SD DOT	PROJECT	SECTION	SHEET
	090 EF-452 & 000I-452	non	1/28

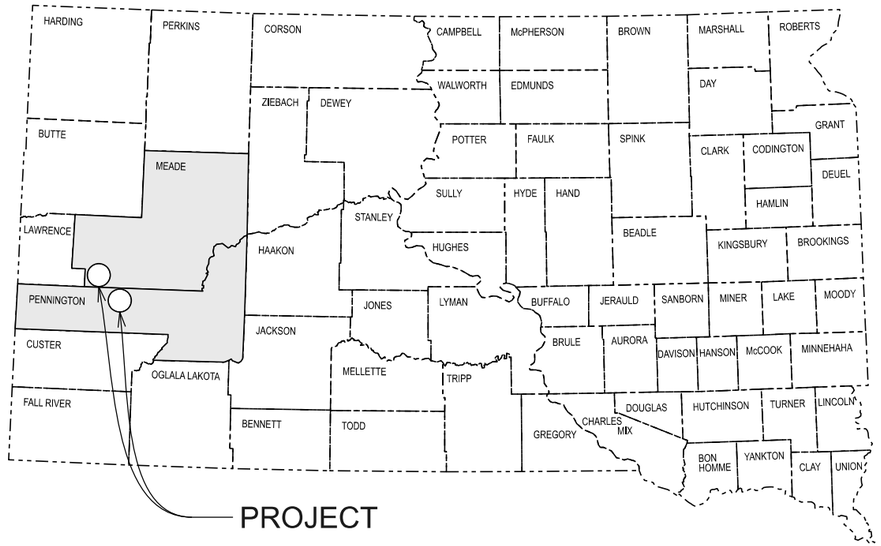
Plotting Date: 9/26/2025

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

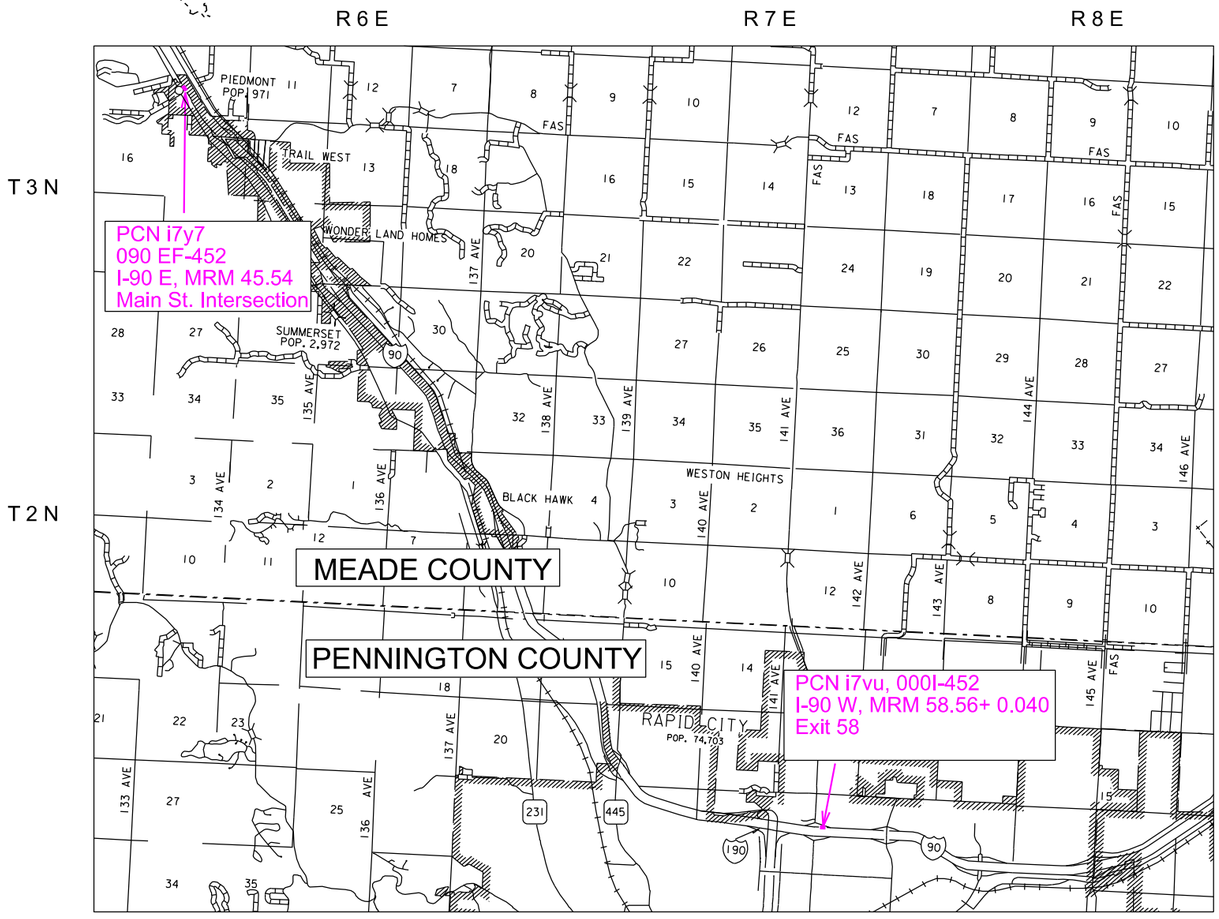
PLANS FOR PROPOSED

PROJECTS 090 EF-452 & 000I-452
INTERSTATE 90
MEADE & PENNINGTON COUNTIES

BARRIER REPAIR
PCNs i7y7 & i7vu



INDEX OF SHEETS



STORM WATER PERMIT
No Permit Required

DESIGN DESIGNATION
(I-90 E, MRM 45.54)

ADT (2024)	12411
ADT (2044)	18893
DHV	2775
D	50%
T DHV	6.5%
T ADT	14.4%
V	80 MPH

DESIGN DESIGNATION
(I-90 W, MRM 58.56 + 0.040)

ADT (2024)	19663
ADT (2044)	28491
DHV	2997
D	50%
T DHV	3.3%
T ADT	7.3%
V	80 MPH

ESTIMATE OF QUANTITIES

PCN i7VU, Structure 52-415-285, I-90 W, MRM 58.56 + 0.040

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E4100	Construction Schedule, Category I	Lump Sum	LS
460E0010	Class A45 Concrete, Bridge Barrier	1.7	CuYd
460E0300	Breakout Structural Concrete	3.7	CuYd
480E0200	Epoxy Coated Reinforcing Steel	228	Lb
530E0810	Repair Retaining Wall	80	SqFt
634E0010	Flagging	100.0	Hour
634E0110	Traffic Control Signs	182.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	4	Each
634E0420	Type C Advance Warning Arrow Board	1	Each
634E1240	Queue Detection System	2	Each
634E1245	Maintenance of Queue Detection System	10	Hour
634E1255	Contractor Furnished Speed Monitoring Radar Trailer	2	Each
634E1260	Truck/Trailer Mounted Attenuator	2	Each
650E4060	Type C6 Concrete Gutter	42	Ft

PCN i7Y7, I-90 EF, MRM 45.54

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E4100	Construction Schedule, Category I	Lump Sum	LS
460E0100	Class A45 Concrete, Miscellaneous	2.1	CuYd
460E0300	Breakout Structural Concrete	2.1	CuYd
460E0380	Install Dowel in Concrete	31	Each
480E0200	Epoxy Coated Reinforcing Steel	90	Lb
634E0010	Flagging	250.0	Hour
634E0110	Traffic Control Signs	370.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	2	Each
634E0420	Type C Advance Warning Arrow Board	1	Each
634E1255	Contractor Furnished Speed Monitoring Radar Trailer	1	Each

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 10-1-25 Version, Required Provisions, and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges are available for download and viewing at https://dot.sd.gov/doing-business/contractors/standard-specifications.

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 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: 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 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 100 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.

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 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.

PCN I7VU (I-90)

This location can be closed according to the Special Provision for Contract Time 'PCN I7VU Working Day Count'. For the barrier and wall repair at Interstate 90 Exit 58 in Rapid City, the contractor will close the westbound driving lane using standard plate 634.63. Begin lane closure taper at MRM 58.45 at the beginning of the gore area. Provide a partial ramp closure using standard plate 634.63 at the Exit 58 westbound off ramp.

PCN I7Y7 (Sturgis Road)

For the barrier repair at Sturgis Road in Piedmont, the Contractor will close the northbound lane of Sturgis Road using standard plate 634.23 during working hours. The Contractor will provide an additional flagger at the intersecting Main Street to control traffic. Outside of working hours, the lane closure will be removed and standard plate 634.03 will be used to close the shoulder adjacent to the barrier repair location. The I-90 eastbound driving lane adjacent to the barrier will be closed using standard plate 634.64 when workers are present on the I-90 side of the barrier wall. Begin lane closure taper at MRM 45.20. This lane closure may only be in place between the hours of 8:30 AM and 6:30 PM and only when workers are present on the I-90 side of the barrier.

