Erosion Control and Stormwater Management Plan

River Point District

City of La Crosse

LACRS 163627 | June 2, 2022

SEH

Building a Better World for All of Us®

Engineers | Architects | Planners | Scientists

Erosion Control and Stormwater Management Plan

River Point District
City of La Crosse

Prepared for:
City of La Crosse
400 La Crosse Street
La Crosse, WI 54601

Prepared by:
Short Elliott Hendrickson Inc.
156 High Street, Suite 300
New Richmond, WI 54017-1128
715.246.9906

I, Erik Henningsgard, hereby certify that I am a registered Professional Engineer in the State of Wisconsin in accordance with ch. A-E 4, Wis. Adm. Code and that this report has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code.

Reviewed by: 
Erik D. Henningsgard, PE

June 2, 2022
Date

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Erosion Control and Stormwater Management Plan

River Point District

Prepared for the City of La Crosse

1 Introduction

The project includes the development of nearly 40 acres near the confluence of the Mississippi, Black and La Crosse Rivers. The current phase of construction includes approximately 2,500 lineal feet of River Bend Road, an extension of an existing City street as well as approximately 300' of reconstruction of the western end of Causeway Boulevard. The current project will also include the installation of water main, sanitary sewer main, storm sewer, and an underground stormwater management facility. The project is the first infrastructure construction phase of the project and part of a larger development referred to as the River Point District. The site was previously filled to raise the future building pads out of the floodplain and the fill was permitted under DNR permit FIN#75056 and the site terminated under FIN#58263. Below is a 1992 aerial from Google Earth, showing the structures on the site that have since been removed.

1992 Google Earth image of the project site.

The current phase of the project disturbs approximately 8.5 acres and includes the construction of an underground stormwater treatment tank to provide total suspended solids (TSS) reduction

for the overall development. The site is a redevelopment, and all structures were previously removed from the site.

The project consists of one acre or more of land disturbing construction activity and therefore requires a WPDES Storm Water Discharge Permit. The Storm Water Permit Application General Information is included in **Appendix A**. Construction plans for the project are included in **Appendix B**.

2 Wetlands and Wetland Impacts

Wetlands have been identified on the project site and the inland wetlands were filled as part of the Phase 1 fill project. The wetlands that were filled were determined to fulfill all artificial wetland exemption standards. An artificial wetland exemption determination is included in **Appendix C,** which includes the delineation of the wetlands.

Project photos, after the completion of the fill from Phase 1 are included in **Appendix D** and an Endangered Resources Review was completed and is included in **Appendix E**.

3 Erosion Control

For specific details on the erosion control plan refer to the plan sheets in **Appendix B**. The plan includes the installation of silt fence perimeter control, erosion control mat, inlet protection, and tracking pads. The plan also includes the installation of a floatation silt curtain for sediment control during installation of the storm outfall.

Soil borings were completed in the location of the underground stormwater treatment tank and indicate poorly graded sand in the fill areas, which the entire project consists of. A sheet showing the location of the borings along with drafts of the boring logs are included in **Appendix F**.

The Soil Loss & Sediment Discharge Calculation Tool was used to show compliance with the allowable discharge of 5 tons/acre/year per NR 151.11(6m)(b)2 and a narrative and calculations are located in **Appendix G**.

4 Post-Construction Stormwater Management

4.1 Standards

The project is subject to the post-construction performance standards of the DNR code NR 151.121 through NR151.125 and the City of La Crosse. The site is a redevelopment and discharging directly to the river and therefore exempt from peak flow and infiltration standards. The specific standards that apply to the site include:

- DNR Standards, NR151.122(1), Table 1
  - A 40 percent TSS reduction from parking areas and roads.
- City of La Crosse Standards, §105-61(b)(4)(a)
  - A 40 percent TSS reduction from parking areas and roads.

4.2 Design

The project includes the construction of an underground stormwater treatment tank to provide the minimum 40 percent TSS reduction required for future development. Below is a concept General Development Plan as developed by SEH and RINKA+ of the potential future development.

SEH/RINKA+ rendering of a conceptual General Development Plan

The street right-of-way areas were modeled as currently designed utilizing the street, sidewalks, and landscaped source areas. Due to the existing elevations of Highway 53, runoff from the east/west streets was not able to be captured, east of the first north/south street, in the storm sewer system and discharges directly offsite. Not knowing how each individual lot will be developed it is desired to afford the City and future developers the greatest flexibility in their design and development. The DNR regulatory constraints on the project relate to the TSS reduction of 40 percent for parking areas and roads, which is demonstrated through modeling in WinSLAMM. WinSLAMM includes “Standard Land Use” files that depict different land uses, similar to the TR55 CNs. There is a standard land use file for Downtown Commercial that was utilized to determine a designed 95 percent impervious.

Below are the percentages included in the WinSLAMM Standard Land Use file for Downtown Commercial, followed by the source areas included in the modeling.

Areas from SLU Downtown Commercial	
Source Area	**Percent**
Flat Roofs	40.73
Paved Parking	23.01
Driveways	1.48
Sidewalks	8.35
Street Area 1	19.96
Street Area 2	2.21
Landscape	3.56
Other Pervious	0.62
Other Impervious	0.08
Total	100

*Source Area for Interior Blocks	
Source Area	**Percent**
Flat Roofs	59
Paved Parking	36
Driveways	0
Landscape	5
Total	100

***The "Source Area for Interior Blocks" table should be used for reference at the time of block development to ensure development follows the assumptions included in the design.**

The storm sewer infrastructure proposed with construction of the street will collect stormwater runoff and direct it to the underground stormwater treatment tank (tank). The tank is 100 feet by 100 feet with an interior height of 15 feet (Elevation 630'-645'). The tank includes five feet of normal water depth, which is regulated by a twelve-inch orifice discharge at an elevation of 635 feet. The 12-inch outlet is fitted with a duckbill backflow prevention device to prevent backflow into the system up to the 10-year storm event. The outlet is included on an interior weir wall with a top elevation of 640 feet, which is sized to an elevation higher than the 10-year storm elevation. Storm events greater than the 10-year storm will overtop the weir wall and the tank discharges via three 36-inch pipes. A 33'-4"x33'-4" forebay will also be included at the influent pipe for ease of routine sediment removal maintenance.

The Redevelopment Authority of La Crosse will be responsible for long-term maintenance of the facility and an agreement for maintenance is included in **Appendix H** and a Delegation of Signature Authority form is included in **Appendix I**.

4.3 Modeling

The site was modeled in WinSLAMM to determine the TSS reduction achieved in the proposed underground stormwater treatment tank. The WinSLAMM modeling results are included in **Appendix J**.

4.3.1 TSS Removal (WinSLAMM)

The proposed site was modeled in WinSLAMM, following the parameters as outlined in section 4.2 Design. The modeling includes three different land uses including Block Interiors, Right-of-Way (blue), and Offsite Right-of-Way (red) as indicated in the image below. The areas indicated in yellow were not included in the design of the tank and will require stormwater management at the time of development.

WinSLAMM Source Areas

The 40 percent TSS reduction only applies to parking areas and roads and therefore an “Other Device” was applied to source areas for landscaping and sidewalks to exclude the TSS from these areas but account for the runoff volume. The area of the interior of the tank was reduced by the area inside the weir wall of 556 sf (16’-8”x33’-4”), for a total area of 9,444 sf (0.217 acres). The WinSLAMM modeling results in a **TSS reduction of 43.5 percent**.

4.3.2 Hydraulic Analysis (XPSWMM)

The site was modeled with an XPSWMM one-dimensional / two-dimensional (1D-2D) hydrologic and hydraulic model to analyze the proposed storm sewer system. A memorandum with an overview of the results of the modeling is included in **Appendix K**. The following design parameters were incorporated into the design.

1. 10-year peak hydraulic grade line (HGL) below the top of storm pipes.
2. 25-year event resulting in less than 0.5 feet of water ponded in the streets at low points.
3. 100-year event resulting in ponded water that does not reach the elevation of the building pad fill (678.0 feet NAVD).

4.3.3 Results

The proposed stormwater conveyance system and underground stormwater treatment tank have been designed to meet the standards of the DNR and the City of La Crosse.

Appendix A

Storm Water Permit Application General Information

Storm Water Construction General Permit Application

Applications are completed in a series of steps, identified by the tabs below (e.g. Application, Attachments, etc.) Click on a tab, follow the instructions and complete the following steps:
Complete all sections, **Save** your work, **Move** between tabs, **Pay** online by credit card or e-check, (You must use this system to pay all application fees), **Include** your digital signature, **Submit** the Application to the DNR.

NOTE: Missing or incomplete fields are highlighted at the bottom of each page. You may save, close and return to your draft permit as often as necessary to complete your application. If you do not complete the draft in 120 days, your draft is **deleted.**

Basic Permit Information

Project Name River Point District

You must enter a project name and select an activity to begin an application.

- (●) Storm Water Notice of Intent (NOI) - New land disturbing construction activity
- ( ) Storm Water NOI - Renewal Construction

Application Information

The information below is checklist is necessary for a complete application. A complete submittal with detailed drawings will help us make a decision about your permit application. Any applicable statutory review times do not begin until the application is received by the Department and is determined to be complete.

To help us make a decision in the shortest amount of time possible, the following information must be submitted:

New Land Disturbing Construction Activity

- Review related web site and instructions for Storm Water - Notice of Intent [Exit Form]
- Review guidance for soil loss or sediment discharge calculations [Exit Form]
- Complete all required forms and upload required attachments
- Pay fee online
- Sign and Submit form

Permittee Contact Information

Notice: Pursuant to chs. 30 and 31, Wis. Stats., ch. 281, Wis. Stats, and s. 283.33, Wis. Stats., this form is used to apply for coverage under the state construction site storm water runoff general permit, and to apply for a state or federal permit or certification for waterway and wetland projects or dam projects. This form and any required attachments constitute the permit application. Failure to complete and submit this application form may result in a fine and/or imprisonment or forfeiture under the provisions of applicable laws including s. 283.91, Wis. Stats. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Public Records Laws (ss. 19.31-19.39, Wis. Stats.). This form is required for U.S. Army Corps of Engineers (ACOE) regulatory purposes pursuant to 33 CF 325.

Landowner Information

Organization	City of La Crosse
Authorized Rep. Last Name:	Trane
Authorized Rep. First Name:	Andrea
Mailing Address:	400 La Crosse Street
City:	La Crosse
State:	WI
Zip Code:	54601
Email:	tranea@cityoflacrosse.org
Phone Number:	608-789-8321 Ext: (xxx-xxx-xxxx)
Alternative Phone Number:	(xxx-xxx-xxxx)

Applicant Information ☑ *Select if same as landowner*

Organization	City of La Crosse
Contact Last Name:	Trane
Contact First Name:	Andrea
Mailing Address:	400 La Crosse Street
City:	La Crosse
State:	WI
Zip Code:	54601
Email:	tranea@cityoflacrosse.org
Phone Number:	608-789-8321 Ext: (xxx-xxx-xxxx)
Alternative Phone Number:	(xxx-xxx-xxxx)

Primary Project Contact Information ☐ *Select if same as landowner*

◉ Consultant or Plan Preparer ○ Agent ○ Other - specify: _____

Organization:	Short Elliott Hendrickson
Contact Last Name:	Henningsgard
Contact First Name:	Erik
Mailing Address:	156 High Street Suite 300
City:	New Richmond
State:	WI
Zip Code:	54017
Email:	ehenningsgard@sehinc.com
Phone Number:	715-861-4883 Ext: (xxx-xxx-xxxx)
Alternative Phone Number:	(xxx-xxx-xxxx)

On-Site Contact Information ☑ *Check if not applicable and skip this section*

○ Construction Inspector ○ General Contractor ○ Site Superintendent ○ Other - specify: _____

Organization:	
Contact Last Name:	
Contact First Name:	
Mailing Address:	
City:	
State:	
Zip Code:	
Email:	
Phone Number:	**(xxx-xxx-xxxx)**
Alternative Phone Number:	**(xxx-xxx-xxxx)**

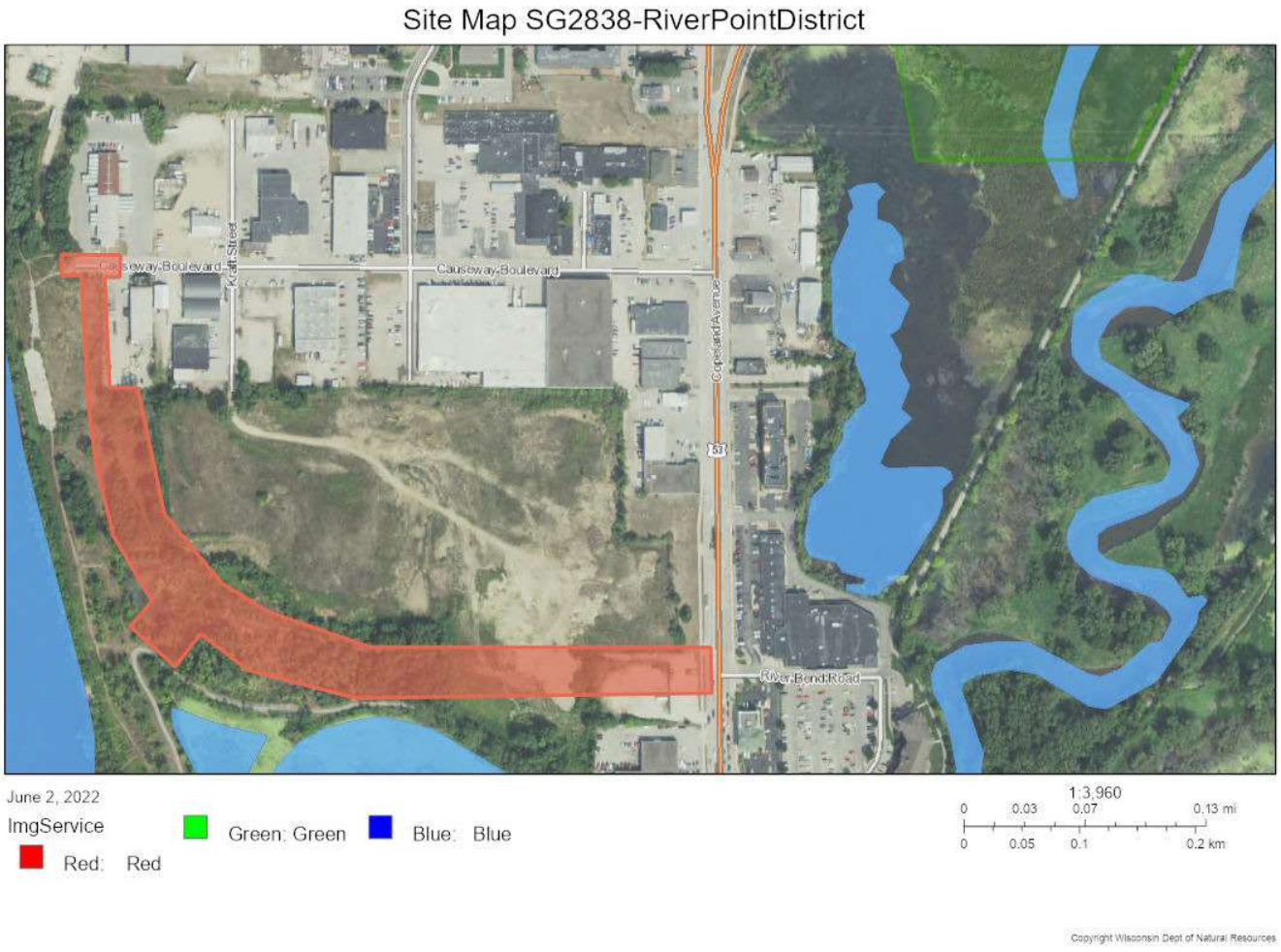
Site Information - *Complete*

Site Map - DRAWN

Choose the best map option for your project . The mapped location of your project is required as part of the application and will be used to screen for potential impacts to sensitive resources, so be sure the map accurately represents the project location(s).

(Single project sites only)

(Delete the map to select new map or map type)



Site Information

Total Area of Project Site :	8.70 acres
Location Address / Description:	Riverbend Rd and Copeland Ave
County:	La Crosse
Municipality:	(•) City ( ) Township ( ) Village of LA CROSSE;C
Nearest Water body:	Mississippi River Provid e the name(s) of closest water bodies
Total Estimated Disturbed Area :	Note: All fields below are calculated from the map. To change the values return to the map feature above. 8.618 acres
Latitude:	43.822291358
Longitude:	-91.254544154

Legal Description

Quarter:	NE
of Quarter:	NE
Section:	31 (Valid Sections: 01 - 36)
Township:	16 N (Valid Townships 01 - 53)
Range:	07 (Valid Ranges 01 - 30)
Direction:	( ) East (•) West
Describe if not wholly contained in the 1/4 section	NENE3116N07W;

Note: Legal Description information is automatically updated by the site mapping tool (if used)

Project Information

Please note: If the information provided is incorrect or incomplete, the overall permit application may be considered incomplete and may be returned to the applicant.)

Anticipated Project Start Date: 8/1/2022

Projected Project End Date: 11/30/2023

Type of Development: ☐ Residential ☑ Commercial/Industrial ☐ Transportation ☐ Utility ☐ Agricultural

Project Type: ☐ In-fill ☑ Redevelopment ☐ New Development ☐ Grading Only

Impervious Area Before Construction: (as percent of total land disturbance) 0 %

Impervious Area After Construction: (as percent of total land disturbance) 95 %

Pre-Application Resource Screening

If a wetland is present at a project site and permit approvals are sought through the waterway and wetland program, storm water program, or concentrated animal feeding operations (CAFO) program, the department requires that a wetland delineation that accurately shows the location of a wetland is submitted with an application. A wetland delineation needs to be verified/concurred with before the application can be submitted or be considered a complete application. See the department Wetland screening and delineation procedures for more information.

Is a wetland present in the project area?

◉ Yes ○ No

If yes, select all sources of information used and attach supporting report or documentation

○ a. A copy of your wetland delineation report and a Wetland Confirmation Service concurrence letter (wetland boundary verification service offered for a fee from the department)

○ b. An assured delineator's wetland delineation report

○ c. A copy of your wetland delineation and an Army Corps of Engineers concurrence letter

◉ d. A copy of your correspondence from a WDNR Water Management Specialist, WDNR Office of Energy Water Management Specialist or WDNR Transportation Liaison regarding your wetland review/ concurrence.

Has the presence of endangered or threatened resources been evaluated according to protocols developed by the DNR Bureau of National Heritage Conservation (BNHC) ***http://dnr.wi.gov/topic/ERReview***

◉ Yes ○ No

If Yes, select how the evaluation was completed and attach supporting report or documentation:

☐ a. Broad Incidental Take Permit /Authorization -specify (e.g. No / Low Impact Activities, Grassland & Savanna Management, etc.):

_____

☐ b. Endangered Resources Preliminary Assessment from the Natural Heritage Inventory Public Portal

☑ c. Standard Endangered Resources Review Letter from Endangered Resources Review Program:
ERR - 19-389 (example ERR-YY-### with YY = Year and ### the number)

☐ d. Certified Endangered Resources Review Letter - specify:
ERR- _____ (example ERR-YY-### with YY = Year and ### the number)

Site Screening Questions (check Yes or No)

Is the proposed disturbed area within 300 feet from a mapped or delineated wetland?	◉ Yes ○ N
Is the proposed disturbed area within 500 feet from a water body?	◉ Yes ○ N
Prior to commencing land disturbing construction activities, is there any area within the project boundaries with a slope length of more than 50 feet at a steepness of greater than 20%?	○ Yes ◉ N
During land disturbing construction activities, will there be any area within the project boundaries with a slope length of more than 50 feet at a steepness of greater than 20%?	○ Yes ◉ N
Are there any proposed permanent storm water management facilities within a wellhead source water protection area? (See Surface Water Data Viewer : Show Layers>Permits & Determinations>Source Water Protection Area)	○ Yes ◉ N
Is the proposed disturbed area within or adjacent to a contaminated property (i.e. brownfield or BRRTs site)?	◉ Yes ○ N
Is the project exempt from the post-construction performance standards in NR151.121(2) or s. NR 151.241(2), Wis. Adm. Code. ?	○ Yes ◉ N

Required Attachments and Supplemental Information - *Complete*

Please recognize that you are responsible for obtaining all necessary local (e.g. city, town, village or county) and U.S. Army Corps of Engineer permits or approvals in addition to any applicable state permits prior to commencing any work at the project site.

The information below is checklist is necessary for a complete application. A complete submittal with detailed drawings will help us make a decision about your permit application. Any applicable statutory review times do not begin until the application is received by the Department and is determined to be complete.

To help us make a decision in the shortest amount of time possible, the following information must be submitted:

New Land Disturbing Construction Activity

- Review related web site and instructions for Storm Water - Notice of Intent [Exit Form]
- Review guidance for soil loss or sediment discharge calculations [Exit Form]
- Complete all required forms and upload required attachments
- Pay fee online
- Sign and Submit form

Upload Required Attachments (15 MB per file limit) - Help reduce file size and trouble shoot file uploads

* indicates completion of this item is required

Note: To replace an existing file, use the 'Click here to attach file ' link. To delete a selected item press Ctrl D or the icon.

Erosion Control Plan Narrative and Storm Water Management

File Attachment — LACRS163627StormwaterManagementPlan-Narrative.pdf

Erosion Control Map (Construction Plans)

File Attachment — AppB-PlanSet.pdf

Site Evaluation for Storm Water Infiltration

File Attachment — AppF-SoilsInfo.pdf

Modeling

File Attachment — AppJ-WinSLAMMModeling.pdf

File Attachment — AppK-HydraulicAnalysis-XPSWMM.pdf

Long Term Maintenance Agreement

File Attachment — AppH-Long-TermMaintAgreement.pdf

Best Management Practices (BMP) Permission Letter

File Attachment

Soil Loss/Sediment Discharge Calculations

File Attachment

AppG-SoilLossDischargeCalcs.pdf

Wetland Assessment Method

WDNR Communications

File Attachment

AppC-WetlandCorrespondence.pdf

Endangered Species or Threatened Resources

Certified ER Review letter

File Attachment

AppE-ERR.pdf

Site Photos

File Attachment

AppD-Photos.pdf

4/8/2022

Date of Photograph(s):

Other Items (Select Type)

Other Document

File Attachment

LACRS163627StormwaterManagementPlan-reduced.pdf

(Click insert to add additional Other Items or Site Photos. Use your cursor to hover over the file name field. When the drop down arrow appears, select insert or remove item)

Payment Confirmation

Wisconsin Department of Natural Resources Invoice Number: WP-00035837

Total Due: 235

Important:

- Closing this page without saving will cause the loss of your payment history.
- A 2.5% convenience fee is added for credit card payments.
- Follow all three steps below and sign and submit your permit.

STEP 1 Completed Payment

STEP 2 **Enter Confirmation Number** WS2WT3008552899

STEP 3

Please note that payment is considered successful when your financial institution renders payment for this transaction. Failure of US Bank to collect and transfer funds from the permit applicant to the DNR, does not release the applicant of financial responsibility and the DNR reserves the right to collect unpaid fees.

All payments are collected by US Bank which is an external website contracted by the Wisconsin Department of Natural Resources for the sole purpose of collecting payments over the web.

Sign and Submit

Steps to Complete the signature process

1. Check who is electronically signing the eNOI
2. Read and Accept the Terms and Conditions
3. Press the Initiate Signature Process button
4. Open the confirmation email for a one time confirmation code and instructions to complete the signature process.
5. You will receive a final acknowledgement email upon completing these steps

NOTE: For security purposes all email correspondence will be sent to the address you used when registering your WAMS ID. This may be a different email than that provided in the application. For information on your WAMS account click HERE .

Terms and Conditions

Certification: I hereby certify that I am the owner or authorized representative of the owner of the property which is the subject of this Permit Application. I certify that the information contained in this form and attachments is true and accurate. I certify that the project will be in compliance with all permit conditions. I understand that failure to comply with any or all of the provisions of the permit may result in permit revocation and a fine and/or imprisonment or forfeiture under the provisions of applicable laws.

Permission: I hereby give the Department permission to enter and inspect the property at reasonable times, to evaluate this notice and application, and to determine compliance with any resulting permit coverage.

Signee (must check current role prior to accepting terms and conditions)

- ○ Landowner using WAMS ID
- ◉ Delegation of Signature Authority (Form 3500-220) for agent signing on the behalf or the landowner
- ○ Agent seeking to share permit application with Landowner (Land owner must get WAMS id and complete signature)

Delegation of Signature Authority

File Attachment Click to view attachment

Submission of this form constitutes notice by the landowner that the person electronically signing the eNOI is authorized to do so on behalf of the landowner. Please **download form 3500-220** and sign and attach it above.

Name:	Erik Henningsgard
Title:	Consultant

Authorized Signature.

☑ I accept the above terms and conditions.

Signed by : i:0#.f|wamsmembership|erikh on 2022-06-03T10:01:51

You have already signed and submitted this application to the DNR. Please contact the Wisconsin DNR for assistance.

After providing the final authorized signature, the system will send an email to the authorized party and any agents. This email will include a copy to the final read only version of this application

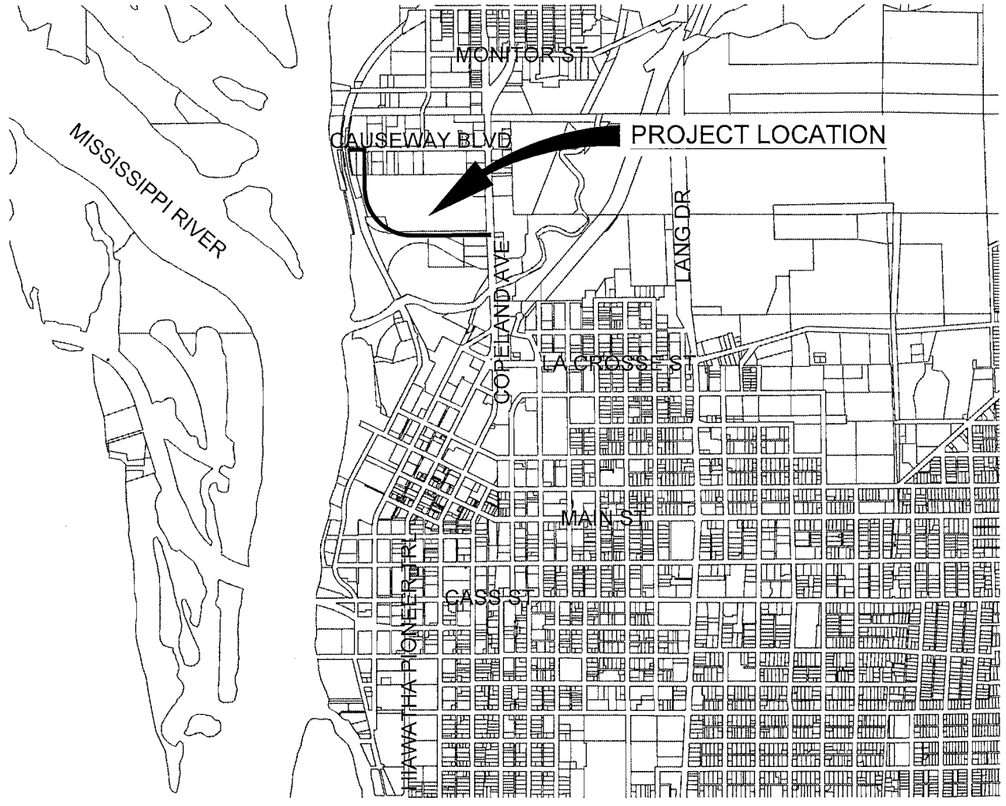
Appendix B

Plan Sheets

CITY OF
LA CROSSE, WISCONSIN

CONSTRUCTION PLANS FOR
RIVER POINT DISTRICT PHASE II

UTILITY PLANS FOR AGENCY REVIEW



N

N.T.S.

EXISTING

- RIGHT OF WAY
- PERMANENT EASEMENT
- PROPERTY LINE
- HORIZONTAL CONTROL POINT
- BENCHMARK
- SURVEY MARKER
- SOIL BORING
- SANITARY SEWER AND MANHOLE
- FORCE MAIN AND LIFT STATION
- SANITARY SEWER SERVICE & CLEANOUT
- WATER MAIN, HYDRANT, VALVE AND MANHOLE
- WATER SERVICE AND CURB STOP BOX
- STORM SEWER, MANHOLE AND CATCH BASIN
- CULVERT AND APRON ENDWALL
- GAS MAIN, VALVE, VENT AND METER
- HANDHOLE
- BURIED FIBER OPTIC CABLE AND MANHOLE
- BURIED PHONE CABLE, PEDESTAL AND MANHOLE
- BURIED TV CABLE, PEDESTAL AND MANHOLE
- BURIED ELECTRIC CABLE, PEDESTAL, MANHOLE, TRANSFORMER AND METER
- OVERHEAD WIRE, POLE AND GUY WIRE
- LIGHT POLE
- TRAFFIC SIGNAL
- STREET NAME SIGN
- SIGN (NON STREET NAME)
- RAILROAD TRACKS
- DECIDUOUS AND CONIFEROUS TREE
- BUSH / SHRUB AND STUMP
- EDGE OF WOODED AREA
- WETLAND
- BUILDING
- FENCE (UNIDENTIFIED)
- BARBED WIRE FENCE
- CHAIN LINK FENCE
- ELECTRIC WIRE FENCE
- WOOD FENCE
- WOVEN WIRE FENCE
- PLATE BEAM GUARDRAIL
- CABLE GUARDRAIL
- POST / BOLLARD
- RETAINING WALL

PROPOSED

- STREET CENTERLINE
- RIGHT-OF-WAY
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- SANITARY SEWER, BULKHEAD AND MANHOLE
- FORCE MAIN
- SANITARY SERVICE AND CLEANOUT
- WATER MAIN, TEE, HYDRANT, BULKHEAD AND VALVE
- WATER VALVE MANHOLE, REDUCER, BEND AND CROSS
- WATER SERVICE AND CURB STOP BOX
- STORM SEWER, MANHOLE AND CATCH BASIN
- CULVERT AND APRON ENDWALL
- DRAIN TILE
- DITCH / SWALE
- RIPRAP
- STREET NAME SIGN
- SIGN (NON STREET NAME)
- RETAINING WALL

EROSION CONTROL

- EXISTING AND PROPOSED DRAINAGE DIRECTIONAL FLOW ARROW
- TEMPORARY ROCK CONSTRUCTION ENTRANCE
- STORM DRAIN INLET PROTECTION
- SILT FENCE
- SEDIMENT CONTROL LOG
- CULVERT PROTECTION
- FLOTATION SILT CURTAIN
- EROSION CONTROL BLANKET

NOTE:
THE SUBSURFACE UTILITY QUALITY INFORMATION IN THIS PLAN IS LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

THE CONTRACTOR SHALL CALL THE WISCONSIN ONE CALL SYSTEM AT 811 BEFORE COMMENCING EXCAVATION.

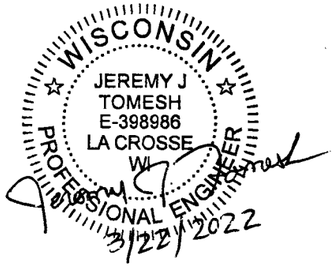
811 Know what's below. Call before you dig.

INDEX

THIS PLAN CONTAINS 37 SHEETS.

NOT FOR CONSTRUCTION

PROJECT LOCATION



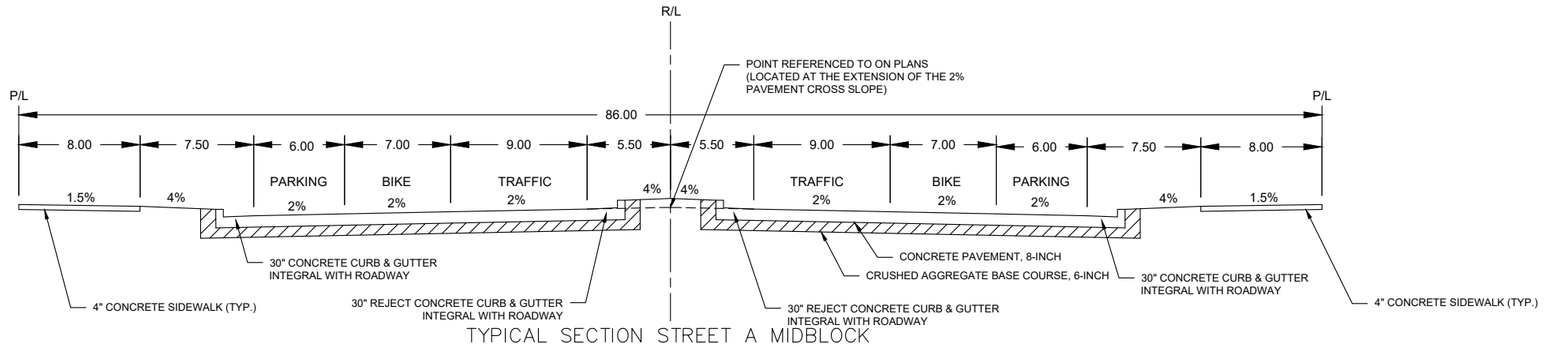
LA CROSSE, WISCONSIN

SEH
PHONE: 715.246.9906
155 HIGH STREET, SUITE 300
NEW RICHMOND, WI 54017
www.sehinc.com

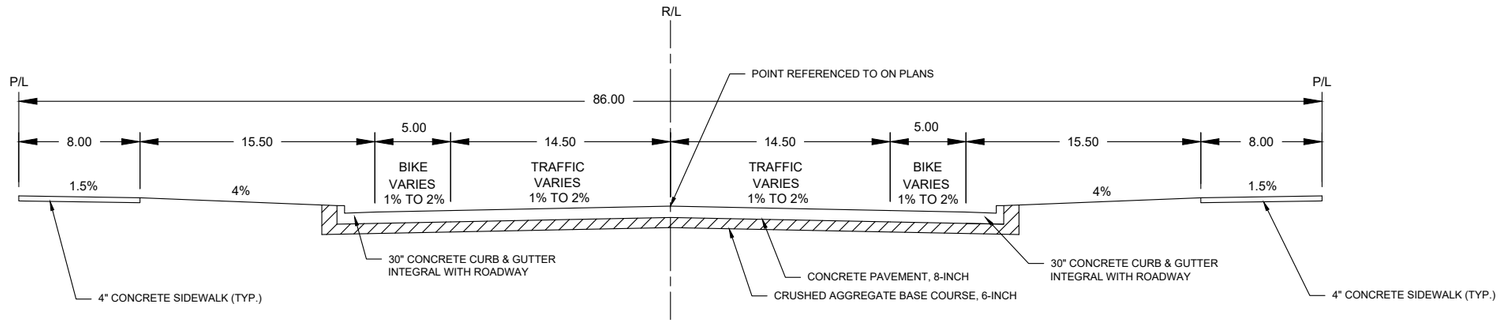
FILE NO.
LACRS163627

T0.01
of 37

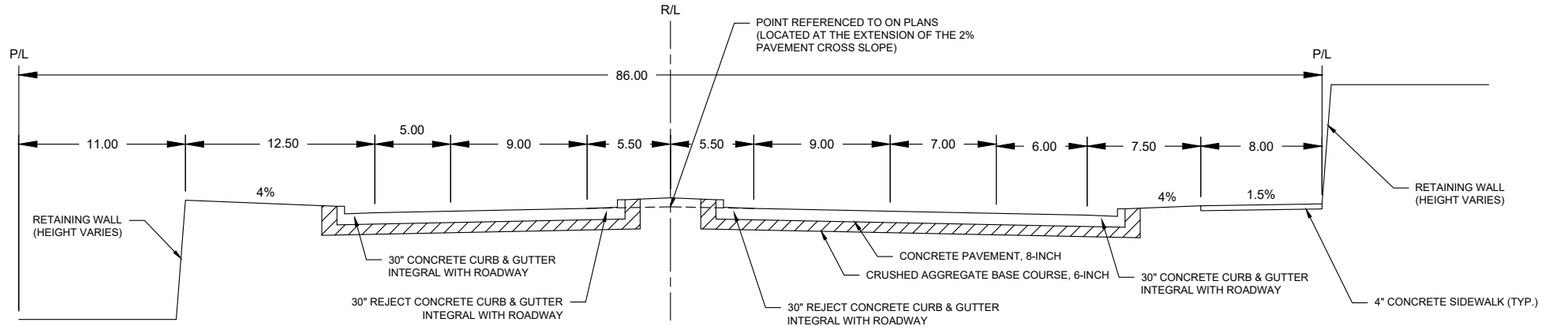
Save: 3/17/2022 11:01 AM lketelhut Plot: 3/17/2022 11:10 AM X:\CO\LA\CRS\163627\5-final-dsgn\51-drawings\10-Civil\cadd\dwg\sheet\LACRS163627TI_dwg



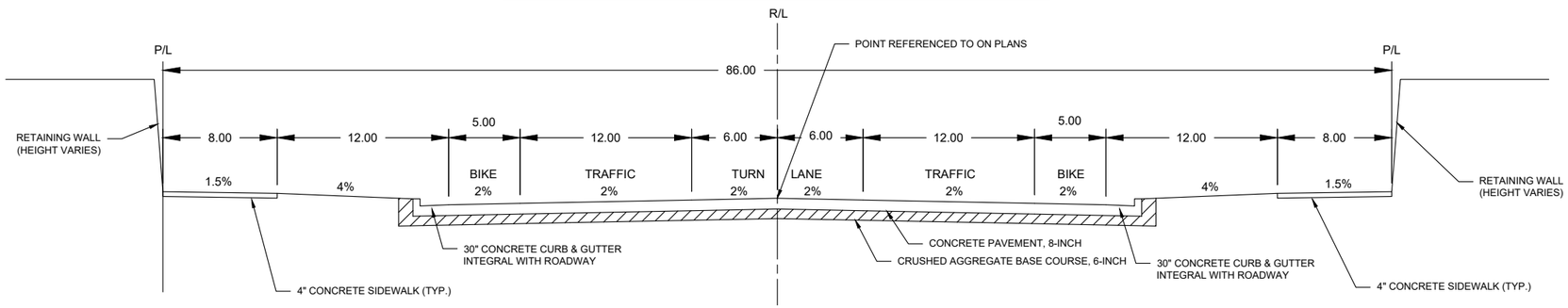
TYPICAL SECTION STREET A MIDBLOCK



TYPICAL SECTION STREETS A INTERSECTIONS AND BUMPOUTS



TYPICAL SECTION STREET A STA 101+50 TO 104+50



TYPICAL SECTION STREET A STA 124+30 TO 125+80

SEH Project	LACRS163627
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Designed By	CMR
Checked By	DAS

Rev.#	Revision Issue Description	Date
1	RELEASED FOR PERMITTING	03.17.2022

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RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

TYPICAL SECTIONS

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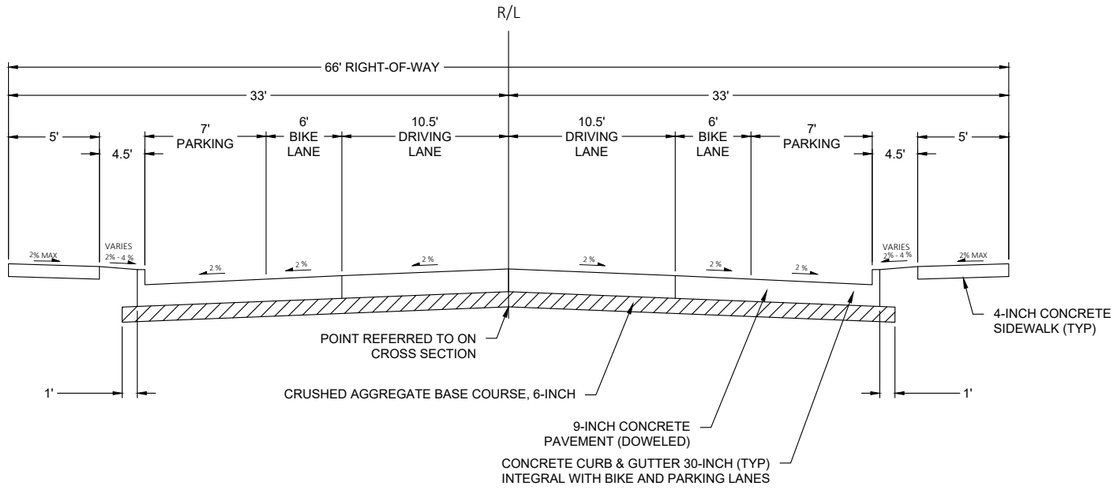
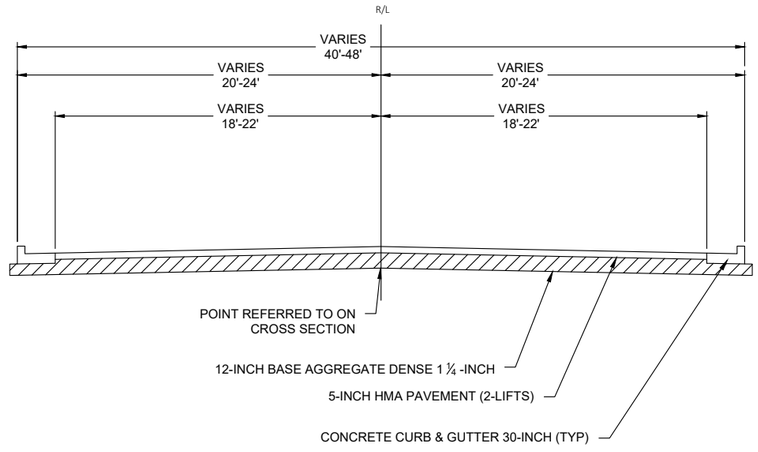
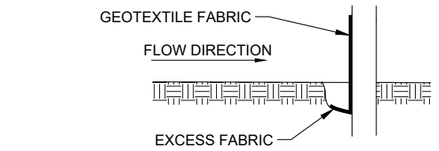


TYPICAL SECTION CAUSEWAY BLVD.
STA 3+88.50 TO STA 6+06.50

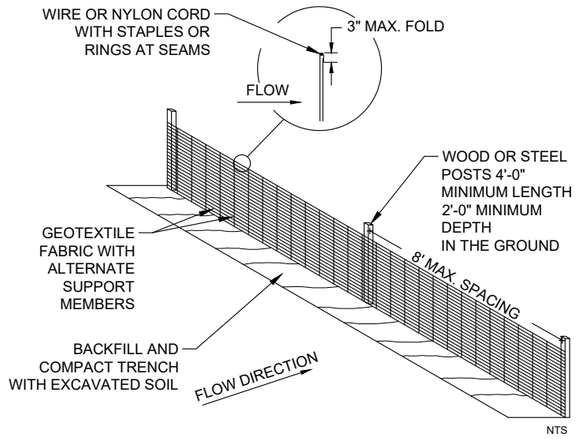


ASPHALT TYPICAL SECTION CAUSEWAY BLVD.
STA 6+06.50 - 6+65.00

SEH Project	LACRS163627	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	RIVER POINT DISTRICT	TYPICAL SECTIONS
Drawn By	SFA	1	RELEASED FOR PERMITTING	03.17.2022		NOT FOR CONSTRUCTION		LA CROSSE, WISCONSIN	
Designed By	CMR								
Checked By	DAS								

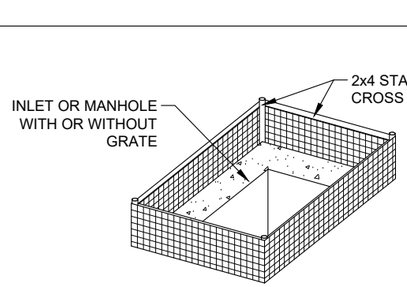


TRENCH DETAIL

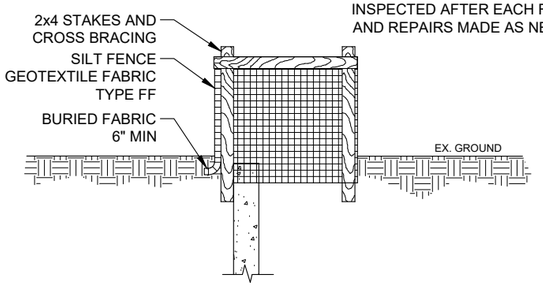


NTS

SILT FENCE



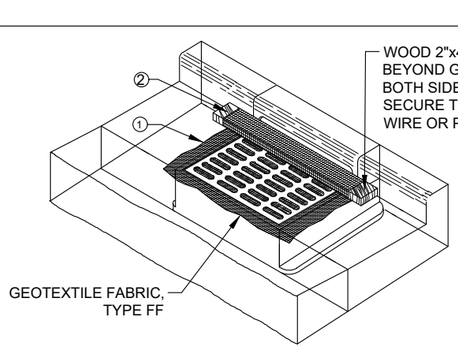
THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.



PROVIDE INLET PROTECTION IN ACCORDANCE WITH WIDNR TECHNICAL STANDARD 1060

NTS

INLET PROTECTION



INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER.

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

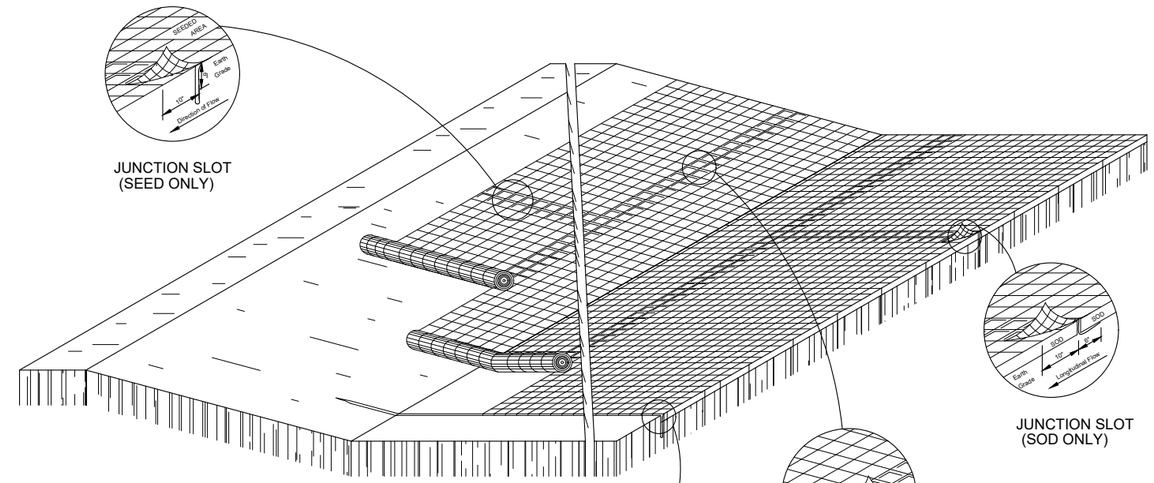
THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

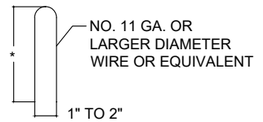
(1) FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

(2) AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.

NTS

INLET PROTECTION





DETAIL OF TYPICAL STAPLE

* 6" MIN. FOR FIRM SOILS
* 12" MIN FOR LOOSE SOILS
* 8" MIN. WHERE BOTH SOD AND MATS ARE BEING USED

EROSION CONTROL

GENERAL NOTES: DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL SPECIFICATIONS.

VARIATIONS IN THE DIMENSIONS OF MATERIALS SHOWN HEREON SHALL BE PERMITTED IF THEY PROVIDE EQUIVALENT PROTECTION AND MATERIAL STRENGTH AND IF PRIOR APPROVAL OF THE ENGINEER IS OBTAINED.

LAP JOINTS SHALL NOT BE PLACED IN THE BOTTOM OF V-SHAPED DITCHES.

JUNCTION SLOTS ON ADJACENT STRIPS OF MATTING SHALL BE STAGGERED A MINIMUM OF 4 FEET APART.

EDGES OF THE EROSION MAT SHALL BE IMPRESSED IN THE SOIL.

EROSION MAT SHALL BE MEASURED AND PAID FOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

EROSION MAT OVER SOD:
- A: ONLY JUTE FABRIC WILL BE PERMITTED OVER SOD.
- B: ROAD STAKES FOR THE SOD MAY BE OMITTED BY THE ENGINEER IF THE EXISTING SLOPE AND SOIL CONDITIONS SO WARRANT.
- C: THE WIDTH OF EROSION MAT SHALL ALWAYS EQUAL THE SOD WIDTH.
- D: SOD STRIPS MAY BE PLACED EITHER LONGITUDINALLY OR TRANSVERSELY TO THE FLOW LINE OF THE DITCH.

EROSION MAT OVER SEEDING: JUNCTION OR ANCHOR SLOTS SHALL BE AT MINIMUM INTERVAL OF 100 FEET ON GRADES UP TO AND INCLUDING 3 PERCENT, AND 50 FEET ON GRADES EXCEEDING 3 PERCENT.

EROSION MAT AND SOD

SEH Project	LACRS163627
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Checked By	DAS

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1	RELEASED FOR PERMITTING	03.17.2022

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RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

EROSION CONTROL DETAILS

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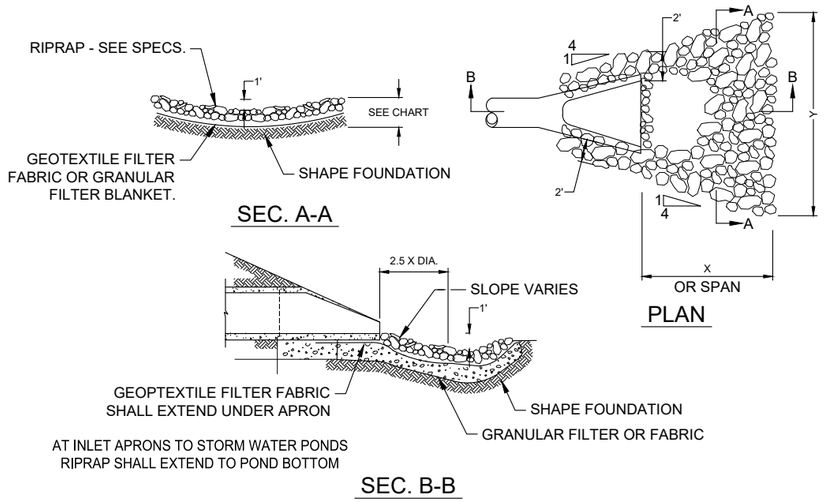
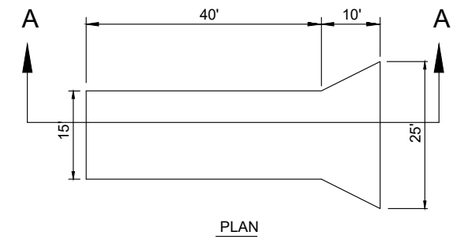
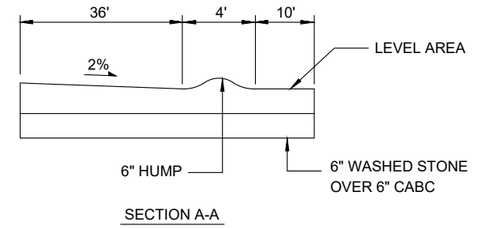


RIPRAP AT RCP OUTLETS						
			CLASS II d50 = 6"	CLASS III d50 = 9"	CLASS IV d50 = 12"	CLASS II = TYPE III CLASSES III & IV = TYPE IV
PIPE DIA. (IN.)	X (FT.)	Y (FT.)	12" DEPTH RIPRAP (CU. YDS.)	18" DEPTH RIPRAP (CU. YDS.)	24" DEPTH RIPRAP (CU. YDS.)	GEOTEXTILE FABRIC (SY)
12	8	10.5	2.8	4.1	5.5	9.5
15	8	11.0	2.9	4.4	5.8	10.1
18	10	12.5	3.9	5.9	7.8	13.4
21	10	13.0	4.2	6.3	8.4	14.2
24	12	14.5	5.5	8.3	11.0	14.8
27	12	15.0	5.8	8.7	11.6	19
30	14	16.5	7.3	10.9	14.5	23.5
36	16	18.5	9.2	13.8	18.3	29.5
42	18	20.5	10.9	16.3	21.7	35.2
48	20	22.0	12.9	19.4	25.8	41.3

NTS

RIP RAP AT ROUND RCP APRONS





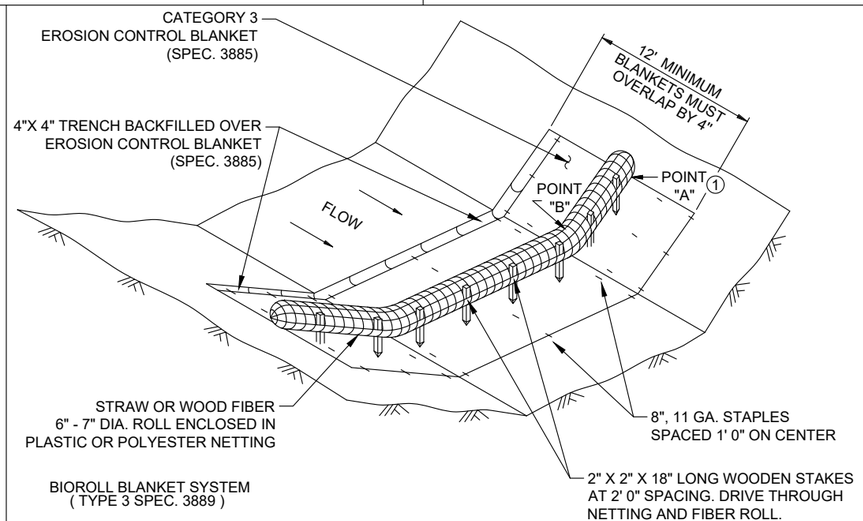
NOTE: MAINTAIN TRACKING PAD IN GOOD CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING SITE. CLEAN UP & REMOVE ANY TRACKED MUD OR SEDIMENT LEAVING SITE IMMEDIATELY.

