SHAWNEE COUNTY
INVITATION TO BID

Quotation Number: 028-23
Date Issued: 06-02-2023
Closing Date: 07-05-2023, 2:00pm

Vendor Name: _____
Address: _____
Phone Number: _____

1. SHAWNEE COUNTY PROJECT: S-601017.00 Timber Ridge Subdivision – Street, SW 55th Terrace / Maupin Lane

2. BIDS RECEIVED UNTIL: 2:00 P.M., Local Time, **Wednesday, July 5, 2023**, through the Shawnee County bid portal, www.snco.us/purchasing/.

3. BID OPENING: Bids from the portal will be publically read and recorded at 2:30 PM, Local Time, Wednesday, July 5, 2023, in the County Commission Chambers, 707 SE Quincy, 1st Floor.

4. DESCRIPTION OF MAJOR UNITS OF WORK:
   Approximately 1,332 SY of 8" Asphalt Pavement, 1,745 SY of 8" AB-3, 934 LF of Curb & Gutter

5. DESIGN ENGINEER: SBB Engineering LLC, 101 S. Kansas Ave., Topeka, KS 66609

6. BID DOCUMENTS: Digital (.pdf) Project Drawings and Project Manual may be obtained free of charge from the bid portal, or by emailing a request to Courtney.Liberato@sbbeng.com.

7. BID SECURITY REQUIREMENTS: All bids must be accompanied by a certified check, cashier's check or a bid bond for not less than five percent (5%) of the amount bid (including alternates), made payable to the County Clerk of Shawnee County, Kansas.

8. PRE-BID CONFERENCE: N/A

9. SUBMITTAL: Bid Submittal requirements are explained in the Instructions to Bidders.

SHAWNEE COUNTY, KANSAS

SPECIFICATIONS AND CONTRACT

DOCUMENTS

TIMBER RIDGE SUBDIVISION
Shawnee County Project No. S-601017.00

SW 55TH TERRACE / SW MAUPIN LANE

DIRECTOR OF PUBLIC WORKS/
SHAWNEE COUNTY ENGINEER

Curt F. Niehaus, PE

BOARD OF COUNTY
COMMISSIONERS

Bill Riphahn
Chair

Kevin Cook
Vice-Chair

Aaron Mays
Member

Shawnee County
Department of Public Works 1515
NW Saline Street
Topeka, Kansas

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DOCUMENT 020
INVITATION TO BID

1. **SHAWNEE COUNTY PROJECT:** S-601017.00 Timber Ridge Subdivision – Street SW 55th Terrace / SW Maupin Lane

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7. **BID SECURITY REQUIREMENTS:** All bids must be accompanied by a certified check, cashier's check or a bid bond for not less than five percent (5%) of the amount bid (including alternates), made payable to the County Clerk of Shawnee County, Kansas.

8. **PRE-BID CONFERENCE:** A pre-bid conference will be held at N/A. Representatives of the Design Engineer and Owner will be present to answer questions. Attendance is N/A (Specify mandatory or optional).

9. **SUBMITTAL:** Bid Submittal requirements are explained in the Instructions to Bidders.

DOCUMENT 100
INSTRUCTIONS TO BIDDERS

1. Defined Terms.

Terms used in these Instructions to Bidders shall have the meanings assigned to them in the General Conditions. The term "Successful Bidder" means the lowest, qualified, responsible Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award.

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 Invitation may be obtained from the office designated in the Invitation to Bid.

2.2. Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Design Engineer assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.3. Owner and Design Engineer in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

3. Qualifications of Bidders.

To demonstrate qualifications to perform the Work, the apparent low Bidder must be prepared to submit within five days of Owner's request written evidence of the types set forth in the General or Supplementary Conditions, such as financial data, previous experience and evidence of authority to conduct business in the jurisdiction where the Project is located. Any information furnished pursuant to this section shall be deemed confidential and will not be disclosed by the Owner. Each Bid must contain evidence of Bidder's qualification to do business in the State of Kansas or covenant to obtain such qualification prior to award of the contract.

4. Examination of Contract Documents and Site.

4.1. Before submitting a Bid, each Bidder must (a) examine the Contract Documents thoroughly, (b) visit the site to familiarize himself with local conditions that may in any manner affect cost, progress or performance of the Work, (c) familiarize himself with federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work; and (d) study and carefully correlate Bidder's observations with the Contract Documents.

4.2. Reference is made to the Supplementary Conditions for the identification of those reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which have been relied upon by Engineer in preparing the Drawings and Specifications. Owner will make copies of such reports available to any Bidder requesting them. These reports are not guaranteed as to accuracy or completeness, nor are they part of the Contract Documents. Before submitting his Bid each Bidder will, at his own expense, make such additional investigations and tests as the Bidder may deem necessary to determine his Bid for performance of the Work in accordance

with the specified calendar completion dates, price and other terms and conditions of the Contract Documents.

4.3. On request Owner will provide each Bidder access to the site to conduct such investigations and tests as each Bidder deems necessary for submission of his Bid.

4.4. The lands upon which the Work is to be performed, rights-of-way for access thereto and other lands designated for use by Contractor in performing the Work are identified in the Supplementary Conditions, Specifications or Drawings.

4.5. The submission of a Bid will constitute an incontrovertible representation by the Bidder that he has complied with every requirement of this Article 4 and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms, and conditions for performance of the Work.

5. Interpretations.

All questions about the meaning or intent of the Contract Documents shall be submitted to the Design Engineer as defined in Article 2 of the Agreement in writing at least 10 calendar days prior to the opening of Bids. Replies will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

6. Bid Security.

6.1. Bid Security shall be made payable to Owner, in an amount of five percent of the Bidder's maximum Bid price (including alternates) and in the form of a certified or cashier's check or a Bid Bond issued by a Surety meeting the requirement of paragraph 5.1 of the General Conditions. All forms of Bid Security must be delivered in original form. Facsimile transmission of Bid Security documents will not be accepted.

6.2. The Bid Security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required Contract Security, whereupon it will be returned; if the successful Bidder fails to execute and deliver the Agreement and furnish the required Contract Security within 10 days of the award of contract, Owner may annul the award and the Bid Security of that bidder will be forfeited to the Owner.

The Bid Security of any Bidder whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the seventh day after the "Effective date of the Agreement" (which term is defined in the General Conditions). Bid Security of other Bidders will be returned within seven days of the Bid opening.

7. Calendar Completion Date Contract.

The specified calendar completion dates by which the Work is to be completed is set forth in the Agreement.

8. Liquidated Damages.

Provisions for liquidated damages are set forth in the Agreement.

9. Substitute Material and Equipment.

The Contract, if awarded, will be on the basis of material and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or equal" items. Whenever it is indicated in the Drawings or allowed by Specifications that a substitute or an "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 Agreement". The procedure for submittal of any such application by Contractor and consideration by Engineer is set forth in paragraphs 6.7.1, 6.7.2 and 6.7.3 of the General Conditions which may be supplemented in the Specifications.

10. Subcontractors, etc.

10.1. Bidder must submit to Owner, as part of their Bid Form, a complete list of all Subcontractors and other persons and organizations (including those who will be furnishing the principal items of material and equipment) proposed to be used by the bidder to complete this project. Failure by the Bidder to provide this list with his bid shall render the bid nonresponsive. If requested by the Owner, the Successful Bidder shall submit to the owner, in writing, an experience statement with pertinent information as to similar projects and other evidence of qualifications for each such Subcontractor, person and organization listed on the Bid Form. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, other person or organization, either Owner or Engineer may before giving the award of contract, request the apparent Successful Bidder to submit an acceptable substitute without an increase in Bid Price. If the apparent Successful Bidder declines to make any such substitution, the contract shall not be awarded to such Bidder, but his declining to make any such substitution will not constitute grounds for sacrificing his Bid Security. Any Subcontractor, other person or organization so listed and to whom Owner or Engineer does not make written objection prior to giving the award of contract, will be deemed acceptable to Owner and Engineer. Substitutions to this list of acceptable Subcontractors and other persons and organizations after the apparent Successful Bidder has been awarded a contract by the Owner will not be allowed without the written approval of the Owner or Engineer.

10.2. No Contractor shall be required to employ any Subcontractor, other person or organization against whom he has reasonable objection.

10.3. No Subcontractor who is on the Owner's "List of Suspended Contractors" as of the date of the opening of Bids may be employed by the Contractor on the project. A current list of suspended contractors may be obtained from the County Clerk’s Office.

10.4. The amount of the Work performed by Subcontractors in aggregate shall not exceed seventy (70) percent of the Total Bid in accordance with paragraph 6.8.3 of the General Conditions. A contract will not be awarded to a bidder not in compliance with this requirement.

11. Bid Form.

11.1. The Bid Form is included in this Project Manual; additional copies may be obtained from the office designated in the Invitation to Bid.

11.2. Bid Forms must be typed and submitted through the Shawnee County bid portal, www.snco.us/purchasing/.

11.3. Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address shall be shown below the signature.

11.4. Bids by partnerships must be executed in the partnership name and signed by a partner whose title must appear under the signature and the official address of the partnership must be shown below the signature.

11.5. All names must be typed or printed below the signature.

11.6. The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).

11.7. The address to which communications regarding the Bid are to be directed must be shown, if different than that required above.

12. Submission of Bids.

12.1. Bids must be submitted on a duly executed copy of the Bid Form obtainable as designated in the Invitation to Bid.

12.2. Bids shall be submitted at the time and place indicated in the Invitation to Bid and shall be included in an opaque sealed envelope marked with the Project title and name and address of the Bidder and accompanied by the Bid Security and other required documents. Bids received after the closing time indicated in the Invitation to Bid will be rejected.

12.3. Bids will not be accepted from any Contractor who is on the Owner's "List of Suspended Contractors" as of the date of the Opening of Bids. Bids received from suspended Contractors will automatically be rejected.

13. Modification and Withdrawal of Bids.

13.1. Bids 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 at any time prior to the opening of Bids.

13.2. If, within twenty-four 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 his Bid, Owner may, at its sole discretion, allow that bidder to withdraw his Bid and the Bid Security will be returned.

14. Opening of Bids.

Bids will be read publicly as noted on the Invitation to Bid.

15. Bids to Remain Open.

All Bids shall remain open for thirty (30) days after the day of the bid opening, but Owner may, in his sole discretion, release any Bid and return the Bid Security prior to that date.

16. Award of Contract.

16.1. Owner reserves the right to reject any and all Bids, to waive any and all informalities and to negotiate contract terms with the Successful Bidder. Owner reserves the right to reject all nonconforming, nonresponsive or conditional Bids. Discrepancies in the indicated multiplication of unit prices and quantities shall be resolved in favor of the correct multiplication based on the unit prices indicated. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

16.2. In evaluating Bids, Owner shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements and alternates and unit prices if requested in the Bid forms. It is Owner's intent to accept alternates (if any are accepted) in the order in which they are listed in the Bid form but Owner may accept them in any order or combination.

16.3. Owner may consider the qualifications, experience and financial ability of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the Work as to which the identity of Subcontractors and other persons and organizations must be submitted as provided in the General Conditions. Operating costs, maintenance considerations, performance data and guarantees of materials and equipment may also be considered by Owner.

16.4. Owner reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.

16.5. If the contract is to be awarded it will be awarded to the lowest Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Owner.

16.6. If the contract is to be awarded, Owner will notify the Successful Bidder within thirty (30) days after the day of the Bid opening.

17. Performance and Other Bonds.

Paragraph 5.1 of the General Conditions sets forth Owner's requirements as to performance and other Bonds. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by the required Contract Security.

18. Signing of Agreement.

Owner will notify the apparent low Bidder in writing that their bid will be recommended for award of contract, it will be accompanied by at least three unsigned counterparts of the Agreement and all other Contract Documents. Contractor shall sign and deliver all counterparts of the Agreement to Owner with all other Contract Documents attached by the date and time specified in Document 820,

Supplementary Conditions. The Contractor shall also submit certificates of insurance in accordance with paragraph 2.1 of the General Conditions and an estimated construction schedule in accordance with paragraph 2.6 of the General Conditions with the executed Agreement. Within ten days after contract award, Owner will deliver all fully signed counterparts to Contractor.

19. Sales Taxes.

19.1. For all projects, payment of Kansas State Sales Tax or Compensating (Use) tax is not necessary and should not be included in unit prices bid for materials to be incorporated in the work. The County Engineer will furnish an exemption certificate (including exemption certificate number) obtained from the Sales and Compensating Tax Division of the Department of Revenue of the State of Kansas to the Contractor, Subcontractor or repairmen making purchases of any tangible personal property to be incorporated in this project. The Contractor, Subcontractor or repairmen must furnish all suppliers with a copy of the properly executed exemption certificate secured for this project. He may reproduce as many copies of the certificate as he may need.

20. State Registration of Out-of-State Contractors.

Bidders are advised that K.S.A. 79-1008, 79-1009 requires the registration of out-of-state contractors with the Director of Revenue for collection of tax.

21. Non-Resident Bidders.

Attention is directed to Section 16-113 and 16-114 of the Kansas Statutes Annotated which requires that any Non-Resident Contractor who undertakes the construction of any public improvement to be paid for out of public funds, must appoint in writing and file with the Kansas Secretary of State, some person (resident in Shawnee County, Kansas) on whom service may be had in any civil action which may arise out of such contractual relation.

22. Equal Employment Opportunity.

It is the policy of Shawnee County, Kansas to require that all bidders and contractors are expected to comply with the provisions of K.S.A. 44-1030 and 44-1031 and other applicable Federal and Kansas laws governing equal employment opportunity.

22.1. Comply with K.S. A. 44-1030 requiring that:

a. The Contractor shall observe the provisions of the Kansas act against discrimination and shall not discriminate against any person in the performance of work under the present contract because of race, religion, color, sex, physical handicap unrelated to such person's ability to engage in the particular work, national origin or ancestry;

b. In all solicitations or advertisements for employees, the Contractor shall include the phrase, "equal opportunity employer," or a similar phrase to be approved by the commission;

c. If the Contractor fails to comply with the manner in which the Contractor reports to the commission in accordance with the provisions of K.S.A. 44-1031, the Contractor shall be deemed to have breached the present contract and it may be cancelled, terminated or suspended, in whole or in part, by the Owner;

d. If the Contractor is found guilty of a violation of the Kansas act against discrimination under a decision or order of the commission which has become final, the Contractor shall be deemed to have breached the present contract and it may be cancelled, terminated or suspended, in whole or in part, by the Owner; and

e. The Contractor shall include the provisions of paragraphs (a) through (d) inclusively of this subsection 22.1. in every sub-contract or purchase order so that such provisions will be binding upon such Subcontractor or vendor.

22.2. Guarantee that during the performance of any County contract or agreement the Contractor, Subcontractor, vendor, or supplier of the County shall comply with all provisions of the Civil Rights Act of 1964, The Equal Employment Opportunity Act of 1972, Executive Order 11246, Age Discrimination in Employment Act of 1967, Part 20 Title 41 of the Code of Federal Regulations, Rehabilitation Act of 1973.

23. Standard Technical Specifications.

This project shall be subject to the latest revisions of the City of Topeka and Shawnee County Standard Technical Specifications, with any addenda thereto, except as modified or supplemented by specifications contained in this Project Manual and Kansas Department of Transportation Specifications for Road and Bridges, latest edition and addendum.

DOCUMENT 101
MODIFICATIONS TO INSTRUCTIONS TO BIDDERS

These modifications to the Instruction to Bidders amend or supplement the Instruction to Bidders, Document 100, of this Project Manual, as listed below. All provisions which are not so amended or supplemented shall remain in full force and effect.

1) Bids must be submitted through the Shawnee County bid portal, www.snco.us/purchasing/.

DOCUMENT 330
BID FORM

TO: Board of County Commissioners
200 S.E. 7th St., Room B-11
Topeka, Kansas 66603

Project No. and Description: S-601017.00 Timber Ridge Subdivision – Street

SW 55th Terrace / SW Maupin Lane

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with Owner in the form included in the contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Price and be complete by the Calendar Completion Dates indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.

2. Bidder accepts all of the terms and conditions of the Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for thirty (30) days after the day of Bid opening. Bidder will sign and submit the Agreement with the Bonds and other documents required by the Bidding Requirements within ten days after receipt of the award of contract and Contract Documents from the Owner.

3. In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that:

a. Bidder has examined copies of all the bidding Documents and of the following Addenda (receipt of all which is hereby acknowledged):

Date	Number
_____	_____
_____	_____
_____	_____
_____	_____

b. Bidder has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

c. Bidder has studied carefully all reports and drawings of subsurface conditions and drawings of physical conditions which are identified in the Supplementary Conditions as provided in paragraph 4.2 of the General Conditions, and accepts the determination set forth in the Supplementary Conditions (if applicable) of the extent of the technical data contained in such reports and drawings upon which Bidder is entitled to rely.

d. Bidder has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests and studies (in addition to or to supplement these referred to in (c) above) which pertain to the subsurface or physical conditions at the site or otherwise may affect the cost, progress, performance or furnishing of the Work as Bidder considers necessary for the performance or furnishing of the Work at the Contract Price, by the Calendar Completion Date and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.2 of the General Conditions; and no additional examinations, investigations, explorations, tests, reports or similar information or data are or will be required by Bidder for such purposes.

e. Bidder has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports or similar information or data in respect of said Underground Facilities are or will be required by Bidder in order to perform and furnish the Work at the Contract Price, by the Calendar Completion Date and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.3 of the General Conditions.

f. Bidder has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

g. Bidder has given the Design Engineer written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to Bidder.

h. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other bidder or over Owner.

Project No. and Description: S-601017.00 Timber Ridge Subdivision – Street

SW 55th Terrace / Mauplin Lane

4. Bidder will complete the Work for the following price(s):

ITEM	DESCRIPTION	QTY	UNITS	UNIT PRICE	TOTAL
1	STREET GRADING - UNCLASSIFIED EXCAVATION / EMBANKMENT*	400	CY		
2	8" ASPHALTIC CONCRETE PAVEMENT	1,332	SY		
3	8" AB-3	1,745	SY		
4	COMBINED CURB & GUTTER, TYPE IV	934	LF		
5	6" ASPHALT (TEMPORARY TURNAROUND)	158	SY		
6	SIGN (OM4-1)	4	EA		

TOTAL BID $ _____

NOTE: Quantities bid are estimates only. Shawnee County reserves the right to increase or decrease quantities, as necessary, with no change in the Unit Bid Price.

5. Quantities are estimated. Final payment will be based on actual quantities unless otherwise stated in the Contract Documents.

6. Bidder agrees that the Work will be substantially complete by the calendar completion date for substantial completion given in the Agreement and General Conditions.

7. Bidder accepts the provisions of the Agreement for Liquidated Damages in the event of failure to complete the work by the calendar completion date.

8. The following documents are attached to and made a condition of this Bid:

   a. Required Bid Security in the form of a certified or bank check or a bid bond in accordance with the provisions of the Instructions to Bidders.

   b. List of Subcontractors/Suppliers.

9. The terms used in this Bid which are defined in the General Conditions included as part of the Contract Documents have the meanings assigned to them in the General Conditions.

SUBMITTED on _____, 2023

_____ a(n) _____
Name of Bidder (individual, partnership, corporation)

_____
Address of Bidder

_____
Telephone Number

By: _____ , (Corporate Seal)
Authorized Person

_____
Title

Project Number: S-601017.00
Contractor's Name: _____

List of Subcontractors/Suppliers

The Bidder is required to furnish the following information in accordance with the provisions of Section 100, Instructions to Bidders for ALL Subcontractors. Each Supplier performing more than 10 % of the Total Bid shall also be furnished. Do not list alternate subcontractors/suppliers for the same work. The Contractor shall list only one subcontractor/supplier for each such portion of Work as is defined by the Contractor in his bid. Contractor shall not substitute any person as subcontractor/supplier in the place of a subcontractor/supplier listed below, except as provided in Section 100.

The Bidder understands that if he fails to specify a subcontractor/supplier for any portion of the Work to be performed under the contract or specifies more than one subcontractor/supplier for the same portion of the Work, he shall be deemed to have agreed that he is fully qualified to perform that portion himself and that he shall not be permitted to sublet or subcontract that portion of the Work, except as provided in Section 100.

Subcontractor: _____
Amount: _____ ($ _____)
(words)

Subcontractor: _____
Amount: _____ ($ _____)
(words)

Subcontractor: _____
Amount: _____ ($ _____)
(words)

Subcontractor: _____
Amount: _____ ($ _____)
(words)

DOCUMENT 530
AGREEMENT

THIS AGREEMENT is dated as of the _____ day of _____ in the year 2023 by and between Shawnee County, Kansas (hereinafter called Owner) and _____ (hereinafter called Contractor). Owner and Contractor in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. Work.

Contractor shall complete all Work as specified or indicated in the Contract Documents. The Project for which the Work under the Contract Documents is to be performed is: S-601017.00 Timber Ridge Subdivision – Street SW 55th Terrace / SW Maupin Lane

Article 2. **Engineer.**

The project has been designed by SBB Engineering LLC
The Design Engineer is hereinafter designated as the Engineer and is to act as Owner's project representative, assume all duties and responsibilities and have the rights and authority assigned to Engineer in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 3. Calendar Completion Date Contract.

3.1. This is a Calendar Completion Date contract. The Work will commence with an issuance of a Work Order by the Owner on Monday, July 31, 2023 provided the Contractor complies with the required submittal times for the executed Agreement and its counterparts, and be substantially completed on or before Close of Business Friday, November 17, 2023 and completed and ready for final payment and acceptance in accordance with paragraph 14.13 of the General Conditions on or before Close of Business Friday, December 1, 2023.

3.2. Liquidated Damages. Owner and Contractor recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed by the calendar completion dates specified in paragraph 3.1 above. They also recognize the delays, expense and difficulties involved in proving in a legal proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay Owner according to the following schedule:

Contract Amount	Substantial Completion Liquidated Damages	Final Payment and Acceptance Liquidated Damages
$0 to $500,000	$750.00	$750.00
$500,000.01 to $1,000,000	$1,250.00	$750.00
$1,000,000.01 to $1,500,000	$2,000.00	$1,250.00
$1,500,000.01 to $2,000,000	$2,500.00	$1,500.00
$2,000,000.01 to $5,000,000	$3,000.00	$2,000.00
$5,000,000.01 and up	$5,000.00	$3,000.00

For each day that expires after the date specified in paragraph 3.1 for Substantial Completion until the work is certified by the engineer as Substantially Complete and after certification of Substantial Completion if Contractor neglects, refuses or fails to complete the remaining Work by the calendar completion date for Final Payment and Acceptance. The Owner shall deduct the accrued liquidated damages from the final payment due to the Contractor.

Article 4. Contract Price.

4.1. Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents in current funds as per the Contractor's Bid, which is attached as an exhibit to this Agreement.

Article 5. Payment Procedures.

Applications for Payment shall be in accordance with Article 14 of the General Conditions.

5.1. Progress Payments. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's signed Applications for Payment as recommended by Engineer within thirty-five (35) days following the end of the period for which payment is being requested, provided the application for payment is submitted within seven (7) days following the end of the period. Period shall end on the last calendar day of each month. All progress payments will be based on the number of units or estimated percentage of the Work completed in accordance with paragraph 14.1 of the General Conditions.

5.1.1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as Engineer shall determine, or Owner may withhold, in accordance with paragraph 14.7 of the General Conditions.

(1) 90% of Work completed. If the project has been 50% completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to

Owner and Engineer upon written request by the Contractor, Owner, may determine that as long as the character and progress of the Work remain satisfactory to them, that the retainage on account of Work completed be reduced or eliminated. Reduction or elimination of the retainage will be at the sole discretion of the Owner.

(2) 0 % of materials and equipment not incorporated in the Work (but delivered, suitably stored and accompanied by documentation satisfactory to Owner as provided in paragraph 14.2 of the General Conditions).

5.1.2. Upon Substantial Completion, in an amount sufficient to increase total payments to Contractor to 95% of the Contract Price, less such amounts as Engineer shall determine, or Owner may withhold, in accordance with paragraph 14.7 of the General Conditions.

5.2. Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.13 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said paragraph 14.13.

5.3. Interest. All monies not paid when due hereunder shall not bear interest.

Article 6. Contractor's Representations.

In order to induce Owner to enter into this Agreement, Contractor represents that he fully complies with the requirements stated in paragraphs 3b. through 3g. of the Bid Form, which is attached as an exhibit to this Agreement.

Article 7. Contract Documents.

The Contract Documents which comprise the entire agreement between Owner and Contractor concerning the Work consist of the following:

7.1. This Agreement.

7.2. Performance and other Bonds contained in this Project Manual.

7.3. Work Order.

7.4. General Conditions, Doc 700 (available at Shawnee County Department of Public Works Office, 1515 NW Saline Street, Topeka, Kansas or on-line at www.snco.us/publicworks

7.5. Supplementary Conditions contained in this Project Manual, if any.

7.6. City of Topeka and Shawnee County Standard Technical Specifications, 2016 Edition with any addenda thereto and KDOT Standard Specification for Road & Bridges, latest edition with any addenda thereto.

7.7. Specifications contained in this Project Manual, if any.

7.8. Project Drawings, bearing the following title: S-601017.00 Timber Ridge Subdivision Street SW 55th Terrace / SW Maupin Lane

7.9. Addenda _____ to _____, inclusive.

7.10. Contractor's Bid, including all attachments to Bid, which is attached as an exhibit to this Agreement.

7.11. The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Change Orders and other documents amending, modifying, or supplementing the Contract Documents pursuant to paragraphs 3.4 and 3.5 of the General Conditions.

There are no Contract Documents other than those listed above in this Article 7. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.4 and 3.5 of the General Conditions.

Article 8. Suspension of Contractor.

8.1. Contractor may be placed on Owner's "List of Suspended Contractors" for a period of time from the date of written notification by Owner if Contractor fails to perform in accordance with specific provisions stated in paragraph 8.2 of this Article 8. The period of Suspension shall be established as follows:

First Suspension - l year
Second Suspension - 2 years
Third Suspension - Permanent

During the period of suspension, the Contractor will not be permitted to submit a bid to Owner to perform Work either directly or indirectly or as a subcontractor.

8.2. The Contractor shall be suspended upon written notification by Owner:

8.2.1. If Contractor exceeds the date established for substantial completion or final payment and acceptance as indicated in paragraph 3.1, or

8.2.2. Upon occurrence of any of the events stated in paragraph 15.2 of the General Conditions.

8.2.3. If Contractor fails to complete any outstanding “One-Year Correction Period” work, as defined in paragraph 13.12 of the General Conditions, on previously completed projects within 90 calendar days of written notification by the Owner, the Contractor will be placed on Owners “List of Suspended Contractors”, as defined in paragraph 8.1, Article 8. Suspension of Contractor, and shall remain suspended until such time as the corrective work has been certified as complete in writing by the Owner.

Article 9. Miscellaneous.

9.1. Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.

9.2. No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary

in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.3. Owner and Contractor each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement in triplicate. One counterpart each has been delivered to Owner, Contractor and Design Engineer. All portions of the Contract Documents have been signed or identified by Owner and Contractor or by Design Engineer on their behalf.

OWNER: Shawnee County, Kansas

CONTRACTOR _____

_____

By: _____
Chair,
Board of County Commissioners

By: _____

[CORPORATE SEAL]

Attest: _____
Shawnee County Clerk

Attest: _____

Date: _____

Attachment To
Shawnee County Contract C_____

CONTRACTUAL PROVISIONS ATTACHMENT

The undersigned parties agree that the following provisions are hereby incorporated into the contract to which it is attached and made a part thereof, said contract being dated the _____ day of _____, 2023

1. **TERMS HEREIN CONTROLLING PROVISIONS**. It is expressly agreed that the terms of each and every provision in this attachment shall prevail and control over the terms of any other conflicting provision in any other document relating to and a part of the contract in which this attachment is incorporated.

2. **AGREEMENT WITH KANSAS LAW**. It is agreed by and between the undersigned that all disputes and matters whatsoever arising under, in connection with or incident to this contract shall be litigated, if at all, in and before a Court located in the State of Kansas, U.S.A., to the exclusion of the Courts of any other states or country. All contractual agreements shall be subject to, governed by, and construed according to the laws of the State of Kansas.

3. **TERMINATION DUE TO LACK OF FUNDING APPROPRIATION**. Shawnee County is subject to the Kansas Cash Basis Law, K.S.A. 10-1101 *et seq.* If, in the judgment of the Financial Administrator, Audit-Finance Office, sufficient funds are not appropriated to continue the function performed in this agreement and for the payment of the charges hereunder, County may terminate this agreement at the end of its current fiscal year. County agrees to give written notice of termination to contractor at least thirty (30) days prior to the end of its current fiscal year. In the event this agreement is terminated pursuant to this paragraph, County will pay to the contractor all regular contractual payments incurred through the end of such fiscal year. The termination of the contract pursuant to this paragraph shall not cause any penalty to be charged to the County or the contractor.

4. **DISCLAIMER OF LIABILITY**. Neither the County of Shawnee nor any department thereof shall hold harmless or indemnify any contractor for any liability whatsoever.

5. **ANTI-DISCRIMINATION CLAUSE**. The contractor agrees: (a) to comply with the Kansas Act Against Discrimination (K.S.A. 44-1001 *et seq*.) and the Kansas Age Discrimination in Employment Act, (K.S.A. 44-1111 *et seq*.) and the applicable provisions of the Americans With Disabilities Act (42 U.S.C. 12101 *et seq*.) [ADA] and to not discriminate against any person because of race, religion, color, sex, disability, national origin or ancestry, or age in the admission of access to or treatment or employment in, its programs or activities; (b) to include in all solicitations or advertisements for employees, the phrase "equal opportunity employer"; (c) to comply with the reporting requirements set out in K.S.A. 44-1031 and K.S.A. 44-1116; (d) to include those provisions in every subcontract or purchase order so that they are binding upon such subcontractor or vendor; (e) that a failure to comply with the reporting requirements of (c) above or if the contractor is found guilty of any violation of such acts by the Kansas Human Rights Commission, such violation shall constitute a breach of contract; (f) if the contracting agency determines that the contractor has violated applicable provisions of ADA, that violation shall constitute a breach of contract; (g) if (e) or (f) occurs, the contract may be cancelled, terminated or suspended in whole or in part by the County. Parties to this contract understand that subsections (b) through (e) of this paragraph number 5 are not applicable to a contractor who employs fewer than four employees or whose contract with the County totals $5,000 or less during this fiscal year.

6. **ACCEPTANCE OF CONTRACT**. This contract shall not be considered accepted, approved or otherwise effective until the required approvals and certifications have been given and this is signed by the Board of County Commissioners of the County of Shawnee, Kansas.

7. **ARBITRATION, DAMAGES, WARRANTIES**. Notwithstanding any language to the contrary, no interpretation shall be allowed to find the County has agreed to binding arbitration, or the payment of damages or penalties upon the occurrence of a contingency. Further, the County shall not agree to pay attorney fees and late payment charges; and no provisions will be given effect which attempts to exclude, modify, disclaim or otherwise attempt to limit implied warranties of merchantability and fitness for a particular purpose.

8. **REPRESENTATIVE'S AUTHORITY TO CONTRACT**. By signing this document, the representative of the contractor thereby represents that such person is duly authorized by the contractor to execute this document on behalf of the contractor and that the contractor agrees to be bound by the provisions thereof.

9. **RESPONSIBILITY FOR TAXES**. The County shall not be responsible for, nor indemnify a contractor for, any federal, state or local taxes which may be imposed or levied upon the subject matter of this contract.

10. **INSURANCE**. The County shall not be required to purchase, any insurance against loss or damage to any personal property to which this contract relates, nor shall this contract require the County to establish a "self-insurance" fund to protect against any such loss or damage. Subject to the provisions of the Kansas Tort Claims Act (K.S.A. 75-6101 *et seq*.), the vendor or lessor shall bear the risk of any loss or damage to any personal property to which vendor or lessor holds title.

11. **AUTOMATED CLEARING HOUSE (ACH)**. Shawnee County prefers to pay its vendor invoices via electronic funds transfers through the automated clearing house (ACH) network. Shawnee County may require vendors to accept payments via ACH. To initiate payment of invoices, vendors shall execute the County's standard ACH Vendor Payment Authorization Agreement. Upon verification of the data provided, the Payment Authorization Agreement will authorize the County to deposit payment for services rendered or goods provided directly into vendor accounts with financial institutions. All payments shall be made in United States currency.

VENDOR/CONTRACTOR:

_____
By:

_____
Title:

_____
Date:

BOARD OF COUNTY COMMISSIONERS
SHAWNEE COUNTY, KANSAS

_____
Bill Riphahn, Chair

_____
Date:

ATTEST:

_____
Cynthia A. Beck, Shawnee County Clerk

Performance Bond

Any singular reference to Contractor, Surety, Owner of other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

CONTRACT
Date:
Amount:
Description (Name and Location): S-601017.00 - Timber Ridge Subdivision - Street
SW 55th Terrace / SW Maupin Lane
Shawnee County, KS

BOND
Date (Not earlier than Contract Date):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent or representative.

CONTRACTOR AS PRINCIPAL		SURETY	
Company:	(Corp. Seal)	Company:	(Corp. Seal)
Signature: _____		Signature: _____	
Name and Title:		Name and Title: (Attach Power of Attorney)	

(Space is provided below for signatures of additional parties, if required.)

CONTRACTOR AS PRINCIPAL		SURETY	
Company:	(Corp. Seal)	Company:	(Corp. Seal)
Signature: _____		Signature: _____	
Name and Title:		Name and Title:	

EJCDC No. 1910-28-A (1996 Edition)
Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, and the American Institute of Architects.

1. The CONTRACTOR and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Contract, which is incorporated herein by reference.

2. If the CONTRACTOR performs the Contract, the Surety and the CONTRACTOR have no obligation under this Bond, except to participate in conferences as provided in paragraph 3.1.

3. If there is no OWNER Default, the Surety's obligation under this Bond shall arise after:

3.1. The OWNER has notified the CONTRACTOR and the Surety at the addresses described in paragraph 10 below, that the OWNER is considering declaring a CONTRACTOR Default and has requested and attempted to arrange a conference with the CONTRACTOR and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Contract. If the OWNER, the CONTRACTOR and the Surety agree, the CONTRACTOR shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive the OWNER's right, if any, subsequently to declare a CONTRACTOR Default; and

3.2. The OWNER has declared a CONTRACTOR Default and formally terminated the CONTRACTOR's right to complete the Contract. Such CONTRACTOR Default shall not be declared earlier than twenty days after the CONTRACTOR and Surety have received notice as provided in paragraph 3.1; and

3.3. The OWNER has agreed to pay the Balance of the Contract Price to:

3.3.1. The Surety in accordance with the terms of the Contract;

3.3.2. Another contractor selected pursuant to paragraph 4.3 to perform the Contract.

4. When the OWNER has satisfied the conditions of paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

4.1. Arrange for the CONTRACTOR, with consent of the OWNER, to perform and complete the Contract; or

4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the OWNER for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by the OWNER and the contractor selected with the OWNER's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the Bonds issued on the Contract, and pay to the OWNER the amount of damages as described in paragraph 6 in excess of the Balance of the Contract Price incurred by the OWNER resulting from the CONTRACTOR Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances;

4.4.1. After investigation, determine the amount for which it may be liable to the OWNER and, as soon as practicable after the amount is determined, tender payment therefor to the OWNER; or

4.4.2. Deny liability in whole or in part and notify the OWNER citing reasons therefor.

5. If the Surety does not proceed as provided in paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the OWNER to the Surety demanding that the Surety perform its obligations under this Bond, and the OWNER shall be entitled to enforce any remedy available to the OWNER. If the Surety proceeds as provided in paragraph 4.4, and the OWNER refuses the payment tendered or the Surety has denied pliability, in whole or in part, without further notice the OWNER shall be entitled to enforce any remedy available to the OWNER.

6. After the OWNER has terminated the CONTRACTOR's right to complete the Contract, and if the Surety elects to act under paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the OWNER shall not be greater than those of the CONTRACTOR under the Contract, and the responsibilities of the OWNER to the Surety shall not be greater than those of the OWNER under the Contract. To a limit of the amount of this Bond, but subject to commitment by the OWNER of the Balance of the Contract Price to mitigation of costs and damages on the Contract, the Surety is obligated without duplication for:

6.1. The responsibilities of the CONTRACTOR for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional and delay costs resulting from the CONTRACTOR's Default, and resulting from the actions or failure to act of the Surety under paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of the CONTRACTOR.

7. The Surety shall not be liable to the OWNER or others for obligations of the CONTRACTOR that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the OWNER or its heirs, executors, administrators, or successors.

8. The Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after CONTRACTOR Default or within two years after the CONTRACTOR ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to the Surety, the OWNER or the CONTRACTOR shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the Contract was be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

12.1. Balance of the Contract Price: The total amount payable by the OWNER to the CONTRACTOR under the Contract after all proper adjustments have been made, including allowance to the CONTRACTOR of any amounts received or to be received by the OWNER in settlement of insurance or other Claims for damages to which the CONTRACTOR is entitled, reduced by all valid and proper payments made to or on behalf of the CONTRACTOR under the Contract.

