CITY OF DE PERE

PROJECT
19-02

RYAN ROAD RECONSTRUCTION

BID DATE:
JANUARY 31, 2019
@ 1:00 PM

Bid documents, including plans and specifications, are available for download at www.QuestCDN.com. The QuestCDN website can also be accessed through the City website at www.de-pere.org. On the homepage, click on the City Departments tab at the top, then click on Public Works, then Engineering, then Construction Projects, then 2019 Construction Projects. Download cost is $15 for each contract. Bidding documents may be viewed on the QuestCDN website or at the Municipal Service Center.

Bid Tabs must be verified by staff prior to posting and will be available for viewing on the website within 7 days following the bid opening. Award information will be pending until approved by the Common Council.

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JANUARY 10, 2019 – JANUARY 17, 2019

CITY OF DE PERE

ADVERTISEMENT TO BID

PROJECT 19-02

RYAN ROAD RECONSTRUCTION

Sealed proposals will be received by the Board of Public Works of the City of De Pere at the Municipal Service Center, 925 South Sixth Street, De Pere, Wisconsin 54115, until 1:00 PM. Thursday January 31, 2019, at which time they will be publicly opened and read aloud.

Project 19-02 for which proposals are being sought includes the following approximate quantities:

- 5,400 CY Unclassified Excavation
- 2,300 CY Crushed Aggregate Base Course
- 5,450 SY Concrete Pavement (9" or 8") with Integral Curb, Driveway and Sidewalks
- 150 SY Concrete (6" or 4") Driveway and Sidewalks
- 35 Tons Asphaltic Concrete Patching of Driveways
- Pavement Marking
- Restoration

Complete digital project bidding documents are available for viewing and or downloading at www.QuestCDN.com or may be examined at the office of the Director of Public Works. Digital plan documents may be downloaded for $15 by inputting Quest project #6074772 on Quest's Project Search page. The QuestCDN website can also be accessed through the City website at www.de-pere.org. On the homepage, click on the City Departments tab at the top, then click on Public Works, then Engineering, then Construction Projects, then 2019 Construction Projects.

Each proposal shall be accompanied by a certified check or bid bond in an amount equal to five percent (5%) of the bid, payable to the City of De Pere, as a guarantee that if the bid is accepted, the bidder will execute a contract and furnish a contract bond as set forth in the General Conditions of the City of De Pere. In case the bidder fails to file such contract and bond, the amount of the check or bid bond shall be forfeited to the City of De Pere as liquidated damages.

The letting of the contract is subject to the provisions of the following Wisconsin Statutes:

Section 62.15 regarding Public Works.

Section 66.0901(3) regarding Prequalification of Contractor.

Each bidder shall pre-qualify by submitting proof of responsibility on forms furnished by the Director of Public Works. Such forms shall be filed with the Director of Public Works no later than 4:00 P.M., Monday, January 28, 2019. Prospective bidders who have previously submitted such forms subsequent to January 1, 2019 will not be required to separately submit such form for this project.

The City of De Pere reserves the right to reject any or all bids, to waive any informalities in bidding and to accept any proposal which the Common Council deems most favorable to the interest of the City of De Pere.

Dated this 10th day of January 2019.

Board of Public Works
City of De Pere
Eric Rakers, P.E.
City Engineer

Project 19-02

SECTION 00 21 13
INSTRUCTIONS TO BIDDERS

ARTICLE 1 – DEFINED TERMS

1.1 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

None

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.1 Complete sets of the Bidding documents in the number and for the deposit sum, if any, stated in the Advertisement or Invitation to Bid may be obtained as stated in the Advertisement for bids.

2.2 Complete sets of Bidding Documents shall be used in preparing Bids; Owner does not assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.3 Owner, in providing the Bidding Documents on the terms stated in the Advertisement for Bids, does so only for the purpose of obtaining Bids for the Work and does not confer a license or grant for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.1 In accordance with Section 66.0901(3), each bidder shall pre-qualify by submitting proof of responsibility on forms furnished by the Director of Public Works. Such forms shall be filed with the Director of Public Works as stated in the advertisement for Bids. Prospective bidders who have previously submitted such forms after January 1st of this year will not be required to separately submit such form for this project.

ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA AND SITE

4.1 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated conditions appear in the General Conditions.

4.2 Underground Facilities

A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

4.3 Subsurface and Physical Conditions

A. The technical data includes:
   1. Those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
   2. Those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except underground Facilities).
   3. In preparation of the Plans and Specifications, Engineer relied upon the following reports of explorations and tests of subsurface conditions at the Site:
      a. Geotechnical Engineering Report, 2019 Construction Design by ECS Midwest, LLC, dated December 17, 2018

B. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Contractor may not rely upon or make any claim against Owner, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
   1. the completeness of such reports and drawings for Contractor's purposes, including but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
   2. Other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
   3. Any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.4 On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.

4.5 Reference is made to Section 01 10 00: Summary of Work, for work that will be completed and for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of Contract Documents (other portions thereof related to price) for such other work.

4.6 It is the responsibility of each Bidder before submitted a Bid to:

A. Examine and carefully study the Bidding Documents, the other related data identified in the Bidding Documents, and any Addenda;

B. Visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. Become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;

D. Obtain and carefully study (or accept consequences of not doing so) all examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto;

E. Agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents;

F. Become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

G. Correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawing identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;

H. Promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies, that bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and

I. Determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

4.7 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and, procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 5 – SITE AND OTHER AREAS

5.1 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

ARTICLE 6 – INTERPRETATIONS AND ADDENDA

6.1 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than ten days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

6.2 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner and Engineer.

ARTICLE 7 – BID SECURITY

7.1 A Bid shall be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder's maximum Bid price and in the form of a certified check or bank money order or Bid bond (on the form attached) issued by a surety meeting the requirements of the General Conditions. Submittal of a Bid Bond on a form other than the Bid Bond form included in the Bidding Documents may be cause for rejection of Bid.

7.2 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may annul the Notice of Award and the Bid security of that Bidder will be forfeited. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner per the General Conditions.

7.3 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within seven days after the Bid opening.

ARTICLE 8 – CONTRACT TIMES

8.1 The number of days within which, or the dates by which, Milestones are to be achieved and the Work is to be substantially completed and ready for final payment are set forth in the Bid Form and Summary of Work.

ARTICLE 9 – LIQUIDATED DAMAGES

9.1 Provisions for liquidated damages are set forth in the General Conditions.

ARTICLE 10 – SUBSTITUTE AND "OR-EQUAL" ITEMS

10.1 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or "or-equal" items. Whenever it is specified or described in the Bidding Documents that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Bid Form and Summary of Work.

ARTICLE 11 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

11.1 The Bidder shall submit with the Bid to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute, in which case apparent Successful Bidder shall submit an acceptable substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

11.2 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposed to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner subject to revocation of such acceptance after the Effective Date of the Agreement.

11.3 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 12 – PREPARATION OF BID

12.1 The Bid form is included with the Bidding documents.

12.2 All blanks on the Bid Form shall be completed by printing in ink or by typewrite and the Bid signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each alternative, and unit price item listed therein, or the words "No Bid," "No Change," or "Not Applicable" entered.

12.3 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate office accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporations shall be shown below the seal.

12.4 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown below the signature.

12.5 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown below the signature.

12.6 A Bid by an individual shall show the Bidder's name and official address.

12.7 A Bid by a joint venture shall be executed by each joint venture in the manner indicated on the Bid Form. The official address of the joint venture shall be shown below the signature.

12.8 All names shall be typed or printed in ink below the signatures.

12.9 The Bid shall contain an acknowledgement of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

12.10 The address and telephone number for communications regarding the Bid shall be shown.

12.11 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located or covenant to obtain such qualification prior to award of the Contract. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 13 – BASIS OF BID; COMPARISON OF BIDS

13.1 Unit Price

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid Schedule.

B. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accord with the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

ARTICLE 14 – SUBMITTAL OF BID

14.1 A Bid shall be submitted no later than date and time prescribed and at place indicated in Advertisement for Bids and shall be enclosed in a plainly marked package with the Project title (and, if applicable, designated portion of the Project for which the Bid is submitted), name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to City of De Pere, Municipal Service Center, 925 S. Sixth Street, De Pere, WI 54115. Electronically transmitted Bids will not be accepted.

14.2 See Bid Form for a list of documents typically required to be submitted with the Bid.

ARTICLE 15 – MODIFICATION AND WITHDRAWAL OF BID

15.1 A Bid may be modified or withdrawn by an appropriate document duly executed in the manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.

15.2 If within 24 hours after Bids are opened, any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 16 – OPENING BIDS

16.1 Bids will be opened at the time and place indicated in the Advertisement or Invitation to Bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 17 – BIDS REMAIN SUBJECT TO ACCEPTANCE

17.1 All bids will remain subject to acceptance for the period of time stated in the General Conditions, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 18 – EVALUATION OF BIDS AND AWARD OF CONTRACT

18.1 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.

18.2 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

18.3 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

18.4 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Supplier, and other individuals or entities proposed for those portions of the Work for which the identify of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.

18.5 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities to perform the Work in accordance with the Contract Documents.

18.6 Bidder agrees to waive any claim it has or may have against the Owner and the respective employees arising out of or in connection with the administration, evaluation or recommendation of any Bid.

18.7 If the Contract is to be awarded, Owner will award the Contract to the lowest responsible responsive Bidder whose Bid is in the best interests of the Project.

ARTICLE 19 – CONTRACT SECURITY AND INSURANCE

19.1 The General Conditions set forth Owner's requirements as to performance and payment

bonds and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by such bonds and a certificate of insurance.

ARTICLE 20 – SIGNING OF AGREEMENT

20.1 When Owner gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement with the other Contract Documents which are identified in the Agreement as attached thereto. Within 10 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within ten days thereafter, Owner shall deliver one fully signed counterpart to Successful Bidder with a complete set of Drawings with appropriate identification.

- END OF SECTION -

SECTION 00 41 13

CITY OF DE PERE

BID FORM

PROJECT 19-02

This bid, submitted by the undersigned Bidder to the City of De Pere, in accordance with the Advertisement or Invitation to Bid, which will be received until 1:00 PM. Thursday January 31, 2019 is to furnish and deliver all materials, and to perform and do all work on the project designated, by September 3rd.

Bidder has examined and carefully prepared the bid from the plans and specifications and has checked the same in detail before submitting said proposal or bid; and that said bidder or bidder's agents, officer or employees have not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this proposal or bid.

Bidder has examined and carefully studied the Bidding Documents, other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date
_____	_____
_____	_____

BASIS OF BID:

Bidder will complete the Work in accordance with the Contract documents for the following prices (s):

As stated in the attached Unit Price Bid Schedule.

Unit Prices have been computed in accordance with the General Conditions.

Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

TOTAL BID PRICE: $_____

ATTACHMENTS TO THIS BID

The following documents are submitted with and made a condition of this Bid:

A. Required Bid Security
B. Unit Price Bid Schedule (Section 00 41 43)
C. Tabulation of Subcontractors (Section 00 43 36)

BID SUBMITTAL

This Bid is submitted by _____ of _____,_____

The Bidder, being duly sworn, does dispose that they are an authorized representative of

Bidder, if Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____

By: _____
(Signature of general partner – attach evidence of authority to sign)

Name (typed or printed): _____

A Corporation

Corporation Name: _____

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability): _____

By: _____
(Signature – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(CORPORATE SEAL)

Attest _____

Date of Qualification to do business in Wisconsin is ___/___/___.

Joint Venture

Name of Joint Venture: _____

First Joint Venturer Name: _____(SEAL)

By: _____

(Signature of first joint venture partner – attach evidence of authority to sign)

Name (typed or printed):_____

Title: _____

Second Joint Venturer Name:_____(SEAL)

By:_____

(Signature of second joint venture partner – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(Each joint venture must sign. Manner of signing for each individual, partnership, and corporation that is a party to joint venture should be in manner indicated above.)

Bidder's Business Address _____

_____

Phone No. _____ Fax No. _____

E-mail _____

SUBMITTED on _____, 20__.

State Contractor License No. _____(if applicable).

SECTION 00 41 43

CITY OF DE PERE
PROJECT 19-02
BID SCHEDULE – UNIT PRICE

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT BID
STORM SEWER					
ST-01	Abandon/Remove Existing Storm Sewer Appurtenances	LS	1	$_____	$_____
STREET AND DRAINAGE					
SD-01	Unclassified Excavation	CY	5400	$_____	$_____
SD-02	Provide 1 ¼" Crushed Aggregate Base Course	CY	2300	$_____	$_____
SD-03	Provide Asphaltic Concrete Pavement Type 4 LT 58-28 S, 2" Upper Layer	TON	35	$_____	$_____
SD-04	Provide Asphaltic Concrete Pavement Type 3 LT 58-28 S, 2" Lower Layer	TON	35	$_____	$_____
SD-05	Provide 24" Integral Curb	LF	2600	$_____	$_____
SD-06	Provide 9"-Inch Doweled Concrete Pavement with Integral Curb	SY	5400	$_____	$_____
SD-07	Remove and Replace 6" Concrete Sidewalk, Ramp, and Driveway	SY	95	$_____	$_____
SD-08	Provide 8" Concrete Sidewalk, Ramp, and Driveway	SY	70	$_____	$_____
SD-09	Provide 6" Concrete Sidewalk, Ramp, and Driveway	SY	90	$_____	$_____

SD-10	Provide 4" Concrete Sidewalk, Ramp, and Driveway	SY	50	$_____	$_____
SD-11	Drilled Tie Bars (Existing Sidewalk, Driveway, and Curb and Gutter)	EA	14	$_____	$_____
SD-12	Drilled Tie Bars (Concrete Pavement)	EA	40	$_____	$_____
SD-13	Provide Detectable Warning Field (Natural)	EA	8	$_____	$_____
SD-14	Pavement Marking Stop Line Epoxy 12-Inch White	LF	75	$_____	$_____
SD-15	Pavement Marking Epoxy 6-Inch White	LF	250	$_____	$_____
SD-16	Pavement Marking Epoxy 4-Inch Yellow	LF	330	$_____	$_____
SD-17	Pavement Marking Epoxy 4-Inch White	LF	40	$_____	$_____
SD-18	Pavement Marking Arrows Epoxy Type-2	EA	2	$_____	$_____
SD-19	Landscaping – Topsoil, Seed, Fertilizer and Mulch	SY	6400	$_____	$_____
SPECIAL CONSTRUCTION					
SC-01	Inlet Protection Type B	EA	6	$_____	$_____
SC-02	Adjust Inlet	EA	6	$_____	$_____
SC-03	Adjust Manhole	EA	7	$_____	$_____
SC-04	Traffic Control	LS	1	$_____	$_____
			TOTAL AMOUNT BID:		$_____

SECTION 00 43 13

CITY OF DE PERE

BID BOND

KNOW ALL MEN BY THESE PRESENTS: That _____,

as Principal, hereinafter called Principal, and _____,

as Surety, hereinafter called Surety, are held and firmly bound unto the City of De Pere, a municipal corporation of the State of Wisconsin, as Obligee, hereinafter called City, in the amount of
_____ dollars ($_____)
for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presence.

WHEREAS, Principal has made a proposal to the City for furnishing all materials, labor, tools, equipment and incidentals necessary to complete the work of Project 19-02 in accordance with drawings and specifications prepared by the Director of Public Works of said City, which proposal is by reference made a part hereof, and is hereinafter referred to as the BID.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall be awarded the contract for said project and Principal shall enter into a contract in accordance with the BID, then this obligation shall be null and void; otherwise it shall remain in full force and effect, provided that:

1. The liability of Surety shall in no event exceed the penalty of this bond.

2. Any suits at law or proceedings, in equity brought or to be brought against Surety to recover any claim hereunder shall be executed within six (6) months from the date of this instrument.

Signed and sealed this _____ day of _____, 20____.

In the presence of:

_____	_____
WITNESS	PRINCIPAL (SEAL)
_____	_____
WITNESS	SURETY (SEAL)

SECTION 00 43 36

TABULATION OF SUBCONTRACTORS

The following information is submitted which gives the name, business address, and portion of work for each subcontractor that will be used in the work if the bidder is awarded the contract, and no subcontractor doing work in excess of one-half of one percent of the total amount of the bid and who is not listed will be used without the written approval of the Engineer. Additional numbered pages outlining this portion of the proposal may be attached to this page.

PORTION OF WORK	BUSINESS NAME	BUSINESS ADDRESS
Excavation		
Asphaltic Concrete Pavement		
Concrete Driveway and Sidewalk		
Landscaping		

SECTION 00 51 00
NOTICE OF AWARD

(Contractor)
(Contractor Name)
(Address)
(Address)

Project Description: 19-02 RYAN ROAD RECONSTRUCTION

The City has considered the proposal submitted by you dated (BID DATE) for the above-described project in response to its Advertisement for Bids dated January 10, 2019 and January 17, 2019.

You are hereby notified that the Common Council of the City of De Pere has accepted your bid of (Contract Amount $_____.00).

You are required to execute the Contract and furnish the required Performance Bond, Payment Bond and Certificates of Insurance within ten (10) calendar days from the date of this notice to you.

If you fail to execute said Agreement and to furnish said bonds within ten (10) days from the date of this notice, said City will be entitled to consider all your rights arising out of the City's acceptance of your bid as abandoned and as a forfeiture of your Bid Bond. The City will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the City.

Dated this __th day of _____2019.

_____
DEPARTMENT OF PUBLIC WORKS

BY: Eric P. Rakers, P.E.
City Engineer

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by:

_____, this the _____ day of _____, 20___

By:_____

Title:_____

SECTION 00 52 13
CONTRACT

This Contract, made and entered into this day _____ (date to be affixed by City), by and between (Contractor Name), hereinafter called Contractor, and the City of De Pere, a municipal corporation of the State of Wisconsin, hereinafter called City.

WITNESSETH: That, in consideration of the covenants and agreements herein contained, to be performed by the parties hereto, and of the payments hereinafter agreed to be made, it is mutually agreed as follows:

ARTICLE I - SCOPE OF WORK

The Contractor shall furnish all materials and all equipment and labor necessary, and perform all work shown on the drawings and described in the specifications for the project entitled Project Number and Name, all in accordance with the requirements and provisions of the following documents, which are hereby made a part of this Contract:

(a) Advertisement for Bids, dated (1st Advertising Date) and (2nd Advertising Date).

(b) Drawings designated for Project Number and Name dated (1st Advertising Date).

(c) City of De Pere 2019 Construction Specifications.

(d) Special Provisions dated (1st Advertising Date)

(e) Proposal submitted by (Contractor Name) dated Bid Date.

(f) Addenda No. dated

ARTICLE II - TIME OF COMPLETION

(a) The work to be performed under the Contract shall be commenced within (number spelled out) (__) calendar days after receipt of written notice to proceed. The work shall be completed within (Number spelled out) (__) calendar days) or (specific calendar dates) after receipt of Notice to Proceed.

(b) Time is of the essence with respect to the date of completion herein above stated. Failure to complete the work within the number of calendar days stated in this Article, or interim dates included in the work sequence in Section 01 10 00, Summary of Work, including any extensions granted thereto, shall entitle the City to deduct from the monies due the Contractor an amount equal to Update based on 00 70 00 - General Conditions (Page 22)($) per day for each calendar day of delay in the completion of the work. Such amount shall be considered and treated not as a penalty but as liquidated damages, which the City will sustain, by failure of the Contractor to complete the work within the time stated.

ARTICLE III - PAYMENT

(a) The Contract Sum. The City shall pay to the Contractor for the performance of the Contract the amounts determined for the total number of each of the following units of work completed at the unit price stated thereafter. The number of units contained in this schedule is approximate only,

and the final payment shall be made for the actual number of units that are incorporated in or made necessary by the work covered by the Contract.

(b) Progress Payments. The City shall make payments on account of the Contract as follows:

1. On not later than the fourth Friday day of every month the Contractor shall present to the City an invoice covering an estimate of the amount and proportionate value of the work done as verified by the City under each item of work that has been completed from the start of the job up to and including the fourth Friday of the preceding month, and the value of the work so completed determined in accordance with the schedule of unit prices for such items, together with such supporting evidence as may be required. This invoice shall also include an allowance for the cost of such materials and equipment required in the permanent work as have been delivered to the site but not as yet incorporated in the work.

2. On not later than the third week of the following month, the City shall, after deducting previous payments made, pay to the Contractor 95% of the amount of the approved invoice, retaining 5% of the estimate of work done until 50% of the work has been completed. At 50% completion of the work, the previous retainage shall not yet be paid, but further partial payments shall be made in full to the contractor without additional retainage being taken unless the engineer certifies that the work is not proceeding satisfactorily. If the work is not proceeding satisfactorily, additional amounts may be retained. After substantial completion, an amount retained may be paid to the contractor, keeping retained only such amount as is needed for the remaining work.

3. The Contractor shall notify the City in writing when all work under this Contract has been completed. Upon receipt of such notice the City shall, within a reasonable time, make the final inspection and issue a final certificate stating that the work provided for in this Contract has been completed and is accepted under the terms and conditions thereof, and that the entire balance due the Contractor as noted in said final certificate is due and payable. Before issuance of the final certificate the Contractor shall submit evidence satisfactory to the City that payrolls, material bills, and other indebtedness connected with the work under this Contract have been paid.

   The City shall make final payment as soon after issuance of the final certificate as practicable.

ARTICLE IV – CONTRACT DOCUMENTS

(a) Contents

1. The Contract documents consist of the following:
   a. This Contract (pages 00 52 13-1 to 0052-13-2, inclusive).
   b. Payment bond (pages 00 61 13-1 to 00 61 13-2, inclusive).
   c. Performance bond (page 00 61 16-1).
   d. General Conditions (pages 00 70 00-1 to 00 70 00-27, inclusive).
   e. Specifications as listed in the table of contents of the Project Manual.
   f. Drawings consisting of ___ sheets with each sheet bearing the following general title: ___[or] the Drawings listed on attached sheet index.
   g. Addenda (numbers ___ to ___ inclusive), dated_____.
   h. Exhibits to this Agreement (enumerated as follows):
      1) Contractor's Bid (pages 00 41 13-1 to 00 41 13-3, inclusive).
      2) Bid Schedule – Unit Prices (Pages 00 41 43-1).
      3) Proposed Products Form (Page 00 43 33-1)
      4) Tabulation of Subcontractors (page 00 43 36-1).
      5) Documentation submitted by Contractor prior to Notice of Award (00 51 00-1)

i. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
   1) Notice to Proceed (Page 00 55 00-1).
   2) Change Orders.

2. The documents listed in Paragraph (a) Contents, are attached to this Agreement (except as expressly noted otherwise above).

3. There are no Contract Documents other than those listed above in this Article IV.

IN WITNESS WHEREOF, the parties hereto have executed this Contract, the day and year first written above.

_____ _____
(WITNESS) (CONTRACTOR) (SEAL)

_____ BY:_____
(WITNESS)

_____
(TITLE)

BY: _____

_____
(TITLE)

CITY OF DE PERE (SEAL)

Approved as to Form By: _____ (City Attorney)

Sufficient funds are available to provide for the payment of this obligation.

_____
(COMPTROLLER)

BY:_____ BY:_____
(MAYOR) (CLERK-TREASURER)

SECTION 00 55 00
NOTICE TO PROCEED

Date: _____

(CONTRACTOR NAME)
(ADDRESS)
(ADDRESS)

PROJECT: (PROJECT NUMBER AND NAME)

You are hereby notified to commence work in accordance with the CONTRACT dated _____, within ten (10) days of this Notice. All work under this contract shall be completed within _____(NUMBER IN WORDS) (__#) consecutive days from the start of construction or _____(DATE) whichever comes first.

_____
Department of Public Works

By: Eric P. Rakers, P.E.
Title: City Engineer

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by

_____, this _____ day of _____, 20___.
Company Name

_____
Signature

BY: _____
Printed Name

TITLE: _____

SECTION 00 61 13

CITY OF DE PERE

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That (CONTRACTOR NAME), as Principal, hereinafter called Contractor, and _____

_____, as Surety, hereinafter called Surety, are held and firmly bound unto the City of De Pere, a municipal corporation of the State of Wisconsin, as Obligee, hereinafter called the owner, for the use and benefit of claimants as herein below defined in the amount _____ _____(CONTRACT AMT. SPELLED OUT) ($_____) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____ (date to be affixed by City) entered into a contract with City for Project 19-02, in accordance with drawings and specifications prepared by the Director of Public Works of said City, which contract is by reference made a part hereof, and is hereinafter referred to as the CONTRACT.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly make payments to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the CONTRACT, then this obligation shall be null and void; otherwise it shall remain in full force and effect, subject, however, to the following conditions.

1. A claimant is defined as one having a direct contract with Contractor or with a sub-contractor of Contractor for labor, material, or both, used or reasonably required for use in the performance of the contract, labor and material being construed to include that part of water, gas, power, lights, heat, oil, gasoline, telephone service, or rental of equipment directly applicable to the contract.

2. The above named Contractor and Surety hereby jointly and severally agree with the City that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant may sue on this bond for the use of such claimant in the name of the City, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon, provided, however, that the City shall not be liable for the payment of any costs or expenses of any such suit.

3. No suit or action shall be commenced hereunder by any claimant:

    a. Unless claimant shall have given written notice to any two of the following: The Contractor, the City, or the Surety above named, within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished,

or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail, postage prepaid, in an envelope addressed to the Contractor, City, or Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the State of Wisconsin, save that such service need not be made by a public officer.

b. After the expiration of one (1) year following the date on which Contractor ceased work on said CONTRACT.

c. Other than in a state court of competent jurisdiction in and for the County or other political subdivision of the state in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere.

4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens, which may be filed or recorded against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

SIGNED AND SEALED THIS _____ DAY OF _____, 20___.

In Presence of:

_____ _____
(WITNESS) (CONTRACTOR)

_____ _____
(WITNESS) (SURETY)

SECTION 00 61 16

CITY OF DE PERE

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That (CONTRACTOR'S NAME), as Principal, hereinafter called Contractor, and _____ _____, as Surety, hereinafter called Surety, are held and firmly bound unto the City of De Pere, a municipal corporation of the State of Wisconsin, as Obligee, hereinafter called City, in the amount of _____(AMOUNT WRITTEN OUT) ($_____) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assign, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____ (date to be affixed by City), entered into a contract with the City for Project 19-02, in accordance with drawings and specifications prepared by the Director of Public Works of said City, which contract is by reference made a part hereof, and is hereinafter referred to as the CONTRACT.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Contractor shall promptly and faithfully perform said CONTRACT, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Whenever Contractor shall be, and declared by the City to be in default under the CONTRACT, the City having performed City's obligations there under, the Surety may promptly remedy the default, or shall promptly

1. Complete the CONTRACT in accordance with its terms and conditions or

2. Obtain a bid or bids for submission to City for completing the CONTRACT in accordance with its terms and conditions, and upon determination by the City and Surety of the lowest responsible bidder, arrange for a contract between such bidder and City make available as work progresses (even though there should be a default or succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable by City to Contractor under the CONTRACT and any amendments thereto, less the amount properly paid by City to Contractor.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the CONTRACT falls due. No right of action shall accrue on this bond to or for the use of any person or corporation other than the owner named herein or the heirs, executors, administrators or successors of City.

SIGNED AND SEALED THIS _____ DAY OF _____, 20___.

In the Presence of:

_____ _____
(WITNESS) (CONTRACTOR) (SEAL)

_____ _____
(WITNESS) (SURETY) (SEAL)

Contractor's Application for Payment No.

Application Period:	Application Date:
Owner: City of De Pere	Contractor:
	Contractor's Project No.:

APPLICATION FOR PAYMENT

Change Order Summary

Approved Change Orders		
Number	Additions	Deductions
Total	$0.00	$0.00
NET CHANGE BY CHANGE ORDERS:		$0.00

1. ORIGINAL CONTRACT PRICE:……	
2. Net change by Change Orders and Written Amendments (+ or -):……	$0.00
3. CURRENT CONTRACT PRICE (Line 1 plus Line 2):……	$0.00
4. Total completed and stored to date Column H on Progress Estimate:….	$0.00
5. Retainage (per Agreement):	
a. Work Completed - Column H (5% up to 50% of Contract or 2.5% of 100% of Contract	$0.00
6. AMOUNT ELIGIBLE TO DATE (Line 4 minus 5)……	$0.00
7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application)……	$0.00
8. AMOUNT DUE THIS APPLICATION (Line 6 minus Line 7)……	$0.00

CONTRACTOR'S CERTIFICATION

The undersigned Contractor certifies that:(1) all previous progress payments received from Owner on account of Work done under Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applicaions for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covere d by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by the Applicaton for Payment is in accordance with the Contract Documents and is not defective.

By:	Date:

Payment of: $ _____
(Line 8 or other - attach explanation of other amount)

is recommended by: _____ (Contractor) _____ (Date)

Payment of: $ _____
(Line 8 or other - attach explanation of other amount)

is recommended by: _____ (Owner) _____ (Date)

SECTION 00 65 16

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project:	
Owner:	Owner's Contract No.:
Contractor:	

This [tentative] [definitive] Certificate of Substantial Completion applies to:

☐All Work under the Contract Documents: ☐The following specified portions of the Work:

_____

_____

_____
Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Contractor and Engineer, and found to be substantially complete. The Date of Substantial completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [definitive] list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

☐Amended Responsibilities ☐ Not Amended

Owner's Amended Responsibilities:

_____

_____

_____

Contractor's Amended Responsibilities:

_____

_____

_____

The following documents are attached to and made part of this Certificate:

_____
_____
_____

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

_____ _____
Executed by Engineer Date

_____ _____
Accepted by Contractor Date

SECTION 01 10 00
SUMMARY OF WORK

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes
   1. References
   2. Work Covered by the Contract Documents
   3. Work Sequence
   4. Use of Premises
   5. Warranty
   6. Work By Others
   7. Project Utility Sources
   8. Miscellaneous Provisions

1.2 REFERENCES

A. General Specifications The work under this contract shall be in accordance with the City of De Pere, 2019 Construction Specifications and these Special Provisions and plans, and the latest edition of the Wisconsin Department of Transportation Standards Specifications for Highway and Structure Construction, where referenced in the City Specifications.

B. Definitions. Any reference to the "state" or the "department" in said standard Specifications shall mean the "City of De Pere" for the purposes of this contract.

C. Industry Standards
   1. Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
   2. Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.
   3. If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement.
   4. The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements.
   5. Each section of the specifications generally includes a list of reference standards normally referred to in that respective section. The purpose of this list is to furnish the Contractor with a list of standards normally used for outlining the quality control

desired on the project. The lists are not intended to be complete or all inclusive, but only a general reference of standards that are regularly referred to.

6. Each entity engaged in construction on the Project shall be familiar with industry standards applicable to it construction activity. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required construction activity, obtain copies directly from the publication source and make them available on request.

1.3 WORK COVERED BY THE CONTRACT DOCUMENTS

A. Project Identification
   1. Project Location
      a. Ryan Road – 470 feet south of Diversity to 850 feet north of Diversity Drive
   2. Work will be performed under the following prime contract:
      a. Project 19-02 – Ryan Road Reconstruction

B. The Work includes:
   1. Unclassified excavation.
   2. Concrete curb and gutter slip form and hand poured gaps.
   3. Concrete pavement, driveway aprons, and sidewalk removal and repairs.
   4. Asphaltic concrete paving.
   5. Terrace restoration.
   6. Erosion control.
   7. Pavement marking.
   8. Traffic control and detour installation.

1.4 WORK SEQUENCE

A. Conduct construction activities to maintain access to residence throughout construction.

B. Maintain access to Pine Trail Crossing subdivision from Diversity Drive at all times throughout construction. During concrete paving, access may be restricted to one lane with proper signage. This access will be heavily used by contractors for home and apartment construction.

C. Maintain access for the Tranquil Trails apartment complex on Lot 61 throughout construction, including concrete paving.

D. The Altmayer School access to Ryan Road shall be closed to traffic during construction. Install Type 3 barricades on school property to prevent vehicle access onto Ryan Road.

E. Road closures shall not occur until June 14th.

F. Ryan Road shall be open to traffic by August 27th.

1.5 USE OF PREMISES

A. Contractor shall have full use of the premises for construction operations, including use of the Project Site, as allowed by law, ordinances, permits, easement agreements and the Contract documents.

B. Contractor's use of premises is limited only by Owner's right to perform work or to retain other contractors on portions of the Project.

C. The Project Site is limited to property boundaries, rights-of-way, easements, and other areas designated in the Contract Documents.

D. Provide protection and safekeeping of material and products stored on or off the premises.
E. Move any stored material or products which interfere with operations of Owner or other Contractors.

1.6 WARRANTY

A. The Contractor warrants and guarantees to the City that all work shall be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects will be given to the Contractor. All defective work, whether or not in place, may be rejected, corrected or accepted as provided in this proposal.

B. If within one (1) year after the date of contract work completion or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents or by a special provision of the Contract Documents, any work is found to be defective, the Contractor shall comply in accordance with the City's written instructions. These written instructions will include either correcting such defective work or, if it has been rejected by the City, removing it from the site and replacing it with non-defective work. If the Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk or loss or damage, the City may have the defective work corrected or the rejected work removed and replaced. All direct and indirect costs of correction or removal and replacement of defective work, including compensation for additional professional services, shall be paid by the Contractor.

1.7 WORK BY OTHERS

A. Owner has awarded a separate contract for performance of certain construction operations which will be conducted at the Project site simultaneously with work under this Contract. This contract includes the following:
   1. Project 18-15 – Pine Trail Crossing Utility and Street Construction.

B. Utility work will be occurring during construction. Coordinate construction activities with utility contractors.

C. Cooperate fully with separate contractors and/or Owner so work by others may be carried out smoothly, without interfering with or delaying work under this Contract.

1.8 PROJECT UTILITY SOURCES

A. Green Bay Metropolitan Sewer District (NEW Water), Lisa Sarau, (lsarau@newwater.us) (920-438-1039)

B. AT&T, Shea Gorzelanczyk, (sg2528@att.com) (920-433-4250)

C. Wisconsin Public Service, Bob Laskowski, (rtlaskowski@wisconsinpublicservice.com) (920-617-2775)

D. Charter, Vince Albin, (vince.albin@charter.com) (920-378-0444)

E. Nsight, Rick Vincent, (rick.vincent@nsight.com) (920-617-7316)

F. TDS Metrocom, Steve Jakubiec, (steve.jakubiec@tdstelecom.com) (920-882-4166)

G. Net-Lec (Mi-Tech Services), Dennis Lafave, (dlafave@mi-tech.us) (920-619-9774)

H. Level3 (Mi-Tech Services), Chris Kraus, (ckraus@mi-tech.us) (414-550-6201)

1.9 MISCELLANEOUS PROVISIONS

A. Notification to Residents – The Contractor shall individually notify all residents and businesses 2-weeks prior to the start of operations, giving an estimated time that vehicle movement will be limited or prohibited. Property owners shall be notified 24-hours prior to closing a drive.

B. Maintain mail service throughout construction.

C. Ingress and egress to the site of work for delivery of materials, hauling of excavation, daily construction activities and all vehicular traffic shall be as follows:
   1. CTH PP to Rockland Road to Ryan Road
   2. CTH PP to Diversity Drive.

D. During street excavation, all exposed subgrade shall be graded and covered with crushed aggregate base course at the end of each day.
   1. Per the soil borings, there is approximately 14” of existing base course under the existing asphalt in certain locations. All gravel surfaces shall be maintained if the existing asphalt is removed at the beginning of the project and rutting, pumping, or failures occur.

E. Salvaged pulverized asphaltic concrete pavement, salvaged crushed aggregate base course, and/or virgin asphaltic base course shall be allowed on the project. Pulverized asphaltic concrete pavement shall be placed on the bottom 8” of the crushed aggregate base course.

Pulverizing the asphaltic concrete pavement shall be accomplished by milling or crushing and mixing with crushed concrete or aggregate to conform to the requirements of Section 32 11 26.16.

F. Salvaged material for base course may be stockpiled at the City of De Pere Compost Site (655 Rockland Road). All excess waste must be removed from the compost, and the site must be restored with topsoil, seed and mulch to match preexisting conditions once construction is complete.

G.

PART 2 – PRODUCTS

PART 3 – EXECUTION

END OF SECTION

SECTION 01 22 02

MEASUREMENT AND PAYMENT STORM SEWER

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes:
   1. Abandon/Remove Existing Storm Sewer Appurtenances ST-01

B. Unit Prices include:
   1. Defined work for each Unit Price Item which will provide a functionally complete Project when combined with all unit price items. If there are specific work items which the Contractor believes are not identified in any Unit Price Item, but is required to provide a functionally complete Project, then the identified specific work items shall be included in the appropriate Unit Price Item.
   2. The method of measurement for payment.
   3. The price per unit for payment.

1.2 GENERAL WORK ITEMS

A. Include with the appropriate Unit Price Item the following work items which are common to the Unit Price Items for storm sewer systems.

B. If there is a specific Unit Price Item for any of the following items, then the work item shall be included with that specific unit price item.
   1. Traffic Control.
   2. Sawcutting asphalt and/or concrete.
   3. Removal, hauling and disposal of surface materials including road pavement, curb and gutter, sidewalk, driveways and other pavement surfaces in the trench area and as shown on the drawings.
   4. Dewatering.
   5. Excavation.
   6. Open Trench installation method (unless bid item specifies other method).
   7. Pipe Bedding.
   8. Backfilling and compacting native obtained from the excavation.
   9. Supplying, hauling, backfilling and compacting granular material.
   10. Loading, hauling and disposing of surplus excavated material.
   11. Landscaping – turf establishment surface restoration and trees and bushes damaged during construction.

12. Maintenance, protection, replacement and/or repair of facilities not designated for alteration on the Site beyond the limits identified.
13. Site access requirements including temporary aggregate material as required for local traffic access.
14. Bulkhead and abandoned existing storm sewer with flowable fill as shown on Drawings.
15. If crossing or undermining of existing public or private utility, then include:
    a. Maintaining the utility in service.
    b. Replacing of existing utilities, if damaged.
    c. Providing support and bedding material.
16. Dust control.
17. Remove and replace existing mailboxes and traffic signs.
18. Restroom facilities
19. Easement and right-of-way requirements.
20. Construction staking and other survey work not provide by the Engineer.
21. Regulatory requirements.
22. Preconstruction videotaping and video equipment.
23. Quality assurance and quality control testing and inspections.
24. Shop drawings and other submittals.

1.3 ABANDON/REMOVE STORM SEWER APPURTENANCES

A. The unit price for Abandon/Remove Storm Sewer Appurtenances work includes:
    1. General Work Items of Article 1.2.
    2. Storm sewer pipe/structure abandonment, flowable fill materials and installation (where applicable).
    3. Storm sewer pipe/structure removal, backfilling, and compacting (where applicable).

B. Measurement of payment will not be made.

C. The unit of measurement for payment is lump sum.

END OF SECTION

SECTION 01 22 04

MEASUREMENT AND PAYMENT STREET AND DRAINAGE CONSTRUCTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes:

1. Topsoil and Unclassified Excavation	SD-01
2. Crushed Aggregate Base and Surface Course	SD-02
3. Asphaltic Concrete Pavement	SD-03, SD-04
4. Portland Cement Concrete Curb and Gutter	SD-05
5. Portland Cement Concrete Pavement	SD-06
6. Portland Cement Concrete Driveway and Sidewalk	SD-07, SD-08, SD-09, SD-10
7. Drilling Tie Bars and Dowel Bars	SD-11, SD-12
8. Detectable Warning Field Natural	SD-13
9. Pavement Marking Epoxy Lines	SD-14, SD-15, SD-16, SD-17
10. Pavement Marking Epoxy Arrows	SD-18
11. Landscaping – Topsoil, Seed, Fertilize, and Mulch	SD-19

B. Unit Prices include:
   1. Defined work for each Unit Price Item which will provide a functionally complete Project when combined with all unit price items. If there are specific work items which the Contractor believes are not identified in any Unit Price Item, but is required to provide a functionally complete Project, then the identified specific work items shall be included in the appropriate Unit Price Item.
   2. The method of measurement for payment.
   3. The price per unit for payment.

1.2 GENERAL WORK ITEMS

A. Include with the appropriate Unit Price Item the following work items which are common to the Unit Price Items for street and drainage systems.

B. If there is a specific Unit Price Item for any of the following items, then the work item shall be included with that specific unit price item.
   1. Traffic Control.
   2. Sawcutting asphalt and/or concrete.

3. Removal, hauling and disposal of surface materials including road pavement, curb and gutter, sidewalk, driveways and other pavement surfaces in the trench area and as shown on the drawings.
4. Maintenance, protection, replacement and/or repair of facilities not designated for alteration on the Site.
5. Site access requirements including temporary aggregate material as required for local traffic access.
6. Dust control.
7. Remove and replace existing mailboxes and traffic signs.
8. Restroom facilities.
9. Construction staking and other survey work not provide by the Owner.
10. Regulatory requirements.
11. Quality assurance and quality control testing and inspections.
12. Final casting and valve box adjustment.
13. Shop drawings and other submittals.

1.3 TOPSOIL AND UNCLASSIFIED EXCAVATION

A. The unit price for Topsoil and Unclassified Excavation work includes:
   1. General Work Items of Article 1.2.
   2. Removal of topsoil to depth available.
   3. Hauling and stockpiling topsoil.
   4. Excavation to subgrades shown on the Drawings.
   5. Hauling of unclassified material.
   6. Placing unclassified material in fill areas to subgrades shown on the Drawings and the subgrade required for placement of topsoil.
   7. Compaction of subgrade and fill areas.
   8. Test rolling subgrade.
   9. Excavation of undercut areas for placing topsoil.
   10. Respreading topsoil to final grades shown on the Drawings.
   11. Disposal of surplus topsoil, unclassified material and unsuitable material.
   12. Preparation of disposal site and transportation of material over an Engineer approved haul route from the site including all loading and dumping of material
   13. Finish grading.

B. Measurement of payment will not be made unless there is a change in project scope. The estimated quantity represents the computed volume by comparing the triangulated surfaces and will be the basis for payment.

