

PHASE 2 GRADING PROJECT

CENTRAL PARK

HARRISBURG, SOUTH DAKOTA

CLIENT:

CITY OF HARRISBURG
301 EAST WILLOW STREET
HARRISBURG, SOUTH DAKOTA 57032
605.743.5872

MAYOR:
DERICK WENCK

CITY COUNCIL:
KEVIN MAXWELL
TOM ANEZ
CHRIS KINDT
DANNY TANK

WARD I
WARD II
WARD II

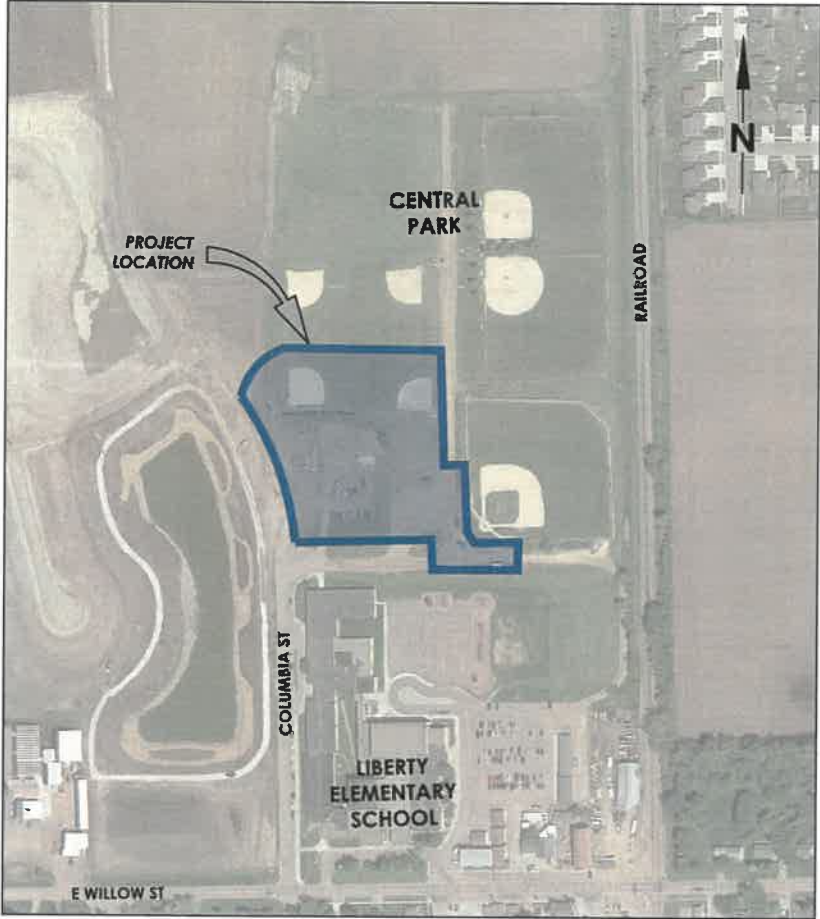
CITY STAFF:
ANDREW PIETRUS
JOE STONESIFER
MARY MCCLUNG
TOBY HUIZENGA
JASON THURSTON

CITY ADMINISTRATOR
CITY ENGINEER
FINANCE OFFICER
PUBLIC WORKS SUPERINTENDENT
PARKS SUPERVISOR

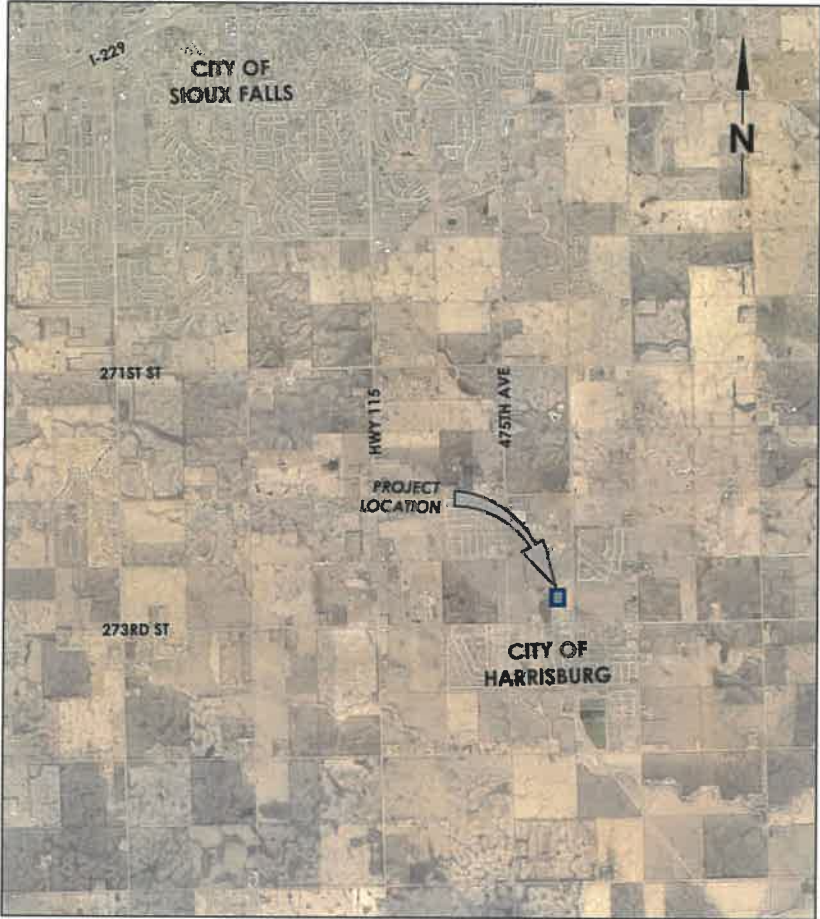


STOCKWELL NO. 20377

LOCATION MAP:



VICINITY MAP (LOCAL):



LEGEND OF LINE TYPES:

—	- CENTERLINE
- - -	- PROPERTY LINE
—	- SECTION LINE
- - -	- QUARTER LINE
—	- MAJOR CONTOUR
- - -	- MINOR CONTOUR
—	- WATER MAIN
- - -	- STORM SEWER
- - -	- SANITARY SEWER
- - -	- SANITARY SEWER FORCE MAIN
- - -	- COMBINED SEWER
- - -	- GAS MAIN
- - -	- UNDERGROUND POWER
- - -	- OVERHEAD POWER
- - -	- FIBER OPTIC
- - -	- CONC. CURB & GUTTER
- - -	- APPROACH
- - -	- WOOD FENCE
- - -	- CHAIN LINK FENCE
- - -	- BARBED WIRE FENCE

LEGEND OF SYMBOLS:

	- DECIDUOUS TREE		- UTILITY CLOSURE
	- CONIFEROUS TREE		- WELL
	- TREE STUMP		- WATERMAIN SHUTOFF
	- SHRUB		- FIRE HYDRANT
	- SIGN		- WATERMAIN VALVE & BOX
	- PARKING METER POST		- WATERMAIN CAP
	- MAIL BOX		- UTILITY CLEANOUT
	- FLAGPOLE		- UTILITY RISER
	- SPRINKLER HEAD		- UTILITY METER
	- GAS VALVE		- STORM SEWER MANHOLE
	- TRAFFIC SIGNAL LIGHT		- SANITARY MANHOLE
	- POWER POLE		- WATER MANHOLE
	- GUY WIRE		- ELECTRIC MANHOLE
	- STREET LIGHT		- TELEPHONE MANHOLE
	- FLOOD LIGHT		- FIBER OPTIC MANHOLE
	- HISTORICAL STREET LIGHT		

SHEET INDEX:

SHEET #	SHEET NAME
SECTION A A-1.00	TITLE SHEET & LEGEND
SECTION B B-1.00	ESTIMATE OF QUANTITIES
SECTION D D-1.00 THRU D-2.00 THRU	D-1.02 D-2.05 GENERAL REQUIREMENTS SECTION NOTES
SECTION G G-1.00 THRU G-2.00 THRU G-3.00 THRU	G-1.02 G-2.01 G-3.04 SWPPP NOTES EROSION CONTROL PLAN EROSION CONTROL DETAILS
SECTION H H-1.00	EXISTING CONDITIONS & REMOVALS
SECTION I I-1.00	TRAFFIC CONTROL PLAN
SECTION J J-1.00	GRADING PLAN
SECTION L L-1.00	UTILITIES PLAN
SECTION M M-1.00 THRU M-1.01 THRU	M-1.01 PIPE SECTIONS
SECTION N N-1.00 THRU N-1.12 THRU	N-1.12 DETAILS

CONSTRUCTION PLANS



I, David Christian Locke, hereby certify that these plans were prepared by me, or under my direct supervision, except where indicated as prepared by other design professionals of record, and that I am a duly registered landscape architect under the laws of the State of South Dakota.

David C. Locke, P.L.A. S.D. No. 11267 Date 6/9/21

DRAWINGS INDICATE GENERAL UTILITY LOCATIONS ONLY. NEITHER THE CORRECTNESS OR COMPLETENESS OF LOCATIONS ARE GUARANTEED.

PRIOR TO EXCAVATION CONTACT:
SOUTH DAKOTA ONE CALL (1-800-781-7474)

CONSULTANT LIST:

PLANS ISSUED BY:
CIVIL ENGINEER / SURVEYOR



STOCKWELL ENGINEERS, INC.
801 N. PHILLIPS AVE., SUITE 100
SIOUX FALLS, SD 57104
PH: 605.338.6668
FAX: 605.338.8750

UTILITY PROVIDER LIST:

CITY OF HARRISBURG
PUBLIC WORKS
TOBY HUIZENGA
PHONE: (605) 767-0075

XCEL ENERGY
DERRECK MARTIN
CELL: (605) 339-8325

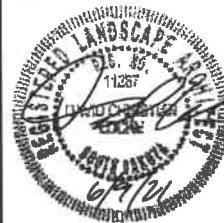
Contract documents include addendum 1 as recorded. Such amendments have been noted in these plans by the Engineer. It shall be understood that notes are provided only as an aid and convenience to the user and shall not be considered as supplementary or superseding the Contract Documents. The user shall hold harmless the Owner and the Engineer from damages resulting from the use of the engineer's notes without verification or substantiating information from the Contract Documents as originally issued or subsequently and officially modified.

Item No.	Item Description	Unit	QTY
1	Mobilization	LS	1
2	Traffic Control	LS	1
3	Clearing	LS	1
4	Clear and Grub Tree	Each	16
5	Incidental Work	LS	1
6	Manhole Construction Plate Marker	Each	5
7	Concrete Washout Facility	Each	1
8	Temporary Vehicle Tracking Control	Each	2
9	Erosion Control Blanket	SqYd	2480
10	Silt Fence	Ft	1225
11	Inlet Protection	Each	9
12	12" Sediment Control Wattle	Ft	780
13	Permanent Seed Mix #1	Lb	2250
14	Fertilizer	Lb	1345
15	Mulching	Ton	9.0
16	Salvage Topsoil	CuYd	2474
17	Placing Salvaged Topsoil	CuYd	2373
18	Placing Contractor Furnished Topsoil	CuYd	1187
19	Place Salvaged Crushed Rock	Ton	290
20	Unclassified Excavation	CuYd	6930
21	Demo Restroom Building	LS	1
22	Remove and Salvage Rocks	LS	1
23	Remove and Salvage Power Pole Barrier	LS	1
24	Remove Fence Backstops	Each	2
25	Remove Asphalt Concrete Pavement	SY	2103
26	Remove & Salvage Gravel Surfacing	SY	2354
27	Remove & Salvage Ag Lime Surfacing	SY	1512
28	Remove & Salvage Crushed Rock	SY	592
29	18" RCP, Class 3 Furnish	Ft	90
30	18" RCP, Class 3 Install	Ft	90
31	15" SS, Furnish	Ft	290
32	15" SS, Install	Ft	290
33	15" Perforated SDR 35 PVC SS, Furnish	Ft	114
34	15" Perforated SDR 35 PVC SS, Install	Ft	114
35	Class M6 Concrete	CuYd	9.19
36	Reinforcing Steel	Lb	508
37	Junction Box Frame & Cover	Each	1
38	Catch Basin Frame & Grate	Each	3
39	Adjust Wet Well	Each	1
40	Remove Sanitary Sewer Pipe	Ft	113
41	6" Sanitary Sewer Service	Ft	260
42	8" Sanitary Sewer Pipe 8' to 10' Deep	Ft	235

Item No.	Item Description	Unit	QTY
43	Sanitary Sewer Tracer Wire Terminal Box	Each	1
43	8" Sanitary Sewer Pipe 10' to 12' Deep	Ft	165
44	8" Sanitary Sewer Pipe Bedding Material	Ft	400
45	Sanitary Sewer Tracer Wire	Ft	660
46	Sanitary Sewer Tracer Wire Terminal Box	Each	3
47	48" Sanitary Sewer Manhole 6'-8' Deep	Each	1
48	48" Sanitary Sewer Manhole 8'-10' Deep	Each	1
49	6" Boots for Manhole	Each	2
50	8" Boots for Manhole	Each	1
51	Manhole Frame with Bolt Down Cover Plate	Each	2
52	Manhole Exfiltration/Vacuum Test	Each	2
53	Sanitary Exfiltration Test	Ft	660
54	PVC Sewer Pipe Deflection Test	Ft	660
55	6" Sewer Cap/Plug	Each	1
56	2" Water Service Piping	Ft	295
57	2" Water Service Bedding Material	Ft	295
58	4" PVC Irrigation Pipe	Ft	400
59	6"x2" Water Service Tap	Each	2
60	2" Water Service Curb Stop	Each	4
61	2" Water Service Cap/Plug	Each	2
62	Water Service Disconnect	Each	4
63	Water Service Reconnect	Each	3
64	Valve Box Adjustment	Each	2
65	Place Salvaged Gravel	Ton	10
66	Asphalt Concrete for Patching	Ton	6



CENTRAL PARK
PHASE 2 GRADING PROJECT
HARRISBURG, SOUTH DAKOTA
SEI Project #: 20377



Plot Time: 6/3/2021 4:09 PM

**CONSTRUCTION
PLANS**

**ESTIMATE OF
QUANTITY**

B-1.00

1.0 GENERAL REQUIREMENTS

1.1 PROJECT INFORMATION

1.1.1 The Owner of the project is the City of Harrisburg. The City of Harrisburg has retained Stockwell Engineer's to act as the Owner's representative. Contact information for each is provided below

City of Harrisburg 301 E Willow Street Harrisburg, SD 57032 (605)743-5872	Stockwell Engineers 801 North Main Ave, Suite 100 Sioux Falls, SD 57104 (605)338-6668
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1.2 DESCRIPTION OF WORK

This project generally consists of site grading and restoration of the proposed site. Utility work generally includes construction of storm sewer and inlets, sanitary sewer installation and water service installation.

1.3 SPECIFICATION AND DRAWING CONVENTIONS

1.3.1 The specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

1.3.2 The General Notes of this section apply to the Work of all Sections in the Specifications.

1.4 SPECIFICATIONS TO BE USED

1.4.1 The Project Manual, together with the most current edition of the City of Harrisburg Engineering Design Standards and the South Dakota Department of Transportation Standard Specifications for Roads and Bridges with Supplemental Specifications and Errata and required provisions, are hereby made a part of these specifications in its entirety unless otherwise revised, deleted, or supplemented herein.

1.4.2 The South Dakota Department of Transportation Standard Specifications for Roads and Bridges with Supplemental Specifications and Errata can be downloaded from the SDDOT's website at <http://www.sddot.com/>.

1.5 ORDER OF PRECEDENCE

1.5.1 If conflicts arise, the order of precedence of the contract documents shall be as follows: Drawings over Technical Specifications over Special Provisions over Supplemental Specifications over General Conditions over South Dakota Department of Transportation Supplemental Specifications and Errata over South Dakota Department of Transportation Standard Specifications for Roads and Bridges.

1.6 LOCAL ORDINANCES

1.6.1 The Contractor shall abide by all local, state and federal ordinances or policies.

1.7 TIME PROVISIONS

1.7.1 Time provisions shall be as specified under Article 4 of the Agreement between Owner and Contractor.

1.8 SEQUENCE OF OPERATIONS

1.8.1 The following Sequence of Operation shall be followed by the Contractor unless an alternate Sequence of Operations is submitted in writing and approved by the Engineer. The bidder shall commence work under this contract after all start date requirements are fulfilled and complete the work within the time provisions

specified. The Contractor shall notify the Engineer as start date requirements are approaching. After the Contractor has, in the opinion of the Engineer, satisfactorily completed all start date requirements in accordance with the contract documents, approval to commence work shall be given.

1. Construction may begin after the notice to proceed has been issued and preconstruction meeting has been held, and in accordance with Article 4 of the Agreement between the Owner and the Contractor.

1.9 FACILITIES AND UTILITY WORK BY OTHERS

1.9.1 All facilities shall be verified by the Contractor prior to starting work. Any time existing facilities impede the progress of work, the Contractor shall immediately notify the Engineer.

1.9.2 All utilities, whether privately or publicly owned, shall be moved, relocated, and/or replaced as necessary, by the respective utility company or companies except as noted in the plans. These modifications shall take place in advance of construction when applicable or when advised by the Engineer. No payment shall be made to the Contractor unless specified in the contract documents.

1.9.3 The Contractor shall safeguard all utilities and coordinate his efforts to coincide with utility work by others to minimize inconvenience to the public and utility companies. When pipe utility installation crosses existing utilities, the Contractor shall be responsible for supporting the utilities in a manner that is acceptable to the owner of the utility. Any damage caused to the utilities due to Contractor carelessness shall be repaired at the Contractor's expense to the satisfaction of the utility owner.

1.9.4 Abandoned utilities (gas lines, telephone lines, etc.) encountered during construction shall be removed and disposed of by the Contractor. Costs associated with this work shall be incidental to the various bid items associated with work adjacent to the abandoned utility.

1.9.5 The Contractor shall be responsible for the coordination of all work associated with the disturbance, removal, or replacement of unidentified metallic natural gas mains or services when encountered. The Contractor shall, in advance and prior to proceeding with the work, coordinate with the City of Harrisburg and all utility companies related to the associated work.

1.9.6 Existing utility locations shown on drawings are approximate. There is no guarantee that the utilities shown include all such utilities or that the locations indicated are exact. The Contractor shall contact South Dakota One Call system, utility companies, and the City of Harrisburg to verify locations of all existing utilities prior to excavation.

1.9.7 The Contractor shall be responsible for notifying South Dakota One Call 1-800-781-7474 to have utilities field located.

1.9.8 The following utility companies are known to have facilities on the project:

City of Harrisburg Toby Huizenga (605) 767-0075	Xcel Energy Derreck Martin (605) 339-8325
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1.9.9 The Contractor shall cooperate with and coordinate his efforts to work with the utility companies and their Contractors. Each bidder shall be responsible prior to bid letting, for determining the effects of utility work on the project work scope and schedule and shall account for all such effects in his bid. No consideration will be given to the Contractor after the bid letting due to utility work done by others.

1.10 ACCESS TO SITE

1.10.1 The Project Site shall be within the right-of-way and park areas as illustrated in the plans. Contractor shall have limited use of Project Site for construction operations as indicated in the construction documents. Driveways and entrances serving premises shall be kept clear and available to Owner, Owner's employees, and emergency vehicles at all times. Material storage and vehicle and equipment traffic shall be limited to the construction limits. Schedule deliveries to minimize space and time requirements for storage of material and equipment on-site.

1.10.2 All paved streets and parking lots adjacent to the project are to be cleaned at the end of each working day or when directed by the Engineer.

1.10.3 It shall be the responsibility of the Contractor to coordinate with the property owners relating to access to their property and any subsequent damages.

1.11 WORK RESTRICTIONS

1.11.1 Contractor shall comply with limitations on use of public streets and with other requirements of authorities having jurisdiction. Onsite work hours shall be limited to the following:

1. Weekday Hours: dawn to dusk
2. Saturday Hours: dawn to dusk
3. Sunday Hours: Prohibited unless approved by the Engineer
4. Holidays: Prohibited unless approved by the Engineer
5. Utility Shutdown Hours: 8:00 am to 5:00 pm

1.11.2 Utility Interruptions: Do not interrupt utilities unless the Work necessitates. Notify Engineer in writing two days in advance of proposed utility interruptions. Obtain Engineer's written permission before proceeding.

1.11.3 Disruptive Operations: Coordinate operations that may result in high levels of noise, vibration, odors or other disruption with Engineer. Notify Engineer in writing not less than two days in advance of proposed disruptive operations. Obtain Engineer's written permission before proceeding.

1.12 UNIT PRICES

1.12.1 Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit. Measurement and payment of items are described throughout the construction documents. Engineer reserves the right to reject Contractor's measurement of work-in-place and measure the Work independently.

1.13 SUBSTITUTIONS

1.13.1 Refer to the general conditions for substitution procedures.

1.14 CONTRACT MODIFICATION AND PAYMENT

1.14.1 Refer to the general conditions for contract modification and payment procedures

1.15 LIST OF SUBCONTRACTORS AND SUPPLIERS

1.15.1 Prior to the preconstruction meeting, the Contractor shall submit to the Engineer a summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment to be fabricated. The list shall include the following information:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products
2. Description of related Work covered by subcontract
3. Drawing number and detail references, as appropriate, covered by subcontract
4. Names of key personnel who will be involved with the Work.

1.16 LIST OF CONTACTS

PRIOR TO THE PRE-CONSTRUCTION MEETING, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A LIST OF KEY PERSONNEL. THE LIST SHALL INCLUDE SUPERINTENDENT AND OTHER PERSONNEL IN ATTENDANCE AT PROJECT SITE. IDENTIFY INDIVIDUALS ALONG WITH THEIR DUTIES AND RESPONSIBILITIES. INCLUDE ADDRESSES, CELLULAR TELEPHONE NUMBERS AND E-MAIL ADDRESSES.

1.17 PROGRESS SCHEDULE

1.17.1 In accordance with the General Conditions and prior to scheduling the pre-construction meeting, the Contractor shall submit a preliminary progress schedule to the Engineer for approval.

1.17.2 General Format: Develop schedule in bar and network format. Span schedule from date established for the Notice to Proceed to date of Readiness for Final Payment. Illustrate first workday of each week with a continuous vertical line. Block out and clearly label holidays. Illustrate each significant construction activity separately and indicate each activity's estimated start date, completion date,



STOCKWELL ENGINEERS, INC.
801 N. PHILLIPS AVE., SUITE 100
SIOUX FALLS, SD 57104
PH: 605.338.6668
FAX: 605.338.8750



CENTRAL PARK
PHASE 2 GRADING PROJECT
HARRISBURG, SOUTH DAKOTA
SET Project #: 20377



Plot Time: 4/3/2021 4:00 PM

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time duration, sequence requirements, and relationship to other activities. Indicate float or the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.

1.17.3 Significant Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, Notice to Proceed, Commencement Deadlines, Interim Completion dates, Substantial Completion, and Readiness for Final Payment.

1.17.4 Include a narrative that lists the Contractor's anticipated work hours. Describe the days of the week when operations are expected to occur and the associated hours for each day. List holidays and other anticipated days when work will not occur. Provide the estimated number of adverse weather days for each month.

1.17.5 After the Progress Schedule is approved, a preconstruction meeting can be scheduled. At monthly intervals, update schedule to reflect actual construction progress and activities. Issue revised schedule one week before each regularly scheduled coordination meeting. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations. As the Work progresses, indicate final completion percentage for each activity. Failure to submit schedules will result in the Owner withholding payment until the updated schedule is submitted.

1.17.6 When periodic update indicates the Work is behind the current approved schedule, submit a report indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which the schedule will be regained.

1.18 SCHEDULE OF SUBMITTALS

1.18.1 Prior to the pre-construction meeting, deliver to the Engineer a Submittal Schedule as required in the General Conditions. The Schedule of Submittals shall be prepared in coordination with the Contractor's Progress Schedule. Include time required for review, ordering, manufacturing, fabrication and deliver when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Engineer and additional time for handling and reviewing submittals required by those corrections.

1.19 GENERAL COORDINATION PROCEDURES

1.19.1 Coordination: Contractor shall coordinate operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work, including those that depend on each other for proper installation, connection, and operation. Make adequate provisions to accommodate items scheduled for later installation.

1.19.2 Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to the following:

- 1. Preparation of Contractor's Progress Schedule.
- 2. Installation and removal of temporary facilities and controls.
- 3. Delivery and processing of submittals.
- 4. Progress meetings.
- 5. Project closeout activities.

1.20 REQUEST FOR INFORMATION (RFI):

1.20.1 General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors. Include a detailed, legible description of item needing information or interpretation and the following:

- 1. Project name.
- 2. Project number.
- 3. Date.
- 4. Name of Contractor.
- 5. Name of Engineer.
- 6. RFI number, numbered sequentially.

- 7. RFI subject.
- 8. Specification Section number and title and related paragraphs, as appropriate.
- 9. Drawing number and detail references, as appropriate.
- 10. Field dimensions and conditions, as appropriate.
- 11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
- 12. Contractor's signature.
- 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

1.20.2 Engineer will review each RFI, determine action required, and respond. Allow seven working days for Engineer's response for each RFI. The following Contractor generated RFIs will be returned without action:

- 1. Requests for approval of submittals.
- 2. Requests for approval of substitutions.
- 3. Requests for approval of Contractor's means and methods.
- 4. Requests for coordination information already indicated in the Contract Documents.
- 5. Requests for adjustments in the Contract Time or the Contract Sum.
- 6. Requests for interpretation of Architect's actions on submittals.
- 7. Incomplete RFIs or inaccurately prepared RFIs.

1.20.3 Engineer's action may include a request for additional information, in which case Engineer's time for response will date from time of receipt by Engineer of additional information. Engineer's action of RFIs that may result in a change to the Contract Time or the Contract Price may require a Change Order as specified in the General Conditions of the Contract.

1.21 DIGITAL DATA FILES

1.21.1 Digital data files of Engineer's CAD drawings will be provided by Engineer for Contractor's use during construction. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project record Drawings. Engineer makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings. Contractor and those subcontractors granted access by Contractor, shall execute a data licensing agreement in form acceptable to Engineer.

1.22 PROJECT MEETINGS

1.22.1 General: The Contractor shall schedule and conduct meetings and conferences at Project site unless otherwise indicated. Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Engineer of scheduled meeting dates and times a minimum of 10 working days prior to meeting.

1.22.2 Coordination Meetings: Contractor shall conduct Project coordination meetings at biweekly intervals. Project coordination meetings are in addition to specific meetings held for other purposes. Coordination meetings shall be held at a time and location approved by the Engineer. Subcontractors, private utility owners, the general public and those others interested in the current progress or performance of future activities shall be invited to attend. The Contractor will provide a summary of the project schedule and will answer questions. The public will then be dismissed, and the remaining attendees will discuss construction coordination and other items as needed.

1.23 SUBMITTALS

1.23.1 Submittal procedures are specified in the General Conditions. Deliver submittals in form acceptable to Engineer. Include a transmittal or cover letter listing the following:

- 1. Name of the Project
- 2. Date transmitted
- 3. Name of the Engineer
- 4. Name of the Contractor
- 5. Name of firm or entity that prepared the submittal
- 6. Submittal purpose and description
- 7. References to specification section with paragraph number and generic name cited.
- 8. Drawing number and detail references, as appropriate

- 9. Location(s) where product is to be installed, as appropriate
- 10. Other necessary identification
- 11. Remarks
- 12. Identify options requiring selection by Engineer
- 13. Signature of transmitter

1.23.2 On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Engineer on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet. Site references to specification section, drawing number or detail with paragraph number and generic name.

1.23.3 Prepare and deliver submittals required by individual specification sections. A non-comprehensive list is provided below.

- 1. Progress Schedule
- 2. Schedule of Values
- 3. Schedule of Submittals
- 4. List of Subcontractors and Suppliers
- 5. Contact List
- 6. Materials Certifications
- 7. Shop Drawings
- 8. DENR Contractor Certification Form (2110 LD)

1.23.4 Incomplete submittals will be rejected and will be returned for resubmittal without review. Engineer will discard submittals received from sources other than Contractor.

1.24 ACCEPTANCE TESTING

1.24.1 The Owner will be responsible for acceptance testing. Any failing tests will be paid by the Contractor by deducting the cost from the pay request.

1.25 REFERENCES

1.25.1 Industry Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference. Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.25.2 Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

1.26 TEMPORARY FACILITIES

1.26.1 Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work. Locate facilities to limit site disturbance.

1.26.2 Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

1.26.3 Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities. Remove snow and ice as required to minimize accumulations.



1.27 SECURITY AND PROTECTION OF FACILITIES

1.27.1 Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

1.27.2 Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1.27.3 Temporary Erosion and Sediment Control: Comply with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent, and requirements specified in Section G.

1.27.4 Storm Water Control: Comply with requirements of authorities having jurisdiction. Be aware of existing drainage patterns and facilities. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains. Repair damage caused by improper temporary drainage facilities at Contractor's expense.

1.28 PRODUCT DELIVERY, STORAGE AND HANDLING

1.28.1 Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

1.28.2 Delivery and Handling: Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

1.28.3 Storage: Store products to allow for inspection and measurement of quantity or counting of units. Store materials in a manner that will not endanger Project structure. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage. Protect stored products from damage and liquids from freezing.

1.29 PRODUCT WARRANTIES

1.29.1 Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1.30 EXAMINATION AND PREPARATION

1.30.1 Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; and other utilities. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B.Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations. Proceed with installation only after unsatisfactory conditions have

been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

1.30.2 Existing Utility Information: Furnish information to local utility owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

1.30.3 Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.30.4 Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

1.30.5 Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Engineer promptly.

1.30.6 Construction Layout: Notify the Engineer to lay out the Work using accepted surveying practices. Engineer's Surveyor shall establish benchmarks and control points for Contractor to set lines and levels. Preserve and protect benchmarks and control points during construction operations. Do not change or relocate benchmarks or control points without prior written approval of Engineer. Report lost or destroyed benchmarks or control points promptly. Contractor shall verify the accuracy of benchmarks set by the Engineer's Surveyor and notify the Engineer immediately if errors are discovered. Proceed with work only after errors are corrected. Proceeding with the Work indicates Contractor's acceptance of Surveyor's benchmark.