NTS

TRACKING PAD

EROSION CONTROL NOTES

1. POST WDNR CERTIFICATE OF PERMIT COVERAGE ON SITE AND MAINTAIN UNTIL CONSTRUCTION ACTIVITIES HAVE CEASED, THE SITE IS STABILIZED, AND A NOTICE OF TERMINATION IS FILED WITH WDNR.
2. REFER TO THE WDNR STORMWATER CONSTRUCTION TECHNICAL STANDARDS AT http://dnr.wi.gov/topic/stormwater/standards/const_standards.html.
3. KEEP A COPY OF THE CURRENT EROSION CONTROL PLAN ON SITE THROUGHOUT THE DURATION OF THE PROJECT.
4. SUBMIT PLAN REVISIONS OR AMENDMENTS TO THE WDNR AT LEAST 5 DAYS PRIOR TO FIELD IMPLEMENTATION.
5. THE CONTRACTOR IS RESPONSIBLE FOR ROUTINE SITE INSPECTIONS AT LEAST ONCE EVERY 7 DAYS AND WITHIN 24 HOURS AFTER A RAINFALL EVENT OF 0.5 INCHES OR GREATER. KEEP INSPECTION REPORTS ON-SITE AND MAKE THEM AVAILABLE UPON REQUEST.
6. INSPECT AND MAINTAIN ALL INSTALLED EROSION CONTROL PRACTICES UNTIL THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.
7. WHEN POSSIBLE, PRESERVE EXISTING VEGETATION, MINIMIZE LAND DISTURBING CONSTRUCTION ACTIVITY ON SLOPES OF 20% OR MORE, MINIMIZE SOIL COMPACTION, AND PRESERVE TOPSOIL.
8. INSTALL CONSTRUCTION VEHICLE TRACKING ENTRANCE AT LOCATIONS OF TRUCK EGRESS FROM DISTURBED AREAS.
9. INSTALL INLET PROTECTION PRIOR TO LAND DISTURBING ACTIVITIES IN THE CONTRIBUTING DRAINAGE AREA AND/OR IMMEDIATELY UPON INLET INSTALLATION.
10. PERMITTING OF GROUNDWATER DEWATERING IS THE RESPONSIBILITY OF THE CONTRACTOR.
11. IMMEDIATELY STABILIZE STOCKPILES AND SURROUND STOCKPILES AS NEEDED WITH SILT FENCE OR OTHER PERIMETER CONTROL IF STOCKPILES WILL REMAIN INACTIVE FOR 7 DAYS OR LONGER.
12. IMMEDIATELY STABILIZE ALL DISTURBED AREAS THAT WILL REMAIN INACTIVE FOR 14 DAYS OR LONGER. BETWEEN SEPT 15 AND OCT 15: STABILIZE WITH MULCH, TACKIFIER, AND A PERENNIAL SEED MIXED WITH WINTER WHEAT, ANNUAL OATS, OR ANNUAL RYE, AS APPROPRIATE FOR REGION AND SOIL TYPE. OCT 15 THROUGH COLD WEATHER: STABILIZE WITH A POLYMER AND DORMANT SEED MIX, AS APPROPRIATE.
13. STABILIZE ALL AREAS OF FINAL GRADING WITHIN 7 DAYS OF REACHING FINAL GRADE.
14. SWEEP/CLEAN UP ALL SEDIMENT/TRASH THAT MOVES OFF SITE DUE TO CONSTRUCTION ACTIVITY OR STORM EVENTS BEFORE THE END OF THE SAME WORKDAY OR AS DIRECTED BY THE ENGINEER.
15. PROPERLY DISPOSE OF ALL WASTE AND UNUSED BUILDING MATERIALS, INCLUDING GARBAGE, DEBRIS, CLEANING WASTES, OR OTHER CONSTRUCTION MATERIALS.
16. MAKE PROVISIONS FOR WATERING DURING THE FIRST 8 WEEKS FOLLOWING SEEDING OR PLANTING OF DISTURBED ARES WHENEVER MORE THAT 7 CONSECUTIVE DAYS OF DRY WEATHER OCCUR.



1 POINT "A" MUST BE 1' HIGHER (MIN) THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

NTS

DITCH CHECK

SEH Project	LACRS163627
Drawn By	SFA
Designed By	CMR
Checked By	DAS

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1	RELEASED FOR PERMITTING	03.17.2022

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RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

EROSION CONTROL DETAILS

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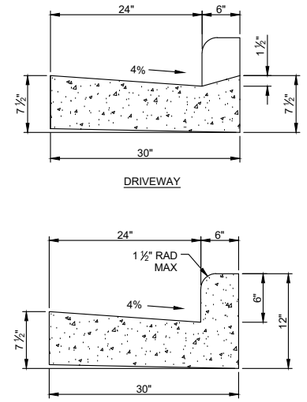


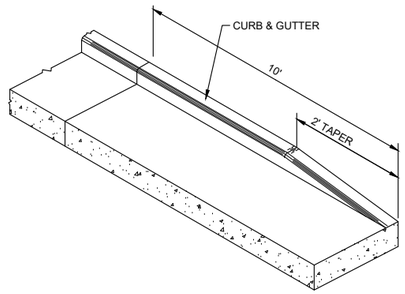
DRIVEWAY

NOTES:

THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE COURSE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED

NTS

TYPE D CURB AND GUTTER



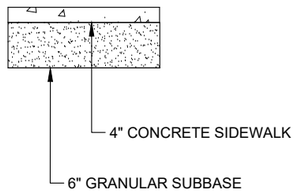
NTS

CURB TAPER

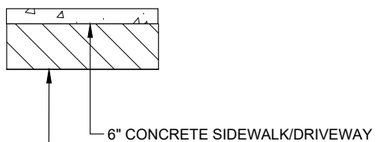
GENERAL NOTES:

1. IN ALL DRIVEWAY AREAS RECEIVING SIDEWALK, REMOVE AND REPLACE EXISTING DRIVEWAY APPROACHES IN BOULEVARD AND SIDEWALK AREAS. INSTALL 6" AGGREGATE BASE COURSE AND 6" CONCRETE SIDEWALK.
2. GRADING FOR ANY NEW PROPOSED SIDEWALKS WILL REQUIRE CONTRACTOR TO EXCAVATE, AT A MINIMUM, OF 6" BELOW THE BOTTOM OF THE SIDEWALK GRADE AND TO INSTALL AND COMPACT INPLACE A GRANULAR SUBBASE MATERIAL. IF GRANULAR SOIL ALREADY EXISTS UNDER PROPOSED SIDEWALK, THE 6" SUBCUT MAY BE WAIVED UPON ENGINEER'S DETERMINATION THAT EXISTING SOILS ARE ACCEPTABLE
3. SAW CUT EXISTING DRIVEWAYS TO ACCOMMODATE NEW CURB AND GUTTER OR SIDEWALK GRADES.

SIDEWALK/DRIVEWAY GENERAL NOTES

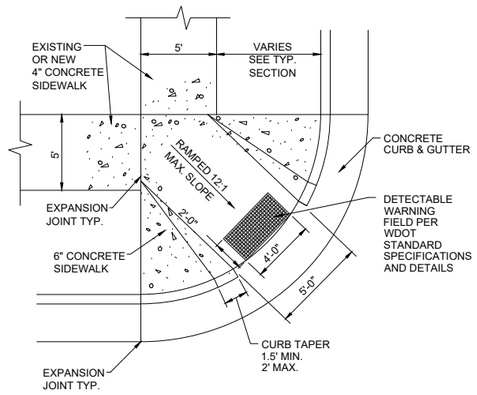


4" CONCRETE SIDEWALK

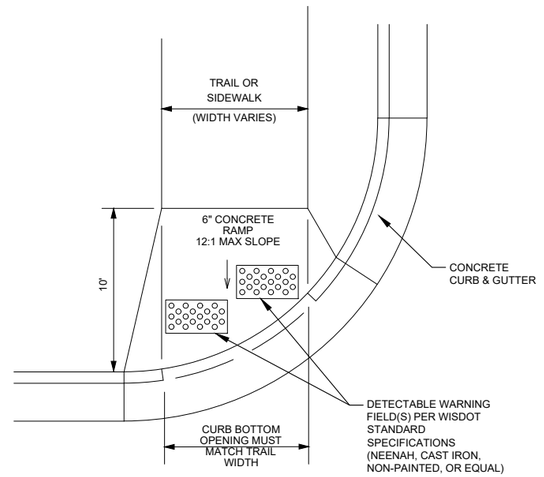


NTS

6" CONCRETE SIDEWALK/DRIVEWAY



ACCESSIBLE RAMPS



ACCESSIBLE RAMPS

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SEH Project	LACRS163627	1	RELEASED FOR PERMITTING	03.17.2022
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RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

STREET DETAILS

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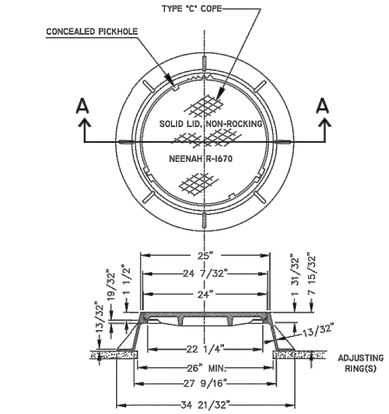
DRAWING NOT TO SCALE

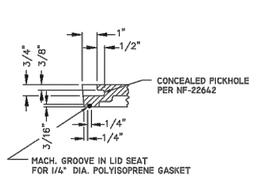


A – A

DETAIL OF MANHOLE FRAME & COVER

(MINIMUM WEIGHT 324 LBS. TOTAL)
NEENAH R-1670 OR EQUAL

B
D-6



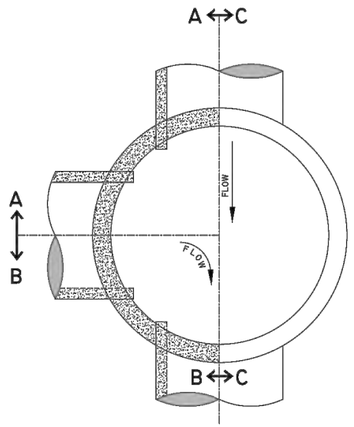
SELF-SEAL DETAIL

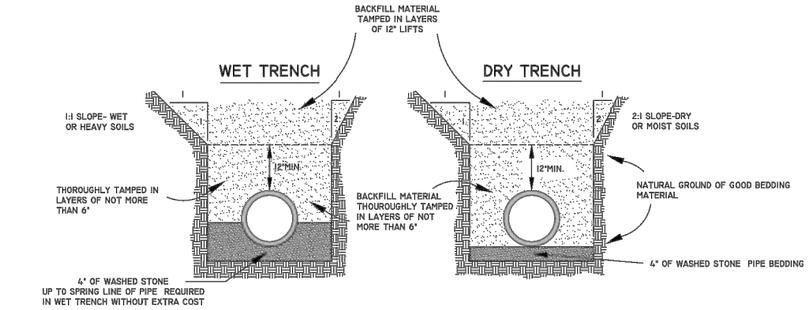
NOTE

OPENING FOR FRAME & COVER SHALL BE CENTERED ON MANHOLES WITH FLAT TOPS.

SEWER PIPE JOINT MATERIALS

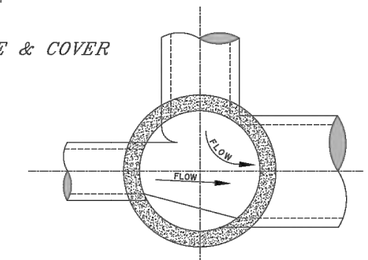
CONCRETE PIPE-RUBBER GASKET (ASTM C-443)
PVC PIPE- ELASTOMETRIC GASKET (ASTM D-3212 & F-477)





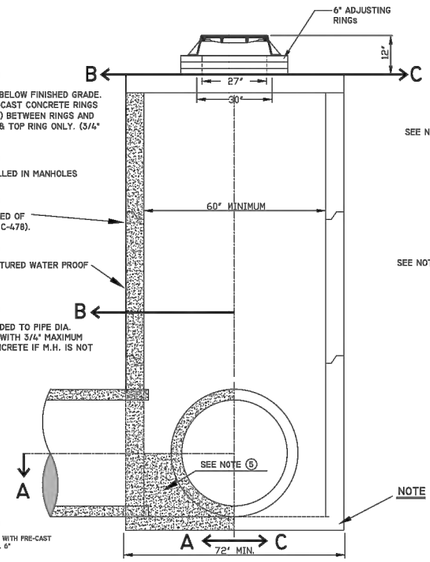
DETAILS OF SEWER TRENCHES

A
D-6



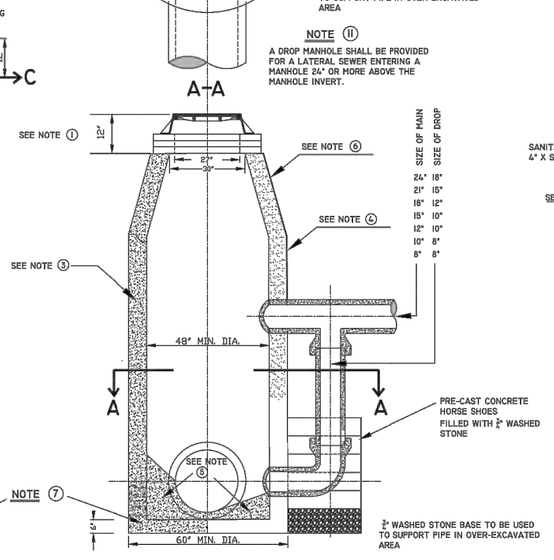
C
D-6

DETAILS OF STANDARD MANHOLE FOR 30" PIPE OR SMALLER



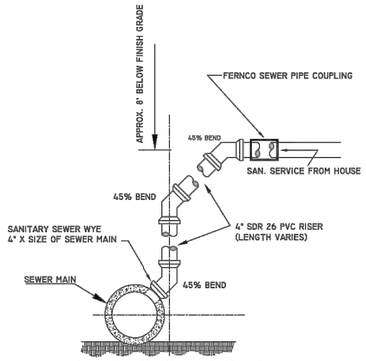
D
D-6

DETAILS OF STANDARD MANHOLE FOR 36" PIPE OR LARGER



E
D-6

DETAILS OF DROP MANHOLE FOR 30" PIPE OR SMALLER



DETAILS OF RISER FOR HOUSE CONNECTION

F
D-6

PROJECT No.	*SANITARY SEWER DETAILS*
LOCATION	
RESOLUTION	*D-6* DATE

ENGINEERING DEPT.
City of LaCrosse, Wis.

			BY	DATE
FIELD BOOK	SURVEYED			
	DRAWN PRELIMINARY			
NUMBER	FINAL			
	CHECKED			
	APPROVED			
PAGE	REVISIONS	M.D.F. 3/03	J.M.C.	6/2015
		J.M.C. 9/03	BFM	2/2019
		M.D.F. 4/05	J.M.C.	8/2019
SCALE: NONE		M.D.F. 12/10	BFM	11/2019
		M.D.F. 4/13		

SHEET NO. TOTAL SHEETS

(D-6) sanitary sewer_detail

(D-6)sanitary sewer_detail

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SEH Project	LACRS163627
Drawn By	SFA
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Checked By	DAS

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RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

SANITARY SEWER DETAILS

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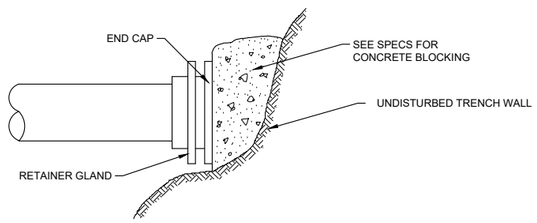
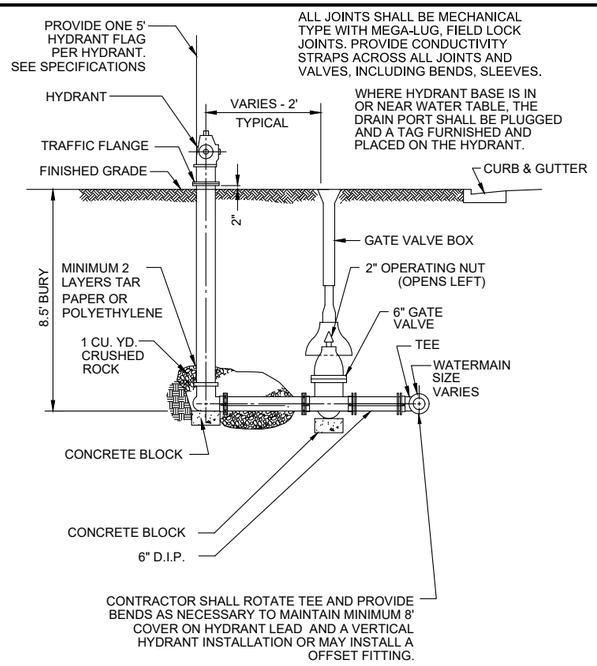
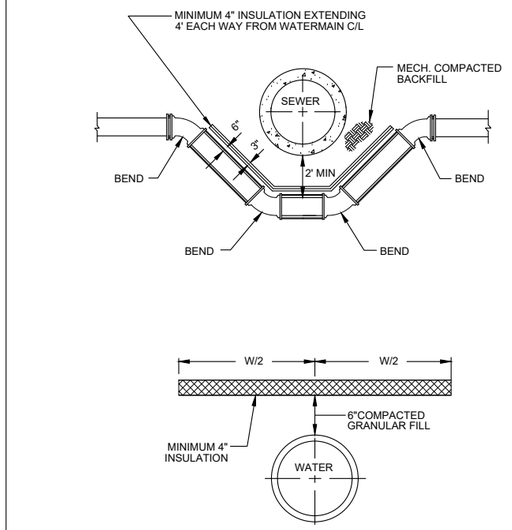
RESTRAINED/TIED PIPE LENGTH CHART								
MINIMUM LENGTH REQUIRING RESTRAINT IN FEET								
FITTING TYPE	6"	8"	10"	12"	16"	20"	24"	30"
11.25 DEGREE BEND	10	10	10	10	20	20	20	20
22.50 DEGREE BEND	10	10	10	10	20	20	40	40
45 DEGREE BEND	10	10	10	20	40	40	40	60
60 DEGREE BEND	10	20	20	30	40	60	60	80
90 DEGREE BEND	20	20	30	40	60	80	80	120
TEE (SIDE TIED)	20	20	30	40	60	80	80	120
STUBS OR DEAD ENDS	20	20	30	40	60	80	80	120
CROSS WITH PLUGGED END	20	20	30	40	60	80	80	120
VALVES AT END OF LINE	20	20	30	40	60	80	80	120
THE ABOVE LENGTHS (GIVEN IN FEET) REPRESENT THE MINIMUM LENGTH OF PIPE TO BE TIED TOGETHER IN EACH REQUIRED DIRECTION FROM THE FITTING DESCRIBED.								



DEAD END BLOCKING



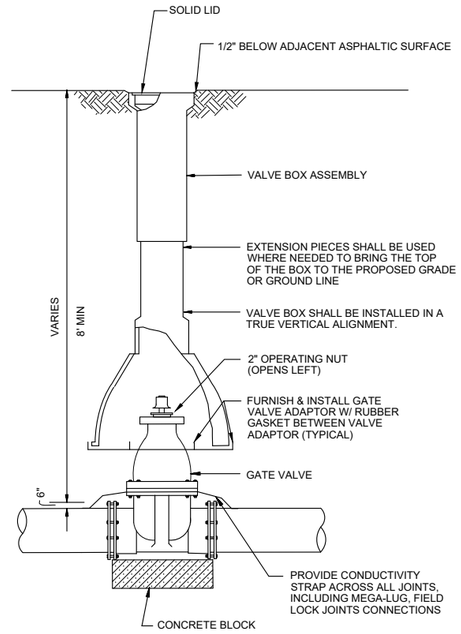
FIRE HYDRANT



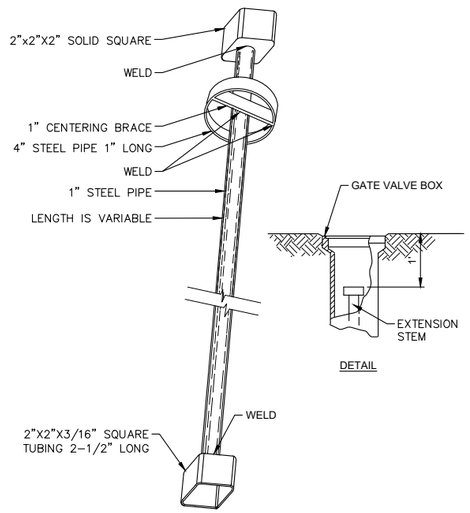
ALL JOINTS SHALL BE MECHANICAL TYPE WITH MEGA-LUG, FIELD LOCK JOINTS. PROVIDE CONDUCTIVITY STRAPS ACROSS ALL JOINTS AND VALVES, INCLUDING BENDS, SLEEVES.

LOWER WATER MAIN ITEM INCLUDES ALL CUTS, FITTINGS, FIELD LOCK JOINTS, LOWERING, AND INSULATION

LOWER WATER MAIN

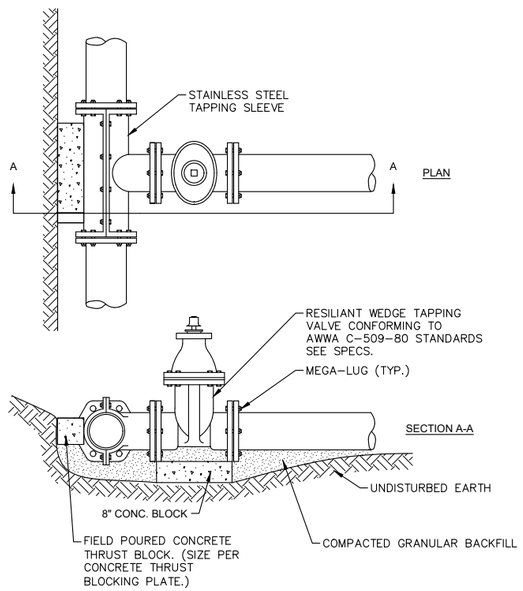


GATE VALVE + BOX

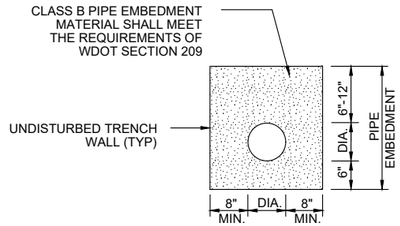


AFTER FABRICATION, THE ENTIRE GATE VALVE EXTENSION STEM SHALL BE PAINTED WITH A SHOP APPLIED PRIMER AND WITH AN EXTERIOR EPOXY PAINT.COLOR TO BE SPECIFIED BY OWNER.

VALVE EXTENSION STEM

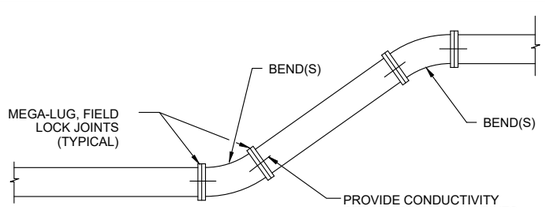


WATER MAIN WET TAP



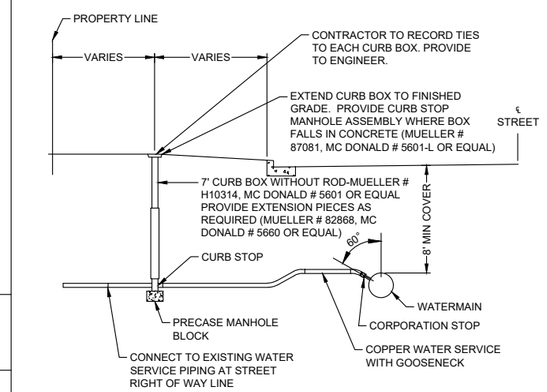
NOTE: CLASS B PIPE EMBEDMENT SHALL BE INCIDENTAL TO ALL PIPE INSTALLATION

CLASS B PIPE EMBEDMENT

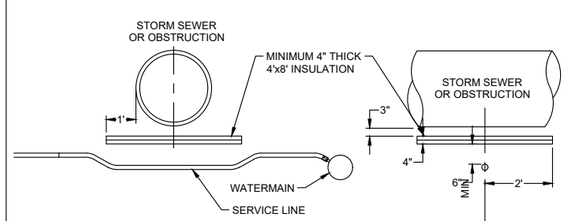


NOTE:
ALL JOINTS WITHIN 20' OF BENDS, TEES AND CROSSES SHALL BE SIMILARLY RESTRAINED.

JOINT RESTRAINT DETAIL



WATER SERVICE CONNECTION



INSULATED WATER SERVICE

NTS

WATER SERVICE CONNECTION

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		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	LACRS163627	1	RELEASED FOR PERMITTING	03.17.2022			
Drawn By	SFA						
Designed By	CMR						
Checked By	DAS						

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RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

WATER DETAILS

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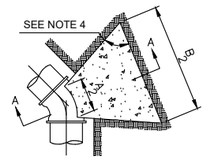
NOTES:
FORMS (IF USED) MAY BE LEFT IN PLACE
TRENCH DAMS SHALL BE INCIDENTAL, NO DIRECT PAYMENT SHALL BE MADE.

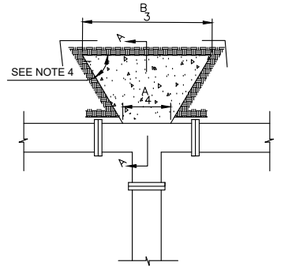
SECTION A–A
N.T.S.

TRENCH DAM

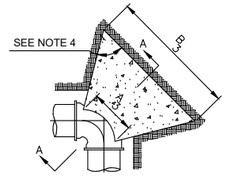
STA 120+00 AND STA 123+50



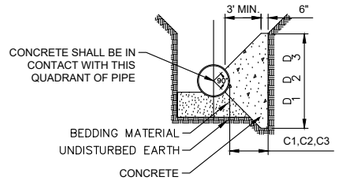
PLAN 45° BENDS



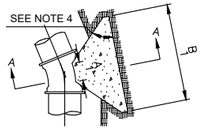
PLAN TEES



PLAN 90° BENDS



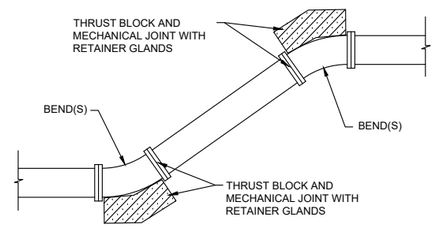
SECTION A–A



PLAN 22 1/2° BENDS

NOTES:
1. SHAPE OF BACK BUTTRESS MAY VARY AS LONG AS POURED AGAINST FIRM UNDISTURBED EARTH.
2. DIMENSION C1,C2,C3 SHOULD BE LARGE ENOUGH TO MAKE ANGLE 0 EQUAL TO OR LARGER THAN 45°.
3. DIMENSION A1,A2,A3, & A4 SHOULD BE AS LARGE AS POSSIBLE WITHOUT INTERFERING WITH MJ BOLTS.
4. 45° MINIMUM.
5. PLACE POLYETHYLENE BETWEEN CONCRETE AND PIPE.

BUTTRESS DIMENSIONS						
PIPE SIZE	22 1/2° BEND		45° BEND		90° BEND/TEE	
	B_1	D_1	B_2	D_2	B_3	D_3
6"	1'–5"	1'–5"	1'–5"	1'–5"	2'–1"	1'–6"
8"	1'–5"	1'–5"	2'–1"	1'–6"	2'–8"	2'–0"
12"	1'–10"	1'–10"	3'–4"	2'–0"	4'–9"	2'–6"
16"	3'–0"	2'–0"	3'–10"	3'–0"	6'–2"	3'–6"
20"	3'–6"	2'–8"	5'–6'	3'–4"	8'–4"	4'–0"
24"	4'–4"	3'–0"	6'–10"	3'–10"	9'–8"	5'–0"
30"	–	–	9'–3"	6'–0"	17'–0"	6'–0"



CONCRETE THRUST BLOCKING

SEH Project	LACRS163627
Drawn By	SFA
Designed By	CMR
Checked By	DAS

Rev.#	Revision Issue Description	Date
1	RELEASED FOR PERMITTING	03.17.2022

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RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

WATER DETAILS

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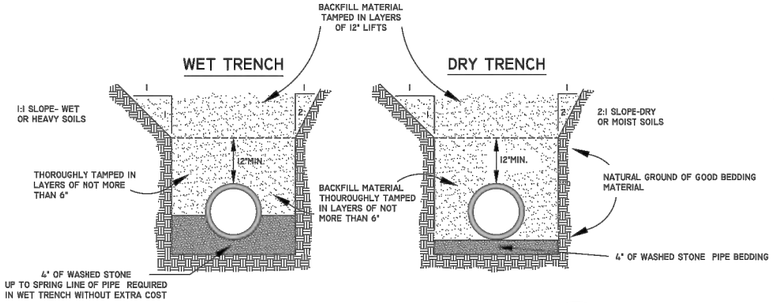
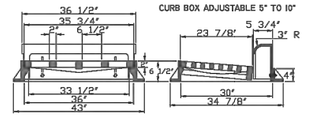
DRAWING
NOT TO SCALE



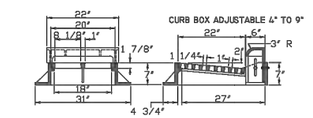
DETAILS OF SEWER TRENCHES A / D-2

SEWER PIPE JOINT MATERIALS
CONCRETE PIPE-RUBBER GASKET (ASTM C-443)
PVC PIPE- ELASTOMETRIC GASKET (ASTM D-3212 & F-477)



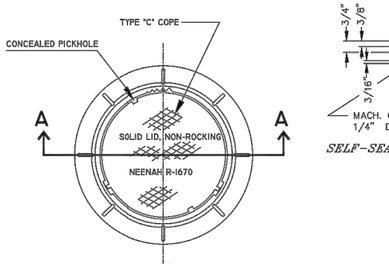
DETAILS OF TYPE "A" CATCH BASIN CASTING
NEENAH R-3246-A OR EQUAL
MINIMUM WEIGHT 649 LBS. TOTAL

F / D-2



DETAILS OF TYPE "B" CATCH BASIN CASTING
NEENAH R-3234-BI OR EQUAL
MINIMUM WEIGHT 400 LBS. TOTAL

NOTE: " DUMP NO WASTE DRAINS TO RIVER"
SHALL BE MOLDED IN ALL CASTINGS FACE

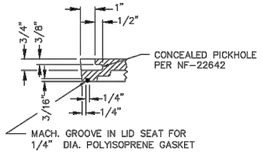


A — A

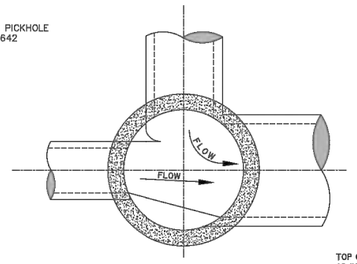
DETAIL OF MANHOLE FRAME & COVER
(MINIMUM WEIGHT 324 LBS. TOTAL)
NEENAH R-1670 OR EQUAL

NOTE
OPENING FOR FRAME & COVER SHALL BE CENTERED ON MANHOLES WITH FLAT TOPS.

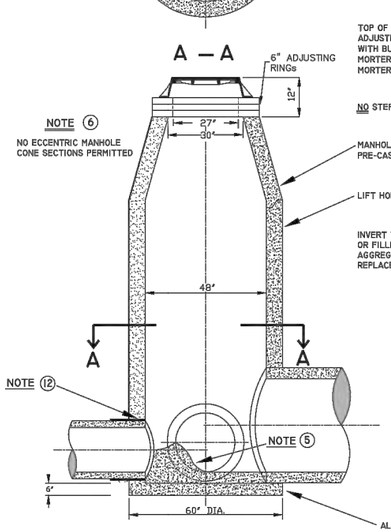
B / D-2



SELF-SEAL DETAIL



A — A



NOTE ①
TOP OF MANHOLE TO BE 12" BELOW FINISHED GRADE. ADJUSTMENT TO BE OF PRE-CAST CONCRETE RINGS WITH BUTYL GASKETS (ROPE) BETWEEN RINGS AND MORTER BETWEEN CASTING & TOP RING ONLY. (3/4" MORTER MAX.)

NOTE ②
NO STEPS ARE TO BE INSTALLED IN MANHOLES

NOTE ③
MANHOLE TO BE CONSTRUCTED OF PRE-CAST CONCRETE (ASTM C-478).

NOTE ④
LIFT HOLES TO BE MANUFACTURED WATER PROOF

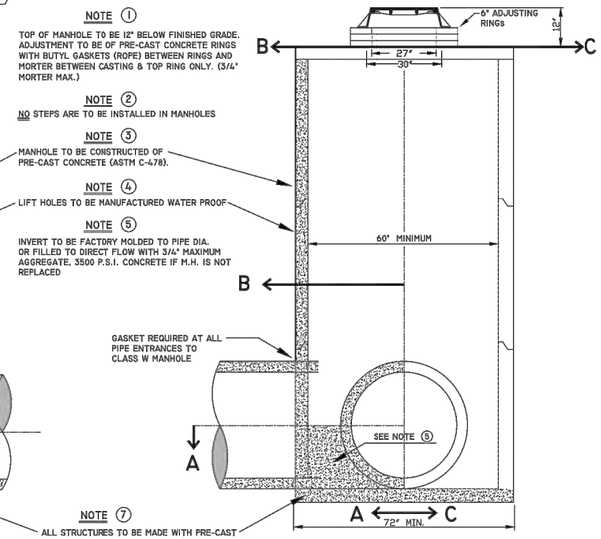
NOTE ⑤
INVERT TO BE FACTORY MOLDED TO PIPE DIA. OR FILLED TO DIRECT FLOW WITH 3/4" MAXIMUM AGGREGATE. 3500 P.S.I. CONCRETE IF M.H. IS NOT REPLACED

NOTE ⑫
THE CONNECTION OF ALL PVC STORM WATER PIPE, SIZE 6" TO 30", TO PRECAST MANHOLES OR OTHER STRUCTURES SHALL EMPLOY A WATERTIGHT, FLEXIBLE PIPE-TO-MANHOLE CONNECTOR

THE CONNECTOR SHALL CONSIST OF A SINGLE RUBBER GASKET, SHALL BE CONSTRUCTED SOLELY OF SYNTHETIC OR NATURAL RUBBER, SHALL MEET/EXCEED THE REQUIREMENTS OF ASTM C 923, AND SHALL HAVE A MINIMUM TENSILE STREGHTH OF 1600 PSI

THE CONNECTOR SHALL BE THE SOLE ELEMENT RELIED ON TO ASSURE A FLEXIBLE, WATERTIGHT SEAL OF THE PIPE TO THE STRUCTURE

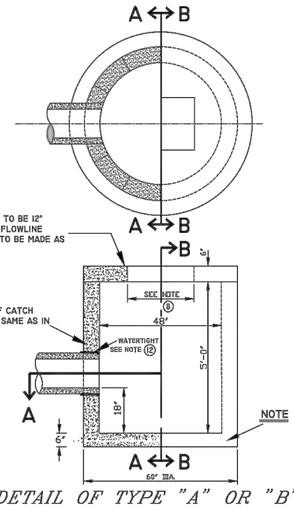
C / D-2 *DETAILS OF STANDARD MANHOLE FOR 30" PIPE OR SMALLER*



NOTE ⑦
ALL STRUCTURES TO BE MADE WITH PRE-CAST INTEGRAL FOOTING BASE. MIN. 6"

D / D-2 *DETAILS OF STANDARD MANHOLE FOR 36" PIPE OR LARGER*

NOTE ⑧
RECTANGULAR OPENING IN TOP
"B" TYPE CASTING - 27" X 22"
"A" TYPE CASTING - 36" X 30"



E / D-2 *DETAIL OF TYPE "A" OR "B" CATCH BASIN*

PROJECT No.
LOCATION
RESOLUTION
DATE

STORM SEWER DETAILS
D-2

ENGINEERING DEPT.
City of LaCrosse, Wis.

FIELD BOOK		BY	DATE
	SURVEYED		
DRAWN	PRELIMINARY		
	FINAL		
DESIGNER			
CHECKED			
APPROVED			
PAGE	REVISIONS		
	M.D.F. 3/03	J.M.C.	6/2015
	J.M.C. 9/03	BFM	2/2019
	M.D.F. 4/05	J.M.C.	8/2019
	M.D.F. 12/10		
	M.D.F. 4/13		

SCALE: NONE
SHEET NO. TOTAL SHEETS

(D-2)storm sewer_detail

D-2 storm sewer_detail

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SEH Project	LACRS163627
Drawn By	SFA
Designed By	CMR
Checked By	DAS

Rev.#	Revision Issue Description	Date
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RIVER POINT DISTRICT
LA CROSSE, WISCONSIN

STORM SEWER DETAILS

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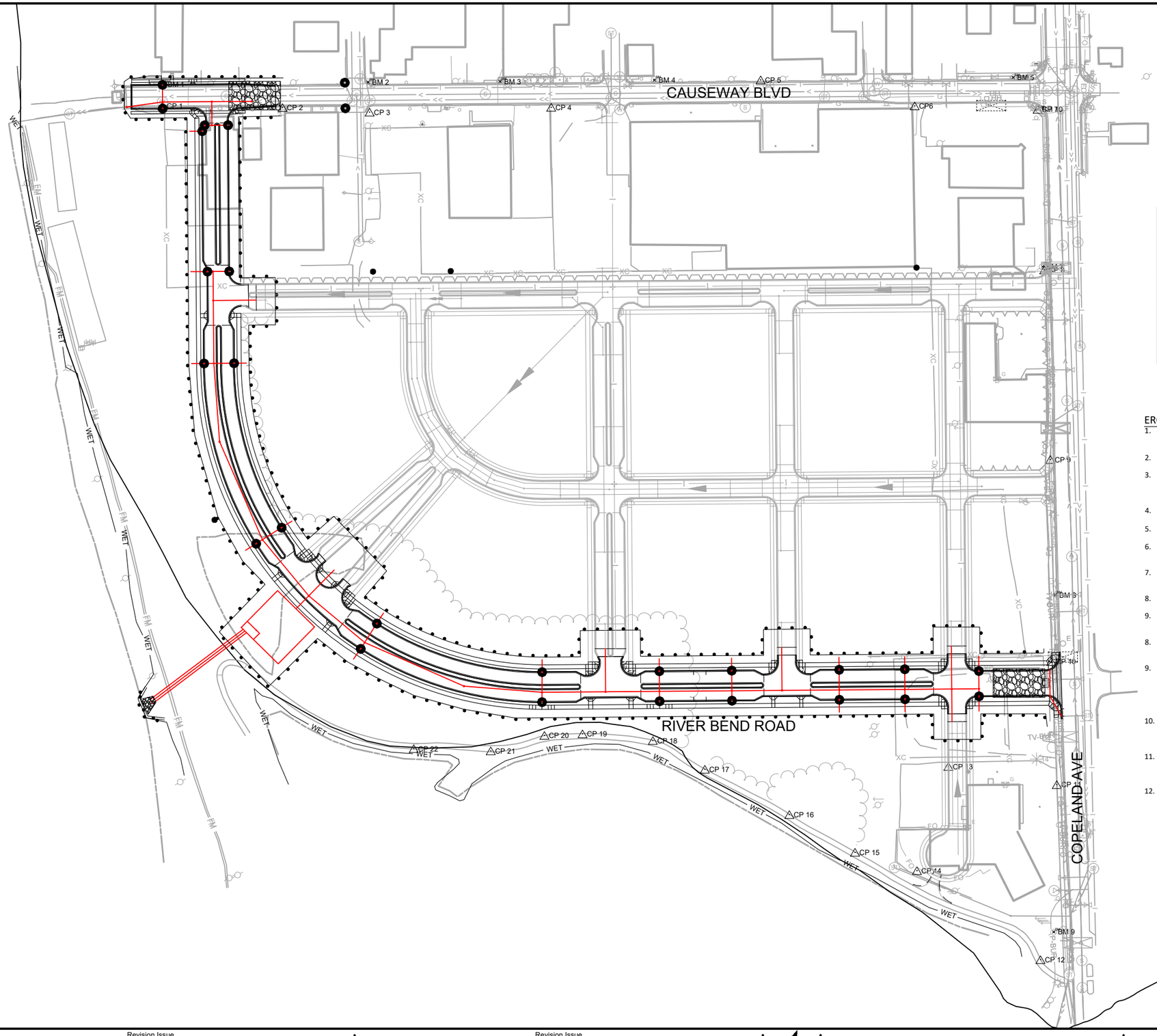

LEGEND	
	INLET PROTECTION
	TRACKING PAD
	EROSION CONTROL: RIPRAP
	SILT FENCE

EROSION CONTROL:

1. CONSTRUCT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE "WISCONSIN STORMWATER CONSTRUCTION AND POST-CONSTRUCTION TECHNICAL STANDARDS".
2. SEDIMENT CONTROL MEASURES MAY NEED TO BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF CONSTRUCTION.
3. INSPECT AND MAINTAIN ALL SEDIMENT CONTROL STRUCTURES WEEKLY AND AFTER SITE RECEIVES 1/2" OR MORE OF RAIN IN A 24-HOUR PERIOD TO ENSURE PROPER WORKING CONDITION. SEDIMENT CONTROL MEASURES ARE TO BE IN WORKING CONDITION AT THE END OF EACH DAY.
4. INSPECT SEDIMENT CONTROL STRUCTURES FOR INTEGRITY AFTER ANY SIGNIFICANT RAINFALL OF 1/2" OR MORE. **CORRECT ANY DAMAGED STRUCTURES IMMEDIATELY.**
5. DO NOT REMOVE ANY SEDIMENT/EROSION CONTROL MEASURES UNTIL THE AREAS SERVED HAVE 80% OR MORE ESTABLISHED VEGETATIVE COVER AS DETERMINED BY THE ENGINEER.
6. ALL TRACKED SOIL ON ADJACENT STREETS FROM THIS PROJECT MUST BE CLEANED ON A DAILY BASIS, MINIMUM. CONTRACTORS ARE REQUIRED TO USE THE TRACKING DRIVE SHOWN ON PLAN FOR ACCESS TO AND FROM THE SITE.
7. ALL SIDE SLOPES 5:1 OR STEEPER SHALL BE RESTORED WITH CLASS I - TYPE 'A' EROSION MATTING, AND ALL AREAS OF CONCENTRATED FLOW SHALL BE RESTORED WITH CLASS II - TYPE 'B' CHANNEL MATTING, UNLESS OTHERWISE NOTED.
8. ALL SLOPES PROTECTED ONLY BY SILT FENCE MUST BE FULLY RESTORED WITHIN 30 DAYS OF DISTURBANCE.
9. PREVENT OVERLAND FLOW FROM LEAVING ANY PORTION OF THE WORK SITE BY INSTALLING SEDIMENT LOGS OR SILT FENCING PARALLEL TO THE SLOPE DOWNHILL FROM THE WORK AREA.
8. ALL DISTURBANCE DIRECTED TO STORMWATER MANAGEMENT TANK SHALL BE SEEDED AND MATTED WITHIN 7 DAYS OF COMPLETION OF THE GRADING. GRASS MUST BE ESTABLISHED WITHIN 90 DAYS OF SEEDING IF SEASON ALLOWS.
9. STABILIZE ALL NON-ACTIVE STOCKPILES WITH TEMPORARY SEED & MULCH WITHIN 14 DAYS OF INACTIVITY. INSTALL SILT FENCING AROUND ALL DOWN SLOPE AND SIDE SLOPES OF TOPSOIL STOCKPILES. STOCKPILES NOT SHOWING ADEQUATE VEGETATION BY NOV 1 SHOULD BE DORMANT SEEDED AND COVERED WITH A WisDOT PAL TYPE A SOIL STABILIZER (FOR SLOPES 3 FEET HORIZONTAL TO 1 FOOT VERTICAL OR FLATTER) OR EROSION CONTROL MAT IF THEY ARE INACTIVE.
10. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 14 DAYS OF INACTIVITY. THIS MAY BE DONE USING TEMPORARY AND/OR PREEMINENT RESTORATION TECHNIQUES, DEPENDING ON PROGRESS OF GRADING ACTIVITIES OF THE AREA(S). THIS INCLUDES AREAS OF SITE DEVELOPMENT **AND** UTILITY CONSTRUCTION.
11. SEDIMENT CONTROL FOR UTILITY CONSTRUCTION
    A. PLACE EXCAVATED TRENCH MATERIAL ON HIGH SIDE OF THE TRENCH.
    B. BACKFILL, COMPACT, AND STABILIZE THE TRENCH IMMEDIATELY AFTER UTILITY INSTALLATION.
12. CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND MAINTAINING CONTAMINATED SOIL MANAGEMENT AND DEWATERING PERMITS. SEE SPECIFICATIONS.

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RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

EROSION CONTROL

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RETAINING WALL

PROPOSED UNDERGROUND STORMWATER TREATMENT TANK

PROPOSED STORMWATER OUTFALL

CAUSEWAY BLVD

RIVER BEND ROAD

COPELAND AVE

FLOODWAY

BASE FLOOD ELEV. = 643.9

N

100 0 100 200
scale 50 feet

LEGEND	
———	PROPOSED CONTOURS
— — — —	EXISTING CONTOURS
⏦⏦⏦⏦⏦	RETAINING WALL
———	STORM PIPE

SEH Project	LACRS163627
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RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

GRADING PLAN

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NOTES:

1. LIFT STATION IMPROVEMENTS TO BE DONE UNDER SEPARATE CONTRACT.
2. SERVICE LOCATIONS ARE APPROXIMATE AND SHOULD BE VERIFIED IN FIELD.
3. POLYETHYLENE ENCASEMENT SHALL BE APPLIED TO ALL WATERMAIN PIPES, FITTING, VALVES AND APPURTENANCES PER CITY SPECIFICATION 400.2.4.

CONTAMINATED SOILS

STA = 4+59.17
33 LF - 4" SANITARY SERVICE @ 2.00%
1 - CONNECT TO EX SERVICE

STA = 4+69.17
24 LF - 2 " SERVICE
1 - 2" CURB STOP & BOX
1 - CONNECT TO EX SERVICE

STA = 5+56.68
1 - 12" X 6" REDUCER

STA = 5+62.02, 12.74' L
1 - 12" X 12" TEE
1 - 12" GV AND BOX

STA = 6+25.00, 12.76' L
1 - 12" GV & BOX
1 - 12" X 6" REDUCER
2- 12" 45 DEG BENDS
6 LF- 6" DIP
1 - CONNECT TO EX WM

STA = 3+86.50
25 LF - 0.75 " SERVICE
1 - 1" CURB STOP & BOX
1 - CONNECT TO EX SERVICE

REMOVE 280 LF - 6" DIP
SALVAGE HYDRANT TO CITY

STA = 3+81.35
5 LF - 6" DIP
1 - 6" GV & BOX
1 - HYDRANT

CONNECT TO LIFT STATION

REMOVE EX. 48" SAN. MANHOLE
REMOVE 270 LF - 8" PVC SAN. MAIN

STA = 6+40.00, 0.00' L
1 - 12" X 8" ECCENTRIC REDUCER
1 - CONNECT TO EX SANITARY SEWER

N

scale 10: 20 0 20 40 feet

BENCHMARK EL.

CAUSEWAY BOULEVARD

BENCHMARK EL.

PROPOSED REFERENCE LINE PROFILE
EXISTING REFERENCE LINE PROFILE
EX. LIFT STATION
PRO. TOP = 646.00
(BY OTHERS)
8' COVER (MIN)
6" DIP
12" DIP
181 LF 12" SDR-35 PVC @ 0.40%
83 LF 12" SDR-35 PVC @ 0.30%
5 LF 12" SDR-35 PVC @ 0.23%
CONNECT TO EX. LIFT STATION
EX. LIFT STATION
449
RIM = 642.42
STA = 6+34.98, 0.1' L
12" IE (E) = 622.95
12" IE (W) = 622.85

650 645 640 635 630 625 620 615

643.9 642.25 642.5 642.05 641.9 641.85 642.0 641.65 642.1 641.85 642.3 642.05 642.4 642.25 642.5 642.44 642.6 642.41 642.5 642.21 642.4 642.10

3+00 4+00 5+00 6+00 7+00 8+00

DATE: 3/23/2022 10:48:06 AM

SEH Project	LACRS163627
Drawn By	SFA
Designed By	CMR
Checked By	DAS

Rev.#	Revision Issue Description	Date
1	RELEASED FOR PERMITTING	03.17.2022

NOT FOR CONSTRUCTION

SEH

RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

WATER MAIN AND SANITARY SEWER PLAN & PROFILE CAUSEWAY BOULEVARD

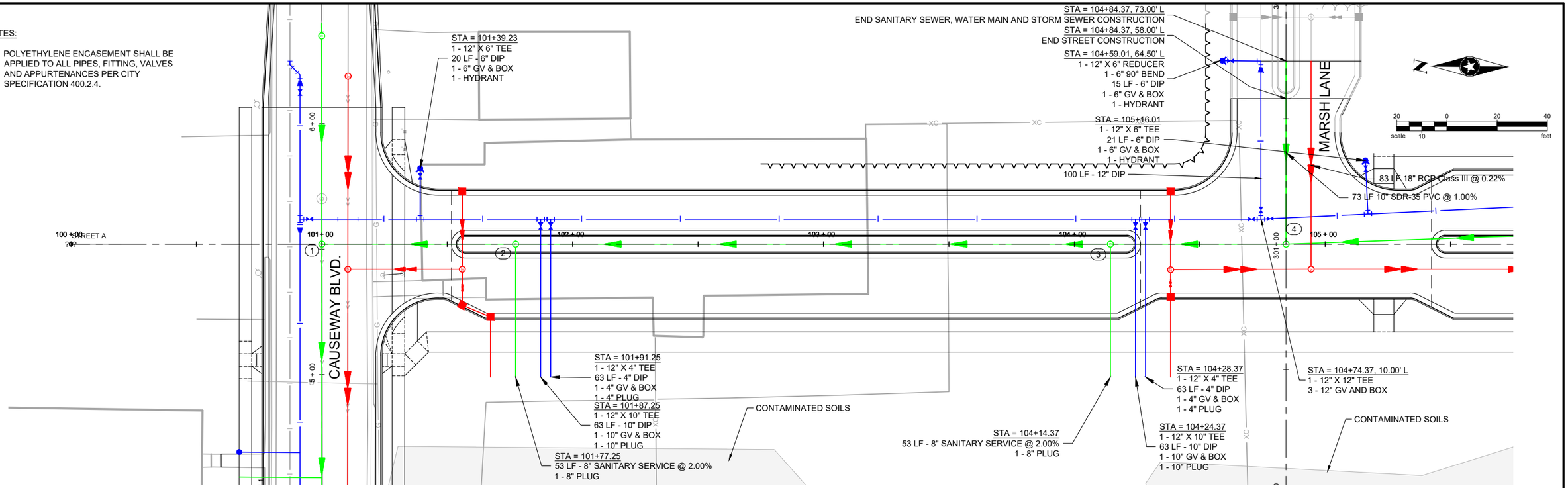
C3.01

of 37

Save: 3/23/2022 10:18 AM saarthun Plot: 3/23/2022 10:49 AM X:\KOL\LACRS\163627\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\LACRS163627PP_Causeway.dwg

NOTES:

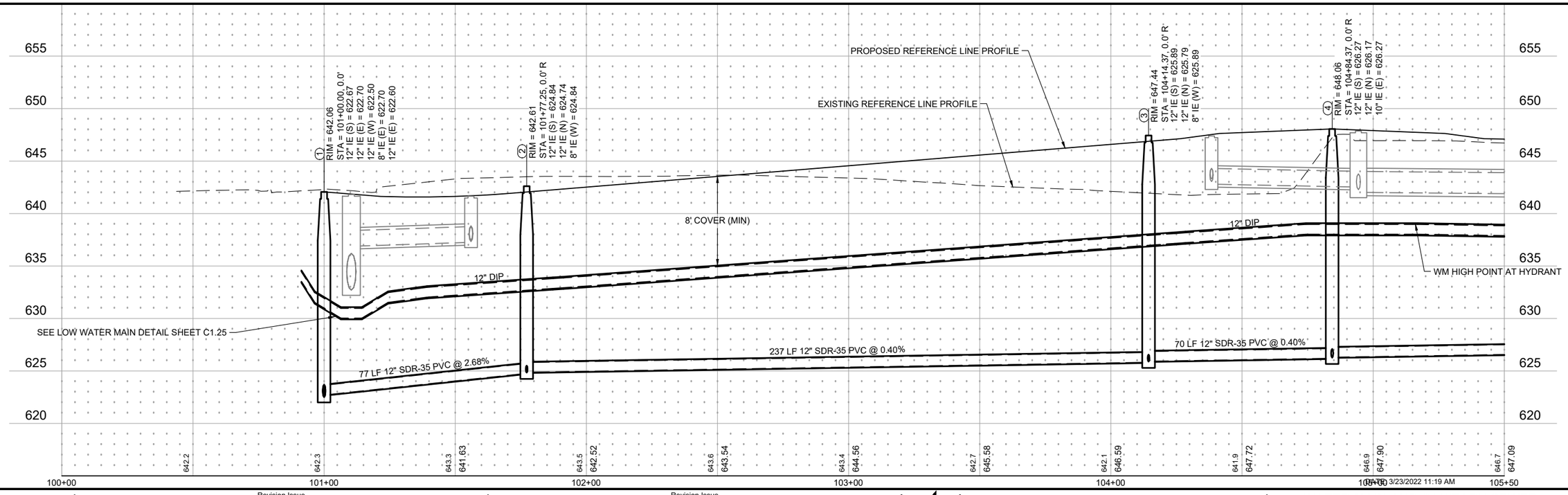
1. POLYETHYLENE ENCASEMENT SHALL BE APPLIED TO ALL PIPES, FITTING, VALVES AND APPURTENANCES PER CITY SPECIFICATION 400.2.4.



BENCHMARK EL.

RIVER BEND ROAD

BENCHMARK EL.



Plot: 3/23/2022 11:19 AM

		Rev.#	Revision Issue Description	Date
SEH Project	LACRS163627	1	RELEASED FOR PERMITTING	03.17.2022
Drawn By	SFA			
Designed By	CMR			
Checked By	DAS			

NOT FOR CONSTRUCTION

SEH

RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

WATER MAIN AND SANITARY SEWER PLAN & PROFILE RIVER BEND ROAD

C3.02

of 37

Save: 3/21/2022 9:59 AM cralleigh Plot: 3/23/2022 11:19 AM X:\KOL\LACRS\163627\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\LACRS163627PP_Street A.dwg

NOTES:

1. POLYETHYLENE ENCASEMENT SHALL BE APPLIED TO ALL PIPES, FITTING, VALVES AND APPURTENANCES PER CITY SPECIFICATION 400.2.4.

NOTE: WATER LATERALS TO BE PLACED UNDERNEATH STORM SEWER.

