

September 27, 2024

ADDENDUM NO. 2

**RE: Item #1, October 2, 2024 Letting - NH-PH 0385(50)96, PCN 03VD, Pennington County -
Grading, Interim Surfacing, Replace Str (2-13x13 CIP & 12x12 CIP RCBC)**

TO WHOM IT MAY CONCERN:

The following addenda to the plans shall be inserted and made a part of your proposal for the referenced project.

SPECIAL PROVISIONS: NO CHANGE

SDEBS BID PROPOSAL: *The electronic bid proposal for this contract has been revised to include the changes associated with this addendum. Bidders must log in to the SDEBS to retrieve and incorporate these changes into their bid.*

Bid Items were added:

Alternate A – Deep Excavation Pipe

Add Bid Item 110E0500 “Remove Pipe Culvert”

Add Bid Item 421E0110 “Pipe Culvert Undercut for Alternate Bidding”

Alternate B – Bore and Jack Steel Pipe

Add Bid Item 421E0110 “Pipe Culvert Undercut for Alternate Bidding”

Add Bid Item 464E0100 “Controlled Density Fill”

Bid Item 632E1340 “2.5”x2.5” Perforated Tube Post”

Quantities for Bid Items were changed:

Bid Item 421E0100 “Pipe Culvert Undercut” changed from 1,216 to 411 CuYd

Bid Item 730E0251 “Special Permanent Seed Mixture 1” changed from 1,727 to 1,816 Lb

Bid Item 732E0200 “Fiber Mulching” changed from 130 to 40 Ton

Bid Items were removed:

Bid Item 632E1330 “2.25”x2.25” Perforated Tube Post”

PLANS: Please destroy sheets A2, A3, A4, B2, B3, B10, B12, B13, B14, D2, D4, and S2 and replace with the enclosed sheets, dated 9/23/24, 9/24/24 and 9/25/24.

Sheets A2 & B2:

Quantities for Bid Items were changed:

Bid Item 421E0100 “Pipe Culvert Undercut” changed from 1,216 to 411 CuYd

Sheets A3 & B3:

Bid Items were added:

Alternate A – Deep Excavation Pipe

Add Bid Item 110E0500 “Remove Pipe Culvert”

Add Bid Item 421E0110 "Pipe Culvert Undercut for Alternate Bidding"
Alternate B – Bore and Jack Steel Pipe

Add Bid Item 421E0110 "Pipe Culvert Undercut for Alternate Bidding"

Add Bid Item 464E0100 "Controlled Density Fill"

Sheet A4: Section D – Erosion and Sediment Control
Quantities for Bid Items were changed:
Bid Item 730E0251 "Special Permanent Seed Mixture 1" changed from 1,727 to 1,816 Lb
Bid Item 732E0200 "Fiber Mulching" changed from 130 to 40 Ton

Section S – Permanent Signing

Bid Items were added:

Bid Item 632E1340 "2.5"x2.5" Perforated Tube Post"

Bid Items were removed:

Bid Item 632E1330 "2.25"x2.25" Perforated Tube Post"

Sheet B10: PIPE CULVERT UNDERCUT table was revised. PIPE CULVERT UNDERCUT ALTERNATE A and PIPE CULVERT UNDERCUT ALTERNATE B tables were added.

Sheet B12: INCIDENTAL WORK, GRADING table was revised and TABLE OF REMOVE PIPE CULVERT ALTERNATE A was added and note spacing was adjusted.

Sheets B13-B14: TABLE OF CONTROLLED DENSITY FILL FOR PIPE Alternate B was added and note placement was adjusted.

Sheet D2: Section D - ESTIMATE OF QUANTITIES
Quantities for Bid Items were changed:
Bid Item 730E0251 "Special Permanent Seed Mixture 1" changed from 458 to 1,816 Lb
Bid Item 732E0200 "Fiber Mulching" changed from 130 to 40 Ton

PERMANENT SEEDING tables were revised.

Sheet D4: FIBER REINFORCED MATRIX note was revised.

Sheet S2: Section S - ESTIMATE OF QUANTIITES
Bid Items were added:
Bid Item 632E1340 "2.5"x2.5" Perforated Tube Post"
Bid Items were removed:
Bid Item 632E1330 "2.25"x2.25" Perforated Tube Post"

Sincerely,

Sam Weisgram
Engineering Supervisor

SW/cj

CC: Todd Seaman, Rapid City Region Engineer
Bruce Schroeder, Custer Area Engineer

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

Rev 7/22/2024 SBS
 Rev 9/11/2024 GCE
 Rev 9/13/2024 GCE
 Rev 9/24/2024 GCE

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	A2	A9

Section B - Grading

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
004E0030	Maintenance of Traffic Diversion(s)	Lump Sum	LS
004E0050	Remove Traffic Diversion(s)	Lump Sum	LS
009E0010	Mobilization	Lump Sum	LS
009E3220	Reestablish Right-of-Way and Property Corner	382	Each
009E3225	Reestablish Public Land Survey System Corner	2	Each
009E3230	Grade Staking	8,990	Mile
009E3250	Miscellaneous Staking	8,462	Mile
009E3280	Slope Staking	8,462	Mile
009E3290	Structure Staking	2	Each
009E3301	Engineer Directed Surveying/Staking	200.0	Hour
009E4200	Construction Schedule, Category II	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0300	Remove Concrete Curb and/or Gutter	1,210	Ft
110E0400	Remove Drop Inlet	15	Each
110E0550	Remove Cattle Guard	1	Each
110E0600	Remove Fence	33,827	Ft
110E0730	Remove Beam Guardrail	17,114.0	Ft
110E0800	Remove W Beam Guardrail End Terminal	50	Each
110E1050	Remove Asphalt Concrete Approach Pavement	6,602.0	SqYd
120E1000	Muck Excavation	21,144	CuYd
120E1100	Unclassified/Rock Excavation	1,498,226	CuYd
120E2000	Undercutting	58,607	CuYd
120E6100	Water for Embankment	12,343.9	MGal
240E0010	Obliterate Old Road	28	Sta
250E0020	Incidental Work, Grading	Lump Sum	LS
260E6010	Granular Material	200.0	Ton
270E0040	Salvage and Stockpile Asphalt Mix and Granular Base Material	108,754.0	Ton
421E0100	Pipe Culvert Undercut	411	CuYd
450E0122	18" RCP Class 2, Furnish	14	Ft
450E0130	18" RCP, Install	14	Ft
450E0142	24" RCP Class 2, Furnish	1,712	Ft
450E0143	24" RCP Class 3, Furnish	418	Ft
450E0144	24" RCP Class 4, Furnish	180	Ft
450E0150	24" RCP, Install	2,310	Ft
450E0162	30" RCP Class 2, Furnish	910	Ft
450E0163	30" RCP Class 3, Furnish	66	Ft
450E0164	30" RCP Class 4, Furnish	152	Ft
450E0165	30" RCP Class 5, Furnish	116	Ft
450E0170	30" RCP, Install	1,244	Ft
450E0182	36" RCP Class 2, Furnish	820	Ft
450E0183	36" RCP Class 3, Furnish	88	Ft
450E0184	36" RCP Class 4, Furnish	294	Ft

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E0185	36" RCP Class 5, Furnish	84	Ft
450E0190	36" RCP, Install	1,286	Ft
450E0202	48" RCP Class 2, Furnish	164	Ft
450E0210	48" RCP, Install	164	Ft
450E0212	54" RCP Class 2, Furnish	610	Ft
450E0220	54" RCP, Install	610	Ft
450E0223	60" RCP Class 3, Furnish	106	Ft
450E0224	60" RCP Class 4, Furnish	70	Ft
450E0230	60" RCP, Install	176	Ft
450E2016	24" RCP Flared End, Furnish	6	Each
450E2017	24" RCP Flared End, Install	6	Each
450E2024	30" RCP Flared End, Furnish	4	Each
450E2025	30" RCP Flared End, Install	4	Each
450E2028	36" RCP Flared End, Furnish	13	Each
450E2029	36" RCP Flared End, Install	13	Each
450E2036	48" RCP Flared End, Furnish	4	Each
450E2037	48" RCP Flared End, Install	4	Each
450E2040	54" RCP Flared End, Furnish	12	Each
450E2041	54" RCP Flared End, Install	12	Each
450E2044	60" RCP Flared End, Furnish	2	Each
450E2045	60" RCP Flared End, Install	2	Each
450E2200	24" RCP Sloped End, Furnish	27	Each
450E2201	24" RCP Sloped End, Install	27	Each
450E2204	30" RCP Sloped End, Furnish	13	Each
450E2205	30" RCP Sloped End, Install	13	Each
450E2304	18" RCP Safety End, Furnish	1	Each
450E2307	18" RCP Safety End, Install	1	Each
450E3052	48" RCP Arch Class 2, Furnish	384	Ft
450E3060	48" RCP Arch, Install	384	Ft
450E4520	48" RCP Arch Flared End, Furnish	6	Each
450E4521	48" RCP Arch Flared End, Install	6	Each
450E4759	18" CMP 16 Gauge, Furnish	564	Ft
450E4760	18" CMP, Install	564	Ft
450E4769	24" CMP 16 Gauge, Furnish	1,240	Ft
450E4770	24" CMP, Install	1,240	Ft
450E4779	30" CMP 16 Gauge, Furnish	520	Ft
450E4780	30" CMP, Install	520	Ft
450E4789	36" CMP 16 Gauge, Furnish	952	Ft
450E4790	36" CMP, Install	952	Ft
450E5015	24" CMP Elbow, Furnish	24	Each
450E5016	24" CMP Elbow, Install	24	Each
450E5020	30" CMP Elbow, Furnish	8	Each
450E5021	30" CMP Elbow, Install	8	Each



INDEX OF SHEETS

A2 and A4 Estimate of Quantities for Sections B, C, D, E, F, M, and S
 A5 to A9 Environmental Commitments

