



Department of Transportation

Office of Project Development

700 E Broadway Avenue

Pierre, South Dakota 57501-2586 605/773-3268

FAX: 605/773-2614

September 29, 2016

ADDENDUM NO. 1

**RE: Item #8, October 5, 2016 Letting - IM 0909(81)406, PCN 021X, Minnehaha County -
Replace Structures, Approach Grading (Twin 378' Prestressed Girder Bridges)**

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

BID ITEM FILE: *Bidders must log in to retrieve the addendum bid item file that must be loaded into the SDEBS to incorporate the revisions listed here.*

Bid Items were added:

Bid Item 633E1300 "Pavement Marking Paint, White"

Bid Item 633E1305 "Pavement Marking Paint, Yellow"

Quantities for Bid Items were changed:

Bid Item 120E0010 "Unclassified Excavation" changed from 20,149 to 20,549 CuYd

Bid Item 633E1300 "Pavement Marking Paint, White" changed from 16 to 34 Gal

Bid Item 633E1305 "Pavement Marking Paint, Yellow" changed from 11 to 25 Gal

PLANS: Please destroy sheets A1, A3, B2, B3, C2, M1, M2, M3, and M4 and replace with the enclosed sheets, dated 9/28/16, 9/29/16, and 9/30/16.

Sheet A1: **Quantities for Bid Items were changed:**

Section B – Grading

Bid Item 120E0010 "Unclassified Excavation" changed from 20,149 to 20,549 CuYd

Bid Items were added:

Section C – Traffic Control

Bid Item 633E1300 "Pavement Marking Paint, White"

Bid Item 633E1305 "Pavement Marking Paint, Yellow"

Sheet A3: **Quantities for Bid Items were changed:**

Bid Item 633E1300 "Pavement Marking Paint, White" changed from 16 to 34 Gal

Bid Item 633E1305 "Pavement Marking Paint, Yellow" changed from 11 to 25 Gal

Sheet B2: **Quantities for Bid Items were changed:**

Bid Item 120E0010 "Unclassified Excavation" changed from 20,149 to 20,549 CuYd

Sheet B3: TABLE OF UNCLASSIFIED EXCAVATION was revised to include 400 CuYd of Bridge End Backfill Excavation.

Sheet C2: Bid Items were added:

Bid Item 633E1300 "Pavement Marking Paint, White"
Bid Item 633E1305 "Pavement Marking Paint, Yellow"

Sheet M1: Map was revised.

Sheet M2: Quantities for Bid Items were changed:

Bid Item 633E1300 "Pavement Marking Paint, White" changed from 16 to 34 Gal
Bid Item 633E1305 "Pavement Marking Paint, Yellow" changed from 11 to 25 Gal

PAVEMENT MARKING note and ESTIMATED QUANTITIES table were revised.

Sheet M3: ESTIMATED QUANTITIES table was revised.

Sheet M4: PAVEMENT MARKING LAYOUT was revised.

Sincerely,

Sam Weisgram
Engineering Supervisor

SW/cj

CC: Craig Smith, Mitchell Region Engineer
Travis Dressen, Sioux Falls Area Engineer

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(81)406	A1	A5

Plotting Date: 09/30/2016 Revised: 9-30-16 BTR

Section B - Grading

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	0.878	Mile
009E3250	Miscellaneous Staking	0.513	Mile
009E3280	Slope Staking	0.513	Mile
009E3290	Structure Staking	2	Each
009E3300	Three Man Survey Crew	40.0	Hour
100E0100	Clearing	Lump Sum	LS
110E0400	Remove Drop Inlet	4	Each
110E0600	Remove Fence	1,537	Ft
110E0700	Remove 3 Cable Guardrail	1,292	Ft
110E0730	Remove Beam Guardrail	328.0	Ft
110E0740	Remove 3 Cable Guardrail Anchor Assembly	6	Each
110E0745	Remove 3 Cable Guardrail Slip Base Anchor Assembly	2	Each
110E0770	Remove W Beam Guardrail Breakaway Cable Terminal	4	Each
110E1100	Remove Concrete Pavement	7,653.9	SqYd
110E4290	Salvage Beam Guardrail	275.1	Ft
110E4380	Salvage W Beam Guardrail Tangent End Terminal	2	Each
110E7020	Remove Interim Crossover Closure for Reset	640	Ft
120E0010	Unclassified Excavation	20,549	CuYd
120E0400	Select Subgrade Topping	12,109	CuYd
120E0600	Contractor Furnished Borrow Excavation	12,334	CuYd
120E6100	Water for Embankment	312.0	MGal
250E0020	Incidental Work, Grading	Lump Sum	LS
270E0040	Salvage and Stockpile Asphalt Mix and Granular Base Material	5,070.3	Ton
421E0100	Pipe Culvert Undercut	46	CuYd
450E0122	18" RCP Class 2, Furnish	86	Ft
450E0130	18" RCP, Install	86	Ft
450E0142	24" RCP Class 2, Furnish	190	Ft
450E0150	24" RCP, Install	190	Ft
450E2308	24" RCP Safety End, Furnish	4	Each
450E2311	24" RCP Safety End, Install	4	Each
450E4759	18" CMP 16 Gauge, Furnish	102	Ft
450E4760	18" CMP, Install	102	Ft
450E4769	24" CMP 16 Gauge, Furnish	78	Ft
450E4770	24" CMP, Install	78	Ft
450E5010	18" CMP Elbow, Furnish	4	Each
450E5011	18" CMP Elbow, Install	4	Each
450E5015	24" CMP Elbow, Furnish	2	Each
450E5016	24" CMP Elbow, Install	2	Each
450E5211	18" CMP Flared End, Furnish	2	Each
450E5212	18" CMP Flared End, Install	2	Each
450E5215	24" CMP Flared End, Furnish	1	Each
450E5216	24" CMP Flared End, Install	1	Each

