STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P TAPU(12)	A1	114

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PLOTTING DATE: 2018–05–09 INTIALS: MRS
REVISION DATE: **2018–05–09 INTIALS: GAR**

REVISED

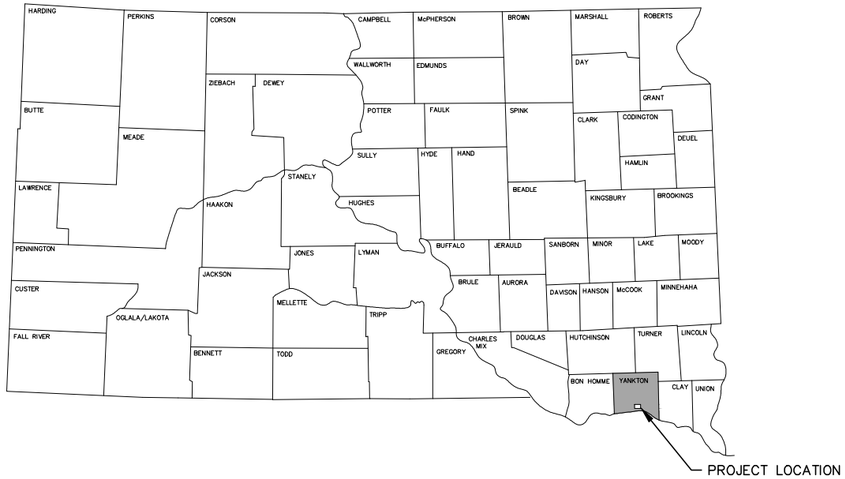
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECT P TAPU(12)
YANKTON COUNTY
YANKTON, SOUTH DAKOTA

CONCRETE BIKE TRAIL, STORM SEWER & GRADING

PCN 05C8



STORM WATER PERMIT DATA

MAJOR STREAM: MARNE CREEK
TOTAL PROJECT AREA: 6.20 ACRES
AREA DISTURBED: 5.75 ACRES

GROSS LENGTH 6570 FEET 1.24 MILES

APPROXIMATE BEGIN

LAT./LONG. 43°53'54.1" N/97°25'01.0" W

APPROXIMATE END

LAT./LONG. 42°54'31.1" N/97°24'16.4" W

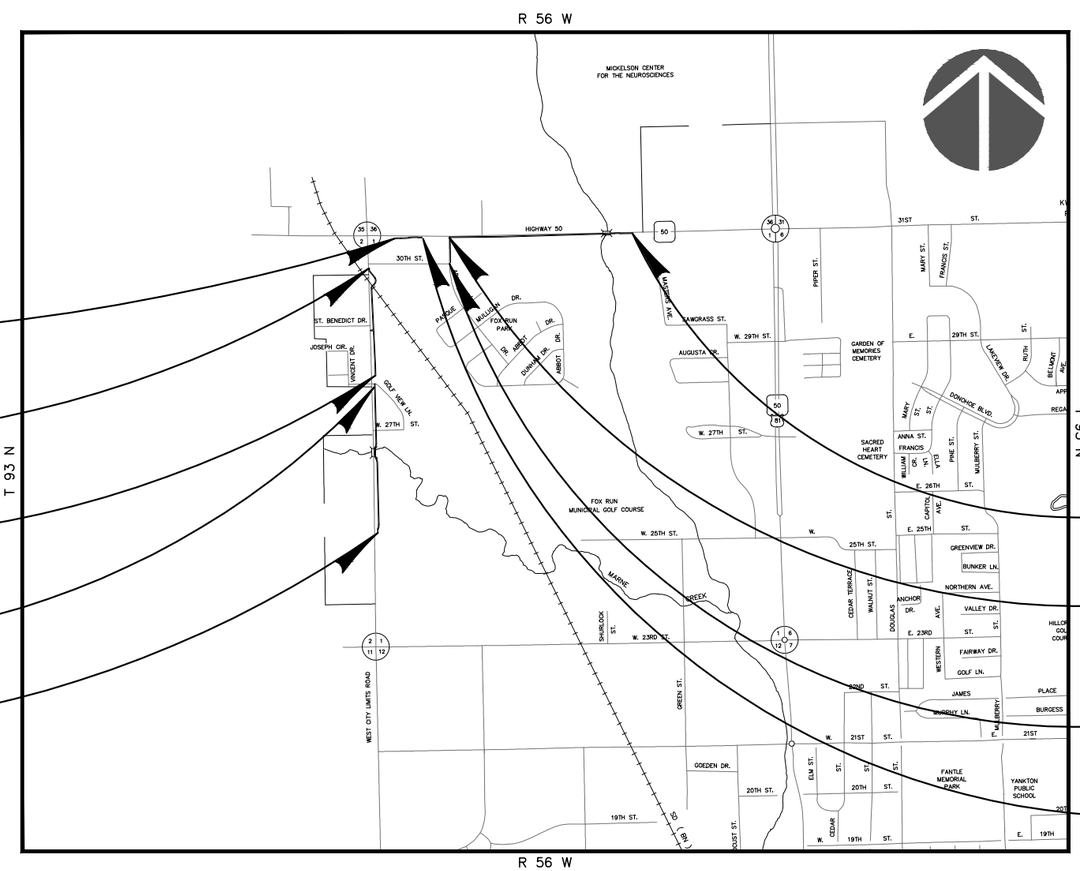
BEGIN PROJECT P TAPU(12)
STA. 300+50
EAST OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND HWY 50

END PROJECT P TAPU(12)
STA. 214+86
SOUTH OF THE INTERSECTION
OF WEST CITY LIMITS AND 30TH STREET

BEGIN PROJECT P TAPU(12)
STA. 200+50
NORTH OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND GOLF VIEW LANE

END PROJECT P TAPU(12)
STA. 119+80
SOUTH OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND 27TH STREET

BEGIN PROJECT P TAPU(12)
STA. 100+50
NORTH OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND 23RD STREET



END PROJECT P TAPU(12)
STA. 424+73
EAST OF THE INTERSECTION
OF HWY 50 AND ADKINS DR

BEGIN PROJECT P TAPU(12)
STA. 400+50
STA. 503+45
AT THE INTERSECTION
OF HWY 50 AND ADKINS DR

END PROJECT P TAPU(12)
STA. 500+32
APPROX. AT THE INTERSECTION
OF ADKINS DR AND 30TH STREET

END PROJECT P TAPU(12)
STA. 303+80
WEST OF THE INTERSECTION
OF HWY 50 AND ADKINS DR

INDEX OF SECTIONS

SECTION A: ESTIMATE OF QUANTITIES & ENVIRONMENTAL COMMITMENTS
SECTION B: GRADING PLANS
SECTION C: TRAFFIC CONTROL
SECTION D: EROSION CONTROL
SECTION X: CROSS SECTIONS
SECTION Z: PIPE SECTIONS

STOCKWELL

STOCKWELL ENGINEERS, INC.
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REG. NO. 8738
GAARDA, ROPS
SOUTH DAKOTA
5/9/18

ORIENTATION SHEET

FILE: 16165 – Orientation.dwg PLOTTING DATE: 2018-05-08 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	A2	A5

STOCKWELL ENGINEERS
SIOUX FALLS, SD

SECTION A - ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

REVISED/5-9-18/GAR
REVISED/5-17-18/GAR
REVISED/5-30-18/GAR
REVISED/6-26-18/GAR

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPU(12)	A3	A5

Section B – Grading

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0130	Remove Traffic Sign	2	Each
110E0300	Remove Concrete Curb and/or Gutter	189	Ft
110E0500	Remove Pipe Culvert	66	Ft
110E1010	Remove Asphalt Concrete Pavement	148.9	SqYd
110E1100	Remove Concrete Pavement	82.3	SqYd
110E1140	Remove Concrete Sidewalk	238	SqYd
110E7150	Remove Sign for Reset	8	Each
110E7500	Remove Pipe for Reset	96	Ft
110E7510	Remove Pipe End Section for Reset	5	Each
110E7800	Remove Chain Link Fence for Reset	160	Ft
120E0010	Unclassified Excavation	6,275	CuYd
120E0600	Contractor Furnished Borrow Excavation	13,380	CuYd
250E0020	Incidental Work, Grading	Lump Sum	LS
260E1010	Base Course	85.0	Ton
260E3010	Gravel Surfacing	81.5	Ton
320E1200	Asphalt Concrete Composite	29.0	Ton
380E4010	6" PCC Fillet Section	182.2	SqYd
450E0123	18" RCP Class 3, Furnish	208	Ft
450E0130	18" RCP, Install	208	Ft
450E0163	30" RCP, Class 3, Furnish	42	Ft
450E0170	30" RCP, Install	42	Ft
450E0213	54" RCP Class 3, Furnish	24	Ft
450E0220	54" RCP Install	24	Ft
450E2008	18" RCP Flared End, Furnish	11	Each
450E2009	18" RCP Flared End, Install	11	Each
450E2024	30" RCP Flared End, Furnish	2	Ft
450E2025	30" RCP Flared End, Install	2	Ft
450E3023	30" RCP Arch Class 3, Furnish	24	Ft
450E3030	30" RCP Arch, Install	24	Ft
450E3320	30" RCP Arch Bend, Furnish	1	Each
450E3321	30" RCP Arch Bend, Install	1	Each
450E4508	30" RCP Arch Flared End, Furnish	1	Each
450E4509	30" RCP Arch Flared End, Install	1	Each
450E9000	Reset Pipe	96	Ft
450E9001	Reset Pipe End Section	5	Each
621E0520	Reset Chain Link Fence	160	Ft
621E0060	6' Chain Link Fence with Top Rail	72	Ft
632E1320	2.0"x2.0" Perforated Tube Post	98.0	Ft
632E2510	Type 2 Object Marker Back to Back	5	Each
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	51.8	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	54.1	SqFt
632E3500	Reset Sign	8	Each
633E1407	Pavement Marking Paint, 6" White	486	Ft
633E1430	Pavement Marking Paint, 24" White	56	Ft
650E0060	Type B66 Concrete Curb & Gutter	62	Ft
651E0060	6" Concrete Sidewalk	63,613	SqFt
651E7000	Type 1 Detectable Warnings	210	SqFt
998E0100	Railroad Protective Insurance	Lump Sum	LS

Section C - Traffic Control

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
634E0110	Traffic Control Signs	222.3	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	7	Each
634E0420	Type C Advance Warning Arrow Board	1	Each
634E2000	Longitudinal Barricade Pedestrian	30	Ft

Section D – Erosion and Sediment Control

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E1693	Remove Erosion Control Wattle	170	Ft
110E1700	Remove Silt Fence	269	Ft
230E0010	Placing Topsoil	6,005	CuYd
700E0210	Class B Riprap	145	Ton
730E0206	Type D Permanent Seed Mixture	1,755	Lb
731E0100	Fertilizing	8,634	Lb
732E0200	Fiber Mulching	8.6	Ton
734E0151	9" Diameter Erosion Control Wattle	170	Ft
734E0602	Low Flow Silt Fence	269	Ft
734E0610	Mucking Silt Fence	19	CuYd
734E0620	Repair Silt Fence	68	Ft
734E0845	Sediment Control at Inlet with Frame and Grate	9	Each
734E5010	Sweeping	10	Hour
831E0110	Type B Drainage Fabric	155	SqYd
900E1310	Concrete Washout Facility	1	Each

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARDA. ROPS
SOUTH DAKOTA
6/26/18

ENVIRONMENTAL COMMITMENTS

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

COMMITMENT A: WETLANDS

Approximately 0.05 acre of wetlands will be impacted by the project. Refer to Section B – Grading Plans for location and boundaries of the impacted wetlands. These unavoidable impacts to wetlands are less than 0.1 acres and the "*Statewide Wetland Finding for South Dakota Federal-Aid Highway Projects*" will apply.

Table of Impacted Wetlands

Wetland No.	Type	Station	Temporary Impact (Acres)	Permanent Impact (Acres)
1	Linear	420+70	0.00	0.05
2	Linear	111+00	0.00	0.00

Action Taken/Required:

Mitigation is not required in accordance with Section 404 of the Clan Water Act. Mitigation will occur off-site in accordance with the "Statewide Finding Regarding Wetlands for South Dakota Federal-Aid Highway Projects (February 2016)".

Temporary impacts will not be mitigated as original grades will be re-established.

The contact person is the Environmental Project Scientist of the SDDOT Environmental Office at 605-773-3268.

The contractor shall notify the project engineer if additional easement is needed to complete the work adjacent to any wetland. The project engineer shall obtain an appropriate course of action from the Environmental Office before proceeding with construction activities that affect any wetland.

COMMITMENT C: WATER SOURCE

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment before entering South Dakota to reduce the risk of invasive species introduction into the project vicinity.

The Contractor shall not withdraw water directly from streams of the James, Big Sioux, and Vermillion watersheds without prior approval from the SDDOT Environmental Office.

Action Taken/Required:

The Contractor shall obtain the necessary permits from the regulatory agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE) prior to executing water extraction activities.

COMMITMENT E: STORM WATER

Construction activities constitute 1 acre or more of earth disturbance.

Action Taken/Required:

The DENR and the US Environmental Protection Agency (EPA) have issued separate general permits for the discharge of storm water runoff. The DENR permit applies to discharges on state land and the EPA permit applies to discharges on federal or reservation land. The Contractor is advised this project is regulated under the Phase II Storm Water Regulations and must receive coverage under the General Permit for Construction Activities. A Notice of Intent (NOI) will be submitted to DENR a minimum of 15 days prior to project start by the DOT Environmental Office. A letter must be received from DENR that acknowledges project coverage under this general permit before project start. The Contractor is advised that permit coverage may also be required by off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

The Contractor shall adhere to the "Special Provision Regarding Storm Water Discharges to Waters of the State".

A major component of the storm water construction permits is development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which is a joint effort and responsibility of the SDDOT and the Contractor. Erosion control measures and best management practices will be implemented in accordance with the SWPPP. The SWPPP is a dynamic document and is to be available on-site at all times.

Information on storm water permits and SWPPPs are available on the following websites:

SDDOT:
http://www.sddot.com/business/environmental/stormwater/Default.aspx

DENR: http://www.denr.sd.gov/des/sw/stormwater.aspx

EPA: http://cfpub.epa.gov/npdes/home.cfm?program_id=6

Contractor Certification Form:

The "Department of Environmental and Natural Resources – Contractor Certification Form" (SD EForm – 2110LDV1-ContractorCertification.pdf) shall be completed by the Contractor or their certified Erosion Control Supervisor after the award of the contract. Work may not begin on the project until this form is signed.

The form certifies under penalty of law that the Contractor understands and will comply with the terms and conditions of the Surface Water Discharge General Permit for Storm Water Discharges Associated with Construction Activities for the Project.

The online form can be found at:
http://denr.sd.gov/des/sw/eforms/E2110LDV1-ContractorCertification.pdf

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor shall furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the Public ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood

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SOUTH DAKOTA
5/9/18

REVISED/5-9-18/GAR

CONTINUED COMMITMENT H: WASTE DISPOSAL SITE

debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the Public ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

Action Taken/Required:

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor shall arrange and pay for a cultural resource survey and/or records search. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor shall provide ARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

COMMITMENT N: SECTION 404 PERMIT

The SDDOT has obtained a Section 404 Permit from the US Army Corps of Engineers for the permanent actions associated with this project.

Action Taken/Required:

The Contractor shall comply with all requirements contained in the Section 404 permit.

The Contractor shall also be responsible for obtaining a Section 404 permit for any dredge, excavation, or fill activities associated with staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands or waters of the United States.

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5/9/18

SECTION B: GRADING PLANS

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STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P TAPU(12)	B1	B56

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PLOTTING DATE: 2018–05–09 INTIALS: MRS
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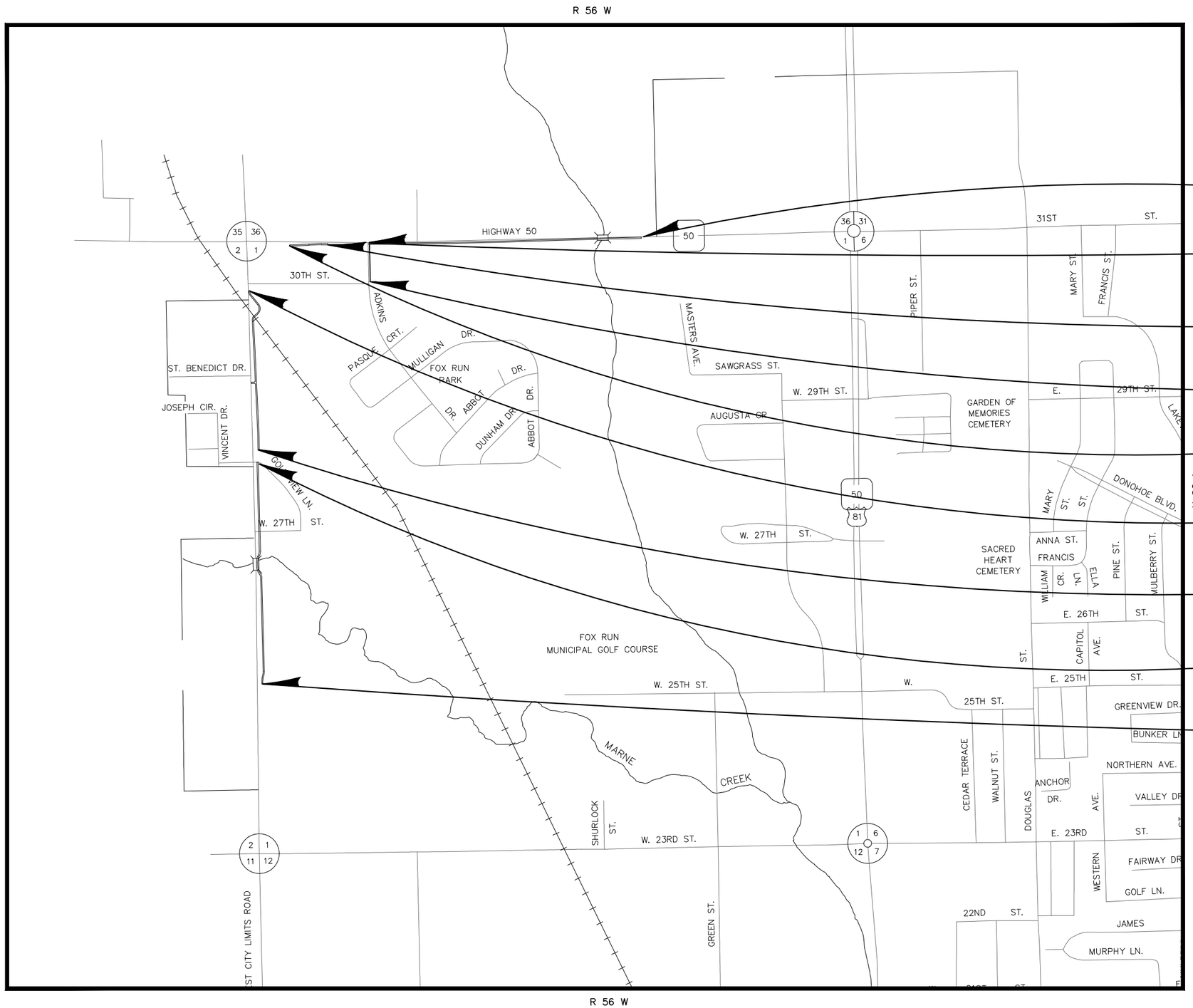
B6	TABLE OF PIPE QUANTITIES
B7	TABLE OF PERMANENT SIGNING
B8	TYPICAL GRADING & SURFACING SECTIONS
B9 THRU B11	HORIZONTAL ALIGNMENT & CONTROL DATA
B12	EXISTING TOPOGRAPHY SYMBOLOGY & LEGENDS SHEET
B13 THRU B26	PLAN & PROFILE
B27 THRU B35	REMOVALS & IN PLACE UTILITIES
B36 THRU B44	GRADING & STORM SEWER
B45 THRU B57	DETAILS



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SECTION B – GRADING

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPU(12)	B2	B57

REVISED/5-9-18/GAR
REVISED/5-17-18/GAR
REVISED/5-30-18/GAR
REVISED/6-26-18/GAR

SECTION B ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0130	Remove Traffic Sign	2	Each
110E0300	Remove Concrete Curb and/or Gutter	189	Ft
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450E2025	30" RCP Flared End, Install	2	Ft
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450E3321	30" RCP Arch Bend, Install	1	Each
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651E0060	6" Concrete Sidewalk	63613	SqFt
651E7000	Type 1 Detectable Warnings	210	SqFt
998E0100	Railroad Protective Insurance	1	LS

GRADING OPERATIONS

Water for Embankment shall be considered incidental to embankment.

The estimated cubic yards of excavation and/or embankment required to construct outlet ditches, ditch blocks, and approaches are included in the earthwork balance notes on the profile sheets.

Special ditch grades and other sections of the roadway different than the typical sections shall be constructed to the limits shown on the cross sections. If significant changes to the cross sections are necessary during construction, the Engineer shall contact the Designer for the proposed change.

UTILITIES

The Contractor shall be aware that the existing utilities shown in the plans were prior to surveyed the design of this project and might have been relocated or replaced by a new utility facility prior to construction of this project, might be relocated or replaced by a new utility facility during the construction of this project, or might not require adjustment and may remain in its current location. The Contractor shall contact each utility owner and confirm the status of all existing and new utility facilities. The utility contact information is provided elsewhere in the plans or bidding documents.

The Contractor shall cooperate with the utility companies in accordance with section 5.6 of the Specifications and shall refer to the list of utility owners below. It is the responsibility of the Contractor to verify, with the various utility companies, the proposed utility relocations. Multiple underground utilities exists along the project. The approximate location is shown in the plans.

The Contractor shall safeguard all utilities and coordinate his efforts to coincide with utility work in order to avoid interference and to minimize inconvenience between Contractors and the Public. Any damage to utilities because of the Contractor's carelessness shall be repaired at the Contractor's expense.

The Contractor shall call One-Call Utility Locating Services at 1-800-781-7474 to obtain utility locates prior to any excavation. Individual utility contacts are as follows:

GAS
MidAmerican Energy
1200 S Blauvelt
Sioux Falls, SD 57105
Attn: Nicolle Paulson
605-373-6081

POWER
NorthWestern Energy
313 Cedar St
Yankton, SD 57078
Attn: Brad Wenande
605-665-7459

WATER, SEWER & STREETS
City of Yankton
416 Walnut
Yankton, SD 57078
Attn: Adam Haberman
605-668-5265

TELECOMMUNICATIONS
Century Link
125 S. Dakota Avenue
Sioux Falls, SD 57104
Attn: Doug Wudel
605-339-5307

CLEARING

Before clearing activities begin, the Contractor shall contact the Engineer to determine the limits of clearing for the project. If the trees or shrubs that are supposed to remain within the limits of work are damaged or destroyed by the Contractor, the Contractor shall replace them with the same size and type at the Contractor's expense.

TABLE OF EARTHWORK QUANTITIES	
Excavation	270
Contractor Furnished Borrow	13,380
Total Excavation	13,650
Embankment	10,500
Shrink (30%)	3,150
Total Embankment	13,650
Excavation	270
Stripping Topsoil	6,005
Total Unclassified Excavation	6,275

UNCLASSIFIED EXCAVATION

The table above reflects the "excavation" quantity as the cut volume between the existing ground surface and the proposed finished surface prior to placing of topsoil or any base course or asphalt/concrete surfacing, and the "embankment" quantity as the fill volume.

A shrinkage factor of 30% has been included in the quantity of embankment.

Excavate the existing subgrade to provide for the required depth of base course and asphalt or concrete surfacing. Contractor is to scarify and recompact the subgrade of all surfacing to a depth of **12"**, for the entire width of the gravel section. No additional payment shall be made for scarifying and recompaction work. All costs associated with scarifying and re-compaction work shall be incidental to the contract unit price per cubic yard for Unclassified Excavation. Earthwork shall be performed as shown on appropriate cross sections. The contractor is to strip the site of topsoil material within the grading limits. The topsoil shall not be used as embankment or fill material, but shall be salvaged for replacement after all grading work is complete.

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.

UNCLASSIFIED EXCAVATION

All excavations made for underground utilities are incidental to the installation of that utility. All spoil material removed for pipe installation is the property of the Contractor and is to be removed from the project by the Contractor. All spoil material and costs for removing it are incidental to pipe installation costs.

The excess soil resulting from earthwork activities, if any, shall become the property of the contractor who shall be responsible for its removal from the site.

Compaction of subgrade and embankments shall be governed by the specified density method. Water used for compaction of subgrade and granular materials shall be incidental to the earthwork and granular bid items.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
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SOUTH DAKOTA
2/26/18

SHRINKAGE FACTOR: Embankment +30% (Assumed)

REVISED/5-9-18/GAR
REVISED/6-26-18/GAR

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPU(12)	B3	B57

CONTRACTOR FURNISHED BORROW EXCAVATION

The Contractor shall provide a suitable site for Contractor furnished borrow excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site.

Restoration of the Contractor furnished borrow excavation site shall be the responsibility of the Contractor.

The Contractor furnished borrow excavation material shall be uniform in texture and free from organic material. The liquid limit shall not exceed 45 and the plastic index shall not exceed 25.

The Contractor will be responsible for the following minimum testing prior to use of each borrow site:

A minimum of one test for liquid limit and plastic index and a 4 point for each location and soil type, with samples obtained according to SD201.

The Department will be responsible for the following minimum testing:

A minimum of one test for liquid limit and plastic index and a 4 point for every major change in soil type. Independent Assurance testing will not be required.

INCIDENTAL WORK, GRADING

Station	LT/RT	Remarks
105+09	LT	Connect to Existing 18" RCP
100+76	RT	Remove Chain Link Fence
112+09	LT	Raise MH Rim (2' barrel section)
113+52	LT	Connect to Existing 18" RCP
114+31	LT	Connect to Existing 18" RCP
119+56	LT	Connect to Existing 18" RCP
212+54	RT	Remove Tree
212+68	RT/LT	Remove Fence
401+42	RT	Connect to Existing 30" RCPA
404+57	RT	Connect to Existing 18" RCP
407+74	RT	Connect to Existing 18" RCP
410+37	RT	Connect to Existing 18" RCP
420+90	RT	Connect to Existing 54" RCP

Several locations above reference connecting to existing RCP storm sewer. The contractor shall anticipate providing a watertight connection by use of butyl rope sealant, gaskets, seals, couplers or concrete collar for the RCP connection as determined by the engineer in the field. All labor and materials for this work shall be considered incidental to the connection.

TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL

Station	to	Station	LT/RT	Quantity (SqYd)
105+12		105+18	LT	12.7
113+54		113+38	LT	30.5
114+06		114+10	LT	31.8
119+57		119+63	LT	37.6
214+70		214+90	LT	9.5
400+52		400+81	LT	11.6
401+08		401+32	LT	11.6
500+76		500+93	LT	3.6
			Total:	148.9 SqYd

TABLE OF CONCRETE PAVEMENT REMOVAL

Station	LT/RT	Quantity (SqYd)
105+12	LT	29.2
214+85	RT	10.5
400+50	LT	23.8
401+10	LT	18.8
	Total:	82.3 SqYd

TABLE OF CONCRETE CURB & GUTTER REMOVAL

Station	LT/RT	Quantity (Ft)
113+54	LT	45
114+06	LT	46
119+57	LT	58
214+85	RT	8
400+50	LT	10
401+10	LT	5
500+76	LT	17
	Total:	189 Ft

TABLE OF CONCRETE SIDEWALK REMOVAL

Station	LT/RT	Quantity (SqFt)
113+54	LT	52.6
114+06	LT	58.2
116+85	LT	1727.5
400+50	LT	301.0
	Total:	2139.3 SqFt

TABLE OF REMOVE SIGN FOR RESET

Station	LT/RT
105+34	102' LT
113+72	5.5' RT
114+13	5.5' RT
214+92	1' LT
401+22	6' LT
406+81	1' RT
419+24	6' LT
423+97	10' LT

TABLE OF REMOVE TRAFFIC SIGN

Station	LT/RT
420+83	33' RT
420+92	36' RT

CONCRETE PIPE CONNECTIONS

Pipe connections to existing pipes, manholes, junction boxes, and drop inlets shall be done by breaking a hole into the existing structure and inserting the pipe. A concrete collar shall then be poured around the pipe in the area of the connection.

When it is not possible to use a normal pipe joint (male-female ends), connections to existing pipe shall be made by placing a 2' wide by 6" thick M6 concrete collar around the outside of the connection. The concrete collar shall be reinforced with 6x6 W2.9 x W2.9 wire mesh.

All costs for constructing the concrete collars including materials and labor shall be incidental to the contract unit price per foot for the corresponding pipe bid item.

STORM SEWER

Reinforced concrete pipe may be bell and spigot. The pipe sections shall be adjoined such that the ends are fully entered and the inner surfaces are reasonably flush and even.

Lift holes in the reinforced concrete pipe shall be plugged with grout.

Watertight joints are required for reinforced concrete pipe, drop inlets, manholes, and junction boxes where storm sewers run parallel to and within 10 feet horizontally from existing or proposed water mains.

Watertight joints are required where reinforced concrete pipes, drop inlets, manholes, or junction boxes cross water mains and are separated a distance of 18 inches or less, above or below, the water main.

If watertight joints are required then the watertight joints shall extend for a distance of 10 feet beyond the water main. This measurement shall be from the sealed concrete joint to the outer most surface of the water main.

Watertight joint seals shall conform to the following requirements:

1. Reinforced Concrete Pipe (Circular): Gasketed pipe shall conform to the requirements of ASTM C443 and the gasket shall be in conformance with Section 990 of the Specifications. Non-gasketed concrete pipe shall be sealed with a mastic joint seal conforming to the requirements of ASTM C990 and encased with a minimum 2' wide by 6" thick M6 concrete collar reinforced with 6x6 W2.9 x W2.9 wire mesh.

2. Reinforced Concrete Pipe (Arch): Gasketed pipe shall conform to the requirements of ASTM C443 and the gasket shall be in conformance with Section 990 of the Specifications. Non-gasketed concrete pipe joints shall be sealed with a hydrophilic flexible water stop seal and wrapped with a 1-foot wide strip of fabric above the cradle. The fabric shall conform to the requirements of Section 831 of the Specifications for Type A Drainage Fabric. The hydrophilic flexible water stop shall be from the list below.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
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SOUTH DAKOTA
2/26/18

REVISED/5-9-18/GAR

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPU(12)	B4	B57

STORM SEWER BEDDING

Bedding for all storm sewer shall meet the requirements of Class B Bedding.

TYPE 1 DETECTABLE WARNINGS

Detectable warnings shall be in compliance with the Americans with Disability Act regulations.

The detectable warnings shall be installed according to the manufacturer's installation instructions.

A concrete thickness equal to the adjacent concrete sidewalk thickness and 2 inches of granular cushion material shall be placed below the Type 1 Detectable Warnings. When concrete is placed below the detectable warnings then the concrete thickness shall be transitioned at the rate of 1" per foot to match the adjacent concrete sidewalk thickness. The detectable warnings shall be a brick red color for application in concrete curb ramps.

When Type 1 Detectable Warnings are specified, the Contractor shall furnish and install only one of the products listed in the Type 1 Detectable Warnings table.

TYPE 1 DETECTABLE WARNINGS CONTINUED

Type 1 Detectable Warnings

Product	Manufacturer
Detectable Warning Plate Cast Iron Plate	Neenah Foundry Company Neenah, WI 800-558-5075 http://www.neenahfoundry.com/
Detectable Warning Plate Cast Iron Plate	Deeter Foundry Lincoln, NE 800-234-7466 http://www.deeter.com/
Detectable Warning Plate Cast Iron Plate(No Coating)	East Jordan Iron Works, Inc. 301 Spring Street East Jordan, MI 49727 800-626-4653 http://www.ejiw.com
CAST-DWD Cast Iron Plate	Key 3 Casting (Northern Foundry) 555 West 25th Street Hibbing, MN 55746 218-263-8871 http://key3casting.com

TABLE OF TYPE 1 DETECTABLE WARNINGS

Station	LT/RT	Quantity (SqFt)
105+30	93' LT	10
105+30	40' LT	12
113+72	0' LT/RT	20
114+15	0' LT/RT	20
119+74	0' LT/RT	20
206+35	40' LT	10
206+35	100' LT	10
212+48	0' LT/RT	20
212+79	0' LT/RT	20
214+92	0' LT/RT	20
400+75	0' LT/RT	20
401+16	0' LT/RT	20
500+84	7' LT	8
	Total:	210 SqFt

TABLE OF 6" CONCRETE SIDEWALK

Station	to	Station	LT/RT	Quantity (SqFt)
100+00		105+00	LT/RT	4355
105+00		110+00	LT/RT	5490
110+00		115+00	LT/RT	4650
115+00		120+00	LT/RT	4860
200+00		205+00	LT/RT	4496
205+00		210+00	LT/RT	5258
210+00		215+00	LT/RT	4962
300+00		305+00	LT/RT	3506
400+00		405+00	LT/RT	4196
405+00		410+00	LT/RT	5000
410+00		415+00	LT/RT	5000
415+00		420+00	LT/RT	5120
420+00		425+00	LT/RT	4730
500+00		505+00	LT/RT	1990
			Total:	63,613 SqFt

TABLE OF ASPHALT CONCRETE COMPOSITE

Station	to	Station	LT/RT	Quantity (Ton)
105+12		105+42	LT	3.7
113+55		113+78	LT	4.5
114+05		114+27	LT	4.5
119+52		119+85	LT	5.5
214+80		215+00	LT	2.8
400+51		400+85	LT	3.5
401+02		401+15	LT	3.5
500+80		500+90	LT	1.0
			Total:	29.0 Ton

GENERAL

Permanent signing location shall be staked in the field by the Contractor and verified by the Engineer. The Contractor shall give the Engineer a minimum of one week advanced notice to allow for the verification of permanent sign locations.

The Contractor shall furnish all signs, posts, stiffeners, bases, hardware, and labor for the installation of permanent signs in the size and type and quantity as required per the plan tables and/or the direction of the Engineer.

The Contractor shall be responsible for contacting the South Dakota One Call to locate the utilities at the staked sign locations.

EXISTING SIGNS

Unless otherwise noted in the plans, existing street and highway signs shall not be disturbed or relocated and shall remain functional during the course of this project.

SIGN DESIGN

Signs shall be constructed as required per the Manual on Uniform Traffic Control Devices (MUTCD), the 2009 edition of "Standard Highway Signs", and/or as specified in the plans.

All sign material shall comply with Section 982 of the Specifications, except that the sheet aluminum shall be 0.100 inch thick.

SIGN SHEETING

Super/Very High Intensity reflective sheeting is defined as that which meets the standards of Type XI as defined by ASTM D4956. Very High Intensity reflective sheeting is defined as that which meets the standards of Type IV as defined by ASTM D4956.

All black legend and borders shall be non-reflectorized (unless otherwise specified in these plans).

All warning signs shall be fluorescent yellow. All School signs, and Pedestrian Crossing signs shall be fluorescent yellow-green.

SIGN, SIGN POST AND SIGN PLACEMENT VERIFICATION

All sign post locations and positions shall be located by the Contractor and verified by the Engineer. The Contractor shall verify that the post location allows for proper placement of the signs according to the plans.

Prior to ordering signs, the Contractor shall verify dimensions, background, border, and legends of the signs.

The posts shall be installed to a depth of 42" below finished grade. Prior to ordering sign posts, the Contractor shall verify post lengths.

SIGN INSTALLATION

Sign installation shall be as shown on the plans. The installation height of signs shall not exceed the minimum by more than 1.0 foot. Sign posts shall not extend beyond the top of the sign.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GARRO A. ROPS
SOUTH DAKOTA
5/9/18

SECTION B – GRADING

REVISED/6-26-18/GAR

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPU(12)	B5	B57

RESET SIGN

Station	LT/RT
105+34	127' LT
113+72	13' RT
114+15	13' RT
214+92	10' RT
401+16	6' RT
406+81	10' LT
419+24	10' LT
423+49	12' LT

PAVEMENT MARKING

The pavement marking material shall be as defined in Section 980 and 981 of the Specifications.

TABLE OF PCC FILLET

Station	Quantity Sq Yd
105+36	29.1
113+77	31.1
114+09	31.1
119+79	37.2
214+96	15.7
400+77	19
401+14	19
Total	182.2

TABLE OF CURB & GUTTER

Station	LT/RT	Quantity Ft
113+55	20' LT	3
113+74	9' RT	3
119+57	21' LT	6
119+74	21' RT	7
214+79	13' LT	3
400+58	20' LT	18
401+16	5' LT	5
500+84	13' LT	17
	Total	62

REGISTERED PROFESSIONAL ENGINEER
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8738
GAARD A.
ROPS
6/26/18

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPU(12)	B6	B57

TABLE OF PIPE QUANTITIES

		Reinforced Concrete Pipe								
		Circular RCP			Arch RCP	Arch Flared Ends	Circular Flared Ends			
Station / Offset / Section Number	(Number and Page)	18" Cl. 3 (Ft)	30" Cl. 3 (Ft)	54" Cl. 3 (Ft)	30" Cl. 3 (Ft)	30" (Ft)	18" (Each)	30" (Each)	Reset Pipe End Section (Each)	Reset Pipe (Ft)
105+07.0 -19.6' LT (EX.) TO 105+15.0 – 19.6' LT (EX. FES)	Section 1 Sheet Z2								2	96
105+09.2 – 100.0' LT (EX.) TO 105+23.1 – 100.0' LT (EX. FES)	Section 2 Sheet Z2	8							1	
109+96.8 - 16.5' LT (FES) TO 110+20.7 - 21.5' RT (FES)	Section 3 Sheet Z2	32					2			
111+85.5 - 19.2' RT (FES) TO 111+96.6 - 15.3' LT (FES)	Section 4 Sheet Z2	24					2			
113+20.0 - 17.6' LT (FES) TO 113+52.8 - 6.8' LT (FES)	Section 5 Sheet Z2	24					1			
114+31.2 - 8.9' LT (FES) TO 114+40.0 - 13.9' LT (FES)	Section 5 Sheet Z2	8					1			
119+32.0 - 15.1' LT (FES) TO 119+56.9 5.5' LT (FES)	Section 6 Sheet Z2	24					1			
206+17 - 20.0' LT (FES) TO 206+53.2 - 19.5' LT (FES)	Section 7 Sheet Z2	24					2			
111+86.3 – 18.6' RT (FES) TO 111+95.4 – 16.5' LT (FES)	Section 8 Sheet Z2		42					2		
401+40.8 - 5.9' RT (EX.) TO 401+49.8 - 27.6' RT (FES)	Section 9 Sheet Z3				24	1				
404+56.9 - 1.9' RT (EX) TO 404+57.4 - 21.9' RT (FES)	Section 10 Sheet Z3	20					1			
407+74.2 - 6.5' RT (EX) TO 407+74 - 30.5' RT (FES)	Section 11 Sheet Z3	24					1			
410+37.1 - 3.9' RT (EX) TO 410+37.1 - 23.9' RT (FES)	Section 12 Sheet Z3	20							1	
420+89.9 - 33.8' RT (EX) TO 420+81.1 - 56.1' RT (FES)	Section 13 Sheet Z3			24					1	
	TOTAL:	**208**	**42**	**24**	**24**	**1**	**11**	**2**	**5**	**96**

Legend
EX: Existing (new pipe is connecting to existing pipe)
FES: Flared End Section (RCP)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPU(12)	B7	B57

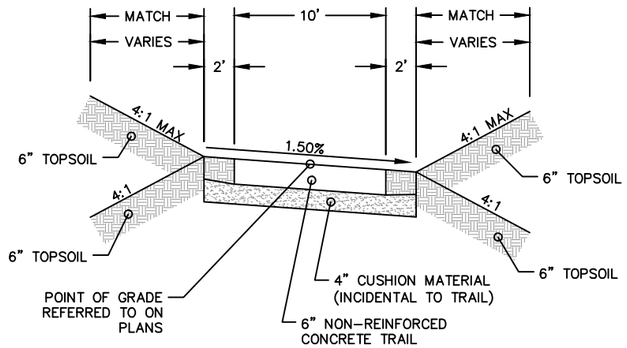
TABLE OF PERMANENT SIGNING

Station/Offset	Description	Sign Code	Width (in)	Height (in)	Super/Very High Intensity (Sq. Ft)	High Intensity (Sq. Ft)	Perforated Tube Post 2.0"x2.0" (Ft)	Color	
								Background	Legend & Border
105+28 - 90 LT	Pedestrian	W11-2	30	30	6.3		7	Yellow-Green	Black
	Diagonal Downard Arrow	W16-7P L	24	12	2.0			Yellow-Green	Black
105+28 - 35 LT	Pedestrian	W11-2	30	30	6.3		7	Yellow-Green	Black
	Diagonal Downard Arrow	W16-7P L	24	12	2.0			Yellow-Green	Black
	Stop	R1-1	18	18	1.9		7	Red	White
113+72 -8 RT	Stop	R1-1	18	18	1.9		7	Red	White
	Bike Route	D11-1	24	18		3.0		Green	White
	No Motor Vehicles	R5-3	24	24		4.0		White	Black
114+19 - 8 LT	Stop	R1-1	18	18	1.9		7	Red	White
	Bike Route	D11-1	24	18		3.0		Green	White
	No Motor Vehicles	R5-3	24	24		4.0		White	Black
119+73 - 8 RT	Stop	R1-1	18	18	1.9		7	Red	White
	Bike Route	D11-1	24	18		3.0		Green	White
	No Motor Vehicles	R5-3	24	24		4.0		White	Black
200+05 - 8 LT	Stop	R1-1	18	18	1.9		7	Red	White
	Bike Route	D11-1	24	18		3.0		Green	White
	No Motor Vehicles	R5-3	24	24		4.0		White	Black
206+27 - 37 LT	Pedestrian	W11-2	30	30	6.3		7	Yellow-Green	Black
	Diagonal Downard Arrow	W16-7P L	24	12	2.0			Yellow-Green	Black
206+27 - 90 LT	Pedestrian	W11-2	30	30	6.3			Yellow-Green	Black
	Diagonal Downard Arrow	W16-7P L	24	12	2.0			Yellow-Green	Black
206+42 - 37 LT	Stop	R1-1	18	18	1.9		7	Red	White
212+51 - 9 RT	Stop	R1-1	18	18	1.9		7	Red	White
	Railroad Crossing	R15-1	24 (2)	4.5 (2)		1.4		White	Black
212+78 - 9 LT	Stop	R1-1	18	18	1.9		7	Red	White
	Railroad Crossing	R15-1	24 (2)	4.5 (2)		1.4		White	Black
214+83 - 7 RT	Stop	R1-1	18	18	1.9		7	Red	White
	Bike Route	D11-1	24	18		3.0		Green	White
	No Motor Vehicles	R5-3	24	24		4.0		White	Black
400+62 - 8 RT	Stop	R1-1	18	18	1.9		7	Red	White
	Bike Route	D11-1	24	18		3.0		Green	White
	No Motor Vehicles	R5-3	24	24		4.0		White	Black
401+23 - 8 LT	Stop	R1-1	18	18	1.9		7	Red	White
	Bike Route	D11-1	24	18		3.0		Green	White
	No Motor Vehicles	R5-3	24	24		4.0		White	Black
				Totals:	**54.1**	**51.8**	**98.0**		

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GARD A. ROPS
SOUTH DAKOTA
5/9/18

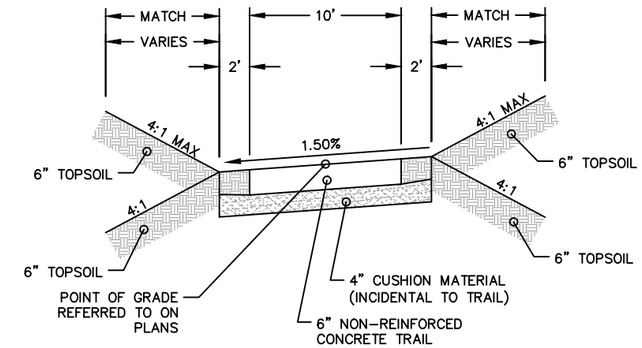
TYPICAL GRADING & SURFACING SECTIONS

FILE: 16165 – Typical Section.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B8	B57



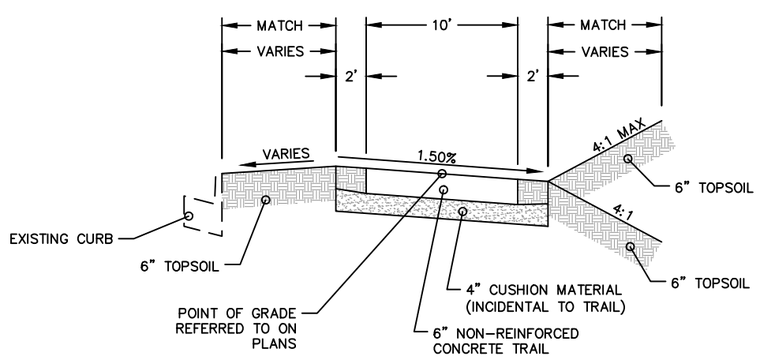
NON-REINFORCED CONCRETE TRAIL TYPICAL SECTION

STA.100+00 TO 115+00
STA. 300+00 TO 303+80



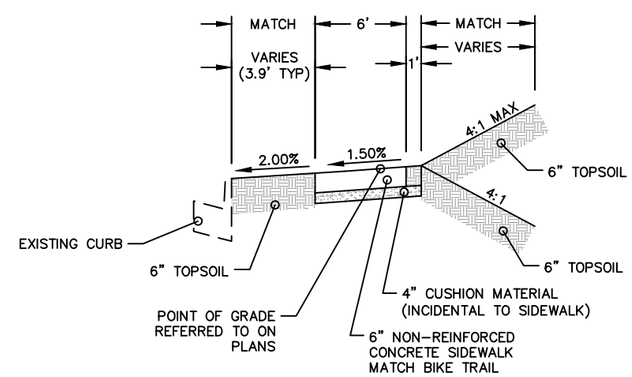
NON-REINFORCED CONCRETE TRAIL TYPICAL SECTION

STA. 200+00 TO 215+00



NON-REINFORCED CONCRETE TRAIL TYPICAL SECTION

STA. 400+50 TO STA. 425+00



NON-REINFORCED CONCRETE SIDEWALK TYPICAL SECTION

STA. 500+50 TO STA. 503+80

*THE TRAIL SHALL BE CONSTRUCTED TO MEET ADA REQUIREMENTS. (IE. MAX. 2% CROSS SLOPE.)

STOCKWELL ENGINEERS
SIOUX FALLS, SD

HORIZONTAL ALIGNMENT AND CONTROL DATA

FILE: 16165 – Alignment Data.dwg PLOTTING DATE: 2018–05–09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B9	B57

WEST CITY LIMITS ROAD SOUTH

Tangent Data

Description	PT Station	Northing	Easting
Start:	100+00.00	19624.73	50008.143
End:	100+50.00	19674.7	50006.524

Tangent Data

Parameter	Value	Parameter	Value
Length:	50	Course:	N 01° 51' 19.7493" W

Tangent Data

Description	PT Station	Northing	Easting
Start:	100+50.00	19674.7	50006.524
End:	100+75.29	19699.98	50005.705

Tangent Data

Parameter	Value	Parameter	Value
Length:	25.29	Course:	N 01° 51' 19.7493" W

Curve Point Data

Description	Station	Northing	Easting
PC:	100+75.29	19699.98	50005.705
RP:		19703.28	50107.652
PT:	101+01.93	19726.42	50008.31

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	14° 57' 54.7151"	Type:	RIGHT
Radius:	102		
Length:	26.64	Tangent:	13.4
Mid-Ord:	0.87	External:	0.88
Chord:	26.57	Course:	N 05° 37' 37.6083" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	101+01.93	19726.42	50008.31
End:	101+33.97	19757.62	50015.577

Tangent Data

Parameter	Value	Parameter	Value
Length:	32.04	Course:	N 13° 06' 34.9658" E

Curve Point Data

Description	Station	Northing	Easting
PC:	101+33.97	19757.62	50015.577
RP:		19781.44	49913.313
PT:	101+60.82	19784.26	50018.275

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	14° 38' 54.9863"	Type:	LEFT
Radius:	105		
Length:	26.84	Tangent:	13.5
Mid-Ord:	0.86	External:	0.86
Chord:	26.77	Course:	N 05° 47' 07.4727" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	101+60.82	19784.26	50018.275
End:	109+67.24	20590.39	49996.619

Tangent Data

Parameter	Value	Parameter	Value
Length:	806.42	Course:	N 01° 32' 20.0204" W

Curve Point Data

Description	Station	Northing	Easting
PC:	109+67.24	20590.39	49996.619
RP:		20588.38	49921.646
PT:	110+06.51	20627.61	49985.567

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	30° 00' 00.0000"	Type:	LEFT
Radius:	75		
Length:	39.27	Tangent:	20.1
Mid-Ord:	2.56	External:	2.65
Chord:	38.82	Course:	N 16° 32' 20.0204" W

Tangent Data

Description	PT Station	Northing	Easting
Start:	110+06.51	20627.61	49985.567
End:	110+30.33	20647.91	49973.107

Tangent Data

Parameter	Value	Parameter	Value
Length:	23.82	Course:	N 31° 32' 20.0204" W

Curve Point Data

Description	Station	Northing	Easting
PC:	110+30.33	20647.91	49973.107
RP:		20687.14	50037.028
PT:	110+69.60	20685.13	49962.055

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	30° 00' 00.0000"	Type:	RIGHT
Radius:	75		
Length:	39.27	Tangent:	20.1
Mid-Ord:	2.56	External:	2.65
Chord:	38.82	Course:	N 16° 32' 20.0204" W

Tangent Data

Description	PT Station	Northing	Easting
Start:	110+69.60	20685.13	49962.055
End:	111+22.72	20738.23	49960.629

Tangent Data

Parameter	Value	Parameter	Value
Length:	53.12	Course:	N 01° 32' 20.0204" W

Curve Point Data

Description	Station	Northing	Easting
PC:	111+22.72	20738.23	49960.629
RP:		20740.24	50035.602
PT:	111+61.99	20775.98	49969.666

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	30° 00' 00.0000"	Type:	RIGHT
Radius:	75		
Length:	39.27	Tangent:	20.1
Mid-Ord:	2.56	External:	2.65
Chord:	38.82	Course:	N 13° 27' 39.9796" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	111+61.99	20775.98	49969.666
End:	111+79.81	20791.65	49978.159

Tangent Data

Parameter	Value	Parameter	Value
Length:	17.82	Course:	N 28° 27' 39.9796" E

Curve Point Data

Description	Station	Northing	Easting
PC:	111+79.81	20791.65	49978.159
RP:		20827.39	49912.223
PT:	112+19.08	20829.41	49987.196

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	30° 00' 00.0000"	Type:	LEFT
Radius:	75		
Length:	39.27	Tangent:	20.1
Mid-Ord:	2.56	External:	2.65
Chord:	38.82	Course:	N 13° 27' 39.9796" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	112+19.08	20829.41	49987.196
End:	112+45.21	20855.53	49986.494

Tangent Data

Parameter	Value	Parameter	Value
Length:	26.13	Course:	N 01° 32' 20.0204" W

Tangent Data

Description	PT Station	Northing	Easting
Start:	112+45.21	20855.53	49986.494
End:	113+19.96	20930.2	49983.082

Tangent Data

Parameter	Value	Parameter	Value
Length:	74.75	Course:	N 02° 36' 58.9275" W

Curve Point Data

Description	Station	Northing	Easting
PC:	113+19.96	20930.2	49983.082
RP:		20929.29	49963.103
PT:	113+29.79	20939.52	49980.289

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	28° 08' 38.8577"	Type:	LEFT
Radius:	20		
Length:	9.82	Tangent:	5.01
Mid-Ord:	0.6	External:	0.62
Chord:	9.73	Course:	N 16° 41' 18.3563" W

Tangent Data

Description	PT Station	Northing	Easting
Start:	113+29.79	20939.52	49980.289
End:	113+52.14	20958.73	49968.856

Tangent Data

Parameter	Value	Parameter	Value
Length:	22.35	Course:	N 30° 45' 37.7852" W

Curve Point Data

Description	Station	Northing	Easting
PC:	113+52.14	20958.73	49968.856
RP:		20968.96	49986.042
PT:	113+62.57	20968.64	49966.045

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	29° 51' 44.0307"	Type:	RIGHT
Radius:	20		
Length:	10.42	Tangent:	5.33
Mid-Ord:	0.68	External:	0.7
Chord:	10.31	Course:	N 15° 49' 45.7698" W

Tangent Data

Description	PT Station	Northing	Easting
Start:	113+62.57	20968.64	49966.045
End:	114+21.20	21027.28	49965.125

Tangent Data

Parameter	Value	Parameter	Value
Length:	58.64	Course:	N 00° 53' 53.7544" W

Curve Point Data

Description	Station	Northing	Easting
PC:	114+21.20	21027.28	49965.125
RP:		21027.59	49985.123
PT:	114+30.80	21036.54	49967.237

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	27° 28' 57.5721"	Type:	RIGHT
Radius:	20		
Length:	9.59	Tangent:	4.89
Mid-Ord:	0.57	External:	0.59
Chord:	9.5	Course:	N 12° 50' 35.0316" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	114+30.80	21036.54	49967.237
End:	114+41.93	21046.5	49972.22

Tangent Data

Parameter	Value	Parameter	Value
Length:	11.13	Course:	N 26° 35' 03.8176" E

Curve Point Data

Description	Station	Northing	Easting
PC:	114+41.93	21046.5	49972.22
RP:		21055.45	49954.335
PT:	114+52.13	21056.36	49974.314

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	29° 12' 02.7452"	Type:	LEFT
Radius:	20		
Length:	10.19	Tangent:	5.21
Mid-Ord:	0.65	External:	0.67
Chord:	10.08	Course:	N 11° 59' 02.4451" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	114+52.13	21056.36	49974.314
End:	119+26.02	21529.76	49952.682

Tangent Data

Parameter	Value	Parameter	Value
Length:	473.89	Course:	N 02° 36' 58.9275" W

Curve Point Data

Description	Station	Northing	Easting
PC:	119+26.02	21529.76	49952.682
RP:		21528.84	49932.703
PT:	119+34.05	21537.49	49950.736

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	23° 00' 08.8521"	Type:	LEFT
Radius:	20		
Length:	8.03	Tangent:	4.07
Mid-Ord:	0.4	External:	0.41
Chord:	7.98	Course:	N 14° 07' 03.3536" W

Tangent Data

Description	PT Station	Northing	Easting
Start:	119+34.05	21537.49	49950.736
End:	119+55.12	21556.5	49941.623

Tangent Data

Parameter	Value	Parameter	Value
Length:	21.08	Course:	N 25° 37' 07.7796" W

Curve Point Data

Description	Station	Northing	Easting
PC:	119+55.12	21556.5	49941.623
RP:		21565.14	49959.657
PT:	119+63.05	21564.13	49939.683

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	22° 42' 48.1740"	Type:	RIGHT
Radius:	20		
Length:	7.93	Tangent:	4.02
Mid-Ord:	0.39	External:	0.4
Chord:	7.88	Course:	N 14° 15' 43.6926" W

Tangent Data

Description	PT Station	Northing	Easting
Start:	119+63.05	21564.13	49939.683
End:	119+98.61	21599.64	49937.88

Tangent Data

Parameter	Value	Parameter	Value
Length:	35.56	Course:	N 02° 54' 19.6056" W

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/19

STOCKWELL ENGINEERS
SIOUX FALLS, SD

HORIZONTAL ALIGNMENT AND CONTROL DATA

FILE: 16165 – Alignment Data.dwg PLOTTING DATE: 2018–05–09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B10	B57

WEST CITY LIMITS ROAD NORTH

Tangent Data

Description	PT Station	Northing	Easting
Start:	200+00.00	21690.79	49947.175
End:	201+81.53	21872.3	49945.037

Tangent Data

Parameter	Value	Parameter	Value
Length:	181.53	Course:	N 00° 40' 28.6878" W

Tangent Data

Description	PT Station	Northing	Easting
Start:	201+81.53	21872.3	49945.037
End:	211+19.54	22809.2	49899.473

Tangent Data

Parameter	Value	Parameter	Value
Length:	938.01	Course:	N 02° 47' 03.2837" W

Curve Point Data

Description	Station	Northing	Easting
PC:	211+19.54	22809.2	49899.473
RP:		22808.23	49879.497
PT:	211+31.63	22820.38	49895.381

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	34° 38' 08.0350"	Type:	LEFT
Radius:	20		
Length:	12.09	Tangent:	6.24
Mid-Ord:	0.91	External:	0.95
Chord:	11.91	Course:	N 20° 06' 07.3012" W

Tangent Data

Description	PT Station	Northing	Easting
Start:	211+31.63	22820.38	49895.381
End:	211+71.11	22851.75	49871.387

Tangent Data

Parameter	Value	Parameter	Value
Length:	39.49	Course:	N 37° 25' 11.3187" W

Curve Point Data

Description	Station	Northing	Easting
PC:	211+71.11	22851.75	49871.387
RP:		22863.9	49887.271
PT:	211+83.35	22863.07	49867.288

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	35° 03' 26.2531"	Type:	RIGHT
Radius:	20		
Length:	12.24	Tangent:	6.32
Mid-Ord:	0.93	External:	0.97
Chord:	12.05	Course:	N 19° 53' 28.1922" W

Tangent Data

Description	PT Station	Northing	Easting
Start:	211+83.35	22863.07	49867.288
End:	212+34.04	22913.72	49865.198

Tangent Data

Parameter	Value	Parameter	Value
Length:	50.69	Course:	N 02° 21' 45.0656" W

Curve Point Data

Description	Station	Northing	Easting
PC:	212+34.04	22913.72	49865.198
RP:		22914.34	49880.186
PT:	212+48.08	22926.04	49870.795

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	53° 36' 07.0309"	Type:	RIGHT
Radius:	15		
Length:	14.03	Tangent:	7.58
Mid-Ord:	1.61	External:	1.81
Chord:	13.53	Course:	N 24° 26' 18.4498" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	212+48.08	22926.04	49870.795
End:	213+05.08	22961.73	49915.242

Tangent Data

Parameter	Value	Parameter	Value
Length:	57	Course:	N 51° 14' 21.9653" E

Curve Point Data

Description	Station	Northing	Easting
PC:	213+05.08	22961.73	49915.242
RP:		22996.82	49887.069
PT:	213+75.77	23024.99	49922.156

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	90° 00' 20.7712"	Type:	LEFT
Radius:	45		
Length:	70.69	Tangent:	45
Mid-Ord:	13.18	External:	18.64
Chord:	63.64	Course:	N 06° 14' 11.5797" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	213+75.77	23024.99	49922.156
End:	214+53.30	23085.44	49873.61

Tangent Data

Parameter	Value	Parameter	Value
Length:	77.53	Course:	N 38° 45' 58.8059" W

Curve Point Data

Description	Station	Northing	Easting
PC:	214+53.30	23085.44	49873.61
RP:		23113.62	49908.697
PT:	214+81.56	23111.43	49863.75

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	35° 58' 55.5222"	Type:	RIGHT
Radius:	45		
Length:	28.26	Tangent:	14.61
Mid-Ord:	2.2	External:	2.31
Chord:	27.8	Course:	N 20° 46' 31.0448" W

Tangent Data

Description	PT Station	Northing	Easting
Start:	214+81.56	23111.43	49863.75
End:	215+43.34	23173.14	49860.749

Tangent Data

Parameter	Value	Parameter	Value
Length:	61.78	Course:	N 02° 47' 03.2837" W

HIGHWAY 50 WEST

Tangent Data

Description	PT Station	Northing	Easting
Start:	300+00.00	23449.76	50138.58
End:	300+50.00	23450.15	50188.579

Tangent Data

Parameter	Value	Parameter	Value
Length:	50	Course:	N 89° 33' 11.4568" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	300+50.00	23450.15	50188.579
End:	303+80.57	23454.86	50519.113

Tangent Data

Parameter	Value	Parameter	Value
Length:	330.57	Course:	N 89° 11' 00.9938" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	303+80.57	23454.86	50519.113
End:	304+30.61	23455.1	50569.159

Tangent Data

Parameter	Value	Parameter	Value
Length:	50.05	Course:	N 89° 43' 27.5704" E

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

HORIZONTAL ALIGNMENT AND CONTROL DATA

FILE: 16165 – Alignment Data.dwg PLOTTING DATE: 2018–05–09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B11	B57

HIGHWAY 50 EAST

Tangent Data

Description	PT Station	Northing	Easting
Start:	400+00.00	23457.23	50757.275
End:	400+50.00	23457.9	50807.268

Tangent Data

Parameter	Value	Parameter	Value
Length:	50	Course:	N 89° 14' 01.7904" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	400+50.00	23457.9	50807.268
End:	401+19.76	23458.79	50877.021

Tangent Data

Parameter	Value	Parameter	Value
Length:	69.76	Course:	N 89° 16' 03.9116" E

Curve Point Data

Description	Station	Northing	Easting
PC:	401+19.76	23458.79	50877.021
RP:		69600.32	50098.163
PCC:	407+75.66	23474.52	51532.733

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	00° 48' 51.6562"	Type:	LEFT
Radius:	46148.1		
Length:	655.91	Tangent:	327.96
Mid-Ord:	1.17	External:	1.17
Chord:	655.9	Course:	N 88° 37' 32.8001" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	407+75.66	23474.52	51532.733
RP:		70153.34	50049.321
PT:	416+78.55	23511.92	52434.833

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	01° 06' 27.6791"	Type:	LEFT
Radius:	46702.39		
Length:	902.89	Tangent:	451.46
Mid-Ord:	2.18	External:	2.18
Chord:	902.87	Course:	N 87° 37' 33.4500" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	416+78.55	23511.92	52434.833
End:	421+23.77	23532.51	52879.575

Tangent Data

Parameter	Value	Parameter	Value
Length:	445.22	Course:	N 87° 20' 56.4820" E

Curve Point Data

Description	Station	Northing	Easting
PC:	421+23.77	23532.51	52879.575
RP:		21040.18	52994.973
PT:	422+01.60	23534.9	52957.363

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	01° 47' 14.0803"	Type:	RIGHT
Radius:	2495		
Length:	77.83	Tangent:	38.92
Mid-Ord:	0.3	External:	0.3
Chord:	77.82	Course:	N 88° 14' 33.5221" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	422+01.60	23534.9	52957.363
End:	422+44.95	23535.55	53000.715

Tangent Data

Parameter	Value	Parameter	Value
Length:	43.36	Course:	N 89° 08' 10.5623" E

Curve Point Data

Description	Station	Northing	Easting
PC:	422+44.95	23535.55	53000.715
RP:		26040.27	52962.954
PT:	423+08.50	23537.32	53064.235

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	01° 27' 12.4653"	Type:	LEFT
Radius:	2505		
Length:	63.55	Tangent:	31.77
Mid-Ord:	0.2	External:	0.2
Chord:	63.54	Course:	N 88° 24' 34.3296" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	423+08.50	23537.32	53064.235
End:	424+73.01	23543.97	53228.607

Tangent Data

Parameter	Value	Parameter	Value
Length:	164.51	Course:	N 87° 40' 58.0970" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	424+73.01	23543.97	53228.607
End:	425+23.01	23545.99	53278.566

Tangent Data

Parameter	Value	Parameter	Value
Length:	50	Course:	N 87° 40' 58.0970" E

ADKINS DRIVE

Tangent Data

Description	PT Station	Northing	Easting
Start:	500+00.00	23098.56	50892.855
End:	500+31.99	23130.48	50890.785

Tangent Data

Parameter	Value	Parameter	Value
Length:	31.99	Course:	N 03° 42' 35.8178" W

Tangent Data

Description	PT Station	Northing	Easting
Start:	500+31.99	23130.48	50890.785
End:	504+00.00	23498.25	50877.512

Tangent Data

Parameter	Value	Parameter	Value
Length:	368.01	Course:	N 02° 04' 01.0348" W

REGISTERED PROFESSIONAL ENGINEER
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SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

EXISTING TOPOGRAPHY SYMBOLOGY AND LEGEND SHEET

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P TAPU(12)	B12	B57

FILE: 16165 – Title Page.dwg
PLOTTING DATE: 2018–05–09 INTIALS: MRS
REVISION DATE:

- CENTERLINE
- PROPERTY LINE
- 1400 – MAJOR CONTOUR
- 1402 – MINOR CONTOUR
- W – WATER MAIN
- ST – STORM SEWER
- S – SANITARY SEWER
- FM – SANITARY SEWER FORCE MAIN
- CS – COMBINED SEWER
- G – GAS MAIN
- UT – UNDERGROUND TELEPHONE
- OT – OVERHEAD TELEPHONE
- UP – UNDERGROUND POWER
- OP – OVERHEAD POWER
- F – FIBER OPTIC
- UTV – UNDERGROUND CABLE TV
- OTV – OVERHEAD CABLE TV
- TR – TRAFFIC
- IW – INDUSTRIAL WASTE
- SL – LAWN SPRINKLER LINE
- CONC. CURB & GUTTER
- APPROACH
- WOOD FENCE
- CHAIN LINK FENCE
- BARBED WIRE FENCE

- 30" – DECIDUOUS TREE
- 8" – CONIFEROUS TREE
- 18" – TREE STUMP
- SHRUB
- SIGN
- PARKING METER POST
- MAIL BOX
- FLAGPOLE
- SPRINKLER HEAD
- GAS VALVE
- TRAFFIC SIGNAL LIGHT
- POWER POLE
- GUY WIRE
- STREET LIGHT
- FLOOD LIGHT
- HISTORICAL STREET LIGHT
- UTILITY CLOSURE
- W – WELL
- S – WATERMAIN SHUTOFF
- FIRE HYDRANT
- WATERMAIN VALVE & BOX
- WATERMAIN CAP
- WATERMAIN TEE
- WATERMAIN CROSS
- WATERMAIN REDUCER

- WATERMAIN SLEEVE
- UTILTIY CLEANOUT
- UTILTIY RISER
- M – UTILITY METER
- D – STORM SEWER MANHOLE
- S – SANITARY MANHOLE
- W – WATER MANHOLE
- E – ELECTRIC MANHOLE
- T – TELEPHONE MANHOLE
- F – FIBER OPTIC MANHOLE

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. RODES
SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

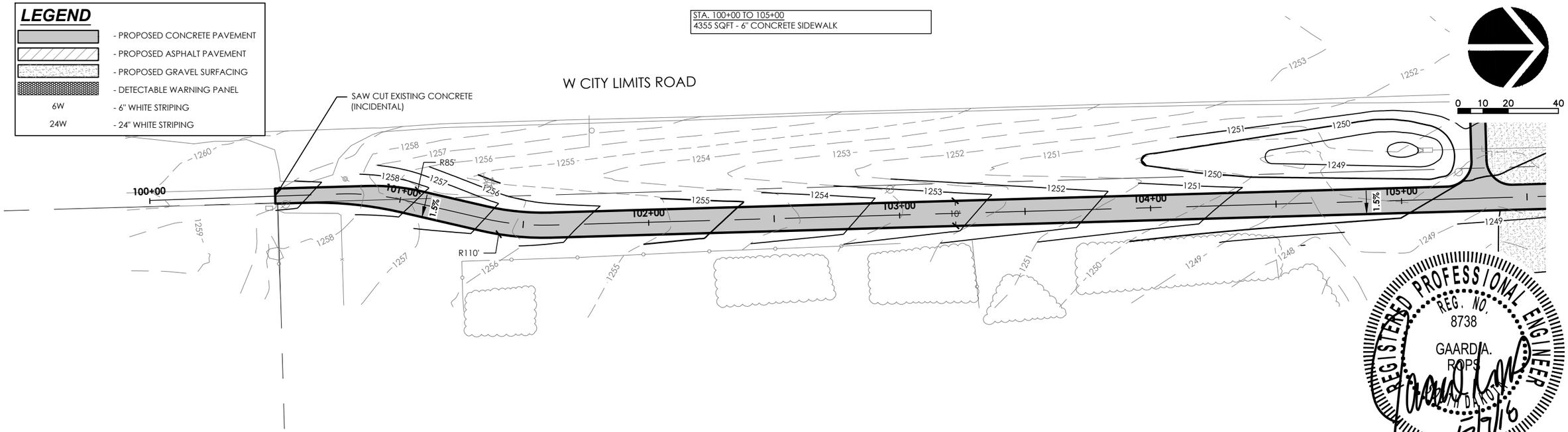
PAVEMENT PLAN & PROFILE

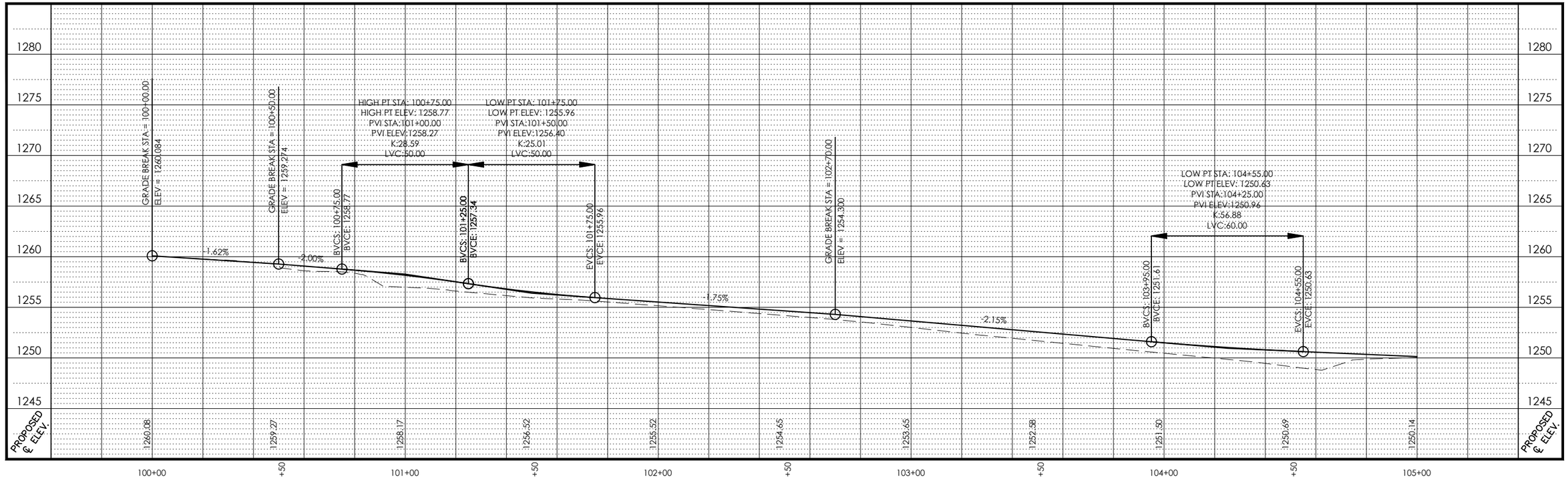
FILE: 16165 – Pavement.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B13	B57

LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- PROPOSED GRAVEL SURFACING
- DETECTABLE WARNING PANEL
- 6W - 6" WHITE STRIPING
- 24W - 24" WHITE STRIPING

STA. 100+00 TO 105+00
4355 SQFT - 6" CONCRETE SIDEWALK





REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARDIA. ROPS
SOUTH DAKOTA
5/7/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

PAVEMENT PLAN & PROFILE

FILE: 16165 – Pavement.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B14	B57

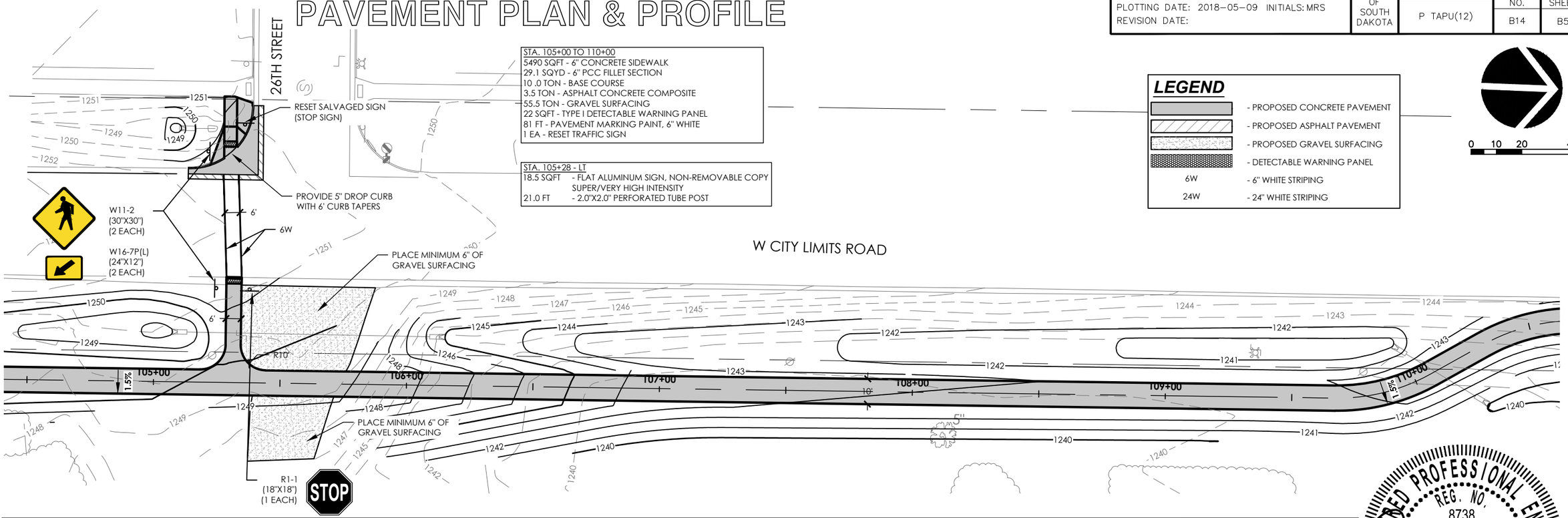
STA. 105+00 TO 110+00
5490 SQFT - 6" CONCRETE SIDEWALK
29.1 SQYD - 6" PCC FILLET SECTION
10 .0 TON - BASE COURSE
3.5 TON - ASPHALT CONCRETE COMPOSITE
55.5 TON - GRAVEL SURFACING
22 SQFT - TYPE I DETECTABLE WARNING PANEL
81 FT - PAVEMENT MARKING PAINT, 6" WHITE
1 EA - RESET TRAFFIC SIGN

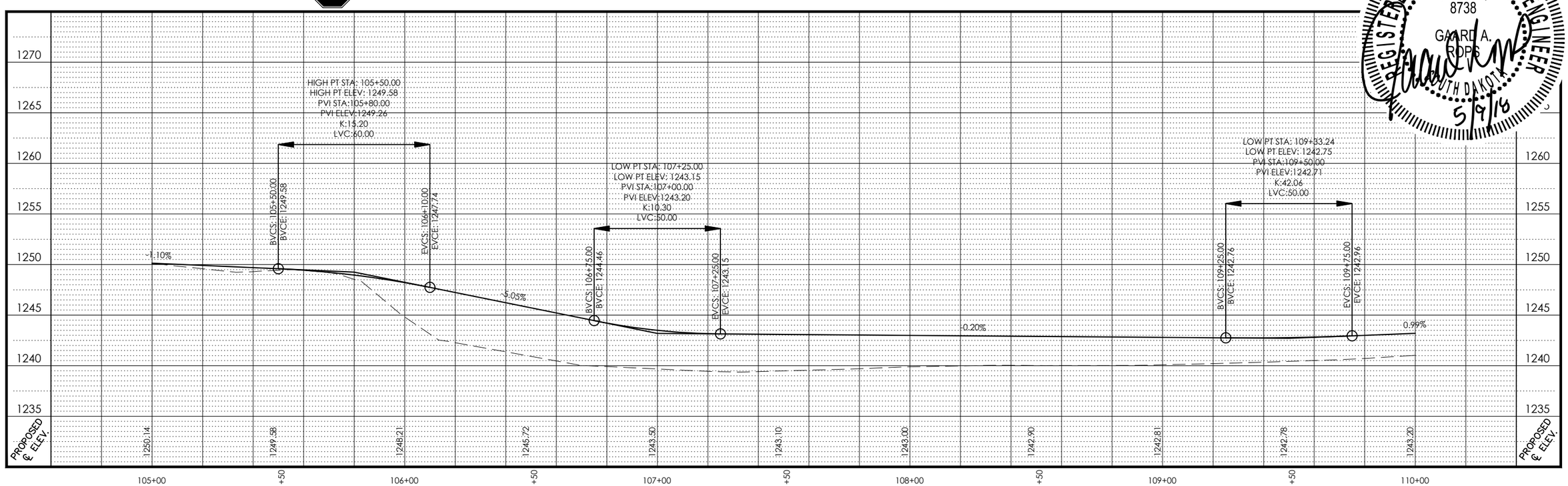
STA. 105+28 - LT
18.5 SQFT - FLAT ALUMINUM SIGN, NON-REMOVABLE COPY SUPER/VERY HIGH INTENSITY
21.0 FT - 2.0"X2.0" PERFORATED TUBE POST

LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- PROPOSED GRAVEL SURFACING
- DETECTABLE WARNING PANEL
- 6W - 6" WHITE STRIPING
- 24W - 24" WHITE STRIPING

0 10 20 40





REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GARRD A. ROPS
SOUTH DAKOTA
5/9/18

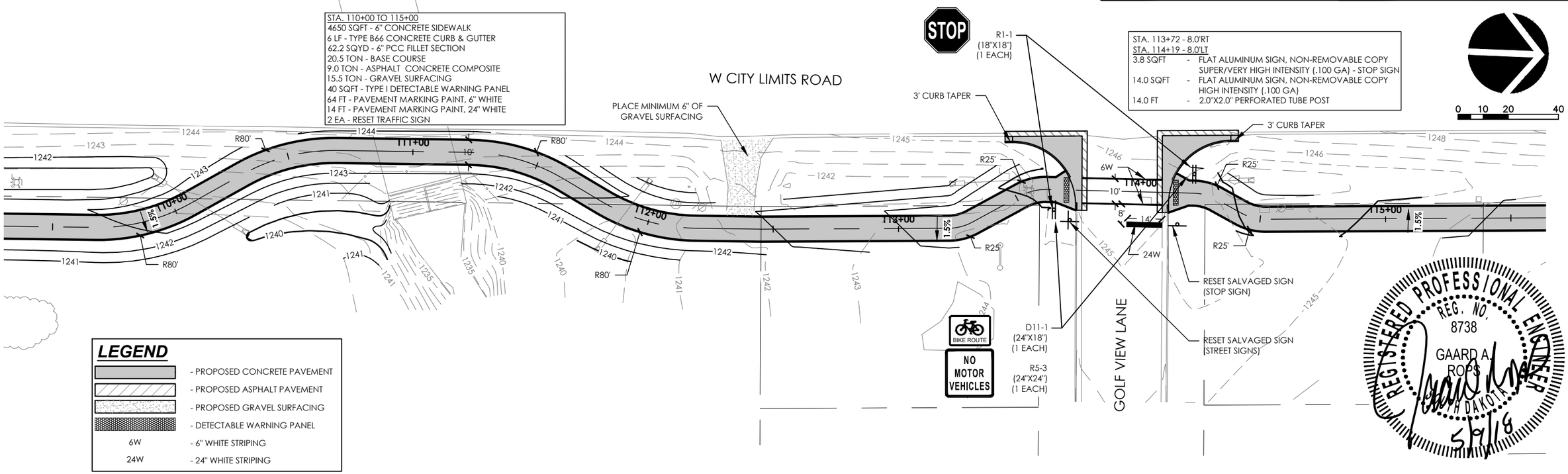
STOCKWELL ENGINEERS
SIOUX FALLS, SD

PAVEMENT PLAN & PROFILE

FILE: 16165 – Pavement.dwg PLOTTING DATE: 2018–05–09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B15	B57

STA. 110+00 TO 115+00
4650 SQFT - 6" CONCRETE SIDEWALK
6 LF - TYPE B66 CONCRETE CURB & GUTTER
62.2 SQYD - 6" PCC FILLET SECTION
20.5 TON - BASE COURSE
9.0 TON - ASPHALT CONCRETE COMPOSITE
15.5 TON - GRAVEL SURFACING
40 SQFT - TYPE I DETECTABLE WARNING PANEL
64 FT - PAVEMENT MARKING PAINT, 6" WHITE
14 FT - PAVEMENT MARKING PAINT, 24" WHITE
2 EA - RESET TRAFFIC SIGN

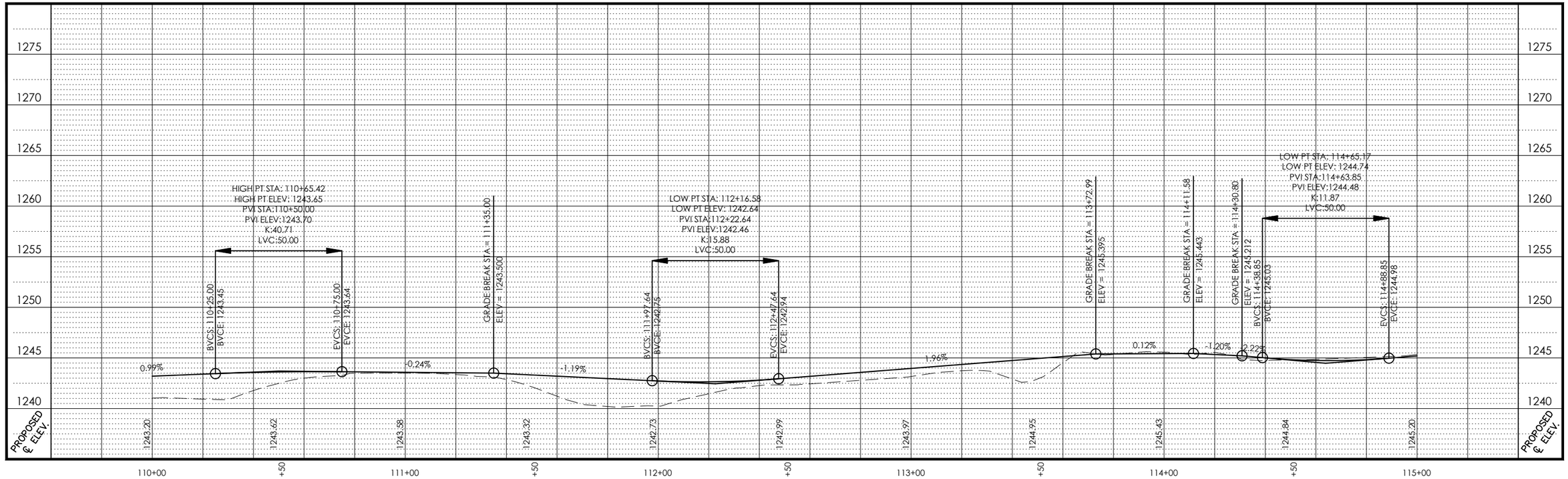
STA. 113+72 - 8.0'RT
STA. 114+19 - 8.0'LT
3.8 SQFT - FLAT ALUMINUM SIGN, NON-REMOVABLE COPY SUPER/VERY HIGH INTENSITY (.100 GA) - STOP SIGN
14.0 SQFT - FLAT ALUMINUM SIGN, NON-REMOVABLE COPY HIGH INTENSITY (.100 GA)
14.0 FT - 2.0"X2.0" PERFORATED TUBE POST



LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- PROPOSED GRAVEL SURFACING
- DETECTABLE WARNING PANEL
- 6W - 6" WHITE STRIPING
- 24W - 24" WHITE STRIPING

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

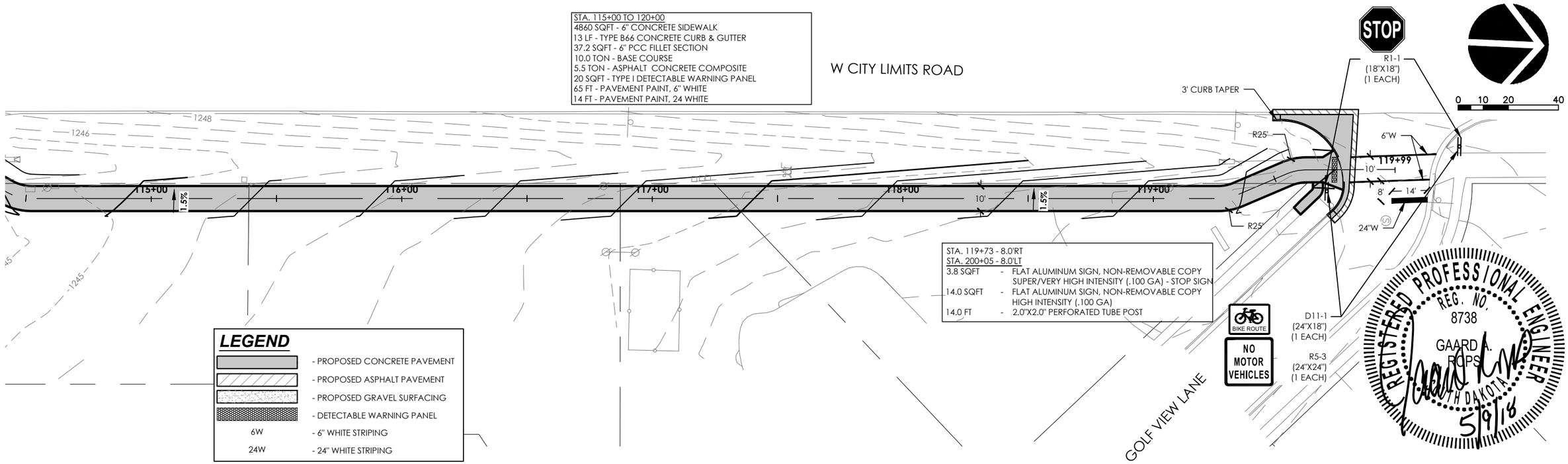


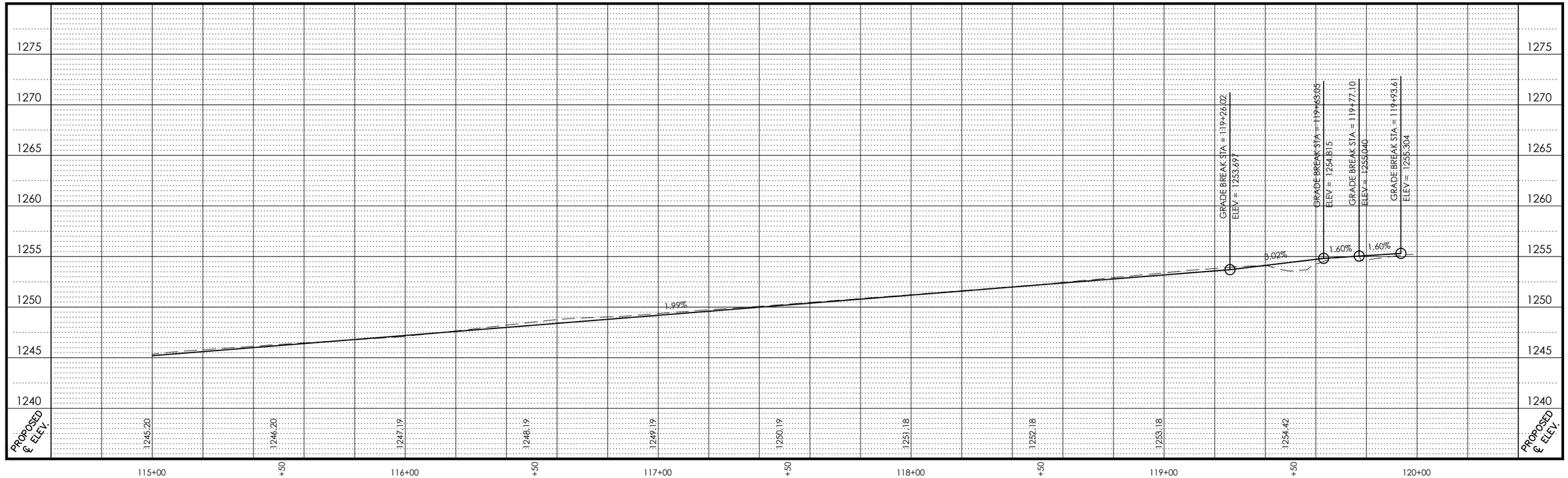
STOCKWELL ENGINEERS
SIOUX FALLS, SD

PAVEMENT PLAN & PROFILE

FILE: 16165 – Pavement.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B16	B57

STA. 115+00 TO 120+00
4860 SQFT - 6" CONCRETE SIDEWALK
13 LF - TYPE B66 CONCRETE CURB & GUTTER
37.2 SQFT - 6" PCC FILLET SECTION
10.0 TON - BASE COURSE
5.5 TON - ASPHALT CONCRETE COMPOSITE
20 SQFT - TYPE I DETECTABLE WARNING PANEL
65 FT - PAVEMENT PAINT, 6" WHITE
14 FT - PAVEMENT PAINT, 24 WHITE



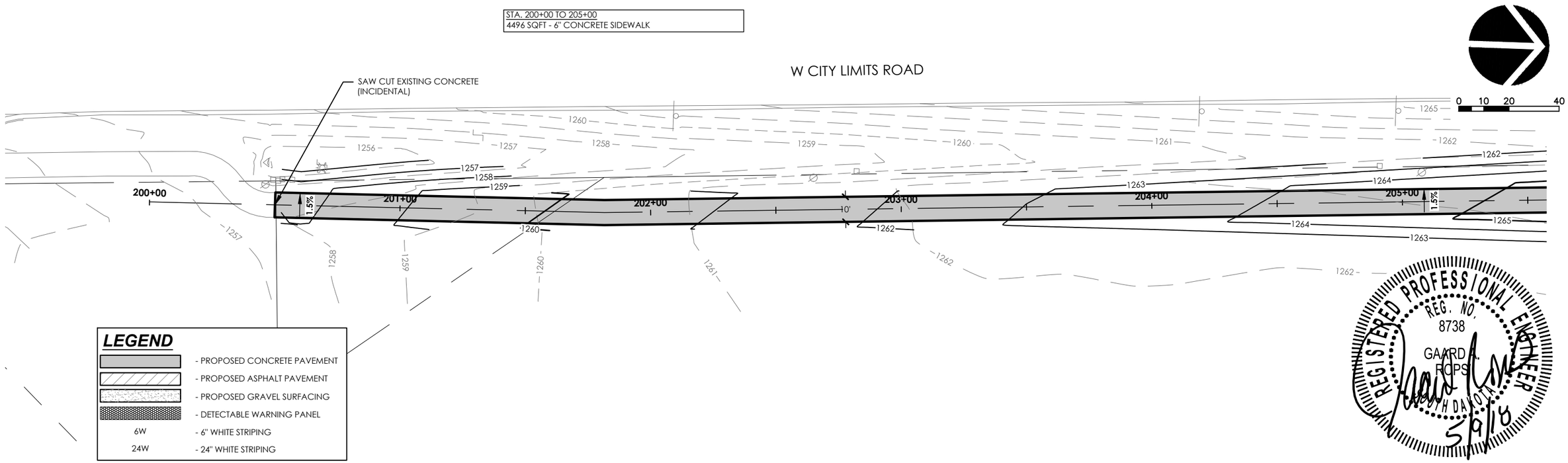


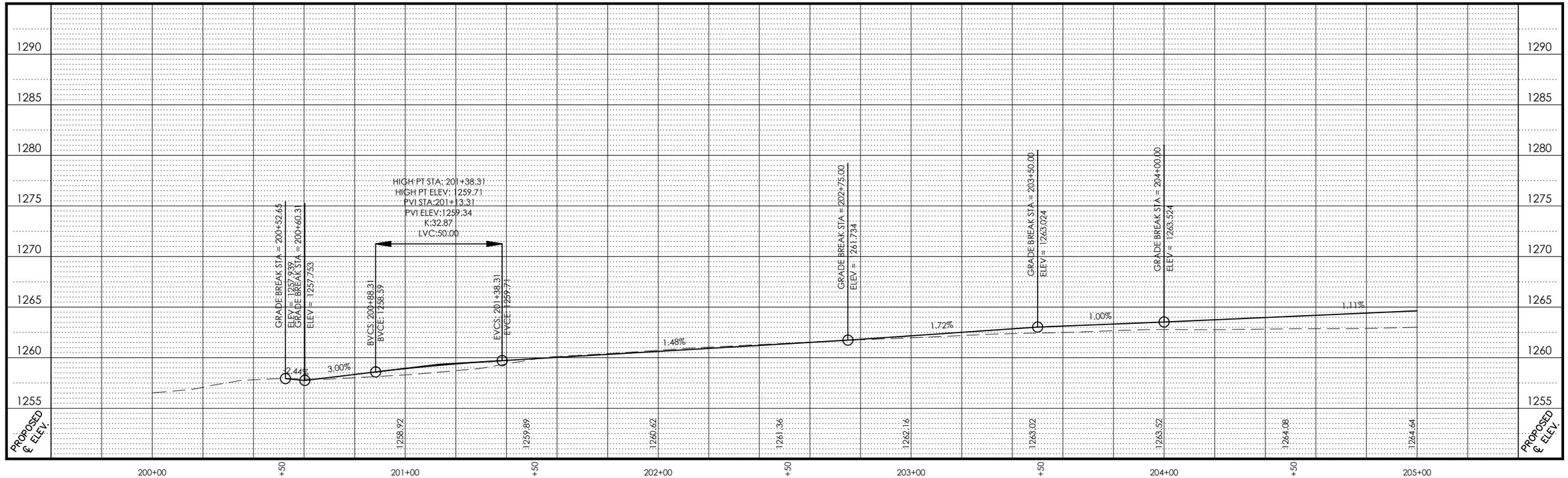
STOCKWELL ENGINEERS
SIOUX FALLS, SD

PAVEMENT PLAN & PROFILE

FILE: 16165 – Pavement.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B17	B57

STA. 200+00 TO 205+00
4496 SQFT - 6" CONCRETE SIDEWALK



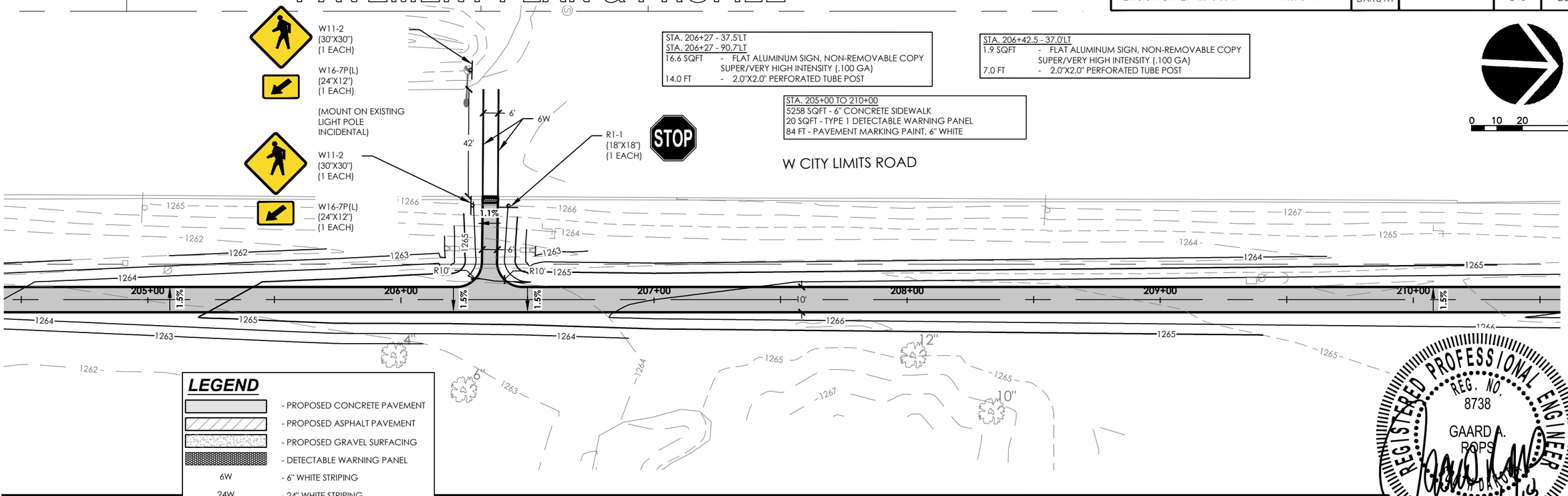


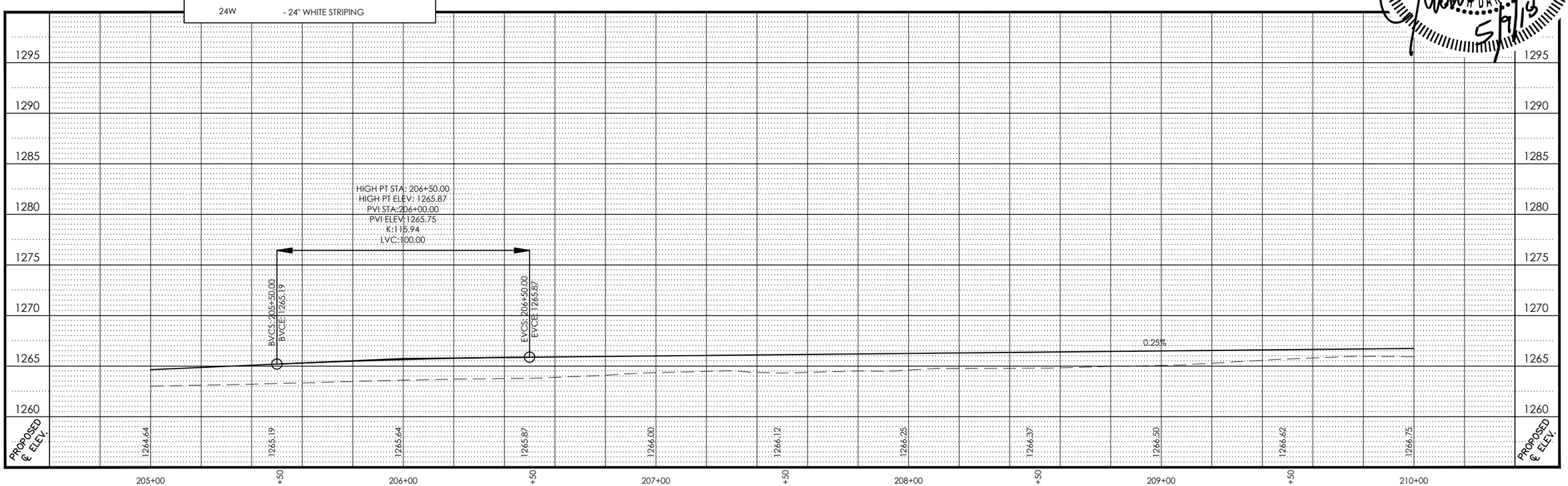
STOCKWELL ENGINEERS
SIOUX FALLS, SD

PAVEMENT PLAN & PROFILE

REVISED

FILE: 16165 – Pavement.dwg PLOTTING DATE: 2018–05–09 INITIALS: MRS REVISION DATE: 2018-05-09 INITIALS: GAR	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B18	B57





REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

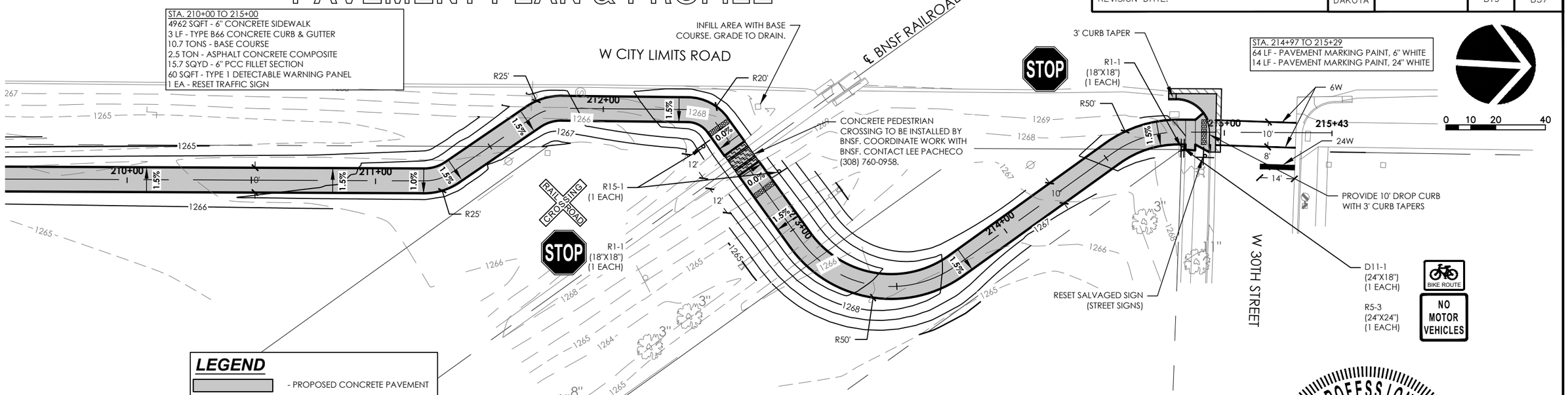
STOCKWELL ENGINEERS
SIOUX FALLS, SD

PAVEMENT PLAN & PROFILE

FILE: 16165 – Pavement.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B19	B57

STA. 210+00 TO 215+00
4962 SQFT - 6" CONCRETE SIDEWALK
3 LF - TYPE B66 CONCRETE CURB & GUTTER
10.7 TONS - BASE COURSE
2.5 TON - ASPHALT CONCRETE COMPOSITE
15.7 SQYD - 6" PCC FILLET SECTION
60 SQFT - TYPE 1 DETECTABLE WARNING PANEL
1 EA - RESET TRAFFIC SIGN

STA. 214+97 TO 215+29
64 LF - PAVEMENT MARKING PAINT, 6" WHITE
14 LF - PAVEMENT MARKING PAINT, 24" WHITE



LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- PROPOSED GRAVEL SURFACING
- DETECTABLE WARNING PANEL
- 6W — 6" WHITE STRIPING
- 24W — 24" WHITE STRIPING

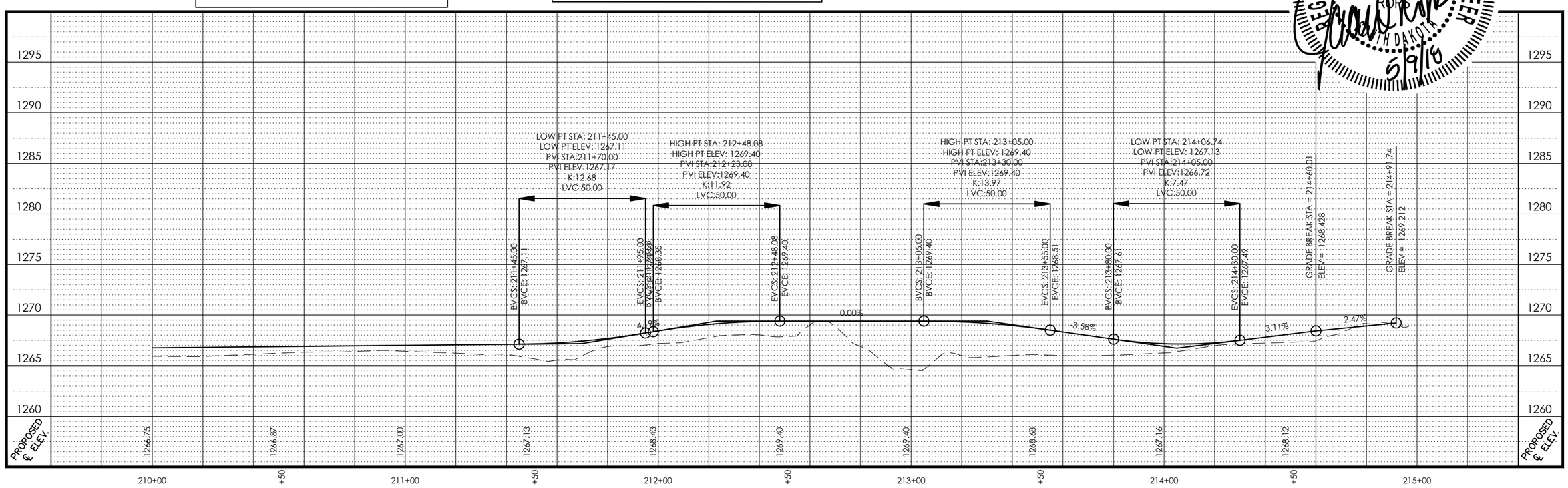
STA. 212+51 - 9.0'RT
STA. 212+78 - 9.0'LT

3.8 SQFT	-	FLAT ALUMINUM SIGN, NON-REMOVABLE COPY SUPER/VERY HIGH INTENSITY (.100 GA)
6.0 SQFT	-	FLAT ALUMINUM SIGN, NON-REMOVABLE COPY HIGH INTENSITY (.100 GA)
14.0 FT	-	2.0"X2.0" PERFORATED TUBE POST

STA. 214+83 - 7.0'RT

1.9 SQFT	-	FLAT ALUMINUM SIGN, NON-REMOVABLE COPY SUPER/VERY HIGH INTENSITY (.100 GA) - STOP SIGN
7.0 SQFT	-	FLAT ALUMINUM SIGN, NON-REMOVABLE COPY HIGH INTENSITY (.100 GA)
7.0 FT	-	2.0"X2.0" PERFORATED TUBE POST

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARDA FORS
SOUTH DAKOTA
5/9/18

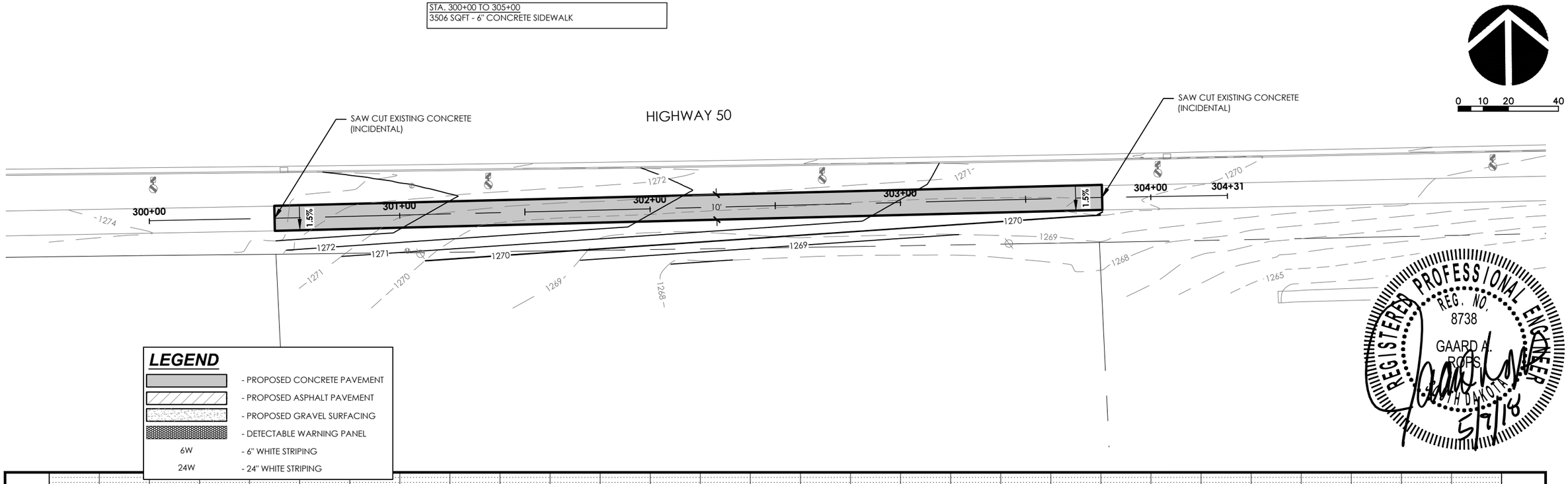


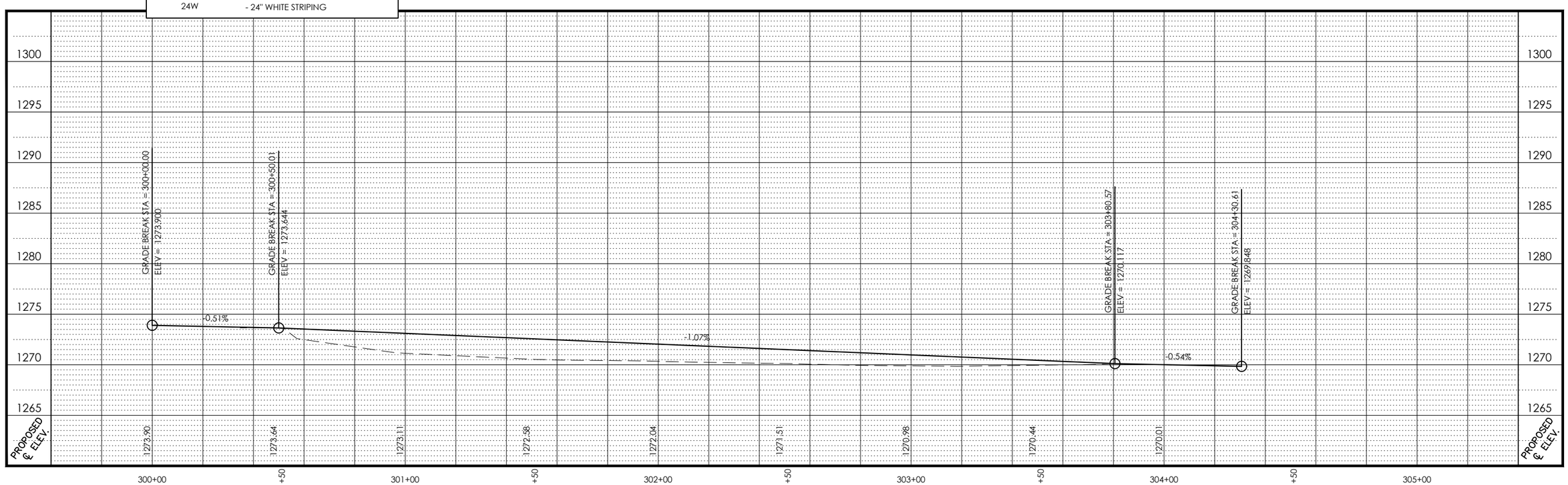
STOCKWELL ENGINEERS
SIOUX FALLS, SD

PAVEMENT PLAN & PROFILE

FILE: 16165 – Pavement.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B20	B57

STA. 300+00 TO 305+00
3506 SQFT - 6" CONCRETE SIDEWALK





STOCKWELL ENGINEERS
SIOUX FALLS, SD

PAVEMENT PLAN & PROFILE

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		P TAPU(12)	B21	B57

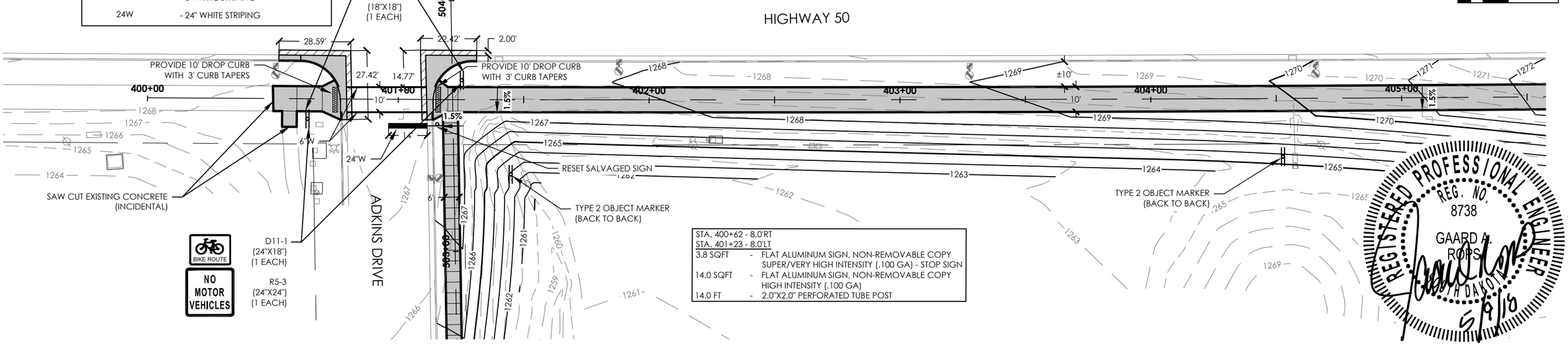
LEGEND

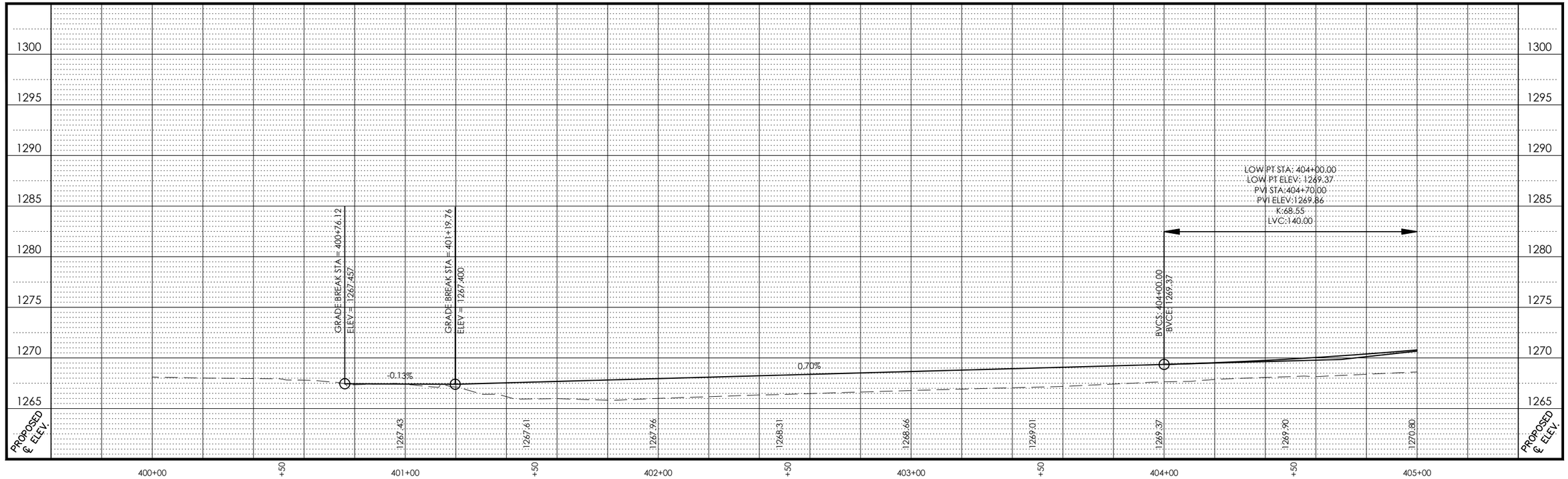
- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- PROPOSED GRAVEL SURFACING
- DETECTABLE WARNING PANEL
- 6W - 6" WHITE STRIPING
- 24W - 24" WHITE STRIPING

STA. 400+00 TO 405+00
4196 SQFT - 6" CONCRETE SIDEWALK
23 FT - CONCRETE CURB & GUTTER
29.7 TONS - BASE COURSE
7.0 TON - ASPHALT CONCRETE COMPOSITE
38 SQYD - 6" PCC FILLET SECTION
40 SQFT - TYPE 1 DETECTABLE WARNING PANEL
64 FT - PAVEMENT PAINT, 6" WHITE
14 FT - PAVEMENT PAINT, 24" WHITE
1 EA - RESET SIGN

STA. 401+47 - 32.0'RT
STA. 404+53.5 - 26.0'RT
2 EA - TYPE 2 OBJECT MARKER (BACK TO BACK)

0 10 20 40





STOCKWELL ENGINEERS
SIOUX FALLS, SD

PAVEMENT PLAN & PROFILE

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		P TAPU(12)	B22	B57

LEGEND

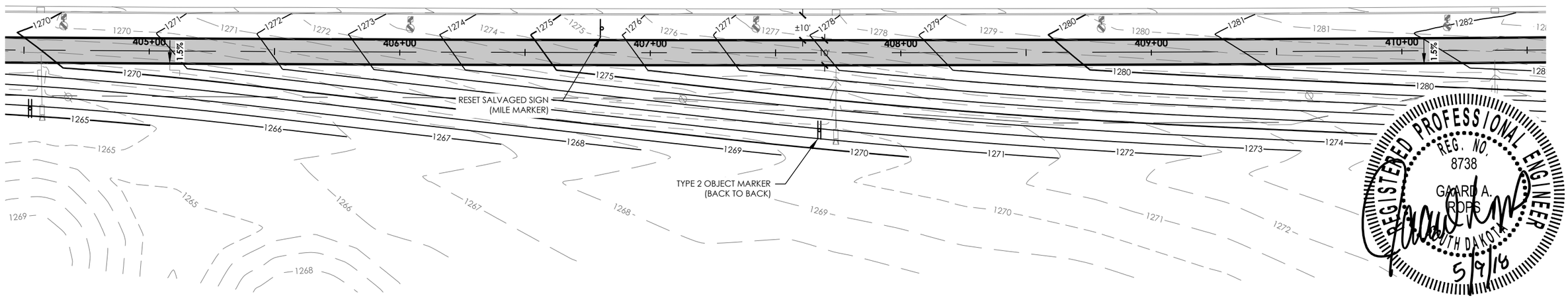
- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- PROPOSED GRAVEL SURFACING
- DETECTABLE WARNING PANEL
- 6W - 6" WHITE STRIPING
- 24W - 24" WHITE STRIPING

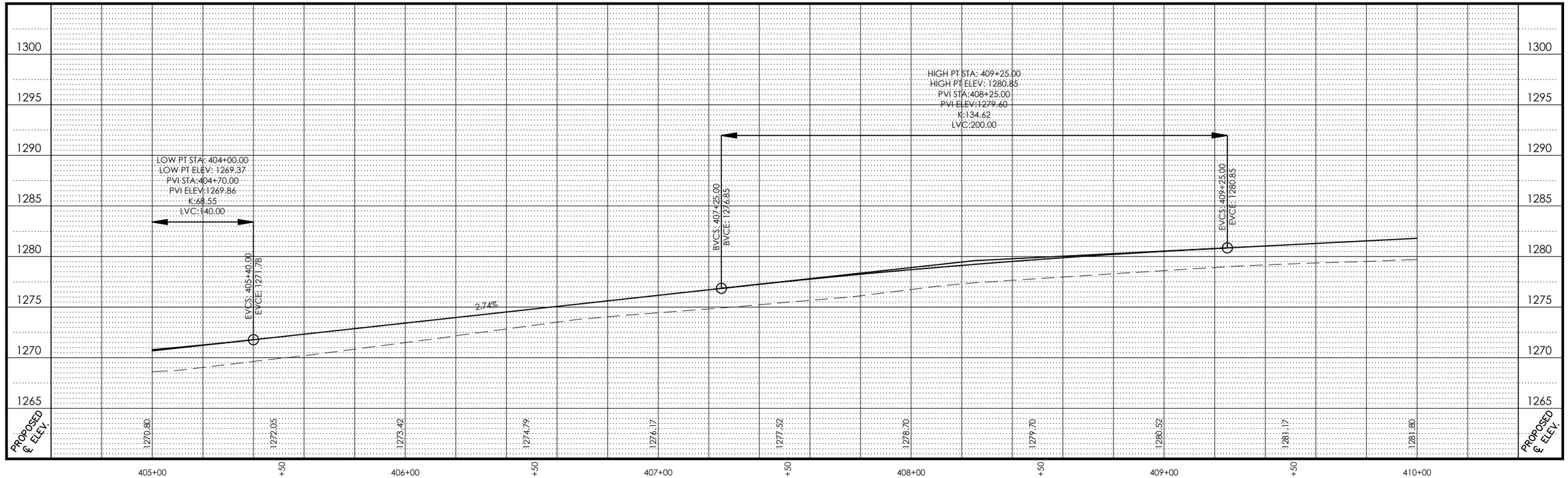
STA. 405+00 TO 410+00
5000 SQFT - 6" CONCRETE SIDEWALK
1 EA - RESET SIGN

STA. 407+70 - 34.0'RT
1 EA - TYPE 2 OBJECT MARKER (BACK TO BACK)

0 10 20 40

HIGHWAY 50





REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GARRD A. ROPS
SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

PAVEMENT PLAN & PROFILE

FILE: 16165 – Pavement.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B23	B57

LEGEND

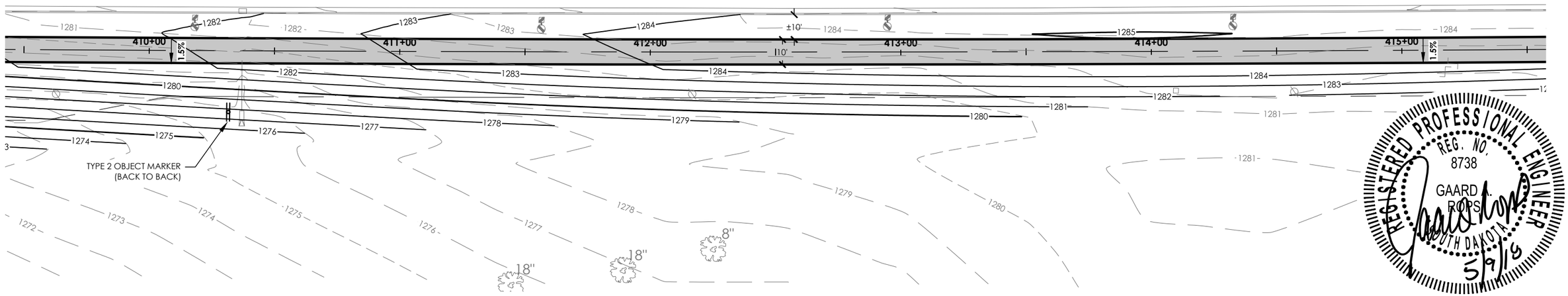
- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- PROPOSED GRAVEL SURFACING
- DETECTABLE WARNING PANEL
- 6W - 6" WHITE STRIPING
- 24W - 24" WHITE STRIPING

STA. 410+00 TO 415+00
5000 SQFT - 6" CONCRETE SIDEWALK

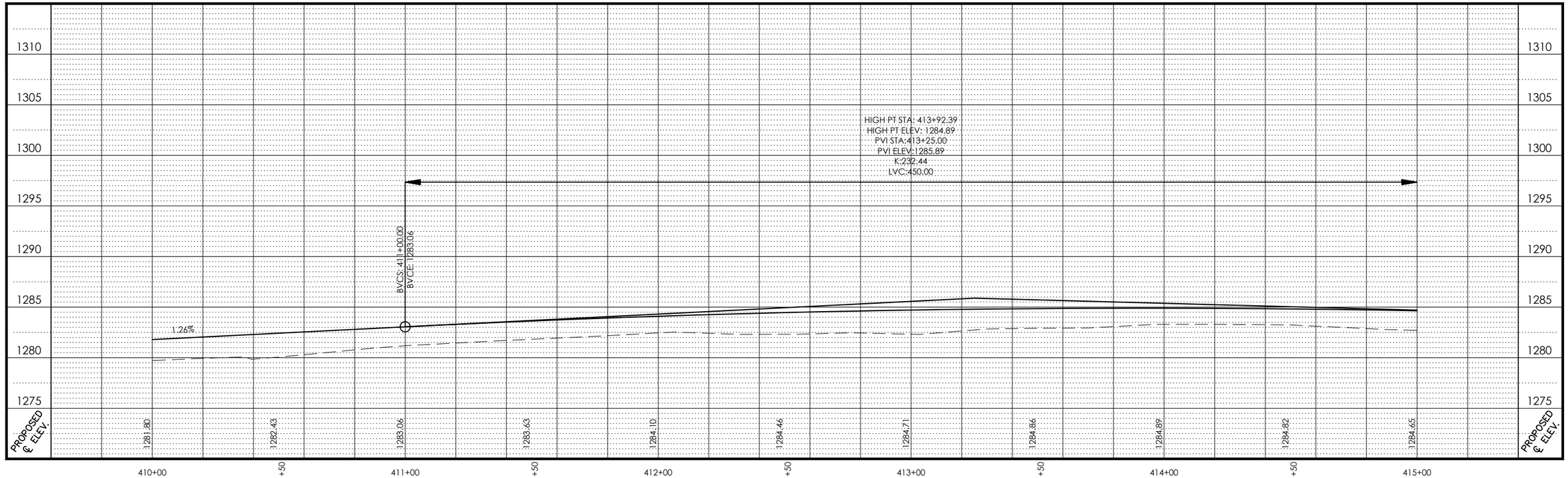
STA. 410+33 - 27.5'RT
1 EA - TYPE 2 OBJECT MARKER (BACK TO BACK)

0 10 20 40

HIGHWAY 50



REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18



STOCKWELL ENGINEERS
SIOUX FALLS, SD

PAVEMENT PLAN & PROFILE

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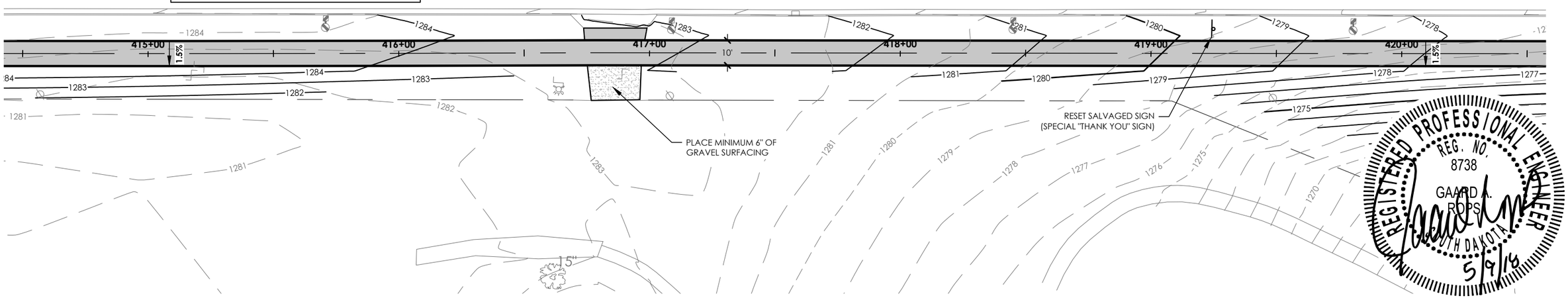
		P TAPU(12)	B24	B57

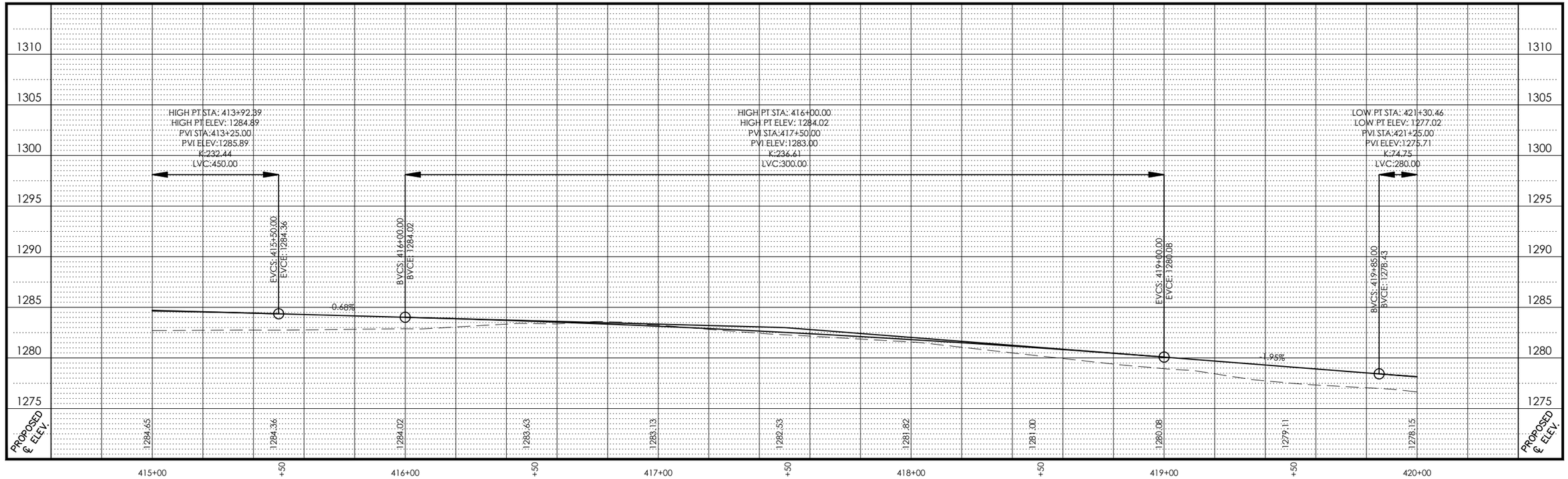
LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- PROPOSED GRAVEL SURFACING
- DETECTABLE WARNING PANEL
- 6W - 6" WHITE STRIPING
- 24W - 24" WHITE STRIPING

STA. 415+00 TO 420+00
5120 SQFT - 6" CONCRETE SIDEWALK
10.5 TON - GRAVEL SURFACING
1 EA - RESET SIGN

0 10 20 40





REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

PAVEMENT PLAN & PROFILE

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		P TAPU(12)	B25	B57

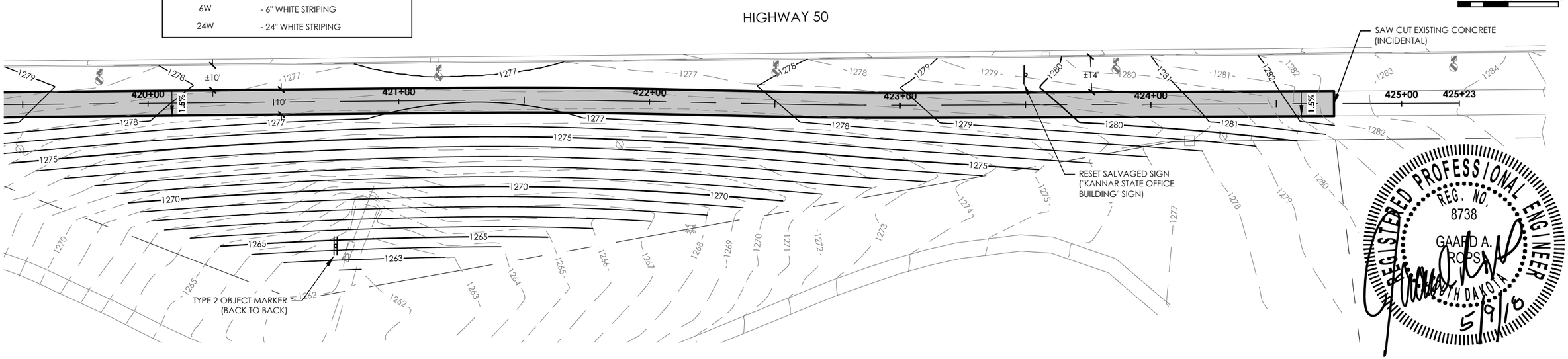
LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- PROPOSED GRAVEL SURFACING
- DETECTABLE WARNING PANEL
- 6W - 6" WHITE STRIPING
- 24W - 24" WHITE STRIPING

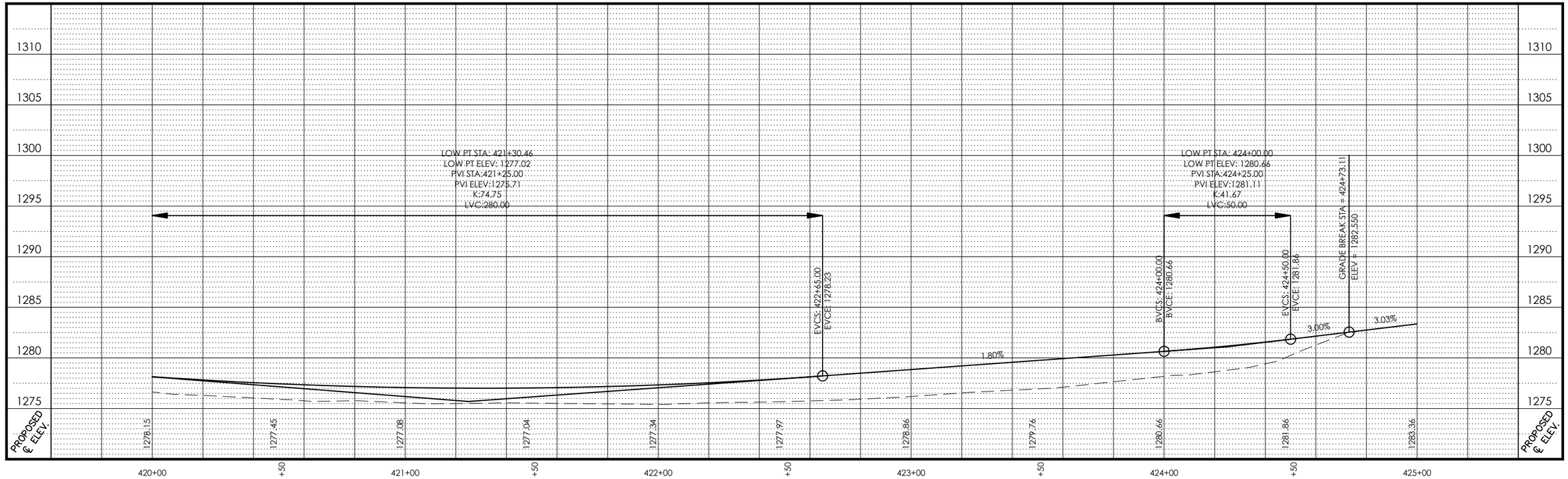
STA. 420+00 TO 425+00
4730 SQFT - 6" CONCRETE SIDEWALK
1 EA - RESET SIGN

STA. 420+77 - 57.0'RT
1 EA - TYPE 2 OBJECT MARKER (BACK TO BACK)

0 10 20 40



REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROSS
SOUTH DAKOTA
5/9/18



STOCKWELL ENGINEERS
SIOUX FALLS, SD

PAVEMENT PLAN & PROFILE

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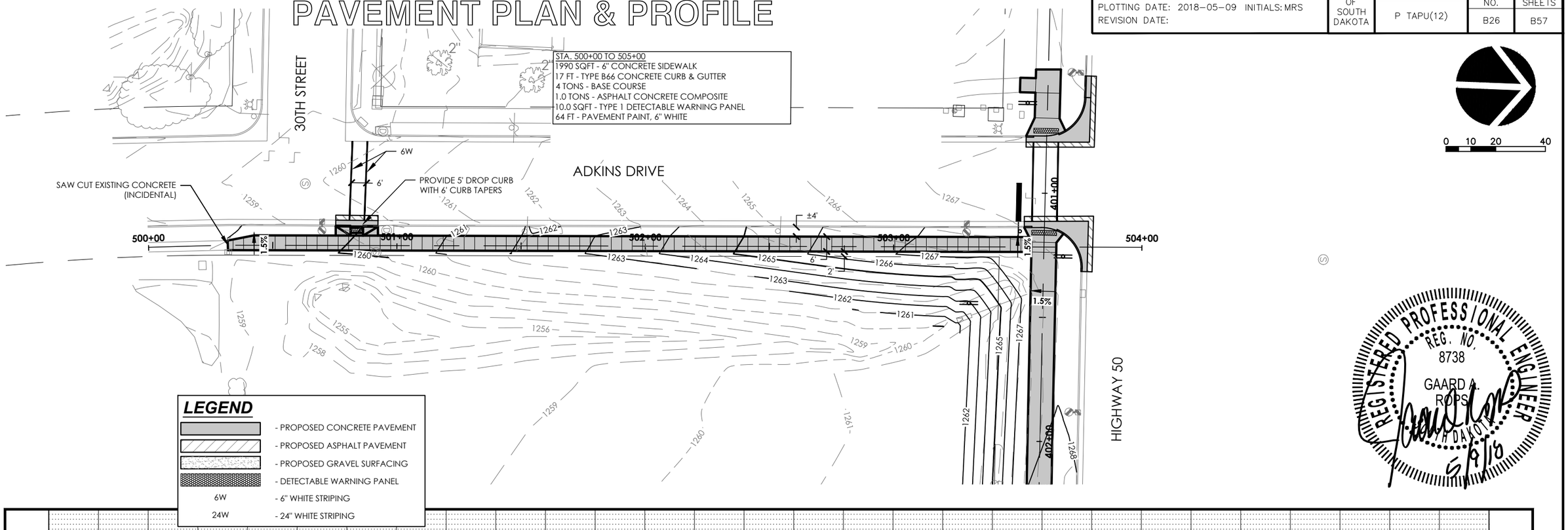
		P TAPU(12)	B26	B57

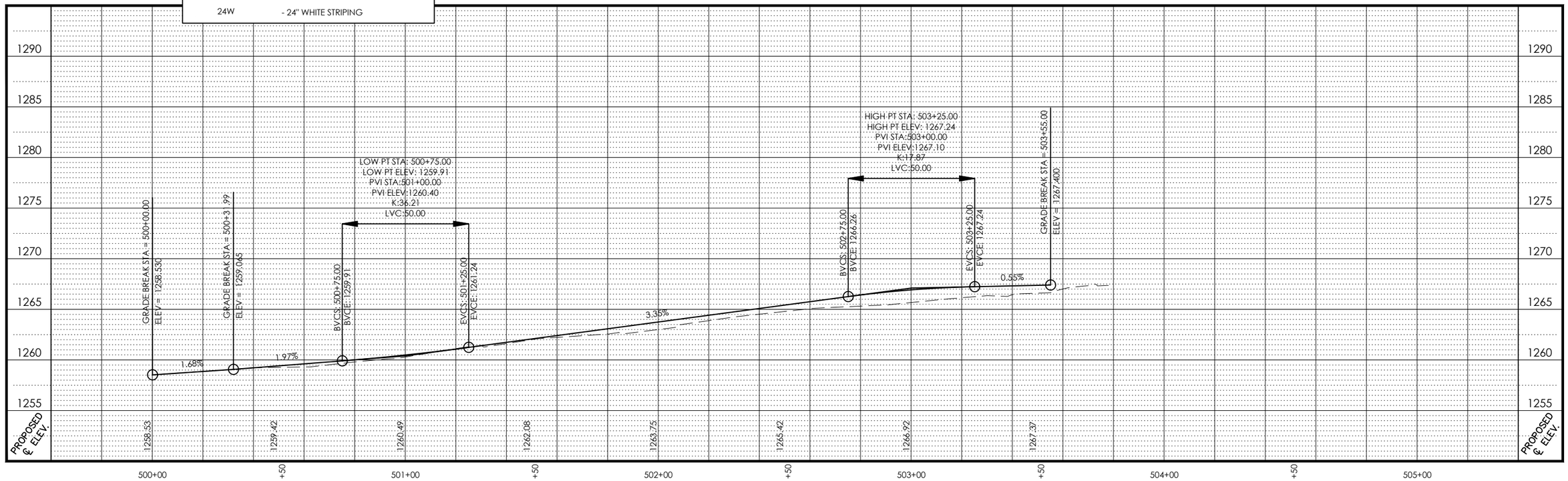
STA. 500+00 TO 505+00
1990 SQFT - 6" CONCRETE SIDEWALK
17 FT - TYPE B66 CONCRETE CURB & GUTTER
4 TONS - BASE COURSE
1.0 TONS - ASPHALT CONCRETE COMPOSITE
10.0 SQFT - TYPE 1 DETECTABLE WARNING PANEL
64 FT - PAVEMENT PAINT, 6" WHITE



LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- PROPOSED GRAVEL SURFACING
- DETECTABLE WARNING PANEL
- 6W - 6" WHITE STRIPING
- 24W - 24" WHITE STRIPING

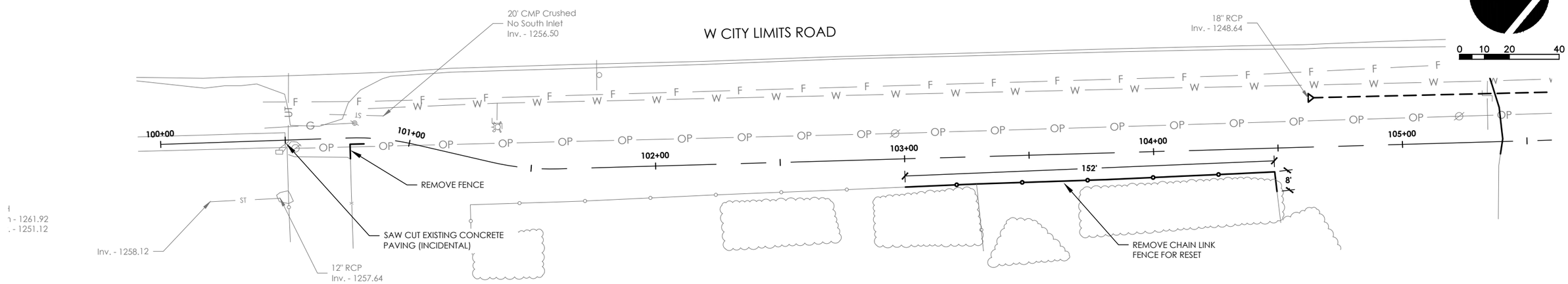
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18



STOCKWELL ENGINEERS
SIOUX FALLS, SD

REMOVALS & IN PLACE UTILITIES

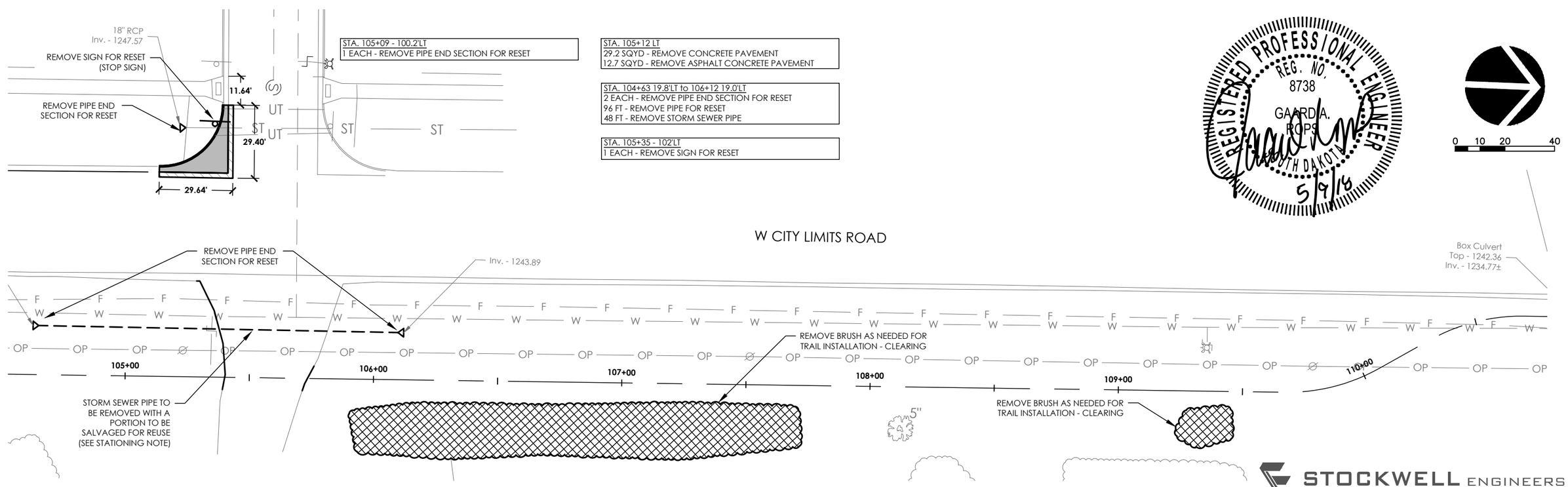
FILE: 16165 – Removals.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B27	B57



STA. 100+76 8.4'RT to 100+82 2.4'RT
12 FT - REMOVE CHAIN LINK FENCE (INCIDENTAL)

STA. 103+00 11.4'RT to 104+49 17.5'RT
160 FT - REMOVE CHAIN LINK FENCE FOR RESET

NOTE:
CONTRACTOR TO SALVAGE ALL TOPSOIL WITHIN GRADING LIMITS.



