



# ESTIMATE OF QUANTITIES

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0212(178)226	2	35

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BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3210	Construction Staking	9.425	Mile
009E3230	Grade Staking	9.425	Mile
009E3300	Three Man Survey Crew	40.0	Hour
009E4200	Construction Schedule, Category II	Lump Sum	LS
110E0135	Remove Delineator	225	Each
110E1700	Remove Silt Fence	25	Ft
120E0010	Unclassified Excavation	13,999	CuYd
120E0100	Unclassified Excavation, Digouts	471	CuYd
120E6200	Water for Granular Material	972.4	MGal
230E0010	Placing Topsoil	12,288	CuYd
260E1010	Base Course	2,873.0	Ton
* 270E0210	Haul and Stockpile Granular Material	7,274.6	Ton
280E0010	Full Depth Reclamation	247,896	SqYd
320E0005	PG 58-34 Asphalt Binder	2,423.7	Ton
320E1203	Class Q3R Hot Mixed Asphalt Concrete	52,069.5	Ton
320E4000	Hydrated Lime	522.6	Ton
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	18.8	Mile
330E0010	MC-70 Asphalt for Prime	263.5	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	114.9	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	47.2	Ton
330E1000	Blotting Sand for Prime	618.1	Ton
330E2000	Sand for Flush Seal	498.4	Ton
332E0010	Cold Milling Asphalt Concrete	147,257	SqYd
600E0300	Type III Field Laboratory	1	Each
633E0010	Cold Applied Plastic Pavement Marking, 4"	7,408	Ft
633E0020	Cold Applied Plastic Pavement Marking, 8"	403	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24"	224	Ft
633E0040	Cold Applied Plastic Pavement Marking, Arrow	2	Each
633E1300	Pavement Marking Paint, White	319	Gal
633E1305	Pavement Marking Paint, Yellow	113	Gal
633E5000	Grooving for Cold Applied Plastic Pavement Marking, 4"	7,408	Ft
633E5005	Grooving for Cold Applied Plastic Pavement Marking, 8"	403	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	224	Ft
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	2	Each
634E0010	Flagging	1,750.0	Hour
634E0020	Pilot Car	875.0	Hour
634E0110	Traffic Control Signs	521	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0410	Type B Advance Warning Arrow Board	1	Each
634E0630	Temporary Pavement Marking	47.1	Mile
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
730E0212	Type G Permanent Seed Mixture	594	Lb
732E0100	Mulching	45.7	Ton
* 734E0604	High Flow Silt Fence	100	Ft
734E0604	High Flow Silt Fence	100	Ft
734E0610	Mucking Silt Fence	7	CuYd
734E0620	Repair Silt Fence	25	Ft
831E0300	Reinforcement Fabric (MSE)	4,400	SqYd
900E0010	Refurbish Single Mailbox	1	Each
900E1980	Storage Unit	1	Each

\* - Denotes Non-Participating

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## **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](http://cfpub.epa.gov/npdes/home.cfm?program_id=6)

#### **Contractor Certification Form:**

The "Department of Environment 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 department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

**Action Taken/Required:**

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

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

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

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

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

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

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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** 171.4 Acres **(4.2 1.b.)**
- **Total Area To Be Disturbed** 22.8 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  $\frac{1}{3}$  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  $\frac{1}{2}$  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:

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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. Remove/Dispose Existing Delineators
3. Remove/Replace Topsoil on Inslopes throughout Project
4. Cold Mill Asphalt Concrete
5. Haul & Stockpile Remaining Cold Milled Material
6. Complete Unclassified Excavation for Digsouts & Backfill Operations
7. Full Depth Reclamation
8. Roadway Stabilization Geotechnical Repair
9. Complete Gravel Placement Operations on Approaches/Intersecting Roads
10. Complete Asphalt Concrete Paving Operations
11. Grind Rumble Strips
12. Install Permanent Pavement Markings
13. Refurbish Mailboxes
14. Remove Project Temporary Signing
15. 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.

**GENERAL NOTES**

Removing, relocating, covering, salvaging and resetting of existing traffic control devices 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 signs and markers that are damaged or lost shall be replaced by the Contractor at no cost to the State.

The Contractor shall remove all existing in-place delineators from the project which shall become the property of the Contractor for their disposal. New delineators will be furnished and installed by State forces after the completion of permanent seeding operations.

At the end of each day's full depth processing, laydown operations, and cold milling, the Contractor shall be required to construct 20:1 transitions for the facilitation of traffic. Additional processing and 20:1 transitions may be required in the field by the Engineer at the intersecting roads. No separate payment will be made for this work.

It is anticipated that at begin project the Contractor will be required to remove some Full Depth Reclamation material to allow for the new asphalt surfacing layers to match the adjacent existing surface elevations.

When determined by the Engineer, the Contractor may need to re-locate the Contractor Furnished Portable Changeable Message Signs multiple times along with changing the message readout display at any time throughout the duration of the project. All costs associated with re-location and message changing shall be incidental to the "Contractor Furnished Portable Changeable Message Sign" bid item.

**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 may perform work on the roadway during daylight hours only, unless additional hours are approved by the Engineer. Traffic shall be returned to two-way traffic 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.

Windrows from the full depth reclamation will not be allowed throughout the roadway limits during non-working hours.

Contractor shall accommodate all over width traffic for the duration of the project.

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

Work zones shall be at least one mile but shall not exceed 3 miles in length or a maximum delay of 15 minutes for vehicles waiting at the flagger station.

A MC-70 Asphalt for Prime application shall be placed on the Full Depth Reclamation finished surface. The application shall closely follow the reclaiming operation and at no time shall the prime operation be more than 10 calendar days from the base finishing operation. The cure time for the processed base, prime, and blotting sand application will be determined on construction. Any damage to the primed surface shall be repaired by the Contractor prior to asphalt paving and shall be done at no cost to the State.

**SHOULDER PREPARATION**

Prior to the Full Depth Reclamation operation, 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 Pierre Area Office (605) 773-5294 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.

**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.

**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 Full Depth Reclamation material 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 paid for at the contract unit price per MGal for "Water for Granular 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 471 cubic yards 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 Pierre Area and the Pierre Region offices.

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**COLD MILLING ASPHALT CONCRETE**

Cold milling asphalt concrete shall be done according to the typical sections and transition detail. After the cold milling process, any gravel shoulder material needing removed to satisfy daylighting requirements shall be salvaged so it can be incorporated into the Full Depth Reclamation material.

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.

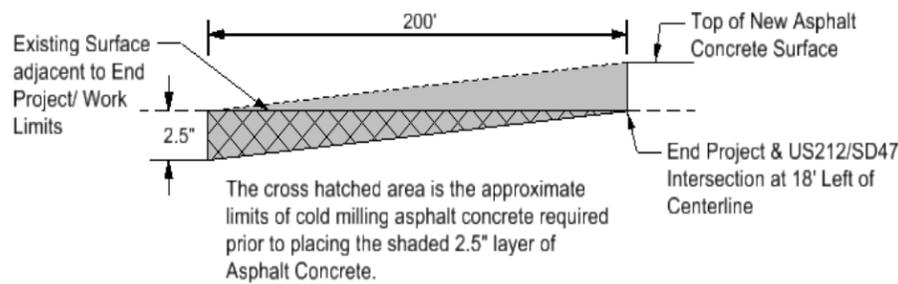
After completion of the milling operation, the Contractor shall clean up and dispose of any remaining debris to the satisfaction of the Engineer.

The Los Angeles Abrasion Loss value on the aggregate used for the in place asphalt concrete is 23 percent. This value was obtained from testing during construction of the in-place asphalt concrete.

Cold milling asphalt is estimated to produce 17,096.3 tons cold milled material. An estimated 9,821.7 tons of RAP will be used on the project 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 on this project 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 end project and US212/SD47 Intersection 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 at End Project & US212/SD47 Intersection**



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

**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 Roadway Stabilization Geotechnical Repair areas.

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

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

**HAUL AND STOCKPILE GRANULAR MATERIAL**

Excess cold milled material estimated (for informational purposes only) at 7,274.6 tons shall be hauled and stockpiled at the site located east of the Lebanon Junction at approximate MRM 237.35 within the SW4 SE4 SW4 Sec2, R74W T118N. The material shall be weighed going into the stockpile.

The Contractor shall have approval from the Engineer of the stockpile location prior to stockpiling the material within the aforementioned site.

Prior to stockpiling the cold milled material and constructing the access road, a minimum depth of 4" of topsoil shall be removed and stockpiled by the Contractor. Upon completion of the topsoil stockpile the Contractor shall seed the stockpile with Cover Crop Seeding as per Specifications. Payment for topsoil removal, stockpiling, and seeding shall be incidental to the "Haul and Stockpile Granular Material" bid item.

Prior to stockpiling operations, the Contractor shall be required to construct a gravel surfaced road from the existing field entrance that is near the stockpile site. The road shall be approximately 15' wide x 250' long with 8" of Gravel Surfacing. The access road should be constructed in the State Right of Way as close as possible to the fence line. Construction of the road and compaction of the material shall be done to the satisfaction of the Engineer. All costs associated with constructing the road, including the Gravel Surfacing material, shall be incidental to the "Haul and Stockpile Granular Material" bid item.

High Flow Silt Fence shall be placed along the disturbed area at the stockpile site where runoff would exist as directed by the Engineer. Payment for Silt Fence shall be at contract unit price per foot for the non-participating bid item "High Flow Silt Fence" as shown in the Estimate.

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".

**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 884.2 C.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 <sub>initial</sub>	N <sub>design</sub>	N <sub>maximum</sub>
Class Q3R	6	50	75

All remaining requirements for Class Q3 shall apply.

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**FULL DEPTH RECLAMATION (FDR)**

The Contractor may perform initial rolling with a sheepsfoot roller until the roller pads walk out of the reclaimed mix. The sheepsfoot roller shall weigh at least 25,000 pounds. The maximum lift thickness may be increased to 8" if a sheepsfoot roller is utilized and good compaction results are obtained. Moisture and density requirements throughout the full depth of processing as required in Section 280.3 C shall be adhered to; moisture testing shall be completed behind the processing unit and prior to compaction.

Shaping of the surface to repair ruts, potholes, wash-boarding, sheepsfoot roller marks, and other distortions shall be accomplished by scarifying to a depth of 2 inches below the deepest distortion and shaped and compacted to the typical section.

Repeated reclaiming and rolling may be required within two calendar days after the initial processing and rolling to achieve the target density on the completed in-place recycled surface. The Contractor shall discontinue any type of rolling that results in cracking, movement, or other types of distress until such time that the problem can be resolved. If there is a significant change in mix proportions, weather conditions, or other controlling factors, the Engineer may require construction of test strips to check target density.

All other requirements for Full Depth Reclamation shall apply.

**UNCLASSIFIED EXCAVATION**

Unclassified Excavation will occur throughout the inslope topsoil blading limits and at Roadway Stabilization Geotechnical Repair (Geotech) areas as determined by the Engineer.

If any material is remaining it shall become the property of the Contractor for their disposal.

**TABLE OF UNCLASSIFIED EXCAVATION**

Location	Type of Work	Quantity (CuYd)
Geotech Area	Excavation	1,711
Inlsopes	Blading Topsoil (4" Depth)	12,288
<b>Total:</b>		<b>13,999</b>

Measurement of topsoil blading quantity will not be made as plans quantity will be the basis for payment. An amount of 12,288 cubic yards, based on 10 linear feet down the inslope for removal has been estimated.

**FLUSH SEAL**

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

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**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.

**BLOTTING SAND FOR PRIME**

Blotting Sand for Prime shall be furnished by the Contractor.

**ROADWAY STABILIZATION GEOTECHNICAL REPAIR**

Roadway areas around MRM 230.00 and 230.00+0.250 may need to be stabilized by removing all material above the subgrade, reworking the subgrade as directed by the Engineer, then installing Reinforcement Fabric (MSE) followed by placing 6" layer of Base Course material with 8" FDR material above the Base Course layer. The removal of material shall be paid for at the contract unit price per cubic yard for "Unclassified Excavation". Geotechnical Engineering personnel shall be contacted (605-773-3725) during construction to identify locations that may need stabilization.

The fabric shall be unrolled perpendicular to roadway centerline with a 2 foot minimum overlap and placed as taut as possible with minimal wrinkles. Placement shall be done so that subsequent Base Course granular material does not shove, wrinkle, or distort the in-place fabric. The overlaps shall be shingled in such a manner that assures the granular material will not be forced underneath the fabric during backfilling operations. The fabric may be held in place with small piles of granular material or staples.

The fabric shall conform to Section 831 of the Standard Specification for Geotextiles and Impermeable Plastic Membrane, Reinforcement Fabric (MSE). The fabric shall be on the Approved Products List for this material or shall be certified by the supplier to meet this specification prior to installation. Payment for fabric will be based on area covered plus 15% for overlaps. All cost for furnishing and installing the fabric shall be paid for at the contract unit price per square yard for "Reinforcement Fabric (MSE)".

Granular material shall be dumped at least 20 feet behind the leading edge of the backfill and pushed into place with a loader or dozer from the covered areas to the uncovered areas. The granular material shall be placed as a single 6 inch lift or as directed by the Engineer. The granular material compaction requirements shall be as specified in Section 120.3 B 3.a.

The bid quantities for the stabilization work are based on a 30 foot width with a length of 1,320 feet. These quantities may be adjusted or eliminated by CCO as determined by the Engineer during construction depending on the field conditions.

**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".

**PLACING TOPSOIL**

The Contractor will be required to place removed topsoil. The thickness will be approximately 4 inches.

The placing 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 replacement shall be done as according to the plans and/or as directed by the Engineer.

Measurement of placing topsoil will not be made as plans quantity will be the basis for payment. An amount of 12,288 cubic yards has been estimated.

**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".

**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 data charged to this internet connection at the end of each month. The Project Engineer will then audit the bills to ensure all charges are legitimate and then initiate a Construction Change Order (CCO) to reimburse the Contractor for the actual approved usage. Reimbursement will not be made for fees associated with the purchase, installation, disconnection, monthly charges, and incidentals involved in the installation, maintenance, and disconnection of the internet connection (including attachments). These items shall be incidental to the contract unit price per each for "Type III Field Laboratory".

**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.

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**

MRM	L/R	Single (Each)
231.00+0.767	Rt	1
<b>Total:</b>		<b>1</b>

**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 inslope topsoil removal 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 22.849 acres of disturbed area will require seeding. 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.

**MYCORRHIZAL INOCULUM**

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

- Glomus intraradices* 25%
- Glomus aggregatu* 25%
- Glomus mosseae* 25%
- Glomus etunicatum* 25%

All seed shall be inoculated 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 <a href="http://www.mycorrhizae.com/">http://www.mycorrhizae.com/</a>

**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.

**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.

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

**REFLECTORIZED SHEETING REQUIREMENTS FOR TEMPORARY TRAFFIC CONTROL DEVICES**

Delete the first paragraph of Section 984.1 and replace with the following:

Temporary traffic control devices, including signs, drums, cones, tubular markers, barricades, vertical panels, and direction indicator barricades shall be reflectORIZED with sheeting applied to a satisfactory backing. Flat surfaced temporary traffic control devices including, but not limited to; signs, barricades, vertical panels, and direction indicator barricades shall be reflectORIZED with super/very high intensity reflectORIZED sheeting meeting the standards of Type XI as defined by AASHTO M 268 (ASTM D4956). Round surfaced temporary traffic control devices including, but not limited to; drums, cones, and tubular markers shall be reflectORIZED with high intensity reflectORIZED sheeting meeting the standards of Type IV as defined by AASHTO M 268 (ASTM D4956). All orange colored material shall be fluorescent.