1.30.7 Lines and Levels: Contractor shall lay out and establish control lines and levels for site improvements. Transfer survey markings and elevations from benchmarks as necessary. Always level from two or more locations.

1.31 INSTALLATION

1.31.1 General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated. Make vertical Work plumb and make horizontal Work level. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

1.31.2 Tools and Equipment: Where possible, select tools or equipment that minimize production of excessive noise levels.

1.32 CUTTING AND PATCHING

1.32.1 General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

1.32.2 Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

1.32.3 Temporary Support: Provide temporary support of work to be cut.

1.32.4 Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

1.32.5 Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

1.32.6 Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use. Cut or drill from the exposed or finished side into concealed surfaces. For concrete and masonry, cut using a cutting machine, such as an abrasive saw or a diamond-core drill. For excavating and backfilling, comply with requirements in applicable Sections where required by cutting and patching operations. Proceed with patching after construction operations requiring cutting are complete.

1.32.7 Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable. Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing. Clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

1.32.8 Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

1.33 PROGRESS CLEANING

1.33.1 General: Clean Project site and work areas daily. Enforce requirements strictly. Dispose of materials lawfully. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations. Use containers intended for holding waste materials of type to be stored. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

1.33.2 Site: Maintain Project site free of waste materials and debris. Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1.33.3 Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

1.33.4 Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

1.33.5 Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

1.33.6 Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements as specified.

1.33.7 During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

1.33.8 Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

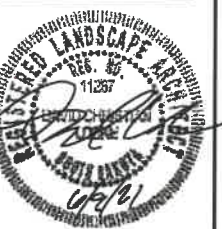
1.33.9 Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.



STOCKWELL ENGINEERS, INC.
801 N. PHILLIPS AVE., SUITE 100
SIOUX FALLS, SD 57104
PH: 605.338.6668
FAX: 605.338.8750



CENTRAL PARK
PHASE 2 GRADING PROJECT
HARRISBURG, SOUTH DAKOTA
SEI Project #: 20377



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CONSTRUCTION
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1.34 PROTECTION OF INSTALLED CONSTRUCTION

1.34.1 Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

1.34.2 Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

1.34.3 Comply with manufacturer's written instructions for temperature and relative humidity.

1.35 WASTE MANAGEMENT AND DISPOSAL

1.35.1 Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract. Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.

1.35.2 Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled. Comply with requirements for Temporary Facilities and Controls for controlling dust and dirt, environmental protection, and noise control.

1.35.3 Disposal of Waste: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas. Burning waste materials on Site is not permitted.

1.36 CLOSEOUT PROCEDURES

1.36.1 Procedures for Substantial Completion are specified in the General Conditions and further described in the paragraphs that follow.

1.36.2 Final Cleaning: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average maintenance program. Comply with manufacturer's written instructions.

1.36.3 Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

- 1. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
- 2. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
- 3. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
- 4. Remove tools, construction equipment, machinery, and surplus material from Project site.
- 5. Leave Project clean and ready for occupancy.

1.36.4 Submit and complete the following items before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

- 1. Submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- 2. Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
- 3. Submit closeout submittals specified in other Sections, including project record documents, operation and maintenance manuals.
- 4. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- 5. Advise Owner of pending insurance changeover requirements.

- 6. Advise Owner of changeover in utility services.
- 7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
- 8. Complete final cleaning requirements.

1.36.5 Inspection: Submit a written request for inspection to determine Substantial Completion in conformance with the General Conditions.

1.36.6 Complete repair and restoration operations identified in Engineer's Punch List. Repair, or remove and replace, defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1.36.7 Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.



3.5 PAYMENT

3.5.1 Payment for all work and materials associated with traffic control shall be incidental to the contract lump sum price for "Traffic Control."

Installation, maintenance, relocation, and removal of Type I and II barricades, cones, vertical panels, drums, barricade warning lights, watchmen, tubular markers signs and flags shall be included in the lump sum price bid for "Traffic Control".

4.0 EROSION CONTROL NOTES

4.1 GENERAL

4.1.1 The contractor shall be responsible for preventing erosion and containing all construction related debris, sediments, or containments on site. Protective measures are illustrated in the technical drawings but are not meant to be all inclusive. The contractor shall monitor their site and notify the Engineer of any failures to contain construction related pollutants.

4.1.2 The Contractor is responsible for maintaining and repairing all erosion control measures until a Notice of Termination is filed with the DENR. No payment will be made to the Contractor for maintaining or repairing those items unless otherwise specified. Erosion Control measures included in this plan are listed below.

4.2 VEHICLE TRACKING CONTROL

4.2.1 Vehicle tracking control shall be installed at locations to prevent sediment from leaving the site. The contractor shall be responsible for cleaning or replacing material to maintain the effectiveness of the station. The construction entrance shall be routinely inspected, and the Contractor shall repair or replace material as deemed necessary by the Engineer.

4.2.2 All costs for furnishing, installing, maintaining, and removal of the construction entrance including equipment, labor, materials, and incidentals shall be included in the contract unit price per each for "Temporary Vehicle Tracking Control".

4.3 CONCRETE WASHOUT

4.3.1 The contractor shall provide a location for concrete delivery trucks to washout on site. Washout material shall remain within the work limits. The contractor shall be responsible for cleaning to maintain the effectiveness of the station. The construction entrance shall be routinely inspected, and the Contractor shall repair or replace the station as deemed necessary by the Engineer.

4.3.2 All costs for furnishing, installing, maintaining and removal of the washout facility including equipment, labor, materials and incidentals shall be included in the contract unit price per each for "Concrete Washout Facility".

4.4 INLET PROTECTION

4.4.1 Inlet protection for area drains, catch basins and open ends of pipes shall be "Silt Fence Drop Inlet Protection". Inlet protection for curb style drop inlets shall be "Corrugated Pipe and Fabric Inlet Protection".

4.4.2 Accumulated sediment should be removed and disposed of on site. The device should be cleaned or replaced if standing water is evident 48 hours after a rain event. Damaged devices must be repaired without additional cost.

4.4.3 Inlet protection will be measured once per type installed at each structure. No additional measurement will be made when the same type of inlet protection is removed and reinstalled at the same location on the same structure.

4.4.4 Inlet protection will be paid for at the contract unit price per each. Payment shall be full compensation for all materials, labor, equipment and incidentals required to install, maintain and remove the inlet protection.

4.5 STREET SWEEPING

4.5.1 Vehicle tracking of sediment from the construction site shall be minimized. Street sweeping shall be used if erosion and sediment control best management practices are not adequate to prevent sediment from being tracked onto the street.

4.5.2 The Contractor shall use a pickup broom having integral self-contained storage to clean the roadway. The pickup broom used shall be a minimum of 6 feet wide and have working gutter brooms.

4.5.3 At a minimum, sweeping will be required:

- 1. Prior to opening any segment or roadway to traffic.
- 2. When sawing operations are underway in the inside driving lanes, the outside driving lanes and gutter may need to be swept to control dust.
- 3. As requested by the Engineer or City of Harrisburg.

4.5.4 All costs for cleaning the roadway with a pickup broom shall be incidental to the contract. No separate payment will be made.

4.6 DUST CONTROL

4.6.1 Dust control shall be provided by the contractor at the request of the engineer. The contractor shall anticipate watering base course that is significantly dry to settle dust. Costs associated with dust control shall be incidental to the project.

4.7 SILT FENCE

4.7.1 The silt fence fabric provided shall be from the SDDOT approved product list. The approved product list for low flow silt fence may be viewed at the following internet site:

<https://dot.sd.gov/doing-business/certification-accreditation/approved-products>

4.7.2 Silt fence shall be placed at the locations noted in the technical drawings and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. All costs for furnishing, installing, maintaining, mucking and removing of the silt fence including equipment, labor, materials, and incidentals shall be included in the contract unit price per linear foot for "Silt Fence".

4.7.3 Any silt fencing in need of repair due to drainage from various rain events shall be properly repaired by the Contractor. All cost for labor, equipment and materials required to repair the silt fencing shall be incidental to the bid item "Silt Fence".

4.7.4 Following rain events, if any silt fencing becomes more than 25% full of silt, the Contractor shall remove the silt and dispose of it by spreading it evenly over the adjacent subgrade to match finish grade elevations minus topsoil. All cost associated with the removing of the silt from any fencing shall be incidental to the bid item "Silt Fence".

4.8 SEDIMENT CONTROL WATTLE

4.8.1 The Contractor shall provide certification that the sediment control wattles do not contain noxious weed seeds.

4.8.2 Sediment should be removed on a routine basis when the level of sedimentation reaches one-half the height of the exposed wattle. Damaged areas should be repaired immediately until the vegetation is established and growing through the material.

4.8.3 Sediment control wattles shall be paid for at the contract unit price per lineal foot. Payment for all materials, labor and equipment necessary to install, maintain, repair, and remove the sediment control wattles shall be included in the contract unit price per lineal foot under the bid item "12" Sediment Control Wattle".

4.8.4 Materials: The erosion control wattle shall be 12" diameter with biodegradable netting and selected from the manufacturers listed below, or approved equal:

Manufacturer
American Excelsior Company
Arlington, TX
Phone: 1-800-777-7645
www.amerexcel.com

Product Name
Curlex Sediment Log

Western Excelsior Corporation
Mancos, CO
Phone: 1-800-833-8573
www.westernexcelsior.com

Aspen Fiber Logs and Straw Logs

R.H. Dyck Inc.
Winters, CA
Phone: 1-530-662-7700
www.earth-savers.com

Earth-saver Rice Straw Wattles

4.9 EROSION CONTROL BLANKET

4.9.1 Erosion control blanket will be installed at the locations noted in the plans and at locations determined by the Engineer during construction.

4.9.2 Erosion control blanket shall be paid for at the contract unit price per square yard. Payment for all materials, labor and equipment necessary to install, maintain, repair, and remove the erosion control blankets shall be included in the contract unit price per square yard under the bid item "Erosion Control Blanket".

4.9.3 Contractor shall roll up, remove, and salvage to Owner the erosion control blanket once turf grass begins to appear through the erosion control blanket and at the discretion of the Engineer.

4.9.4 The erosion control blanket provided will be from the approved product list. The approved product list for erosion control blanket may be viewed at the following internet site:

<https://dot.sd.gov/doing-business/certification-accreditation/approved-products>

4.10 REMOVAL OF TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES

4.10.1 The Contractor is responsible to remove all temporary erosion control and sediment control devices when the site reaches final stabilization. No payment will be made to the Contractor for removing these items. The Engineer may order specific temporary erosion control and sediment control devices to remain in place past final stabilization. The Contractor will not be responsible to remove these items.

5.0 REMOVAL NOTES

5.1 EROSION CONTROL

5.1.1 Erosion control shall be installed immediately after removals are complete and in compliance with the SWPPP.

5.2 REMOVAL OF EXISTING ASPHALT PAVEMENT

5.2.1 The asphalt concrete pavement shall be removed and disposed of by the Contractor at a site approved by the Owner and Engineer. Payment for asphalt mat removal is included in the contract unit price per square yard for "Remove Asphalt Concrete Pavement". Payment shall be at the contract unit price per square yard, regardless of variations in thickness. Any sawing required to remove existing asphalt pavement shall be considered incidental to the "Remove Asphalt Concrete Pavement" bid item.

5.3 REMOVAL AND SALVAGED GRAVEL SURFACING

5.3.1 The gravel surfacing shall be salvaged to the Owner at a site approved by the Owner and Engineer. Payment shall be at the contract unit price per square yard for "Remove & Salvage Gravel Surfacing". Payment shall be at the contract unit price per square yard regardless of variation in gravel surfacing thickness. - Replaced Item. No. 1.3.2.1, Add #1

5.4 REMOVAL OF EXISTING AG LIME SURFACING

5.4.1 The ag lime surfacing shall be salvaged to the Owner at a site approved by the Owner and Engineer. Payment shall be at the contract unit price per square yard "Remove & Salvage Ag Lime Surfacing". Payment shall be at the contract unit price per square yard, regardless of variations in thickness.

5.5 REMOVE & SALVAGE CRUSHED ROCK

5.5.1 The crushed rock shall be salvaged to the Owner at a site approved by the Owner and Engineer. Payment shall be at the contract unit price per square yard



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"Remove & Salvage Crushed Rock". Payment shall be at the contract unit price per square yard, regardless of variations in thickness.

5.6 REMOVE FENCE BACKSTOP

5.6.1 The chain link fencing backstops shall be carefully removed and salvaged for the Owner and delivered to a site approved by the Owner and Engineer. Payment for removal of all fencing items including footings is included in the contract unit price per each for "Remove Fence Backstop". Payment shall be at the contract unit price per each, regardless of variations in fence/backstop height.

5.7 REMOVE & SALVAGE POWER POLE BARRIER

5.7.1 The lump sum payment for "Remove & Salvage Power Pole Barrier" will be full compensation for all removal and salvage of all power pole barriers within the project limits to a site approved by the Owner and Engineer.

5.8 REMOVE & SALVAGE ROCKS

5.8.1 The lump sum payment for "Remove & Salvage Rocks" will be full compensation for all removal and salvage of all decorative quartzite rocks within the project limits to a site approved by the Owner and Engineer.

5.9 DEMO RESTROOM BUILDING

5.9.1 The lump sum payment for "Demo Restroom Building" will be full compensation for all demolition, removal and disposal of the restroom building, all footings/foundations and connected pavements, utilities, and furnishings. All items removed from the building shall become the property of the Contractor. Materials shall be disposed of at an approved offsite disposal location.

5.10 CLEARING

5.10.1 The lump sum payment for "Clearing" will be full compensation for all removal and disposal of trees less than six (6) inches in diameter, stumps, roots, spray killing of turf and other vegetation designated for removal and mowing as required. The Engineer will establish right-of-way lines and construction limit lines prior to the start of clearing operations. The Engineer, at the start of the project, will mark the clearing limits.

5.10.2 Organic material shall not be used as fill in trenches or embankment. The Contractor shall dispose of all trees, brush, stumps, roots and other remains in a legal manner. Burying or burning of debris on or adjacent to the project shall be prohibited.

5.10.3 Erosion control measures shall be installed and functioning prior to clearing and excavation. See erosion control plans and notes.

5.11 CLEAR AND GRUB TREE

5.11.1 The unit price payment for "Clear and Grub Tree" will be full compensation for all removal and disposal of trees. The Engineer will establish right-of-way lines and construction lines prior to the start of clearing and grubbing operations.

5.11.2 Some trees may require the Contractor to have the tree topped by a licensed arborist, prior to clearing and grubbing the tree, due to the close proximity of physical features to remain. All costs associated with this work is considered incidental to the contract unit price for "Clear and Grub Tree".

5.11.3 Some trees to be removed are located near driveway pavements, fences or other items not being removed with this project. The Contractor shall cut these trees level with the ground and grind the stump 8" below ground line. All costs associated with this work is considered incidental to the contract unit price for "Clear and Grub Tree". Removal of trees are identified on the H sheets. All smaller trees and shrubs (less than six (6) inches in diameter) will be removed and paid under the bid item "Clearing".

5.11.4 Ash wood cannot be transported off the project site between Memorial Day and Labor Day due to the presence of the Emerald Ash Borer in the area. If ash trees to be removed with the project cannot be removed from the project site prior to Memorial Day, or cannot wait to be removed from the project site until after Labor Day, the Contractor may still cut down the ash tree(s), but the ash wood must remain on the project site until after Labor Day. All costs associated with the transporting and disposal of ash wood, and/or storing ash wood on the project site

until it can be safely transported to a disposal facility, shall be incidental to the contract unit price for "Clear and Grub Tree".

5.11.5 Ash wood cannot be transported outside of the Quarantine Area designated by the South Dakota Department of Agriculture and the United States Department of Agriculture without a permit. The Quarantine Area is currently defined as all of Minnehaha County, Lincoln County north of US Highway 18, and Turner County north of US Highway 18 and east of SD Highway 19. Transport of ash wood outside the Quarantine Area without a permit will subject offenders to civil and/or criminal penalties. All costs associated with the transporting and disposal of ash wood, as well as permitting fees, if necessary, shall be incidental to the contract unit price for "Clear and Grub Tree". Facilities within the Quarantine Area that accept ash wood for disposal include:

Mueller Pallets
27163 471st Avenue
Sioux Falls, SD 57108
(605) 368-2440

Mueller Pallets
46868 Sands Street
Sioux Falls, SD 57107
(605) 368-2440

5.11.6 Grinding of ash tree stumps and disposal of ash tree stump grinding waste may occur at any time of the year with no restriction on transportation time frames within the Quarantine Area. If ash tree stumps are removed by any method other than grinding (ie. excavator, etc.), the same transportation restrictions as regular ash wood waste apply. All costs associated with grinding, removing, and disposal of ash tree stumps shall be incidental to the contract unit price for "Clear and Grub Tree".

6.0 GRADING NOTES

6.1 EROSION CONTROL

6.1.1 The contractor shall maintain erosion control devices as indicated in the drawings and in compliance with the SWPPP.

6.2 EARTH WORK

6.2.1 Excavate the existing subgrade to provide for the required depth of subbase and surfacing. Earthwork shall be performed as shown on grading plans and appropriate cross sections. All embankment areas shall be stripped of organic material prior to filling.

6.2.2 All excavations made for underground utilities are incidental to the installation of that utility. All suitable backfill material removed for pipe installation is the property of the Owner and is to be reused on the project by the Contractor. All spoil material that is unsuitable for backfill is the property of the Contractor and is to be removed and disposed of by the Contractor. All spoil material and costs for removing it are incidental to pipe installation costs.

6.2.3 The suitable excess soil resulting from earthwork activities shall be reused on the project by the Contractor or stockpiled in locations shown in the plan document. All costs associated with stockpiling excess material shall be included in the bid item for "Unclassified Excavation." Topsoil in the stockpile area shall be stripped to the depth encountered. Stockpiles shall be smooth graded with maximum 4:1 side slopes and a flat top and covered with 6" compacted topsoil.

6.2.4 Any contaminated material shall also be the responsibility of the Contractor to dispose.

6.2.5 Water for compaction of subgrade and embankments shall be provided by the Contractor and used to maintain soil at or near optimum moisture content to obtain required density. Compaction of subgrade and embankments shall be governed by the specified density method. Compaction of embankment shall be no less than 95% of Standard Proctor Density. Separate payment will not be made for water used for compaction of subgrade.

6.2.6 The quantity of unclassified excavation represents the unadjusted net volume of cut that exists within the site. The volumes listed within the earthwork table have been calculated through comparing the existing grade surface after removal of 6" topsoil strippings to the subgrade surface defined as 6" below the finished grade elevation throughout the graded site. The volumes of cut and fill are unadjusted and describe the net volume of existing, in-place material needed to be

excavated on site and the net volume of area needed to be filled to reach subgrade elevation as defined above.

6.2.7 The Contractor shall anticipate excavated material to compact to a higher density than its native state. The Contractor shall apply their own assumptions of shrinkage as they see fit and include them in their unit price.

6.2.8 Due to the difficulty in making field measurements on this project and to expedite final payment, the computed quantity of Unclassified Excavation shall be the basis of payment for this item. No field measurements will be made for payments except when changes from the plan shown construction limits are ordered by the Engineer.

6.3 TABLE OF EARTHWORK QUANTITIES

6.3.1 Base Bid Earthwork Quantities:

DESCRIPTION	QUANTITY (CuYd)
Cut (EG minus 6" to FG minus 6")	6,930
Fill (EG minus 6" to FG minus 6")	2,837
Net Cut/Fill	4,093 (Cut)
Shrink (30% of Fill)	851
Waste	3,242

6.4 STRIPPING AND SALVAGING TOPSOIL

6.4.1 The Contractor shall strip existing topsoil as indicated in the technical drawings and salvage it for placing once grading is complete. All Topsoil shall be removed, minimum depth of 6 inches and stockpiled at a location approved by the Engineer. All costs for salvaging and stockpiling shall be paid for at the contract unit price per cubic yard under the bid item "Salvage Topsoil".

6.5 PLACING SALVAGED TOPSOIL

6.5.1 Following completion of grading operations, topsoil shall be spread evenly over the disturbed areas to a depth of 6 inches. The first 4 inches of depth shall be entirely salvaged topsoil. See Erosion Control plans for locations.

6.5.2 The basis of payment for "Placing Salvaged Topsoil" will be the plan quantity. No separate measurement will be made unless changes from the plan shown construction limits are ordered by the Engineer. All costs associated with the placing and preparing of salvaged topsoil to the minimum depths required shall be paid for at the contract unit price per cubic yard under the bid item "Placing Salvaged Topsoil".

6.5.3 Contractor salvaged topsoil shall be supplemented by Owner furnished previously salvaged topsoil at a location north of the project site and by Contractor Furnished Topsoil.

6.6 PLACING CONTRACTOR FURNISHED TOPSOIL

6.6.1 The Contractor shall furnish sufficient topsoil to cover the top 2" of the site.

6.6.2 Contractor furnished topsoil shall be screened and pulverized and meet the requirements of the following table:

	Minimum	Maximum
Material Passing #10 Sieve	95%	-
Clay	5%	50%
Silt	10%	70%
Sand and Gravel	10%	60%
Organic Matter (as determined by weight)	4%	15%
pH (ASTM D 5268)	6.0	8.0

6.6.3 The topsoil provided shall be smooth, uniform, and free of stones 1 inch or larger in any dimension, roots and other extraneous or undesirable material harmful

to plant growth. The Contractor shall submit to the Engineer the prospective source for the topsoil at least 1 month prior to time of placement to allow adequate time for inspecting, testing and approving the source. A companion topsoil test may be performed on site after placement. Texture shall be determined by the method described in AASHTO T 88.

6.6.4 Prior to placing seed, topsoil shall be graded to finished grade and loosened to a depth of 6 inches. Topsoil shall be rolled and raked, removing ridges and pulverize soil clumps to less than 1 inch. The Engineer shall approve the grade prior to seeding.

6.7 PLACING SALVAGED CRUSHED ROCK

6.7.1 Following completion of grading operations, crushed rock shall be spread to a depth of 6" over specified areas of the site. See Erosion Control plans for locations.

6.7.2 The basis of payment for "Placing Salvaged Rock" will be the plan quantity. No separate measurement will be made unless changes from the plan shown construction limits are ordered by the Engineer. All costs associated with the placing and preparing of salvaged crushed rock to the minimum depths required shall be paid for at the contract unit price per ton under the bid item "Placing Salvaged Crushed Rock".

7.0 STORM SEWER

7.1 STORM DRAINAGE - GENERAL

7.1.1 All storm sewer shall be installed, measured, and paid for in accordance with City of Harrisburg Standard Specifications except as modified herein.

7.1.2 Storm drainage pipe shall be the size(s) and class(es) designated on the plan and profile sheets and in the estimate of quantities.

7.1.3 Standard bedding material shall be considered incidental to the installation of the storm drainage pipe. No separate measurement or payment shall be made for standard bedding material.

7.1.4 The Contractor shall notify the Engineer upon completion of the storm drainage work. Inspection of the storm drainage work will be completed by the Engineer, who will identify all deficiencies. If deficiencies are identified prior to paving, they shall be corrected prior to paving. Final payment will not be made until all deficiencies have been corrected and the storm drainage work has been given final acceptance. The expense of the initial television inspection and any additional television inspections beyond the initial inspection will be borne entirely by the Contractor.

7.2 STORM SEWER INSTALLATION

7.2.1 All storm sewer shall be installed, measured, and paid for in accordance with City of Harrisburg Standard Specifications. Storm sewer pipe shall be reinforced concrete (RCP) or solid wall poly-vinyl chloride (PVC). All reinforced concrete pipe shall be Class III unless otherwise specified. All PVC pipe shall be SDR 35 unless otherwise specified. Contractor shall propose to the Engineer which pipe material shall be used for the project unless certain pipe material is specifically noted on the plans.

7.2.2 Perforated PVC pipe shall be bedded in accordance with the "Perforated PVC Bedding Detail". Cost associated with bedding of perforated PVC pipe shall be incidental to the pipe furnish and installation cost. There shall be no separate payment for coarse grained soil, bedding rock or Type B drainage fabric associated with the pipe bedding.

7.3 INLETS AND JUNCTION BOXES

7.3.1 Storm Sewer structures shall be cast in place to accommodate field adjustments. The contractor may substitute precast structures at junction box locations. Contractor shall adjust precast junction boxes as necessary to accommodate field conditions. All costs to make adjustments shall be the contractors responsibility. Storm sewer inlets and junction boxes shall be paid for

under the bid items "Class M-6 Concrete" and "Reinforcing Steel". Plans quantity will be the basis for payment unless changes are ordered by the Engineer.

7.4 NO LIFT HOLES IN STORM DRAINAGE PIPE WALL

7.4.1 Lift holes are prohibited for pipe or culvert manufactured after January 1, 2018.

7.4.2 The Contractor shall be responsible for developing and utilizing procedures and equipment for handling and installing storm drainage pipe or culvert without penetrations through the wall. The Contractor is allowed to utilize lifting devices which are incorporated or cast into the pipe or culvert upon shop drawing approval by the Engineer.

7.5 CONNECT TO EXISTING PIPE

7.5.1 If a male/female joint is not available to connect existing RCP pipe with new RCP storm sewer pipe, a concrete collar shall be installed. The collar shall be Class M-6 concrete and shall be 6 inches thick and 2 feet wide with wire mesh reinforcement. All costs for constructing concrete collars shall be incidental to the various storm sewer bid items.

7.6 NEW STRUCTURE CASTING ADJUSTMENTS

7.6.1 Storm sewer junction box castings are to be constructed or adjusted to required finish grade. The Contractor shall furnish the junction box frames and covers in accordance with the supplemental standard specifications, where shown on the plan sheets. No payment will be made for adjusting castings to new structures.

7.6.2 Frames and/or lids cracked or broken through the carelessness of the Contractor's forces shall be replaced with new frames and/or lids at the Contractor's expense.

8.0 SANITARY SEWER

8.1 SANITARY SEWER - GENERAL

8.1.1 Contractors License. The Contractor shall obtain a "South Dakota State Sewer and Water Plumbing Contractor's License" prior to commencing construction.

8.1.2 Existing sanitary sewer lines and manholes within the construction limits shall be protected at all times during construction. The upstream ends of existing sanitary sewer lines downstream from new sanitary sewer construction shall be plugged at locations to be approved by the Engineer. Water, stone, dirt, gravel, asphalt, concrete or any other debris shall not be allowed to enter the City's sanitary sewer system during flushing operations or at any other time. Construction taking place in the vicinity of any existing City sanitary sewer lines or manholes shall not cause any inflow of surface water, ground water, water from damaged water lines, or debris to enter the City's sanitary sewer system. The Contractor shall be responsible for any damages incurred to the City's sanitary sewer system and/or private property and any actions imposed by SDDENR due to spills or overflows.

8.1.3 Manhole construction plate markers shall be constructed in accordance with standard plates. The plate markers shall be installed on existing manholes immediately after construction surfacing removals have been completed and on new manholes immediately after installation. The Contractor shall ensure that all manholes are secured, protected and watertight at the end of each workday. Under no circumstances shall an uncompleted or completed manhole be left uncovered, unprotected or not watertight overnight. Manhole construction plate markers shall be measured by each unit furnished and installed. Payment for manhole construction plate markers will be full compensation for furnishing, installing, and removing each plate marker and all appurtenances necessary for the proper installation of the plate marker.

8.2 MANHOLE EXTERNAL JOINT SEALS

8.2.1 Manhole external joints seals, meeting the requirements of ASTM C877 Type III, shall be used on all manhole joints unless otherwise specified. Manhole external joint seals shall be Infi-Shield Gator Wrap as manufactured by Sealing Systems Inc., WrapidSeal as manufactured by CANUSA-CPs, or an approved equal. The

external joint seal materials shall be compatible with City of Sioux Falls Standard 48 inch diameter RCP manholes and shall be a minimum of 9 inches wide.

8.2.2 Manhole external joint seals shall be considered incidental per manhole regardless of depth or number of joints.

8.3 MANHOLE CONSTRUCTION PLATE MARKER

8.3.1 Manhole construction plate markers shall be constructed in accordance with Standard Plate 950.17.

8.3.2 Manhole construction plate markers shall be installed on existing manholes immediately after construction surfacing removals have been completed and on new manholes immediately after installation. The Contractor shall ensure that all manholes are secured, protected, and watertight at the end of each workday. Under no circumstances shall an uncompleted or completed manhole be left uncovered, unprotected, or not watertight overnight.

8.3.3 Manhole construction plate markers shall be measured by each unit furnished and installed. Payment for manhole construction plate markers will be full compensation for furnishing, installing, and removing each manhole construction plate marker and all appurtenances necessary for the proper installation of the manhole construction plate marker.

8.4 ADJUST WET WELL

8.4.1 The existing lift station wet well must be raised to match proposed finish grades. The work to adjust the casting elevation will involve installation of a 24" x 72" diameter manhole section below the existing cover slab.

8.4.2 The Contractor shall properly remove cover so as not to damage the existing barrel section below. Any damage to the existing wet well shall be removed and replaced to the satisfaction of the Owner at Contractor expense.

8.4.3 The Contractor shall furnish and install new barrel section and reinstall salvaged cover slab in accordance with City standard specifications.

8.4.4 All costs associated with the following shall be included in the unit price bid for "Adjust Wet Well".

- 1. Verify existing wet well cover elevations and minimum adjustment to meet match proposed finish grades.
- 2. Furnish and install 24" x 72" diameter barrel section.
- 3. Remove and reset the existing cover slab.
- 4. Furnish and install exterior joint seal.
- 5. Perform excavation and backfill for the work.

9.0 WATER

9.1 WATER MAIN INSTALLATION

9.1.1 Water main construction will include installation of a new 4" irrigation main across the area of grading for future connection the existing baseball field irrigation system to the Columbia Street water main, and installation and reconnection of several new water services. The exact location of the existing 2" water line is not known so the Contractor shall locate the pipe with the help of City personnel. The connections shall be made as described on the drawings.