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E5025	36" CMP Elbow, Furnish	15	Each
450E5026	36" CMP Elbow, Install	15	Each
450E5215	24" CMP Flared End, Furnish	3	Each
450E5216	24" CMP Flared End, Install	3	Each
450E5223	36" CMP Flared End, Furnish	10	Each
450E5224	36" CMP Flared End, Install	10	Each
450E5306	18" CMP Sloped End, Furnish	11	Each
450E5307	18" CMP Sloped End, Install	11	Each
450E5310	24" CMP Sloped End, Furnish	22	Each
450E5311	24" CMP Sloped End, Install	22	Each
450E5314	30" CMP Sloped End, Furnish	5	Each
450E5315	30" CMP Sloped End, Install	5	Each
450E8014	24" RCP to CMP Transition, Furnish	8	Each
450E8015	24" Pipe Transition, Install	8	Each
450E8019	30" RCP to CMP Transition, Furnish	3	Each
450E8020	30" Pipe Transition, Install	3	Each
450E8024	36" RCP to CMP Transition, Furnish	7	Each
450E8025	36" Pipe Transition, Install	7	Each
462E0100	Class M6 Concrete	25.9	CuYd
464E0100	Controlled Density Fill	216.8	CuYd
480E0100	Reinforcing Steel	4,715	Lb
600E0300	Type III Field Laboratory	1	Each
610E0124	24' Cattle Guard with Wings	1	Each
610E0424	24' Precast Concrete Cattle Guard Foundation	1	Each
620E0010	Type 1 Right-of-Way Fence	1,112	Ft
620E0020	Type 2 Right-of-Way Fence	31,039	Ft
620E0030	Type 3 Right-of-Way Fence	310	Ft
620E0120	Type 2s Right-of-Way Fence	225	Ft
620E0520	Type 2 Temporary Fence	26,271	Ft
620E0610	Type 1s Temporary Fence	225	Ft
620E0620	Type 2s Temporary Fence	215	Ft
620E1020	2 Post Panel	174	Each
620E1030	3 Post Panel	32	Each
620E2014	14' Tubular Gate	1	Each
620E2016	16' Tubular Gate	1	Each
650E0060	Type B66 Concrete Curb and Gutter	352	Ft
650E0360	Type BL66 Concrete Curb and Gutter	158	Ft
650E1060	Type F66 Concrete Curb and Gutter	247	Ft
650E1360	Type FL66 Concrete Curb and Gutter	597	Ft
650E2100	Special Concrete Curb and Gutter	30	Ft
650E6260	6" Concrete Valley Gutter	27.7	SqYd
670E2200	Type C Frame and Grate	1	Each
671E6007	Type A7 Manhole Frame and Lid	2	Each

Section B – Grading, Continued

Section B - Grading - Alternate B

Section C - Traffic Control

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
700E0210	Class B Riprap	521.9	Ton
700E0410	Class D Riprap	417.0	Ton
720E1015	Bank and Channel Protection Gabion	399.0	CuYd
831E0110	Type B Drainage Fabric	5,220	SqYd
831E0300	Reinforcement Fabric (MSE)	300	SqYd
900E0010	Refurbish Single Mailbox	7	Each
900E0012	Refurbish Double Mailbox	6	Each
900E0015	Multiple Mailbox Support	3	Each
900E1150	Right of Way Marker	324	Each
* 900E2030	Miscellaneous Work	1	Site

* - Denotes Non-Participating

Section B - Grading - Alternate A

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0500	Remove Pipe Culvert	787	Ft
120E1100	Unclassified/Rock Excavation	73,877	CuYd
421E0110	Pipe Culvert Undercut for Alternate Bidding	375	CuYd
450E0162	30" RCP Class 2, Furnish	32	Ft
450E0164	30" RCP Class 4, Furnish	72	Ft
450E0165	30" RCP Class 5, Furnish	122	Ft
450E0170	30" RCP, Install	226	Ft
450E0192	42" RCP Class 2, Furnish	58	Ft
450E0193	42" RCP Class 3, Furnish	90	Ft
450E0194	42" RCP Class 4, Furnish	128	Ft
450E0195	42" RCP Class 5, Furnish	166	Ft
450E0196	42" RCP Class 4000D, Furnish	92	Ft
450E0198	42" RCP Class 5000D, Furnish	138	Ft
450E0200	42" RCP, Install	672	Ft
450E0213	54" RCP Class 3, Furnish	74	Ft
450E0214	54" RCP Class 4, Furnish	50	Ft
450E0215	54" RCP Class 5, Furnish	68	Ft
450E0218	54" RCP Class 4500D, Furnish	136	Ft
450E0220	54" RCP, Install	328	Ft
450E2024	30" RCP Flared End, Furnish	2	Each
450E2025	30" RCP Flared End, Install	2	Each
450E2032	42" RCP Flared End, Furnish	3	Each
450E2033	42" RCP Flared End, Install	3	Each
450E2040	54" RCP Flared End, Furnish	2	Each
450E2041	54" RCP Flared End, Install	2	Each
450E4799	42" CMP 16 Gauge, Furnish	100	Ft
450E4800	42" CMP, Install	100	Ft
450E5030	42" CMP Elbow, Furnish	2	Each
450E5031	42" CMP Elbow, Install	2	Each
450E5227	42" CMP Flared End, Furnish	1	Each
450E5228	42" CMP Flared End, Install	1	Each
450E8029	42" RCP to CMP Transition, Furnish	1	Each
450E8030	42" Pipe Transition, Install	1	Each

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
421E0110	Pipe Culvert Undercut for Alternate Bidding	207	CuYd
450E0162	30" RCP Class 2, Furnish	32	Ft
450E0164	30" RCP Class 4, Furnish	48	Ft
450E0170	30" RCP, Install	80	Ft
450E0192	42" RCP Class 2, Furnish	58	Ft
450E0193	42" RCP Class 3, Furnish	58	Ft
450E0194	42" RCP Class 4, Furnish	102	Ft
450E0195	42" RCP Class 5, Furnish	56	Ft
450E0200	42" RCP, Install	274	Ft
450E0213	54" RCP Class 3, Furnish	74	Ft
450E0214	54" RCP Class 4, Furnish	54	Ft
450E0215	54" RCP Class 5, Furnish	24	Ft
450E0220	54" RCP, Install	152	Ft
450E2024	30" RCP Flared End, Furnish	1	Each
450E2025	30" RCP Flared End, Install	1	Each
450E2032	42" RCP Flared End, Furnish	3	Each
450E2033	42" RCP Flared End, Install	3	Each
450E2040	54" RCP Flared End, Furnish	2	Each
450E2041	54" RCP Flared End, Install	2	Each
450E4799	42" CMP 16 Gauge, Furnish	156	Ft
450E4800	42" CMP, Install	156	Ft
450E5030	42" CMP Elbow, Furnish	2	Each
450E5031	42" CMP Elbow, Install	2	Each
450E5219	30" CMP Flared End, Furnish	1	Each
450E5220	30" CMP Flared End, Install	1	Each
450E5227	42" CMP Flared End, Furnish	1	Each
450E5228	42" CMP Flared End, Install	1	Each
450E7630	30" Steel Pipe, Furnish	146	Ft
450E7642	42" Steel Pipe, Furnish	346	Ft
450E7654	54" Steel Pipe, Furnish	176	Ft
450E8017	30" Concrete/Steel Pipe Transition, Furnish	1	Each
450E8020	30" Pipe Transition, Install	1	Each
450E8027	42" Concrete/Steel Pipe Transition, Furnish	3	Each
450E8030	42" Pipe Transition, Install	3	Each
450E8037	54" Concrete/Steel Pipe Transition, Furnish	2	Each
450E8040	54" Pipe Transition, Install	2	Each
451E5130	Bore and Jack 30" Pipe	146	Ft
451E5142	Bore and Jack 42" Pipe	346	Ft
451E5154	Bore and Jack 54" Pipe	176	Ft
464E0100	Controlled Density Fill	212.4	CuYd

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E7150	Remove Sign for Reset	1	Each
120E6000	Water for Dust Control	5,000.0	MGal
205E0010	Dust Control Chloride	107,230	Lb
260E3500	Temporary Gravel Surfacing	9,350.0	Ton
632E2510	Type 2 Object Marker Back to Back	4	Each
632E3500	Reset Sign	1	Each
634E0010	Flagging	20,000.0	Hour
634E0020	Pilot Car	6,000.0	Hour
634E0110	Traffic Control Signs	2,279.2	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	42	Each
634E0525	Linear Delineation System Panel, Barrier Mounted	326	Each
634E0560	Remove Pavement Marking, 4" or Equivalent	1,500	Ft
634E0700	Traffic Control Movable Concrete Barrier	326	Each
634E0705	Remove and Reset Traffic Control Movable Concrete Barrier	86	Each
634E0750	Temporary Concrete Barrier End Protection	8	Each
634E0755	Remove and Reset Temporary Concrete Barrier End Protection	4	Each
634E0760	Temporary Concrete Barrier End Protection Module Set or Repair Kit	2	Each
634E1002	Detour and Restriction Signing	2,316.2	SqFt
634E1215	Contractor Furnished Portable Changeable Message Sign	3	Each
634E2025	Longitudinal Pedestrian Barrier	240	Ft