STA. 105+09 - 100.2'LT
1 EACH - REMOVE PIPE END SECTION FOR RESET

STA. 105+12 LT
29.2 SQYD - REMOVE CONCRETE PAVEMENT
12.7 SQYD - REMOVE ASPHALT CONCRETE PAVEMENT

STA. 104+63 19.8'LT to 106+12 19.0'LT
2 EACH - REMOVE PIPE END SECTION FOR RESET
96 FT - REMOVE PIPE FOR RESET
48 FT - REMOVE STORM SEWER PIPE

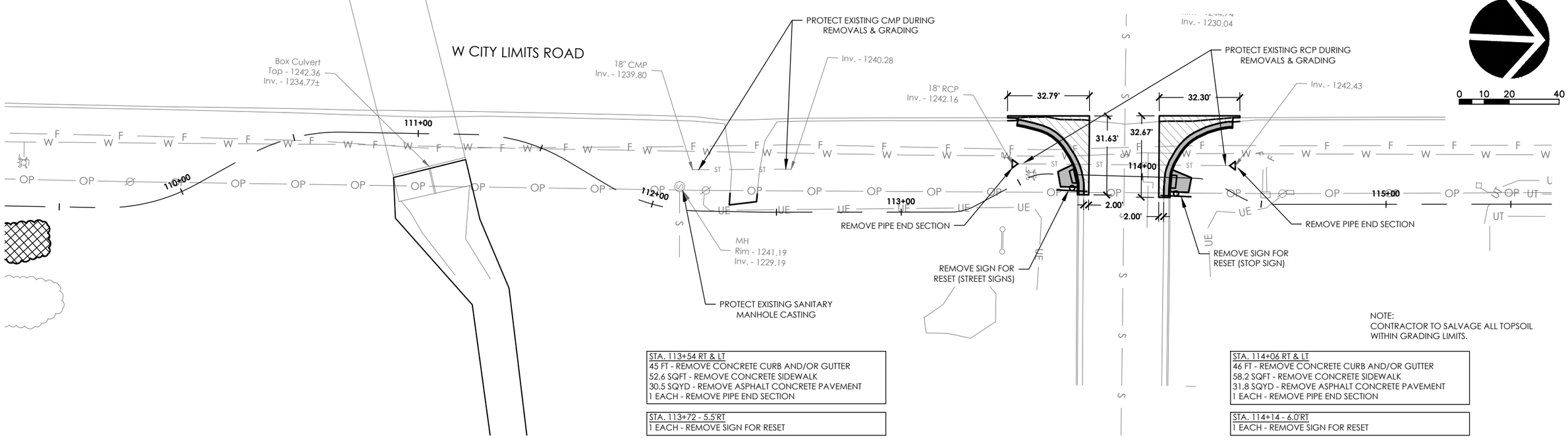
STA. 105+35 - 102'LT
1 EACH - REMOVE SIGN FOR RESET

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARDIA, ROPS
SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

REMOVALS & IN PLACE UTILITIES

FILE: 16165 – Removals.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B28	B57



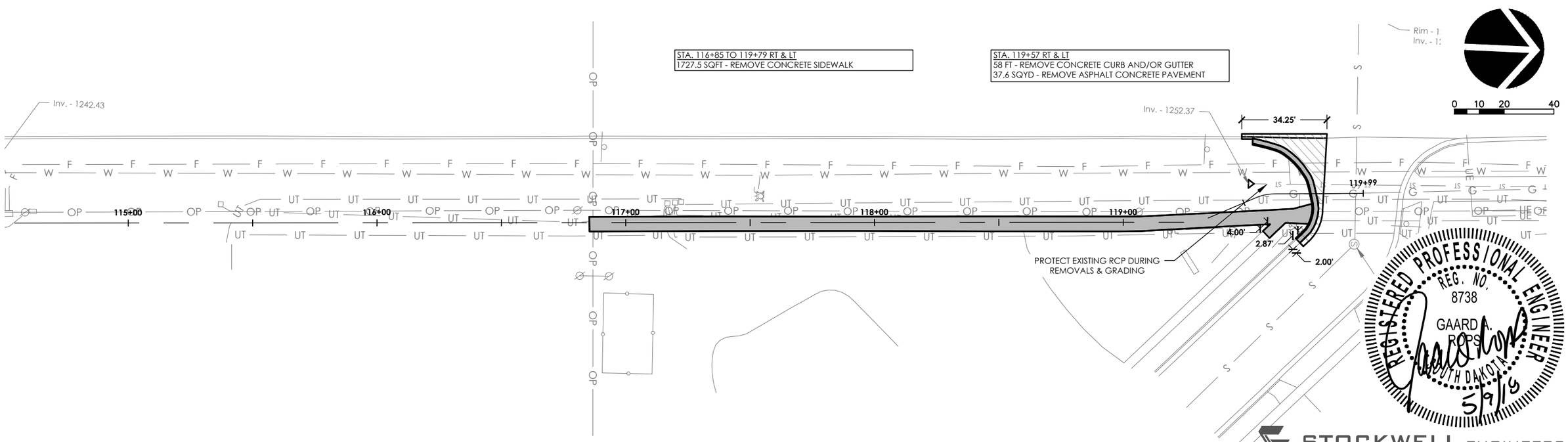
NOTE:
CONTRACTOR TO SALVAGE ALL TOPSOIL WITHIN GRADING LIMITS.

STA. 113+54 RT & LT
45 FT - REMOVE CONCRETE CURB AND/OR GUTTER
52.6 SQFT - REMOVE CONCRETE SIDEWALK
30.5 SQYD - REMOVE ASPHALT CONCRETE PAVEMENT
1 EACH - REMOVE PIPE END SECTION

STA. 113+72 - 5.5'RT
1 EACH - REMOVE SIGN FOR RESET

STA. 114+06 RT & LT
46 FT - REMOVE CONCRETE CURB AND/OR GUTTER
58.2 SQFT - REMOVE CONCRETE SIDEWALK
31.8 SQYD - REMOVE ASPHALT CONCRETE PAVEMENT
1 EACH - REMOVE PIPE END SECTION

STA. 114+14 - 6.0'RT
1 EACH - REMOVE SIGN FOR RESET



STA. 116+85 TO 119+79 RT & LT
1727.5 SQFT - REMOVE CONCRETE SIDEWALK

STA. 119+57 RT & LT
58 FT - REMOVE CONCRETE CURB AND/OR GUTTER
37.6 SQYD - REMOVE ASPHALT CONCRETE PAVEMENT

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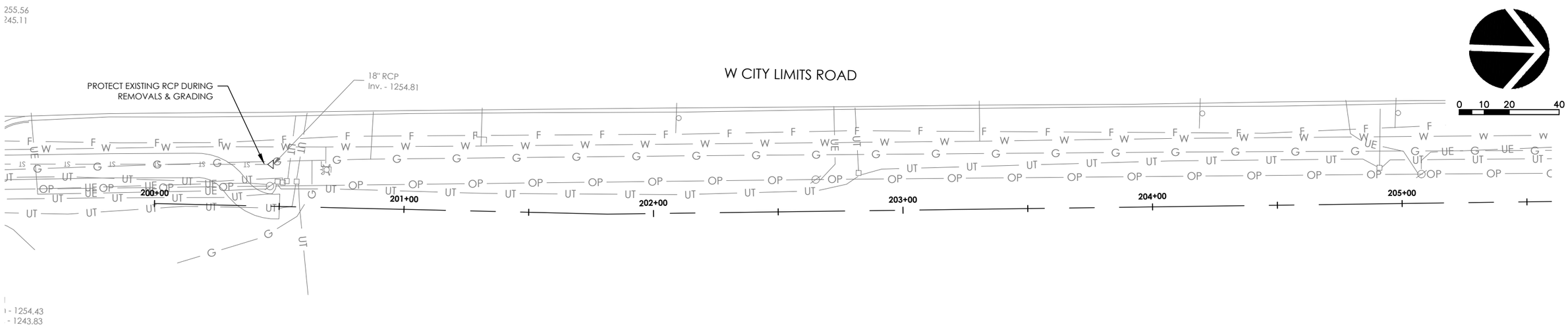
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

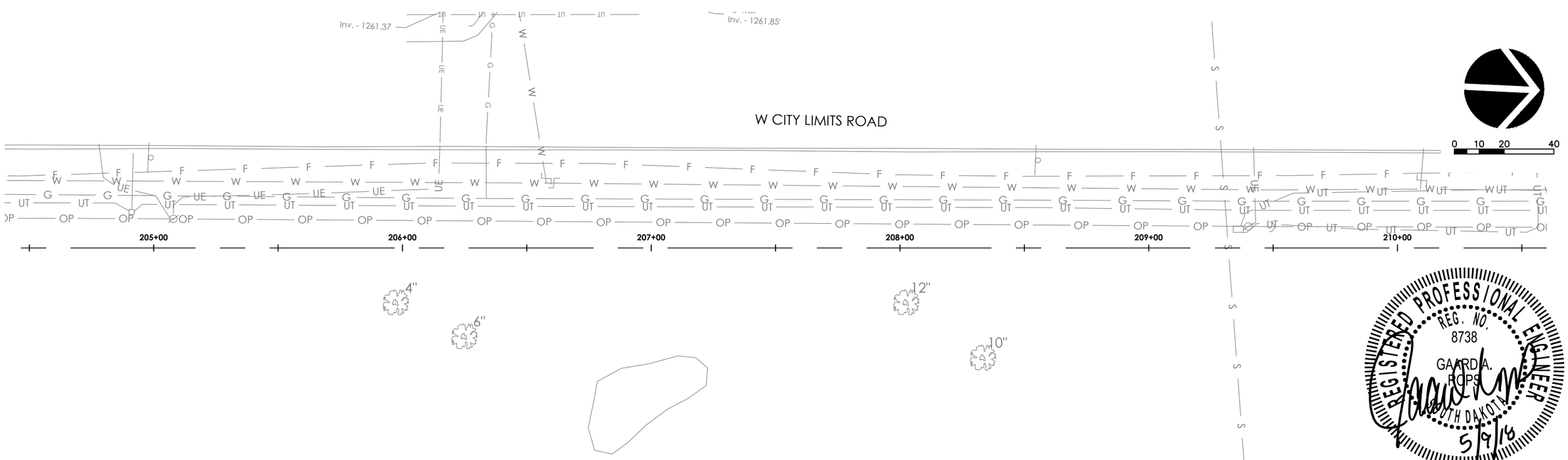
STOCKWELL ENGINEERS
SIOUX FALLS, SD

REMOVALS & IN PLACE UTILITIES

FILE: 16165 – Removals.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B29	B57



NOTE:
CONTRACTOR TO SALVAGE ALL TOPSOIL WITHIN GRADING LIMITS.



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SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

REMOVALS & IN PLACE UTILITIES

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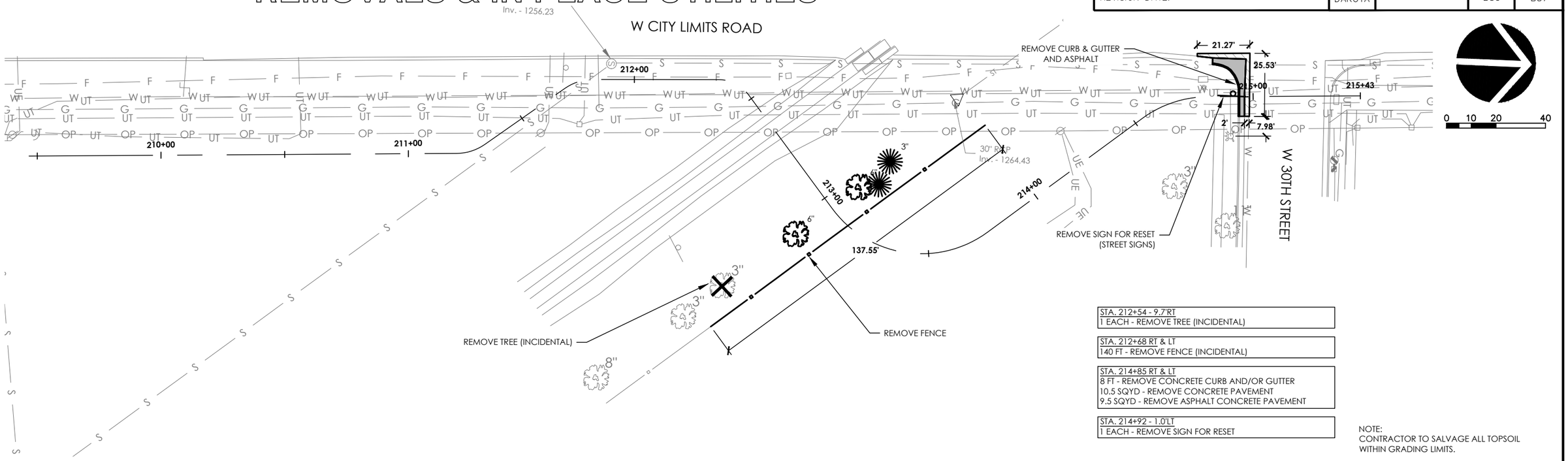
		P TAPU(12)	B30	B57



STA. 212+54 - 9.7'RT
1 EACH - REMOVE TREE (INCIDENTAL)

STA. 212+68 RT & LT
140 FT - REMOVE FENCE (INCIDENTAL)

STA. 214+85 RT & LT
8 FT - REMOVE CONCRETE CURB AND/OR GUTTER
10.5 SQYD - REMOVE CONCRETE PAVEMENT
9.5 SQYD - REMOVE ASPHALT CONCRETE PAVEMENT

STA. 214+92 - 1.0'LT
1 EACH - REMOVE SIGN FOR RESET

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STOCKWELL ENGINEERS
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REMOVALS & IN PLACE UTILITIES

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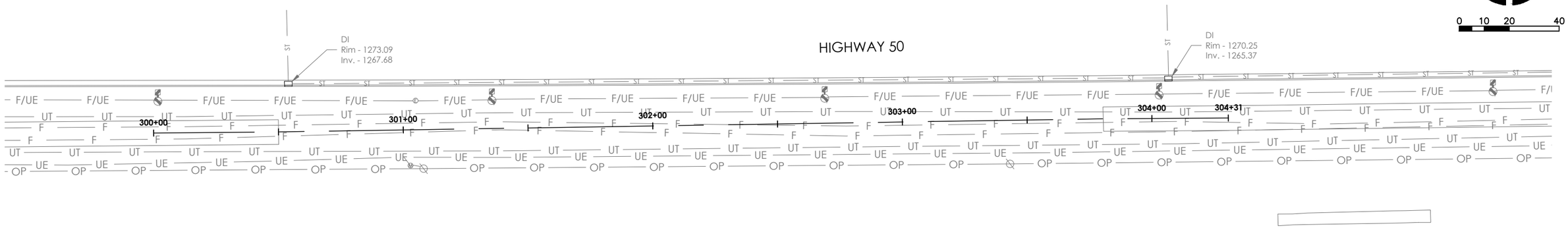
		P TAPU(12)	B31	B57



NOTE:
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REMOVALS & IN PLACE UTILITIES

FILE: 16165 – Removals.dwg PLOTTING DATE: 2018–05–09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B32	B57

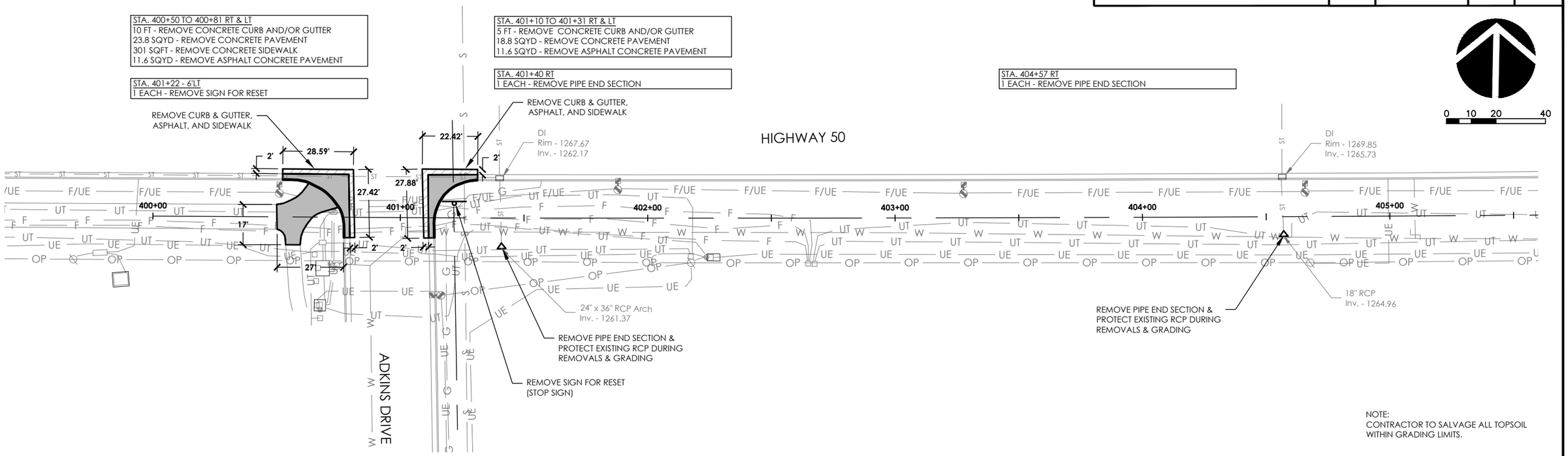
STA. 400+50 TO 400+81 RT & LT
10 FT - REMOVE CONCRETE CURB AND/OR GUTTER
23.8 SQYD - REMOVE CONCRETE PAVEMENT
301 SQFT - REMOVE CONCRETE SIDEWALK
11.6 SQYD - REMOVE ASPHALT CONCRETE PAVEMENT

STA. 401+22 - 6'LT
1 EACH - REMOVE SIGN FOR RESET

STA. 401+10 TO 401+31 RT & LT
5 FT - REMOVE CONCRETE CURB AND/OR GUTTER
18.8 SQYD - REMOVE CONCRETE PAVEMENT
11.6 SQYD - REMOVE ASPHALT CONCRETE PAVEMENT

STA. 401+40 RT
1 EACH - REMOVE PIPE END SECTION

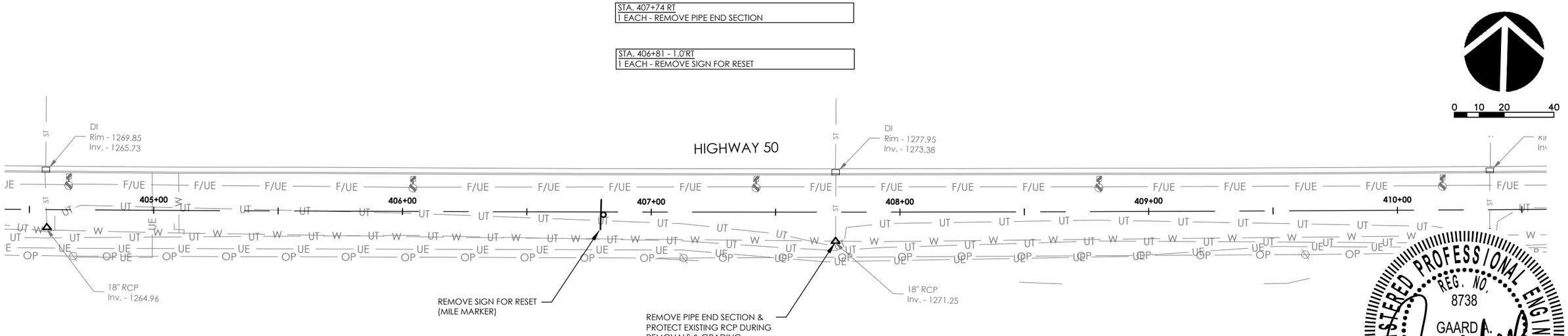
STA. 404+57 RT
1 EACH - REMOVE PIPE END SECTION



NOTE:
CONTRACTOR TO SALVAGE ALL TOPSOIL WITHIN GRADING LIMITS.

STA. 407+74 RT
1 EACH - REMOVE PIPE END SECTION

STA. 406+81 - 1.0'RT
1 EACH - REMOVE SIGN FOR RESET



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SOUTH DAKOTA
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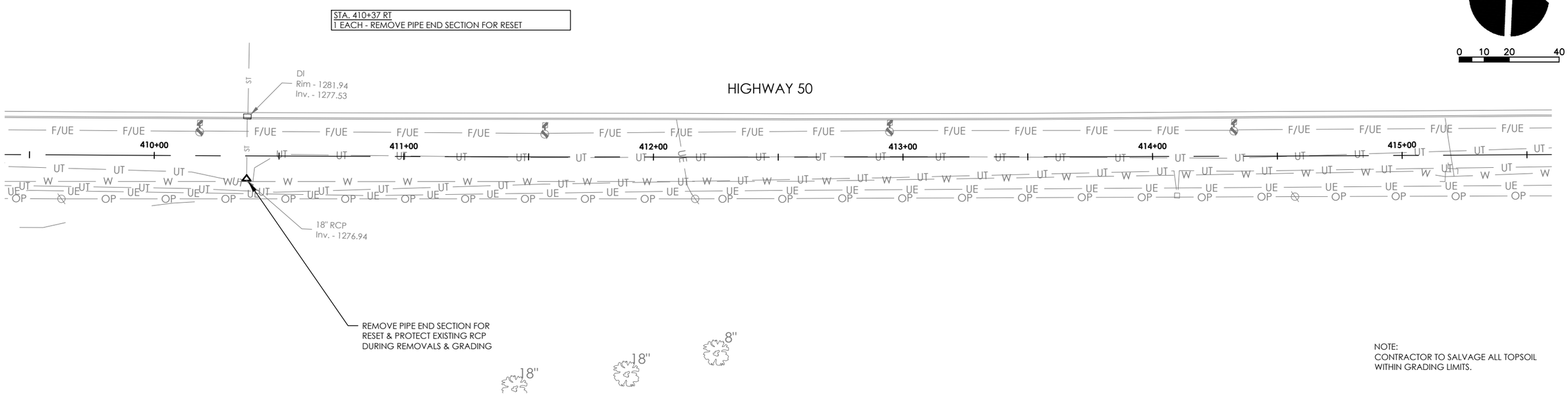
STOCKWELL ENGINEERS
SIOUX FALLS, SD

REMOVALS & IN PLACE UTILITIES

FILE: 16165 – Removals.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B33	B57



NOTE:
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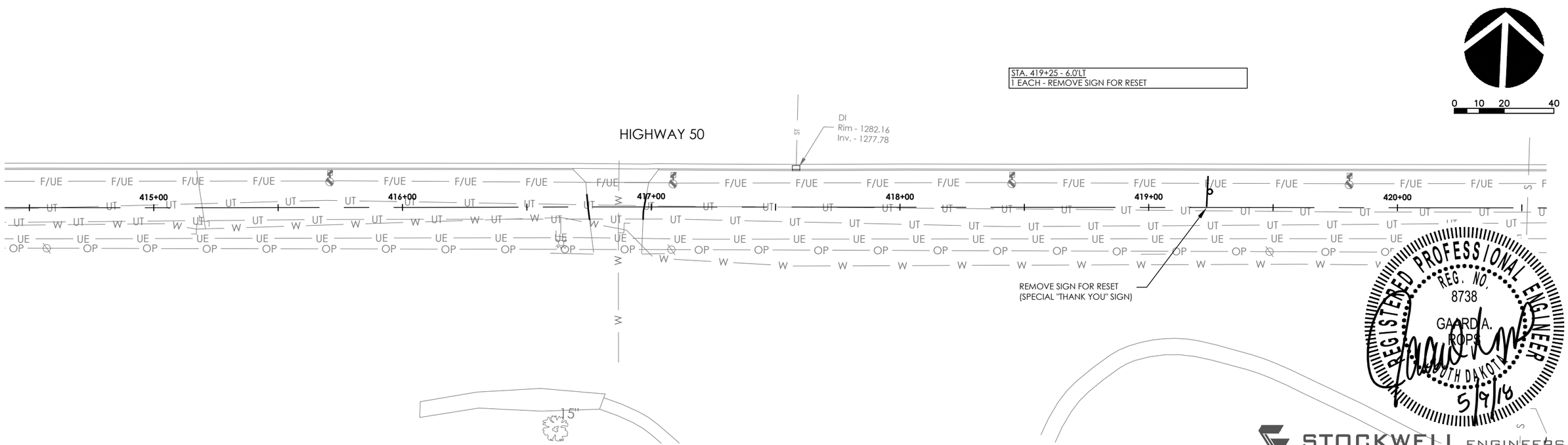

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SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
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REMOVALS & IN PLACE UTILITIES

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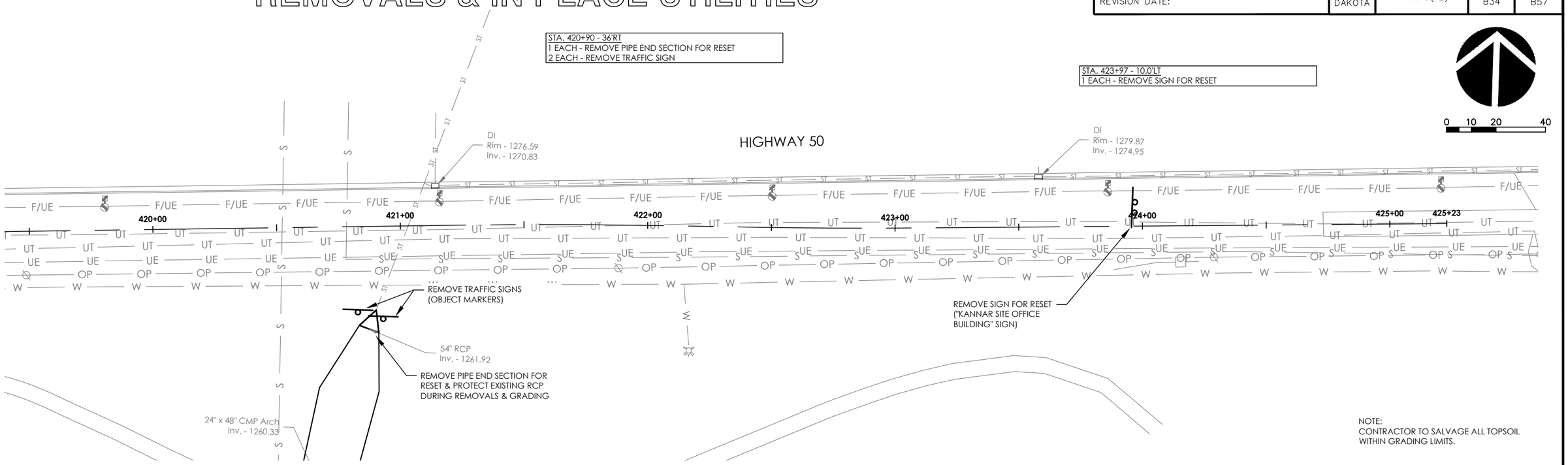
		P TAPU(12)	B34	B57



NOTE:
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REMOVALS & IN PLACE UTILITIES

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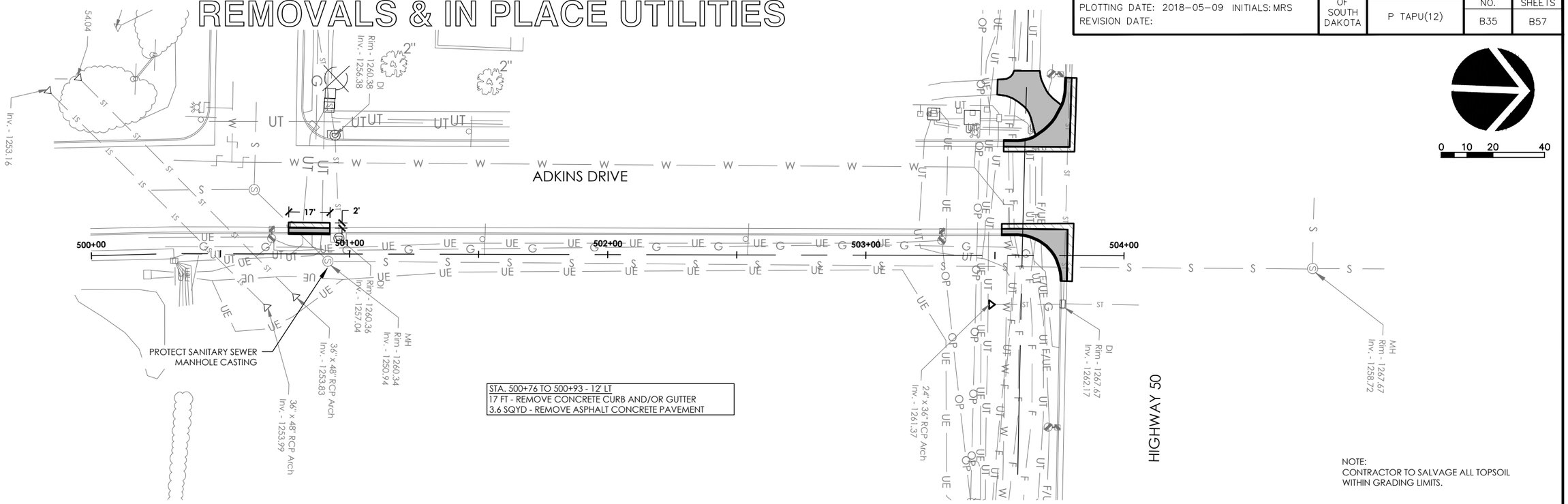
		P TAPU(12)	B35	B57



STA. 500+76 TO 500+93 - 12' LT
17 FT - REMOVE CONCRETE CURB AND/OR GUTTER
3.6 SQYD - REMOVE ASPHALT CONCRETE PAVEMENT

NOTE:
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5/9/18

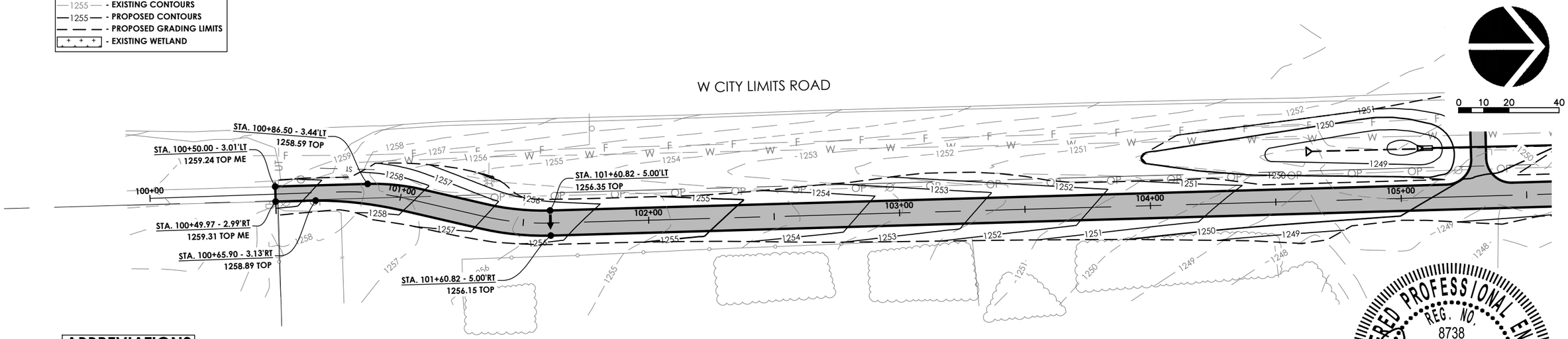
STOCKWELL ENGINEERS
SIOUX FALLS, SD

GRADING & STORM SEWER

FILE: 16165 – Grading & Storm Sewer.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B36	B57

LEGEND

- 1255 - EXISTING CONTOURS
- 1255 - PROPOSED CONTOURS
- PROPOSED GRADING LIMITS
- EXISTING WETLAND



ABBREVIATIONS

BVC - BEGIN VERTICAL CURVE
BT - BOTTOM OF TAPER
EVC - END VERTICAL CURVE
LOG - LIP OF GUTTER
ME - MATCH EXISTING
POF - POINT OF FILLET
RAD PT - RADIUS POINT
TC - TOP OF CURB
TOP - TOP OF PAVEMENT

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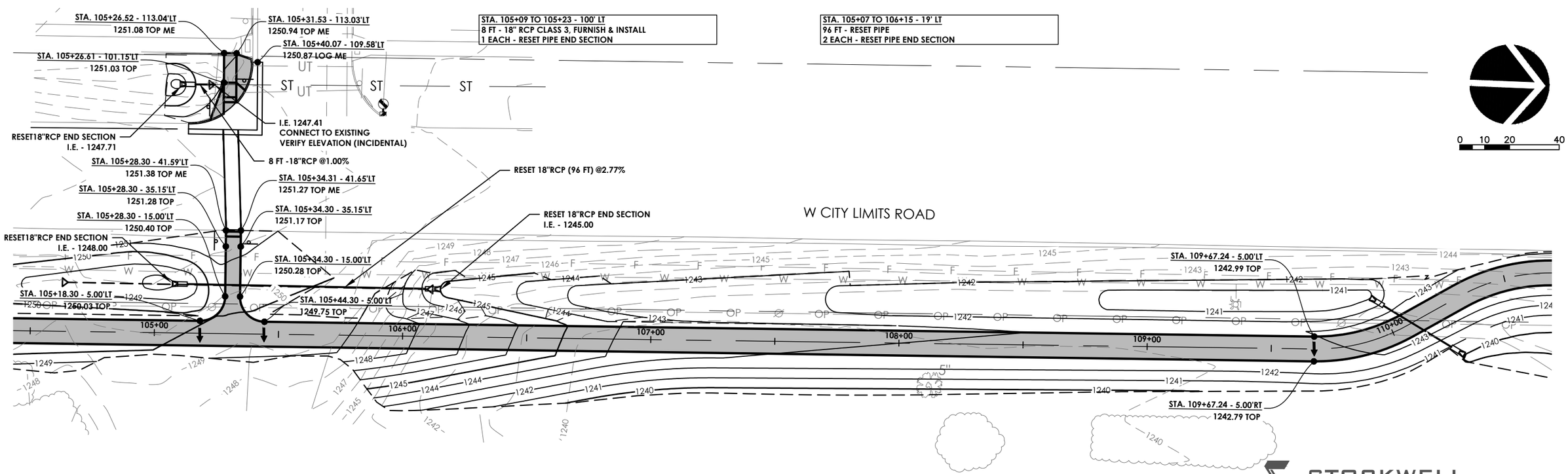
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

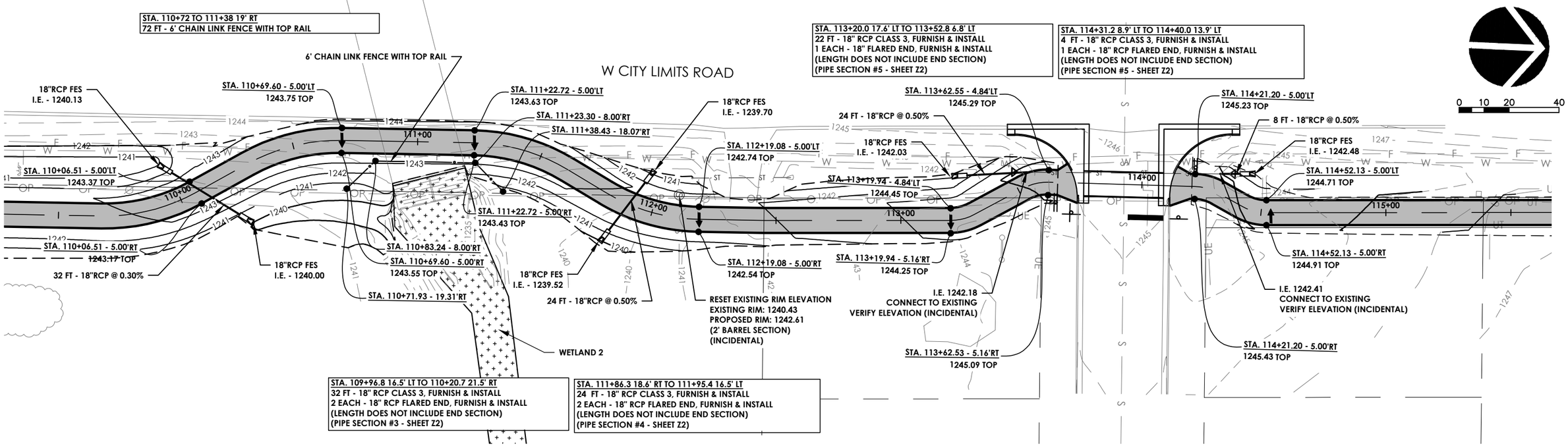


STOCKWELL ENGINEERS
SIOUX FALLS, SD

GRADING & STORM SEWER

REVISED

FILE: 16165 – Grading & Storm Sewer.dwg PLOTTING DATE: 2018–05–09 INITIALS: MRS REVISION DATE: 2018-05-09 INITIALS: GAR	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B37	B57



LEGEND

- 1255 — EXISTING CONTOURS
- 1255 — PROPOSED CONTOURS
- PROPOSED GRADING LIMITS
- EXISTING WETLAND

ABBREVIATIONS

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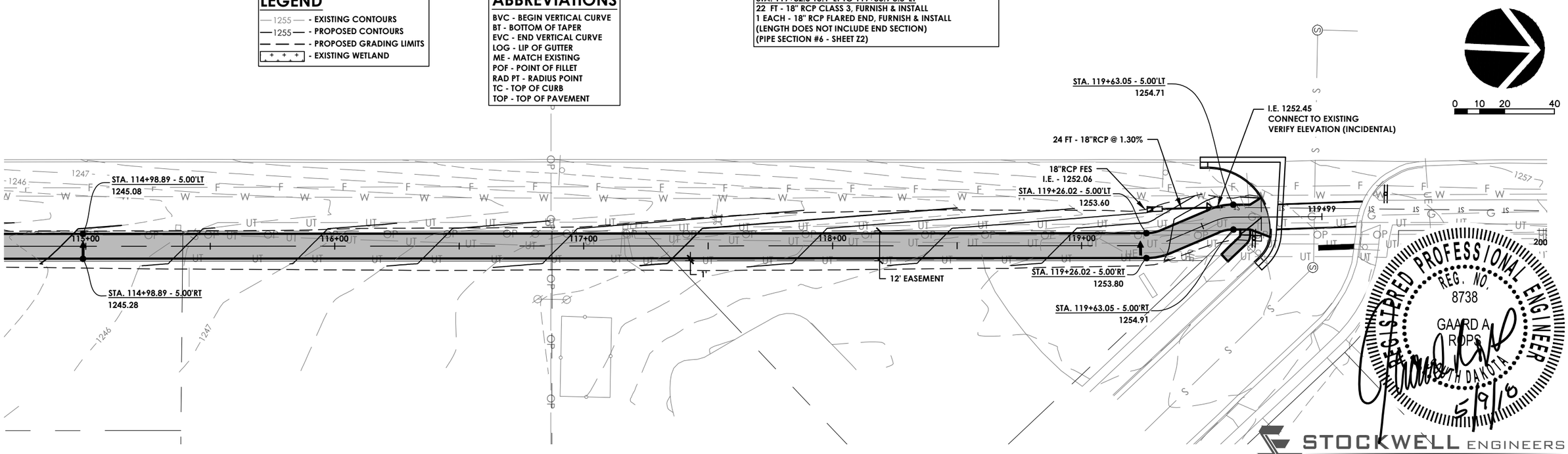
TOP - TOP OF PAVEMENT



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SOUTH DAKOTA
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STOCKWELL ENGINEERS
SIOUX FALLS, SD

GRADING & STORM SEWER

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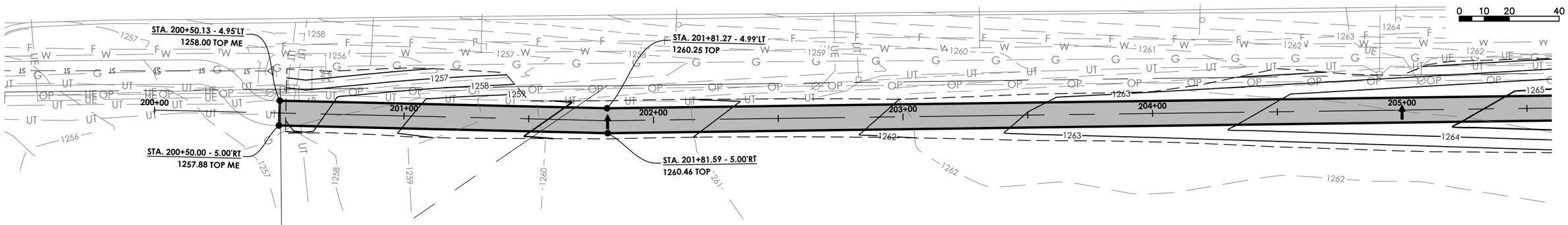
		P TAPU(12)	B38	B57

LEGEND

- 1255 - EXISTING CONTOURS
- 1255 - PROPOSED CONTOURS
- PROPOSED GRADING LIMITS
- EXISTING WETLAND



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ME - MATCH EXISTING
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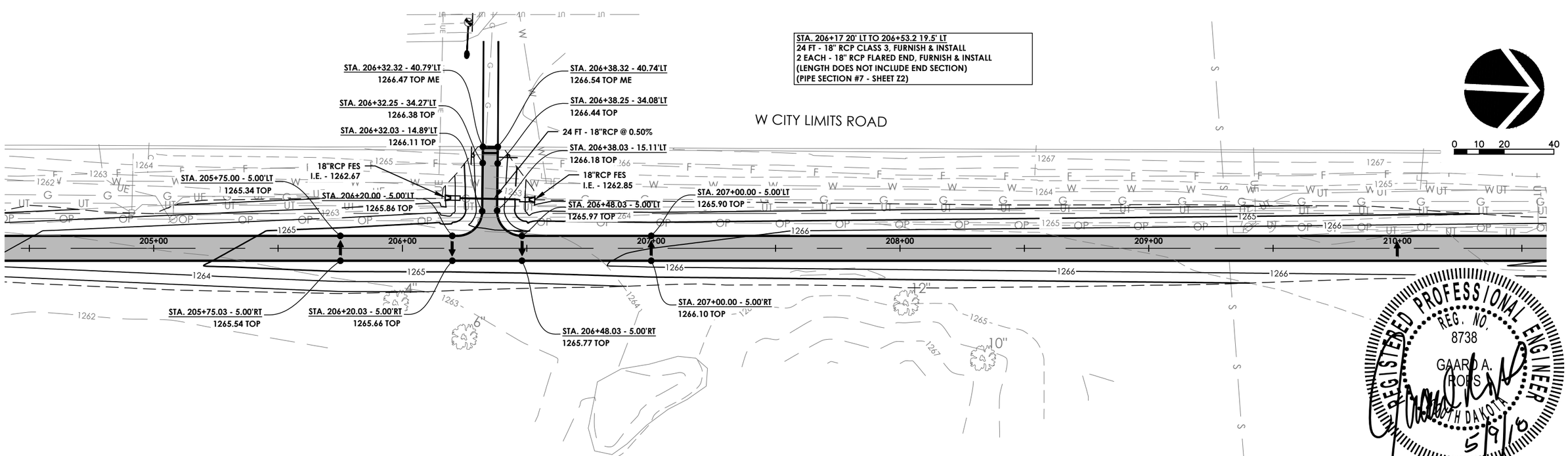
RAD PT - RADIUS POINT
TC - TOP OF CURB
TOP - TOP OF PAVEMENT

STA. 206+17 20' LT TO 206+53.2 19.5' LT
24 FT - 18" RCP CLASS 3, FURNISH & INSTALL
2 EACH - 18" RCP FLARED END, FURNISH & INSTALL
(LENGTH DOES NOT INCLUDE END SECTION)
(PIPE SECTION #7 - SHEET Z2)



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SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

GRADING & STORM SEWER

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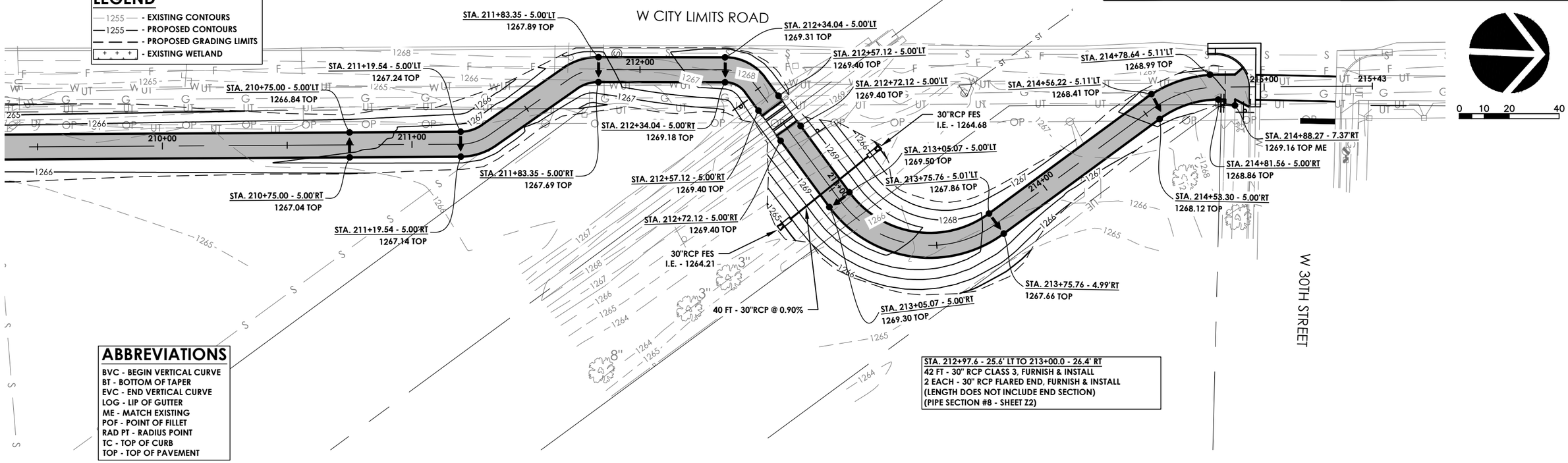
		P TAPU(12)	B39	B57

LEGEND

- 1255 — EXISTING CONTOURS
- 1255 — PROPOSED CONTOURS
- PROPOSED GRADING LIMITS
- EXISTING WETLAND



STA. 212+97.6 - 25.6' LT TO 213+00.0 - 26.4' RT
42 FT - 30" RCP CLASS 3, FURNISH & INSTALL
2 EACH - 30" RCP FLARED END, FURNISH & INSTALL
(LENGTH DOES NOT INCLUDE END SECTION)
(PIPE SECTION #8 - SHEET Z2)

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TOP - TOP OF PAVEMENT

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SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

GRADING & STORM SEWER

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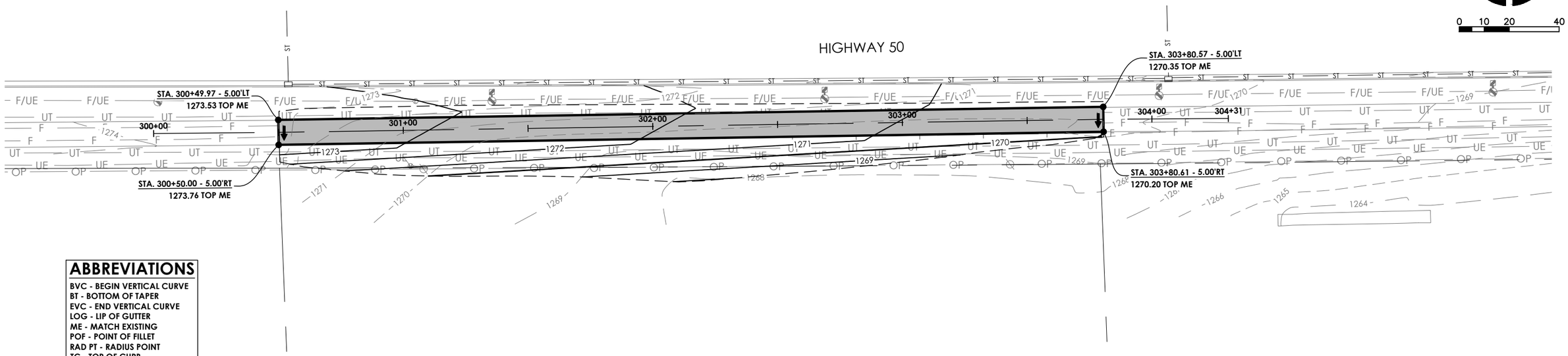
		P TAPU(12)	B40	B57

LEGEND

- 1255 - EXISTING CONTOURS
- 1255 - PROPOSED CONTOURS
- PROPOSED GRADING LIMITS
- EXISTING WETLAND

0 10 20 40



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TOP - TOP OF PAVEMENT

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROBS
SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

GRADING & STORM SEWER

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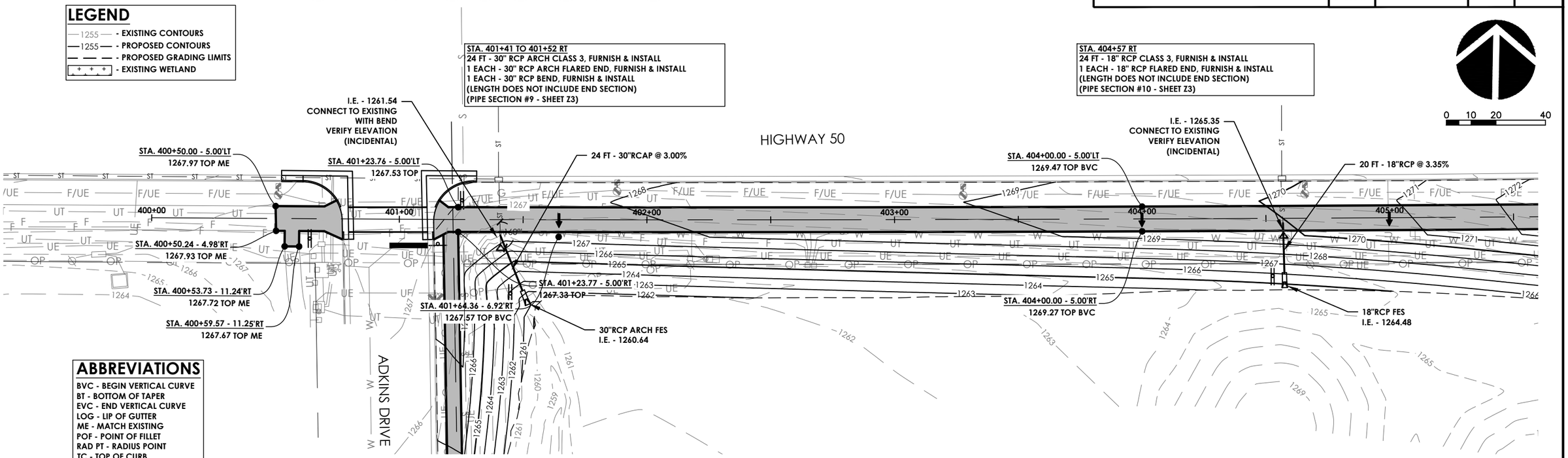
		P TAPU(12)	B41	B57

LEGEND

- 1255 - EXISTING CONTOURS
- 1255 - PROPOSED CONTOURS
- PROPOSED GRADING LIMITS
- EXISTING WETLAND



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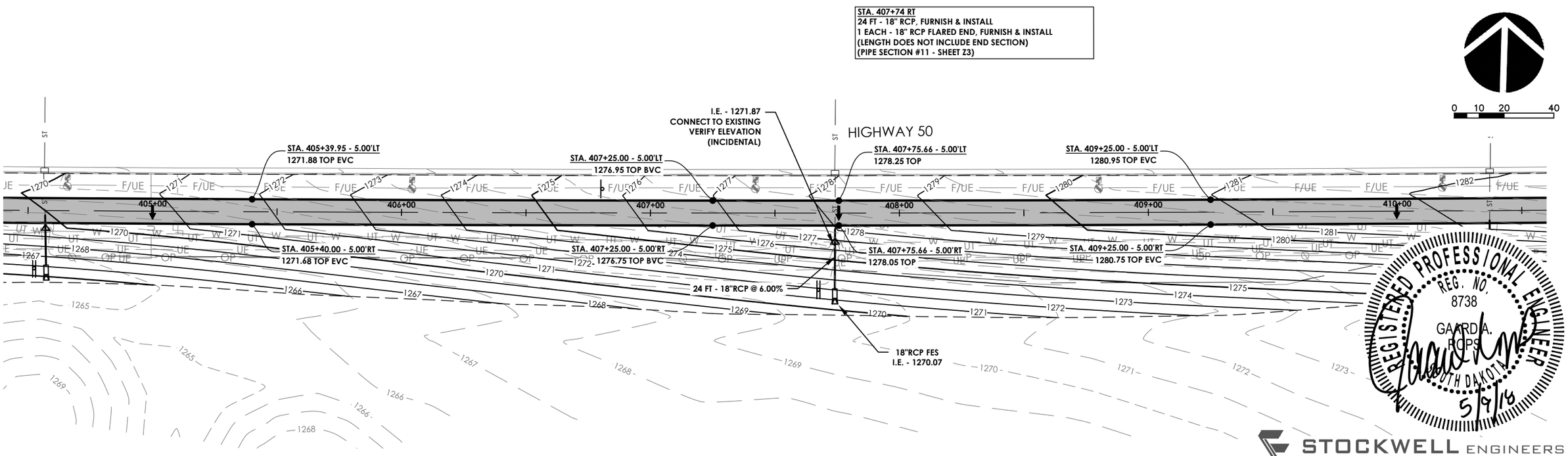

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
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SOUTH DAKOTA
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STOCKWELL ENGINEERS
SIOUX FALLS, SD

GRADING & STORM SEWER

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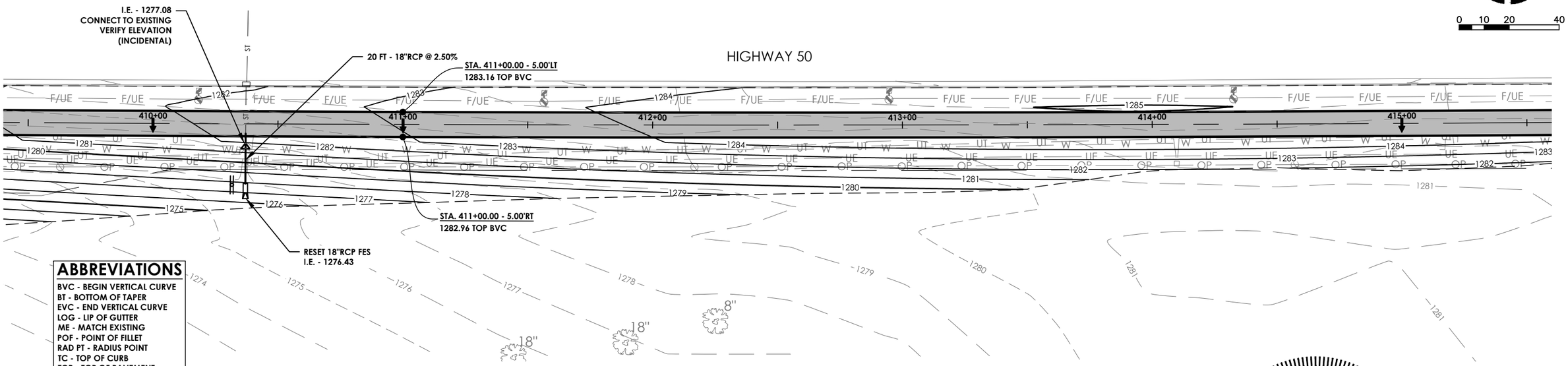
		P TAPU(12)	B42	B57

LEGEND

- 1255 - EXISTING CONTOURS
- 1255 - PROPOSED CONTOURS
- PROPOSED GRADING LIMITS
- EXISTING WETLAND

STA. 410+37 RT
24 FT - 18" RCP CLASS 3, FURNISH & INSTALL
1 EACH - RESET PIPE END SECTION
(LENGTH DOES NOT INCLUDE END SECTION)
(PIPE SECTION #12 - SHEET Z3)

0 10 20 40



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RAD PT - RADIUS POINT
TC - TOP OF CURB
TOP - TOP OF PAVEMENT

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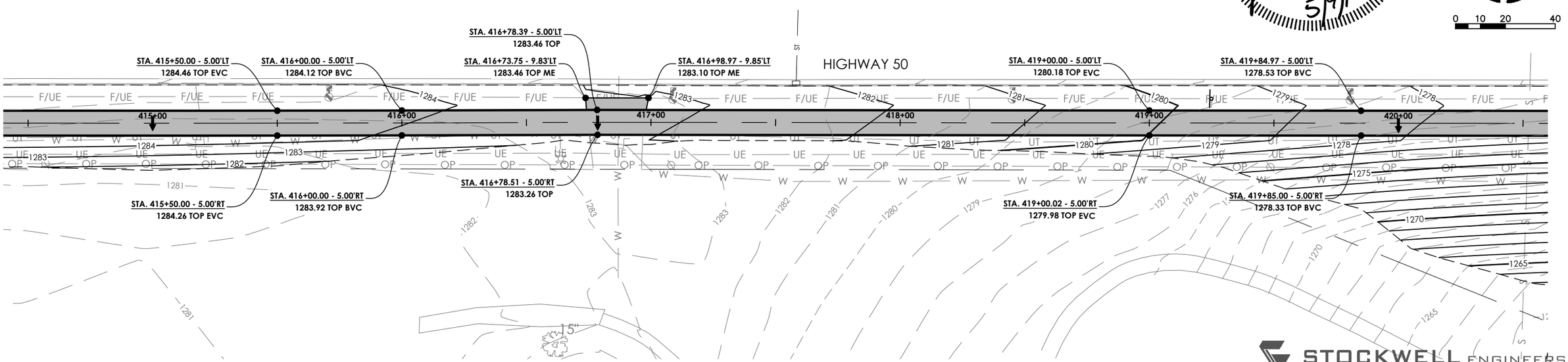
REG. NO. 8738
GAARDA, ROPP
SOUTH DAKOTA
5/9/18

0 10 20 40



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SIOUX FALLS, SD

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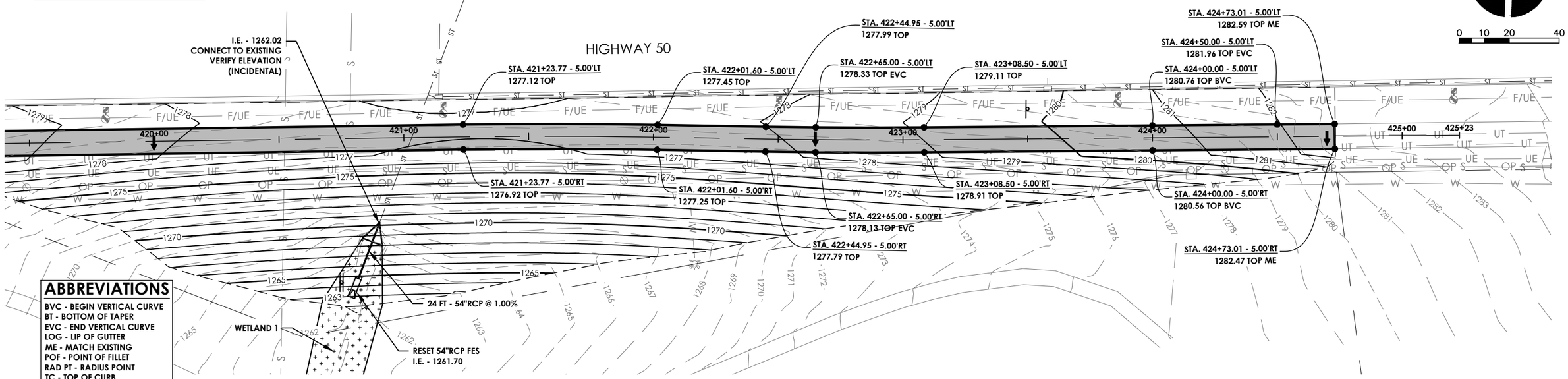
		P TAPU(12)	B43	B57

GRADING & STORM SEWER

LEGEND

- 1255 — EXISTING CONTOURS
- 1255 — PROPOSED CONTOURS
- PROPOSED GRADING LIMITS
- EXISTING WETLAND

STA. 420+79 TO 420+91 RT
24 FT - 54" RCP CLASS 3, FURNISH & INSTALL
1 EACH - RESET PIPE END SECTION
(LENGTH DOES NOT INCLUDE END SECTION)
(PIPE SECTION 13 - SHEET Z3)



ABBREVIATIONS

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ME - MATCH EXISTING
POF - POINT OF FILLET
RAD PT - RADIUS POINT
TC - TOP OF CURB
TOP - TOP OF PAVEMENT

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROTS
SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

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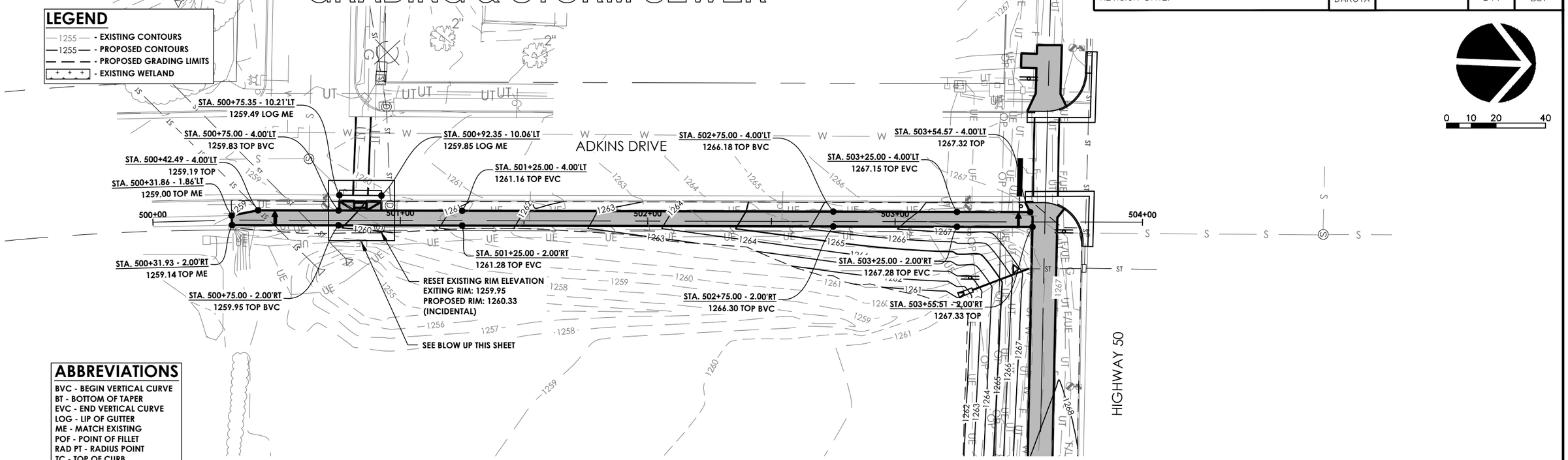
		P TAPU(12)	B44	B57

GRADING & STORM SEWER

LEGEND

- 1255 - EXISTING CONTOURS
- 1255 - PROPOSED CONTOURS
- PROPOSED GRADING LIMITS
- EXISTING WETLAND



ABBREVIATIONS

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ME - MATCH EXISTING
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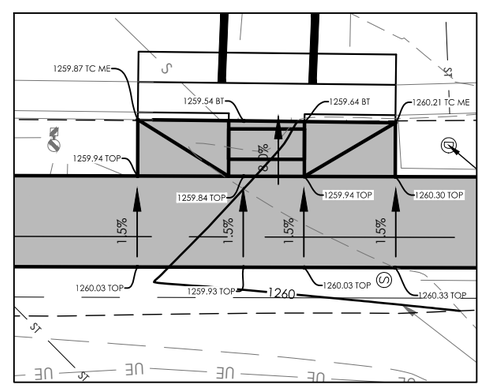
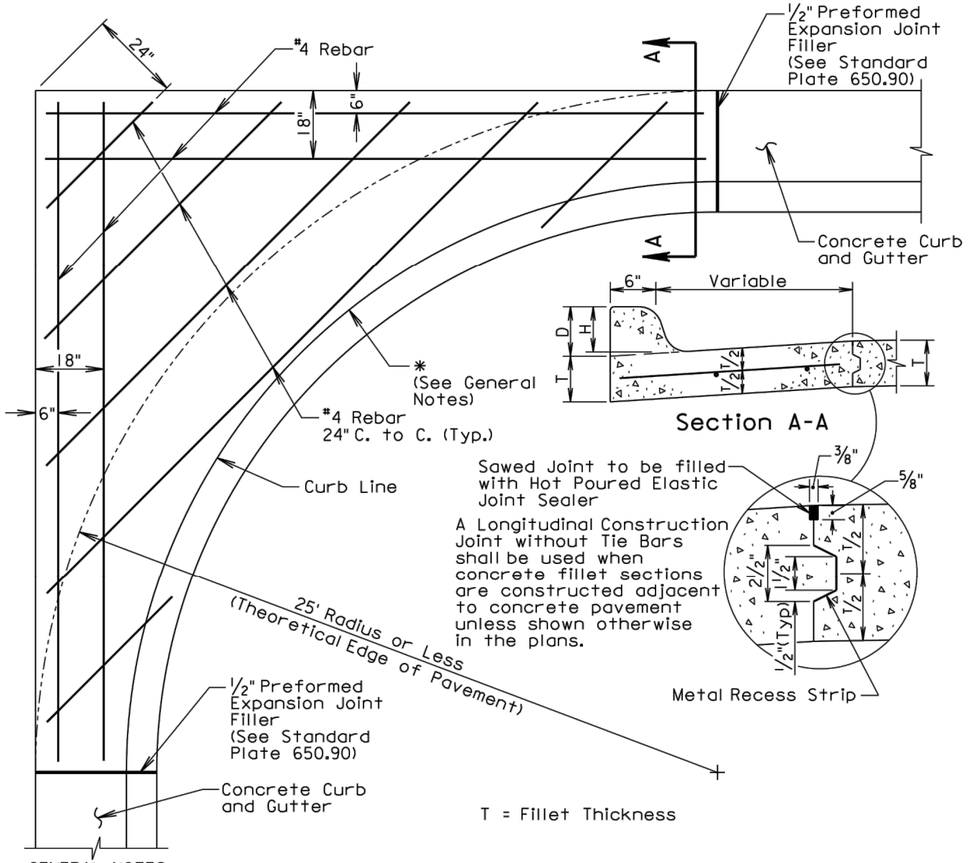
TC - TOP OF CURB
TOP - TOP OF PAVEMENT



BLOW UP

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD



GENERAL NOTES:

* If a curb ramp is constructed adjacent to a PCC fillet section, the curb will need to be modified. Refer to the corresponding curb ramp standard plate or other special details in the plans for modification of the PCC fillet section.