C. The unit of measurement for payment is cubic yards.

1.4 CRUSHED AGGREGATE BASE AND SURFACE COURSE

A. The unit price for Crushed Aggregate Base and Surface Course work includes:
   1. General Work Items of Article 1.2.
   2. Aggregate material.
   3. Preparation of foundation.
   4. Placing and compacting to thickness and width shown on the Drawings or specified elsewhere.
   5. Maintenance until surface pavement is constructed.
   6. Preparation of crushed aggregate base for paving.
   7. Adjustment of manholes and valve boxes to proposed finish road grade.

B. Measurement of payment will be made based on the following:
   1. Length will be the construction limits.
   2. Width will be 24” behind the back of curb with concrete pavement.
   3. Depth is 12 with concrete pavement”.
   4. Width and depth for the transition to existing pavement on the south end will be measured per the plans and include shoulder material.
   5. Area will be field verified by survey and calculated based on the computer generated area.

C. The unit of measurement for payment is cubic yards.

1.5 ASPHALTIC CONCRETE PAVEMENT

A. The unit price for Asphaltic Concrete Pavement work includes:
   1. General Work Items of Article 1.2.
   2. Asphaltic concrete mixture, tack coat and other required materials
   3. Surface preparation.
   4. Provide tack coat on base material.
   5. Saw cutting and/or mill adjacent and abutting pavement surfaces.
   6. Asphaltic concrete placement and compaction to thickness and width shown on the drawings or specified elsewhere.
   7. Tack coat between asphaltic concrete courses and abutting pavements.

B. Measurement for payment will be the actual amount of material required and incorporated in the work verified by submitting to the Engineer delivery tickets provided with each load showing the weight measured on a certified scale, type of material, the date delivered and the project name.

C. The Unit Price shall be adjusted for deficiencies for less than minimum density represented by the average lot density of five nuclear density tests of 750 tons of asphaltic concrete placed as shown in the following table:

Density Deficiency-Percent of Unit Price for Payment

%Lot Density Below Specified Minimum	WisDOT Mixes
From 0.5-1.0 inclusive	98%
From 1.1-1.5 inclusive	95%
From 1.6-2.0 inclusive	91%
From 2.1-2.5 inclusive	85%
From 2.6-3.0 inclusive	70%
More than 3.0	0%

D. The unit of measurement for payment is tons.

1.6 PORTLAND CEMENT CONCRETE CURB AND GUTTER

A. The unit price for Portland Cement Concrete Curb and Gutter work includes:
   1. General Work Items of Article 1.2.
   2. Providing Portland cement concrete mixture of size shown in the drawings or specified elsewhere.
   3. Providing expansion joints.
   4. Providing curing.
   5. Existing curb and gutter removal.
   6. Subgrade preparation.
   7. Provide crushed aggregate base.
   8. Fine grading of subgrade.
   9. Providing contraction joints.
   10. Driveway entrances and handicap ramp entrances.
   11. Adjustment of catch basin/inlets.
   12. Finishing.
   13. Protection.
   14. Restoration behind the curb.

B. Measurement for payment will be along the flow line of the gutter and through inlets/catch basins.

C. The unit of measurement for payment is linear feet.

1.7 PORTLAND CEMENT CONCRETE PAVEMENT

A. The unit price for Portland Cement Concrete Pavement work includes:

1. General Work Items of Article 1.2.
2. Furnish all labor, tools, equipment and services.
3. Providing Portland cement concrete mixture of thickness shown in the drawings or specified elsewhere.
4. Surface preparation.
5. Providing reinforcement including tie bars and dowel bars.
6. Drilling tie bars and dowel bars into existing pavement.
7. Joint sealing.
8. Providing curing.
9. Concrete sealing with linseed oil.
10. Fine grading of subgrade.
11. Providing expansion joints and contraction joints.
12. Adjustment of manholes, water valves, inlets/catch basin and other structures to finish grade.
13. Finishing.
14. Protection.

B. Measurement for payment will be length and width of areas paved. Concrete curb and gutter will be measured separately, regardless if the curb is installed with integral curb. Curb and gutter will be paid per linear foot for 24" width. The width and length will be subtracted from the concrete pavement area if integral curb is constructed.

C. The unit of measurement for payment is square yard.

1.8 PORTLAND CEMENT CONCRETE DRIVEWAY AND SIDEWALK

A. The unit price for Portland Cement Concrete Sidewalk and Driveway work includes:
   1. General Work Items of Article 1.2.
   2. Providing Portland cement concrete mixture of thickness shown in the drawings or specified elsewhere.
   3. Providing expansion joint.
   4. Providing curing.
   5. Existing pavement removal.
   6. Subgrade preparation.
   7. Providing contraction joints.
   8. Handicap ramps.
   9. Sidewalk steps.
   10. Saw cutting adjacent surfaces.
   11. Finishing.
   12. Protection.

13. Restoration.

B. Measurement for payment will be the average horizontal length and width of the concrete placed.

C. The unit of measurement for payment is square yards.

1.11 DRILLING TIE BARS

A. The unit price for Drilling Tie Bars work includes:
   1. General Work Items of Article 1.2.
   2. Providing and installing tie bars, including coating.
   3. For drilling holes in concrete not placed under the contract.
   4. For epoxying or driving.

B. Measurement for payment will be the actual number of bars installed.
   1. This item applies to concrete curb and gutter, sidewalk, and driveway.
   2. This item does not apply to concrete pavement and patches.

C. The unit of measurement for payment is each.

1.12 DETECTABLE WARNING FIELD NATURAL

A. The unit price for Detectable Warning Field Natural work includes:
   1. General Work Items of Article 1.2.
   2. Providing and installing Detectable Warning Field per ADA requirements.
   3. Each detectable warning field shall be 2 feet by 4 feet.

B. Measurement for payment will be the actual number of detectable warning field installed.

C. The unit of measurement for payment is each.

1.13 PAVEMENT MARKING EPOXY LINES

A. The unit price for Pavement Marking Epoxy Lines includes:
   1. General Work Items of Article 1.2.
   2. Providing and installing the Pavement Marking Epoxy Lines includes preparing the surface, including brush-off blasting of concrete, for providing all marking, including reflectorization with glass beads, for protecting marking until dry or cured, and for replacing marking improperly constructed or that fails during the warranty period.
   3. For remarking if initially applies at less than 90% of the specified rate.

B. Measurement of payment will be by the linear foot, calculates as follows:
   1. For solid lines; by adding the linear feet of solid line measured end to end.
   2. For intermittent lines; by multiplying the specified length of the individual marking of the line by the number of markings in the intermittent line end to end.

C. The unit of measurement for payment is linear feet.

1.14 PAVEMENT MARKING EPOXY ARROWS

A. The unit price for Pavement Marking Epoxy Arrows includes:
   1. General Work Items of Article 1.2.
   2. Providing and installing the Pavement Marking Epoxy Words & Arrows includes preparing the surface, including brush-off blasting of concrete, for providing all marking, including reflectorization with glass beads, for protecting marking until dry or cured, and for replacing marking improperly constructed or that fails during the warranty period.
   3. For remarking if initially applies at less than 90% of the specified rate.

B. Measurement for payment will be by each individual unit.

C. The unit of measurement for payment is each.

1.15 LANDSCAPING- TOPSOIL, SEED, FERTILIZE AND MULCH

A. The unit price for Landscaping- Topsoil, Seed, Fertilize, and Mulch work includes:
   1. General Work Items of Article 1.2.
   2. Provide 4” topsoil or salvaged topsoil.
   3. Provide seed.
   4. Provide fertilizer.
   5. Provide mulch.
   6. Provide maintenance.

B. Measurement for payment will be the width and length not greater than the road right of way, not greater than the easement and not greater than 15 feet beyond the top of either side of ditches outside the right of way.

C. The unit of measurement for payment is square yard.

END OF SECTION

SECTION 01 22 05

MEASUREMENT AND PAYMENT SPECIAL CONSTRUCTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes:

1. Inlet Protection Erosion Control	SC-01
2. Adjusting Existing Structure Frame and Casting	SC-02, SC-03
3. Traffic Control	SC-04

B. Unit Prices include:
   1. Defined work for each Unit Price Item which will provide a functionally complete Project when combined with all unit price items. If there are specific work items which the Contractor believes are not identified in any Unit Price Item, but is required to provide a functionally complete Project, then the identified specific work items shall be included in the appropriate Unit Price Item.
   2. The method of measurement for payment.
   3. The price per unit for payment.

1.2 GENERAL WORK ITEMS

A. Include with the appropriate Unit Price Item the following work items which are common to the Unit Price Items for special construction.

B. If there is a specific Unit Price Item for any of the following items, then the work item shall be included with that specific unit price item.
   1. Traffic Control.
   2. Loading, hauling and disposing of surplus material.
   3. Maintenance, protection, replacement and/or repair of facilities not designated for alteration on the Site beyond the limits identified.
   4. Dust control.
   5. Restroom facilities.
   6. Construction staking and other survey work not provide by the Engineer.
   7. Regulatory requirements.
   8. Quality assurance and quality control testing and inspections.

9. Shop drawings and other submittals.

1.3 INLET PROTECTION EROSION CONTROL

A. The unit price for Inlet Protection Erosion Control work includes:
   1. General Work Items of Article 1.2.
   2. Provide geotextile and wood materials for type shown on the Drawings.
   3. Placing inlet protection system.
   4. Inspection and maintenance of the installed inlet protection.
   5. Removal of the inlet protection.
   6. Cleaning debris buildup around inlet.

B. Measurement for payment will be actual number of inlet protection erosion control installed.

C. The unit of measurement for payment is each.

1.4 ADJUST EXISTING STRUCTURE FRAME CASTING

A. The unit price for Adjusting Existing Structure Frame Casting work includes:
   1. General Work Items of Article 1.2.
   2. City of De Pere will provide structure castings. Contractor will pick up castings at 925 South Sixth Street.
   3. Removal of the casting and existing adjusting rings from the structure as required.
   4. Providing concrete adjusting rings and a 2 inch rubber riser ring from the WisDOT approved product list.
   5. Bituminous plastic cement sealing the exterior of the adjusting rings and casting.
   6. The ring will be secured to the precast section with a 3 ½” wide Kent Seal or equal.
   7. Above the concrete ring attach ¼ inch thru 3 inch thick ring using two 5/16 inch bead above and below the ring of sealant type as recommended by the rubber manufacturer.
   8. Initial and final adjustment.
   9. Backfilling and compacting.

B. Measurement for payment will be the actual number of structure frame casting adjusted.

C. The unit of measurement for payment is each.

1.5 TRAFFIC CONTROL

A. The unit price for Traffic Control Work includes:
   1. General Work Items of Article 1.2.

2. Providing, install, maintain, and removing the Traffic control signing and barricades as shown on the plans and per the MUTCD.
3. Traffic Detour, including covering signs when not in use.
4. Flaggers per the MUTCD.
5. Temporary traffic control signals (activated) per the MUTCD>
6. Sidewalk closure.

B. Measurement for payment will not be made.
   1. This item applies to the specific bid items lists. All other traffic control is incidental to other items bid.

C. The unit of measurement for payment is for each intersection lump sum.

END OF SECTION

SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 – GENERAL

1.1 SUMMARY

A. This section includes:
   1. Administrative and procedural requirements necessary to prepare and process Applications for Payment

1.2 SCHEDULE OF VALUES

A. Unit Price work will be the Schedule of Values used as the basis for reviewing Applications for Payment.

1.3 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as recommended by the Engineer and approved by Owner.

B. The date for each progress payment should be the 3rd Tuesday of each month. The period covered by each Application for Payment starts on the day following the end of the preceding period and ends the 4th Friday of the Month.

C. Use forms provided by Engineer for Applications for Payment. Sample copy of the Application for Payment and Continuation Sheet is included in Section 00 62 76.

D. Application Preparation Procedures
   1. When requested by the Contractor, the Engineer will determine the actual quantities and classifications of Unit Price Work performed.
      a. Preliminary determinations will be reviewed with the Contractor before completing Application for Payment.
      b. Engineer will complete the Application for Payment based on Engineer's decision on actual quantities and classifications.
      c. Engineer will submit three original copies of Application for Payment to Contractor for certification of all three original copies.
      d. Contractor shall submit signed Application for payment to Owner for approval within time frame agreed to at the Preconstruction Conference.
   2. If payment is requested for materials and equipment not incorporated in the Work, then the following shall be submitted with the Application for Payment:
      a. Evidence that materials and equipment are suitably stored at the site or at another location agreed to in writing.
      b. A bill of sale, invoice, or other documentation warranting that the materials and equipment are free and clear of all liens.

c. Evidence that the materials and equipment are covered by property insurance.

3. Complete every entry on form. Execute by a person authorized to sign legal documents on behalf of Contractor.

E. With each Application for Payment, submit waivers of liens from subcontractors and suppliers for the construction period covered by the previous application.
   1. Submit partial waivers on each item for amount requested before deduction for retainage on each item.
   2. When an application shows completion for an item, submit final or full waivers.
   3. Owner reserves the right to designate which entities involved in the Work shall submit waivers.
   4. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application.
   5. Submit waivers of lien on forms executed in a manner acceptable to Owner.

F. The following administrative actions and submittals shall precede or coincide with submittal of first Application for Payment:
   1. List of subcontractors.
   2. Schedule of Values (For Lump Sum Work).
   3. Contractor's construction schedule.

G. Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted including, but not limited, to the following:
   1. Evidence of completion of Project closeout requirements.
   2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
   3. Updated final statement, accounting for final changes to the Contract Sum.
   4. Consent of Surety to Final Payment.
   5. Final lien waivers as evidence that claims have been settled.
   6. Final liquidated damages settlement statement.

PART 2 – PRODUCTS

PART 3 – EXECUTION

END OF SECTION

SECTION 01 32 33
CONSTRUCTION PHOTOGRAPHS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Photographs for utility construction sites.

1.2 SUBMITTALS

A. Submit electronic files of each photographic view within seven (7) days of taking photographs.

1.3 QUALITY ASSURANCE

A. Photographs are to be submitted to the Engineer for approval prior to the start of construction.

PART 2 – PRODUCTS

PART 3 – EXECUTION

3.1 UTILITY AND STREET CONSTRUCTION SITES

A. Prior to start of construction provide sufficient photographs to adequately show the existing facilities and conditions within and adjacent to the construction Site to serve as a guide for final restoration including:
   1. Roads including shoulders and/or curb and gutter.
   2. Sidewalks, parking areas, and driveways.
   3. Utility structures.
   4. Landscaping including signs, plantings, walls, fences, trees, shrubbery, etc.
   5. Mail boxes.
   6. Drainage facilities including culverts, inlets, ditches.
   7. Building structures.

B. During construction provide sufficient photographs (a minimum of one per 100 feet of installed utility) to adequately show construction means, methods, and Site conditions including:
   1. Crossings of other utilities.
   2. Exposure of existing structures.
   3. Soil conditions.

END OF SECTION

SECTION 01 33 00
SUBMITTALS

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for submittals:
   1. Progress Schedule
   2. Schedule of Shop Drawings and Sample Submittals
   3. Shop Drawings

B. Failure to meet Submittal requirements to the satisfaction of the Engineer will constitute unsatisfactory performance of the work in accordance with the Contract Documents, therefore, the Engineer may recommend to the Owner that all or a portion of payments requested during the corresponding pay period be withheld until these requirements are met.

1.2 SUBMITTAL PROCEDURES

A. Coordination
   Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Coordinate transmittal of different types of submittals for related elements of the work so processing will not be delayed by the need to review submittals concurrently for coordination.
      a. The Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
   3. To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for re-submittals.
      a. Allow two weeks for initial submittal.
      b. Allow two weeks for reprocessing each submittal.
      c. No extension of Contract Time will be authorized because of failure to transmit submittals to the Engineer sufficiently in advance of the work to permit processing.

B. Submittal Preparation
   Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
   1. Assign a reference number to each submittal and re-submittal.
   2. Provide a space approximately 4 by 5 inches (100 by 125 mm) on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
   3. Include the following information on the label for processing and recording action taken.

a. Project name.
b. Date.
c. Name and address of the Engineer.
d. Name and address of the Contractor.
e. Name and address of the subcontractor.
f. Name and address of the supplier.
g. Name of the manufacturer.
h. Number and title of appropriate Specification Section.
i. Drawing number and detail references, as appropriate.

4. Each submittal shall be stamped by the Contractor indicating that submittal was reviewed for conformance with the Contract Documents. The Engineer will not accept unstamped submittals.

C. Submittal Transmittal

Package each submittal appropriately for transmittal and handling. Transmit each submittal to the Engineer. The Engineer will not accept submittals received from sources other than the Contractor.

1. On the transmittal, record relevant information and requests for Engineer action. On a form, or separate sheet, record deviations from Contract Document requirements, including variations, limitations, and justifications. Include Contractor's certification that information complies with Contract Document requirements.

1.3 CONTRACTOR'S PROGRESS SCHEDULE

A. Prepare and submit to the Engineer within 10 days after the Effective Date of the Agreement, four copies of a preliminary progress schedule of the work activities from Notice to Proceed until Substantial Completion.

1. Provide sufficient detail of the work activities comprising the schedule to assure adequate planning and execution of the work, such that in the judgment of the Engineer, it provides an appropriate basis for monitoring and evaluation of the progress of the work. A work activity is defined as an activity which requires substantial time and resources (manpower, equipment, and/or material) to complete and must be performed before the contract is considered complete.
2. The schedule shall indicate the sequence of work activities. Identify each activity with a description, start date, completion date and duration. Include, but do not limit to the following items, as appropriate to this contract:
   a. Shop drawing review by the Engineer.
   b. Excavation and grading.
   c. Asphalt and concrete placement sequence.
   d. Restoration.
   e. Construction of various segments of utilities.
   f. Subcontractor's items of work.
   g. Allowance for inclement weather.
   h. Contract interfaces, date of Substantial Completion.

i. Interfacing and sequencing with existing facilities and utilities.
j. Sequencing of major construction activities.
k. Milestones and completion dates.

B. Distribution
Following response to the initial submittal, print and distribute copies of the revised construction schedule to the Engineer, Subcontractors, and other parties required to comply with scheduled dates. When revisions are made, distribute to the same parties. Delete parties from distribution when they have completed their assigned portion of the work and are no longer involved in construction activities.

C. Schedule Updating
Revise the schedule after each meeting, event, or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

D. Punch List
Prepare and submit to the Engineer within 10 days after substantial completion a detailed progress schedule for outstanding work and punch list items.

1.4 SCHEDULE OF SHOP DRAWINGS AND SAMPLE SUBMITTALS

A. Submit four (4) hard copies or electronic copies of preliminary submittal schedule in accordance with the General Conditions of the Contract and as follows:
1. Coordinate submittal schedule with the subcontractors, Schedule of Values, and of products as well as the Contractor's Progress Schedule.
2. Prepare the schedule in chronological order. Provide the following information:
a. Scheduled date for the first submittal.
b. Related Section number.
c. Submittal category (Shop Drawings, Product Data, or Samples).
d. Name of the subcontractor.
e. Description of the part of the work covered.
f. Scheduled date for the Engineer's final release or approval.

B. Distribution
Following response to the preliminary submittal schedule, print and distribute copies of the revised submittal schedule to the Engineer, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the field office.
1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the work and are no longer involved in construction activities.

C. Schedule Updating
Revise the schedule after each meeting or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.5 SHOP DRAWINGS

A. Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

B. Collect product data into a single submittal for each element of construction of system. Product data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.

   1. Mark each copy to show actual product to be provided. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
      a. Manufacturer's printed recommendations.
      b. Compliance with trade association standards.
      c. Compliance with recognized testing agency standards.
      d. Application of testing agency labels and seals.
      e. Notation of dimensions verified by field measurement.
      f. Notation of coordination requirements.

C. Do not use shop drawings without an appropriate final stamp indicating action taken.

D. Submittals
   Submit four (4) copies of each required submittal. The Engineer will retain two copies, and return the others to the Contractor marked with action taken and corrections or modifications required.

E. Distribution
   Furnish copies of reviewed submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms. Maintain one copy at the project site for reference.
   1. Do not proceed with installation until a copy of the Shop drawing is in the Installer's possession.
   2. Do not permit use of unmarked copies of the Shop Drawing in connection with construction.

1.6 ENGINEER'S ACTION

A. Except for submittals for the record or information, where action and return is required, the Engineer will review each submittal, mark to indicate action taken, and return promptly. The Engineer will stamp each submittal with a uniform action stamp. The Engineer will mark the stamp appropriately to indicate the action taken, as follows:

1. "No Exceptions Taken": The work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents.
2. "Make Corrections Noted": The work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents.
3. "Amend and Resubmit": Do not proceed with work covered by the submittal. Resubmit without delay. Do not use, or allow others to use, submittals marked "Amend and Resubmit" at the Project Site or elsewhere where work is in progress.
4. "Rejected – See Remarks": Do not proceed with work covered by the submittal. Resubmit without delay. Do not use, or allow others to use, submittals marked "Rejected and Resubmit" at the Project Site or elsewhere where work is in progress.

B. Unsolicited Submittals
The Engineer/Architect will return unsolicited submittals to the sender without action.

PART 2 – PRODUCTS

PART 3 – EXECUTION

END OF SECTION

SECTION 01 41 00

REGULATORY REQUIREMENTS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes
   1. Underground Utilities
   2. Property Monuments
   3. Traffic Control
   4. Permits for Project

1.2 UNDERGROUND UTILITIES

A. Under the provisions of Wisconsin Statutes, Section 182.0175, all contractors, subcontractors, and any firm or individual intending to do work on this contract shall contact all utility firms in the affected area of construction a minimum of three (3)working days prior to beginning construction so that affected utilities will be located and marked.

1.3 PROPERTY MONUMENTS

A. Protect iron pipe monuments from movement.

B. The cost of replacement of any monuments moved or destroyed during construction shall be the Contractor's responsibility.

C. Perpetuation of destroyed or moved monuments shall be performed in accordance with state statutes by a registered land surveyor.

1.4 TRAFFIC CONTROL

A. Provide traffic control facilities including barricades, signs, lights, warning devices, pavement markings, flaggers, etc.

B. Construct and use traffic control facilities in accordance with the U.S. D. O. T. Federal Highway Administration's Manual on Uniform Traffic Control Devices for Streets and Highways.

C. Maintain traffic control devices as required to properly safeguard the public travel through final completion, including during periods of suspension of work.

1.5 PERMITS FOR PROJECT

A. The following permits are being obtained by the Owner:

1. WRAPP (equivalent to the NOI), General Permit to Discharge Construction Site Storm Water Runoff

B. Any costs associated with violations pertaining to the NOI permit will be the responsibility of the Contractor.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

END OF SECTION

SECTION 01 71 23

FIELD ENGINEERING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes
   1. Engineering Surveys Provided by the Engineer
   2. Engineering Surveys Provided by the Contractor

1.2 SUBMITTALS

A. None

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 PREPARATION

A. Investigate and verify the existence and location of site improvements, utilities, and other existing facilities.

B. Before construction, verity the location of invert elevations at points of connection of sanitary sewer, storm sewer, water piping and underground electrical services.

C. Furnish information to the Engineer and the appropriate utility regarding conflicts that are necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction.

D. Provide the Engineer two working days advance notification when ready for engineering surveys for construction to be provided by the Engineer.

3.2 ENGINEERING SURVEYS TO BE PROVIDE BY THE ENGINEER

A. General
   1. Establish benchmarks for construction as shown on the drawings.
   2. Establish control points as shown on the drawings.

B. Gravity Sewer Systems and Water Distribution Systems.
   1. Provide construction reference stakes set for pipe construction location at critical changes in horizontal and vertical alignment.
   2. Provide construction stakes for location of pipe at connections.

C. New Road Construction
   1. Provide construction slope intercept stakes for horizontal and vertical alignment on each side of the road base on each cross section in the cross section sheets for requests received at least 72 hours before the related work begins.
   2. Provide construction reference stakes for subgrade at a minimum of 50 foot intervals and maximum of 100 foot intervals on tangents. Provide construction reference stakes for subgrade at 25 foot intervals within vertical and horizontal curves. Provide a reference line stake at each location.
   3. Provide construction reference stakes for top of crushed aggregate at a minimum of 50 foot intervals and maximum of 100 foot intervals on tangents. Provide construction reference stakes for top of crushed aggregate at 25 foot intervals within vertical and horizontal curves. Provide a reference or centerline stake.

3.3 ENGINEERING SURVEYS TO BE PROVIDED BY THE CONTRACTOR

A. General
   1. Locate, preserve and protect established construction reference stakes, benchmarks and control points.
   2. Locate, preserve and protect property corners and section corner monuments. If moved or destroyed due to Contractor negligence, then replace in accordance with state requirements; some of which are referenced in the "Regulatory Requirements".
   3. Provide additional construction staking as necessary to complete construction based on the construction reference stakes provided by the Engineer and the Drawings.
   4. Before beginning with necessary construction staking, verify the information shown on the Drawings, in relation to the established construction reference stakes, bench marks, control points and property corners. Notify the Engineer of any discrepancies.
   5. Remove construction reference stakes when directed by the Engineer.

B. Gravity Sewer Systems and Water Distribution Systems.
   1. Provide any intermediate construction reference points as required to verify installation at the line and grade established and locate appurtenant structures.
   2. Check the line and grade with construction reference stakes at each pipe length.

C. New Road Construction
   1. Provide additional construction reference stakes necessary to establish location and grade in accordance with the plans.

END OF SECTION

SECTION 32 11 26.16

PULVERIZED ASPHALT AND AGGREGATE BASE COURSE

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes
   1. Material testing.
   2. Foundation preparation.
   3. Pulverize asphalt and aggregate base course installation.

1.2 REFERENCES

A. Wisconsin Department of Transportation Section 325

1.3 QUALITY ASSURANCE

A. The Engineer will obtain an independent testing laboratory to provide quality control testing.

1.4 DELIVERY, STORAGE AND HANDLING

A. Stockpiling of Aggregates
   1. Store aggregates to prevent contamination by foreign matter or by aggregates of different sizes.

B. Delivery of Aggregates
   1. Vehicles used to transport aggregates shall be of a type to minimize loss of materials and excessive segregation of particles.

PART 2 – PRODUCTS

2.1 MATERIALS

2.2 SOURCE QUALITY CONTROL

PART 3 – EXECUTION

3.1 PREPARATION OF FOUNDATION

A. Pulverize the full depth (shown on plans or elsewhere) of the existing asphaltic pavement and aggregate until 97 percent or more will pass the 2-inch sieve. Windrow material as construction operations dictate.

B. Preparation of foundation for pulverized asphalt and aggregate base course shall be in accordance with requirements of Section "Excavation and Fill".

C. Do not place the base course on a foundation that is soft or spongy or one that is covered by ice or snow.

D. Do not place base material on a dry or dusty foundation when existing condition would cause rapid dissipation of moisture from base material and hinder or preclude its proper compaction.
   1. Apply water to such dry foundations and rework or re-compact as necessary.

3.2 PULVERIZE ASPHALT AND AGGREGATE BASE COURSE INSTALLATION

A. Construct surface base course to the width, thickness, section, and location shown on the drawings.
   1. Maximum compacted thickness of any one layer shall not exceed 8 inches.

B. Spreading Base Material
   1. Proceed with the work such that the hauling equipment will travel over previously placed material.
   2. Route hauling equipment as uniformly as possible over all portions of the previously constructed layers of the base course.
   3. Deposit the material on the foundation or previously placed layer in such a manner as to minimize segregation and to facilitate spreading to a uniform layer of the required dimensions.

C. Compaction
   1. After a layer of aggregate has been placed and spread to the required thickness, width, and section, it shall be compacted.
   2. Compact the re-laid material first with either a rubber tired roller or 12.5-ton or heavier vibratory padfoot roller and second with an 8-ton or heavier vibratory steel roller. Add water, as required, both before and during compaction.
   3. Each layer or course placed shall be compacted to at least 95 percent of the maximum dry density as determined by the Modified Proctor Test (ASTMD1557).

4. Areas where proper compaction is not obtainable due to segregation of materials, excess fines or other deficiencies shall be reworked or removed and replaced with material that will that will yield the desired results.
5. Prior to and during compaction operations, shape and maintain the material to the proper dimensions.

D. Maintenance
1. Provide maintenance of the base course until surface paving is complete or until the base is otherwise accepted.

E. Dust Abatement
1. Minimize the dispersion of dust from the base course by the application of water or other approved dust control materials.

END OF SECTION

APPENDIX

A. Subsurface Exploration and Subgrade Analysis 52 pages

ECS Midwest, LLC

Geotechnical Engineering Report

2019 Construction Design

Garrity's Glen South
College Avenue
James Street
Prosper Street
Ryan Road
De Pere, Brown County, Wisconsin

ECS Project Number 59:1549

December 17, 2018

December 17, 2018

Mr. Chase Kuffel
City of De Pere
925 South Sixth Street
De Pere, WI 54115
Email: ckuffel@mail.de-pere.org

ECS Project No. 59:1549

Reference: Geotechnical Engineering Report
2019 Construction Design
Garrity's Glen South
College Avenue
James Street
Prosper Street
Ryan Road
De Pere, Brown County, Wisconsin

Mr. Kuffel:

ECS Midwest, LLC (ECS) has completed the subsurface exploration, laboratory testing, and geotechnical engineering analyses for the above-referenced project. We performed our services in general accordance with our Proposal No. 59:203, dated February 1, 2018. This report presents our understanding of the geotechnical aspects of the project, the results of the field exploration and laboratory testing conducted, and our design and construction recommendations.

It has been our pleasure to be of service to the City of De Pere during the design phase of this project. We would appreciate the opportunity to remain involved during the remainder of the design phase, and we would like to provide our services during the construction phase to verify the assumptions of subsurface conditions made for this report. Please contact us should you have any questions concerning the information contained in this report, or if we can be of further assistance to you.

Respectfully submitted,

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- Site Location Diagram
- Boring Location Diagram

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- Reference Notes for Boring Logs
- Test Boring Log 1 through 11
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- Important Information about This Geotechnical-Engineering Report

EXECUTIVE SUMMARY

The main findings of the exploration are briefly summarized below. Information gleaned from the executive summary should not be utilized in lieu of reading the entire geotechnical report.

- The geotechnical exploration performed for the planned addition included eleven (11) standard penetration test borings. ECS drilled the borings to a depth of approximately 10 to 23 feet below the existing grade for a total of 173 feet.

- The borings generally encountered an asphalt or concrete pavement section at the surface, but Boring 1 through 4 contained a 6 to 8 inch topsoil layer. The generalized soil profile below the near surface layer consisted of existing FILL, which extended to a depth of between 2 and 5½ feet below the existing grade, and then lacustrine soils extended to the termination depth of the borings. However, Boring 1, 3, 9 and 11 did not contain existing fill strata. The encountered existing FILL consisted of lean clay, silty clay and sandy silty clay with organics. Further, the encountered lacustrine consisted of lean clay, fat clay, silty clay and silt soils.

- The drill crew observed a groundwater level in Boring 7 at a depth of 8 feet below the existing grade during drilling. The drill crew also observed a groundwater level in Boring 4 at a depth of 18 feet below the existing grade at the completion of drilling operations. However, none of the other borings contained a measureable groundwater level.

- The existing FILL exhibited a medium stiff to stiff consistency with SPT N-values ranging from 5 to 10 bpf (blows per foot). The lacustrine soils exhibited a very soft to very stiff consistency with SPT N-values ranging from 2 to 27 bpf and unconfined compressive strengths ranging from 0.25 to 5.5 tsf (tons per square foot).

- ECS recommends the removal of all existing fill and organic soils from below utility structures and pipes.

- ECS anticipates the encountered soils will remain in place below pavements unless the soils contain more than 5 percent organic content or proof-rolling operations indicate rutting or deflections in excess of 1 inch. Consideration should be given to providing Excavation Below Subgrade (EBS) for frost concerns where the exposed subgrade contains highly frost susceptible soil (e.g. silt, silty clay or sandy silty clay).

- In our opinion, initial attempts to control groundwater seepage into excavations could include a series of sump pits and pumps. However, if the groundwater level cannot be controlled with a series of sump pumps, or where excavations extend below the static groundwater level, then dewatering efforts will require a more substantial system (such as temporary well point system).

1.0 INTRODUCTION

1.1 GENERAL

ECS prepared this report for the purpose of providing the results of our subsurface exploration and laboratory testing, site characterization, engineering analysis, and geotechnical recommendations for the design and construction of utility infrastructure and pavements. The report also includes our recommendations concerning geotechnical subgrade preparation, fill placement, dewatering and construction considerations.

1.2 SCOPE OF SERVICES

ECS performed eleven (11) standard penetration test borings at the approximate locations shown on the site plan prepared by the City of De Pere, which was provided with the request for soil borings, dated November 1, 2018. We also implemented a limited laboratory-testing program to characterize the physical and engineering properties of the subsurface soils.

This report discusses our exploration and testing procedures, presents our findings and evaluations, and includes the following.

- A brief description of our field and laboratory test procedures and results.
- A description of the observed surface topographical features and site conditions.
- A description of area and site geologic conditions.
- A description of the interpreted subsurface soil stratigraphy with pertinent available physical properties.
- Copies of our records of subsurface exploration (test boring logs).
- Recommendations for design of pavements (rigid and flexible) including subgrade preparation, soil parameters for WisDOT pavement design and pavement drainage.
- Recommendations for storm water infiltration.
- Utility construction considerations.
- Recommendations for site preparation and construction of engineered fills, including an evaluation of on-site soils for use as compacted fills, and delineation of potentially unsuitable soils.
- Evaluation and recommendations relative to groundwater control.

1.3 AUTHORIZATION

ECS provided services in accordance with our Proposal No. 59:203, (dated February 1, 2018) and the "Agreement for Contractor Services – City of De Pere" authorized by Mr. Michael Walsh, Mayor and Ms. Shana Ledvina, Clerk-Treasurer (dated April 19, 2018), and includes the Terms and Conditions of Service outlined in the Proposal and Agreement.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION

The project sites are located in the City of De Pere, Brown County, Wisconsin. Specifically, the project sites are located at the following locations: proposed Garrity's Glen South subdivision; the portion of College Avenue that extends west of 4th Street; the portion of James Street between North Broadway Street and Wisconsin Street; the portion of Prosper Street between Enterprise Drive and South Broadway Street; and the portion of Ryan Road between South Melcorn Circle and Deer Point Lane. The site location is shown in Figure 2.1.1 and on the Site Location Diagram in Appendix A of this report.

Figure 2.1.1 Site Locations (outlined in red)

2.2 PAST SITE HISTORY/USES

ECS reviewed aerial photographs of the subject site dated 1992, 2005, 2006, 2008, 2010, 2011, 2015, 2017 and 2018. Based on our review of the aerial photographs, the site use at Garrity's Glen South appears to consist of agricultural land since at least 1992. Further, the site use at College Avenue, James Street, Prosper Street and Ryan Road appears to consist of asphalt or concrete paved street sections. These site uses appear to have remained relatively unchanged since at least 1992.

2.3 CURRENT SITE CONDITIONS

The site of the proposed construction consisted of an existing farm operation at Garrity's Glen South, an asphalt paved urban street section at College Avenue and James Street, a concrete paved urban street section at Prosper Street, and an asphalt paved rural roadway at Ryan Road at the time

of drilling. The ground surface generally consisted of nearly level to gently sloping soils across the sites. However, ECS did not determine the surface elevation at the boring locations.

2.4 PROPOSED CONSTRUCTION

ECS understands the proposed project will include new construction and reconstruction of existing municipal utilities and roadway pavements. Further, we anticipate the proposed pavements will consist of a concrete or bituminous pavement section, and the new vertical alignment will approximately match the existing alignment (less than 2 feet). The planned traffic volume was not provided to us at the time of this report. ***If the design changes, please notify ECS immediately so that we evaluate our recommendations and verify the recommendations are appropriate for the proposed construction.***

Where the borings encounter subsurface conditions that might be detrimental to the support of the proposed construction, ECS has assumed the owner will have an acceptable risk level if the detrimental material remains in place. With this in mind, this report assumes the owner would only be willing to accept a low risk for utility settlement in excess of 1 inch. In addition, we assume the owner would be willing to accept a moderate risk for reduced pavement performance. ***If these assumptions concerning the owner's acceptable risk level are incorrect, we should be immediately contacted so we can review our recommendations in light of the changed acceptable risk level.***

3.0 FIELD EXPLORATION

3.1 FIELD EXPLORATION PROGRAM

ECS used the boring depths and locations provided by Mr. Chase Kuffel, Assistant City Engineer of the City of De Pere, to characterize the project site in general geotechnical and geological terms, and to evaluate subsequent field and laboratory data to assist in the determination of geotechnical recommendations.

3.1.1 Test Borings

ECS drilled eleven (11) standard penetration test borings within the limits of the proposed construction. The drill crew advanced four (4) of the borings to a depth of approximately 10 feet, one (1) to 15 feet, one (1) to 17 feet, one (1) to 18 feet, three (3) to 20 feet, and one (1) to 23 feet below the existing grade. We performed the borings with a truck vehicle mounted rotary drill rig utilizing continuous flight hollow stem augers (HSA).

ECS personnel identified the test boring locations in the field using a measuring tape relative to existing site features. The approximate as-drilled test boring locations are shown on the Boring Location Diagram in Appendix A of this report. However, our scope did not include obtaining the surface elevation at the boring locations.

The drill crew conducted standard penetration tests (SPTs) in the boreholes at regular intervals in general accordance with American Society for Testing Materials (ASTM) D1586 (American Association of State Highway and Transportation Officials (AASHTO) T206). The obtained standard penetration resistances provide a general indication of soil relative density and consistency. The drill crew chief visually and manually classified the samples in the field in accordance with ASTM: D2488. Field personnel then collected representative soil samples and returned them to the laboratory for further observation and verification of the field classification.

Some borehole backfill settlement or expansion can and will occur over time. Monitoring the boreholes after the initial drilling activities is not within our scope. Settlement or expansion of the borehole backfill can create a hazard and should be carefully monitored by the client.

3.2 SOIL SURVEY MAPPING

Based on our review of the Soil Survey from the USDA - Natural Resources Conservation Service (websoilsurvey.nrcs.usda.gov), which provides soil information to a shallow depth (generally less than 5 feet), the site soils are generally mapped as Fill land (Fd), Manawa silty clay loam (McA), Oshkosh sandy loam (OmB), Oshkosh silt loam (OnA and OnB), Oshkosh silty clay loam (OsA) and Poygan silty clay loam (Po). These soil types are described with the following properties.

- Fill land (Fd) – Landforms consisting of human transported materials of various soil types. These soils are generally well drained and have a moderate potential for frost action. This soil type is mapped in the area of Boring 7.

- Manawa silty clay loam (McA) – Landforms consisting of drainageways with clayey till, and/or calcareous, dense clayey till. These soils are generally somewhat poorly drained, classified as being in Hydrologic Soil Group D, and have a moderate potential for frost action. This soil type is mapped in the area of Boring 8.

- Oshkosh sandy loam (OmB) – Landforms consisting of glacial lakes with silty loess over clayey lacustrine deposits. These soils are generally well drained, classified as being in Hydrologic Soil Group C, and have a moderate potential for frost action. This soil type is mapped in the area of Boring 5 and 6.

- Oshkosh silt loam (OnA and OnB) – Landforms consisting of glacial lakes with silty loess over clayey lacustrine deposits. These soils are generally well drained, classified as being in Hydrologic Soil Group C, and have a moderate potential for frost action. This soil type is mapped in the area of Boring 9, 10 and 11.

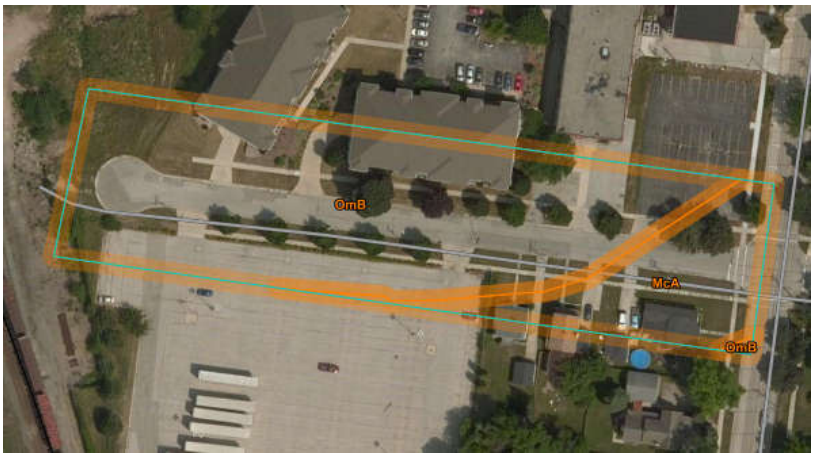
- Oshkosh silty clay loam (OsA) – Landforms consisting of glacial lakes with silty loess over clayey lacustrine deposits. These soils are generally well drained, classified as being in Hydrologic Soil Group C, and have a moderate potential for frost action. This soil type is mapped in the area of Boring 1, 2 and 4.

- Poygan silty clay loam (Po) – Landforms consisting of depressions with silty and clayey till. These soils are generally poorly drained, classified as being in Hydrologic Soil Group C/D, and have a high potential for frost action. This soil type is mapped in the area of Boring 3.

Soil mapping of the site vicinity is presented in the following figures.