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**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 (605-773-5294), SD Highway Patrol (Pierre State Radio (605-773-3536)), and Potter County Sheriff Department (605-765-9405).

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

**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.

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.

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 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.

**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 the Grooving for Cold Applied Plastic Pavement Marking corresponding bid items.

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.

**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.

**TEMPORARY PAVEMENT MARKINGS**

Temporary pavement markings shall be as per the Specifications.

The total length of no passing zone is estimated to be **0.55** 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 3 DO NOT PASS and 3 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 Full Depth Reclamation Surface
- 3) One pass on top of the first lift of Asphalt Concrete
- 4) One pass on top of the second lift of Asphalt Concrete
- 5) \*\* 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 flexible vertical markers (tabs). 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.

# TYPICAL SECTION

## Section 1

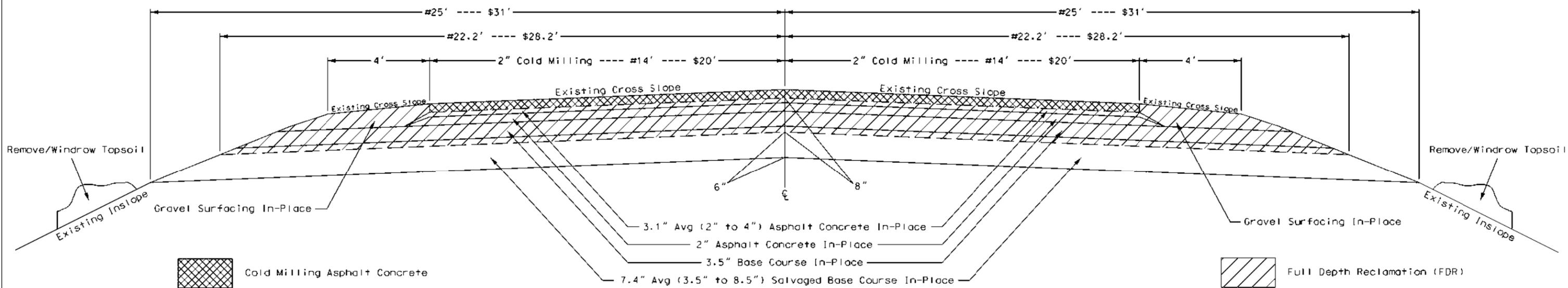
\*\* Station 10+00 to Station 61+06.93  
 Station 81+36.83 to Station 315+71.98  
 Station 343+95.68 to Station 456+95  
 \$ Station 461+15 to \$ Station 465+45  
 Station 469+65 to Station 475+50  
 Station 494+10 to Station 507+64.34

\*\* At Begin Project the Contractor shall transition the FDR material from 5.5" Avg at Station 10+00 to the 8" Avg at Station 12+00 to allow for full thickness of asphalt concrete layers throughout the transition.

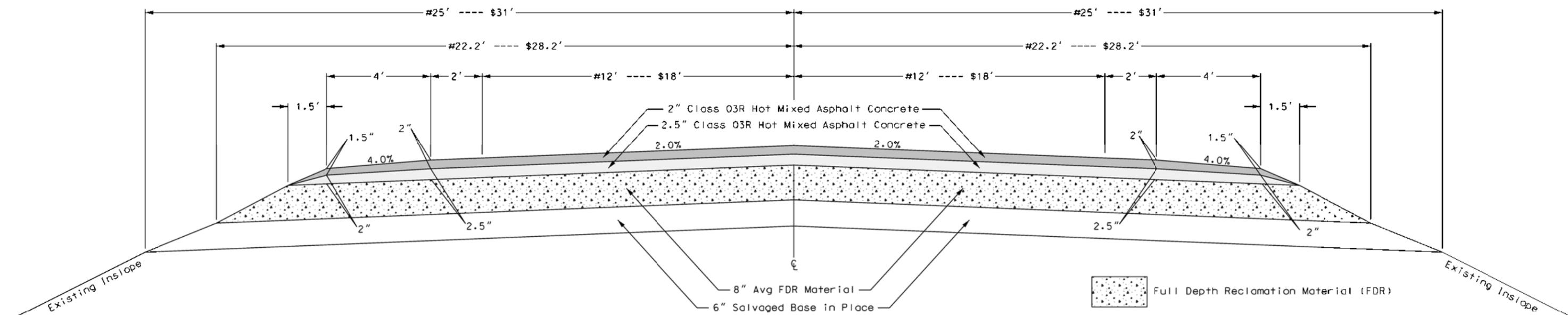
\$ REFER TO TABLE OF ADDITIONAL QUANTITIES FOR QUANTITY CALCULATIONS

TRANSITIONS:  
 # 14' to 20' fm Station 456+95 to Station 461+15  
 # 20' to 14' fm Station 465+45 to Station 469+65

### IN PLACE, COLD MILLING ASPHALT CONCRETE AND FDR SECTION



### RESURFACING SECTION

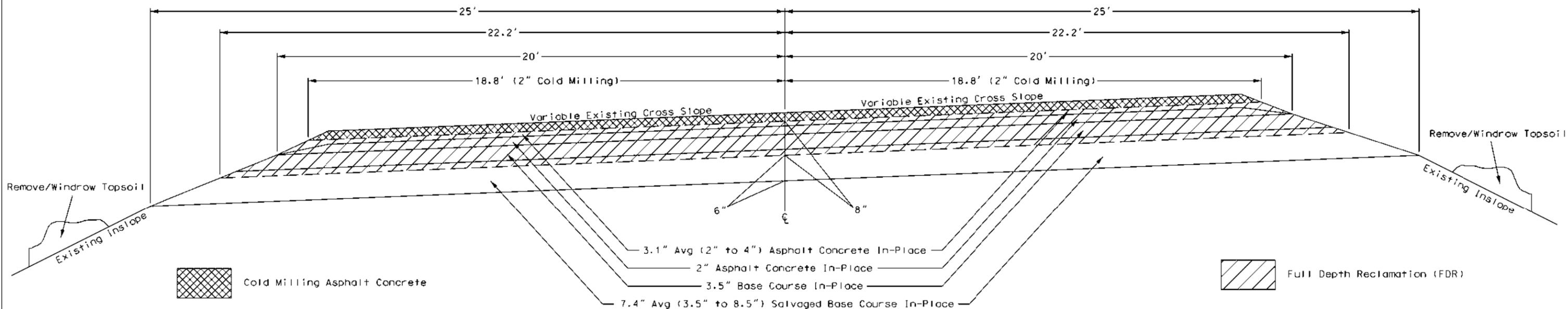


# TYPICAL SECTION

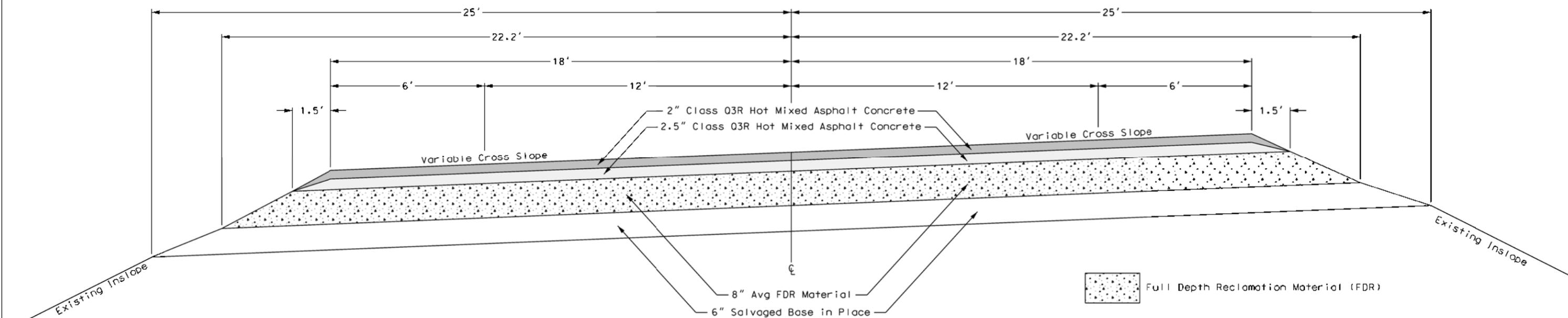
## Section 2 -- Superelevated Curves

Station 61+06.93 to Station 81+36.83  
 Station 315+71.98 to Station 343+95.68

### IN PLACE, COLD MILLING ASPHALT CONCRETE AND FDR SECTION



### RESURFACING SECTION



# TYPICAL SECTION

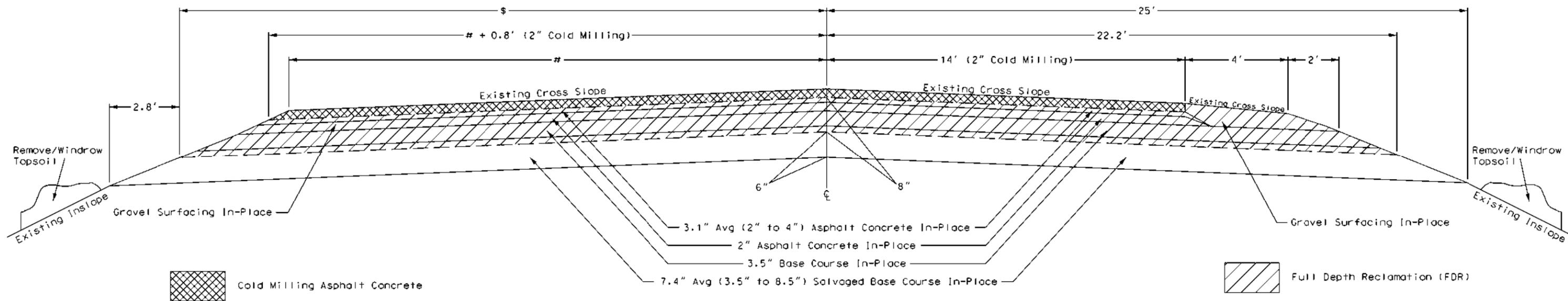
## Section 3

Station 476+50 to Station 480+50 -- # 22' -- \$ 26.2'  
 Station 482+50 to Station 484+50 -- # 30' -- \$ 34.2'  
 Station 484+60 to Station 485+00 -- # 40' -- \$ 44.2'  
 Station 485+10 to Station 487+10 -- # 30' -- \$ 34.2'  
 Station 489+10 to Station 493+10 -- # 22' -- \$ 26.2'

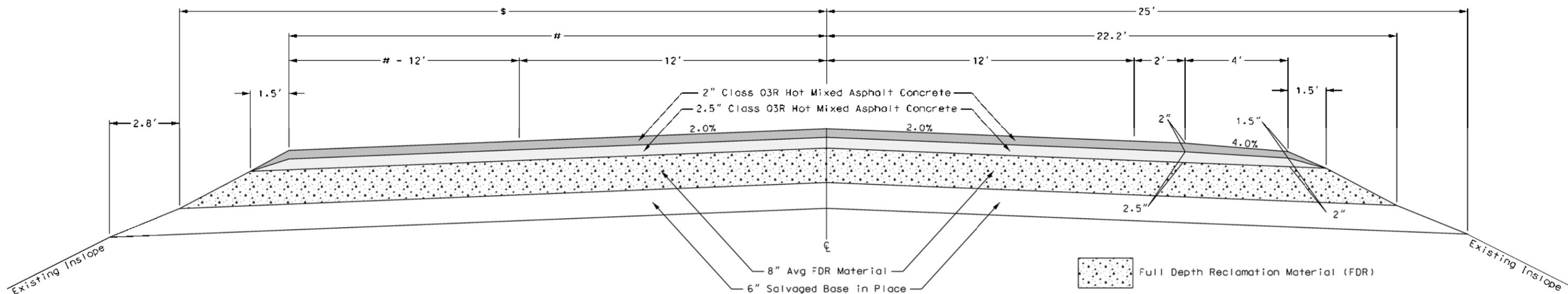
NOTE: REFER TO TABLE OF ADDITIONAL QUANTITIES FOR QUANTITY CALCULATIONS FOR TYPICAL SECTION

TRANSITIONS:  
 fm Station 475+50 to Station 476+50  
 fm Station 480+50 to Station 482+50  
 fm Station 484+50 to Station 484+60  
 fm Station 485+00 to Station 485+10  
 fm Station 487+10 to Station 489+10  
 fm Station 493+10 to Station 494+10

### IN PLACE, COLD MILLING ASPHALT CONCRETE AND FDR SECTION



### RESURFACING SECTION



# RATES OF MATERIALS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0212(178)226	16	35

## SECTION 1 (per mile)

Station 10+00 to Station 61+06.93  
 Station 81+36.83 to Station 315+71.98  
 Station 343+95.68 to Station 456+95  
 Station 469+65 to Station 475+50  
 Station 494+10 to Station 507+64.34

### **COLD MILLING ASPHALT CONCRETE**

Cold Milling Asphalt Concrete is computed at the rate of 16,427 Square Yards, applied 28 feet wide.

### **FULL DEPTH RECLAMATION**

Full Depth Reclamation is computed at the rate of 26,048 Square Yards, applied 44.4 feet wide.

Provide MC-70 Asphalt for Prime at the rate of 27.8 ton applied 40 feet wide (Rate = 0.30 gallon per square yard), throughout the Full Depth Reclamation finished surface limits.

Provide Blotting Sand for Prime at the rate of 65 applied 22 feet wide (Rate = 10 pounds per square yard).

### **CLASS Q3R HOT MIXED ASPHALT CONCRETE**

ASPHALT MIX	1 <sup>ST</sup> LIFT (2.5")	2 <sup>ND</sup> LIFT (2")
Aggregate (80% Contractor Furnished)	2,260 Tons	1,794 Tons
Salvaged Asphalt Concrete (20%)	565 Tons	448 Tons
PG 58-34 Asphalt Binder	139 Tons	111 Tons
<b>TOTAL MIX</b>	<b>2,964 Tons</b>	<b>2,353 Tons</b>
Hydrated Lime	30 Tons	24 Tons
<b>TOTAL MIX WITH HYDRATED LIME</b>	<b>2,994 Tons</b>	<b>2,377 Tons</b>

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

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 6.0 ton applied 40 feet wide (Rate = 0.06 gallon per square yard), prior to application of the 1<sup>st</sup> and 2<sup>nd</sup> lifts of Class Q3R Hot Mixed Asphalt Concrete.

### **Flush Seal**

Provide SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 5.9 ton applied 39 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 – SUPERELEVATED CURVES (per station)

Station 61+06.93 to Station 81+36.83  
 Station 315+71.98 to Station 343+95.68

### **COLD MILLING ASPHALT CONCRETE**

Cold Milling Asphalt Concrete is computed at the rate of 418 Square Yards, applied 37.6 feet wide.

