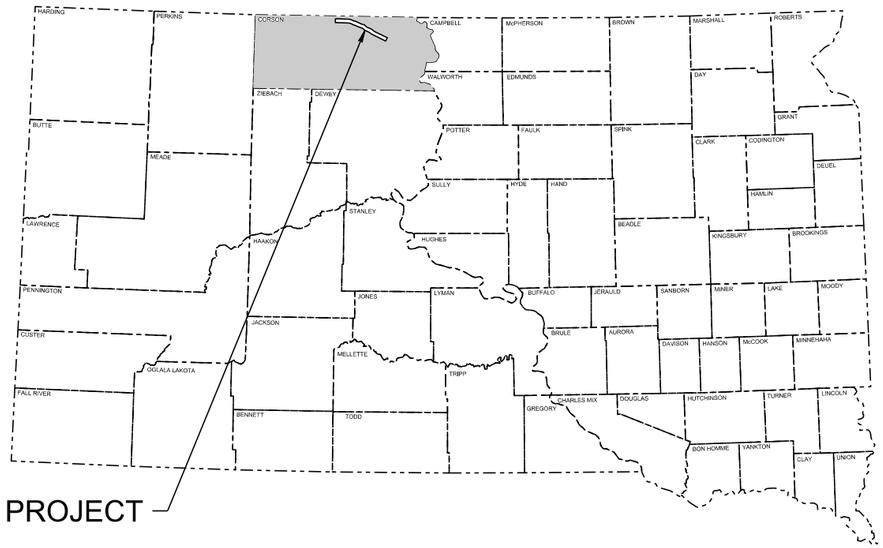


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

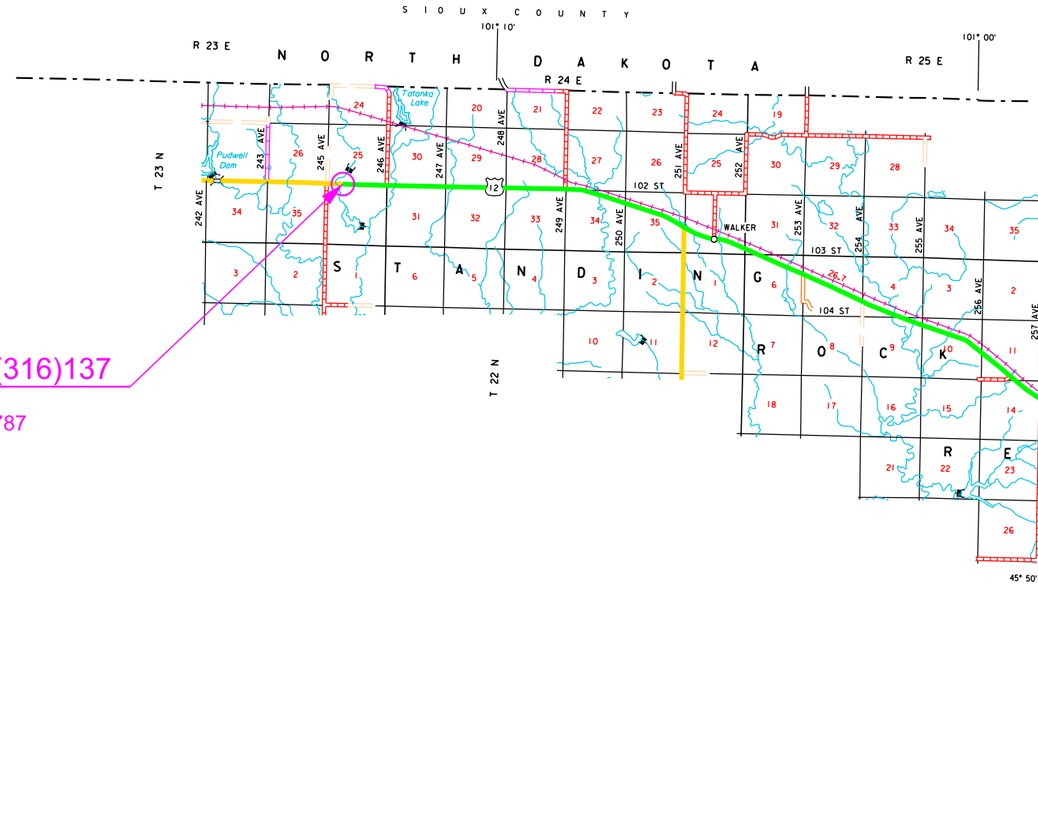
PROJECT NH 0012(316)137
US HIGHWAY 12
CORSON COUNTY

ASPHALT CONCRETE SURFACING OF SHOULDERS
PCN 09EJ

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(316)137	1	26

Plotting Date: 09/18/2024

INDEX OF SHEETS



BEGIN NH 0012(316)137
Station 2+00.00
MRM 137.00+0.787
Mileage 57.195

END NH 0012(316)137
Station 1048+22.76
MRM 157.00+0.585
Mileage 76.993

DESIGN DESIGNATION

ADT (2022)	400
ADT (2042)	522
DHV	83
D	50%
T DHV	16.2%
T ADT	35.6%
V	65 mph

STORM WATER PERMIT

None required

GROSS LENGTH	104,622.76 FEET	19.815 MILES
LENGTH OF EXCEPTIONS	0 FEET	0 MILES
NET LENGTH	104,622.76 FEET	19.815 MILES

8

December11, 2024

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3320	Checker	Lump Sum	LS
110E0707	Remove High Tension 4 Cable Guardrail	1,045	Ft
110E0749	Remove High Tension 4 Cable Guardrail Anchor Assembly	2	Each
110E1010	Remove Asphalt Concrete Pavement	1,470.0	SqYd
120E0100	Unclassified Excavation, Digouts	991	CuYd
120E0600	Contractor Furnished Borrow Excavation	10	CuYd
120E6200	Water for Granular Material	436.9	MGal
210E1000	Shoulder Preparation	39.630	Mile
260E1030	Base Course, Salvaged	2,829.5	Ton
270E0110	Salvage and Stockpile Granular Material	2,829.5	Ton
270E0112	Salvage Granular Material	10,489.2	Ton
* 270E0210	Haul and Stockpile Granular Material	10,489.2	Ton
320E3000	Compaction Sample	6	Each
320E5010	Saw and Seal Shoulder Joint	209,246	Ft
330E0010	MC-70 Asphalt for Prime	248.1	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	51.7	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	41.0	Ton
330E1000	Blotting Sand for Prime	10.0	Ton
330E2000	Sand for Flush Seal	565.4	Ton
332E0010	Cold Milling Asphalt Concrete	2,004	SqYd
600E0300	Type III Field Laboratory	1	Each
629E0110	High Tension 4 Cable Guardrail	1,040	Ft
629E0290	High Tension Cable Guardrail Anchor Assembly	2	Each
* 629E1107	Furnish High Tension Cable Guardrail Post	20	Each
* 629E1109	Furnish High Tension Cable Guardrail Post and Sleeve	15	Each
632E2510	Type 2 Object Marker Back to Back	2	Each
633E1200	High Build Waterborne Pavement Marking Paint, White	892	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	290	Gal
634E0010	Flagging	500.0	Hour
634E0020	Pilot Car	200.0	Hour
634E0110	Traffic Control Signs	611.8	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
900E0010	Refurbish Single Mailbox	1	Each

*** - Denotes Non-Participating**

SURFACING ALTERNATE A

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
320E0005	PG 58-34 Asphalt Binder	1,677.8	Ton
320E1050	Class E Asphalt Concrete	27,355.8	Ton

SURFACING ALTERNATE B

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
320E0005	PG 58-34 Asphalt Binder	1,398.3	Ton
320E1050	Class E Asphalt Concrete	28,116.2	Ton

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified 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. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf >

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

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 pits, or staging areas associated with the project, cease construction activities in the affected area until the Whooping Crane departs and immediately 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 will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project vicinity, all equipment will be power washed with hot water (≥140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

Action Taken/Required:

The Contractor will obtain the necessary permits from the regulatory agencies such as the South Dakota Department of Agriculture and Natural Resources (DANR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at:
< https://sdleastwanted.sd.gov/maps/default.aspx >

< South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species: https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04 >

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

The waste disposal site(s) will 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 Environmental Office and the Project Engineer.

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with 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 not to exceed the duration of the project. Prior to project completion, the waste will 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) will be incidental to the various contract items.

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the Tribal Historic Preservation Office (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 a cultural resource review prior to scheduling the pre-construction meeting. 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 will arrange and pay for a record search and when necessary, a cultural resource survey. 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 if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view in 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 will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. 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.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 150 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

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 will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

SEQUENCE OF OPERATIONS

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work.

US12 shoulder preparation will be limited to one side of the roadway. The placement of Class E Asphalt Concrete will begin within 5 working days after completion of shoulder preparation on one side of the roadway. Shoulder preparation of the other side of the roadway will not begin until a minimum of 60 percent of the Class E Asphalt Concrete placement has been completed on the first shoulder prepared. In no case will shoulder drop offs exist at the same location on both sides of the roadway.

UTILITIES

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

Utilities are not anticipated to be impacted by 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 will contact the Engineer to determine modifications that will be necessary to avoid utility impacts.

INCIDENTS

An incident is an emergency road user occurrence, a natural disaster, or other unplanned event that affects or impedes the normal flow of traffic such as a crash, hazardous materials spill, or other event.

The Contractor will set up a meeting prior to start of work to plan and coordinate responses to an incident. The Contractor will invite the Department of Transportation, the South Dakota Highway Patrol, the Corson County Sheriff, BIA/Tribal Police, and local emergency response entities to the meeting.

The Contractor will assist to maintain traffic as required by these plan notes and as agreed to at that meeting.

Emergency vehicle access through the project will be considered and discussed at the meeting.

The Contractor may be required to modify messages on portable changeable message signs or relocate portable changeable message signs, and to provide flaggers to direct or detour traffic. The Contractor should be prepared to relocate advance warning signs if determined to be necessary for a major traffic incident lasting more than two hours. Fixed location ground mounted signs may be covered and additional portable signs provided.

No additional payment will be made for the modification of portable changeable message sign messages or the relocation of portable changeable message signs. Cost for the relocation of an advance warning sign due to an incident will be 50% of the designated sign rate. Flaggers will be paid for at the contract unit price per hour for "Flagging".

PRESS RELEASE ANNOUNCEMENTS

The SDDOT will prepare a press release to be released 5 days prior to any phase change or any other major change that affects traffic flow. The SDDOT will be responsible to keep law enforcement, emergency services, and the traveling public notified of changes in project access. The Contractor will provide the Engineer with pertinent information 7 days prior to any phase change or any other major change that affects traffic flow.

GENERAL TRAFFIC CONTROL

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

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

All construction operations will be conducted in the general direction of traffic movement.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.

For areas of shoulder removal where a shoulder drop-off exists, Shoulder Drop-Off signs will be placed at 1 mile spacing. Channelizing devices, as shown on Standard Plate 634.03, will be used at the spacing shown in the standard plate for the first 1000′ from the beginning of the shoulder drop off and then every 500′ thereafter where shoulder drop-offs occur.

The Contractor will be allowed a maximum of 2 flagger-controlled work zones at one time unless an alternative traffic control plan is submitted and approved by the Engineer. Flagger controlled work zones will be a maximum of 3 miles in length (each) and will be separated by a minimum of 3 miles between work zones.

When work is in progress within an intersection, Flaggers will be required to direct traffic.

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

At no time will a vertical drop-off of greater than 3 inches be left overnight adjacent to the traveled way. The Contractor will utilize granular material to ensure a 3-inch vertical drop-off is not exceeded. The slope of the embankment material will not be steeper than a 4:1 within 30 feet of the traveled way.

Traffic will be maintained on the driving lanes. Use of the shoulder as a driving lane will not be permitted. Any damage to the shoulder due to rerouted traffic or Contractor's equipment will be repaired at no expense to the Department.

The Contractor will furnish, install, maintain, and remove TRUCK CROSSING (W8-6) signs daily. The TRUCK CROSSING signs will be displayed always when haul vehicles are hauling material. When hauling conditions no longer exist, the signs will be covered or removed from view. The exact number and location will be determined during construction. Payment for additional signs will be based on the contract unit price per square foot for "Traffic Control Signs".

The Contractor will notify businesses/homeowners a minimum of two weeks prior to construction to inform them of upcoming construction and again a minimum of 48 hours prior to any blocked access to make appropriate arrangements.

A mobile work operation will be allowed provided the flush sealing, and pavement marking can be completed satisfactorily by a continuously moving work operation. A mobile work operation will require approval by the Engineer.

TRAFFIC CONTROL SIGNS

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	2	48" x 48"	16.0	32.0
W8-17	SHOULDER DROP-OFF (symbol)	6	48" x 48"	16.0	96.0
W20-1	ROAD WORK AHEAD	6	48" x 48"	16.0	96.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	6	48" x 48"	16.0	96.0
W21-2	FRESH OIL	6	48" x 48"	16.0	96.0
W21-5	SHOULDER WORK	4	48" x 48"	16.0	64.0
SPECIAL	WAIT FOLLOW PILOT CAR	6	30" x 18"	3.8	22.8
G20-1	ROAD WORK NEXT 6 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 13 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 20 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	6	36" x 18"	4.5	27.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			611.8

FLAGGING

Operations will be conducted so that the traveling public will not have to wait longer than 15 minutes at the flagger station.

Additional flagger warning signs and flagger hours have been included in the Estimate of Quantities for use on intersecting roads. These flaggers will be used as directed by the Engineer and will be used primarily during daytime hours. Also included in the Estimate of Quantities are WAIT FOLLOW PILOT CAR signs for use on low volume intersecting roads as determined by the Engineer. WAIT FOLLOW PILOT CAR signs will not block the view of the stop sign.

It is required that the flaggers and pilot car operators be able to communicate with one another. If an emergency vehicle needs to pass through the project, the Contractor will be required to expedite traffic movement. All costs associated with this will be incidental to the contract unit price per hour for "Flagging".

TYPE III FIELD LABORATORY

The lab will be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection will be provided with a multi-port wireless router. The internet connection will be a minimum speed of 5 Mbps unless limited by job location and approved by the DOT. Prior to installing the wireless router, the Contractor will 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. These items will be incidental to the contract unit price per each for "Type III Field Laboratory".