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.

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, signposts, and breakaway bases will be removed within 7 calendar days following pavement marking.

A Type 3 Barricade will be installed at the end of a lane closure taper as detailed in these plans.

LANE CLOSURES

Interstate lane closures will be removed when work will not be occurring for a period of 2 or more calendar days, including weekends and Friday or Monday Holidays. Activities that do not involve workers being present, such as curing time for concrete, constitute work. Lane closures will not be set up on a Friday if no work will be occurring on Saturday or Sunday. In these cases, the lane closure will be installed on Monday.

QUEUE DETECTION SYSTEM

The Contractor will furnish and install a Queue Detection System for I-90 westbound and eastbound prior to the construction zone.
The Queue Detection System will be capable of detecting slowed and stopped traffic prior to and within the work zone for up to two miles. The system will be capable of detecting slowed and stopped traffic prior to and within the work zone and warn drivers of traffic congestion.

The Contractor will ensure the Queue Detection System is always operational.

The system will display the following messages depending on the traffic conditions detected:

During times of free flowing traffic, Portable Changeable Message Signs will be blank when not required for end-of-queue detection or incident management.

During times of moderate congestion and slow speeds (30 mph to 55 mph):
SLOWED TRAFFIC AHEAD and REDUCE SPEED

During times of major congestion, very slow speeds, or stopped traffic conditions (below 30 mph):
STOPPED TRAFFIC AHEAD and REDUCE SPEED

There will be four message boards for each direction of travel on I-90 with Two boards located at two locations as determined by the Engineer. At each location one message board will be located on the left side of road and one on right side of road.

Portable Changeable Message Signs locations are dependent of site, traffic, and operational conditions. Locations of Portable Changeable Message Signs will be approved by the Engineer.

OPERATION AND MAINTENANCE

When road work begins on the project, the Contractor will be responsible for the operation (to include initial and daily system setup and programming) and the continued maintenance (to include adjustment and replacement of any parts or materials or appurtenances when necessary) required of the Queue Detection System. The Contractor's operation and maintenance Responsibility will end upon the Engineer's acceptance of the work on the project. Queue Detection System operation or maintenance work is required to be performed by the Contractor when project conditions dictate, lane closures change, the flow of I-90 mainline or interchange ramp traffic is impeded, a potential risk to the public exists or when equipment breaks down or malfunctions. The more serious situations require a high priority response and are to be reacted to as quickly as circumstances allow.

The Contractor should plan for sufficient staff for operation, maintenance, adjustment, materials and replacement of the Queue Detection System. The individual(s) responsible for installation, operations and maintenance of the Queue Detection System will be experienced, knowledgeable, and trained with respect to installation, setup, operation and maintenance of the Queue Detection System.

Relocation of sensor trailers and Portable Changeable Message Signs will be required as part of the work involved in maintaining the Queue Detection System. In the event of failure, the Contractor will furnish necessary advance Flaggers to safely control or warn traffic until the Queue Detection System is operational. The Contractor will furnish the flaggers within one hour of initial awareness of the Queue Detection System failure. The Contractor will be required to secure Portable Changeable Message Signs in the proper positions.

All Portable Changeable Message Signs and any sensor trailers will be marked with a minimum of two reflectorized drums.

The Queue Detection System including changeable message signs and other electronic materials are to operate 24 hours per day 7 days per week. The equipment will be powered by utility provided power, solar power, battery power, or generator. Solar powered battery units will have a no-charge-life of not less than 30 days. No-charge-life is the number of consecutive days that the system can continue to properly function (normal dimming and full output during varying lighting conditions for the display legend) starting with a full battery charge and with no additional charge provided by the solar cells.

The detectors will be capable of detecting traffic speeds in 5 Mile Per Hour increments and relaying information to detection systems for preset thresholds.

The system is required to detect end of queue and once detected, provide adequate notification and warning. As the end of queue continues to back up, the notification and warning will be extended.

Cost for furnishing and the initial installation and operation, including all equipment such as Portable Changeable Message Signs, detection, and all miscellaneous parts and materials will be included in the contract unit price per each for Queue Detection System.

Cost for the daily operation, adjustment, relocation, replacement, providing technical support, maintenance (labor, materials and equipment), and flagging to control of warn traffic in the event of system failure of the Queue Detection System will be included in the contract unit price per hour for Maintenance of Queue Detection System.

TRUCK/TRAILER MOUNTED ATTENUATOR

The Contractor will furnish truck or trailer mounted attenuator(s) to be used in interstate lane closures for the duration of the project. Truck or trailer mounted attenuators (TMAs) will meet the crashworthy requirements of NCHRP 350 or MASH Test Level 3. TMAs will be used and maintained in accordance with the manufacturers' recommendations.

The TMAs should be utilized on the project where workers and/or equipment are working next to the centerline of the roadway with live traffic in the adjacent lane, or as directed by the Engineer. The TMAs will be removed from the roadway at the end of each working day. The TMAs will remain the property of the Contractor at the end of the project.

The TMAs will be paid for at the contract unit price per each for Truck/Trailer Mounted Attenuator. Payment will be full compensation for furnishing, maintaining, relocating and removing as many times as required by the Engineer and the Contractor's operations.

In the event a TMA is hit while in service, the manufacturer will assess the TMA and make a recommendation as to whether it can be repaired or needs to be replaced. The Department will reimburse the Contractor for repairs as documented by invoices or pay for another TMA to be deployed to the project as needed.

TRAFFIC CONTROL SIGNS

Traffic control signs have been included in a table for each site. Payment will only be for those signs used on each site.

INVENTORY OF TRAFFIC CONTROL SIGNS – PCN i7VU (I-90)

		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER	SQFT
R2-1	SPEED LIMIT __	5	36" x 48"	12.0	60.0
R2-6aP	FINES DOUBLE (plaque)	1	36" x 24"	6.0	6.0
W3-5	SPEED REDUCTION AHEAD (__ MPH)	3	24" x 36"	6.0	18.0
W4-2R	RIGHT LANE ENDS	2	48" x 48"	16.0	32.0
W5-4	RAMP NARROWS	1	48" x 48"	16.0	16.0
W13-4P	ON RAMP (plaque)	1	36" x 36"	9.0	9.0
W20-1	ROAD WORK AHEAD	1	48" x 48"	16.0	16.0
W20-5	RIGHT LANE CLOSED AHEAD	1	48" x 48"	16.0	16.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			182.0

INVENTORY OF TRAFFIC CONTROL SIGNS -PCN i7Y7 (Sturgis Road)

		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	3	48" x 48"	16.0	48.0
R2-1	SPEED LIMIT __	6	36" x 48"	12.0	72.0
R2-6aP	FINES DOUBLE (plaque)	1	36" x 24"	6.0	6.0
W3-5	SPEED REDUCTION AHEAD (__ MPH)	3	24" x 36"	6.0	18.0
W4-2R	RIGHT LANE ENDS	2	48" x 48"	16.0	32.0
W5-4	RAMP NARROWS	1	48" x 48"	16.0	16.0
W20-5	RIGHT LANE CLOSED AHEAD	1	48" x 48"	16.0	16.0
W20-4	ONE LANE ROAD AHEAD	3	48" x 48"	16.0	48.0
W20-7	FLAGGER (symbol)	3	48" x 48"	16.0	48.0
W21-5	SHOULDER WORK	3	48" x 48"	16.0	48.0
G20-2	END ROAD WORK	4	36" x 18"	4.5	18.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			370.0

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 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.

It is required that the flaggers 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".

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 Meade (PCN I7Y7) or Pennington (I7VU) County Sheriff 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.