Dimensions D, H, and T shall conform to those shown on the appropriate curb and gutter standard plate.

All rebar shall be in conformance with Sections 480 and 1010 of the Specifications. All rebar shall have a minimum of 3" clear cover.

Class M6 Concrete shall be used in construction of the fillets.

The concrete curb shall be monolithic with the concrete fillet. No separate payment for this curb will be made as the curb is considered a part of the fillet.

Joints shall be constructed at 10' intervals except when fillets are constructed adjacent to PCC Pavement. If there is adjacent PCC Pavement the joints shall be extended from edge of pavement through the fillet section as directed by the Engineer.

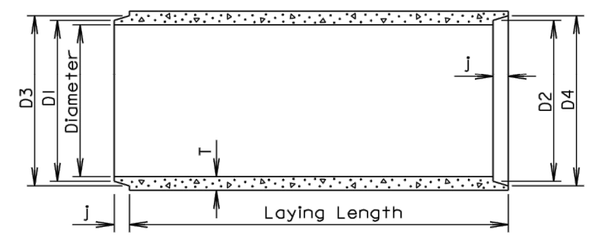
The cost for all materials, labor, and incidentals necessary to construct the PCC fillet section with curb and gutter shall be incidental to the contract unit price per square yard for the corresponding PCC fillet section bid item.

June 26, 2015

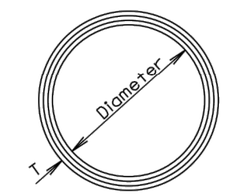
Published Date: 4th Qtr. 2017	SDDOT	PCC FILLET SECTION WITH TYPE B CURB AND GUTTER	PLATE NUMBER 380.16 Sheet 1 of 1

TOLERANCES IN DIMENSIONS

Diameter: ±1.5% for 24" Dia. or less and ±1% or 3/8" whichever is more for 27" Dia. or greater.
Diameters at joints: ± 3/16" for 30" Dia. or less and ± 1/4" for 36" or greater.
Length of joint (j): ± 1/4".
Wall thickness (T): not less than design T by more than 5% or 3/16", whichever is greater.
Laying length: shall not underrun by more than 1/2".



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

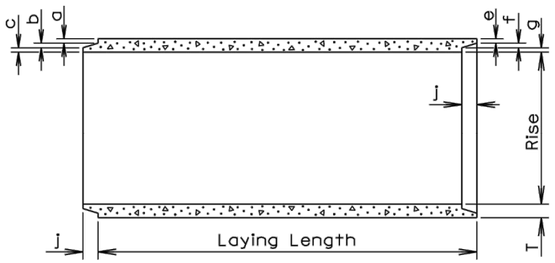
Construction of R.C.P. shall conform to the requirements of Section 990 of the Specifications.

Not more than 2 four-foot sections shall be permitted near the ends of any culvert. Four-foot lengths shall be used only to secure the required length of culvert.

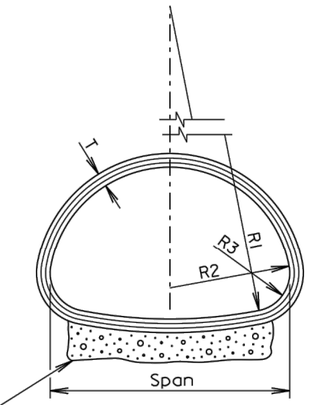
Diam. (in.)	Approx. Wt. /Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 7/8	14 1/4
15	127	2 1/4	2	16 1/2	16 7/8	17 1/4	17 5/8
18	168	2 1/2	2 1/4	19 5/8	20	20 3/8	20 3/4
21	214	2 3/4	2 1/2	22 7/8	23 1/4	23 3/4	24 1/8
24	265	3	2 3/4	26	26 3/8	27	27 3/8
27	322	3 1/4	3	29 1/4	29 5/8	30 1/4	30 5/8
30	384	3 1/2	3 1/4	32 3/8	32 3/4	33 1/2	33 7/8
36	524	4	3 3/4	38 3/4	39 1/4	40	40 1/2
42	685	4 1/2	4	45 1/8	45 5/8	46 1/2	47
48	867	5	4 1/2	51 1/2	52	53	53 1/2
54	1070	5 1/2	4 1/2	57 7/8	58 3/8	59 3/8	59 7/8
60	1296	6	5	64 1/4	64 3/4	66	66 1/2
66	1542	6 1/2	5 1/2	70 5/8	71 1/8	72 1/2	73
72	1810	7	6	77	77 1/2	79	79 1/2
78	2098	7 1/2	6 1/2	83 3/8	83 7/8	85 5/8	86 1/8
84	2410	8	7	89 3/4	90 1/4	92 1/8	92 5/8
90	2740	8 1/2	7	95 3/4	96 1/4	98 1/8	98 5/8
96	2950	9	7	102 1/8	102 5/8	104 1/2	105
102	3075	9 1/2	7 1/2	109	109 1/2	111 1/2	112
108	3870	10	7 1/2	115 1/2	116	118	118 1/2

June 26, 2015

Published Date: 4th Qtr. 2017	SDDOT	REINFORCED CONCRETE PIPE	PLATE NUMBER 450.01 Sheet 1 of 1



LONGITUDINAL SECTION



END VIEW

TOLERANCES IN DIMENSIONS

Radial dimensions at joints: ± 1/8" for 65" span or less and ± 1/4" for longer spans.
Rise and Span: ±2% of tabular values.
Length of Joint (J): ± 1/4".
Wall thickness (T): not less than design T by more than 5% or 3/16", whichever is greater.
Laying length: shall not underrun by more than 1/2".

Gravel Bedding Material shall be supplied for 102" to 169" spans. It shall be placed to a thickness of 6" (Min.) x 85% of the Span x Length of culvert and shall conform to the gradation requirements for gravel surfacing except material may be screened or may be plan provided material.

* Size (in.)	Approx. Wt./Ft. (lb.)	Rise (in.)	Span (in.)	T (in.)	a (in.)	b (in.)	c (in.)	j (in.)	e (in.)	f (in.)	g (in.)	R1 (in.)	R2 (in.)	R3 (in.)
18	170	13 1/2	22	2 1/2	1 3/8	3/8	3/4	2	1 1/8	3/8	1	27 1/2	13 3/4	5 1/4
24	320	18	28 1/2	3 1/2	1 5/8	1/2	1 3/8	3	1 3/8	1/2	1 5/8	40 11/16	14 3/4	4 5/8
30	450	22 1/2	36 1/4	4	1 13/16	5/8	1 9/16	3 1/2	1 9/16	5/8	1 13/16	51	18 3/4	6 1/8
36	600	26 5/8	43 3/4	4 1/2	2	3/4	1 3/4	4	1 3/4	3/4	2	62	22 1/2	6 1/2
42	740	31 5/16	51 1/8	4 1/2	2	3/4	1 3/4	4	1 3/4	3/4	2	73	26 1/4	7 3/4
48	890	36	58 1/2	5	2 1/4	3/4	2	5	2	3/4	2 1/4	84	30	8 7/8
54	1100	40	65	5 1/2	2 1/2	3/4	2 1/4	5	2 1/4	3/4	2 1/2	92 1/2	33 3/8	10
60	1400	45	73 1/2	6	3 5/16	3/4	1 15/16	5	2 3/4	3/4	2 1/2	105	37 1/2	11
72	1900	54	88	7	3 13/16	1	2 3/16	6	3 1/4	1	2 3/4	126	45	13 5/16
84	2500	62	102	8	4 1/8	1	2 7/8	6	3 1/2	1	3 1/2	162 1/2	52	14 1/2
96	3300	78	122 3/8	9	4 1/2	1	3 1/2	7	4	1	4	218	62	20
108	4200	88	138 1/2	10	5	1	4	7	4 1/2	1	4 1/2	269	70	22
120	5100	96 7/8	154	11	5 1/2	1	4 1/2	7	5	1	5	301 3/8	78	24
132	5100	106 1/2	168 3/4	10		1	4	7	4 1/2	1	4 1/2	329	85 5/8	26 7/8

* Equivalent Diameter of Circular R. C. P.

GENERAL NOTES:

Construction of R.C.P. Arch shall conform to the requirements of Section 990 of the Specifications. Not more than 2 four-foot sections shall be permitted near the ends of any culvert. Four-foot lengths shall be used only to secure the required length of culvert.

June 26, 2015

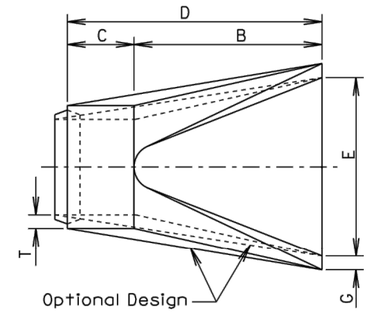
Published Date: 4th Qtr. 2017

SDDOT

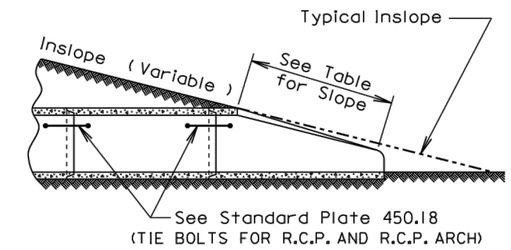
REINFORCED CONCRETE PIPE ARCH

PLATE NUMBER 450.02

Sheet 1 of 1



TOP VIEW

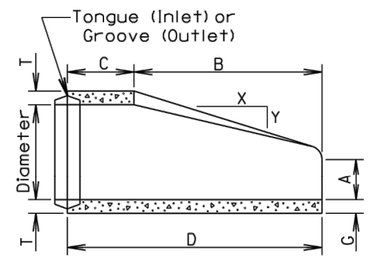


SLOPE DETAIL

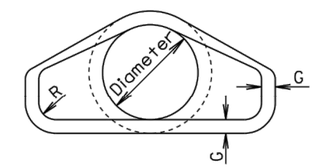
GENERAL NOTES:

Lengths of concrete pipe shown on plan sheets are between flared ends only.

Construction of R.C.P. Flared End shall conform to the requirements of Section 990 of the Specifications.



LONGITUDINAL SECTION



END VIEW

Dia. (in.)	Approx. Wt. of Section (lbs.)	Approx. Slope (X to Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	G (in.)	R (in.)
12	530	2.4: 1	2	4	24	48 7/8	72 7/8	24	2	1 1/2
15	740	2.4: 1	2 1/4	6	27	46	73	30	2 1/4	1 1/2
18	990	2.3: 1	2 1/2	9	27	46	73	36	2 1/2	1 1/2
21	1280	2.4: 1	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	1 1/2
24	1520	2.5: 1	3	9 1/2	43 1/2	30	73 1/2	48	3	1 1/2
27	1930	2.5: 1	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	1 1/2
30	2190	2.5: 1	3 1/2	12	54	19 3/4	73 3/4	60	3 1/2	1 1/2
36	4100	2.5: 1	4	15	63	34 3/4	97 3/4	72	4	1 1/2
42	5380	2.5: 1	4 1/2	21	63	35	98	78	4 1/2	1 1/2
48	6550	2.5: 1	5	24	72	26	98	84	5	1 1/2
54	8240	2: 1	5 1/2	27	65	33 1/4	98 1/4	90	5 1/2	1 1/2
60	8730	1.9: 1	6	35	60	39	99	96	5	1 1/2
66	10710	1.7: 1	6 1/2	30	72	27	99	102	5 1/2	1 1/2
72	12520	1.8: 1	7	36	78	21	99	108	6	1 1/2
78	14770	1.8: 1	7 1/2	36	90	21	111	114	6 1/2	1 1/2
84	18160	1.6: 1	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2
90	20900	1.5: 1	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	6

June 26, 2015

Published Date: 4th Qtr. 2017

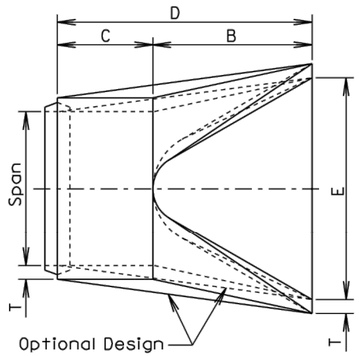
SDDOT

R. C. P. FLARED ENDS

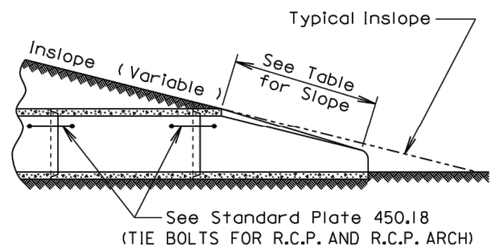
PLATE NUMBER 450.10

Sheet 1 of 1

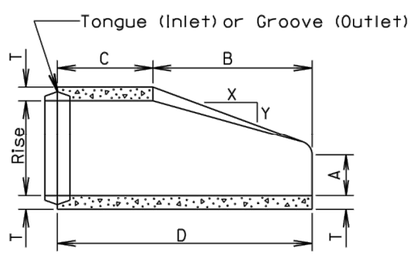
STOCKWELL ENGINEERS
SIOUX FALLS, SD



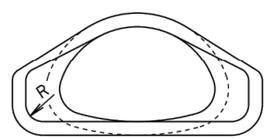
TOP VIEW



SLOPE DETAIL



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

Lengths of concrete pipe shown on plan sheets are between flared ends only.

Construction of R.C.P. Arch Flared End shall conform to the requirements of Section 990 of the Specifications.

* Size (in.)	Approximate Weight of Section (lbs.)	Rise (in.)	Span (in.)	Slope (X:Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	R (in.)
18	1100	13½	22	3:1	2½	7	27	45	72	36	2
24	1750	18	28½	3:1	3½	8½	39	33	72	48	3
30	3300	22½	36¼	3:1	4	9½	50	46	96	60	3
36	4350	26⅝	43¾	3:1	4½	11⅛	60	36	96	72	6
42	5250	31 5/16	51⅛	3:1	4½	15 13/16	60	36	96	78	6
48	6400	36	58½	3:1	5	21	60	36	96	84	6
54	7850	40	65	3:1	5½	25½	60	36	96	90	6
60	9500	45	73½	3:1	6	31	60	36	96	96	6
72	13550	54	88	2:1	7	31	60	39	99	120	6
84	17950	62	102	2:1	8	28½	83	19	102	144	6

*Equivalent Diameter of Circular R.C.P.

June 26, 2015

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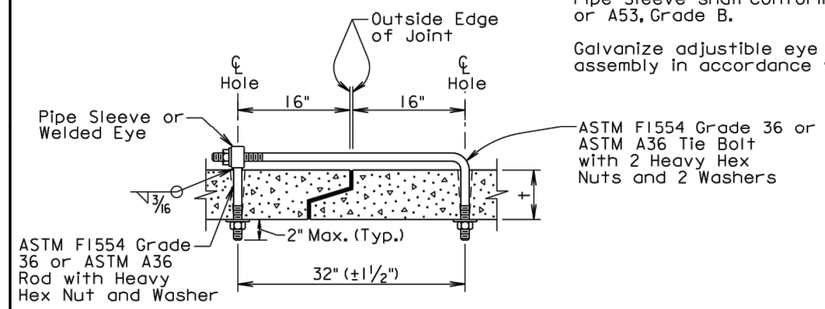
SDDOT

R.C.P. ARCH FLARED ENDS

PLATE NUMBER 450.11

Sheet 1 of 1

Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3¼	⅝	¾
3½-6½	¾	1
≥ 7	1	1¼



ADJUSTABLE EYE BOLT TIE

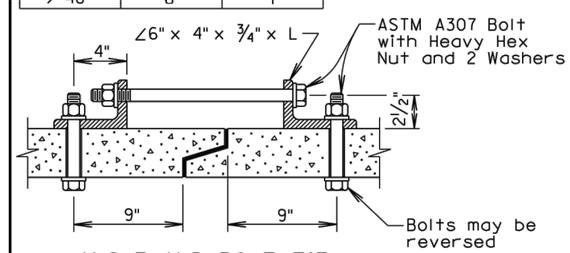
GENERAL NOTES:

Tie bolts shall conform to ASTM F1554 Grade 36 or ASTM A36. Nuts shall be heavy hex conforming to ASTM A563. Washers shall conform to ASTM F436.

Pipe Sleeve shall conform to ASTM A500 or A53, Grade B.

Galvanize adjustible eye bolt tie assembly in accordance with ASTM A153.

Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
≤ 48	4	¾
> 48	6	1



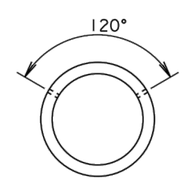
ANGLE AND BOLT TIE

GENERAL NOTES:

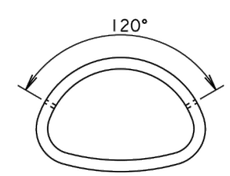
Angles shall conform to ASTM A36.

Bolts shall conform to ASTM A307. Nuts shall be heavy hex conforming to ASTM A563. Washers shall conform to ASTM F436.

Galvanize angles, bolts, nuts, and washers in accordance with ASTM A153.



END VIEW "CIRCULAR"



END VIEW "ARCH"

GENERAL NOTES:

In lieu of the tie bolts detailed above other types of tie bolt connections may be installed as approved by the Office of Bridge Design.

All pipe sections of R.C.P. and R.C.P. Arch shall be tied with tie bolts except for pipe located between drop inlets, manholes, and junction boxes. All pipe sections of pipes that only enter or exit drop inlets, manhole, and junction boxes shall be tied with tie bolts.

There will be no separate measurement or payment for the tie bolts. The cost for furnishing and installing the tie bolts shall be incidental to the contract unit price per foot for the corresponding bid item for R.C.P. or R.C.P. Arch.

February 28, 2013

Published Date: 4th Qtr. 2017

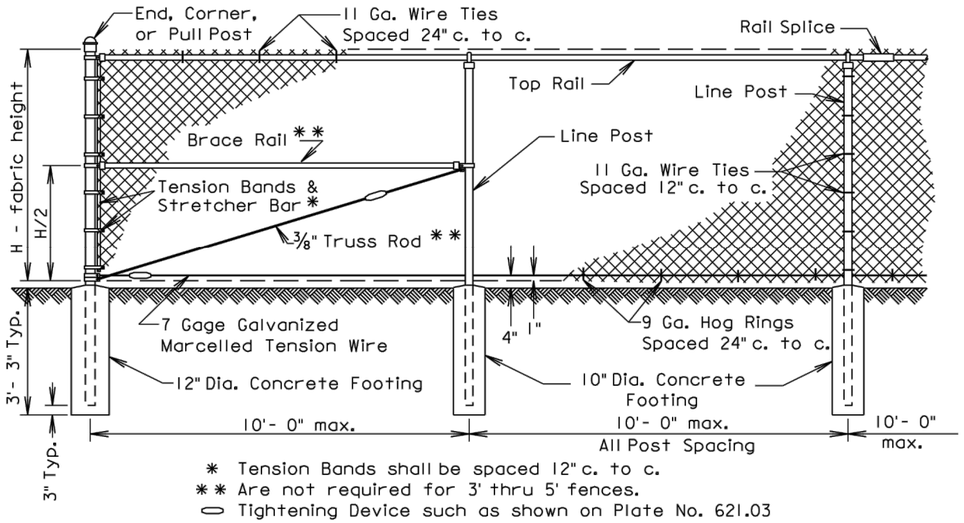
SDDOT

TIE BOLTS FOR R.C.P. AND R.C.P. ARCH

PLATE NUMBER 450.18

Sheet 1 of 1

STOCKWELL ENGINEERS
SIOUX FALLS, SD



* Tension Bands shall be spaced 12" c. to c.
** Are not required for 3' thru 5' fences.
⬭ Tightening Device such as shown on Plate No. 621.03

Component	End, Corner & Pull Post		Line Post			Top & Brace Rail	
Type of Fabrication	Round Pipe Nominal	Roll Formed Steel	Round Pipe Nominal	"C" Section	H-Beam Steel	Round Pipe Nominal	Roll Formed Steel
Size	3.00" O. D.	3.5" x 3.5"	2.50" O. D.	1.875"x1.625"	2.25"x1.70"	1.625" O. D.	1.625"x1.25"
Weight (lb. / ft.)	5.79 or 4.64	5.14	3.65 or 3.12	2.34	3.43	2.27 or 1.84	1.35

GENERAL NOTES:

Specific details of manufacture of component parts of the complete fence construction shall be subject to the approval of the Engineer. Commercially available items produced specifically for the use intended shall be used wherever possible in the construction of the fence.

"H" (Height of Fabric) shall be as shown on the Plans. Fabric is available in the the following heights; 36", 42", 48", 60", 72", 84", 96", 108", 120", & 144". Fabric heights 60 inches and under shall be knuckled at both selvages. Fabric heights 72 inches and over shall be knuckled at one selvage and twisted at the other selvage.

Chain Link Fabric shall be 2" mesh, No. 9 gage galvanized wire securely fastened to Tension Wire, Line Post, Rails, Braces and Stretcher Bars spaced as shown hereon.

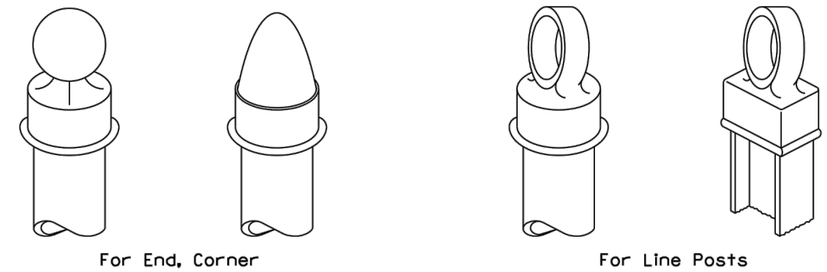
Fence may be constructed with either Round Pipe, "C" Section, "H" Beam, or roll Formed Steel components as shown in the table above. Line post may be Round Pipe, "C" Section, or "H" Beam. The Corner Post and Rails shall be either Round Pipe or Roll Formed Steel. The type of components used shall have prior approval by the Engineer before construction.

Where fence must cross small bodies of water (such as drainage areas or ponds) that could freeze during the winter, use 11 gage Hog Rings. Provide only two ties per Tension Wire and Top Rail between line posts.

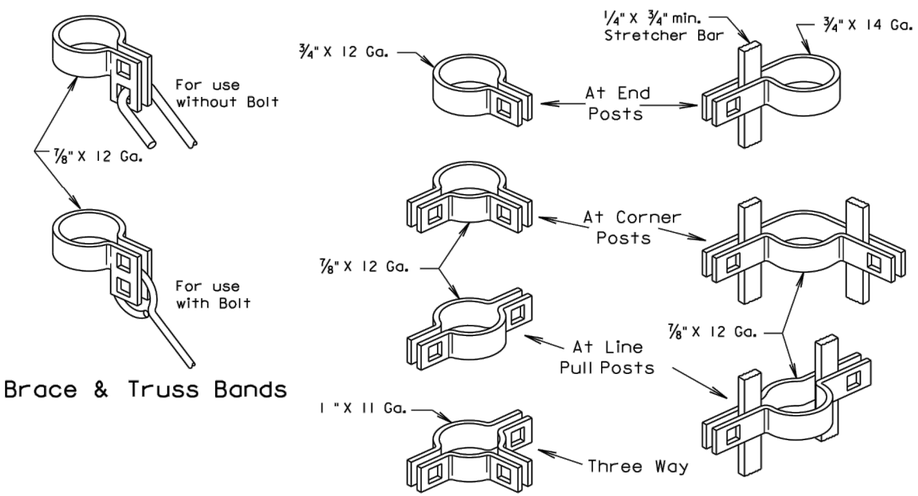
A suitable method of rail splicing shall be used to allow for expansion and contraction while maintaining proper position of the Top Rail.

March 31, 2000

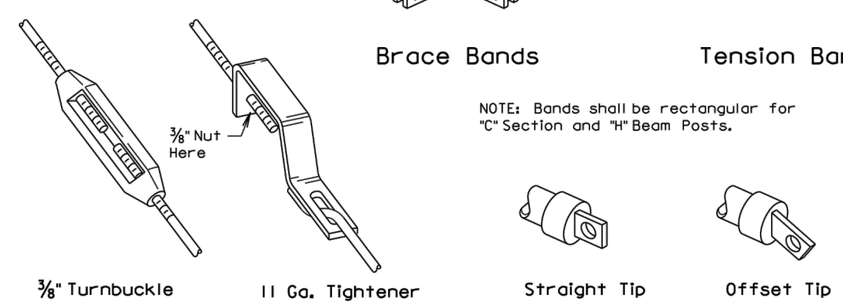
Published Date: 4th Qtr. 2017	SDDOT	CHAIN LINK FENCE WITH TOP RAIL	PLATE NUMBER 621.01 Sheet 1 of 1



Typical Post Tops
(Shown for example only)

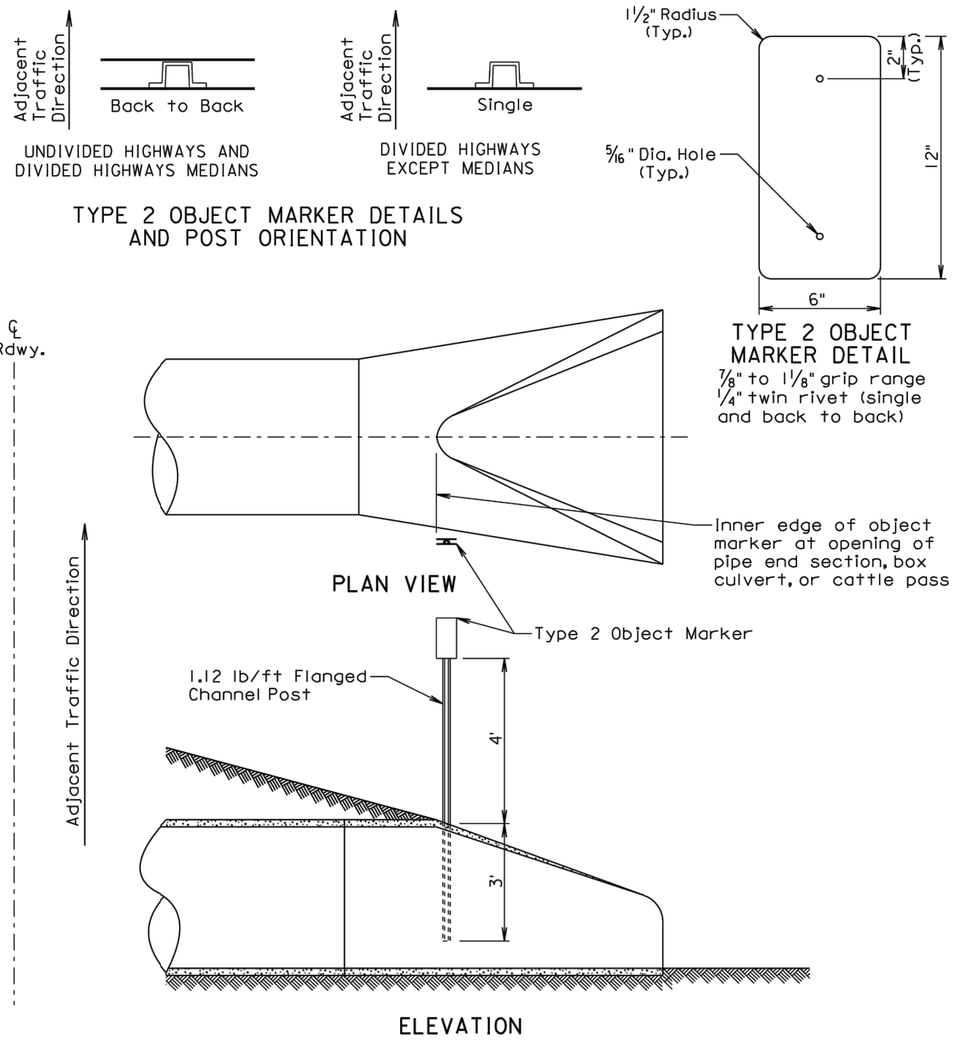


NOTE: Bands shall be rectangular for "C" Section and "H" Beam Posts.



March 31, 2000

Published Date: 4th Qtr. 2017	SDDOT	HARDWARE FOR CHAIN LINK FENCE	PLATE NUMBER 621.03 Sheet 1 of 1



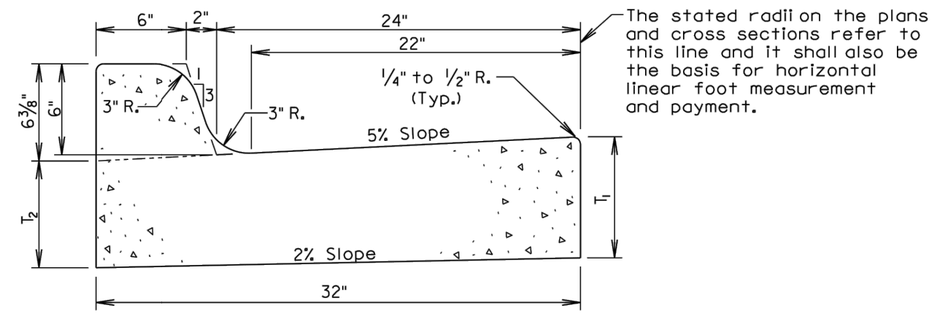
GENERAL NOTES:

The type 2 object markers and the 1.12 lb/ft flanged channel posts shall be in conformance with Specifications Section 982.2 J.

Payment for the type 2 object markers shall be in conformance with Specification Section 632.5 B.

June 26, 2015

Published Date: 2nd Qtr. 2018	SDDOT	TYPE 2 OBJECT MARKER INSTALLATION AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES	PLATE NUMBER 632.10
			Sheet 1 of 1



Type	T_1 (Inches)	T_2 (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
B66	6	5 1/16	0.057	17.7
B67	7	6 1/16	0.065	15.4
B68	8	7 1/16	0.073	13.7
B68.5	8.5	7 9/16	0.077	13.0
B69	9	8 1/16	0.081	12.3
B69.5	9.5	8 9/16	0.085	11.7
B610	10	9 1/16	0.090	11.2
B610.5	10.5	9 9/16	0.094	10.7
B611	11	10 1/16	0.098	10.2
B611.5	11.5	10 9/16	0.102	9.8
B612	12	11 1/16	0.106	9.4

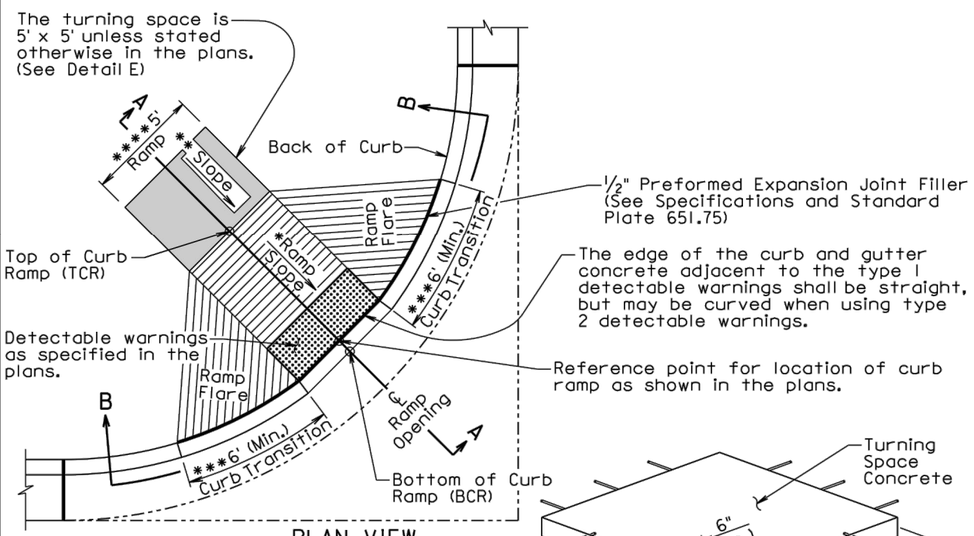
GENERAL NOTES:

When concrete curb and gutter longitudinally adjoins new concrete pavement, the method of attachment shall be by one of the methods shown on Standard Plate 380.11.

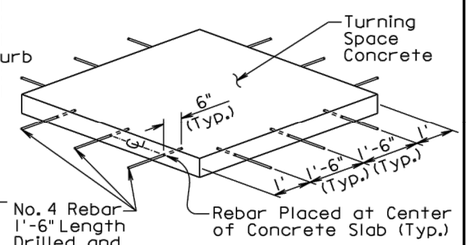
See Standard Plate 650.90 for expansion and contraction joints in the curb and gutter.

September 6, 2008

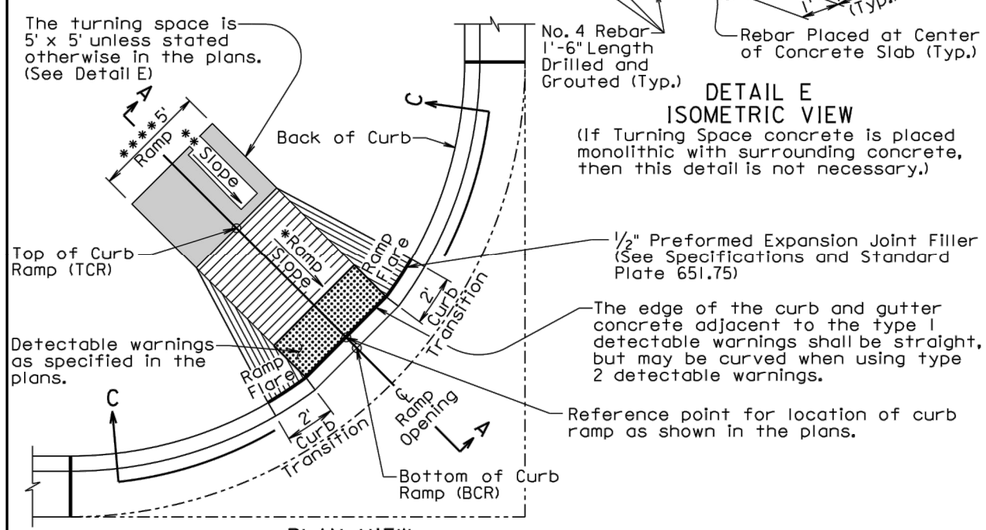
Published Date: 4th Qtr. 2017	SDDOT	TYPE B CONCRETE CURB AND GUTTER	PLATE NUMBER 650.01
			Sheet 1 of 1



PLAN VIEW
(With 6'+ Curb Transition)



DETAIL E
ISOMETRIC VIEW
(If Turning Space concrete is placed monolithic with surrounding concrete, then this detail is not necessary.)



PLAN VIEW
(With 2' Curb Transition)

September 6, 2015

Published Date: 4th Qtr. 2017	SDDOT	TYPE 1 CURB RAMP (PERPENDICULAR CURB RAMP)	PLATE NUMBER 651.01
			Sheet 1 of 3

Curb ramp slopes are designed at 7.5% unless stated otherwise in the plans. The curb ramp may have a maximum slope of 8.3% and shall not exceed 15' in length unless stated otherwise in the plans.

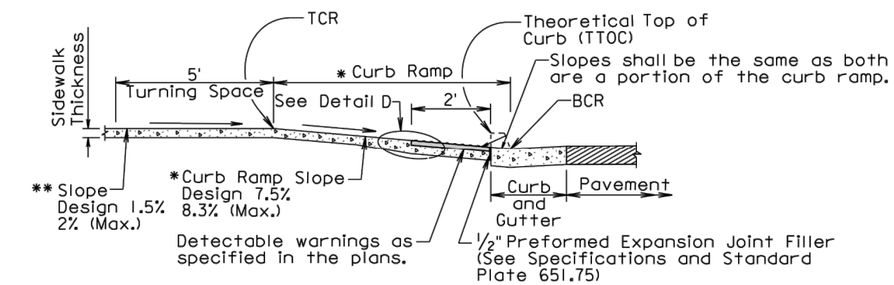
The curb ramp length may be computed based on the intersection of a continuous 1.5% theoretical slope from theoretical top of curb (TTOC) with the curb ramp using a
* continuous 7.5% curb ramp slope. The elevation of point TCR shall always be higher than the elevation of point TTOC unless specified otherwise in the plans. The curb ramp length dimension as shown in the plans shall be adjusted as necessary to meet all slope and length requirements based on field geometrics.

The cross slope of the ramp shall not be steeper than 2%. Plans are designed using a 1.5% slope unless stated otherwise in the plans.

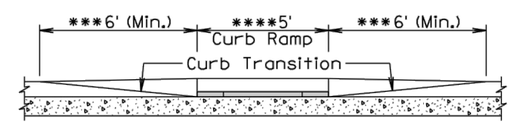
** The slope in the turning space shall not be steeper than 2% in any direction of pedestrian travel. Plans are designed using a 1.5% slope unless stated otherwise in the plans.

*** The curb transition shall be a minimum of 6' long, a maximum of 10' long, and the curb transition slope shall not be steeper than 10% unless stated otherwise in the plans. The curb transition length shall be adjusted as necessary to meet slope and length requirements based on field geometrics.

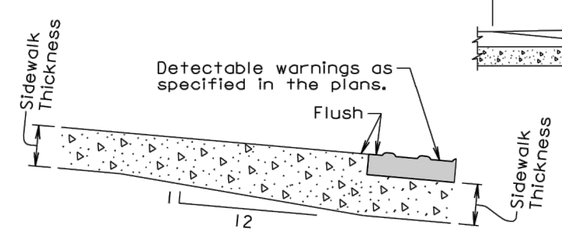
**** The ramp width is 5' unless stated otherwise in the plans.



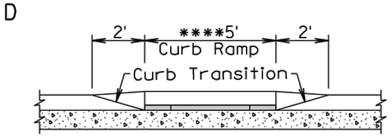
SECTION A-A



SECTIONAL VIEW B-B



DETAIL D



SECTIONAL VIEW C-C

September 6, 2015

Published Date: 4th Qtr. 2017	SDDOT	TYPE 1 CURB RAMP (PERPENDICULAR CURB RAMP)	PLATE NUMBER 651.01
			Sheet 2 of 3

GENERAL NOTES:

For illustrative purpose only, type 1 detectable warnings are shown in the drawings.

For illustrative purpose only, PCC fillet sections are shown in the drawings. The curb ramp depicted on this standard plate may be used with a PCC fillet section or curb and gutter.

For illustrative purpose only, the curb ramp location is shown at the center of a PCC fillet section. The curb ramp shall be placed at the location stated in the plans.

Sidewalk shall not be placed adjacent to the curb ramp flares when a 2' curb transition is used unless shown otherwise in the plans.

* Care shall be taken to ensure a uniform grade on the curb ramp, free of sags and short grade changes.

Surface texture of the curb ramp shall be obtained by coarse brooming transverse to the slope of the curb ramp.

The normal gutter line profile shall be maintained through the area of the ramp opening.

Joints shall be sawed or tooled into the concrete adjacent to the detectable warnings to alleviate possible corner cracking.

Care shall be taken to ensure that the surface of the detectable warnings are clean and maintains a uniform color.

The detectable warnings shall be cut as necessary to fit the plan specified limits of the detectable warnings. Cost for cutting the detectable warnings shall be incidental to the corresponding detectable warning bid item.

There will be no separate payment for curb ramps. The curb ramp shall be measured and paid for at the contract unit price per square foot for the corresponding concrete sidewalk bid item. The square foot area of the detectable warnings shall be included in the measured and paid for quantity of sidewalk.

If rebar is placed in the Turning Space as depicted in DETAIL E, the cost of the materials, labor, and equipment to furnish and install the rebar shall be incidental to the contract unit price per square foot for the corresponding concrete sidewalk bid item.

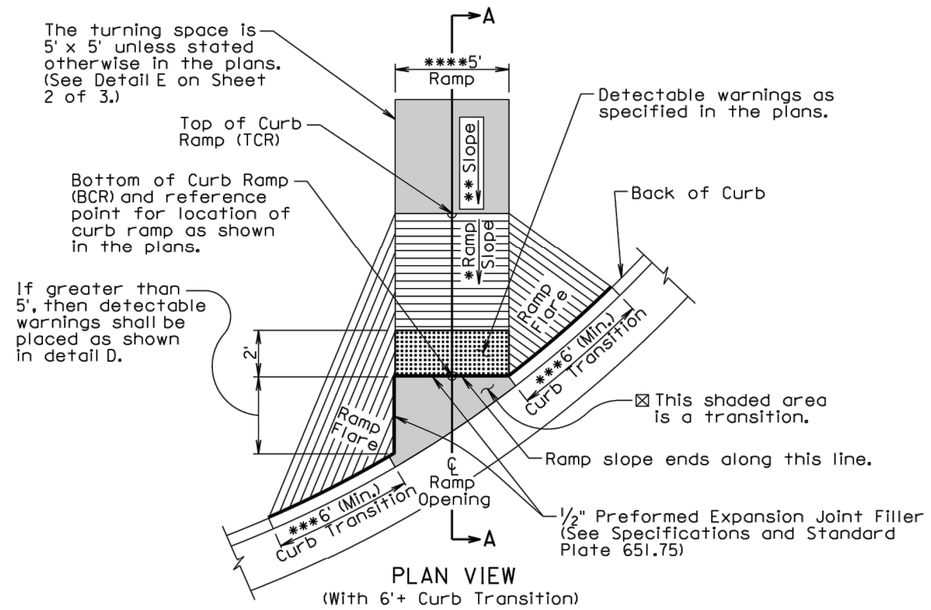
The curb transitions and ramp opening shall be measured and paid for at the contract unit price per foot for the corresponding curb and gutter bid item when curb and gutter is used. The curb transitions and ramp opening shall be measured and paid for at the contract unit price per square yard for the corresponding PCC fillet section bid item when a PCC fillet section is used.

The type 1 detectable warnings shall be measured to the nearest square foot. All costs for furnishing and installing the type 1 detectable warnings including labor, equipment, materials, and incidentals shall be paid for at the contract unit price per square foot for "Type 1 Detectable Warnings".

The type 2 detectable warnings shall be measured to the nearest square foot. All costs for furnishing and installing the type 2 detectable warnings including labor, equipment, and materials, including adhesive, necessary sealant or grout, and necessary grinding shall be paid for at the contract unit price per square foot for "Type 2 Detectable Warnings".

September 6, 2015

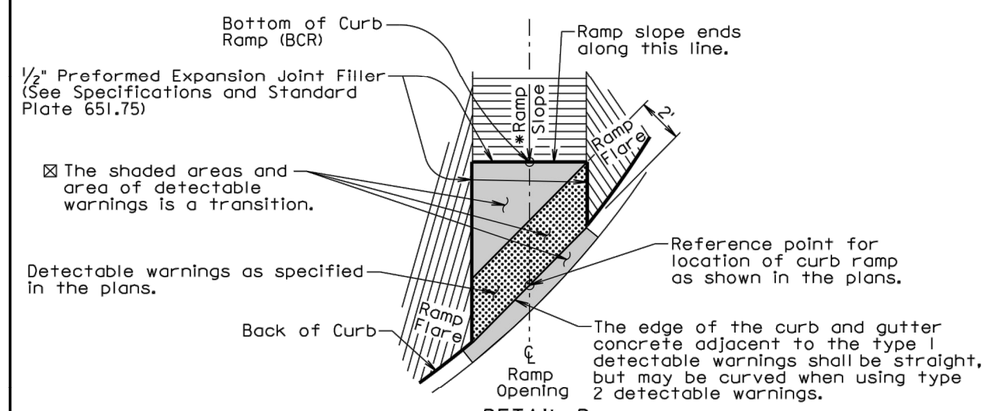
Published Date: 4th Qtr. 2017	SDDOT	TYPE 1 CURB RAMP (PERPENDICULAR CURB RAMP)	PLATE NUMBER 651.01
			Sheet 3 of 3



PLAN VIEW
(With 6'+ Curb Transition)

⊠ The slope within the transition area shall not be steeper than 5%. The concrete within the transition shall be placed monolithic with the curb and gutter or fillet section concrete. The concrete thickness within the transition shall be the same as the curb and gutter or fillet section concrete thickness.

*** The curb transition shall be a minimum of 6' long, a maximum of 10' long, and the curb transition slope shall not be steeper than 10% unless stated otherwise in the plans. The curb transition length shall be adjusted as necessary to meet slope and length requirements based on field geometrics.

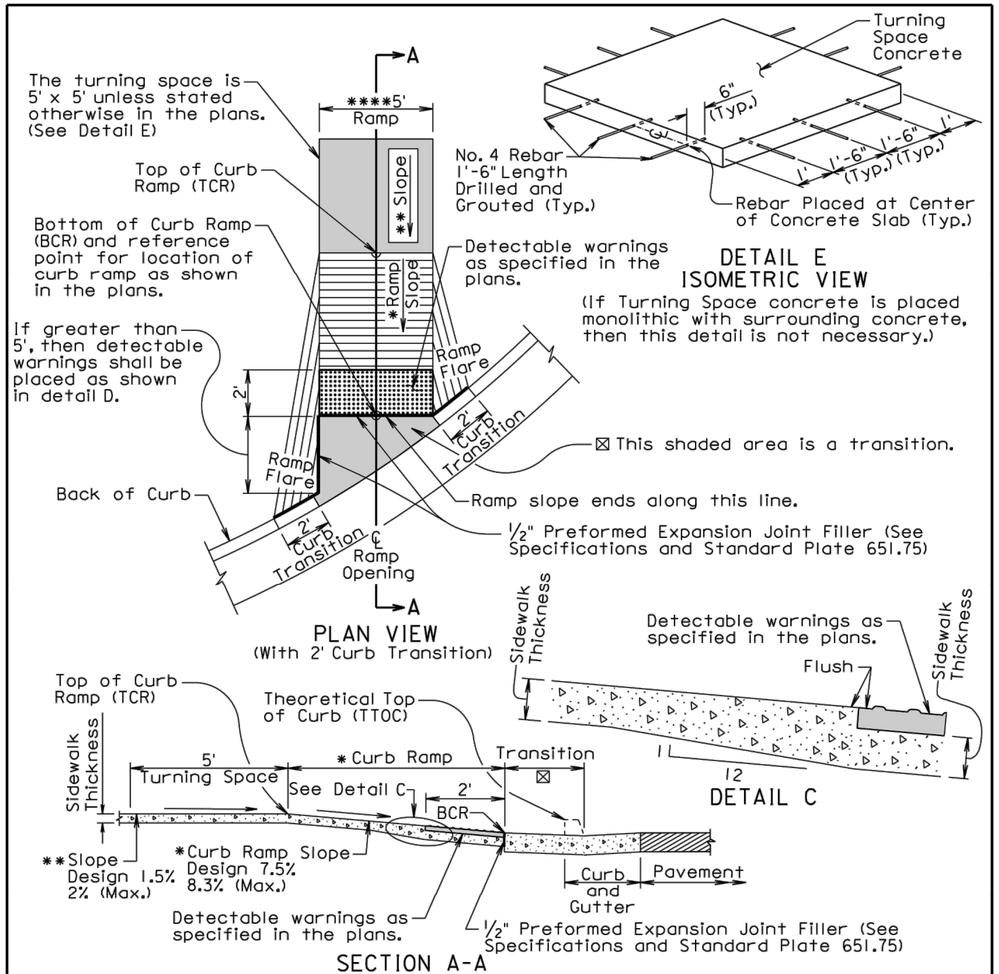


DETAIL D

September 6, 2015

Published Date: 4th Qtr. 2017	SDDOT	TYPE 2 CURB RAMP (DIRECTIONAL CURB RAMP)	PLATE NUMBER 651.02
			Sheet 1 of 3

STOCKWELL ENGINEERS
SIOUX FALLS, SD



Curb ramp slopes are designed at 7.5% unless stated otherwise in the plans. The curb ramp may have a maximum slope of 8.3% and shall not exceed 15' in length unless stated otherwise in the plans.

* The elevation of point TCR shall always be higher than the elevation of point TTOC unless specified otherwise in the plans. The curb ramp length dimension as shown in the plans shall be adjusted as necessary to meet all slope and length requirements based on field geometrics.

The cross slope of the ramp shall not be steeper than 2%. Plans are designed using a 1.5% slope unless stated otherwise in the plans.

** The slope in the turning space shall not be steeper than 2% in any direction of pedestrian travel. Plans are designed using a 1.5% slope unless stated otherwise in the plans.

**** The ramp width is 5' unless stated otherwise in the plans.

September 6, 2015

Published Date: 4th Qtr. 2017	SDDOT	TYPE 2 CURB RAMP (DIRECTIONAL CURB RAMP)	PLATE NUMBER 651.02
			Sheet 2 of 3

GENERAL NOTES:

For illustrative purpose only, type 1 detectable warnings are shown in the drawings.

The curb ramp depicted on this standard plate may be used with a PCC fillet section or curb and gutter. The curb ramp shall be placed at the location stated in the plans.

Sidewalk shall not be placed adjacent to the curb ramp flares when a 2' curb transition is used unless shown otherwise in the plans.

* Care shall be taken to ensure a uniform grade on the curb ramp, free of sags and short grade changes.

Surface texture of the curb ramp shall be obtained by coarse brooming transverse to the slope of the curb ramp.

The normal gutter line profile shall be maintained through the area of the ramp opening.

Joints shall be sawed or tooled into the concrete adjacent to the detectable warnings to alleviate possible corner cracking.

Care shall be taken to ensure that the surface of the detectable warnings are clean and maintains a uniform color.

The detectable warnings shall be cut as necessary to fit the plan specified limits of the detectable warnings. Cost for cutting the detectable warnings shall be incidental to the corresponding detectable warning bid item.

There will be no separate payment for curb ramps. The curb ramp shall be measured and paid for at the contract unit price per square foot for the corresponding concrete sidewalk bid item. The square foot area of the detectable warnings shall be included in the measured and paid for quantity of sidewalk.

If rebar is placed in the Turning Space as depicted in DETAIL E, the cost of the materials, labor, and equipment to furnish and install the rebar shall be incidental to the contract unit price per square foot for the corresponding concrete sidewalk bid item.

The curb transitions and ramp opening shall be measured and paid for at the contract unit price per foot for the corresponding curb and gutter bid item when curb and gutter is used. The curb transitions and ramp opening shall be measured and paid for at the contract unit price per square yard for the corresponding PCC fillet section bid item when a PCC fillet section is used.

All costs for furnishing and installing the transition area at the base of the curb ramp shall be incidental to the contract unit price per foot for the corresponding curb and gutter bid item when curb and gutter is used and shall be incidental to the contract unit price per square yard for the corresponding PCC fillet section bid item when a PCC fillet section is used.

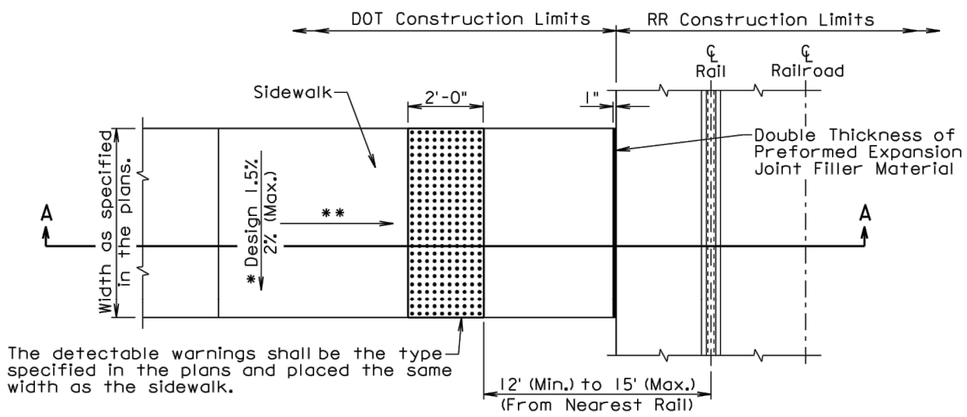
The type 1 detectable warnings shall be measured to the nearest square foot. All costs for furnishing and installing the type 1 detectable warnings including labor, equipment, materials, and incidentals shall be paid for at the contract unit price per square foot for "Type 1 Detectable Warnings".

The type 2 detectable warnings shall be measured to the nearest square foot. All costs for furnishing and installing the type 2 detectable warnings including labor, equipment, and materials, including adhesive, necessary sealant or grout, and necessary grinding shall be paid for at the contract unit price per square foot for "Type 2 Detectable Warnings".

September 6, 2015

Published Date: 4th Qtr. 2017	SDDOT	TYPE 2 CURB RAMP (DIRECTIONAL CURB RAMP)	PLATE NUMBER 651.02
			Sheet 3 of 3

STOCKWELL ENGINEERS
SIOUX FALLS, SD



PLAN VIEW

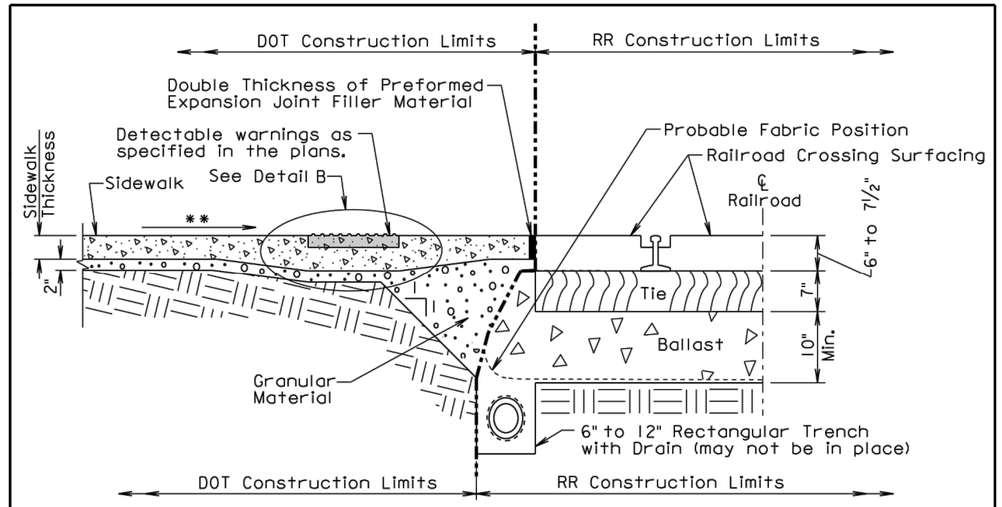
*The cross slope of the sidewalk shall not be steeper than 2%. Plans are designed using a 1.5% cross slope unless stated otherwise in the plans.

**If the sidewalk is curbside, then the surface of the curbside sidewalk shall match the slope of the curb transition. The longitudinal slope of the sidewalk and curb transition, where the sidewalk transitions to the railroad crossing elevation, is designed at 4.5% and shall not be steeper than 5% unless stated otherwise in the plans.

**If there is a boulevard sidewalk, then the curb and gutter transition shall be in accordance with Standard Plate 650.35. The longitudinal slope of the sidewalk, where the sidewalk transitions to the railroad crossing elevation, is designed at 4.5% and shall not be steeper than 5% unless stated otherwise in the plans.

September 14, 2017

Published Date: 4th Qtr. 2017	SDDOT	SIDEWALK AND DETECTABLE WARNINGS ADJACENT TO RAILROAD CROSSING	PLATE NUMBER 651.20
			Sheet 1 of 2



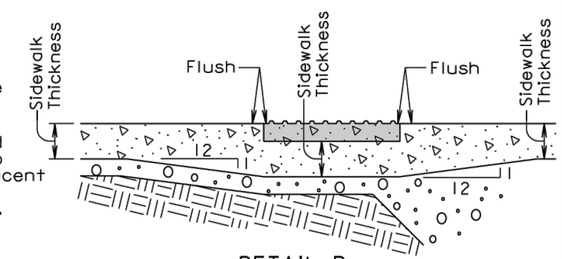
SECTION A-A

GENERAL NOTES:

For illustrative purpose only, type 1 detectable warnings are shown in the drawings.

Ballast material shall not be disturbed during construction work adjacent to the railroad crossing unless the adjacent work involves reconstruction or maintenance of the railroad crossing.

The sidewalk shall be placed at the location stated in the plans and shall be perpendicular to the railroad crossing.



DETAIL B

Care shall be taken to ensure that the surface of the detectable warnings are clean and maintains a uniform color.

If curb and gutter is required adjacent to the railroad crossing, the curb transition shall be measured and paid for at the contract unit price per foot for the corresponding curb and gutter bid item.

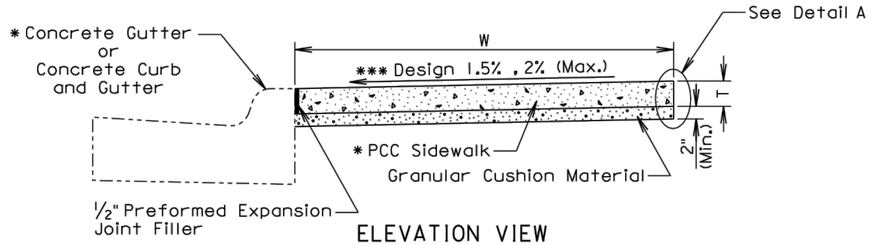
The type 1 detectable warnings shall be measured to the nearest square foot. All costs for furnishing and installing the type 1 detectable warnings including labor, equipment, materials, and incidentals shall be paid for at the contract unit price per square foot for "Type 1 Detectable Warnings".

The type 2 detectable warnings shall be measured to the nearest square foot. All costs for furnishing and installing the type 2 detectable warnings including labor, equipment, and materials, including adhesive, necessary sealant or grout, and necessary grinding shall be paid for at the contract unit price per square foot for "Type 2 Detectable Warnings".

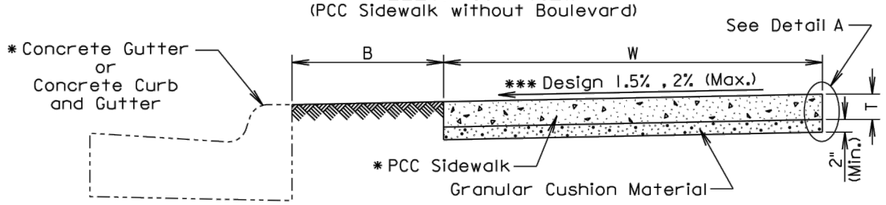
The square foot area of the detectable warnings shall be included in the measured and paid for quantity of sidewalk.

September 14, 2017

Published Date: 4th Qtr. 2017	SDDOT	SIDEWALK AND DETECTABLE WARNINGS ADJACENT TO RAILROAD CROSSING	PLATE NUMBER 651.20
			Sheet 2 of 2

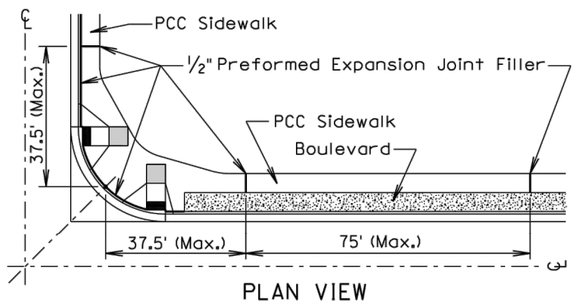


ELEVATION VIEW
(PCC Sidewalk without Boulevard)



ELEVATION VIEW
(PCC Sidewalk with Boulevard)

B Width of boulevard as specified in the plans.
T Thickness of PCC sidewalk as specified in the plans.
W Width of PCC sidewalk as specified in the plans.
* Type as specified in the plans.



PLAN VIEW

GENERAL NOTES:

The PCC sidewalk shall be constructed in accordance with Section 651 of the Specifications.

*** The cross slope of the sidewalk is designed at 1.5% and the maximum slope allowed is 2% unless specified otherwise in the plans.

The maximum length between expansion joints in PCC sidewalk is 75 feet.

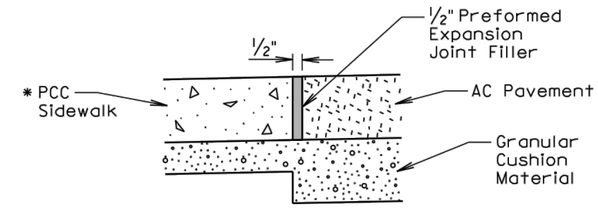
PCC sidewalk placed adjacent to intersection of roadways shall have an expansion joint placed transversely a maximum of 37.5 feet from the intersection. See PLAN VIEW.

An expansion joint in PCC sidewalk shall consist of a 1/2 inch thick preformed expansion joint filler material placed full depth and width of the PCC sidewalk.

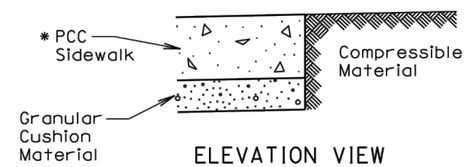
** Large areas of PCC pavement adjacent to PCC sidewalk may require a different joint treatment than shown in the detail. If a different joint detail is necessary, plans will contain the joint detail and the Contractor shall construct the joint treatment in accordance with the plans.

September 6, 2015

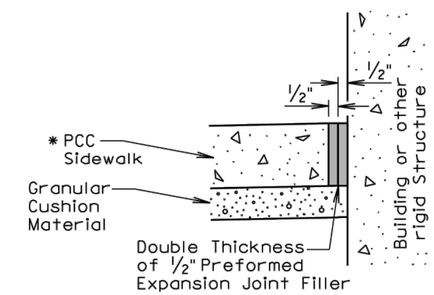
Published Date: 4th Qtr. 2017	SDDOT	PCC SIDEWALK	PLATE NUMBER 651.75
			Sheet 1 of 2



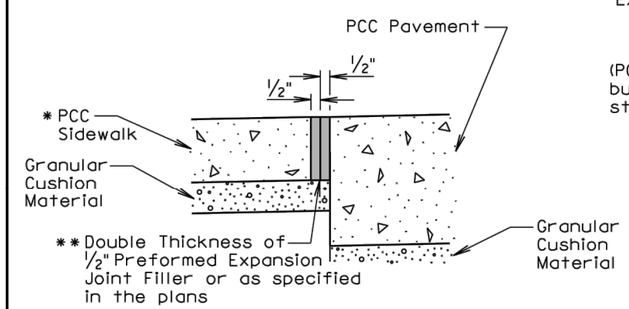
ELEVATION VIEW
(PCC sidewalk adjacent to asphalt concrete pavement)



ELEVATION VIEW
(PCC sidewalk adjacent to earthen material, landscape rock, or other compressible materials)



ELEVATION VIEW
(PCC sidewalk adjacent to building or other rigid structure)



ELEVATION VIEW
(PCC sidewalk adjacent to PCC pavement)

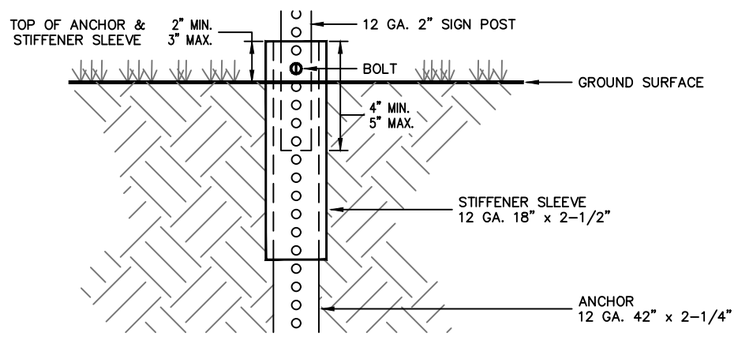
Detail A
(Use Appropriate Detail(s))

September 6, 2015

Published Date: 4th Qtr. 2017	SDDOT	PCC SIDEWALK	PLATE NUMBER 651.75
			Sheet 2 of 2

FILE: 16165 – Details.dwg PLOTTING DATE: 2018-05-09 INITIALS: BDW REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B55	B57

PERFORATED TUBE POST
(TELESPAR POST)



NOTES

BOLTS AND WASHERS USED FOR MOUNTING TRAFFIC SIGNS SHALL BE STAINLESS STEEL. FLAT WASHERS SHALL BE MIL. SPEC. MS813.

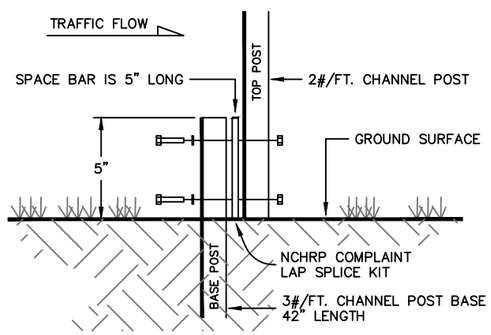
NUTS USED FOR MOUNTING TRAFFIC SIGNS SHALL BE A NYLOC (SELF-LOCKING) TYPE.

SIGNS SHALL BE MOUNTED USING A PLASTIC / NYLON WASHER PLACED BETWEEN THE SIGN FACE AND THE METALLIC FLAT WASHER.

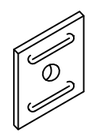
LAG SCREWS USED TO MOUNT TRAFFIC SIGNS TO WOODEN POWER POLES SHALL BE GALVANIZED OR STAINLESS STEEL.

ALL HARDWARE REQUIRED FOR MOUNTING THE SIGNS SHALL BE INCIDENTAL TO THE COST OF INSTALLING THE SIGNS.

FLANGED CHANNEL POST
(U-POST)

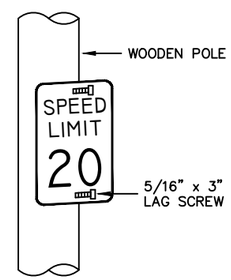


SIGN SAVER PLATE
3"x3" PUNCHED RIBBED ALUMINUM

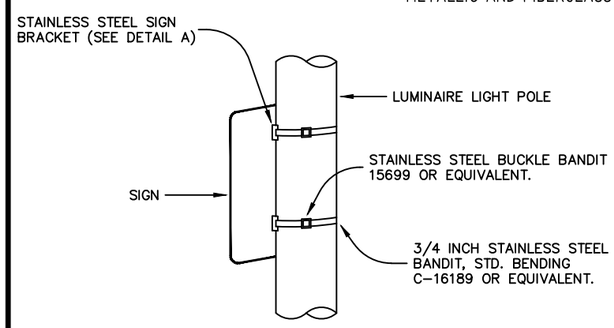


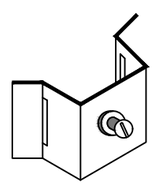
TO BE USED WHEN MOUNTING SIGNS ON CHANNEL POST.

SIGN MOUNTING ON WOODEN POWER POLE



STAINLESS STEEL BAND MOUNTING SYSTEM
TO BE USED WHEN MOUNTING SIGNS ON METALLIC AND FIBERGLASS POLES.



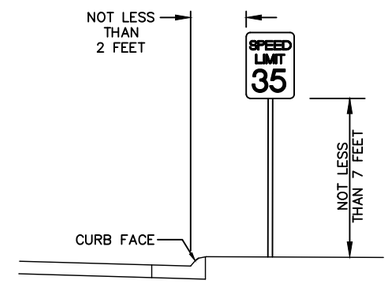


BANDIT DO-21 OR EQUIVALENT.

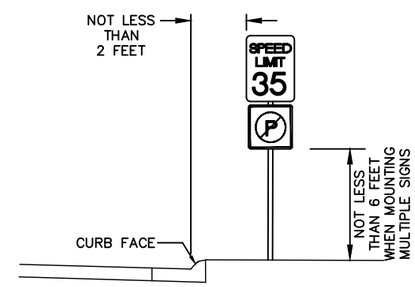
DETAIL A

SIGN MOUNT SPECIFICATIONS

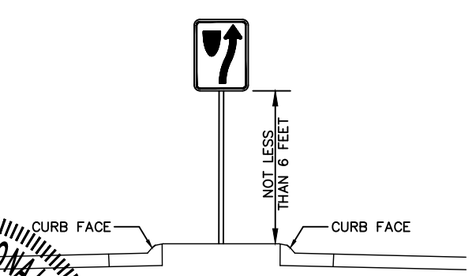
ROADSIDE SINGLE SIGN



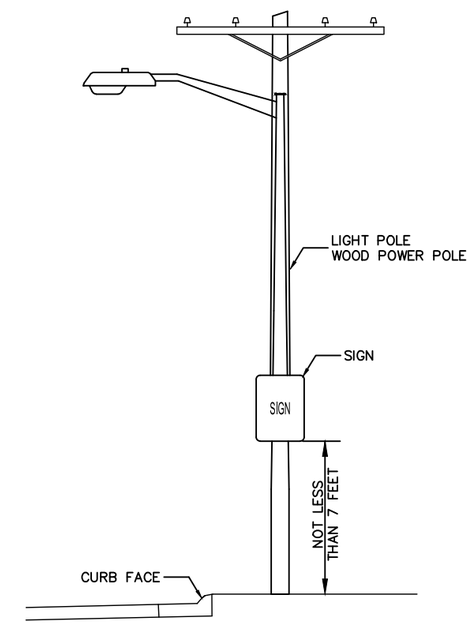
ROADSIDE MULTIPLE SIGN



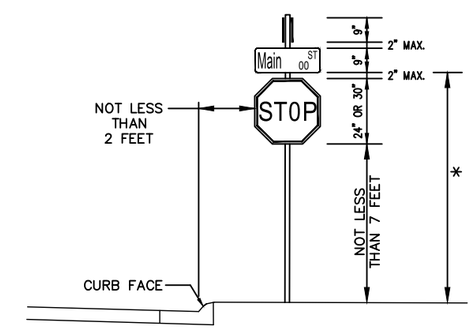
SIGN ON NOSE OF MEDIAN



STREET LIGHT/WOODEN POWER POLE MOUNT



STOP/STREET NAME SIGNS



* 10' WHEN STREET NAME SIGNS ARE MOUNTED ALONE ON POST.