Rev 7/2/2024 SBS
 Rev 9/3/2024 GCE
 Rev 9/25/2024 GCE
 Rev 9/27/2024 GCE

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	A4	A9

Section D - Erosion and Sediment Control

Section E - Structure Structure No. 52-279-329

Section S - Permanent Signing

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E1690	Remove Sediment	111.3	CuYd
110E1695	Remove Sediment Filter Bag	32	Ft
110E1700	Remove Silt Fence	4,831	Ft
230E0010	Placing Topsoil	37,222	CuYd
730E0100	Cover Crop Seeding	150.0	Bu
730E0251	Special Permanent Seed Mixture 1	1,816	Lb
731E0200	Fertilizing	43.17	Ton
732E0100	Mulching	7.0	Ton
732E0200	Fiber Mulching	40.0	Ton
732E0500	Fiber Reinforced Matrix	82.9	Ton
734E0044	Soil Stabilizer	62.9	Acre
734E0103	Type 3 Erosion Control Blanket	18,698	SqYd
734E0104	Type 4 Erosion Control Blanket	3,287	SqYd
734E0132	Type 2 Turf Reinforcement Mat	1,641.0	SqYd
734E0154	12" Diameter Erosion Control Wattle	48,245	Ft
734E0165	Remove and Reset Erosion Control Wattle	12,061	Ft
734E0170	Temporary Sediment Barrier	4,500	Ft
734E0180	Sediment Filter Bag	32	Ft
734E0325	Surface Roughening	57.1	Acre
734E0510	Shaping for Erosion Control Blanket	13,937	Ft
734E0602	Low Flow Silt Fence	5,385	Ft
734E0604	High Flow Silt Fence	4,876	Ft
734E0610	Mucking Silt Fence	1,341	CuYd
734E0620	Repair Silt Fence	4,831	Ft
734E0845	Sediment Control at Inlet with Frame and Grate	2	Each
900E1310	Concrete Washout Facility	1	Each
900E1320	Construction Entrance	3	Each

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
420E0200	Structure Excavation, Box Culvert	263	CuYd
421E0200	Box Culvert Undercut	317	CuYd
460E0120	Class A45 Concrete, Box Culvert	779.5	CuYd
480E0100	Reinforcing Steel	124,868	Lb
700E0210	Class B Riprap	572.5	Ton
734E1200	Natural Streambed Material	648.2	Ton
831E0110	Type B Drainage Fabric	775	SqYd

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0130	Remove Traffic Sign	16	Each
110E0135	Remove Delineator	238	Each
110E7150	Remove Sign for Reset	107	Each
632E1320	2.0"x2.0" Perforated Tube Post	278.0	Ft
632E1340	2.5"x2.5" Perforated Tube Post	120.0	Ft
632E2022	4"x4" White Delineator Back to Back with 1,12 Lb/Ft Post	231	Each
632E2207	4" Tubular White Delineator Reflector	7	Each
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	263.5	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	128.8	SqFt
632E3500	Reset Sign	107	Each

Section F - Surfacing

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3320	Checker	Lump Sum	LS
120E6200	Water for Granular Material	1,917.1	MGal
260E1010	Base Course	51,011.4	Ton
260E1030	Base Course, Salvaged	108,754.0	Ton
* 270E0230	Haul and Stockpile Asphalt Mix Material	11,000.0	Ton
320E1200	Asphalt Concrete Composite	1,313.6	Ton
330E0010	MC-70 Asphalt for Prime	270.2	Ton
330E0300	SS-1h or CSS-1h Asphalt for Fog Seal	28.7	Ton
330E1000	Blotting Sand for Prime	585.0	Ton
330E3000	Sand for Fog Seal	10.0	Ton
332E0010	Cold Milling Asphalt Concrete	139,683	SqYd
360E0020	AE150S Asphalt for Surface Treatment	199.2	Ton
360E1050	Type 3 Cover Aggregate	2,684.9	Ton

* - Denotes Non-Participating

SPECIFICATIONS

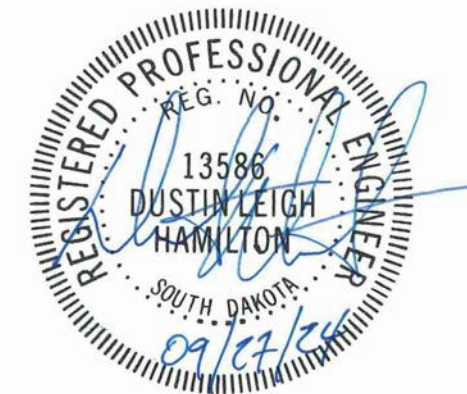
Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

Section E - Structure Structure No. 52-282-363

Section M - Pavement Marking

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
250E0030	Incidental Work, Structure	Lump Sum	LS
420E0200	Structure Excavation, Box Culvert	408	CuYd
421E0200	Box Culvert Undercut	321	CuYd
460E0120	Class A45 Concrete, Box Culvert	967.2	CuYd
480E0100	Reinforcing Steel	107,104	Lb
700E0210	Class B Riprap	155.6	Ton
734E1200	Natural Streambed Material	1,025.6	Ton
831E0110	Type B Drainage Fabric	168	SqYd

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
633E1220	High Build Waterborne Pavement Marking Paint, 4" White	88,380	Ft
633E1222	High Build Waterborne Pavement Marking Paint, 4" Yellow	55,858	Ft
633E1260	High Build Waterborne Pavement Marking Paint, 24" White	42	Ft
633E1262	High Build Waterborne Pavement Marking Paint, 24" Yellow	520	Ft
633E1270	High Build Waterborne Pavement Marking Paint, Area	107	SqFt
633E1272	High Build Waterborne Pavement Marking Paint, Arrow	12	Each



Rev 7/22/2024 SBS
 Rev 9/11/2024 GCE
 Rev 9/13/2024 GCE
 Rev 9/24/2024 GCE

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	B2	B105

SECTION B ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
004E0030	Maintenance of Traffic Diversion(s)	Lump Sum	LS
004E0050	Remove Traffic Diversion(s)	Lump Sum	LS
009E0010	Mobilization	Lump Sum	LS
009E3220	Reestablish Right-of-Way and Property Corner	382	Each
009E3225	Reestablish Public Land Survey System Corner	2	Each
009E3230	Grade Staking	8,990	Mile
009E3250	Miscellaneous Staking	8,462	Mile
009E3280	Slope Staking	8,462	Mile
009E3290	Structure Staking	2	Each
009E3301	Engineer Directed Surveying/Staking	200.0	Hour
009E4200	Construction Schedule, Category II	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0300	Remove Concrete Curb and/or Gutter	1,210	Ft
110E0400	Remove Drop Inlet	15	Each
110E0550	Remove Cattle Guard	1	Each
110E0600	Remove Fence	33,827	Ft
110E0730	Remove Beam Guardrail	17,114.0	Ft
110E0800	Remove W Beam Guardrail End Terminal	50	Each
110E1050	Remove Asphalt Concrete Approach Pavement	6,602.0	SqYd
120E1000	Muck Excavation	21,144	CuYd
120E1100	Unclassified/Rock Excavation	1,498,226	CuYd
120E2000	Undercutting	58,607	CuYd
120E6100	Water for Embankment	12,343.9	MGal
240E0010	Obliterate Old Road	28	Sta
250E0020	Incidental Work, Grading	Lump Sum	LS
260E6010	Granular Material	200.0	Ton
270E0040	Salvage and Stockpile Asphalt Mix and Granular Base Material	108,754.0	Ton
421E0100	Pipe Culvert Undercut	411	CuYd
450E0122	18" RCP Class 2, Furnish	14	Ft
450E0130	18" RCP, Install	14	Ft
450E0142	24" RCP Class 2, Furnish	1,712	Ft
450E0143	24" RCP Class 3, Furnish	418	Ft
450E0144	24" RCP Class 4, Furnish	180	Ft
450E0150	24" RCP, Install	2,310	Ft
450E0162	30" RCP Class 2, Furnish	910	Ft
450E0163	30" RCP Class 3, Furnish	66	Ft
450E0164	30" RCP Class 4, Furnish	152	Ft
450E0165	30" RCP Class 5, Furnish	116	Ft
450E0170	30" RCP, Install	1,244	Ft
450E0182	36" RCP Class 2, Furnish	820	Ft
450E0183	36" RCP Class 3, Furnish	88	Ft
450E0184	36" RCP Class 4, Furnish	294	Ft

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E0185	36" RCP Class 5, Furnish	84	Ft
450E0190	36" RCP, Install	1,286	Ft
450E0202	48" RCP Class 2, Furnish	164	Ft
450E0210	48" RCP, Install	164	Ft
450E0212	54" RCP Class 2, Furnish	610	Ft
450E0220	54" RCP, Install	610	Ft
450E0223	60" RCP Class 3, Furnish	106	Ft
450E0224	60" RCP Class 4, Furnish	70	Ft
450E0230	60" RCP, Install	176	Ft
450E2016	24" RCP Flared End, Furnish	6	Each
450E2017	24" RCP Flared End, Install	6	Each
450E2024	30" RCP Flared End, Furnish	4	Each
450E2025	30" RCP Flared End, Install	4	Each
450E2028	36" RCP Flared End, Furnish	13	Each
450E2029	36" RCP Flared End, Install	13	Each
450E2036	48" RCP Flared End, Furnish	4	Each
450E2037	48" RCP Flared End, Install	4	Each
450E2040	54" RCP Flared End, Furnish	12	Each
450E2041	54" RCP Flared End, Install	12	Each
450E2044	60" RCP Flared End, Furnish	2	Each
450E2045	60" RCP Flared End, Install	2	Each
450E2200	24" RCP Sloped End, Furnish	27	Each
450E2201	24" RCP Sloped End, Install	27	Each
450E2204	30" RCP Sloped End, Furnish	13	Each
450E2205	30" RCP Sloped End, Install	13	Each
450E2304	18" RCP Safety End, Furnish	1	Each
450E2307	18" RCP Safety End, Install	1	Each
450E3052	48" RCP Arch Class 2, Furnish	384	Ft
450E3060	48" RCP Arch, Install	384	Ft
450E4520	48" RCP Arch Flared End, Furnish	6	Each
450E4521	48" RCP Arch Flared End, Install	6	Each
450E4759	18" CMP 16 Gauge, Furnish	564	Ft
450E4760	18" CMP, Install	564	Ft
450E4769	24" CMP 16 Gauge, Furnish	1,240	Ft
450E4770	24" CMP, Install	1,240	Ft
450E4779	30" CMP 16 Gauge, Furnish	520	Ft
450E4780	30" CMP, Install	520	Ft
450E4789	36" CMP 16 Gauge, Furnish	952	Ft
450E4790	36" CMP, Install	952	Ft
450E5015	24" CMP Elbow, Furnish	24	Each
450E5016	24" CMP Elbow, Install	24	Each
450E5020	30" CMP Elbow, Furnish	8	Each
450E5021	30" CMP Elbow, Install	8	Each