CHECKING SPREAD RATES

The Contractor will be responsible for checking the Base Course, Salvaged; and Asphalt Concrete spread rates and taking the weigh delivery tickets as the surfacing material arrives on the project and is placed onto the roadway.

The Contractor will compute the required spread rates for each typical surfacing section and create a spread chart prior to the start of material delivery and placement. The Engineer will review and check the Contractor's calculations and spread charts. The station to station spread will be written on each ticket as the surfacing material is delivered to the roadway.

At the end of each day's shift, the Contractor will verify the following:

- All tickets are present and accounted for,
- The quantity summary for each item is calculated,
- The amount of material wasted if any,
- Each day's ticket summary is marked with the corresponding 'computed by',
- The ticket summary is initialed and certified that the delivered and placed quantity is correct.

All daily tickets and the summary by item will be given to the Engineer no later than the following morning.

If the checker is not properly and accurately performing the required duties, the Contractor will correct the problem or replace the checker with an individual capable of performing the duties to the satisfaction of the Engineer. Failure to do so will result in suspension of the work.

The Department will perform depth checks. The Contractor will be responsible for placement of material to the correct depth unless otherwise directed by the Engineer. If the placed material is not within a tolerance of ±1/2 inch of the plan shown depth, the Contractor will correct the problem at no additional cost to the Department. Excess material above the tolerance will not be paid for. Achieving the correct depth may require picking up and moving material or other action as required by the Engineer. All costs for providing the Contractor furnished checker and performing all related duties will be incidental to the contract lump sum price for the "Checker". No allowances will be made to the contract lump sum price for Checker due to authorized quantity variations unless the quantities for the material being checked vary above or below the estimated quantities by more than 25 percent. Payment for the Checker will then be increased or decreased by the same proportion as the placed material quantity bears to the estimated material quantity.

SURFACING THICKNESS DIMENSIONS

The plans shown spread rates will be applied even though the thickness may vary from that shown in the plans.

At those locations where material must be placed to achieve a required elevation, the depth/quantity may be varied to achieve the required elevation.

INTERSECTING ROADS AND ENTRANCES

In areas where granular material has been placed adjacent to the existing asphalt concrete, the Contractor will be required to remove the granular material to a depth below the existing asphalt concrete to allow for the placement of the new asphalt concrete. New asphalt concrete will be placed flush with the existing asphalt concrete. The existing granular material removed will be placed on the entrances, intersecting roads or other locations as directed by the Engineer.

All costs to remove and place the granular material including labor, equipment and incidentals will be incidental to the various related contract items.

REMOVE ASPHALT CONCRETE PAVEMENT

At each existing paved approach along the shoulder, a 9-foot-wide by 105-foot-long strip of in place asphalt concrete surfacing will be removed to make way for the shoulder paving. An estimated 1,470 Square Yards will be removed. The material will be hauled away and will become property of the Contractor. Care will be taken not to waste the in-place granular material. The remaining in-place granular material will be salvaged and stockpiled. Payment will be based on plans quantity. Further measurements will not be made unless there is a change made in the limits of work.

TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL

Station	Road	L/R	Quantity (SqYd)
47+01	246 Ave	L	105
204+12	249 Ave	L	105
316+41	251 Ave/Bullhead Rd	R	105
330+80	Mailboxes W	L	105
332+00	Mailboxes E	L	105
343+35	1st Ave E, Walker	R	105
485+60	254 Ave	R	105
541+40	255 Ave	L	105
633+00	105 St	R	105
665+99	257 Ave	L	105
665+99	257 Ave	R	105
723+66	258 Ave	R	105
854+75	260 Ave	L	105
1023+52	263 Ave	L	105
		Total:	1,470

COLD MILLING ASPHALT CONCRETE

The Los Angeles Abrasion Loss value on the aggregate use for the in-place asphalt concrete was unknown.

Cold milling asphalt concrete will be performed at service entrances, and intersecting road approaches, as shown in the Table of Additional Quantities. Milling depth will be 2 inches. Cold milling asphalt is estimated to produce 222.8 tons of cold milled asphalt concrete material. This estimated quantity will become property of the Contractor and removed from the site for disposal. Costs associated with hauling and disposing of the cold milled material will be incidental to Cold Milling Asphalt Concrete.

Payment will be based on plans quantity. Further measurements will not be made unless there is a change made in the limits of work.

UNCLASSIFIED EXCAVATION, DIGOUTS

The locations and extent of digout areas will be determined in the field by the Engineer. The backfilling material for the digouts will be and Base Course, Salvaged.

Included in the Estimate of Quantities are 25 cubic yards of Unclassified Excavation, Digouts per shoulder per mile for the removal of the unstable material throughout the project.

Included in the Estimate of Quantities are 50 tons of Base Course, Salvaged per shoulder per mile for backfill of Unclassified Excavation, Digouts.

The digouts will be extended through the shoulder and backfilled with granular material that will daylight to the inslope to allow water to escape the subsurface.

SHOULDER WORK

Prior to beginning work on this project, SDDOT personnel will mow and/or spray the shoulders to kill existing vegetation. The Contractor will notify the Mobridge Area Office at (605) 845-3844 at least three weeks prior to beginning work on this project so SDDOT personnel can mow and/or spray along the shoulder and inslopes. The Department will not be responsible for the effectiveness of the mowing or spraying.

Vegetation and accumulated material on or adjacent to the existing roadway edge will be removed by the Contractor, to the satisfaction of the Engineer, prior to shoulder paving operations. Any remaining windrow of accumulated material will be spread evenly on the inslope adjacent to the asphalt shoulder, to the satisfaction of the Engineer, following application of the flush seal.

Costs associated with this work including removal and replacement of topsoil will be incidental to the contract unit prices for the various items. Separate measurement and payment will not be made.

SHOULDER PREPARATION

Prior to placement of asphalt concrete on the shoulders, the upper 4″ of the existing shoulder material will be scarified, reworked, shaped, and recompacted to obtain a uniform and stable surface according to Section 260.3 D. The cross slope and inslope requirements will meet what is shown in the typical sections. Cost for this work will be incidental to the contract unit price per mile for Shoulder Preparation.

Included in the Estimate of Quantities are 10.34 MGals per mile per shoulder of Water for Granular Material for shaping and recompaction.

SALVAGE AND STOCKPILE GRANULAR MATERIAL

An estimated 13,318.7 tons (7,047 Cubic Yards) of granular base material will be salvaged from the existing highway according to the in-place surfacing typical sections.

An estimated 2,829.5 tons of salvaged granular material will be stockpiled at a site furnished by the Contractor and satisfactory to the Engineer for use as Base Course, Salvaged on this project. This salvaged material will be processed to meet the requirements of Section 884.2 D.8 prior to stockpiling.

An estimated 10,489.2 tons of salvaged granular material will be hauled and stockpiled at locations as specified by the Haul and Stockpile Granular Material plan note.

The Contractor will ensure that no vegetation, topsoil, subgrade, or other foreign material is incorporated into the granular base material.

The quantity of salvaged granular base material may vary from the plans.

The quantity of salvageable material is estimated from the in-place surfacing typical sections. This estimated quantity was included in the Salvage and Stockpile Granular Material quantities.

HAUL AND STOCKPILE GRANULAR MATERIAL

10,489.2 tons of salvaged granular material will be hauled and stockpiled at a site adjacent to US Hwy 12 at MRM 153+0.55 Rt, located in the southeast quarter of Section 20, Township 22 North, Range 26 East of the Black Hills Meridian, Corson County, South Dakota. The Contractor will have approval from the Engineer of the stockpile location prior to stockpiling the material within the aforementioned site.

A computerized scale, portable platform scale, stationary commercial scale, stationary commercial plant, portable plant scale, or a belt scale along with a scale operator will be provided by the Contractor at the stockpile site to weigh the salvaged material prior to stockpiling.

The salvaged granular material will meet the requirements of Section 884.2 D.8 prior to stockpiling.

No further gradation testing of the material will be required.

All other costs for crushing, hauling, and stockpiling the salvaged material will be incidental to the contract unit price per ton for Haul and Stockpile Granular Material. Any work necessary to prepare the stockpile site prior to stockpiling will be incidental to the contract unit price per ton for Haul and Stockpile Granular Material.

BASE COURSE, SALVAGED

Base Course, Salvaged will be obtained from the salvaged granular material on the shoulders and may be used without further gradation testing.

All other requirements for Base Course, Salvaged will apply.

At the time of compaction, the material placed on the shoulders will have a minimum of 4% moisture uniformly blended throughout the depth of material. The percent moisture may be adjusted by the Engineer. Included in the Estimate of Quantities is 0.48 MGal per mile per shoulder of Water for Granular Material.

CLASS E ASPHALT CONCRETE

Mineral Aggregate for Class E Asphalt Concrete - Alternate A will conform to the requirements for Class E, Type 1.

Mineral Aggregate for Class E Asphalt Concrete - Alternate B will consist of a minimum of eighty percent crushed limestone ledge rock and will conform to the requirements for Class E, Type 1.

When directed by the Engineer, the Contractor will saw and remove a total of three undamaged compaction cores per asphalt concrete lift per shoulder from designated area(s) and repair the hole(s) to the satisfaction of the Engineer. All costs associated with the compaction cores will be incidental to the contract unit price per each for “Compaction Sample”.

The thickness of the Class E Asphalt Concrete surfacing on the shoulders as shown in the typical sections will be measured from the top edge of the concrete pavement.

All other requirements for Class E will apply.

FLUSH SEAL

Application of flush seal will be completed within 10 working days following completion of the asphalt concrete surfacing.

Application of flush seal may be eliminated by the Engineer. If the paved surface remains tight, the Engineer will notify the Contractor as soon as possible that the flush seal is unnecessary.

SAND FOR FLUSH SEAL

The sand application will be placed 6′ wide in each shoulder, leaving the 2′ bevel on each shoulder free of sand.

BLOTTING SAND FOR PRIME

Included in the Estimate of Quantities are 10 tons of Blotting Sand for Prime to be used where necessary for maintenance of traffic as directed by the Engineer. (Rate = 10 pounds per square yard)

RATES OF MATERIALS

The Estimate of Quantities is based on the following quantities of materials per mile, per shoulder.

SECTION 1

Sta. 2+00 to Sta. 1048+22.76

Notes on specific items:

MC-70 Asphalt for Prime 6.26 tons
Applied 9 feet wide
(Rate = 0.30 gallon per square yard).

SS-1h or CSS-1h Emulsified Asphalt for Tack 1.27 tons
Applied 8.5 feet wide
(Rate = 0.06 gallon per square yard).

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal 1.00 tons
Applied 8 feet wide
(Rate = 0.05 gallon per square yard).

Sand for Flush Seal 14.08 tons
Applied 6 feet wide
(Rate = 8 lbs. per square yard).

CLASS E ASPHALT CONCRETE

ALTERNATE A

Crushed Aggregate	643 tons
PG 58-34 Asphalt Binder	42 tons
Total	685 tons

ALTERNATE B

Crushed Aggregate	669 tons
PG 58-34 Asphalt Binder	35 tons
Total	704 tons

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

REMOVE HIGH TENSION CABLE GUARDRAIL

The cables, posts, anchor assemblies, and hardware items will become the property of the Contractor and will be removed from the project limits.

Payment for removing the guardrail items except for the anchor assemblies will be incidental to the contract unit price per foot for “Remove High Tension 4 Cable Guardrail”. Payment for removing the anchor assemblies will be incidental to the contract unit price per each for “Remove High Tension 4 Cable Guardrail Anchor Assembly”.

CONTRACTOR FURNISHED BORROW EXCAVATION

The Contractor will provide a suitable site for Contractor furnished borrow excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. The borrow material will be approved by the Engineer. The plans quantity for “Contractor Furnished Borrow Excavation” as shown in the Estimate of Quantities will be the basis of payment for this item.

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

Contractor Furnished Borrow is necessary to fill the soil voids caused by cable guardrail anchor removal.

Payment for the aforementioned work including labor, equipment, materials, and incidentals will be incidental to the various bid items of the contract.

HIGH TENSION CABLE GUARDRAIL

The Contractor will furnish and install a high tension cable guardrail system that meets the Test Level 3 crash testing requirements of the Manual for Assessing Safety Hardware (MASH). The maximum dynamic deflection of the system will be less than 10’-0” and the maximum post spacing will be 10’-6” unless specified otherwise in the plans. High Tension 4 Cable Guardrail will be one of the following products:

Valtir (Trinity) – CASS S3 M10
Brifen – 4 Rope O-Post System

The high tension cable guardrail system will be in compliance with Specifications Section 6.9 Buy America.

The Contractor will install the system according to the manufacturer’s installation recommendations except where stated otherwise in the plans. A copy of the detail drawings and installation instructions for the high tension cable guardrail and anchor assemblies will be given to the Engineer a minimum of 4 weeks prior to installation of the high tension cable guardrail system.

All posts will be galvanized and inserted into driven galvanized steel sleeves with soil plates. The driven sleeves must be designed for a minimum frost depth of 42” and to resist the additional lateral component of curved cable sections.

Delineation of the high tension cable guardrail will be in conformance with standard plate 632.40.

The cables provided will be pre-stretched in the factory.

The Contractor will check and adjust the tension of the cables a minimum of 3 weeks after installation and not longer than 6 weeks after installation. Cost for this work will be incidental to the contract unit price per foot for “High Tension 4 Cable Guardrail”.

High tension cable guardrail will be installed on a 10:1 or flatter slope and the embankment limits will match the high tension cable guardrail limits. The embankment quantities may vary from plans quantity.

The lengths of high tension cable guardrail stated in the plans are based on a minimum effective length (length of need). The length and location of the high tension cable guardrail at each site will need to be adjusted during construction as necessary depending on the system provided and will be approved by the Design Engineer before installation. When the Valtir (Trinity) CASS S3 M10 system is installed adjacent to one-way traffic roadways, 26’ of the anchor assembly on the approach end is considered non-effective, and 51’ on the non-approach end is considered non-effective; however, when the same system is installed adjacent to two-way traffic roadways, 26’ of the anchor assembly on both the approach and non-approach ends is considered non-effective. For Brifen 4 Rope O-Post System installations, the anchor assembly is non-effective.