9.1.2 All water main shall be installed, measured, and paid for in accordance with City of Harrisburg Standard Specifications except as modified herein.

9.1.3 All water main shall be paid for at the same unit price, regardless of depth. A minimum of six feet of cover will be required above all water main. Storm sewer and sanitary elevations are provided in their respective sections to benefit the Contractor during installation of water main. The Contractor shall coordinate elevations in the field to maintain six feet of cover and to avoid utility conflicts.

9.1.4 Initial backfill of water main shall consist of water main bedding material, which shall be considered incidental to water main installation. The remainder of the backfill shall consist of native soils and be placed in uniform layers and compacted to a minimum 85% of maximum density in turf areas and a minimum of 95% of maximum density in gravel and paved areas.



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CENTRAL PARK
PHASE 2 GRADING PROJECT
HARRISBURG, SOUTH DAKOTA
SEI Project #: 20377



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9.1.5 The Contractor shall coordinate the connection of the proposed water main to the existing water main to minimize shutoff time. The Contractor shall have all materials for the connection on the site and to the extent possible, shall have fittings assembled and tied prior to cutting the existing water main and making the connection.

9.1.6 All ductile iron pipe, valves, fire hydrant barrels and fittings shall be wrapped with polyethylene tube material to protect the pipe from any future corrosion. The poly material shall be installed as detailed in the supplemental specifications and the ductile iron handbook from DIPRA and ANSI A21.5 (AWWA C105).

9.1.7 The Contractor shall cap the existing water main as necessary during water main installation in order to maintain service during construction. Contractor shall coordinate cap locations with the City and the Engineer. All cost associated with the cutting and capping of existing watermain shall be incidental to watermain installation.

9.1.8 Tracer wire shall be placed with all new water mains as detailed in the plans. Payment to place tracer wire as detailed in the plans shall be incidental to water main installation.

9.1.9 A steel fence post shall be used to mark the ends of the capped 4" irrigation line.

9.2 ACCEPTANCE TESTING

9.2.1 Water main shall be tested as specified by the City of Harrisburg Water Superintendent. The contractor should anticipate pressure testing watermain only after highly chlorinated water is flushed out of the line. When minor water main work that will not be pressure or bacteria tested (i.e. tie-in connects of new water main to existing water main, water main adjustments, installation of new valves on existing main or any other work deemed minor by the Engineer), may not be backfilled until the fittings and connections are examined for leaks under standard city pressure.

9.3 WATER MAIN DISINFECTION

9.3.1 After disinfection and final flushing and before the new water main is connected to the distribution system, two consecutive sets of acceptable samples shall be collected from the new main. Samples shall be taken as specified by the City of Harrisburg Water Superintendent. The contractor should anticipate taking test sample sets once after highly chlorinated water is flushed out of the line and once 16 hours after system water has sat in the line. A sample set shall be taken using an approved metering device and shall include a sample for each 200 LF of pipe tested. The samples must be submitted to a health laboratory acceptable to the state DENR, which includes the City of Sioux Falls health lab. The samples must be free of coliform bacteria before the system can be placed into service.

9.3.2 When minor water main work occurs (i.e. tie-in connections of new water main to existing water main, water main adjustments, installation of new valves on existing main or any other work deemed minor by the Engineer) the existing main, prior to the completion of the bacteria testing, may be returned to service once the line has been flushed and a boil order has been issued. The boil order will be rescinded with the passing of the bacteria test. The Contractor shall notify City of Harrisburg personnel as well as affected residents a minimum of 24 hours before the boil order is issued.

9.3.3 The contractor shall disinfect the inside of the new water main and fittings where a boil order tie-in is required. When flushing the water main, the water used for disinfecting the main shall not reach a stream, river, or water way if chlorine is detected in the water. Contact the Engineer for more information.

9.3.4 The Contractor shall notify City of Harrisburg personnel as well as affected residents a minimum of 24 hours before the interruption of water service.

9.4 DISCHARGE OF CHLORINATED WATER

9.4.1 Water from the City's Water Distribution System that is drained into work areas or open trenches must be discharged without impact to the environment. The following is a prioritized list for dewatering of trenches in work areas:

9.4.2 Water from the distribution system shall be pumped to the City's sanitary sewer system. Contractor is responsible for verifying hydraulic loading on existing sanitary sewer system during trench dewatering operations to ensure that sewer backups do not occur.

9.4.3 Water from the distribution system shall be pumped to areas where water can be stored and discharged through infiltration. Overland flow is not allowed. If discharge is on private property, contractor shall secure permission prior to discharge.

9.4.4 Water from the distribution system may be pumped into vector trucks or septic tank trucks and hauled to the Water Reclamation Plant or other facility permitted by (DENR) to accept such discharge.

9.4.5 The above items will be considered incidental to the work necessary to complete tie-ins to existing and operational waterlines.

9.5 WATER MAIN PARALLELING OR CROSSING SEWERS

9.5.1 Installation of water mains parallel to sanitary or storm sewer lines shall be completed in a manner such that the water mains shall be laid at least 10 feet horizontal distance from any existing or proposed sanitary sewer, storm sewer, or sewer manhole. Where water mains cross above storm sewers or sanitary sewers, there shall be at least 18 inches vertical clearance between the bottom of the water main and the top of the sewer pipe and one full length of water pipe must be located so both joints will be as far from the sewer as possible.

9.5.2 A water main may cross below a non-perforated sanitary or storm sewer main if minimum vertical separation of 18 inches is provided and the sewer main is of acceptable water main pipe material and is a continuous piece of at least 20 feet in length with the length of the water pipe located so both joints are as far as possible from the sewer main. A water main may cross either above or below a non-perforated sanitary or storm sewer line with a vertical separation of less than 18 inches if either the water or sewer line is encased in PVC or cast iron for at least 10 feet each side of the crossing. If PVC or cast iron is used as encasement material, the ends shall be adequately sealed with a rubber boot. Where water mains are to be installed in parallel with a sewer or a sewer manhole that is less than 10 feet away horizontally and is not at least 18 inches below the water main, the water main shall be encased in PVC or cast iron for the entire distance that the sewer is too close to the water main. If PVC or cast iron is used as encasement material, the ends shall be adequately sealed with a rubber boot. Payment for crossings shall be incidental to the contract unit prices for the water main items.

9.6 WATER SERVICES

9.6.1 Water Services shall be constructed of the material and installed as specified in the technical section of the project manual.

9.6.2 Service saddles shall have two bands that are bolted together. The lower band shall be stainless steel and the upper band shall be ductile iron with an epoxy coating. The bolts and nuts shall be stainless steel. The service saddles shall be Ford Model FC 202, Romac 202S, AY McDonald 4845 or approved equal.

9.6.3 Fittings necessary to make the connections including corporation stop and curb stop and box shall be considered incidental to the service. Removal of existing curb stop and riser shall be considered incidental to the service. All costs for labor and materials required to make the connections shall be included in the respective bid items for "Water Service Reconnect" and "X" Water Service".

9.7 IRRIGATION SYSTEM PIPE

9.7.1 Pipelines 4 inches and larger shall be installed by trencher method. Open trench excavation will be permitted for installation of non-pipeline items. All installation labor and materials shall be included in the unit prices for installation of the irrigation line. Control wires shall be installed in a neat, orderly fashion below pipelines. All open excavations, including trencher excavations, shall be backfilled and compacted to a minimum of 95 percent standard proctor density.

9.7.2 Trenches shall be backfilled with existing native soils removed during trenching. In the event the excavated soils are not suitable for backfilling and compaction efforts, suitable soil from the site shall be traded and used for backfilling. Any unsuitable soils may be used on the fill slopes.

9.7.3 Irrigation pipe shall be I.P.S. Pressure Polyvinyl Chloride (PVC) SDR 21 and minimum working pressure class shall be 200 psi. Pipes shall be constructed with an integral bell coupler which meets the requirements of ASTM D3139 and include a gasket sealing system that conforms to the requirements of ASTM F-477. Spigot ends shall be beveled and include markings for insertion depth. Irrigation pipe shall be measured to the nearest lineal foot for the respective types and sizes of irrigation pipe furnished and installed. Measurement shall be from center of fittings or to end of pipe. Payment will be at the contract unit prices per lineal foot and shall include full compensation for all labor, materials, equipment, and incidentals necessary to complete the installation of irrigation pipe including, but not limited to gaskets, trench dewatering, excavating and backfilling, and tracer wire. Item No. 1.3.3.1 Add #1

10.0 SURFACING

10.1 ASPHALT CONCRETE FOR PATCHING

10.1.1 "Asphalt Concrete for Patching" shall be installed in locations shown in the plans or as directed by the Engineer. The minimum depth of all asphalt concrete patching shall be 4-inches.

10.1.2 Compaction of asphalt concrete shall be by the specified density method. The minimum density requirement is 92% (Rice Method) of specified density or to the satisfaction of the Engineer.

10.1.3 Asphalt concrete composite shall conform to the SDDOT Specifications for Class G, Asphalt Concrete. The top lift shall conform to Class G-2 for the mineral aggregate specifications. All lower lift(s) shall conform to Class G-1 for the mineral aggregate specifications unless otherwise noted or by direction of the Engineer. The surface course shall not exceed 2" in thickness when laid and compacted.

10.1.4 A maximum of 20% (by weight) of Recycled Asphalt Pavement (RAP) will be allowed in the asphalt concrete composite mix. RAP stockpiles containing concrete chunks, grass, dirt, wood, metal, coal tar, or other foreign or environmentally restricted materials shall not be used. No other recycled material will be allowed.

10.1.5 The asphalt cement used in the mixture shall be Performance Graded AASHTO Designation PG58-28 and shall conform to the current SDDOT Specifications. Certificates of compliance will be required on the asphalt concrete composite mix and the performance graded asphalt binder. The Engineer may accept the mixture on the basis of the certificate of compliance and visual inspection or may test the mixture for specification compliance.

10.1.6 Tack coat (SS-1h or CSS-1h) shall be applied between each lift of asphalt and along existing concrete and asphalt faces and any areas as determined by the Engineer at the rate of .05 gal/sq. yd. Payment for this work shall be incidental to the unit price for asphalt.

11.0 RESTORATION NOTES

11.1 SEEDING

11.1.1 Each bag of seed delivered to the project shall bear a tag which conforms to the SD Standard Specifications for Roads and Bridges Section 730.2D. There will be no payment for seed used without the proper labeling.

11.1.2 Seeding shall comply with section 730 of the SDDOT Standard Specifications for Roads and Bridges except as noted below. Seeding completed outside of this period shall occur with the written permission of the Engineer. Seeding completed outside of Specified seeding periods will be at the Contractor's risk with the requirements for reseeding if vigorous and full growth does not occur. If seasonal limitations cannot be met, then an alternate soil stabilization practice must be used. Payment will be made to the Contractor for these alternate practices if caused by the conditions and sequencing of the plans and/or specifications and not the result of the Contractor's negligence.

11.1.3 The initial preparation of the newly graded area for seeding shall consist of removing existing grass, vegetation and turf. Do not mix into topsoil. Loosen soil to a depth of at least 6 inches. Remove stones larger than 1" in any dimension, sticks, roots, trash and other extraneous matter. Grade the planting areas to a smooth, uniform surface that is loose and uniformly fine textured. Grade to within +/- 0.5" of the finish elevation. Roll and rake, remove ridges, pulverize soil clods to less than 1" and fill depressions to meet finish grades. The Contractor will need prior authorization from the Engineer to commence seeding. Seedbed preparation shall be incidental to the appropriate "Seed Mixture" pay item.

11.1.4 Seed Mixes shall be planted within the following time windows:

1. Spring: April 1st through June 15th
2. Fall: August 15th through September 15th
3. Dormant: November through December 15th



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PHASE 2 GRADING PROJECT
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11.1.5 Seed mix shall meet the following specifications:

- 1. Minimum Purity 97% and Minimum Germination 85%
- 2. Maximum Other Crop Content 0.10% and Maximum Weed Content 0.10%
- 3. Components and/or percentages of the above blend may vary

11.1.6 Seed Mix #1

- 1. Super Turf II LS (Turf Type Tall Fescue & Kentucky Bluegrass mixture – 93% Firecracker SLs, Spyder LS, Summer and Titanium 2LS Turf Type Tall Fescue, 7% Dauntless and Jackpot Kentucky Bluegrass) as manufactured by United Seeds Inc. and distributed by Zimco Supply or approved equal.

	LBS/1 ACRE
Permanent Seed Mix #1	500

11.1.7 Seed shall be delivered to the project in bags with seed tags attached. The tags will be collected from the bags by the Engineer during seeding. See plan notes on Labeling. Seed shall be applied in two directions (half rate each time) using a press drill or slit seeder in all areas where possible. Hand seeding will be kept to a minimum and only done when site conditions prohibit the use of a drill or slit seeder.

11.1.8 These rates shall be doubled if seed is broadcast and shall be increased by 50 percent if the seeding is applied through hydraulic seeding. Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1. If hydraulic seeding is used, hydraulic mulching shall be done as a separate operation. All seed shall be drilled in with an approved drill and incorporated to the top ¼" +/- of topsoil. Small areas not accessible with a drill may be broadcast and dragged or raked in.

11.1.9 Measurement & Payment: Seed will be measured and paid for in accordance with the SDDOT Standard Specifications for Roads & Bridges Section 730.4 and 730.5.

11.1.10 The Contractor shall be responsible for maintaining turf areas for a minimum period of 45 days. During the maintenance period, the Contractor shall perform watering, fertilizing, weeding, mowing, trimming, replanting or other operations as required to reach establishment. Once the Engineer has determined that 70% establishment is obtained, the Contractor shall be relieved of the responsibility of maintenance.

11.2 FERTILIZING

11.2.1 Fertilizer Type: For use in both seed and sod applications. Fertilizer shall have a minimum guaranteed analysis of 18-24-12 with a minimum of 25% SCU for slow release properties. The application rate shall be 300 lbs/acre. Any other fertilizer analysis and/or application rate must be approved by the Engineer prior to application.

11.2.2 Fertilizer shall be delivered to the site in bags, each fully labeled, conforming to the specifications and bearing the name and warranty of the producer. Appropriate documentation shall be given to the Engineer for approval prior to application.

11.2.3 Measurement & Payment: Fertilizer will be measured and paid for in accordance with the SDDOT Standard Specifications for Roads & Bridges Section 731.4 and 731.5.

11.3 MULCHING

11.3.1 Following permanent seeding, grass hay or straw mulch conforming to section 732 of the SDDOT Standard Specifications shall be applied at the rate of 2 tons per acre at locations shown on the erosion control plan sheets.

11.3.2 **Maintenance:** Look for small areas of erosion or where the mulch has washed away which typically occurs after a heavy rain. All areas of failure should be repaired. Payment will be at the contract unit price for mulched areas maintained and repaired.



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1.0 STORM WATER POLLUTION PREVENTION PLAN

1.1 GENERAL

1.1.1 The Contractor shall be responsible for preventing erosion and containing all construction related debris, sediments, or containments on site. Protective measures are illustrated in the technical drawings but are not meant to be all inclusive. The contractor shall monitor their site and notify the Engineer of any failures to contain construction related pollutants.

1.1.2 The Contractor is responsible for maintaining and repairing all erosion control measures until a Notice of Termination is filed with the DENR. No payment will be made to the Contractor for maintaining or repairing those items unless otherwise specified.

1.2 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

1.2.1 The numbers right of the title headings are reference numbers to the GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES

❖ SITE DESCRIPTION (4.2 1)

- Project Limits: See Title Sheet (4.2 1.b)
- Project Description: See General Notes (4.2 1.a.)
- Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))
- Major Soil Disturbing Activities (check all that apply)
 - ☑ Clearing and grubbing
 - ☑ Excavation/borrow
 - ☑ Grading and shaping
 - ☑ Filling
 - ☑ Cutting and filling
 - ☐ Other (describe):
- Total Project Area 4.50 Acres (4.2 1.b.)
- Total Area To Be Disturbed 6.76 Acres (4.2 1.b.)
- Existing Vegetative Cover (%) 80%
- Soil Properties: USDA-NRCS Soil Series Classification: 84% WhA (Wentworth-Chancellor silty clay loams) 0% to 2% slopes, 11% EaB (Egan silty clay loam) 3% to 6% slopes, 5% Te (Tetonka silt loam) 0% to 2% slopes (4.2 1. d.)
- Name of Receiving Water Body/Bodies Nine Mile Creek (4.2 1.e.)

❖ ORDER OF CONSTRUCTION ACTIVITIES (4.2 1.c.)

(Stabilization measures shall be initiated as soon as possible, but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Initiation of final or temporary stabilization may exceed the 14-day limit if earth disturbing activities will be resumed within 21 days.)

- Install perimeter protection where runoff sheets from the site.
- Install channel and ditch bottom protection.
- Clearing and grubbing.
- Remove and store topsoil.
- Stabilize disturbed areas.
- Install utilities, storm sewers, curb and gutter.
- Install inlet and culvert protection after completing storm drainage and other utility installations.
- Complete final grading.
- Complete final paving and sealing of concrete.
- Complete traffic control installation and protection devices.
- Reseed areas disturbed by removal activities.

❖ EROSION AND SEDIMENT CONTROLS (4.2 2.a.(1)(a)-(f))

(Check all that apply)

- Stabilization Practices (See Detail Plan Sheets)
 - ☐ Temporary Seeding (Cover Crop Seeding)
 - ☑ Permanent Seeding

- ☐ Sodding
- ☐ Planting (Woody Vegetation for Soil Stabilization)
- ☑ Mulching (Grass Hay or Straw)
- ☐ Hydraulic Mulch (Wood Fiber Mulch)
- ☐ Soil Stabilizer
- ☐ Bonded Fiber Matrix
- ☑ Erosion Control Blankets or Mats
- ☐ Vegetation Buffer Strips
- ☐ Roughened Surface (e.g. tracking)
- ☑ Dust Control
- ☐ Other:

➤ Structural Temporary Erosion and Sediment Controls

- ☑ Silt Fence
- ☐ Floating Silt Curtain
- ☐ Straw Bale Check
- ☐ Temporary Berm
- ☐ Temporary Slope Drain
- ☑ Straw Wattles or Rolls
- ☐ Turf Reinforcement Mat
- ☐ Rip Rap
- ☐ Gabions
- ☐ Rock Check Dams
- ☐ Sediment Traps/Basins
- ☑ Inlet Protection
- ☐ Outlet Protection
- ☑ Surface Inlet Protection (Area Drain)
- ☑ Curb Inlet Protection
- ☑ Stabilized Construction Entrances
- ☐ Entrance/Exit Equipment Tire Wash
- ☐ Interceptor Ditch
- ☑ Concrete Washout Area
- ☐ Temporary Diversion Channel
- ☐ Work Platform
- ☐ Temporary Water Barrier
- ☐ Temporary Water Crossing
- ☑ Other: Erosion Control Blanket

➤ Wetland Avoidance

Will construction and/or erosion and sediment controls impinge on regulated wetlands? Yes ☐ No ☑ If yes, the structural and erosion and sediment controls have been included in the total project wetland impacts and have been included in the 404 permit process with the USACE.

➤ Storm Water Management (4.2 2.b., (1) and (2))

Storm water management will be handled by temporary controls outlined in "EROSION AND SEDIMENT CONTROLS" above, and any permanent controls needed to meet permanent storm water management needs in the post construction period. Permanent controls will be shown on the plans and noted as permanent.

➤ Other Storm Water Controls (4.2 2.c., (1) and (2))

▪ Waste Disposal

All liquid waste materials will be collected and stored in sealed metal containers approved by the project engineer. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be instructed in the proper procedures for waste disposal, and notices stating proper practices will be posted in the field office. The general contractor's representative responsible for the conduct of work on the site will be responsible for seeing waste disposal procedures are followed.

▪ Hazardous Waste

All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the individual designated as the contractor's on-site representative will be responsible for seeing that these practices are followed.

▪ Sanitary Waste

Portable sanitary facilities will be provided on all construction sites. Sanitary waste will be collected from the portable units in a timely manner by a licensed waste management contractor or as required by any local regulations.

❖ Maintenance and Inspection (4.2 3. and 4.2 4.)

➤ Maintenance and Inspection Practices

- Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
- All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
- Silt fence will be inspected for depth of sediment and for tears to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches 1/3 of the height of the silt fence.
- Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
- Check dams will be inspected for stability. Sediment will be removed when depth reaches 1/2 the height of the dam.
- All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
- Inspection and maintenance reports will be prepared for each site inspection, which will also document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
- The Engineer and contractor's site superintendent are responsible for inspections. Maintenance, repair activities are the responsibility of the contractor. The Engineer will complete the inspection and maintenance reports and distribute copies.

❖ Non-Storm Water Discharges (3.0)

The following non-storm water discharges are anticipated during this project (check all that apply).

- ☑ Discharges from water line flushing.
- ☑ Pavement wash-water, where no spills or leaks of toxic or hazardous materials have occurred.
- ☑ Uncontaminated ground water associated with dewatering activities.

❖ Materials Inventory (4.2. 2.c.(2))

The following materials or substances are expected to be present on the site during the construction period. These materials will be handled as noted under the headings "EROSION AND SEDIMENT CONTROLS" and "SPILL PREVENTION" (check all that apply).

- ☑ Concrete and Portland Cement
- ☐ Detergents
- ☐ Paints
- ☑ Metals
- ☐ Bituminous Materials
- ☐ Petroleum Based Products
- ☐ Cleaning Solvents
- ☑ Wood

- ☒ Cure
- ☐ Texture
- ☒ Chemical Fertilizers
- ☐ Other:

❖ **Spill Prevention (4.2 2.c.(2))**

➤ **Material Management**

▪ Housekeeping

- Only needed products will be stored on-site by the contractor.
- Except for bulk materials the contractor will store all materials under cover and in appropriate containers.
- Products must be stored in original containers and labeled.
- Material mixing will be conducted in accordance with the manufacturer's recommendations.
- When possible, all products will be completely used before properly disposing of the container off site.
- The manufacturer's directions for disposal of materials and containers will be followed.
- The contractor's site superintendent will inspect materials storage areas regularly to ensure proper use and disposal.
- Dust generated will be controlled in an environmentally safe manner.
- Vegetation areas not essential to the construction project will be preserved and maintained as noted on the plans.

▪ Hazardous Materials

- Products will be kept in original containers unless the container is not resealable.
- Original labels and material safety data sheets will be retained in a safe place to relay important product information.
- If surplus product must be disposed of, manufacturer's label directions for disposal will be followed.
- Maintenance and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, degreasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants will be conducted on an impervious surface and under cover during wet weather to prevent the release of contaminants onto the ground.
- Wheel wash water will be collected and allowed to settle out suspended solids prior to discharge. Wheel wash water will not be discharged directly into any storm water system or storm water treatment system.
- Potential pH-modifying materials such as: bulk cement, cement kiln dust, fly ash, new concrete washings, concrete pumping, residuals from concrete saw cutting (either wet or dry), and mixer washout waters will be collected on site and managed to prevent contamination of storm water runoff.

➤ **Product Specific Practices (6.8)**

▪ Petroleum Products

All on-site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled.

▪ Fertilizers

Fertilizers will be applied only in the amounts specified. Once applied, fertilizers will be worked into the soil to limit the exposure to storm water. Fertilizers will be stored in an enclosed area. The contents of partially used fertilizer bags will be transferred to sealable containers to avoid spills.

▪ Points

All containers will be tightly sealed and stored when not required for use. The excess will be disposed of according to the manufacturer's instructions and any applicable state and local regulations.

▪ Concrete Trucks

Contractors will provide designated truck washout areas on the site. These areas must be self contained and not connected to any storm water outlet of the site. Upon completion of construction washout areas will be properly stabilized.

➤ **Spill Control Practices (4.2 2 c.(2))**

In addition to the previous housekeeping and management practices, the following practices will be followed for spill prevention and cleanup if needed.

- For all hazardous materials stored on site, the manufacturer's recommended methods for spill clean up will be clearly posted. Site personnel will be made aware of the procedures and the locations of the information and cleanup supplies.
- Appropriate cleanup materials and equipment will be maintained by the contractor in the materials storage area on-site. As appropriate, equipment and materials may include items such as brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for clean up purposes.
- All spills will be cleaned immediately after discovery and the materials disposed of properly.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- After a spill a report will be prepared describing the spill, what caused it, and the cleanup measures taken. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring, as well as clean up instructions in the event of reoccurrences.
- The contractor's site superintendent, responsible for day-to-day operations, will be the spill prevention and cleanup coordinator. The contractor is responsible for ensuring that the site superintendent has had appropriate training for hazardous materials handling, spill management, and cleanup.

➤ **Spill Response (4.2 2 c.(2))**

The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into storm water runoff and conveyance systems. If the release has impacted on-site storm water, it is critical to contain the released materials on-site and prevent their release into receiving waters. If a spill of pollutants threatens storm water or surface water at the site, the spill response procedures outlined below must be implemented in a timely manner to prevent the release of pollutants.

- The contractor's site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.
- If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.
- Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the contractor at the site.
- If oil sheen is observed on surface water (e.g. settling ponds, detention ponds, swales), action will be taken immediately

to remove the material causing the sheen. The contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.

- If a spill occurs the superintendent or the superintendent's designee will be responsible for completing the spill reporting form and for reporting the spill to SD DENR.
- Personnel with primary responsibility for spill response and clean up will receive training by the contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

❖ **Spill Notification**

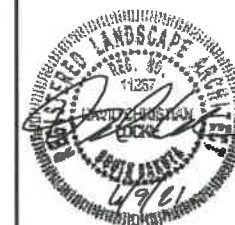
In the event of a spill, the contractor's site superintendent will make the appropriate notification(s), consistent with the following procedures:

- A release or spill of a regulated substance (includes petroleum and petroleum products) must be reported to DENR immediately **if any one of the following** conditions exists:
 - The discharge threatens or is in a position to threaten the waters of the state (surface water or ground water).
 - The discharge causes an immediate danger to human health or safety.
 - The discharge exceeds 25 gallons.
 - The discharge causes a sheen on surface water.
 - The discharge of any substance that exceeds the ground water quality standards of ARSD (Administrative Rules of South Dakota) chapter 74:51:01.
 - The discharge of any substance that exceeds the surface water quality standards of ARSD chapter 74:51:01.
 - The discharge of any substance that harms or threatens to harm wildlife or aquatic life.
 - The discharge of crude oil in field activities under SDCL (South Dakota Codified Laws) chapter 45-9 is greater than 1 barrel (42 gallons).

To report a release or spill, call DENR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central time). To report the release after hours, on weekends or holidays, call State Radio Communications at 605-773-3231. Reporting the release to DENR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, the responsible person must also contact local authorities to determine the local reporting requirements for releases. DENR recommends that spills also be reported to the National Response Center at (800) 424-8802.

❖ **Construction Changes (4.4)**

When changes are made to the construction project that will require alterations in the temporary erosion controls of the site, the Storm Water Pollution Prevention Plan (SWPPP) will be amended to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The Engineer will modify the SWPPP plan and drawings to reflect the needed changes. Copies of forms and the SWPPP will be retained in a designated place for review over the course of the project.



❖ **CERTIFICATIONS**

➤ **Certification of Compliance with Federal, State, and Local Regulations**

The Storm Water Pollution Prevention Plan (SWPPP) for this project reflects the requirements of all local municipal jurisdictions for storm water management and sediment and erosion control as established by ordinance, as well as other state and federal requirements for sediment and erosion control plans, permits, notices or documentation as appropriate.

➤ **Owner**

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

Authorized Signature (See the General Permit, Section 6.7.1.C.)

➤ **Prime Contractor**

This section is to be executed by the General Contractor after the award of the contract. This section may be executed any time there is a change in the Prime Contractor of the project.

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

Authorized Signature

❖ **CONTACT INFORMATION**

➤ **Contractor Information:**

- Prime Contractor Name: _____
- Contractor Contact Name: _____
- Address: _____
- City: _____ State: _____ Zip: _____
- Office Phone: _____ Field: _____
- Cell Phone: _____ Fax: _____

➤ **Owner, City of Harrisburg**

- Name: Joe Stonesifer
- Address: 301 E Willow Street
- City: Harrisburg State: SD Zip: 57032
- Office Phone: 605 743-5872
- Cell Phone: 605 280-7083

➤ **Engineer, Stockwell Engineers**

- Name: David Locke
- Business Address: 801 N Phillips Ave, Suite 100
- City: Sioux Falls State: SD Zip: 57104
- Office Phone: 605 338-6668
- Cell Phone: 605 951-7528

➤ **SD DENR Contact Spill Reporting**

- Business Hours Monday-Friday (605) 773-3296
- Nights and Weekends (605) 773-3231

➤ **SD DENR Contact for Hazardous Materials.**

- (605) 773-3153

➤ **National Response Center Hotline**

- (800) 424-8802.