### **FULL DEPTH RECLAMATION**

Full Depth Reclamation is computed at the rate of 493 Square Yards, applied 44.4 feet wide.

Provide MC-70 Asphalt for Prime at the rate of 0.53 ton applied 40 feet wide (Rate = 0.30 gallon per square yard), throughout the Full Depth Reclamation finished surface limits.

Provide Blotting Sand for Prime at the rate of 1.22 applied 22 feet wide (Rate = 10 pounds per square yard).

### **CLASS Q3R HOT MIXED ASPHALT CONCRETE**

ASPHALT MIX	1 <sup>ST</sup> LIFT (2.5")	2 <sup>ND</sup> LIFT (2")
Aggregate (80% Contractor Furnished)	44.08 Tons	35.26 Tons
Salvaged Asphalt Concrete (20%)	11.02 Tons	8.82 Tons
PG 58-34 Asphalt Binder	2.72 Tons	2.17 Tons
<b>TOTAL MIX</b>	<b>57.82 Tons</b>	<b>46.25 Tons</b>
Hydrated Lime	0.58 Tons	0.46 Tons
<b>TOTAL MIX WITH HYDRATED LIME</b>	<b>58.40 Tons</b>	<b>46.71 Tons</b>

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

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.11 ton applied 40 feet wide (Rate = 0.06 gallon per square yard), prior to application of the 1<sup>st</sup> and 2<sup>nd</sup> lifts of Class Q3R Hot Mixed Asphalt Concrete.

### **Flush Seal**

Provide SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.09 ton applied 39 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).

# TABLE OF PROJECT STATIONING

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0212(178)226	17	35

SECTION	STATION	TO	STATION	DESCRIPTION	PROJECT GROSS LENGTHS	EXCEPTION LENGTH	PROJECT NET LENGTHS
1	<b>Begin Project</b> 10+00.00	to	61+06.93	Rural 2 Lane	5106.93'	-	5106.93'
2	61+06.93	to	81+36.83	Rural 2 Lane -- Superelevated Curve	2029.90'	-	2029.90'
1	81+36.83	to	315+71.98	Rural 2 Lane	23435.15'	-	23435.15'
2	315+71.98	to	343+95.68	Rural 2 Lane -- Superelevated Curve	2823.70'	-	2823.70'
1	343+95.68	to	456+95.00	Rural 2 Lane	11299.32'	-	11299.32'
Section Transition	456+95.00	to	461+15.00	Rural 2 Lane transitioning into Turn Lane at SD47 Intersection	420.00'	-	420.00'
1	461+15.00	to	465+45.00	Turn Lane thru SD47 Intersection	430.00'	-	430.00'
Section Transition	465+45.00	to	469+65.00	Turn Lane at SD47 Intersection transitioning into Rural 2 Lane	420.00'	-	420.00'
1	469+65.00	to	475+50.00	Rural 2 Lane	585.00'	-	585.00'
Section Transition	475+50.00	to	476+50.00	Rural 2 Lane transitioning into Weigh Scale widening Section	100.00'	-	100.00'
3	476+50.00	to	480+50.00	Rural 2 Lane with Weigh Scale Section	400.00'	-	400.00'
Section Transition	480+50.00	to	482+50.00	Weigh Scale Transition	200.00'	-	200.00'
3	482+50.00	to	484+50.00	Rural 2 Lane with Weigh Scale Section	200.00'	-	200.00'
Section Transition	484+50.00	to	484+60.00	Weigh Scale Transition	10.00'	-	10.00'
3	484+60.00	to	485+00.00	Rural 2 Lane with Weigh Scale Section	40.00'	-	40.00'
Section Transition	485+00.00	to	485+10.00	Weigh Scale Transition	10.00'	-	10.00'
3	485+10.00	to	487+10.00	Rural 2 Lane with Weigh Scale Section	200.00'	-	200.00'
Section Transition	487+10.00	to	489+10.00	Weigh Scale Transition	200.00'	-	200.00'
3	489+10.00	to	493+10.00	Rural 2 Lane with Weigh Scale Section	400.00'	-	400.00'
Section Transition	493+10.00	to	494+10.00	Weigh Scale Transition	100.00'	-	100.00'
1	494+10.00	to	507+64.34 <b>End Project</b>	Rural 2 Lane	1354.34'	-	1354.34'
<b>TOTALS =</b>					49764.34' <b>9.425 Miles</b>	0.00' <b>0.000 Miles</b>	49764.34' <b>9.425 Miles</b>

# TABLE OF MATERIAL QUANTITIES

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0212(178)226	18	35

1/11/16 Revision – V. Martin

DESCRIPTION	Water For Granular Material (MGal)	Cold Milling Asphalt Concrete (SqYd)	Full Depth Reclamation (SqYd)	Base Course (Ton)	Haul and Stockpile Granular Material (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)	MC-70 Asphalt for Prime (Ton)	Blotting Sand for Prime (Ton)	Sand For Flush Seal (Ton)
<b>Section 1</b>	787.0	129,888	205,962	-	↓	42,468.5	1,976.8	427.0	94.8	38.7	219.9	514.0	411.2
<b>Section 2</b>	89.0	3,272	23,928	-	↓	5,101.6	237.3	50.5	10.6	4.4	25.7	59.2	47.6
Subtotal =	876.0	133,160	229,890	-	7,274.6	47,570.1	2,214.1	477.5	105.4	43.1	245.6	573.2	458.8
Table of Additional Quantities Totals =	96.4	14,097	18,006	2,873.0	-	4,499.4	209.6	45.1	9.5	4.1	17.9	44.9	39.6
<b>TOTALS =</b>	<b>972.4</b>	<b>147,257</b>	<b>247,896</b>	<b>2,873.0</b>	<b>7,274.6</b>	<b>52,069.5</b>	<b>2,423.7</b>	<b>522.6</b>	<b>114.9</b>	<b>47.2</b>	<b>263.5</b>	<b>618.1</b>	<b>498.4</b>

# TABLE OF ADDITIONAL QUANTITIES

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0212(178)226	19	35

1/11/16 Revision – V. Martin

DESCRIPTION	Water For Granular Material (MGal)	Cold Milling Asphalt Concrete (SqYd)	Full Depth Reclamation (SqYd)	Base Course (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)	MC-70 Asphalt for Prime (Ton)	Blotting Sand for Prime (Ton)	Sand For Flush Seal (Ton)
<b>Asphalt to ROW</b> 1 Farm & Field Entrance (MRM 227+0.787)	-	182		-	25.5	1.2	0.3	0.1	-	-	-	-
<b>Asphalt to Radius/Base Course</b> 11 Intersecting Road Entrances	0.5	-		49.5	257.8	12.0	2.6	0.4	-	-	-	-
<b>Base Course</b> 33 Farm & Field Entrances	4.8	-		495.0	-	-	-	-	-	-	-	-
<b>Section 1 fm Station 456+95 to 469+65 (includes transitions)</b> <b>** Mainline Asphalt Paving</b> 1st Lift 2nd Lift	28.5	3,171	7,402	-	878.9 698.7	40.9 32.5	8.8 7.0	1.7 1.7	- 1.4	8.1	22.2	- 12.5
<b>Section 3 (includes transitions)</b> <b>** Mainline Asphalt Paving</b> 1st Lift 2nd Lift	40.3	8,153	10,605	-	1,269.1 1,009.1	59.1 47.0	12.7 10.1	2.5 2.5	- 2.1	9.8	22.8	- 18.2
<b>Roadway Stabilization Geotechnical Repair (Approx. MRM 230.00 &amp; 230.00+0.250)</b>	13.3	-	-	1,386.0	-	-	-	-	-	-	-	-
<b>End Project Transition (200 feet)</b>	-	836		-	116.8	5.5	1.2	0.2	0.2	-	-	2.0
<b>** US212/SD47 Intersecting Road (Paving Limit at 230' onto SD47 fm US212 Rdwy Centerline)</b>	-	1,755		-	243.5	11.4	2.4	0.4	0.4	-	-	7.0
<b>Backfill for Digouts</b>	9.0	-	-	942.5	-	-	-	-	-	-	-	-
<b>TOTALS =</b>	<b>96.4</b>	<b>14,097</b>	<b>18,006</b>	<b>2,873.0</b>	<b>4,499.4</b>	<b>209.6</b>	<b>45.1</b>	<b>9.5</b>	<b>4.1</b>	<b>17.9</b>	<b>44.9</b>	<b>39.6</b>

\*\* Portion of quantity shall be to a Specified Density Compaction Effort.  
 Tonnage shown in the table above for Class Q3R Hot Mixed Asphalt Concrete is based on a 2.5" compacted depth for intersecting road/entrances and shall be as detailed in the plans for each lift on mainline.  
 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 0212(178)226	20	35

DESCRIPTION	Class Q3R Hot Mixed Asphalt Concrete <u>With</u> Specified Density Compaction (Ton)	Class Q3R Hot Mixed Asphalt Concrete <u>Without</u> Specified Density Compaction (Ton)
<b>Section 1 (1st Lift)</b>		
24' Finished Roadway Width	15,601.6	-
6' Shoulders w/1.5' Bevel	-	8,072.0
<b>Section 1 (2nd Lift)</b>		
24' Finished Roadway Width	12,481.3	-
6' Shoulders w/1.5' Bevel	-	6,313.6
<b>Section 1 (1st Lift) - fm Table of Additional Quantities</b>		
24' - 36' Finished Roadway Width	611.8	-
6' Shoulders w/1.5' Bevel	-	267.1
<b>Section 1 (2nd Lift) - fm Table of Additional Quantities</b>		
24' - 36' Finished Roadway Width	485.2	-
6' Shoulders w/1.5' Bevel	-	213.5
<b>Section 1 Totals =</b>	29,179.9	14,866.2
<b>Section 2 (1st Lift)</b>		
24' Finished Roadway Width	1,813.8	-
6' Shoulders w/1.5' Bevel	-	1,020.7
<b>Section 2 (2nd Lift)</b>		
24' Finished Roadway Width	1,451.0	-
6' Shoulders w/1.5' Bevel	-	816.1
<b>Section 2 Totals =</b>	3,264.8	1,836.8
<b>Section 3 (1st Lift) - fm Table of Additional Quantities</b>		
24' Finished Roadway Width	695.1	-
6' Shoulders w/1.5' Bevel along with transitioning/widening throughout on the Left	-	574.0
<b>Section 3 (2nd Lift) - fm Table of Additional Quantities</b>		
24' Finished Roadway Width	556.1	-
6' Shoulders w/1.5' Bevel along with transitioning/widening throughout on the Left	-	453.0
<b>Section 3 Totals =</b>	1,251.2	1,027.0
<b>Subtotals =</b>	33,695.9	17,730.0
<b>Remaining fm Table of Additional Quantities Totals =</b>	176.2	467.4
<b>TOTALS =</b>	<b>33,872.1</b>	<b>18,197.4</b>

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0212(178)226	21	35

## TABLE OF SUPERELEVATED CURVES

<u>Station</u>	<u>To</u>	<u>Station</u>	<u>Remarks</u>
<b>Begin Project</b>			
10+00.00		61+88.53	Normal Crown Section
61+88.53		63+11.53	Superelevation Transition
63+11.53		79+02.23	0° 45' 00" Curve Rt. 0.024 Superelevation Rate Point of Rotation – Centerline
79+02.23		80+25.23	Superelevation Transition
80+25.23		316+39.98	Normal Crown Section
316+39.98		317+79.98	Superelevation Transition
317+79.98		341+87.68	1° 00' 00" Curve Rt. 0.030 Superelevation Rate Point of Rotation – Centerline
341+87.68		343+27.68	Superelevation Transition
343+27.68		507+64.38	Normal Crown Section
<b>End Project</b>			

# SIGN TABULATION

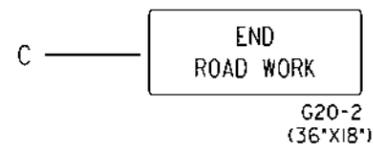
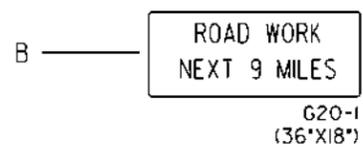
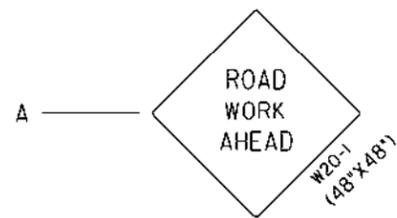
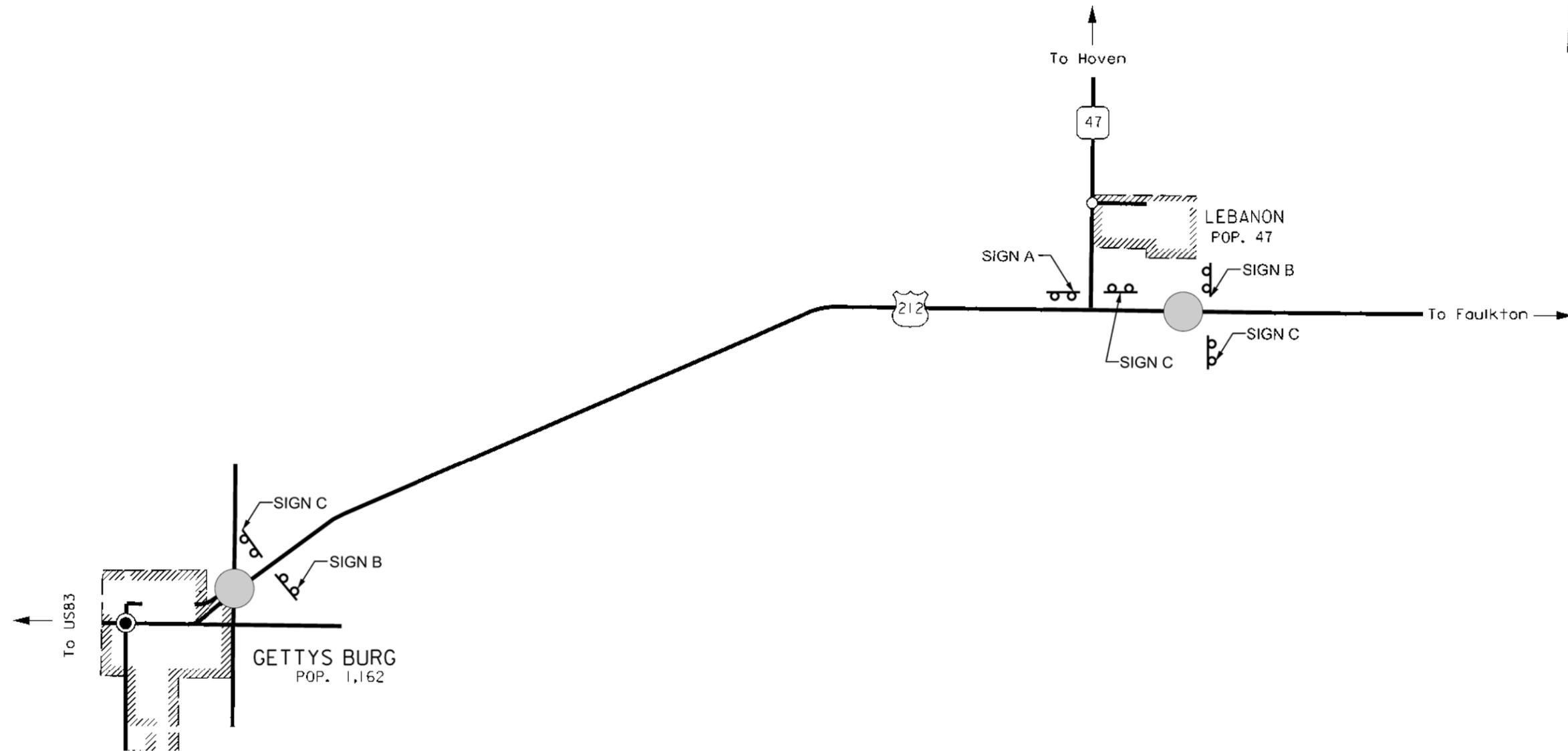
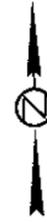
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0212(178)226	22	35

## ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R4-7	KEEP RIGHT (symbol)	2	24" x 30"	5	10
W7-3aP	NEXT ___ MILES (plaque)	1	36" x 30"	8	8
W8-7	LOOSE GRAVEL	2	48" x 48"	16	32
W8-11	UNEVEN LANES	4	48" x 48"	16	64
W16-2P	___ FEET (supplemental distance plaque)	2	30" x 24"	5	10
W20-1	ROAD WORK AHEAD	7	48" x 48"	16	112
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16	32
W20-7	FLAGGER (symbol)	3	48" x 48"	16	48
W21-2	FRESH OIL	2	48" x 48"	16	32
W21-3	ROAD MACHINERY AHEAD	2	48" x 48"	16	32
W21-5	SHOULDER WORK	4	48" x 48"	16	64
G20-1	ROAD WORK NEXT ___ MILES	2	36" x 18"	5	10
G20-2	END ROAD WORK	7	36" x 18"	5	35
SPECIAL	WINDROW	2	48" x 48"	16	32
		<b>CONVENTIONAL ROAD</b>			<b>521</b>
		<b>TRAFFIC CONTROL SIGNS SQFT</b>			

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0212(178)226	23	35

# FIXED LOCATION SIGN LAYOUT



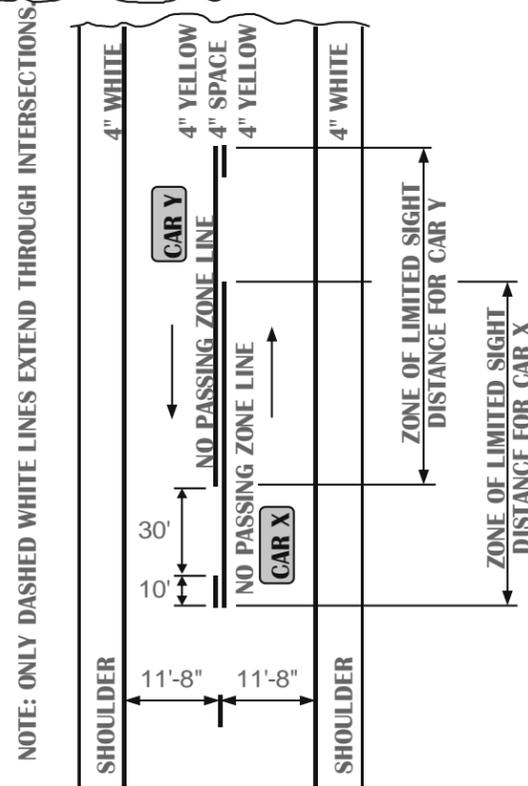
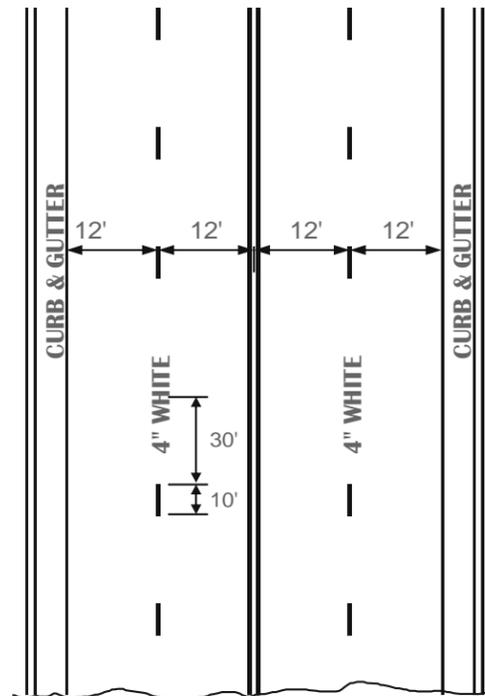
Notes:  
Sign locations will be verified in the field by the Engineer prior to installation.

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 0212(178)226	24	35

## UNDIVIDED ROADWAY



## 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
<u>Solid Yellow Edgeline</u> Rate = 16.90 Gals./Pass-Mile	<u>Solid Yellow Centerline</u> Rate = 16.90 Gals./Pass-Mile	<u>Yellow Centerline</u> (Includes No Passing Zones) Rate = 12± Gals./Pass-Mile
<u>Dashed White Centerline</u> Rate = 4.60 Gals./Pass-Mile	<u>Dashed White Lane Line</u> Rate = 4.60 Gals./Pass-Mile	<u>Solid White Edgeline</u> (Rate for one line) Rate = 16.90 Gals./Pass-Mile
<u>Solid White Edgeline</u> Rate = 16.90 Gals./Pass-Mile	<u>Solid White Edgeline</u> (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.

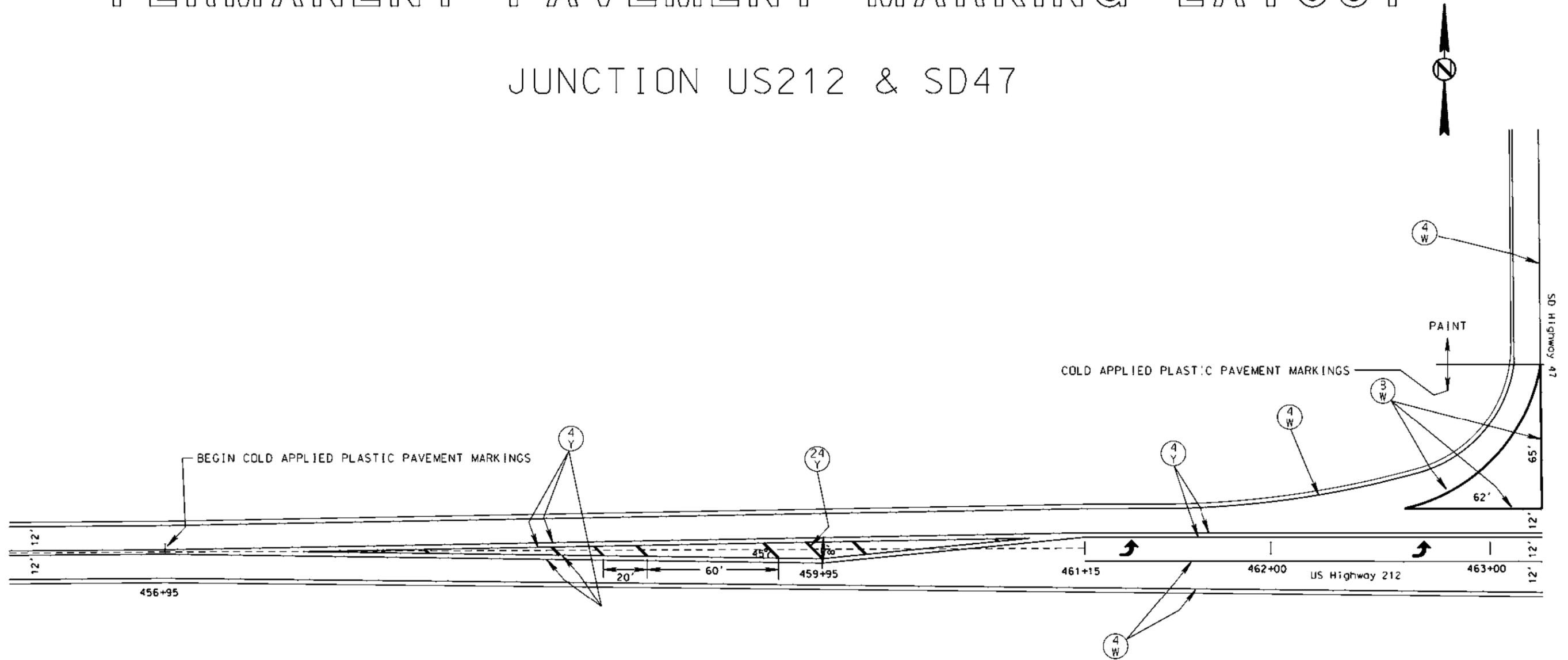
ESTIMATED QUANTITIES	
PAVEMENT MARKING PAINT	QUANTITY
WHITE	319 GALLONS
YELLOW	113 GALLONS
<b>TOTAL</b>	<b>432 GALLONS</b>

**Table of Pavement Marking Quantities**  
(Cold Applied Plastic)

ITEM	US212/SD47 Intersection
4" White	2,768
4" Yellow	4,640
8" White	403
24" Yellow	224
Left Arrow	2
<b>Total</b>	<b>8,037</b>