12.2. Contract: The agreement between the OWNER and the CONTRACTOR identified on the signature page, including all Contract Documents and changes thereto.

12.3. CONTRACTOR Default: Failure of the CONTRACTOR, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

12.4. OWNER Default: Failure of the OWNER, which has neither been remedied not waived, to pay the CONTRACTOR as required by the Contractor or to perform and complete or comply with the other terms thereof.

(FOR INFORMATION ONLY---Name, Address and Telephone)
AGENT or BROKER: OWNER'S REPRESENTATIVE (Engineer or other party):

STATUTORY BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT we, the undersigned _____ of _____, hereinafter referred to as "CONTRACTOR", and _____ a corporation organized under the laws of the State of _____, and authorized to transact business in the State of Kansas, as "Surety", are held and firmly bound unto the State of Kansas, in the penal sum of _____ Dollars ($_____), lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, or heirs, executors, administrators, successors and assigns, jointly and severally by these presents.

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH THAT:

WHEREAS, the above bonded CONTRACTOR has, on the _____ day of _____, 20_____, entered into the Public Improvement Agreement with the Shawnee County, Kansas, for the construction of the public improvements described in the attached contract documents and below.

Shawnee County Project S-601017.00: Timber Ridge Subdivision – Street Sewer SW 55th Terrace / SW Maupin Lane
Date of Project: May ___, 2023

NOW, THEREFORE, if the CONTRACTOR and his SUBCONTRACTORS shall pay all indebtedness incurred for supplies, materials, or labor furnished, used or consumed in connection with, or in, or about the construction or making of, public improvements, including gasoline, lubricating oils, fuel oils, greases, coal, and similar items used or consumed directly in furtherance of such improvements, this obligation shall be void; otherwise it shall remain in full force and effect.

PROVIDED FURTHER, that the surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract or to the work to be performed thereunder, or the specifications accompanying the same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the contract or to the specifications.

PROVIDED FURTHER, that the surety agrees that any person to whom there is due any sum for supplies, materials, or labor, as herein before stated, or his assigns, may bring an action on this bond for the recovery of the indebtedness; PROVIDED, that no action shall be brought on the bond after six (6) months from the completion of the public improvements.

IN TESTIMONY WHEREOF, the CONTRACTOR has hereunto set his hand, and said surety has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its attorney-in-fact duly authorized to do so at _____ on this_____ day of _____, 20__.

_____
NAME

_____
(NAME PRINTED)

_____
(ADDRESS)

_____
(TELEPHONE)

_____
BY

_____
TITLE

_____
Surety

By_____
Attorney-in-Fact

_____
Address

_____
Phone No.

By_____
State Representative

(Accompany this bond with the attorney-in-fact's authority from the surety company certified to include the date of bond).

WHEREBY certify that the above bond is approved and that said bond has been filed in the records of_____ County, this _____ day of _____, 20__.

_____
Clerk of the District Court

DOCUMENT 820
SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend, modify or supplement the General Conditions for Shawnee County Department of Public Works Construction Projects, Document 700, and other provisions of the Contract Documents, the Standard Technical Specifications or the Drawings, as indicated below. All provisions which are not so amended, modified or supplemented shall remain in full force and effect.

SC-1: The Contractor shall use the following dates in preparation of the Progress Schedule:

Item	Description	Due Date
1	**Bid Opening @ 2:00 PM in Commission Chambers, Shawnee County Courthouse**	**Wednesday, July 5, 2023**
2	**Contractor returns three (3) executed Contracts, Bonds and Insurance to Shawnee County Public Works**	**Wednesday, July 13, 2023**
3	**Contract Awarded by Board of County Commissioners**	**Thursday, July 20, 2023**
4	**Pre-Construction Conference**	**Wednesday, July 26, 2023**
5	**Construction Start Work Order**	**Monday, July 31, 2023**
6	**Substantial Completion**	**Close of Business Friday November 17, 2023**
7	**Final Payment & Acceptance**	**Close of Business Friday December 1, 2023**

ALL materials, equipment and work provided for on this project shall be in accordance with City of Topeka and Shawnee County Standard Technical Specifications, 2016 Edition and as supplemented by the following Supplemental Conditions and KDOT Standard Specifications for Road & Bridges.

DOCUMENT 830
SUBMITTAL CONTROL SHEET

Project: Timber Ridge Subdivision - SW 55th Terrace / SW Maupin Lane Project Manager:

Project No.: S-601017.00 Contractor:

Section No.	Specifications Section Title	Samples	Shop Dwgs.	Matl. Or Parts List	Descriptive Data	Mfrgs Literature	Mix Designs	Certifications	Operation Instr.	Tests	Date of Submittal	Date Rejected	Date Revise & Resubmit	Date Make Corrections Noted	Date No Exceptions Taken	Notes
3.12	Aggregate Base - Type AB-3				x		x	x								
7.00	Asphaltic Pavement				x		x	x		x						
5.01	Concrete				x		x	x		x						

Geotechnical Engineering Report

Timber Ridge Subdivision
Topeka, Kansas
March 7, 2022
Terracon Project No. 14215059

Prepared for:
Schmidt, Beck & Boyd Engineering, LLC.
Topeka, Kansas

Prepared by:
Terracon Consultants, Inc.
Topeka, Kansas

March 7, 2022

Schmidt, Beck & Boyd Engineering, LLC.
101 S Kansas Ave.
Topeka, Kansas 66603

Attn: Mr. Jeff Laubach, P.E.
P: (785) 215-8630
E: Jeff.Laubach@sbbeng.com

Re: Geotechnical Engineering Report
Timber Ridge Subdivision
SW 55th Terrace and SW Westport Drive
Topeka, Kansas
Terracon Project No. 14215059

Dear Mr. Laubach:

We have completed the Geotechnical Engineering services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. P14215059.R1 dated February 15, 2022. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of pavement subgrades for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Michael A. Snapp, P.E.
Geotechnical Engineer
Kansas PE: 27005

Jamie M. Klein, P.E.
Senior Associate
Kansas PE: 22112

REPORT TOPICS

Note: This report was originally delivered in a web-based format. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES
SITE LOCATION AND EXPLORATION PLAN
EXPLORATION RESULTS

- Test Pit Logs with Laboratory Data
- GeoModel
- Moisture Density Relationship Results

SUPPORTING INFORMATION

- General Notes
- Unified Soil Classification System
- Description of Rock Properties

Note: Refer to each individual Attachment for a listing of contents.

Geotechnical Engineering Report

Timber Ridge Subdivision
SW 55th Terrace and SW Westport Drive
Topeka, Kansas

Terracon Project No. 14215059
March 7, 2022

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed street construction to be located south of the Timber Ridge Subdivision in Topeka, Kansas. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil and rock conditions
- Groundwater conditions
- Site preparation and earthwork
- Pavement design and construction

The geotechnical engineering Scope of Services for this project included the advancement of 5 test pits to depths ranging from approximately 3 to 8.5 feet below existing site grades. As requested, an additional test pit was performed at a planned borrow source nearby.

Maps showing the site and test pit locations are shown in the **Site Location and Exploration Plans** section. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the test pit logs in the **Exploration Results** section.

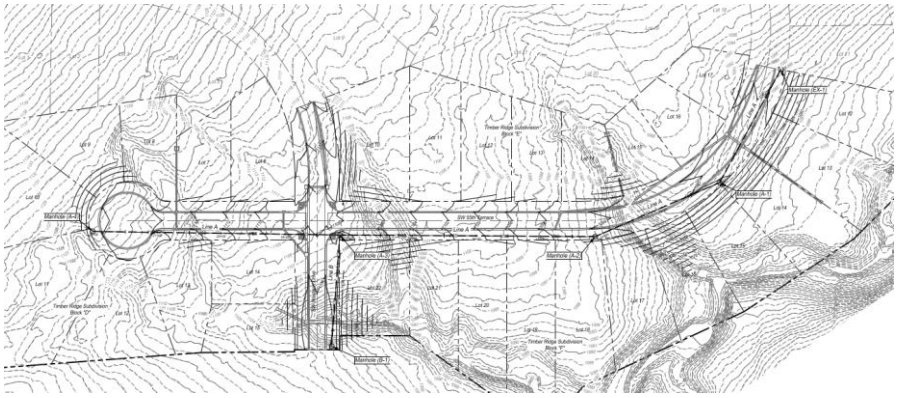
SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project is located immediately south of the Timber Ridge Subdivision near the intersection of SW 55th Terrace and SW Westport Drive in Topeka, Kansas.
Existing Improvements	The general area of the project is improved with a residential subdivision. The immediate project site is currently an undeveloped area towards the southern part of the existing subdivision.
Current Ground Cover	Mostly bare ground.
Existing Topography	Based on a provided topographic site plan, the project area is slightly to moderately sloped and includes 2 southward draining draws.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Information Provided	Our understanding of the project is from email correspondence with Schmidt, Beck and Boyd Engineering, provided Preliminary Plans and Grading Plan dated February 3, 2021.
Project Description	We understand the project will include new streets, water lines and sanitary sewers for the extension of the existing residential development. The project site is shown in the plans below.
Preliminary Site Plan	
Grading/Slopes	Based upon provided grading plans, we anticipate site grading will consist of up to 15 feet of fill and 5 feet of cut. In addition, we understand the planned sewer will be constructed at depths of less than 15 feet below final grades. We understand permanent slopes will be no steeper than 3H:1V (Horizontal to Vertical).
Pavements	We understand the pavement will be constructed with asphalt using a City of Topeka standard section for low volume residential roads.

Terracon should be notified if any of the above information is inconsistent with the planned construction, especially the grading limits, as modifications to our recommendations may be necessary.

GEOTECHNICAL CHARACTERIZATION

Subsurface Profile

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of

the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and evaluation of pavement subgrades. Detailed conditions encountered at each exploration point are indicated on the individual logs. The individual test pit logs and GeoModel can be found in the **Exploration Results** section of this report. Stratification boundaries on the test pit logs and GeoModel represent the approximate location of changes in stratum type; however, in situ the transition between native materials may be gradual while in existing fill changes could be abrupt.

Groundwater Conditions

The test pits were observed during excavation and at the completion for the presence and level of groundwater. Groundwater was not observed at these times; however, this does not necessarily mean the test pits terminated above groundwater. Due to the low permeability of the upper cohesive soils and underlying bedrock encountered in the test pits, a relatively long period may be necessary for a groundwater level to develop and stabilize in an excavation. Long term observations in piezometers or observation wells sealed from the influence of surface water are often required to define groundwater levels in materials of this type.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the test pits were performed. In addition, perched water can develop over low permeability soil or rock strata. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the observations made during our subsurface exploration. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

GEOTECHNICAL OVERVIEW

Clay soils are not an ideal subgrade for pavements. The clay soils that predominately exist in this locale generally have moderate to high swell potential, low permeability (and thus poor internal drainage), low strength when saturated and are moderately susceptible to frost action. If relatively well compacted to a high degree at the proper moisture content and left undisturbed, these subgrade soils can satisfactorily support pavements. It should be noted that a uniformly moisture conditioned, and compacted subgrade should result in more uniform performance of the pavement.

Existing fill and possible fill materials were encountered at 2 of the 6 test pit locations to depths ranging from approximately 2 to 4 feet. The fill and possible fill materials contained cobbles and boulders and should be removed to full depth. It appears possible to construct new engineered fills with the fill materials provided they meet the criteria described in the **Earthwork** section this report; however, this may require some sorting of the cobbles and boulders, and potentially moisture conditioning (i.e. wetting or drying).

Based on the site provided preliminary grading plan, we understand up to 15 feet of fill will be required to construct the new road embankment. Based on our analysis, the soils encountered in the test pits have the potential to consolidate about 1 inch under the weight of the new fill. In addition, the fill induced settlement is not anticipated to be uniform as the depth of fill along the roadway alignment is not uniform. If this magnitude of settlement is not tolerable for the planned pavements and utilities, then we recommend where fill heights exceed 8 feet, the new fill be placed as early in the construction schedule as possible and the settlement monitored as described in section **Fill Induced Settlement Considerations**. We anticipate the construction schedule would have sufficient time between initial grading and construction of pavements for settlement to occur. After the existing soils have consolidated sufficiently, construction of pavements and other settlement sensitive improvements can proceed in the normal manner.

Shale and limestone bedrock were encountered in 3 of the 6 test pits at depths ranging from approximately 4 to 5.5 feet below ground surface. The presence of bedrock should be considered when establishing budget costs associated with site utility excavations or similar. Excavations which extend into the bedrock strata will likely require large backhoes with rock teeth or rock trenching equipment. Large concrete or pavement type saws might also be necessary to create neat excavations. Additional information is provided in the **Earthwork** section.

The recommendations presented in the following sections consider site grading as outlined earlier within this report. Terracon should be contacted immediately if conditions are different than described as this may impact our recommendations. The **General Comments** section provides an understanding of the report limitations.

EARTHWORK

Site Preparation

We recommend removal of all existing vegetation, organic topsoil or otherwise unsuitable materials from areas that may include at-grade construction or will receive new fill. Root zones were encountered to depths of up to 6 inches but should be expected to vary across the site, so the extent of removal should be determined in the field by a representative Geotechnical Engineer. Stripped materials consisting of vegetation and organic materials should be stockpiled outside the work areas in order to be reused for landscaping purposes at the site.

In our opinion, the existing and potential fill materials containing cobbles and boulders should eb fully removed. Consideration may be given to reusing the clay materials provided the cobbles and boulders have been removed. Any remaining fill within the pavement area should then be evaluated by Terracon during construction. This evaluation should consist of observing test pit excavations, performing field density tests, and/or possibly obtaining samples for additional laboratory testing. If unsuitable materials are encountered at this time, they should be removed

and replaced with controlled engineered fill or possibly stabilized as recommended later within this report.

Mature trees were located within or near the planned roadway, which were recently removed; however, roots appeared to still be present in our samples. Tree root systems can remove substantial moisture from surrounding soils. Where trees were removed, the full root ball and all associated dry and desiccated soils should be removed. The soil materials which contain less than 5 percent organics can be reused as engineered fill provided the material is moisture conditioned and properly compacted.

After completing these operations and any excavation needed, we recommend the exposed subgrade be proofrolled (under the observation of Terracon personnel) with a loaded tandem-axle dump truck or other heavy, rubber-tired construction equipment weighing at least 20 tons, to locate any zones that are soft or unstable. Areas that are inaccessible can be evaluated using hand equipment such as a steel T-probe, Oakfield sampler and hand penetrometer. Soft, dry and low-density soil should be removed or reworked and compacted in place prior to placing fill.

Where fill is placed on existing slopes steeper than 5H:1V, benches should be cut into the existing slopes prior to fill placement. The benches should have a minimum vertical face height of 1 foot and a maximum vertical face height of 3 feet and should be cut wide enough to accommodate the compaction equipment. We recommend that fill slopes be over filled and then cut back to develop an adequately compacted slope face.

Fill Induced Settlement Considerations

As previously described, fill placement of up to 15 feet for embankment construction will cause stress increases extending into the underlying soils, which will in turn respond by consolidating and settling. Our analysis indicates the planned fill could result in settlement of about 1 inch of the native soils alone. Settlement of this magnitude may result in adverse performance of pavements and other settlement sensitive improvements.

If the estimated settlement is not tolerable, we recommend constructing the roadway embankment early in the construction process and delaying construction of pavements until the rate of settlement decreases to acceptable levels as determined by settlement monitoring. Settlement monitoring should be performed using a minimum of three settlement posts installed in the area of deepest fill. The posts should be installed as recommended by a Terracon representative, but should generally consist of 5-foot steel posts concreted into the final subgrade (i.e. after fill placement is complete) a minimum of three feet. Settlement posts should be measured to the nearest hundredth of a foot at least twice weekly, and settlement readings should be forwarded to Terracon for evaluation. Based on our analysis and experience, we would anticipate on the order of 30 to 60 days may be required to achieve the desired consolidation. This estimated delay is based on the proposed construction, the soil conditions observed, and the test results performed. However, other factors not tested at the time of this exploration may alter the time for the settlement to occur,

such as the effective drainage path and the condition and permeability of the native soils at the time of construction, which could shorten or extend the delay. After the existing soils have consolidated as determined by survey, construction of pavements and other settlement sensitive improvements can proceed in the normal manner.

Soil Stabilization

Stabilization efforts may be required should weather conditions impact the site during construction. Methods of subgrade improvement, as described below, could include scarification, moisture conditioning and recompaction, removal of unstable materials and replacement with granular fill (with or without geosynthetics). The appropriate method of improvement, if required, would be dependent on factors such as schedule, weather, the size of area to be stabilized, and the nature of the instability. More detailed recommendations can be provided during construction as the need for subgrade stabilization occurs. Performing site grading operations during warm seasons and dry periods would help reduce the amount of subgrade stabilization required.

If the exposed subgrade is unstable during proofrolling operations, it could be stabilized using one of the methods outlined below.

- **Scarification and Recompaction** - It may be feasible to scarify, dry, and recompact the exposed soils. The success of this procedure would depend primarily upon favorable weather and sufficient time to dry the soils. Stable subgrades likely would not be achievable if the thickness of the unstable soil is greater than about 1 foot, if the unstable soil is at or near groundwater levels, or if construction is performed during a period of wet or cool weather when drying is difficult.

- **Crushed Stone** - The use of crushed stone or crushed gravel is the most common procedure to improve subgrade stability. Typical undercut depths would be expected to range from about 6 to 30 inches below finished subgrade elevation. The use of high modulus geotextiles (i.e., engineering fabric or geogrid) could also be considered after underground work such as utility construction is completed. Prior to placing the fabric or geogrid, we recommend that all below grade construction, such as utility line installation, be completed to avoid damaging the fabric or geogrid. Equipment should not be operated above the fabric or geogrid until one full lift of crushed stone fill is placed above it. The maximum particle size of granular material placed over geotextile fabric or geogrid should not exceed 1-1/2 inches.

Further evaluation of the need and recommendations for subgrade stabilization can be provided during construction as the geotechnical conditions are exposed.

Fill Material Types

Materials used for engineered fill should meet the following material property requirements:

Soil Type [1]	USCS Classification	Acceptable Locations
Lean clay	CL (LL<40)	> 8 inches below pavement
Lean to fat clay [2, 3]	CL/CH (LL<40)	> 8 inches below pavement
Fat clay [3]	CH (LL≥50)	> 8 inches below pavement
Chemically stabilized clay soils	N/A	All locations and elevations
Well graded granular	GM [4]	All locations and elevations

1. Engineered fill should consist of approved materials free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site.
2. By our definition, cohesive soils with a liquid limit of 46 to 49 and/or plastic index of 22 or greater are classified as lean to fat clay (with the borderline symbol CL/CH) to alert of the expansive potential of moderate plasticity clay soils (see ASTM D2487-11, Section 1.1, Note 1).
3. Delineation of moderate to high plasticity clays should be performed in the field by the geotechnical engineer or their representative and may require additional laboratory testing.
4. Similar to KDOT Type AB-3, crushed limestone aggregate, limestone screenings, or other dense graded granular material containing at least 18% low plasticity fines.

Fill Compaction Requirements

Engineered fill should meet the following compaction requirements.

Item		Description
Fill Lift Thickness		9 inches or less in loose thickness when heavy, self-propelled compaction equipment is used 4 to 6 inches in loose thickness when material is placed in confined spaces or hand-guided equipment (i.e. jumping jack or plate compactor) is used
Compaction Requirements [1]		At least 95% of the materials maximum standard Proctor dry density (ASTM D 698), or At least 70% of the material's maximum relative density (ASTM D4253 and D4254) for cohesionless soils
Moisture Content Cohesive Soil	**LL≥45**	Within the range of optimum moisture content to 4% above optimum moisture content as determined by the standard Proctor test during placement and compaction
	LL<45	Within the range of 2% below optimum moisture content to 2% above the optimum moisture content value as determined by the standard Proctor test at the time of placement and compaction
Moisture Content Granular Material [2]		Workable moisture levels

1. We recommend that engineered fill be tested for moisture content and compaction during placement. Should the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.
2. Specifically, moisture levels should be maintained low enough to allow for satisfactory compaction to be achieved without the cohesionless fill material pumping when proofrolled.

Rock Excavation

Shale and limestone bedrock were encountered in 3 of the 6 test pits at depths ranging from approximately 4 to 6 feet below ground surface. With effort, we were able to excavate through the upper highly weathered bedrock. However, the test pits that encountered rock were each terminated because of practical excavation refusal at depths ranging from approximately 4.5 feet to 6 feet within slightly weathered shale or limestone. It has been our experience that highly weathered bedrock can sometimes be excavated using track-hoes with rock teeth or ripper equipped dozers. However, excavation of sound shale, sandstone and limestone bedrock will likely require the use of other techniques such as jackhammers, rock splitters, or pneumatic breakers. It should be noted that the rippability of rock is more dependent on the type and size of the equipment used, the fracturing or quality of the bedrock, and the amount of effort expended, than it is on the type of rock.

The presence of bedrock should be considered when establishing budget costs associated with utility excavations. To minimize the potential for rock excavation “extras”, consideration could be given to requesting unit rate rock excavation costs as part of the bidding process. In addition, bid documents should clearly define rock excavation. The contractor should be provided with the data in this report and allowed to perform any additional exploration or studies necessary to develop his bid. We recommend making test excavations to make determinations regarding rippability of the rock penetrated by the flight augers.

Earthwork Construction Considerations

Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of pavements. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over, or adjacent to, construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted, prior to floor slab construction.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, “Excavations” and its appendices, and in accordance with any applicable local, and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation and topsoil, evaluation and remediation of existing fill materials, proof-rolling and mitigation of unsuitable areas delineated by the proof-roll.

Each lift of compacted fill should be tested, evaluated, and reworked as necessary until approved by the Geotechnical Engineer prior to placement of additional lifts. In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. In the event unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer’s evaluation of subsurface conditions, including assessing variations and associated design changes.

PAVEMENTS SUBGRADES

General Pavement Comments

The liquid limit and/or plasticity index values determined from the Atterberg limits tests performed on representative samples obtained at the site exceed the City of Topeka/Shawnee County Department of Public Work’s Liquid Limit and Plasticity Index requirements. In addition, we understand the prepared pavement subgrade must perform satisfactory under construction loads during the placement of the paving materials. Based on the results of our exploration and our understanding of the requirements, we recommend modifying the subgrade soils with fly ash, cement, hydrated lime or quick lime. As an alternative, a zone of properly compacted crushed rock could be placed to improve subgrade performance.

If fly ash modification is selected, we recommend incorporating 15 percent (dry weight basis) Class “C” fly ash within the upper 8 inches of soil subgrade. The fly ash treated subgrade should be constructed and tested using applicable methods as specified by Kansas Department of Transportation (KDOT) Standard Specifications for State Road and Bridge Construction, Section 303, 2015 edition.

We recommend at least 5 percent lime or cement by dry weight of soil treated be used for modification within the upper 8 inches of soil subgrade. If lime modification is selected, we recommend subgrade modification be performed using either slaked quicklime or pelletized hydrated lime and the pavement subgrade be tested for sulfates prior to use. The lime or cement treated subgrade should be constructed using applicable methods as specified by Kansas Department of Transportation (KDOT) Standard Specifications for State Road and Bridge Construction, Section 302 and 303, 2015 edition. For lime stabilization we would recommend the following exceptions be made: 1) a 48-hour mellowing period should be allowed prior to the soil-lime mixture being remixed and compacted as described within this report and 2) the moisture content of the final mixture should be within the range determined by Terracon following laboratory testing of the soil-lime mixture.

If loss of chemical stabilizing agent is anticipated during spreading and mixing operations (i.e. due to wind, etc.) the applied percentage should be adjusted accordingly such that the percentages recommended herein are actually incorporated into the subgrade.

If crushed rock is selected, we recommend placing an 8-inch thick layer of dense graded crushed limestone (KDOT AB-3 or AB-1 or similar) placed and compacted as described in the section **Fill Compaction Requirements**. It should be noted this option may require the removal of existing subgrade soils, which should be accounted for in budget estimates.

Pavement subgrades are susceptible to disturbance by repetitive heavy wheel loads that most often occur during the pavement laydown operations. Loaded trucks back continuously over the same route to an asphalt spreader. Repetitive traffic can result in deformation, pumping, and rutting. Removal of the rutted, disturbed subgrade during paving operations and replacement with thicker asphalt results in a thicker section in some areas. While this remedial treatment is beneficial, it results in non-uniform thickness. Even with a thicker pavement section, the lift is often too thick to be well compacted at the bottom. For these reasons, we recommend subgrades be repetitively proofrolled with loaded trucks several days in advance of paving and maintain proper moisture contents so that low density or otherwise unsuitable areas can be corrected before paving begins. Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to backfilled trenches. Areas that pump or rut should be undercut and replaced with properly placed and compacted fill and then proofrolled again.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we

can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, cost estimating, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Field Exploration

The field exploration program consisted of the following:

Number of Test Pits	Test Pit Designation	Test Pit Depth (feet) [1]	Location [2]
5	TP-1 thru TP-5	3 to 8	General street alignment
1	TP-6	7	Planned borrow area

1. Below ground surface.
2. The test pit locations are shown on the attached **Exploration Plan**

Test Pit Layout and Elevations: Terracon personnel provided the test pit layout using handheld GPS equipment (estimated horizontal accuracy of about ±10 feet) and referencing existing site features. Approximate ground surface elevations were obtained by interpolation from the provided topographic site plan. If more precise ground surface elevations and/or test pit locations are desired, we recommend the test pits be surveyed by a professional land surveyor.

Test Pit Layout and Elevations: Terracon personnel provided the layout using handheld GPS equipment (estimated horizontal accuracy of about ±10 feet) and referencing existing site features. Approximate ground surface elevations were estimated using Google Earth. If more precise ground surface elevations and/or test pit locations are desired, we recommend the test pits be surveyed by a professional land surveyor.

Subsurface Exploration Procedures: The test pits were excavated by the Contractor utilizing a CASE 580 Super M backhoe. Two to three samples were obtained from each test pit. In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge is pushed hydraulically into the soil to obtain a relatively undisturbed sample.

We also observed the test pits during and at the completion of excavation for the presence of groundwater. Groundwater was not observed at these times.

A Terracon geologist prepared field test pit logs during excavation operations to record sampling depths, penetration distances, other relevant sampling information, visual classifications of materials encountered during excavations, and our interpretation of subsurface conditions between samples. Final test pit logs, prepared from field logs include modifications based on the engineer's laboratory observations and tests.

Property Disturbance: The Contractor backfilled the test pits utilizing the excavated materials. Excess material was dispersed in the general vicinity of test pits. Because backfill material often

settles below the surface after a period, we recommend test pits be checked periodically and backfilled, if necessary.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests. The laboratory testing program included the following types of tests:

- Moisture Content
- Dry Unit Weight
- Unconfined Compression
- Atterberg Limits
- Moisture Density Relationship

The laboratory testing program included examination of soil samples by an engineer or geologist. Based on the material's texture and plasticity, we described and classified the soil samples in accordance with the attached Unified Soil Classification System (USCS).

Rock classification was conducted using locally accepted practices for engineering purposes and was based on drilling characteristics and observation of disturbed samples and auger cuttings; rock core samples and petrographic analysis may reveal other rock types. Test pit log rock classification was determined using the Description of Rock Properties.

SITE LOCATION AND EXPLORATION PLANS

Contents:

Site Location Plan
Exploration Plan

Note: All attachments are one page unless noted above.

SITE LOCATION PLAN

Timber Ridge Subdivision ■ Topeka, Kansas
March 7, 2022 ■ Terracon Project No. 14215059

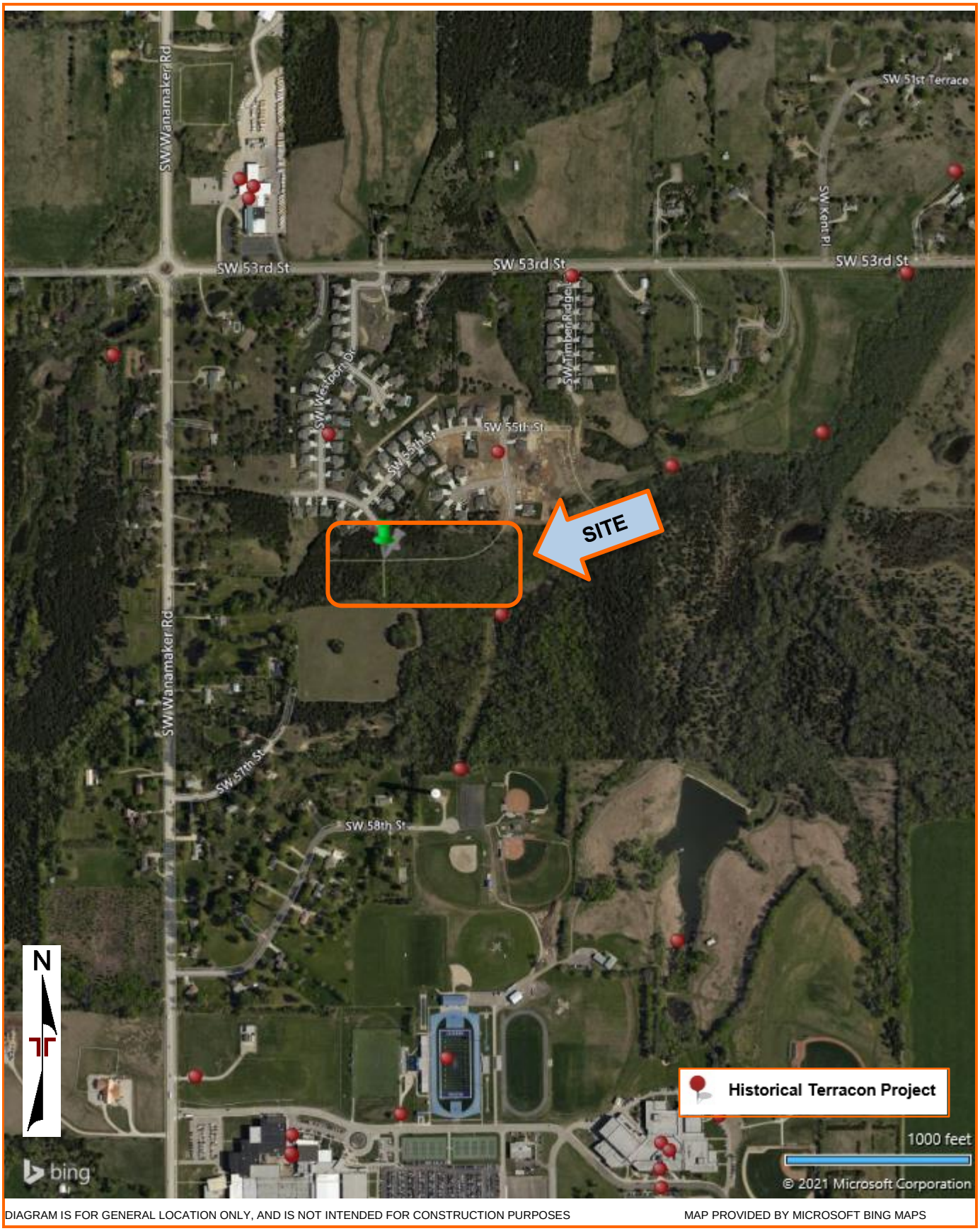


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN

Timber Ridge Subdivision ■ Topeka, Kansas
March 7, 2022 ■ Terracon Project No. 14215059

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION RESULTS

Contents:

Test Pit Logs (TP-1 through TP-6)
GeoModel
Moisture Density Relationship Results

Note: All attachments are one page unless noted above.

TEST PIT LOG NO. TP-1

PROJECT: Timber Ridge Subdivision

CLIENT: Schmidt, Beck & Boyd Engineering
Topeka, KS

SITE: SW 55th Terrace and SW Westport Drive
Topeka, KS

LOCATION See Exploration Plan

Latitude: 38.9667° Longitude: -95.7591°

Approximate Surface Elev.: 1121.5 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	SAMPLE NUMBER	LABORATORY HP (psf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
3	0.0	1121.5+/-	1								
		LEAN CLAY (CL), red brown to brown, medium stiff to very stiff	2		12	1	7000 (HP)	4550	24.8	98	
			3								
			4		24	2	5000 (HP)	1960	22.6	104	41-20-21
		brown to gray brown with dark brown	5								
	6.0	1115.5+/-	6			3					
		SHALEY CLAY (CL/CH), gray brown, stiff	7		15	4	9000+ (HP)	3220	19.7	109	
	8.5	1113+/-	8								
		Test Pit Terminated at 8.5 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: NA

Advancement Method:
Backhoe

Abandonment Method:
Backfill with excavated materials.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2016 SW 37th St
Topeka, KS

Test Pit Started: 02-23-2022

Test Pit Completed: 02-23-2022

Excavator: CASE 580 Super M

Operator: Extreme Excavation, Inc.

Project No.: 14215059

TEST PIT LOG NO. TP-2

PROJECT: Timber Ridge Subdivision

CLIENT: Schmidt, Beck & Boyd Engineering
Topeka, KS

SITE: SW 55th Terrace and SW Westport Drive
Topeka, KS

LOCATION See Exploration Plan

Latitude: 38.9667° Longitude: -95.7582°

Approximate Surface Elev.: 1109.5 (Ft.) +/-

DEPTH ELEVATION (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	SAMPLE NUMBER	LABORATORY HP (psf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
3		0									
		1									
		2			18	1	8000 (HP)	3140	16.3	110	
		3									

SHALEY CLAY (CL/CH), gray brown, stiff

3.0 1106.5+/-

Test Pit Terminated at 3 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: NA

Advancement Method:
Backhoe

Abandonment Method:
Backfill with excavated materials.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2016 SW 37th St
Topeka, KS

Test Pit Started: 02-23-2022 | Test Pit Completed: 02-23-2022

Excavator: CASE 580 Super M | Operator: Extreme Excavation, Inc.

Project No.: 14215059

TEST PIT LOG NO. TP-3

PROJECT: Timber Ridge Subdivision

CLIENT: Schmidt, Beck & Boyd Engineering
Topeka, KS

SITE: SW 55th Terrace and SW Westport Drive
Topeka, KS

LOCATION See Exploration Plan

Latitude: 38.9668° Longitude: -95.7571°

Approximate Surface Elev.: 1102 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	SAMPLE NUMBER	LABORATORY HP (psf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
3			**LEAN CLAY (CL)**, trace organics, yellow brown to gray brown, stiff	1									
				2			18	1	9000+ (HP)	3530	29.7	99	44-21-23
				3									
		3.5	1098.5+/-										
			SHALEY CLAY (CL/CH), gray brown, stiff	4									
				5			8	2	9000+ (HP)	3020	29.7	93	
		5.5	1096.5+/-										
4			**SHALE**, olive gray, slightly weathered										
		6.0	1096+/-	6									
			Test Pit Terminated at 6 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: NA

Advancement Method:
Backhoe

Abandonment Method:
Backfill with excavated materials.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2016 SW 37th St
Topeka, KS

Test Pit Started: 02-23-2022
Test Pit Completed: 02-23-2022
Excavator: CASE 580 Super M
Operator: Extreme Excavation, Inc.
Project No.: 14215059

TEST PIT LOG NO. TP-4

PROJECT: Timber Ridge Subdivision

CLIENT: Schmidt, Beck & Boyd Engineering
Topeka, KS

SITE: SW 55th Terrace and SW Westport Drive
Topeka, KS

LOCATION See Exploration Plan

Latitude: 38.9669° Longitude: -95.7562°

Approximate Surface Elev.: 1089 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	SAMPLE NUMBER	LABORATORY HP (psf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
2			**FILL - LEAN CLAY**, trace rock and cobbles at the surface, dark brown, (per field observations)										
		2.0	1087+/-	1									
3			**SHALEY CLAY (CL/CH)**, gray brown, medium stiff	2			8	1	9000+ (HP)	1860	24.9	99	
		4.0	1085+/-	3									
4			**SHALE**, olive gray, severe weathering, (per field observations)	4									
		6.0	1083+/-	5									
		6.5	**SHALE**, olive gray, slight weathering, (per field observations) 1082.5+/-	6									
			Test Pit Terminated at 6.5 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: NA

Advancement Method:
Backhoe

Abandonment Method:
Backfill with excavated materials.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2016 SW 37th St
Topeka, KS

Test Pit Started: 02-23-2022

Test Pit Completed: 02-23-2022

Excavator: CASE 580 Super M

Operator: Extreme Excavation, Inc.