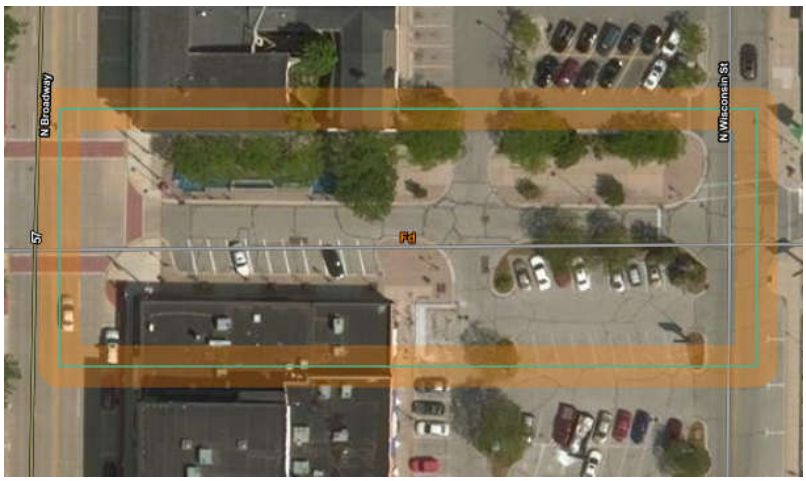
(Source: USDA - Natural Resources Conservation Service)

Figure 3.3.1 Soil Survey Information (Garrity's Glen South)



(Source: USDA - Natural Resources Conservation Service)

Figure 3.3.2 Soil Survey Information (College Avenue)



(Source: USDA - Natural Resources Conservation Service)

Figure 3.3.3 Soil Survey Information (James Street)

(Source: USDA - Natural Resources Conservation Service)

Figure 3.3.4 Soil Survey Information (Prosper Street)

(Source: USDA - Natural Resources Conservation Service)

Figure 3.3.5 Soil Survey Information (Ryan Road)

3.4 SUBSURFACE CHARACTERIZATION

The encountered subsurface conditions in the borings closely match published geological mapping. Table 3.4.1 of this report provides generalized characterizations of the soil strata encountered during our subsurface exploration. For subsurface information at a specific test boring location, refer to the boring logs in Appendix B of this report.

Table 3.4.1 Subsurface Stratigraphy

Approximate Depth Range (feet)	Strata	Description	SPT(1) N-value Range (bpf)	Unconfined Comressive Strength(2) (tsf)
Surface	--	Approximately 6 to 8 inch thick topsoil layer at Boring 1 through 4, and 7 to 23 inch thick asphalt or concrete pavement section at Boring 5 through 11.	N/A	N/A
2 - 5½	I	FILL: lean clay (CL), silty clay (CL-ML) and sandy silty clay (CL-ML) with organics, medium stiff to stiff	5 - 10	N/A
10 - 23	II	Lacustrine: lean clay (CL), fat clay (CH), silty clay (CL-ML) and silt (ML), very soft to very stiff	2 - 27	0.25 - 5.5

Notes: (1) Standard Penetration Test.
(2) Based on calibrated hand penetrometer test

Because the drill crew used discontinuous material sampling intervals at the test borings, we inferred conditions between sample intervals. The soil stratification shown on the boring logs represents the interpreted soil conditions at the actual boring locations. Variations in the

stratification can occur between sample intervals and boring locations. The subsurface conditions at other times and locations on the site may differ from those found at the boring locations. If different site conditions are encountered during construction, then ECS should be contacted to review our recommendations relative to the new information.

Because of the limitations of the split-spoon sampler, which has a 1⅜-inch inside diameter, the soil classifications noted on the boring logs may not be representative of the entire soil matrix. Materials larger than the 1⅜-inch inside diameter of the split-spoon sampler cannot be collected and observed directly. Where possible, the drill crew noted the estimated depth of larger diameter materials, such as cobbles, based on things such as changes in the observed drilling resistance and auger cuttings.

3.5 GROUNDWATER OBSERVATIONS

The drill crew observed a measureable groundwater level in Boring 7 at a depth of 8 feet below the existing grade during drilling and in Boring 4 at a depth of 18 feet at the completion of drilling operations. However, none of the other borings contained a groundwater level.

Variations in the long-term water table elevation may occur as a result of seasonal variations in precipitation, evaporation, surface water runoff, lateral drainage conditions, construction activities, and other factors. The time of year and the weather history during the advancement of the borings should be considered when estimating groundwater levels at other points in time.

4.0 LABORATORY TESTING

The laboratory testing performed by ECS for this project consisted of select tests performed on samples obtained during our field exploration operations. The following paragraphs briefly describe the results of the completed laboratory testing program. We performed classification and index property tests on representative soil samples obtained from the test borings to aid classification of the soils, and to help estimate engineering properties.

A geotechnical engineer visually classified each collected soil sample from the test borings on the basis of texture and plasticity using the Unified Soil Classification System (USCS) and ASTM D2488 (AASHTO T206), Standard Practice for Description and Identification of Soils (Visual-Manual Procedures) as a general guideline. After classification, the geotechnical engineer grouped the various soil types into the major zones noted on the test boring logs in Appendix B of this report. The group symbols for each soil type are indicated in parentheses before the soil descriptions on the test boring logs. The bracketed text noted on the boring logs after the group symbols indicates the AASHTO Classification. The stratification lines designating the interfaces between earth materials on the test boring logs are approximate; in-situ, the transitions may be gradual.

Calibrated hand penetrometer tests (Qp) were also performed on cohesive soil samples to estimate the soil's unconfined compressive strength. In the hand penetrometer test, the unconfined compressive strength of a soil sample is estimated, to a maximum of 6.0 tons per square foot (tsf), by measuring the resistance of a soil sample to penetration by a small, calibrated, spring-loaded cylinder. Although unconfined compressive strength does not relate directly to pavement design equations, ECS utilizes this information for comparative strength of soil layers. The hand penetrometer test results can be found on the boring logs adjacent to the number of the tested sample included in Appendix B of this report.

The soil samples will be retained in our laboratory for a period of 60 days, after which, they will be discarded unless other instructions are received as to their disposal.

5.0 DESIGN RECOMMENDATIONS

5.1 PAVEMENT DESIGN CONSIDERATIONS

Subgrade Characteristics: The pavement design recommendations assume the subgrade consists of suitable materials evaluated by ECS, and the subgrade is prepared as recommended in the **Subgrade Preparation** and **Earthwork Operations** sections of this report.

Based on the results of our soil borings, ECS recommends the use of the pavement subgrade design parameters noted in Table 5.1.1 of this report, which provides values for the first suitable soil strata encountered in the borings. ECS obtained the values for the Soil Support Value and Design Group Index from the WisDOT Pavement Design Manual and Frost Index values from the frost susceptibility classifications according to the U.S. Army Corps of Engineer's criteria. We estimated the Subgrade and Resilient Modulus values based on historical testing of similar soil. For grading work and drainage design, shrinkage should be in the range of 20 to 35 percent for the encountered soils. These values correlate to expansion factors of 25 to 54 percent. For design purposes we recommend using an average shrinkage factor of 25 percent (33 percent expansion factor).

Table 5.1.1 Recommended Pavement Subgrade Design Parameters [1, 2]

Boring Number	Location [3]	Soil Classification		Subgrade Reaction Modulus, K (psi/in)	Resilient Modulus, M_R (psi)	Frost Index	Soil Support Value	Design Group Index
		USCS	AASHTO					
1	Garrity's Glen South	CL	A-6	125	2,800	F-3	4.2	12
2	Garrity's Glen South	CL [FILL][3]	A-6	125	2,800	F-3	4.2	12
3	Garrity's Glen South	CL	A-6	125	2,800	F-3	4.2	12
4	Garrity's Glen South	CL [FILL][3]	A-6	125	2,800	F-3	4.2	12
5	College Avenue	CL-ML [FILL][3]	A-4	125	2,800	F-4	3.9	14
6	College Avenue	CL-ML [FILL][3]	A-4	125	2,800	F-4	3.9	14
7	James Street	CL [FILL][3]	A-6	125	2,800	F-3	4.2	12
8	Prosper Street	CL [FILL][3]	A-6	150	3,000	F-3	4.2	12
9	Prosper Street	CL	A-6	175	3,300	F-3	4.2	12
10	Ryan Road	CL [FILL][3]	A-6	125	2,800	F-3	4.2	12
11	Ryan Road	CL	A-6	150	3,000	F-3	4.2	12

Notes:
1. All design parameters are estimates only, and are based on historical data for similar soil types. If more accurate values are required, additional testing should be performed.
2. Design parameters are for the first suitable soil strata below the proposed pavement elevation encountered in the borings. If more than 2 feet of sub-base fill material is placed, the characteristics of the fill will govern the pavement design.
3. Denotes existing fill which, understanding the risks noted in the **Subgrade Preparation** section of this report, is suitable to support the proposed pavement section.

Areas of subgrade stabilization and/or undercut may be needed because of the potentially variable support of the existing fill, especially if the subgrade is subjected to construction traffic disturbance or if construction is during adverse weather conditions. A reduced service life, increased pavement maintenance and associated costs should be expected because of the existing fill subgrade. In addition, consideration should be given to providing Excavation Below Subgrade (EBS) for frost concerns in areas where the exposed subgrade contains highly frost susceptible soil (e.g. silt, silty clay or sandy silty clay).

The ends of over-excavated areas should be sloped across a minimum length of 10 feet to reduce the potential abrupt changes in the pavement support characteristics that could lead to future pavement distress. Furthermore, in areas requiring over-excavation for detrimental frost concerns and in trenches for utilities, ECS recommends constructing transition zones, which are wedges of backfilled soil used to mask the distinct difference between the native soils and the backfilled area (such as trenches for utilities). The transition zone should start at the trench walls, and a depth of 3 feet below the finished pavement, and rise at a slope of 1 vertical to 3 horizontal as it extends perpendicular to the trench. However, transition zones would not be necessary where EBS areas are backfilled with soils similar to the native soils, or where the native soils contain less than 30 percent material passing the #200 sieve.

Prior to placing the aggregate base material, the pavement subgrade should be prepared as recommended within this report. Crushed aggregate base course utilized below pavements should meet Section 305 of the WisDOT Standard Specifications for Road and Bridge Construction and the gradation should meet the "1¼ inch" specification. The crushed aggregate base course should be compacted to at least 95 percent of the maximum dry density obtained in accordance with ASTM D1557, Modified Proctor method. As an alternative, a dense graded base meeting the "3 inch" specification can be used for the lower 8 inches of the base course layer to bridge over softer subgrade soils.

The aggregate used in the bituminous mixture should meet the 19.0 mm gradation for the lower pavement layer and the 12.5 mm gradation for the upper pavement layer as specified in Section 460 of the WisDOT Standard Specifications for Road and Bridge Construction. The asphalt pavement should be compacted to a minimum of 93 percent of the theoretical density value.

Adequate construction joints, contraction joints and isolation joints should be provided in the areas of rigid pavement to reduce the impacts of cracking and shrinkage. Please refer to ACI 330R-92 *Guide for Design of Concrete Parking Lots*. The Guide recommends an appropriate spacing strategy for the anticipated loads and pavement thickness. It has been our experience that joint spacing closer to the minimum values results in a pavement with less cracking and better long-term performance.

Weather Restrictions: In this region, asphalt plants may close during the months of December through March, and/or April if particularly cold weather conditions prevail. However, this can change based on year to year temperature fluctuations. Daily temperatures from December to March will often stay below 40°F, limiting the days that asphalt placement can occur.

Pavement Drainage: An important consideration with the design and construction of pavements is surface and subsurface drainage. Where standing water develops, either on the pavement surface or within the base course layer, softening of the subgrade and other problems related to the

deterioration of the pavement can be expected. The final pavement surface should be shaped or crowned to properly direct surface water to suitable on or off-site stormwater drainage infrastructure. In addition, the silty and clayey pavement subgrade should be properly sloped to avoid dips or pockets where water may become trapped. Dips in the silty or clayey subgrade could result in a "bathtub" effect, which may trap water and potentially soften the subgrade. Good drainage should help reduce the possibility of the subgrade materials becoming saturated over a long period of time.

Infiltration and subterranean water are generally the main sources of water that should be considered in the design of the pavement. Infiltration is surface water that enters the pavement through the joints, pores or cracks in the pavement, and through shoulders and areas adjacent to pavements as a result of precipitation. Subterranean water is a source of water from a high water table on the site. Based on our estimated groundwater level, we consider surface water infiltration to be the main source of water to be considered for pavement design on this project.

To reduce the potential for shallow perched water to develop in areas of the site, "stub" or "finger" drains should be considered around catch basins and in other low-lying areas to reduce the accumulation of water above and within the subgrade soils and aggregate base. As an alternative to the use of stub or finger drains, existing manholes and storm sewer inlets could be perforated with 1-inch diameter holes at 2-foot centers, and the manhole/inlet wrapped with a non-woven geotextile to reduce migration of material into the manhole/inlet. The holes could be placed at 90 degree intervals around the perimeter of the manhole, and the excavation around the manhole backfilled with free draining granular materials.

Sheet drainage across large pavement areas allows more water to enter the pavement through openings, cracks and weak points over time, which can adversely affect the base course and subgrade. This can increase the potential risk of premature pavement deterioration, distress and long-term pavement maintenance issues. Intermediate drains should be installed at adequate intervals to reduce the length of sheet flow across the pavement surface.

Pavement Maintenance: A sound maintenance program should be implemented to help maintain and enhance the performance of pavements, and help attain the design service life. A preventative maintenance program should be implemented early in the pavement life to be effective. The "standard in the industry" supported by research indicates that preventative maintenance should typically begin within 2 to 5 years of the placement of pavement. However, maintenance of pavement on undocumented fill sites may require more maintenance and sooner. Failure to perform preventative maintenance will reduce the service life of the pavement, and increase the costs for corrective maintenance and full pavement rehabilitation. To help reduce water infiltration thru the pavement section into the base course layer, which may result in softening of the subgrade and deterioration of the pavement, we recommend timely sealing of pavement joints and cracks with elastomeric caulk. We recommend exterior pavements be observed for distresses, such as cracks, depressions and poor drainage, at least twice a year, typically once in the spring and fall.

5.2 INFILTRATION DESIGN CONSIDERATIONS

The recommendations presented in this section follow the general guidelines of WDNR Conservation Practice Standard 1002, Site Evaluation for Stormwater Infiltration.

ECS understands a storm water management device would likely be constructed in the area of Boring 3 and 4. The "Soil and Site Evaluation – Storm" log included in Appendix B of this report indicate the storm water design parameters for each soil strata encountered in these borings. We determined the design infiltration rate using Table 2 of the Wisconsin Department of Natural Resources Conservation Practice Standards "Site Evaluation for Storm Water Infiltration (1002)".

Design Infiltration Rates: Based on the results of the exploration, the borings encountered soils that have a USDA soil classification of clay (c). Based on the soil textural classification and the guidelines provided in Table 2 of the WDNR Conservation Practice Standard 1002, the infiltration rate of the clay soils encountered in the borings is 0.07 inches per hour. The soil infiltration rate for each soil strata encountered in the borings can be found on the ***Soil and Site Evaluation – Storm*** form included in Appendix B of this report. Infiltration rates based on soil textural classification and the guidelines provided in Table 2 of the WDNR Conservation Practice Standard 1002 should be adjusted for the least permeable soil layer within 5-feet of each of the listed intervals.

Estimation of the final design infiltration rate should consider the effects of any engineered fill placed, surface vegetation, erosion control devices, and potential groundwater mounding. Prior to and during construction, the design infiltration rate of the soil at the basin bottom should be verified. Compaction of the basin bottom subgrade during and following construction should be prevented as this may reduce the infiltration rate of the soil. This may require exclusion of construction traffic from the infiltration bottom, or loosening of the subgrade soil, such as by raking or discing. Sediment allowed to accumulate at the basin bottom will reduce infiltration. Measures should be taken to reduce accumulation of sediment. Periodic removal of sediment should be expected.

Infiltration Feasibility: Based on the conditions encountered in the test borings, the site is considered to have a low capacity for the infiltration of storm water because of the predominant clayey soils encountered at the test boring locations. In accordance with Section V, Step C5 of the Wisconsin Department of Natural Resources (WDNR) Conservation Practice Standard 1002, the clayey soils have a correlated infiltration rate of 0.07 inches per hour, which is less than 0.6 inches per hour, and as such, these soils are anticipated to be exempt from the infiltration requirements per section NR 151.12(5)(c)6.a of the Wisconsin Administrative Code. In addition, if the bottom of the infiltration device extends to within 5 feet of the highest groundwater level noted in the borings, the location of the boring would be excluded from the infiltration requirements based on Chapter NR 151.12(5)(c)5.f of the Wisconsin Administrative Code.

Our scope of services is not inclusive of all steps involved in the initial site screening (Part A) of the WDNR Technical Standard 1002. Therefore, other conditions may exist at, or near the site that could exclude or exempt the site, or portions of the site from the infiltration requirements. Additional evaluation must be conducted prior to the design and implementation of an infiltration device at this site so that its construction meets Wisconsin Administrative Code requirements.

Details of the proposed storm water management device were not available at the time of this report preparation; it is recommended ECS be provided the storm water management plans, when available, to check that the recommendations provided herein are applicable. ECS should also be called on to provide observation and testing during infiltration basin construction.

6.0 SITE CONSTRUCTION RECOMMENDATIONS

6.1 SUBGRADE PREPARATION

6.1.1 Existing Utilities

ECS recommends utilities not reused should be capped-off and removed or properly abandoned in-place in accordance with local codes and ordinances. The excavations for utilities to be removed in the influence zone of new construction are recommended to be backfilled with engineered fill. Grading operations must be done carefully so that existing utilities are not damaged or disturbed. Utility invert elevations, depths and sizes should be checked relative to the planned utility and pavement elevations to determine what specific concerns are present.

6.1.2 Stripping and Initial Site Preparation

The subgrade preparation should consist of stripping all pavement to be removed, organic soils (topsoil) and any other soft or unsuitable materials from the 5-foot expanded pavement limits and 5 feet beyond the toe of engineered fills, where feasible. ECS should be called on to observe and document that topsoil and other unsuitable surficial materials have been removed prior to the placement of engineered fill or construction of structures. Please note, topsoil removal should not be based on soil coloration alone. After removal of the root mat, it may be possible to leave some darker soils in place provided the soil contains no more than 5 percent organic matter as determined by ASTM D2974, has the recommended strength characteristics and is stable under proofroll. A landscape architect should approve any topsoil or other materials proposed for use in future landscape areas.

6.1.3 Special Subgrade Preparations – Utilities

The existing fill encountered in the borings present concerns for the support of utility pipes and structures. The existing fill extended to a depth of between 2 and 5½ feet below the existing grade. The owner should be aware of an increased risk of settlement in excess of 1 inch associated with the construction of utilities on these soils. In our opinion, the risk would be high for utilities constructed on undocumented fill. Based on the anticipated acceptable risk level of the owner, ECS recommends the removal of all existing fill from below utility pipes and structures.

Excavations subcut below the proposed pipe or structure elevation should be oversized one foot horizontally in each direction for every foot of sub-base fill placed below the pipe or structure, to a maximum oversize of 3 feet on each side of the pipe. All over-excavated soils should be replaced with properly compacted engineered fill.

6.1.4 Special Subgrade Preparations – Pavements

In general, pavements derive their strength from the characteristics of the subgrade soils, the sub-base fill and the base course, and the concrete or bituminous upper layer and lower layer mixtures. In the design of the pavement, the total pavement thickness typically includes the concrete or bituminous mixtures, base course, and sub-base fill. The site has generally suitable conditions for the proposed pavement construction. However, the existing fill and frost susceptible soils encountered in the borings present concerns for the pavement performance.

Existing Fill: The existing fill encountered in the borings extended to a depth of between 2 and 5½ feet below the existing grade. The existing fill provides a concern for the performance of the pavement system. The owner should be aware of the increased risk for a reduced pavement performance associated with constructing pavements on undocumented fill. The risk exists because undocumented fill has a higher potential for variable density. In addition, this risk tends to increase with the presence of organic soils (more than 5% organics). However, because of natural soil variability, every construction site has at least a very low risk for a reduced pavement performance.

Based primarily on the standard penetration N-values, in ECS's opinion, the risk for reduced pavement performance associated with the existing fill at this site would generally be moderate to high. However, the risk could be reduced to a low risk if the existing fill contains less than 5 percent organic content *and* proof-rolling observations do not indicate rutting or deflection greater than 1 inch. Based on our assumption of the owner's acceptable level of risk, we recommend removing any existing fill which contains greater than 5 percent organic content or does not meet the above proof-rolling requirements from within 2 feet of the finished pavement grade. The removed material should then be replaced with a compacted engineered fill in accordance with the **Earthwork Operations** section of this report.

Frost Susceptible Soils: The frost susceptible clayey and silty soils encountered in the borings provide another concern for the pavement system. ECS wishes to note, a risk for reduced pavement performance exists with the construction of pavements on frost susceptible soil. The reduced pavement performance may occur because of potential detrimental frost heaving and spring thaw weakening. The risk associated with frost susceptible soils can be reduced by removal of all frost susceptible soils within 3 feet of the finished pavement grade. In our opinion, the risk at this site related to the frost susceptible soils would generally be moderate. However, the risk would be high to very high in areas where highly frost susceptible silt, silty clay, or sandy silty clay soil is present within 3 feet of the finished pavement grade.

Summary: Based on our assumption of the owner's acceptable risk level (as outlined in the "Project Information" section of this report), we recommend the following:

1. Remove all existing fill soils from within 2 feet of the finished pavement grade, unless it contains less than 5 percent organic content *and* proof-rolling observations do not indicate rutting or deflection greater than 1 inch.

2. All over-excavated material should be replaced with compacted engineered fill in accordance with the **Earthwork Operations** section of this report.

3. If the owner is willing to accept a moderate risk for reduced pavement performance, then we anticipate a majority of the frost susceptible soils will remain in place below pavements. However, we recommend removing all highly frost susceptible soils (e.g. silt, silty clay and sandy silty clay) from within 3 feet of the finished pavement grade.

6.1.5 Proofrolling

After the removal of all unsuitable surface materials, cutting to the proposed subgrade, and prior to the placement of any engineered fill or other construction materials, the exposed subgrade should be observed by ECS. The contractor should thoroughly proofroll the exposed subgrade with previously approved construction equipment having a minimum axle load of 10 tons (e.g. fully loaded tandem-axle dump truck in clayey soils or large smooth drum roller in sandy soils). The contractor should traverse the areas subject to proofrolling by the equipment in two perpendicular (orthogonal) directions with overlapping passes of the vehicle under the observation of ECS. This procedure is intended to assist in identifying any localized yielding materials. Unstable or pumping subgrade areas identified during the proofroll should be marked for repair prior to the placement of any subsequent engineered fill or other construction materials. Unstable subgrade repair methods, such as undercutting or moisture conditioning or chemical stabilization, should be discussed with ECS to determine the appropriate procedure(s) with regard to the existing conditions causing the instability. A test pit(s) may be excavated to explore the shallow subsurface materials in the area of the instability to aid in determining the cause of the observed unstable materials and to assist in the evaluation of the appropriate remedial action to stabilize the subgrade.

Near surface subgrade soils having a high moisture content and/or those having N-values less than 10 bpf may not pass a proofroll, and may need to be undercut or repaired. Some undercutting or repair of unstable subgrade soils should be anticipated during pavement subgrade preparation. If construction will occur during wet times of the year (such as during the spring or fall months) or immediately following extended periods of rain, then seasonal reduction of the near surface soil strength will occur. This may cause additional unstable or pumping subgrade areas for constructability concerns.

The actual quantity of the subgrade undercut or stabilization should be determined by ECS at the time of construction.

6.1.6 Site Temporary Dewatering

We anticipate utility excavations will likely extend below the groundwater level encountered in Boring 7. Further, seasonal variations in precipitation and site drainage conditions can cause the accumulation of water in the upper soils, particularly within existing fill and more permeable granular soils underlain by less permeable clayey soils. Where excavations extend less than 2 feet below the groundwater level, initial attempts to control water may be accomplished by pumping from sump pits in the excavation bottom, which are backfilled with AASHTO Size No. 57 Stone or open-graded bedding material. If water control cannot be maintained with sump pumps, or where excavations extend more than 2 feet below the static groundwater level, a more substantial excavation dewatering system, such as a temporary well point system, may be required to control groundwater seepage during construction. ECS recommends the contractor be required to submit a Dewatering Plan as part of the project specifications for water conditions beyond the capability of pumping from sumps.

More complex dewatering techniques, such as vacuum wells or other methods, should be started prior to excavation to prevent "boiling" and/or "heaving" of the subgrade soils. Dewatering should continue until all earthwork operations and backfilling have extended above the water table.

Lowering the static groundwater level can adversely affect nearby structures, utilities and other construction. We recommend any dewatering scheme be reviewed by ECS and a contractor who specializes in this type of work prior to its implementation.

6.1.7 Subgrade Stabilization

Subgrade Benching: Fill should not be placed on ground with a slope steeper than 5H:1V. The ground should be benched so as to allow for fill placement on a horizontal surface.

Subgrade Compaction: Upon completion of subgrade documentation, the exposed subgrade within the 5-foot expanded pavement area and embankment limits should be moisture conditioned to within +/- 3 percent of the soil's optimum moisture content to a depth of 10 inches, and be compacted with suitable equipment (minimum 10-ton vibratory roller for granular soils or a sheepsfoot roller for cohesive soils). The subgrade within the expanded pavement limits should be compacted to a dry density of at least 95 percent of the Modified Proctor maximum dry density (ASTM D1557). Beyond these areas, compaction should be to at least 90 percent. ECS should be called on to document the achievement of proper subgrade compaction.

Subgrade Compaction Control: The expanded limits of the proposed construction areas should be well defined, including the limits for structures, pavements, fills, and slopes, etc. We recommend performing field density testing of subgrade soils at the frequencies listed in Table 6.1.1 of this report.

Table 6.1.1 Frequency of Subgrade Compaction Testing

Location	Frequency of Tests
Pavement Areas	1 test per 10,000 sq. ft.
Other Non-Critical Areas	1 test per 10,000 sq. ft.

6.2 EARTHWORK OPERATIONS

6.2.1 Engineered Fill Materials

Product Submittals: Prior to placement of engineered fill, representative bulk samples (about 50 pounds) of on-site and off-site borrow should be submitted to ECS for laboratory testing, which will include natural moisture content, grain-size distribution, and moisture-density relationships for compaction. Import materials should be tested prior to being hauled to the site to determine if they meet project specifications.

Satisfactory Engineered Fill Materials: Engineered fills should consist of approved materials, free of organic matter and debris, contain no particle sizes greater than 3 inches in the largest dimension, and have a Liquid Limit and Plasticity Index less than 40 and 15, respectively. Open-graded materials, such as coarser sands and gravels (SP and GP), which contain void space in their mass should not be used in engineered fills unless properly encapsulated within a filter geotextile. If the fill is to provide non-frost susceptible characteristics, it must be classified as a clean GW, GP, SW or SP per Unified Soil Classification System (ASTM D-2487).

Unsatisfactory Materials: Unsatisfactory engineered fill materials, which do not satisfy the requirements for suitable materials, include topsoil and organic materials (PT, OH, OL), silt (ML), sandy silt (ML), elastic Silt (MH), silty clay (CL-ML), sandy silty clay (CL-ML) and high plasticity clay (CH). Topsoil is not recommended to be used as engineered fill, but may be suitable for use within future landscape areas. A landscape architect should approve any materials proposed for use in future landscape areas.

Pea gravel is not recommended to be used as engineered fill. Pea gravel has round/smooth characteristics, no fines and does not interlock when compacted, which makes it more susceptible to future movement and instability resulting in excessive and variable settlement.

On-Site Borrow Suitability: The on-site soil, with the exception of silt (ML), silty clay (CL-ML) and sandy silty clay (CL-ML), may be feasible to use as engineered fill, but should be further evaluated and approved by ECS prior to its use. On-site soil used as engineered fill must not contain an adverse amount of organic matter, and must be free of frozen matter, deleterious materials, over-sized material (maximum 3-inch particle diameter), or chemicals that may result in the material being classified as "contaminated." Depending on the conditions at the time of construction, the use of on-site soil for foundation support may not be practical, and use of an imported high quality granular material may be needed for foundation support. The material used as engineered fill must be considered low volume change material with a maximum Liquid Limit of 40 and maximum Plasticity Index of 15, unless specifically tested and found to have low volume change properties and approved by ECS. The soils must be compacted within a narrow range of the materials optimum moisture content. The soil samples had relatively high moisture contents so the contractor should expect some drying of on-site soil prior to reuse as engineered fill. The soil should not be compacted too dry as it may lose its apparent stability if it later becomes wet. The suitability of engineered fill materials should be checked by ECS prior to placement. Sorting to remove over-sized material (i.e. cobbles) should be expected at this site prior to re-use of the on-site soil as engineered fill.

Natural soil deposits considered unsuitable by virtue of their plasticity are present on the site. The moisture contents of many of the samples were observed to generally be more than 5 percent above the optimum moisture contents of the material. The construction team should anticipate moisture conditioning (mostly drying) of subgrade soils and engineered fill lifts at this site. Soil chemical modification may be helpful to reduce moisture contents of subgrade soils and fills.

6.2.2 Compaction

Engineered Fill Compaction: Engineered fill within the expanded pavement, and embankment limits should be placed in maximum 8-inch thick loose lifts, moisture conditioned as necessary to within +/- 3 percent of the soil's optimum moisture content, and be compacted with suitable equipment to a dry density of at least 95 percent of the Modified Proctor maximum dry density (ASTM D1557). Beyond these areas, the engineered fill should be compacted to at least 90 percent. ECS should be called on to document the achievement of proper fill compaction.

Fill Compaction Control: The expanded limits of the proposed construction areas should be well defined, including the limits of the fill zones for pavements and embankment slopes, etc., at the time of fill placement. Grade controls should be maintained throughout the filling operations. All filling operations should be observed on a full-time basis by a qualified representative of ECS to

document the achievement of the minimum compaction requirements. Field density testing of fills should be performed at the frequencies shown in Table 6.2.1, but not less than 2 tests per lift.

Table 6.2.1 Frequency of Compaction Tests in Fill Areas

Location	Frequency of Tests
Pavement Areas	1 test per 10,000 sq. ft. per lift
Utility Trenches	1 test per 200 linear ft. per lift
All Other Non-Critical Areas	1 test per 10,000 sq. ft. per lift

Compaction Equipment: Compaction equipment suitable to the soil type being compacted should be used to compact the subgrades and fill materials. Sheepsfoot compaction equipment should be suitable for the fine-grained soils (Clays). A vibratory steel drum roller or plate compactor should be used for compaction of coarse-grained soils (Sands and Gravels) as well as for sealing compacted surfaces.

Fill Placement Considerations: Fill materials should not be placed on frozen soils, on frost-heaved soils, and/or on excessively wet soils. Borrow fill materials should not contain frozen materials at the time of placement, and all frozen or frost-heaved soils should be removed prior to placement of engineered fill or other fill soils and aggregates. Scarify, aerate and moisture condition excessively wet soils or aggregates.

At the end of each work day, all fill areas should be graded to facilitate drainage of any precipitation and the surface should be sealed by use of a smooth-drum roller to limit infiltration of surface water. During placement and compaction of new fill at the beginning of each workday, the contractor may need to scarify existing subgrades to a depth of 4 inches or more so that a weak plane will not be formed between the new fill and the existing subgrade soils.

Drying and compaction of wet soils is typically difficult during the cold, winter months. Accordingly, earthwork should be performed during the warmer, drier times of the year, if practical. Proper drainage should be maintained during the earthwork phases of construction to reduce ponding of water which has a tendency to degrade subgrade soils. Alternatively, if these soils cannot be stabilized by conventional methods as previously discussed, chemical modifications of the subgrade soils, such as with lime, cement or other materials, may be utilized to adjust the moisture content. If lime or cement is utilized to control moisture contents and/or for stabilization, then ECS recommends the use of Quick Lime, Calciment® or regular Type 1 cement. The soil modification procedure, such as determination of the quantity of additive, and mixing and curing procedures, should be evaluated before implementation. The contractor should be required to minimize dusting or implement dust control measures.

Where fill materials will be placed to widen existing embankment fills, or placed up against sloping ground, the soil subgrade should be scarified, and the new fill benched and keyed into the existing material. Fill material should be placed in horizontal lifts. In confined areas such as utility trenches, portable compaction equipment and thin lifts of 3 inches to 4 inches may be required to achieve specified degrees of compaction.

We recommend the grading contractor have equipment on site during earthwork for both drying and wetting fill soils. We do not anticipate significant problems in controlling moisture during dry

weather, but moisture control may be difficult during winter months or extended periods of rain. The control of moisture content of clay soils can be difficult when these soils become wet. Further, construction traffic can easily degrade soils that have an elevated moisture content.

6.3 PAVEMENT SUBGRADE OBSERVATIONS

Pavement Subgrade Verification: ECS should be called on to observe and test exposed subgrade within the expanded pavement limits prior to engineered fill placement and pavement construction to check achievement of adequate subgrade preparation. A proofroll using a loaded dump truck should be performed in their presence at that time. Once subgrades have been prepared to the satisfaction of ECS, subgrades should be properly compacted and new engineered fill can be placed. Existing subgrades to a depth of at least 10 inches and all engineered fill should be properly moisture conditioned and compacted to the required in-place density. ECS should check the condition of the prepared subgrade prior to placement of the subbase stone and pavement. If there will be significant time lag between the subgrade check and placement of the subbase stone and pavement, ECS may need to recheck the condition of the subgrade before placement of stone and pavement. Prior to final pavement construction, the subgrade may require scarification, moisture conditioning, and re-compaction to restore stable conditions.

6.4 UTILITY INSTALLATIONS

Utility Subgrades: The native soils encountered in our exploration are expected to be generally suitable for support of utility pipes. However, we recommend removing all existing fill and soils that contain more than 5 percent organic content from below utilities. The pipe subgrade should be observed and probed for stability by ECS to evaluate the suitability of the encountered materials. Any loose or unsuitable materials encountered at the utility pipe subgrade elevation should be removed and replaced with suitable compacted engineered fill or pipe bedding material.

Utility Backfilling: The granular bedding material should be at least 4 inches thick, but not less than that specified by the project drawings and specifications. Fill placed for support of the utilities, as well as backfill over the utilities, should satisfy the requirements for engineered fill given in this report. Compacted backfill should be free of topsoil, roots, ice, or any other material designated by ECS as unsuitable. The backfill should be moisture conditioned, placed, and compacted in accordance with the recommendations of this report.

6.5 GENERAL CONSTRUCTION CONSIDERATIONS

Moisture Conditioning: During the cooler and wetter periods of the year, the construction team should anticipate delays and additional costs. At these times, reduction of soil moisture may need to be accomplished by mechanical manipulation to lower moisture contents to levels appropriate for compaction. Alternatively, during the drier times of the year, such as the summer months, moisture may need to be added to the soil to provide adequate moisture for successful compaction according to the project requirements.

Subgrade Protection: Measures should be taken to limit site disturbance, especially from rubber-tired heavy construction equipment, and to control and remove surface water from development areas, including pavement areas. ECS recommends the design team consider designating a haul road and construction staging area to limit the areas of disturbance and to prevent construction

traffic from excessively degrading sensitive subgrade soils and existing pavement areas. Haul roads and construction staging areas could be covered with excess depths of aggregate to protect those subgrades. The aggregate can later be removed and used in pavement areas provided it has not been mixed with silty or clayey soils.

Surface Drainage: The contractor should properly maintain surface drainage conditions. Surface water should be directed away from the construction area, and the work area should be sloped away from the construction area at a gradient of 1 percent or steeper to reduce the potential of ponding water and the subsequent saturation of the surface soils. At the end of each work day, the subgrade soils should be sealed by rolling the surface with a smooth drum roller to reduce infiltration of surface water.

Excavation Safety: The contractor should make and maintain all excavations and slopes in accordance with OSHA excavation safety standards. The contractor is solely responsible for designing and constructing stable, excavations and slopes and should shore, slope, or bench the sides of the excavations and slopes as required to maintain stability of both the excavation sides and bottom. The contractor's responsible person, as defined in OSHA 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. ECS is providing this information solely as a service to our client. ECS is not assuming responsibility for construction site safety or the contractor's activities; ECS does not imply such responsibility, and the contractor, design team and owner should not infer it.

Excavation Instability: Excavation stability and caving problems may occur due to the existing fill soils. The instability problems will generally depend upon the excavation depth, length of time the excavations remain open, inclination of excavation side-walls, magnitude and location of surcharges near the excavations, groundwater levels and the suitability of any dewatering systems if needed.

Excavation Difficulties: Excavation difficulties for utilities and other construction may occur due to the presence of existing utilities. The degree of excavation difficulty will generally depend upon the depth of excavation and capabilities of the excavation equipment.

Existing Construction Considerations: Site preparation will require complete removal and proper disposal of the existing pavement to be removed and any remnants of previous construction, including all underground utilities that are not reused, etc. Disposal of debris should be in accordance with local, state and federal regulations for the material type. It should be noted that any construction remnants left in-place may cause excavation difficulties for new utilities and/or landscape plantings. All excavations must be backfilled with compacted engineered fill performed under engineering controlled conditions.

Removal of the existing pavement and placement of engineered backfill is recommended to be observed and tested by ECS. Alteration to the recommendations of this report may be needed, if conditions different than those noted on the boring logs are revealed below the existing construction.

Existing Fill Considerations: Existing fill was encountered in a majority of the test boring locations. Unsuitable materials may have been buried beneath the site surface during previous site grading or construction not detected by the test borings. Questionable material, if encountered, is recommended to be evaluated by ECS to determine if the material needs to be removed and replaced with engineered fill. Alteration to the recommendations of this report may be needed, if excavations reveal conditions different than those noted on the test boring logs.

Erosion Control: The surface soils may be erodible. Therefore, the Contractor should provide and maintain good site drainage during earthwork operations to maintain the integrity of the surface soils. All erosion and sedimentation controls should be in accordance with sound engineering practices and local requirements.

Bidding/Estimating Considerations: Contractors bidding or undertaking any work at the site should examine the results of the subsurface exploration, satisfy themselves as to the adequacy of the information for bidding and construction, make their own interpretation of the data, and consider the effect it may have on their cost proposal, construction techniques, schedule, and equipment capabilities. Furthermore, contractors should complete any additional fieldwork and investigation they deem necessary to properly prepare a cost proposal for the site work. Soil borings do not provide the same wide-scale view of the subsurface conditions that is obtained during site grading, excavation or other aspects of earthwork construction. Additional scope may be required to obtain more detailed subsurface information needed for earthwork bid preparation, which could include test pits to better understand the lateral and vertical extents of the subsurface materials of concern such as existing undocumented fill. Even with this additional information, budget contingencies should be carried in construction to help cover potential variations in subsurface conditions.

7.0 CLOSING

ECS has prepared this report of findings, evaluations, and recommendations to guide geotechnical-related design and construction aspects of the project.

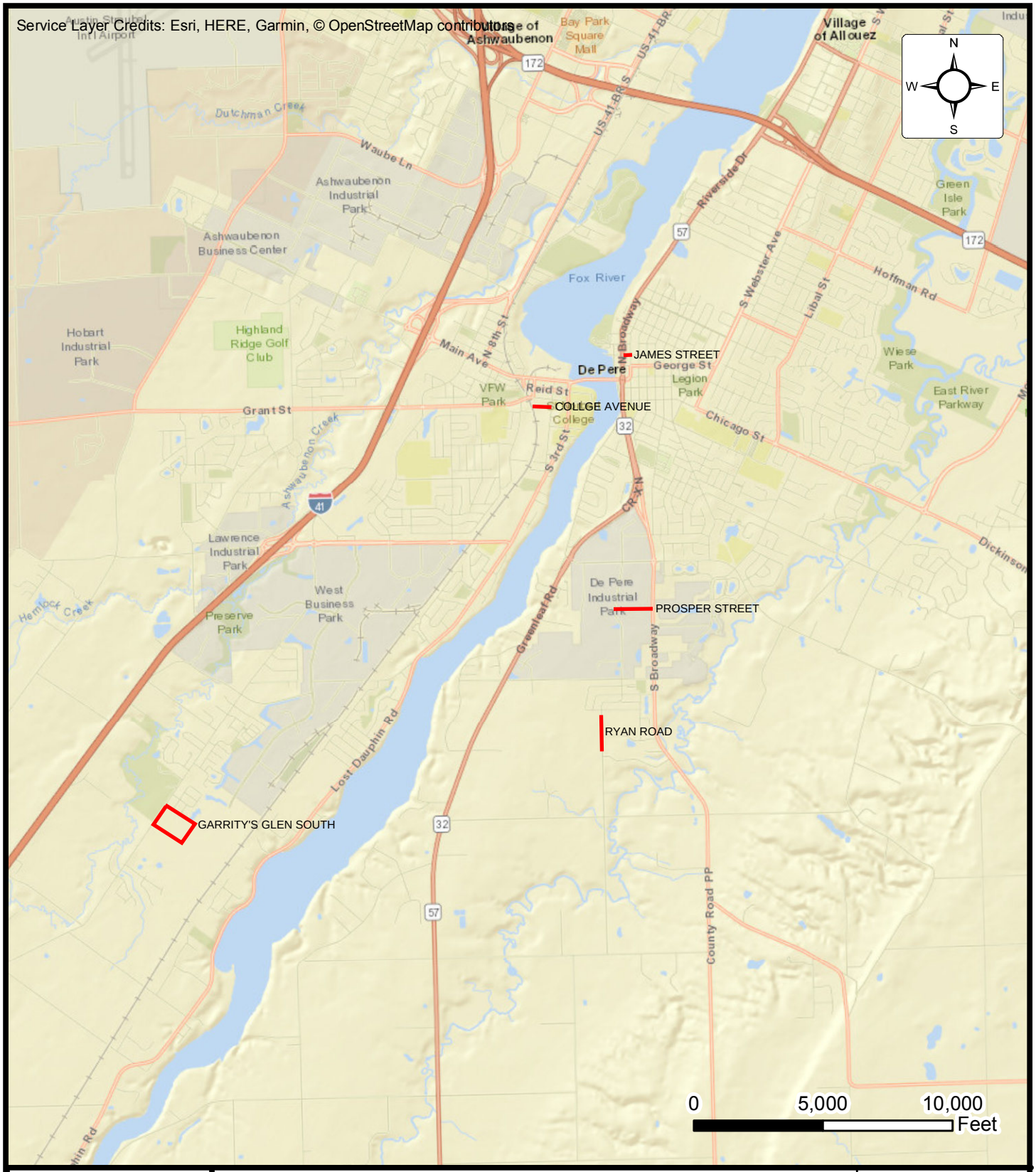
The description of the proposed project is based on information provided to ECS by the City of De Pere. If any of this information is inaccurate, either due to our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted immediately so that we can review the report in light of the changes and provide additional or alternate recommendations as may be required to reflect the proposed construction.

We recommend that ECS be allowed to review the project's plans and specifications pertaining to our work so that we may ascertain consistency of those plans/specifications with the intent of this geotechnical report.

