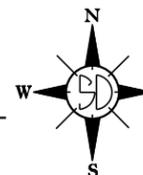


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(190)212 & NH 0083(83)205	1	70

Plotting Date: 11/04/2015



PLANS FOR PROPOSED

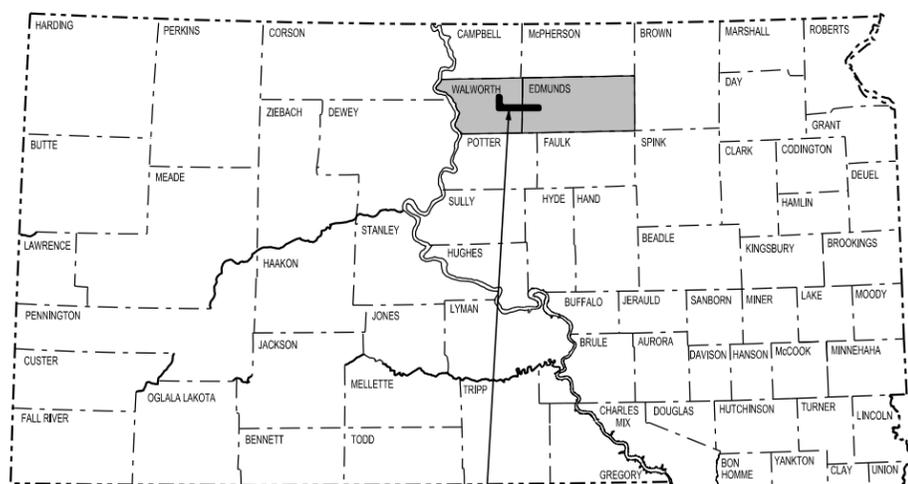
PROJECTS NH 0012(190)212 & NH 0083(83)205

US HIGHWAYS 12 & 83

WALWORTH & EDMUNDS COUNTIES

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US12 DESIGN DESIGNATION

(MRM 212.00 to 214.68)

ADT(2014)	2380
ADT(2034)	2440
DHV	312.3
D	52%
T DHV	13.7%
T ADT	30.1%
V	65 MPH

US12 DESIGN DESIGNATION

(MRM 214.68 to 233.36)

ADT(2014)	1364
ADT(2034)	1398
DHV	179.0
D	52%
T DHV	14.1%
T ADT	31.0%
V	65 MPH

US83 DESIGN DESIGNATION

(MRM 205.28 to 205.92)

ADT(2014)	575
ADT(2034)	589
DHV	75.4
D	52%
T DHV	13.5%
T ADT	29.6%
V	65 MPH

US HIGHWAY 12

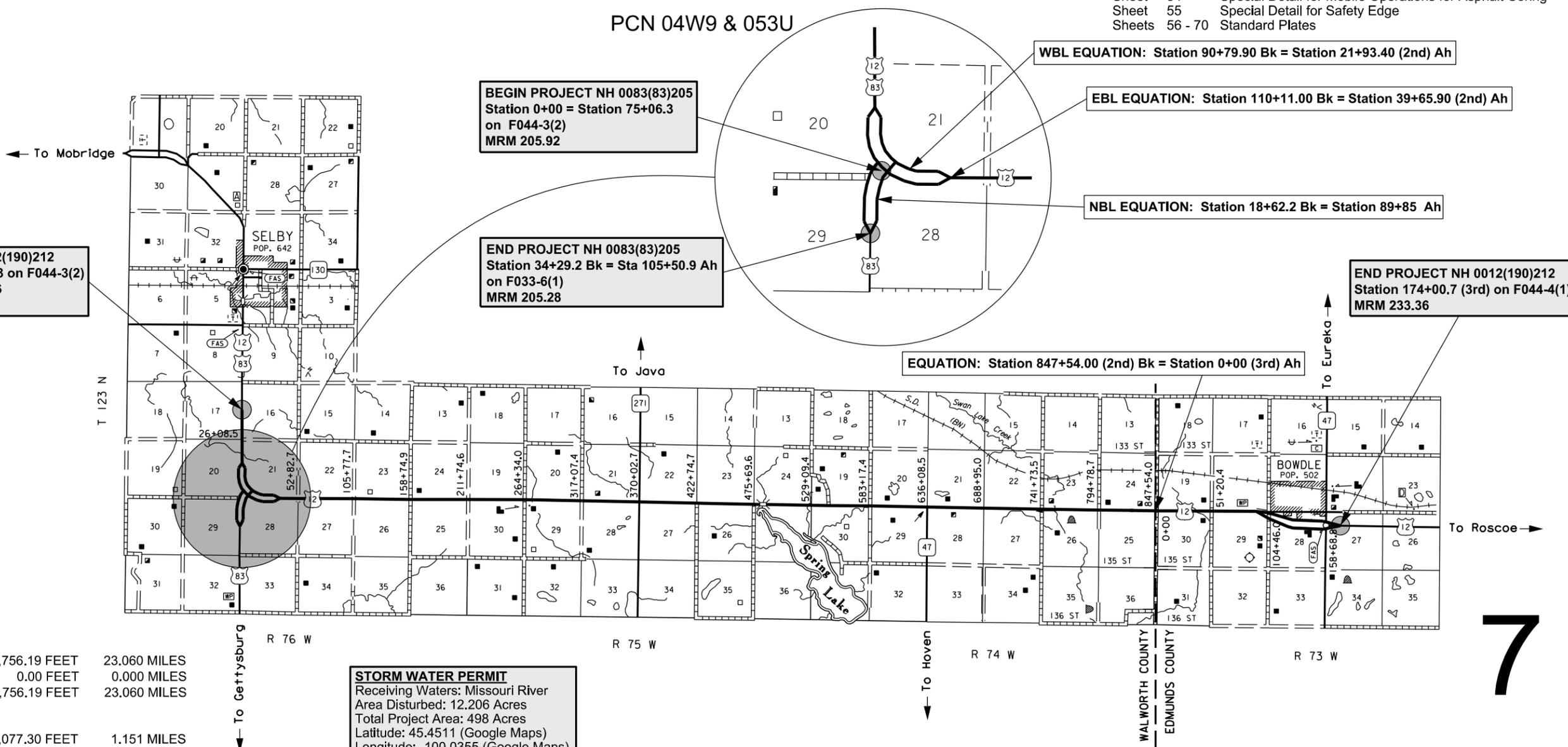
GROSS LENGTH	121,756.19 FEET	23.060 MILES
LENGTH OF EXCEPTIONS	0.00 FEET	0.000 MILES
NET LENGTH	121,756.19 FEET	23.060 MILES

US HIGHWAY 83

GROSS LENGTH	6,077.30 FEET	1.151 MILES
LENGTH OF EXCEPTIONS	0.00 FEET	0.000 MILES
NET LENGTH	6,077.30 FEET	1.151 MILES

COLD MILLING ASPHALT CONCRETE, ASPHALT CONCRETE
RESURFACING, PIPE REPAIR, & RUMBLE STRIPS

PCN 04W9 & 053U



STORM WATER PERMIT
Receiving Waters: Missouri River
Area Disturbed: 12.206 Acres
Total Project Area: 498 Acres
Latitude: 45.4511 (Google Maps)
Longitude: -100.0355 (Google Maps)

ESTIMATE OF QUANTITIES

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	2	70

NH 0012(190)212 – PCN 04W9

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0510	Remove Pipe End Section	6	Each
110E1690	Remove Sediment	1.0	CuYd
110E1693	Remove Erosion Control Wattle	520	Ft
110E1700	Remove Silt Fence	225	Ft
110E7500	Remove Pipe for Reset	66	Ft
110E7510	Remove Pipe End Section for Reset	43	Each
120E0100	Unclassified Excavation, Digouts	1,153	CuYd
120E0600	Contractor Furnished Borrow Excavation	959	CuYd
120E4100	Reprofiling Ditch	4.0	Sta
230E0100	Remove and Replace Topsoil	Lump Sum	LS
260E1010	Base Course	3,691.0	Ton
260E1050	Base Course, Salvaged Asphalt Mix	1,165.9	Ton
270E0210	Haul and Stockpile Granular Material	12,504.4	Ton
320E0005	PG 58-34 Asphalt Binder	3,158.4	Ton
320E1203	Class Q3R Hot Mixed Asphalt Concrete	62,104.1	Ton
320E1800	Asphalt Concrete Blade Laid	3,459.0	Ton
320E4000	Hydrated Lime	652.2	Ton
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	46.1	Mile
330E0100	SS-1h or CSS-1h Asphalt for Tack	275.2	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	115.9	Ton
330E2000	Sand for Flush Seal	1,307.8	Ton
332E0010	Cold Milling Asphalt Concrete	551,106	SqYd
450E2008	18" RCP Flared End, Furnish	4	Each
450E2009	18" RCP Flared End, Install	4	Each
450E2032	42" RCP Flared End, Furnish	1	Each
450E2033	42" RCP Flared End, Install	1	Each
450E4699	Tie Bolts for RCP	126	Each
450E8300	Culvert Joint Cleaning	1,249.5	Ft
450E8305	Repair Culvert Joint	1,249.5	Ft
450E8310	Chemical Grout Void Fill	305.0	Gal
450E8900	Cleanout Pipe Culvert	3	Each
450E9000	Reset Pipe	66	Ft
450E9001	Reset Pipe End Section	43	Each
600E0300	Type III Field Laboratory	1	Each
633E0010	Cold Applied Plastic Pavement Marking, 4"	85,154	Ft
633E0020	Cold Applied Plastic Pavement Marking, 8"	7,780	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24"	2,054	Ft

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
633E0040	Cold Applied Plastic Pavement Marking, Arrow	13	Each
633E1300	Pavement Marking Paint, White	479	Gal
633E1305	Pavement Marking Paint, Yellow	174	Gal
633E5000	Grooving for Cold Applied Plastic Pavement Marking, 4"	85,154	Ft
633E5005	Grooving for Cold Applied Plastic Pavement Marking, 8"	7,780	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	2,054	Ft
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	13	Each
634E0010	Flagging	1,200.0	Hour
634E0020	Pilot Car	600.0	Hour
634E0110	Traffic Control Signs	730	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0280	Type 3 Barricade, 8' Single Sided	2	Each
634E0420	Type C Advance Warning Arrow Board	1	Each
634E0630	Temporary Pavement Marking	92.2	Mile
730E0212	Type G Permanent Seed Mixture	290	Lb
732E0100	Mulching	22.3	Ton
734E0154	12" Diameter Erosion Control Wattle	520	Ft
734E0604	High Flow Silt Fence	900	Ft
734E0610	Mucking Silt Fence	62	CuYd
734E0620	Repair Silt Fence	225	Ft
900E0010	Refurbish Single Mailbox	8	Each
900E1980	Storage Unit	1	Each

* - Denotes Non-Participating

NH 0083(83)205 – PCN 053U

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0510	Remove Pipe End Section	4	Each
110E1010	Remove Asphalt Concrete Pavement	168.0	SqYd
110E1690	Remove Sediment	1.0	CuYd
110E1693	Remove Erosion Control Wattle	100	Ft
110E1700	Remove Silt Fence	44	Ft
110E7500	Remove Pipe for Reset	24	Ft
110E7510	Remove Pipe End Section for Reset	4	Each
120E0100	Unclassified Excavation, Digouts	58	CuYd
120E0600	Contractor Furnished Borrow Excavation	20	CuYd
120E4100	Reprofiling Ditch	2.0	Sta
230E0100	Remove and Replace Topsoil	Lump Sum	LS
260E1010	Base Course	298.1	Ton
260E1050	Base Course, Salvaged Asphalt Mix	32.3	Ton
270E0210	Haul and Stockpile Granular Material	1,456.4	Ton
320E0005	PG 58-34 Asphalt Binder	172.7	Ton
320E1203	Class Q3R Hot Mixed Asphalt Concrete	3,437.0	Ton
320E1800	Asphalt Concrete Blade Laid	173.3	Ton
320E4000	Hydrated Lime	36.1	Ton
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	2.3	Mile
330E0100	SS-1h or CSS-1h Asphalt for Tack	15.0	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	6.2	Ton
330E2000	Sand for Flush Seal	82.0	Ton
332E0010	Cold Milling Asphalt Concrete	29,597	SqYd
421E0100	Pipe Culvert Undercut	12	CuYd
450E0122	18" RCP Class 2, Furnish	54	Ft
450E0130	18" RCP, Install	54	Ft
450E2305	18" RCP Safety End with Bars, Furnish	1	Each
450E2307	18" RCP Safety End, Install	1	Each
450E4508	30" RCP Arch Flared End, Furnish	2	Each
450E4509	30" RCP Arch Flared End, Install	2	Each
450E8900	Cleanout Pipe Culvert	2	Each
450E9000	Reset Pipe	24	Ft
450E9001	Reset Pipe End Section	4	Each
464E0100	Controlled Density Fill	5.1	CuYd
633E0010	Cold Applied Plastic Pavement Marking, 4"	11,946	Ft
633E0020	Cold Applied Plastic Pavement Marking, 8"	4,791	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24"	285	Ft

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
633E0040	Cold Applied Plastic Pavement Marking, Arrow	3	Each
633E5000	Grooving for Cold Applied Plastic Pavement Marking, 4"	11,946	Ft
633E5005	Grooving for Cold Applied Plastic Pavement Marking, 8"	4,791	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	285	Ft
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	3	Each
634E0010	Flagging	140.0	Hour
634E0020	Pilot Car	70.0	Hour
634E0110	Traffic Control Signs	99	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0280	Type 3 Barricade, 8' Single Sided	2	Each
634E0630	Temporary Pavement Marking	4.6	Mile
634E0810	Groove 6" Wide Rumble Strip	739	Ft
720E1015	Bank and Channel Protection Gabion	10.0	CuYd
730E0212	Type G Permanent Seed Mixture	27	Lb
732E0100	Mulching	2.1	Ton
734E0154	12" Diameter Erosion Control Wattle	100	Ft
734E0604	High Flow Silt Fence	175	Ft
734E0610	Mucking Silt Fence	12	CuYd
734E0620	Repair Silt Fence	44	Ft
831E0110	Type B Drainage Fabric	24	SqYd

* - Denotes Non-Participating

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	3	70

ENVIRONMENTAL COMMITMENTS

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

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pit, or staging site associated with the project, cease construction activities in the affected area until the Whooping Crane departs and contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

COMMITMENT C: WATER SOURCE

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

Action Taken/Required:

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

COMMITMENT E: STORM WATER

Construction activities constitute 1 acre or more of earth disturbance.

Action Taken/Required:

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

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

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

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

SDDOT:

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

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

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

Contractor Certification Form:

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

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

The online form can be found at:

<http://denr.sd.gov/des/sw/eforms/E2110LDV1-ContractorCertification.pdf>

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

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

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

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

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

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

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COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all designated option borrow sites provided within the plans.

Action Taken/Required:

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: staging areas, borrow sites, waste disposal sites, and all material processing sites.

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

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

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

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

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

COMMITMENT N: SECTION 404 PERMIT

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

Action Taken/Required:

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

The Contractor shall also be responsible for obtaining a Section 404 permit for any dredge, excavation, or fill activities associated with staging areas,

borrow sites, waste disposal sites, or material processing sites that affect wetlands or waters of the United States.

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STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

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

❖ **SITE DESCRIPTION (4.2 1)**

- **Project Limits: See Title Sheet (4.2 1.b)**
- **Project Description: See Title Sheet (4.2 1.a.)**
- **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
- **Major Soil Disturbing Activities** (check all that apply)
 - Clearing and grubbing
 - Excavation/borrow
 - Grading and shaping
 - Filling
 - Cutting and filling
 - Other (describe):
- **Total Project Area 498 Acres (4.2 1.b.)**
- **Total Area To Be Disturbed 11.171 (US12) and 1.035 (US83) Acres (4.2 1.b.)**
- **Existing Vegetative Cover (%) 70**
- **Soil Properties: AASHTO Soil or USDA-NRCS Soil Series Classification Silt Loam (4.2 1. d.)**
- **Name of Receiving Water Body/Bodies Missouri River (4.2 1.e.)**

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

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

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

- (Check all that apply)
- **Stabilization Practices (See Detail Plan Sheets)**
 - Temporary Seeding (Cover Crop Seeding)
 - Permanent Seeding
 - Sodding
 - Planting (Woody Vegetation for Soil Stabilization)
 - Mulching (Grass Hay or Straw)
 - Hydraulic Mulch (Wood Fiber Mulch)
 - Soil Stabilizer
 - Bonded Fiber Matrix
 - Erosion Control Blankets or Mats
 - Vegetation Buffer Strips
 - Roughened Surface (e.g. tracking)
 - Dust Control
 - Other: Windrow Topsoil/Utilize Existing Vegetation for Control Barrier

➤ **Structural Temporary Erosion and Sediment Controls**

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

➤ **Wetland Avoidance**

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

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

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

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

- **Waste Disposal**
All liquid waste materials will be collected and stored in sealed metal containers approved by the project engineer. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be instructed in the proper procedures for waste disposal, and notices stating proper practices will be posted in the field office. The general contractor's representative responsible for the conduct of work on the site will be responsible for seeing waste disposal procedures are followed.
- **Hazardous Waste**
All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the individual designated as the contractor's on-site representative will be responsible for seeing that these practices are followed.
- **Sanitary Waste**
Portable sanitary facilities will be provided on all construction sites. Sanitary waste will be collected from the portable units in a timely manner by a licensed waste management contractor or as required by any local regulations.

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

➤ **Maintenance and Inspection Practices**

- Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
- All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
- Silt fence will be inspected for depth of sediment and for tears in order to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches 1/3 of the height of the silt fence.
- Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
- Check dams will be inspected for stability. Sediment will be removed when depth reaches 1/2 the height of the dam.
- All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
- Inspection and maintenance reports will be prepared on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
- The SDDOT Project Engineer and contractor's site superintendent are responsible for inspections. Maintenance, repair activities are the responsibility of the contractor. The SDDOT Project Engineer will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

❖ **Non-Storm Water Discharges (3.0)**

- The following non-storm water discharges are anticipated during the course of this project (check all that apply).
- Discharges from water line flushing.
 - Pavement wash-water, where no spills or leaks of toxic or hazardous materials have occurred.
 - Uncontaminated ground water associated with dewatering activities.

❖ **Materials Inventory (4.2. 2.c.(2))**

- The following materials or substances are expected to be present on the site during the construction period. These materials will be handled as noted under the headings "EROSION AND SEDIMENT CONTROLS" and "SPILL PREVENTION" (check all that apply).
- Concrete and Portland Cement
 - Detergents
 - Paints
 - Metals
 - Bituminous Materials
 - Petroleum Based Products
 - Cleaning Solvents
 - Wood
 - Cure
 - Texture
 - Chemical Fertilizers
 - Other:

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
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Spill Prevention (4.2 2.c.(2))

➤ **Material Management**

▪ Housekeeping

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

▪ Hazardous Materials

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

➤ **Product Specific Practices (6.8)**

▪ Petroleum Products

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

▪ Fertilizers

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

▪ Paints

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

▪ Concrete Trucks

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

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

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

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

➤ **Spill Response (4.2 2 c.(2))**

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

- The contractor's site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.
- If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.

➤ **Spill Response (4.2 2 c.(2)) - Continued**

Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the contractor at the site.

- If oil sheen is observed on surface water (e.g. settling ponds, detention ponds, swales), action will be taken immediately to remove the material causing the sheen. The contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.
- If a spill occurs the superintendent or the superintendent's designee will be responsible for completing the spill reporting form and for reporting the spill to SD DENR.
- Personnel with primary responsibility for spill response and clean up will receive training by the contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

❖ **Spill Notification**

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

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

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

❖ **Construction Changes (4.4)**

When changes are made to the construction project that will require alterations in the temporary erosion controls of the site, the Storm Water Pollution Prevention Plan (SWPPP) will be amended to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SDDOT Project Engineer will modify the SWPPP plan (DOT 298) and drawings to reflect the needed changes. Copies of changes will be routed per DOT 298. Copies of forms and the SWPPP will be retained in a designated place for review over the course of the project.

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SPECIFICATIONS

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

SCOPE OF WORK

The work required for this project includes, but is not limited to, the following items, not listed in order of execution.

1. Install Fixed Location Signing Prior to Construction Activities Commencing
2. Erosion Control Measure Installations
3. Complete Mainline Pipe and Erosion Repair
4. Foam/Grout/Tie Cattle Pass Joints
5. Cold Mill Asphalt Concrete
6. Haul & Stockpile Remaining Cold Milled Material
7. Complete Unclassified Excavation for Dugouts & Backfill Operations
8. Complete All Asphalt Concrete Strengthening & Leveling
9. Complete Gravel Placement Operations on Approaches/Intersecting Roads
10. Complete Asphalt Concrete Paving Operations
11. Grind Rumble Strips/In-Lane Rumble Strips
12. If Required, Place Flush Seal
13. Install Permanent Pavement Markings
14. Refurbish Mailboxes
15. Remove Project Temporary Signing
16. Mow Project In-slopes and Complete Any Remaining Project Cleanup

The Contractor is encouraged to inspect the project site prior to bidding to evaluate the extent of work that will be required for construction.

SEQUENCE OF OPERATIONS

The Contractor shall submit a proposed sequence of operations for the Engineer's review and approval at least two weeks prior to the preconstruction meeting.

Traffic shall be maintained through the project at ALL times. The Contractor shall maintain access on and off the highway for local residences and county roads. The Contractor may perform work on the roadway during daylight hours only, unless additional hours are approved by the Engineer. Traffic shall be returned to normal driving lanes during non-working hours.

Once work starts to inconvenience traffic, work shall be pursued in a near continuous, expeditious manner to its completion. Any work that restricts the motorist from driving the posted speed limit, reduces existing roadway width, or causes a potentially unsafe condition due to Contractor operations such as frequent movement of equipment or materials on or through the project, is considered to be an inconvenience to traffic.

Class Q3R Hot Mixed Asphalt Concrete paving shall commence within 10 calendar days of the start of Cold Milling Asphalt Concrete.

Rumble strips shall be completed prior to permanent pavement marking and the flush seal.

Work zones for asphalt paving operation and pilot car operation shall not exceed 3 miles in length in rural sections.

GENERAL NOTES

The Contractor shall be required to mow the in-slopes with a rotary mower to a height of 6 inches for a distance of 14 feet from the edge of the roadway (or shoulder) for the length of the project. This work will be completed to the satisfaction of the Engineer after all construction activities are completed. All costs associated with this work shall be incidental to the various contract items.

Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators, signs, and markers that are damaged or lost shall be replaced by the Contractor at no cost to the State.

UTILITIES

The Contractor shall contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It shall be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

Utilities are not planned to be affected on this project. If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49 7A and Administrative Rule Article 20:25, the Contractor shall contact the Engineer to determine modifications that will be necessary to avoid utility impacts.

SHOULDER PREPARATION

Prior to mainline paving, the shoulders shall be bladed and broomed of all vegetation and loose/accumulated material to the satisfaction of the Engineer. Shoulder preparation shall not be measured for payment, and no separate payment will be made for this work.

Vegetation and accumulated material adjacent to the existing surface edge shall be removed to the satisfaction of the Engineer prior to placement of mainline surfacing. Any remaining windrow of accumulated material shall be re-spread evenly on the in-slope adjacent to the asphalt shoulder to the satisfaction of the Engineer prior to the application of the flush seal.

All costs associated with shoulder preparation shall be incidental to the various contract items.

The Contractor shall notify the Mobridge Area (605) 845-3844 at least two weeks prior to beginning work on this project so SDDOT personnel can mow or spray along the shoulder in-slopes. The Department will not be responsible for the effectiveness of the mowing or spraying.

SURFACING THICKNESS DIMENSIONS

Material will be placed evenly, at the rates shown in the plans, even though the thickness may vary from that shown on the typical section. At those locations where material must be placed to achieve a required elevation, quantities may be varied to achieve the required elevations, as approved by the Engineer.

INTERSECTING ROADS AND ENTRANCES

Intersecting roads and entrances shall be satisfactorily cleared of vegetation, shaped, and compacted prior to placement of mainline surfacing. Separate measurement and payment will not be made for this work. All costs associated with intersecting roads and entrances preparation shall be incidental to the various contract items.

WATER FOR GRANULAR MATERIAL

The moisture content for compaction of the Base Course and Base Course, Salvaged Asphalt Mix shall be approximately optimum moisture for the material or as directed by the Engineer. The quantity for Water for Granular Material is based on 4% of the quantity of the aforementioned material. All costs for furnishing and placing the water shall be incidental to the contract unit price per ton for the corresponding Base Course material.

EXCAVATION OF UNSTABLE MATERIAL

The locations and extent of digout areas will be determined in the field by the Engineer. The backfilling material for the digouts shall be Base Course paid for at the contract unit price per ton.

Included in the Estimate of Quantities are 1,153 cubic yards and 58 cubic yards on US12 and US83, respectively of Unclassified Excavation – Digouts for the removal of unstable material throughout the project.

The digout shall be extended to the shoulder and the granular material backfill shall daylight to the inslope to allow water to escape the subgrade.

A copy of the surfacing/subgrade investigation report for this project is available from the Mobridge Area and the Pierre Region offices.

BASE COURSE

Base Course shall be furnished by the Contractor and be utilized for backfilling digouts, for placing on farm/field entrances and intersecting roads, and for the Shallow Pipe Installation site on the US83 crossover.

Included in the "Table of Additional Quantities" are 100 tons of Base Course per mile for the backfilling of digouts and an estimated 15 tons per farm/field entrance and 20 tons per intersecting road.

Base Course shall be compacted to the satisfaction of the Engineer.

COLD MILLING ASPHALT CONCRETE

Cold milling asphalt concrete shall be done according to the typical sections. The depth or width of milling may need to be adjusted due to rutting, maintenance patches, or roadway irregularities. Additional asphalt concrete shall be milled in these areas to provide a uniform typical section from centerline to the edge of the finished shoulder. These areas may also include farm & field entrances and intersecting roads. Any additional costs associated with this additional cold milling shall be incidental to the contract unit price per square yard for "Cold Milling Asphalt Concrete". No adjustments in quantity or price will be made.

The Contractor will be responsible for excessive material lost at plant site stockpile location, or intermediate stockpiling locations due to bad stockpile management practices as deemed by the Engineer and will be required to compensate the State by providing similar material.

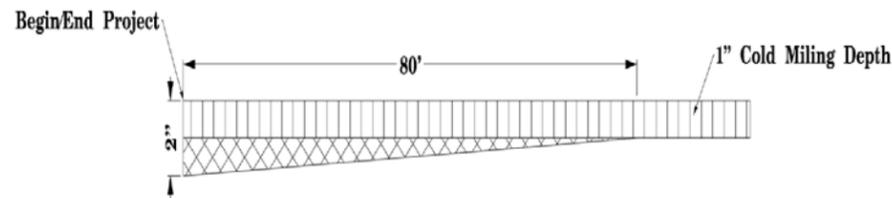
After completion of the milling operation, the Contractor shall clean up and dispose of any remaining debris to the satisfaction of the Engineer.

The Los Angeles Abrasion Loss value on the aggregate used for the in place asphalt concrete and microsurfacing ranged from 22 to 31 percent. These values were obtained from testing during construction.

Cold milling asphalt is estimated to produce 24,961.5 tons and 2,221.2 tons of salvaged asphalt concrete material on the US12 and US83 projects, respectively. An estimated 1,165.9 tons and 32.3 tons will be used as Base Course, Salvaged Asphalt Mix on US12 and US83, respectively to widen the inside (median) shoulder within Section 2 and Section 5 on US12 and the inside (median) shoulder Section 1 on US83. An estimated 12,023.7 tons of RAP will be used within this Contract in the Class Q3R Hot Mixed Asphalt Concrete mixture. The Contractor is responsible to assure enough RAP is available for the Class Q3R Hot Mixed Asphalt Concrete. All remaining cold milled material not utilized within this Contract shall be hauled and stockpiled as specified elsewhere in the plans.

In order to construct the new surfacing flush with the existing Asphalt Concrete Pavement at begin/end project it will be necessary to transition the depth of cold milling to the limits as shown in the detail below. The transition shall be approved by the Engineer.

Cold Milling Transition Detail



Plans quantity will be the basis of payment for Cold Milling Asphalt Concrete and no further measurement will be made.

CLASS Q3R HOT MIXED ASPHALT CONCRETE

Mineral Aggregate:

Asphalt concrete aggregates shall consist of reclaimed asphalt pavement (RAP) and virgin aggregate.

Virgin mineral aggregate for Class Q3R Hot Mixed Asphalt Concrete shall conform to the requirements of Class Q3.

The Class Q3R Hot Mixed Asphalt Concrete shall include 20 percent RAP in the mixture.

RAP shall be obtained from the material produced by cold milling on this project and may be used without further testing. RAP in the cold feed shall be crushed to meet the requirements specified in Section 884.2C.1.

Screening or scalping of the RAP stockpile(s) will not be allowed.

Mix Design Criteria:

Gyratory Controlled QC/QA Mix Design requirements for the Class Q3R Hot Mixed Asphalt Concrete shall conform to the requirements of Class Q3 except as modified by the following:

Gyratory Compactive Effort:

	N _{initial}	N _{design}	N _{maximum}
Class Q3R	6	50	75

All remaining requirements for Class Q3 shall apply.

ASPHALT CONCRETE BLADE LAID

Included in the Estimate of Surfacing Quantities are 150 tons of Asphalt Concrete Blade Laid, 1.5 tons of Hydrated Lime, and 11.3 tons of PG 58-34 Asphalt Binder per mile and shall be tight bladed on the existing surface 24 feet wide prior to the overlay. A sufficient amount of material shall be kept in front of the blade to fill and level all joints, cracks and other surface irregularities.

Mineral Aggregate for tight bladed material shall use only the fine aggregate components combined in the same proportions as the Class Q3R Hot Mixed Asphalt Concrete mix. No quality testing will be done on any of the coarse aggregate (+No. 4 sieve) in this mix.

The Asphalt Concrete Blade Laid Lift shall be designed using an N_{design} Gyratory Compactive Effort of 65. The asphalt binder content shall be determined so that the air voids of Asphalt Concrete Blade Laid Lift are between 3.0% and 5.0%.

All loose existing joint material shall be removed and the surface shall be thoroughly swept at speeds not higher than 5 M.P.H. with a rotary broom to remove all loose asphalt concrete and joint material from cracks and spall areas prior to placing the Blade Laid Mix. Cost for removing the material and brooming shall be included in the contract unit price per ton for "Asphalt Concrete Blade Laid".

BASE COURSE, SALVAGED ASPHALT MIX

Base Course, Salvaged Asphalt Mix placed on the shoulders shall be compacted according to Section 260.3D.

Base Course, Salvaged Asphalt Mix estimated at 1,165.9 tons and 32.3 tons for US12 and US83, respectively shall be obtained from the material produced and stockpiled within this Contract.

The Base Course, Salvaged Asphalt Mix material shall be crushed to meet the requirements of Section 884 prior to use.

HAUL AND STOCKPILE GRANULAR MATERIAL

Excess cold milled material estimated (for informational purposes only) at 12,504.4 tons and 1,456.4 tons for US12 and US83, respectively shall be hauled and stockpiled at the site located at US83/212 Junction west of Gettysburg within the NE1/4 of Sec 26 T118N R77W, Potter County, South Dakota. The Contractor shall have approval from the Engineer of the stockpile location prior to stockpiling the material within the aforementioned site.

The Contractor shall use a portable platform scale, stationary commercial scale, stationary commercial plant, portable plant scale, or a belt scale to control the weighing of the salvage material.

The RAP shall be crushed to meet the requirements of Section 884.2C.1 prior to incorporation into the stockpile.

Screening or scalping of the RAP stockpile(s) will not be allowed.

All other costs for hauling and stockpiling the remaining cold milled material shall be incidental to the contract unit price per ton for "Haul And Stockpile Granular Material".

ADDITIONAL QUANTITIES

Included in the Table of Additional Quantities are 100 tons of Class Q3R Hot Mixed Asphalt Concrete, 4.7 tons of PG 58-34 Asphalt Binder, and 1.0 ton of Hydrated Lime per mile for spot leveling, strengthening and repair of the existing surface. Also included in the Table of Additional Quantities are 5.0 tons of SS-1h or CSS-1h Emulsified Asphalt for Tack for repair and leveling areas throughout the project. The aforementioned materials shall be placed as directed by the Engineer.

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FLUSH SEAL

Application of Flush Seal shall be completed within 10 working days following completion of the asphalt concrete surfacing.

SAND FOR FLUSH SEAL

Sand for Flush Seal shall be furnished by the Contractor.

The spreading device placing the sand shall leave a gap of 6 inches each side of centerline, applicable lane lines and the edge-line to ensure a better bond between the pavement and the permanent pavement marking.

RUMBLE STRIP ROADWAY CLEANING

The Contractor shall be required to remove loose material from the driving surface and/or asphalt shoulders of the roadway. Loose material may be swept to the edge of shoulders and it shall be the Contractor's responsibility to ensure the loose material does not enter any vegetated areas and/or waterways.

All costs associated with the work shall be incidental to the contract unit price per mile for "Grind 12" Rumble Strip or Stripe in Asphalt Concrete".

RUMBLE STRIPS

Rumble strips shall be installed in rural areas with posted speeds greater than 50 M.P.H. Rumble strips will not be required in urban areas or where there is development in close proximity to the highway. The Engineer shall provide the exact start and stop locations for the rumble strip installation.

The gaps for the rumble strip installation as detailed on the standard plates shall be included with the measurement and payment.

Rumble strips shall not be placed on any bridge deck or within 25 feet of the approach slab or within 50 feet of any railroad crossing.

The placement of rumble strips from the driving lane may vary depending on the existing typical section of the roadway as directed by the Engineer.

The Contractor shall install rumble strips as per standard plate shown in the plans. The rumble strips must be grooved into the asphalt concrete surfacing. Following installation, the rumble strips shall be flush sealed with SS-1h or CSS-1h Asphalt for Flush Seal.

Rumble Strip installation shall be completed prior to application of the Flush Seal and Permanent Pavement Markings.

In the event the Flush Seal is eliminated from the contract, the Contractor will still be required to apply a Flush Seal to the newly installed 12" Rumble Strip at a width of 1.5' and at the same rate as specified in this plan set. No adjustment in payment will be made and SS-1h or CSS-1h Asphalt for Flush Seal will be paid at the contract unit price per ton.

All costs for installing the rumble strips shall be paid for at the contract unit price per mile for "Grind 12" Rumble Strip or Stripe in Asphalt Concrete".

IN-LANE RUMBLE STRIPS

The Contractor shall install in-lane rumble strips as per detail shown in the plans.

The in-lane rumble strips must be grooved into the asphalt concrete surfacing. Following installation, the in-lane rumble strips shall be flush sealed with SS-1h or CSS-1h Asphalt for Flush Seal. The in-lane rumble strips shall be completed prior to the flush seal and permanent pavement markings.

Cost for installing the in-lane rumble strips shall be paid for at the contract unit price per foot for "Groove 6" Wide Rumble Strip".

REFURBISH MAILBOXES

The Contractor shall reset the existing mailboxes on new posts with the necessary support hardware for single assemblies (See Standard Plate No's. 900.02 and 900.03). The Contractor may submit documentation of an alternate NCHRP 350 crashworthy compliant mailbox support system to the Department for review and approval. The local Postmaster will determine the recommended mounting height of the mailboxes throughout the project. The Contractor shall coordinate with the Engineer on the proper postal representative to contact.

The mailboxes shall be removed and reset on the nearest approach and/or as determined by the Engineer at a minimum of 20 feet from the roadway edgeline.

All costs for removing existing mailboxes, providing temporary mailboxes, and resetting mailboxes with new posts and necessary support hardware shall be incidental to the contract unit price per each for "Refurbish Single Mailbox".

Table of Refurbish Mailbox

Station	L/R	Single (Each)
601+57 (2 nd)	Lt	1
609+50 (2 nd)	Rt	1
748+07 (2 nd)	Lt	1
751+20 (2 nd)	Rt	1
806+81 (2 nd)	Lt	1
835+20 (2 nd)	Lt	1
71+10 (3 rd)	Lt	1
137+61 (3 rd)	Rt	1
Total:		8

STORAGE UNIT

The Contractor shall provide a storage unit such as a portable storage container or a semi-trailer meeting the minimum size requirements from the table below:

Project Total Asphalt Concrete Tonnage	Minimum Internal Size (Cu Ft)	Minimum External Size (L x W x H)
Less than 50,000 ton	1,166	20' x 8' x 8.6' std
More than 50,000 ton	2,360	40' x 8' x 8.6' std
All Gyratory Controlled QC/QA Projects	2,360	40' x 8' x 8.6' std

The storage unit is intended for use only by the Engineer for the duration of the project. The QC lab personnel or the Contractor will not be allowed to use the storage container while it is on the project, without permission of the Engineer.

The storage unit shall be on site and operational prior to asphalt concrete production. Upon completion of asphalt concrete production, the Engineer will notify the Contractor when the storage unit can be removed from the project. The storage unit use will not exceed 30 calendar days from the completion of asphalt concrete production. The storage unit will remain the property of the Contractor.

The storage unit shall be weather proof and shall be set in a level position. The storage unit shall be able to be locked with a padlock.

The storage unit shall be placed adjacent to the QA lab, as approved by the Engineer.

The following shall apply when the storage unit provided on the project is a portable storage container:

The portable storage container shall be constructed of steel.

The portable storage container shall be set such that it is raised above the surrounding ground level to keep water from ponding under or around the storage container.

The following shall apply when the storage unit provided on the project is a semi-trailer:

A set of steps and hand railings shall be provided at the exterior door. If the floor of the semi-trailer is 18 inches or more above the ground, a landing shall be constructed at the exterior door. The minimum dimensions for the landing shall be 4 feet by 5 feet. The top of the landing shall be level with the threshold or opening of the doorway.