The Contractor will provide a signed letter of compliance to the Engineer upon completion of the high tension cable guardrail installation(s) stating that the high tension cable barrier system has been installed in conformance to the manufacturer installation instructions and specifications, meets the Test Level 3 crash test requirements of MASH, and is terminated with an approved anchor assembly.

The high tension cable guardrail will be measured along the centerline of the cable guardrail from the beginning to the end of the minimum effective length.

All costs for furnishing and installing the high tension cable guardrail system including all labor, materials, and equipment will be incidental to the contract unit price per foot for “High Tension 4 Cable Guardrail”.

HIGH TENSION CABLE GUARDRAIL ANCHOR ASSEMBLY

The beginning and end of each “run” of high tension cable guardrail will terminate with an anchor assembly. The High Tension Cable Anchor Assemblies will be one of the following products:

Valtir (Trinity) – CASS Cable Terminal (CCT)
Brifen – MASH Gating Terminal (MGT)

The footing(s) for the anchor assembly will be designed to allow for 1 inch maximum of lateral deflection. The allowable design soil pressure will be 1000 psf. The top 2 feet of soil pressure will be neglected in the design of the footing(s). The footing(s) will be a minimum of 5’ deep. The footing(s) design will be submitted through proper channels to the Office of Bridge Design for a one-time approval. Any changes to the anchor assembly that could affect footing size including configuration changes such as different number of cables and different number of footings will be resubmitted for approval. The approval will be obtained a minimum of 4 weeks prior to construction of the anchor footing(s).

Delineation of the high tension cable guardrail anchor assembly will be in conformance with standard plate 632.40.

All costs for furnishing and installing the High Tension Cable Guardrail Anchor Assembly including all labor, equipment, and materials which include the anchor footing(s), hardware, and all attachments to the anchor footing(s), will be incidental to the contract unit price per each for “High Tension Cable Guardrail Anchor Assembly”.

FURNISH HIGH TENSION CABLE GUARDRAIL POST AND SLEEVE

The Contractor will furnish an additional 35 galvanized posts with all necessary hardware and accessories to complete the post installation, 15 sleeves with soil plates, and 35 caps or cable spacers with back to back white reflective sheeting and will deliver and stockpile the materials at the DOT McIntosh Maintenance Yard located at 106 North Hwy. 12 in McIntosh. The posts and sleeves will be the same type of posts and sleeves provided in the installation of the high tension cable guardrail on the project.

All costs for furnishing the posts, hardware, sleeves with soil plates, caps, cable spacers, and delivering them to the McIntosh Maintenance Yard will be incidental to the contract unit prices per each for “Furnish High Tension Cable Guardrail Post and Sleeve” and “Furnish High Tension Cable Guardrail Post”.

MAILBOXES

The Contractor will reset the existing mailboxes on new posts with the necessary support hardware for single mailbox assemblies. The local Postmaster will determine the recommended mounting height of the mailboxes throughout the project. The Contractor will 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 will be incidental to the contract unit price per each for “Refurbish Single Mailbox”.

A single mailbox will be refurbished at Sta. 828+30 R.

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

The Contractor will be required to record the current locations of the no passing zones, and paint all existing pavement markings including centerline, edge line, and lane lines in their existing locations.

All materials will be applied as per manufacturer’s recommendations. High build waterborne pavement marking paint will conform to the supplemental specifications for Section 980.1 B.

The application of permanent pavement marking will begin no sooner than 7 calendar days following completion of the fog or flush seal. Application of permanent pavement marking will be completed within 14 calendar days following completion of the final surfacing.

Reflective media will consist of glass beads. Reflective media will require a Certificate of Compliance for Certification for each source and lot. Acceptance sampling will not be required.

RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

Solid 4” line = 22.5 Gals/Mile
Dashed 4” line = 6.2 Gal/Mile
Glass Beads = 8 Lbs/Gal.

All cost for materials, labor, and equipment necessary to furnish and install the pavement markings will be incidental to the contract unit price for the respective High Build Waterborne Pavement Marking Paint items.

RETROREFLECTIVITY FOR PAVEMENT MARKING PAINT

The Department may take retroreflectivity readings on the pavement marking lines after 2 days and within 30 days of the line application using either a portable or mobile retroreflectometer that conforms to 30-meter geometry. If the Department chooses to take retroreflectivity readings, three retroreflectivity readings will be taken on each line at each test location. The three readings will be averaged and become the reading for that test location.

If the Department chooses to take retroreflectivity readings, three readings will be taken on the edge lines and lane lines in the direction of application. For combination solid yellow and skip yellow lines for turn lanes and for centerline markings on two-way roadways, three readings will be taken in one direction, the reflectometer will be turned 180 degrees and three more readings will be taken. The six readings for the centerline markings will be averaged and become the test reading for that test location.

If the Department chooses to take readings, the minimum retroreflectivity values will be 275 mc/m^2/lux for white and 170 mc/m^2/lux for yellow.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(316)137	10	26

TABLE OF APPROACHES (Sheet 1 of 2)

Station	L or R	Description	Pave to ROW	Pave to Radius	Remove Asphalt Concrete Pavement	Cold Mill	6-foot Shoulder Only
19+50	L	Field Entrance					1
19+50	R	Field Entrance					1
29+60	L	Field Entrance					1
29+60	R	Field Entrance					1
44+30	L	Field Entrance					1
44+30	R	Field Entrance					1
47+01	L	246th Avenue - Gravel road with bituminous approach		1	1	1	
75+95	L	Field Entrance					1
95+05	L	Field Entrance					1
95+05	R	Residential Driveway					1
98+51	L	Field Entrance					1
114+25	L	Field Entrance					1
124+94	L	Field Entrance					1
124+94	R	Field Entrance					1
149+00	L	Field Entrance					1
149+00	R	Field Entrance					1
163+20	L	Residential Driveway					1
163+20	L	Field Entrance					1
176+80	R	Farm Entrance					1
177+73	L	Field Entrance					1
204+12	L	249th Avenue - Gravel road with bituminous approach		1	1	1	
204+12	R	Earthen road with gravel approach					1
231+20	R	Residential Driveway					1
252+20	R	Field Entrance					1
258+46	R	Field Entrance					1
278+87	R	Farm Entrance					1
315+45	L	Field Entrance					1
316+41	R	251st Avenue (Bullhead Road) - Pave to ROW	1		1	1	
318+25	L	Field Entrance					1
328+40	L	Field Entrance					1
330+80	L	Service Entrance		1	1	1	
332+00	L	Service Entrance		1	1	1	
334+90	L	Field Entrance					1
334+90	R	Field Entrance					1
337+50	L	Field Entrance					1
343+35	L	1st Ave. E., Walker, SD - Gravel road with bituminous approach		1	1	1	
343+35	R	Field Entrance					1
371+36	R	Field Entrance					1
427+54	R	Farm Entrance					1
450+75	L	Field Entrance					1
		Sheet 1 Totals	**1**	**5**	**6**	**6**	**34**

TABLE OF APPROACHES (Sheet 2 of 2)

Station	L or R	Description	Pave to ROW	Pave to Radius	Remove Asphalt Concrete Pavement	Cold Mill	6-foot Shoulder Only
450+82	R	Field Entrance					1
462+00	R	Field Entrance					1
485+60	R	254th Avenue - Earthen/gravel road with bituminous approach		1	1	1	
524+40	R	Residential Driveway					1
541+40	L	255th Avenue - Earthen/gravel road with bituminous approach		1	1	1	
541+40	R	Field Entrance					1
575+00	R	Residential Driveway					1
601+00	R	Field Entrance					1
628+00	R	Field Entrance					1
633+00	R	105th Street - Gravel Road with bituminous approach		1	1	1	
655+67	R	Field Entrance					1
665+99	L	257th Avenue - Gravel road with bituminous approach		1	1	1	
665+99	R	257th Avenue - Gravel road with bituminous approach		1	1	1	
674+65	R	Field Entrance					1
708+65	L	Service Entrance					1
723+66	R	258th Aveunue - Earthen/gravel road with bituminous approach		1	1	1	
758+80	R	Field Entrance					1
773+33	L	Service Entrance					1
781+80	R	Field Entrance					1
828+00	R	Farm Entrance					1
847+75	R	Earthen road with gravel approach					1
854+75	L	260th Avenue - Gravel road with bituminous approach		1	1	1	
859+30	R	Farm Entrance					1
907+28	R	Field Entrance					1
947+00	R	Field Entrance					1
965+33	R	Field Entrance					1
1023+52	L	263rd Aveune - Earthen/gravel road with bituminous approach		1	1	1	
		Sheet 2 Totals	**0**	**8**	**8**	**8**	**19**
		Sheet 1 Totals	1	5	6	6	34
		Project Totals	**1**	**13**	**14**	**14**	**53**

TABLE OF ADDITIONAL QUANTITIES

	Remove Asphalt Concrete Pavement 110E1010 (SY)	Water for Granular Material 120E6200 (MGal)	Base Course, Salvaged 260E1030 (Ton)	PG 58-34 Asphalt Binder 320E0005 ALTERNATE A (Ton)	Class E Asphalt Concrete 320E1050 ALTERNATE A (Ton)	PG 58-34 Asphalt Binder 320E0005 ALTERNATE B (Ton)	Class E Asphalt Concrete 320E1050 ALTERNATE B (Ton)	MC-70 Asphalt for Prime 330E0010 (Ton)	SS-1h or CSS-1h Asphalt for Tack 330E0100 (Ton)	SS-1h or CSS-1h Asphalt for Flush Seal 330E0210 (Ton)	Sand for Flush Seal 330E2000 (Ton)	Cold Milling Asphalt Concrete 332E0010 (SY)
Approaches - Pave to Radius (13 each)	1,365	0	0	11.7	184.6	10.4	191.1	0	1.3	1.3	6.5	1768
Approach at Bullhead Road - Pave to ROW	105	0	0	1.6	24.6	0.8	25.6	0	0.1	0.1	0.9	236
Approaches - Gravel only (53 each)	0	8.1	848.0	0	0	0	0	0	0	0	0	0
TOTAL ADDITIONAL QUANTITIES	**1,470**	**8.1**	**848.0**	**13.3**	**209.2**	**11.2**	**216.7**	**0**	**1.4**	**1.4**	**7.4**	**2004**

TABLE OF MATERIAL QUANTITIES

	Remove Asphalt Concrete Pavement 110E1010 (SY)	Water for Granular Material 120E6200 (MGal)	Base Course, Salvaged 260E1030 (Ton)	PG 58-34 Asphalt Binder 320E0005 ALTERNATE A (Ton)	Class E Asphalt Concrete 320E1050 ALTERNATE A (Ton)	PG 58-34 Asphalt Binder 320E0005 ALTERNATE B (Ton)	Class E Asphalt Concrete 320E1050 ALTERNATE B (Ton)	MC-70 Asphalt for Prime 330E0010 (Ton)	SS-1h or CSS-1h Asphalt for Tack 330E0100 (Ton)	SS-1h or CSS-1h Asphalt for Flush Seal 330E0210 (Ton)	Sand for Flush Seal 330E2000 (Ton)	Cold Milling Asphalt Concrete 332E0010 (SY)
Section 1	0	0	0	1,664.5	27,146.6	1,387.1	27,899.5	248.1	50.3	39.6	558.0	0
Additional Quantities	1,470	8.1	848.0	13.3	209.2	11.2	216.7	0.0	1.4	1.4	7.4	2004
TOTAL MATERIAL QUANTITIES	**1,470**	**8.1**	**848.0**	**1,677.8**	**27,355.8**	**1,398.3**	**28,116.2**	**248.1**	**51.7**	**41.0**	**565.4**	**2004**

NOTES: Gravel approaches – Quantities for Base Course Salvaged are estimated at 16.0 Tons per approach.
Approaches with paving to radius – Quantities for approximately 136 Square Yards of Cold Milling Asphalt Concrete; 105 Square Yards of Remove Asphalt Concrete Pavement; 0.9 Tons of Asphalt Binder (Alternate A); 14.2 Tons Class E Asphalt Concrete (Alternate A); 0.8 Tons of Asphalt Binder (Alternate B); 14.7 Tons of Class E Asphalt Concrete (Alternate B); 0.2 Tons of MC-70 Asphalt for Prime; 0.1 Tons of SS-1h of CSS-1h Asphalt for Flush Seal; and 0.5 Tons of Sand for Flush Seal per approach are estimated.