Field observations, and quality assurance testing during earthwork, utility and pavement installation are an extension of and integral to the geotechnical design recommendation. We recommend the owner retain these quality assurance services and that ECS be allowed to continue our involvement throughout these critical phases of construction to provide general consultation as issues arise. ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

APPENDIX A – Drawings & Reports

Site Location Diagram
Boring Location Diagram



Site Location Diagram
2019 CONSTRUCTION DESIGN

VARIOUS STREETS, DE PERE, WI

CITY OF DE PERE

ENGINEER	MEK
SCALE	1 " = 5280'
PROJECT NO.	59:1549
SHEET	1 OF 1
DATE	11/21/2018

Boring Location Diagram
2019 CONSTRUCTION DESIGN

GARRITY'S GLEN SOUTH, DE PERE, WI

CITY OF DE PERE

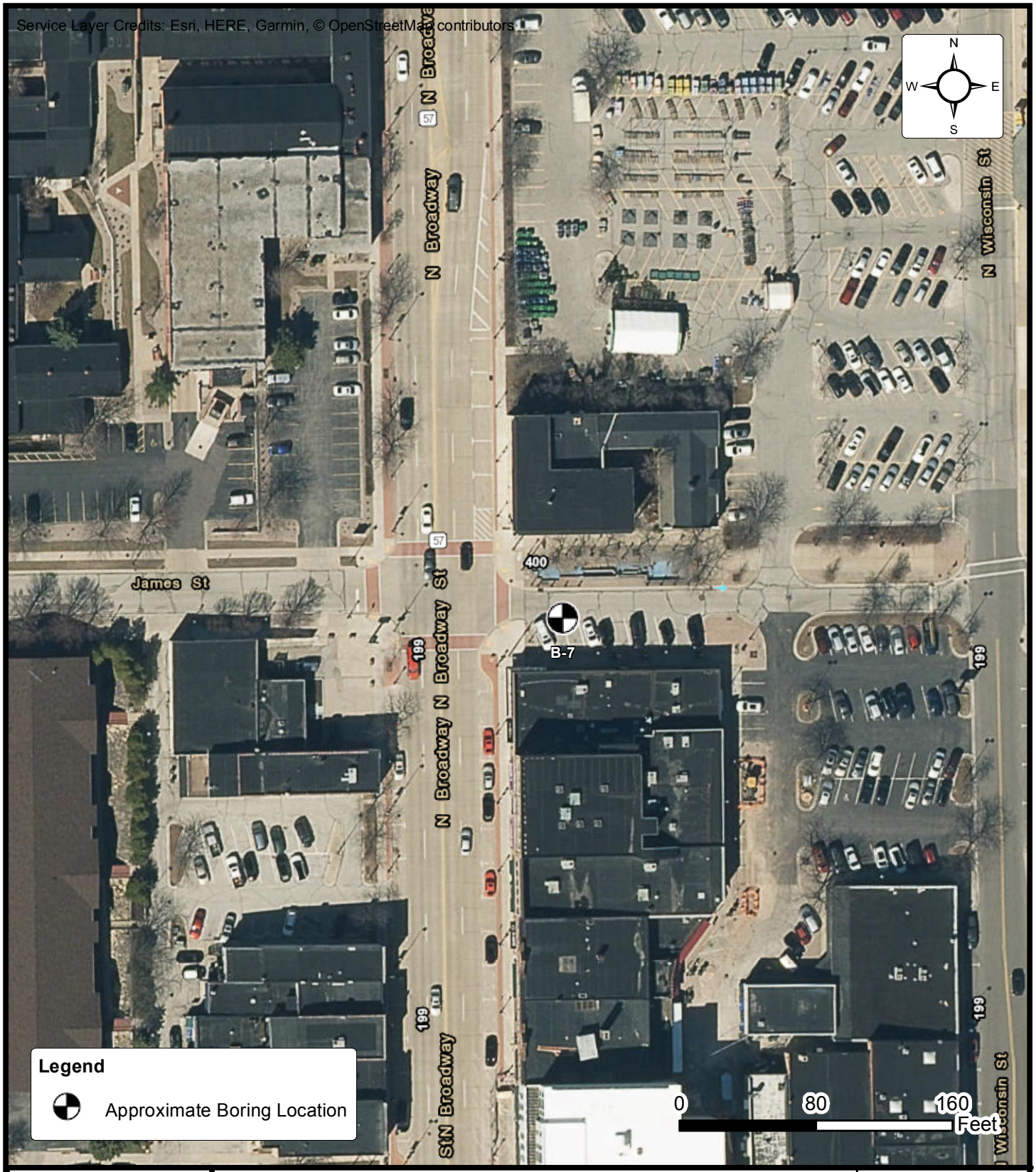
ENGINEER	MEK
SCALE	1 " = 250 '
PROJECT NO.	59:1549
SHEET	1 OF 1
DATE	12/17/2018

Boring Location Diagram
2019 CONSTRUCTION DESIGN

COLLEGE AVENUE, DE PERE, WI

CITY OF DE PERE

ENGINEER	MEK
SCALE	1 " = 80 '
PROJECT NO.	59:1549
SHEET	1 OF 1
DATE	12/17/2018



Boring Location Diagram
2019 CONSTRUCTION DESIGN

JAMES STREET, DE PERE, WI

CITY OF DE PERE

ENGINEER	MEK
SCALE	1 " = 80 '
PROJECT NO.	59:1549
SHEET	1 OF 1
DATE	12/17/2018

Boring Location Diagram
2019 CONSTRUCTION DESIGN

PROSPER STREET, DE PERE, WI

CITY OF DE PERE

ENGINEER	MEK
SCALE	1 " = 250 '
PROJECT NO.	59:1549
SHEET	1 OF 1
DATE	12/17/2018

Boring Location Diagram
2019 CONSTRUCTION DESIGN

RYAN ROAD, DE PERE, WI

CITY OF DE PERE

ENGINEER	MEK
SCALE	1 " = 250 '
PROJECT NO.	59:1549
SHEET	1 OF 1
DATE	12/17/2018

APPENDIX B – Field Operations

Reference Notes for Boring Logs
Test Boring Log 1 through 11
Soil and Site Evaluation – Storm

REFERENCE NOTES FOR BORING LOGS

MATERIAL[1,2]		
	ASPHALT	
	CONCRETE	
	GRAVEL	
	TOPSOIL	
	SHALE	
	BRICK	
	AGGREGATE BASE COURSE	
	FILL[3]	MAN-PLACED SOILS
GW	WELL-GRADED GRAVEL	gravel-sand mixtures, little or no fines
GP	POORLY-GRADED GRAVEL	gravel-sand mixtures, little or no fines
GM	SILTY GRAVEL	gravel-sand-silt mixtures
GC	CLAYEY GRAVEL	gravel-sand-clay mixtures
SW	WELL-GRADED SAND	gravelly sand, little or no fines
SP	POORLY-GRADED SAND	gravelly sand, little or no fines
SM	SILTY SAND	sand-silt mixtures
SC	CLAYEY SAND	sand-clay mixtures
ML	SILT	non-plastic to medium plasticity
MH	ELASTIC SILT	high plasticity
CL	LEAN CLAY	low to medium plasticity
CH	FAT CLAY	high plasticity
OL	ORGANIC SILT or CLAY	non-plastic to low plasticity
OH	ORGANIC SILT or CLAY	high plasticity
PT	PEAT	highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS

SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION

DESIGNATION		PARTICLE SIZES
Boulders		12 inches (300 mm) or larger
Cobbles		3 inches to 12 inches (75 mm to 300 mm)
Gravel:	Coarse	¾ inch to 3 inches (19 mm to 75 mm)
	Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand:	Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
	Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
	Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")		<0.074 mm (smaller than a No. 200 sieve)

COHESIVE SILTS & CLAYS

UNCONFINED COMPRESSIVE STRENGTH, Q_P[4]	SPT[5] (BPF)	CONSISTENCY[7] (COHESIVE)
<0.25	<3	Very Soft
0.25 - <0.50	3 - 4	Soft
0.50 - <1.00	5 - 8	Medium Stiff
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

GRAVELS, SANDS & NON-COHESIVE SILTS

SPT[5]	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

RELATIVE AMOUNT[7]	COARSE GRAINED (%)[8]	FINE GRAINED (%)[8]
Trace	≤5	≤5
Dual Symbol *(ex: SW-SM)*	10	10
With	15 - 20	15 - 25
Adjective *(ex: "Silty")*	≥25	≥30

WATER LEVELS[6]

	WL	Water Level (WS)(WD)
		(WS) While Sampling
		(WD) While Drilling
	SHW	Seasonal High WT
	ACR	After Casing Removal
	SWT	Stabilized Water Table
	DCI	Dry Cave-In
	WCI	Wet Cave-In

[1] *Classifications and symbols per ASTM D 2488-09 (Visual-Manual Procedure) unless noted otherwise.*

[2] *To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.*

[3] *Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-**FILL**)].*

[4] *Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).*

[5] *Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf).*

[6] *The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.*

[7] *Minor deviation from ASTM D 2488-09 Note 16.*

[8] *Percentages are estimated to the nearest 5% per ASTM D 2488-09.*

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CLIENT	JOB #	BORING #	SHEET
City of De Pere	1549	1	1 OF 1

PROJECT NAME: 2019 Construction Design

ARCHITECT-ENGINEER:

SITE LOCATION: Various Streets, De Pere, Brown County, Wisconsin

Additional info.: Garrity's Glen South

Station+Offset:

CALIBRATED PENETROMETER TONS/FT^2 (1, 2, 3, 4, 5+)

ROCK QUALITY DESIGNATION & RECOVERY — RQD% (20%, 40%, 60%, 80%, 100%) — REC.%

PLASTIC LIMIT — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT (10, 20, 30, 40, 50+)

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION

SURFACE ELEVATION: Not Indicated

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	BLOWS/6"	STANDARD PENETRATION BLOWS/FT	CALIBRATED PENETROMETER TONS/FT^2
0					Topsoil Thickness [6"]			
	S-1	SS	24	4	(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND AND SEAMS OF SILT, brown, moist, medium stiff to stiff	1 2 3	5	
	S-2	SS	24	9		2 3 4	9	3.5
5	S-3	SS	24	15	(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND, brown, moist, very stiff to stiff to very stiff	5 5 9	22	4.5
	S-4	SS	18	10		13 17 5	18	5.5
	S-5	SS	18	11		8 10 5	16	4.25
10	S-6	SS	18	6		6 10 10	10	3.25
	S-7	SS	18	15		4 6 10	16	3.75
15								
	S-8	SS	18	12	(CL/ML) {A-4} Lacustrine, SILTY CLAY, very dark brown, moist, very stiff	9 11 14	25	5.0
20	S-9	SS	24	17		9 13 14 21	27	5.0
					END OF BORING @ 23'			
25								
30								

WATER LEVELS — ELEVATION (FT)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL None — WS ☐ — WD ☒	BORING STARTED 11/26/18	
WL(BCR) — WL(ACR) None	BORING COMPLETED 11/26/18	CAVE IN DEPTH
WL	RIG ATV — FOREMAN GB/BB	DRILLING METHOD 3 1/4" HSA 0' to 23' (AH)

CLIENT	JOB #	BORING #	SHEET
City of De Pere	1549	2	1 OF 1

PROJECT NAME: 2019 Construction Design

ARCHITECT-ENGINEER:

SITE LOCATION: Various Streets, De Pere, Brown County, Wisconsin

Additional info.: Garrity's Glen South

Station+Offset:

CALIBRATED PENETROMETER TONS/FT2: 1 2 3 4 5+

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — REC.% ——— 20% 40% 60% 80% 100%

PLASTIC LIMIT — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT: 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION

SURFACE ELEVATION: Not Indicated

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	BLOWS/6"	STANDARD PENETRATION BLOWS/FT	CALIBRATED PENETROMETER TONS/FT2
0					Topsoil Thickness [8"]			
	S-1	SS	24	10	(CL) {A-6} FILL, LEAN CLAY WITH SAND AND SILT, dark brown, moist, medium stiff	2 3 4 4	7	
	S-2	SS	24	10	(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND, brown, moist, stiff	3 4 5 5	9	4.1
5	S-3	SS	24	18		4 5 9 10	14	2.5
	S-4	SS	18	17	(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND, dark brown, moist, medium stiff to stiff	3 4 5	9	1.7
	S-5	SS	18	12		3 4 4	8	1.1
10	S-6	SS	18	17		2 3 5	8	1.8
	S-7	SS	18	18		3 3 4	7	2.0
15								
	S-8	SS	18	15		3 5 7	12	2.7
20					END OF BORING @ 20'			
25								
30								

WATER LEVELS — ELEVATION (FT)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL None — WS ☐ — WD ☒	BORING STARTED 11/26/18	
WL(BCR) — WL(ACR) None	BORING COMPLETED 11/26/18	CAVE IN DEPTH
WL	RIG ATV — FOREMAN GB/BB	DRILLING METHOD 3 1/4" HSA 0' to 20' (AH)

CLIENT	JOB #	BORING #	SHEET
City of De Pere	1549	3	1 OF 1

PROJECT NAME: 2019 Construction Design

ARCHITECT-ENGINEER:

SITE LOCATION: Various Streets, De Pere, Brown County, Wisconsin

Additional info.: Garrity's Glen South

Station+Offset:

CALIBRATED PENETROMETER TONS/FT2 (1, 2, 3, 4, 5+)

ROCK QUALITY DESIGNATION & RECOVERY — RQD% (20%, 40%, 60%, 80%, 100%) — REC.%

PLASTIC LIMIT — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT (10, 20, 30, 40, 50+)

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION

SURFACE ELEVATION: Not Indicated

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	BLOWS/6"	STANDARD PENETRATION BLOWS/FT	CALIBRATED PENETROMETER TONS/FT2
0					Topsoil Thickness [8"]			
	S-1	SS	24	4	(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND, brown, moist, soft to medium stiff	2 2 2	4	
	S-2	SS	24	10		4 3 3	7	3.3
5	S-3	SS	24	15	(CH) {A-7-6} Lacustrine, FAT CLAY WITH SAND, brown, moist, stiff	4 6 3	10	4.5
	S-4	SS	18	16		4 6 7	13	3.7
	S-5	SS	18	0		3 5 8	11	
10	S-6	SS	18	18		3 4 7	10	3.0
	S-7	SS	18	15		3 4 6	13	1.9
15	S-8	SS	18	16		3 6 7	11	2.2
	S-9	SS	18	12		4 5 6	13	3.5
20					END OF BORING @ 20'	4 6 7		
25								
30								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL None — WS ☐ — WD ☒	BORING STARTED 11/26/18	
WL(BCR) — WL(ACR) None	BORING COMPLETED 11/26/18	CAVE IN DEPTH
WL	RIG ATV — FOREMAN GB/BB	DRILLING METHOD 3 1/4" HSA 0' to 20' (AH)

CLIENT	JOB #	BORING #	SHEET
City of De Pere	1549	4	1 OF 1

PROJECT NAME: 2019 Construction Design

ARCHITECT-ENGINEER:

SITE LOCATION: Various Streets, De Pere, Brown County, Wisconsin

Additional info.: Garrity's Glen South

Station+Offset:

CALIBRATED PENETROMETER TONS/FT^2 (1, 2, 3, 4, 5+)

ROCK QUALITY DESIGNATION & RECOVERY — RQD% (20%, 40%, 60%, 80%, 100%) — REC.%

PLASTIC LIMIT — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT (10, 20, 30, 40, 50+)

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION

SURFACE ELEVATION: Not Indicated

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	BLOWS/6"	STANDARD PENETRATION BLOWS/FT	CALIBRATED PENETROMETER TONS/FT^2
0					Topsoil Thickness [8"]			
	S-1	SS	24	12	(CL) {A-6} FILL, LEAN CLAY WITH SAND, brown, moist, medium stiff	2 3 4 4	7	
	S-2	SS	24	5	(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND, brown, moist to wet, stiff to medium stiff to stiff	3 4 6 8	10	2.3
5	S-3	SS	24	17		3 4 8 10	12	3.5
	S-4	SS	18	18		3 4 6	10	1.8
	S-5	SS	18	5		3 4 6	10	2.2
10	S-6	SS	18	18		3 4 5	9	2.5
	S-7	SS	18	18		2 3 4	7	0.9
15	S-8	SS	18	15		3 4 6	10	2.5
	S-9	SS	18	10		4 6 7	13	3.7
20					END OF BORING @ 20'			
25								
30								

WATER LEVELS — ELEVATION (FT)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL None — WS ☐ — WD ☒	BORING STARTED 11/26/18	
WL(BCR) — WL(ACR) 18 feet	BORING COMPLETED 11/26/18	CAVE IN DEPTH
WL	RIG ATV — FOREMAN GB/BB	DRILLING METHOD 3 1/4" HSA 0' to 20' (AH)

CLIENT	JOB #	BORING #	SHEET
City of De Pere	1549	5	1 OF 1

PROJECT NAME: 2019 Construction Design

ARCHITECT-ENGINEER:

SITE LOCATION: Various Streets, De Pere, Brown County, Wisconsin

Additional info.: College Avenue

Station+Offset:

CALIBRATED PENETROMETER TONS/FT^2: 1 2 3 4 5+

ROCK QUALITY DESIGNATION & RECOVERY: RQD% 20% 40% 60% 80% 100% — REC.%

PLASTIC LIMIT — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT: 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION

SURFACE ELEVATION: Not Indicated

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	BLOWS/6"	STANDARD PENETRATION BLOWS/FT	CALIBRATED PENETROMETER TONS/FT^2
0					Asphalt Thickness [3.5"]			
					Gravel Thickness [14"]			
	S-1	SS	18	6	(CL/ML) {A-4} FILL, SANDY SILTY CLAY WITH ORGANICS, very dark brown, moist, medium stiff	1 3 4	7	
	S-2	SS	18	6		3 3 4	7	
5	S-3	SS	18	9	(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND, brown, moist, medium stiff to very stiff	2 3 4	7	1.3
	S-4	SS	18	12		2 2 3	5	2.5
	S-5	SS	18	13		6 9 12	21	4.3
10					END OF BORING @ 10'			
15								
20								
25								
30								

WATER LEVELS — ELEVATION (FT)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL None — WS ☐ WD ☒	BORING STARTED 11/27/18	
WL(BCR) — WL(ACR) None	BORING COMPLETED 11/27/18	CAVE IN DEPTH
WL	RIG ATV — FOREMAN GB/BB	DRILLING METHOD 3 1/4" HSA 0' to 10' (AH)

CLIENT	JOB #	BORING #	SHEET
City of De Pere	1549	6	1 OF 1

PROJECT NAME: 2019 Construction Design

ARCHITECT-ENGINEER:

SITE LOCATION: Various Streets, De Pere, Brown County, Wisconsin

Additional info.: College Avenue

Station+Offset:

CALIBRATED PENETROMETER TONS/FT^2: 1, 2, 3, 4, 5+

ROCK QUALITY DESIGNATION & RECOVERY: RQD% 20%, 40%, 60%, 80%, 100%; REC.%

PLASTIC LIMIT — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT: 10, 20, 30, 40, 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION

SURFACE ELEVATION: Not Indicated

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	BLOWS/6"	STANDARD PENETRATION BLOWS/FT	CALIBRATED PENETROMETER TONS/FT^2
0					Asphalt Thickness [4"]			
					Gravel Thickness [3"]			
	S-1	SS	18	8	(CL/ML) {A-4} FILL, SILTY CLAY WITH SAND, trace Organics, very dark brown, moist, medium stiff	2 3 4	7	
	S-2	SS	18	3	(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND AND SEAMS OF SILT, trace gravel, brown with gray, moist, medium stiff to very stiff	2 3 4	7	1.4
5	S-3	SS	24	12		3 3 5	8	1.5
	S-4	SS	18	15		6 5 7 9	16	3.1
	S-5	SS	18	7		7 9 10	19	
10					END OF BORING @ 10'			
15								
20								
25								
30								

WATER LEVELS — ELEVATION (FT)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL None — WS ☐ — WD ☒	BORING STARTED 11/27/18	
WL(BCR) — WL(ACR) None	BORING COMPLETED 11/27/18	CAVE IN DEPTH
WL	RIG ATV — FOREMAN GB/BB	DRILLING METHOD 3 1/4" HSA 0' to 10' (AH)

CLIENT	JOB #	BORING #	SHEET
City of De Pere	1549	7	1 OF 1

PROJECT NAME: 2019 Construction Design

ARCHITECT-ENGINEER:

SITE LOCATION: Various Streets, De Pere, Brown County, Wisconsin

Additional info.: James Street

Station+Offset:

CALIBRATED PENETROMETER TONS/FT2: 1 2 3 4 5+

ROCK QUALITY DESIGNATION & RECOVERY: RQD% 20% 40% 60% 80% 100% — REC.%

PLASTIC LIMIT — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT: 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION

SURFACE ELEVATION: Not Indicated

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	BLOWS/6"	STANDARD PENETRATION BLOWS/FT	CALIBRATED PENETROMETER TONS/FT2
0					Asphalt Thickness [6"]			
					Pulverized Asphalt Thickness [5.5"]			
					Gravel Thickness [11.5"]			
	S-1	SS	24	12	(CL) {A-6} FILL, LEAN CLAY WITH POCKETS OF SAND, brown, moist, medium stiff to stiff	3 4 3	7	
5	S-2	SS	24	15		5 5 5	10	
	S-3	SS	18	12	(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND, brown, moist to wet, stiff	5 5 3	9	2.4
	S-4	SS	18	18	(CH) {A-7-6} Lacustrine, FAT CLAY, brown, wet, very soft	4 5 1	0.25 / 2	
10	S-5	ST	24	27		1 1	1;0	
	S-6	SS	18	0		1 1 1	2	
15					END OF BORING @ 15'			
20								
25								
30								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL 8 feet WS ☐ WD ☒	BORING STARTED 11/27/18	
WL(BCR) WL(ACR) None	BORING COMPLETED 11/27/18	CAVE IN DEPTH
WL	RIG ATV FOREMAN GB/BB	DRILLING METHOD 3 1/4" HSA 0' to 15' (AH)

CLIENT	JOB #	BORING #	SHEET
City of De Pere	1549	8	1 OF 1

PROJECT NAME: 2019 Construction Design

ARCHITECT-ENGINEER:

SITE LOCATION: Various Streets, De Pere, Brown County, Wisconsin

Additional info.: Prosper Street

Station+Offset:

CALIBRATED PENETROMETER TONS/FT2: 1, 2, 3, 4, 5+

ROCK QUALITY DESIGNATION & RECOVERY: RQD% 20%, 40%, 60%, 80%, 100%; REC.%

PLASTIC LIMIT — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT: 10, 20, 30, 40, 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION

SURFACE ELEVATION: Not Indicated

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	BLOWS/6"	STANDARD PENETRATION BLOWS/FT	CALIBRATED PENETROMETER TONS/FT2
0					Concrete Thickness [6"]			
					Gravel Thickness [9"]			
	S-1	SS	18	9	(CL) {A-6} FILL, LEAN CLAY WITH SAND, dark brown, moist, stiff	4 5 5	10	3.5
	S-2	SS	18	6	(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND, brown, moist, stiff to very stiff	4 9 9	18	5.1
5	S-3	SS	18	13		5 8 11	19	4.9
	S-4	SS	18	6		5 8 11	19	5.2
	S-5	SS	18	15		6 7 11	18	5.0
10					END OF BORING @ 10'			
15								
20								
25								
30								

WATER LEVELS — ELEVATION (FT)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL None — WS ☐ — WD ☒	BORING STARTED 11/27/18	
WL(BCR) — WL(ACR) None	BORING COMPLETED 11/27/18	CAVE IN DEPTH
WL	RIG ATV — FOREMAN GB/BB	DRILLING METHOD 3 1/4" HSA 0' to 10' (AH)

CLIENT	JOB #	BORING #	SHEET
City of De Pere	1549	9	1 OF 1

PROJECT NAME: 2019 Construction Design

ARCHITECT-ENGINEER:

SITE LOCATION: Various Streets, De Pere, Brown County, Wisconsin

Additional info.: Prosper Street

Station+Offset:

CALIBRATED PENETROMETER TONS/FT^2 (1, 2, 3, 4, 5+)

ROCK QUALITY DESIGNATION & RECOVERY — RQD% (20%, 40%, 60%, 80%, 100%) — REC.%

PLASTIC LIMIT — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT (10, 20, 30, 40, 50+)

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION

SURFACE ELEVATION: Not Indicated

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	BLOWS/6"	STANDARD PENETRATION BLOWS/FT	CALIBRATED PENETROMETER TONS/FT^2
0					Concrete Thickness [8"]			
					Gravel Thickness [10"]			
	S-1	SS	18	6	(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND AND GRAVEL, brown, moist, stiff	3 4 5	9	2.5
	S-2	SS	18	5		4 4 5	9	2.3
5	S-3	SS	18	9	(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND, dark brown, moist, stiff to very stiff	4 5 9	14	3.7
	S-4	SS	18	15		4 6 8	14	4.3
	S-5	SS	18	3		4 7 9	16	2.3
10					END OF BORING @ 10'			
15								
20								
25								
30								

WATER LEVELS — ELEVATION (FT)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL None — WS ☐ — WD ☒	BORING STARTED 11/27/18	
WL(BCR) — WL(ACR) None	BORING COMPLETED 11/27/18	CAVE IN DEPTH
WL	RIG ATV — FOREMAN GB/BB	DRILLING METHOD 3 1/4" HSA 0' to 10' (AH)

CLIENT	JOB #	BORING #	SHEET
City of De Pere	1549	10	1 OF 1

PROJECT NAME: 2019 Construction Design

ARCHITECT-ENGINEER:

SITE LOCATION: Various Streets, De Pere, Brown County, Wisconsin

Additional info.: Ryan Road

Station+Offset:

CALIBRATED PENETROMETER TONS/FT2: 1, 2, 3, 4, 5+

ROCK QUALITY DESIGNATION & RECOVERY: RQD% 20%, 40%, 60%, 80%, 100%; REC.%

PLASTIC LIMIT — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT: 10, 20, 30, 40, 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION

SURFACE ELEVATION: Not Indicated

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	BLOWS/6"	STANDARD PENETRATION BLOWS/FT	CALIBRATED PENETROMETER TONS/FT2
0					Asphalt Thickness [1"]			
					Gravel Thickness [14"]			
	S-1	SS	18	8	(CL) {A-6} FILL, LEAN CLAY WITH SAND AND GRAVEL, dark brown, moist, medium stiff	5 2 4	6	
	S-2	SS	18	5		2 3 4	7	
5	S-3	SS	18	5	(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND, trace gravel, brown, moist, stiff to very stiff	3 4 5	9	3.0
	S-4	SS	18	5		4 5 8	13	3.4
	S-5	SS	18	5		4 5 8	13	2.4
10	S-6	SS	18	15		6 11 15	26	4.0
	S-7	SS	18	2		3 4 6	10	
15	S-8	SS	24	18		6 8 12 13	20	2.5
					END OF BORING @ 18'			
20								
25								
30								

WATER LEVELS — ELEVATION (FT)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL None — WS ☐ — WD ☒	BORING STARTED 11/27/18	
WL(BCR) — WL(ACR) None	BORING COMPLETED 11/27/18	CAVE IN DEPTH
WL	RIG ATV — FOREMAN GB/BB	DRILLING METHOD 3 1/4" HSA 0' to 18' (AH)

CLIENT	JOB #	BORING #	SHEET
City of De Pere	1549	11	1 OF 1

PROJECT NAME: 2019 Construction Design

ARCHITECT-ENGINEER:

SITE LOCATION: Various Streets, De Pere, Brown County, Wisconsin

Additional info.: Ryan Road

Station+Offset:

CALIBRATED PENETROMETER TONS/FT^2: 1, 2, 3, 4, 5+

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — REC.% ——— 20%, 40%, 60%, 80%, 100%

PLASTIC LIMIT — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT: 10, 20, 30, 40, 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION

SURFACE ELEVATION: Not Indicated

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT	CALIBRATED PENETROMETER TONS/FT^2
0							
	S-1	SS	18	4	4 4 4	8	2.2
	S-2	SS	18	4	4 4 5	9	2.3
5	S-3	SS	18	9	3 4 6	10	3.2
	S-4	SS	18	15	4 4 6	10	2.2
	S-5	SS	18	15	3 4 6	10	3.0
10	S-6	SS	18	12	5 9 11	20	3.8
	S-7	SS	18	9	3 4 7	11	3.2
15	S-8	SS	24	18	6 10 12 14	22	5.3
20							
25							
30							

Asphalt Thickness [2.5"]

Gravel Thickness [14"]

(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND, brown, moist, medium stiff to very stiff

NOTE: 2 inch layer of Silt encountered beneath Gravel Base Course.

END OF BORING @ 17'

WATER LEVELS — ELEVATION (FT)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL None — WS ☐ — WD ☒	BORING STARTED 11/27/18	
WL(BCR) — WL(ACR) None	BORING COMPLETED 11/27/18	CAVE IN DEPTH
WL	RIG ATV — FOREMAN GB/BB	DRILLING METHOD 3 1/4" HSA 0' to 17' (AH)

1002-CPS-1
Division of Industry Services
P. O. Box 2658
Madison, Wisconsin 53701
Scott Walker, Governor
Laura Gutierrez, Secretary

SOIL AND SITE EVALUATION – STORM

In accordance with SPS 382.365, 385, Wis. Adm. Code, and WDNR Standard 1002

Attach a complete site plan on paper not less than 8 ½ x 11 inches in size. Plan must include, but not limited to: vertical and horizontal reference point (BM), direction and percent of slope, scale or dimensions, north arrow, and BM referenced to nearest road

Please print all information

Personal information you provide may be used for secondary purposes [Privacy Law, s. 15.04(1)(m)]

County: Brown
Parcel I.D.: WD-L484
Reviewed by: M King / M Meyer
Date: 12/3/18

Property Owner: R&M Garrity Farm, LLC ETAL

Property Location: Govt. Lot SW¼ SW¼ S6 T22 N R20 E

Property Owner' Mail Address: 3173 Trenton Lane

Lot #: | Block #: | Subd. Name or CSM #: Garrity's Glen South

City: Green Bay | State: WI | Zip Code: 54313-4025 | Phone Number:

☒ City ☐ Village ☐ Town: De Pere | Nearest Road: Adare Court

Drainage area _____ ☐ sq .ft ☐ acres

Test site suitable for (check all that apply): ☐ Site not suitable;

☐ Bioretention; ☐ Subsurface Dispersal System;

☐ Reuse; ☐ Irrigation; ☐ Other _____

Hydraulic Application Test Method

☒ Morphological Evaluation

☐ Double Ring Infiltrometer

☐ Other: (specify) _____

Soil Moisture
Date of soil borings: _____

USDA-NRCS WETS Value:
☐ Dry =1;
☒ Normal = 2;
☐ Wet = 3.

3 #OBS. ☐ Pit ☒ Boring Ground surface elevation. ---ft. Elevation of limiting factor ---ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App Rate Inches/Hr
A	0 – 8	7.5 YR 4/3	No Redox Features	c	0, cdy	fr	C	0 – 5	60 – 70	0.07
C	8 – 60	7.5 YR 4/4	No Redox Features	c	1, f, abk	fi	C	0 – 5	70 – 80	0.07
C	60 – 240	7.5 YR 4/3	No Redox Features	c	1, f, abk	fi	---	0 – 5	70 – 80	0.07

Comments:

4 #OBS. ☐ Pit ☒ Boring Ground surface elevation. ---ft. Elevation of limiting factor 216 ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App Rate Inches/Hr
---	0 – 8	7.5 YR 3/2	No Redox Features	c	0, cdy	fr	C	0 – 5	60 – 70	0.07
---	8 – 36	7.5 YR 4/4	No Redox Features	c	0, cdy	fr	C	0 – 5	70 – 80	0.07
C	36 – 240	7.5 YR 4/3	No Redox Features	c	1, f, abk	fi	---	0 – 5	70 – 80	0.07

Comments:

Name (Please Print): Matthew A. Meyer
Signature: Matthew A. Meyer
Credential Number: 1053414

Address: 1060 Breezewood Lane, Suite 102 Neenah, WI 54956
Date Evaluation Conducted: 12/3/18
Telephone Number: 920-886-1406

SBD-10793 (R01/17)

WDNR
September 2017

APPENDIX C – Supplemental Report Documents

Important Information about This Geotechnical-Engineering Report

Important Information about Your

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical-Engineering Report Is Based on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical-engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical-engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold-prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your GBA-Member Geotechncial Engineer for Additional Assistance

Membership in the GEOPROFESSIONAL BUSINESS ASSOCIATION exposes geotechnical engineers to a wide array of risk confrontaton techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your GBA-member geotechnical engineer for more information.

GEOPROFESSIONAL BUSINESS ASSOCIATION

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

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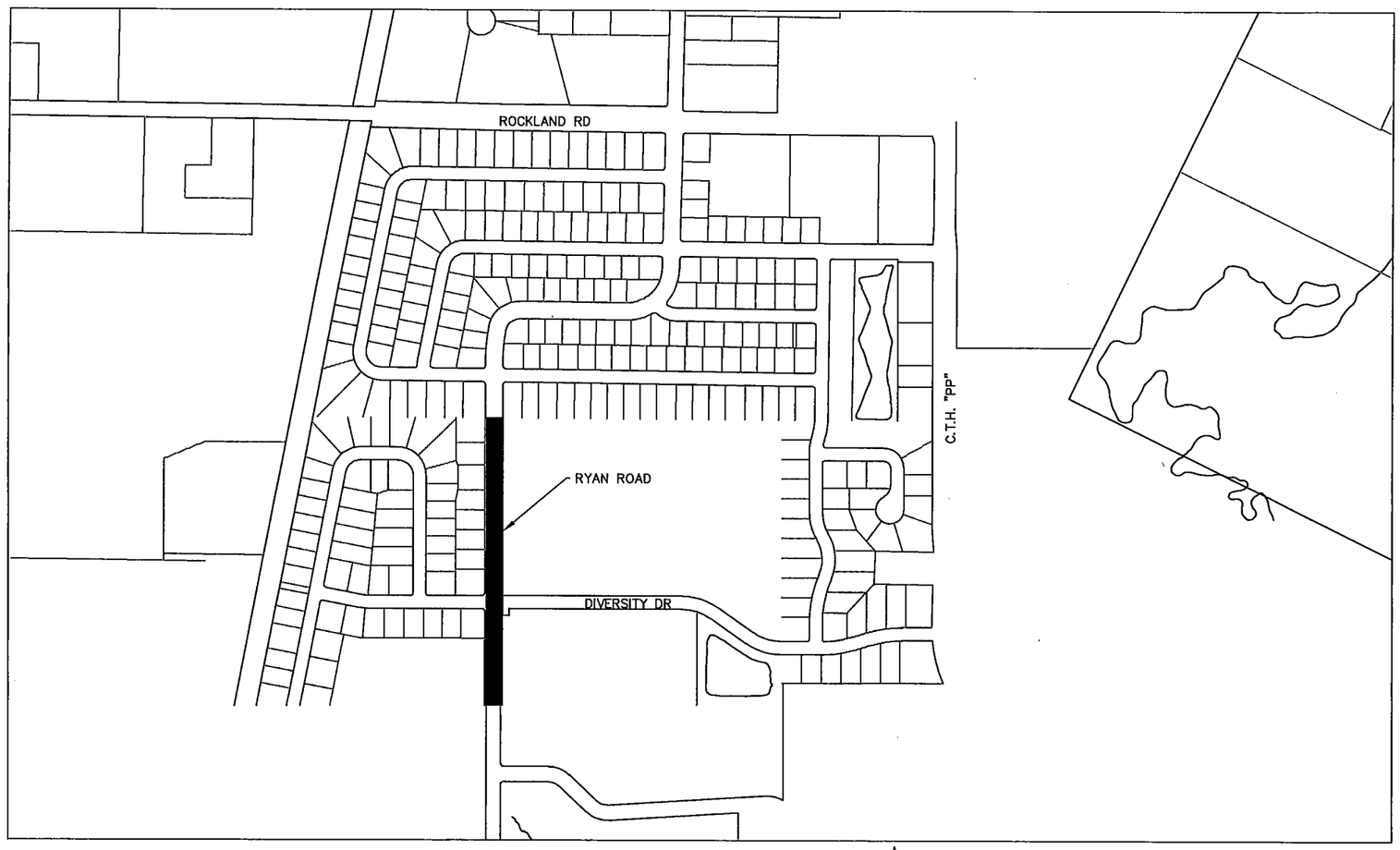
PROJECT# 19-02
RYAN ROAD
STREET RECONSTRUCTION

CITY OF DE PERE

ENGINEER DIVISION
925 S. SIXTH ST
DE PERE, WI, 54115



SITE LOCATION MAP
N.T.S.

SHEET NO.	DESCRIPTION
G001	TITLE SHEET
G002	STANDARD ABBREVIATION & SYMBOLS
G003	TYPICAL SECTIONS
G004	BENCHMARKS AND CONTROL POINTS
C101–C104	RYAN ROAD PLAN AND PROFILES
C301–C318	RYAN ROAD CROSS SECTIONS
C401	EROSION CONTROL PLANS
C402	INTERSECTION GRADES
C403	PAVEMENT MARKINGS
C404	LIFT STATION SITE PLANS
C405	TRAFFIC CONTROL PLANS
C501–C505	CONSTRUCTION DETAILS

CITY OF DE PERE
BOARD OF PUBLIC WORKS

1/18/19 — DATE — CITY ENGINEER
1/18/19 — DATE — CITY ADMINISTRATOR
1/18/19 — DATE — MAYOR

STAMPS:

WISCONSIN
ERIC P. RAKERS
E-30929
GREEN BAY, WI
PROFESSIONAL ENGINEER
1/18/19

LIST OF STANDARD ABBREVIATIONS

ADT	AVERAGE DAILY TRAFFIC
AGGR	AGGREGATE
AH	AHEAD
ASPH	ASPHALT
B/B	BACK TO BACK
BARR	BARRICADE
BC	BACK OF CURB
BK	BACK
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BOW	BACK OF SIDEWALK
BSMT	BASEMENT
C	CUT
C&G	CURB AND GUTTER
C/C	CENTER TO CENTER
CABC	CRUSHED AGGREGATE BASE COURSE
CB	CATCH BASIN
CE	CONSTRUCTION ENTRANCE
CI	CAST IRON PIPE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CNTY	COUNTY
CO	CLEANOUT
CONC	CONCRETE
CONSTR	CONSTRUCTION
CONSTR JT	CONSTRUCTION JOINT
CP	CONTROL POINT
CTH	COUNTY TRUNK HIGHWAY
CTRL JT	CONTROL JOINT
CTV	CABLE TV
CY	CUBIC YARD
D	DEPTH
DIA	DIAMETER
DI	DUCTILE IRON PIPE
DISCH	DISCHARGE
DW	DRIVEWAY
E	EAST (SEE ELEC BELOW)
EA	EACH
EB	EASTBOUND
EBS	EXCAVATION BELOW SUBGRADE
ECS	EXTERNAL CHIMNEY SEAL
EL	ELEVATION
ELEC	ELECTRIC (E WHEN USED IN LINE STYLE)
EMB	EMBANKMENT
ENTR	ENTRANCE
EP	EDGE OF PAVEMENT
EW	ENDWALL
EXC	EXCAVATION
EXIST	EXISTING
F	FILL
F/F	FACE TO FACE
FDN	FOUNDATION
FE	FIELD ENTRANCE
FERT	FERTILIZER
FIN GR	FINISHED GRADE
FL	FLOWLINE
FO	FIBER OPTIC
FOW	FRONT OF SIDEWALK
FT	FOOT
FTG	FOOTING
G	GAS
GV	GAS VALVE
GW	GUY WIRE
HDPE	HIGH DENSITY POLYETHYLENE
HR	HANDICAP RAMP
HSE	HOUSE
HT	HEIGHT
HYD	HYDRANT
I	INTERSECTION ANGLE
ICS	INTERNAL CHIMNEY SEAL
ID	INSIDE DIAMETER
IN	INCH
INL	INLET
INTERS	INTERSECTION
INV	INVERT
IP	IRON PIPE OR PIN
JCT	JUNCTION
L	LENGTH (OF CURVE)
LC	LONG CHORD OF CURVE
LP	LIGHTPOLE
LS	LIFT STATION OR LUMP SUM
LT	LEFT
MAINT	MAINTENANCE
MATL	MATERIAL
MB	MAILBOX
MH	MANHOLE
MP	MARKER POST
N	NORTH
NB	NORTHBOUND
NC	NORMAL CROWN
NE	NORTHEAST
NO	NUMBER
NTS	NOT TO SCALE
NW	NORTHWEST
O	OIL
O&C	OIL AND CHIP
OBLIT	OBLITERATE
OD	OUTSIDE DIAMETER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVE
PCC	PORTLAND CEMENT CONCRETE
PED	PEDESTAL
PLE	PERMANENT LIMITED EASEMENT
PVMT	PAVEMENT
PE	PRIVATE ENTRANCE
PI	POINT OF INTERSECTION
PJF	PRE-FORMED JOINT FILLER
PL	PROPERTY LINE
POC	POINT OF CURVE
POT	POINT ON TANGENT
PP	POLYETHYLENE
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSI	POUND PER SQUARE INCH
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
R	RANGE OR RADIUS
RCP	REINFORCED CONCRETE PIPE
REBAR	REINFORCEMENT BAR
REL	RELOCATE
REM	REMAINING
REQD	REQUIRED
RL	REFERENCE LINE
ROW	RIGHT OF WAY
RP	REFERENCE POINT
RR	RAILROAD
RT	RIGHT
RW	RETAINING WALL
S	SOUTH
SALV	SALVAGE
SAN	SANITARY
SB	SOUTHBOUND
SDWK	SIDEWALK
SE	SOUTHEAST
SF	SQUARE FEET
SHLDR	SHOULDER
SY	SQUARE YARD
SS	STORM SEWER
SSD	STOPPING SIGHT DISTANCE
STA	STATION
STD	STANDARD
STH	STATE HIGHWAY TRUNK
STM	STORM
STP	SEWAGE TREATMENT PLANT
STRUCT	STRUCTURE OR STRUCTURAL
SW	SOUTHWEST
TAN	TANGENT
T	TOWN (T WHEN USED FOR TELEPHONE LINE)
TEL	TELEPHONE
TEMP	TEMPORARY
TLE	TEMPORARY LIMITED EASEMENT
TOC	TOP OF CURB
TOW	TOP OF WATER
TRANS	TRANSITION
TYP	TYPICAL
UG	UNDERGROUND
USH	US HIGHWAY
VC	VERTICAL CURVE
VERT	VERTICAL
VOL	VOLUME
VPC	VERTICAL POINT OF CURVATURE
VPI	VERTICAL POINT OF INTERSECTION
VPRC	VERTICAL POINT OF REVERSE CURVE
VPT	VERTICAL POINT OF TANGENCY
W	WEST
WB	WESTBOUND
WM	WATERMAIN
WSO	WATER SHUTOFF VALVE
WTP	WATER TREATMENT PLANT
WV	WATER VALVE
WWTP	WASTE WATER TREATMENT PLANT
YD	YARD

MAPPING & TOPOGRAPHY SYMBOLOGY

DESCRIPTION	SYMBOL EXISTING	SYMBOL PROPOSED
BENCHMARK		
BUSH		
CATCH BASIN		
CABLE TV BOX	CTV	
CONTROL POINT		
ELECTRICAL BOX	E	
EROSION CONTROL – INELT		
FIELD INLET		
GAS VALVE	GV	
HEDGE		
HYDRANT		
IRON PIPE		
LIGHTPOLE		
MAILBOX	MB	
MANHOLE ELECTRIC	E	
MANHOLE SANITARY	SS	SS
MANHOLE STORM	ST	ST
MONTORING WELL	MW	
POWER POLE		
SIGN BASE		
SIGN		
SIGNAL HEAD, TRAFFIC SIGNAL STANDARD, PEDESTAL BASE		
SIGNAL HEAD, TRAFFIC SIGNAL POLE, TRANSFORMER BASE		(xx)
STUMP		
TELEPHONE MANHOLE	TEL	
TELEPHONE PEDESTAL	TEL	
TREE		
WELL	W	
WATER SERVICE VALVE		
BUTTERFLY WATER VALVE		
WATER VALVE		

GENERAL CONSTRUCTION NOTES:

1. ALL ELEVATIONS ARE REFERENCED TO NAVD 88.
2. THE WORK UNDER THIS CONTRACT SHALL BE IN ACCORDANCE WITH THE CITY OF DE PERE, CURRENT CONSTRUCTION SPECIFICATIONS AND THESE SPECIAL PROVISIONS AND PLANS, AND THE LATEST ADDITION OF THE WISCONSIN DEPARTMENT OF TRANSPORTATION STANDARDS SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION SPECIFICATIONS, LATEST EDITION, WHERE REFERENCED IN THE CITY SPECIFICATIONS.
3. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO CONSTRUCTION AND SHALL CONFIRM TO THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES CONSTRUCTION SITE EROSION CONTROL AND TECHNICAL STANDARDS.
4. EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING EXACT LOCATIONS AND ELEVATIONS OF ALL UTILITIES. WHETHER SHOWN OR NOT, FROM THE OWNERS OF THE RESPECTIVE UTILITIES. ALL UTILITIES OWNERS SHALL BE NOTIFIED BY THE CONTRACTOR 72 HOURS PRIOR TO EXCAVATION.