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E5410	24" CMP Safety End, Furnish	1	Each
450E5411	24" CMP Safety End, Install	1	Each
462E0100	Class M6 Concrete	3.1	CuYd
480E0100	Reinforcing Steel	477	Lb
600E0200	Type II Field Laboratory	1	Each
620E0020	Type 2 Right-of-Way Fence	1,445	Ft
620E0520	Type 2 Temporary Fence	400	Ft
620E1020	2 Post Panel	16	Each
620E1030	3 Post Panel	2	Each
629E0100	3 Cable Guardrail	1,384	Ft
629E0300	3 Cable Guardrail Slip Base Anchor Assembly	4	Each
629E0400	3 Cable Guardrail Anchor Assembly	4	Each
629E9060	Reset Interim Crossover Closure	640	Ft
630E0110	Straight Double Class A Thrie Beam Guardrail with Wood Posts	75.0	Ft
630E1010	Straight Class A W Beam Guardrail with Wood Posts	487.5	Ft
630E2000	W Beam to Thrie Beam Guardrail Transition	6	Each
630E2020	W Beam Guardrail Tangent End Terminal	2	Each
630E2030	W Beam Guardrail Breakaway Cable Terminal	4	Each
634E0700	Traffic Control Movable Concrete Barrier	33	Each
634E0750	Temporary Concrete Barrier End Protection	2	Each
634E0760	Temporary Concrete Barrier End Protection Module Set or Repair Kit	2	Each
650E4380	Type D48 Concrete Curb and Gutter	78	Ft
670E3200	Type D Frame and Grate	4	Each
670E5400	Precast Drop Inlet Collar	4	Each
680E0240	4" Corrugated Polyethylene Drainage Tubing	80	Ft
680E0440	4" Slotted Corrugated Polyethylene Drainage Tubing	675	Ft
680E2000	Concrete Headwall for Underdrain	2	Each
680E2500	Porous Backfill	378.0	Ton
720E1015	Bank and Channel Protection Gabion	9.0	CuYd

Section C - Traffic Control

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
632E2510	Type 2 Object Marker Back to Back	4	Each
633E0050	Cold Applied Plastic Pavement Marking, Message	2	Word
633E1300	Pavement Marking Paint, White	34	Gal
633E1305	Pavement Marking Paint, Yellow	25	Gal
634E0010	Flagging	40.0	Hour
634E0110	Traffic Control Signs	1,261.6	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	11	Each
634E0330	Temporary Raised Pavement Markers	6,645	Ft
634E0380	Tubular Marker	121	Each
634E0390	Replace Tubular Marker	12	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
634E0560	Remove Pavement Marking, 4" or Equivalent	4,633	Ft
634E0570	Remove Pavement Marking, Message	2	Word
634E0600	4" Temporary Pavement Marking Tape Type I	25,090	Ft
634E0620	Temporary Pavement Marking, Continuous 4" Edge Line	6,400	Ft
634E0900	Portable Temporary Traffic Control Signal	3	Unit
634E1002	Detour Signing	463.8	SqFt
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each
635E7600	Maintenance of Traffic Signal(s)	100	Hour

INDEX OF SHEETS

A1 and A3 Estimate of Quantities for Sections B, C, D, E, F, M, and S
 A4 and A5 Environmental Commitments

Plot Scale - 1:200

Plotted From - trst12145

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ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(81)406	A3	A5

Plotting Date: 09/28/2016 Revised: 9-28-16 BTR

Section F – Surfacing

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
120E6200	Water for Granular Material	100.0	MGal
260E1010	Base Course	3,275.7	Ton
260E1030	Base Course, Salvaged	5,070.3	Ton
320E0008	PG 64-34 Asphalt Binder	529.4	Ton
320E1060	Class G Asphalt Concrete	9,729.8	Ton
320E3000	Compaction Sample	3	Each
320E4000	Hydrated Lime	96.3	Ton
330E0010	MC-70 Asphalt for Prime	19.1	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	21.0	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	7.0	Ton
330E2000	Sand for Flush Seal	76.7	Ton
430E0700	Precast Concrete Headwall for Drain	22	Each
680E0010	Edge Drain	8,316	Ft
680E0015	Edge Drain Outlet	18	Each
680E0240	4" Corrugated Polyethylene Drainage Tubing	40	Ft
680E0440	4" Slotted Corrugated Polyethylene Drainage Tubing	115	Ft
680E2500	Porous Backfill	95.0	Ton
831E0400	Impermeable Plastic Membrane	50	SqYd

Section S - Permanent Signing

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0100	Remove Concrete Footing(s)	Lump Sum	LS
110E5010	Salvage Delineator	21	Each
110E5020	Salvage Traffic Sign	6	Each
110E5030	Salvage Extruded Panel Sign	1	Each
632E0010	1.25' Diameter Breakaway Support Concrete Footing	20.0	Ft
632E0060	2.5' Diameter Fixed Support Concrete Footing	14.0	Ft
632E1210	S3x5.7 Steel Post	11.0	Ft
632E1260	W8x31 Steel Post	49.2	Ft
632E1410	3" Diameter Steel Post, .216" Shell	25.0	Ft
632E1415	4" Diameter Steel Post, .237" Shell	58.1	Ft
632E2020	4"x4" White Delineator with 1.12 Lb/Ft Post	6	Each
632E2220	Guardrail Delineator	33	Each
632E2510	Type 2 Object Marker Back to Back	11	Each
632E3105	Extruded Aluminum Sign, Removable Copy Super/Very High Intensity	203.5	SqFt
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	57.5	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	48.0	SqFt