Project No.: 14215059

TEST PIT LOG NO. TP-5

PROJECT: Timber Ridge Subdivision

CLIENT: Schmidt, Beck & Boyd Engineering
Topeka, KS

SITE: SW 55th Terrace and SW Westport Drive
Topeka, KS

LOCATION See Exploration Plan

Latitude: 38.9672° Longitude: -95.7557°

Approximate Surface Elev.: 1087 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	SAMPLE NUMBER	LABORATORY HP (psf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
1			**12 INCHES TOPSOIL**										
		1.0	1086+/-	1									
2			**LEAN TO FAT CLAY (CL/CH)**, with limestone cobbles and boulders, gray brown, stiff, (possible fill)	2			18	1	9000+ (HP)	2960	29.7	93	
		4.0	1083+/-	3									
4			**LIMESTONE**, slight weathering, (per field observations)	4									
		4.5	1082.5+/-										
			Test Pit Terminated at 4.5 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: NA

Advancement Method:
Backhoe

Abandonment Method:
Backfill with excavated materials.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2016 SW 37th St
Topeka, KS

Test Pit Started: 02-23-2022
Test Pit Completed: 02-23-2022
Excavator: CASE 580 Super M
Operator: Extreme Excavation, Inc.
Project No.: 14215059

TEST PIT LOG NO. TP-6

PROJECT: Timber Ridge Subdivision

CLIENT: Schmidt, Beck & Boyd Engineering
Topeka, KS

SITE: SW 55th Terrace and SW Westport Drive
Topeka, KS

LOCATION See Exploration Plan

Latitude: 38.9657° Longitude: -95.7582°

Approximate Surface Elev.: 1114 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	SAMPLE NUMBER	LABORATORY HP (psf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
1			**12 INCHES TOPSOIL**										
		1.0	1113+/-	1									
			FAT CLAY (CH), light brown	2				1					62-29-33
				3									
3		4.0	1110+/-	4									
			SHALEY CLAY (CL/CH), light olive gray	5									
				6				2					
		7.0	1107+/-	7									
			Test Pit Terminated at 7 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: NA

Advancement Method:
Backhoe

Abandonment Method:
Backfill with excavated materials.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

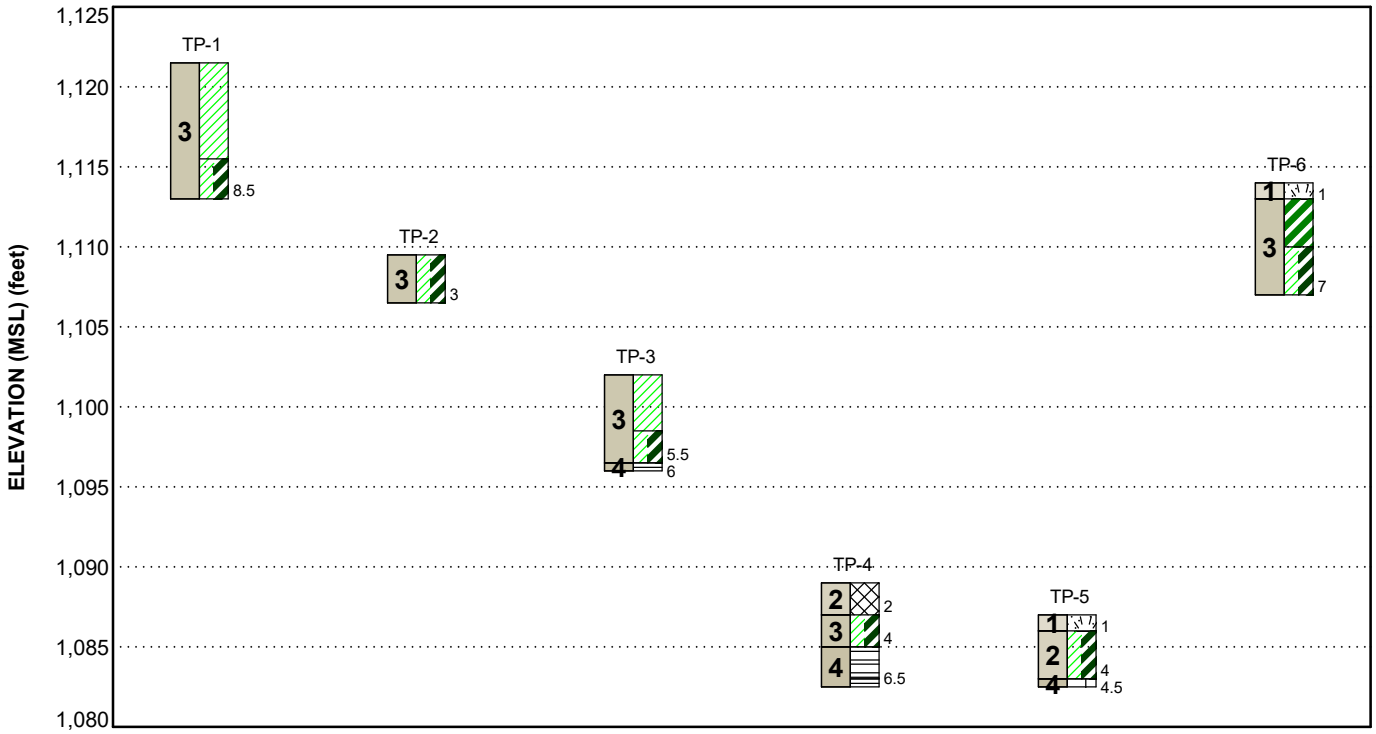
No free water observed

Terracon
2016 SW 37th St
Topeka, KS

Test Pit Started: 02-23-2022
Test Pit Completed: 02-23-2022
Excavator: CASE 580 Super M
Operator: Extreme Excavation, Inc.
Project No.: 14215059

GEOMODEL

Timber Ridge Subdivision ■ Topeka, KS
Terracon Project No. 14215059



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	**Surface**	Topsoil
2	**Fill and Possible Fill Materials**	Lean Clays, varying amounts of rock and cobbles.
3	**Cohesive Soils**	Fat, Lean to Fat, Lean, and Shaley Clays, medium stiff to very stiff.
4	**Bedrock**	Shale and Limestone, severe to slight weathering.

LEGEND

Lean Clay
Fill
Fat Clay
Lean Clay/Fat Clay
Topsoil
Shale
Limestone

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

LABORATORY COMPACTION CHARACTERISTICS OF SOIL REPORT

Report Number: 14215059.0001
Service Date: 03/04/22
Report Date: 03/07/22
Task: Laboratory Testing

Terracon
2016 SW 37th St
Topeka, KS 66611-2570
785-267-3310

Client

Schmidt, Beck & Boyd Engineering
Attn: Jeff Laubach
101 South Kansas Ave
Topeka, KS 66612

Project

Timber Ridge Subdivision
SW 55th Terrace and SW Westport Drive
Topeka, KS

Project Number: 14215059

Material Information

Source of Material: Borrow Source
Proposed Use: Engineered Fill

Sample Information

Sample Date: 02/23/21
Sampled By: Reichart, Nicholas
Sample Location: Test Pit TP-6, 1 to 3 feet

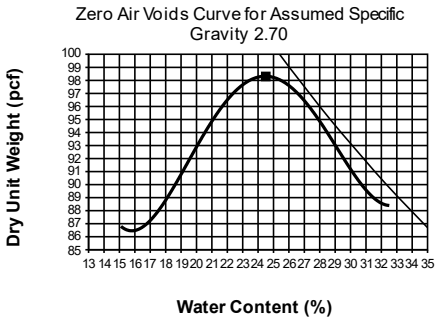
Sample Description: Fat Clay, light brown to orange brown

Laboratory Test Data

Test Procedure: ASTM D422
Test Method: Method B
Sample Preparation: Wet
Rammer Type: Mechanical
Maximum Dry Unit Weight (pcf): 98.3
Optimum Water Content (%): 24.5

	Result	Specifications
Liquid Limit:	62	
Plastic Limit:	29	
Plasticity Index:	33	
In-Place Moisture (%):		

USCS: CH



Comments:

Services: Obtain a sample of proposed material at the project site and return it to the laboratory. Prepare and test the sample for moisture-density relationship and plasticity index.

Terracon Rep.: Kenneth Ross
Reported To: NA
Contractor:
Report Distribution:

Reviewed By: _____

Michael Snapp

Test Methods: ASTM D698, ASTM D4318

SUPPORTING INFORMATION

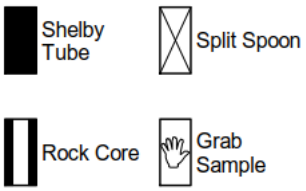
Contents:

Note: All attachments are one page unless noted above.

GENERAL NOTES – DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

Terracon GeoReport

Sampling



Water Level

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

Field Tests

N	**Standard Penetration Test Resistance (Blows/Ft.)**
(HP)	**Hand Penetrometer**
(T)	**Torvane**
(DCP)	**Dynamic Cone Penetrometer**
UC	**Unconfined Compressive Strength**
(PID)	**Photo-Ionization Detector**
(OVA)	**Organic Vapor Analyzer**

Descriptive Soil Classification

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

Location and Elevation Notes

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

Strength Terms

Relative Density of Coarse Grained Soils

(More than 50% retained on No. 200 sieve.)
Density determined by Standard Penetration Resistance

Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.
Very Loose	0 – 3
Loose	4 – 9
Medium Dense	10 – 29
Dense	30 – 50
Very Dense	> 50

Consistency of Fine Grained Soils

(50% or more passing the No. 200 sieve.)
Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance

Descriptive Term (Consistency)	Unconfined Compressive Strength Qu (psf)	Standard Penetration or N-Value Blows/Ft.
Very Soft	less than 500	0 – 1
Soft	500 to 1,000	2 – 4
Medium Stiff	1,000 to 2,000	4 – 8
Stiff	2,000 to 4,000	8 – 15
Very Stiff	4,000 to 8,000	15 – 30
Hard	> 8,000	> 30

Relative Proportions of Sand and Gravel

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 – 29
Modifier	> 30

Relative Proportions of Fines

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

Grain Size Terminology

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

Plasticity Description

Term	Plasticity Index
Non-plastic	0
Low	1 – 10
Medium	11 – 30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or [Cc<1 or Cc>3.0] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or [Cc<1 or Cc>3.0] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K, L, M, N]
			Liquid limit - not dried			Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K, L, M, P]
			Liquid limit - not dried			Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

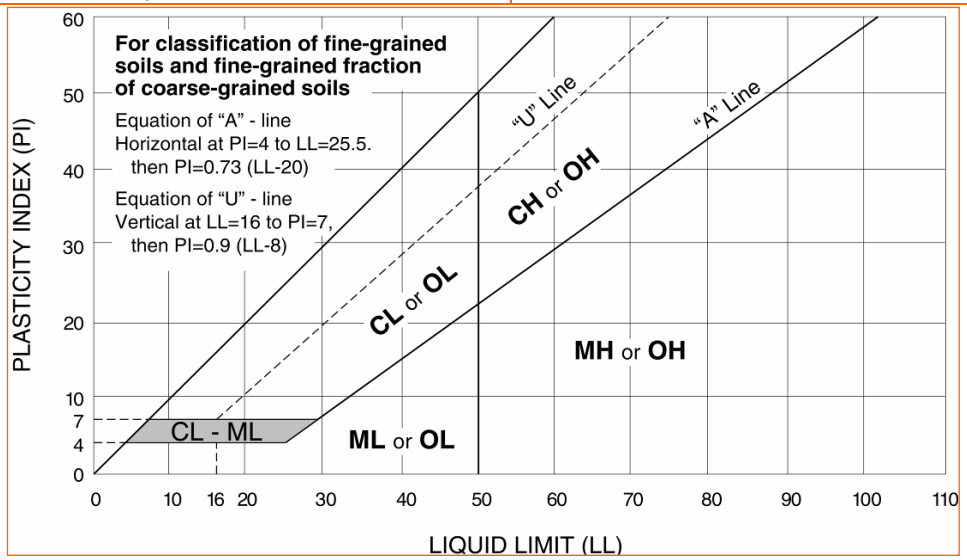
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



DESCRIPTION OF ROCK PROPERTIES

Weathering	
Fresh	Rock fresh, crystals bright, few joints may show slight staining. Rock rings under hammer if crystalline.
Very slight	Rock generally fresh, joints stained, some joints may show thin clay coatings, crystals in broken face show bright. Rock rings under hammer if crystalline.
Slight	Rock generally fresh, joints stained, and discoloration extends into rock up to 1 in. Joints may contain clay. In granitoid rocks some occasional feldspar crystals are dull and discolored. Crystalline rocks ring under hammer.
Moderate	Significant portions of rock show discoloration and weathering effects. In granitoid rocks, most feldspars are dull and discolored; some show clayey. Rock has dull sound under hammer and shows significant loss of strength as compared with fresh rock.
Moderately severe	All rock except quartz discolored or stained. In granitoid rocks, all feldspars dull and discolored and majority show kaolinization. Rock shows severe loss of strength and can be excavated with geologist's pick.
Severe	All rock except quartz discolored or stained. Rock "fabric" clear and evident, but reduced in strength to strong soil. In granitoid rocks, all feldspars kaolinized to some extent. Some fragments of strong rock usually left.
Very severe	All rock except quartz discolored or stained. Rock "fabric" discernible, but mass effectively reduced to "soil" with only fragments of strong rock remaining.
Complete	Rock reduced to "soil". Rock "fabric" no discernible or discernible only in small, scattered locations. Quartz may be present as dikes or stringers.

Hardness (for engineering description of rock – not to be confused with Moh's scale for minerals)	
Very hard	Cannot be scratched with knife or sharp pick. Breaking of hand specimens requires several hard blows of geologist's pick.
Hard	Can be scratched with knife or pick only with difficulty. Hard blow of hammer required to detach hand specimen.
Moderately hard	Can be scratched with knife or pick. Gouges or grooves to ¼ in. deep can be excavated by hard blow of point of a geologist's pick. Hand specimens can be detached by moderate blow.
Medium	Can be grooved or gouged 1/16 in. deep by firm pressure on knife or pick point. Can be excavated in small chips to pieces about 1-in. maximum size by hard blows of the point of a geologist's pick.
Soft	Can be gouged or grooved readily with knife or pick point. Can be excavated in chips to pieces several inches in size by moderate blows of a pick point. Small thin pieces can be broken by finger pressure.
Very soft	Can be carved with knife. Can be excavated readily with point of pick. Pieces 1-in. or more in thickness can be broken with finger pressure. Can be scratched readily by fingernail.

Joint, Bedding, and Foliation Spacing in Rock [1]		
Spacing	**Joints**	**Bedding/Foliation**
Less than 2 in.	Very close	Very thin
2 in. – 1 ft.	Close	Thin
1 ft. – 3 ft.	Moderately close	Medium
3 ft. – 10 ft.	Wide	Thick
More than 10 ft.	Very wide	Very thick

1. Spacing refers to the distance normal to the planes, of the described feature, which are parallel to each other or nearly so.

Rock Quality Designation (RQD) [1]	
RQD, as a percentage	**Diagnostic description**
Exceeding 90	Excellent
90 – 75	Good
75 – 50	Fair
50 – 25	Poor
Less than 25	Very poor

1. RQD (given as a percentage) = length of core in pieces 4 inches and longer / length of run

Joint Openness Descriptors	
Openness	**Descriptor**
No Visible Separation	Tight
Less than 1/32 in.	Slightly Open
1/32 to 1/8 in.	Moderately Open
1/8 to 3/8 in.	Open
3/8 in. to 0.1 ft.	Moderately Wide
Greater than 0.1 ft.	Wide

References: American Society of Civil Engineers. Manuals and Reports on Engineering Practice - No. 56. Subsurface Investigation for Design and Construction of Foundations of Buildings. New York: American Society of Civil Engineers, 1976. U.S. Department of the Interior, Bureau of Reclamation, Engineering Geology Field Manual.

SHAWNEE COUNTY
STREET & STORM SEWER
TIMBER RIDGE SUBDIVISION
SW 55TH TERRACE / MAUPLIN LANE
COUNTY PROJECT NO. S-601017.00

Know what's below. Call 811 before you dig or visit us at www.kansasonecall.com

"Kansas One-Call" is the Underground Utility Notification center for the State of Kansas. Through this facility, you can notify operators of underground facilities of proposed excavations to request that the underground facilities be marked before you dig.

Kansas Statute annotated #66-1801 through #66-1815 requires anyone who engages in any type of excavation to provide advance notice of at least two full working days, but not more than 15 calendar days, excluding weekends and holidays.

The person who is doing the work is responsible for calling Kansas One-Call. If the owner contracts with a professional excavator to do the excavation, then the professional excavator is responsible for calling Kansas One-Call.

The service provided by Kansas One-Call to excavators is free of charge.

Call 785-368-3111 for emergencies with City of Topeka utilities.

NON-EMERGENCY UTILITY OWNER CONTACTS

Cable TV
Cox Communications
931 SW Henderson Rd.
Topeka, KS 66615
Glenn Calhoon
(785)215-6705
(785)207-1693
glenn.calhoon@cox.com

Electric
Evergy
PO Box 889
4001 NW 14th St.
Topeka, KS 66603
Aaron Spreer
(785)865-4850
(785)575-6300
aaron.spreer@evergy.com

Fiber Optic - City of Topeka
City of Topeka, Info. Tech.
620 SE Madison St., 3rd Flr
Topeka, KS 66603
Mark Biswell
(785)368-3718
mbiswell@topeka.org

Fiber Optic - CenturyLink CLEC
Centurylink CLEC
100 Centurylink Dr.
Monroe, LA 71203
Luke Hempler
(816)308-9639
luke.hempler@centurylink.com

Fiber Optic - USD 501
USD 501, Info. Tech.
1900 SW Hope St.
Topeka, KS 66604
Dickie Hanson
(785)438-4750
dhanson@tps501.org

Gas
Kansas Gas Service
P.O. Box 3538
200 E 1st St.
Topeka, KS 66601
Dawn Hecker
(785)431-4251
dawn.hecker@onegas.com
For Gas Leaks 1-888-482-4950
911 must also be called immediately

Sanitary/Storm Sewer
City of Topeka, WPC Div.
1115 NE Poplar St.
Topeka, KS 66616
Darrin A. Coffland
(785)368-2467
dcoffland@topeka.org

Telephone
AT&T
220 SE 6th St., Rm 360
Topeka, KS 66603
Randall Nicely
(785)276-5377
RN0380@att.com

Traffic Signal
City of Topeka, Traffic Ops.
927 NW Harrison St.
Topeka, KS 66612
Duane Morris
(785)368-3913
dmorris@topeka.org

Fiber Optic - AT&T Transmission
AT&T Services, Inc.
1425 Oak St.
Kansas City, MO 64016
Lenny Vohs
(770)335-8244
lv2121@att.com

Telephone/Fiber Optics
Verizon/MCI
Jeffrey Wiard
(620)242-6647
Jeffrey.Wiard@verizonwireless.com

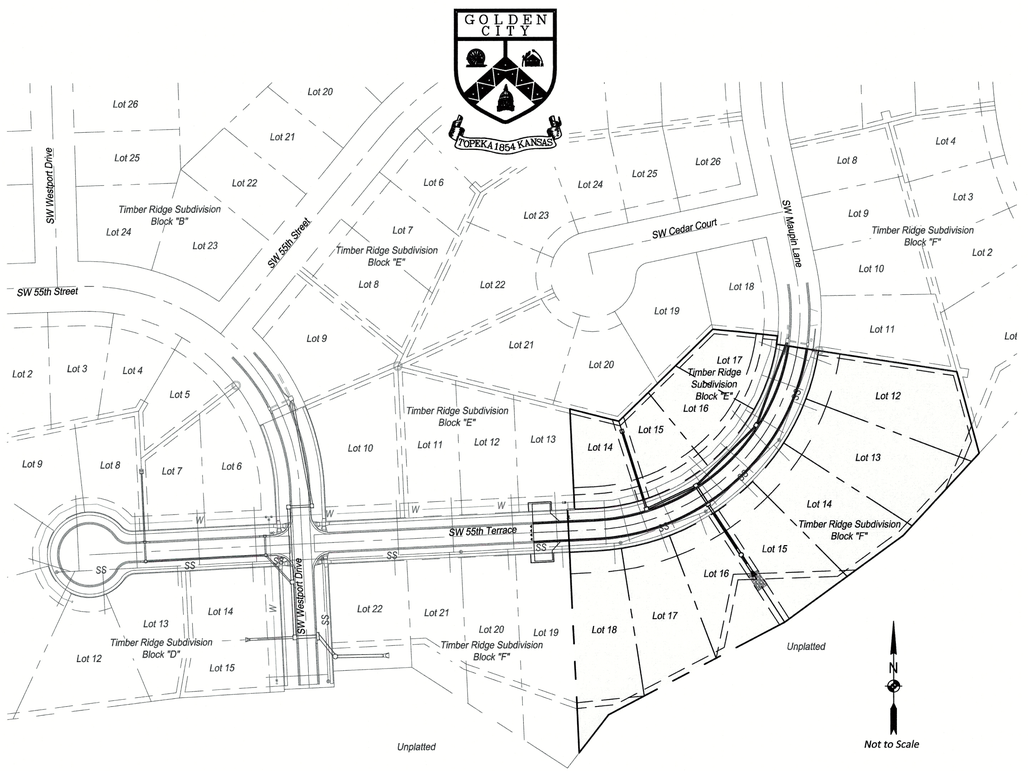
Water
City of Topeka, Water Dist.
3245 NW Waterworks Dr.
Topeka, KS 66606
Duncan Theuri
(785)368-0152
dtheuri@topeka.org

Fiber Optic - Giant Communications
Giant Communications
515 S Kansas Ave., Ste. 210
Topeka, KS 66603
Lance Lyman
(785)362-3312
lancelyman@giantcomm.net

Fiber Optic - KsFiberNet
Kansas Fiber Network LLC
10875 Benson, Ste. 250
Overland Park, KS 66210
Brad Burger
(913)213-2937
bburger@ksfiber.net

GENERAL NOTE:

1. *All construction methods and materials used in the construction of the improvements covered by these plans shall be in accordance with the Technical Specifications and design standards on file at the office of the Shawnee County Engineer.*



LEGEND

Construction Limits			
Traffic Signal Line	TS	Gas Valve	
Overhead Telephone Line	OHT	Mail Box	
Underground Telephone Line	T	Existing Storm Inlet	
Overhead Cable	OTV	Existing Sanitary Sewer Manhole	S
Underground Cable	UTV	Existing Storm Sewer Manhole	D
Overhead Electric Line	OHP	Existing Traffic Manhole	T
Underground Electric Line	UGP	Sign	
Water Line	W	Tree, Deciduous	
Gas Line	G	Tree, Coniferous	
Sanitary Sewer		Stump	
Storm Sewer		Shrub	
Fiber Optic Line	FO		
Centerline			
Right-of-Way Line			
Property Line			
Lot Line			
Chain link Fence			
Wood Fence			
RailRoad Tracks			
Section Corner			
Bench Mark			
Property Pin			
Power Pole			
Telephone Pole			
Street Light			
Guy Pole			
Guy Wire			
Fire Hydrant			
Water Meter			
Water Valve			
Gas Meter			

DEVELOPER

DULTMEIER-ROLLENHAGEN, LLC
5526 SW 53RD STREET
TOPEKA, KS 66610

INDEX to SHEETS:

JEFFREY WAYNE LAUBACH — LICENSED — 18824 — 5/25/2023 — KANSAS — PROFESSIONAL ENGINEER

RELEASED FOR CONSTRUCTION
May 26, 2023
COUNTY ENGINEER — DATE

SBB PROJ. NO. 21-025

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: J. LAUBACH
APP'D BY: J. LAUBACH
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

SHAWNEE COUNTY, KANSAS
PUBLIC WORKS DEPARTMENT
1515 NW SALINE
TOPEKA, KS 66618
(785) 233-7702

SBB ENGINEERING
SBB Engineering, LLC
101 S Kansas Ave., Topeka, KS 66603
Ph: (785) 215-8630 www.sbbeng.com

S-601017.00
TIMBER RIDGE SUBDIVISON
STREET & STORM SEWER

TITLE SHEET

DATE: 5.25.2023
SHEET: 1 OF 23
PROJ.: S-601017.00

GENERAL NOTES:

1. ALL CONSTRUCTION METHODS AND MATERIALS USED IN THE CONSTRUCTION OF THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS AND DESIGN STANDARDS ON FILE AT THE OFFICE OF THE SHAWNEE COUNTY ENGINEER.

2. THE LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES MAY VARY FROM WHAT IS INDICATED IN THESE PLANS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE UTILITY OWNER TO LOCATE AND FLAG ALL UNDERGROUND UTILITIES WHETHER INDICATED OR NOT. NO EXCAVATION WILL BE PERMITTED IN THE AREA OF UNDERGROUND UTILITIES UNTIL ALL SUCH UTILITIES HAVE BEEN LOCATED AND IDENTIFIED TO THE SATISFACTION OF ALL PARTIES AND THEN ONLY WITH EXTREME CARE TO AVOID ANY POSSIBILITY OF DAMAGE TO THE UTILITY.

3. ALL DISPOSAL SITES MUST BE APPROVED BY THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT. MATERIAL EITHER STOCKPILED OR DISPOSED OF IN A FLOOD PLAIN WOULD REQUIRE A KANSAS STATE BOARD OF AGRICULTURE PERMIT. ANY MATERIAL DUMPED IN WATERS OF THE UNITED STATES OR WETLANDS IS SUBJECT TO U.S. CORPS OF ENGINEERS PERMITTING REGULATIONS. ANY MATERIAL BURIED OR STOCKPILED BEYOND APPROVED CONSTRUCTION LIMITS WOULD REQUIRE ADDITIONAL ARCHEOLOGICAL INVESTIGATIONS UNLESS BURIED IN PREVIOUSLY APPROVED BORROW LOCATIONS.

4. ALL SAW CUTS SHALL BE FULL-DEPTH. SAW CUTS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE SUBSIDIARY TO OTHER BID ITEMS.

5. SIDEWALK CROSS SLOPES SHALL NOT EXCEED 2%.

6. LONGITUDINAL SLOPE OF PROPOSED SIDEWALK RAMPS SHALL NOT EXCEED 12:1 (8.33%).

7. SEALING OF CURB & GUTTER SECTIONS SHALL BE AT EXPANSION JOINTS ONLY. CONTRACTION JOINTS IN CURB & GUTTER SHALL NOT BE SEALED.

8. ACCESS TO ALL PROPERTIES SHALL BE MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION BY THE CONTRACTOR.

9. ALL DISTURBED AREAS THAT ARE NOT HARDSCAPED SHALL BE SEEDED, FERTILIZED AND MULCHED IN ACCORDANCE WITH THE STANDARD TECHNICAL SPECIFICATIONS.

10. TEMPORARY EROSION CONTROL SHALL BE PROVIDED TO CONTROL SEDIMENTATION DUE TO BARE SOILS INTO THE STORM SEWER SYSTEM. TEMPORARY SEEDING, FERTILIZING, AND MULCHING SHALL BE PROVIDED IN THE EVENT THAT THE PROJECT IS NOT COMPLETED PRIOR TO AN EXTENDED WORK STOPPAGE DUE TO WINTER WEATHER.

11. ALL PROPERTY PINS DISTURBED BY CONSTRUCTION SHALL BE REPLACED BY A LICENSED LAND SURVEYOR. THIS WORK SHALL BE SUBSIDIARY TO OTHER ITEMS OF THE CONTRACT.

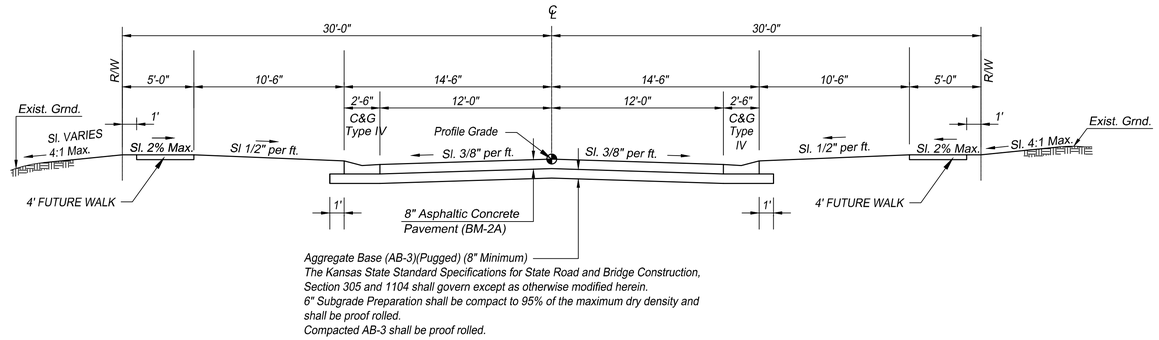
12. CONSTRUCTION STAKING WILL BE PROVIDED BY SBB ENGINEERING, LLC.

13. ANY FILL MATERIAL NEEDED TO FINISH STREET GRADING MAY BE EXCAVATED FROM BLOCK E - LOT 13, 14, 15, 16.

14. PRIOR TO PLACING AB-3, THE COMPACTED SUBGRADE SHALL BE PROOF ROLLED. COMPACTED AB-3 SHALL ALSO BE PROOF ROLLED.

ABBREVIATIONS:

TC	TOP OF CURB
TP	TOP OF PAVEMENT
TS	TOP OF SIDEWALK
TW	TOP OF RETAINING WALL
M.E.	MATCH EXISTING
L.I.P.	LEAVE IN PLACE
U.E.	UTILITY EASEMENT
P.A.E.	PEDESTRIAN ACCESS EASEMENT



Aggregate Base (AB-3)(Pugged) (8" Minimum)
The Kansas State Standard Specifications for State Road and Bridge Construction, Section 305 and 1104 shall govern except as otherwise modified herein.
6" Subgrade Preparation shall be compact to 95% of the maximum dry density and shall be proof rolled.
Compacted AB-3 shall be proof rolled.

TYPICAL SECTION

SUMMARY OF QUANTITIES
STREET & STORM SEWER PROJECT S-601017.00

ITEM	DESCRIPTION	QTY	UNITS
1	STREET GRADING - UNCLASSIFIED EXCAVATION / EMBANKMENT*	400	CY
2	8" ASPHALTIC CONCRETE PAVEMENT	1,332	SY
3	8" AB-3	1,745	SY
4	COMBINED CURB & GUTTER, TYPE IV	934	LF
5	6" ASPHALT (TEMPORARY TURNAROUND)	158	SY
6	SIGN (OM4-1)	4	EA
7	LOT GRADING - UNCLASSIFIED EXCAVATION / EMBANKMENT	1	LS
8	CONNECT TO EXISTING STORM SEWER	1	EA
9	DITCH INLET, TYPE IV	1	EA
10	5' DIA. MANHOLE	1	EA
11	CURB INLET, TYPE I, L=6' x W=4'	1	EA
12	CURB INLET, TYPE I , L=6' x W=5'	3	EA
13	REINFORCED CONCRETE PIPE (18")(RCP)	126	LF
14	REINFORCED CONCRETE PIPE (24")(RCP)	310	LF
15	REINFORCED CONCRETE PIPE (30")(RCP)	145	LF
16	30" (RCP) END SECTION W/ TOEWALL	1	EA
17	CLASS II STONE RIPRAP	42	SY
18	SILT FENCE	1,219	LF
19	INLET PROTECTION	6	EA
20	TEMPORARY TRAFFIC CONTROL	1	LS
21	CONSTRUCTION ENTRANCE	1	EA

ITEMS #7 THRU 21 - ITEMS TO BE PROVIDED BY OWNER

*STREET GRADING - UNCLASSIFIED EXCAVATION / EMBANKMENT BID ITEMS INCLUDES 6" SUBGRADE PREPARATION. 6" SUBGRADE SHALL BE COMPACT TO 95% OF THE MAXIMUM DRY DENSITY AND SHALL BE PROOF ROLLED.

ITEMS TO BE COMPLETED OR PROVIDED BY OWNER:

1. TOP SOIL, TEMPORARY SEEDING, PERMANENT SEEDING WILL BE COMPLETED BY THE OWNER.
2. STORM SEWER INSTALLATION TO BE PROVIDED BY THE OWNER. ONCE CURB AND GUTTER HAS BEEN PLACED, IT IS THE OWNER'S RESPONSIBILITY TO ADJUST CURB INLET TOPS TO FINISHED GRADE AND TO INSTALL CURB TRANSITIONS AND THROATS ON INLETS.
3. OWNER'S RESPONSIBILITY TO PROVIDE SUBGRADE FOR STREET AT 16" BELOW FINISHED GRADE (TOP OF ASPHALT). TOLERANCE SHALL BE AT SUBGRADE PLUS 2".