# PERMANENT PAVEMENT MARKING LAYOUT

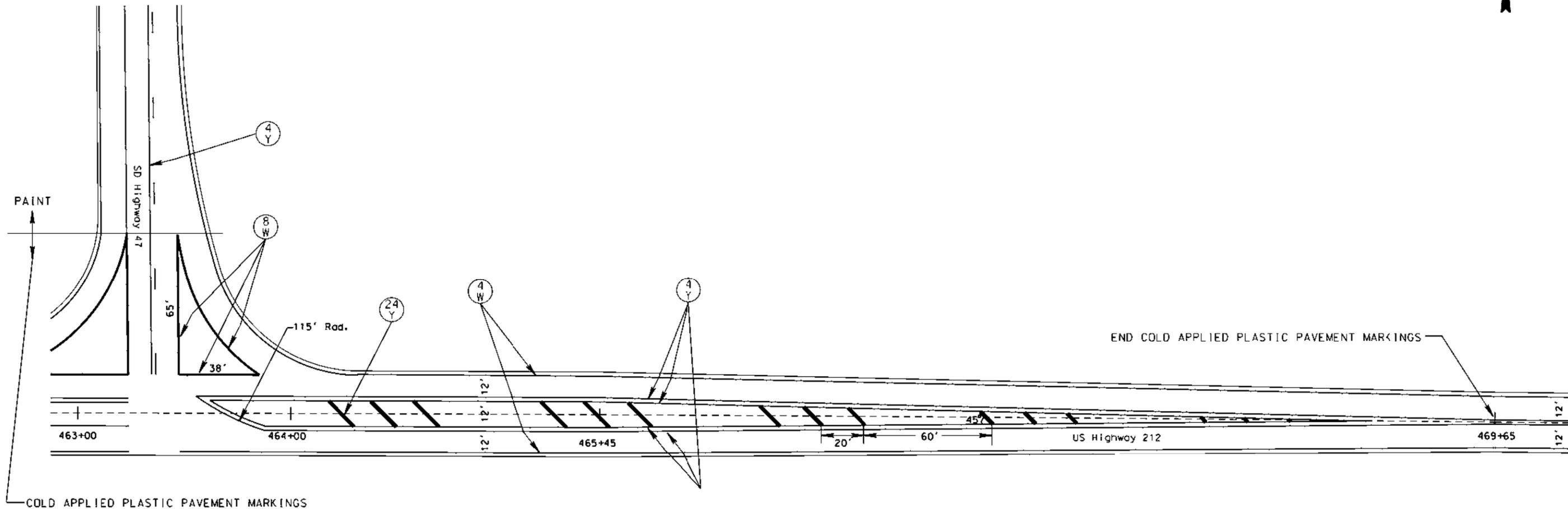
## JUNCTION US212 & SD47



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

# PERMANENT PAVEMENT MARKING LAYOUT

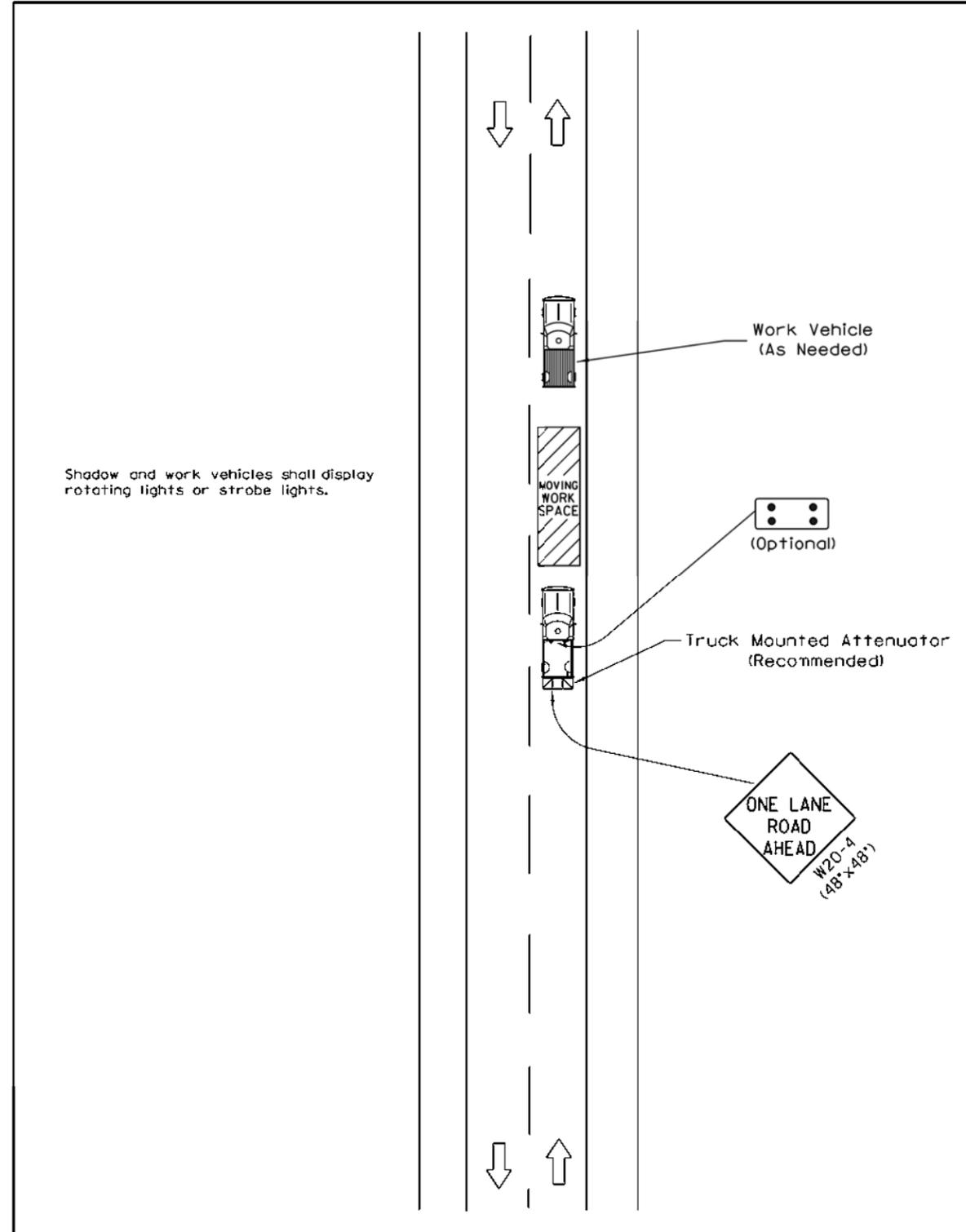
## JUNCTION US212 & SD47



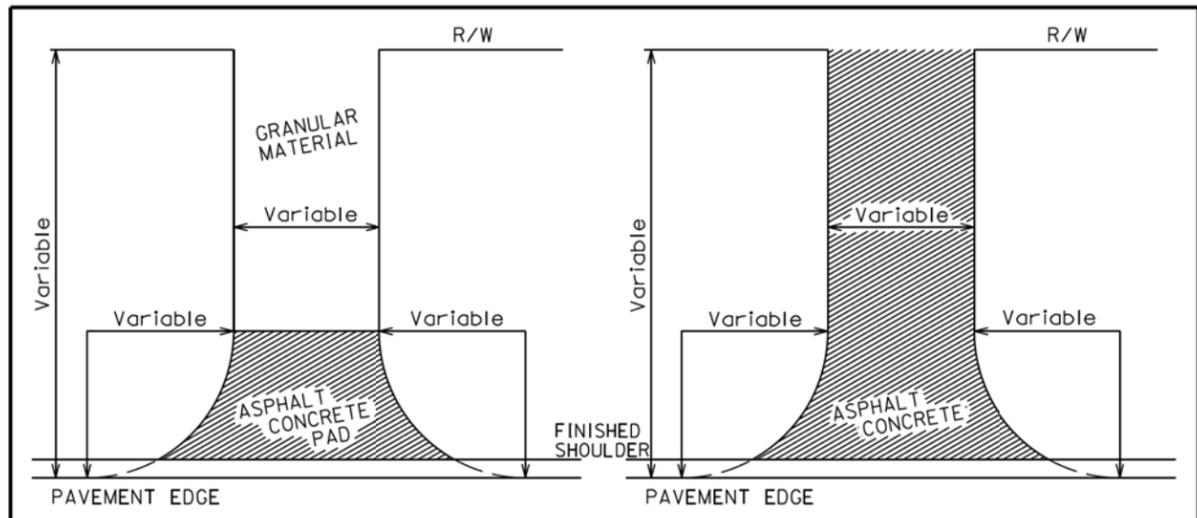
KEY	ITEM
(4 Y)	4" YELLOW
(4 W)	4" WHITE
(8 W)	8" WHITE
(24 Y)	24" YELLOW

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0212(178)226	27	35

# SPECIAL DETAIL FOR MOBILE OPERATION FOR ASPHALT CORING

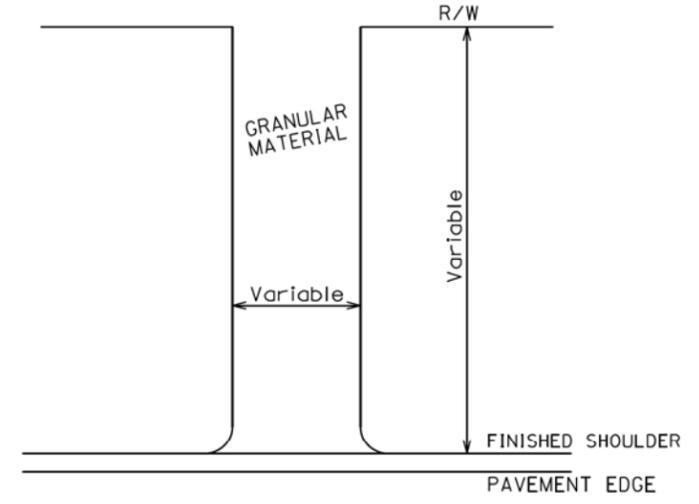


Plotting Date: 01/04/2016



INTERSECTING ROAD  
NO ASPHALT CONCRETE SURFACING  
BEYOND R/W

INTERSECTING ROAD  
ASPHALT CONCRETE SURFACING  
BEYOND R/W



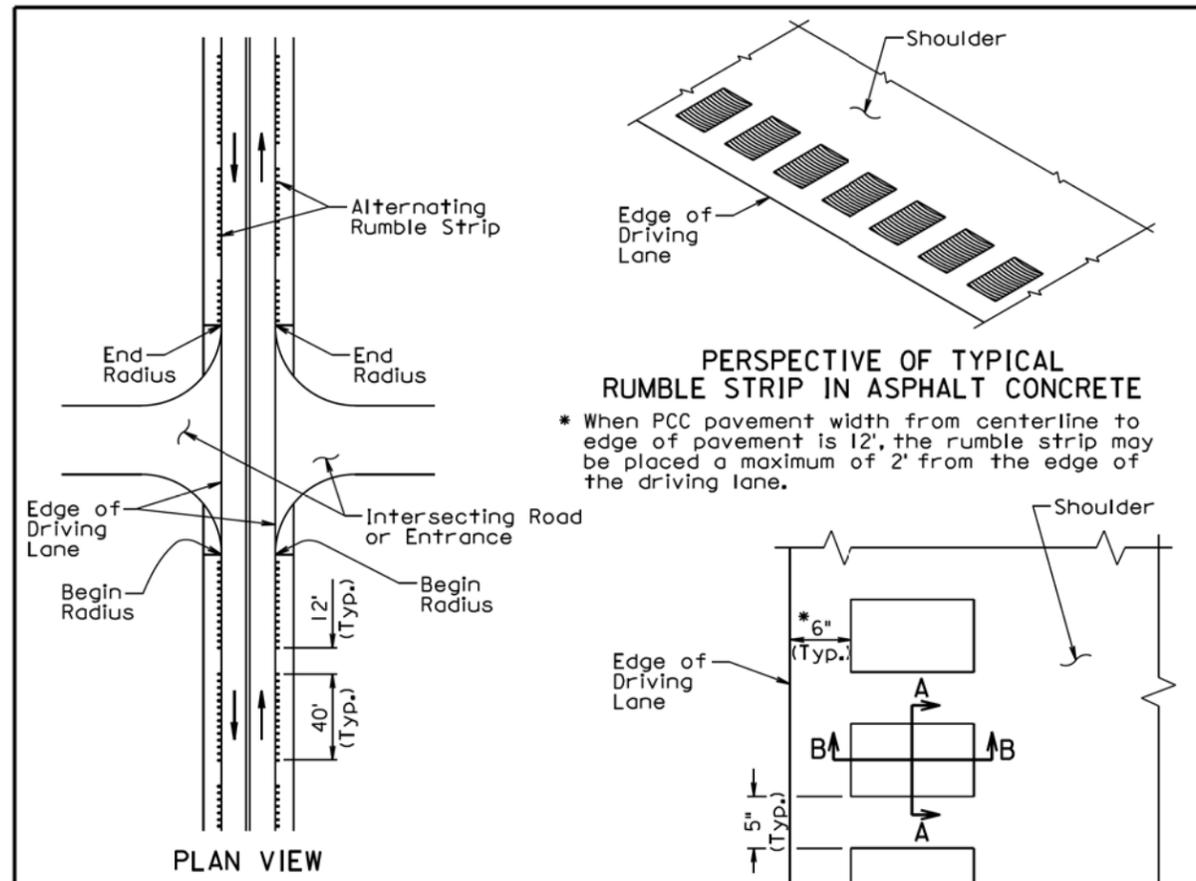
**ENTRANCE**

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

<b>S D D O T</b>	<b>RESURFACING OF INTERSECTING ROADS AND ENTRANCES</b>	PLATE NUMBER <b>320.11</b>
	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.

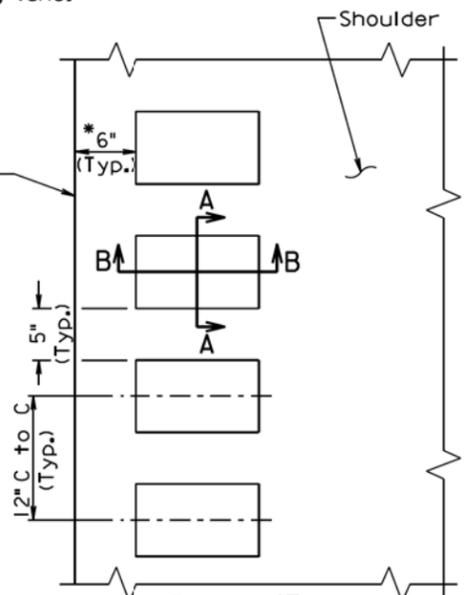
**GENERAL NOTES:**

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.

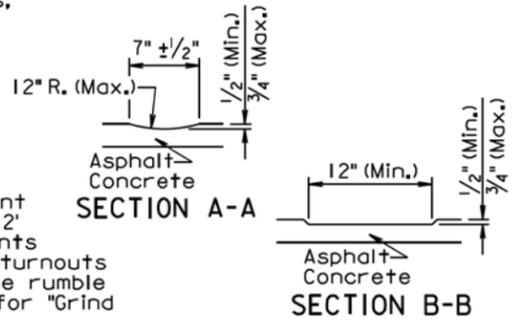
A rumble strip shall not be constructed through intersecting roads, entrances, and turnouts. The lengths of the 40' segments with continuous indentations and the 12' segments without a rumble strip adjacent to the intersecting roads, entrances, and turnouts shall be adjusted as approved by the Engineer.

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".



**PLAN VIEW TYPICAL RUMBLE STRIP IN ASPHALT CONCRETE**



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

June 26, 2011

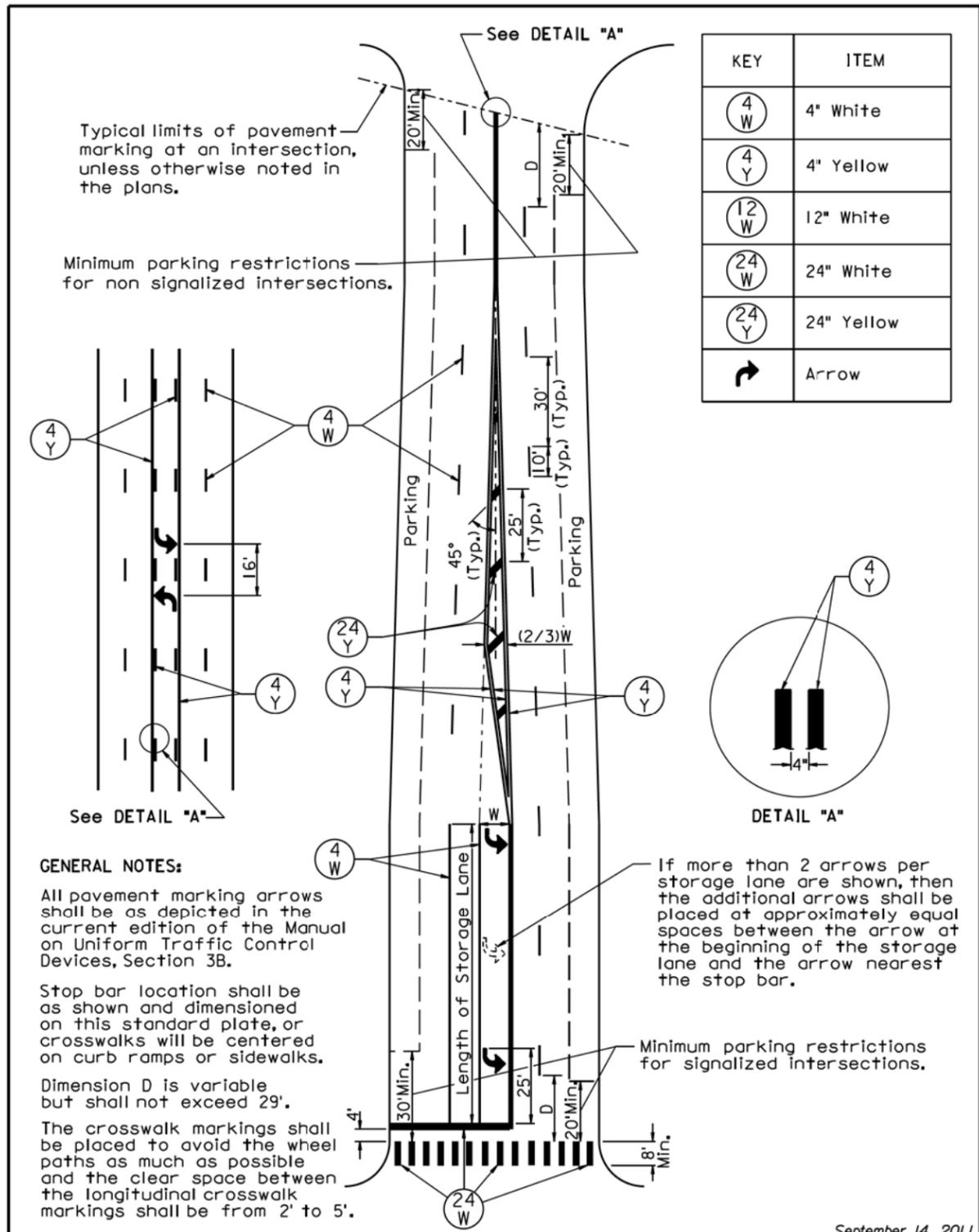
PLOT SCALE - 1:200

PLOTTED FROM - TRPR22410

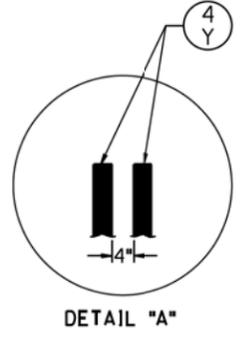
PLOT NAME - 1

FILE - ... \POT104\MM\32011\_32024.DGN

Plotting Date: 01/04/2016



KEY	ITEM
(4 W)	4" White
(4 Y)	4" Yellow
(12 W)	12" White
(24 W)	24" White
(24 Y)	24" Yellow
↶	Arrow



**GENERAL NOTES:**

All pavement marking arrows shall be as depicted in the current edition of the Manual on Uniform Traffic Control Devices, Section 3B.

Stop bar location shall be as shown and dimensioned on this standard plate, or crosswalks will be centered on curb ramps or sidewalks.

Dimension D is variable but shall not exceed 29'.