STOCKWELL ENGINEERS, INC.
801 N. PHILLIPS AVE., SUITE 100
SIOUX FALLS, SD 57104
PH: 605.338.6668
FAX: 605.338.8750



CENTRAL PARK
PHASE 2 GRADING PROJECT
HARRISBURG, SOUTH DAKOTA
SEI Project #: 20377



Plot Title: 6/3/2021 3:56 PM


**CONSTRUCTION
PLANS**

SWPPP


G-1.02

20377-G-2.00 ErosionControl.dwg


LEGEND




- PLACE 6" SALVAGED CRUSHED ROCK




- EROSION CONTROL BLANKET




- PERMANENT SEED MIX #1, 6" TOPSOIL, FERTILIZER, & MULCH




- 12" SEDIMENT CONTROL WATTLE




- SILT FENCE




- VEHICLE TRACKING CONTROL



- CONCRETE WASHOUT FACILITY



- INLET PROTECTION

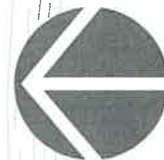


- MANHOLE PLATE MARKER

EXCESS GRAVEL SPREAD AREA
(SPREAD EVENLY ALONG EDGE OF ROAD TO DRAIN)

RESTORE ACCESS ROAD TO
EXISTING CONDITION

UTILIZE EXISTING OWNER TOPSOIL
STOCKPILE TO SUPPLEMENT SALVAGED
TOPSOIL WITHIN PROJECT LIMITS



0 25 50 100

**STOCKWELL**

STOCKWELL ENGINEERS, INC.
801 N. PHILLIPS AVE., SUITE 100
SIOUX FALLS, SD 57104
PH: 605.338.6668
FAX: 605.338.8750



CENTRAL PARK
PHASE 2 GRADING PROJECT
HARRISBURG, SOUTH DAKOTA
SEE PROJECT # 20377



PLOT DATE 6/3/2021 3:26 PM

**CONSTRUCTION
PLANS**

EROSION
CONTROL

G-2.00

2007 - G-200 - Erosion.dwg



CENTRAL PARK
PHASE 2 GRADING PROJECT
HARRISBURG, SOUTH DAKOTA
SEI PROJECT #: 20377

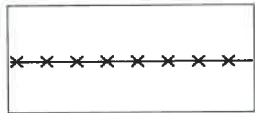


PLOT DATE 6/3/2021 3:26 PM

CONSTRUCTION PLANS

EROSION CONTROL

G-2.01



SILT FENCE

SF

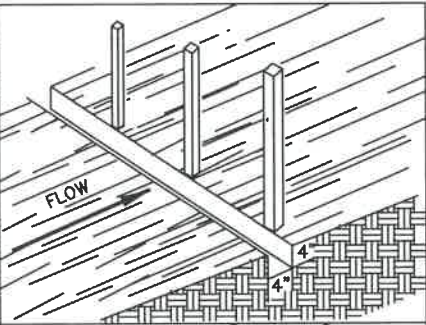
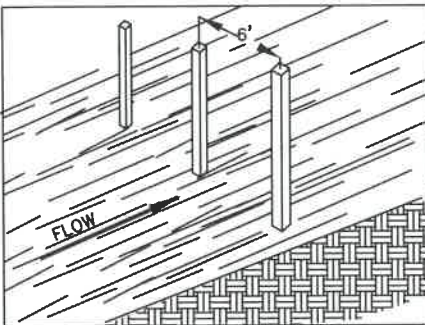
DEFINITION:

A TEMPORARY SEDIMENT BARRIER CONSISTING OF A FILTER FABRIC STRETCHED ACROSS AND ATTACHED TO SUPPORTING POSTS AND ENTRENCHED. THE SILT FENCE IS A TEMPORARY LINEAR BARRIER CONSTRUCTED OF SYNTHETIC FILTER FABRIC AND SUPPORTED BY WOODEN OR STEEL POSTS.

PURPOSES:

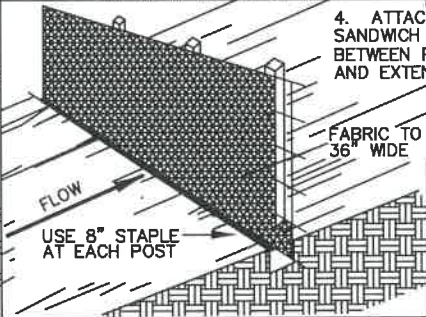
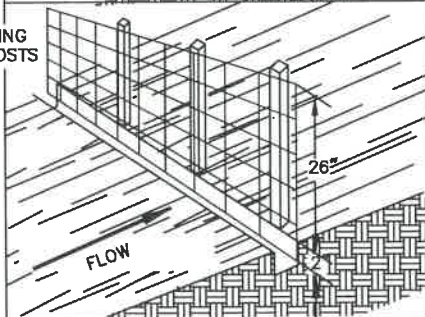
- 1. TO INTERCEPT AND DETAIN SMALL AMOUNTS OF SEDIMENT FROM DISTURBED AREAS DURING CONSTRUCTION OPERATIONS IN ORDER TO REDUCE SEDIMENT IN RUNOFF FROM LEAVING THE SITE.
- 2. TO DECREASE THE VELOCITY OF SHEET FLOWS AND LOW-TO-MODERATE LEVEL CONCENTRATED FLOWS.

1. SET POSTS.



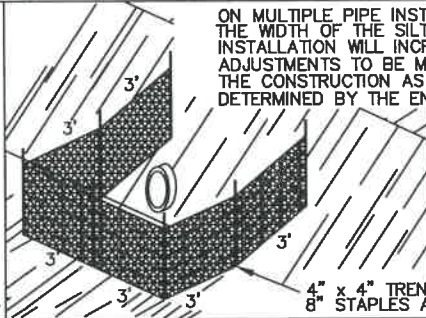
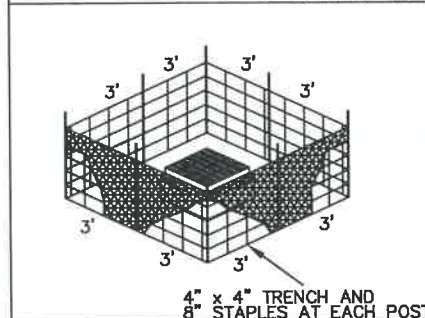
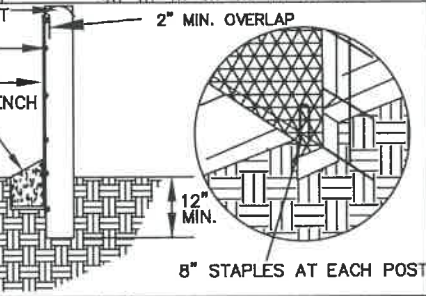
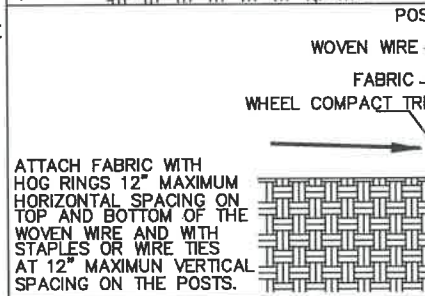
2. EXCAVATE A 4" X 4" TRENCH UPSLOPE ALONG THE POSTS.

3. ATTACH A SUPPORTING WIRE FENCE TO THE POSTS



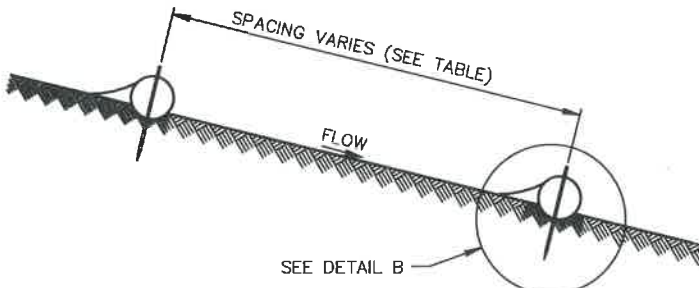
4. ATTACH FABRIC, SANDWICH FABRIC OVERLAP BETWEEN POSTS AND WIRE AND EXTEND INTO TRENCH. FABRIC TO BE 36" WIDE

5. BACKFILL TRENCH. IF ROCK TYPE SOILS ARE ENCOUNTERED, UTILIZE 30 TO 40 LB SANDBAGS BUTTED END TO END TO PREVENT UNDERFLOW.

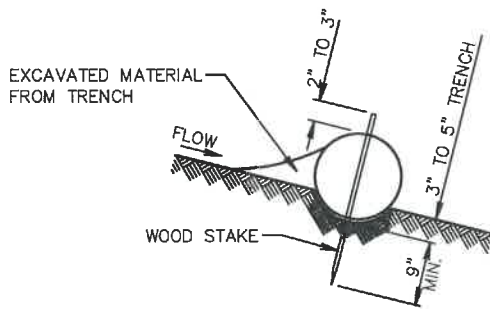


FENCE MATERIAL SHALL CONFORM TO GEOTEXTILE SPECIFICATIONS, SECTION 831 OF SDDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, LATEST EDITION.

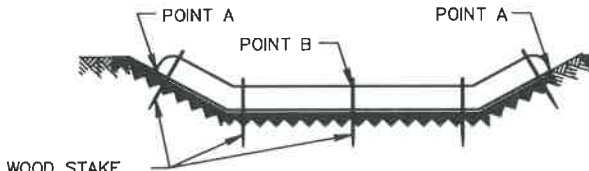
SILT FENCE (WOVEN WIRE)



ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION



DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



SECTION A-A

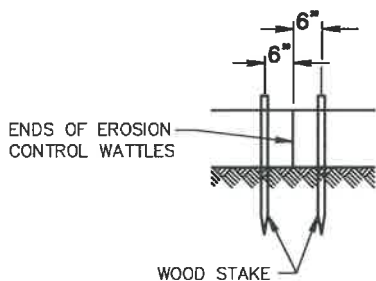
DITCH INSTALLATION	
GRADE	SPACING (FT)
2%	150
3%	100
4%	75
5%	50

SEDIMENT CONTROL WATTLE

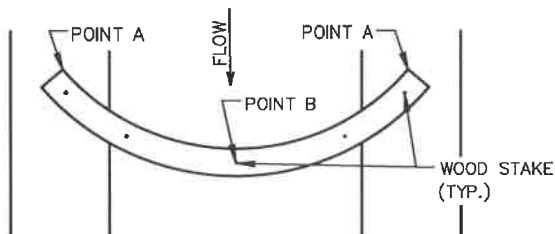
W

CUT OR FILL SLOPE INSTALLATION	
SLOPE	SPACING (FT)
1:1	10
2:1	20
3:1	30
4:1	40

NOTE: IF ONLY ONE WATTLE IS REQUIRED, THE SLOPE SHALL NOT EXCEED 20:1.



DETAIL C



PLAN VIEW
DITCH INSTALLATION

GENERAL NOTES:

AT CUT OR FILL SLOPE INSTALLATIONS, WATTLES SHALL BE INSTALLED ALONG THE CONTOUR AND PERPENDICULAR TO THE WATER FLOW.

AT DITCH INSTALLATIONS, POINT "A" MUST BE HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE WATTLE AND NOT AROUND THE ENDS.

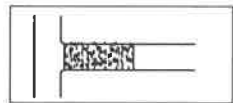
THE CONTRACTOR SHALL DIG A 3" TO 5" TRENCH, INSTALL THE WATTLE TIGHTLY IN THE TRENCH SO THAT DAYLIGHT CAN NOT BE SEEN UNDER THE WATTLE, AND THEN COMPACT THE SOIL EXCAVATED FROM THE TRENCH AGAINST THE WATTLE ON THE UPHILL SIDE. SEE DETAIL B.

THE STAKES SHALL BE 1"x2" OR 2"x2" WOOD STAKES, HOWEVER, OTHER TYPES OF STAKES SUCH AS REBAR MAY BE USED ONLY IF APPROVED BY THE ENGINEER. THE STAKES SHALL BE PLACED 6" FROM THE ENDS OF THE WATTLES AND THE SPACING OF THE STAKES ALONG THE WATTLES SHALL BE 3' TO 4'.

WHERE INSTALLING RUNNING LENGTHS OF WATTLES, THE CONTRACTOR SHALL BUTT THE SECOND WATTLE TIGHTLY AGAINST THE FIRST AND SHALL NOT OVERLAP THE ENDS. SEE DETAIL C.

SEDIMENT CONTROL WATTLE





VEHICLE TRACKING CONTROL

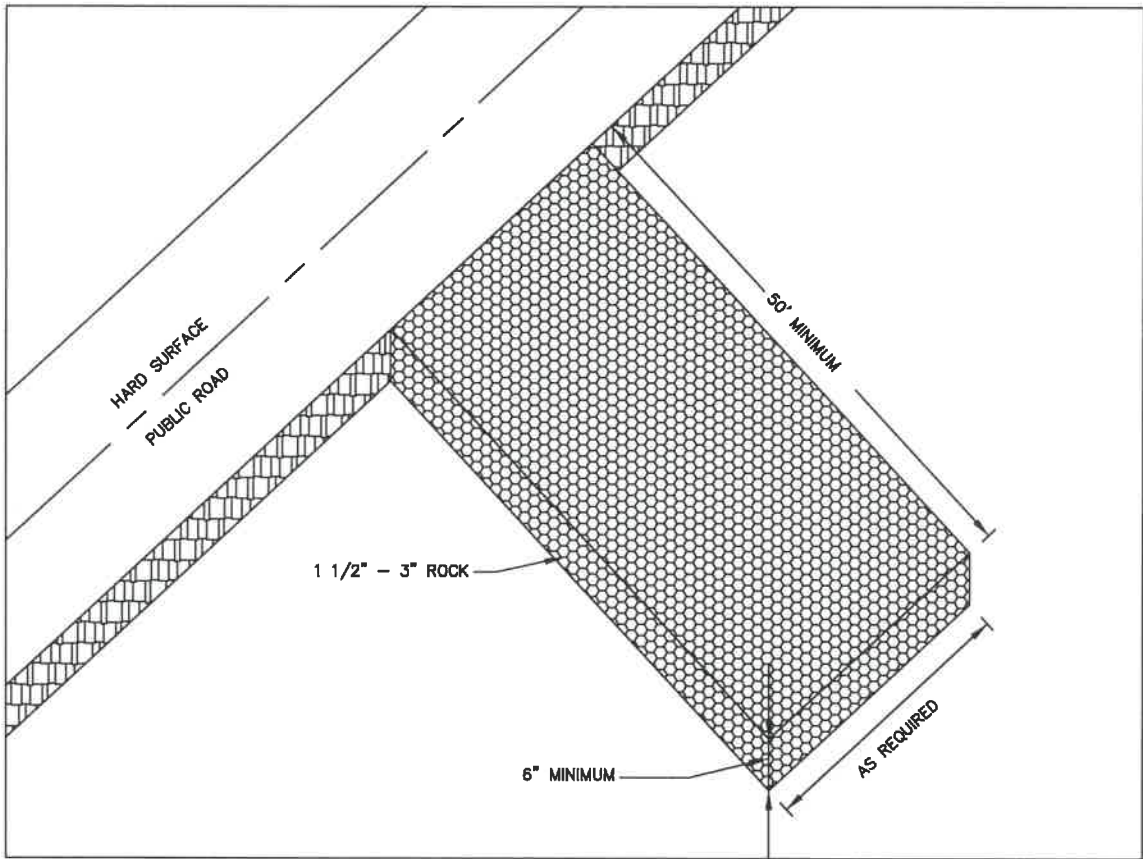


DEFINITION:

A STONE STABILIZED PAD LOCATED AT POINTS OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE.

PURPOSES:

TO REDUCE THE AMOUNT OF MUD TRANSPORTED ONTO PUBLIC ROADS BY MOTOR VEHICLES OR RUNOFF.



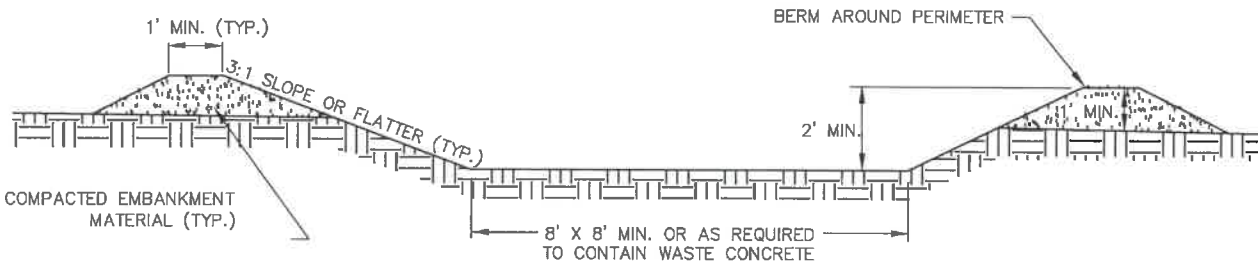
TEMPORARY VEHICLE
TRACKING CONTROL

CONCRETE WASHOUT FACILITY



NOTES:

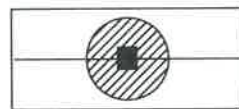
1. CONCRETE WASHOUT FACILITY SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
2. A SIGN SHALL BE INSTALLED ADJACENT TO EACH WASHOUT FACILITY TO INFORM CONCRETE EQUIPMENT OPERATORS TO UTILIZE THE CWF.
3. THE CONCRETE WASHOUT FACILITY SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
4. WHEN CWF ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE AND MATERIALS USED TO CONSTRUCT THE CWF SHALL BE REMOVED AND DISPOSED OF.
5. WHEN THE CONCRETE WASHOUT FACILITY IS REMOVED, THE HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE SHALL BE BACKFILLED, REPAIRED AND STABILIZED.



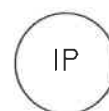
CROSS SECTIONAL VIEW

CONCRETE WASHOUT FACILITY





INLET PROTECTION

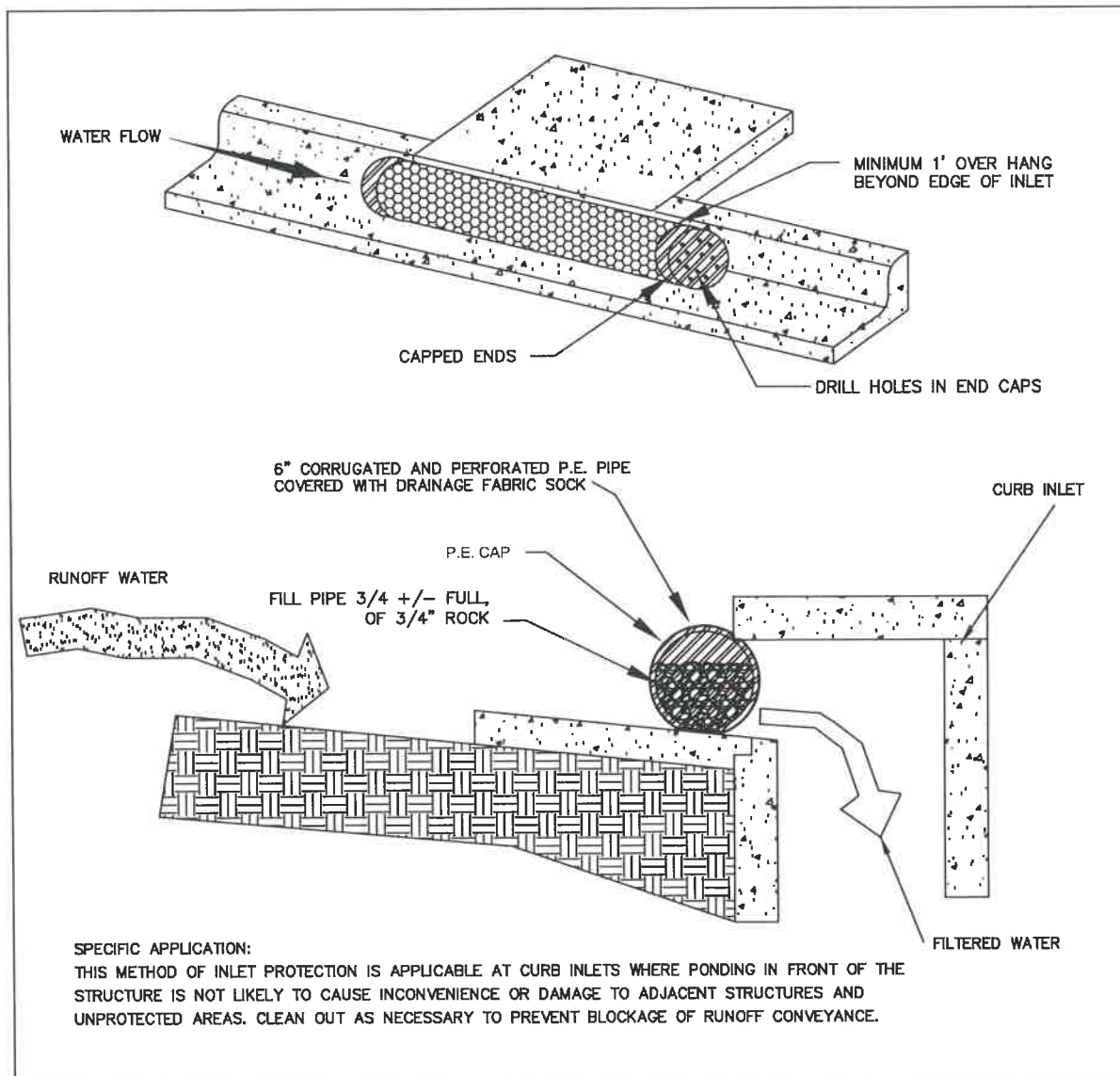


DEFINITION:

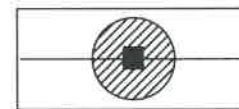
A SEDIMENT FILTER OR AN EXCAVATED IMPOUNDING AREA AROUND A STORM DRAIN DROP INLET OR CURB INLET. TO BE USED ONLY AT ON-GRADE CONDITIONS.

PURPOSES:

TO REDUCE SEDIMENT FROM ENTERING STORM DRAINAGE SYSTEMS PRIOR TO PERMANENT STABILIZATION OF DISTURBED AREAS.



CORRUGATED PIPE AND FABRIC
INLET PROTECTION



INLET PROTECTION

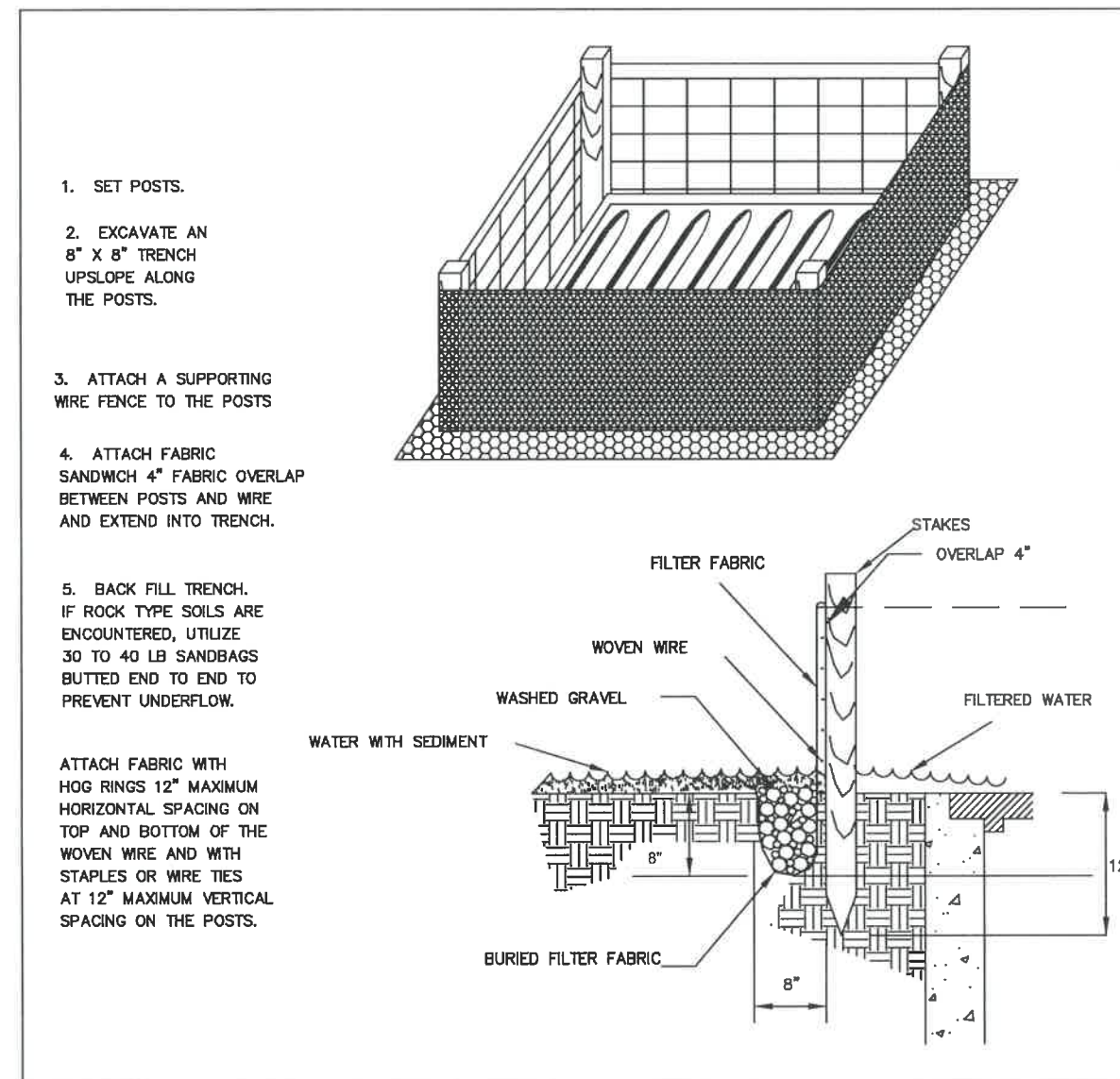


DEFINITION:

A SEDIMENT FILTER OR AN EXCAVATED IMPOUNDING AREA AROUND A STORM DRAIN DROP INLET OR CURB INLET.

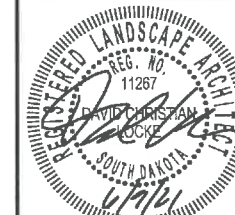
PURPOSES:

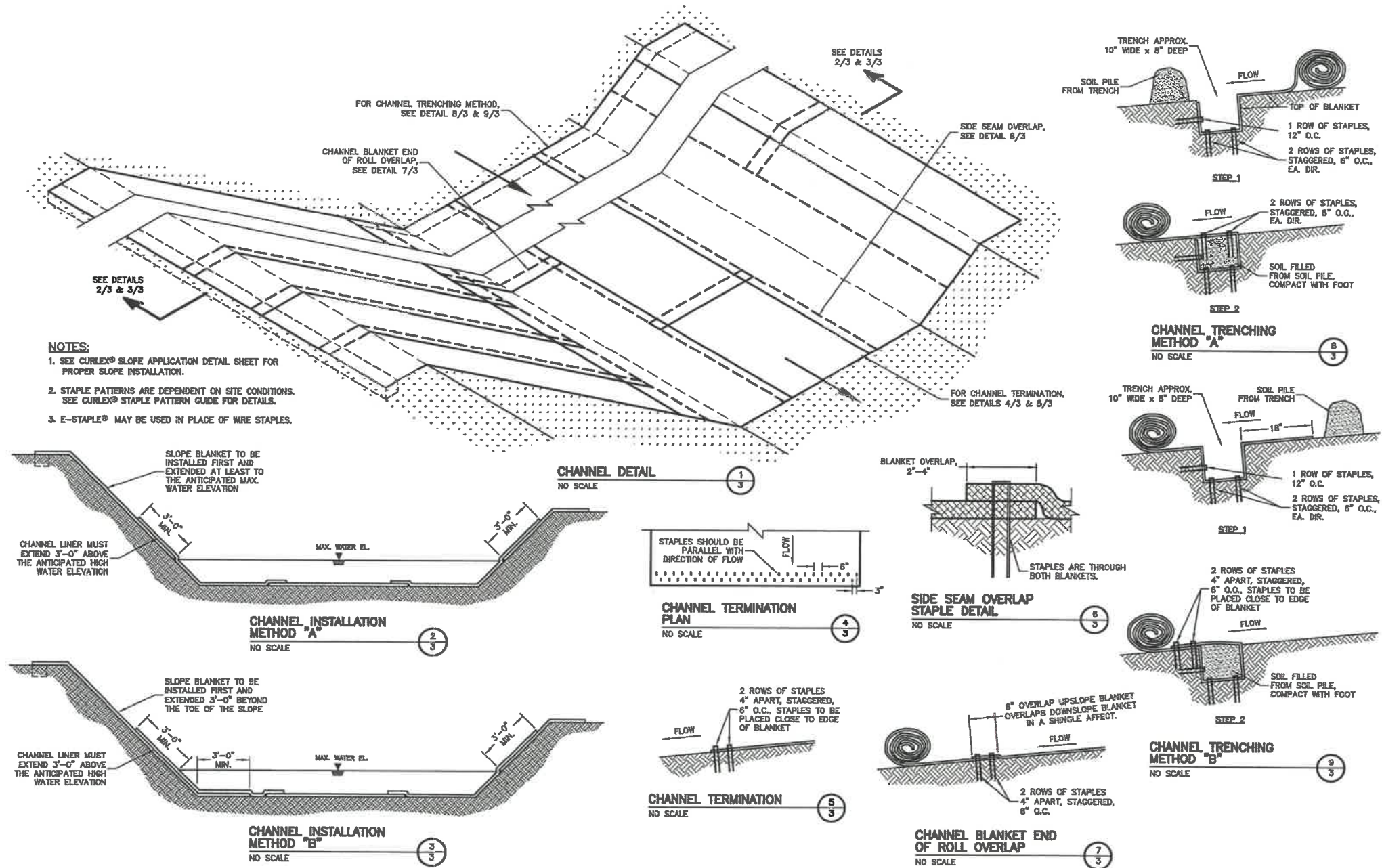
TO REDUCE SEDIMENT FROM ENTERING STORM DRAINAGE SYSTEMS PRIOR TO PERMANENT STABILIZATION OF DISTURBED AREAS.



FILTER FABRIC SHALL CONFORM TO SECTION 831 OF SDDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, LATEST EDITION.