SBB PROJ. NO. 21-025

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: J. LAUBACH
APP'D BY: J. LAUBACH
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

SHAWNEE COUNTY, KANSAS
PUBLIC WORKS DEPARTMENT
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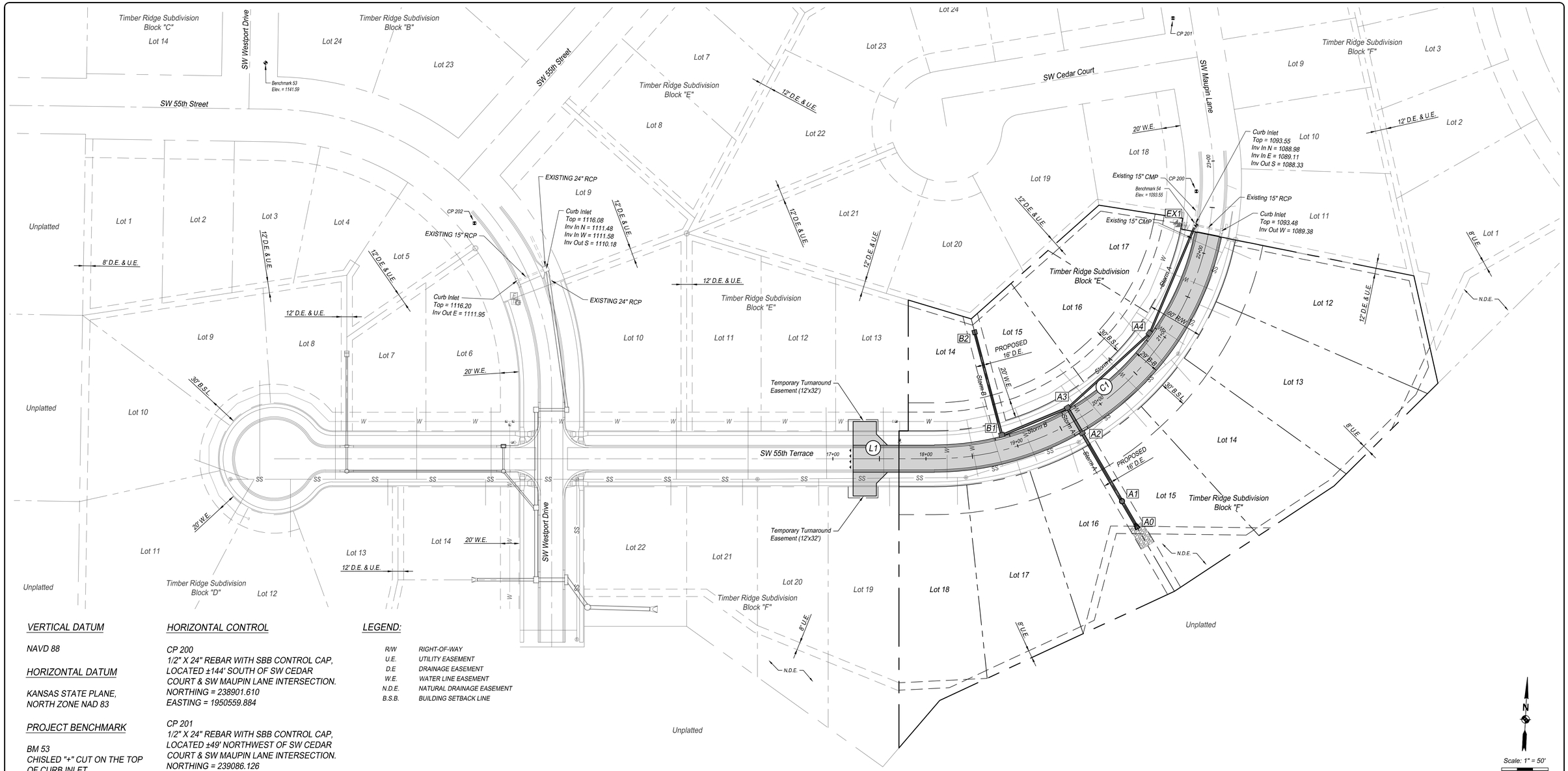
TOPEKA, KS 66618
(785) 233-7702

SBB ENGINEERING
SBB Engineering, LLC
101 S Kansas Ave., Topeka, KS 66603
Ph: (785) 215-8630 www.sbbeng.com

S-601017.00
TIMBER RIDGE SUBDIVISON
STREET & STORM SEWER

GENERAL NOTES,
TYPICAL SECTION &
SUMMARY OF QUANTITIES

DATE: 5.25.2023
SHEET: 2 OF 23
PROJ.: S-601017.00



VERTICAL DATUM

NAVD 88

HORIZONTAL DATUM

KANSAS STATE PLANE,
NORTH ZONE NAD 83

PROJECT BENCHMARK

BM 53
CHISLED "+" CUT ON THE TOP OF CURB INLET
ELEV. = 1141.59'
NORTHING = 238992.645
EASTING = 1949554.760

BM 54
"□" CUT ON CENTER FRONT FACE OF CURB INLET
ELEV. = 1093.55'
NORTHING = 238865.135
EASTING = 1950561.381

HORIZONTAL CONTROL

CP 200
1/2" X 24" REBAR WITH SBB CONTROL CAP, LOCATED ±144' SOUTH OF SW CEDAR COURT & SW MAUPIN LANE INTERSECTION.
NORTHING = 238901.610
EASTING = 1950559.884

CP 201
1/2" X 24" REBAR WITH SBB CONTROL CAP, LOCATED ±49' NORTHWEST OF SW CEDAR COURT & SW MAUPIN LANE INTERSECTION.
NORTHING = 239086.126
EASTING = 1950526.052

CP 202
1/2" X 24" REBAR WITH SBB CONTROL CAP, LOCATED ±49' SOUTHEAST OF SW 55TH STREET & SW WESTPORT DRIVE INTERSECTION.
NORTHING = 238831.128
EASTING = 1949786.938

LEGEND:

R/W	RIGHT-OF-WAY
U.E.	UTILITY EASEMENT
D.E	DRAINAGE EASEMENT
W.E.	WATER LINE EASEMENT
N.D.E.	NATURAL DRAINAGE EASEMENT
B.S.B.	BUILDING SETBACK LINE

SW 55th Terrace Alignment Table

Point ID	Start Station	Bearing	Length	Northing	Easting
L1	17+21.74	N87°19'13"E	87.28	238,597.5076	1,950,204.9887
C1	18+09.02		412.27	238,601.5883	1,950,292.1733

SBB PROJ. NO. 21-025

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: J. LAUBACH
APP'D BY: J. LAUBACH
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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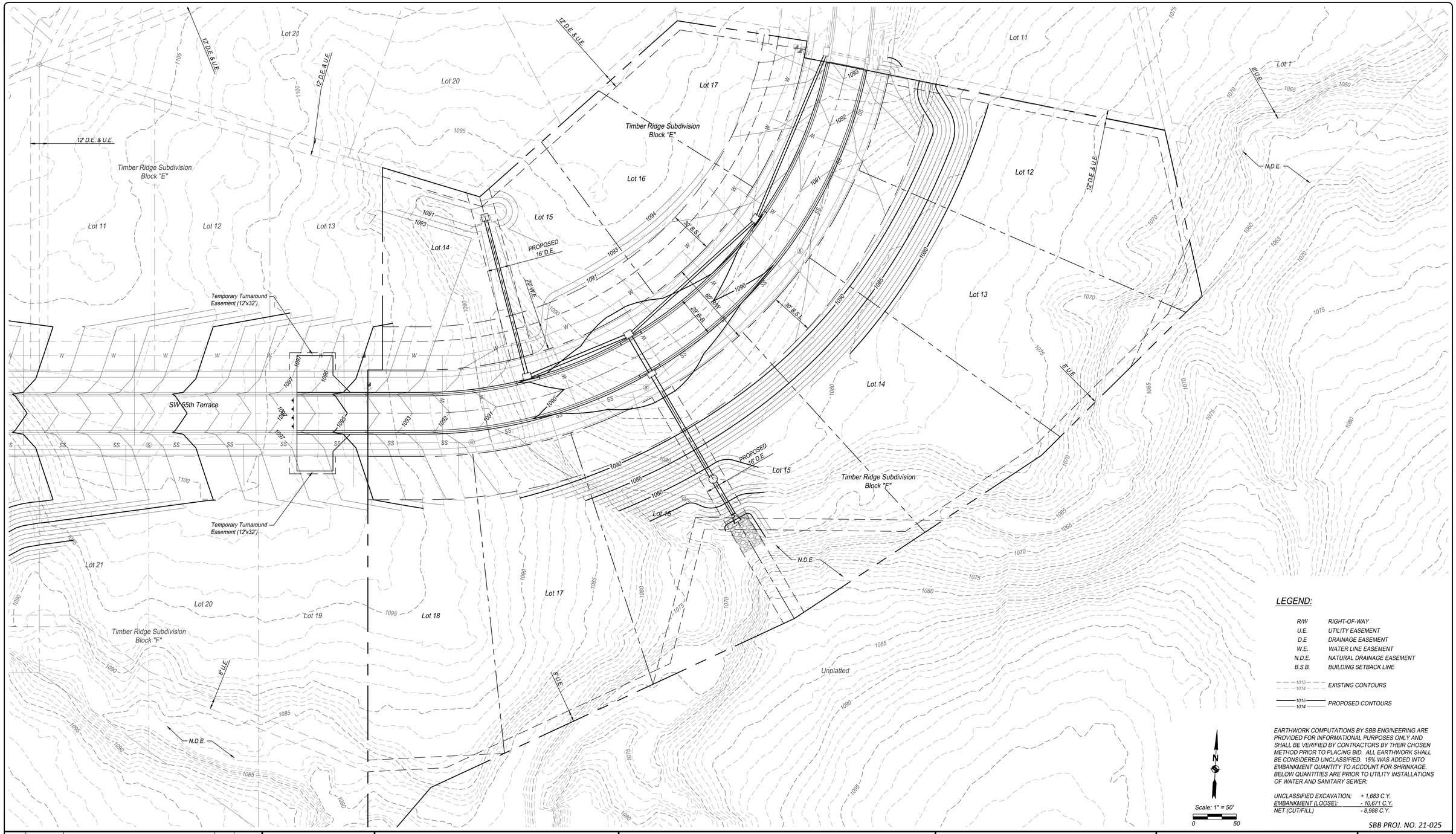
S-601017.00
TIMBER RIDGE SUBDIVISON
STREET & STORM SEWER

GENERAL LAYOUT & PROJECT CONTROL

DATE: 5.25.2023
SHEET: 3 OF 23
PROJ.: S-601017.00



LEGEND:

R/W	RIGHT-OF-WAY
U.E.	UTILITY EASEMENT
D.E	DRAINAGE EASEMENT
W.E.	WATER LINE EASEMENT
N.D.E.	NATURAL DRAINAGE EASEMENT
B.S.B.	BUILDING SETBACK LINE
1015 / 1014	EXISTING CONTOURS
1015 / 1014	PROPOSED CONTOURS

Scale: 1" = 50'

0 50

EARTHWORK COMPUTATIONS BY SBB ENGINEERING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND SHALL BE VERIFIED BY CONTRACTORS BY THEIR CHOSEN METHOD PRIOR TO PLACING BID. ALL EARTHWORK SHALL BE CONSIDERED UNCLASSIFIED. 15% WAS ADDED INTO EMBANKMENT QUANTITY TO ACCOUNT FOR SHRINKAGE. BELOW QUANTITIES ARE PRIOR TO UTILITY INSTALLATIONS OF WATER AND SANITARY SEWER.

UNCLASSIFIED EXCAVATION:	+ 1,683 C.Y.
EMBANKMENT (LOOSE):	- 10,671 C.Y.
NET (CUT/FILL)	- 8,988 C.Y.

SBB PROJ. NO. 21-025

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: J. LAUBACH
APP'D BY: J. LAUBACH
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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S-601017.00
TIMBER RIDGE SUBDIVISON
STREET & STORM SEWER

GRADING PLAN

DATE: 5.25.2023
SHEET: 4 OF 23
PROJ.: S-601017.00

DRAINAGE CALCULATIONS

FUTURE PHASE FOR REFERENCE ONLY

PIPE FLOW DATA

STRUC ID	RUNOFF: INCREMENTAL RUNOFF COEFFICIENT "C"	INCREMENTAL AREA "A" (AC.)	INCREMENTAL C X A	CUMULATIVE AREA "A" (AC.)	CUMULATIVE C X A	RUNOFF: SYSTEM TIME OF CONCENTRATION "Tc" AT STRUCTURE (MIN)	RAINFALL INTENSITY i_{10}/i_{100} (IN/HR)	ANTECEDENT PRECIPITATION FACTOR $P_{10}/P_{100}/P_{CIP}$	RUNOFF Q_{10}/Q_{100} / Q_{CIP}	PIPE DESIGN (n = 0.012 RCP, n = 0.022 CMP*): UPSTREAM STRUCTURE NUMBER	DOWNSTREAM STRUCTURE NUMBER	DIAMETER "D" (IN)	LENGTH "L" (FT)	UPSTREAM INVERT ELEVATION	DOWNSTREAM INVERT ELEVATION	SLOPE "S" (FT/FT)	TRAVEL TIME IN PIPE "TT" (MIN)	VELOCITY FULL V_F (FPS)	RUNOFF Q_{10} / Q_{100} / Q_{CIP}	FULL FLOW Q (CFS)
							4.81	1.00	7											7
B2	0.51	2.91	1.48	2.91	1.48	8.0	6.51	1.00	10	B2	B1	24	114.10	1087.02	1085.88	0.0100	0.2	8	10	24
							9.17	1.25	17											17
							4.81	1.00	10											10.2
B1	0.51	1.23	0.63	4.14	2.11	8.2	6.51	1.00	14	B1	A3	24	76.29	1082.50	1081.74	0.0100	0.2	8	13.7	24.5
							9.17	1.25	24										24.2	
							4.50	1.00	7											7.1
EX 1	0.51	3.08	1.57	3.08	1.57	10.0	6.08	1.00	10	EX 1	A4	18	126.01	1088.33	1083.59	0.0376	0.2	12	9.6	22.1
							8.58	1.25	17										16.8	
							4.50	1.00	8											7.8
A4	0.51	0.30	0.15	3.38	1.72	10.2	6.08	1.00	10	A4	A3	24	119.00	1081.83	1081.24	0.0050	0.4	5	10.5	17.3
							8.58	1.25	18										18.5	
							4.50	1.00	19											18.8
A3	0.51	0.65	0.33	8.17	4.17	10.5	6.08	1.00	25	A3	A2	30	31.67	1080.24	1079.50	0.0234	0.0	14	25.3	67.9
							8.58	1.25	45										44.7	
							4.50	1.00	21											21.1
A2	0.51	1.03	0.53	9.20	4.69	10.6	6.08	1.00	29	A2	A1	30	84.57	1079.30	1072.11	0.0850	0.1	26	28.5	129.5
							8.58	1.25	50										50.3	
							4.50	1.00	21											21.1
A1	0.51	0.00	0.00	9.20	4.69	10.6	6.08	1.00	29	A1	A0	30	28.00	1069.50	1069.11	0.0139	0.0	11	28.5	52.4
							8.58	1.25	50										50.3	
							4.81	1.00	4											3.7
F4	0.51	1.50	0.77	1.50	0.77	8.0	6.51	1.00	5	F4	F3	18	98.00	1115.10	1107.43	0.0783	0.1	18	5.0	31.8
							9.17	1.25	9										8.8	
							4.81	1.00	6											5.6
F3	0.51	0.80	0.41	2.30	1.17	8.1	6.51	1.00	8	F3	F2	18	26.96	1107.23	1106.96	0.0100	0.1	6	7.6	11.4
							9.17	1.25	13										13.4	
							4.81	1.00	6											6.4
F2	0.51	0.31	0.16	2.61	1.33	8.2	6.51	1.00	9	F2	F1	18	168.24	1106.46	1102.99	0.0206	0.3	9	8.7	16.3
							9.17	1.25	15										15.3	
							4.81	1.00	8											8.2
F1	0.51	0.30	0.15	3.33	1.70	8.5	6.51	1.00	11	F1	E1	18	52.54	1102.49	1101.00	0.0284	0.1	11	11.1	19.2
							9.17	1.25	19										19.5	
							5.40	1.00	1											1.2
G1	0.51	0.42	0.21	0.42	0.21	5.0	7.26	1.00	2	G1	F1	18	26.96	1103.26	1102.99	0.0100	0.1	6	1.6	11.4
							10.20	1.25	3										2.7	
							3.84	1.00	22											21.9
EX2	0.51	11.20	5.71	11.20	5.71	15.0	5.21	1.00	30	EX2	E3	30	153.20	1110.18	1101.83	0.0545	0.1	21	29.8	103.7
							7.36	1.25	53										52.6	
							3.84	1.00	22											22.2
E3	0.51	0.16	0.08	11.36	5.79	15.1	5.21	1.00	30	E3	E2	30	32.67	1101.33	1100.75	0.0178	0.0	12	30.2	59.2
							7.36	1.25	53										53.3	
							3.84	1.00	24											23.6
E2	0.51	0.69	0.35	12.05	6.15	15.2	5.21	1.00	32	E2	E1	30	105.00	1100.25	1098.50	0.0167	0.1	12	32.0	57.4
							7.36	1.25	57										56.5	
							3.84	1.00	31											30.8
E1	0.51	0.36	0.18	15.74	8.03	15.3	5.21	1.00	42	E1	D3	36	77.49	1098.00	1097.11	0.0115	0.1	11	41.8	77.4
							7.36	1.25	74										73.9	
							3.84	1.00	14											14.0
D4	0.51	7.14	3.64	7.14	3.64	15.0	5.21	1.00	19	D4	D3	30	63.06	1099.87	1099.24	0.0100	0.1	9	19.0	44.4
							7.36	1.25	34										33.5	
							3.84	1.00	49											49.4
D3	0.51	2.33	1.19	25.21	12.86	15.1	5.21	1.00	67	D3	D2	48	32.17	1096.11	1095.79	0.0099	0.0	12	67.0	155.2
							7.36	1.25	118										118.3	
							3.84	1.00	50											50.4
D2	0.51	0.55	0.28	25.76	13.14	15.2	5.21	1.00	68	D2	D1	48	37.34	1095.29	1095.00	0.0078	0.1	11	68.4	137.1
							7.36	1.25	121										120.9	
							3.84	1.00	50											50.4
D1	0.51	0.00	0.00	25.76	13.14	15.2	5.21	1.00	68	D1	D0	48	66.90	1090.75	1090.34	0.0061	0.1	10	68.4	121.8
							7.36	1.25	121										120.9	

DRAINAGE AREA AND STRUCTURE DATA

Structure	Area (ac)	C	TC (min)	i_{10} (in/hr)	Q_{10} (cfs)	Q_{10} Total (cfs)	i_{100} (in/hr)	Q_{100} (cfs)	Street Grade	Intercept$_{10}$ Qi/Q	Q_{10} Cap (cfs)	Q_{10} Byp (cfs)	Gutter Spread (ft)	Inlet Type
EX 1A	2.40	0.51	10	6.08	7.4	7.4	8.58	13.1	4.0%	0.50	3.7	3.7	8.7	Type I Curb Inlet
EX 1	0.68	0.51	5	7.26	2.5	6.2	10.20	4.4	4.0%	0.55	3.4	2.8	8.1	Type I Curb Inlet
A4	0.30	0.51	5	7.26	1.1	3.9	10.20	2.0	1.0%	0.70	2.7	1.2	9.0	Type I Curb Inlet
A3	0.65	0.51	5	7.26	2.4	5.2	10.20	4.2	0.0%	1.00	5.2	0.0	5.8	Type I Curb Inlet
B1	1.23	0.51	5	7.26	4.6	4.6	10.20	8.0	2.0%	0.65	3.0	1.6	Sump	Type I Curb Inlet
A2	1.03	0.51	5	7.26	3.8	6.6	10.20	6.7	0.0%	1.00	6.6	0.0	Sump	Type I Curb Inlet

REFER TO SHEET 9 FOR CAPACITY CALCULATIONS OF DITCH INLET (STR B2)

LEGEND:

- DIRECTION OF SURFACE RUNOFF
- AREA A1 0.00 AC. — INLET DRAINAGE AREA
- INLET AREA BOUNDARY
- EXISTING CONTOURS (1015 / 1014)
- PROPOSED CONTOURS (1015 / 1014)

N

Scale: 1" = 100'

0 100

SBB PROJ. NO. 21-025

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: J. LAUBACH
APP'D BY: J. LAUBACH
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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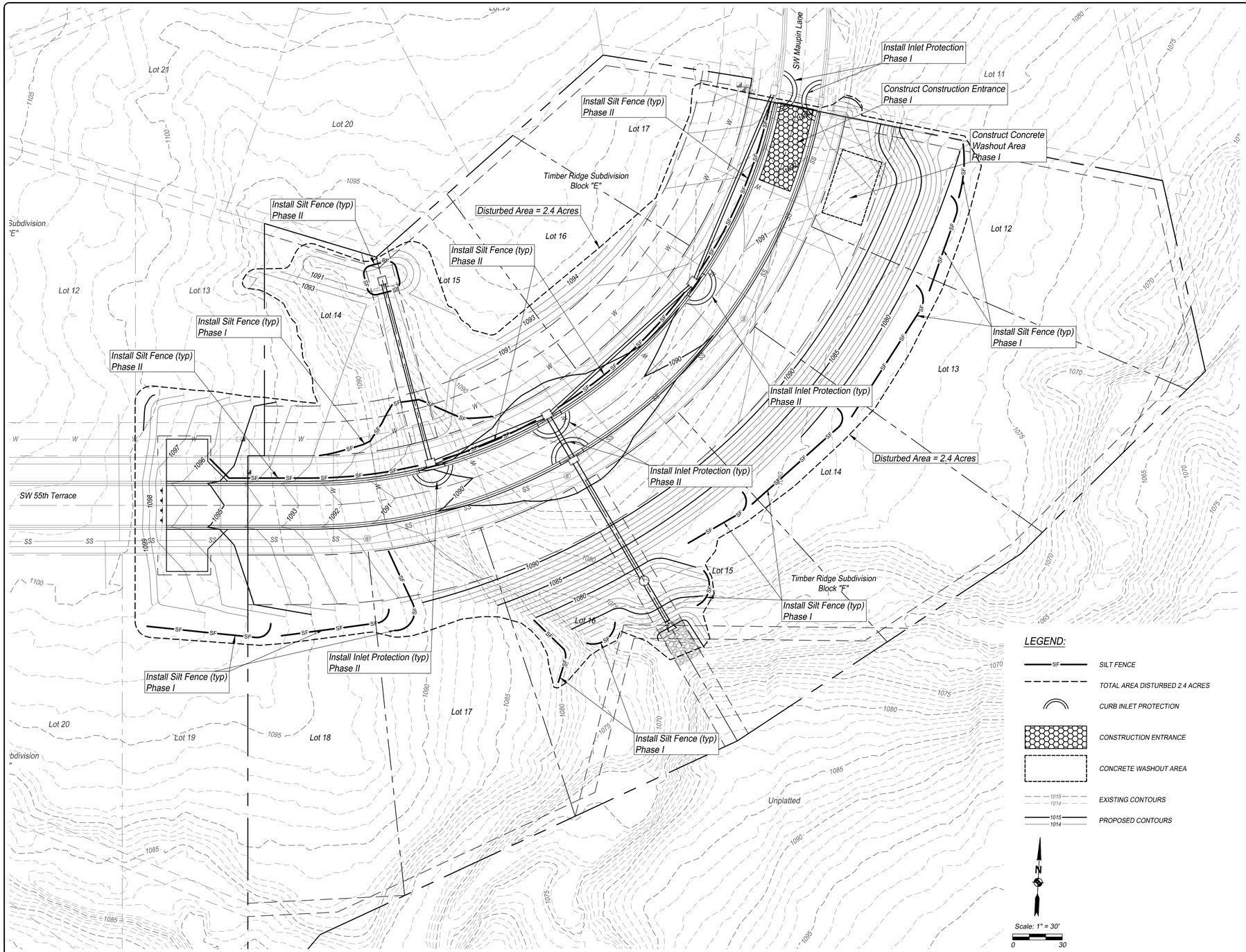
S-601017.00
TIMBER RIDGE SUBDIVISON
STREET & STORM SEWER

DRAINAGE AREA MAP & CALCULATIONS

DATE: 5.25.2023
SHEET: 5 OF 23
PROJ.: S-601017.00



GENERAL NOTES:

1. THE LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES MAY VARY FROM WHAT IS INDICATED IN THESE PLANS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE UTILITY OWNER TO LOCATE AND FLAG ALL UNDERGROUND UTILITIES WHETHER INDICATED OR NOT. NO EXCAVATION WILL BE PERMITTED IN THE AREA OF UNDERGROUND UTILITIES UNTIL ALL SUCH UTILITIES HAVE BEEN LOCATED AND IDENTIFIED TO THE SATISFACTION OF ALL PARTIES AND THEN ONLY WITH EXTREME CARE TO AVOID ANY POSSIBILITY OF DAMAGE TO THE UTILITY.
2. ALL DISTURBED AREAS THAT ARE NOT PAVED OR LANDSCAPED SHALL BE SEEDED, FERTILIZED AND MULCHED IN ACCORDANCE WITH THE SPECIFICATIONS.

EROSION CONTROL GENERAL NOTES:

3. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PREVENT EROSION ON THE PROJECT AND POLLUTION OF ANY DRAINAGE COURSE, AND SHALL MEET THE REQUIREMENTS OF THE STATE OF KANSAS STORMWATER RUNOFF FROM CONSTRUCTION ACTIVITIES GENERAL PERMIT NO. S-MCST-1703-1.
4. PRIOR TO COMMENCEMENT OF EARTHWORK OPERATIONS, CONTRACTOR SHALL INSTALL PERIMETER WATTLES AND CONSTRUCTION ENTRANCE AS SHOWN ON THE PLAN. THE INLET PROTECTION AND ADDITIONAL WATTLES WITHIN WORK AREA SHALL BE INSTALLED IMMEDIATELY AFTER INSTALLATION OF THE INLETS AND COMPLETION OF ROUGH GRADING.
5. EROSION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED BY THE CONTRACTOR NOT LESS THAN WEEKLY OR WITHIN 24 HOURS AFTER A RAINFALL EVENT OF 0.5 INCHES OR MORE. MAINTENANCE SHALL INCLUDE BUT NOT BE LIMITED TO SEDIMENT REMOVAL AND SILT FENCE REPAIR AND/OR REPLACEMENT. FIELD ADJUSTMENTS MAY BE MADE AS NECESSARY TO ENSURE OPTIMAL PERFORMANCE.
6. CONTRACTOR SHALL CLEAR ALL SURROUNDING PARKING LOTS AND STREETS OF ANY TRACKED DEBRIS BY SWEEPING OR SCRAPING THE EXISTING PAVEMENT BY THE END OF EACH WORKDAY AND THE CONTRACTOR SHALL CLEAN UP SOIL WASHED OFF THE CONSTRUCTION SITE AFTER A STORM BY THE END OF THE NEXT WORKDAY.
7. DURING ALL SOIL DISTURBING ACTIVITIES, THE CONTRACTOR WILL TAKE APPROPRIATE STEPS USING ACCEPTED CONSTRUCTION METHODS TO MINIMIZE THE TIME OF EXPOSURE OF UNPROTECTED SOIL AND OTHER CONSTRUCTION MATERIALS TO RAINFALL.
8. CONTRACTOR SHALL KEEP A WRITTEN LOG OF WHEN CONSTRUCTION ACTIVITIES BEGIN, EROSION AND SEDIMENT CONTROLS ARE INSTALLED, INSPECTED AND REPAIRED.
9. EROSION AND SEDIMENT CONTROL MEASURES SHALL NOT BE REMOVED UNTIL GRASS COVER HAS BEEN ESTABLISHED OR AS DIRECTED BY ENGINEER.
10. ALL AREAS SHALL BE GRADED TO FINISHED GRADE PRIOR TO SEEDING AND MULCHING. ALL AREAS NOT PART OF THE HARDSCAPE OR OTHER NOTED LANDSCAPING SHALL BE PERMANENTLY SEEDED, FERTILIZED AND MULCHED.
11. ALL WATTLES SHALL BE STRAW WATTLE WS-12 AS MANUFACTURED BY NORTH AMERICAN GREEN, OR APPROVED EQUAL. THE WATTLES SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR MAY USE WATTLES AND SILT FENCE INTERCHANGEABLY IN AREAS IDENTIFIED ON THE DRAWINGS.
12. THE CONTRACTOR HAS THE OPTION TO MODIFY THE LOCATION OF THE CONSTRUCTION ENTRANCE TO FIT THE PREFERRED WORK PATTERN.

WASTE DISPOSAL:

1. WASTE MATERIALS: ANY WASTE AND OTHER UNUSABLE MATERIALS WILL BE REMOVED FROM THE SITE ON A REGULAR BASIS AND PROPERLY DISPOSED OF IN AN APPROVED SITE.
2. CHEMICAL WASTE: ALL CHEMICAL WASTE MATERIALS WILL BE COLLECTED AND STORED IN A TIGHTLY SEALED METAL OR OTHER CHEMICAL RESISTANT CONTAINER. THE CONTAINER WILL MEET ALL LOCAL AND ANY STATE SOLID WASTE MANAGEMENT REGULATIONS. THE WASTE MATERIALS AND ALL DISPOSABLE MATERIALS WILL BE TRANSPORTED TO A COMMERCIAL CHEMICAL DISPOSAL FACILITY CAPABLE OF EITHER RECYCLING OR PROPERLY DISPOSING OF THE POLLUTANTS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS. THE STATE WASTE MANAGEMENT SECTION CONTACT NUMBER IS (785) 296-1600.
3. HAZARDOUS WASTE: ALL HAZARDOUS WASTE MATERIALS, SUCH AS OIL FILTERS, PETROLEUM PRODUCTS, EQUIPMENT MAINTENANCE FLUIDS AND PAINTS, SHALL NOT BE STORED ON SITE AND WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL, STATE AND/OR FEDERAL REGULATIONS. IF THERE ARE QUESTIONS REGARDING THE PROPER HANDLING OF HAZARDOUS WASTES THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT HAZARDOUS WASTE SECTION AT (785) 296-1600.
4. SANITARY WASTE: PORTABLE TOILET FACILITIES WILL BE PROVIDED ON THE PROJECT SITE AND SERVICED BY THE PROVIDER ON A REGULAR BASIS.

MATERIAL MANAGEMENT PRACTICES:

1. GOOD HOUSEKEEPING: THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ON-SITE DURING CONSTRUCTION.
2. ALL MATERIALS STORED ON-SITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN ORIGINAL CONTAINERS IF APPROPRIATE.
3. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURER'S LABELS.
4. MANUFACTURERS' RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.

SPILL PREVENTION:

1. PETROLEUM PRODUCTS: ALL ON-SITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED.
2. FERTILIZERS: FERTILIZERS USED WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS RECOMMENDED BY THE MANUFACTURER. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORM WATER. FERTILIZER SHALL NOT BE STORED ON-SITE.
3. CONCRETE TRUCKS: CONCRETE TRUCKS ARE LIMITED TO A DESIGNATED AREA TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRUM WASH WATER ON THE SITE. PROPER SIGNAGE SHALL BE INSTALLED AND MAINTAINED ON SITE DEFINING DIRECTIONS TO AND LOCATIONS OF THE SPECIFIED WASH OUT AREA. IF A WASH OUT AREA CANNOT BE DESIGNATED OR MAINTAINED ON SITE, CONCRETE WASH OUT AND DISPOSAL MAY BE PROHIBITED AT THE OWNERS DISCRETION.

SBB PROJ. NO. 21-025

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: J. LAUBACH
APP'D BY: J. LAUBACH
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

SHAWNEE COUNTY, KANSAS
PUBLIC WORKS DEPARTMENT
1515 NW SALINE
TOPEKA, KS 66618
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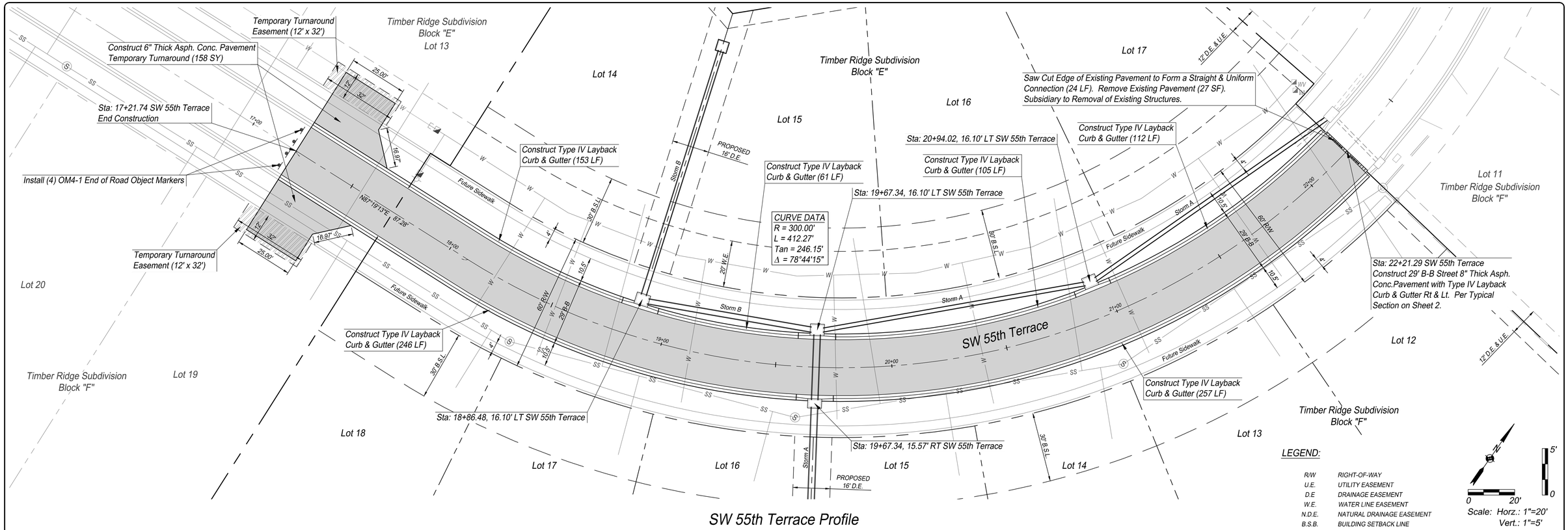
SBB ENGINEERING
SBB Engineering, LLC
101 S Kansas Ave., Topeka, KS 66603
Ph: (785) 215-8630 www.sbbeng.com

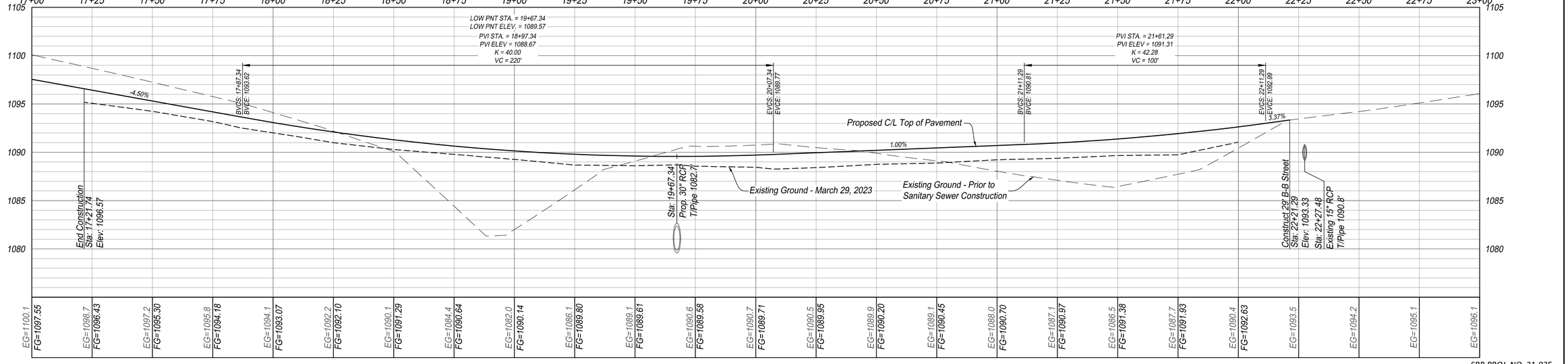
S-601017.00
TIMBER RIDGE SUBDIVISON
STREET & STORM SEWER

EROSION CONTROL PLAN

DATE: 5.25.2023
SHEET: 6 OF 23
PROJ.: S-601017.00



SW 55th Terrace Profile



SBB PROJ. NO. 21-025

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: J. LAUBACH
APP'D BY: J. LAUBACH
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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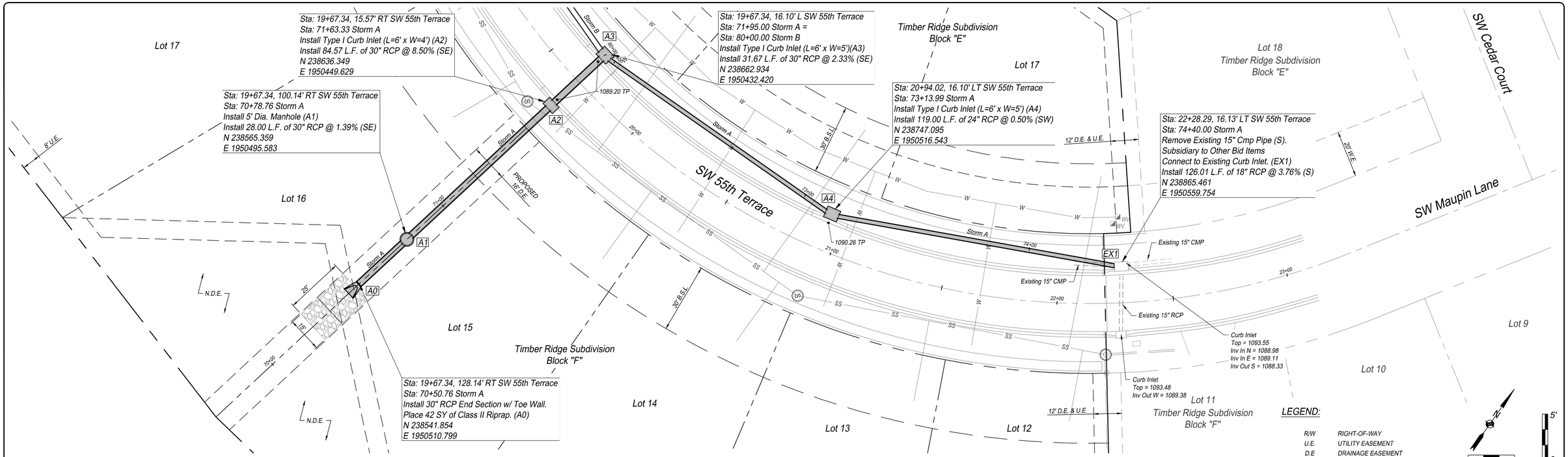
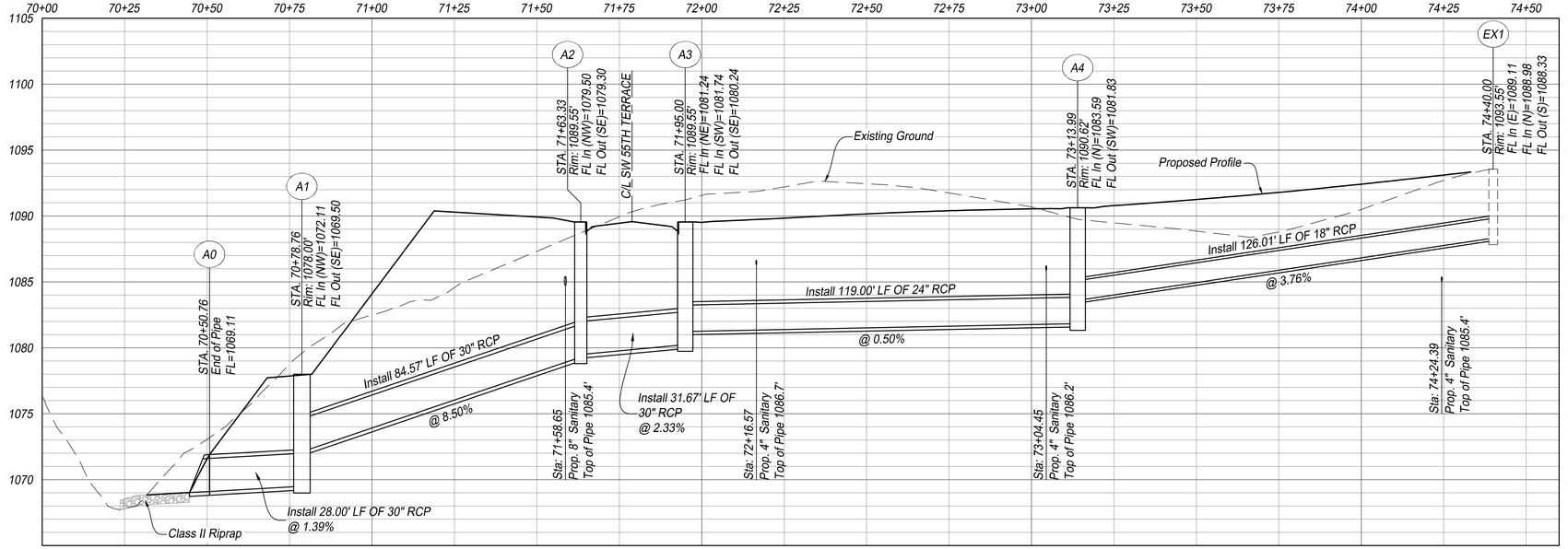
S-601017.00
TIMBER RIDGE SUBDIVISON
STREET & STORM SEWER