Section M - Pavement Marking

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
633E1300	Pavement Marking Paint, White	34	Gal
633E1305	Pavement Marking Paint, Yellow	25	Gal

Plot Scale - 1:200

Plotted From - trsf12145

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SECTION B ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	0.878	Mile
009E3250	Miscellaneous Staking	0.513	Mile
009E3280	Slope Staking	0.513	Mile
009E3290	Structure Staking	2	Each
009E3300	Three Man Survey Crew	40.0	Hour
100E0100	Clearing	Lump Sum	LS
110E0400	Remove Drop Inlet	4	Each
110E0600	Remove Fence	1,537	Ft
110E0700	Remove 3 Cable Guardrail	1,292	Ft
110E0730	Remove Beam Guardrail	328.0	Ft
110E0740	Remove 3 Cable Guardrail Anchor Assembly	6	Each
110E0745	Remove 3 Cable Guardrail Slip Base Anchor Assembly	2	Each
110E0770	Remove W Beam Guardrail Breakaway Cable Terminal	4	Each
110E1100	Remove Concrete Pavement	7,653.9	SqYd
110E4290	Salvage Beam Guardrail	275.1	Ft
110E4380	Salvage W Beam Guardrail Tangent End Terminal	2	Each
110E7020	Remove Interim Crossover Closure for Reset	640	Ft
120E0010	Unclassified Excavation	20,549	CuYd
120E0400	Select Subgrade Topping	12,109	CuYd
120E0600	Contractor Furnished Borrow Excavation	12,334	CuYd
120E6100	Water for Embankment	312.0	MGal
250E0020	Incidental Work, Grading	Lump Sum	LS
270E0040	Salvage and Stockpile Asphalt Mix and Granular Base Material	5,070.3	Ton
421E0100	Pipe Culvert Undercut	46	CuYd
450E0122	18" RCP Class 2, Furnish	86	Ft
450E0130	18" RCP, Install	86	Ft
450E0142	24" RCP Class 2, Furnish	190	Ft
450E0150	24" RCP, Install	190	Ft
450E2308	24" RCP Safety End, Furnish	4	Each
450E2311	24" RCP Safety End, Install	4	Each
450E4759	18" CMP 16 Gauge, Furnish	102	Ft
450E4760	18" CMP, Install	102	Ft
450E4769	24" CMP 16 Gauge, Furnish	78	Ft
450E4770	24" CMP, Install	78	Ft
450E5010	18" CMP Elbow, Furnish	4	Each
450E5011	18" CMP Elbow, Install	4	Each
450E5015	24" CMP Elbow, Furnish	2	Each
450E5016	24" CMP Elbow, Install	2	Each
450E5211	18" CMP Flared End, Furnish	2	Each
450E5212	18" CMP Flared End, Install	2	Each
450E5215	24" CMP Flared End, Furnish	1	Each
450E5216	24" CMP Flared End, Install	1	Each

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E5410	24" CMP Safety End, Furnish	1	Each
450E5411	24" CMP Safety End, Install	1	Each
462E0100	Class M6 Concrete	3.1	CuYd
480E0100	Reinforcing Steel	477	Lb
600E0200	Type II Field Laboratory	1	Each
620E0020	Type 2 Right-of-Way Fence	1,445	Ft
620E0520	Type 2 Temporary Fence	400	Ft
620E1020	2 Post Panel	16	Each
620E1030	3 Post Panel	2	Each
629E0100	3 Cable Guardrail	1,384	Ft
629E0300	3 Cable Guardrail Slip Base Anchor Assembly	4	Each
629E0400	3 Cable Guardrail Anchor Assembly	4	Each
629E9060	Reset Interim Crossover Closure	640	Ft
630E0110	Straight Double Class A Thrie Beam Guardrail with Wood Posts	75.0	Ft
630E1010	Straight Class A W Beam Guardrail with Wood Posts	487.5	Ft
630E2000	W Beam to Thrie Beam Guardrail Transition	6	Each
630E2020	W Beam Guardrail Tangent End Terminal	2	Each
630E2030	W Beam Guardrail Breakaway Cable Terminal	4	Each
634E0700	Traffic Control Movable Concrete Barrier	33	Each
634E0750	Temporary Concrete Barrier End Protection	2	Each
634E0760	Temporary Concrete Barrier End Protection Module Set or Repair Kit	2	Each
650E4380	Type D48 Concrete Curb and Gutter	78	Ft
670E3200	Type D Frame and Grate	4	Each
670E5400	Precast Drop Inlet Collar	4	Each
680E0240	4" Corrugated Polyethylene Drainage Tubing	80	Ft
680E0440	4" Slotted Corrugated Polyethylene Drainage Tubing	675	Ft
680E2000	Concrete Headwall for Underdrain	2	Each
680E2500	Porous Backfill	378.0	Ton
720E1015	Bank and Channel Protection Gabion	9.0	CuYd

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste.

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 section(s) 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.

Generally, all shallow inlet and outlet ditches as noted on the plan sheets shall be cut with a 10-foot wide bottom with 5:1 backslopes. However, the Engineer may direct the Contractor to adjust the ditch width for proper alignment with the drainage structure.

Temporary fence and/or permanent fence shall be placed ahead of the grading operation unless otherwise directed by the Engineer.

TYPE II FIELD LABORATORY

The lab shall be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection shall be provided with a multi-port wireless router. The internet connection shall be a minimum speed of 512 Kb unless limited by job location and approved by the DOT. Prior to installing the wireless router the Contractor shall submit the wireless router's technical data to the Area Office to check for compatibility with the state's computer equipment. The internet connection is intended for state personnel usage only. The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer.