HEIGHTS AND LATERAL LOCATIONS OF SIGNS FOR TYPICAL URBAN INSTALLATION

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REG. NO. 8788
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

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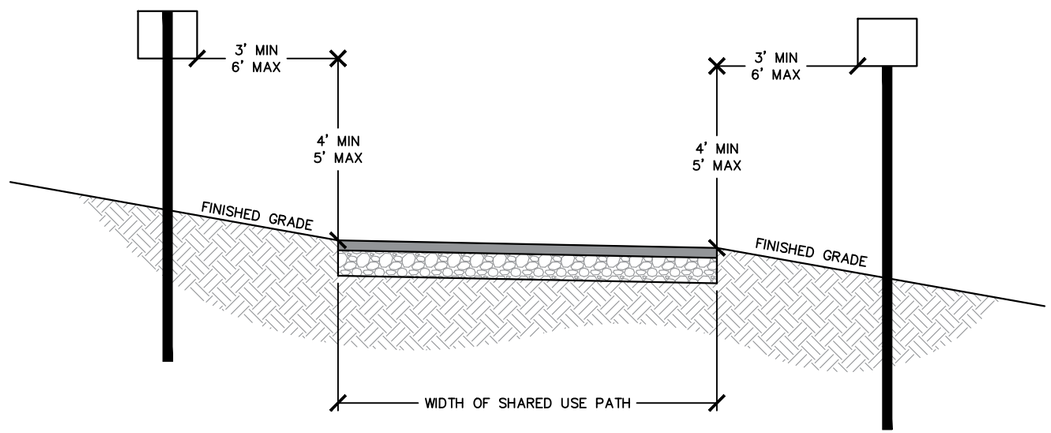
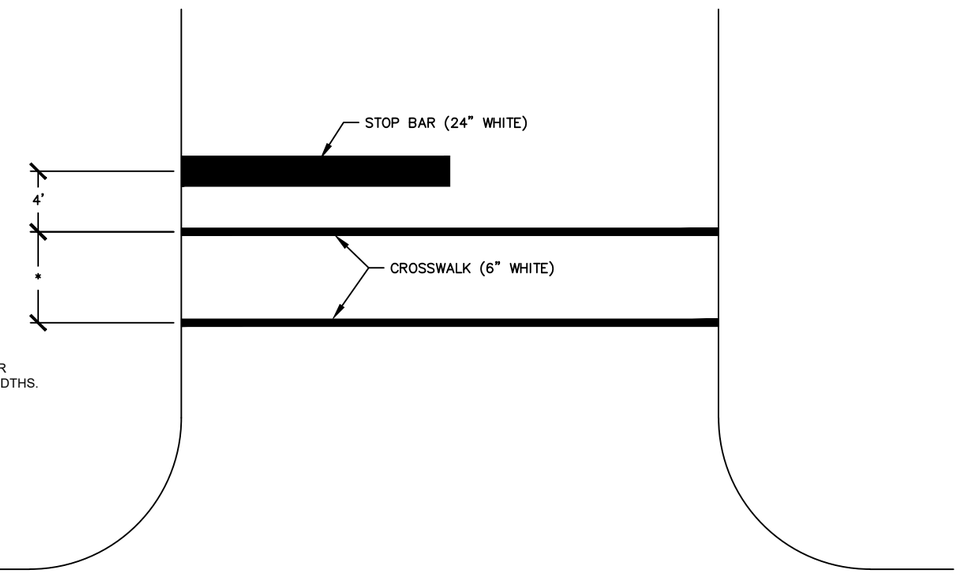
SIOUX FALLS, SD

FILE: 16165 – Details.dwg PLOTTING DATE: 2018-05-09 INITIALS: BDW REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B56	B57



TYPICAL SIGN INSTALLATION

SCALE: NONE



*SEE PLANS FOR
CROSSWALK WIDTHS.

CROSSWALK MARKING FOR INTERSECTIONS

SCALE: NONE

REGISTERED PROFESSIONAL ENGINEER
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8738
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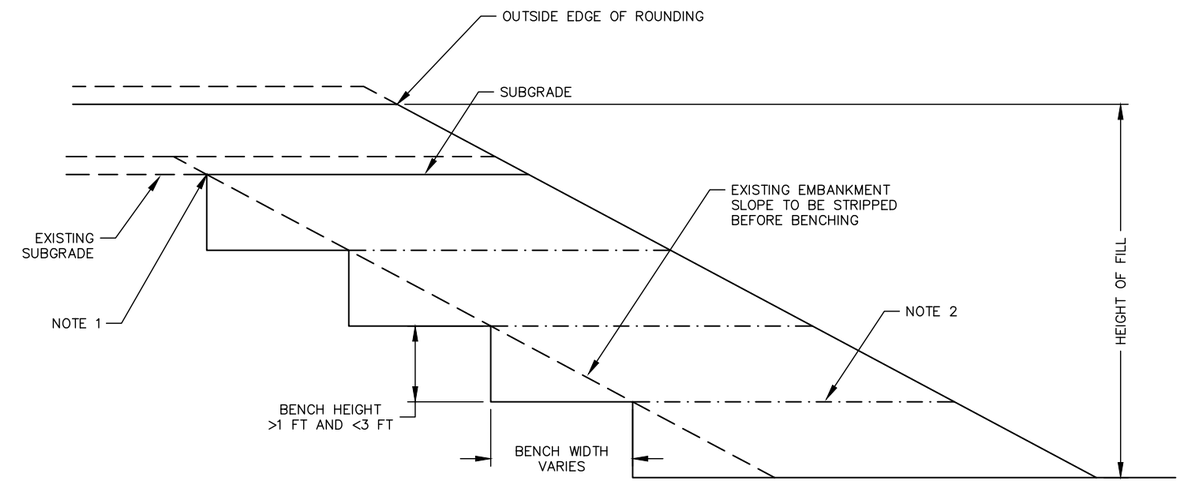
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

FILE: 16165 – Details.dwg PLOTTING DATE: 2018-05-09 INITIALS: BDW REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	B57	B57



NOTES:
1 WHEN THE SUBGRADE IS BELOW THE EXISTING OUTSIDE EDGE OF ROUNDING, BENCHING SHALL BE CARRIED OUT BELOW THE POINT WHERE THE SUBGRADE INTERSECTS THE EXISTING SLOPE.
2 BENCHES ARE TO BE EXCAVATED ONE LEVEL AT A TIME AND THE FILL PLACED AND COMPACTED BEFORE THE NEXT BENCH IS EXCAVATED.
3 BENCHING IS NOT REQUIRED ON EXISTING SLOPES FLATTER THAN 5H:1V.
4 ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN.

BENCHING OF EARTH SLOPES

SCALE: NONE

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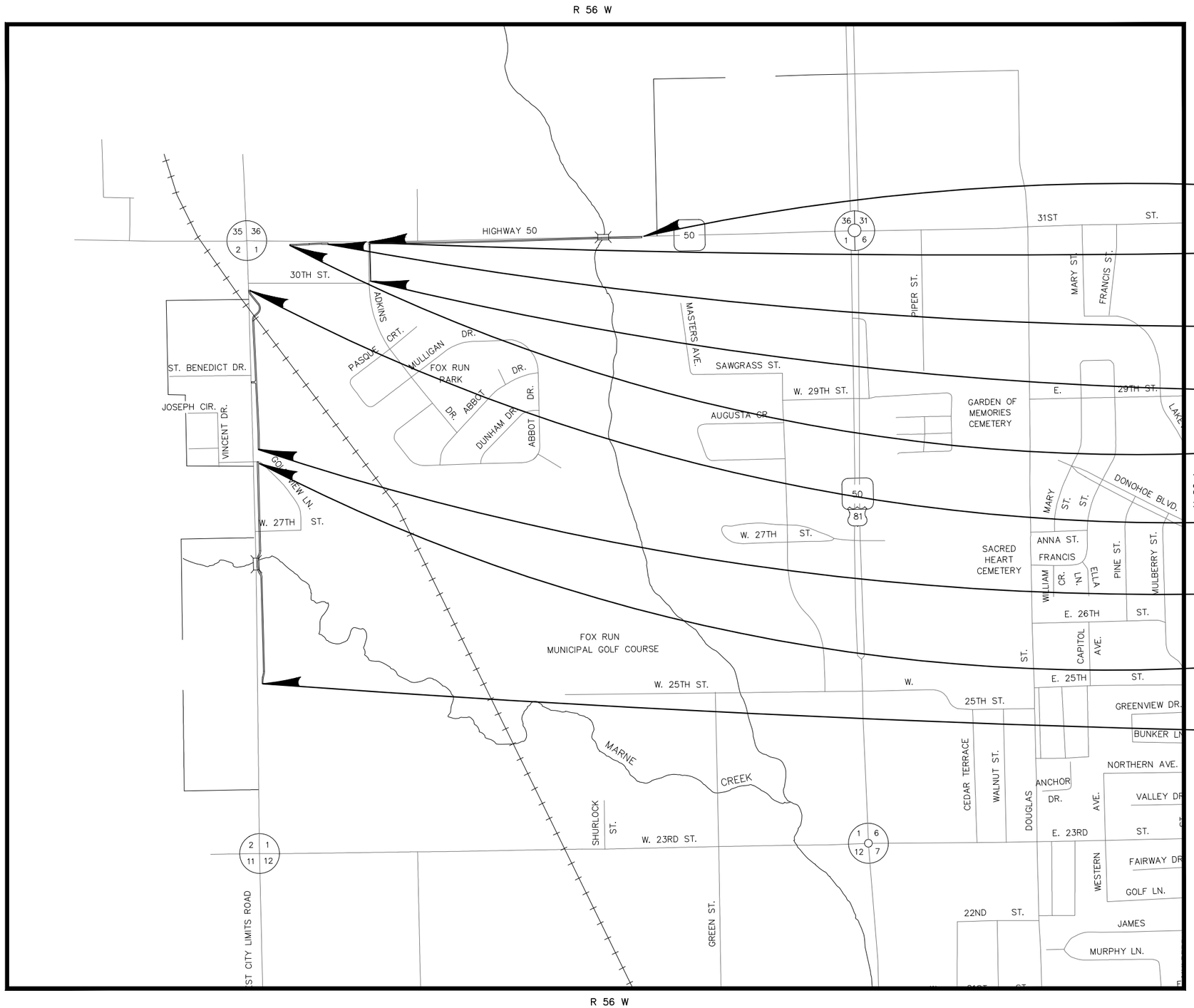
STOCKWELL ENGINEERS
SIOUX FALLS, SD

SECTION C: TRAFFIC CONTROL

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P TAPU(12)	C1	C6

FILE: 16165 – Title Page.dwg
PLOTTING DATE: 2018–05–09 INTIALS: MRS
REVISION DATE:



INDEX OF SHEETS

C1	TITLE SHEET
C2	ESTIMATE OF QUANTITIES & GENERAL NOTES
C3	TRAFFIC CONTROL SHEETS
C4 THRU C6	TRAFFIC CONTROL DETAILS

END PROJECT P TAPU(12)
STA. 424+73
EAST OF THE INTERSECTION
OF HWY 50 AND ADKINS DR

BEGIN PROJECT P TAPU(12)
STA. 400+50
STA. 503+45
AT THE INTERSECTION
OF HWY 50 AND ADKINS DR

END PROJECT P TAPU(12)
STA. 303+80
WEST OF THE INTERSECTION
OF HWY 50 AND ADKINS DR

END PROJECT P TAPU(12)
STA. 500+32
APPROX. AT THE INTERSECTION
OF ADKINS DR AND 30TH STREET

BEGIN PROJECT P TAPU(12)
STA. 300+50
EAST OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND HWY 50

END PROJECT P TAPU(12)
STA. 214+86
SOUTH OF THE INTERSECTION
OF WEST CITY LIMITS AND 30TH STREET

BEGIN PROJECT P TAPU(12)
STA. 200+50
NORTH OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND GOLF VIEW LANE

END PROJECT P TAPU(12)
STA. 119+80
SOUTH OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND 27TH STREET

BEGIN PROJECT P TAPU(12)
STA. 100+50
NORTH OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND 23RD STREET

REGISTERED PROFESSIONAL ENGINEER
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GERARD A. ROPS
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SECTION C – TRAFFIC CONTROL

REVISED/5-9-18/GAR
REVISED/6-26-18/GAR

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPU(12)	C2	C6

SECTION C ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
634E0110	Traffic Control Signs	222.3	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	7	Each
634E0420	Type C Advance Warning Arrow Board	1	Each
634E2000	Longitudinal Pedestrian Barricade	30	Ft

GENERAL MAINTENANCE OF TRAFFIC

Contractor shall not close W 30th St from West City Limits Road or Adkins Drive from Highway 50 simultaneously. Contractor shall provide access via 30th Street or Adkins Drive each day at all times.

Contractor shall not park vehicles or stage equipment along W City Limits Road without approved lane closure. If lane closures are necessary, the Contractor shall set up signage as required by the Engineer. Any lane closure signage such as, but not limited to, 42" Grabber Cones shall be incidental to the contract lump sum price for "Traffic Control, Miscellaneous."

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

		CONVENTIONAL ROAD						
SIGN CODE	SIGN DESCRIPTION	PHASE 1 QUANTITY	PHASE 2 QUANTITY	SIGN SIZE			SQFT PER SIGN	MAX REQUIRED SQFT
G20-2	END ROAD WORK	2	2	48"	x	48"	16.0	32.0
R1-1	STOP	1	1	30"	x	30"	6.3	6.3
R3-2	NO LEFT TURN	1	1	24"	x	24"	4.0	4.0
R9-9	SIDEWALK CLOSED	2	2	30"	x	18"	3.8	7.6
R11-2	ROAD CLOSED	2	2	48"	x	30"	10.0	20.0
R11-4	ROAD CLOSED TO THRU TRAFFIC	1	1	60"	x	30"	12.5	12.5
W1-4L	REVERSE CURVE LEFT	1	1	30"	x	30"	6.3	6.3
W1-4R	REVERSE CURVE RIGHT	1	1	30"	x	30"	6.3	6.3
W4-2R	LANE ENDS RIGHT	1	1	30"	x	30"	6.3	6.3
W9-3	CENTER LANE CLOSED AHEAD	1	1	36"	x	36"	9.0	9.0
W20-1	ROAD WORK AHEAD	3	3	48"	x	48"	16.0	48.0
W20-5	RIGHT LANE CLOSED AHEAD	1	1	48"	x	48"	16.0	16.0
W21-5	SHOULDER WORK	3	3	48"	x	48"	16.0	48.0
							TOTAL:	222.3

TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Double Sided	7 Each

REGISTERED PROFESSIONAL ENGINEER
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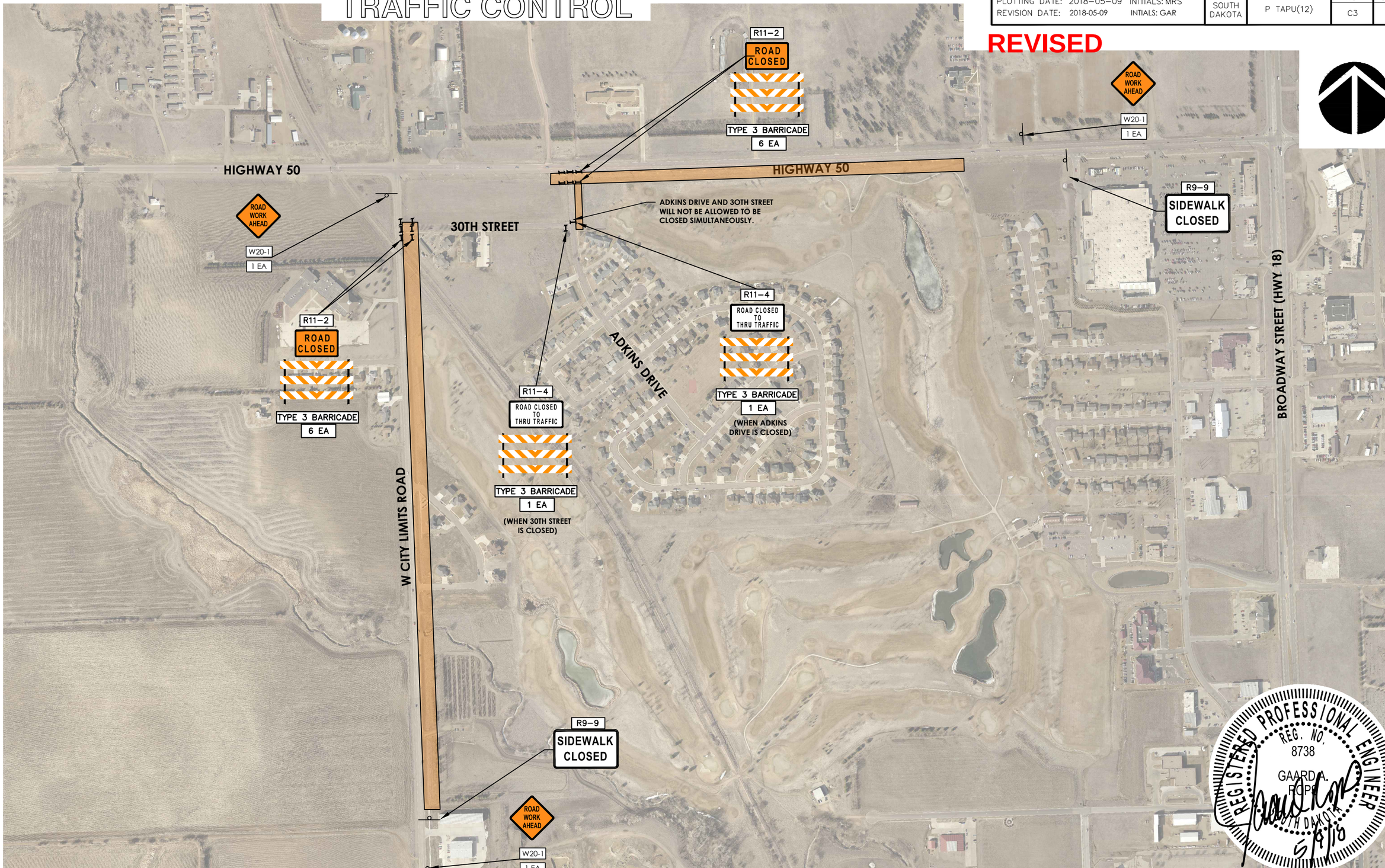
SOUTH DAKOTA
2/26/18

TRAFFIC CONTROL

FILE: 16165 – Traffic.dwg		STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
PLOTTING DATE: 2018–05–09	INITIALS: MRS		P TAPU(12)	C3	C6
REVISION DATE: 2018-05-09	INTIALS: GAR				

REVISED



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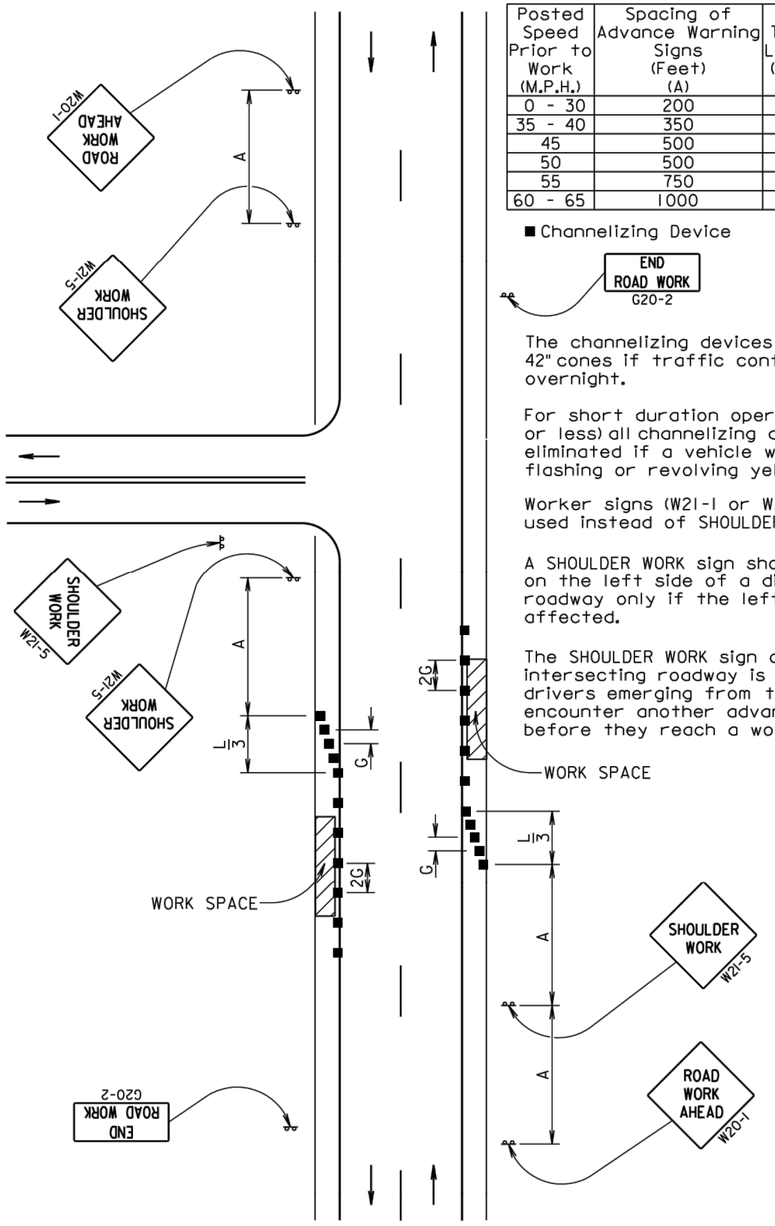
SIOUX FALLS, SD



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45	500	600	25
50	500	600	50
55	750	660	50
60 - 65	1000	780	50

■ Channelizing Device

END ROAD WORK
G20-2

The channelizing devices shall be drums or 42" cones if traffic control must remain overnight.

For short duration operations (1 hour or less) all channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

June 3, 2016

Published Date: 4th Qtr. 2017	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES WORK ON SHOULDERS	PLATE NUMBER 634.03 Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45	500	600	25
50	500	600	50 ✱
55	750	660	50 ✱
60 - 65	1000	780	50 ✱

✱ Spacing is 40' for 42" cones.

◎ Reflectorized Drum

■ Channelizing Device

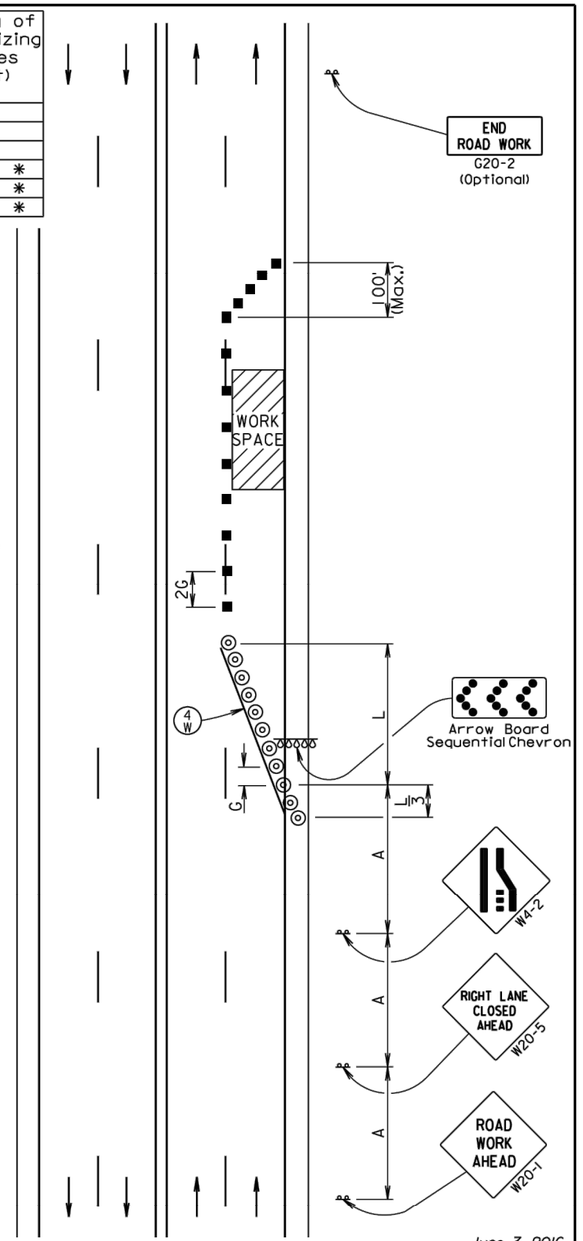
(4 W) 4" White Temporary Pavement Marking

The channelizing devices shall be 42" cones or drums.

42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

Temporary pavement markings shall be used if traffic control must remain overnight.

The length of A and L may be adjusted to fit field conditions.



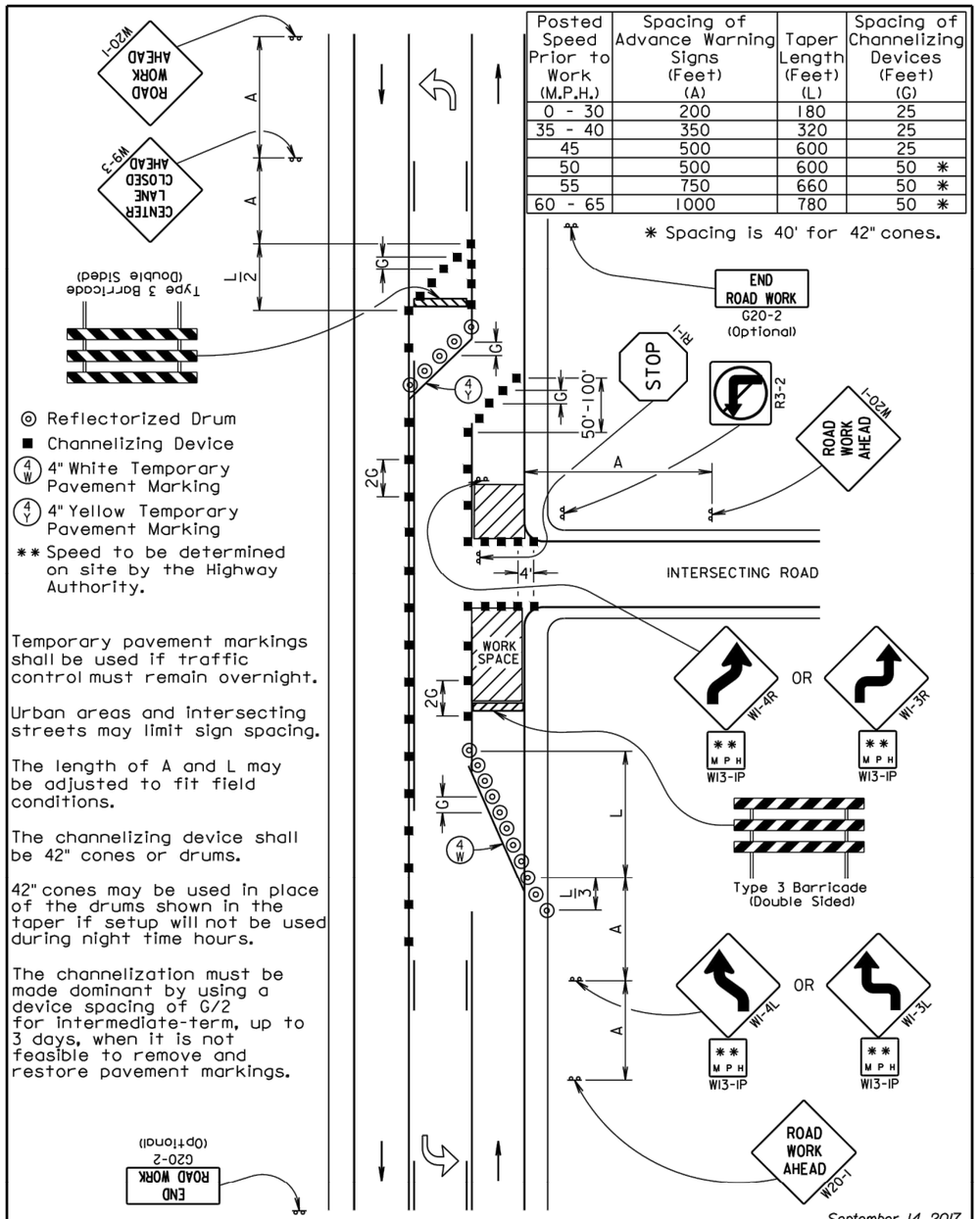
June 3, 2016

Published Date: 4th Qtr. 2017	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES 4-LANE UNDIVIDED, RIGHT LANE CLOSED	PLATE NUMBER 634.47 Sheet 1 of 1

FILE: 16165 – Details.dwg PLOTTING DATE: 2018-05-09 INITIALS: BDW REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	C5	C6

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45	500	600	25
50	500	600	50 *
55	750	660	50 *
60 - 65	1000	780	50 *

* Spacing is 40' for 42" cones.



- ◎ Reflectorized Drum
- ■ Channelizing Device
- (4 W) 4" White Temporary Pavement Marking
- (4 Y) 4" Yellow Temporary Pavement Marking
- ** Speed to be determined on site by the Highway Authority.

Temporary pavement markings shall be used if traffic control must remain overnight.

Urban areas and intersecting streets may limit sign spacing.

The length of A and L may be adjusted to fit field conditions.

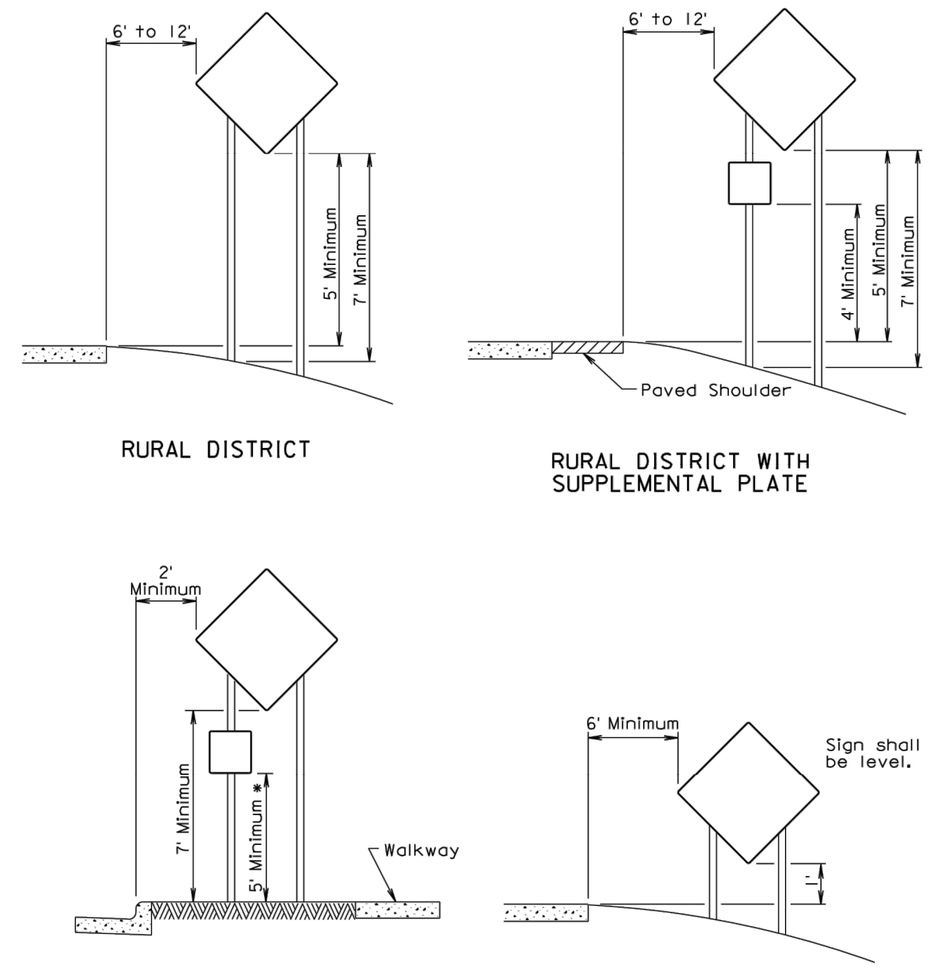
The channelizing device shall be 42" cones or drums.

42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

The channelization must be made dominant by using a device spacing of G/2 for intermediate-term, up to 3 days, when it is not feasible to remove and restore pavement markings.

September 14, 2017

Published Date: 4th Qtr. 2017	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES 3-LANE, OUTSIDE LANE CLOSED	PLATE NUMBER 634.53 Sheet 1 of 1



* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

September 22, 2014

Published Date: 4th Qtr. 2017	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85 Sheet 1 of 1

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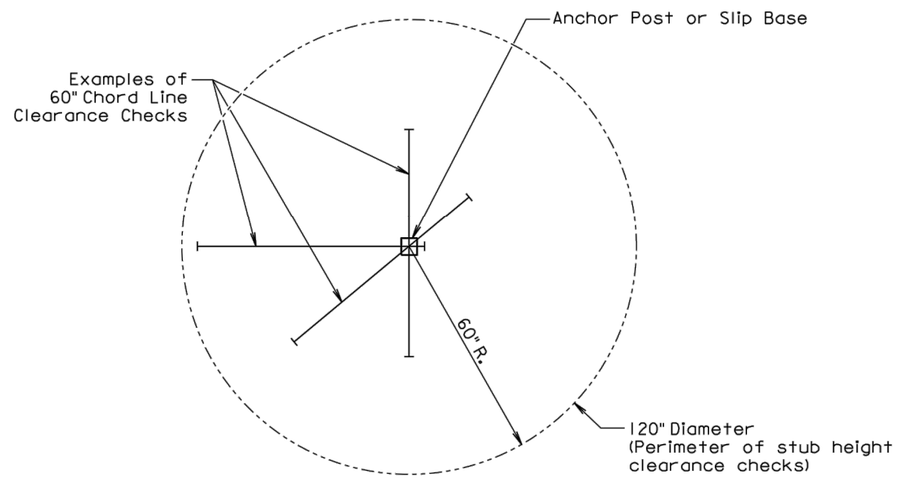
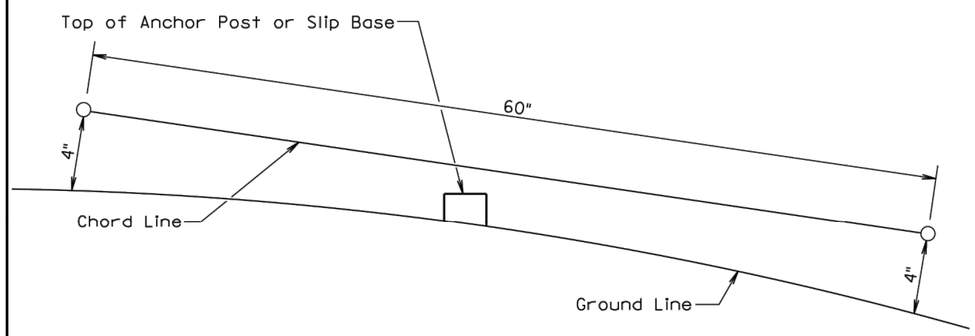
FILE: 16165 – Details.dwg PLOTTING DATE: 2018-05-09 INITIALS: BDW REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	C6	C6



PLAN VIEW

(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

Published Date: 4th Qtr. 2017	SDDOT	***BREAKAWAY SUPPORT STUB CLEARANCE***	***PLATE NUMBER*** *634.99* *Sheet 1 of 1*

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SIOUX FALLS, SD

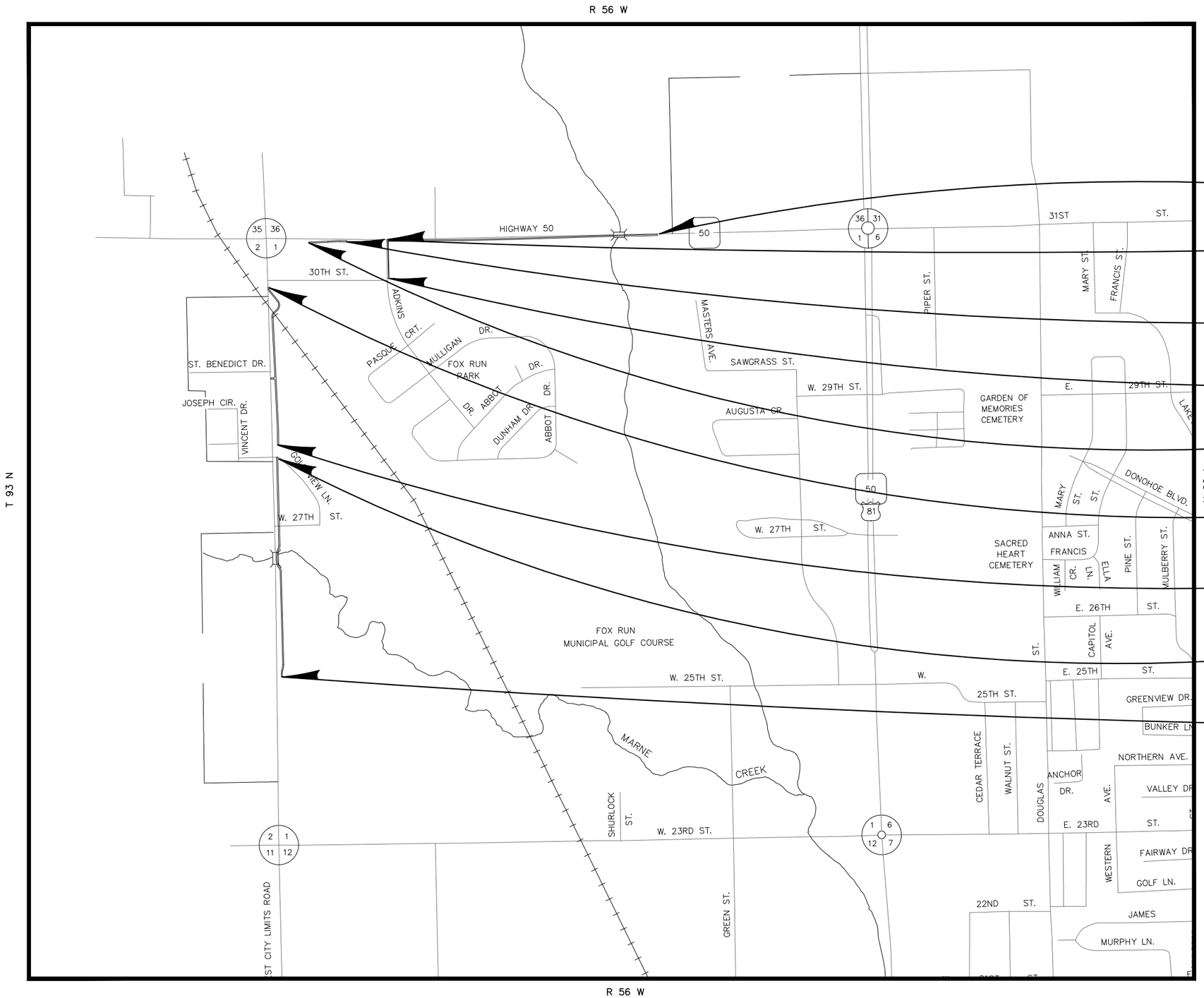
SECTION D: EROSION CONTROL

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P TAPU(12)	D1	D18

FILE: 16165 – Title Page.dwg
PLOTTING DATE: 2018–05–09 INTIALS: MRS
REVISION DATE:

INDEX OF SHEETS

D1	TITLE SHEET
D2 THRU D3	ESTIMATE OF QUANTITIES & GENERAL NOTES
D4 THRU D6	STORM WATER POLLUTION PREVENTION PLAN CHECKLIST
D7 THRU D15	EROSION CONTROL SHEETS
D16 THRU D18	STANDARD PLATES



END PROJECT P TAPU(12)
STA. 424+73
EAST OF THE INTERSECTION
OF HWY 50 AND ADKINS DR

BEGIN PROJECT P TAPU(12)
STA. 400+50
STA. 503+45
AT THE INTERSECTION
OF HWY 50 AND ADKINS DR

END PROJECT P TAPU(12)
STA. 303+80
WEST OF THE INTERSECTION
OF HWY 50 AND ADKINS DR

END PROJECT P TAPU(12)
STA. 500+32
APPROX. AT THE INTERSECTION
OF ADKINS DR AND 30TH STREET

BEGIN PROJECT P TAPU(12)
STA. 300+50
EAST OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND HWY 50

END PROJECT P TAPU(12)
STA. 214+86
SOUTH OF THE INTERSECTION
OF WEST CITY LIMITS AND 30TH STREET

BEGIN PROJECT P TAPU(12)
STA. 200+50
NORTH OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND GOLF VIEW LANE

END PROJECT P TAPU(12)
STA. 119+80
SOUTH OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND 27TH STREET

BEGIN PROJECT P TAPU(12)
STA. 100+50
NORTH OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND 23RD STREET

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SECTION D – EROSION AND SEDIMENT CONTROL

REVISED/5-17-18/GAR

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPU(12)	D2	D18

SECTION D ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E1693	Remove Erosion Control Wattle	170	Ft
110E1700	Remove Silt Fence	269	Ft
230E0010	Placing Topsoil	6005	CuYd
700E0210	Class B Riprap	145	Ton
730E0206	Type D Permanent Seed Mixture	1755	Lb
731E0100	Fertilizing	8634	Lb
732E0200	Fiber Mulching	8.6	Ton
734E0151	9" Diameter Erosion Control Wattle	170	Ft
734E0602	Low Flow Silt Fence	269	Ft
734E0610	Mucking Silt Fence	19	CuYd
734E0620	Repair Silt Fence	68	Ft
734E0845	Sediment Control At Inlet with Frame & Grate	9	Each
734E5010	Sweeping	10	Hour
831E0110	Type B Drainage Fabric	155	
900E1310	Concrete Washout Facility	1	Each

PLACING TOPSOIL

The thickness will be approximately 6 inches in all areas. All stripped and stockpiled topsoil will be placed along the project. The minimum locations of stripped topsoil have been indicated in the plans.

SHRINKAGE FACTOR: Embankment +30% (Assumed)

MYCORRHIZAL INOCULUM

Mycorrhizal inoculum shall consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier shall provide certification of the fungal species claimed and the live propagule count. The inoculum shall include the following fungal species:

Glomus intraradices 25%
Glomus aggregatu 25%
Glomus mosseae 25%
Glomus etunicatum 25%

All seed shall be inoculated by the seed supplier with a minimum of 20,000 live propagules of mycorrhizal fungi per 1,000 square feet. All costs of inoculating the seed shall be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

The mycorrhizal inoculum shall be as shown below or an approved equal:

Product	Manufacturer
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 http://www.mycorrhizae.com/

FERTILIZING

A commercial fertilizer with a minimum guaranteed analysis of 13-13-13, 18-46-0, 11-52-0, or an approved alternate fertilizer sold for use as a lawn starter fertilizer shall be applied to all areas designated for permanent seeding. The application rate of fertilizer shall be **1500 pounds per acre**.

PERMANENT SEEDING

The areas to be seeded consist of all newly graded areas within the project limits except for the top of roadways and sidewalk.

Type D Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/1000 SqFt)
Kentucky Bluegrass	Avalanche, Appalachian, Wildhorse, Blue Bonnet	1.4
Perennial Ryegrass	Turf Type Varieties	1.4
Creeping Red Fescue	Epic, Boreal	1.4
Chewings Fescue	Ambrose, K2, VNS, Zodiac	1.4
Alkali Grass	Fults, Fults II, Quill, Salty	1.4
	Total:	**7 lb/1000 SqFt**

FIBER MULCHING

Fiber mulch shall be applied in a separate operation following permanent seeding.

An additional 2% by weight of tackifier shall be added to the fiber mulch product selected from the approved product list. If the product selected has guar gum tackifier included, then the additional 2% of tackifier shall be guar gum. If the product selected has synthetic tackifier included, then the additional 2% of tackifier shall be synthetic.

Fiber mulch shall be applied at the rate of **3000 pounds per acre**.

The Contractor shall allow the fiber mulch to cure a minimum of 18 hours prior to watering or any storm event to ensure proper cohesion between the soil and fiber particles.

All costs for the additional tackifier added to the fiber mulch including labor, equipment, and materials shall be incidental to the contract unit price per ton for "Fiber Mulching".

The fiber mulch provided shall be from the approved product list. The approved product list for fiber mulch may be viewed at the following internet site:

http://sddot.com/business/certification/products/Default.aspx

TABLE OF FIBER MULCHING

Station to	Station	Quantity (Lb)
100+00	105+00	1239
105+00	110+00	1659
110+00	115+00	1011
115+00	120+00	1176
200+00	205+00	1445
205+00	210+00	1617
210+00	215+00	1494
300+00	304+31	672
400+00	405+00	1108
405+00	410+00	1627
410+00	415+00	1244
415+00	420+00	842
420+00	425+00	1805
500+00	504+00	328
	Total:	**17,267 Lb**

LOW FLOW SILT FENCE

The low flow silt fence fabric provided shall be from the approved product list. The approved product list for low flow silt fence may be viewed at the following internet site:
http://sddot.com/business/certification/products/Default.aspx

Low flow silt fence shall be placed at the locations noted in the table and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.04 for details.

REGISTERED PROFESSIONAL ENGINEER
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5/17/18

TABLE OF LOW FLOW SILT FENCE

Station	LT/RT	Location	Quantity (Ft)
110+14	RT	ROW	85
111+19	RT	ROW	83
420+50	RT	Flowline of Ditch	20
421+00	RT	Flowline of Ditch	20
420+70	RT	Inlet of Pipe	35
500+75	RT	Inlet of Pipe	26
		Total:	**269 Ft**

REMOVE SILT FENCE

Silt fencing shall remain on the project until vegetation has been established and then they shall be removed in accordance with the Engineer.

All cost associated with the removal of silt fence shall be paid for on a linear foot basis under the bid item "Remove Silt Fence".

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment shall be installed at locations noted in the table and at locations determined by the Engineer during construction. Refer to Standard Plate 734.06 for details.

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

The erosion control wattle provided shall be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

http://sddot.com/business/certification/products/Default.aspx

TABLE OF EROSION CONTROL WATTLE

Station	LT/RT	Diameter (Inch)	Location	Quantity (Ft)
105+07	LT	9"	Inlet of Pipe	10
105+09	LT	9"	Inlet of Pipe	10
109+95	LT	9"	Inlet of Pipe	10
111+98	LT	9"	Inlet of Pipe	10
112+58	LT	9"	Inlet of Pipe	10
114+42	LT	9"	Inlet of Pipe	10
206+55	LT	9"	Inlet of Pipe	10
212+58	LT	9"	Inlet of Pipe	10
401+60	RT	9"	Flowline of Ditch	10
404+58	RT	9"	Outlet of Pipe	10
407+74	RT	9"	Outlet of Pipe	10
410+38	RT	9"	Outlet of Pipe	10
419+50	RT	9"	Flowline of Ditch	10
420+00	RT	9"	Flowline of Ditch	10
421+50	RT	9"	Flowline of Ditch	10
422+00	RT	9"	Flowline of Ditch	10
422+50	RT	9"	Flowline of Ditch	10
			Total:	**170 Ft**

REMOVE EROSION CONTROL WATTLE

Erosion control wattles shall remain on the project until vegetation has been established and then they shall be removed in accordance with the Engineer.

All cost associated with the removal of the erosion control wattles shall be paid for at the contract unit price per foot for "Remove Erosion Control Wattle".

STREET SWEEPING

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.
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.

At a minimum, sweeping will be required:
1. Prior to opening any segment or roadway to traffic.
2. At the end of each work day if necessary.

All costs for cleaning the roadway with a pickup broom shall be incidental to the contract unit price per hour for "Sweeping".

SEDIMENT CONTROL AT INLETS WITH FRAMES AND GRATES

This type of sediment control device should be used storm water or sediment could possibly enter the frame and grate. Sediment Control at Inlet with Frame and Grate shall be installed prior to working in the vicinity of the drop inlets. The Contractor shall be responsible for maintaining and repairing the sediment control devices for the duration of the project for which sediment control measures are required. Maintenance shall be scheduled to prevent storm water from backing up into the driving lane.

"Sediment Control at Inlet with Frame and Grate" will be paid for one time at each location, regardless of the number of times the sediment control devices are installed, inspected, cleaned, removed, repaired, or replaced. All costs associated with furnishing, installing, inspecting, maintaining, cleaning, sediment removal, and repairing Sediment Control at Inlet with Frame and Grate shall be incidental to the contract unit price per each for "Sediment Control at Inlet with Frame and Grate".

Sediment collection devices shall be:
A sediment control device as shown on Standard Plate 734.10. Filter fabric used for constructing the sediment control at inlets with frames and grates shall be the same type of fabric that is used in high flow silt fence from the approved product list. The approved product list may be viewed at the following internet site:

TABLE OF SEDIMENT CONTROL AT INLETS WITH FRAMES AND GRATES

Station	LT/RT	Quantity (Each)
300+55	LT	1
304+07	LT	1
401+42	LT	1
404+58	LT	1
407+75	LT	1
410+38	LT	1
417+60	LT	1
421+16	LT	1
500+98	LT	1
	Total:	**9 Each**

TABLE OF RIP-RAP

Station	LT/RT	Quantity Ton
401+52	RT	25
420+74	RT	120
	Total	145

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

SECTION D – EROSION AND SEDIMENT CONTROL

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPU(12)	D4	D18

STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

*(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 Title Sheet (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** 6.2 Acres **(4.2 1.b.)**
- **Total Area To Be Disturbed** 5.75 Acres **(4.2 1.b.)**
- **Existing Vegetative Cover (%)** 95
- **Soil Properties:** AASHTO Soil Classification A-6 **(4.2 1. d.)**
- **Name of Receiving Water Body/Bodies** Marne Creek & Missouri River **(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 exits the site.**
- **Clearing and grubbing.**
- **Remove and store topsoil.**
- **Install storm sewer.**
- **Install 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:
- **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 in order 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 ½ 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 on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
  - The SDDOT Project Engineer and contractor's site superintendent are responsible for inspections. Maintenance, repair activities are the responsibility of the contractor. The SDDOT Project Engineer will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

NON-STORM WATER DISCHARGES (3.0)

The following non-storm water discharges are anticipated during the course of 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.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPA
SOUTH DAKOTA
5/9/16

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, de-greasing 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 by the SDDOT. 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.
  - Paints
    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 SDDOT Project Engineer will modify the SWPPP plan (DOT 298) and drawings to reflect the needed changes. Copies of changes will be routed per DOT 298. 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.

- **South Dakota Department of Transportation**

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

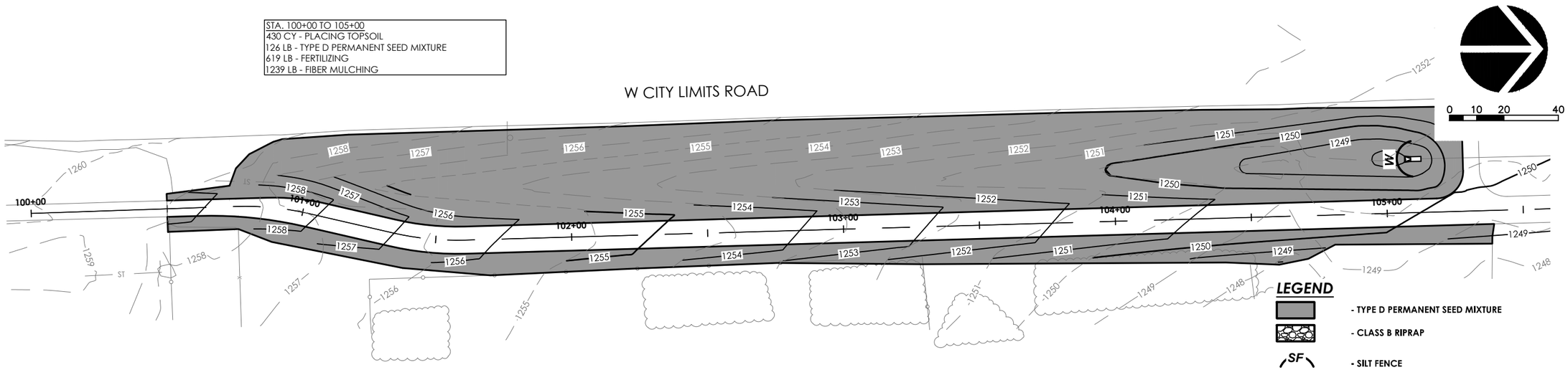
- **Contractor Information**:
  - Prime Contractor Name: _____
  - Contractor Contact Name: _____
  - Address: _____
  - _____
  - City: _____State: _____Zip: _____
  - Office Phone: _____Field: _____
  - Cell Phone: _____Fax: _____
- **Erosion Control Supervisor**
  - Name: _____
  - Address: _____
  - _____
  - City: _____State: _____Zip: _____
  - Office Phone: _____Field: _____
  - Cell Phone: _____Fax: _____
- **SDDOT Project Engineer**
  - Name: _____
  - Business Address: _____
  - Job Office Location: _____
  - City: _____State: _____Zip: _____
  - Office Phone: _____Field: _____
  - Cell Phone: _____Fax: _____
- **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.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROAS
SOUTH DAKOTA
5/9/18

EROSION CONTROL

FILE: 16165 – Erosion.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	D7	D18

STA. 100+00 TO 105+00
430 CY - PLACING TOPSOIL
126 LB - TYPE D PERMANENT SEED MIXTURE
619 LB - FERTILIZING
1239 LB - FIBER MULCHING

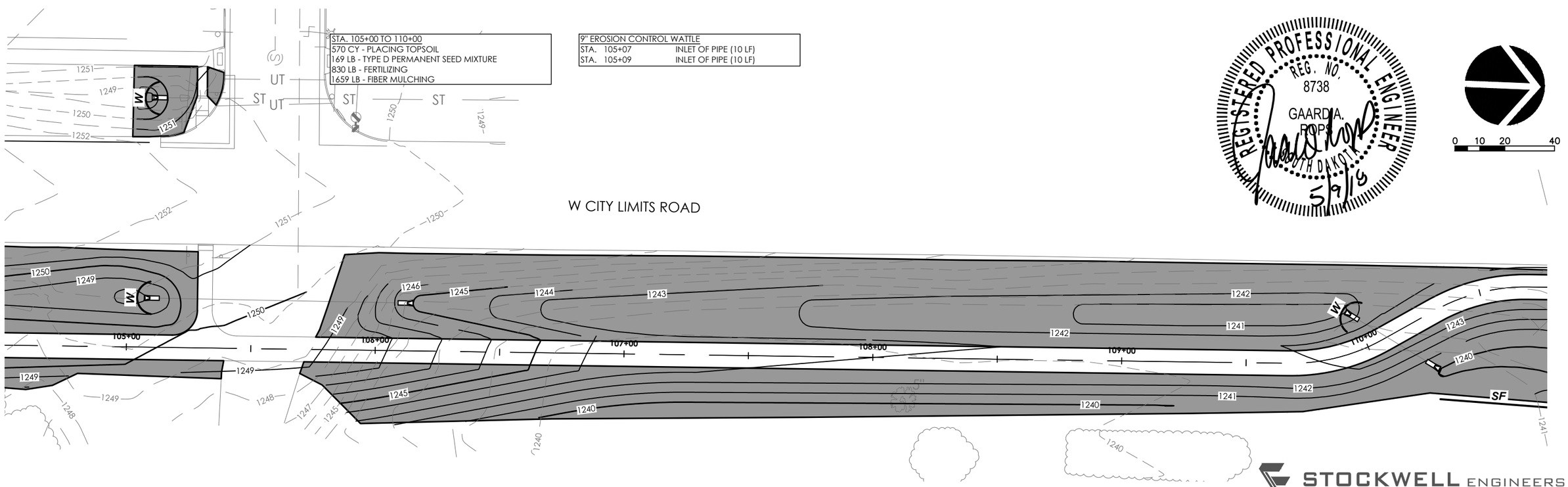


LEGEND

- TYPE D PERMANENT SEED MIXTURE
- CLASS B RIPRAP
- SF — SILT FENCE
- W — SEDIMENT CONTROL WATTLE
- SEDIMENT CONTROL AT INLET WITH FRAME & GRATE
- CWF — CONCRETE WASHOUT FACILITY
- 1255 — EXISTING CONTOUR
- 1255 — PROPOSED CONTOUR

STA. 105+00 TO 110+00
570 CY - PLACING TOPSOIL
169 LB - TYPE D PERMANENT SEED MIXTURE
830 LB - FERTILIZING
1659 LB - FIBER MULCHING

9" EROSION CONTROL WATTLE
STA. 105+07 INLET OF PIPE (10 LF)
STA. 105+09 INLET OF PIPE (10 LF)



REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARDIA, ROPS
SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

EROSION CONTROL

FILE: 16165 – Erosion.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	D8	D18

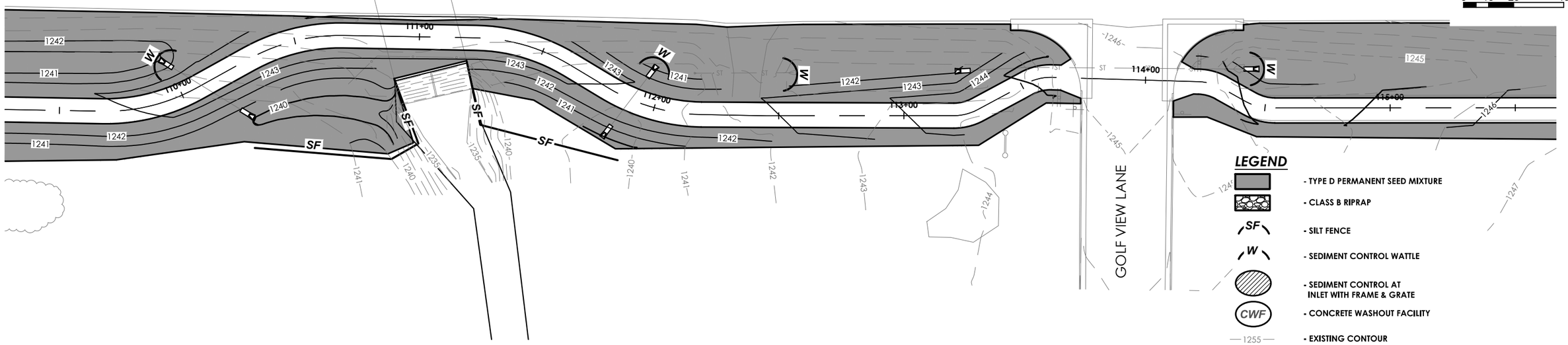
STA. 110+00 TO 115+00
350 CY - PLACING TOPSOIL
103 LB - TYPE D PERMANENT SEED MIXTURE
505 LB - FERTILIZING
1011 LB - FIBER MULCHING

9" EROSION CONTROL WATTLE	
STA. 109+95	INLET OF PIPE (10 LF)
STA. 111+98	INLET OF PIPE (10 LF)
STA. 112+58	INLET OF PIPE (10 LF)
STA. 114+42	INLET OF PIPE (10 LF)

LOW FLOW SILT FENCE	
STA. 110+14	ROW (85 LF)
STA. 111+19	ROW (83 LF)

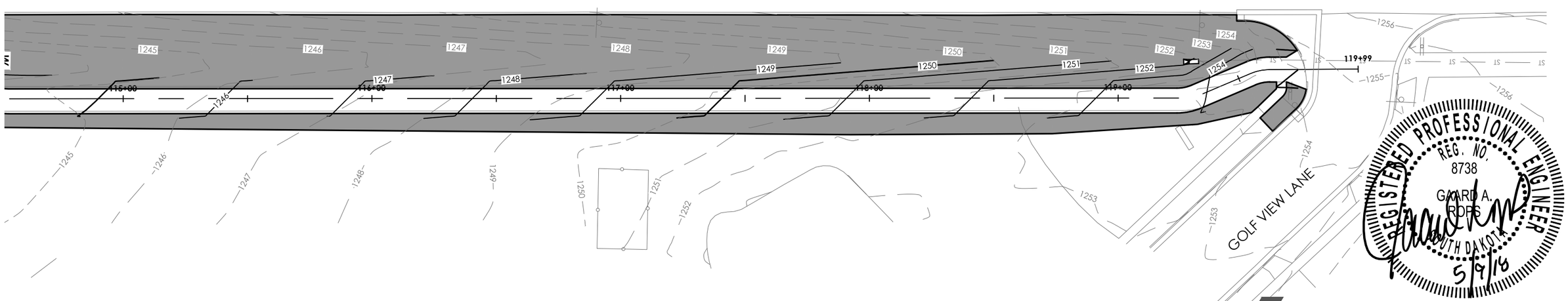
0 10 20 40

W CITY LIMITS ROAD



STA. 115+00 TO 120+00
410 CY - PLACING TOPSOIL
120 LB - TYPE D PERMANENT SEED MIXTURE
588 LB - FERTILIZING
1176 LB - FIBER MULCHING

W CITY LIMITS ROAD



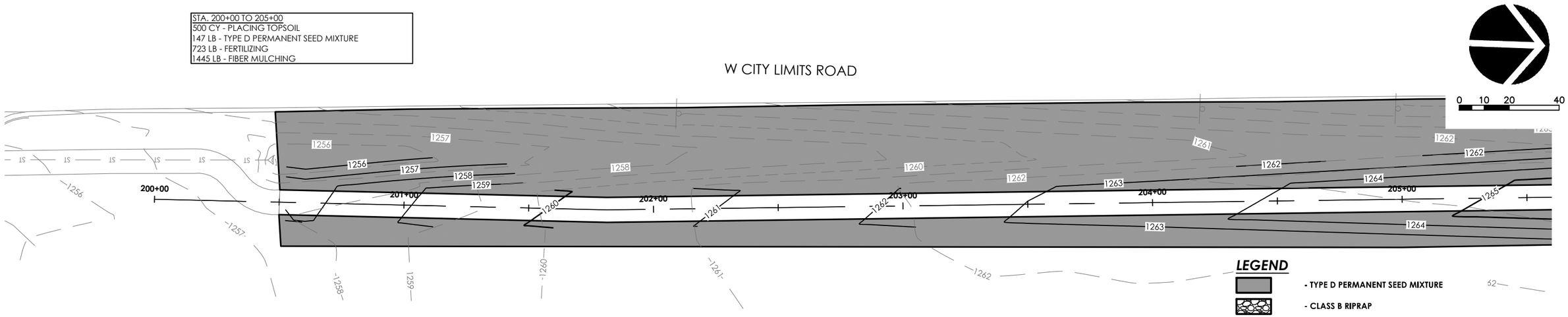
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROBS
SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

EROSION CONTROL

FILE: 16165 – Erosion.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	D9	D18

STA. 200+00 TO 205+00
500 CY - PLACING TOPSOIL
147 LB - TYPE D PERMANENT SEED MIXTURE
723 LB - FERTILIZING
1445 LB - FIBER MULCHING

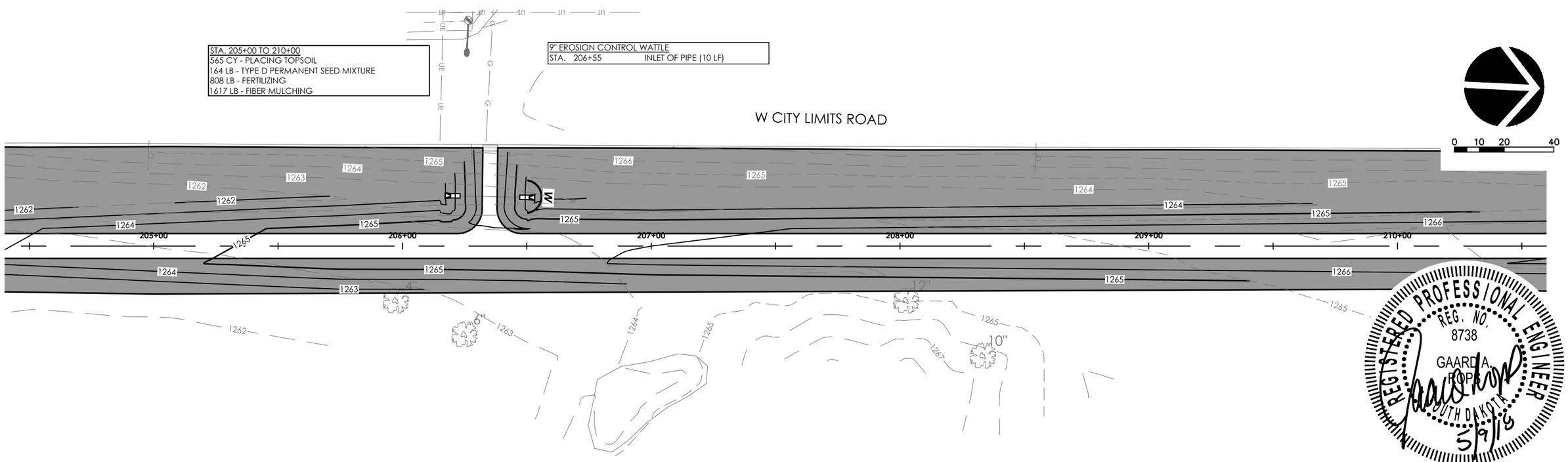


LEGEND

- TYPE D PERMANENT SEED MIXTURE
- CLASS B RIPRAP
- SF — SILT FENCE
- W — SEDIMENT CONTROL WATTLE
- SEDIMENT CONTROL AT INLET WITH FRAME & GRATE
- CWF — CONCRETE WASHOUT FACILITY
- 1255 — EXISTING CONTOUR
- 1255 — PROPOSED CONTOUR

STA. 205+00 TO 210+00
565 CY - PLACING TOPSOIL
164 LB - TYPE D PERMANENT SEED MIXTURE
808 LB - FERTILIZING
1617 LB - FIBER MULCHING

9" EROSION CONTROL WATTLE
STA. 206+55 INLET OF PIPE (10 LF)



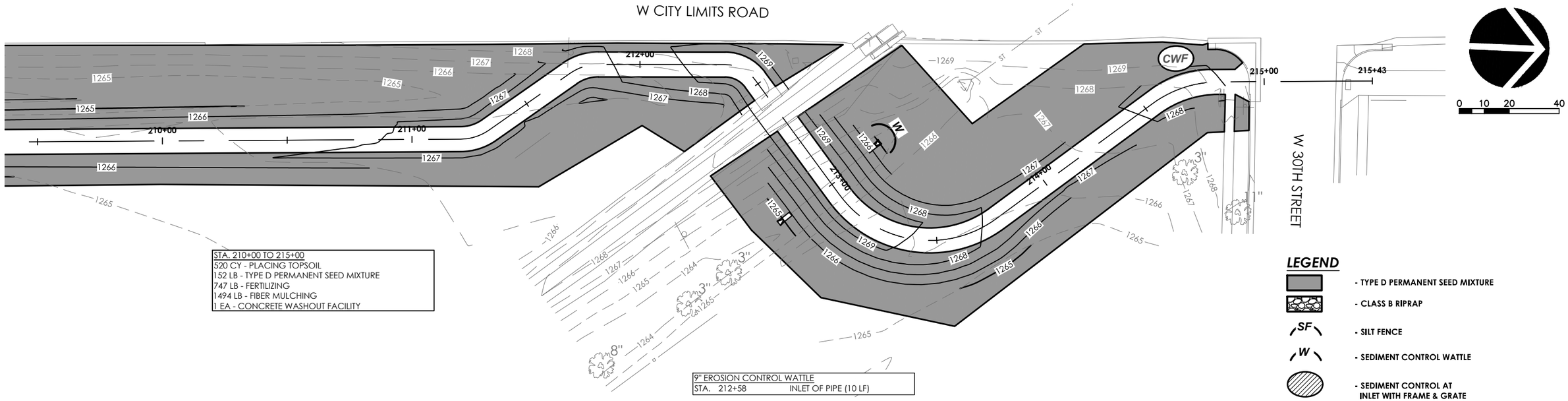
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARDA, ROPER
SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

EROSION CONTROL

FILE: 16165 – Erosion.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	D10	D18

W CITY LIMITS ROAD



STA. 210+00 TO 215+00
520 CY - PLACING TOPSOIL
152 LB - TYPE D PERMANENT SEED MIXTURE
747 LB - FERTILIZING
1494 LB - FIBER MULCHING
1 EA - CONCRETE WASHOUT FACILITY

9" EROSION CONTROL WATTLE
STA. 212+58 INLET OF PIPE (10 LF)

LEGEND

- TYPE D PERMANENT SEED MIXTURE
- CLASS B RIPRAP
- SILT FENCE
- SEDIMENT CONTROL WATTLE
- SEDIMENT CONTROL AT INLET WITH FRAME & GRATE
- CONCRETE WASHOUT FACILITY
- 1255 - EXISTING CONTOUR
- 1255 - PROPOSED CONTOUR

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

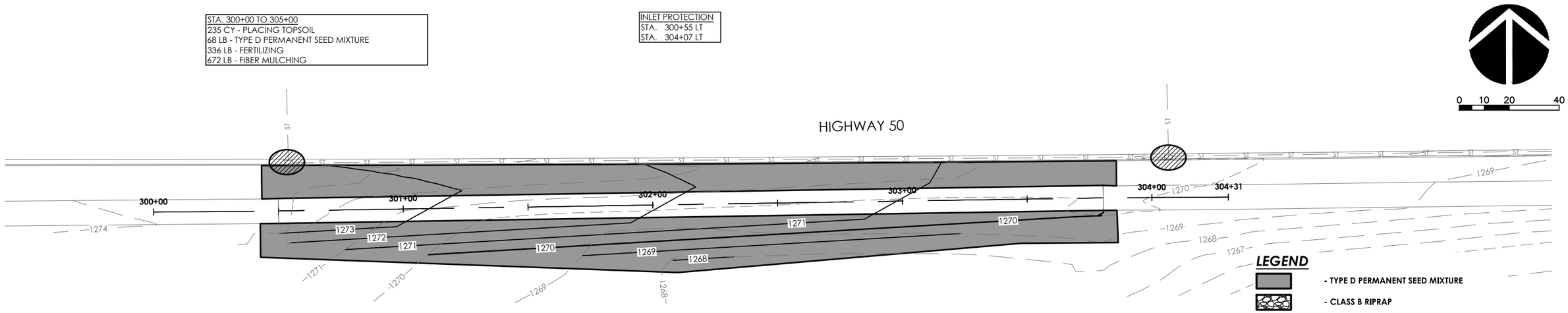
STOCKWELL ENGINEERS
SIOUX FALLS, SD

EROSION CONTROL

FILE: 16165 – Erosion.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	D11	D18

STA. 300+00 TO 305+00
235 CY - PLACING TOPSOIL
68 LB - TYPE D PERMANENT SEED MIXTURE
336 LB - FERTILIZING
672 LB - FIBER MULCHING

INLET PROTECTION
STA. 300+55 LT
STA. 304+07 LT



LEGEND

- TYPE D PERMANENT SEED MIXTURE
- CLASS B RIPRAP
- SF - SILT FENCE
- W - SEDIMENT CONTROL WATTLE
- SEDIMENT CONTROL AT INLET WITH FRAME & GRATE
- CWF - CONCRETE WASHOUT FACILITY
- 1255 - EXISTING CONTOUR
- 1255 - PROPOSED CONTOUR