The semi-trailer may be connected to the QA lab by a stable elevated walkway. The walkway shall be a minimum of 48 inches wide and contain handrails installed at 32 inches above the deck of the walkway. The walkway shall be constructed such that it is stable and the deck does not deform during use and allows for proper door operation. Walkway construction shall be approved by the Engineer.

All cost for furnishing, maintaining, and removing the storage unit including labor, equipment, and materials including any necessary walkways, landings, stairways, and handrails shall be included in the contract unit price per each for "Storage Unit".

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TYPE III 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 III Field Laboratory".

REMOVING, STOCKPILING, AND REPLACING TOPSOIL

The Contractor will be required to remove/peel back and salvage 4 inches of the existing topsoil from the top of the in-slope to the toe of the in-slope within the divided sections to accommodate the build-up of the median shoulder as shown on the typical sections or as determined by the Engineer.

The Contractor shall also windrow/stockpile topsoil material at areas to be reprofiled along with near disturbed areas to control potential sediment runoff as determined by the Engineer.

The replacement of topsoil shall be spread evenly throughout all disturbed areas upon completion of the work. Any clumps larger than 3 inches shall be broken up prior to seeding the areas.

All topsoil removal, stockpiling, salvaging, windrowing, and replacement shall be done as according to the plans and/or as directed by the Engineer.

All cost associated with removing, salvaging, stockpiling, windrowing, and replacing topsoil shall be incidental to the contract lump sum price for "Remove and Replace Topsoil".

Measurement of topsoil quantities will not be made; however for informational purposes only, an amount of 6,007 cubic yards and 557 cubic yards of topsoil removal and replacement has been estimated for US12 and US83 projects, respectively.

CONTRACTOR FURNISHED BORROW EXCAVATION

The Contractor shall provide a suitable site for Contractor Furnished Borrow Excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. Borrow material shall be utilized to build-up the inslopes throughout the divided sections to accommodate the median shoulder build-up.

The borrow material shall be approved by the Engineer. The plans quantity for "Contractor Furnished Borrow Excavation" as shown in the Estimate of Quantities will be the basis of payment for this item.

Water for Embankment is estimated at the rate of 10.0 gallons of water per cubic yard of Embankment. For informational purposes only, an estimated 9.6 MGal and 0.1 MGal to complete the work for the US12 and US83 projects, respectively. Payment for Water for Embankment shall be incidental to bid item "Contractor Furnished Borrow Excavation".

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

CULVERT CLEANOUT

Material in existing mainline culverts as listed in the "Table of Mainline Pipe and Erosion Repair" shall be cleaned out by water flushing or other approved methods. Each culvert shall be cleaned such that the bottom of the pipe is visible throughout its length so as to re-establish the flow line.

It is the responsibility of the Contractor to visit the site to determine the extent of pipe cleaning work required.

The Contractor shall implement appropriate sediment control measures prior to water flushing in order to prevent discharges beyond the project boundaries.

All costs for this work shall be included in the contract unit price per each for "Cleanout Pipe Culvert".

CONCRETE PIPE CONNECTIONS

The new 18" RCP connection to the existing 42" RCPA at Station 7+35 on US83 at the Shallow Pipe Installation site shall be done by creating a hole into the existing pipe and inserting the new 18" RCP. A concrete collar shall then be poured around the pipe in the area of the connection. The collar shall be made by placing a 2' wide by 6" thick M6 concrete collar around the outside of the connection. The concrete collar shall be reinforced with 6x6 W2.9 x W2.9 wire mesh.

The Contractor shall ensure the connection of the new 18" RCP to the existing 42" RCPA is watertight to the satisfaction of the Engineer.

All costs for constructing the concrete collars including materials and labor shall be incidental to the contract unit price per foot for "18" RCP, Install".

PIPE NOTES

The Contractor is responsible for verifying the size of each pipe prior to ordering any pipe end sections. The Contractor shall obtain the approval of the Engineer before ordering any pipe.

Pipe culverts and end sections that are removed and not reset shall become the property of the Contractor. Pipe culverts and end sections shall be disposed of as per the waste disposal site notes and shall not be in view from the project upon completion of the project.

Refer to the "Table of Mainline Pipe and Erosion Repair" for work associated at each site.

The excavation required to expose the existing pipe and ends will be incidental to the contract unit price per each for "Remove Pipe End Section for Reset".

TIE BOLTS FOR RCP

All joints for RCP installed both new and reset, shall be tied together. This includes connection from existing culvert sections to new or reset sections. Existing tie bolts may be salvaged and reused if condition is acceptable to the Engineer. The cost for furnishing and installing the tie bolts for new and reset sections shall be incidental to corresponding pipe items.

All joints for Cattle Passes/Pipe listed in the "Table of Reinforced Concrete Pipe Joint Repair and Void Grouting" in the plan notes shall have tie bolts installed. The Contractor shall drill holes at an angle as to cause the legs of the tie bolt to bind against the outside face of the hole upon tie bolt tightening. Bending of the tie bolt legs may need to be done in order to achieve this. Prior to inserting the tie bolt the Contractor shall fill the hole with epoxy resin. The epoxy resin mixture shall be of a type for bonding steel to hardened concrete and shall conform to AASHTO M235 Type IV, (Equivalent to ASTM C881, Type IV). The Contractor shall allow the resin to properly set-up prior to the final tightening of the tie bolts. Cost for removing/resetting tie bolts, drilling tie bolt holes, epoxy resin, and furnishing and installing the tie bolts shall be incidental to the contract unit price per each for "Tie Bolts for RCP".

For informational purposes: Field drilling will be required to install the tie bolts on reset culvert, on reset culvert ends, existing culvert when installing a new/reset end section, and on existing cattle pass culvert sections.

REPROFILING DITCH

The Contractor shall reprofile the ditch to restore drainage profile into/out of the pipe. This work will require removing sedimentation along with placing the removed material where areas need borrow material. The quantities and locations of reprofiling may change depending on the degree of erosion/sedimentation that has taken place from time of the survey to the time of construction. All work shall be within the Right-of-Way. Pipe cleanout material may be used as borrow material for filling in erosion. Placement and location of the cleanout material shall be approved by the Engineer. Refer to the "Table of Mainline Pipe and Erosion Repair" for locations of reprofiling.

All costs associated with clearing and reshaping of the existing ditch, including topsoil removal/replacement, labor, excavation, placing material, equipment, and incidentals shall be paid for at the contract unit price per station for "Reprofiling Ditch".

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	12	70

CONTROLLED DENSITY FILL FOR PLUGGING PIPE

The existing CMP pipe at Station 7+90 on US83 under the Northbound Lane shall be plugged with Controlled Density Fill (refer to Table of Mainline Pipe and Erosion Repair). Controlled density fill shall be contained within the required limits by removing the existing end sections and plugging the culvert end with contractor furnished borrow excavation material prior to placing the controlled density fill. The borrow material shall be shaped to match the existing inslope and covered with topsoil.

Controlled density fill shall be a flowable mortar material. Materials shall be in accordance with the Specifications, except as modified below. The mix design shall be:

Material	Rate per Cubic Yard
Portland Cement Type I, II, III, or V	200 Lb
Fine Aggregate	2600 Lb
Coarse Aggregate	None
Water	35 Gal
“W.R. Grace – Darafill” or approved equal	1 (3 oz.) capsule or equivalent *

* Shall be one 3 ounce capsule or equivalent CLSM performance additive (foaming admixture).

The fine aggregate shall be natural sand consisting of mineral aggregate particles conforming to the following gradation requirements:

Passing 3/8 Inch Sieve	100%
Passing No. 200 Sieve	0-10%

The mix design shown above is designed to produce a minimum compressive strength of 100 psi. The Engineer may allow adjustments to the proportion of water at the site to provide the necessary consistency of the mix.

All costs for furnishing and installing the controlled density fill, including labor, materials, equipment and incidentals necessary to complete the work shall be included in the contract unit price per cubic yard for “Controlled Density Fill.”

Plans quantity will be the basis for payment unless otherwise ordered by the Engineer.

EMBANKMENT ADJACENT TO CULVERTS

The earth embankment adjacent to the existing pipe ends shall be removed prior to removing the pipe end and upon completion of the pipe end installation, the earth embankment shall be replaced adjacent to the culvert.

Cost for removing and replacing the earth embankment shall be incidental to various contract items.

SHALLOW PIPE INSTALLATION

For the pipe culvert as shown in the “Table of Shallow Pipe Installation” shall be installed in accordance with the following notes and as shown on the “Shallow Pipe Installation Detail” located elsewhere in these plans.

The new pipe culvert shall be undercut to a minimum depth of 1 foot and backfilled with base course. The depth of undercut is an estimate and the actual depth necessary shall be determined during construction. The Engineer will determine how much undercut shall be done in accordance with Section 421 of the Specifications, but will not reduce the undercut to less than 1 foot in depth. Compaction of the undercut backfill shall be in accordance with Section 421.3A.

The culvert bedding shall be base course material placed to form a bed that is at least 15 percent of the pipe height above the lower fence (invert) of the pipe. The material shall be thoroughly compacted to provide a firm uniform foundation. The foundation shall then be shaped (cradled) to fit the lower part of the pipe, and the pipe shall be laid on a three inch thick layer of sand. The Contractor shall ensure that the cradle is constructed at an elevation such that after placing the three inches of sand in the cradle, the flowline elevation of the pipe is correct. Base Course shall then be placed in 6 inch layers and compacted with mechanical tampers, to at least 30 percent of the overall pipe height.

The remainder of the pipe culvert excavation shall be backfilled with soils taken from the excavation limits or other suitable material as approved by the Engineer. The backfill will be benched into the 2:1 excavation slope. Compaction of the backfill material shall be governed by the Specified Density Method.

The minimum testing as shown in M.S.T.R (Minimum Sample and Test Requirements) Section 4.1.F.3.a.1 will be required.

After the new pipe has been backfilled to the top of the subgrade, surfacing shall be placed as detailed in the Shallow Pipe Installation Detail.

All costs to remove the asphalt concrete pavement, including full depth saw cutting of the asphalt concrete pavement shall be incidental to the contract unit price per square yard for “Remove Asphalt Concrete Pavement”. It is estimated that 6” of asphalt concrete exists throughout the removal limits.

Base Course for pipe undercut backfill, bedding, and base course layer beneath asphalt concrete shall be paid for at the contract unit price per ton for “Base Course”.

Pipe Culvert Undercut shall be paid for at the contract unit price per cubic yard for “Pipe Culvert Undercut”. Necessary excavation shall be incidental to the contract unit price per foot for the appropriate size of new pipe.

TABLE OF SHALLOW PIPE INSTALLATION

Location
US83 Crossover at Station 7+35

SHRINKAGE FACTOR: Embankment +30%

REINFORCED CONCRETE PIPE JOINT REPAIR AND VOID GROUTING

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	13	70

A. CULVERT JOINT CLEANING

1. This work shall consist of cleaning of the culvert joints, washing the entire culvert and joints with a high pressure washer, and if needed, wire brush cleaning of each joint to be repaired as directed by the Engineer. The entire culvert shall be clean and dry and most notably the specified joints shall be thoroughly cleaned to the satisfaction of the Engineer using a power washer with water pressure of at least 2500 psi. The culvert must be in a clean condition so that no deleterious material is trapped in the joints that are being repaired. The Contractor shall dispose of all debris removed from the culverts during the cleaning operation as approved by the Engineer.
2. All costs for equipment, material and labor for the culvert joint cleaning work shall be incidental to the contract unit price per foot for Culvert Joint Cleaning which shall be compensation in full for all equipment.
3. Contractor shall visit the project to determine the extent of cleaning needed for Culvert Joint Cleaning prior to bidding work.

B. REPAIR CULVERT JOINT

This work shall consist of repairing culvert joints in accordance with the Chemical Grout Manufacturer's directions for the sealing of each joint to prevent future infiltration/exfiltration of soils and water. Joint Sealing also prevents the soil stabilization and void filling grout from expanding back into the structure during injection. The following shall apply:

1. The work shall consist of repairing the concrete culvert joint with a sealant comprised of water reactive hydrophilic polyurethane resin and dry oil free oakum. The work shall include the furnishing by the Contractor, of all supervision, training, labor, materials, tools, lighting and equipment for the performance of all operations necessary to repair or seal joints between concrete pipe sections throughout the culvert. All grout will be injected under such pressure so as not to damage the existing drainage structure or roadway structure.
2. The Contractor shall provide a notarized statement, from the Manufacturer, that the polyurethane foam resin meets the specified requirements, along with submitting the Manufacturer's current product specification and installation instructions. The grout materials shall be non-flammable and non-toxic when cured.
3. The Contractor shall be an Approved Contractor of the Manufacturer of the specified product and shall provide written certification from the Manufacturer attesting to their Approved Contractor status.
4. All product documentation and Contractor submittals must be submitted to the Engineer prior to or at the preconstruction meeting. The Contractor must have the Engineer's approval prior to commencing any of this work.
5. The Contractor shall follow the Manufacturer's installation instructions throughout the repair process and install components in accordance with Manufacturer's specifications.
6. The Contractor shall provide safe storage and handling of materials prior to delivery and at the project site. All material installation, handling and storage shall be in accordance with Manufacturer's recommendations.

7. Temperature of the resin is critical from the point of pumping to the point of injection. All polyurethanes react faster at higher temperatures. Drum heaters and heated hoses are required when ambient or ground temperatures are below 70 degrees Fahrenheit. The optimum hose temperature will vary with the weather conditions and the particular job site conditions with the minimum hose temperature being 75 degrees Fahrenheit and the maximum hose temperature being 95 degrees Fahrenheit and the drum temperature not to exceed 90 degrees Fahrenheit.
8. The Contractor shall provide worker and inspector safety and worker protective gear in accordance with the manufacturer, including but not limited to chemical goggles, face shields, eye wash system and NBR gloves.
9. The Contractor shall submit to the Engineer for approval a detailed procedure for the installation of the polyurethane grout.
10. The work shall include, but is not limited to sealing each pipe joint with a hydrophilic polyurethane grout meeting the following specifications:
 - GEL FOAM II (Saturated Oakum Rope Joint Packing) as manufactured by Green Mountain International, LLC or equal.
 - ULTRA (Single Component Grout For Joint Injection) as manufactured by Green Mountain International, LLC or equal.
11. UV Protection (Gel Coat) - The work shall consist of trimming excess grout and oakum from the interior face of the joint prior to applying the Gel Coat. The epoxy gel compound shall be recommended by the Manufacturer for both surface sealing and protecting the hydrophilic grout from UV exposure. The epoxy gel compound shall be mixed and handled in accordance with the Manufacturer's recommendations and shall meet the following requirements:
 - Epoxy gel sealant compounds manufactured by Green Mountain Grouts, LLC or equal.
12. All costs for all equipment, material and labor required to complete the work shall be incidental to the contract unit price per foot for Repair Culvert Joint. Completion of the work includes initial saturated oakum rope packing of each joint, follow up injection of resin into the back side of each joint, trimming the excess grout and oakum from the interior face of the joint, application of the epoxy gel coat and site clean-up.
13. Contractor shall visit the project to determine the extent of work needed for Repairing the Culvert Joints prior to bidding the work.

C. DUAL COMPONENT CHEMICAL GROUT FOR VOID FILLING

1. This work shall consist of filling external voids surrounding the culvert, with an injected high expansion chemical grout compound. The work shall include furnishing the chemical grout by the Contractor, all supervision, training, labor, materials, tools, lighting and equipment for the performance of all operations necessary to fill external voids around the drainage structure. Holes shall be strategically drilled as required and grout injected throughout the structure to effectively fill all voids that have developed outside of the structure due to the infiltration of external soils and materials into the culvert and "piping" (water running outside and under the structure due to separated joints). All grout shall be injected under such pressure so as not to damage the existing drainage structure or roadway structure. All joints shall be appropriately cleaned and sealed, with appropriate recommended cure time, prior to the injection of the void grouting. After completion of the void filling, all holes shall be properly sealed.
2. The Contractor must supply the Engineer with three (3) prior job references of projects where they have successfully injected urethane resin for subgrade void filling applications, or soil stabilization.
3. The Contractor shall provide a notarized statement, from the Manufacturer, that the polyurethane foam resin meets the specified requirements for filling voids, along with submitting the Manufacturer's current product specification and installation instructions.
4. The Contractor shall follow the Manufacturer's installation instructions throughout the repair process and install components in accordance with Manufacturer's specifications.
5. The Contractor shall be an Approved Contractor of the Manufacturer of the specified product and shall provide certification from the Manufacturer attesting to their Approved Contractor status.
6. The Contractor shall provide safe storage and handling of materials prior to delivery and at the project site. All material installation, handling and storage shall be in accordance with the Manufacturer's recommendations.
7. The Contractor shall provide worker and inspector safety and worker protective gear in accordance with the Manufacturer, including but not limited to chemical goggles, face shields, eye wash system, Tyvek or equivalent clothing protection and NBR gloves.
8. All product documentation and Contractor submittals must be submitted to the Engineer prior to or at the preconstruction meeting. The Contractor must have the Engineer's approval prior to commencing on any of this work.
9. The chemical grout or void filling materials shall be a dual component hydrophobic polyurethane grout compound.

REINFORCED CONCRETE PIPE JOINT REPAIR AND VOID GROUTING (CONTINUED)

C. DUAL COMPONENT CHEMICAL GROUT FOR VOID FILLING (CONTINUED)

10. The grout materials shall be non-flammable and non-toxic when cured.
11. The grout mixture shall have expansion properties listed in the data sheets of greater than twenty (20) times its original volume and cure to rigid closed cell polyurethane foam. The grout shall expand to fill any voids and bond to the exterior surface of the structure. The grout shall be in accordance with the Manufacturer's recommendations and shall meet the following requirements:
 - VF dual component polyurethane grouts as manufactured by Green Mountain International, LLC or equal.
12. It is the Contractor's responsibility to locate reinforcing bars and conduit prior to drilling any grout holes.
13. The typical method consists of placing a layer of chemical grout behind or around the structure. The Contractor shall submit for approval by the Engineer a detailed grouting plan showing the spacing, orientation and depth of the grout holes, as well as type of polyurethane grout to be used, range of gel times, equipment, mixing procedures, recommended injection pressure, technique for monitoring grout travel and any other pertinent information. The grouting plan should address the prevention of overfilling and prevention of damage to structures or roadway. The Contractor shall submit this detailed procedure for the installation of the expansion grout to the Engineer for approval. The holes are drilled with a rotary percussion hammer drill using a sharp masonry bit with a minimum diameter of 3/8 inch to a maximum diameter of 5/8 inch. Care must be taken to prevent holes from causing damage to reinforcing bars or utility conduits. Drilled holes should be vacuumed and flushed. Use injection grout and methods as recommended by Manufacturer.

TEMPERATURE of the resin is critical from the point of pumping to the point of injection.

All polyurethanes react faster at higher temperatures. Drum heaters and heated hoses are required when ambient and ground temperatures are below 70 degrees Fahrenheit. The optimum hose temperature will vary with the weather conditions and the particular job site conditions with the minimum hose temperature being 75 degrees Fahrenheit and the maximum hose temperature being 95 degrees Fahrenheit and the drum temperature not to exceed 90 degrees Fahrenheit.

Injection can be monitored by either applicator's visual inspection or by pumping a specific amount of injection grout into each hole. The work will start at the inlet end of the pipe and proceed downstream to the outlet. Inject bottom row every other hole. When material appears at the adjacent port, discontinue injection at entry port and begin injection at the adjacent port.

Continue injection process section by section from bottom of pipe to top of pipe in a continuous manner to next pipe section. Injection

pressure will vary from 200 psi to 3000 psi depending on the width of the joint, thickness of the structure, and condition of the concrete. After the grout cures, excess material shall be trimmed to be flush with the pipe interior wall and the pipe left clean.

14. All costs for filling external voids surrounding the culvert shall be incidental to the contract unit price per gallon for Chemical Grout Void Fill for all equipment, intermediate and post cleanup, material and labor required to complete the work. Any overfilling of voids that results in damage to overlying pavement, highway user ride quality, or drainage structure integrity shall be corrected by the Contractor at no expense to the Owner. All corrections shall be approved by the Engineer.
15. Contractor shall visit the project to determine the extent of work needed for the Grout Void Fill prior to bidding the work.

Table of Reinforced Concrete Pipe Joint Repair and Void Grouting

Location	Remarks	Tie Bolts (Each)	Culvert Joint Cleaning (Feet)	Repair Culvert Joint (Feet)	Chemical Grout Void Fill (Gallon)
Sta. 362+21 (2 nd)	4' x 6' Precast Cattle Pass	24	246.0	246.0	60.0
Sta. 491+00 (2 nd)	4' x 6' Precast Cattle Pass	20	205.0	205.0	50.0
Sta. 699+01 (2 nd)	4' x 6' Precast Cattle Pass	18	184.5	184.5	45.0
Sta. 752+65 (2 nd)	54" RCPA	24	204.0	204.0	50.0
Sta. 802+50 (2 nd)	4' x 6' Precast Cattle Pass	20	205.0	205.0	50.0
Sta. 837+97 (2 nd)	4' x 6' Precast Cattle Pass	20	205.0	205.0	50.0
	Totals:	126	1,249.5	1,249.5	305.0

HIGH FLOW SILT FENCE

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

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

High flow silt fence shall be placed at the locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.05 for details.

The anticipated areas for the placement of silt fence will be at inlets at pipe repair locations and at pipe inlets throughout the divided sections where topsoil has been removed.

An additional quantity of high flow silt fence has been added to the Estimate of Quantities for temporary sediment control.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	14	70

PERMANENT SEEDING

All disturbed areas as a result of work on this project shall be restored, reshaped, and seeded to the satisfaction of the Engineer. Disturbed areas anticipated on the project include the topsoil peel down areas throughout the divided sections along with all other areas disturbed as a result of the Contractor's operations.

Type G Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana	7
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Indiangrass	Holt, Tomahawk	3
Big Bluestem	Bison, Bonilla, Champ, Pawnee, Sunnyview	3
Oats or Spring Wheat: April through May; Winter Wheat: August through November		10
Total:		26

It is estimated that 11.171 acres and 1.035 acres of disturbed area will require seeding for the US12 and US83 projects, respectively. Limits of the work shall be as determined by the Engineer at the time of construction.

Application of fertilizer will not be required on for this Contract.

MULCHING (GRASS HAY OR STRAW)

Application of grass hay or straw mulch will be required throughout disturbed areas as directed by the Engineer on this Contract.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	15	70

MYCORRHIZAL INOCULUM

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

<i>Glomus intraradices</i>	25%
<i>Glomus aggregatu</i>	25%
<i>Glomus mosseae</i>	25%
<i>Glomus etunicatum</i>	25%

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

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

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

EROSION CONTROL WATTLE

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

The placement of the erosion control wattles will be determined by the Engineer. The anticipated areas for placement will be throughout the median ditch bottoms throughout the divided sections.

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

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

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

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

TRAFFIC CONTROL FOR ASPHALT CORING

Coring operations shall be completed during daylight hours only. Traffic control for coring operations shall be executed by following the "Special Detail for Mobile Operations for Asphalt Coring" sheet.

GENERAL MAINTENANCE OF TRAFFIC

All traffic control sign locations shall be set in the field by the Contractor and verified by the Engineer prior to installation.

Channelizing devices in a series shall be of the same type. Channelizing drums shall be of a two part construction with breakaway bases. The cost of additional channelizing devices shall be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

Certified flaggers properly attired and preceded by FLAGGER symbol signs, will be required where work activity and/or equipment present a hazard to the workers, a hazard to through traffic, or encroaches into a driving lane.

Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

All non-fixed location signs may be mounted on portable supports. The portable supports shall be constructed to yield upon impact to minimize hazards to motorists, and shall be of proper height. The bottom of signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas and one foot above the pavement in rural areas. Portable sign supports may be used as long as the duration is less than 3 days. If the duration is more than 3 days the signs shall meet the minimum mounting heights of 5 foot for rural areas and 7 foot for urban areas.

Erect only those signs that are applicable to the work in progress. When the Contractor is working at specific work spaces within the project, only those traffic control devices applicable to that operation should be displayed. Non-applicable signs and/or devices shall be removed from view by the Contractor and stored a minimum of 30 feet from the driving lanes during periods of inactivity. All costs to do this work shall be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

A shadow vehicle, equipped with flashing amber light and a ROAD MACHINERY AHEAD sign prominently displayed, shall be used in advance of landscaping, clean up, and other mobile work activities. Highway equipment working within traffic or adjacent to traffic shall, at all times, display a flashing or revolving amber light to warn the traveling public. The Contractor shall maintain the driving surface on the project to eliminate hazards to the traveling public. The driving surface is defined as both Driving Lanes along with both outside shoulders on the project.

The cost for additional signs shall be paid for at the contract unit price per square foot for "Traffic Control Signs". Additional Flagger hours shall be paid for at the contract unit price per hour for "Flagging".

Traffic Control Signs, as shown in the Estimate of Quantities, are estimates. Contractor's operation may require adjustments in quantities, either more or less. Payment will be for those signs actually ordered by the Engineer and used. The cost for additional signs shall be paid for at the contract unit price per square foot for "Traffic Control Signs".

TRAFFIC CONTROL

The Contractor shall designate an employee to be responsible for the maintenance of traffic. The Engineer must approve the employee selected. The name and phone number of person(s) shall be provided to the SD Department of Transportation (773-5294), SD Highway Patrol (Pierre State Radio (773-3536)), Mobridge Dispatch (845-5000), Edmunds County Sheriff Department (426-6262) and Walworth County Sheriff Department (649-7600).

All traffic control devices shall be in "like new" condition.

TEMPORARY PAVEMENT MARKINGS

Temporary pavement markings shall be as per the Specifications.

The total length of no passing zone is estimated to be **6.737** miles.

No Passing Zones may be identified using DO NOT PASS and PASS WITH CARE signs in addition to dashed centerline pavement markings. It is estimated that 32 DO NOT PASS and 32 PASS WITH CARE signs will be required to mark the no passing zones.

The Contractor shall erect DO NOT PASS signs to mark no passing zones prior to the removal of the existing pavement markings. PASS WITH CARE signs shall also be used in conjunction with the DO NOT PASS signs. These signs shall be erected on fixed location supports.

These signs shall be removed upon completion of the permanent pavement markings.

If the Contractor elects not to use the DO NOT PASS and PASS WITH CARE signs, the temporary pavement markings placed shall be fully compliant as normally used to identify no passing zones.

At the end of each day the temporary pavement markings shall be in place and visible. No separate payment will be made for remarking a segment of roadway that was not evened up with surface treatment at the end of the previous day.

Quantities of Temporary Pavement Markings consist of:

- 1) One pass on top of the Milled Surface
- 2) One pass on top of the Tight Blading
- 3) One pass on top of the Asphalt Concrete
- 4) ** One pass on top of the Flush Seal

** If the flush seal is eliminated from the contract, the length of temporary pavement marking used for the flush seal shall also be eliminated from the contract.

** Multiple applications may be needed if plastic covers are lost and the tabs are not functioning. No extra payment will be made.

Flagger symbol signs (W20-7) and flaggers, or a shadow vehicle with rotating yellow lights or strobe lights shall be positioned on the roadway shoulder in advance of workers for both directions of traffic during the installation of temporary road markers. The traffic control device used shall be moved to provide proper warning of the work operation. A ROAD WORK AHEAD (W20-1), a Workers symbol sign (W21-1) or a BE PREPARED TO STOP (W3-4) warning sign shall be mounted on the rear of the shadow vehicle. The method of traffic control used by the Contractor for this work shall be approved by the Engineer.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	16	70

PERMANENT PAVEMENT MARKING

The Contractor shall advise the Engineer a minimum of 2 weeks prior to the application of the permanent pavement marking to allow the State to check and mark the location of no passing zones.

The application of permanent pavement marking paint may not begin until 2 calendar days following completion of flush seal and shall be completed within 14 calendar days following completion of the flush seal. If the Flush Seal is eliminated, the Contractor shall complete the application of permanent pavement marking paint no sooner than 2 calendar days, but within 14 calendar days following completion of final surfacing.

The Contractor will be required to repaint all existing pavement marking including centerline, edge line, lane lines, turn arrows, etc. This list is approximate. The Contractor will be required to inventory and mark, and/or offset the extent and location of the existing turn arrows, etc. before the markings are obliterated. Additional quantities are included in the Estimate of Quantities to paint the additional pavement markings.

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

COLD APPLIED PLASTIC PAVEMENT MARKINGS

Cold Applied Plastic Pavement Markings shall be grooved, 3M Series 380 AW or approved equal.

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

GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING

The Contractor shall establish a positive means for the removal of the grinding and/or grooving residue. Residue from dry grooving shall be vacuumed. Solid residue shall be removed from the pavement surfaces before being blown by traffic action or wind. Residue from wet grooving shall not be permitted to flow across lanes being used by public traffic or into gutter or drainage facilities. Residue, whether in solid or slurry form, shall be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state. All costs for removal of grinding and/or grooving residue shall be included in the contract unit price per foot for "Grooving for Cold Applied Plastic Pavement Marking".

The groove depth shall be 100 mils with a tolerance of + 10 mils.

The groove shall be made using stacked diamond tipped blade cutting heads to prevent damage at the joints.

Grooving for cold applied plastic pavement markings shall replicate the existing 4" pavement marking lines. See Table of Pavement Marking Quantities on Paint and Cold Applied Plastic Markings Tabulation sheet.

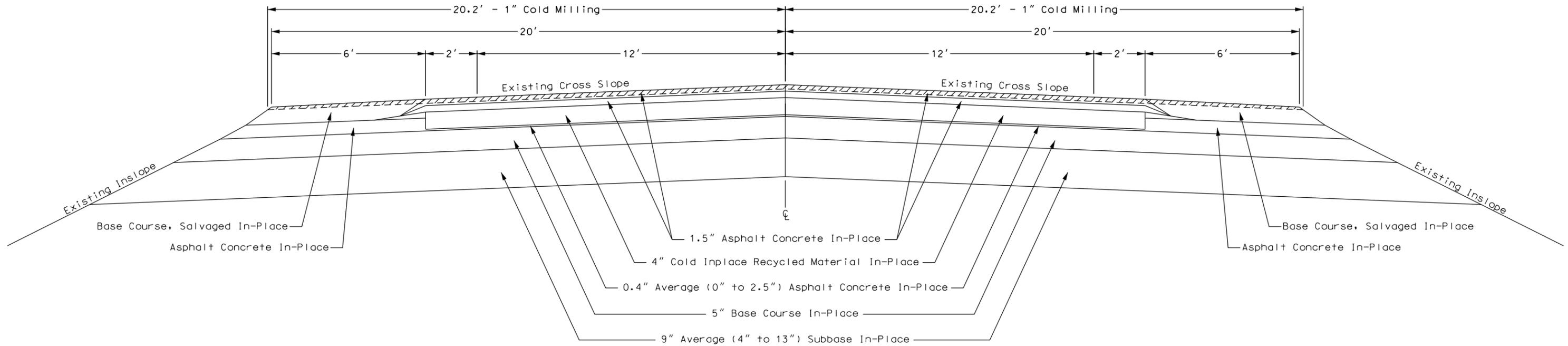
TYPICAL SECTION

Section 1 (US Hwy 12)

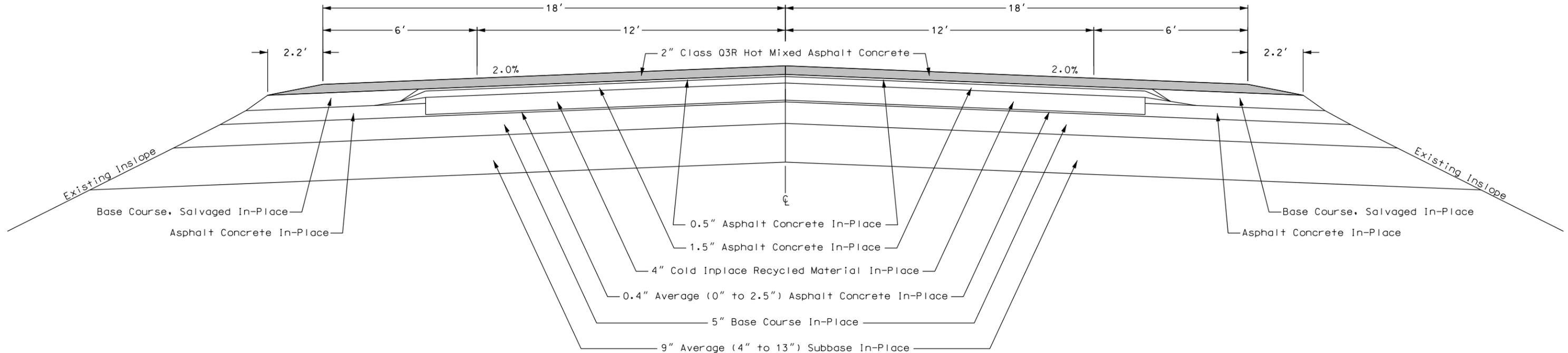
Sta 0+00 to Sta 40+00
Sta 39+65.9 (2nd) to Sta 847+54 (2nd)

IN PLACE & COLD MILLING ASPHALT CONCRETE SECTION

Transition fm Rural 2-Lane to Divided 4-Lane:
EBL & WBL: Sta 40+00 to Sta 48+90



RESURFACING SECTION



TYPICAL SECTION

Section 2 (US Hwy 12)

EBL: Sta 48+90 to Sta 101+21.49

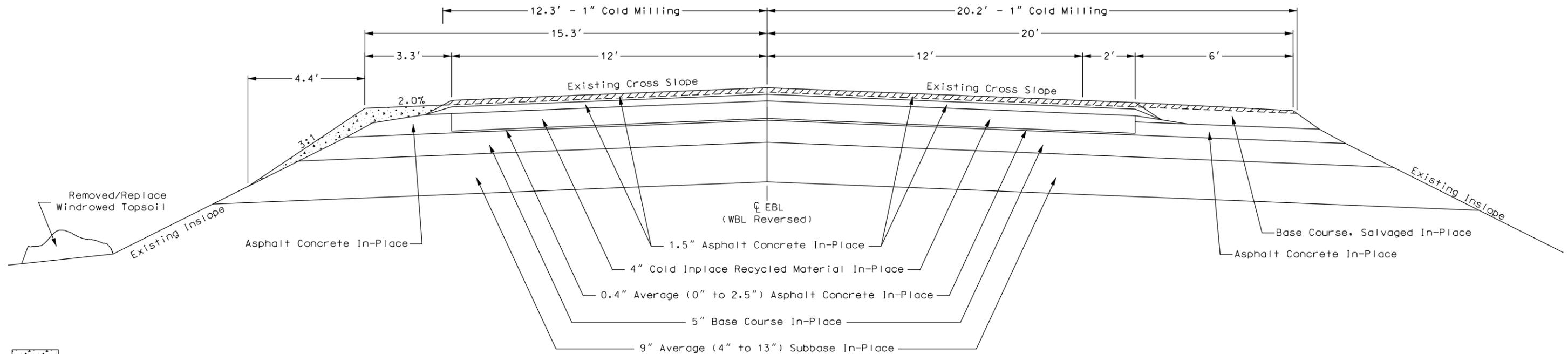
WBL: Sta 48+90 to Sta 30+76.39 (2nd) ~ Thru Equation

Transition fm Divided 4-Lane to Rural 2-Lane:

EBL: Sta 101+21.49 to Sta 110+11

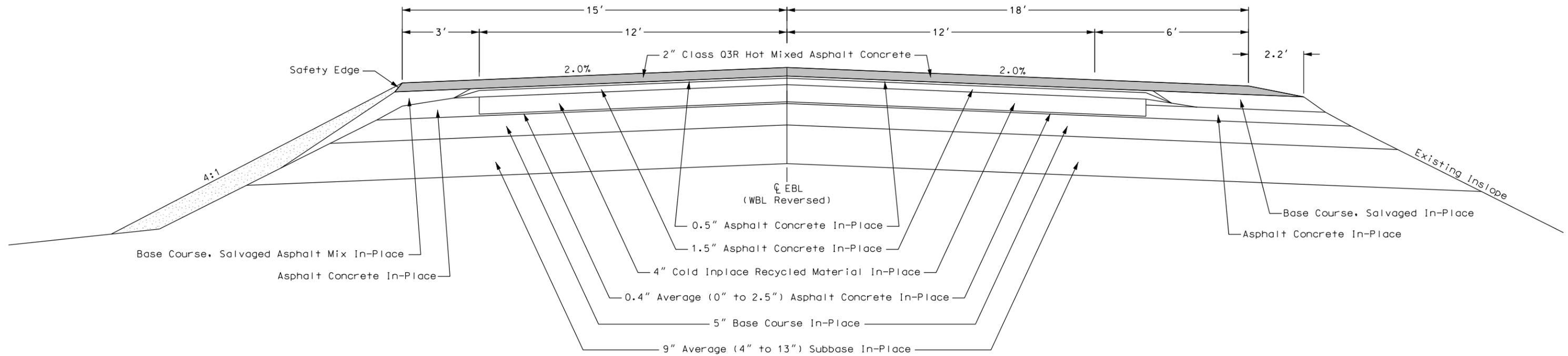
WBL: Sta 30+76.39 (2nd) to Sta 39+65.9 (2nd)

IN PLACE, COLD MILLING ASPHALT CONCRETE, & MEDIAN SHOULDER WIDENING SECTION



-  Base Course, Salvaged Asphalt Mix
-  Contractor Furnished Borrow/ Replaced Windrowed Topsoil