The Contractor shall submit a copy of each monthly bill for calls charged to this phone at the end of each month. The Project Engineer will then audit the bills to ensure all calls are legitimate and then initiate a Construction Change Order (CCO) to reimburse the Contractor for the actual phone calls made, including local and long distance calls. Reimbursement will not be made for fees associated with the purchase, installation, disconnection, monthly line charges, and incidentals involved in the installation, maintenance, and disconnection of the phone (including attachments). These items shall be incidental to the contract unit price per each for "Type II Field Laboratory".

UTILITIES

The Contractor shall be aware that the existing utilities shown in the plans were surveyed prior to 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.

Warning OH Power Transmission Lines

The contractor shall maintain a minimum approach distance of 25' from conductors with any crane (or its load), boom, backhoe, etc.

STATE OF SOUTH DAKOTA	PROJECT IM 0909(81)406	SHEET B2	TOTAL SHEETS B48
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Plotting Date: 09/29/2016 Revised: 9-29-16 BTR

Plot Scale - 1:200

Plotted From - trs12145

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SHRINKAGE FACTOR: Embankment +35% to +50% (Removed Surfacing used in Select Subgrade Topping is assumed -10% Swell)

STATE OF SOUTH DAKOTA	PROJECT IM 0909(81)406	SHEET B3	TOTAL SHEETS B48
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Plotting Date: 09/29/2016 Revised: 9-29-16 BTR

TABLE OF EXCAVATION QUANTITIES BY BALANCES

Station to	Station	Excavation (CuYd)	* Surfacing Removal (CuYd)	* Contractor Furnished Borrow Exc. (CuYd)	Select Subgrade Topping Exc. (CuYd)	Total Excavation (CuYd)	Out-of- Balance Exc. (CuYd)	Out-of- Balance Select Subgrade Topping Exc. (CuYd)	** Excavation Waste (CuYd)	** Surfacing Waste (CuYd)
WB I-90										
659+33	667+15	0	1640	3486	3312	8438	0	0	0	319
670+93	675+50	238	801	1450	2198	4687	380	0	0	23
675+50	677+21	136	0	0	309	445	0	94	123	0
EB I-90										
659+33	667+63	811	1728	7398	3864	13801	0	0	0	67
671+41	675+50	831	720	0	2010	3561	0	0	445	26
675+50	677+76	41	0	0	416	457	188	151	0	0
Totals:		2057	4889	12334	12109	31389	568	245	568	435

* The quantities for these items are in the Estimate of Quantities under their respective bid items.

The Quantity for Surfacing Removal in this table is only the portion used in the select subgrade topping. It does not include the existing AC Shoulder and gravel under the shoulders as this will be used as gravel cushion in the final surfacing.

** The quantities for these items are for information only. Surfacing Waste is the excess Surfacing Removal not used in the Select Subgrade Topping.

Note: Placing of the select subgrade topping shall be paid for separately using the "Select Subgrade Topping" bid item.

TABLE OF UNCLASSIFIED EXCAVATION

Excavation	2057
Select Subgrade Topping Excavation	12109
Topsoil	3300
Salvaged Asphalt Mix and Granular Base Material (from cut sections)	2683
Bridge End Backfill Excavation (See Section E for Details)	400
Total	20549

Salvaged Asphalt Mix and Granular Base Material shall be paid for once as Unclassified Excavation. When finaling a project, the quantities of Salvaged Asphalt Mix and Granular Base Material from fill sections and off-alignment roadways or obliterated old roads will not be adjusted according to field measurements. The quantity of Salvaged Asphalt Mix and Granular Base Material from cut sections will not be added to the Excavation quantity as it is already in the cuts on the final cross sections.

The volume of in place Concrete Surfacing removed will NOT be paid for as Unclassified Excavation.

The Excavation quantities from individual balances and the table above have been reduced by the volume of in place concrete pavement that will be removed.

When finaling a project, the estimated quantity of 4889 cubic yards of Concrete Pavement removed from the cut sections shall be subtracted from the Unclassified Excavation quantity for final payment. The quantity of Concrete Pavement from cut sections subtracted from the Unclassified Excavation quantity shall be plans quantity and will not be adjusted according to field measurements.

SELECT SUBGRADE TOPPING

After the existing PCCP and asphalt is removed, the existing gravel cushion/ base course shall be removed and stockpiled. The removed PCCP will be crushed to a minus 2.5 inch size. There are two layers of PCC pavement with a thin (1 to 2 inch) AC leveling course between them. It will not be required to remove this AC separately during the pavement removal. The AC leveling course may be crushed and included in the PCCP salvage, but the AC shoulders should be removed separately and not used in the subgrade.

In all cut sections, the subgrade will be undercut to a depth of 2 feet. The crushed PCCP and the salvaged gravel cushion/ base course will be

blended with the soil taken from the undercut and used as Select Subgrade Topping to backfill the undercut. The blended backfill material will consist of a ratio of approximately 2:1 undercut soil to salvaged surfacing and gravel cushion/ base course (by volume).

In fill sections, the top 2 feet of subgrade will be constructed with the Select Subgrade Topping. To obtain the Select Subgrade Topping, the salvaged PCCP and granular material will be mixed with new embankment material at the same 2:1 rate as the undercut backfill. Shallow embankment sections, i.e. fills less than 2 feet in height measure at the finished subgrade shoulder, will be undercut to ensure the upper 2 of subgrade is constructed with Select Subgrade Topping.

Select Subgrade Topping Excavation shall be paid for once as Unclassified Excavation.