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROOPS
SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

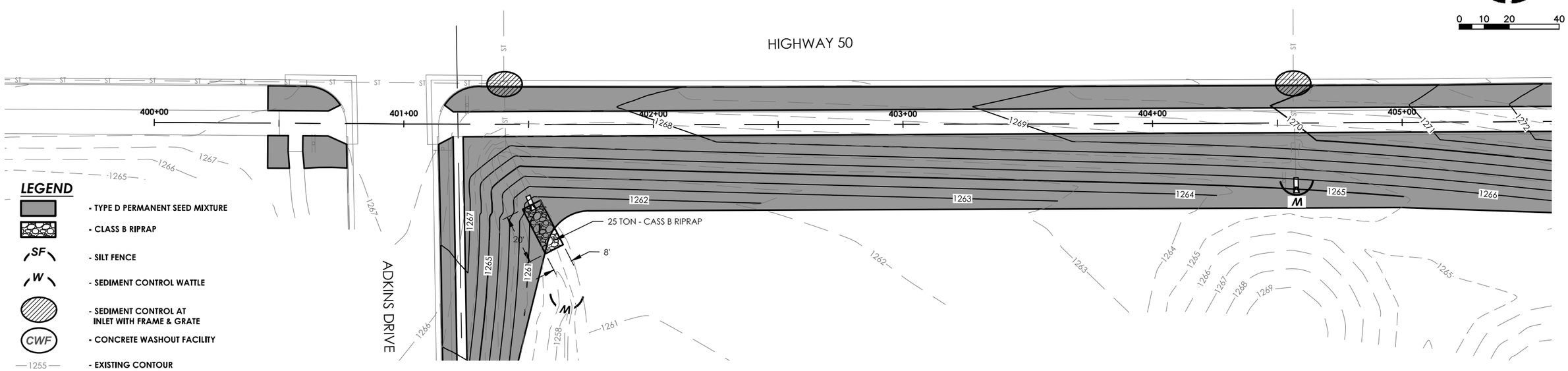
EROSION CONTROL

FILE: 16165 – Erosion.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	D12	D18

STA. 400+00 TO 405+00
385 CY - PLACING TOPSOIL
113 LB - TYPE D PERMANENT SEED MIXTURE
554 LB - FERTILIZING
1108 LB - FIBER MULCHING
25 TONS - CLASS B RIPRAP
30 SQYD - TYPE B DRAINAGE FABRIC

9" EROSION CONTROL WATTLE
STA. 401+60 FLOW LINE OF DITCH (10 LF)
STA. 404+58 OUTLET OF PIPE (10 LF)

INLET PROTECTION
STA. 401+42 LT
STA. 404+58 LT



STA. 405+00 TO 410+00
570 CY - PLACING TOPSOIL
165 LB - TYPE D PERMANENT SEED MIXTURE
814 LB - FERTILIZING
1627 LB - FIBER MULCHING

9" EROSION CONTROL WATTLE
STA. 407+74 OUTLET OF PIPE (10 LF)

INLET PROTECTION
STA. 407+75 LT

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REG. NO. 8738
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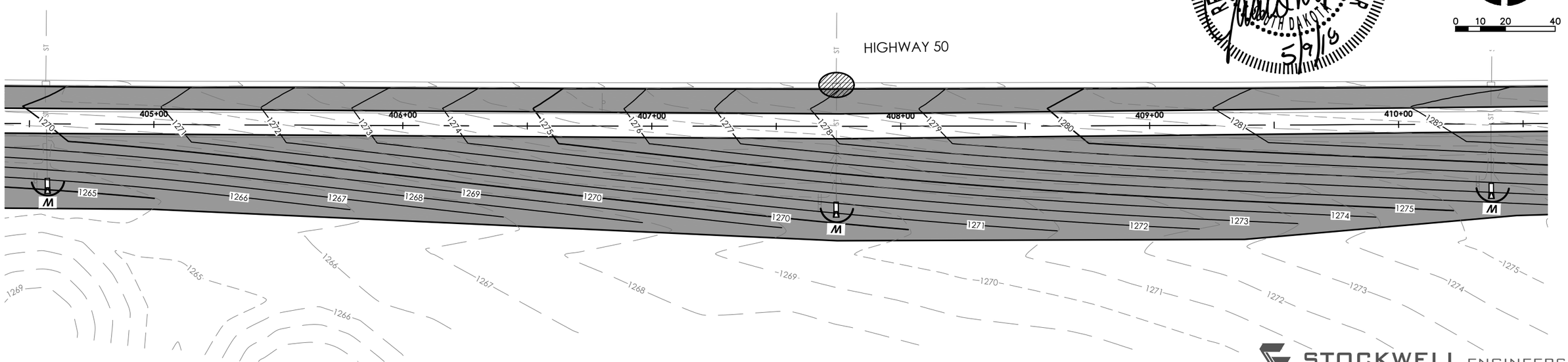
SOUTH DAKOTA
5/9/18



STOCKWELL ENGINEERS
SIOUX FALLS, SD

EROSION CONTROL

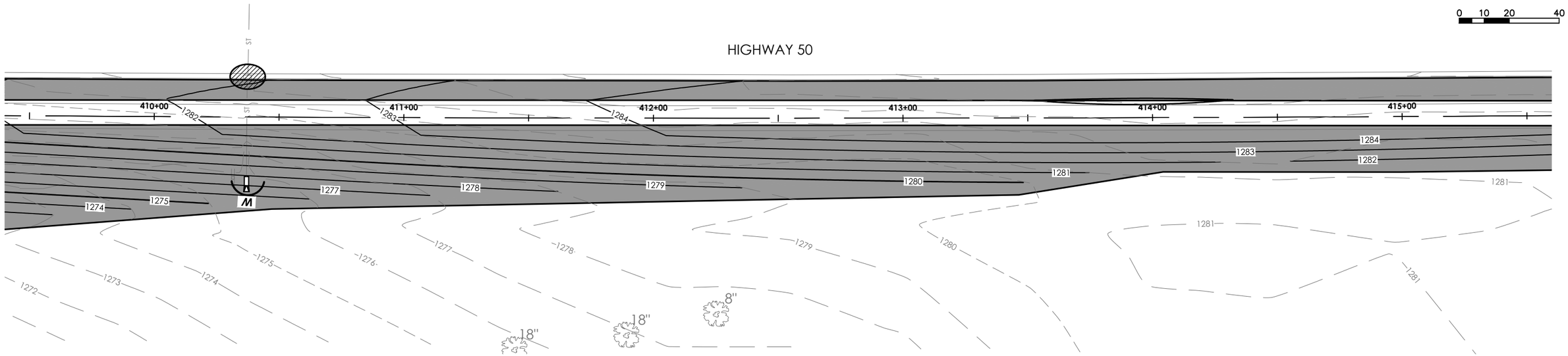
FILE: 16165 – Erosion.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	D13	D18

STA. 410+00 TO 415+00
435 CY - PLACING TOPSOIL
126 LB - TYPE D PERMANENT SEED MIXTURE
622 LB - FERTILIZING
1244 LB - FIBER MULCHING

9" EROSION CONTROL WATTLE
STA. 410+38 OUTLET OF PIPE (10 LF)

INLET PROTECTION
STA. 410+38 LT

0 10 20 40



STA. 415+00 TO 420+00
290 CY - PLACING TOPSOIL
86 LB - TYPE D PERMANENT SEED MIXTURE
421 LB - FERTILIZING
842 LB - FIBER MULCHING

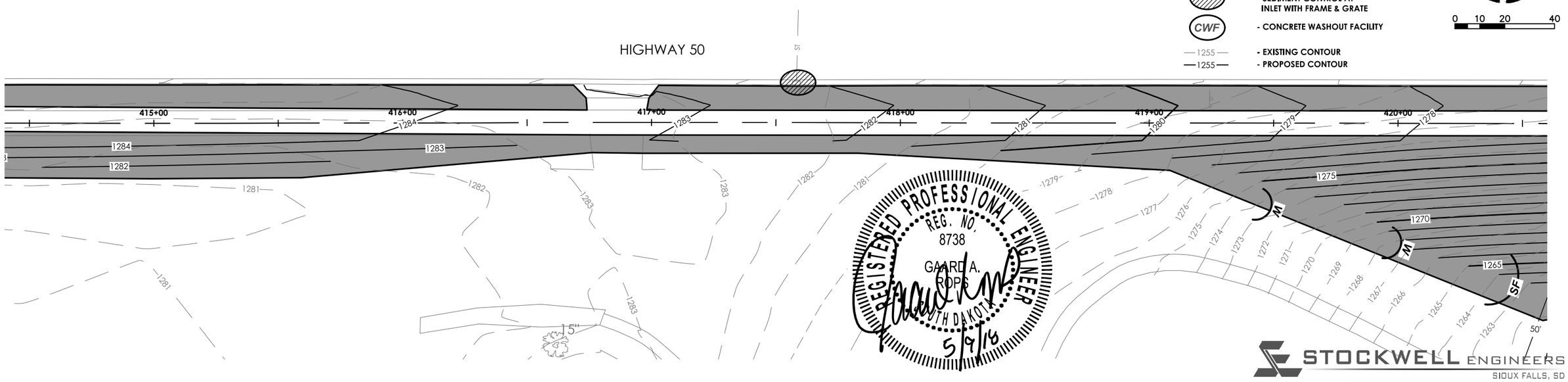
9" EROSION CONTROL WATTLE
STA. 419+50 FLOW LINE OF DITCH (10 LF)
STA. 420+00 FLOW LINE OF DITCH (10 LF)

INLET PROTECTION
STA. 417+60 LT

LEGEND

- TYPE D PERMANENT SEED MIXTURE
- CLASS B RIPRAP
- SILT FENCE
- SEDIMENT CONTROL WATTLE
- SEDIMENT CONTROL AT INLET WITH FRAME & GRATE
- CONCRETE WASHOUT FACILITY
- 1255 - EXISTING CONTOUR
- 1255 - PROPOSED CONTOUR

0 10 20 40



REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

EROSION CONTROL

FILE: 16165 – Erosion.dwg PLOTTING DATE: 2018–05–09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	D14	D18

STA. 420+00 TO 425+00
630 CY - PLACING TOPSOIL
183 LB - TYPE D PERMANENT SEED MIXTURE
902 LB - FERTILIZING
1805 LB - FIBER MULCHING
120 TON - CLASS B RIPRAP
125 SQYD - TYPE B DRAINAGE FABRIC

INLET PROTECTION
STA. 421+16 LT

9" EROSION CONTROL WATTLE

STA.	421+50	Flow line of Ditch (10 LF)
STA.	422+00	Flow line of Ditch (10 LF)
STA.	422+50	Flow line of Ditch (10 LF)

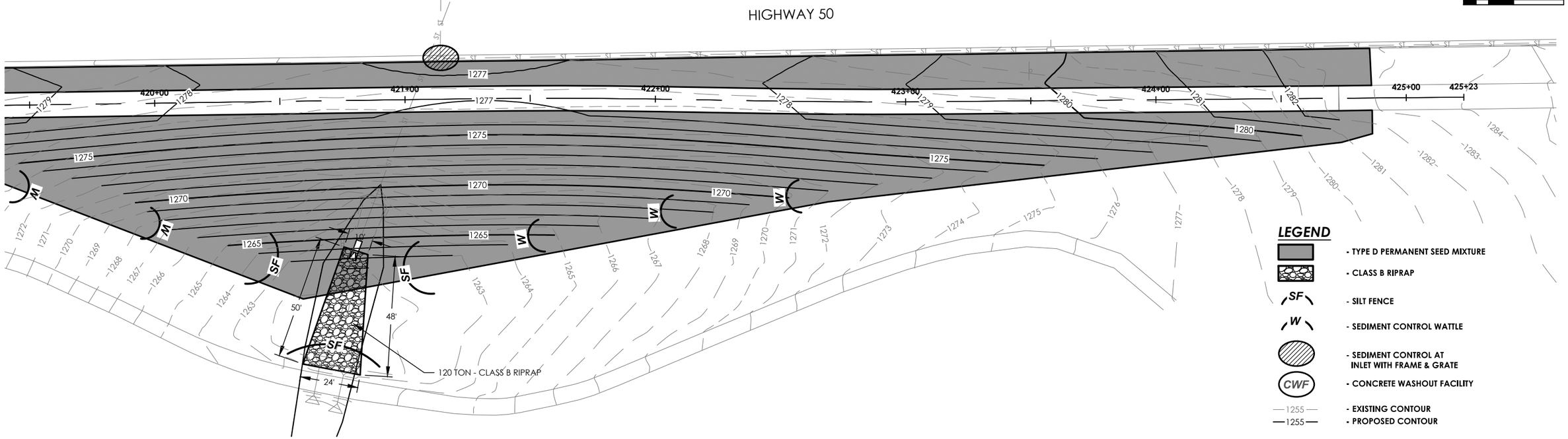
LOW FLOW SILT FENCE

STA.	420+50	Flow line of Ditch (20 LF)
STA.	421+00	Flow line of Ditch (20 LF)

HIGH FLOW SILT FENCE

STA.	420+70	INLET OF CMP PIPES (35 LF)

0 10 20 40



LEGEND

- TYPE D PERMANENT SEED MIXTURE
- CLASS B RIPRAP
- SF - SILT FENCE
- W - SEDIMENT CONTROL WATTLE
- SEDIMENT CONTROL AT INLET WITH FRAME & GRATE
- CWF - CONCRETE WASHOUT FACILITY
- 1255 - EXISTING CONTOUR
- 1255 - PROPOSED CONTOUR

REGISTERED PROFESSIONAL ENGINEER
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SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

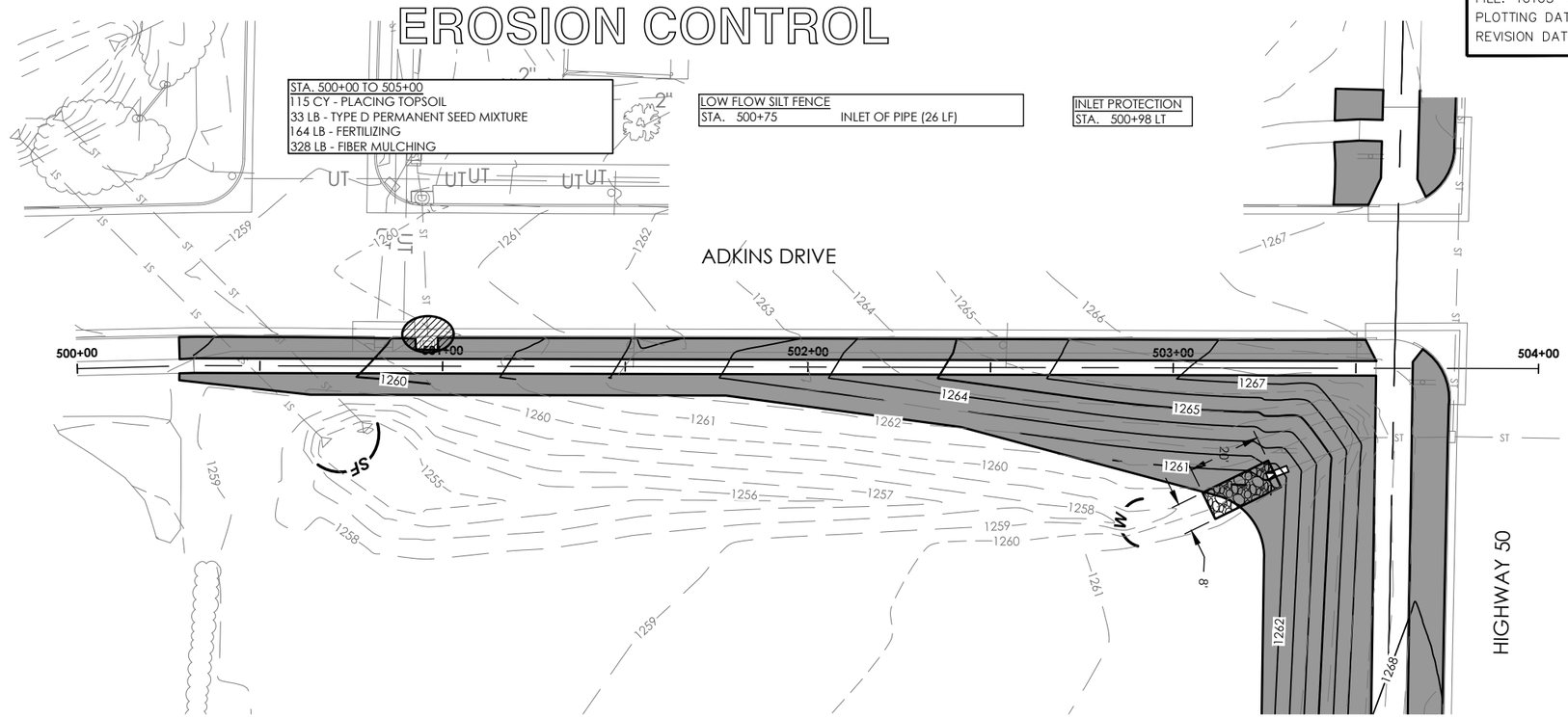
FILE: 16165 – Erosion.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	D15	D18

EROSION CONTROL

STA. 500+00 TO 505+00
115 CY - PLACING TOPSOIL
33 LB - TYPE D PERMANENT SEED MIXTURE
164 LB - FERTILIZING
328 LB - FIBER MULCHING

LOW FLOW SILT FENCE
STA. 500+75 INLET OF PIPE (26 LF)

INLET PROTECTION
STA. 500+98 LT



0 10 20 40

LEGEND

- TYPE D PERMANENT SEED MIXTURE
- CLASS B RIPRAP
- SILT FENCE
- SEDIMENT CONTROL WATTLE
- SEDIMENT CONTROL AT INLET WITH FRAME & GRATE
- CONCRETE WASHOUT FACILITY
- 1255 - EXISTING CONTOUR
- 1255 - PROPOSED CONTOUR

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SOUTH DAKOTA
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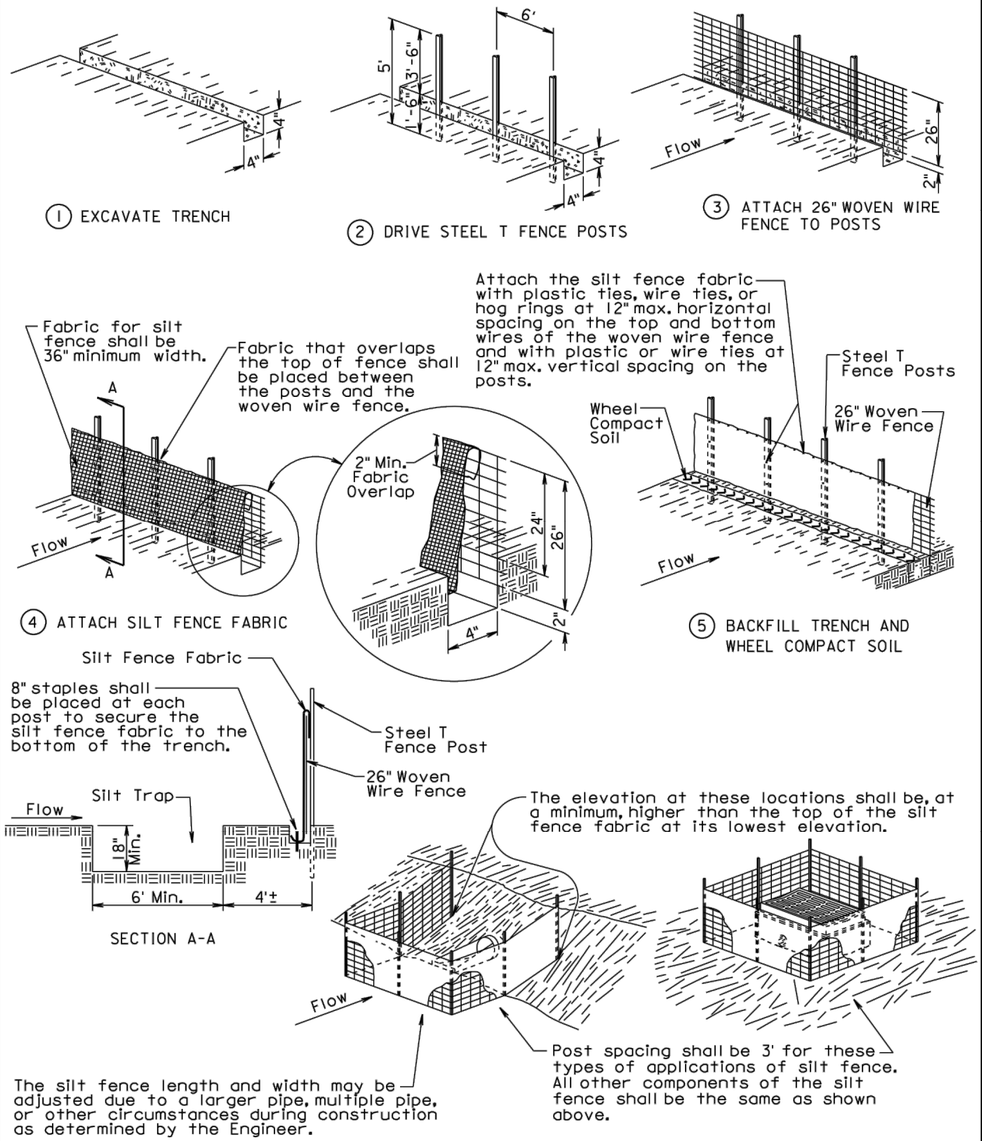
STOCKWELL ENGINEERS
SIOUX FALLS, SD

MANUAL LOW FLOW SILT FENCE INSTALLATION



1 EXCAVATE TRENCH

2 DRIVE STEEL T FENCE POSTS

3 ATTACH 26" WOVEN WIRE FENCE TO POSTS

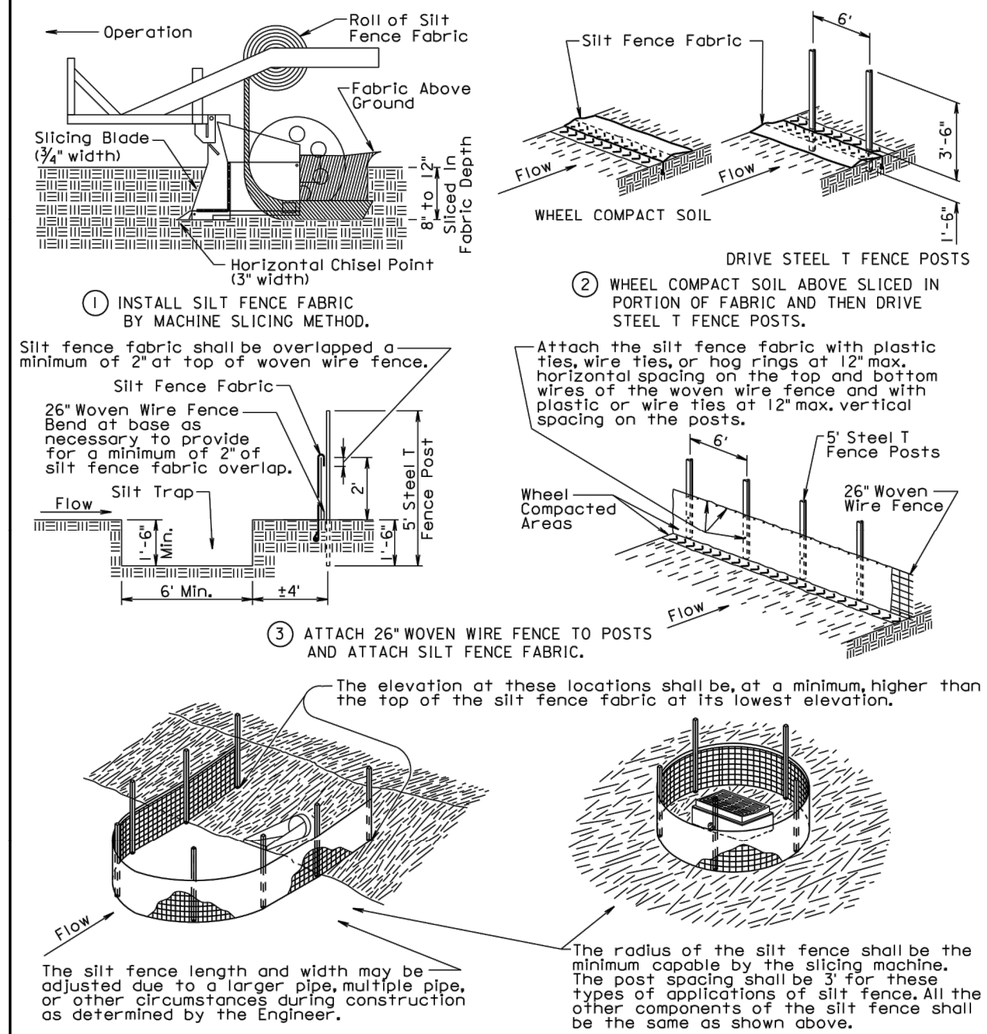
4 ATTACH SILT FENCE FABRIC

5 BACKFILL TRENCH AND WHEEL COMPACT SOIL

December 23, 2003

Published Date: 4th Qtr. 2017	SDDOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04 Sheet 1 of 2

MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION



1 INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.

2 WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.

3 ATTACH 26" WOVEN WIRE FENCE TO POSTS AND ATTACH SILT FENCE FABRIC.

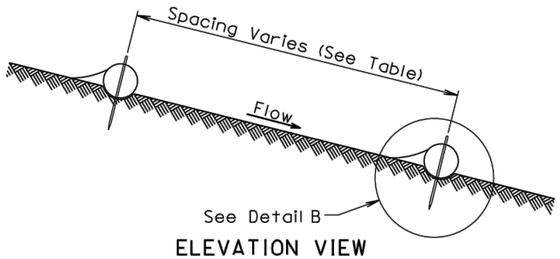
GENERAL NOTES:

A silt trap shall be provided when specified by a plan note. All costs for constructing the silt trap shall be incidental to the contract unit price per cubic yard for "Silt Trap".

If a trench can not be dug or the silt fence fabric can not be sliced in due to the type of earthen material (such as rock), then a row of 30 to 40 pound sandbags butted end to end shall be provided on top of the extra length of silt fence fabric to prevent underflow.

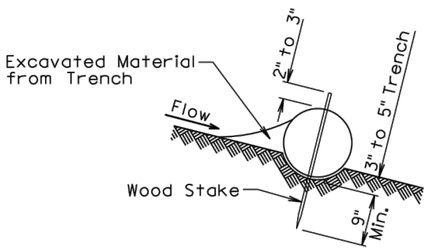
December 23, 2003

Published Date: 4th Qtr. 2017	SDDOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04 Sheet 2 of 2

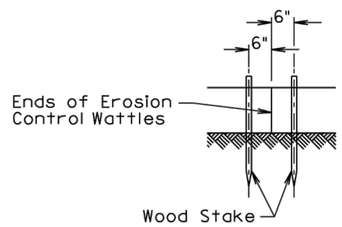


ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION

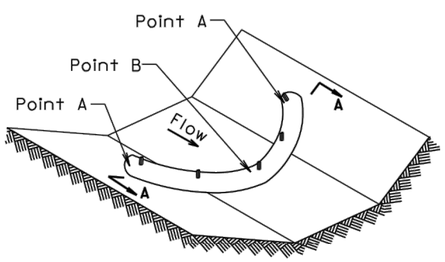
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



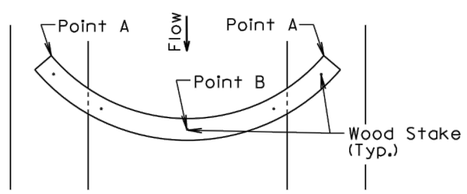
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

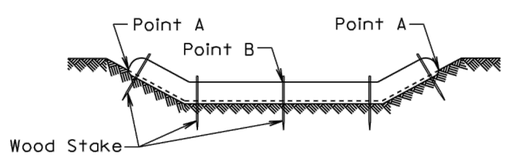


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

DITCH INSTALLATION	
Grade	Spacing (Ft)
2%	150
3%	100
4%	75
5%	50



SECTION A-A

December 23, 2004

Published Date: 4th Qtr. 2017	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

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.

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than ½". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

Sediment removal, disposal, or necessary shaping shall be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping shall be incidental to the contract unit price per cubic yard for "Remove Sediment".

All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials shall be incidental to the contract unit price per foot for the corresponding erosion control wattle bid item.

All costs for removing the erosion control wattle from the project including labor, equipment, and materials shall be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

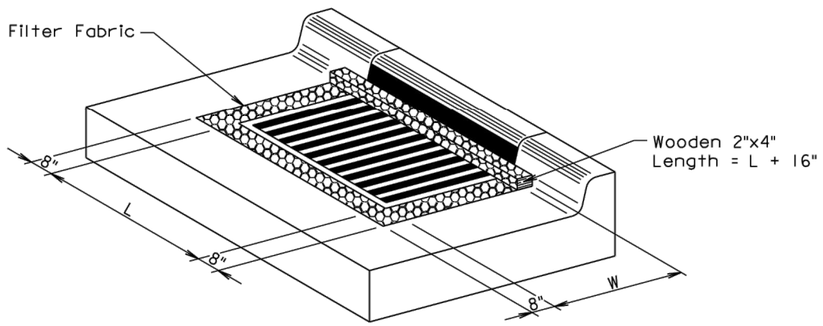
December 23, 2004

Published Date: 4th Qtr. 2017	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2

STOCKWELL ENGINEERS
SIOUX FALLS, SD

FILE: 16165 – Details.dwg PLOTTING DATE: 2018-05-09 INITIALS: BDW REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	D18	D18

L = Length of Grate
W = Width of Grate



ISOMETRIC VIEW

GENERAL NOTES:

The grate and curb and gutter shown are for illustrative purposes only.

The sediment control at inlet with frame and grate shall be placed at locations stated in the plans or at locations determined by the Engineer.

The filter fabric shall be the type specified in the plans.

The filter fabric shall be placed in the inlet opening prior to placing the grate. Approximately 18 inches of excess filter fabric shall be wrapped around the 2"x4" and stapled securely to the 2"x4" after the grate has been placed.

The Contractor shall inspect and maintain the sediment control device once every week and within 24 hours after every rainfall event. The Contractor shall maintain the sediment control device by removing accumulated sediment and replacing torn filter fabric with new filter fabric.

The removed sediment shall be placed at a location away from the drop inlet where the sediment will not be washed back into the drop inlet or other storm sewer system.

All costs for furnishing, installing, inspecting, maintaining, removing, and replacing the sediment control device at the inlet including labor, equipment, and materials shall be incidental to the contract unit price per each for "Sediment Control at Inlet with Frame and Grate".

September 14, 2005

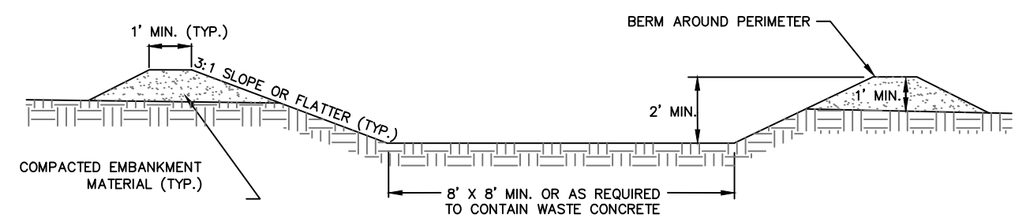
Published Date: 4th Qtr. 2017	SDDOT	***SEDIMENT CONTROL AT INLETS WITH FRAMES AND GRATES***	*PLATE NUMBER* 734.10
			Sheet 1 of 1

CONCRETE WASHOUT FACILITY

CWF

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

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GARD A. ROPS
SOUTH DAKOTA
5/9/18

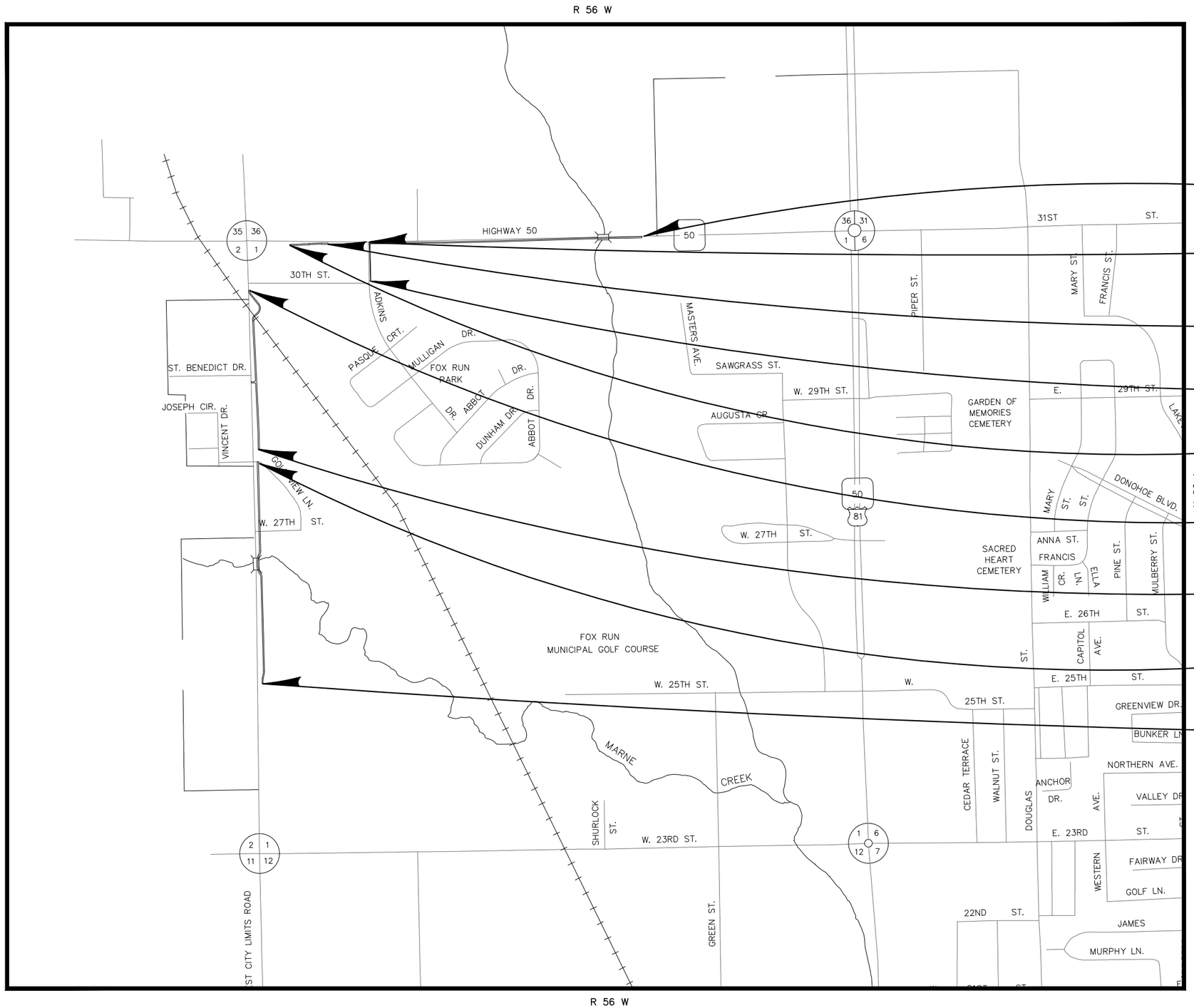
CONCRETE WASHOUT FACILITY

STOCKWELL ENGINEERS
SIOUX FALLS, SD

SECTION X: CROSS SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P TAPU(12)	X1	X25

FILE: 16165 – Title Page.dwg
PLOTTING DATE: 2018–05–09 INTIALS: MRS
REVISION DATE:



INDEX OF SHEETS

X1 TITLE SHEET
X2 THRU X25 CROSS SECTIONS

END PROJECT P TAPU(12)
STA. 424+73
EAST OF THE INTERSECTION
OF HWY 50 AND ADKINS DR

BEGIN PROJECT P TAPU(12)
STA. 400+50
STA. 503+45
AT THE INTERSECTION
OF HWY 50 AND ADKINS DR

END PROJECT P TAPU(12)
STA. 303+80
WEST OF THE INTERSECTION
OF HWY 50 AND ADKINS DR

END PROJECT P TAPU(12)
STA. 500+32
APPROX. AT THE INTERSECTION
OF ADKINS DR AND 30TH STREET

BEGIN PROJECT P TAPU(12)
STA. 300+50
EAST OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND HWY 50

END PROJECT P TAPU(12)
STA. 214+86
SOUTH OF THE INTERSECTION
OF WEST CITY LIMITS AND 30TH STREET

BEGIN PROJECT P TAPU(12)
STA. 200+50
NORTH OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND GOLF VIEW LANE

END PROJECT P TAPU(12)
STA. 119+80
SOUTH OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND 27TH STREET

BEGIN PROJECT P TAPU(12)
STA. 100+50
NORTH OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND 23RD STREET

REGISTERED PROFESSIONAL ENGINEER
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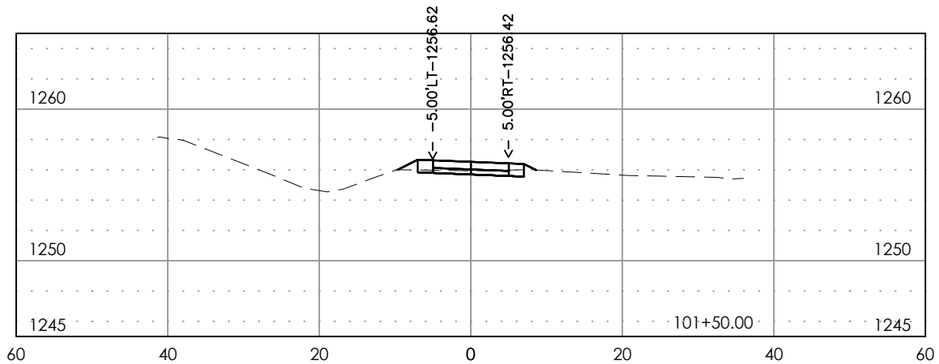
SOUTH DAKOTA
5/9/18

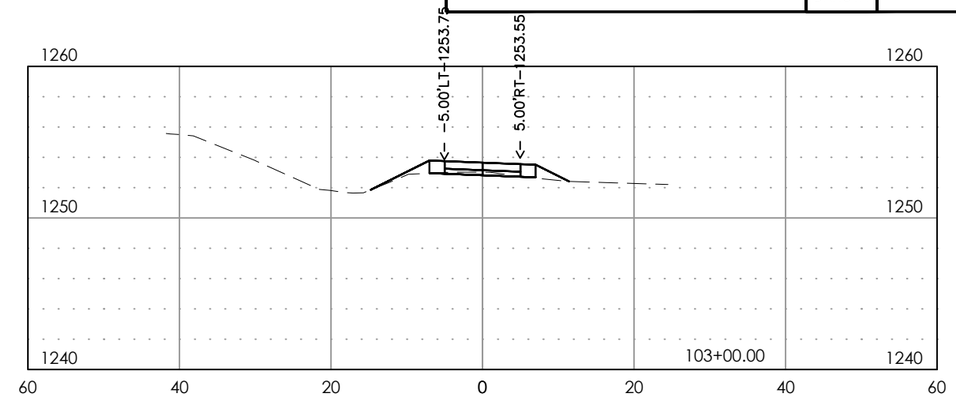
STOCKWELL
STOCKWELL ENGINEERS, INC.
801 N. PHILLIPS AVE., SUITE 100
SIOUX FALLS, SD 57104
PH: 605.338.6668
FAX: 605.338.8750

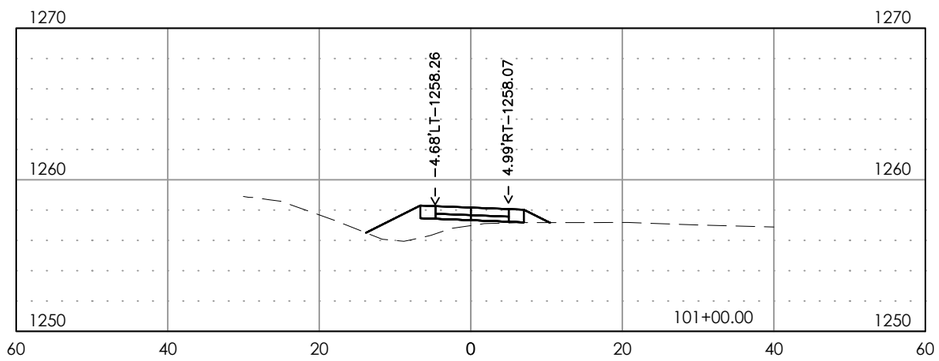
CROSS SECTIONS

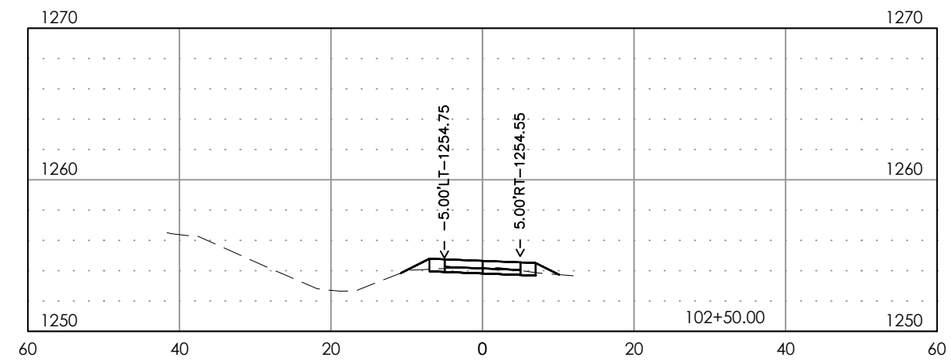
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

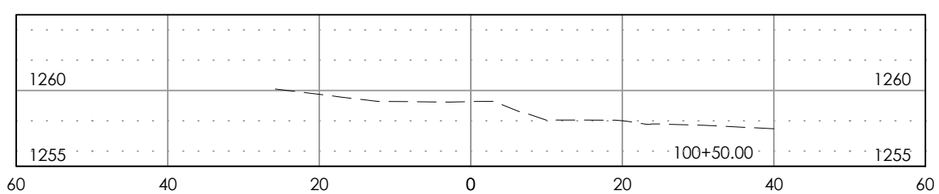
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X2	X25

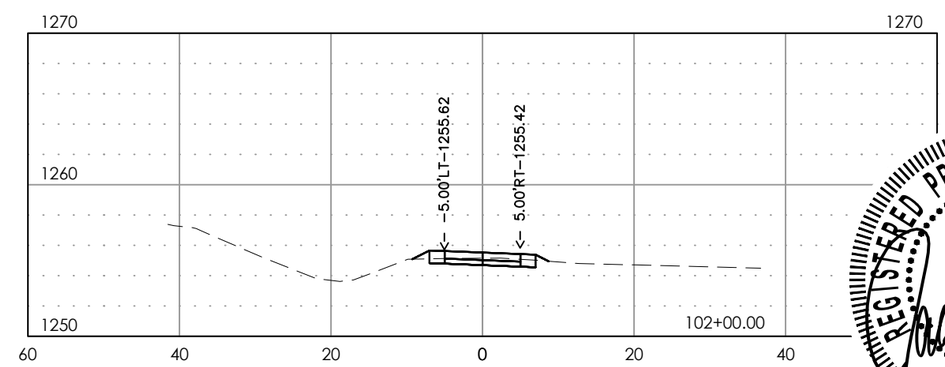












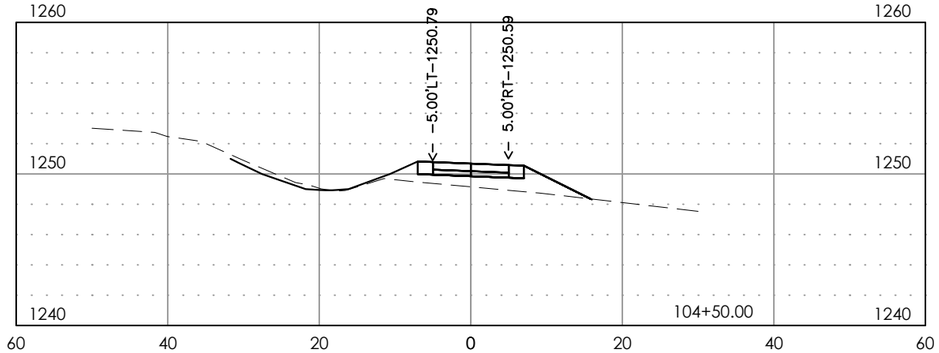
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

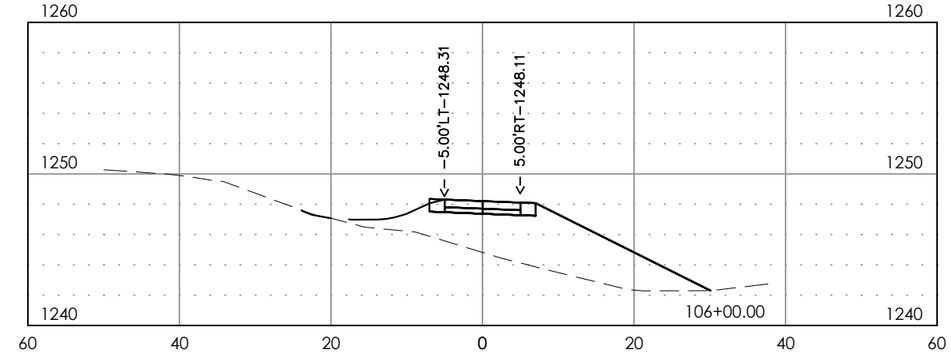
STOCKWELL ENGINEERS
SIOUX FALLS, SD

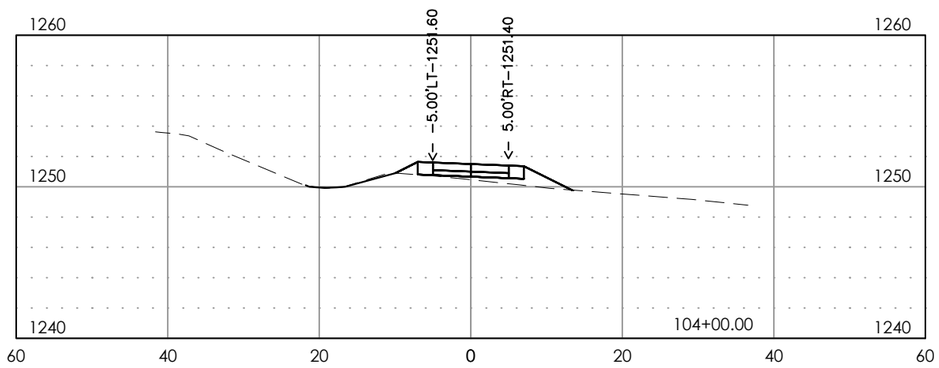
CROSS SECTIONS

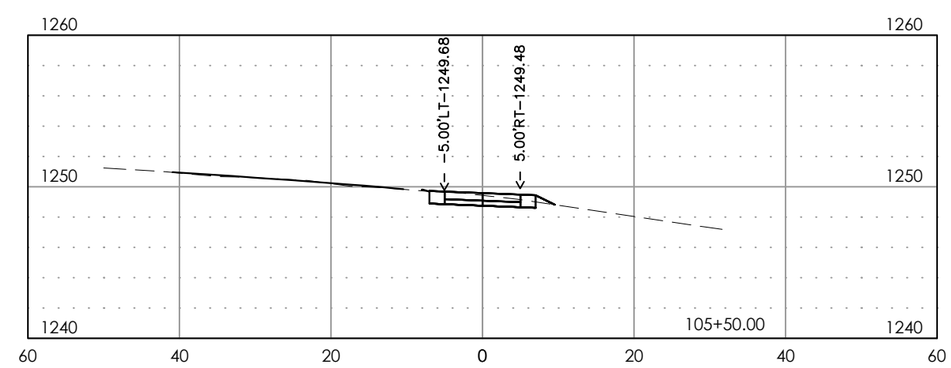
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

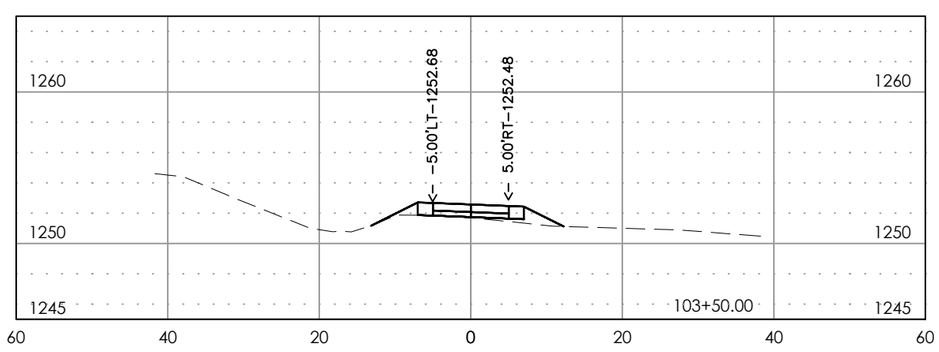
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X3	X25

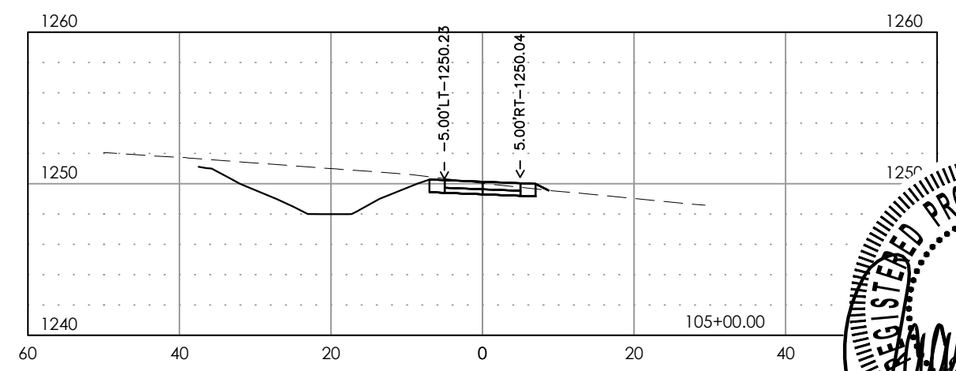












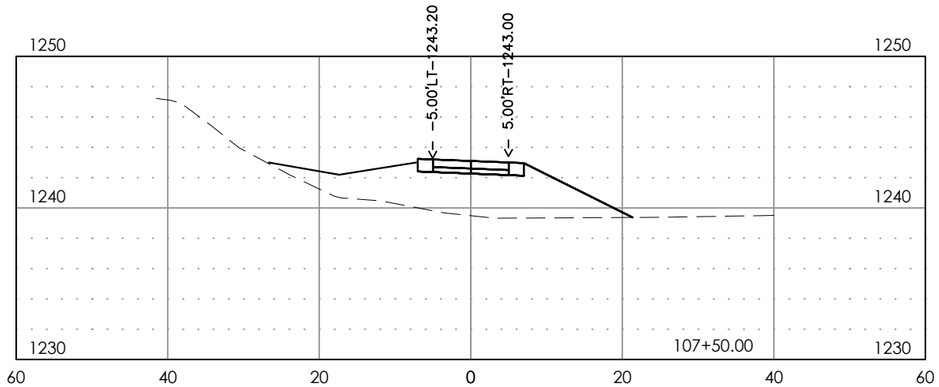
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GARD A. ROBS
SOUTH DAKOTA
5/9/18

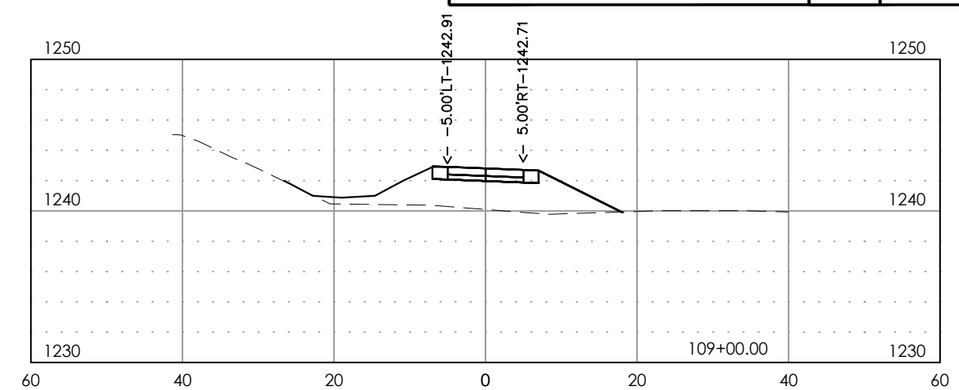
STOCKWELL ENGINEERS
SIOUX FALLS, SD

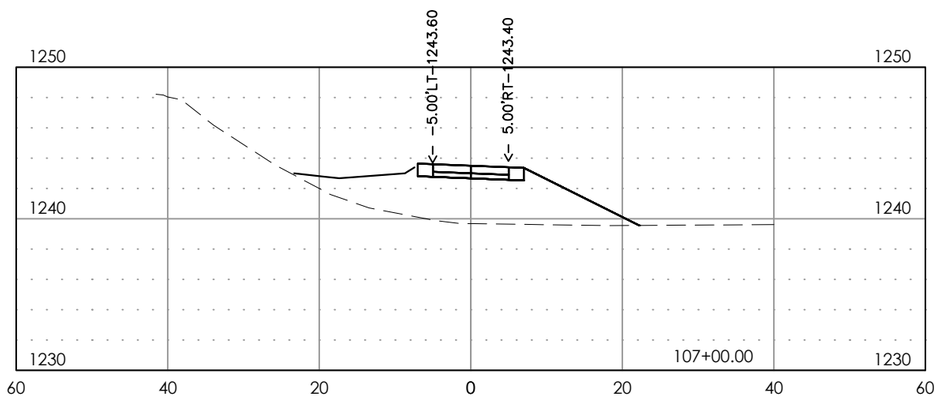
CROSS SECTIONS

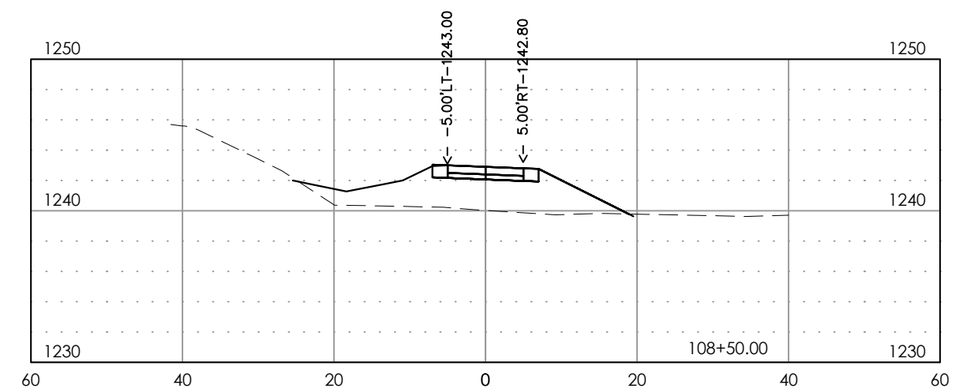
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

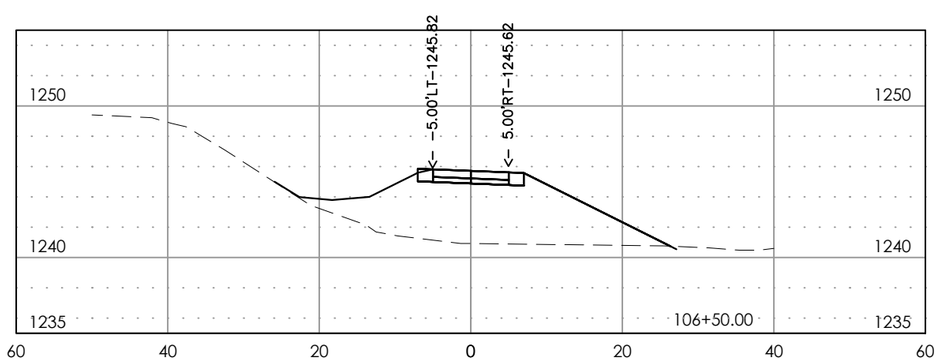
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X4	X25

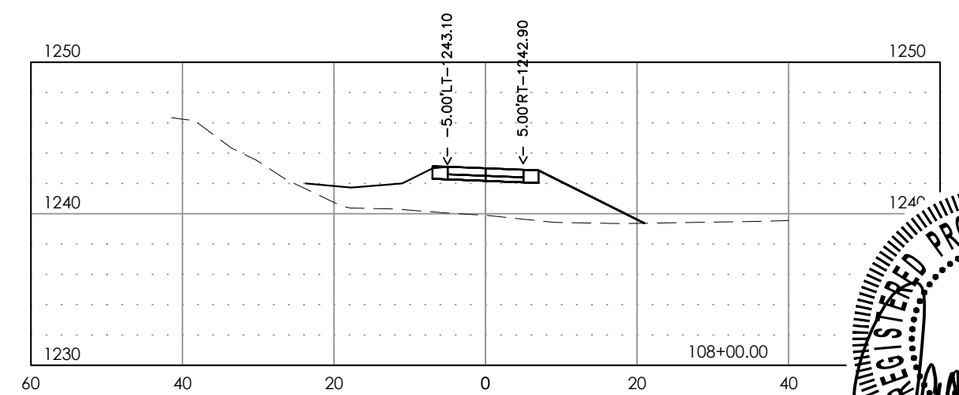












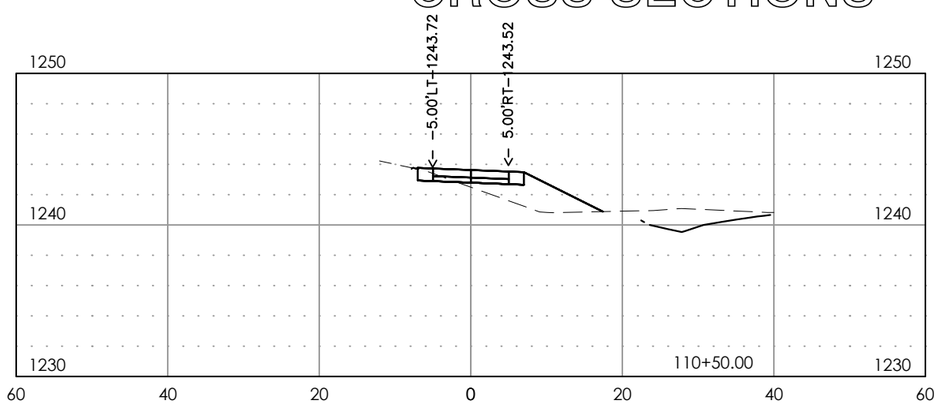
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. HOPS
SOUTH DAKOTA
5/9/18

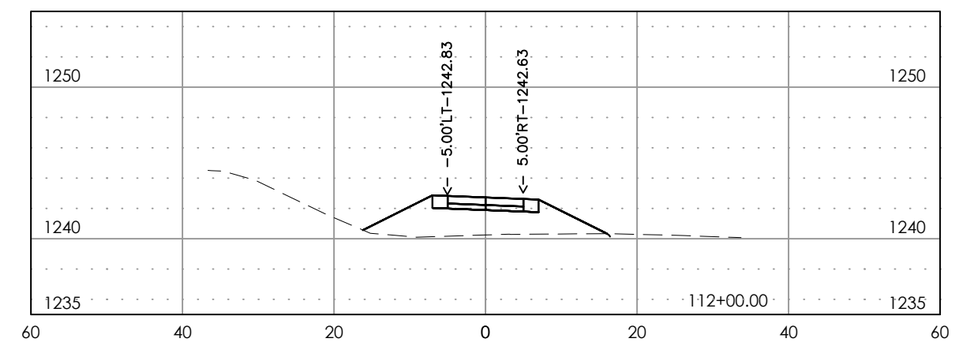
STOCKWELL ENGINEERS
SIOUX FALLS, SD

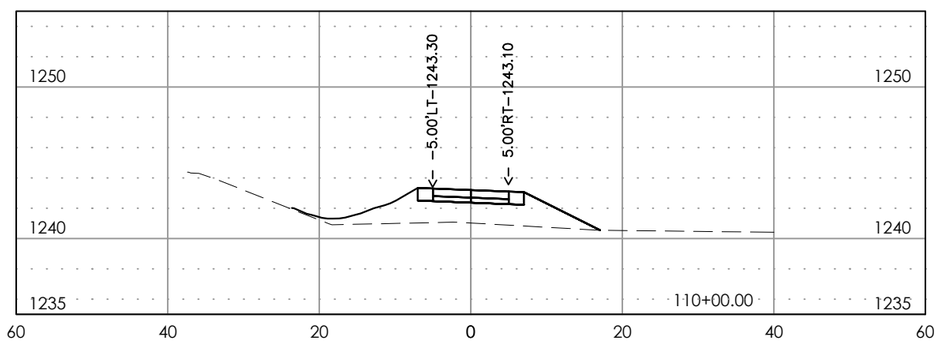
CROSS SECTIONS

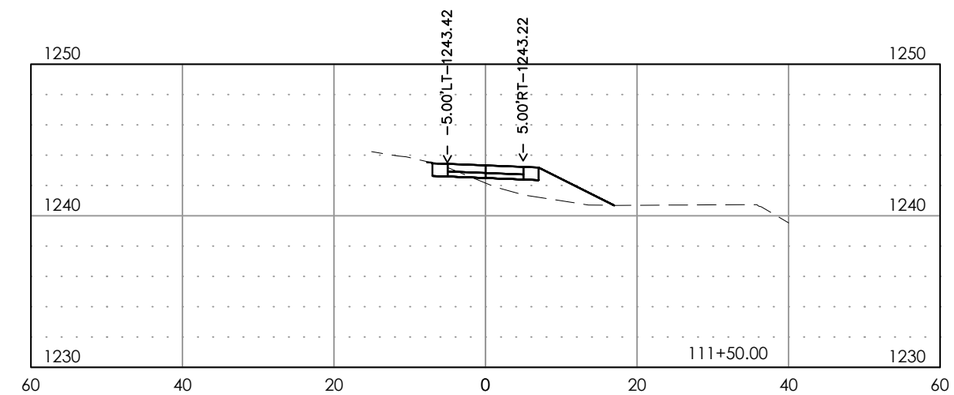
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

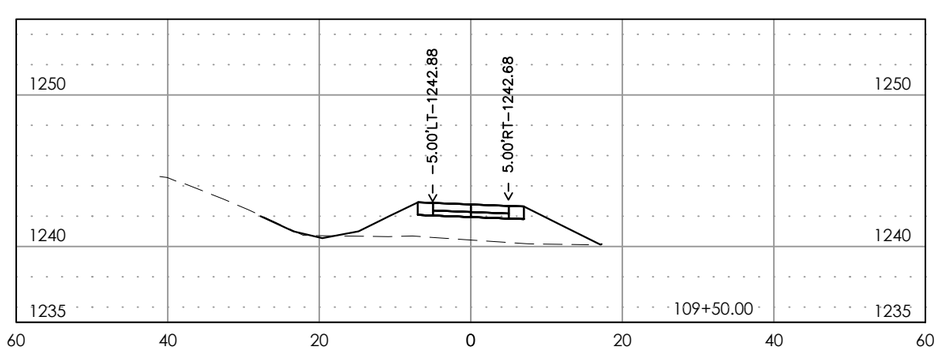
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X5	X25

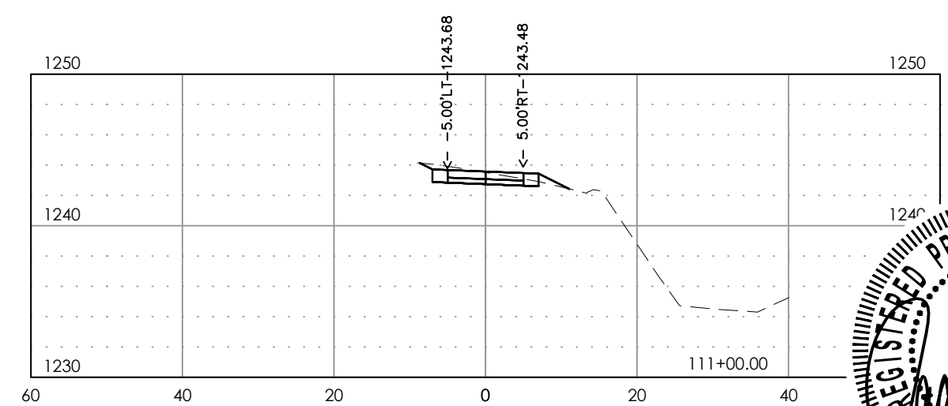












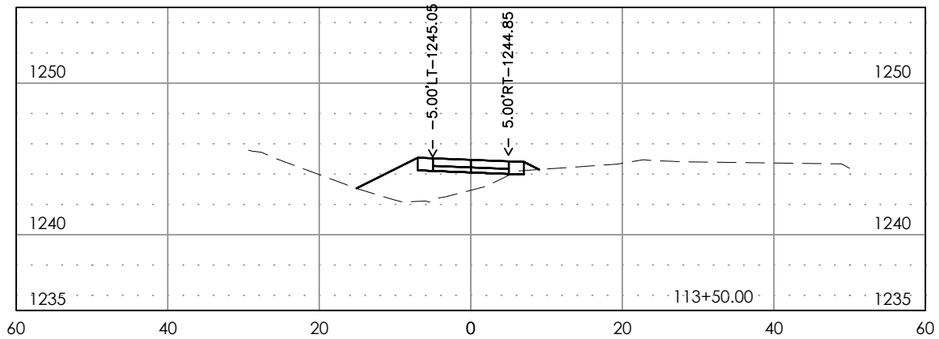
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. NORDSTROM
SOUTH DAKOTA
5/9/18

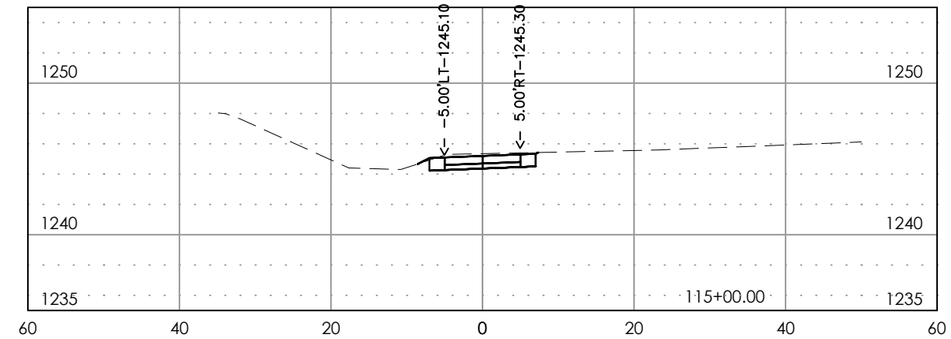
STOCKWELL ENGINEERS
SIOUX FALLS, SD

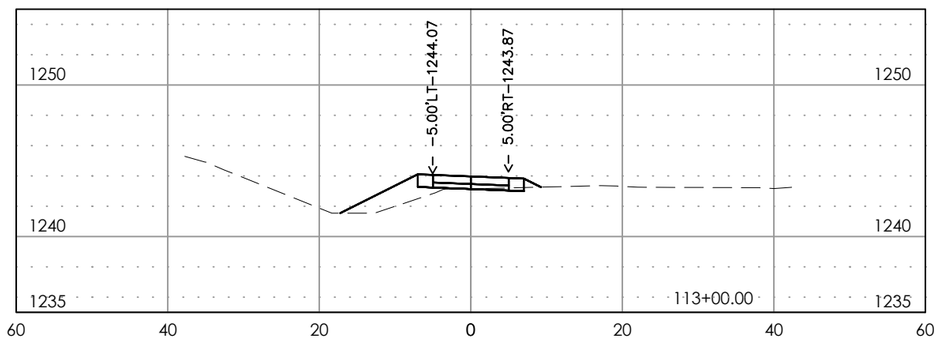
CROSS SECTIONS

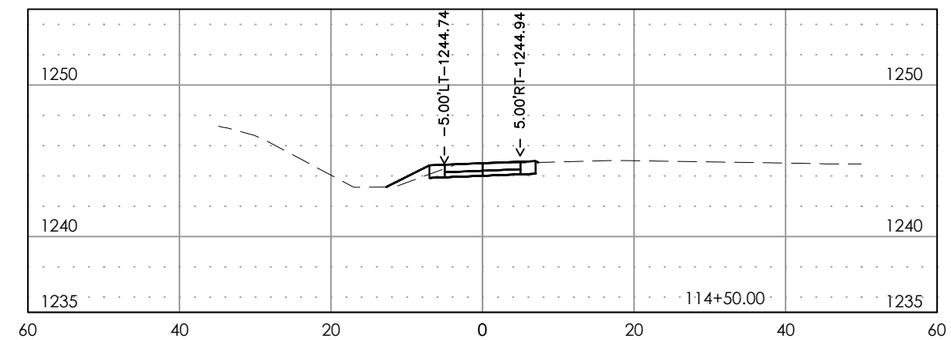
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

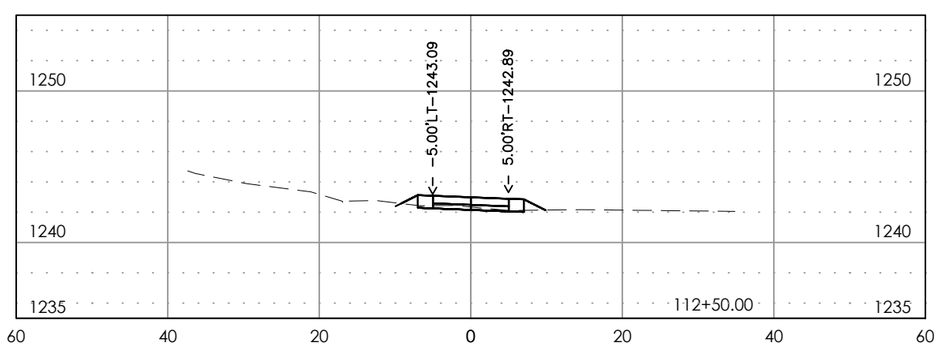
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X6	X25

