

CITY OF DE PERE

PROJECT 19-11

GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION

**BID DATE:
MAY 30, 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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MAY 9, 2019 – MAY 16, 2019

CITY OF DE PERE

ADVERTISEMENT TO BID

PROJECT 19-11

GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION

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, May 30, 2019, at which time they will be publicly opened and read aloud.

Project 19-11 for which proposals are being sought includes the following approximate quantities:

- 3,600 LF New Sanitary Sewer (8-inch)
- 3,600 LF New Water Main (8-inch to 12-inch)
- 6,800 LF New Storm Sewer (8-inch to 36-inch)
- New Sanitary Sewer Lateral Installation (4-inch), and Associated Appurtenances
- New Water Service Installation (1-Inch) and Associated Appurtenances
- New Storm Sewer Lateral Installation (6-inch), and Associated Appurtenances
- 31,700 CY Unclassified Excavation (Street and Pond Construction)
- 9,200 LF New Concrete Curb and Gutter
- 1,900 Tons Asphaltic Concrete Pavement Placement
- Erosion Control & 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 #6341767 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.

**Project 19-11
Garrity's Glen South Subdivision Construction**

City of De Pere

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, May 27, 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 9th day of May 2019.

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

Project 19-11

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 submitting 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 19-11

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 May 30, 2019 is to furnish and deliver all materials, and to perform and do all work on the project designated, by June 15, 2020.

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. Proposed Products Form (Section 00 43 33)
- B. 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)

**Project 19-11
Garrity's Glen South Subdivision Construction**

City of De Pere

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 19-11

BID SCHEDULE – UNIT PRICE

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT BID
SANITARY SEWER					
SS-01	Provide 8” PVC Sanitary Sewer	LF	4,000	\$_____	\$_____
SS-02	Provide 6” PVC Sanitary Sewer Lateral	LF	145	\$_____	\$_____
SS-03	Provide 4” PVC Sanitary Sewer Lateral	LF	3,100	\$_____	\$_____
SS-04	Provide Sanitary Sewer Risers	VF	115	\$_____	\$_____
SS-05	Provide 8”x6” Sanitary Wye	EA	3	\$_____	\$_____
SS-06	Provide 8”x4” Sanitary Wye	EA	68	\$_____	\$_____
SS-07	Provide 12”x4” Cut in Wye w/Solid Sleeve PVC Connection to Existing	EA	9	\$_____	\$_____
SS-08	Provide 4’ Diameter Sanitary Sewer Manhole	VF	190	\$_____	\$_____
SS-09	Core Drill Sanitary Manhole	EA	3	\$_____	\$_____
SS-10	Abandon Existing Sanitary Lateral at Manhole	EA	1	\$_____	\$_____
STORM SEWER					
ST-01	Provide 36” RCP Class III Storm Sewer (Granular Backfill)	LF	205	\$_____	\$_____
ST-02	Provide 30” PVC, RCP Class III, or PP Storm Sewer (Granular Backfill)	LF	325	\$_____	\$_____

**Project 19-11
Garrity's Glen South Subdivision Construction**

City of De Pere

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT BID
STORM SEWER CONTINUED					
ST-03	Provide 24" PVC, RCP Class III, or PP Storm Sewer (Granular Backfill)	LF	70	\$ _____	\$ _____
ST-04	Provide 21" PVC or RCP Class III Storm Sewer (Granular Backfill)	LF	715	\$ _____	\$ _____
ST-05	Provide 18" PVC or RCP Class III Storm Sewer (Granular Backfill)	LF	600	\$ _____	\$ _____
ST-06	Provide 15" PVC or RCP Class III Storm Sewer (Granular Backfill)	LF	910	\$ _____	\$ _____
ST-07	Provide 12" PVC or RCP Class III Storm Sewer (Granular Backfill)	LF	1,600	\$ _____	\$ _____
ST-08	Provide 8" PVC Storm Sewer (Granular Backfill)	LF	1,330	\$ _____	\$ _____
ST-09	Provide 60" RCP Class III Storm Sewer (Natural Backfill)	LF	60	\$ _____	\$ _____
ST-10	Provide 36" RCP Class III Storm Sewer (Natural Backfill)	LF	40	\$ _____	\$ _____
ST-11	Provide 15" PVC or RCP Class III Storm Sewer (Natural Backfill)	LF	170	\$ _____	\$ _____
ST-12	Provide 12" PVC or RCP Class III Storm Sewer (Natural Backfill)	LF	850	\$ _____	\$ _____
ST-13	Provide 6" PVC Storm Sewer Lateral	LF	2,680	\$ _____	\$ _____
ST-14	Provide 21"x6" Storm Branch or Inserta Tee	EA	4	\$ _____	\$ _____
ST-15	Provide 18"x6" Storm Branch or Inserta Tee	EA	9	\$ _____	\$ _____
ST-16	Provide 15"x6" Storm Branch or Inserta Tee	EA	6	\$ _____	\$ _____
ST-17	Provide 12"x6" Storm Branch or Inserta Tee	EA	17	\$ _____	\$ _____
ST-18	Provide 8"x6" Wye	EA	14	\$ _____	\$ _____

**Project 19-11
Garrity's Glen South Subdivision Construction**

City of De Pere

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT BID
STORM SEWER CONTINUED					
ST-19	Provide 6' Diameter Storm Manhole	VF	13	\$ _____	\$ _____
ST-20	Provide 5' Diameter Storm Manhole	VF	25	\$ _____	\$ _____
ST-21	Provide 4' Diameter Storm Manhole	VF	145	\$ _____	\$ _____
ST-22	Provide Type A Inlet (30" RCP or 15" Nyloplast)	EA	17	\$ _____	\$ _____
ST-23	Provide Type B Inlet	EA	31	\$ _____	\$ _____
ST-24	Connect to Structure and/or Existing Pipe	EA	1	\$ _____	\$ _____
ST-25	Core Drill Existing Structure	EA	1	\$ _____	\$ _____
ST-26	Provide 60" RCP Endwall	EA	2	\$ _____	\$ _____
ST-27	Provide 36" RCP Endwall	EA	1	\$ _____	\$ _____
ST-28	Provide 15" RCP Endwall	EA	1	\$ _____	\$ _____
ST-29	Abandon/Remove Existing Storm Sewer Appurtenances	LS	1	\$ _____	\$ _____
WATER MAIN					
W-01	Provide 12" PVC Water Main (Granular Backfill)	LF	145	\$ _____	\$ _____
W-02	Provide 8" PVC Water Main (Granular Backfill)	LF	225	\$ _____	\$ _____
W-03	Provide 4" PVC Water Main (Granular Backfill)	LF	100	\$ _____	\$ _____
W-04	Provide 12" PVC Water Main (Natural Backfill)	LF	1,110	\$ _____	\$ _____
W-05	Provide 8" PVC Water Main (Natural Backfill)	LF	3,370	\$ _____	\$ _____

**Project 19-11
Garry's Glen South Subdivision Construction**

City of De Pere

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT BID
WATER MAIN CONTINUED					
W-06	Provide 4" PVC Water Main (Natural Backfill)	LF	100	\$ _____	\$ _____
W-07	Provide 1" HDPE Water Service-Open Cut	LF	2,000	\$ _____	\$ _____
W-08	Provide 1" HDPE with plug 50' in length	EA	78	\$ _____	\$ _____
W-09	Provide 1" Corporation and Curb Stop	EA	77	\$ _____	\$ _____
W-10	Provide 2" Corporation with Plug/Saddle with 2" HDPE	EA	2	\$ _____	\$ _____
W-11	Provide 12" Gate Valve	EA	2	\$ _____	\$ _____
W-12	Provide 8" Gate Valve	EA	9	\$ _____	\$ _____
W-13	Provide 6" Gate Valve	EA	3	\$ _____	\$ _____
W-14	Provide 4" Gate Valve	EA	3	\$ _____	\$ _____
W-15	Provide Connection to Existing Water Main	EA	2	\$ _____	\$ _____
W-16	Provide Connection to Existing Water Main 12"x12" Tapping Tee and Valve	EA	1	\$ _____	\$ _____
W-17	Provide Hydrant (6.5' Bury)	EA	11	\$ _____	\$ _____
W-18	Provide 6" PVC Hydrant Lead	LF	52	\$ _____	\$ _____
W-19	Provide Water Main Offset	EA	8	\$ _____	\$ _____
W-20	Hydrant Extension	VF	3.5	\$ _____	\$ _____
W-21	Remove Hydrant	EA	2	\$ _____	\$ _____

**Project 19-11
Garrity's Glen South Subdivision Construction**

City of De Pere

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT BID
STREET AND DRAINAGE					
SD-01	Provide Clearing and Grubbing	LS	1	\$ _____	\$ _____
SD-02	Unclassified Excavation (Street & Lots)	CY	3,600	\$ _____	\$ _____
SD-03	Unclassified Excavation (Pond)	CY	32,500	\$ _____	\$ _____
SD-04	Mill or Remove Asphaltic Concrete Pavement	SY	300	\$ _____	\$ _____
SD-05	Backyard Swale Ditching	SY	4,450	\$ _____	\$ _____
SD-06	Provide 1 ¼" Crushed Aggregate Base Course	TON	14,150	\$ _____	\$ _____
SD-07	Provide ¾" Crushed Aggregate Base Course Shoulder	TON	20	\$ _____	\$ _____
SD-08	Provide Asphaltic Concrete Pavement Type 4 LT 58-28 S, 1 ¾" Upper Layer	TON	60	\$ _____	\$ _____
SD-09	Provide Asphaltic Concrete Pavement Type 3 LT 58-28 S, 2 ¼" Lower Layer	TON	2,000	\$ _____	\$ _____
SD-10	Provide 24" Concrete Curb and Gutter (Slip Form)	LF	9,100	\$ _____	\$ _____
SD-11	Provide #4 Reinforcement Bars for Curb and Sidewalk	LF	2,240	\$ _____	\$ _____
SD-12	Drilled Tie Bars (Existing Sidewalk, Driveway, and Curb and Gutter)	EA	8	\$ _____	\$ _____
SD-13	Landscaping-Topsoil, Temporary Nurse Crop and Mulch	SY	19,100	\$ _____	\$ _____
SD-14	Landscaping-Topsoil, Seed, Fertilizer, and Erosion Mat	SY	7,700	\$ _____	\$ _____
SD-15	Landscaping-Topsoil, Seed, Fertilizer, and Mulch	SY	39,500	\$ _____	\$ _____
SD-16	Provide Turf Reinforcement Mat over Landscaping	SY	60	\$ _____	\$ _____

**Project 19-11
Garrity's Glen South Subdivision Construction**

City of De Pere

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT BID
SPECIAL CONSTRUCTION					
SC-01	Pipe Foundation Stabilization	CY	100	\$ _____	\$ _____
SC-02	Provide Silt Fence	LF	500	\$ _____	\$ _____
SC-03	Inlet Protection Type A	EA	16	\$ _____	\$ _____
SC-04	Inlet Protection Type D	EA	30	\$ _____	\$ _____
SC-05	Provide Heavy Rip Rap w/ Geotextile Fabric (Type HR)	SY	820	\$ _____	\$ _____
SC-06	Tracking Pad	EA	3	\$ _____	\$ _____
SC-07	Erosion Bale Ditch Checks	EA	40	\$ _____	\$ _____
SC-08	Reconstruct Manhole	VF	26	\$ _____	\$ _____
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 19-11 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 33

PROPOSED PRODUCTS FORM

The following is a list of material, type or model numbers and manufacturers used in the preparation of this proposal and to be used on this project:

<u>ITEM</u>	<u>MATERIAL</u>	<u>SUPPLIER</u>
Water Main (PVC)	_____	_____
Valves	_____	_____
Hydrants	_____	_____
Manholes	_____	_____
Inlets	_____	_____
Storm Sewer	_____	_____
Sanitary Sewer	_____	_____

SECTION 00 51 00

NOTICE OF AWARD

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

Project Description: 19-11 Garrity's Glen South Subdivision Construction

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 May 9, 2019 and May 16, 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 19-11 Garrity's Glen South Subdivision Construction, 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)

SECTION 00 55 00

NOTICE TO PROCEED

Date: _____

(CONTRACTOR NAME)
(ADDRESS)
(ADDRESS)

PROJECT: 19-11 Garrity's Glen South Subdivision Construction

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 Oblige, 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 19-11, 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.

**Project 19-11
Garrity's Glen South Subdivision Construction**

City of De Pere

- 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 19-11, 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 Applications 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 covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by the Application 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:

**Project 19-11
Garrity's Glen South Subdivision Construction**

City of De Pere

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 its 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. Lawrence Drive from Garroman Drive to 1150' north of Garroman Drive.
 - b. Garroman Drive from Lawrence Drive to 1300' east of Lawrence Drive.
 - c. Kilrush Road from Ballyvaughan Road to 550' south of County Clare Road.
 - d. Ballyvaughan Road from 250' south of Garroman Drive to 250' south of Adare Court.
 - e. Tipperary Trail from Garroman Drive to Ballyvaughan Road.
2. Work will be performed under the following prime contract:
 - a. 19-11 Garrity's Glen South Subdivision Construction

B. The Work includes:

1. Water main and associated appurtenances installation.
2. Storm Sewer and associated appurtenances installation.
3. Sanitary Sewer and associated appurtenances installation.
4. Curb and Gutter installation.
5. Asphalt concrete paving.
6. Terrace restoration.
7. Clearing and grubbing.
8. Unclassified excavation for roadway construction and pond construction.
9. Grading
12. Ditching
13. Erosion Control

1.4 WORK SEQUENCE

- A. Conduct construction activities to maintain access to businesses and residences throughout construction.
- B. Topsoil, seed, and mulch shall be completed prior to asphaltic concrete pavement placement.
- C. Work shall be staged to meet the following interim deadlines:
 1. Complete utility service, excavation, crushed aggregate base course and grading in utility easement to within 6" of final elevation on Ballyvaughan Road and Garroman Drive by October 25, 2019. Manholes and inlets installed prior to or during the winter months shall be installed to top of gravel grade and adjusted to final grade prior to paving.

2. Provide utility to, excavation, crushed aggregate base course and grading in utility easement within 6" of final elevation to Lawrence Drive, Kilrush Road and Tipperary Trail by May 15, 2020. Manholes and inlets installed prior to or during the winter months shall be installed to top of gravel grade and adjusted to final grade prior to paving.
3. Provide concrete curb and gutter by May 31, 2020.
4. Provide all remaining grading, restoration, and asphaltic concrete pavement by June 15, 2020.

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. Utility Installation for the subdivision will occur concurrent with this project.
- B. 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)
- I. Central Brown County Water Authority, Rob Michaelson, (rmichaelson@mpu.org) (920-686-4354)

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. Ingress and Egress to the site for delivery of materials, hauling, daily construction, and all vehicular traffic shall be off of Lawrence Drive from Southbridge Road.
 - 1. Lawrence Drive, between Southbridge Road and Fortune Avenue, is not a truck route and shall not be used by trucks.
- C. Provide a Traffic Control Plan for work on Lawrence Drive. Maintain two lanes of traffic on Lawrence Drive at all times unless approved by the Engineer.
- D. Storm Sewer pipe shall be protected if it is placed prior to the road being brought to subgrade. Ramp areas with less than two feet of cover or avoid with construction equipment.

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- E. If utilities are installed prior to fill being placed to bring the road to subgrade, road fill, properly compacted may be placed over trenches.

PART 2 – PRODUCTS

PART 3 – EXECUTION

END OF SECTION

SECTION 01 22 01

MEASUREMENT AND PAYMENT SANITARY SEWER

PART 1 – GENERAL

1.1 SUMMARY

- | | |
|---|---------------------|
| A. Section includes: | Bid Item No. |
| 1. Sanitary Sewer Mains (Granular Backfill) | SS-01 |
| 2. Sanitary Sewer Laterals | SS-02, SS-03 |
| 3. Sanitary Sewer Risers | SS-04 |
| 4. Sanitary Sewer Service Branches | SS-05, SS-06, SS-07 |
| 5. Sanitary Sewer Manholes | SS-08 |
| 6. Core Drilling to Existing Sanitary Manhole | SS-09 |
| 7. Abandon Existing Sanitary Lateral at Manhole | SS-10 |
- 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 sanitary 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. Bypass pumping.
 6. Excavation.
 7. Open Trench installation method (unless bid item specifies other method).
 8. Pipe Bedding.
 9. Backfilling and compacting native obtained from the excavation.
 10. Supplying, hauling, backfilling and compacting granular material.
 11. Loading, hauling and disposing of surplus excavated material.
 12. Landscaping – turf establishment surface restoration and trees and bushes damaged during construction.

13. Maintenance, protection, replacement and/or repair of facilities not designated for alteration on the Site beyond the limits identified.
14. Site access requirements including temporary aggregate material as required for local traffic access.
15. Bulkhead and abandoned existing sanitary sewer with flowable fill as shown on Drawings.
16. 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.
17. Dust control.
18. Remove and replace existing mailboxes and traffic signs.
19. Restroom facilities
20. Easement and right-of-way requirements.
21. Construction staking and other survey work not provide by the Engineer.
22. Regulatory requirements.
23. Preconstruction videotaping and video equipment.
24. Quality assurance and quality control testing and inspections.
25. Shop drawings and other submittals.

1.3 SANITARY SEWER MAINS (GRANULAR BACKFILL)

- A. The unit price for Sanitary Sewer Main (Granular Backfill) work includes:
 1. General Work Items of Article 1.2.
 2. Sanitary sewer pipe and fittings of material stated in the Unit Price Bid Schedule and installed using the open trench method.
 3. Excavation, breakdown and removal of abandoned piping inside the trench area, including plugging of existing connections.
 4. Excavation, breakdown and removal of abandoned pipeline structures inside the trench area, including plugging of existing connections.
- B. Measurement of payment will be the actual horizontal length along the centerline of the installed sewer from centerline of the manhole to centerline of manhole with no deductions for manholes, sewer services branches and other fittings.
- C. The unit of measurement for payment is linear feet.

1.4 SANITARY SEWER LATERALS

- A. The unit price for Sanitary Sewer Laterals work includes:
 1. General Work Items of Article 1.2.
 2. Sanitary sewer lateral pipe and fittings of the material stated in the Unit Price Bid Schedule and installed using the open trench method.
 3. Watertight plug in the end of the sewer service lateral or connection including transition coupling to the existing building sewer lateral.
 4. Tracer wire.
 5. Install an 8' – 4" X 4" board at the end of the lateral.

B. Measurement of payment will be the actual horizontal length along the centerline of the installed sewer service lateral pipe (excluding risers) from centerline of the service branch to the end of the pipe at the right of way, easement or existing sewer service lateral with no deductions for fittings.

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

1.5 SANITARY SEWER RISERS

A. The unit price for Sanitary Sewer Risers work includes:

1. General Work Items of Article 1.2.
2. Sanitary sewer riser pipe and fittings of material stated in the Unit Price Bid Schedule and installed using the open trench method.
3. Risers to be installed at the right of way.
4. Tracer wire.

B. Measurement for payment will be the actual length of pipe along the centerline of the installed sewer service riser pipe from centerline of fitting to centerline of fitting having a vertical rise of 45 degrees or greater with no deductions for fittings.

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

1.6 SANITARY SEWER SERVICE BRANCHES

A. The unit price for Sanitary Sewer Service Branches work includes:

1. General Work Items of Article 1.2.
2. Sanitary sewer service branches of same material strength or better than sanitary sewer main pipe.
3. Installation along with the sanitary sewer main pipe installation.
4. Cut Wye in Existing Sewer (where required).
5. Plug (where required).

B. Measurement for payment will be the actual number installed.

C. The unit of measurement for payment is each.

1.7 SANITARY SEWER MANHOLES

A. The unit price for Sanitary Sewer Manholes work includes:

1. General Work Items of Article 1.2.
2. Precast reinforced concrete components.
3. Joint flexible gasket material.
4. Resilient flexible connector between the manhole structure and the sewer pipe.
5. Adjusting rings and bituminous plastic cement sealant at chimney.
6. Manhole steps.
7. Manhole frame and cover (Neenah Foundry R-1500 Manhole Cover with Non-Rocking Lid or equal). Sanitary Sewer manhole covers shall have gaskets and concealed pick holes.

8. Bedding material.
9. Sewer pipe stub with connections and watertight plug (where required).
10. Final casting adjustment.

- B. Measurement for payment will be the distance from the invert of the lowest sewer to the top of the frame and cover as set.
- C. The unit of measurement for payment is vertical feet.

1.8 CORE DRILLING TO EXISTING SANITARY MANHOLE

- A. The unit price for Core Drilling to Existing Sanitary Manhole work includes:
1. General Work Items of Article 1.2.
 2. Core drilling into existing sanitary sewer manhole (where required).
 3. Install A-Lok boot.
 4. Reform flow line in existing sanitary manhole.
- B. Measurement for payment will be the actual number complete.
- C. The unit of measurement for payment is each.

1.9 ABANDON EXISTING SANITARY LATERAL AT MANHOLE

- A. The unit price for Abandon Existing Sanitary Lateral at Manhole includes:
1. General Work Items of Article 1.2.
 2. Providing and installing water tight plug in lateral at manhole.
- B. Measurement for payment will be by each individual unit installed.
- C. The unit of measurement for payment is each.

END OF SECTION

SECTION 01 22 02

MEASUREMENT AND PAYMENT STORM SEWER

PART 1 – GENERAL

1.1 SUMMARY

- | | |
|--|---|
| A. Section includes: | Bid Item No. |
| 1. Storm Sewer Mains (Granular Backfill) | ST-01, ST-02, ST-03, ST-04,
ST-05, ST-06, ST-07, ST-08 |
| 2. Storm Sewer Mains (Natural Backfill) | ST-09, ST-10, ST-11, ST-12 |
| 3. Storm Sewer Laterals | ST-13 |
| 4. Storm Sewer Service Branches | ST-14, ST-15, ST-16, ST-17
ST-18 |
| 5. Storm Sewer Manholes | ST-19, ST-20, ST-21 |
| 6. Catch Basin/Inlets | ST-22, ST-23 |
| 7. Connect to Structure and/or Existing Pipe | ST-24 |
| 8. Core Drill Existing Structure | ST-25 |
| 9. Flared End Section | ST-26, ST-27, ST-28 |
| 10. Abandon/Remove Existing Storm Sewer
Appurtenances | ST-29 |
- 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 STORM SEWER MAINS (GRANULAR BACKFILL)

- A. The unit price for Storm Sewer Main (Granular Backfill) work includes:
 1. General Work Items of Article 1.2.
 2. Storm sewer pipe and fittings of material stated in the Unit Price Bid Schedule and installed using the open trench method.
 3. Excavation, breakdown and removal of abandoned piping inside the trench area, including plugging of existing connections.
 4. Excavation, breakdown and removal of abandoned pipeline structures inside the trench area, including plugging of existing connections.
- B. Measurement of payment will be the actual horizontal length along the centerline of the installed sewer from centerline of the manhole to centerline of manhole with no deductions for manholes, sewer services branches and other fittings.
- C. The unit of measurement for payment is linear feet.

1.4 STORM SEWER MAINS (NATURAL BACKFILL)

- A. The unit price for Storm Sewer Main (Natural Backfill) work includes:
 1. General Work Items of Article 1.2.
 2. Storm sewer pipe and fittings of material stated in the Unit Price Bid Schedule and installed using the open trench method.

3. Construct a clay dam around the pipe, in place of the bedding stone and initial backfill, as shown on the project plan sheets.
 4. Excavation, breakdown and removal of abandoned piping inside the trench area, including plugging of existing connections.
 5. Excavation, breakdown and removal of abandoned pipeline structures inside the trench area, including plugging of existing connections
- B. Measurement of payment will be the actual horizontal length along the centerline of the installed sewer from centerline of the manhole to centerline of manhole with no deductions for manholes, sewer services branches and other fittings.
- C. The unit of measurement for payment is linear feet.

1.5 STORM SEWER LATERALS

- A. The unit price for Storm Sewer Laterals work includes:
1. General Work Items of Article 1.2.
 2. Storm sewer lateral pipe and fittings of the material stated in the Unit Price Bid Schedule and installed using the open trench method.
 3. Watertight plug in the end of the sewer service lateral or connection including transition coupling to the existing building sewer lateral.
 4. Tracer wire.
 5. Installed an 8' – 4" X 4" board at the end of the lateral.
- B. Measurement of payment will be the actual horizontal length along the centerline of the installed sewer service lateral pipe from centerline of the service branch to the end of the pipe at the right of way, easement or existing sewer service lateral with no deductions for fittings.
- C. The unit of measurement for payment is linear feet.

1.6 STORM SEWER SERVICE BRANCHES/INSERTA TEES

- A. The unit price for Storm Sewer Service Branches/Inserta Tees work includes:
1. General Work Items of Article 1.2.
 2. Storm sewer service branches of same material strength or better than storm sewer main pipe (where required).
 3. Core drilling into concrete storm sewer main (where required).
 4. Installation along with the storm sewer main pipe installation.
 5. Plug (where required).
- B. Measurement for payment will be the actual number installed.
- C. The unit of measurement for payment is each.

1.7 STORM SEWER MANHOLES

- A. The unit price for Storm Sewer Manholes work includes:

1. General Work Items of Article 1.2.
2. Precast reinforced concrete components.
3. Joint flexible gasket material.
4. Grout seal between the manhole and structure and the sewer pipe.
5. Adjusting rings and bituminous plastic cement sealant at chimney.
6. Manhole steps.
7. Manhole frame and cover.
8. Bedding material.
9. Sewer pipe stub with connections and watertight plug (where required).
10. Final casting adjustment.

B. Measurement for payment will be the distance from the invert of the lowest sewer to the top of the frame and cover as set.

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

1.8 CATCH BASIN/INLETS

A. The unit price for Catch Basin/Inlets work includes:

1. General Work Items of Article 1.2.
2. Precast reinforced concrete components.
3. Joint flexible gasket material.
4. Grout seal between the catch basin/inlet structure and the sewer pipe.
5. Adjusting rings grouted in place.
6. Casting frame and grate.
7. Bedding material.
8. Supply and install 6 to 10 feet of 4 inch flexible perforated plastic pipe with geotextile wrap subgrade drain.
9. Sand fill and Class "B" concrete floor and flow line.
10. Temporary cover over catch basin/inlet to prevent eroded materials from entering.
11. Final casting adjustment.

B. Measurement for payment will be the actual number installed.

C. The unit of measurement for payment is each.

1.9 CONNECT TO STRUCTURE AND/OR EXISTING PIPE

A. The unit price for Connect to Structure and/or Existing Pipe includes:

1. General Work Items of Article 1.2.
2. Sawing existing storm sewer.
3. Connection to existing storm pipe or manhole.

B. Measurement for payment will be the actual number complete.

C. The unit of measurement for payment is each.

1.10 CORE DRILLING EXISTING STRUCTURE

- A. The unit price for Core Drilling Existing Storm Structure includes:
 - 1. General Work Items of Article 1.2.
 - 2. Core drilling into existing storm sewer manhole or pipe (where required).
 - 3. Connection with mortar or the installation of boot.
 - 4. Reform flow line (manhole) or concrete collar (pipe).
- B. Measurement for payment will be the actual number complete.
- C. The unit of measurement for payment is each.

1.11 FLARED END SECTION

- A. The unit price for Reinforced Concrete Apron Endwall includes:
 - 1. General Work Items of Article 1.2.
 - 2. Precast concrete components.
 - 3. Anchors to storm sewer pipe.
- B. Measurement for payment will be the actual number installed.
- C. The unit of measurement for payment is each.

1.12 ABANDON/REMOVE EXISTING STORM SEWER AND APPURTENANCES

- A. The unit price for Abandon/Remove Existing Storm Sewer and Appurtenances work includes:
 - 1. General Work Items of Article 1.2.
 - 2. Bulkhead and abandon existing storm sewer with flowable fill or remove for entire project where stated on the plans and located outside of the trench area.
 - 3. Remove and dispose of manholes and inlets.
- B. Measurement for payment will not be made. This includes all of the project area.
- C. The unit of measurement for payment is lump sum.

END OF SECTION

SECTION 01 22 03

MEASUREMENT AND PAYMENT WATER SYSTEM

PART 1 – GENERAL

1.1 SUMMARY

- | | |
|---|------------------------|
| A. Section includes: | Bid Item No. |
| 1. Water Mains (Granular Backfill) | W-01, W-02, W-03 |
| 2. Water Mains (Natural Backfill) | W-04, W-05, W-06 |
| 3. Water Services | W-07 |
| 4. Provide 1" HDPE w/ Plug 50' in length | W-08 |
| 5. Corporation and Curb Stop | W-09 |
| 6. 2" Corporation w/ Plug or Saddle and HDPE Pipe | W-10 |
| 7. Fire Hydrants | W-17 |
| 8. Hydrant Leads | W-18 |
| 9. Valves | W-11, W-12, W-13, W-14 |
| 10. Connection to Existing Water Mains | W-15, W-16 |
| 11. Water Main Offset | W-19 |
| 12. Hydrant Extension | W-20 |
| 13. Remove Hydrant | W-21 |
- 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 water 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 water main 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 WATER MAINS (GRANULAR BACKFILL)

- A. The unit price for Water Main (Granular Backfill) work includes:
 1. General Work Items of Article 1.2.
 2. Water pipe and fittings of material stated in the Unit Price Bid Schedule and installed using the open trench method.
 3. Ductile or cast iron fittings.
 4. Tracer wire.
 5. Polyethylene encasement of ductile iron or cast iron pipe and fittings.
 6. Blocking and joint restraints.
 7. Disinfection of pipelines.
- B. Measurement of payment will be the actual horizontal length along the centerline of the installed water main with no deductions for fittings and valves.
- C. The unit of measurement for payment is linear feet.

1.4 WATER MAINS (NATURAL BACKFILL)

- A. The unit price for Water Main (Natural Backfill) work includes:
 1. General Work Items of Article 1.2.
 2. Water pipe and fittings of material stated in the Unit Price Bid Schedule and installed using the open trench method.

3. Ductile or cast iron fittings.
4. Tracer wire.
5. Polyethylene encasement of ductile iron or cast iron pipe and fittings.
6. Blocking and joint restraint.
7. Disinfection of pipelines.

B. Measurement of payment will be the actual horizontal length along the centerline of the installed water main with no deductions for fittings and valves.

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

1.5 WATER SERVICES

A. The unit price for Water Services work includes:

1. General Work Items of Article 1.2.
2. Pipe and fittings of material stated in the Unit Price Bid Schedule.
3. Tracer wire.
4. Disinfection of pipelines.
5. Installed an 8' - 4"x4" board at the end of the lateral.

B. Measurement of payment will be the actual horizontal length along the centerline of the installed water service with no deductions for fittings and curb stops.

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

1.6 WATER SERVICES WITH PLUG AND 50' LENGTH

A. The unit price for Water Service with Plug and 50' Length work includes:

1. General Work Items of Article 1.2.
2. Pipe and fittings of material stated in the Unit Price Bid Schedule.
3. Tracer wire.
4. Disinfection of pipelines.
5. Installed 50' of HDPE, coiled, with plug, at end of trench.
6. Backfill over coiled water service.

B. Measurement of payment will be the number installed.

C. The unit of measurement for payment is each.

1.7 CORPORATION AND CURB STOPS

A. The unit price for Corporation and Curb Stops work includes:

1. General Work Items of Article 1.2.
2. Supply curb stops and curb boxes.
3. Connection to existing water service (where required).
4. Installation of curb stops and curb boxes.
5. Tracer wire.

B. Measurement for payment will be the actual number installed.

C. The unit of measurement for payment is each.

1.8 2" CORPORATION WITH PLUG/SADDLE AND HDPE

A. The unit price for 2" Corporation with Plug/Saddle and HDPE work includes:

1. General Work Items of Article 1.2.
2. Provide and install 2" corporation with plug (where required) with 2" HDPE pipe.
3. Provide and install 2" corporation with saddle (where required) with 2" HDPE pipe.
4. Remove 2" corporation with plug/saddle and repair water main.
5. Provide solid sleeve if saddle was removed.

B. Measurement for payment will be the actual number installed.

C. The unit of measurement for payment is each.

1.9 FIRE HYDRANTS

A. The unit price for Fire Hydrants work includes:

1. General Work Items of Article 1.2.
2. Fire hydrant complete of the specified bury depth.
3. Blocking and joint restraints.
4. Hydrant wrenches.
5. Hydrant markers.
6. Polyethylene encasement.
7. Drainage pit.
8. Disinfection of hydrant.
9. Tracer wire.
10. Tracer wire access box.

B. Measurement for payment will be the actual number installed.

C. The unit of measurement for payment is each.

1.10 HYDRANTS LEADS

A. The unit price for Hydrants Leads work includes:

1. General Work Items of Article 1.2.
2. Pipe and fittings of material stated in the Unit Price Bid Schedule.
3. Blocking and joint restraints.
4. Tracer wire.
5. Disinfection of pipeline.

B. Measurement for payment will be the actual horizontal length along the centerline of the installed from the centerline of the water main to the centerline of the hydrant with no deductions for fittings and valves.

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

1.11 VALVES

- A. The unit price for Valves work includes:
 - 1. General Work Items of Article 1.2.
 - 2. Valve.
 - 3. Valve box.
 - 4. Polyethylene encasement.
 - 5. Stem.
 - 6. Bedding material.
- B. Measurement for payment will be the actual number installed.
- C. The unit of measurement for payment is each.

1.12 CONNECTIONS TO EXISTING WATER MAINS

- A. The unit price for Connection to Existing Water Mains work includes:
 - 1. General Work Items of Article 1.2.
 - 2. Locating existing water main.
 - 3. Connection to the end of existing pipe.
 - a. Remove existing plug.
 - b. Direct connection to end of existing pipe.
 - c. Transition fittings, if required.
- B. Measurement for payment will be the actual number installed.
- C. The unit of measurement for payment is each.

1.13 CONNECTION TO EXISTING WATER MAIN BY CUT-IN TEE/TAPPING TEE

- A. The unit price for Connection to Existing Water Main by Cut-in Tee/Tapping Tee work includes:
 - 1. General Work Items of Article 1.2.
 - 2. Locating existing water main.
 - 3. Supply and install ductile or cast iron pipe fittings.
 - 4. Supply equipment for tapping tee installation.
 - 5. Installation of tapping tee.
 - 6. Valve and valve box.
 - 7. Polyethylene encasement of ductile or cast iron pipe fittings.
 - 8. Tracer wire.
 - 9. Blocking and joint restraints.
 - 10. Disinfection of pipeline.
- B. Measurement for payment will be the actual number installed.
- C. The unit of measurement for payment is each.

1.14 FIRE HYDRANT EXTENSION

- A. The unit price for Fire Hydrant Extension work includes:
 - 1. General Work Items of Article 1.2.
 - 2. Fire hydrant extension at the height specified.
 - 3. Remove and Reinstall top of hydrant.
 - 4. New hydrant marker.
- B. Measurement for payment will be based on the additional height installed.
- C. The unit of measurement for payment is vertical feet.

1.15 WATER MAIN OFFSET

- A. The unit price for Water Main Offset work includes;
 - 1. General Work Items of Article 1.2.
 - 2. Ductile or cast iron fittings and PVC pipe.
 - 3. Tracer wire.
 - 4. Polyethylene encasement of ductile iron or cast iron pipe and fittings.
 - 5. Blocking and joint restraints.
- B. Measurement for payment will be actual number installed.
- C. The unit of measurement for payment is each and includes the pipe fittings from vertical bend to vertical bend at the offset location.

1.16 REMOVE HYDRANT

- A. The unit price for Remove Hydrant work includes:
 - 1. General Work Items of Article 1.2.
 - 2. Excavating
 - 3. Removing existing hydrant.
 - 4. Backfilling and compacting.
 - 5. Salvage to owner at 925 S. Sixth Street, De Pere, WI 54115.
- B. Measurement for payment will be based on the number salvaged.
- C. The unit of measurement for payment is each.

END OF SECTION

SECTION 01 22 04

MEASUREMENT AND PAYMENT STREET AND DRAINAGE CONSTRUCTION

PART 1 – GENERAL

1.1 SUMMARY

- | | |
|---|---------------------|
| A. Section includes: | Bid Item No. |
| 1. Clearing and grubbing. | SD-01 |
| 2. Topsoil and Unclassified Excavation. | SD-02, SD-03 |
| 3. Mill or Remove Asphaltic Concrete Pavement | SD-04 |
| 4. Backyard Swale Ditching | SD-05 |
| 5. Crushed Aggregate Base and Surface Course | SD-06, SD-07 |
| 6. Asphaltic Concrete Pavement | SD-08, SD-09 |
| 7. Portland Cement Concrete Curb and Gutter | SD-10 |
| 8. Deformed Reinforcement Bars | SD-11 |
| 9. Drilling Tie Bars and Dowel Bars | SD-12 |
| 10. Landscaping – Topsoil, Seed, Fertilize, and Mulch | SD-13, SD-14, SD-15 |
| 11. Turf Reinforcement Mat | SD-16 |
- 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 CLEARING AND GRUBBING

- A. The unit price for Clearing and Grubbing work includes:
 1. General Work Items of Article 1.2.
 2. Cutting and disposing of trees, brush, windfalls, logs and other vegetation.
 3. Removing and disposing of roots, stumps, stubs, logs and other timber.
 4. Stripping and stockpiling topsoil.
- B. Measurement of payment will not be made.
- C. The unit of measurement for payment is lump sum.

1.4 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.

1.5 BACKYARD SWALE DITCHING

- A. The unit price for Backyard Swale Ditching 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. Excavation of undercut areas for placing topsoil.
9. Respreading topsoil to final grades shown on the Drawings.
10. Disposal of surplus topsoil, unclassified material and unsuitable material.
11. Preparation of disposal site and transportation of material over an Engineer approved haul route from the site including all loading and dumping of material
12. Finish Grading.
13. Place seed and erosion control revegetation mat, Class I, Urban.

B. Measurement of payment will be the length and width of the area to be ditched for backyard swales.

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

1.6 MILL OR REMOVE ASPHALTIC CONCRETE PAVEMENT

A. The unit price for Mill or Remove Asphaltic Concrete Pavement work includes:

1. General Work Items of Article 1.2.
2. Milling or remove to length, width and depth as shown on Drawings or specified elsewhere.
3. Hauling and disposing of pavement.
4. Cleaning of area.

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

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

1.7 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 the actual amount of material required and incorporated in the work verified by submitting to the Engineer delivery tickets provide with each load showing the weight measured on a certified scale, type of material, the date delivered and

the project name. Aggregates in excess of seven (7) percent total moisture determined based on the dry mass of the aggregates will have moisture content in excess of seven (7) percent deducted from the measured weight.

C. The unit of measurement for payment is tons.

1.8 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.

1.9 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.

1.10 DEFORMED REINFORCEMENT BARS

A. The unit price for Deformed Reinforcement Bars work includes:

1. General Work Items of Article 1.2.
2. Supply and install 2 number 4 deformed reinforcement bars over all trenches that fall under any portion of the concrete curb and gutter, sidewalk, and driveway being constructed.

B. Measurement for payment will be the horizontal length of each bar 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 linear feet.

1.12 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.

1.13 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 area shown on the plans.
- C. The unit of measurement for payment is square yard.

1.14 TURF REINFORCEMENT MAT

- A. The unit price for Turf Reinforcement Mat work includes:
1. General Work Items of Article 1.2.
 2. Install to the dimensions as shown on the drawing or specified elsewhere.
 3. Providing turf reinforcement mat
 4. Install per manufacturer's recommendations.
- B. Measurement for payment will be for the area where installed. Landscape restoration is included under other bid items.
- C. The unit of measurement for payment is square yards.

END OF SECTION

SECTION 01 22 05

MEASUREMENT AND PAYMENT SPECIAL CONSTRUCTION

PART 1 – GENERAL

1.1 SUMMARY

- | | |
|-------------------------------------|--------------|
| A. Section includes: | Bid Item No. |
| 1. Pipe Foundation Stabilization | SC-01 |
| 2. Silt Fence Erosion Control | SC-02 |
| 3. Erosion Bale Ditch Checks | SC-07 |
| 4. Inlet Protection Erosion Control | SC-03, SC-04 |
| 5. Rip Rap Erosion Control | SC-05 |
| 6. Tracking Pad | SC-06 |
| 7. Manhole Reconstruct | SC-08 |
- 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 PIPE FOUNDATION STABILIZATION

- A. The unit price for Pipe Foundation Stabilization work includes:
1. General Work Items of Article 1.2.

2. Excavation below the limits of the pipe bedding with the bottom of the excavation wider than the top with 1:1 side slopes.
3. Dewatering.
4. Soil Class A-7 or A-8 aggregate material.
5. Loading, hauling and disposing of surplus excavated material.

B. Measurement of payment will be the volume calculated based on:

1. The actual depth from 4" below the bottom of pipe to the bottom of the aggregate material placed.
2. The bottom width is the actual width not to exceed the pipe outside diameter plus 24" plus 1:1 side slopes.
3. The top width is the pipe outside diameter plus 24".

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

1.4 SILT FENCE EROSION CONTROL

A. The unit price for Silt Fence Erosion Control work includes:

1. General Work Items of Article 1.2.
2. Provide fabric and post.
3. Excavate to anchor fabric and compact soil or provide soil class C-3 to anchor the fabric.
4. Inspection and maintenance of the installed silt fence.
5. Removal of the silt fence.
6. Finish grading.
7. Topsoil, seeding, fertilizing, and mulching area in the vicinity of the removed silt fence which does not have established turf.

B. Measurement of payment will be the actual horizontal length installed.

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

1.5 EROSION BALES

A. The unit price for Erosion Bales work includes:

6. General Work Items of Article 1.2.
 1. Provide straw bales and anchor stakes.
 2. Excavate and embed the straw bales.
 3. Inspection and maintenance of the installed straw bales.
 4. Removal of the straw bales.
 5. Finish grading.
 6. Topsoil, seeding, fertilizing, and mulching area in the vicinity of the removed erosion bales which does not have established turf.

B. Measurement for payment will be the actual number of bales installed.

C. The unit of measurement for payment is each.

1.6 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.

1.7 RIP RAP EROSION CONTROL

- A. The unit price for Rip Rap Erosion Control work includes:
 - 1. General Work Items of Article 1.2.
 - 2. Provide rip rap material and geotextile fabric.
 - 3. Excavate and place rip rap material.
- B. Measurement for payment will be the actual area installed.
- C. The unit of measurement for payment is square yards.

1.8 TRACKING PAD

- A. The unit price for Tracking Pad work includes:
 - 1. General Work Items of Article 1.2.
 - 2. Install to the dimensions as shown on the drawing or specified elsewhere.
 - 3. Providing filter fabric.
 - 4. Providing crushed aggregate base course (3 inch clear stone).
 - 5. Daily maintenance of aggregate.
 - 6. Removal of aggregate and restore with topsoil, seed, fertilizer and mulch.
- B. Measurement for payment will be the actual number of tracking pads installed.
- C. The unit of measurement for payment is each.

1.9 MANHOLE RECONSTRUCT

- A. The unit price for Manhole Reconstruct work includes:
 - 1. General Work Items of Article 1.2.
 - 2. Salvage and reinstall structure castings.
 - 3. Removal of the casting, existing adjusting rings and sections of structure.
 - 4. Providing or reusing existing precast cone section for manholes.

5. Providing concrete adjusting rings and a 2 inch rubber riser ring from the WisDOT approved product list.
 6. Bituminous plastic cement sealing the exterior of the adjusting rings and casting.
 7. The ring will be secured to the precast section with a 3 ½" wide Kent Seal or equal.
 8. 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.
 9. Initial and final adjustment.
 10. Backfilling and compacting.
- B. Measurement for payment will be the actual number of structure reconstructed.
- C. The unit of measurement for payment is vertical feet.

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. WDNR-Water Main Extension
 - 2. WDNR-Sanitary Sewer Extension

3. WDNR-WRAPP (Storm Water Notice of Intent)

- 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, verify 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 PROVIDED 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, benchmarks, 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 31 23 00.1

EARTHWORK

PART 1 – GENERAL

1.1 SUMMARY

- A. Work in this section shall include but not be limited to the following:
 - 1. Excavation.
 - 2. Test rolling.
 - 3. Filling and compacting.
 - 4. Backfilling around structures.
 - 5. Disposal of surplus materials.
 - 6. Finish grading.

1.2 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM)
 - 1. D4318 Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
 - 2. D1140 Test for Amount of Material in Soils Finer than the No. 200 Sieve
 - 3. D1556 Test for Density of Soil in Place by the Sand-Cone Method
 - 4. D1557 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Lb (4.54 kg) Rammer and 18 in. (457 mm) Drop
 - 5. D2216 Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
 - 6. D2922 Test for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
 - 7. D3017 Test for Moisture Content of Soil and Soil-Aggregate by Nuclear Method (Shallow Depth)

1.3 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittals:
 - 1. Two (2) copies of testing data of laboratory tests to the owner's representative if material is brought from off site.

1.4 DENSITY TESTING

- A. The Engineer will provide an independent testing laboratory to provide testing services.
- B. Anticipated testing schedule as follows:

Fill Utilized For:	Number of Acceptable Tests for Each Class or Fill:
Embankments, dikes or berms	1 test per 600 cubic yards
Structural or controlled fills	1 test per 1,500 square feet, minimum of 1 test per lift
Trench backfill under paved or surfaced areas greater than 15' depth	1 test per 100 feet of trench or any portion thereof, in the lower 1/4, each middle 1/4, and upper 1/4 of backfill
Trench backfill under paved or surfaced areas less than 15' depth	1 test per 100 feet of trench or any portion thereof, in the lower 1/3, middle 1/3, and upper 1/3 of backfill
Lateral trench backfill	1 test per 100 feet of trench with a minimum of 1 test location per trench in the lower 1/3, middle 1/3, and upper 1/3.
Non-structural fills	1 test per 2,000 cubic yards

PART 2 – PRODUCTS

2.1 SOIL MATERIALS

- A. Soil used for borrow, fill, and backfilling shall meet the requirements of soil class as called for on plans or in specifications.
- B. As a minimum, all soil shall meet the requirements of Soil Class G-1.
- C. All soil classes shall be as per Section 31 05 10, Soils and Aggregates for Earthwork.

PART 3 – EXECUTION

3.1 EXCAVATION

- A. Excavation to Correct Grade
 - 1. Excavate site of structures and pavements as follows:
 - a. To elevation shown on the plans.
 - b. To such additional width as necessary for erection and removal of forms, shoring or sheeting, and finishing of walls.
 - 2. Excavation of unsuitable materials.
 - a. Excavate unsuitable soil materials under a proposed structure.
 - b. Excavation shall extend lateral a minimum of 5 feet beyond the building limits plus 1 foot for each foot of cut below the foundation.
 - c. Notify the Owner's project representative prior to proceeding with their removal of unsuitable material.
- B. Borrow Excavation
 - 1. Clear site in accordance with Section, 31 10 00, Site Clearing.
 - 2. Strip and stockpile topsoil.
 - 3. Excavate, haul, place, and compact borrow soil material.
 - 4. Regrade borrow areas as shown on the plans or in an acceptable manner to facilitate proper site drainage.
 - 5. Replace stockpiled topsoil.
 - 6. Surplus topsoil may be utilized in borrow area regarding.

7. Seed and mulch in accordance with Section 32 92 00, Turf and Grasses.

C. Excavation Precautions

1. Excavation slope stability.
 - a. Maintain excavation slope to ensure a stable excavation and prevent caving.
 - b. Provide and erect all timber work, shoring, sheeting, bracing, etc. necessary to prevent caving and displacement of adjacent property.
 - 1) Shoring shall be placed so as not to interfere with building work.
 - 2) Shoring shall be independent of footings.
2. Underpinning existing structures.
 - a. Underpin as necessary to protect existing structures and foundations.
 - b. Furnish all material, labor, and equipment necessary to complete underpinning operations.
3. Dewatering of excavations.
 - a. Contractor shall provide and maintain all equipment necessary to keep excavated areas free of all groundwater, surface water, or precipitation.
 - b. Soil which becomes soft, yielding, or loses support due to inadequate dewatering efforts shall be dealt with as follows:
 - 1) Excavate disturbed soil materials for their entire depth.
 - 2) Replace excavated materials with an approved fill material.
4. Protect excavation from freezing.
 - a. Take precautions necessary to prevent frost from entering subgrade soils.
 - b. If subgrade becomes frozen, remove snow, ice, and frozen soil prior to placement of additional fill or finish surfacings.

3.2 FILLING AND COMPACTING

A. Layer thickness for fill soil shall be as follows:

1. Layer thickness shall be dependent on the soil classification type, weight, and soil contact pressure of compaction equipment being used.
2. Layer thickness shall not exceed 8 inches.

B. Compaction

1. Compaction method for fill soils shall be appropriate for soil material being compacted and provide sufficient soil contact pressure to thoroughly compact entire lift thickness.

C. Proper soil moisture contents for compaction shall be maintained in all soils.

1. Optimum moisture content as determined by Modified (ASTM D1557) Proctor shall be used to determine acceptance moisture contents for soil compaction.
2. Contractor shall scarify and compact existing ground prior to placing fill material.

D. Compaction requirements for all fill soils unless specified elsewhere shall be as follows:

- Class 1 -Fills supporting structures.
- Subgrade under pavements or floors.
- Backfill under piping and conduits.

Class 2- Fills which do not support structures.

**COMPACTION REQUIREMENTS FOR
VARIOUS SOIL CLASSES**

Soil Class	Required Compaction (%) of Modified Proctor Density	
	Class 1	Class 2
B-3 through B-4	95	90
C-1 through C-6	95	90
D-1 through D-3, and G-1 and G-2	95	90
E-1	95	90

3.3 TEST ROLLING

- A. The following testing services shall be provided:
 - 1. The subgrade condition and elevation shall be checked by the Engineer prior to placement of fill material. The subgrade will be proof rolled using a tandem axle dump truck fully loaded with fill material to the maximum legal weight limit. The fill condition and elevation shall be checked by the Engineer prior to placement of subsequent courses.
- B. Treat areas showing yielding or rutting under test rolling as follows:
 - 1. Replace and/or recompact as necessary to stabilize the area.
 - 2. Retest soil areas replaced or recompact.

3.4 BACKFILLING AROUND STRUCTURES

- A. Do not backfill any foundation, wall, or structure prior to inspection by the Engineer.
- B. Backfilling under pipes or conduits in areas excavated due to construction.
 - 1. Contractor shall furnish and compact Soil Class A-7 under all piping or conduits.
 - a. Compact fill shall extend from undisturbed earth to grade.
 - b. Place and compact fill in all areas disturbed by construction.

3.5 DISPOSAL OF SURPLUS MATERIALS

- A. The Owner shall have prior claim to all surplus excavated material. If such claim is exercised by the Owner, the material shall be deposited at such points as may be directed by the Engineer at the expense of the Contractor, the haul not to exceed two (2) miles. If Owner does not desire to claim surplus excavated material, the Contractor shall be totally responsible for obtaining a disposal site. No material shall be disposed of in a floodplain, wetland or waterway.

After delivery to any designated location, such material shall be leveled off by the Contractor.

3.6 FINISH GRADING

- A. Grade, trim, and shape subgrade to required grade and section.
 - 1. Adjust slopes by grading so that transition is smooth and gradual.
 - 2. The crests of cut banks shall be rounded and shaped.
 - 3. Washouts and ruts shall be refilled, regarded, and properly compacted.
 - 4. Remove all stones 3 inches or larger from grading limits.

- B. Vertical Grading Tolerances
 - 1. Rough grading tolerance.
 - a. Areas to be topsoiled – rough grade to within 0.2 foot of finish grades.
 - 2. Areas having paved surfaces (i.e., concrete, asphalt, etc.).
 - a. Maximum allowable variation from correct profile and section shall not be more than ¼-inch in 10 feet.

END OF SECTION

SECTION 33 00 05

DOUBLE AND TRIPLE WALLED POLYPROPYLENE PIPE

PART 1 – GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Double walled polypropylene pipe for mainline gravity storm sewer.
 - 2. Triple walled polypropylene pipe for mainline gravity storm sewer.
- B. The products described are not installed under this Section.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. D3212 Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
 - 2. F477 Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
 - 3. F2736 Standard Specification for 6 to 27 in. (152 TO 762 mm) Polypropylene (PP) Corrugated Single Wall Pipe And Double Wall Pipe
 - 4. F2764 Standard Specification for 30 to 60 in. 9750 to 1500 mm) Polypropylene (PP) Triple Wall Pipe and Fittings for Non-Pressure Sanitary Sewer Applications

1.3 SUBMITTALS

- A. Submit the following:
 - 1. Certification of productions date of all materials.
 - 2. Manufacturer's certification that the materials delivered were manufactured, sampled, tested, and inspected in accordance with this specifications and appropriate referenced standards.
 - 3. Product data sheet.
 - 4. Manufacturer's recommendations for assembly.

1.4 QUALITY ASSURANCE

- A. Make pipe available to the Engineer's Representative for inspection.
- B. Pipe shall be considered defective and will be rejected when:
 - 1. Pitted or cracked.
 - 2. Flaking.
 - 3. Straightness varies more than ½ inch in 10 feet.
 - 4. Any defect which prevents assembly according to manufacturer's recommendations.
 - 5. Not utilized within twelve months of date of production.

6. Pipe is not properly marked.

C. Material brands and/or pipe classes shall not be mixed.

D. Pipe marking – pipe and fittings shall be marked as follows:

1. Manufacturer's name, trademark, or logo.
2. Nominal size.
3. Pipe stiffness designation, dimension ration, or schedule size and pressure class.
4. ASTM specification designation.
5. Production date.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inspect the pipe shipment to identify shifted loads, broken packaging or rough treatment, which could be an indication of damage.

B. Unload the pipe in a manner which will not put stress on the pipe or strike anything causing damage.

C. Place and store the pipe package units on level ground stacked no more than 8 feet high. Do not store close to heat sources.

D. For onsite gasket installation on pipe, store gaskets away from excessive exposure to heat, direct sunlight, ozone, oil, or grease.

E. For gaskets installed on pipe offsite, keep the protective wrap on gaskets until installation.

F. Handle pipe in a manner to prevent impact blows, abrasion damage, gouging, or cutting.

G. When handling pipe in cold weather, provide additional care to prevent damage due to impact.

PART 2 – PRODUCTS

2.1 NON-PRESSURE RATED PIPE

A. Mainline Gravity Sewer and Sewer Services

1. Pipe fittings and repair couplings shall be manufactured and tested in accordance with the following standards:
 - a. Sizes 8 inch through 27 inch and depths up to 20 feet: ASTM F2736, SDR-35 PVC
 - b. Sizes 30 inch through 60 inch and depths up to 20 feet: ASTM F2764, PS46 PVC, T-1 minimum cell classification
2. Pipe shall have a minimum pipe stiffness of 46 PSI.
3. Minimum height of cover to the top of pipe to the existing elevation or proposed finished elevation (whichever is less) shall be two feet.
4. Elastomeric Gaskets: Conform with ASTM F477.
5. Elastomeric Joints: Conform with ASTM D3212.

6. Solvent Weld Joints: Not permitted.

B. Sewer Services

1. 4" and 6" pipe shall be Schedule 40 PVC and conform to Section 33 00 02, Polyvinyl Chloride (PVC) Pipe and Fittings.
2. Branch laterals shall be designed to accept SDR 35.

2.2 DEFLECTION TEST REQUIREMENTS

A. Deflection testing procedures shall conform to Section 01 45 23 10, Testing and Inspection of Pipeline and Appurtenances.

B. The following table shall be used for the mandrel setting for Polypropylene Pipe:

Table 1
SaniTite HP Recommended Mandrel Settings

Pipe Type	Pipe Diameter (Inches)	Minimum Inside Diameter (Inches)	Inside Diameter With 5% Deflection (Inches)
Dual Wall	12	11.90	11.31
	15	14.85	14.11
	18	17.93	17.03
	21	20.79	19.75
	24	23.90	22.71
	30	29.79	28.30
Triple Wall	30	29.62	28.14
	36	35.40	33.63
	42	41.31	39.24
	48	47.31	44.94
	60	59.30	56.34

END OF SECTION

SECTION 33 11 00.1 SP

WATER DISTRIBUTION SYSTEMS – SPECIAL

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes:

1. Modifications to the City of De Pere 2019 Standard Specifications to update hydrant cap and marker colors.

PART 2 – PRODUCTS

2.1 FIRE HYDRANTS

A. The caps on the hydrant shall be painted per NFPA Standard 291, based on available fire flows as determined by the Engineer and shown on the plans.

1. Class AA – M4137 Hydrant National Blue – Rated capacity of 1500 gpm or greater
2. Class A – Green – Rated capacity of 1000-1499 gpm
3. Class B – Orange – Rated capacity of 500-999 gpm
4. Class C – Red – Rated capacity of less than 500 gpm

B. Hydrant markers will consist of a five (5) foot long 3/8 inch diameter fiberglass shaft attached to a heavy duty MIL SPEC zinc plated carbon steel spring mount with a flat bracket. The shaft will be completely wrapped with alternating six (6) inch wide reflective tape strips so that there will be no exposed fiberglass. The reflective tape color will match the hydrant cap color. Complete assembly will be corrosion and UV resistant. Flat mounting bracket will fit onto the 5/8-inch hydrant bolt.

END OF SECTION

APPENDIX

- A. Geotechnical Engineering Report 2019
Construction by ECS Midwest, LLC 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,

ECS Midwest, LLC

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APPENDICES

Appendix A – Drawings & Reports

- Site Location Diagram
- Boring Location Diagram

Appendix B – Field Operations

- Reference Notes for Boring Logs
- Test Boring Log 1 through 11
- Soil And Site Evaluation - Storm

Appendix C – Supplemental Report Documents

- 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.



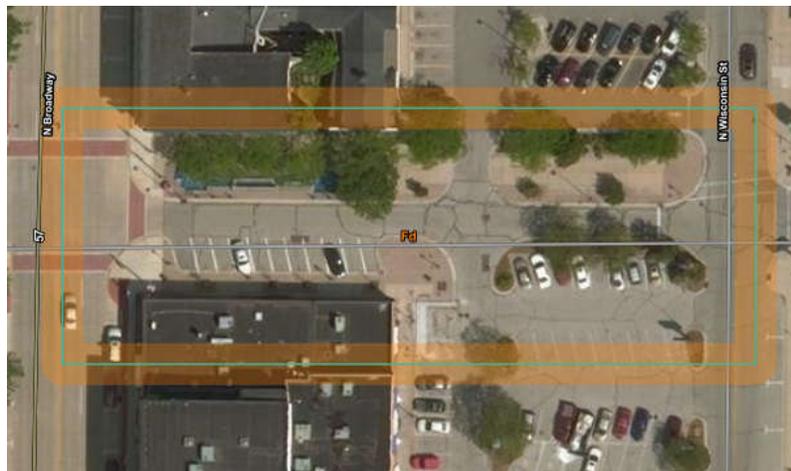
(Source: USDA - Natural Resources Conservation Service)

Figure 3.3.1 Soil Survey Information (Garry'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 Compressive 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 1 $\frac{3}{8}$ -inch inside diameter, the soil classifications noted on the boring logs may not be representative of the entire soil matrix. Materials larger than the 1 $\frac{3}{8}$ -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 (Q_p) 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, Mr (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 sheepfoot 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.

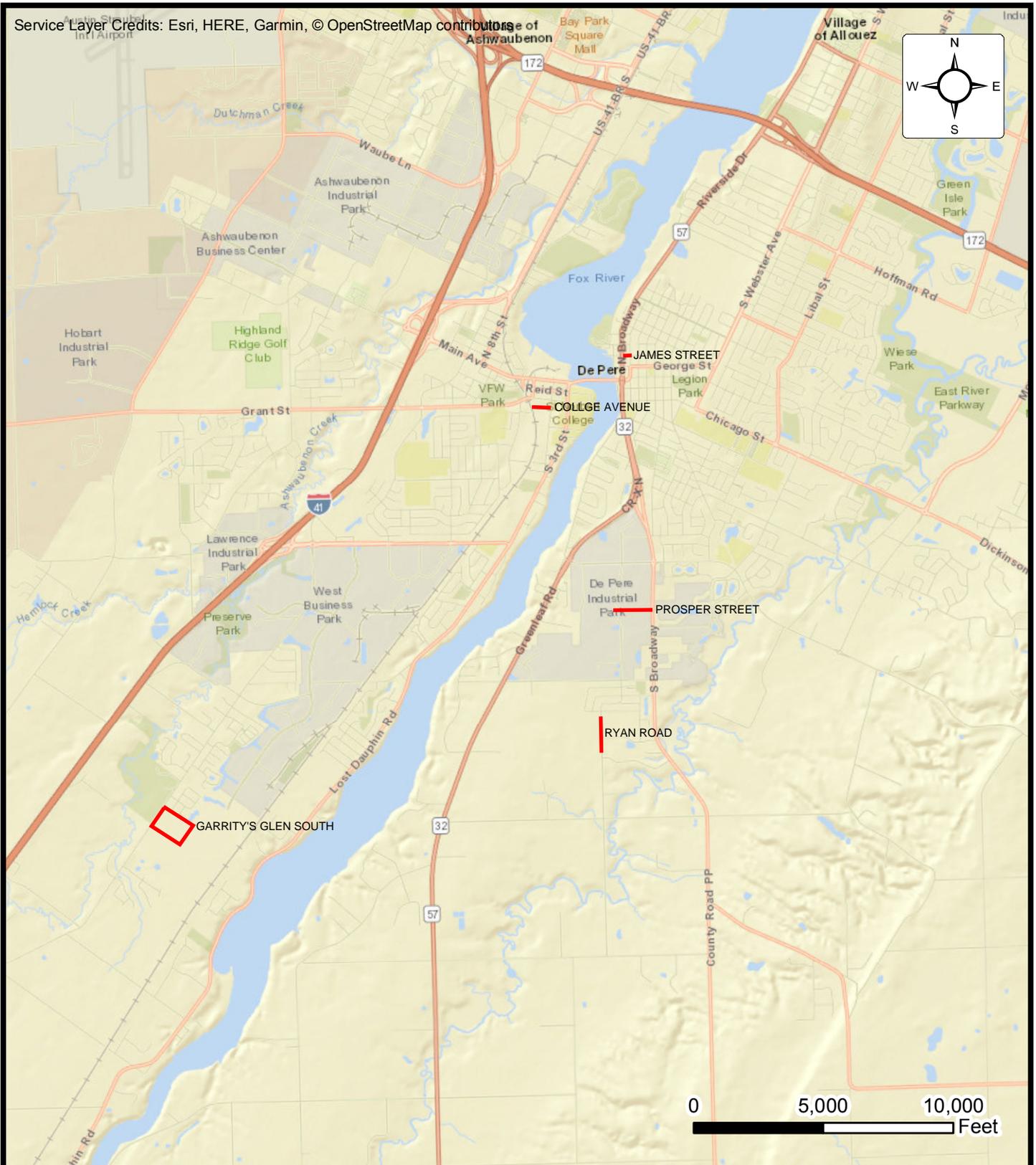
The description of the proposed project is based on information provided to ECS by the City of De Pere. If any of this information is inaccurate, either due to our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted immediately so that we can 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



Legend



Approximate Boring Locations



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



Legend



Approximate Boring Locations

0 80 160 Feet

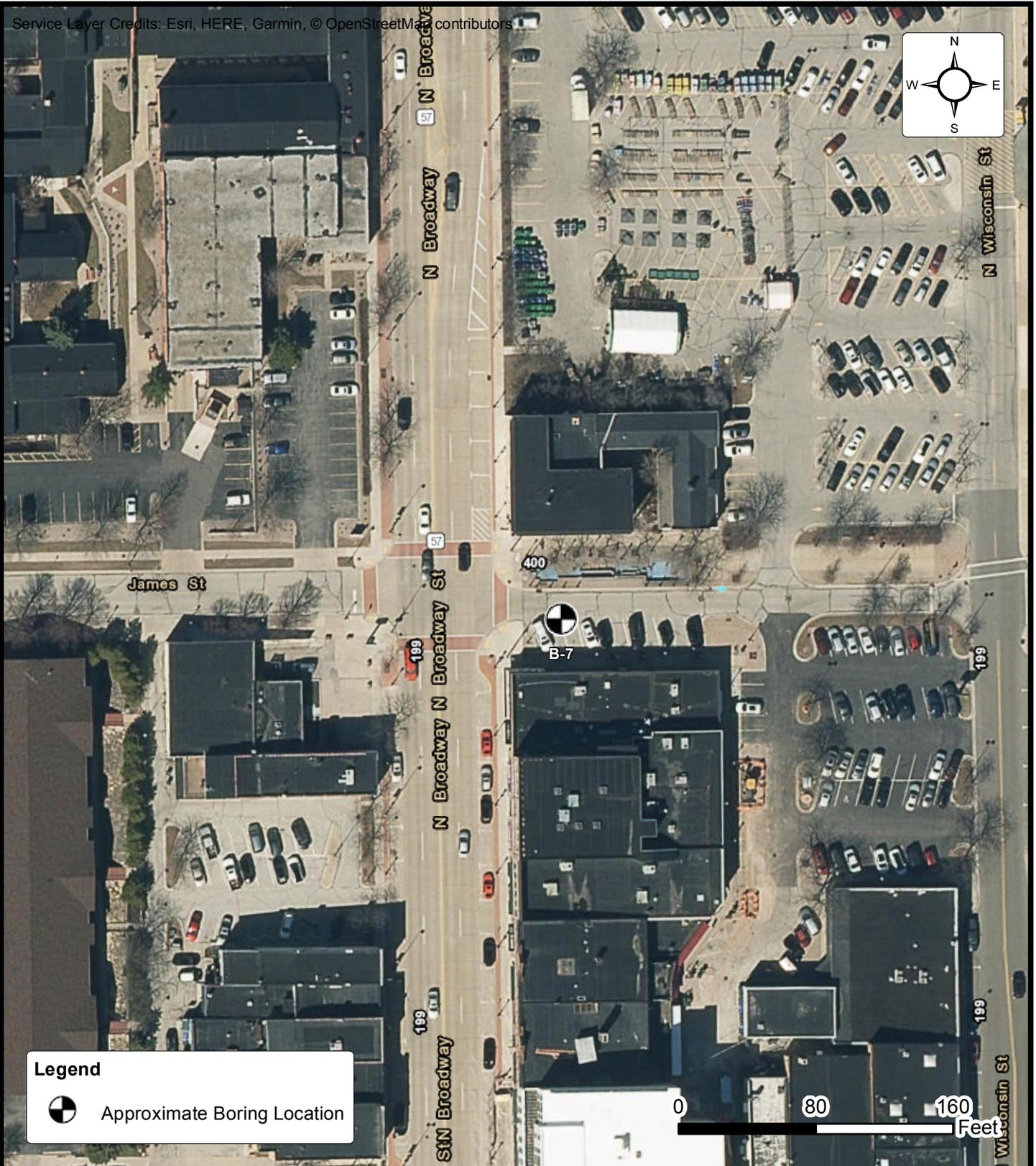
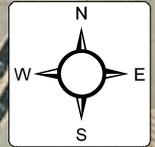


Boring Location Diagram 2019 CONSTRUCTION DESIGN

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



Legend



Approximate Boring Location

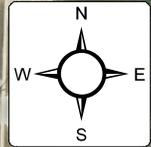


Boring Location Diagram 2019 CONSTRUCTION DESIGN

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



Legend



Approximate Boring Locations

0 250 500 Feet

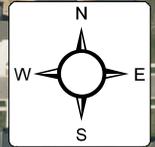


Boring Location Diagram 2019 CONSTRUCTION DESIGN

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



Legend



Approximate Boring Locations



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
	FILL³ 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)
Gravel: 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)
Sand: Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
Sand: 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

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

GRAVELS, SANDS & NON-COHESIVE SILTS	
SPT ⁵	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

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

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

²To 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.

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

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

⁵Standard 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).

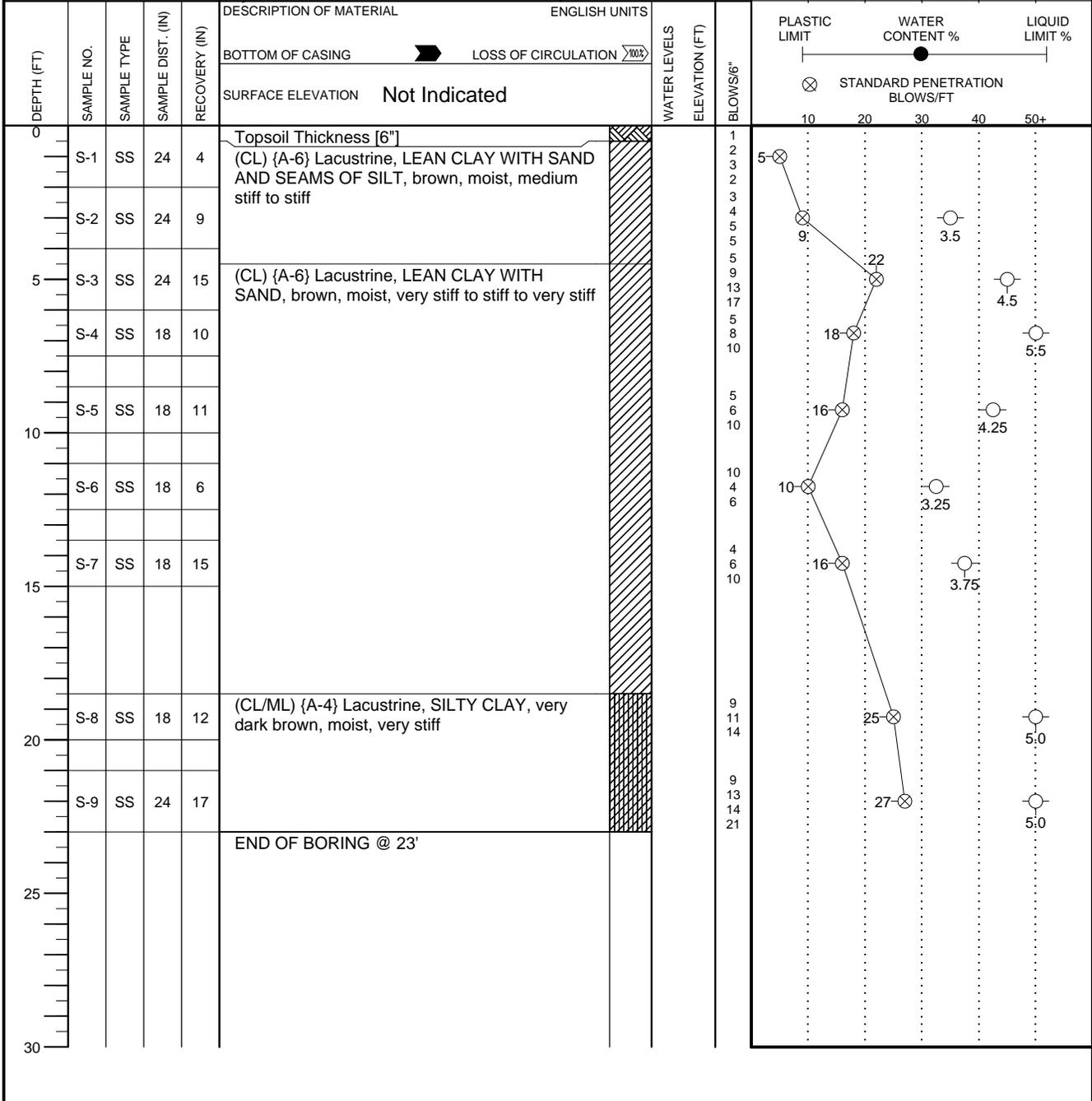
⁶The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water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

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

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

CLIENT City of De Pere	JOB # 1549	BORING # 1	SHEET 1 OF 1	
PROJECT NAME 2019 Construction Design	ARCHITECT-ENGINEER			

SITE LOCATION Various Streets, De Pere, Brown County, Wisconsin		
Additional info. Garry's Glen South	Station+Offset	

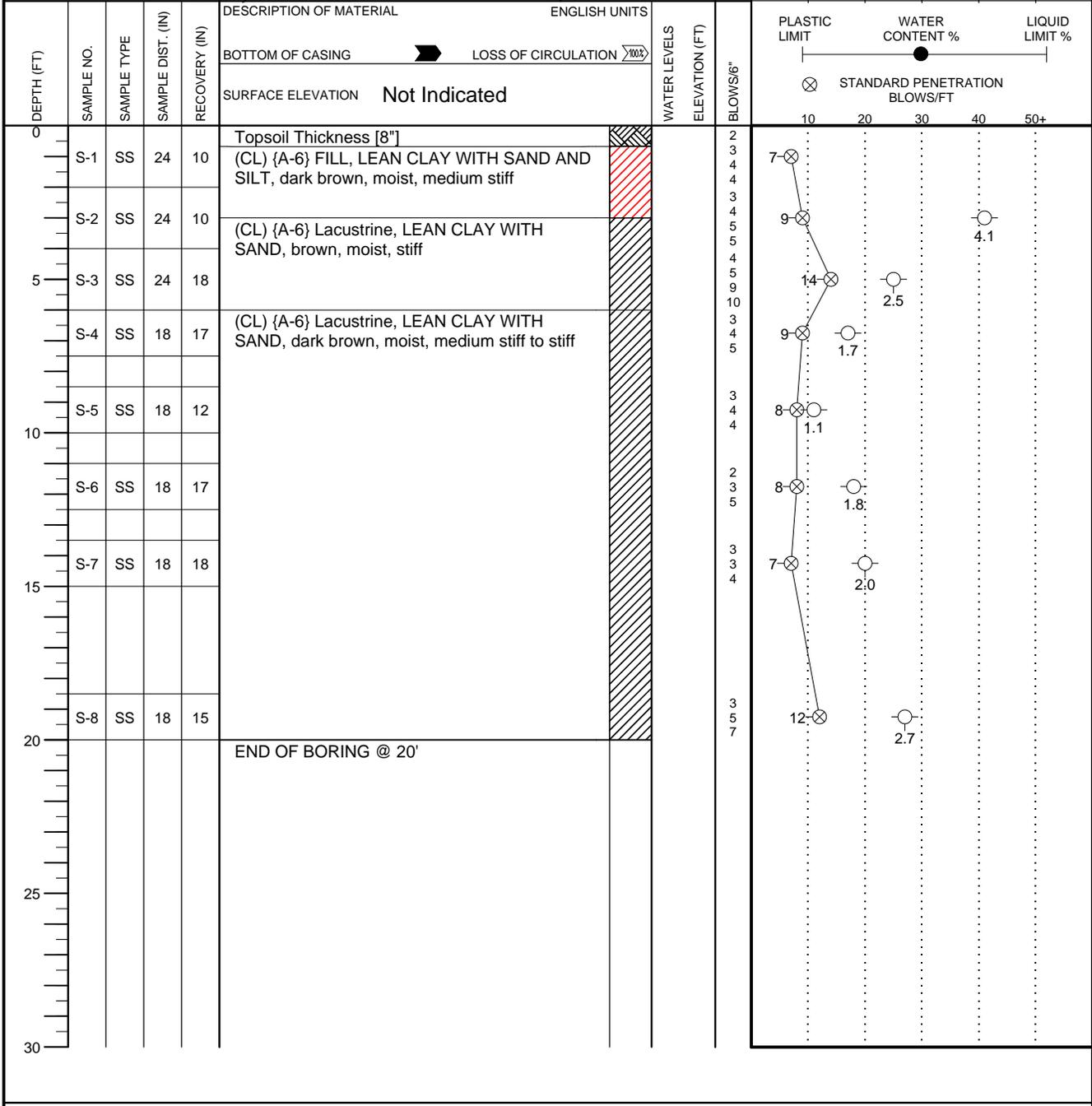


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

<input checked="" type="checkbox"/> WL None	<input type="checkbox"/> WS	<input checked="" type="checkbox"/> WD	BORING STARTED	11/26/18	
<input checked="" type="checkbox"/> WL(BCR)	<input checked="" type="checkbox"/> WL(ACR) None		BORING COMPLETED	11/26/18	CAVE IN DEPTH
<input checked="" type="checkbox"/> WL			RIG	ATV	FOREMAN GB/BB
			DRILLING METHOD 3 1/4" HSA 0' to 23' (AH)		

CLIENT City of De Pere	JOB # 1549	BORING # 2	SHEET 1 OF 1	
PROJECT NAME 2019 Construction Design	ARCHITECT-ENGINEER			

SITE LOCATION Various Streets, De Pere, Brown County, Wisconsin		CALIBRATED PENETROMETER TONS/FT ² 1 2 3 4 5+ ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — — — REC.% — — — — — 20% 40% 60% 80% 100%
Additional info. Garry's Glen South	Station+Offset	

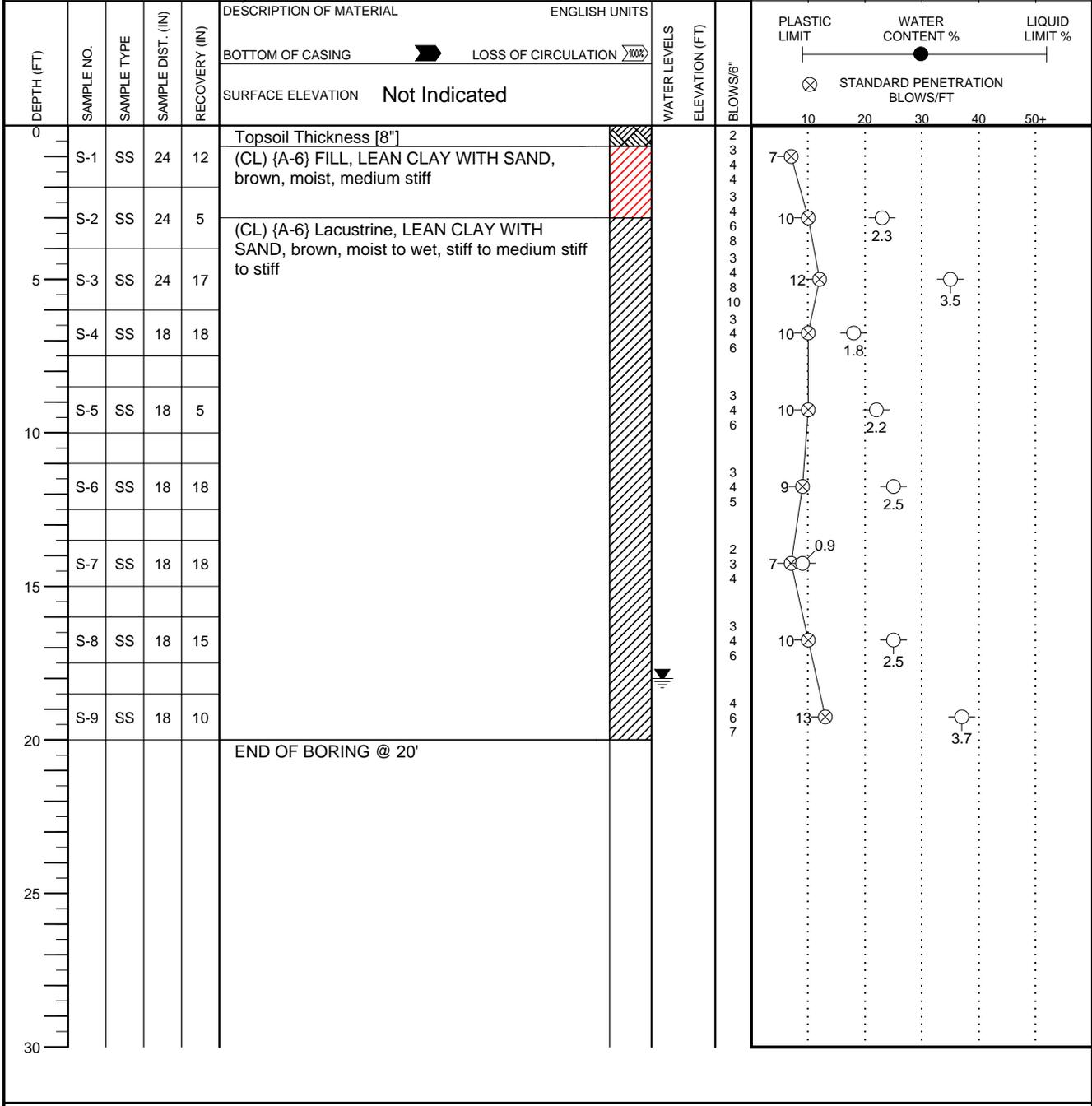


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

<input checked="" type="checkbox"/> WL None	<input type="checkbox"/> WS	<input checked="" type="checkbox"/> WD	BORING STARTED	11/26/18	
<input checked="" type="checkbox"/> WL(BCR)	<input checked="" type="checkbox"/> WL(ACR) None		BORING COMPLETED	11/26/18	CAVE IN DEPTH
<input checked="" type="checkbox"/> WL			RIG	ATV	FOREMAN GB/BB
			DRILLING METHOD 3 1/4" HSA 0' to 20' (AH)		

CLIENT City of De Pere	JOB # 1549	BORING # 4	SHEET 1 OF 1	
PROJECT NAME 2019 Construction Design	ARCHITECT-ENGINEER			

SITE LOCATION Various Streets, De Pere, Brown County, Wisconsin		CALIBRATED PENETROMETER TONS/FT ² 1 2 3 4 5+ ROCK QUALITY DESIGNATION & RECOVERY RQD% — REC.% — 20% 40% 60% 80% 100%
Additional info. Garry's Glen South	Station+Offset	

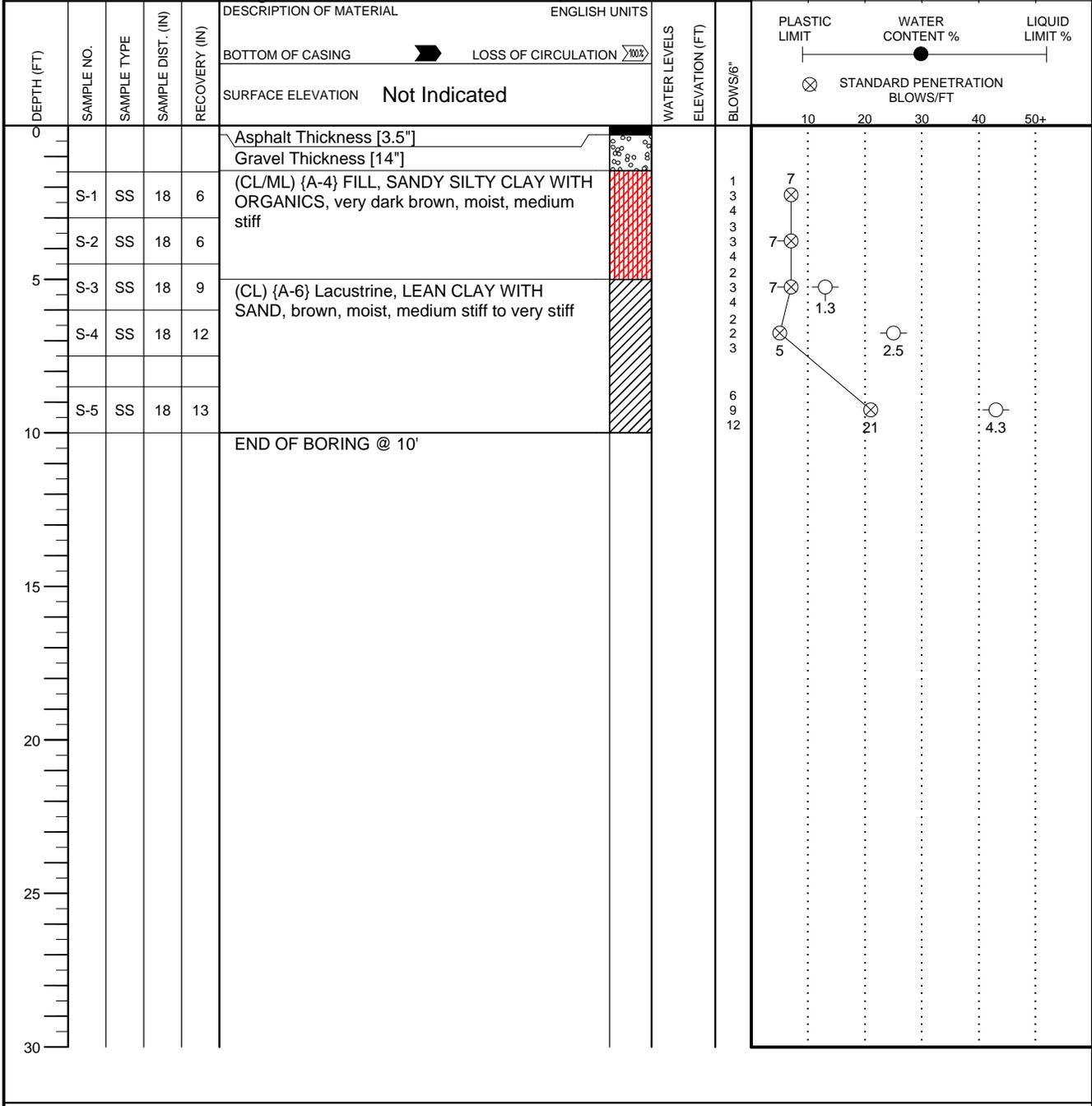


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

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<input checked="" type="checkbox"/> WL(BCR)	<input checked="" type="checkbox"/> WL(ACR) 18 feet		BORING COMPLETED	11/26/18	CAVE IN DEPTH
<input checked="" type="checkbox"/> WL			RIG	ATV	FOREMAN GB/BB
			DRILLING METHOD 3 1/4" HSA 0' to 20' (AH)		

CLIENT City of De Pere	JOB # 1549	BORING # 5	SHEET 1 OF 1	
PROJECT NAME 2019 Construction Design	ARCHITECT-ENGINEER			

SITE LOCATION Various Streets, De Pere, Brown County, Wisconsin		CALIBRATED PENETROMETER TONS/FT ² 1 2 3 4 5+ ROCK QUALITY DESIGNATION & RECOVERY RQD% — REC.% — 20% 40% 60% 80% 100%
Additional info. College Avenue	Station+Offset	