MAPPING & TOPOGRAPHY SYMBOLOGY

DESCRIPTION	SYMBOL
PLAN	
EXISTING SANITARY SEWER LINE	(SIZE AND MATERIAL) San
PROPOSED SANITARY SEWER LINE	100'–8" PVC SAN San
EXISTING STORM SEWER LINE	(SIZE AND MATERIAL) ST
PROPOSED STORM SEWER LINE	100'–8" PVC STM ST
EXISTING WATER MAIN LINE	(SIZE AND MATERIAL) W
PROPOSED WATER MAIN LINE	100'–8" PVC WM (TEE–BEND) W
EXISTING ELECTRICAL LINE	E
EXISTING GAS MAIN LINE	G
EXISTING TELEPHONE LINE	T
EXISTING CABLE TV LINE	TV
EXISTING SANITARY LATERAL	San
EXISTING WATER SERVICE	W
RIGHT OF WAY	ROW
PROPERTY LINE	PL
SILT FENCE EROSION CONTROL	
EXISTING FIBER OPTIC	FO
EXISTING MAJOR CONTOUR	615
EXISTING MINOR CONTOUR	612
PROPOSED MAJOR CONTOUR	615
PROPOSED MINOR CONTOUR	612
PROFILE	
EXISTING SANITARY SEWER LINE	(SIZE AND MATERIAL)
PROPOSED SANITARY SEWER LINE	100'–8" PVC SAN @ 0.40%
EXISTING STORM SEWER LINE	(SIZE AND MATERIAL)
PROPOSED STORM SEWER LINE	100'–8" PVC STM @ 1.0%
EXISTING WATER MAIN LINE	(SIZE AND MATERIAL)
PROPOSED WATER MAIN LINE	PROPOSE 8" PVC WM

PATCH SYMBOLS

ASPHALTIC CONCRETE PAVEMENT

CRUSHED AGGREGATE BASE COURSE

PORTLAND CEMENT CONCRETE

CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115

OFFICE 920–339–4060 FAX 920–339–4071

STANDARD ABBREVIATIONS AND SYMBOLS

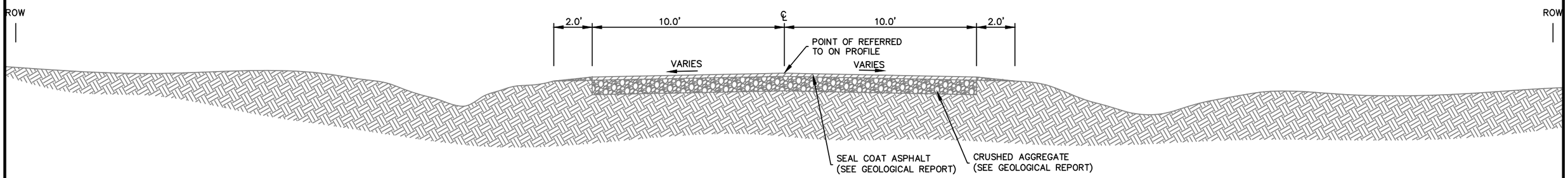
NAME: RYAN ROAD STREET RECONSTRUCTION

PROJECT # 19–02

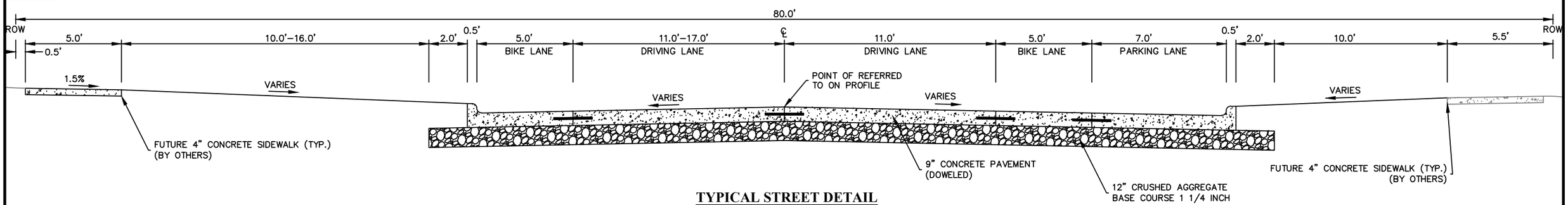
	BY	DATE
SURVEYED		
DRAWN	KAD	10–2018
DESIGNED		
CHECKED		

REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS

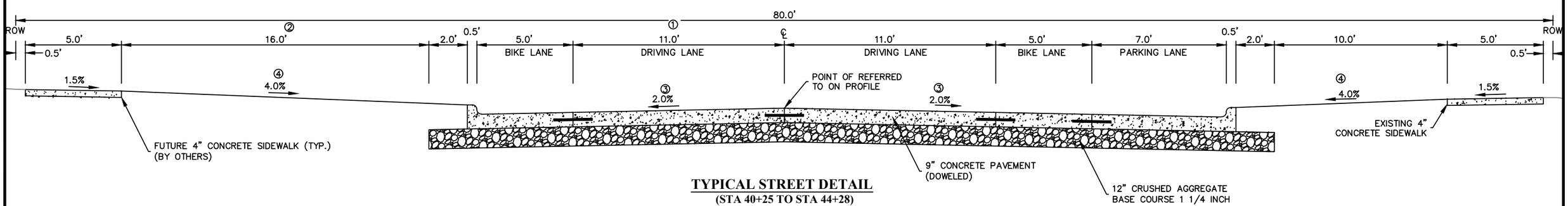
PAGE NO. G002



EXISTING TYPICAL STREET DETAIL



TYPICAL STREET DETAIL
(STA 45+12 TO STA 53+11)



TYPICAL STREET DETAIL
(STA 40+25 TO STA 44+28)

① LANE WIDTH CHANGES AS FOLLOWS:

LEFT SIDE LANE
STATION 40+25 TO 52+50 – 11.0'
STATION 52+50 TO 53+11 – 11.0' TO 17.0'

RIGHT SIDE LANE
STATION 40+25 TO 53+11 – 11.0'

② TERRACE WIDTH CHANGES AS FOLLOWS:

LEFT SIDE LANE
STATION 40+25 TO 52+50 – 16.0'
STATION 52+50 TO 53+11 – 16.0' TO 10.0'

RIGHT SIDE LANE
STATION 40+25 TO 53+11 – 10.0'

③ LANE CROSS SLOPE VARIES THROUGH PROJECT AS FOLLOWS:

LEFT SIDE
STATION 40+25 TO 44+29 – 2.00%
STATION 44+29 TO 45+12 – INTERSECTION
STATION 45+12 TO 48+75 – 2.00%
STATION 48+75 TO 49+00 – 2.00% TO 1.00%
STATION 49+00 TO 52+00 – 1.00%
STATION 52+25 TO 52+50 – 1.00% TO 2.00%
STATION 52+50 TO 53+11 – 2.00%

RIGHT SIDE
STATION 40+25 TO 44+29 – 3.00%
STATION 44+29 TO 45+12 – INTERSECTION
STATION 45+12 TO 48+75 – 2.00%
STATION 48+75 TO 49+00 – 2.00% TO 3.00%
STATION 49+00 TO 52+00 – 3.00%
STATION 52+25 TO 52+50 – 3.00% TO 2.00%
STATION 52+50 TO 53+11 – 2.00%

④ TERRACE CROSS SLOPE VARIES THROUGH PROJECT AS FOLLOWS:

LEFT SIDE
STATION 40+25 TO 48+75 – 4.00%
STATION 48+75 TO 49+00 – 4.00% TO 6.00%
STATION 49+00 TO 52+00 – 6.00% OR VARIABLE
STATION 52+25 TO 52+50 – 6.00% TO 4.00%
STATION 52+50 TO 53+11 – 4.00%

RIGHT SIDE
STATION 40+25 TO 52+00 – 2.00%
STATION 52+25 TO 52+50 – 2.00% TO 4.00%
STATION 52+50 TO 53+11 – 4.00%

2' 0 2.5' 5' 0

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OFFICE 920–339–4061 FAX 920–339–4071

RYAN ROAD
TYPICAL SECTIONS

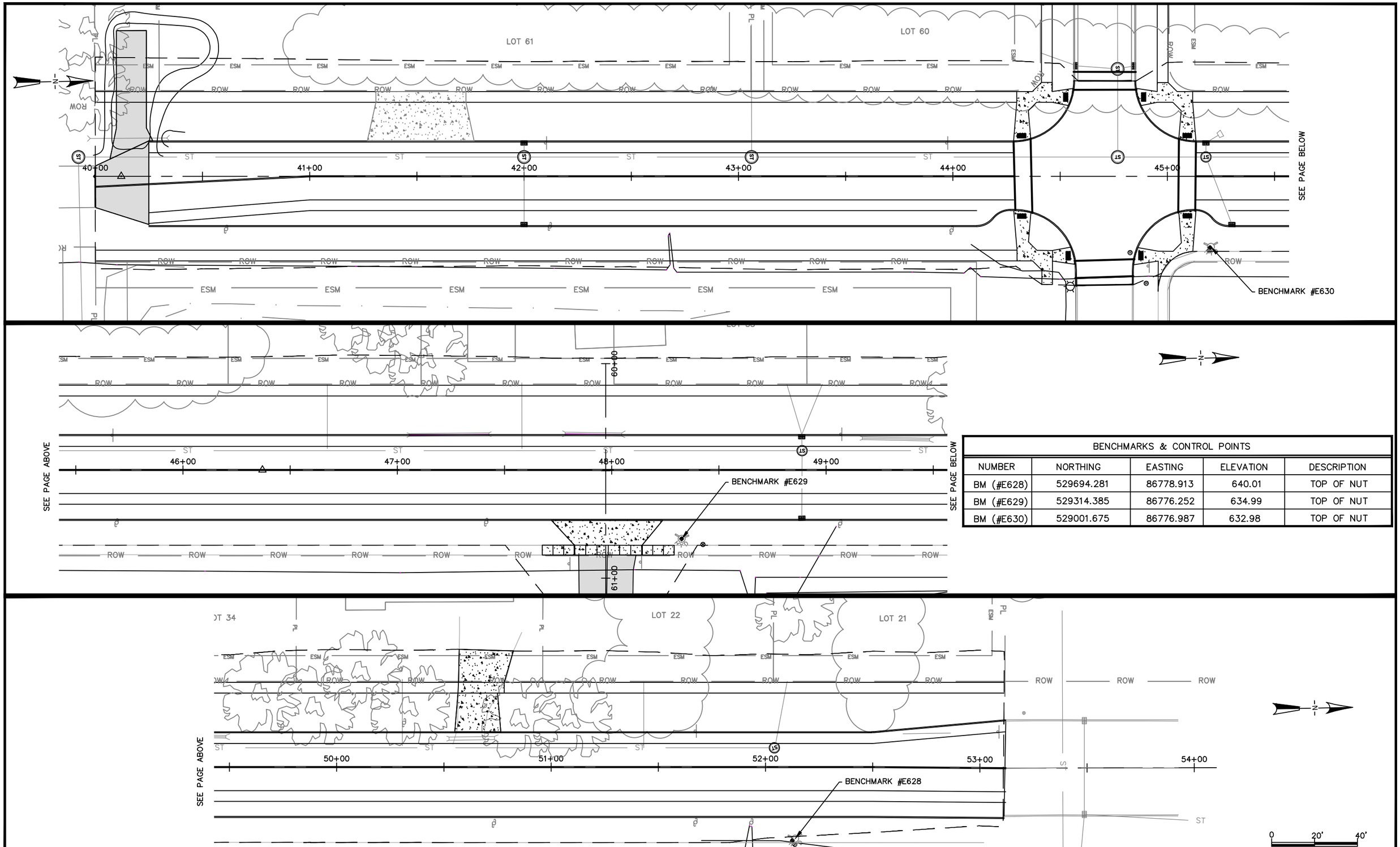
NAME: RYAN ROAD STREET RECONSTRUCTION
PROJECT # 19–02

	BY	DATE
SURVEYED	SRL	4–2018
DRAWN	SRL	9–2018
DESIGNED	SRL	9–2018
CHECKED	EPR	11–2018

REVISIONS / ISSUES

NO.	DATE	BY	REMARKS

PAGE NO. G003



BENCHMARKS & CONTROL POINTS				
NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
BM (#E628)	529694.281	86778.913	640.01	TOP OF NUT
BM (#E629)	529314.385	86776.252	634.99	TOP OF NUT
BM (#E630)	529001.675	86776.987	632.98	TOP OF NUT

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OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD

CONTROL POINTS AND BENCHMARKS

NAME: RYAN ROAD STREET RECONSTRUCTION

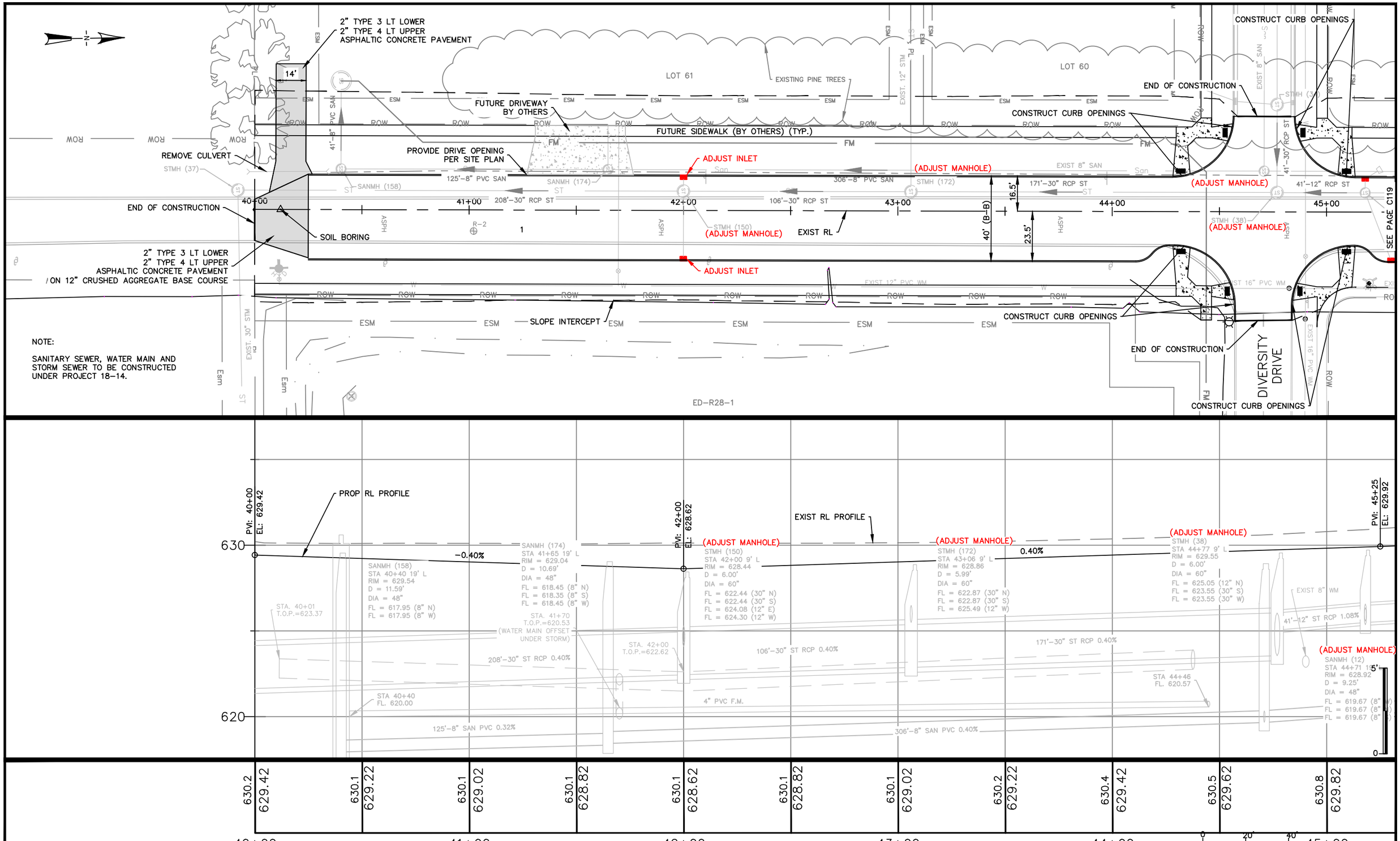
PROJECT # 19-02

	BY	DATE
SURVEYED	MAU	4-2018
DRAWN	SRL	10-2018
DESIGNED	SRL	10-2018
CHECKED	EPR	10-2018

REVISIONS / ISSUES

NO.	DATE	BY	REMARKS

PAGE NO. G004



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OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD
450' S/O DIVERSITY DR TO DIVERSITY DR
STREET

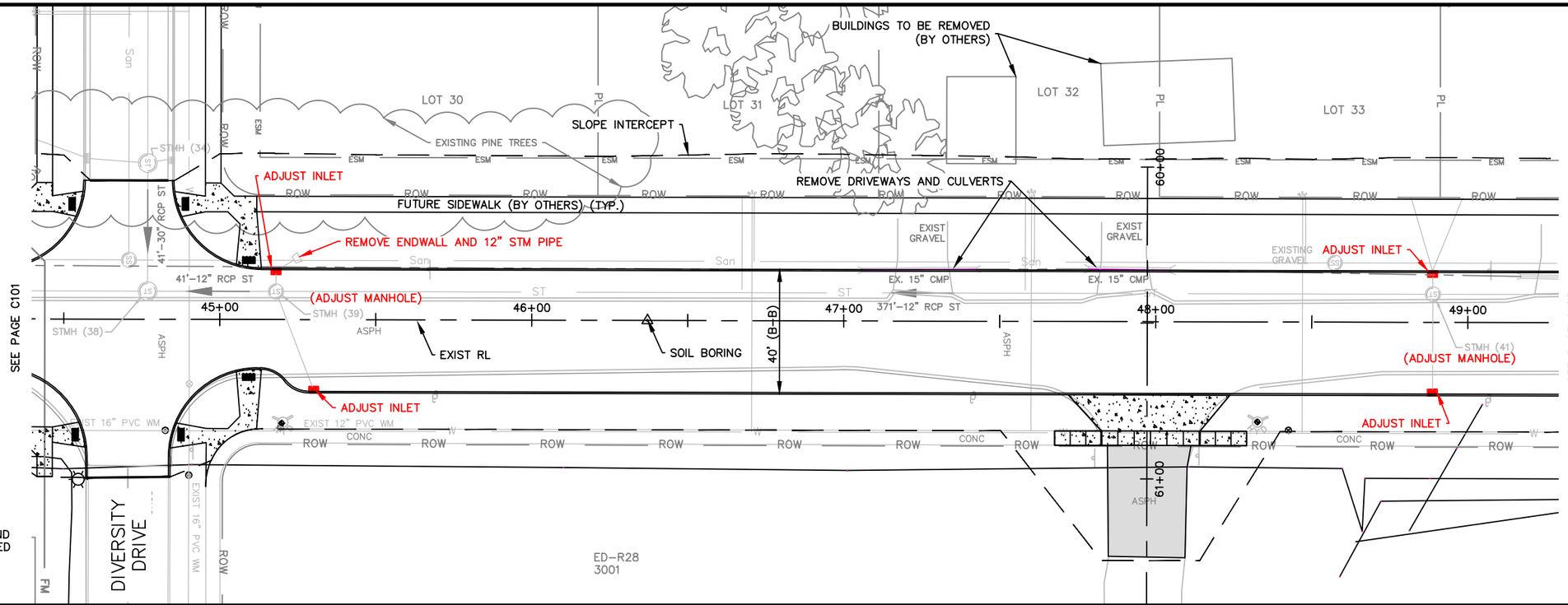
NAME: RYAN ROAD STREET RECONSTRUCTION
PROJECT # 19-02

	BY	DATE
SURVEYED	JML	03-2018
DRAWN	SRL	10-2018
DESIGNED	SRL	10-2018
CHECKED	EPR	12-2018

REVISIONS / ISSUES

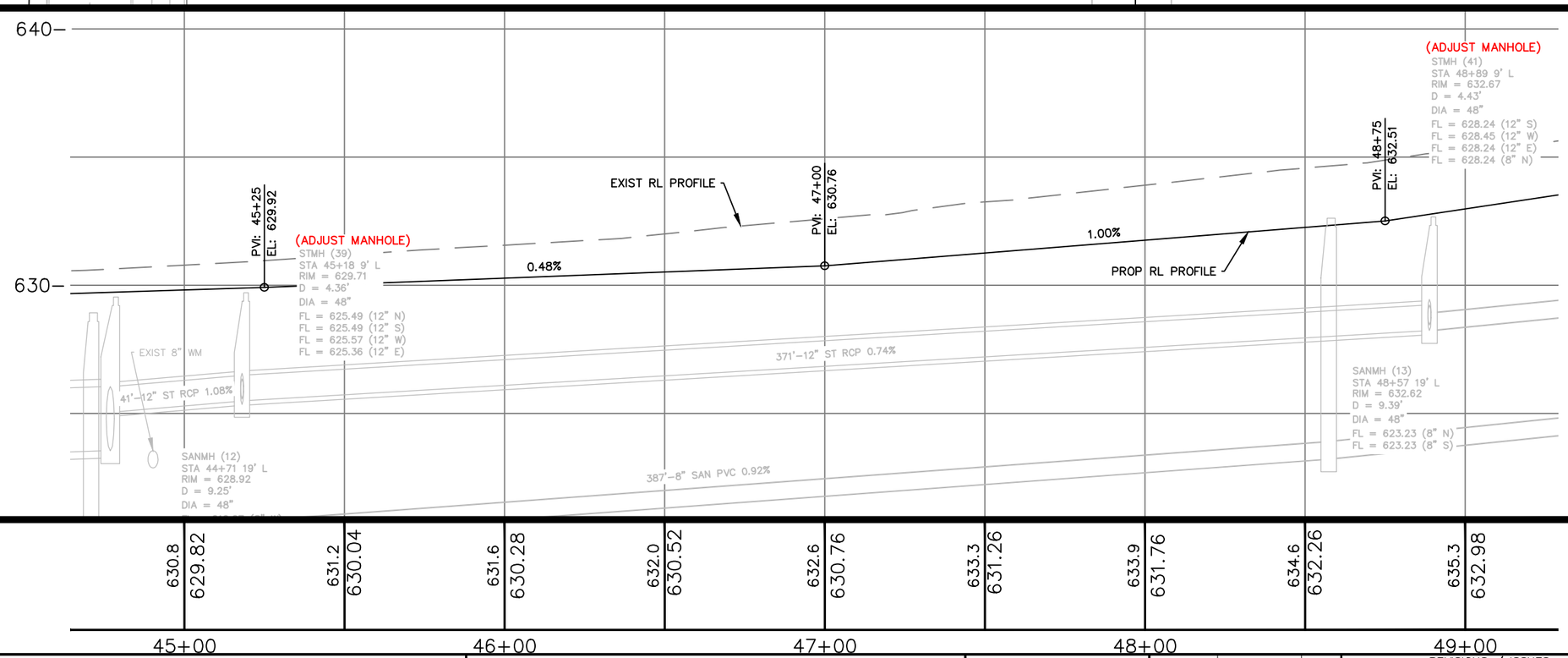
NO.	DATE	BY	REMARKS

PAGE NO. C101



NOTE:

SANITARY SEWER, WATER MAIN AND STORM SEWER TO BE CONSTRUCTED UNDER PROJECT 18-14.



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RYAN ROAD

DIVERSITY DR TO 400' N/O DIVERSITY DR

STREET

NAME: RYAN ROAD STREET RECONSTRUCTION

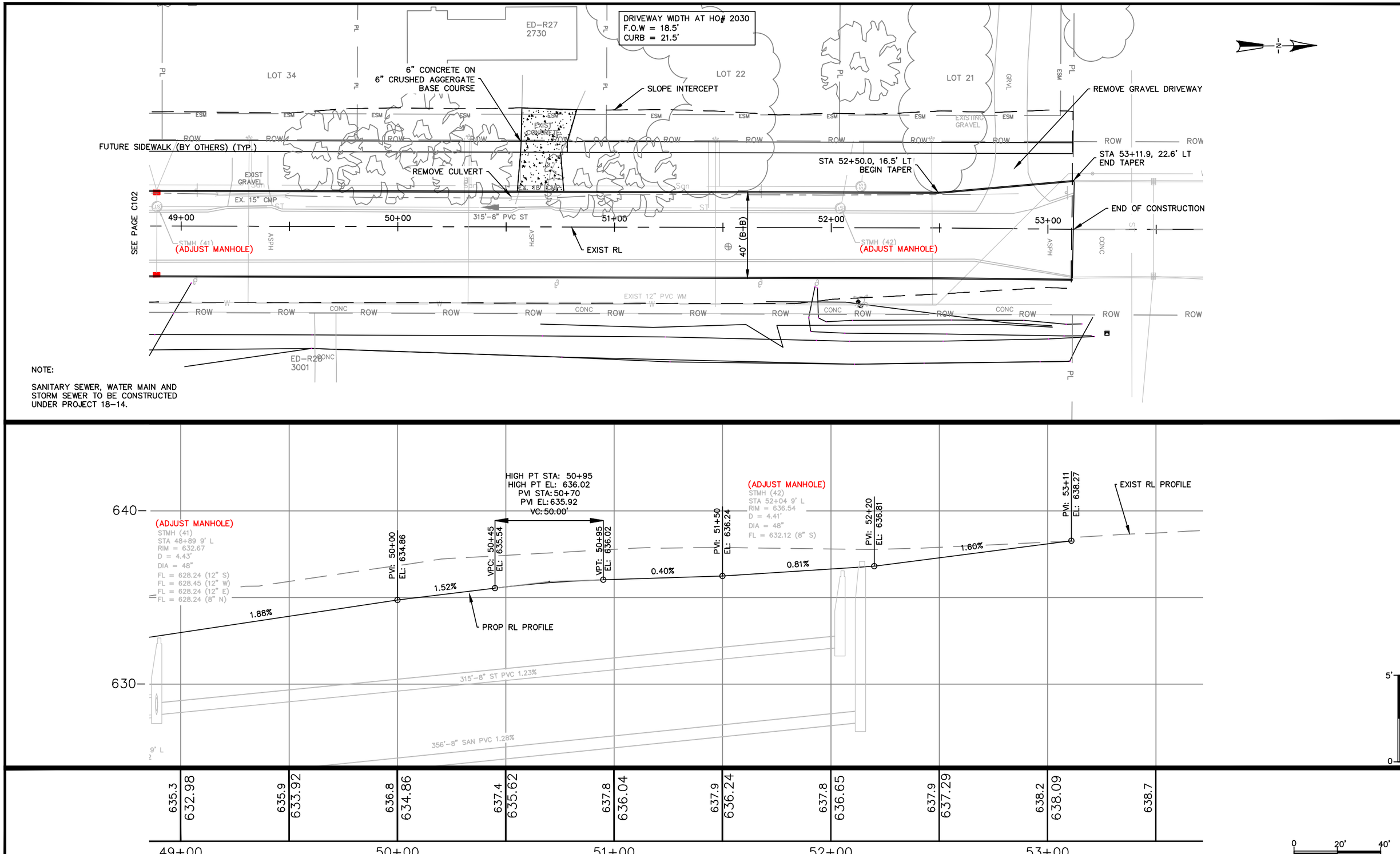
PROJECT # 19-02

	BY	DATE
SURVEYED	JML	03-2018
DRAWN	SRL	10-2018
DESIGNED	SRL	10-2018
CHECKED	EPR	12-2018

REVISIONS / ISSUES

NO.	DATE	BY	REMARKS
1	9/2018	SRL	ROAD PROFILE & STORM SEWER CHANGES

PAGE NO. C102



NOTE:

SANITARY SEWER, WATER MAIN AND STORM SEWER TO BE CONSTRUCTED UNDER PROJECT 18-14.

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RYAN ROAD

400' N/O DIVERSITY DR TO 800' N/O DIVERSITY DR

STREET

NAME: RYAN ROAD STREET RECONSTRUCTION

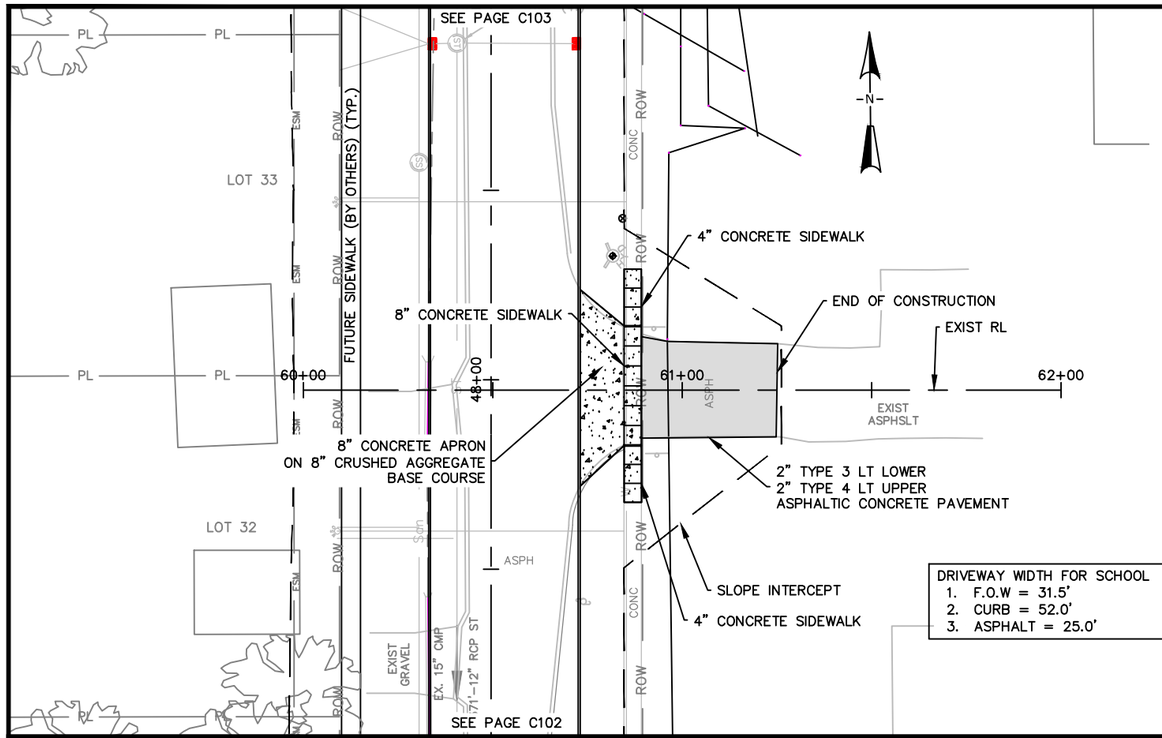
PROJECT # 19-02

	BY	DATE
SURVEYED	JML	03-2018
DRAWN	SRL	10-2018
DESIGNED	SRL	10-2018
CHECKED	EPR	12-2018

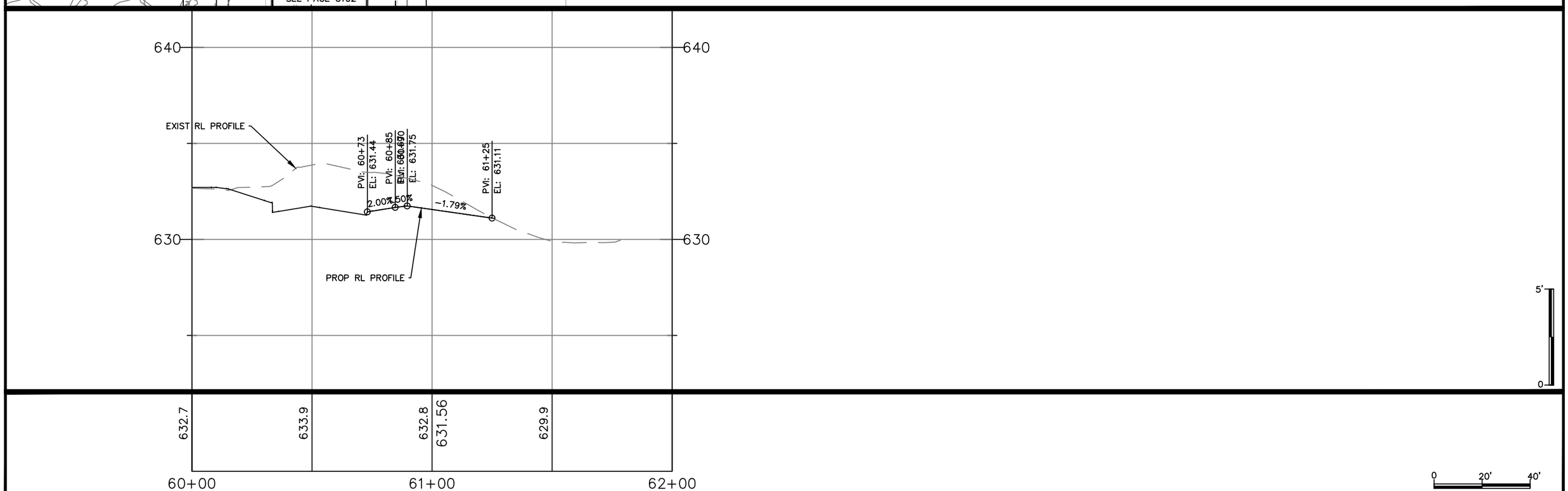
REVISIONS / ISSUES

NO.	DATE	BY	REMARKS

PAGE NO. C103



DRIVEWAY WIDTH FOR SCHOOL
1. F.O.W = 31.5'
2. CURB = 52.0'
3. ASPHALT = 25.0'



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RYAN ROAD
SCHOOL DRIVEWAY
STREET

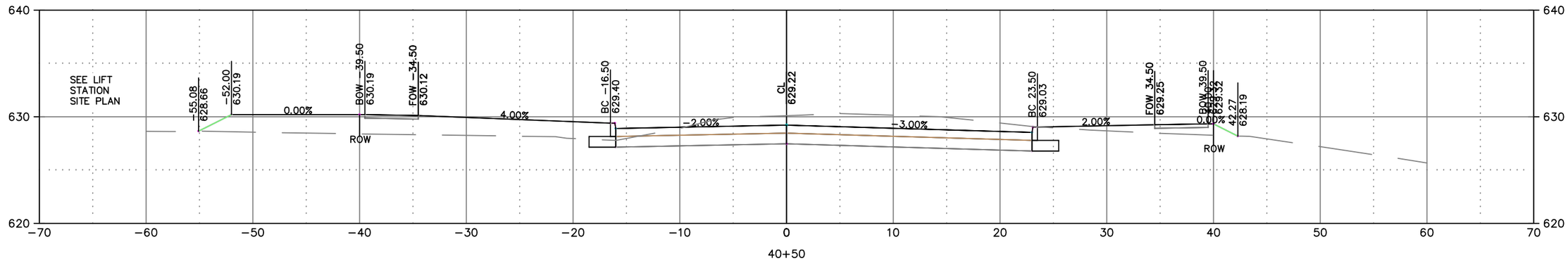
NAME: RYAN ROAD STREET RECONSTRUCTION
PROJECT # 19-02

	BY	DATE
SURVEYED	JML	03-2018
DRAWN	SRL	10-2018
DESIGNED	SRL	10-2018
CHECKED	EPR	12-2018

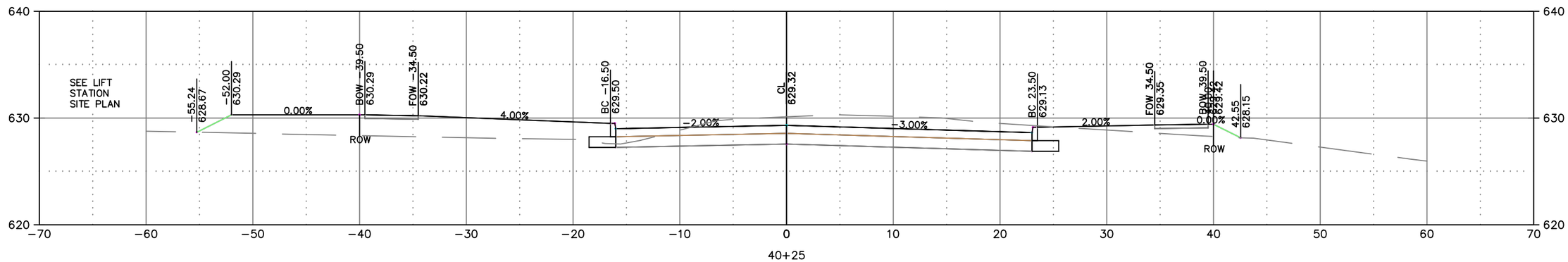
REVISIONS / ISSUES

NO.	DATE	BY	REMARKS

PAGE NO. C104

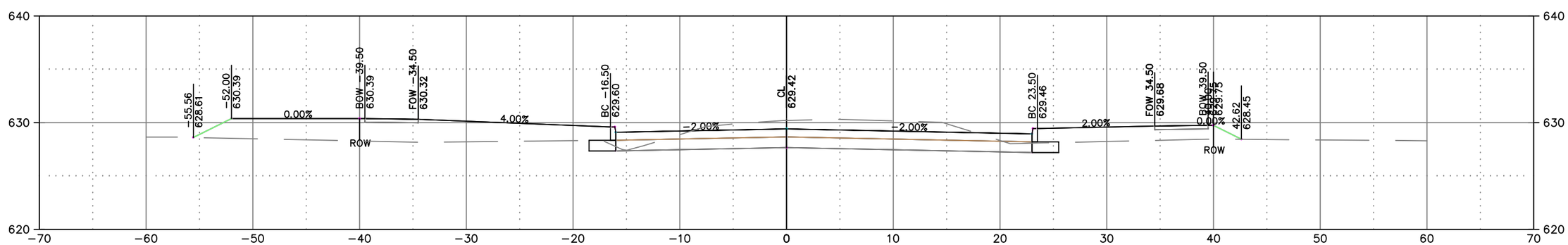


40+50



40+25

DRIVEWAY LEFT



40+00

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RYAN ROAD

CROSS SECTIONS

NAME: RYAN ROAD STREET RECONSTRUCTION

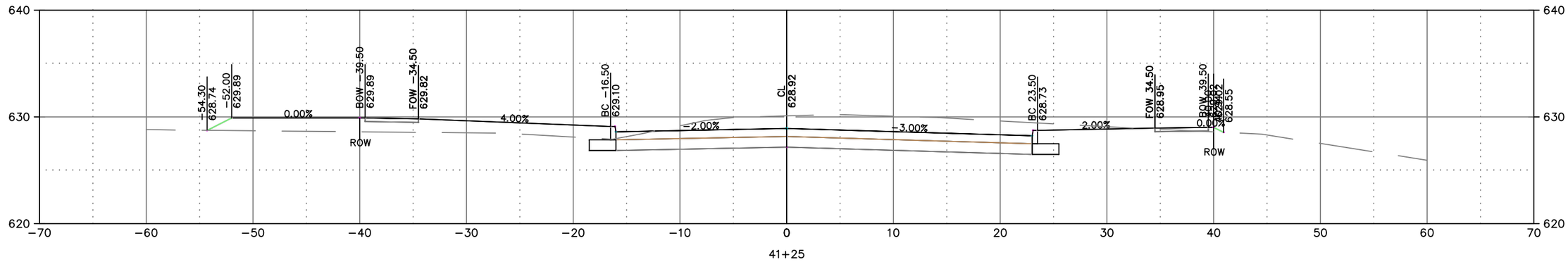
PROJECT # 19-02

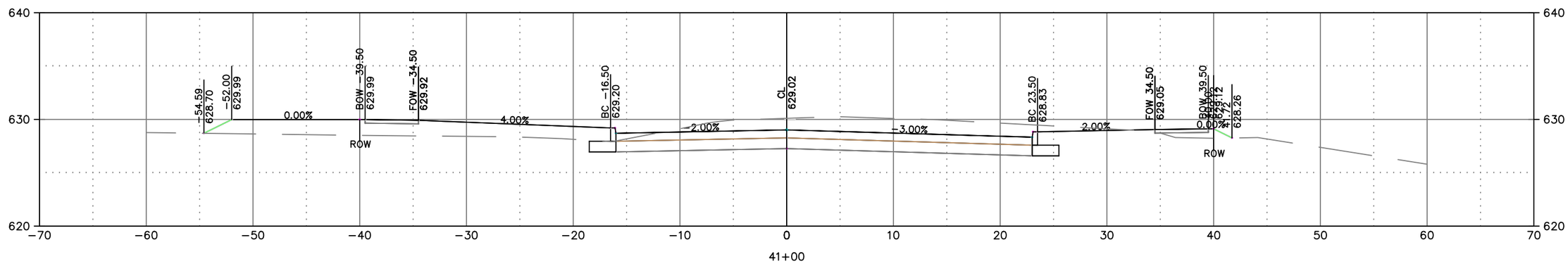
	BY	DATE
SURVEYED	MAU	03-2018
DRAWN	SRL	11-2018
DESIGNED	SRL	11-2018
CHECKED	EPR	11-2018