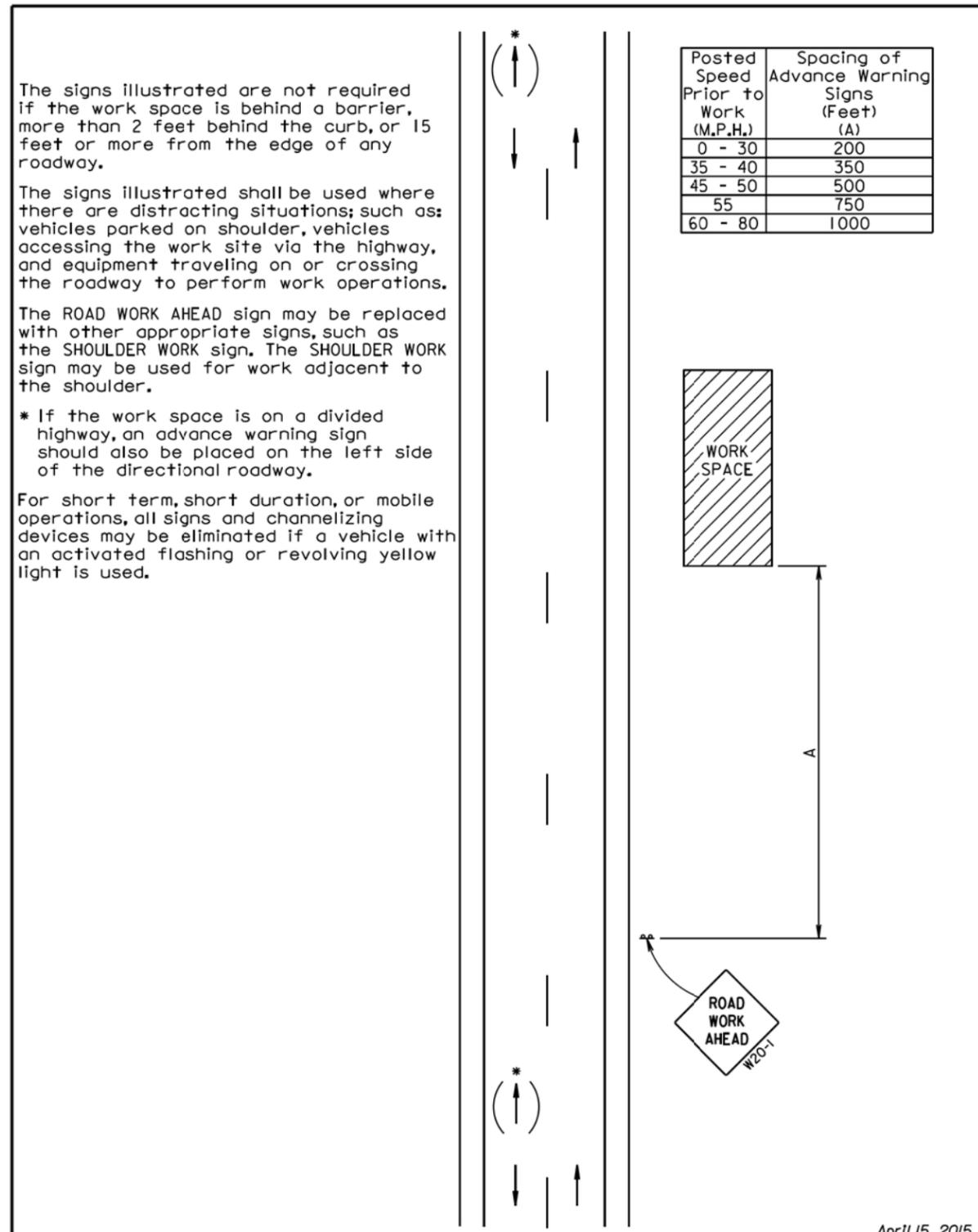
The crosswalk markings shall be placed to avoid the wheel paths as much as possible and the clear space between the longitudinal crosswalk markings shall be from 2' to 5'.

If more than 2 arrows per storage lane are shown, then the additional arrows shall be placed at approximately equal spaces between the arrow at the beginning of the storage lane and the arrow nearest the stop bar.

Minimum parking restrictions for signalized intersections.

September 14, 2011

<b>S D D O T</b>	<b>PAVEMENT MARKINGS FOR ADJACENT INTERSECTIONS AND CENTER TURN LANE</b>	PLATE NUMBER <b>633.01</b>
	Published Date: 4th Qtr. 2015	Sheet 1 of 1



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 80	1000

The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated shall be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

\* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

April 15, 2015

<b>S D D O T</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES WORK BEYOND THE SHOULDER</b>	PLATE NUMBER <b>634.01</b>
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

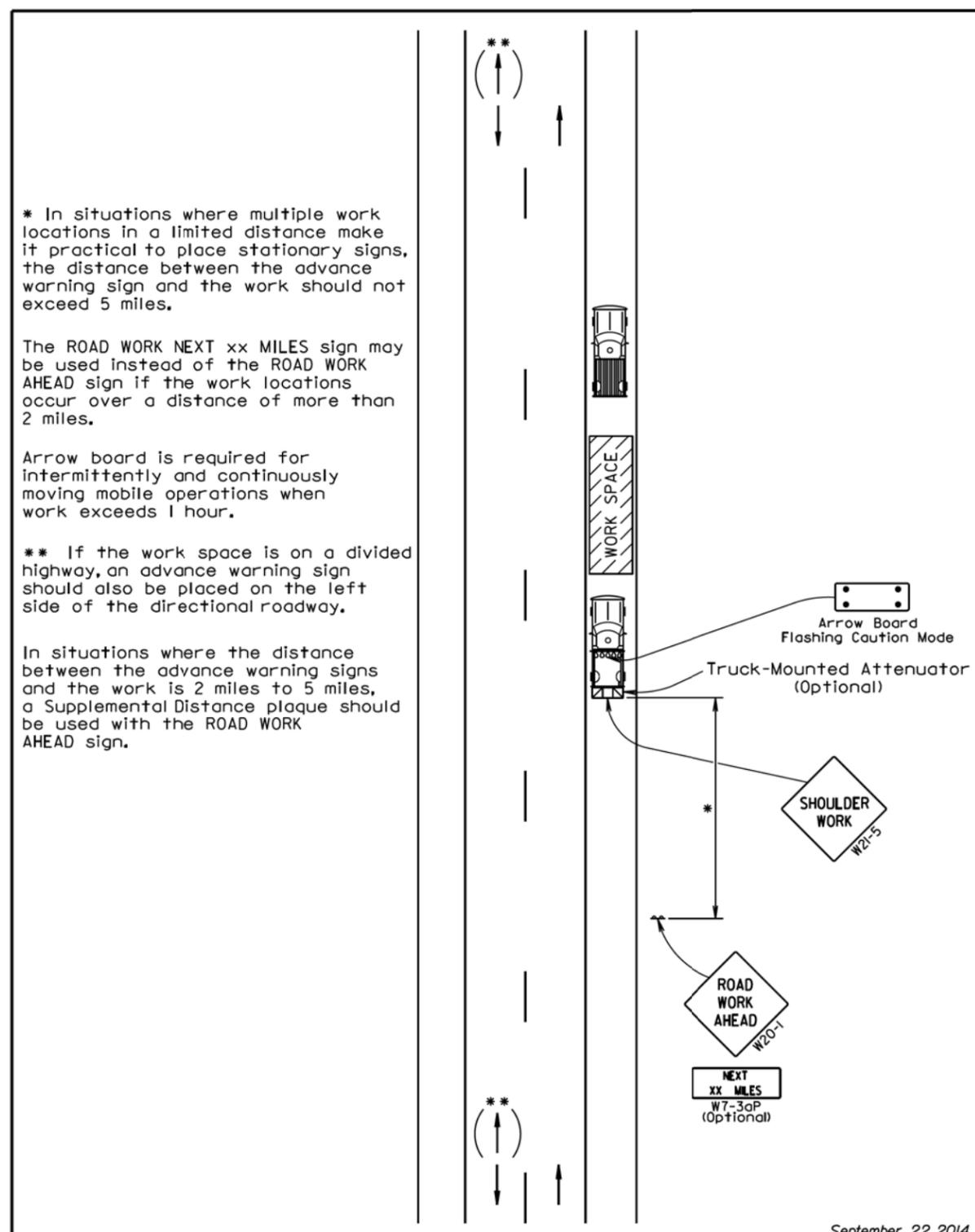
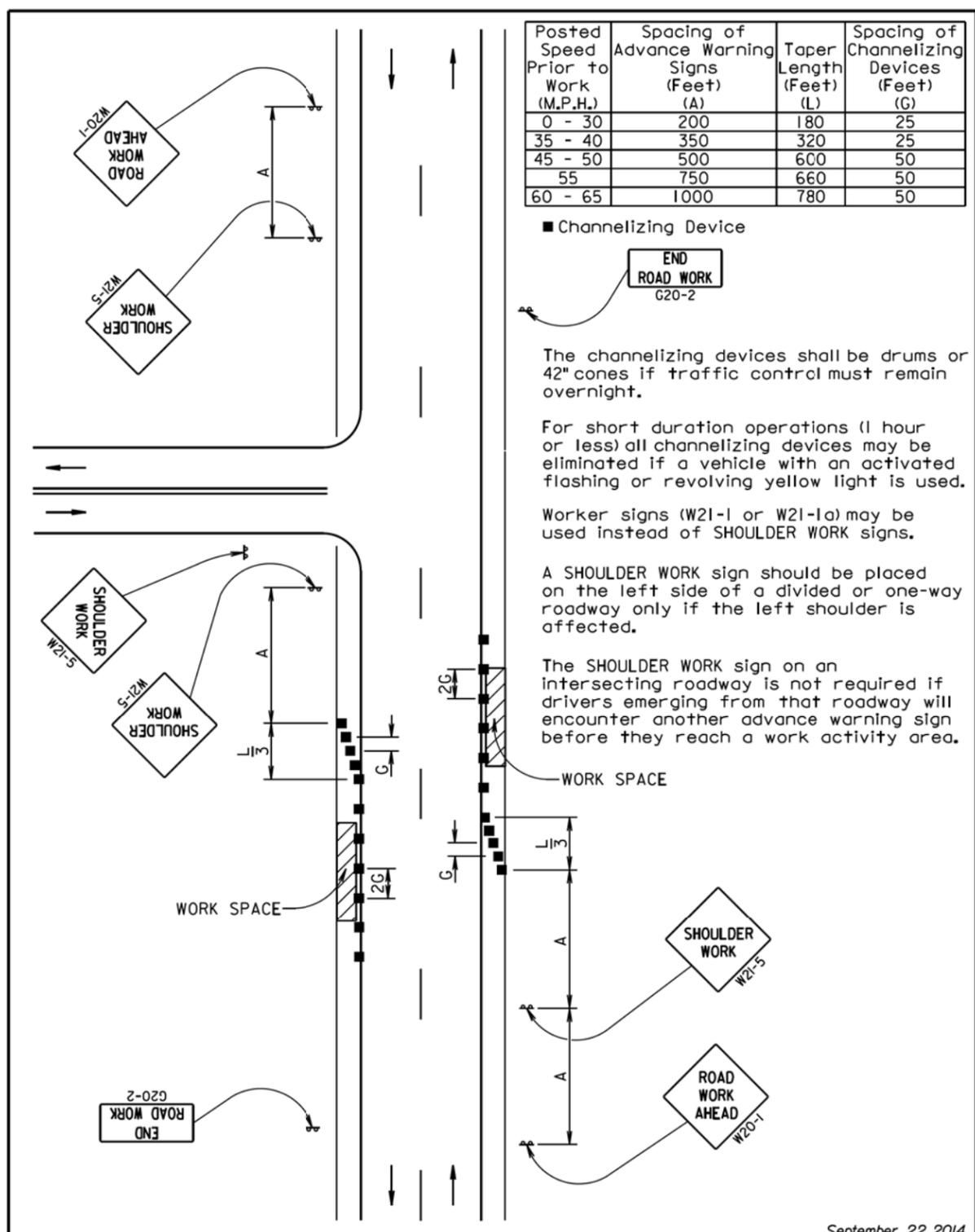
PLOT SCALE - 1:200