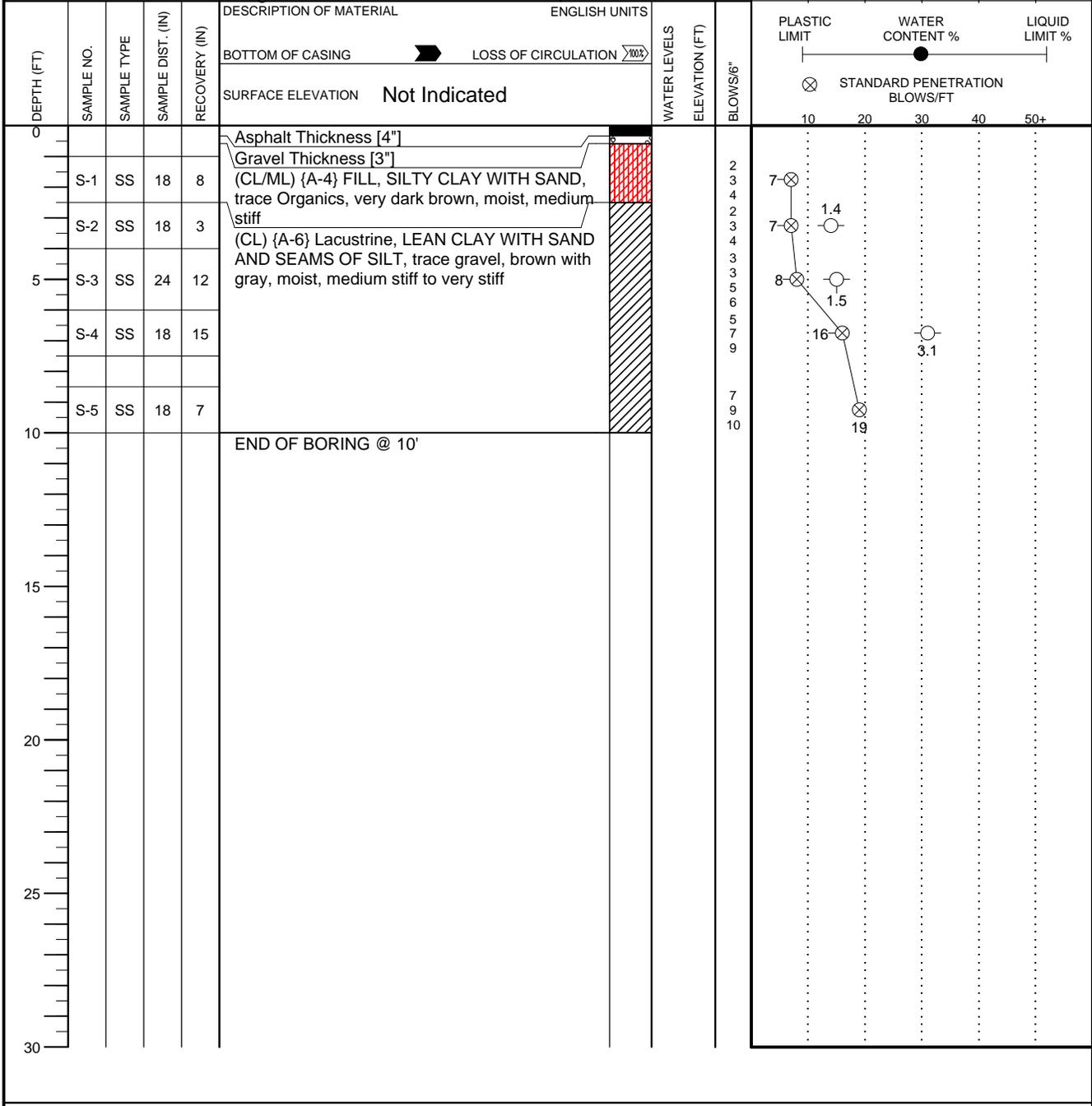


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

<input checked="" type="checkbox"/> WL None	<input type="checkbox"/> WS	<input checked="" type="checkbox"/> WD	BORING STARTED	11/27/18	
<input checked="" type="checkbox"/> WL(BCR)	<input checked="" type="checkbox"/> WL(ACR) None		BORING COMPLETED	11/27/18	CAVE IN DEPTH
<input checked="" type="checkbox"/> WL			RIG	ATV	FOREMAN GB/BB
			DRILLING METHOD 3 1/4" HSA 0' to 10' (AH)		

CLIENT City of De Pere	JOB # 1549	BORING # 6	SHEET 1 OF 1	
PROJECT NAME 2019 Construction Design	ARCHITECT-ENGINEER			

SITE LOCATION Various Streets, De Pere, Brown County, Wisconsin		CALIBRATED PENETROMETER TONS/FT ² 1 2 3 4 5+ ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — — — REC.% — — — — — 20% 40% 60% 80% 100%
Additional info. College Avenue	Station+Offset	PLASTIC LIMIT — — — — — WATER CONTENT % — — — — — LIQUID LIMIT % STANDARD PENETRATION BLOWS/FT 10 20 30 40 50+

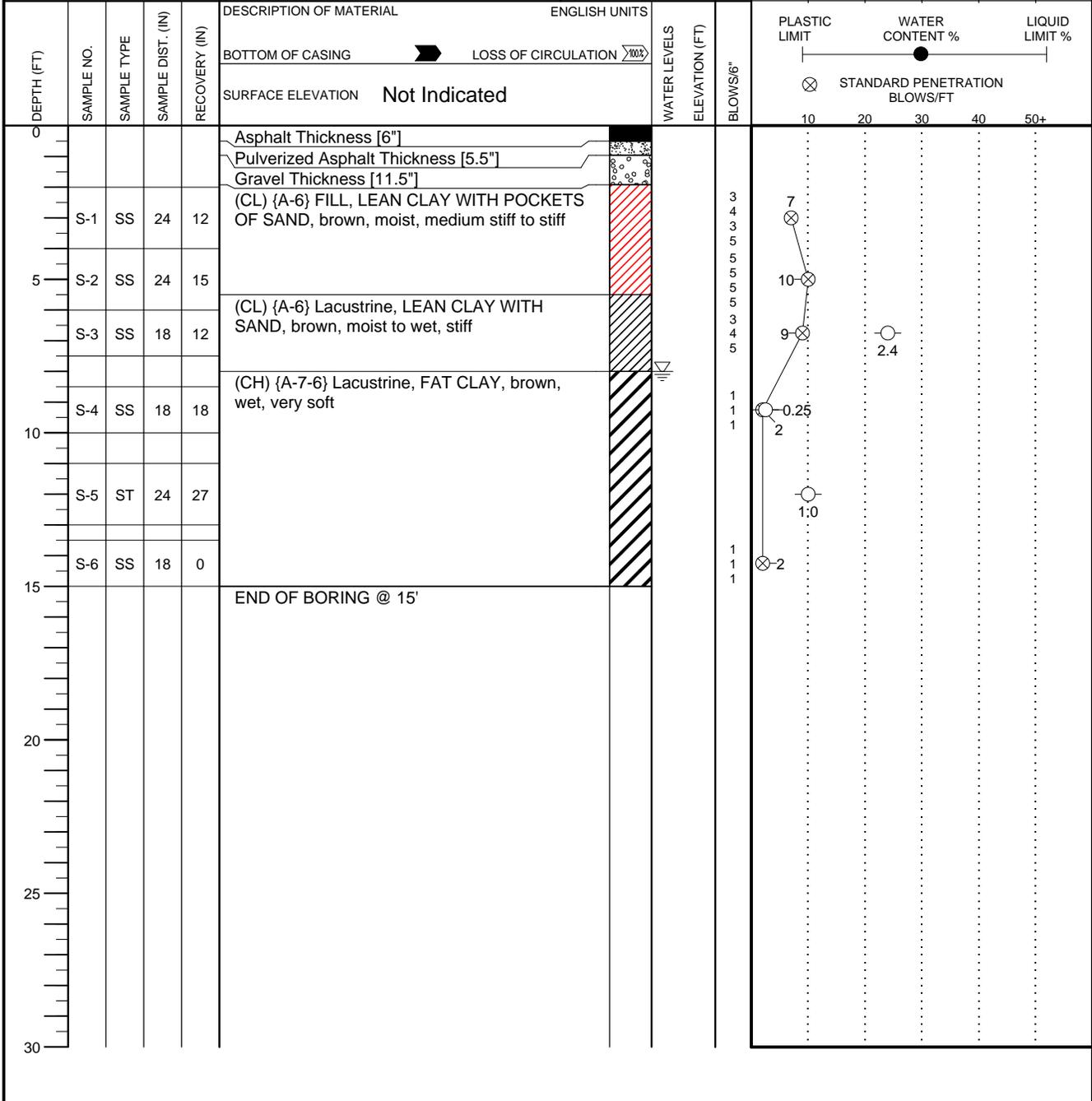


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

<input checked="" type="checkbox"/> WL None	<input type="checkbox"/> WS	<input checked="" type="checkbox"/> WD	BORING STARTED	11/27/18	
<input checked="" type="checkbox"/> WL(BCR)	<input checked="" type="checkbox"/> WL(ACR) None		BORING COMPLETED	11/27/18	CAVE IN DEPTH
<input checked="" type="checkbox"/> WL			RIG	ATV	FOREMAN GB/BB
			DRILLING METHOD 3 1/4" HSA 0' to 10' (AH)		

CLIENT City of De Pere	JOB # 1549	BORING # 7	SHEET 1 OF 1	
PROJECT NAME 2019 Construction Design	ARCHITECT-ENGINEER			

SITE LOCATION Various Streets, De Pere, Brown County, Wisconsin		CALIBRATED PENETROMETER TONS/FT ² 1 2 3 4 5+ ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — — — REC.% — — — — — 20% 40% 60% 80% 100%
Additional info. James Street	Station+Offset	PLASTIC LIMIT — — — — — WATER CONTENT % — — — — — LIQUID LIMIT % STANDARD PENETRATION BLOWS/FT 10 20 30 40 50+



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

WL 8 feet	WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	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 City of De Pere	JOB # 1549	BORING # 8	SHEET 1 OF 1	
PROJECT NAME 2019 Construction Design	ARCHITECT-ENGINEER			

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

Additional info. Station+Offset

Prosper Street

DESCRIPTION OF MATERIAL ENGLISH UNITS

BOTTOM OF CASING LOSS OF CIRCULATION

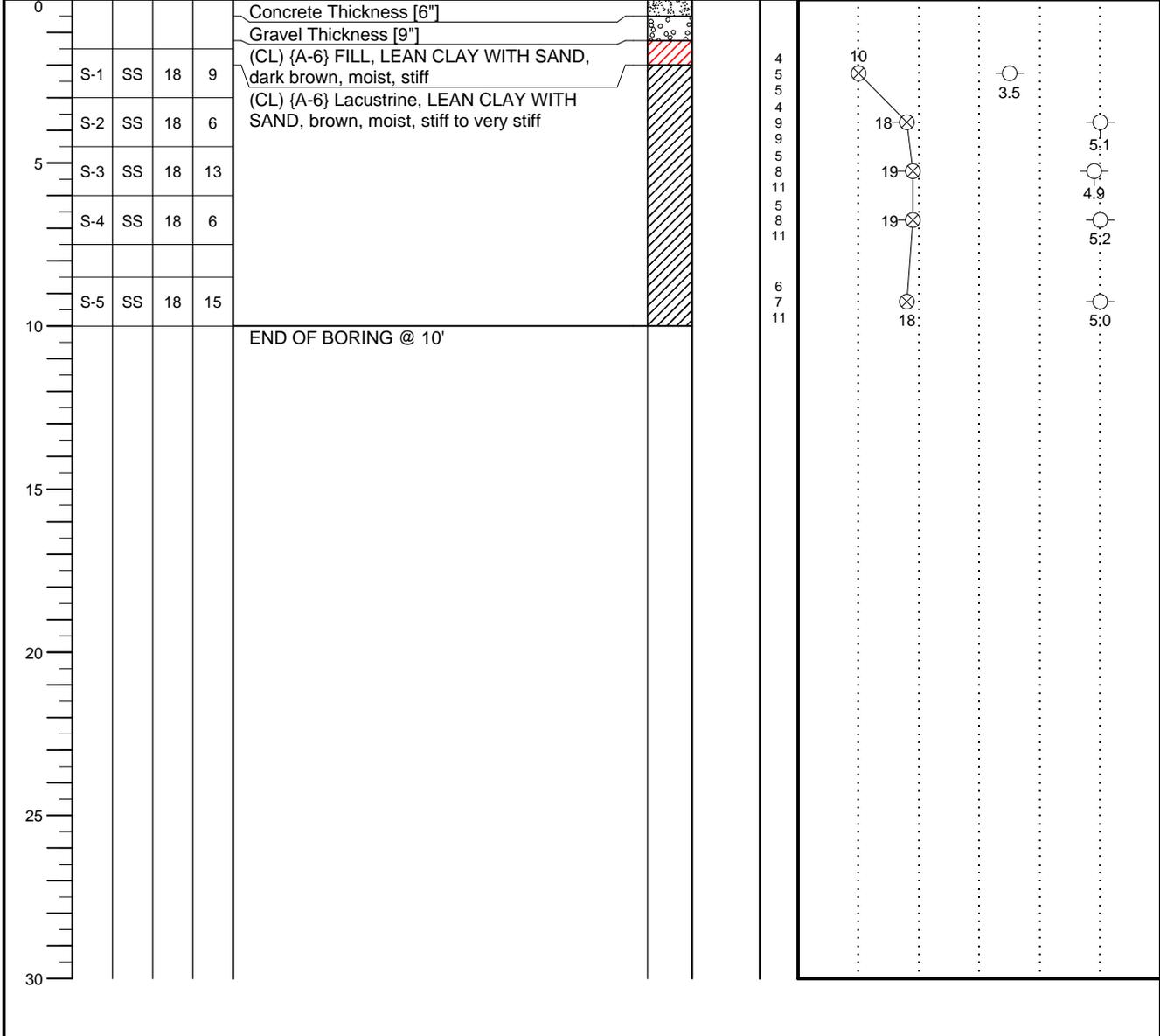
SURFACE ELEVATION **Not Indicated**

WATER LEVELS ELEVATION (FT) BLOWS/6"

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

PLASTIC LIMIT WATER CONTENT % LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT

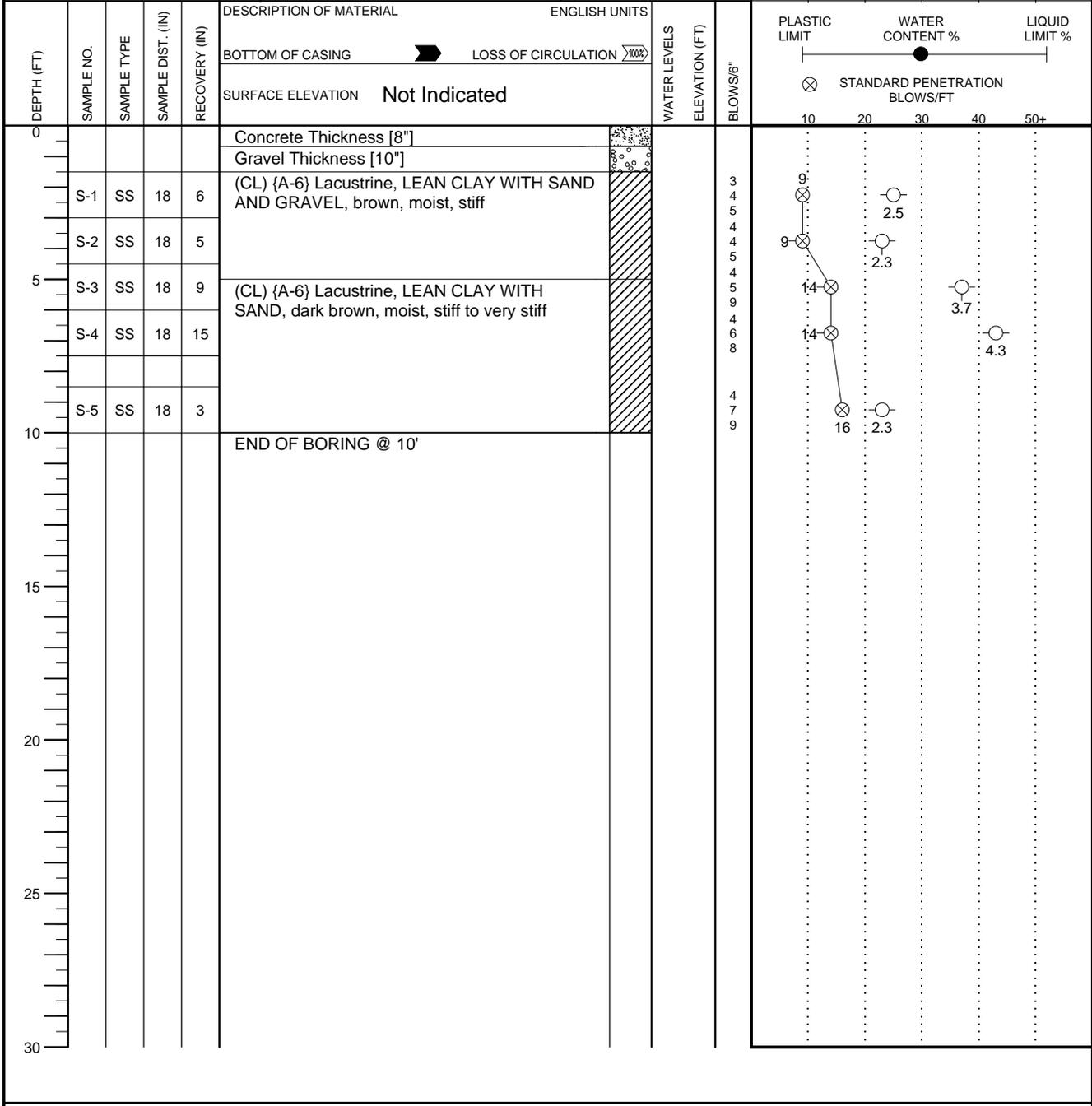


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

<input checked="" type="checkbox"/> WL None	<input type="checkbox"/> WS	<input checked="" type="checkbox"/> WD	BORING STARTED	11/27/18	
<input checked="" type="checkbox"/> WL(BCR)	<input checked="" type="checkbox"/> WL(ACR) None		BORING COMPLETED	11/27/18	CAVE IN DEPTH
<input checked="" type="checkbox"/> WL			RIG	ATV	FOREMAN GB/BB
			DRILLING METHOD 3 1/4" HSA 0' to 10' (AH)		

CLIENT City of De Pere	JOB # 1549	BORING # 9	SHEET 1 OF 1	
PROJECT NAME 2019 Construction Design	ARCHITECT-ENGINEER			

SITE LOCATION Various Streets, De Pere, Brown County, Wisconsin		CALIBRATED PENETROMETER TONS/FT ² 1 2 3 4 5+
Additional info. Prosper Street	Station+Offset	ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — — — REC.% — — — — — 20% 40% 60% 80% 100%

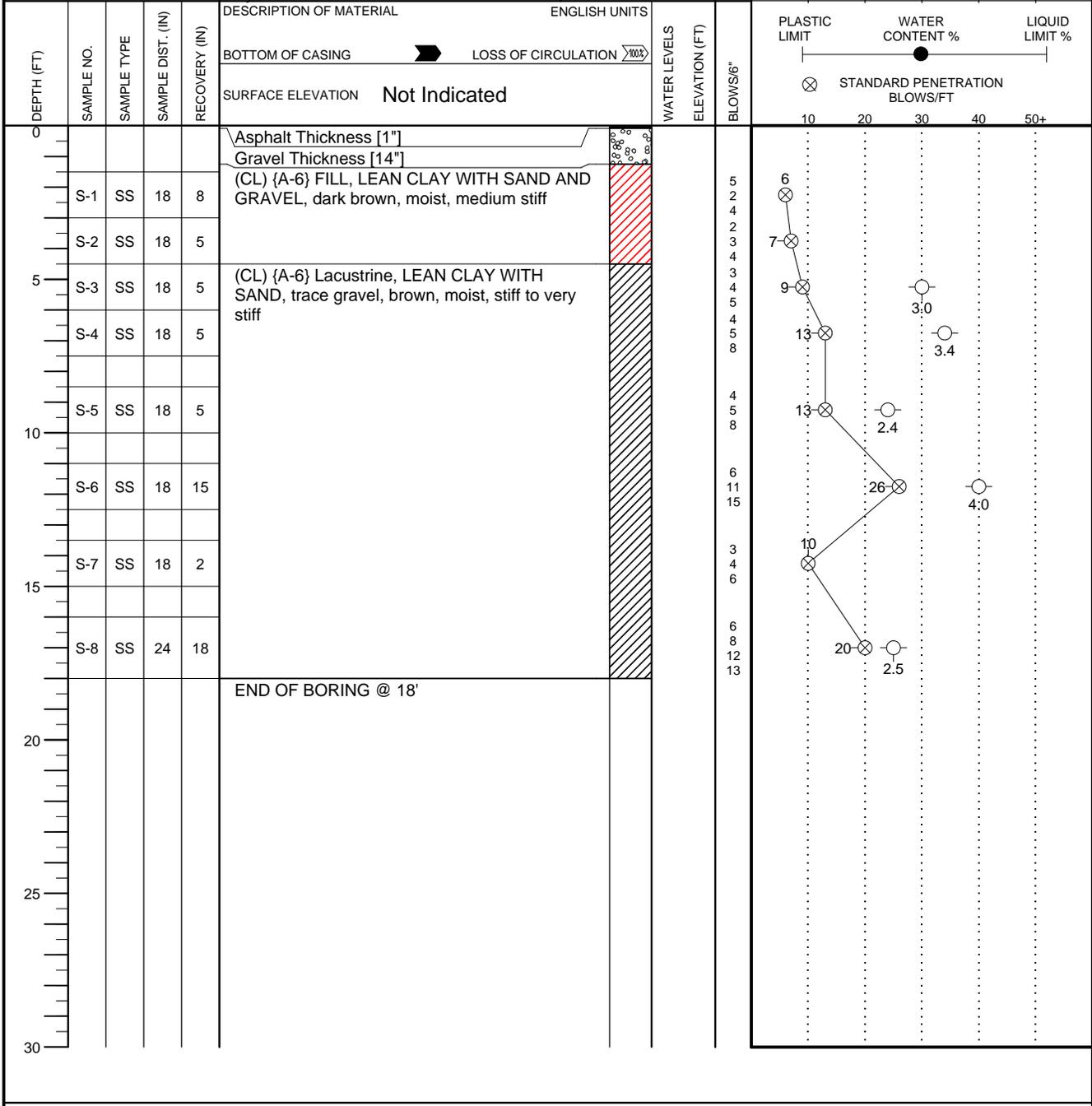


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

<input checked="" type="checkbox"/> WL None	<input type="checkbox"/> WS	<input checked="" type="checkbox"/> WD	BORING STARTED	11/27/18	
<input checked="" type="checkbox"/> WL(BCR)	<input checked="" type="checkbox"/> WL(ACR) None		BORING COMPLETED	11/27/18	CAVE IN DEPTH
<input checked="" type="checkbox"/> WL			RIG	ATV	FOREMAN GB/BB
			DRILLING METHOD 3 1/4" HSA 0' to 10' (AH)		

CLIENT City of De Pere	JOB # 1549	BORING # 10	SHEET 1 OF 1	
PROJECT NAME 2019 Construction Design	ARCHITECT-ENGINEER			

SITE LOCATION Various Streets, De Pere, Brown County, Wisconsin		CALIBRATED PENETROMETER TONS/FT ² 1 2 3 4 5+ ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — — — REC.% — — — — — 20% 40% 60% 80% 100%
Additional info. Ryan Road	Station+Offset	PLASTIC LIMIT — — — — — WATER CONTENT % — — — — — LIQUID LIMIT % STANDARD PENETRATION BLOWS/FT 10 20 30 40 50+



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

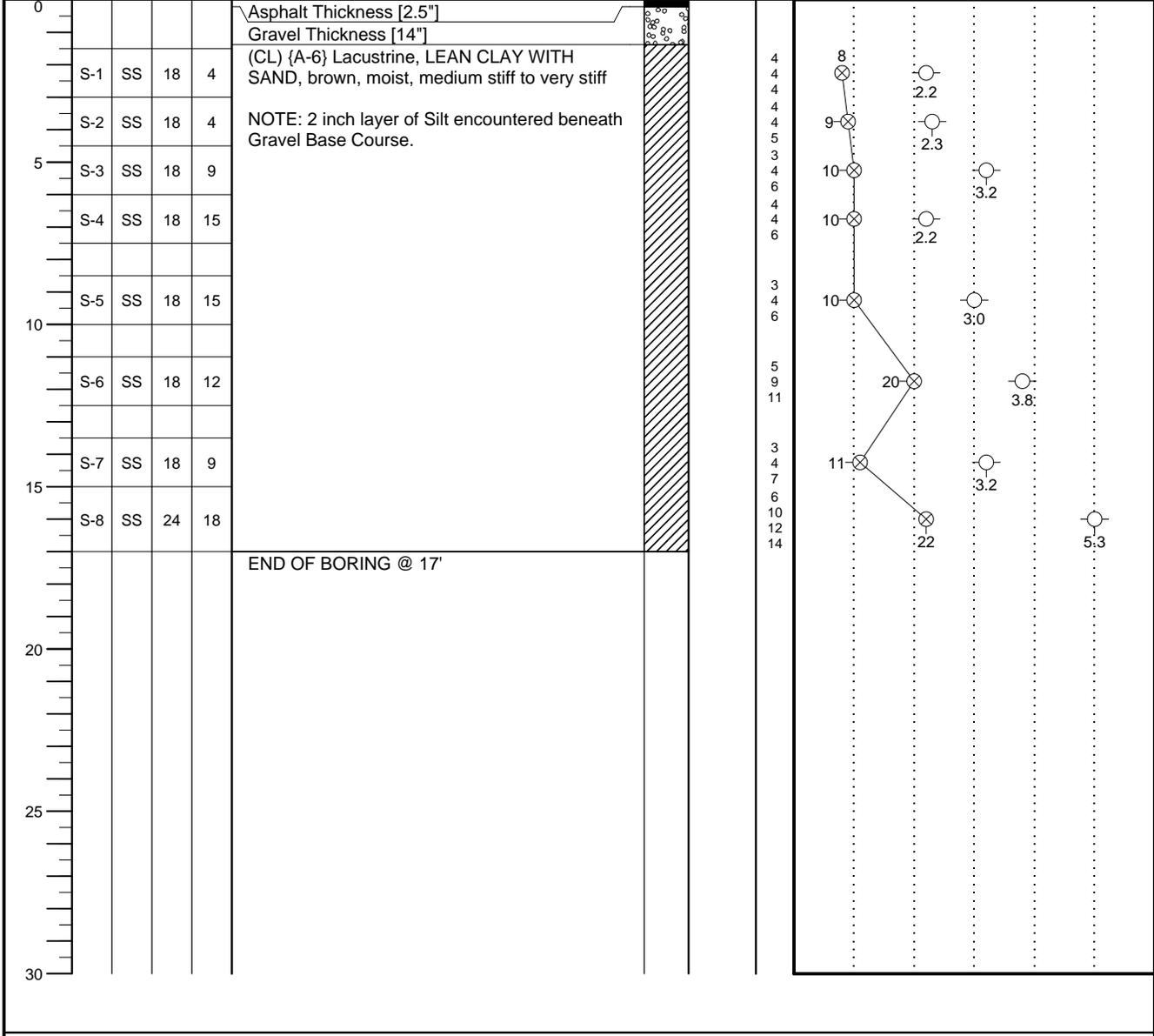
WL None	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED	11/27/18	
WL(BCR)	WL(ACR) None		BORING COMPLETED	11/27/18	CAVE IN DEPTH
WL			RIG	ATV	FOREMAN GB/BB
			DRILLING METHOD 3 1/4" HSA 0' to 18' (AH)		

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

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	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+
					BOTTOM OF CASING	LOSS OF CIRCULATION				
					SURFACE ELEVATION Not Indicated					



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

<input checked="" type="checkbox"/> WL None	<input type="checkbox"/> WS	<input checked="" type="checkbox"/> WD	BORING STARTED	11/27/18	
<input checked="" type="checkbox"/> WL(BCR)	<input checked="" type="checkbox"/> WL(ACR) None		BORING COMPLETED	11/27/18	CAVE IN DEPTH
<input checked="" type="checkbox"/> WL			RIG	ATV	FOREMAN GB/BB
			DRILLING METHOD 3 1/4" HSA 0' to 17' (AH)		

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 Geotechnical Engineer for Additional Assistance

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



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# 19-11 GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION

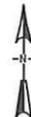
CITY OF DE PERE



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	PROJECT OVERALL SHEET LAYOUT
G004	TYPICAL SECTIONS
G005	EXISTING CONDITIONS AND DEMOLITION PLAN
G006	EXISTING CONDITIONS POND PLAN
G007	STAGING PLAN
C101 - C103	GARROMAN DRIVE SANITARY & WATER PLAN & PROFILE SHEETS
C104 - C106	BALLYVAUGHAN ROAD SANITARY & WATER PLAN & PROFILE SHEETS
C107 - C109	KILRUSH ROAD SANITARY & WATER PLAN & PROFILE SHEETS
C110 - C112	TIPPERARY TRAIL SANITARY & WATER PLAN & PROFILE SHEETS
C113 - C114	LAWRENCE DRIVE SANITARY, WATER & STORM PLAN & PROFILE SHEETS
C115 - C117	GARROMAN DRIVE STORM & STREET PLAN & PROFILE SHEETS
C118 - C120	BALLYVAUGHAN ROAD STORM & STREET PLAN & PROFILE SHEETS
C121 - C123	KILRUSH ROAD STORM & STREET PLAN & PROFILE SHEETS
C124 - C126	TIPPERARY TRAIL STORM & STREET PLAN & PROFILE SHEETS
C127 - C128	SIDE LOTS STORM SEWER PLAN & PROFILE SHEETS
C301 - C334	CROSS SECTIONS
C401 - C404	SURVEY/MAPPING (ALIGNMENT, EROSION CONTROL)
C405	INTERSECTION DETAILS
C406 - C416	DITCHES PLAN AND PROFILES
C417 - C418	FINAL RESTORATION PLANS
C419 - C420	POND PLANS
C501 - C507	CONSTRUCTION DETAILS

**CITY OF DE PERE
BOARD OF PUBLIC WORKS**

5/21/19 DATE	<i>E. P. Rakers</i> CITY ENGINEER
5/21/19 DATE	<i>Thomas M. Walsh</i> CITY ADMINISTRATOR
5/21/19 DATE	<i>Michael J. Walsh</i> MAYOR

STAMPS:



LIST OF STANDARD ABBREVIATIONS

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

MAPPING & TOPOGRAPHY SYMBOLOGY

DESCRIPTION	SYMBOL	
	EXISTING	PROPOSED
BENCHMARK		
BUSH		
CATCH BASIN		
CABLE TV BOX		
CONTROL POINT		
ELECTRICAL BOX		
EROSION CONTROL - INELT		
FIELD INLET		
GAS VALVE		
HEDGE		
HYDRANT		
IRON PIPE		
LIGHTPOLE		
MAILBOX		
MANHOLE ELECTRIC		
MANHOLE SANITARY		
MANHOLE STORM		
MONITORING WELL		
POWER POLE		
SIGN BASE		
SIGN		
SIGNAL HEAD, TRAFFIC SIGNAL STANDARD, PEDESTAL BASE		
SIGNAL HEAD, TRAFFIC SIGNAL POLE, TRANSFORMER BASE		
STUMP		
TELEPHONE MANHOLE		
TELEPHONE PEDESTAL		
TREE		
WELL		
WATER SERVICE VALVE		
WATER VALVE		

GENERAL CONSTRUCTION NOTES:

- ALL ELEVATIONS ARE REFERENCED TO NAVD 88.
- 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.
- 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.
- 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	PROFILE
EXISTING SANITARY SEWER LINE		
PROPOSED SANITARY SEWER LINE		
EXISTING STORM SEWER LINE		
PROPOSED STORM SEWER LINE		
EXISTING WATER MAIN LINE		
PROPOSED WATER MAIN LINE		
EXISTING ELECTRICAL LINE		
EXISTING GAS MAIN LINE		
EXISTING TELEPHONE LINE		
EXISTING CABLE TV LINE		
EXISTING SANITARY LATERAL		
EXISTING WATER SERVICE		
RIGHT OF WAY		
PROPERTY LINE		
EASEMENT LINE		
SILT FENCE EROSION CONTROL		
EXISTING FIBER OPTIC		
EXISTING MAJOR CONTOUR		
EXISTING MINOR CONTOUR		
PROPOSED MAJOR CONTOUR		
PROPOSED MINOR CONTOUR		

PATCH SYMBOLS	
ASPHALTIC CONCRETE PAVEMENT	
CRUSHED AGGREGATE BASE COURSE	
PORTLAND CEMENT CONCRETE	

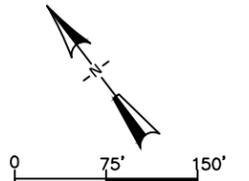
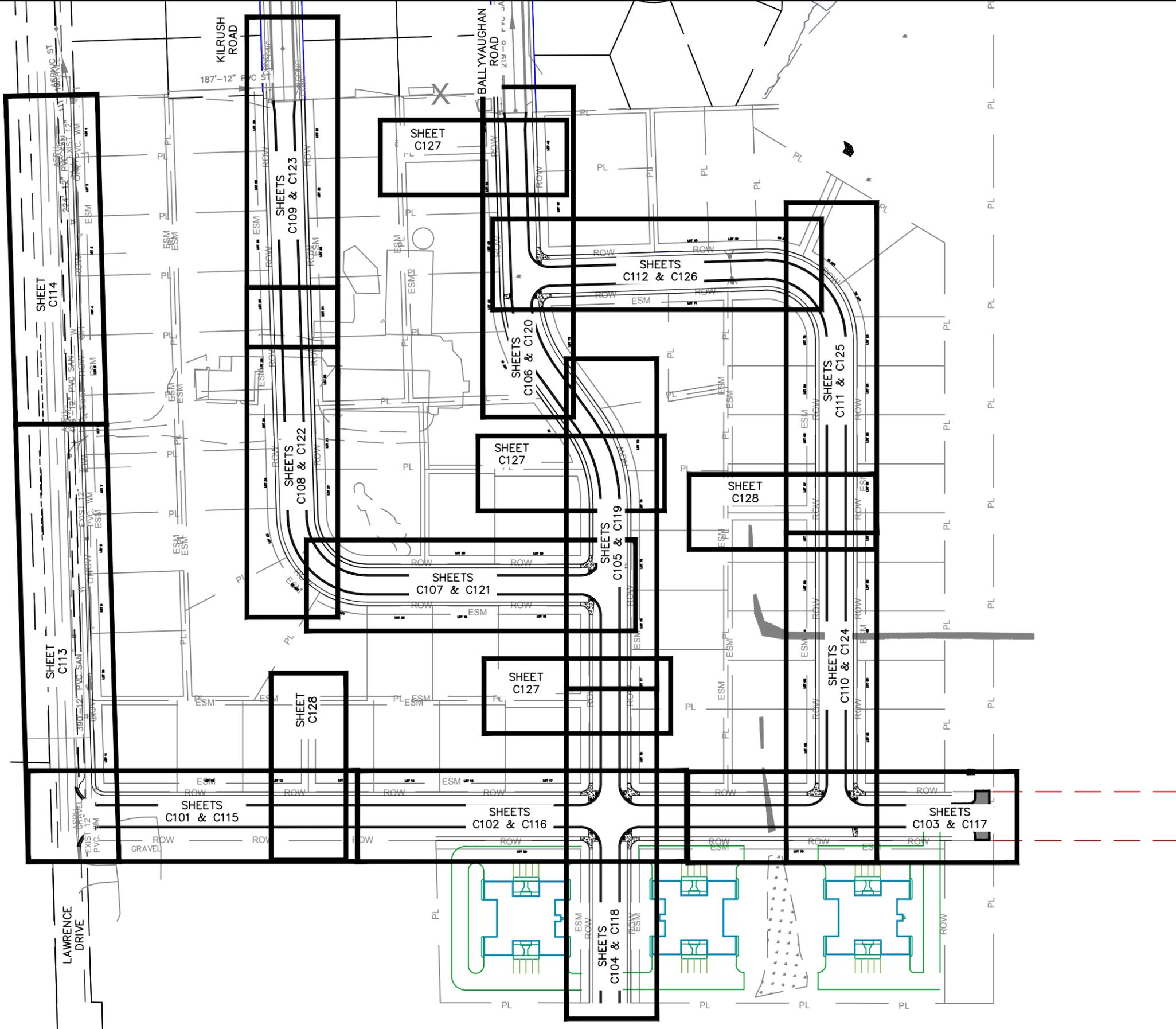


CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4060 FAX 920-339-4071

STANDARD ABBREVIATIONS AND SYMBOLS

NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION	BY: KAD	DATE: 10-2018	REVISIONS / ISSUES		PAGE NO. G002
PROJECT # 19-11	SURVEYED	DESIGNED	NO.	DATE	
	DRAWN	CHECKED	BY	REMARKS	



CITY OF DE PERE

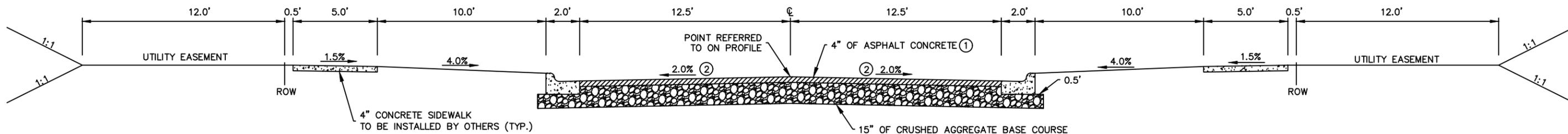
ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
 OFFICE 920-339-4061 FAX 920-339-4071

**GARRITY'S GLEN SOUTH
 OVERALL SHEETS LAYOUT**

NAME: GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

BY	DATE
SURVEYED	MACH IV 8-2018
DRAWN	SRL 5-2019
DESIGNED	SRL 5-2019
CHECKED	EPR 5-2019

REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS



BALLYVAUGHAN ROAD, KILRUSH ROAD, AND TIPPERARY TRAIL

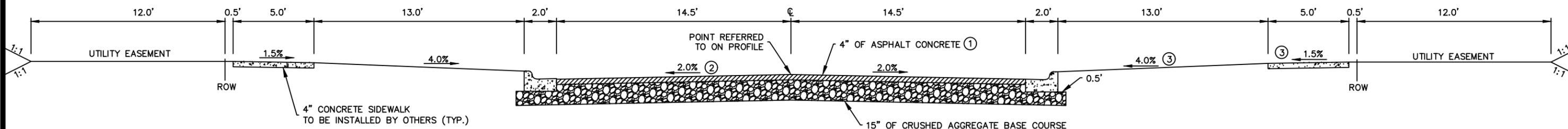
TYPICAL SECTIONS

① 4" ASPHALTIC CONCRETE PAVEMENT CONSISTS OF
 (2.25" BINDER COURSE: 3 LT 58-28 S)
 (1.75" SURFACE COURSE: 4 LT 58-28 S)
 ASPHALT SURFACE COURSE TO BE INSTALLED BY OTHERS.

② CROSS SLOPE VARIES THROUGH
 BALLYVAUGHAN ROAD AS FOLLOWS:
 (SEE INTERSECTION SHEET C405)

LEFT SIDE
STATION 21+04.5 TO 21+46.5 - 2.00% TO 1.00%
STATION 21+46.5 TO 21+88.5 - 1.00% TO 2.00%

RIGHT SIDE
STATION 25+71.3 TO 26+18.3 - 2.00% TO 0.72%
STATION 26+18.3 TO 26+60.3 - 0.72% TO 2.00%



**TYPICAL SECTION
 GARROMAN DRIVE**

① 4" ASPHALTIC CONCRETE PAVEMENT CONSISTS OF
 (2.25" BINDER COURSE: 3 LT 58-28 S)
 (1.75" SURFACE COURSE: 4 LT 58-28 S)
 ASPHALT SURFACE COURSE TO BE INSTALLED BY OTHERS.

② CROSS SLOPE VARIES THROUGH
 GARROMAN DRIVE AS FOLLOWS:
 (SEE INTERSECTION SHEET C405)

LEFT SIDE
STATION 45+80 TO 52+00 - 2.00%
STATION 52+00 TO 52+50 - 2.00% TO 2.76%
STATION 52+50 TO 52+69 - 2.76%
STATION 52+69 TO 53+11.5 - 2.76% TO 2.00%
STATION 53+11.5 TO 55+50 - 2.00%
STATION 55+50 TO 55+92 - 2.00% TO 3.00%
STATION 55+92 TO 56+35 - 3.00% TO 2.00%
STATION 56+32 TO 58+00 - 2.00%

③ FROM STATION 45+75 TO 50+60 TAPER
 FINISHED SURFACE TO MATCH GRADE
 PROVIDE DRAINAGE SWALE PER PLAN.



CITY OF DE PERE

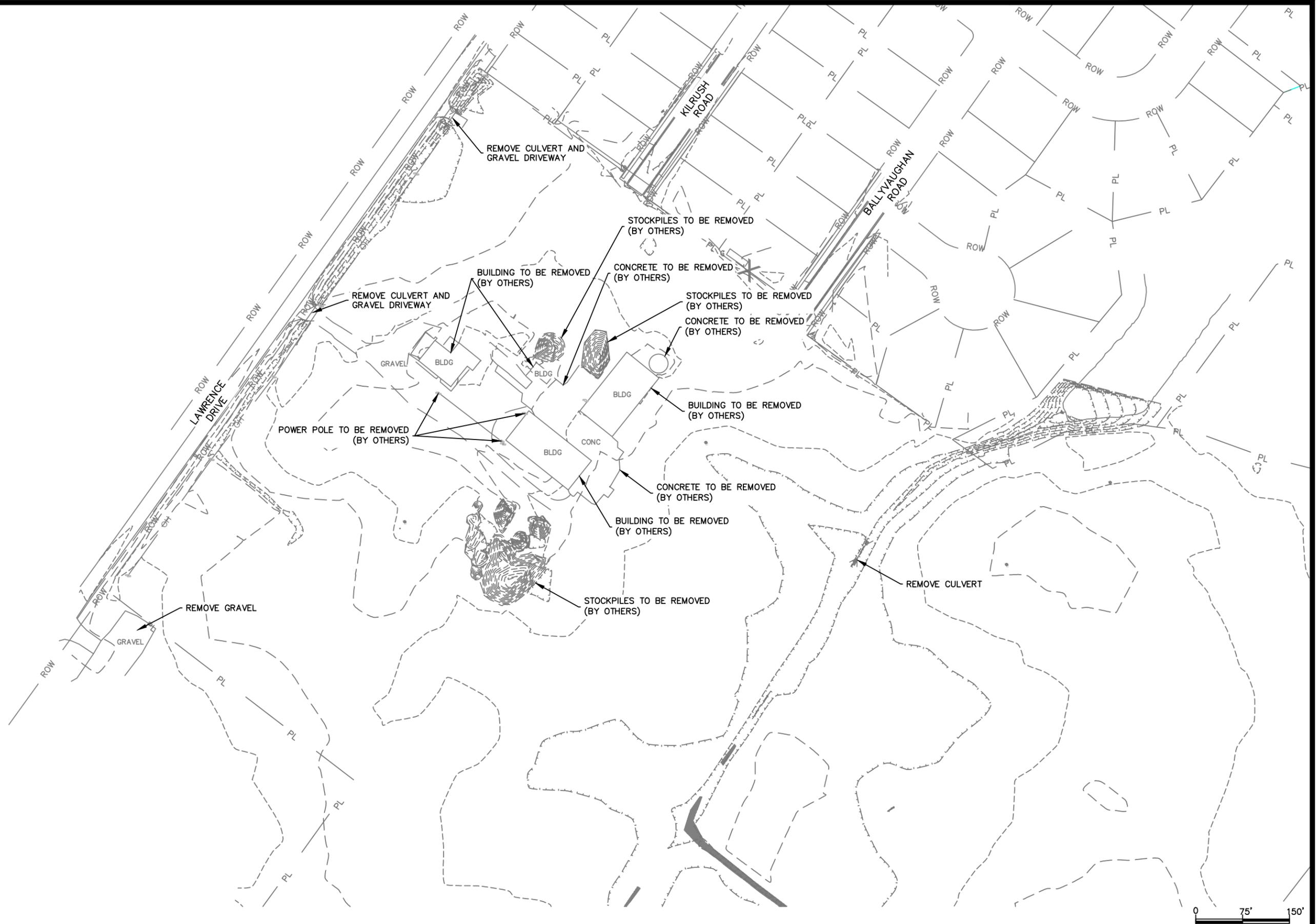
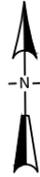
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 OFFICE 920-339-4061 FAX 920-339-4071

**GARRITY'S GLEN SOUTH
 TYPICAL SECTIONS**

NAME: GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

BY	DATE
SURVEYED MACH IV	8-2018
DRAWN SRL	11-2018
DESIGNED SRL	11-2018
CHECKED EPR	12-2018

REVISIONS / ISSUES			
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**GARRITY'S GLEN SOUTH
 EXISTING CONDITIONS AND DEMOLITION**

NAME:
 GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

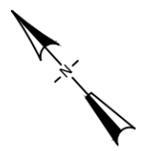
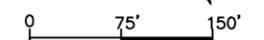
	BY	DATE
SURVEYED	MACH IV	8-2018
DRAWN	SRL	5-2019
DESIGNED	SRL	5-2019
CHECKED	EPR	5-2019

REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS



STAGES OF CONSTRUCTION

- 
STAGE 1 PROVIDE UTILITY SERVICE, EXCAVATION, CRUSHED AGGREGATE BASE COURSE AND GRADING UTILITY EASEMENT WITHIN 6" OF FINAL GRADE TO GARROMAN DRIVE AND BALLYVAUGHAN ROAD.
- 
STAGE 2 PROVIDE UTILITY SERVICE, EXCAVATION, CRUSHED AGGREGATE BASE COURSE AND GRADING UTILITY EASEMENT WITHIN 6" OF FINAL GRADE TO KILRUSH ROAD AND TIPPERARY TRAIL.
- 
STAGE 3 PROVIDE ALL REMAINING GRADING, CURB AND GUTTER RESTORATION, AND ASPHALTIC CONCRETE PAVEMENT.



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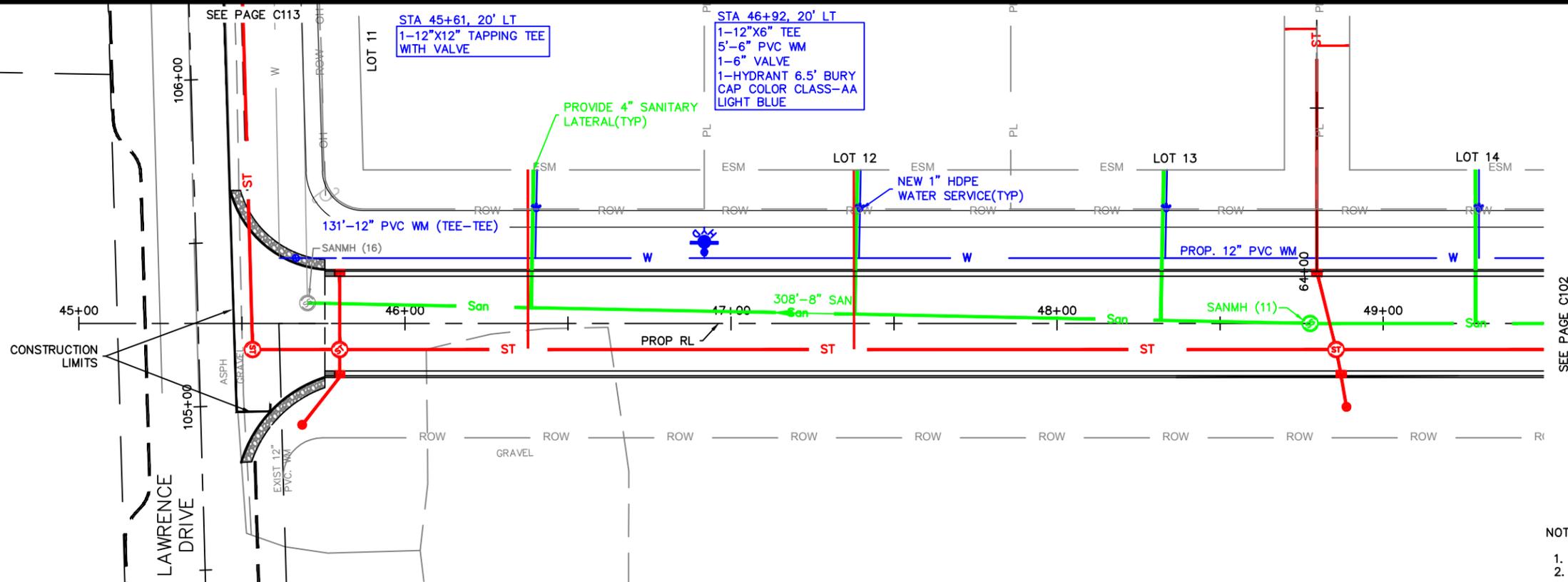
**GARRITY'S GLEN SOUTH
 STAGES OF CONSTRUCTION**

NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

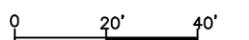
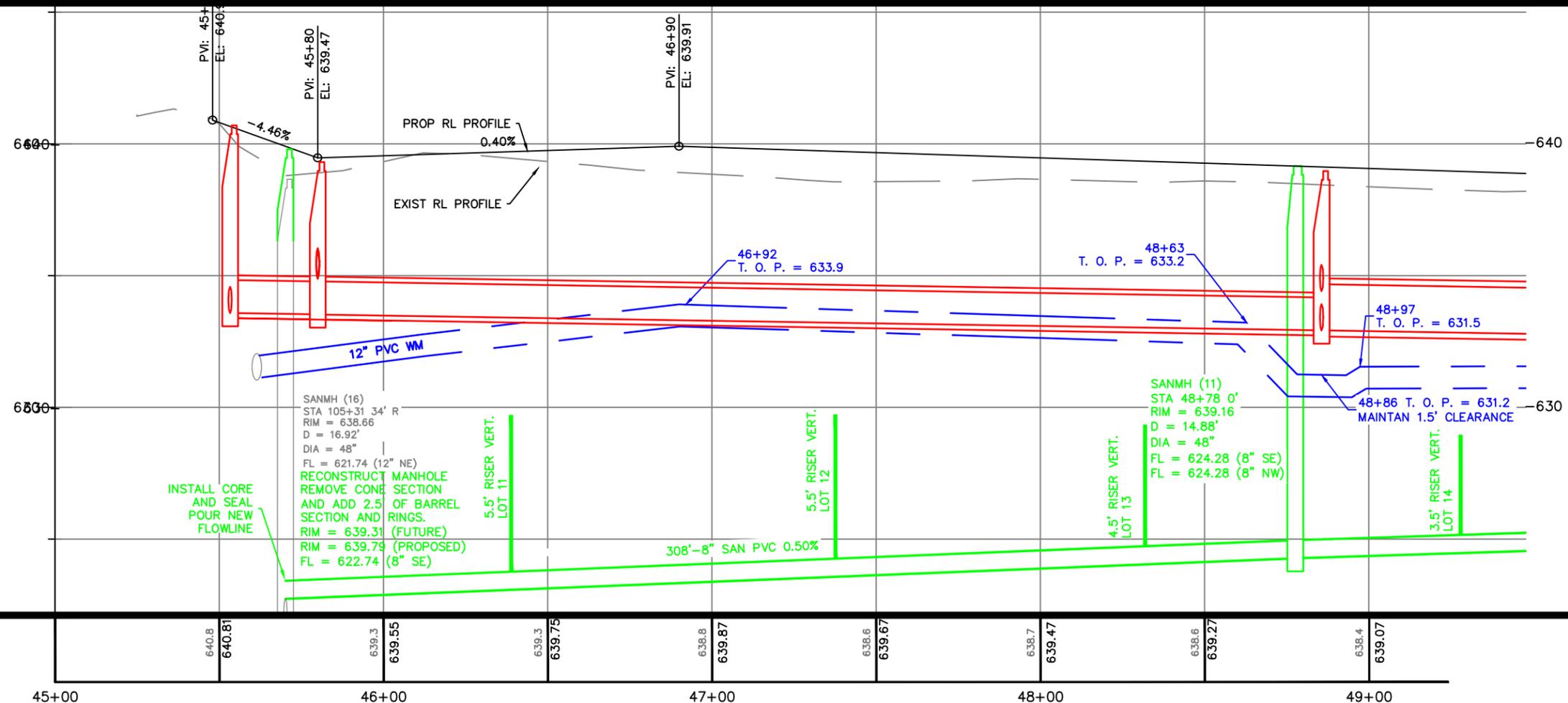
BY	DATE
SURVEYED	MACH IV 8-2018
DRAWN	SRL 5-2019
DESIGNED	SRL 5-2019
CHECKED	SRL 5-2019

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NO.	DATE	BY	REMARKS

X:\Projects\City Projects\2019\Project 19-11 Garry's Glen South\1200- CAD\19-11 Staging Plan.dwg



- NOTE:
1. GRANULAR BACKFILL - SANITARY SEWER
 2. NATURAL BACKFILL - WATER MAIN



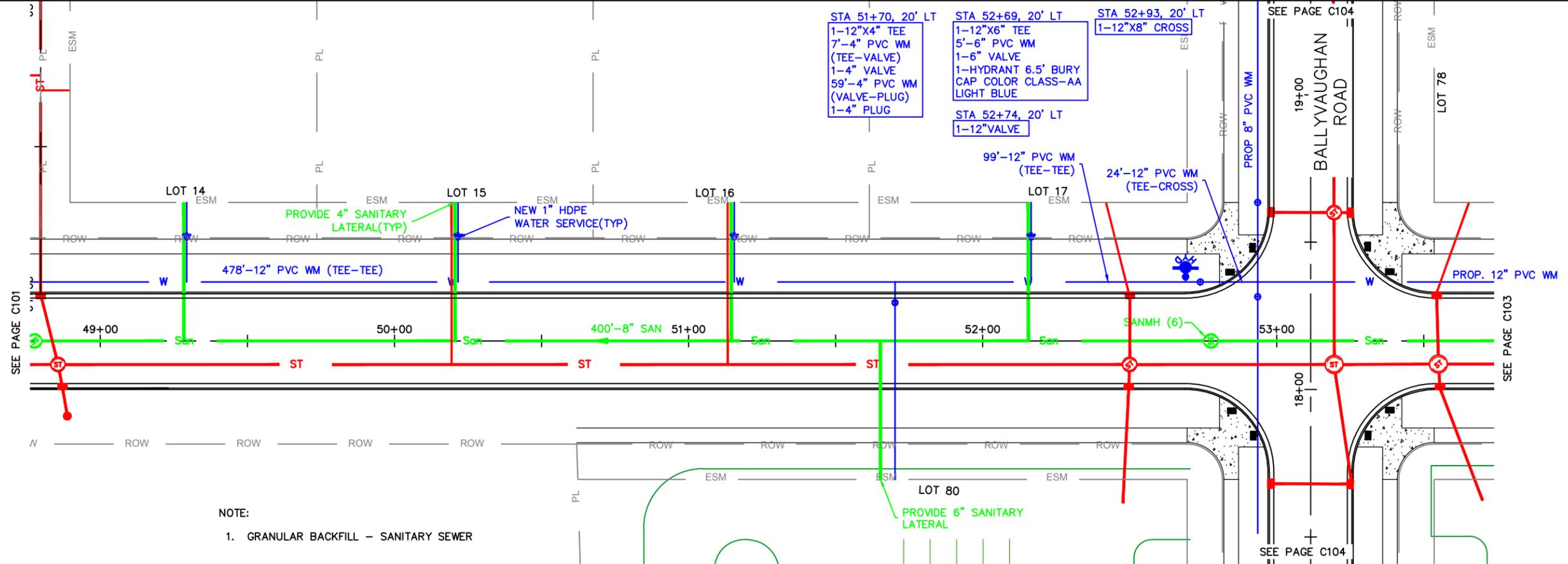
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GARRAMAN DRIVE
LAWRENCE DRIVE TO 400' E/O LAWRENCE DR
SANITARY SEWER AND WATER

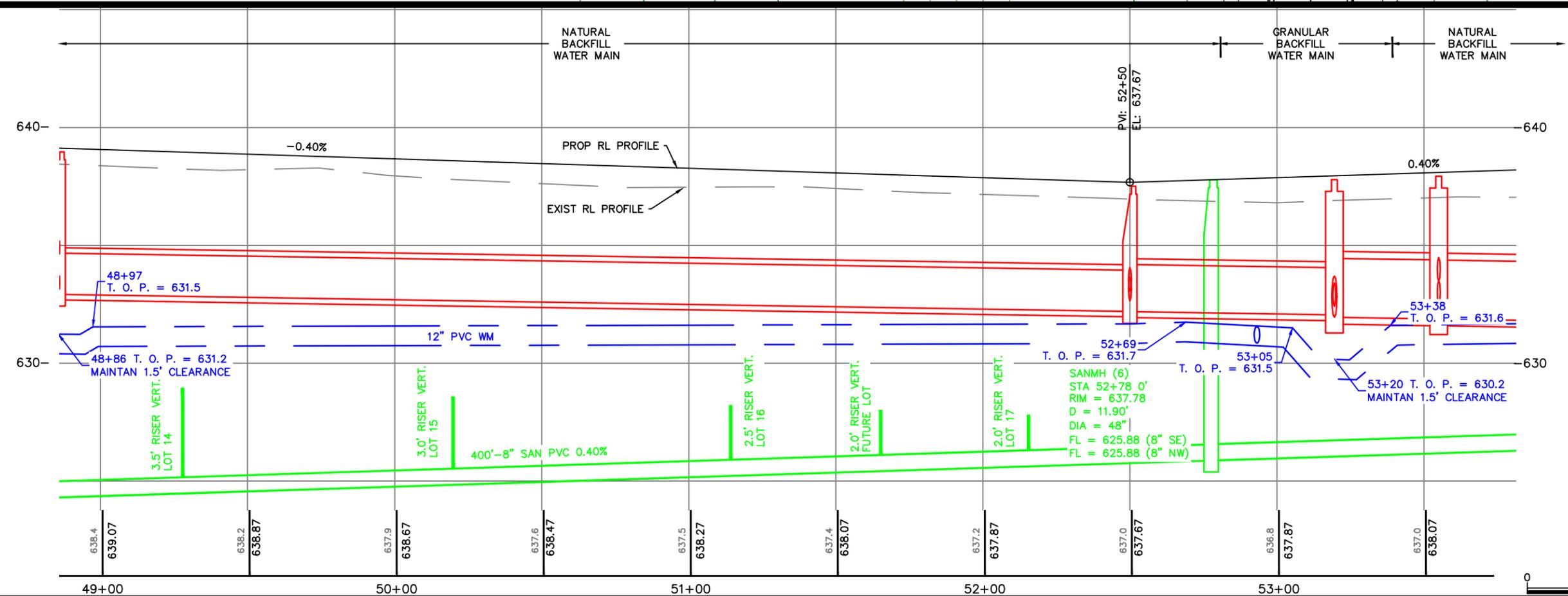
NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

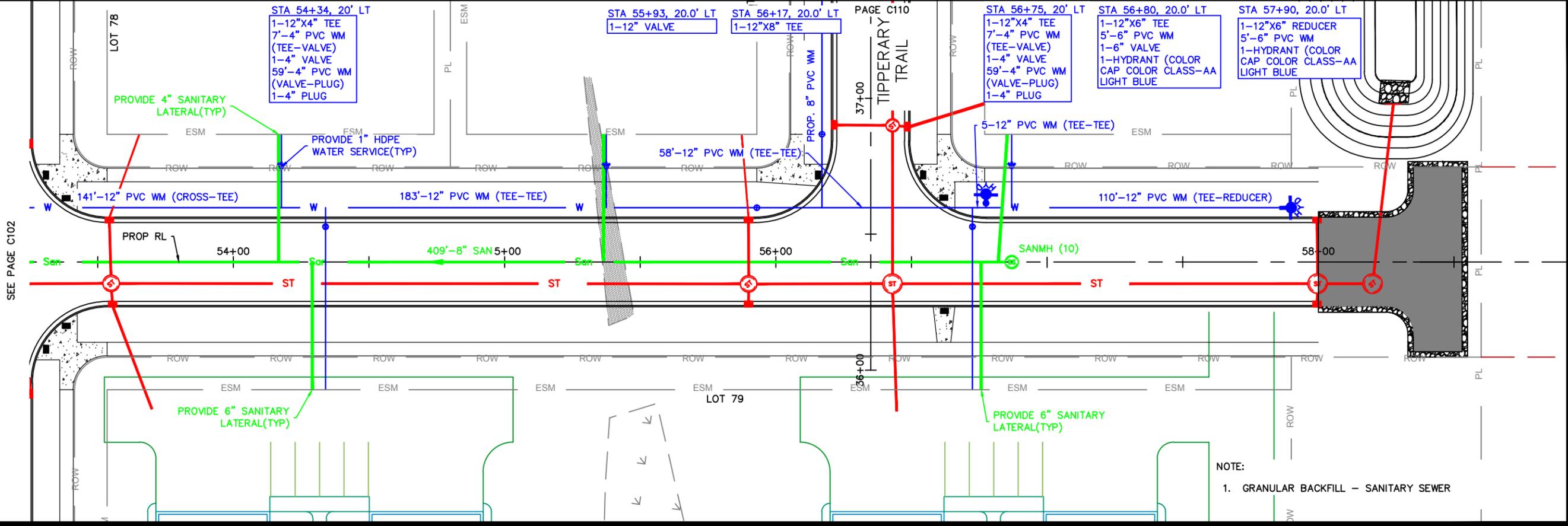
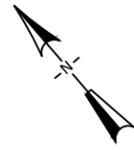
NO.	DATE	BY
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DRAWN	11-2018	SRL
DESIGNED	11-2018	SRL
CHECKED	11-2018	EPR

REVISIONS / ISSUES		
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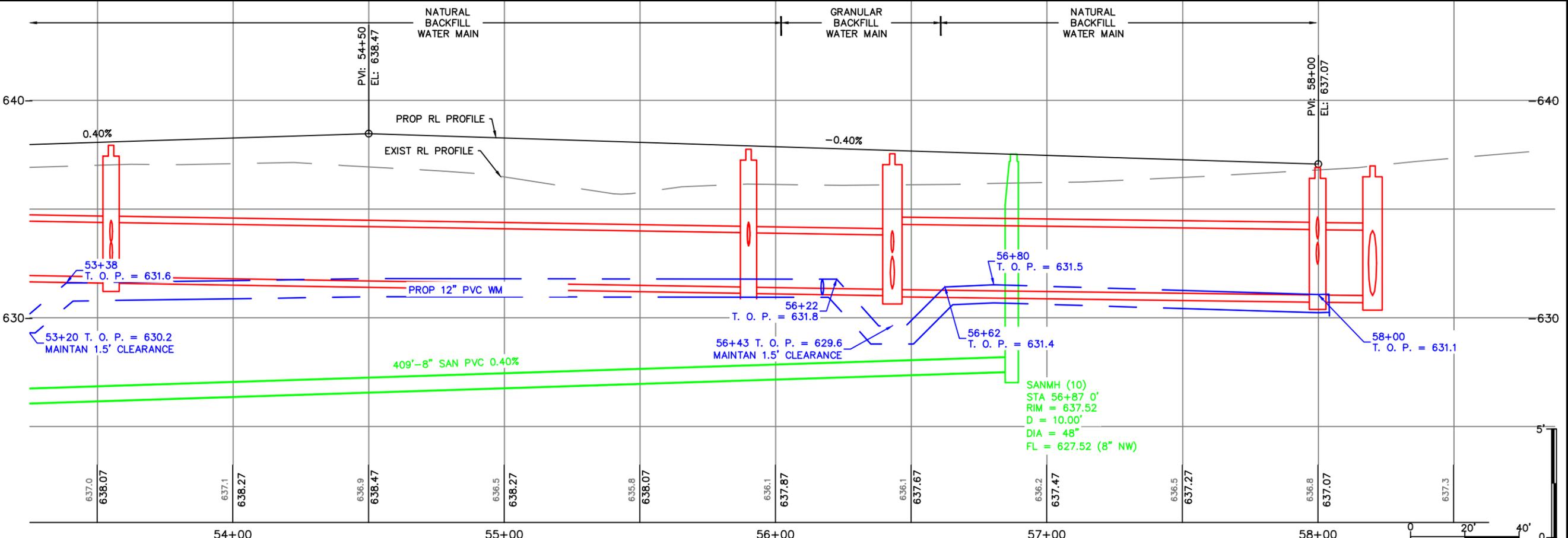


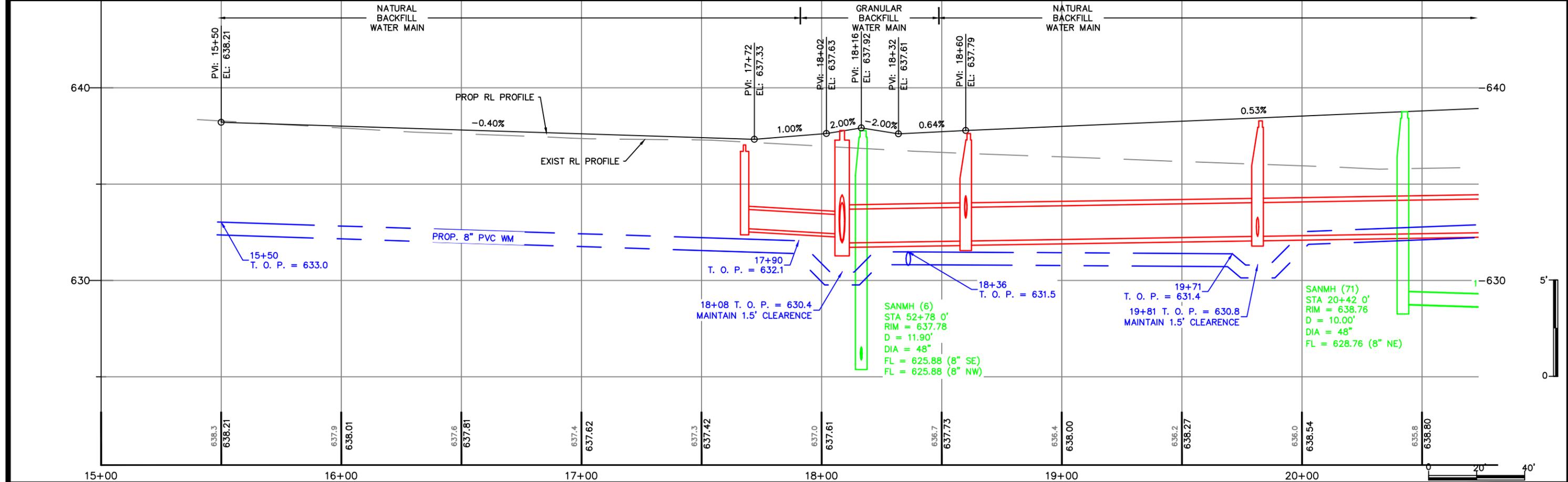
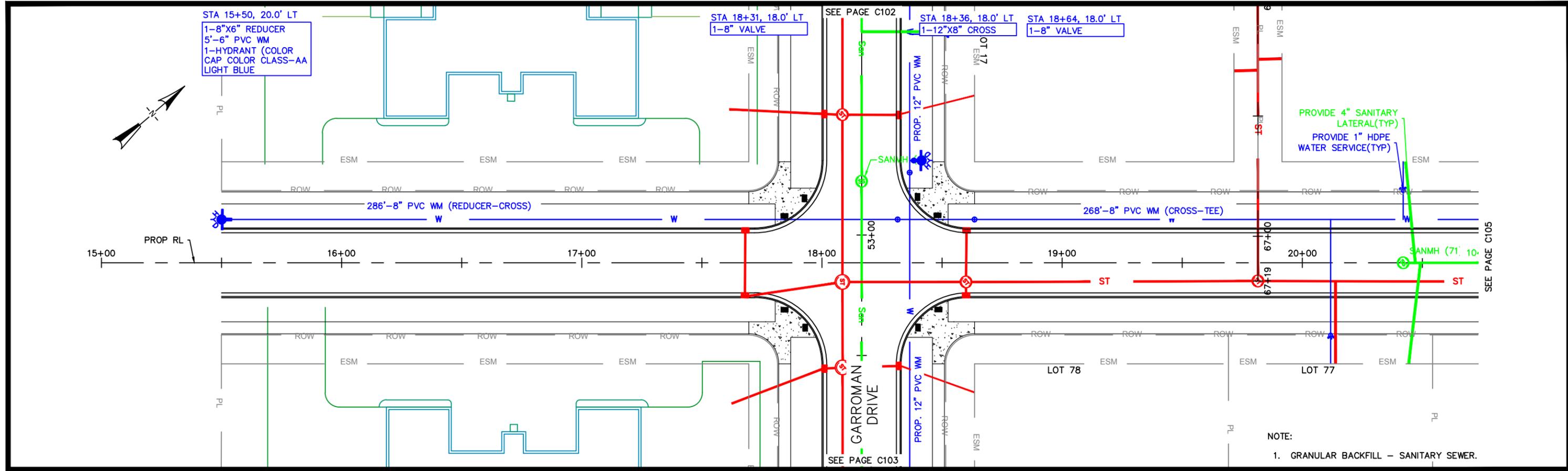
NOTE:
1. GRANULAR BACKFILL - SANITARY SEWER

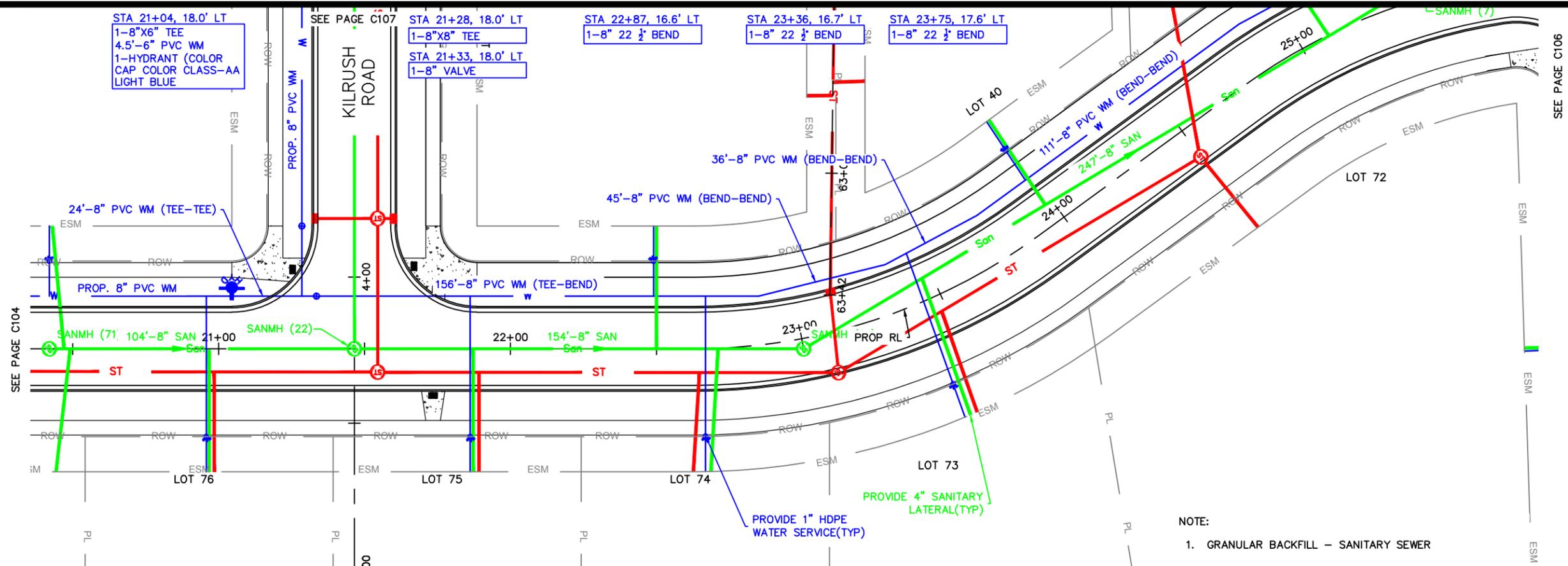
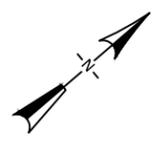




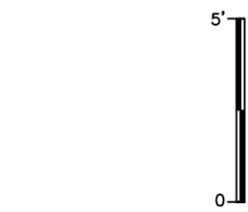
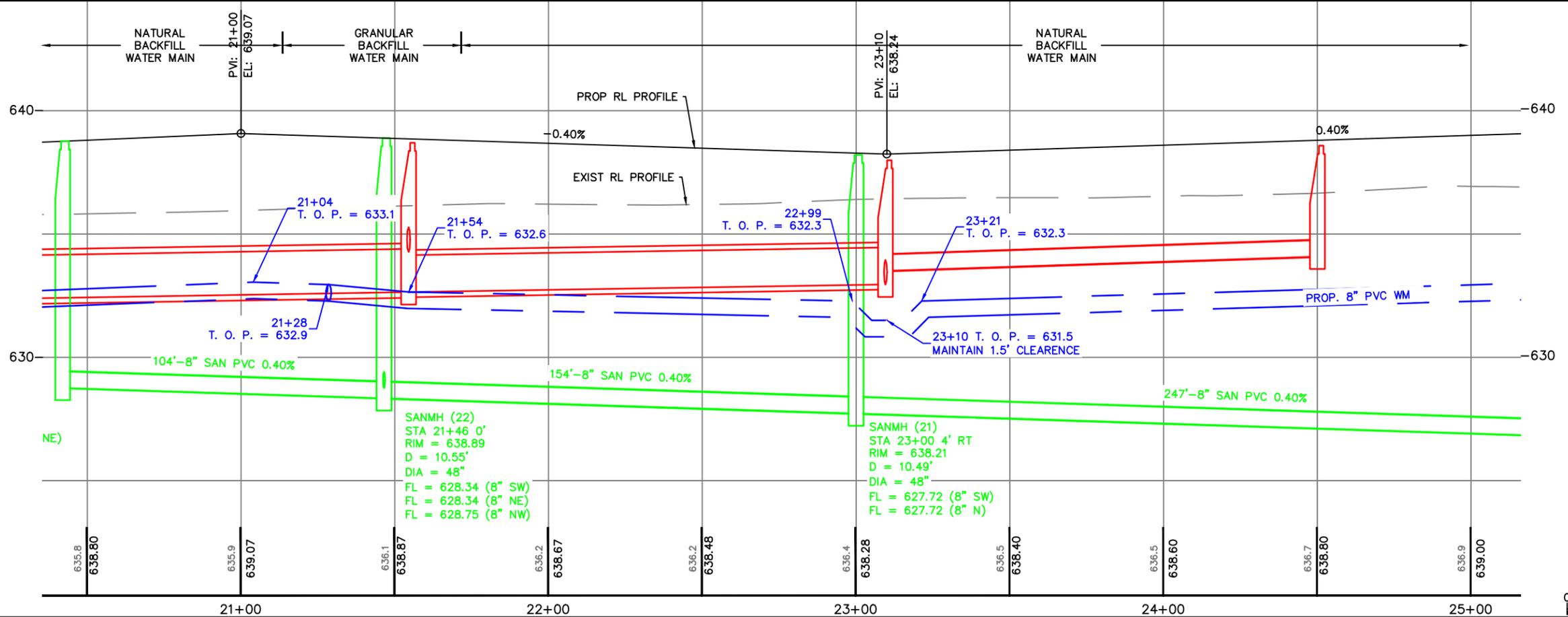
NOTE:
1. GRANULAR BACKFILL - SANITARY SEWER

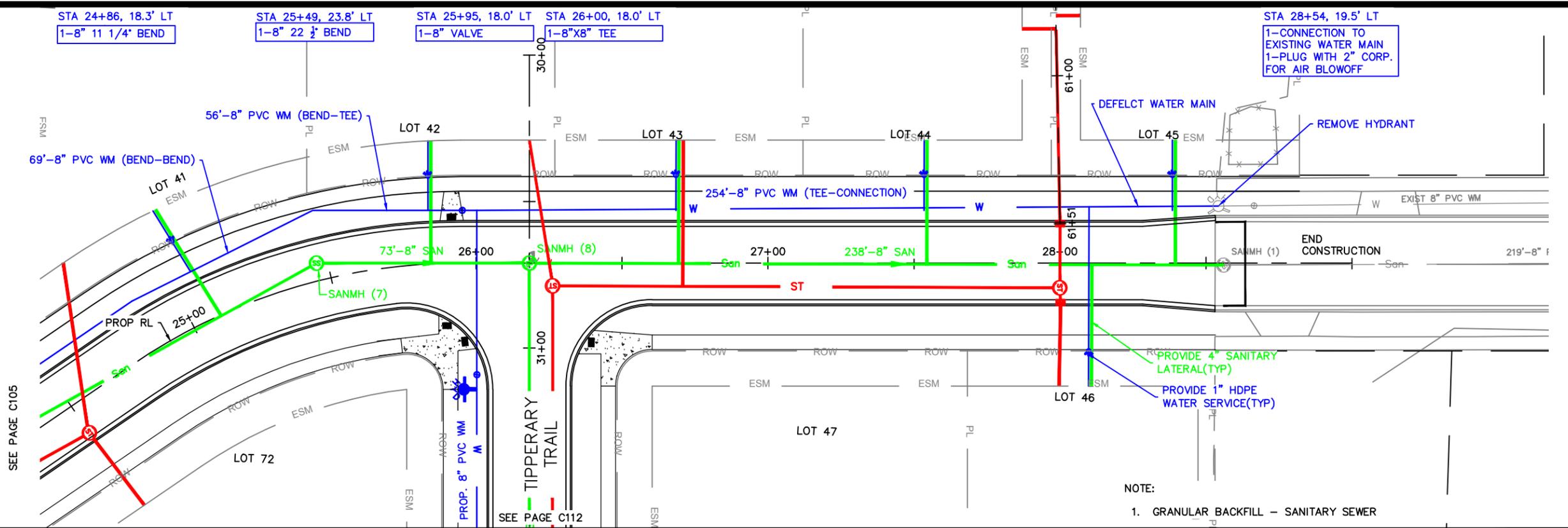




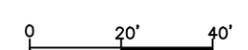
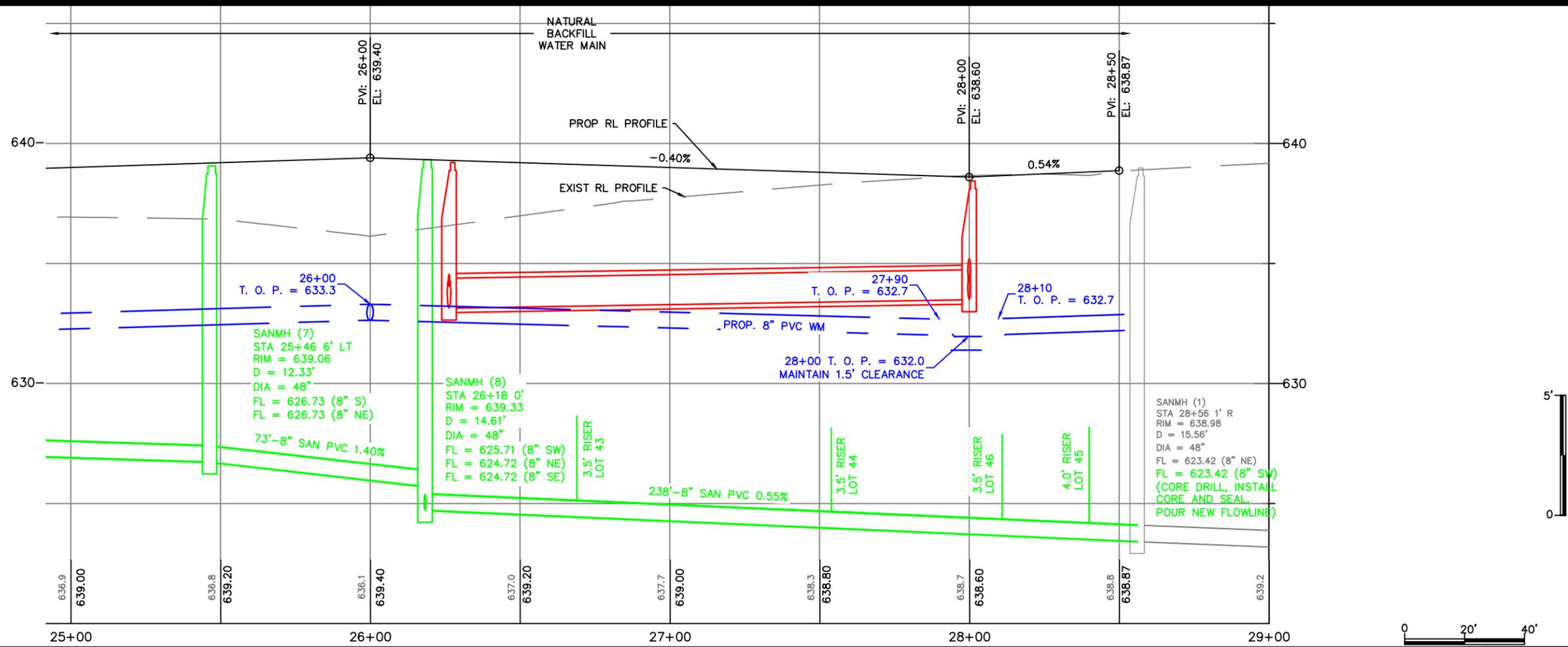


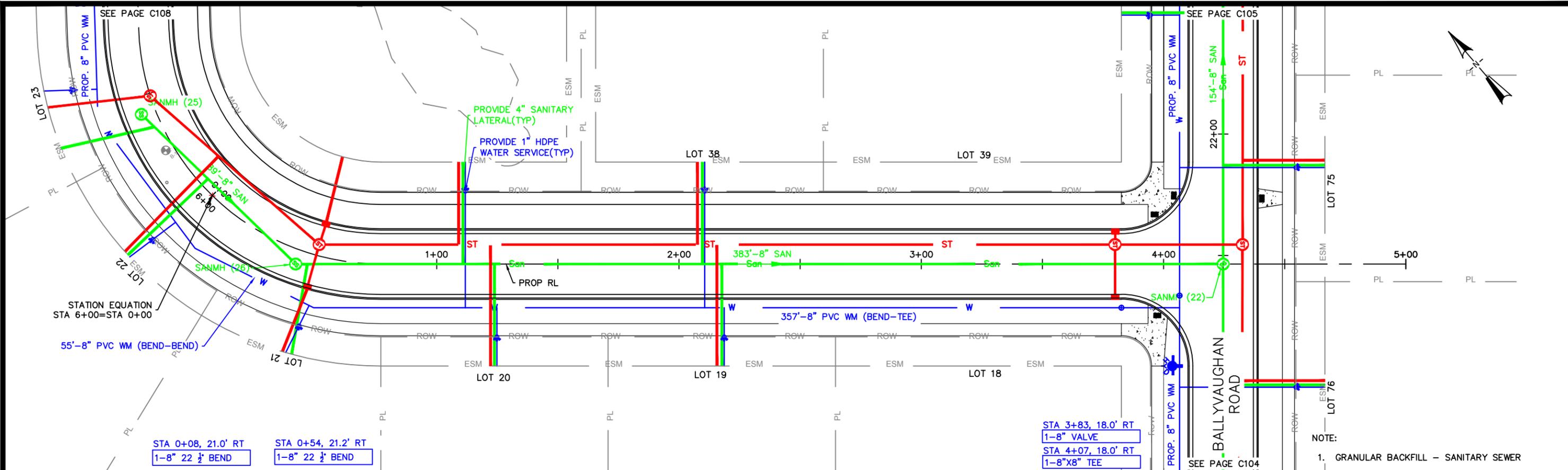
NOTE:
1. GRANULAR BACKFILL - SANITARY SEWER





NOTE:
1. GRANULAR BACKFILL - SANITARY SEWER





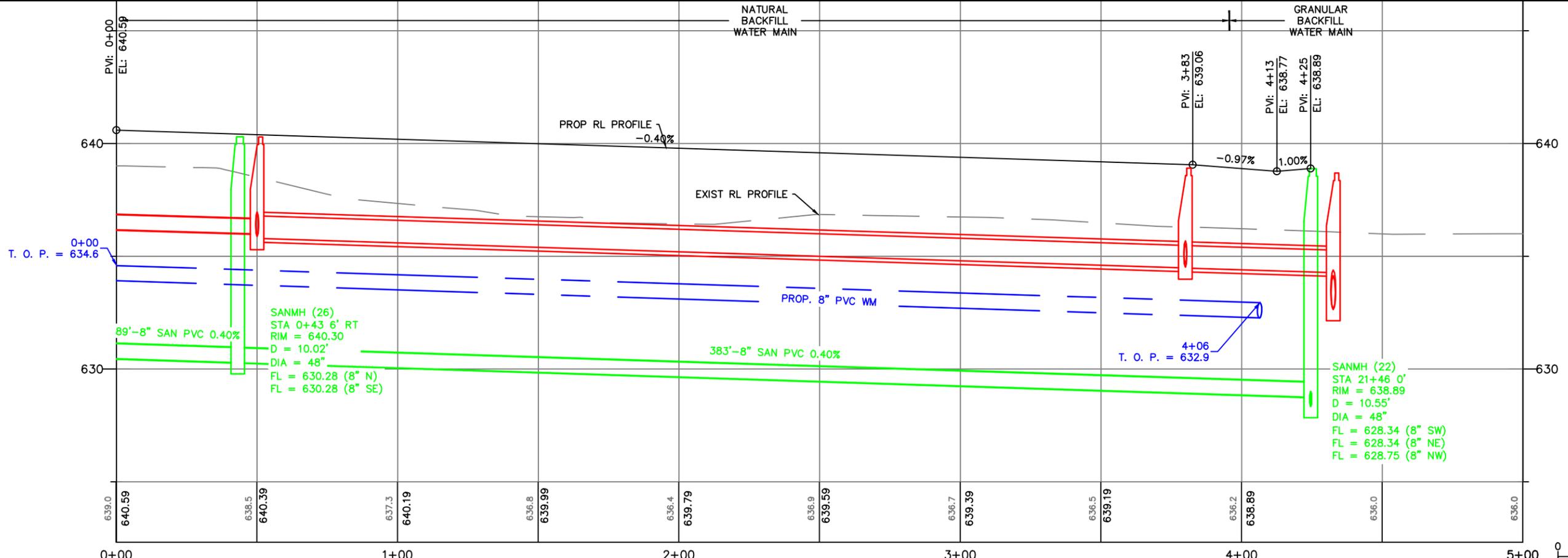
STA 0+08, 21.0' RT
1-8" 22 1/2" BEND

STA 0+54, 21.2' RT
1-8" 22 1/2" BEND

STA 3+83, 18.0' RT
1-8" VALVE

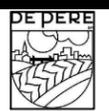
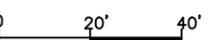
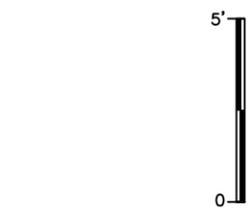
STA 4+07, 18.0' RT
1-8"X8" TEE

NOTE:
1. GRANULAR BACKFILL - SANITARY SEWER



SANMH (26)
STA 0+43.6' RT
RIM = 640.30
D = 10.02'
DIA = 48"
FL = 630.28 (8" N)
FL = 630.28 (8" SE)

SANMH (22)
STA 21+46.0'
RIM = 638.89
D = 10.55'
DIA = 48"
FL = 628.34 (8" SW)
FL = 628.34 (8" NE)
FL = 628.75 (8" NW)