SW 55TH TERRACE
PLAN & PROFILE

DATE: 5.25.2023
SHEET: 7 OF 23
PROJ.: S-601017.00



Storm A Profile



NOTE: ALL STORM SEWER PIPE, STRUCTURES, RIP-RAP TO BE PROVIDED BY OTHERS AND ARE NOT PART OF THIS CONTRACT

SBB PROJ. NO. 21-025

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: J. LAUBACH
APP'D BY: J. LAUBACH
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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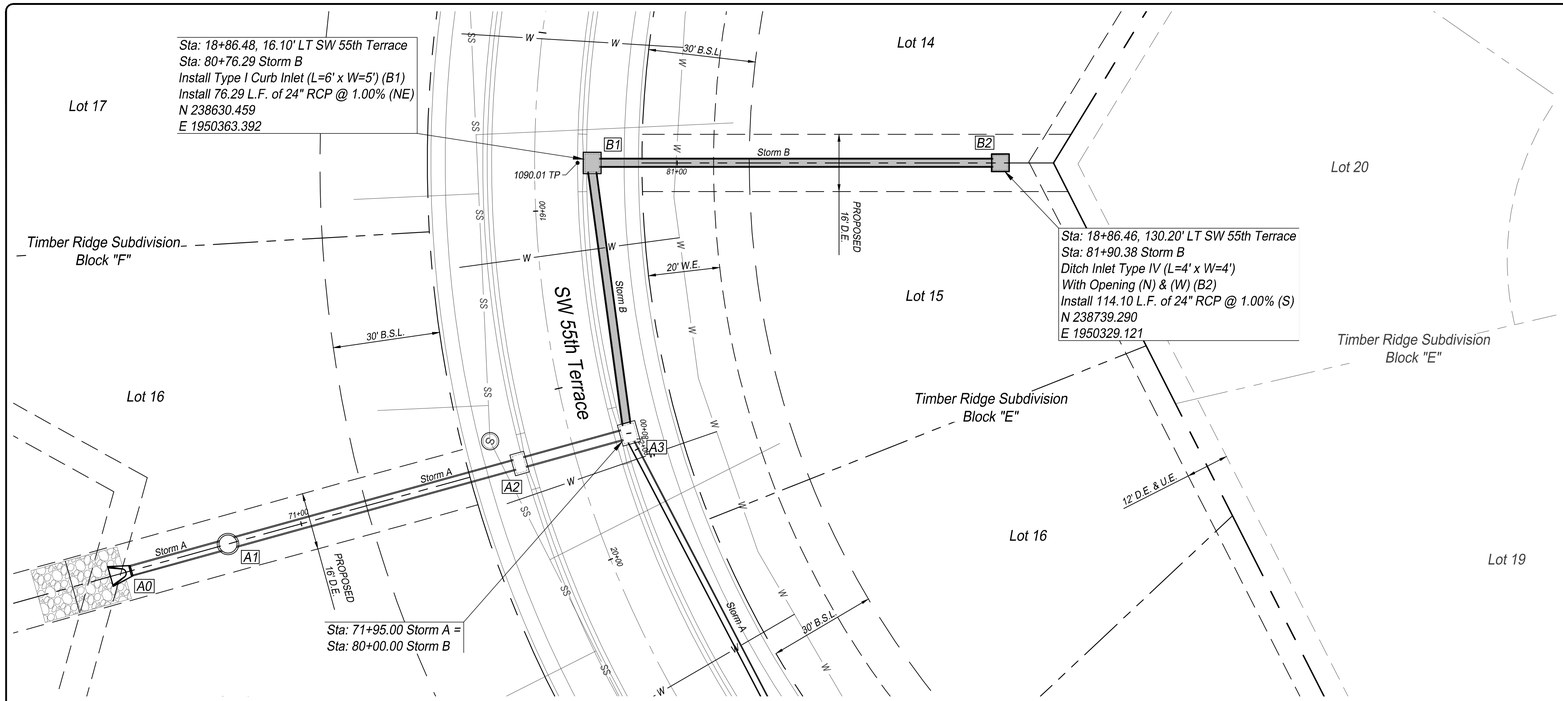
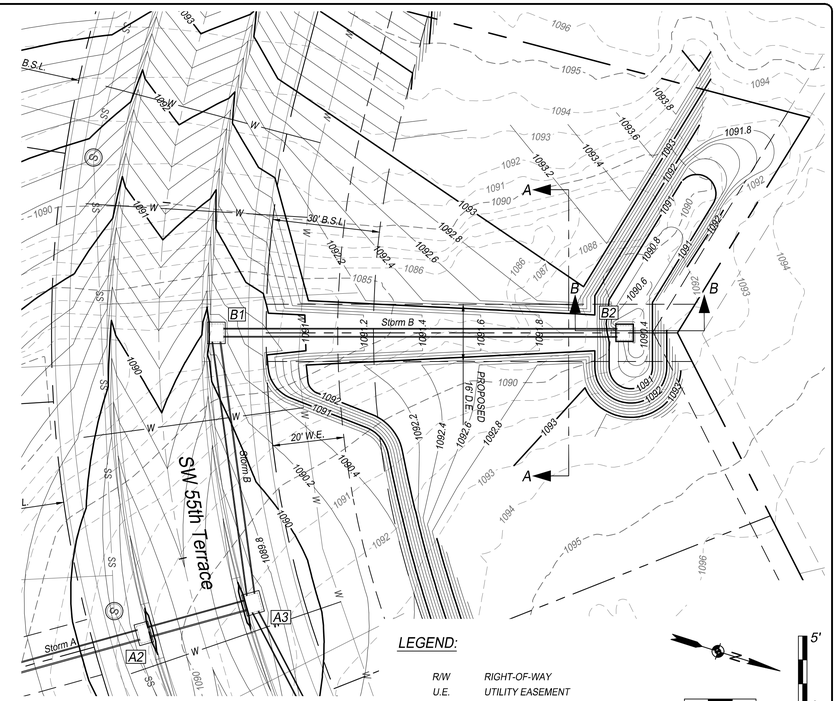
TIMBER RIDGE SUBDIVISON
STREET & STORM SEWER

STORM SEWER LINE A
PLAN & PROFILE

DATE: 5.25.2023
SHEET: 8 OF 23
PROJ.: S-601017.00





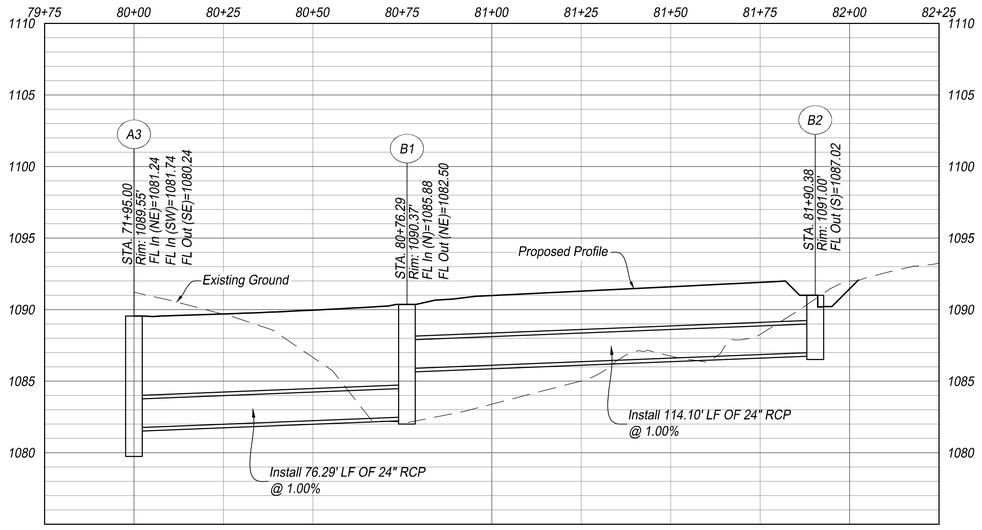
LEGEND:

R/W	RIGHT-OF-WAY
U.E.	UTILITY EASEMENT
D.E	DRAINAGE EASEMENT
W.E.	WATER LINE EASEMENT
N.D.E.	NATURAL DRAINAGE EASEMENT
B.S.B.	BUILDING SETBACK LINE

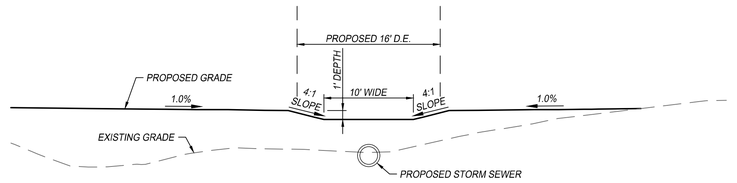
0 20' — 0 5'

Scale: Horz.: 1"=20'
Vert.: 1"=5'

Storm B Profile



NOTE: ALL STORM SEWER PIPE, STRUCTURES, RIP-RAP TO BE PROVIDED BY OTHERS AND ARE NOT PART OF THIS CONTRACT



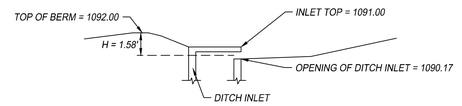
TYPICAL SECTION A-A
NOT TO SCALE

NOTE: GRADING SHOWN ON LOTS 14 AND 15 TO BE PROVIDED BY OTHERS

CAPACITY OF DITCH INLET PER OPENING (ORIFICE EQUATION):

Q = 0.6 AREA (2 * 32.2 * H) ^0.5
AREA = 4' x 0.5' = 2 SF
H = 1.58'
Q = 12.0 CFS

2 OPENINGS = 2 x 12.0 CFS = 24.0 CFS
100-YR FLOW TO STRUCTURE B2 = 17.0 CFS
(CAPACITY OF OPENINGS GREATER THAN 100-YR FLOW)



TYPICAL SECTION B-B
NOT TO SCALE

SBB PROJ. NO. 21-025

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: J. LAUBACH
APP'D BY: J. LAUBACH
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

SHAWNEE COUNTY, KANSAS
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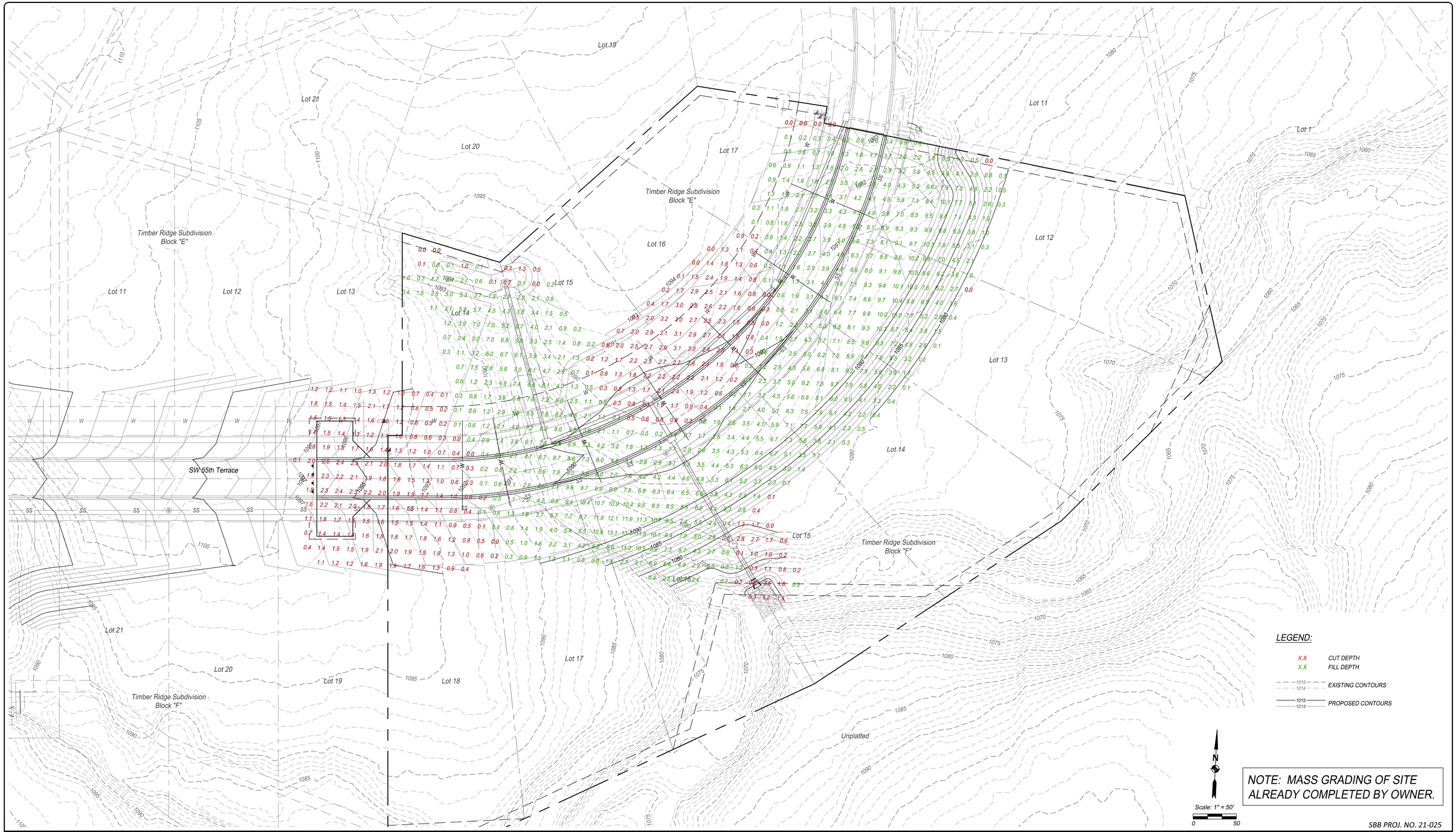
S-601017.00
TIMBER RIDGE SUBDIVISON
STREET & STORM SEWER

STORM SEWER LINE B
PLAN & PROFILE

DATE: 5.25.2023
SHEET: 9 OF 23
PROJ.: S-601017.00



NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: J. LAUBACH
APP'D BY: J. LAUBACH
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

SHAWNEE COUNTY, KANSAS
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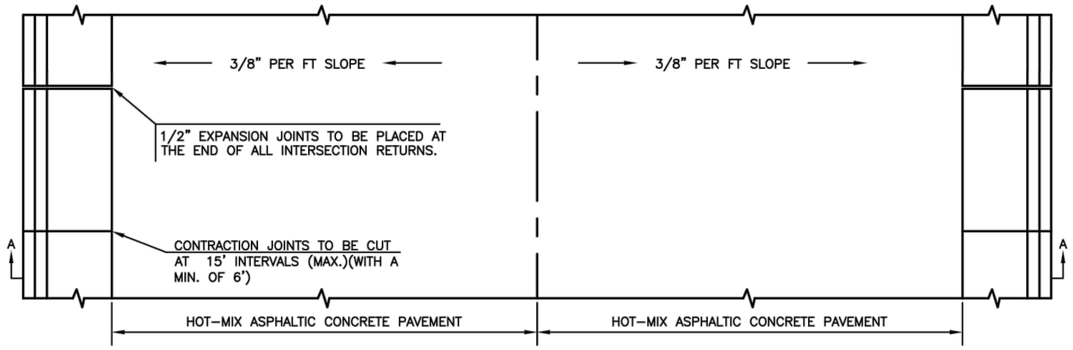
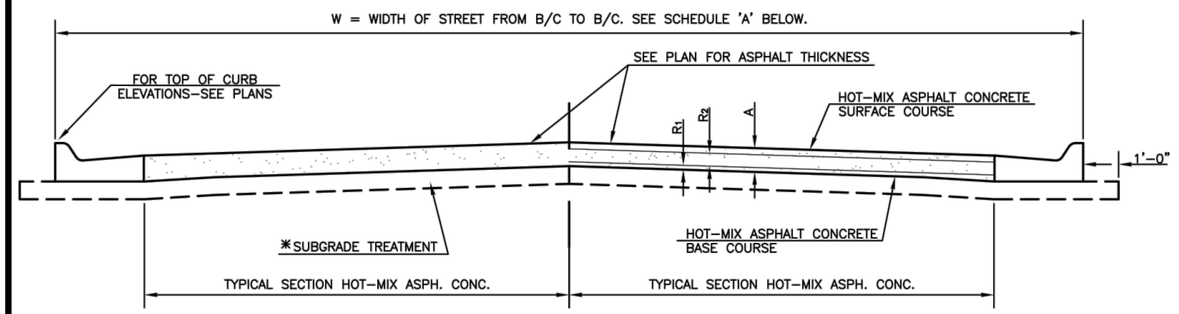
S-601017.00
TIMBER RIDGE SUBDIVISON
STREET & STORM SEWER

EARTHWORK CALCULATIONS PLAN

DATE: 5.25.2023
SHEET: 10 OF 23
PROJ.: S-601017.00



PLAN

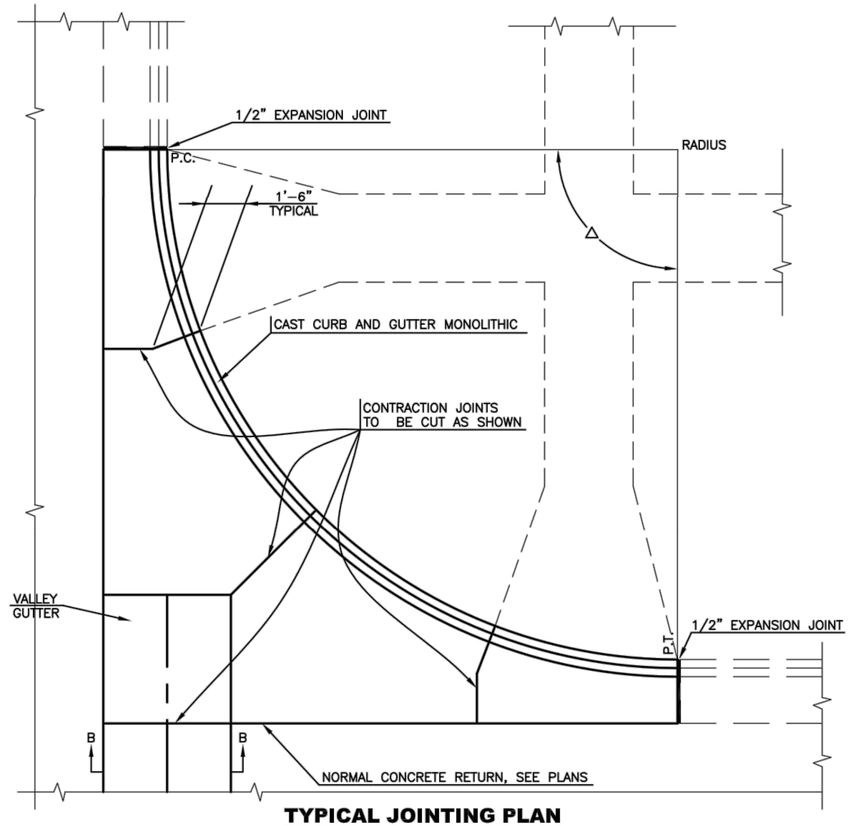


TYPICAL SECTION HOT-MIX ASPH. CONC. PAVE
SECTION A-A

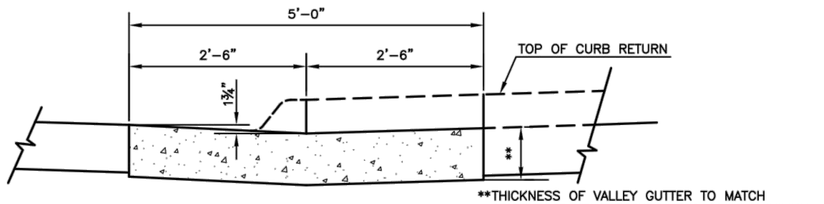
PAVEMENT DETAILS

*SUBGRADE TREATMENT PER GEOTECHNICAL REPORT

SCHEDULE 'A'						
STREET	FROM	TO	W	R_1	R_2	A



TYPICAL JOINTING PLAN



SECTION B-B

**THICKNESS OF VALLEY GUTTER TO MATCH ABUTTING PAVEMENT THICKNESS OR 8" MINIMUM.

VALLEY GUTTER DETAILS

NOTES:
1. PAY LENGTH OF VALLEY GUTTER IS FROM P.C. TO P.C. ACROSS STREET INTERSECTION.
2. PAY WIDTH OF VALLEY GUTTER IS 5'.
3. PAY AREA OF VALLEY GUTTER IS PAY LENGTH X PAY WIDTH (SQ. YD.)
4. PAY CURB AND GUTTER FROM P.C. TO P.T. AROUND RADIAL.
5. NO ADDITIONAL PAYMENT FOR OTHER WORK AND MATERIALS REQUIRED TO COMPLETE RETURN AS DETAILED. SEE PLANS FOR TYPE OF RETURN TO BE CONSTRUCTED.
6. SAND IS NOT AN APPROVED FILL OR SUBGRADE MATERIAL.
7. WHERE VALLEY GUTTER ABUTS CONCRETE PAVEMENT, THE VALLEY GUTTER SECTION SHALL BE TIED TO THE CONCRETE PAVEMENT WITH 1/2" x 3'–0" DEFORMED TIE BARS AT 5'–0" CENTERS.
8. WHERE VALLEY GUTTER IS CONSTRUCTED ADJACENT TO NEW ASPHALT PAVEMENT, THE CONTRACTOR MAY, AT THEIR OPTION, CONSTRUCT A CONTINUOUS ASPHALT PAVEMENT SECTION THROUGH THE VALLEY GUTTER AREA, FOLLOWED BY SAWCUTTING AND REMOVING THE ASPHALT STRIP FOR CONSTRUCTION OF THE VALLEY GUTTER SECTION. NO PAY ADJUSTMENT SHALL BE MADE FROM PLAN QUANTITIES FOR THE ADDITIONAL ASPHALT PAVEMENT THAT IS REMOVED. SAWCUTS SHALL BE FULL DEPTH. THE SUBGRADE MUST MEET COMPACTION REQUIREMENTS IN THE REMOVAL AREA PRIOR TO PLACEMENT OF THE VALLEY GUTTER.

NO.	DATE:	REVISION	BY:	APP'D
3	March 2013	Added min jt. spacing & made bar size"	DHS	SB
2	Dec. 2009	Added to Valley Gutter Details	DHS	SB
1	Feb. 2008	Mod. Typ. Jt. Plan & Pvmt. Det.	DHS	SB

DRAWN BY: rm/mc
APP'D BY:

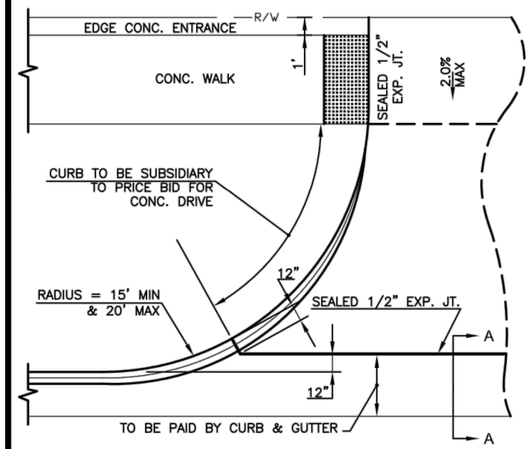
SHAWNEE COUNTY, KANSAS
PUBLIC WORKS DEPARTMENT
1515 NW SALINE
TOPEKA, KS 66618
(785) 233-7702

TOPEKA Public Works ENGINEERING
620 SE MADISON St. • 2nd Floor • TOPEKA, KS 66607
Phone: (785) 368-3842 • Fax: (785) 368-3881

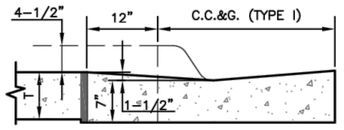
STANDARD DETAILS

ASPHALT CONCRETE PAVEMENT DETAILS
(DT-001)

DATE: 5.25.2023
SHEET: 11 OF 23
PROJ.: S-601017.00

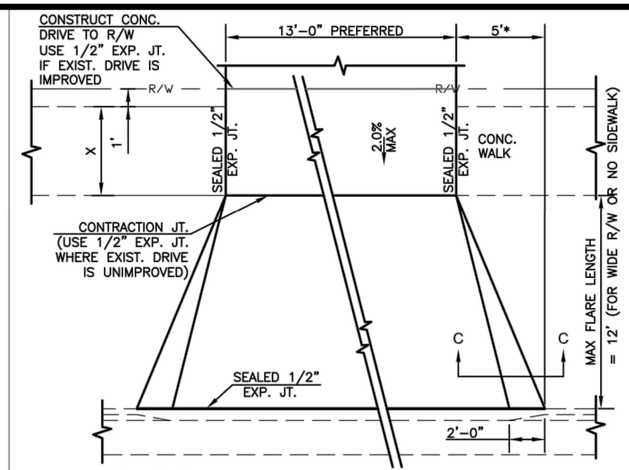


COMMERCIAL DRIVE APPROACH



SECTION A - A

T=8" NON–REINFORCED FOR COMMERCIAL DRIVE, ALLEY APPROACH, AND SIDEWALK IN DRIVE ENTRANCE.



"X" = 5'–0" ON PRINCIPAL ARTERIAL, MINOR ARTERIALS AND COLLECTORS
"X" = 4'–0" ON SUB–COLLECTORS AND LOCALS

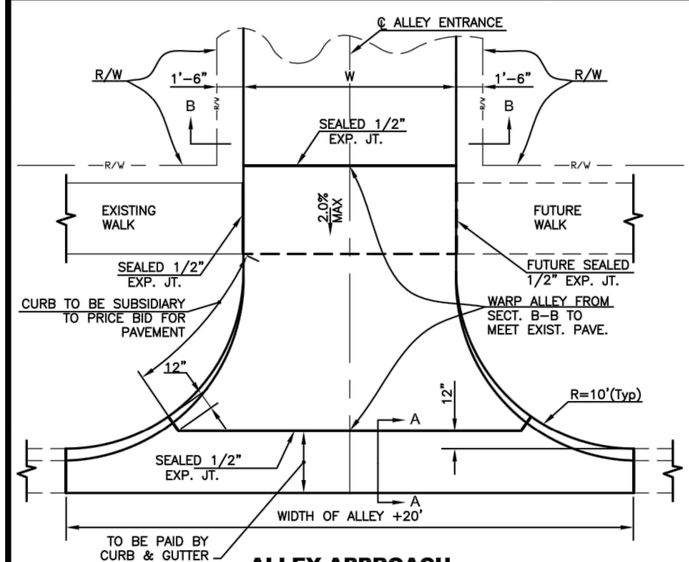
TYPICAL PRIVATE DRIVE APPROACH

NOTES:
1. A SPECIAL DETAIL WILL BE PROVIDED WHEN SIDEWALK IS CLOSER THAN 6'–0" FROM BACK OF CURB.
2. THEORETICAL CURB HEIGHT OF 6" ABOVE ℄ SHALL BE OBTAINED IN ENTRANCE PAVEMENT.

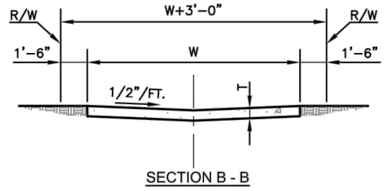
* FLARE SHALL BE 5 FEET WIDE IN NEW CONSTRUCTION. VARIANCES MAY BE MADE WITH APPROVAL OF THE CITY ENGINEER IN SPECIAL CIRCUMSTANCES FOR THE REPLACEMENT OF EXISTING DRIVEWAYS.

SECTION C - C

T1=6" FOR RESIDENTIAL DRIVE APPROACH AND SIDEWALK IN DRIVE ENTRANCE

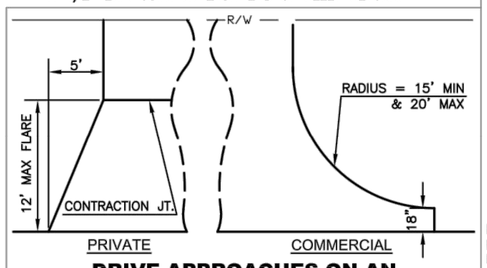


ALLEY APPROACH

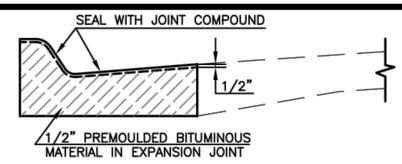


SECTION B - B

NOTES:
1. T=7" REINFORCED CONCRETE
2. WIDTH OF W WILL BE USED THROUGHOUT ON ALL ALLEY PAVING PROJECTS.
3. ALLEY RETURNS SHALL BE THE SAME THICKNESS AS THE ADJACENT STREET THICKNESS.
4. 1/2" EXP. JOINT AT EACH END OF ALLEY RETURN.

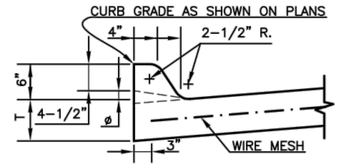


DRIVE APPROACHES ON AN UNIMPROVED ROADWAY

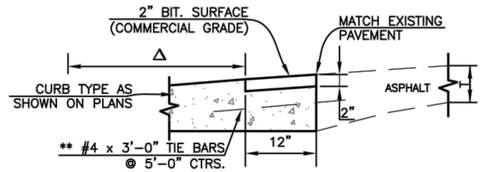


CURB AND GUTTER EXPANSION JOINT DETAILS

NOTES:
1. 1/2" EXPANSION JOINTS TO BE PLACED AT THE END OF ALL INTERSECTION RETURNS.
2. SAND IS NOT AN APPROVED FILL OR SUBGRADE MATERIAL.
3. ALL EXPANSION JOINTS SHALL BE SEALED WITH APPROVED MATERIAL.



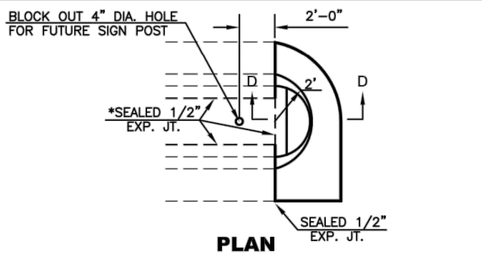
6" INTEGRAL CURB



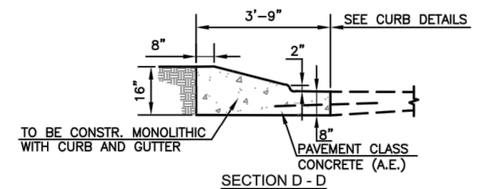
CC&G (MODIFIED)

NOTE:
CURB AND GUTTER ABUTTING EXISTING ASPHALT

△ DIMENSION IS FROM BACK OF CURB TO TOE, SEE APPROPRIATE DETAIL FOR CURB TYPE AS SHOWN ON PLANS



PLAN

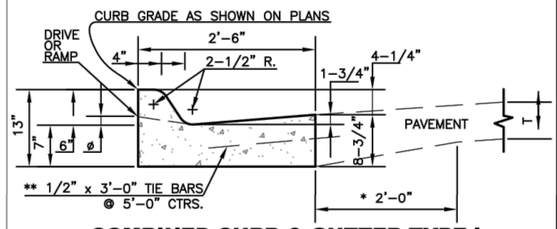


SECTION D - D

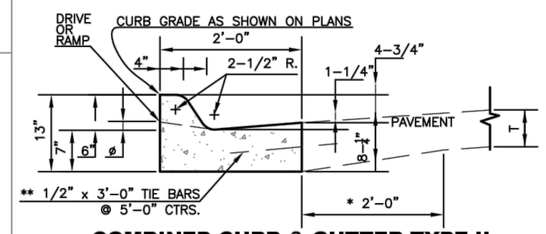
SOLID NOSE DETAILS

NOTE:
PAVEMENT CLASS CONCRETE (AE) NEEDED TO COMPLETE THE MEDIAN NOSE SHALL BE SUBSIDIARY TO THE BID ITEM FOR COMBINED CURB AND GUTTER TYPE III.

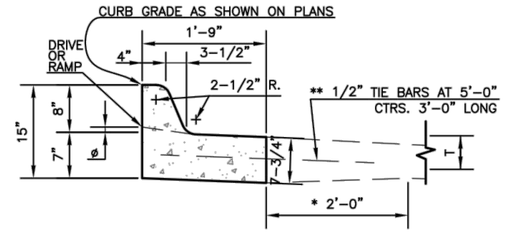
* OMIT SEALED 1/2" EXPANSION JOINT WHEN SURFACE MATERIAL USED IN MEDIAN IS OTHER THAN CONCRETE.



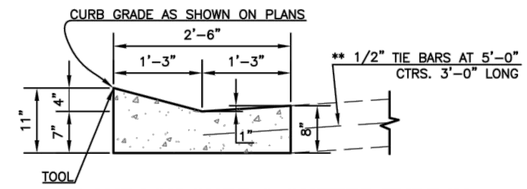
COMBINED CURB & GUTTER-TYPE I



COMBINED CURB & GUTTER-TYPE II



COMBINED CURB & GUTTER-TYPE III



LAYBACK CURB & GUTTER-TYPE IV

NOTES:
1. USE OF LAYBACK CURB AND GUTTER IS RESTRICTED TO STREET CLASSIFICATION OF SUB–COLLECTOR AND LOCAL. LAYBACK CURB AND GUTTER SHALL NOT BE USED IN INTERSECTION CURB RETURNS.
2. FOR CURB AND GUTTER ABUTTING EXISTING ASPHALT, REFER TO CC&G MODIFIED DETAIL

* THE CONTRACTOR HAS THE OPTION OF MAINTAINING OR TRANSITIONING AS SHOWN AT NO ADDITIONAL COST.

**THE TIE BARS MAY BE ELIMINATED WITH ASPHALTIC CONCRETE PAVEMENT CONSTRUCTION.

ø 1–1/2" FOR DRIVE ENTRANCES AND 3/4" FOR SIDEWALK RAMP

NO.	DATE:	REVISION	BY:	APP'D
5	March 2013	C&G payment @ alley appr. & bars to "	DHS	SB
4	Dec. 2012	Changed to tie bar from rebar	DHS	SB
3	March 2010	Eliminated keyed jt. at Com. Drive Appr.	DHS	SB
2	Dec. 2009	Added Dr. Appr. on Unimpr. Rdwy., added flare verbage, mod. S/W x–slope & remv. keyed joints from C & G.	DHS	SB
1	Feb. 2008	Mod. Com. Dr. & Alley Appr.	DHS	SB

DRAWN BY: rm/mc

APP'D BY: [signature]

SHAWNEE COUNTY, KANSAS
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STANDARD DETAILS

CURB & GUTTER AND APPROACH DETAILS
(DT-003)

DATE: 5.25.2023
SHEET: 12 OF 23
PROJ.: S-601017.00

MAXIMUM ALLOWABLE DEPTH OF TRENCH (IN FEET)

REINFORCED CONCRETE PIPE (RCP)

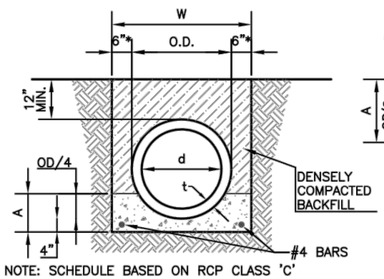
ASTM PIPE CLASS	PIPE DIAMETER (INCHES)				
	12, 15, 18, 21	24, 27, 30, 36	42, 48, 54	60, 66, 72	78, 84
II	8	11	12	15	17
III	11	14	16	18	21
IV	20	22	23	25	27

CORRUGATED STEEL PIPE (CSP), ALUMINIZED STEEL TYPE 2

PIPE DIAMETER (INCHES)	HEIGHT OF COVER ABOVE TOP OF PIPE (FEET) (H–20 LOADING)					
	CSP					
	1 – 10		11 – 15		16 – 20	
	2.66x.5	3x1	2.66x.5	3x1	2.66x.5	3x1
12	16 ga.		16 ga.		16 ga.	
15	16 ga.		16 ga.		16 ga.	
18	16 ga.		16 ga.		16 ga.	
21	16 ga.		16 ga.		16 ga.	
24	16 ga.		16 ga.		16 ga.	
27	16 ga.		16 ga.		16 ga.	
30	16 ga.		16 ga.		16 ga.	
33	16 ga.		16 ga.		16 ga.	
36	16 ga.	16 ga.	16 ga.	16 ga.	16 ga.	16 ga.
42	14 ga.	16 ga.	14 ga.	16 ga.	14 ga.	16 ga.
48	14 ga.	16 ga.	14 ga.	16 ga.	14 ga.	16 ga.
54	12 ga.	14 ga.	12ga.	14 ga.	12 ga.	14 ga.
60	10 ga.	14 ga.	10 ga.	14 ga.	10 ga.	14 ga.
66	10 ga.	14 ga.	10 ga.	14 ga.	10 ga.	14 ga.
72	10 ga.	14 ga.	10 ga.	14 ga.	10 ga.	14 ga.
78		14 ga.		14 ga.		14 ga.
84		12 ga.		12 ga.		12 ga.
90		12 ga.		12 ga.		12 ga.
96		12 ga.		12 ga.		12 ga.