RESURFACING SECTION



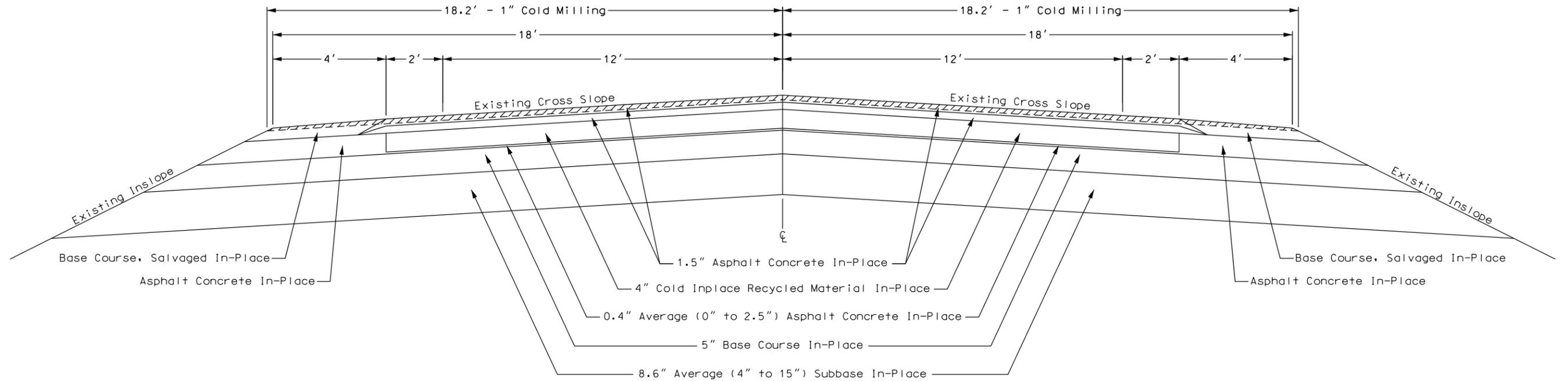
TYPICAL SECTION

Section 3 (US Hwy 12)

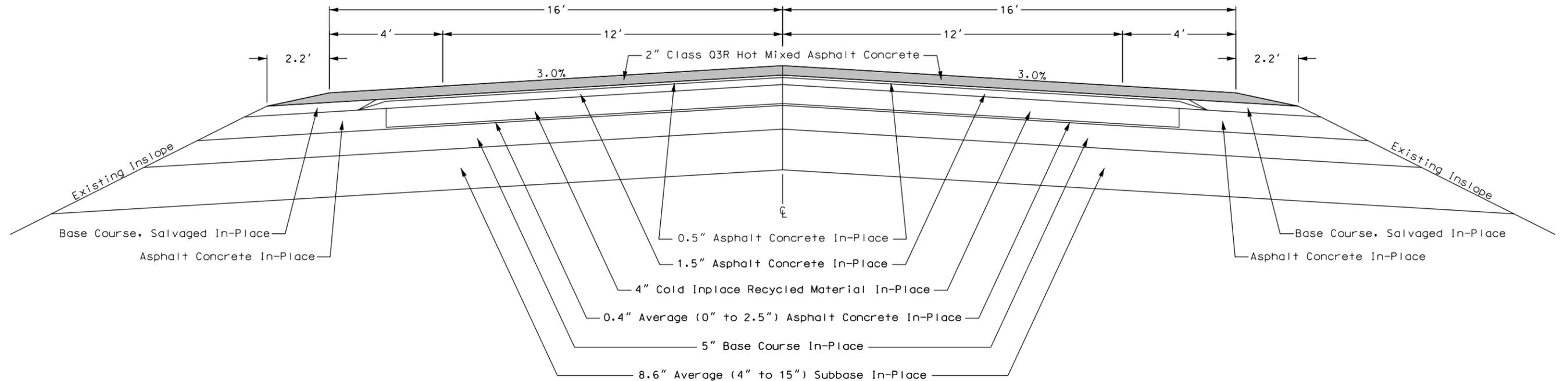
Sta 0+00 (3rd) to Sta 60+60 (3rd)

IN PLACE & COLD MILLING ASPHALT CONCRETE SECTION

Transition fm Rural 2-Lane to Grain Terminal Turn Lane:
Sta 60+60 (3rd) to Sta 69+20 (3rd)



RESURFACING SECTION



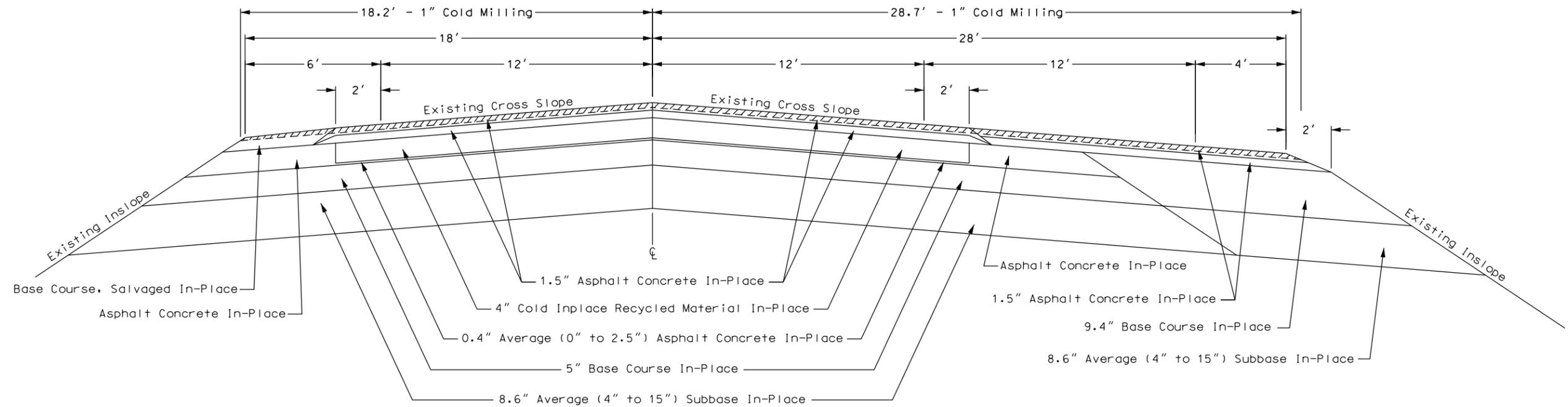
TYPICAL SECTION

Section 4 (US Hwy 12)

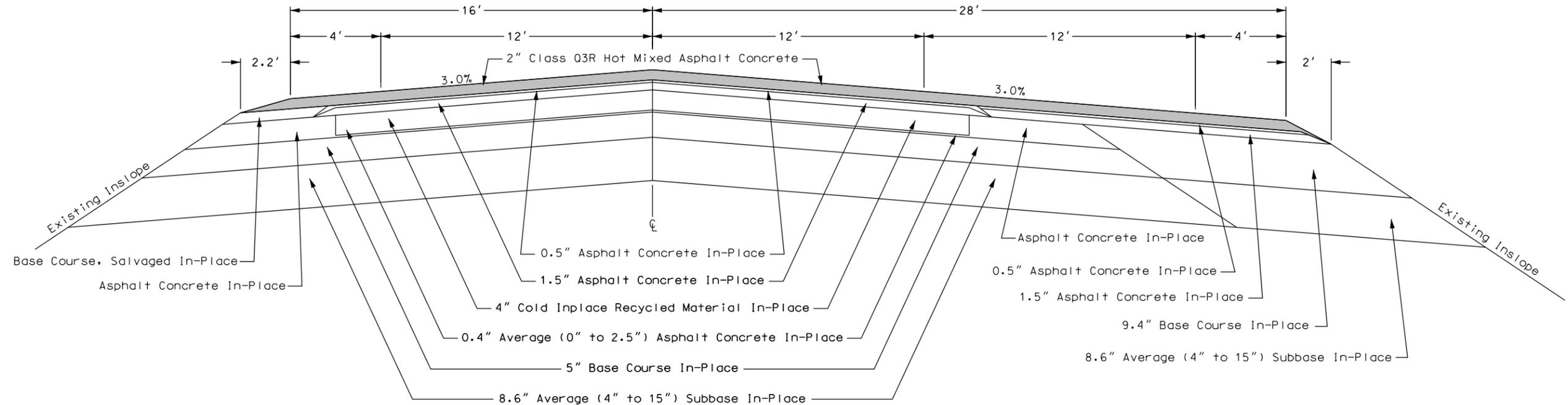
Sta 69+20 (3rd) to Sta 77+69.9 (3rd)

Grain Terminal Turn Lane/Transition to Divided 4-Lane:
Sta 77+69.9 (3rd) to Sta 90+16.5 (3rd)

IN PLACE & COLD MILLING ASPHALT CONCRETE SECTION



RESURFACING SECTION



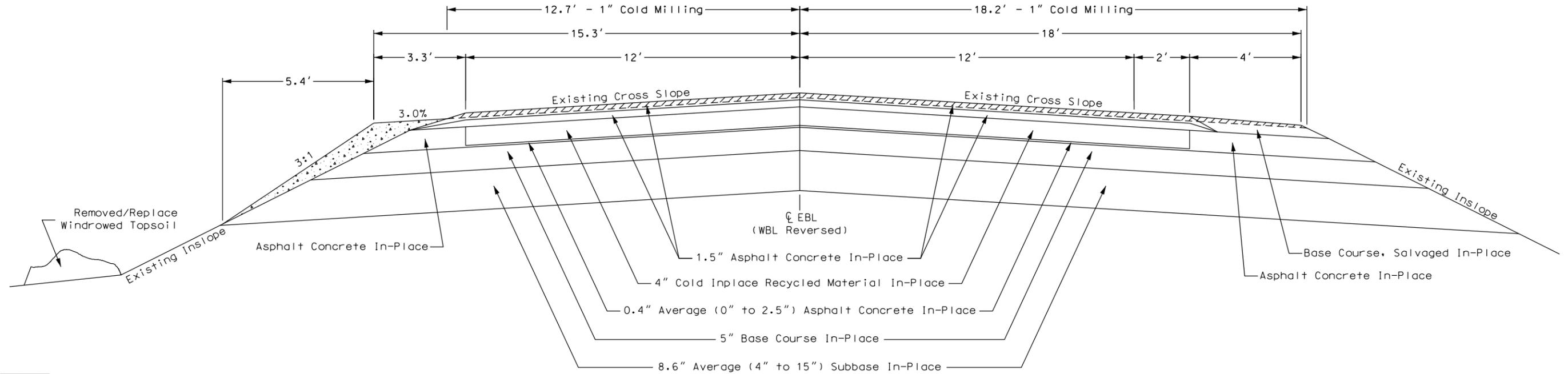
TYPICAL SECTION

Section 5 (US Hwy 12)

EBL & WBL: Sta 90+16.5 (3rd) to Sta 165+00 (3rd)

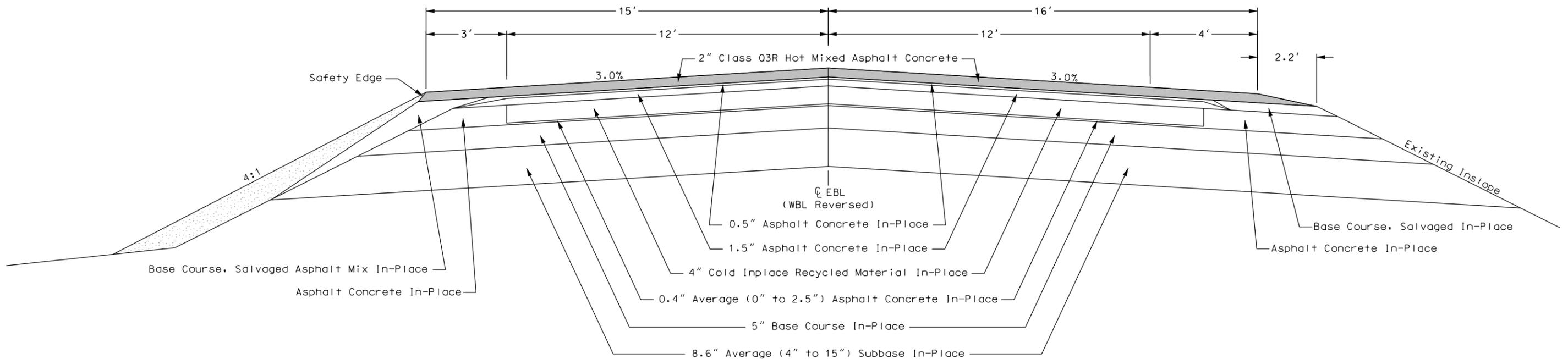
IN PLACE, COLD MILLING ASPHALT CONCRETE, & MEDIAN SHOULDER WIDENING SECTION

Transition fm Divided 4-Lane to Rural 2-Lane:
EBL & WBL: Sta 165+00 (3rd) to Sta 174+00.7 (3rd)



-  Base Course, Salvaged Asphalt Mix
-  Contractor Furnished Borrow/ Replaced Windrowed Topsoil

RESURFACING SECTION



TYPICAL SECTION

Section 1 (US Hwy 83)

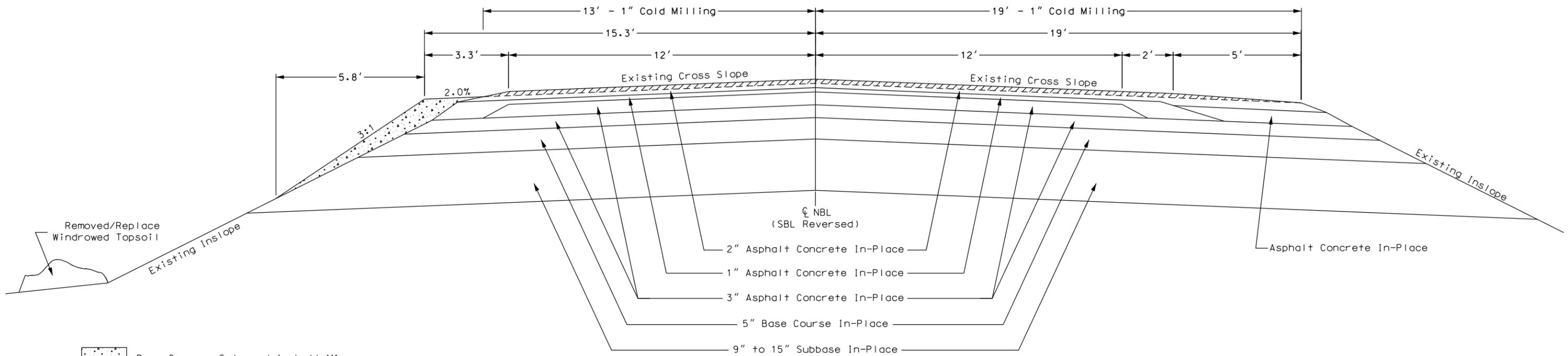
NBL: Sta 0+00 to Sta 97+70.9 (Thru Equation)

SBL: Sta 0+00 to Sta 26+49.2

Transition fm Divided 4-Lane to Rural 2-Lane:

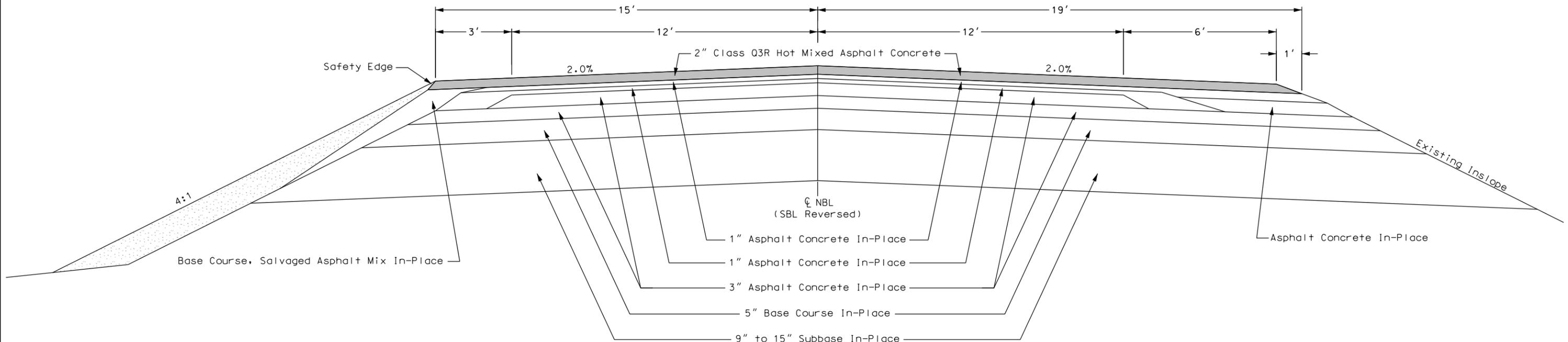
SBL: Sta 26+49.2 to Sta 34+29.2
 NBL: Sta 97+70.9 to Sta 105+50.9

IN PLACE, COLD MILLING ASPHALT CONCRETE, & MEDIAN SHOULDER WIDENING SECTION



-  Base Course, Salvaged Asphalt Mix
-  Contractor Furnished Borrow/ Replaced Windrowed Topsoil

RESURFACING SECTION



TYPICAL SECTION

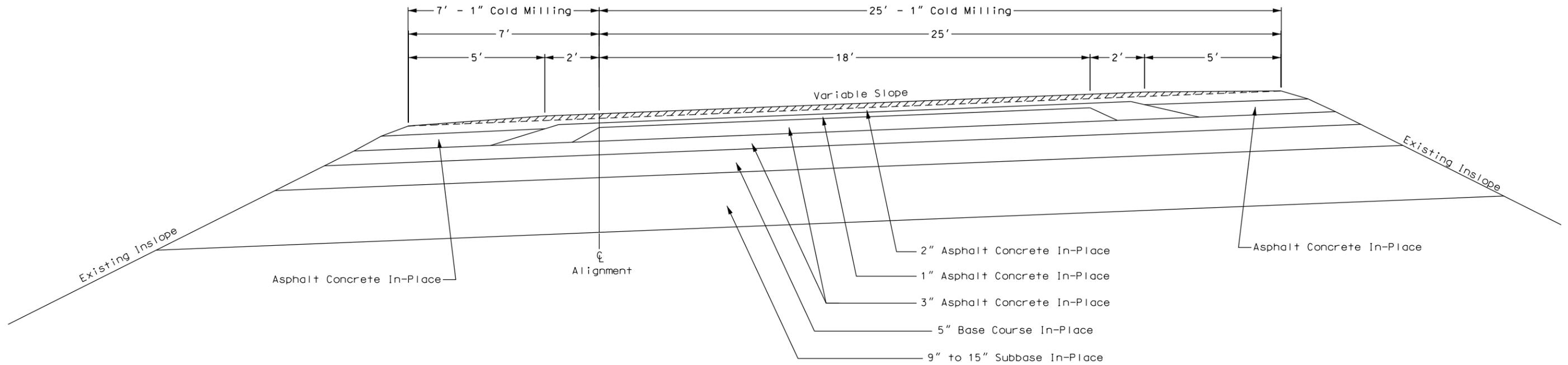
**** Section 2 (US Hwy 83)**

Ramp A (US12 onto US83)

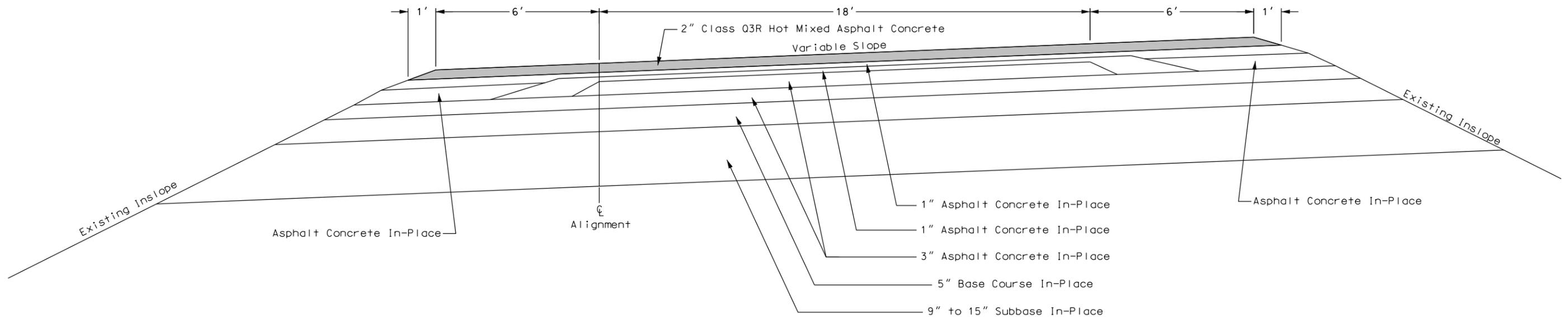
Ramp B (US83 onto US12)

** Refer to "Table of Additional Quantities" sheet for quantities.

IN PLACE & COLD MILLING ASPHALT CONCRETE



RESURFACING SECTION



RATES OF MATERIALS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	24	70

US HWY 12

SECTION 1 (per station)

Station 0+00 to Station 40+00

Cold Milling Asphalt Concrete is computed at the rate of 449 Square Yards, applied 40.4 feet wide.

Class Q3R Hot Mixed Asphalt Concrete (2" Lift)

Aggregate (80% Contractor Furnished)	35.87 Tons
Salvaged Asphalt Concrete (20%)	8.97 Tons
PG 58-34 Asphalt Binder	2.21 Tons
TOTAL MIX	47.05 Tons
Hydrated Lime	0.47 Tons
TOTAL MIX WITH HYDRATED LIME	47.52 Tons

The exact proportions of these materials will be determined on construction.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.10 ton applied 24 feet wide (Rate = 0.09 gallon per square yard), prior to application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.12 ton applied 41.5 feet wide (Rate = 0.06 gallon per square yard), prior to application of 2" lift of Class Q3R Hot Mixed Asphalt Concrete.

Flush Seal

Provide SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.10 ton applied 40 feet wide (Rate = 0.05 gallon per square yard).

Provide Sand for Flush Seal at the rate of 0.98 ton applied 22 feet wide for (Rate = 8 pounds per square yard).

SECTION 1 (per mile)

Station 39+65.9 (2nd) to Station 847+54 (2nd)

Cold Milling Asphalt Concrete is computed at the rate of 23,701 Square Yards, applied 40.4 feet wide.

Class Q3R Hot Mixed Asphalt Concrete (2" Lift)

Aggregate (80% Contractor Furnished)	1,894 Tons
Salvaged Asphalt Concrete (20%)	473 Tons
PG 58-34 Asphalt Binder	117 Tons
TOTAL MIX	2,484 Tons
Hydrated Lime	25 Tons
TOTAL MIX WITH HYDRATED LIME	2,509 Tons

The exact proportions of these materials will be determined on construction.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 5.4 ton applied 24 feet wide (Rate = 0.09 gallon per square yard), prior to application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 6.2 ton applied 41.5 feet wide (Rate = 0.06 gallon per square yard), prior to application of 2" lift of Class Q3R Hot Mixed Asphalt Concrete.

Flush Seal

Provide SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 5.0 ton applied 40 feet wide (Rate = 0.05 gallon per square yard).

Provide Sand for Flush Seal at the rate of 52 ton applied 22 feet wide for (Rate = 8 pounds per square yard).

SECTION 2 (per station)

EBL ~ Station 48+90 to Station 101+21.49 WBL ~ Station 48+90 to Station 30+76.39 (2nd) ~ Thru Equation

Cold Milling Asphalt Concrete is computed at the rate of 361 Square Yards, applied 32.5 feet wide.

Class Q3R Hot Mixed Asphalt Concrete (2" Lift)

Aggregate (80% Contractor Furnished)	32.18 Tons
Salvaged Asphalt Concrete (20%)	8.05 Tons
PG 58-34 Asphalt Binder	1.98 Tons
TOTAL MIX	42.21 Tons
Hydrated Lime	0.42 Tons
TOTAL MIX WITH HYDRATED LIME	42.63 Tons

The exact proportions of these materials will be determined on construction.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.10 ton applied 24 feet wide (Rate = 0.09 gallon per square yard), prior to application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.10 ton applied 36.5 feet wide (Rate = 0.06 gallon per square yard), prior to application of 2" lift of Class Q3R Hot Mixed Asphalt Concrete.

Flush Seal

Provide SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.08 ton applied 35 feet wide (Rate = 0.05 gallon per square yard).

Provide Sand for Flush Seal at the rate of 0.98 ton applied 22 feet wide for (Rate = 8 pounds per square yard).

RATES OF MATERIALS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	25	70

US HWY 12

SECTION 3 (per mile)

Station 0+00 (3rd) to Station 60+60 (3rd)

Cold Milling Asphalt Concrete is computed at the rate of 21,355 Square Yards, applied 36.4 feet wide.

Class Q3R Hot Mixed Asphalt Concrete (2" Lift)

Aggregate (80% Contractor Furnished)	1,698 Tons
Salvaged Asphalt Concrete (20%)	424 Tons
PG 58-34 Asphalt Binder	105 Tons
TOTAL MIX	2,227 Tons
Hydrated Lime	22 Tons
TOTAL MIX WITH HYDRATED LIME	2,249 Tons

The exact proportions of these materials will be determined on construction.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 5.4 ton applied 24 feet wide (Rate = 0.09 gallon per square yard), prior to application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 5.6 ton applied 37.5 feet wide (Rate = 0.06 gallon per square yard), prior to application of 2" lift of Class Q3R Hot Mixed Asphalt Concrete.

Flush Seal

Provide SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 4.5 ton applied 36 feet wide (Rate = 0.05 gallon per square yard).

Provide Sand for Flush Seal at the rate of 52 ton applied 22 feet wide for (Rate = 8 pounds per square yard).

SECTION 4 (per station)

Station 69+20 (3rd) to Station 77+69.9 (3rd)

Cold Milling Asphalt Concrete is computed at the rate of 521 Square Yards, applied 46.9 feet wide.

Class Q3R Hot Mixed Asphalt Concrete (2" Lift)

Aggregate (80% Contractor Furnished)	43.35 Tons
Salvaged Asphalt Concrete (20%)	10.84 Tons
PG 58-34 Asphalt Binder	2.67 Tons
TOTAL MIX	56.86 Tons
Hydrated Lime	0.57 Tons
TOTAL MIX WITH HYDRATED LIME	57.43 Tons

The exact proportions of these materials will be determined on construction.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.15 ton applied 36 feet wide (Rate = 0.09 gallon per square yard), prior to application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.14 ton applied 49 feet wide (Rate = 0.06 gallon per square yard), prior to application of 2" lift of Class Q3R Hot Mixed Asphalt Concrete.

Flush Seal

Provide SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.12 ton applied 48 feet wide (Rate = 0.05 gallon per square yard).

Provide Sand for Flush Seal at the rate of 1.47 ton applied 33 feet wide for (Rate = 8 pounds per square yard).

SECTION 5 (per mile)

EBL & WBL ~ Station 90+16.5 (3rd) to Station 165+00 (3rd)

Cold Milling Asphalt Concrete is computed at the rate of 18,128 Square Yards, applied 30.9 feet wide.

Class Q3R Hot Mixed Asphalt Concrete (2" Lift)

Aggregate (80% Contractor Furnished)	1,601 Tons
Salvaged Asphalt Concrete (20%)	400 Tons
PG 58-34 Asphalt Binder	99 Tons
TOTAL MIX	2,100 Tons
Hydrated Lime	21 Tons
TOTAL MIX WITH HYDRATED LIME	2,121 Tons

The exact proportions of these materials will be determined on construction.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 5.4 ton applied 24 feet wide (Rate = 0.09 gallon per square yard), prior to application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 5.2 ton applied 34.5 feet wide (Rate = 0.06 gallon per square yard), prior to application of 2" lift of Class Q3R Hot Mixed Asphalt Concrete.

Flush Seal

Provide SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 4.1 ton applied 33 feet wide (Rate = 0.05 gallon per square yard).

Provide Sand for Flush Seal at the rate of 52 ton applied 22 feet wide for (Rate = 8 pounds per square yard).

RATES OF MATERIALS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	26	70

US HWY 83

SECTION 1 (per station)

NBL ~ Station 0+00 to Station 97+70.9 ~ Thru Equation
SBL ~ Station 0+00 to Station 26+49.2

Cold Milling Asphalt Concrete is computed at the rate of 356 Square Yards, applied 32 feet wide.

Class Q3R Hot Mixed Asphalt Concrete (2" Lift)

Aggregate (80% Contractor Furnished)	31.64 Tons
Salvaged Asphalt Concrete (20%)	7.91 Tons
PG 58-34 Asphalt Binder	1.95 Tons
TOTAL MIX	41.50 Tons
Hydrated Lime	0.42 Tons
TOTAL MIX WITH HYDRATED LIME	41.92 Tons

The exact proportions of these materials will be determined on construction.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.10 ton applied 24 feet wide (Rate = 0.09 gallon per square yard), prior to application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.10 ton applied 35.5 feet wide (Rate = 0.06 gallon per square yard), prior to application of 2" lift of Class Q3R Hot Mixed Asphalt Concrete.

Flush Seal

Provide SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.08 ton applied 34 feet wide (Rate = 0.05 gallon per square yard).

Provide Sand for Flush Seal at the rate of 0.98 ton applied 22 feet wide for (Rate = 8 pounds per square yard).

SECTION 2 (per station)

Ramp A (US12 onto US83)
Ramp B (US83 onto US12)

Cold Milling Asphalt Concrete is computed at the rate of 356 Square Yards, applied 32 feet wide.

Class Q3R Hot Mixed Asphalt Concrete (2" Lift)

Aggregate (80% Contractor Furnished)	29.16 Tons
Salvaged Asphalt Concrete (20%)	7.29 Tons
PG 58-34 Asphalt Binder	1.80 Tons
TOTAL MIX	38.25 Tons
Hydrated Lime	0.38 Tons
TOTAL MIX WITH HYDRATED LIME	38.63 Tons

The exact proportions of these materials will be determined on construction.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.09 ton applied 18 feet wide (Rate = 0.09 gallon per square yard), prior to application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.08 ton applied 33 feet wide (Rate = 0.06 gallon per square yard), prior to application of 2" lift of Class Q3R Hot Mixed Asphalt Concrete.

Flush Seal

Provide SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.08 ton applied 32 feet wide (Rate = 0.05 gallon per square yard).

Provide Sand for Flush Seal at the rate of 0.75 ton applied 18 feet wide for (Rate = 8 pounds per square yard).

TABLE OF PROJECT STATIONING

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	27	70

NH 0012(190)212 PCN 04W9							
SECTION	STATION	TO	STATION	DESCRIPTION	PROJECT GROSS LENGTHS	EXCEPTION LENGTH	PROJECT NET LENGTHS
1	Begin Project 0+00.00	to	40+00.00	Rural 2 Lane	4000.00'	-	4000.00'
Section Transition	40+00.00	to	48+90.00	Transition fm Rural 2 Lane to Divided 4-Lane Section	890.00'	-	890.00'
Eastbound Lanes (EBL)							
2	48+90.00	to	101+21.49	EBL Divided Section	5231.49'	-	5231.49'
Section Transition	101+21.49	to	110+11.00	Transition fm Divided EBL Section to Rural 2 Lane	889.51'	-	889.51'
EBL Equation	110+11.00 Bk	=	39+65.90 (2nd) Ah	-	-	-	-
Westbound Lanes (WBL)							
2	48+90.00	to	90+79.90	WBL Divided Section	4189.90'	-	4189.90'
WBL Equation	90+79.90 Bk	=	21+93.40 (2nd) Ah	-	-	-	-
2	21+93.40 (2nd)	to	30+76.39 (2nd)	WBL Divided Section	882.99'	-	882.99'
Section Transition	30+76.39 (2nd)	to	39+65.90 (2nd)	Transition fm Divided WBL Section to Rural 2 Lane	889.51'	-	889.51'
1	39+65.90 (2nd)	to	847+54.00 (2nd)	Rural 2 Lane	80788.10'	-	80788.10'
Equation	847+54.00 Bk	=	0+00.00 (3rd) Ah	-	-	-	-
3	0+00.00 (3rd)	to	60+60.00 (3rd)	Rural 2 Lane	6060.00'	-	6060.00'
Section Transition	60+60.00 (3rd)	to	69+20.00 (3rd)	Rural 2 Lane transitioning into Turn Lanes at Bowdle Grain Terminal	860.00'	-	860.00'
4	69+20.00 (3rd)	to	77+69.90 (3rd)	Turn Lanes at Bowdle Grain Terminal	849.90'	-	849.90'
Section Transition	77+69.90 (3rd)	to	90+16.50 (3rd)	Turn Lanes at Bowdle Grain Terminal transitioning into Divided 4-Lane Section	1246.60'	-	1246.60'
5	90+16.50 (3rd)	to	165+00.00 (3rd)	EBL Divided Section	7483.50'	-	7483.50'
5	90+16.50 (3rd)	to	165+00.00 (3rd)	WBL Divided Section	7483.50'	-	7483.50'
Section Transition	165+00.00 (3rd)	to	174+00.70 (3rd) End Project	EBL & WBL Divided Section transitioning into Rural 2 Lane	900.70'	-	900.70'
TOTALS =					121756.19' 23.060 Miles	0.00' 0.000 Miles	121756.19' 23.060 Miles

NH 0083(83)205 PCN 053U							
SECTION	STATION	TO	STATION	DESCRIPTION	PROJECT GROSS LENGTHS	EXCEPTION LENGTH	PROJECT NET LENGTHS
1	Begin Project 0+00.00	to	26+49.20	SBL Divided Section	2649.20'	-	2649.20'
Section Transition	26+49.20	to	34+29.20 End Project	Transition fm Divided SBL Section to Rural 2 Lane	780.00'	-	780.00'
1	0+00.00	to	18+62.20	NBL Divided Section	1862.20'	-	1862.20'
NBL Equation	18+62.20 Bk	=	89+85.00 Ah	-	-	-	-
1	89+85.00	to	97+70.90	NBL Divided Section	785.90'	-	785.90'
Section Transition	97+70.90	to	105+50.90 End Project	Transition fm Divided NBL Section to Rural 2 Lane	780.00'	-	780.00'
TOTALS =					6077.30' 1.151 Miles	0.00' 0.000 Miles	6077.30' 1.151 Miles

TABLE OF MATERIAL QUANTITIES

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	28	70

NH 0012(190)212 PCN 04W9 US HWY 12	(For Info Only) Water For Granular Material (Gal)	Cold Milling Asphalt Concrete (SqYd)	Base Course, Salvaged Asphalt Mix (Ton)	Contractor Furnished Borrow Excavation (CuYd)	Base Course (Ton)	Haul And Stockpile Granular Material (Ton)	Asphalt Concrete Blade Laid (Ton)	Class Q3R Hot Mixed Asphalt Concrete (Ton)	PG 58-34 Asphalt Binder (Ton)	Hydrated Lime (Ton)	SS-1h or CSS-1h Asphalt For Tack (Ton)	SS-1h or CSS-1h Asphalt For Flush Seal (Ton)	Sand For Flush Seal (Ton)
Section 1	-	380,609	-	-	-	-	↓	40,291.0	1,878.6	401.3	99.7	80.5	834.9
Section 2	-	37,199	-	-	-	↓	↓	4,392.8	204.0	43.3	10.3	8.2	101.0
Section 3	-	24,516	-	-	-	↓	↓	2,581.9	120.5	25.3	6.4	5.2	59.7
Section 4	-	4,428	-	-	-	↓	↓	488.1	22.7	4.8	1.2	1.0	12.5
Section 5	-	51,393	-	-	-	↓	↓	6,013.0	280.7	59.5	14.7	11.6	147.4
Subtotal =	-	498,145	-	-	-	12,507.2	↓	53,766.8	2,506.5	534.2	132.3	106.5	1,155.5
Table of Additional Quantities Totals =	46.5	52,961	1165.9	959	3,691.0	-	3,459.0	8,337.3	651.9	118.0	142.9	9.4	152.3
TOTALS =	46.5	551,106	1,165.9	959	3,691.0	12,507.2	3,459.0	62,104.1	3,158.4	652.2	275.2	115.9	1,307.8

NH 0083(83)205 PCN 053U US HWY 83	(For Info Only) Water For Granular Material (Gal)	Cold Milling Asphalt Concrete (SqYd)	Remove Asphalt Concrete Pavement (SqYd)	Pipe Culvert Undercut (CuYd)	Base Course, Salvaged Asphalt Mix (Ton)	Contractor Furnished Borrow Excavation (CuYd)	Base Course (Ton)	Haul And Stockpile Granular Material (Ton)	Asphalt Concrete Blade Laid (Ton)	Class Q3R Hot Mixed Asphalt Concrete (Ton)	PG 58-34 Asphalt Binder (Ton)	Hydrated Lime (Ton)	SS-1h or CSS-1h Asphalt For Tack (Ton)	SS-1h or CSS-1h Asphalt For Flush Seal (Ton)	Sand For Flush Seal (Ton)
Section 1	-	18,858	-	-	-	-	-	↓	↓	2,220.6	103.3	22.2	5.3	4.2	51.9
Subtotal =	-	18,858	-	-	-	-	-	1,456.4	↓	2,220.6	103.3	22.2	5.3	4.2	51.9
Table of Additional Quantities Totals =	3.1	9,739	168.0	12	32.3	20	298.1	-	172.7	1,216.4	70.0	13.9	9.7	2.0	30.1
TOTALS =	3.1	28,597	168.0	12	32.3	20	298.1	1,456.4	172.7	3,437.0	173.3	36.1	15.0	6.2	82.0