All cost associated with the crushing, mixing and placement of the Select Subgrade Topping material shall be included in the contract unit price per cubic yard for Select Subgrade Topping.

Select Subgrade Topping shall be compacted with sheepsfoot or other approved rollers. Compaction shall be as per 260.3.C. Additional test strips will be made as required by changes in soil types. Moisture requirements will be determined in accordance with SD 104, except the optimum and field moisture will be determined using material passing a ¾ inch sieve.

Density testing will be performed a minimum of 1 per lane per lift on each side (east and west) of the structure.

Moisture testing will be performed a minimum of 1 per day.

The plan shown quantity will be the basis of payment. However, if there are additional areas of Select Subgrade Topping Excavation other than what is shown in the plans, the Engineer shall direct removal of these areas and the additional areas will be measured according to the Engineer.

1:200 Plot Scale

Plotted From: trsf12145

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SECTION C TRAFFIC CONTROL ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
632E2510	Type 2 Object Marker Back to Back	4	Each
633E0050	Cold Applied Plastic Pavement Marking, Message	2	Word
633E1300	Pavement Marking Paint, White	34	Gal
633E1305	Pavement Marking Paint, Yellow	25	Gal
634E0010	Flagging	40.0	Hour
634E0110	Traffic Control Signs	1,261.6	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	11	Each
634E0330	Temporary Raised Pavement Markers	6,645	Ft
634E0380	Tubular Marker	121	Each
634E0390	Replace Tubular Marker	12	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
634E0560	Remove Pavement Marking, 4" or Equivalent	4,633	Ft
634E0570	Remove Pavement Marking, Message	2	Word
634E0600	4" Temporary Pavement Marking Tape Type I	25,090	Ft
634E0620	Temporary Pavement Marking, Continuous 4" Edge Line	6,400	Ft
634E0900	Portable Temporary Traffic Control Signal	3	Unit
634E1002	Detour Signing	463.8	SqFt
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each
635E7600	Maintenance of Traffic Signal(s)	100	Hour

SEQUENCE OF OPERATIONS

The following Sequence of Operations shall be followed by the Contractor unless an alternate Sequence of Operations is submitted in writing one week prior to the preconstruction meeting and approved by the Engineer.

Phase 1

1. Install lane closure traffic control.
2. Complete guardrail installations required to maintain two-way traffic on the westbound lanes. Install delineation and Type 2 Object markers at guard rail locations as detailed in these plans.
3. Install traffic control for width restriction and for head to head traffic in the westbound lanes of Interstate 90.
4. Divert eastbound traffic through the crossovers and maintain head to head in the westbound lanes of Interstate 90.
5. Complete all work in the eastbound lanes.
6. Complete guardrail installations required to maintain two-way traffic on the eastbound lanes. Install delineation and Type 2 Object markers at guardrail locations as detailed in these plans.

7. Restore eastbound traffic to the eastbound mainline of Interstate 90. Continue to maintain one lane of westbound traffic in the westbound driving lane.
8. Remove the centerline traffic control devices and temporary pavement marking in the westbound lanes.
9. Reset Crossover Closures.
10. Complete miscellaneous cleanup and erosion control.

Phase 2

1. Install lane closure traffic control.
2. Install traffic control for width restriction and for head to head traffic in the eastbound lanes of Interstate 90.
3. Divert westbound traffic through the crossovers to be maintained head to head in the eastbound lanes of Interstate 90.
4. Complete all work in the westbound lanes.
5. Restore westbound traffic to the westbound mainline of Interstate 90. Continue to maintain one lane of westbound traffic in the westbound driving lane.
6. Remove the centerline traffic control devices and pavement marking in the eastbound lanes.
7. Remove traffic control for width restriction.
8. Reset Crossover Closures.
9. Complete miscellaneous cleanup and erosion control.

Phase 3

Phase 3 consists of the work to install the permanent waterborne pavement markings (spring of 2018).

GENERAL NOTES

Requests to deviate from the sequence of operations shall be submitted in writing to the Engineer for review. Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work. An alternative sequence shall be submitted for review a minimum of one week prior to potential implementation.

Existing guide, route, informational logo, regulatory, warning signs and delineation shall be temporarily reset and maintained during construction as directed by the Engineer.

All haul trucks shall be equipped with a second flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights shall be incidental to the various related contract bid items.

4" Yellow Raised Pavement Markers shall be used for lane closure tapers or lane shift tapers and shall be installed at 5' spacing. Raised Pavement Markers used for tapers and shifts will not be measured for payment. All costs associated to furnish, install, maintain (including replacement as required by the Engineer at no added cost to the Department), and remove all markers will be paid at the unit price per foot for "Temporary Raised Pavement Markers".

MAINTENANCE OF TRAFFIC

Lane closures are to be used during guardrail and other minor work operations. Two-way head to head traffic controls are to be used during structure replacement. Lane shifts may be used on the interchange ramps.

Regulatory speed limits of 45 miles per hour shall be used when workers are present within lane closures.

Contractors' equipment and trucks will not be allowed to enter or exit lanes used by traffic or cross opposing traffic on Interstate 90. The Contractor shall submit a plan in writing detailing how haul vehicles will enter and exit the work site.

Traffic shall cross medians at median crossover locations built specifically for the maintenance of through traffic.

Routing traffic onto the asphalt shoulders during any phase of the construction will not be allowed.

Signing for the crossovers and the two way traffic section shall be installed on fixed location ground mounted supports.

The existing STOP/ONE WAY/DO NOT ENTER sign assemblies located at the top of the exit ramps shall be maintained when the exit ramp is opened to traffic. These sign assemblies may need to be removed, salvaged, relocated and reset.

Regulatory speed limit signing installed on ramps shall be changed as mainline regulatory speeds change.