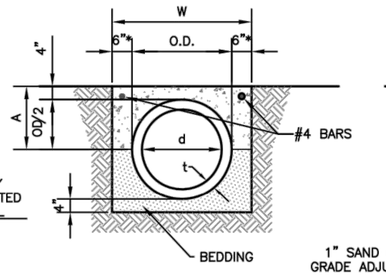
PIPE DIAMETER (INCHES)	CSPA							
	END AREA (SF)		DIMENSIONS; SPAN x RISE		1 – 2		2 – 9	
	2.66x.5	3x1	2.66x.5	3x1	2.66x.5	3x1	2.66x.5	3x1
12	1.1		17x13		16 ga.		16 ga.	
15	1.6		21x15		16 ga.		16 ga.	
18	2.2		24x18		16 ga.		16 ga.	
21	2.8		28x20		16 ga.		16 ga.	
24	4.4		35x24		14 ga.		14 ga.	
27	6.4		42x29		14 ga.		14 ga.	
30	8.7		49x33		12 ga.		12 ga.	
33	11.4		57x38		12 ga.		12 ga.	
36	14.3	15.6	64x43	60x46	12 ga.	14 ga.	12 ga.	14 ga.
42	17.6	19.3	71x47	66x51	10 ga.	14 ga.	10 ga.	14 ga.
48	21.3	23.2		73x55		14 ga.		14 ga.
54	25.3	27.4		81x59		14 ga.		14 ga.
60		32.1		87x63		14 ga.		14 ga.
66		37.0		95x67		12 ga.		12 ga.
72		42.4		103x71		12 ga.		12 ga.
78		48.0		112x75		12 ga.		12 ga.

NOTE: MAXIMUM PIPE INTRUSION INTO STRUCTURE IS 6". UNIQUE STRUCTURES MIGHT REQUIRE ADDITIONAL ANALYSIS. ENGINEER APPROVAL REQUIRED.



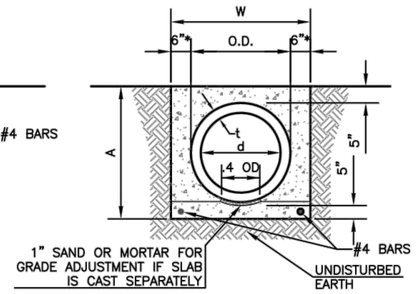
NOTE: SCHEDULE BASED ON RCP CLASS 'C' MINIMUM 2500 PSI CONCRETE USED FOR CRADLING

CONCRETE CRADLE



*MINIMUM WIDTH

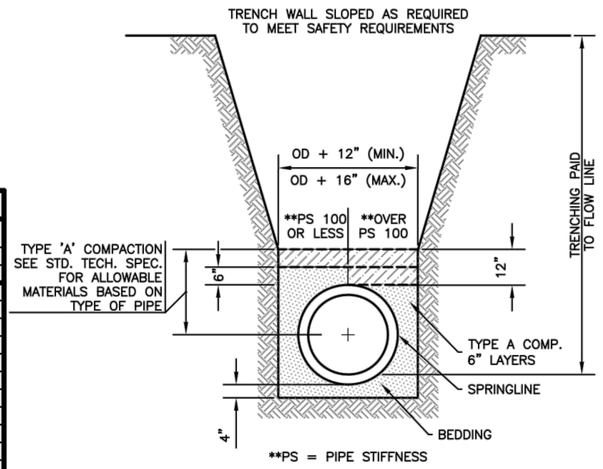
CONCRETE ARCH

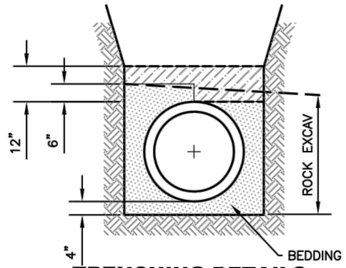


CONCRETE ENCASEMENT

d	t	O.D.	W	CRADLE A		ARCH A		ENCASE. A	
IN.	IN.	IN.	IN.	IN.	CY/FT	IN.	CY/FT	IN.	CY/FT
15	2.25	19.5	31.5	8.9	.057	13.8	.073	29.5	.162
18	2.50	23.0	34.0	9.8	.067	15.5	.086	33.0	.190
21	2.75	26.5	38.5	10.6	.077	17.3	.100	36.5	.220
24	3.00	30.0	42.0	11.5	.089	19.0	.114	40.0	.250
27	3.25	33.5	45.5	12.4	.100	20.8	.129	43.5	.282
30	3.50	37.0	49.0	13.3	.113	22.5	.145	47.0	.316
33	3.75	40.5	52.5	14.1	.126	24.3	.162	50.5	.351
36	4.00	44.0	56.0	15.0	.140	26.0	.179	54.0	.387
42	4.50	51.0	63.0	16.8	.169	29.5	.215	61.0	.463
48	5.00	58.0	70.0	18.5	.200	33.0	.254	68.0	.545
54	5.50	65.0	77.0	20.3	.234	36.5	.296	75.0	.632
60	6.00	72.0	84.0	22.0	.270	40.0	.341	82.0	.724

SCHEDULE FOR CONCRETE CRADLE, CONCRETE ARCH, AND CONCRETE ENCASEMENT FOR STORM SEWERS





TRENCHING DETAILS

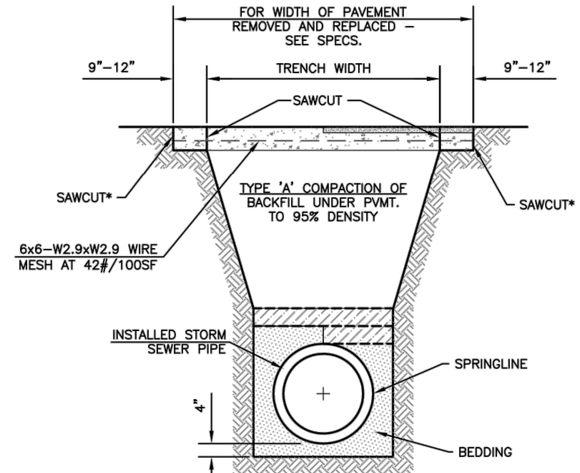
NOTES:
1. THE TRENCH SHALL BE EXCAVATED TO 4" BELOW BOTTOM OF THE PIPE BARREL & BACKFILLED AS SHOWN ABOVE WITH AN APPROVED BEDDING MATERIAL.
2. WHEN THE SEWER IS TO BE INSTALLED IN ROCK, THE TRENCH IS TO BE EXCAVATED TO A MINIMUM DEPTH OF 4" BELOW THE BOTTOM OF THE PIPE AND BACKFILLED IN 6" COMPACTED LAYERS WITH AN APPROVED BEDDING MATERIAL AS SHOWN ABOVE. THE ROCK EXCAVATED TO BE PAID AS A SEPARATE BID ITEM. THE EMBEDMENT, IN ALL CASES, TO BE INCLUDED IN THE PRICE BID PER TRENCH, EXCAVATION, AND BACKFILL.

STANDARDS FOR SETTING LINE AND GRADE FOR SEWER CONSTRUCTION:

1. STAKES, SPIKES, SHINERS, OR CROSSES SET BY TRANSIT AT THE SURFACE ON AN OFFSET FROM THE SEWER CENTER LINE.
2. STAKES ARE TO BE SET IN THE TRENCH BOTTOM ON THE SEWER LINE AS THE ROUGH GRADE FOR SEWER IS COMPLETED.
3. ELEVATIONS GIVEN TO THE FINISHED TRENCH GRADE AND SEWER INVERT, WHILE SEWER LAYING PROGRESSES.

STANDARD METHODS FOR TRANSFERRING LINE AND GRADE TO SEWER TRENCH BOTTOM:

1. ELECTRONIC LASER EQUIPMENT–STAKING SHALL BE AT 25' INTERVALS FOR THE FIRST 100' AND EVERY 100' THEREAFTER UNTIL THE NEXT MANHOLE IS REACHED.
2. BATTER BOARDS AND BATTER BOARD SUPPORTS–STAKING SHALL BE EVERY 25'.



INSTALLATION OF SEWER UNDER EXISTING PAVEMENT

PAVEMENT SHALL BE SAWED AND REMOVED WITHOUT DAMAGE TO ADJACENT PAVEMENT.

PAVEMENT PLACEMENT SCHEDULE

SCHEDULE TO BE USED UNLESS OTHERWISE NOTED ON PLANS.

ORIGINAL SURFACE	NEW PAVEMENT
CONCRETE	8" REINFORCED CONCRETE 4,000psi
BRICK OVER CONCRETE	7" REINFORCED CONC.BASE 4,000psi PLUS ONE–COURSE RELAID BRICK.
ASPHALT	MATCH EXISTING PAVEMENT THICKNESS WITH A MINIMUM OF 6" HOT–MIX ASPHALTIC CONCRETE.
ASPHALT OVER CONCRETE	7" REINFORCED CONCRETE BASE 4000 psi PLUS 2" HOT MIX ASPHALTIC CONCRETE. 7" REINFORCED CONCRETE BASE SHALL BE JOINED TO ADJACENT PAVEMENT. SEE "FULL PANEL REPAIR & UTILITY CUTS FOR CONCRETE PAVEMENT" DETAIL AS SHOWN ON MISCELLANEOUS DETAILS I (DT–017). THE WEARING SURFACE WILL CONFORM TO CITY/COUNTY STANDARD SPECIFICATIONS.
BRICK OVER BRICK/SUBGRADE	7" HOT–MIX ASPHALTIC CONCRETE PLUS ONE–COURSE RE–LAID BRICK.

PAVEMENT SHALL BE SAWED AND REMOVED WITHOUT DAMAGE TO ADJACENT PAVEMENT.

* SECOND PAVEMENT CUT TO BE MADE AND PAVEMENT REMOVED AFTER TRENCH IS PROPERLY BACKFILLED.

** CONCRETE PAVEMENT SHALL BE JOINED TO ADJACENT CONCRETE PAVEMENT AS PER "FULL PANEL REPAIR AND UTILITY CUTS FOR CONCRETE PAVEMENT" AS SHOWN ON MISCELLANEOUS DETAILS I (DT–017).

NOTES:
1. THE TRENCH SHALL BE EXCAVATED TO 4" BELOW BOTTOM OF THE PIPE BARREL & BACKFILLED AS SHOWN ABOVE WITH AN APPROVED BEDDING MATERIAL.
2. WHEN THE SEWER IS TO BE INSTALLED IN ROCK, THE TRENCH IS TO BE EXCAVATED TO A MINIMUM DEPTH OF 4" BELOW THE BOTTOM OF THE PIPE AND BACKFILLED IN 6" COMPACTED LAYERS WITH AN APPROVED BEDDING MATERIAL AS SHOWN. THE ROCK EXCAVATED TO BE PAID AS A SEPARATE BID ITEM. THE EMBEDMENT, IN ALL CASES, TO BE INCLUDED IN THE PRICE BID PER TRENCH, EXCAVATION, AND BACKFILL.

NO.	DATE:	REVISION	BY:	APP'D
3	June 2018	Added maximum pipe intrusion note	DHS	JVH
2	March 2013	Mod. Pvmt. Place. Sch. & Bedding Amt.	DHS	SB
1	Feb. 2008	Mod.Pvmt.Sch. and Cradle, Arch. & Encase.	DHS	SB

DRAWN BY: rm/mc

APP'D BY: R. Christopher Kump

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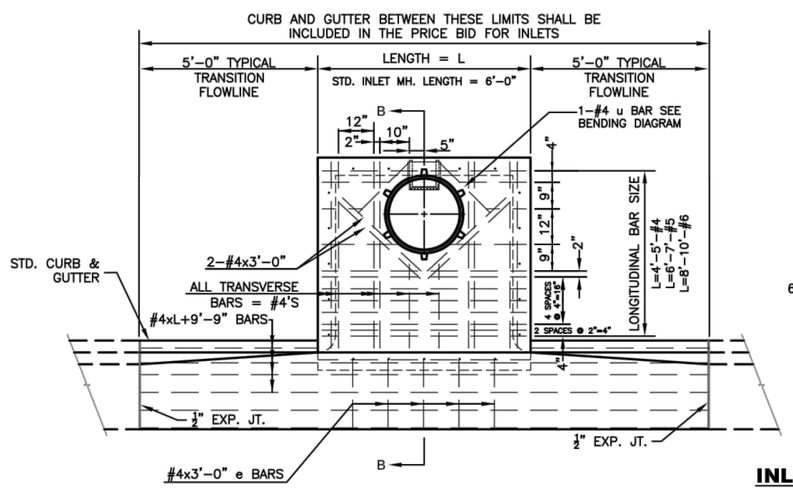
STANDARD DETAILS

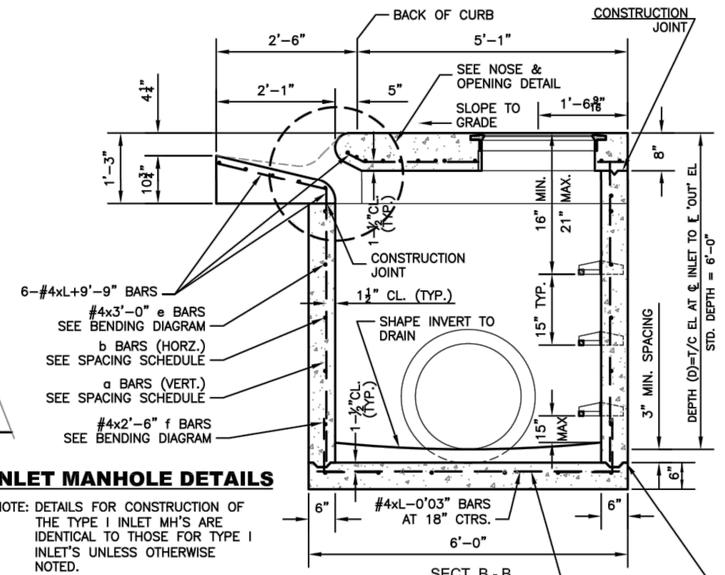
STORM SEWER DETAILS
(DT-008)

DATE: 5.25.2023

SHEET: 13 OF 23

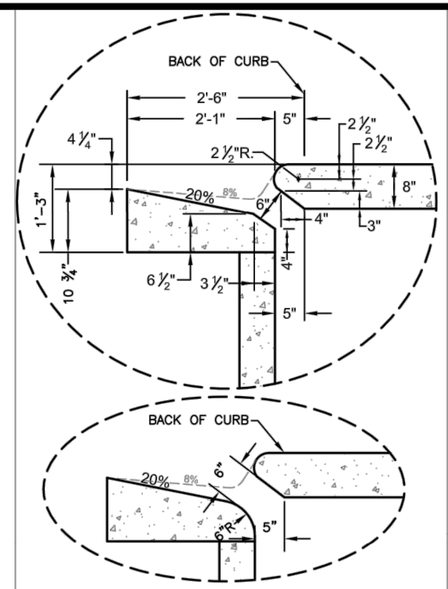
PROJ.: S-601017.00


CURB AND GUTTER BETWEEN THESE LIMITS SHALL BE INCLUDED IN THE PRICE BID FOR INLETS
5'–0" TYPICAL TRANSITION FLOWLINE
LENGTH = L
STD. INLET MH. LENGTH = 6'–0"
5'–0" TYPICAL TRANSITION FLOWLINE
1–#4 u BAR SEE BENDING DIAGRAM
STD. CURB & GUTTER
2–#4x3'–0"
ALL TRANSVERSE BARS = #4'S
#4xL+9'–9" BARS
LONGITUDINAL BAR SIZE
L=4'–5"–#4
L=6'–7"–#5
L=8'–10"–#6
4 SPACES @ 4"=16"
2 SPACES @ 2"=4"
½" EXP. JT.
#4x3'–0" e BARS



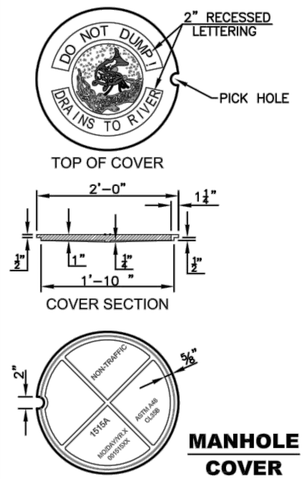
INLET MANHOLE DETAILS

NOTE: DETAILS FOR CONSTRUCTION OF THE TYPE I INLET MH'S ARE IDENTICAL TO THOSE FOR TYPE I INLET'S UNLESS OTHERWISE NOTED.



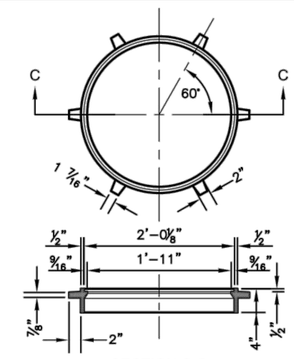
NOSE & OPENING DETAILS

EITHER OPTION MAY BE USED TO OBTAIN 6" OPENING



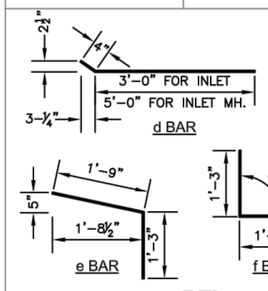
MANHOLE COVER

WT. 69 lbs.



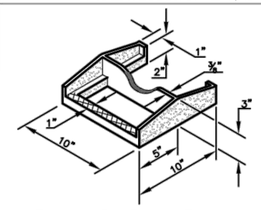
FRAME CASTING

WT. 64 lbs.
CLAY AND BAILEY NO. 3215 OR APPROVED EQUAL.



BENDING DIAGRAM

NOTE: THE e & f BARS WILL HAVE THE SAME SPACING AS THE a BARS. THE e & f BARS WILL TIE TO THE a BARS.



C.I. MH STEP CASTING DETAILS

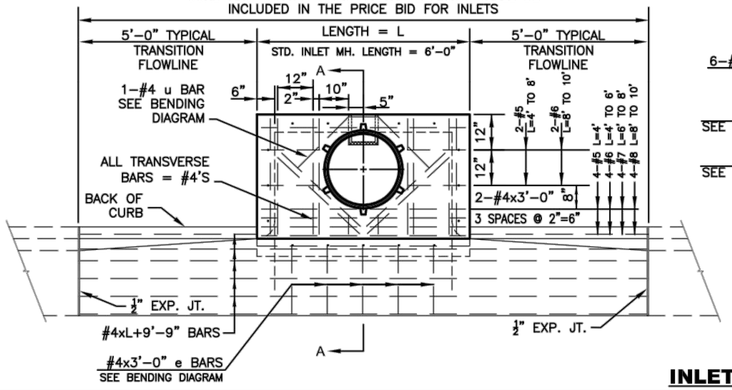
WT. 11 lbs.

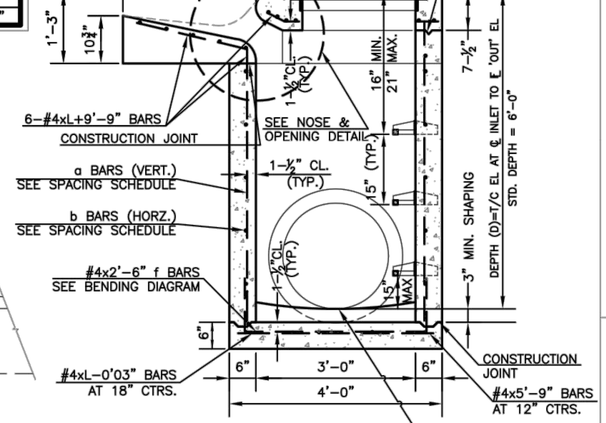
CLOW–NATIONAL NO. F–3650 CLAY AND BAILEY NO. 2113 NEENAH R–1980–E OR EQUAL

COPOLYMER POLYPROPYLENE PLASTIC STEP, PS2–PF, MANUFACTURED BY M.A. IND. INC. OR APPROVED EQUAL MAY BE USED AS AN ALTERNATE TO DETAILED CASTING. THIS STEP MAY BE CAST IN PLACE OR INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDED INSTALLATION PROCEDURE.

REINFORCING BAR SPACING SCHEDULE

D	L = 4'		L = 5'		L = 6'		L = 7'		L = 8'		L = 9'	
	a BAR	b BAR	a BAR	b BAR	a BAR	b BAR	a BAR	b BAR	a BAR	b BAR	a BAR	b BAR
3'	12"	18"	12"	18"	12"	18"	12"	18"	12"	18"	12"	18"
4'	18"	12"	12"	18"	12"	18"	12"	18"	12"	18"	12"	18"
5'	18"	12"	18"	12"	12"	18"	12"	18"	12"	18"	12"	18"
6'	18"	12"	18"	12"	18"	12"	12"	18"	12"	18"	12"	18"
7'	18"	12"	18"	12"	18"	12"	18"	12"	12"	18"	12"	18"
8'	18"	12"	18"	12"	18"	12"	18"	12"	18"	12"	12"	18"
9'	18"	12"	18"	12"	18"	12"	18"	12"	18"	12"	18"	12"
10'	18"	12"	18"	12"	18"	12"	18"	12"	18"	12"	18"	12"





INLET DETAILS

NOTES:
1. ALL TOP SLAB REINFORCING SHALL BE GRADE 60 REBAR.
2. USE CLASS 'A' CONCRETE THROUGHOUT. BEVEL ALL EXPOSED EDGES WITH A 3/4" TRIANGULAR MOLDING.
3. REINF. STEEL BARS IN INLETS OR INLET MH'S SHALL BE INCLUDED IN THE PRICE BID FOR EACH STRUCTURE. BARS TO BE BENT AROUND PIPE.
4. STEPS SHALL BE INSTALLED IN ALL INLETS OVER 4' DEEP AND LOCATED UNDER MANHOLE RING AND COVER.
5. SUPPLIERS SHALL GRIND ALL BURRS SMOOTH ON CASTINGS.
6. STANDARD INLETS AND INLET MANHOLES SHALL BE 6'–0" IN LENGTH UNLESS OTHERWISE SHOWN ON THE PLANS. LONGER OR SHORTER INLETS MAY BE SPECIFIED IN ONE FOOT INCREMENTS, AND ARE TO BE BID PER EACH FOR EACH LENGTH OF STRUCTURE AS SHOWN ON THE PLANS. INLETS OR INLET MANHOLES SHORTER THAN 6'–0" ARE TO BE BID AT THE SAME UNIT PRICE AS THE STANDARD STRUCTURES. UNIT BID PRICES ARE FOR STRUCTURES NOT EXCEEDING A DEPTH (D) OF 6'–0". EXTRA DEPTH SHALL BE PAID FOR AT THE UNIT PRICE BID FOR EXTRA DEPTH FOR EACH LENGTH OF INLET.
7. SEE SHEET ENTITLED "REINFORCING STEEL FOR INLETS AND MANHOLES" FOR DETAILS AND QUANTITIES.
8. ALL REINFORCING STEEL SHALL BE #4 @ 6" CENTERS EXCEPT WHERE NOTED OR DESIGNED BY ENGINEER. MINIMUM CLEAR DISTANCE FOR REINFORCEMENT SHALL BE 1–1/2".
9. MAXIMUM PIPE INTRUSION INTO STRUCTURE IS 6". UNIQUE STRUCTURES MIGHT REQUIRE ADDITIONAL ANALYSIS. ENGINEER APPROVAL REQUIRED.

INLET SCHEDULE

STATION	LT. OR RT.	INLET (I) or INLET (MH)	L	D	EXTRA DEPTH	a BAR SPACING	b BAR SPACING

NO.	DATE:	REVISION	BY:	APP'D
6	June 2018	Added maximum pipe intrusion note	DHS	JVH
5	April 2018	Moved leader at rt. side Inlet Details to ℄	DHS	JVH
4	March 2013	Changed inlet top thickness to 8"	DHS	SB
3	Sept. 2011	Elim. dim. from Inlet MH & Inlet Details	DHS	SB
2	March 2010	Eliminated keyed joints	DHS	SB
1	Feb. 2008	Mod. MH Cover & Added Notes	DHS	SB

DRAWN BY: rm/mc
APP'D BY: [signature]

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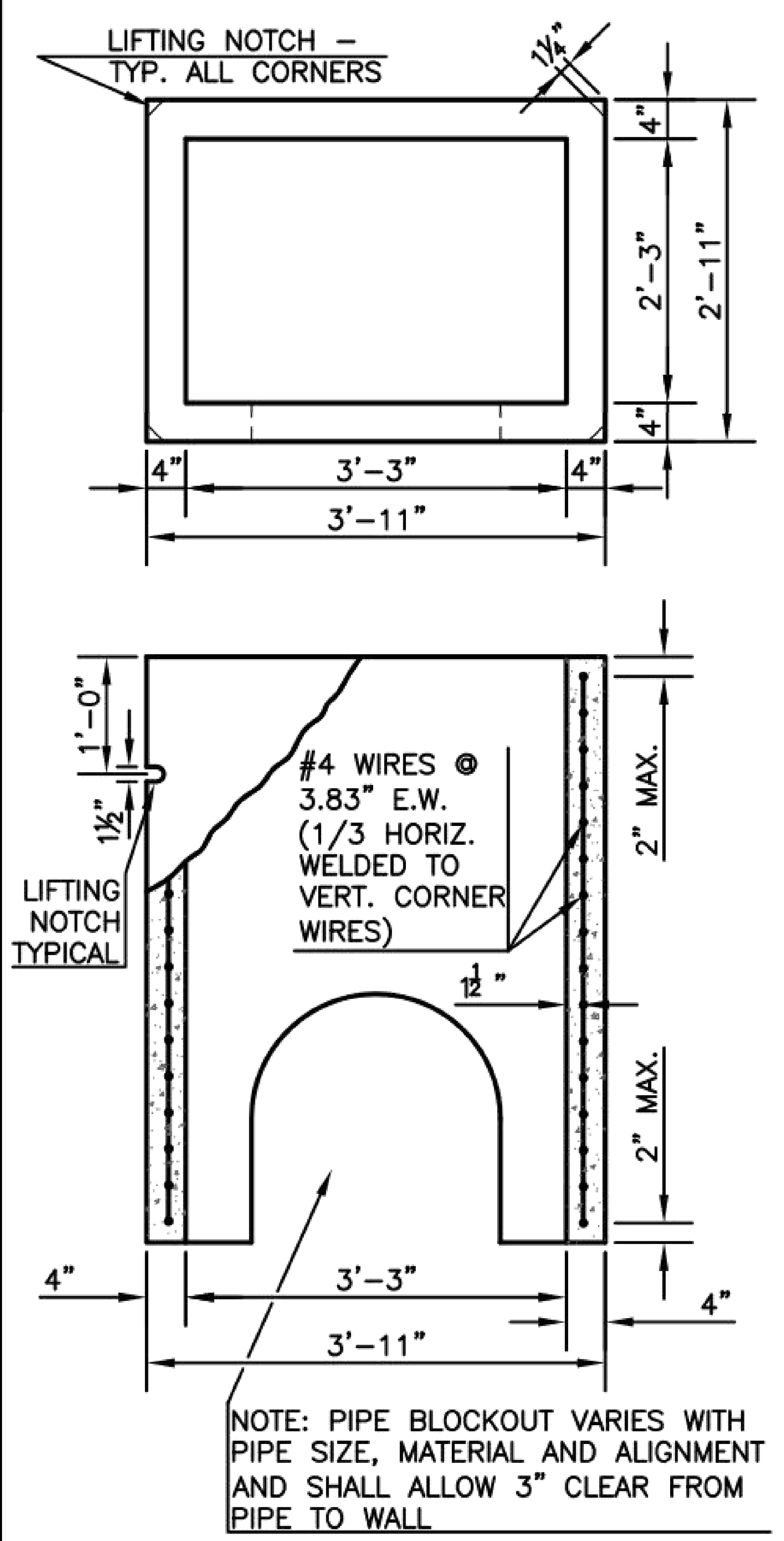
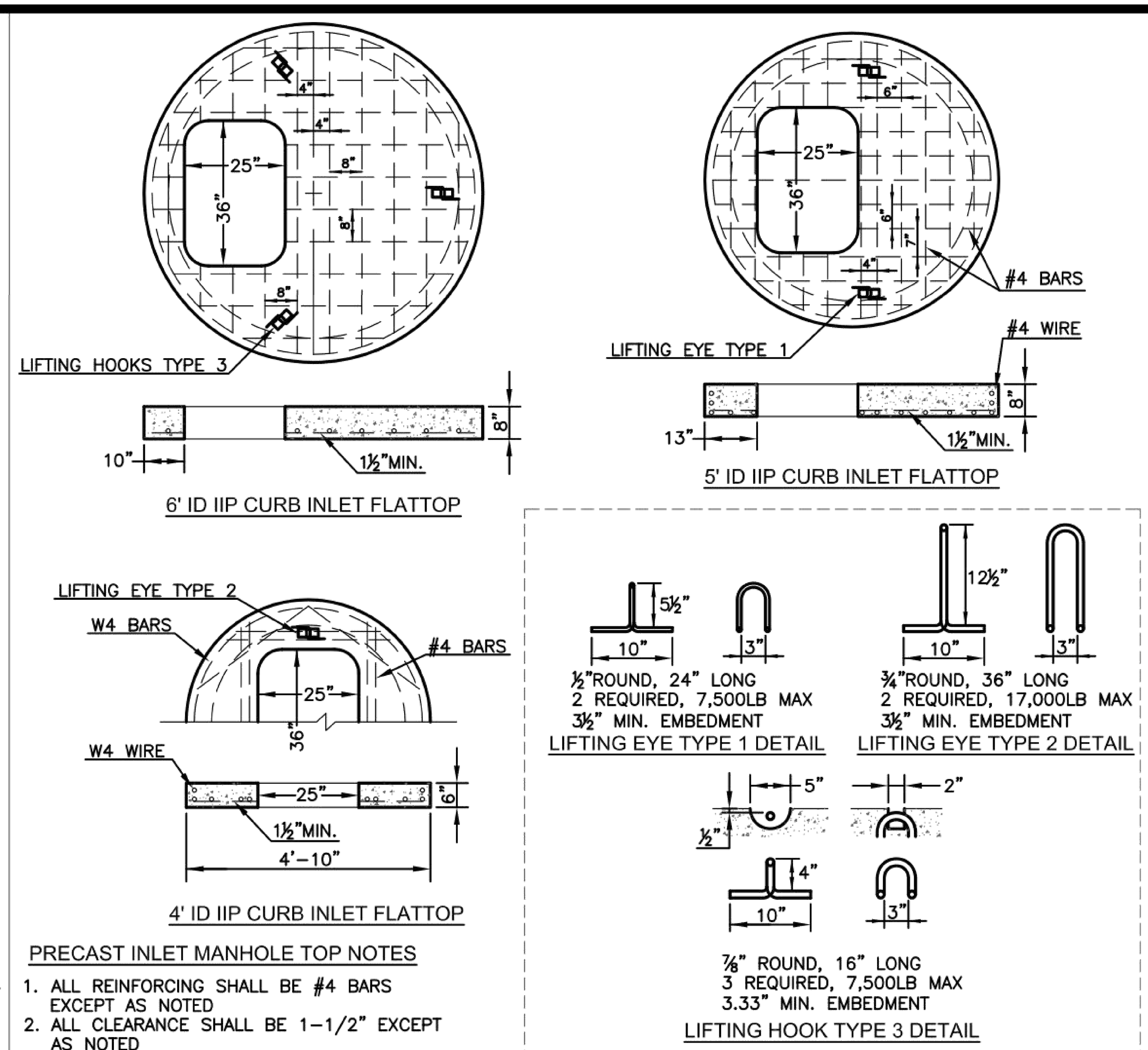
STANDARD DETAILS

TYPE I INLETS
(DT-009)

DATE: 5.25.2023
SHEET: 14 OF 23
PROJ.: S-601017.00



PRECAST INLET BOX RISER



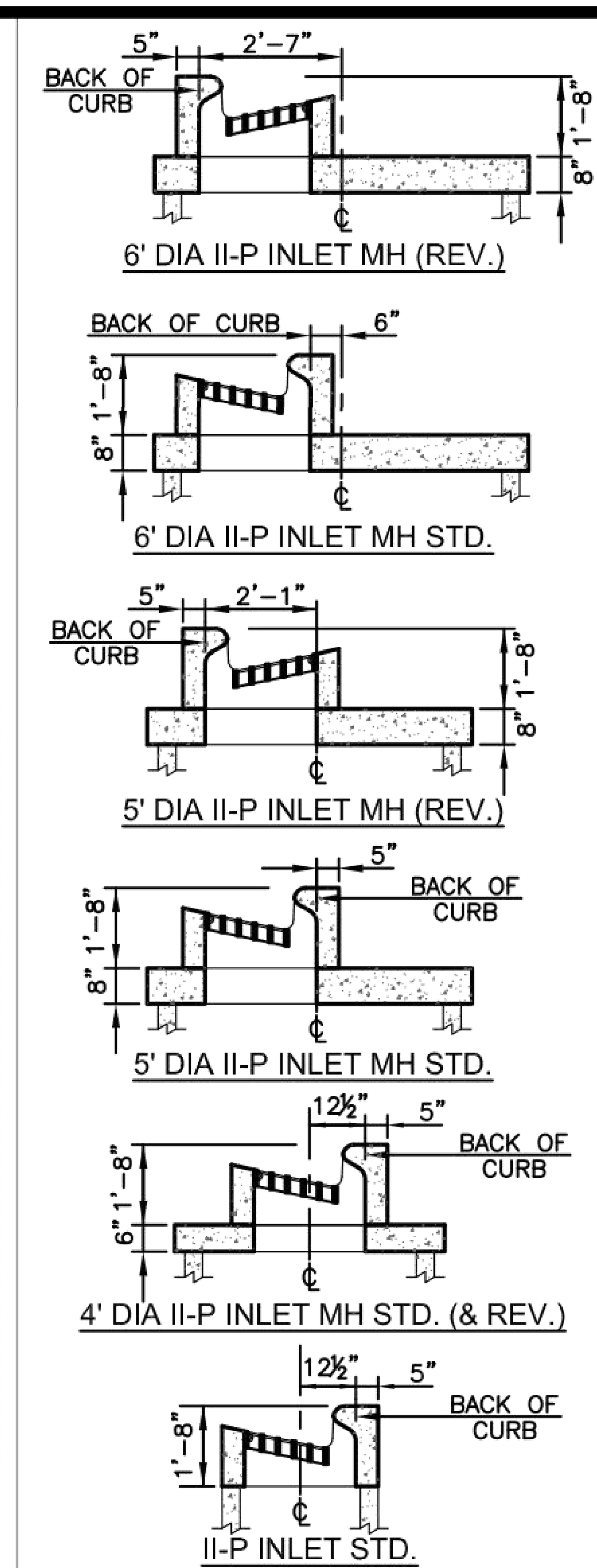
PRECAST INLET MANHOLE TOP NOTES

1. ALL REINFORCING SHALL BE #4 BARS EXCEPT AS NOTED
2. ALL CLEARANCE SHALL BE 1-1/2" EXCEPT AS NOTED

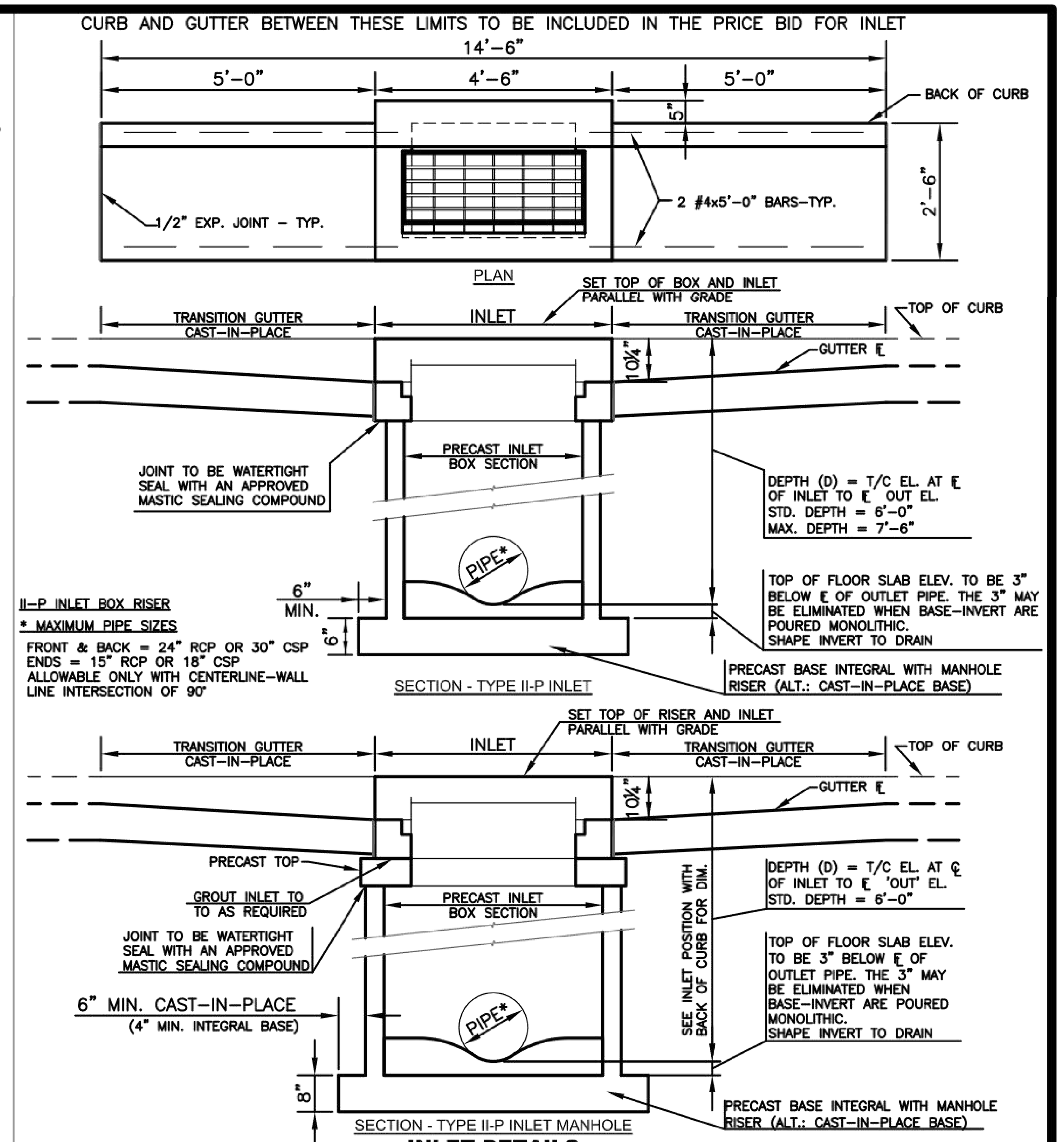
PRECAST INLET MANHOLE RISER NOTES

1. ALL MANHOLE RISER SECTIONS SHALL CONFORM TO A.S.T.M. 478-80.
2. ALL MANHOLE CONSTRUCTION SHALL BE WATERTIGHT.
3. STEPS SHALL BE PS1-PF OR PS2-PF AS MANUFACTURED BY M.A. INDUSTRIES INC. OF APPROVED EQUAL AND SHALL BE PLACED TO PROVIDE EASY ACCESS TO MANHOLE AT 16" O.C. MAX. WHILE MAINTAINING VERT. ALIGNMENT.