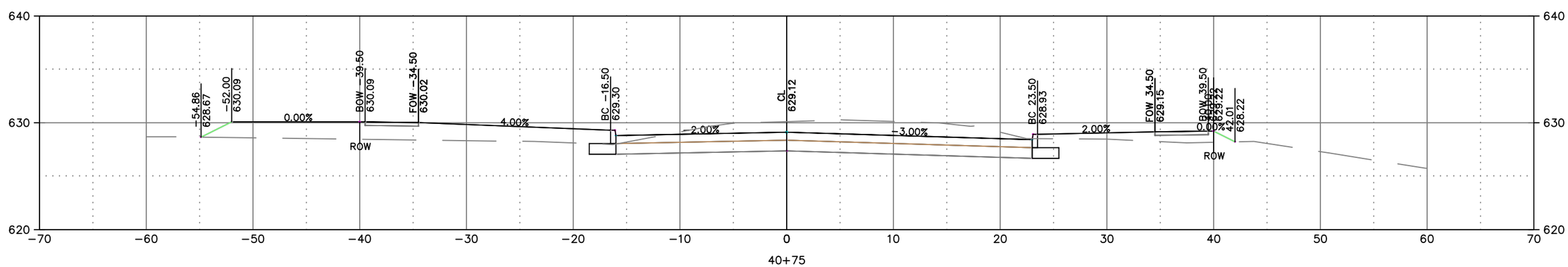
REVISIONS / ISSUES

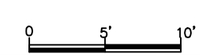
NO.	DATE	BY	REMARKS

PAGE NO. C301









CITY OF DE PERE

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OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD

CROSS SECTIONS

NAME: RYAN ROAD STREET RECONSTRUCTION

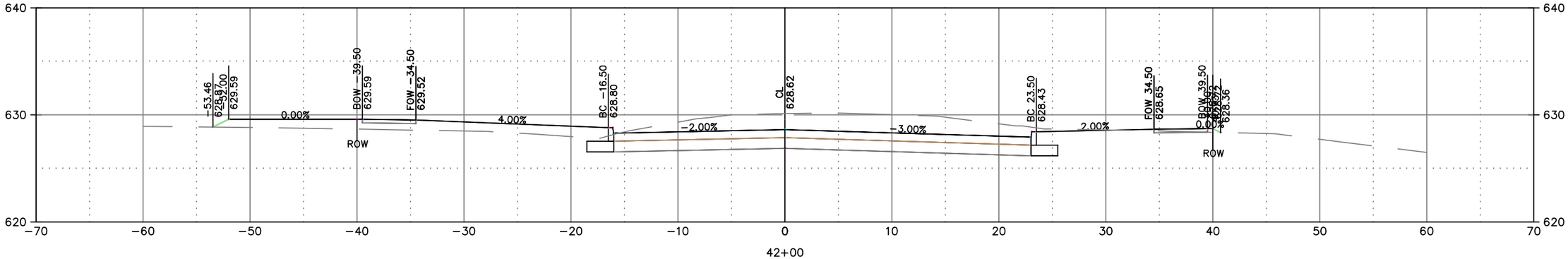
PROJECT # 19-02

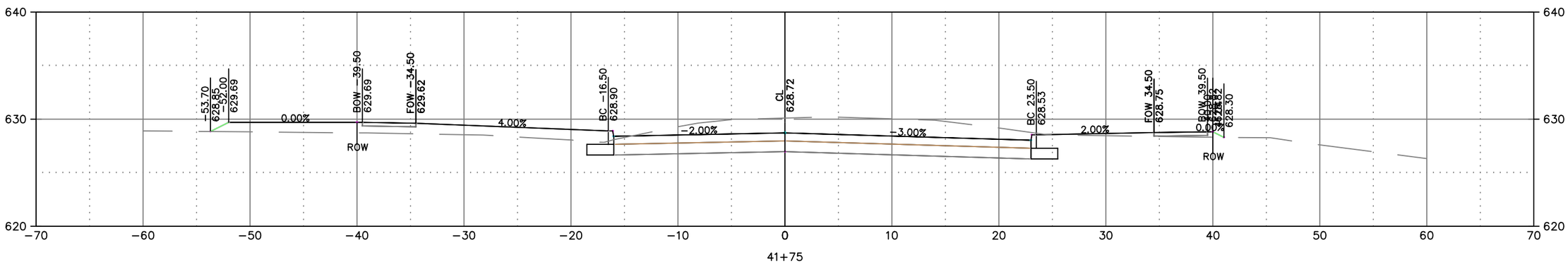
	BY	DATE
SURVEYED	MAU	03-2018
DRAWN	SRL	11-2018
DESIGNED	SRL	11-2018
CHECKED	EPR	11-2018

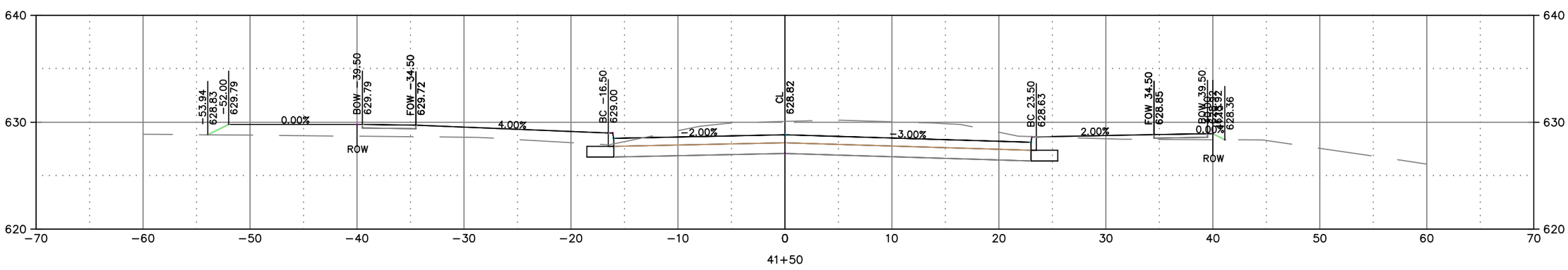
REVISIONS / ISSUES

NO.	DATE	BY	REMARKS

PAGE NO. C302







CITY OF DE PERE

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OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD

CROSS SECTIONS

NAME: RYAN ROAD STREET RECONSTRUCTION

PROJECT # 19-02

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DRAWN	SRL	11-2018
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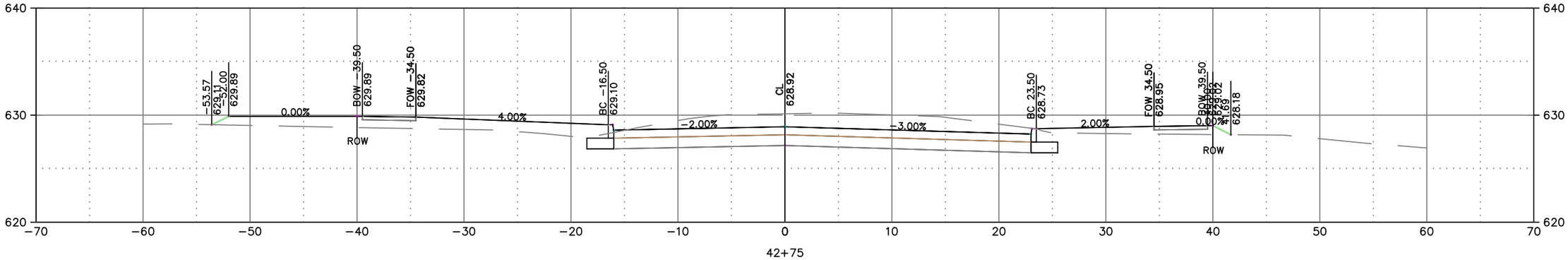
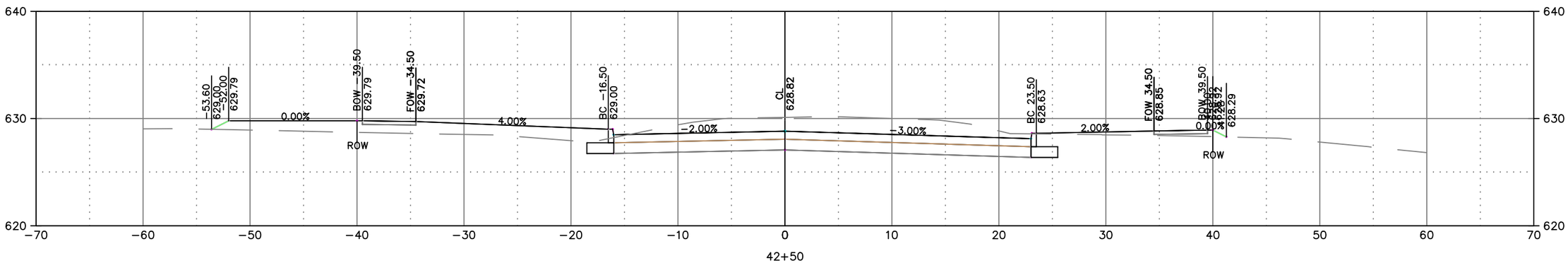
CHECKED	EPR	11-2018

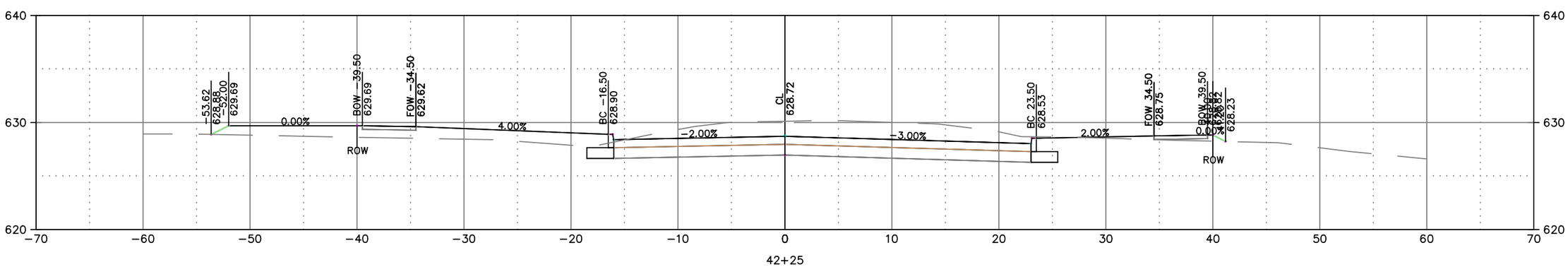
REVISIONS / ISSUES

NO.	DATE	BY	REMARKS

PAGE NO. C303







CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115

OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD

CROSS SECTIONS

NAME: RYAN ROAD STREET RECONSTRUCTION

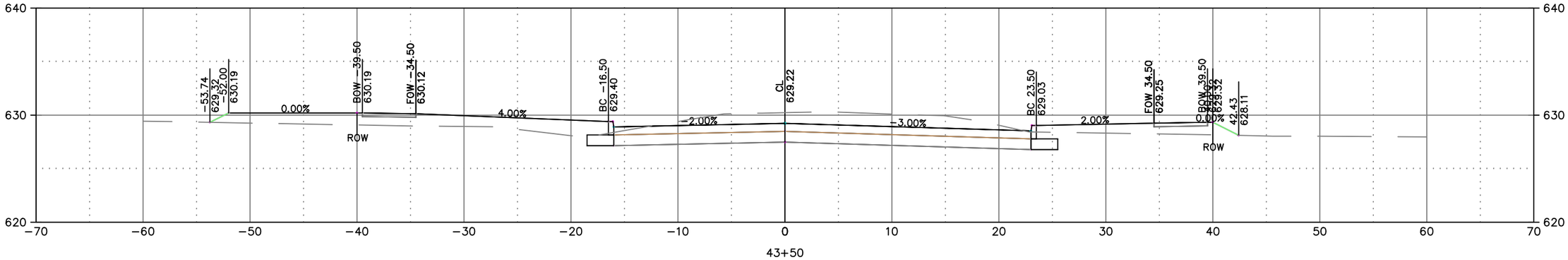
PROJECT # 19-02

	BY	DATE
SURVEYED	MAU	03-2018
DRAWN	SRL	11-2018
DESIGNED	SRL	11-2018
CHECKED	EPR	11-2018

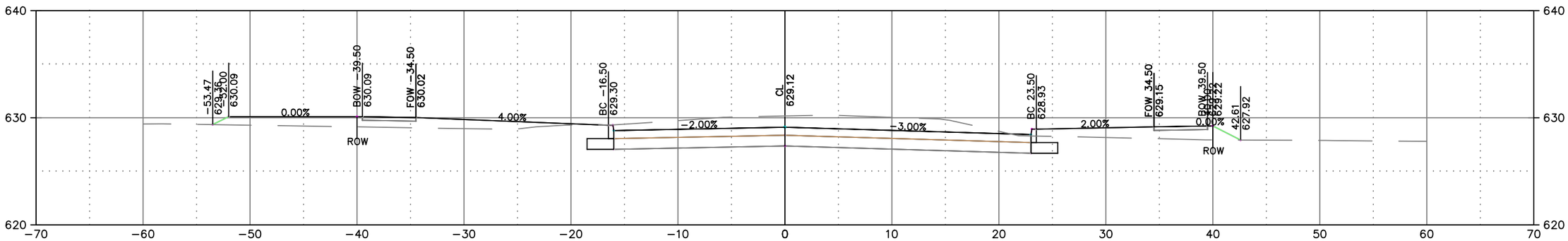
REVISIONS / ISSUES

NO.	DATE	BY	REMARKS

PAGE NO. C304



43+50



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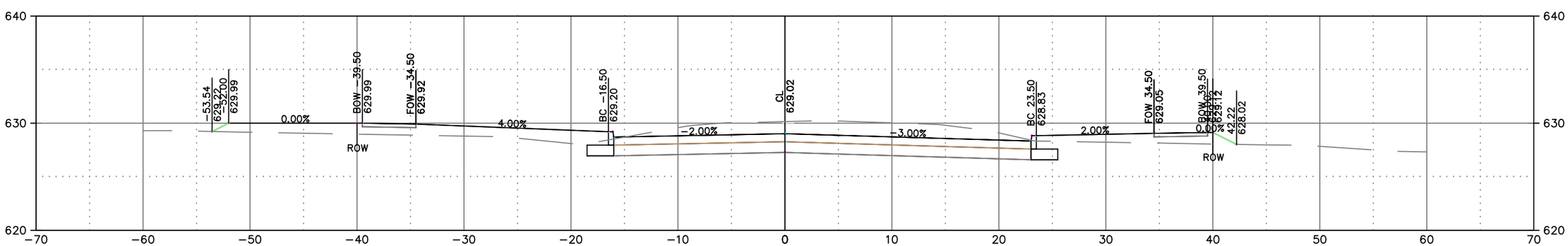


43+00

10'
0

0 5' 10'

CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD
CROSS SECTIONS

NAME:
RYAN ROAD
STREET RECONSTRUCTION

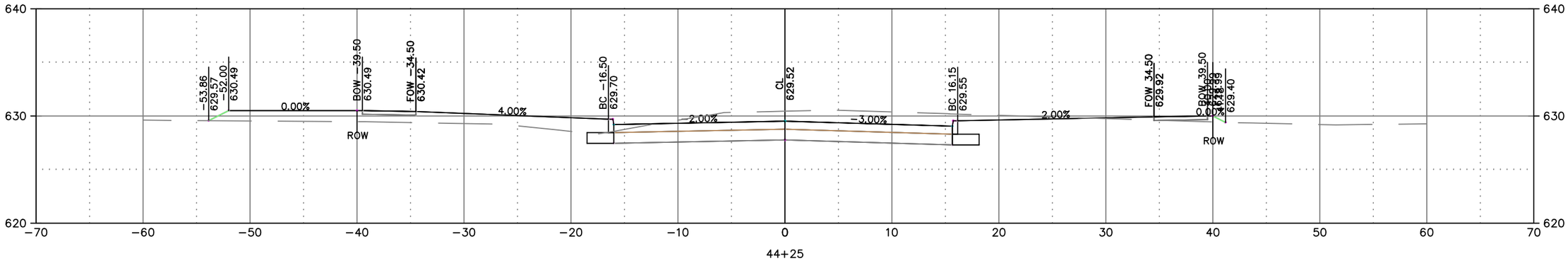
PROJECT #
19-02

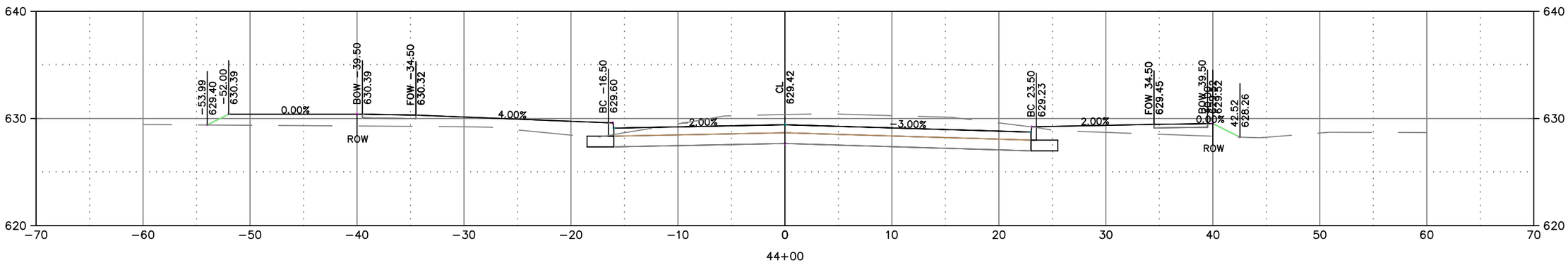
	BY	DATE
SURVEYED	MAU	03-2018
DRAWN	SRL	11-2018
DESIGNED	SRL	11-2018
CHECKED	EPR	11-2018

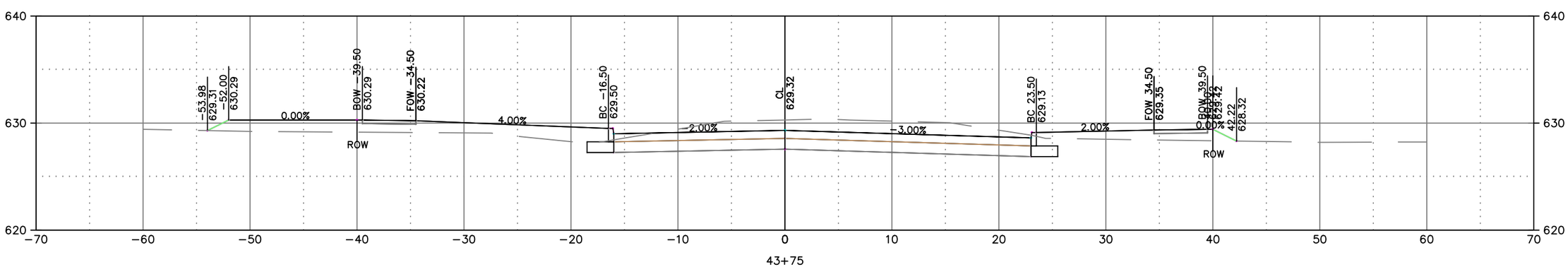
REVISIONS / ISSUES

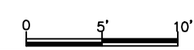
NO.	DATE	BY	REMARKS

PAGE NO.
C305









CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115

OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD

CROSS SECTIONS

NAME: RYAN ROAD STREET RECONSTRUCTION

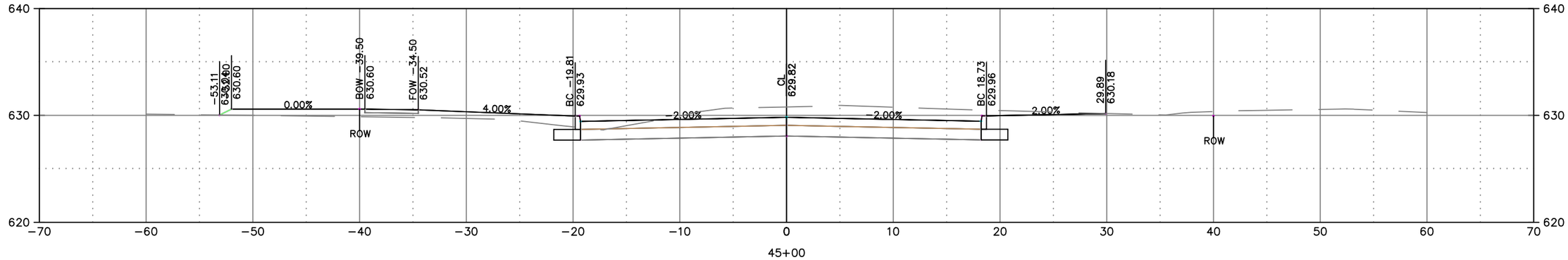
PROJECT # 19-02

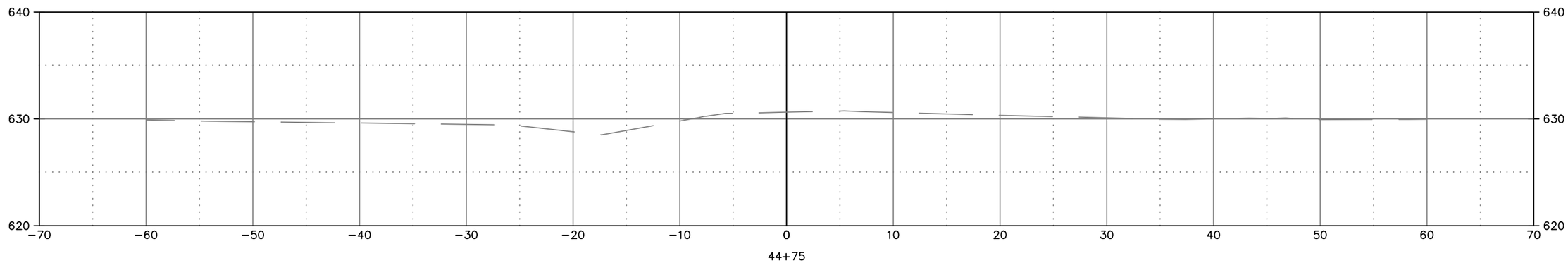
	BY	DATE
SURVEYED	MAU	03-2018
DRAWN	SRL	11-2018
DESIGNED	SRL	11-2018
CHECKED	EPR	11-2018

REVISIONS / ISSUES

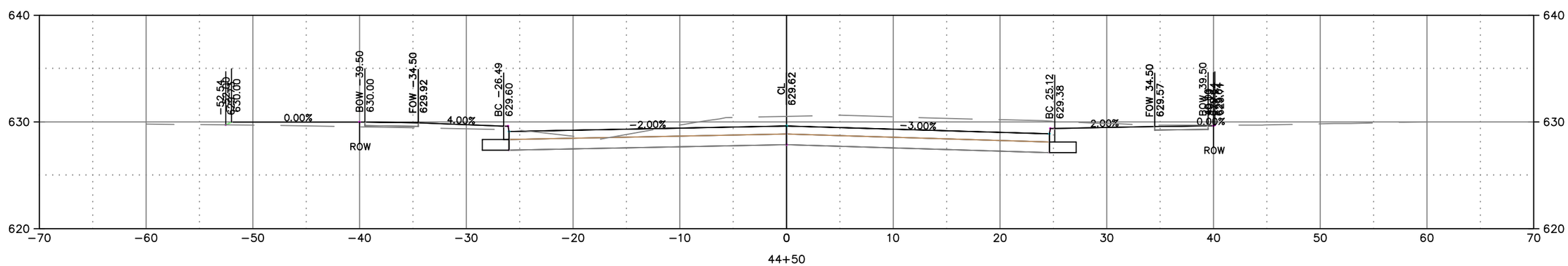
NO.	DATE	BY	REMARKS

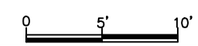
PAGE NO. C306





INTESECTION DIVERSITY DRIVE





CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD
CROSS SECTIONS

NAME: RYAN ROAD STREET RECONSTRUCTION
PROJECT # 19-02

	BY	DATE
SURVEYED	MAU	03-2018
DRAWN	SRL	11-2018
DESIGNED	SRL	11-2018
CHECKED	EPR	11-2018

REVISIONS / ISSUES

NO.	DATE	BY	REMARKS

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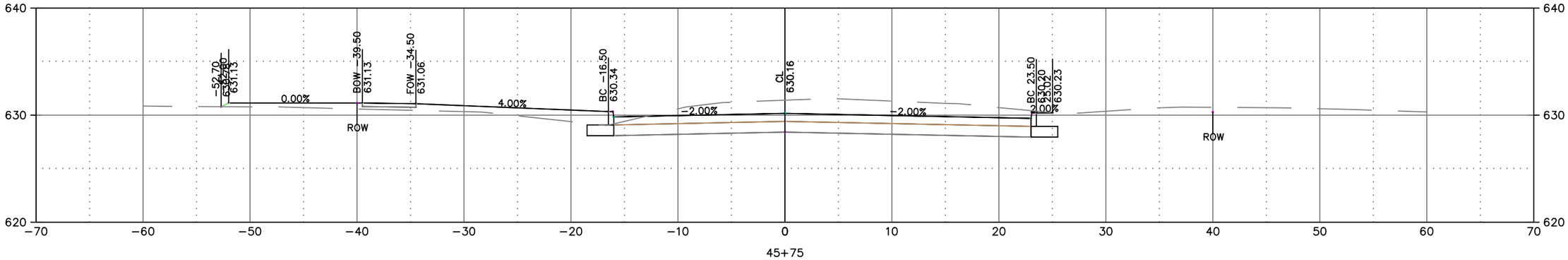

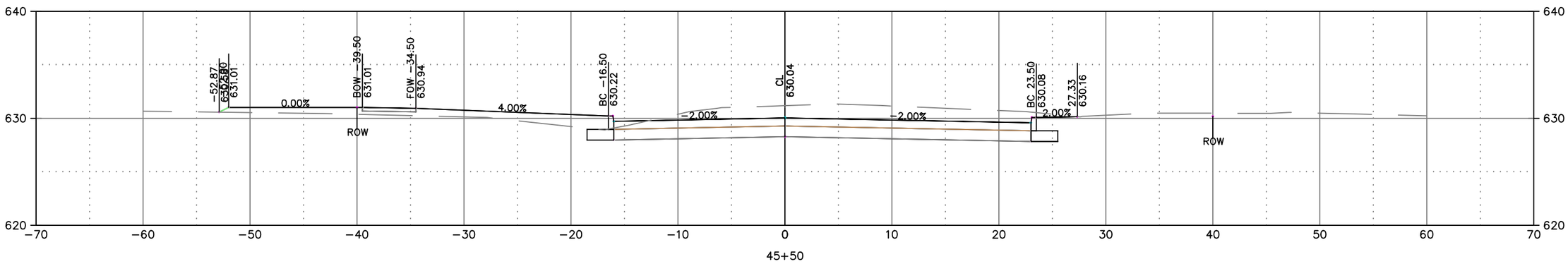

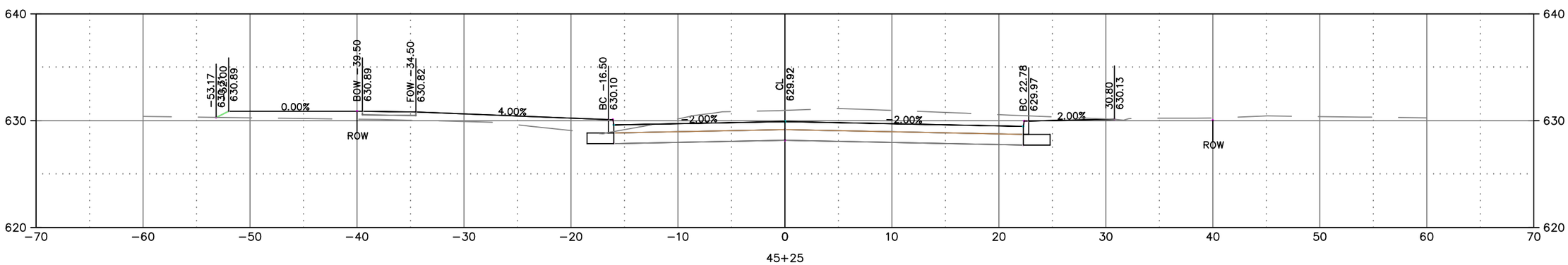

10'
0

0 5' 10'

CITY OF DE PERE

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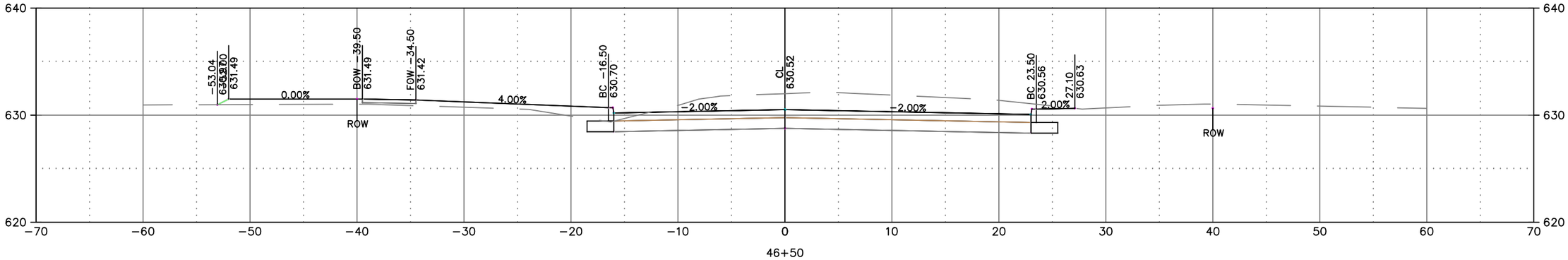

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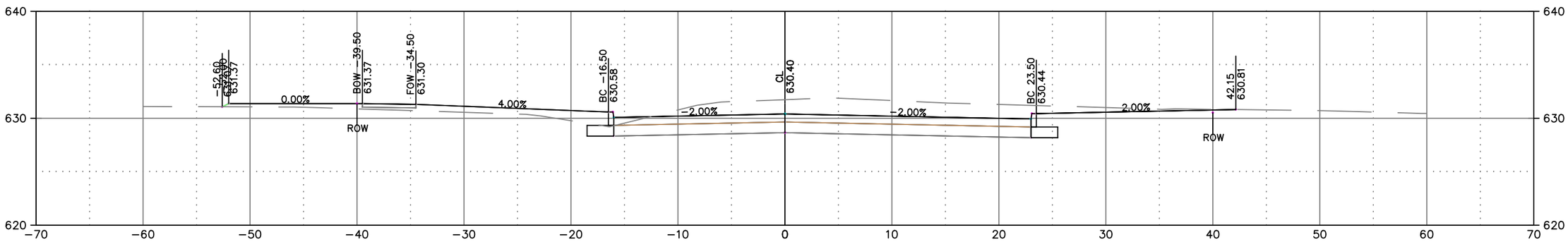

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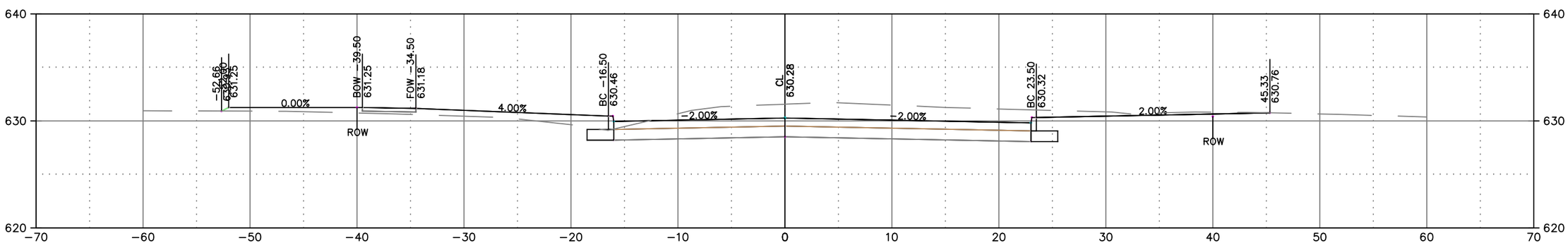

46+00

10'
0

0 5' 10'

CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115

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RYAN ROAD

CROSS SECTIONS

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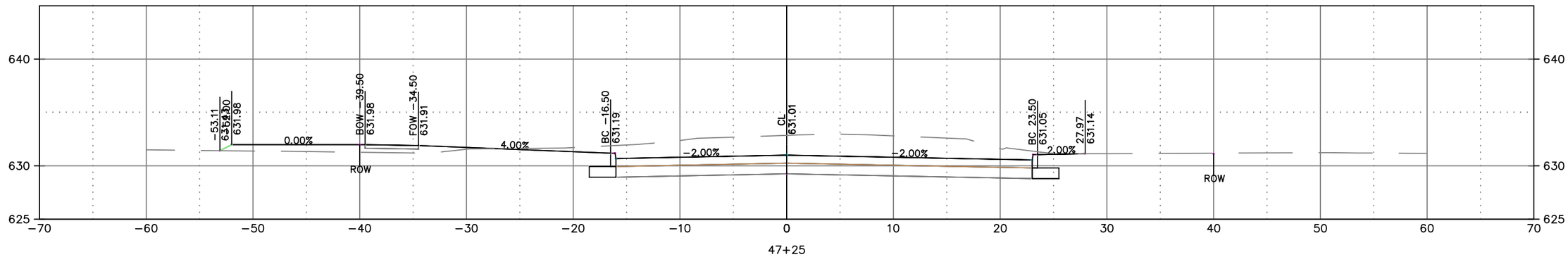

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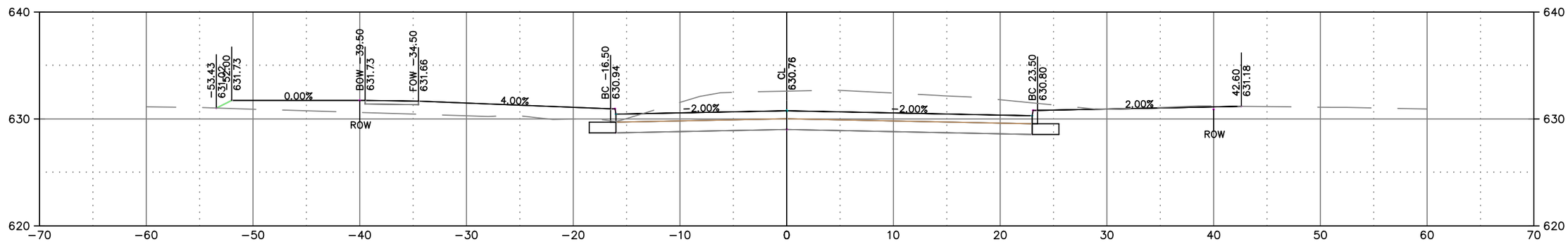

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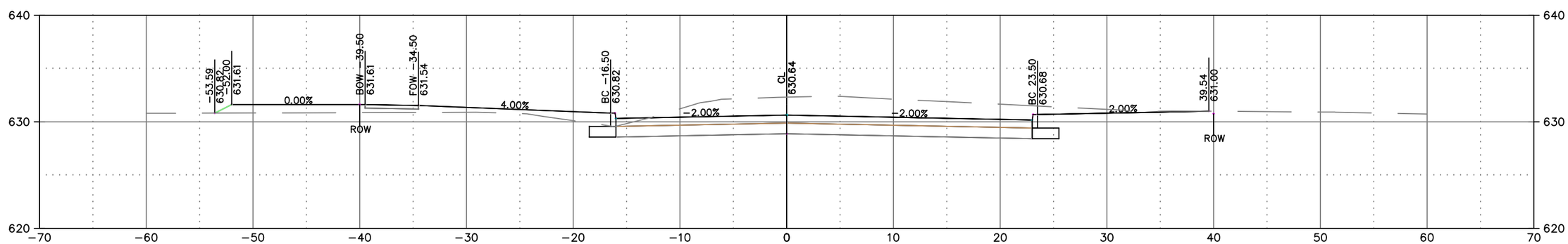

46+75

CITY OF DE PERE

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OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD

CROSS SECTIONS

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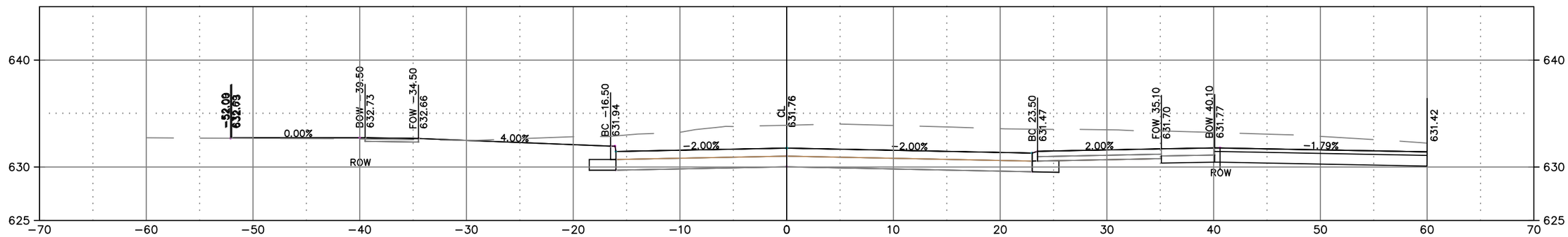
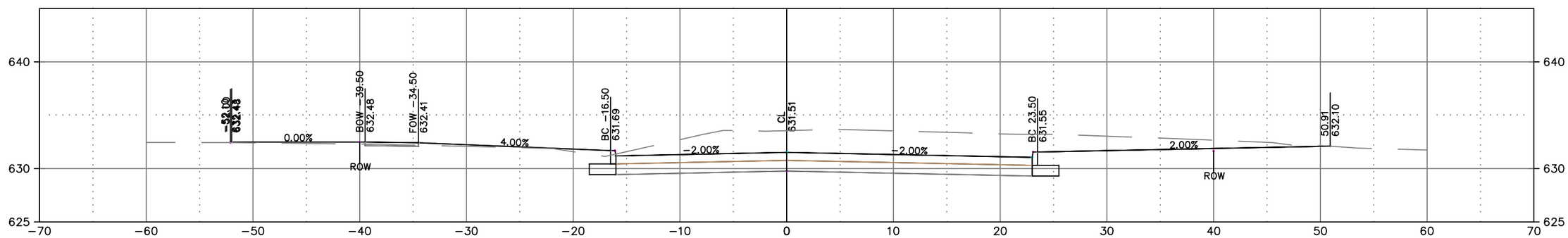


48+00
DRIVEWAY RIGHT



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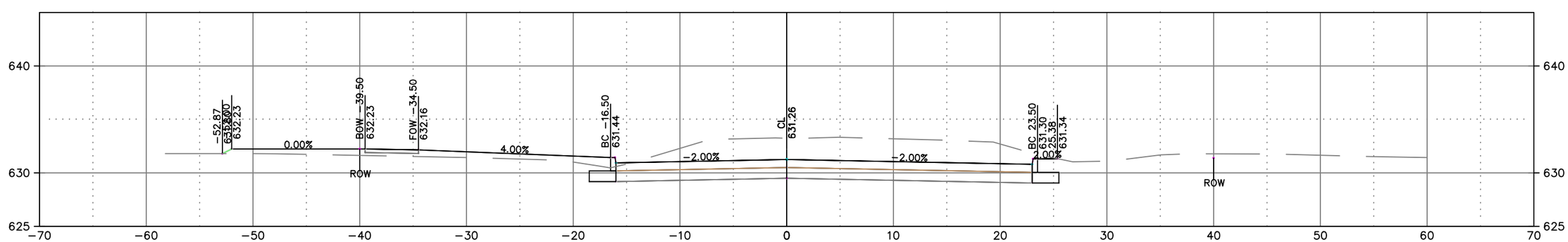

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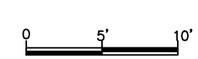