PLOTTED FROM - TRPR22410

PLOT NAME - 2

FILE - ... \POT104\MM\63301, 63401.DGN

PLOT SCALE - 1:200

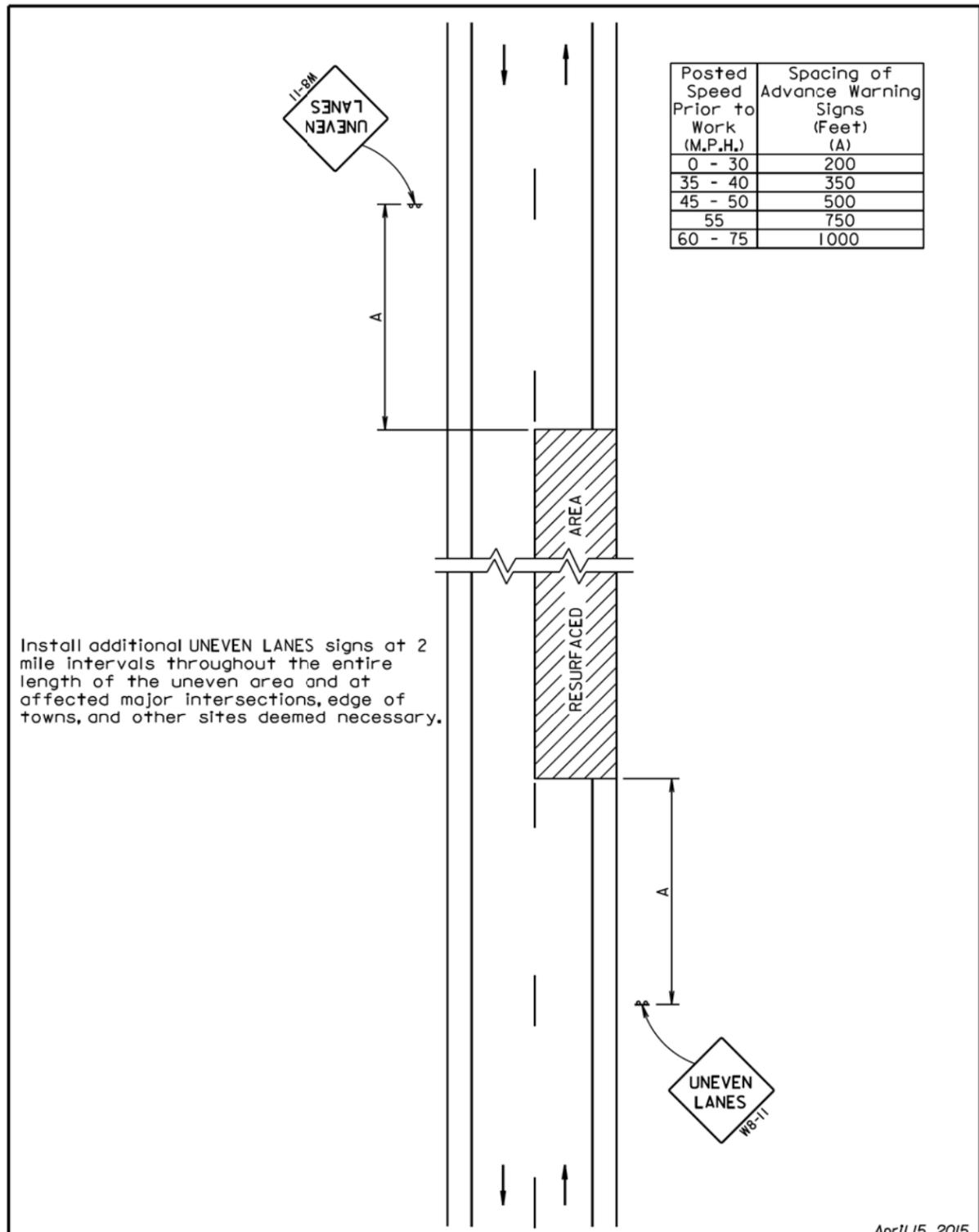


PLOTTED FROM - TRPR22410

PLOT NAME - 3

FILE - ... \POT104\MM\63403, 63404, DON

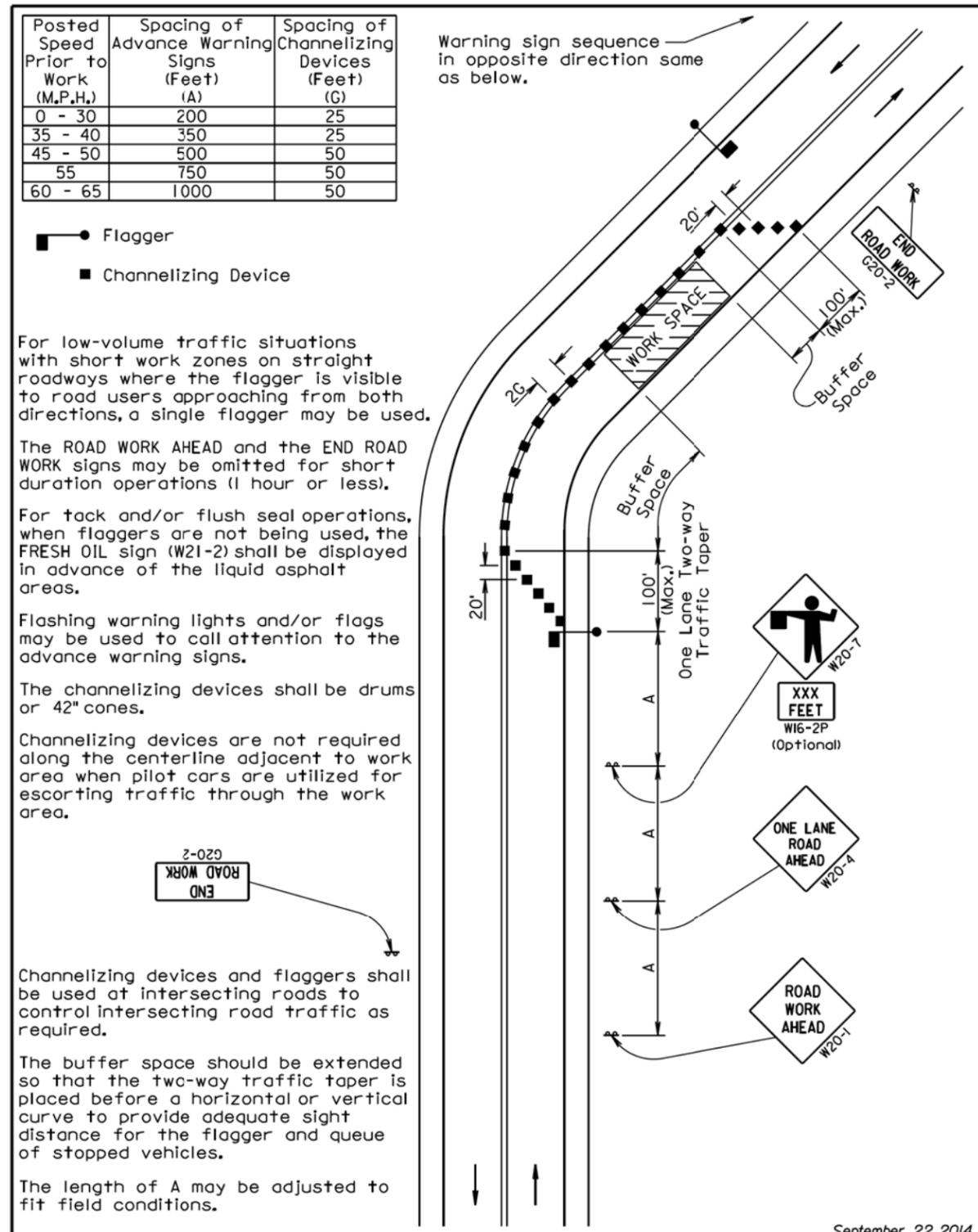
Plotting Date: 01/04/2016



Install additional UNEVEN LANES signs at 2 mile intervals throughout the entire length of the uneven area and at affected major intersections, edge of towns, and other sites deemed necessary.

April 15, 2015

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



For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) shall be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices shall be drums or 42" cones.

Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

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

Warning sign sequence in opposite direction same as below.

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

September 22, 2014

PLOT SCALE - 1:200

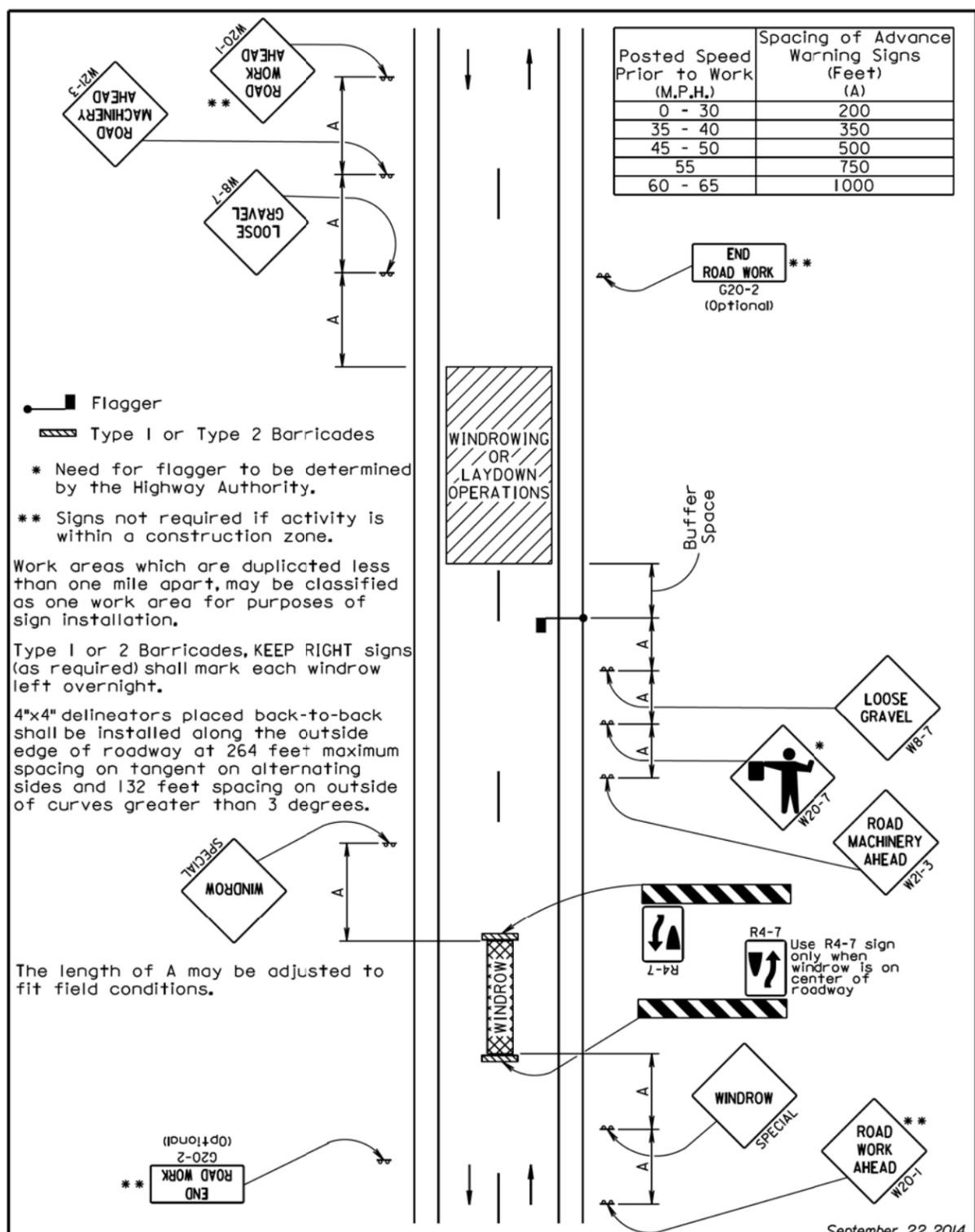
PLOTTED FROM - TRPR22410

PLOT NAME - 4

FILE - ... \PLOT104\MM\63422, 63423, DON

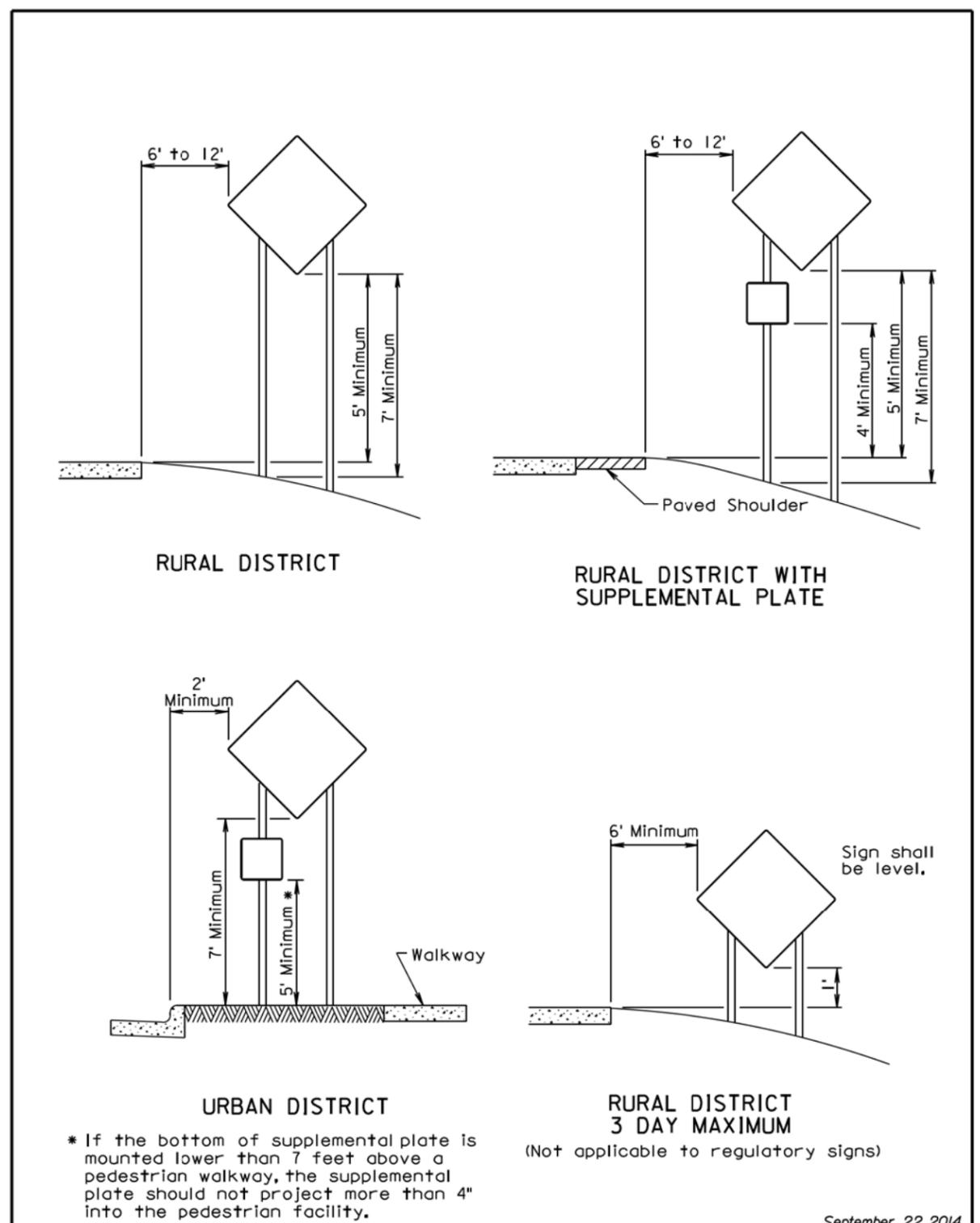
Plotting Date: 01/04/2016

PLOT SCALE - 1:200



September 22, 2014

<b>S D D O T</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES WINDROWING OR LAYDOWN OPERATION</b>	PLATE NUMBER <b>634.27</b>
	Published Date: 4th Qtr. 2015	Sheet 1 of 1



September 22, 2014

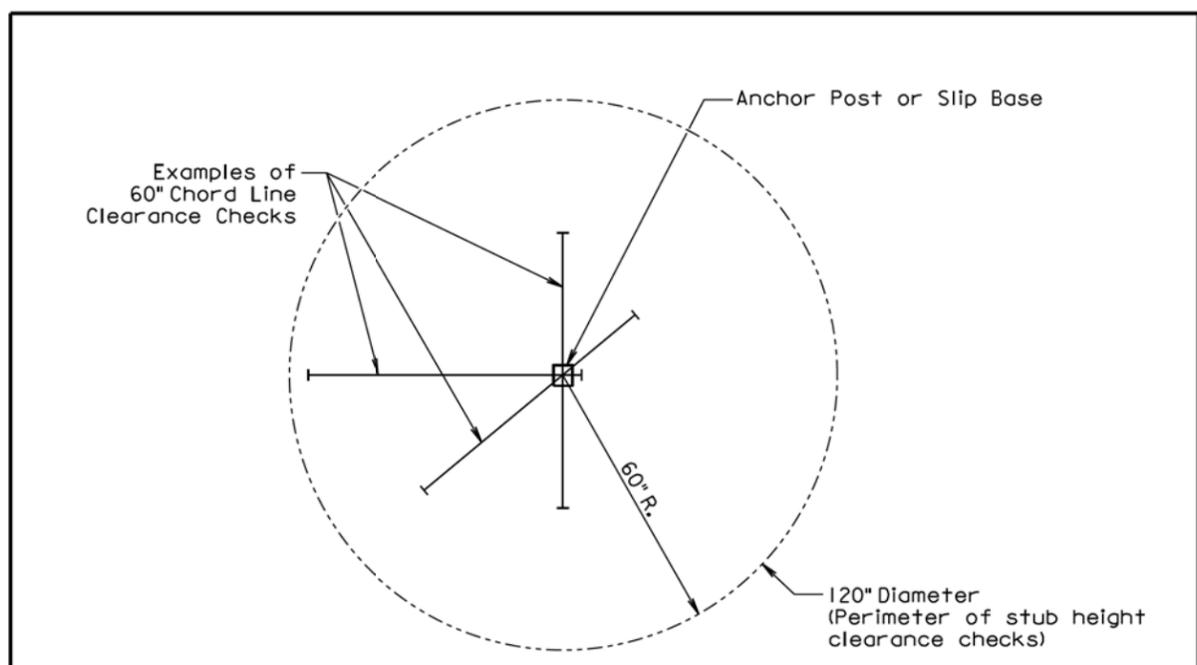
<b>S D D O T</b>	<b>CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)</b>	PLATE NUMBER <b>634.85</b>
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