Other devices as deemed necessary may be used.

One fixed location ground mounted Highway Workers Give 'Em a Brake sign shall be installed 2000' in advance of the Road Work Next 1 Mile signs for eastbound and westbound directions of travel. The signs shall be mounted to the right of the roadway a minimum of 16' from the edge of the shoulder to the inside edge of the sign.

REMOVE PAVEMENT MARKING

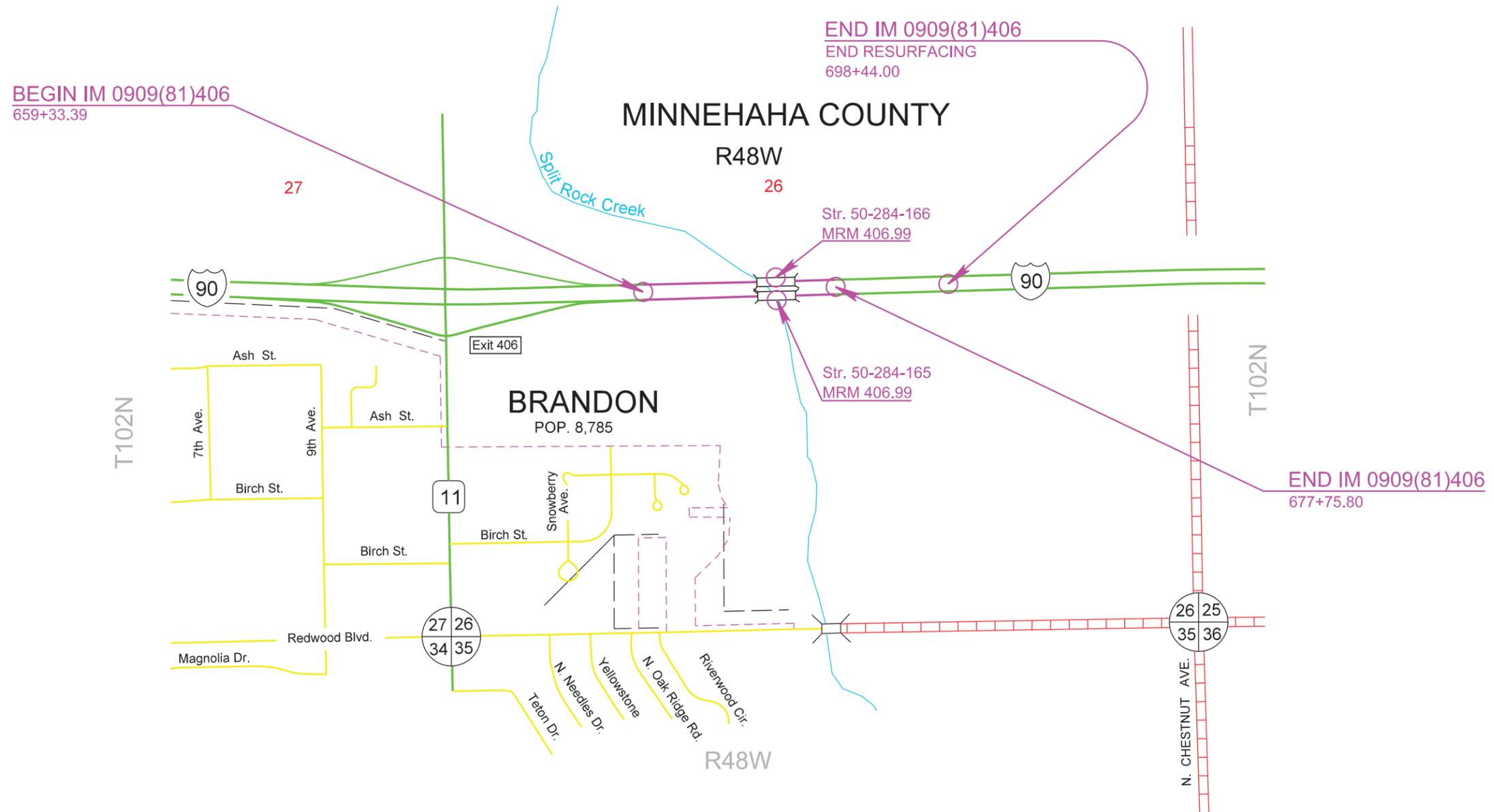
Pavement markings which conflict with the desired traffic patterns detailed in the traffic control layouts in the plans shall be removed by the Contractor unless otherwise shown. Removal of pavement markings shall be paid at the contract unit price per foot for "Remove Pavement Marking, 4" or Equivalent" and per word for "Remove Pavement Marking, Message".

Section M: Pavement Marking Plans

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(81)406	M1	M4
Plotting Date: mmm-ddd-yyy		Rev: 9-28-16 SAH	

INDEX OF SHEETS

- M1 General Layout W/Index
- M2 Estimate w/General Notes & Typical Markings
- M3-M4 Pavement Marking Layouts



Plot Scale - \$\$scale\$\$

Plotted From - \$\$username\$\$

File - \$\$filename\$\$

SECTION M ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
633E1300	Pavement Marking Paint, White	34	Gal
633E1305	Pavement Marking Paint, Yellow	25	Gal

PAVEMENT MARKING

All materials shall be applied as per manufacturer's recommendations.

The Contractor shall apply temporary painted pavement marking on mainline lanes prior to opening the closed lanes to traffic. The Contractor shall apply permanent pavement marking paint in the spring of 2018.

COLD WEATHER WATERBORNE PAINT

Waterborne paint applied after October 15 shall be formulated as cold weather, waterborne paint and shall be applied in accordance with manufacturer's recommendations, including minimum temperature requirements.