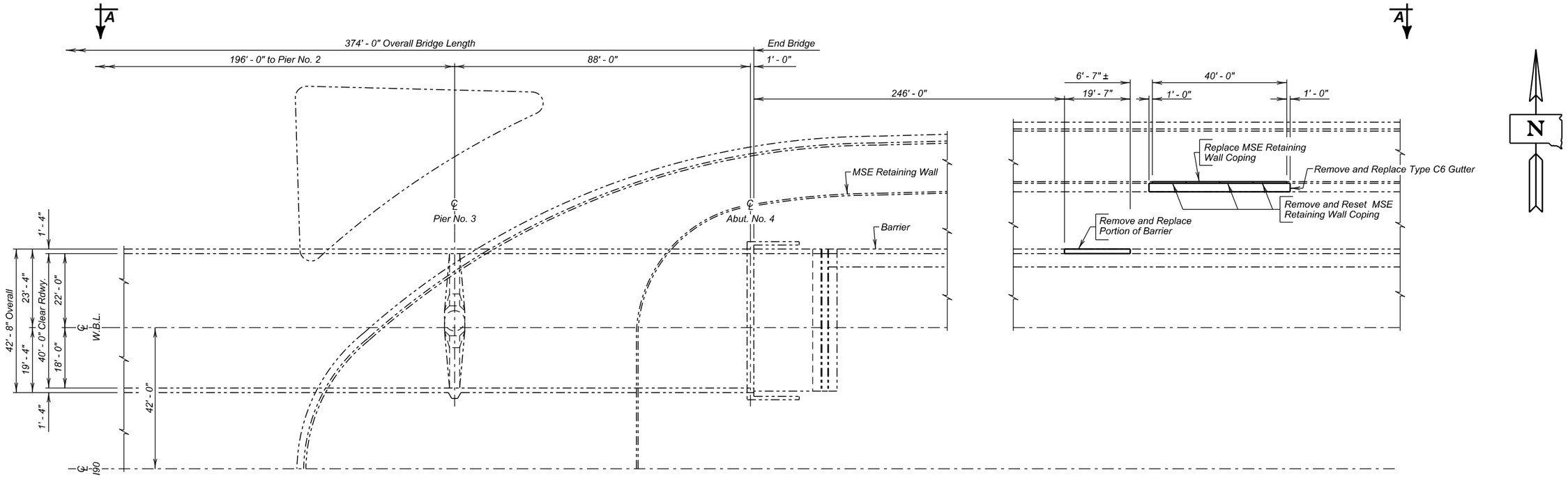
The Contractor may be required to modify messages on portable changeable message signs or relocate portable changeable message signs, and to provide flaggers to direct or detour traffic. The Contractor should be prepared to relocate advance warning signs if determined to be necessary for a major traffic 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".

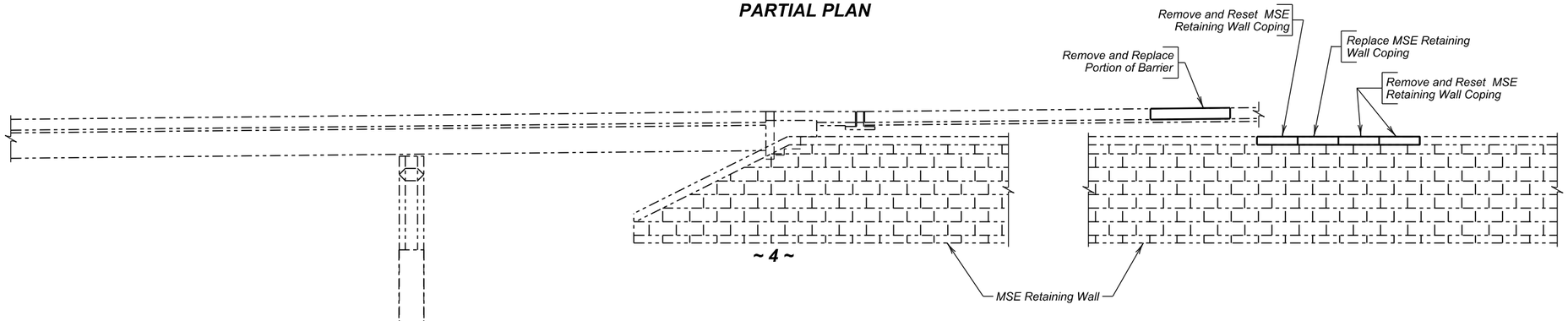
PRESS RELEASE ANNOUNCEMENTS

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.

SD DOT	PROJECT	SECTION	SHEET
	090 EF-452 & 000I-452	non	5/28



PARTIAL PLAN



VIEW A-A

-X271-
INDEX OF BRIDGE SHEETS -

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Breakout Structural Concrete	CuYd	2.0
Repair Retaining Wall	SqFt	80
Type C6 Concrete Gutter	Ft	42

(WEST BOUND LANES)
LAYOUT FOR REPAIR
FOR
374' - 0" CONT. COMP. GIRDER BIRDGE

40' - 0" ROADWAY — 0° SKEW
OVER HAINES AVE. — SEC. 25-T2N-R7E
STR. NO. 52-415-285 — 000i-452
PCN i7VU

PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 2025

-X271-

PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY	CK. DES. BY	DRAFTED BY	
TJM	JKI	KR	Steven A. Johnson
PENNi7VU	i7VURA01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
460E0010	Class A45 Concrete, Bridge Barrier	1.7	CuYd
460E0300	Breakout Structural Concrete	3.7	CuYd
480E0200	Epoxy Coated Reinforcing Steel	228	Lb
530E0810	Repair Retaining Wall	80	SqFt
650E4060	Type C6 Concrete Gutter	42	Ft

SPECIFICATIONS

Construction Specifications: Standard Specifications for Roads and Bridges, 10-1-25 Version; Required Provisions; and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges is available for download and viewing at https://dot.sd.gov/doing-business/contractors/standard-specifications.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the start of construction.

1. Breakout and repair barrier portion.
2. Remove portion of Type C6 concrete gutter.
3. Replace one coping segment and remove and reset three coping segments on the MSE wall.
4. Replace Type C6 concrete gutter.

GENERAL CONSTRUCTION - BRIDGE

1. All reinforcing steel will conform to ASTM A615, Grade 60.
2. All exposed concrete corners and edges will be chamfered ¾-inch unless noted otherwise in the plans. Match existing chamfer if the existing chamfer differs.
3. Use 2-inch clear cover on all reinforcing steel except as shown otherwise.
4. Barrier curbs and end blocks will be built normal to the grade.
5. Requests for construction joints or reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.
6. Snap ties, if used in the barrier curb formwork, will be corrosion resistant. The corrosion resistant ties will be inert in concrete and compatible with reinforcing steel.
7. All lap splices are contact lap splices unless noted otherwise.

CONCRETE BREAKOUT

1. The existing barrier and Type C6 Concrete Gutter will be broken out to the limits shown on the plans. Breakout limits will be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction will be cleaned and straightened to the satisfaction of the Engineer. Care will be taken not to damage the existing reinforcing steel that is to be reused in the new construction during concrete breakout. Any reinforcing steel that is damaged during concrete breakout will be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department.
2. All broken out concrete and discarded reinforcing steel will become the property of the Contractor and will be disposed of at a site obtained by the Contractor and approved by the Engineer. An appropriate site will be as described in the Environmental Commitment Notes in the plans.
3. The contract unit price per cubic yard for Breakout Structural Concrete will include breaking out concrete, cleaning, straightening reinforcing steel, and disposal of all broken out material.

SURFACE FINISH

1. All of the surfaces visible to the traveling public on the new concrete barriers will be given a Class B Commercial Texture Finish in accordance with Section 460.3 L.1.c. of the Construction Specifications. Visible surfaces include the front face, top, and back face of the barrier. The Commercial Texture Finish color will match the existing barrier.
2. For informational purposes the amount of surface area requiring the Class B Commercial Texture Finish is 116 square feet.
3. The cost of the commercial texture finish will be included in the contract unit price per cubic yard for Class A45 Concrete, Bridge Barrier. This payment will be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to the application of this finish.

EPOXY COATING EXISTING REINFORCING STEEL

1. The existing reinforcing steel in the barrier exposed during concrete breakout, that is to be reused, will be epoxy coated in the field following Section 480.3 A. 4 of the Construction Specifications.
2. The cost of cleaning and epoxy coating the existing reinforcing steel will be incidental to the contract unit price per cubic yard for Breakout Structural Concrete.