TABLE OF ADDITIONAL QUANTITIES

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	29	70

NH 0012(190)212 ~ PCN 04W9 ~ US HWY 12	(For Info Only) Water For Granular Material (MGal)	Cold Milling Asphalt Concrete (SqYd)	Base Course (Ton)	Base Course, Salvaged Asphalt Mix (Ton)	Contractor Furnished Borrow Excavation (CuYd)	Asphalt Concrete Blade Laid (Ton)	Class Q3R Hot Mixed Asphalt Concrete (Ton)	PG 58-34 Asphalt Binder (Ton)	Hydrated Lime (Ton)	SS-1h or CSS-1h Asphalt For Tack (Ton)	SS-1h or CSS-1h Asphalt For Flush Seal (Ton)	Sand For Flush Seal (Ton)
Asphalt to ROW												
13 Intersecting Road Entrances Station 158+75 (2nd) Lt. & Rt., Station 264+34 (2nd) Lt. & Rt., Station 397+10 (2nd) Rt., Station 422+75 (2nd) Rt., Station 475+70 (2nd) Rt., Station 583+17 (2nd) Lt., Station 741+80 (2nd) Lt. & Rt., Station 794+73 (2nd) Lt., & Station 847+54 (2nd) Lt. & Rt.	-	4,068	-		-	-	455.6	21.2	4.5	0.8	-	-
6 Intersecting Roads at Intersections												
US12/SD271 Intersecting Road to Java (Station 370+03 (2nd) Lt.)	-	540	-	-	-	-	60.0	2.8	0.6	0.1	-	-
US12/SD47 Intersecting Road to Hoven (Station 636+08 (2nd) Rt.)	-	540	-	-	-	-	60.0	2.8	0.6	0.1	-	-
Intersecting Road/Turn Lane at Station 104+20 (3rd) Lt.	-	584	-	-	-	-	64.8	3.0	0.6	0.1	-	-
Intersecting Road at Station 137+45 (3rd) Lt. (Main Street in Bowdle)	-	540	-	-	-	-	60.0	2.8	0.6	0.1	-	-
US12/SD47 Intersecting Road to Eureka (Station 158+40 (3rd) Lt.)	-	540	-	-	-	-	60.0	2.8	0.6	0.1	-	-
US12/SD47 Intersecting Road to SD20 (Station 158+40 (3rd) Rt.)	-	540	-	-	-	-	60.0	2.8	0.6	0.1	-	-
Asphalt to Radius/Base Course												
10 Intersecting Road Entrances Station 317+07 (2nd) Lt., Station 436+00 (2nd) Rt., Station 475+70 (2nd) Lt., Station 636+08 (2nd) Lt., Station 51+08 (3rd) Lt. & Rt., Station 71+20 (3rd) Lt., Station 77+20 (3rd) Lt., Station 104+20 (3rd) Rt., Station 137+45 (3rd) Rt.,	1.9	-	200.0	-	-	-	187.9	8.7	1.9	0.4	-	-
Base Course												
79 Farm & Field Entrances	11.4	-	1,185.0	-	-	-	-	-	-	-	-	-
Spot Leveling, Strengthening, & Repair	-	-	-	-	-	-	2,306.0	108.4	23.1	5.0	-	-
Median Shoulder Build-up Thru Divided Section												
Divided Section at US12/83 Junction	2.0	-	-	212.8	192	-	-	-	-	-	-	-
Divided Section thru Bowdle	9.1	-	-	953.1	766	-	-	-	-	-	-	-
Asphalt Concrete Blade Laid	-	-	-	-	-	3459.0	-	260.6	34.6	124.2	-	-
** Transition fm Typical Section 1 to 2 (Station 40+00 to Station 48+90)	-	6,453	-	-	-	-	716.2	33.7	7.2	1.6	1.4	25.8
** EBL Deceleration/Turn Lane onto US83 (Station 64+66 to Station 72+00)	-	812	-	-	-	-	90.1	4.2	0.9	0.2	0.2	3.2
** WBL Acceleration Lane at US83/12 Junction (Station 64+33 to Station 74+20)	-	975	-	-	-	-	108.2	5.1	1.1	0.2	0.2	3.9
** WBL Deceleration/Turn Lane onto US83 (Station 74+20 to Station 79+60)	-	667	-	-	-	-	74.0	3.5	0.7	0.2	0.1	2.7
US12/83 Junction Crossover (Station 75+06)	-	800	-	-	-	-	88.8	4.2	0.9	0.2	0.2	3.2
** EBL Acceleration Lane onto US83 (Station 76+66 to Station 87+79)	-	1,175	-	-	-	-	130.5	6.1	1.3	0.3	0.3	4.7
Crossover (Station 96+30)	-	100	-	-	-	-	11.1	0.5	0.1	0.1	-	-
** Transition fm Typical Section 2 to 1												
EBL: Station 101+21.49 to Station 110+11 equals	-	5,955	-	-	-	-	661.0	31.1	6.6	1.5	1.3	23.8
WBL: Station 30+76.39 (2nd) to Station 39+65.9 (2nd) ~ Thru Equation	-	-	-	-	-	-	-	-	-	-	-	-
Historical Turnout (Station 92+96 (2nd))	-	244	-	-	-	-	27.1	1.3	0.3	0.1	-	-
** US12/SD271 Intersection to Java Turn Lanes/Tapers												
EB: Station 363+03 (2nd) to Station 379+53 (2nd)	-	3,781	-	-	-	-	419.7	19.7	4.2	0.9	0.8	15.1
WB: Station 359+54 (2nd) to Station 378+40 (2nd)	-	-	-	-	-	-	-	-	-	-	-	-
** US12/SD47 Intersection to Hoven Turn Lanes/Tapers												
EB: Station 627+72 (2nd) to Station 646+58 (2nd)	-	3,781	-	-	-	-	419.7	19.7	4.2	0.9	0.8	15.1
WB: Station 626+59 (2nd) to Station 643+09 (2nd)	-	-	-	-	-	-	-	-	-	-	-	-
** Transition fm Typical Section 3 to 4 (Station 60+60 (3rd) to Station 69+20 (3rd))	-	3,979	-	-	-	-	425.9	20.0	4.3	1.1	0.9	10.6
** WBL Turn Lane into Grain Terminal Facility (Station 77+69.9 (3rd) to Station 85+95 (3rd))	-	1,100	-	-	-	-	122.1	5.7	1.2	0.3	0.2	4.4
** Transition fm Typical Section 4 to 5 (Station 77+69.9 (3rd) to Station 90+16.5 (3rd))	-	8,357	-	-	-	-	934.5	43.8	9.4	2.2	1.9	26.6
Crossover (Station 97+10 (3rd))	-	288	-	-	-	-	32.0	1.5	0.3	0.1	-	-
Crossover (Station 104+20 (3rd))	-	288	-	-	-	-	32.0	1.5	0.3	0.1	-	-
Crossover (Station 137+45 (3rd))	-	258	-	-	-	-	28.6	1.3	0.3	0.1	-	-
Crossover (Station 158+40 (3rd))	-	244	-	-	-	-	27.1	1.3	0.3	0.1	-	-
** Transition fm Typical Section 5 to End Project (Station 165+00 (3rd) to Station 174+00.7 (3rd))	-	6,352	-	-	-	-	674.4	31.7	6.7	1.7	1.1	13.2
Backfill for Digouts	22.1	-	2,306.0	-	-	-	-	-	-	-	-	-
TOTALS =	46.5	52,961	3,691.0	1,165.9	959	3,459.0	8,337.3	651.9	118.0	142.9	9.4	152.3

** Shall be to a Specified Density Compaction Effort.
 Tonnage shown in the tables above for Class Q3R Hot Mixed Asphalt Concrete is based on a compacted depth as detailed in the plans.
 The quantities above are included in the Material Quantities table in the "Table of Material Quantities" sheet.

TABLE OF ADDITIONAL QUANTITIES

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	30	70

NH 0083(83)205 ~ PCN 053U ~ US HWY 83	(For Info Only) Water For Granular Material (MGal)	Cold Milling Asphalt Concrete (SqYd)	Remove Asphalt Concrete Pavement (SqYd)	Pipe Culvert Undercut (CuYd)	Base Course (Ton)	Base Course, Salvaged Asphalt Mix (Ton)	Contractor Furnished Borrow Excavation (CuYd)	Asphalt Concrete Blade Laid (Ton)	Class Q3R Hot Mixed Asphalt Concrete (Ton)	PG 58-34 Asphalt Binder (Ton)	Hydrated Lime (Ton)	SS-1h or CSS-1h Asphalt For Tack (Ton)	SS-1h or CSS-1h Asphalt For Flush Seal (Ton)	Sand For Flush Seal (Ton)
Asphalt to ROW														
1 Intersecting Road Entrance Station 7+90 Rt	-	313	-	-	-	-	-	-	35.0	1.6	0.3	0.1	-	-
Base Course														
3 Farm & Field Entrances	0.4	-	-	-	45.0	-	-	-	-	-	-	-	-	-
Spot Leveling, Strengthening, & Repair														
Median Shoulder Build-up Thru Divided Section	0.3	-	-	-	-	32.3	4	-	115.1	5.4	1.2	1.0	-	-
Shallow Pipe Installation (Station 7+35)														
Asphalt Concrete Blade Laid	-	152	-	-	-	-	-	172.7	-	13.0	1.7	6.2	-	-
** Transition fm Typical Section 1 to End Project														
SBL: Station 26+49.2 to Station 34+29.2 NBL: Station 97+70.9 to Station 105+50.9	-	5,287	-	-	-	-	-	-	586.8	27.6	5.9	1.3	1.1	21.1
** Ramp A (US12 onto US83 - approx. 700 feet)														
Ramp A	-	2,492	-	-	-	-	-	-	270.4	12.6	2.7	0.6	0.6	5.6
** Ramp B (US83 onto US12 - approx. 420 feet)														
Ramp B	-	1,495	-	-	-	-	-	-	162.3	7.6	1.6	0.4	0.3	3.4
Backfill for Digouts														
Backfill	1.1	-	-	-	115.1	-	-	-	-	-	-	-	-	-
TOTALS =	3.1	9,739	168.0	12	298.1	32.3	20	172.7	1,216.4	70.0	13.9	9.7	2.0	30.1

** Shall be to a Specified Density Compaction Effort.

Tonnage shown in the tables above for Class Q3R Hot Mixed Asphalt Concrete is based on a compacted depth as detailed in the plans.

The quantities above are included in the Material Quantities table in the "Table of Material Quantities" sheet.

SUMMARY OF ASPHALT CONCRETE

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	31	70

NH 0012(190)212 ~ PCN 04W9 ~ US HWY 12	Class Q3R Hot Mixed Asphalt Concrete With Specified Density Compaction (Ton)	Class Q3R Hot Mixed Asphalt Concrete Without Specified Density Compaction (Ton)
Section 1		
24' Finished Roadway Width	25,348.3	-
6' Shoulders w/2.2' Bevel	-	14,942.7
Section 1 Totals =	25,348.3	14,942.7
Section 2		
24' Finished Roadway Width	3,080.6	-
3' Median Shoulders w/Safety Edge	-	1,312.2
6' Shoulders w/2.2' Bevel		
Section 2 Totals =	3,080.6	1,312.2
Section 3		
24' Finished Roadway Width	1,811.7	-
4' Shoulders w/2.2' Bevel	-	770.2
Section 3 Totals =	1,811.7	770.2
Section 4		
36' Finished Roadway Width (w/2.7' Bevel) w/Center Turn Lane	381.1	-
4' Shoulders w/2' Bevel	-	107.0
Section 4 Totals =	381.1	107.0
Section 5		
24' Finished Roadway Width	4,474.5	-
3' Median Shoulders w/1.5' Bevel	-	1,538.5
4' Shoulders w/2.2' Bevel		
Section 5 Totals =	4,474.5	1,538.5
Subtotals =	35,096.2	18,670.6
Table of Additional Quantities Totals =	4,776.3	3,561.0
TOTALS =	39,872.5	22,231.6

NH 0083(83)205 ~ PCN 053U ~ US HWY 83	Class Q3R Hot Mixed Asphalt Concrete With Specified Density Compaction (Ton)	Class Q3R Hot Mixed Asphalt Concrete Without Specified Density Compaction (Ton)
Section 1		
24' Finished Roadway Width	1,568.0	-
3' Median Shoulders w/1.5' Bevel	-	652.6
6' Shoulders w/1' Bevel		
Section 1 Totals =	1,568.0	652.6
Table of Additional Quantities Totals =	1,019.5	196.9
TOTALS =	2,587.5	849.5

TABLE OF MAINLINE PIPE AND EROSION REPAIR

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	32	70

Stationing →			20+00	38+00	49+00	55+00	58+00	75+50	59+91	87+76	106+38	126+45 (2nd)	147+46 (2nd)	158+28 (2nd)	PROJECT TOTALS	Subtotal										
MRM →			213.00+0.003	213.00+0.346	213.43+0.134 (012 E/W)	213.43+0.258 (012 E/W)	213.43+0.293 (012 E/W)	214.10+0.012 (012 E/W)	215.00+0.077	215.00+0.608	215.00+0.958	216.00+0.343	216.00+0.738	216.00+0.946												
Structure Type →			7'x7' RCBC (87.5')	42" RCP (108')	7'x6' RCBC (112')	18" RCP (46')	Triple 42" RCP (108')	18" RCP (78')	30" RCP (70')	48" RCP (52')	24" RCP (58')	18"x24" RCPA (56')	24" RCP (58')	24" RCP (68')												
End Treatment →			Sloped	Flared	Sloped	Flared	Flared	Flared	Flared	Flared	Flared	Flared	Flared	Flared												
NH 0012(190)212 PCN 04W9 US HWY 12			no work	remove/reset end sections & install tie bolts for all reset sections	no work	Eastbound Lane Only -- remove/replace end sections, install tie bolts for all reset sections, & reprofile ditch	remove/reset all end sections with exception to remove/replace middle end section on left & install tie bolts for all reset sections	Eastbound Lane Only -- remove/replace right (median) end section, remove/reset left end section, & install tie bolts for all reset sections	remove/reset end sections along w/ 1st interior section on left & install tie bolts for all reset sections	remove/reset end sections & install tie bolts for reset sections	no work	no work	remove/reset left end section & install tie bolts for reset sections	no work												
Bid Item	Bid Item Description	Unit	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt		
110E7500	Remove Pipe for Reset	(Ft)	66	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	6
110E0510	Remove Pipe End Section	(Each)	6	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	4
110E7510	Remove Pipe End Section for Reset	(Each)	43	-	-	1	1	-	-	-	-	2	3	1	-	1	1	1	1	-	-	-	-	1	-	13
120E4100	Reprofiling Ditch	(Sta)	4.0	-	-	-	-	-	-	1.0	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0
450E2008	18" RCP Flared End, Furnish	(Each)	4	-	-	-	-	-	-	1	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	3
450E2009	18" RCP Flared End, Install	(Each)	4	-	-	-	-	-	-	1	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	3
450E2032	42" RCP Flared End, Furnish	(Each)	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
450E3033	42" RCP Flared End, Install	(Each)	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
450E8900	Cleanout Pipe Culvert	(Each)	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450E9000	Reset Pipe	(Ft)	66	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	6
450E9001	Reset Pipe End Section	(Each)	43	-	-	1	1	-	-	-	-	2	3	1	-	1	1	1	1	-	-	-	-	1	-	13

TABLE OF MAINLINE PIPE AND EROSION REPAIR

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	33	70

	Stationing	159+35 (2nd)	180+73 (2nd)	191+43 (2nd)	209+74 (2nd)	226+00 (2nd)	263+74 (2nd)	270+61 (2nd)	286+54 (2nd)	334+11 (2nd)	371+11 (2nd)	362+21 (2nd)											
	MRM	216.00+0.965	217.00+0.371	217.00+0.577	217.00+0.923	218.00+0.233	218.00+0.948	219.00+0.082	219.00+0.383	220.00+0.293	220.00+0.998	220.00+0.827											
	Structure Type	30" RCP (68')	24" RCP (88')	24" RCP (80')	18" RCP (74')	18" RCP (?)	24" RCP (62')	18" RCP (82')	24" RCP (72')	24" RCP (98')	24" RCP (94')	4'x6' Precast Cattle Pass (62')											
	End Treatment	Flared	Flared	Flared	Flared	Flared	Flared	Flared	Flared	Flared	Flared	Flared											
NH 0012(190)212 PCN 04W9 US HWY 12		remove/reset right end section along w/1st interior section & install tie bolts for all reset sections	remove/reset end sections & install tie bolts for reset sections	remove/reset right end section along w/1st interior section & install tie bolts for all reset sections	remove/reset end sections & install tie bolts for reset sections	remove/reset right end section & install tie bolts for reset section	no work	no work	no work	no work	remove/reset right end section & install tie bolts for reset section	remove/reset end sections & foam/chemically grout/install tie bolts for ALL joints (refer to plan notes)											
Bid Item	Bid Item Description	Unit	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Subtotal
110E7500	Remove Pipe for Reset	(Ft)	-	6	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
110E0510	Remove Pipe End Section	(Each)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
110E7510	Remove Pipe End Section for Reset	(Each)	-	1	1	1	-	1	1	1	-	1	-	-	-	-	-	-	-	1	1	1	10
120E4100	Reprofiling Ditch	(Sta)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450E2008	18" RCP Flared End, Furnish	(Each)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450E2009	18" RCP Flared End, Install	(Each)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450E2032	42" RCP Flared End, Furnish	(Each)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450E3033	42" RCP Flared End, Install	(Each)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450E8900	Cleanout Pipe Culvert	(Each)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450E9000	Reset Pipe	(Ft)	-	6	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
450E9001	Reset Pipe End Section	(Each)	-	1	1	1	-	1	1	1	-	1	-	-	-	-	-	-	-	1	1	1	10

TABLE OF MAINLINE PIPE AND EROSION REPAIR

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	35	70

	Stationing	572+72 (2nd)	585+54 (2nd)	606+01 (2nd)	616+82 (2nd)	634+12 (2nd)	674+00 (2nd)	688+35 (2nd)	699+01 (2nd)	724+16 (2nd)	752+65 (2nd)	786+09 (2nd)	802+50 (2nd)												
MRM		224.00+0.818	225.00+0.039	225.00+0.447	225.00+0.649	225.00+0.978	226.06+0.714	227.00+0.011	227.00+0.207	227.00+0.688	228.00+0.226	228.00+0.857	229.00+0.169												
Structure Type		24" RCP (78')	30" RCP (70')	24" RCP (102')	18" RCP (82')	Twin 36" RCP (76')	24" RCP (60')	18" RCP (62')	4'x6' Precast Cattle Pass (43')	48" RCPA (52')	54" x 88" RCPA	30" RCP (82')	4'x6' Precast Cattle Pass (50')												
End Treatment		Flared	Flared	Flared	Flared	Flared	Flared	Flared	Flared	Flared	Flared	Flared	Flared												
NH 0012(190)212 PCN 04W9 US HWY 12		no work	no work	no work	no work	West Pipe -- remove/reset end sections along w/2 interior sections on right & left East Pipe -- remove/reset end sections along w/2 interior sections on right & 1 interior section on left -- install tie bolts for all reset sections	remove/reset end sections, install tie bolts for end sections	remove/reset end sections, install tie bolts for end sections	remove/reset end sections & foam/chemically grout/install tie bolts for ALL joints (refer to plan notes), cleanout sediment throughout cattle pass, & reprofile fm approach pipe to cattle pass opening	remove/reset end sections, remove/reset 1 interior section, install tie bolts for all reset sections	remove/reset end sections & foam/chemically grout/install tie bolts for ALL joints (refer to plan notes)	no work	remove/reset end sections & foam/chemically grout/install tie bolts for ALL joints (refer to plan notes)												
Bid Item	Bid Item Description	Unit	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Subtotal
110E7500	Remove Pipe for Reset	(Ft)	-	-	-	-	-	-	-	-	18	24	-	-	-	-	6	-	-	-	-	-	-	-	48
110E0510	Remove Pipe End Section	(Each)	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
110E7510	Remove Pipe End Section for Reset	(Each)	-	-	-	-	-	-	-	2	2	1	1	1	1	1	1	1	1	1	1	1	-	-	16
120E4100	Reprofiling Ditch	(Sta)	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0	-	-	-	-	-	-	-	-	2.0
450E2008	18" RCP Flared End, Furnish	(Each)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450E2009	18" RCP Flared End, Install	(Each)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450E2032	42" RCP Flared End, Furnish	(Each)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450E3033	42" RCP Flared End, Install	(Each)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450E8900	Cleanout Pipe Culvert	(Each)	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
450E9000	Reset Pipe	(Ft)	-	-	-	-	-	-	-	18	24	-	-	-	-	-	6	-	-	-	-	-	-	-	48
450E9001	Reset Pipe End Section	(Each)	-	-	-	-	-	-	-	2	2	1	1	1	1	1	1	1	1	1	1	1	-	-	16

SIGN TABULATION

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	38	70

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R11-2	ROAD CLOSED	2	48" x 30"	10	20
W3-4	BE PREPARED TO STOP	4	48" x 48"	16	64
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16	32
W7-3aP	NEXT ___ MILES (plaque)	2	36" x 30"	8	16
W8-1	BUMP	3	48" x 48"	16	48
W8-6	TRUCK CROSSING	2	48" x 48"	16	32
W8-11	UNEVEN LANES	4	48" x 48"	16	64
W16-2P	___ FEET (supplemental distance plaque)	4	30" x 24"	5	20
W20-1	ROAD WORK AHEAD	10	48" x 48"	16	160
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16	64
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16	32
W20-7	FLAGGER (symbol)	4	48" x 48"	16	64
W21-5	SHOULDER WORK	4	48" x 48"	16	64
W21-5a	LEFT or RIGHT SHOULDER CLOSED	2	48" x 48"	16	32
W21-5b	LEFT or RIGHT SHOULDER CLOSED AHEAD	2	48" x 48"	16	32
G20-1	ROAD WORK NEXT ___ MILES	5	36" x 18"	5	25
G20-2	END ROAD WORK	12	36" x 18"	5	60
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			829

TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Single Sided	4 Each

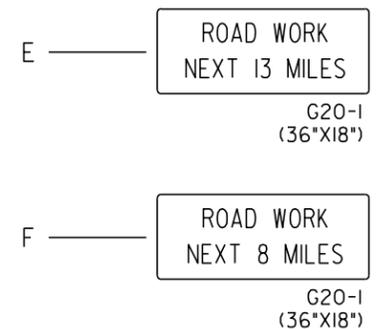
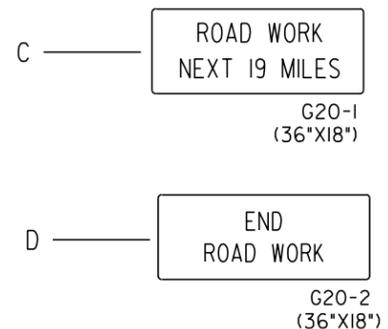
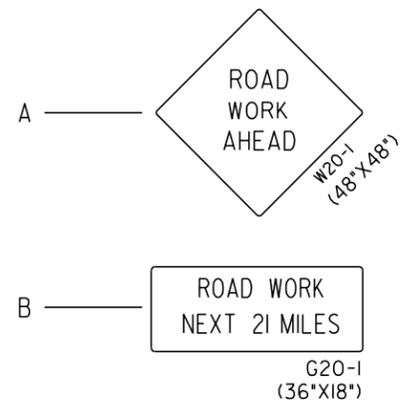
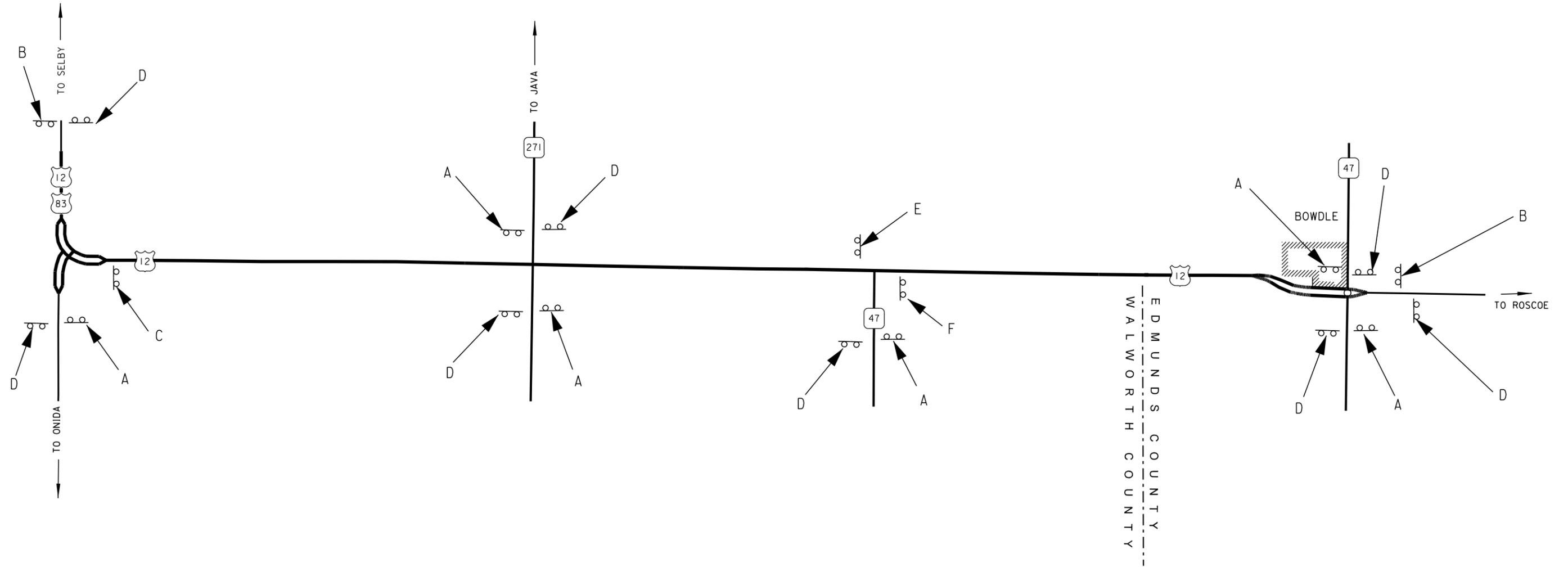
ARROW BOARDS

ITEM DESCRIPTION	QUANTITY
Type C Arrow Board	1 Each

SUMMARY OF TRAFFIC CONTROL (FOR INFORMATION ONLY)			
	Fixed Signs	Standard Plates	Total
Traffic Control	(Sq Ft)	(Sq Ft)	(Sq Ft)
US12	140	590	730
US83	21	78	99
	Project Total=		829

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(190)212 & NH 0083(83)205	39	70

FIXED LOCATION SIGN LAYOUT



Notes:
 Sign locations will be verified in the field by the Engineer prior to installation.
 Fixed location signs to remain in place until the completion of permanent pavement markings.

PAINT & COLD APPLIED PLASTIC MARKINGS TABULATION

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	40	70

FURNISHING AND APPLYING PAVEMENT MARKING PAINT

1. Approximate paint application rates shall be as follows:

DIVIDED ROADWAY (Rates for one line)	UNDIVIDED ROADWAY	
	Four Lane Roadway (Rates for one line)	Two Lane Roadway
Solid Yellow Edgeline Rate = 16.90 Gals./Pass-Mile	Solid Yellow Centerline Rate = 16.90 Gals./Pass-Mile	Yellow Centerline (Includes No Passing Zones) Rate = 12± Gals./Pass-Mile
Dashed White Centerline Rate = 4.60 Gals./Pass-Mile	Dashed White Lane Line Rate = 4.60 Gals./Pass-Mile	Solid White Edgeline (Rate for one line) Rate = 16.90 Gals./Pass-Mile
Solid White Edgeline Rate = 16.90 Gals./Pass-Mile	Solid White Edgeline (Not applicable in curb & gutter section) Rate = 16.90 Gals./Pass-Mile	

2. Typical pavement marking as shown on the following sheet shall be applied throughout the entire length of applicable sections of roadway.

3. Exact location of NO PASSING ZONE lines will be determined in the field by the Engineer. A dash of white paint will mark the beginning and end of all no passing zones. NO PASSING ZONE signs and the ending post in fence lines, if present, shall not be used as the beginning and ending of NO PASSING ZONE lines.

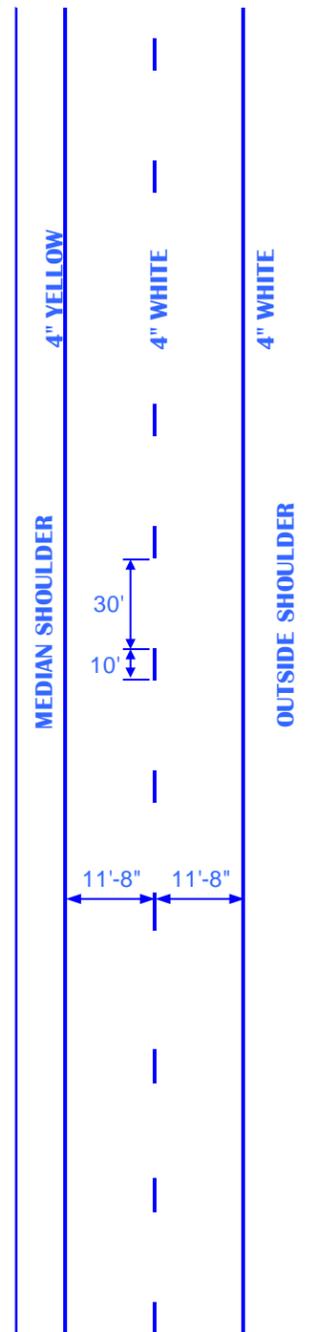
4. Traffic Control shall be incidental to the cost of application. The striper and advance or trailing warning vehicle shall be equipped with flashing amber lights or advance warning arrow panel.

ESTIMATED QUANTITIES	
PAVEMENT MARKING PAINT	QUANTITY
WHITE	479 GALLONS
YELLOW	174 GALLONS
TOTAL	653 GALLONS

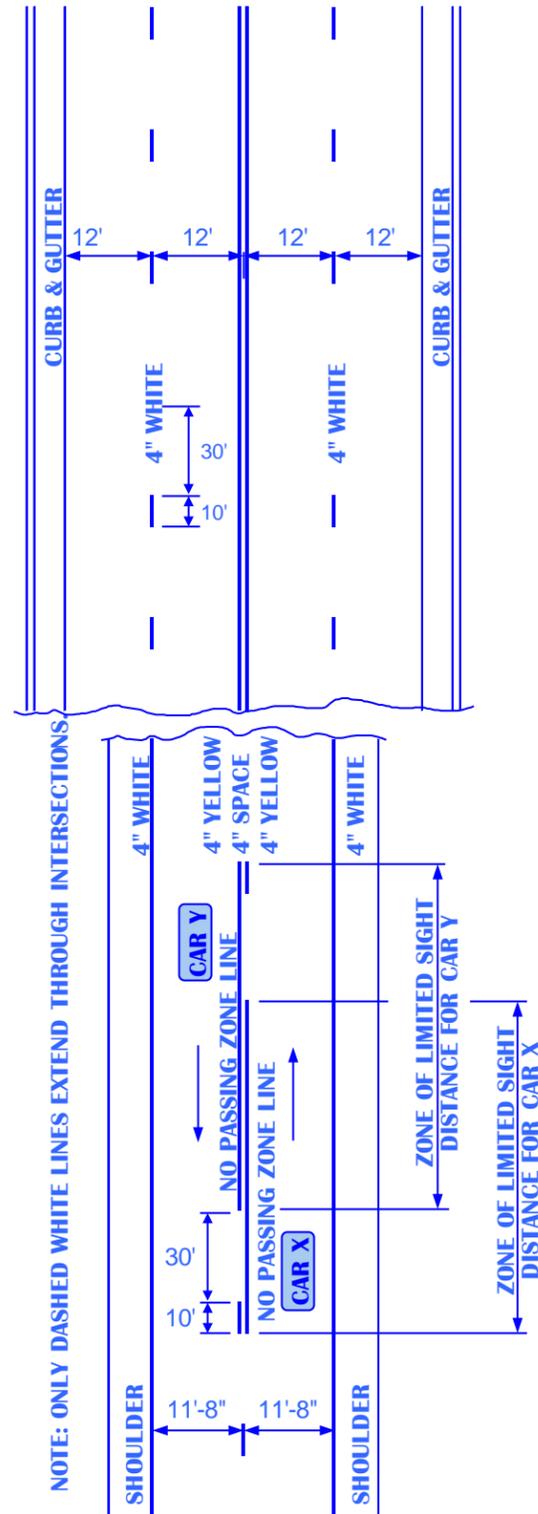
Table of Pavement Marking Quantities
(Cold Applied Plastic)

ITEM	US12/US83S Intersection		US12/SD271 Intersection	US12/SD47 Intersection	Grain Elevator Section	Bowdle Divided Section	Total
	US12	US83					
4" White	14,859	7,420	3,030	2,535	4,728	23,540	56,112
4" Yellow	8,372	4,526	4,160	3,760	5,176	14,994	40,988
8" White	-	2,991	-	-	-	400	3,391
8" Yellow	4,160	1,800	-	-	-	3,220	9,180
24" White	-	12	-	-	-	-	12
24" Yellow	948	273	184	202	120	600	2,327
Left Arrow	2	-	4	2	-	-	8
Right Arrow	2	3	-	-	1	2	8
Total	45,368		7,378	6,499	10,025	42,756	

DIVIDED ROADWAY (ONE DIRECTION SHOWN)



UNDIVIDED ROADWAY



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	41	70

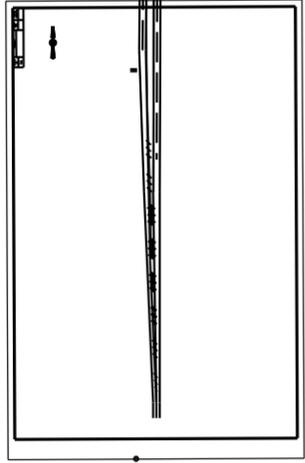
PAVEMENT MARKING LAYOUT OF COLD APPLIED PLASTIC

(US 12 & US 83 JCT.)

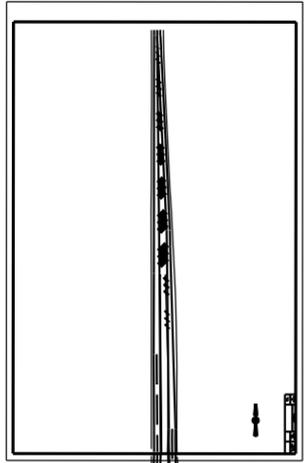
(SHEET LAYOUT)



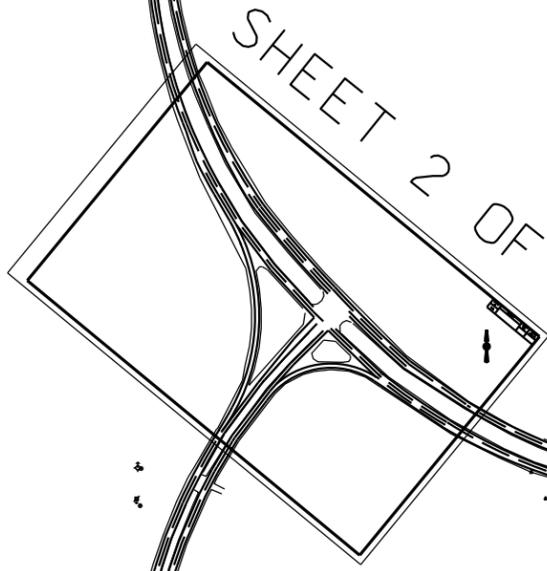
SHEET 4 OF 4



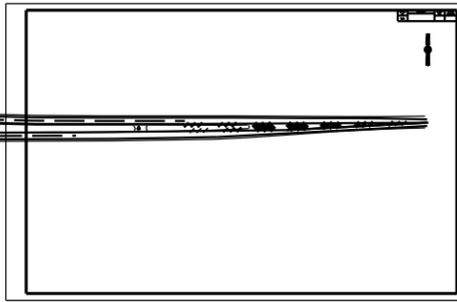
SHEET 1 OF 4



SHEET 2 OF 4



SHEET 3 OF 4

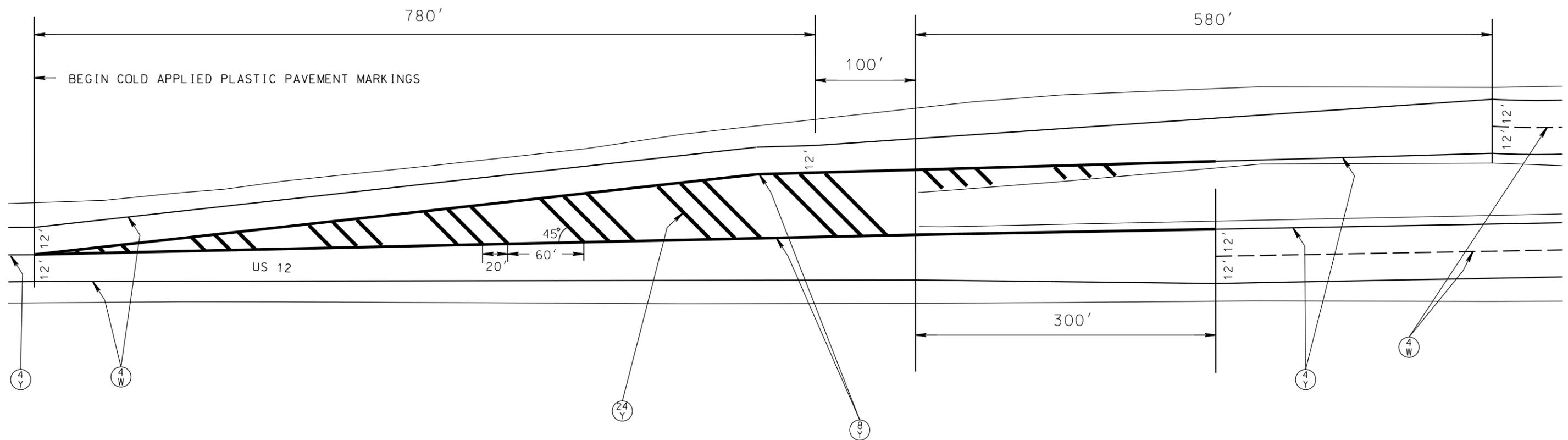


STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	42	70

PAVEMENT MARKING LAYOUT OF COLD APPLIED PLASTIC

(US 12 & US 83 JCT.)