Cold weather, waterborne paint shall conform to Section 980 of the Specifications except for the following:

980.1: Resin Binder shall be FASTRACK™ XSR™ manufactured by Dow, or approved equal.

980.1 A. Quantitative Requirements:

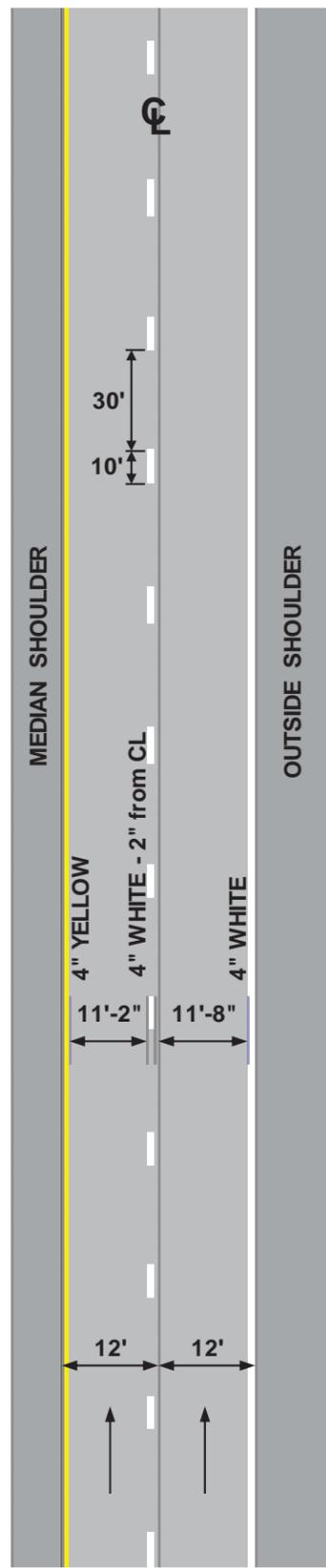
Pigment, percent by weight: 60.0 – 63.0 for white and 58.5 – 61.5 for yellow.

Pigment, percent by weight; tested in accordance with ASTM D3723: 60.0 – 63.0 for white and 56.1 – 59.2 for yellow.

Non-volatile Vehicle, percent by weight; tested in accordance with NIST 141C (Method 4051.1): 41.5 minimum for white and 41.5 minimum for yellow.

The

**DIVIDED ROADWAY
(ONE DIRECTION SHOWN)**



PAVEMENT MARKING

Typical pavement marking as shown on this sheet shall be applied throughout the entire length of divided roadway.

Traffic Control shall be incidental to the cost of application. The striper and advance or trailing warning vehicle shall be equipped with flashing amber lights and advance warning arrow board.

Application rates shall be as follows:

DIVIDED ROADWAY (Rates for one line)	
Solid Yellow Edgeline	Rate = 16.9 Gals./Pass-Mile
Dashed White Centerline	Rate = 4.6 Gals./Pass-Mile
Solid White Edgeline	Rate = 16.9 Gals./Pass-Mile

ESTIMATED QUANTITIES	
PAINT	QUANTITY
WHITE	34 GALLONS
YELLOW	25 GALLONS

Included in the above quantities are:			
Additional White		Additional Yellow	
Description	Gallons	Description	Gallons
4" Lines	-	Transitions	-
8" Lines	-	4" Skip Lines	-
12" Gore Lines	-	8" Lines	-
Crosswalks	-	12" Lines	-
24" Stop Lines	-	24" Hatches	-
24" Hatches	-	Solid Areas	-
Solid Areas	-	Additional Yellow:	-
Arrows			
Left Arrows	-		
Right Arrows	-		
Straight Arrows	-		
Combo Arrows	-		
Lane Drop Arrows	-		
Messages			
STOP	-		
STOP AHEAD	-		
R X R with Bars	-		
SCHOOL X-ING	-		
Additional White:	-		

NOTE: All pavement marking dimensions are based on 12' driving lanes.