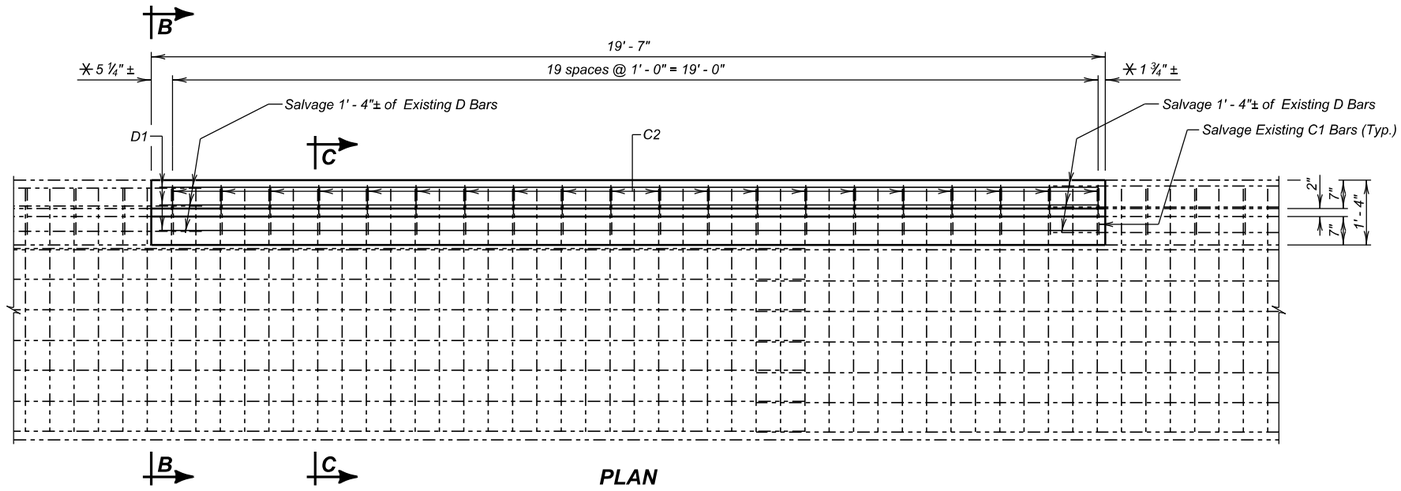
MSE WALL REPAIR

1. The existing MSE wall was damaged due to a traffic accident. Three of the precast coping units were knocked out of alignment and one coping unit was dislodged and damaged. The three misaligned coping units are to be removed and reset. The damaged coping unit is to be replaced with a unit that matches the existing coping units.
2. Once the coping units to be removed and reset are removed, the existing leveling strip will be evaluated to determine if the concrete material can be reused or if it requires removal and replacement. Care will be taken during the removal and repair process. Any damage to the existing MSE wall panels by the Contractor will be repaired, as approved by the Engineer, by the Contractor at no cost to the Department.
3. The contract unit price per square foot for Repair Retaining Wall will include removal and reset of the existing coping units, the new coping unit purchase and installation, the leveling strip including potential removal and replacement, disposal of any materials, any labor and equipment, and any incidentals related to the repair of the MSE wall.

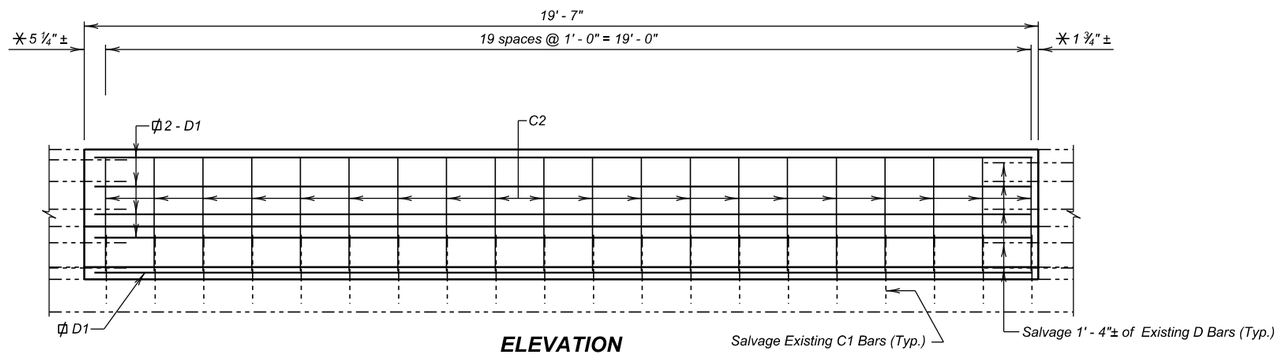
ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
374' - 0" CONT. COMP. GIRDER BRIDGE
STR. NO. 52-415-285
JUNE 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
TJM	JKI	TJM	Steve A Johnson BRIDGE ENGINEER
PENNI7VU	I7VUMA02		

SD DOT	PROJECT	SECTION	SHEET
	090 EF-452 & 000I-452	non	7/28

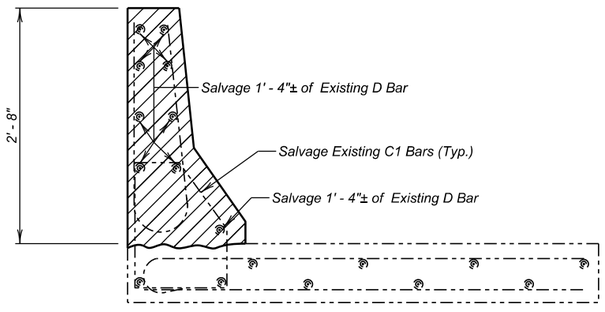


PLAN

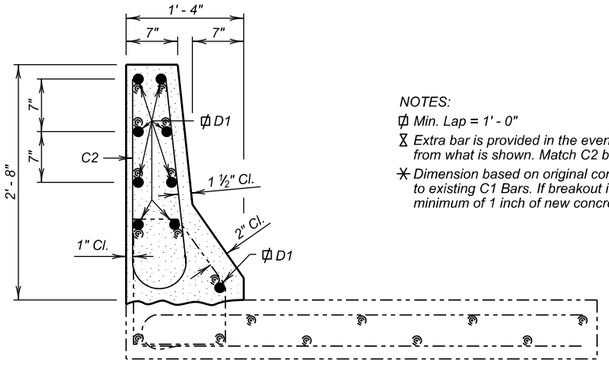


ELEVATION
(Barrier Slab Reinforcing Steel Not Shown)

LEGEND:
Approximate locations requiring concrete removal.



SECTION B - B
(Concrete Breakout)

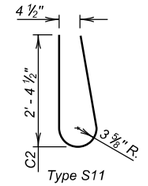


SECTION B - B
(Concrete Placement)

NOTES:
- Min. Lap = 1' - 0"
- Extra bar is provided in the event the existing reinforcing steel is shifted from what is shown. Match C2 bars to existing C1 bar spacing.
- Dimension based on original construction plans. Actual location may vary. Match new C2 bars to existing C1 Bars. If breakout is at the edge of the salvaged C1 bar shift breakout so a minimum of 1 inch of new concrete is placed outside of the vertical reinforcement.

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
C2	21	5	5' - 1"	S11	
D1	9	4	19' - 4"	Str.	

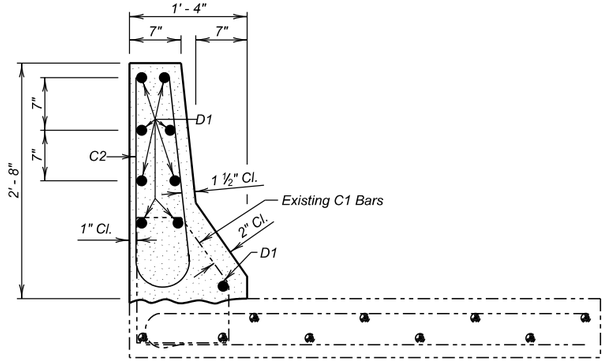


Type S11

NOTES-
All dimensions are out to out of bars.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Barrier	CuYd	1.7
Breakout Structural Concrete	CuYd	1.7
Epoxy Coated Reinforcing Steel	Lb	228



SECTION C - C

(WEST BOUND LANES)
BARRIER REPAIR DETAILS
FOR

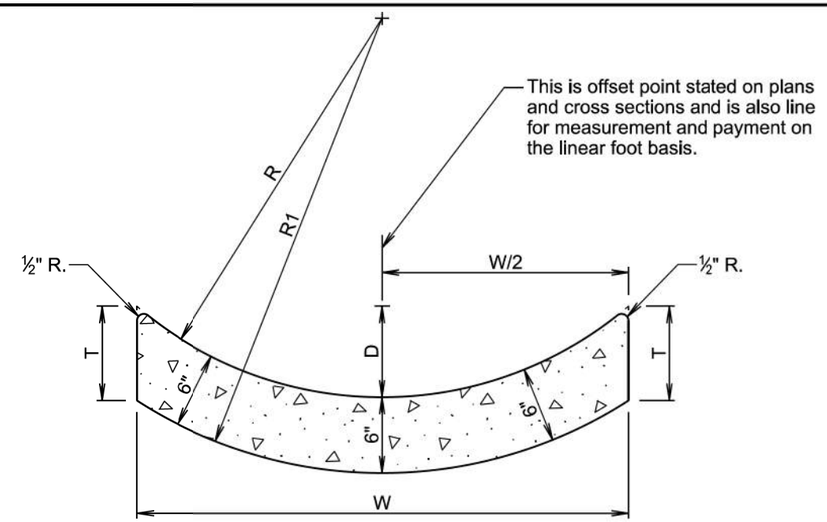
374' - 0" CONT. COMP. GIRDER BIRDGE

40' - 0" ROADWAY
OVER HAINES AVE.
STR. NO. 52-415-285

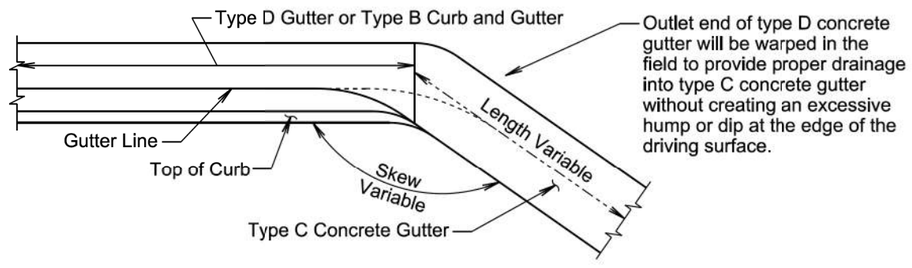
0° SKEW
SEC. 25-T2N-R7E
000i-452

PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
TJM PENNi7VU	JKI i7VURA03	KR	Steve A Johnson BRIDGE ENGINEER