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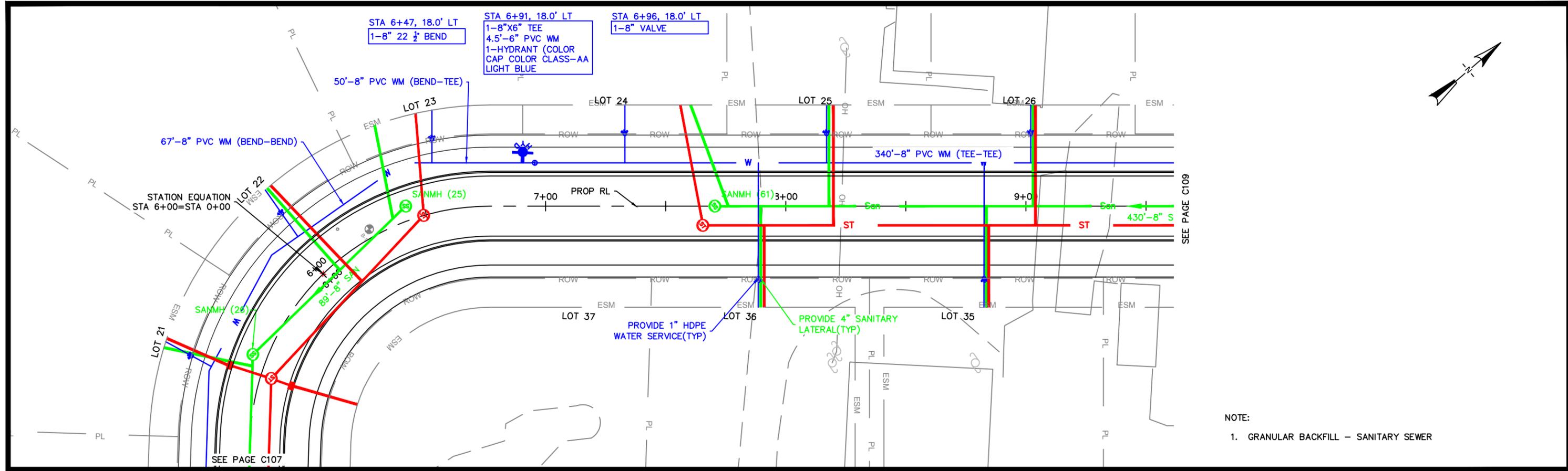
KILRUSH ROAD
450' W/O BALLYVAUGHAN TO BALLYVAUGHAN
SANITARY SEWER AND WATER MAIN

NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION
PROJECT # 19-11

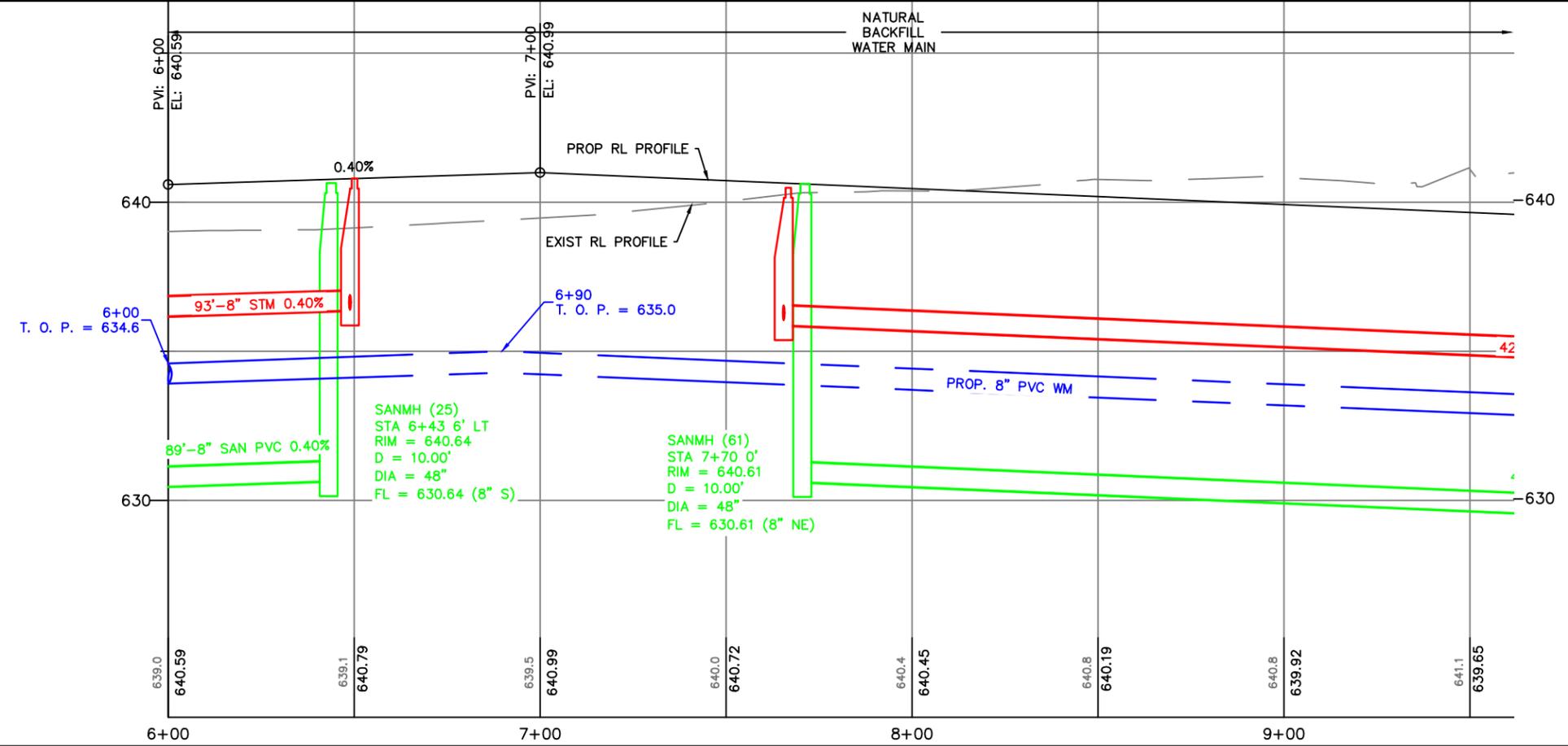
BY	DATE
SURVEYED MACH IV	8-2018
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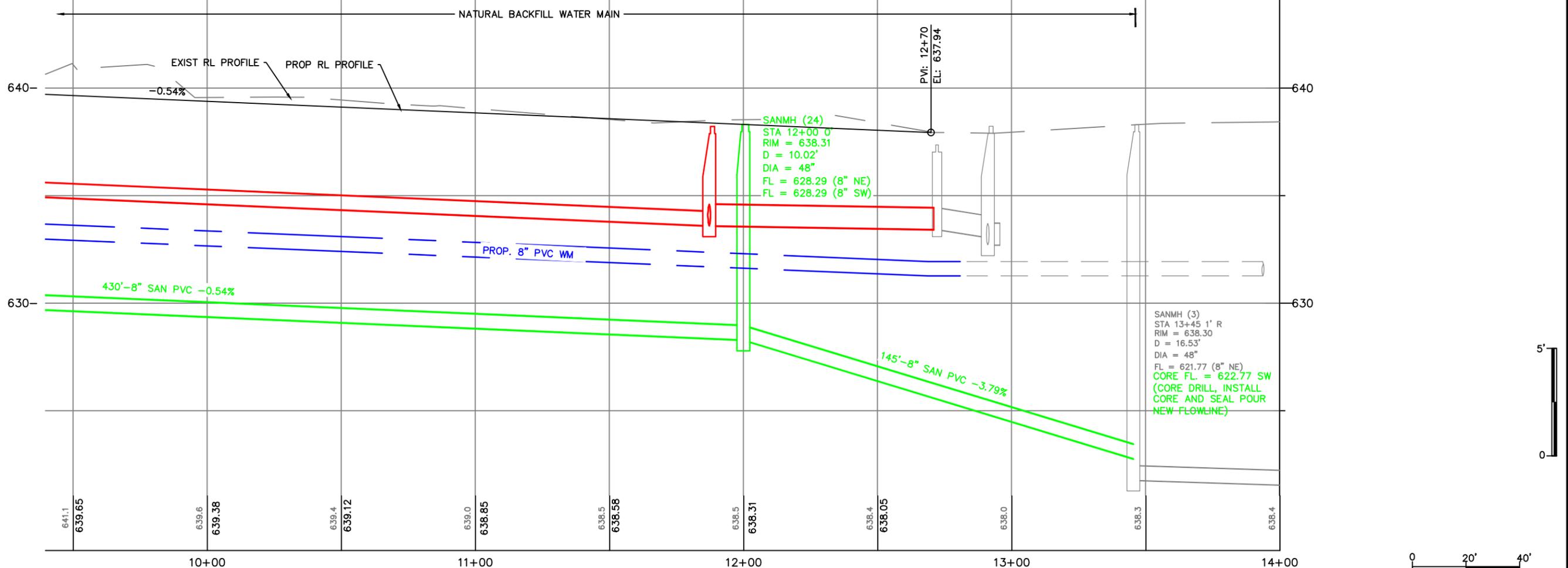
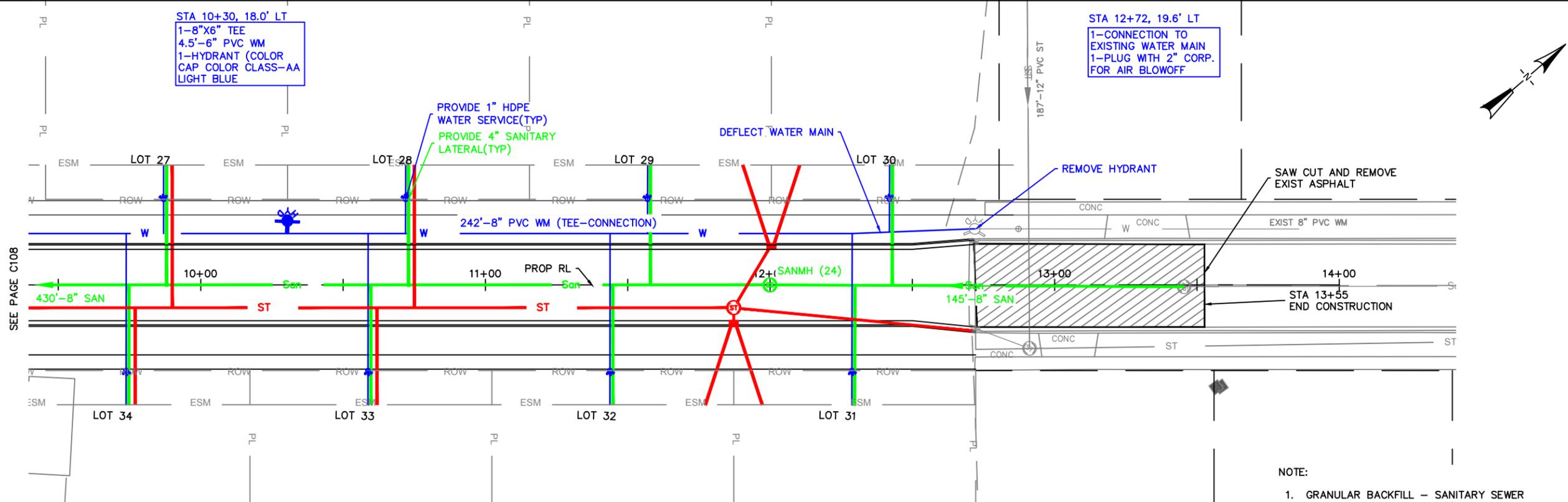
REVISIONS / ISSUES		
NO.	DATE	REMARKS

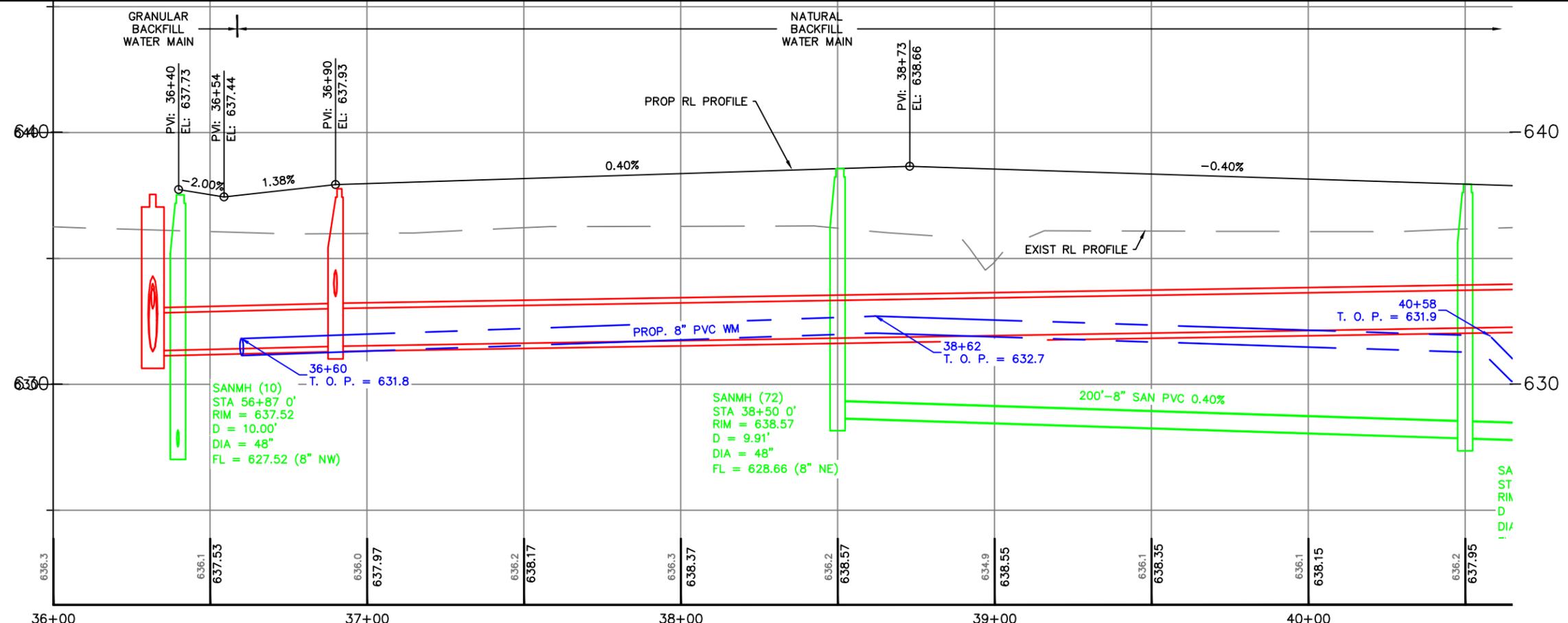
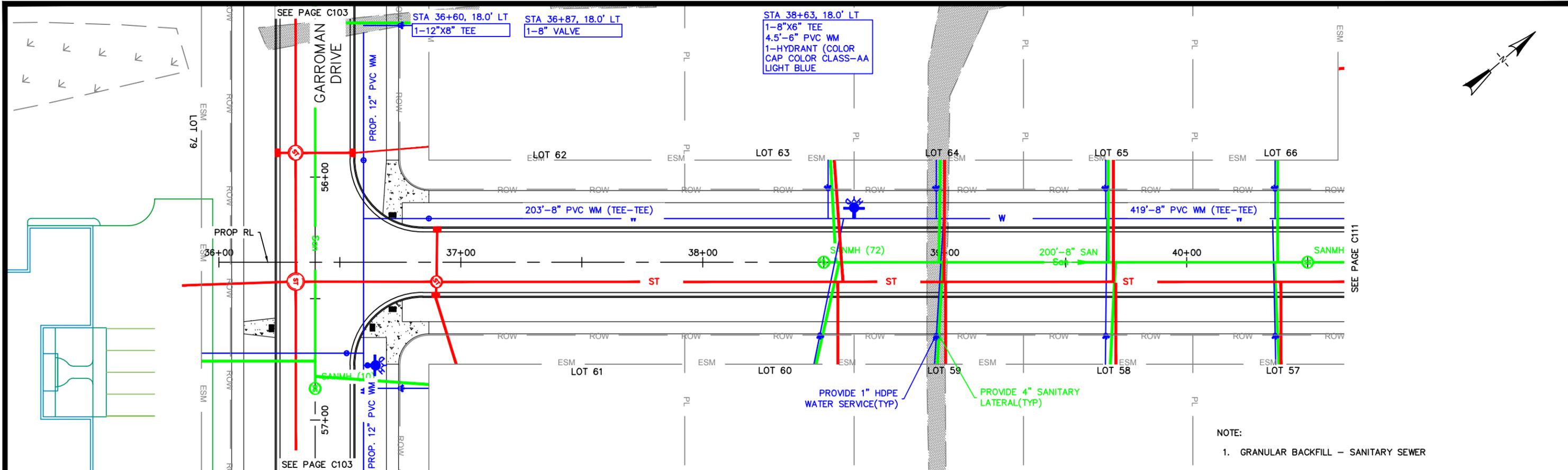
PAGE NO.
C107

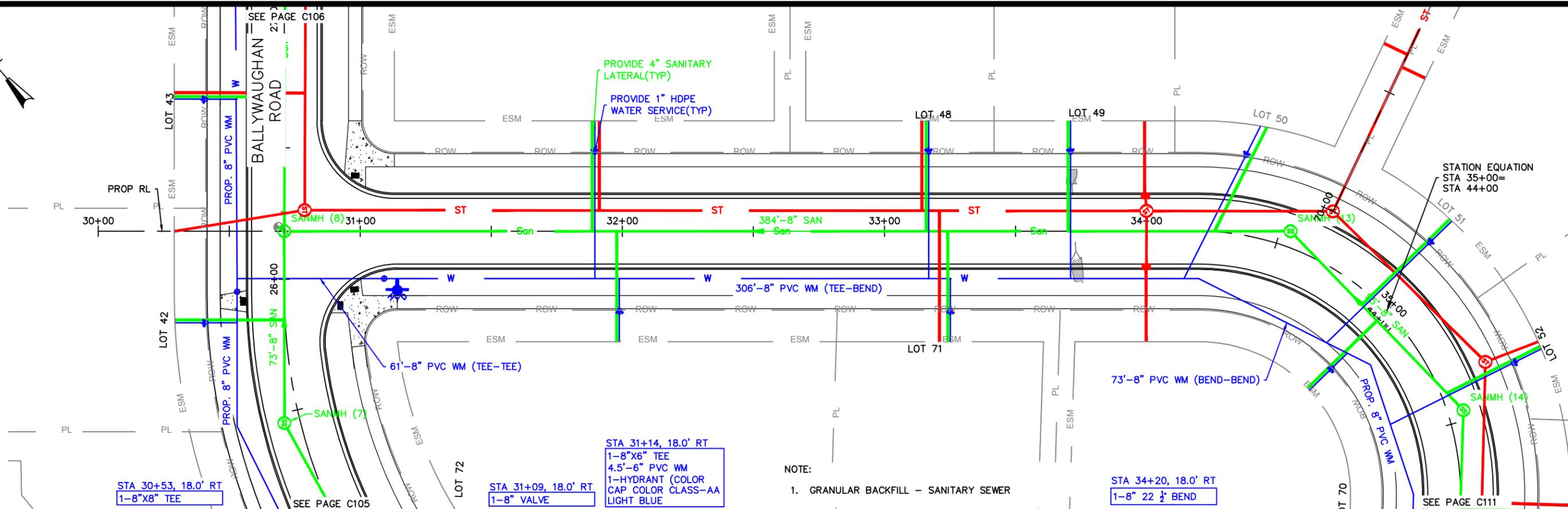


NOTE:
1. GRANULAR BACKFILL - SANITARY SEWER









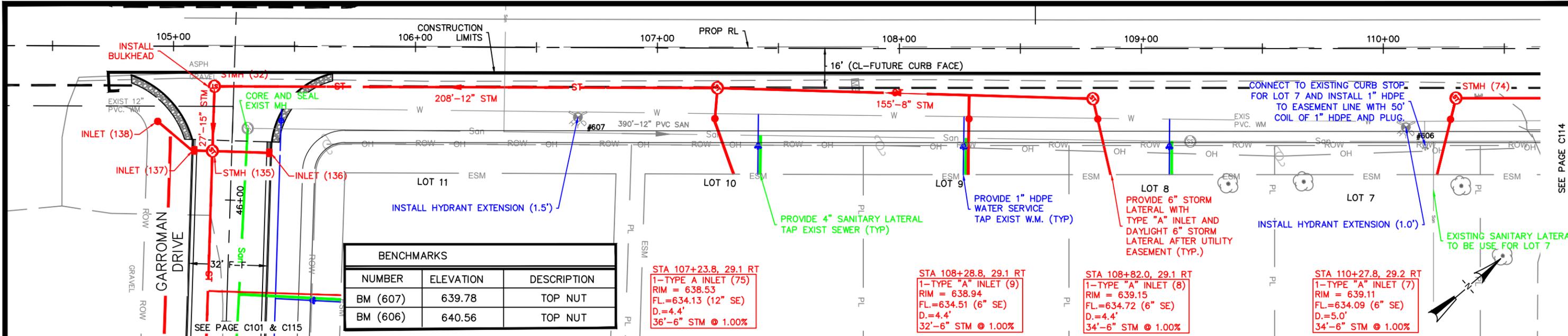
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 ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
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TIPPERARY TRAIL
BALLYVAUGHAN ROAD TO 700' N/O GARROMAN
SANITARY SEWER AND WATER MAIN

NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

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DRAWN	11-2018	SRL	
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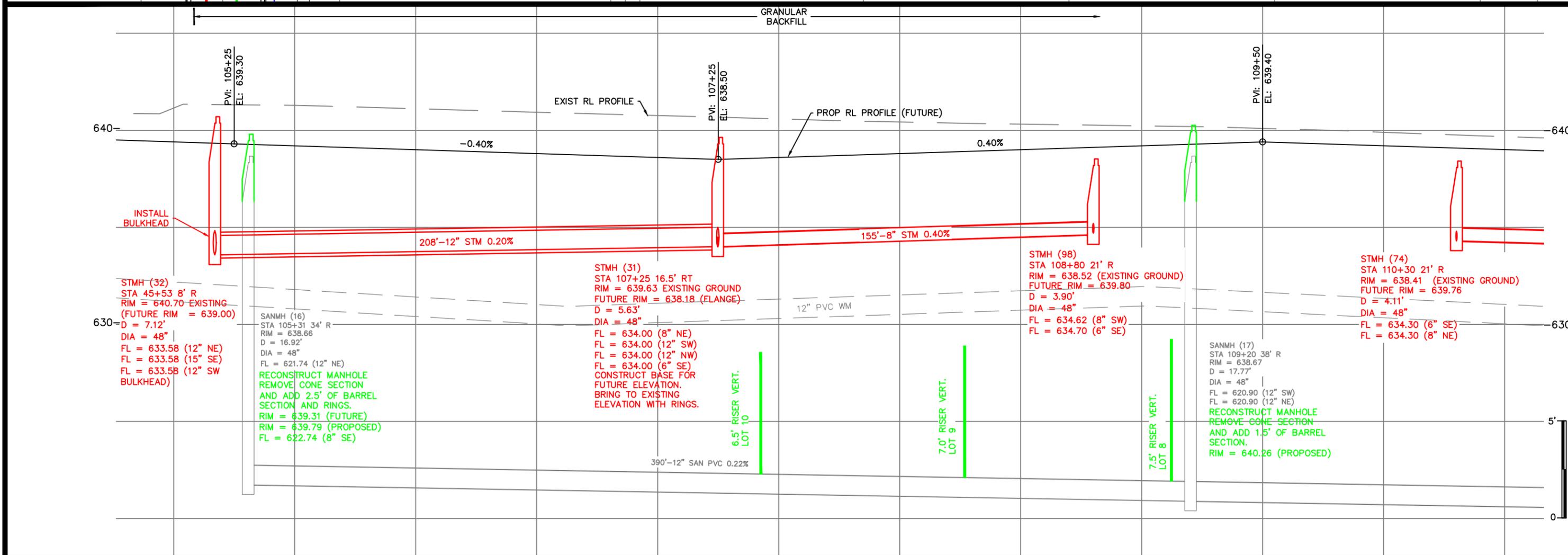
BENCHMARKS		
NUMBER	ELEVATION	DESCRIPTION
BM (607)	639.78	TOP NUT
BM (606)	640.56	TOP NUT

STA 107+23.8, 29.1 RT
 1-TYPE "A" INLET (75)
 RIM = 638.53
 FL=634.13 (12" SE)
 D=4.4'
 36'-6" STM @ 1.00%

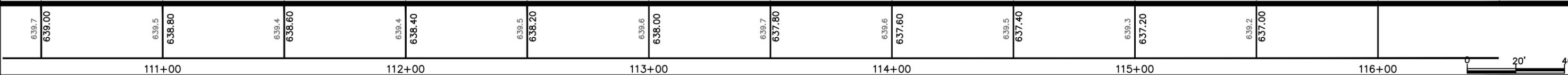
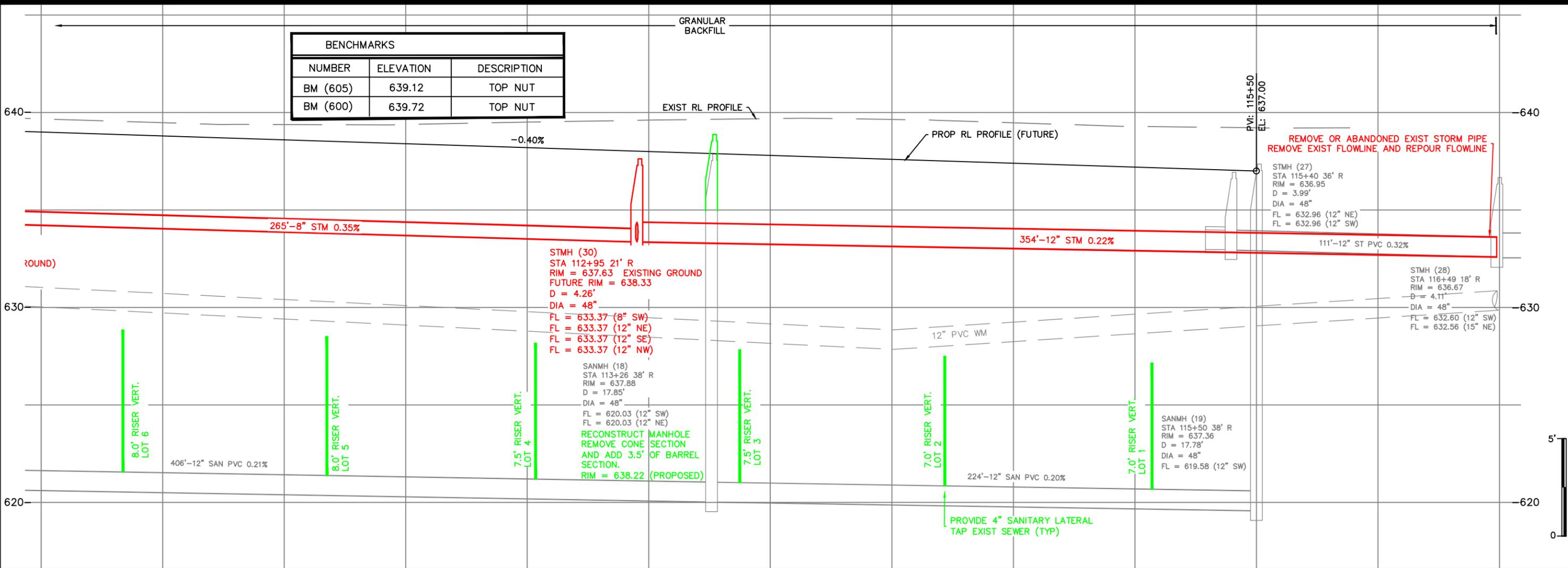
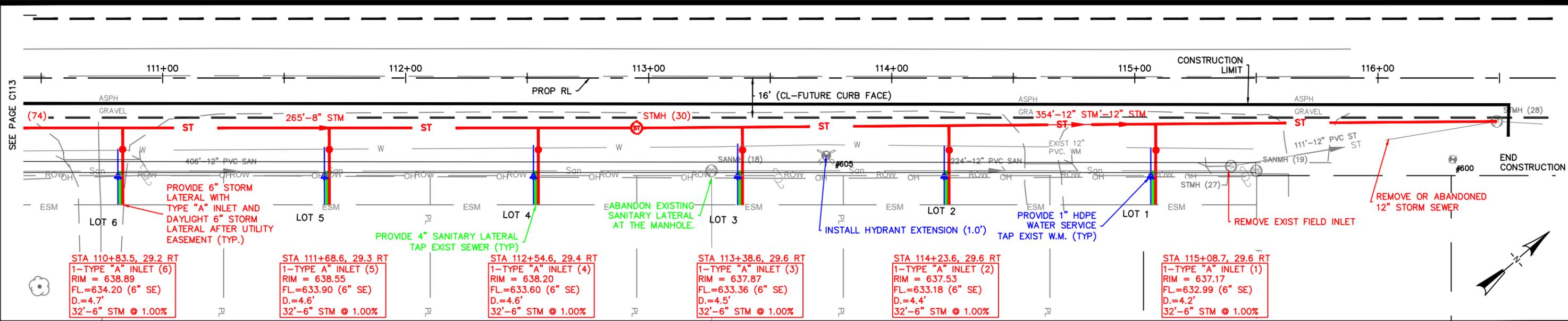
STA 108+28.8, 29.1 RT
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 RIM = 638.94
 FL=634.51 (6" SE)
 D=4.4'
 32'-6" STM @ 1.00%

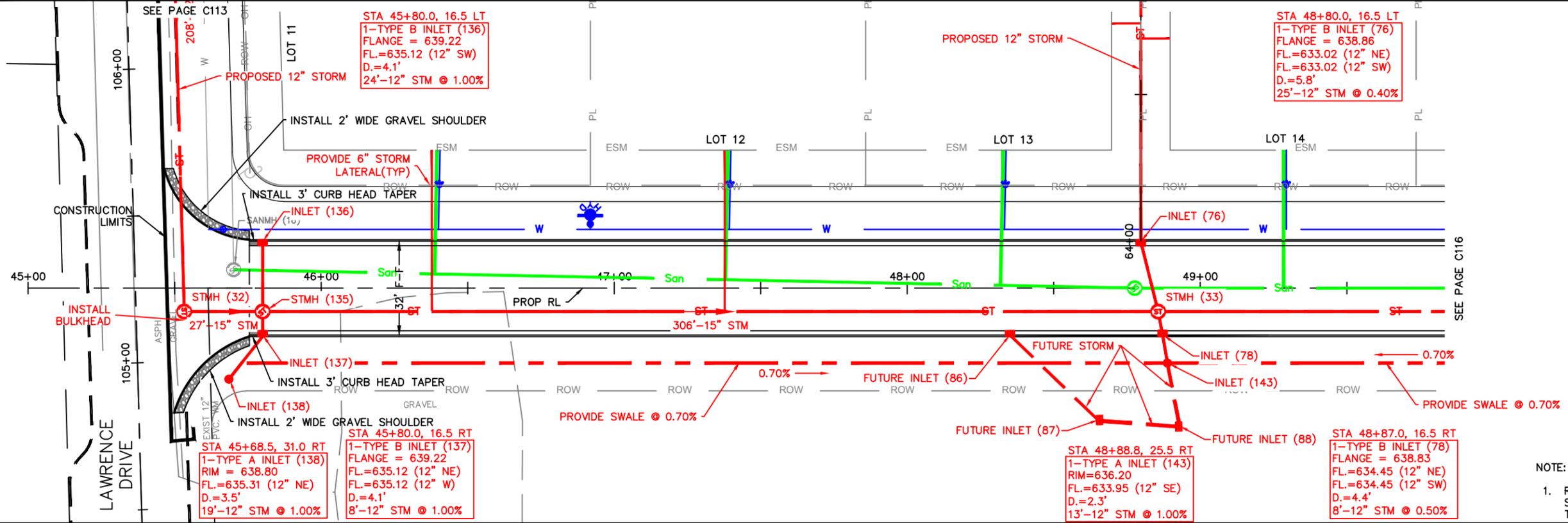
STA 108+82.0, 29.1 RT
 1-TYPE "A" INLET (8)
 RIM = 639.15
 FL=634.72 (6" SE)
 D=4.4'
 34'-6" STM @ 1.00%

STA 110+27.8, 29.2 RT
 1-TYPE "A" INLET (7)
 RIM = 639.11
 FL=634.09 (6" SE)
 D=5.0'
 34'-6" STM @ 1.00%

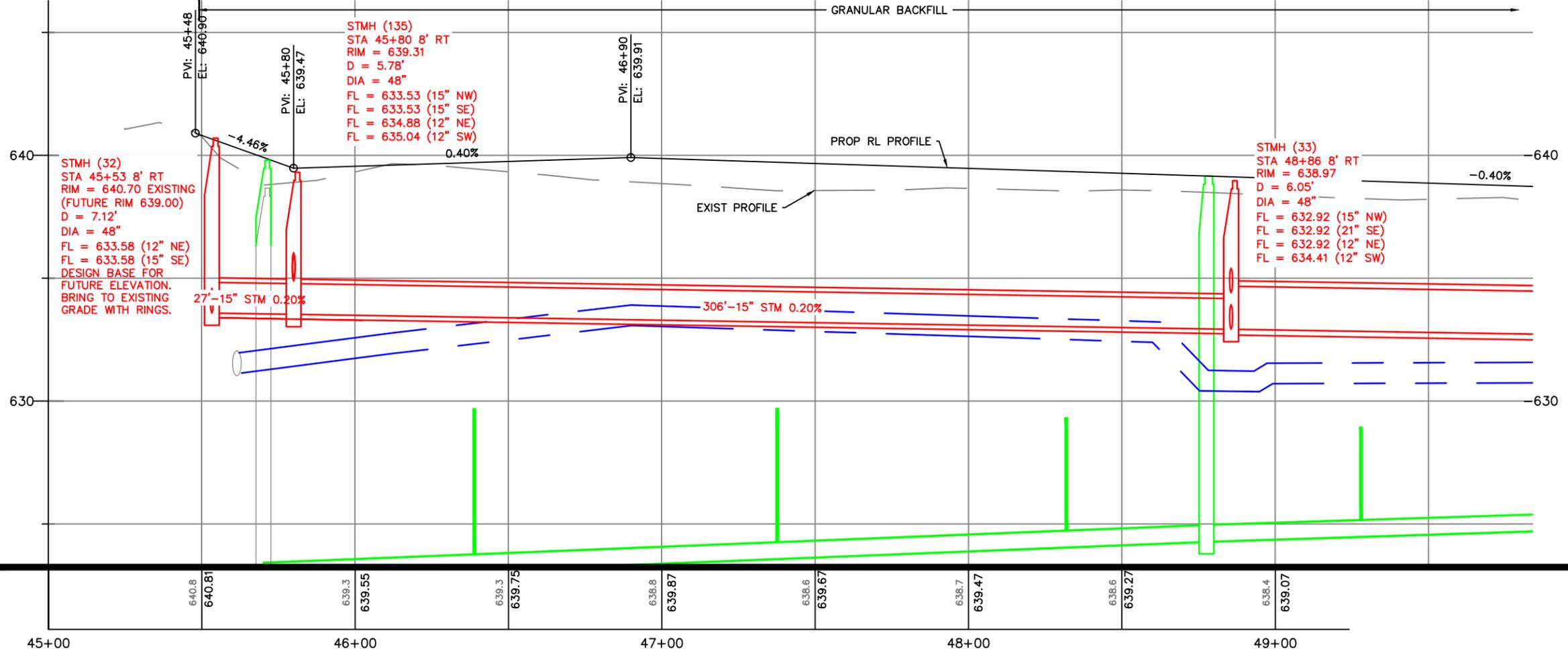


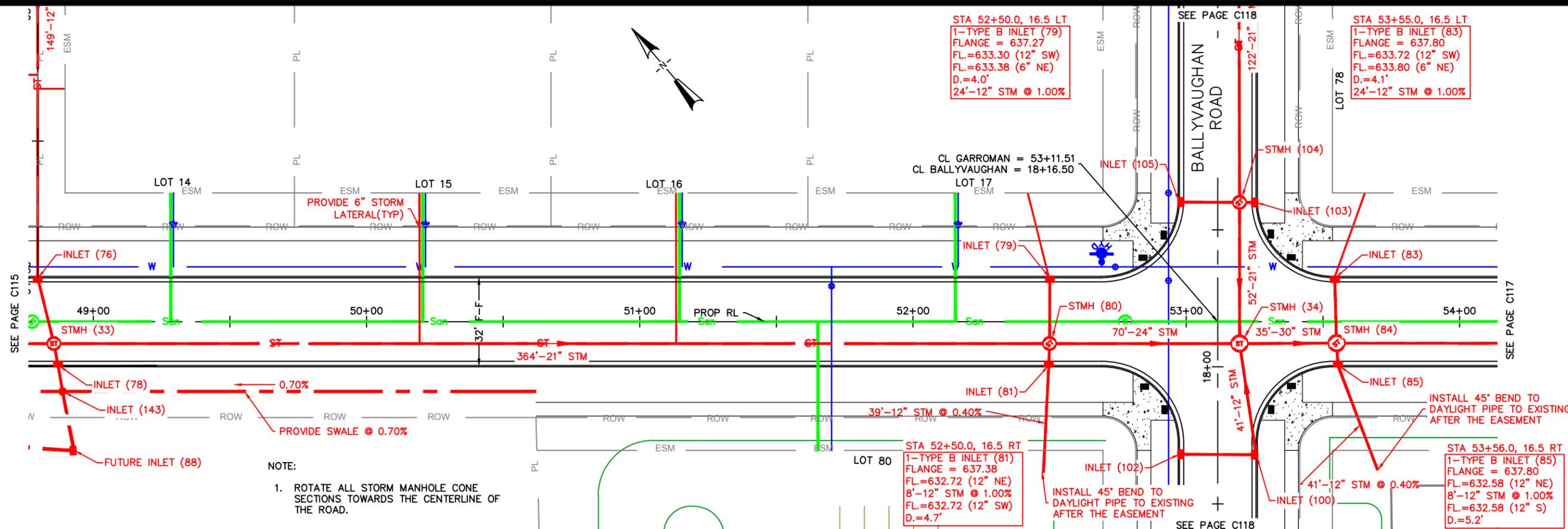
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105+00		106+00		107+00		108+00		109+00		110+00		110+00		110+00		110+00		110+00		110+00		110+00		110+00



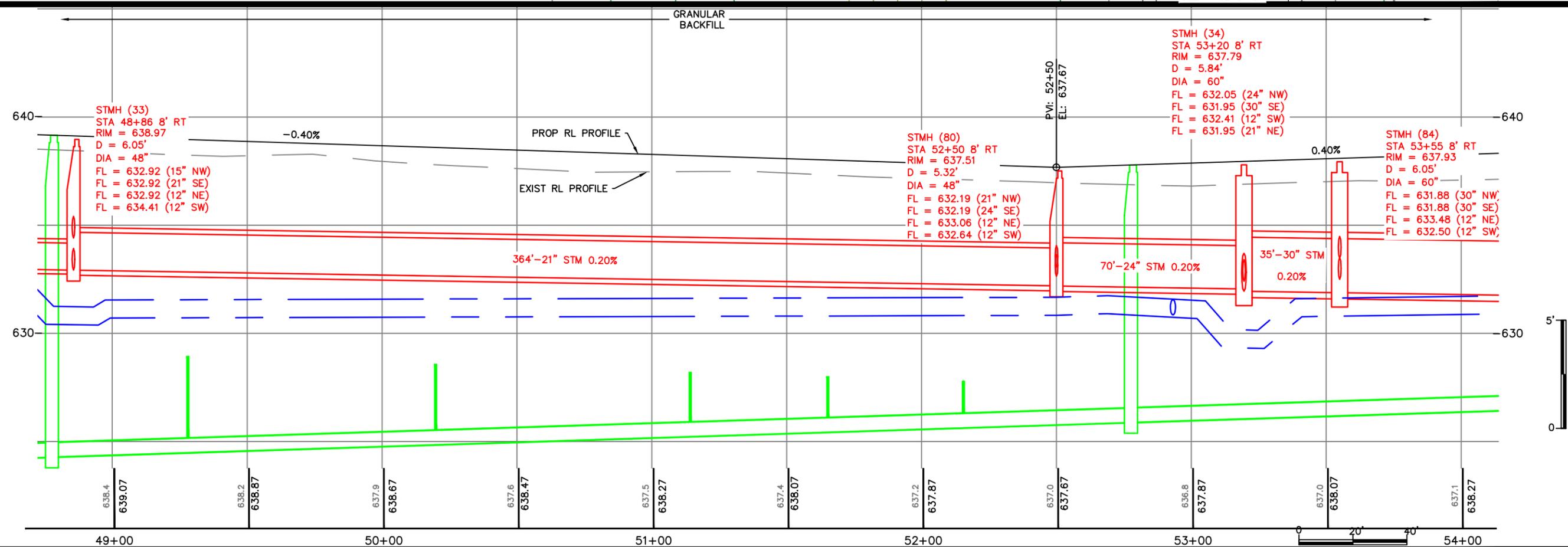


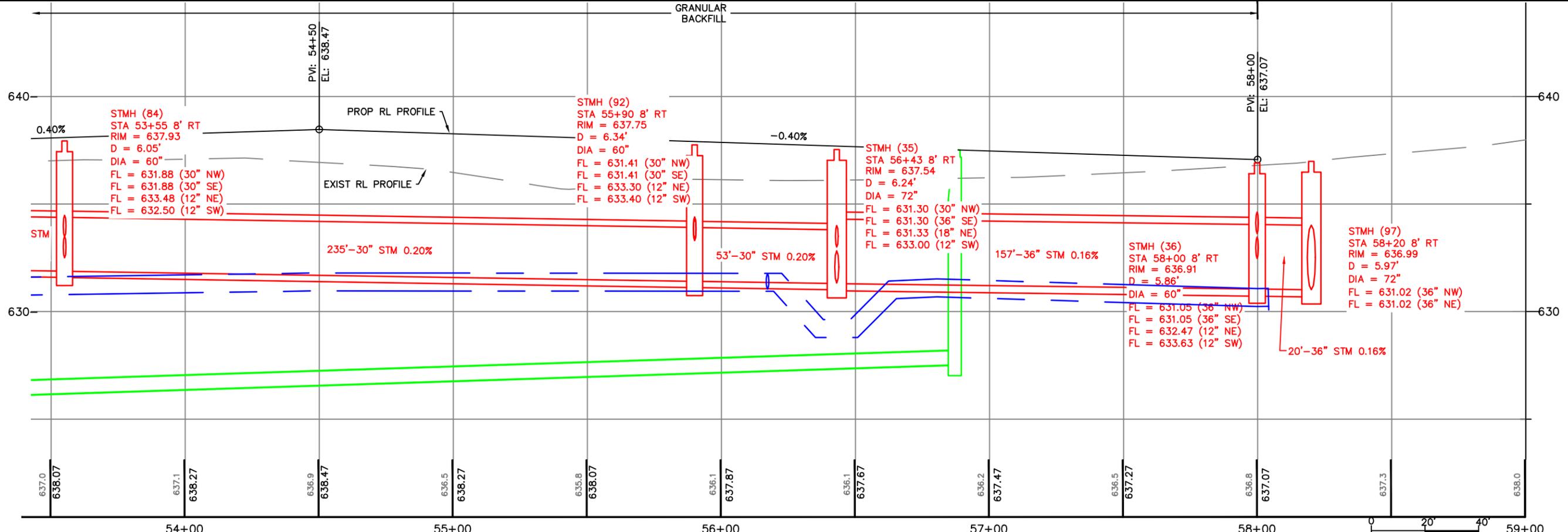
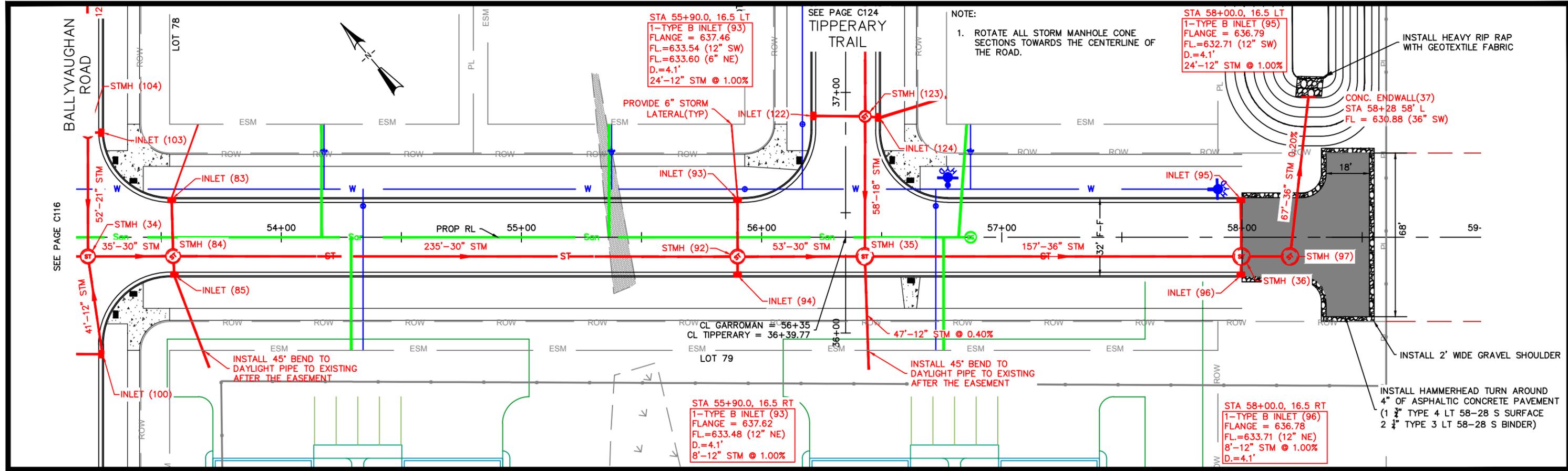
NOTE:
 1. ROTATE ALL STORM MANHOLE CONE SECTIONS TOWARDS THE CENTERLINE OF THE ROAD.

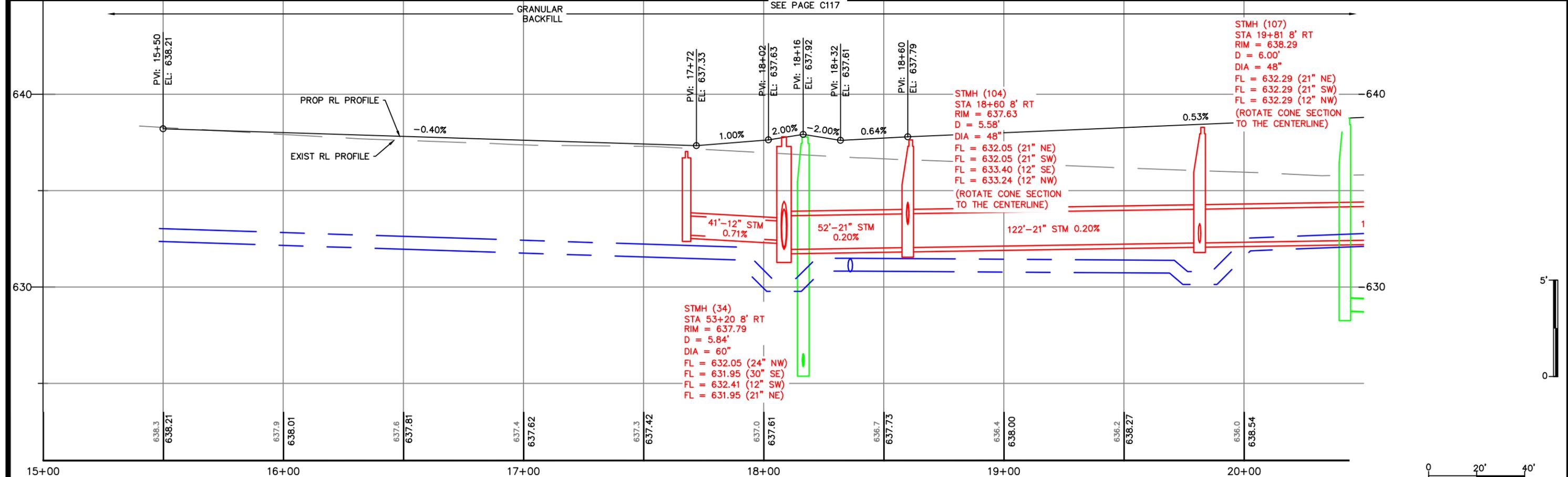
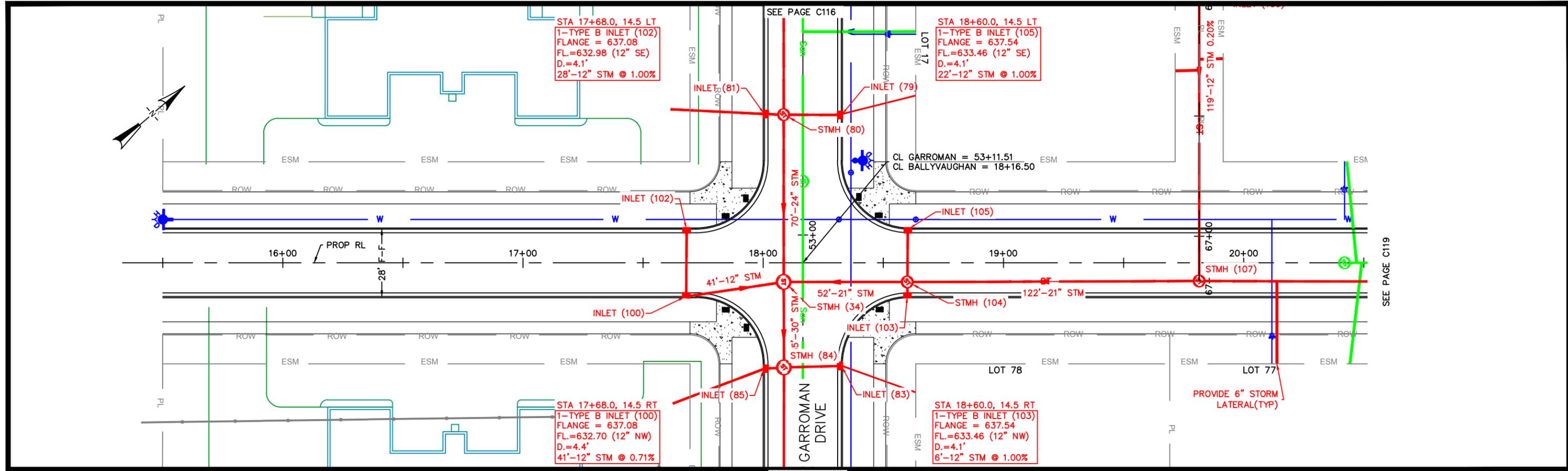


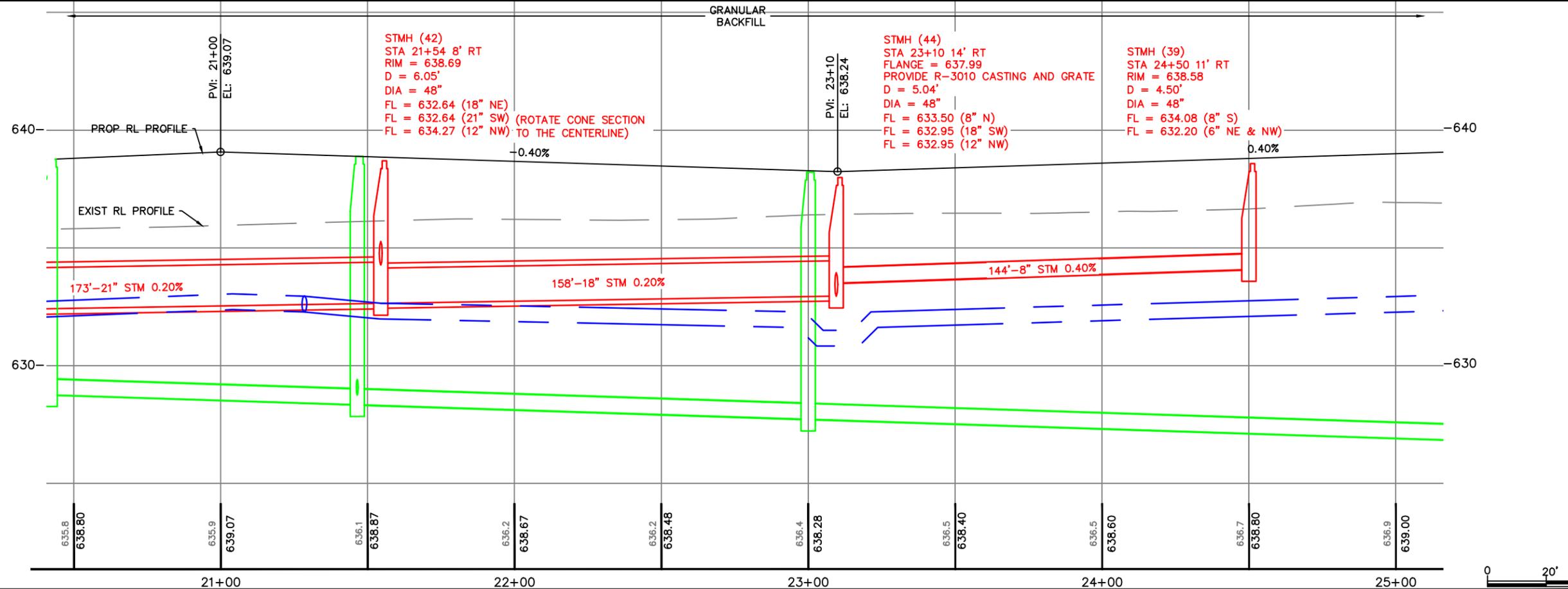
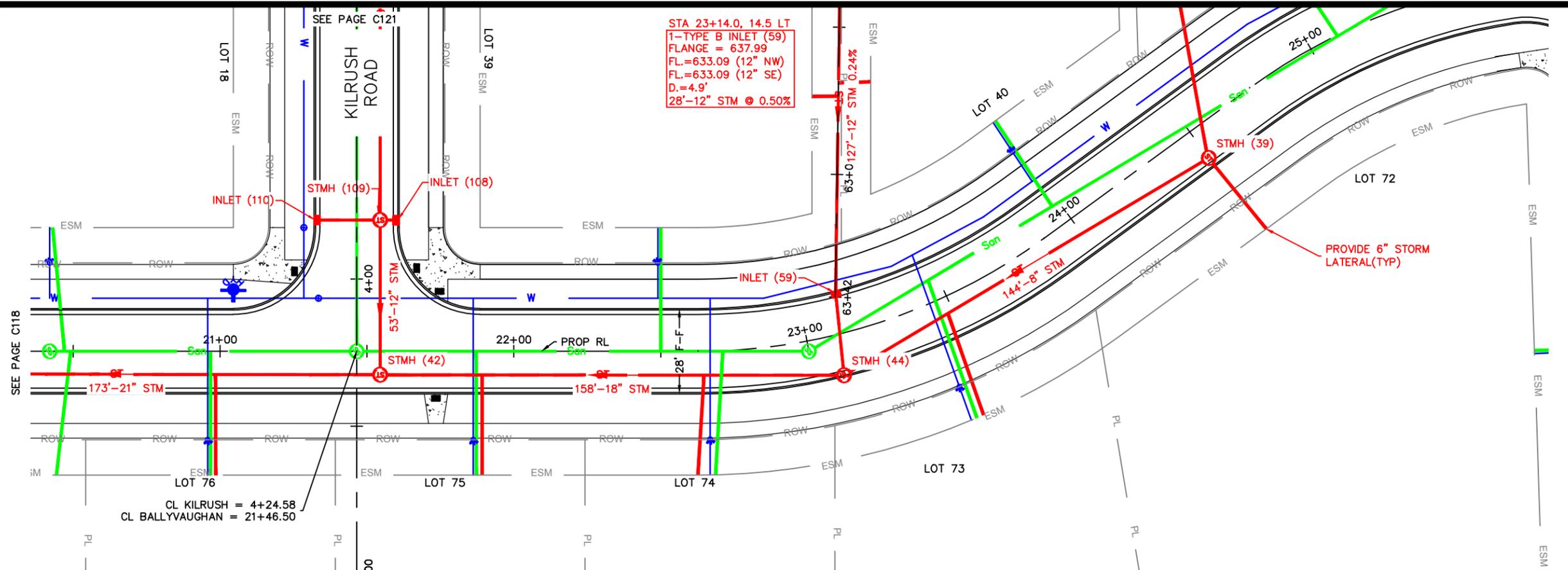


NOTE:
 1. ROTATE ALL STORM MANHOLE CONE SECTIONS TOWARDS THE CENTERLINE OF THE ROAD.









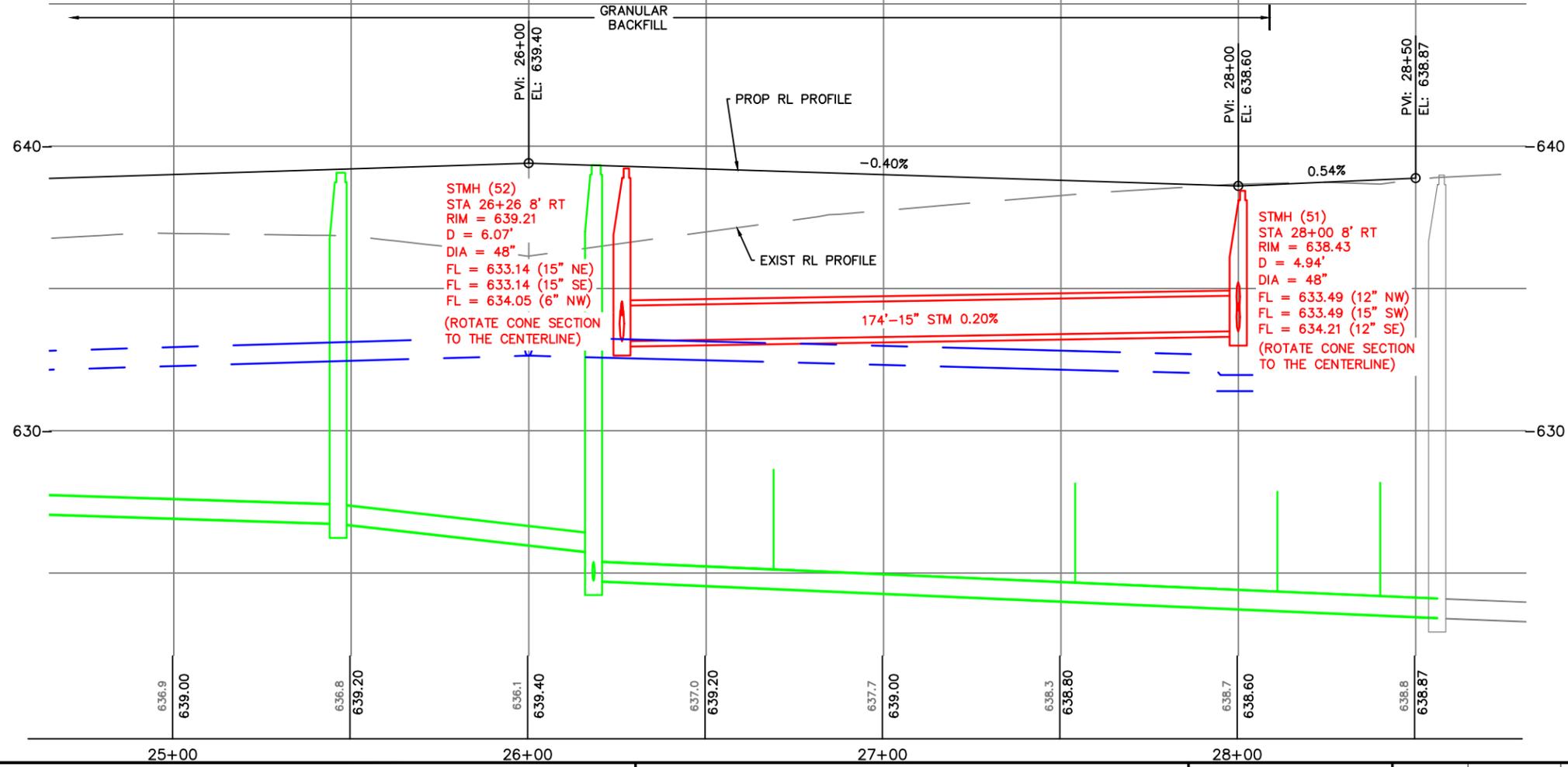
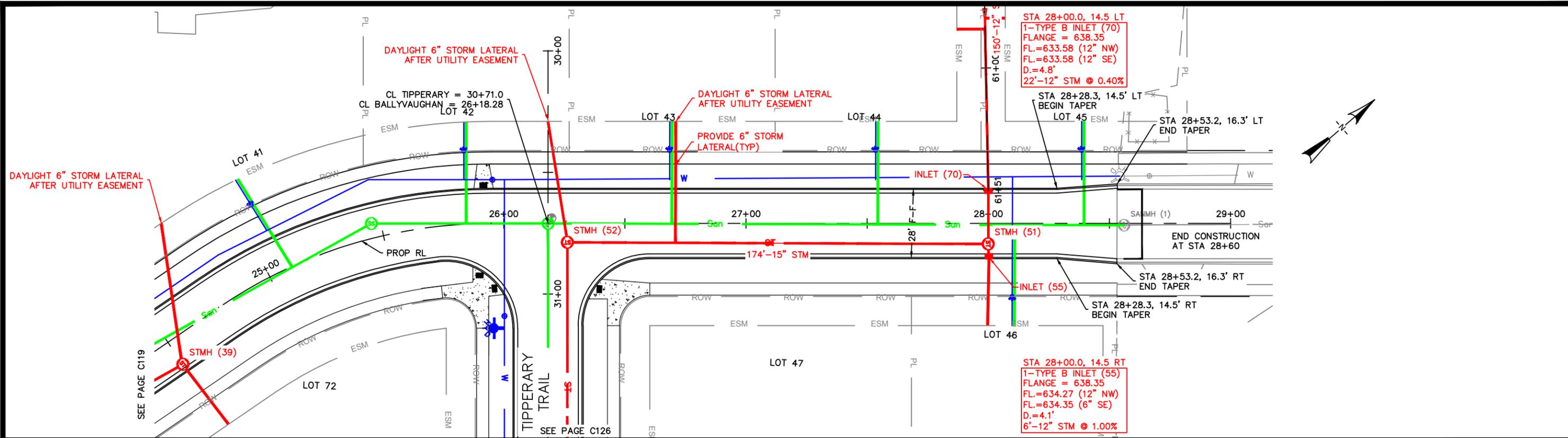
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BALLYVAUGHAN ROAD
100' S/O KILRUSH TO 100' S/O TIPPERARY
STORM SEWER AND STREET

NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION
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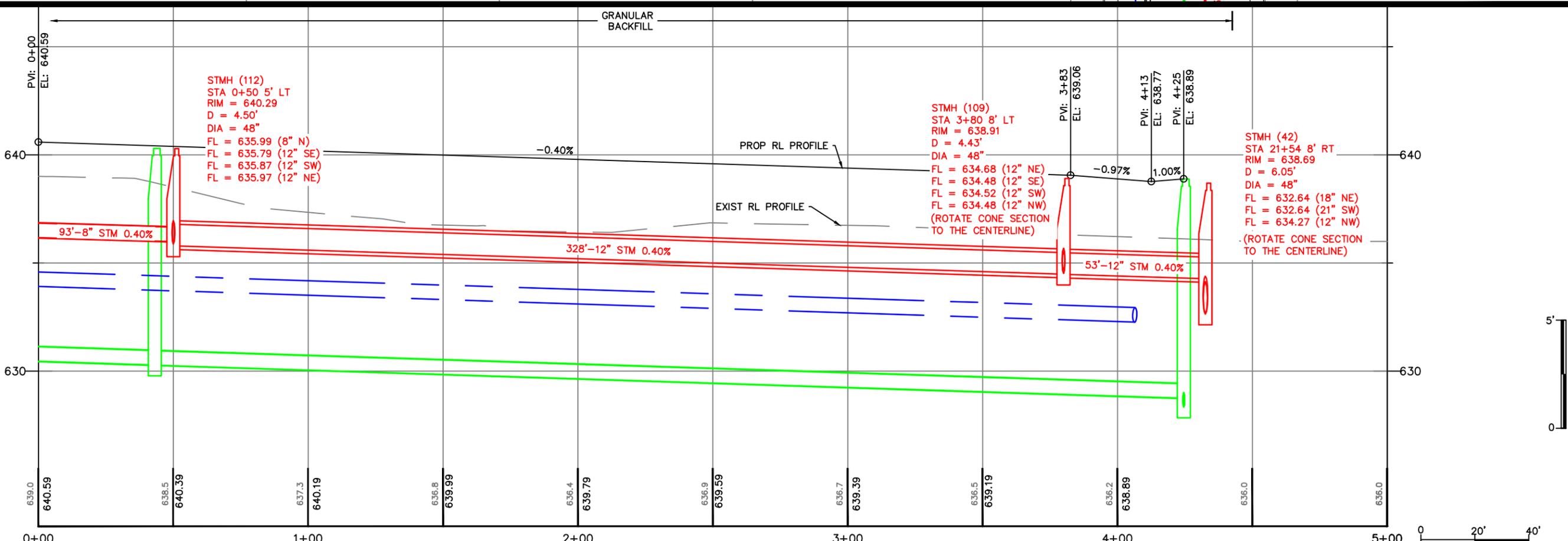
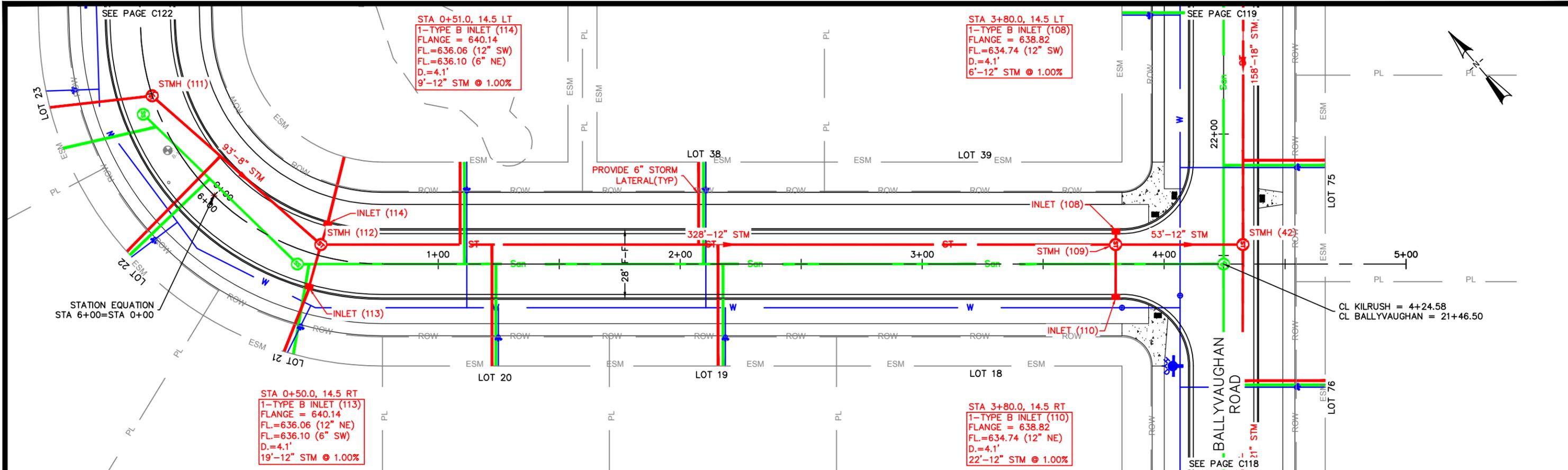
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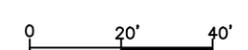
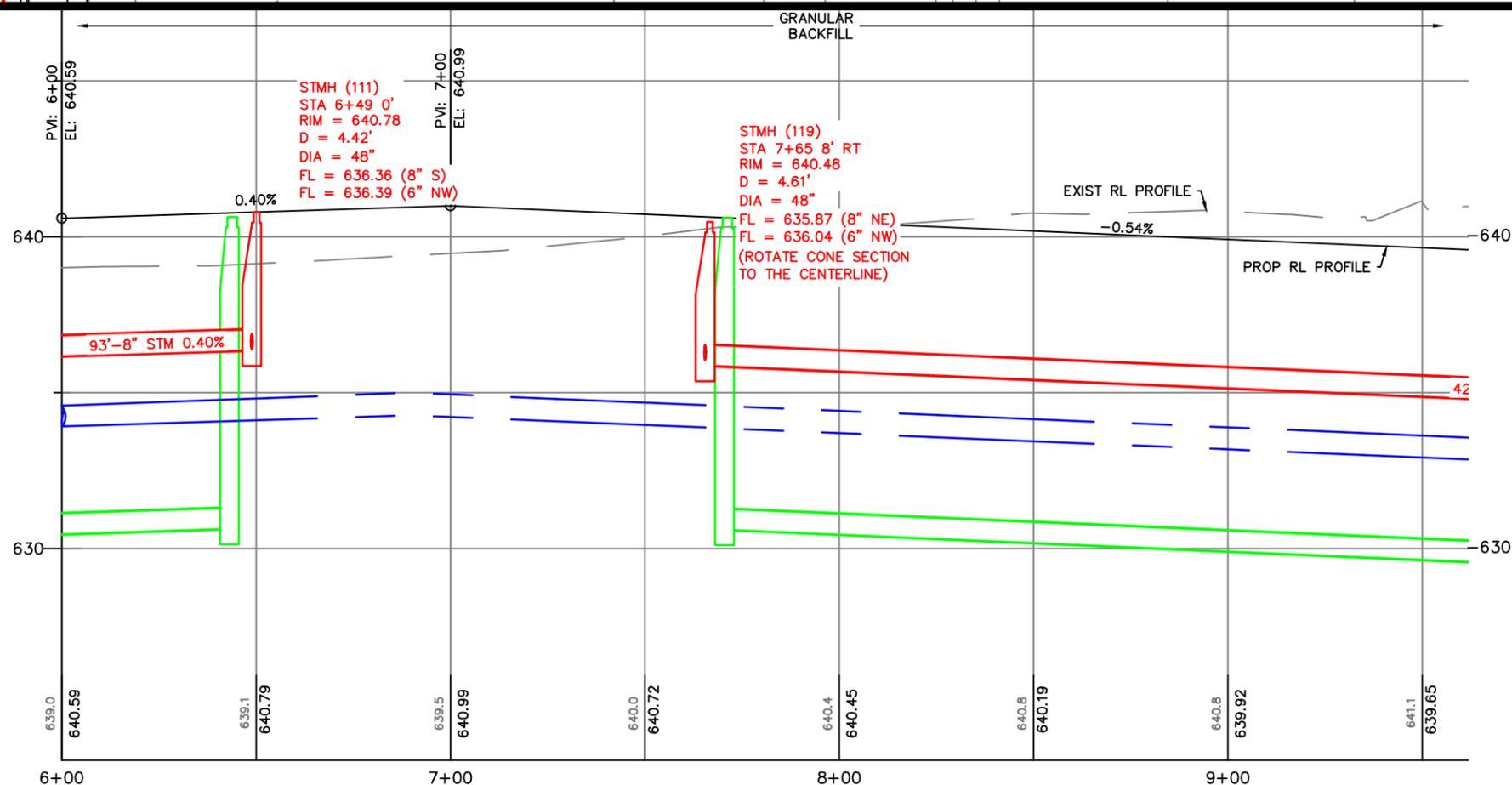
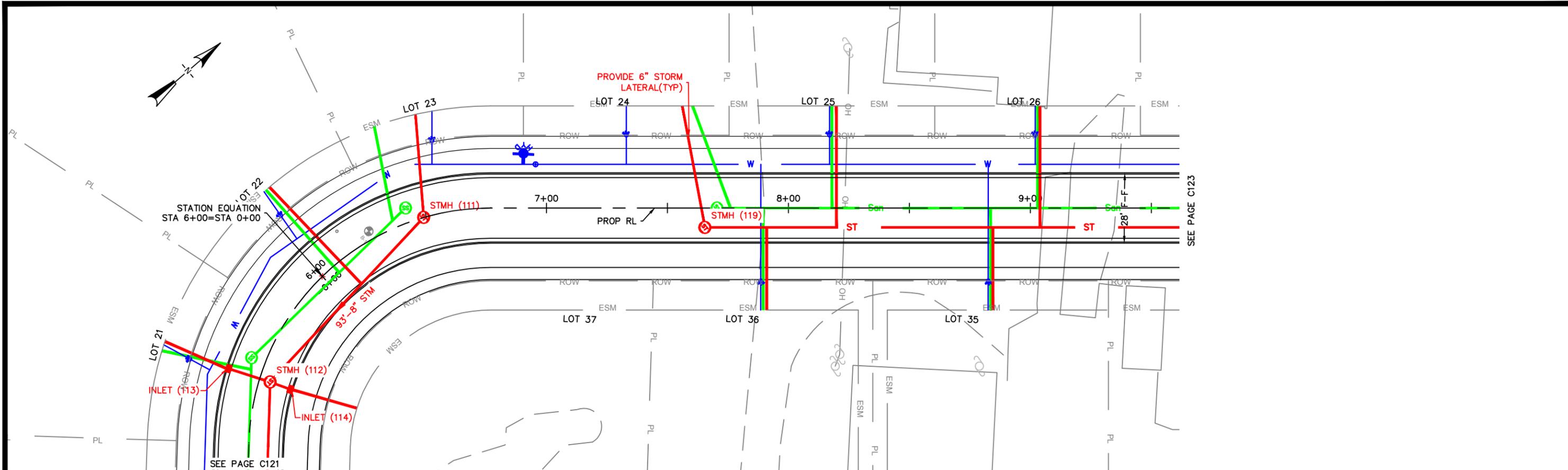
BALLYVAUGHAN ROAD
100' S/O TIPPERARY TO 250' N/O TIPPERARY
STORM SEWER AND STREET

NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

BY	DATE
MACH IV	8-2018
SRL	11-2018
SRL	11-2018
EPR	11-2018

REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS





CITY OF DE PERE

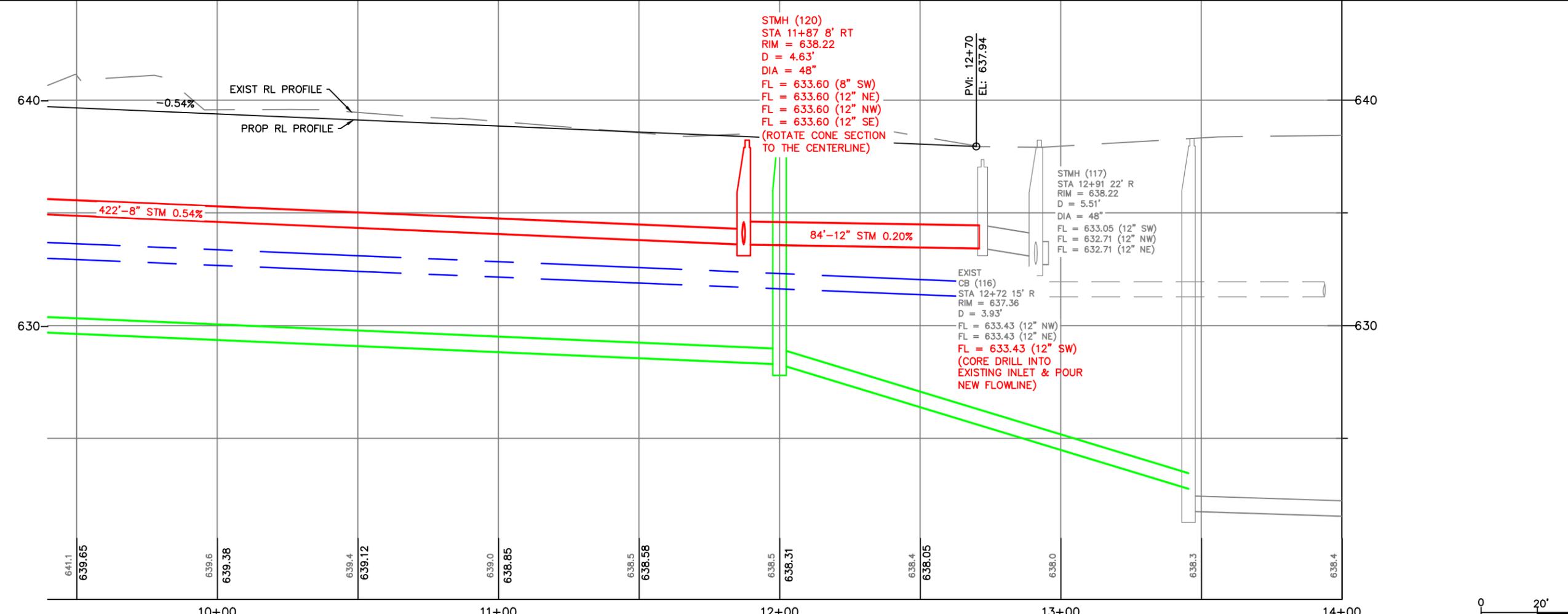
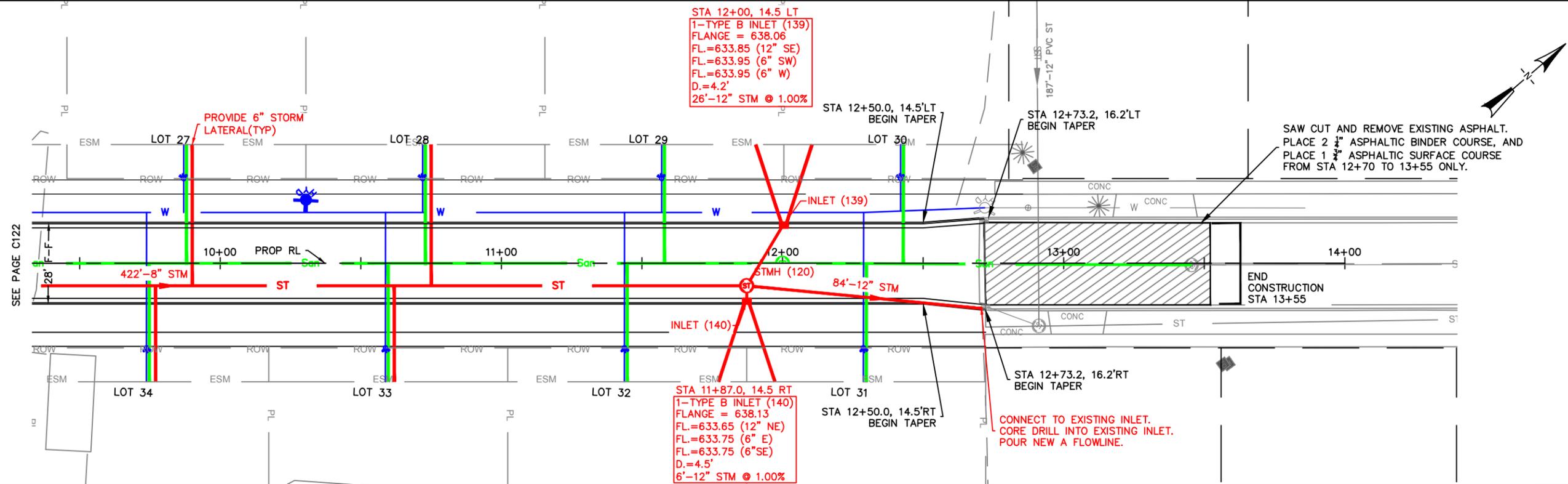
ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

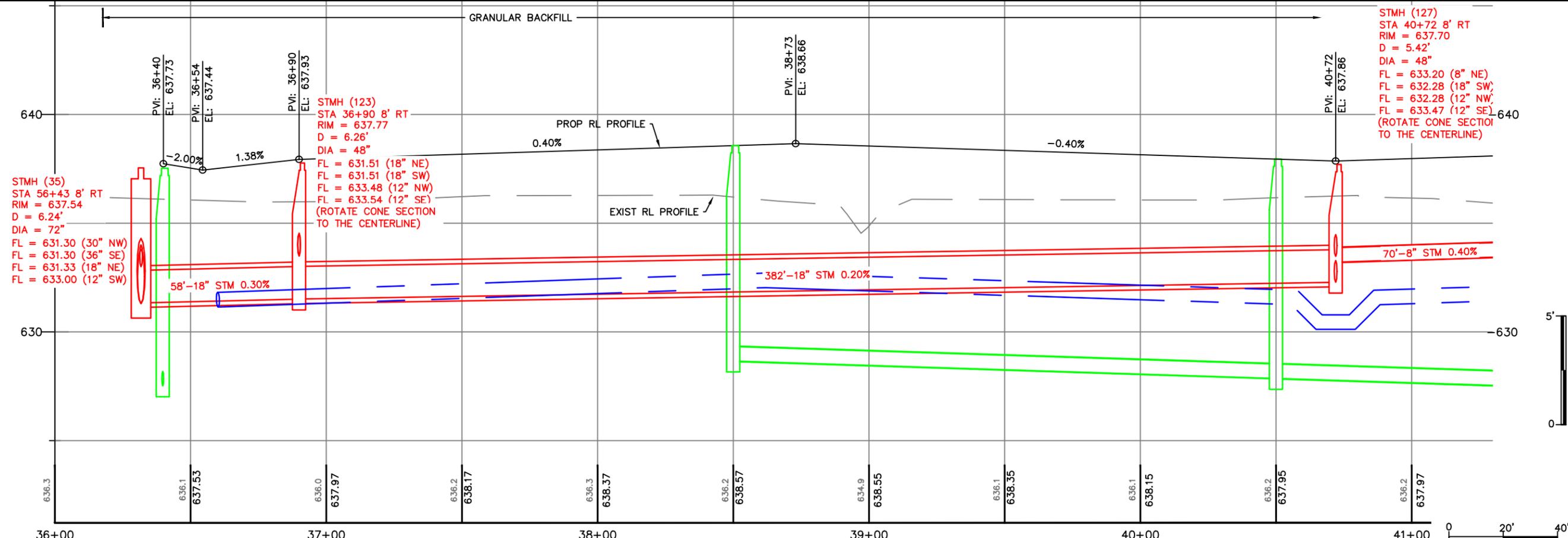
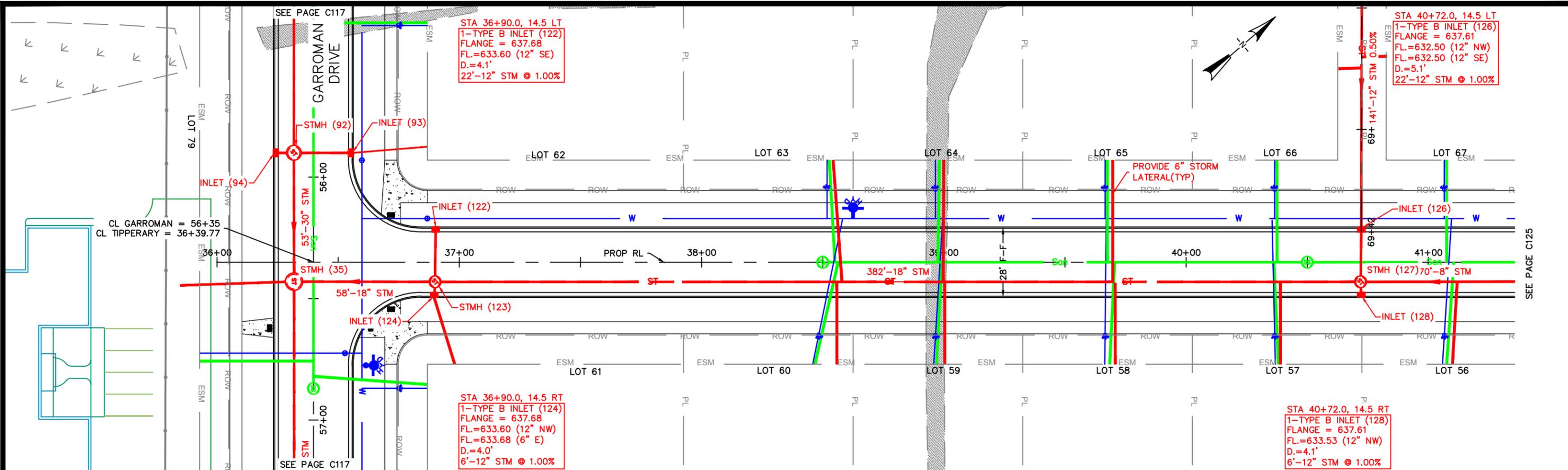
**KILRUSH ROAD
450' W/O BALLYVAUGHAN TO
800' N/O BALLYVAUGHAN
STORM SEWER AND STREET**