83 LF 18" RCP Class III @ 0.22%
73 LF 10" SDR-35 PVC @ 1.00%

STA = 106+25.81
46 LF - 8" SANITARY SERVICE @ 2.00%
1 - 8" PLUG

STA = 106+36.76
1 - 12" X 10" CROSS
36 LF - 10" DIP
1 - 10" GV & BOX
1 - 10" PLUG

STA = 106+41.13
1 - 12" X 4" CROSS
35 LF - 4" DIP
1 - 4" GV & BOX
1 - 4" PLUG

PC: 106+20.19

STA = 107+81.28
1 - 12" X 6" TEE
27 LF - 6" DIP
1 - 6" GV & BOX
1 - HYDRANT

STA = 107+75.13, 5.17' L
1 - 12" 22 ½° BEND

STA = 109+56.84, 10.07' L
1 - 12" 11 ¼° BEND

STA = 109+55.81
53 LF - 8" SANITARY SERVICE @ 2.00%
1 - 8" PLUG

STA = 109+47.64
1 - 12" X 4" CROSS
42 LF - 4" DIP
1 - 4" GV & BOX
1 - 4" PLUG

STA = 109+44.39
1 - 12" X 10" CROSS
41 LF - 10" DIP
1 - 10" GV & BOX
1 - 10" PLUG

STA = 110+65.76, 58.11' L
END STREET CONSTRUCTION

STA = 110+32.11
1 - 12" X 6" TEE
12 LF - 6" DIP
1 - 6" GV & BOX
1 - HYDRANT

EAGLE REST RD

20 0 20 40
scale 10 feet

STA = 106+38.11
71 LF - 4" DIP
1 - 4" GV & BOX
1 - 4" PLUG

STA = 106+34.42
71 LF - 10" DIP
1 - 10" GV & BOX
1 - 10" PLUG

STA = 106+25.06
60 LF - 8" SANITARY SERVICE @ 1.53%
1 - 8" PLUG

CONTAMINATED SOILS

LOWER WATER MAIN

STA = 109+40.36
65 LF - 10" DIP
1 - 10" GV & BOX
1 - 10" PLUG

STA = 109+48.24
64 LF - 4" DIP
1 - 4" GV & BOX
1 - 4" PLUG

STA = 109+57.49
53 LF - 8" SANITARY SERVICE @ 2.00%
1 - 8" PLUG

STA 110+89.41, 10.07' L
1 - 12" 11 ¼° BEND

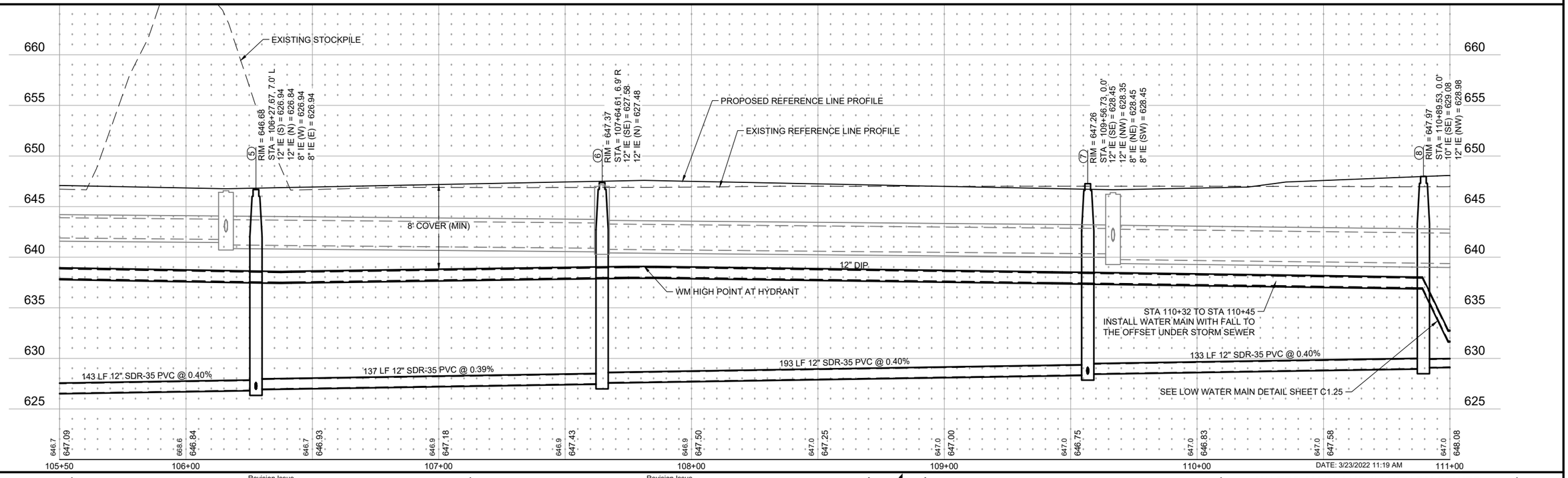
CONCRETE MONOLITH

PROPOSED STORMWATER MANAGEMENT TANK

BENCHMARK EL.

RIVER BEND ROAD

BENCHMARK EL.



		Rev.#	Revision Issue Description	Date
SEH Project	LACRS163627	1	RELEASED FOR PERMITTING	03.17.2022
Drawn By	SFA			
Designed By	CMR			
Checked By	DAS			

NOT FOR CONSTRUCTION

SEH

RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

WATER MAIN AND SANITARY SEWER PLAN & PROFILE RIVER BEND ROAD

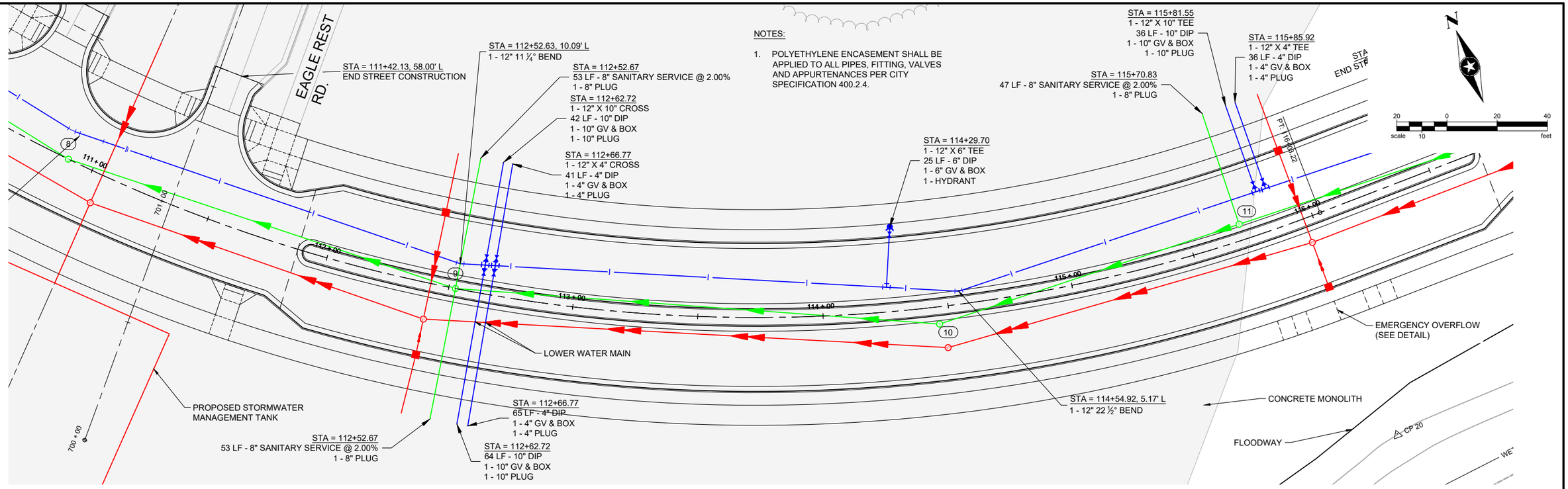
C3.03

of 37

Save: 3/21/2022 9:59 AM cralleigh Plot: 3/23/2022 11:19 AM X:\KOL\LACRS\163627\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\LACRS163627PP_Street A.dwg

NOTES:

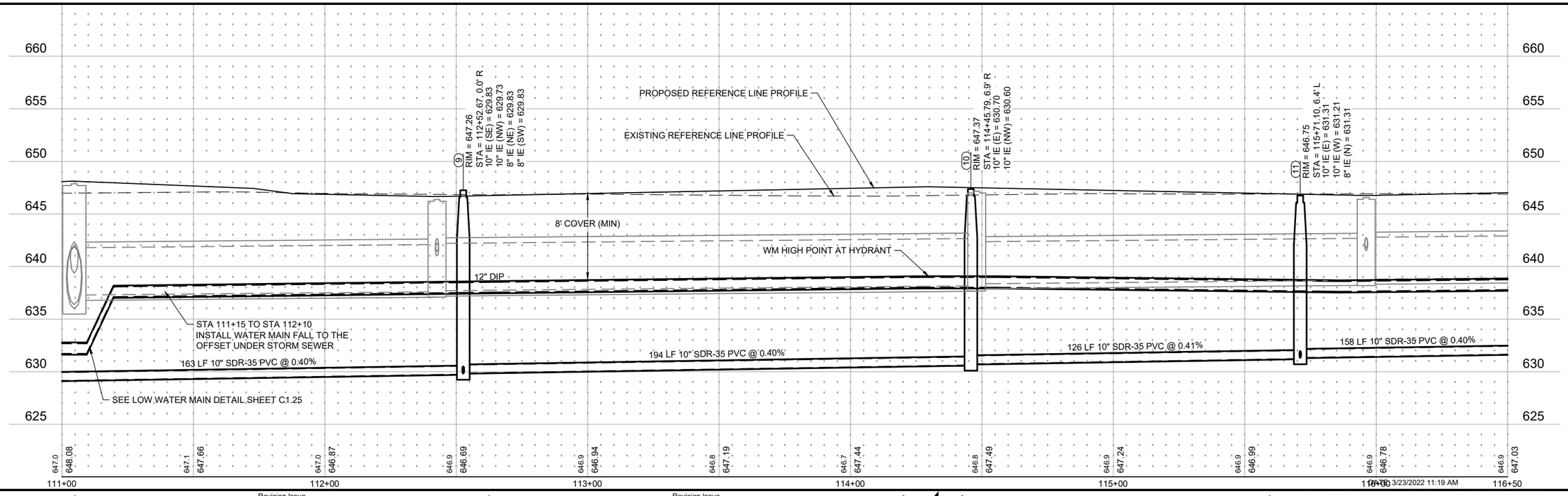
1. POLYETHYLENE ENCASEMENT SHALL BE APPLIED TO ALL PIPES, FITTING, VALVES AND APPURTENANCES PER CITY SPECIFICATION 400.2.4.



BENCHMARK EL.

RIVER BEND ROAD

BENCHMARK EL.



Plotted: 3/23/2022 11:19 AM

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	LACRS163627	1	RELEASED FOR PERMITTING	03.17.2022			
Drawn By	SFA						
Designed By	CMR						
Checked By	DAS						

NOT FOR CONSTRUCTION

SEH

RIVER POINT DISTRICT

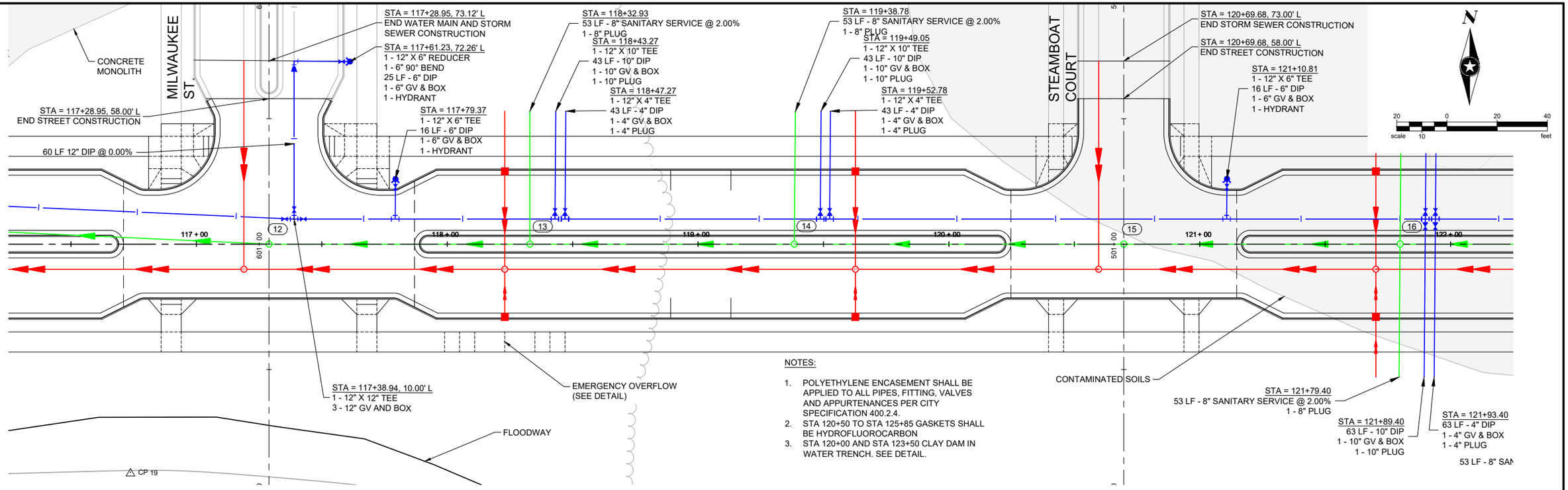
LA CROSSE, WISCONSIN

WATER MAIN AND SANITARY SEWER PLAN & PROFILE RIVER BEND ROAD

C3.04

of 37

Save: 3/21/2022 9:59 AM craleigh Plot: 3/23/2022 11:19 AM X:\KOL\LACRS\163627\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\LACRS163627PP_Street A.dwg



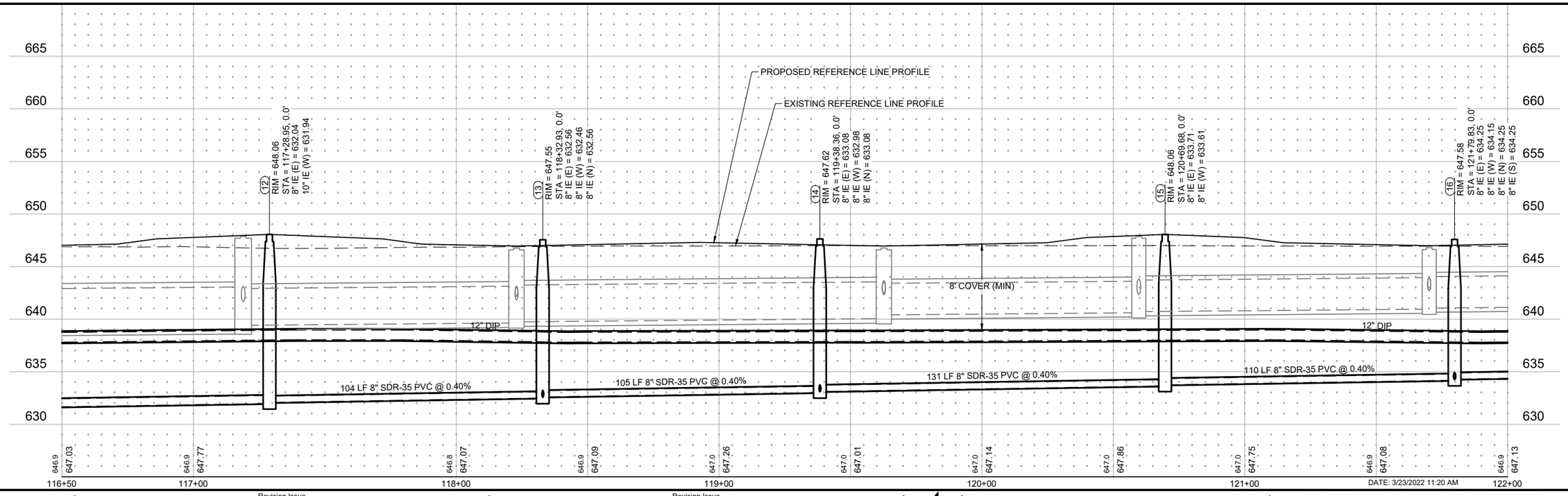
NOTES:

1. POLYETHYLENE ENCASEMENT SHALL BE APPLIED TO ALL PIPES, FITTING, VALVES AND APPURTENANCES PER CITY SPECIFICATION 400.2.4.
2. STA 120+50 TO STA 125+85 GASKETS SHALL BE HYDROFLUOROCARBON
3. STA 120+00 AND STA 123+50 CLAY DAM IN WATER TRENCH. SEE DETAIL.

BENCHMARK EL.

RIVER BEND ROAD

BENCHMARK EL.



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SEH Project	LACRS163627
Drawn By	SFA
Designed By	CMR
Checked By	DAS

Rev.#	Revision Issue Description	Date
1	RELEASED FOR PERMITTING	03.17.2022

NOT FOR CONSTRUCTION

SEH

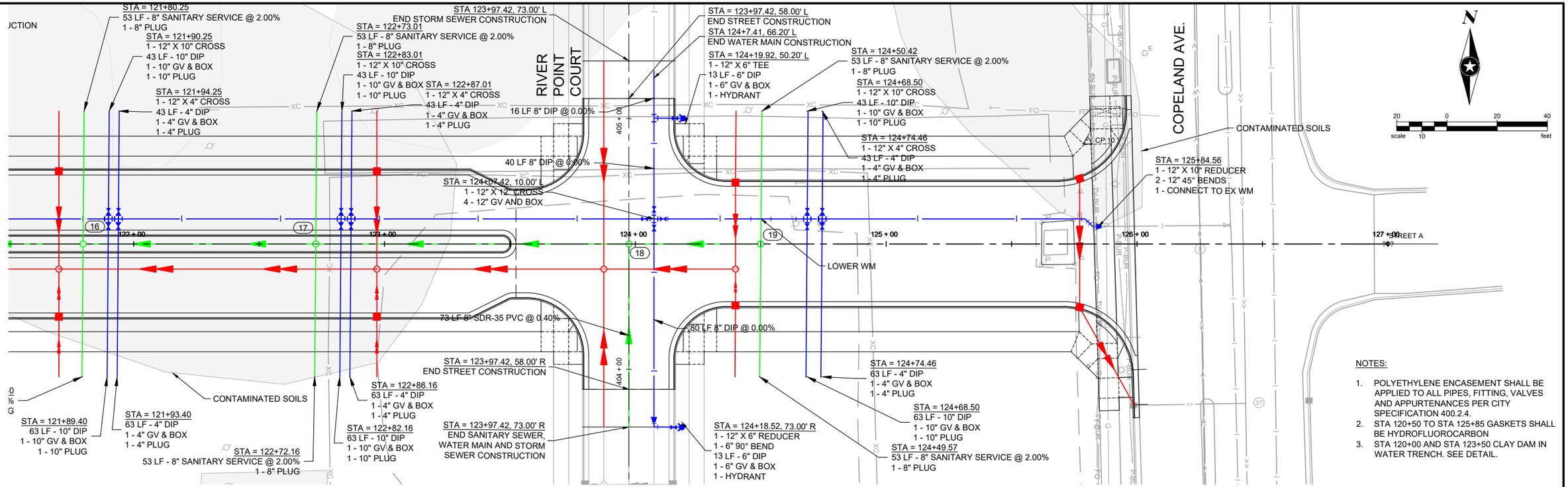
RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

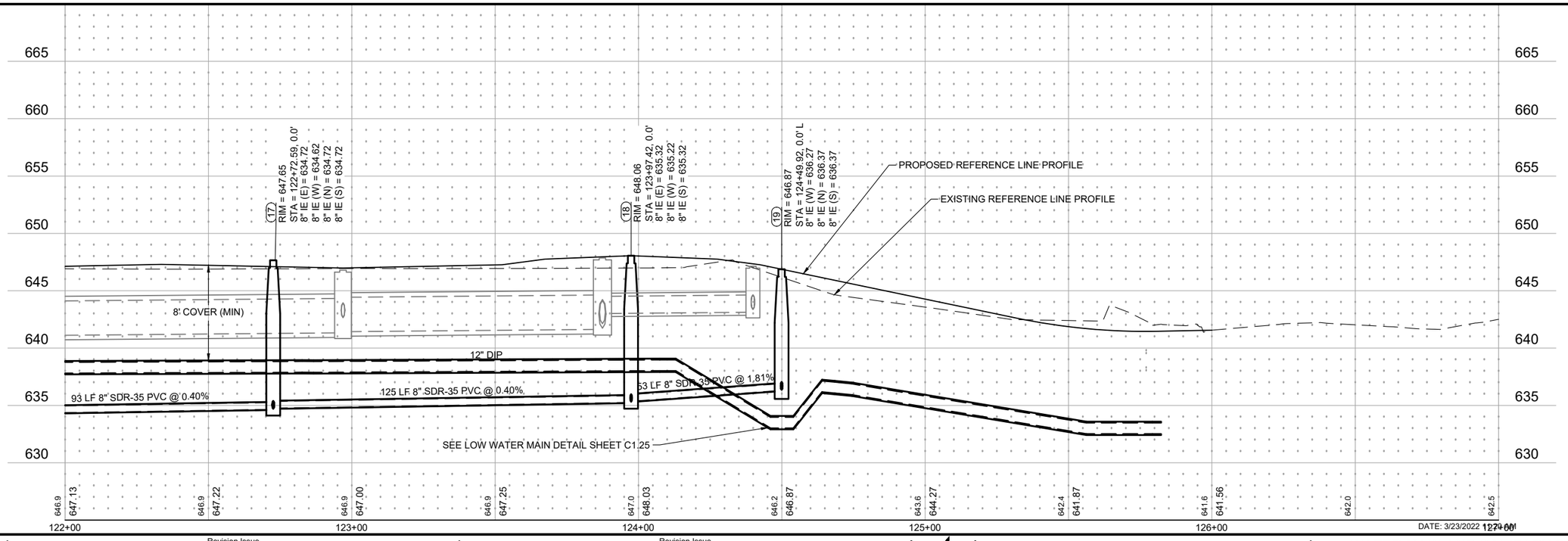
WATER MAIN AND SANITARY SEWER PLAN & PROFILE RIVER BEND ROAD

C3.05

of 37



RIVER BEND ROAD



		Rev.#	Revision Issue Description	Date
SEH Project	LACRS163627	1	RELEASED FOR PERMITTING	03.17.2022
Drawn By	SFA			
Designed By	CMR			
Checked By	DAS			

NOT FOR CONSTRUCTION

SEH

RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

WATER MAIN AND SANITARY SEWER PLAN & PROFILE RIVER BEND ROAD

C3.06

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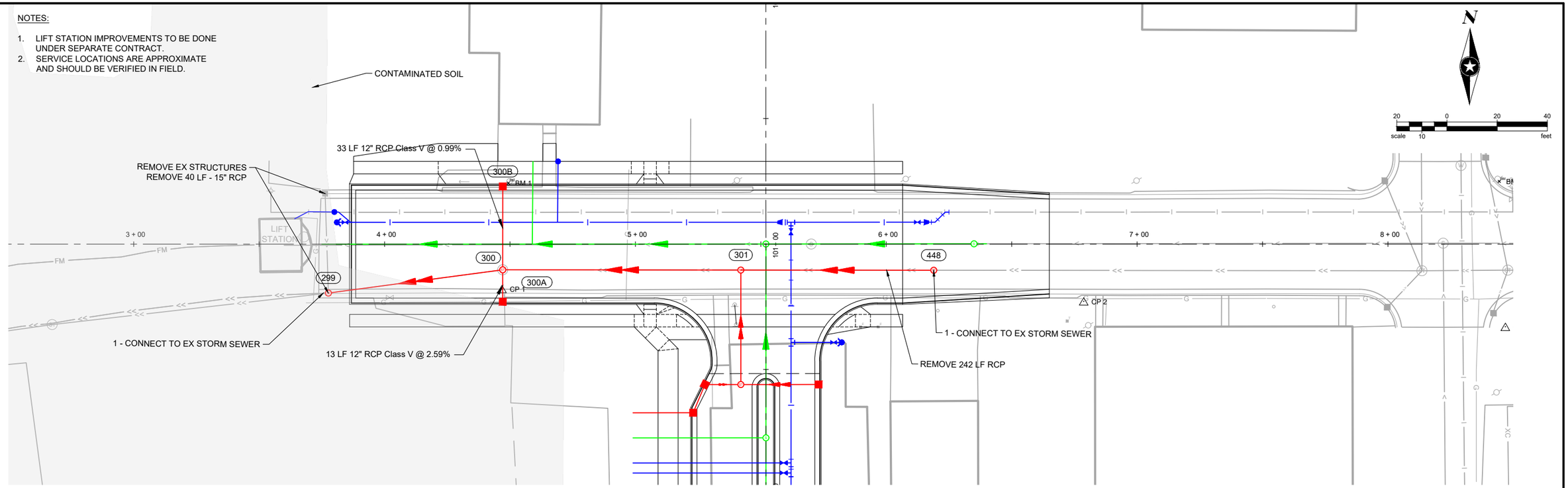
Save: 3/21/2022 9:59 AM craleigh Plot: 3/23/2022 11:20 AM X:\KOL\LACRS\163627\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\LACRS163627PP_Street A.dwg

NOTES:

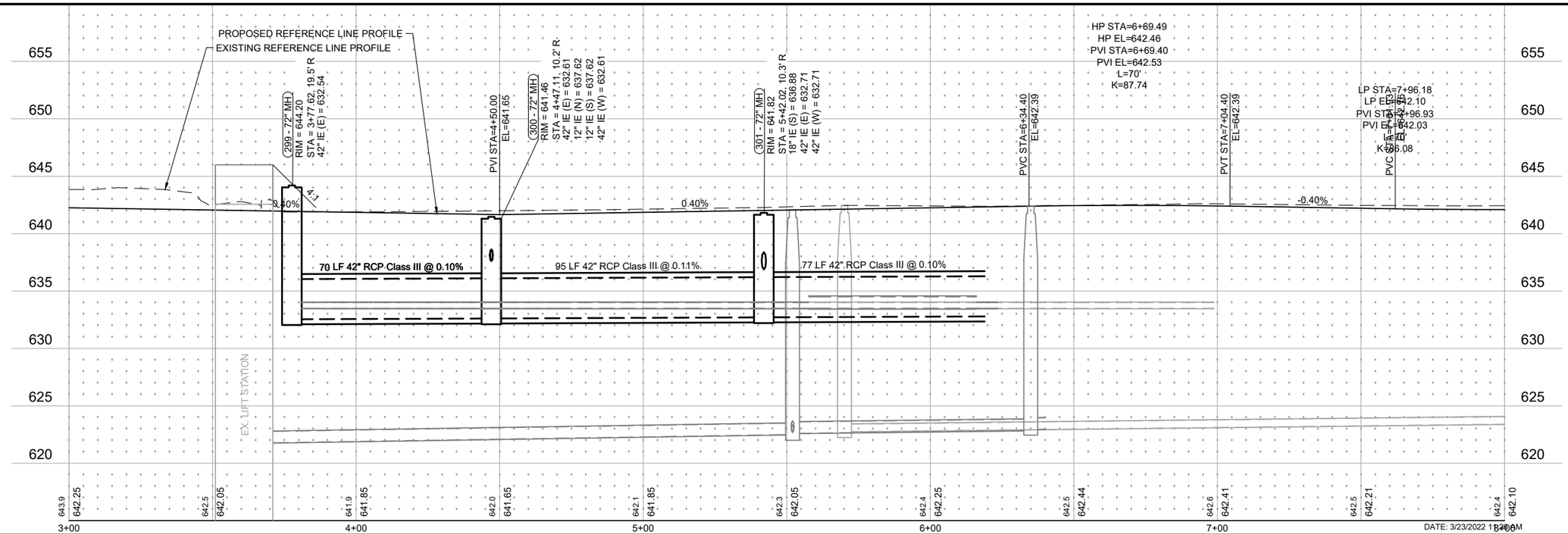
1. LIFT STATION IMPROVEMENTS TO BE DONE UNDER SEPARATE CONTRACT.
2. SERVICE LOCATIONS ARE APPROXIMATE AND SHOULD BE VERIFIED IN FIELD.



BENCHMARK EL.

CAUSEWAY BOULEVARD

BENCHMARK EL.



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		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	LACRS163627	1	RELEASED FOR PERMITTING	03.17.2022			
Drawn By	SFA						
Designed By	CMR						
Checked By	DAS						

NOT FOR CONSTRUCTION

RIVER POINT DISTRICT

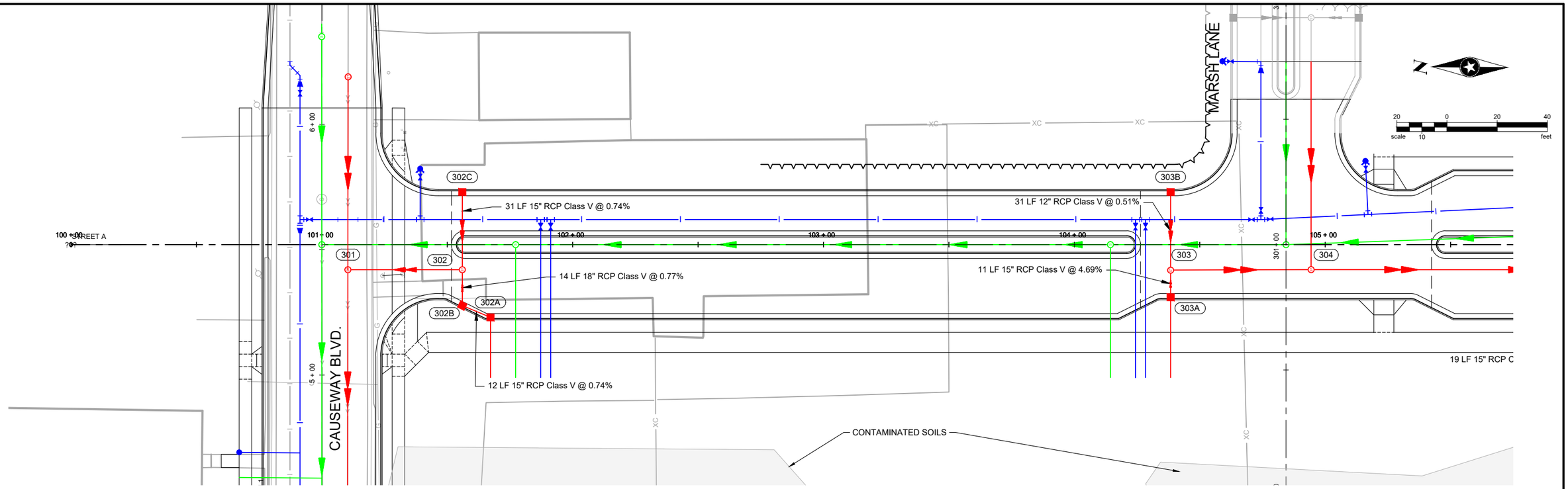
LA CROSSE, WISCONSIN

STORM SEWER AND STREET PLAN & PROFILE CAUSEWAY BOULEVARD

C4.01

of 37

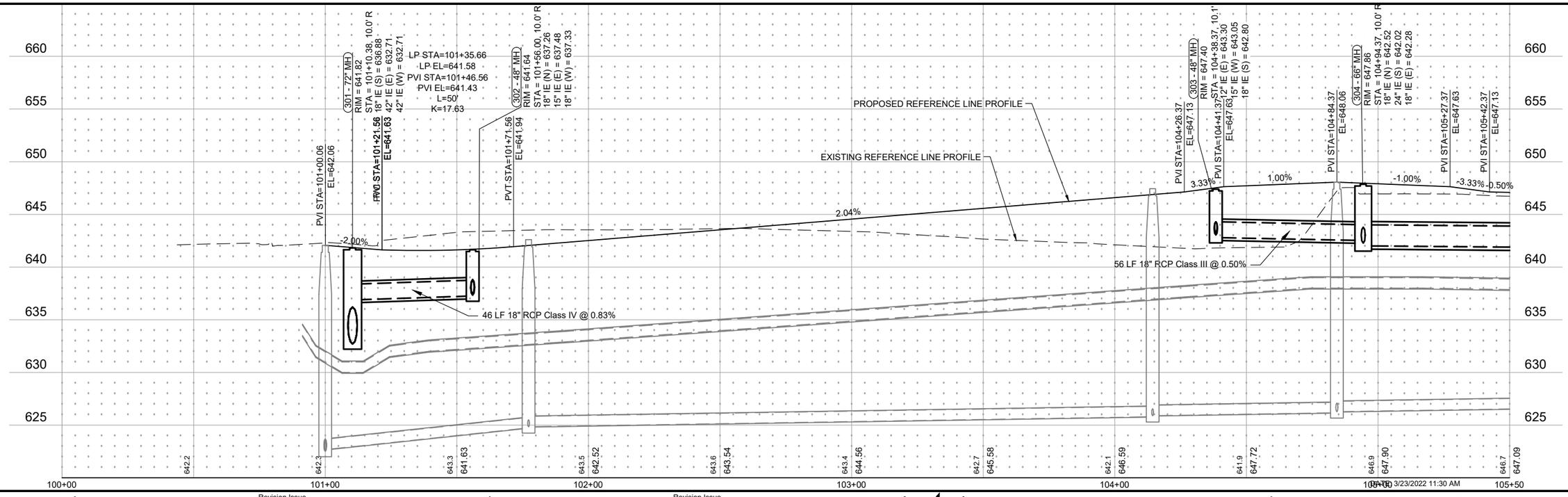
Save: 3/17/2022 10:53 AM Ikteilhut Plot: 3/23/2022 11:26 AM X:\KOIL\LACRS\163627\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\LACRS163627PP_Causeway Storm.dwg



BENCHMARK EL.

RIVER BEND ROAD

BENCHMARK EL.



Plotted: 3/23/2022 11:30 AM

SEH Project	LACRS163627
Drawn By	SFA
Designed By	CMR
Checked By	DAS

Rev.#	Revision Issue Description	Date
1	RELEASED FOR PERMITTING	03.17.2022

NOT FOR CONSTRUCTION

SEH

RIVER POINT DISTRICT

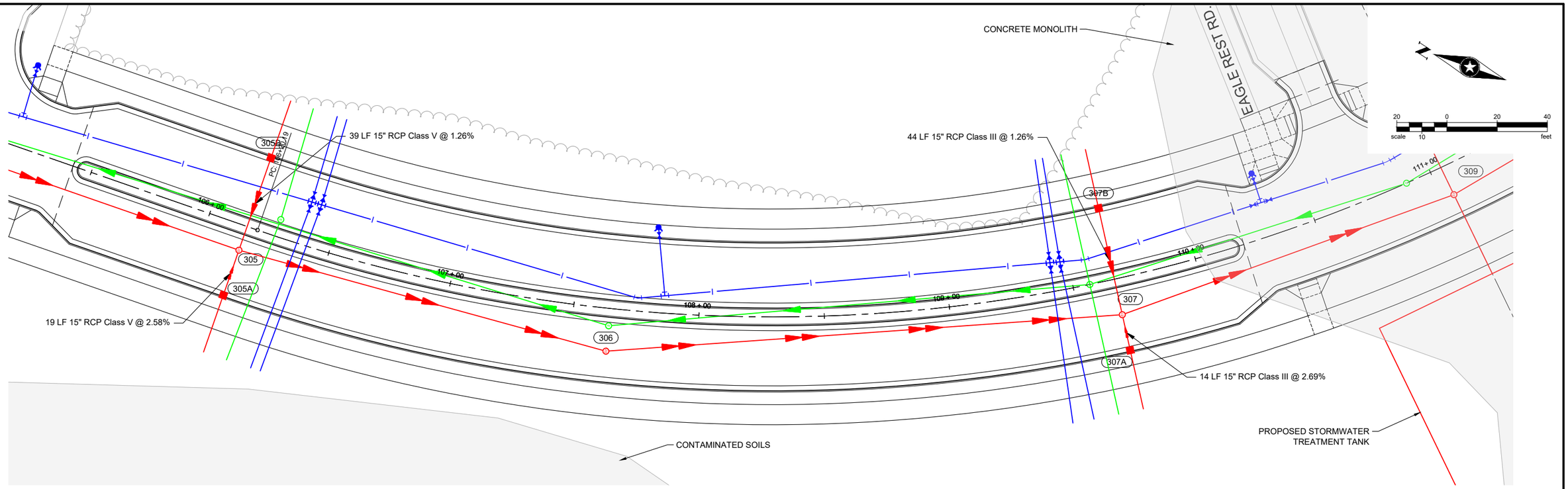
LA CROSSE, WISCONSIN

STORM SEWER AND STREET PLAN & PROFILE RIVER BEND ROAD

C4.02

of 37

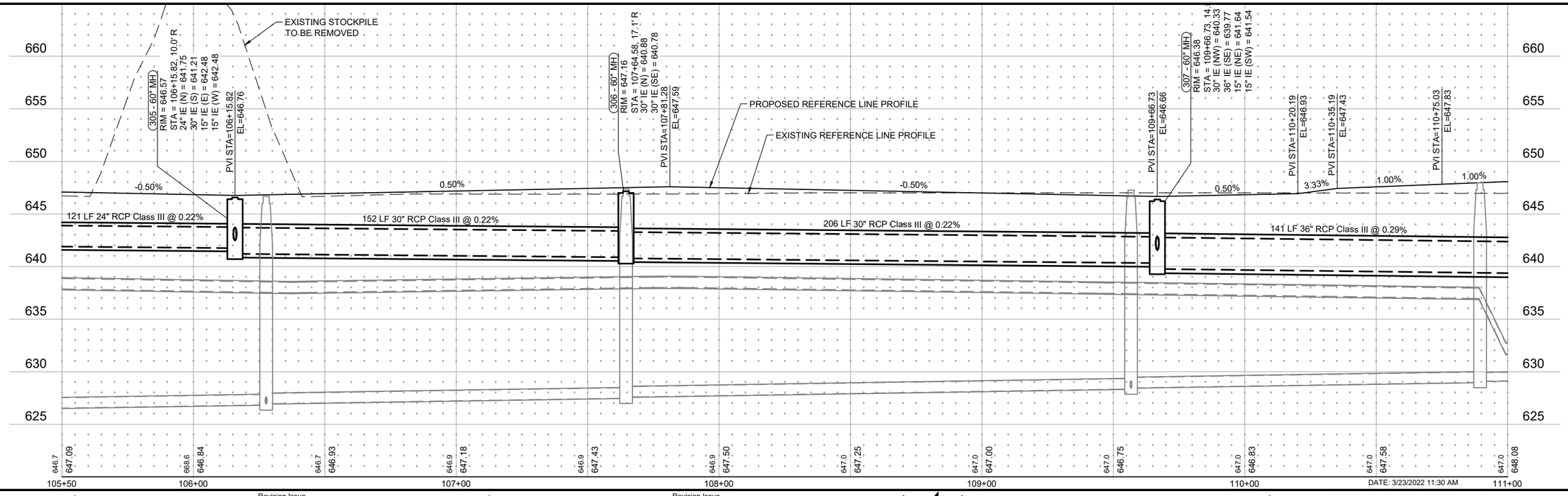
Save: 3/21/2022 3:56 PM cralleigh Plot: 3/23/2022 11:30 AM X:\KOLL\LACRS\163627\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\LACRS163627PP_Street A storm.dwg



BENCHMARK EL.

RIVER BEND ROAD

BENCHMARK EL.



SEH Project	LACRS163627
Drawn By	SFA
Designed By	CMR
Checked By	DAS

Rev.#	Revision Issue Description	Date
1	RELEASED FOR PERMITTING	03.17.2022

NOT FOR CONSTRUCTION

SEH

RIVER POINT DISTRICT

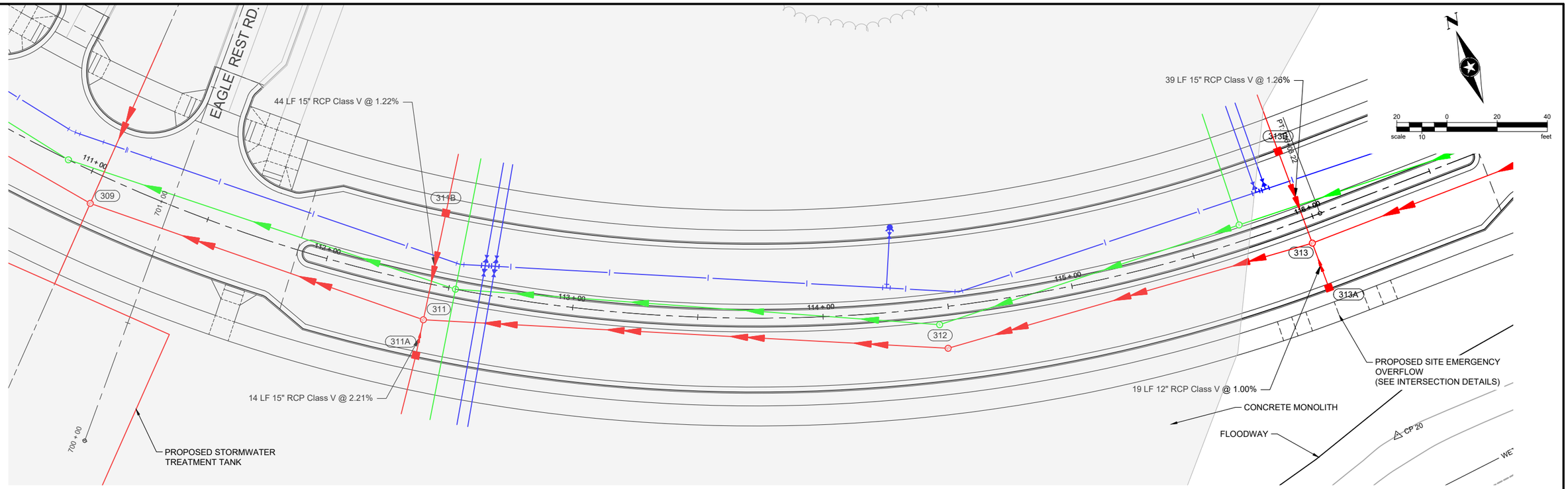
LA CROSSE, WISCONSIN

STORM SEWER AND STREET PLAN & PROFILE RIVER BEND ROAD

C4.03

of 37

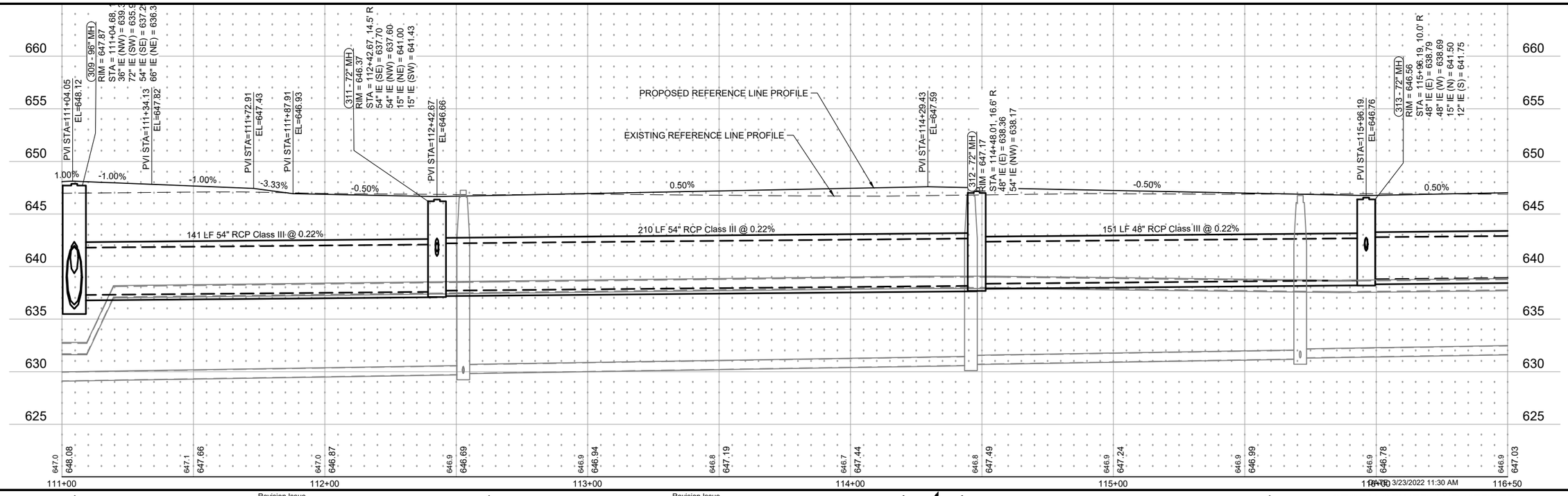
Save: 3/21/2022 3:56 PM cralleigh Plot: 3/23/2022 11:30 AM X:\KOII\LACRS\163627\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\LACRS163627PP_Street A storm.dwg



BENCHMARK EL.

RIVER BEND ROAD

BENCHMARK EL.



Plot: 3/23/2022 11:30 AM

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	LACRS163627	1	RELEASED FOR PERMITTING	03.17.2022			
Drawn By	SFA						
Designed By	CMR						
Checked By	DAS						

NOT FOR CONSTRUCTION

SEH

RIVER POINT DISTRICT

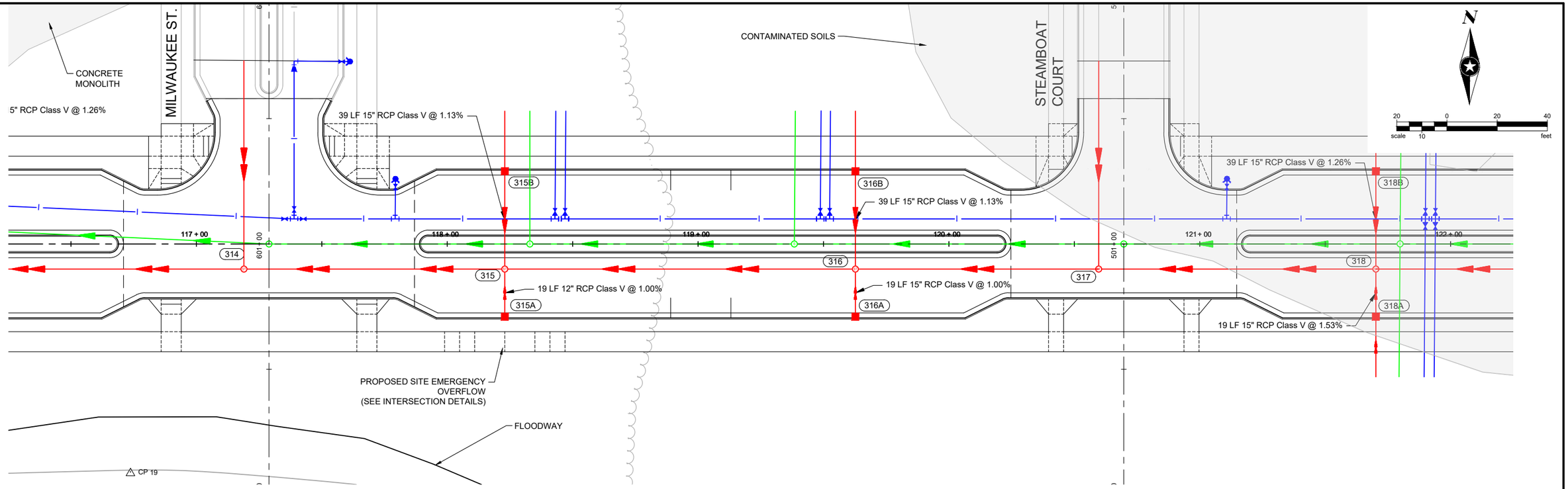
LA CROSSE, WISCONSIN

STORM SEWER AND STREET PLAN & PROFILE RIVER BEND ROAD

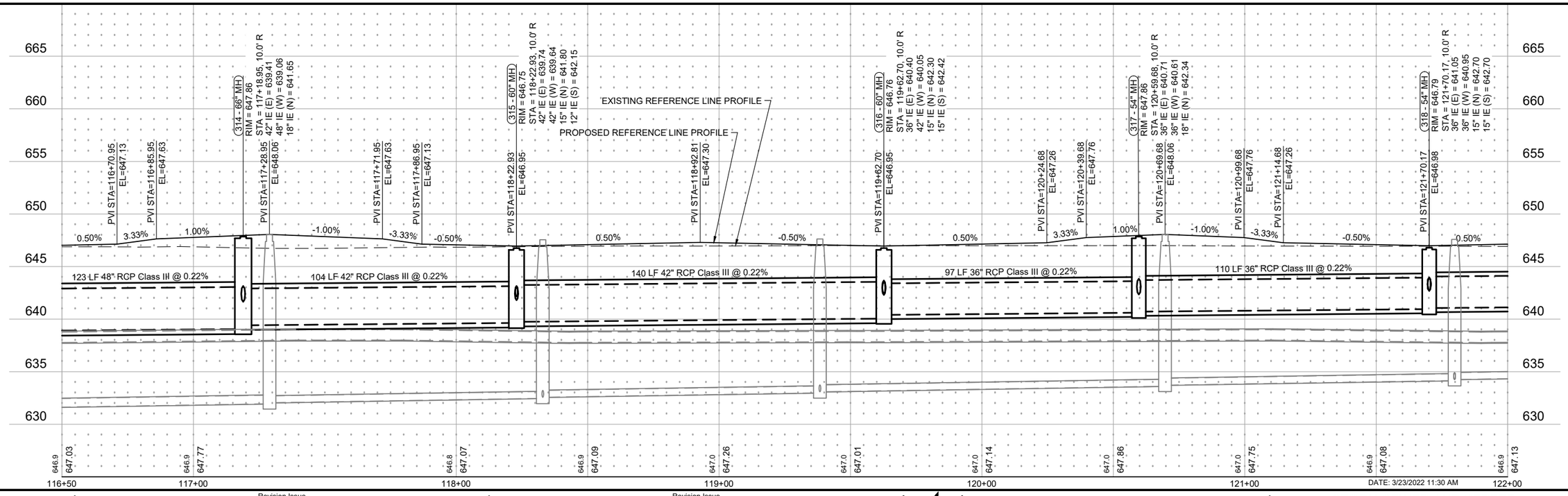
C4.04

of 37

Save: 3/21/2022 3:56 PM cralleigh Plot: 3/23/2022 11:30 AM X:\KOLL\LACRS\163627\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\LACRS163627PP_Street A storm.dwg



RIVER BEND ROAD



		Rev.#	Revision Issue Description	Date
SEH Project	LACRS163627	1	RELEASED FOR PERMITTING	03.17.2022
Drawn By	SFA			
Designed By	CMR			
Checked By	DAS			

NOT FOR CONSTRUCTION

SEH

RIVER POINT DISTRICT

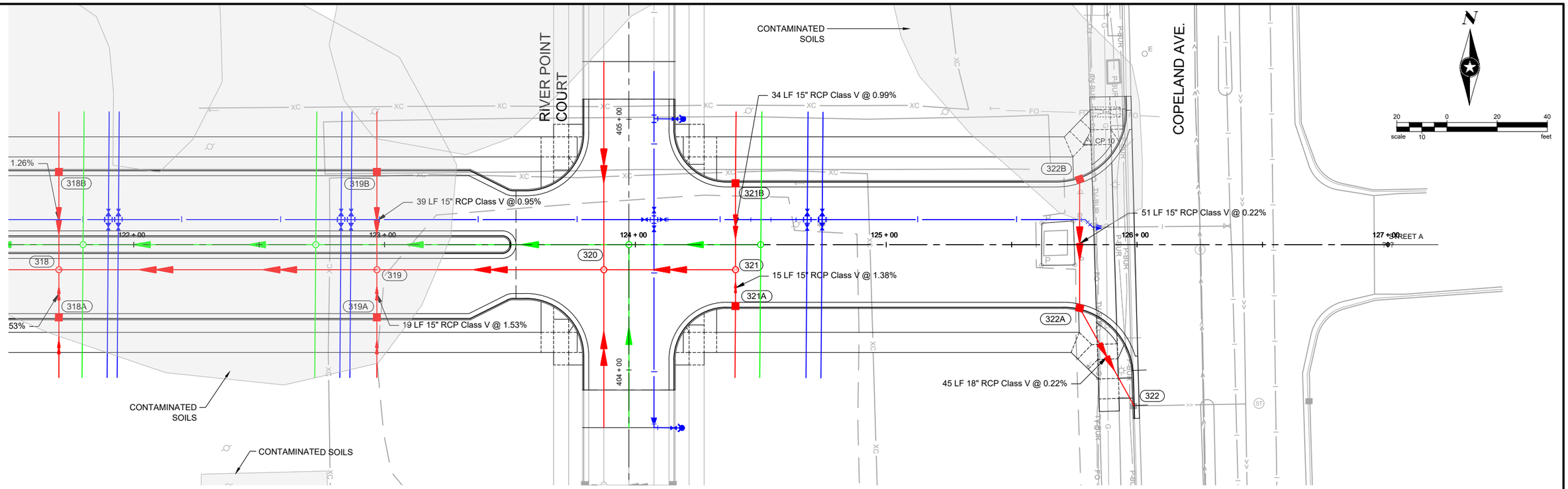
LA CROSSE, WISCONSIN

STORM SEWER AND STREET PLAN & PROFILE RIVER BEND ROAD

C4.05

of 37

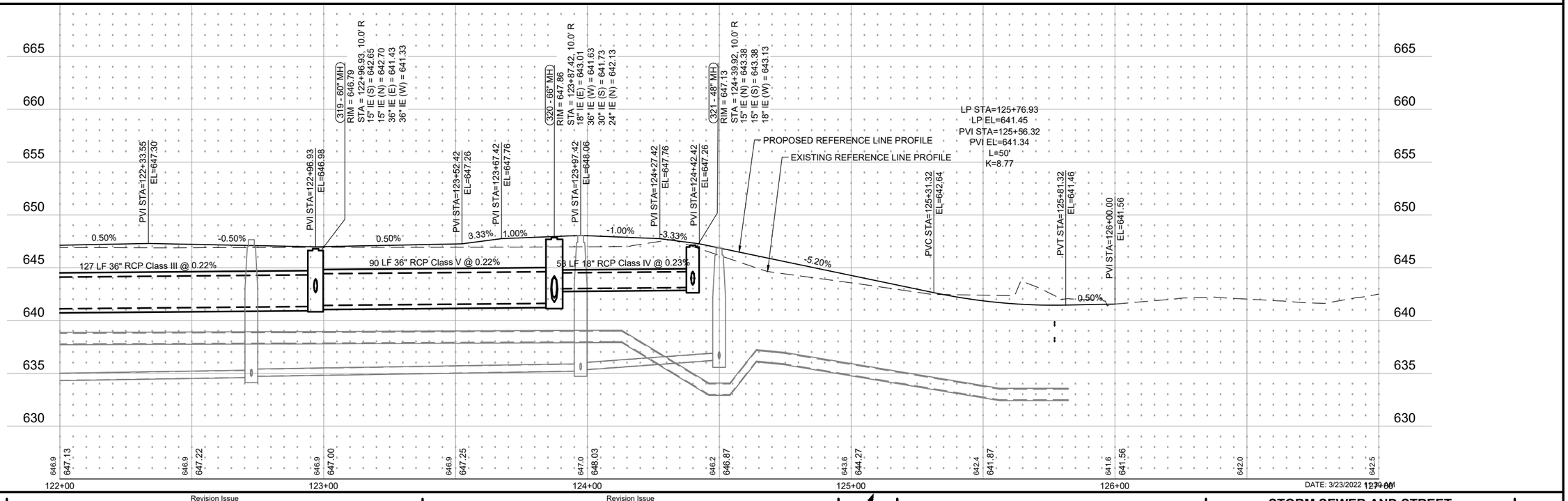
Save: 3/21/2022 3:56 PM cralleigh Plot: 3/23/2022 11:30 AM X:\KOLL\LACRS\163627\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\LACRS163627PP_Street A storm.dwg



BENCHMARK EL.

RIVER BEND ROAD

BENCHMARK EL.