TYPE C CONCRETE GUTTER							
Type	Gutter Depth D	Gutter Width W	Radius of Top of Gutter R	Radius of Bottom of Gutter R1	Vertical Depth of Concrete at Edges T	Cu. Yd. Per Lin. Foot	Lin. Ft. Per Cu. Yd.
C6	6"	30"	21¾"	27¾"	7⅝"	0.04982	20.1
C9	9"	48"	36½"	42½"	7⅝"	0.07966	12.6
C12	12"	72"	60"	66"	7⅜"	0.11828	8.5



GENERAL NOTE:

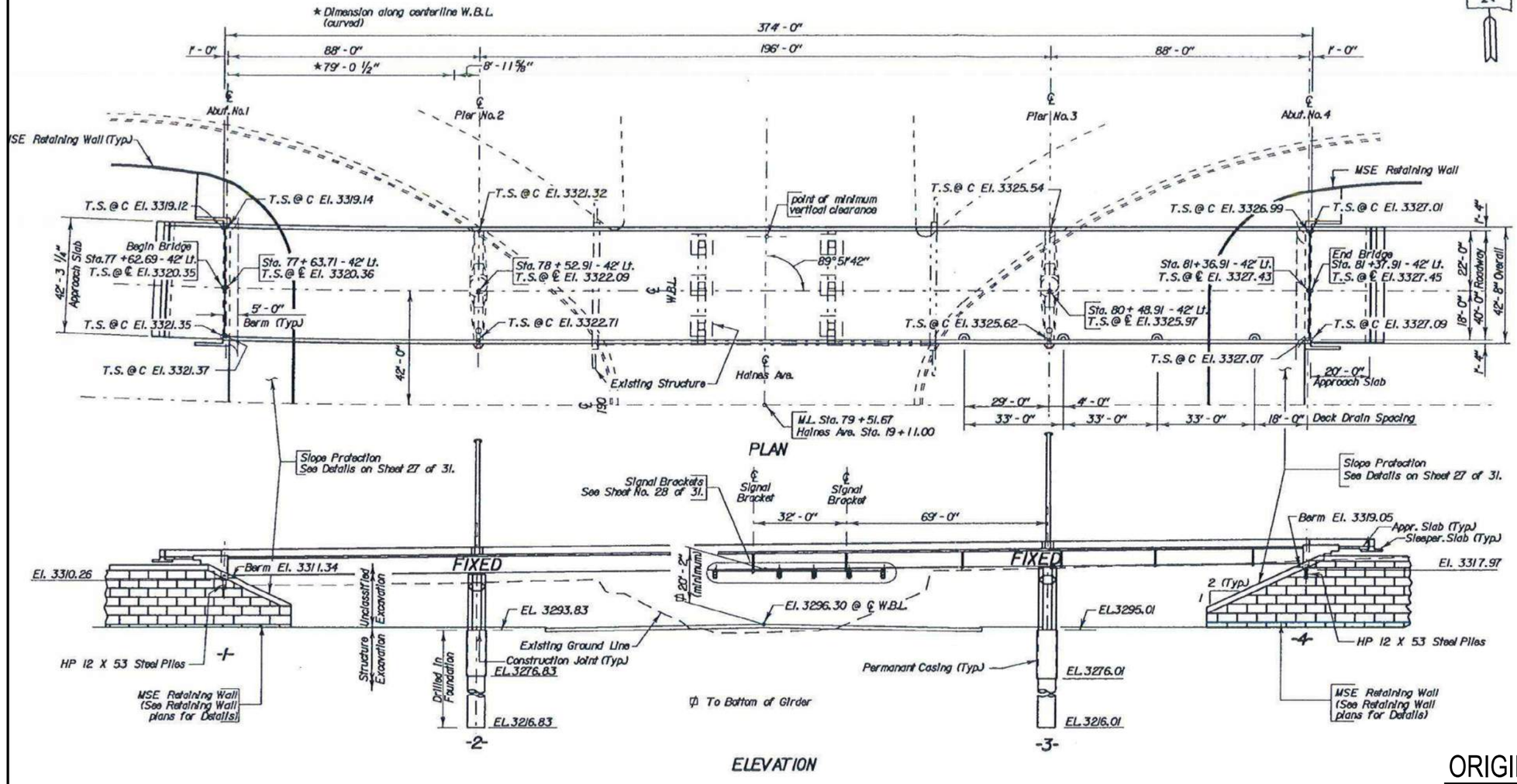
The concrete for the type C concrete gutter will comply with the requirements of the specifications for class M6 concrete.

One-half inch preformed expansion joint filler will be placed transversely in the concrete gutter at intervals of approximately 30 feet.

December 23, 2019

Published Date: 2026	SDDOT	TYPE C CONCRETE GUTTER	PLATE NUMBER 650.10 Sheet 1 of 1

SD DOT	PROJECT	SECTION	SHEET
	090 EF-452 & 000I-452	non	9/28



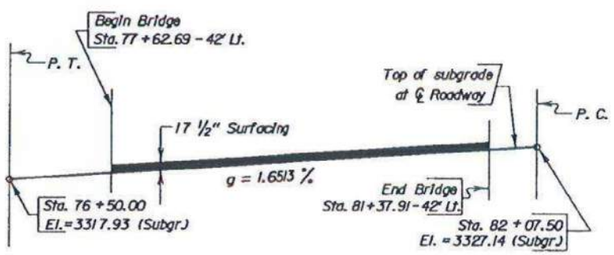
ELEVATION

NOTE: T.S. @ ℄ Elev. = Top of Slab at Center Line Elevation.
T. S. @ C. Elev. = Top of Slab at Curb Elevation.

N

-X27I-

INDEX OF BRIDGE SHEETS-



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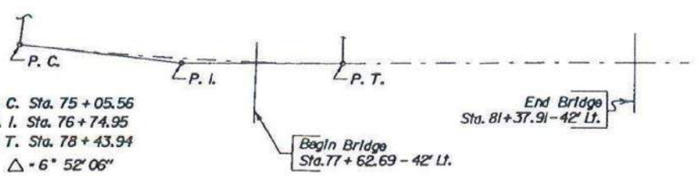


P. C. Sta. 75 + 05.56
P. I. Sta. 76 + 74.95
P. T. Sta. 78 + 43.94
△ = 6° 52' 06"
D = 2° 01' 47"
R = 2822.79'
T = 169.39'
Lc = 338.38'

HORIZONTAL CURVE DATA

ORIGINAL CONSTRUCTION PLANS

GENERAL DRAWING
FOR
(WEST BOUND LANES)

374'-0" CONT. COMP. GIRDER BRIDGE

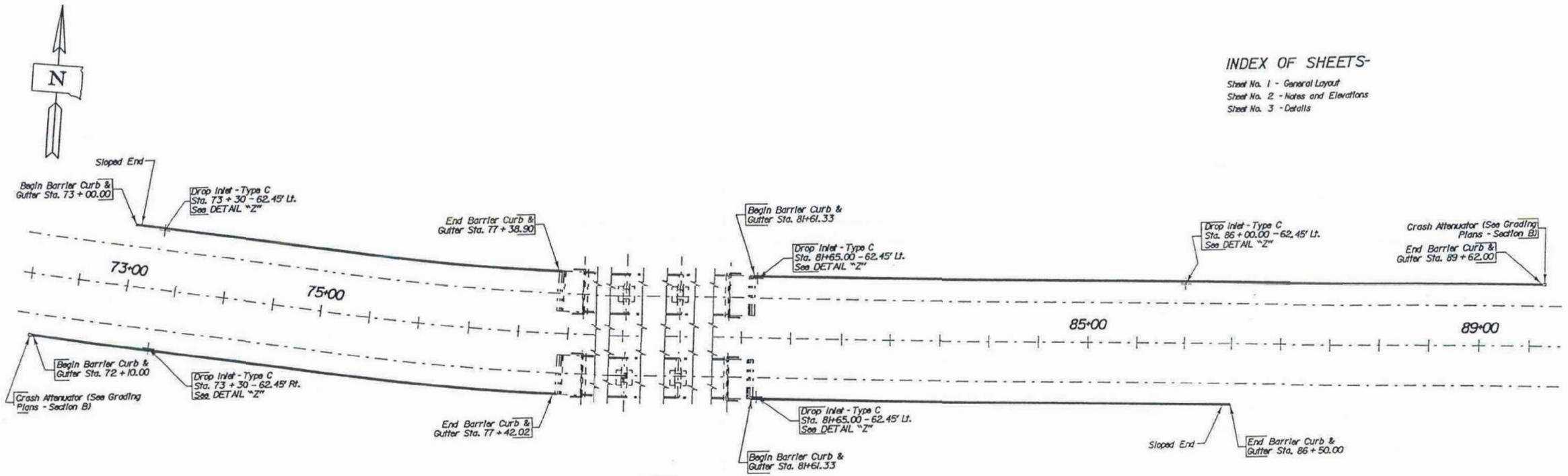
40'-0" ROADWAY — SEC. 25-T2N-R7E
OVER HAINES AVE. — 0° SKEW
STR. NO. 52-415-285 — IM 90-2(119)57
STA. 77+62.69 TO STA. 81+37.91-42' LT. — HS25-44
PCEMS NO. 3453 — (& ALT.)

PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 1999

PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
HE/DC	TB & JM	HE/DC	BRIDGE ENGINEER
PENN3453	3453BB01		

SD DOT	PROJECT	SECTION	SHEET
	090 EF-452 & 000I-452	non	10/28



LAYOUT

INDEX OF SHEETS-

ORIGINAL CONSTRUCTION PLANS

GENERAL LAYOUT
FOR
CONCRETE BARRIER CURB AND GUTTER
(WITH SLOPED END SECTION)

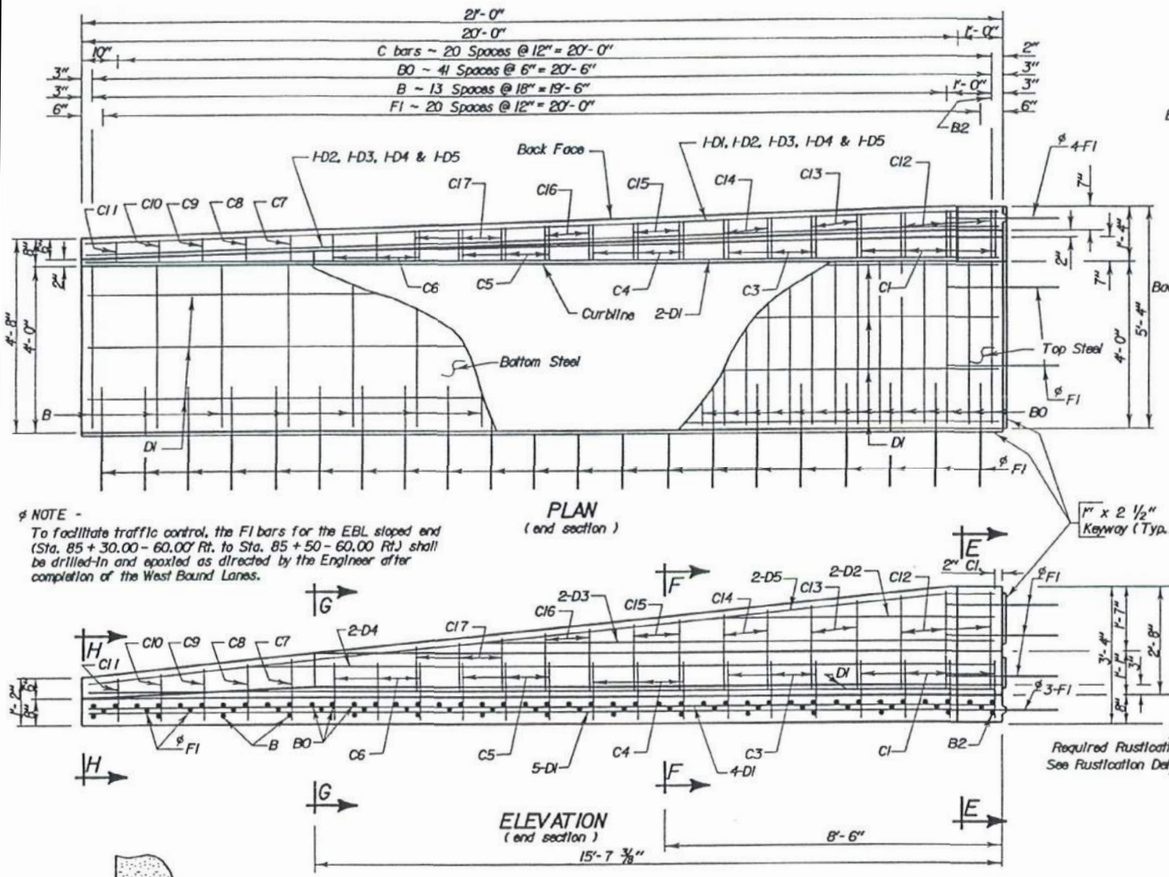
ADJ. TO I-90 IM 90-2(119)57
PCEMS NO. 3453

PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 1999

PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SJ/TJD	REM	SJ/TJD	BRIDGE ENGINEER
PENN3453	3453DH01		

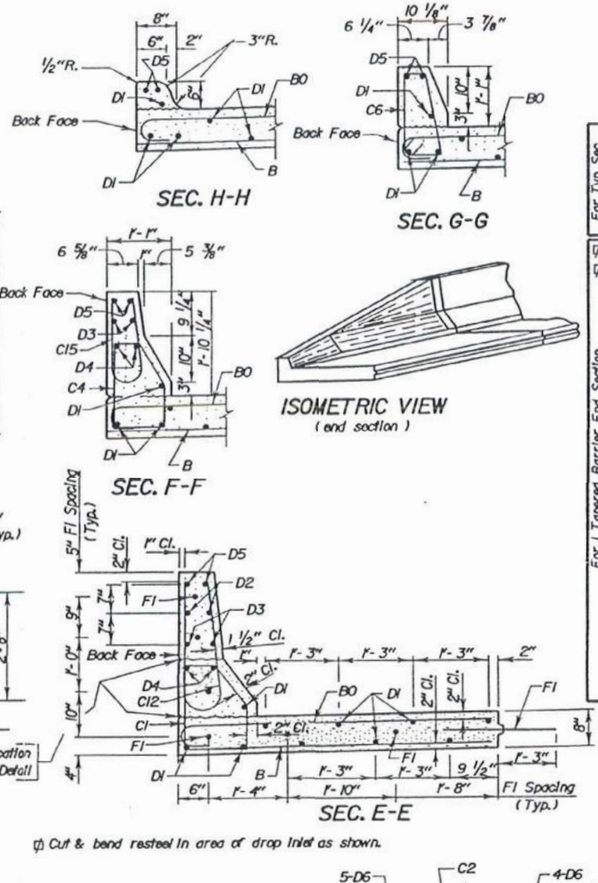
SD DOT	PROJECT	SECTION	SHEET
	090 EF-452 & 000I-452	non	11/28



℄ NOTE -
To facilitate traffic control, the F1 bars for the EBL sloped end (Sta. 85+30.00 - 60.00' Rt. to Sta. 85+50 - 60.00 Rt) shall be drilled-in and epoxied as directed by the Engineer after completion of the West Bound Lanes.

1" x 2 1/2" Keyway (Typ.)

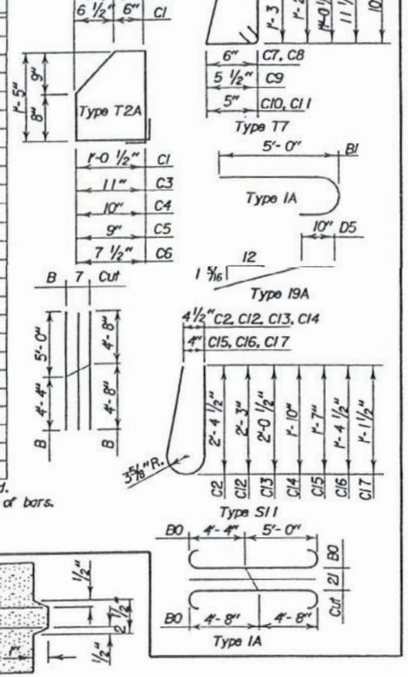
Required Rustication See Rustication Detail



℄ Cut & bend resteel in area of drop inlet as shown.

REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type	Bending Details
For Typ. Sec.	B1	4438	6	5'-8"	1A	
	B2	1481	4	5'-0"	Str.	
	C1	2220	5	5'-7"	T2A	
	C2	2220	5	5'-1"	S11	
	D6	702	4	60'-0"	Str.	
	F1	2220	5	2'-6"	Str.	
For Tapered Barrier End Section	B	7	4	9'-4"	Str.	
	B0	21	6	10'-8"	1A	
	B2	1	4	5'-0"	Str.	
	C1	4	5	5'-7"	T2A	
	C3	3	5	5'-4"	T2A	
	C4	3	5	5'-3"	T2A	
	C5	3	5	5'-1"	T2A	
	C6	3	5	4'-11"	T2A	
	C7	1	5	4'-4"	T7	
	C8	1	5	4'-1"	T7	
	C9	1	5	3'-10"	T7	
	C10	1	5	3'-7"	T7	
	C11	1	5	3'-4"	T7	
	C12	3	5	4'-10"	S11	
	C13	2	5	4'-5"	S11	
	C14	2	5	4'-0"	S11	
	C15	2	5	3'-6"	S11	
	C16	2	5	3'-1"	S11	
	C17	3	5	2'-7"	S11	
	D1	10	4	20'-8"	Str.	
	D2	2	4	6'-3"	Str.	
	D3	2	4	12'-0"	Str.	
	D4	2	4	15'-6"	Str.	
	D5	2	4	20'-8"	19A	
	℄ F1	27	5	2'-6"	Str.	



NOTE - All bars to be Epoxy Coated.
All dimensions are out to out of bars.

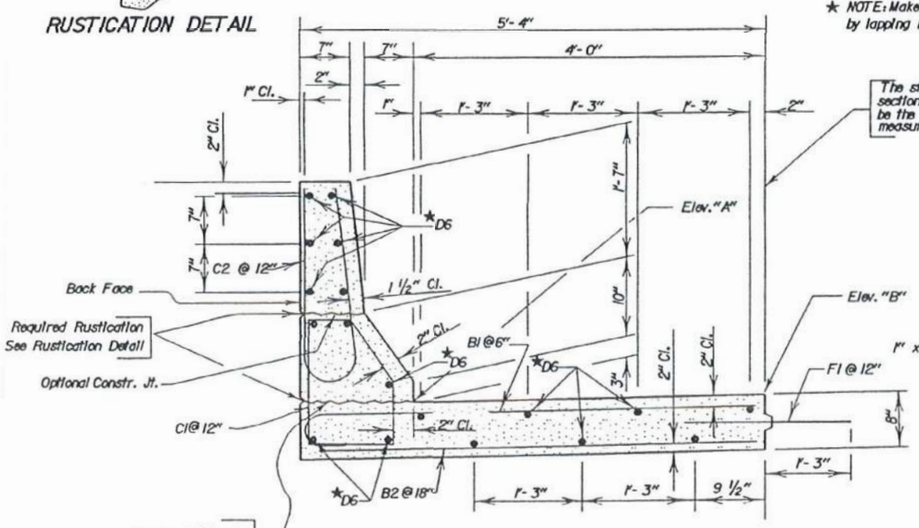
℄ See Cutting Diagram

KEYWAY DETAIL

NOTE -
Use this sheet in conjunction with Sheet No. 2 of 3.

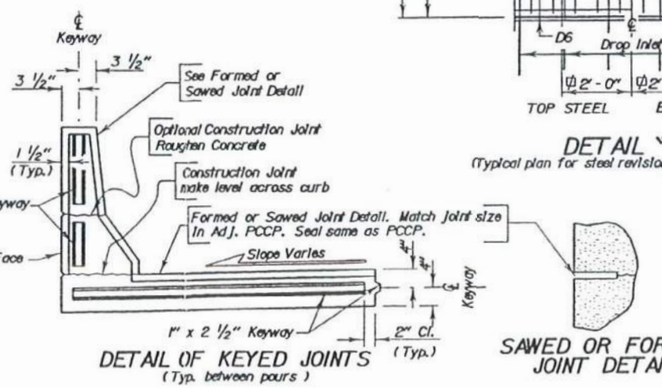
★ NOTE: Make reinforcing continuous by lapping 12" min. (Typ.)

RUSTICATION DETAIL



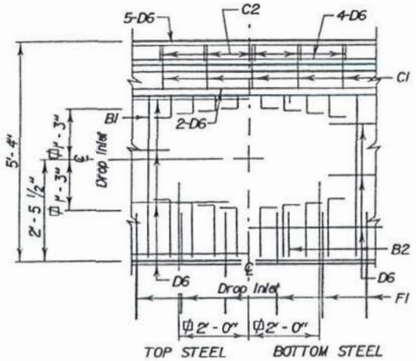
The stated radii on the plans and cross sections refer to this line and it shall also be the basis for horizontal linear foot measurement and payment.

BARRIER CURB & GUTTER - TYPICAL SECTION



DETAIL OF KEYED JOINTS
(Typ. between pours)

SAWED OR FORMED JOINT DETAIL



DETAIL "Z"
(Typical plan for steel revision @ Drop Inlets)

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Conc. Barrier Curb and Gutter	L.F.	2219
Conc. Barrier Curb and Gutter End Section	L.F.	42
Special Surface Finish	S.F.	5530
Install Dowel in Concrete	Each	21

1. 3.7 Cu. Yds. Concrete in one Tapered Barrier End Section.
2. 827 Lbs. Epoxy Coated Re-Steel in one Tapered Barrier End Section.
3. 0.22 Cu. Yds. of Concrete per foot in Regular Barrier Section.
4. 45.01 Lbs. Epoxy Coated Re-Steel per foot of Regular Barrier Section, not including laps.

Items 1 and 4 are approximate quantities contained in the above bid item and are for information only.

ORIGINAL CONSTRUCTION PLANS

DETAILS FOR

CONCRETE BARRIER CURB & GUTTER

(WITH SLOPED END SECTION)

ADJ. TO I-90 IM 90-2(119)57

PENNINGTON COUNTY

S. D. DEPT. OF TRANSPORTATION

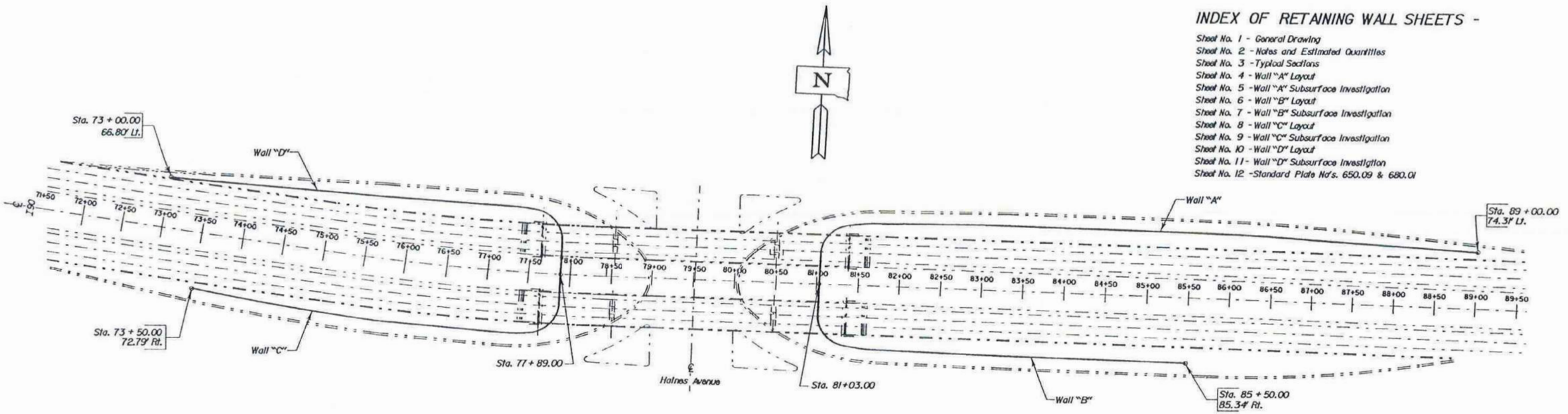
JUNE 1999

7 OF 11

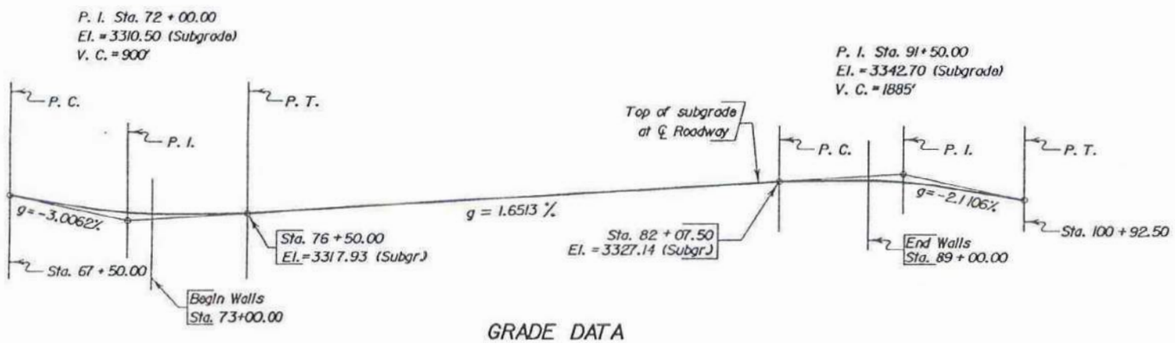
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SJ/TJD	TD	SJ/TJD	BRIDGE ENGINEER
PENN3453	3453DH03		