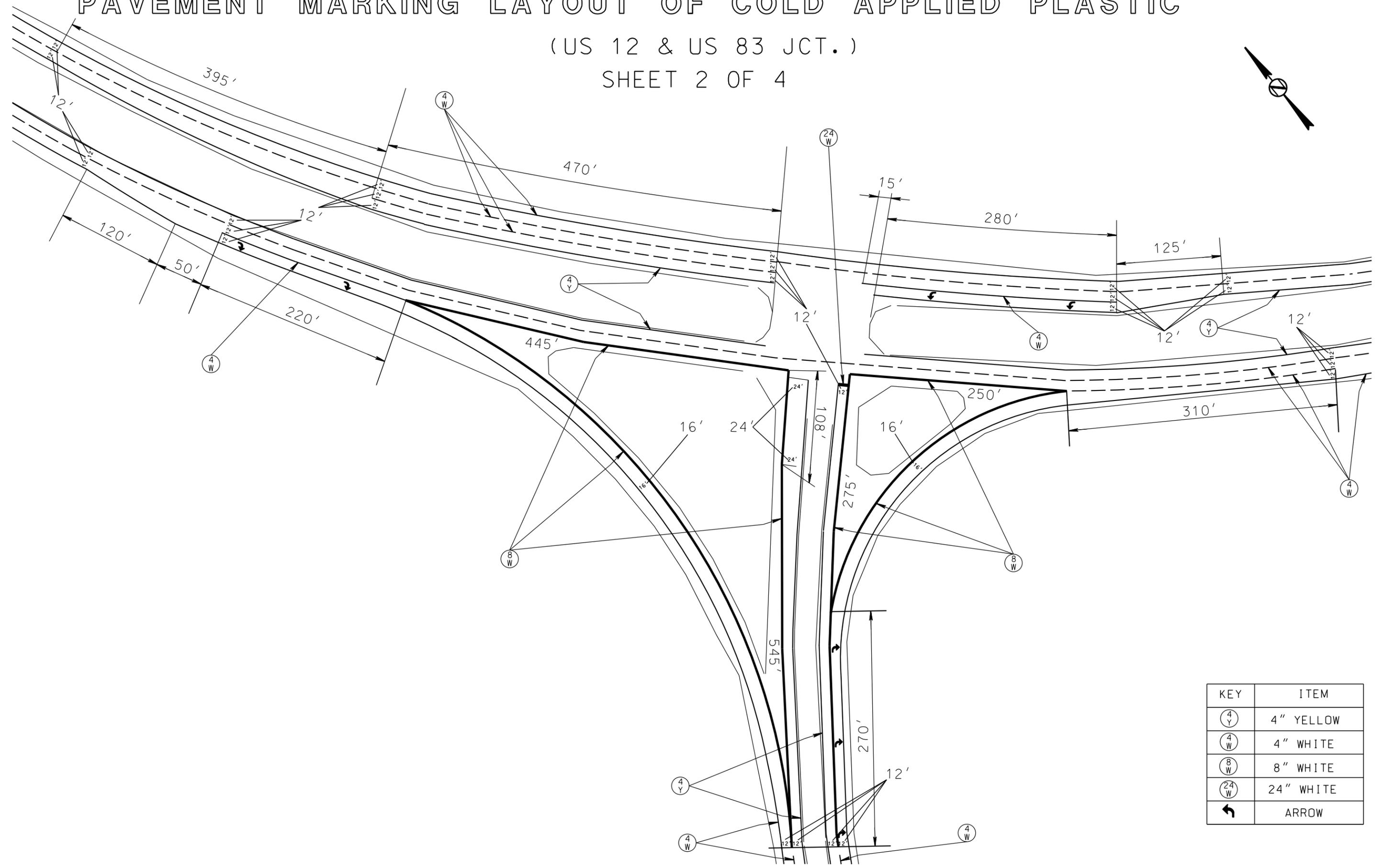
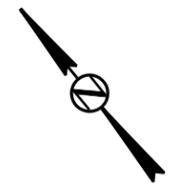
SHEET 1 OF 4



KEY	ITEM
(4 Y)	4" YELLOW
(4 W)	4" WHITE
(8 Y)	8" YELLOW
(24 Y)	24" YELLOW

PAVEMENT MARKING LAYOUT OF COLD APPLIED PLASTIC

(US 12 & US 83 JCT.)
SHEET 2 OF 4



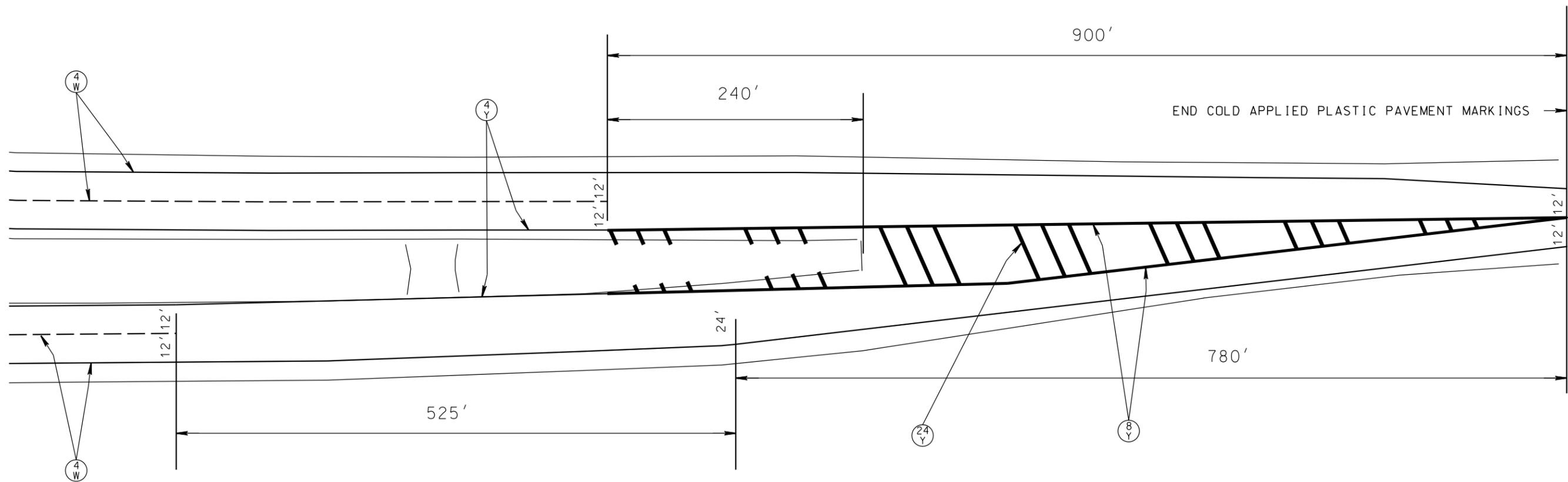
KEY	ITEM
(4 Y)	4" YELLOW
(4 W)	4" WHITE
(8 W)	8" WHITE
(24 W)	24" WHITE
↩	ARROW

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 001211901212 & NH 00831831205	44	70

PAVEMENT MARKING LAYOUT OF COLD APPLIED PLASTIC

(US 12 & US 83 JCT.)

SHEET 3 OF 4



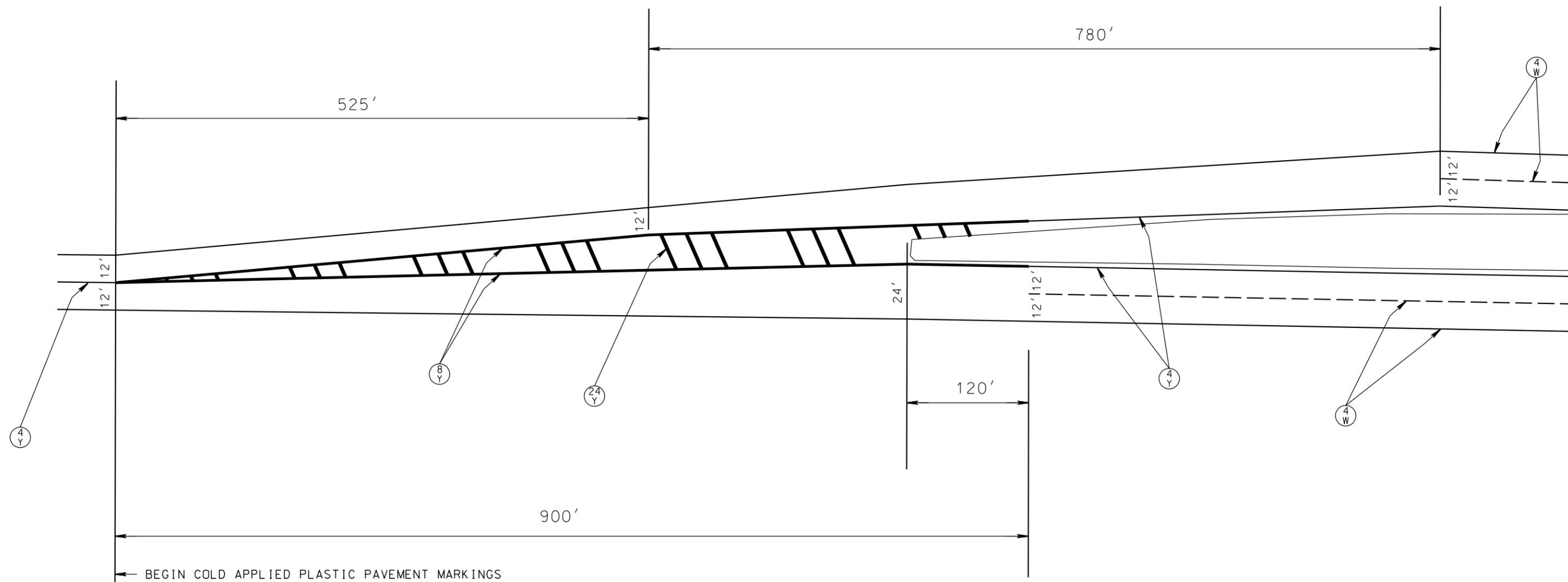
KEY	ITEM
④ Y	4" YELLOW
④ W	4" WHITE
⑧ Y	8" YELLOW
②④ Y	24" YELLOW

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	45	70

PAVEMENT MARKING LAYOUT OF COLD APPLIED PLASTIC

(US 12 & US 83 JCT.)

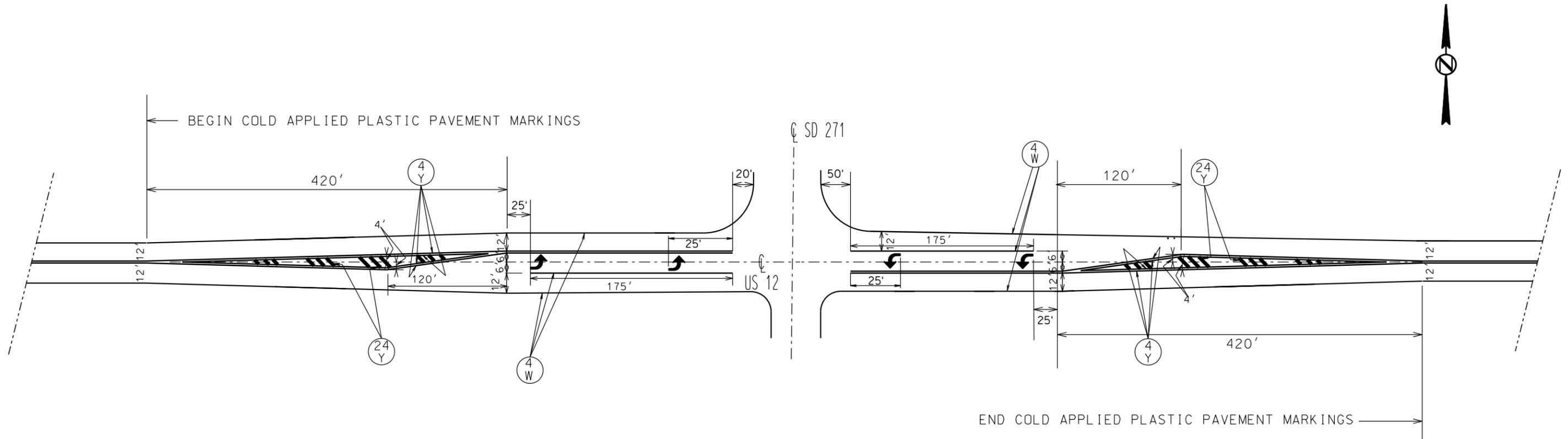
SHEET 4 OF 4



KEY	ITEM
⓪ 4 Y	4" YELLOW
⓪ 4 W	4" WHITE
⓪ 8 Y	8" YELLOW
⓪ 24 Y	24" YELLOW

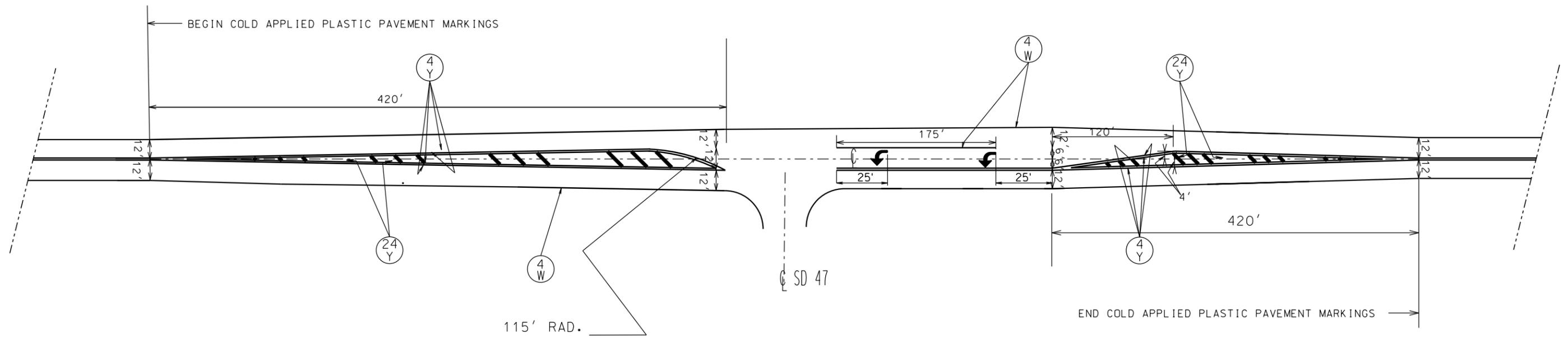
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	46	70

PAVEMENT MARKING LAYOUT OF COLD APPLIED PLASTIC (JCT US 12/SD 271)



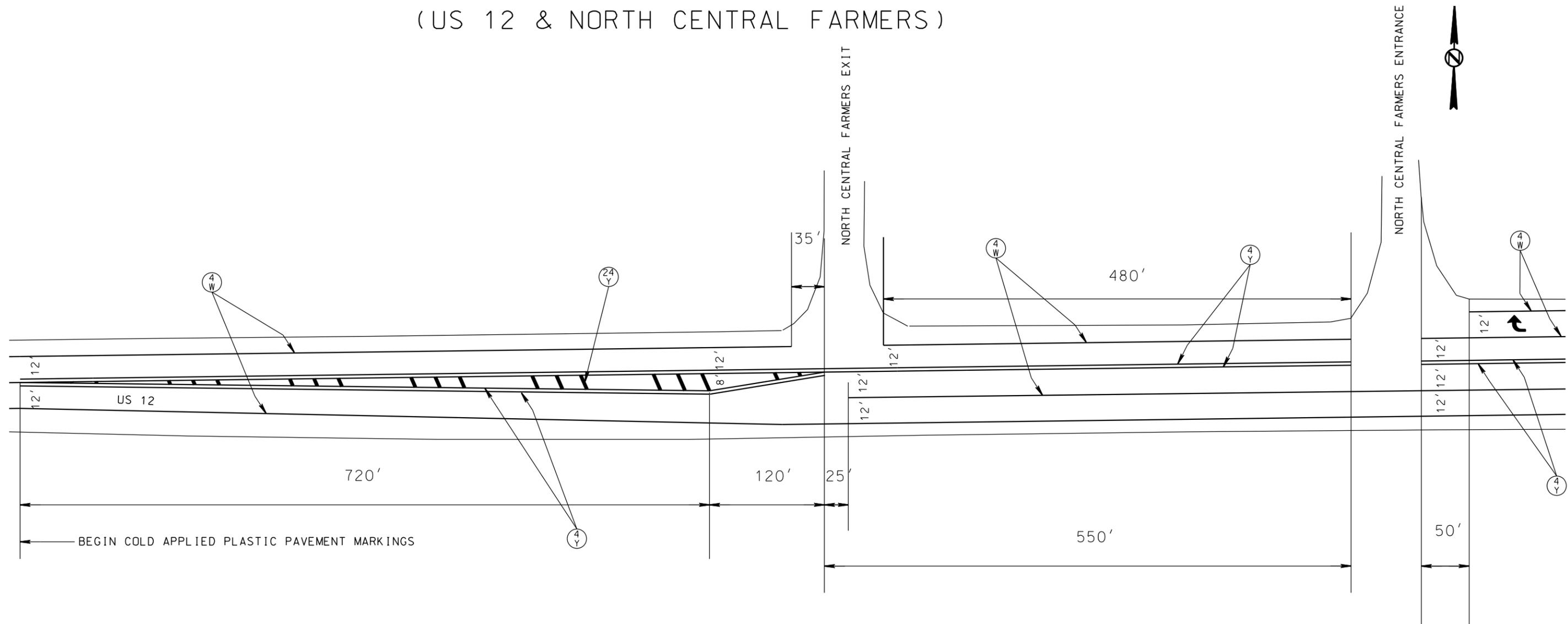
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(190)212 & NH 0083(83)205	47	70

PAVEMENT MARKING LAYOUT OF COLD APPLIED PLASTIC (JCT US 12/SD 47)



PAVEMENT MARKING LAYOUT OF COLD APPLIED PLASTIC

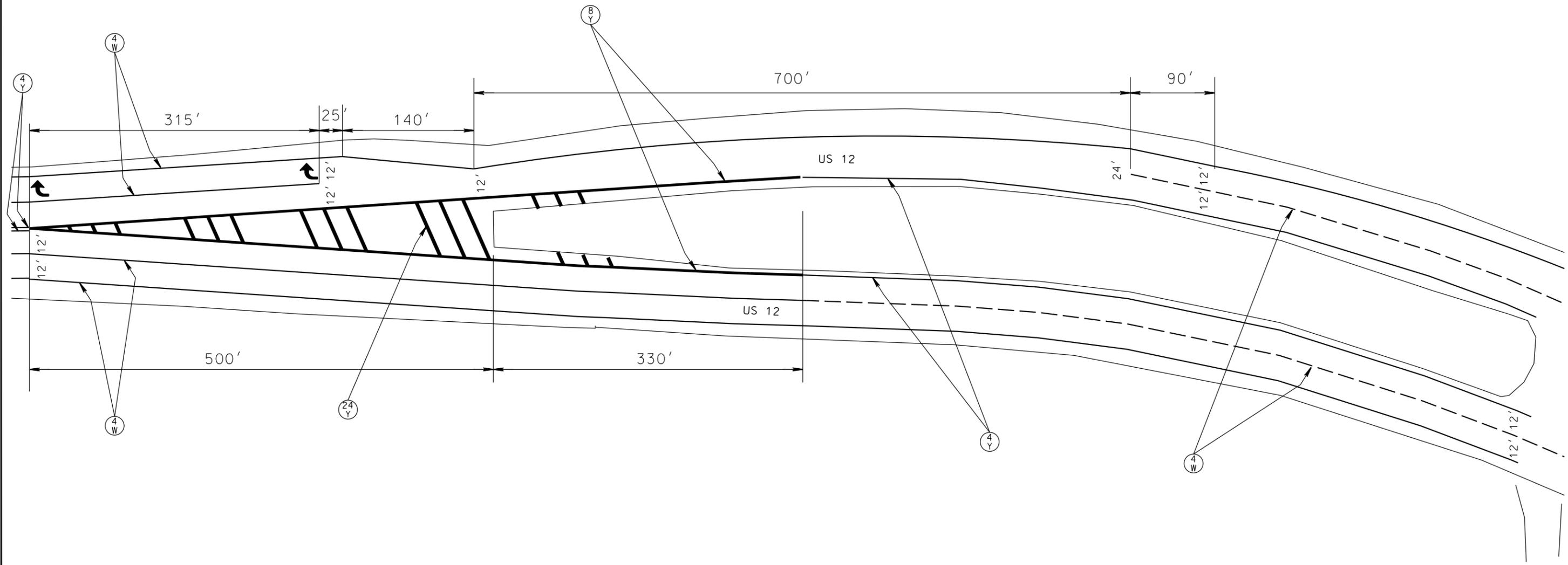
(US 12 & NORTH CENTRAL FARMERS)



KEY	ITEM
(4 Y)	4" YELLOW
(4 W)	4" WHITE
(24 Y)	24" YELLOW
↶	ARROW

PAVEMENT MARKING LAYOUT OF COLD APPLIED PLASTIC

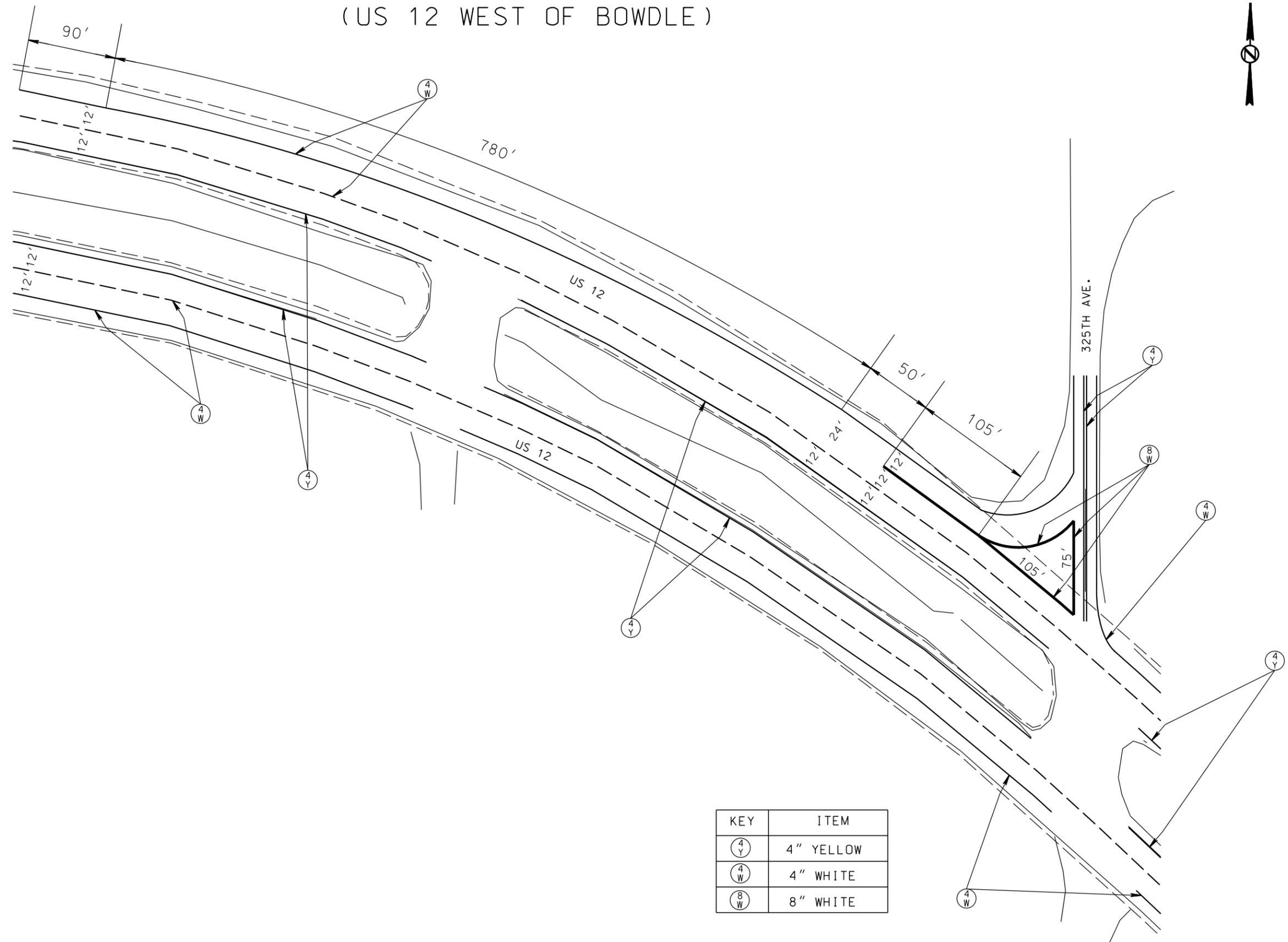
(US 12 WEST OF BOWDLE)



KEY	ITEM
⓪ 4 Y	4" YELLOW
⓪ 4 W	4" WHITE
⓪ 8 Y	8" YELLOW
⓪ 24 Y	24" YELLOW
↻	ARROW

PAVEMENT MARKING LAYOUT OF COLD APPLIED PLASTIC

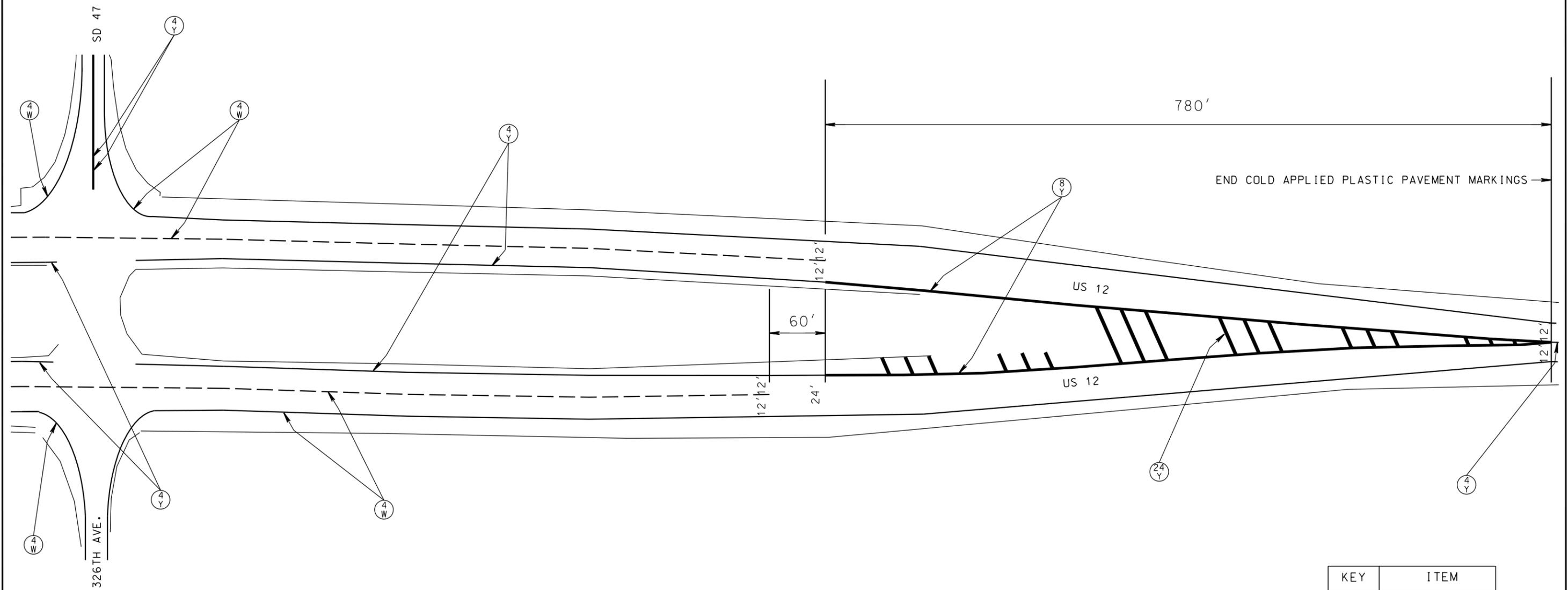
(US 12 WEST OF BOWDLE)



KEY	ITEM
(4Y)	4" YELLOW
(4W)	4" WHITE
(8W)	8" WHITE

PAVEMENT MARKING LAYOUT OF COLD APPLIED PLASTIC

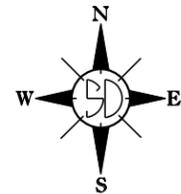
(JCT. US 12 & SD 47)



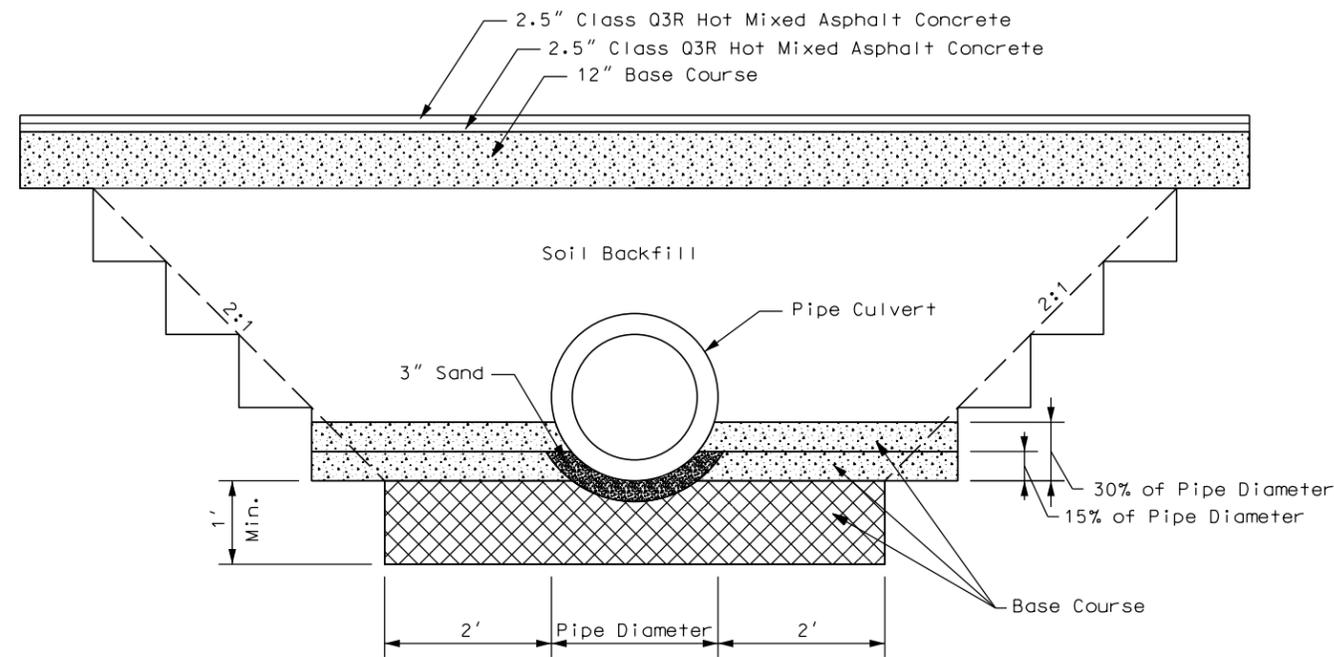
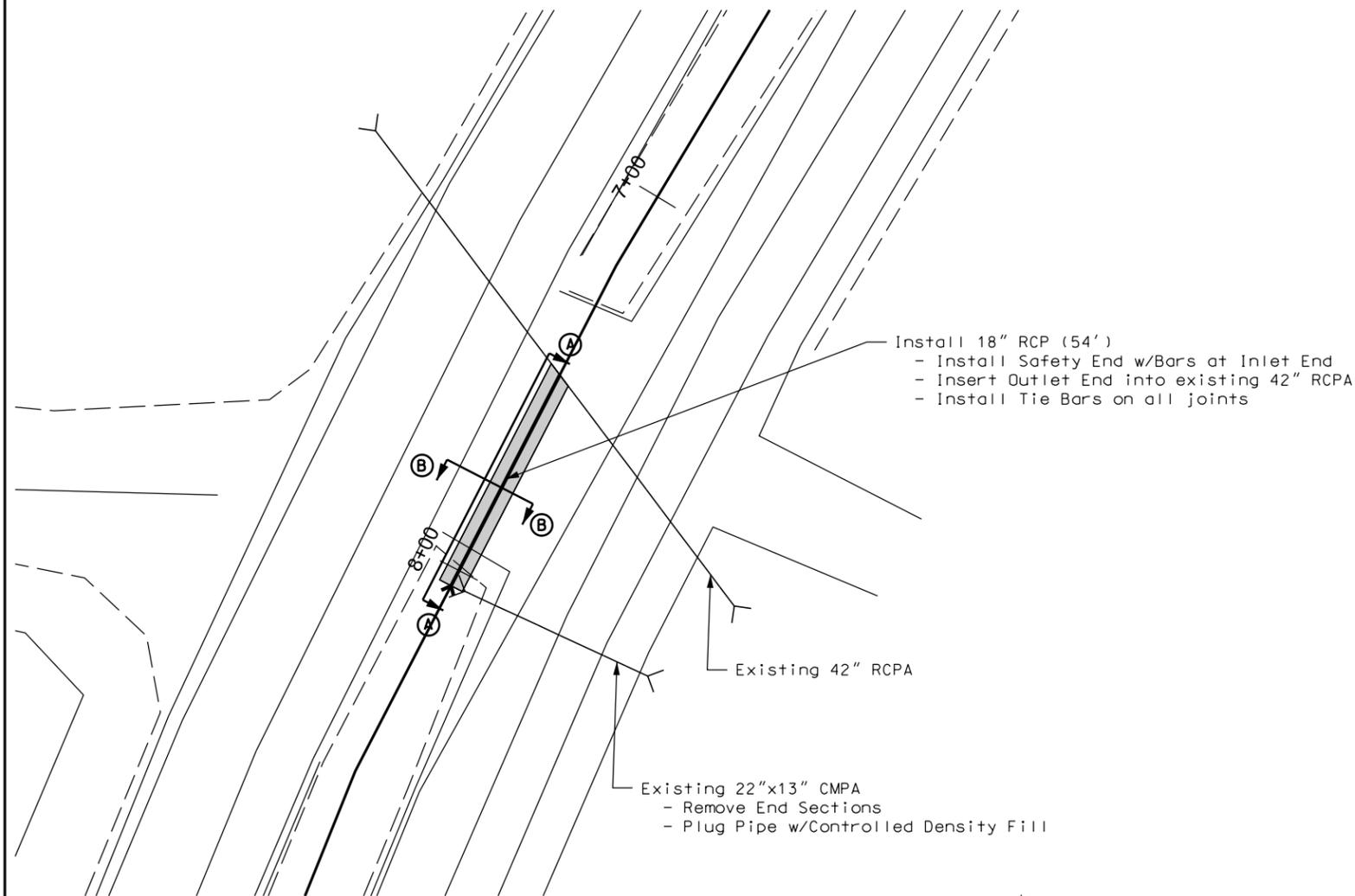
KEY	ITEM
(4 Y)	4" YELLOW
(4 W)	4" WHITE
(8 Y)	8" YELLOW
(24 Y)	24" YELLOW