		Rev.#	Revision Issue Description	Date
SEH Project	LACRS163627	1	RELEASED FOR PERMITTING	03.17.2022
Drawn By	SFA			
Designed By	CMR			
Checked By	DAS			

NOT FOR CONSTRUCTION

SEH

RIVER POINT DISTRICT

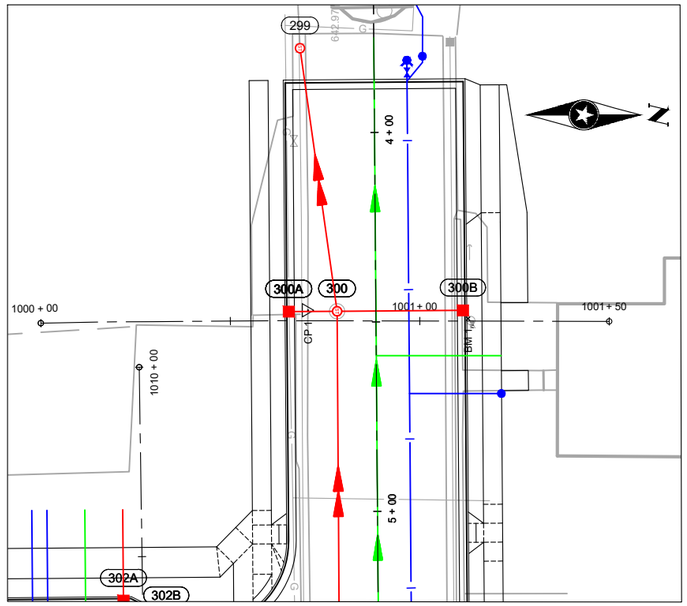
LA CROSSE, WISCONSIN

STORM SEWER AND STREET PLAN & PROFILE RIVER BEND ROAD

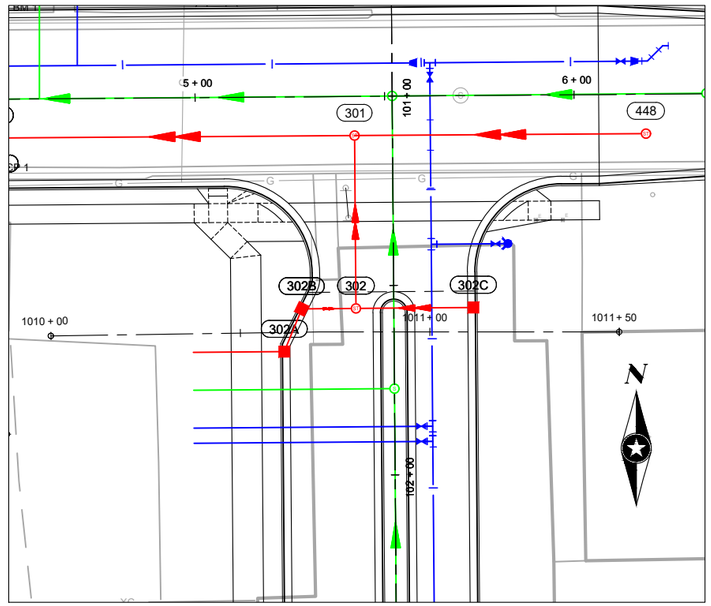
C4.06

of 37

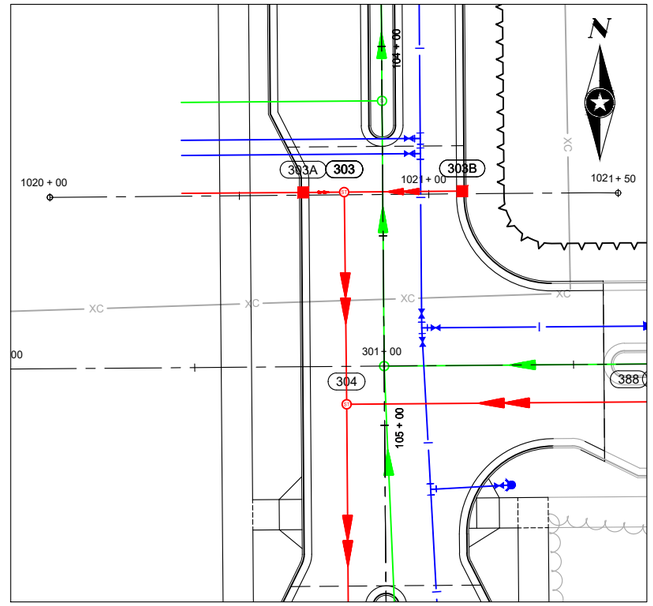
Save: 3/21/2022 3:56 PM cralleigh Plot: 3/23/2022 11:30 AM X:\KOLL\LACRS\163627\5-final-dsgn\51-drawings\10b-Civil\cad\dwg\sheet\LACRS163627PP_Street A storm.dwg



STORM NETWORK 300

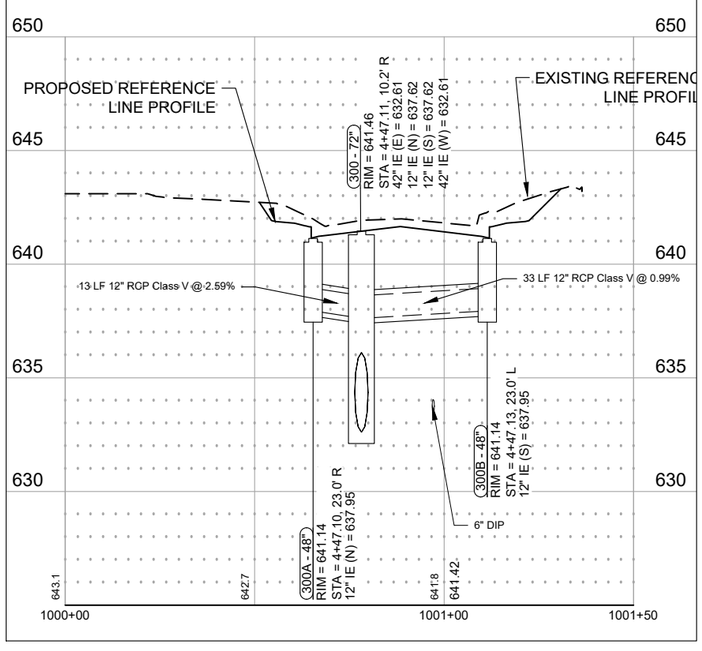


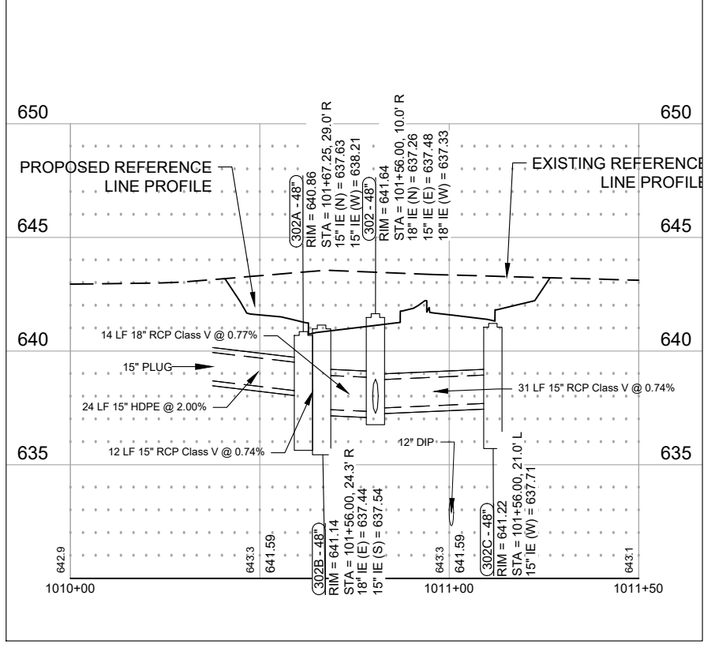
STORM NETWORK 302

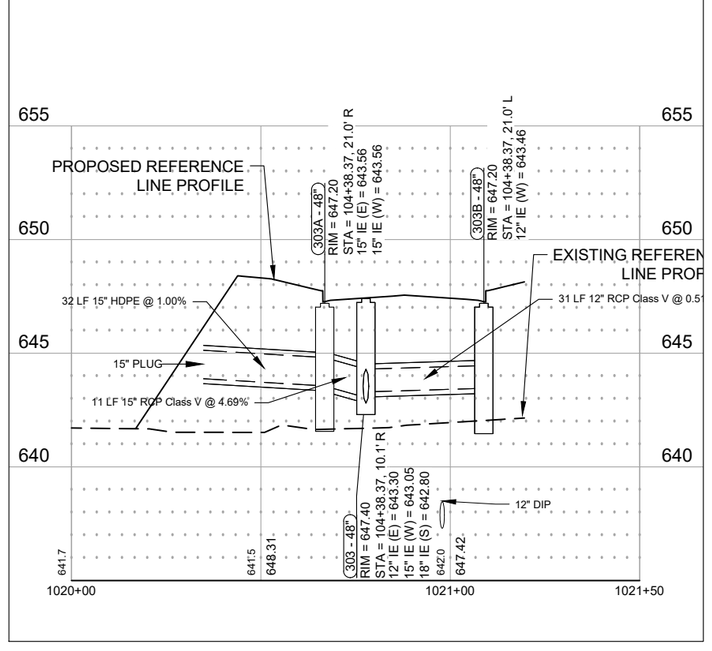


STORM NETWORK 303

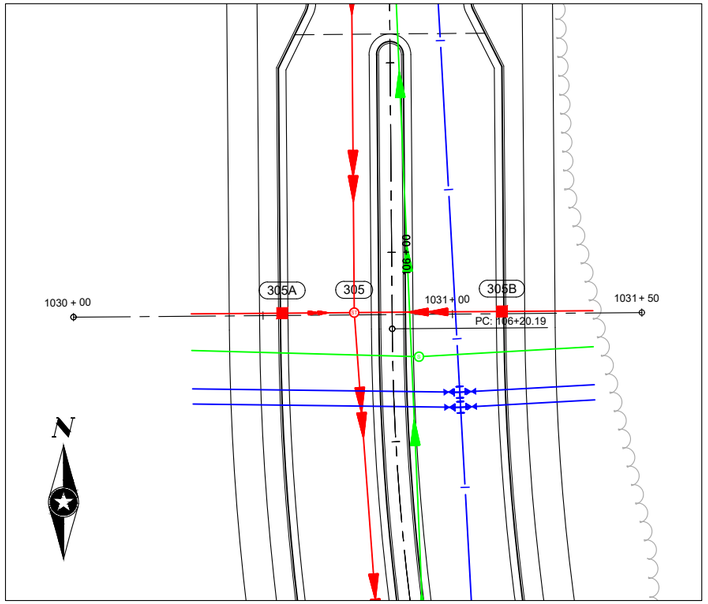
20 0 20 40
scale 10 feet







SEH Project	LACRS163627	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	RIVER POINT DISTRICT	STORM SEWER CROSSING PLAN & PROFILE **RIVER BEND ROAD**
Drawn By	SFA	1	RELEASED FOR PERMITTING	03.17.2022		NOT FOR CONSTRUCTION		LA CROSSE, WISCONSIN	C4.07
Designed By	CMR								of 37
Checked By	DAS								



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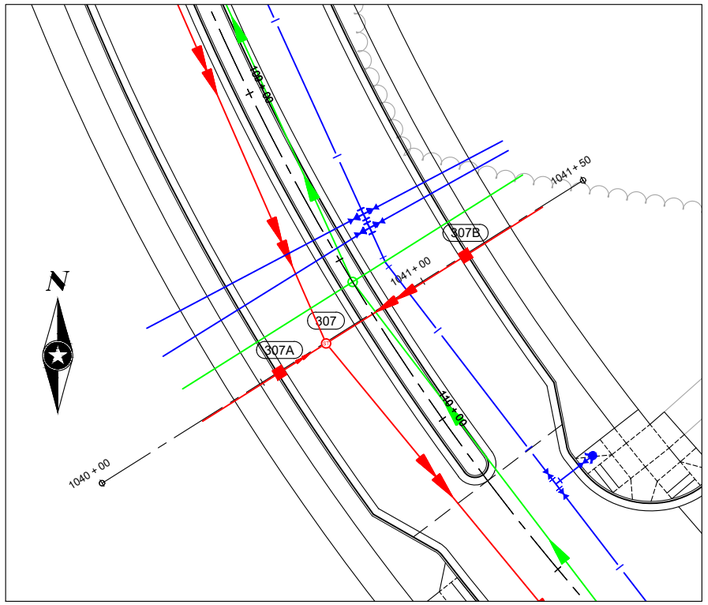
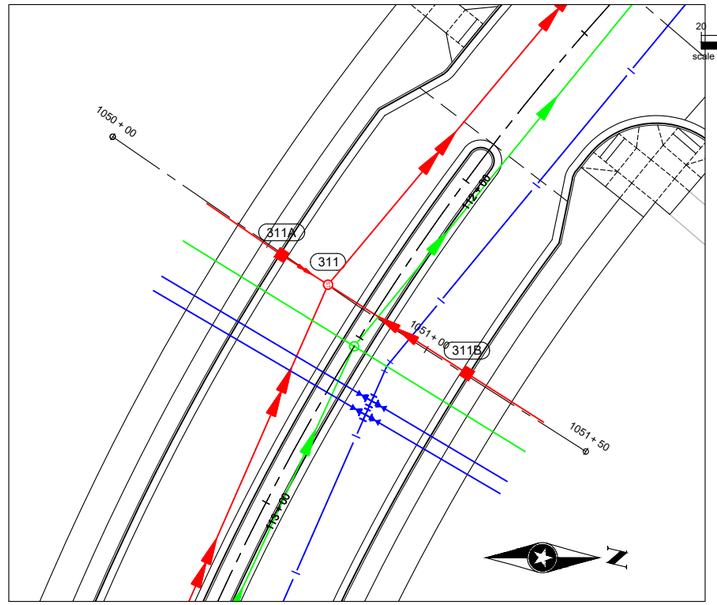
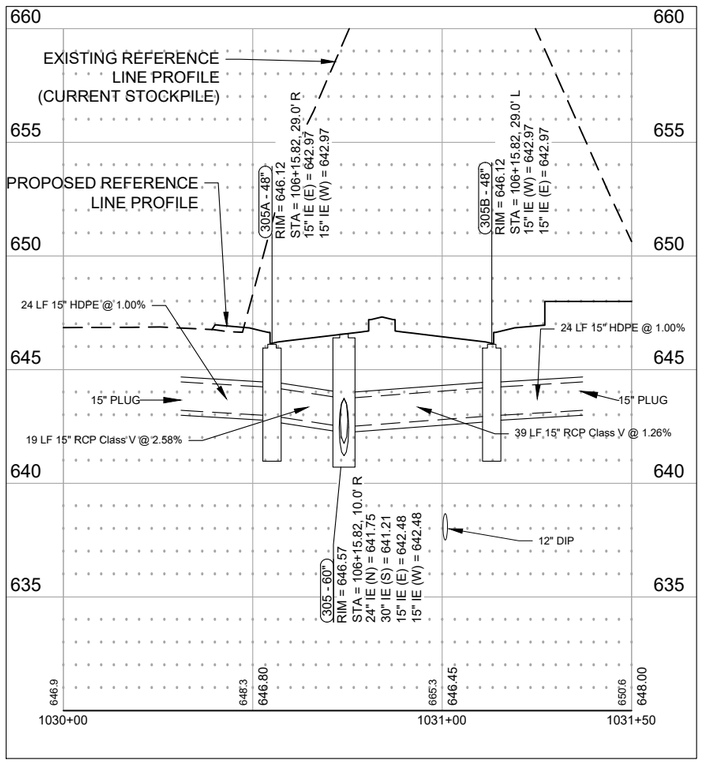
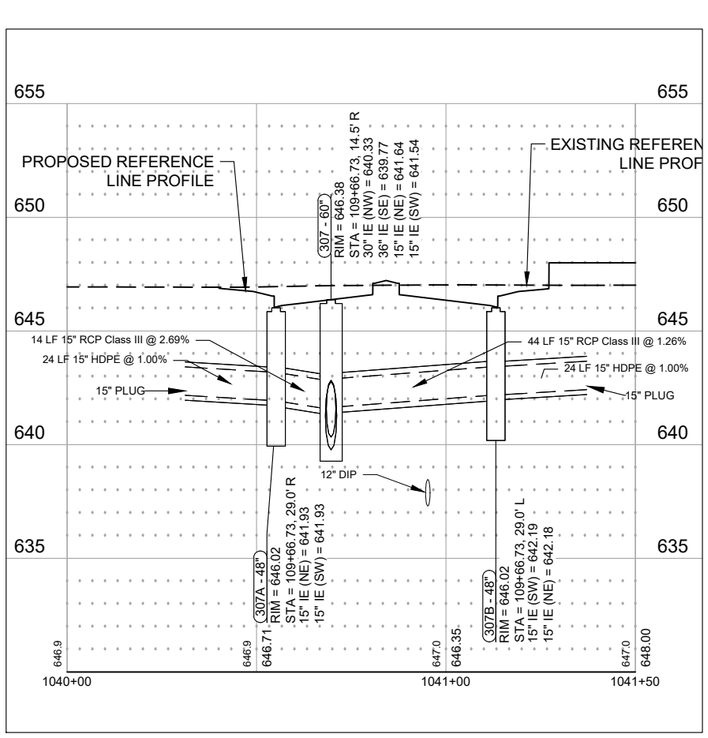


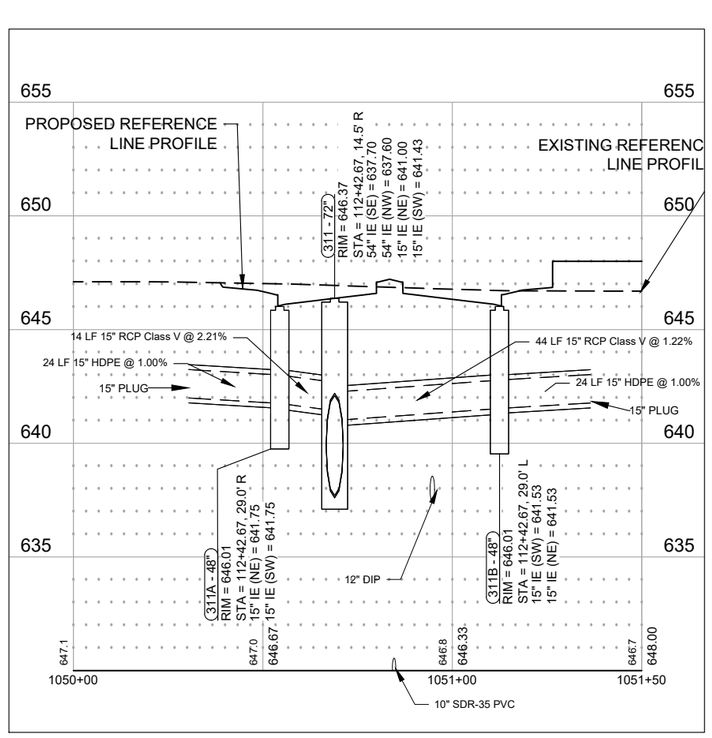
STORM NETWORK 307



STORM NETWORK 311







SEH Project	LACRS163627	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
Drawn By	SFA	1	RELEASED FOR PERMITTING	03.17.2022			
Designed By	CMR						
Checked By	DAS						

NOT FOR CONSTRUCTION

SEH

RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

STORM SEWER CROSSING PLAN & PROFILE RIVER BEND ROAD

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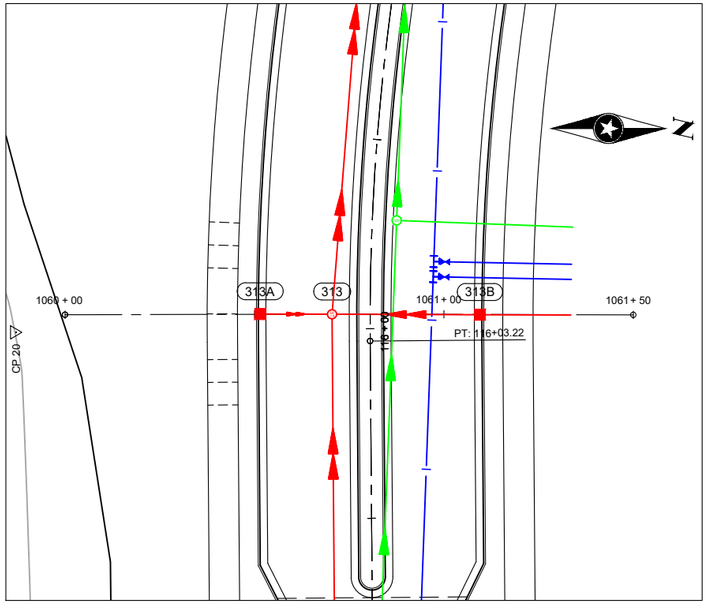

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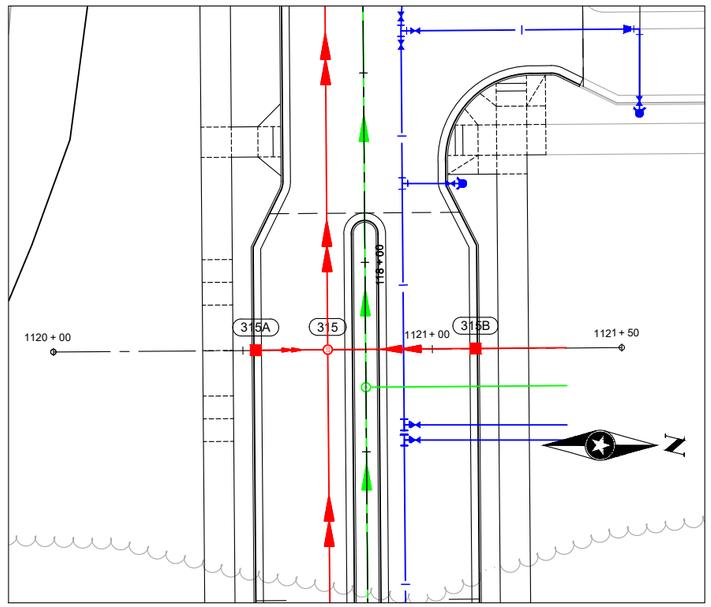
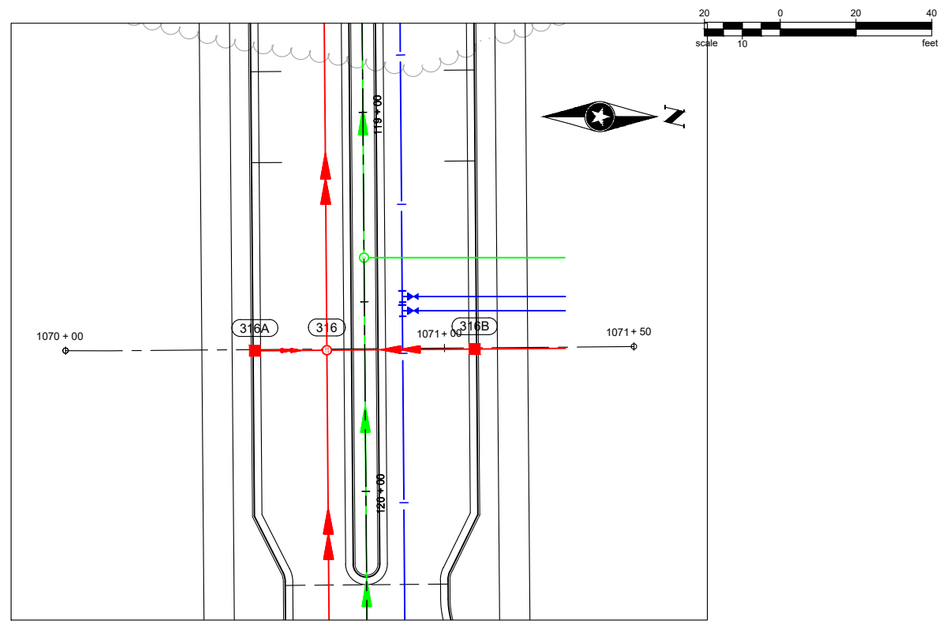


STORM NETWORK 315



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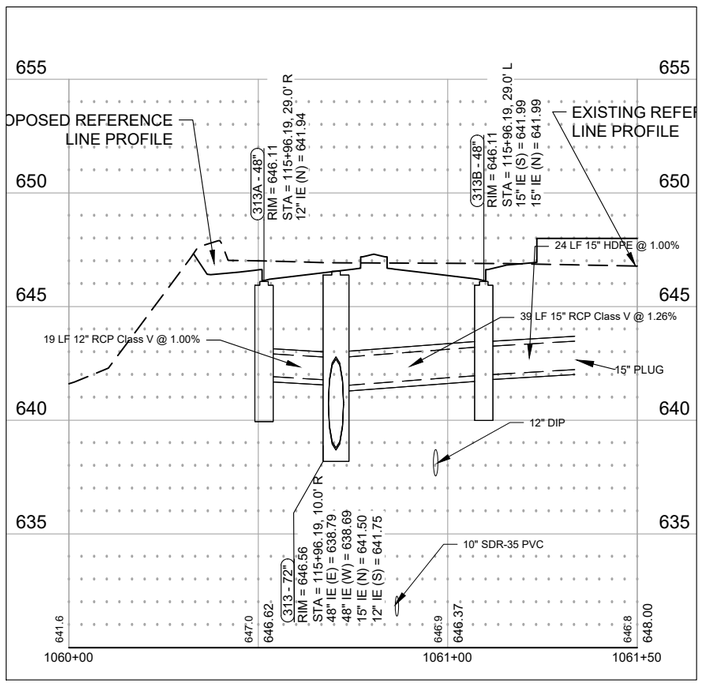

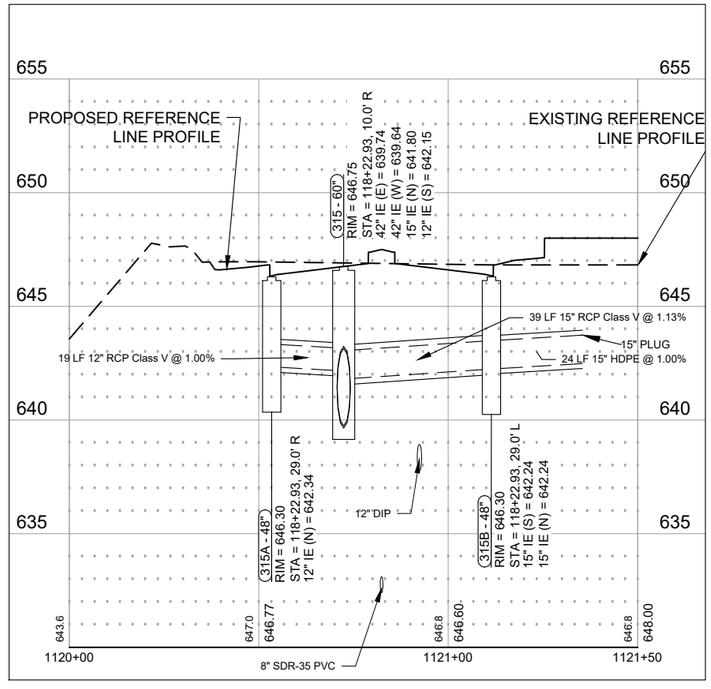

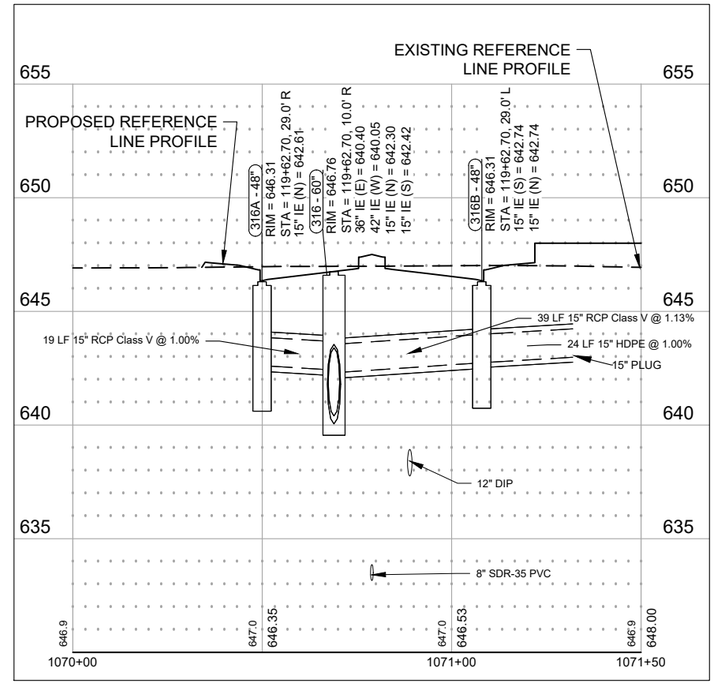

SEH Project	LACRS163627	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	RIVER POINT DISTRICT	STORM SEWER CROSSING PLAN & PROFILE
Drawn By	SFA	1	RELEASED FOR PERMITTING	03.17.2022		NOT FOR CONSTRUCTION		LA CROSSE, WISCONSIN	RIVER BEND ROAD
Designed By	CMR								
Checked By	DAS								

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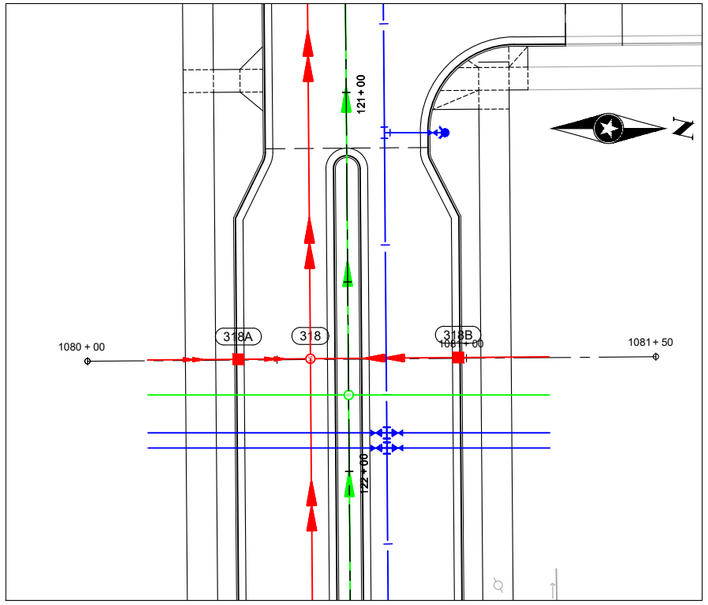

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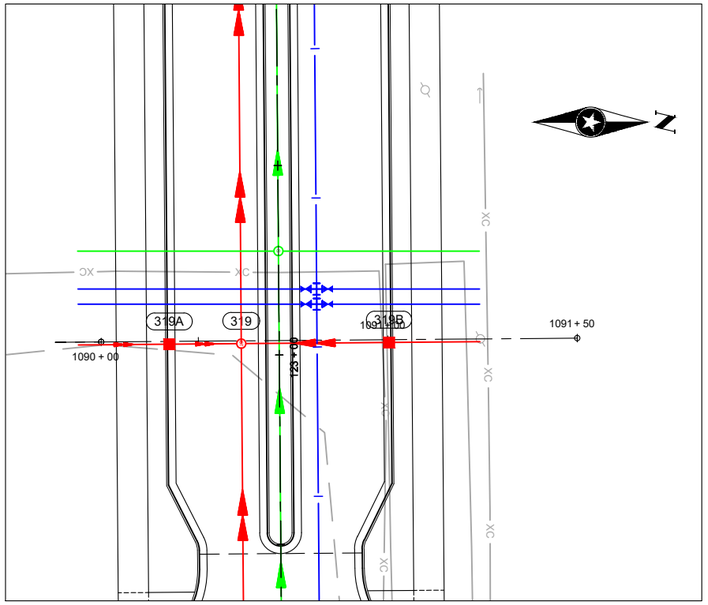

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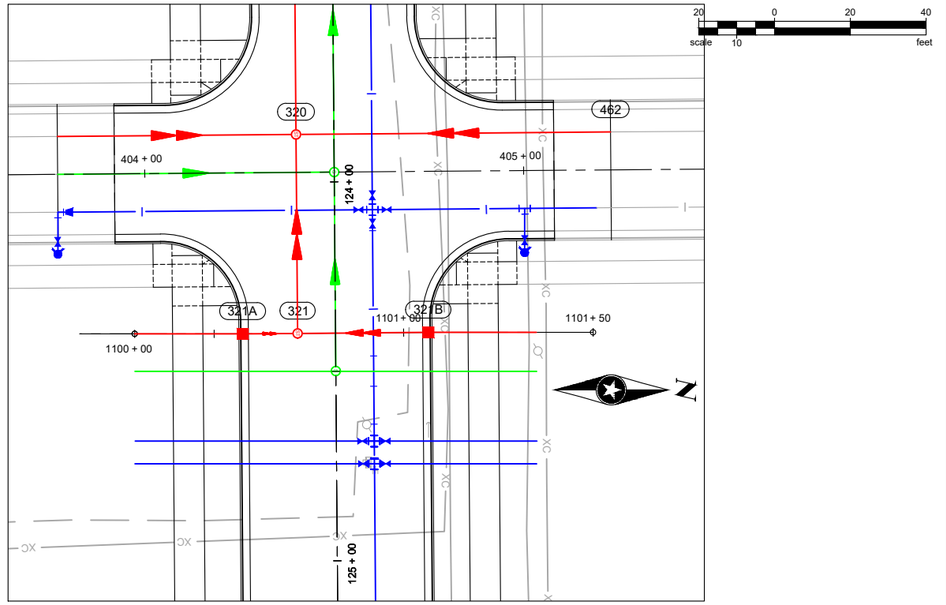

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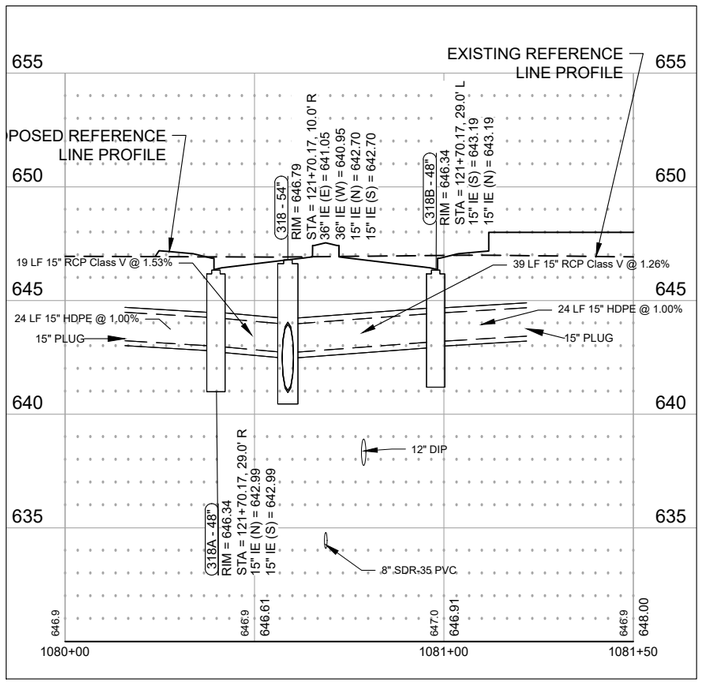
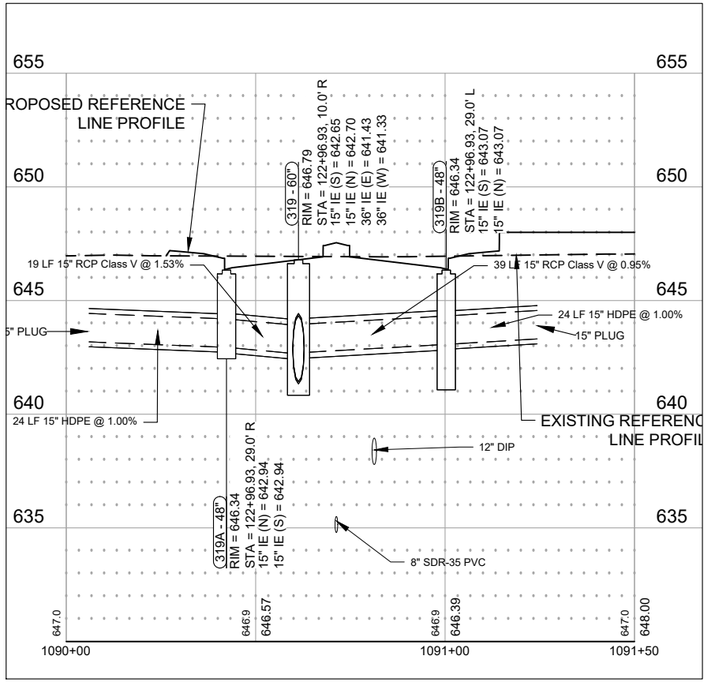
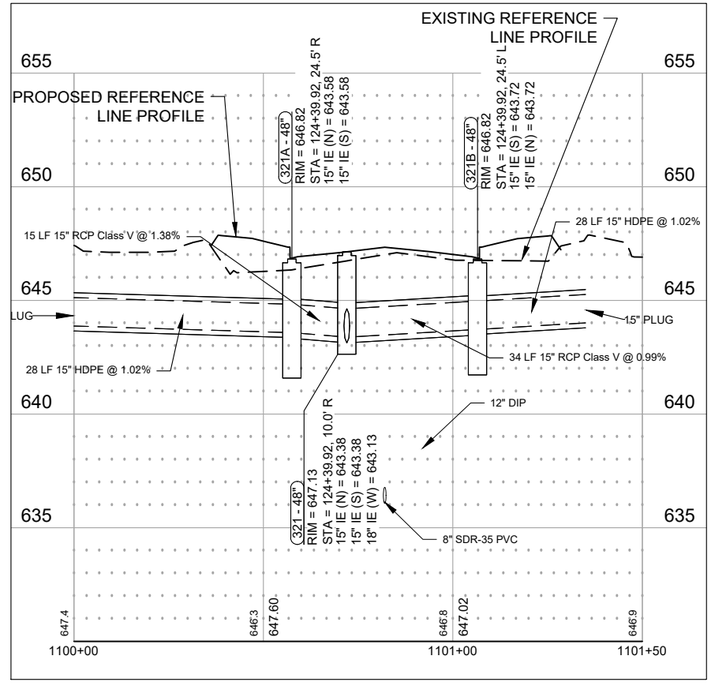
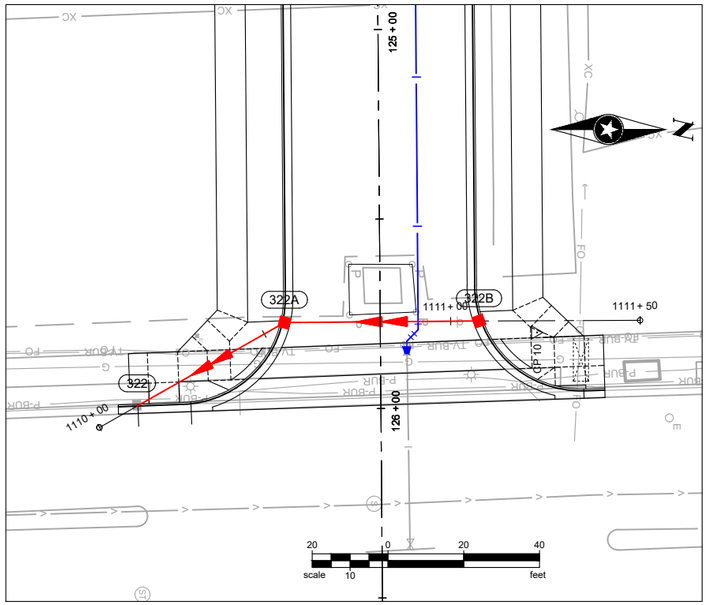






SEH Project	LACRS163627	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	RIVER POINT DISTRICT	STORM SEWER CROSSING PLAN & PROFILE RIVER BEND ROAD
Drawn By	SFA	1	RELEASED FOR PERMITTING	03.17.2022		NOT FOR CONSTRUCTION		LA CROSSE, WISCONSIN	C4.10
Designed By	CMR								of 37
Checked By	DAS								



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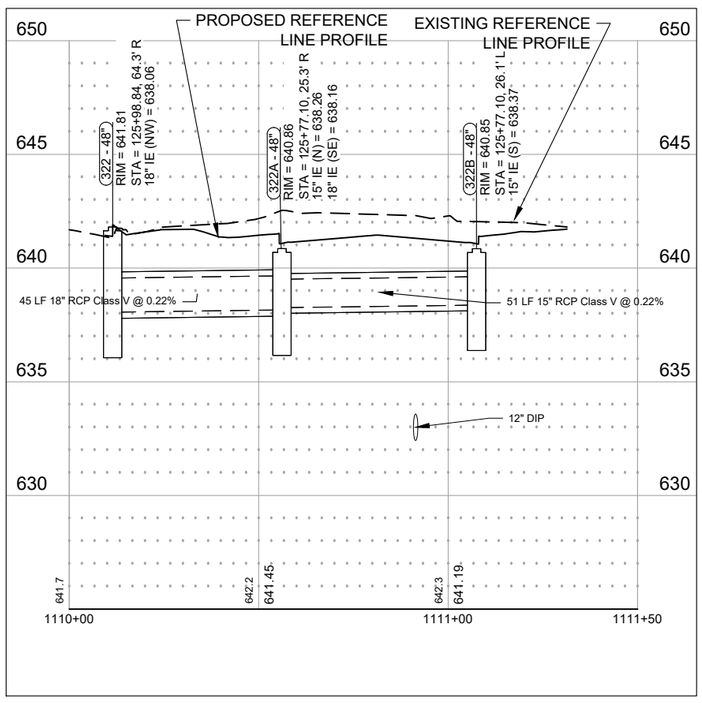
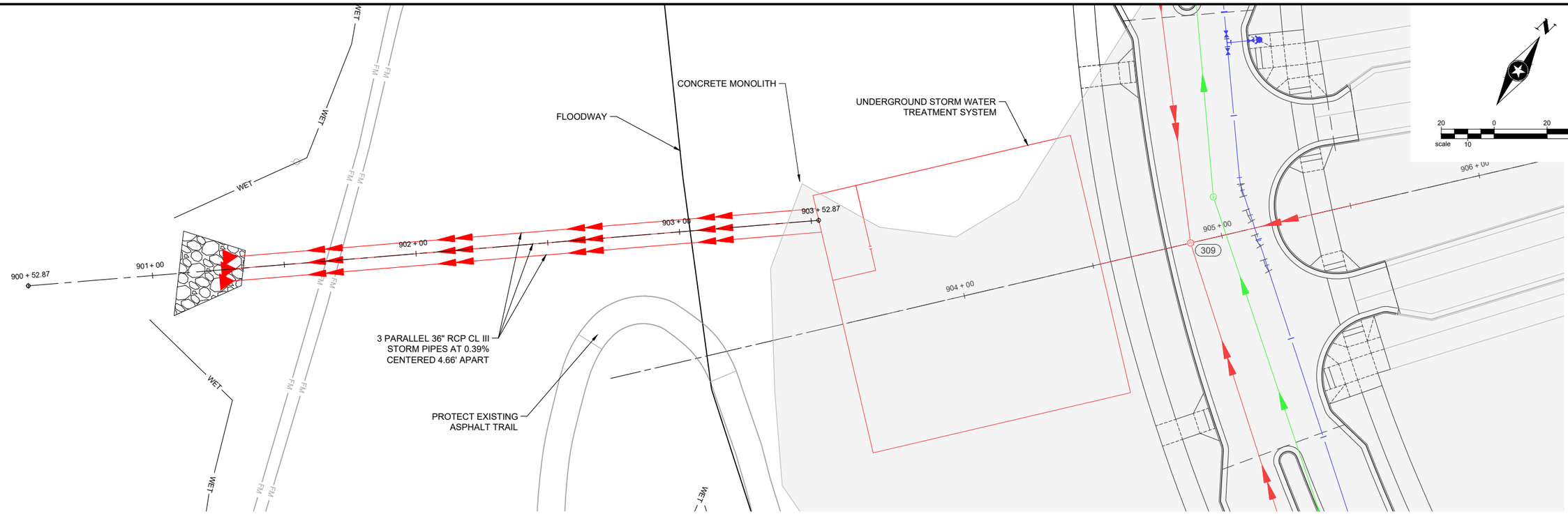


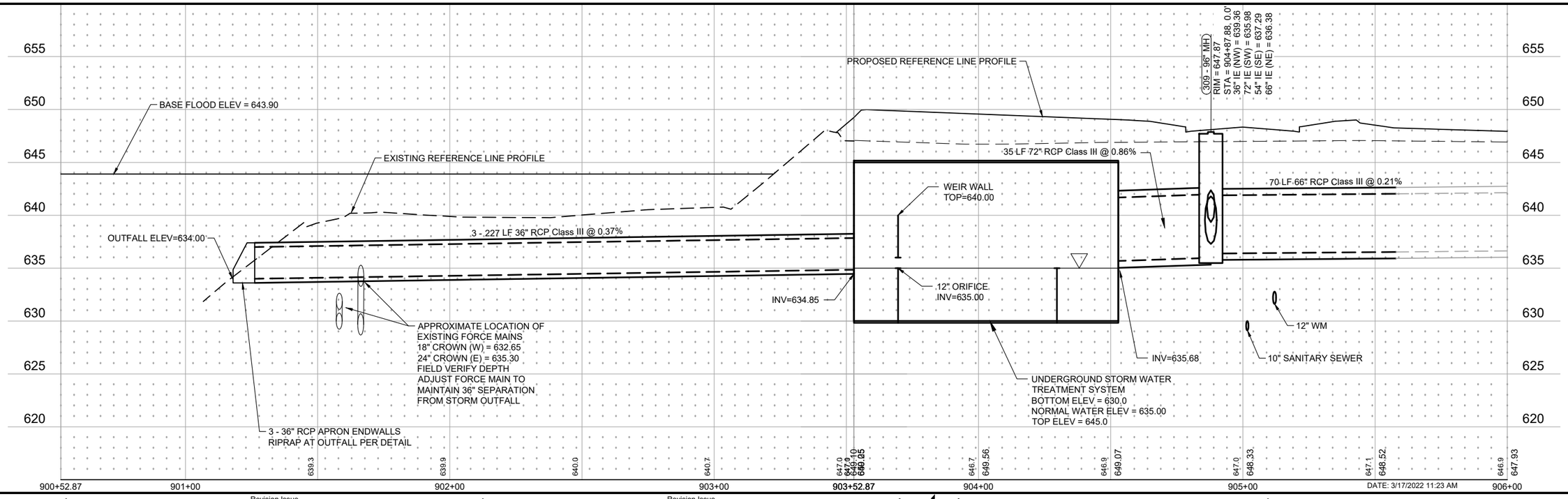
SEH Project	LACRS163627	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	RIVER POINT DISTRICT	STORM SEWER CROSSING PLAN & PROFILE River Bend Road
Drawn By	SFA	1	RELEASED FOR PERMITTING	03.17.2022		NOT FOR CONSTRUCTION		LA CROSSE, WISCONSIN	C4.11
Designed By	CMR								of 37
Checked By	DAS								



BENCHMARK EL.

DEVELOPMENT STORMWATER OUTFALL

BENCHMARK EL.



		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	LACRS163627	1	RELEASED FOR PERMITTING	03.17.2022			
Drawn By	SFA						
Designed By	CMR						
Checked By	DAS						

NOT FOR CONSTRUCTION

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RIVER POINT DISTRICT

LA CROSSE, WISCONSIN

PLAN & PROFILE
STORM SEWER ALIGNMENT

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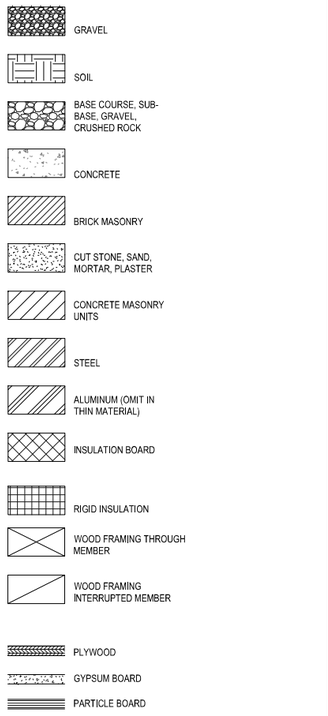
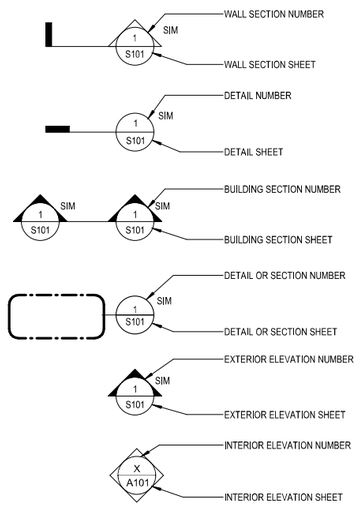
ABBREVIATIONS

&	AND
L	ANGLE
@	AT
℄	CENTERLINE
⌀	DIAMETER/ROUND
(E)	EXISTING
#	POUND/NUMBER
+/-	PLUS OR MINUS
SQ	SQUARE
AB	ANCHOR BOLT
ADD	ADDENDUM
ADDL	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE
ADJA	ADJACENT
AGGR	AGGREGATE
ALUM	ALUMINUM
ALT	ALTER OR ALTERNATE
ANCH	ANCHOR
ANG	ANGLE
ANOD	ANODIZED
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ASPH	ASPHALT (PAVING)
BITUM	BITUMINOUS
BLDG	BUILDING
BLK	BLOCK
BM	BEAM
BOT	BOTTOM
BRG	BEARING
BRKT	BRACKET
BTWN	BETWEEN
C	CHANNEL
CANT	CANTILEVER
CIP	CAST-IN-PLACE
CJ	CONTROL JOINT
CLR	CLEAR
CM	CENTIMETER
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMP	COMPOSITE
CONC	CONCRETE
COND	CONDITION
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE
CORR	CORRIDOR
CRM	CONCRETE RUBBLE MASONRY
CTR	CENTER
d	PENNY (NAILS)
D	DEEP/DEPTH
DBL	DOUBLE
DET	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DL	DEAD LOAD
DN	DOWN
DO	DOOR OPENING
DR	DOOR
DWL	DOWEL
DWG	DRAWING
DWR	DRAWER
E	EAST
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATION
ENCL	ENCLOSURE
EQ	EQUAL
EQPT	EQUIPMENT
EW	EACH WAY
EXP	EXPANSION
EXIST	EXISTING
EXT	EXTERIOR
EXTN	EXTENSION
FD	FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FH	FLAT HEAD
FL	FLOOR
FND	FOUNDATION
FR	FRAME
FRP	FIBERGLASS REINFORCED POLYESTER/PLASTIC
FS	FOOTING STEP
FT	FOOT/FEET
FTG	FOOTING
FV	FIELD VERIFY
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GB	GRADE BEAM
GEN	GENERATOR
GP	GUSSET PLATE
GR	GRADE
H	HEIGHT/HIGH
HC	HOLLOW CORE
HD	HEAD
HEF	HORIZONTAL EACH FACE
HIF	HORIZONTAL INSIDE FACE
HOF	HORIZONTAL OUTSIDE FACE
HORIZ	HORIZONTAL
HR	HOUR
HS	HEADED STUD
HSS	HOLLOW STRUCTURAL SHAPE
ID	INSIDE DIAMETER (DIMENSION)
IN	INCH
INFO	INFORMATION
INSUL	INSULATION
INT	INTERIOR
INV	INVERT
JBE	JOIST BEARING ELEVATION
JGBE	JOIST GIRDER BEARING ELEVATION
JST	JOIST
JT	JOINT
K	KIPS
KG	KILOGRAM
KM	KILOMETER
KO	KNOCK-OUT
KW	KILOWATT
L	LENGTH/LONG
L#	LINTEL
LB	POUND
LF	LINEAL FOOT
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATION
LONG	LONGITUDINAL
LTL	LINTEL
LVR	LOUVER
MAS	MASONRY
MAT'L	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MEMB	MEMBRANE
MFR	MANUFACTURER
MFG	MANUFACTURING
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MM	MILLIMETER
MTL	METAL
N	NORTH
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NS	NO SCALE
NTS	NOT TO SCALE
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER (DIMENSION)
OPNG	OPENING
OPP	OPPOSITE
OVHD	OVERHEAD
PC	PRECAST
PCF	POUNDS PER CUBIC FOOT
PERIM	PERIMETER
PERP	PERPENDICULAR
PL	PLATE
PLYWD	PLYWOOD
PNL	PANEL
PREFAB	PREFABRICATED
PSI	POUNDS PER SQUARE INCH
PSF	POUNDS PER SQUARE FOOT
QT	QUARRY TILE
R	RISER
RAD	RADIUS
REF	REFERENCE/REFER
REINF	REINFORCED/REINFORCING
REQ	REQUIRED
REV	REVISED/REVISION
RH	ROUND HEAD
RLG	RAILING
RM	ROOM
RO	ROUGH OPENING
RTU	ROOF TOP UNIT
S	SOUTH
SCHED	SCHEDULE
SECT	SECTION
SER	STRUCTURAL ENGINEER OF RECORD
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SL	SLOPE
SLNT	SEALANT
SLH	SHORT LEG HORIZONTAL
SLV	SHORT LEG VERTICAL
SM	SQUARE METER
SOG	SLAB ON GRADE
SP	SPACED
SPEC	SPECIFICATIONS
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STRUC	STRUCTURE/STRUCTURAL
SUSP	SUSPEND/SUSPENDED
SYM	SYMMETRICAL
T	TREAD
T&B	TOP AND BOTTOM
TBE	TOP OF BEAM ELEVATION
TD	TRENCH DRAIN
TFE	TOP OF FOOTING ELEVATION
THK	THICK/THICKNESS
THR	THRESHOLD
THRD	THREADED
TOS	TOP OF STEEL
TRANS	TRANSVERSE
TSE	TOP OF SLAB ELEVATION
TWE	TOP OF WALL ELEVATION
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VAR	VARIES
VEF	VERTICAL EACH FACE
VERT	VERTICAL
VIF	VERTICAL INSIDE FACE OR VERIFY IN FIELD
VL#	VENEER LINTEL
VLE	VENEER LEDGE ELEVATION
VLS	VENEER LEDGE STEP
VOF	VERTICAL OUTSIDE FACE
VOL	VOLUME
W	WEST/WIDTH/WIDE
W	WIDE FLANGE (STEEL)
WF	WIDE FLANGE (ALUMINUM)
W/	WITH
W/O	WITHOUT
WP	WATERPROOF
WPM	WATERPROOF MEMBRANE
WS	WATER STOP
WR	WATER RESISTANT
WT	WEIGHT
WWF	WELDED WIRE FABRIC

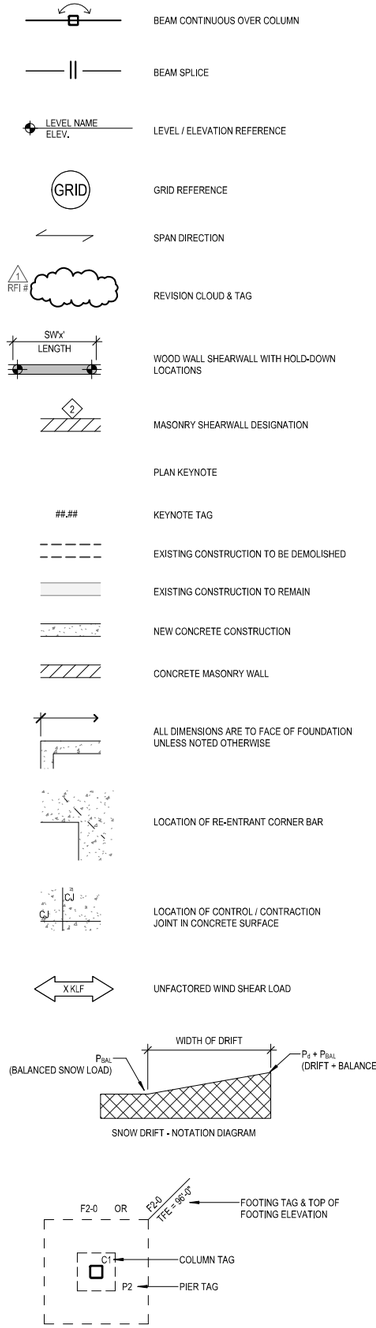
MATERIAL SYMBOLS



CALLOUT SYMBOLS



ANNOTATION SYMBOLS



STRUCTURAL SHEET INDEX

SEH Project	LACRS 163627
Drawn By	PAM
Designed By	MLH
Checked By	MLH

	Revision Issue Description	
#1	Released For Permitting	03/17/2022

NOT FOR CONSTRUCTION

SEH

DATE _____ LICENSE NO._____

RIVER POINT DISTRICT
UNDERGROUND RESERVOIR
LA CROSSE, WISCONSIN

GENERAL STRUCTURAL NOTES, ABBREVIATIONS AND SYMBOLS

S001

GENERAL STRUCTURAL NOTES

1. These notes do not replace the specifications but are to be read in conjunction with them. Any discrepancies or conflicts between the two shall be brought to the attention of the Structural Engineer of Record (SER) for resolution. In these Notes and the Specifications, the word "shall" means "has a duty to."
2. These drawings are for Lacrosse River Point District (SEH project number (LACRS-163627) and no other use is authorized. Contact SER, Mike Hemstad at SEH 651-470-9287.