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E5025	36" CMP Elbow, Furnish	15	Each
450E5026	36" CMP Elbow, Install	15	Each
450E5215	24" CMP Flared End, Furnish	3	Each
450E5216	24" CMP Flared End, Install	3	Each
450E5223	36" CMP Flared End, Furnish	10	Each
450E5224	36" CMP Flared End, Install	10	Each
450E5306	18" CMP Sloped End, Furnish	11	Each
450E5307	18" CMP Sloped End, Install	11	Each
450E5310	24" CMP Sloped End, Furnish	22	Each
450E5311	24" CMP Sloped End, Install	22	Each
450E5314	30" CMP Sloped End, Furnish	5	Each
450E5315	30" CMP Sloped End, Install	5	Each
450E8014	24" RCP to CMP Transition, Furnish	8	Each
450E8015	24" Pipe Transition, Install	8	Each
450E8019	30" RCP to CMP Transition, Furnish	3	Each
450E8020	30" Pipe Transition, Install	3	Each
450E8024	36" RCP to CMP Transition, Furnish	7	Each
450E8025	36" Pipe Transition, Install	7	Each
462E0100	Class M6 Concrete	25.9	CuYd
464E0100	Controlled Density Fill	216.8	CuYd
480E0100	Reinforcing Steel	4,715	Lb
600E0300	Type III Field Laboratory	1	Each
610E0124	24" Cattle Guard with Wings	1	Each
610E0424	24" Precast Concrete Cattle Guard Foundation	1	Each
620E0010	Type 1 Right-of-Way Fence	1,112	Ft
620E0020	Type 2 Right-of-Way Fence	31,039	Ft
620E0030	Type 3 Right-of-Way Fence	310	Ft
620E0120	Type 2s Right-of-Way Fence	225	Ft
620E0520	Type 2 Temporary Fence	26,271	Ft
620E0610	Type 1s Temporary Fence	225	Ft
620E0620	Type 2s Temporary Fence	215	Ft
620E1020	2 Post Panel	174	Each
620E1030	3 Post Panel	32	Each
620E2014	14" Tubular Gate	1	Each
620E2016	16" Tubular Gate	1	Each
650E0060	Type B66 Concrete Curb and Gutter	352	Ft
650E0360	Type BL66 Concrete Curb and Gutter	158	Ft
650E1060	Type F66 Concrete Curb and Gutter	247	Ft
650E1360	Type FL66 Concrete Curb and Gutter	597	Ft
650E2100	Special Concrete Curb and Gutter	30	Ft
650E6260	6" Concrete Valley Gutter	27.7	SqYd
670E2200	Type C Frame and Grate	1	Each
671E6007	Type A7 Manhole Frame and Lid	2	Each



SECTION B ESTIMATE OF QUANTITIES CONT'D

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
700E0210	Class B Riprap	521.9	Ton
700E0410	Class D Riprap	417.0	Ton
720E1015	Bank and Channel Protection Gabion	399.0	CuYd
831E0110	Type B Drainage Fabric	5,220	SqYd
831E0300	Reinforcement Fabric (MSE)	300	SqYd
900E0010	Refurbish Single Mailbox	7	Each
900E0012	Refurbish Double Mailbox	6	Each
900E0015	Multiple Mailbox Support	3	Each
900E1150	Right of Way Marker	324	Each
* 900E2030	Miscellaneous Work	1	Site

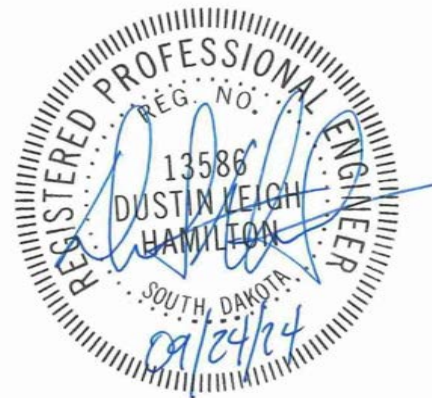
* - Denotes Non-Participating

Alternate A - Deep Excavation Pipe

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0500	Remove Pipe Culvert	787	Ft
120E1100	Unclassified/Rock Excavation	73,877	CuYd
421E0110	Pipe Culvert Undercut for Alternate Bidding	375	CuYd
450E0162	30" RCP Class 2, Furnish	32	Ft
450E0164	30" RCP Class 4, Furnish	72	Ft
450E0165	30" RCP Class 5, Furnish	122	Ft
450E0170	30" RCP, Install	226	Ft
450E0192	42" RCP Class 2, Furnish	58	Ft
450E0193	42" RCP Class 3, Furnish	90	Ft
450E0194	42" RCP Class 4, Furnish	128	Ft
450E0195	42" RCP Class 5, Furnish	166	Ft
450E0196	42" RCP Class 4000D, Furnish	92	Ft
450E0198	42" RCP Class 5000D, Furnish	138	Ft
450E0200	42" RCP, Install	672	Ft
450E0213	54" RCP Class 3, Furnish	74	Ft
450E0214	54" RCP Class 4, Furnish	50	Ft
450E0215	54" RCP Class 5, Furnish	68	Ft
450E0218	54" RCP Class 4500D, Furnish	136	Ft
450E0220	54" RCP, Install	328	Ft
450E2024	30" RCP Flared End, Furnish	2	Each
450E2025	30" RCP Flared End, Install	2	Each
450E2032	42" RCP Flared End, Furnish	3	Each
450E2033	42" RCP Flared End, Install	3	Each
450E2040	54" RCP Flared End, Furnish	2	Each
450E2041	54" RCP Flared End, Install	2	Each
450E4799	42" CMP 16 Gauge, Furnish	100	Ft
450E4800	42" CMP, Install	100	Ft
450E5030	42" CMP Elbow, Furnish	2	Each
450E5031	42" CMP Elbow, Install	2	Each
450E5227	42" CMP Flared End, Furnish	1	Each
450E5228	42" CMP Flared End, Install	1	Each
450E8029	42" RCP to CMP Transition, Furnish	1	Each
450E8030	42" Pipe Transition, Install	1	Each

Alternate B - Bore and Jack Steel Pipe

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
421E0110	Pipe Culvert Undercut for Alternate Bidding	207	CuYd
450E0162	30" RCP Class 2, Furnish	32	Ft
450E0164	30" RCP Class 4, Furnish	48	Ft
450E0170	30" RCP, Install	80	Ft
450E0192	42" RCP Class 2, Furnish	58	Ft
450E0193	42" RCP Class 3, Furnish	58	Ft
450E0194	42" RCP Class 4, Furnish	102	Ft
450E0195	42" RCP Class 5, Furnish	56	Ft
450E0200	42" RCP, Install	274	Ft
450E0213	54" RCP Class 3, Furnish	74	Ft
450E0214	54" RCP Class 4, Furnish	54	Ft
450E0215	54" RCP Class 5, Furnish	24	Ft
450E0220	54" RCP, Install	152	Ft
450E2024	30" RCP Flared End, Furnish	1	Each
450E2025	30" RCP Flared End, Install	1	Each
450E2032	42" RCP Flared End, Furnish	3	Each
450E2033	42" RCP Flared End, Install	3	Each
450E2040	54" RCP Flared End, Furnish	2	Each
450E2041	54" RCP Flared End, Install	2	Each
450E4799	42" CMP 16 Gauge, Furnish	156	Ft
450E4800	42" CMP, Install	156	Ft
450E5030	42" CMP Elbow, Furnish	2	Each
450E5031	42" CMP Elbow, Install	2	Each
450E5219	30" CMP Flared End, Furnish	1	Each
450E5220	30" CMP Flared End, Install	1	Each
450E5227	42" CMP Flared End, Furnish	1	Each
450E5228	42" CMP Flared End, Install	1	Each
450E7630	30" Steel Pipe, Furnish	146	Ft
450E7642	42" Steel Pipe, Furnish	346	Ft
450E7654	54" Steel Pipe, Furnish	176	Ft
450E8017	30" Concrete/Steel Pipe Transition, Furnish	1	Each
450E8020	30" Pipe Transition, Install	1	Each
450E8027	42" Concrete/Steel Pipe Transition, Furnish	3	Each
450E8030	42" Pipe Transition, Install	3	Each
450E8037	54" Concrete/Steel Pipe Transition, Furnish	2	Each
450E8040	54" Pipe Transition, Install	2	Each
451E5130	Bore and Jack 30" Pipe	146	Ft
451E5142	Bore and Jack 42" Pipe	346	Ft
451E5154	Bore and Jack 54" Pipe	176	Ft
464E0100	Controlled Density Fill	212.4	CuYd



EXCAVATION FOR DEEP PIPE AND BOX CULVERT REMOVAL

Included in the quantity of "Unclassified/Rock Excavation" are 168,920 cubic yards of excavation for removal of deep pipes and box culverts. Deep pipes and box culverts are existing mainline pipes or box culverts at depths of 10 feet or greater (measured from the flow line to the lowest elevation of either the existing ground line, undercut line, or bottom of removed or salvaged surfacing).

All work necessary to excavate and backfill the deep pipes and box culverts including labor, equipment, and incidentals will be incidental to the contract unit price per cubic yard for "Unclassified/Rock Excavation". Payment for deep pipe and box culvert excavation will be based only on plans quantity and measurement of these excavation quantities during construction will not be performed.