SILT FENCE DROP INLET PROTECTION





EROSION CONTROL BLANKET



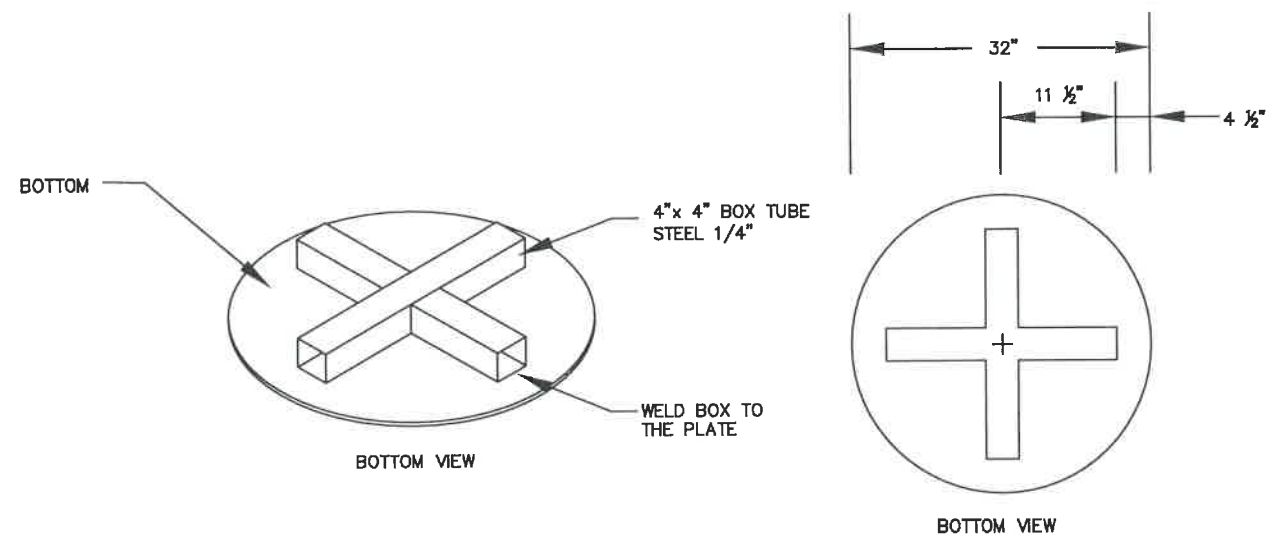
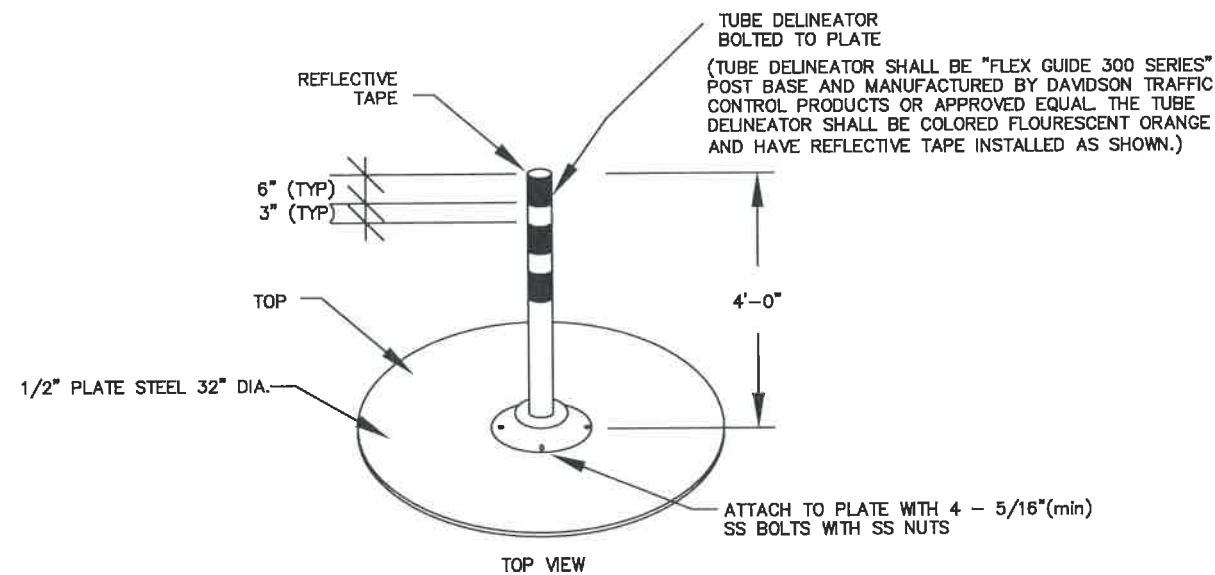
CENTRAL PARK
PHASE 2 GRADING PROJECT
HARRISBURG, SOUTH DAKOTA
SEI PROJECT #: 20377



PLOT DATE 6/3/2021 3:26 PM

CONSTRUCTION PLANS

EROSION CONTROL



- NOTE:
1. A SEALANT MATERIAL SHALL BE INSTALLED
BETWEEN THE MANHOLE CONSTRUCTION PLATE MARKER
AND THE MANHOLE TO FORM A WATERTIGHT SEAL.
 2. BREAKAWAY LIFT HOOKS WILL BE ALLOWED ON THE TOP
OF THE PLATE FOR USE IN INSTALLING AND REMOVING THE
PLATE. THE LIFT HOOKS SHALL BE LOCATED WITHIN A 10 INCH
RADIUS OF THE PLATE CENTER.

MANHOLE CONSTRUCTION
PLATE MARKER



CENTRAL PARK
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SE PROJECT #: 20377



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**CONSTRUCTION
PLANS**

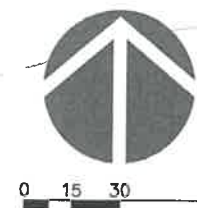
EROSION
CONTROL

G-3.04

20377 - H-1.00 - REMOVALS.dwg

LEGEND

- CLEAR & GRUB TREE OR SHRUB
- CLEARING BOUNDARY / WORK LIMITS
- REMOVE ASPHALT OR CONCRETE PAVEMENT
- REMOVE & SALVAGE GRAVEL SURFACING (4"-6" DEPTH)
- REMOVE & SALVAGE AG LIME SURFACING (6"-8" DEPTH)
- REMOVE & SALVAGE CRUSHED ROCK (8"-12" DEPTH)

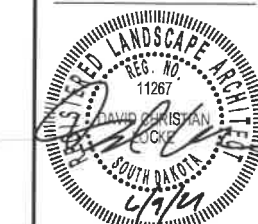


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CENTRAL PARK PHASE 2 GRADING PROJECT HARRISBURG, SOUTH DAKOTA

SEE PROJECT #1-20377



PLOT DATE

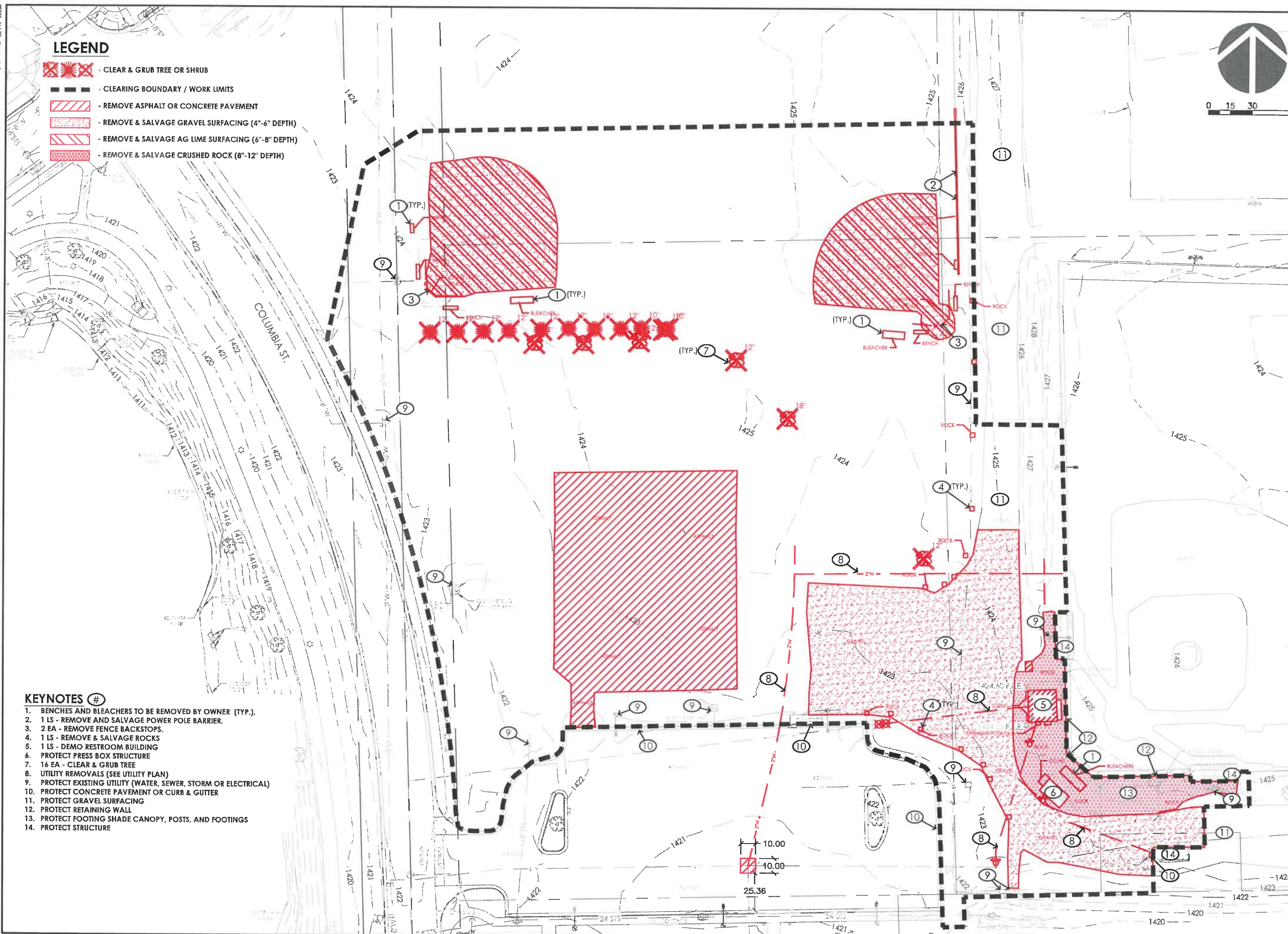
CONSTRUCTION
PLANS

EXISTING
CONDITION &
REMOVALS

H-1.00

KEYNOTES

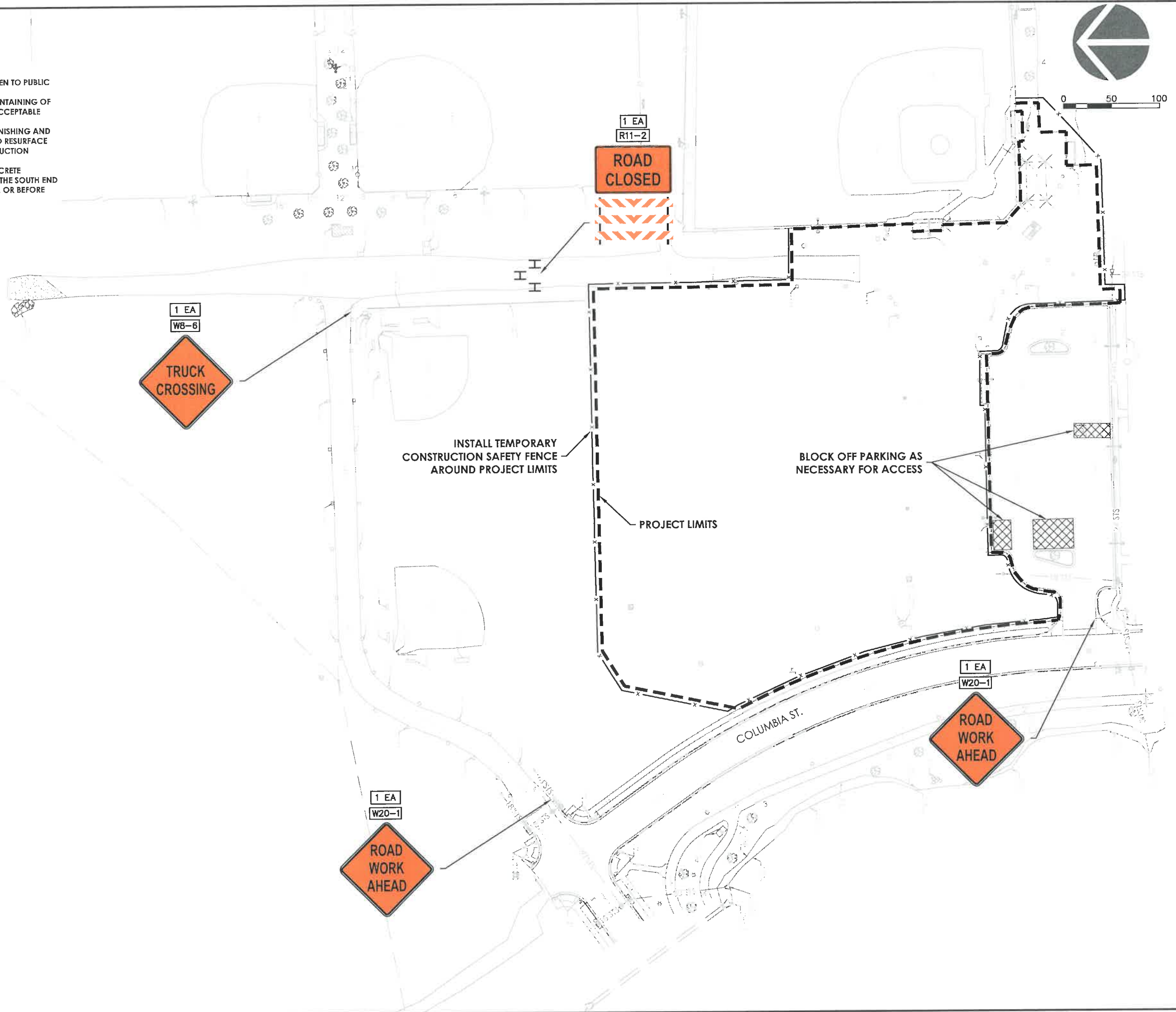
1. BENCHES AND BLEACHERS TO BE REMOVED BY OWNER (TYP.).
2. 1 LS - REMOVE AND SALVAGE POWER POLE BARRIER.
3. 2 EA - REMOVE FENCE BACKSTOPS.
4. 1 LS - REMOVE & SALVAGE ROCKS.
5. 1 LS - DEMO RESTROOM BUILDING.
6. PROTECT PRESS BOX STRUCTURE.
7. 16 EA - CLEAR & GRUB TREE.
8. UTILITY REMOVALS (SEE UTILITY PLAN).
9. PROTECT EXISTING UTILITY (WATER, SEWER, STORM OR ELECTRICAL).
10. PROTECT CONCRETE PAVEMENT OR CURB & GUTTER.
11. PROTECT GRAVEL SURFACING.
12. PROTECT RETAINING WALL.
13. PROTECT FOOTING SHADE CANOPY, POSTS, AND FOOTINGS.
14. PROTECT STRUCTURE.





NOTES

1. THE EXISTING GRAVEL ROAD MUST REMAIN OPEN TO PUBLIC DURING CONSTRUCTION.
2. TRAFFIC CONTROL LUMP SUM TO INCLUDE MAINTAINING OF GRAVEL ROAD, DURING CONSTRUCTION, IN ACCEPTABLE CONDITION FOR PUBLIC USE.
3. TRAFFIC CONTROL LUMP SUM TO INCLUDE FURNISHING AND PLACING SUFFICIENT GRAVEL, AS DIRECTED, TO RESURFACE EXISTING ROAD WHERE DAMAGED BY CONSTRUCTION AND/OR CONSTRUCTION TRAFFIC.
4. UTILITY WORK AND PERMANENT ASPHALT CONCRETE PAVEMENT PATCHING IN THE PARKING LOT AT THE SOUTH END OF THE PROJECT LIMITS MUST BE COMPLETE ON OR BEFORE AUGUST 12, 2021.



**CENTRAL PARK
PHASE 2 GRADING PROJECT**
HARRISBURG, SOUTH DAKOTA
SEE PROJECT # 20377



PLOT DATE 6/3/2021 4:40 PM

**CONSTRUCTION
PLANS**

**TRAFFIC
CONTROL**

I-1.00

LEGEND

- STORM SEWER LINE
- 2" W
- WATER LINE
- 4" S
- SANITARY SEWER LINE
- PVC IRRIGATION LINE
- 2" W
- REMOVALS
- CB - CATCH BASIN, JUNCTION BOX
- B - BEND, VALVE, REDUCER, TEE
- C - CAP, SLEEVE, CURB STOP
- S - SEWER MANHOLE, SEWER CAP
- 1620 - MAJOR FG CONTOUR
- 1621 - MINOR FG CONTOUR

- 1 PIPE CROSSING #1
90 LF - 18" RCP, CLASS 3
(SEE SHEET M1.00 FOR PROFILE)
- 2 PIPE CROSSING #2
73 LF - 15" SS
(SEE SHEET M1.00 FOR PROFILE)
- 3 PIPE CROSSING #3
114 LF - 15" PERFORATED PVC SS
(SEE SHEET M1.00 FOR PROFILE)
- 4 PIPE CROSSING #4
290 LF - 15" SS
(SEE SHEET M1.00 FOR PROFILE)

JB #1
CONSTRUCT 4'X4' JUNCTION BOX
4.09 CY - CLASS M6 CONCRETE
254 LB - REINFORCING STEEL
1 EA - JUNCTION BOX FRAME & COVER

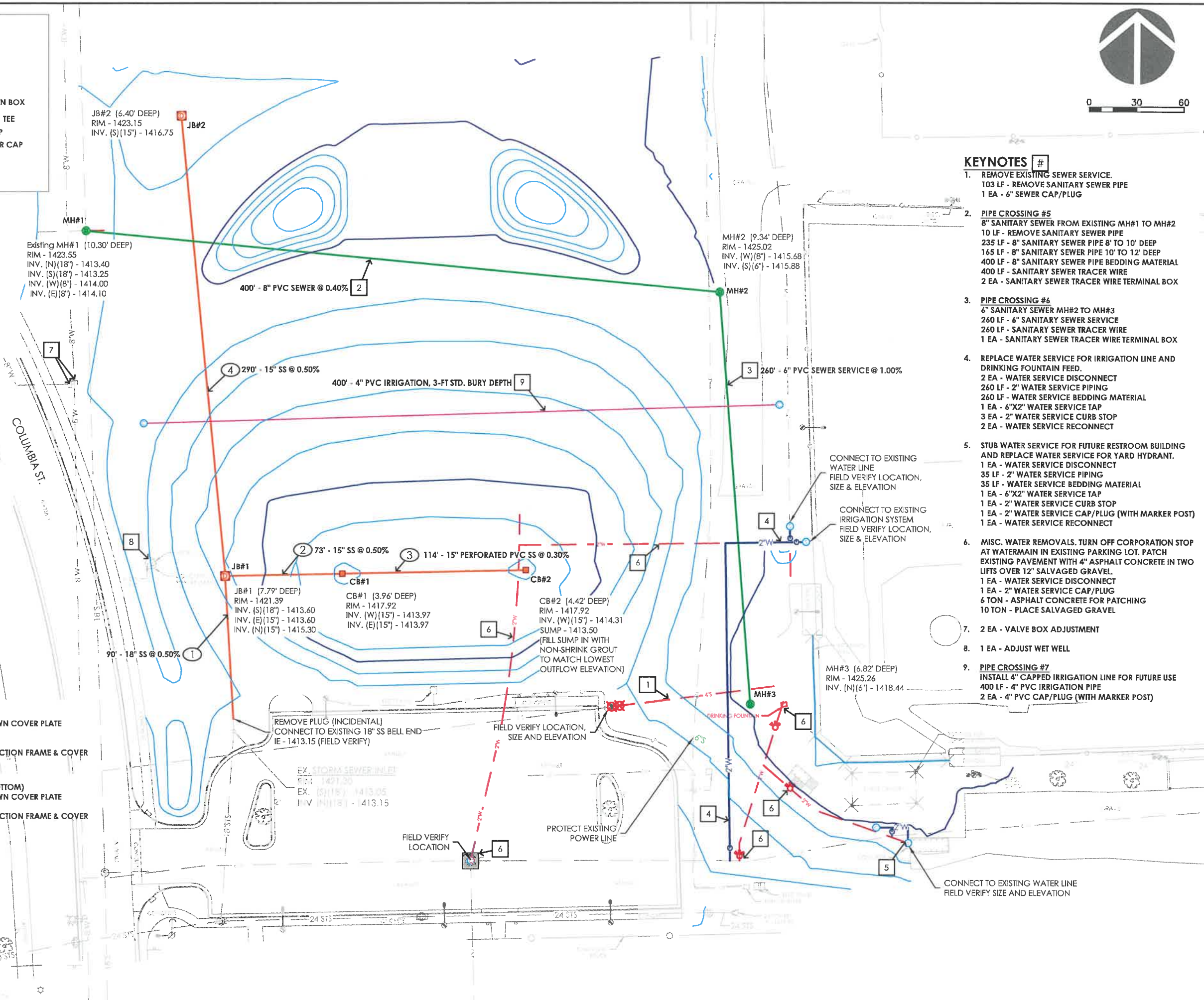
CB #1
CONSTRUCT 2'X2' CATCH BASIN
0.75 CY - CLASS M6 CONCRETE
16 LB - REINFORCING STEEL
1 EA - CATCH BASIN FRAME & COVER

CB #2
CONSTRUCT 2'X2' CATCH BASIN
0.73 CY - CLASS M6 CONCRETE
16 LB - REINFORCING STEEL
1 EA - CATCH BASIN FRAME & COVER

JB #2
CONSTRUCT 4'X4' JUNCTION BOX
3.62 CY - CLASS M6 CONCRETE
222 LB - REINFORCING STEEL
1 EA - CATCH BASIN FRAME & COVER

MH#2
1 EA - 48" MANHOLE 8'-10" DEEP
1 EA - MANHOLE FRAME WITH BOLT DOWN COVER PLATE
1 EA - 6" BOOTS FOR MANHOLE
1 EA - 8" BOOTS FOR MANHOLE
1 EA - TEMPORARY MANHOLE CONSTRUCTION FRAME & COVER

MH#3
1 EA - 48" MANHOLE 6'-8" DEEP (FLAT BOTTOM)
1 EA - MANHOLE FRAME WITH BOLT DOWN COVER PLATE
1 EA - 6" BOOTS FOR MANHOLE
1 EA - TEMPORARY MANHOLE CONSTRUCTION FRAME & COVER

**KEYNOTES #**

1. REMOVE EXISTING SEWER SERVICE.
103 LF - REMOVE SANITARY SEWER PIPE
1 EA - 6" SEWER CAP/PLUG
2. PIPE CROSSING #5
8" SANITARY SEWER FROM EXISTING MH#1 TO MH#2
10 LF - REMOVE SANITARY SEWER PIPE
235 LF - 8" SANITARY SEWER PIPE 8' TO 10' DEEP
165 LF - 8" SANITARY SEWER PIPE 10' TO 12' DEEP
400 LF - 8" SANITARY SEWER PIPE BEDDING MATERIAL
400 LF - SANITARY SEWER TRACER WIRE
2 EA - SANITARY SEWER TRACER WIRE TERMINAL BOX
3. PIPE CROSSING #6
6" SANITARY SEWER MH#2 TO MH#3
260 LF - 6" SANITARY SEWER SERVICE
260 LF - SANITARY SEWER TRACER WIRE
1 EA - SANITARY SEWER TRACER WIRE TERMINAL BOX
4. REPLACE WATER SERVICE FOR IRRIGATION LINE AND DRINKING FOUNTAIN FEED.
2 EA - WATER SERVICE DISCONNECT
260 LF - 2" WATER SERVICE PIPING
260 LF - WATER SERVICE BEDDING MATERIAL
1 EA - 6"X2" WATER SERVICE TAP
3 EA - 2" WATER SERVICE CURB STOP
2 EA - WATER SERVICE RECONNECT
5. STUB WATER SERVICE FOR FUTURE RESTROOM BUILDING AND REPLACE WATER SERVICE FOR YARD HYDRANT.
1 EA - WATER SERVICE DISCONNECT
35 LF - 2" WATER SERVICE PIPING
35 LF - WATER SERVICE BEDDING MATERIAL
1 EA - 6"X2" WATER SERVICE TAP
1 EA - 2" WATER SERVICE CURB STOP
1 EA - 2" WATER SERVICE CAP/PLUG (WITH MARKER POST)
1 EA - WATER SERVICE RECONNECT
6. MISC. WATER REMOVALS. TURN OFF CORPORATION STOP AT WATERMAIN IN EXISTING PARKING LOT. PATCH EXISTING PAVEMENT WITH 4" ASPHALT CONCRETE IN TWO LIFTS OVER 12" SALVAGED GRAVEL.
1 EA - WATER SERVICE DISCONNECT
1 EA - 2" WATER SERVICE CAP/PLUG
6 TON - ASPHALT CONCRETE FOR PATCHING
10 TON - PLACE SALVAGED GRAVEL
7. 2 EA - VALVE BOX ADJUSTMENT
8. 1 EA - ADJUST WET WELL
9. PIPE CROSSING #7
INSTALL 4" CAPPED IRRIGATION LINE FOR FUTURE USE
400 LF - 4" PVC IRRIGATION PIPE
2 EA - 4" PVC CAP/PLUG (WITH MARKER POST)



0 30 60

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CENTRAL PARK
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 SEE PROJECT # 20377



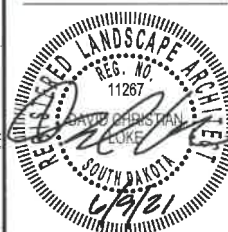
PLOT DATE

CONSTRUCTION
PLANS

UTILITY PLAN

L-1.00

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PHASE 2 GRADING PROJECT
HARRISBURG, SOUTH DAKOTA
SEI PROJECT #: 20377



PLOT DATE _____

CONSTRUCTION PLANS

GRADING PLAN

J-1.00

VERTICAL: 1" = 10'
HORIZONTAL: 1" = 30'

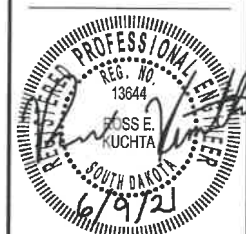
LEGEND

- PROPOSED GRADE
- EXISTING GRADE

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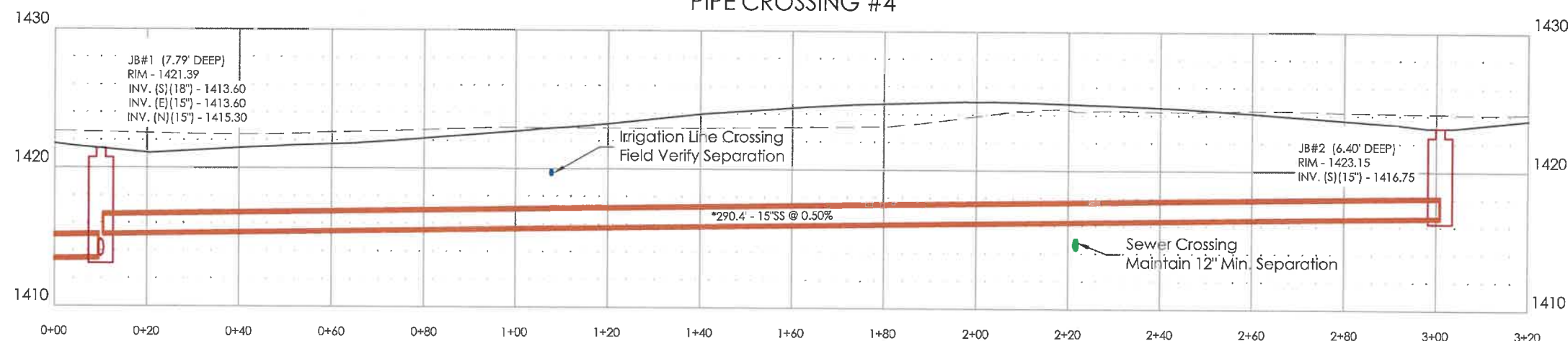
PLOT DATE