GOVERNING BUILDING CODE:

2018 Wisconsin Commercial Building Code
2015 International Building Code as adopted and amended by the state building code

DESIGN CODES AND STANDARDS:

ACI Manual of Concrete Practice
ACI 318, 301 Building Code Requirements & Specifications for Structural Concrete
ACI 350 Environmental Engineering Concrete Structures

DESIGN LOADS PER ASCE 7-16

Risk category II

1. Live load:
   - Roof live load: 50 PSF
2. Dead load:
   - Soil dead load: 420 PSF
3. Snow loads:
   - Ground snow load: 40 PSF (non-concurrent with roof live load)
   - Importance factor: 1.00
4. Rain Load Intensity: N/A
5. Wind loads: N/A
6. Seismic loads: N/A
   - Site class: D
   - Ss: 0.051 g
   - S_1: 0.039 g
   - Fa: 1.6
   - Fv: 2.4
   - Sds: 0.055 g
   - Sd1: 0.063 g
   - Ie: 1.0
   - Seismic design category: A
7. Soil criteria:
   - Allowable soil bearing pressure: 3,000 PSF
   - Design water elevation (Q100): 646.00'
   - Frost depth: 65 inches (unheated structure)
   - Anticipated max differential settlement: 1/2 inch
   - Anticipated max total settlement: 1 inch

   Sand backfill:
   - Wet unit weight: 120 PCF
   - Angle of Internal Friction: 32 degrees
   - At-rest pressure: 52 PCF (unsaturated), 90 PCF (saturated)
   - Passive pressure: 300 PCF
   - Sliding coefficient: 0.35
   - Subgrade modulus: 50 PCI

DESIGN / CONSTRUCTION CRITERIA

1. The contractor shall verify dimensions and conditions before construction and notify the engineer of any discrepancies, inconsistencies, or difficulties affecting the work before proceeding.
2. All material, workmanship, and details shall be in accordance with typical competent construction practices, current manufacturer's recommendations, and all applicable codes and government regulations.
3. The contractor shall coordinate all disciplines, verifying size and location of all openings, whether shown on structural drawings or not, as called for on process, architectural, mechanical, electrical or other drawings. All conflicts, inconsistencies, or other difficulties affecting structural work shall be called to the architect and engineer's attention for direction before proceeding.
4. Equipment and structural anchor rod sizes, types, embedment, and patterns shall be verified with the manufacturer or fabricator. All anchor patterns shall be templated to ensure accuracy of placement.
5. The contractor shall supply all necessary temporary bracing, shoring, guying, or other means to avoid excessive stresses and to hold structural elements in place during construction.
6. Job site safety (including excavations) is the sole responsibility of the general contractor and their
7. subcontractors.
8. The engineer is not responsible for construction means, methods, techniques or practices. Where drawings and details imply this, they are provided to show final construction. If contractor desires to use different means and methods than implied by these drawings, submit similar details for review.
9. Standard or typical structural details are intended to illustrate design concepts and to specify material and required physical dimensions matching or similar to the referenced locations in the drawing set. Standard details apply whether or not they are cut on the drawings.
10. There is no provision for future vertical or horizontal expansion in the design.
11. Unless specifically noted otherwise, building sections may not illustrate all dowels, keyways, or waterstops required by design. All base slab or footing to wall joints shall have vertical dowels crossing the joint. All elevated slabs (including base slabs above the lowest base slab elevation) to tank or foundation walls shall have horizontal dowels crossing the joint. Refer to typical details in the drawings for design intent.

FOUNDATIONS

1. CAUTION: Existing underground utilities may exist anywhere on the site. Notify owner and Digger's hotline (800) 242-8511 (Wisconsin) prior to disturbing any grade or excavation.
2. Material Definitions and Gradations:
   a. Non-frost-susceptible fill
      - 100% passing 1" sieve
      - < 50% passing #40 sieve
      - < 6% passing #200 sieve
      - < 2% organic content
   b. Aggregate Base
      - 100% passing 1" sieve
      - 70-100% passing 3/4" sieve
      - 45-90% passing 3/8" sieve
      - 35-80% passing #4 sieve
      - 20-65% passing #10 sieve
      - 10-35% passing #40 sieve
      - 3-10% passing #200 sieve
      - < 2% organic content
      - Large aggregates through #4 have minimum 25% fractured faces or crushed (per gradation)
   c. Aggregate Filter/Base
      - 100% passing 1" sieve
      - 85-100% passing 3/4" sieve
      - 45-90% passing 3/8" sieve
      - 20-60% passing #4 sieve
      - 0-10% passing #10 sieve
      - 0-6% passing #200 sieve
      - < 2% organic content
      - Large aggregates through #4 have minimum 75% fractured faces or crushed
   d. Granular Structural Backfill
      - 100% passing 1" sieve
      - 0-65% passing #10 sieve
      - 0-65% passing #40 sieve
      - 0-10% passing #200 sieve
      - < 2% organic content
3. Structural foundations consist of wall and spread footings established on material capable of safely supporting 3,000 PSF as recommended by TESTING COMPANY in report REPORT# dated DATE. The structural engineer is not responsible for the accuracy or content of the subsurface soil conditions described in the specifications, test borings, or geotechnical report. A licensed geotechnical engineer shall be present during construction to test, inspect and verify all assumed soil conditions as required.

FOUNDATIONS (CONT)

4. Basement and subgrade tank walls shall be backfilled with Granular Structural Backfill or Non-Frost Susceptible Fill (as defined above) within 2 feet of the wall. Tank walls are designed for an exterior lateral load of 52 PCF equivalent fluid pressure, at-rest, above groundwater (taken as elevation 642.0 due to drain tiles). Tank walls are designed for an equivalent fluid pressure of 90 PCF below elevation 642.0. Walls are designed for an interior lateral load of 63 pcf. Tank walls are not designed to resist any lateral load until the wall concrete has achieved its full design strength, 14 days minimum, and the top slab is in place and has achieved 75 percent of its design strength.
5. Away from walls, place fill in 8 inch loose lifts and compact to 98 percent Standard Proctor beneath foundations, 95 percent otherwise. Within 8 feet of walls, hand compact to 95 percent Standard Proctor.
6. When placing compacted fill adjacent to foundation walls and piers, place backfill at equal rates on both sides to prevent overturning or structural damage.
7. Contractor shall provide for dewatering at excavations from either surface water or seepage.
8. Moisture content in soils beneath building locations should not be allowed to vary after footing excavations and after grading for slabs on grade are completed to a degree that would de-stabilize the compacted soil. If subgrade materials become desiccated or softened by water or other conditions, remove and replace with engineered fill as recommended
by the geotechnical engineer. Do not place concrete on frozen ground, nor allow ground beneath foundations to freeze. All foundation work shall be placed on substrate approved and tested by geotechnical engineer of record.
9. Do not place backfill on frozen subgrade. Do not place frozen backfill.
10. Base slab shall be constructed on a subgrade of native material compacted to at least 98 percent of its maximum dry density (standard proctor), and 6 inches of Aggregate Base or Aggregate Filter/Base (as defined above) or WisDOT base aggregate course (dense) below the slab compacted to 100 percent standard proctor density unless noted otherwise in geotechnical report. In wet or potentially wet situations, use Aggregate Filter/Base (as defined above).
11. Grading: where not specifically shown on the plans, it is intended that all excavated and backfilled areas shall be graded to slope away from buildings and other structures.

CONCRETE

1. An independent testing agency shall cast 4 six inch test cylinders or an equivalent number of four inch cylinders for each 75 cubic yards of each concrete mix placed or for each day's operation, whichever is the lesser amount. The testing agency shall cast, cure, and test the specimens in accordance with ASTM C31 and ASTM C39. Air, temperature, and slump shall be tested at minimum for the first truck and every third truck thereafter (1st, 4th, 7th, etc.) or when a change in properties is noticed, at the final location (test after pump, not at truck).
2. The contractor shall be responsible for the design of form work to comply with the dimensions indicated on the plans, maintaining proper alignment during concrete pouring operations. Special care shall be taken with formwork for self-consolidating concrete.
3. All concrete except as noted in the following paragraphs shall meet the following requirements:
   - Compressive Strength: f'c = 6,000 PSI min at 28 days
   - Water / (cement + pozzolan) ratio: 0.45 max (0.40 max if exposed to sulfates)
4. Concrete used in walls and columns shall meet the following requirements:
   - Compressive Strength: f'c = 4,000 PSI min at 28 days
   - Water / (cement + pozzolan) ratio: 0.45 max
5. Grout fill used in hydraulic structures shall meet the following requirements:
   - Compressive Strength: f'c = 3,000 PSI min at 28 days
   - Water / (cement + pozzolan) ratio: 0.45 max
6. Concrete and grout exposed to frost (including foundation walls) shall be air entrained 6% +/- 1%.
7. Slump shall be 4 inches +/- 1 inch without water reducing admixtures. With water reducing admixtures, concrete mix design shall state design slump and field tests shall be +/- 1 inch. Slump is used primarily as a measure of concrete consistency, truck to truck. If slump is outside these ranges, water content (water:cementitious ratio) shall be checked against allowable; and concrete rejected, accepted, or adjusted on that basis.
8. Water-reducing admixtures conforming to ASTM C494 added to the mix at manufacturer's dosage rates may be used for improved workability.
9. Do not add water to concrete at the jobsite without written approval of the SER, and in no case in excess of the water in the approved mix design.
10. No chloride containing admixtures are allowed.
11. All concrete is normal weight unless specifically noted otherwise.
12. Cement shall be Portland cement type 1 or Portland Limestone Cement type 1L conforming to ASTM C150. Up to 30% cement may be replaced with fly ash and up to 50% with GGBFS (50% combined max.). Aggregate for normal weight concrete shall conform to ASTM C33. Water is to be potable or demonstrated to have no harmful effects on concrete.
Fly ash shall be demonstrated by test to contain minimum 18 percent CAO. When fly ash is used in concrete to be air entrained, air entraining shall be adjusted as required for LOI per recent experience of ready mix supplier.
13. Measured from the time water and cement are batched together, no more than 90 minutes shall elapse until concrete is placed. This time shall be reduced by two minutes for every degree that concrete temperature exceeds 75 degrees Fahrenheit. These criteria may be relaxed by the use of set-controlling admixtures.
14. Protect concrete in accordance with ACI 305 and ACI 306 for hot weather concreting and cold weather concreting respectively. In cold weather, heat is required if outside temperature falls below 30 degrees any time during first three days. Reinforcing shall be 40 degrees or warmer at time of concrete placement. Concrete temperature shall be recorded every morning and shall be kept above 40 degrees in all locations for 7 days. Concrete shall not be exposed to combustion products (use electric heat, ducted heater or ground thaw). Keep protection in place minimum 24 hours after cessation of heating to provide gradual cool-down.
15. When air temperature is above 85 degrees, provide mist, shading, windscreens and other protection as required for 12 hours after placing.
16. Concrete being placed shall be protected from rain. If rain falls on concrete before it has set, or within 3 hours of placement in any event, contractor shall bear cost of testing to prove concrete is unaffected, and shall remove and replace affected concrete to the satisfaction of the engineer.
17. Wet cure (poly and burlap or proprietary blankets kept moist daily) for a minimum of 7 days; sides of footings may be buried after 24 hours. Add one day of cure for fly ash in excess of 15 percent or GGBFS in excess of 10 percent of cementitious. Contractor is responsible for staining caused by burlap in visible areas. Spray-on curing compounds shall not be used as a substitute for wet curing without written permission of the SER except as follows. Liquid-containing structures must use a wet cure on all surfaces. Spray-on curing compounds may be substituted for wet curing in areas of non-liquid-holding structures that are not visible in the final condition and in liquid holding structures in winter conditions where water curing may be hazardous or difficult. When spray-on curing compounds are used, they should be applied in two layers perpendicular to each other and according to manufacturer's instructions.
18. Cementitious grout shall be non-shrink and non-metallic grout. Place according to manufacturer's recommendations and trim neatly where visible.
19. Leak testing is not required for this structure. However, any honeycomb greater than ½" deep shall be patched, and any cracks greater than 1/32 inch shall be treated with crystalline waterproofing (such as Xypex), topically applied per manufacturer's recommendations.
20. Coordinate with other trades for sleeves, conduit, electrical grounding wires, inserts, underground utilities, and other items to be embedded into concrete and verify that they are properly installed and supported before casting concrete. Holes through slab or wall shall leave minimum 1 inch clear to reinforcing; shift reinforcing as required. Placement of such items shall be coordinated with reinforcing placement where they would otherwise displace each other. For instance, in areas with a single mat of reinforcing, east-west conduit should be placed with east-west reinforcing and north-south conduit is placed with north-south reinforcing.
21. Embedments shall not significantly impair the strength of the structure and shall not reduce fire protection. In no case shall embedments violate the required concrete cover. Conduit and pipes, with their fittings, embedded in concrete shall not be larger in outside dimension than 1/3 the overall thickness of slab, wall, or beam in which they are embedded and shall not be spaced closer than three diameters on center. Conduit and pipes placed within 2 feet below bottom of slabs and footings shall not be spaced closer than three diameters on center and shall be encased in CLSM or concrete vibrated to flow around conduit.
22. No uncoated aluminum items shall be embedded in any concrete. All aluminum surfaces in direct contact with concrete shall receive one coat of 8-12 mil dry film thickness bitumastic.
23. Unless shown on drawings, concrete shall be placed without construction joints except where specifically shown on shop drawings approved by the engineer. The contractor shall submit shop drawings showing additional or alternate construction joint locations to the engineer for approval.
24. Bevel all exposed corners of concrete 3/4"x3/4".
25. Verify size and location of all equipment bases, housekeeping pads, and openings.
26. All concrete to be trowel finished shall be tested for air content, whether or not it is purposely air entrained. If concrete contains more than 2 percent entrained air, delay start of finishing to preclude weakened air-rich plane just below surface.
27. Unless specifically noted otherwise, building sections may not illustrate all dowels, keyways, or waterstops required by design. All base slab or footing to wall joints shall have vertical dowels crossing the joint. All elevated slabs (including base slabs above the lowest base slab elevation) to tank or foundation walls shall have horizontal dowels crossing the joint. Slabs on grade may either be independent (with expansion joint) or doweled in; provide dowels where slabs on grade are shown to bear on walls in sections. Refer to typical details in the drawings for design intent.

JOINTS IN CONCRETE STRUCTURES

1. Because of the effects of concrete consolidation, workmanship, detailing, cure, temperature, aggregate size, and other factors; Contractor is responsible for cracking in base slabs and walls of liquid-holding structures, and shall repair any leaking cracks by sealing, injecting, or otherwise filling them. Where sealing is judged necessary by either Contractor or Engineer, Contractor shall submit material and description of sealing to be used for review by Engineer. Note that crystalline waterproofing will heal tight cracks (less than approximately 1/64") over time in warm temperatures, but wide cracks or leak tests attempted in cold temperatures will require additional measures. Any wall which is or may be subject to external groundwater is considered liquid holding.
2. Contractor is encouraged to use well-graded aggregate larger than ¾"; fiber reinforcing; shrinkage reducing admixtures; crystalline waterproofing; extended moist cure; and other means to reduce shrinkage. If used, crystalline waterproofing shall be used at the manufacturer's recommended dosage.
3. Concrete walls in liquid-holding structures:
   a. Concrete walls in liquid-holding structures shall have waterstopped construction joints at a maximum spacing of 20 feet for concrete proportioned according to these Notes and the specification. Full horizontal reinforcing shall extend through these joints and be developed each side of joint. At least 36 hours shall pass between adjacent wall pours in liquid-holding structures. Joint spacing in walls shall be measured at the inside surface between corners in a straight line or along a curve, but not around corners. For example, an 18' square box is not required to have wall joints, but a 22' square box is required to have one in each wall. For this purpose, a T-intersection counts as a corner at the intersecting wall but not at the continuing wall.
   b. Alternatively, a low-shrinkage mix may be proposed, and shrinkage measured for the specific concrete mix to be used in the walls, and the maximum construction joint spacing determined by the equation: Spacing = 2.0 / (sh + 0.03), where "sh" is the shrinkage in percent from the 35-day shrinkage test described below; and the spacing is limited to 50 feet. Concrete placed in the walls shall have the same or lesser water content as that used in the test. If a Shrinkage Reducing Admixture or Shrinkage Compensating Admixture is used, it shall be used at the manufacturer's recommended dosage. Measurement of shrinkage shall be according to ASTM C157, except that the specimens should be cured in a lime saturated bath for 7 days rather than 28 days. Shrinkage shall be reported based on measurements at the end of the 7-day moist cure, and at 28 days after cessation of curing. If Shrinkage Compensating Admixture is used, initial measurement shall be 12 hours after placing rather than 7 days; full 7-day lime bath cure and 28-day drying shall still be followed.
4. Concrete base slabs in liquid-holding structures:
   a. Concrete base slabs in liquid-holding structures shall have waterstopped construction joints at a maximum spacing of 40 feet in each direction, with full reinforcing through the joint and developed each side of each joint. At least 36 hours shall pass between adjacent slab pours in liquid-holding structures.
   b. Alternatively, shrinkage may be measured as specified above for the specific concrete mix to be used in the base slab, and the maximum spacing determined by the equation: Spacing = 4.0 / (sh + 0.03), where "sh" is the shrinkage in percent from the 35-day shrinkage test described above and the spacing is limited to 100 feet. Concrete placed in the base slab shall have the same or lesser water content as that used in the test. If a Shrinkage Reducing Admixture is used, it shall be used at the manufacturer's recommended dosage.

WATERSTOPS

1. Waterstops in new construction shall be 6-inch PVC, center bulb, ribbed, unless specifically noted otherwise.
2. At splices, miter all intersecting connections at 45 degrees and use a manufacturer approved heating iron to make full contact butt joints.
3. For construction joints at hardened (existing) concrete, hydrophilic waterstops may be proposed by the contractor in lieu of adhered split-T PVC waterstop. Such material shall be selected considering water head to be resisted, concrete cover in all directions, reinforcing present through the joint, and whether waterstop is continually immersed. Contractor's proposal shall include waterstop information and contact information for a technical representative of the waterstop supplier along with the representative's written recommendation of the type of waterstop to be used. Hydrophilic waterstop shall not be used unless this process is followed.

REINFORCING STEEL

1. All concrete is reinforced concrete unless specifically called out as unreinforced. Reinforce all concrete not otherwise shown with same steel as in similar sections or areas. Any details not shown shall be detailed per ACI 315 and meet requirements of ACI 318, current editions.
2. All reinforcing steel shall conform to the requirements of ASTM A615 grade 60 steel. Reinforcing steel shall not be welded without authorization of the SER, and if welded shall be A706 grade 60 steel. Reinforcing to be welded shall only be welded to structural steel, not other reinforcing, unless specifically noted on the drawings. Welded plain wire fabric shall be supplied in sheets, not rolls, and conform to the requirements of ASTM A185.
3. Clear minimum cover of concrete over reinforcing steel shall be as follows unless specifically noted otherwise:
   - 3" Concrete placed against earth
   - 3" Top mat of base slabs to receive waterstops at wall joint
   - 2" All other concrete
4. All reinforcing shall be tied to crossing reinforcing on at least every other bar (every bar at perimeter), and sufficiently to resist displacement from workers and placement of concrete.
5. All footing dowels shall be accurately positioned and wired in place before casting footing concrete. Where not noted, provide and install dowels of same size and spacing as vertical reinforcement in all columns and walls. Position all anchor bolts with templates.
6. Bar lap lengths in concrete and 90 degree end hooks shall be in accordance with the table below unless noted otherwise. This table lists class 'B' laps. For epoxy coated reinforcing steel, increase lap length by 50% with c-c bar spacing < 6db and cover to center of bar <3db, otherwise increase by 20%. For masonry reinforcing, use fc' = 3000 psi values.

CLASS B REINFORCING BAR LAP SPLICE TABLE (note d, e, & f)

	f_c' = 3000 psi (note c)		f_c' = 4000 psi		f_c' = 6000 psi		
BAR SIZE	VERTICAL (note a)	HORIZONTAL (note b)	VERTICAL (note a)	HORIZONTAL (note b)	VERTICAL (note a)	HORIZONTAL (note b)	STD 90° HOOK
#3	21"	28"	19"	24"	15"	20"	6"
#4	29"	37"	25"	32"	20"	26"	8"
#5	36"	46"	31"	40"	25"	33"	10"
#6	43"	56"	37"	48"	30"	39"	12"
#7	62"	81"	54"	70"	44"	57"	14"
#8	71"	93"	62"	80"	50"	66"	16"
#9	80"	104"	70"	90"	57"	74"	19"
#10	91"	118"	78"	102"	64"	83"	22"
#11	100"	131"	87"	113"	71"	92"	24"

a. Vertical bars; and horizontal or diagonal bars with less than 12" of concrete placed below them.
b. Horizontal or diagonal bars with 12" or more of concrete placed below them. (eg. wall horizontals)
c. Use f_c' = 3000 psi values for masonry rebar laps. Do not lap splice bars bigger than #8 in masonry. Break off fins in cores of 6" CMU.
d. For epoxy coated bars, multiply these values x 1.20.
e. For laps between different bar sizes, use the greater of these values based on the smaller bar, or these values based on the bigger bar divided by 1.30.
f. Hoop bar laps shall be staggered such that splices do not overlap with bars above, below, or on opposite faces.

7. Bars marked continuous, corner bars, and all vertical steel shall be lapped in accordance with table above at splices and embedments, unless shown otherwise. Splice top bars near midspan and splice bottom bars over supports, unless noted otherwise.
8. Bar support accessories shall be as specified in latest edition of the ACI detailing handbook and the concrete reinforcing steel institute design handbook. Maximum accessory spacing shall be 4'-0" on center, and all accessories on exposed surfaces shall have plastic coated ends. Chairs shall be supported on sand plates as required to keep from sinking into subgrade. WWF shall be supported by continuous bolsters or bars on chairs sufficiently close to prevent sheets from sagging appreciably during concrete placement. Support rebar used at contractor's option shall be extra bars supplied by contractor, not taken from design reinforcing.

POST INSTALLED ANCHOR RODS AND DOWELS

1. Unless noted otherwise, anchors and reinforcing dowels installed in concrete or concrete masonry shall be as noted below. Anchors not shown or noted on the drawings, those required by the contractor solely for his means and methods, or those required by mechanical/electrical and carrying less than 100 pounds of non-safety-related items, do not require special inspection.
2. Approved manufacturers are: HILTI, ITW / Redhead, Simpson, and Powers / Rawl. Submit product data and current ICC ES report or IAPMO report showing product is compliant with project code requirements for review. Contractor shall arrange for manufacturer's rep to train all installers on the complete installation process. A letter of procedure stating method of drilling, the product for use, the complete installation procedure, manufacturer training date and a list of the personnel trained on anchor installation shall be submitted to the engineer.
3. Permanent anchors exposed to earth, weather, or corrosive environments, including all anchors in wet areas, and anchors engaging stainless steel or FRP/aluminum members, shall be stainless steel type 304 or 316; Otherwise, anchors shall be zinc plated, minimum ASTM A36 material unless ASTM A193 grade B7 is noted in the drawings, and shall be according to ASTM F1554. Reinforcing dowels shall be of the same size (U.N.O.), material and coating (if any) as the continuing reinforcing.
4. Where expansion anchors are called for, contractor may substitute screw type anchors with self-tapping threads or adhesive anchors of the same size and embedment, subject to review of capacity by the engineer for the product substituted. Where adhesive anchors are called for, other types shall not be substituted. Screw type anchors shall not be re-used on permanent work.
5. Adhesive shall have a current ICC ES report. Use high viscosity adhesive and placement devices in consultation with the manufacturer for overhead work. Overhead installation shall be subject to continuous special inspection during installation and shall only be performed by certified adhesive anchor installers. Use low temperature formulations for cold weather work. Do not apply significant load to anchors until their capacity has been assured.
6. Anchors installed in concrete masonry and precast hollow core concrete shall be installed in cores grouted solid. Minimum grout strength f'g = 3,000 PSI. Minimum 12 inches of grout each way along horizontal cores from anchor. Vertical cores shall be grouted full height. Anchors installed in masonry shall not be installed within 1 1/2 inches of any head joint unless block are square end and mortared across full width of head joint, or filled bond beam.
7. Holes shall be drilled, cleaned, and maintained until installation in accordance with manufacturer's recommendations using standard rotary-impact bits and oil-free compressed air; diamond core bits shall not be used unless specifically approved by the manufacturer. Locate and avoid reinforcing bars and PT tendons. Maintain spacing (minimum 8 inches) and edge/corner distances (minimum 4 inches) as recommended by manufacturer unless specifically noted otherwise in the drawings.
8. Unless noted otherwise, anchors shall be installed to the following embedments:

	Diameter	CIP Concrete	Grouted CMU
Expansion/screw:	1/2 inch	3 1/2 inches	4 1/2 inches
	5/8 inch	4 inches	5 inches
	3/4 inch	5 inches	6 inches
Adhesive:	1/2 inch	4 1/2 inches	5 1/2 inches
	5/8 inch	5 inches	6 inches
	3/4 inch	6 inches	7 inches (6" in 8" CMU)

9. Except as noted, all anchors shall have intermittent special structural inspection by one of the following. Load tests shall be to 150 percent of service capacity or 75 percent of ultimate strength, with no appreciable slip, permanent deformation, or concrete damage. Anchors which fail this test shall be replaced at no cost to the project. Two failures in a given installation shall result in mandatory load testing at double the rate noted below.
   a. Expansion and screw anchors:
      - Witness installation with torque wrench according to manufacturer's recommendations and requirements of ICC report;
      - Test all anchors with torque wrench after installation (including load test of 5 percent of installed anchors); or
      - Load test of 10 percent of installed anchors by supplier or third party inspector
   b. Adhesive anchor rods and dowels:
      - Witness installation according to manufacturer's recommendations and requirements of ICC report; or
      - Load test of 10 percent of installed anchors by supplier or third party inspector

STRUCTURAL METALS / FRP

1. All structural steel shall be as follows:
   - Wide flange beams and columns shall be ASTM A992, grade 50 steel.
   - All miscellaneous steel (angles, channels, plate) shall be ASTM A992, A529, or A36 steel (min. Fy = 36 KSI).
   - Rectangular steel tubes (HSS) shall be ASTM A500, grade C steel (fy = 50 KSI).
   - Pipe shall be ASTM A53 (fy = 35 KSI) unless A500 grade C (46 KSI) is noted.
   - Other shapes shall be ASTM A36 (36 KSI).
2. Splicing or modification of members in the field is prohibited without prior written approval of the SER.
3. All primary member bolted connections shall be two bolt minimum.
4. Fabrication and erection shall be in accordance with the latest edition of the AISC Manual of Steel Construction, Code of Standard Practice for Steel Buildings and Bridges, except as follows:
   - To paragraph 3.1, add "The project architectural drawings are a part of the structural steel design drawings by reference and must be used concurrently with the structural steel design drawings for any information not shown on the structural steel design drawings".
   - Delete paragraph 3.2 and insert the following: "architectural, process, electrical and mechanical plans shall be used as a supplement to the structural steel design drawings to define detail configurations and construction information".
   - Paragraph 3.3 modify the last sentence to read, "in case of discrepancies between the structural steel plans and plans of other disciplines or existing conditions, such discrepancies shall be called to the architect / engineer's attention for resolution".
5. All aluminum shapes shall be ASTM B209, B308, alloy 6061-T6; except handrail may be 6063-T5 or -T6. All welding shall be performed by a certified welder using compatible electrodes in accordance with the requirements of AWS D1.2 and visually inspected. Where designed by the fabricator, aluminum alloy and temper shall be stated on shop drawings.
6. All exposed steel shall be galvanized. Damaged galvanizing shall be repaired by application of cold galvanizing compound such as ZRC (minimum 3 coats). Paint finish per architectural.
7. All steel welding shall be performed by a certified welder using E70 electrodes in accordance with the requirements of AWS D1.1 "Structural Welding Code" and visually inspected. Full-pen welds shall also be inspected by NDT methods such as ultrasonic, mag particle, or dye pen.
8. All field welded connections shall be chipped, ground where required, wire brush cleaned and painted to match the paint system.
9. All bolts not otherwise specified shall be 3/4" diameter high strength (ASTM A325-N). All bolts shall be fully pretensioned. Any non-twist off bolts shall have 10 percent checked with a torque wrench by the special inspector.
10. All copes shall be made with a 1 inch minimum radius.
11. All anchor rods shall be minimum 3/4" diameter ASTM A276 Stainless Steel type 304 unless noted otherwise. Where headed rods are noted or specified, bent rods shall not be furnished; rods may be headed or nutted, with the nut tack welded at the bottom end of the anchor or double nutted.
12. All cut or raw surfaces of FRP shall be coated with compatible epoxy.

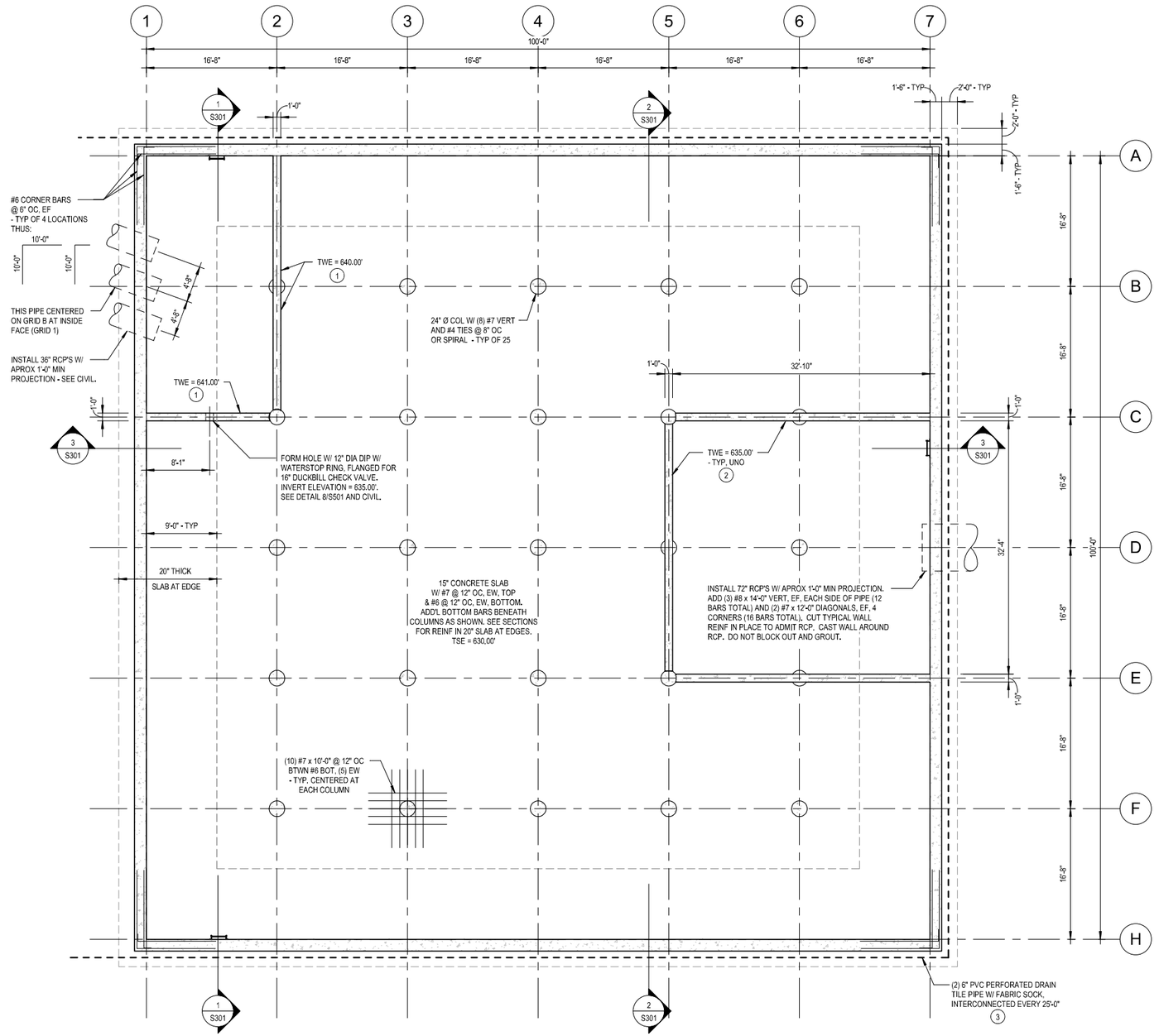
SHOP DRAWING REVIEW

1. Short Elliott Hendrickson Inc. (SEH) will review the general contractor's (GC) shop drawings and related submittals (as indicated below) with respect to the ability of the detailed work, when complete, to be a properly functioning integral element of the overall structural system designed by SEH. In general, submittals will not be reviewed for correct quantities or construction considerations. SEH shall review shop drawings and related materials with comments provided that each submission has met the requirements herein. SEH shall return without comment unrequired material or submissions without GC approval stamp
2. Any items requiring submittal of calculation packages shall have calculations submitted prior to or as part of the shop drawing submittal they accompany. Shop drawings submitted prior to submittal of required calculations will be rejected. All calculations shall be sealed and signed by an engineer licensed in the state of the project. The supplier's engineer must provide calculations for all systems and connections that differ from the drawings. Design shall comply with the requirements in these notes, the drawings and the specifications.
3. Prior to submittal of a shop drawing or any related material to SEH, the GC shall:
   - Review each submission for conformance with the means, methods, techniques, sequences and operations of construction and safety precautions and programs incidental thereto, all of which are the sole responsibility of the GC.
   - Review and approve each submission.
   - Stamp each submission as approved.
4. SEH shall assume that no submission comprises a variation from the contract documents unless the GC advises SEH with written documentation. Should SEH require more than ten (10) working days to perform the review, SEH shall so notify the GC. Submittals shall include drawings and related material (if any) as indicated below.
   - Concrete mix designs and material certificates including admixtures, compounds applied to the concrete after placement, and associated product data. See specifications.
   - Aggregate tests and concrete test history for each mix design, with the submission of concrete mix designs.
   - Reinforcing steel shop drawings including erection drawings and bending details. Bar list will not be reviewed for correct quantities. Include elevations of all reinforced concrete masonry walls and all concrete walls with footing steps or other elevation changes, at a scale no smaller than 1/8" = 1'-0" showing all required reinforcing.
   - Structural steel and metal fabrication shop drawings including erection drawings and piece details.

REQUIRED INSPECTION

1. Required inspection and testing is required according to the table below. Refer to specification section 01 45 10 for responsibilities. Contractor shall coordinate with SER, testing agency and geotechnical engineer throughout the project.
   - Required Inspections shall be performed in accordance with IBC Chapter 17.
   - Required Inspection of reinforcing steel and anchor rod placement shall be performed prior to concrete placement or during anchor rod installation for adhesive anchors.
   - Continuous inspection during concrete placement is required.
   - Conduct concrete slump tests in accordance with ASTM C143.
   - Obtain set of a four (4) concrete test cylinders each time concrete is placed. Make test cylinders in accordance with ASTM C39.
   - See these Notes for testing of Post-Installed anchors and rebar where installation is not witnessed.
   - Reports of Required Inspections shall be provided, at the frequency noted above, to the Owner, Contractor, and Engineer of Record by the firm contracted to perform Required Inspections.
   - Special Inspection criteria presented above and in specification shall apply to all footings and foundation walls, but does not apply to non-structural slab on grade and site work concrete.

REQUIRED INSPECTIONS & TESTS SCHEDULE	INSPECTION FREQUENCY		TESTING		NOT APPLICABLE
DESCRIPTION OF WORK - PER IBC CH. 17	C*	P*	YES	NO	
METAL CONSTRUCTION					
1. WELDING	☐	☑	☐	☑	☐
2. DETAILS: BRACING, LOCATIONS, ETC.	☐	☑	☐	☑	☐
3. BOLTING	☐	☑	☐	☑	☐
4. OPEN-WEB STEEL JOISTS & JOIST GIRDERS:					
A. INSTALLATION OF OPEN-WEB JOISTS & JOIST GIRDERS END CONNECTIONS WELD OR BOLT	☐	☐	☐	☐	☑
B. INSTALLATION OF STANDARD BRIDGING & BRIDGING THAT DIFFERS FROM SJI SPECS	☐	☐	☐	☐	☑
5. STEEL DECK INCLUDING WELDING OR MECHANICAL FASTENING	☐	☐	☐	☐	☑
6. COMPOSITE CONSTRUCTION INCLUDING HEADED STUD ANCHORS	☐	☐	☐	☐	☑
7. COLD FORMED TRUSSES SPANNING 60FT OR GREATER	☐	☐	☐	☐	☑
CONCRETE CONSTRUCTION					
1. INSPECT REINFORCEMENT	☐	☑	☐	☑	☐
2. REINFORCING BAR WELD	☑	☐	☑	☐	☐
3. INSPECT ANCHORS CAST IN CONCRETE	☐	☑	☐	☑	☐
4. INSPECT ANCHORS POST-INSTALLED IN CONCRETE	☐	☑	☐	☑	☐
5. VERIFY USE OF REQUIRED DESIGN MIX	☐	☑	☐	☑	☐
6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	☐	☑	☑	☐	☐
7. INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	☑	☐	☐	☑	☐
8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES	☐	☑	☐	☑	☐
9. INSPECT PRESTRESSED CONCRETE MEMBERS	☐	☐	☐	☐	☑
10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS	☐	☐	☐	☐	☑
11. VERIFY IN-SITU CONCRETE STRENGTH PRIOR TO POST-TENSIONING CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS	☐	☐	☐	☐	☑
12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED	☐	☑	☐	☑	☐
MASONRY CONSTRUCTION - LEVEL A					
1. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS	☐	☐	☐	☐	☑
MASONRY CONSTRUCTION - LEVEL B					
1. REINFORCEMENT: SIZE AND SPACING	☐	☐	☐	☐	☑
2. PRISMS	☐	☐	☐	☐	☑
3. DETAILS: GROUTING, LINTELS, ETC	☐	☐	☐	☐	☑
WOOD AND LIGHT GAUGE METAL					
1. HIGH LOAD DIAPHRAGMS	☐	☐	☐	☐	☑
2. METAL-PLATE-CONNECTED WOOD TRUSSES SPANNING 60FT OR GREATER	☐	☐	☐	☐	☑
SOILS					
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATION ARE ADEQUATE= TO ACHIEVE THE DESIGN BEARING CAPACITY	☐	☑	☐	☑	☐
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL	☐	☑	☐	☑	☐
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS	☐	☑	☐	☑	☐
4. VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	☐	☑	☐	☑	☐
5. PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY	☐	☑	☐	☑	☐
CAST-IN-PLACE DEEP FOUNDATIONS					
1. OBSERVE DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT	☐	☐	☐	☐	☑
2. VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM ELEMENT DIAMETERS, LENGTHS, EMBEDMENTS INTO BEDROCK AND BELL DIAMETERS (IF APPLICABLE), AND ADEQUATE END BEARING STRATA CAPACITY, RECORD CONCRETE OR GROUT VOLUMES	☐	☐	☐	☐	☑
DRIVEN DEEP FOUNDATIONS ELEMENTS					
1. VERIFY ELEMENT MATERIALS SIZE AND LENGTHS COMPLY WITH THE REQUIREMENTS	☐	☐	☐	☐	☑
2. DETERMINE CAPACITIES OF TEST ELEMENTS AND CONDUCT ADDITIONAL LOAD TESTS, AS REQUIRED	☐	☐	☐	☐	☑
3. INSPECT DRIVING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT	☐	☐	☐	☐	☑
4. VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM TYPE AND SIZE OF HAMMER, RECORD NUMBER OF BLOWS PER FOOT OF PENETRATION. DETERMINE REQUIRED PENETRATIONS TO ACHIEVE DESIGN CAPACITY, RECORD TIP AND BUTT ELEVATIONS AND DOCUMENT ANY DAMAGE TO FOUNDATION ELEMENT	☐	☐	☐	☐	☑



FOUNDATION PLAN KEYNOTES:

1. 12" CONCRETE WALL WITH #6 @ 12" OC DOWELS AND HORIZONTAL BARS, #5 @ 12" OC VERTICAL, EACH FACE. SINGLE #6 DOWELS @ 12" OC, CENTERED INTO COLUMNS.
2. 12" CONCRETE WALL WITH #5 @ 12" OC, EW, EF. SINGLE #6 DOWELS @ 12" OC, CENTERED INTO COLUMNS
3. DAYLIGHT DRAIN TILES W/ RODENT SCREEN AND CONCRETE SPLASH PAD, EACH END.

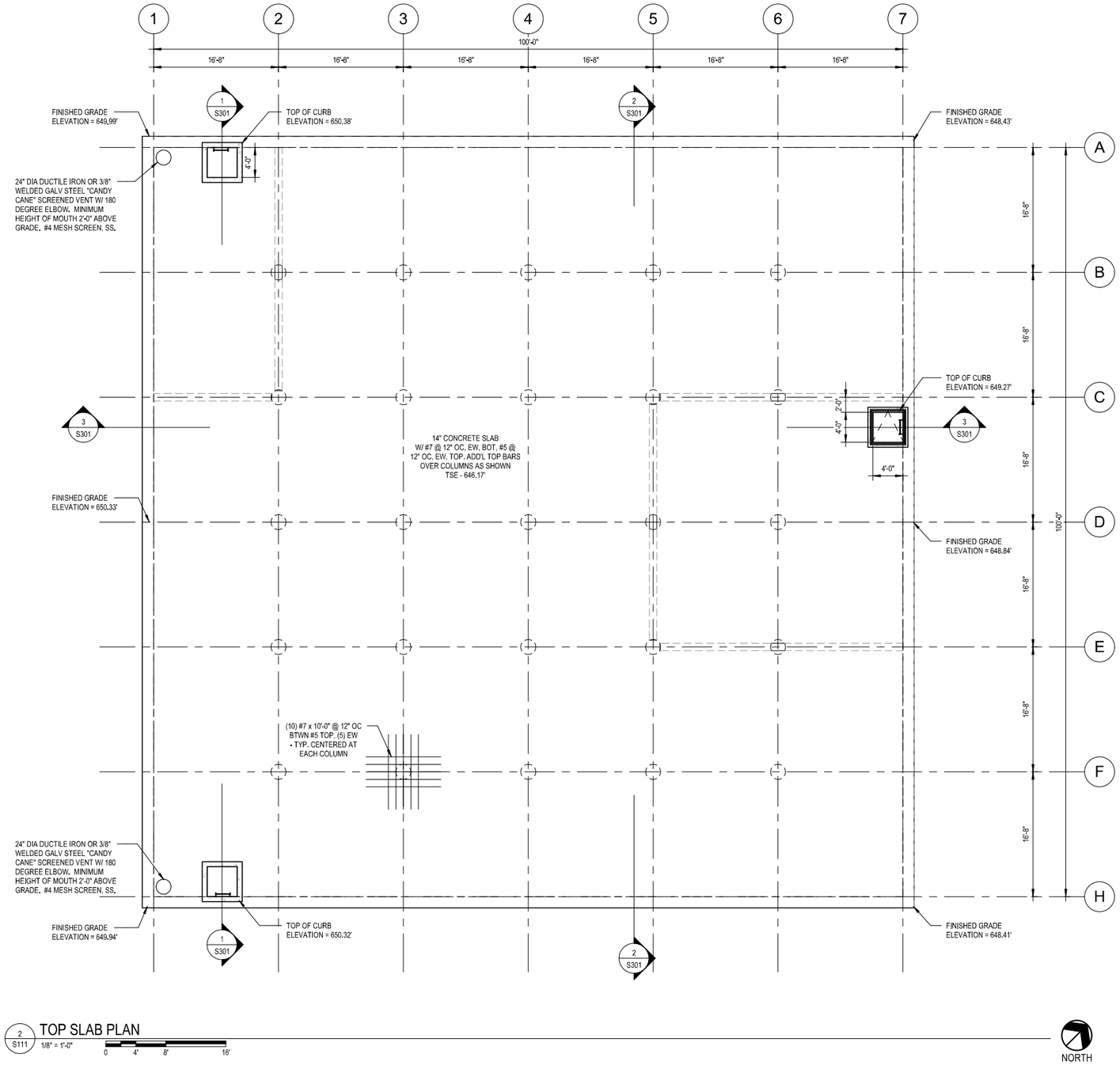
1 S101 **STRUCTURAL FOUNDATION PLAN**

1/8" = 1'-0"

0 4' 8' 16'

NORTH

SEH Project	LACRS 163627	Revision Issue Description			Revision Issue Description	**RIVER POINT DISTRICT**	**FOUNDATION PLAN**	S101
Drawn By	PAM	#1	Released For Permitting	03/17/2022	**NOT FOR CONSTRUCTION**	UNDERGROUND RESERVOIR		
Designed By	Designer				SEH	LA CROSSE, WISCONSIN		
Checked By	MLH				DATE _____ LICENSE NO._____			



2 S111 TOP SLAB PLAN

1/8" = 1'-0"

0 4" 8" 16"

NORTH

TOP PLAN GENERAL NOTES:

(TYPICAL UNLESS NOTED OTHERWISE)

1. DO NOT BACKFILL UNTIL CONCRETE LID IS IN PLACE WITH MINIMUM 0.75 Fc' BY TEST.

SEH Project	LACRS 163627
Drawn By	PAM
Designed By	MLH
Checked By	MLH

Revision Issue Description		
#1	Released For Permitting	03/17/2022

NOT FOR CONSTRUCTION

SEH

DATE _____ LICENSE NO._____

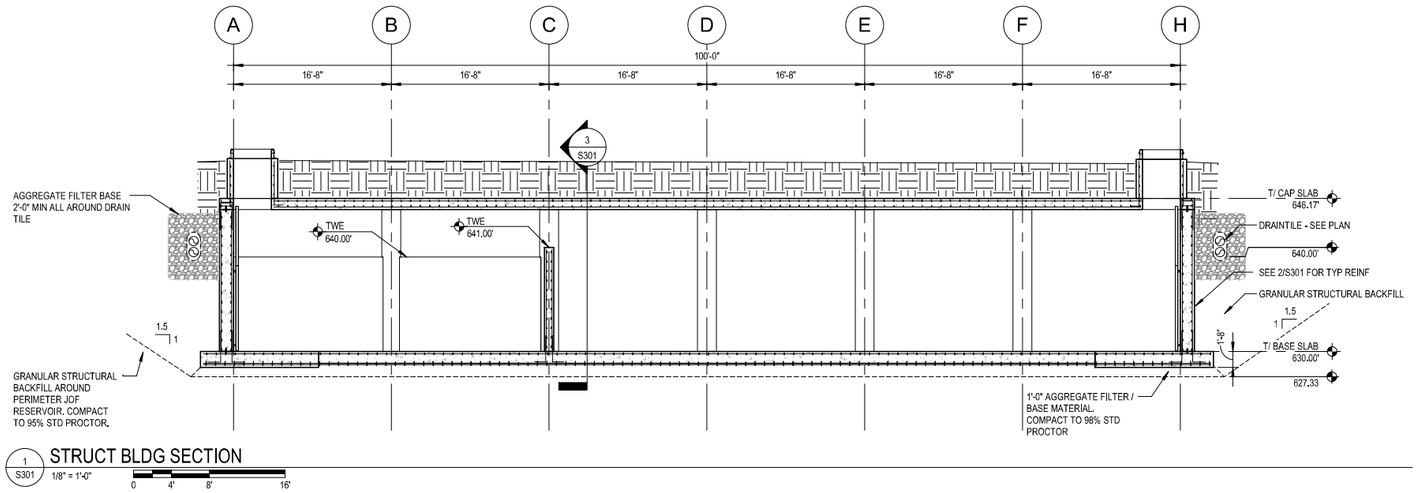
RIVER POINT DISTRICT

UNDERGROUND RESERVOIR

LA CROSSE, WISCONSIN

TOP SLAB PLAN

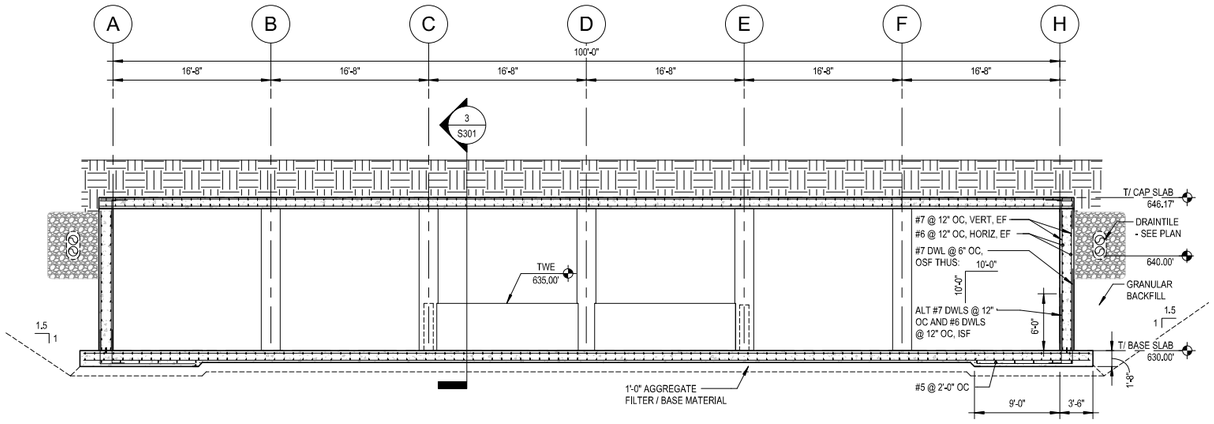
S111



1 S301 STRUCT BLDG SECTION

1/8" = 1'-0"

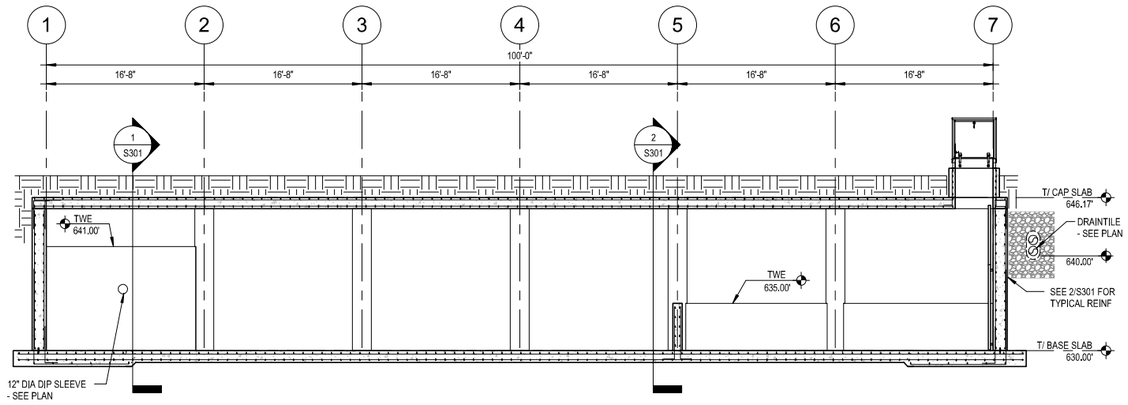
0 4' 8' 16'



2 S301 STRUCT BLDG SECTION1

1/8" = 1'-0"

0 4' 8' 16'



3 S301 STRUCT BLDG SECTION2

1/8" = 1'-0"

0 4' 8' 16'

SEH Project	LACRS 163627
Drawn By	PAM
Designed By	MLH
Checked By	MLH

Revision Issue Description		
#1	Released For Permitting	03/17/2022

Revision Issue Description

NOT FOR CONSTRUCTION

SEH

DATE _____ LICENSE NO._____

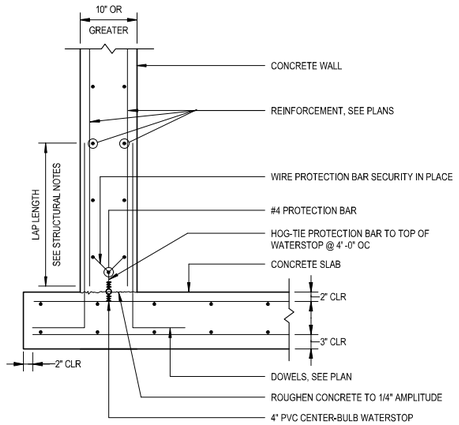
RIVER POINT DISTRICT

UNDERGROUND RESERVOIR

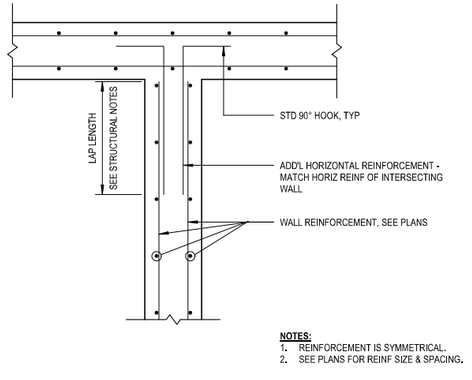
LA CROSSE, WISCONSIN

BUILDING SECTIONS

S301

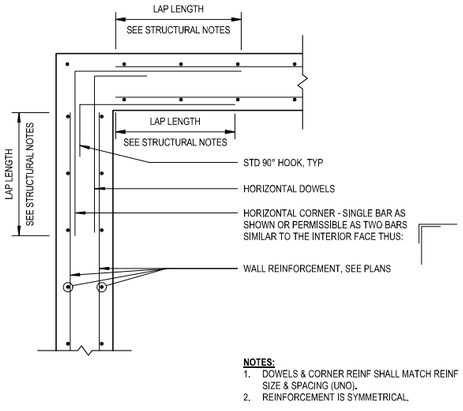


1 S501 WALL TO SLAB JOINT DETAIL
NOT TO SCALE



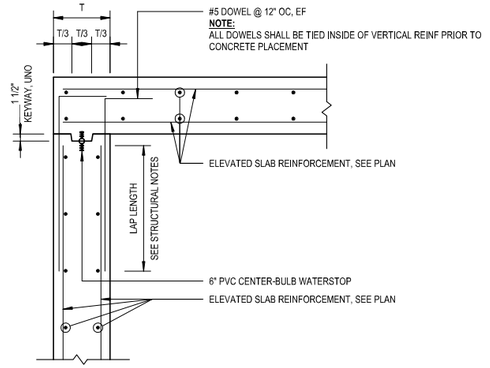
NOTES:
1. REINFORCEMENT IS SYMMETRICAL.
2. SEE PLANS FOR REINF SIZE & SPACING.