The excavation quantities for deep pipes and box culverts are not included with the earthwork balance quantities on the plans profile sheets. The quantities computed for excavation of the deep pipes and box culverts are based on the limits shown in the drawing below. The drawing shows a box culvert for illustration purposes only; the limits are similar for a pipe.

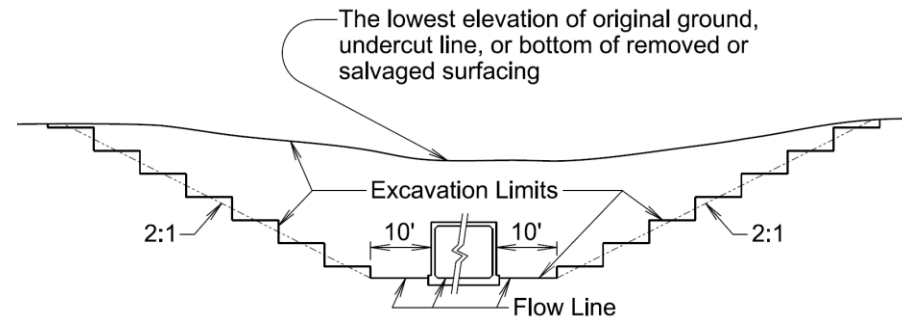


TABLE OF EXCAVATION FOR DEEP PIPE AND BOX CULVERT REMOVAL

Sta	Type	Quantity (CuYd)
145+61	Pipe	492
170+02	Pipe	909
173+06	Pipe	996
181+51	Pipe	1,940
216+86	Pipe	1,478
*208+18	Box Culvert	25,273
238+08	Pipe	1,487
284+74	Pipe	4,078
306+97	Pipe	3,053
324+70	Pipe	5,974
356+64	Pipe	1,973
359+80	Pipe	5,476
370+55	Pipe	1,497
372+99	Pipe	8,865
377+32	Pipe	1,805
384+52	Pipe	6,209
411+55	Pipe	4,688
*415+61	Box Culvert	20,507
*416+44	Box Culvert	26,054
416+94	Pipe	11,022
431+23	Pipe	1,460
433+79	Pipe	1,697
438+87	Pipe	3,473
447+86	Pipe	5,293
452+10	Pipe	5,313
460+07	Pipe	3,959
473+69	Pipe	5,125
491+47	Pipe	8,823
Total:		168,920

* The excavation quantity includes excavation for the installation of the new RCBC at Station 208+18 and 416+21.

TABLE OF EXCAVATION FOR DEEP PIPE AND BOX CULVERT REMOVAL FOR ALTERNATE A

Sta	Type	Quantity (CuYd)
161+52	Pipe	33,824
165+14	Pipe	18,615
318+72	Pipe	9,046
498+77	Pipe	12,392
Total:		73,877

PIPE EXTENSIONS BACKFILL COMPACTION

For pipe extensions that are outside the new surfaced shoulder as shown in the typical sections, acceptance tests in the lower one-half and upper one-half of pipe 48" or less in diameter may be performed by visual inspection to the satisfaction of the Engineer. All other MSTR pipe density testing requirements will apply.

PIPE CULVERT UNDERCUT

The table includes undercut for 36 inch and larger pipe culverts. The depth of undercut is an estimate and the actual depth necessary will be determined during construction. Pipes listed may or may not require undercutting and pipes not listed may require undercutting. The Engineer will determine which pipe will be undercut in accordance with Section 421 of the Specifications.

Station	Undercut Depth (Ft)	Pipe Culvert Undercut (CuYd)
145+61	1	104
181+51	1	42
238+08	1	46
284+74	1	72
324+70	1	84
447+86	1	63
Total:		411

PIPE CULVERT UNDERCUT ALTERNATE A

Station	Undercut Depth (Ft)	Pipe Culvert Undercut (CuYd)
161+52	1	155
165+14	1	126
318+72	1	94
Total:		375

PIPE CULVERT UNDERCUT ALTERNATE B

Station	Undercut Depth (Ft)	Pipe Culvert Undercut (CuYd)
161+52	1	90
165+14	1	64
318+72	1	53
Total:		207



INCIDENTAL WORK, GRADING

Station	L/R	Remarks
109+69	L	Take Out 24"-4' CMP
114+02	L	Take Out 36"-6' CMP & 1 End Section
123+50		Take Out 24"-53' CMP
129+32	L	Take Out 24"-9' CMP
133+34		Take Out 24"-18' CMP
140+23		Take Out 30"-81' CMP
141+97		Take Out 30"-76' CMP
146+60		Take Out 30"-134' CMP
158+42		Take Out 24"-51' CMP
170+12		Take Out 24"-53' CMP
173+05		Take Out 24"-75' CMP
176+44		Take Out 24"-80' CMP
181+56		Take Out 30"-85' CMP
190+48-29'	L	Take Out 18"-48' CMP
192+03		Take Out 24"-57' CMP
192+35-32'	L	Take Out 12"-56' CMP
197+04		Take Out 24"-47' CMP
217+13		Take Out 24"-55' CMP
223+19	L&R	Take Out 24"-18' CMP
225+99	L&R	Take Out 24"-12' CMP
232+38		Take Out 30"-59' CMP
238+30		Take Out 24"-90' CMP
241+13-91'	L	Take Out 18"-20' CMP
248+65-62'	L	Take Out 24"-48' CMP & 1 Flared End Section
249+67		Take Out 24"-64' CMP
255+00		Take Out 24"-51' CMP
257+88-46'	L	Take Out 48"-126' CMP & 2 Safety Ends
264+46		Take Out 24"-68' CMP
269+41		Take Out 24"-68' CMP
274+60		Take Out 48"-74' CMP
280+56		Take Out 24"-59' CMP
284+72		Take Out 48"-92' CMP
288+14		Take Out 24"-56' CMP
293+25		Take Out 30"-82' CMP
295+50		Take Out 30"-73' CMP
300+00		Take Out 24"-52' CMP
306+99		Take Out 24"-53' CMP
312+57		Take Out 24"-84' CMP
314+67		Take Out 24"-105' CMP
324+74		Take Out 30"-142' CMP
334+07		Take Out 24"-69' CMP
339+83-23'	R	Take Out 18"-64' CMP
347+92		Take Out 24"-50' CMP
356+60		Take Out 30"-99' CMP
359+80	L&R	Take Out 30"-17' CMP
367+05		Take Out 24"-63' CMP
370+55		Take Out 5'x7'-75' RCBC
372+99	L&R	Take Out 30"-43' CMP
377+36		Take Out 24"-86' CMP
381+56		Take Out 24"-65' CMP
389+31		Take Out 24"-91' CMP
403+01		Take Out 24"-63' CMP
404+13-101'	L	Take Out 18"-61' CMP
407+22-64'	L	Take Out 18"-64' CMP
410+29-31'	R	Take Out 18"-38' CMP
410+91		Take Out 24"-131' CMP
415+61-155'	L	Take Out 5'x6'-96' RCBC
416+44		Take Out 6'x7'-128' RCBC

Station	L/R	Remarks
423+24		Take Out 30"-49' CMP & 1 Concrete Headwall
425+07		Take Out 30"-49' CMP & 1 Concrete Headwall
425+58		Take Out 18"-73' CMP & 1 Concrete Headwall
425+99-38'	R	Take Out 18"-98' CMP & 2 End Sections
431+23	L	Take Out 24"-13' CMP & 1 Concrete Headwall
433+62		Take Out 24"-95' CMP
438+93		Take Out 30"-111' CMP
447+90		Take Out 36"-142' CMP
451+87		Take Out 24"-106' CMP
459+41		Take Out 24"-113' CMP
465+93-92'	R	Take Out 30"-131' CMP
471+57-67'	R	Take Out 24"-67' CMP
473+71		Take Out 24"-100' CMP
481+63		Take Out 30"-179' CMP & 2 End Sections
487+64		Take Out 36"-114' CMP & 1 End Sections
491+54-152'	L	Take Out 30"-14' CMP
497+22-35'	L	Take Out 30"-33' CMP
508+25-160'	L	Take Out 30"-170' CMP
520+23-76'	R	Take Out 24"-74' CMP & 1 End Section
523+55		Take Out 24"-135' CMP

TABLE OF CONCRETE CURB AND/OR GUTTER REMOVAL

Station to Station	L/R	Quantity (Ft)	
523+63	526+06	L	254.7
526+30	530+17	L	445.1
526+82	527+17	L	34.4
530+27	534+19	L	432.6
534+43	534+63	L	43.5
		Total:	1210.3

TABLE OF ASPHALT CONCRETE APPROACH PAVEMENT REMOVAL

Station to	Station	L/R	Quantity (SqYd)
119+87	125+45	R	550
161+88	164+06	L	296
184+33	187+78	R	1515
190+17	192+87	L	418
201+59	204+75	R	638
241+11	241+62	L	98
247+30	248+67	L	437
257+63	258+37	L	161
414+34	416+15	L	1187
414+81	415+39	R	98
456+09	457+83	R	177
505+10	506+58	L	277
520+02	520+57	R	50
525+54	526+45	L	178
530+14	531+02	L	230
533+79	534+92	L	292
		Total:	6602

TABLE OF DROP INLET REMOVAL

All costs for removal of the frame and grate assembly will be incidental to the contract unit price per each for "Remove Drop Inlet".

Station	L/R	(Each)	
109+66-15'	L	1	
123+46-16'	L	1	
129+32-17'	L	1	
232+36-19'	R	1	
255+00-33'	R	1	
158+42-21'	L	1	
170+08-21'	L	1	
280+62-18'	L	1	
288+15	R	1	
300+00	L	1	
306+99	L	1	
334+08-21'	R	1	
347+92-19'	R	1	
367+04-19'	L	1	
381+52-23'	L	1	
		Total:	15



TABLE OF REMOVE PIPE CULVERT ALTERNATE A

All costs for removal of the pipe culvert will be incidental to the contract unit price per foot for "Remove Pipe Culvert".