SHALLOW PIPE INSTALLATION DETAIL

US83 - STATION 7+35



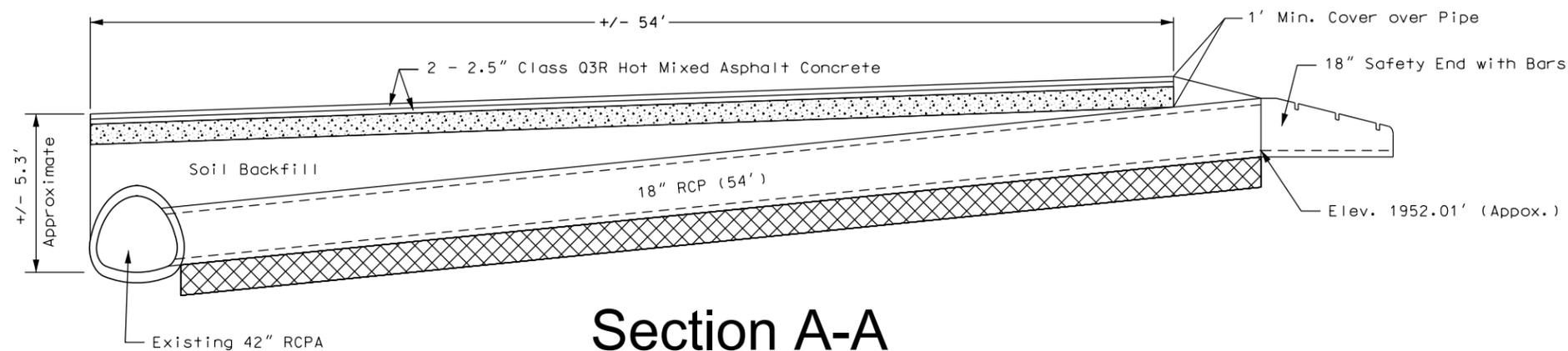
Plan View



Section B-B

LEGEND

- Limits of Work
- Pipe Undercut/Base Course
- Base Course

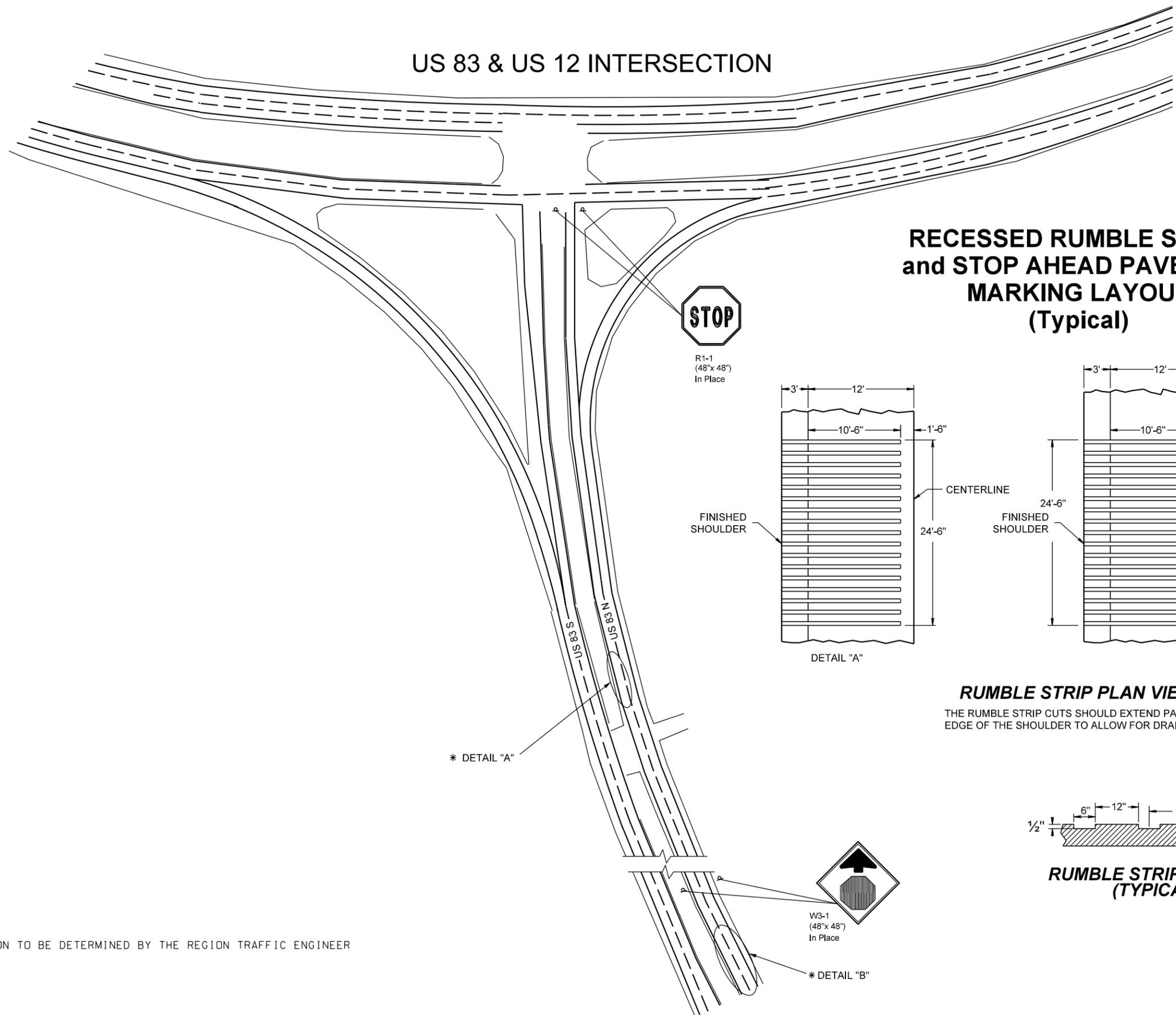


Section A-A

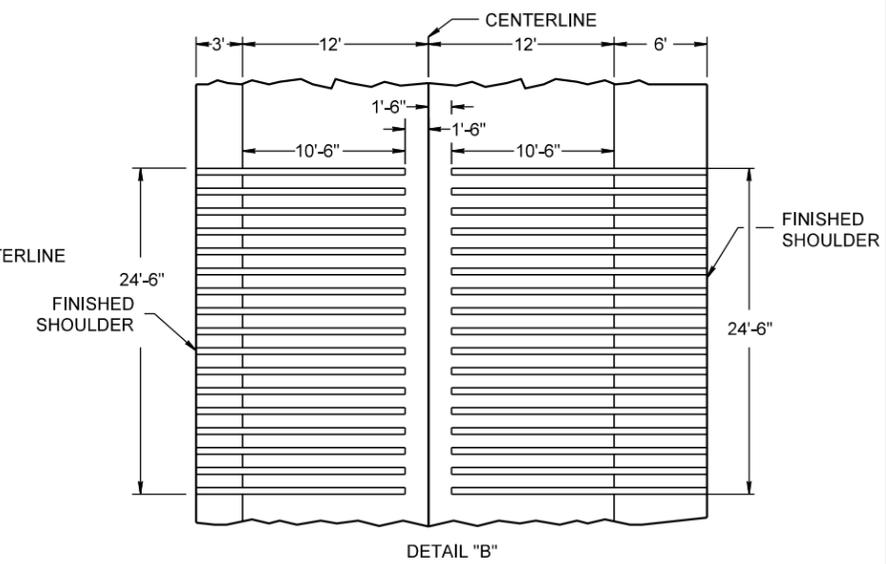
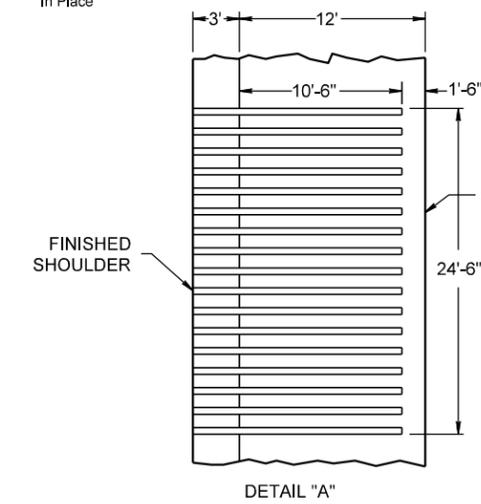
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(190)212 & NH 0083(83)205	53	70

DETAIL FOR IN-LANE RUMBLE STRIPS

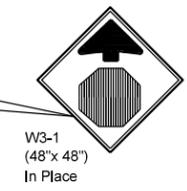
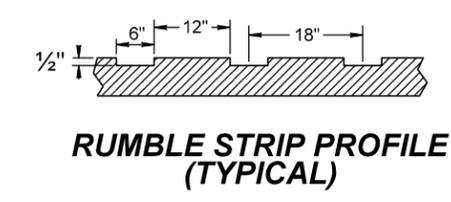
US 83 & US 12 INTERSECTION



RECESSED RUMBLE STRIPS and STOP AHEAD PAVEMENT MARKING LAYOUT (Typical)



RUMBLE STRIP PLAN VIEW
THE RUMBLE STRIP CUTS SHOULD EXTEND PAST THE EDGE OF THE SHOULDER TO ALLOW FOR DRAINAGE.



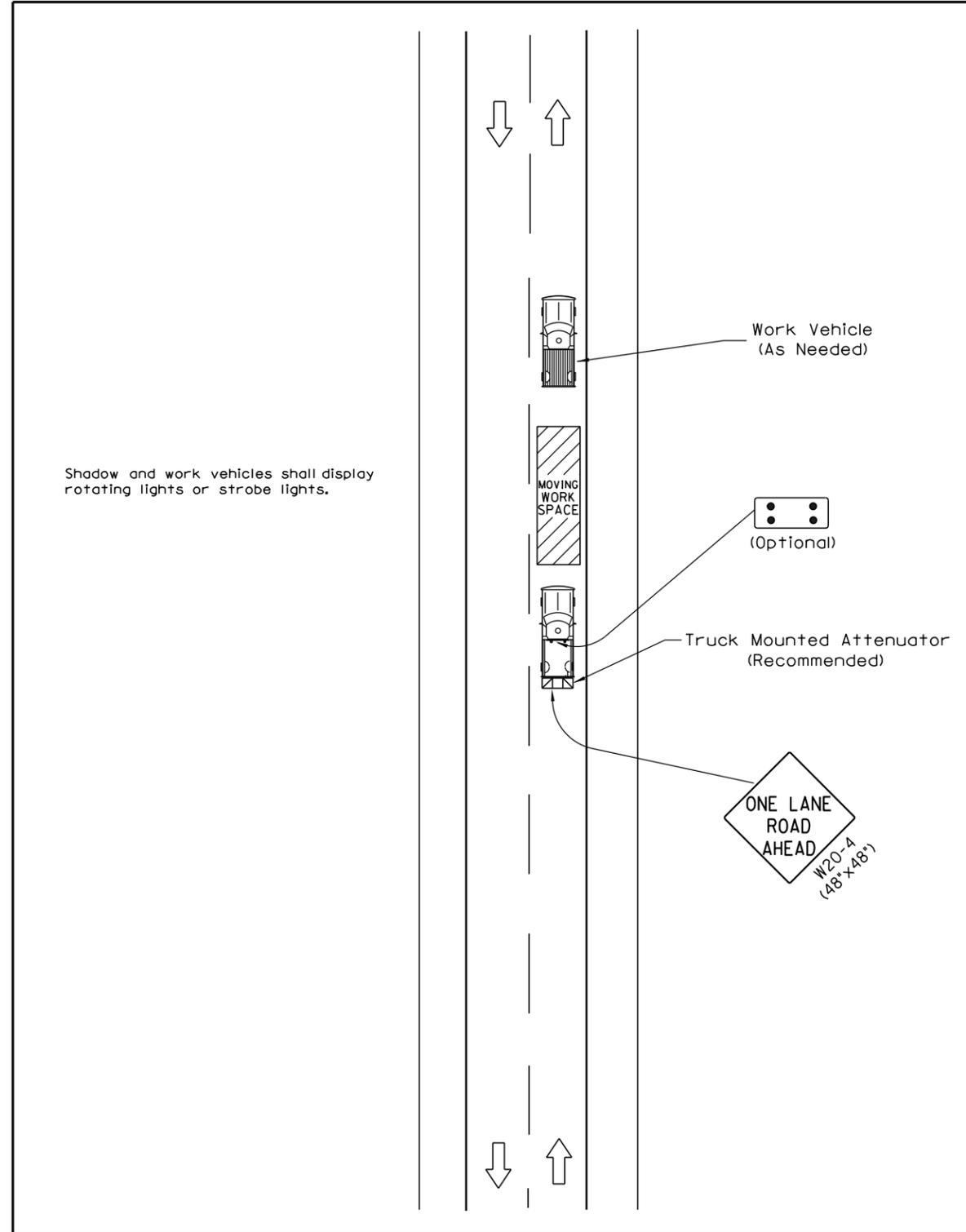
* EXACT LOCATION TO BE DETERMINED BY THE REGION TRAFFIC ENGINEER

* DETAIL "A"

* DETAIL "B"

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(190)212 & NH 0083(83)205	54	70

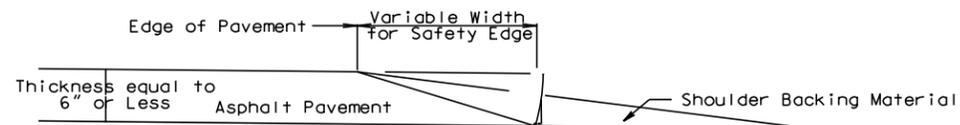
SPECIAL DETAIL FOR MOBILE OPERATION FOR ASPHALT CORING



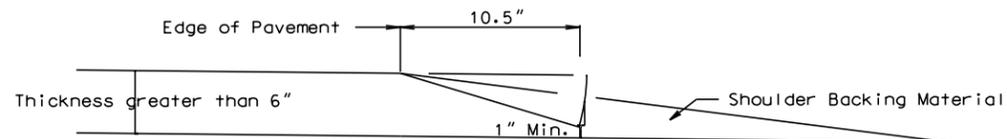
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(190)212 & NH 0083(83)205		

Plotting Date: 11/03/2015

SAFETY EDGE CONFIGURATION FOR ASPHALT PAVEMENTS



Detail 1: Safety Edge Dimension For HMA Pavements (Thickness 6" or Less)



Detail 2: Safety Edge Dimension For HMA Pavements (Thickness greater than 6")

GUIDE SPECIFICATION FOR SAFETY EDGE CONSTRUCTION WITH HOT MIX ASPHALT PAVEMENTS

When specified in the plans an approved longitudinal paver wedge system shall be included to create a sloped safety edge along the outside edge of the asphalt concrete pavement. The wedge system shall be attached to the paver screed and shall compact the hot mixed asphalt pavement (HMA) to a density at least as dense as the compaction imparted to the rest of the HMA by the paving screed.

The system shall provide a sloped Safety Edge equal to 30° plus or minus 5° measured from the extended pavement surface cross slope. The safety edge must be constructed as an integral operation in the paving process and in accordance with the attached Detail.

The use of a single plate strike-off method to construct the safety edge will not be allowed.

The Engineer may allow the Contractor to use handwork for short sections or to saw cut the sloped safety edge after paving operations are complete in areas such as driveways, intersections, and interchanges.

The Contractor shall submit the proposed system for approval by the Engineer at the Preconstruction Meeting. The Engineer may require proof that the system has been used on previous projects with acceptable results or may require a test section to be constructed prior to the beginning of work to demonstrate that it can create an acceptable safety wedge and compaction. Paving shall not begin until the system is approved in writing by the Engineer. The safety edge shall be constructed on each lift of HMA specified in the plans.

The safety edge device shall be attached to the paving machine as recommended by the supplier. The device shall use a spring loaded shoe that constrains the asphalt head, thus increasing the density of the extruded profile. The shoe shall be capable of applying variable pressure to ensure some compaction of the edge during the paving operation. Currently there is a least four manufactures producing equipment that can create a Safety Edge (see list below). The Engineer may permit an approved equal.

Transtech Systems, Inc.
1594 State Street
Schenectady, NY 12304
Phone: 1-800-724-6306 or 1-518-370-5558
www.transtechsys.com

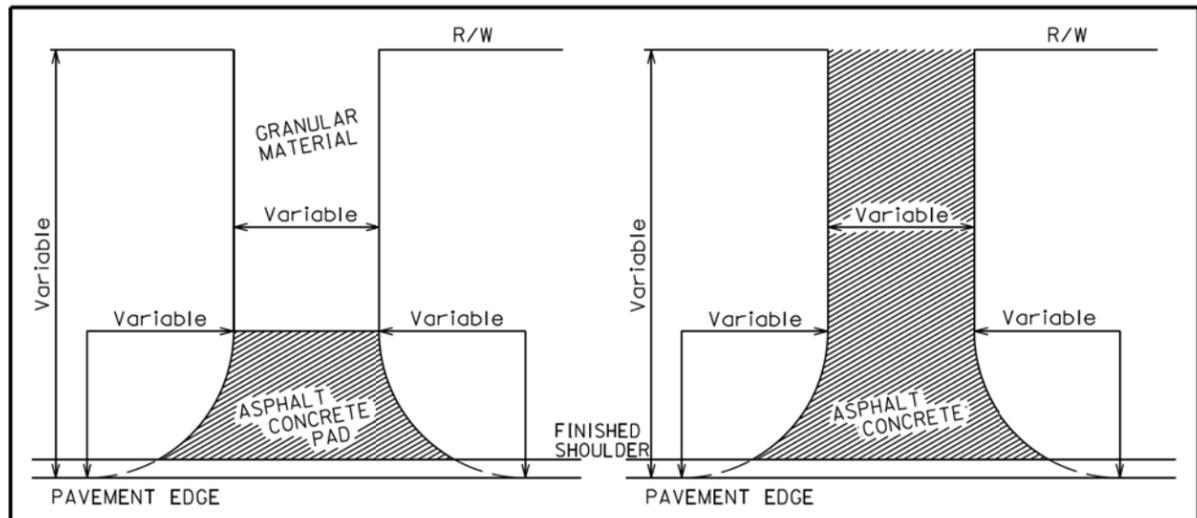
Carlson Paving Products
18425 50th Ave. E
Tacoma WA 98446
Phone: 1-253-278-9426
<http://www.carlsonpavingproducts.com>

Advant-Edge Paving Equipment LLC
1197 Hillside Avenue, Suite B47
Niskayuria, NY 12309
Phone: 1-518-280-6090
www.advantagepaving.com

Troxler Electronic Laboratories, Inc.
3008 E. Cornwallis Rd. • PO Box 12057
Research Triangle Park, NC 27709
Phone: 1-877-876-9537
<http://www.troxlerlabs.com/products/paving.php>

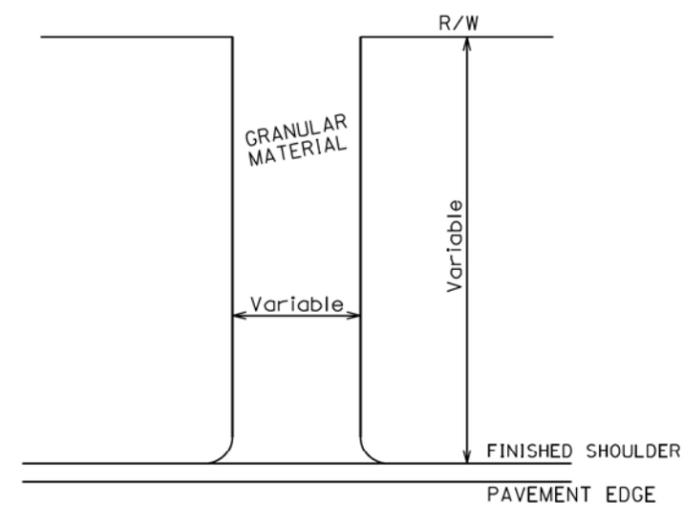
Separate measurement and payment will not be made; all work associated with furnishing and constructing the safety edge shall be incidental to contract unit price per ton for the asphalt being placed.

Plotting Date: 11/03/2015



INTERSECTING ROAD
NO ASPHALT CONCRETE SURFACING
BEYOND R/W

INTERSECTING ROAD
ASPHALT CONCRETE SURFACING
BEYOND R/W



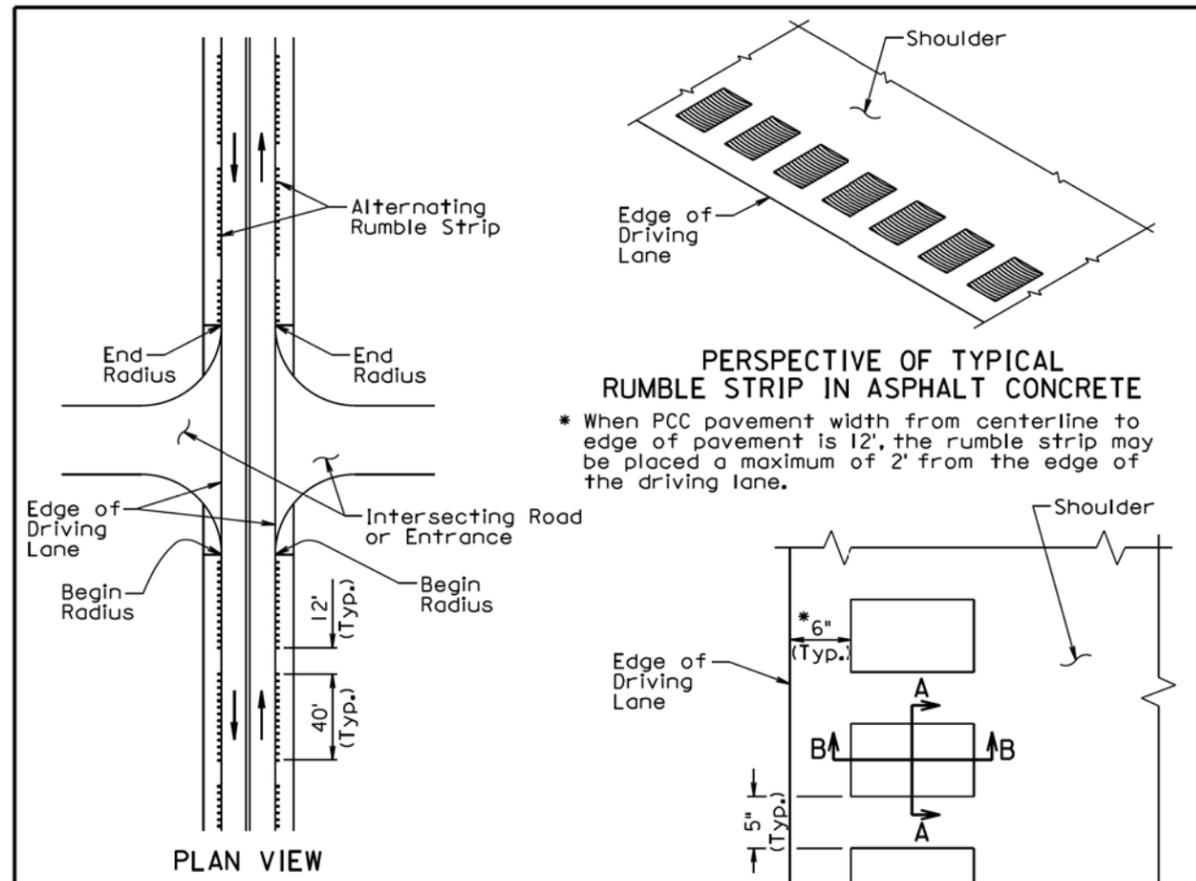
ENTRANCE

The surfacing details shown on this sheet are provided as a guide for surfacing these facilities. The precise construction limits for situations other than the standards shown will be determined by the Engineer, at the time of construction.

ROADWAY WITH SHOULDER

March 31, 2000

S D D O T	RESURFACING OF INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 320.11
	Published Date: 4th Qtr. 2015	Sheet 1 of 1



PERSPECTIVE OF TYPICAL RUMBLE STRIP IN ASPHALT CONCRETE
* When PCC pavement width from centerline to edge of pavement is 12', the rumble strip may be placed a maximum of 2' from the edge of the driving lane.

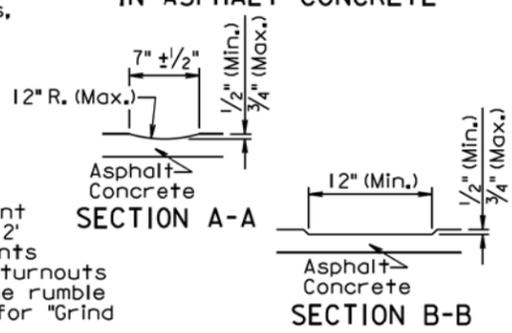
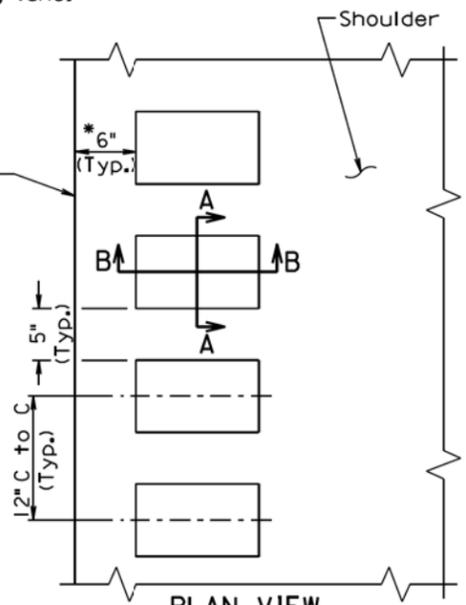
GENERAL NOTES:

A rumble strip shall be constructed on all of the asphalt concrete shoulders by grinding alternating patterns of 40' continuous indentations in the asphalt concrete. The rumble strip shall receive a flush seal with the shoulder flush sealing or asphalt surface treatment.

A rumble strip shall not be constructed through intersecting roads, entrances, and turnouts. The lengths of the 40' segments with continuous indentations and the 12' segments without a rumble strip adjacent to the intersecting roads, entrances, and turnouts shall be adjusted as approved by the Engineer.

Prior to constructing the rumble strip the Contractor shall submit to the Engineer, for approval, the proposed method of constructing the rumble strip.

Measurement of the rumble strip shall be to the nearest 0.1 of a mile for each shoulder. Measurement and payment of the rumble strip shall include the 12' long segments without rumble strips and the segments adjacent to the intersecting roads, entrances, and turnouts without rumble strips. Payment for constructing the rumble strip shall be at the contract unit price per mile for "Grind 12" Rumble Strip or Stripe in Asphalt Concrete".



S D D O T	12" RUMBLE STRIP IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.24
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

June 26, 2011

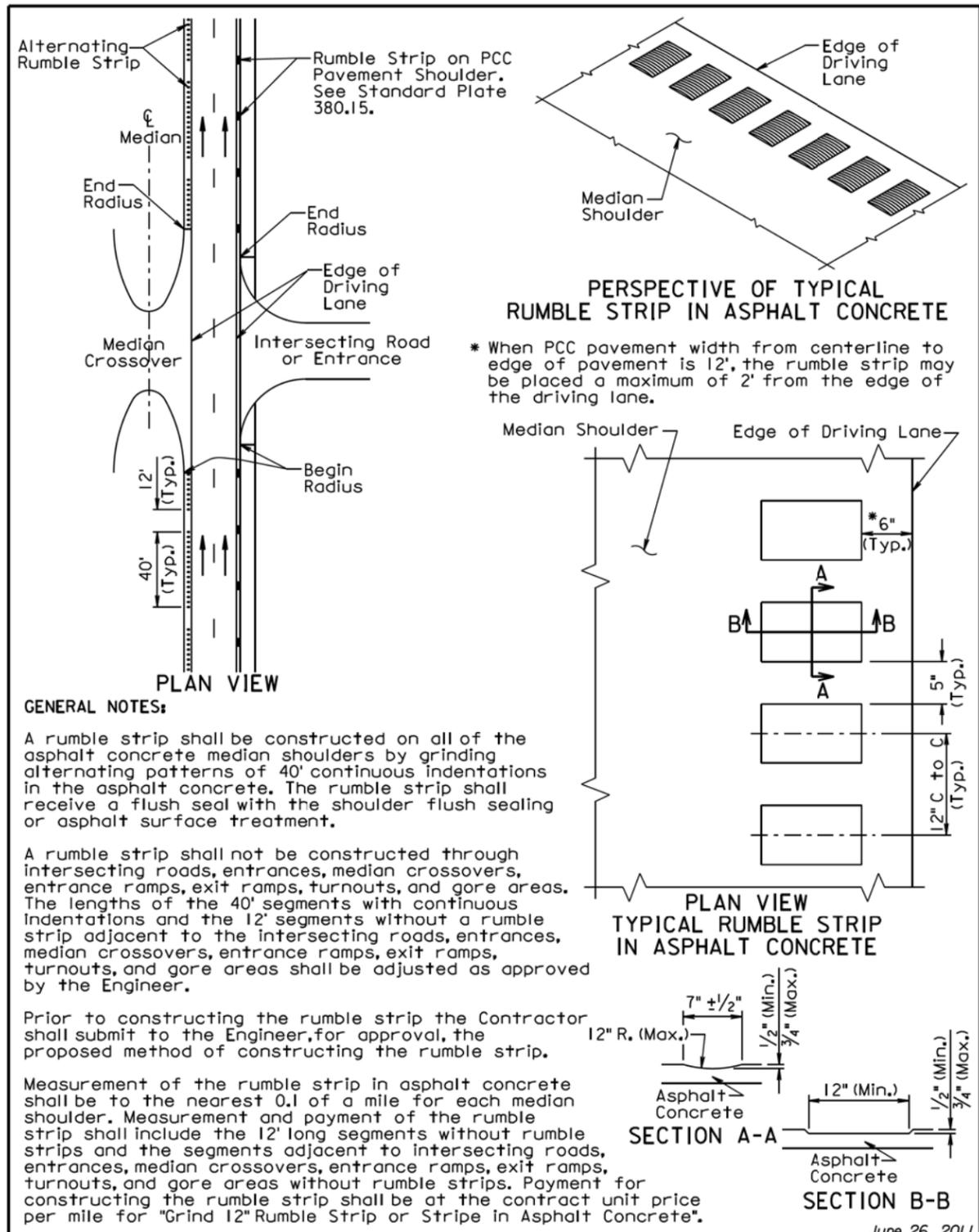
PLOT SCALE - 1:200

PLOTTED FROM - TRPR22410

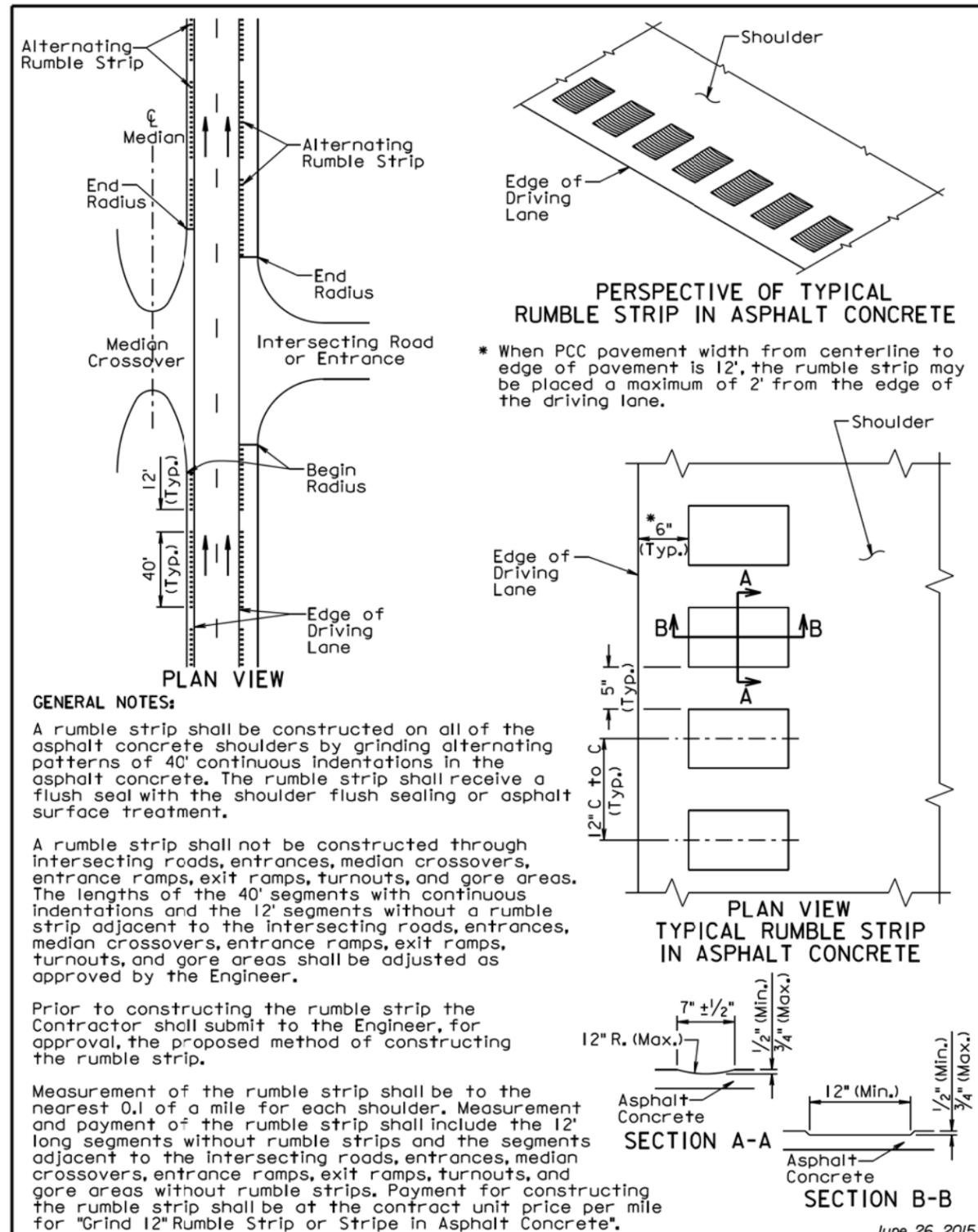
PLOT NAME - 1

FILE - ... \WAL\04W\32011\32024.DGN

Plotting Date: 11/03/2015



S D D O T	12" RUMBLE STRIP IN ASPHALT CONCRETE ON DIVIDED HIGHWAY MEDIAN SHOULDER	PLATE NUMBER 320.26
	Published Date: 4th Qtr. 2015	Sheet 1 of 1



S D D O T	12" RUMBLE STRIP IN ASPHALT CONCRETE ON DIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.28
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

PLOT SCALE - 1:200

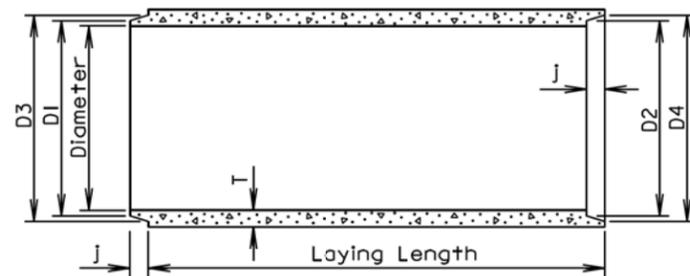
PLOTTED FROM - TRPR22410

PLOT NAME - 2

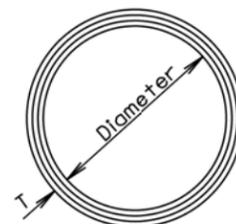
FILE - ... \WAL\04\9\32026, 32028, DON

TOLERANCES IN DIMENSIONS

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



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

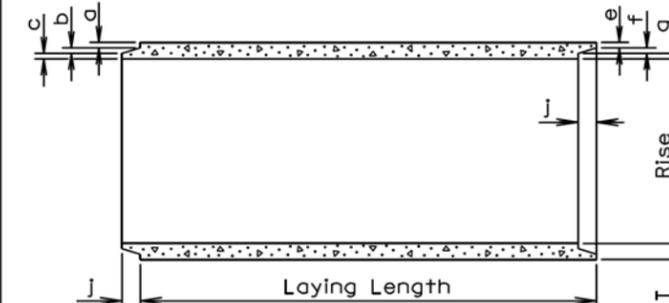
Construction of R. C. P. shall conform to the requirements of Section 990 of the Specifications.

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

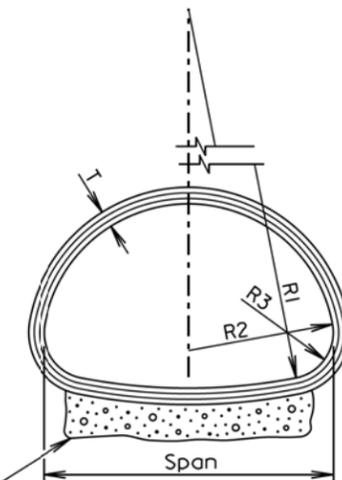
Diam. (in.)	Approx. Wt./Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 3/8	14 1/4
15	127	2 1/4	2	16 1/2	16 3/8	17 1/4	17 5/8
18	168	2 1/2	2 1/4	19 5/8	20	20 3/8	20 3/4
21	214	2 3/4	2 1/2	22 1/8	23 1/4	23 3/4	24 1/8
24	265	3	2 3/4	26	26 3/8	27	27 3/8
27	322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

June 26, 2015

S D D O T	REINFORCED CONCRETE PIPE	PLATE NUMBER 450.01
	Published Date: 4th Qtr. 2015	Sheet 1 of 1



LONGITUDINAL SECTION



END VIEW

TOLERANCES IN DIMENSIONS

Radial dimensions at joints: $\pm \frac{1}{8}$ " for 65" span or less and $\pm \frac{1}{4}$ " for longer spans.
 Rise and Span: $\pm 2\%$ of tabular values.
 Length of joint (j): $\pm \frac{1}{4}$ ".
 Wall thickness (T): not less than design T by more than 5% or $\frac{3}{16}$ ", whichever is greater.
 Laying length: shall not underrun by more than $\frac{1}{2}$ ".

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

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

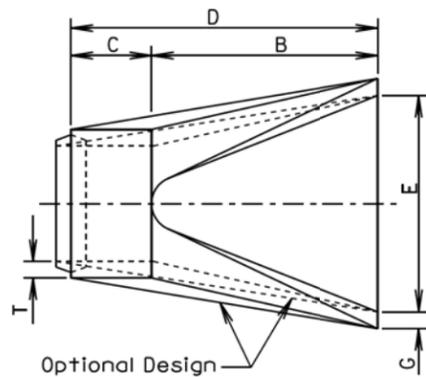
* Equivalent Diameter of Circular R. C. P.

GENERAL NOTES:

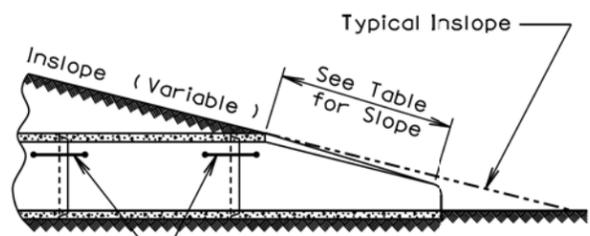
Construction of R.C.P. Arch shall conform to the requirements of Section 990 of the Specifications. Not more than 2 four-foot sections shall be permitted near the ends of any culvert. Four-foot lengths shall be used only to secure the required length of culvert.