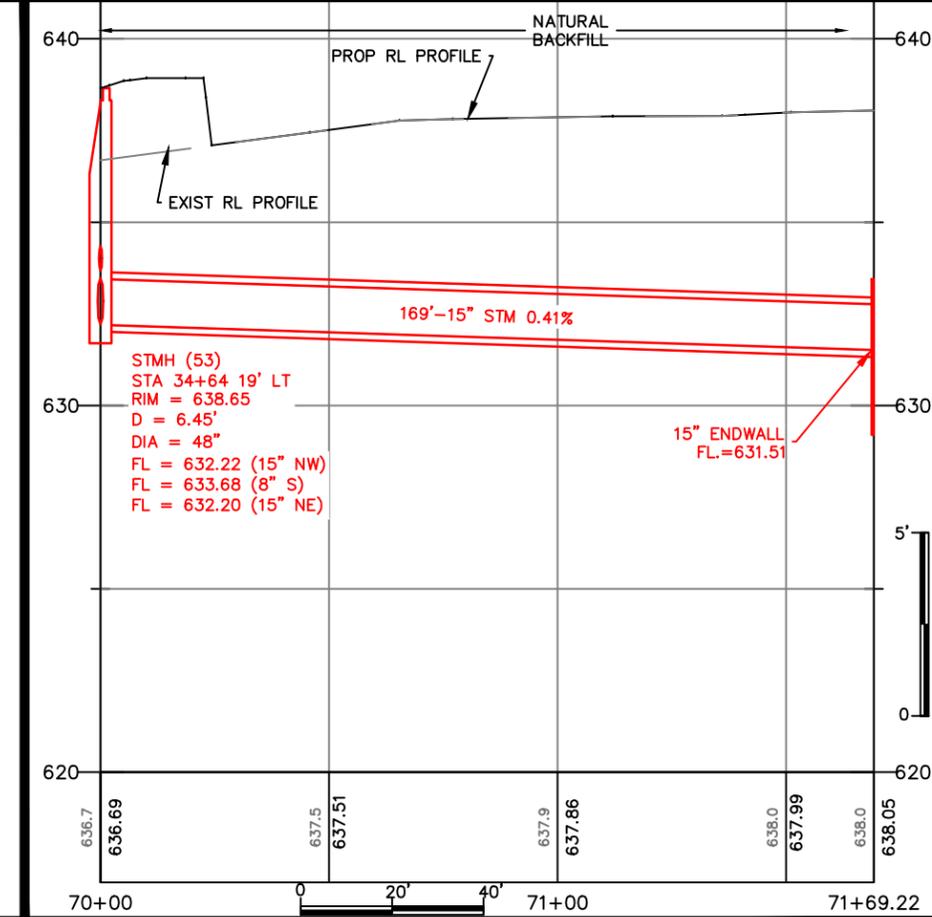
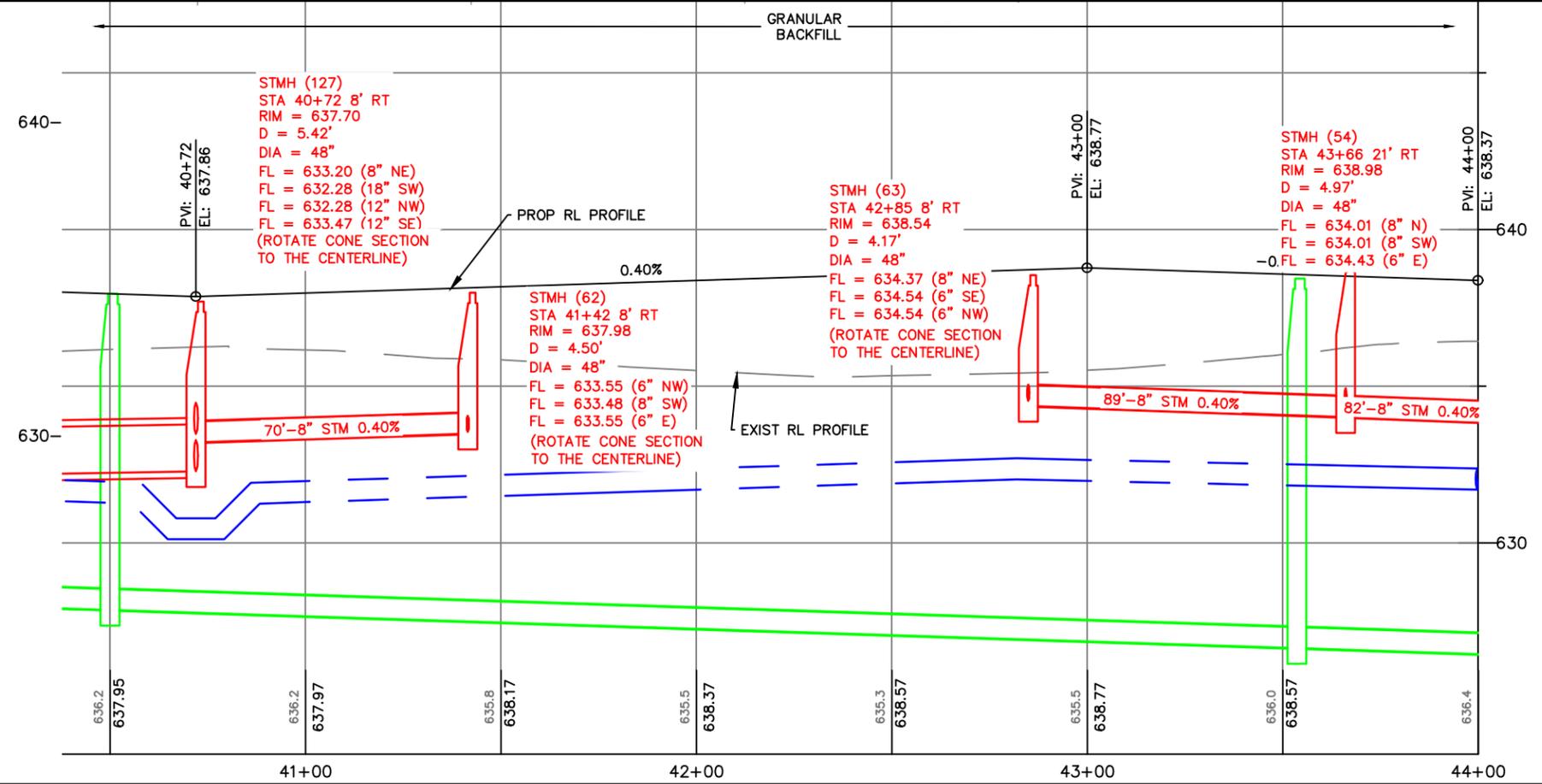
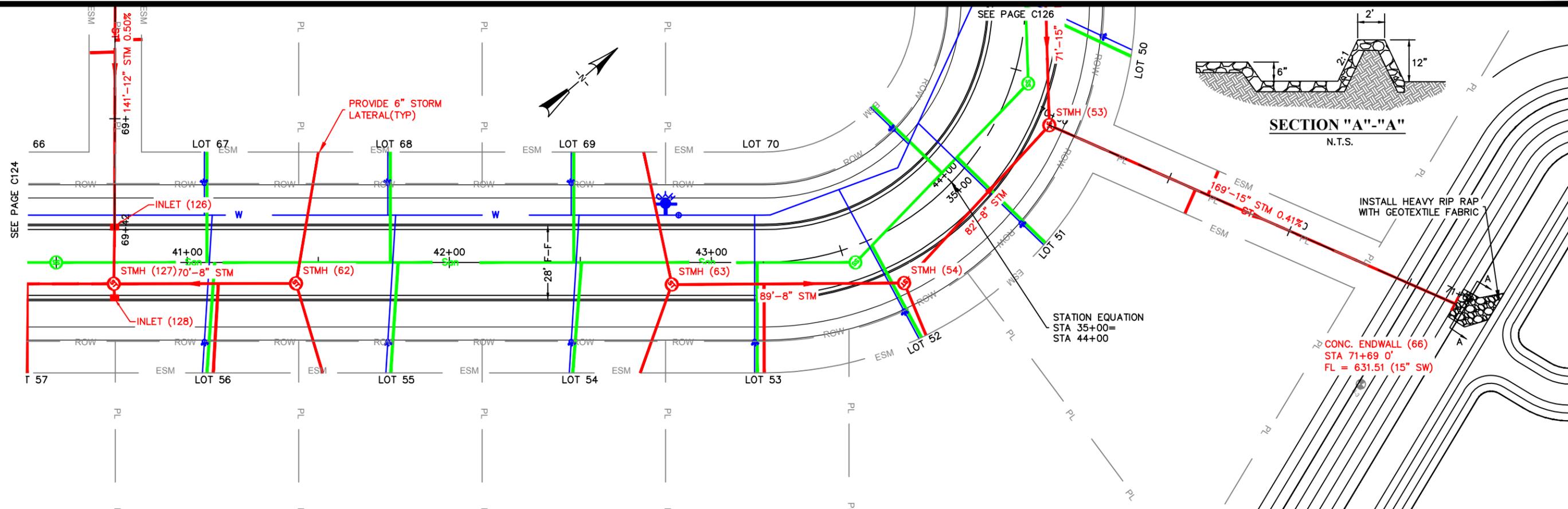
NAME: GARRITY'S GLEN SOUTH
SUBDIVISION CONSTRUCTION
PROJECT # 19-11

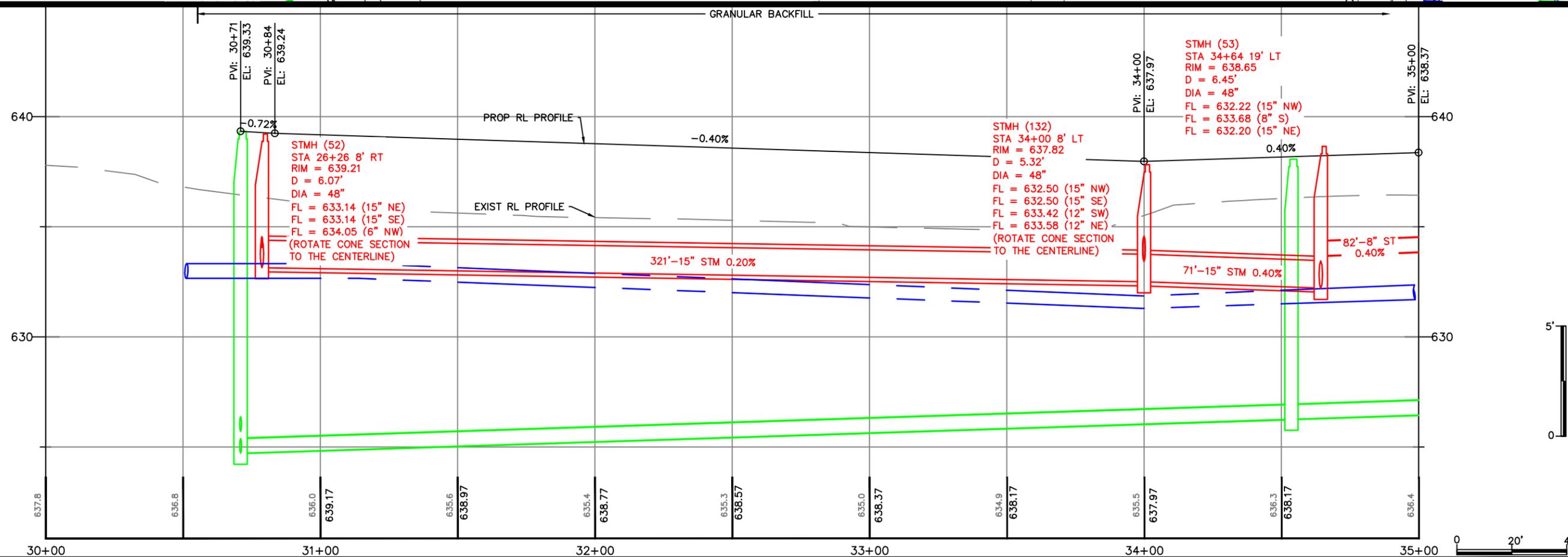
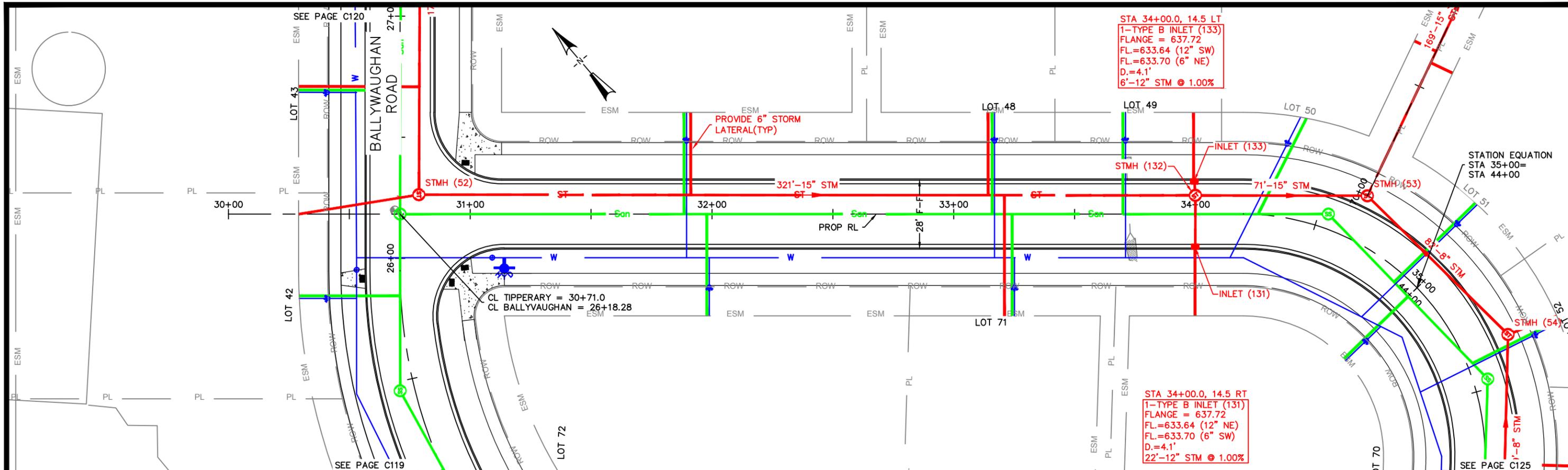
BY	DATE
SURVEYED MACH IV	8-2018
DRAWN SRL	11-2018
DESIGNED SRL	11-2018
CHECKED EPR	11-2018

REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS









CITY OF DE PERE

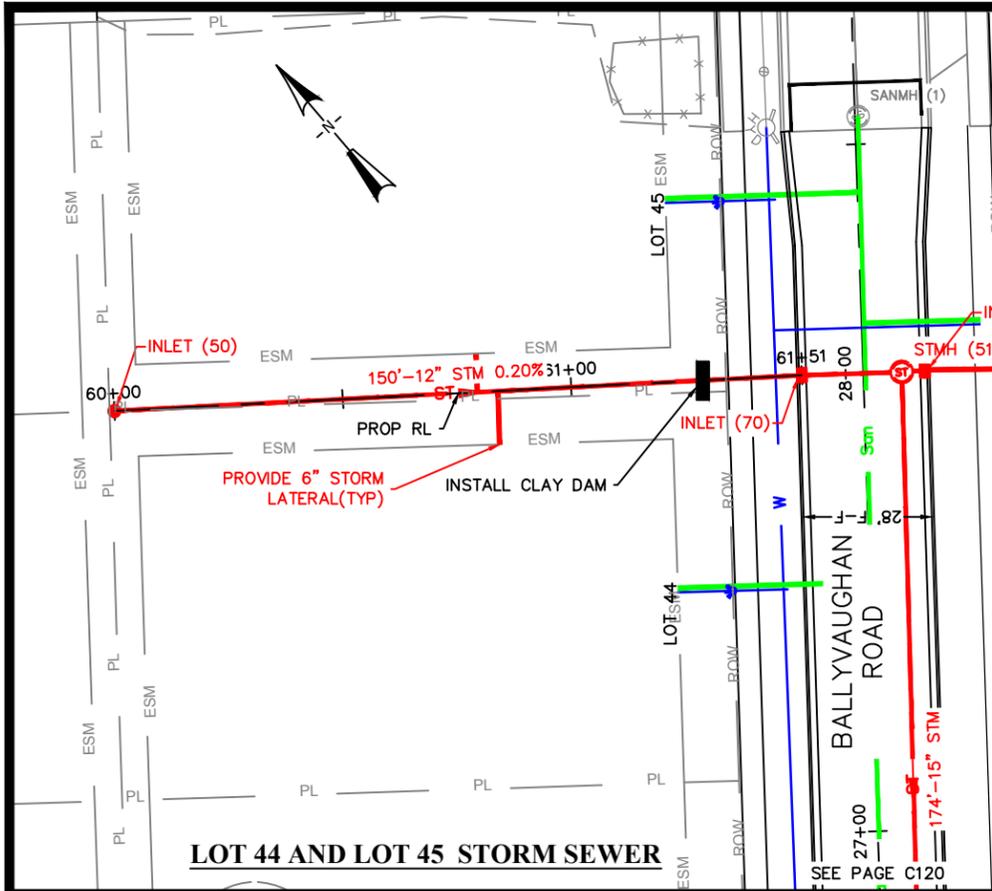
ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

TIPPERARY TRAIL
BALLYVAUGHAN ROAD TO 700' N/O GARROMAN
STORM SEWER AND STREET

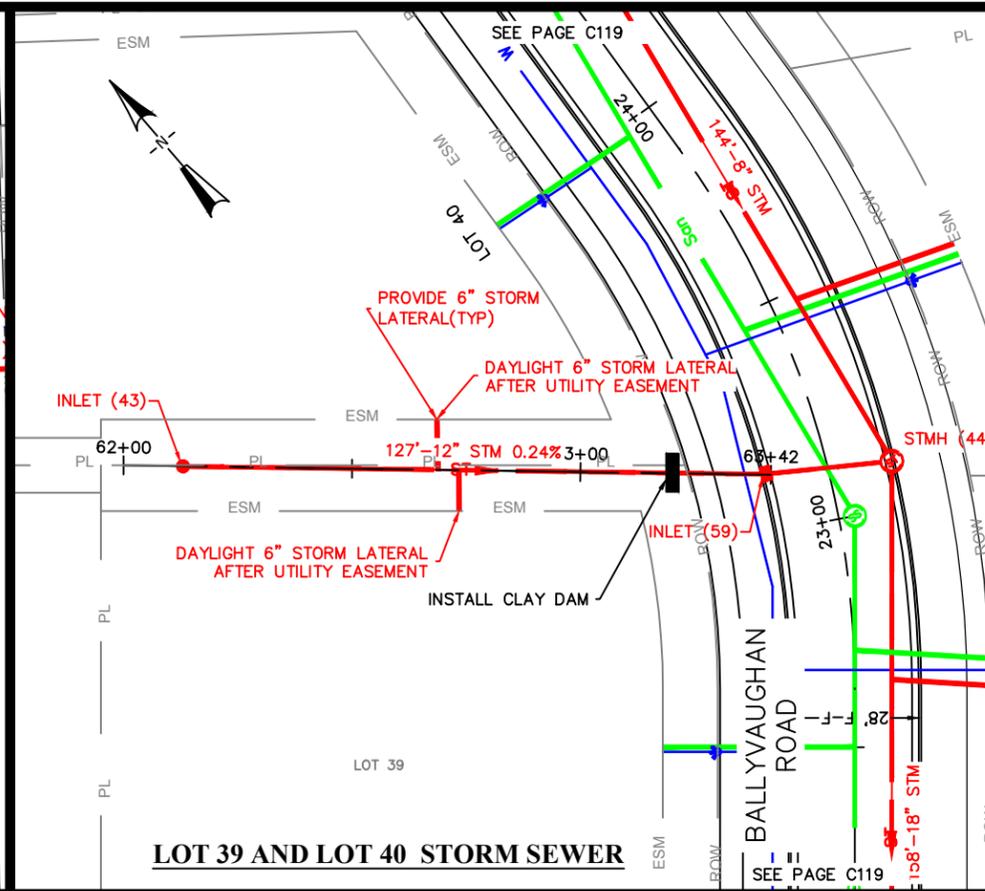
NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION
PROJECT # 19-11

BY	DATE
SURVEYED	MACH IV 8-2018
DESIGNED	SRL 11-2018
CHECKED	EPR 11-2018

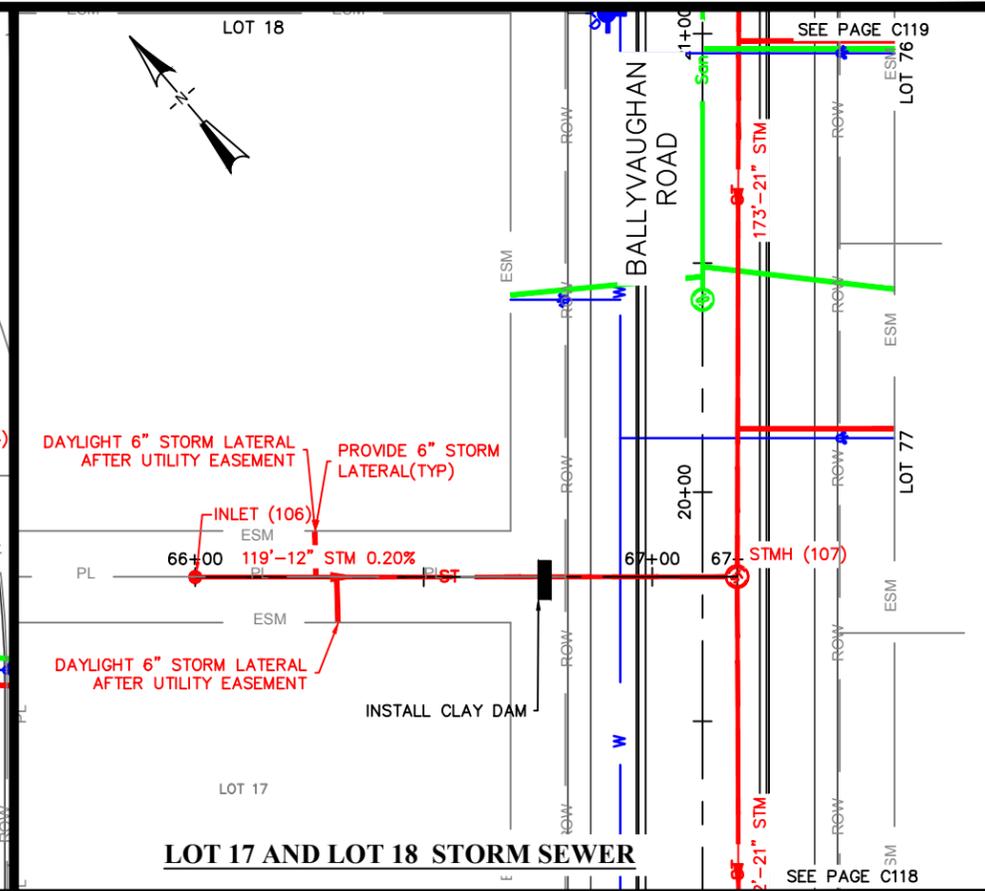
REVISIONS / ISSUES		
NO.	DATE	REMARKS



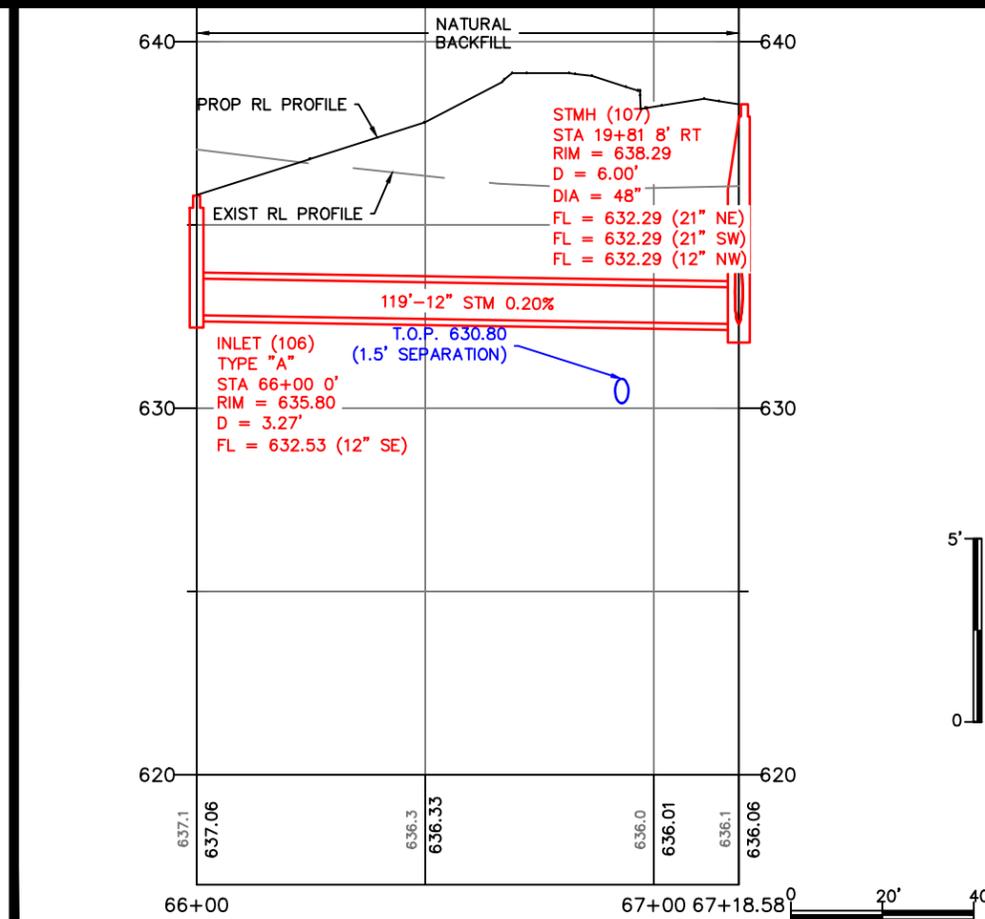
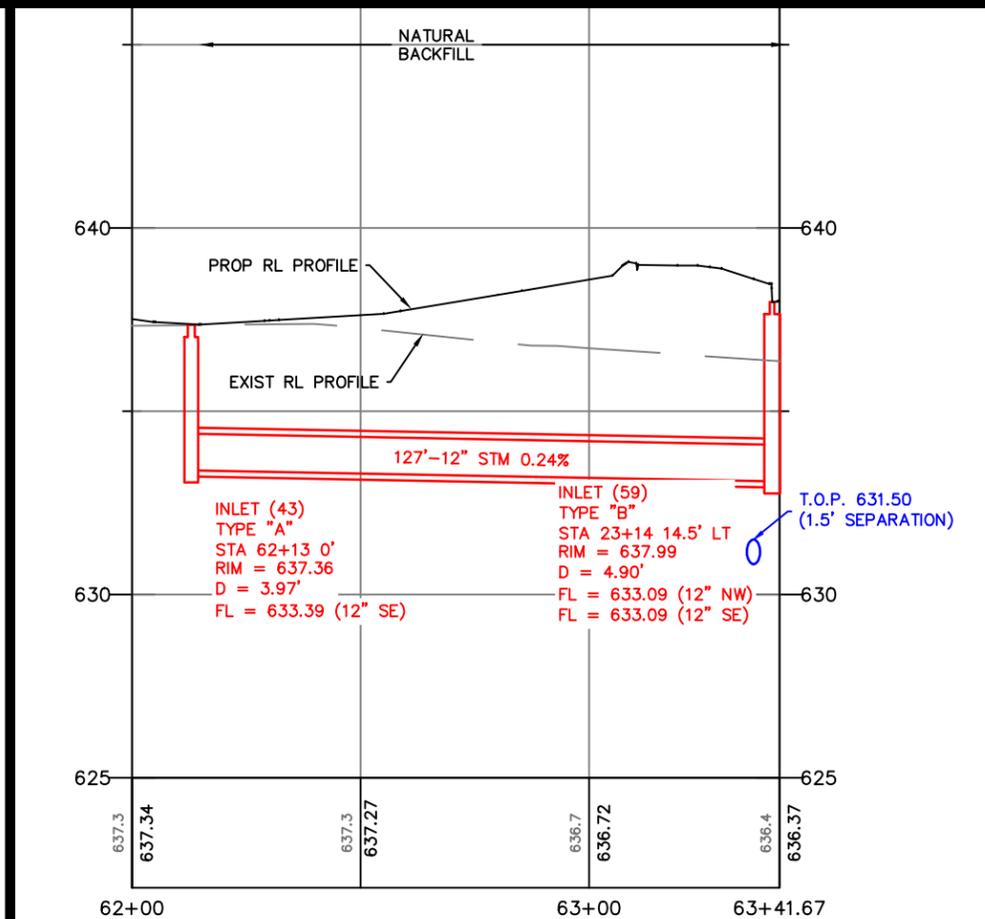
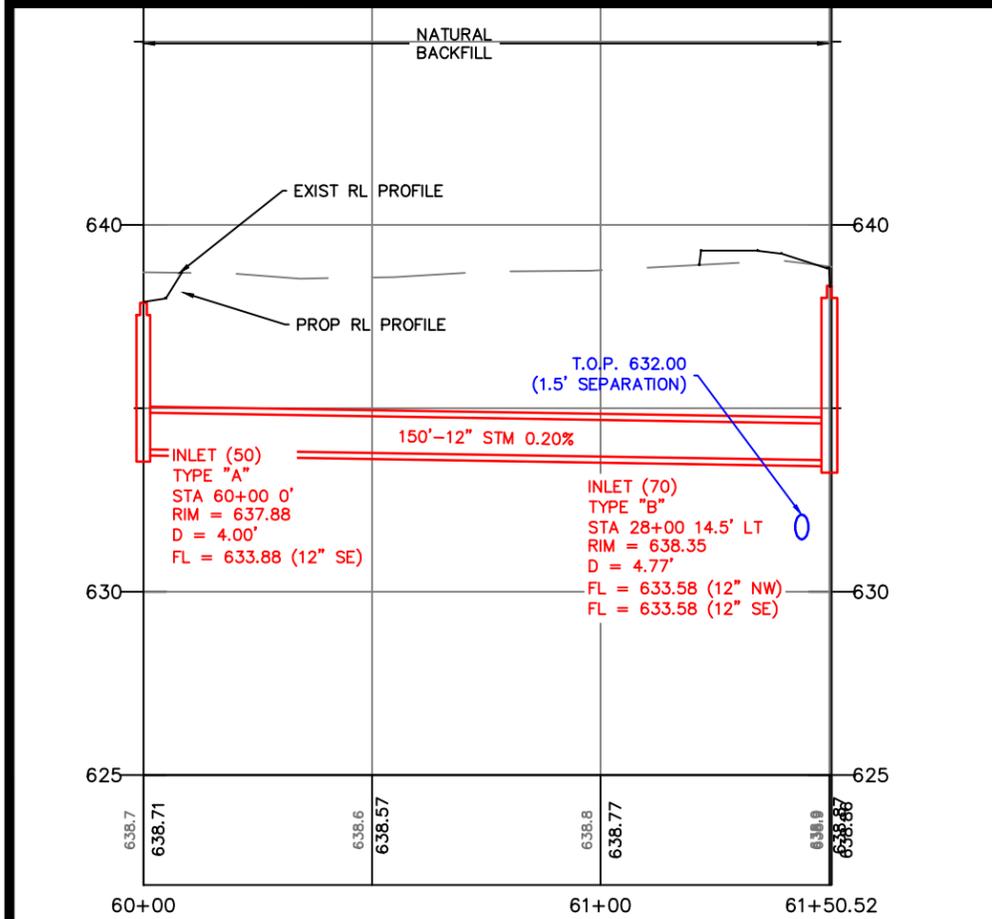
LOT 44 AND LOT 45 STORM SEWER



LOT 39 AND LOT 40 STORM SEWER



LOT 17 AND LOT 18 STORM SEWER



CITY OF DE PERE

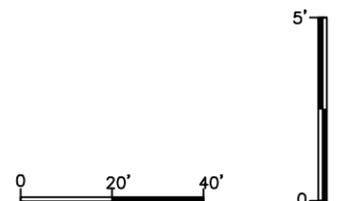
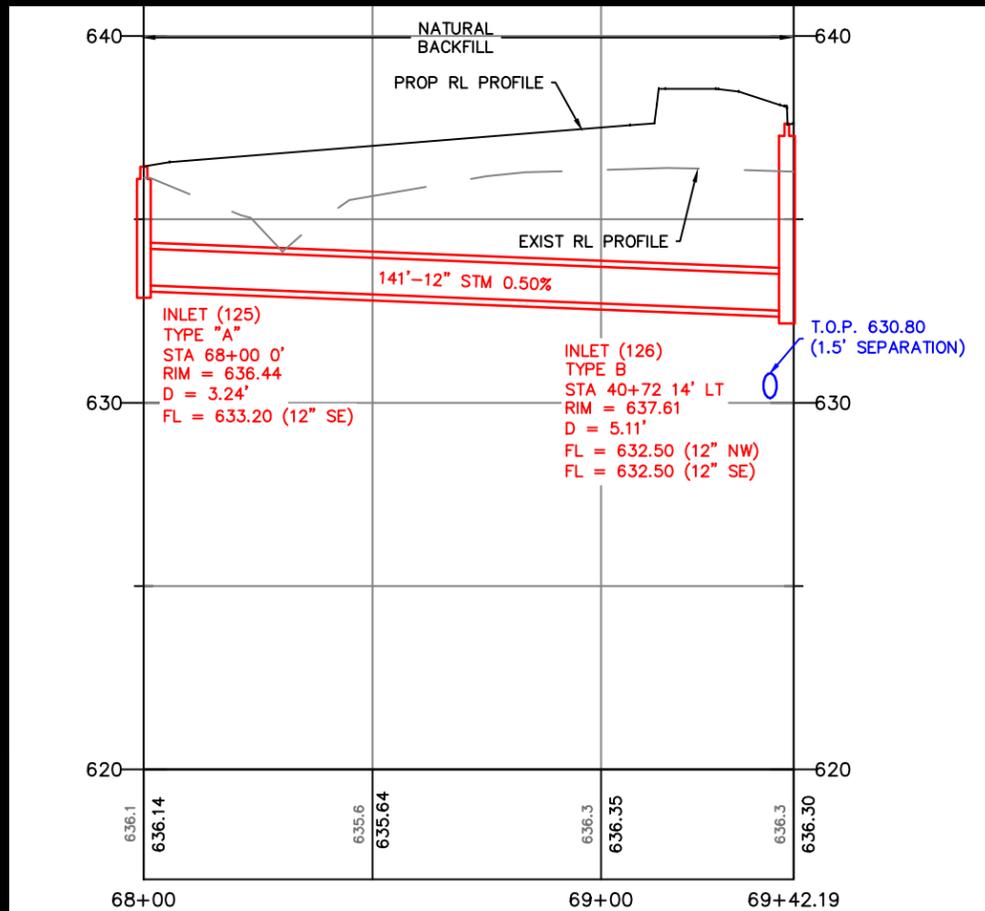
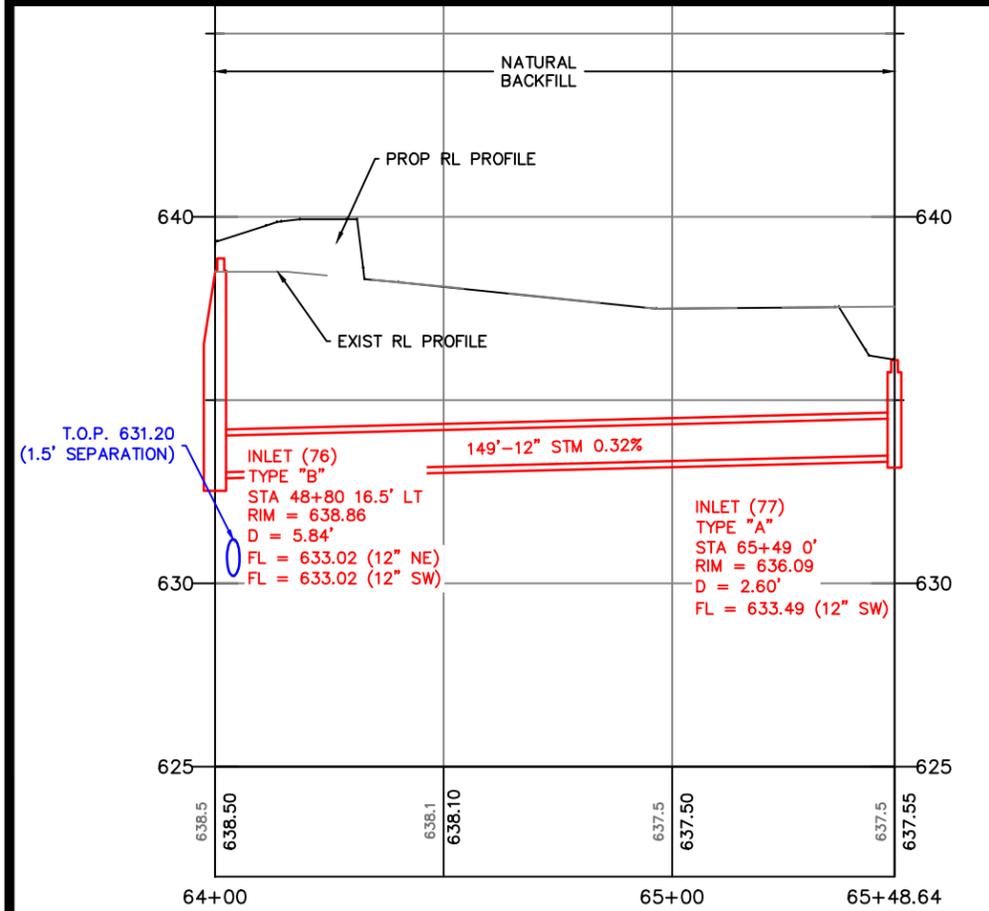
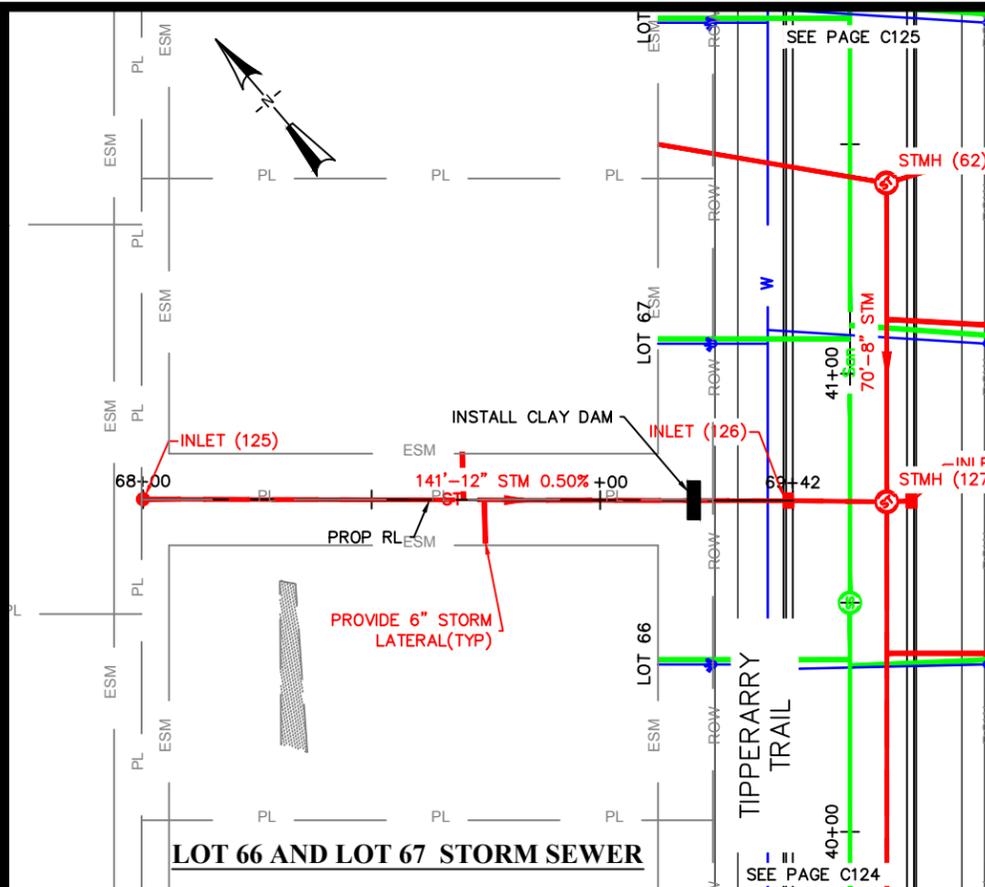
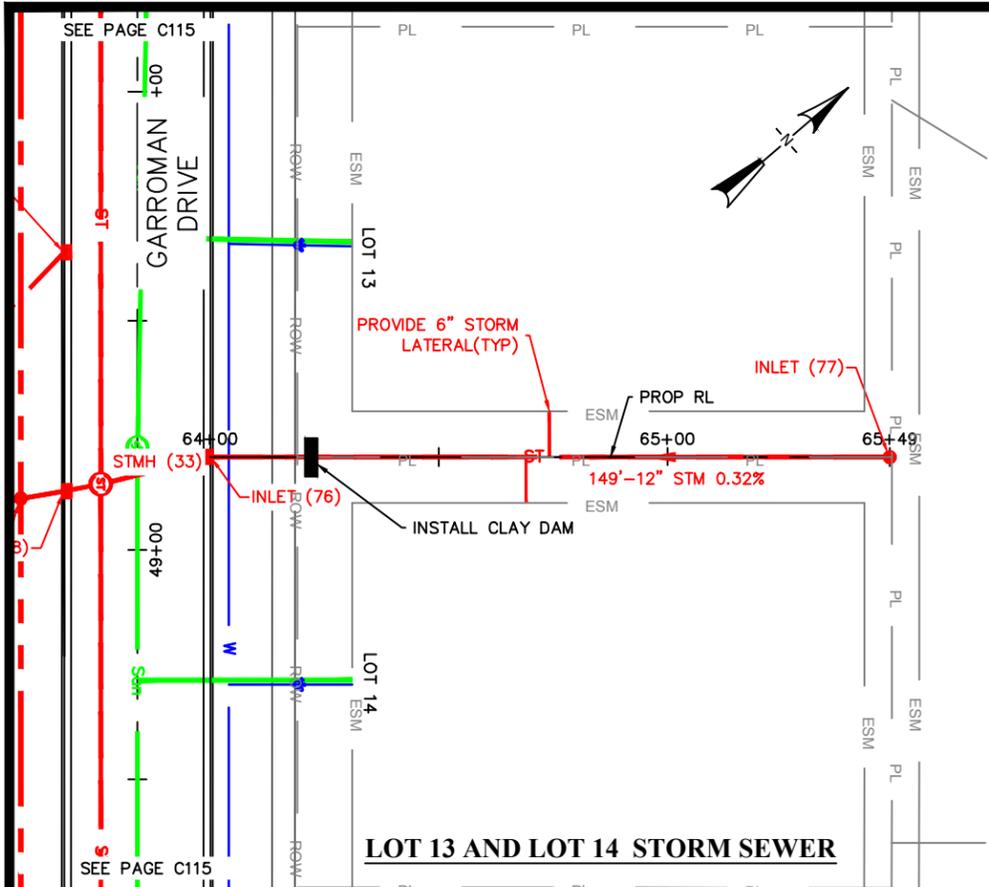
ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
 OFFICE 920-339-4061 FAX 920-339-4071

**REAR LOTS STORM SEWER
 LOTS 44-45, LOTS 39-40 AND LOTS 17-18
 STORM SEWER**

NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

BY	DATE
SURVEYED	MACH IV 8-2018
DRAWN	SRL 11-2018
DESIGNED	SRL 11-2018
CHECKED	EPR 11-2018

REVISIONS / ISSUES		
NO.	DATE	REMARKS



CITY OF DE PERE

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

**REAR LOTS STORM SEWER
LOTS 13-14 AND LOTS 66-67
STORM SEWER**

NAME: GARRITY'S GLEN SOUTH
SUBDIVISION CONSTRUCTION
PROJECT # 19-11

BY	DATE
SURVEYED MACH IV	8-2018
DRAWN SRL	11-2018
DESIGNED SRL	11-2018
CHECKED EPR	11-2018

REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS

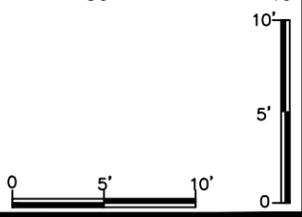
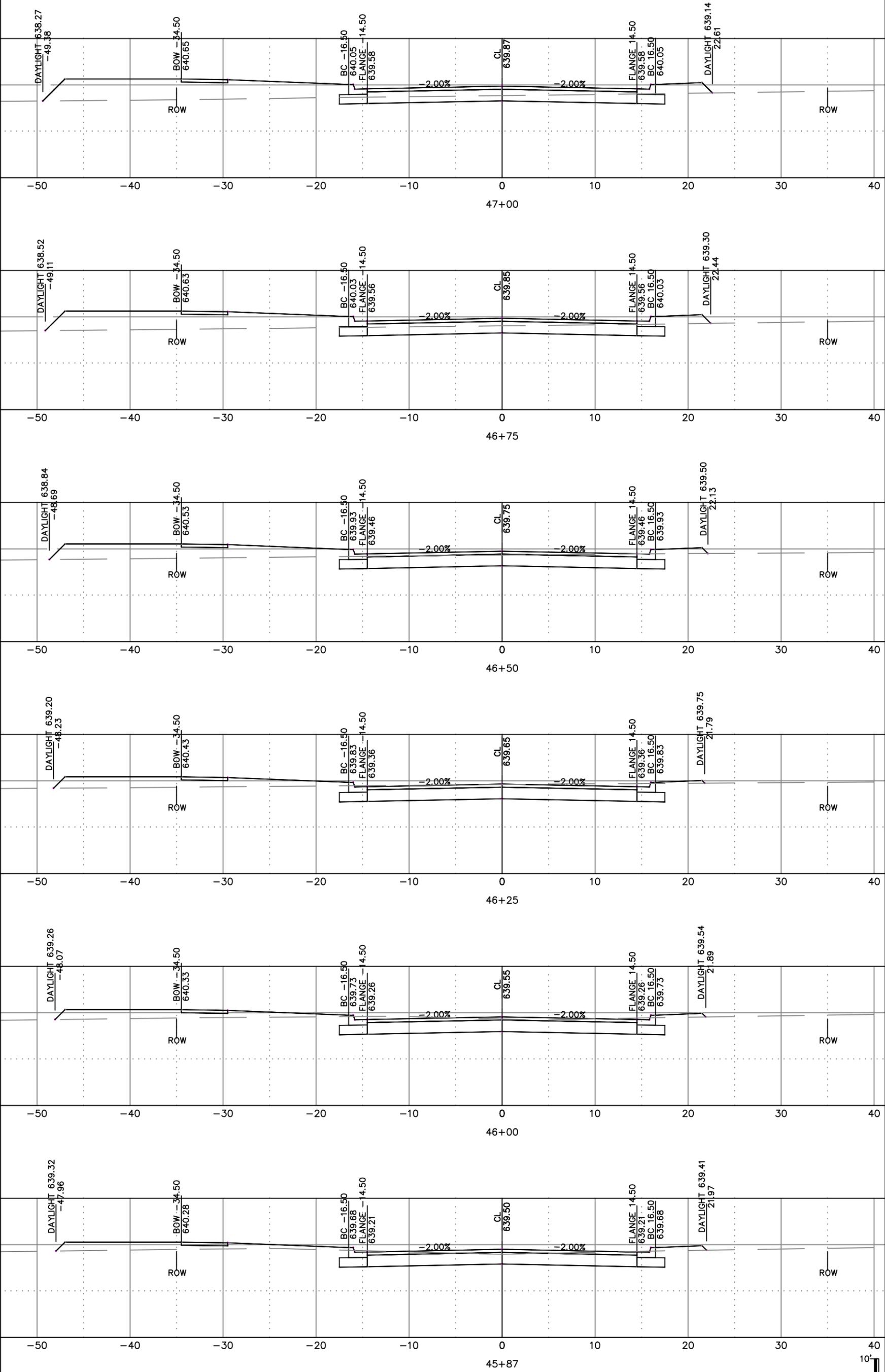


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 ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
 OFFICE 920-339-4061 FAX 920-339-4071

GARROMAN DRIVE
 CROSS SECTIONS

NAME:	GARRITY'S GLEN SOUTH
PROJECT #	19-11
SUBDIVISION CONSTRUCTION	
DATE	08-2018
DESIGNED	5-2018
CHECKED	5-2018

NO.	DATE	BY	REVISIONS / ISSUES





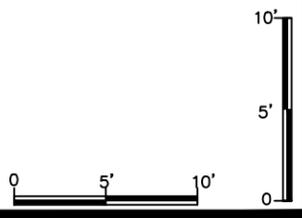
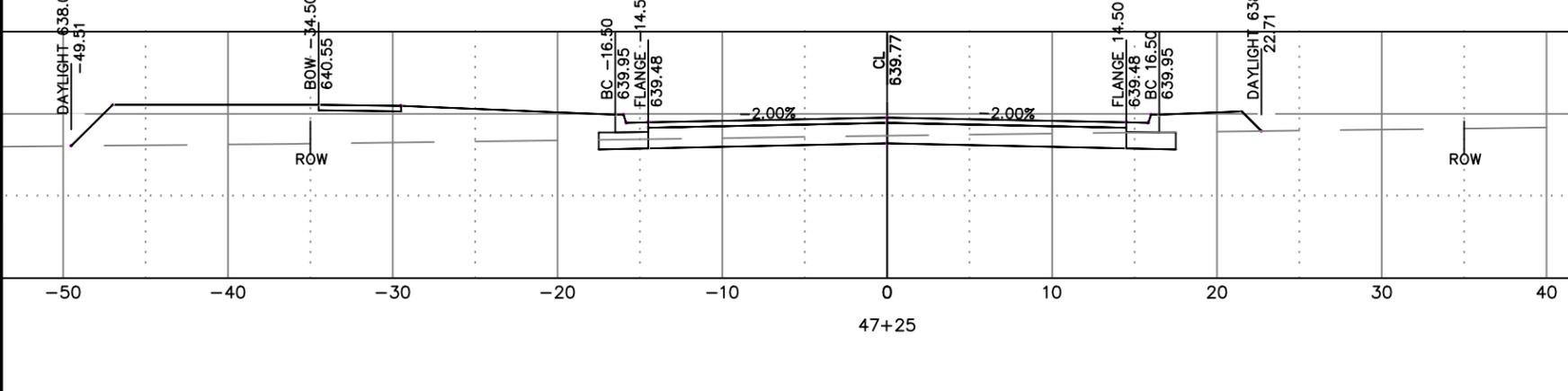
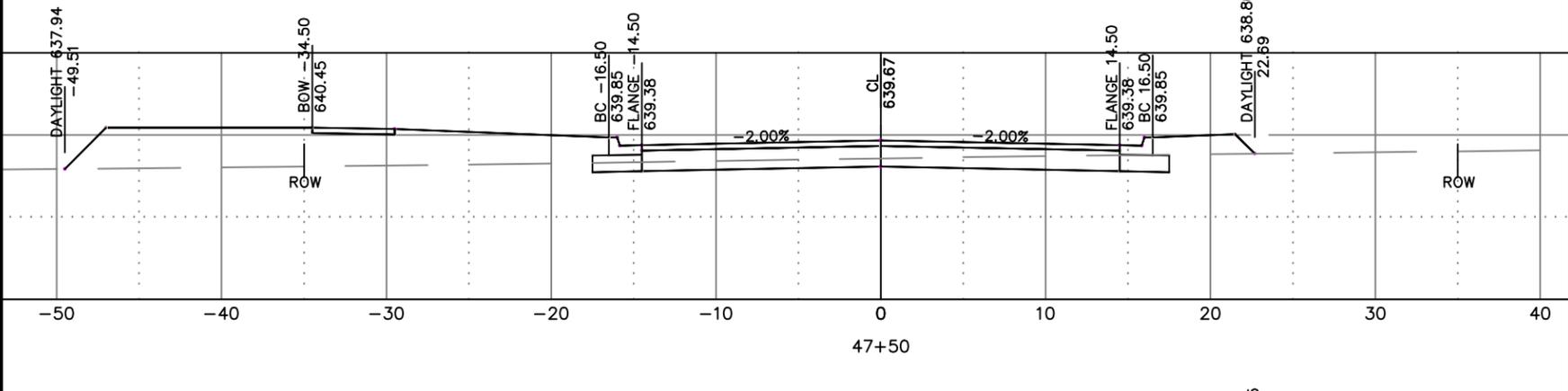
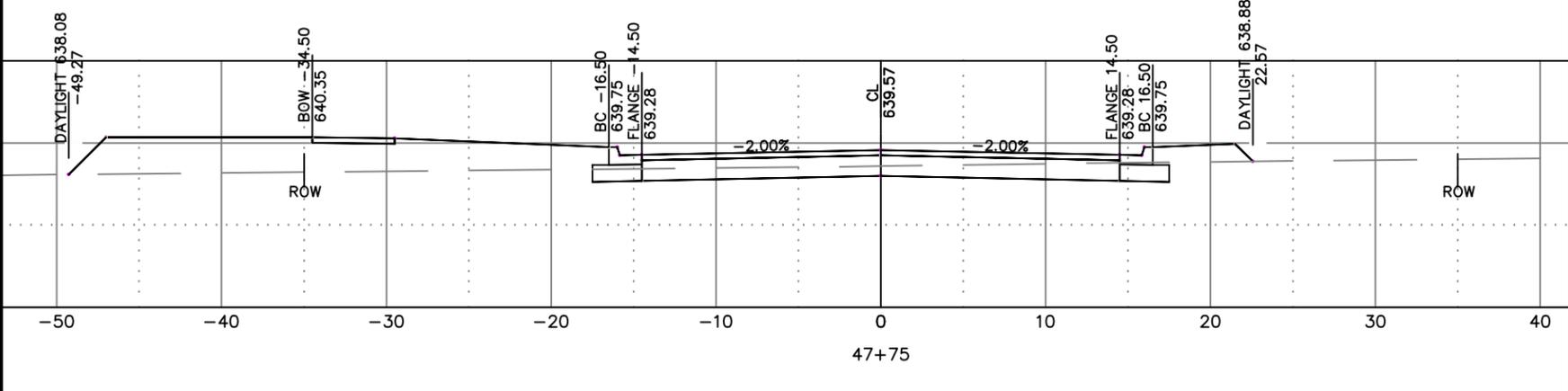
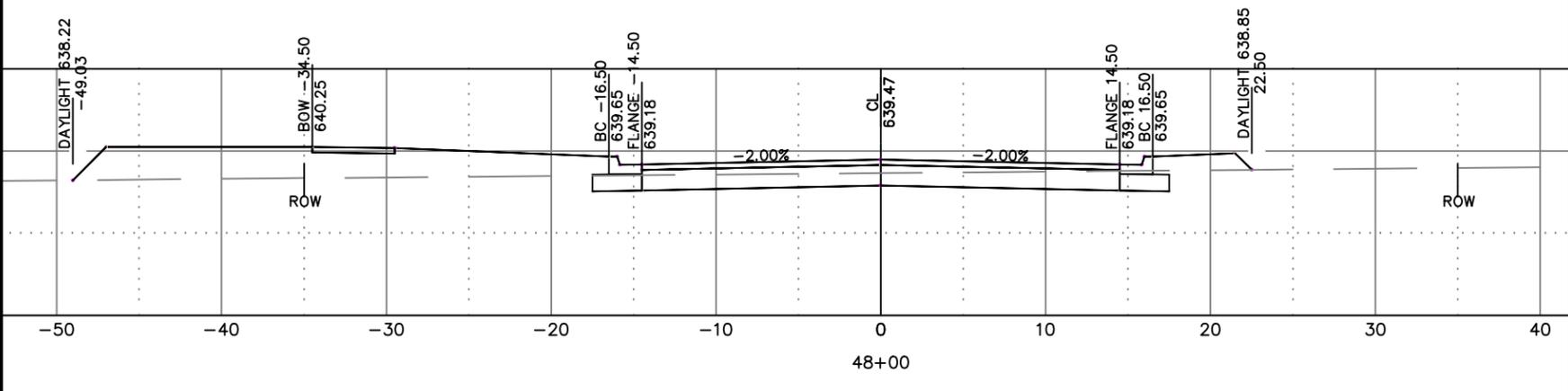
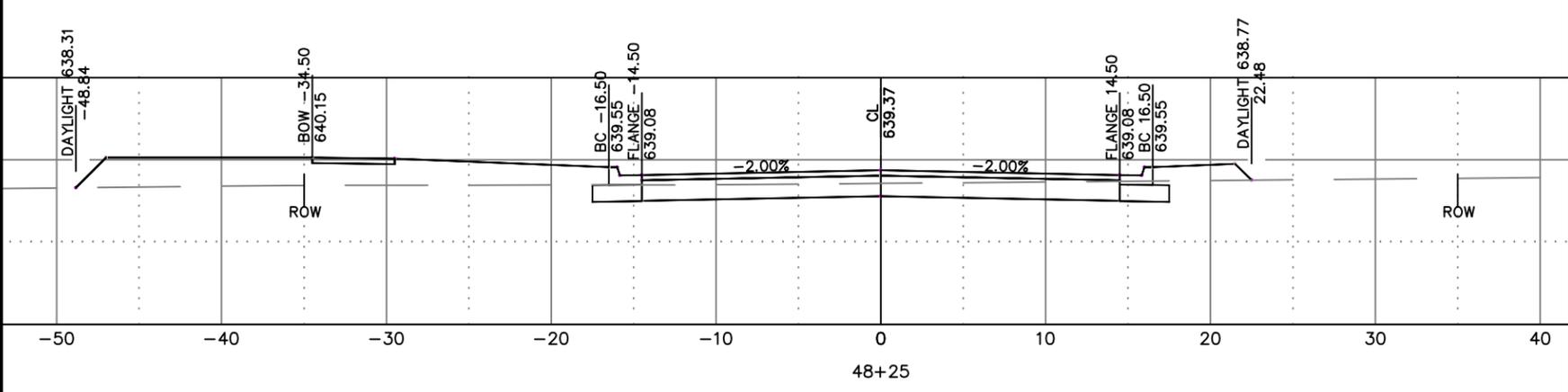
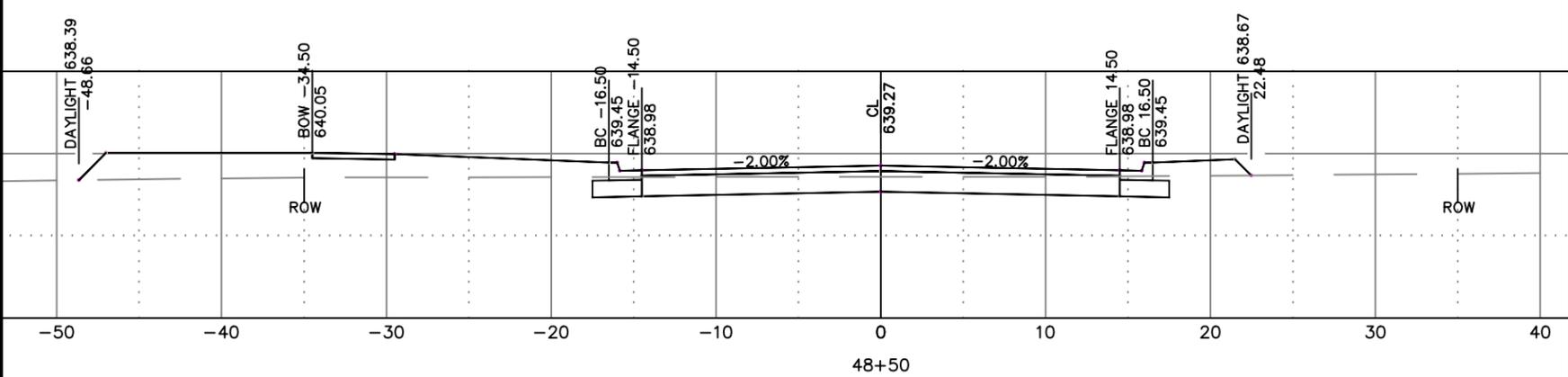
ENGINEERING DIVISION
 OFFICE 920-339-4061 FAX 920-339-4071

CITY OF DE PERE
GARROMAN DRIVE
CROSS SECTIONS

NAME: GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

DATE	BY	REVISIONS / ISSUES
06-2018	MACH IV	
5-2019	SRL	
5-2019	SRL	
5-2019	ERR	

DATE	BY	REVISIONS / ISSUES





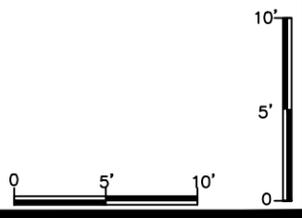
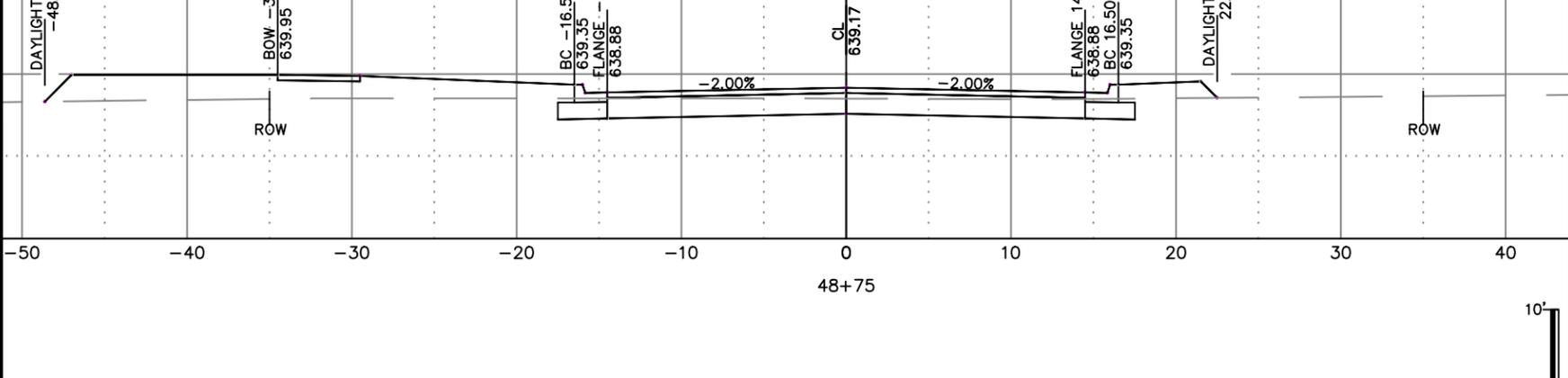
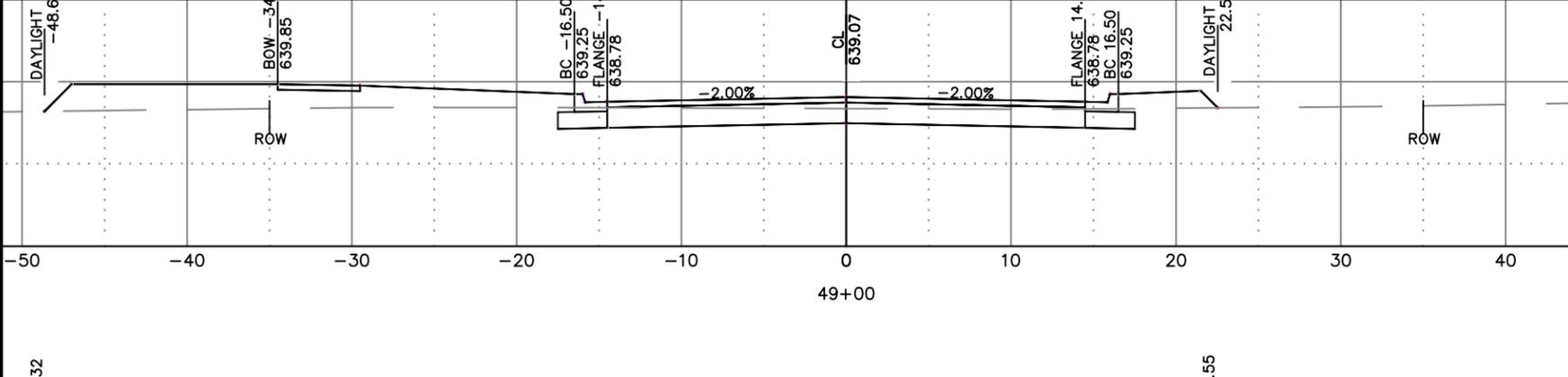
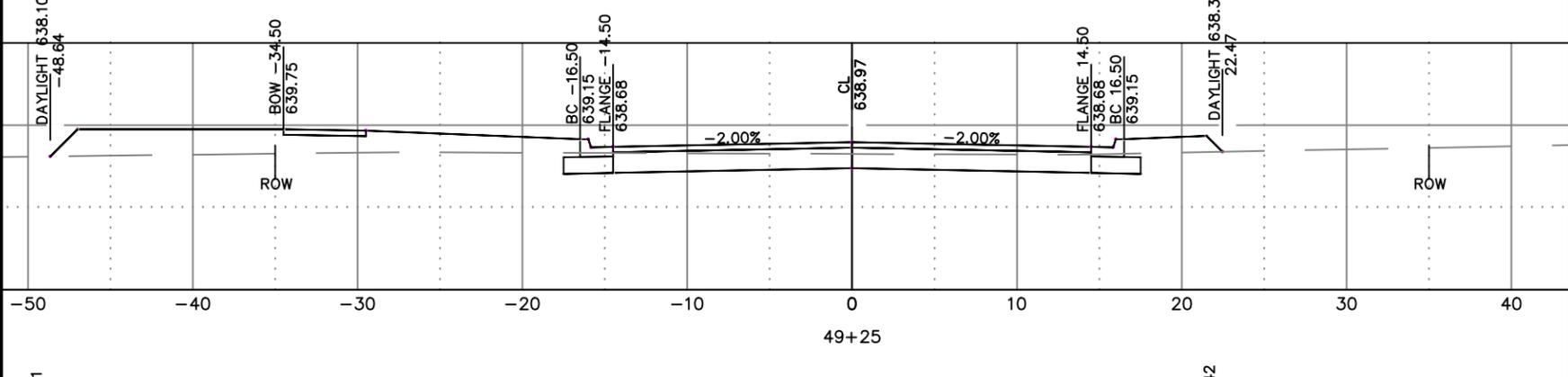
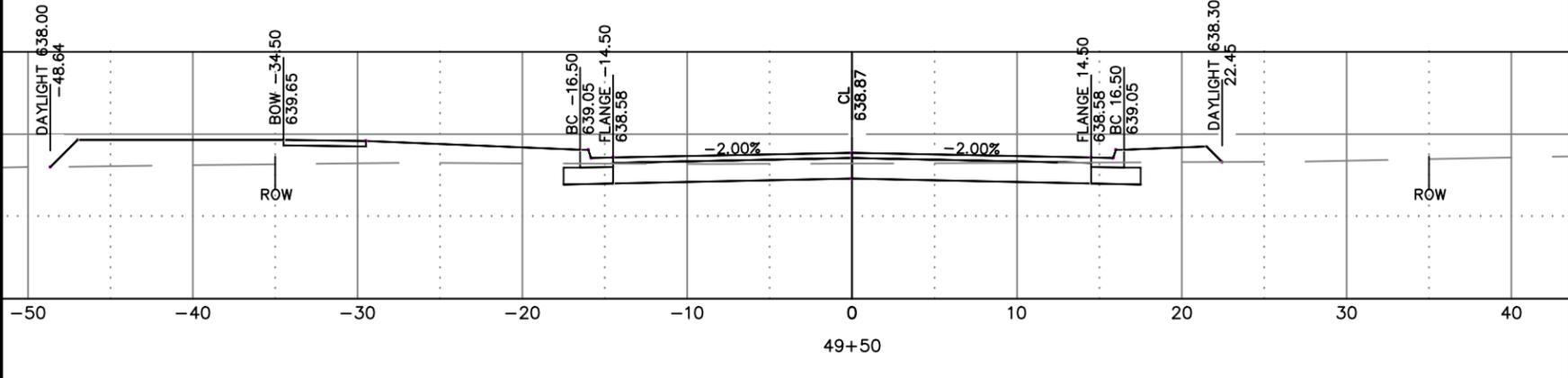
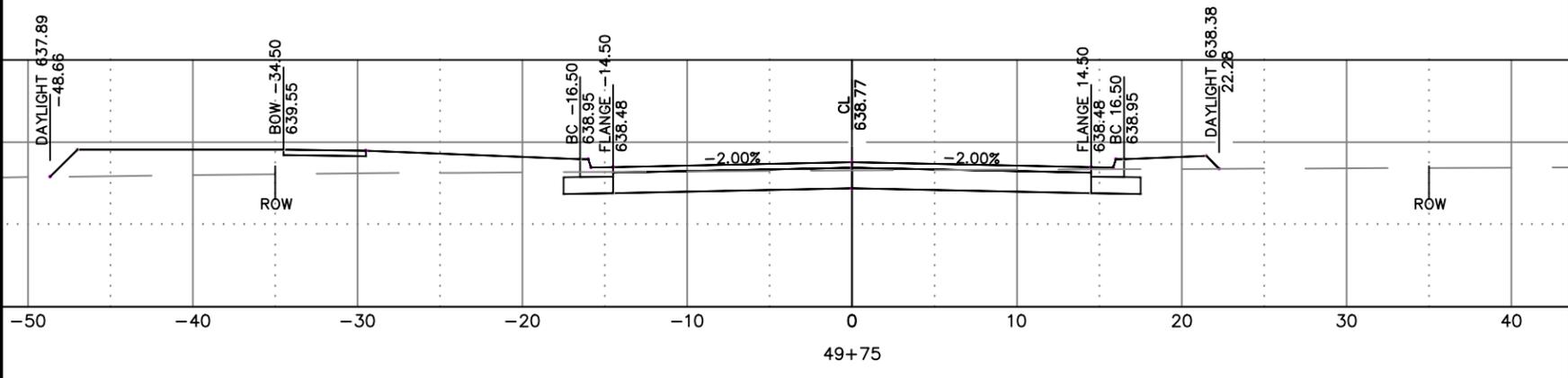
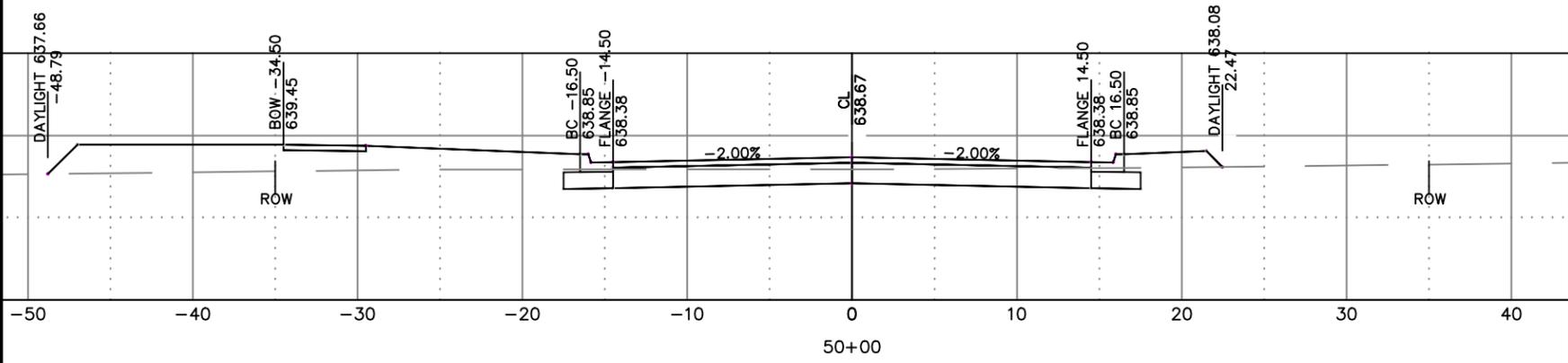
CITY OF DE PERE
 ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
 OFFICE 920-339-4061 FAX 920-339-4071

GARROMAN DRIVE
 CROSS SECTIONS

NAME: GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

NO.	DATE	BY	REVISIONS / ISSUES

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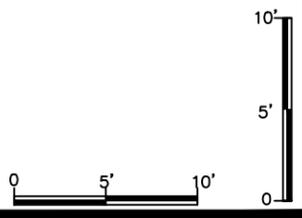
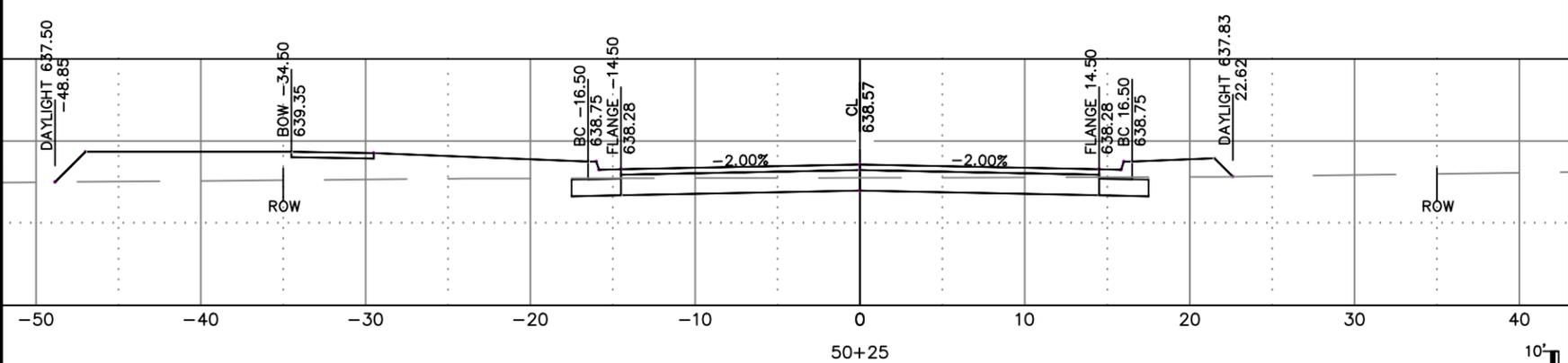
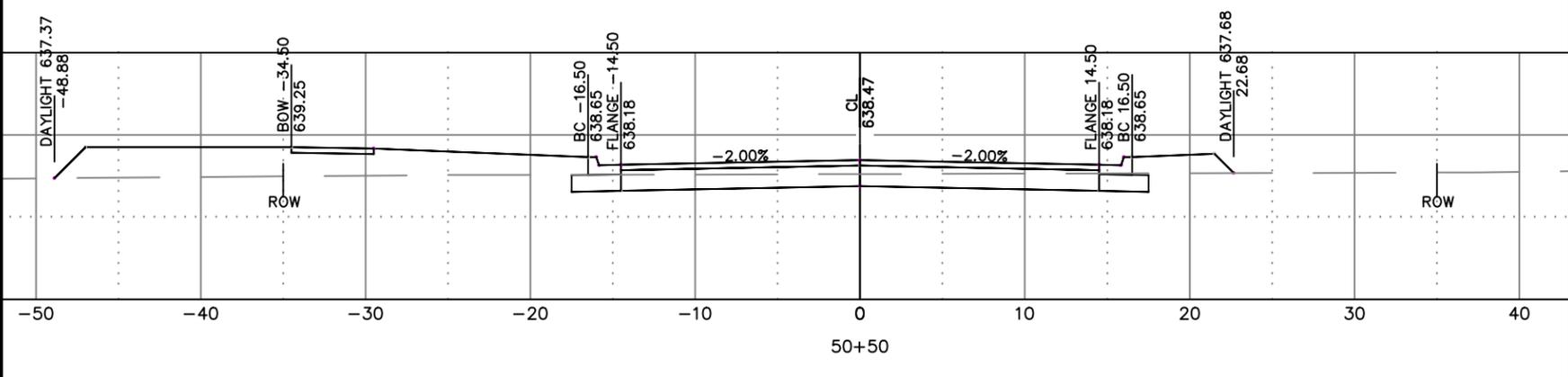
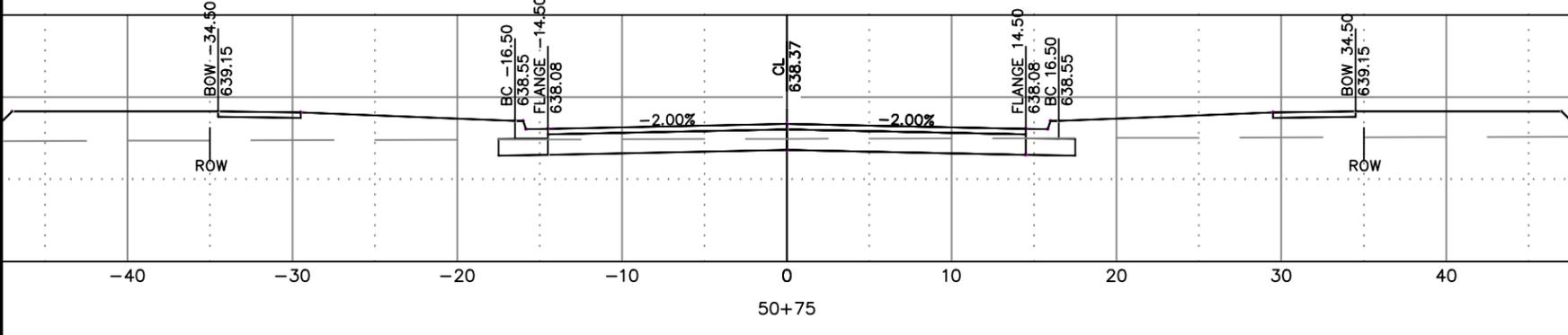
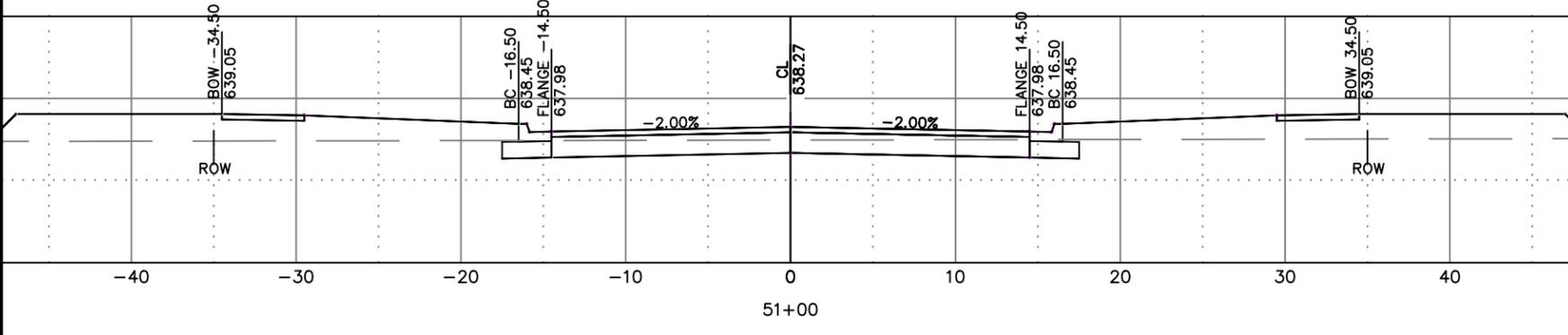
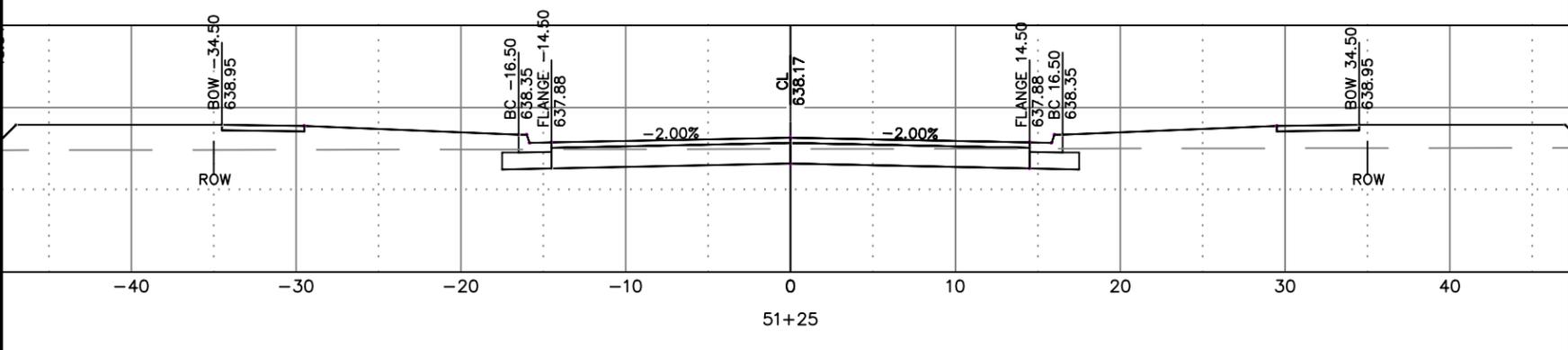
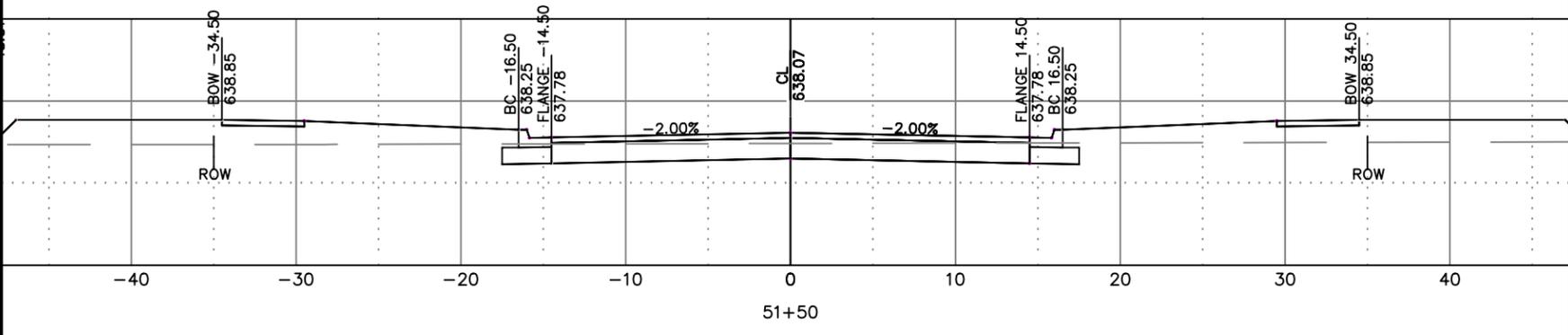


ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

CITY OF DE PERE
GARROMAN DRIVE
CROSS SECTIONS

NAME:	GARRITY'S GLEN SOUTH
PROJECT #	19-11
DESIGNED	SR
CHECKED	EP
DATE	08-2018
BY	MACH IV
DATE	5-2019
BY	SR
DATE	5-2019

NO.	DATE	REVISIONS / ISSUES	REMARKS

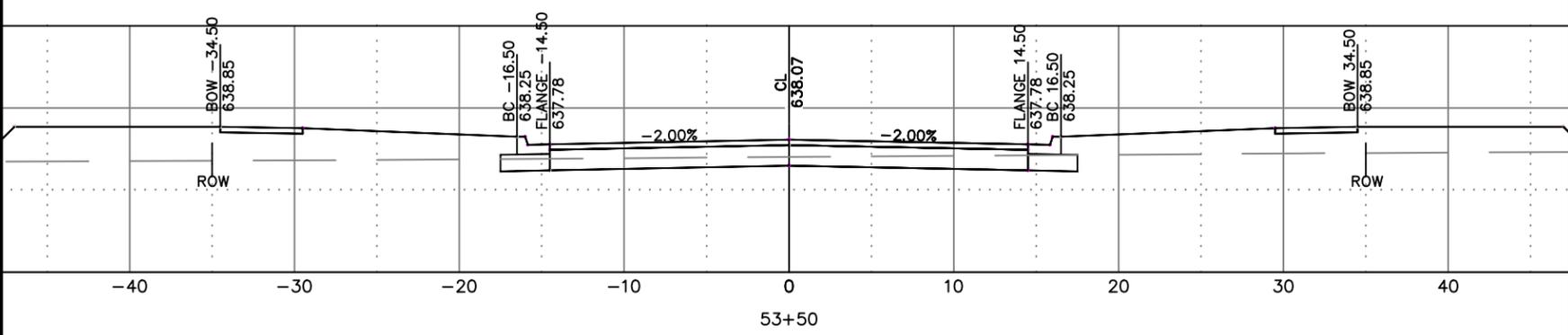
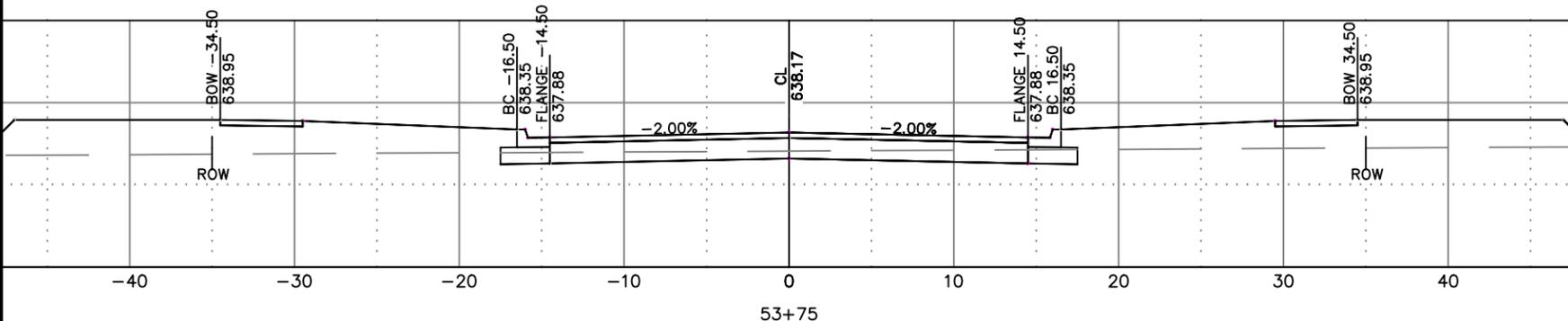




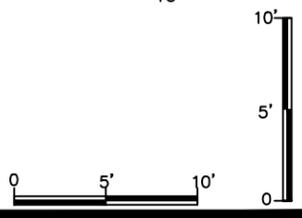
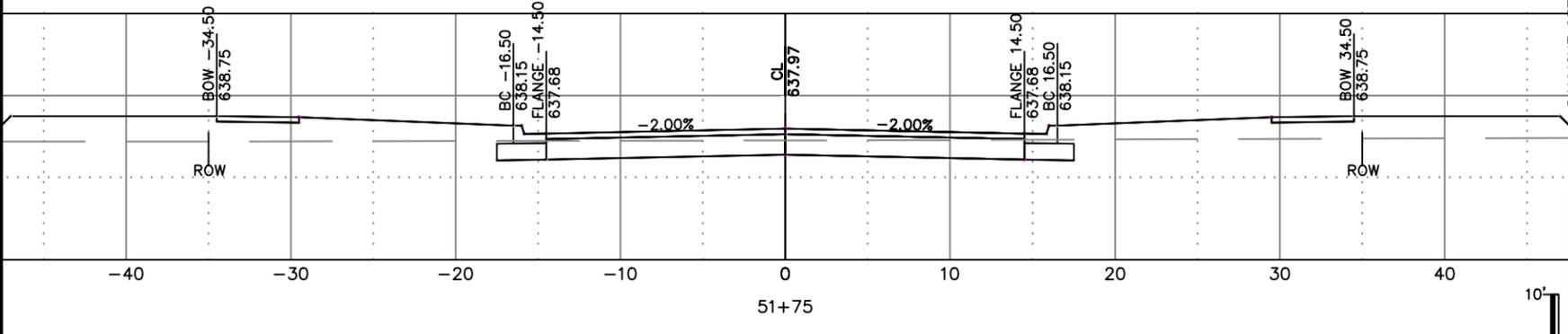
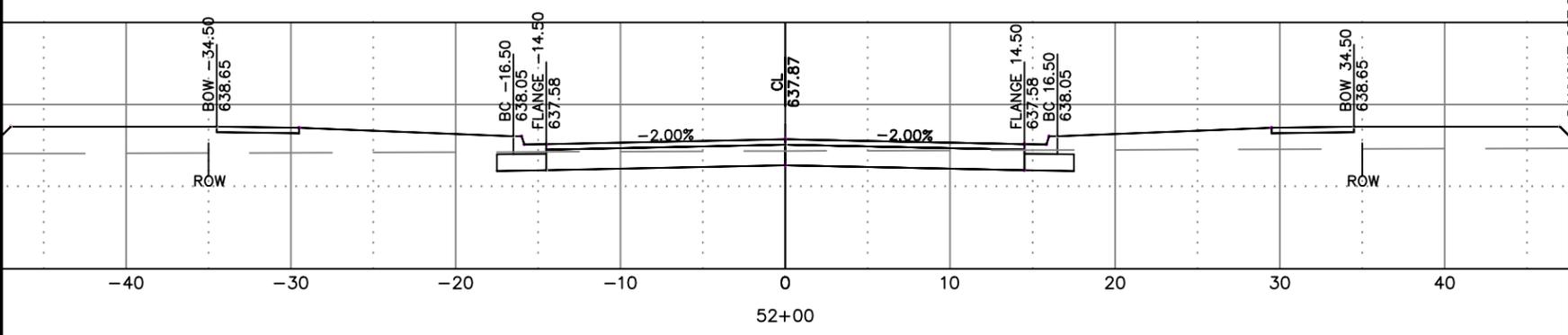
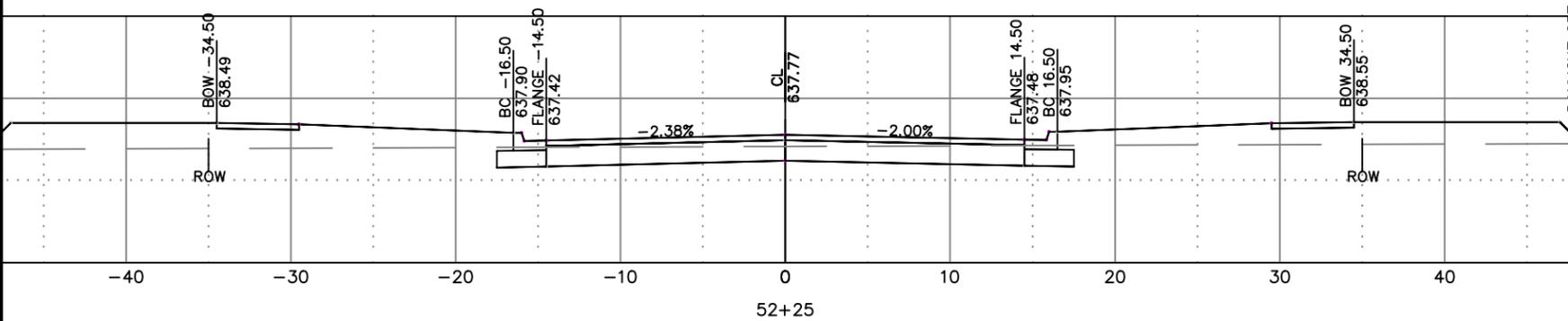
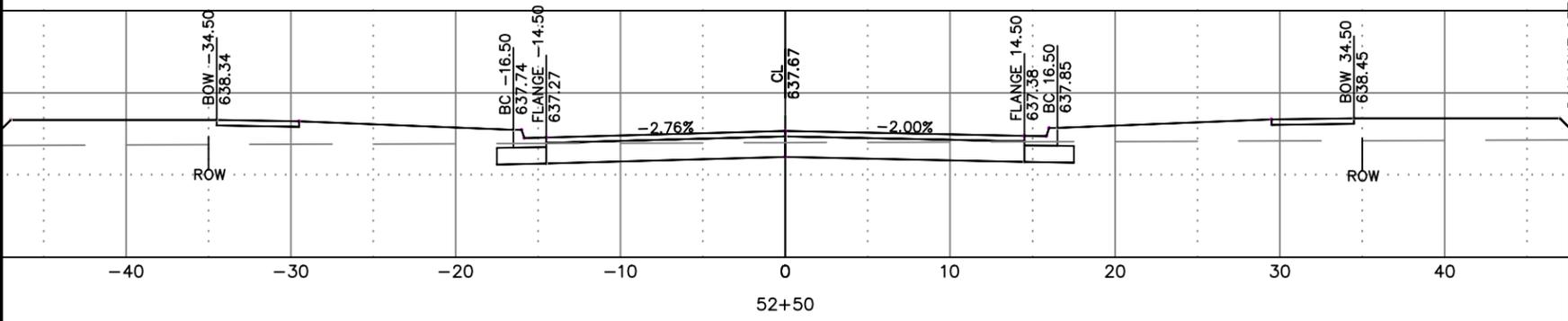
ENGINEERING DIVISION
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CITY OF DE PERE
 GARROMAN DRIVE
 CROSS SECTIONS