2 S501 WALL INTERSECTION REINFORCEMENT DETAIL
NOT TO SCALE

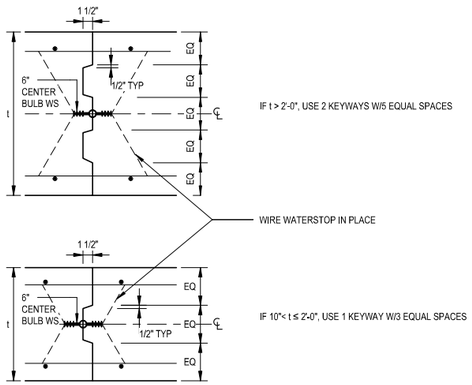


NOTES:
1. DOWELS & CORNER REINF SHALL MATCH REINF SIZE & SPACING (UNO).
2. REINFORCEMENT IS SYMMETRICAL.

3 S501 WALL CORNER REINFORCEMENT DETAIL
NOT TO SCALE

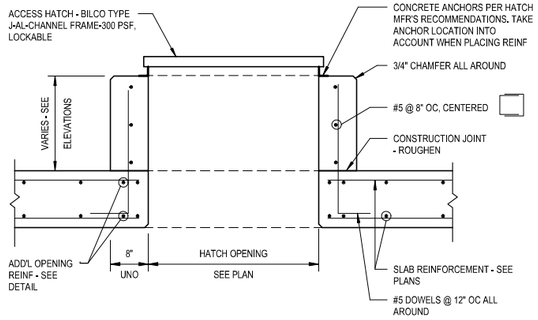


4 S501 ELEVATED SLAB CONNECTION DETAIL
NOT TO SCALE



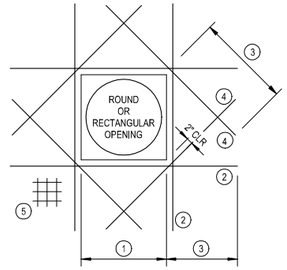
NOTE:
IF t ≤ 0'-10", OMIT KEYWAY

5 S501 WALL CONSTRUCTION JOINT DETAIL
NOT TO SCALE



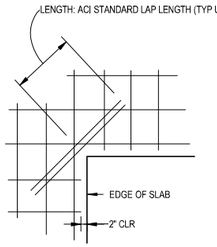
6 S501 ACCESS HATCH CURB DETAIL
NOT TO SCALE

NOTES:
1. IF OPENING DIMENSION OR DIAMETER IS GREATER THAN 3'-0", REFER TO SPECIFIC DETAIL.
2. BAR OR BARS OF SAME SIZE AND COATING AS BARS CUT, W/(1/2) THE NUMBER OF CUT BARS EACH SIDE OF OPENING, SPACED @ 4". IF ONLY ONE BAR, OR NO BARS (PER MAT) ARE CUT IN EITHER DIRECTION USE ONLY DIAGONAL BARS.
3. PROVIDE LAP LENGTH, SEE TABLE IN STRUCTURAL NOTES.
4. SINGLE DIAGONAL BAR EACH FACE, SAME SIZE AND COATING AS BIGGEST BAR CUT, MINIMUM #5 x 5'-0".
5. IF REINF IS WWF, OR THERE IS NO REINF, PROVIDE (4) #5 x 5'-0" DIAGONAL BARS.



7 S501 OPENING REINFORCEMENT DETAIL
NOT TO SCALE

SEH Project	LACRS 163627	Revision Issue Description			Revision Issue Description		RIVER POINT DISTRICT UNDERGROUND RESERVOIR LA CROSSE, WISCONSIN	FOUNDATION DETAILS	S501
Drawn By	PAM	#1	Released For Permitting	03/17/2022	NOT FOR CONSTRUCTION				
Designed By	MLH								
Checked By	MLH					DATE _____ LICENSE NO._____			



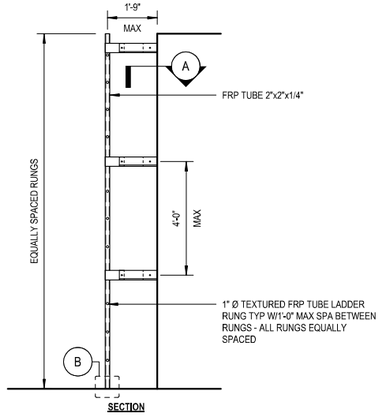
SLAB REINF BARS *	ADDITIONAL CORNER BARS
WWF	(1) #4
#4	(1) #4
#5	(1) #5
#6	(1) #6
#7	(2) #5
#8	(2) #6

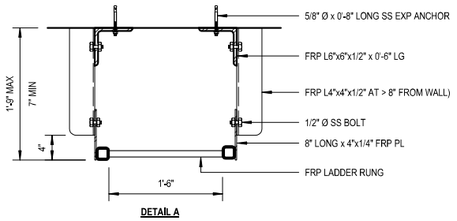
* USE LARGEST DIAMETER BAR IN EITHER DIRECTION FOR DETERMINING CORNER BARS.

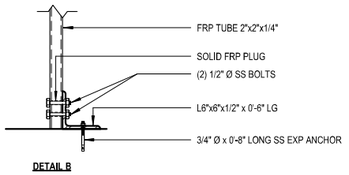
NOTE:
PROVIDE 2" CLEAR COVER OVER ALL BARS AT OPENINGS

ADDITIONAL CORNER BARS:
- WHEN SLAB HAS BOTTOM REINFORCEMENT LAYER ONLY, PLACE DIAGONAL BARS AT MID-DEPTH.
- WHEN SLAB HAS TOP REINFORCEMENT LAYER
- ONLY, PLACE DIAGONAL BARS BELOW TOP REINFORCEMENT.
- WHEN SLAB HAS TOP & BOTTOM REINFORCEMENT
- LAYERS, PLACE DIAGONAL BARS BETWEEN TOP & BOTTOM REINFORCEMENT (2-LAYERS).

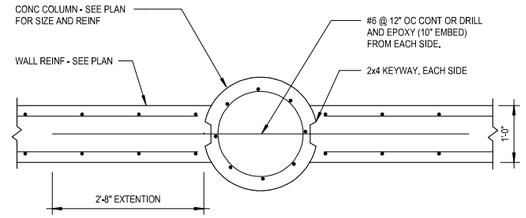
1 S502 SLAB REENTRANT CORNER DETAIL
NOT TO SCALE







2 S502 FRP LADDER DETAIL
NOT TO SCALE



3 S502 DETAIL AT INTERIOR WALLS
NOT TO SCALE

SEH Project	LACRS 163627	Revision Issue Description			Revision Issue Description		RIVER POINT DISTRICT
Drawn By	PAM	#1	Released For Permitting	03/17/2022	NOT FOR CONSTRUCTION	SEH	UNDERGROUND RESERVOIR
Designed By	MLH					DATE _____ LICENSE NO._____	LA CROSSE, WISCONSIN
Checked By	MLH						FOUNDATION DETAILS S502

Appendix C

Wetland Determination

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
1300 W Clairemont Avenue
Eau Claire, WI 54701

Tony Evers, Governor
Preston D. Cole, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

March 9, 2020

EXE-WC-2020-32-00320

City of La Crosse
Jason Gilman
3rd floor, 400 La Crosse St
La Crosse, WI 54601

RE: Artificial Wetland Exemption Determination for an area described as Wetland 2, Wetland 5, Wetland 6, and Wetland 7, located in the NW1/4 of the NW1/4 of Section 32, Township 16 North, Range 07 West, City of La Crosse, La Crosse County

Dear Mr. Gilman:

This letter is in response to your request for an artificial wetland exemption determination for the above mentioned wetlands.

According to 281.36 (4n), State Statutes, a landscape feature where hydrophytic vegetation may be present as a result of human modification to the landscape or hydrology and for which no definitive evidence exists showing a prior wetland or stream history before August 1, 1991, may be exempt from state wetland regulations. The following types of artificial wetlands cannot be exempted from state wetland regulation:

1) a wetland that serves as a fish spawning area or that is passage to a fish spawning area
2) a wetland created as a result of a wetland mitigation requirement.

In addition, DNR must also consider whether the artificial wetland is providing significant flood protection to adjacent or downstream properties and infrastructure, and/or significant water quality functions to adjacent or downstream water bodies.

The Department reviewed the following materials to aid in our exemption determination:

- The request narrative
- Historic Maps, including the Original Land Survey Plat, Bordner Survey, the 1973 USGS topographic Quad map, and soil mapping.
- Aerial photographs, including the 1937/8 era photograph, pre-construction photographs, and post-construction photographs.
- Wetland Delineation Information
- Site photographs that show different angles and views of the wetland

Below is a summary of our findings:

Request Narrative

According to the request narrative and delineation report Wetlands 2, 5, 6, and 7 are believed to be artificial due to previous earthwork has resulted in runoff being trapped in these depressional wetlands, which infiltrates slowly due to soil fill material composition and compaction, thus developing wetland characteristics. Wetlands 2, 5, 6, and 7 are 1.34 acres, 0.05 acres, 0.07 acres, and 0.36 acres, respectively. The total artificial wetland impact would be 1.82 acres or 79,279 square feet.

Historic Map Review

- Original Land Survey Plat. The original land survey depicts two waterways to the west and south.
- Bordner Survey. The Bordner survey indicates the project site is located within the City of La Crosse, Wisconsin.
- 1973 USGS Topographic Quad map: The USGS Quad map depicts waterways area located to the west and south of wetlands 2, 5, 6, and 7. Additionally wetlands appear to be located west of the project site.
- Soil Maps: The soil maps indicate that wetlands 2, 5, 6 and 7 are located within Urban land, valley trains soil; a predominantly non-hydric soils that does not contain hydric minor components.

Aerial Photograph Review

- 1937/38 era aerial photograph. The 1937/38 aerial photograph shows no definitive evidence of wetlands signatures within the areas of wetlands 2, 5, 6, and 7.
- Pre-construction aerial photograph: The 1952-1989 aerial photograph obtained by Amanda Dehmlow show no definitive wetland signatures within wetland areas 5, 6, and 7. Within the 1952 and 1962 aerial photographs there appears to be standing water within wetland 2. However, the 1973-1989 aerial photographs appear to indicate that wetland 2 was disturbed and potentially used as a borrow source or excavated.
- Post-construction aerial photograph: The 2008-2017 aerial photograph shows the site was altered as the oil storage facility and associated roadways was removed. The site appears to have been continuously changing by what appears to be grading and the addition of an access road.

Wetland Delineation Information

The wetland delineation notes that buried stones and concrete prevented digging the soil sample site beyond 8 inches within wetland 2. Furthermore, stones and concrete prevented digging the soil sample site beyond 14 inches within wetland 7.

Site Photographs

The site photographs show wetland 2 contains an excavated pond and the presence of stone and concreted within the wetland areas surrounding the pond. Wetland 5 appears to be located within a depression along the entrance drive way. Wetland 6 appears to be located within a constructed ditch along the northern site limits. Wetland 7 appears within a concave portion of the project site with a steep embankment of fill material borders the northern wetland limits.

Conclusion:

- Based upon the information provided above, the wetland identified as Wetlands 2, 5, 6, and 7 lacked a wetland history prior to August 1, 1991, and fulfills all artificial wetland exemption standards. Therefore, wetlands 2, 5, 6, and 7 are exempt from state wetland regulations.

This letter describes DNR's decision regarding the jurisdictional status of Wetlands 2, 5, 6, and 7, and is only valid for state jurisdictional purposes. For decisions regarding the federal jurisdictional status of Wetlands 2, 5, 6, and 7, you will need to contact the U.S. Army Corps of Engineers. The U.S. Army Corps of Engineers contact is USACE_Requests_WI@usace.army.mil.

If you have any questions about this determination, please contact me at (715) 225-1391 or email Amanda.Dehmlow@wisconsin.gov.

Sincerely,

Amanda Dehmlow
Water Management Specialist

cc: U.S. Army Corps of Engineers
Joseph Nied, Short Elliott Hendrickson, Inc., Consultant
Jason Gilman, City of La Crosse Director of Planning, Development and Assessment
Ed Mccann, La Crosse County Conservation Warden
Jill Schoen, NR Basin Supervisor
Dan Baumann, Secretary's Director

Figure 1. Wetland Delineation Map

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
180 FIFTH STREET EAST, SUITE 700
ST. PAUL, MN 55101-1678

December 7, 2020

Regulatory File No. MVP-2020-02373-KDZ

Short Elliot Hendrickson Inc.
c/o Renee Wilde
10 North Bridge Street
Chippewa Falls, Wisconsin 54729

Dear Ms. Wilde:

This letter regards an approved jurisdictional determination for four wetlands (Wetland 2, Wetland 5, Wetland 6, and Wetland 7) associated with the Riverfront North Development parcel. The project site is located in the NE ¼ of Section 31, Township 16 North, Range 07 East, La Crosse County, Wisconsin. The review area for our jurisdictional determination is identified on the enclosed figure labeled: MVP-2020-02373-KDZ, Figure 1.

We have determined that Wetland 2, Wetland 5, Wetland 6, and Wetland 7 are not waters of the United States subject to Corps of Engineers (Corps) jurisdiction. Therefore, you are not required to obtain Department of the Army authorization to discharge dredged or fill material within these areas. The rationale for this determination is provided in the enclosed Approved Jurisdictional Determination form. This determination is only valid for the review area described. You are also cautioned that the area of waters described on the enclosed Jurisdictional Determination form is approximate and is not based on a precise delineation of aquatic resources

If you object to this approved jurisdictional determination, you may request an administrative appeal under Corps regulations at 33 CFR 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination, you must submit a completed RFA form to the Mississippi Valley Division Office at the address shown on the form.

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR 331.5, and that it has been received by the Division Office within 60 days of the date of the enclosed NAP. It is not necessary to submit an RFA form to the division office if you do not object to the determination in this letter

This approved jurisdictional determination may be relied upon for five years from the date of this letter. However, the Corps reserves the right to review and revise the boundary in response to changing site conditions, information that was not considered during our initial review, or off-site activities that could indirectly alter the extent of wetlands and other resources on-site. This determination may be renewed at the end of the five year period provided you submit a written request and our staff are able to verify that the limits established during the original determination are still accurate.

If you have any questions, please contact me in our Stevens Point office at (651) 290-5877 or kyle.d.zibung@usace.army.mil. In any correspondence or inquiries, please refer to the Regulatory file number shown above.

Sincerely,

Kyle Zibung
Lead Project Manager

Enclosures

Path: \\seh\x\Projects\UZ\WWIRRN\1484373-env-stdy-regs\30-env-doc\90-wetlands\site maps\Maps\Figure 6 - Wetland Delineation Results.mxd

SEH
10 North Bridge Street
Chippewa Falls, WI 54729
PHONE: (608) 498-4805
FAX: (888) 908-8166
TF: (800) 325-2055
www.sehinc.com

Project: WIRRN 148437
Print Date: 10/29/2019

Map by: mnied
Projection: Mercantor
Auxuillary Sphere
Source: Esri, et al

Wetland Delineation Results

Riverside North Development
City of La Crosse, La Crosse County, WI

Figure 6

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Renee Wilde	**File No.:** MVP-2020-02373-KDZ	**Date:** 07 December 2020

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT		
REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)		
ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.		
POINT OF CONTACT FOR QUESTIONS OR INFORMATION:		
If you have questions regarding this decision and/or the appeal process you may contact: Kyle Zibung U.S. Army Corps of Engineers 2926 Post Road, Suite B Stevens Point, Wisconsin 54481 651-290-5877	If you only have questions regarding the appeal process you may also contact the Division Engineer through: Administrative Appeals Review Officer Mississippi Valley Division P.O. Box 80 (1400 Walnut Street) Vicksburg, MS 39181-0080 601-634-5820 FAX: 601-634-5816	
RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.		
_____ Signature of appellant or agent.	Date:	Telephone number:

U.S. ARMY CORPS OF ENGINEERS
REGULATORY PROGRAM
APPROVED JURISDICTIONAL DETERMINATION FORM (INTERIM)
NAVIGABLE WATERS PROTECTION RULE

I. ADMINISTRATIVE INFORMATION

Completion Date of Approved Jurisdictional Determination (AJD): 12/7/2020
ORM Number: MVP-2020-02373-KDZ
Associated JDs: N/A
Review Area Location[1]: State/Territory: Wisconsin City: La Crosse County/Parish/Borough: La Crosse
Center Coordinates of Review Area: Latitude 43.822 Longitude -91.255

II. FINDINGS

A. Summary: Check all that apply. At least one box from the following list MUST be selected. Complete the corresponding sections/tables and summarize data sources.

- ☐ The review area is comprised entirely of dry land (i.e., there are no waters or water features, including wetlands, of any kind in the entire review area). Rationale: N/A
- ☐ There are "navigable waters of the United States" within Rivers and Harbors Act jurisdiction within the review area (complete table in Section II.B).
- ☐ There are "waters of the United States" within Clean Water Act jurisdiction within the review area (complete appropriate tables in Section II.C).
- ☒ There are waters or water features excluded from Clean Water Act jurisdiction within the review area (complete table in Section II.D).

B. Rivers and Harbors Act of 1899 Section 10 (§ 10)[2]

§ 10 Name	§ 10 Size		§ 10 Criteria	Rationale for § 10 Determination
N/A.	N/A.	N/A	N/A.	N/A.

C. Clean Water Act Section 404

Territorial Seas and Traditional Navigable Waters ((a)(1) waters):[3]				
(a)(1) Name	(a)(1) Size		(a)(1) Criteria	Rationale for (a)(1) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

Tributaries ((a)(2) waters):				
(a)(2) Name	(a)(2) Size		(a)(2) Criteria	Rationale for (a)(2) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

Lakes and ponds, and impoundments of jurisdictional waters ((a)(3) waters):				
(a)(3) Name	(a)(3) Size		(a)(3) Criteria	Rationale for (a)(3) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

Adjacent wetlands ((a)(4) waters):				
(a)(4) Name	(a)(4) Size		(a)(4) Criteria	Rationale for (a)(4) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

[1] Map(s)/figure(s) are attached to the AJD provided to the requestor.
[2] If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.
[3] A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD Form.

D. Excluded Waters or Features

Excluded waters ((b)(1) – (b)(12)):[4]				
Exclusion Name	Exclusion Size		Exclusion[5]	Rationale for Exclusion Determination
Wetland 2	1.34	acre(s)	(b)(1) Non-adjacent wetland.	This determination is limited to Wetland 2, Wetland 5, Wetland 6, and Wetland 7 in the approximately 56-acre study area as shown on MVP-2020-02373-KDZ, Figure 1. Based on a review of the Wisconsin Wetland Inventory, USGS Topographic Map, USDA-NRCS Soil Survey, and January 2020 SEH Wetland Delineation Report, Wetland 2, Wetland 5, Wetland 6, and Wetland 7 are entirely surrounded by uplands, thereby eliminating direct hydrologic connections between all four wetlands and an NWPR tributary during a typical year. Wetland 2 was further evaluated for a hydrologic connection with Wetland 1, however no culvert is present within the trail to provide a connection. Wetland 2, Wetland 5, Wetland 6, and Wetland 7 do not meet the NWPR definition of adjacency.
Wetland 5	0.05	acre(s)	(b)(1) Non-adjacent wetland.	
Wetland 6	0.07	acre(s)	(b)(1) Non-adjacent wetland.	
Wetland 7	0.36	acre(s)	(b)(1) Non-adjacent wetland.	

III. SUPPORTING INFORMATION

A. Select/enter all resources that were used to aid in this determination and attach data/maps to this document and/or references/citations in the administrative record, as appropriate.

☒ Information submitted by, or on behalf of, the applicant/consultant: Renee Wilde-SEH January 31, 2020 Approved Jurisdictional Determination Submittal.

This information is sufficient for purposes of this AJD.

Rationale: N/A

☐ Data sheets prepared by the Corps: Title(s) and/or date(s).

☒ Photographs: Aerial and Other: 2003, 2005, 2008, 2010, 2015, 2017, 2018

☐ Corps site visit(s) conducted on: Date(s).

☐ Previous Jurisdictional Determinations (AJDs or PJDs): ORM Number(s) and date(s).

☐ Antecedent Precipitation Tool: *provide detailed discussion in Section III.B*.

☒ USDA NRCS Soil Survey: Dane County

☐ USFWS NWI maps: Title(s) and/or date(s).

☒ USGS topographic maps: 1:24k:La Crosse

Other data sources used to aid in this determination:

Data Source (select)	Name and/or date and other relevant information
USGS Sources	NHD Data
USDA Sources	N/A.

[4] Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps districts may, in case-by-case instances, choose to identify some or all of these waters within the review area.

[5] Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1) exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.

Data Source (select)	Name and/or date and other relevant information
NOAA Sources	N/A.
USACE Sources	N/A.
State/Local/Tribal Sources	WDNR Surface Water Data Viewer
Other Sources	N/A.

B. Typical year assessment(s): N/A.

C. Additional comments to support AJD: N/A

Appendix D

Site Photos

Photo 1 Near Kraft Street, looking east.

Photo 2 Near Kraft Street, looking south.

Photo 3 Near Kraft Street, looking west.

Photo 4 Southwest corner of the site.

Photo 5 Near the proposed outfall, looking north.

Photo 6 Near the proposed outfall, looking southeast.

Appendix E

Endangered Resources Review

State of Wisconsin / DEPARTMENT OF NATURAL RESOURCES

Tony Evers, Governor
Preston D. Cole, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

101 S. Webster St.
Box 7921
Madison, WI 53707-7921

January 7, 2021

J Michael Nied
SEH
329 Jay Street, Ste 301
La Crosse, WI 54601

SUBJECT: Endangered Resources Review (ERR Log # 19-389)
Proposed Riverside North Development - Renewed 01/07/21, La Crosse County, WI (T16N R07W S32, T16N R07W S31)

Dear J Michael Nied,

The Bureau of Natural Heritage Conservation has reviewed the proposed project described in the Endangered Resources (ER) Review Request received May 14, 2019. The complete ER Review for this proposed project is attached and follow-up actions are summarized below:

Required Actions: 17 species
Recommended Actions: 11 species
No Follow-Up Actions: 2 species
Additional Recommendations Specified: No

This ER Review may contain Natural Heritage Inventory data (http://dnr.wi.gov/topic/NHI), including specific locations of endangered resources, which are considered sensitive and are not subject toWisconsin's Open Records Law. Information contained in this ER Review may be shared with individuals who need this information in order to carry out specific roles in the planning, permitting, and implementation of the proposed project. **Specific locations of endangered resources may not be released or reproduced in any publicly disseminated documents.**

The attached ER Review is for informational purposes and only addresses endangered resources issues. **This ER Review does not constitute DNR authorization of the proposed project and does not exempt the project from securing necessary permits and approvals from the DNR and/or other permitting authorities.** Please contact the ER Review Program whenever the project plans change, new details become available, or more than a year has passed to confirm if results of this ER Review are still valid.

Please contact me at 608-264-8968 or via email at anna.rossler@wi.gov if you have any questions about this ER Review.

Sincerely,

Anna Rossler
Endangered Resources Review Program

cc:

Section A. Location and brief description of the proposed project

Based on information provided by the ER Review Request form and attached materials, the proposed project consists of the following:

Location	La Crosse County - T16N R07W S32, T16N R07W S31
Project Description	La Crosse Redevelopment Authority has proposed to redevelop formerly industrial parcels within the project boundary. The initial improvements will consist of bringing in fill to raise the site to one foot above the 1% chance (100 year) floodplain and the building pads above the 0.2% chance (500 year) floodplain, installing sanitary sewers, water mains and storm sewers, constructing roadways, constructing public water amenities, constructing public multipurpose trails and restoring disturbed areas. Follow-on improvements will consist of development of individual parcels with commercial ,mixed use and residential buildings, and adjacent sidewalks and parking lots. Approximately 60 acres of ground disturbance is anticipated for the development of this 90 acre property. The property boundaries are Copeland/USH 53 to the east, Causeway Boulevard to north, Mississippi River to west and La Crosse River to south
Project Timing	04/01/2020- 10/01/2024
Current Habitat	35% former industrial/open barren land, 20% active industrial, 25% shallow marsh, 10% floodplain forest, 5% upland forest, 5% riverine shoreline
Impacts to Wetlands or Waterbodies	The proposed construction project is bordered to the south by the La Crosse River and to the west by the Mississippi River. Shallow Marsh and Floodplain Forest are located within the project area but to the south of the proposed development. Extent of wetland impacts are currently unknown.
Property Type	Public, Private
Federal Nexus	No

It is best to request ER Reviews early in the project planning process. However, some important project details may not be known at that time. Details related to project location, design, and timing of disturbance are important for determining both the endangered resources that may be impacted by the project and any necessary follow-up actions. Please contact the ER Review Program whenever the project plans change, new details become available, or more than a year has passed to confirm if results of this ER Review are still valid.

Section B. Endangered resources recorded from within the project area and surrounding area

	Group	State Status	Federal Status
Peregrine Falcon *(Falco peregrinus)*	Bird	END	
Henslow's Sparrow *(Centronyx henslowii)*	Bird	THR	SOC
Bell's Vireo *(Vireo bellii)*	Bird	THR	
Common Nighthawk *(Chordeiles minor)*	Bird	SC/M	
Black Tern *(Chlidonias niger)*	Bird~	END	SOC
Bald Eagle *(Haliaeetus leucocephalus)*	Bird~		
Floodplain Forest *(Floodplain forest)*	Community~	NA	
Shrub-carr	Community~	NA	
Emergent Marsh *(Emergent marsh)*	Community~	NA	
Royal River Cruiser *(Macromia taeniolata)*	Dragonfly~	SC/N	
Mud Darter *(Etheostoma asprigene)*	Fish~	SC/N	
Skipjack Herring *(Alosa chrysochloris)*	Fish~	END	
Pallid Shiner *(Hybopsis amnis)*	Fish~	END	
Black Buffalo *(Ictiobus niger)*	Fish~	THR	
Goldeye *(Hiodon alosoides)*	Fish~	END	
Blue Sucker *(Cycleptus elongatus)*	Fish~	THR	
River Redhorse *(Moxostoma carinatum)*	Fish~	THR	

American Eel *(Anguilla rostrata)*	Fish~	SC/N	
Paddlefish *(Polyodon spathula)*	Fish~	THR	
Shoal Chub *(Macrhybopsis hyostoma)*	Fish~	THR	
Blanchard's Cricket Frog *(Acris blanchardi)*	Frog~	END	
Little Brown Bat *(Myotis lucifugus)*	Mammal~	THR	
Buckhorn *(Tritogonia verrucosa)*	Mussel~	THR	
Monkeyface *(Theliderma metanevra)*	Mussel~	THR	
Higgins Eye *(Lampsilis higginsii)*	Mussel~	END	LE
Fawnsfoot *(Truncilla donaciformis)*	Mussel~	THR	
Sheepnose *(Plethobasus cyphyus)*	Mussel~	END	LE
Washboard *(Megalonaias nervosa)*	Mussel~	SC/P	
Snowy Campion *(Silene nivea)*	Plant~	SC	
Blanding's Turtle *(Emydoidea blandingii)*	Turtle~	SC/P	SOC

For additional information on the rare species, high-quality natural communities, and other endangered resources listed above, please visit our Biodiversity (http://dnr.wi.gov/topic/EndangeredResources/biodiversity.html) page. For further definitions of state and federal statuses (END=Endangered, THR=Threatened, SC=Special Concern), please refer to the Natural Heritage Inventory (NHI) Working List (http://dnr.wi.gov/topic/nhi/wlist.html).

Section C. Follow-up actions

Actions that need to be taken to comply with state and/or federal endangered species laws:

• Henslow's Sparrow (*Centronyx henslowii*) - Bird

State Status: THR **Federal Status:** SOC

Impact Type	Impact possible
Required Measures	Time of year restriction
Description of Required Measures	Henslow's Sparrow have been known to occur at the project site. The birds and their nests and eggs are also protected under the federal Migratory Bird Treaty Act (MBTA). To avoid impacts to this listed species, the project shall follow one of the two options below: (i) Assume the birds are present on the site, and avoid all disturbances to the project site from May 5 - August 10. If the project can avoid disturbing areas within or adjacent to suitable habitat during this time period, there will not be any further project restrictions related to this species. If the project cannot completely avoid all areas of suitable habitat or take of the species, please contact me regarding the possibility of applying for an Incidental Take Permit/Authorization. (ii) Not assume the birds are present on the site and have a qualified biologist conduct surveys to determine if they are present (surveys must be conducted at the appropriate time of year and the biologist and survey protocols must be sent to the Review Program for approval prior to the initiation of surveys). If the Henslow's Sparrow are not found on the site as a result of the surveys, you will not have any project restrictions related to these species. If surveys are conducted and the Henslow's Sparrow is recorded, option (i) must be followed above. Survey results should be submitted to the Endangered Resources Review Program. Henslow's Sparrow (Centronyx henslowii), listed as Threatened in Wisconsin, prefers old fields, open grasslands, wet meadows, unmowed highway rights-of-way, undisturbed pastures, Timothy hay fields, and fallow land grown up to tall weeds. The required avoidance period is May 5 - August 10.

• Bell's Vireo (*Vireo bellii*) - Bird

State Status: THR

Impact Type	Impact possible
Required Measures	Time of year restriction,Surveys
Description of Required Measures	Bell's Vireo have been known to occur at the project site. The birds and their nests and eggs are also protected under the federal Migratory Bird Treaty Act (MBTA). To avoid impacts to this listed species, the project shall follow one of the two options below: (i) Assume the birds are present on the site, and avoid all disturbances to the project site from May 25 - August 5. If the project can avoid disturbing areas within or adjacent to suitable habitat during this time period, there will not be any further project restrictions related to this species. If the project cannot completely avoid all areas of suitable habitat or take of the species, please contact me

	regarding the possibility of applying for an Incidental Take Permit/Authorization. (ii) Not assume the birds are present on the site and have a qualified biologist conduct surveys to determine if they are present (surveys must be conducted at the appropriate time of year and the biologist and survey protocols must be sent to the Review Program for approval prior to the initiation of surveys). If the Bell's Vireo are not found on the site as a result of the surveys, you will not have any project restrictions related to these species. If surveys are conducted and the Bell's Vireo is recorded, option (i) must be followed above. Survey results should be submitted to the Endangered Resources Review Program. Bell's Vireo (Vireo bellii), listed as Threatened in Wisconsin, prefers dense shrubby areas within an open prairie landscape. The required avoidance period is May 25 - August 5.

• Black Tern (*Chlidonias niger*) - Bird~

State Status: END **Federal Status:** SOC

Impact Type	Impact possible
Required Measures	Time of year restriction
Description of Required Measures	Suitable habitat for the Black Tern may be present in portions of the project site in and around the marsh area. The birds and their nests and eggs are also protected under the federal Migratory Bird Treaty Act (MBTA). To avoid impacts to this listed species, the project shall follow one of the two options below: (i) Assume the birds are present on the site, and avoid all disturbances areas within or adjacent to suitable habitat from May 15 to July 31. If the project can avoid disturbing areas within or adjacent to suitable habitat during this time period, there will not be any further project restrictions related to this species. If the project cannot completely avoid all areas of suitable habitat or take of the species, please contact me regarding the possibility of applying for an Incidental Take Permit/Authorization. (ii) Not assume the birds are present on the site and have a qualified biologist conduct surveys to determine if they are present (the biologist and survey protocols must be sent to the Review Program for approval prior to the initiation of surveys). If Black Terns are not found on the site as a result of the surveys, you will not have any project restrictions related to these species. If surveys are conducted and the Black Tern is recorded, option (i) must be followed above. Survey results should be submitted to the Endangered Resources Review Program. Black Tern (Chlidonias niger), a bird listed as Endangered, prefers large shallow marshes with abundant vegetation adjacent to open water. The required avoidance period is from May 15 to July 31.

• Skipjack Herring (*Alosa chrysochloris*) - Fish~

State Status: END

Impact Type	Impact possible
Required Measures	Erosion Control
Description of Required Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, erosion and runoff prevention measures must be implemented during the course of the project to avoid take of the Skipjack Herring. Please note that plastic or polypropylene netting associated with erosion matting (also known as an erosion control blankets or erosion mesh netting) without independent movement of strands can easily entrap snakes and other wildlife moving through the area, and cause dehydration, desiccation, and eventually mortality. Biodegradable jute/twine netting with the “leno” or “gauze” weave (contains strands that are able to move independently) has the least impact on snakes. If erosion matting will be used for this project, use the following matting (or something similar): American Excelsior “FibreNet” or “NetFree” products; East Coast Erosion biodegradable jute products; Erosion Tech biodegradable jute products; ErosionControlBlanket.com biodegradable leno weave products; North American Green S75BN, S150BN, SC150BN or C125BN; or Western Excelsior “All Natural” products.

• Pallid Shiner (*Hybopsis amnis*) - Fish~

State Status: END

Impact Type	Impact possible
Required Measures	Erosion Control
Description of Required Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, erosion and runoff prevention measures must be implemented during the course of the project to avoid take of the Pallid Shiner. Please note that plastic or polypropylene netting associated with erosion matting (also known as an erosion control blankets or erosion mesh netting) without independent movement of strands can easily entrap snakes and other wildlife moving through the area, and cause dehydration, desiccation, and eventually mortality. Biodegradable jute/twine netting with the “leno” or “gauze” weave (contains strands that are able to move independently) has the least impact on snakes. If erosion matting will be used for this project, use the following matting (or something similar): American Excelsior “FibreNet” or “NetFree” products; East Coast Erosion biodegradable jute products; Erosion Tech biodegradable jute products; ErosionControlBlanket.com biodegradable leno weave products; North American Green S75BN, S150BN, SC150BN or C125BN; or Western Excelsior “All Natural” products.

• **Black Buffalo (*Ictiobus niger*) - Fish~**

State Status: THR

Impact Type	Impact possible
Required Measures	Erosion Control
Description of Required Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, erosion and runoff prevention measures must be implemented during the course of the project to avoid take of the Black Buffalo. Please note that plastic or polypropylene netting associated with erosion matting (also known as an erosion control blankets or erosion mesh netting) without independent movement of strands can easily entrap snakes and other wildlife moving through the area, and cause dehydration, desiccation, and eventually mortality. Biodegradable jute/twine netting with the “leno” or “gauze” weave (contains strands that are able to move independently) has the least impact on snakes. If erosion matting will be used for this project, use the following matting (or something similar): American Excelsior “FibreNet” or “NetFree” products; East Coast Erosion biodegradable jute products; Erosion Tech biodegradable jute products; ErosionControlBlanket.com biodegradable leno weave products; North American Green S75BN, S150BN, SC150BN or C125BN; or Western Excelsior “All Natural” products.

• **Goldeye (*Hiodon alosoides*) - Fish~**

State Status: END

Impact Type	Impact possible
Required Measures	Erosion Control
Description of Required Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, erosion and runoff prevention measures must be implemented during the course of the project to avoid take of the Goldeye. Please note that plastic or polypropylene netting associated with erosion matting (also known as an erosion control blankets or erosion mesh netting) without independent movement of strands can easily entrap snakes and other wildlife moving through the area, and cause dehydration, desiccation, and eventually mortality. Biodegradable jute/twine netting with the “leno” or “gauze” weave (contains strands that are able to move independently) has the least impact on snakes. If erosion matting will be used for this project, use the following matting (or something similar): American Excelsior “FibreNet” or “NetFree” products; East Coast Erosion biodegradable jute products; Erosion Tech biodegradable jute products; ErosionControlBlanket.com biodegradable leno weave products; North American Green S75BN, S150BN, SC150BN or C125BN; or Western Excelsior “All Natural” products.

• **Blue Sucker (*Cycleptus elongatus*) - Fish~**

State Status: THR

Impact Type	Impact possible
Required Measures	Erosion Control
Description of Required Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, erosion and runoff prevention measures must be implemented during the course of the project to avoid take of the Blue Sucker. Please note that plastic or polypropylene netting associated with erosion matting (also known as an erosion control blankets or erosion mesh netting) without independent movement of strands can easily entrap snakes and other wildlife moving through the area, and cause dehydration, desiccation, and eventually mortality. Biodegradable jute/twine netting with the “leno” or “gauze” weave (contains strands that are able to move independently) has the least impact on snakes. If erosion matting will be used for this project, use the following matting (or something similar): American Excelsior “FibreNet” or “NetFree” products; East Coast Erosion biodegradable jute products; Erosion Tech biodegradable jute products; ErosionControlBlanket.com biodegradable leno weave products; North American Green S75BN, S150BN, SC150BN or C125BN; or Western Excelsior “All Natural” products.

• **River Redhorse (*Moxostoma carinatum*) - Fish~**

State Status: THR

Impact Type	Impact possible
Required Measures	Erosion Control
Description of Required Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, erosion and runoff prevention measures must be implemented during the course of the project to avoid take of the River Redhorse. Please note that plastic or polypropylene netting associated with erosion matting (also known as an erosion control blankets or erosion mesh netting) without independent movement of strands can easily entrap snakes and other wildlife moving through the area, and cause dehydration, desiccation, and eventually mortality. Biodegradable jute/twine netting with the “leno” or “gauze” weave (contains strands that are able to move independently) has the least impact on snakes. If erosion matting will be used for this project, use the following matting (or something similar): American Excelsior “FibreNet” or “NetFree” products; East Coast Erosion biodegradable jute products; Erosion Tech biodegradable jute products;

	ErosionControlBlanket.com biodegradable leno weave products; North American Green S75BN, S150BN, SC150BN or C125BN; or Western Excelsior “All Natural” products.

• Paddlefish (*Polyodon spathula*) - Fish~

State Status: THR

Impact Type	Impact possible
Required Measures	Erosion Control
Description of Required Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, erosion and runoff prevention measures must be implemented during the course of the project to avoid take of the Paddlefish. Please note that plastic or polypropylene netting associated with erosion matting (also known as an erosion control blankets or erosion mesh netting) without independent movement of strands can easily entrap snakes and other wildlife moving through the area, and cause dehydration, desiccation, and eventually mortality. Biodegradable jute/twine netting with the “leno” or “gauze” weave (contains strands that are able to move independently) has the least impact on snakes. If erosion matting will be used for this project, use the following matting (or something similar): American Excelsior “FibreNet” or “NetFree” products; East Coast Erosion biodegradable jute products; Erosion Tech biodegradable jute products; ErosionControlBlanket.com biodegradable leno weave products; North American Green S75BN, S150BN, SC150BN or C125BN; or Western Excelsior “All Natural” products.

• Shoal Chub (*Macrhybopsis hyostoma*) - Fish~

State Status: THR

Impact Type	Impact possible
Required Measures	Erosion Control
Description of Required Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, erosion and runoff prevention measures must be implemented during the course of the project to avoid take of the Shoal Chub. Please note that plastic or polypropylene netting associated with erosion matting (also known as an erosion control blankets or erosion mesh netting) without independent movement of strands can easily entrap snakes and other wildlife moving through the area, and cause dehydration, desiccation, and eventually mortality. Biodegradable jute/twine netting with the “leno” or “gauze” weave (contains strands that are able to move independently) has the least impact on snakes. If erosion matting will be used for this project, use the following matting (or something similar): American Excelsior “FibreNet” or “NetFree” products; East Coast Erosion biodegradable jute products; Erosion Tech biodegradable jute products; ErosionControlBlanket.com biodegradable leno weave products; North American Green S75BN, S150BN, SC150BN or C125BN; or Western Excelsior “All Natural” products.

• Blanchard's Cricket Frog (*Acris blanchardi*) - Frog~

State Status: END

Impact Type	Impact possible
Required Measures	Time of year restriction,Surveys
Description of Required Measures	Since suitable habitat for the Blanchard’s Cricket Frog is present within the project site, one of the following options shall be implemented to avoid take of the species: 1. Avoid work within 75ft of standing water from March 5 – November 30 and within 50ft of standing water from December 1 – March 4. 2. Conduct cricket frog breeding call surveys at the site to determine cricket frog presence/absence (surveys must be conducted according to the Blanchard’s Cricket Frog Species Guidance document: see above). If cricket frogs are not found on site, there will be no project restrictions related to the cricket frog. However, if surveys are conducted and cricket frogs are recorded on site, all impacts to the species must be avoided. If impacts cannot be avoided, then an incidental take permit/authorization shall be applied for. Survey results should be submitted to the Endangered Resources Review Program. Please note, active dates are updated frequently in the spring, starting in early March, and can be checked here: http://dnr.wi.gov/topic/WildlifeHabitat/Herps.asp#regs Blanchard's Cricket Frog (Acris blanchardi), listed as Endangered in Wisconsin, prefers ponds, lakes, and a variety of habitats along and adjacent to streams and rivers including, marshes, fens, sedge meadows, low prairies, and exposed mud flats.

• Buckhorn (*Tritogonia verrucosa*) - Mussel~

State Status: THR

Impact Type	Impact possible
Required Measures	Erosion Control
Description of Required Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, erosion and runoff prevention measures must be implemented during the course of the project to avoid take of the Buckhorn.

	Please note that plastic or polypropylene netting associated with erosion matting (also known as an erosion control blankets or erosion mesh netting) without independent movement of strands can easily entrap snakes and other wildlife moving through the area, and cause dehydration, desiccation, and eventually mortality. Biodegradable jute/twine netting with the “leno” or “gauze” weave (contains strands that are able to move independently) has the least impact on snakes. If erosion matting will be used for this project, use the following matting (or something similar): American Excelsior “FibreNet” or “NetFree” products; East Coast Erosion biodegradable jute products; Erosion Tech biodegradable jute products; ErosionControlBlanket.com biodegradable leno weave products; North American Green S75BN, S150BN, SC150BN or C125BN; or Western Excelsior “All Natural” products.

• Monkeyface (*Theliderma metanevra*) - Mussel~

State Status: THR

Impact Type	Impact possible
Required Measures	Erosion Control
Description of Required Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, erosion and runoff prevention measures must be implemented during the course of the project to avoid take of the Monkeyface. Please note that plastic or polypropylene netting associated with erosion matting (also known as an erosion control blankets or erosion mesh netting) without independent movement of strands can easily entrap snakes and other wildlife moving through the area, and cause dehydration, desiccation, and eventually mortality. Biodegradable jute/twine netting with the “leno” or “gauze” weave (contains strands that are able to move independently) has the least impact on snakes. If erosion matting will be used for this project, use the following matting (or something similar): American Excelsior “FibreNet” or “NetFree” products; East Coast Erosion biodegradable jute products; Erosion Tech biodegradable jute products; ErosionControlBlanket.com biodegradable leno weave products; North American Green S75BN, S150BN, SC150BN or C125BN; or Western Excelsior “All Natural” products.

• Higgins Eye (*Lampsilis higginsii*) - Mussel~

State Status: END**Federal Status:** LE

Impact Type	Impact possible
Required Measures	Erosion Control
Description of Required Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, erosion and runoff prevention measures must be implemented during the course of the project to avoid take of the Higgins Eye. Please note that plastic or polypropylene netting associated with erosion matting (also known as an erosion control blankets or erosion mesh netting) without independent movement of strands can easily entrap snakes and other wildlife moving through the area, and cause dehydration, desiccation, and eventually mortality. Biodegradable jute/twine netting with the “leno” or “gauze” weave (contains strands that are able to move independently) has the least impact on snakes. If erosion matting will be used for this project, use the following matting (or something similar): American Excelsior “FibreNet” or “NetFree” products; East Coast Erosion biodegradable jute products; Erosion Tech biodegradable jute products; ErosionControlBlanket.com biodegradable leno weave products; North American Green S75BN, S150BN, SC150BN or C125BN; or Western Excelsior “All Natural” products.

• Fawnsfoot (*Truncilla donaciformis*) - Mussel~

State Status: THR

Impact Type	Impact possible
Required Measures	Erosion Control
Description of Required Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, erosion and runoff prevention measures must be implemented during the course of the project to avoid take of the Fawnsfoot. Please note that plastic or polypropylene netting associated with erosion matting (also known as an erosion control blankets or erosion mesh netting) without independent movement of strands can easily entrap snakes and other wildlife moving through the area, and cause dehydration, desiccation, and eventually mortality. Biodegradable jute/twine netting with the “leno” or “gauze” weave (contains strands that are able to move independently) has the least impact on snakes. If erosion matting will be used for this project, use the following matting (or something similar): American Excelsior “FibreNet” or “NetFree” products; East Coast Erosion biodegradable jute products; Erosion Tech biodegradable jute products; ErosionControlBlanket.com biodegradable leno weave products; North American Green S75BN, S150BN, SC150BN or C125BN; or Western Excelsior “All Natural” products.

• Sheepnose (*Plethobasus cyphyus*) - Mussel~

State Status: END**Federal Status:** LE

Impact Type	Impact possible
Required Measures	Erosion Control

Description of Required Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, erosion and runoff prevention measures must be implemented during the course of the project to avoid take of the Sheepnose. Please note that plastic or polypropylene netting associated with erosion matting (also known as an erosion control blankets or erosion mesh netting) without independent movement of strands can easily entrap snakes and other wildlife moving through the area, and cause dehydration, desiccation, and eventually mortality. Biodegradable jute/twine netting with the “leno” or “gauze” weave (contains strands that are able to move independently) has the least impact on snakes. If erosion matting will be used for this project, use the following matting (or something similar): American Excelsior “FibreNet” or “NetFree” products; East Coast Erosion biodegradable jute products; Erosion Tech biodegradable jute products; ErosionControlBlanket.com biodegradable leno weave products; North American Green S75BN, S150BN, SC150BN or C125BN; or Western Excelsior “All Natural” products.

Actions recommended to help conserve Wisconsin’s Endangered Resources:

• Common Nighthawk (*Chordeiles minor*) - Bird

State Status: SC/M

Impact Type	Impact possible
Recommended Measures	Time of year restriction
Description of Recommended Measures	Suitable habitat for the Common Nighthawk may be present at the project site. It is recommended to avoid disturbance to the project site during the nesting period, May 20 - August 5. Common Nighthawk (Chordeiles minor), a State Special Concern bird, can be found throughout Wisconsin but is most common in dry, sandy prairie and barrens landscapes, along river systems, and in urban areas. They hunt on the wing for aerial insects (e.g., caddisflies, mayflies, wasps, moths, beetles) during late evening and early morning in forest openings, along rivers or streams, or over barrens and wetlands. They nest in a variety of habitats including forest clearings, dry grasslands and barrens, gravel bars, cultivated fields, and on flat gravel roofs. The recommended avoidance period is May 20 - August 5.

• Floodplain Forest - Community~

State Status: NA

Impact Type	Impact possible
Recommended Measures	Other
Description of Recommended Measures	Floodplain Forest may occur within the project site. Natural communities may contain rare or declining species and their protection should be incorporated into the project design as much as possible. We recommend minimizing impacts to and/or incorporating buffers along the edges of the .

• Shrub-carr - Community~

State Status: NA

Impact Type	Impact possible
Recommended Measures	Other
Description of Recommended Measures	Shrub-carr may occur within the project site. Natural communities may contain rare or declining species and their protection should be incorporated into the project design as much as possible. We recommend minimizing impacts to and/or incorporating buffers along the edges of the .

• Emergent Marsh - Community~

State Status: NA

Impact Type	Impact possible
Recommended Measures	Other
Description of Recommended Measures	Emergent Marsh may occur within the project site. Natural communities may contain rare or declining species and their protection should be incorporated into the project design as much as possible. We recommend minimizing impacts to and/or incorporating buffers along the edges of the .

• Royal River Cruiser (*Macromia taeniolata*) - Dragonfly~

State Status: SC/N

Impact Type	Impact possible
Recommended Measures	Erosion Control
Description of Recommended	Because this project has the potential to impact the Mississippi River and the La Crosse River, it is recommended that erosion and runoff prevention measures be implemented during the course of the project to avoid take of the Royal River Cruiser.

Measures	Royal River Cruiser (Macromia taeniolata), a State Special Concern species, has been found in rocky open shorelines of large southern rivers. The flight period extends from late June through early August.

• Mud Darter (*Etheostoma asprigene*) - Fish~

State Status: SC/N

Impact Type	Impact possible
Recommended Measures	Erosion Control
Description of Recommended Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, it is recommended that erosion and runoff prevention measures be implemented during the course of the project to avoid take of the Mud Darter.

• American Eel (*Anguilla rostrata*) - Fish~

State Status: SC/N

Impact Type	Impact possible
Recommended Measures	Erosion Control
Description of Recommended Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, it is recommended that erosion and runoff prevention measures be implemented during the course of the project to avoid take of the American Eel.

• Little Brown Bat (*Myotis lucifugus*) - Mammal~

State Status: THR

Impact Type	Impact possible
Recommended Measures	Time of year restriction,Other
Description of Recommended Measures	While the known roost is not within the project site and will not be disturbed, bats can use trees for roosting. It is recommended to minimize disturbance to any treed areas. Special consideration should be given to protecting snags or dying trees, particularly from June 1 through August 15 while bats may have pups at the roost. The little brown bat (Myotis lucifugus) is a Threatened species in Wisconsin. Its dorsal fur is a glossy dark-brown to olive-brown color with a lighter ventral side. The little brown bat is insectivorous and feeds on aquatic soft-bodied insects. The species is found roosting in warm microclimates provided by tree snags, bat houses and buildings during the summer. It forages primarily over open water and along edge habitat. This bat hibernates in caves and mines from October through April. Mating occurs in the fall, and females store sperm until emergence in the spring. Usually one pup is born in early June and matures after six weeks.

• Washboard (*Megalonaias nervosa*) - Mussel~

State Status: SC/P

Impact Type	Impact possible
Recommended Measures	Erosion Control
Description of Recommended Measures	Because this project has the potential to impact the Mississippi River and the La Crosse River, it is recommended that erosion and runoff prevention measures be implemented during the course of the project to avoid take of the Washboard.

• Snowy Campion (*Silene nivea*) - Plant~

State Status: SC

Impact Type	Impact possible
Recommended Measures	Surveys,Other
Description of Recommended Measures	Suitable habitat for the Snowy Campion may be present in portions of the project site. Although not required because this is a Special Concern plants, we recommend that you avoid or minimize take of the Snowy Campion. Avoidance and minimization efforts may include site surveys to confirm presence/absence of species and fencing off areas of occupied habitat. Survey results should be submitted to the Endangered Resources Review Program. Snowy Campion (Silene nivea), a Wisconsin Special Concern plant, is found on streambanks and stream-side meadows, often in reed canary grass. It also occurs along deciduous forest margins, near streams and rivers. Blooming occurs late June through late July; fruiting occurs early July through late August. The optimal identification period for this species is late June through late July.

• Blanding's Turtle (*Emydoidea blandingii*) - Turtle~

State Status: SC/P**Federal Status:** SOC

Impact Type	Impact possible
Recommended Measures	Time of year restriction,Exclusion Fencing,Other
Description of Recommended Measures	Since suitable nesting habitat, particularly in the disturbed area, and wetland habitat for the Blanding's Turtle is present within the project site, the following measures can voluntarily be implemented to avoid impacts: Overwintering areas – Blanding's turtles typically overwinter in wetlands or water bodies with standing water at least three feet deep. Because this species can be found in these wetlands and water bodies throughout the year, impacts to these wetlands and water bodies should be minimized at all times. Wetland disturbance should particularly be avoided during the overwintering period (Nov 16-Mar 4). Non-overwintering areas – For wetlands / water bodies shallower than three feet at the deepest point, conduct work outside of the Blanding's turtle's active season (March 5 – November 15). The installation and maintenance of exclusion fencing using the WDNR Amphibian and Reptile Exclusion Fencing Protocol is an avoidance option that can be used during this period as long as the exclusion fencing is installed between November 16 and March 4. Work can then be conducted within the fenced area at any time of year as long as the fencing is maintained. Upland nesting habitat – Avoid work in suitable upland nesting habitat (sandy and/or well-drained soils) within 275 m (900 ft) of a wetland or water body during the Blanding's turtle's nesting period (May 20 – October 15). The installation and maintenance of exclusion fencing using the WDNR Amphibian and Reptile Exclusion Fencing Protocol is an avoidance option that can be used during this period as long as the exclusion fencing is installed between October 16 and May 19. Work can then be conducted within the fenced area at any time of year as long as the fencing is maintained. Otherwise if a turtle is found, please carefully move it to suitable habitat outside the project area. Please note, active dates are updated frequently in the spring, starting in early March, and can be checked here: http://dnr.wi.gov/topic/WildlifeHabitat/Herps.asp#regs Blanding's turtles (Emydoidea blandingii) are listed as a Species of Special Concern in Wisconsin. They utilize a wide variety of aquatic habitats including deep and shallow marshes, shallow bays of lakes and impoundments where areas of dense emergent and submergent vegetation exists, sluggish streams, oxbows and other backwaters of rivers, drainage ditches (usually where wetlands have been drained), and sedge meadows and wet meadows adjacent to these habitats. This species is semi-terrestrial and individuals may spend quite a bit of time on land. Nesting occurs from about mid-May through early July depending on spring temperatures. They strongly prefer to nest in sandy soils and may travel up to 300 m (984 ft) from a wetland or waterbody to find suitable nesting sites.

Remember that although these actions are not required by state or federal endangered species laws, they may be required by other laws, permits, granting programs, or policies of this or another agency. Examples include the federal Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, State Natural Areas law, DNR Chapter 30 Wetland and Waterway permits, DNR Stormwater permits, and Forest Certification.

No actions are required or recommended for the following endangered resources:

• Peregrine Falcon (*Falco peregrinus*) - Bird

State Status: END

Impact Type	No impact or no/low broad ITP/A
Reason	Lack of Suitable Habitat within Project Boundary
Justification	No suitable habitat is present at the project site. No impacts are anticipated. Peregrine Falcon (Falco peregrinus), a bird listed as Endangered in Wisconsin, prefers relatively inaccessible rock ledges on the sides of steep bluffs and ledges on highrise buildings in urban areas. The required avoidance period is from March 15 through July 10.

• Bald Eagle (*Haliaeetus leucocephalus*) - Bird~

State Status: Federal Status:

Impact Type	No impact or no/low broad ITP/A
Reason	Other - Justification Required
Justification	This project is within 1 mile of a bald eagle nest and suitable habitat for the eagle is present in the project area. However, a recent survey did not find any Bald Eagle nests at or within 660 feet of the project site. No impacts are anticipated. Please note, however, that if Eagles are seem at the project site, project activities should be avoided from January 15 – July 30 within 660ft of the nest. Please note, that the bald eagle is federally protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Visit the USFWS Bald Eagle Management website (https://www.fws.gov/midwest/eagle/permits/baeatake/step1.html) for detailed guidelines and conservation measures for your specific project activity.