June 26, 2015

S D D O T	REINFORCED CONCRETE PIPE ARCH	PLATE NUMBER 450.02
	Published Date: 4th Qtr. 2015	Sheet 1 of 1



TOP VIEW

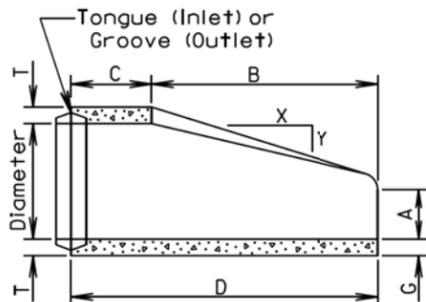


SLOPE DETAIL

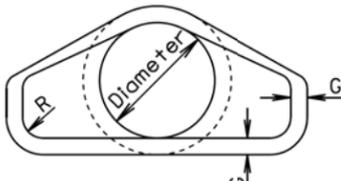
GENERAL NOTES:

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

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



LONGITUDINAL SECTION

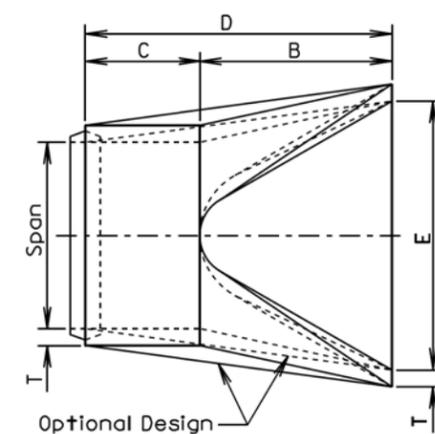


END VIEW

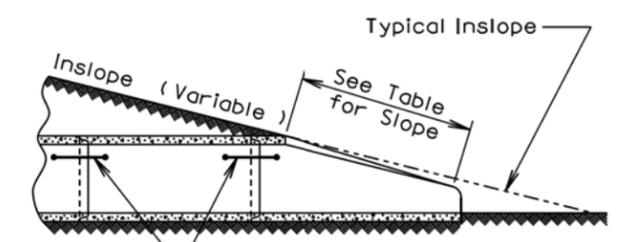
Dia. (in.)	Approx. Wt. of Section (lbs.)	Approx. Slope (X to Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	G (in.)	R (in.)
12	530	2.4:1	2	4	24	48 1/8	72 7/8	24	2	1 1/2
15	740	2.4:1	2 1/4	6	27	46	73	30	2 1/4	1 1/2
18	990	2.3:1	2 1/2	9	27	46	73	36	2 1/2	1 1/2
21	1280	2.4:1	2 3/4	9	36	37 1/2	73 1/2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

June 26, 2015

S D D O T	R. C. P. FLARED ENDS	PLATE NUMBER 450.10
	Published Date: 4th Qtr. 2015	Sheet 1 of 1



TOP VIEW

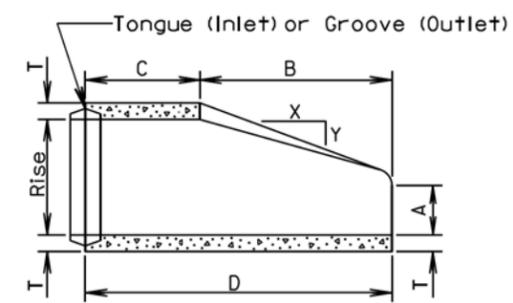


SLOPE DETAIL

GENERAL NOTES:

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

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



LONGITUDINAL SECTION



END VIEW

* Size (in.)	Approximate Weight of Section (lbs.)	Rise (in.)	Span (in.)	Slope (X:Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	R (in.)
18	1100	13 1/2	22	3:1	2 1/2	7	27	45	72	36	2
24	1750	18	28 1/2	3:1	3 1/2	8 1/2	39	33	72	48	3
30	3300	22 1/2	36 1/4	3:1	4	9 1/2	50	46	96	60	3
36	4350	26 5/8	43 3/4	3:1	4 1/2	11 1/8	60	36	96	72	6
42	5250	31 5/16	51 1/8	3:1	4 1/2	15 1/16	60	36	96	78	6
48	6400	36	58 1/2	3:1	5	21	60	36	96	84	6
54	7850	40	65	3:1	5 1/2	25 1/2	60	36	96	90	6
60	9500	45	73 1/2	3:1	6	31	60	36	96	96	6
72	13550	54	88	2:1	7	31	60	39	99	120	6
84	17950	62	102	2:1	8	28 1/2	83	19	102	144	6

*Equivalent Diameter of Circular R. C. P.

June 26, 2015

S D D O T	R. C. P. ARCH FLARED ENDS	PLATE NUMBER 450.11
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

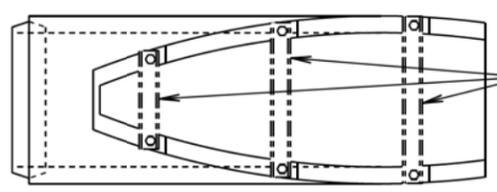
PLOT SCALE - 1:200

PLOTTED FROM - TRPR22410

PLOT NAME - 4

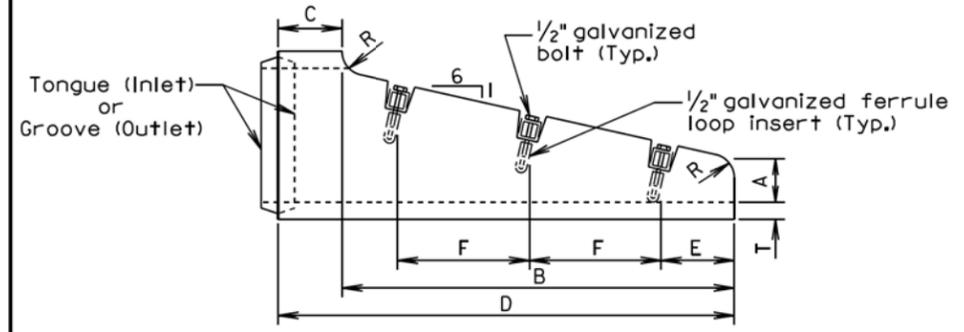
FILE - ... \WAL\04\W4\45010_45011.DGN

Plotting Date: 11/03/2015

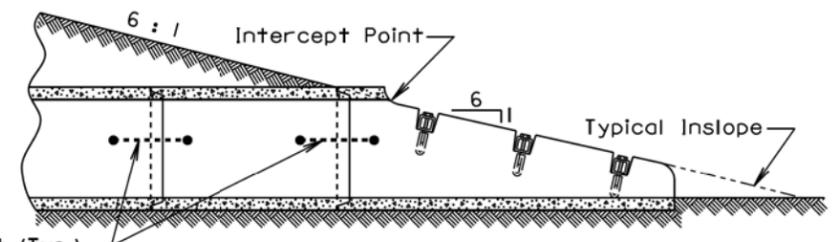


TOP VIEW

If bars are specified in the plans then provide HSS 2.5X2.5X.1875 Structural Steel Tubing in conformance with ASTM A500, Grade B or 3" Diameter Schedule 40 Pipe in conformance with ASTM A53, Grade B.



SIDE VIEW



ELEVATION VIEW

Di. (in.)	T (in.)	R (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	F (in.)	No. Sections	No. Bars
FOR CIRCULAR PIPE										
15	2 1/4	3	6	48	9	57	6	18	1	3
18	2 1/2	3	6	69	9	78	9	24	1	3
*24	3	3	6	111	9	120	6	24	1 or 2	5
FOR ARCH PIPE										
**18	2 1/2	1	6	39	33	72	6	24	1	2

*The use of 2 sections must be an approved design.
**Equivalent Diameter of Circular R. C. P.

GENERAL NOTES:
The length of concrete pipe shown on the plans is between safety ends.
Safety ends without bars are acceptable with or without the bar notches.
Bars shall be galvanized after fabrication in accordance with ASTM A123.

August 31, 2013

S D D O T	R. C. P. SAFETY ENDS WITH OR WITHOUT BARS	PLATE NUMBER 450.12
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

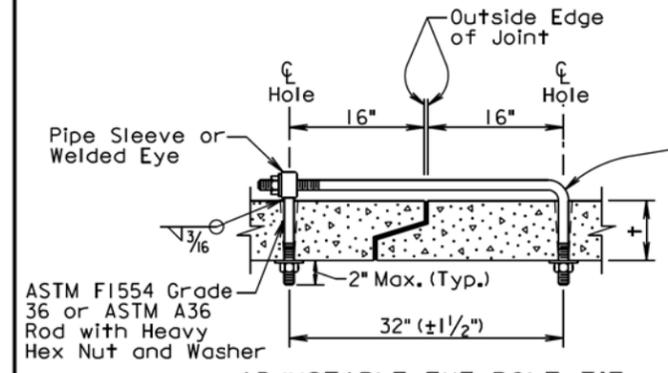
Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3/4	5/8	3/4
3/2-6/2	3/4	1
≥ 7	1	1 1/4

GENERAL NOTES:

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

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

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



ADJUSTABLE EYE BOLT TIE

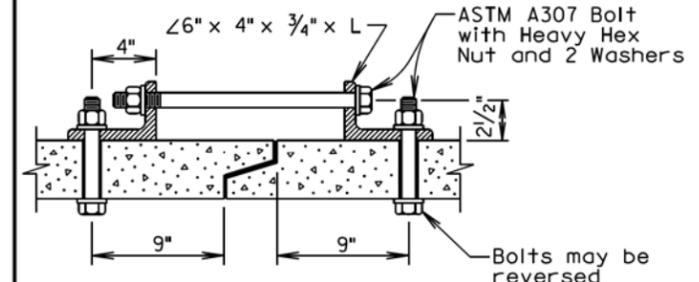
Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
≤ 48	4	3/4
> 48	6	1

GENERAL NOTES:

Angles shall conform to ASTM A36.

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

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



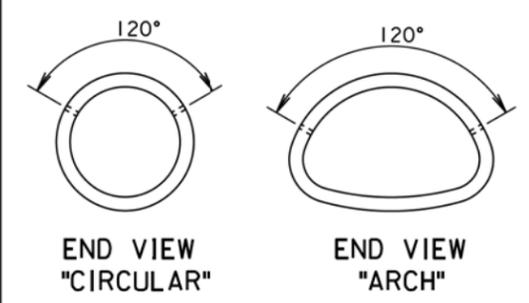
ANGLE AND BOLT TIE

GENERAL NOTES:

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

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

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



END VIEW "CIRCULAR" END VIEW "ARCH"

February 28, 2013

S D D O T	TIE BOLTS FOR R.C.P. AND R.C.P. ARCH	PLATE NUMBER 450.18
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

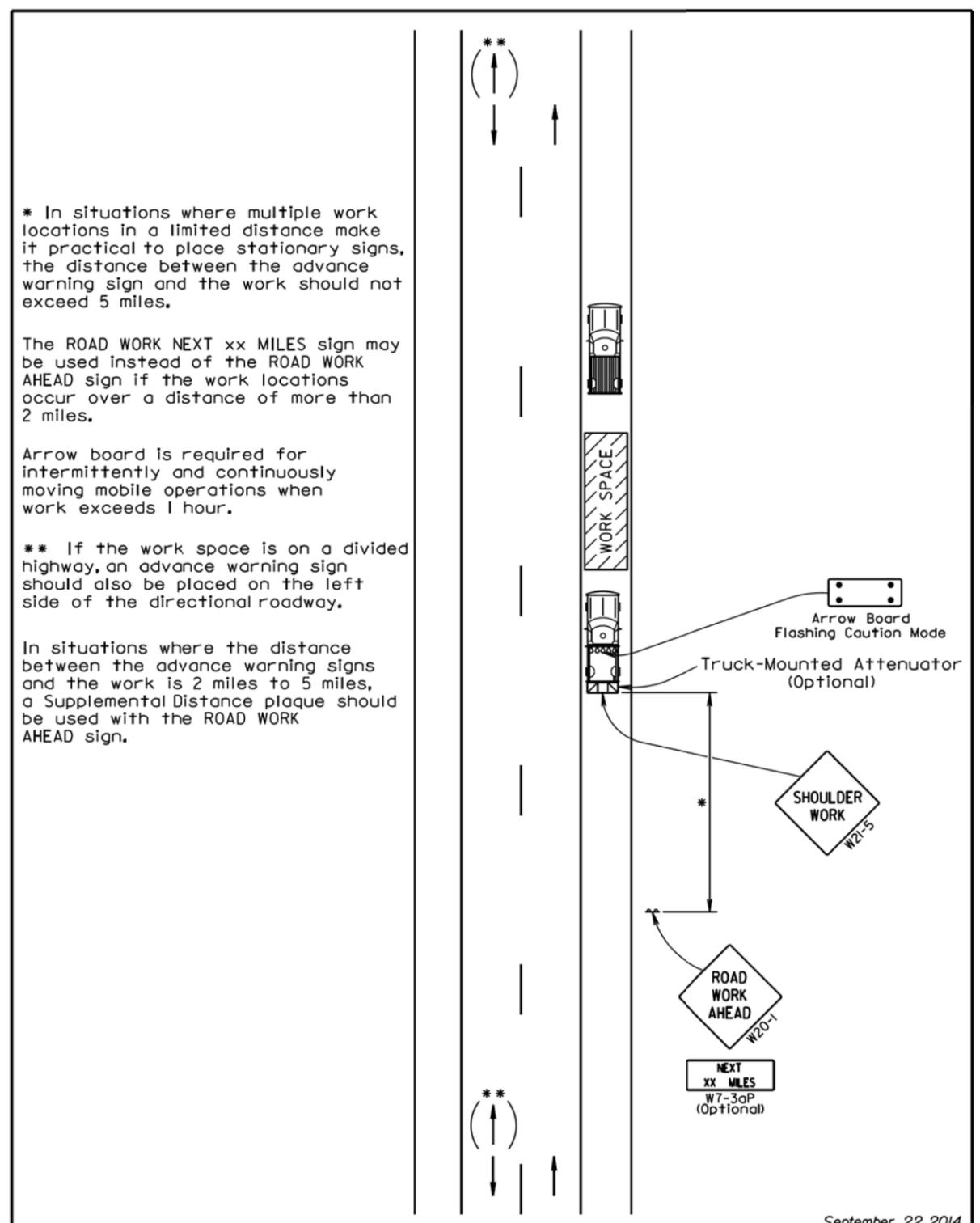
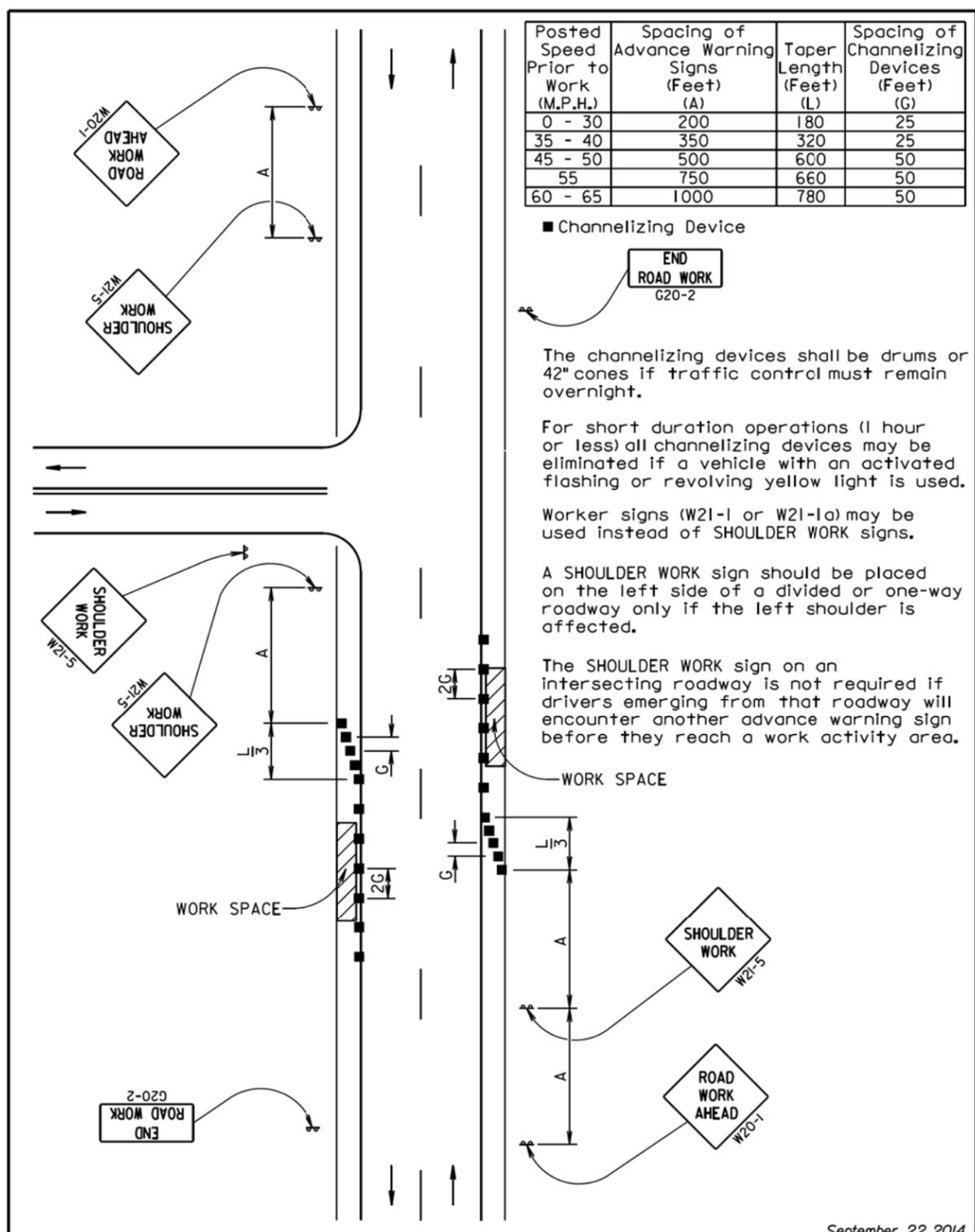
PLOT SCALE - 1:200

PLOTTED FROM - TRP22410

PLOT NAME - 5

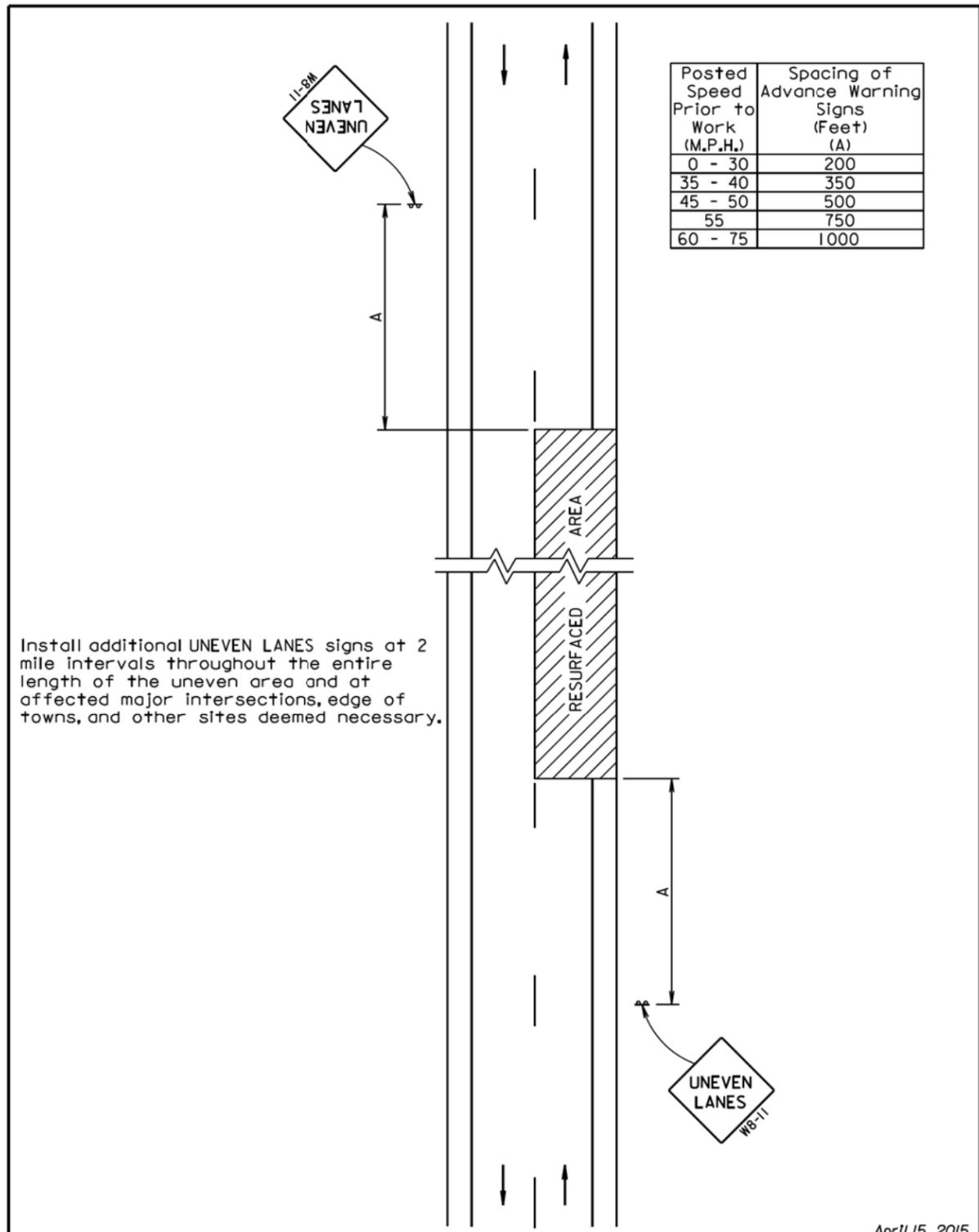
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PLOT SCALE - 1:200



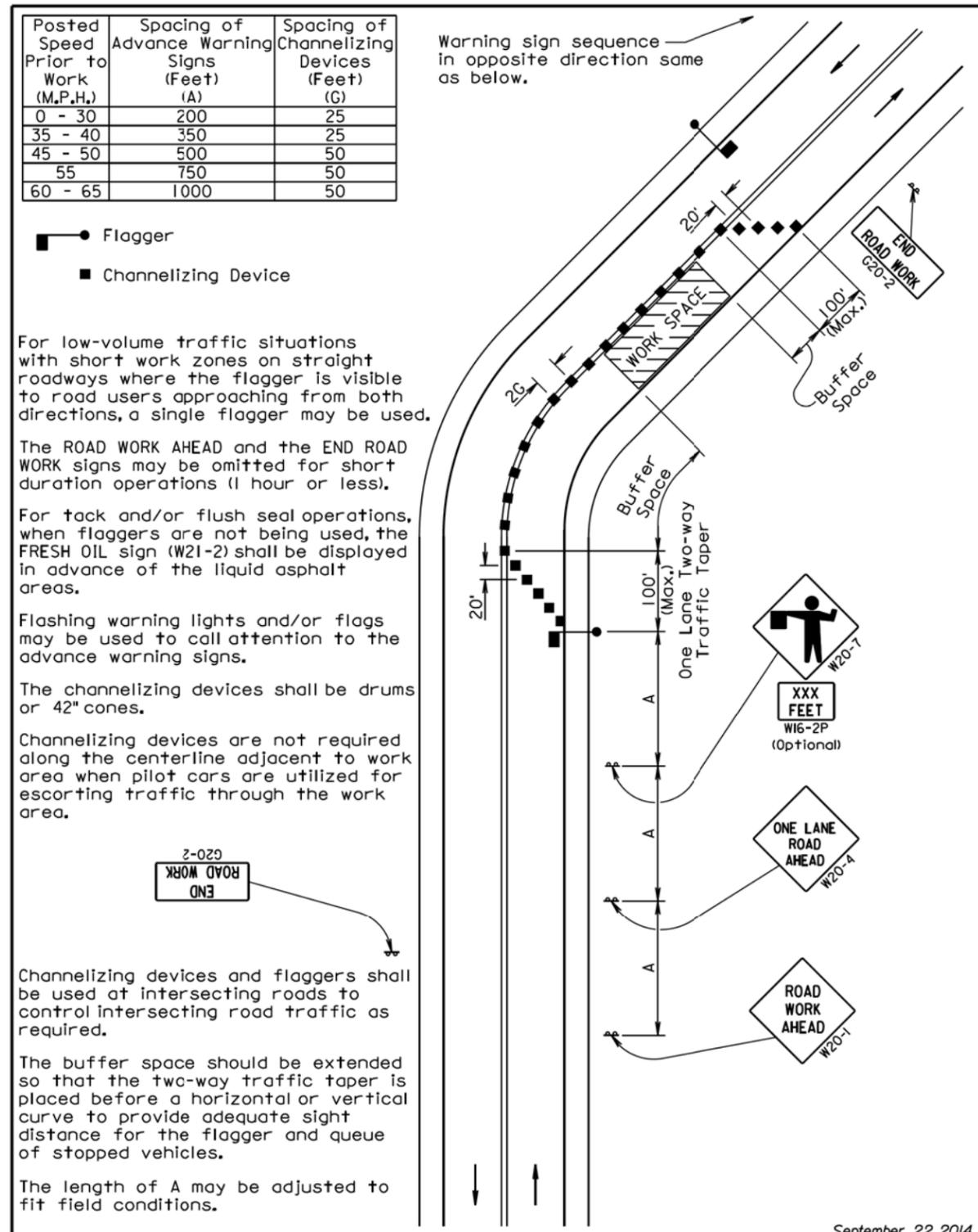
PLOT NAME - 7
FILE - ... \WAL\W04\W\63403, 63404, DON

Plotting Date: 11/03/2015



April 15, 2015

S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES UNEVEN ROAD SURFACE	PLATE NUMBER 634.22
	Published Date: 4th Qtr. 2015	Sheet 1 of 1



September 22, 2014

S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

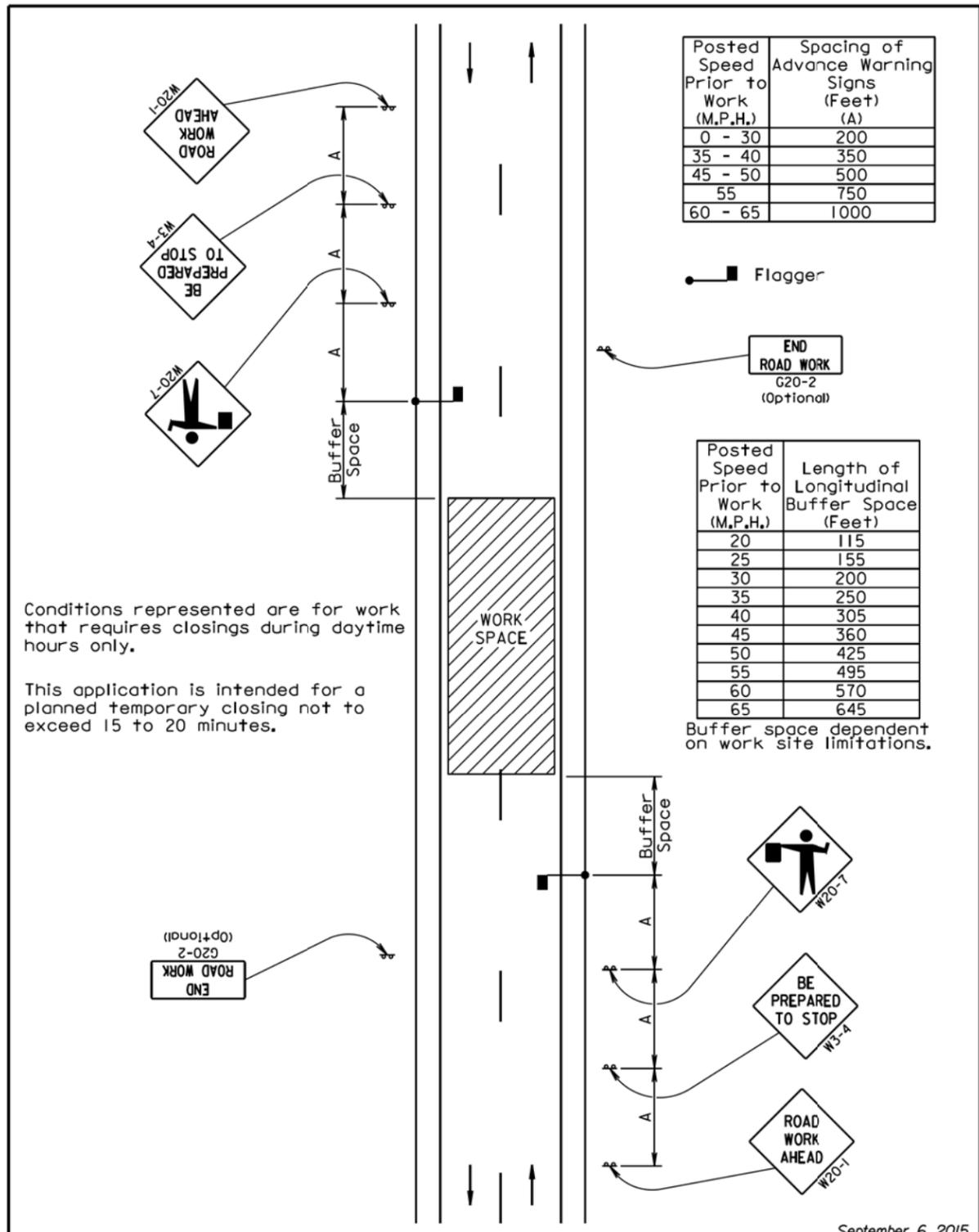
PLOT SCALE - 1:200

PLOTTED FROM - TRPR22410

PLOT NAME - 8

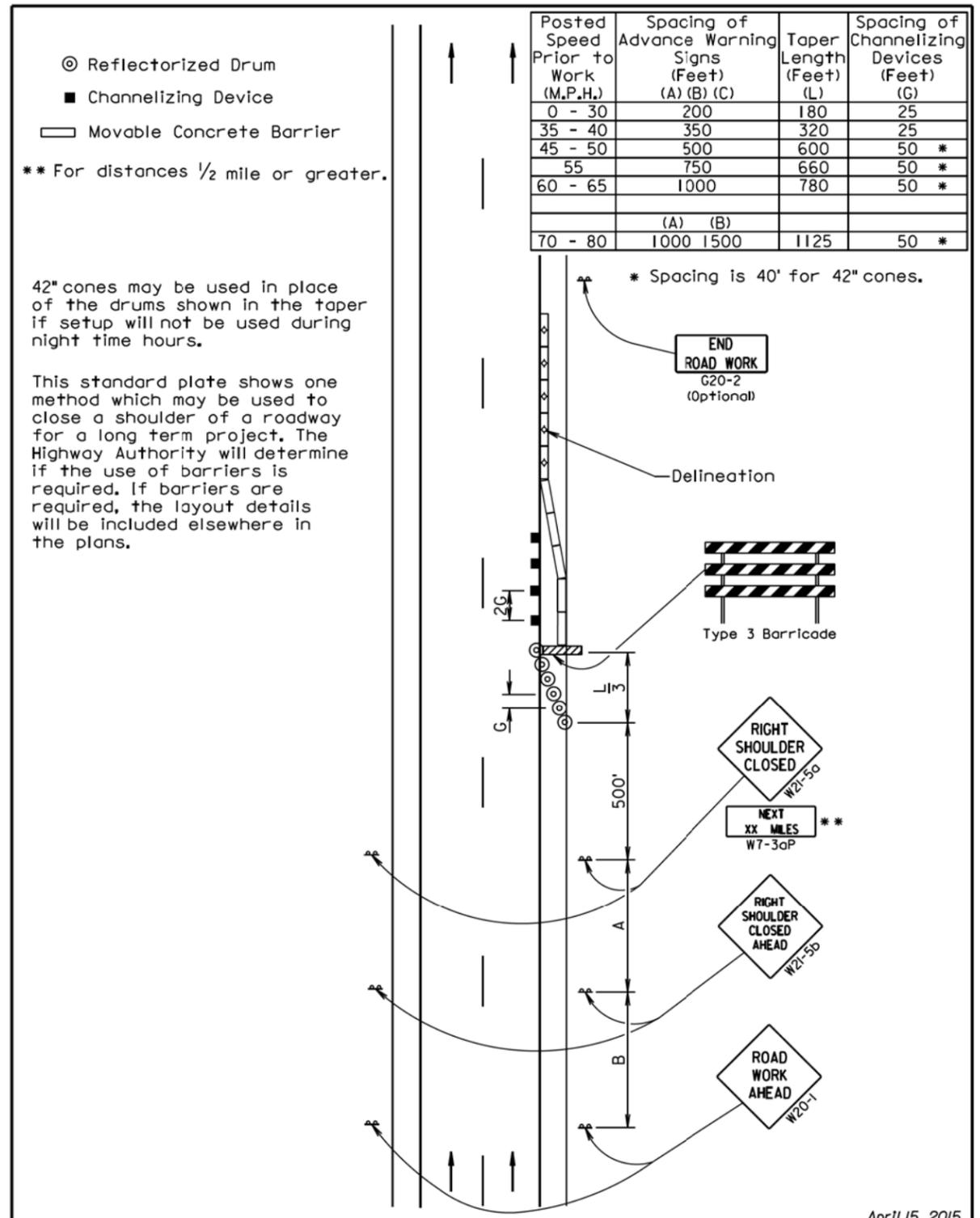
FILE - ... \WAL\04\W\63422, 63423, DON

Plotting Date: 11/03/2015



September 6, 2015

S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES TEMPORARY ROAD WORK	PLATE NUMBER 634.30
	Published Date: 4th Qtr. 2015	Sheet 1 of 1



April 15, 2015

S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES SHOULDER CLOSED	PLATE NUMBER 634.61
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

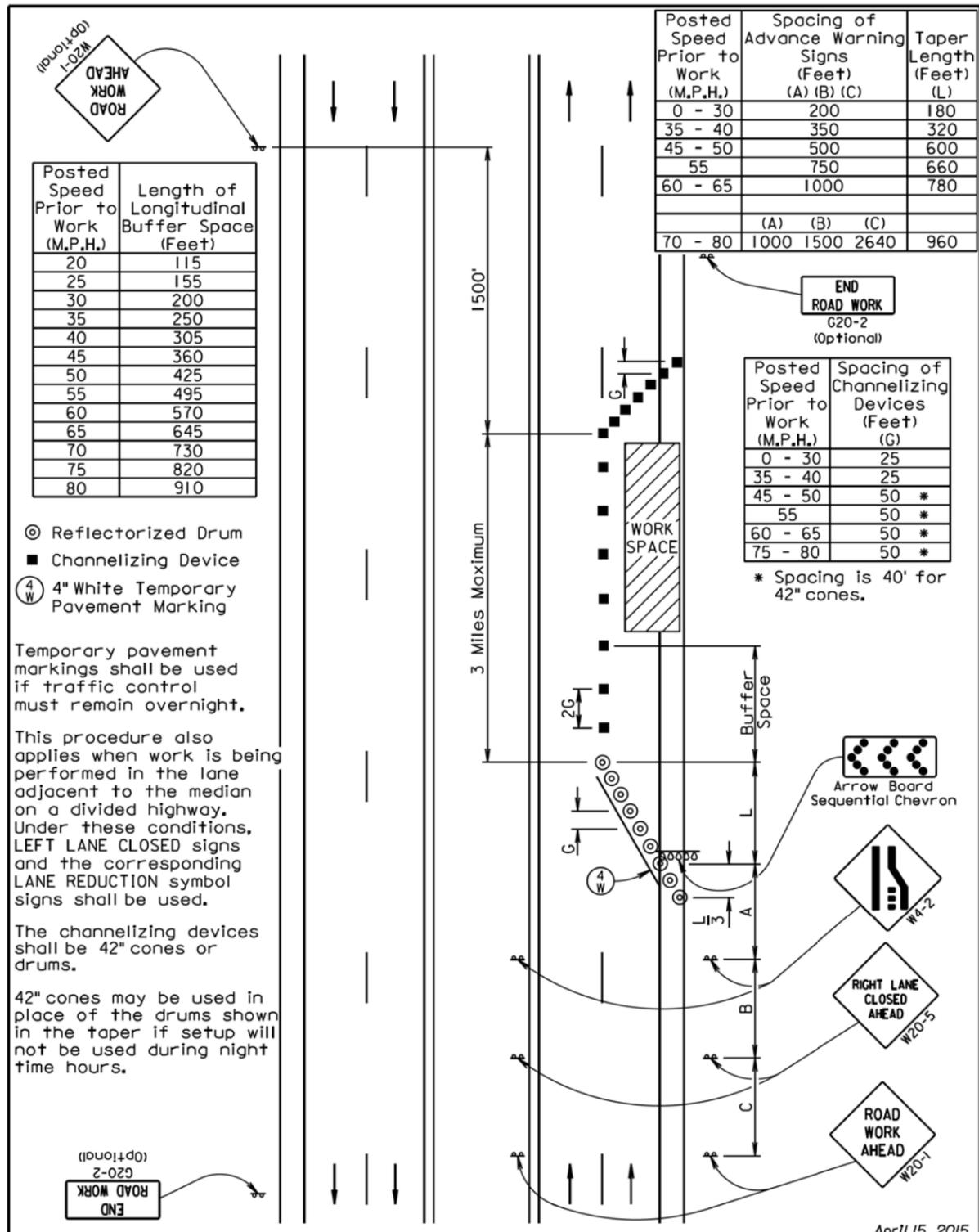
PLOT SCALE - 1:200

PLOTTED FROM - TRPR22410

PLOT NAME - 9

FILE - ... \WAL\04\W\63430, 63461.DGN

Plotting Date: 11/03/2015



Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820
80	910

- ⊙ ReflectORIZED Drum
- Channelizing Device
- ④ 4" White Temporary Pavement Marking

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

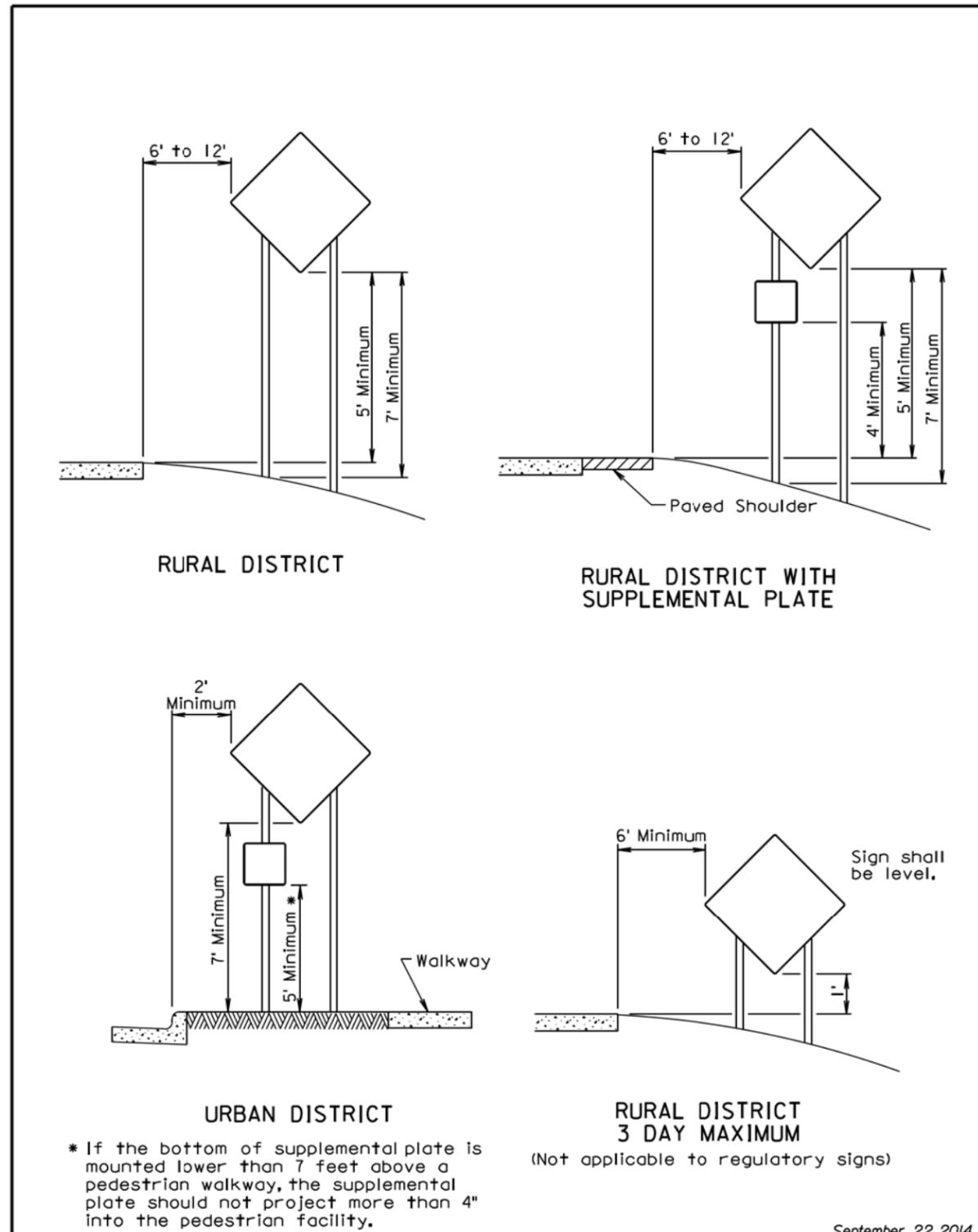
This procedure also applies when work is being performed in the lane adjacent to the median on a divided highway. Under these conditions, LEFT LANE CLOSED signs and the corresponding LANE REDUCTION symbol signs shall be used.