CONSTRUCTION
PLANS

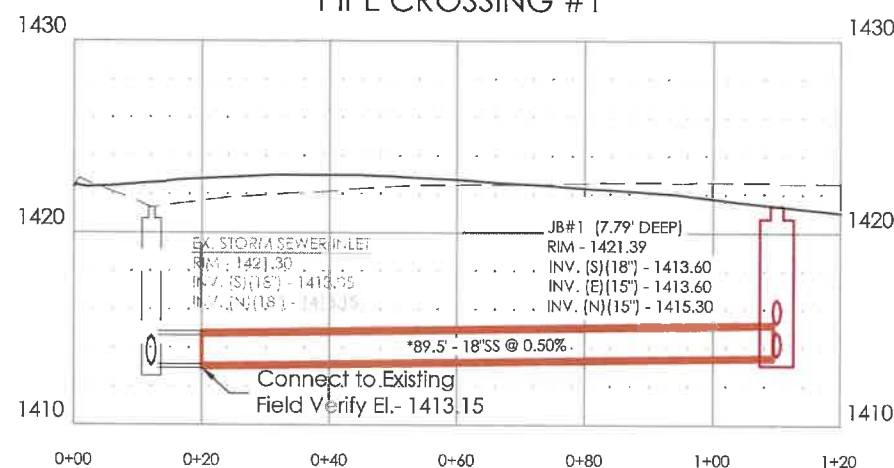
PIPE SECTIONS

M-1.00

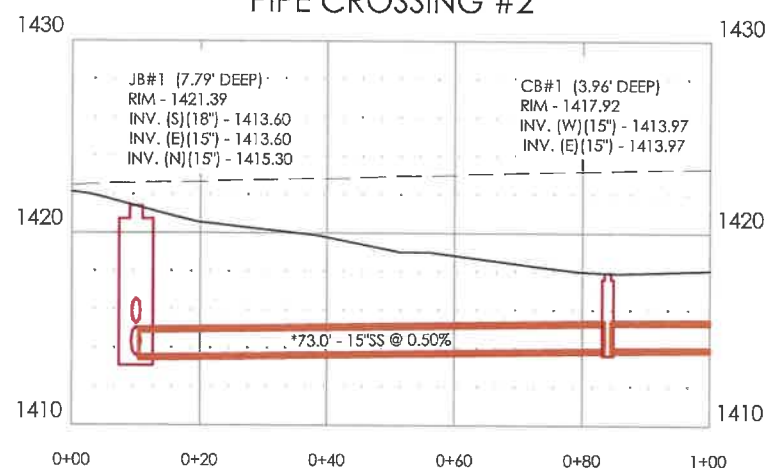
PIPE CROSSING #4



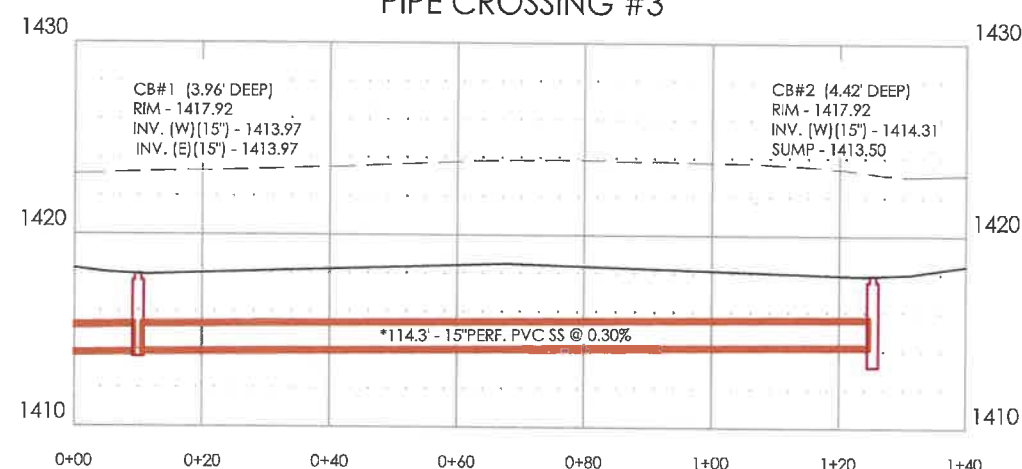
PIPE CROSSING #1



PIPE CROSSING #2



PIPE CROSSING #3



* - DENOTES ENTIRE PIPE LENGTH

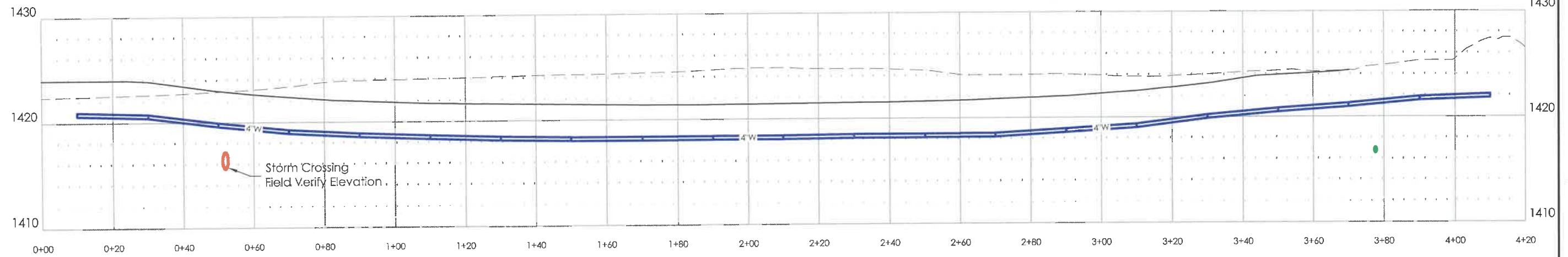
VERTICAL: 1" = 10'
HORIZONTAL: 1" = 30'

LEGEND

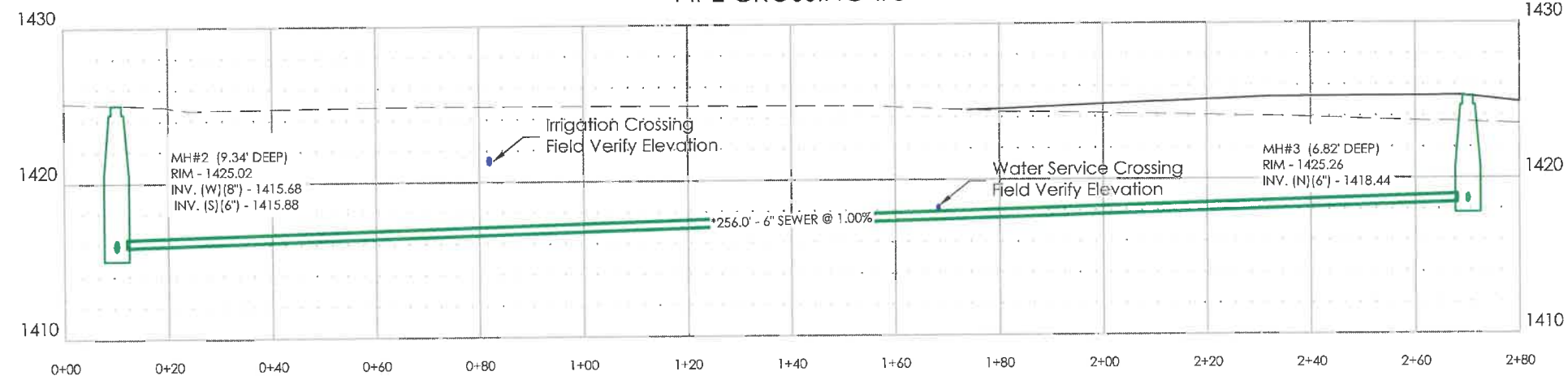
- PROPOSED GRADE
- EXISTING GRADE



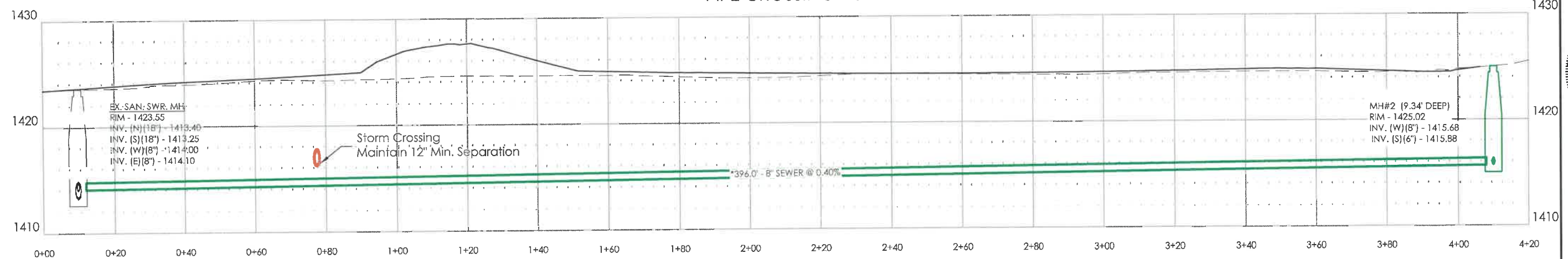
PIPE CROSSING #7



PIPE CROSSING #6

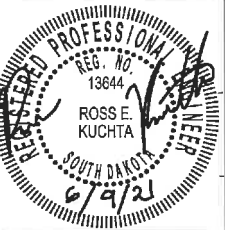


PIPE CROSSING #5



* - DENOTES ENTIRE PIPE LENGTH

CENTRAL PARK
PHASE 2 GRADING PROJECT
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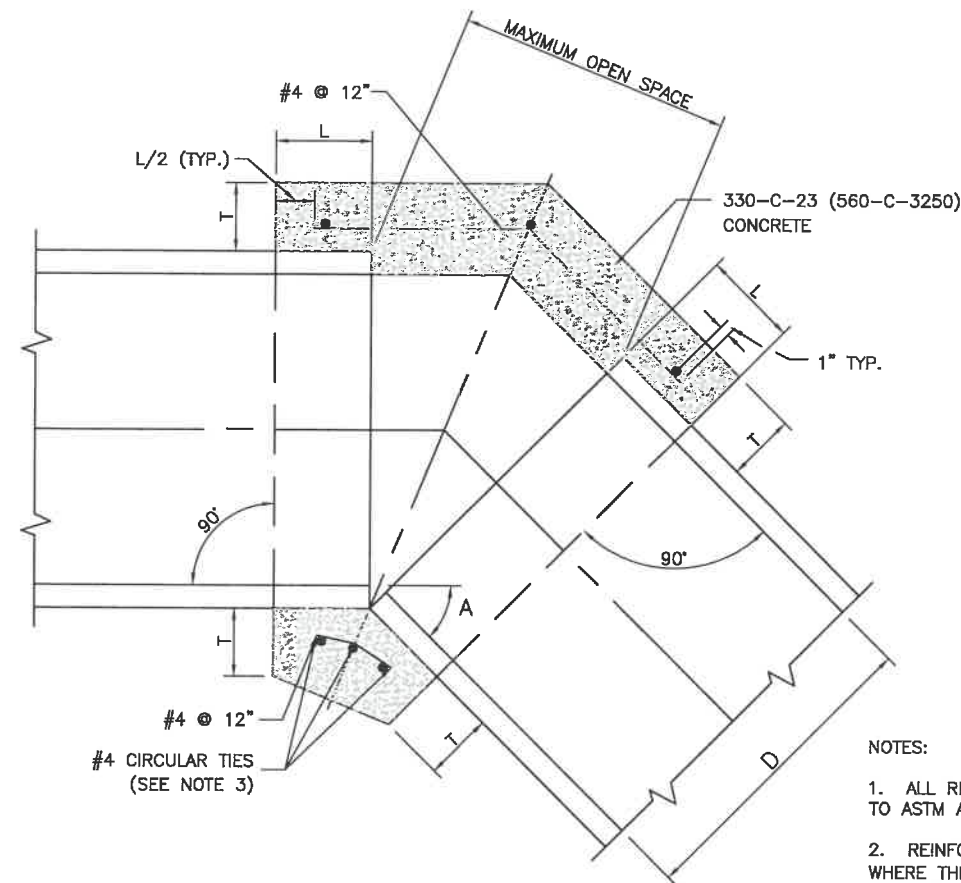
PLOT DATE

CONSTRUCTION PLANS

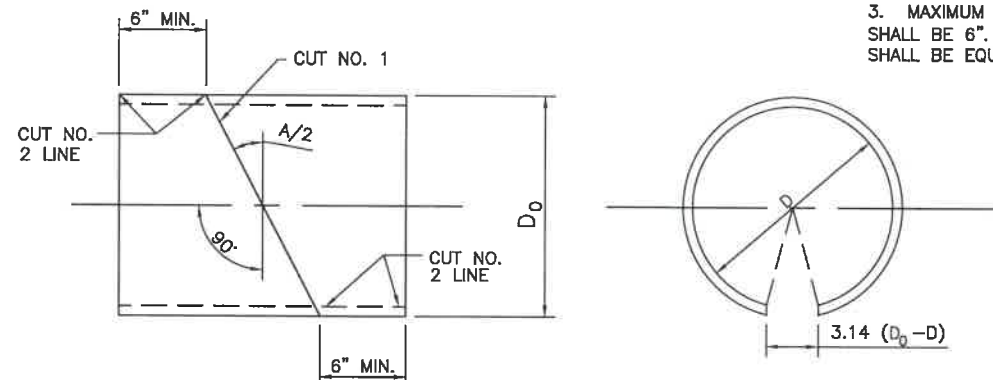
PIPE SECTIONS

M-1.01

20377-N-1.00-Details.dwg



- NOTES:
1. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60.
 2. REINFORCING STEEL IS NOT REQUIRED WHERE THE "MAXIMUM OPEN SPACE" IS LESS THAN 3".
 3. MAXIMUM SPACING FOR CIRCULAR TIES SHALL BE 6". THE DIAMETER OF CIRCULAR TIES SHALL BE EQUAL TO THE PIPE O.D. PLUS T.

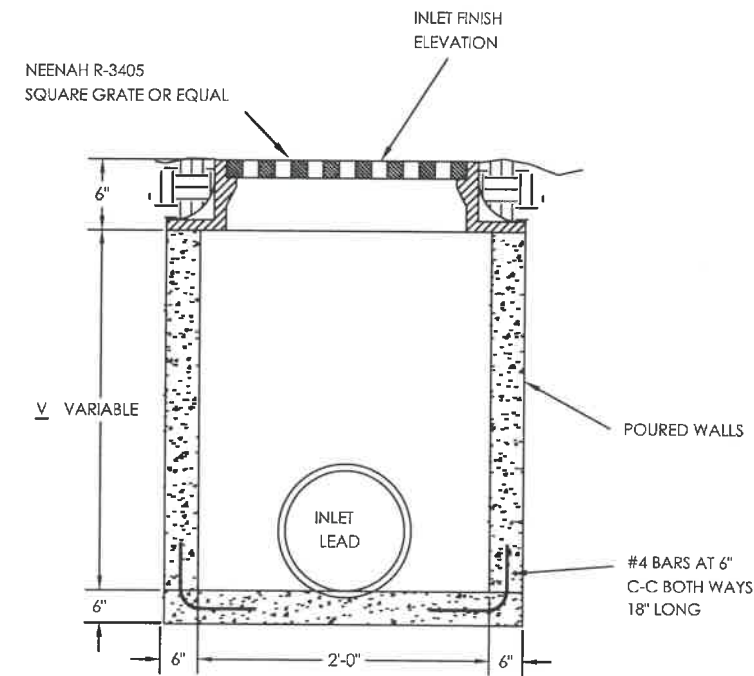


DETAIL "A"
SONO-TUBE, OR EQUAL, INTERIOR FORM

CUT NO. 1: SAW THE TUBE AT AN ANGLE OF A/2 WITH THE TRANSVERSE PLANE. REVERSE ON SECTION AND TAPE BOTH SECTIONS TOGETHER FORMING THE DEFLECTION ANGLE A.
CUT NO. 2: SAW THE TUBE LONGITUDINALLY REMOVING A STRIP 3.14 (D - D) WIDE ON THE SIDE OPPOSITE THE OPEN JOINT. BEND THE ENDS OF THE CUT TOGETHER AND INSERT THE TUBE IN THE PIPE.

ISSUED: FEBRUARY 2004

CONCRETE PIPE COLLAR



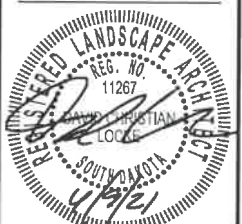
ESTIMATED QUANTITIES			
ITEM	UNIT	CONSTANT	VARIABLE
* CLASS M6 CONCRETE	CUYDS	0.17	0.19V
REINFORCEMENT-CONC. MASONRY	LBS	16	---

* CONSTANT SHALL BE REDUCED FOR THE APPROPRIATE PIPE OR COMBINATION OF PIPES. THUS: 12" DIA.=0.03 C.Y., 15" DIA.=0.04 C.Y., 18" DIA.=0.05 C.Y.

2' X 2' CATCH BASIN



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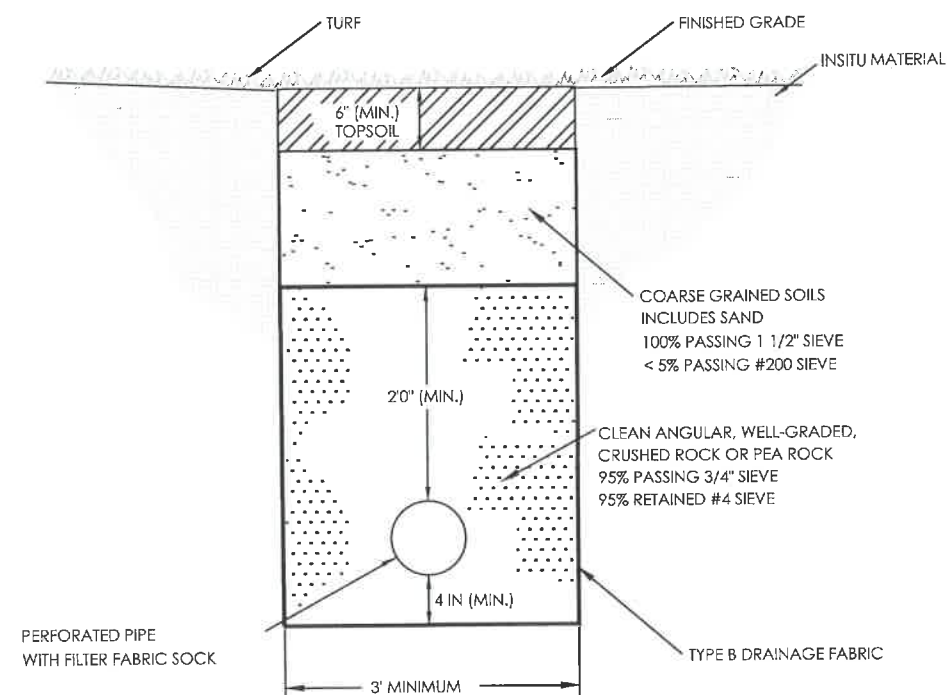


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CONSTRUCTION
PLANS

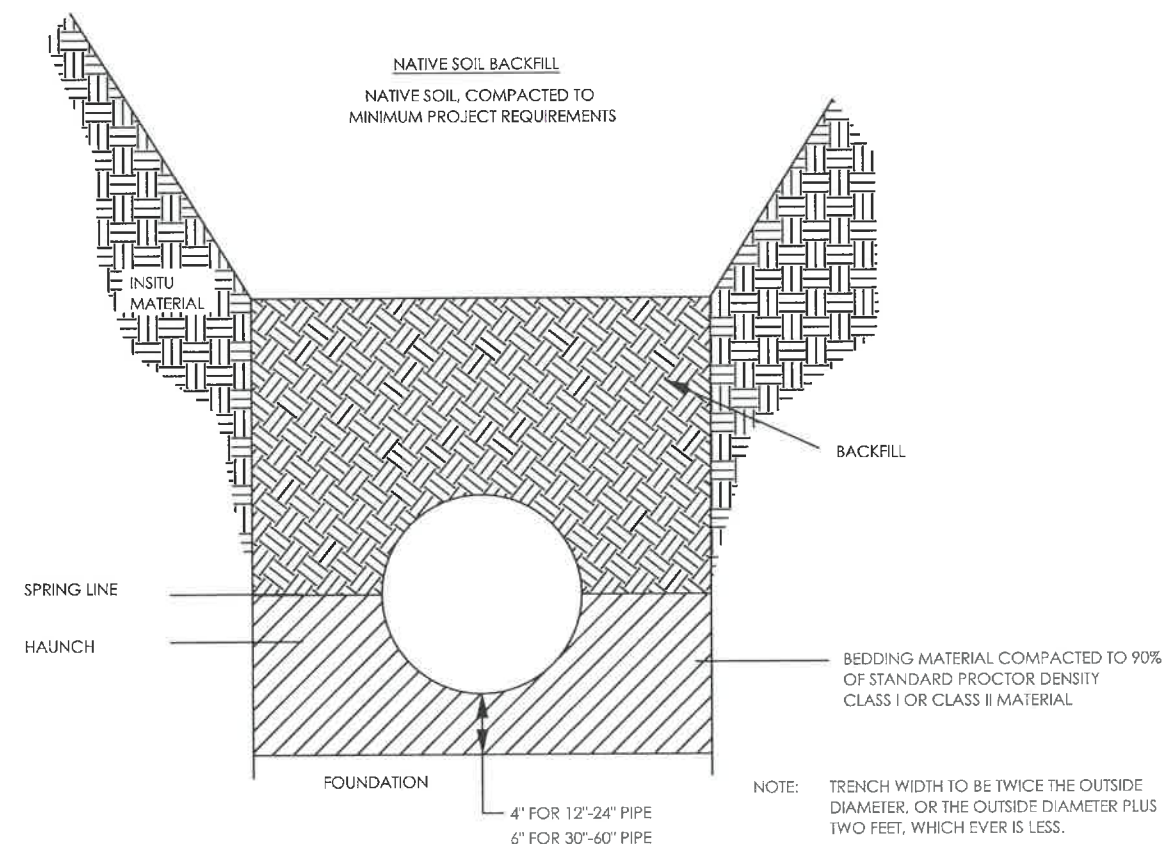
DETAILS

N-1.00



FILTER FABRIC SOCK SHALL BE AN APPROVED STRONG ROUGH POROUS, POLYESTER OR OTHER APPROVED KNITTED FABRIC WHICH COMPLETELY COVERS AND IS SECURED TO THE PERFORATED PIPE IN SUCH A WAY AS TO PREVENT INFILTRATION OF TRENCH BACKFILL MATERIAL. MATERIAL SHALL MEET THE REQUIREMENTS OF ASTM D 3786 AND ASTM D 737.

PERFORATED PVC BEDDING DETAIL



MATERIAL

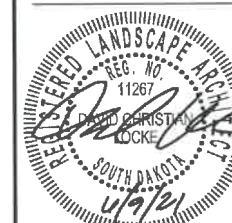
CLASS 1: CRUSHED ROCK OR GRAVEL
100% PASSING 1 1/2" SIEVE
<5% PASSING #200 SIEVE

CLASS II: COARSE GRAINED SOILS INCLUDES SAND
100% PASSING 1 1/2" SIEVE
<5% PASSING #200 SIEVE

BEDDING AND BACKFILL FOR 12" THRU 84" RCP STORM SEWER INSTALLATION



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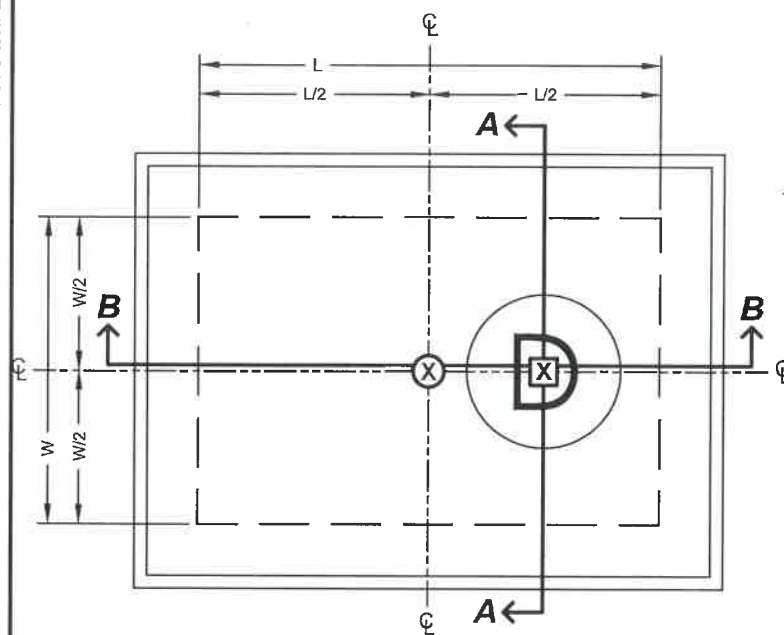


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CONSTRUCTION PLANS

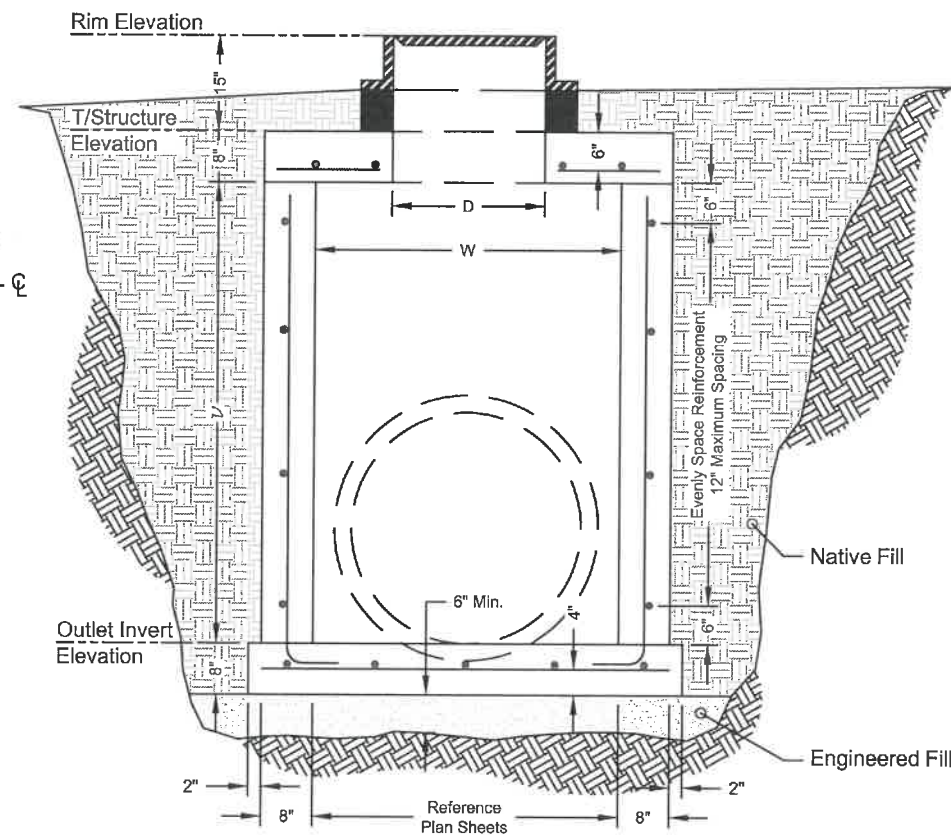
DETAILS

N-1.01

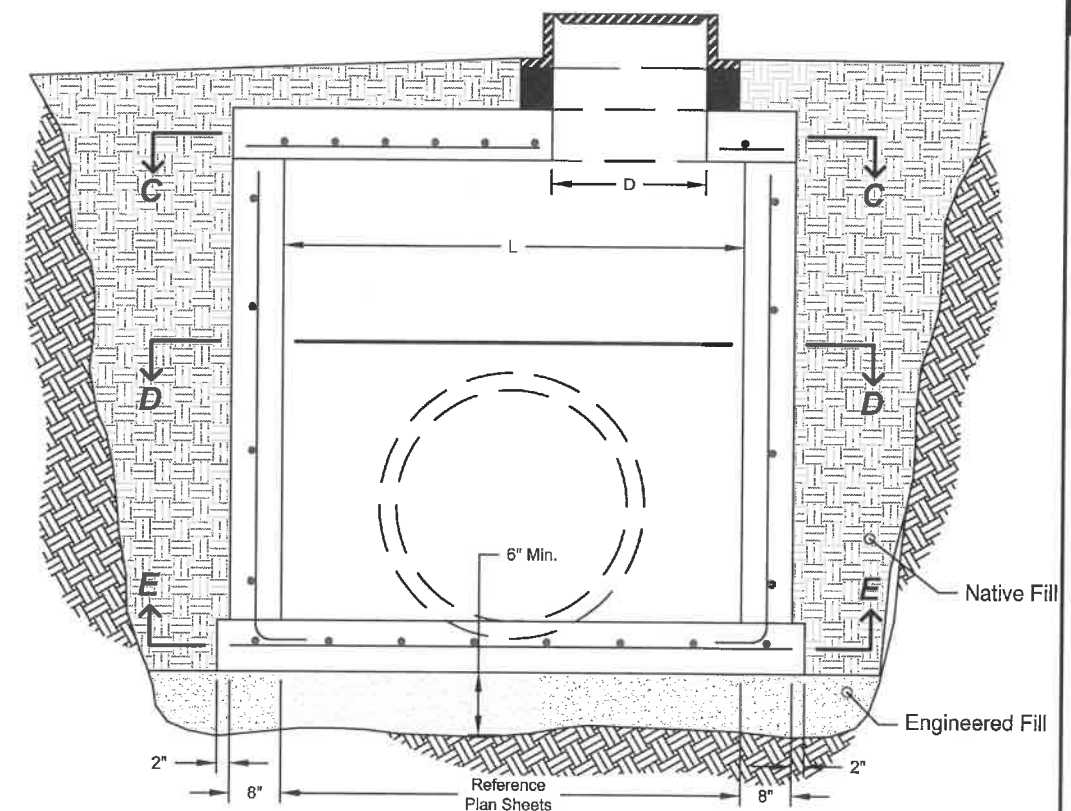


- (X) - Point of station reference for structure
 [X] - Point of station reference for casting
 W - Width of structure
 L - Length of structure
 D - Inside Diameter of Casting
 v - Depth of Structure

Plan View



Section A-A



Section B-B

Specifications:

Concrete, Castings, Steel Reinforcement, Mortar and curing compound shall meet the requirements of Section 670 - Drop Inlets of the SDDOT Standard Specifications for Roads and Bridges, most current edition.

Supplemental Requirements:**Materials:**

All reinforcement within the structure shall be #4 bars with the exception of the cover. Reinforcement within the cover shall be #5 bars.

Type JB frame & covers shall be Neenah R-1733 with concealed pick holes and self-sealing gasket. Type CB frame & grates shall be Neenah R-3405 with a 24"x24" square opening in the structure cover.

Engineered Fill shall be angular crushed rock meeting the gradation requirements of ASTM C448, Size #4.

Construction Requirements:

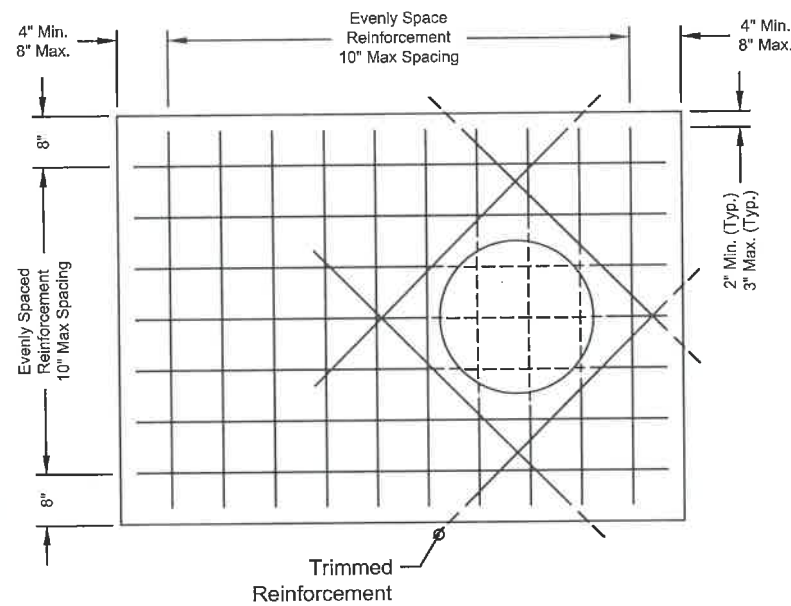
Reinforcing shall be continuous around corners and through connecting slabs. Splices shall be overlapped by a minimum of 12-inches.