PLOT NAME - 5  
FILE - ... \POT104\MM\63427\_63485.DGN

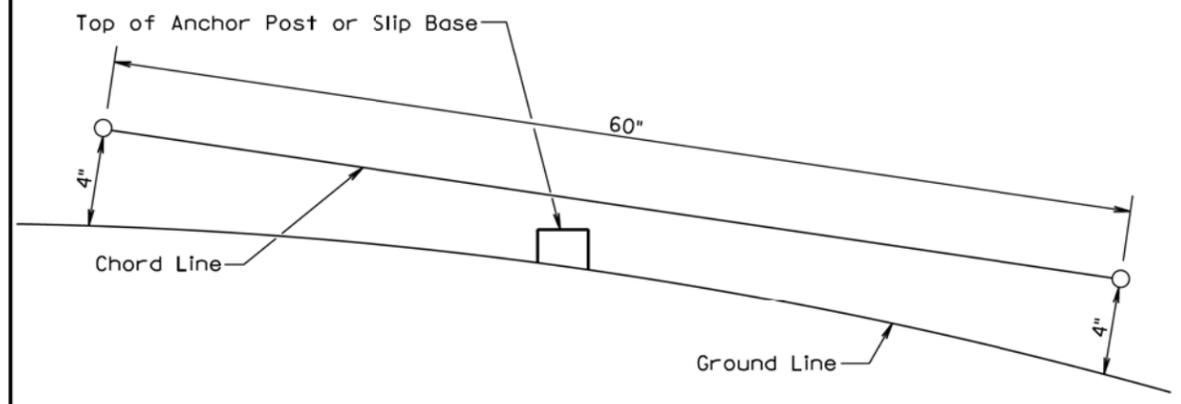
Plotting Date: 01/04/2016

PLOT SCALE - 1:200

PLOT NAME - 6



**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.

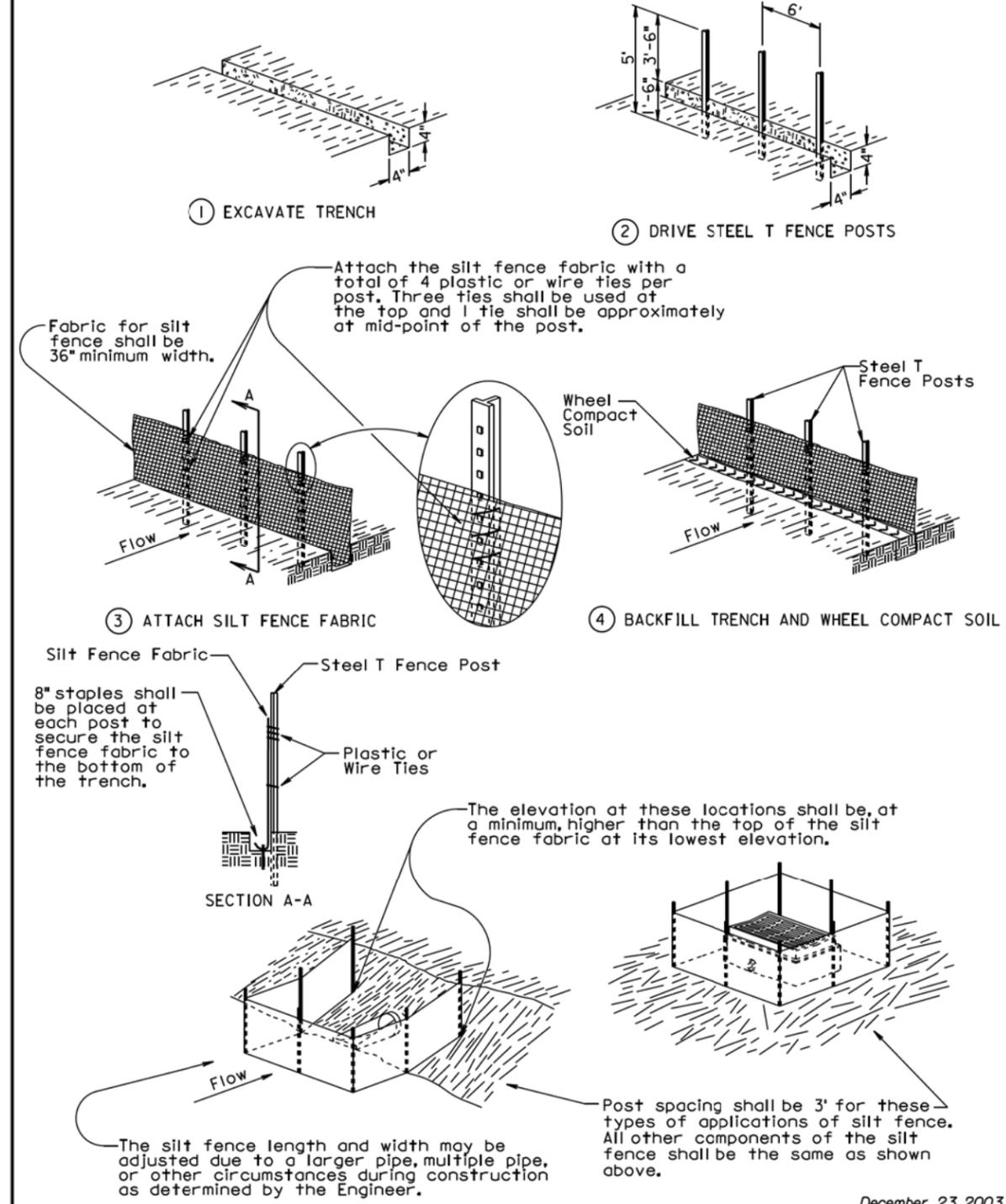
At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

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

<b>S D D O T</b>	<b>BREAKAWAY SUPPORT STUB CLEARANCE</b>	PLATE NUMBER <b>634.99</b>
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

**MANUAL HIGH FLOW SILT FENCE INSTALLATION**

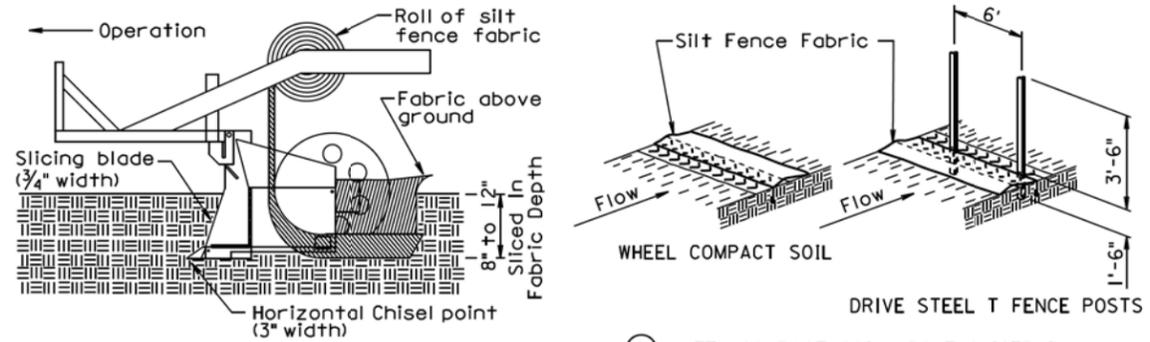


<b>S D D O T</b>	<b>HIGH FLOW SILT FENCE</b>	PLATE NUMBER <b>734.05</b>
	Published Date: 4th Qtr. 2015	Sheet 1 of 2

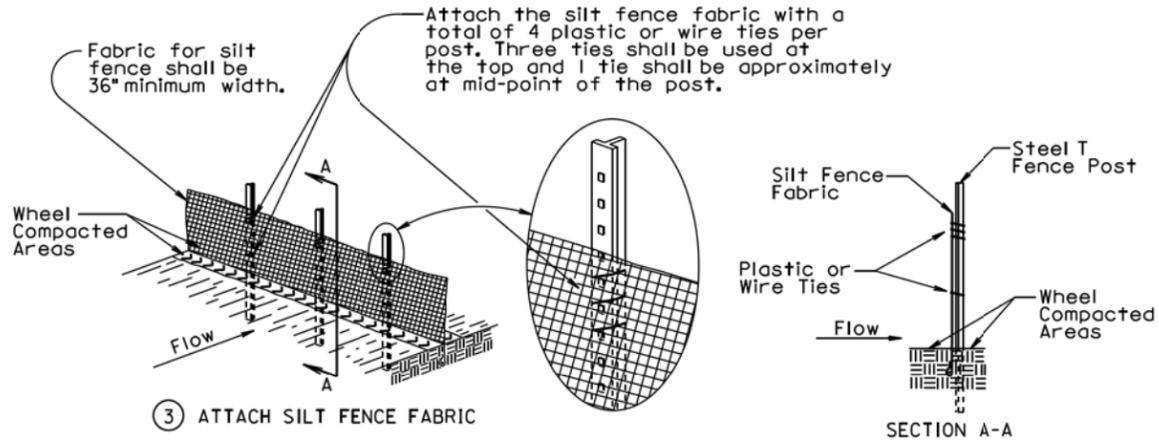
December 23, 2003

Plotting Date: 01/04/2016

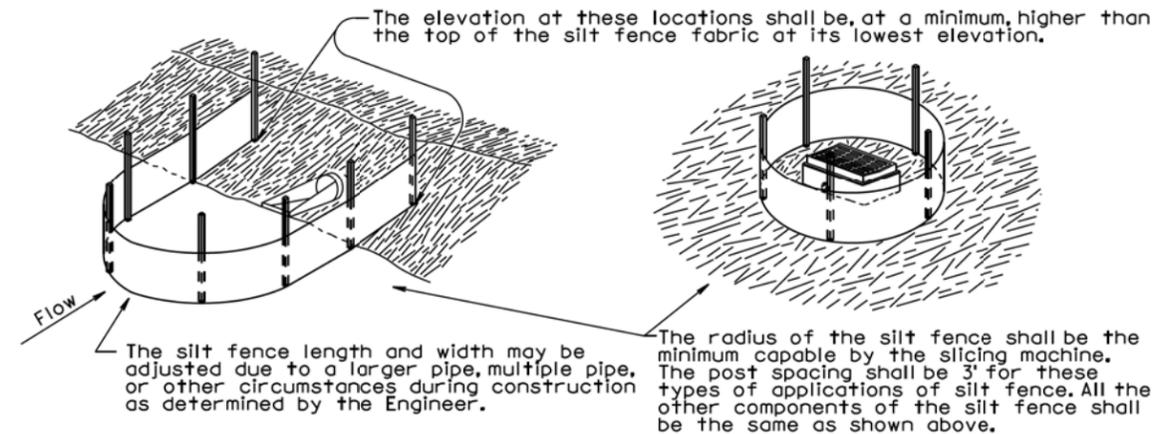
### MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



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



3 ATTACH SILT FENCE FABRIC

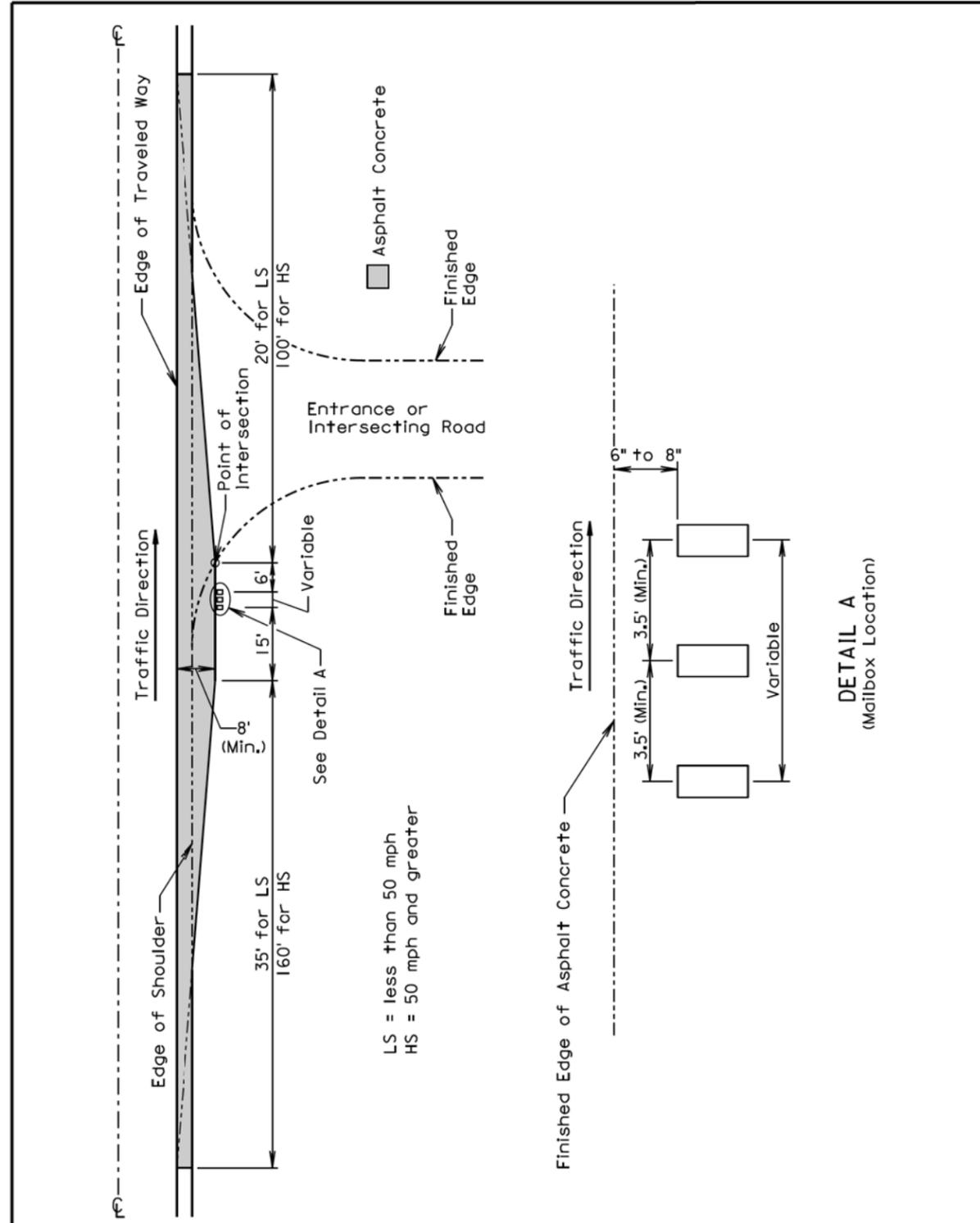


**GENERAL NOTE:**

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

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



September 6, 2015

<b>S D D O T</b>	<b>MAILBOX TURNOUT</b>	PLATE NUMBER <b>900.01</b>
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

PLOT SCALE - 1:200

PLOTTED FROM - TRP22410

PLOT NAME - 7

FILE - ... \P0T104\MMV73405(2).90001.DGN