TABLE OF SUPERELEVATION

STATION	TO	STATION	REMARKS
0+00.00		210+12.91	Normal Crown
210+12.91		212+52.91	Superelevation Runoff
212+52.91		227+09.62	1° Curve R. 0.033 Superelevation Rate Point of Rotation 12'R
227+09.62		229+49.62	Superelevation Runoff
229+49.62		284+40.06	Normal Crown
284+40.06		286+80.06	Superelevation Runoff
286+80.06		296+29.53	1° Curve R. 0.033 Superelevation Rate Point of Rotation 12'R
296+29.53		298+69.53	Superelevation Runoff
298+69.53		323+83.15	Normal Crown
323+83.15		326+23.15	Superelevation Runoff
326+23.15		337+55.02	1°30' Curve L. 0.046 Ft./Ft. Superelevation Rate Point of Rotation 12'L
337+55.02		339+95.02	Superelevation Runoff
339+95.02		347+91.00	Normal Crown
347+91.00		350+31.00	Superelevation Runoff
350+31.00		362+85.97	1° Curve R. 0.033 Ft./Ft. Superelevation Rate Point of Rotation 12'R
362+85.97		365+25.97	Superelevation Runoff
365+25.97		541+40.38	Normal Crown

TABLE OF SUPERELEVATION

STATION	TO	STATION	REMARKS
541+40.38		571+89.87	Normal Crown
571+89.87		574+29.87	Superelevation Runoff
574+29.87		592+30.51	1° Curve R. 0.033 Ft./Ft. Superelevation Rate Point of Rotation 12'R
592+30.51		594+70.51	Superelevation Runoff
594+70.51		651+69.07	Normal Crown
651+69.07		654+09.07	Superelevation Runoff
654+09.07		667+35.85	1° Curve L. 0.033 Ft./Ft. Superelevation Rate Point of Rotation 12'L
667+35.85		669+75.82	Superelevation Runoff
669+75.82		768+64.84	Normal Crown
768+64.84		771+04.84	Superelevation Runoff
771+04.84		782+74.19	1° Curve R. 0.033 Ft./Ft. Superelevation Rate Point of Rotation 12'R
782+74.19		785+14.19	Superelevation Runoff
785+14.19		826+16.83	Normal Crown
826+16.83		828+56.83	Superelevation Runoff
828+56.83		839+64.61	0°30' L. 0.020 Ft./Ft. Superelevation Rate Point of Rotation 12'L
839+64.61		842+04.61	Superelevation Runoff
842+04.61		889+30.36	Normal Crown
889+30.36		891+70.36	Superelevation Runoff
891+70.36		906+07.09	0°30' L. 0.020 Ft./Ft. Superelevation Rate Point of Rotation 12'L
906+07.09		908+47.09	Superelevation Runoff
908+47.09		916+33.30	Normal Crown
916+33.30		918+73.30	Superelevation Runoff
918+73.30		922+84.69	0°30' R. 0.020 Ft./Ft. Superelevation Rate Point of Rotation 12'R
922+84.69		925+24.69	Superelevation Runoff
925+24.69		1052+22.76	Normal Crown

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(316)137	14	26

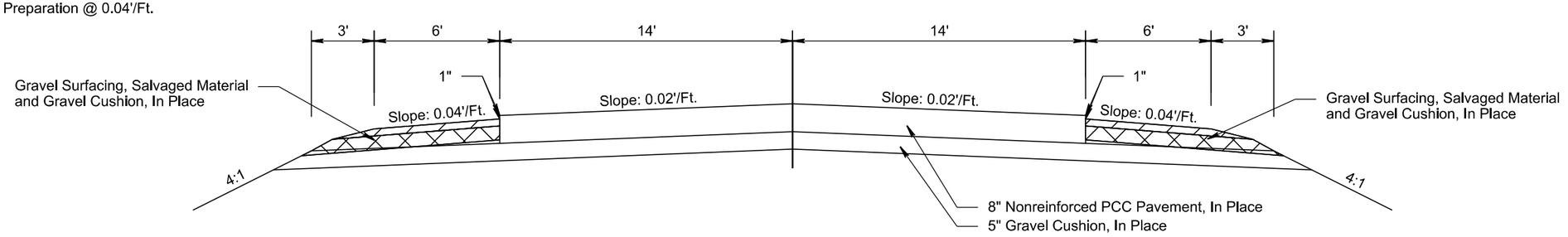
Plotting Date: 09/17/2024

Section 1

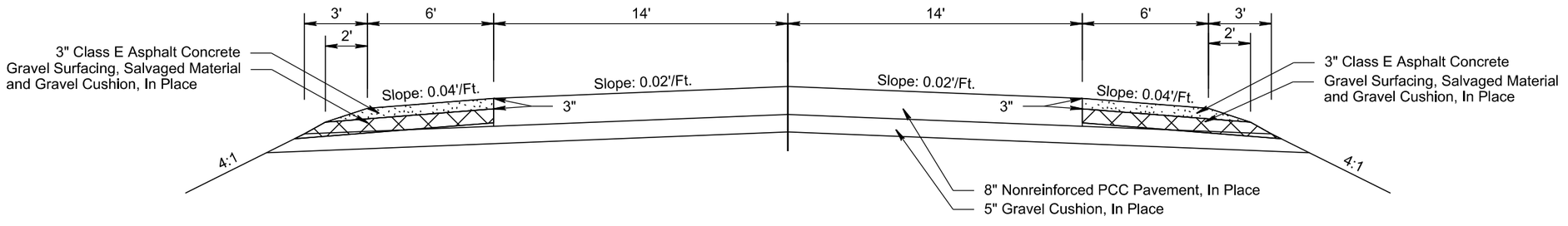
Salvage and Stockpile 1.5" of Granular Material

4" Shoulder Preparation @ 0.04'/Ft.

Sta. 2+00 to Sta. 1048+22.76
In Place Section



Sta. 2+00 to Sta. 1048+22.76
Surfacing Section

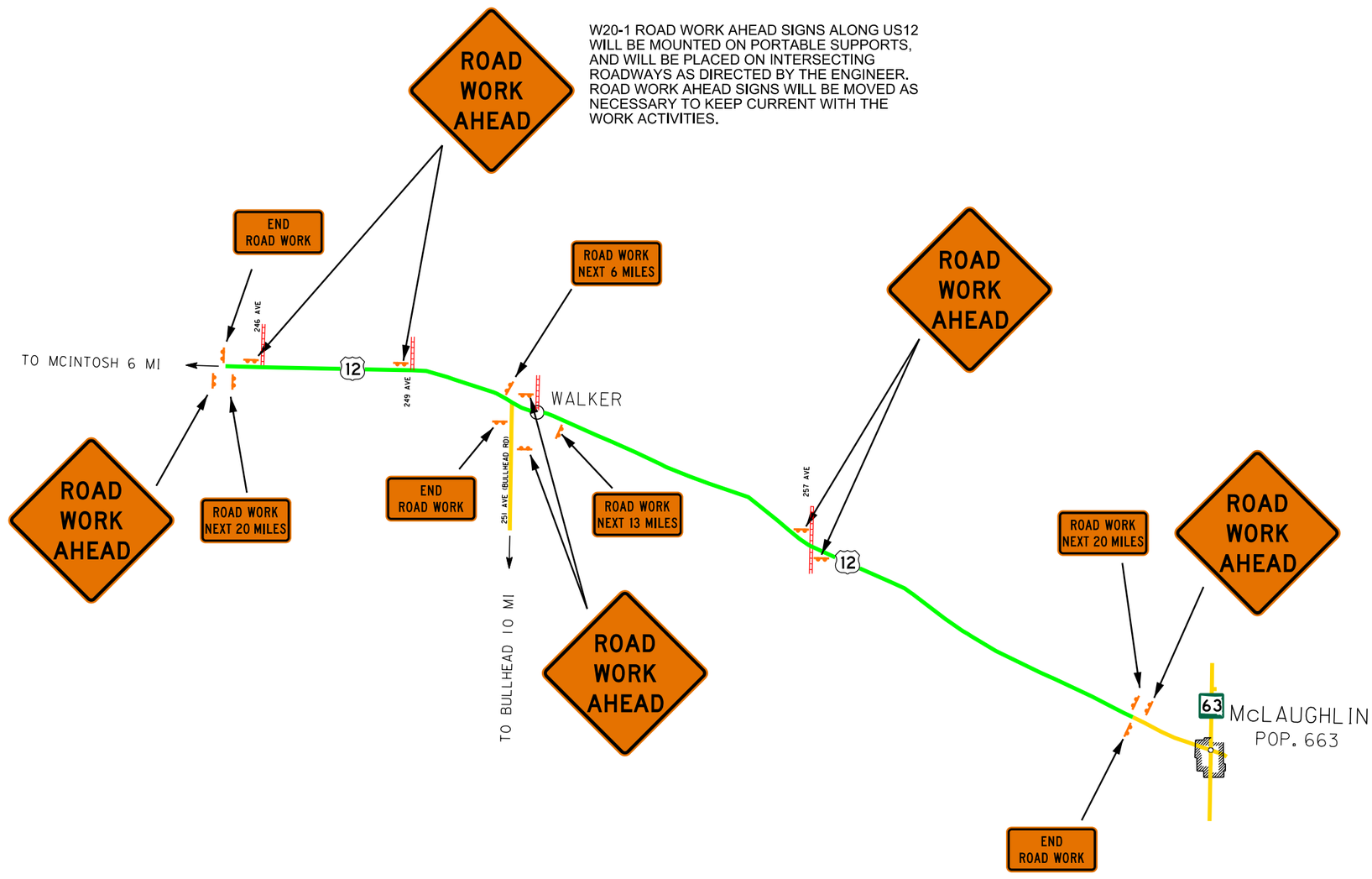


FIXED LOCATION SIGNING

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(316)137	15	26

Plotting Date: 09/18/2024

W20-1 ROAD WORK AHEAD SIGNS ALONG US12 WILL BE MOUNTED ON PORTABLE SUPPORTS, AND WILL BE PLACED ON INTERSECTING ROADWAYS AS DIRECTED BY THE ENGINEER. ROAD WORK AHEAD SIGNS WILL BE MOVED AS NECESSARY TO KEEP CURRENT WITH THE WORK ACTIVITIES.



NOTE:

THE ENGINEER WILL DETERMINE THE EXACT LOCATIONS OF THE SIGNS IN THE FIELD.

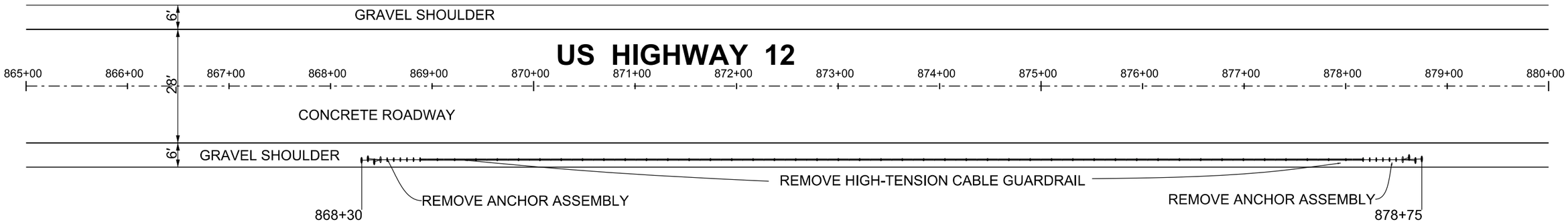
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(316)137	16	26

Plotting Date: 09/18/2024

GUARDAIL LAYOUT

US 12 NEAR MRM 154.3

EXISTING CABLE GUARDRAIL REMOVAL



NEW CABLE GUARDRAIL INSTALLATION

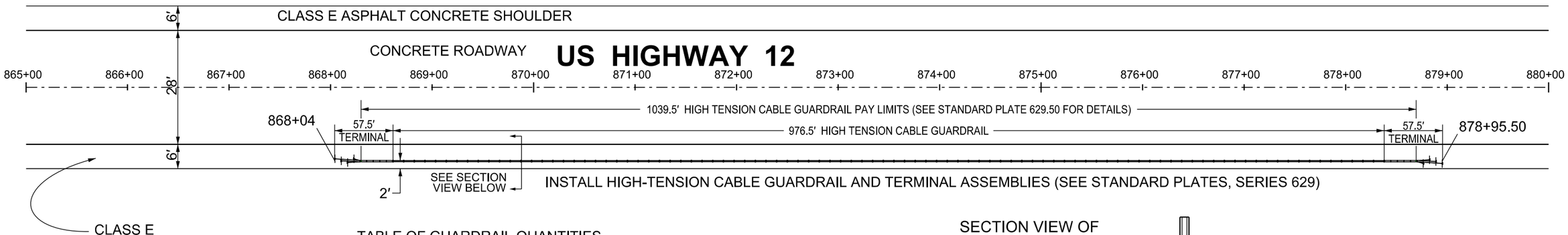
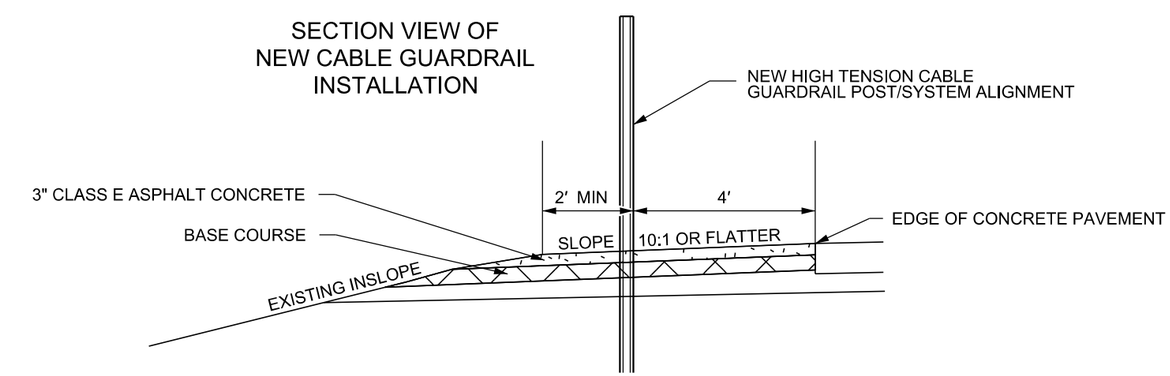


TABLE OF GUARDRAIL QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0707	Remove High Tension 4 Cable Guardrail	1,045	Ft
110E0749	Remove High Tension 4 Cable Guardrail Anchor Assembly	2	Each
120E0600	Contractor Furnished Borrow Excavation	10	CuYd
629E0110	High Tension 4 Cable Guardrail	1,040	Ft
629E0290	High Tension Cable Guardrail Anchor Assembly	2	Each
* 629E1107	Furnish High Tension Cable Guardrail Post	20	Each
* 629E1109	Furnish High Tension Cable Guardrail Post and Sleeve	15	Each
632E2510	Type 2 Object Marker Back to Back	2	Each

*** - Denotes Non-Participating**

SECTION VIEW OF NEW CABLE GUARDRAIL INSTALLATION

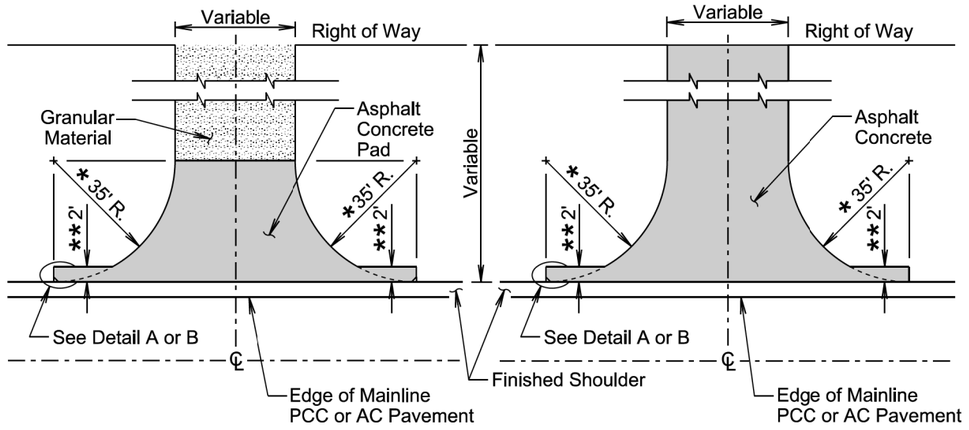


Plot Scale - 1:100

Plotted From - TRPR22410

Plot Name - 1

File - ...\CAD\09EJ Guardrail Layout.dgn



PLAN VIEW
(Intersecting Road)
(No Asphalt Concrete Surfacing Beyond Right of Way)

PLAN VIEW
(Intersecting Road)
(Asphalt Concrete Surfacing Beyond Right of Way)

GENERAL NOTES:

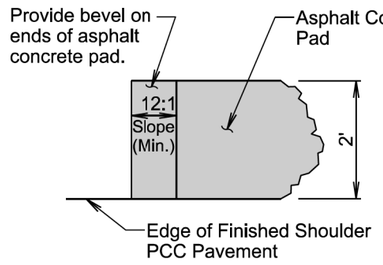
The precise construction limits for situations other than shown above will be determined by the Engineer during construction.