Section D. Next Steps

1. Evaluate whether the **'Location and brief description of the proposed project'** is still accurate. All recommendations in this ER Review are based on the information supplied in the ER Review Request. If the proposed project has changed or more than a year has passed and you would like your letter renewed, please contact the ER Review Program to determine if the information in this ER Review is still valid.
2. Determine whether the project can incorporate and implement the **'Follow-up actions'** identified above:
    - 'Actions that need to be taken to comply with state and/or federal endangered species laws' represent the Department's best available guidance for complying with state and federal endangered species laws based on the project information that you provided and the endangered resources information and data available to us. If the proposed project has not changed from the description that you provided us and you are able to implement all of the 'Actions that need to be taken to comply with state and/or federal endangered species laws', your project should comply with state and federal endangered species laws. Please remember that if a violation occurs, the person responsible for the taking is the liable party. Generally this is the landowner or project proponent. For questions or concerns about individual responsibilities related to Wisconsin's Endangered Species Law, please contact the ER Review Program.
    - If the project is unable to incorporate and implement one or more of the 'Actions that need to be taken to comply with state and/or federal endangered species laws' identified above, the project may potentially violate one or more of these laws. Please contact the ER Review Program immediately to assist in identifying potential options that may allow the project to proceed in compliance with state and federal endangered species laws.
    - 'Actions recommended to help conserve Wisconsin's Endangered Resources' may be required by another law, a policy of this or another Department, agency or program; or as part of another permitting, approval or granting process. Please make sure to carefully read all permits and approvals for the project to determine whether these or other measures may be required. Even if these actions are not required by another program or entity for the proposed project to proceed, the Department strongly encourages the implementation of these conservation measures on a voluntary basis to help prevent future listings and protect Wisconsin's biodiversity for future generations.
3. If federally-protected species or habitats are involved and the project involves federal funds, technical assistance or authorization (e.g., permit) and there are likely to be any impacts (positive or negative) to them, consultation with USFWS will need to occur prior to the project being able to proceed. If no federal funding, assistance or authorization is involved with the project and there are likely to be adverse impacts to the species, contact the USFWS Twin Cities Ecological Services Field Office at 612-725-3548 (x2201) for further information and guidance.

Section E. Standard Information to help you better understand this ER Review

Endangered Resources (ER) Reviews are conducted according to the protocols in the guidance document Conducting Proposed Endangered Resources Reviews: A Step-by-Step Guide for Wisconsin DNR Staff.

How endangered resources searches are conducted for the proposed project area: An endangered resources search is performed as part of all ER Reviews. A search consists of querying the Wisconsin Natural Heritage Inventory (NHI) database for endangered resources records for the proposed project area. The project area evaluated consists of both the specific project site and a buffer area surrounding the site. A 1 mile buffer is considered for terrestrial and wetland species, and a 2 mile buffer for aquatic species. Endangered resources records from the buffer area are considered because most lands and waters in the state, especially private lands, have not been surveyed. Considering records from the entire project area (also sometimes referred to as the search area) provides the best picture of species and communities that may be present on your specific site if suitable habitat for those species or communities is present.

Categories of endangered resources considered in ER Reviews and protections for each: Endangered resources records from the NHI database fall into one of the following categories:

- Federally-protected species include those federally listed as Endangered or Threatened and Designated Critical Habitats. Federally-protected animals are protected on all lands; federally-protected plants are protected only on federal lands and in the course of projects that include federal funding (see Federal Endangered Species Act of 1973 as amended).
- Animals (vertebrate and invertebrate) listed as Endangered or Threatened in Wisconsin are protected by Wisconsin's Endangered Species Law on all lands and waters of the state (s. 29.604, Wis. Stats.).
- Plants listed as Endangered or Threatened in Wisconsin are protected by Wisconsin's Endangered Species Law on public lands and on land that the person does not own or lease, except in the course of forestry, agriculture, utility, or bulk sampling actions (s. 29.604, Wis. Stats.).
- Special Concern species, high-quality examples of natural communities (sometimes called High Conservation Value areas), and natural features (e.g., caves and animal aggregation sites) are also included in the NHI database. These endangered resources are not legally protected by state or federal endangered species laws. However, other laws, policies (e.g., related to Forest Certification), or granting/permitting processes may require or strongly encourage protection of these resources. The main purpose of the Special Concern classification is to focus attention on species about which some problem of abundance or distribution is suspected before they become endangered or threatened.

- State Natural Areas (SNAs) are also included in the NHI database. SNAs protect outstanding examples of Wisconsin's native landscape of natural communities, significant geological formations, and archeological sites. Endangered species are often found within SNAs. SNAs are protected by law from any use that is inconsistent with or injurious to their natural values (s. 23.28, Wis. Stats.).

Please remember the following:

1. This ER Review is provided as information to comply with state and federal endangered species laws. By following the protocols and methodologies described above, the best information currently available about endangered resources that may be present in the proposed project area has been provided. However, the NHI database is not all inclusive; systematic surveys of most public lands have not been conducted, and the majority of private lands have not been surveyed. As a result, NHI data for the project area may be incomplete. Occurrences of endangered resources are only in the NHI database if the site has been previously surveyed for that species or group during the appropriate season, and an observation was reported to and entered into the NHI database. As such, absence of a record in the NHI database for a specific area should not be used to infer that no endangered resources are present in that area. Similarly, the presence of one species does not imply that surveys have been conducted for other species. Evaluations of the possible presence of rare species on the project site should always be based on whether suitable habitat exists on site for that species.

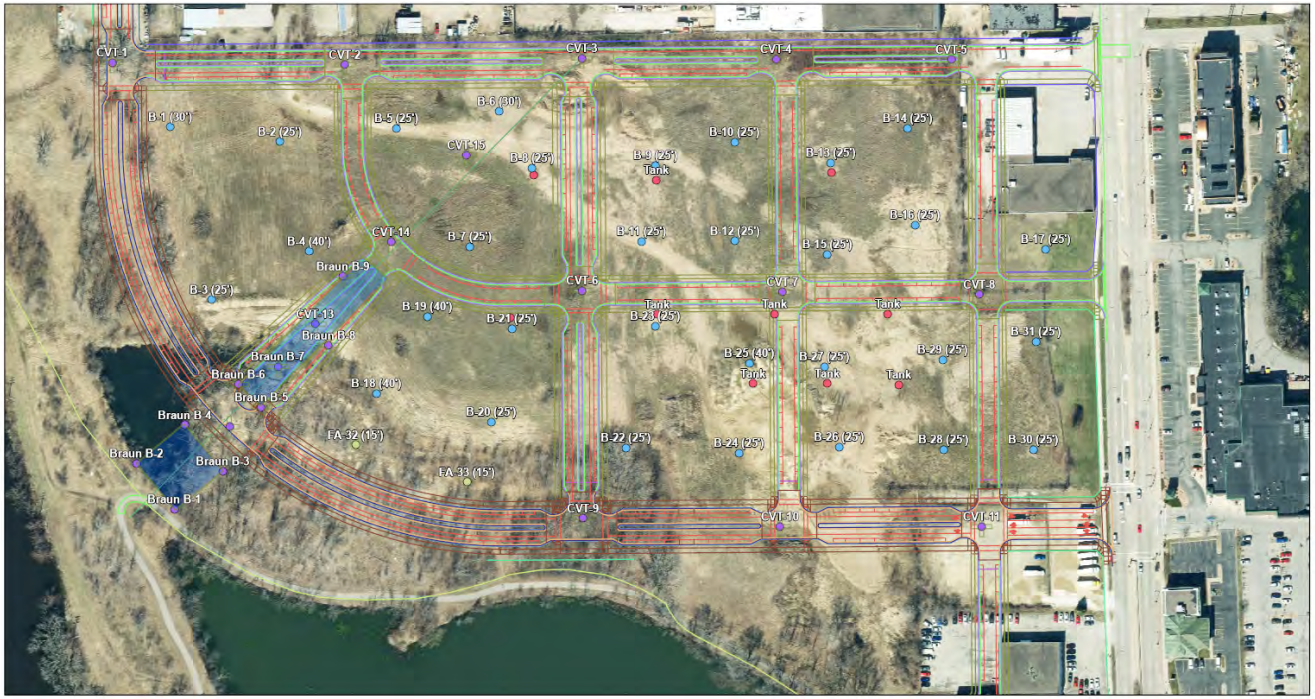
2. This ER Review provides an assessment of endangered resources that may be impacted by the project and measures that can be taken to avoid negatively impacting those resources based on the information that has been provided to ER Review Program at this time. Incomplete information, changes in the project, or subsequent survey results may affect our assessment and indicate the need for additional or different measures to avoid impacts to endangered resources.

3. This ER Review does not exempt the project from actions that may be required by Department permits or approvals for the project. Information contained in this ER Review may be shared with individuals who need this information in order to carry out specific roles in the planning, permitting, and implementation of the proposed project.

Appendix F

Soils Information

LACRS 163627 - Soil Boring w/added layers



March 14, 2022

1:2,257

0 0.02 0.04 0.08 mi

0 0.03 0.06 0.12 km

La Crosse Co WI Land Info, Maxar, Microsoft

Darin Hyatt
La Crosse Co WI Land Info, Maxar, Microsoft

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2201011
Geotechnical Evaluation
River Point District-Storm Water Tanks
Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-1**
LOCATION: See attached sketch
NORTHING: EASTING:
DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/16/22 | END DATE: 02/16/22
SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		FILL: POORLY GRADED SAND (SP), fine-grained, brown, moist to wet		5-6-6 (12)			
			5	5-7-8 (15)			
				6-7-8 (15)			
			10	8-12-14 (26)			
		Concrete debris at 12 feet		5-7-7 (14)			
14.0	▽	ORGANIC CLAY (OL), gray, wet (SWAMP DEPOSIT)	15	1-1-1 (2)		33	OC=3%
			20	0-0-2 (2)		49	DD=80 pcf
23.0		CLAYEY SAND (SC), slightly organic, gray, wet, medium (ALLUVIUM)	25	0-1-6 (7)			
28.0		SANDY ORGANIC CLAY (OL), gray, wet (ALLUVIUM)	30	1-2-4 (6)		39	P200=52%

Continued on next page

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Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-1**

LOCATION: See attached sketch

NORTHING: | EASTING:

DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/16/22 | END DATE: 02/16/22

SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		SANDY ORGANIC CLAY (OL), gray, wet (ALLUVIUM)	35	2-2-3 (5)			
38.0		POORLY GRADED SAND (SP), fine to medium-grained, gray, wet, medium dense (ALLUVIUM)	40	4-4-7 (11)			
41.0		END OF BORING Boring then grouted	45 50 55 60				Water observed at 14.0 feet while drilling. Cave in depth of 22.5 feet immediately after withdrawal of auger.

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LOG OF BORING

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Project Number B2201011
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Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-2**
LOCATION: See attached sketch
NORTHING: EASTING:
DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/16/22 | END DATE: 02/16/22
SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
	▽	FILL: POORLY GRADED SAND (SP), fine-grained, brown, moist to wet		2-3-5 (8)			
			5	6-12-14 (26)			
				7-8-16 (24)			
			10	7-15-20 (35)			
		Concrete debris at 12 feet		6-8-9 (17)			
			15	2-2-3 (5)			
18.0		CLAYEY SAND (SC), slightly organic, gray, wet, soft (ALLUVIUM)	20	2-0-4 (4)		30	P200=16%
23.0		ORGANIC CLAY (OL), with shells, dark gray, wet (SWAMP DEPOSIT)	25	1-0-2 (2)		38	OC=3%
			30	1-0-3 (3)		36	DD=88 pcf

Continued on next page

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Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-2**
LOCATION: See attached sketch
NORTHING: EASTING:
DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/16/22 | END DATE: 02/16/22
SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		ORGANIC CLAY (OL), with shells, dark gray, wet (SWAMP DEPOSIT)	35	1-2-3 (5)			
38.0		POORLY GRADED SAND (SP), fine to medium-grained, gray, wet, medium dense (ALLUVIUM)	40	6-8-10 (18)			
			45	8-12-16 (28)		17	P200=4%
			50	4-7-7 (14)			
51.0		LEAN CLAY (CL), fibrous, slightly organic, black, wet (SWAMP DEPOSIT)				51	OC=4%
54.0		POORLY GRADED SAND (SP), fine to medium-grained, gray, wet, medium dense (ALLUVIUM)	55	7-8-12 (20)			
		Trace Gravel from 60 to 75 feet	60	7-7-10 (17)			

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BORING: **ST-2**
LOCATION: See attached sketch
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DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/16/22 | END DATE: 02/16/22
SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
65		POORLY GRADED SAND (SP), fine to medium-grained, gray, wet, medium dense (ALLUVIUM)		6-7-9 (16)			
70				5-6-8 (14)			
75				10-15-17 (32)			
80				12-16-17 (33)			
85				15-15-20 (35)			
90				14-16-19 (35)			
95				15-17-20 (37)			

Continued on next page

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La Crosse, Wisconsin

BORING: **ST-2**

LOCATION: See attached sketch

NORTHING: | EASTING:

DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/16/22 | END DATE: 02/16/22

SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		POORLY GRADED SAND (SP), fine to medium-grained, gray, wet, medium dense (ALLUVIUM)					
			100	21-23-27 (50)			
101.0		END OF BORING					Water observed at 14.0 feet while drilling.
		Boring then grouted					
			105				
			110				
			115				
			120				
			125				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2201011
Geotechnical Evaluation
River Point District-Storm Water Tanks
Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-3**

LOCATION: See attached sketch

NORTHING: EASTING:

DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/15/22 | END DATE: 02/15/22

SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		FILL: POORLY GRADED SAND (SP), fine-grained, brown, moist		6-2-3 (5)			
				2-2-3 (5)			
				3-5-9 (14)		6	P200=3%
10.5							
		FILL: CONCRETE		8-28-50/1" (REF)			
12.0							
		END OF BORING					Water not observed while drilling.
		Boring then grouted					Refusal on apparent concrete

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2201011
Geotechnical Evaluation
River Point District-Storm Water Tanks
Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-4**
LOCATION: See attached sketch
NORTHING: EASTING:
DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/16/22 | END DATE: 02/16/22
SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
	▽	FILL: POORLY GRADED SAND (SP), fine-grained, brown, moist to wet		5-5-7 (12)			
			5	4-12-19 (31)			
				10-15-20 (35)			
			10	12-16-22 (38)			
				8-10-19 (29)			
			15	4-5-6 (11)			
18.0		ORGANIC CLAY (OL), gray, wet (SWAMP DEPOSIT)	20	0-1-1 (2)			
22.0		CLAYEY SAND (SC), slightly organic, gray, wet (ALLUVIUM)	25	TW		30	P200=31% OC=3%
27.0		FAT CLAY (CH), slightly organic, gray, wet, medium (ALLUVIUM)	30	1-2-5 (7)		39	LL=51, PL=27, PI=24

Continued on next page

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2201011
Geotechnical Evaluation
River Point District-Storm Water Tanks
Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-4**

LOCATION: See attached sketch

NORTHING: | EASTING:

DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/16/22 | END DATE: 02/16/22

SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		FAT CLAY (CH), slightly organic, gray, wet, medium (ALLUVIUM)	35	2-3-7 (10)			
38.0		POORLY GRADED SAND (SP), fine-grained, gray, wet, medium dense (ALLUVIUM)	40	6-8-7 (15)			
41.0		END OF BORING Boring then grouted	45 50 55 60				Water observed at 14.0 feet while drilling. Cave in depth of 27 feet immediately after withdrawal of auger.

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2201011
Geotechnical Evaluation
River Point District-Storm Water Tanks
Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-5**

LOCATION: See attached sketch

NORTHING: EASTING:

DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/16/22 | END DATE: 02/16/22

SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		FILL: POORLY GRADED SAND (SP), fine-grained, brown, moist		4-5-5 (10)			
			5	4-8-10 (18)		4	P200=2%
				8-10-12 (22)			
9.0							
		FILL: CONCRETE	10	12-24-39 (63)			
12.0							Water not observed while drilling.
		END OF BORING					Refusal on apparent aggregate
		Boring then grouted	15				
			20				
			25				
			30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2201011
Geotechnical Evaluation
River Point District-Storm Water Tanks
Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-6**

LOCATION: See attached sketch

NORTHING: | EASTING:

DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/16/22 | END DATE: 02/16/22

SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		FILL: POORLY GRADED SAND (SP), fine-grained, brown, moist		5-6-8 (14)			
5				8-12-16 (28)			
				7-8-16 (24)			
10				6-10-12 (22)		16	P200=4%
12.0		END OF BORING					Water not observed while drilling.
		Boring then grouted					Refusal on apparent concrete
15							
20							
25							
30							

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2201011
Geotechnical Evaluation
River Point District-Storm Water Tanks
Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-7**

LOCATION: See attached sketch

NORTHING: EASTING:

DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/17/22 | END DATE: 02/17/22

SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		FILL: POORLY GRADED SAND (SP), fine-grained, brown, moist		5-7-7 (14)			
			5	7-8-14 (22)			
				8-10-12 (22)		5	P200=3%
			10	10-12-14 (26)			
12.5							
13.0		FILL: CONCRETE		10-50/1" (REF)			
		END OF BORING					
		Boring then grouted	15				Refusal on apparent concrete
			20				
			25				
			30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2201011
Geotechnical Evaluation
River Point District-Storm Water Tanks
Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-8**
LOCATION: See attached sketch
NORTHING: EASTING:
DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/17/22 | END DATE: 02/17/22
SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
	▽	FILL: POORLY GRADED SAND (SP), fine-grained, brown, moist		4-5-5 (10)			
			5	5-5-5 (10)			
				5-5-7 (12)			
			10	5-7-7 (14)			
14.0				5-6-6 (12)			
		FILL: POORLY GRADED SAND (SP), fine-grained, trace concrete, brown, wet	15	10-10-5 (15)			
18.0							
		POORLY GRADED SAND (SP), fine-grained, gray, wet, loose (ALLUVIUM)	20	2-3-4 (7)			
23.0							
		SANDY FAT CLAY (CH), slightly organic, gray, wet, medium (ALLUVIUM)	25	2-2-3 (5)		46	LL=52, PL=22, PI=30
			30	TW		17	

Continued on next page

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2201011
Geotechnical Evaluation
River Point District-Storm Water Tanks
Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-8**
LOCATION: See attached sketch
NORTHING: EASTING:
DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/17/22 | END DATE: 02/17/22
SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		SANDY FAT CLAY (CH), slightly organic, gray, wet, medium (ALLUVIUM)	35	2-2-3 (5)		37	P200=56%
38.0		POORLY GRADED SAND (SP), fine-grained, gray, wet, loose (ALLUVIUM)	40	4-4-6 (10)			
41.0		END OF BORING Boring then grouted					Water observed at 13.5 feet while drilling. Cave in depth of 21.5 feet immediately after withdrawal of auger.
			45				
			50				
			55				
			60				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2201011
Geotechnical Evaluation
River Point District-Storm Water Tanks
Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-9**
LOCATION: See attached sketch
NORTHING: EASTING:
DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/10/22 | END DATE: 02/10/22
SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		FILL: POORLY GRADED SAND (SP), fine-grained, brown, moist to wet		8-4-2 (6)			
			5	2-2-2 (4)			
				3-4-8 (12)			
			10	7-9-12 (21)			
				4-3-2 (5)			
14.0	▽	POORLY GRADED SAND with CLAY (SP-SC), light gray, wet, very loose to loose (ALLUVIUM)	15	2-2-1 (3)			
			20	5-3-5 (8)		18	P200=10%
23.0		ORGANIC CLAY (OL), black, wet (SWAMP DEPOSIT)	25	3-5-5 (10)		78	OC=8%
			30	2-3-6 (9)		76	

Continued on next page

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2201011
Geotechnical Evaluation
River Point District-Storm Water Tanks
Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-9**
LOCATION: See attached sketch
NORTHING: EASTING:
DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/10/22 | END DATE: 02/10/22
SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
33.0		ORGANIC CLAY (OL), black, wet (SWAMP DEPOSIT)					
		SANDY SILTY CLAY (CL-ML), slightly organic, gray, wet, soft (ALLUVIUM)	35	1-1-1 (2)		31	P200=52%
			40	1-0-1 (1)		26	LL=25, PL=19, PI=6
			45	1-1-1 (2)		35	DD=91 pcf
48.0		POORLY GRADED SAND with SILT (SP-SM), medium-grained, dark gray, wet, loose (ALLUVIUM)	50	1-3-6 (9)			
53.0		POORLY GRADED SAND (SP), fine to medium-grained, gray, wet, medium dense (ALLUVIUM)	55	10-12-14 (26)			
			60	8-12-15 (27)			
63.0		POORLY GRADED SAND with GRAVEL (SP), medium-grained, gray, wet, dense (ALLUVIUM)					

Continued on next page

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2201011
Geotechnical Evaluation
River Point District-Storm Water Tanks
Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-9**
LOCATION: See attached sketch
NORTHING: EASTING:
DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/10/22 | END DATE: 02/10/22
SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		POORLY GRADED SAND with GRAVEL (SP), medium-grained, gray, wet, dense (ALLUVIUM)	65	23-20-12 (32)			
			70	12-15-19 (34)			
73.0		POORLY GRADED SAND (SP), medium-grained, trace Gravel, gray, wet, dense to very dense (ALLUVIUM)	75	15-17-20 (37)			
			80	20-20-24 (44)			
			85	22-28-38 (66)			
			90	20-27-35 (62)			
			95	21-30-50/1" (REF)			

Continued on next page

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2201011
Geotechnical Evaluation
River Point District-Storm Water Tanks
Riverpoint Development
La Crosse, Wisconsin

BORING: **ST-9**

LOCATION: See attached sketch

NORTHING: EASTING:

DRILLER: Subcontractor | LOGGED BY: B. Wright | START DATE: 02/10/22 | END DATE: 02/10/22

SURFACE ELEVATION: | RIG: Subcontractor | METHOD: | SURFACING: | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		POORLY GRADED SAND (SP), medium-grained, trace Gravel, gray, wet, dense to very dense (ALLUVIUM)					
			100	20-29-36 (65)			
101.0		END OF BORING					Water observed at 14.0 feet while drilling.
		Boring then grouted					
			105				
			110				
			115				
			120				
			125				

Appendix G

Soil Loss/Sediment Discharge Calculations

Soil Loss Calculation Narrative

River Point District Phase II

City of La Crosse

LACRS 163627 | March 30, 2022

SEH

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Engineers | Architects | Planners | Scientists

Contents

Table of Contents

List of Appendices

Soil Loss Calculation Narrative

River Point District Phase II

Prepared for City of La Crosse

1 Introduction

The project site for the above-referenced project was analyzed to determine the sediment discharge in tons per acre per year in accordance with NR 151.11(6m)(b)2.

2 Schedule

It is anticipated that the project will start construction in the summer of 2022 but an exact start date is unknown. A start date of May 16th will be utilized as the default start date as recommended in the *Construction Site Soil Loss and Sediment Discharge Calculation Guidance*.

The project will begin with the installation of the sanitary sewer, water main, and storm sewer. The time the project will be subject to runoff from exposed soils will begin at the time of utility installation and continue until the gravel road base has been placed. For the purposes of the calculation it is assumed the road sections will be exposed for a maximum of four months, prior to placement of the gravel. The four months still provides results that are under the 5 tons/acre/year.

3 Modeling Results

The soil borings indicate a poorly graded sand in the fill areas, which includes the entire project site. The proposed street grades and slope lengths were reviewed to determine trials inputted into the *Soil Loss & Sediment Discharge Calculation Tool* – WDNR Official Version 2.0 (Calculation Tool). Soils information is included in **Appendix F** of the *Erosion Control and Stormwater Management Plan*. **Table 1** below lists the critical soils, slopes and lengths.

Table 1

Trial	Description	Soils	Slope (%)	Length(ft)
1	101+50 to 104+85	Sand	2.0	335
2	Typical Profile Section	Sand	0.5	200
3	Street Cross Section	Sand	2.0	86

Trial 1 is the north section of River Rd where it connects to Causeway Blvd, Trial 2 is a typical length of proposed street, and Trial 3 assumes the stormwater is sheeting across a typical street cross section.

The slopes and slope lengths, along with other site parameters were entered into the Calculation Tool. Table 2 below lists the results of the Calculation Tool.

Table 2

Trial	Sediment Discharge (tons/acre)
1	4.8
2	1.7
3	3.2

Table 2 above shows the site results in a total sediment discharge of less than the required 5.0 tons/acre/year. The Calculation Tool also does not take into account the permitter silt fence, which will provide for a further reduction in the sediment discharged.

4 Prescriptive Compliance

Areas with slopes of 4:1 or greater will be stabilized with erosion control mat.

Appendix A

Soil Loss & Sediment Discharge Calculation Tool

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

WDNR Version 2.0 (06-29-2017)

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer: City of La Crosse

Project: River Point District Phase II - Trial 1

Date: 03/30/22

County: La Crosse

Version 1.0

Activity (1)	Begin Date (2)	End Date (3)	Period % R (4)	Annual R Factor (5)	Sub Soil Texture (6)	Soil Erodibility K Factor (7)	Slope (%) (8)	Slope Length (ft) (9)	LS Factor (10)	Land Cover C Factor (11)	Soil loss A (tons/acre) (12)	SDF (13)	Sediment Control Practice (14)	Sediment Discharge (t/ac) (15)
Bare Ground	05/16/22	09/16/22	72.9%	160	Sand	0.15	2.0%	335	0.29	1.00	5.0	0.950		4.8
End	09/16/22	-----	-----	-----	-------	-----	2.0%	335	0.29	------	-----	0.000		0.0
		-----	-----	-----	-------	-----	2.0%	335	0.29	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	2.0%	335	0.29	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	2.0%	0	-----	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	0.0%	0	-----	-----	-----	0.000		0.0
										TOTAL	**5.0**		**TOTAL**	**4.8**
													% Reduction Required	**NONE**

Notes:

See Help Page for further descriptions of variables and items in drop-down boxes.
The last land disturbing activity on each sheet must be 'End'. This is either 12 months from the start of construction or final stabilization.
For periods of construction that exceed 12 months, please demonstrate that 5 tons/acre/year is not exceeded in any given 12 month period.

NOTE: THIS TOOL ONLY ADDRESSED SOIL EROSION DUE TO SHEET FLOW. MEASURES TO CONTROL CHANNEL EROSION MAY ALSO BE REQUIRED TO MEET SEDIMENT DISCHARGE REQUIREMENTS.

Recommended Permanent Seeding Dates:

4/15-6/1	and	8/1-8/21	Turf, introduced grasses and legumes
Thaw-6/30			Native Grasses, forbs, and legumes

Designed By:	Erik Henningsgard
Date	3/30/2022

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

WDNR Version 2.0 (06-29-2017)

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer: City of La Crosse

Project: River Point District Phase II - Trial 2

Date: 03/30/22

County: La Crosse

Version 1.0

Activity (1)	Begin Date (2)	End Date (3)	Period % R (4)	Annual R Factor (5)	Sub Soil Texture (6)	Soil Erodibility K Factor (7)	Slope (%) (8)	Slope Length (ft) (9)	LS Factor (10)	Land Cover C Factor (11)	Soil loss A (tons/acre) (12)	SDF (13)	Sediment Control Practice (14)	Sediment Discharge (t/ac) (15)
Bare Ground	05/16/22	09/16/22	72.9%	160	Sand	0.15	0.5%	200	0.11	1.00	1.9	0.900		1.7
End	09/16/22	-----	-----	-----	-------	-----	0.5%	200	0.11	------	-----	0.000		0.0
		-----	-----	-----	-------	-----	0.5%	200	0.11	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	0.5%	200	0.11	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	0.5%	0	-----	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	0.0%	0	-----	-----	-----	0.000		0.0
										TOTAL	**1.9**		**TOTAL**	**1.7**
													% Reduction Required	**NONE**

Notes:

See Help Page for further descriptions of variables and items in drop-down boxes.
The last land disturbing activity on each sheet must be 'End'. This is either 12 months from the start of construction or final stabilization.
For periods of construction that exceed 12 months, please demonstrate that 5 tons/acre/year is not exceeded in any given 12 month period.

NOTE: THIS TOOL ONLY ADDRESSED SOIL EROSION DUE TO SHEET FLOW. MEASURES TO CONTROL CHANNEL EROSION MAY ALSO BE REQUIRED TO MEET SEDIMENT DISCHARGE REQUIREMENTS.

Recommended Permanent Seeding Dates:

4/15-6/1	and	8/1-8/21	Turf, introduced grasses and legumes
Thaw-6/30			Native Grasses, forbs, and legumes

Designed By:	Erik Henningsgard
Date	3/30/2022

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

WDNR Version 2.0 (06-29-2017)

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer: City of La Crosse

Project: River Point District Phase II - Trial 3

Date: 03/30/22

County: La Crosse

Version 1.0

Activity (1)	Begin Date (2)	End Date (3)	Period % R (4)	Annual R Factor (5)	Sub Soil Texture (6)	Soil Erodibility K Factor (7)	Slope (%) (8)	Slope Length (ft) (9)	LS Factor (10)	Land Cover C Factor (11)	Soil loss A (tons/acre) (12)	SDF (13)	Sediment Control Practice (14)	Sediment Discharge (t/ac) (15)
Bare Ground	05/16/22	09/16/22	72.9%	160	Sand	0.15	2.0%	86	0.19	1.00	3.4	0.950		3.2
End	09/16/22	-----	-----	-----	-------	-----	2.0%	86	0.19	------	-----	0.000		0.0
		-----	-----	-----	-------	-----	2.0%	86	0.19	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	2.0%	86	0.19	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	2.0%	0	-----	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	0.0%	0	-----	-----	-----	0.000		0.0
										TOTAL	**3.4**		**TOTAL**	**3.2**
													% Reduction Required	**NONE**

Notes:

See Help Page for further descriptions of variables and items in drop-down boxes.
The last land disturbing activity on each sheet must be 'End'. This is either 12 months from the start of construction or final stabilization.
For periods of construction that exceed 12 months, please demonstrate that 5 tons/acre/year is not exceeded in any given 12 month period.

NOTE: THIS TOOL ONLY ADDRESSED SOIL EROSION DUE TO SHEET FLOW. MEASURES TO CONTROL CHANNEL EROSION MAY ALSO BE REQUIRED TO MEET SEDIMENT DISCHARGE REQUIREMENTS.

Recommended Permanent Seeding Dates:

4/15-6/1 and Thaw-6/30		8/1-8/21	Turf, introduced grasses and legumes Native Grasses, forbs, and legumes

Designed By:	Erik Henningsgard
Date	3/30/2022

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Appendix H

Long-Term Maintenance Agreement

River Point District
La Crosse, La Crosse County, Wisconsin
Long Term Stormwater Management
Maintenance Provisions

SITE NAME
River Point District
La Crosse, WI 54601

PROPERTY LOCATION
The NE ¼ of the NE ¼ of Section 31, Township 16, and Range 7W.
City of La Crosse, La Crosse County, Wisconsin

RESPONSIBLE PARTY
The Redevelopment Authority of La Crosse and contracting agents are responsible for satisfying the provisions of this agreement during construction and shall continue to have responsibility for the long-term maintenance of the stormwater facilities on this site, until such time as it may be conveyed to a future property owner or management entity or association.

PERMANENT COMPONENTS OF THE STORMWATER SYSTEM
The stormwater system consists of the following components:

- Underground Stormwater Treatment Tank
- Backflow Prevention Device
- Underground Stormwater Treatment Tank discharge
- Stormwater Sewer Pipes and Structures

INSPECTION AND MAINTENANCE
All components of the stormwater system shall be inspected semiannually in the spring and in the fall and after rainfalls in excess of 4" in 24 hours. Repairs will be made whenever the performance of the stormwater system is compromised.

Sediment will be removed from the underground stormwater treatment tank when the sediment reaches an average depth of 1.5'. All sediment removed from the tank shall be disposed of in accordance with NR 500.

DUTY TO PROVIDE MAINTENANCE
It is the responsibility of the Redevelopment Authority of La Crosse to maintain inspection and maintenance records, until such time as a successor is established, as mentioned above.

SIGNATURES
The undersigned agree to the provision set forth in this agreement.

For the Redevelopment Authority of La Crosse:

_____
Signature *Date*

_____
Printed Name

_____
Title

Appendix I

Delegation of Signature Authority

Note: In order to fill and save this form electronically, it must be opened using Adobe Reader or Acrobat software. Save a copy of the file, open Adobe Reader, select File > Open and browse for the file you saved.

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

Delegation of Signature Authority for Electronic Notice of Intent WPDES Storm Water Discharges Associated With Land Disturbing Construction Activities General Permit

Form 3500-121 (02/16)

Notice: This Delegation of Signature Authority (DSA) form is authorized by s. NR 205.07(1)(g), Wis. Adm. Code, to delegate electronic signature authority, submittal of an electronic Notice of Intent (eNOI). To delegate electronic signature authority, submittal of a completed DSA form to the Department of Natural Resources (Department) is mandatory for any landowner of a construction site regulated under 40 CFR Part 122, s. 283.33, Wis. Stats., and subch. III of ch. NR 216, Wis. Adm. Code. Failure to complete this form correctly will result in rejection of the eNOI by the Department. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records law (ss. 19.31 - 19.39, Wis. Stats.).

Please read all instructions before completing and type or clearly print the information. Submission of this DSA constitutes notice that the landowner identified in Section I has authorized the person identified in Section II to electronically sign the eNOI for the landowner. The completed DSA form shall be submitted electronically as an attachment to the eNOI, mailed copies will not be accepted.

Note: Submission of a DSA form is not required when the landowner electronically signs an eNOI.

Section I: Landowner Information

Landowner Name (individual, company, organization, or entity)	Authorized Representative (first and last name)		
City of La Crosse	Andrea Trane		
Mailing Address	**City**	**State**	**ZIP Code**
400 La Crosse Street	La Crosse	WI	54601
E-mail Address	**Phone Number (include area code)**	**Alternate Phone Number**	
tranea@cityoflacrosse.org	608.789.8321		

Section II: Delegated Signatory Information

Name (individual, company, organization, or entity)	Signatory Name (first and last name)		
Short Elliott Hendrickson	David Schofield		
Mailing Address	**City**	**State**	**ZIP Code**
329 Jay Street #301	La Crosse	WI	54601
E-mail Address	**Phone Number (include area code)**	**Alternate Phone Number**	
dschofield@sehinc.com	715.577.1474		

Certification

This is to notify the Department that as the landowner or the landowner's authorized representative, I delegate signature authority to the person identified in Section II for electronic signature of an eNOI for coverage under the WPDES General Permit for Storm Water Discharges Associated With Land Disturbing Construction Activities pursuant to ch. NR 216, Wis. Adm. Code. I authorize the person identified in Section II pursuant to the delegation of signature authority process set forth in s. NR 205.07(1)(g), Wis. Adm. Code.

As required by NR 205.07(1)(g)2, Wis. Adm. Code, this form will be submitted to the Department with the eNOI submittal. I understand that if there are any changes to this authorization, a new complete DSA form shall be submitted to the Department. I understand that the landowner is the permittee under ch. NR 216, Wis. Adm. Code, and as such, I am responsible for compliance with the WPDES General Permit for Storm Water Discharges Associated With Land Disturbing Construction Activities. I understand that I have the opportunity to create a Wisconsin Management System (WAMS) ID to electronically sign the eNOI , but that without a WAMS ID, I do not have access to the eNOI system. I am entrusting the person identified in Section II to electronically sign the eNOI on my behalf and submit all required information and attachments.

For this DSA form, the eNOI and all required information and attachments, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NOTE: The person signing below must be a representative of the landowner as described in the instructions. "Landowner" for purposes of this DSA form is defined in s. NR 216.002 (15), Wis. Adm. Code (See instructions). Failure to properly complete and sign this form will result in its rejection.

Signature of Landowner/Authorized Representative	Date Signed
Andrea Trane	1/15/2021
Printed Name of Landowner/Authorized Representative	**Title**
Andrea Trane	Planning Director

Instructions

Section I: Landowner Information

Provide the legal name of the person, company, organization, or any other entity that is the landowner of the construction site. The mailing address and phone number given should be for the authorized representative. "Landowner" means any person holding fee title, an easement or other interest in property that allows the person to undertake land disturbing construction activity on the property.

Section II: Delegated Signatory Information

Provide the legal name of the person, company, organization, or any other entity and the legal name of the person who is the delegated signatory. The mailing address and phone number given should be for the delegated signatory.

Section III: Certification

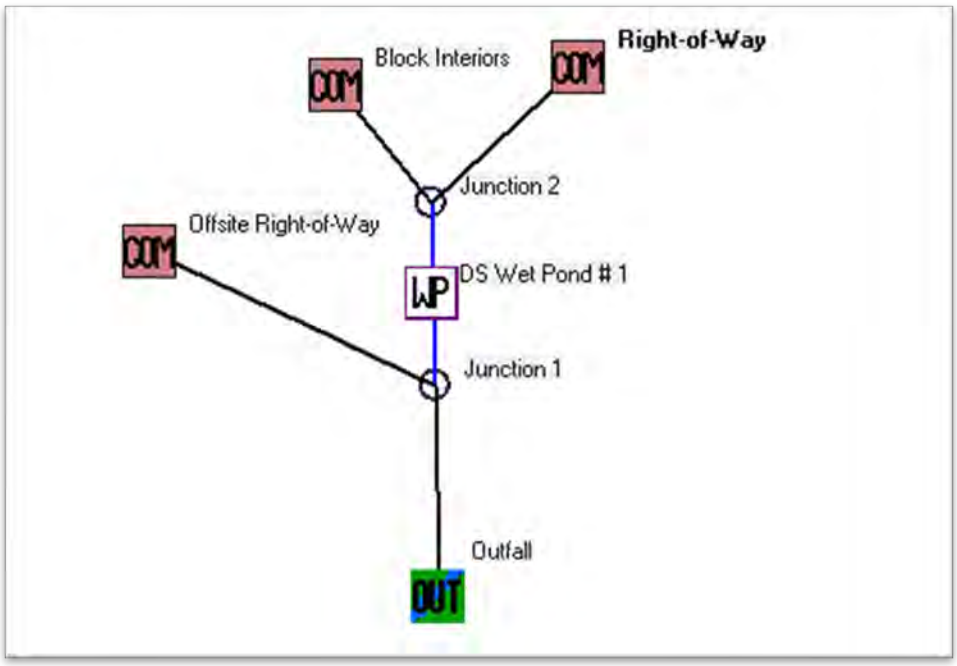
The DSA form shall be signed by the landowner as follows:

1. In the case of a corporation, by a principal executive officer of at least the level of vice president or by the principal executive officer's authorized representative responsible for the overall operation of the point source for which a permit is sought.
2. In the case of a limited liability company, by a member or manager.
3. In the case of a partnership, by a general partner.
4. In the case of a sole proprietorship, by the proprietor.
5. For a unit of government, by a principal executive officer, ranking elected official or other duly authorized representative.

The completed DSA form must be submitted electronically as an attachment with the eNOI. Mailed copies will not be accepted. The eNOI can be accessed at the Department's website at: dnr.wi.gov/permits/water/

Appendix J

WinSLAMM Modeling



Data file name: X:\KO\L\LACRS\163627\3-env-stdy-regs\32-permit\DNR NOI\WinSLAMM Modeling\2022.0330_LACRS163627.mdb
WinSLAMM Version 10.4.0
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Madison WI 1981.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Study period starting date: 01/01/81 Study period ending date: 12/31/81
Start of Winter Season: 12/02 End of Winter Season: 03/12
Date: 03-30-2022 Time: 16:54:41
Site information:

LU# 1 - Commercial: Block Interiors Total area (ac): 24.000

1 - Roofs 1: 14.365 ac. Flat Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz OD-CP#2
13 - Paved Parking 1: 8.460 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.175 ac. Moderately Compacted Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz OD-CP#3

LU# 2 - Commercial: Right-of-Way Total area (ac): 12.390
31 - Sidewalks 1: 4.040 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz OD-CP#5
37 - Streets 1: 7.760 ac. Smooth Street Length = 4.5 curb-mi Street Width (assuming two curb-mi per street mile) = 28.45333 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 0.590 ac. Moderately Compacted Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz OD-CP#4

LU# 3 - Commercial: Offsite Right-of-Way Total area (ac): 1.500
31 - Sidewalks 1: 0.490 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz OD-CP#6
37 - Streets 1: 1.010 ac. Smooth Street Length = 0.4 curb-mi Street Width (assuming two curb-mi per street mile) = 41.6625 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Wet Detention Pond CP# 1 (DS) - DS Wet Pond # 1
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 1
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 30
2. Weir crest width (ft): 1
3. Height from datum to bottom of weir opening: 10
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	1.00	0.2170	0.00	0.00

2	2.00	0.2170	0.00	0.00
3	3.00	0.2170	0.00	0.00
4	4.00	0.2170	0.00	0.00
5	5.00	0.2170	0.00	0.00
6	6.00	0.2170	0.00	0.00
7	7.00	0.2170	0.00	0.00
8	8.00	0.2170	0.00	0.00
9	9.00	0.2170	0.00	0.00
10	10.00	0.2170	0.00	0.00
11	11.00	0.2170	0.00	0.00
12	12.00	0.2170	0.00	0.00
13	13.00	0.2170	0.00	0.00
14	14.00	0.2170	0.00	0.00
15	15.00	0.2170	0.00	0.00

Control Practice 2: Other Device CP# 1 (SA) - SA Device, LU# 1 ,SA# 1
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 3: Other Device CP# 2 (SA) - SA Device, LU# 1 ,SA# 51
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 4: Other Device CP# 3 (SA) - SA Device, LU# 2 ,SA# 51
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

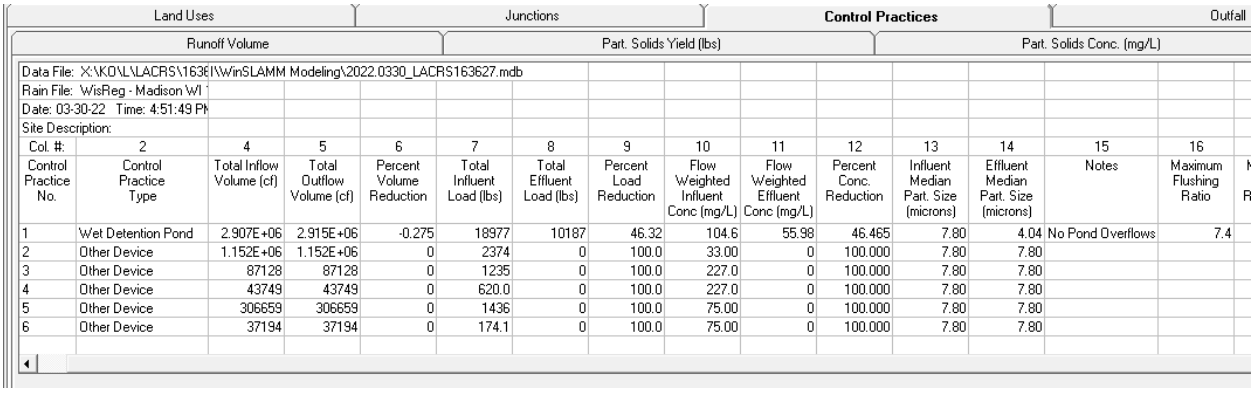
Control Practice 5: Other Device CP# 4 (SA) - SA Device, LU# 2 ,SA# 31
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 6: Other Device CP# 5 (SA) - SA Device, LU# 3 ,SA# 31
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

```
SLAMM for Windows Version 10.4.0
(c) Copyright Robert Pitt and John Voorhees 2012
All Rights Reserved

Data file name:  X:\KO\L\LACRS\163627\3-env-stdy-regs\32-permit\DNR NOI\WinSLAMM Modeling\2022.0330_LACRS163627.mdb
Data file description:
Rain file name:  C:\WinSLAMM Files\Rain Files\WisReg - Madison WI 1981.RAN
Particulate Solids Concentration file name:  C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name:  C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name:  C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name:  C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name:  C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name:  C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name:  C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name:  C:\WinSLAMM Files\Freeway Dec06.std
Pollutant Relative Concentration file name:  C:\WinSLAMM Files\WI_GEO03.ppdx
Start of Winter Season:  12/02             End of Winter Season:  03/12
Model Run Start Date:  01/01/81    Model Run End Date:  12/31/81
Date of run:  03-30-2022    Time of run:  16:52:30
Total Area Modeled (acres):  37.890
Years in Model Run:  1.00
```

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	3.032E+06	-	106.7	20200	-
Outfall Total with Controls:	3.040E+06	-0.26%	60.13	11410	43.51%
Annualized Total After Outfall Controls:	3.048E+06			11442	



Land Uses | Junctions | **Control Practices** | Outfall

Runoff Volume | Part. Solids Yield (lbs) | Part. Solids Conc. (mg/L)

Data File: X:\KO\L\LACRS\163627\3-env-stdy-regs\32-permit\DNR NOI\WinSLAMM Modeling\2022.0330_LACRS163627.mdb
Rain File: WisReg - Madison WI
Date: 03-30-22 Time: 4:51:49 PM
Site Description:

Col. #:	2	4	5	6	7	8	9	10	11	12	13	14	15	16	
Control Practice No.	Control Practice Type	Total Inflow Volume (cf)	Total Outflow Volume (cf)	Percent Volume Reduction	Total Influent Load (lbs)	Total Effluent Load (lbs)	Percent Load Reduction	Flow Weighted Influent Conc (mg/L)	Flow Weighted Effluent Conc (mg/L)	Percent Conc. Reduction	Influent Median Part. Size (microns)	Effluent Median Part. Size (microns)	Notes	Maximum Flushing Ratio	R
1	Wet Detention Pond	2.907E+06	2.915E+06	-0.275	18977	10187	46.32	104.6	55.98	46.465	7.80	4.04	No Pond Overflows	7.4	
2	Other Device	1.152E+06	1.152E+06	0	2374	0	100.0	33.00	0	100.000	7.80	7.80			
3	Other Device	87128	87128	0	1235	0	100.0	227.0	0	100.000	7.80	7.80			
4	Other Device	43749	43749	0	620.0	0	100.0	227.0	0	100.000	7.80	7.80			
5	Other Device	306659	306659	0	1436	0	100.0	75.00	0	100.000	7.80	7.80			
6	Other Device	37194	37194	0	174.1	0	100.0	75.00	0	100.000	7.80	7.80			

WinSLAMM Source Areas and Watersheds

Appendix K

Hydraulic Analysis (XPSWMM)

Building a Better World for All of Us®

MEMORANDUM

TO: City of La Crosse

FROM: Riley Mondloch, PE (Lic. MN, WI)

DATE: February 22, 2022

RE: River Point Storm Sewer Hydraulic Analysis
SEH No. 163627 14.00

PURPOSE AND BACKGROUND

The River Point Development in the City of La Crosse is adjacent to the Mississippi River with the development raised on fill to minimize flood risk. The fill for this development has been placed and a FEMA Letter of Map Revision based on fill obtained to remove the site from the Special Flood Hazard Area, roadway and utility design for the site is ongoing. A preliminary storm sewer layout for the entire development was created using rational calculations as part of preliminary design. An XPSWMM one-dimensional / two dimensional (1D-2D) hydrologic and hydraulic model was created to analyze the proposed storm sewer system and modify as necessary to meet the design intent. This analysis and the results are detailed in this memo. Only Street A is planned for the first phase of construction, with full buildout of the development coming in later stages. However, the entire storm sewer system was modeled at this time to develop a preliminary design with storm sewer layout and trunk line sizes to accommodate the entire site. **Figure 1** shows the storm sewer layout as proposed for the entire development. The storm sewer trunk lines drain to the west where they will pass through a proposed water quality tank and discharge to the Mississippi River. The figures at the end of the report show pipe characteristics in greater detail.

Regulatory Requirements.

The City of La Crosse has recently adopted new regulatory requirements, whereas previously it had defaulted to the County Requirements. The design requirements listed below were provided to SEH in early 2022 by City representatives and are specific to this site. The site is to be considered redevelopment due to the industrial development that previously existed at this location.

-Water Quality Treatment Requirements: 40% TSS reduction required.

-Water Quantity / Rate Control Requirements: Volume and peak rate control are not required due to discharging directly to the Mississippi River

-A check valve is required to prevent backflow into the water quality tank for Mississippi River flood elevations up to the 10-year event.

-The City has stated that the storm sewer and inlets should be designed such that 10-year peak hydraulic grade line (HGL) should be below the top of pipe. Additionally, the 25-year event should result in less than 0.5 feet of water ponded in the streets at low points, and the 100-year event should result in ponded water that does not reach the elevation of the building pad fill (678.0 feet NAVD).

HYDROLOGY

The design storms modeled were the 10-year, 25-year and 100-year 24-hour rainfall events. Atlas 14 rainfall depths with the MSE4 rainfall distribution were used with the SCS curve number (CN) methodology. Land use was simplified to impervious and pervious areas only, with a constant CN value assumed for pervious areas as the entire site consists of engineered and compacted fill. A pervious area CN of 71 was used consistent with the County and City modeling guidance for hydrologic soil group C soils in Grassed areas. Based on soil borings, B soils could be appropriate, but C values were assumed due to the expected compaction associated with the added fill.

CADD plans for the roadway and sidewalk were utilized to determine the associated impervious areas. The final buildout of the interior blocks is not known at this time, but a preliminary architectural drawing was used to estimate the future impervious area. Impervious percentage for the interior blocks was assumed to be 95 percent. It will likely be less in final conditions, but the intent is to allow the developer freedom to have any desired land use without needing additional stormwater treatment within the interior blocks. Exterior areas assumed lower percent impervious based on the architectural figure. **Figure 2** shows the impervious percentages assumed for each area.

Watersheds for road and sidewalk areas were delineated separately from interior areas. This is because stormwater runoff from the road and sidewalk was applied to the 2D model surface representing surface runoff towards inlets, allowing inlet capacity to be modeled. See the hydraulics section for more detail on inlet capacity modeling. The interior watershed runoff was applied directly to the storm sewer pipes assuming runoff from the block interiors and buildings would be picked up with pipes inside the block and connected to the existing storm system.

Subwatersheds were delineated for the interior block areas assuming the stormwater runoff from these areas would be evenly distributed to the surrounding inlets/low points. This assumes stormwater would either connect underground or would sheet flow off the interior block and into the road to each adjacent sag point. The watersheds within blocks will likely not be evenly distributed in the final built out conditions, but the water should still have similar travel times to the main trunk lines and water quality structure where they all converge. The time of concentration and impervious percentage within blocks was modeled accordingly to account for this future uncertainty. A time of concentration of 5 minutes was assumed for road/sidewalks draining directly to sag points, a time of 10 minutes was assumed for interior blocks, and a time of 15 minutes was assumed for the exterior blocks south of “A” street due to the higher amount of grassed area. **Figure 3** shows the watersheds delineated for the XPSWMM model.

HYDRAULIC MODELING

The initial storm sewer design used a minimum slope of 0.22% for all pipes. XPSWMM version 2021 was used to adjust pipe sizes and inverts to meet the requirements listed above.

The water quality tank size was determined using WinSLAMM version 10.4 to obtain the required volume and outlet control structure necessary to meet the water quality requirements. Details of water quality tank were represented in the model as it has an impact on tailwater conditions throughout the entire system. The water quality system consists of a 100 x 100 foot tank with a NWL at 635.0 feet NAVD, a 5 foot wet sump, and a 30 foot long overflow weir at 640.0 feet NAVD. Low flow leaves the system via a 12-inch orifice at 635.0 feet. This orifice will feature a check valve that will prevent fish travel into the tank during times when the Mississippi River is flooded above 635.0 feet. The weir overflow elevation was set in part to be above the 10-year Mississippi River flood elevation as this is the max flood elevation where fish passage into the tank is required to be prevented.

To verify the design meets the City's street ponding requirements, inlet capacity for each of the storm water inlets was represented in the XPSWMM model. XPSWMM allows inlet capacity to be represented in a 2D model by changing the multiplier (M) and exponent (E) parameter in the equation Q = M*Depth^E. The City has specified they will use Neenah 3246A inlet castings on each stormwater inlet structure. The dimensions of this grate were used to create a rating curve in HydroCAD, this rating curve was then plotted in Excel and a curve based on the equation above was plotted alongside it. The M and E parameters were adjusted until the curve matched the HydroCAD rating curve as closely as possible. These parameters were then added to the 2D model to represent the inlet capacity of the Neenah 3246A casting inlet. **Figure 4** shows the inlet rating curve created in HydroCAD alongside the 2D model equation fit to it. The Neenah website contains a weir orifice calculator that was checked with the casting published open areas, but this calculator appears to only be for the horizontal part of the grate, so underestimates the capacity when a curb box is included.

Numerous scenarios were run to analyze different storm sewer pipe sizes and slopes to develop the smallest pipe sizes that could keep the HGL for the 10-year design storm below the top of the pipe. The tailwater from the water quality tank controls such that there is a point where increasing pipe size or slope no longer impacts the HGL, the XPSWMM modeling was used to optimize this to avoid making pipes larger than needed.

RESULTS

Pipe sizes, slopes, and inverts were adjusted until the goal of having the 10-year HGL below top of pipe was achieved. The crowns of pipes were matched rather than inverts where possible. However, due to cover and minimum slopes some pipes are more centered within the larger downstream pipe. Table 1, attached, shows the pipe sizes, inverts, and slopes as modeled. These values were used to prepare the plan sheets, however minor adjustments did need to be made to several structure slopes and inverts, so this table may differ slightly from plans and is only provided to summarize the modeling. The minor changed made during plan production were not significant enough to change model results.

Ponding in the 25-year event is less than 0.5 feet at all the low points, and the 100-year peak HGL is 0.5 feet or more below the building pad elevation of 648 feet. Events in excess of those analyzed should be able to flow off the elevated site prior to reaching elevation 648 because the high point in the corner of each intersection is approximately 0.5 feet lower than the building pads; this will allow water to move across the site and off to the north, the east, or through a curb cut planned on the south end prior to impacting buildings. **Figures 5a – 5c** show the inundation results for the three design storms modeled. **Figures 6a, 7a, and 8a** show the peak HGL for the 10-year storm in the pipe profiles. These show the three main trunklines of the proposed storms sewer. **Figures 6b, 7b, and 8b** show the same pipe segments with the 25-year peak HGL. These figures demonstrate that the 10-year HGL is below or at the top of pipe, and the 25-year peak HGL is still well below the surface in most areas. The surface ponding during the 25-year event is primarily due to inlet capacity rather than pipe capacity. See Figure 1 for structures numbers referenced in the results figures.

This modeling focused on refining the inverts, slopes and sizes of the trunklines for the entire site. For the storm sewer line on Street A the small catch basin (CB) connecting pipes were also refined to better match crowns where they tie in and use 0.5% or higher slopes where possible, although some 18 and 15-inch pipes were still limited to 0.22% slopes on the far east side of Street A due to cover issues. It's assumed minor adjustments will be necessary during final design for the storm sewer lines connecting into the trunk line systems as needed, but this should not significantly impact the modeling results. Similarly minor adjustments will also be necessary for the storm sewer lines connecting into the trunk line

along with refinement of the design for the Street B and Street C trunklines when final plans are completed in future phases.