The location of the manhole casting is variable in relationship to the cover. Reference the plan sheets for location.

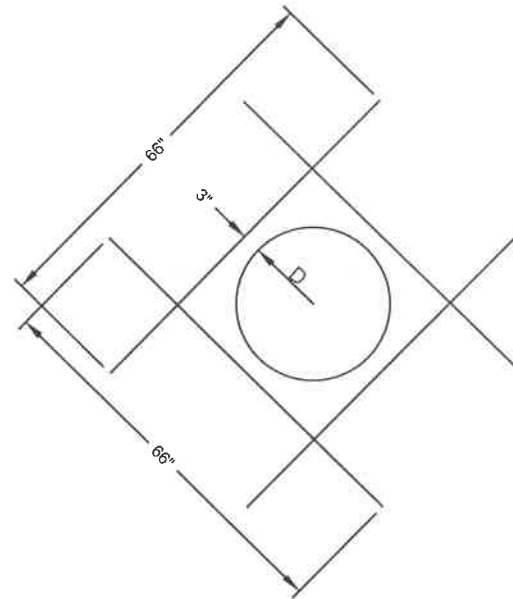
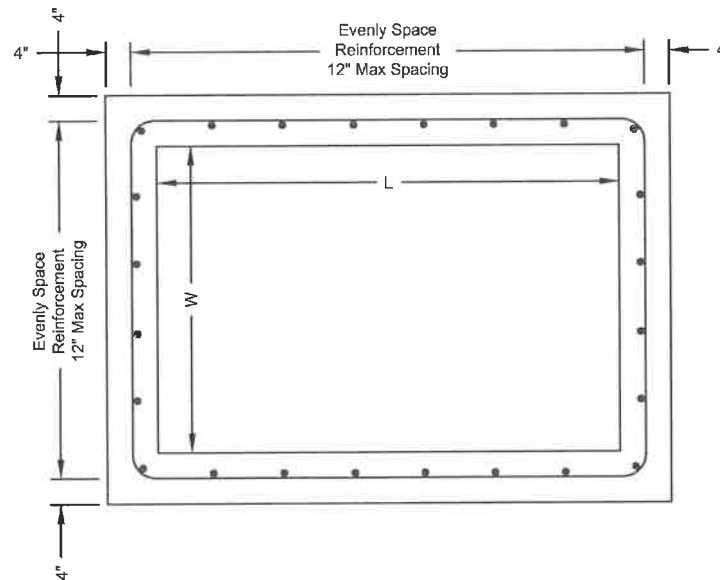
The width of structure "W" and length of structure "L" shall not exceed 7-feet. Depth of structure "v" shall not exceed 8-feet.

Measurement & Payment:

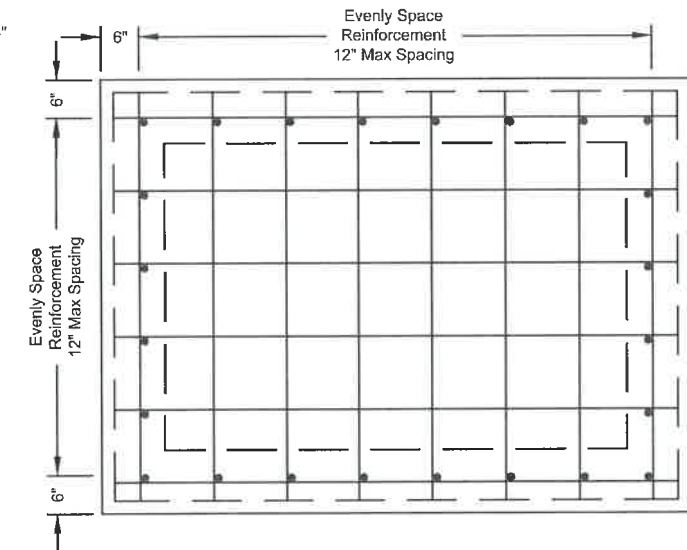
Engineered Fill shall not be measured for payment and shall be considered incidental to the structure.



Section C-C

Reinforcement at
Access Manhole

Section D-D



Section E-E

- (X) - Point of station reference for structure
 [X] - Point of station reference for casting
 W - Width of structure
 L - Length of structure
 D - Inside Diameter of Casting
 ν - Depth of Structure

Notes:

- Maximum diameter "D" shall be 26-inches
- Reinforcement shall be trimmed as necessary to fit within the cover through the manhole opening.
- Reinforcement shall maintain a minimum of 2-inches of cover and shall extend to within 2 to 3-inches of all exterior surfaces

Quantity Computations

Class M6 Concrete

Variables:

M6 - Volume of Class M6 Concrete (CuYd) ν - Depth of structure (Inches)
 W - Width of structure (Inches) TOR - Total Orifice Reduction Value (CuYd)
 L - Length of structure (Inches)

Calculations:

$$M6 = \frac{(W+16)(L+16)}{5832} + \frac{(W+20)(L+20)}{5832} + \frac{\nu(L+W+16)}{2916} - TOR$$

The Total Orifice Reduction Value shall be the total sum of all individual reduction volumes defined by the equation $\nu = \pi R^2 t$ in which "R" and "t" are equal to the radius of orifice and wall thickness respectively. A table of computations for wall protrusions is provided below. Wall thickness of inlet and outlet pipes is considered negligible. Reductions for manhole castings shall be coordinated with the specified casting diameter.

12" Dia. = 0.02	21" Dia. = 0.06	30" Dia. = 0.12	42" Dia. = 0.24
15" Dia. = 0.03	24" Dia. = 0.08	33" Dia. = 0.15	48" Dia. = 0.31
18" Dia. = 0.04	27" Dia. = 0.10	36" Dia. = 0.17	

Reinforcing Steel

Variables:

R_T - Total Reinforcement within Structure
 R_C - Reinforcement within cover (Lb)
 R_F - Reinforcement within floor (Lb)
 R_W - Reinforcement within walls (Lb)
 B_{CW} - Number of bars within the cover with respect to width

B_{CL} - Number of bars within the cover with respect to length
 B_{FW} - Number of bars within the floor with respect to width
 B_{FL} - Number of bars within the floor with respect to length
 B_{WV} - Number of vertical bars within the walls
 B_{WH} - Number of horizontal bars within the walls

W - Width of structure (Inches)
 L - Length of structures (Inches)
 ν - Depth of structure (Inches)

Constants:

C_W - Coefficient of weight per length of bar (Lb/Ft)

A table of coefficient of weight (C_W) for various bar sizes are provided below.

#3 Bar = 0.376	#5 Bar = 1.043	#7 Bar = 2.044	#9 Bar = 3.400
#4 Bar = 0.668	#6 Bar = 1.502	#8 Bar = 2.670	#10 Bar = 4.303

Calculations:

Calculations provided below are divided into three parts, the cover, floor, and walls. The total reinforcement with the structure "R_T" is the total sum of each. No reductions for orifices or trimmed bars shall be figured. No additions for overlapped bars shall be included. The quantity for overlapped bars shall be considered incidental to the total reinforcement of the structure. When figuring the number of bars throughout the structure, the notation " " represents a rounding function in which the resultant enclosed within the brackets shall be rounded up to the nearest whole integer. Calculations shall be as follows:

Cover Calculations:

$$B_{CW} = \lceil \lceil \frac{L+8}{12} + 1 \rceil \lceil \frac{W+8}{12} + 1 \rceil \rceil$$

$$R_C = \frac{[B_{CW}(W+12) + B_{CL}(L+12) + 264]}{12} * 1.043$$

Floor Calculations:

$$B_{FW} = \lceil \lceil \frac{L+8}{12} + 1 \rceil \lceil \frac{W+8}{12} + 1 \rceil \rceil$$

$$R_F = \frac{[B_{FW}(W+16) + B_{FL}(L+16)]}{12} * 0.668$$

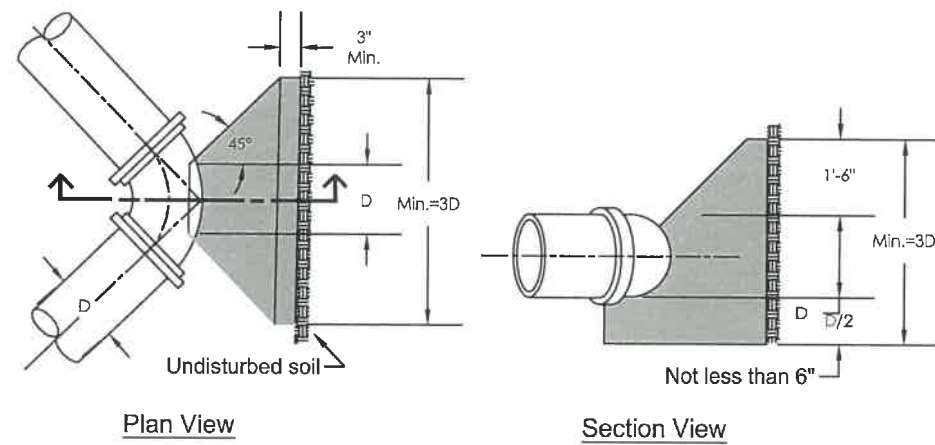
Wall Calculations:

$$B_{WV} = \lceil \lceil \frac{L+W+16}{6} + 1 \rceil \lceil \frac{\nu-12}{12} + 1 \rceil \rceil$$

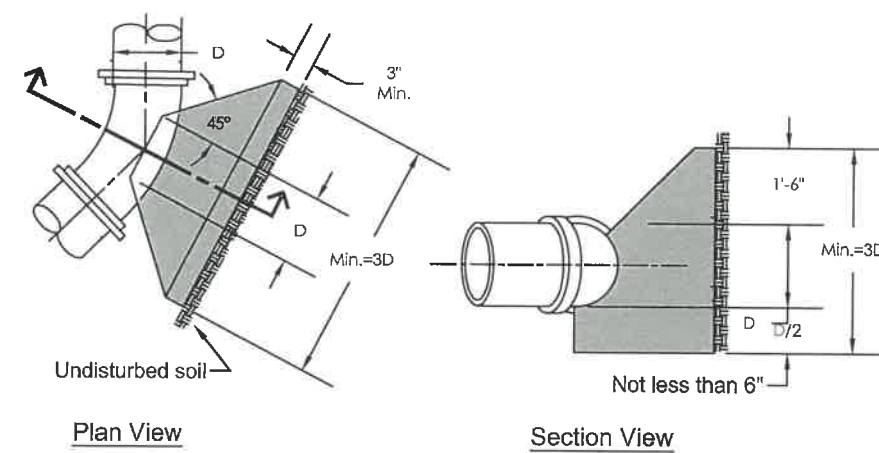
$$R_W = \frac{B_{WV}(\nu) + 2B_{WH}(L+W+16)}{12} * 0.668$$

Total Reinforcement Calculation:

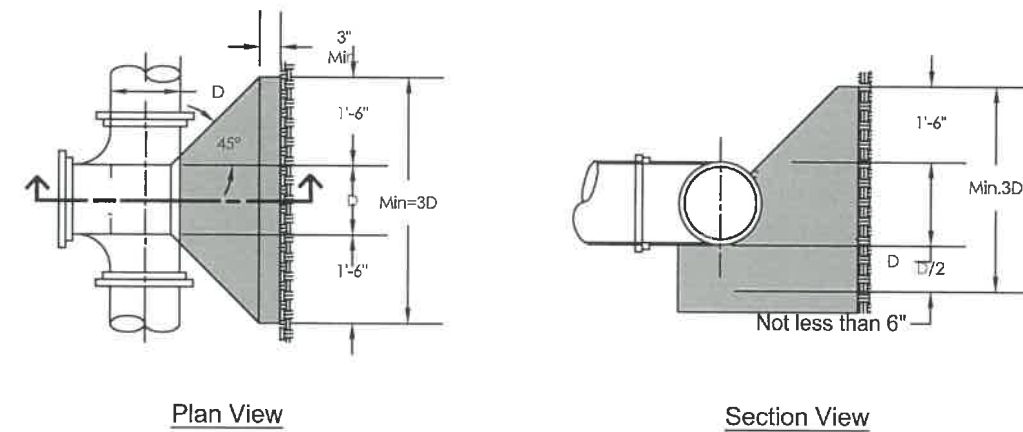
$$R_T = R_C + R_F + R_W$$



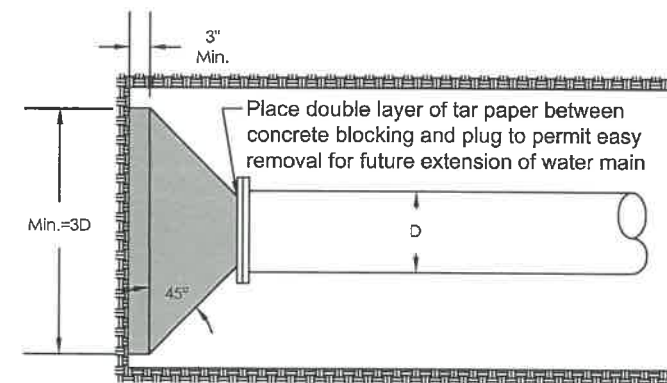
90 - Degree Bend



11 1/4 - Degree, 22 1/2 - Degree and 45 - Degree Bends



Tee



S.J./M.J. Plug

CONCRETE THRUST BLOCK



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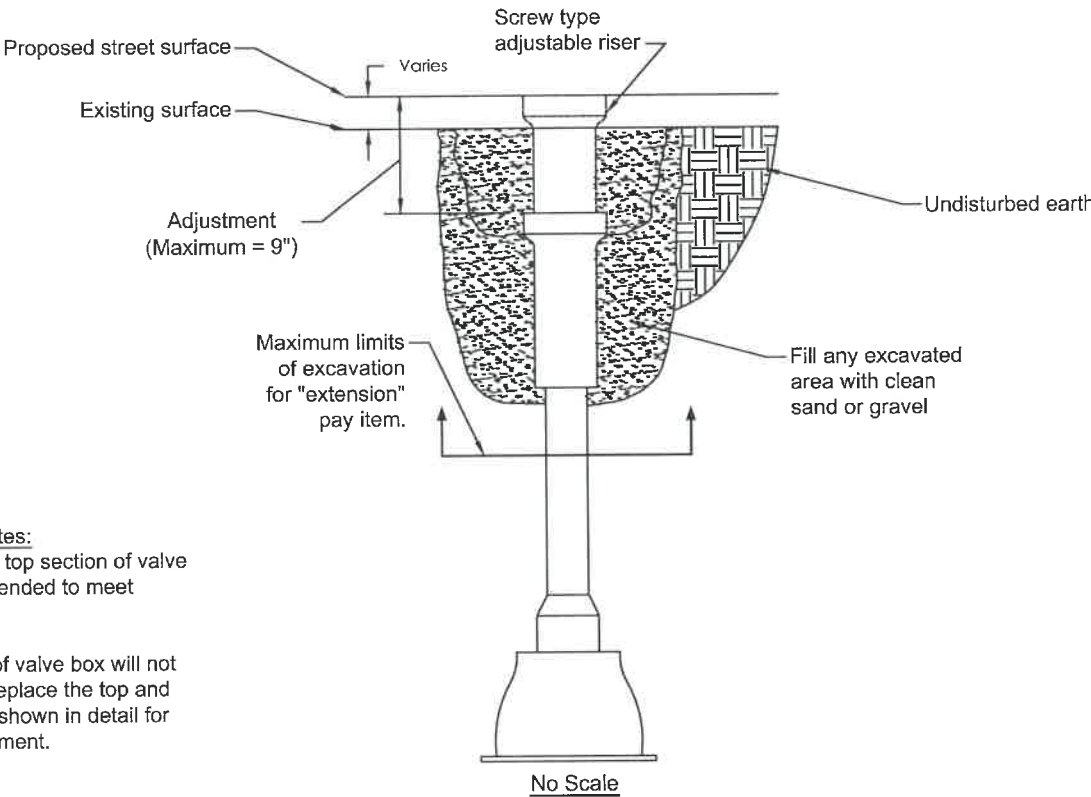
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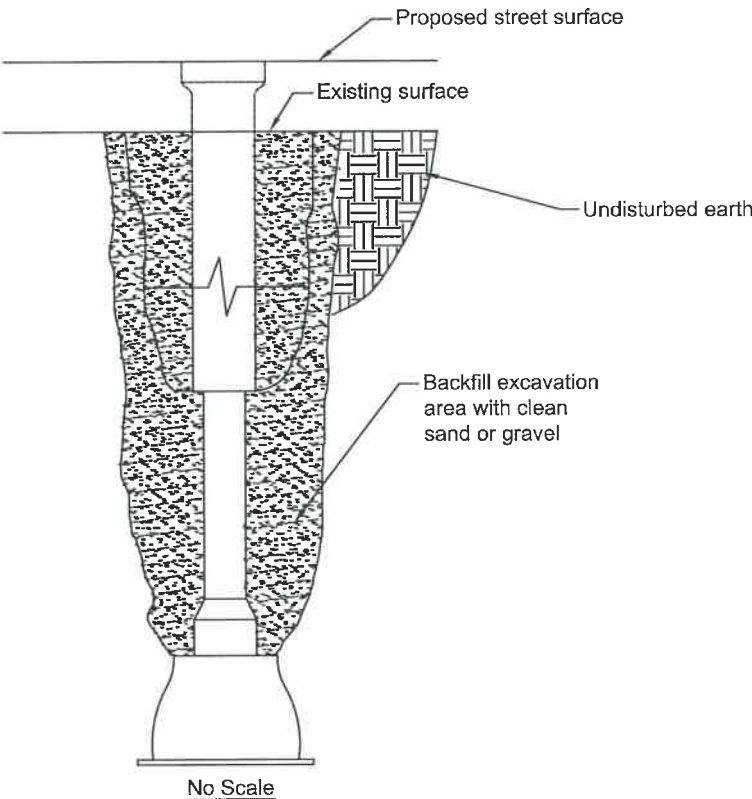
Valve Box Extension
 (or replacement of top section)

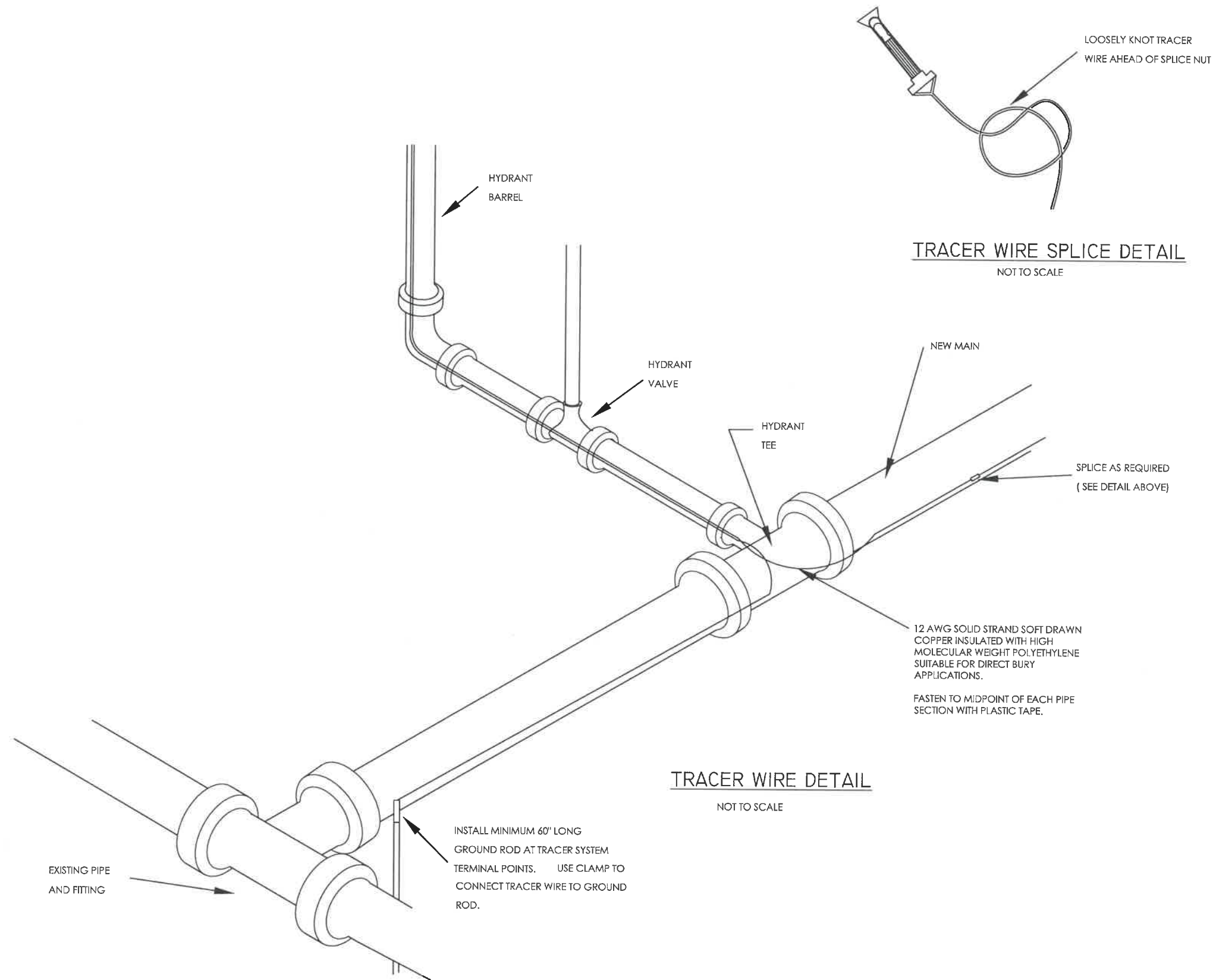


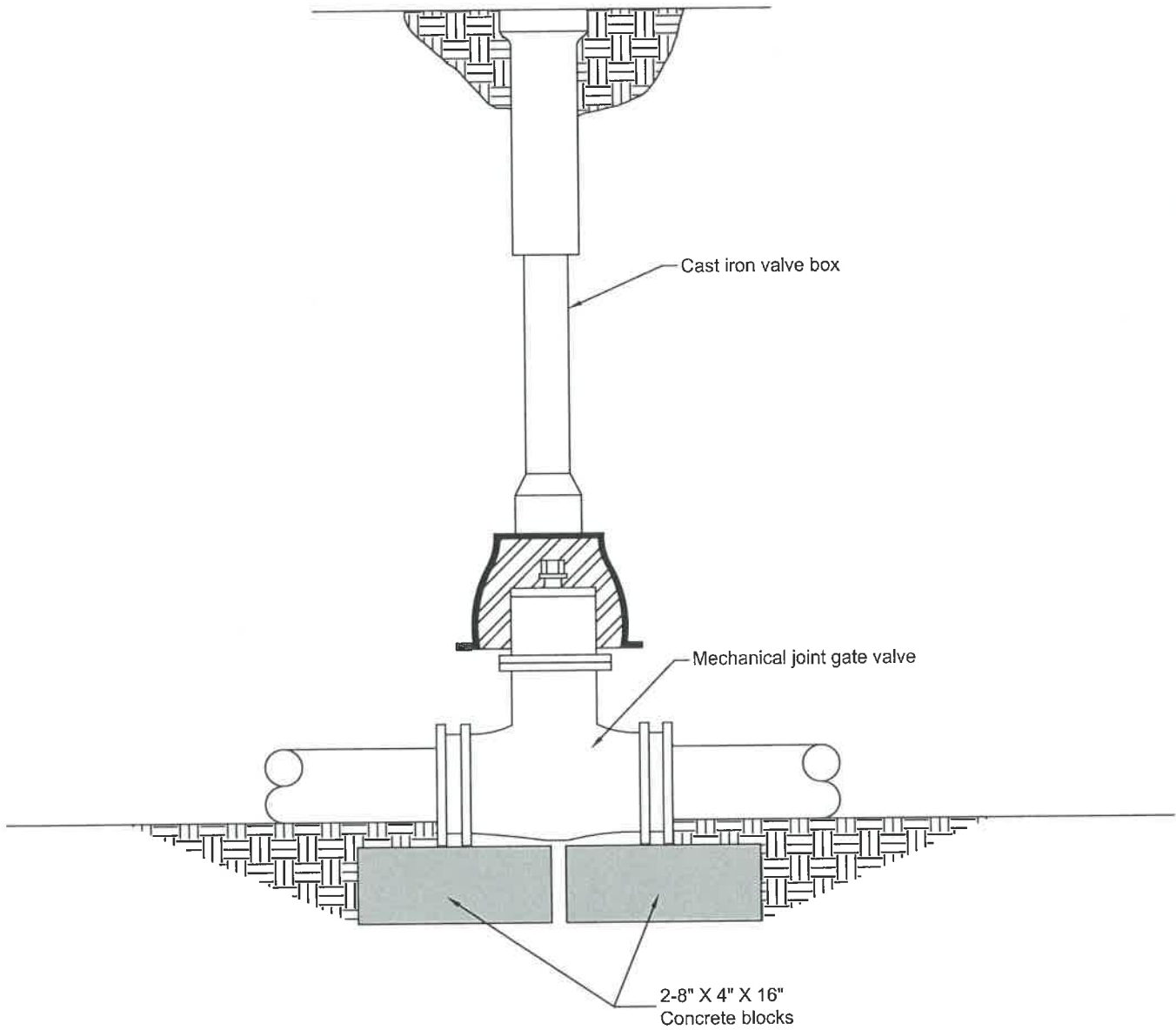
- Valve Box Extension Notes:**
1. Use this method if top section of valve box cannot be extended to meet proposed grade.
 2. If the top section of valve box will not accept the riser, replace the top and center section as shown in detail for valve box replacement.

- General Notes:**
1. Non-threaded adjustments will not be allowed.
 2. Plumb valve box prior to backfilling. All valve boxes shall be adjusted to be flush with the pavement surface prior to placement of the pavement surfacing. The allowable vertical tolerance between the pavement surface and any part of the valve box shall be 0" to $\frac{1}{2}$ " low. In no case shall the valve box be above the surface of the pavement.
 3. It shall be the contractor's responsibility to provide a system to prevent material from entering the valve box during the work.
 4. All adjustments shall be completed prior to opening up the street to traffic.

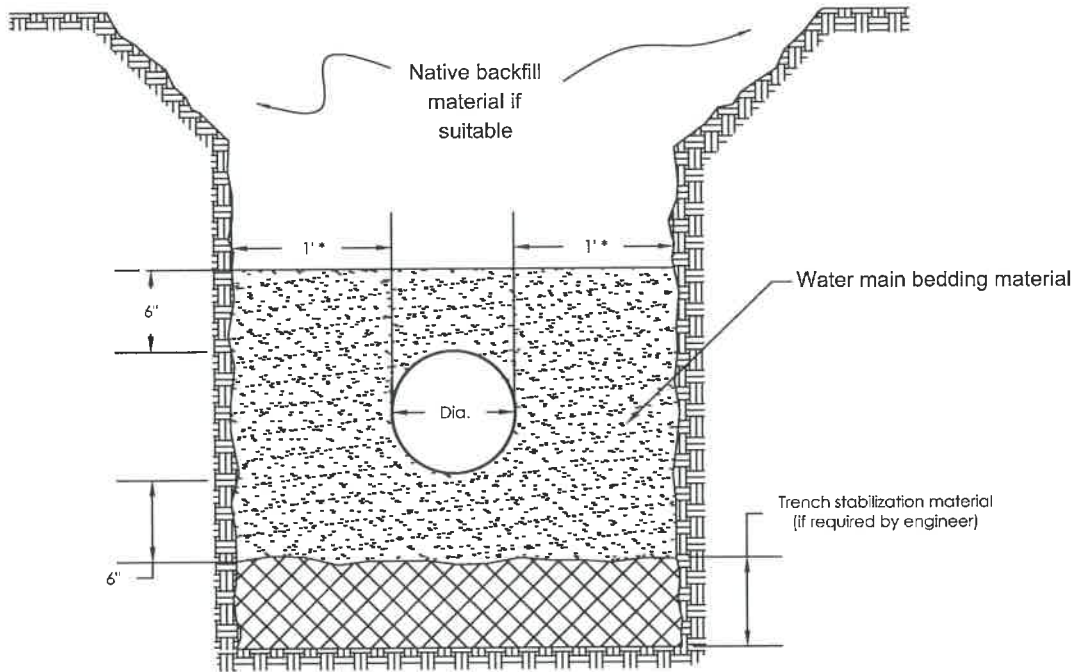
Valve Box Installation







PVC GATE VALVE INSTALLATION



Pipe Size Diameter	Trench Width	Trench Height	Trench Area	Pipe Area	Water Main Bedding Mat. Area	Water Main Bedding Mat. Tons/LF
4"	28"	16"	3.11 Sq.Ft.	.09 Sq.Ft.	3.02 Sq.Ft.	0.21
6"	30"	18"	3.75 Sq.Ft.	.20 Sq.Ft.	3.55 Sq.Ft.	0.25
8"	32"	20"	4.44 Sq.Ft.	.35 Sq.Ft.	4.10 Sq.Ft.	0.29
10"	34"	22"	5.19 Sq.Ft.	.55 Sq.Ft.	4.65 Sq.Ft.	0.33
12"	36"	24"	6.00 Sq.Ft.	.79 Sq.Ft.	5.22 Sq.Ft.	0.37
16"	40"	28"	7.78 Sq.Ft.	1.40 Sq.Ft.	6.38 Sq.Ft.	0.45
20"	44"	32"	9.78 Sq.Ft.	2.18 Sq.Ft.	7.60 Sq.Ft.	0.53
24"	48"	36"	12.00 Sq.Ft.	3.14 Sq.Ft.	8.86 Sq.Ft.	0.62
30"	60"	42"	17.50 Sq.Ft.	4.91 Sq.Ft.	12.59 Sq.Ft.	0.88

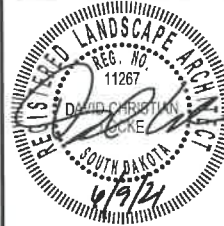
* If >30" use dia./2 on each side of water main pipe.