Station	L/R	(Ft)	
161+67	L/R	235	
165+09	L/R	175	
318+45	L/R	154	
499+21	L/R	223	
		Total:	787

TABLE OF CATTLE GUARDS

Station	L/R	Size
466+60	R	24' Cattle Guard with Wings

TABLE OF REMOVAL OF CATTLE GUARDS

Station	L/R	Size
465+74	R	24' Cattle Guard with Wings

CORRUGATED METAL PIPE

Corrugated metal pipes will have 2 3/8-inch x 1/2-inch corrugations for 42-inch and smaller round pipe and 48-inch and smaller arch pipe unless otherwise stated in the plans. Corrugated metal pipes will have 3-inch x 1-inch or 5-inch x 1-inch corrugations for 48-inch and larger round pipe and 54-inch and larger arch pipe unless otherwise stated in the plans.

The gauge of the corrugated metal elbows, tees, crosses, wyes, and ends will match the thickest gauge of corrugated metal pipe it is connected to.

PIPE FOR APPROACHES, INTERSECTING ROADS, AND DOWNSPOUTS

Class 2 reinforced concrete pipe, high density polyethylene pipe, polypropylene pipe (will be in conformance with AASHTO M330), or steel reinforced polyethylene pipe may be substituted for corrugated metal pipe at approaches and intersecting roads at no additional cost to the State. Substitution for downspout pipes is not allowed.

If corrugated metal pipes are provided, the pipes will be as specified in the CORRUGATED METAL PIPE note.

If high density polyethylene pipe, polypropylene pipe (will be in conformance with AASHTO M330), or steel reinforced polyethylene pipe are provided, then the end sections will be metal, be compatible, and conform to the type of end section as shown in the plans.

CONTROLLED DENSITY FILL FOR PIPE

Controlled density fill will be in conformance with Section 464 of the Specifications.

The controlled density fill will be placed between the pipes from the base of pipe elevation to the haunch of the pipes and extend to the end of the end section.

Controlled density fill between metal pipes will require the pipes to be anchored to resist floating. Anchoring methods will be determined by the Contractor and approved by the Engineer. Payment for anchoring the pipes will be incidental to the pipe installation contract item.

TABLE OF CONTROLLED DENSITY FILL FOR PIPE

Station	Quantity (CuYd)
248+57	91.6
251+04	45.3
257+88	32.9
274+51	47.0
Total:	216.8

TABLE OF CONTROLLED DENSITY FILL FOR PIPE Alternate B

Station	Quantity (CuYd)
161+52	61.8
165+14	81.9
318+72	28.2
498+77	40.5
Total:	212.4

CONCRETE PIPE CONNECTIONS

Pipe connections to existing pipes, manholes, junction boxes, and drop inlets will be done by breaking a hole into the existing structure and inserting the pipe. A concrete collar will 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 will be made by placing a 2' wide by 6" thick M6 concrete collar around the outside of the connection. The concrete collar will be reinforced with 6x6 W2.9 x W2.9 wire mesh.

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

PIPE COVER

The earthen subgrade cover for some pipe installations is less than one foot. The Contractor will take the necessary precautions to ensure the structural properties of the pipes are not damaged after installation and prior to the placement of final surfacing. Any additional costs for preventing damage to these pipes will be incidental to the contract unit price per foot for the corresponding pipe installation contract item.

STORM SEWER

Reinforced concrete pipe may be bell and spigot. The pipe sections will 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 will 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 will extend for a distance of 10 feet beyond the water main. This measurement will be from the sealed concrete joint to the outer most surface of the water main.

Watertight joint seals will conform to the following requirements:

1. **Reinforced Concrete Pipe (Circular):** Gasketed pipe will conform to the requirements of ASTM C443 and the gasket will be in conformance with Section 990 of the Specifications. Non-gasketed concrete pipe will be sealed with a mastic joint seal conforming to the requirements of ASTM C990 and encased with a minimum 2-foot wide by 6-inch thick M6 concrete collar reinforced with 6x6 W2.9 x W2.9 wire mesh.
2. **Reinforced Concrete Pipe (Arch):** Gasketed pipe will conform to the requirements of ASTM C443 and the gasket will be in conformance with Section 990 of the Specifications. Non-gasketed concrete pipe joints will be sealed with a hydrophilic flexible water stop seal and wrapped with a 1-foot wide strip of fabric above the cradle. The fabric will conform to the requirements of Section 831 of the Specifications for Type A Drainage Fabric. The hydrophilic flexible water stop will be from the list below.
3. **Drop Inlets, Manholes, and Junction Boxes:** Joints will be sealed with one of the following methods:
 - A. A flexible strip seal placed in the joints conforming to the requirements of ASTM C990 and the perimeter encased with a minimum 2-foot wide by 6-inch thick M6 concrete collar reinforced with 6x6 W2.9 x W2.9 wire mesh.
 - B. A hydrophilic flexible water stop seal placed in the joints and a 1-foot wide strip of fabric wrapped around the perimeter of the pipe. The fabric will conform to the requirements of Section 831 of the Specifications for Type A Drainage Fabric. The hydrophilic flexible water stop will be from the list below.
 - C. A self-adhesive external joint seal wrap. The seal wrap will be from the list below.

Approved List of Self-adhesive Joint Wrap

Product	Manufacturer
Mar Mac Seal Wrap	Mar Mac Construction Products McBee, SC 843-335-5909 www.marmac.com
ConWrap CS-212	Concrete Sealants, Inc. Tipp City, OH 800-332-7325 http://www.conseal.com



STORM SEWER CONT.

Approved List of Hydrophilic Flexible Water Stop Seal:

<u>Product</u>	<u>Manufacturer</u>
Waterstop RX	Cetco Hoffman Estates, IL 800-527-9948 www.cetco.com
Conseal CS-231	Concrete Sealants, Inc. Tipp City, OH 800-332-7325 http://www.conseal.com

Gaskets and seals (mastic, waterstop, and seal wraps) will be installed in accordance with the Manufacturer's recommendations.

The cost for furnishing and installing all gaskets, mastic joint seal, water stop seal, seal wrap, concrete collars, and for plugging the lift holes will be incidental to the contract unit price per foot for the corresponding pipe contract item.

BORE AND JACK STEEL PIPE

The Contractor will have the option to install steel pipe at stations 161+52, 165+14, 318+72, and 498+77 by boring and jacking the pipe through the existing highway embankment. The pipe will be installed by boring and jacking methods as specified herein unless an alternate plan is submitted in writing and approved by the Engineer.

As shown on the appropriate pipe cross section, some excavation of the existing roadway embankment is anticipated in order to reduce the length of the bore and jack pipe installation.

Steel pipe for boring and jacking will meet or exceed the requirements of ASTM A53 Grade B, ASTM A139 Grade B or ASTM A252 Grade 2. Hydrostatic testing will not be required for this application. The pipe will be required to have the minimum wall thickness as shown in the following table:

<u>Pipe Diameter</u>	<u>Wall Thickness</u>
48" & below	1/2"
54"	5/8"
60"	5/8"
66"	3/4"
72"	3/4"

The exterior of the steel pipe will be coated with a fusion bonded epoxy coating and an abrasion resistant overcoat or a two-component coal tar epoxy. The coal tar will meet the requirements of Sherwin-Williams Targuard, Tnemec Hi-Build Tneme-Tar, or an approved equal. Applications of the coatings will be in conformance with the manufacturer's recommendations.



The pipe joints will be welded by a certified welder in accordance with Section 410.3 D of the Specifications. After the welding has been completed, the exposed area will be coated with 3M Scotchkote Liquid Epoxy 328 or a two-component coal tar epoxy meeting the requirements of Sherwin-Williams Targuard, Tnemec Hi-Build Tneme-Tar, or an approved equal.

The jacking pit will be constructed of sufficient size to accommodate equipment and workmen. The pit walls will be sloped or shored to comply with all applicable State and Federal regulations. The Contractor will be responsible for the design of the pit floor and jacking thrust restraint wall to carry the cyclic loads and thrust applied by the Contractor's operation. Water will not be allowed to accumulate in the jacking pit. All components of the jacking pit will be removed after installation of the pipe unless otherwise allowed by the Engineer.

The pipe will be pushed into position from a jacking pit with hydraulic jacks while simultaneously excavating at the forward end of the pipe. Each pipe section will be jacked from the jacking pit as the excavation at the boring head progresses so that the excavation is supported by the boring head or the pipe at all points.

Jacking thrust will be applied to the pipe by means of a yoke or frame designed to distribute the thrust uniformly around the pipe joint. The thrust will be applied to the pipe joint only in the location and only to the maximum force recommended by the pipe manufacturer. The pipe will be jacked into place without visible damage to the pipe or joint.

The boring head excavation will be circular with a maximum diameter equal to the outside diameter of the jacking pipe plus 1 inch. The Contractor will take whatever corrective action is necessary to prevent running, flowing, or squeezing ground conditions at the cutting face from causing large voids or significant loss of soil that may cause surface settlement.

The Contractor will control the alignment and grade of the pipe installation to meet the following tolerances:

1. Maximum horizontal deviation from plan shown alignment will be less than 0.15% of pipe length from the downstream end of pipe to the point of measurement.
2. Maximum vertical deviation from plan shown alignment will be less than 0.075% of pipe length from the downstream end of pipe to the point of measurement.

All material excavated by the boring head for the pipe installation will be disposed of by the Contractor. The excavated material from the boring pit will be used as backfill for the pit and compacted into place to the satisfaction of the Engineer.

Construction Considerations:

The proposed bore and jack pipe locations will require advancing steel casing through rock embankments. Traditional bore and jack methods will be difficult if not impossible. Methods associated with tunneling will likely be required to excavate large boulders and advance casings through embankments containing compact soil and rock. Excavation and removal of large rock through 36" casing may not be feasible. Damage to the casing and associated protective coating can be expected.