PLOT SCALE - \$\$SCALE\$\$

PLOTTED FROM - \$\$USERNAME\$\$

PLOT NAME - \$\$PLOTNAME\$\$

FILE - \$\$FILENAME\$\$

PAVEMENT MARKING LAYOUT

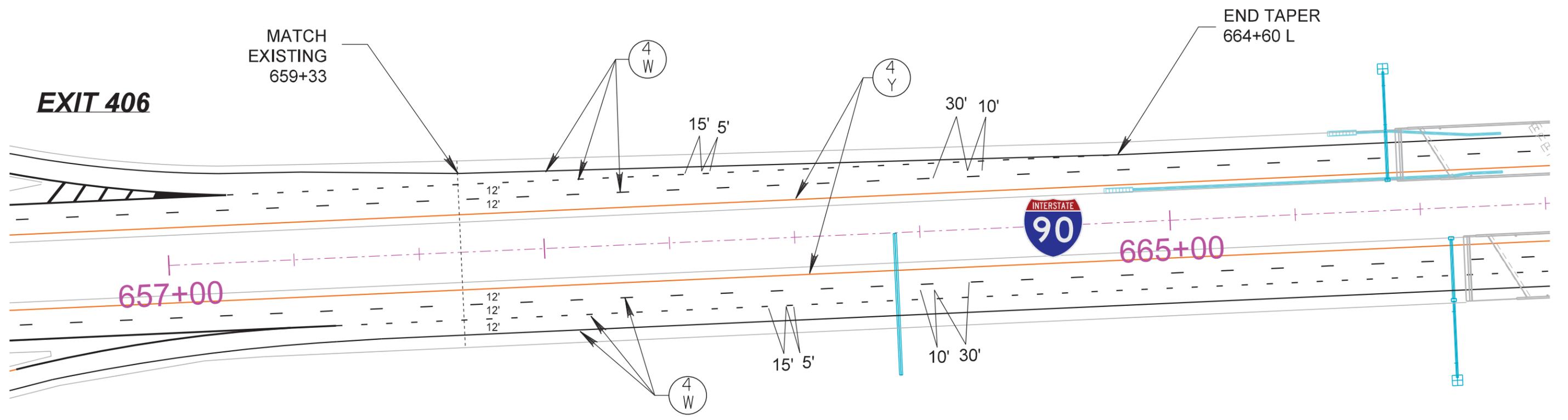
I-90 MAINLINE - EXIT 406

STATE OF SOUTH DAKOTA	PROJECT IM 0909(81)406	SHEET M3	TOTAL SHEETS M4
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Rev: 9-28-16 SAH



SCALE: 1" = 80'



ESTIMATE OF QUANTITIES

KEY	ITEM	EST QUANT	UNIT
(4 W)	PAVEMENT MARKING PAINT, 4" WHITE	34	GAL
(4 Y)	PAVEMENT MARKING PAINT, 4" YELLOW	25	GAL

PLOT SCALE - \$\$SCALE\$\$

PLOTTED FROM - \$\$USERNAME\$\$

PLOT NAME - \$\$PLOTNAME\$\$

FILE - \$\$FILENAME\$\$

PAVEMENT MARKING LAYOUT

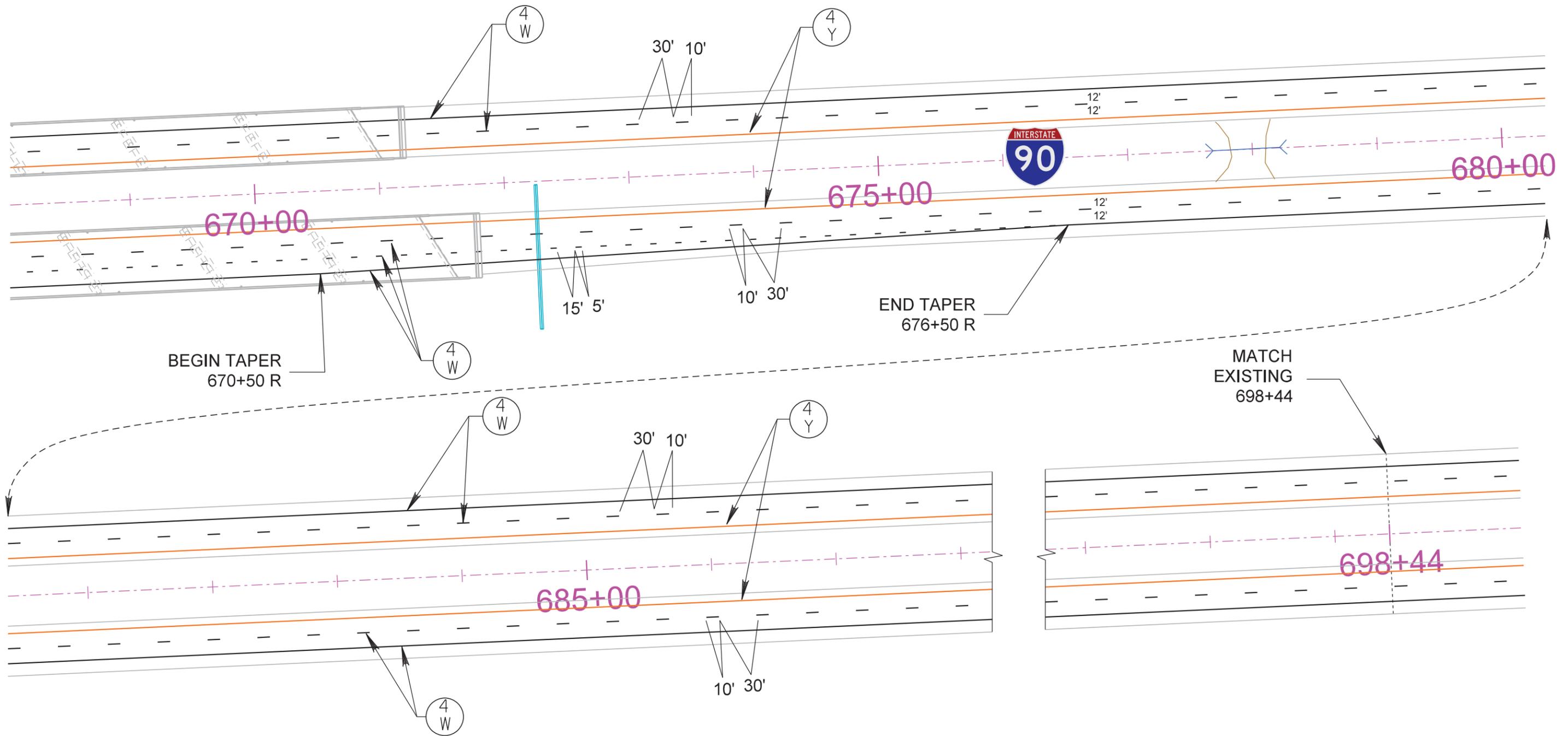
I-90 MAINLINE - EXIT 406

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(81)406	M4	M4

Rev: 9-28-16 SAH



SCALE: 1" = 80'



PLOT SCALE - \$\$SCALE\$\$

PLOTTED FROM - \$\$USERNAME\$\$

PLOT NAME - \$\$PLOTNAME\$\$

FILE - \$\$FILENAME\$\$