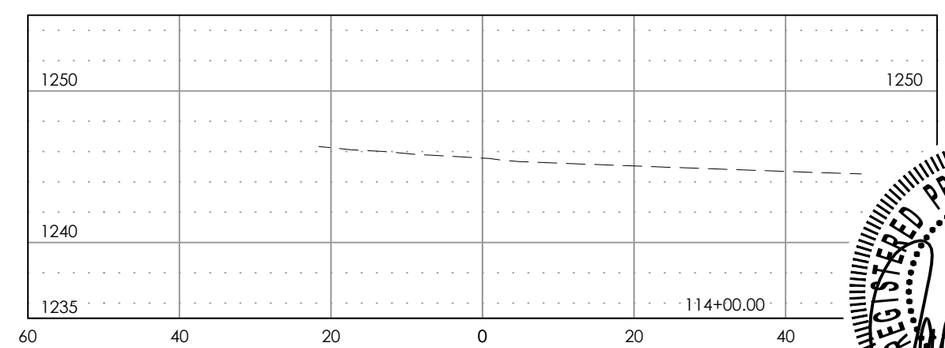












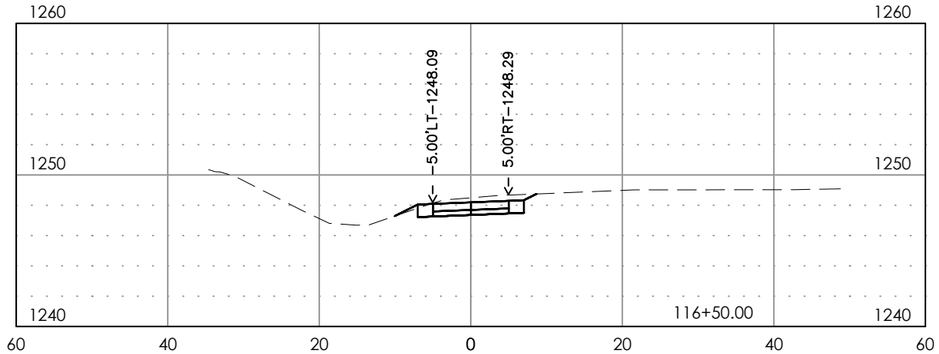
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. KOPS
SOUTH DAKOTA
5/9/18

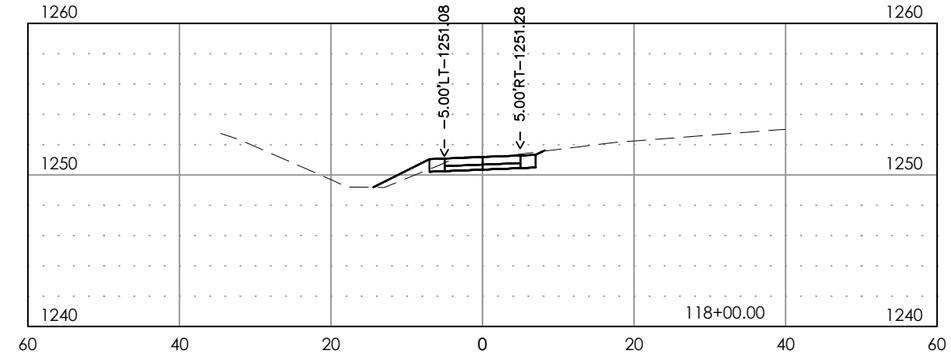
STOCKWELL ENGINEERS
SIOUX FALLS, SD

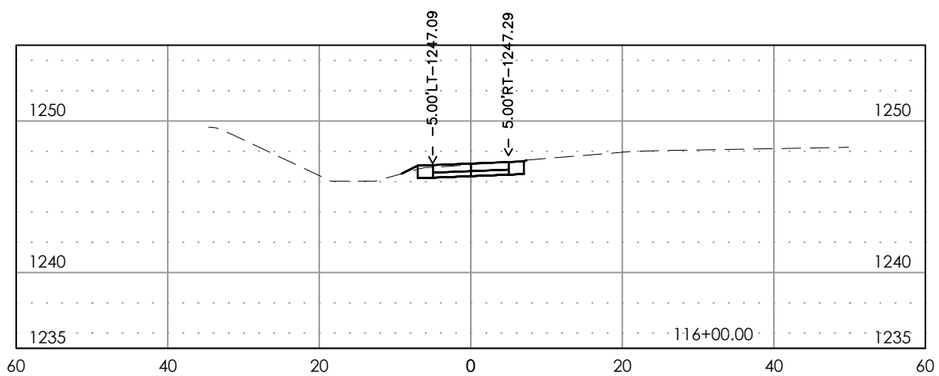
CROSS SECTIONS

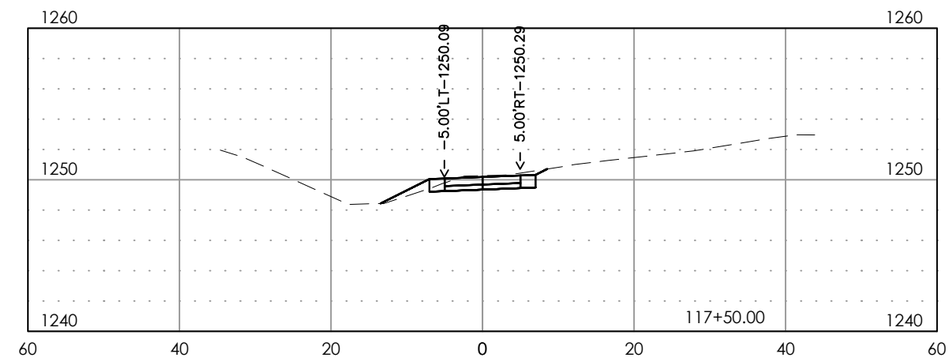
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

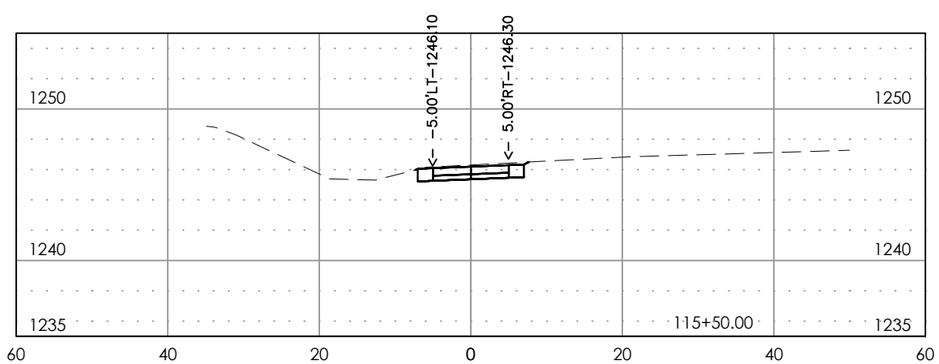
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X7	X25

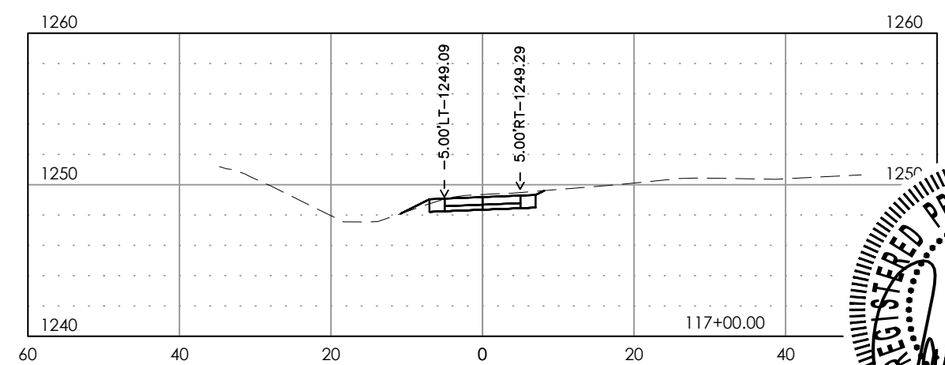












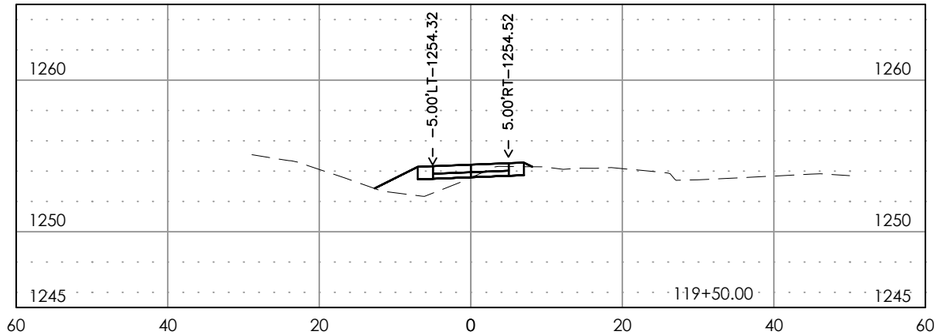
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARDA, ROPP
SOUTH DAKOTA
5/9/18

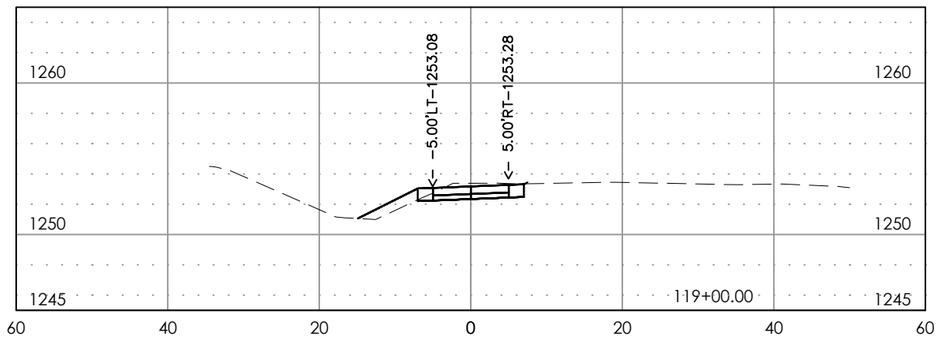
STOCKWELL ENGINEERS
SIOUX FALLS, SD

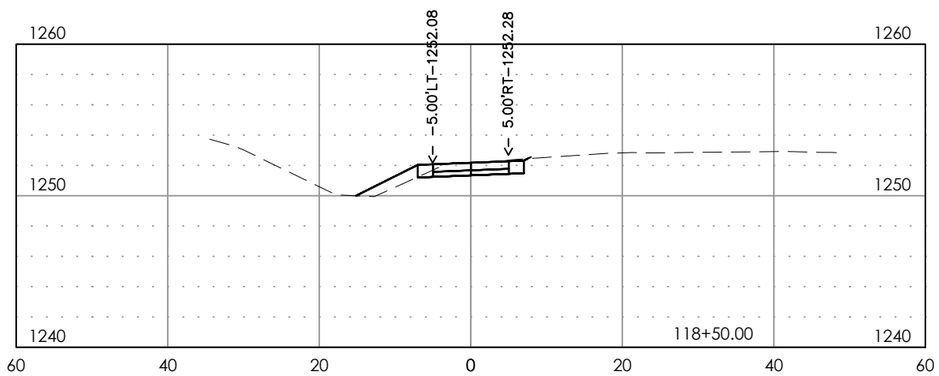
CROSS SECTIONS

HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X8	X25







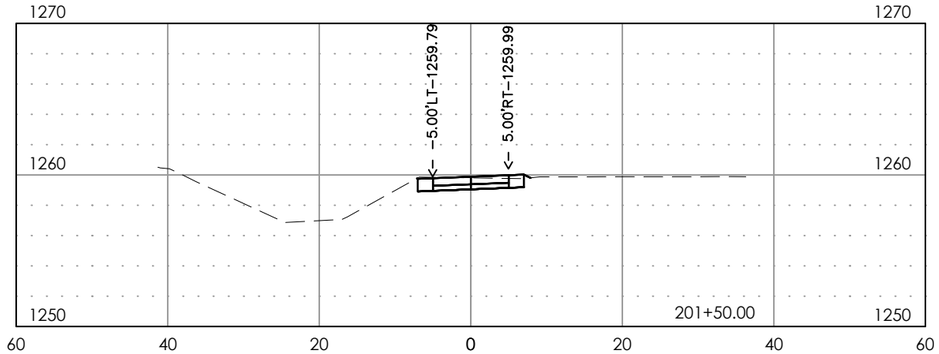
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

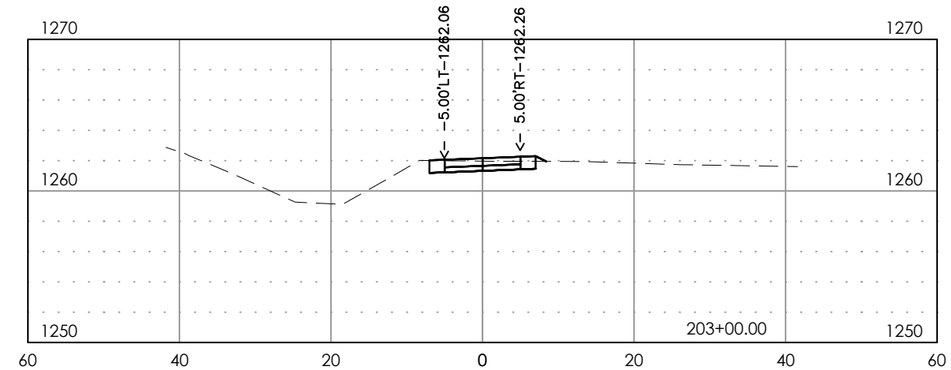
STOCKWELL ENGINEERS
SIOUX FALLS, SD

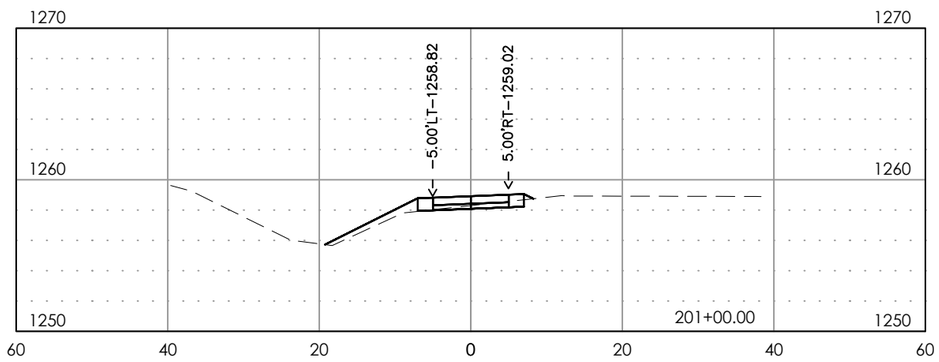
CROSS SECTIONS

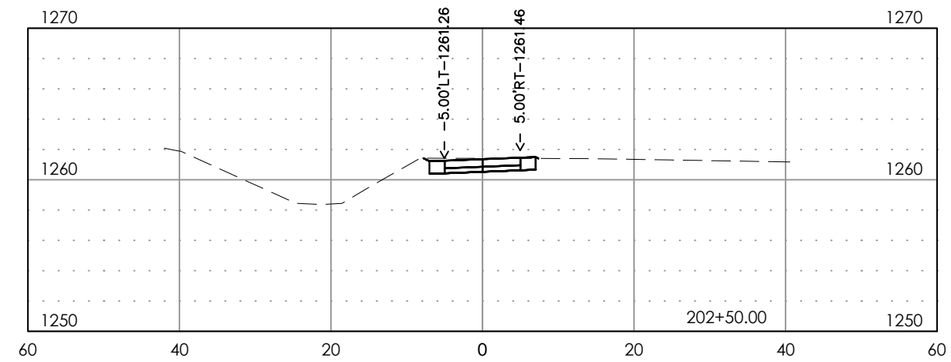
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

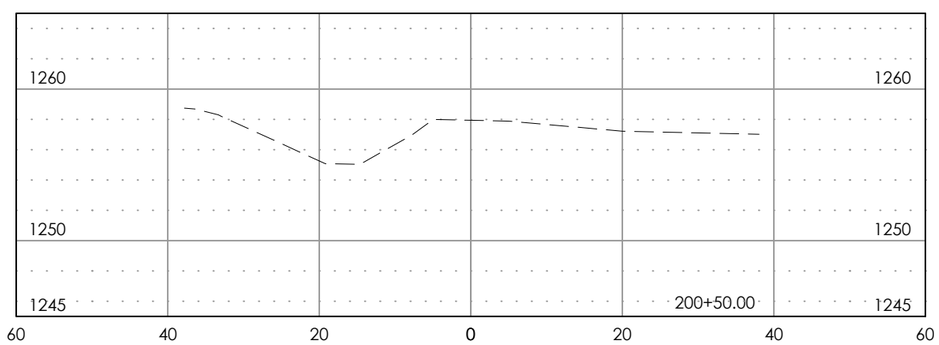
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X9	X25

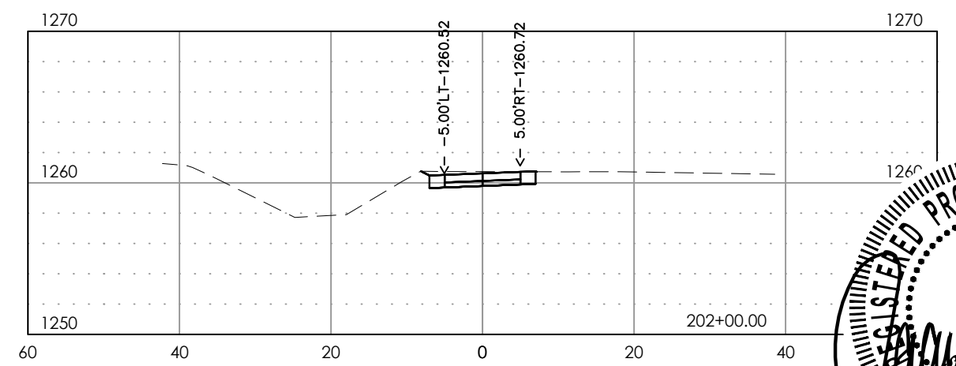












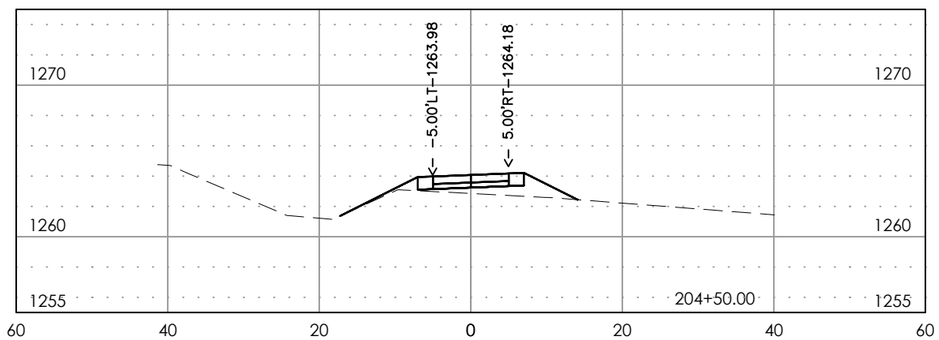
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

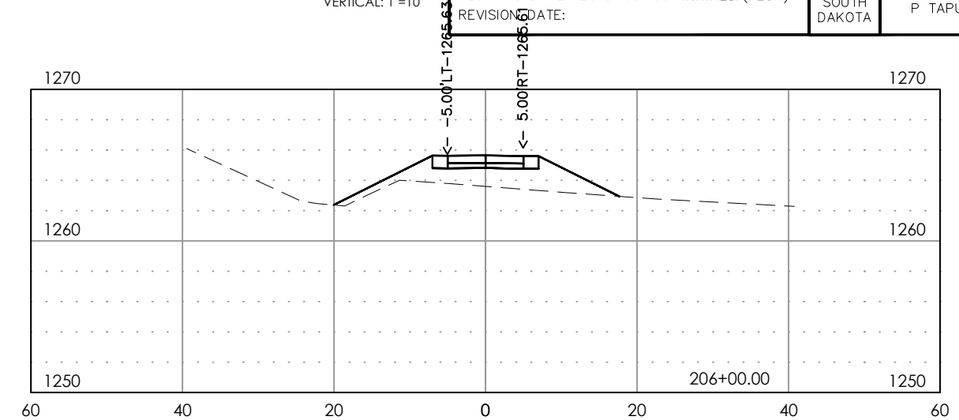
STOCKWELL ENGINEERS
SIOUX FALLS, SD

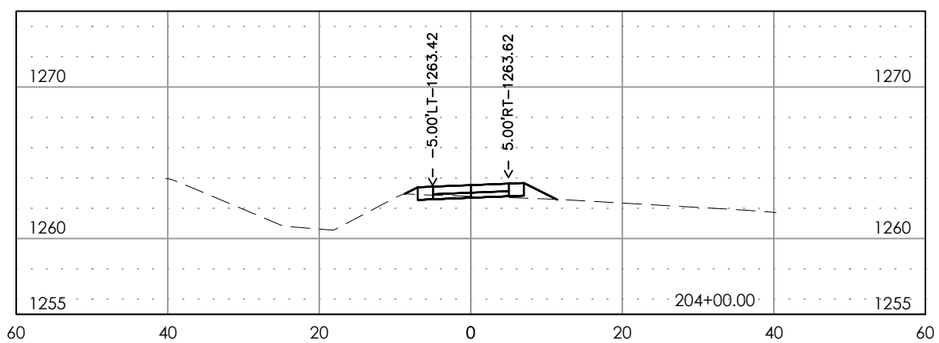
CROSS SECTIONS

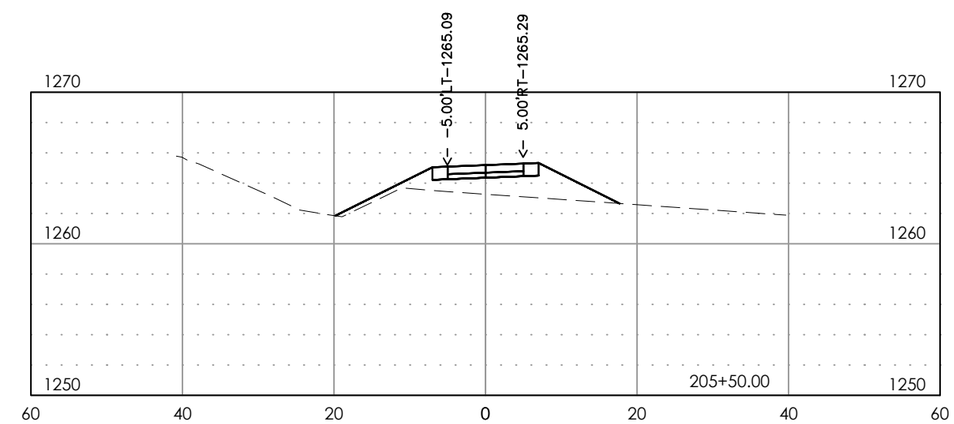
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

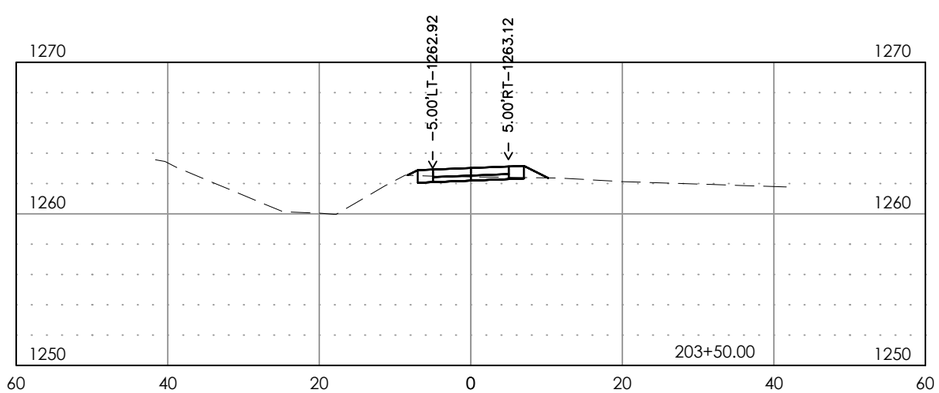
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X10	X25

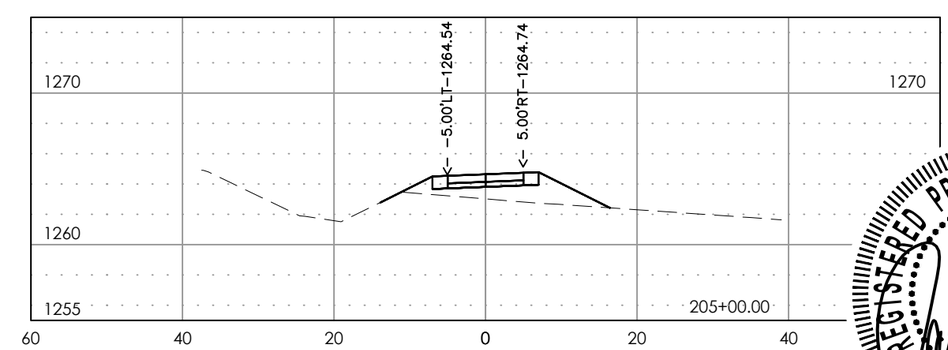












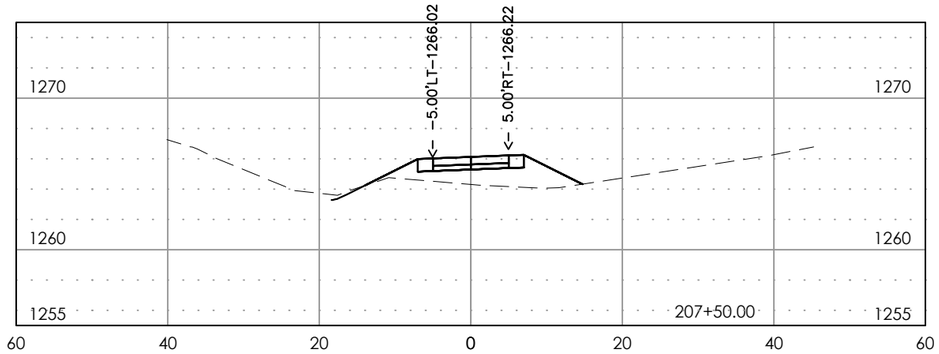
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARDA, ROPS
SOUTH DAKOTA
5/9/18

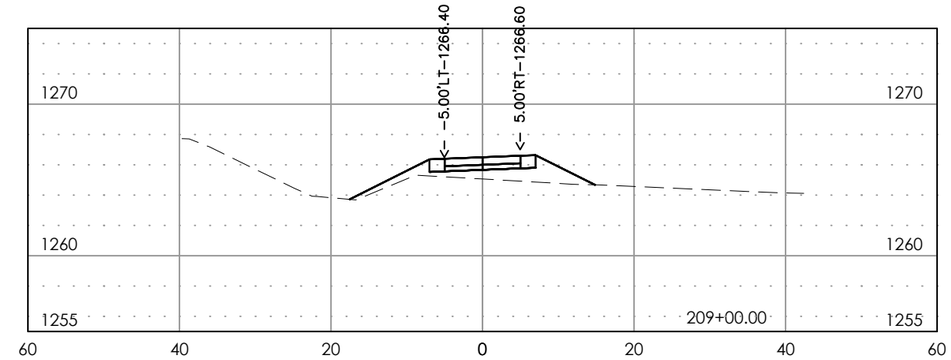
STOCKWELL ENGINEERS
SIOUX FALLS, SD

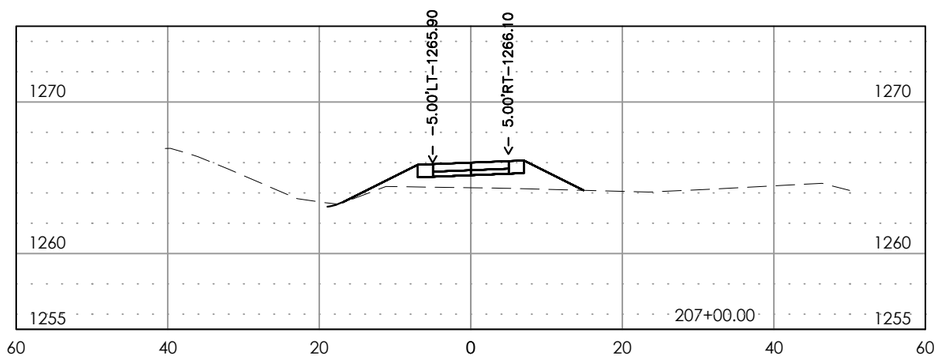
CROSS SECTIONS

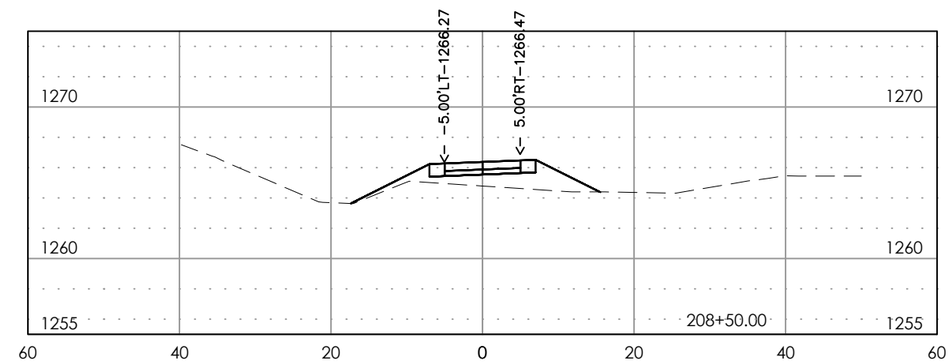
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

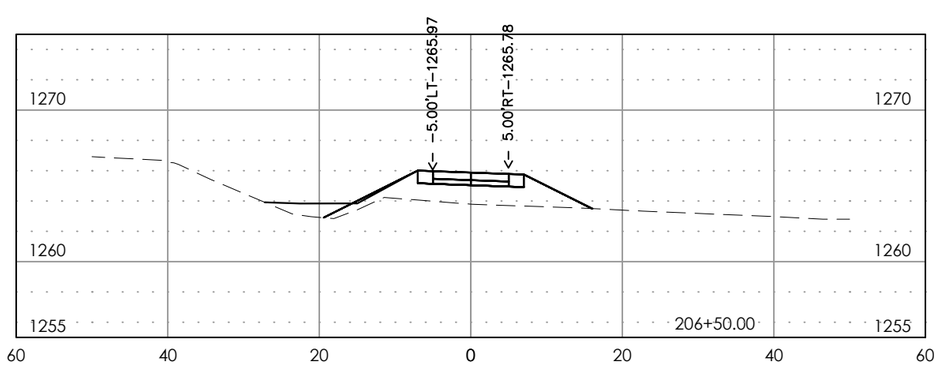
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X11	X25

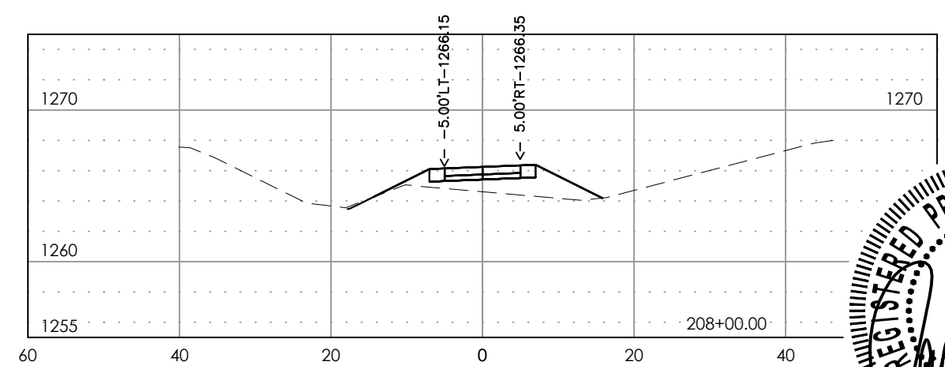












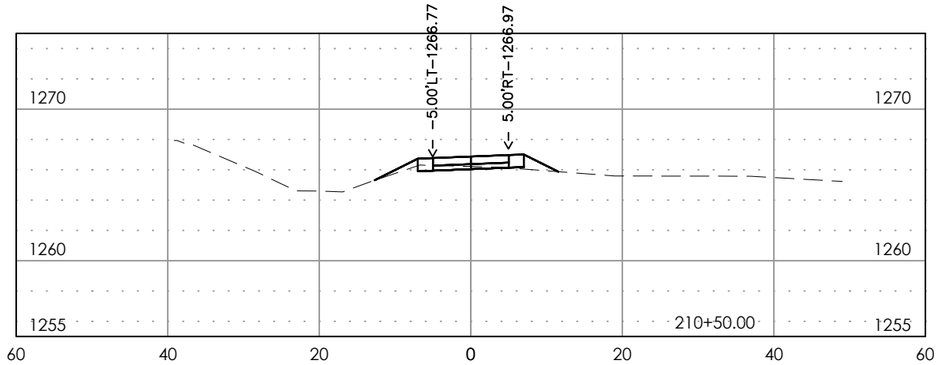
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. KOPS
SOUTH DAKOTA
5/9/18

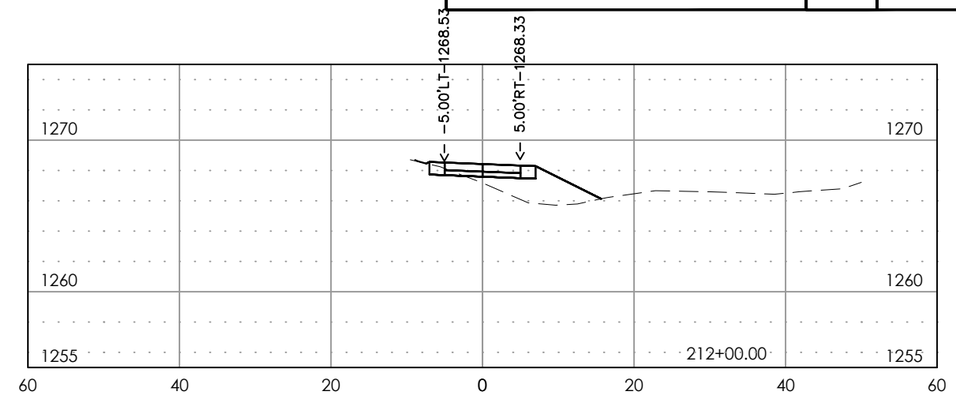
STOCKWELL ENGINEERS
SIOUX FALLS, SD

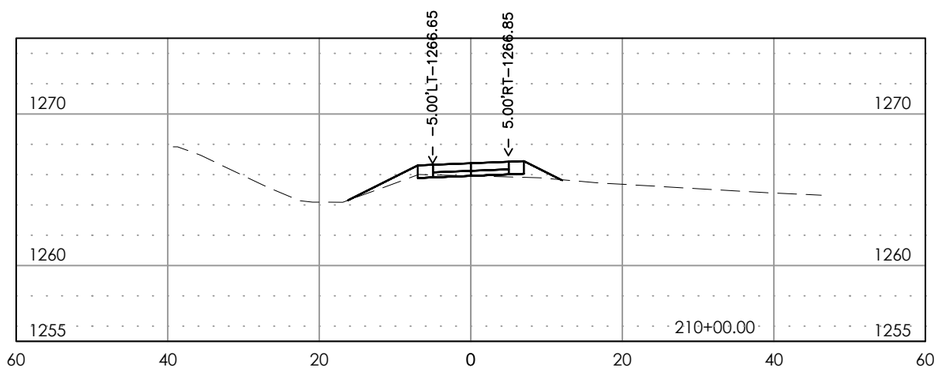
CROSS SECTIONS

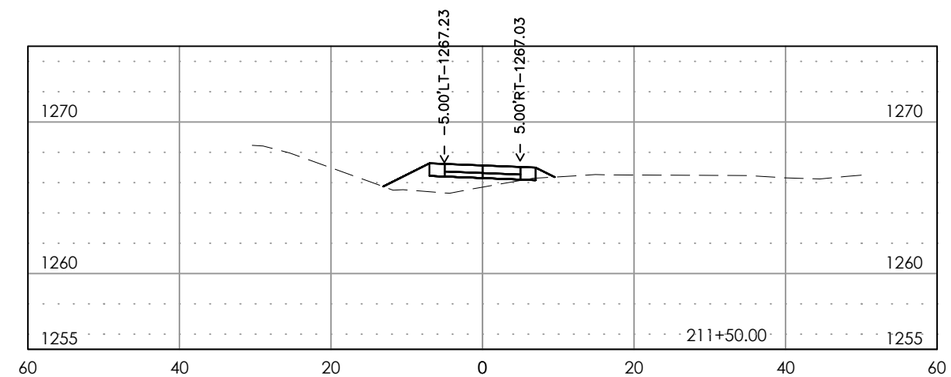
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

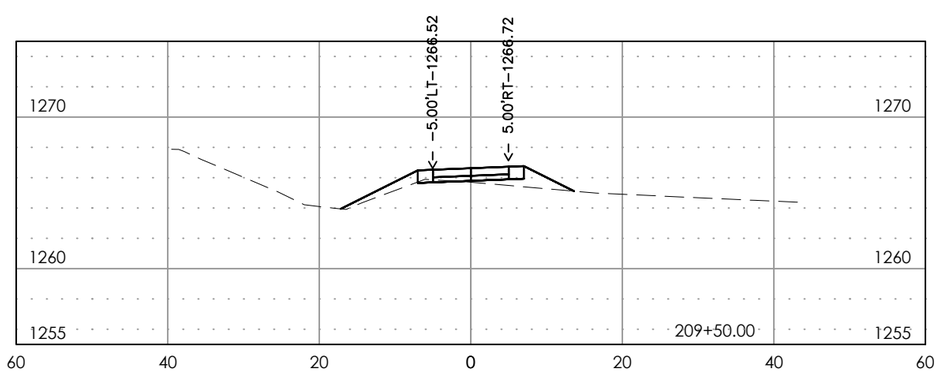
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X12	X25

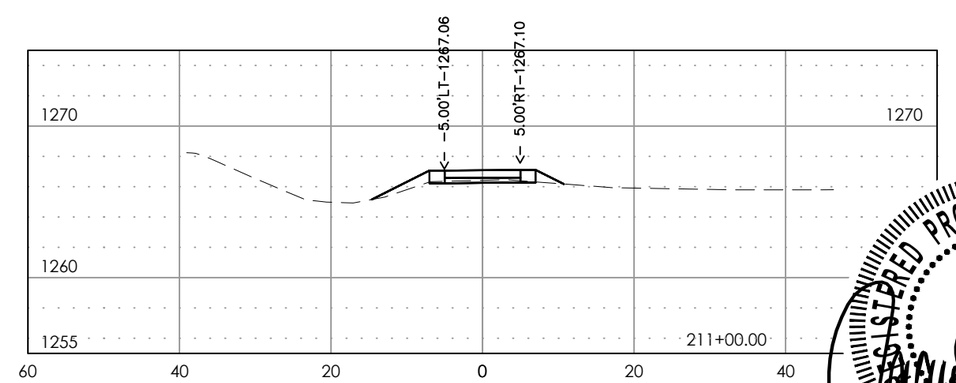












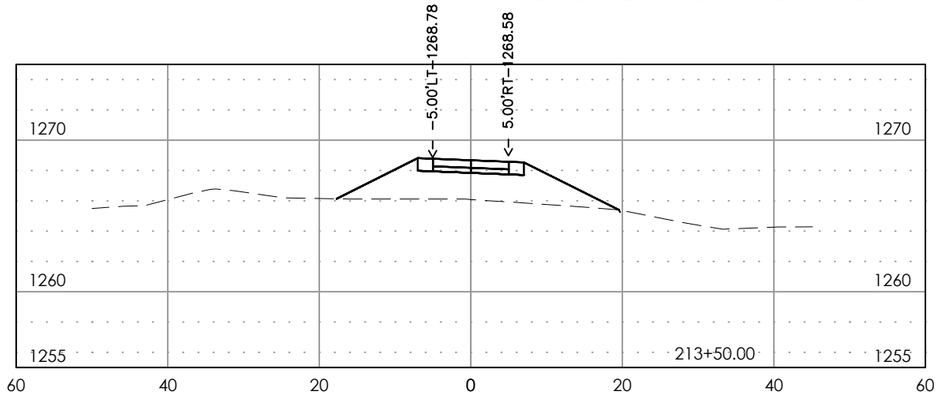
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

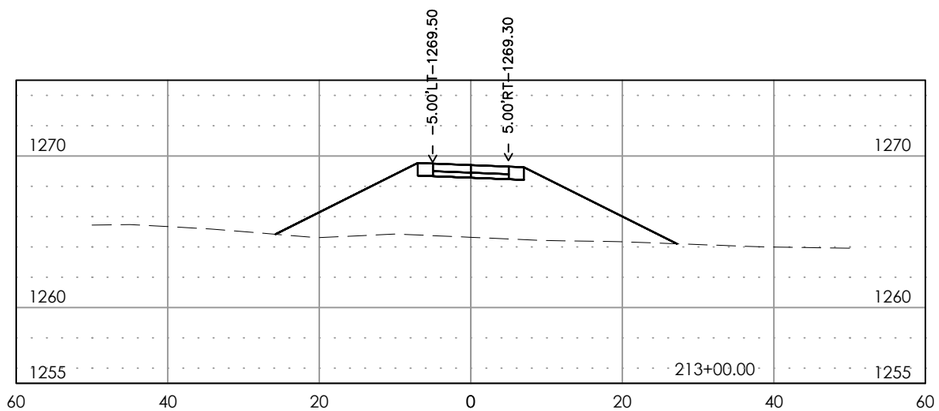
STOCKWELL ENGINEERS
SIOUX FALLS, SD

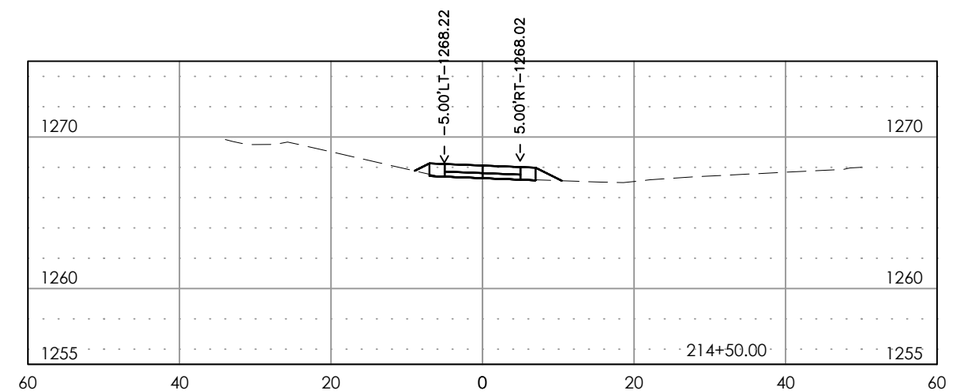
CROSS SECTIONS

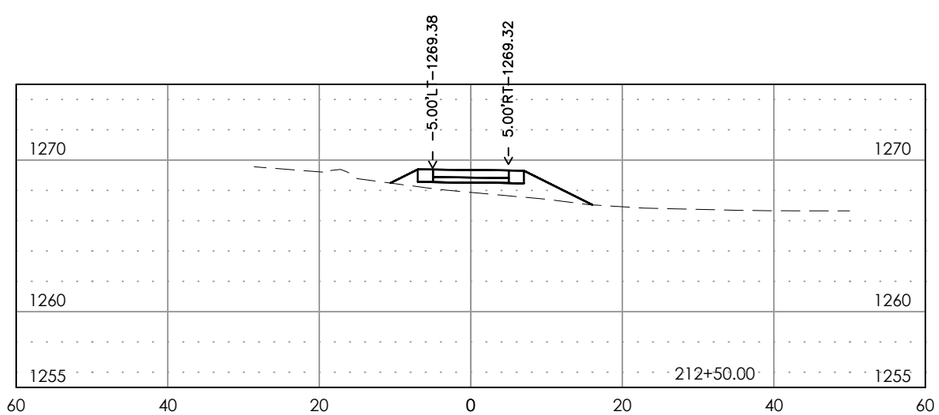
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

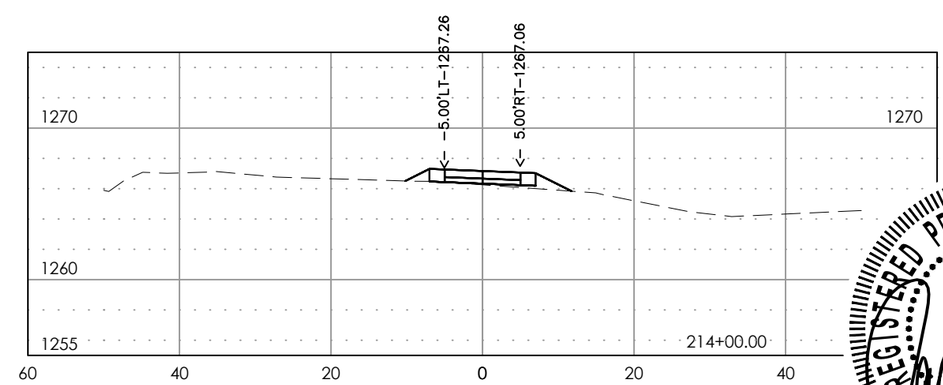
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X13	X25











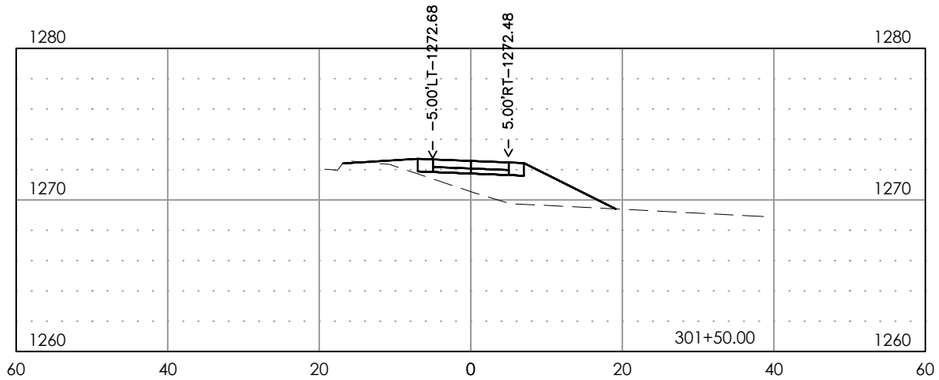
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

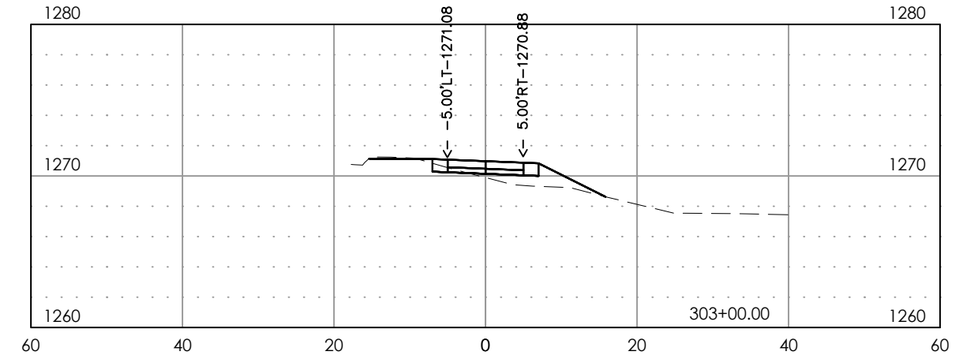
STOCKWELL ENGINEERS
SIOUX FALLS, SD

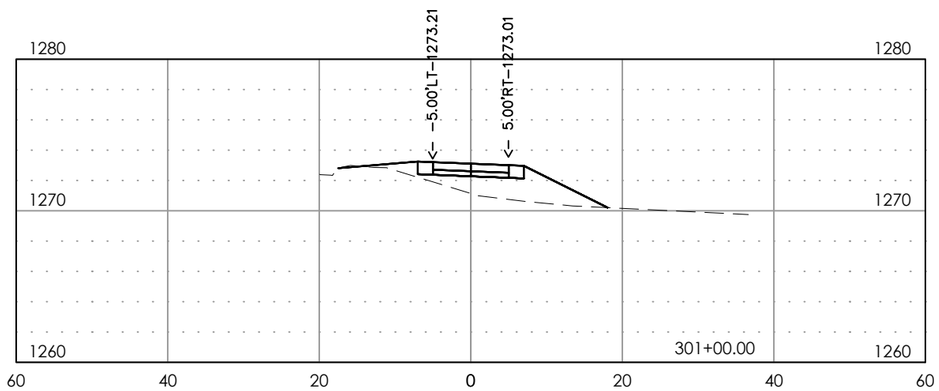
CROSS SECTIONS

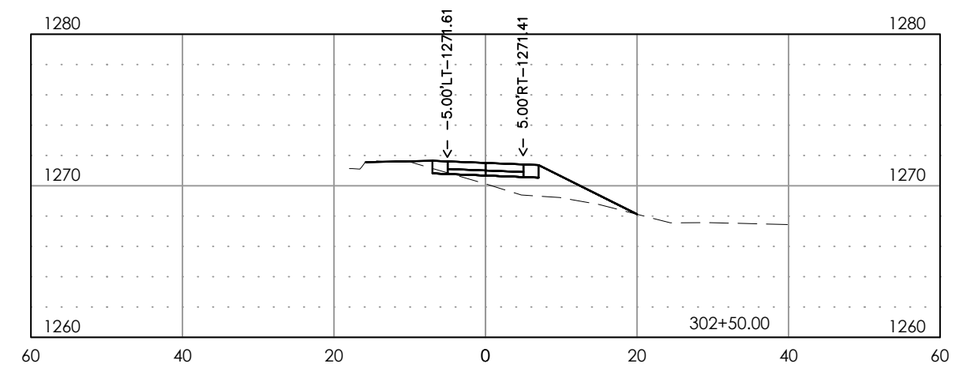
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

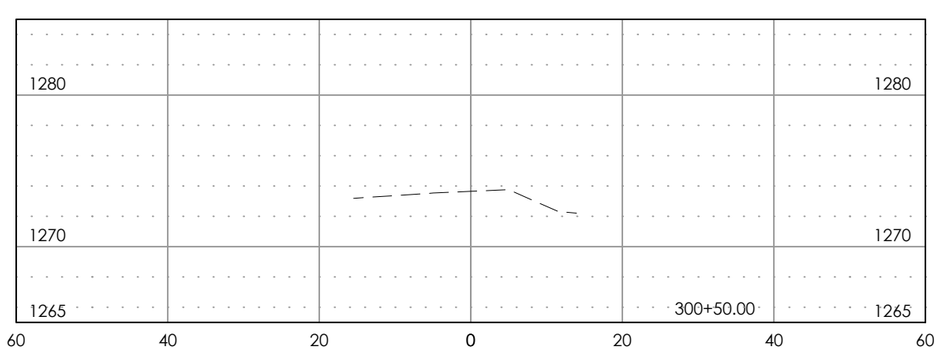
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X14	X25

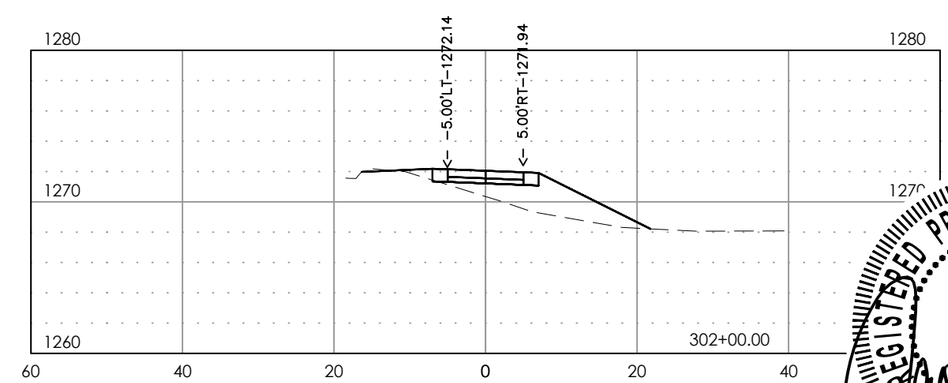












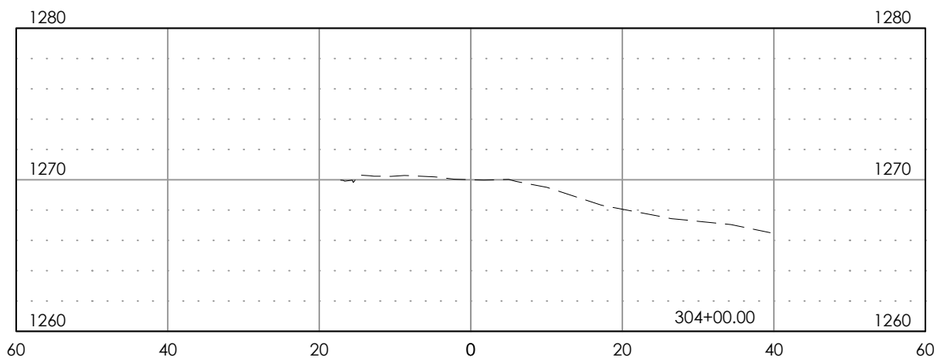
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA

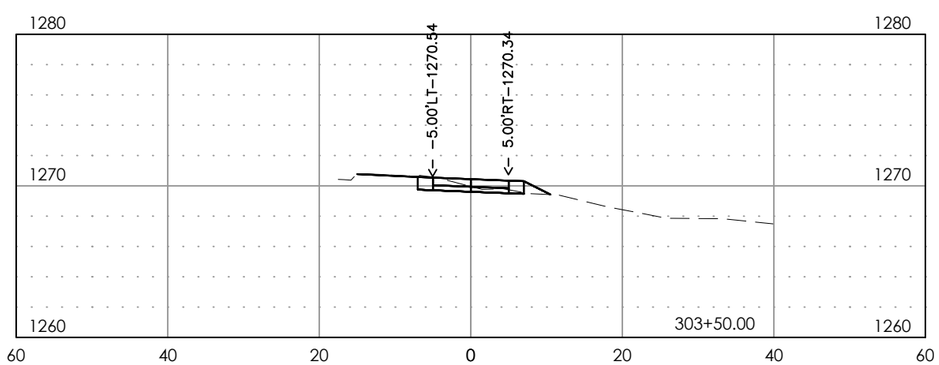
STOCKWELL ENGINEERS
SIOUX FALLS, SD

CROSS SECTIONS

HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X15	X25





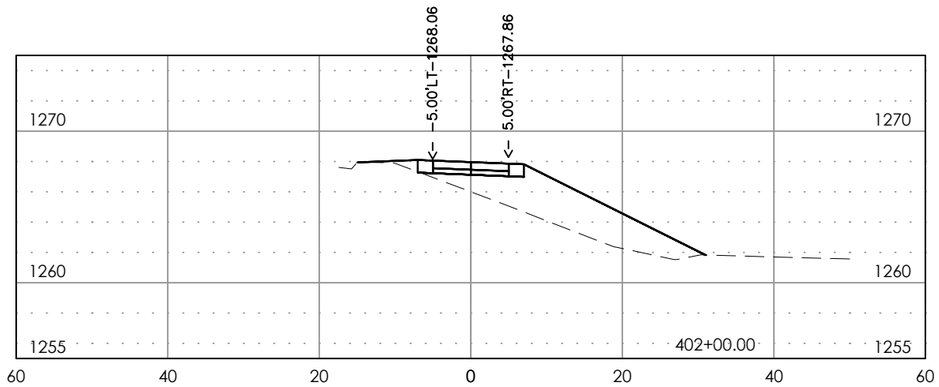
REGISTERED PROFESSIONAL ENGINEER
REG. NO.
8738
GAARD A.
ROOS
SOUTH DAKOTA
5/9/18

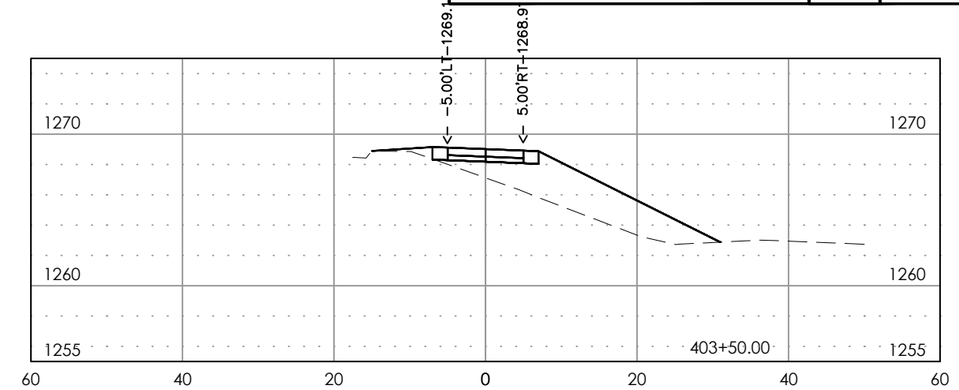
STOCKWELL ENGINEERS
SIOUX FALLS, SD

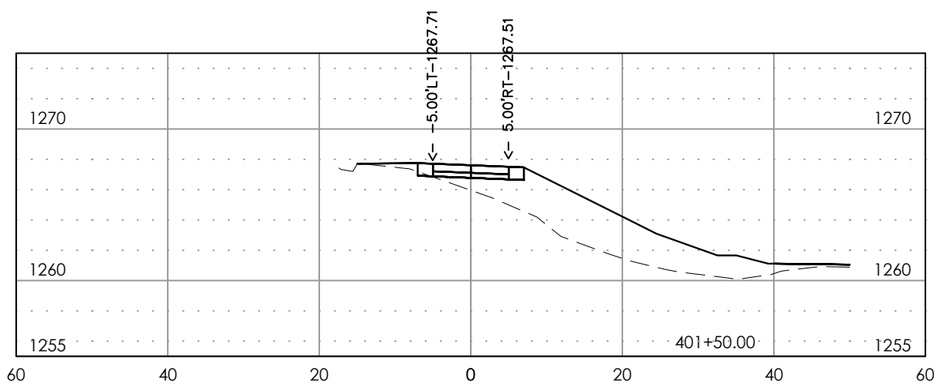
CROSS SECTIONS

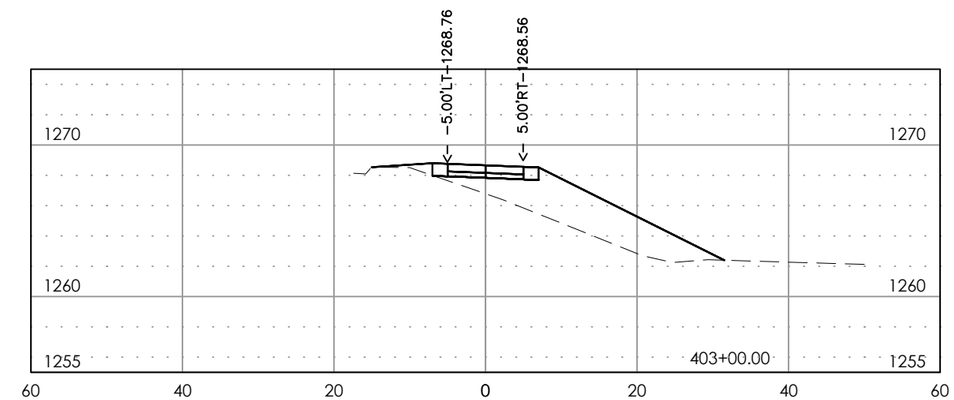
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

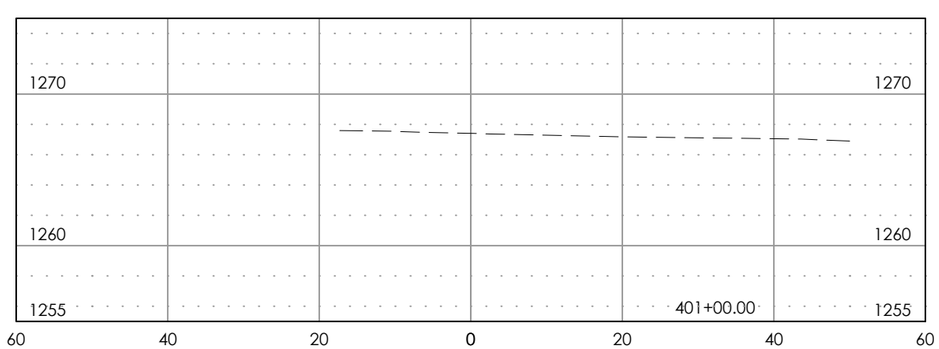
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X16	X25

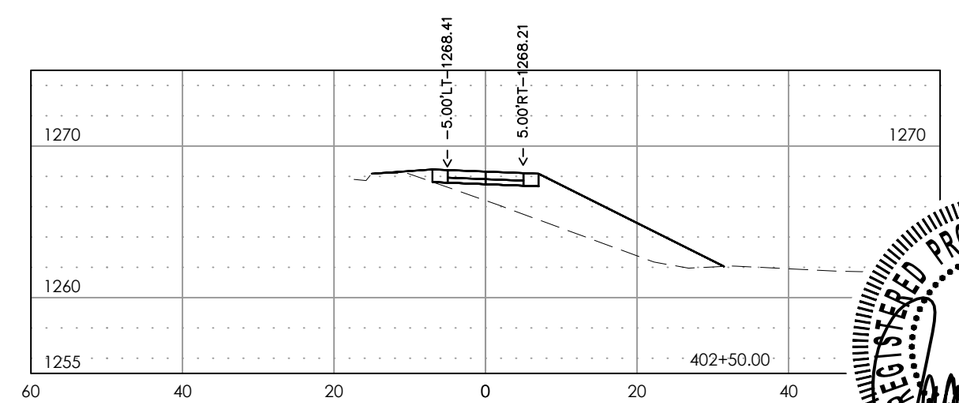












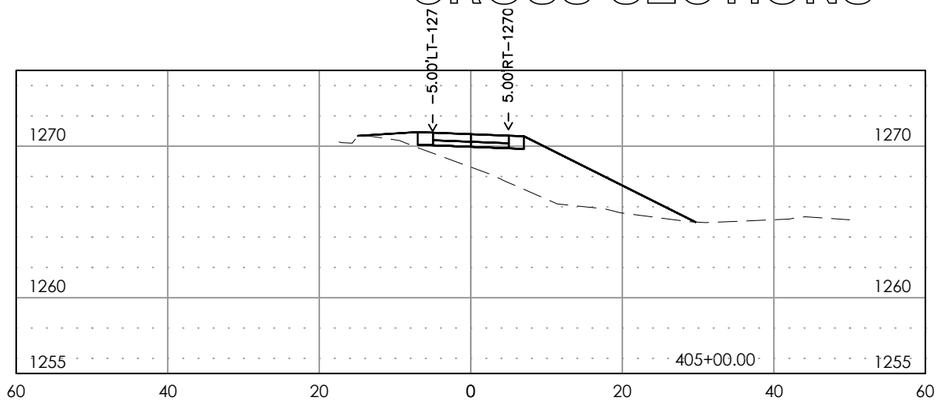
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. KOPS
SOUTH DAKOTA
5/9/18

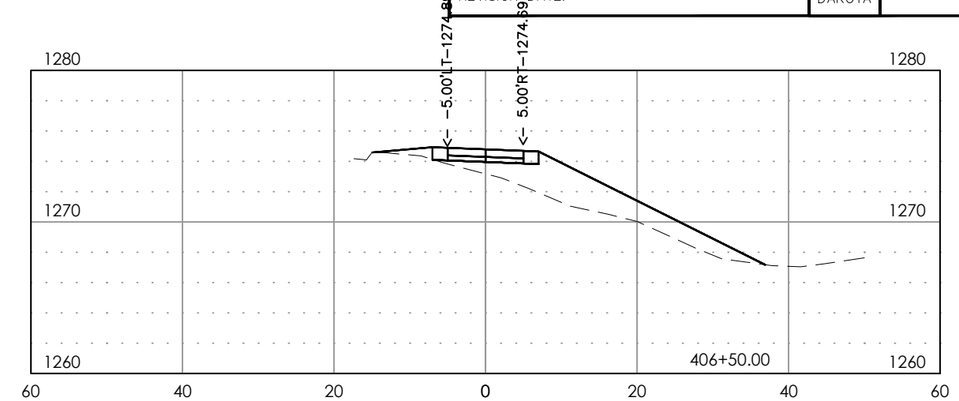
STOCKWELL ENGINEERS
SIOUX FALLS, SD

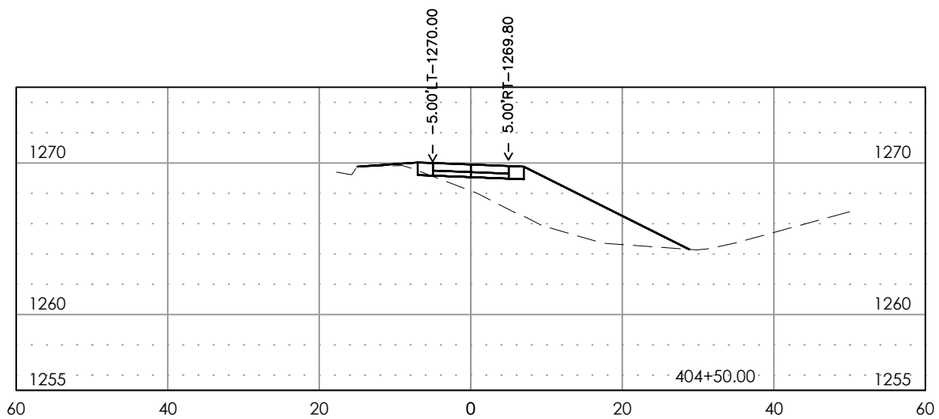
CROSS SECTIONS

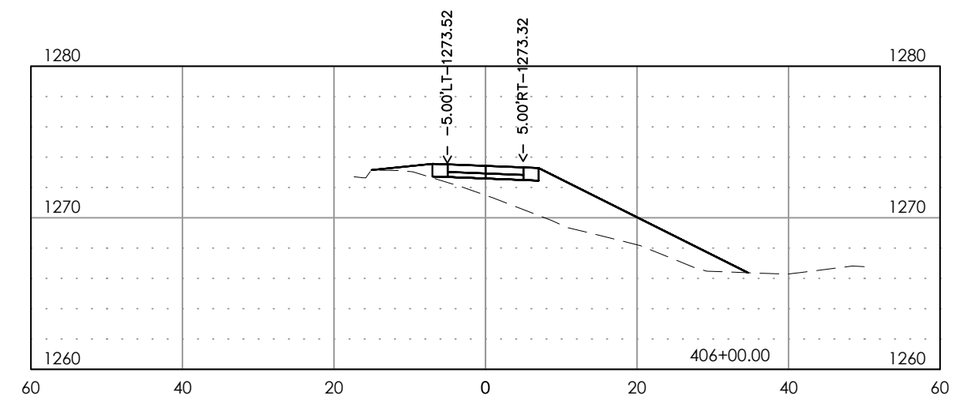
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

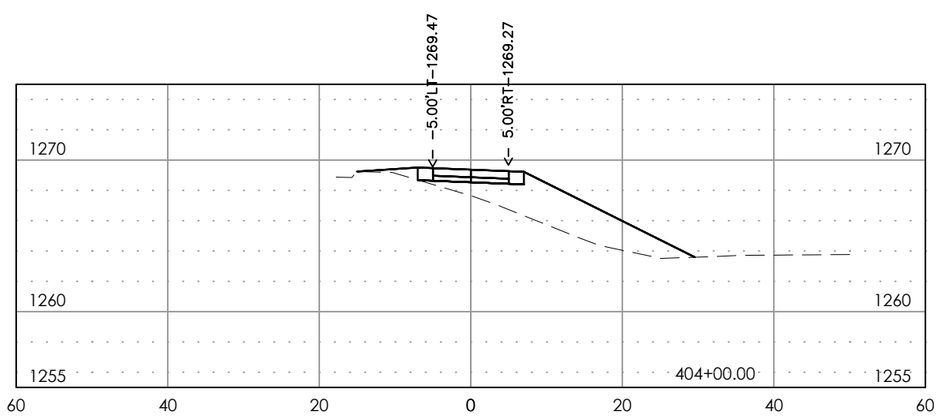
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X17	X25

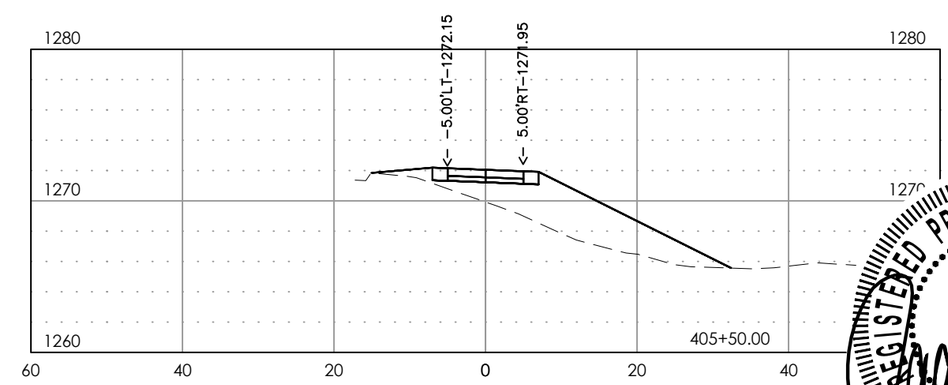












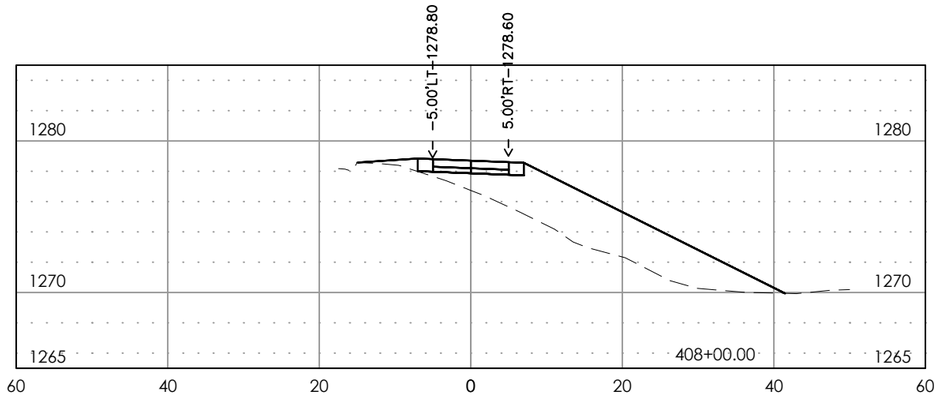
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GARD A. ROFS
SOUTH DAKOTA
5/9/18