Steel casing will be installed horizontally through 126' to 246± of rock embankment. The pipes will be placed through an approximate 30' to 50'

vertical depth of soil, schist, and quartzite embankment fill material. The parent formations from which the embankment materials were excavated include platy to massive schist and quartzite. Traditional bore and jack methods will be difficult if not impossible. Methods associated with tunneling will likely be required to excavate large boulders and advance casings through embankments containing compact soil and rock. In place ledge rock is not anticipated to be encountered within the bore and jack envelopes. Dewatering may be required to construct and maintain jacking pits.

Installation of CMP ends on the steel pipe will require the placement of a minimum of 2 welded stops at each pipe end to prevent the end from slipping off the steel pipe. The location and size will be determined in the field by the Engineer and installed by a certified welder. Stops will be coated with a coal tar epoxy. All costs, including labor and materials for the installation of the stops will be incidental to the contract unit price per foot for the corresponding steel pipe furnish contract item. Alternative methods of attachment may be allowed with the approval of the Engineer.

Payment for furnishing the pipe will be incidental to the contract unit price per foot for the corresponding steel pipe furnish contract item.

All costs involved with boring and jacking the pipe including labor, equipment, welding, materials, disposal of waste material, constructing and backfilling the jacking pit, and excavating and backfilling the roadway embankment will be incidental to the contract unit price per foot for the corresponding bore and jack pipe contract item.

Steep temporary excavation slopes required for bore and jacked pipe will be unstable over the long-term. However, the slopes should remain globally stable over the short-term during construction if measures are taken to divert runoff away from the slope and construction activities are sequenced to minimize the amount of time the temporary excavation slopes are left exposed and unsupported. Regular monitoring of the temporary slopes is required during construction. If a temporary slope becomes unstable, excavation will cease, and the slope will be evaluated by the Engineer.

STEEL PIPE TO RCP TRANSITION

Steel pipe to RCP transitions are required for the pipe installation at Sta. 161+52, 165+14, 318+72, and 498+77. The length of each transition is assumed to be 2 feet long. The steel pipe used in the transition will meet the same requirements, including pipe specifications, coal tar epoxy coating, and welding to adjoining steel pipe sections as the steel pipe used in the bore and jack installation.

The transition section fabricator will submit 2 copies of the shop plans to the Office of Bridge Design for review 15 days prior to fabrication. One reviewed copy will be sent back to the fabricator who will then make changes, if any, and then send the Office of Bridge Design 7 final approved copies for distribution. The Office of Bridge Design must approve and authorize fabrication.

All costs for furnishing and installing the Steel to RCP transitions will be incidental to the contract unit price per each for the corresponding size "Concrete/Steel Pipe Transition, Furnish" and "Pipe Transition, Install" contract items.

SECTION D ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E1690	Remove Sediment	111.3	CuYd
110E1695	Remove Sediment Filter Bag	32	Ft
110E1700	Remove Silt Fence	4,831	Ft
230E0010	Placing Topsoil	37,222	CuYd
730E0100	Cover Crop Seeding	150.0	Bu
730E0251	Special Permanent Seed Mixture 1	1,816	Lb
731E0200	Fertilizing	43.17	Ton
732E0100	Mulching	7.0	Ton
732E0200	Fiber Mulching	40.0	Ton
732E0500	Fiber Reinforced Matrix	82.9	Ton
734E0044	Soil Stabilizer	62.9	Acre
734E0103	Type 3 Erosion Control Blanket	18,698	SqYd
734E0104	Type 4 Erosion Control Blanket	3,287	SqYd
734E0132	Type 2 Turf Reinforcement Mat	1,641.0	SqYd
734E0154	12" Diameter Erosion Control Wattle	48,245	Ft
734E0165	Remove and Reset Erosion Control Wattle	12,061	Ft
734E0170	Temporary Sediment Barrier	4,500	Ft
734E0180	Sediment Filter Bag	32	Ft
734E0325	Surface Roughening	57.1	Acre
734E0510	Shaping for Erosion Control Blanket	13,937	Ft
734E0602	Low Flow Silt Fence	5,385	Ft
734E0604	High Flow Silt Fence	4,876	Ft
734E0610	Mucking Silt Fence	1,341	CuYd
734E0620	Repair Silt Fence	4,831	Ft
734E0845	Sediment Control at Inlet with Frame and Grate	2	Each
900E1310	Concrete Washout Facility	1	Each
900E1320	Construction Entrance	3	Each

COVER CROP SEEDING

Cover crop seeding may be used on this project as a temporary erosion control measure. The actual limits and use of cover crop seeding will be determined by the Engineer during construction.

PLACING TOPSOIL

Topsoil depth within the project area varies and in some places, there is very little topsoil present. Placement and depth of topsoil prior to permanent seeding will be determined by the Engineer during construction to maximize vegetative growth.

The estimated amount of Topsoil to be placed throughout the length of the entire project is 37,222 CuYd.

MYCORRHIZAL INOCULUM

Mycorrhizal inoculum will 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 will provide certification of the fungal species claimed and the live propagule count. The inoculum will include a minimum 25% the fungal species *Rhizophagus intraradices*. The remaining 75% may include other endomycorrhizal fungal species.

All seed will be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed will be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

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

<u>Product</u>	<u>Manufacturer</u>
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 www.mycorrhizae.com
AM 120 Multi Species Blend	Reforestation Technologies Int. Gilroy, CA Phone: 1-800-784-4769 www.reforest.com
LALRISE Prime and Max WP	Lallemand Specialties Inc. Milwaukee, WI Phone: 1-844-590-7781 www.lallemandplantcare.com

FIBER MULCHING

Fiber mulch will be applied in a separate operation following permanent seeding and will be used in lieu of Straw Mulch.

Fiber mulch will be applied at the rate of 3,000 pounds per acre.

The Contractor will 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.

The quantity of Fiber Mulching for Permanent Stabilization was estimated at 60% of the project disturbed area (minus areas that receive Fiber Reinforced Matrix, Erosion Control Blanket, or Turf Reinforcement Mat) speculating that some areas of the project are too steep or rocky to attempt to establish vegetation. Those areas will not be seeded, or fiber mulched.

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

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	D2	D36
Plotting Date: 09/23/2024		Rev. 08-14-24 BS Rev. 09-23-24 BS	

PERMANENT SEEDING

The areas to be seeded consist of all newly graded areas within the project limits except for the top of roadways and areas determined by the engineer to be too steep or rocky to successfully establish vegetation.

The quantity of Special Permanent Seed Mixture 1 was estimated at 60% of the project disturbed area speculating that some areas of the project are too steep or rocky to successfully establish vegetation. The actual limits of Permanent Seeding will be determined by the Engineer during construction to maximize vegetative growth.

Special Permanent Seed Mixture 1 will consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Indiangrass	Holt, Tomahawk, Chief, Nebraska 54	4.0
Big Bluestem	Bison, Bonilla, Champ, Sunnyview, Rountree, Bonanza	4.5
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	4.5
Green Needlegrass	Lodorm, AC Mallard Ecovar	3.5
Canada Wildrye	Mandan	3.5
Wildflowers		
	Canada Milkvetch	0.20
	Prairie Coneflower	0.07
	Lewis Flax	0.19
	Shell-Leaf Penstemon	0.12
	Purple Prairie Clover	0.19
	Stiff Goldenrod	0.07
	Blanket Flower	0.14
	Wild Bergamot	0.05
Total:		21.03

Plot Scale - 1:200

Plotted From - TRPR13525

File - ...:\penn03\VD\Notes\SectionD.dgn

FIBER REINFORCED MATRIX

Fiber reinforced matrix will be applied at locations noted in the table and at locations determined by the Engineer during construction. The application rate is 3,000 pounds per acre.

Fiber reinforced matrix will be applied in a separate operation following permanent seeding and will be used in lieu of Straw Mulch.

An additional quantity of Fiber Reinforced Matrix has been added to the Estimate of Quantities for erosion control on areas determined by the Engineer during construction.

The contractor will use a Fiber Reinforced Matrix from the approved products list, or an approved equal. The approved product list for Fiber Reinforced Matrix may be viewed at the following internet site.

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

TABLE OF FIBER REINFORCED MATRIX

Station	Location	Quantity (Acre)	Quantity (Ton)
139+00 to 150+00 R	Inslope	3.3	5.0
142+00 to 150+00 L	Inslope	1.0	1.5
158+00 to 167+00 L	Inslope	1.9	2.9
161+50 to 167+00 R	Inslope	1.8	2.8
169+00 to 170+50 R	Inslope	0.2	0.2
171+50 to 174+00 R	Inslope	0.4	0.6
175+00 to 177+00 R	Inslope	0.2	0.3
180+00 to 185+00 R	Inslope	0.6	1.0
187+25 to 190+00 R	Inslope	0.2	0.4
204+40 to 209+00 R	Inslope	0.7	1.1
205+00 to 210+00 L	Inslope	0.7	1.0
217+50 to 230+00 L	Inslope	1.2	1.8
232+00 to 241+00 L	Inslope	1.3	2.0
248+75 to 250+00 L	Inslope	0.1	0.1
258+10 to 260+00 L	Inslope	0.1	0.2
270+00 to 275+00 L	Inslope	0.4	0.7
283+50 to 286+00 R	Inslope	0.3	0.5
292+00 to 297+50 R	Inslope	0.5	0.7
305+00 to 321+00 L	Inslope	3.0	4.5
314+00 to 329+00 R	Inslope	2.6	3.8
324+50 to 330+00 L	Inslope	0.8	1.2
330+00 to 339+00 L	Inslope	0.9	1.4
353+25 to 360+50 L	Inslope	1.0	1.5
355+50 to 361+00 R	Inslope	1.0	1.5
362+00 to 377+40 R	Inslope	1.5	2.3
369+00 to 374+50 L	Inslope	0.5	0.7
381+50 to 385+50 R	Inslope	0.6	0.9
383+25 to 385+75 L	Inslope	0.3	0.4
389+00 to 390+00 L	Inslope	0.1	0.1
390+00 to 391+50 R	Inslope	0.2	0.3
394+50 to 396+00 R	Inslope	0.2	0.2
400+00 to 410+00 L	Inslope	1.0	1.5
411+00 to 412+50 R	Inslope	0.2	0.3
430+50 to 434+50 R	Inslope	0.7	1.0
433+00 to 435+00 L	Inslope	0.2	0.3
438+15 to 439+50 L	Inslope	0.1	0.2
438+15 to 440+25 R	Inslope	0.4	0.7
446+50 to 451+00 L	Inslope	0.6	0.9
446+50 to 451+00 R	Inslope	0.8	1.2