NAME:	GARRITY'S GLEN SOUTH
PROJECT #	19-11
SUBDIVISION CONSTRUCTION	
DATE	06-2018
BY	MACH IV
DESIGNED	SRL
CHECKED	ERR
DATE	5-2019
NO.	
DATE	
BY	
REVISIONS / ISSUES	
REMARKS	



**INTERSECTION OF GARROMAN DRIVE
 AND BALLYVAUGHAN ROAD
 SEE INTERSECTION SHEET C405**



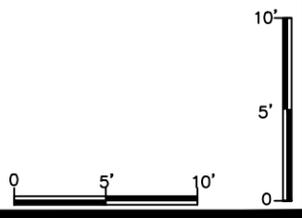
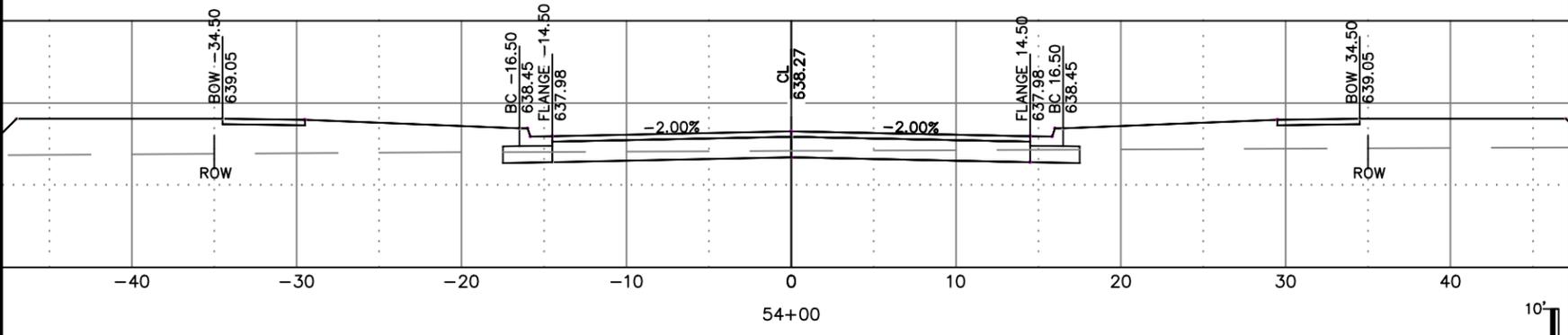
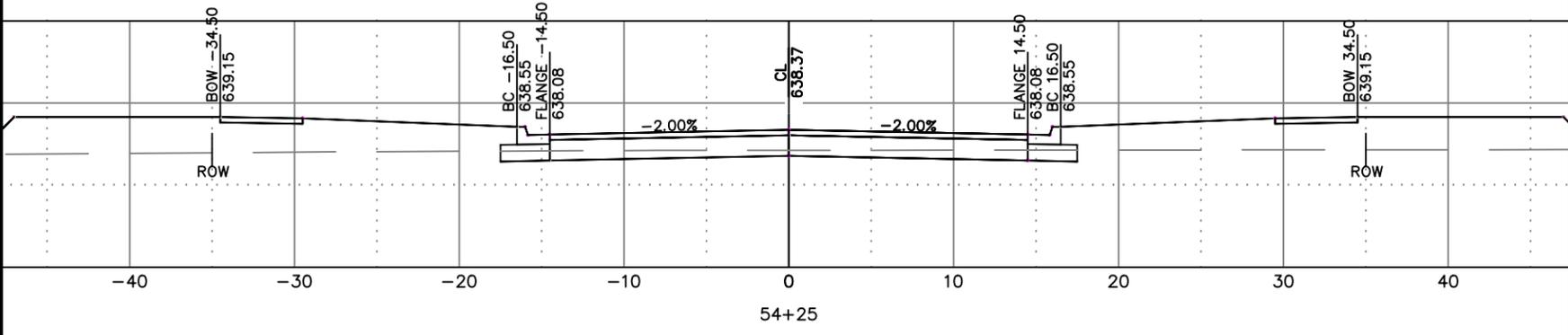
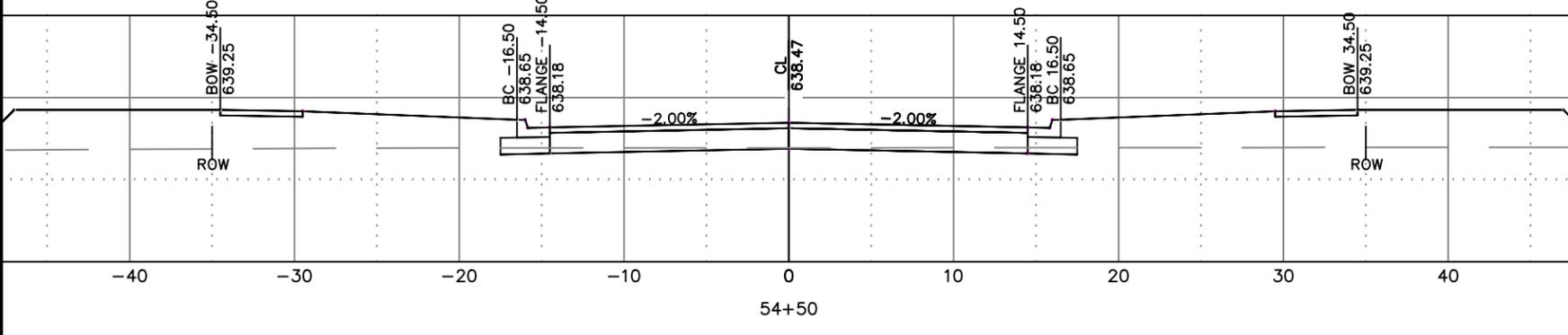
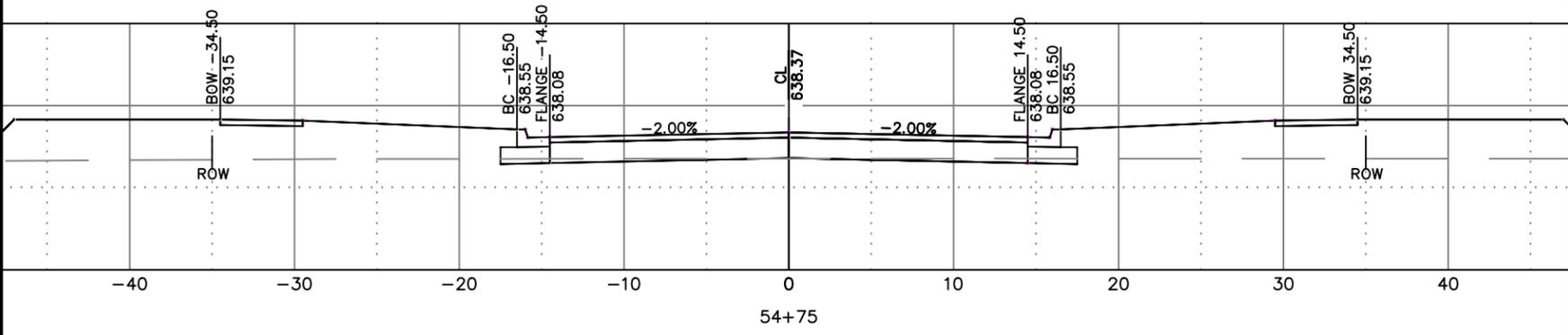
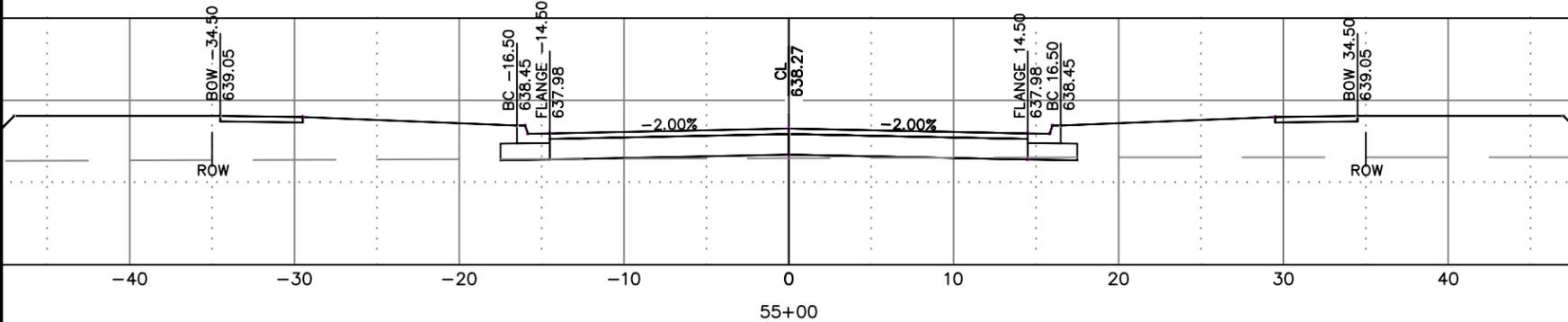
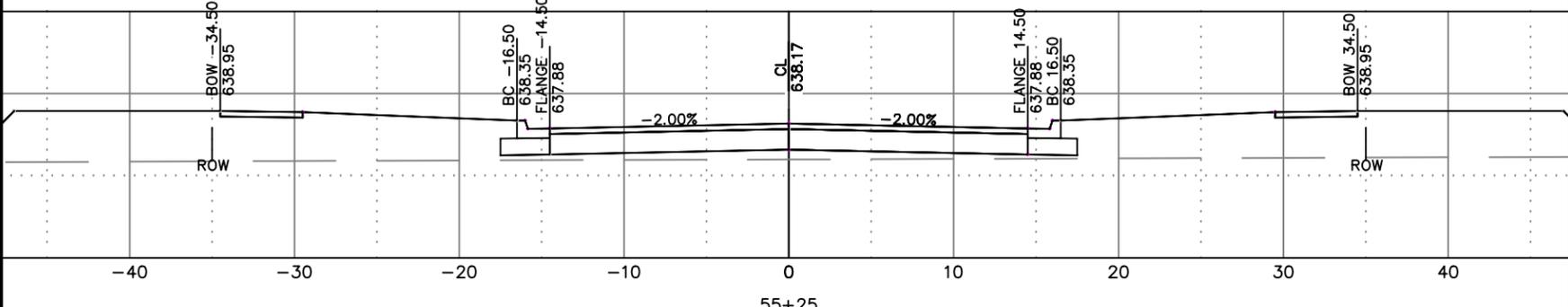


ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
 OFFICE 920-339-4061 FAX 920-339-4071

CITY OF DE PERE
GARROMAN DRIVE
CROSS SECTIONS

NAME: GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

NO.	DATE	BY	REVISIONS / ISSUES





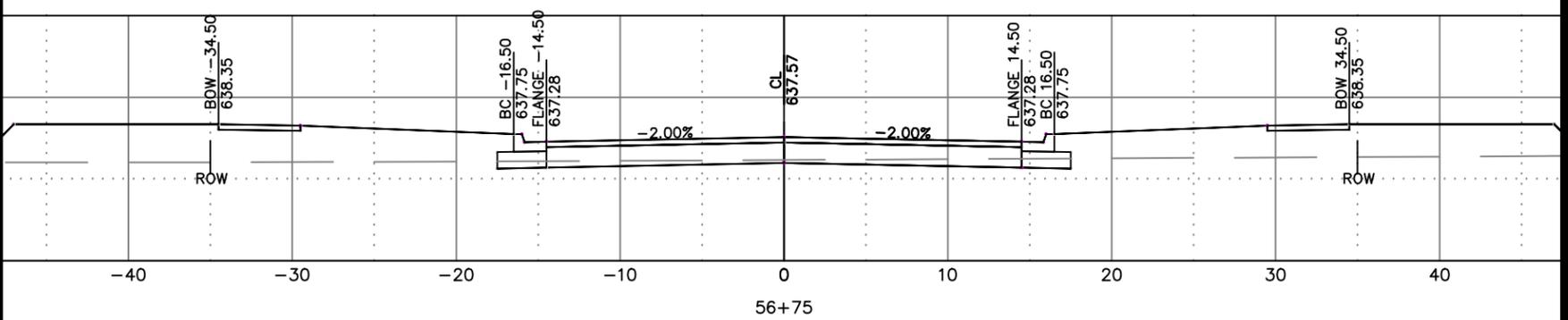
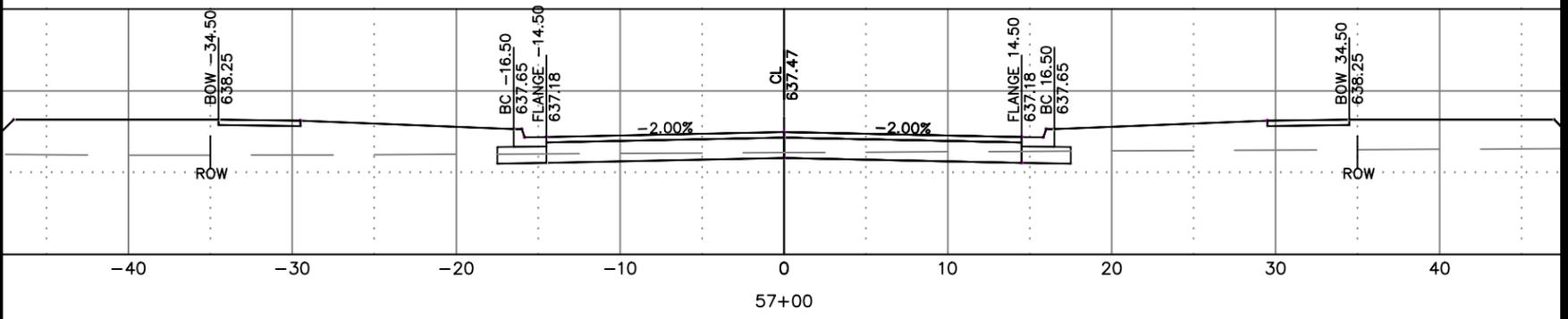
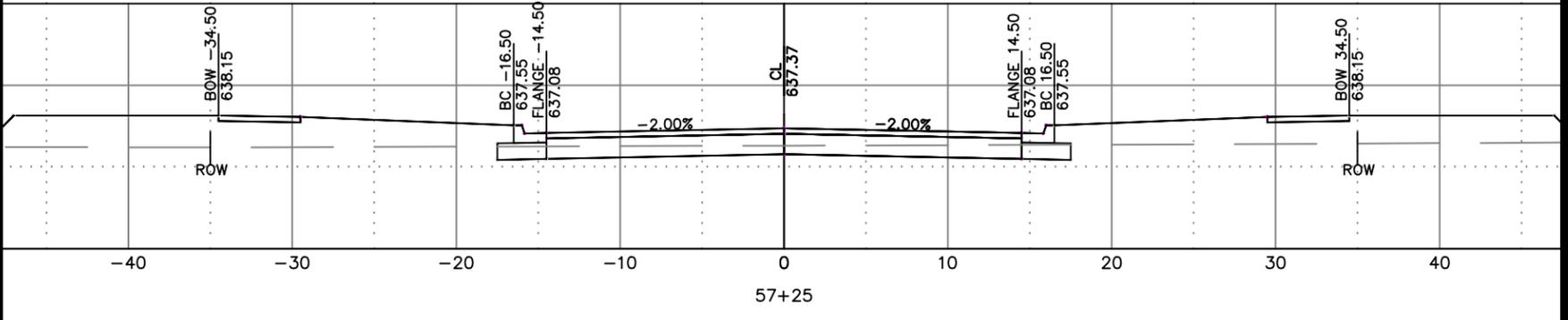
ENGINEERING DIVISION
 OFFICE 920-339-4061 FAX 920-339-4071

CROSS SECTIONS

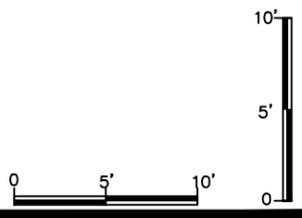
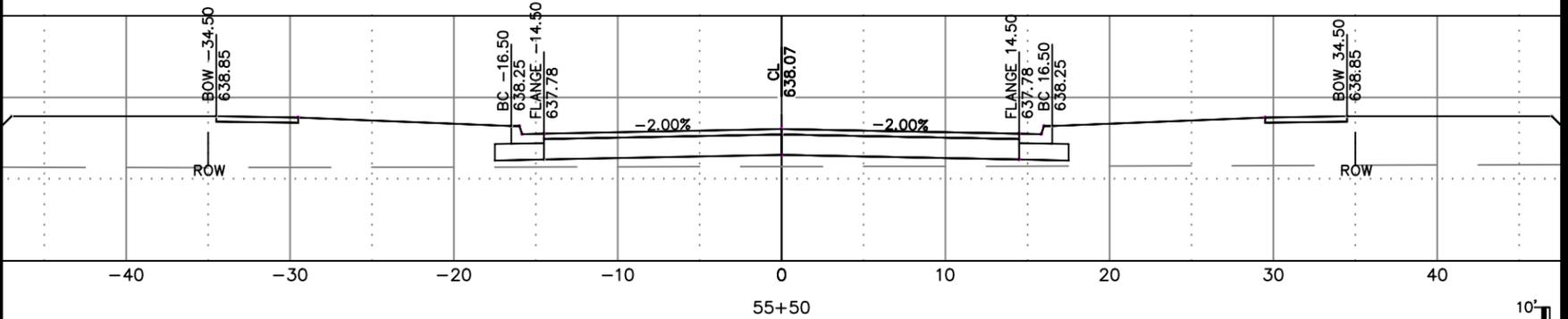
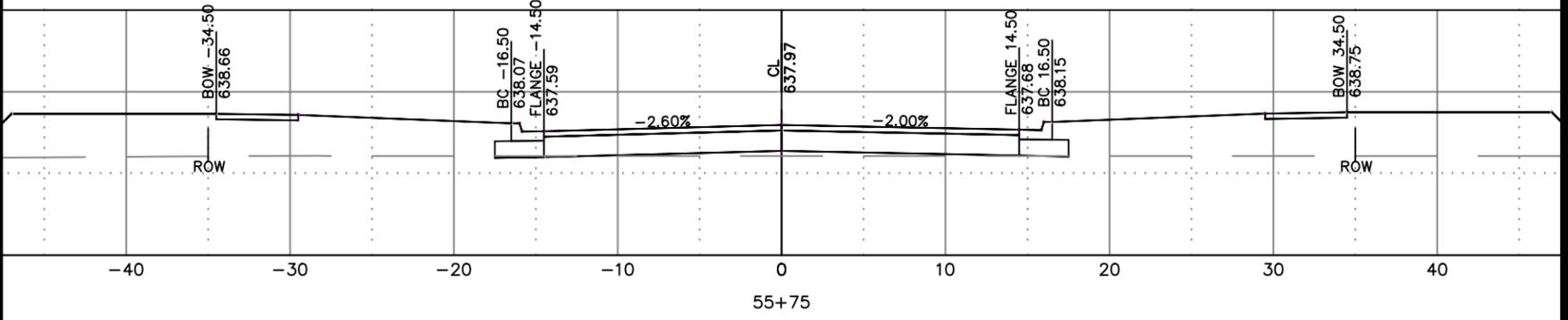
NAME:	GARRITY'S GLEN SOUTH
PROJECT #	19-11
SURVEYED	
DRAWN	
DESIGNED	
CHECKED	
BY	
DATE	

NO.	DATE	BY	REVISIONS / ISSUES

PAGE NO. **C307**



**INTERSECTION OF GARROMAN DRIVE
 AND TIPPERARY TRAIL
 SEE INTERSECTION SHEET C405**



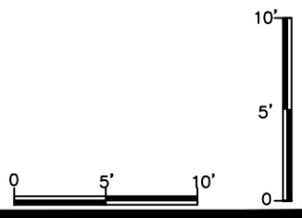
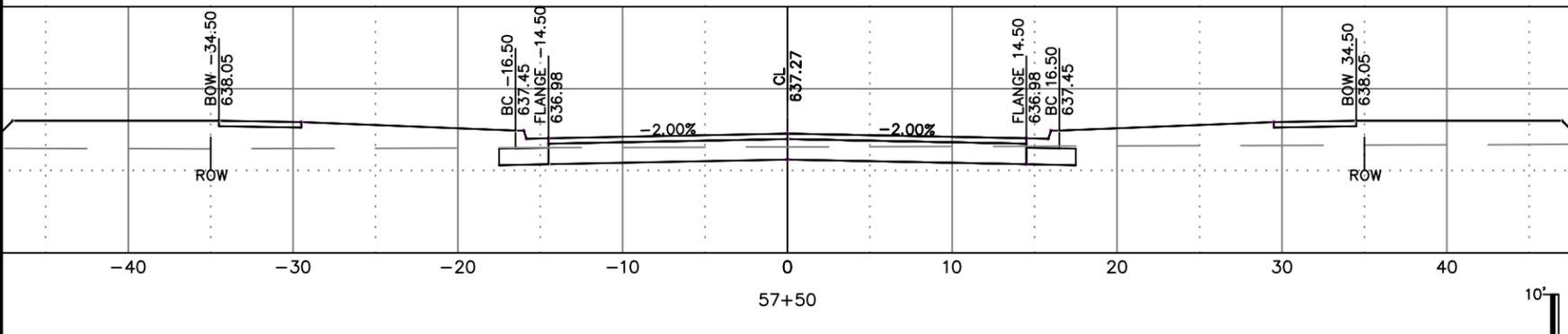
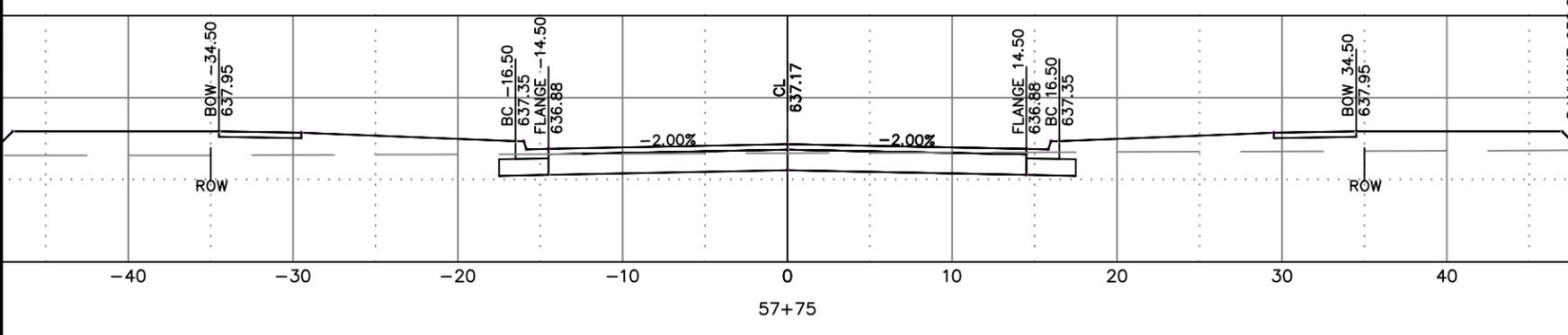
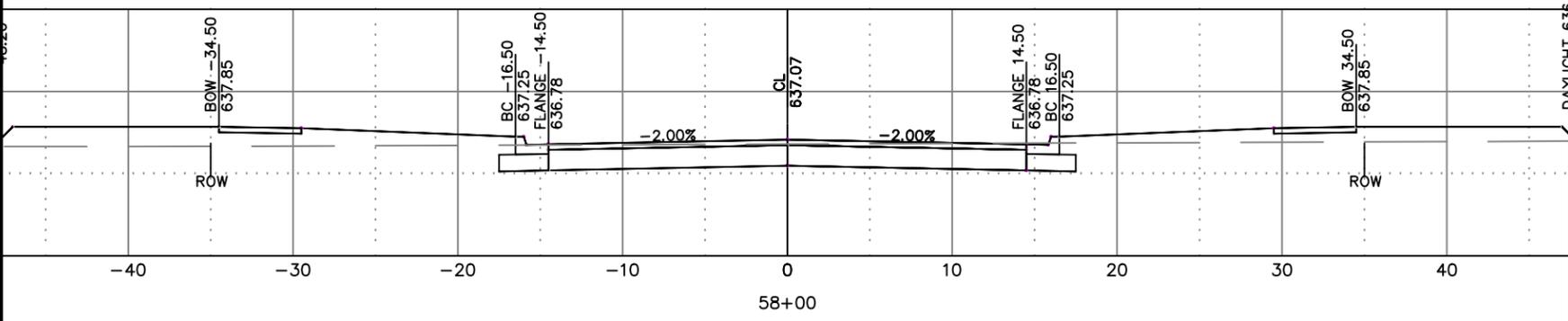


DE PERE
 CITY OF DE PERE
 ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
 OFFICE 920-339-4061 FAX 920-339-4071

GARROMAN DRIVE
 CROSS SECTIONS

NAME: GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

NO.	DATE	BY	REVISIONS / ISSUES





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

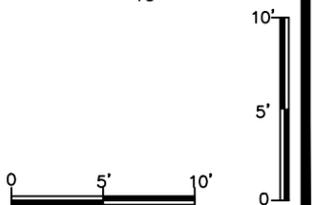
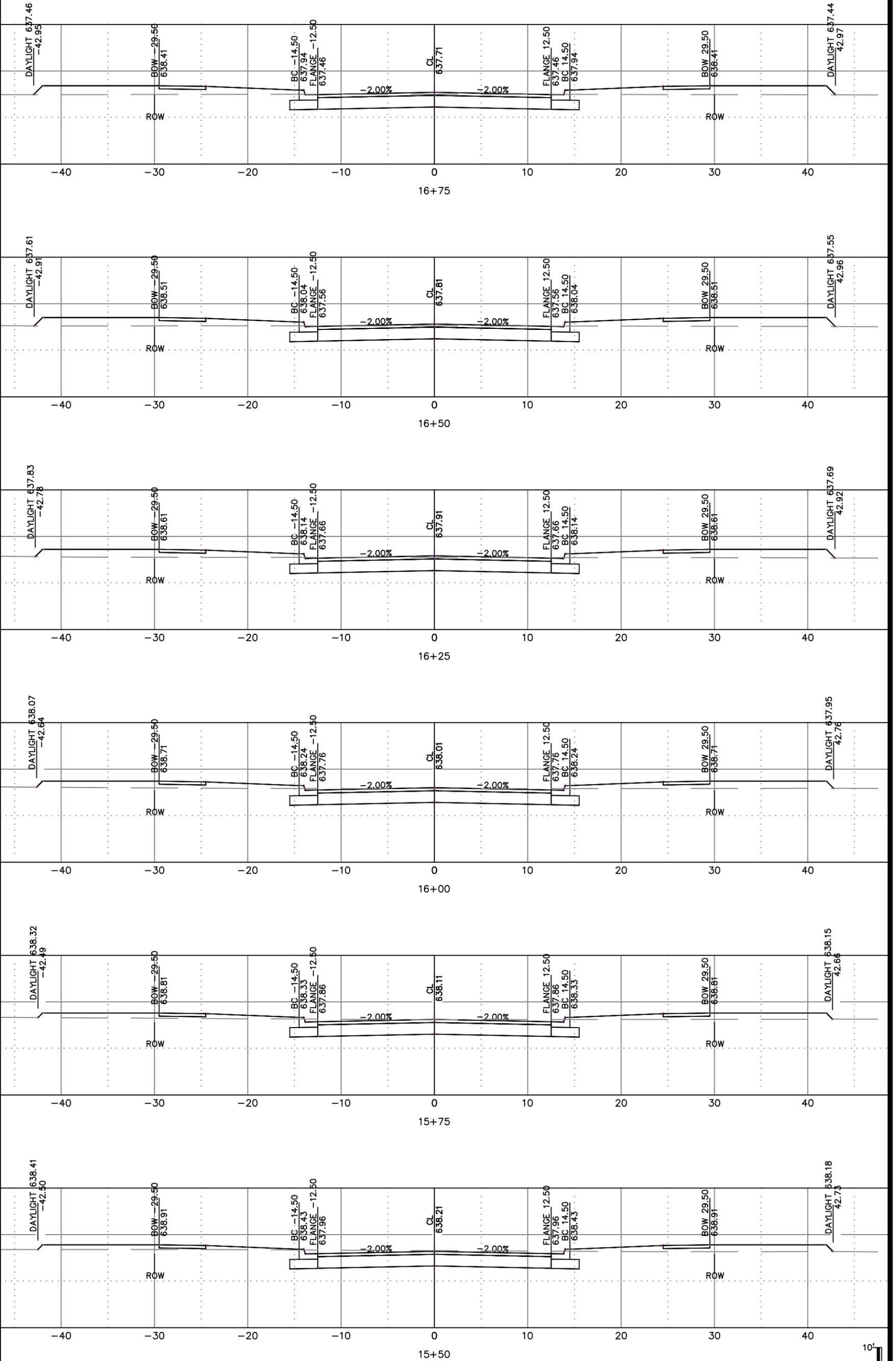
CITY OF DE PERE

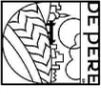
BALLYVAUGHAN ROAD
CROSS SECTIONS

NAME: GARRITT'S GLEN SOUTH
SUBDIVISION CONSTRUCTION
PROJECT # 19-11

NO.	DATE	BY	REVISIONS / ISSUES

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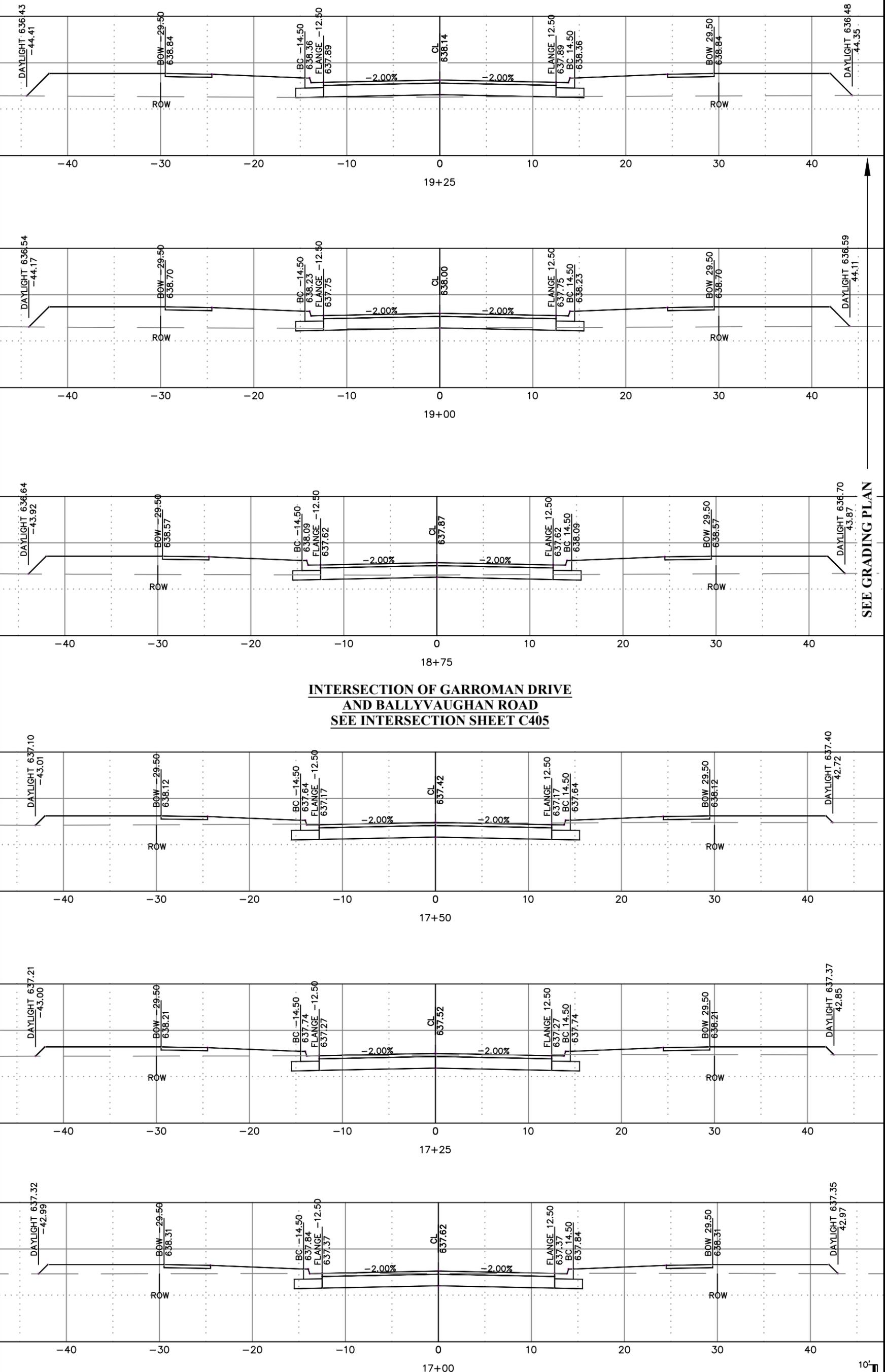




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BALLYVAUGHAN ROAD
 CROSS SECTIONS

NAME:	GARRITT'S GLEN SOUTH
PROJECT #	19-11
DATE	08-2018
BY	SR
DATE	5-2019
BY	SR
DATE	5-2019
BY	SR
DATE	5-2019



SEE GRADING PLAN



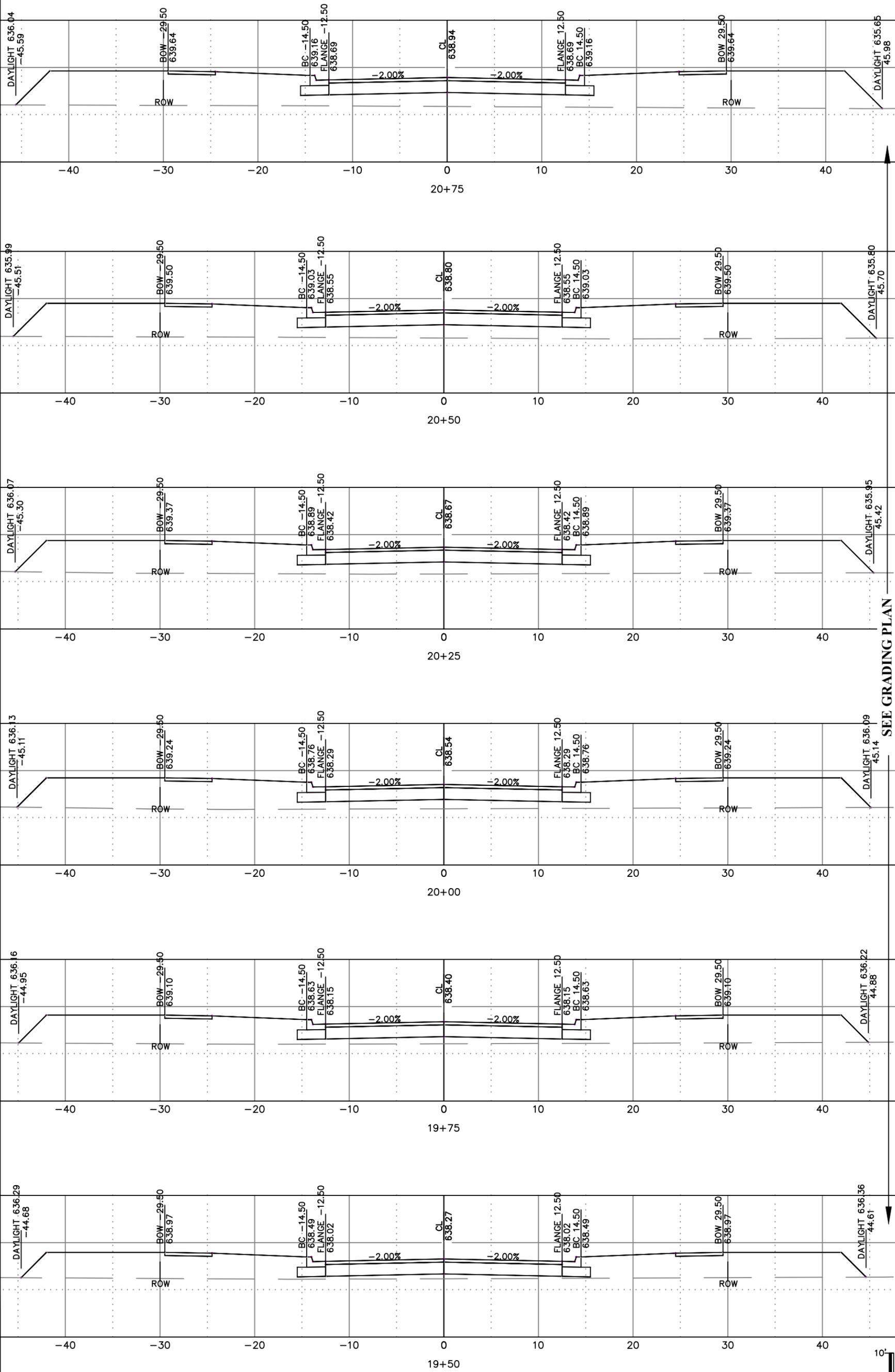
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OFFICE 920-339-4061 FAX 920-339-4071

BALLYVAUGHAN ROAD
CROSS SECTIONS

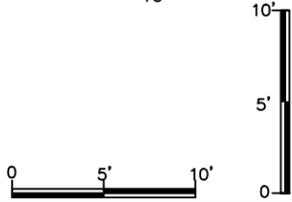
NAME: GARRITY'S GLEN SOUTH
SUBDIVISION CONSTRUCTION
PROJECT # 19-11

NO.	DATE	BY	REVISIONS / ISSUES

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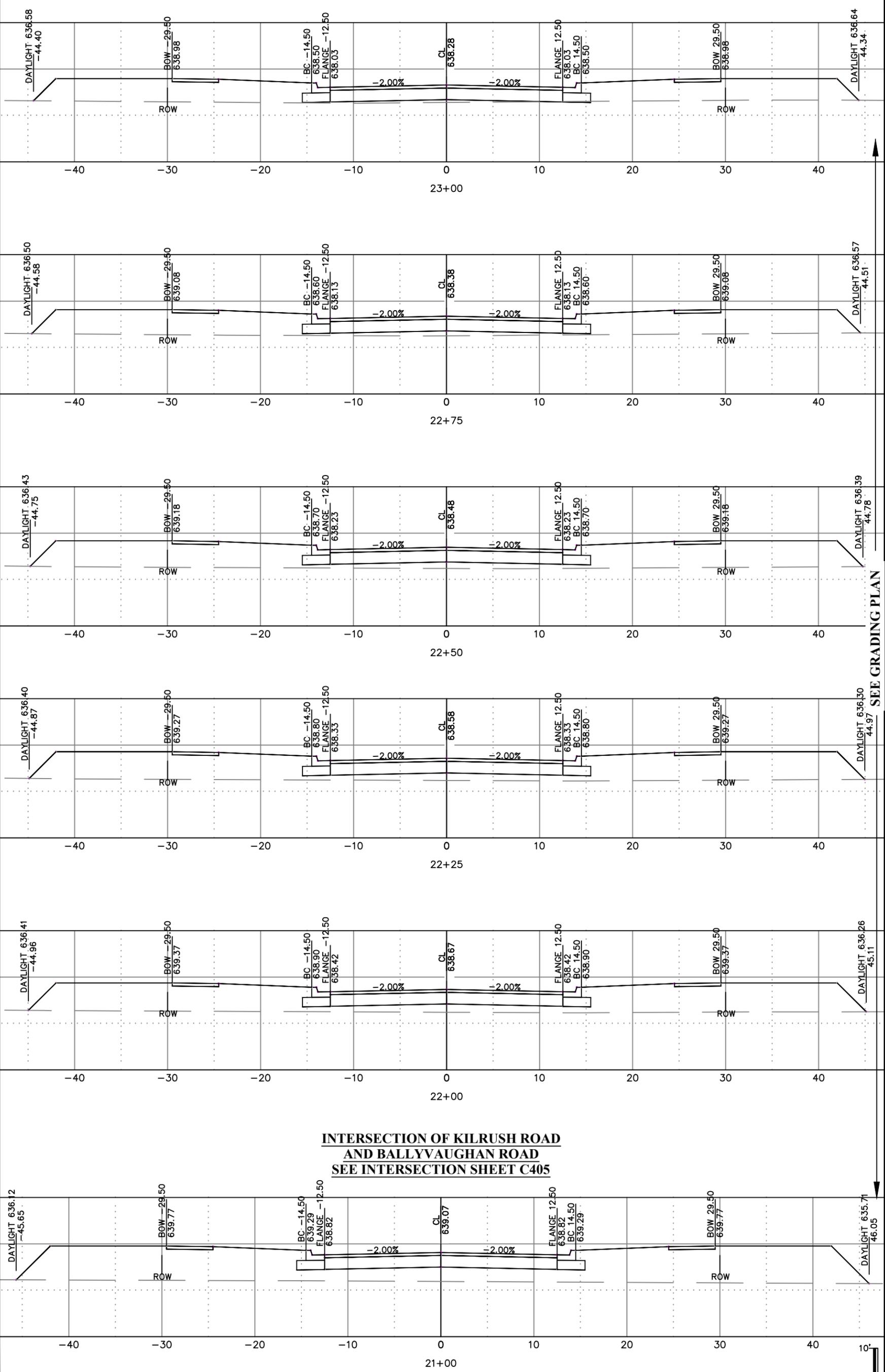


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BALLYVAUGHAN ROAD
 CROSS SECTIONS

NAME:	GARRITY'S GLEN SOUTH
PROJECT #	SUBDIVISION CONSTRUCTION
PROJECT #	19-11
BY	DATE
SURVEYED	MARCH 08-2018
DRAWN	SRL 5-2019
DESIGNED	SRL 5-2019
CHECKED	EPR 5-2019

NO.	DATE	REVISIONS / ISSUES



SEE GRADING PLAN



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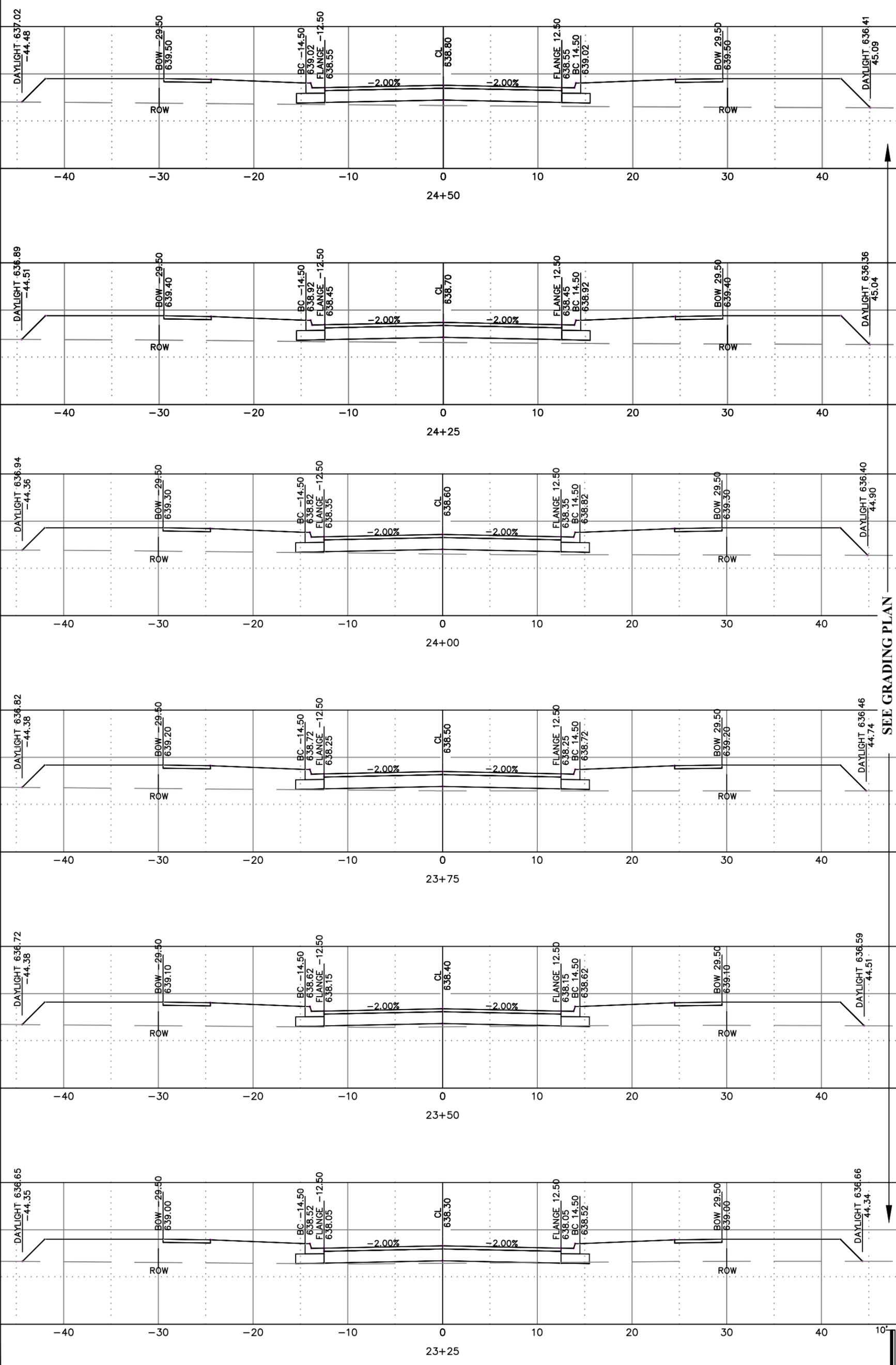
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 CROSS SECTIONS

NAME: GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

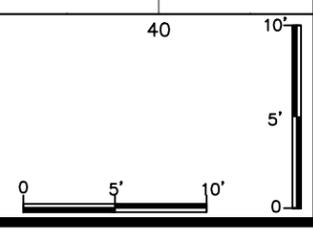
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CHECKED	DATE
SURVEYED	DATE
DRAWN	DATE
BY	DATE
BY	DATE
BY	DATE

NO.	DATE	REVISIONS / ISSUES

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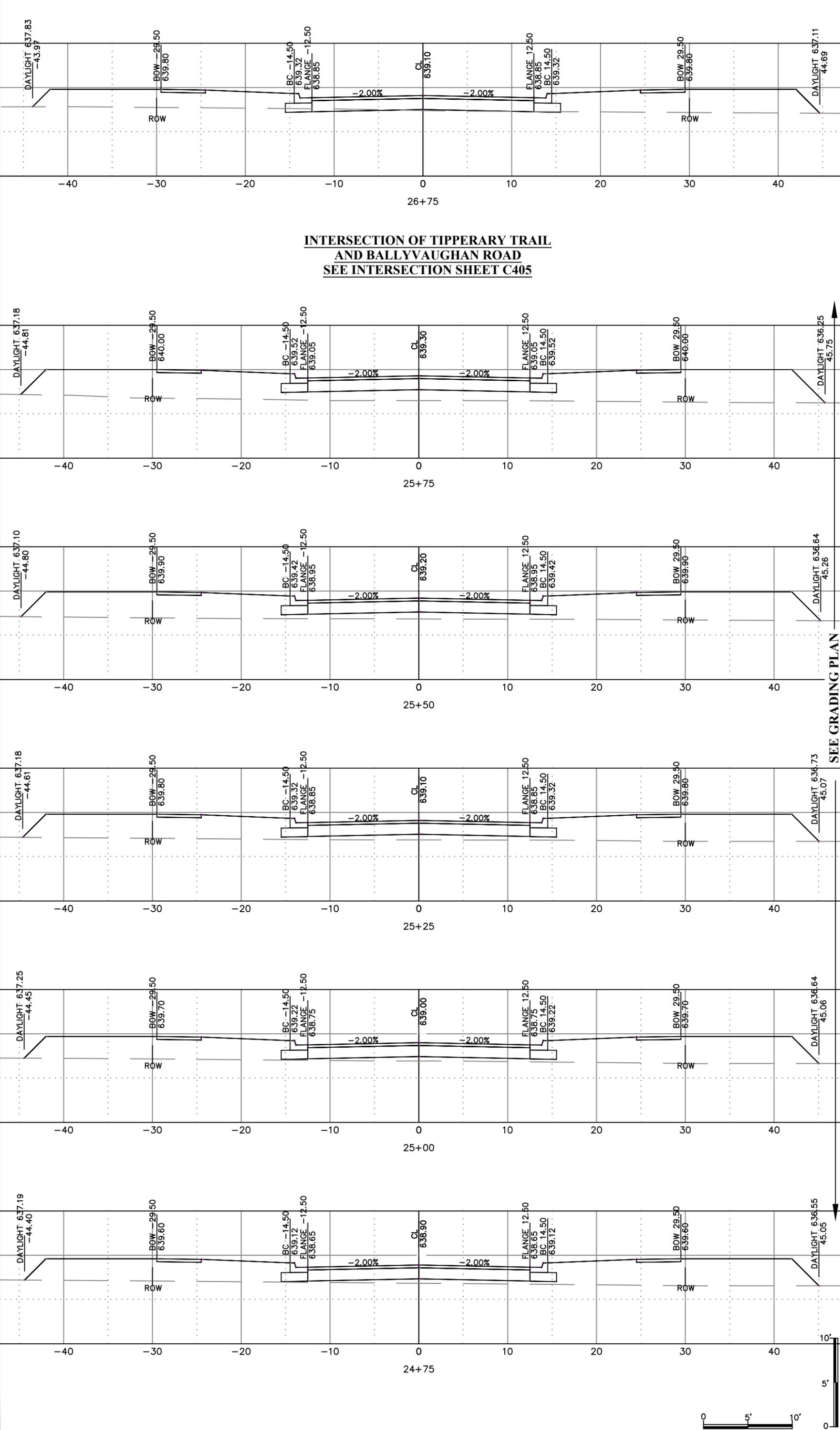
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NAME: GARRITY'S GLEN SOUTH
SUBDIVISION CONSTRUCTION

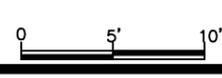
PROJECT # 19-11

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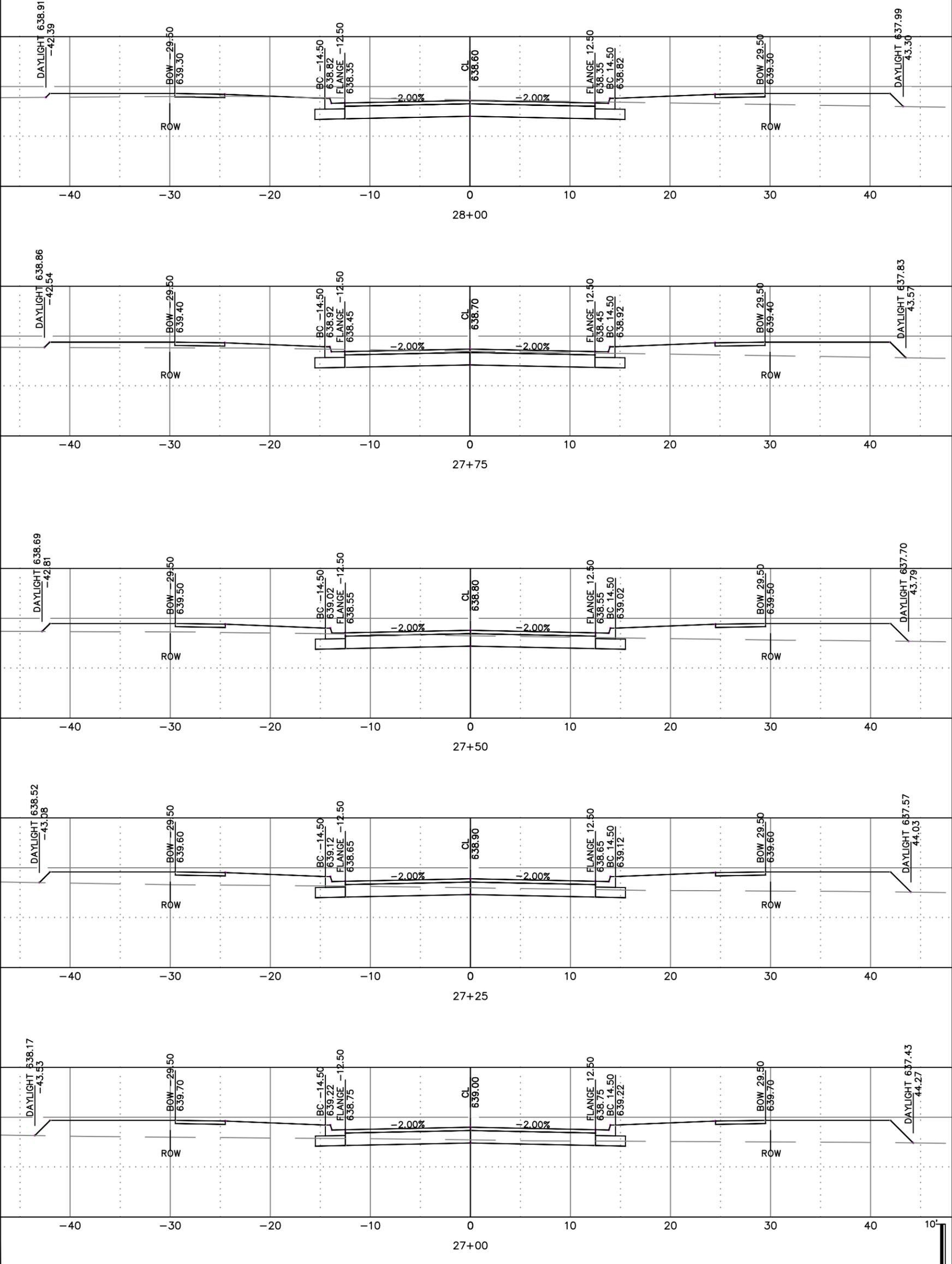




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BALLYVAUGHAN ROAD
 CROSS SECTIONS

NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION		PROJECT # 19-11	
SURVEYED	BY	DATE	NO.
DRAWN	MACHIV	08-2018	
DESIGNED	SRL	5-2019	
CHECKED	EPR	5-2019	
REVISIONS / ISSUES		REMARKS	
BY	DATE		





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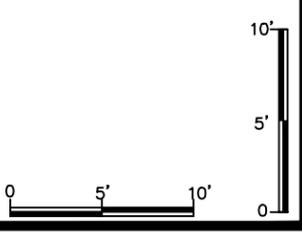
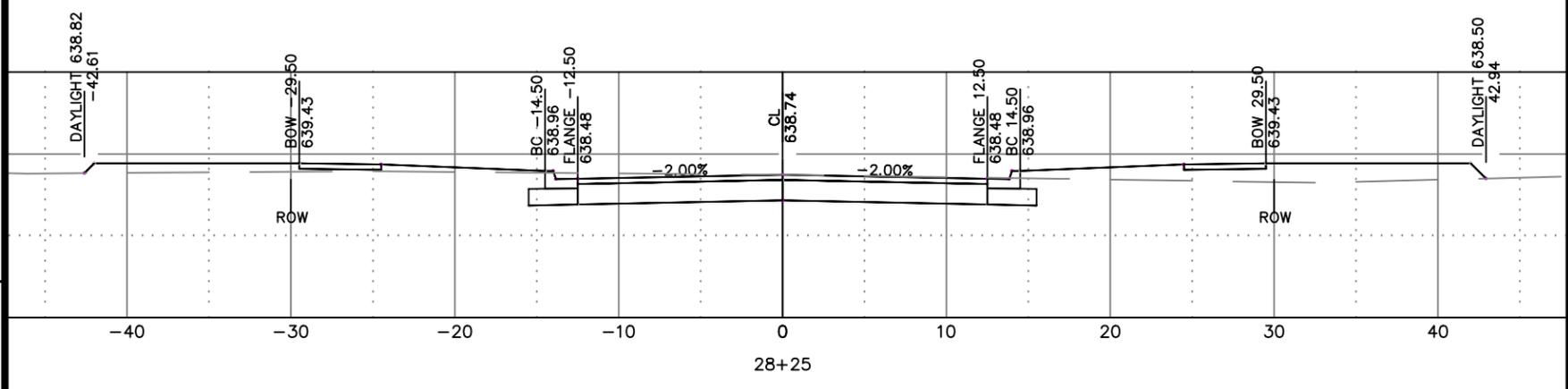
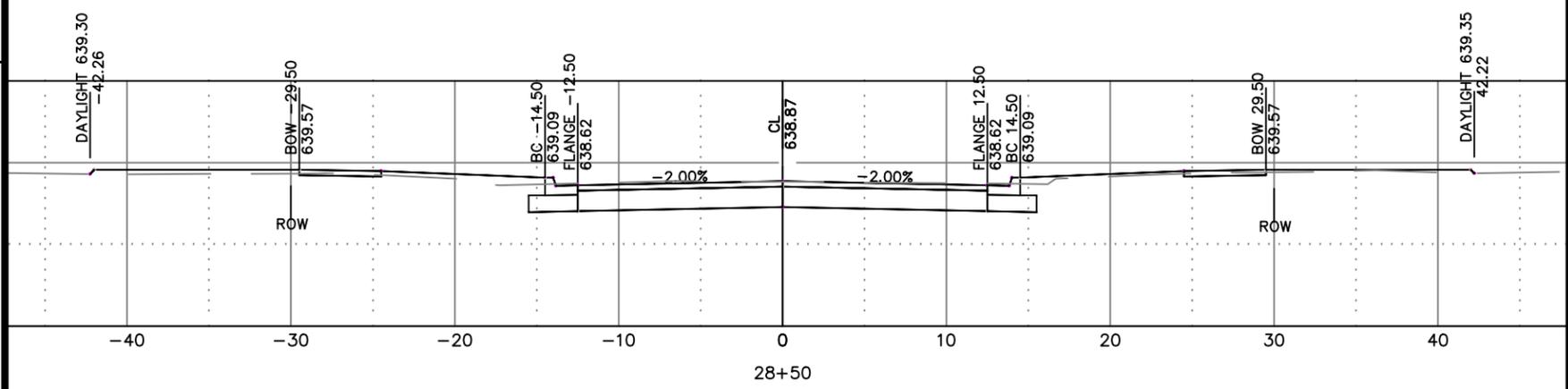
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BALLYVAUGHAN ROAD
CROSS SECTIONS

NAME: GARRITY'S GLEN SOUTH
SUBDIVISION CONSTRUCTION
PROJECT # 19-11

SURVEYED	BY	DATE
DRAWN	MACHIV	08-2018
DESIGNED	SRL	5-2019
CHECKED	EPR	5-2019

NO.	DATE	BY	REMARKS / ISSUES





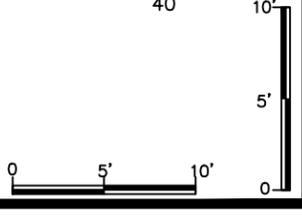
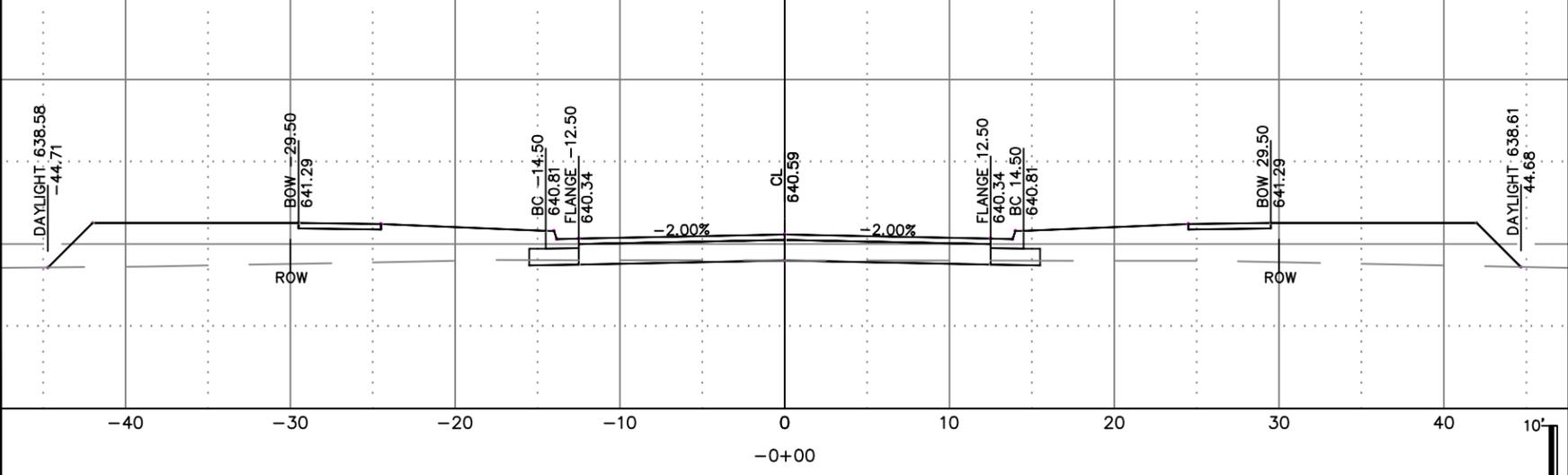
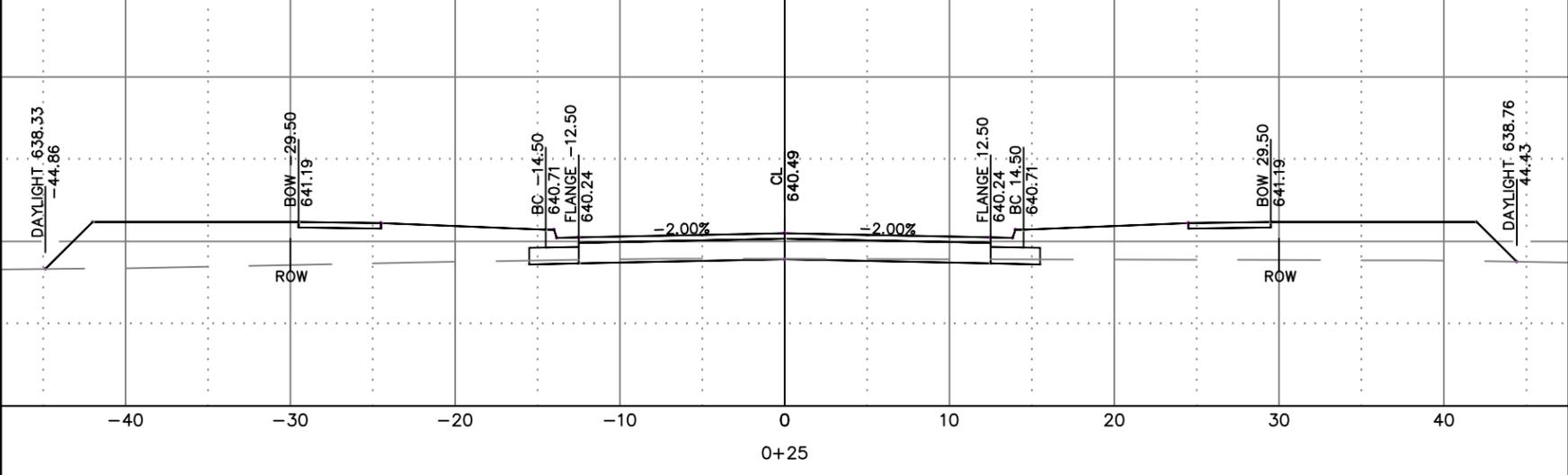
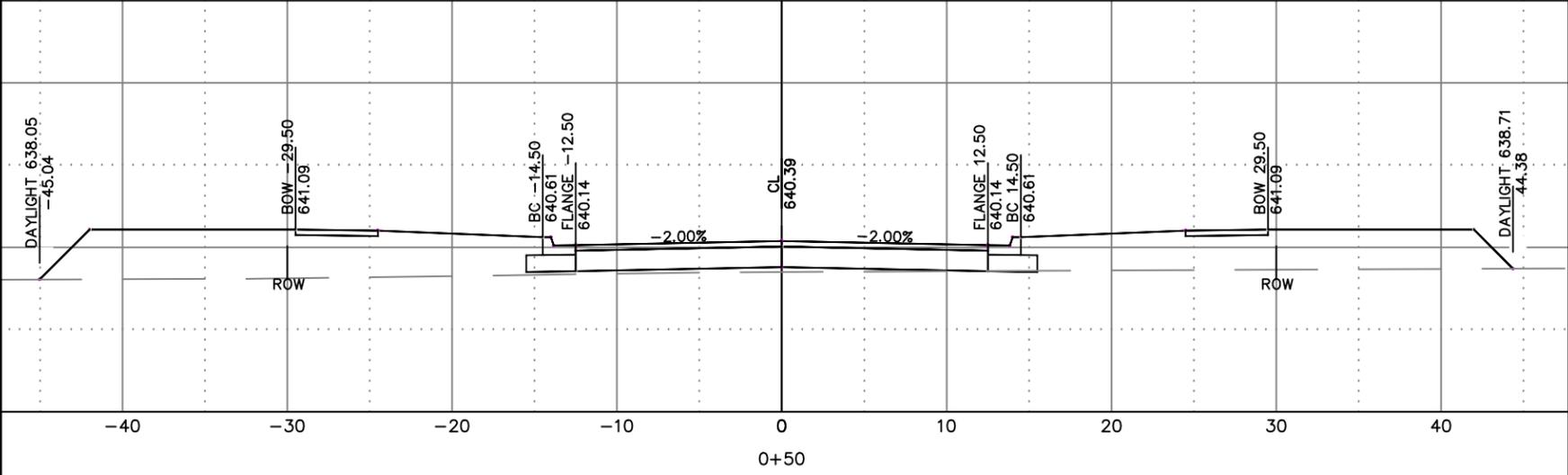
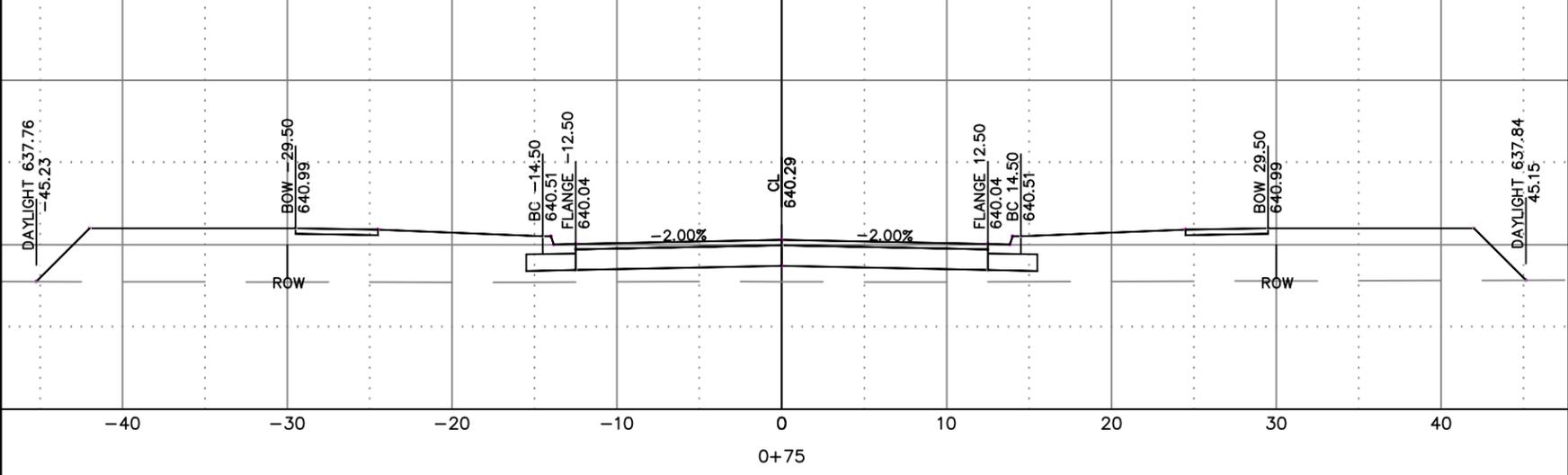
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KILRUSH ROAD
 CROSS SECTIONS

NAME: GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

SURVEYED	BY	DATE
DRAWN	MAJRW	08-2018
DESIGNED	SRJ	5-2019
CHECKED	SRJ	5-2019
	EPR	5-2019

NO.	DATE	BY	REVISIONS / ISSUES
			REMARKS





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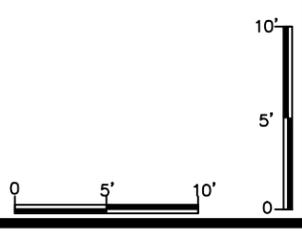
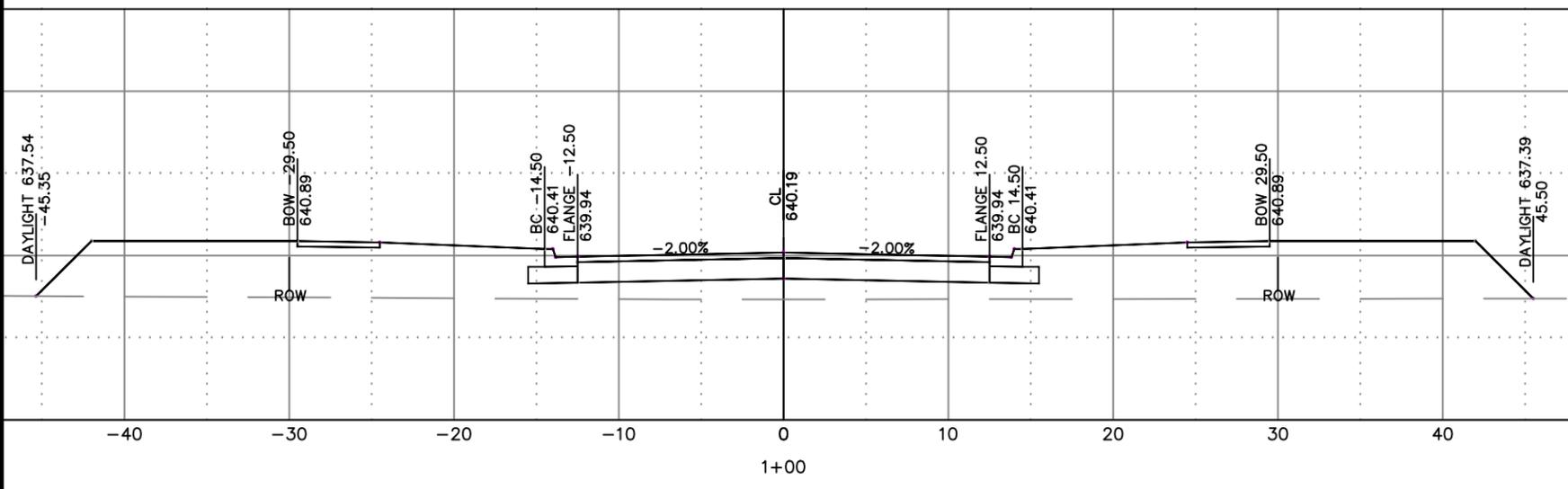
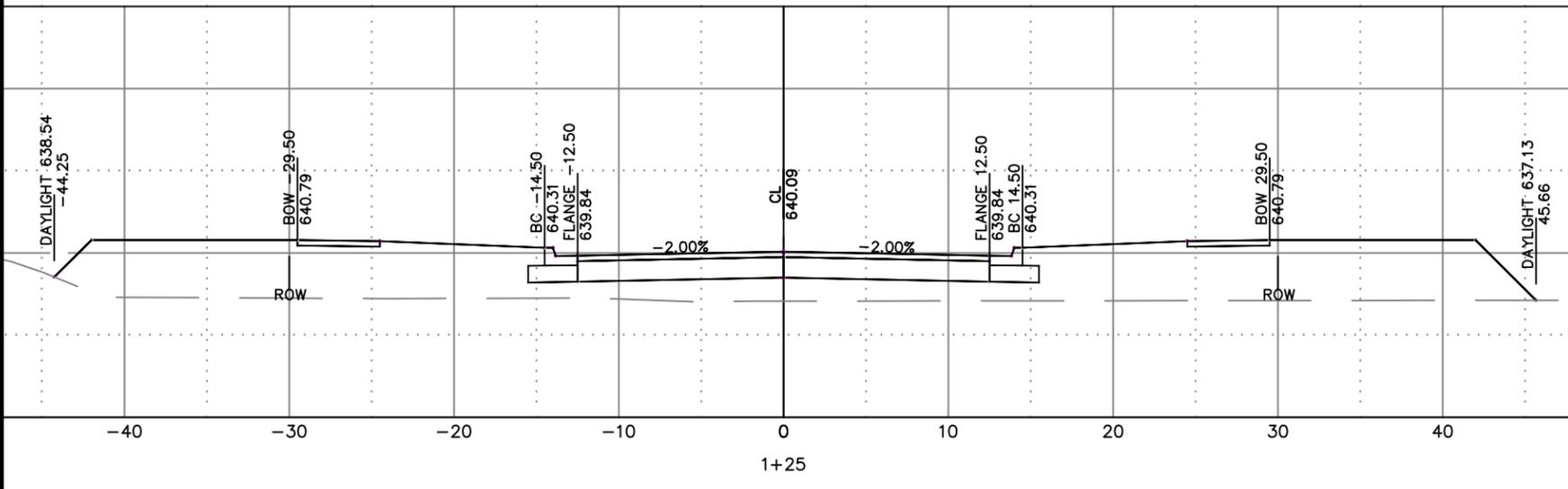
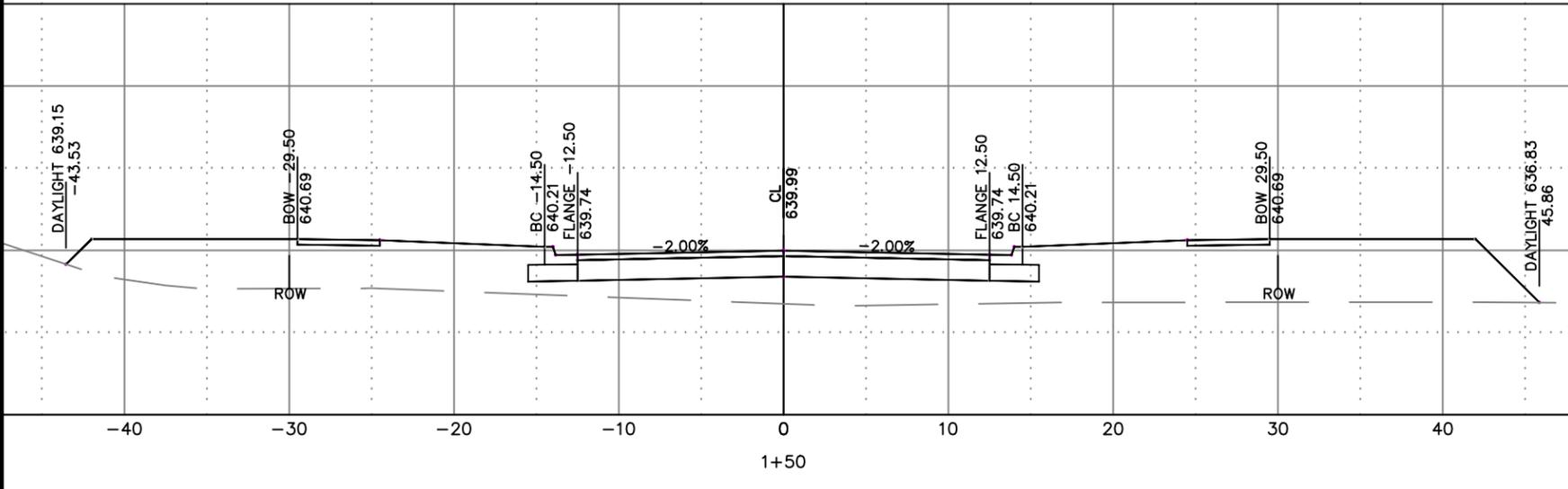
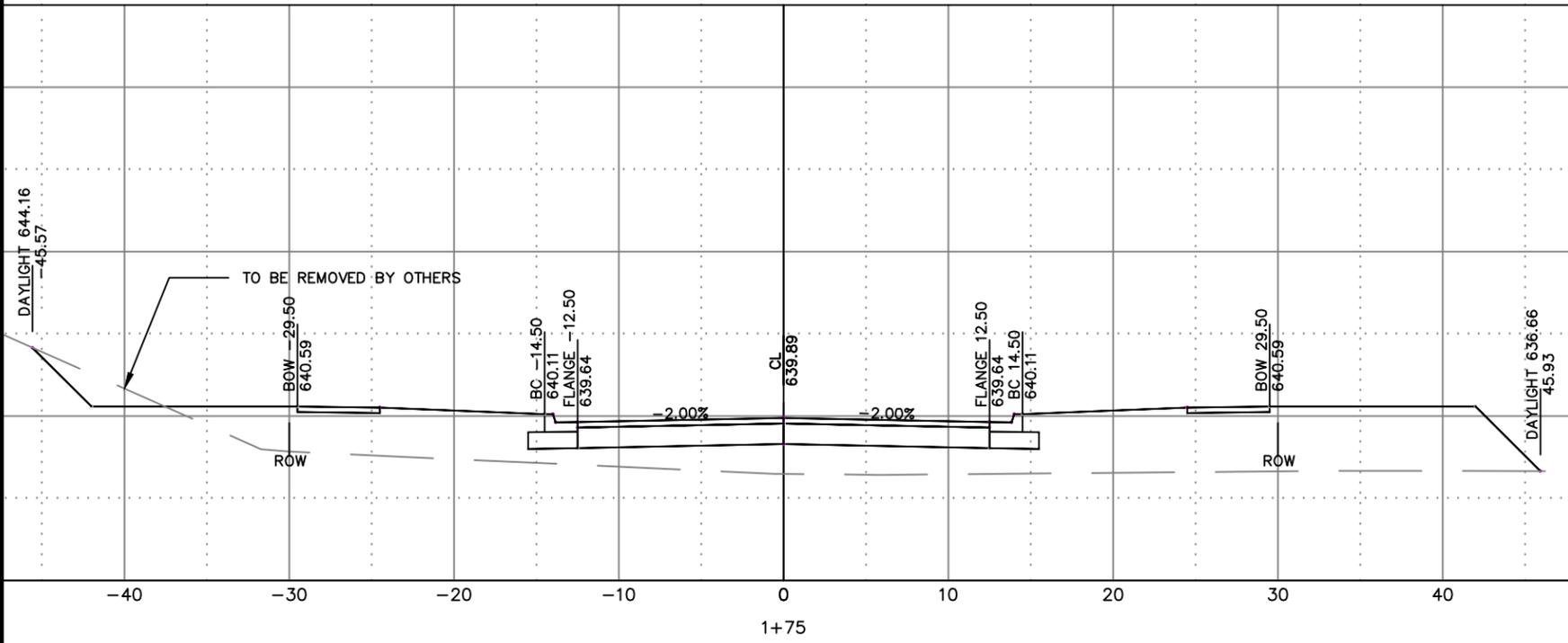
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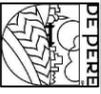
NAME: GARBITT'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