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RYAN ROAD
CROSS SECTIONS

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REVISIONS / ISSUES

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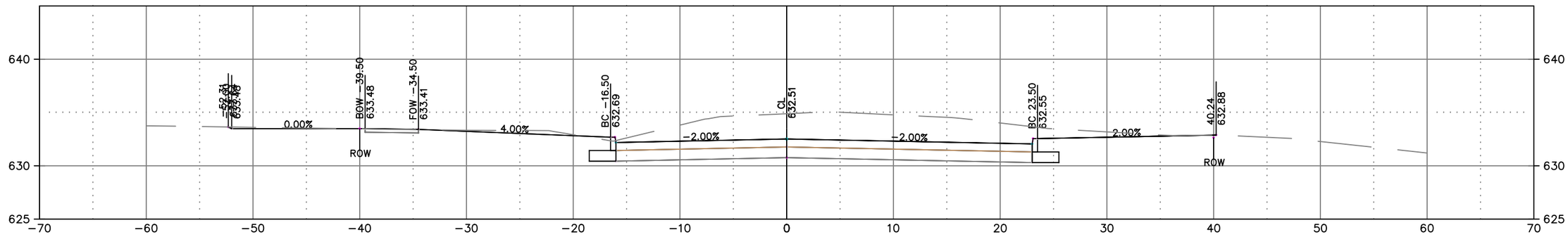

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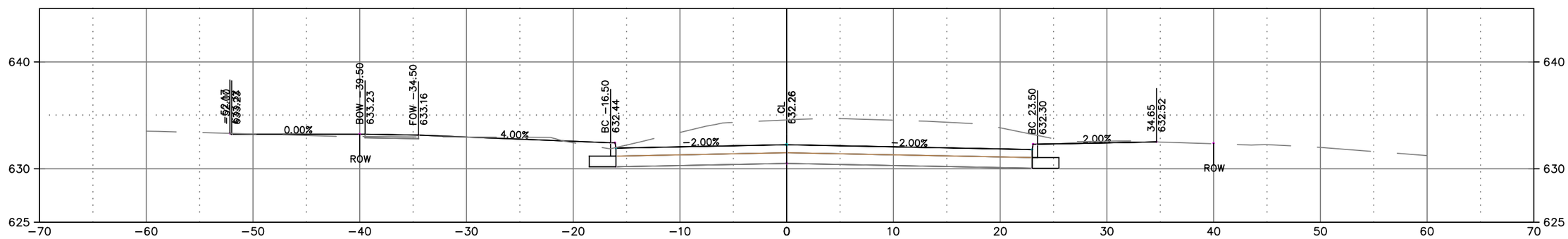

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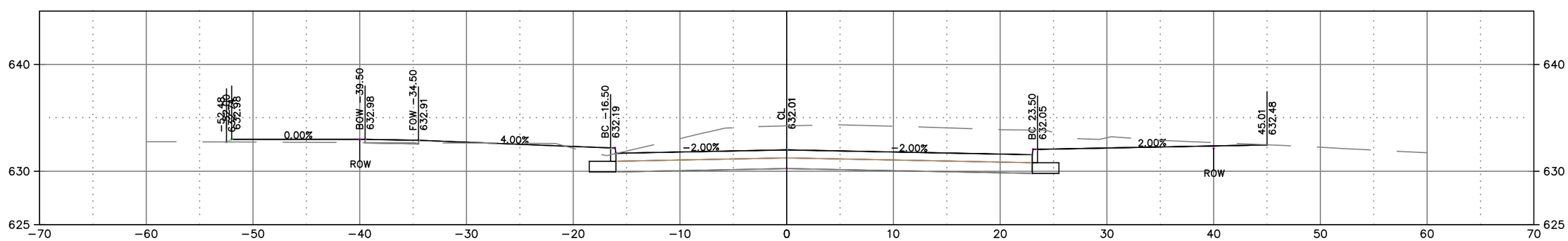

48+25

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RYAN ROAD

CROSS SECTIONS

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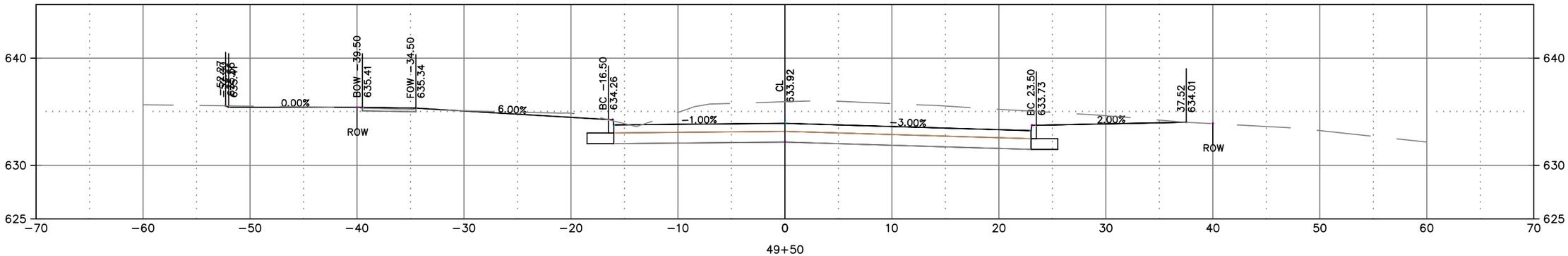

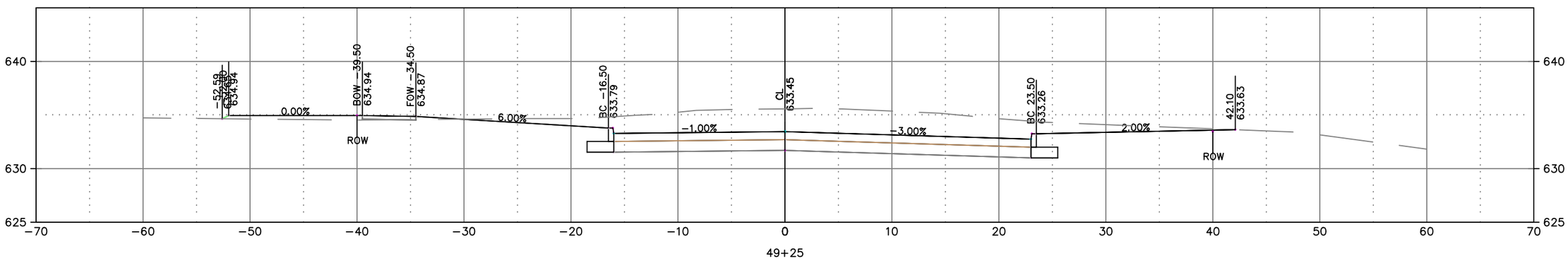

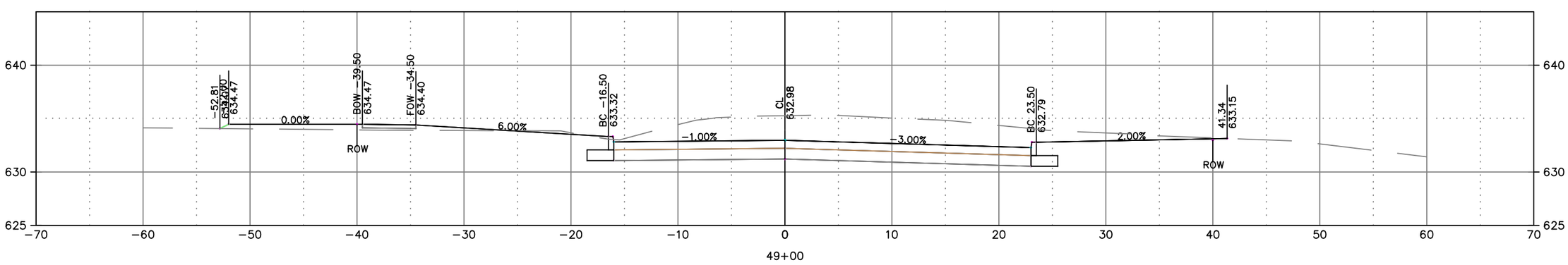

10'
0

0 5' 10'

CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
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RYAN ROAD
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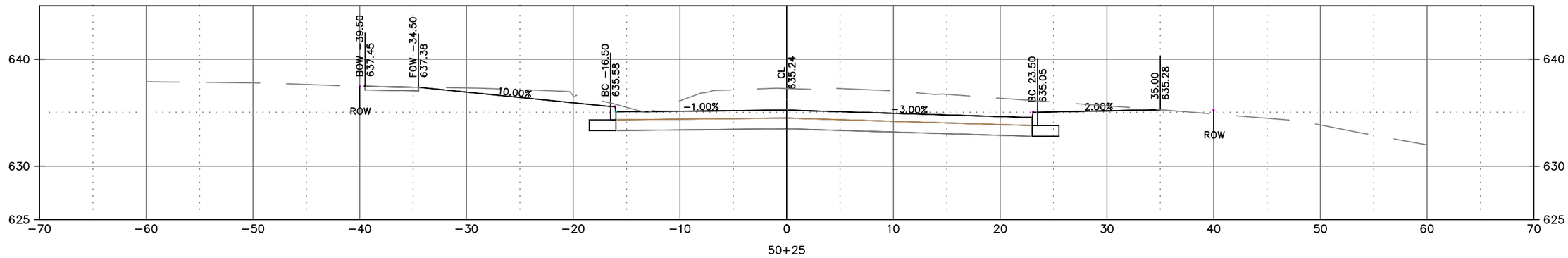

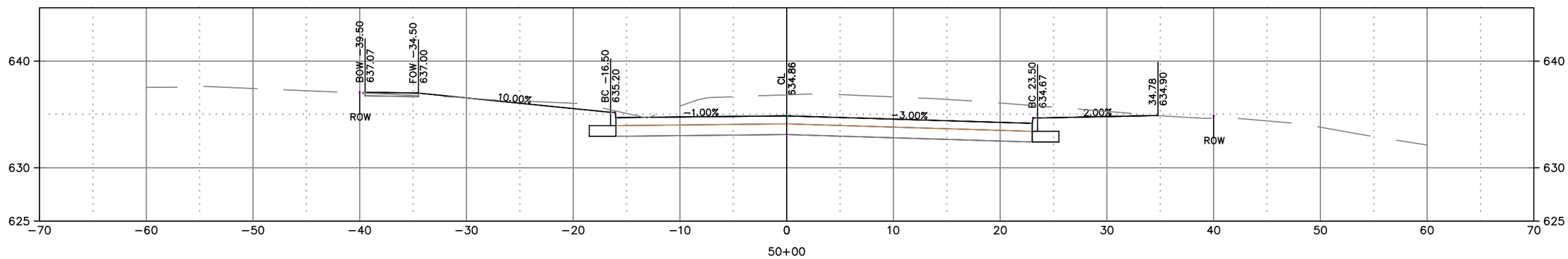

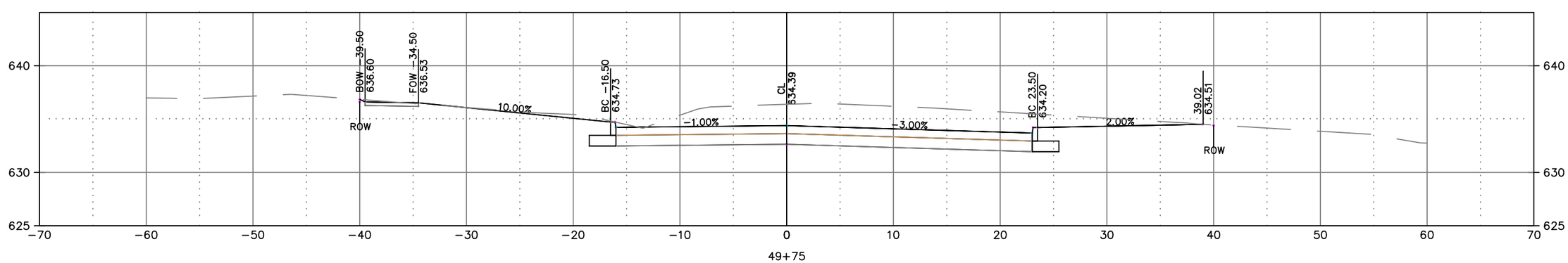

10'
0

0 5' 10'

CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115

OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD

CROSS SECTIONS

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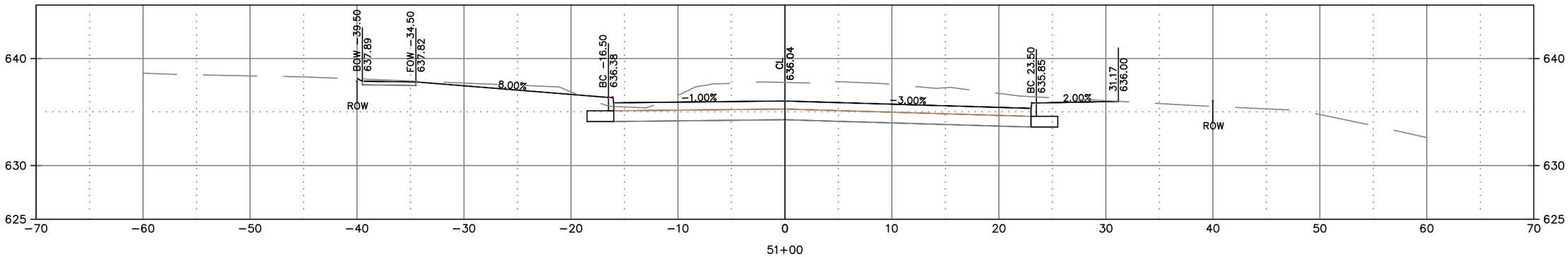

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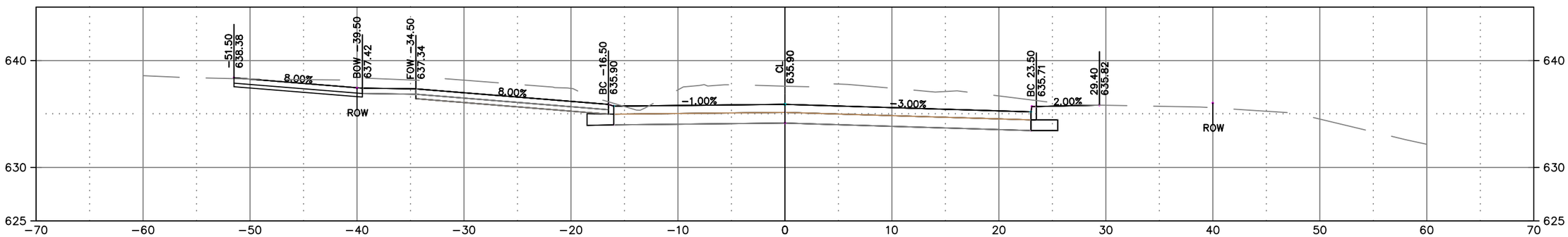

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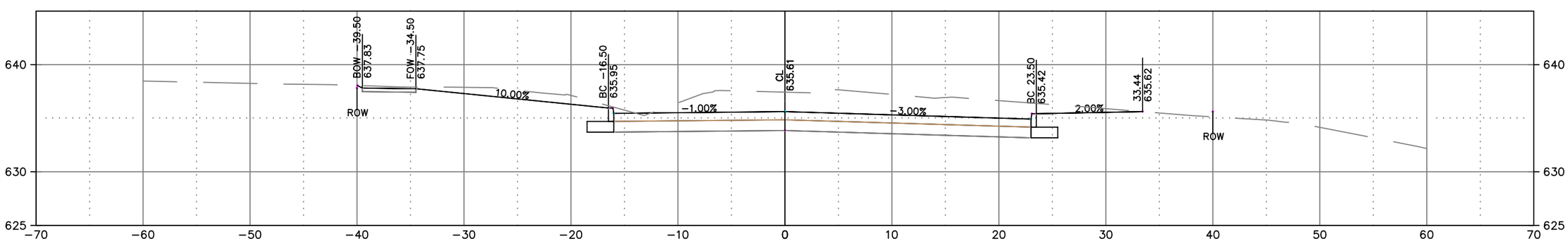

50+50

10'
0

0 5' 10'

CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD
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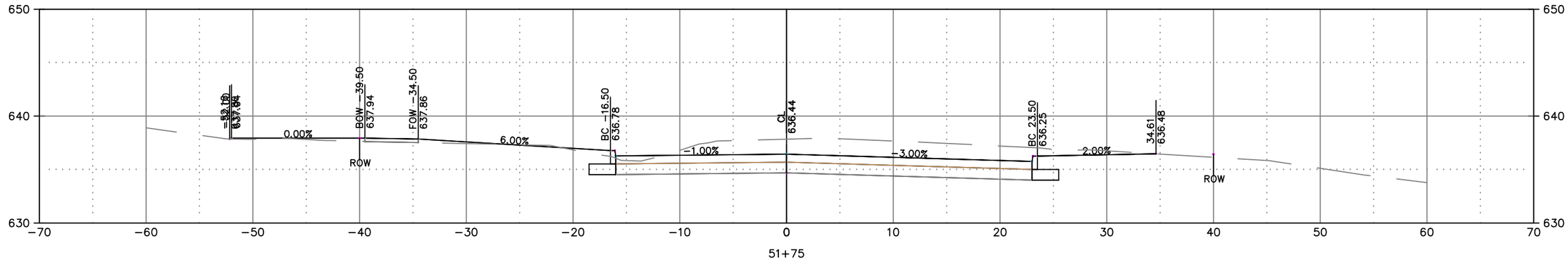

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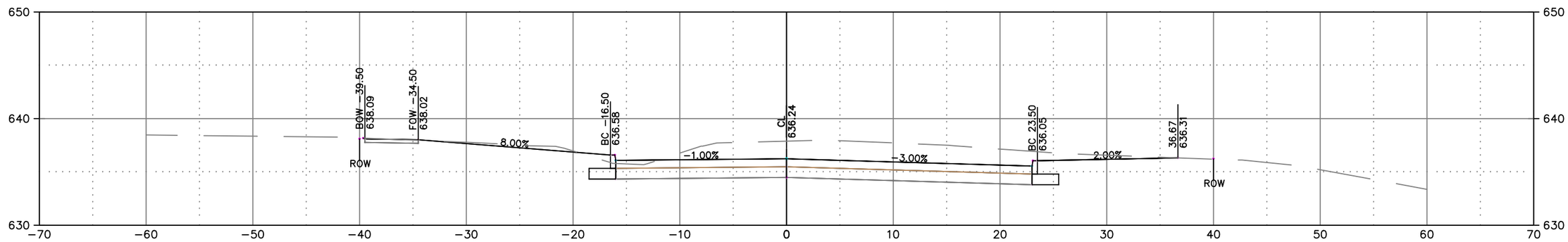

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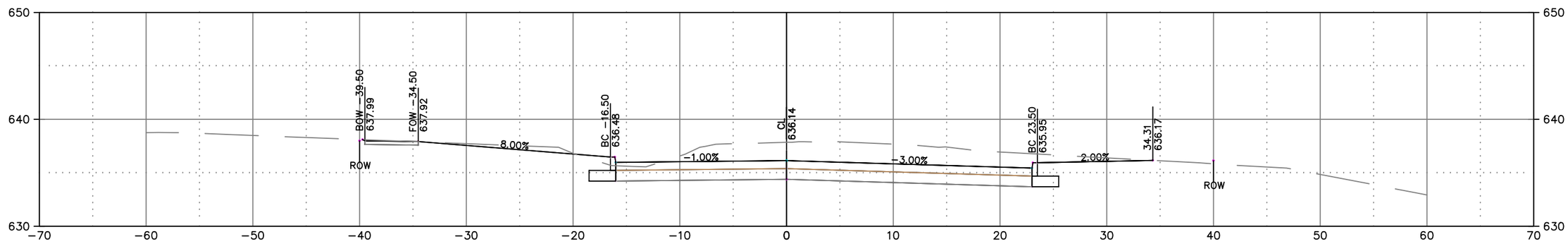

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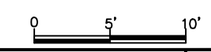

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RYAN ROAD

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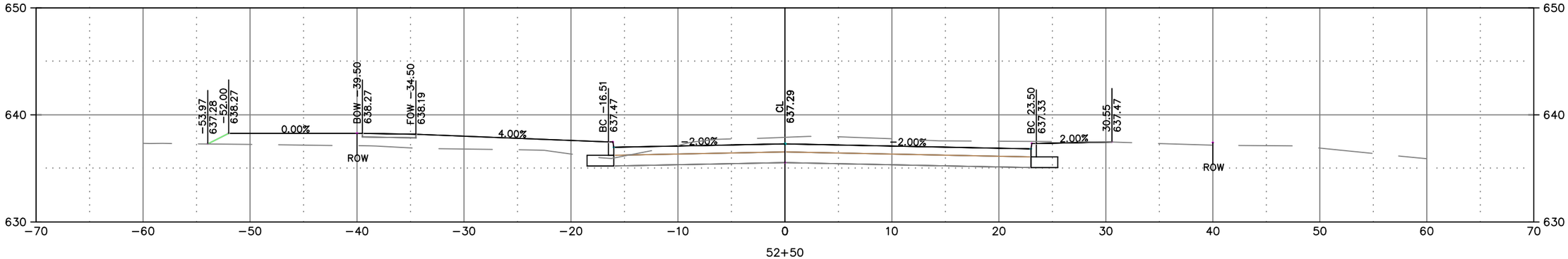

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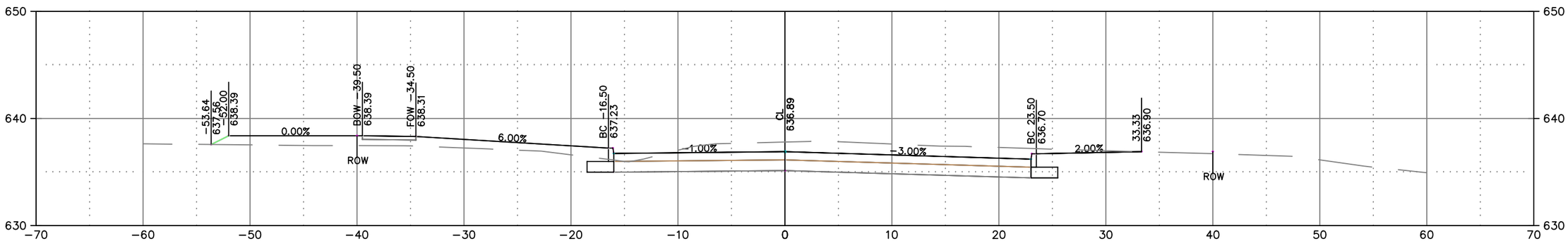

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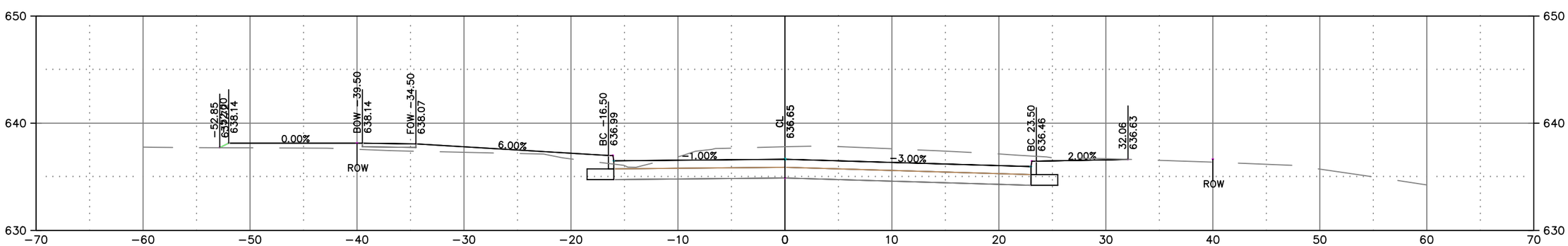

52+00

10'
0

0 5' 10'

CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115

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RYAN ROAD

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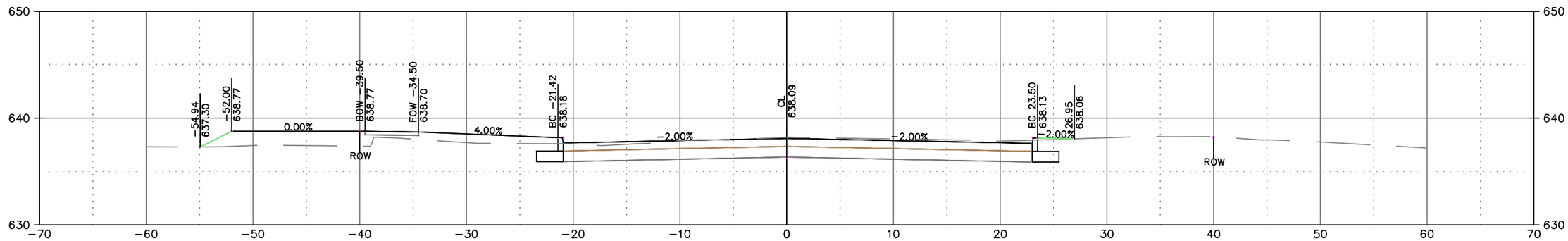

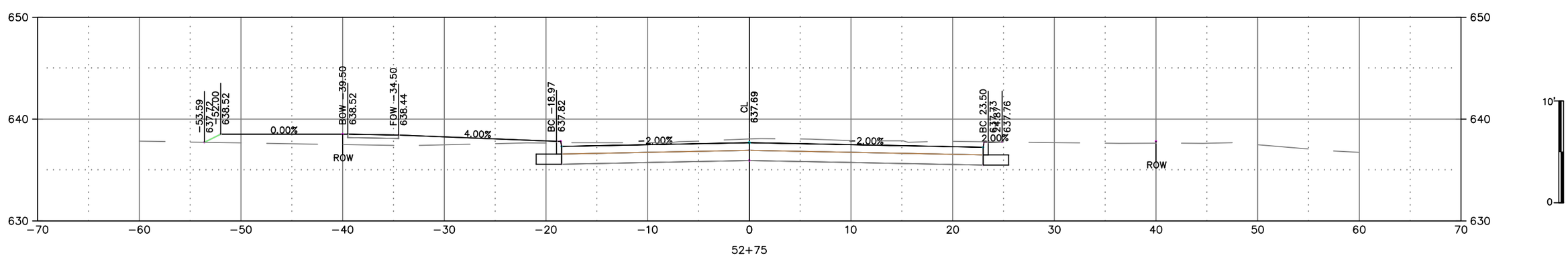

0 5' 10'

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RYAN ROAD

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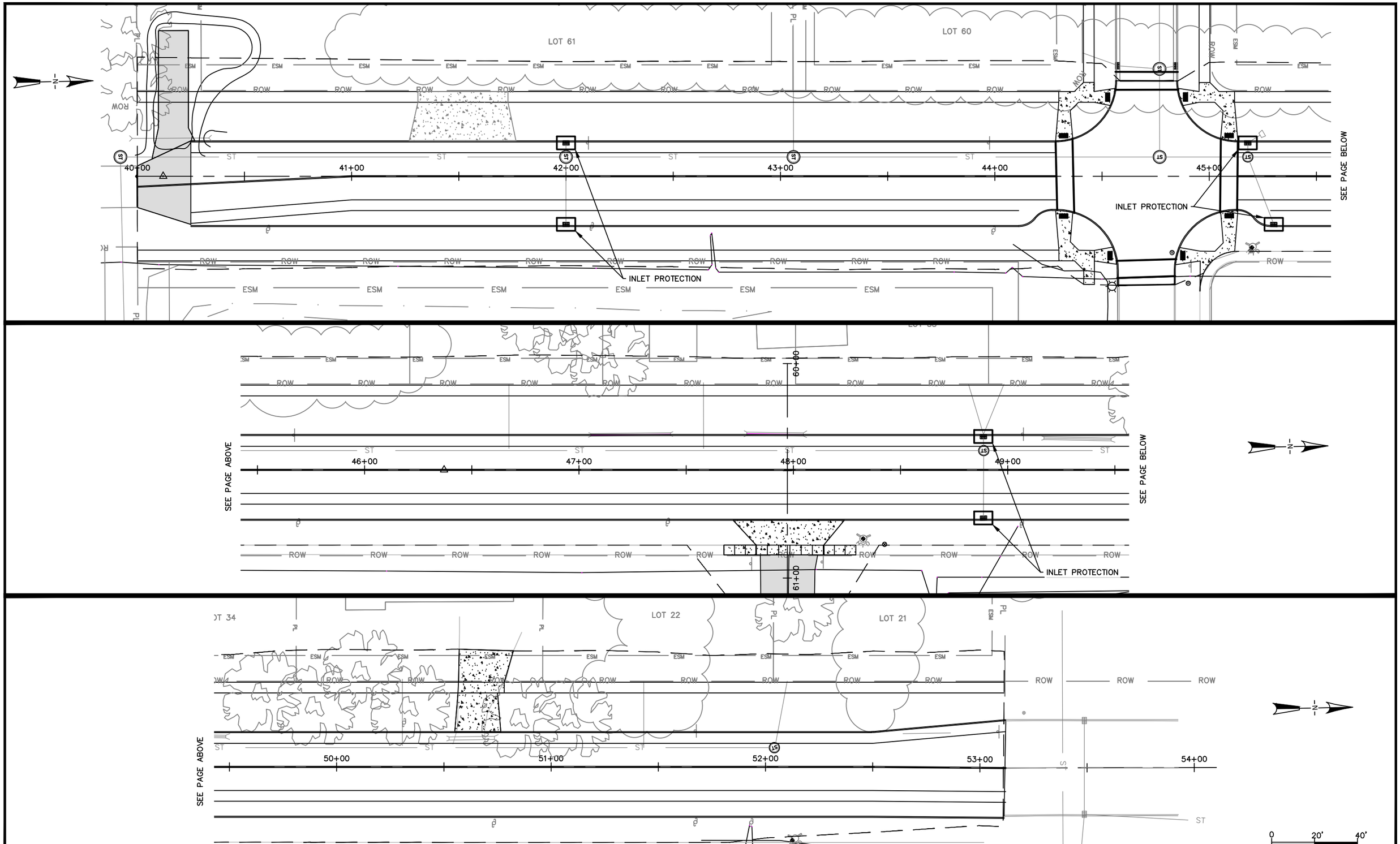

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RYAN ROAD

EROSION CONTROL

NAME: RYAN ROAD STREET RECONSTRUCTION

PROJECT # 19-02

	BY	DATE
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DESIGNED	SRL	10-2018
CHECKED	EPR	10-2018

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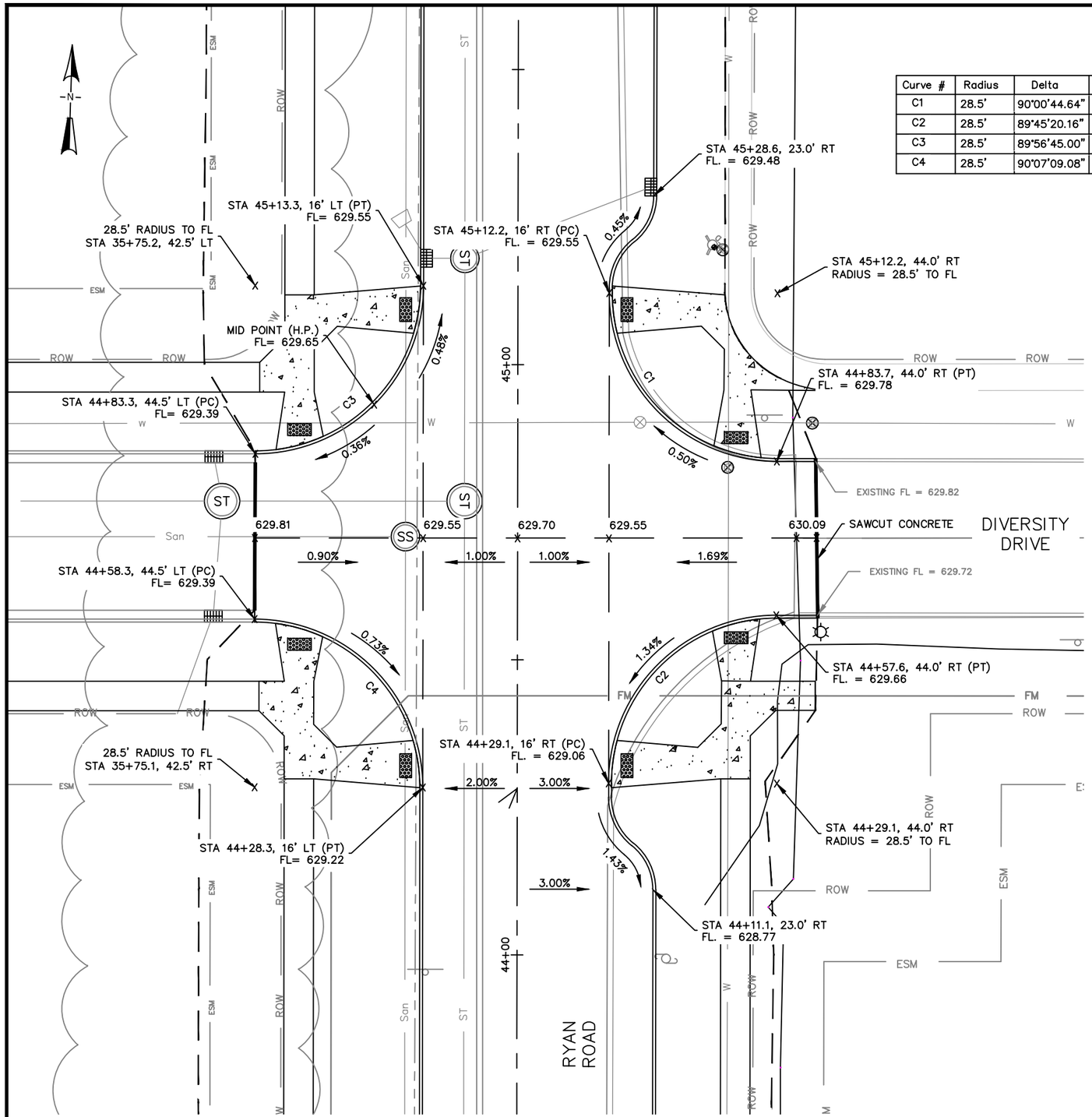
PAGE NO. C401



RYAN ROAD FLOWLINE CURVE TABLE

Curve #	Radius	Delta	Chord Direction	Chord Length	Length	Start Point	End Point	Center
C1	28.5'	90°00'44.64"	N44°55'35.00W	40.309'	44.774'	(N: 528993.929, E: 86759.213)	(N: 52865.390, E: 86787.679)	(N: 528993.890, E: 86787.713)
C2	28.5'	89°45'20.16"	S44°57'27.00W	40.219'	44.646'	(N: 528941.086, E: 86759.097)	(N: 528939.327, E: 86787.515)	(N: 528910.827, E: 86787.597)
C3	28.5'	89°56'45.00"	N45°02'24.00E	40.302'	44.682'	(N: 528965.173, E: 86699.214)	(N: 528995.132, E: 86729.214)	(N: 528995.174, E: 86699.214
C4	28.5'	90°07'09.08"	S44°57'36.00E	40.256'	44.712'	(N: 528940.174, E: 86699.096)	(N: 528910.132, E: 86729.095)	(N: 528910.174, E: 86699.096)

0 10' 20'

CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115

OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD

INTERSECTION GRADES

NAME: RYAN ROAD STREET RECONSTRUCTION

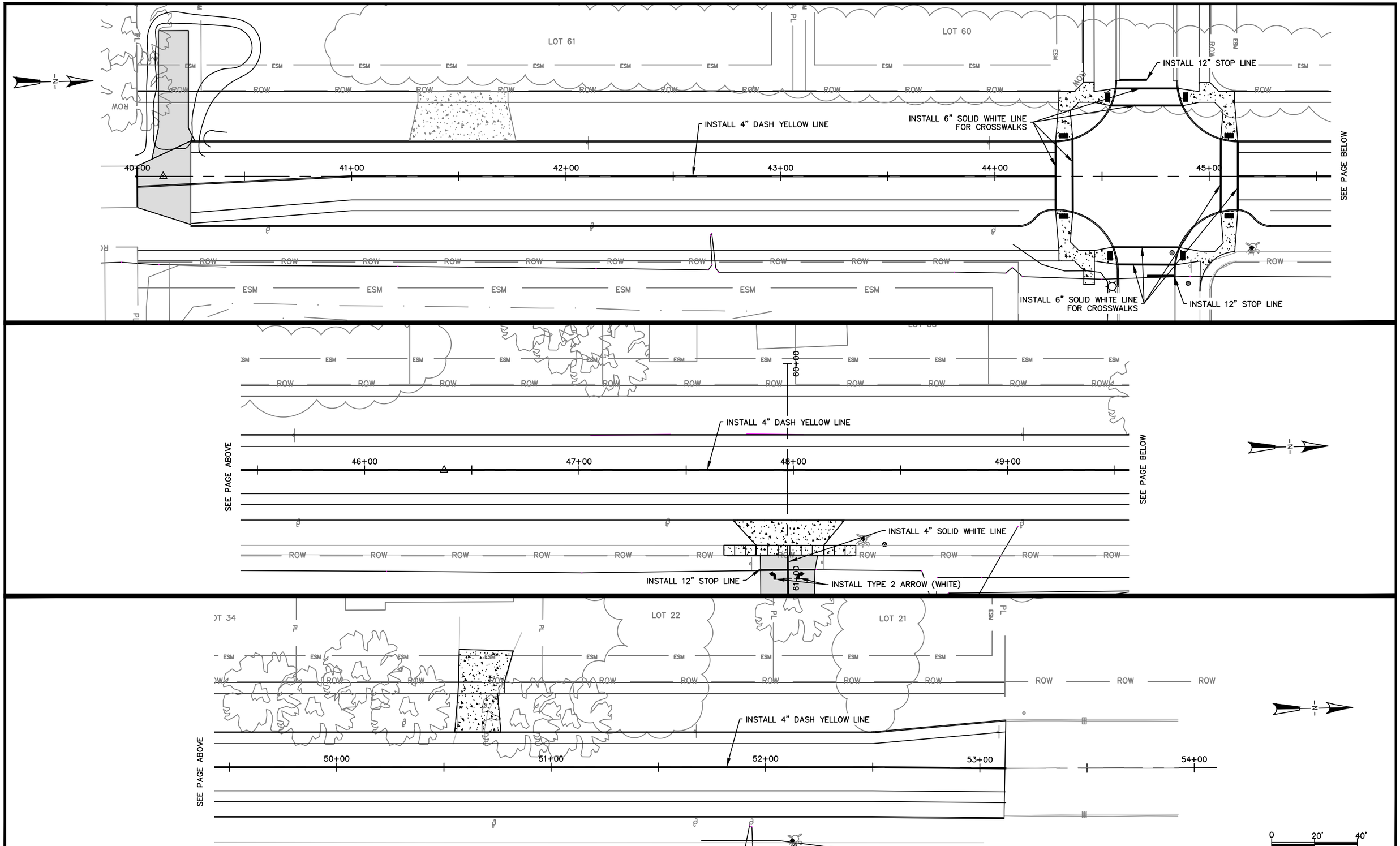
PROJECT # 19-02

	BY	DATE
SURVEYED	JML	03-2018
DRAWN	SRL	11-2018
DESIGNED	SRL	11-2018
CHECKED	EPR	11-2018

REVISIONS / ISSUES

NO.	DATE	BY	REMARKS

PAGE NO. C402



CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD

PAVEMENT MARKINGS

NAME: RYAN ROAD STREET RECONSTRUCTION

PROJECT # 19-02

	BY	DATE
SURVEYED	MAU	4-2018
DRAWN	SRL	10-2018
DESIGNED	SRL	10-2018
CHECKED	EPR	10-2018

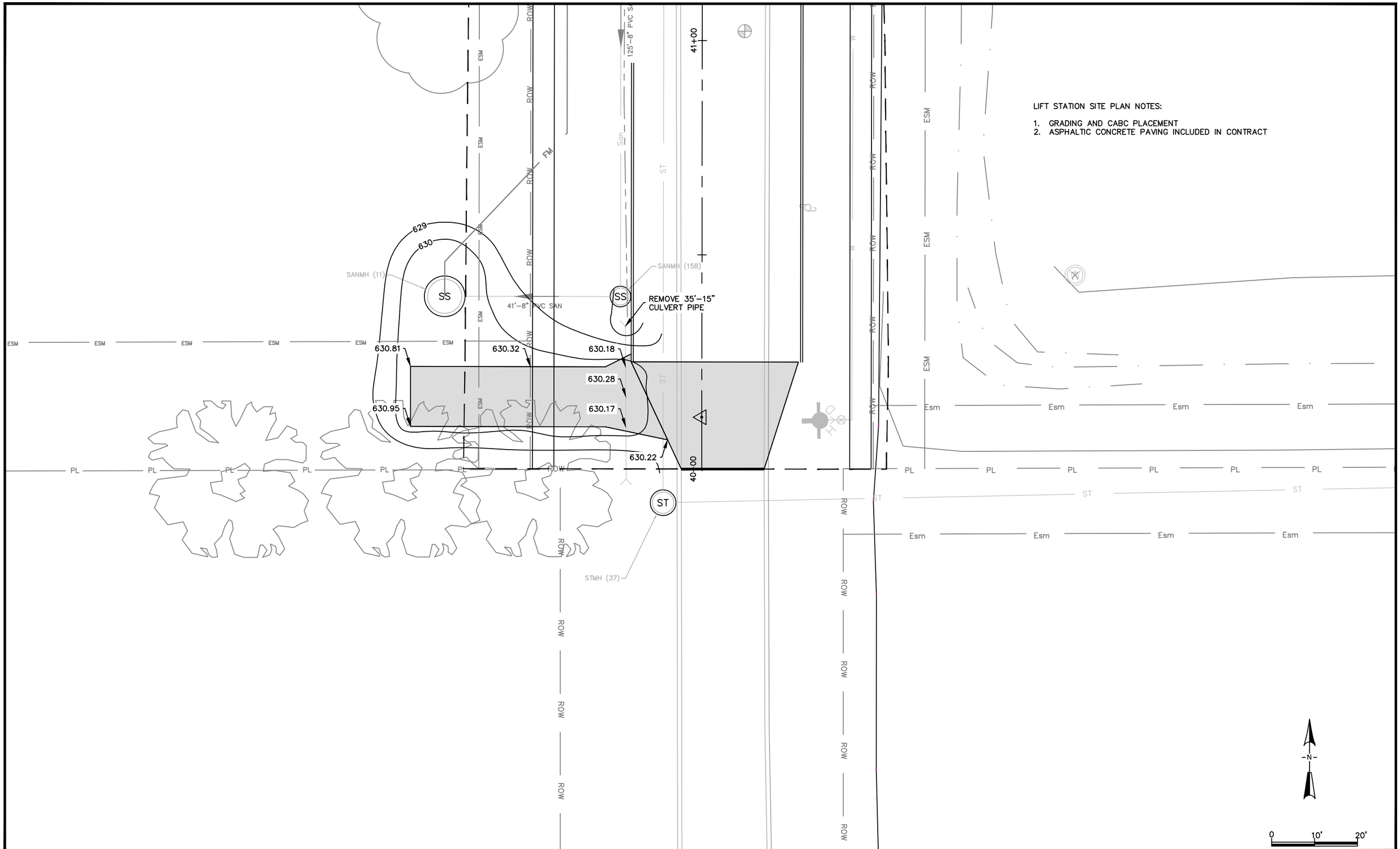
REVISIONS / ISSUES

NO.	DATE	BY	REMARKS

PAGE NO. C403

LIFT STATION SITE PLAN NOTES:

1. GRADING AND CABC PLACEMENT
2. ASPHALTIC CONCRETE PAVING INCLUDED IN CONTRACT



CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

LIFT STATION SITE PLAN

NAME: RYAN ROAD STREET RECONSTRUCTION

PROJECT # 19-02

	BY	DATE
SURVEYED	MAU	03-2018
DRAWN	MAL	01-2019
DESIGNED	MAL	01-2019
CHECKED	EPR	01-2019

REVISIONS / ISSUES

NO.	DATE	BY	REMARKS

PAGE NO. C404

CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD

TRAFFIC CONTROL

NAME: RYAN ROAD STREET RECONSTRUCTION

PROJECT # 19-02

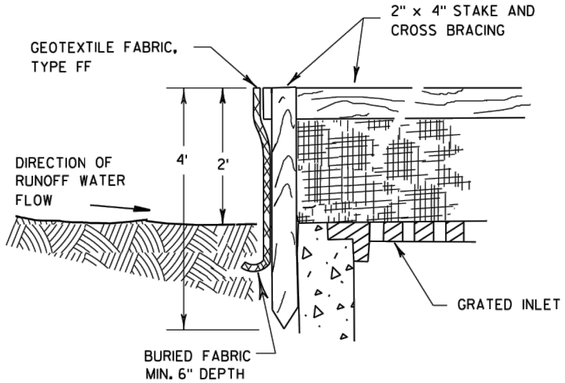
	BY	DATE
SURVEYED	MAU	4-2018
DRAWN	SRL	10-2018
DESIGNED	MAL	01-2019
CHECKED	EPR	01-2019

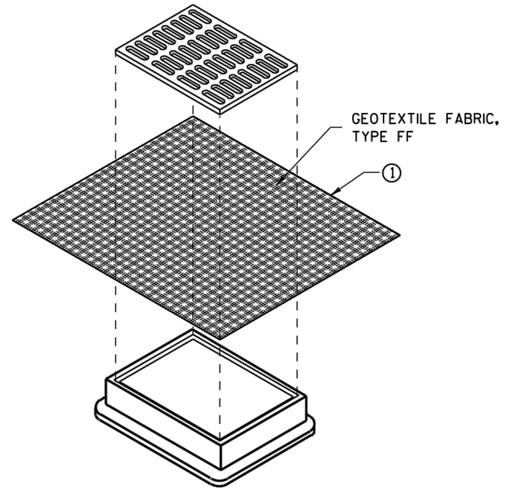
REVISIONS / ISSUES

NO.	DATE	BY	REMARKS

PAGE NO. C405

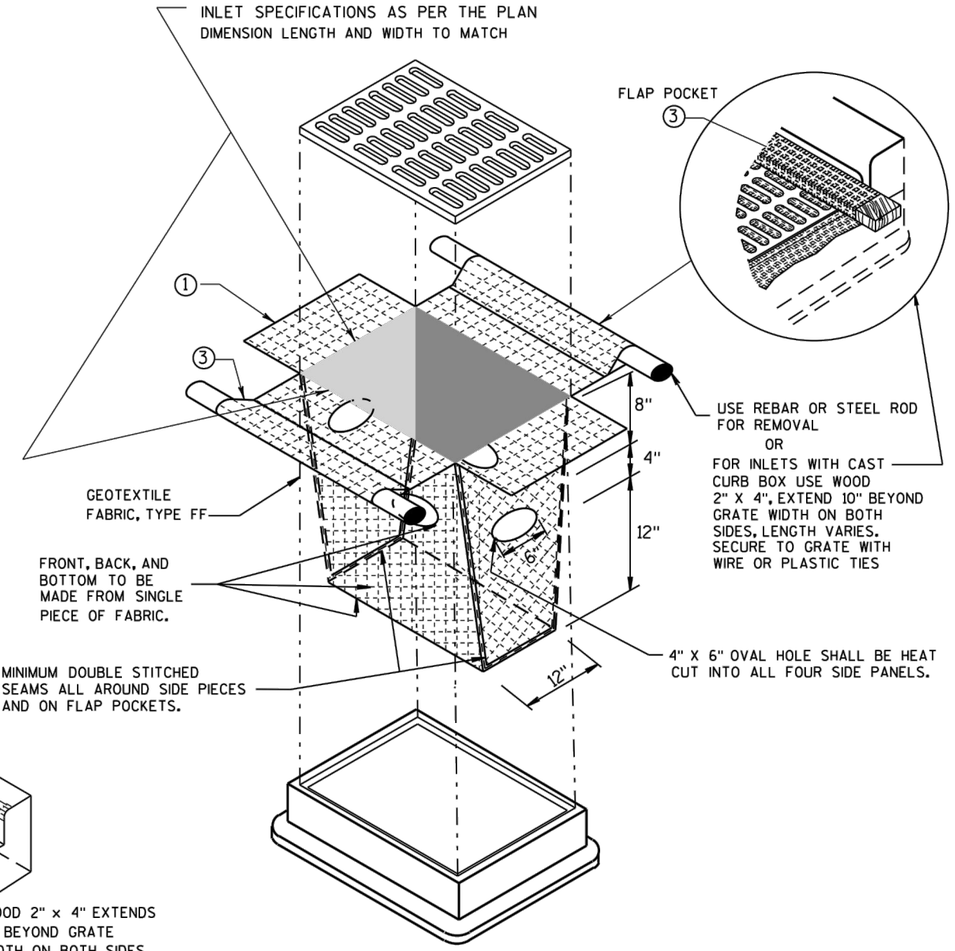
SDD 8e10 Inlet Protection Type A, B, C and D

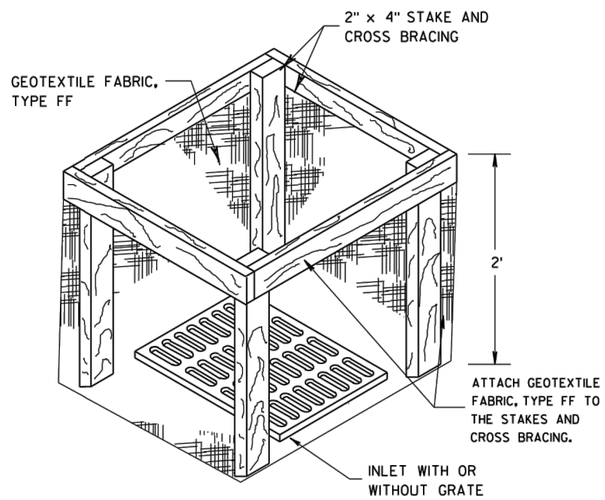




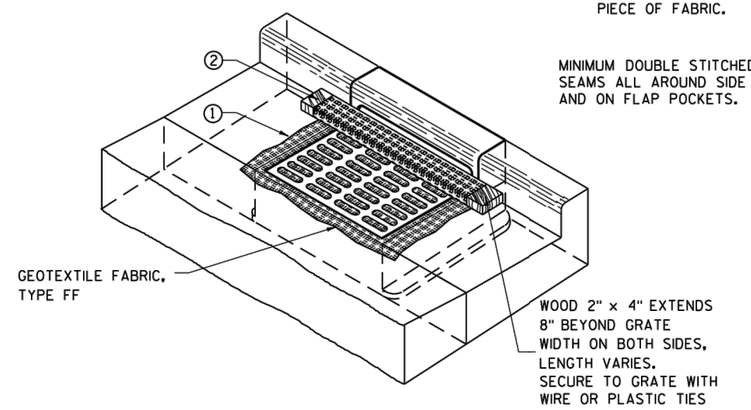
INLET PROTECTION, TYPE B (WITHOUT CURB BOX)

(CAN BE INSTALLED IN ANY INLET WITHOUT A CURB BOX)





INLET PROTECTION, TYPE A



INLET PROTECTION, TYPE C (WITH CURB BOX)

INLET PROTECTION, TYPE D

(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX AS PER NOTE 2)

GENERAL NOTES

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

MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENT'S EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.

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

1. FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
2. FOR INLET PROTECTION, TYPE C (WITH CURB BOX), 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.
3. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2X4.

INSTALLATION NOTES

TYPE B & C

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

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.

TYPE D

DO NOT INSTALL INLET PROTECTION TYPE D IN INLETS SHALLOWER THAN 30", MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.

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

THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE BOTTOM OF THE BAG.

STANDARD DETAIL MODIFIED
TYPE C INLETS EQUALS CITY OF DE PERE TYPE B INLETS

INLET PROTECTION TYPE A, B, C, AND D

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10-16-02 — DATE
/S/ Beth Cannestra — CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 8 E 10-2

CITY OF DE PERE
ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD
CONSTRUCTION DETAILS

NAME: RYAN ROAD STREET RECONSTRUCTION
PROJECT # 19-02

	BY	DATE
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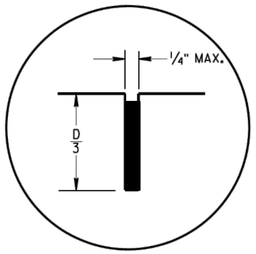
REVISIONS / ISSUES

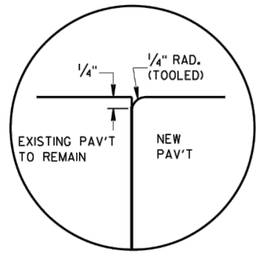
NO.	DATE	BY	REMARKS

PAGE NO. C501

SDD 13c9-b Concrete Pavement Repair and Replacement



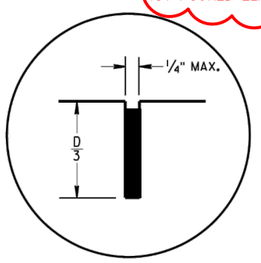
C1



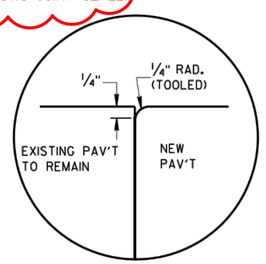
C2

TRANSVERSE JOINTS

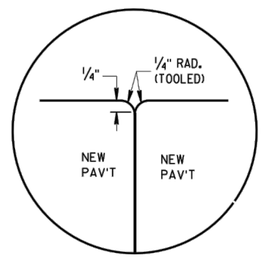
HOT POURED ELASTIC JOINT SEALER



L1



L2



L3

LONGITUDINAL JOINTS

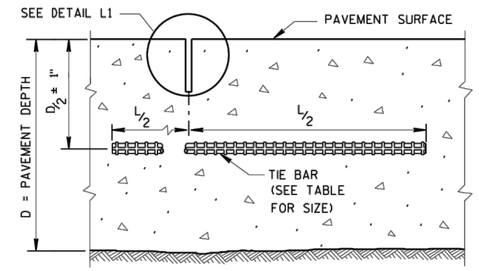
HOT POURED ELASTIC JOINT SEALER

TIE BAR TABLE

PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 1/2"	NO. 4	30"	36"
≥ 10 1/2"	NO. 5	36"	36"
	NO. 4 *	30"	24" **

* SUBSTITUTE BENT BARS AT LONGITUDINAL JOINTS WHEN EQUIPMENT LIMITATIONS DURING CONSTRUCTION WARRANT (e.g. AUXILIARY LANES OR TURN LANES)

** CONFORM TO 15" MINUMUM SPACING FROM TRANSVERSE JOINTS; SPACING BETWEEN TIE BARS WILL BE 30" AT TRANSVERSE JOINTS.



SECTION C-C

SAWED LONGITUDINAL JOINT

GENERAL NOTES

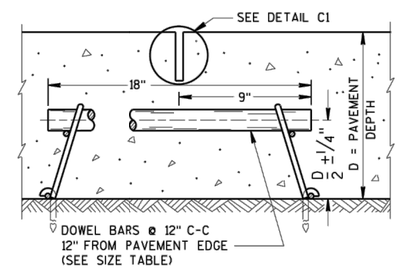
INSTALL DOWEL BARS PARALLEL TO THE PAVEMENT CENTERLINE AND PAVEMENT SURFACE.

CONCRETE PAVEMENT REPAIRS OF EXISTING NONDOWELED CONCRETE PAVEMENTS DO NOT NEED TO BE DOWELED.

ANCHOR DOWEL BARS AND TIE BARS INTO DRILLED HOLES WITH AN EPOXY.

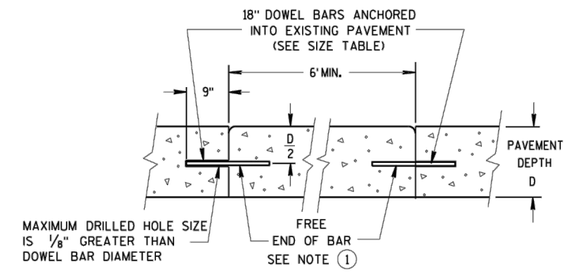
FOR MULTI-LANE CONCRETE PAVEMENT REPLACEMENTS, PROVIDE A MINIMUM DISTANCE OF 15 INCHES FROM ALL TRANSVERSE JOINTS OR EDGES OF REPLACEMENT TO THE CENTER OF THE TIE BAR NEAREST THAT JOINT OR EDGE.

(1) APPLY A THIN UNIFORM COATING OF SURFACE TREATMENT TO THE FREE END OF DOWEL BARS TO PREVENT BONDING.

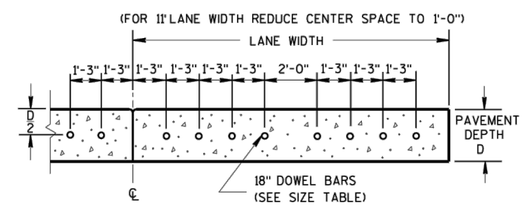


SECTION F-F

CONTRACTION JOINT



SECTION D-D

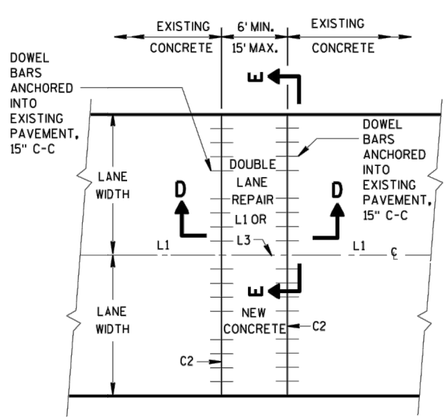


SECTION E-E

DRILLED DOWEL BAR CONSTRUCTION JOINT

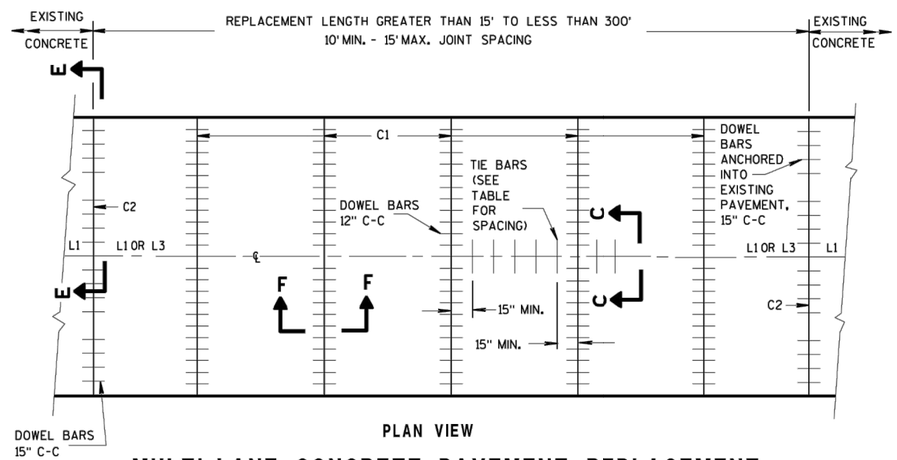
PAVEMENT DEPTH, DOWEL BAR SIZE AND JOINT SPACING TABLE

PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER	DRILLED DOWEL BAR DIAMETER	CONTRACTION JOINT SPACING
5 1/2", 6", 6 1/2"	NONE	NONE	12'
7", 7 1/2"	1"	1"	14'
8", 8 1/2"	1 1/4"	1 1/4"	15'
9", 9 1/2"	1 1/4"	1 1/4"	15'
10" & ABOVE	1 1/2"	1 1/4"	15'



PLAN VIEW

MULTI-LANE CONCRETE PAVEMENT REPAIR



PLAN VIEW

MULTI-LANE CONCRETE PAVEMENT REPLACEMENT

STANDARD DETAIL MODIFIED

CONCRETE PAVEMENT REPAIR AND REPLACEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

S.D.D. 13 C 9-15b

CITY OF DE PERE
ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD
CONSTRUCTION DETAILS

NAME: RYAN ROAD STREET RECONSTRUCTION
PROJECT # 19-02

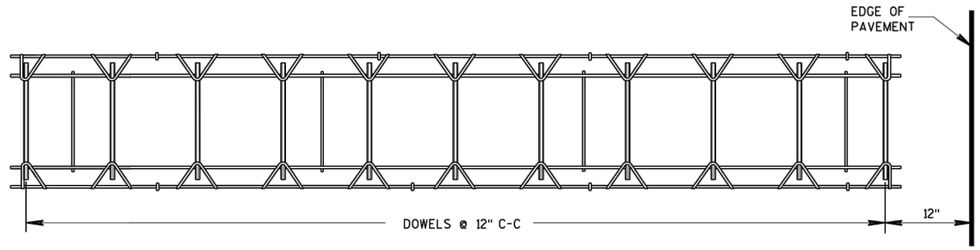
	BY	DATE
SURVEYED	MAU	03-2018
DRAWN	SRL	11-2018
DESIGNED	SRL	11-2018
CHECKED	EPR	11-2018

REVISIONS / ISSUES

NO.	DATE	BY	REMARKS

PAGE NO. C502

SDD 13c13 Urban Doweled Concrete Pavement



PLAN VIEW

SIDE VIEW

CONTRACTION JOINT DOWEL ASSEMBLY ①

PAVEMENT DEPTH, DOWEL BAR SIZE AND JOINT SPACING TABLE

PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER	CONTRACTION JOINT SPACING
5 ½", 6", 6 ½"	NONE	12'
7", 7 ½"	1"	14'
8", 8 ½"	1 ¼"	15'
9", 9 ½"	1 ¼"	15'
10" & ABOVE	1 ½"	15'

GENERAL NOTES

CONTRACTION JOINTS

CONSTRUCT TRANSVERSE CONTRACTION JOINTS NORMAL TO THE CENTERLINE. SHOW THE LOCATION OF CONTRACTION JOINTS THROUGH INTERSECTIONS ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

INSTALL DOWEL BARS PARALLEL TO THE PAVEMENT CENTERLINE AND PAVEMENT SURFACE.

FOR PAVEMENT SLABS OF VARYING WIDTHS, LOCATE THE OUTER MOST DOWEL BAR SO THAT THE CENTER OF THE BAR IS A MINIMUM OF 6 INCHES AND A MAXIMUM OF 18 INCHES FROM THE LONGITUDINAL JOINT AND THE FREE EDGE OF PAVEMENT.

CONSTRUCTION JOINTS

LOCATE CONSTRUCTION JOINTS A MINIMUM OF 6 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGN PARALLEL TO CONTRACTION JOINTS.

① OBTAIN THE ENGINEER'S APPROVAL FOR THE USE OF ALTERNATIVE DESIGNS OF THE DOWEL ASSEMBLY. USE MECHANICAL DOWEL BAR INSERTERS OR DOWEL ASSEMBLIES WHEN CONSTRUCTING CONTRACTION JOINTS.

② SECURE BASKETS WITH ANCHORS TO HOLD DOWEL BARS IN THE CORRECT POSITION AND ALIGNMENT. TYPE, LOCATION, NUMBER AND LENGTH OF ANCHORS ARE DEPENDENT UPON FIELD CONDITIONS.

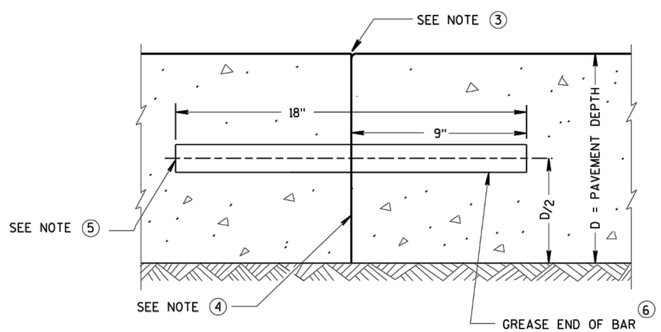
③ FORM OR SAW CONSTRUCTION JOINTS. PROVIDE A ¼-INCH RADIUS AT FORMED JOINTS.

④ PROVIDE A SMOOTH VERTICAL FACE FOR THE ENTIRE DEPTH OF THE PAVEMENT WHEN FORMING CONSTRUCTION JOINTS.

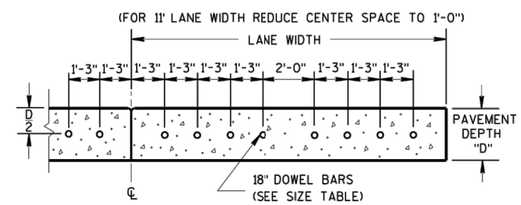
⑤ INSTALL DOWEL BARS AT CONSTRUCTION JOINTS BY FORMING OR DRILLING. INSTALL FORMED DOWEL BARS 12 INCHES C-C AND 12 INCHES FROM PAVEMENT EDGE. REMOVE EXCESS CONCRETE FROM THE FREE END OF THE DOWEL BAR IF DOWEL BARS ARE FORMED THROUGH A HEADER BOARD. INSTALL DRILLED DOWEL BARS ACCORDING TO *DRILLED DOWEL BAR CONSTRUCTION JOINT* DETAIL.

⑥ APPLY A THIN UNIFORM COATING OF SURFACE TREATMENT TO THE FREE END OF DOWEL BARS TO PREVENT BONDING.

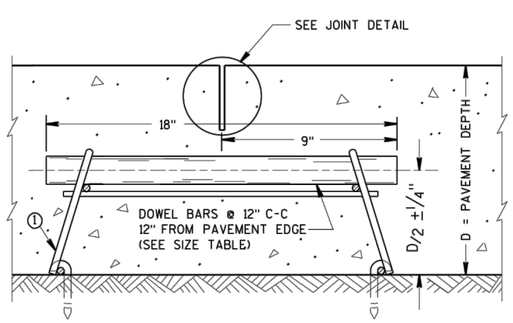
⑦ ANCHOR DOWEL BARS INTO DRILLED HOLES WITH AN EPOXY. MAXIMUM DRILLED HOLE SIZE IS ⅛-INCH GREATER THAN DOWEL BAR DIAMETER, 9 INCHES IN LENGTH.



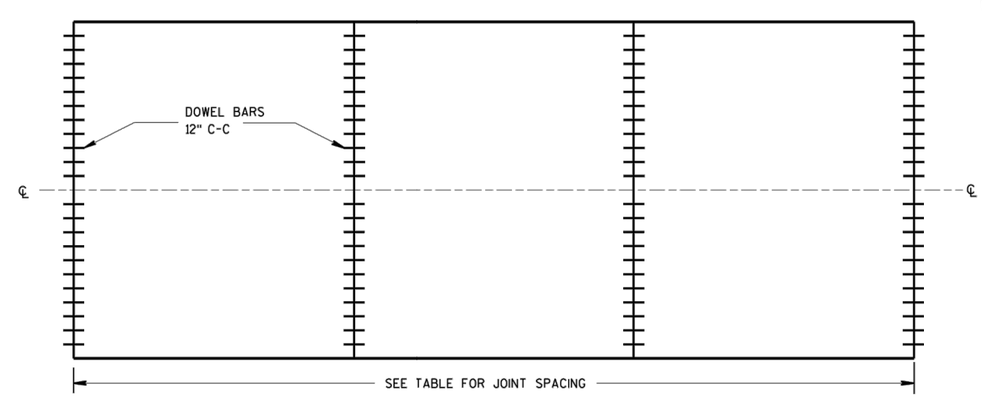
TRANSVERSE CONSTRUCTION JOINT



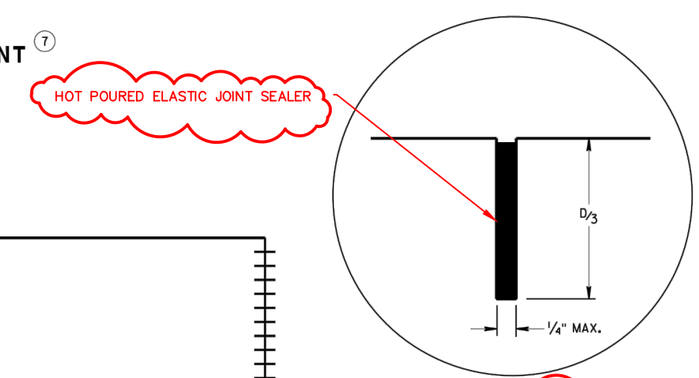
DRILLED DOWEL BAR CONSTRUCTION JOINT ⑦



DOWELED CONTRACTION JOINT



CONTRACTION JOINT LOCATIONS



JOINT DETAIL
STANDARD DETAIL MODIFIED

URBAN DOWELED CONCRETE PAVEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2018 — DATE
/S/ Peter Kemp, P.E. — PAVEMENT SUPERVISOR
FHWA

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S.D.D. 13 C 13-9

CITY OF DE PERE
ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD
CONSTRUCTION DETAILS

NAME: RYAN ROAD STREET RECONSTRUCTION
PROJECT # 19-02

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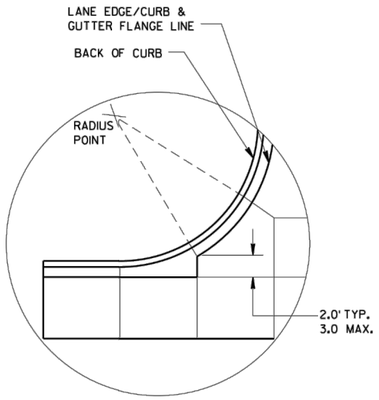
REVISIONS / ISSUES

NO.	DATE	BY	REMARKS

PAGE NO. C503

SDD 13c18-a Concrete Pavement Jointing



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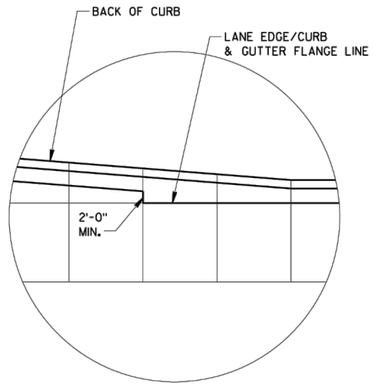

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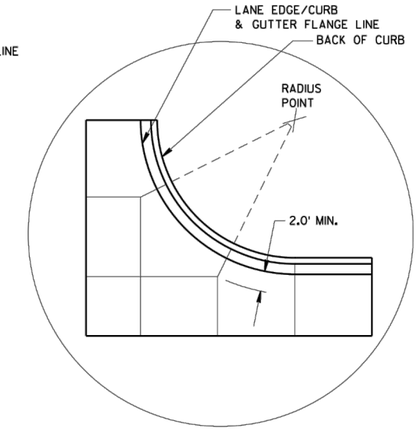

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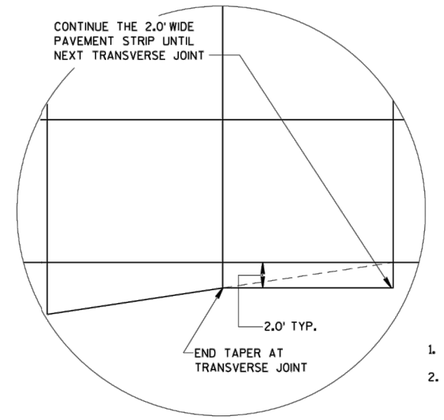


DETAIL "D"

GENERAL NOTES

THE PRIMARY ROADWAY CONTROLS THE TRANSVERSE JOINT PATTERN.

ALIGN NEW JOINTS WITH EXISTING JOINTS OR CRACKS.

CONSTRUCT TRANSVERSE JOINTS PERPENDICULAR TO THE ROADWAY.

ADJUST TRANSVERSE JOINTS TO ALIGN WITH UTILITY FIXTURES (E.G. MANHOLES AND INLETS) IN THE PAVEMENT STRUCTURE WHEN POSSIBLE. WATER VALVES DO NOT REQUIRE JOINT ADJUSTMENT.

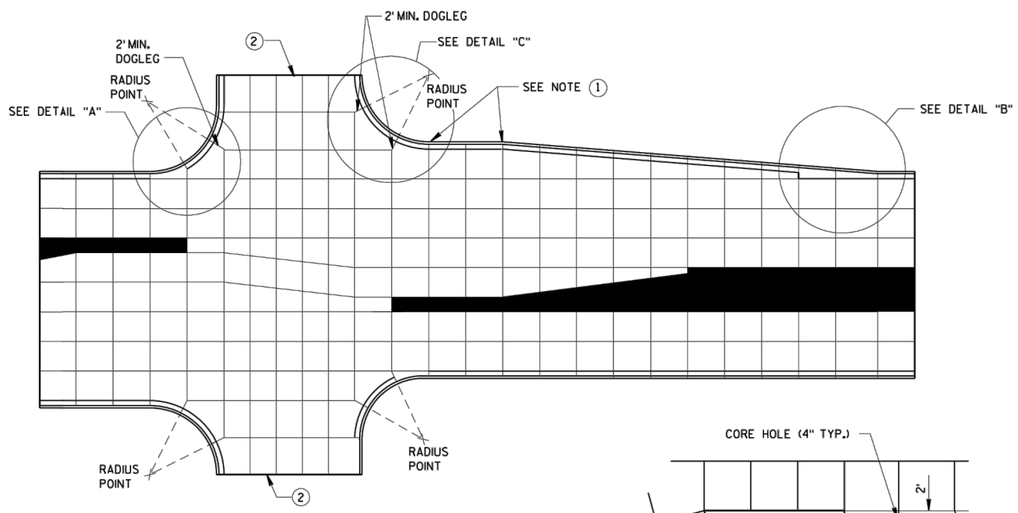
AVOID SLABS LESS THAN 2 FEET WIDE OR GREATER THAN 15 FEET WIDE.

SEE TABLE FOR TRANSVERSE JOINT SPACING. JOINT SPACING SPECIFIED IS MAXIMUM AND ACTUAL SPACING CAN BE ADJUSTED TO ACCOMMODATE INTERSECTIONS.

AVOID ANGLES LESS THAN 60° BY DOGLEGGING JOINTS THROUGH CURVE RADIUS POINTS. USE 90° ANGLES WHEN POSSIBLE.

CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

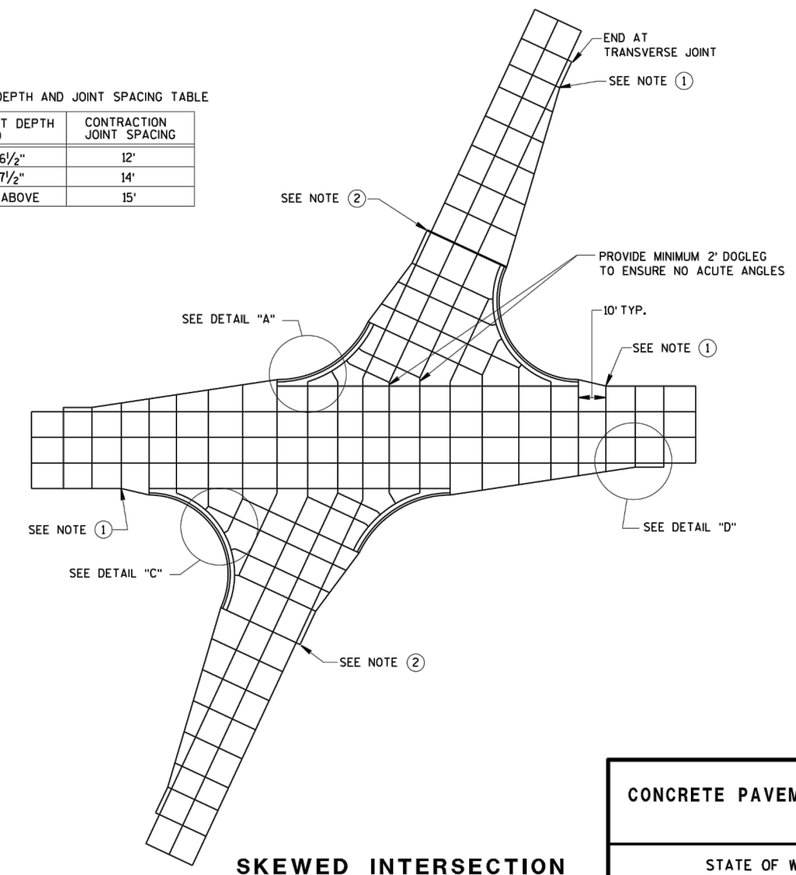
1. PROVIDE TRANSVERSE JOINTS AT ALL PAVEMENT WIDTH CHANGES.
2. CONSTRUCT DOWELED EXPANSION JOINT ON THE SIDE ROAD OF AN INTERSECTION IF THE SIDE ROAD IS CONCRETE PAVEMENT AND GREATER THAN 300 FEET IN LENGTH. ALIGN EXPANSION JOINT WITH EDGE OF RADIUS.
3. THE ENGINEER MAY APPROVE SLIGHT VARIATIONS FROM THESE JOINTING DETAILS.



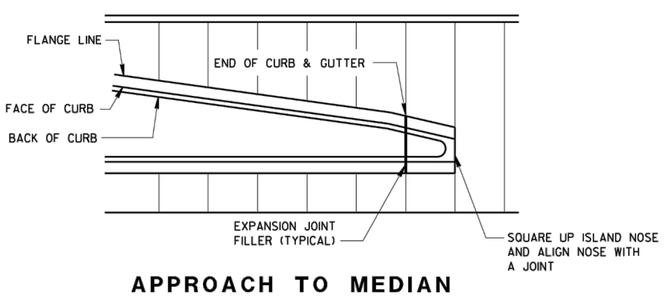
STANDARD INTERSECTION

PAVEMENT DEPTH AND JOINT SPACING TABLE

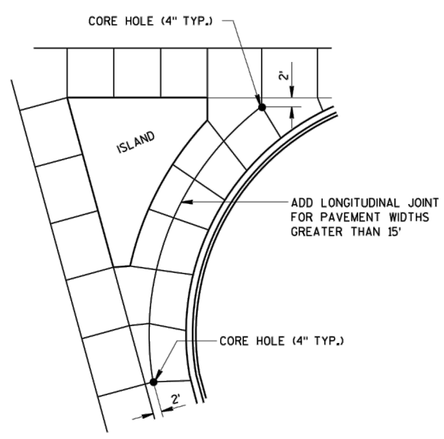
PAVEMENT DEPTH (D)	CONTRACTION JOINT SPACING
6", 6½"	12'
7", 7½"	14'
8" & ABOVE	15'



SKEWED INTERSECTION



APPROACH TO MEDIAN



LARGE RIGHT TURN

6

S.D.D. 13 C 18-6a

CONCRETE PAVEMENT JOINTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

CITY OF DE PERE
ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

RYAN ROAD
CONSTRUCTION DETAILS

NAME: RYAN ROAD STREET RECONSTRUCTION
PROJECT # 19-02

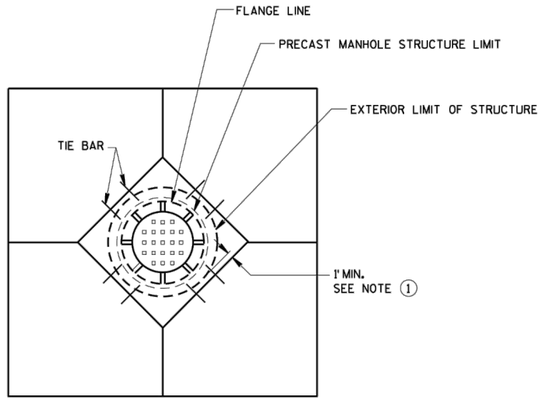
	BY	DATE
SURVEYED	MAU	03-2018
DRAWN	SRL	11-2018
DESIGNED	SRL	11-2018
CHECKED	EPR	11-2018

REVISIONS / ISSUES

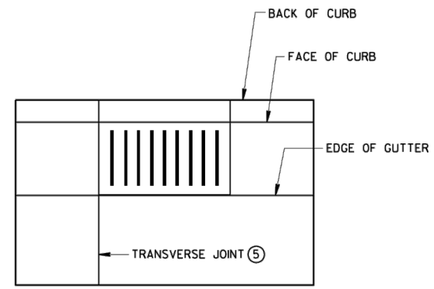
NO.	DATE	BY	REMARKS

PAGE NO. C504

SDD 13c18-d Concrete Pavement Jointing at Utility Fixtures



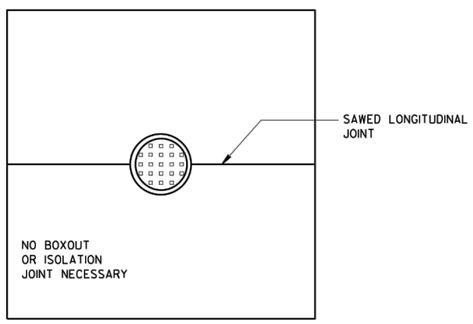
DIAGONAL MANHOLE BOXOUT FOR CONSTRUCTION JOINTS



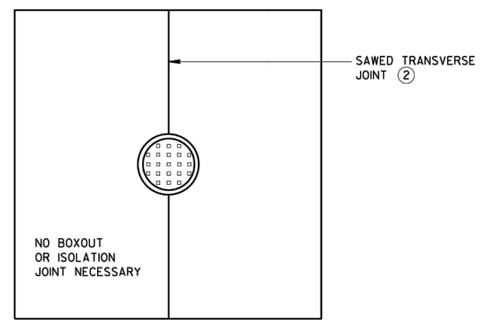
INLET WITH TRANSVERSE JOINT

GENERAL NOTES

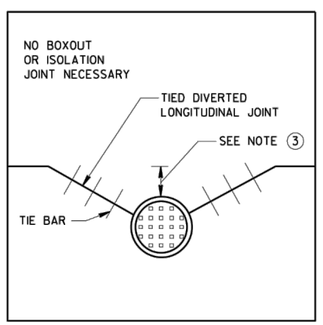
1. USE BOXOUTS WHEN UTILITY STRUCTURE IS IN THE PATH OF CONSTRUCTION JOINTS. PROVIDE A 1-FOOT MINIMUM CLEARANCE BETWEEN THE EXTERIOR LIMIT OF THE STRUCTURE TO THE DIAMOND BOXOUT.
2. ADJUST TRANSVERSE JOINT TO INTERSECT MANHOLE IF POSSIBLE.
3. IF DISTANCE BETWEEN THE LONGITUDINAL JOINT AND THE EDGE OF MANHOLE IS 2 FEET OR LESS, DIVERT THE LONGITUDIAL JOINT AT A 2:1 TAPER RATE TO THE CENTER OF THE MANHOLE. IF THE DISTANCE IS GREATER THAN 2 FEET, DO NOT DIVERT THE JOINT AND SAW AS NORMAL. PLACE REBAR REINFORCEMENT AROUND THE MANHOLE.
4. IF DISTANCE FROM THE EDGE OF THE MANHOLE TO THE NEAREST TRANSVERSE JOINT IS 4 FEET OR LESS, REDIRECT JOINT TO INTERSECT THE CENTER OF THE MANHOLE. IF DISTANCE IS GREATER THAN 4 FEET, DO NOT DIVERT THE JOINT AND SAW AS NORMAL. PLACE REBAR REINFORCEMENT AROUND THE MANHOLE.
5. ALIGN TRANSVERSE JOINT WITH ONE EDGE OF INLET WHEN PRACTICAL.



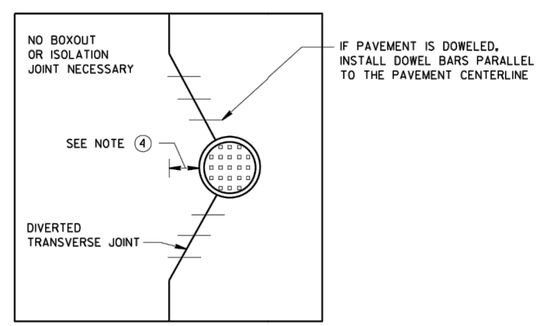
MANHOLE WITH LONGITUDINAL JOINT



MANHOLE WITH TRANSVERSE JOINT



MANHOLE WITH DIVERTED LONGITUDINAL CONTRACTION JOINT



MANHOLE WITH DIVERTED TRANSVERSE CONTRACTION JOINT

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S.D.D. 13 C 18-6d

CONCRETE PAVEMENT JOINTING AT UTILITY FIXTURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2018 — DATE
/S/ Peter Kemp, P.E. — PAVEMENT SUPERVISOR
FHWA

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S.D.D. 13 C 18-6d

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