* For new construction, 35' radius typical or as specified in the plans. For resurfacing projects, radius is variable depending on existing conditions.

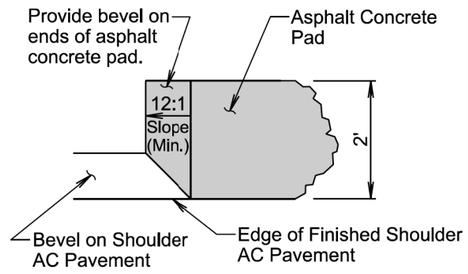
** The Contractor may adjust the screed of the paver during mainline paving operations to provide the 2-foot asphalt concrete pad or the Contractor may provide the 2-foot asphalt concrete pad during paving of the intersecting roads as shown above. The Engineer may eliminate the 2-foot asphalt concrete pads if the Engineer, in the Engineer's sole discretion, determines the pads are infeasible to construct due to site specific reasons including, but not limited to; existing inslope configuration, borrow and material availability, and right-of-way constraints.

August 27, 2020

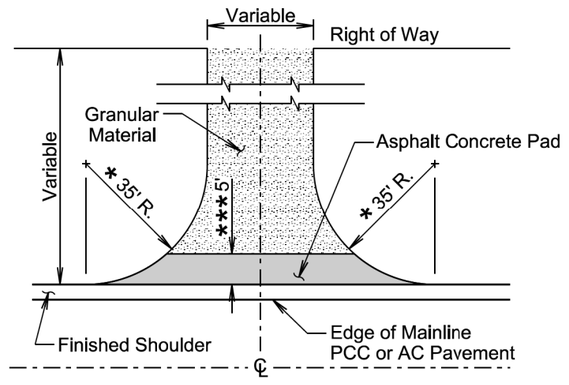
Published Date: 2025	SDDOT	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER 320.04 Sheet 1 of 2



DETAIL A
(Typ. for Projects with PCC Pavement on Shoulder)



DETAIL B
(Typ. for Projects with AC Pavement on Shoulder)

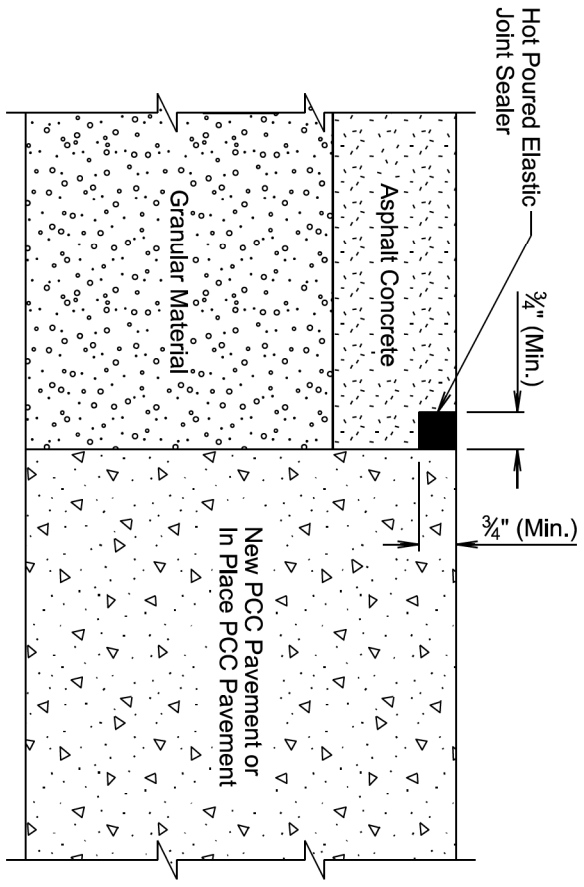


PLAN VIEW
(Entrance)

*** Not required if finished shoulder width is 4' or greater.

August 27, 2020

Published Date: 2025	SDDOT	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER 320.04 Sheet 2 of 2



TRANSVERSE SECTION
(Asphalt Concrete Shoulder Joint)

ASPHALT CONCRETE SHOULDER JOINT ADJACENT TO PCC PAVEMENT

SDDOT

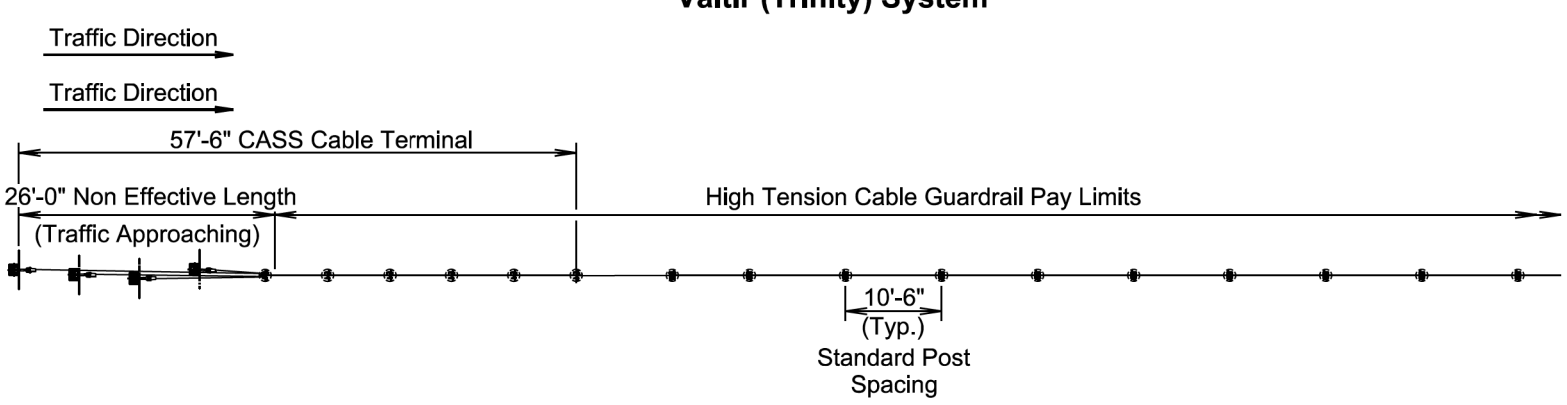
Published Date: 2025

PLATE NUMBER 320.15

September 14, 2019

Sheet 1 of 1

Pay Limits for One-Way Traffic Roadways
Valtir (Trinity) System

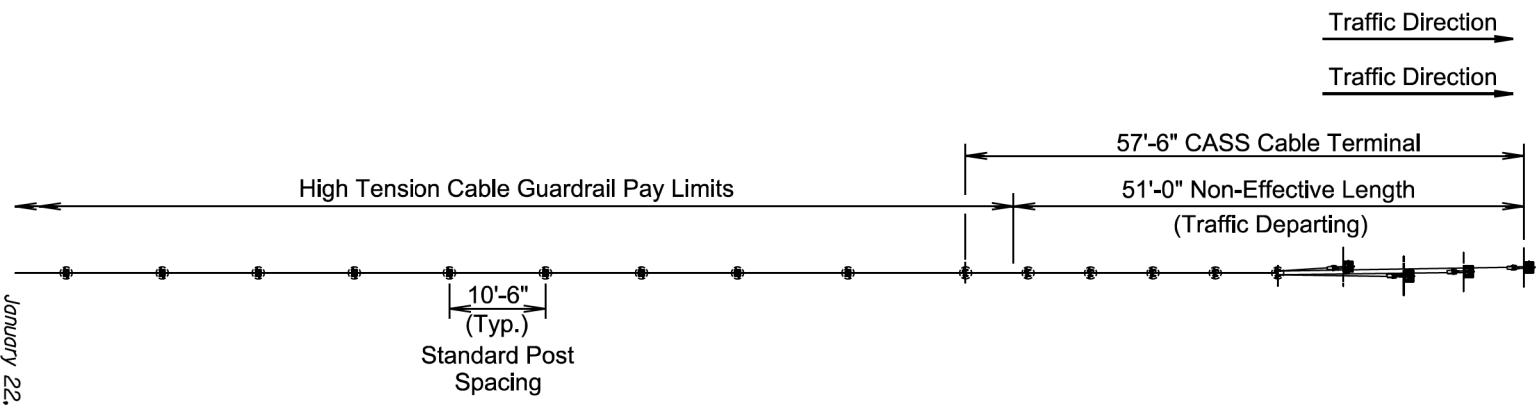


GENERAL NOTES:

Valtir (Trinity) CASS Cable Terminal has a total length of 57'-6". On one-way traffic roadways, it has 31'-6" effective length on the approach end of the terminal and 6'-6" effective length on the non-approach (departure) end. On two-way traffic roadways, it has 31'-6" effective length on both the approach and the non-approach ends of the terminal.

The High Tension Cable Guardrail pay limits will be the length of need (LON) or the effective length.

The High Tension Cable Guardrail Anchor Assembly pay limits will be the non-effective length of the terminal.



