Zoning Appeals

A. Landers stated that N. Williams is currently the representative of the Planning Commission (PC) serving on the Board of Zoning Appeals, as required by the PC bylaws, and that he will not be reapplying to serve on the PC when his term ends next month. Some questions were asked of staff by PC members and after a short discussion K. Clegg volunteered to fill the position.

It was moved by C. Gottlieb, seconded by M. Rayner and carried 7-0 to nominate K. Clegg to serve as the Planning Commission representative to the Board of Zoning Appeals.

PUBLIC COMMENT ON NON-AGENDA ITEMS

No comments were provided.

WORK SESSION

A. Land Development Code 2024 Amendments

The Planning Commission and staff continued work on a comprehensive update to the Land Development Code (LDC) by discussing several items from the LDC that staff has annotated and prepared for amendments. The items discussed were:

- Whether to recommend an exception to the standard that requires parking to be at least 20 feet behind the property line, for 1-and-2 family residential units only, in the Third St. Corridor

District.

- The creation of a 2-space minimum parking space standard for Supportive Housing facilities.
- Increasing the minimum gross floor area for an ADU to a size that makes more sense for dimensional lumber and other building materials – 768 square feet. Section 54.612.
- Clarifying some confusing text regarding monument and wall sign allowances in the charts for certain zoning districts.
- Adding reference language from the City Code about “dog runs” to the fencing section of 54.706 and 54.322 (C)(4) to clarify that dog runs cannot be placed in front yards.
- Changes to simplify and clarify the definition of Lot Coverage/Ground Coverage.
- Adding a standard for the expiration timeframe for Zoning Compliance Permits, in section 54.1401.
- Inserting text to clarify provisions for Violations and Penalties, in section 54.1503.
- Parking area requirements for vehicles being displayed for sale, in section 54.628.
- Whether or not changes should be made to the length of time that temporary structures may be permitted and also for text that describes exceptions that may allow for an administrative 60-day extension period.

A consensus was reached on all of these issues and the amendments will be re-presented with all other amendments as a package for a work session with the City Commission prior to hearings for final approval.

COMMISSION AND STAFF COMMENTS

There were no comments provided.

ADJOURNMENT

The meeting was adjourned by Chair S. Mittlefehldt at 7:30 p.m.



Prepared by D. Stensaas, City Planner and Zoning Administrator, Planning Commission Staff Liaison