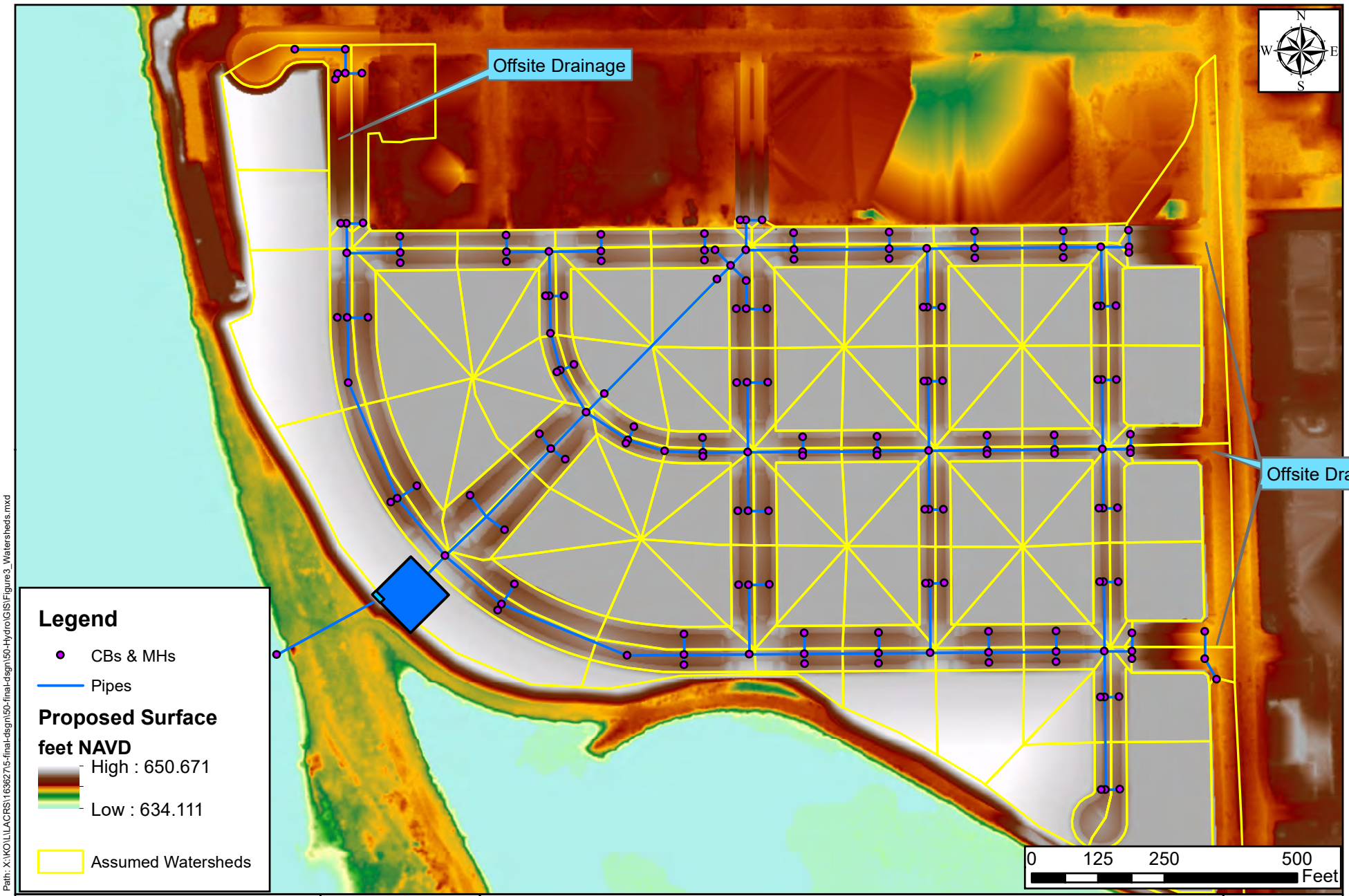
The system will discharge to the Mississippi River via three (3) 36-inch RCP pipes to maintain cover. The model was also used to analyze using two 36-inch pipes versus three, but this reduced capacity such that the 10-year HGL at the upstream end was nearly as high as the weir, so it's recommended to keep the three 36-inch pipes as the outlet configuration.

A full coincident frequency probability was not calculated, however the 25-year event was run with a 100-year tailwater condition on the Mississippi as a conservative check. There are only two locations where the peak HGL shows a ponded elevation on the surface greater than 0.5 feet deep, and those areas only exceed the allowable depth by 0.1 feet. This is a very conservative check, the probability of a 25-year storm occurring over River Point while the Mississippi River is at 100-year flood stage is very low, with an annual chance of occurrence of well under 1 percent.

It is anticipated that the CB connecting pipes can be lowered to match inverts of the trunkline instead of crowns if necessary.
At this time storm sewer lines were set to match crowns if cover allowed. The proposed ground surface elevation of 648.0 in the interior blocks is at least 1.5 feet above the sag point elevations, so if 12-inch pipe is used with three or more feet of cover and 0.5% slopes, the elevation at which the interior drain pipe would connect to the structure beneath a road CB would be 643.0-643.5. Almost all CB connecting pipes have inverts at or below 643.0, so connecting interior drainage to the CB structures should be possible with the current design. If only sheet flow is used to convey water from the blocks to the street and storm system, this paragraph will no longer be relevant.

R.M.
Attachments:

Figure 1 – Proposed Storm Sewer Layout
Figure 2 – Impervious Percentage by Block
Figure 3 – Proposed Watersheds Assumed
Figure 4 – Inlet Rating Curve
Figure 5a – 25-year Surface Inundation Results
Figure 5b – 100-year Surface Inundation Results
Figure 6a – Pipe Profile from Structure WQ Tank to MH 352 with 10-year Peak WSEL
Figure 6b – Pipe Profile from Structure WQ Tank to MH 352 with 25-year Peak WSEL
Figure 7a – Pipe Profile from Structure WQ Tank to MH 338 with 10-year Peak WSEL
Figure 7b – Pipe Profile from Structure WQ Tank to MH 338 with 25-year Peak WSEL
Figure 8a – Pipe Profile from Structure WQ Tank to MH 355 with 10-year Peak WSEL
Figure 8b – Pipe Profile from Structure WQ Tank to MH 355 with 25-year Peak WSEL
Figure 9a – Pipe Profile from Structure WQ Tank to MH 357 with 10-year Peak WSEL
Figure 9b – Pipe Profile from Structure WQ Tank to MH 357 with 25-year Peak WSEL



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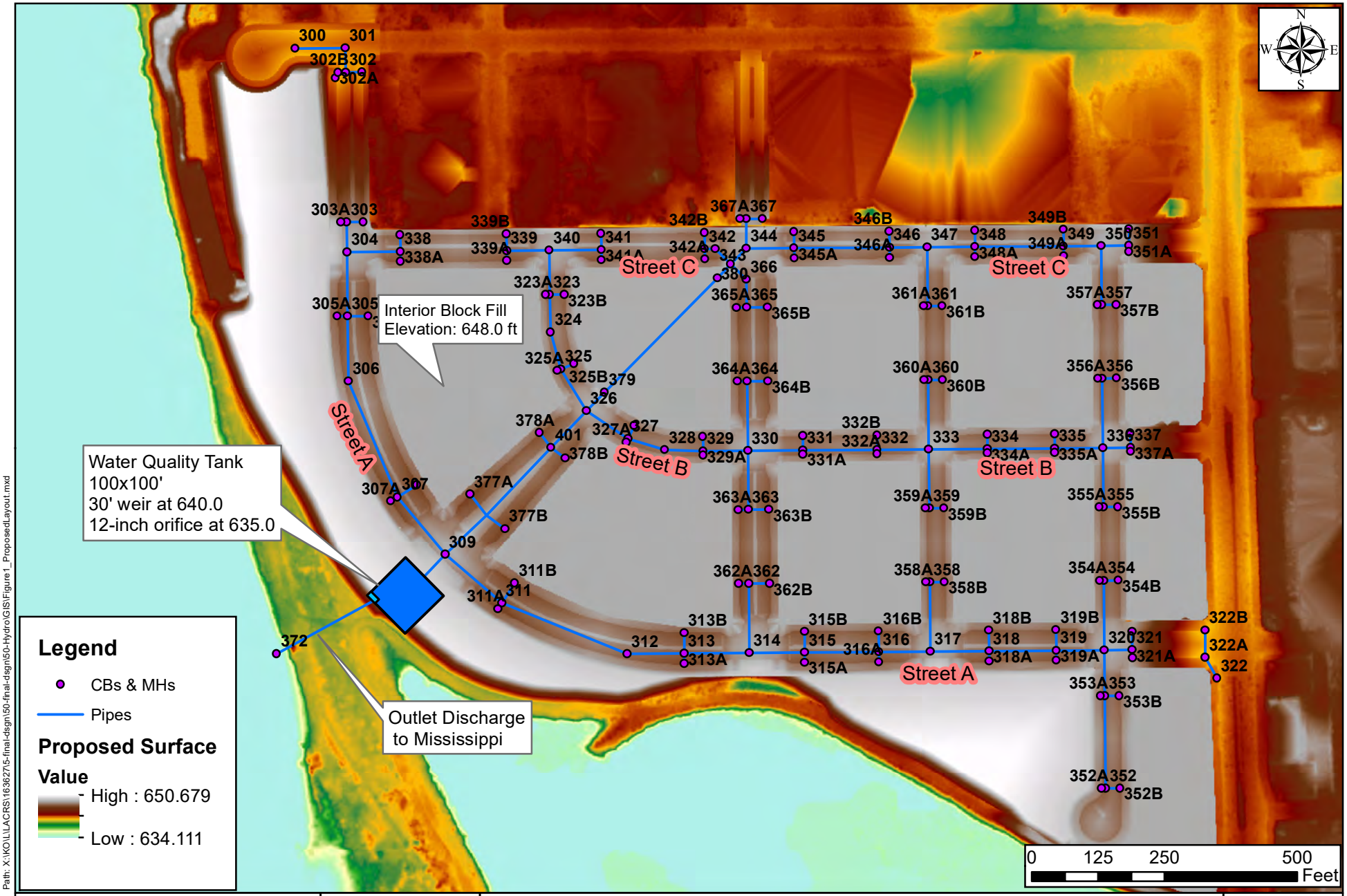
Map by: rmondloch
Projection: La Crosse County Coord.
Source: SEH, ESRI

Proposed Watersheds

River Point
La Crosse WI

Figure
3



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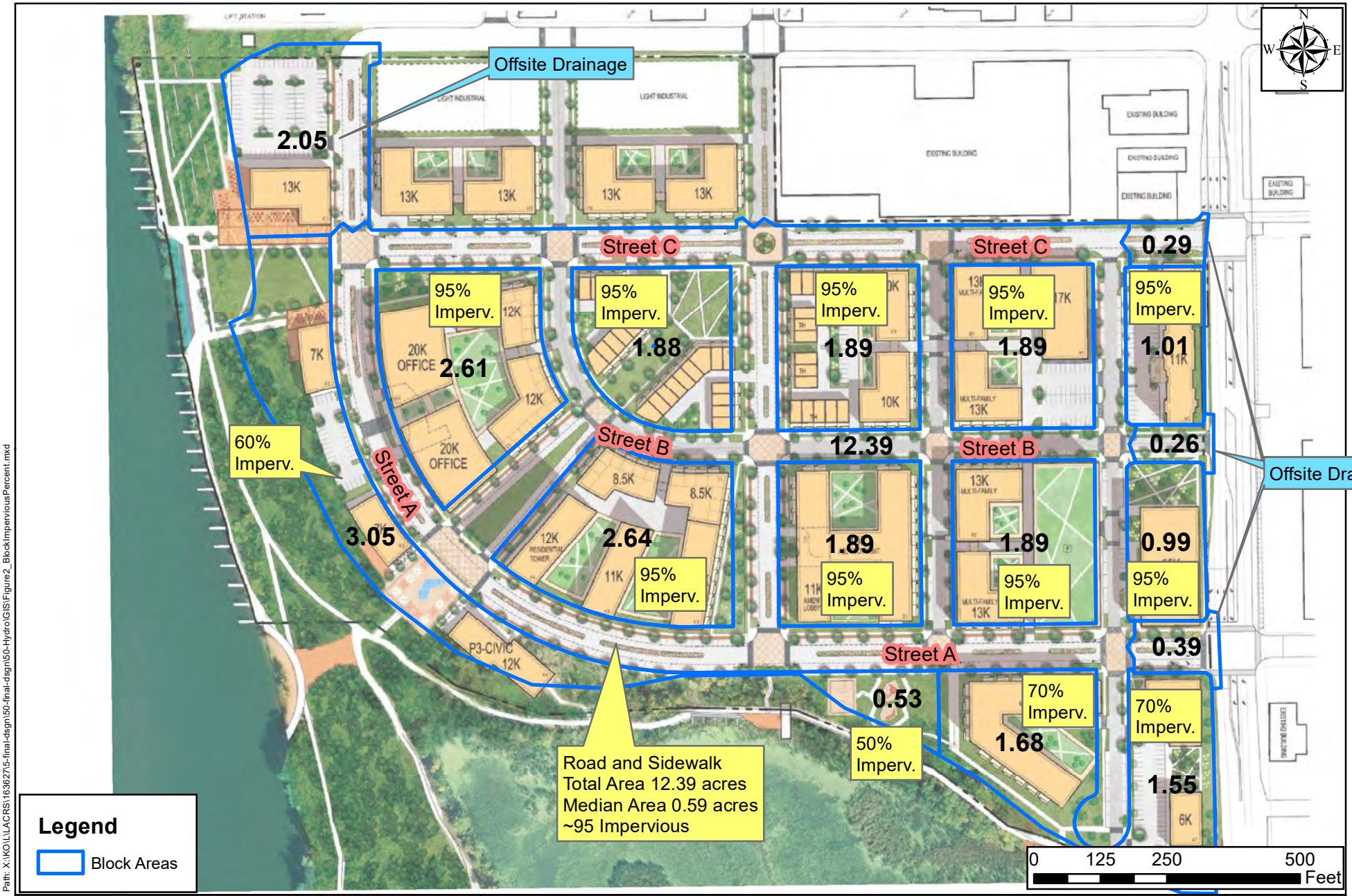
Proposed Pipe Layout and Fill

River Point
La Crosse WI

Figure 1



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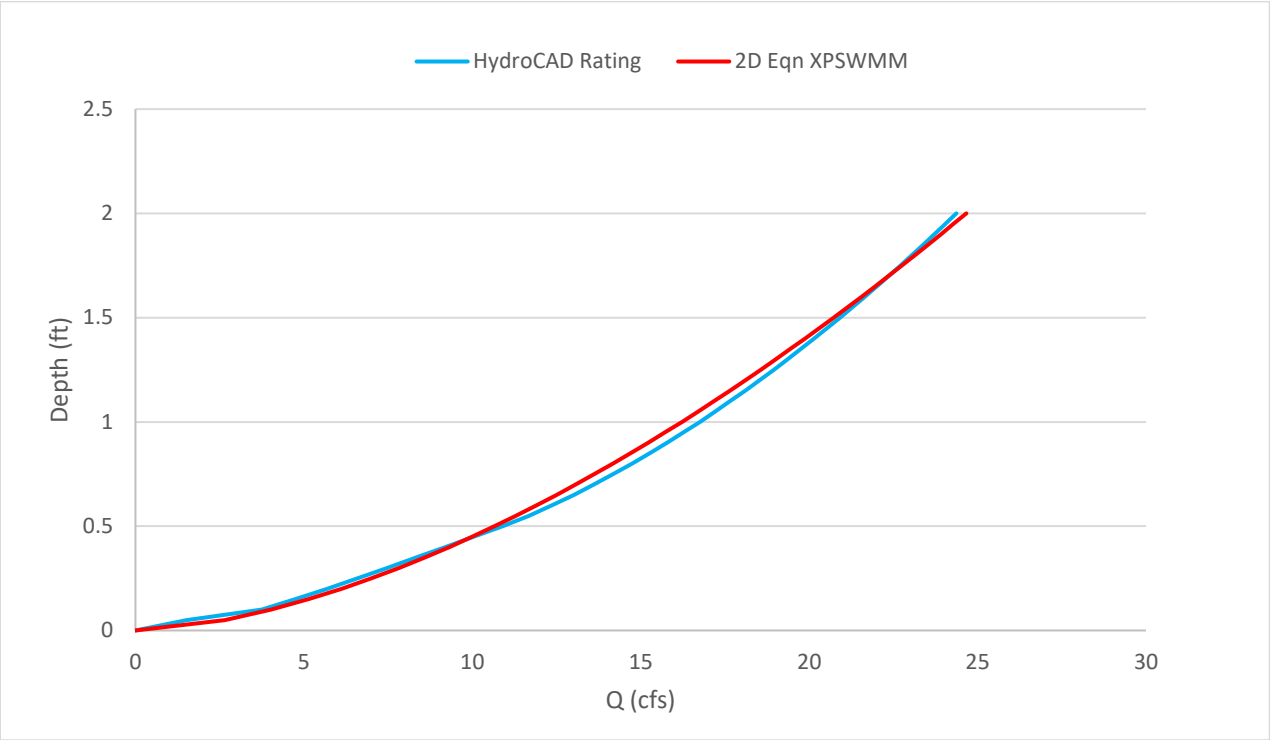
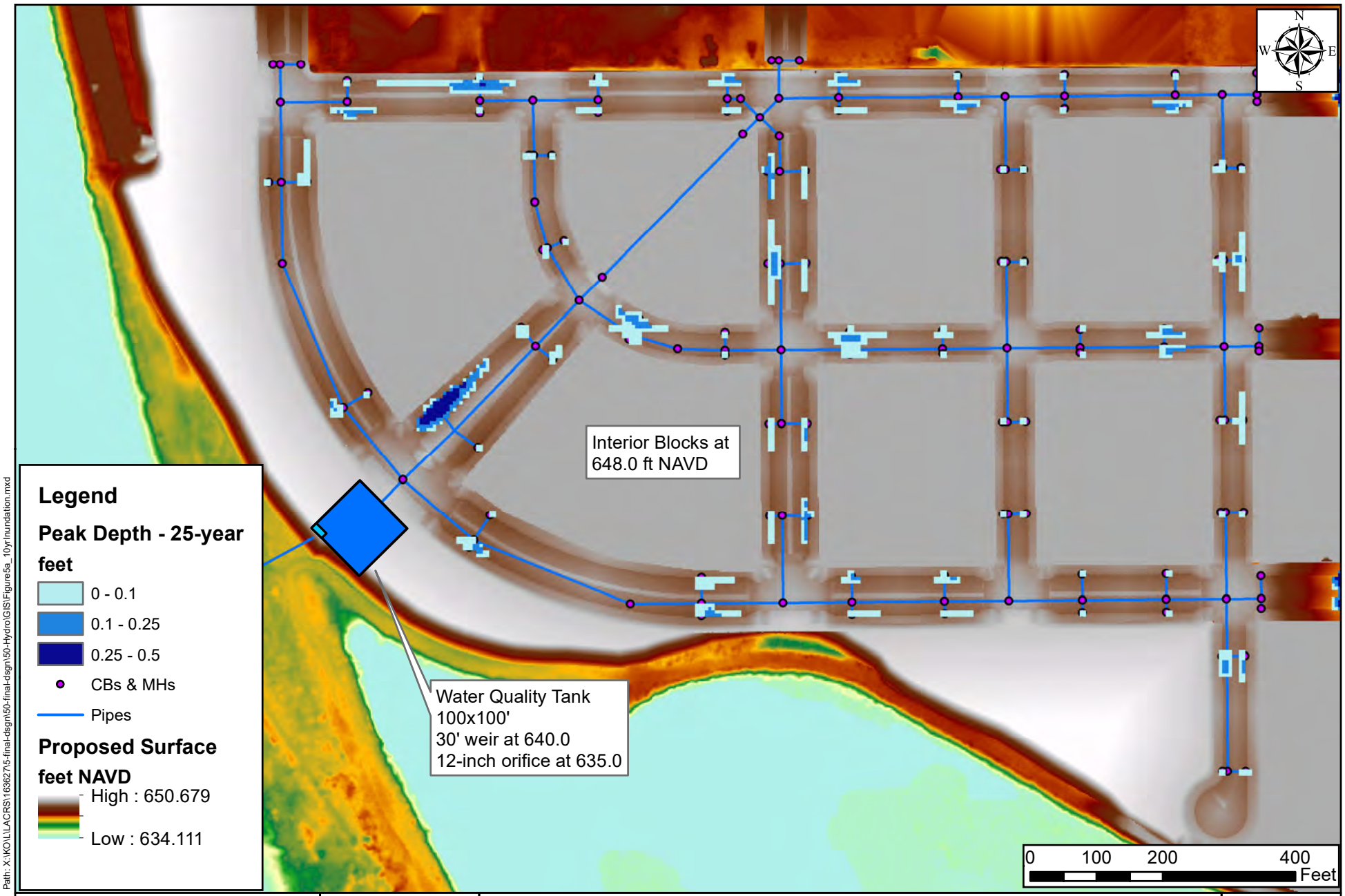
Impervious Percentages Assumed

River Point
La Crosse WI

Figure 2

Figure 4 – Inlet Rating Curves





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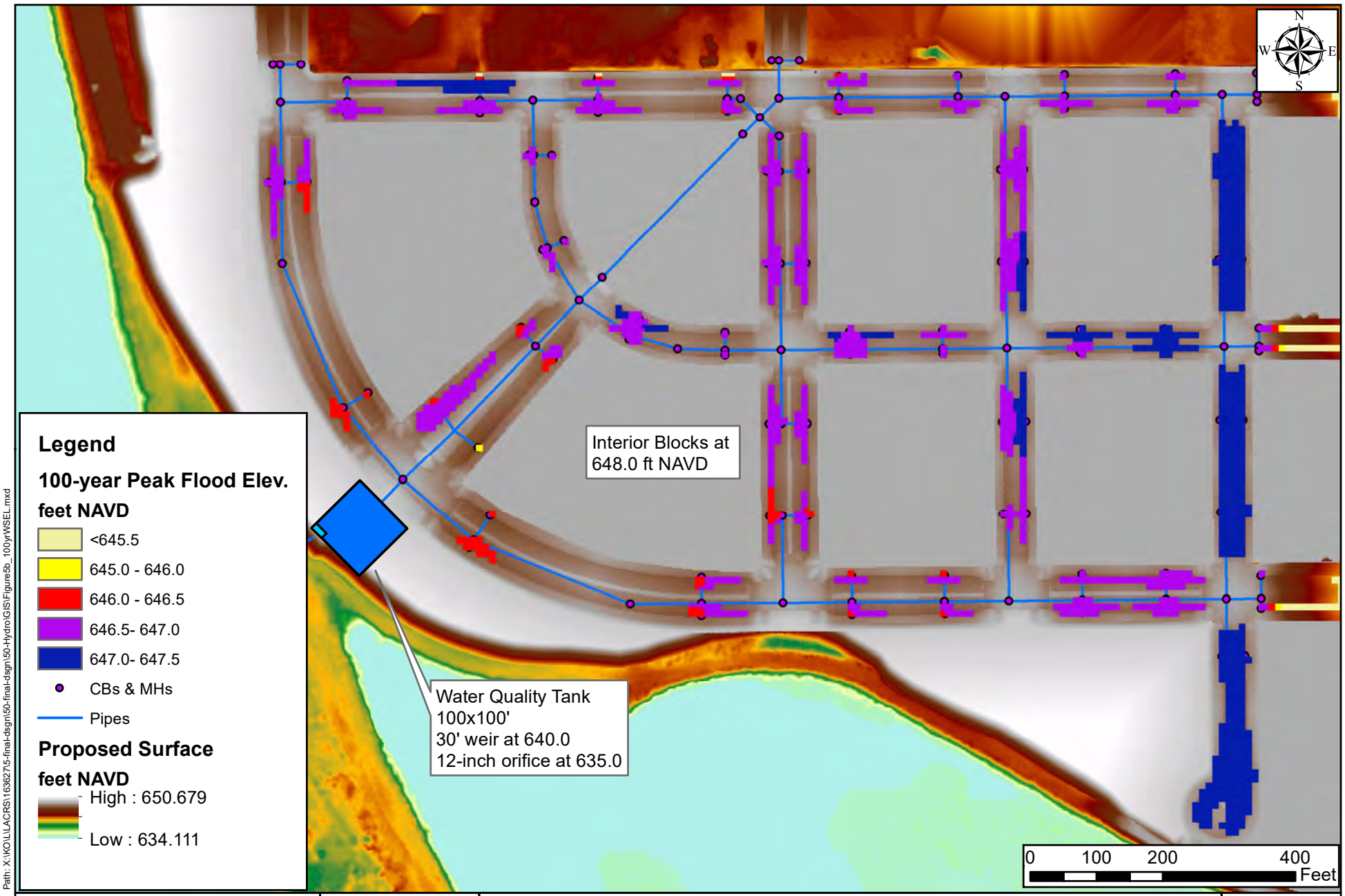
Peak Depth/Inundation - 25-year

River Point
La Crosse WI

Figure 5a



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Peak Water Surface Elevation/Inundation - 100-year

River Point
La Crosse WI

Figure 5b

Figure 6a – Pipe Profile from Structure WQ Tank to MH 352 with 10-year Peak WSEL

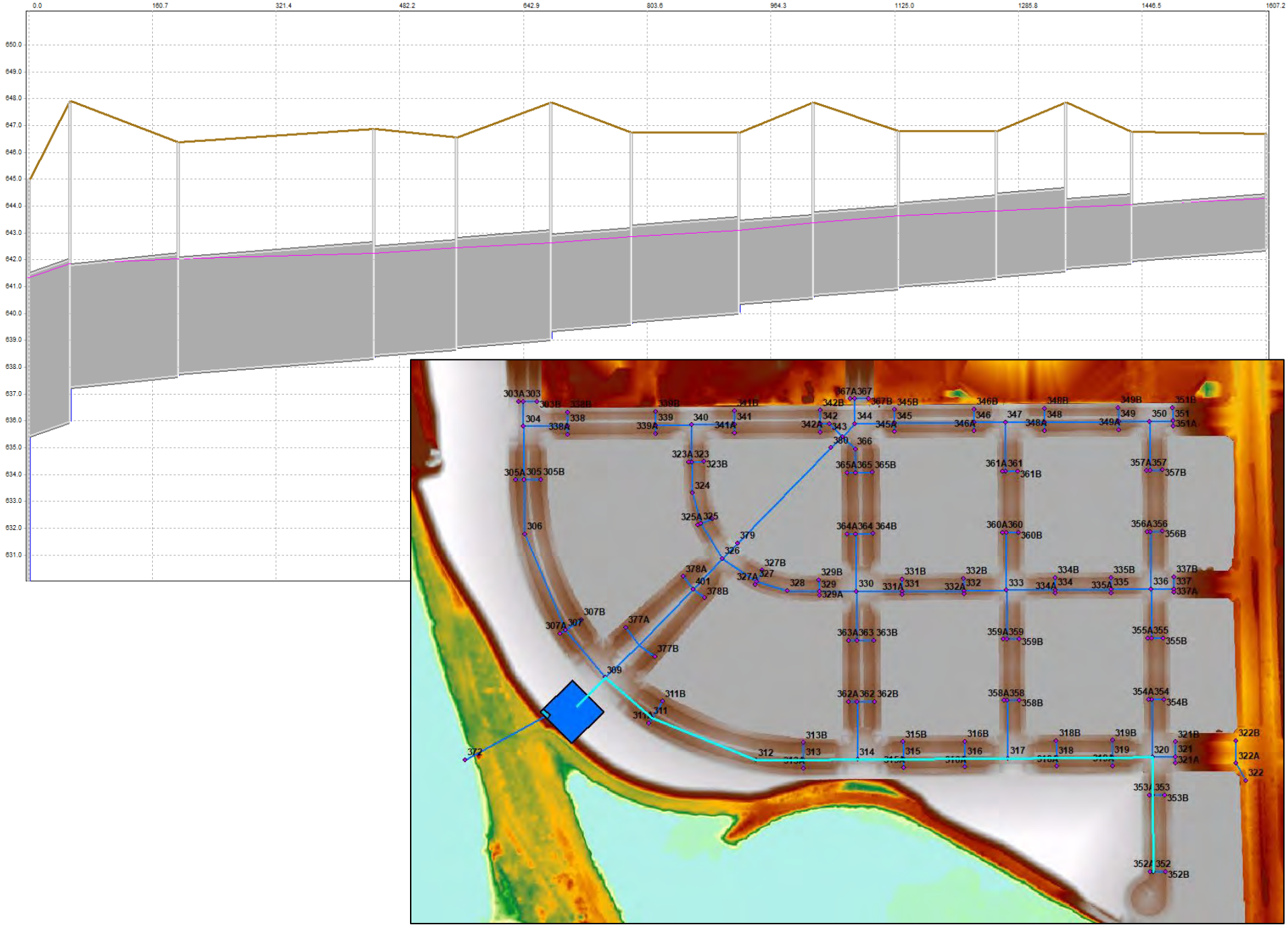


Figure 6b – Pipe Profile from Structure WQ Tank to MH 352 with 25-year Peak WSEL

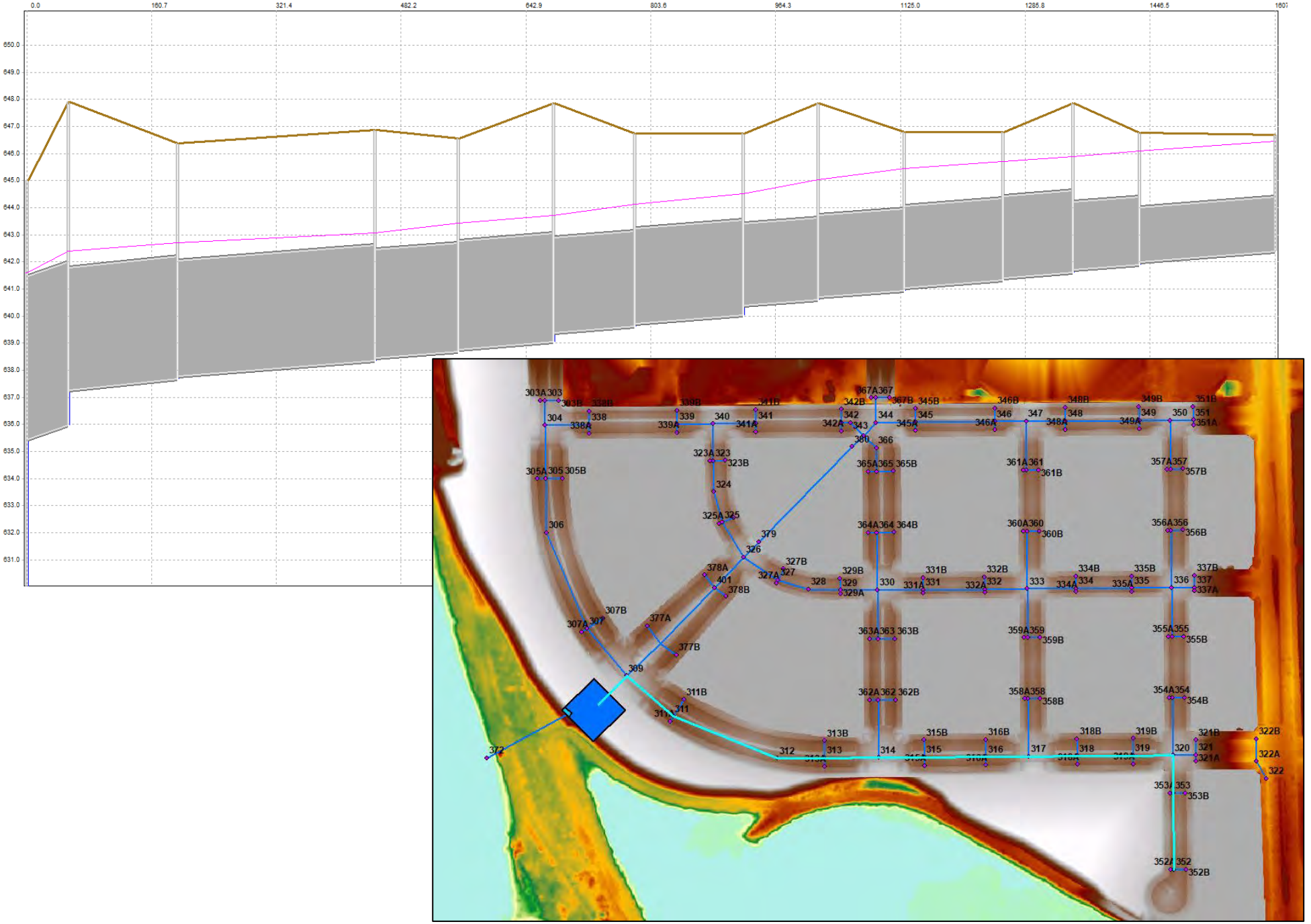


Figure 7a – Pipe Profile from Structure WQ Tank to MH 338 with 10-year Peak WSEL

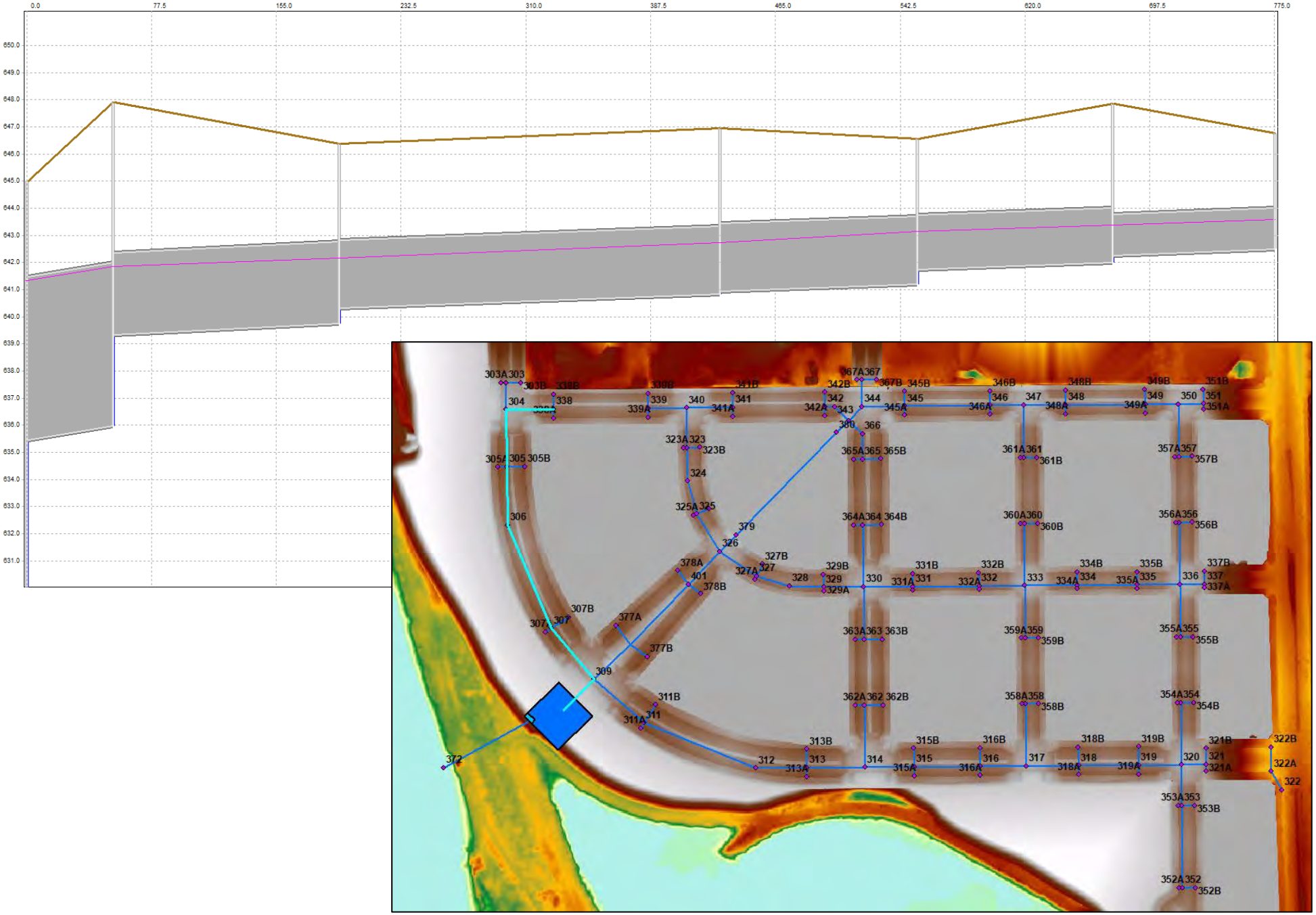


Figure 7b – Pipe Profile from Structure WQ Tank to MH 338 with 25-year Peak WSEL

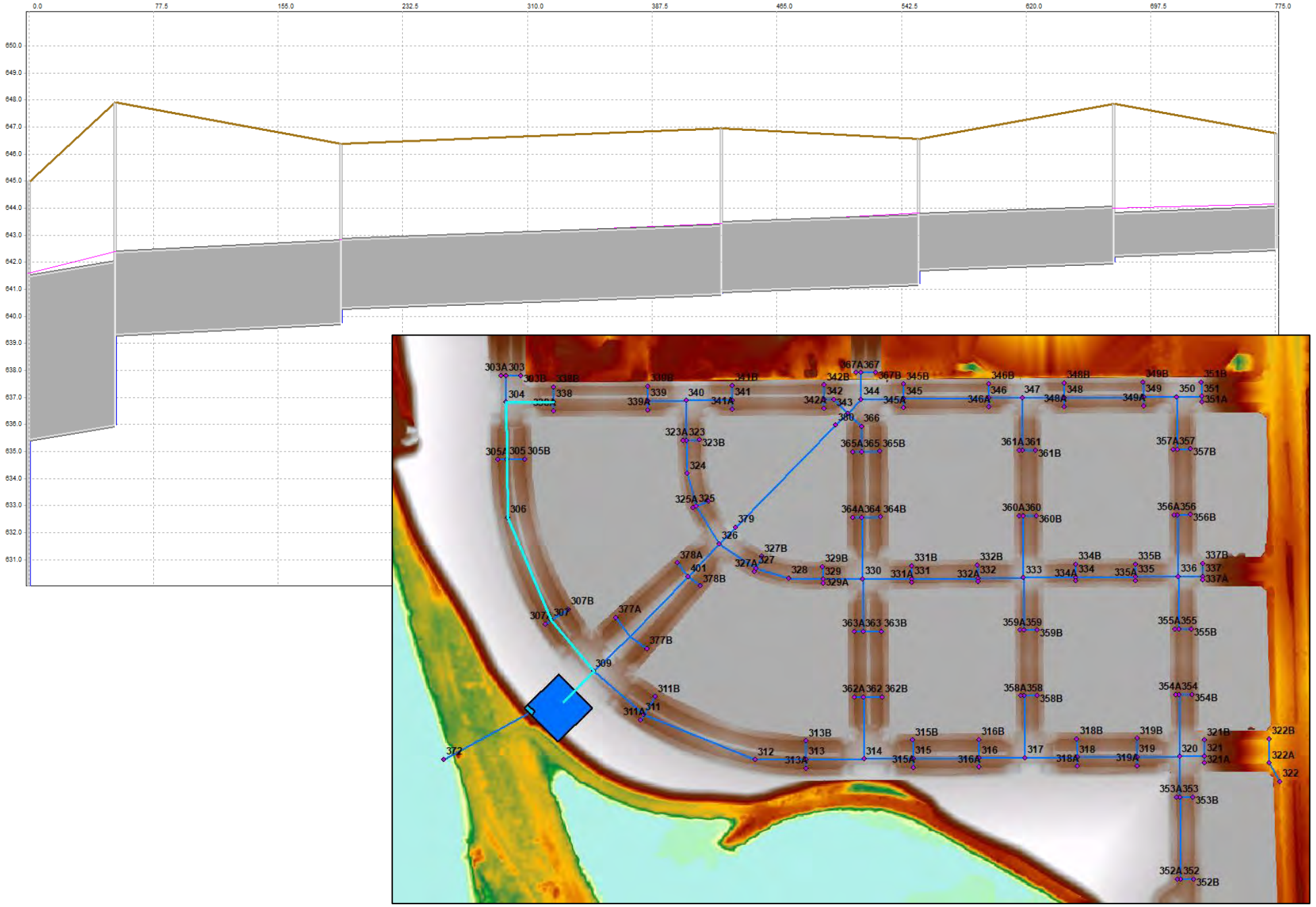


Figure 8a – Pipe Profile from Structure WQ Tank to MH 355 with 10-year Peak WSEL

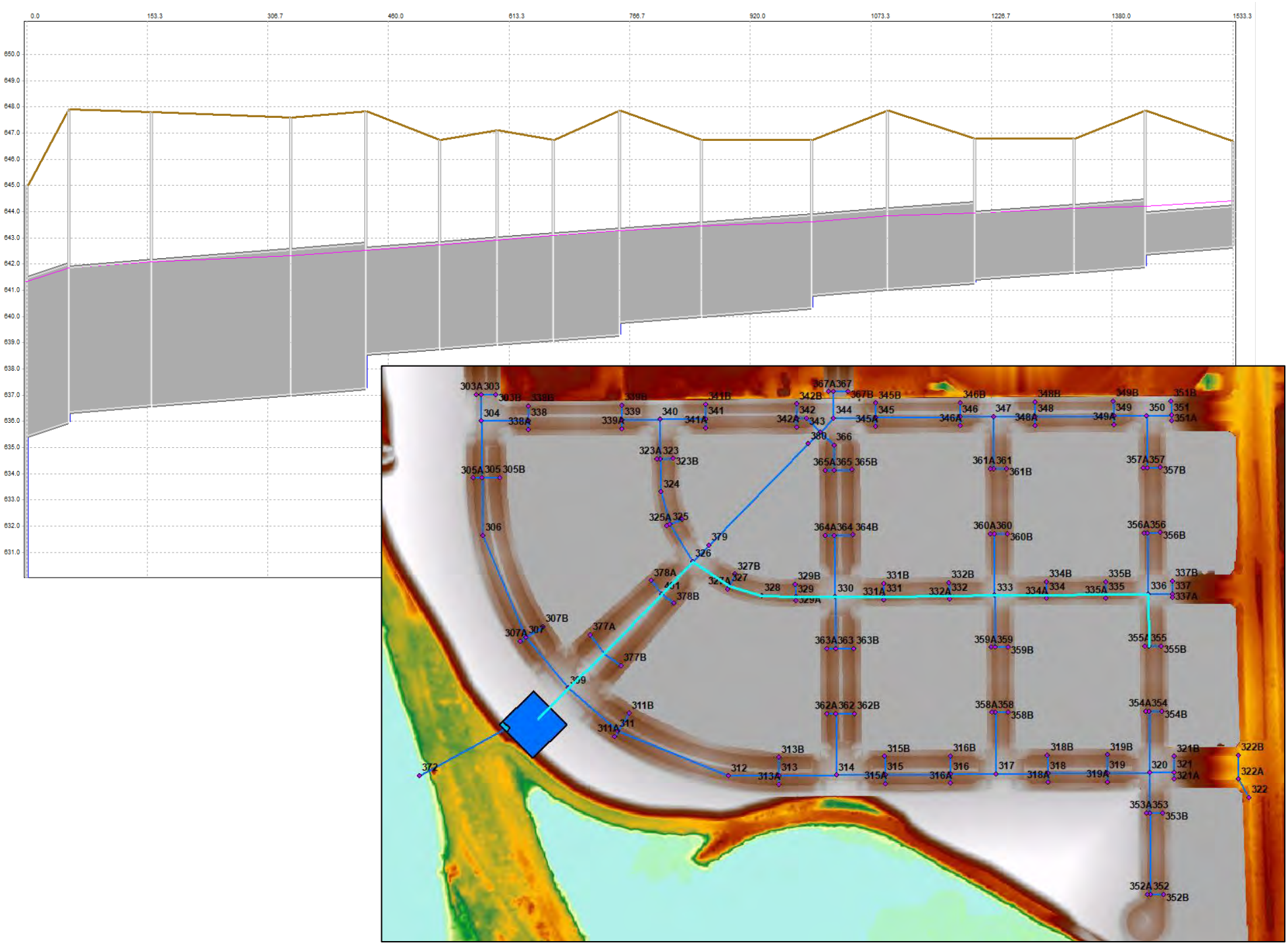


Figure 8b – Pipe Profile from Structure WQ Tank to MH 355 with 25-year Peak WSEL

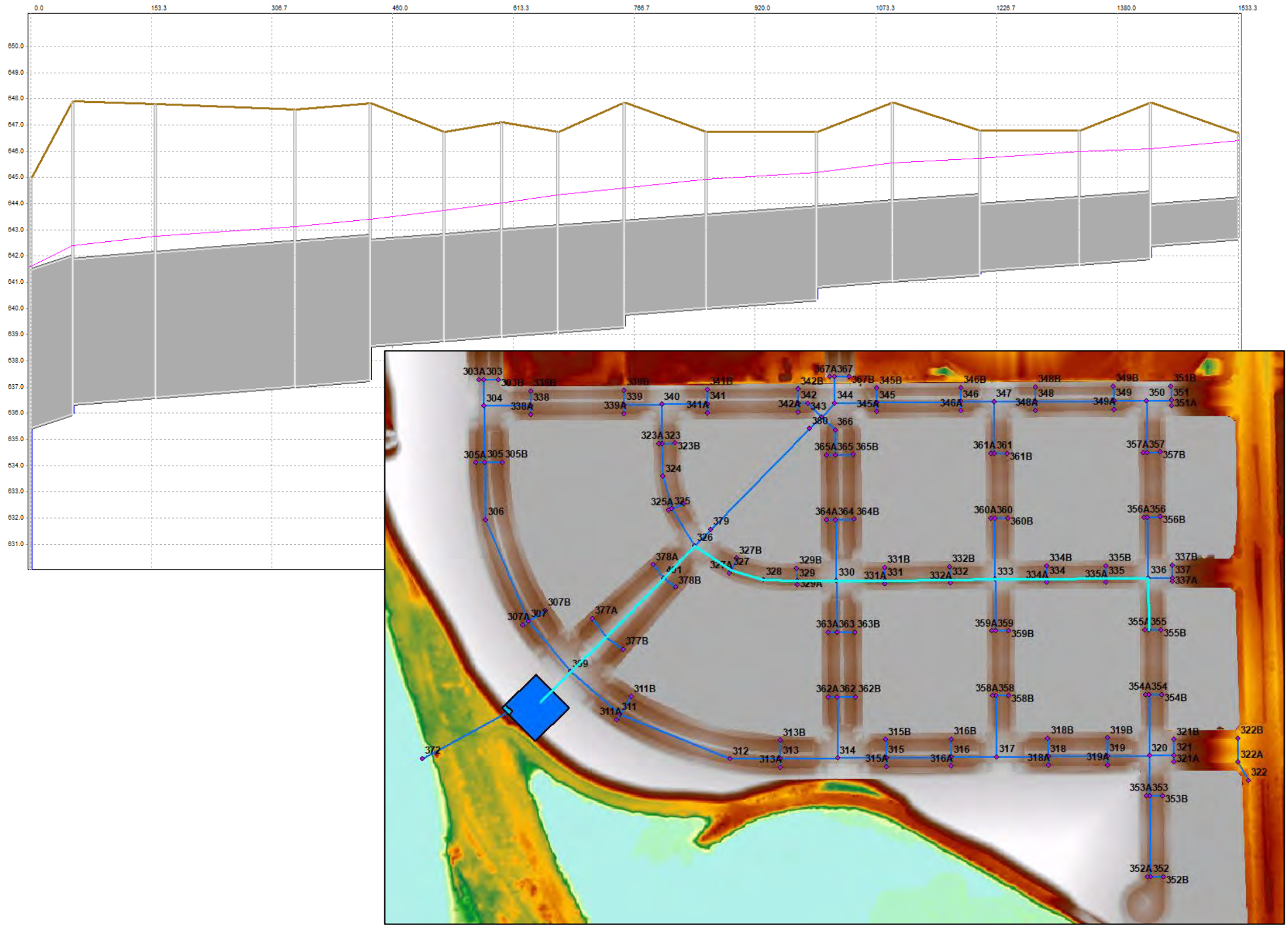


Figure 9a – Pipe Profile from Structure WQ Tank to MH 357 with 10-year Peak WSEL

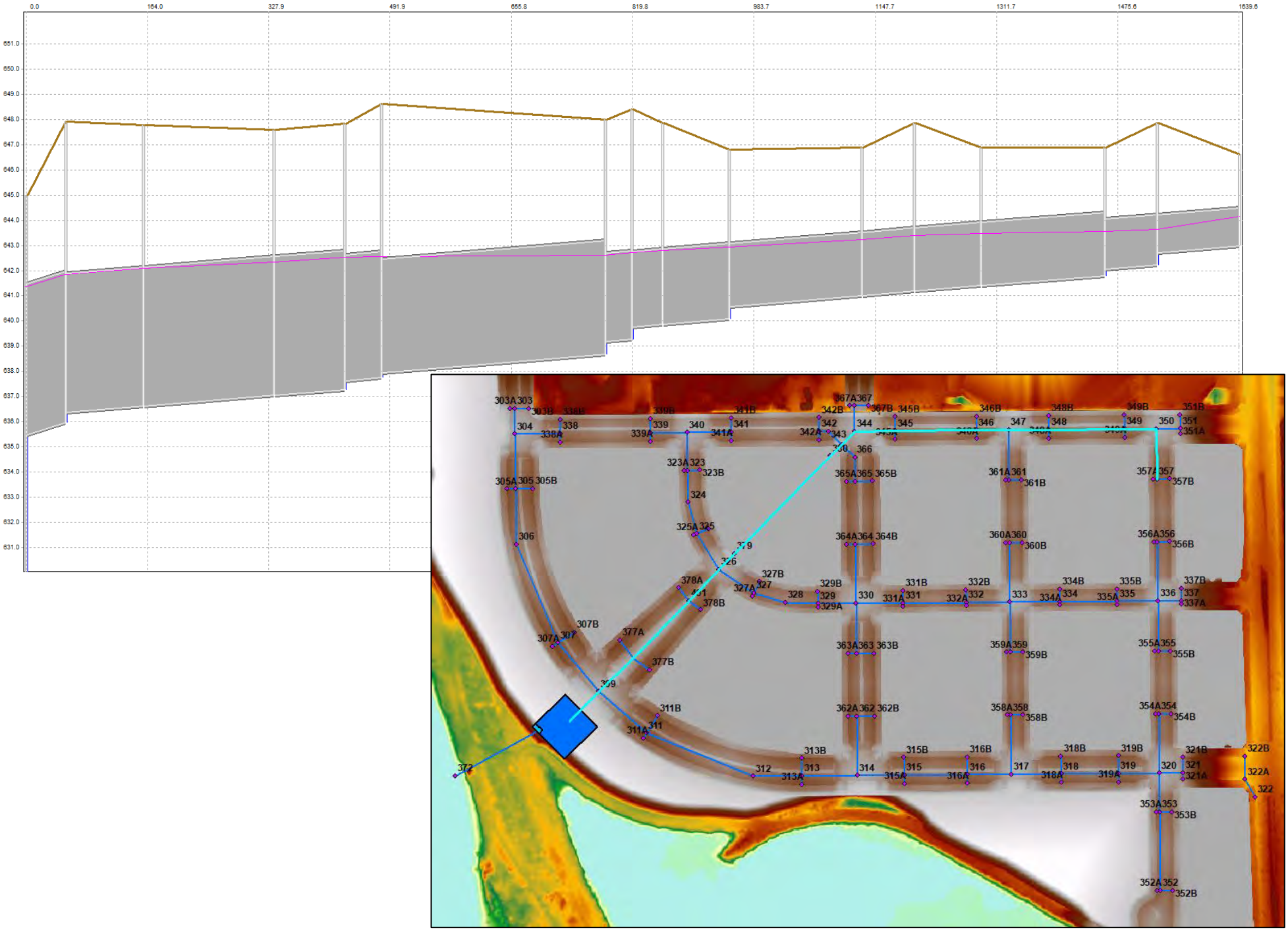
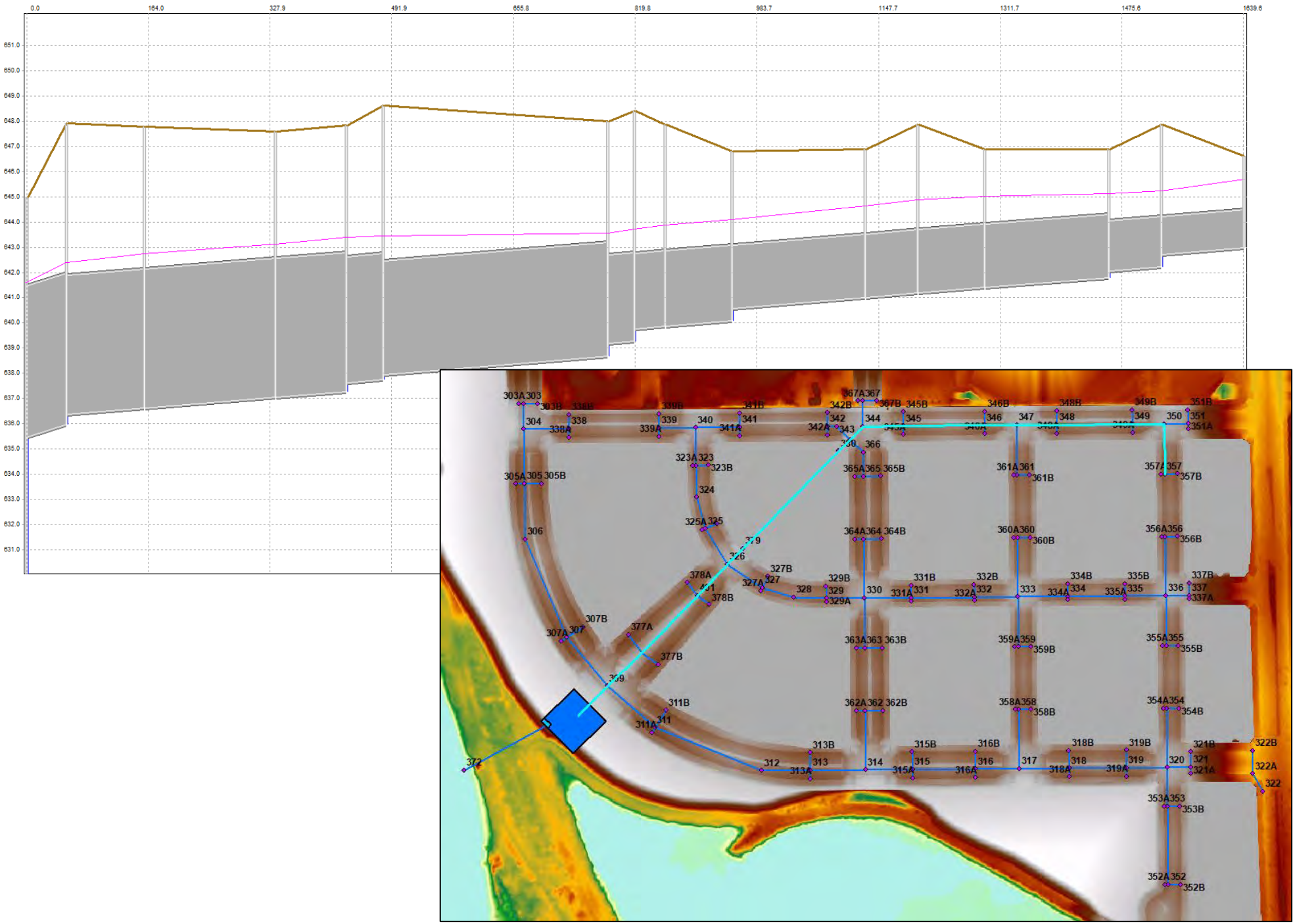


Figure 9b – Pipe Profile from Structure WQ Tank to MH 357 with 25-year Peak WSEL



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