HIGH TENSION CABLE GUARDRAIL

SDDOT

Published Date: 2025

PLATE NUMBER 629.50

January 22, 2023

Sheet 1 of 3

Plotting Date: 09/18/2024

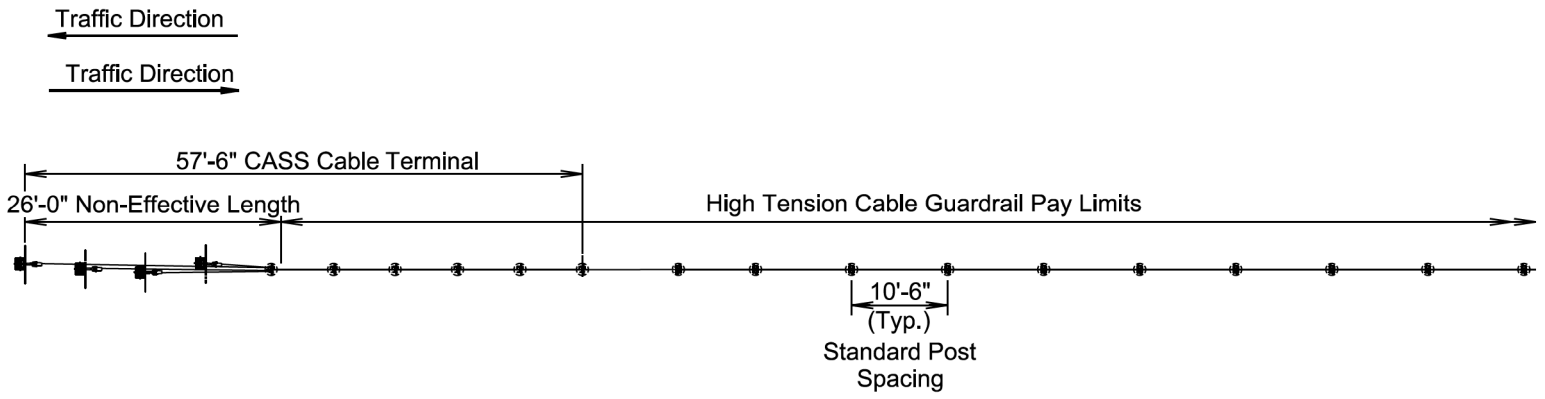
STATE OF SOUTH DAKOTA

PROJECT NH 0012(316)137

SHEET 18

TOTAL SHEETS 26

Pay Limits for Two-Way Traffic Roadways
Valtir (Trinity) System



Published Date: 2025

SDDOT

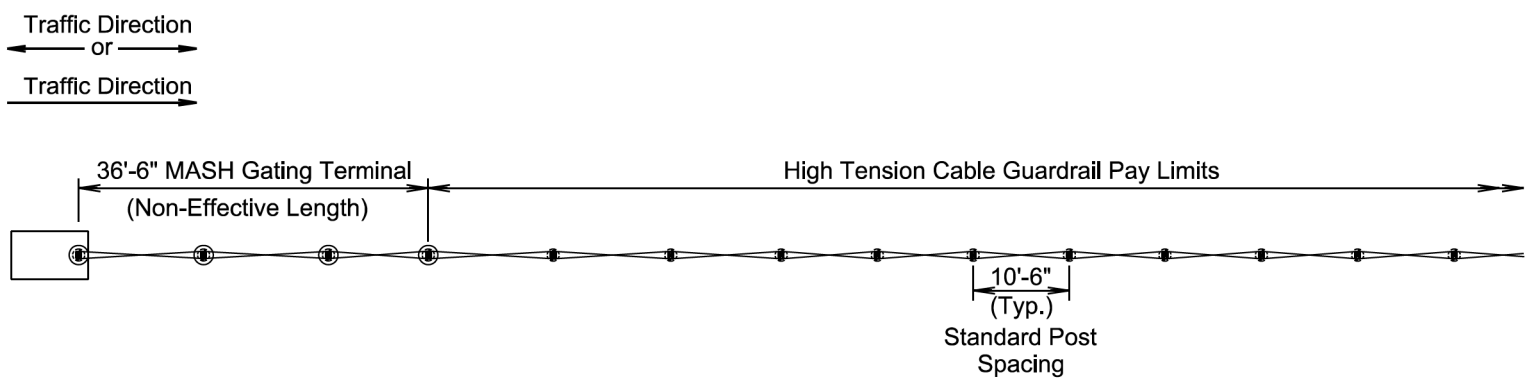
HIGH TENSION CABLE GUARDRAIL

PLATE NUMBER 629.50

Sheet 2 of 3

January 22, 2023

Pay Limits for One-Way and Two-Way Traffic Roadway
Brifen System

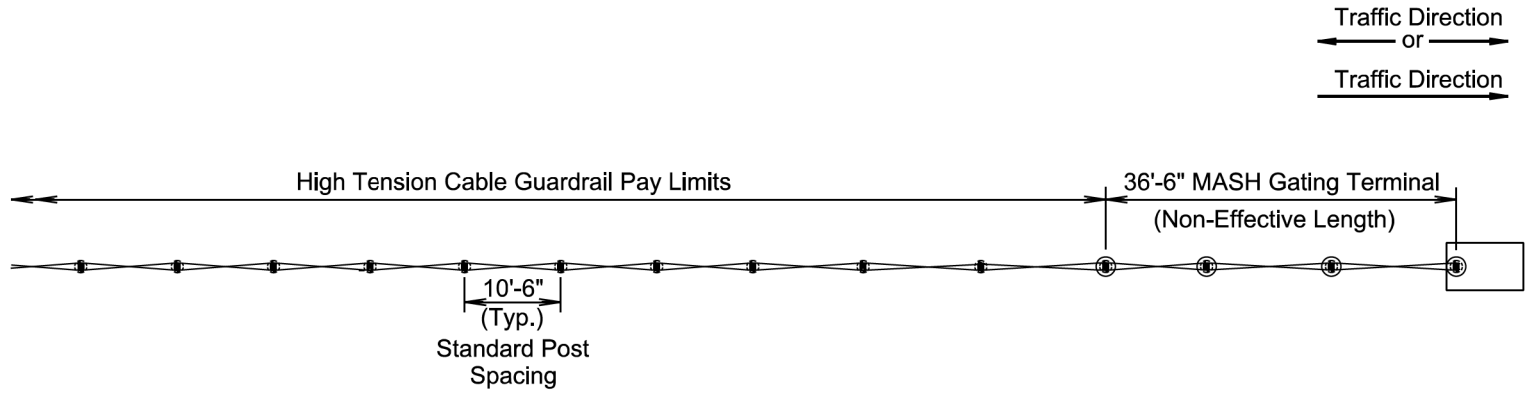


GENERAL NOTES:

The Brifen MASH Gating Terminal has a total length of 36'-6" and is non-effective.

The High Tension Cable Guardrail pay limits will be the length of need (LON) or the effective length.

The High Tension Cable Guardrail Anchor Assembly pay limits will be the non-effective length of the terminal.



Published Date: 2025

SDDOT

HIGH TENSION CABLE GUARDRAIL

PLATE NUMBER 629.50

Sheet 3 of 3

January 22, 2023

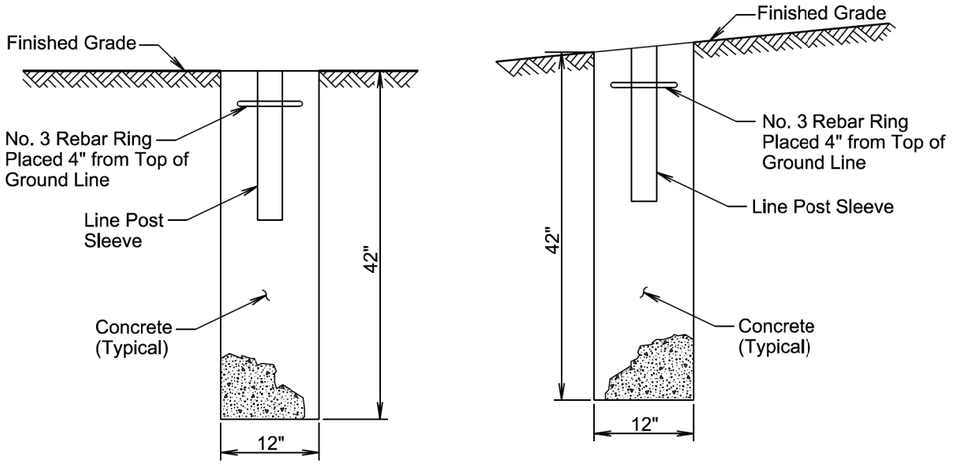
Plotting Date: 09/18/2024

STATE OF SOUTH DAKOTA

PROJECT NH 0012(316)137

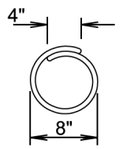
SHEET 19

TOTAL SHEETS 26



Line Post Concrete Footing on Slopes 10:1 or Flatter

Line Post Concrete Footing on Slopes from 4:1 to 10:1



No. 3 Rebar Ring

GENERAL NOTES:

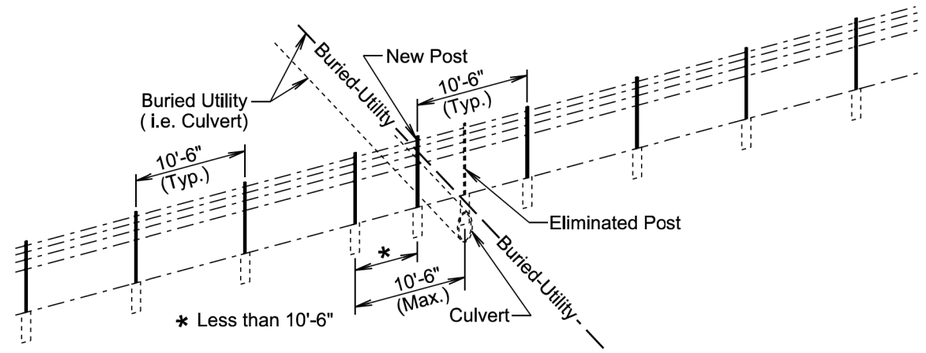
The line post sleeve will be furnished by the manufacturer.

The concrete for the post footing will be either Class M6 or a bagged mix conforming to ASTM C387 that is air entrained with a minimum 28 day compressive strength of 4,000 psi. To reduce the risk of frost heaving, the concrete at the top cannot be wider than the concrete in the lower footing.

All costs for materials, labor, equipment, and incidentals necessary to install the high tension cable guardrail line post footings will be incidental to the contract unit price per foot for "High Tension 3 Cable Guardrail" or "High Tension 4 Cable Guardrail".

March 31, 2024

Published Date: 2025	SDDOT	HIGH TENSION CABLE GUARDRAIL LINE POST CONCRETE FOOTING	PLATE NUMBER 629.60
			Sheet 1 of 1



POST SPACING AT UTILITY CROSSING

GENERAL NOTES:

The post spacing may be modified to avoid utility conflicts; however, the post spacing will not exceed 10'-6".

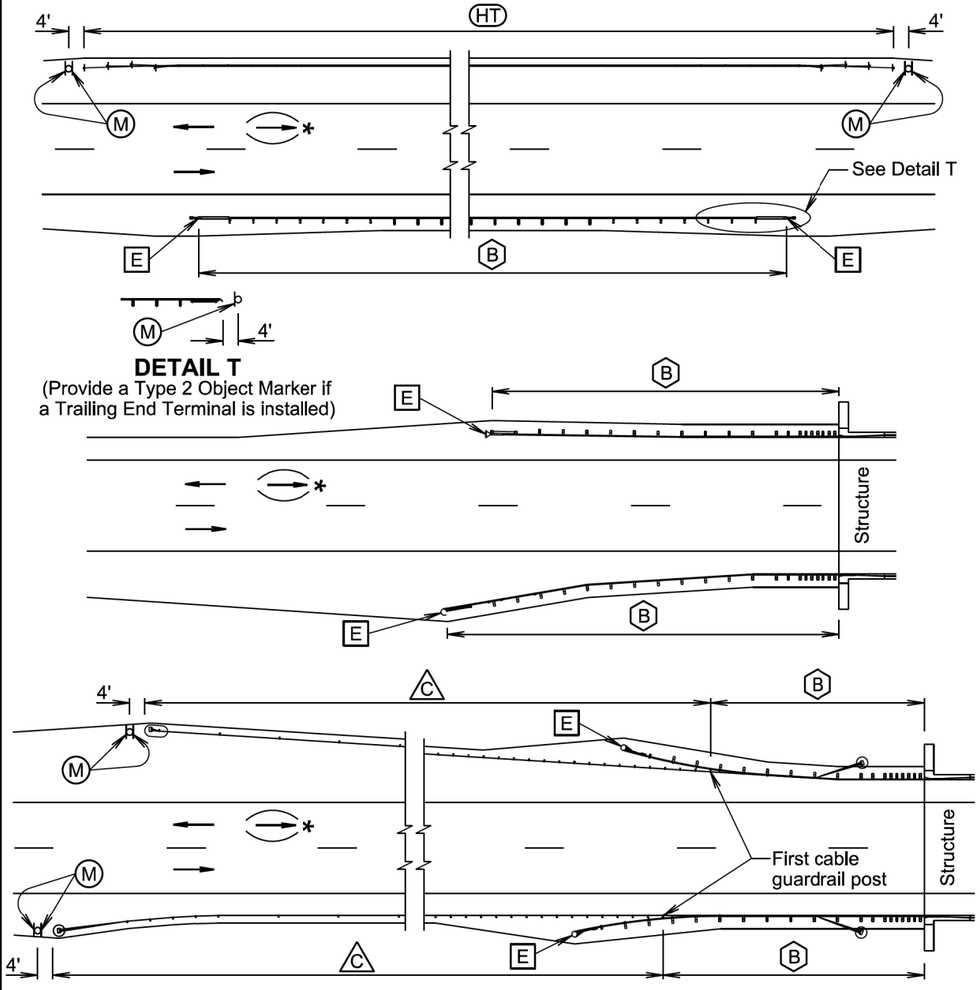
All costs for materials, labor, equipment, and incidentals necessary to install the high tension cable guardrail at an utility crossing will be incidental to the contract unit price per foot for "High Tension 3 Cable Guardrail" or "High Tension 4 Cable Guardrail".

March 31, 2024

Published Date: 2025	SDDOT	HIGH TENSION CABLE GUARDRAIL UTILITY CROSSING	PLATE NUMBER 629.70
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(316)137	21	26

Plotting Date: 09/18/2024



DETAIL T
(Provide a Type 2 Object Marker if a Trailing End Terminal is installed)

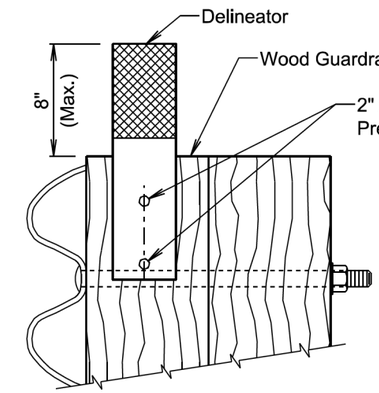
PLAN VIEW
(Typical Guardrail Layouts)

- (B) Steel Beam Guardrail Delineation
- [E] Guardrail End Terminal Object Marker
- <C> 3 Cable Guardrail (Low Tension) Delineation
- (HT) High Tension Cable Guardrail Delineation
- (M) Type 2 Object Marker

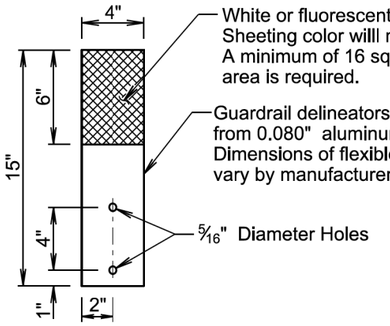
*For two-way traffic, install delineation at the opposite end of structure the same as shown. Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

March 31, 2024

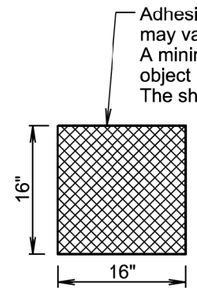
Published Date: 2025	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 1 of 4



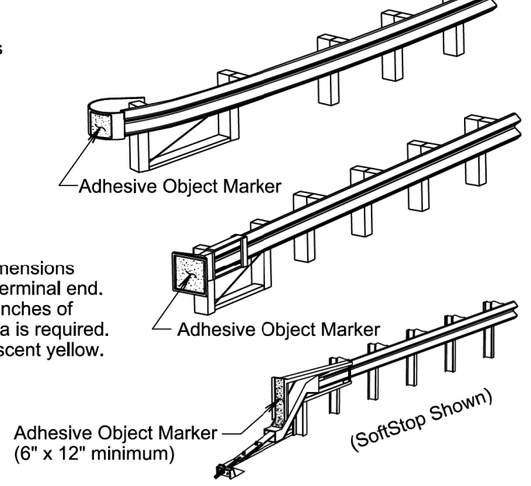
(B) STEEL BEAM GUARDRAIL DELINEATION



DELINEATOR
(For Steel Beam Guardrail)



ADHESIVE OBJECT MARKER



[E] GUARDRAIL END TERMINAL OBJECT MARKER

March 31, 2024

Published Date: 2025	SDDOT	DELINEATION GUARDRAIL	PLATE NUMBER 632.40
			Sheet 2 of 4