SURVEYED	BY	DATE
DRAWN	MACHIV	08-2018
DESIGNED	SRL	5-2019
CHECKED	EPR	5-2019

NO.	DATE	REVISIONS / ISSUES

REMARKS





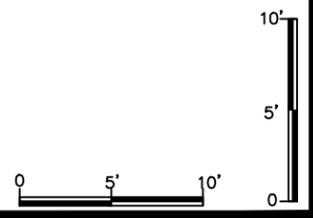
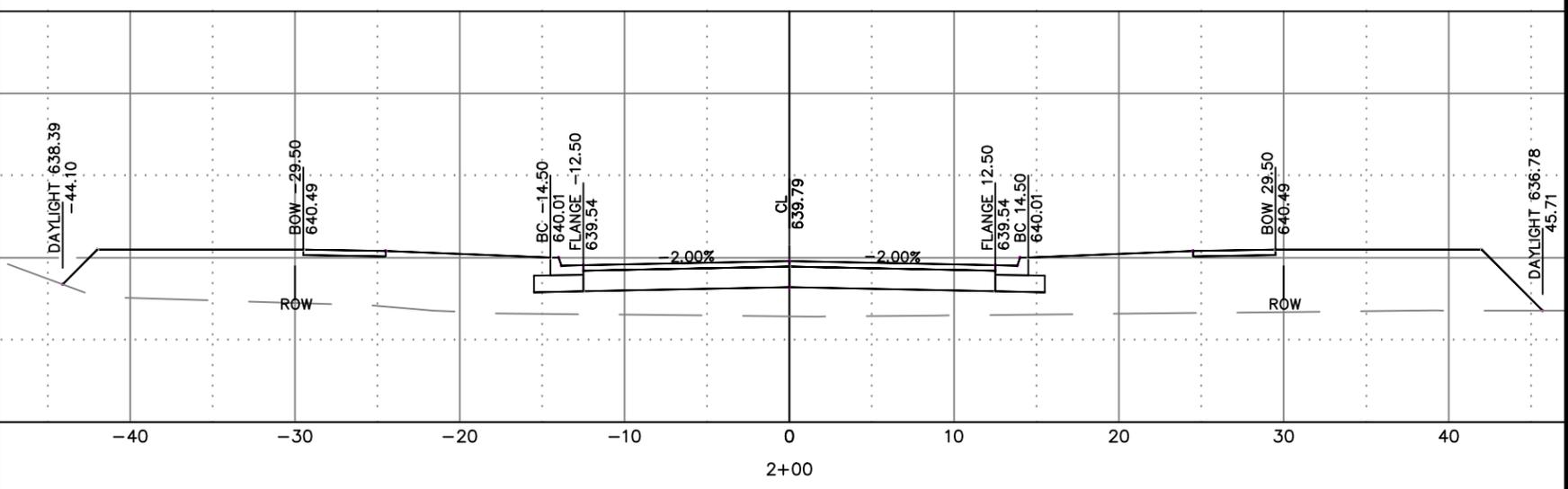
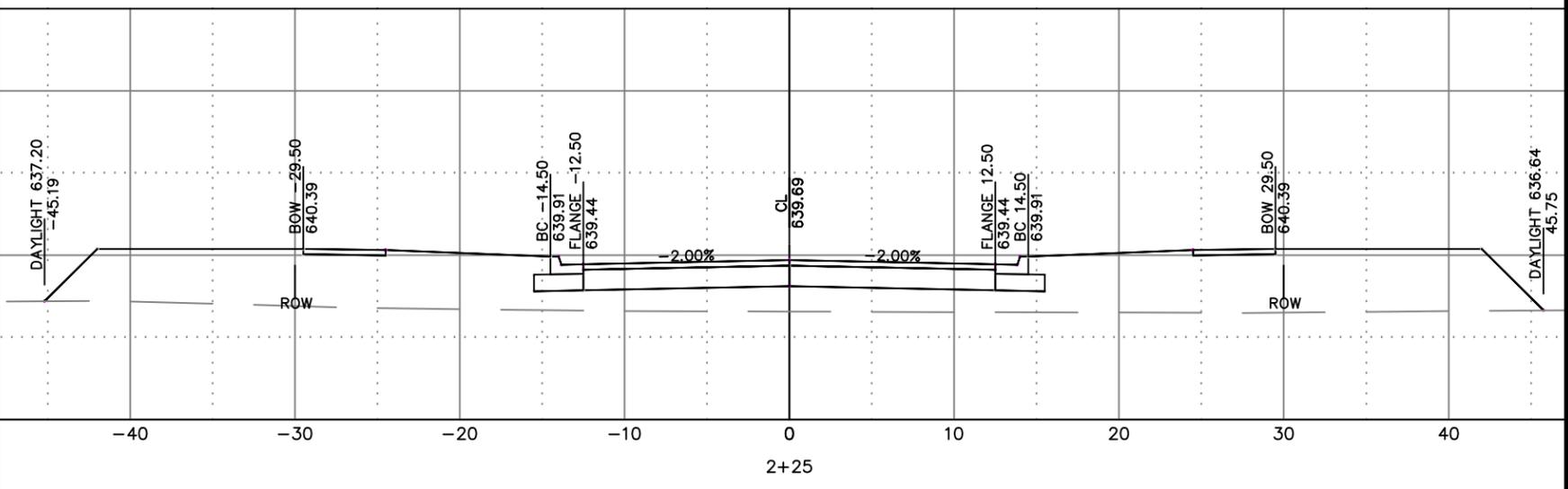
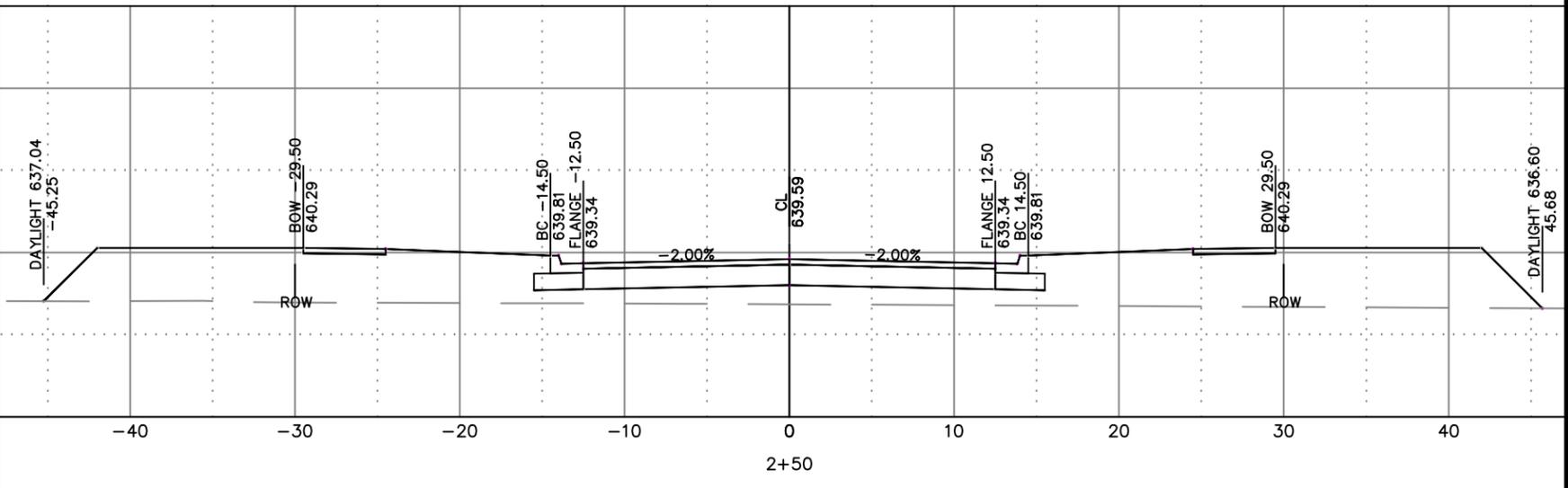
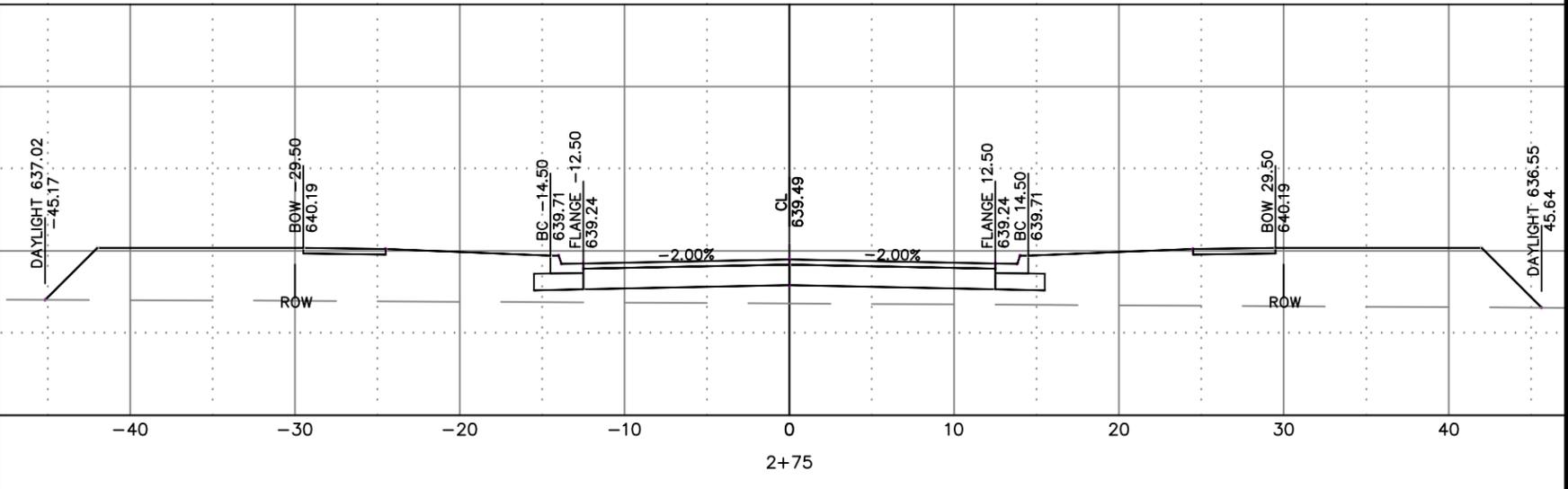
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CROSS SECTIONS

NAME: GARRITY'S GLEN SOUTH
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SURVEYED	BY	DATE
DRAWN	MACHIV	08-2018
DESIGNED	SRL	5-2019
CHECKED	ERR	5-2019

NO.	DATE	BY	REVISIONS / ISSUES



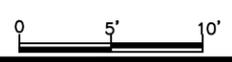
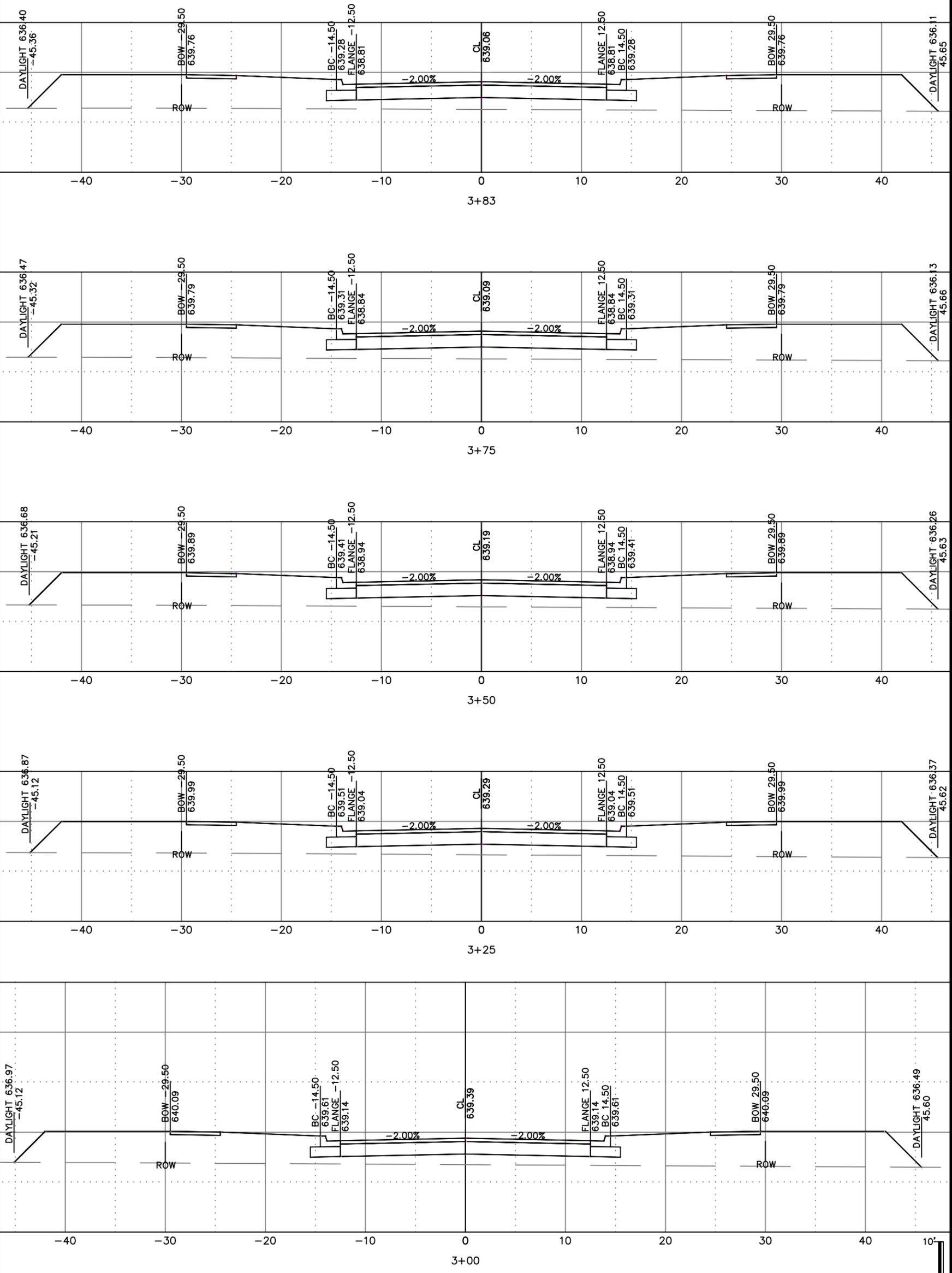


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KILRUSH ROAD
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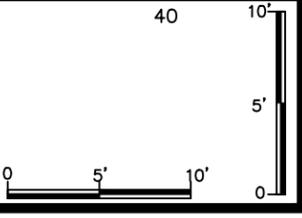
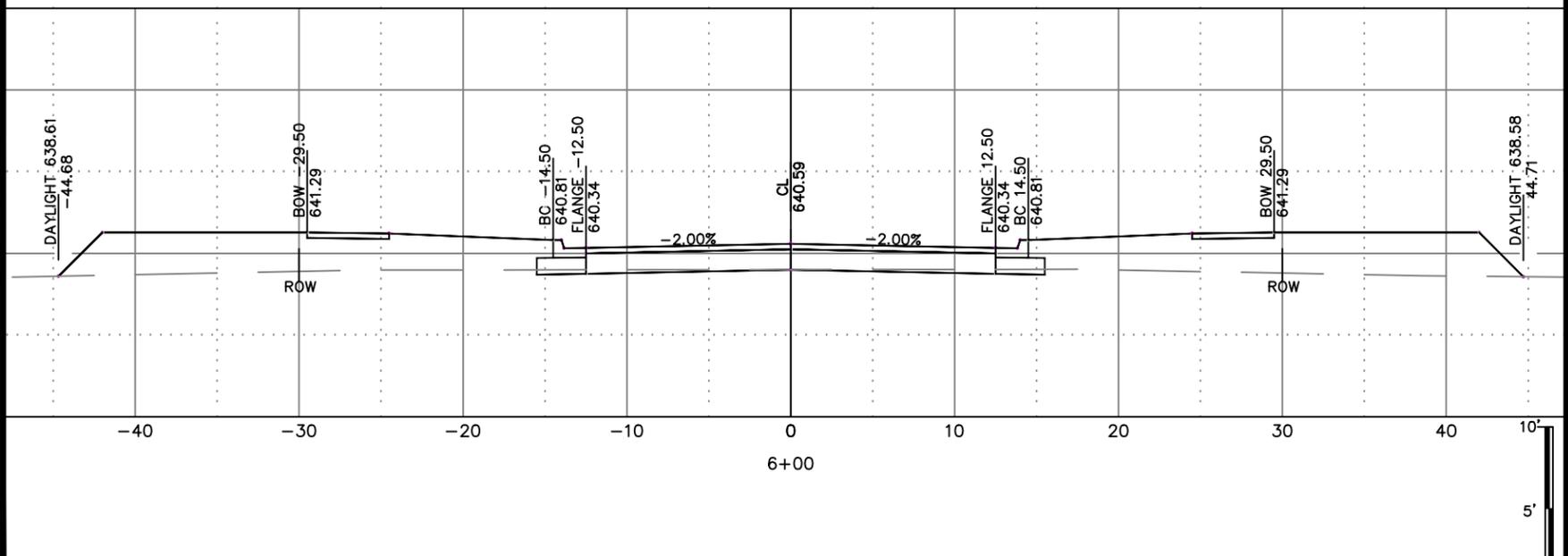
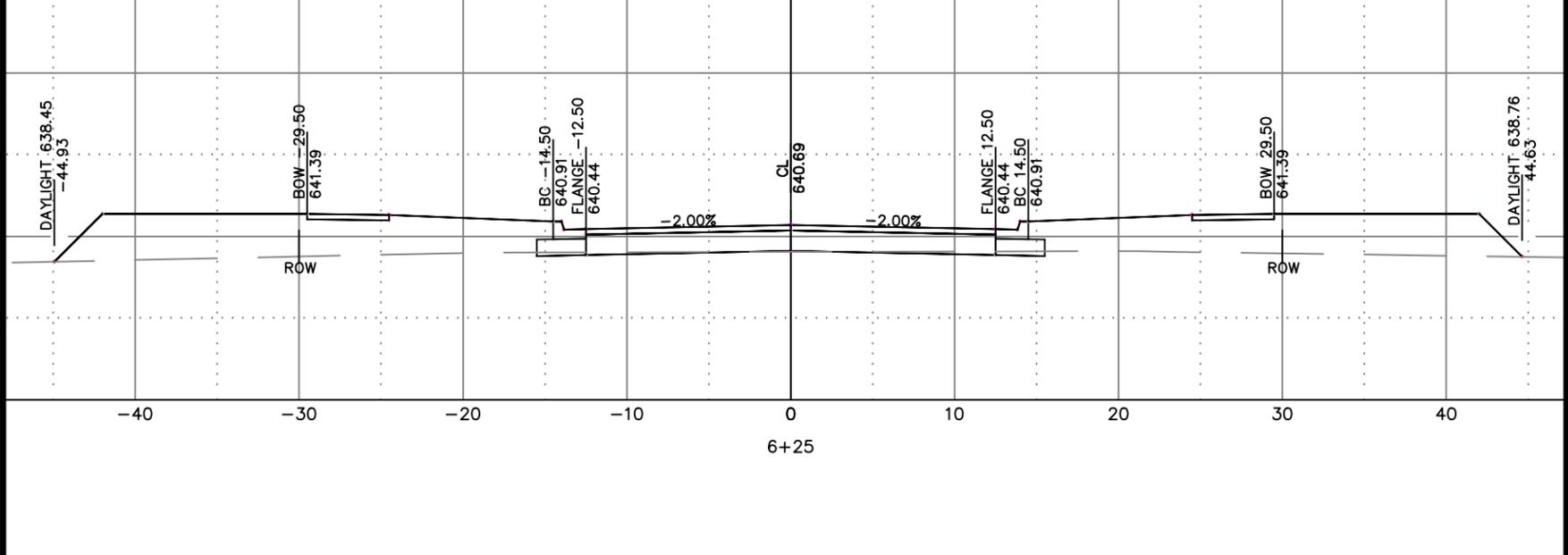
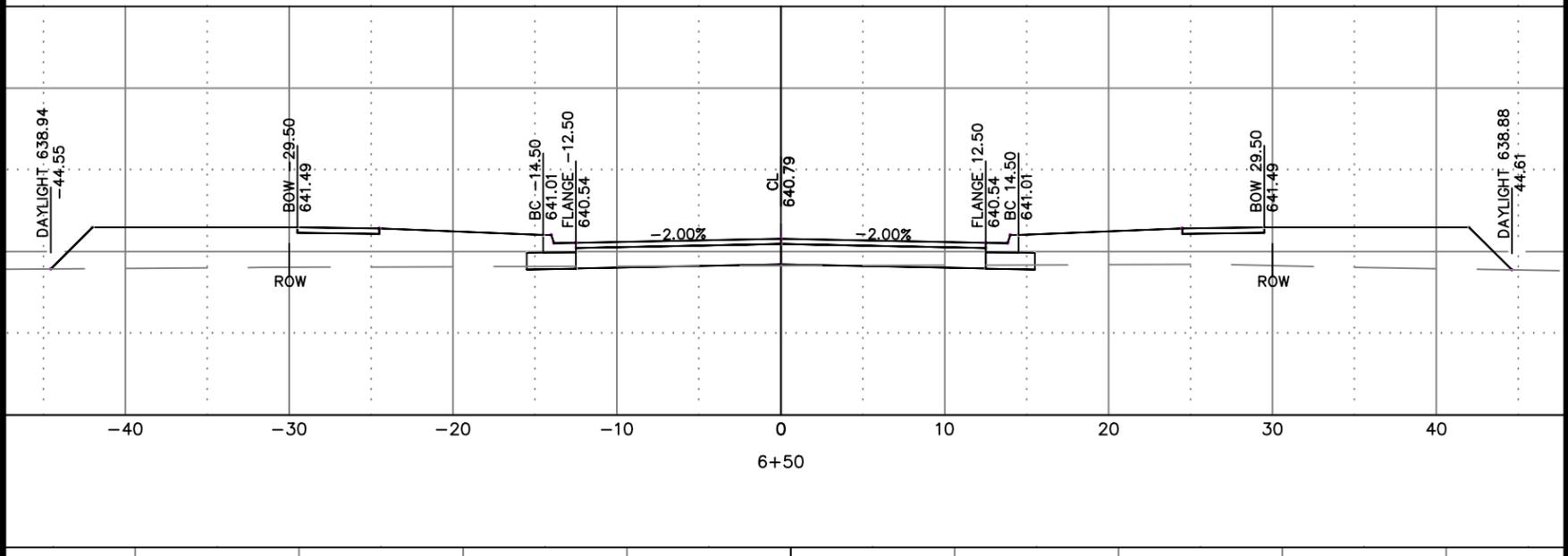
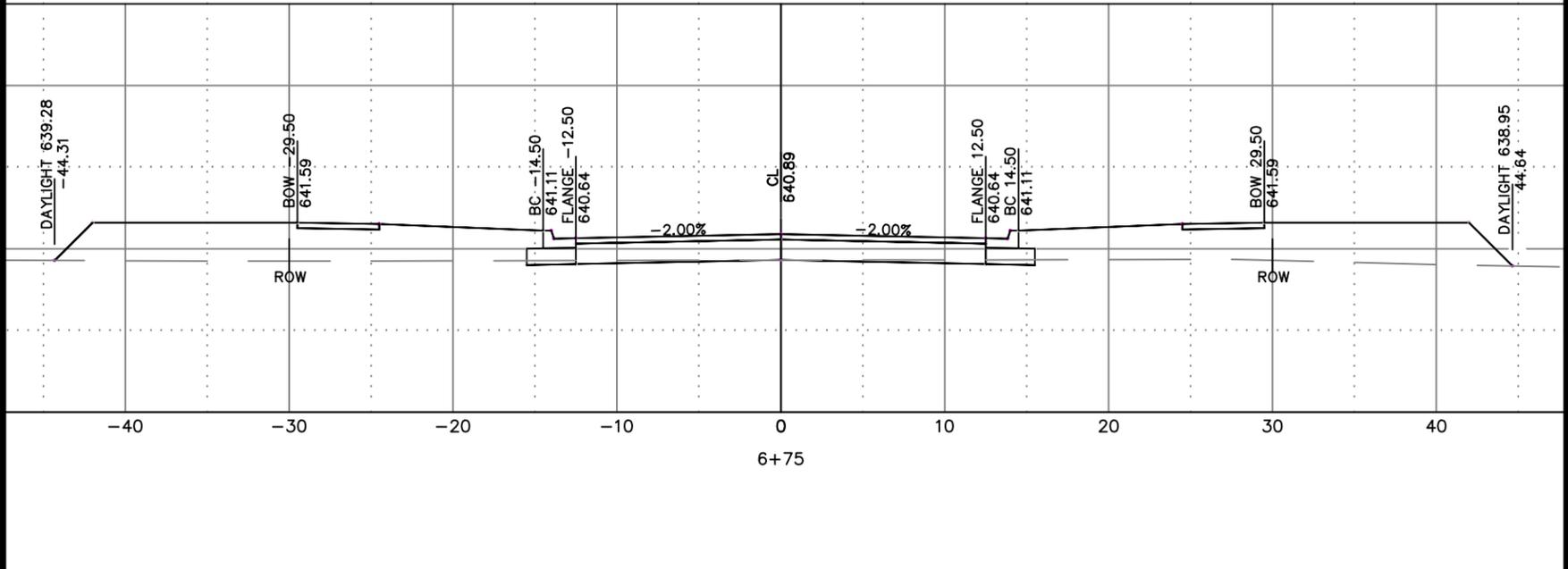
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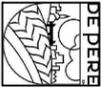
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NAME:	GARRITY'S GLEN SOUTH
PROJECT #	SUBDIVISION CONSTRUCTION
19-11	
BY	DATE
DRAWN	08-2018
DESIGNED	5-2019
CHECKED	5-2019

NO.	DATE	BY	REVISIONS / ISSUES
			REMARKS

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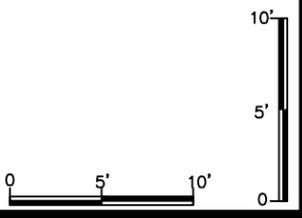
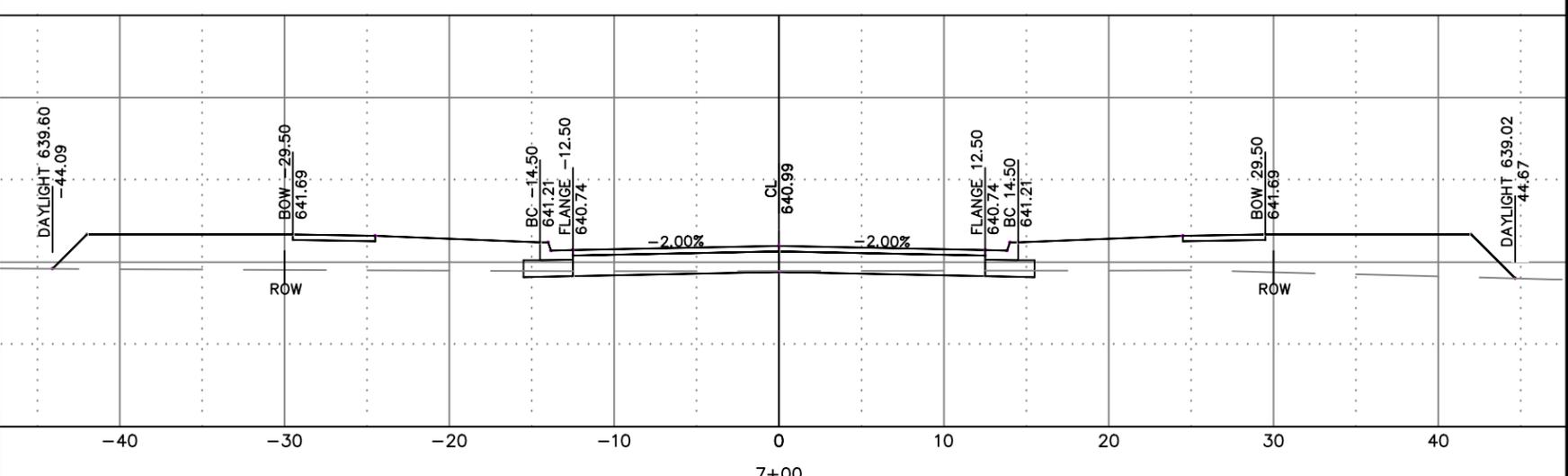
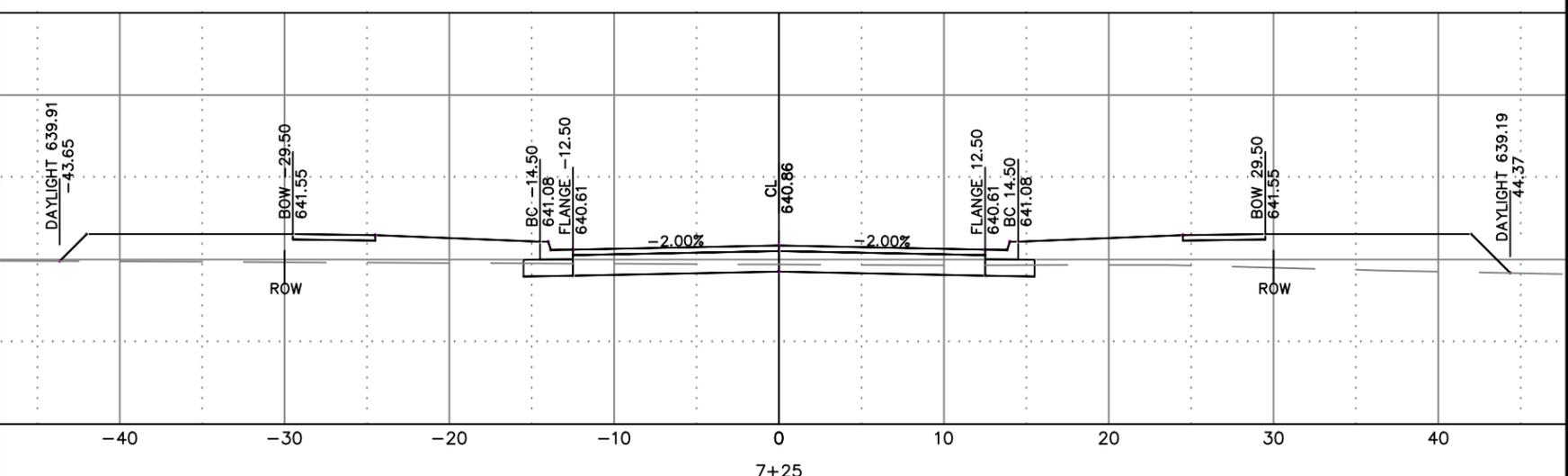
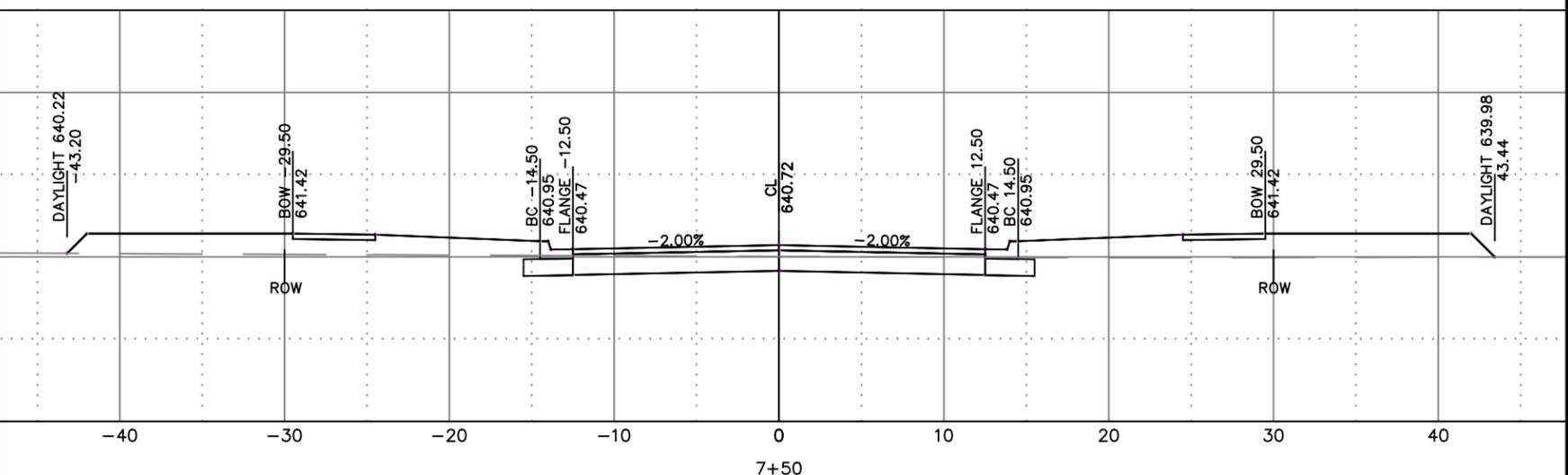
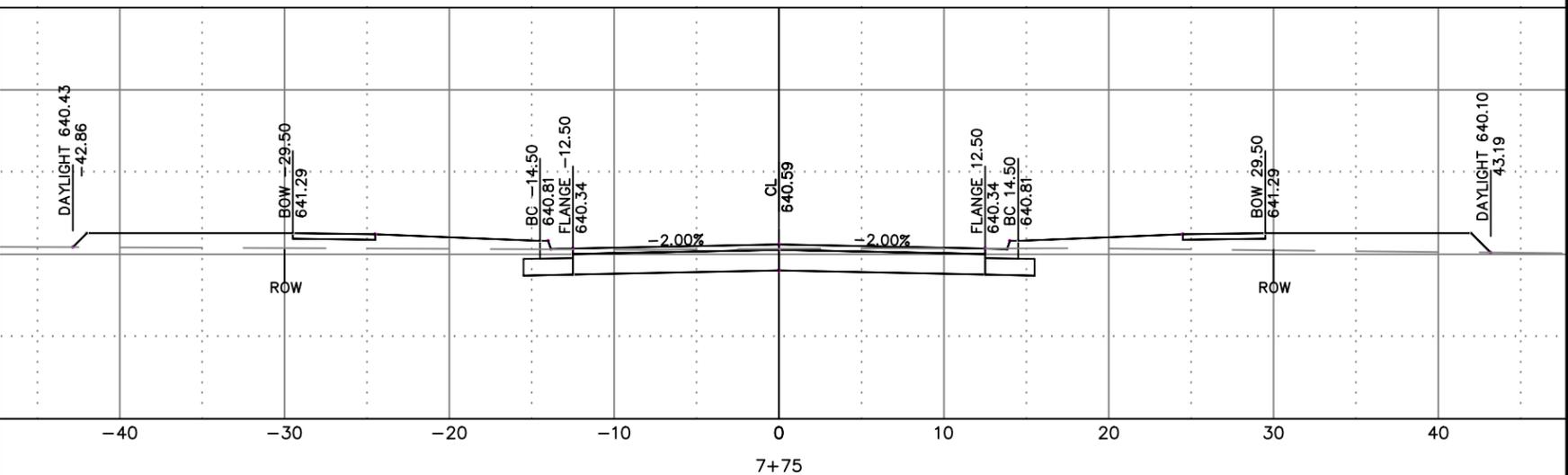
CITY OF DE PERE
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 OFFICE 920-339-4061 FAX 920-339-4071

KILRUSH ROAD
 CROSS SECTIONS

NAME: GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

SURVEYED	BY	DATE
DRAWN	MACHIV	08-2018
DESIGNED	SRL	5-2019
CHECKED	EPK	5-2019

NO.	DATE	REVISIONS / ISSUES



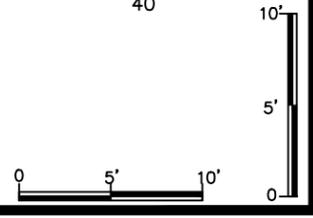
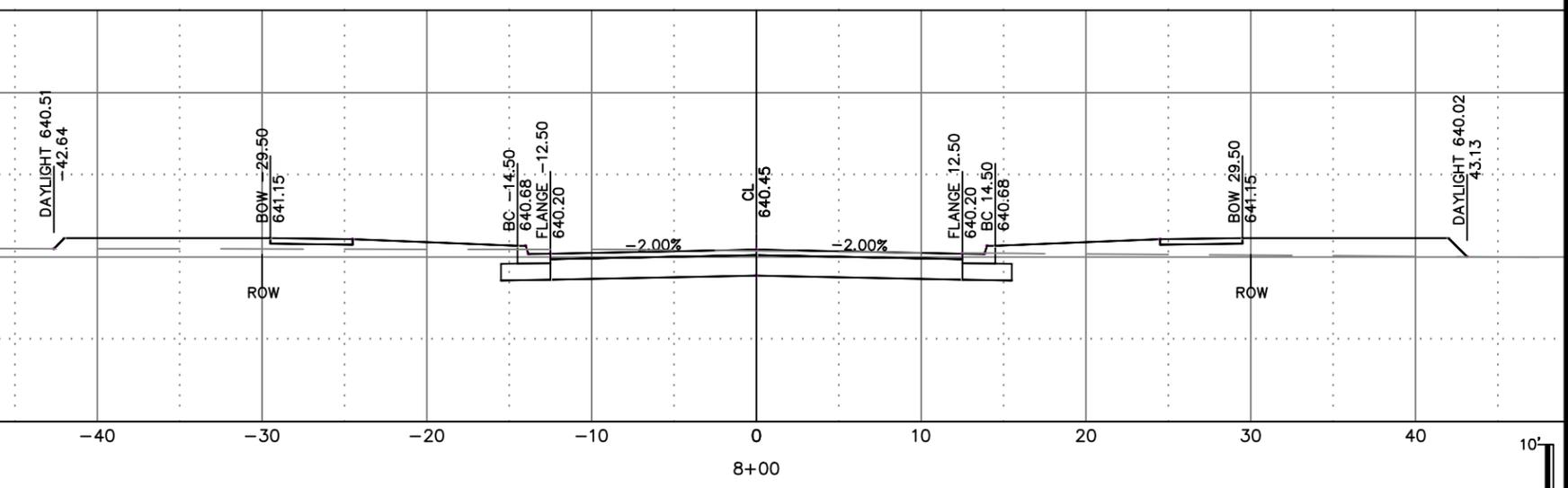
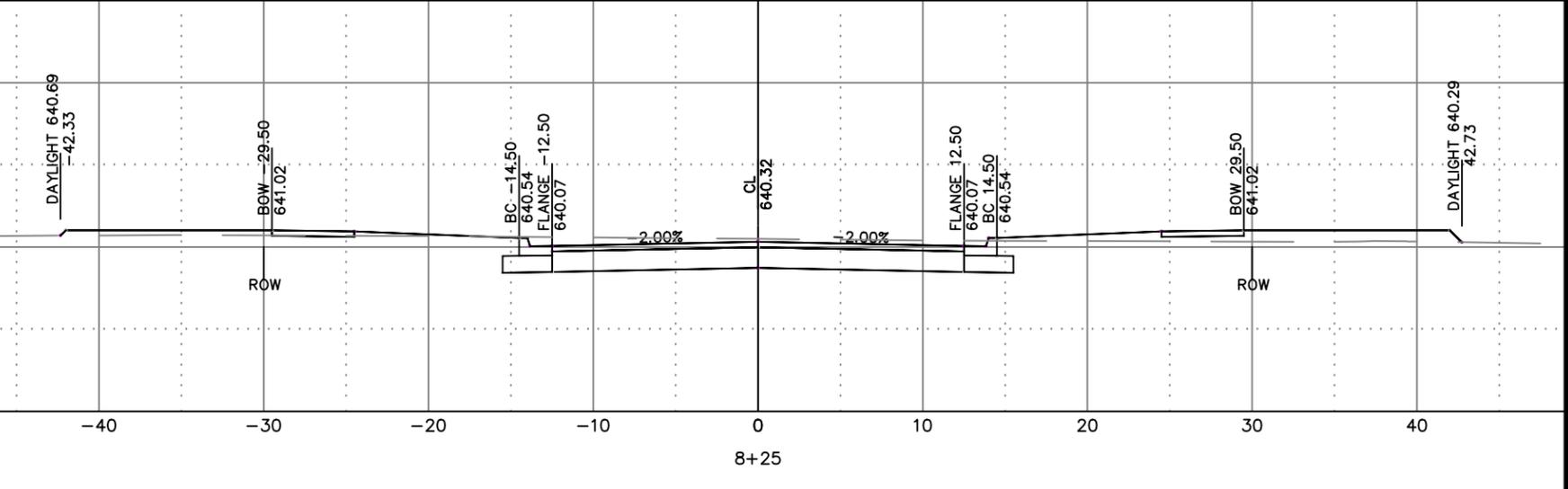
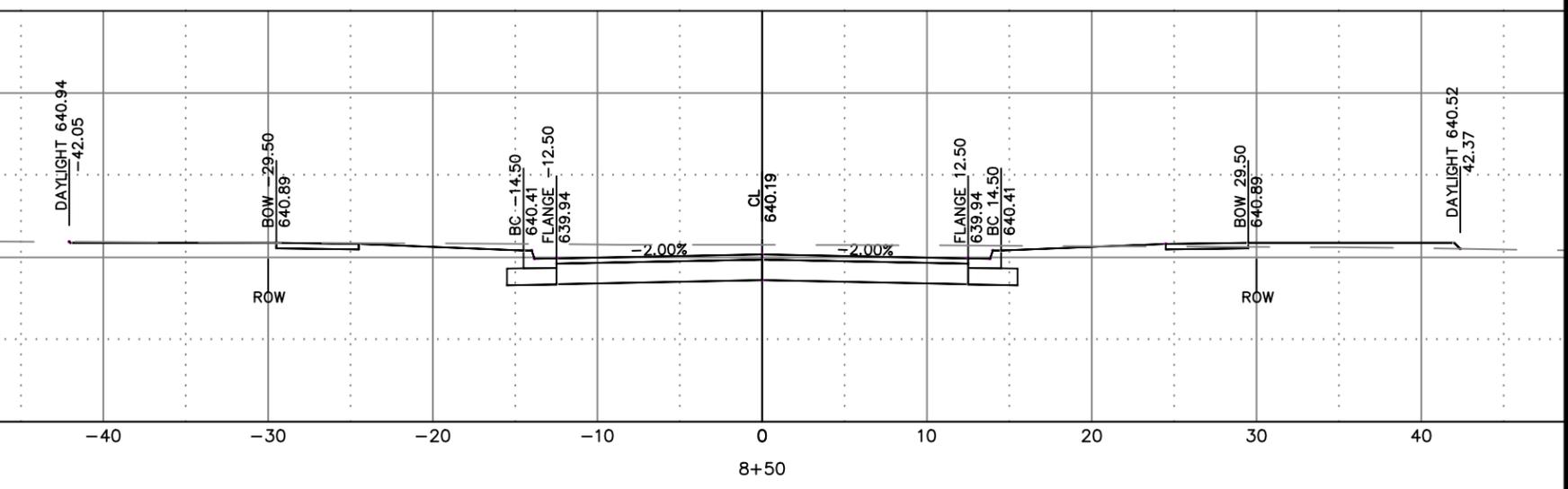
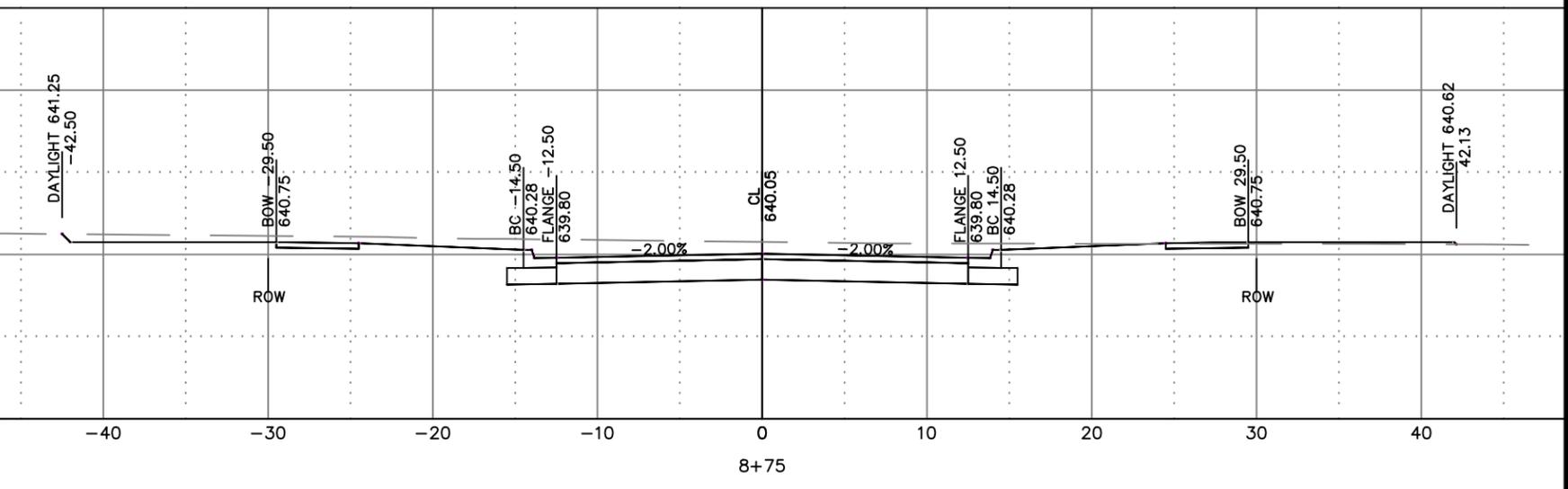


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 OFFICE 920-339-4061 FAX 920-339-4071

KILRUSH ROAD
 CROSS SECTIONS

NAME: GARRITY'S GLEN SOUTH	BY: MACHIV	DATE: 08-2018
PROJECT # 19-11	DESIGNED: SRL	DATE: 5-2019
	CHECKED: EFR	DATE: 5-2019

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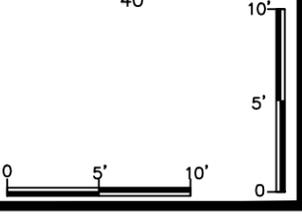
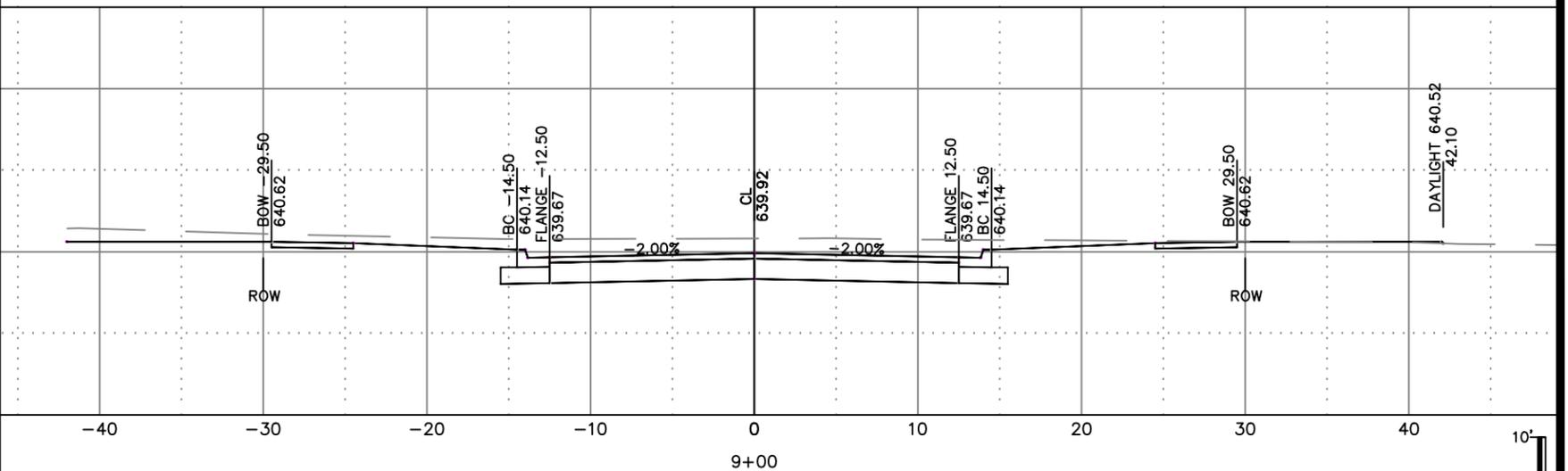
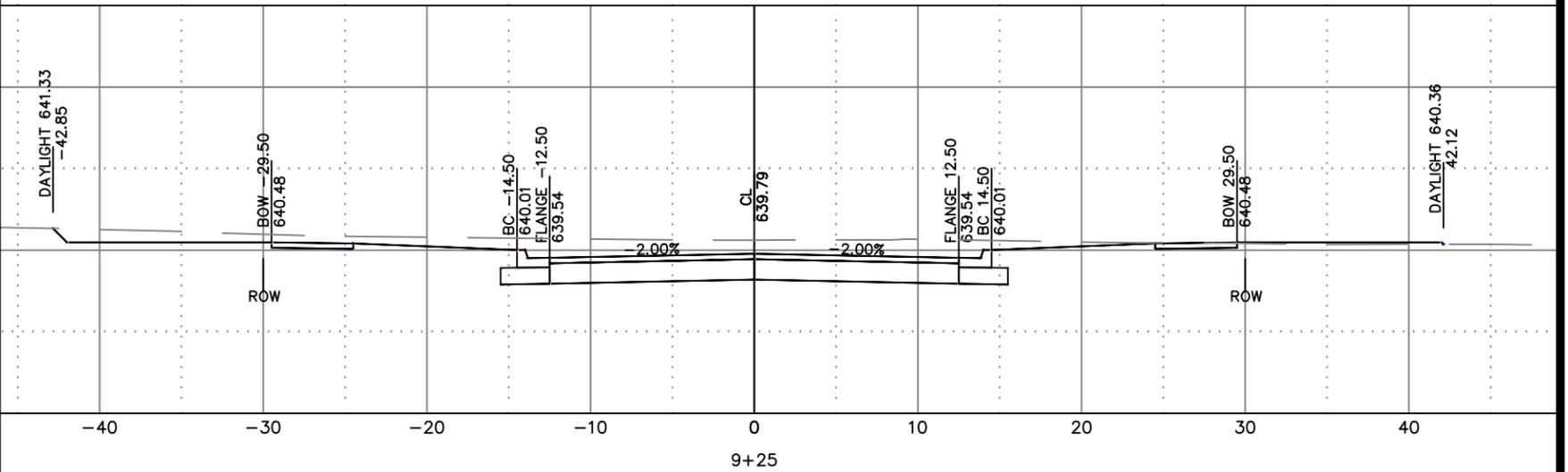
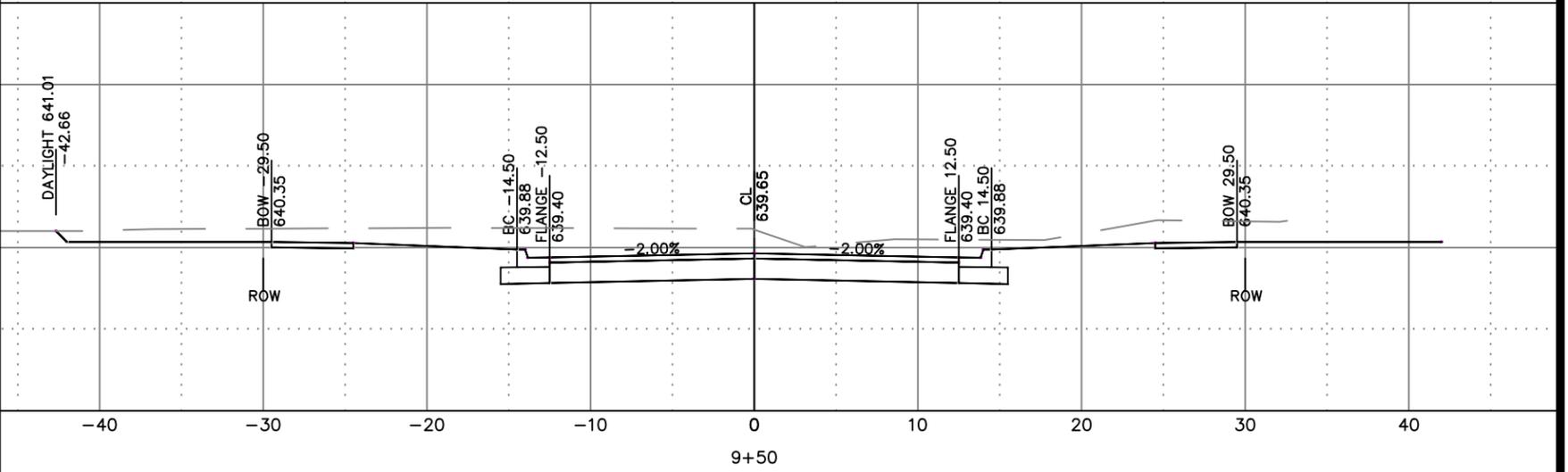
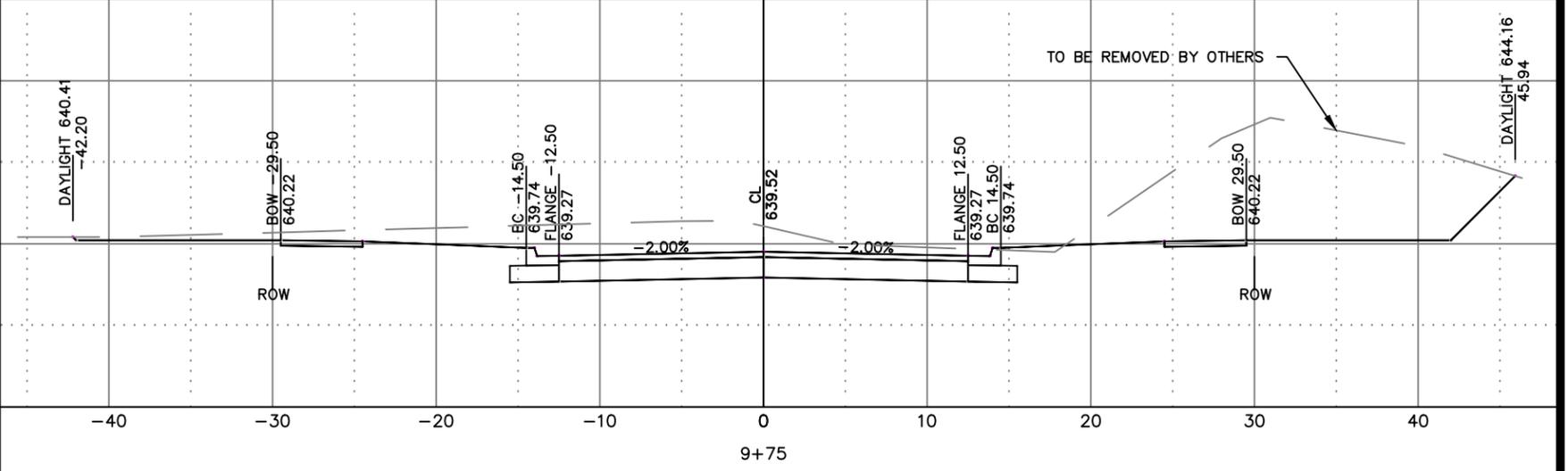
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NAME: GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

SURVEYED	BY	DATE
DESIGNED	MAGUIH	08-2018
CHECKED	SRL	5-2019
	EM	5-2019

NO.	DATE	BY	REVISIONS / ISSUES

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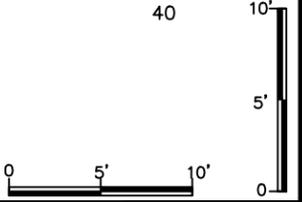
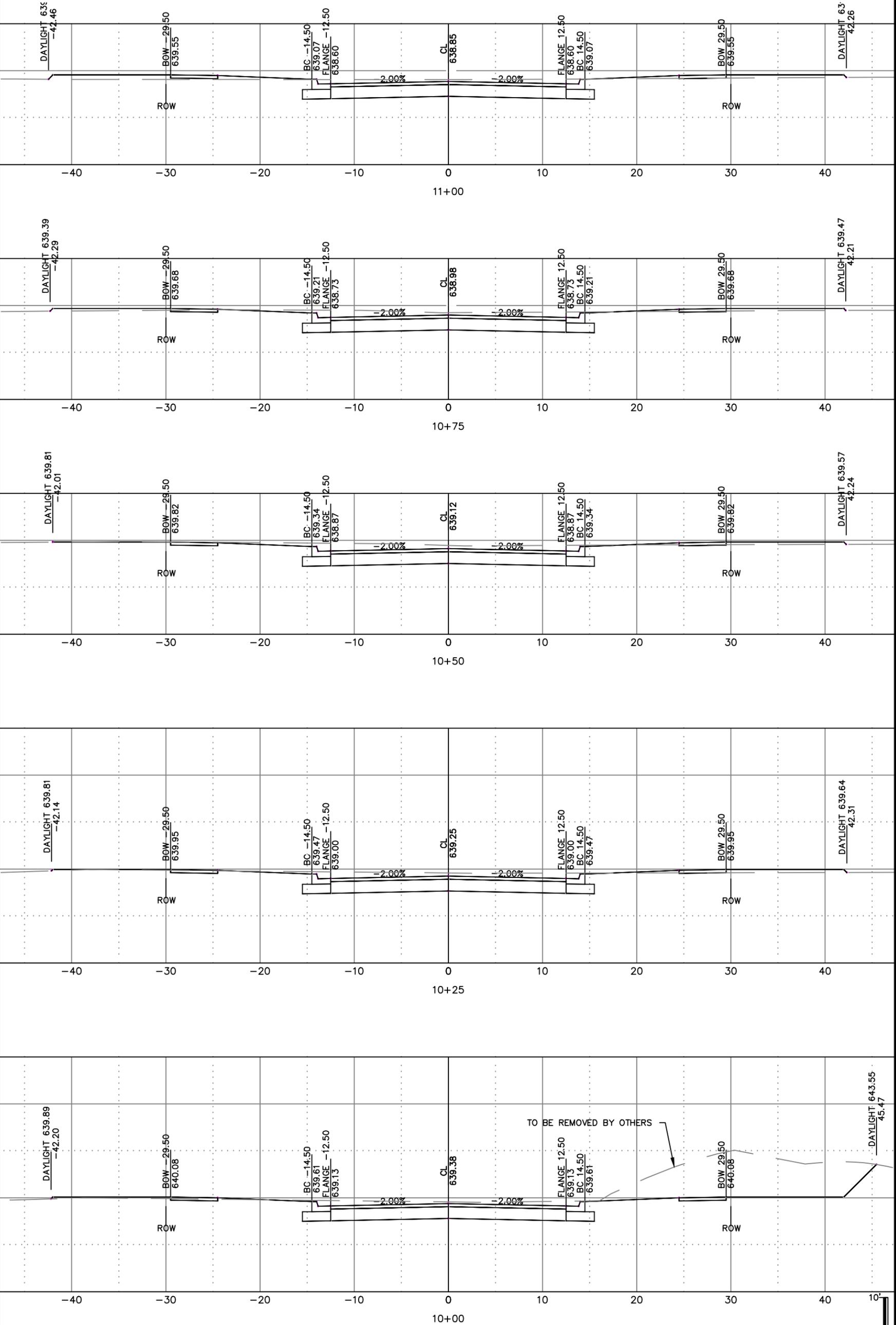
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KILRUSH ROAD
CROSS SECTIONS

NAME:	GARRITY'S GLEN SOUTH
PROJECT #	SUBDIVISION CONSTRUCTION
19-11	
DRAWN	BY
DESIGNED	DATE
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NO.	DATE	BY	REVISIONS / ISSUES

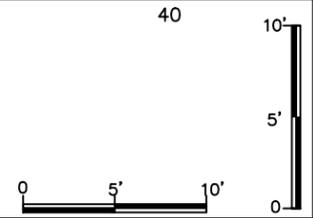
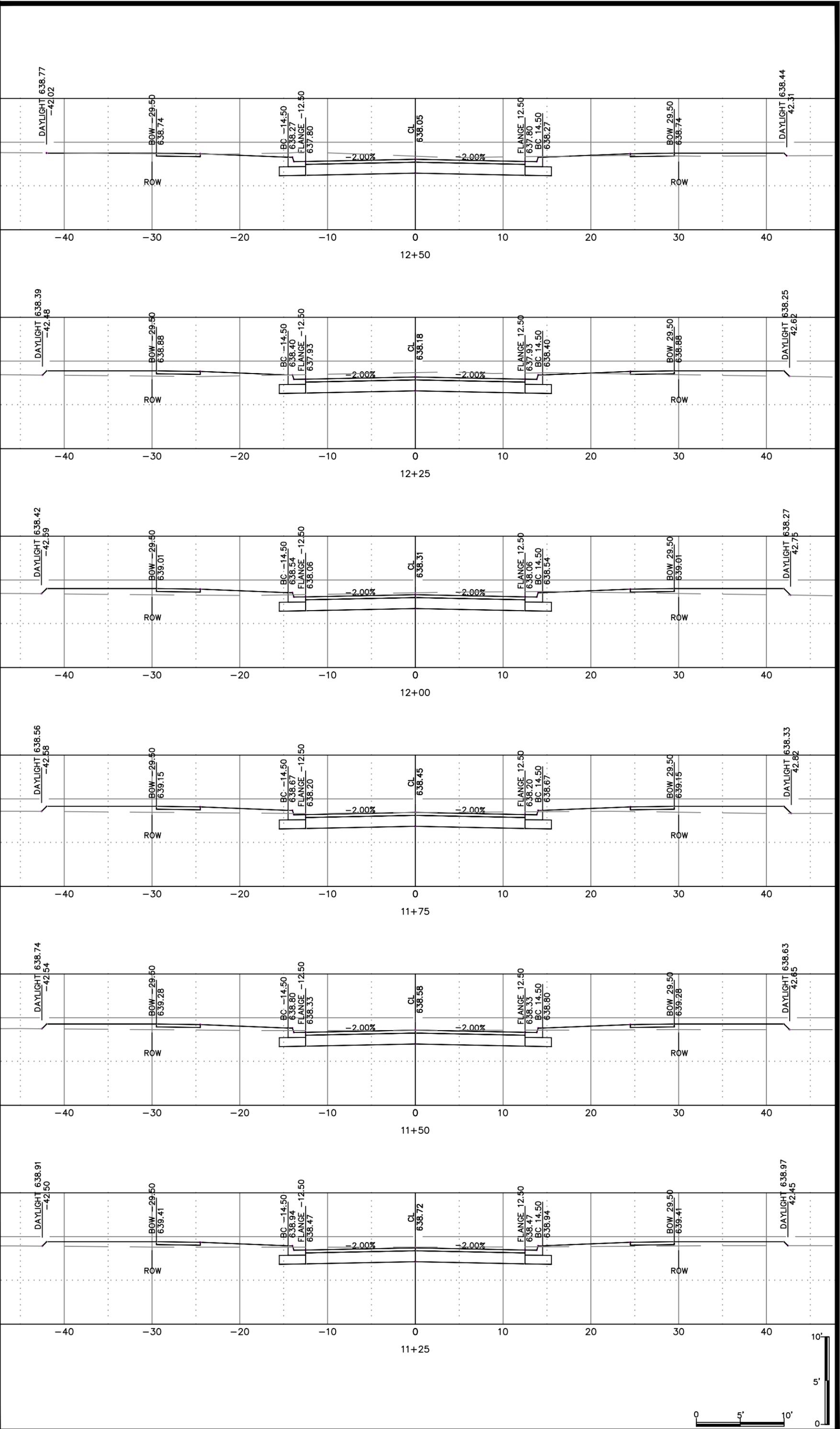




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KILRUSH ROAD
CROSS SECTIONS

NAME: GARRITY'S GLEN SOUTH	BY: MACHIV	DATE: 08-2018
PROJECT # 19-11	DESIGNED: EFR	DATE: 5-2019
SUBDIVISION CONSTRUCTION	CHECKED:	
SURVEYED:	DATE: 08-2018	
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BY _____	DATE _____	REMARKS





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TIPPERARY TRAIL
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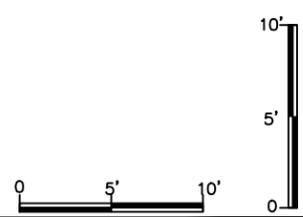
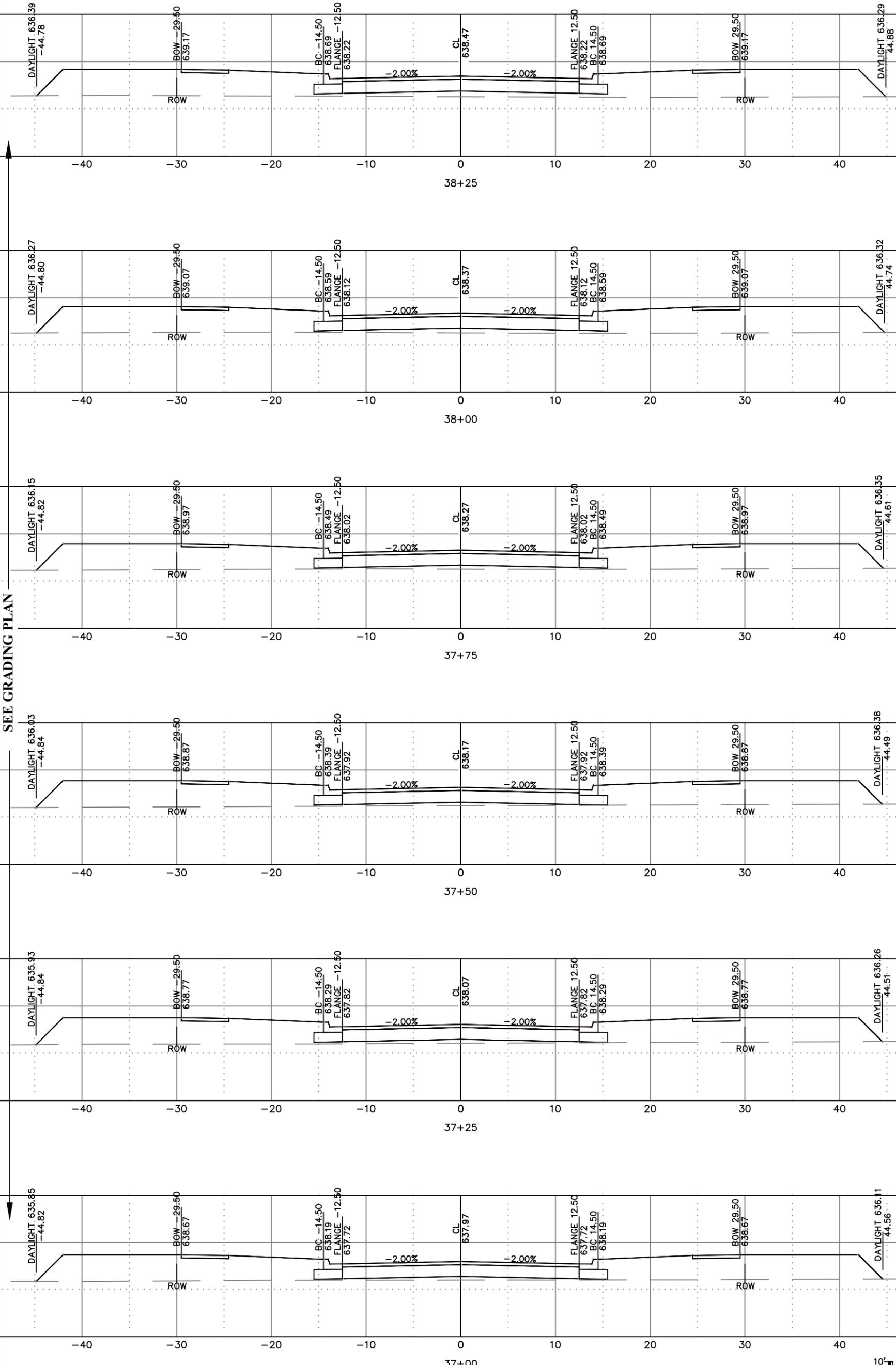
NAME: GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION

PROJECT #	19-11
DRAWN	SRL
DESIGNED	SRL
CHECKED	EPB

BY	DATE
MAOHV	06-2018
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SRL	5-2019
EPB	5-2019

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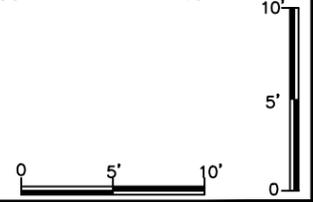
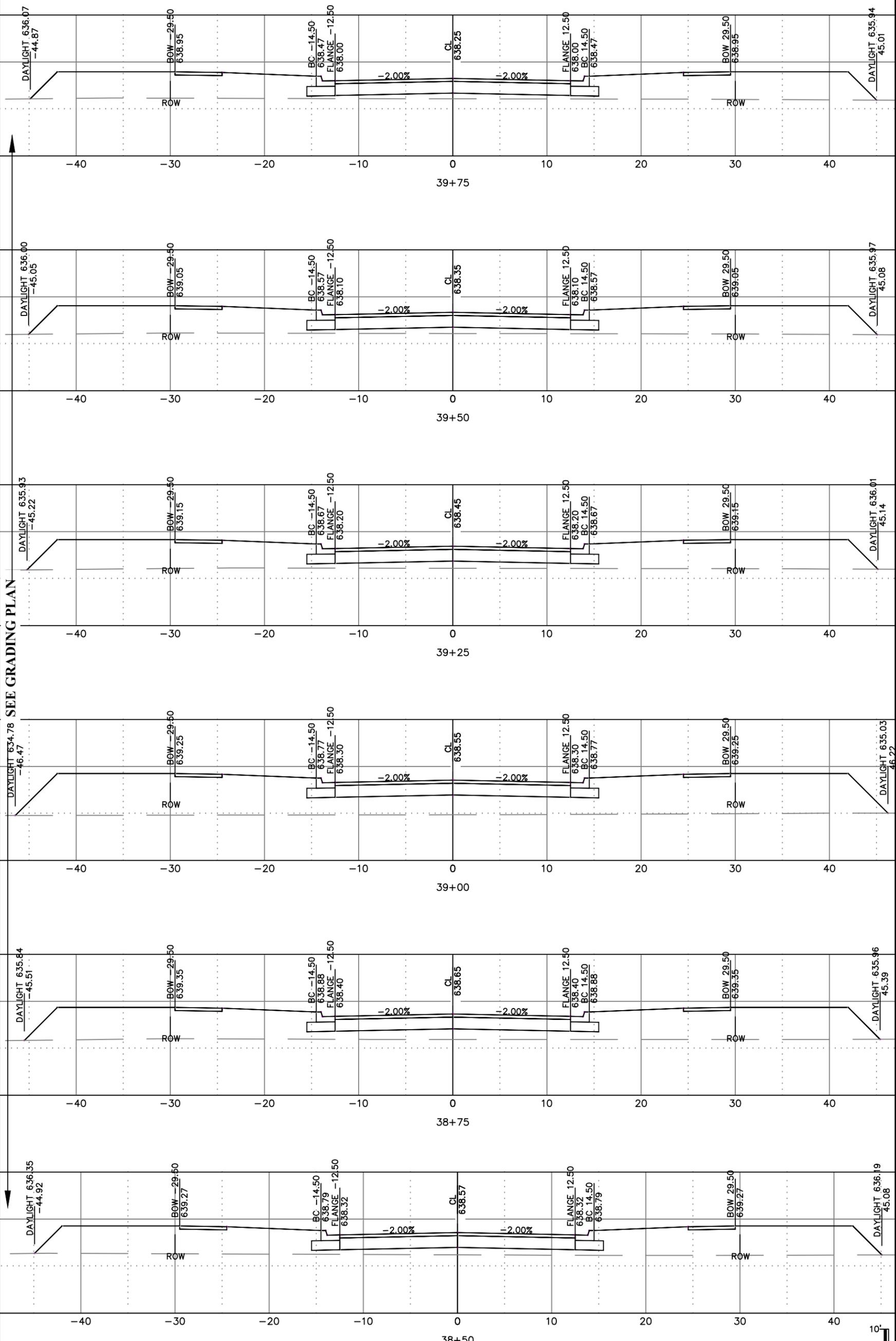
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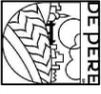
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CROSS SECTIONS

NAME: GARRETT'S GLEN SOUTH SUBDIVISION CONSTRUCTION	PROJECT #
19-11	
SURVEYED	BY
DRAWN	DATE
DESIGNED	NO.
CHECKED	DATE
	NO.
	DATE

REVISIONS / ISSUES	REMARKS





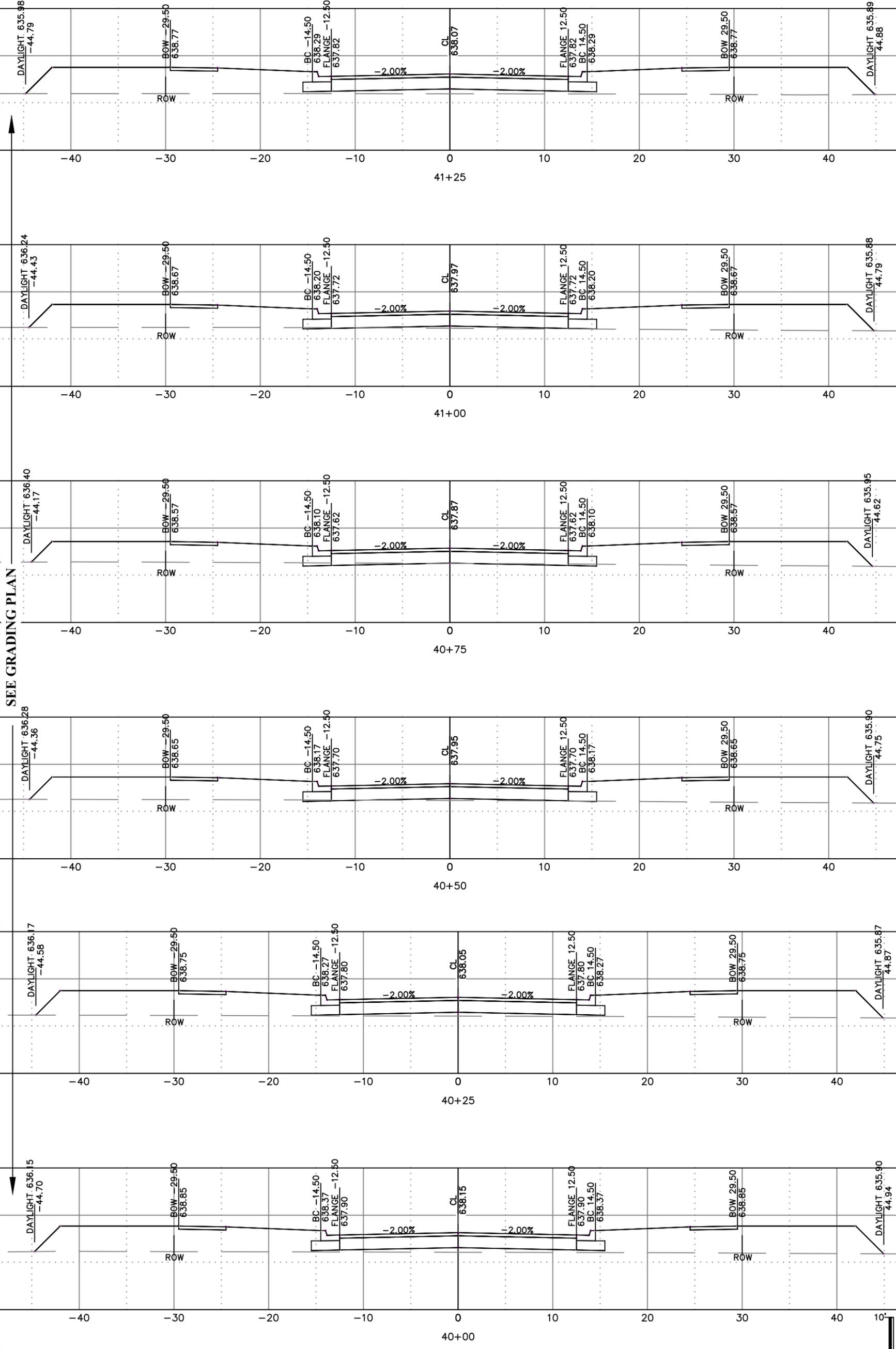
CITY OF DE PERE
 ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
 OFFICE 920-339-4061 FAX 920-339-4071

TIPPERARY TRAIL
 CROSS SECTIONS

NAME: GARBITT'S GEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

NO.	DATE	BY	REVISIONS / ISSUES

PAGE NO. **C329**



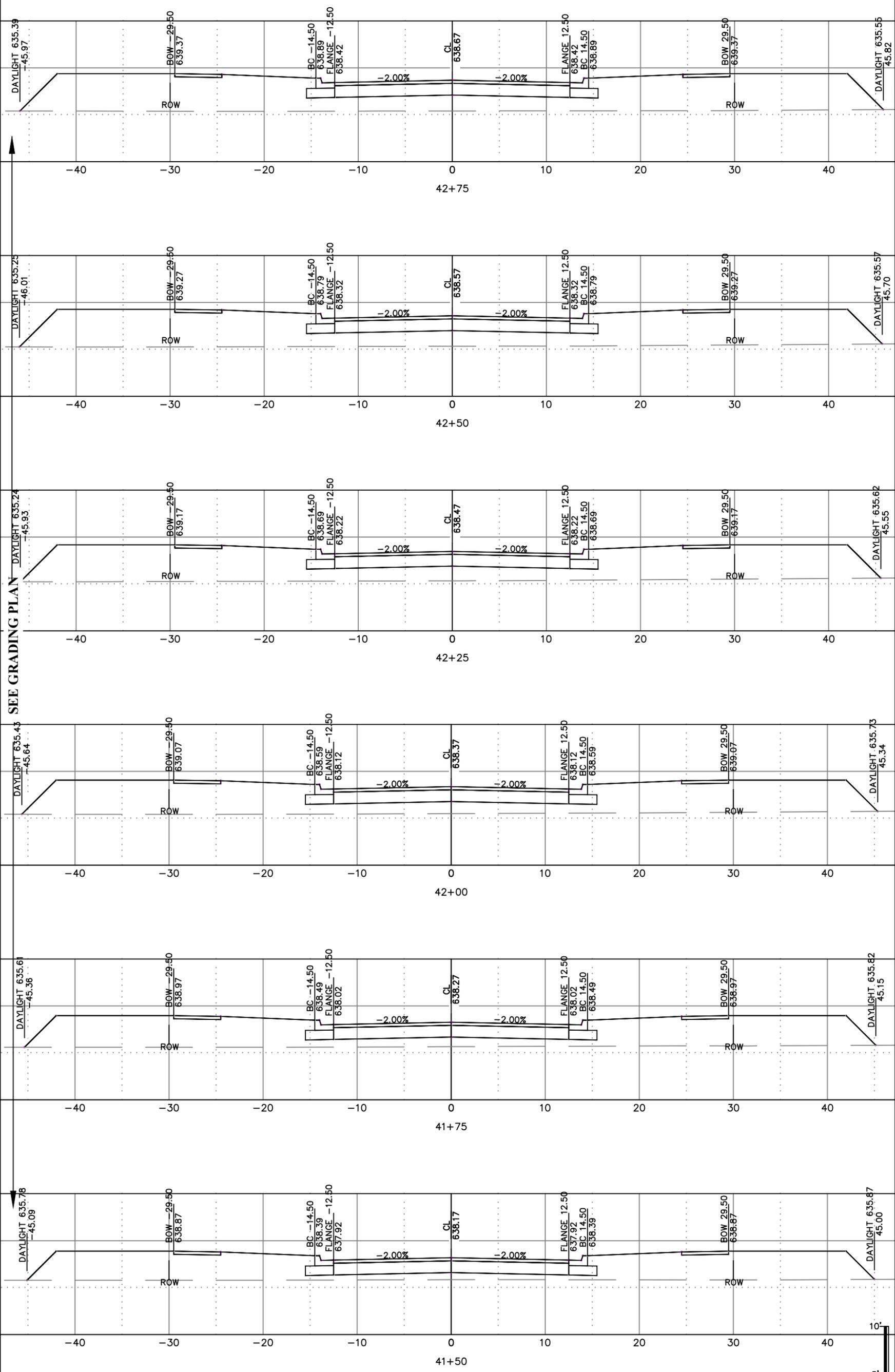


ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
 OFFICE 920-339-4061 FAX 920-339-4071

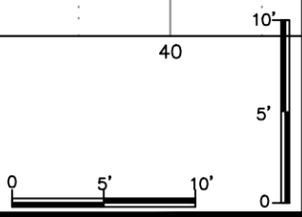
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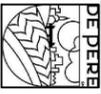
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SUBDIVISION:	CONSTRUCTION
PROJECT #	19-11
DATE:	08-2018
BY:	MAJAV
DESIGNED:	SRL
CHECKED:	EPR

NO.	DATE	BY	REVISIONS / ISSUES



SEE GRADING PLAN



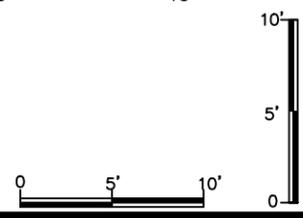
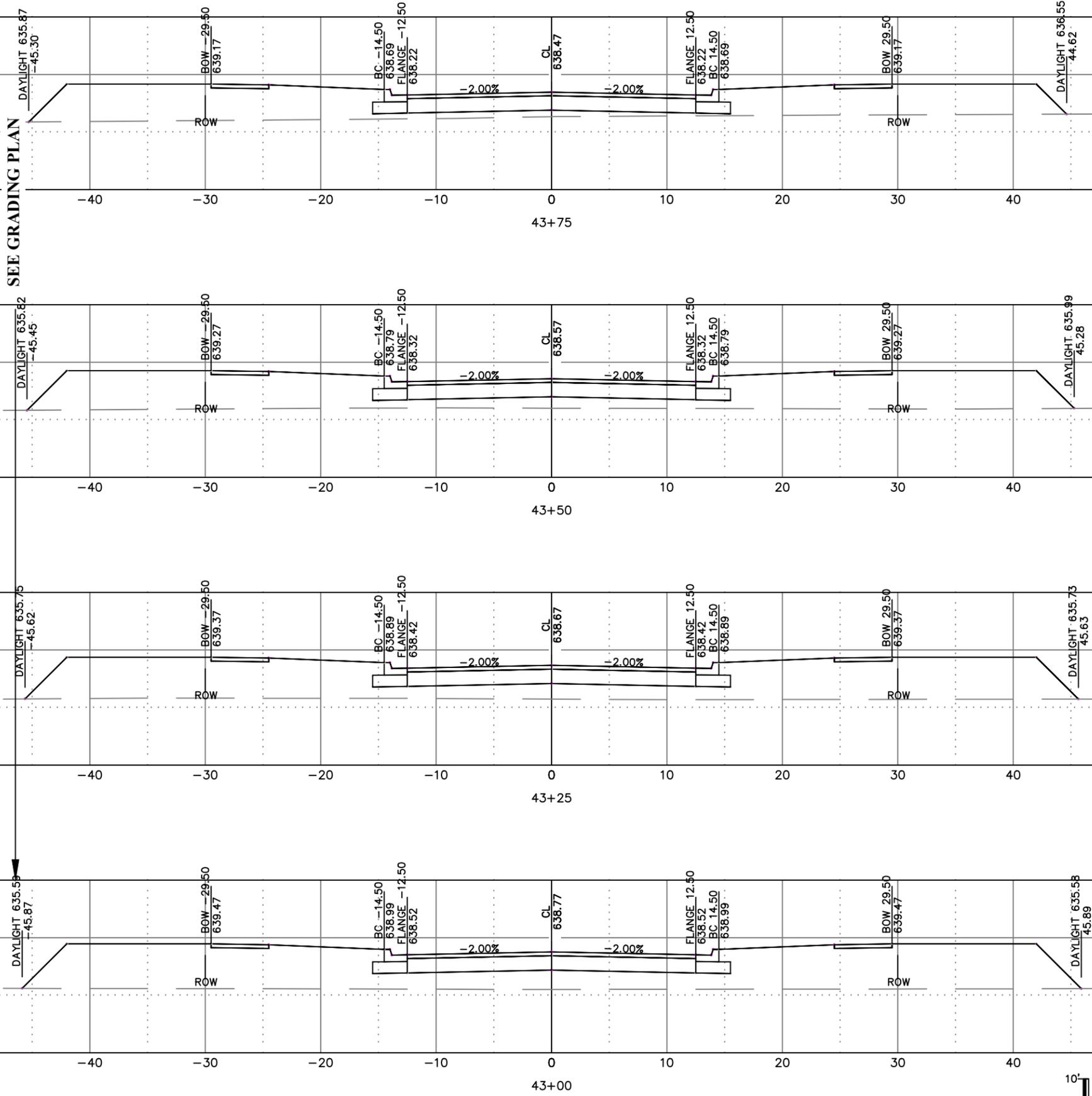


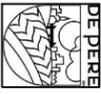
CITY OF DE PERE
 ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
 OFFICE 920-339-4061 FAX 920-339-4071

TIPPERARY TRAIL
CROSS SECTIONS

NAME: GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

NO.	DATE	BY	REVISIONS / ISSUES





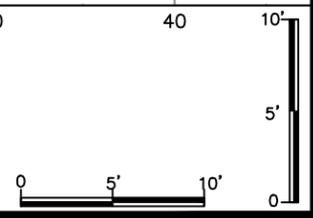
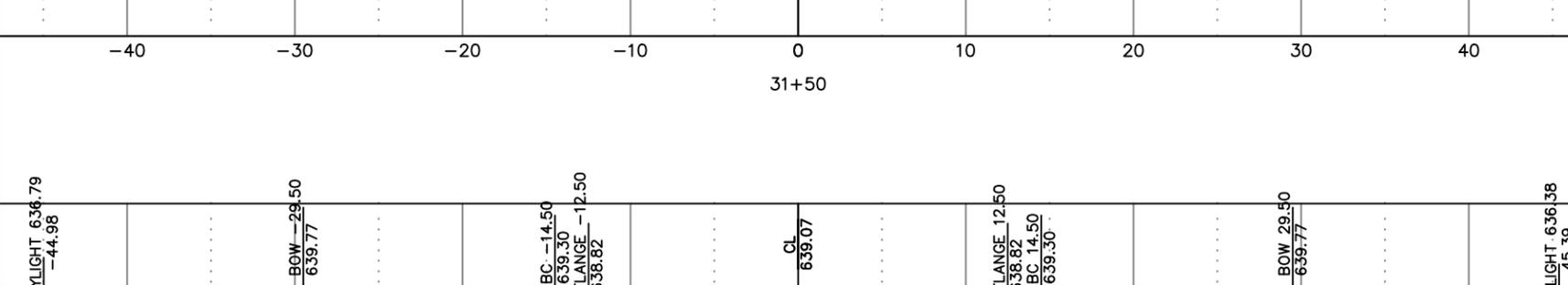
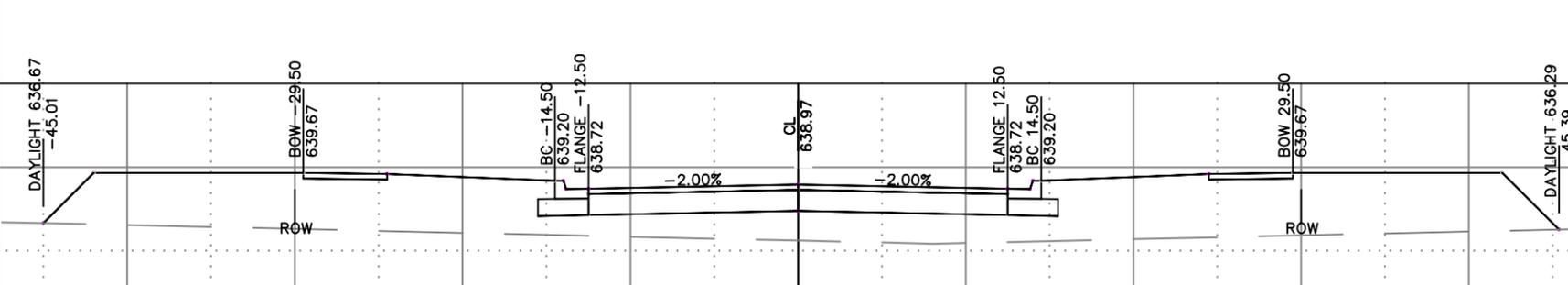
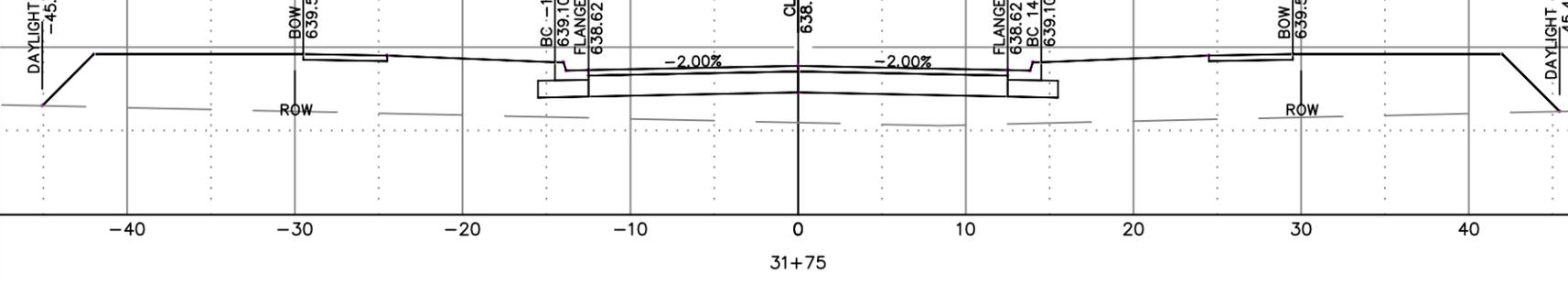
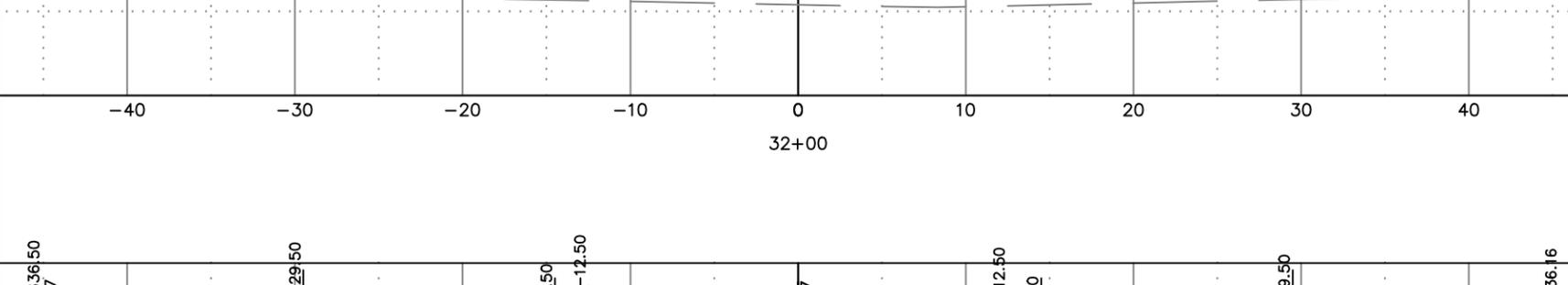
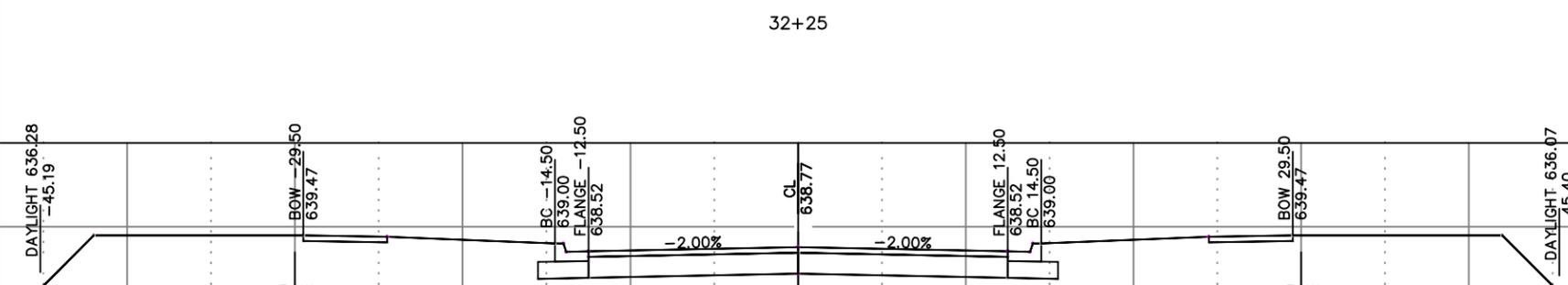
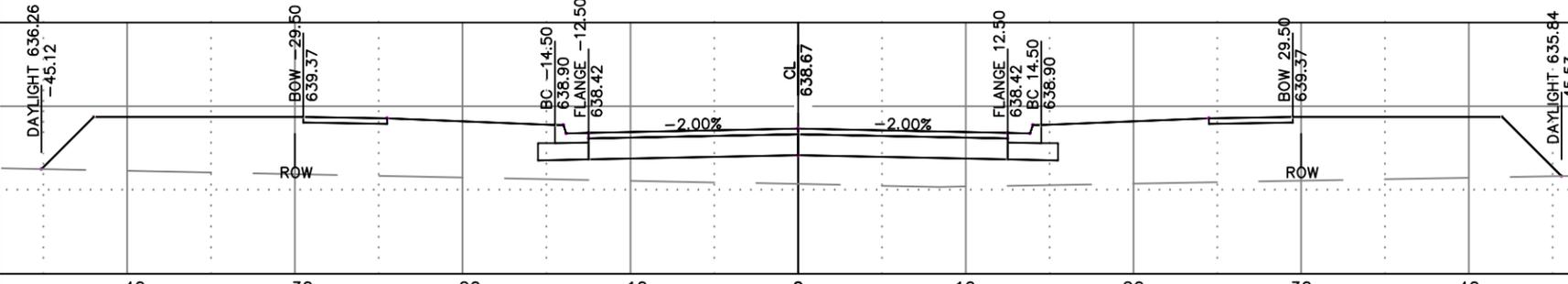
CITY OF DE PERE
 ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
 OFFICE 920-339-4061 FAX 920-339-4071