PRECAST INLET MANHOLE RISER & TOP



INLET POSITIONS WITH BACK OF CURB



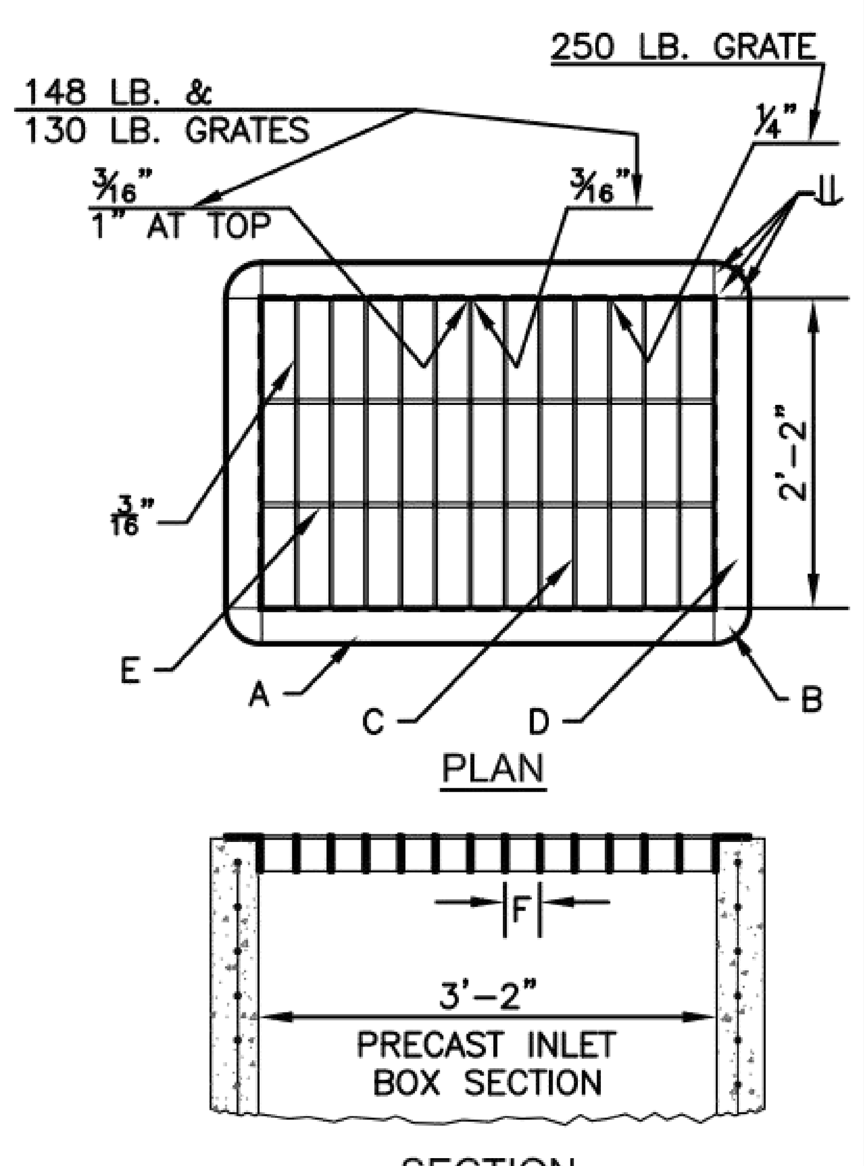
INLET DETAILS

NOTE:
THE BOTTOM SECTION OF ALL CAST-IN-PLACE MANHOLES AND PRECAST MANHOLES NOT BUILT MONOLITHICALLY WITH THE BASE SHALL BE SET INTO A STEEL REINFORCED (#4 @ 12" E.W.) CONCRETE BASE (4,000 PSI) A MINIMUM OF 4 INCHES. IN THIS CASE, THE BASE THICKNESS SHALL BE INCREASED BY 4 INCHES.

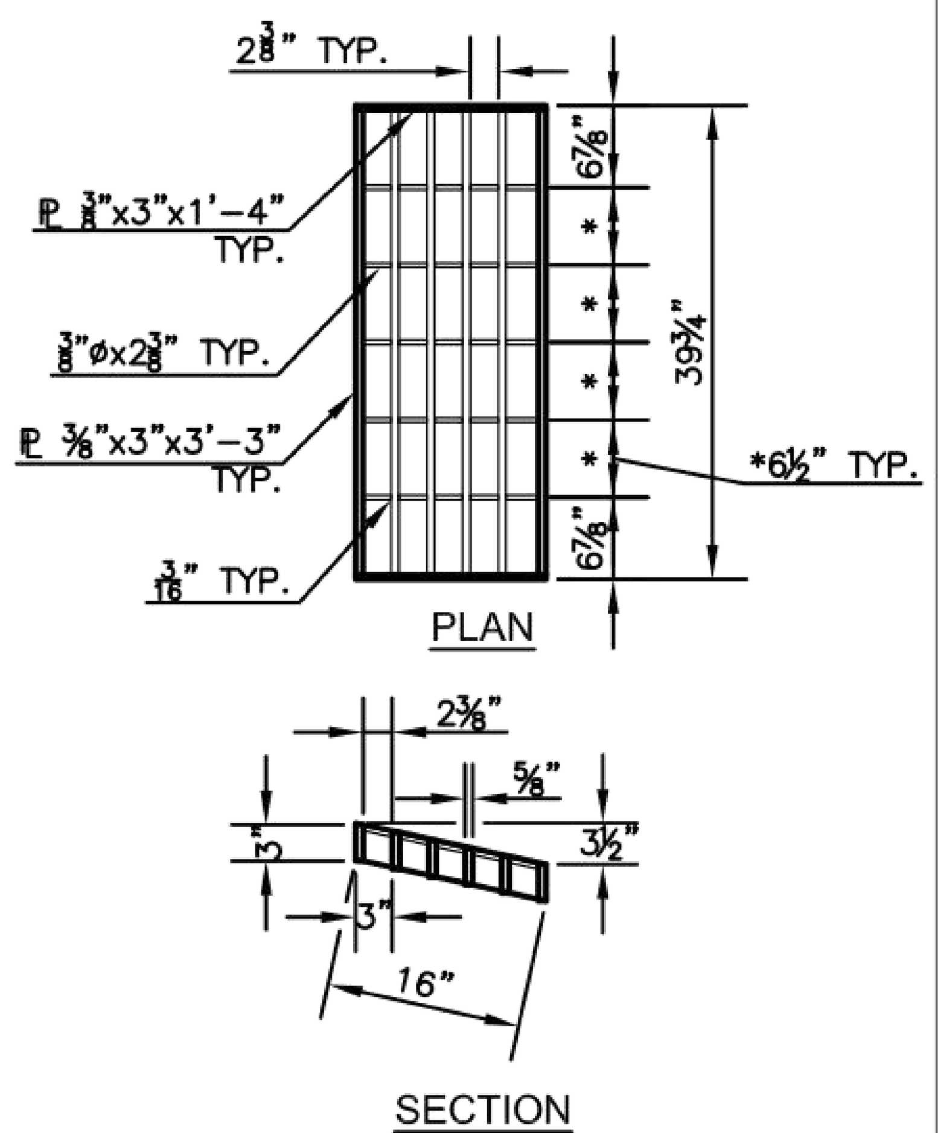
148 LB. PEDESTRIAN GRATE	
A	2 EA. L ½x3x3x3'-1½"
B	4 EA. PL ½X3x0'-3"
C	25 EA. PL ½x2x2'-1⅛"
D	2 EA. L ½x3x3x2'-1¼"
E	52 EA. PL 3/16x1½x0'-1⅛"
F	1-7/16" O.C.

250 LB. TRAFFIC GRATE	
A	2 EA. L ½x3x3x3'-1⅛"
B	4 EA. PL ½X3x0'-3"
C	12 EA. PL ½x3x2'-⅞"
D	2 EA. L ½x3x3x2'-1"
E	26 EA. PL ⅜øx0'-2⅜"
F	2⅞" O.C.

130 LB. YARD GRATE	
A	2 EA. L ½x3x3x3'-1½"
B	4 EA. PL ½X3x0'-3"
C	12 EA. PL ½x3x2'-1⅜"
D	2 EA. L ½x3x3x2'-1½"
E	26 EA. PL ⅜øx0'-2⅛"
F	2⅞" O.C.

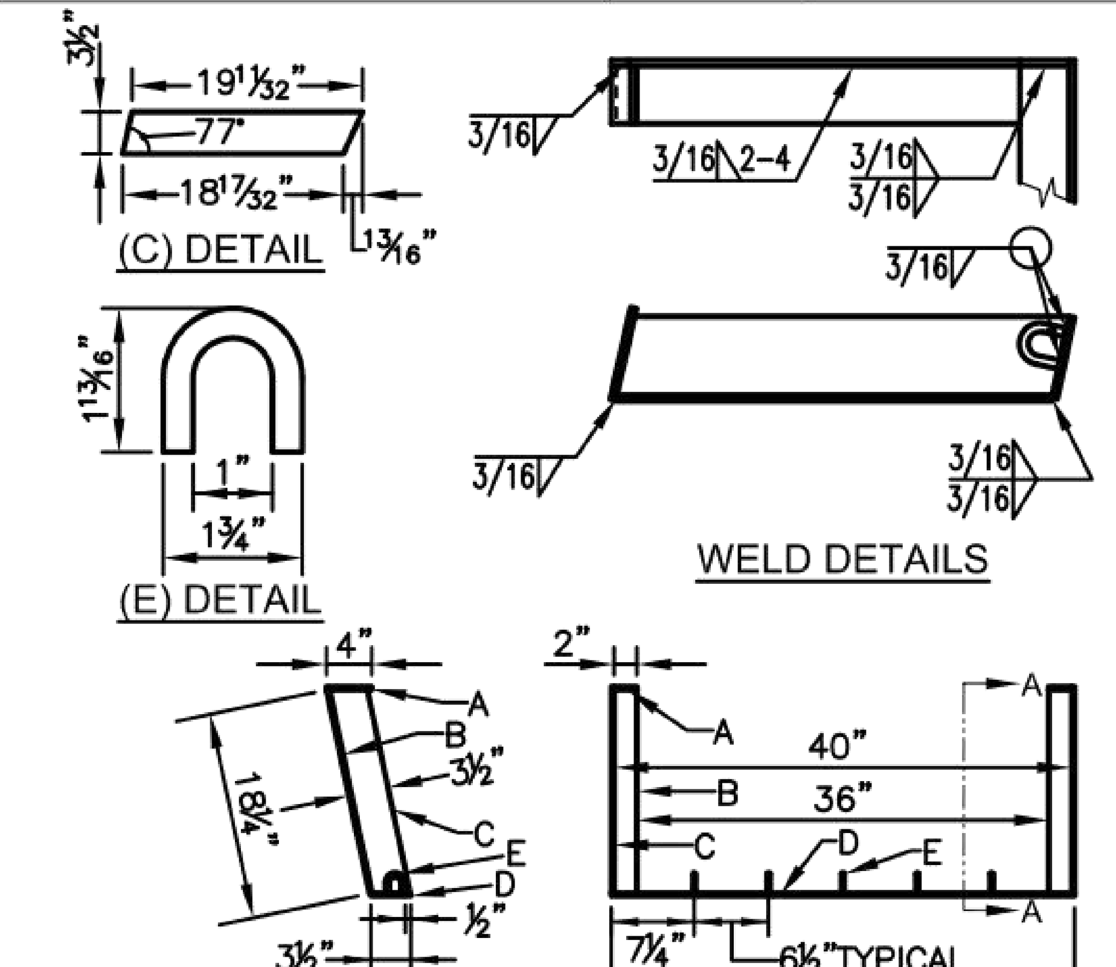


AREA INLET GRATE



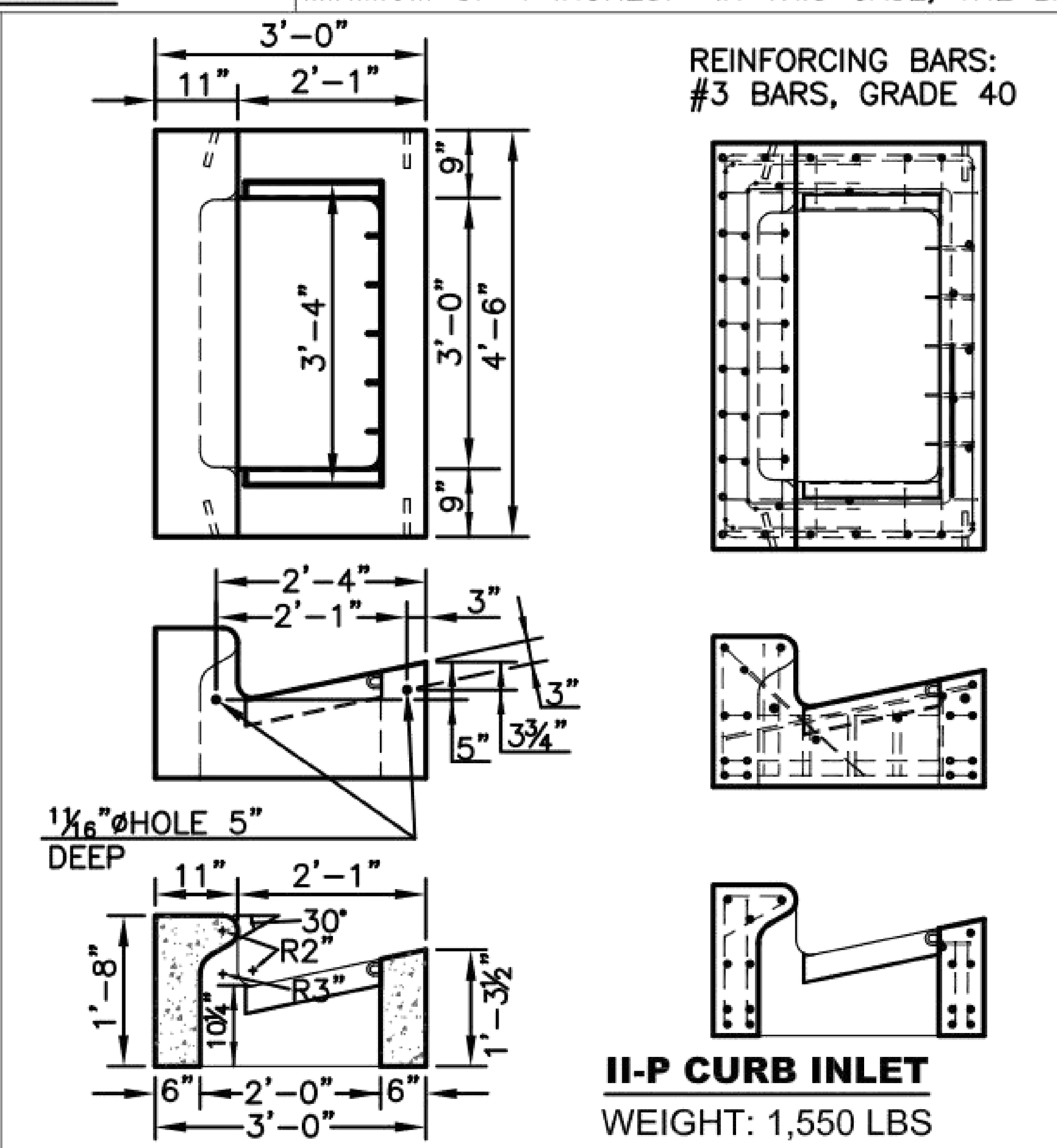
INLET GRATE

WEIGHT: 140 LBS



SYM	PCS	LENGTH	MATERIAL
A	2	4"	1/4x2 FLAT
B	2	18¼"	1/4x2 FLAT
C	2		1/4x3.1/2 FLAT
D	1	40½"	1/4x3.1/2 FLAT
E	5	4"	3/8 HR ROUND

GRATE FRAME



II-P CURB INLET

WEIGHT: 1,550 LBS

NOTES:

1. CAST IN PLACE CONC. SHALL BE 4000PSI.
2. PRECAST CONC. SHALL BE 4000 PSI.
3. REINFORCING WIRE SHALL CONFORM TO ASTM A82.
4. REINFORCING BARS SHALL CONFORM TO ASTM A615.
5. GROUT ALL PIPES IN PLACE.
6. GRATES & FRAMES SHALL BE ASTM A36 STEEL COATED WITH BITUMASTIC BLACK SOLUTION (COAL TAR BASE) AS MANUFACTURED BY KOPPERS OR APPROVED EQUAL.
7. THE INLET TOP SHALL SIT SQUARELY ON TOP OF THE INLET BOTTOM SECTION. THE INLET WALLS SHALL NOT BE OFFSET MORE THAN ONE INCH BETWEEN TOP AND BOTTOM SECTIONS.
8. MAXIMUM PIPE INTRUSION INTO STRUCTURE IS 6". UNIQUE STRUCTURES MIGHT REQUIRE ADDITIONAL ANALYSIS. ENGINEER APPROVAL REQUIRED.

NO.	DATE:	REVISION	BY:	APP'D
3	June 2018	Added maximum pipe intrusion note	DHS	JVH
2	Dec. 2009	Mod. dim at Inl. Pos. & added 7.to NOTES	DHS	SB
1	Feb. 2008	Update	DHS	SB

DRAWN BY: rm/mc
APP'D BY: [signature]

SHAWNEE COUNTY, KANSAS
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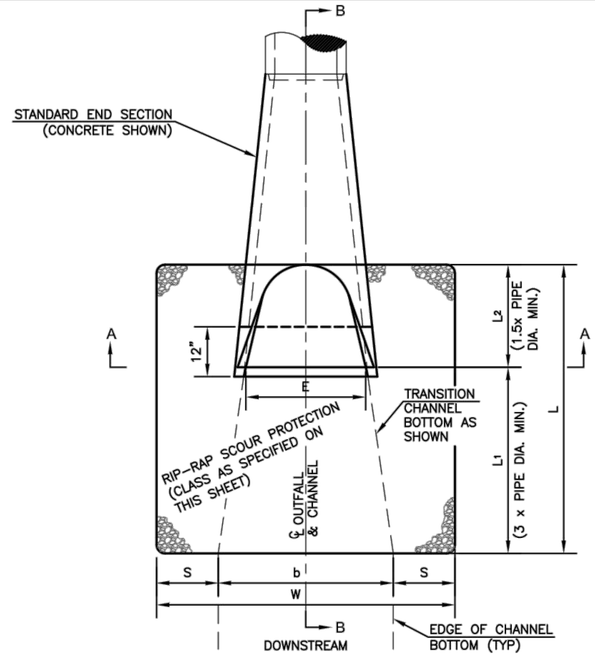
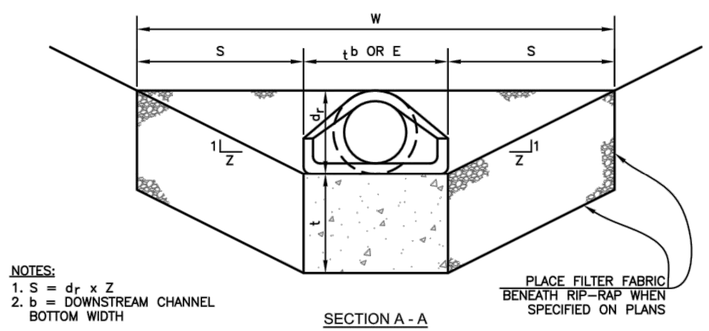
STANDARD DETAILS

TYPE II-P INLET
(PRECAST)
(DT-011)

DATE: 5.25.2023
SHEET: 15 OF 23
PROJ.: S-601017.00

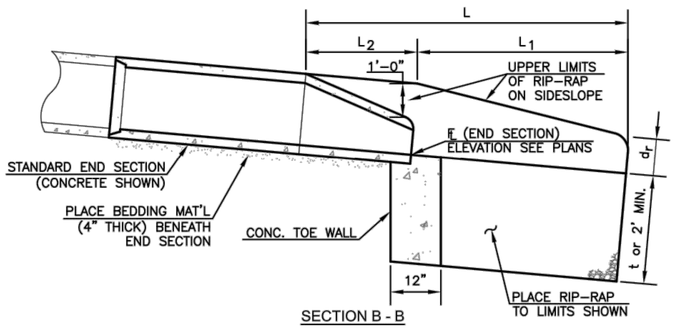


OUTFALL WITH RIP-RAP SCOUR PROTECTION

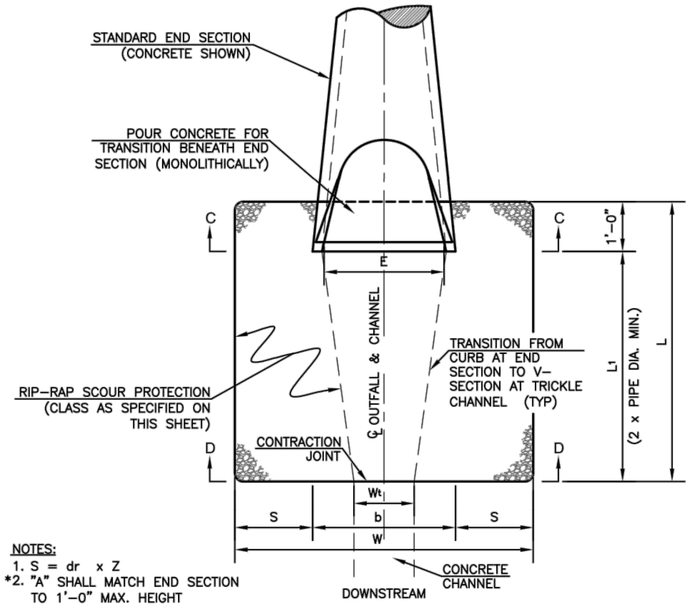


NOTES:
1. S = d_r x Z
2. b = DOWNSTREAM CHANNEL BOTTOM WIDTH

SECTION A - A

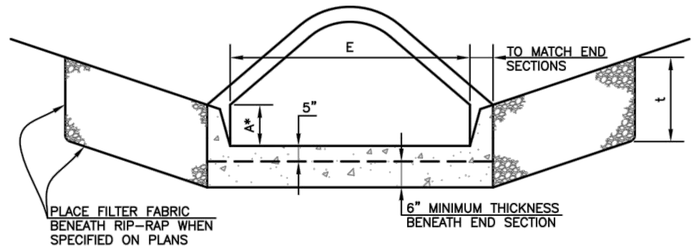


SECTION B - B

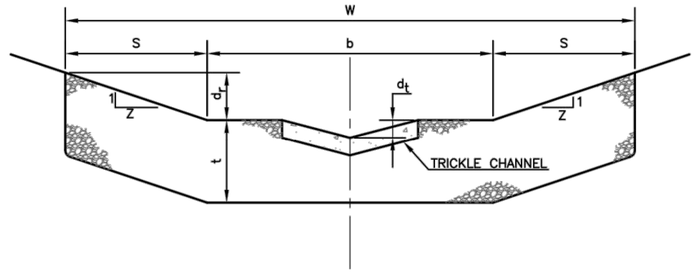


NOTES:
1. S = dr x Z
*2. "A" SHALL MATCH END SECTION TO 1'-0" MAX. HEIGHT

OUTFALL TO TRICKLE CHANNEL TRANSITION & SCOUR PROTECTION



SECTION C - C



SECTION D - D

GENERAL NOTES:

1. ALL CONCRETE SHALL BE "PAVEMENT CLASS", IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
2. MIXING, PLACING, FINISHING, JOINTING AND CURING OF ALL CONCRETE SHALL BE IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF THE STANDARD SPECIFICATIONS FOR SIDEWALKS AND DRIVEWAYS.
3. WELDED WIRE FABRIC (WWF 6 x 6–W2.9 x W2.9) SHALL BE USED THROUGHOUT AND CENTERED IN ALL SLABS AND FOOTINGS. WIRE FABRIC SHALL CONFORM TO ASTM A 185.
4. MATERIALS USED FOR STONE RIP–RAP SHALL CONFORM TO THE OF THE KANSAS DEPT. OF TRANSPORTATION STANDARD SPECIFICATIONS, LATEST EDITION. GRADATION FOR EACH CLASS OF RIP–RAP SPECIFIED SHALL BE IN ACCORDANCE WITH THE ABOVE TABLE.
5. BROKEN CONCRETE RIP–RAP MAY BE SUBSTITUTED FOR STONE RIP–RAP PROVIDED IT MEETS GRADATION REQUIREMENTS FOR THE CLASS OF RIP–RAP SPECIFIED.
6. THE FOLLOWING UNITS OF MEASUREMENT SHALL APPLY TO ALL ITEMS OF WORK DETAILED ON THIS SHEET, UNLESS OTHERWISE SHOWN ON THE PROPOSAL.

   CONCRETE TRANSITION — SQUARE FOOT (ACTUAL EXPOSED SURFACE AREA)

   STONE RIP–RAP, BROKEN CONCRETE RIP–RAP — SQUARE YARD (FOR EACH CLASS OF RIP–RAP)
7. REFER TO "CONCRETE WASH CHECK, TRICKLE CHANNEL & FLUME" STANDARD DETAIL SHEET FOR CONCRETE TRICKLE CHANNEL DETAILS.

RIP-RAP GRADATION REQUIREMENTS

CLASS	D_{50}	*GRADATION, MINIMUM PERCENTAGE LARGER THAN									
		2000lb	1400lb	700 lb	500 lb	200 lb	100 lb	60 lb	40 lb	25 lb	12 lb
		3' dia	2.5'dia	2' dia	1.8'dia	1.3'dia	1.0'dia	0.9'dia	0.8'dia	0.7'dia	0.5'dia
I	0.50' 0.75'						0				100
II	1.00' 1.50'			0						100	
III	2.00'	0							100		

*BASED ON UNIT WEIGHT OF 165 lb/ft^3 – MINIMUM UNIT WEIGHT = 150 lb/ft^3

OUTFALL SCHEDULE

OUTFALL NO OR STATION	d_r	Z	S	b or E	W	L_1	L_2	L	RIP–RAP CLASS	t	TRANSITION			
											E	A	Wt	dt

NO.	DATE:	REVISION	BY:	APP'D
1	Feb. 2008	Mod. General Notes	DHS	SB

DRAWN BY: rm/mc

APP'D BY: R. Chmelka-King

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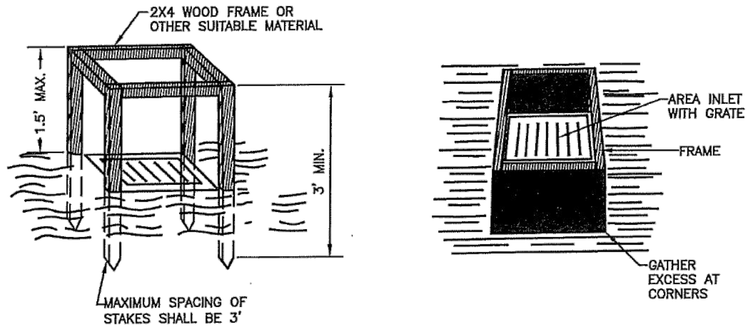
STANDARD DETAILS

PIPE OUTFALLS
(DT-015)

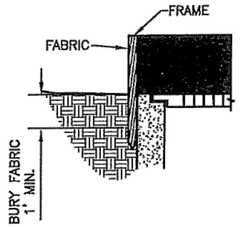
DATE: 5.25.2023

SHEET: 16 OF 23

PROJ.: S-601017.00



TOP VIEWS



PROFILE VIEW

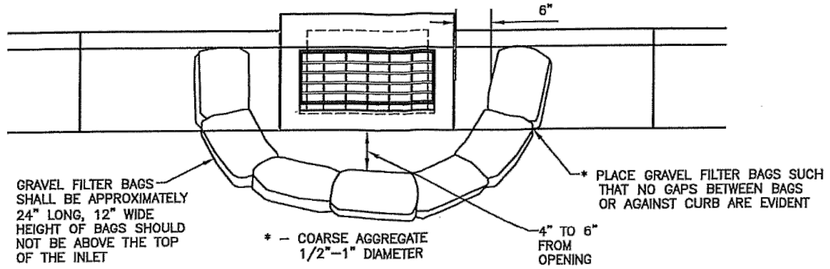
NOTES:
1. BASE OF FABRIC SHALL BE BURIED AT LEAST 1' BELOW GROUND SURFACE AND BACKFILLED WITH CRUSHED STONE OR COMPACTED MATERIAL.
2. WIRE MESH FENCE MAY BE USED TO SUPPORT FABRIC. TOP OF FENCE SHOULD BE LEVEL WITH FRAME AND BOTTOM BURIED 6" BELOW GROUND.
3. MAY BE NECESSARY TO BUILD A TEMPORARY DIKE ON DOWN–SLOPE SIDE OF STRUCTURE TO PREVENT BYPASS FLOW.
4. STRAW BALES OR GRAVEL FILLED FILTER BAGS MAY BE USED IN LIEU OF FABRIC. IF STRAW BALES ARE USED, TWO 4' (MINIMUM) LONG, 2" X 2" HARDWOOD STAKES SHALL BE DRIVEN THROUGH EACH BALE AND SET BACK 12" TO 24" FROM INLET. IF FILTER BAGS ARE USED, PLACE BAGS SUCH THAT NO GAPS ARE EVIDENT.

AREA INLET PROTECTION

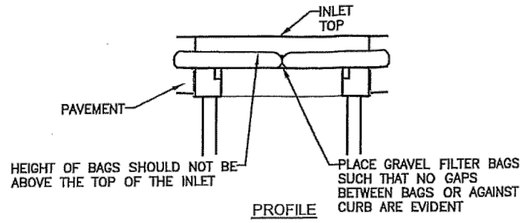
GENERAL NOTES:
1. ANY EROSION AND SEDIMENT CONTROL MEASURES INTENDED TO CONTROL EROSION OF AN EARTH DISTURBANCE OPERATION SHALL BE INSTALLED BEFORE ANY EARTH DISTURBANCE OPERATIONS TAKE PLACE.
2. THE CONTRACTOR SHALL INSPECT THE LAND DISTURBANCE SITE AFTER EACH SIGNIFICANT RAINFALL EVENT WITHIN A 24–HOUR PERIOD AND ASSURE THAT ALL EROSION AND SEDIMENT CONTROL MEASURES ARE IN WORKING CONDITION PRIOR TO ANY FORECASTED RAINFALL. SEDIMENT REMOVAL AND ALL NECESSARY REPAIRS SHALL BE MADE TO MAINTAIN THE INTEGRITY OF THE EROSION AND SEDIMENT CONTROL MEASURES. SEDIMENT SHALL BE REMOVED ONCE IT REACHES HALF OF THE INSTALLED HEIGHT OF MEASURE.
3. THE CONTRACTOR SHALL MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES DURING ALL PHASES OF CONSTRUCTION UNTIL OWNER ACCEPTS WORK AS COMPLETE. THE CONTRACTOR SHALL PROVIDE TEMPORARY SEEDING, BERMS, SILT FENCE, SEDIMENT TRAPS OR OTHER MEANS TO PREVENT SEDIMENT FROM REACHING STREAMS, PUBLIC RIGHT–OF–WAY OR ADJACENT PROPERTY.
4. SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED ONCE 70 PERCENT OF THE PERMANENT COVER IS ESTABLISHED.
5. THE CONTRACTOR SHALL TEMPORARILY SEED AND MULCH ALL DISTURBED AREAS IF THERE HAS BEEN NO CONSTRUCTION ACTIVITY ON THEM FOR A PERIOD OF 14 CALENDAR DAYS. IF THE ENGINEER DETERMINES THAT A SITE HAS A POTENTIAL FOR EROSION, STABILIZATION OF SOIL MAY BE REQUIRED. TEMPORARY SEED MIXTURE SHALL BE APPROVED BY THE ENGINEER OR AS FOLLOWS:

TYPE:	APPLICATION RATE:	
	WINTER WHEAT	120 LBS PER ACRE
	RYEGRASS	75 LBS PER ACRE

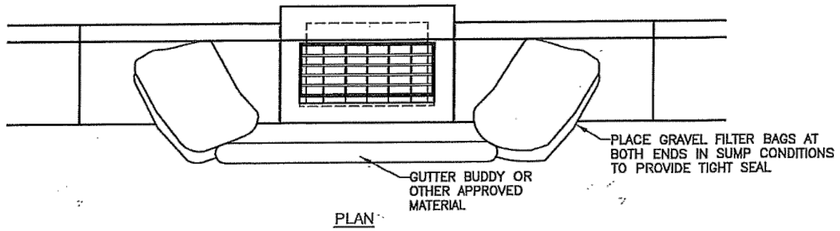
REPAIRS AND RESEEDING SHALL BE PERFORMED BY THE CONTRACTOR AT THE DIRECTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER. IF VEGETATIVE MEASURES ARE NOT EFFECTIVE, NON–VEGETATIVE OPTION MAY BE REQUIRED.



PLAN



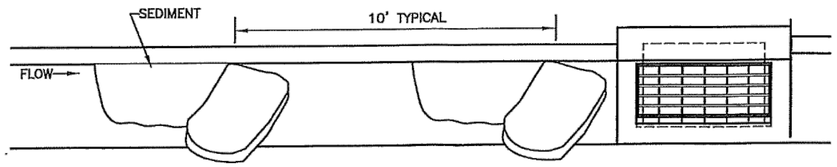
PROFILE



PLAN

SUMP CONDITIONS

NOTE:
DO NOT BLOCK INLET OPENING – STORMWATER MUST BE ALLOWED TO FLOW TO DRAIN AND NOT BYPASS TO DOWNSTREAM.