Plot Scale - 1:200

- Plotted From - TRPR22410

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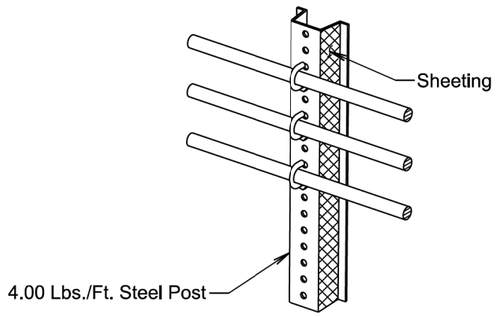
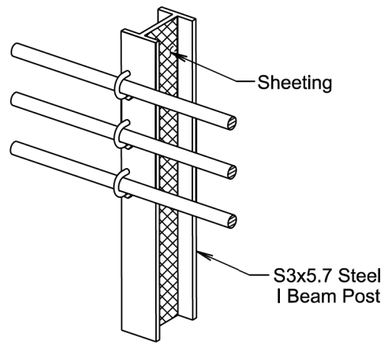
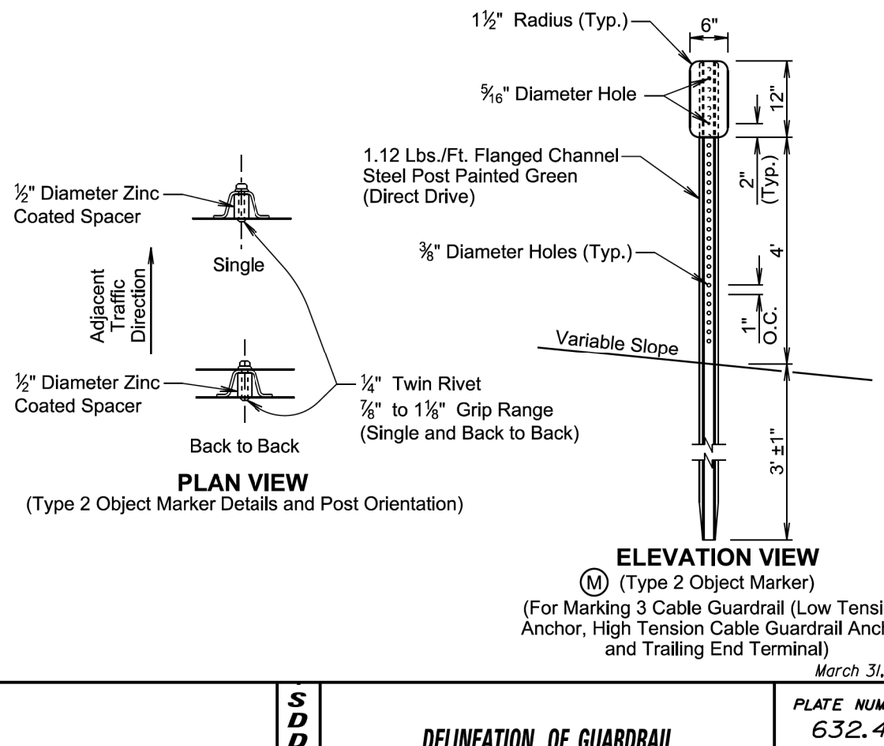


Ⓒ **3 CABLE GUARDRAIL (LOW TENSION) DELINEATION**



Ⓒ **3 CABLE GUARDRAIL (LOW TENSION) DELINEATION**



PLAN VIEW
(Type 2 Object Marker Details and Post Orientation)

ELEVATION VIEW
Ⓜ (Type 2 Object Marker)
(For Marking 3 Cable Guardrail (Low Tension) Anchor, High Tension Cable Guardrail Anchor, and Trailing End Terminal)

March 31, 2024

Published Date: 2025	SDDOT	**DELINEATION OF GUARDRAIL**	PLATE NUMBER 632.40
			Sheet 3 of 4

GENERAL NOTES:

The delineation of high tension cable guardrail will be reflective sheeting placed back to back on every third post cap or cable spacer. Maximum spacing of delineation will not exceed 35 feet. The sheeting will be type XI in conformance with ASTM D4956. The color of the reflective sheeting will be the same as the nearest pavement marking.

The delineators for steel beam guardrail and sheeting on 3 cable guardrail (low tension) posts will be covered with a minimum of 16 square inches of reflective sheeting. The reflective sheeting will be type XI in conformance with ASTM D4956. Along two-way roadways the sheeting will be on both sides of the delineators and guardrail posts and will be white in color. For one-way roadways the sheeting will only be required on the side facing traffic and the color will be the same as the nearest pavement marking, yellow on the left side of the roadway and white on the right side.

When steel beam guardrail is attached to a bridge the first delineator will be attached to the post nearest the bridge.

At bridges with guardrail less than 200 feet in length, a minimum of 4 delineators will be placed in addition to the end terminal yellow object marker. The spacing between the delineators will be approximately one third of the length of the guardrail.

At bridges with guardrail 200 feet and greater in length, including bridges that have steel beam guardrail transitioning to 3 cable guardrail (low tension), the delineators will be placed at a spacing of approximately 50 feet. Delineation will extend throughout the length of the guardrail system.

Steel beam guardrail that is not attached to a bridge and is less than 200 feet in length, a minimum of 4 delineators will be placed in addition to the end terminal yellow object markers. The spacing between the delineators will be approximately one third of the length of the guardrail.

Steel beam guardrail that is not attached to a bridge and is 200 feet and greater in length, including steel beam guardrail transitioning to 3 cable guardrail (low tension), the delineators will be placed at a spacing of approximately 50 feet. Delineation will extend throughout the length of the guardrail system.

All costs for furnishing and installing single or back to back guardrail delineation on 3 cable guardrail and steel beam guardrail will be included in the contract unit price per each for "Guardrail Delineator".

All costs for furnishing and installing the reflective sheeting on the cable spacers or post caps for the high tension cable guardrail will be incidental to the respective high tension cable guardrail contract item.

An adhesive object marker will be placed on the end of the W beam guardrail or MGS end terminal. The adhesive object marker dimensions may vary due to the shape of the terminal end. A minimum of 256 square inches of object marker reflective sheeting area is required on end terminals with sufficient surface area. Other end terminals (SoftStop) will require an adhesive object marker with a minimum size of 6" x 12". The reflective sheeting will be fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the adhesive object marker will be incidental to various contract items.

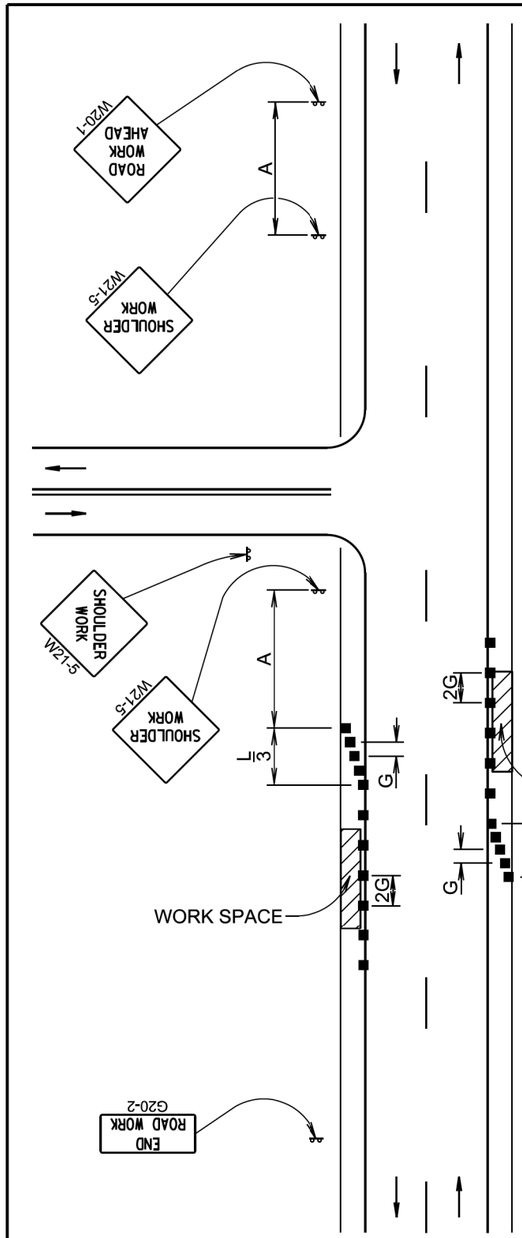
A type 2 object marker will be placed adjacent to the 3 cable guardrail (low tension) anchor, high tension cable guardrail anchor, and trailing end terminal at the location noted on sheet 1 of this standard plate. The type 2 object marker (6" x 12") will have fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the type 2 object marker including the steel post, 6" x 12" reflective panel, and hardware will be included in the contract unit price per each for "Type 2 Object Marker" for single-sided and "Type 2 Object Marker Back to Back" for back to back type 2 object markers.

March 31, 2024

Published Date: 2025	SDDOT	**DELINEATION OF GUARDRAIL**	PLATE NUMBER 632.40
			Sheet 4 of 4

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(316)137	23	26

Plotting Date: 09/18/2024



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

■ Channelizing Device

END ROAD WORK
G20-2

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

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

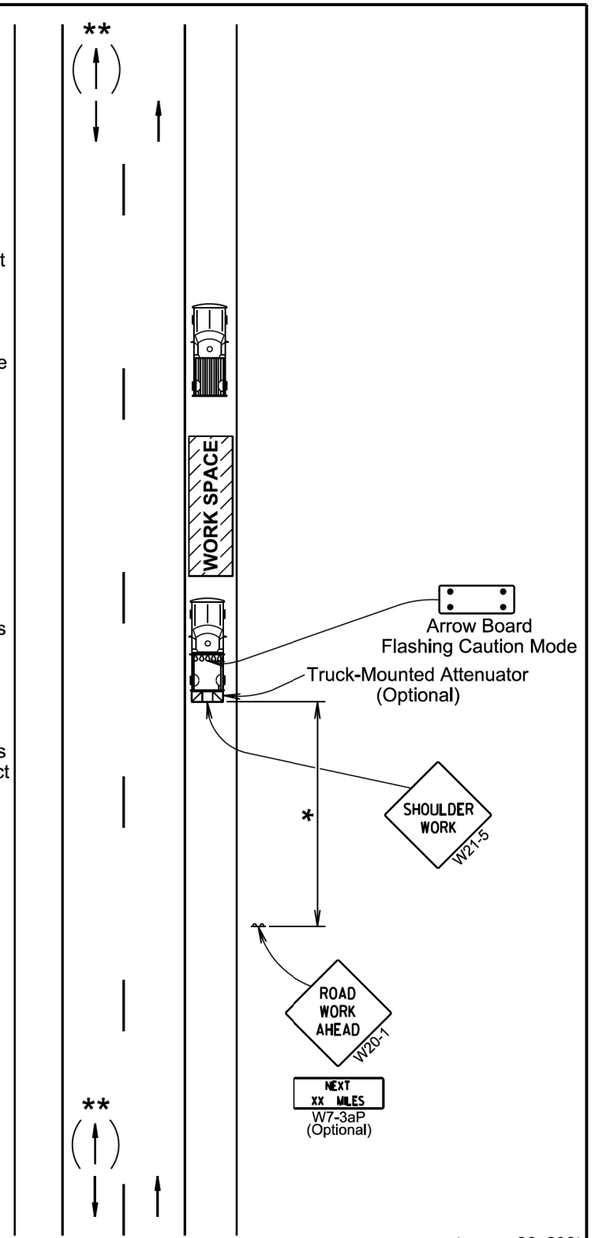
Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

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

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

January 22, 2021

Published Date: 2025	SDDOT	WORK ON SHOULDERS	PLATE NUMBER 634.03
			Sheet 1 of 1



*In situations where multiple work locations in a limited distance make it practical to place stationary signs, the distance between the advance warning sign and the work should not exceed 5 miles.

The ROAD WORK NEXT xx MILES sign may be used instead of the ROAD WORK AHEAD sign if the work locations occur over a distance of more than 2 miles.

Arrow board is required for intermittently and continuously moving mobile operations when work exceeds 1 hour.

**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.

In situations where the distance between the advance warning signs and the work is 2 miles to 5 miles, a Supplemental Distance plaque should be used with the ROAD WORK AHEAD sign.

All costs associated with the traffic control for mobile operation including signs, arrow boards and equipment will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

January 22, 2021

Published Date: 2025	SDDOT	MOBILE OPERATIONS ON SHOULDERS	PLATE NUMBER 634.04
			Sheet 1 of 1

Plot Scale - 1:200

- Plotted From - TRPR22410

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* Messages on signs will vary depending on the operation being conducted.

Vehicle-mounted signs will be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs will be covered or turned from view when work is not in progress.

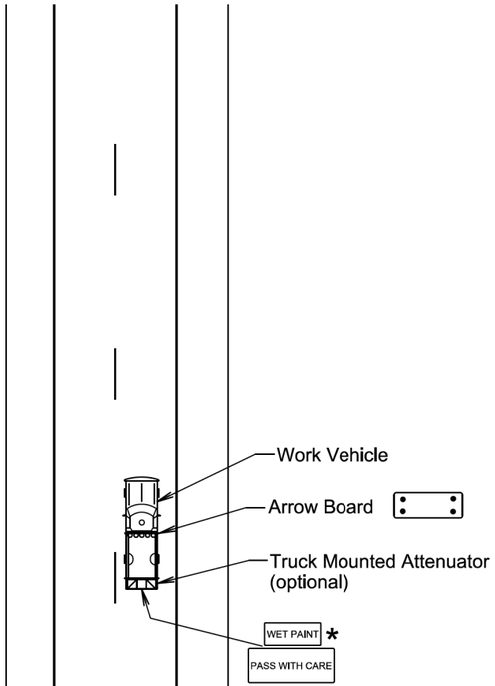
Shadow and Work vehicles will display high-intensity rotating, flashing, oscillating, or strobe lights, flags, signs, or arrow boards.

Vehicle hazard warning signals will not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.

When an arrow board is used, it will be used in the caution mode. Marching Diamonds are acceptable.

Arrow boards will, as a minimum, be Type B, with a size of 60" x 30".

All costs associated with the traffic control for mobile operation including signs, arrow boards and equipment will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".



January 22, 2021

Published Date: 2025	SDDOT	MOBILE OPERATIONS ON 2-LANE ROAD	PLATE NUMBER 634.06
			Sheet 1 of 1

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

Flagger

Channelizing Device

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.

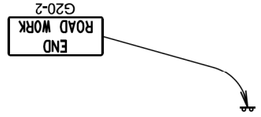
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) will 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 will be drums or 42" cones.