TIPPERARY TRAIL
 CROSS SECTIONS

NAME: GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

DATE	BY
08-2018	SR/RECD
5-2019	DRWN
5-2019	DESIGNED
5-2019	CHKD

NO.	DATE	REVISIONS / ISSUES





DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115

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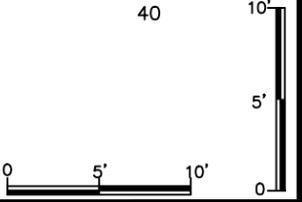
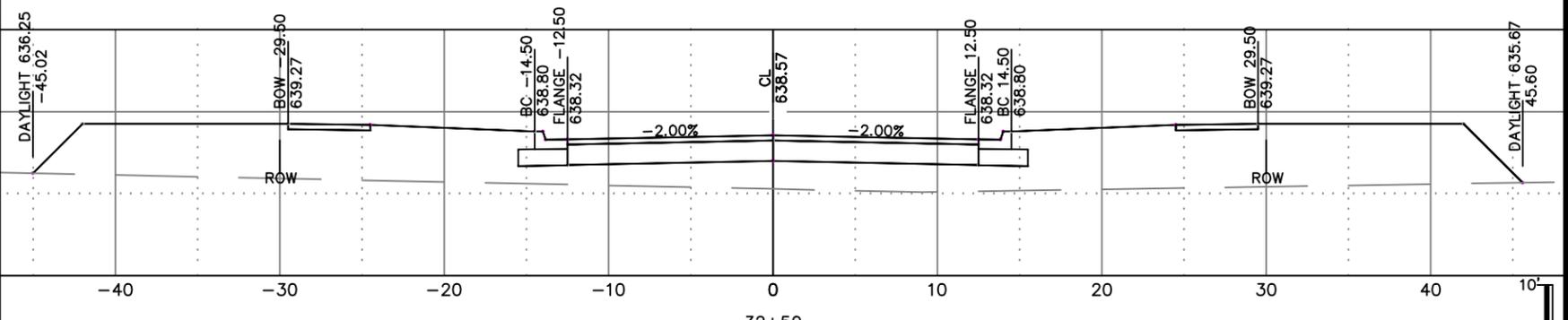
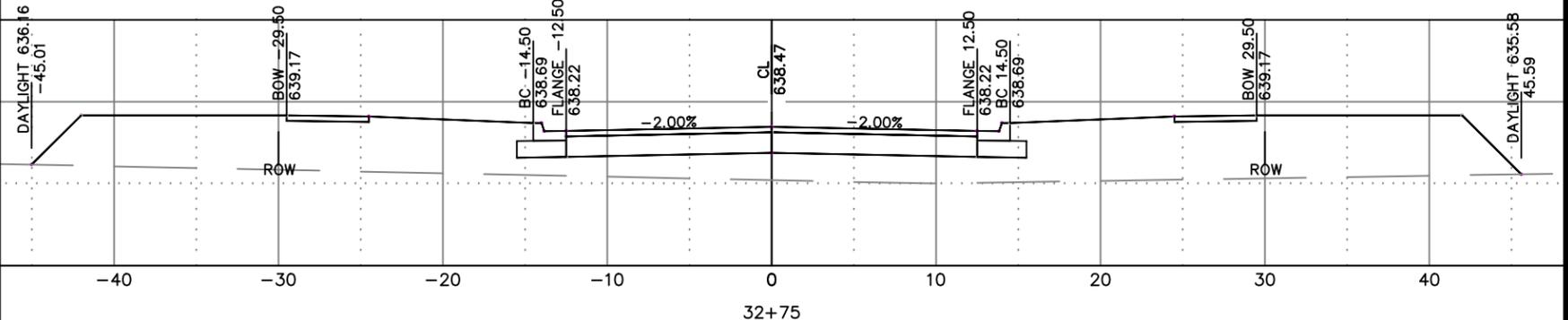
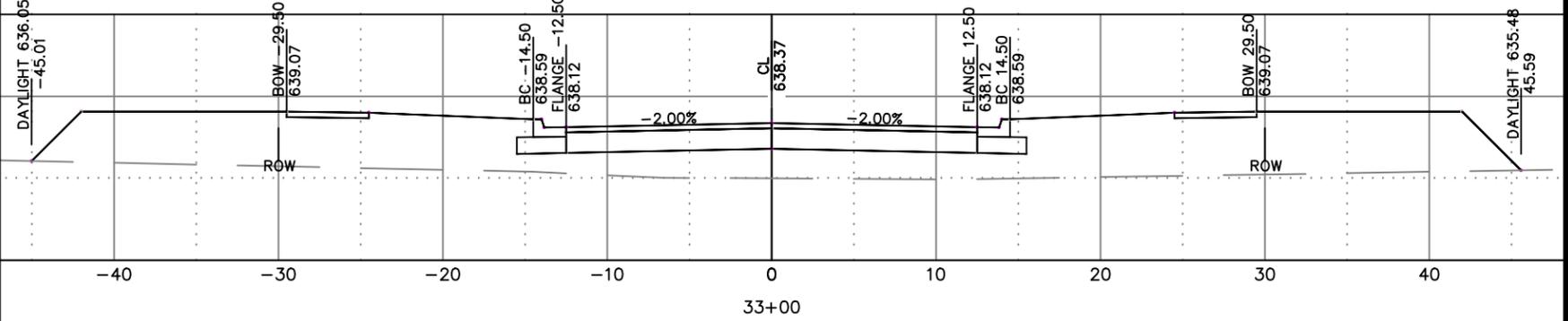
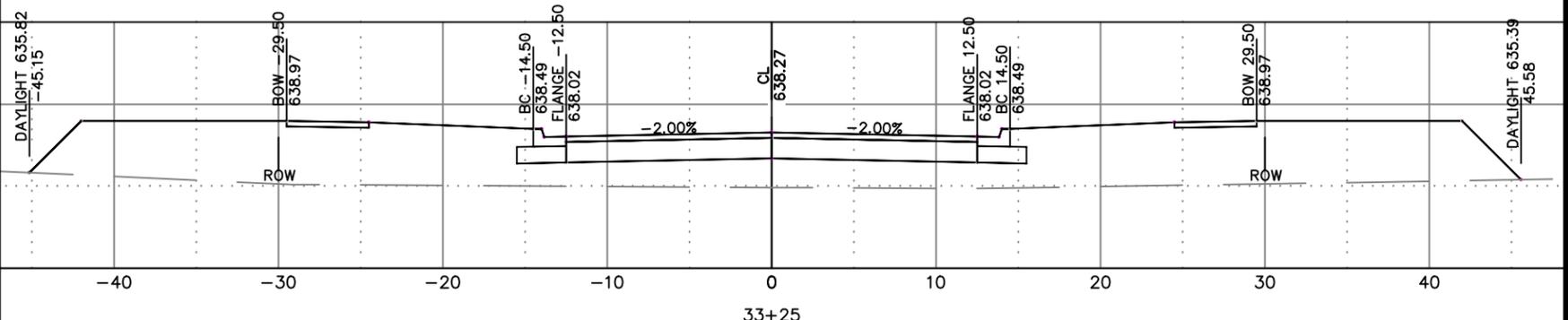
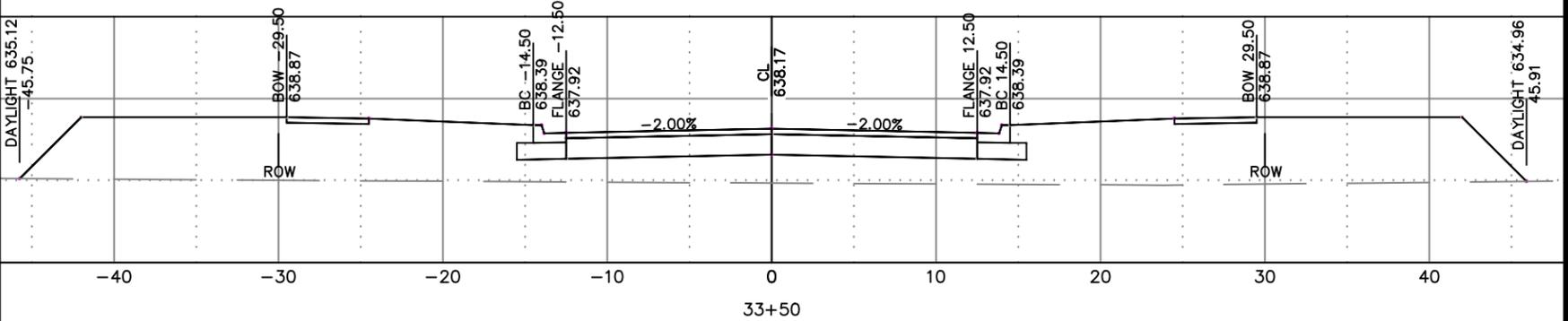
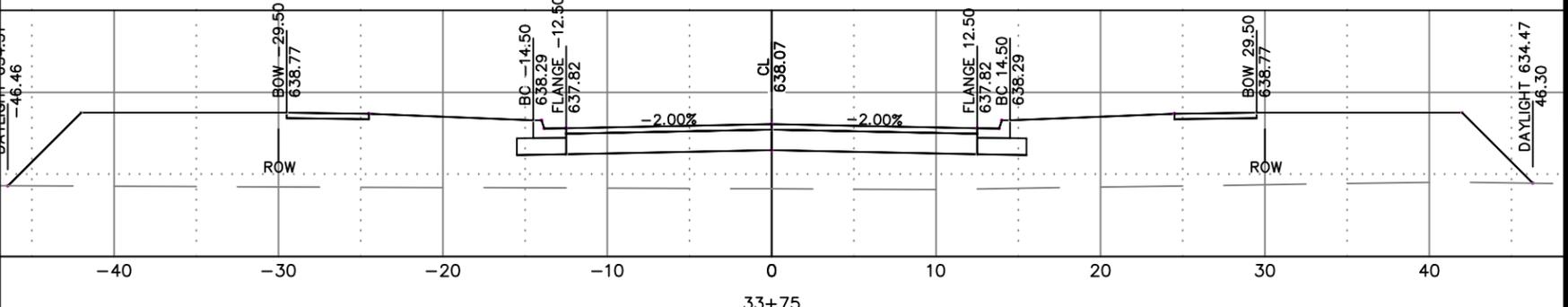
CITY OF DE PERE

TIPPERARY TRAIL

CROSS SECTIONS

NAME: GARRITT'S GLEN SOUTH	BY	DATE	NO.	DATE
PROJECT # 19-11	DESIGNED	5-2019		
SUBDIVISION CONSTRUCTION	CHECKED	5-2019		
	BY	DATE	NO.	DATE
	SRVETED	08-2018		
	DESIGNED	5-2019		
	CHECKED	5-2019		

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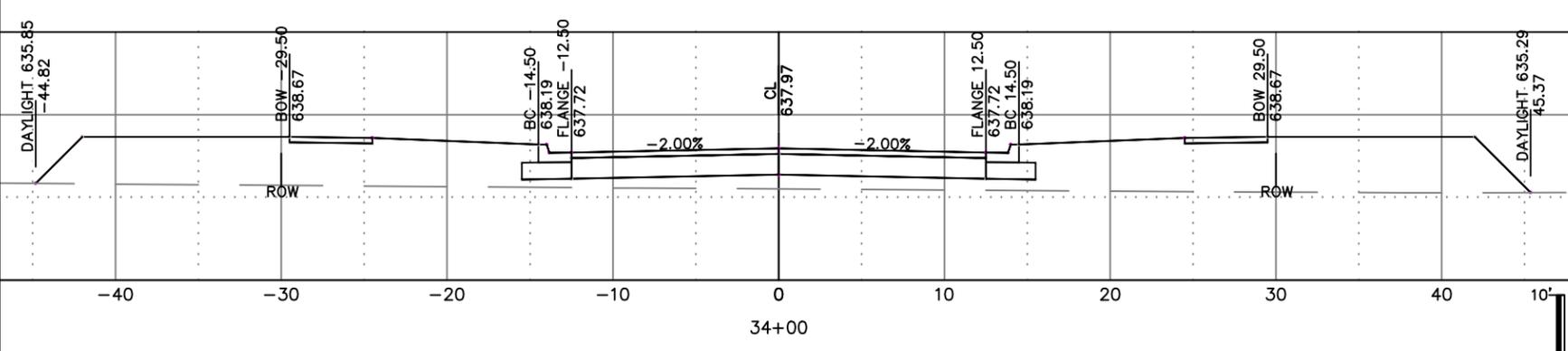
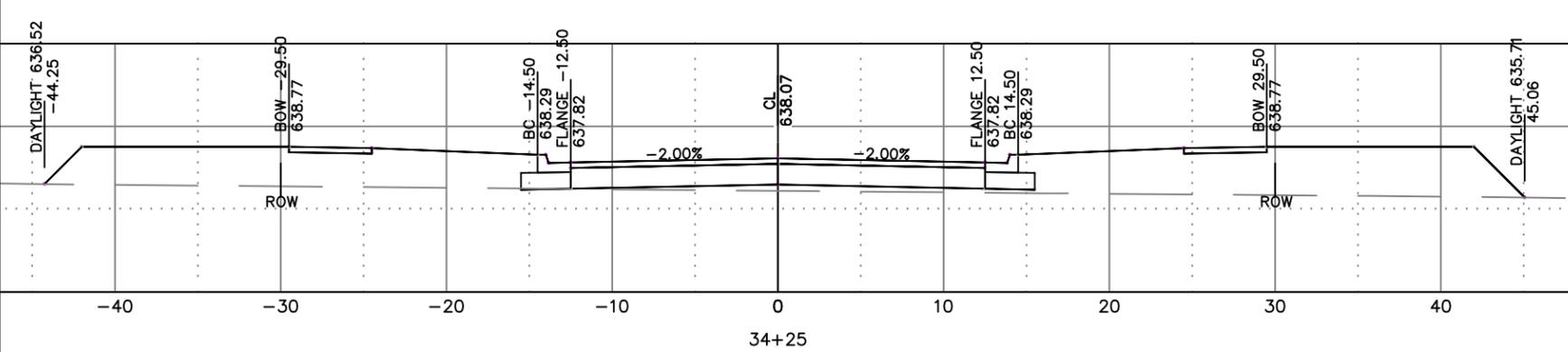
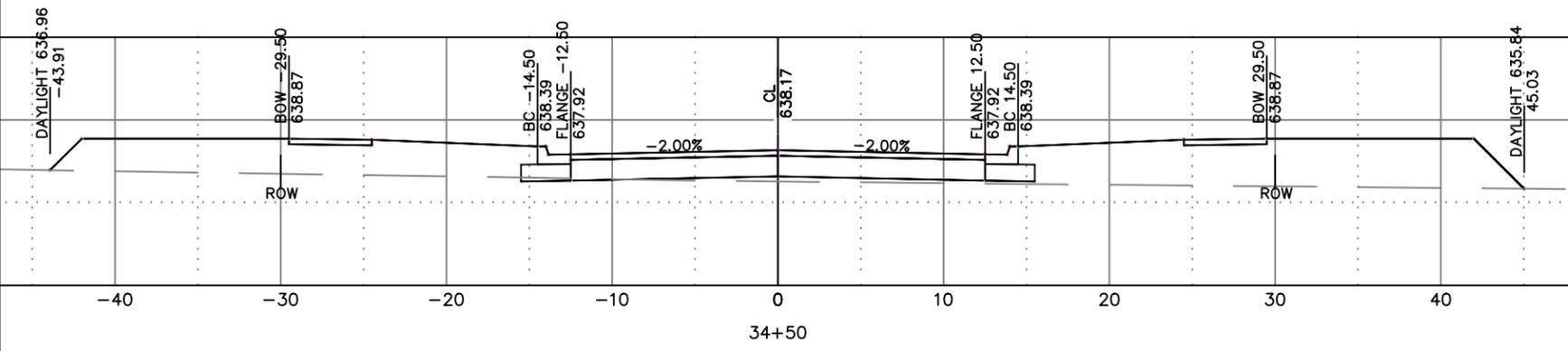
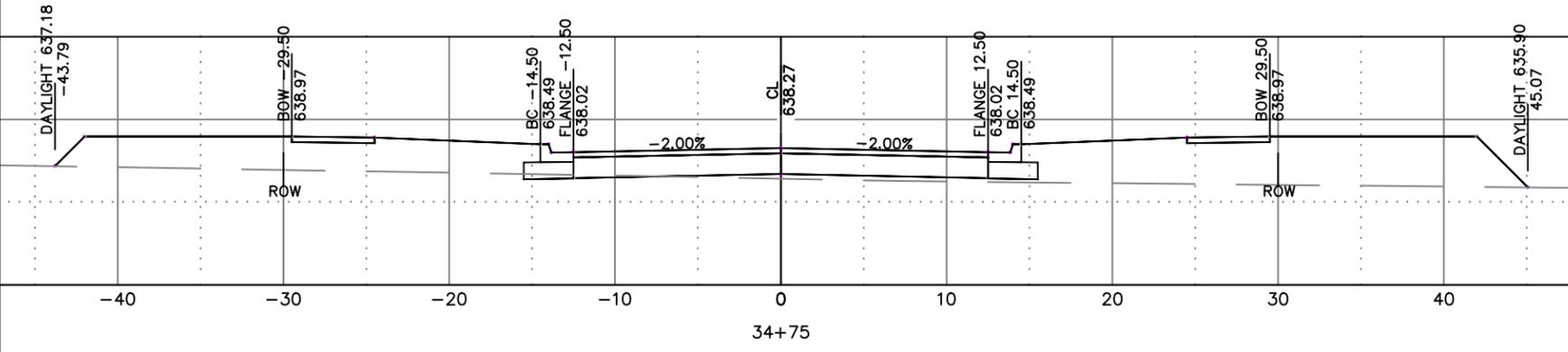
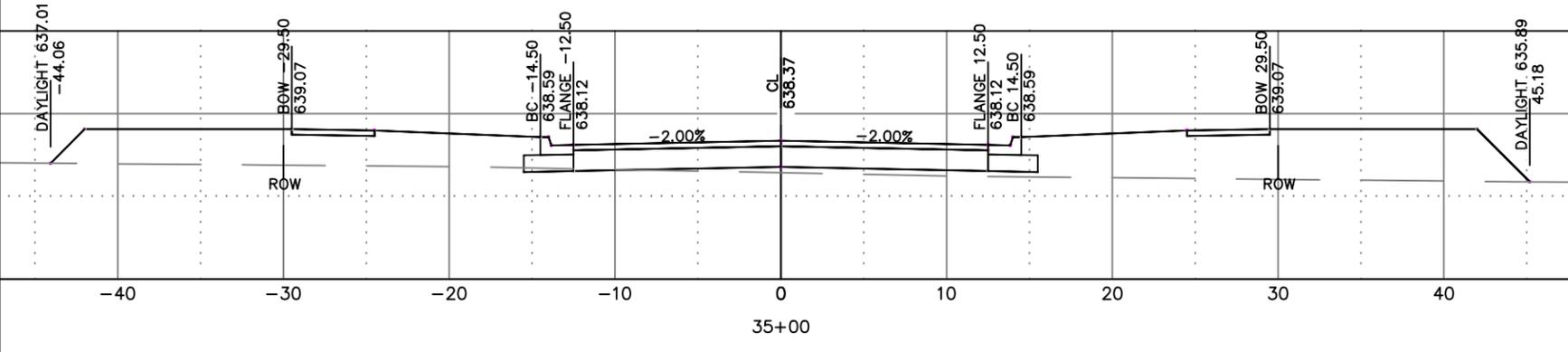
CITY OF DE PERE
 ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
 OFFICE 920-339-4061 FAX 920-339-4071

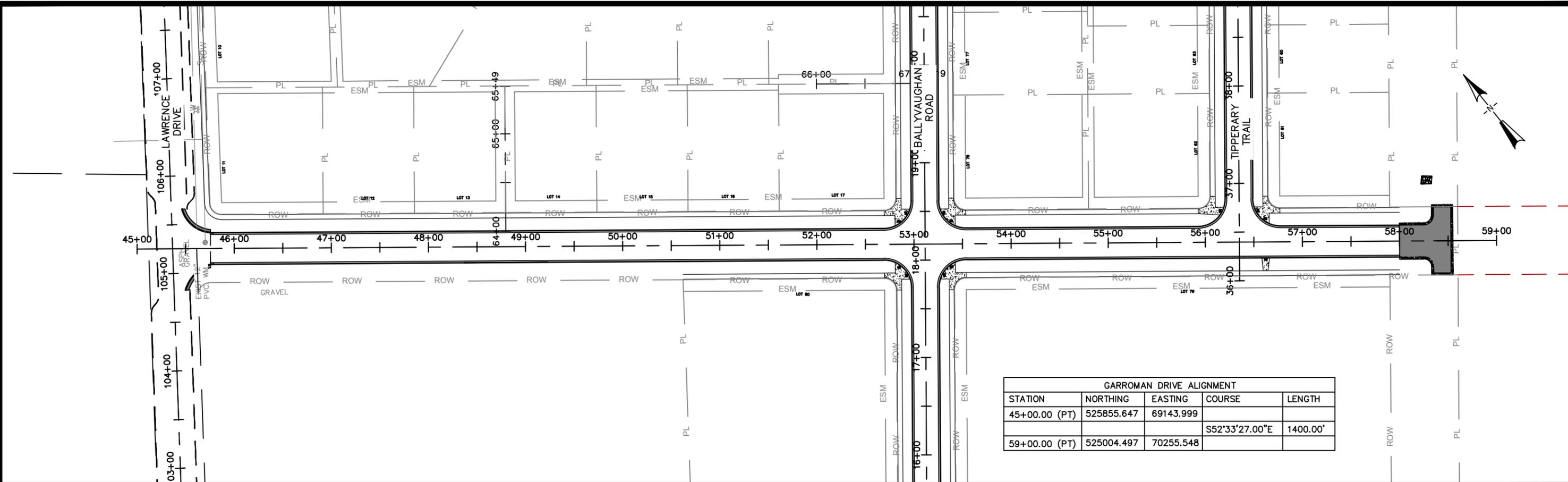
TIPPERARY TRAIL
 CROSS SECTIONS

NAME:	GARRITY'S GLEN SOUTH
PROJECT #	SUBDIVISION CONSTRUCTION
19-11	

DATE	BY
08-2019	SRK
5-2019	SRK
5-2019	SRK

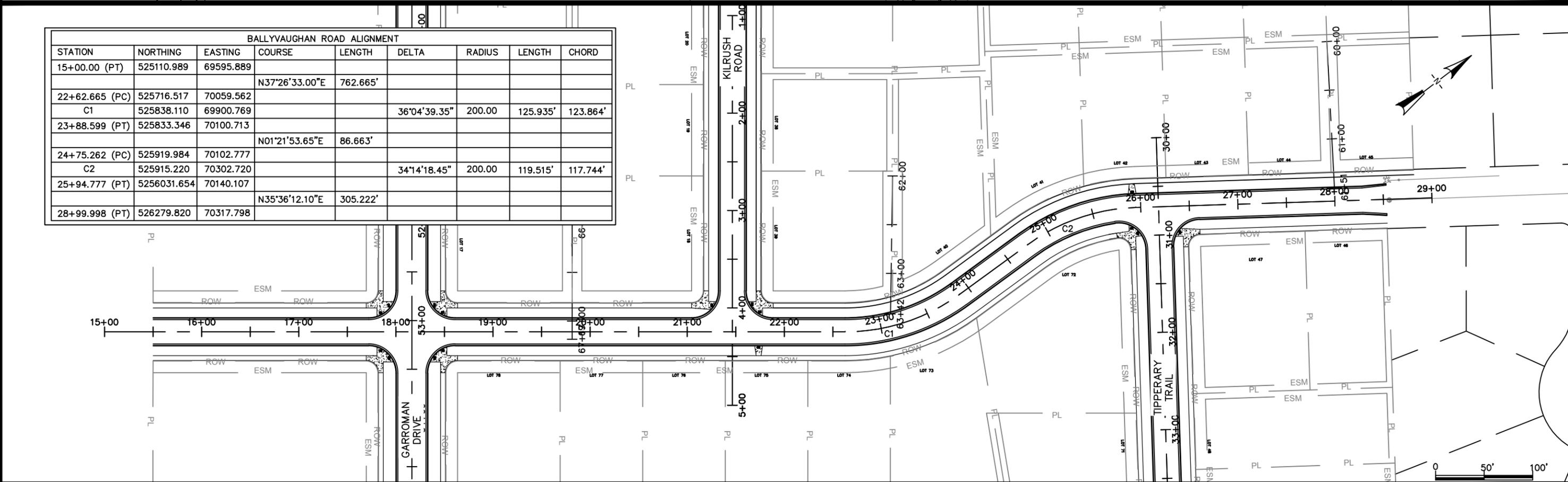
PAGE NO. **C334**





GARROMAN DRIVE ALIGNMENT				
STATION	NORTHING	EASTING	COURSE	LENGTH
45+00.00 (PT)	525855.647	69143.999		
			S52°33'27.00"E	1400.00'
59+00.00 (PT)	525004.497	70255.548		

BALLYVAUGHAN ROAD ALIGNMENT								
STATION	NORTHING	EASTING	COURSE	LENGTH	DELTA	RADIUS	LENGTH	CHORD
15+00.00 (PT)	525110.989	69595.889						
22+62.665 (PC)	525716.517	70059.562	N37°26'33.00"E	762.665'				
					36°04'39.35"	200.00	125.935'	123.864'
23+88.599 (PT)	525833.346	70100.713						
24+75.262 (PC)	525919.984	70102.777	N01°21'53.65"E	86.663'				
					34°14'18.45"	200.00	119.515'	117.744'
25+94.777 (PT)	5256031.654	70140.107						
			N35°36'12.10"E	305.222'				
28+99.998 (PT)	526279.820	70317.798						

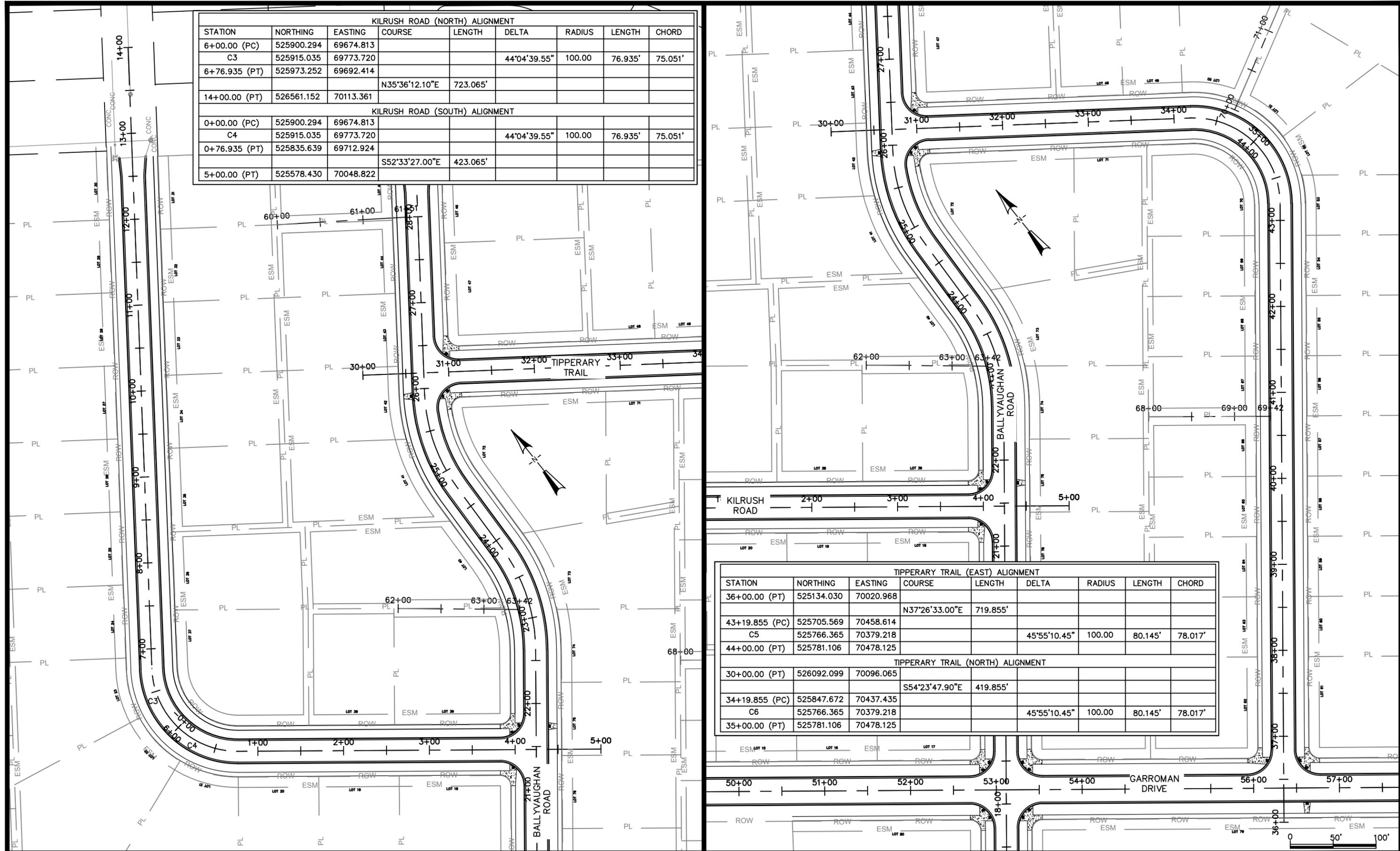


 CITY OF DE PERE ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115 OFFICE 920-339-4061 FAX 920-339-4071	ALIGNMENTS GARROMAN DRIVE AND BALLYVAUGHAN ROAD	NAME: GARRY'S GLEN SOUTH SUBDIVISION CONSTRUCTION	BY SURVEYED MACH IV 8-2018 DRAWN SRL 5-2019 DESIGNED SRL 5-2019 CHECKED EPR 5-2019	DATE NO. DATE BY REMARKS	REVISIONS / ISSUES NO. DATE BY REMARKS	PAGE NO. C401
		PROJECT # 19-11				

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KILRUSH ROAD (NORTH) ALIGNMENT								
STATION	NORTHING	EASTING	COURSE	LENGTH	DELTA	RADIUS	LENGTH	CHORD
6+00.00 (PC)	525900.294	69674.813						
C3	525915.035	69773.720			44°04'39.55"	100.00	76.935'	75.051'
6+76.935 (PT)	525973.252	69692.414						
14+00.00 (PT)	526561.152	70113.361	N35°36'12.10"E	723.065'				
KILRUSH ROAD (SOUTH) ALIGNMENT								
0+00.00 (PC)	525900.294	69674.813						
C4	525915.035	69773.720			44°04'39.55"	100.00	76.935'	75.051'
0+76.935 (PT)	525835.639	69712.924						
5+00.00 (PT)	525578.430	70048.822	S52°33'27.00"E	423.065'				

TIPPERARY TRAIL (EAST) ALIGNMENT								
STATION	NORTHING	EASTING	COURSE	LENGTH	DELTA	RADIUS	LENGTH	CHORD
36+00.00 (PT)	525134.030	70020.968						
43+19.855 (PC)	525705.569	70458.614						
C5	525766.365	70379.218	N37°26'33.00"E	719.855'				
44+00.00 (PT)	525781.106	70478.125			45°55'10.45"	100.00	80.145'	78.017'
TIPPERARY TRAIL (NORTH) ALIGNMENT								
30+00.00 (PT)	526092.099	70096.065						
34+19.855 (PC)	525847.672	70437.435						
C6	525766.365	70379.218	S54°23'47.90"E	419.855'				
35+00.00 (PT)	525781.106	70478.125			45°55'10.45"	100.00	80.145'	78.017'



CITY OF DE PERE
 ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
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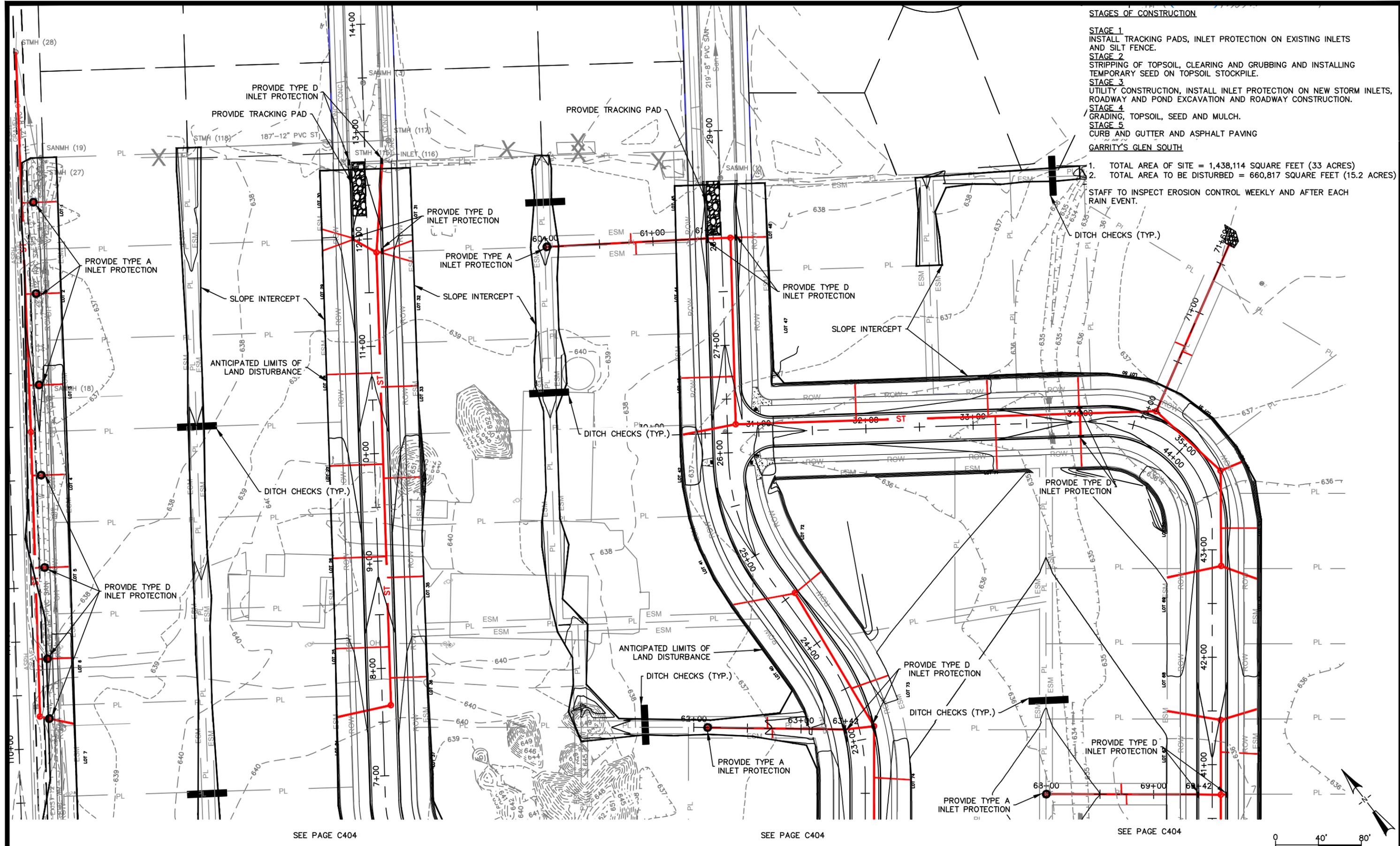
ALIGNMENTS
KILRUSH ROAD AND TIPPERARY TRAIL

NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION	BY SRL	DATE 8-2018	REVISIONS / ISSUES		PAGE NO. C402
PROJECT # 19-11	DRAWN SRL	DATE 5-2019	NO.	DATE	
	DESIGNED SRL	DATE 5-2019			
	CHECKED EPR	DATE 5-2019			

STAGES OF CONSTRUCTION

- STAGE 1
INSTALL TRACKING PADS, INLET PROTECTION ON EXISTING INLETS AND SILT FENCE.
 - STAGE 2
STRIPPING OF TOPSOIL, CLEARING AND GRUBBING AND INSTALLING TEMPORARY SEED ON TOPSOIL STOCKPILE.
 - STAGE 3
UTILITY CONSTRUCTION, INSTALL INLET PROTECTION ON NEW STORM INLETS, ROADWAY AND POND EXCAVATION AND ROADWAY CONSTRUCTION.
 - STAGE 4
GRADING, TOPSOIL, SEED AND MULCH.
 - STAGE 5
CURB AND GUTTER AND ASPHALT PAVING
- GARRITY'S GLEN SOUTH**

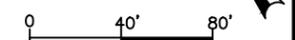
1. TOTAL AREA OF SITE = 1,438,114 SQUARE FEET (33 ACRES)
 2. TOTAL AREA TO BE DISTURBED = 660,817 SQUARE FEET (15.2 ACRES)
- STAFF TO INSPECT EROSION CONTROL WEEKLY AND AFTER EACH RAIN EVENT.



SEE PAGE C404

SEE PAGE C404

SEE PAGE C404



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

**GARRITY'S GLEN SOUTH
EROSION CONTROL PLAN**

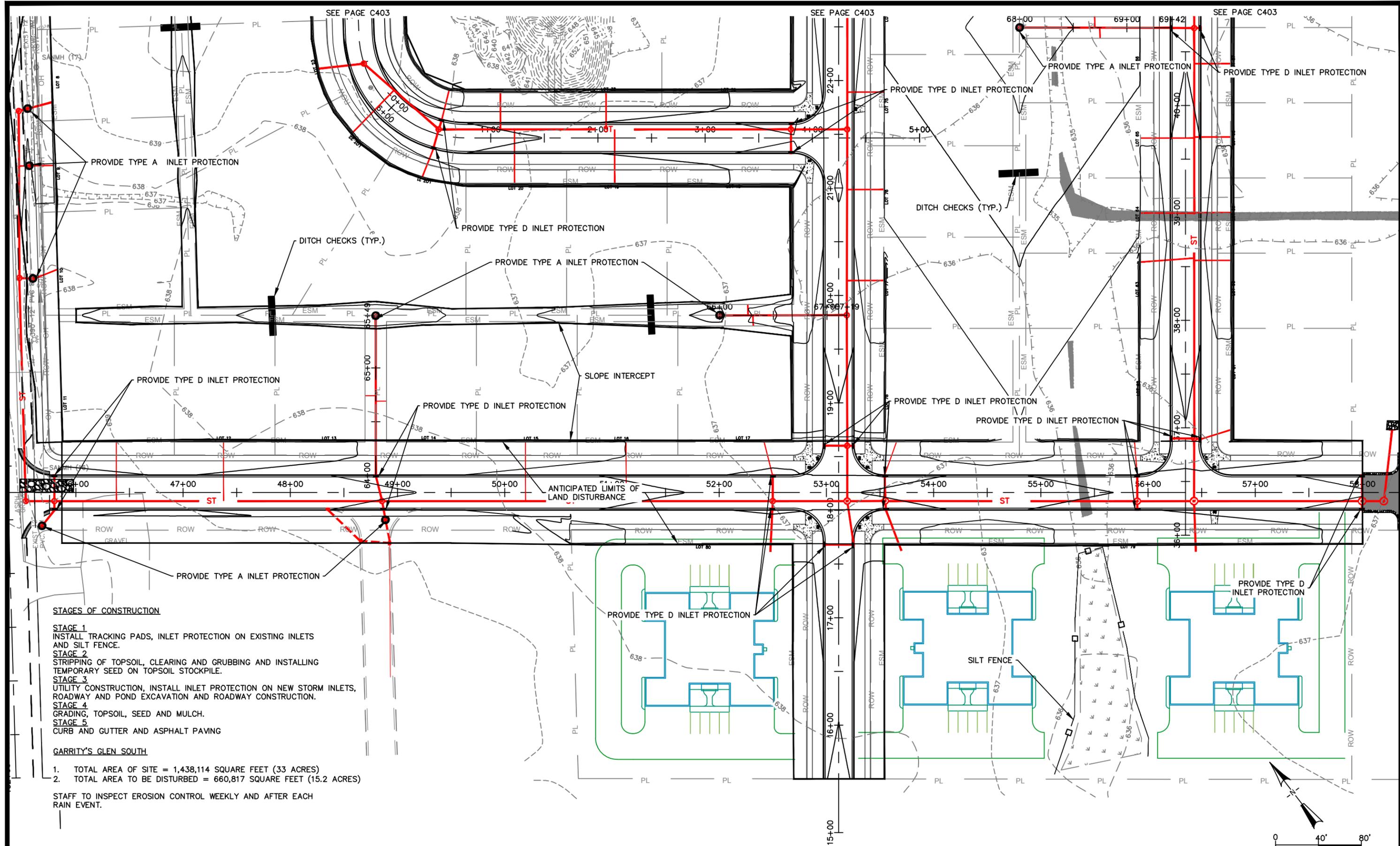
NAME:
GARRITY'S GLEN SOUTH
SUBDIVISION CONSTRUCTION
PROJECT # 19-11

BY	DATE
SURVEYED	MACH IV 8-2018
DRAWN	SRL 5-2019
DESIGNED	SRL 5-2019
CHECKED	EPR 5-2019

REVISIONS / ISSUES		
NO.	DATE	REMARKS

PAGE NO.
C403

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STAGES OF CONSTRUCTION

- STAGE 1
INSTALL TRACKING PADS, INLET PROTECTION ON EXISTING INLETS AND SILT FENCE.
- STAGE 2
STRIPPING OF TOPSOIL, CLEARING AND GRUBBING AND INSTALLING TEMPORARY SEED ON TOPSOIL STOCKPILE.
- STAGE 3
UTILITY CONSTRUCTION, INSTALL INLET PROTECTION ON NEW STORM INLETS, ROADWAY AND POND EXCAVATION AND ROADWAY CONSTRUCTION.
- STAGE 4
GRADING, TOPSOIL, SEED AND MULCH.
- STAGE 5
CURB AND GUTTER AND ASPHALT PAVING

GARRITY'S GLEN SOUTH

- 1. TOTAL AREA OF SITE = 1,438,114 SQUARE FEET (33 ACRES)
- 2. TOTAL AREA TO BE DISTURBED = 660,817 SQUARE FEET (15.2 ACRES)

STAFF TO INSPECT EROSION CONTROL WEEKLY AND AFTER EACH RAIN EVENT.



CITY OF DE PERE

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

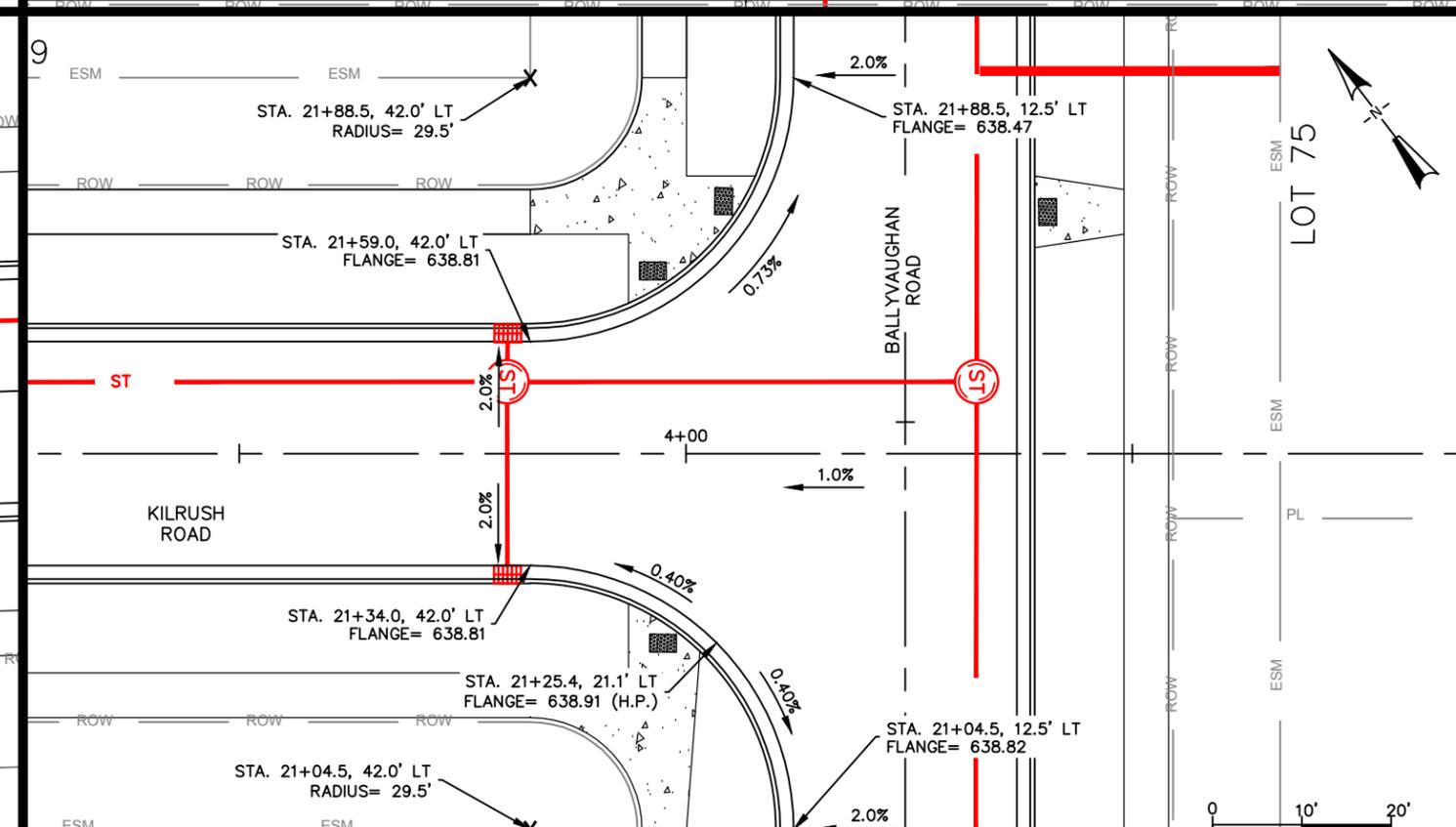
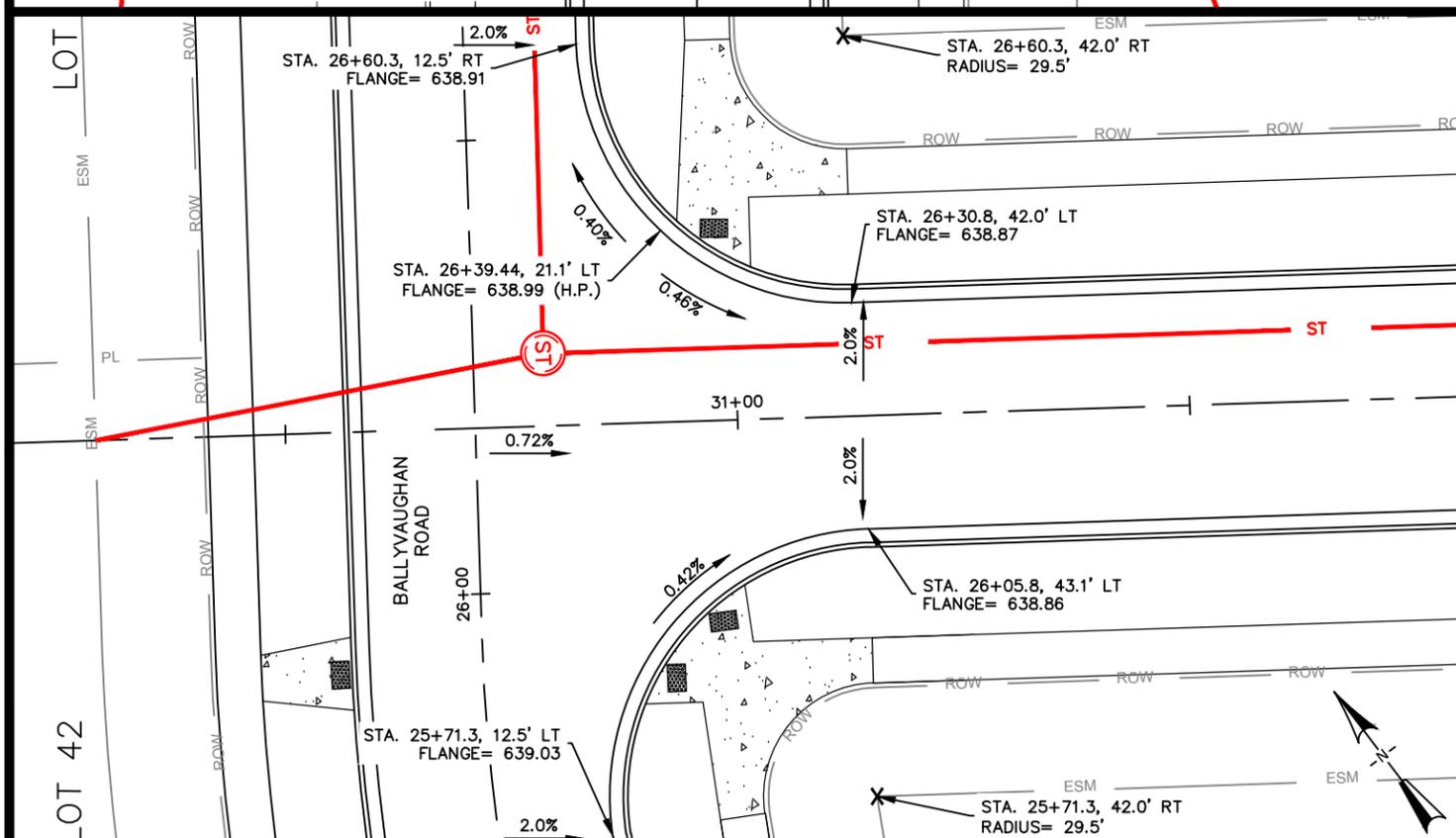
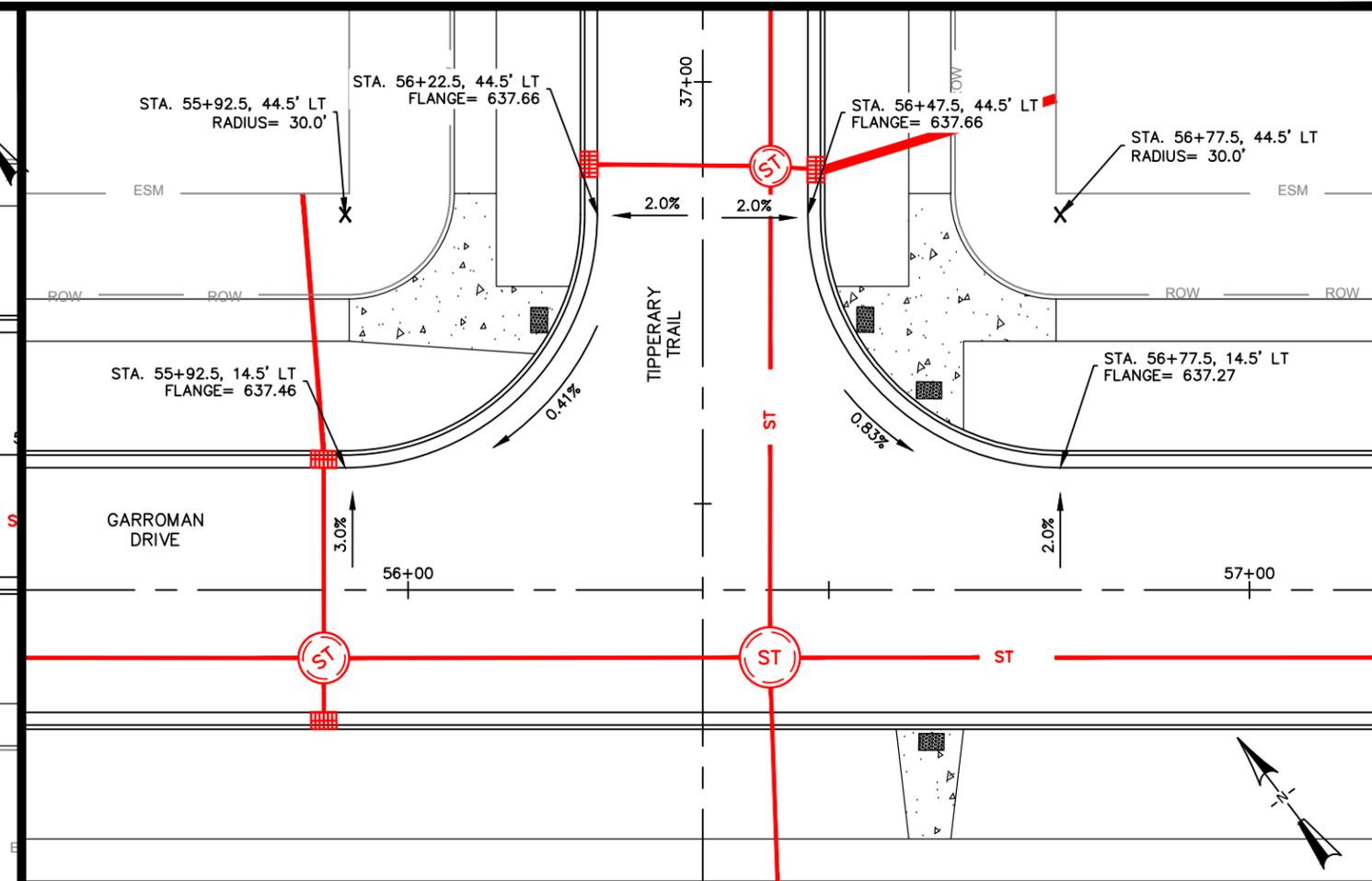
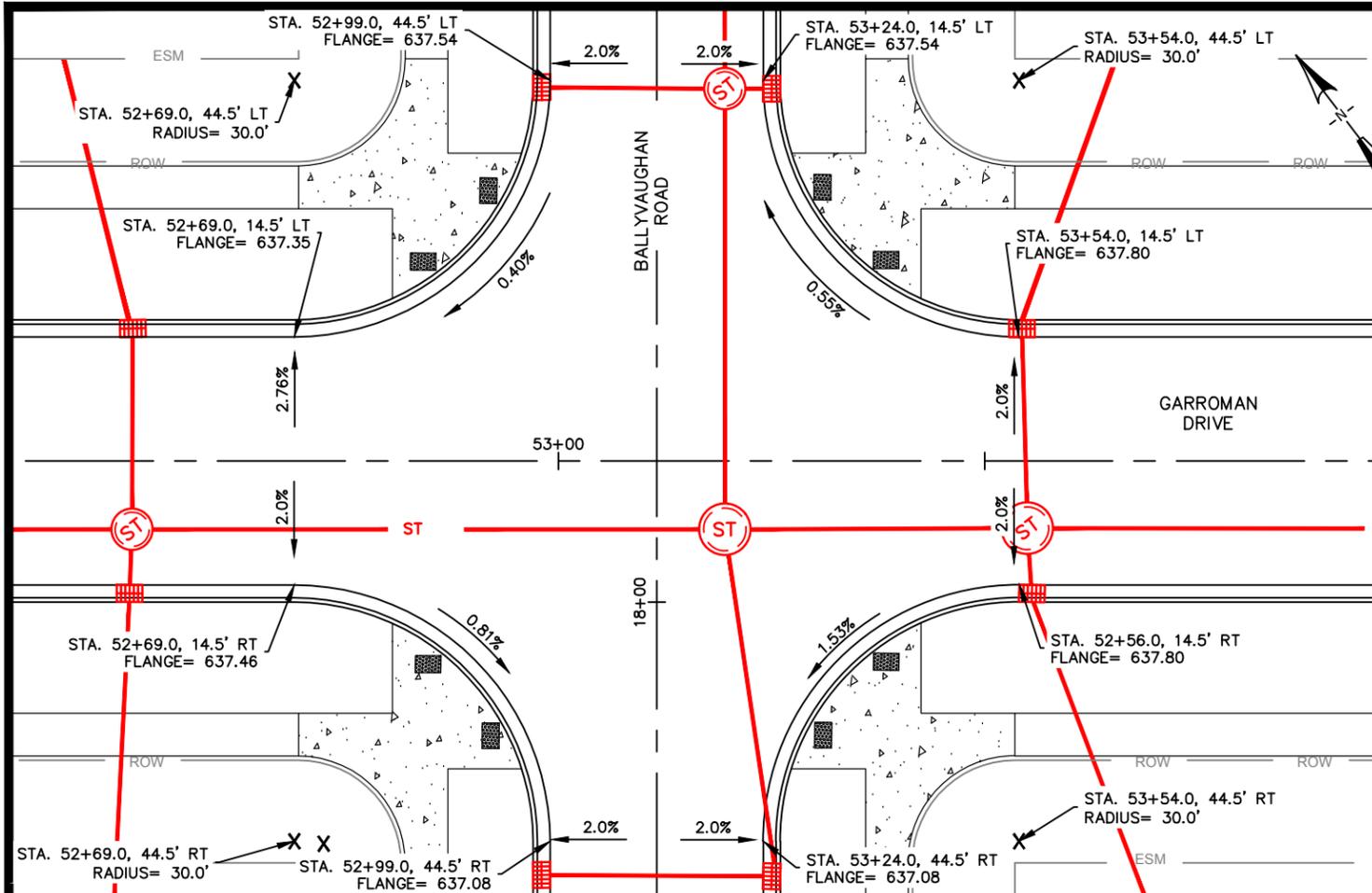
**GARRITY'S GLEN SOUTH
EROSION CONTROL PLAN**

NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION
PROJECT # 19-11

BY	DATE
SURVEYED	MACH IV 8-2018
DRAWN	SRL 5-2019
DESIGNED	SRL 5-2019
CHECKED	EPR 5-2019

REVISIONS / ISSUES		
NO.	DATE	REMARKS

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

**GARRITY'S GLEN SOUTH
INTERSECTION GRADES**

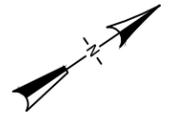
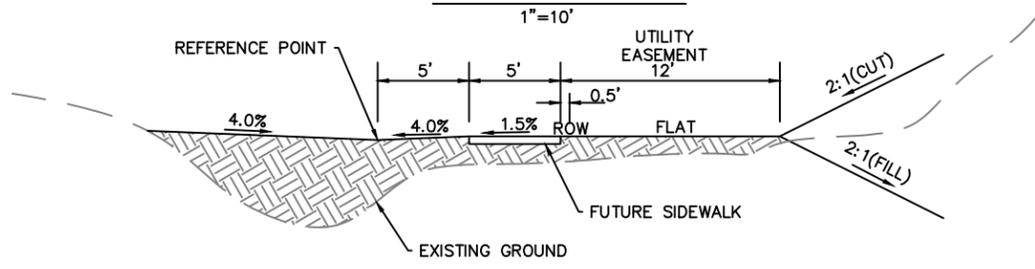
NAME:
GARRITY'S GLEN SOUTH
SUBDIVISION CONSTRUCTION
PROJECT # 19-11

BY	DATE
SURVEYED MACH IV	9-2018
DRAWN SRL	4-2019
DESIGNED SRL	4-2019
CHECKED EPR	4-2019

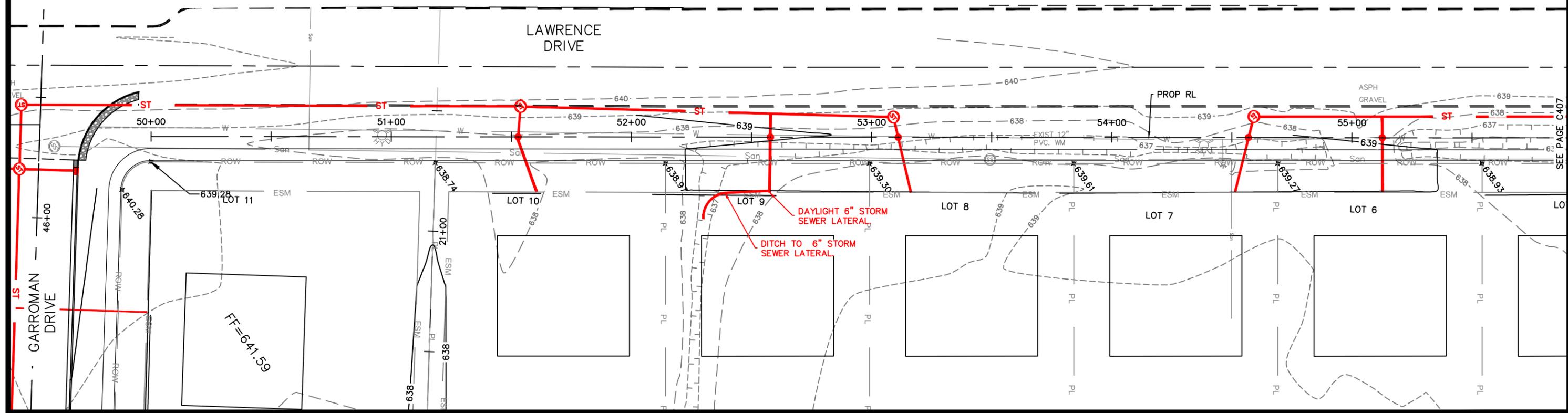
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NO.	DATE	REMARKS

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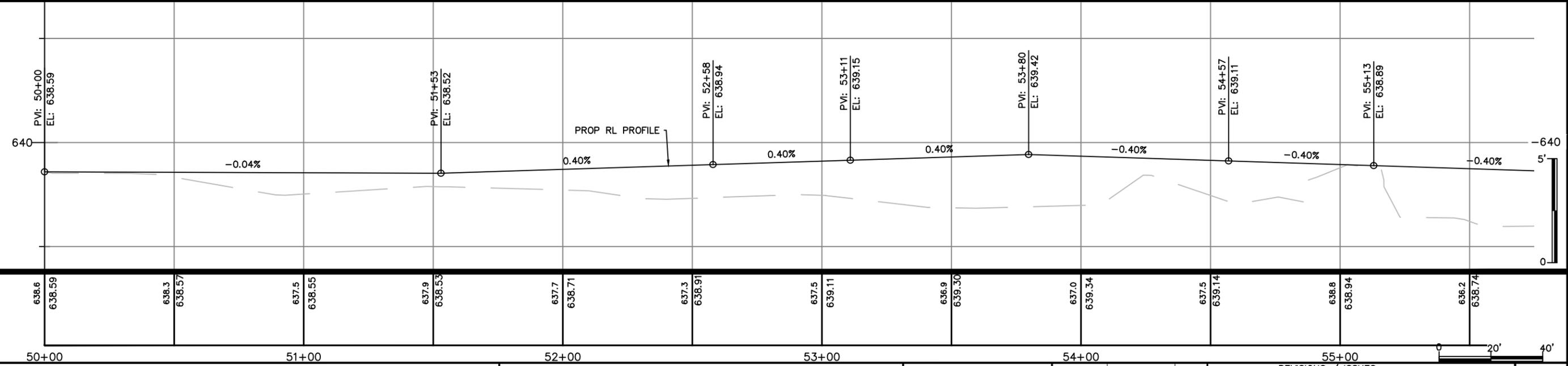
TYPICAL DITCH DETAIL FOR LAWRENCE DRIVE



NOTE:
1. DAYLIGHT 6" STORM LATERAL AFTER UTILITY EASEMENT.



SEE PAGE C407

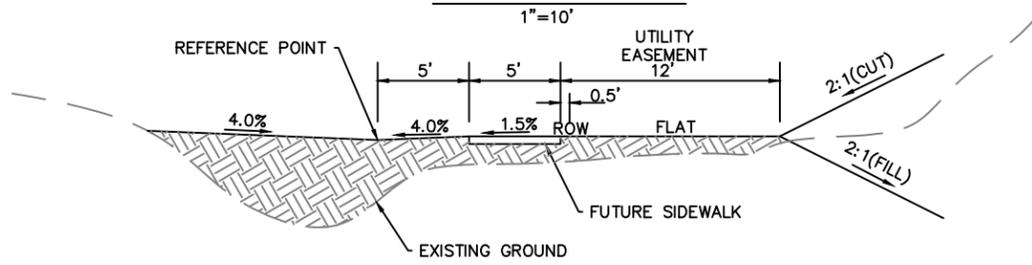


CITY OF DE PERE
ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

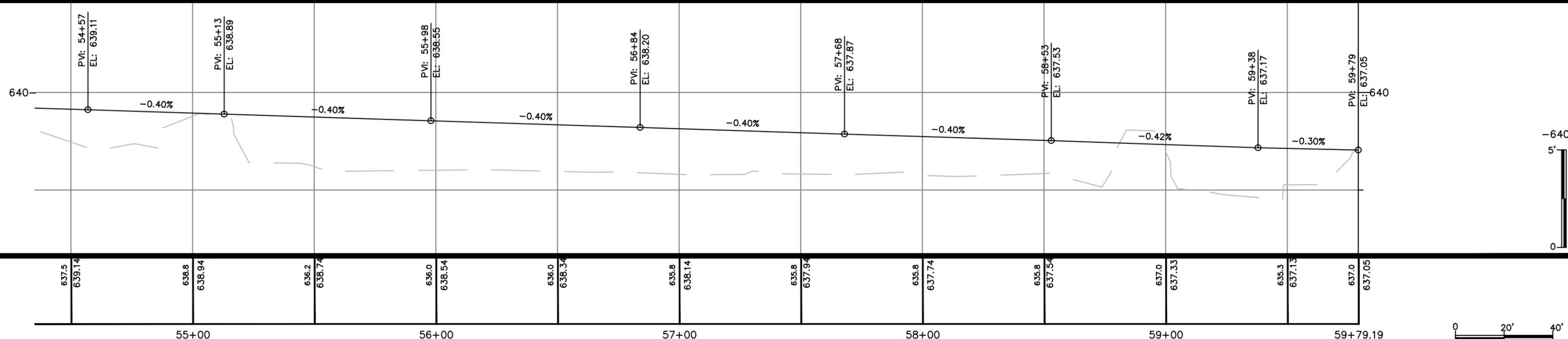
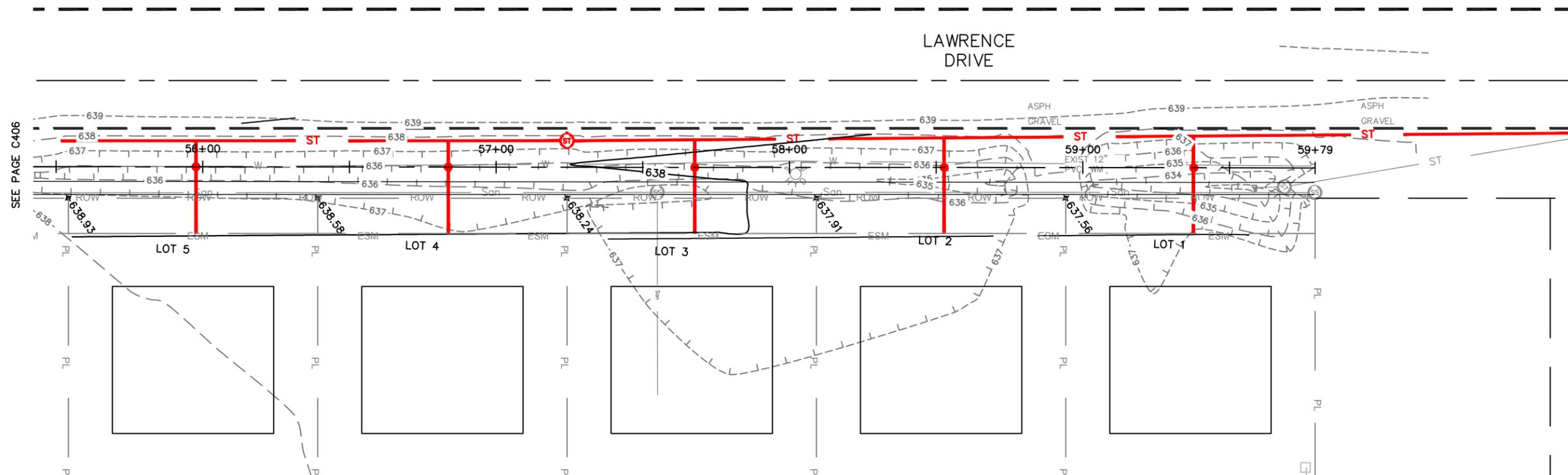
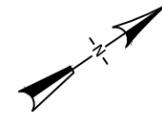
**GARRITY'S GLEN SOUTH
DITCH GRADING
LAWRENCE DRIVE**

NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION	BY MACH IV	DATE 8-2018	REVISIONS / ISSUES		PAGE NO. C406
PROJECT # 19-11	DRAWN SRL	DATE 5-2019	NO.	DATE	
	DESIGNED SRL	DATE 5-2019			
	CHECKED EPR	DATE 5-2019			

TYPICAL DITCH DETAIL FOR LAWRENCE DRIVE



NOTE:
1. DAYLIGHT 6" STORM LATERAL AFTER UTILITY EASEMENT.



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

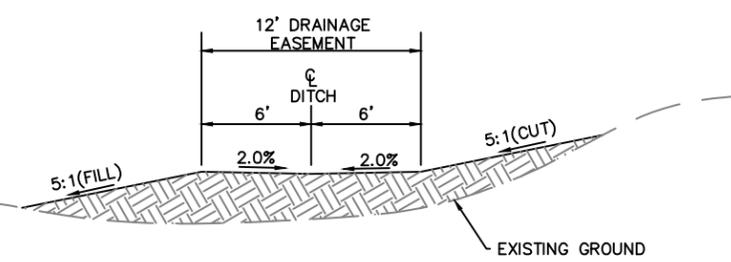
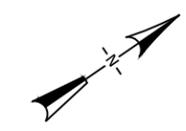
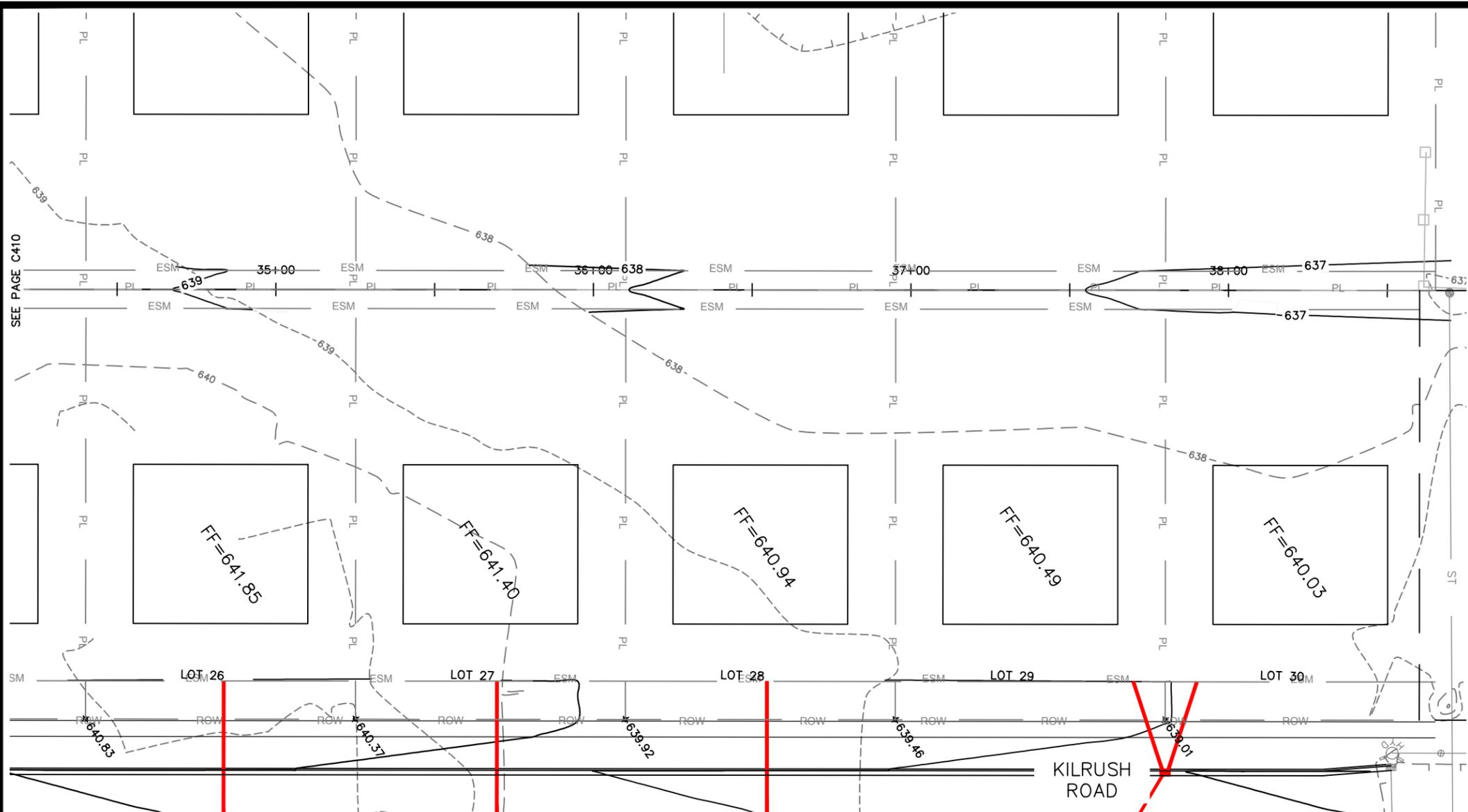
**GARRITY'S GLEN SOUTH
DITCH GRADING
LAWRENCE DRIVE**

NAME:
GARRITY'S GLEN SOUTH
SUBDIVISION CONSTRUCTION
PROJECT #
19-11

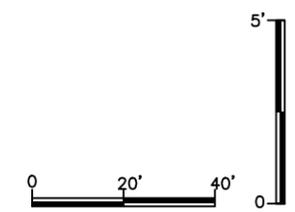
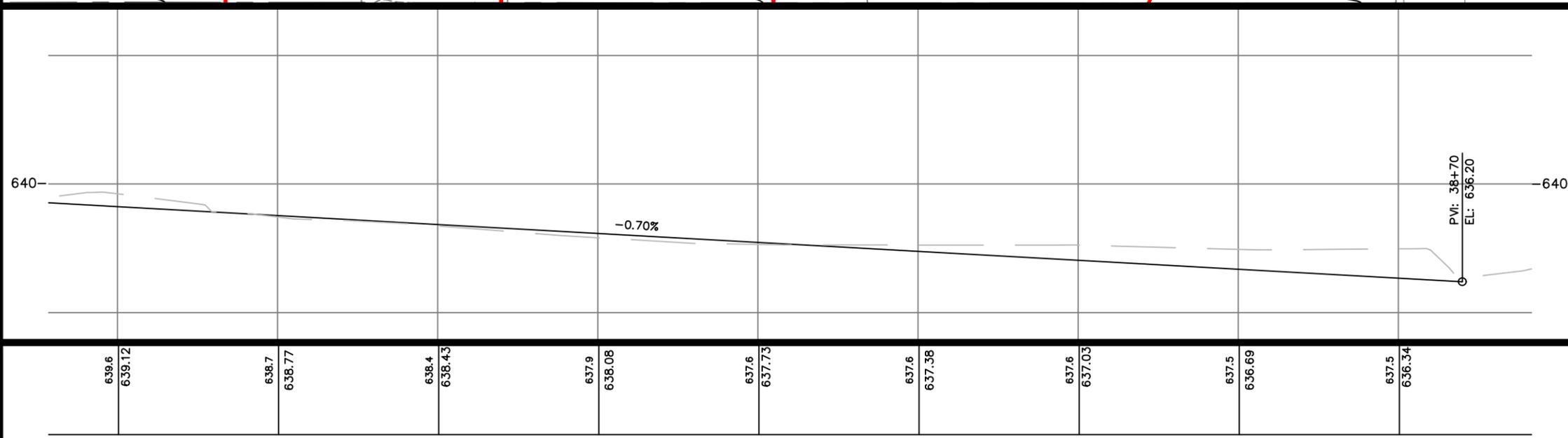
BY	DATE
SURVEYED	MACH IV 8-2018
DRAWN	SRL 5-2019
DESIGNED	SRL 5-2019
CHECKED	EPR 5-2019

REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS

PAGE NO.
C407



TYPICAL DITCH DETAIL
 1"=10'



639.6	639.12	638.7	638.77	638.4	638.43	637.9	638.08	637.6	637.73	637.6	637.38	637.6	637.03	637.5	636.69	637.5	636.34
35+00		36+00				37+00				38+00							



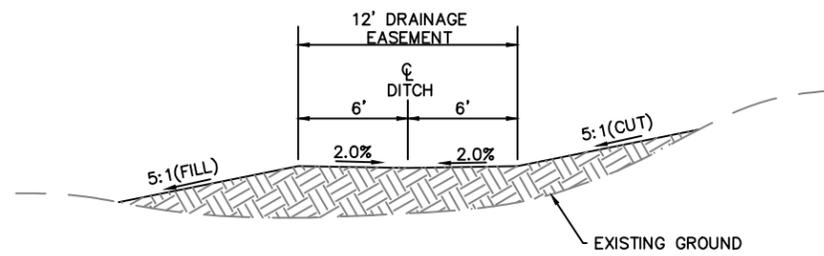
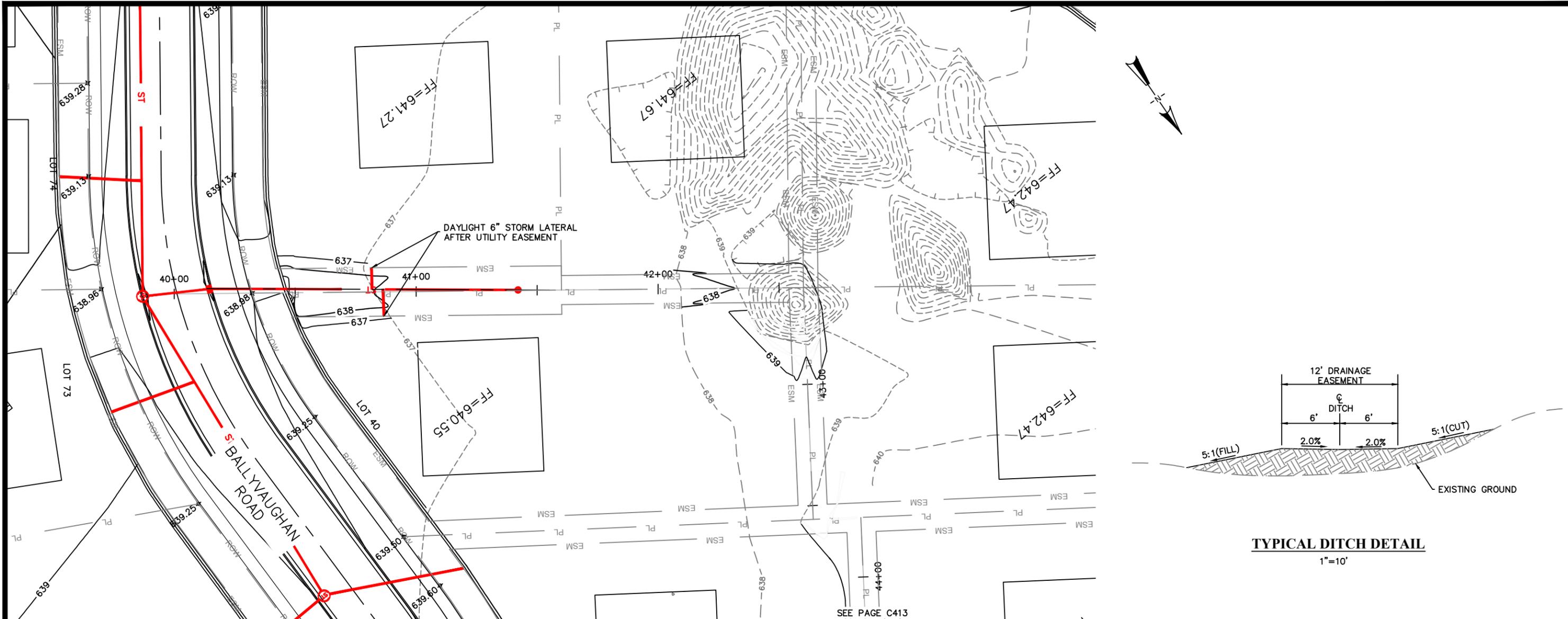
CITY OF DE PERE
 ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
 OFFICE 920-339-4061 FAX 920-339-4071

GARRITY'S GLEN SOUTH
DITCH GRADING
KILRUSH ROAD

NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

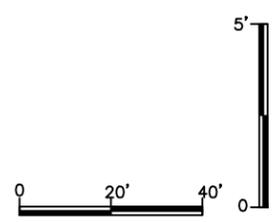
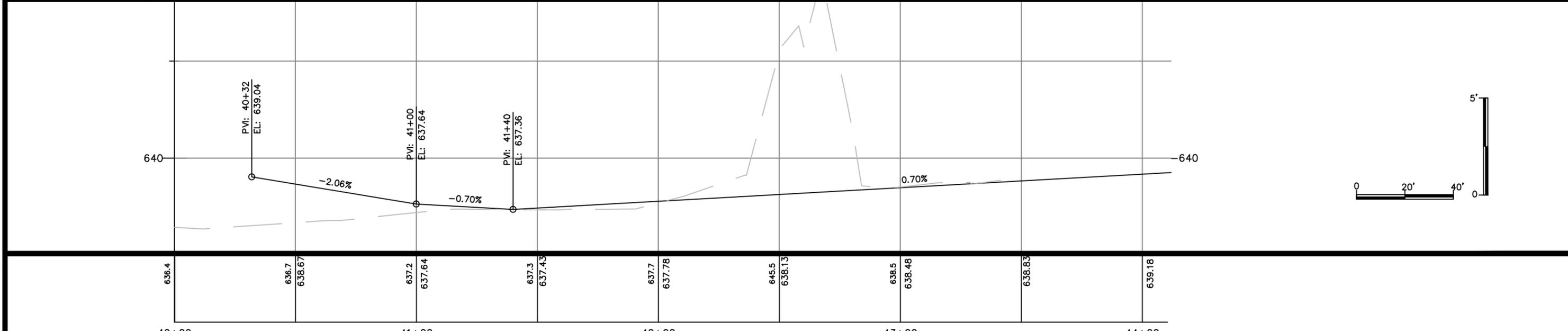
BY	DATE
SURVEYED	MACH IV 8-2018
DRAWN	SRL 5-2019
DESIGNED	SRL 5-2019
CHECKED	EPR 5-2019

REVISIONS / ISSUES		
NO.	DATE	REMARKS



TYPICAL DITCH DETAIL
1"=10'