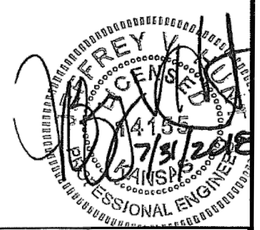


PLAN

IN GRADE CONDITIONS

NOTES:
1. OTHER APPROVED CURB INLET SEDIMENT FILTERS MAY BE USED.
2. IMMEDIATELY FOLLOWING INLET CONSTRUCTION AND PRIOR TO CONSTRUCTION OF CURB AND INLET THROAT, PROTECT INLET OPENING AROUND PERIMETER. SEE AREA INLET DETAIL THIS PAGE.
3. CONTRACTOR TO CLEAN OUT SEDIMENT AFTER EACH SIGNIFICANT RAINFALL EVENT.
4. DURING CONSTRUCTION GRAVEL FILTER BAGS SHALL BE REPLACED PRIOR TO DEGRADATION.
5. ANY SEDIMENT OR GRAVEL DEPOSITED IN INLET SHALL BE REMOVED PROMPTLY.

CURB INLET SEDIMENT PROTECTION



NO.	DATE:	REVISION	BY:	APP'D
2	May 2015	Added & Updated Notes	DHS	JDH
1	March 2013	Revised Notes	DHS	JDH

DRAWN BY: DHS
APP'D BY: JDH

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COUNTY ENGINEER
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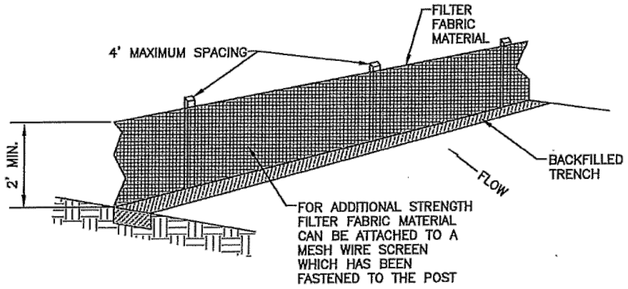
ENGINEERING
620 SE MADISON St. • 2nd Floor • TOPEKA, KS 66607
Phone: (785) 354-3842 • Fax: (785) 368-3861

STANDARD DETAILS

EROSION & POLLUTION CONTROL
INLET PROTECTION AND GENERAL NOTES
(DT-020)

DATE: 5.25.2023
SHEET: 17 OF 23
PROJ.: S-601017.00



PLAN

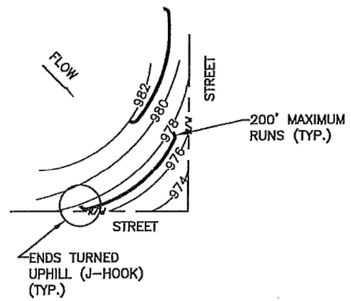
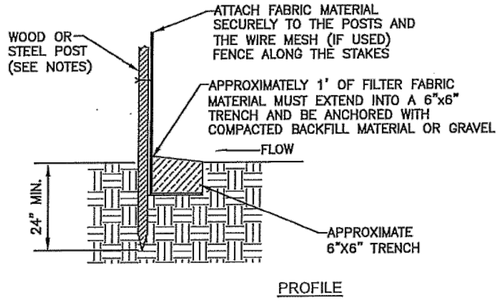


FIGURE A

Land Slope and Distance for Sediment Fence

Land Slope (percent)	Maximum Slope Distance* above Fence (feet)
Less than 2	100
2 to 5	75
5 to 10, greater than 10	50*

*Follow manufacturers' recommendations for proper spacing.



PROFILE

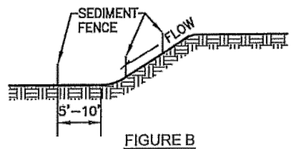
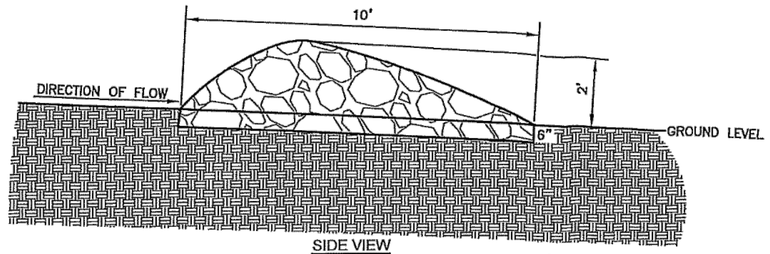


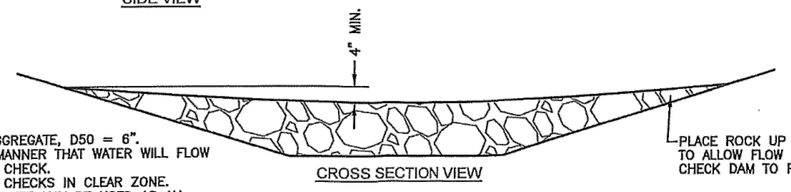
FIGURE B

NOTES:
1. THE USE OF HAY/STRAW BALES IS THE CONTRACTOR'S OPTION. IF HAY BALES ARE USED PLACE TIGHTLY TOGETHER WITH 2"X2"X4' (MIN.) LENGTH WOOD STAKES IN OUTER 1/3 SECTIONS OF BALES. BALES SHOULD EMBEDDED INTO THE SOIL A MINIMUM OF 6" WITHIN A MAXIMUM DRAINAGE AREA OF 1 ACRE OR LESS.
2. THE SEDIMENT FENCES SHALL BE PLACED ALONG CONTOUR LINES, WITH A SHORT SECTION TURNED UPGRADE (J-HOOK) AT EACH END OF THE BARRIERS TO HOLD WATER AND SEDIMENT (SEE FIGURE A).
3. AREAS THAT CONTAIN LARGER CONCENTRATIONS OF WATER SHALL BE LIMITED TO LENGTHS OF SILT FENCES TO NO LONGER THAN 200' (SEE FIGURE A). LIMIT TO 1/4 ACRE PER 100' OF FENCE. FURTHER RESTRICT AREA BY LAND SLOPE TABLE ABOVE.
4. AREAS SHOULD BE BROKEN UP WITH INTERIOR SEDIMENT FENCE TO MINIMIZE WATER CONCENTRATIONS AND LONG SLOPES (SEE FIGURE B).
5. SEDIMENT FENCES INSTALLED AT TOE OF SLOPE SHALL BE PLACED 5' TO 10' AWAY (DOWNSTREAM) TO CREATE SEDIMENT STORAGE (SEE FIGURE B).
6. DEPTH OF WATER CONCENTRATIONS SHOULD NOT EXCEED 1.5' AT ANY POINT ALONG THE FENCE.
7. PLACE SILT FENCE ONLY WHERE OVERLAND OR SHEET FLOW DISCHARGES OCCUR.
8. SILT FENCES SHOULD NOT BE USED IN CONCENTRATED FLOW CHANNELS, OR AS INLET PROTECTION DEVICES IF FLOODING CONDITIONS COULD OCCUR.
9. DO NOT USE HAY OR STRAW BALES WITH WIRE TIES.
10. WHEN SEDIMENT REACHES 1/2 HEIGHT OF SILT FENCE OR SIMILAR CONTROL MEASURE, THE CONTRACTOR SHALL REMOVE THE SEDIMENT.

SILT FENCE



SIDE VIEW

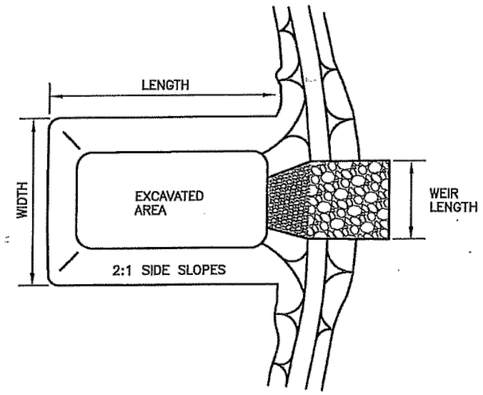


CROSS SECTION VIEW

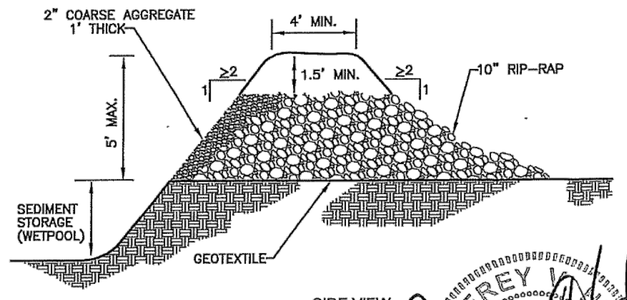
TEMPORARY ROCK DITCH CHECK SPACING	
DITCH ℄ SLOPE (%)	SPACING INTERVAL (FEET)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29
THIS SPACING IS TO BE USED FOR ROCK DITCH CHECKS ONLY.	

NOTES:
1. ROCK SHALL BE CLEAN AGGREGATE, D50 = 6".
2. PLACE ROCK IN SUCH A MANNER THAT WATER WILL FLOW OVER, NOT AROUND DITCH CHECK.
3. DO NOT USE ROCK DITCH CHECKS IN CLEAR ZONE.
4. AGGREGATE EXCAVATED ON SITE MAY BE USED AS AN ALTERNATE TO THE 6" ROCK, IF APPROVED BY THE ENGINEER.

ROCK DITCH CHECK

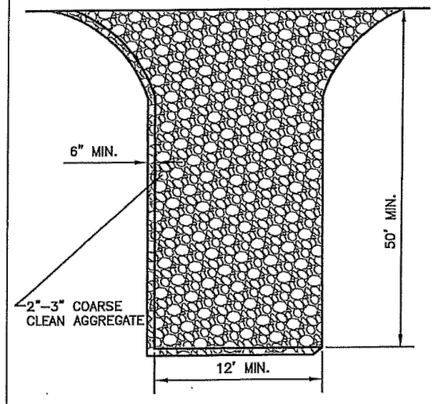


TOP VIEW



SIDE VIEW

SEDIMENT BASIN



NOTES:
1. GEOTEXTILE FABRIC MAY BE USED AS AN UNDERLINER IN WET CONDITIONS TO PROVIDE STABILITY.
2. PROVIDE SUFFICIENT WIDTH, LENGTH & TURNING RADIUS FOR CONSTRUCTION VEHICLES ENTERING & EXITING SITE.
3. MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF SEDIMENT ON TO STREETS AND KEEP THE ENTRANCE EFFECTIVE.
4. PROPERLY GRADE TO PREVENT RUNOFF FROM LEAVING CONSTRUCTION SITE THROUGH ENTRANCE/EXIT.
5. DO NOT ALLOW ROCK SPACES TO BE FILLED IN WITH DIRT – ROCKS MUST BE KEPT LOOSE.

CONSTRUCTION ENTRANCE

NO.	DATE:	REVISION	BY:	APP'D
3	May 2015	Updated Notes & Added Rock Ditch Check	DHS	JDH
2	March 2013	Repl. Sed. Trap & Added Land Slope Table	DHS	JDH
1	Dec. 2009	Modified Stake Depth & Spacing	DHS	JDH

DRAWN BY: DHS

APP'D BY: JDH

SHAWNEE COUNTY, KANSAS
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COUNTY ENGINEER
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(785) 233-7702

TOPEKA Public Works ENGINEERING
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Phone: (785) 368-3842 • Fax: (785) 368-3851

JEFFREY K. LAUN LICENSED PROFESSIONAL ENGINEER 15 7-31-2018

STANDARD DETAILS

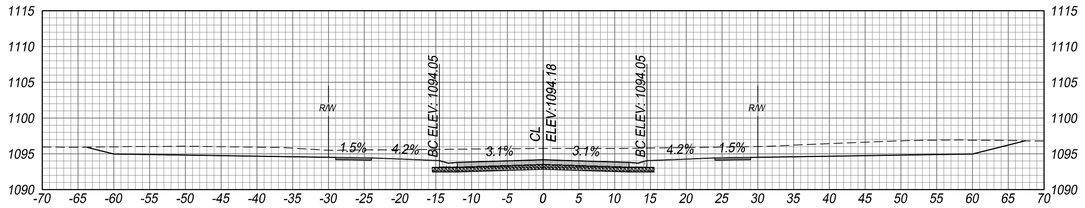
EROSION & POLLUTION CONTROL
SILT FENCE, SEDIMENT BASIN, CONSTRUCTION ENTRANCE, AND ROCK DITCH CHECK
(DT-021)

DATE: 5.25.2023

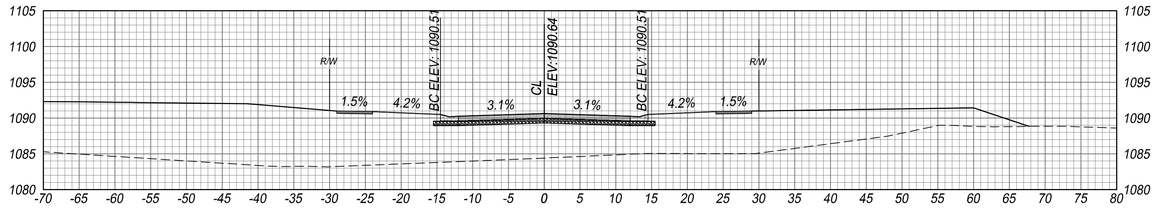
SHEET: 18 OF 23

PROJ.: S-601017.00

17+75.00



18+75.00



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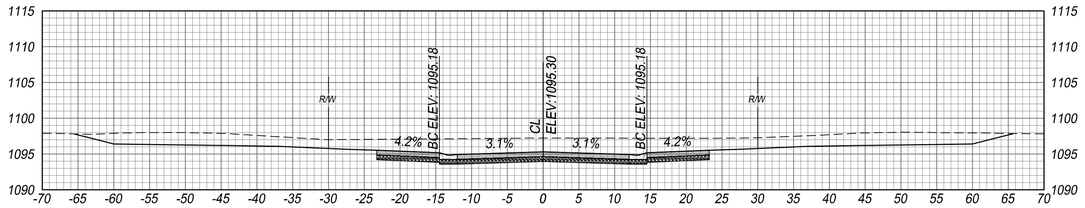

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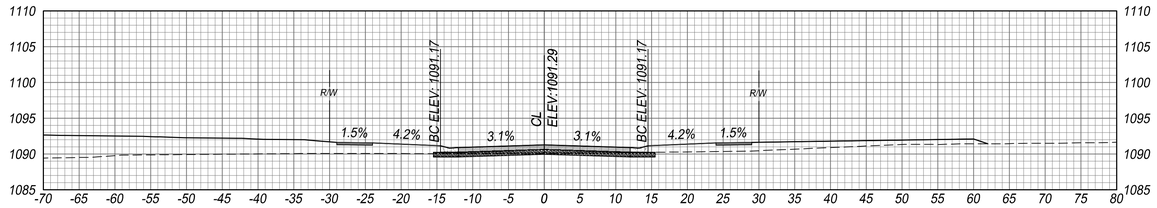

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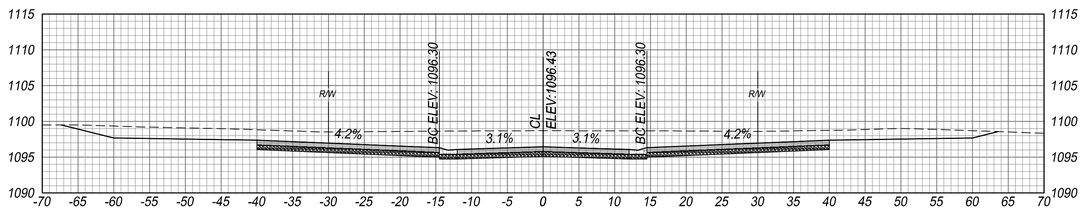

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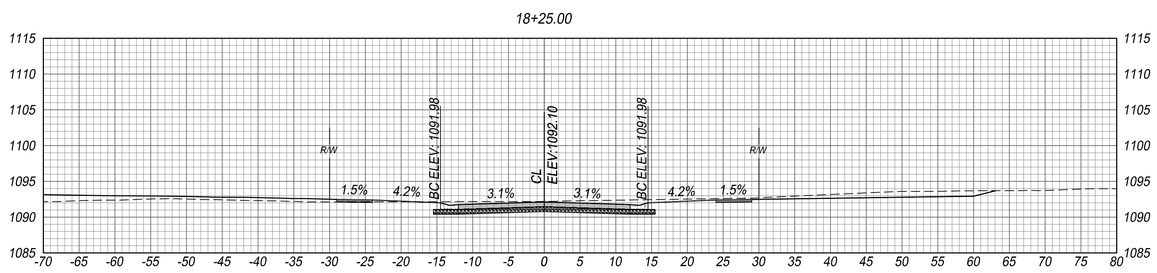

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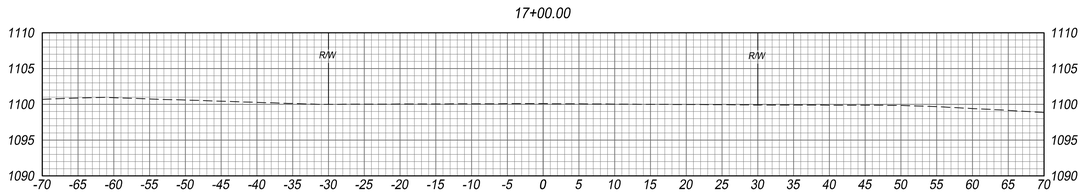

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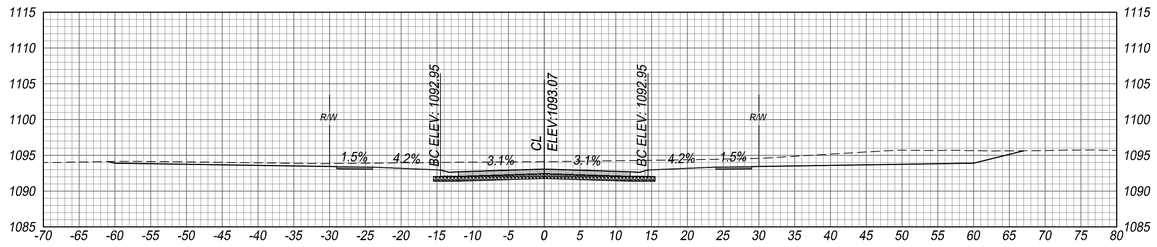

Scale: Horz.: 1"=10'
Vert.: 1"=10'

SBB PROJ. NO. 21-025

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: J. LAUBACH
APP'D BY: J. LAUBACH
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

SHAWNEE COUNTY, KANSAS
PUBLIC WORKS DEPARTMENT
1515 NW SALINE
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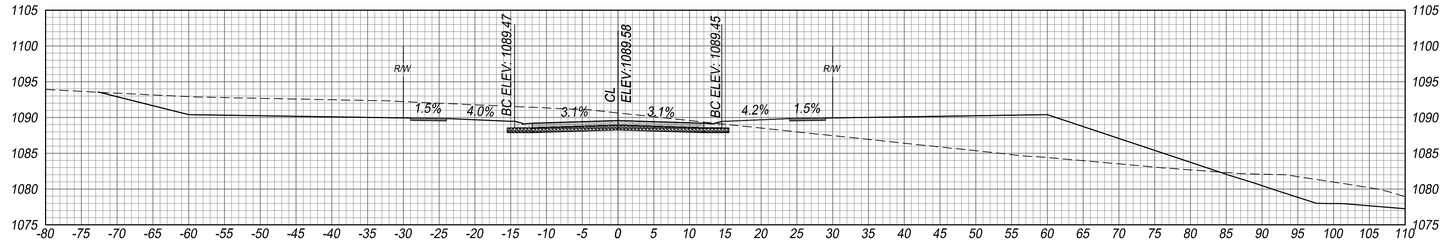
S-601017.00
TIMBER RIDGE SUBDIVISON
STREET & STORM SEWER

SW 55TH TERRACE
CROSS-SECTIONS

DATE: 5.25.2023
SHEET: 19 OF 23
PROJ.: S-601017.00

19+75.00



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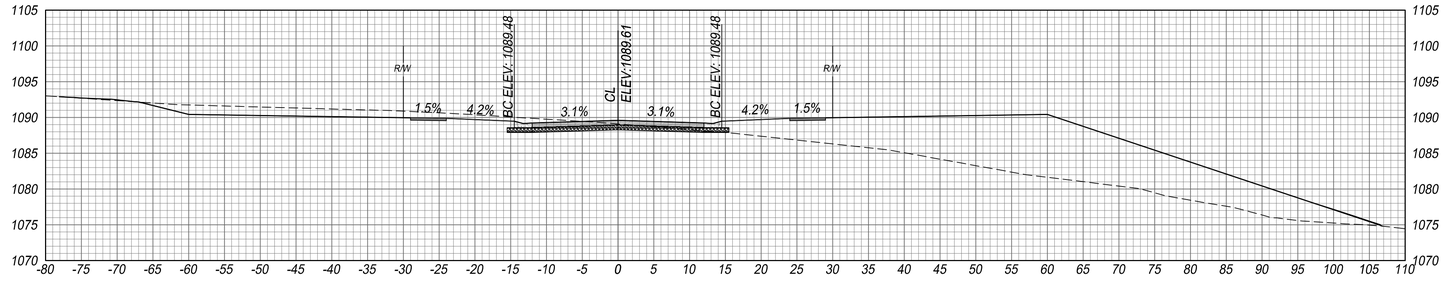

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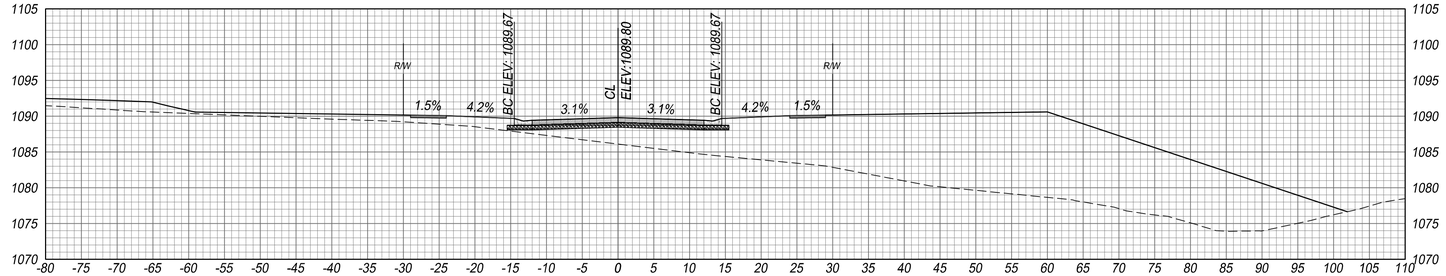

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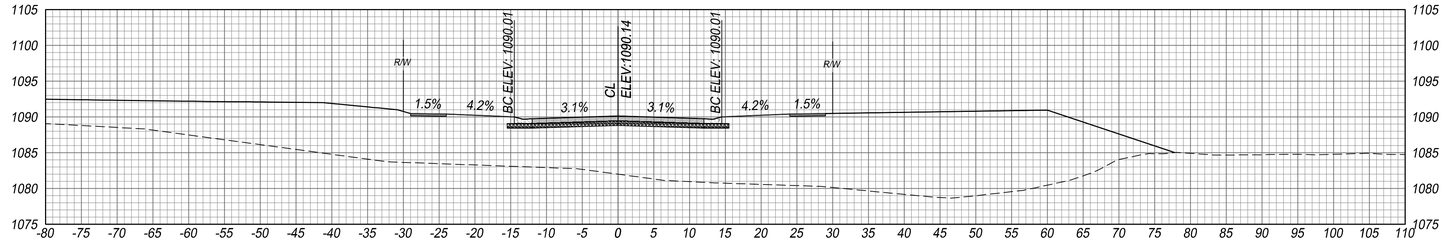

Scale: Horz.: 1"=10'
Vert.: 1"=10'

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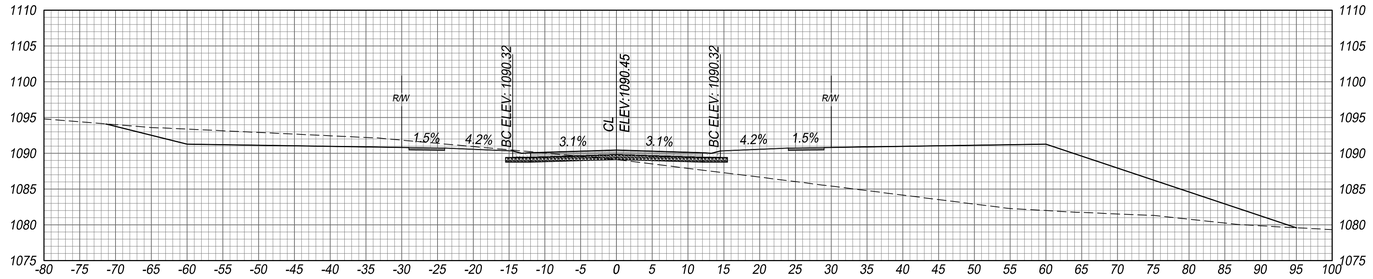
DATE: 5.25.2023
SHEET: 20 OF 23
PROJ.: S-601017.00

20+75.00



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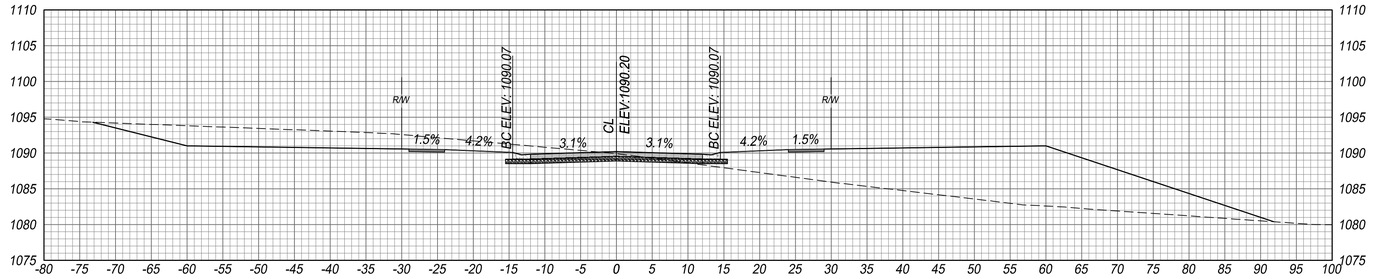

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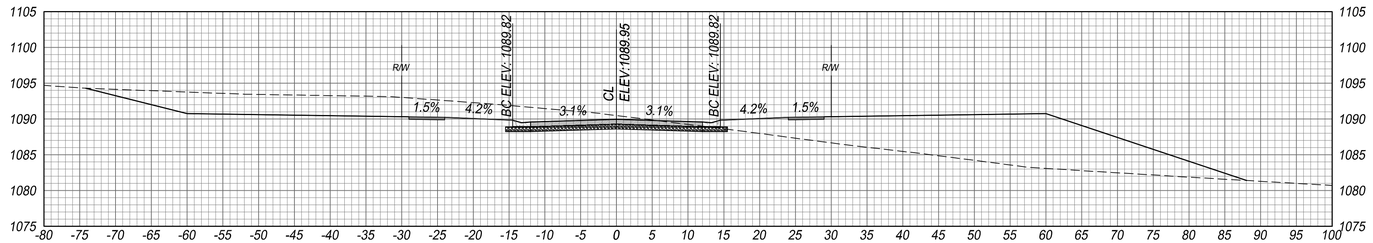

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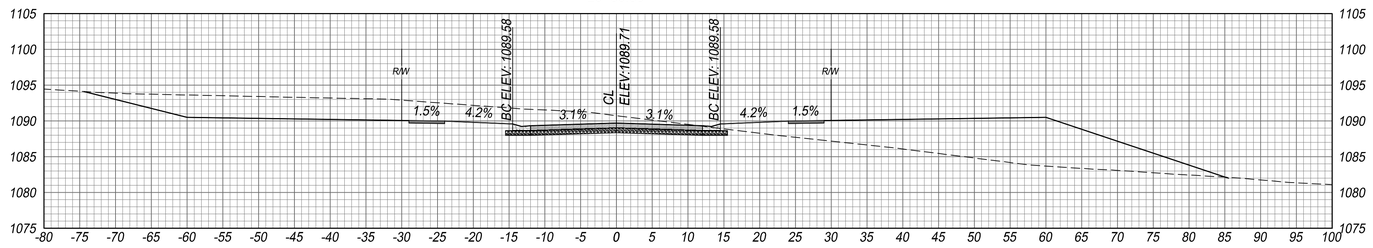

Scale: Horz.: 1"=10'
Vert.: 1"=10'

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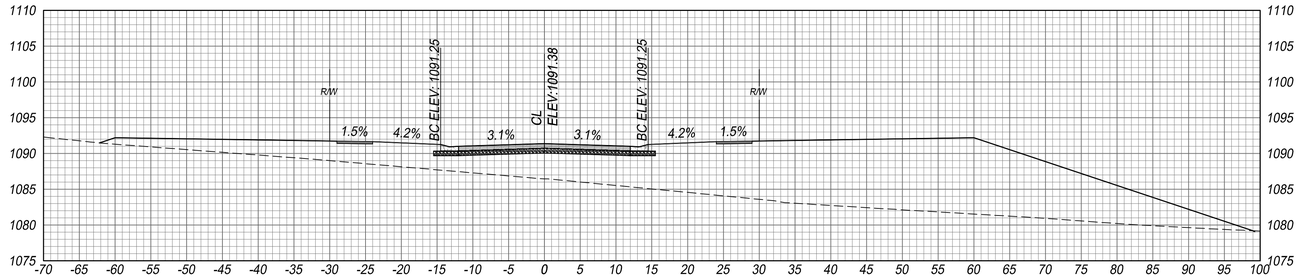
DATE: 5.25.2023
SHEET: 21 OF 23
PROJ.: S-601017.00

21+50.00



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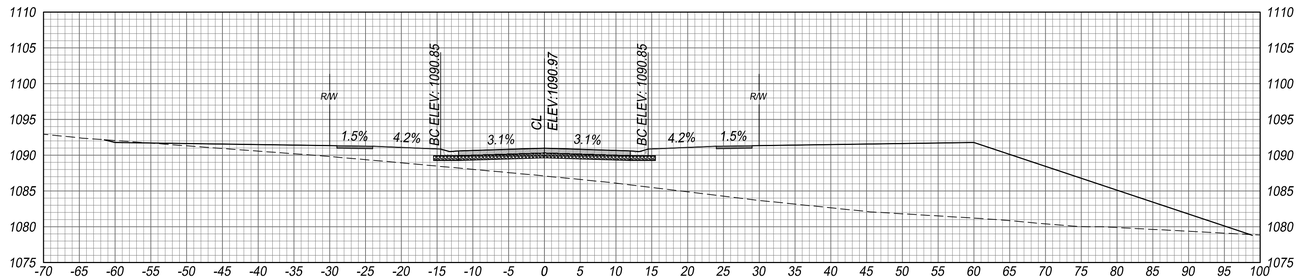

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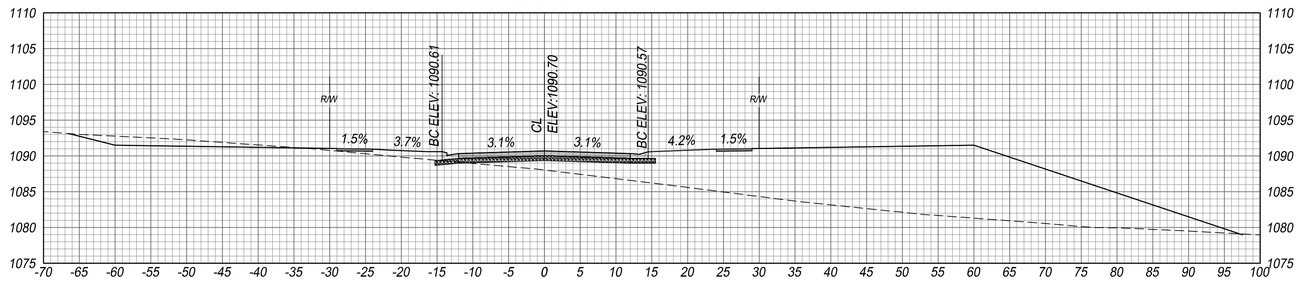

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Vert.: 1"=10'

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DRAWN BY: J. LAUBACH
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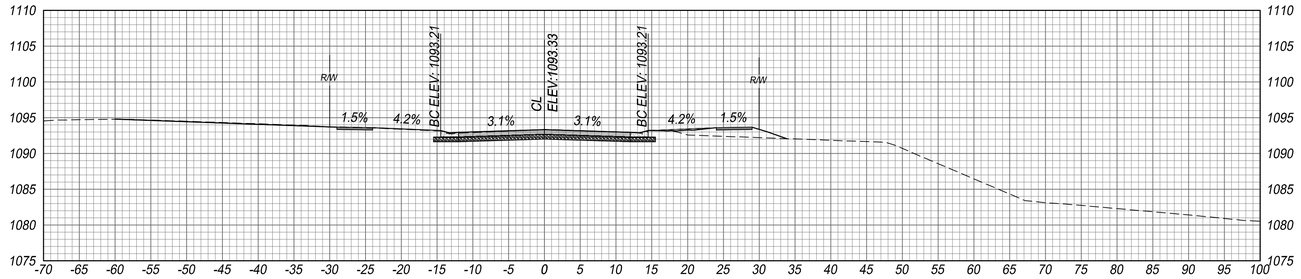
SW 55TH TERRACE
CROSS-SECTIONS

DATE: 5.25.2023
SHEET: 22 OF 23
PROJ.: S-601017.00

22+21.29



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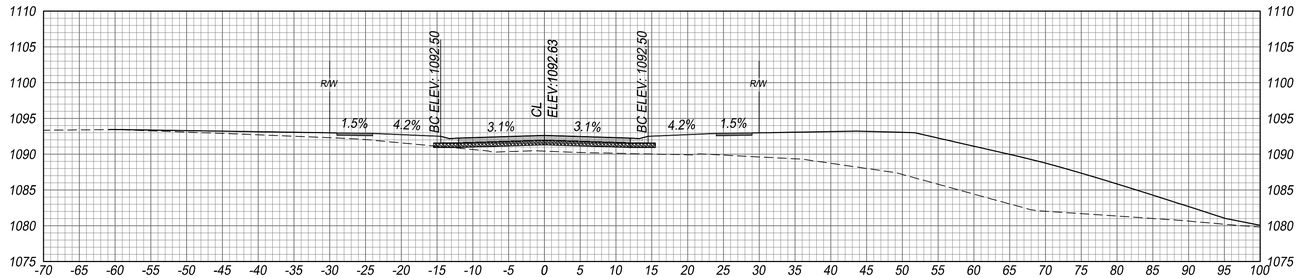
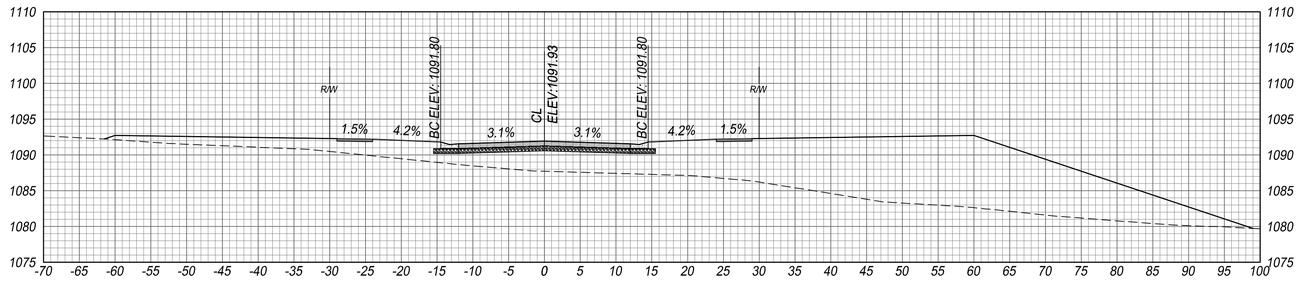


21+75.00



Scale: Horz.: 1"=10'
Vert.: 1"=10'

SBB PROJ. NO. 21-025

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DRAWN BY: J. LAUBACH
APP'D BY: J. LAUBACH
FIELD BOOKS: -
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SW 55TH TERRACE
CROSS-SECTIONS

DATE: 5.25.2023
SHEET: 23 OF 23
PROJ.: S-601017.00

BID FORM

TIMBER RIDGE SUBDIVISION (11 LOTS)

COUNTY PROJECT NO. S-601017.00

PROJECT QUANTITIES					
ITEM	DESCRIPTION	QTY	UNITS	UNIT PRICE	TOTAL
1	STREET GRADING - UNCLASSIFIED EXCAVATION / EMBANKMENT*	400	CY	$ -	$ -
2	8" ASPHALTIC CONCRETE PAVEMENT	1,332	SY	$ -	$ -
3	8" AB-3	1,745	SY	$ -	$ -
4	COMBINED CURB & GUTTER, TYPE IV	934	LF	$ -	$ -
5	6" ASPHALT (TEMPORARY TURNAROUND)	158	SY	$ -	$ -
6	SIGN (OM4-1)	4	EA	$ -	$ -
				TOTAL COST	$ -