The channelizing devices shall be 42" cones or drums.

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

April 15, 2015

S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITHOUT BARRIER	PLATE NUMBER 634.64
	Published Date: 4th Qtr. 2015	Sheet 1 of 1



September 22, 2014

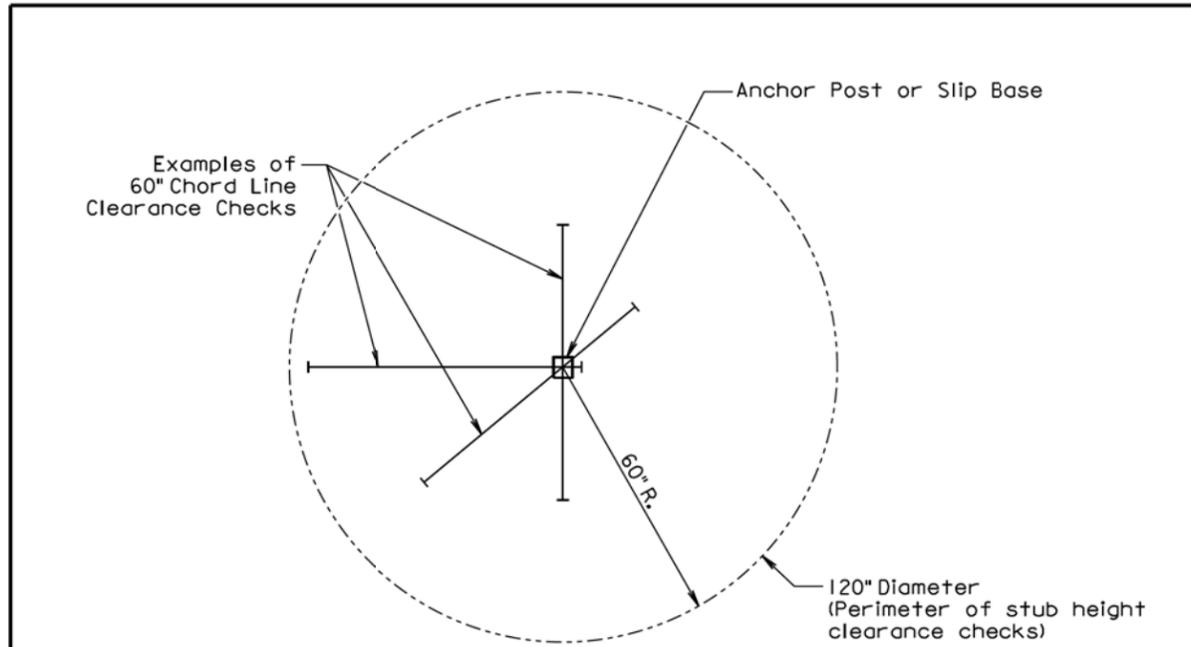
S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

PLOT SCALE - 1:200

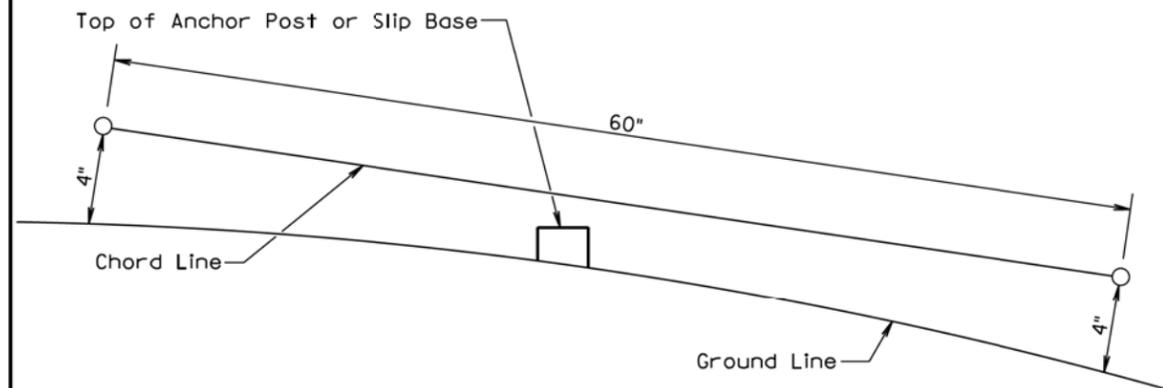
PLOTTED FROM - TRPR22410

PLOT NAME - 10

FILE - ... \WAL\04\W\63464, 63485, DON



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

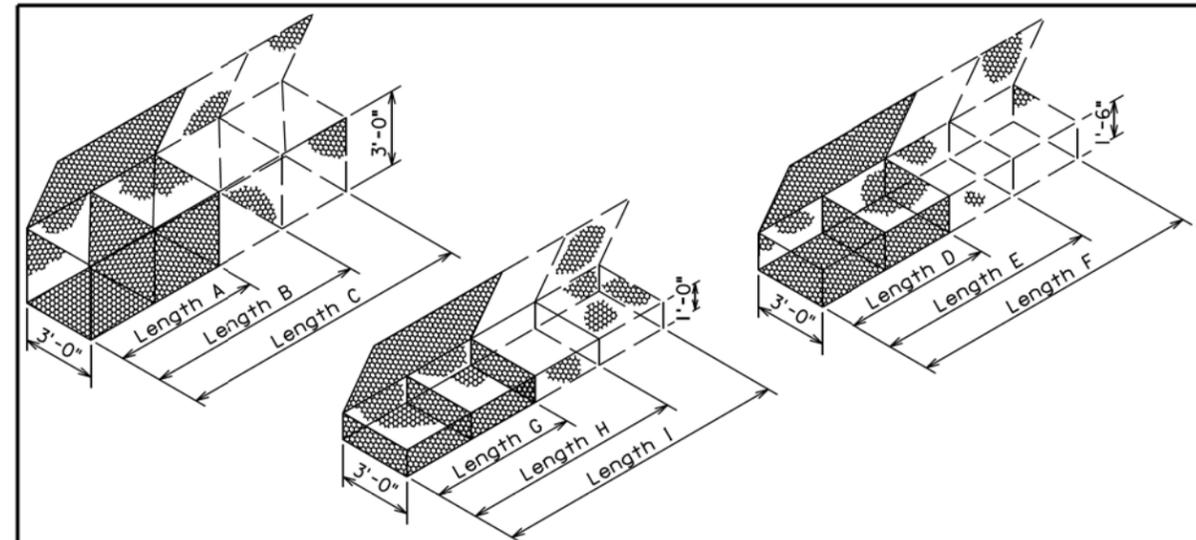
At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

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

July 1, 2005

S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
		Sheet 1 of 1

Published Date: 4th Qtr. 2015



GABION DETAILS
STANDARD SIZES

SIZE	LENGTH	WIDTH	HEIGHT	NUMBER OF CELLS	CAPACITY, Cu. Yd.
A	6'-0"	3'-0"	3'-0"	2	2.0
B	9'-0"	3'-0"	3'-0"	3	3.0
C	12'-0"	3'-0"	3'-0"	4	4.0
D	6'-0"	3'-0"	1'-6"	2	1.0
E	9'-0"	3'-0"	1'-6"	3	1.5
F	12'-0"	3'-0"	1'-6"	4	2.0
G	6'-0"	3'-0"	1'-0"	2	0.7
H	9'-0"	3'-0"	1'-0"	3	1.0
I	12'-0"	3'-0"	1'-0"	4	1.3

Above Dimensions subject to mill tolerances.

GENERAL NOTES:

Lacing and internal connecting wire shall be 0.0866 inch diameter steel wire ASTM A641 Class 3 soft temper measured after galvanizing and for PVC coated gabions shall be 0.0866 inch diameter steel wire measured after galvanizing but before PVC coating.

The lacing procedure is as follows:

1. Cut a length of lacing wire approximately 1 1/2 times the distance to be laced but not exceeding 5 feet.
2. Secure the wire terminal at the corner by looping and twisting.
3. Proceed lacing with alternating single and double loops at a spacing not to exceed 6 inches.
4. Securely fasten the other lacing wire terminal.

Wire lacing or interlocking type fasteners shall be used for gabion assembly and final construction of gabion structures. Interlocking fasteners for galvanized gabions shall be high tensile 0.120 inch diameter galvanized steel wire measured after galvanizing. The galvanizing shall conform to ASTM A641-92 Class 3 coating. Fasteners shall also be in accordance with ASTM A764, Class II, Type III.

Interlocking fasteners for PVC coated gabions shall be high tensile 0.120 inch diameter stainless steel wire conforming to ASTM A313, Type 302, Class I. The spacing of the interlocking fasteners during all phases of assembly and construction shall not exceed 6 inches. All fasteners shall be placed where the mesh weaves around the selvage wire at the vertical and horizontal joints.

June 26, 2001

S D D O T	BANK AND CHANNEL PROTECTION GABIONS	PLATE NUMBER 720.01
		Sheet 1 of 1

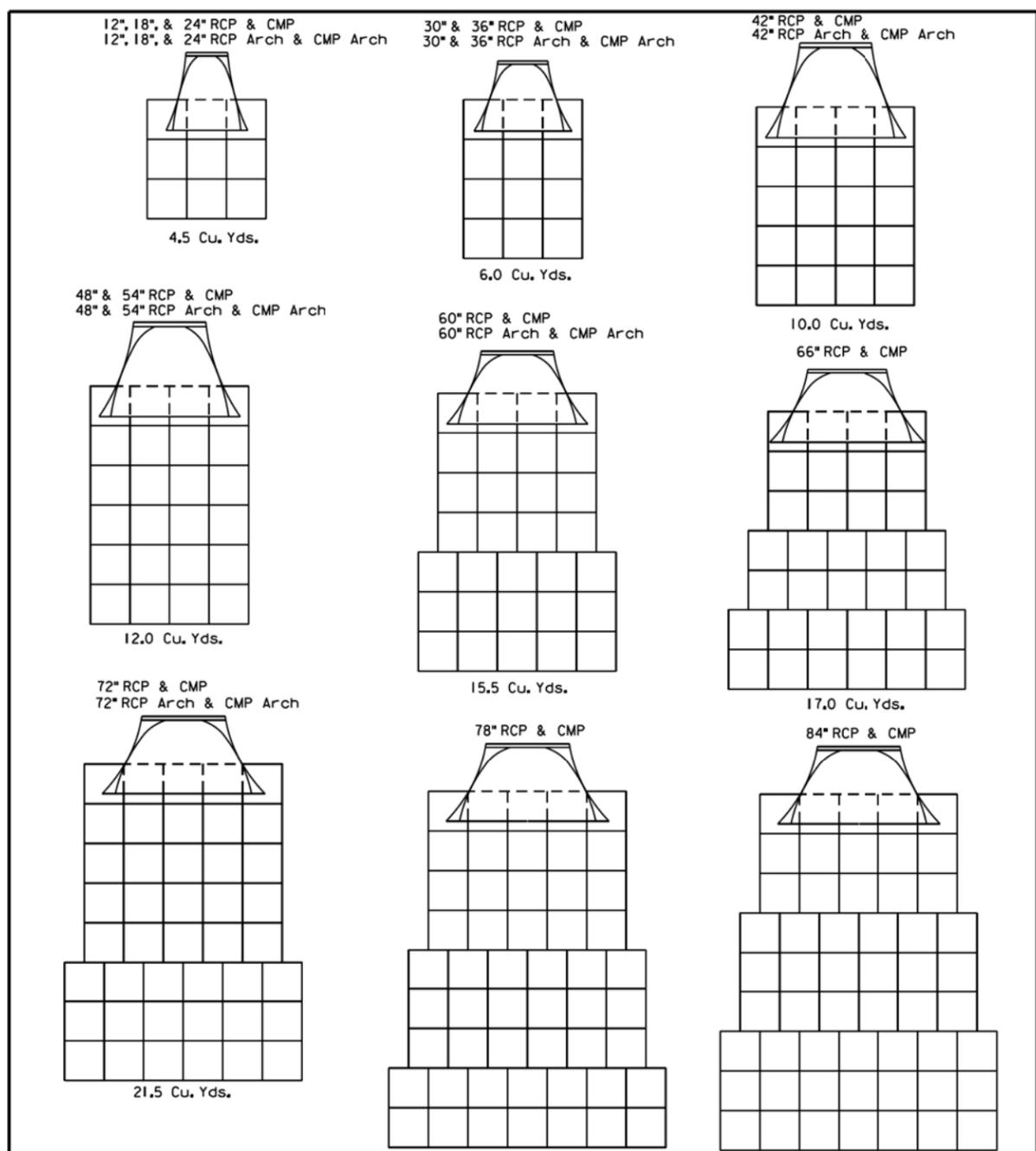
Published Date: 4th Qtr. 2015

Plotting Date: 11/03/2015

PLOT SCALE - 1:200

PLOT NAME - 12

FILE - ... \WAL\W04\WV\72003, 73405-1.DGN



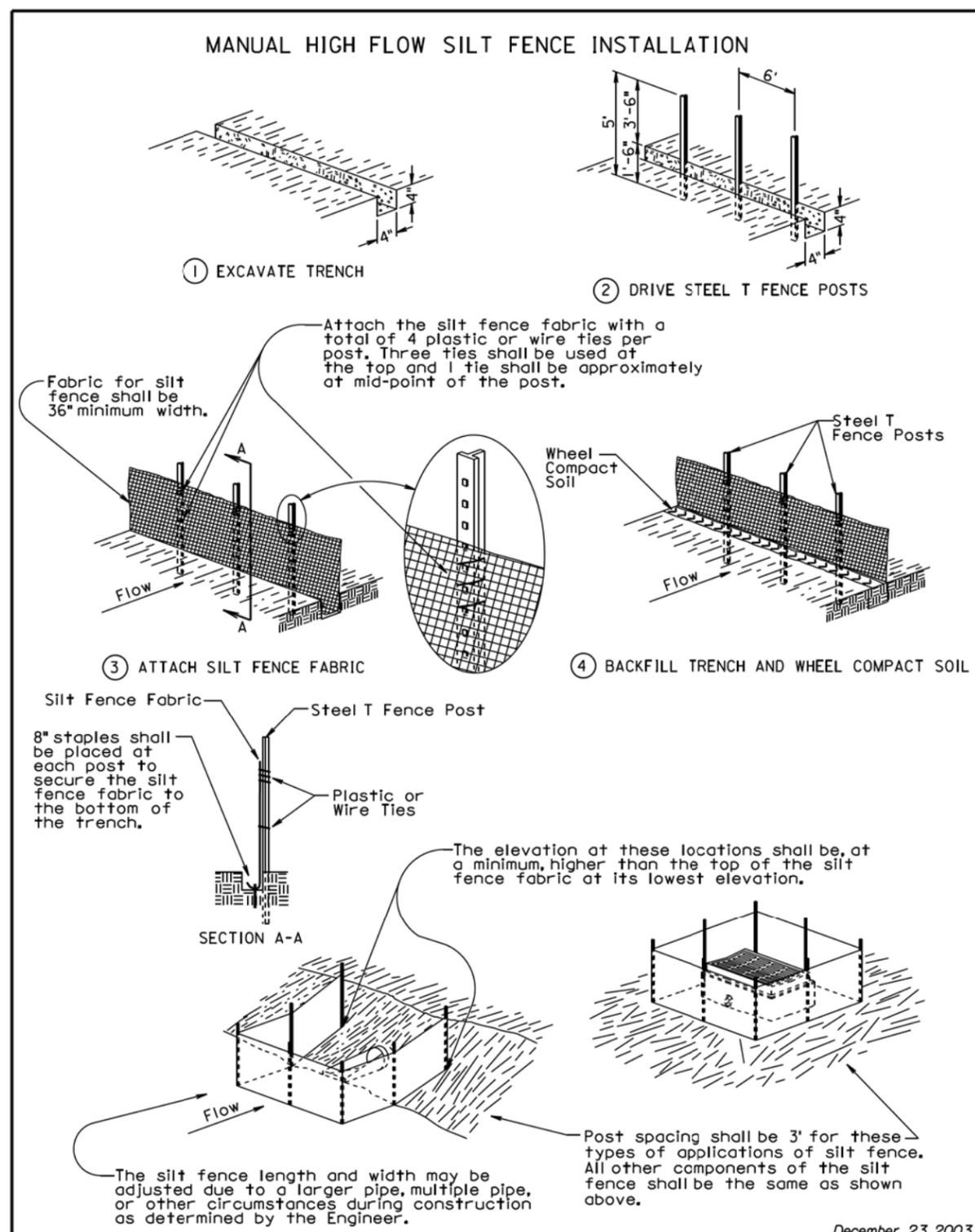
GENERAL NOTES:

Gabions at outlets of C.M. pipe and R.C. pipe shall be placed under the end section a distance of 2' from the outlet end of the section. For C.M. pipe end section installations, the upper fabric of the gabions shall be modified to accommodate the metal end section in a manner approved by the Engineer.

Quantities shown on this standard plate are based on standard gabion sizes D, E, and F (See Standard Plate 720.01).

June 26, 2001

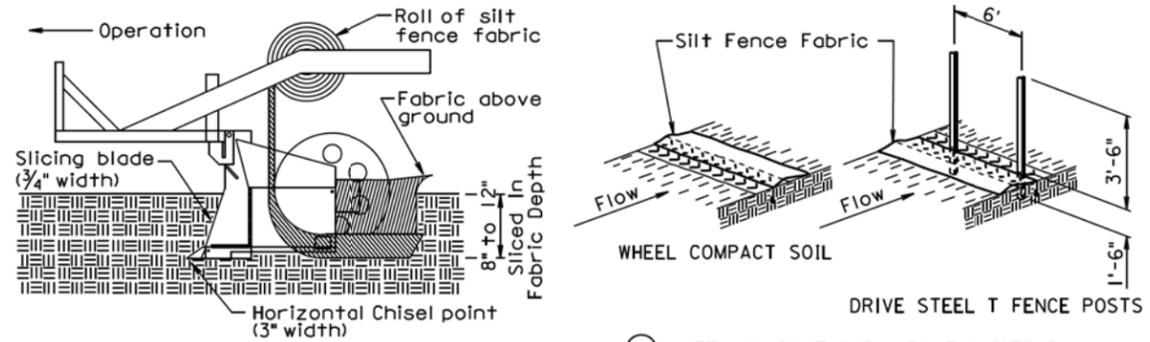
S D D O T	BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS	PLATE NUMBER 720.03
	Published Date: 4th Qtr. 2015	Sheet 1 of 1



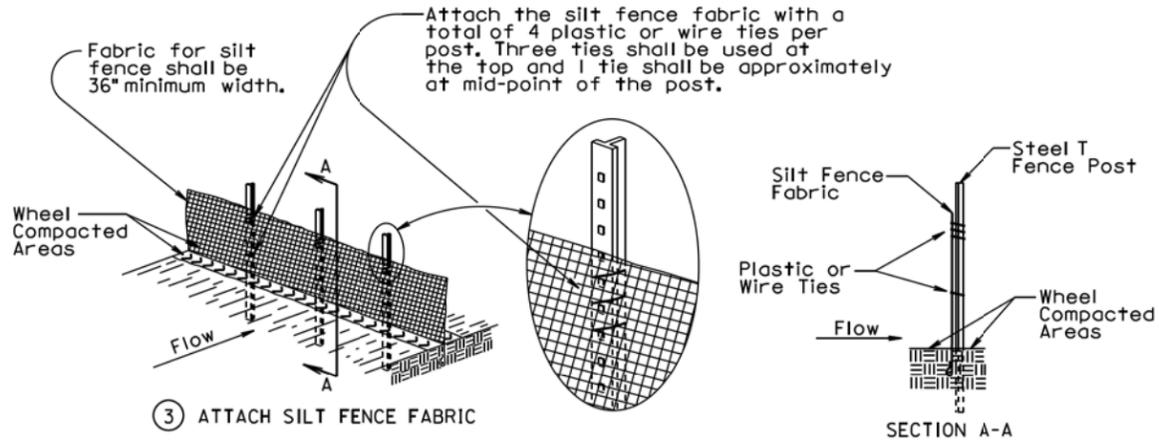
December 23, 2003

S D D O T	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
	Published Date: 4th Qtr. 2015	Sheet 1 of 2

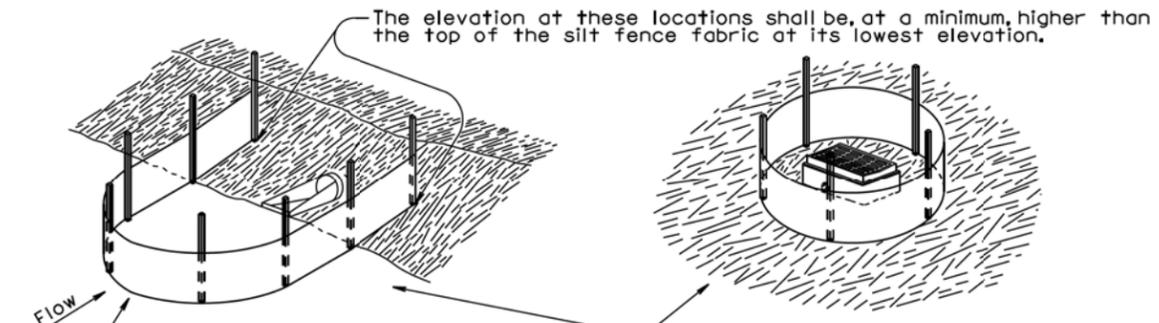
MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



- INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.
- WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.



- ATTACH SILT FENCE FABRIC



The elevation at these locations shall be, at a minimum, higher than the top of the silt fence fabric at its lowest elevation.

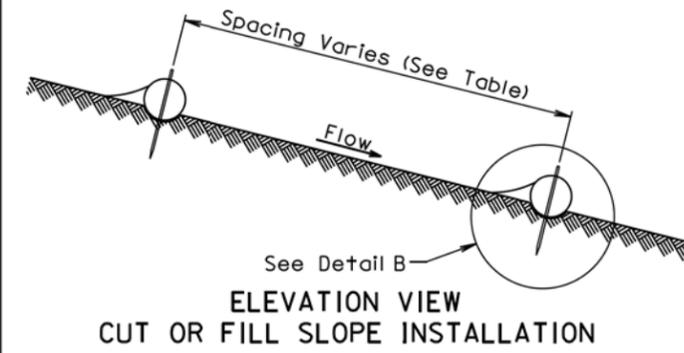
The radius of the silt fence shall be the minimum capable by the slicing machine. The post spacing shall be 3' for these types of applications of silt fence. All the other components of the silt fence shall be the same as shown above.

GENERAL NOTE:

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

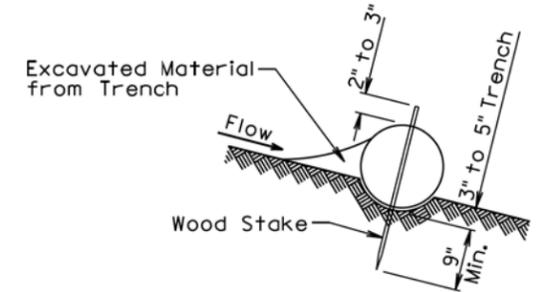
December 23, 2003

S D D O T	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
	Published Date: 4th Qtr. 2015	Sheet 2 of 2

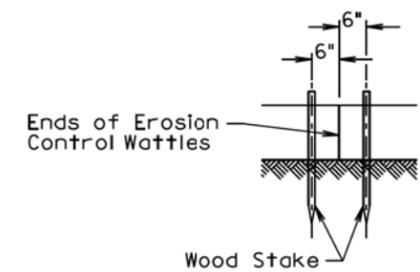


ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION

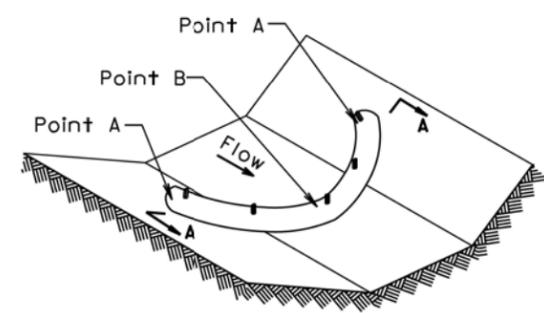
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



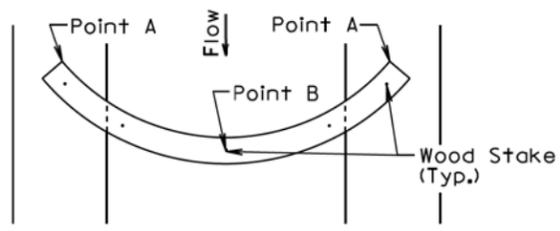
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

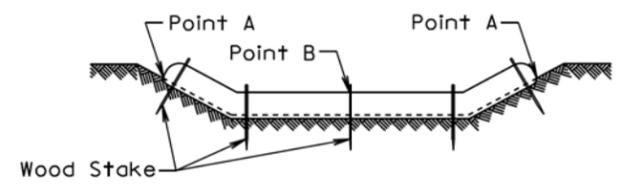


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

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



SECTION A-A

December 23, 2004

S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
	Published Date: 4th Qtr. 2015	Sheet 1 of 2

PLOT SCALE - 1:200

PLOTTED FROM - TRP22410

PLOT NAME - 13

FILE - ... \WAL\04\9173405-2-73406-1.DGN

Plotting Date: 11/03/2015

GENERAL NOTES:

At cut or fill slope installations, wattles shall be installed along the contour and perpendicular to the water flow.

At ditch installations, point A must be higher than point B to ensure that water flows over the wattle and not around the ends.

The Contractor shall dig a 3" to 5" trench, install the wattle tightly in the trench so that daylight can not be seen under the wattle, and then compact the soil excavated from the trench against the wattle on the uphill side. See Detail B.

The stakes shall be 1"x2" or 2"x2" wood stakes, however, other types of stakes such as rebar may be used only if approved by the Engineer. The stakes shall be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles shall be 3' to 4'.

Where installing running lengths of wattles, the Contractor shall butt the second wattle tightly against the first and shall not overlap the ends. See Detail C.

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than 1/2". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

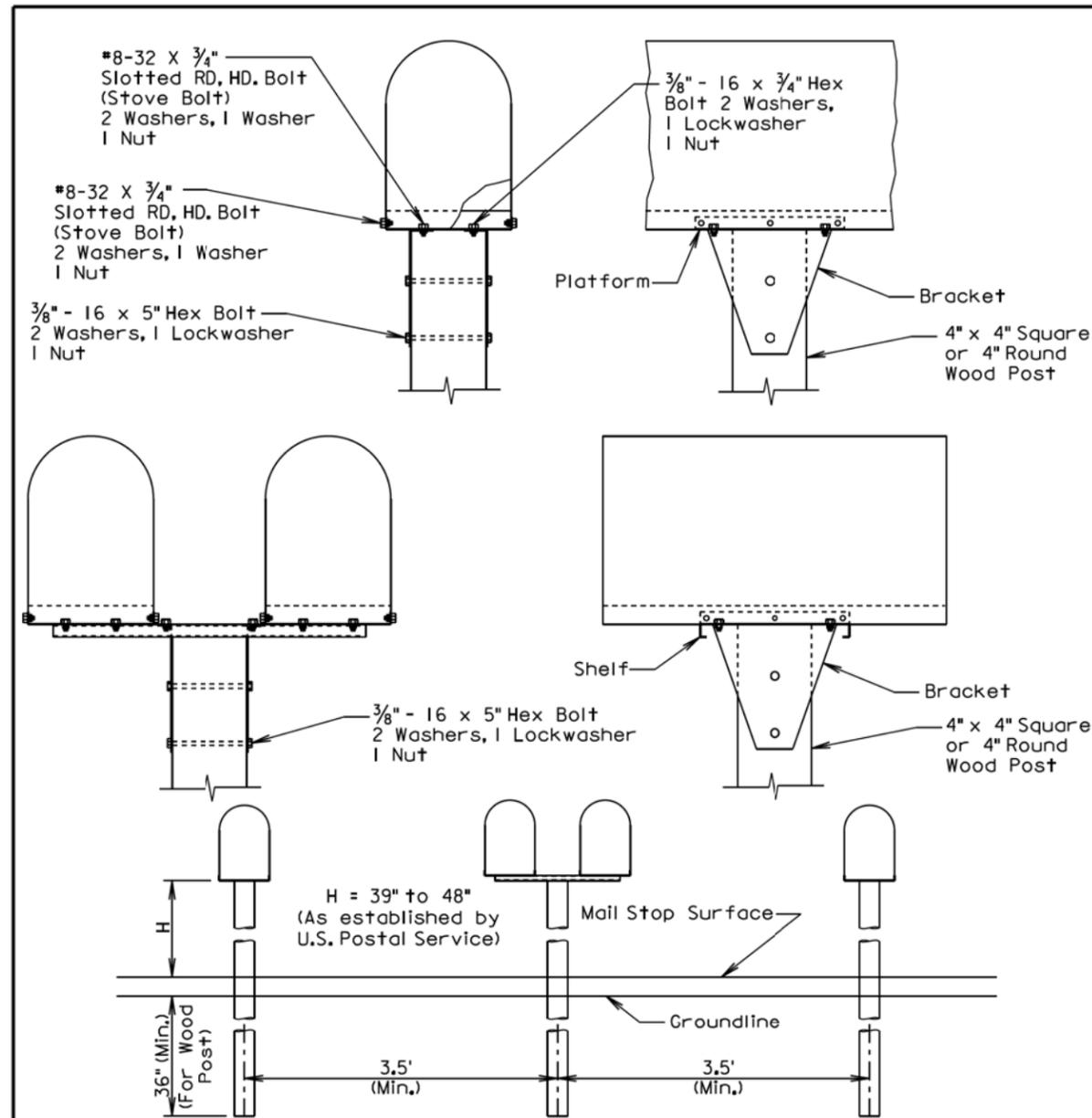
Sediment removal, disposal, or necessary shaping shall be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping shall be incidental to the contract unit price per cubic yard for "Remove Sediment".

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

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

December 23, 2004

S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
	Published Date: 4th Qtr. 2015	Sheet 2 of 2



GENERAL NOTES: SPACING FOR MULTIPLE POST INSTALLATION

The post support assemblies provided should be consistent throughout the project. Single and double mailboxes may be in any sequence.

Post support assemblies shall be one from the approved products list, a 4"x4" or 4" round wood post, or an alternate post support assembly that meets the test level 3 crash testing requirements of NCHRP 350 or MASH.

Alternate mailbox support assemblies shall be approved by the Engineer prior to installation. The Contractor shall provide the Engineer written certification that the mailbox support assembly has met the crash testing requirements and will be installed in accordance with the manufacturer's installation instructions.

September 6, 2013

S D D O T	SINGLE AND DOUBLE MAILBOX ASSEMBLIES	PLATE NUMBER 900.02
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

PLOT SCALE - 1:200

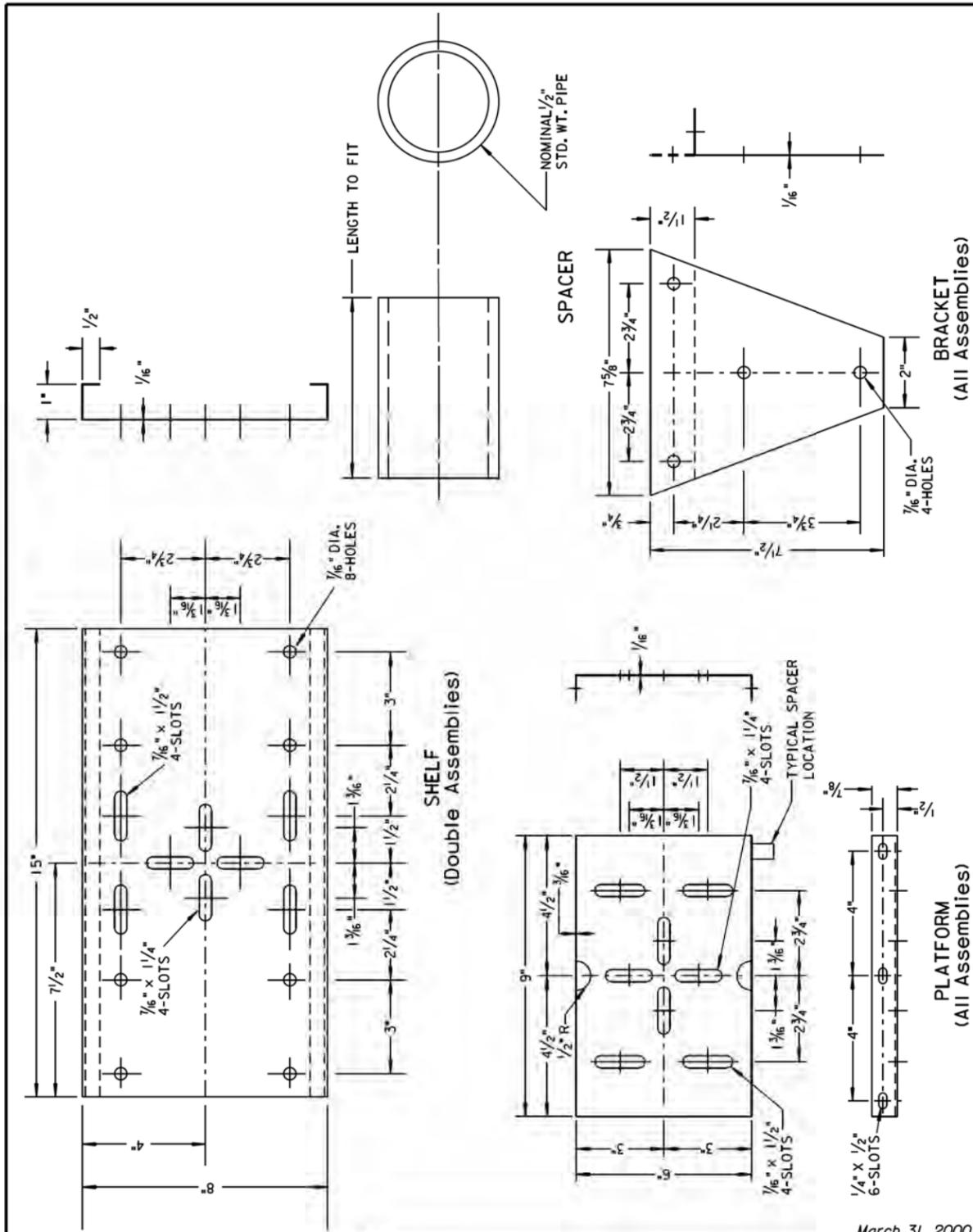
PLOTTED FROM - TRPR22410

PLOT NAME - 14

FILE - ... \WAL\04\9\73406-2-90002.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(190)212 NH 0083(83)205	70	70

Plotting Date: 11/03/2015



March 31, 2000

S D D O T	MAILBOX SUPPORT HARDWARE	PLATE NUMBER 900.03
		Sheet 1 of 1

Published Date: 4th Qtr. 2015