SEE PAGE C413



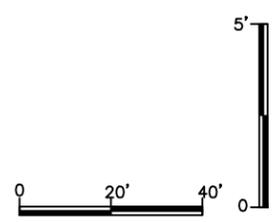
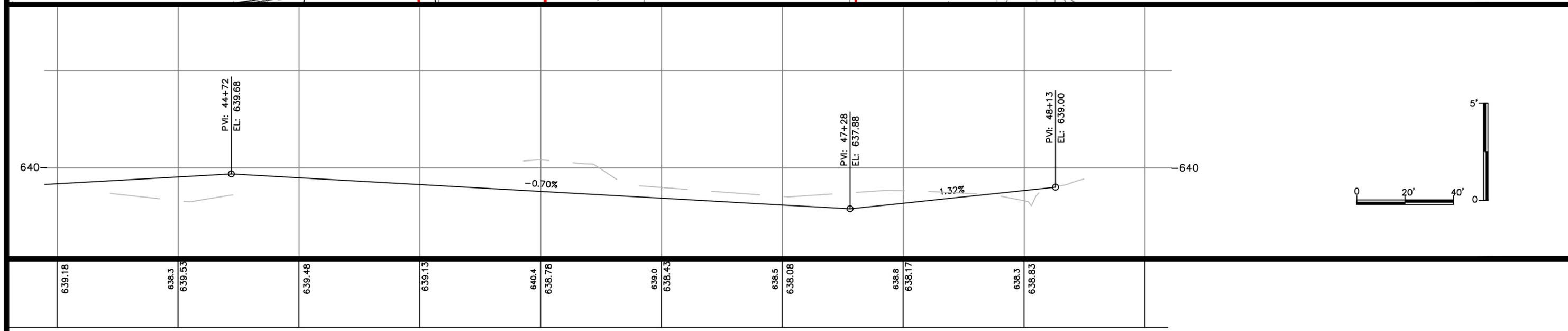
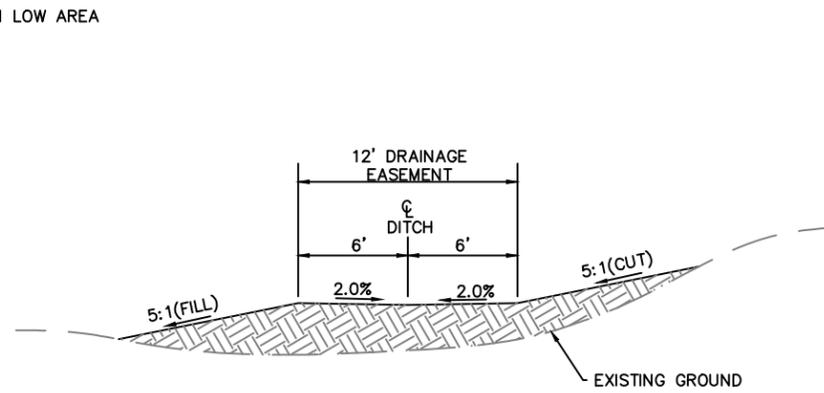
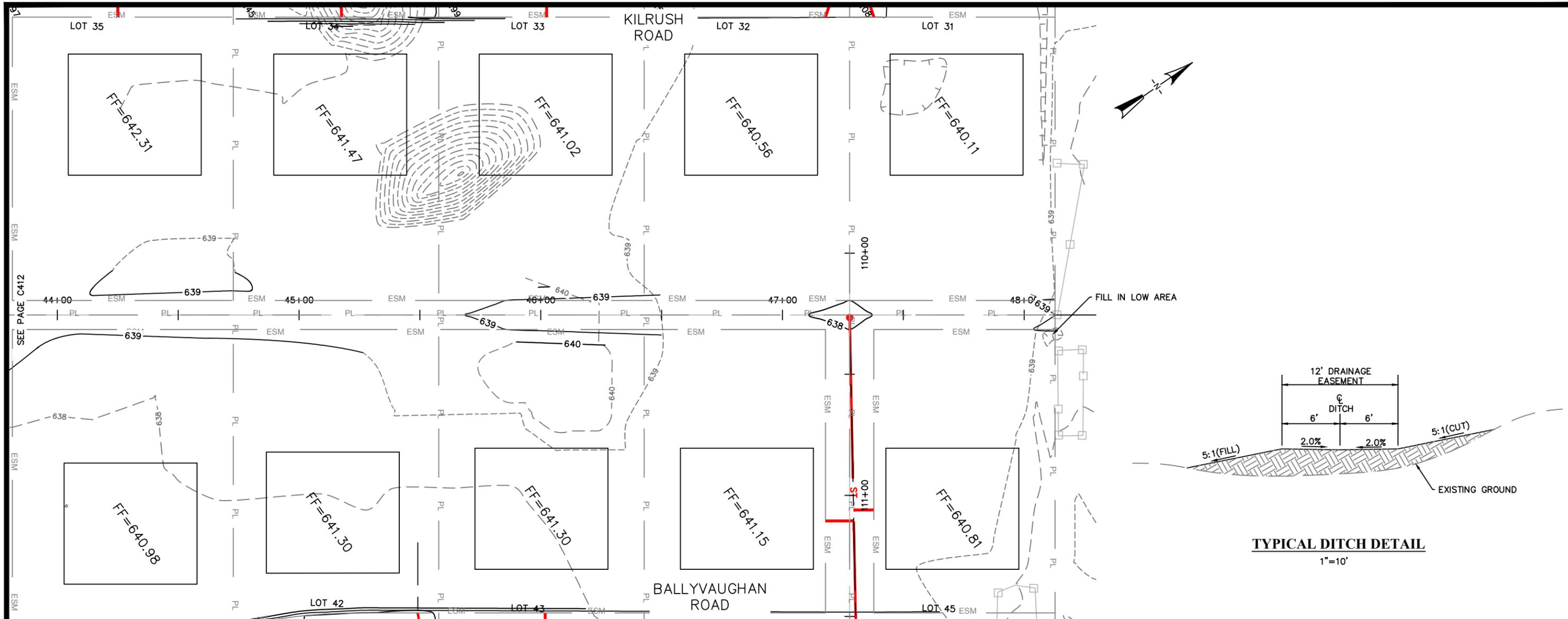
CITY OF DE PERE
ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

**GARRITY'S GLEN SOUTH
DITCH GRADING
BALLYVGHUAN ROAD**

NAME: GARRITY'S GLEN SOUTH
SUBDIVISION CONSTRUCTION
PROJECT # 19-11

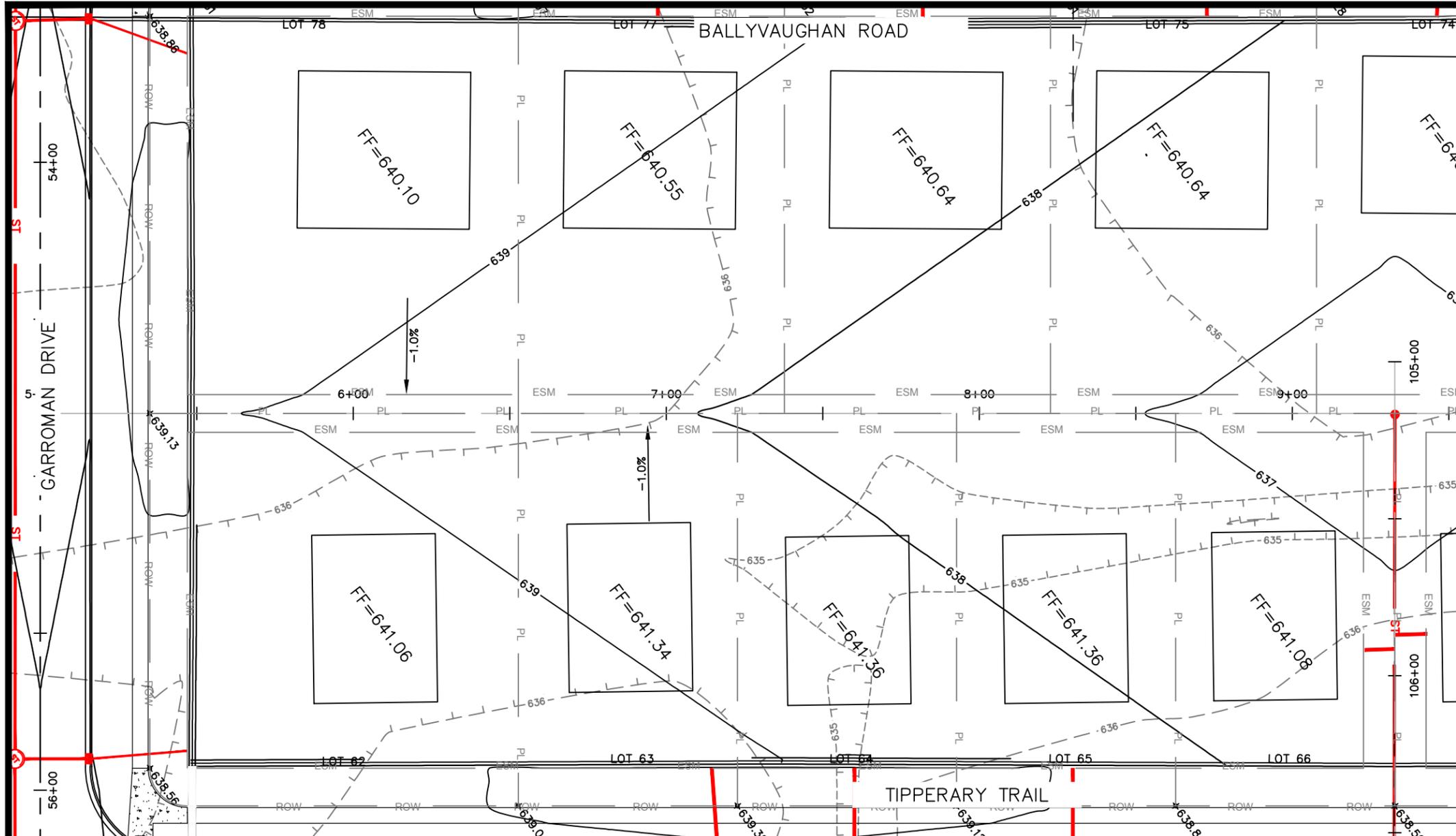
BY	DATE
SURVEYED MACH IV	8-2018
DRAWN SRL	5-2019
DESIGNED SRL	5-2019
CHECKED EPR	5-2019

REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS

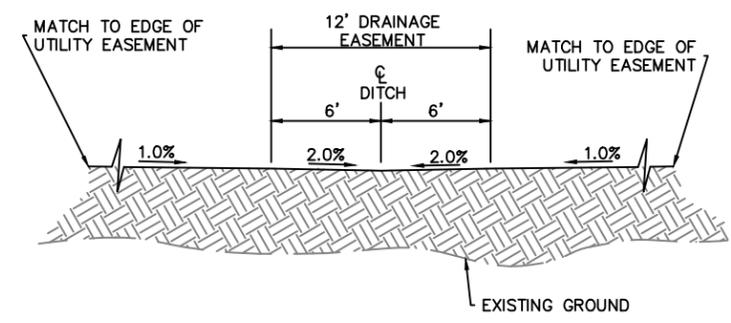


44+00	45+00	46+00	47+00	48+00
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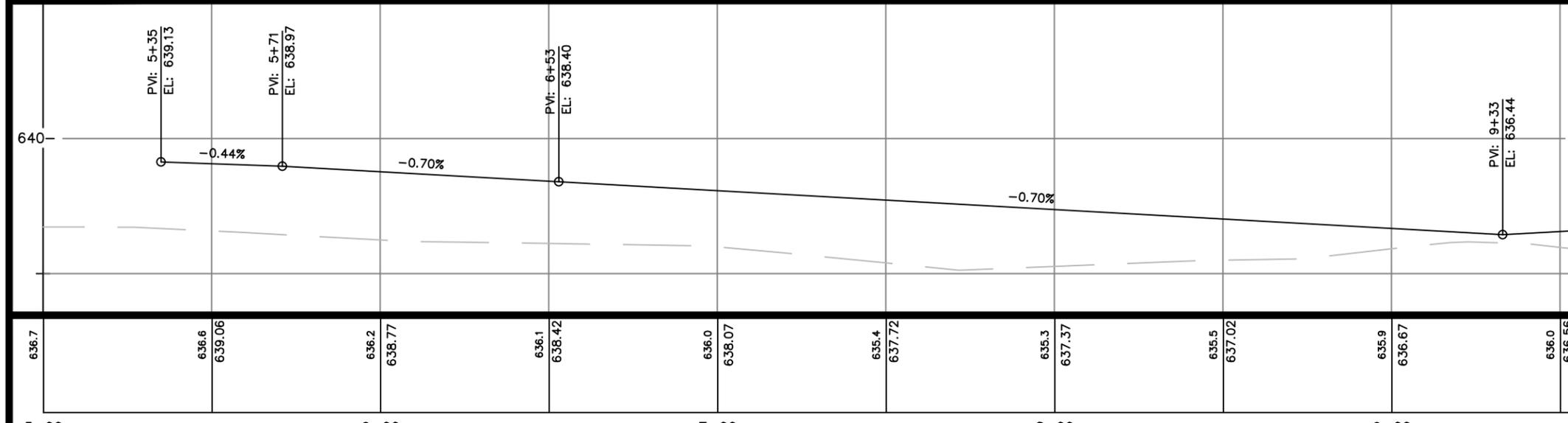
	CITY OF DE PERE ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115 OFFICE 920-339-4061 FAX 920-339-4071	GARRITY'S GLEN SOUTH DITCH GRADING BALLYVAUGHAN ROAD	NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION	BY: MACH IV DATE: 8-2018	REVISIONS / ISSUES NO. DATE BY REMARKS	PAGE NO. C413
			PROJECT # 19-11	SURVEYED: SRL DATE: 5-2019	NO. DATE BY REMARKS	
				DRAWN: SRL DATE: 5-2019	NO. DATE BY REMARKS	
				DESIGNED: SRL DATE: 5-2019	NO. DATE BY REMARKS	



SEE PAGE C415



**TYPICAL DITCH DETAIL
FOR TIPPERARY TRAIL**
1"=10'



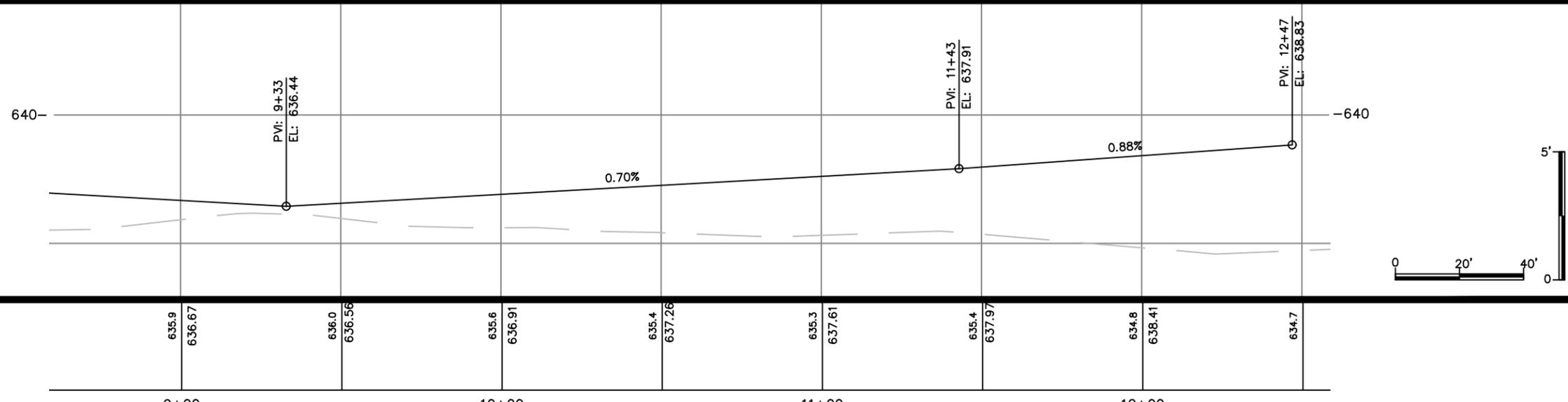
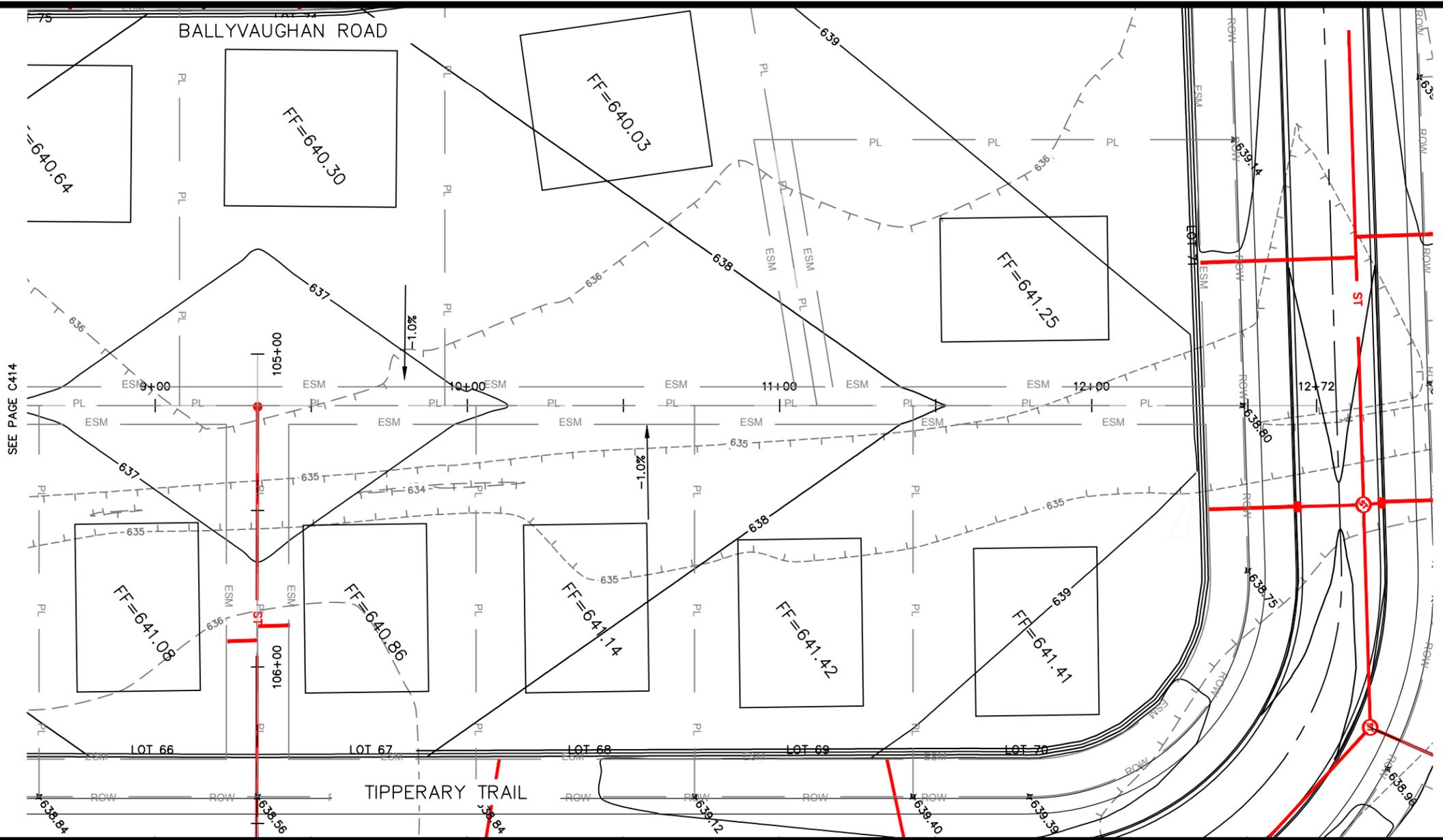
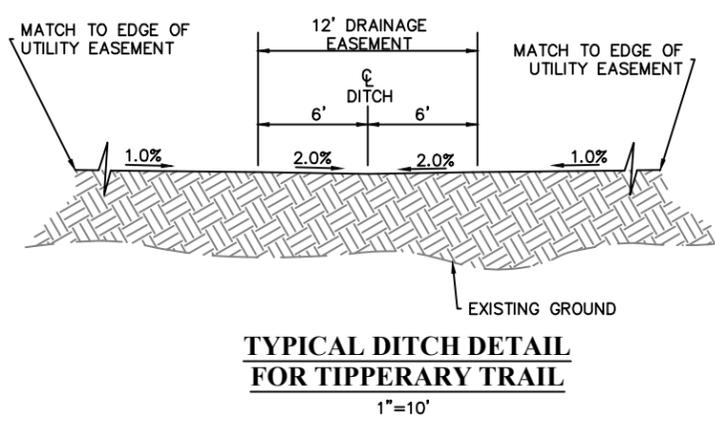
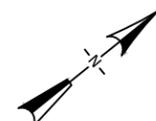
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5+00		6+00		7+00		8+00		9+00										



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**GARRITY'S GLEN SOUTH
DITCH GRADING
TIPPERARY TRAIL**

NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION	BY MACH IV	DATE 8-2018	REVISIONS / ISSUES	
PROJECT # 19-11	DRAWN SRL	DATE 5-2019	NO.	DATE
	DESIGNED SRL	DATE 5-2019	BY	REMARKS
	CHECKED EPR	DATE 5-2019		



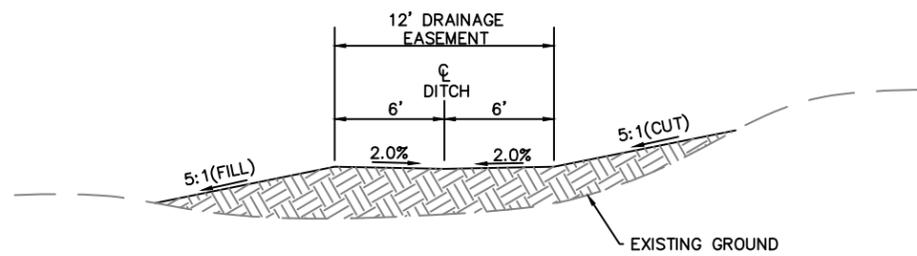
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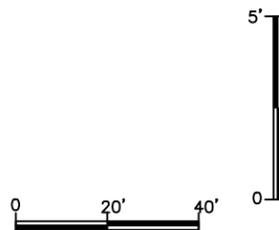
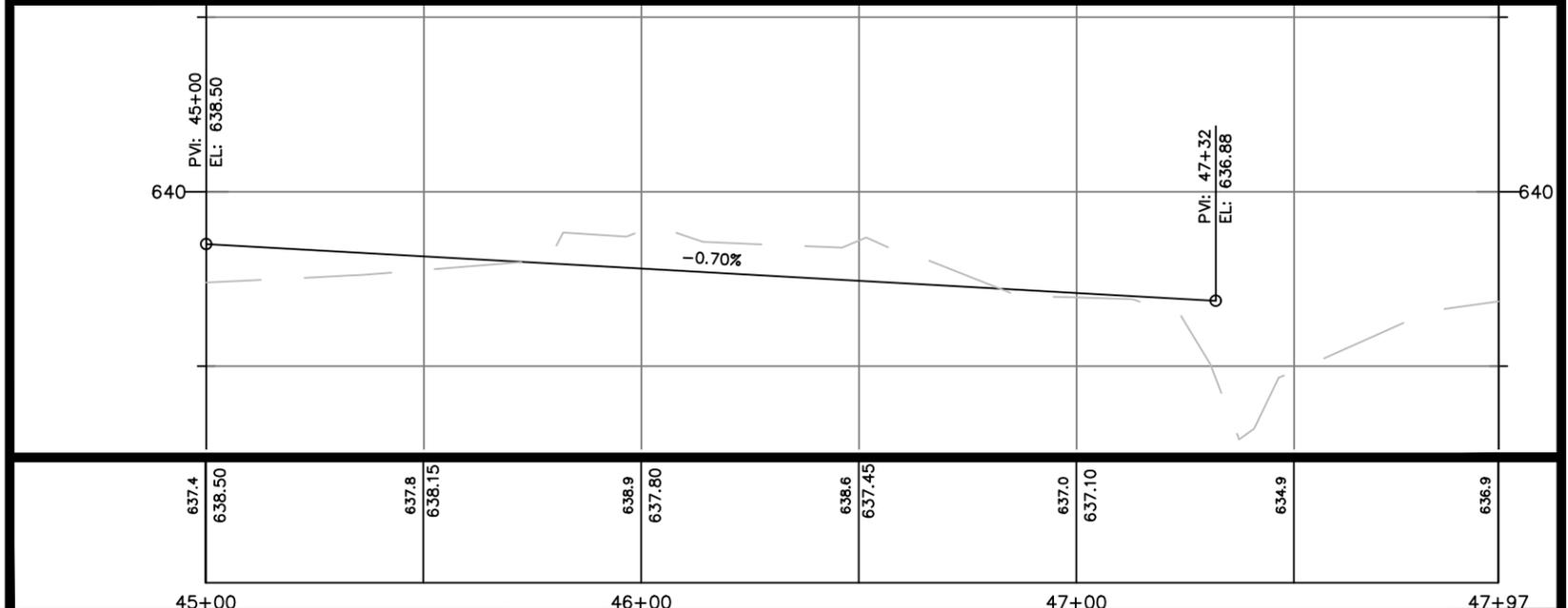
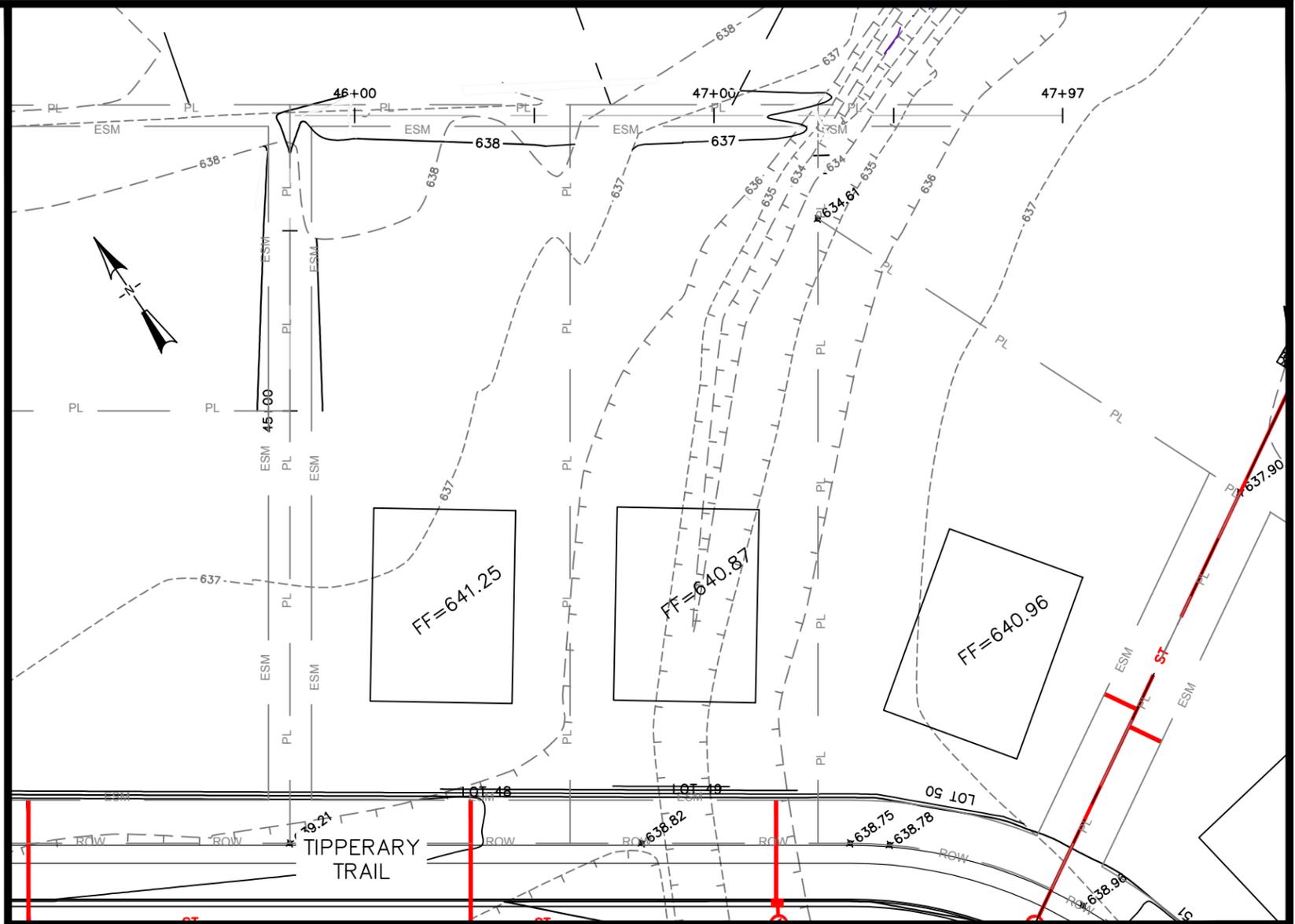
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**GARRITY'S GLEN SOUTH
 DITCH GRADING
 TIPPERARY TRAIL**

NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION	BY MACH IV	DATE 8-2018	REVISIONS / ISSUES	
PROJECT # 19-11	DRAWN SRL	5-2019	NO.	DATE
	DESIGNED SRL	5-2019	BY	REMARKS
	CHECKED EPR	5-2019		



TYPICAL DITCH DETAIL
 1"=10'



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**GARRITY'S GLEN SOUTH
 DITCH GRADING
 TIPPERARY TRAIL BY POND**

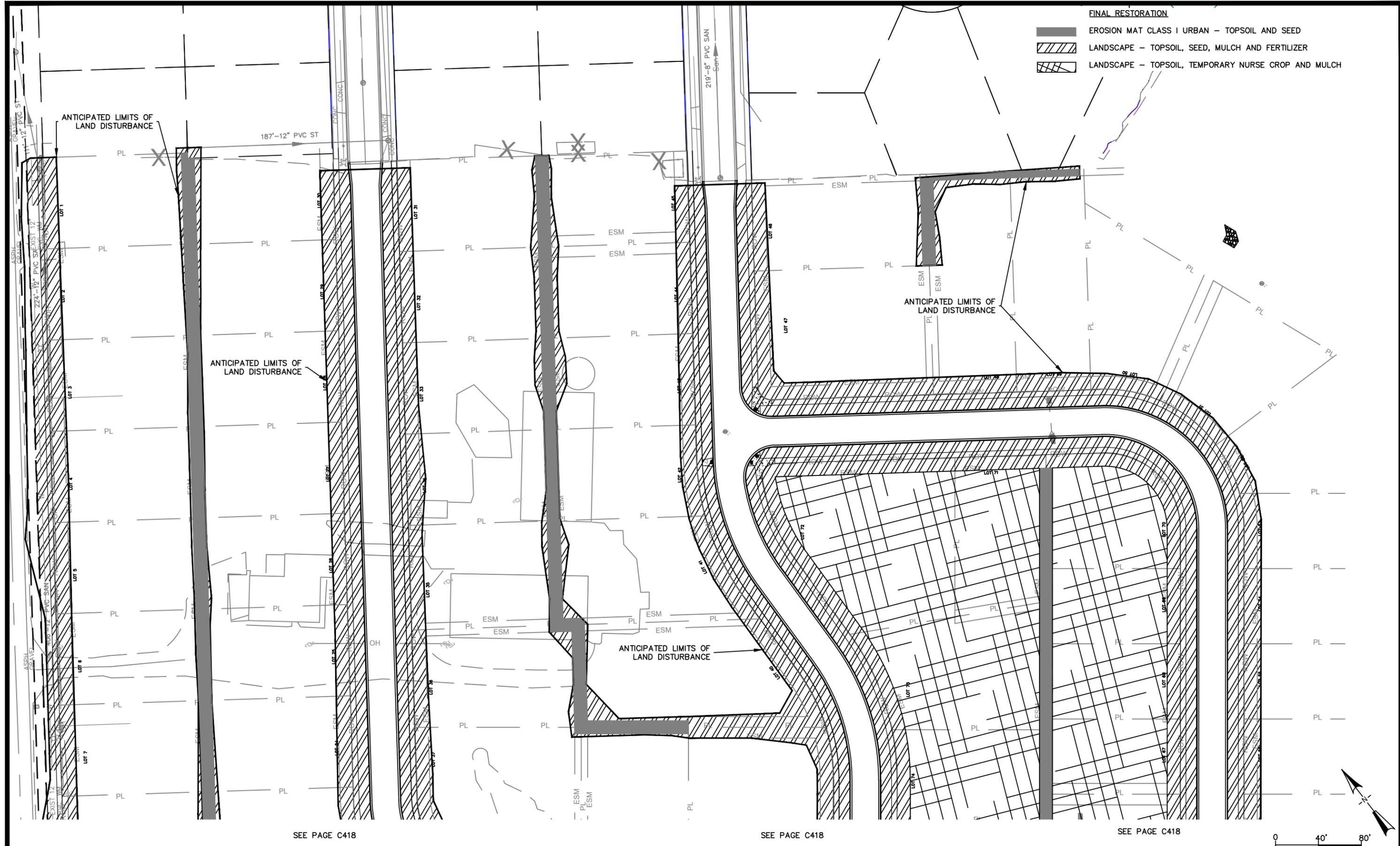
NAME: GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT # 19-11

BY	DATE
MACH IV	8-2018
SRL	5-2019
SRL	5-2019
EPR	5-2019

REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS

FINAL RESTORATION

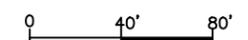
-  EROSION MAT CLASS I URBAN - TOPSOIL AND SEED
-  LANDSCAPE - TOPSOIL, SEED, MULCH AND FERTILIZER
-  LANDSCAPE - TOPSOIL, TEMPORARY NURSE CROP AND MULCH



SEE PAGE C418

SEE PAGE C418

SEE PAGE C418



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

**GARRITY'S GLEN SOUTH
FINAL RESTORATION PLAN**

NAME:
GARRITY'S GLEN SOUTH
SUBDIVISION CONSTRUCTION
PROJECT # 19-11

BY	DATE
SURVEYED	MACH IV 8-2018
DRAWN	SRL 5-2019
DESIGNED	SRL 5-2019
CHECKED	EPR 5-2019

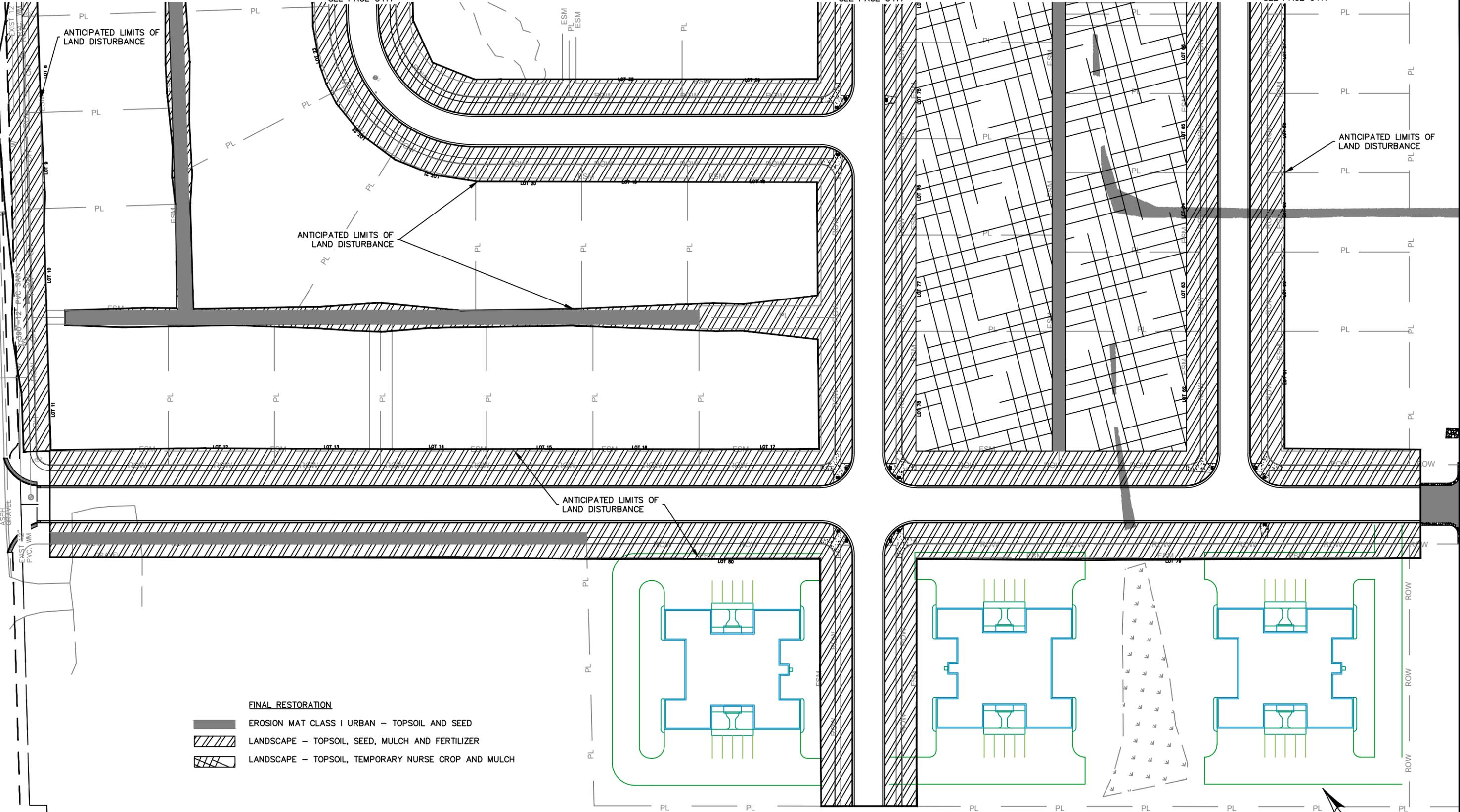
REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS

PAGE NO.
C417

SEE PAGE C417

SEE PAGE C417

SEE PAGE C417



FINAL RESTORATION

-  EROSION MAT CLASS I URBAN - TOPSOIL AND SEED
-  LANDSCAPE - TOPSOIL, SEED, MULCH AND FERTILIZER
-  LANDSCAPE - TOPSOIL, TEMPORARY NURSE CROP AND MULCH



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**GARRITY'S GLEN SOUTH
FINAL RESTORATION PLAN**

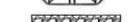
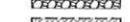
NAME: GARRITY'S GLEN SOUTH
SUBDIVISION CONSTRUCTION
PROJECT # 19-11

BY	DATE
SURVEYED	MACH IV 8-2018
DRAWN	SRL 5-2019
DESIGNED	SRL 5-2019
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REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS

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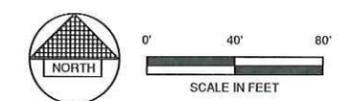
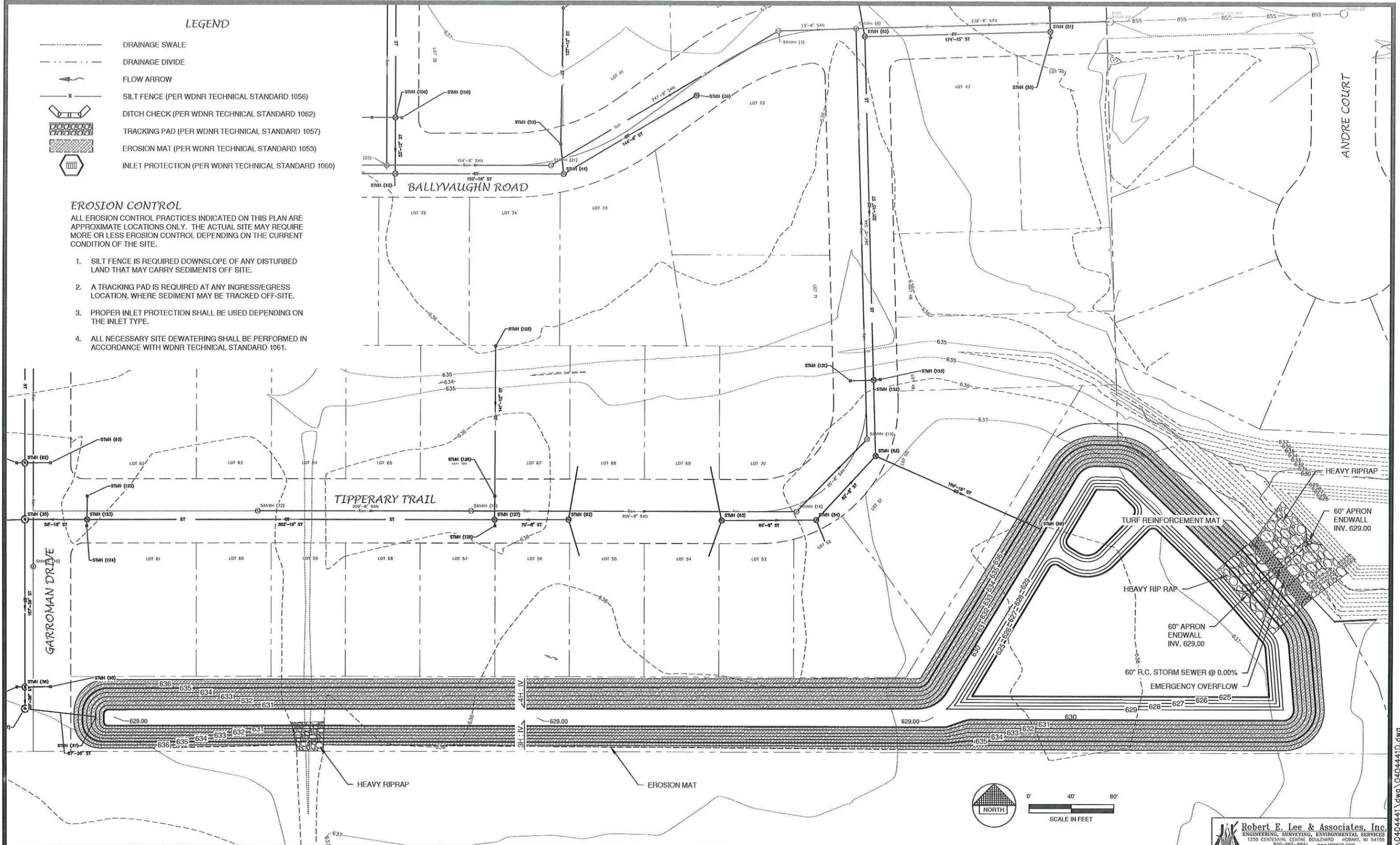
LEGEND

-  DRAINAGE SWALE
-  DRAINAGE DIVIDE
-  FLOW ARROW
-  SILT FENCE (PER WDNR TECHNICAL STANDARD 1056)
-  DITCH CHECK (PER WDNR TECHNICAL STANDARD 1062)
-  TRACKING PAD (PER WDNR TECHNICAL STANDARD 1057)
-  EROSION MAT (PER WDNR TECHNICAL STANDARD 1053)
-  INLET PROTECTION (PER WDNR TECHNICAL STANDARD 1060)

EROSION CONTROL

ALL EROSION CONTROL PRACTICES INDICATED ON THIS PLAN ARE APPROXIMATE LOCATIONS ONLY. THE ACTUAL SITE MAY REQUIRE MORE OR LESS EROSION CONTROL DEPENDING ON THE CURRENT CONDITION OF THE SITE.

1. SILT FENCE IS REQUIRED DOWNSLOPE OF ANY DISTURBED LAND THAT MAY CARRY SEDIMENTS OFF SITE.
2. A TRACKING PAD IS REQUIRED AT ANY INGRESS/EGRESS LOCATION, WHERE SEDIMENT MAY BE TRACKED OFF-SITE.
3. PROPER INLET PROTECTION SHALL BE USED DEPENDING ON THE INLET TYPE.
4. ALL NECESSARY SITE DEWATERING SHALL BE PERFORMED IN ACCORDANCE WITH WDNR TECHNICAL STANDARD 1061.



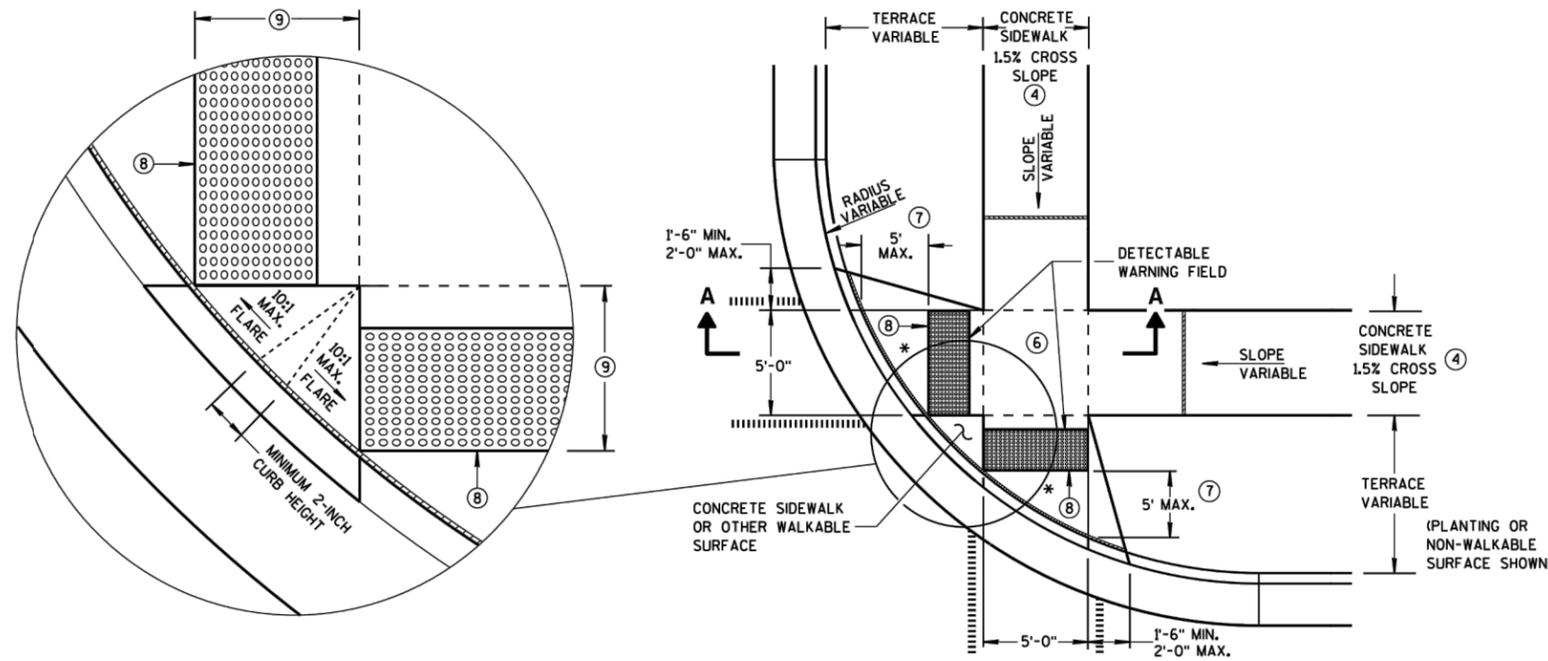
Robert E. Lee & Associates, Inc.
 ENGINEERING, SURVEYING, ENVIRONMENTAL SERVICES
 1250 CENTRAL CENTRE BOULEVARD HOBART, WI 54155
 920-662-9641 www.releinc.com

	BY	DATE
SURVEYED	XXX	-
DRAWN	LLP	05-2019
DESIGNED	PHK	05-2019
CHECKED	XXX	-

REVISIONS / ISSUES		
NO.	DATE	REMARKS

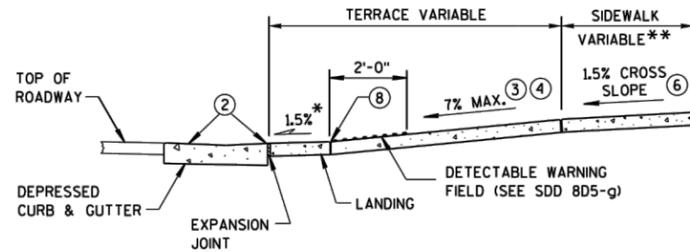
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SDD 8d5-b Curb Ramps Types 2 and 3



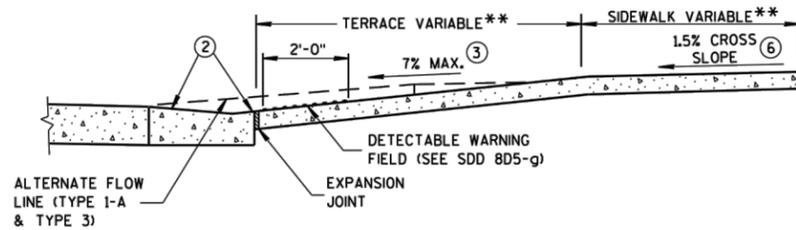
**PLAN VIEW
TYPE 2 RAMP**
(ON LINE WITH SIDEWALK)

* MAXIMUM 2.0% SLOPE
IN ALL DIRECTIONS IN
FRONT OF GRADE BREAK



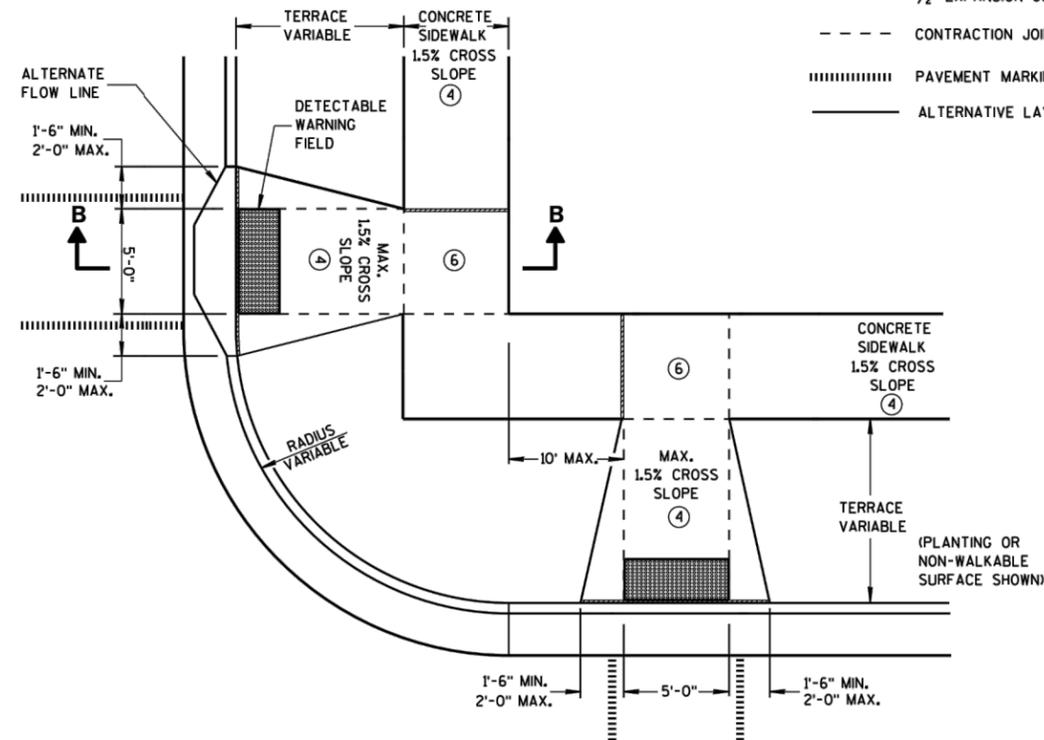
SECTION A-A

** WIDTH SHOWN ELSEWHERE
IN THE PLANS



SECTION B-B

FOR INFORMATION ONLY. CONCRETE
RAMPS WILL BE INSTALLED BY OTHERS.



**PLAN VIEW
TYPE 3 RAMP**
(OUTSIDE OF CROSSWALK AREA)

GENERAL NOTES

AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS.

DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE, SHALL BE FROM THE SAME MANUFACTURER.

- ② GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. MAXIMUM GUTTER FLAG SLOPE IS 4%. PROVIDE LONGITUDINAL DRAINAGE AROUND CURB AND AWAY FROM CURB RAMP. NO VERTICAL LIPS OR DISCONTINUITIES GREATER THAN 1/4-INCH ARE ALLOWED. SLOPE OF CURB HEAD OPENING SHALL MATCH THE RAMP SLOPE, MINIMALLY 1.5% AND NOT TO EXCEED 7%. WHEN ADJACENT TO 1.5% LANDING, CONSTRUCT CURB HEAD OPENING AT 1.5% IN THE DIRECTION OF PEDESTRIAN TRAVEL.
- ③ ABSOLUTE MAXIMUM 12H:1V (8.33%) CURB RAMP SLOPE IS ALLOWABLE WITH FLATTENED GUTTER FLAG SLOPE AND NOT TO EXCEED 11% GRADE CHANGE.
- ④ ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- ⑥ PROVIDE A LEVEL LANDING (MAXIMUM 2% SLOPE) IN ANY DIRECTION OF PEDESTRIAN TRAVEL. STANDARD LANDING SIZE IS 5 FEET X 5 FEET.
- ⑦ WHEN THIS GRADE BREAK DISTANCE EXCEEDS 5 FEET, USE RADIAL DETECTABLE WARNING FIELD PER SDD 8D5-f.
- ⑧ PROVIDE GRADE BREAK PERPENDICULAR TO DIRECTION OF WHEELCHAIR TRAVEL.
- ⑨ WHEN THIS DISTANCE IS LESS THAN 6'-0", IT MAY BE DIFFICULT TO ACHIEVE A 7% SLOPE OR FLATTER ALONG THE RAMP. REDUCE CURB HEIGHT IN TRIANGLE AREA TO ACHIEVE 7% SLOPE OR FLATTER ON RAMP. CONSTRUCT 2-INCH MINIMUM CURB HEIGHT BETWEEN 10:1 FLARES.

LEGEND

- 1/2" EXPANSION JOINT-SIDEWALK
- - - - - CONTRACTION JOINT FIELD LOCATED
- ||||| PAVEMENT MARKING CROSSWALK (WHITE)
- _____ ALTERNATIVE LAYOUT

**CURB RAMPS
TYPES 2 AND 3**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

6

S.D.D. 8 D 5-19b

S.D.D. 8 D 5-19b



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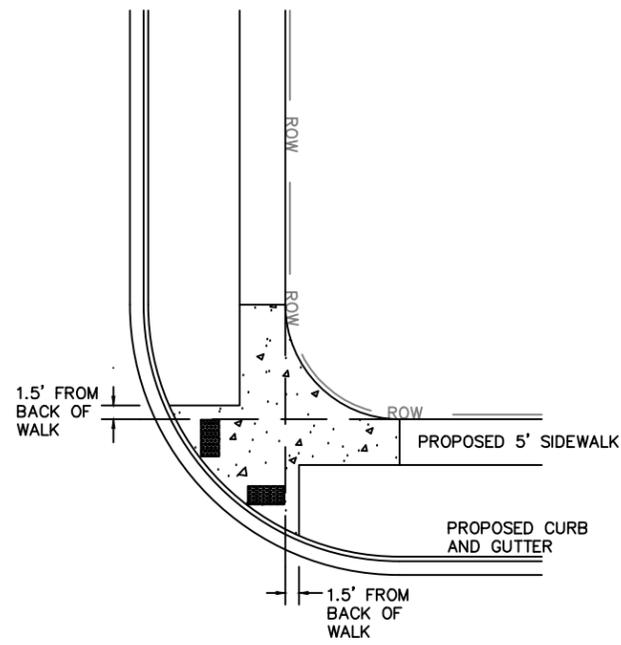
**GARRITY'S GLEN SOUTH
CONSTRUCTION DETAILS**

NAME:
GARRITY'S GLEN SOUTH
SUBDIVISION CONSTRUCTION
PROJECT # 19-11

BY	DATE
SURVEYED	MACH IV 8-2018
DRAWN	SRL 5-2019
DESIGNED	SRL 5-2019
CHECKED	EPR 5-2019

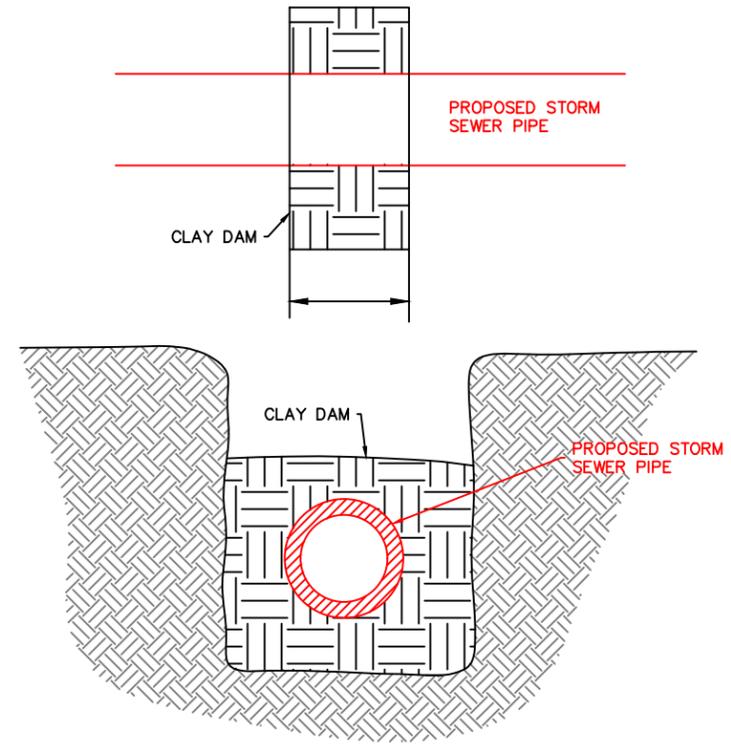
REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS

PAGE NO.
C501



STANDARD CURB RAMP LAYOUT DETAIL
N.T.S.

FOR INFORMATION ONLY. CONCRETE
RAMPS WILL BE INSTALLED BY OTHERS.



CLAY DAM DETAIL
N.T.S.



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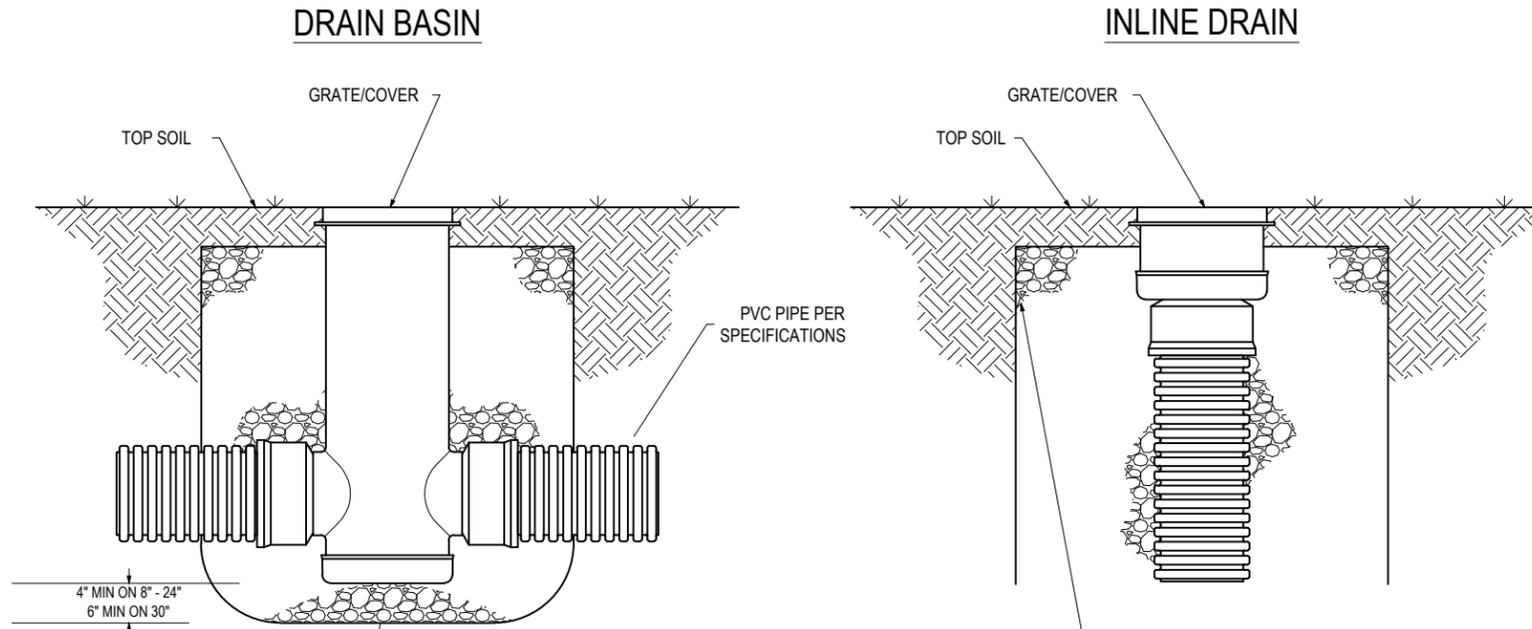
**GARRITY'S GLEN SOUTH
CONSTRUCTION DETAILS**

NAME:
GARRITY'S GLEN SOUTH
SUBDIVISION CONSTRUCTION
PROJECT # 19-11

	BY	DATE
SURVEYED	MACH IV	8-2018
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REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS

NON TRAFFIC INSTALLATION



THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS II MATERIAL AS DEFINED IN ASTM D2321, OR AS DETERMINED BY LOCAL STANDARDS & SITE ENGINEER. BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.

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DRAWN BY	CJA	MATERIAL	 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE	9-30-99	PROJECT NO./NAME	
REVISED BY	EBC	TITLE	DRAIN BASIN & INLINE DRAIN NON TRAFFIC INSTALLATION
DATE	2-24-10	DWG NO.	
DWG SIZE	A	SCALE	1:25 SHEET 1 OF 1
		REV	D



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**GARRITY'S GLEN SOUTH
 CONSTRUCTION DETAILS**

NAME:
 GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT #
 19-11

BY	DATE
MACH IV	8-2018
SRL	5-2019
SRL	5-2019
EPR	5-2019

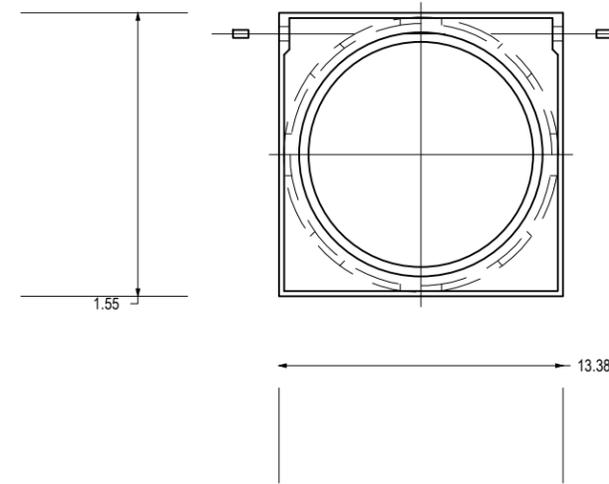
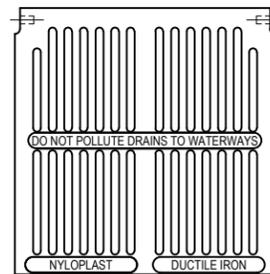
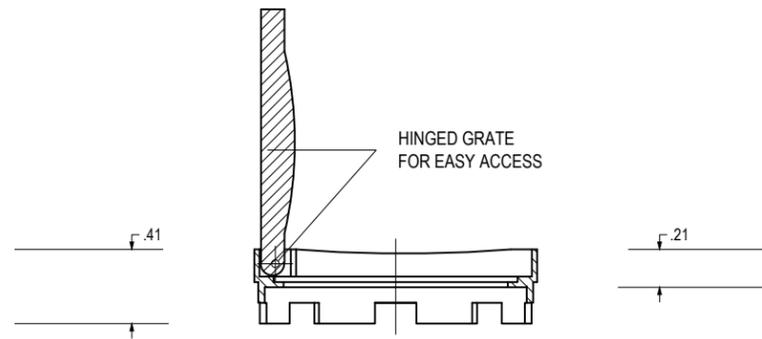
REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS

PAGE NO.

C503

1299CGP

APPROX. DRAIN AREA = 50.60 SQ IN
 APPROX. WEIGHT WITH FRAME = 35.04 LBS



DIMENSIONS ARE FOR REFERENCE ONLY
 ACTUAL DIMENSIONS MAY VARY
 DIMENSIONS ARE IN INCHES
 GRATE MEETS H-10 LOAD RATING
 QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70-50-05
 PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT
 SIZE OF OPENING MEETS REQUIREMENTS OF AMERICAN DISABILITY
 ACT AS STATED IN FEDERAL REGISTER PART III, DEPARTMENT OF
 JUSTICE, 28 CFR PART 36.
 LOCKING DEVICE AVAILABLE UPON REQUEST SEE DRAWING NO.
 7001-110-034

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DRAWN BY	EBC	MATERIAL	DUCTILE IRON
DATE	3-3-06	PROJECT NO./NAME	
REVISED BY	EBC		
DATE	3-13-10		
DWG SIZE	A	SCALE	1:8 SHEET 1 OF 1

 Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com		
	TITLE 12 IN PEDESTRIAN GRATE ASSEMBLY		
DWG NO.	7001-110-202	REV	C



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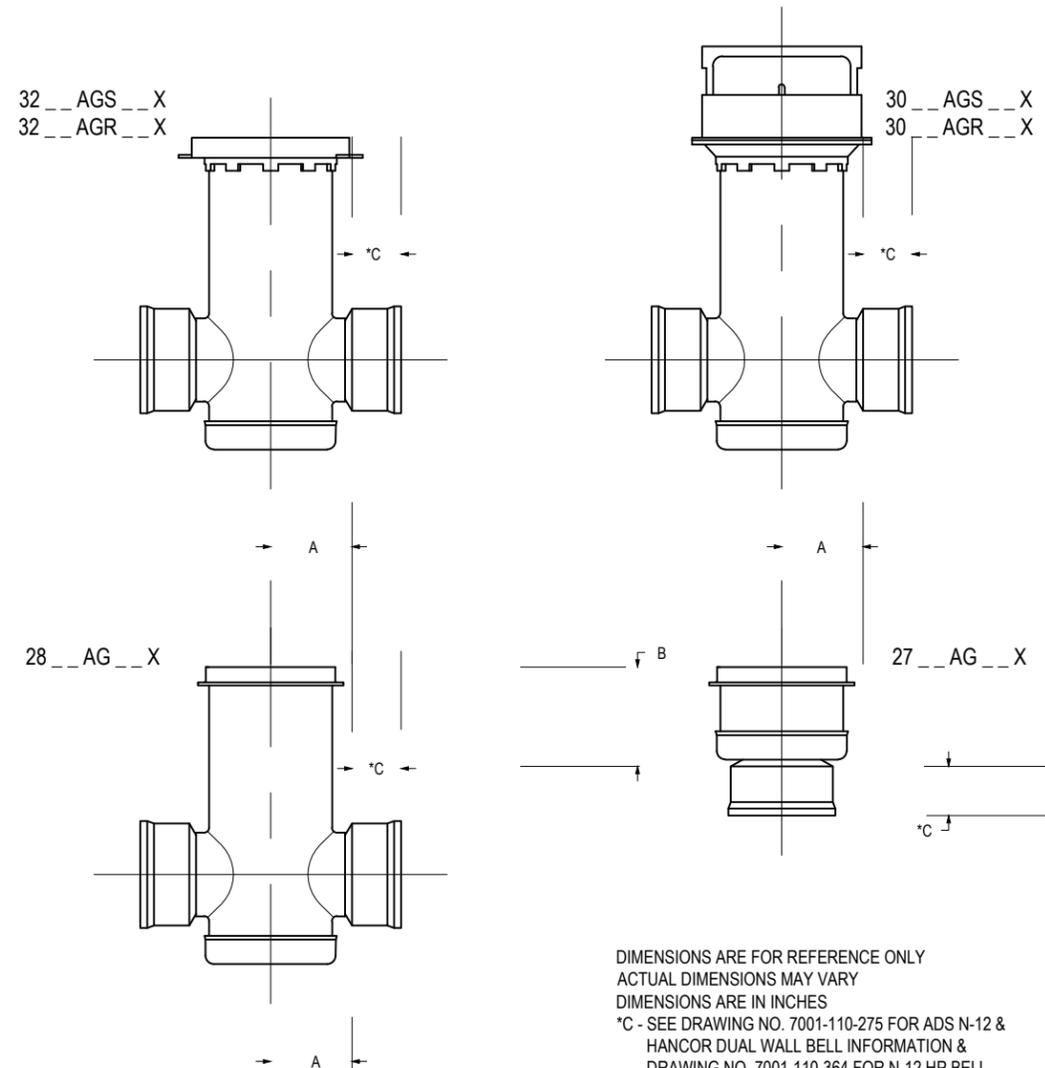
**GARRITY'S GLEN SOUTH
 CONSTRUCTION DETAILS**

NAME:
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 SUBDIVISION CONSTRUCTION
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	BY	DATE
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DESIGNED	SRL	5-2019
CHECKED	EPR	5-2019

REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS

BODY SIZE	ADAPTER SIZE	A	B
8"	4"	6.20	7.50
8"	6"	6.20	5.25
8"	8"	6.70	7.25
10"	4"	7.25	8.75
10"	6"	7.25	8.75
10"	8"	7.75	6.50
10"	10"	7.75	7.75
12"	4"	8.25	10.50
12"	6"	8.25	11.50
12"	8"	8.75	11.50
12"	10"	8.75	11.25
12"	12"	9.25	6.00
15"	4"	9.65	13.25
15"	6"	9.65	12.75
15"	8"	10.15	12.25
15"	10"	10.15	13.50
15"	12"	10.65	12.75
15"	15"	10.65	7.00
18"	4"	11.35	14.00
18"	6"	11.35	14.00
18"	8"	11.85	14.00
18"	10"	11.85	14.00
18"	12"	12.35	14.00
18"	15"	12.35	13.50
18"	18"	12.85	8.25
24"	4"	14.40	15.00
24"	6"	14.40	15.00
24"	8"	14.90	15.00
24"	10"	14.90	15.00
24"	12"	15.40	15.00
24"	15"	15.40	15.00
24"	18"	15.90	10.00
24"	24"	16.90	10.25
30"	4"	18.00	15.25
30"	6"	18.00	15.50
30"	8"	18.50	15.75
30"	10"	18.50	16.00
30"	12"	19.00	16.50
30"	15"	19.00	17.00
30"	18"	19.50	17.75
30"	24"	20.50	14.00
30"	30"	27.00	9.50



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DRAWN BY	CJA	MATERIAL	 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE	9-30-99		
REVISED BY	EBC	PROJECT NO./NAME	TITLE
DATE	3-17-10		8 IN - 30 IN BODY TO ADAPTER DIMENSIONS
DWG SIZE	A	SCALE 1:25 SHEET 1 OF 1	DWG NO. 7002-110-003 REV F



CITY OF DE PERE

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

**GARRITY'S GLEN SOUTH
 CONSTRUCTION DETAILS**

NAME:
 GARRITY'S GLEN SOUTH
 SUBDIVISION CONSTRUCTION
 PROJECT #
 19-11

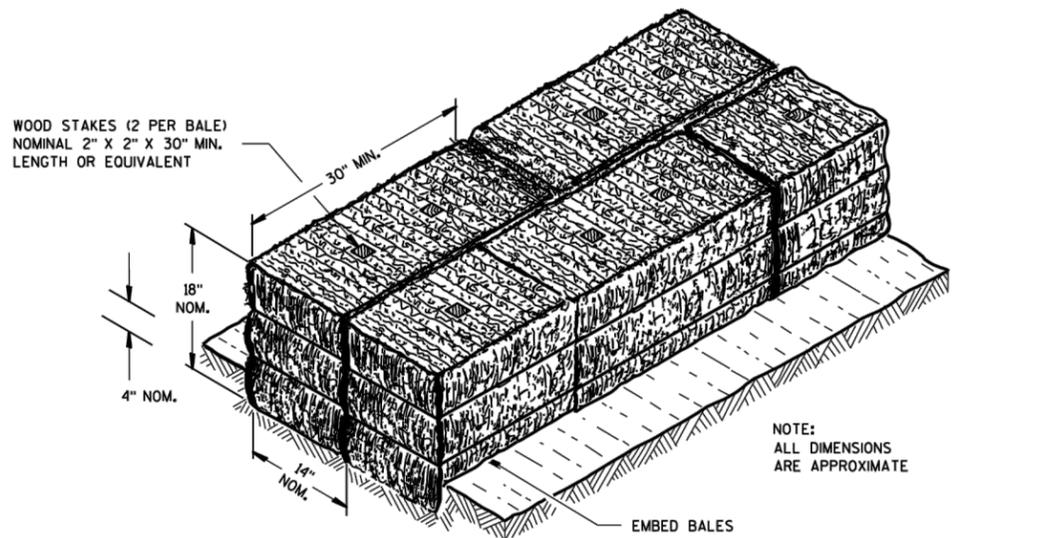
BY	DATE
SURVEYED	MACH IV 8-2018
DRAWN	SRL 5-2019
DESIGNED	SRL 5-2019
CHECKED	EPR 5-2019

REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS

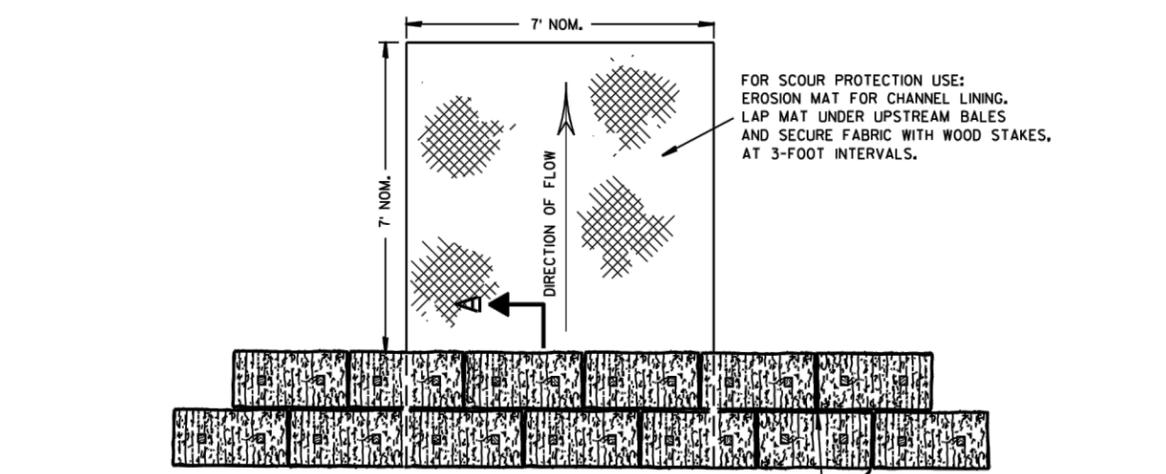
X:\Projects\City Projects\2019\Project 19-11 Garranty's Glen South\200-CAD\19-11 Construction Details.dwg



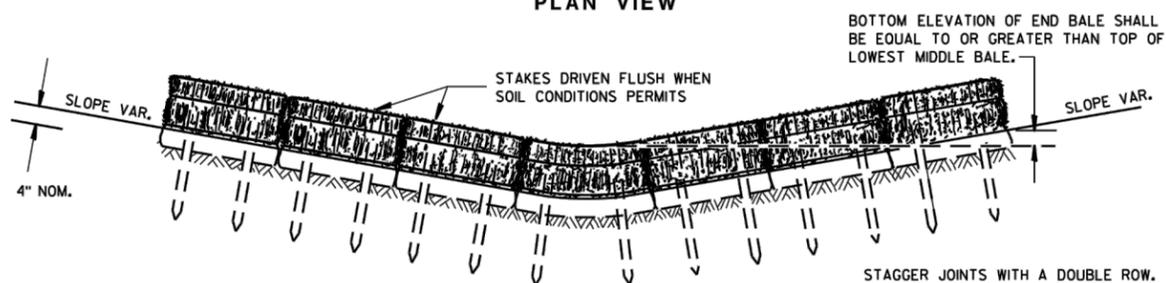
SDD 8e8 Typical Installations of Erosion Bales/Temporary Ditch Checks



SECTION A-A



PLAN VIEW



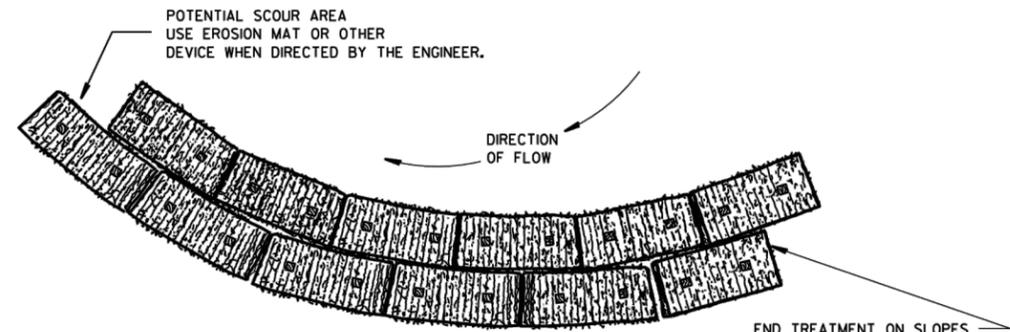
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

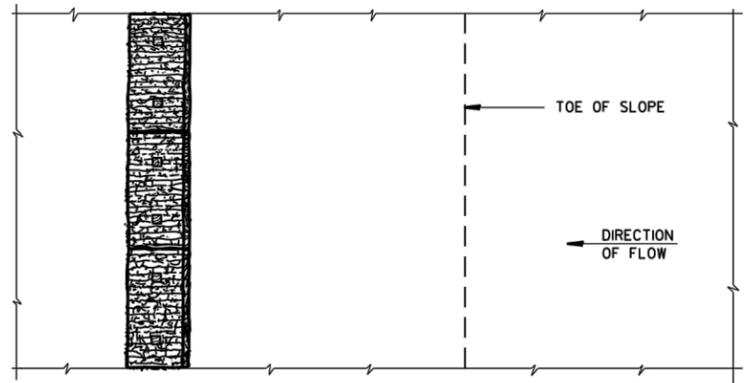
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

- ① TEMPORARY DITCH CHECKS EITHER EROSION BALES OR MANUFACTURED SHALL BE PAID FOR UNDER THE BID ITEM OF TEMPORARY DITCH CHECK. THE DEPARTMENT WILL NOT PAY FOR TEMPORARY DITCH CHECKS CONSTRUCTED OF A SINGLE ROW OF EROSION BALES.

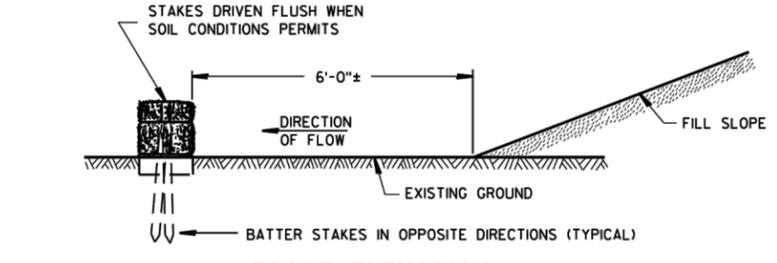


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6/04/02 /S/ Beth Canestra
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

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S.D.D. 8 E 8-3

S.D.D. 8 E 8-3



CITY OF DE PERE

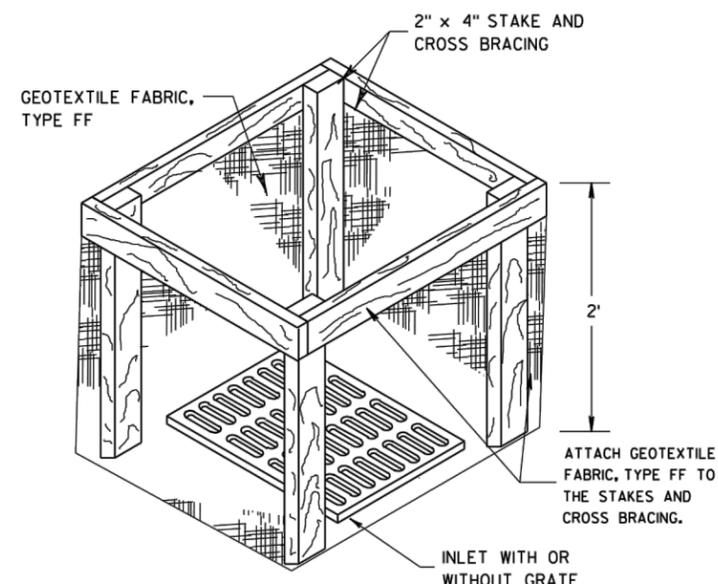
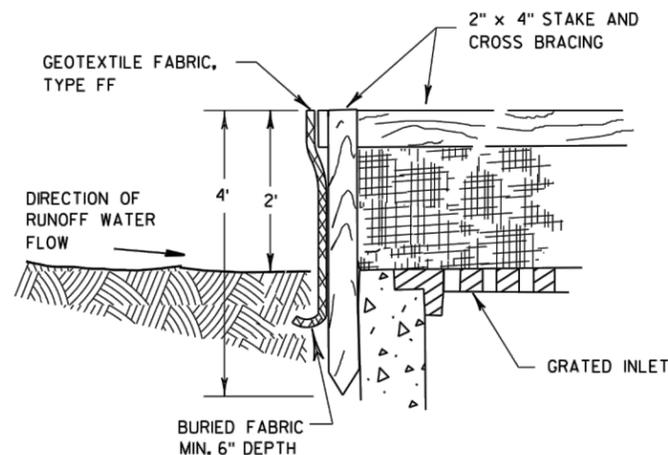
ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

GARRITY'S GLEN SOUTH CONSTRUCTION DETAILS

NAME:	BY	DATE	REVISIONS / ISSUES		PAGE NO.
			NO.	DATE	
GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION	SURVEYED	MACH IV	8-2018		C506
	DRAWN	SRL	5-2019		
	DESIGNED	SRL	5-2019		
	CHECKED	EPR	5-2019		
PROJECT #	19-11				

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



INLET PROTECTION, TYPE A

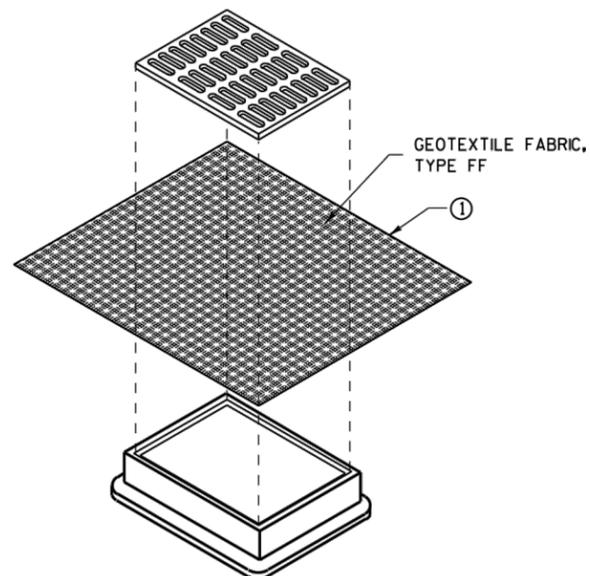
GENERAL NOTES

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.

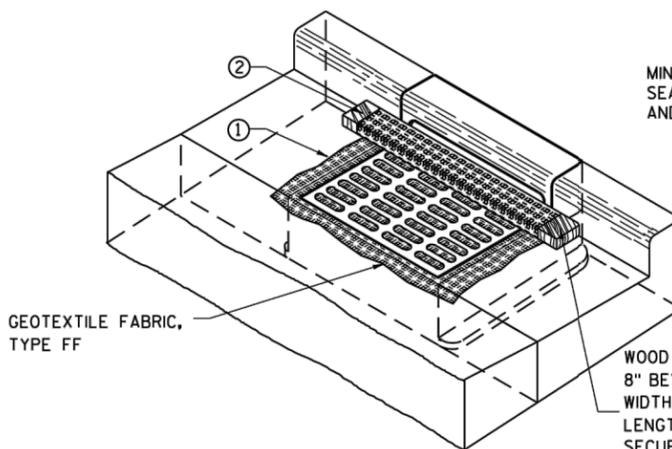
WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

- 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.



INLET PROTECTION, TYPE B (WITHOUT CURB BOX)

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



INLET PROTECTION, TYPE C (WITH CURB BOX)

INSTALLATION NOTES

TYPE B & C

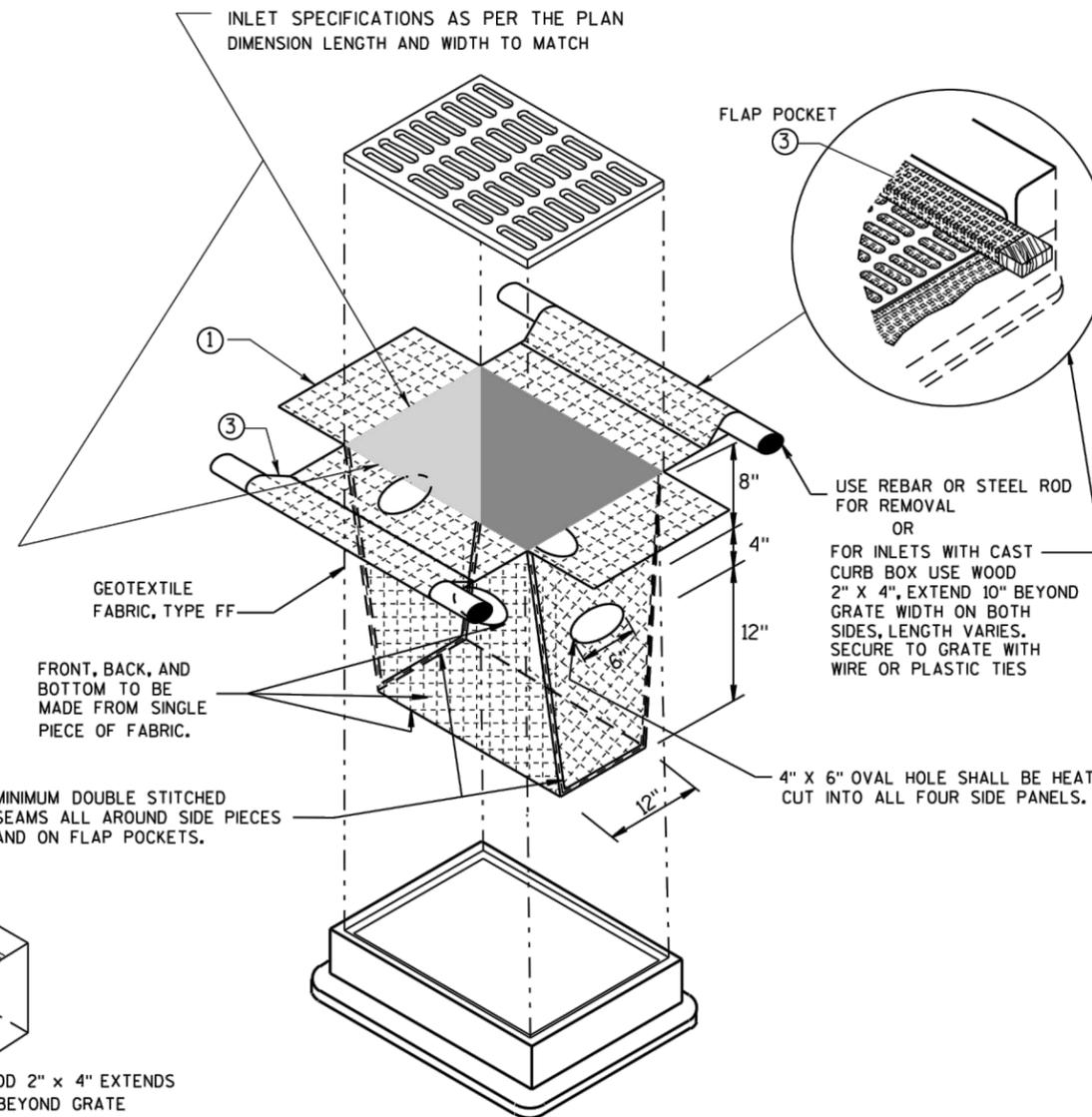
TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE. THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

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.



INLET PROTECTION, TYPE D

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

INLET PROTECTION TYPE A, B, C, AND D

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6

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S.D.D. 8 E 10-2

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

GARRITY'S GLEN SOUTH CONSTRUCTION DETAILS

NAME: GARRITY'S GLEN SOUTH SUBDIVISION CONSTRUCTION	BY MACH IV	DATE 8-2018	REVISIONS / ISSUES	
PROJECT # 19-11	SURVEYED SRL	5-2019	NO.	DATE
	DESIGNED SRL	5-2019	BY	REMARKS
	CHECKED EPR	5-2019		

PAGE NO.
C507