458+00 to 464+00 R	Inslope	1.4	2.1
472+50 to 475+00 L	Inslope	0.3	0.4
472+50 to 475+00 R	Inslope	0.5	0.7
1+15 to 7+00 R (Victoria Lake Rd)	Inslope	2.1	3.1
2+00 to 6+00 L (Victoria Lake Rd)	Inslope	0.5	0.8
480+50 to 484+50 L	Inslope	2.6	3.9
498+00 to 504+00 L	Inslope	2.6	3.9
506+50 to 507+25 L	Inslope	0.7	0.9
518+00 to 524+00 L	Inslope	1.5	2.9
Additional Quantity:		11	16.5
Total:		54.8	82.9

TEMPORARY SEDIMENT BARRIER

The Temporary Sediment Barrier provided will be from the approved product list. The approved product list for low flow silt fence may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

Temporary sediment barriers will be installed at locations noted in the table and at locations determined by the Engineer during construction.

Installation of the temporary sediment barrier will be in accordance with the manufacturer's installation instructions. It is the Contractor's responsibility to select product(s) best suited as perimeter control, slope interrupters, and ditch checks based on site conditions.

All costs for furnishing, installing, and maintaining the temporary sediment barrier including hauling, materials, equipment, labor, and incidentals necessary will be paid for at the contract unit price per foot for "Temporary Sediment Barrier".

An additional quantity of Temporary Sediment Barrier has been added to the Estimate of Quantities for other areas requiring sediment control.

TABLE OF TEMPORARY SEDIMENT BARRIER

Station	Location	Quantity (Ft)
106+00 to 120+00 R	Downslope Boundary	1,400
120+00 to 134+00 R	Downslope Boundary	1,500
524+25 to 536+00 L	Downslope Boundary	1,050
Additional Quantity:		550
Total:		4,500

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment will 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.

An additional quantity of Erosion Control Wattles has been added to the Estimate of Quantities for temporary sediment control.

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

Erosion control wattles will remain on the project to decompose

An additional quantity of 12" Diameter Erosion Control Wattles has been added to the Estimate of Quantities for temporary erosion and sediment control in highway ditch channels and as an alternative to low flow or high flow silt fence at wetland areas adjacent to the highway.

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

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

TABLE OF EROSION CONTROL WATTLE

Station	Location	Diameter (Inch)	Quantity (Ft)
139+00 to 150+00 R	Downslope Boundary	12	1,100
139+50 to 149+50 R	Inslope	12	4,000
158+00 to 167+00 L	Downslope Boundary	12	1,070
158+00 to 166+50 L	Inslope	12	1,100
161+00 to 167+00 R	Downslope Boundary	12	700
169+00 to 177+00 R	Downslope Boundary	12	850
180+00 to 185+75 R	Downslope Boundary	12	575
208+18 L/R	Inlet and outlet of Box Culvert (200 Ft each end)	12	400
217+00 to 230+00 L	Downslope Boundary	12	1,300
232+50 to 240+50 L	Downslope Boundary	12	800
292+25 to 297+00 R	Downslope Boundary	12	575
305+00 to 311+25 L	Downslope Boundary	12	750
320+25 to 326+00 R	Downslope Boundary	12	625
347+00 to 360+00 L	Downslope Boundary	12	1,200
357+00 to 362+00 R	Downslope Boundary	12	550
357+00 to 361+00 R	Inslope	12	1,100
370+50 to 374+00 R	Inslope	12	1,000
371+00 to 377+25 R	Downslope Boundary	12	575
381+50 to 386+00 R	Downslope Boundary	12	450
382+00 to 385+50 R	Inslope	12	600
390+00 to 391+50 R	Downslope Boundary	12	175
395+00 to 397+00 R	Downslope Boundary	12	200
401+00 to 406+90 L	Downslope Boundary	12	590
411+00 to 412+25 R	Downslope Boundary	12	125

SECTION S – ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0130	Remove Traffic Sign	16	Each
110E0135	Remove Delineator	238	Each
110E7150	Remove Sign for Reset	107	Each
632E1320	2.0"x2.0" Perforated Tube Post	278.0	Ft
632E1340	2.5"x2.5" Perforated Tube Post	120.0	Ft
632E2022	4"x4" White Delineator Back to Back with 1.12 Lb/Ft Post	231	Each
632E2207	4" Tubular White Delineator Reflector	7	Each
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	263.5	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	128.8	SqFt
632E3500	Reset Sign	107	Each

GENERAL PERMANENT SIGNING

New sign installations will be staked in the field by the Contractor and checked by the Engineer. The Contractor will give the Engineer a minimum of one week to check staked locations prior to signpost installation. Lateral offset of signs will be as shown in the plans or as directed by the Engineer.

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

When signs are mounted in an assembly, they will be 1-2 inches apart vertically and horizontally.

The height of the post must not exceed the minimum height needed by more than 0.5 feet. Any portion that extends above the sign will be cut off. No separate payment will be made for cutting the post or for that length cut off.

Aluminum U-Channel stiffeners will be used on all signs 36 inches or greater in width and will conform to ASTM B221 Alloy 6063-T6 or 6061-T6. The U-Channel will be 2 inches in width and free of holes. The U-Channel stiffeners will also be used to connect various signs together so that an entire sign assembly can be erected on a single installation. Stiffeners may be fastened to signs by use of 1/4-inch diameter drive rivets.

The Contractor will use 3/8-inch diameter rust proof machine sign bolts, flat metal washers, neoprene washers (against the sign sheeting), lock washers, and nuts to fasten the sign to the channel aluminum and posts. A minimum of two bolts will extend through each post.

Prior to ordering signs, the Contractor will verify dimensions, background, border, and legend of the signs.

Prior to use, the Contractor will provide documentation for the sign support devices showing they meet the applicable NCHRP 350 or MASH requirements.

REMOVE TRAFFIC SIGN

Existing signs that are shown as being removed in the Permanent Signing Table will become the property of the Contractor. Existing signposts and bases will be removed in their entirety. All existing signs, posts, and/or hardware removed will not be reused. Holes remaining from the removal of wood posts will be backfilled and compacted with material placed in layers not to exceed 6 inches in depth.

All costs associated with the removal of existing signs, posts, hardware, and backfilled holes will be incidental to the contract unit price per each for "Remove Traffic Sign". Quantities will be per assembly at the contract unit price per each.

REMOVE SIGN FOR RESET AND RESET SIGN

Signs that are scheduled for reset will be dismantled and reassembled to the extent needed by the Contractor to properly reset the sign. Signs will be handled with care so that the existing signs, posts, and bases are not damaged during the relocation process. The Contractor will replace and pay for any reset signs damaged in their care. The Contractor will remove and dispose of any existing posts for all reset signs that require use of new posts as shown in the Table of Permanent Signing.

All costs for removing, dismantling, and disposing of any existing posts will be incidental to the contract unit price per each for "Remove Sign for Reset". All costs for resetting the existing signs will be incidental to the contract unit price per each for "Reset Sign". All quantities for Remove Sign for Reset and Reset Sign will be per assembly at the contract unit price per each.

NEW PERMANENT SIGNING

All signs will be manufactured in accordance with the sheeting manufacturer's recommendations utilizing a matched component system, including inks, electronic cuttable films, and protective overlay films.

All Flat Aluminum Signs, Nonremovable Copy High Intensity will have sheeting in conformance with the requirements of ASTM D4956 Type IV. All Flat Aluminum Signs, Nonremovable Copy Super/Very High Intensity will have sheeting in conformance with the requirements of ASTM D4956 Type XI.

All costs associated with furnishing and installing the new permanent signs, and with furnishing and installing stiffeners and hardware will be incidental to the contract unit price per square foot for "Flat Aluminum Sign, Nonremovable Copy High Intensity" or "Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity".

SQUARE TUBE ANCHOR SLEEVE

The Contractor will furnish and install new 2.5" x 2.5" x 18", 12 Gauge square tube anchor sleeve or equivalent components as approved by the Engineer for 2.0" x 2.0" perforated tube posts. A 2.25" x 2.25" x 4', 12 Gauge perforated tube post will be used as the anchor post for installation with the square tube anchor sleeve.

SQUARE TUBE POST SLEEVE

All 2.5" x 2.5", 10 Gauge perforated tube post will be sleeved with a 2-3/16" x 2-3/16" x 4', 10 Gauge perforated tube post.

WINGED SLIP BASE ANCHOR

The Contractor will furnish and install new winged slip base anchors for 2.5" x 2.5" perforated tube posts as required in the Permanent Signing Table. Winged slip base anchors will be installed using the direct drive method. Winged slip base anchors will consist of a slip base (upper), a 48-inch-long winged anchor (lower), and a hardware kit.

DELINEATORS – HWY 385

After construction is complete, delineators will be placed on both sides of the roadway. The delineators will match the color of the closest edgeline and will be spaced at intervals indicated on standard plate 632.46. (See- Estimate of Delineators table in these plans). Object markers are to be replaced within section B of these plans. Guardrail delineation markers will be replaced within section B of these plans.