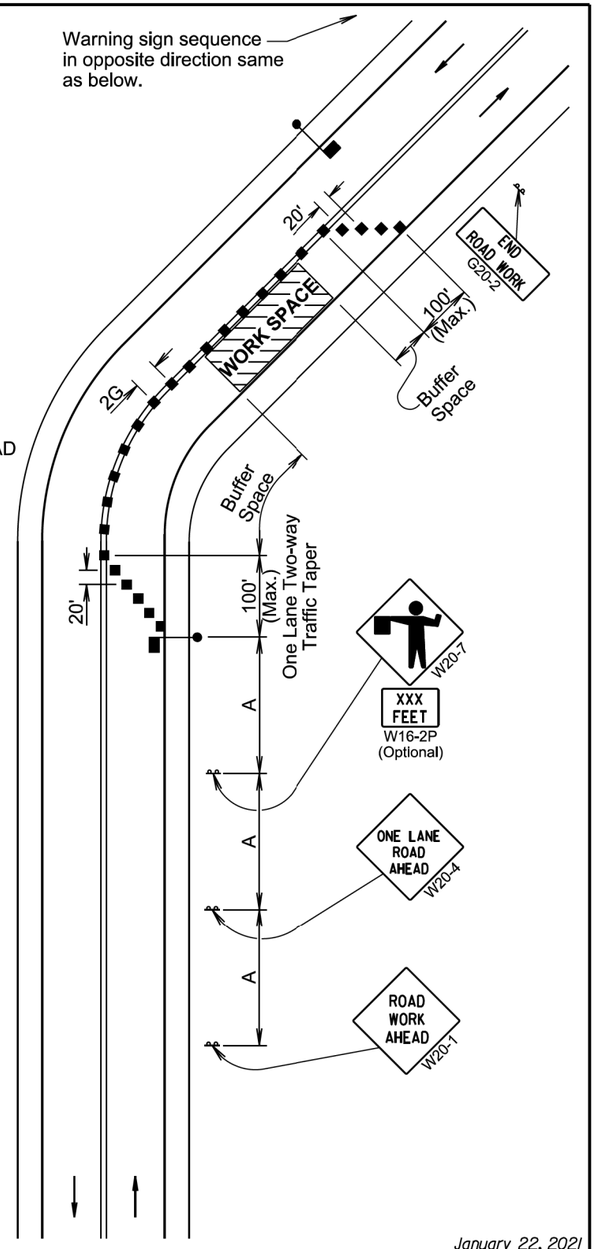
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



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

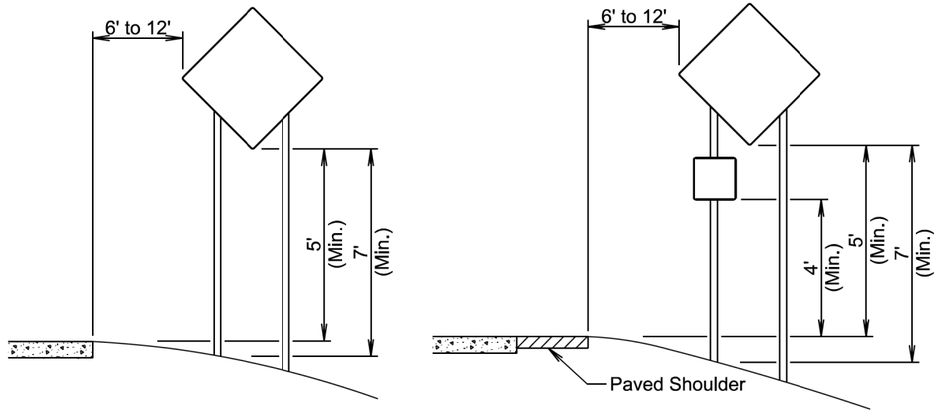
The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

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



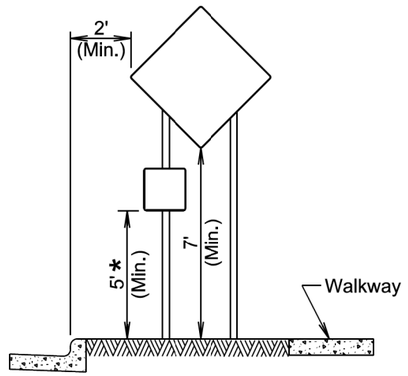
January 22, 2021

Published Date: 2025	SDDOT	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
			Sheet 1 of 1

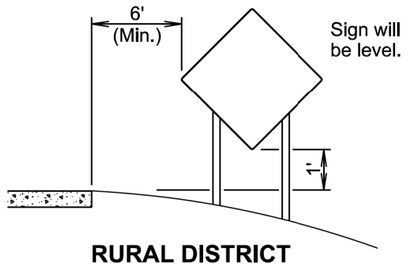


RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

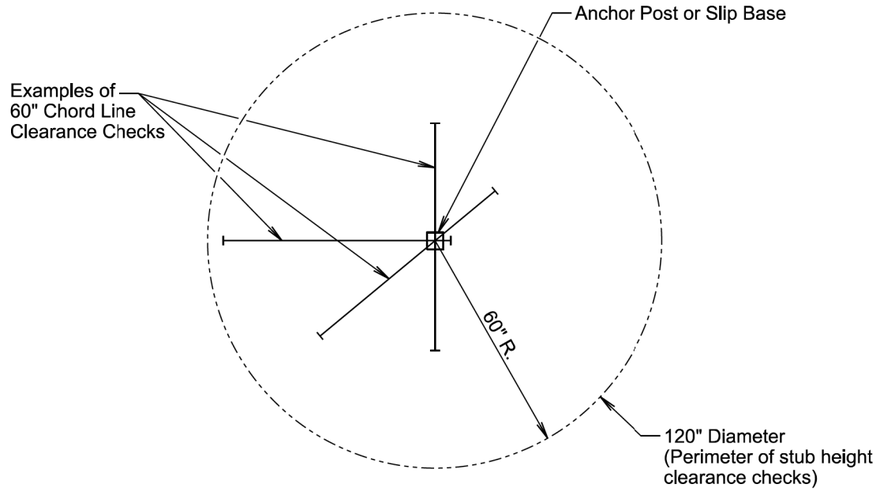


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

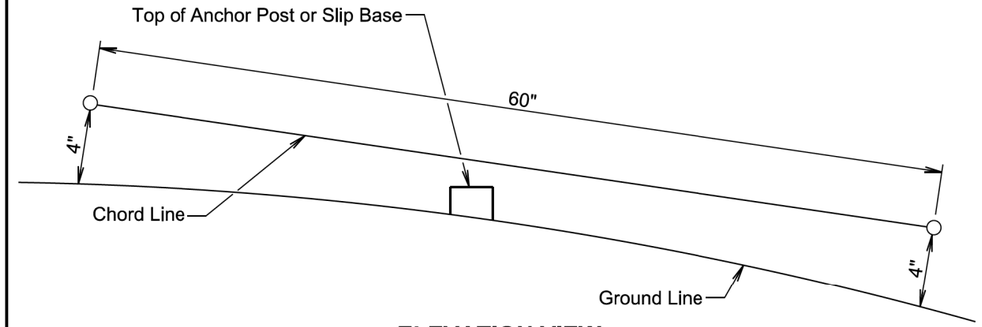
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2025	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases WILL 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 will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

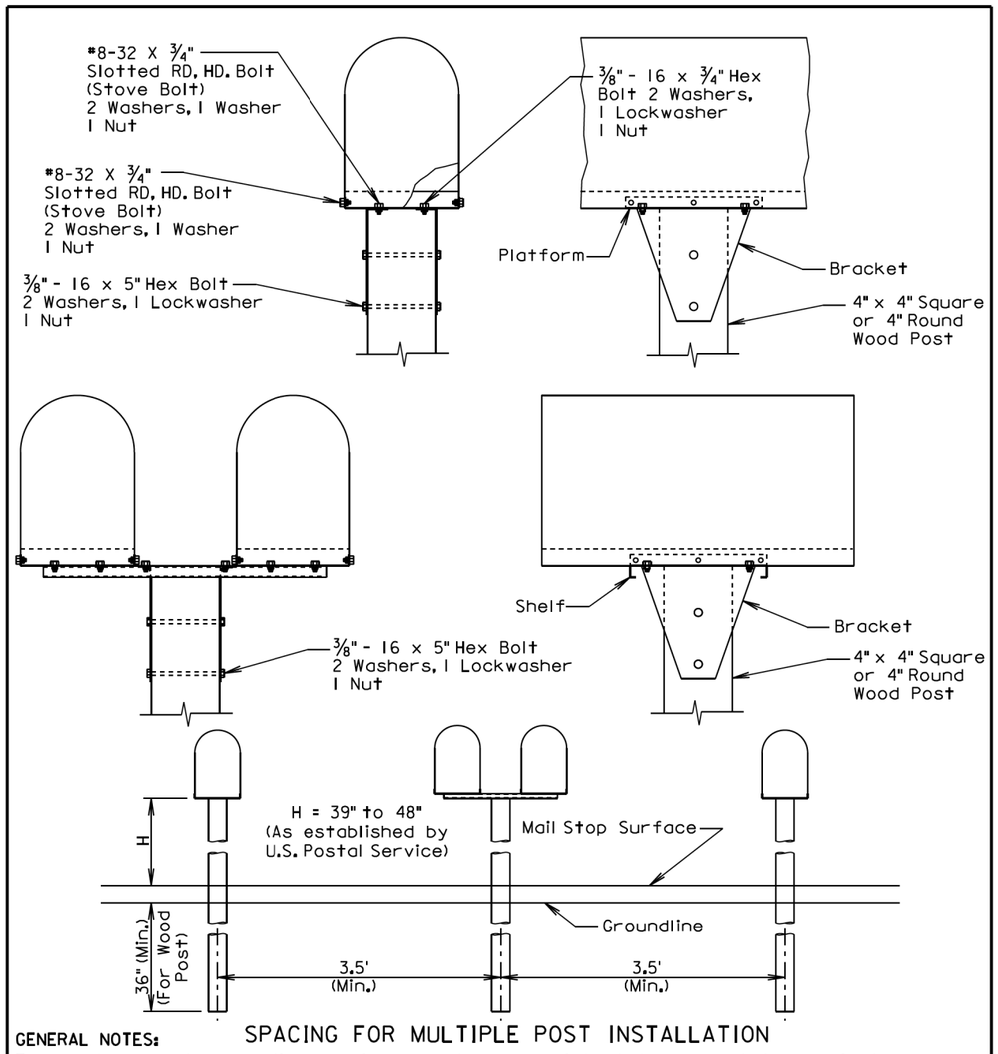
The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

January 22, 2021

Published Date: 2025	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(316)137	26	26

Plotting Date: 09/18/2024



SPACING FOR MULTIPLE POST INSTALLATION

GENERAL NOTES:

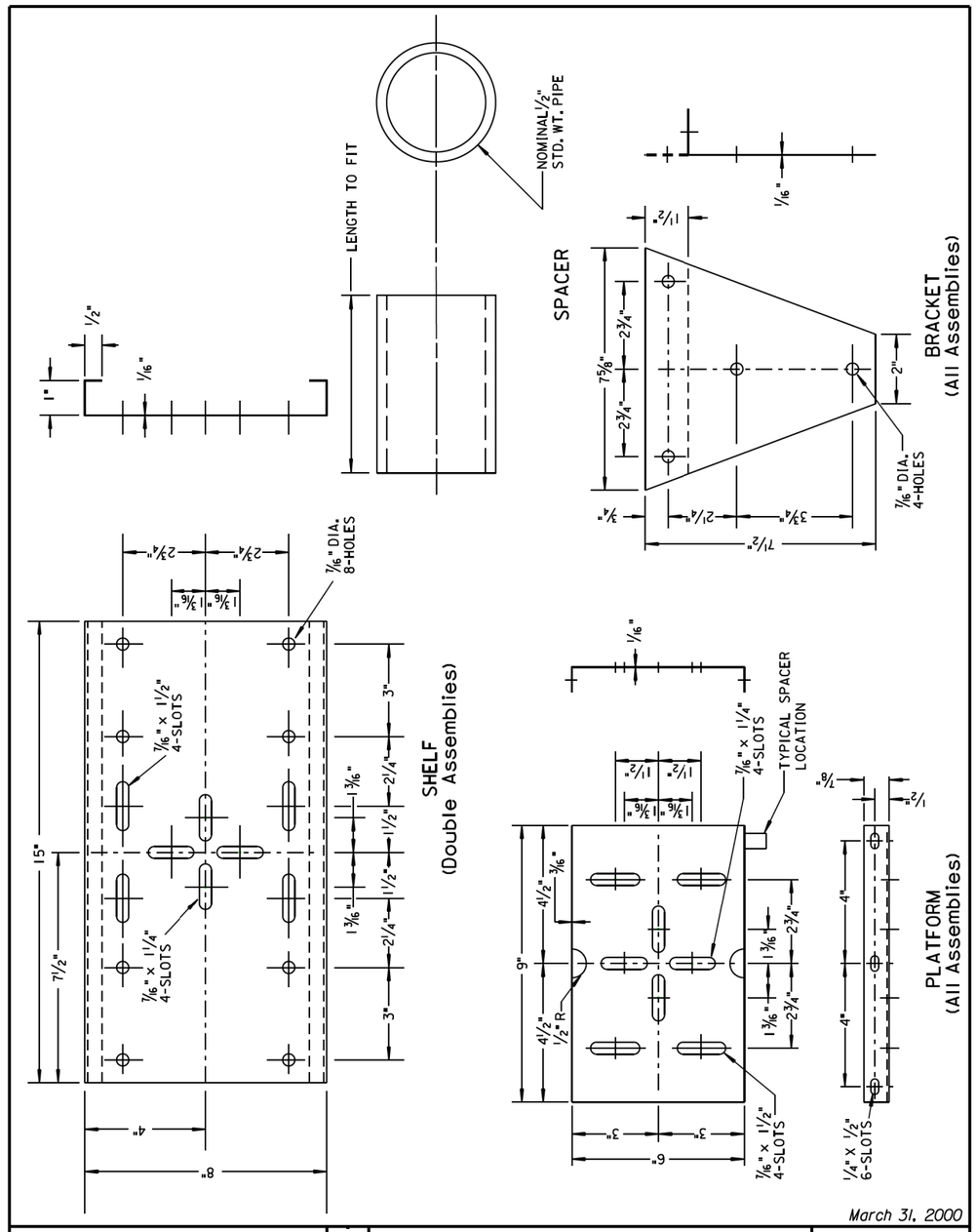
The post support assemblies provided should be consistant throughout the project. Single and double mailboxes may be in any sequence.

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

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

September 6, 2013

Published Date: 2025	SDDOT	***SINGLE AND DOUBLE MAILBOX ASSEMBLIES***	***PLATE NUMBER*** 900.02 *Sheet 1 of 1*



March 31, 2000

Published Date: 2025	SDDOT	***MAILBOX SUPPORT HARDWARE***	***PLATE NUMBER*** 900.03 *Sheet 1 of 1*

- Plotted From - TRPR22410

Plot Scale - 1:200

File - ...\CAD\09EJ Std Plates.dgn