* Length based on one (1) foot of main.

WATERMAIN BEDDING DETAIL



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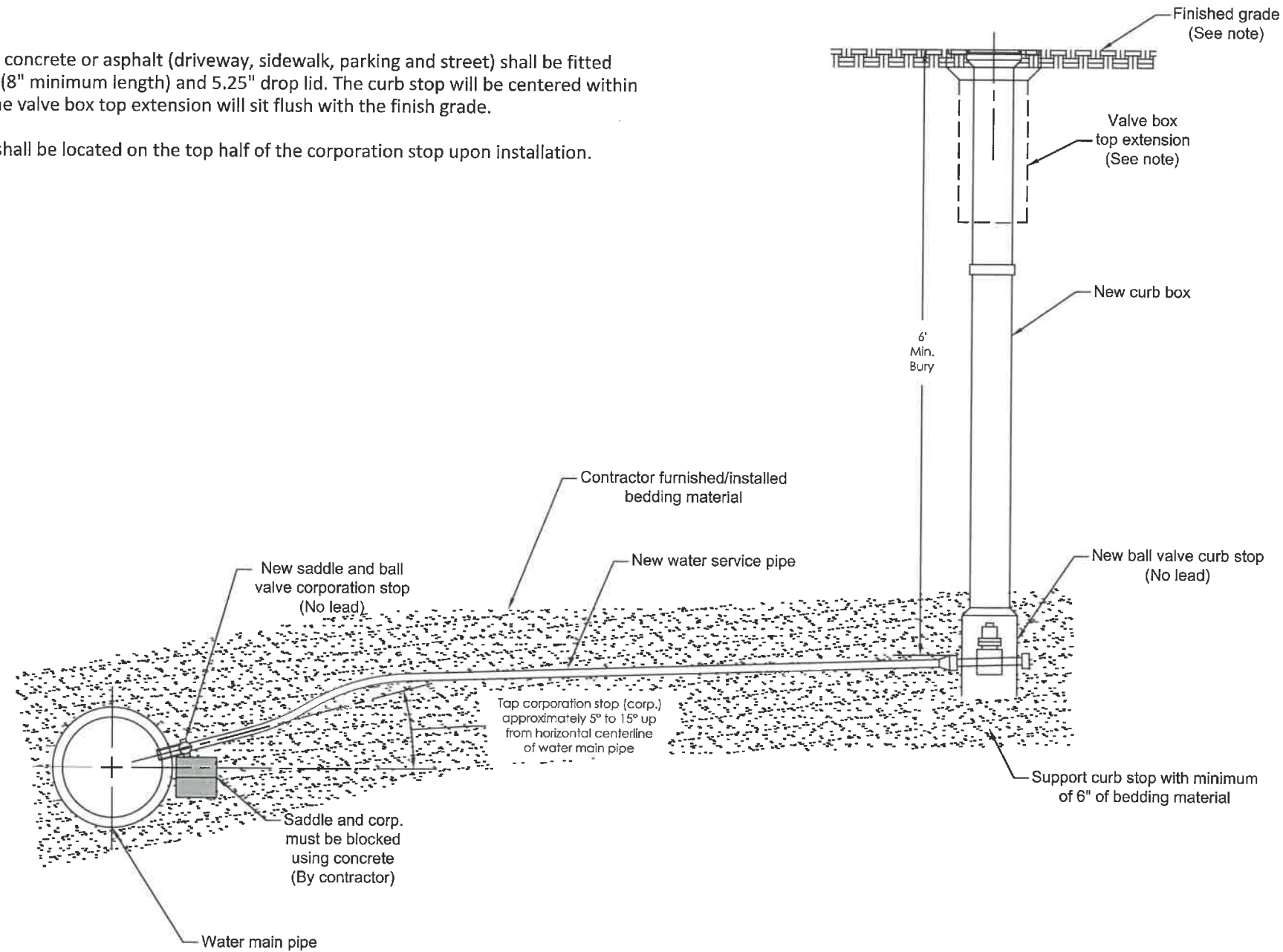
CONSTRUCTION PLANS

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General Notes:

1. Curb stop boxes located within concrete or asphalt (driveway, sidewalk, parking and street) shall be fitted with a valve box top extension (8" minimum length) and 5.25" drop lid. The curb stop will be centered within the valve box top extension. The valve box top extension will sit flush with the finish grade.
2. The ball valve operational nut shall be located on the top half of the corporation stop upon installation.

**WATER SERVICE LINE**

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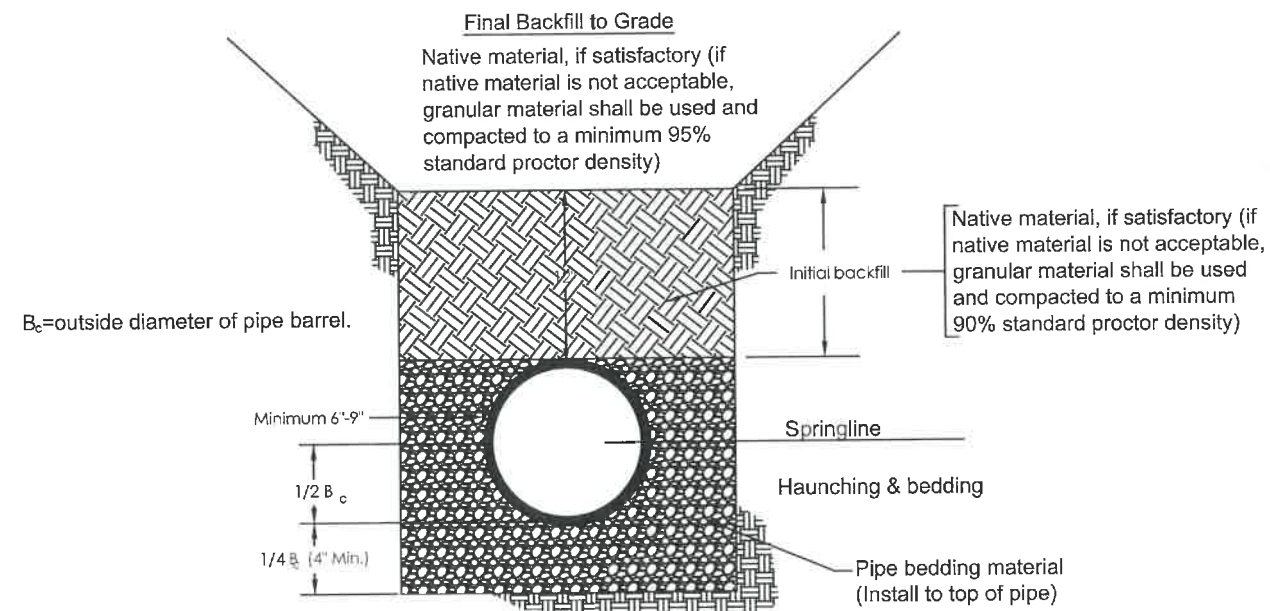


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**CONSTRUCTION
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Pipe bedding material to be hand tamped or shovel sliced around haunches.

Note:

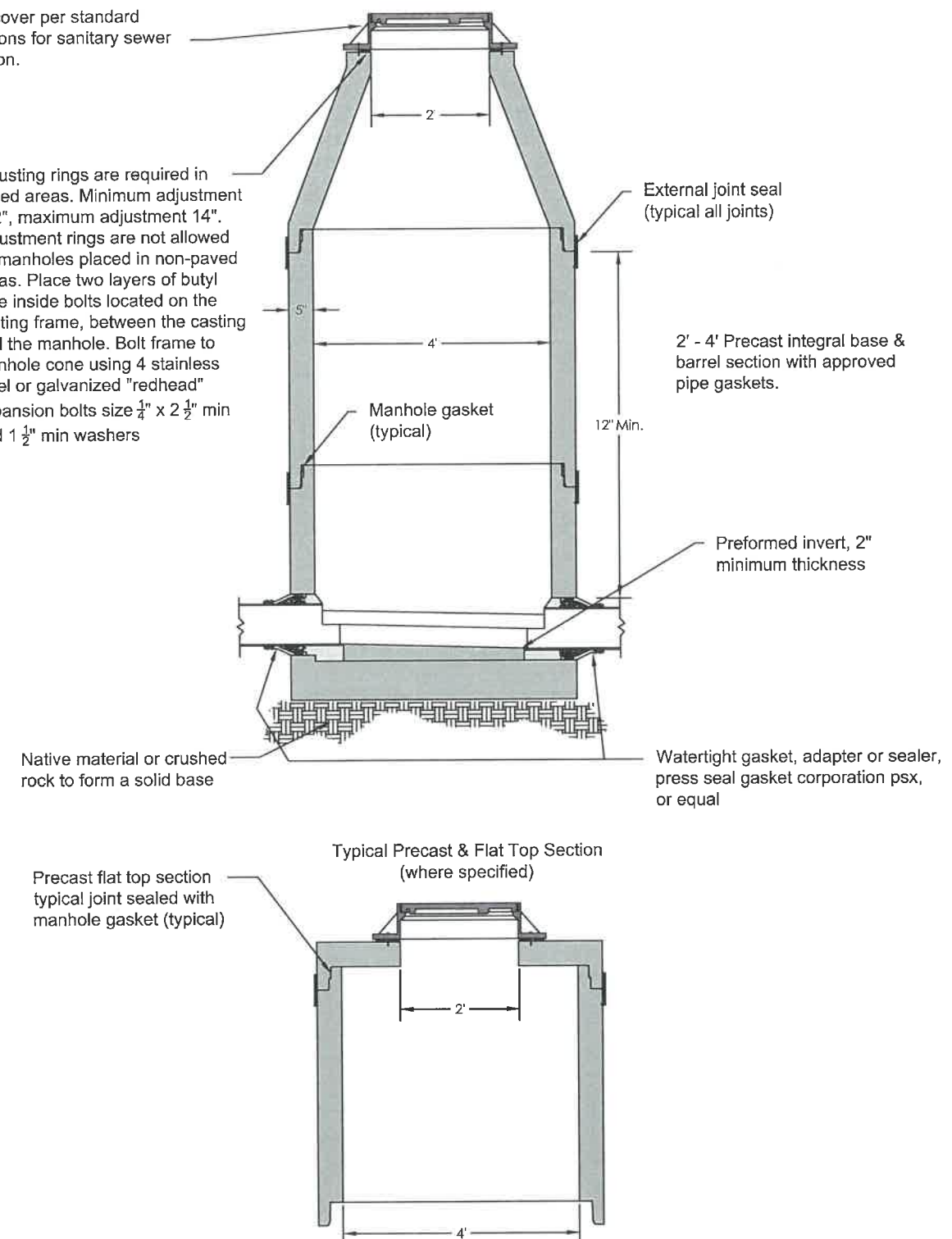
1. If base is unstable, trench shall be undercut and stabilized with trench stabilization material. Specifications as per manufacturer's recommendations and A.S.T.M. C12.
2. Bedding Material
95% Passing 3/4" sieve
95% Retained #4 sieve

(Clean angular, well-graded, crushed rock. Pea rock may be used for sanitary sewer service lines.)
3. The required bedding material under the bottom of the pipe shall be installed prior to pipe installation.

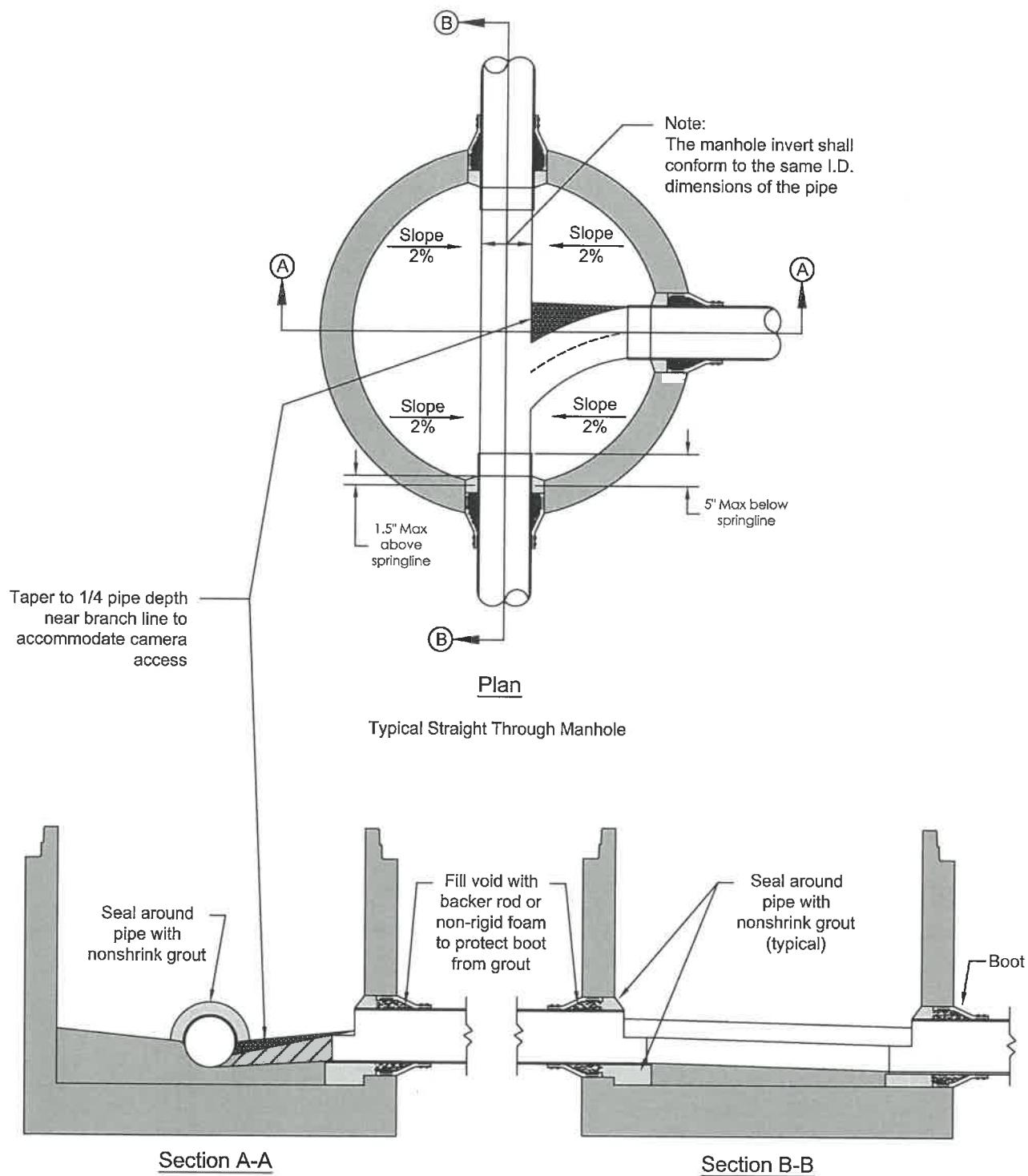
**BEDDING AND BACKFILL
REQUIREMENTS FOR 4"
TO 12" SANITARY
SEWER PIPE**

Manhole cover per standard specifications for sanitary sewer construction.

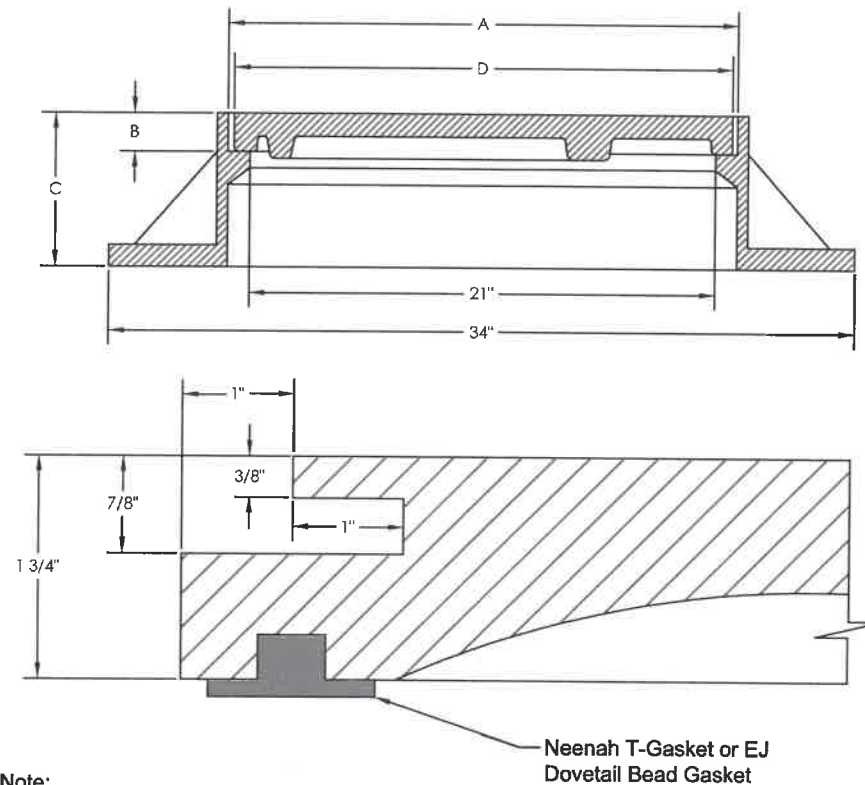
- Adjusting rings are required in paved areas. Minimum adjustment of 2", maximum adjustment 14".
- Adjustment rings are not allowed on manholes placed in non-paved areas. Place two layers of butyl rope inside bolts located on the casting frame, between the casting and the manhole. Bolt frame to manhole cone using 4 stainless steel or galvanized "redhead" expansion bolts size 1/4" x 2 1/2" min and 1 1/2" min washers



**SANITARY SEWER
MANHOLE**



MANHOLE BENCH AND
INVERT DETAIL



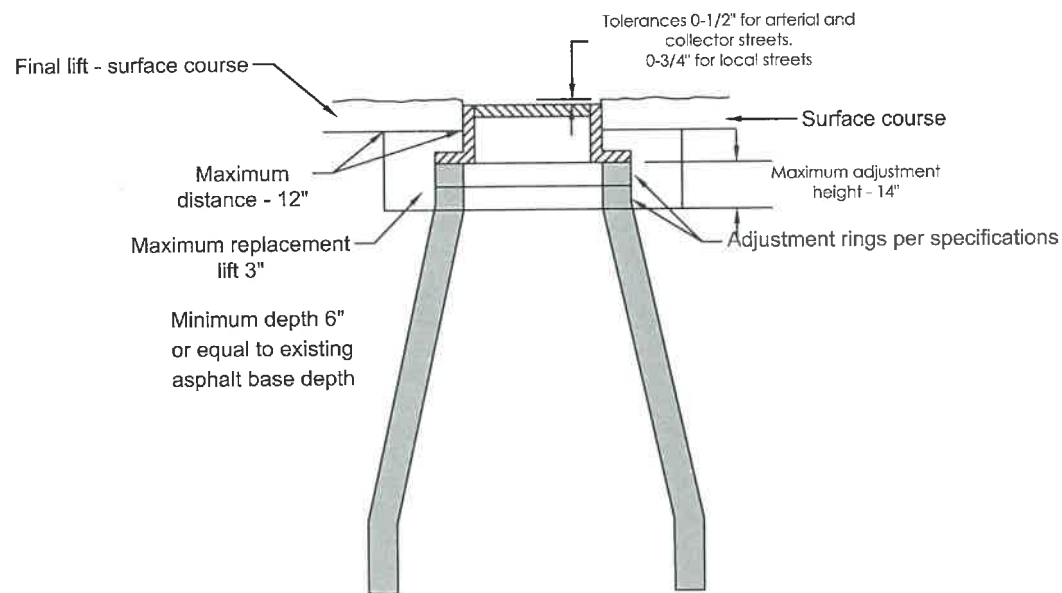
Note:
Concealed pick holes and the seal between the frame and cover shall be protected from asphalt, concrete pavement, chip seal and soil. It shall be the contractors responsibility to provide a system to prevent material from entering the concealed pick hole and frame and cover seal during the work.

Approved Frames:						
Applications	Neenah/Deeter Frame	EJ Series Number	EJ Product Number	Opening for Lid (in)	Thickness for Lid (in)	Frame Height (in)
				A	B	C
Asphalt and concrete streets less than or equal to 6 inches thick	R-1772	1022Z1	102310	23	1.75	7
Asphalt and concrete streets greater than 6 inches thick	R-1713	1050Z1	105015	23	1.75	9
Non-paved easement areas (grass, rock, landscaping, etc.)	R-1712	1050Z1	105011	23	1.75	9
Protection over cleanouts	R-1976	1578Z	157810	11.5	1.25	8

Approved Lids:					
Lid Applications	Neenah/Deeter Frame	EJ Series Number	EJ Product Number	Lid Diameter (in)	Lid Thickness (in)
				D	B
Standard lid for use in all applications	R-1772	1020A	102108	22.75	1.75
Composite lid with limited applications. City engineering approval required	N/A	COM1020	COM102057	22.75	1.75
Protection over cleanouts	R-1976	1578A	157824	11.25	1.25

CONCEALED PICK HOLE FOR
SANITARY MANHOLE COVERS

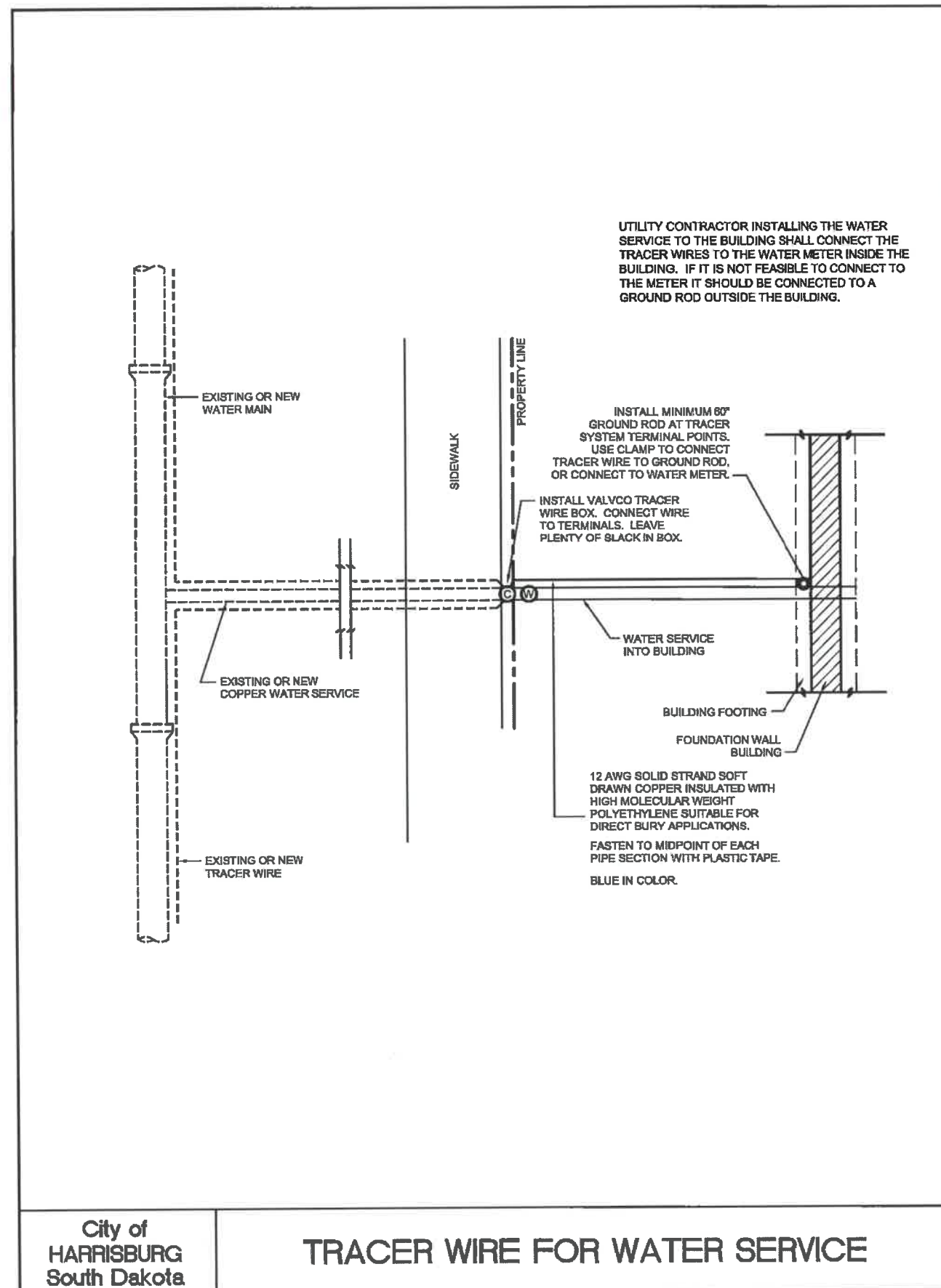
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Note:

1. Asphalt concrete - manhole and casting shall be adjusted to final grade prior to placement of surface course.
2. Concealed pick holes and the seal between the frame and cover shall be protected from asphalt, concrete pavement, chip seal and soil. It shall be the contractors responsibility to provide a system to prevent material from entering the concealed pick hole and frame and cover seal during the work.
3. For chip seal projects, the entire manhole cover and frame shall be protected from the chip seal installation.

**MANHOLE CASTING AND
COVER ADJUSTMENT**



City of
HARRISBURG
South Dakota

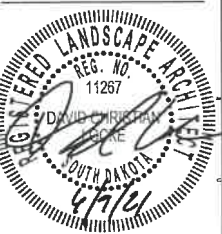
TRACER WIRE FOR WATER SERVICE

STOCKWELL

STOCKWELL ENGINEERS, INC.
801 N. PHILLIPS AVE., SUITE 100
SIOUX FALLS, SD 57104
PH: 605.338.6668
FAX: 605.338.8750



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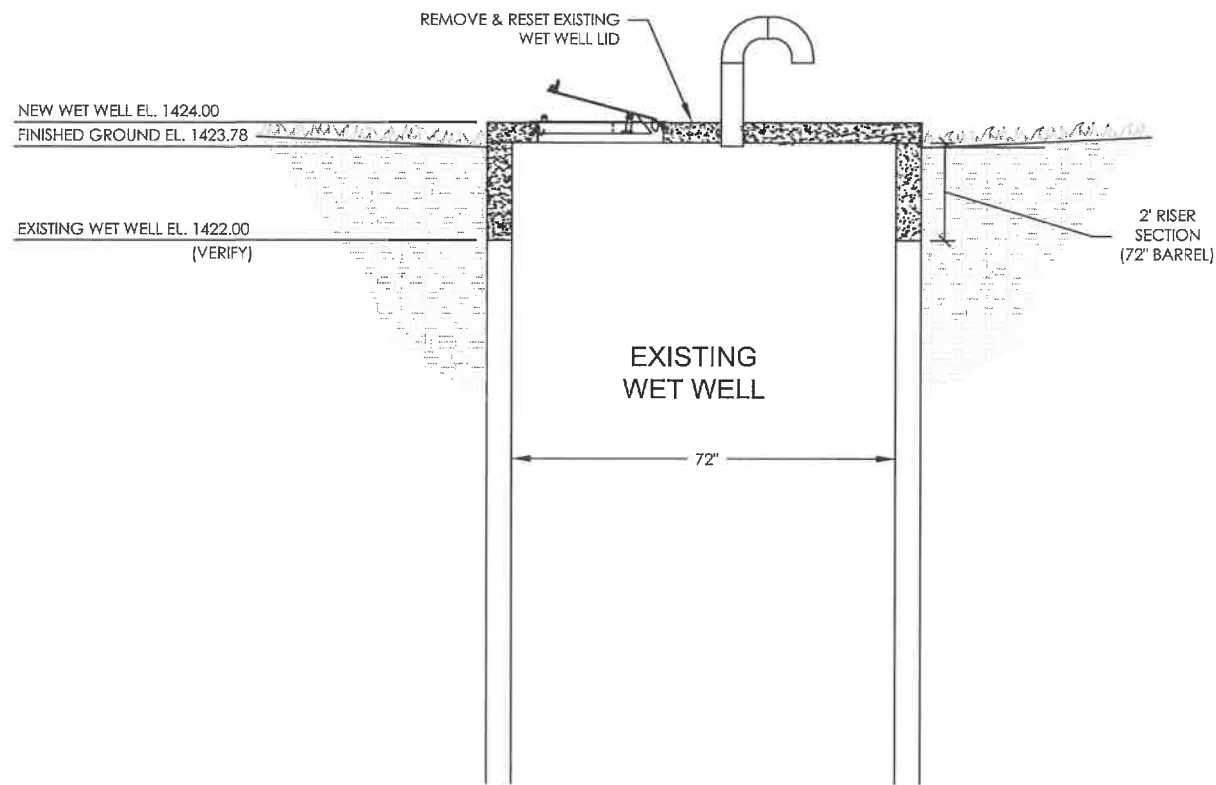


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- NOTES:**
- 1. REMOVE PRECAST CONCRETE COVER SLAB. CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE EXISTING COVER OR BARREL SECTIONS. ANY DAMAGE DONE TO COVER OR BARREL SECTIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER AT CONTRACTOR EXPENSE.
 - 2. FURNISH & INSTALL UNLINED 24"x72" DIAMETER MANHOLE WALL BARRIER SECTION. CONTRACTOR SHALL VERIFY JOINT CONFIGURATION AND PROVIDE BARREL SECTION WITH MATCHING JOINT.
 - 3. REINSTALL PRECAST COVER SLAB.
 - 4. ALL COSTS ASSOCIATED WITH MODIFICATIONS TO WET WELL SHALL BE INCLUDED IN THE PER EACH PRICE FOR ADJUST WET WELL.

ADJUST WET WELL



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