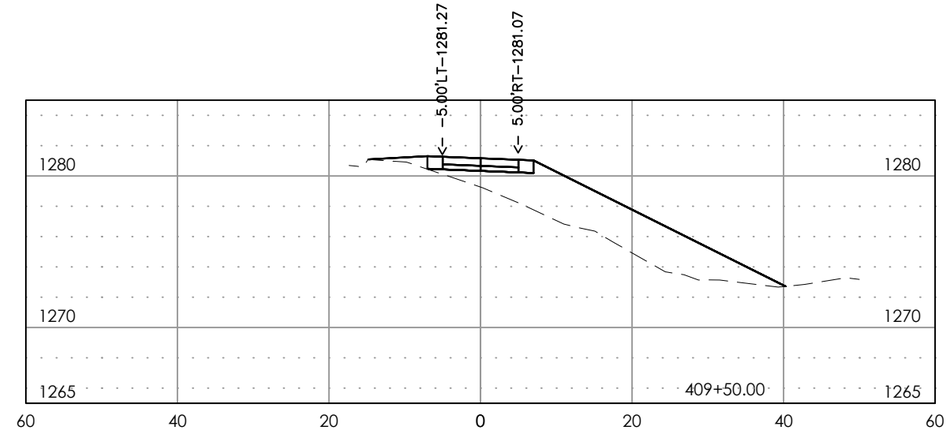
STOCKWELL ENGINEERS
SIOUX FALLS, SD

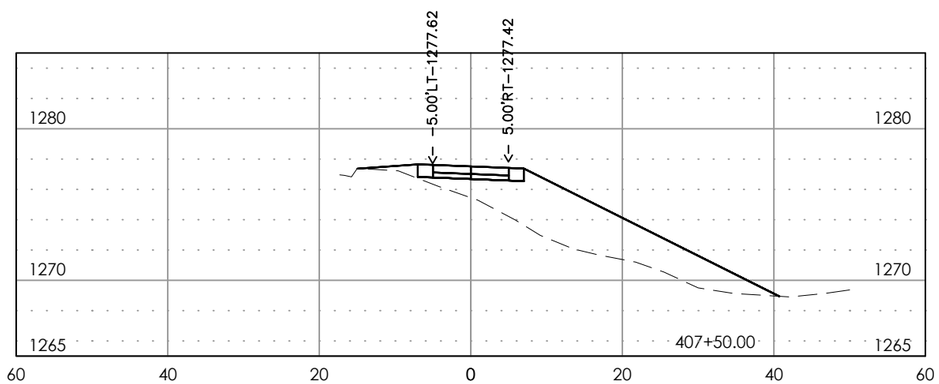
CROSS SECTIONS

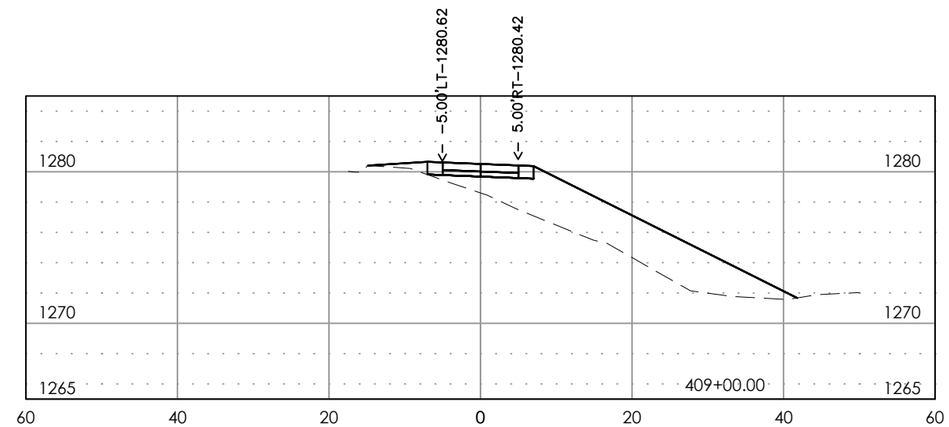
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

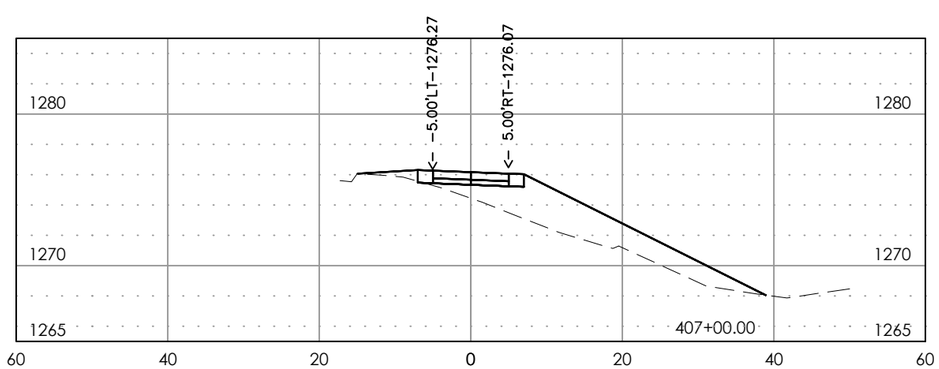
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X18	X25

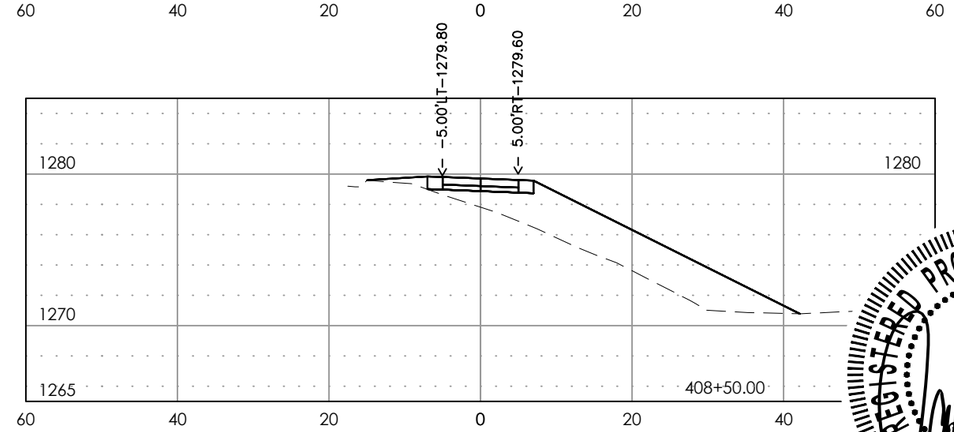












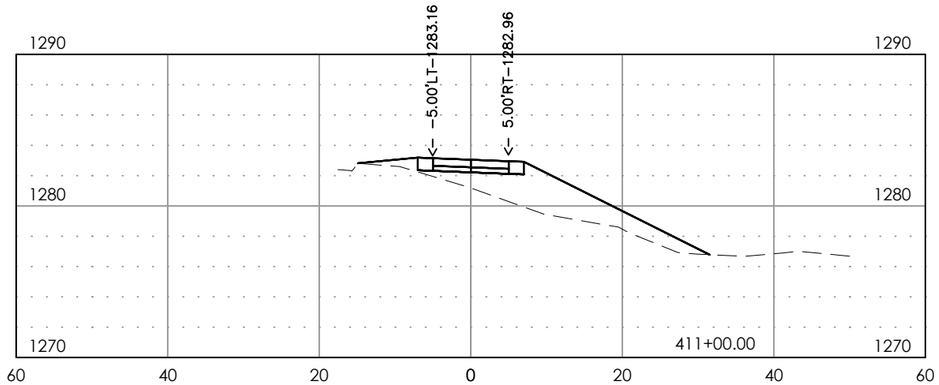
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

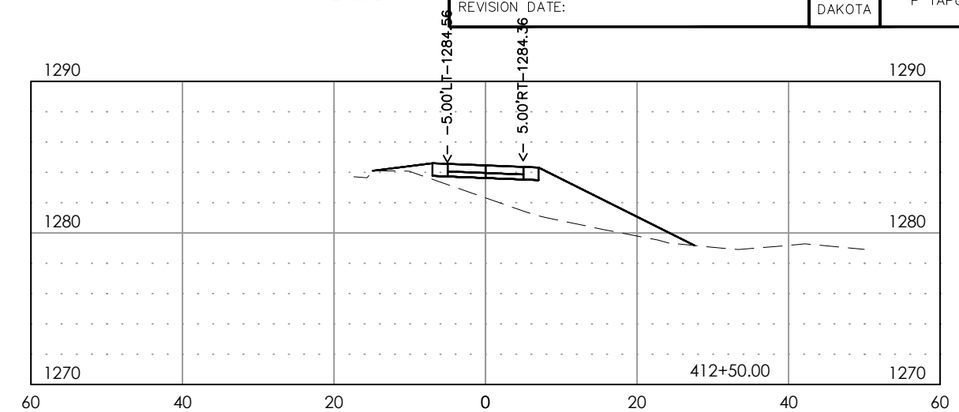
STOCKWELL ENGINEERS
SIOUX FALLS, SD

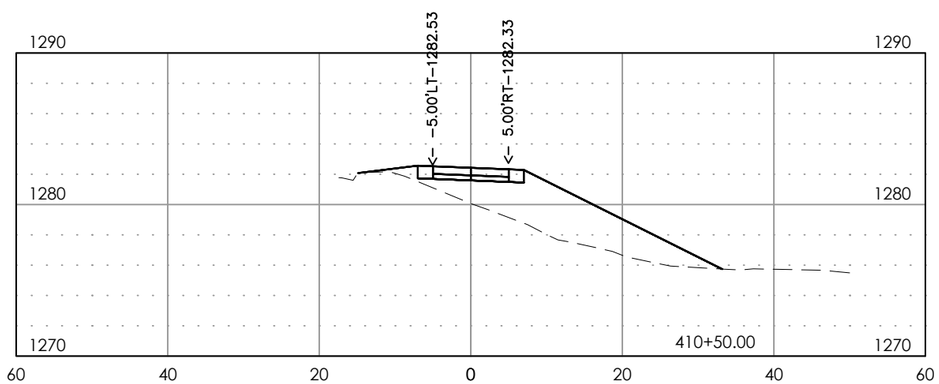
CROSS SECTIONS

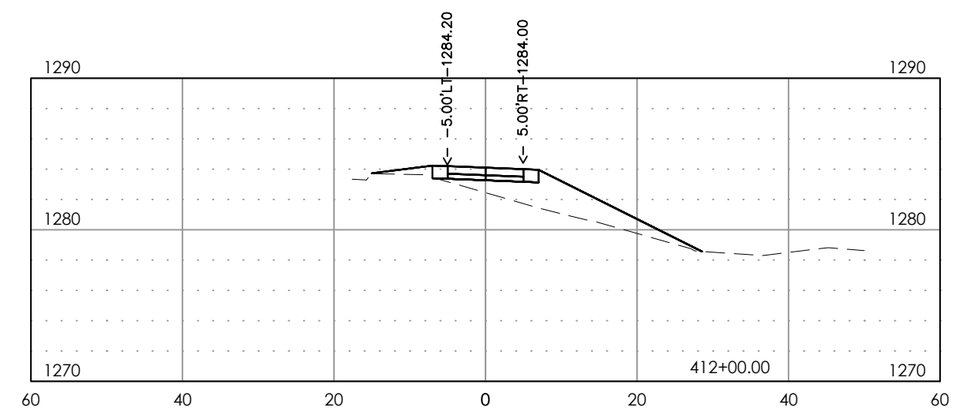
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

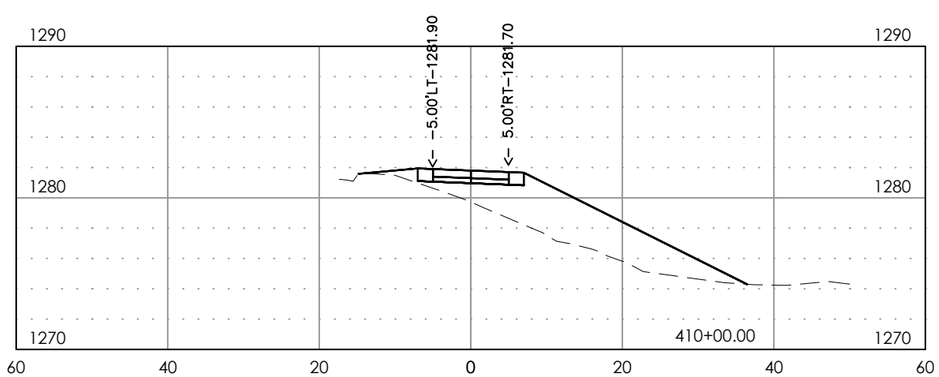
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X19	X25

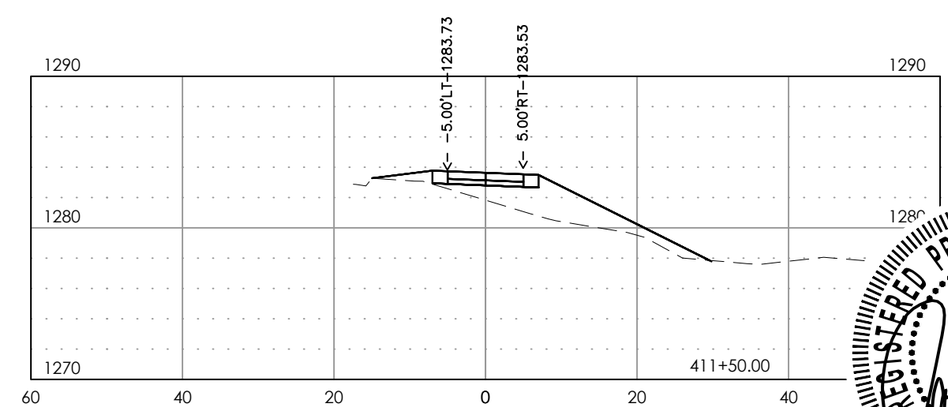












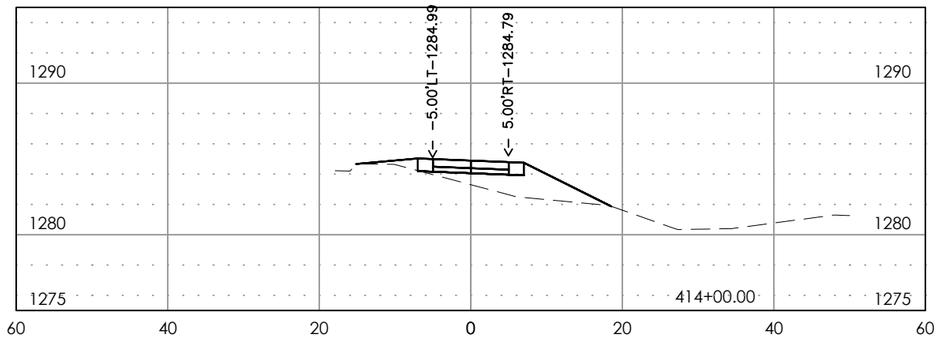
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARDA, ROPS
SOUTH DAKOTA
5/9/18

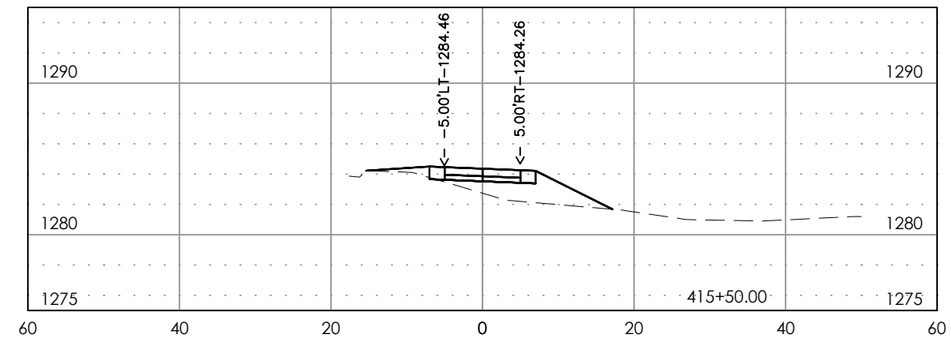
STOCKWELL ENGINEERS
SIOUX FALLS, SD

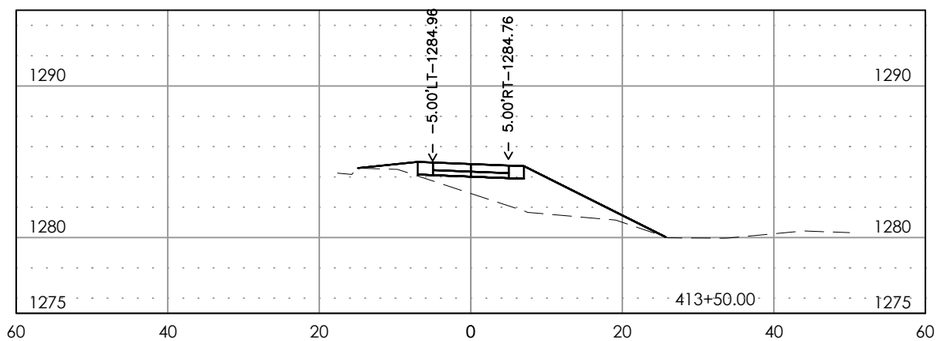
CROSS SECTIONS

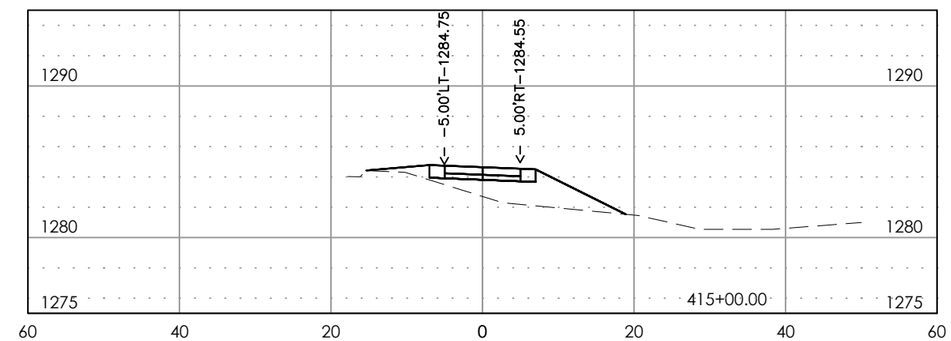
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

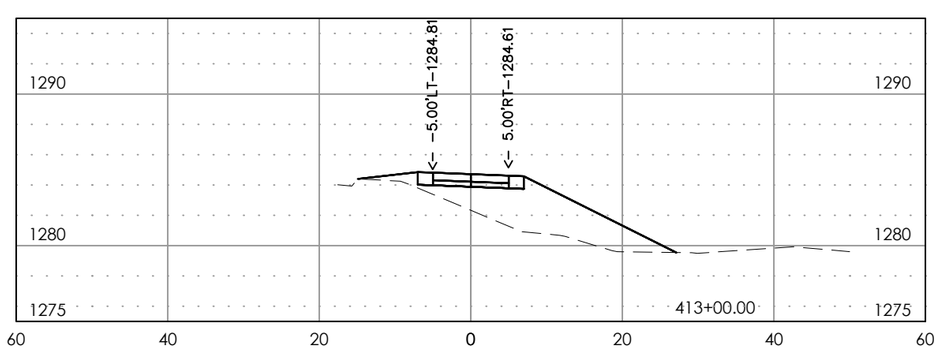
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X20	X25

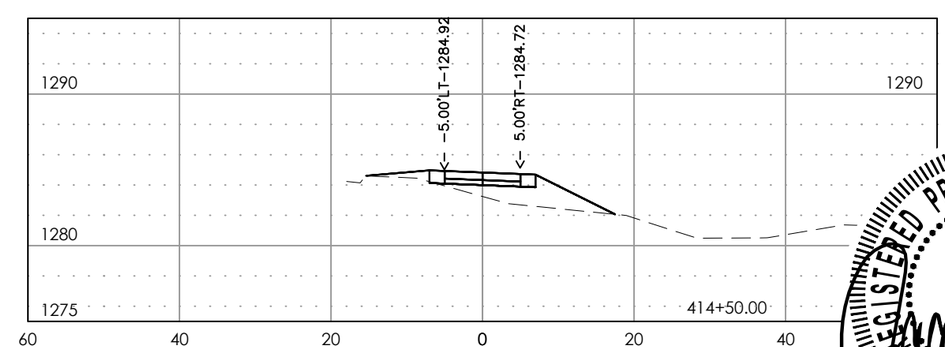












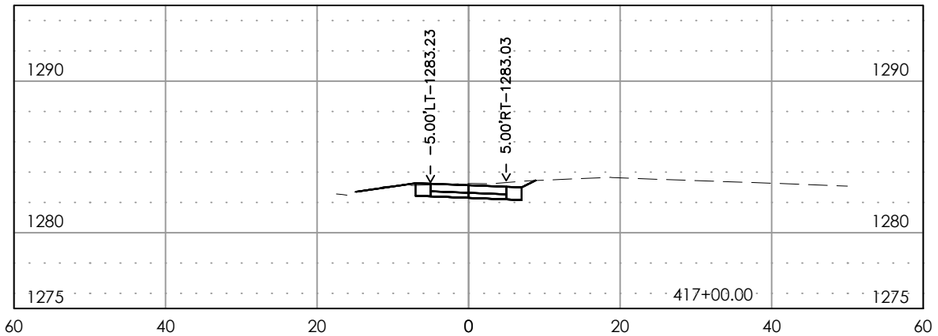
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

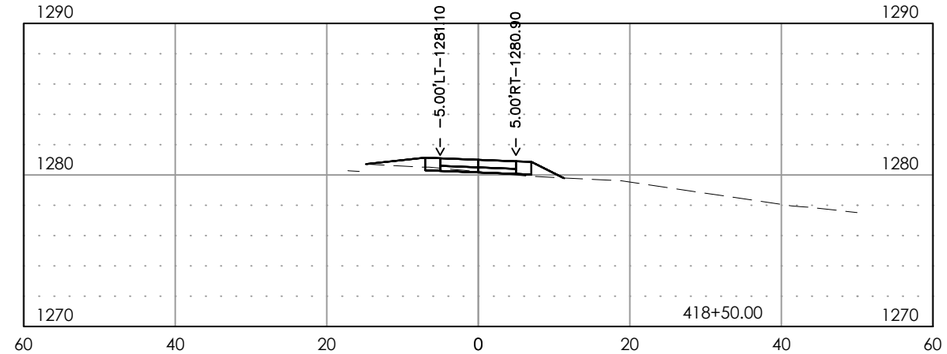
STOCKWELL ENGINEERS
SIOUX FALLS, SD

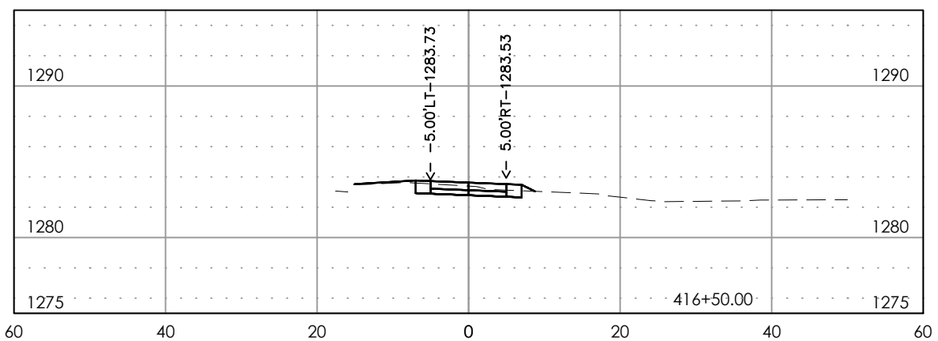
CROSS SECTIONS

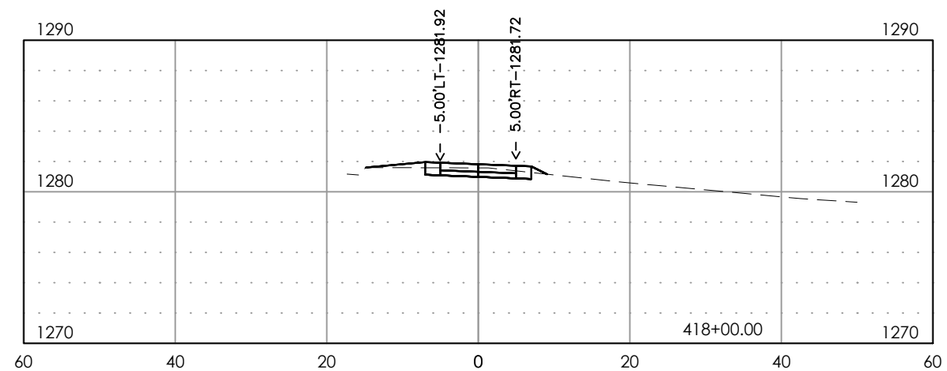
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

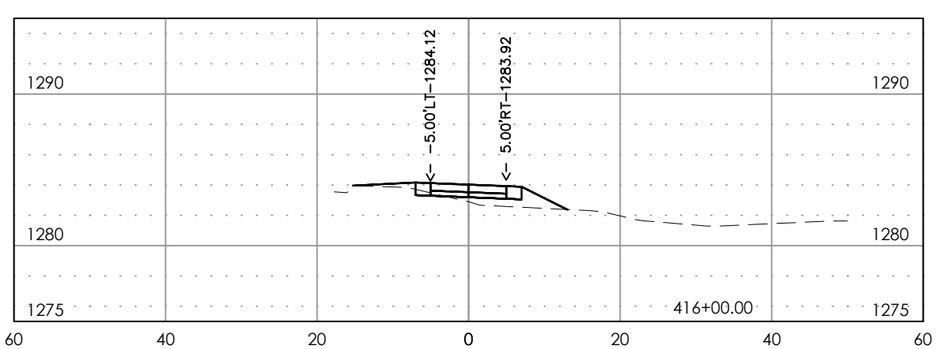
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X21	X25

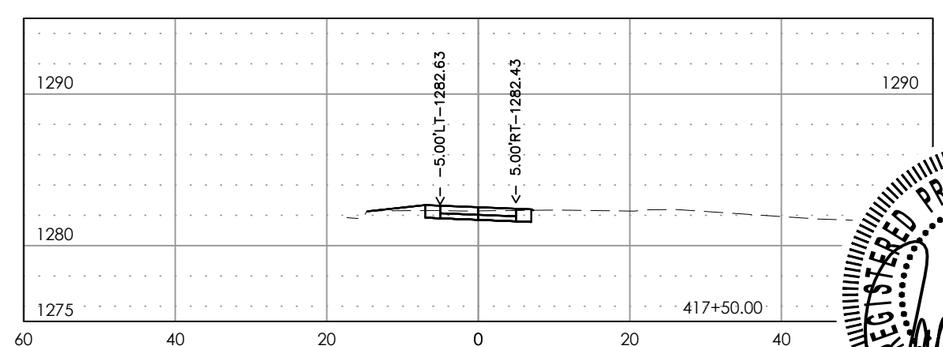










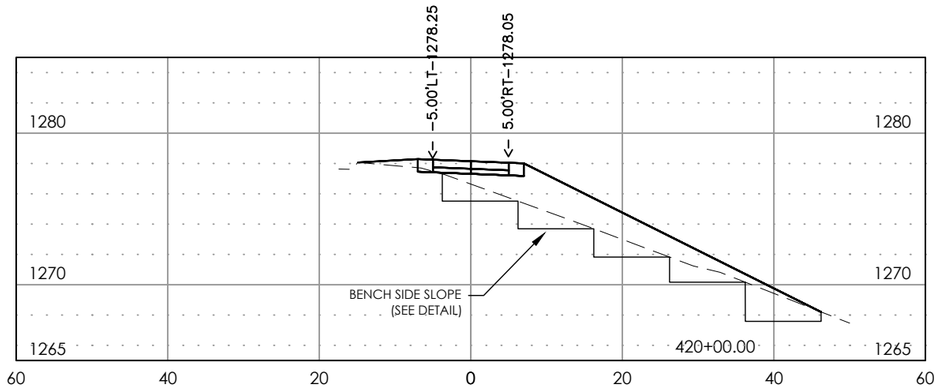


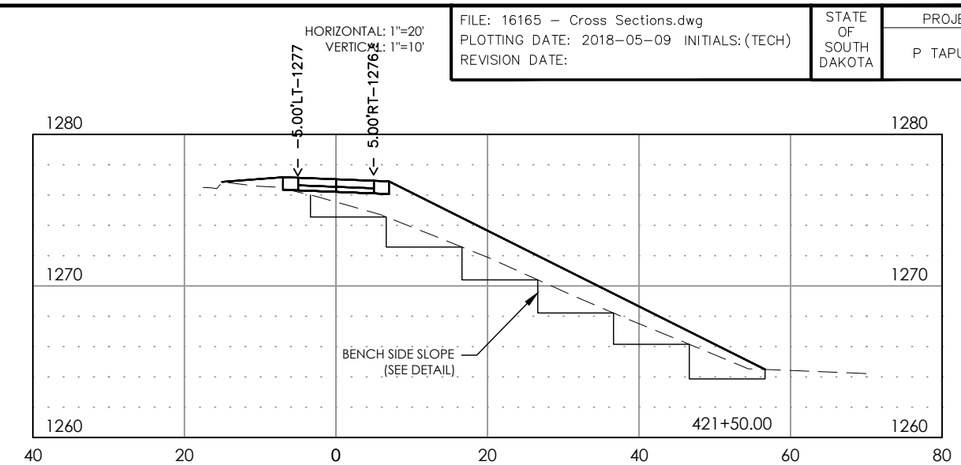
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

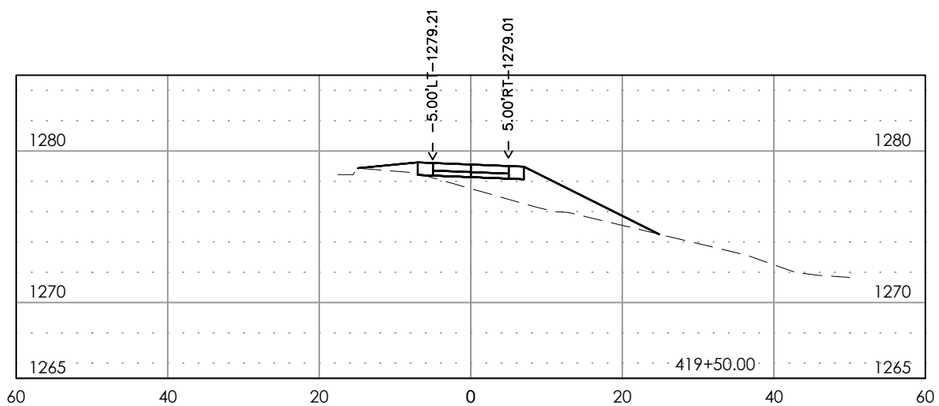
STOCKWELL ENGINEERS
SIOUX FALLS, SD

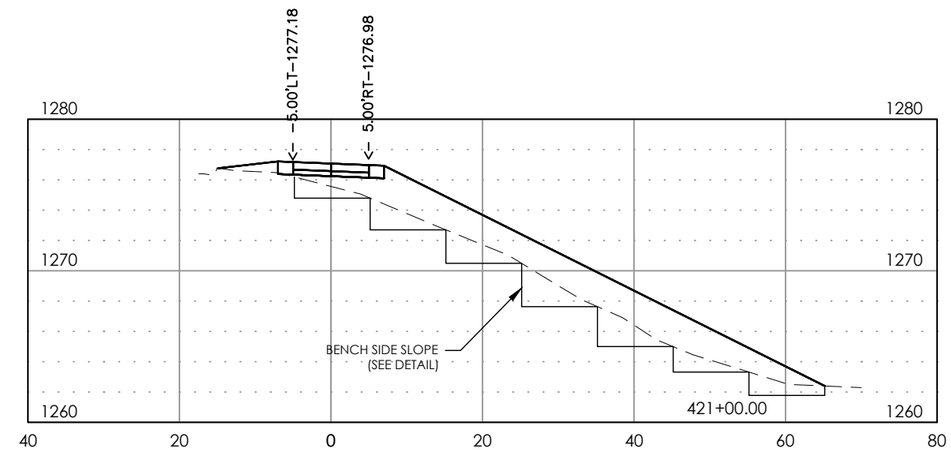
CROSS SECTIONS

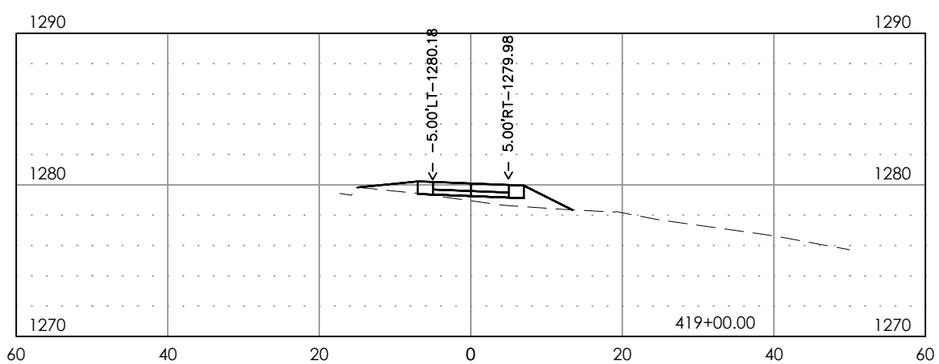
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
HORIZONTAL: 1"=20' VERTICAL: 1"=10'		P TAPU(12)	X22	X25

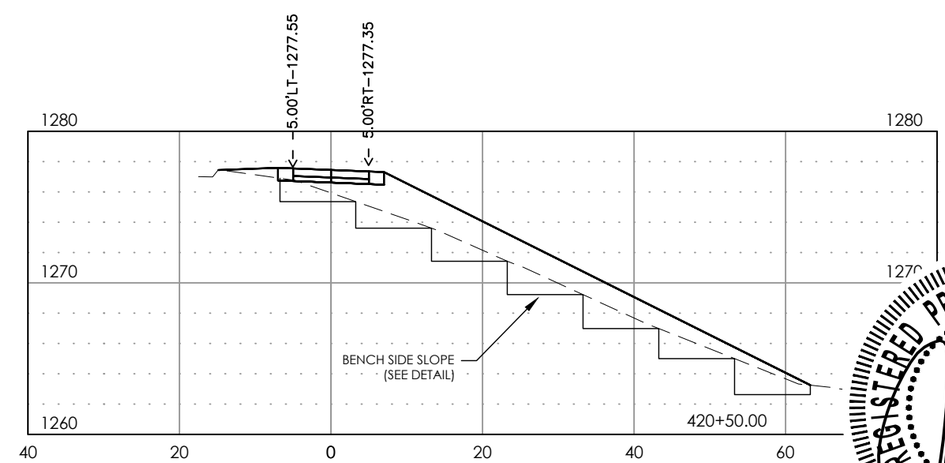












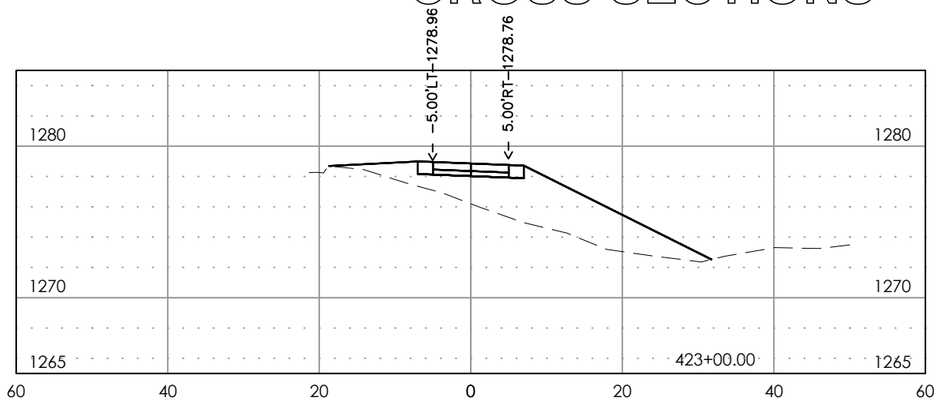
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARDA, ROFS
SOUTH DAKOTA
5/9/18

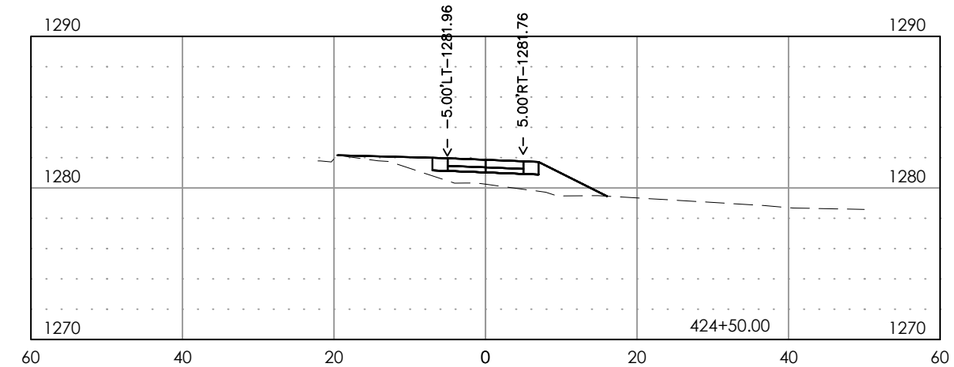
STOCKWELL ENGINEERS
SIOUX FALLS, SD

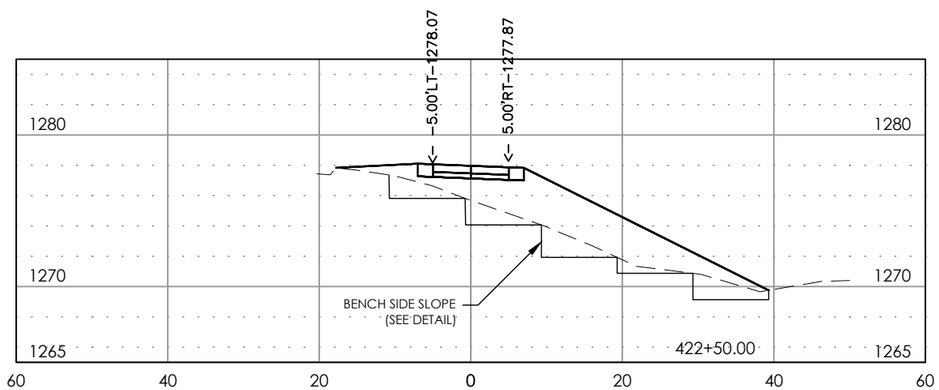
CROSS SECTIONS

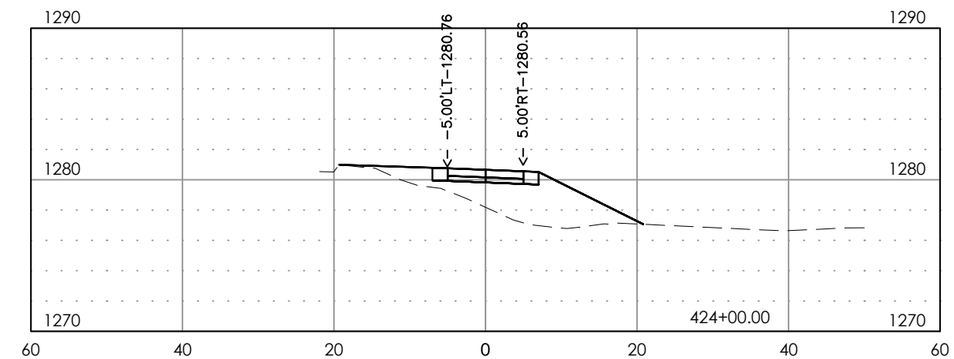
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

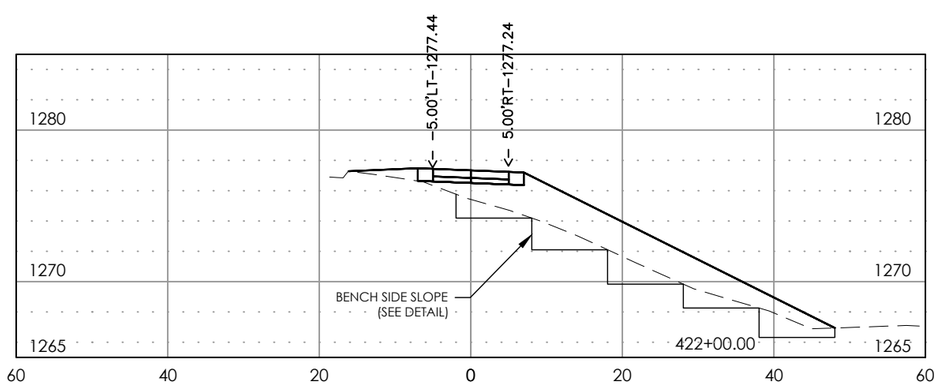
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X23	X25

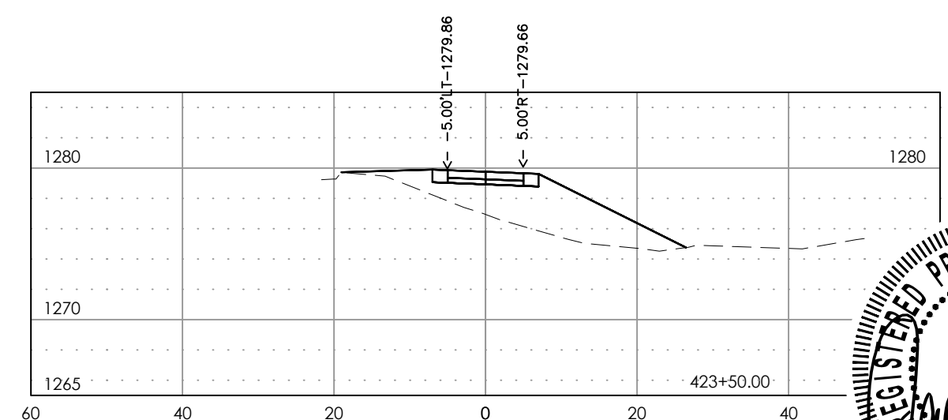












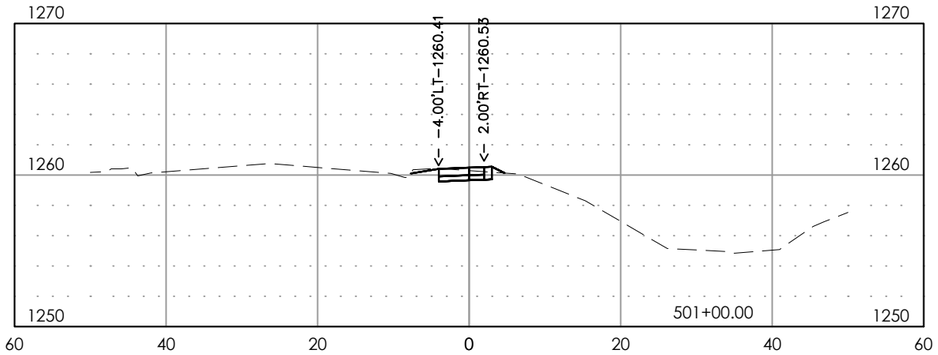
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARDA. ROPS
SOUTH DAKOTA
5/9/18

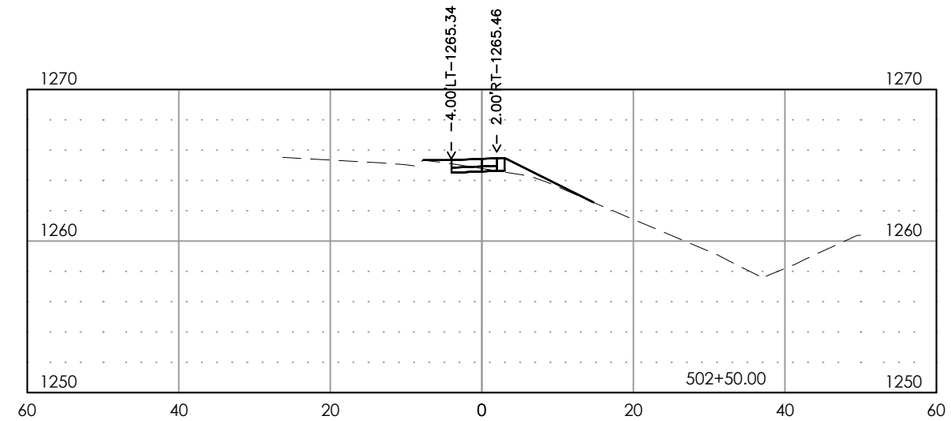
STOCKWELL ENGINEERS
SIOUX FALLS, SD

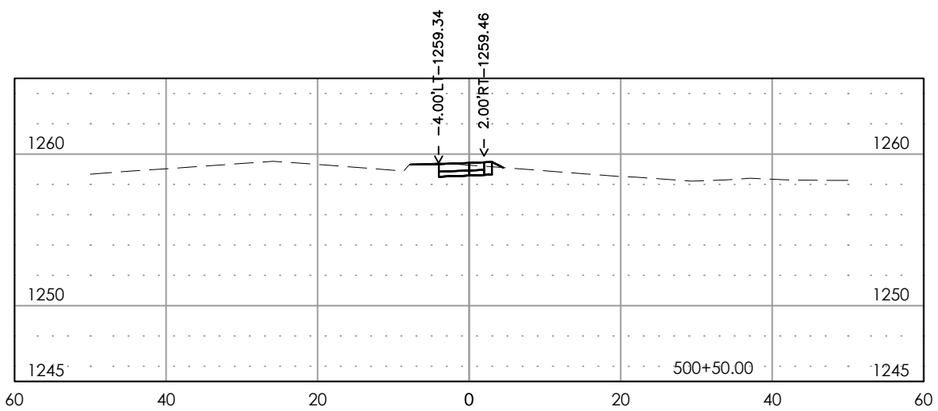
CROSS SECTIONS

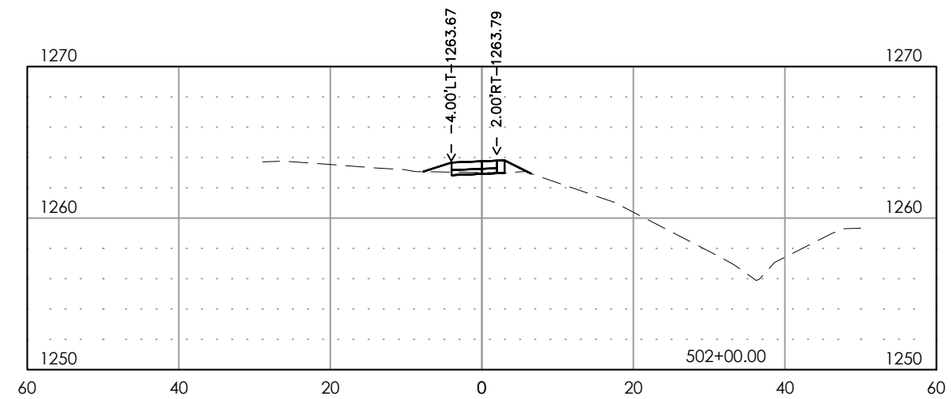
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

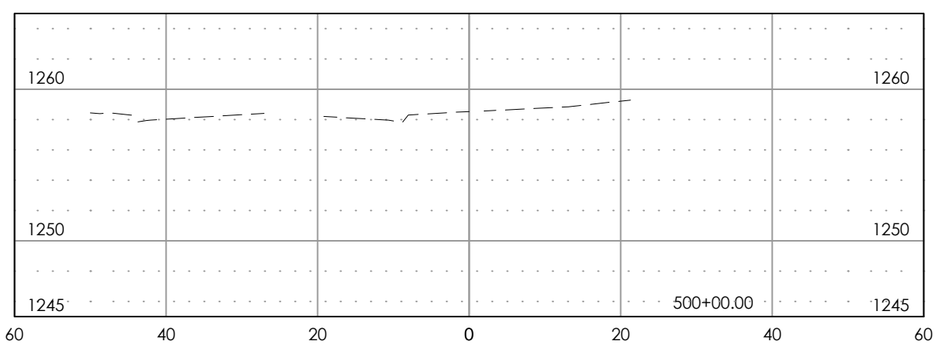
FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X24	X25

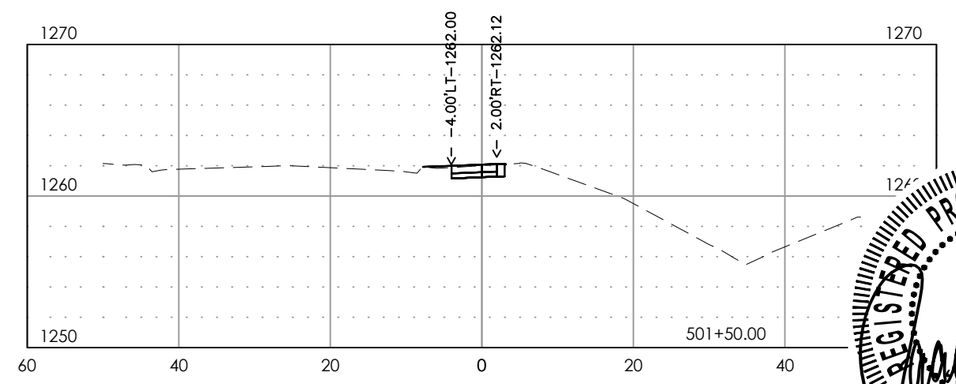












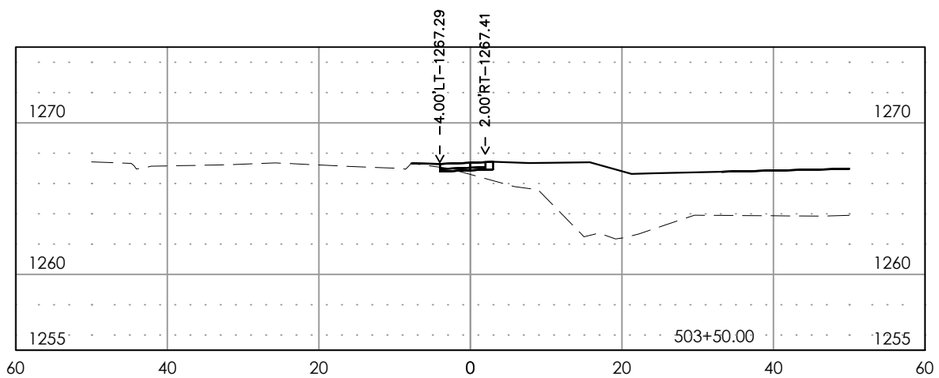
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

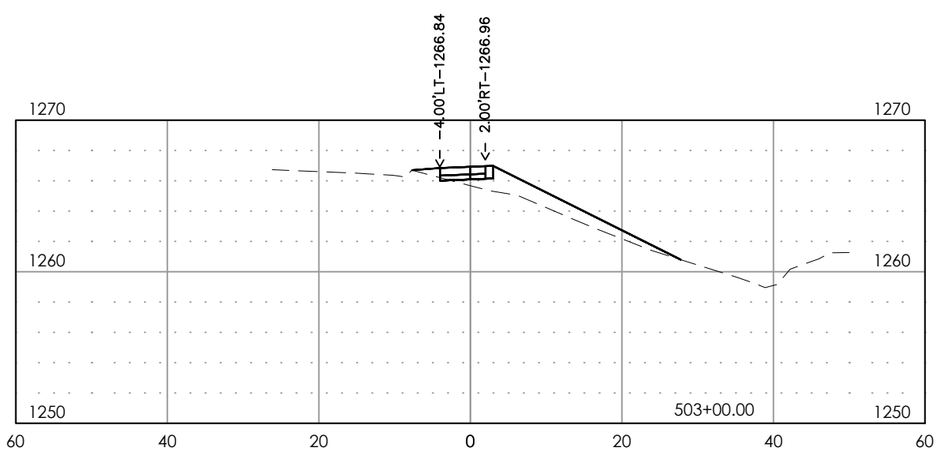
STOCKWELL ENGINEERS
SIOUX FALLS, SD

CROSS SECTIONS

HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

FILE: 16165 – Cross Sections.dwg PLOTTING DATE: 2018-05-09 INITIALS: (TECH) REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	X25	X25





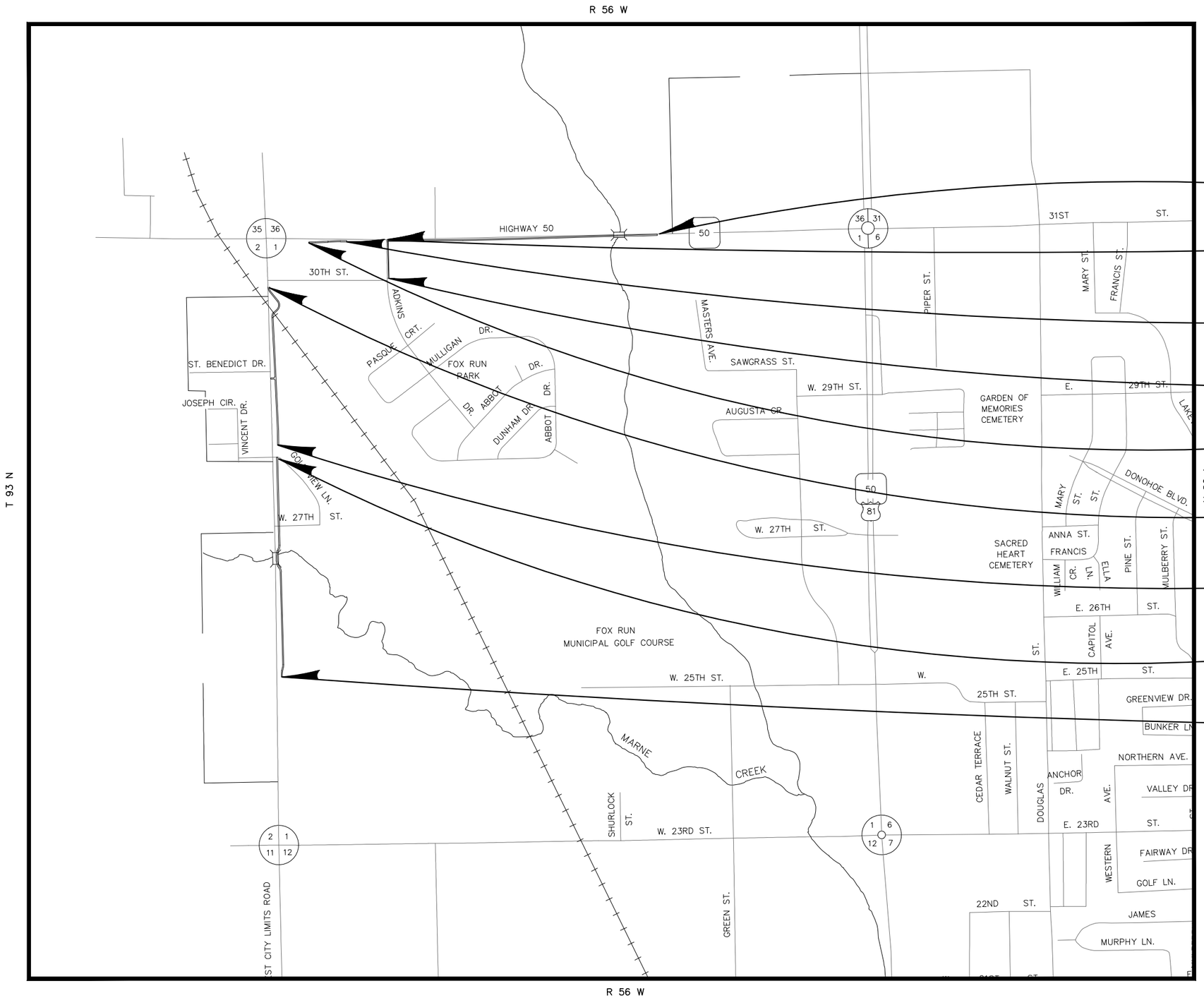
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. ROPS
SOUTH DAKOTA
5/9/18

STOCKWELL ENGINEERS
SIOUX FALLS, SD

SECTION Z: PIPE SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P TAPU(12)	Z1	Z3

FILE: 16165 – Title Page.dwg
PLOTTING DATE: 2018–05–09 INTIALS: MRS
REVISION DATE:



INDEX OF SHEETS

Z1 TITLE SHEET
Z2 THRU Z3 PIPE SECTIONS

END PROJECT P TAPU(12)
STA. 424+73
EAST OF THE INTERSECTION
OF HWY 50 AND ADKINS DR

BEGIN PROJECT P TAPU(12)
STA. 400+50
STA. 503+45
AT THE INTERSECTION
OF HWY 50 AND ADKINS DR

END PROJECT P TAPU(12)
STA. 303+80
WEST OF THE INTERSECTION
OF HWY 50 AND ADKINS DR

END PROJECT P TAPU(12)
STA. 500+32
APPROX. AT THE INTERSECTION
OF ADKINS DR AND 30TH STREET

BEGIN PROJECT P TAPU(12)
STA. 300+50
EAST OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND HWY 50

END PROJECT P TAPU(12)
STA. 214+86
SOUTH OF THE INTERSECTION
OF WEST CITY LIMITS AND 30TH STREET

BEGIN PROJECT P TAPU(12)
STA. 200+50
NORTH OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND GOLF VIEW LANE

END PROJECT P TAPU(12)
STA. 119+80
SOUTH OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND 27TH STREET

BEGIN PROJECT P TAPU(12)
STA. 100+50
NORTH OF THE INTERSECTION
OF WEST CITY LIMITS ROAD AND 23RD STREET

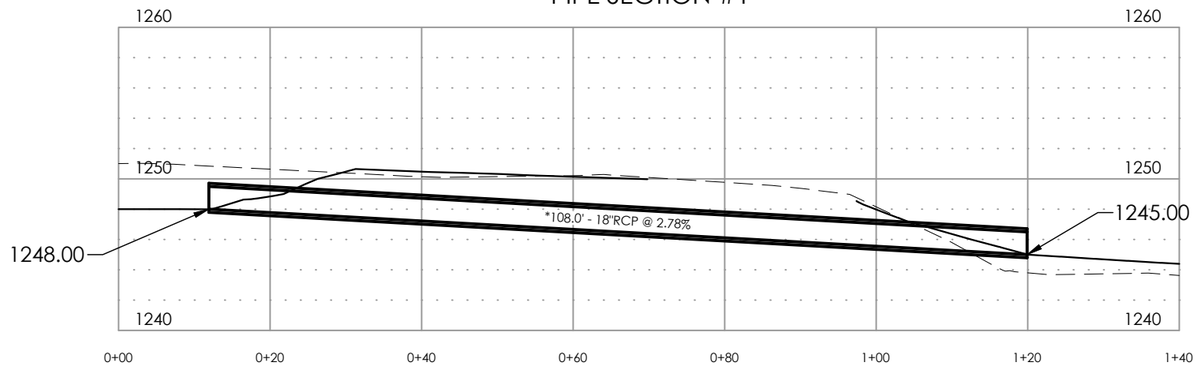
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8738
GAARD A. BORS
SOUTH DAKOTA
5/9/18

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

PIPE SECTIONS

FILE: 16165 – Pipe Crossings.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	Z2	Z3

PIPE SECTION #1



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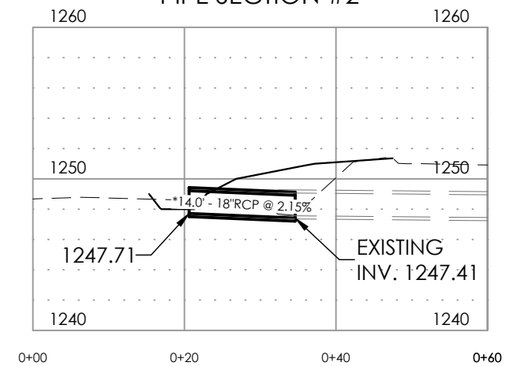

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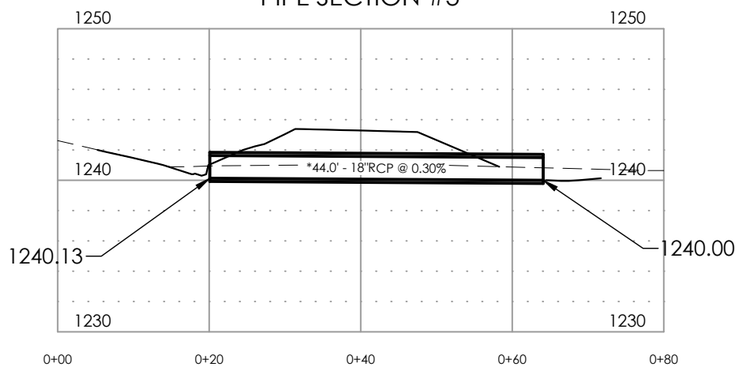

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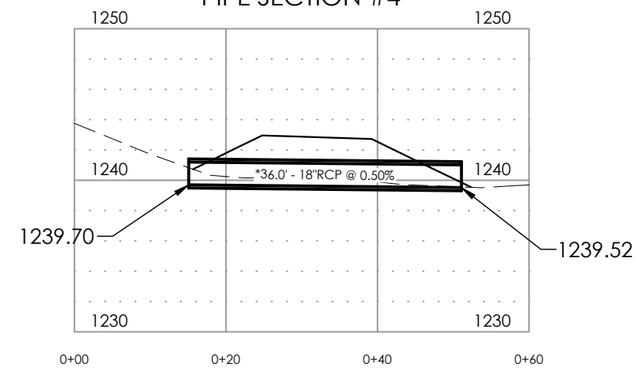

REGISTERED PROFESSIONAL ENGINEER
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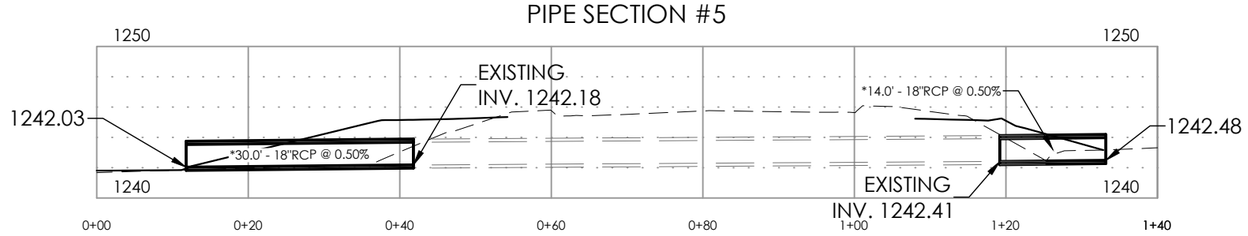
GAARD A. ROFS
SOUTH DAKOTA
5/9/18

PIPE SECTION #5



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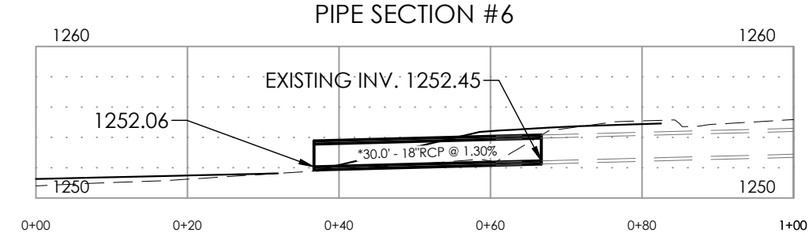

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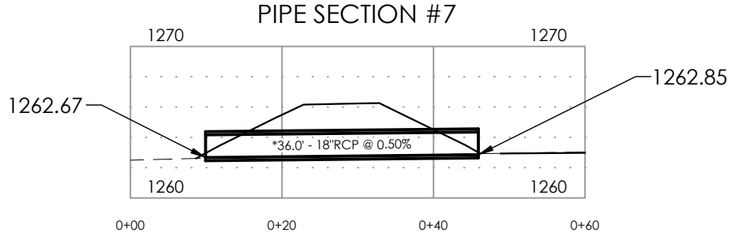
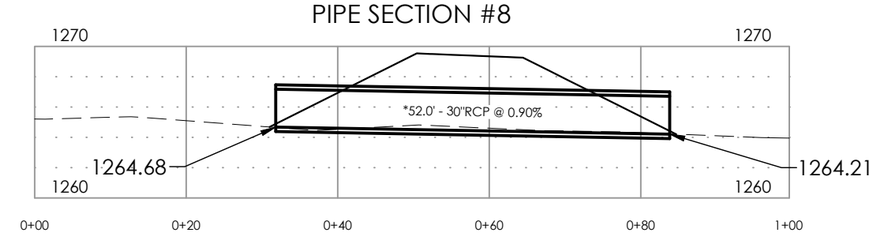


* - DENOTES ENTIRE PIPE LENGTH, INCLUDING FLARED END SECTIONS

PIPE SECTION #8

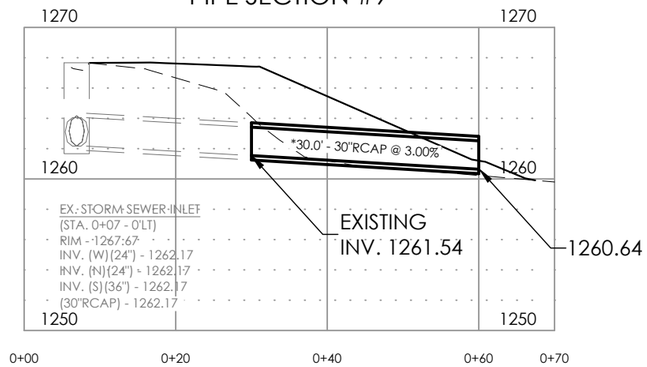


STOCKWELL ENGINEERS
SIOUX FALLS, SD

PIPE SECTIONS

FILE: 16165 – Pipe Crossings.dwg PLOTTING DATE: 2018-05-09 INITIALS: MRS REVISION DATE:	STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		P TAPU(12)	Z3	Z3

PIPE SECTION #9



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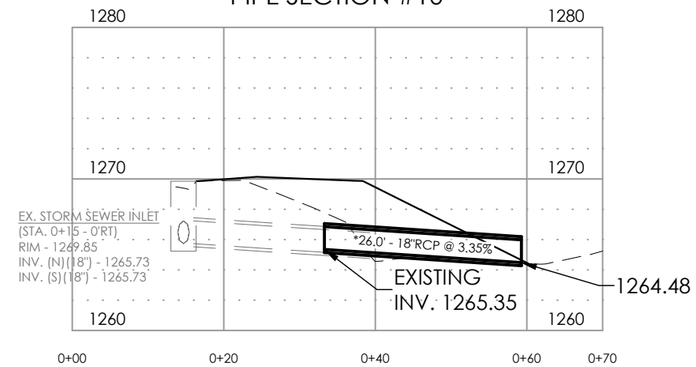

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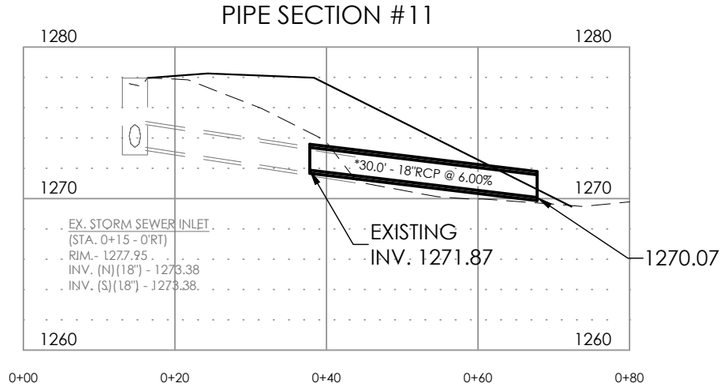

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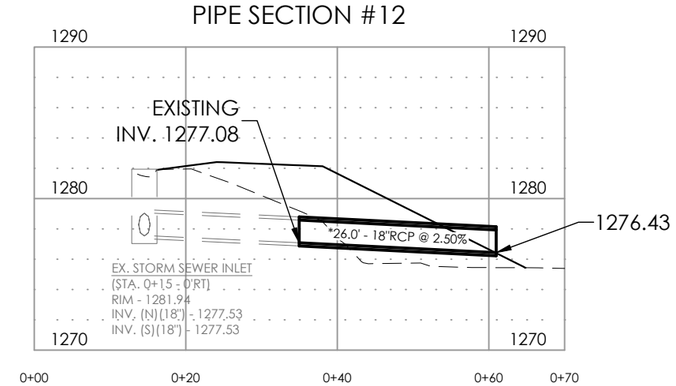

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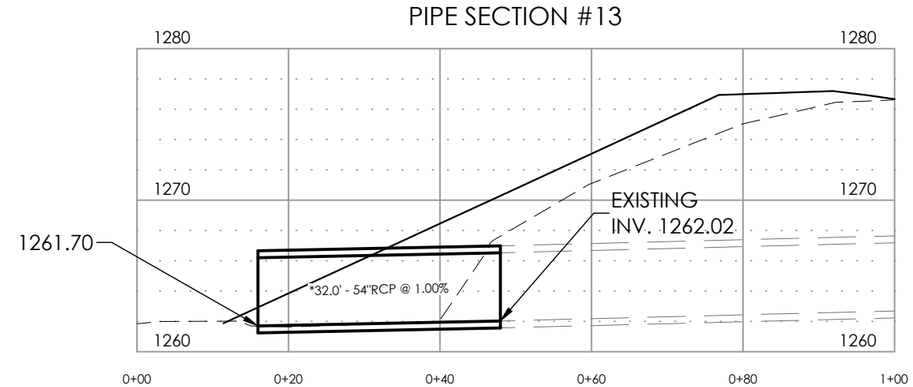

* - DENOTES ENTIRE PIPE LENGTH, INCLUDING FLARED END SECTIONS

REGISTERED PROFESSIONAL ENGINEER
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5/9/18

STOCKWELL ENGINEERS
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