SD DOT	PROJECT	SECTION	SHEET
	090 EF-452 & 000I-452	non	12/28

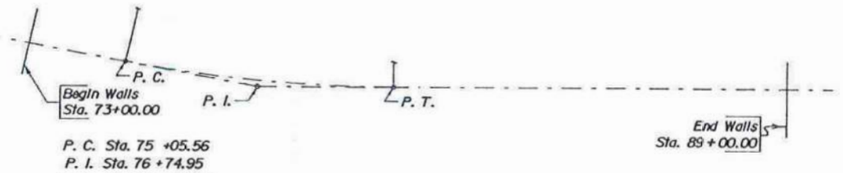
INDEX OF RETAINING WALL SHEETS -



PLAN



GRADE DATA



P. C. Sta. 75 +05.56
P. I. Sta. 76 +74.95
P. T. Sta. 78 +43.94
△ = 6° 52' 06"
D = 2° 01' 41"
R = 2822.79'
T = 169.39'
Lc = 338.38'

HORIZONTAL CURVE DATA

ORIGINAL CONSTRUCTION PLANS

GENERAL DRAWING
FOR
M. S. E. RETAINING WALL

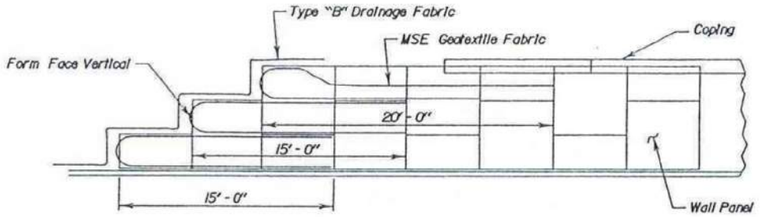
ADJACENT TO I90
PCEMS 3453

SEC. 25-T2N-R7E
IM 90-2(119)57

PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 1999

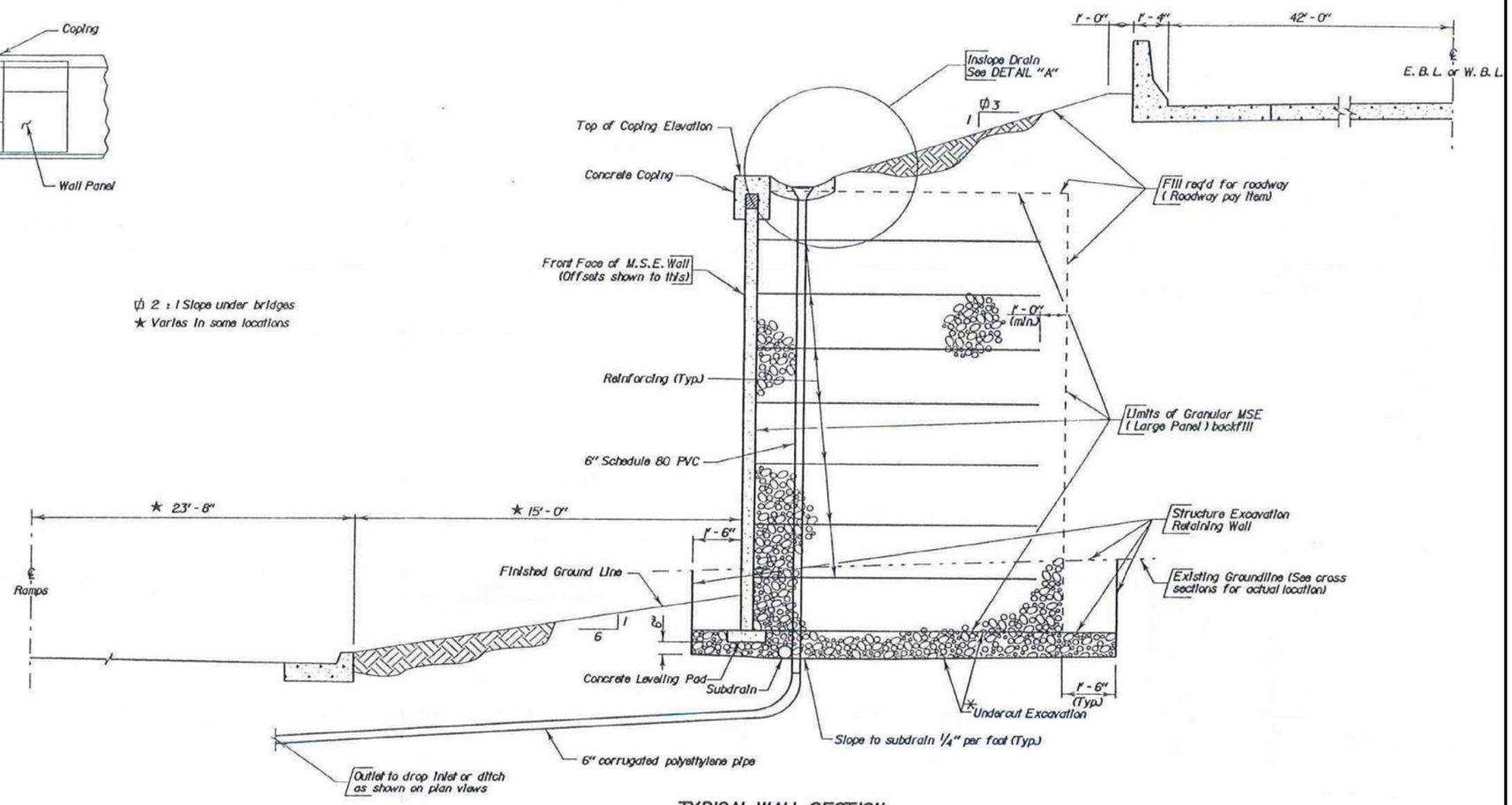
PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
HE	REM	TJD	BRIDGE ENGINEER
PCNN3453	3453RM01		

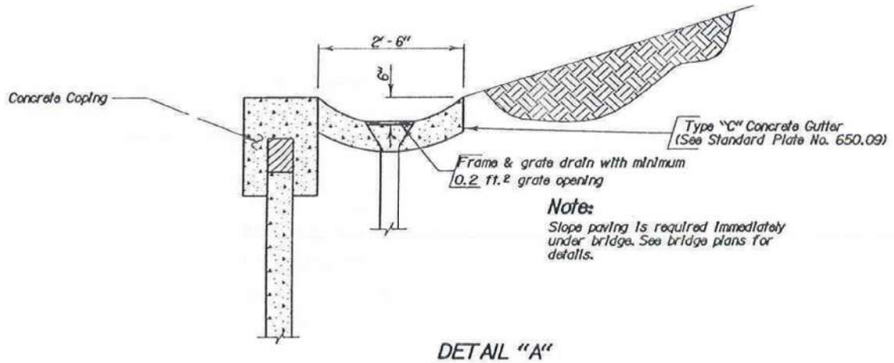


LATERAL RETAINMENT DETAIL
(For Phase Construction)

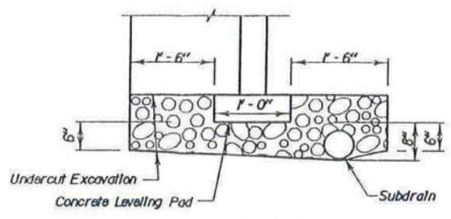
φ 2 : 1 Slope under bridges
★ Varies in some locations



TYPICAL WALL SECTION



DETAIL "A"



* UNDERCUT DETAILS FOR WALL "A"
(Sta. 85 + 37.00 to Sta. 89 + 00.00)

ORIGINAL CONSTRUCTION PLANS

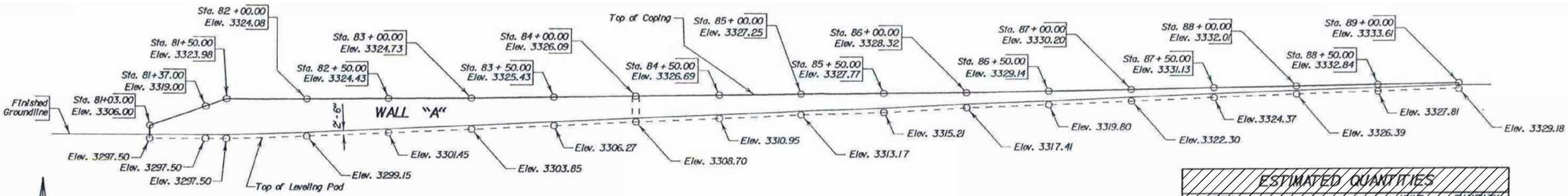
TYPICAL SECTIONS
FOR
M. S. E. RETAINING WALL

ADJACENT TO I90
PCEMS 3453

SEC. 25-T2N-R7E
IM 90-2(119)57

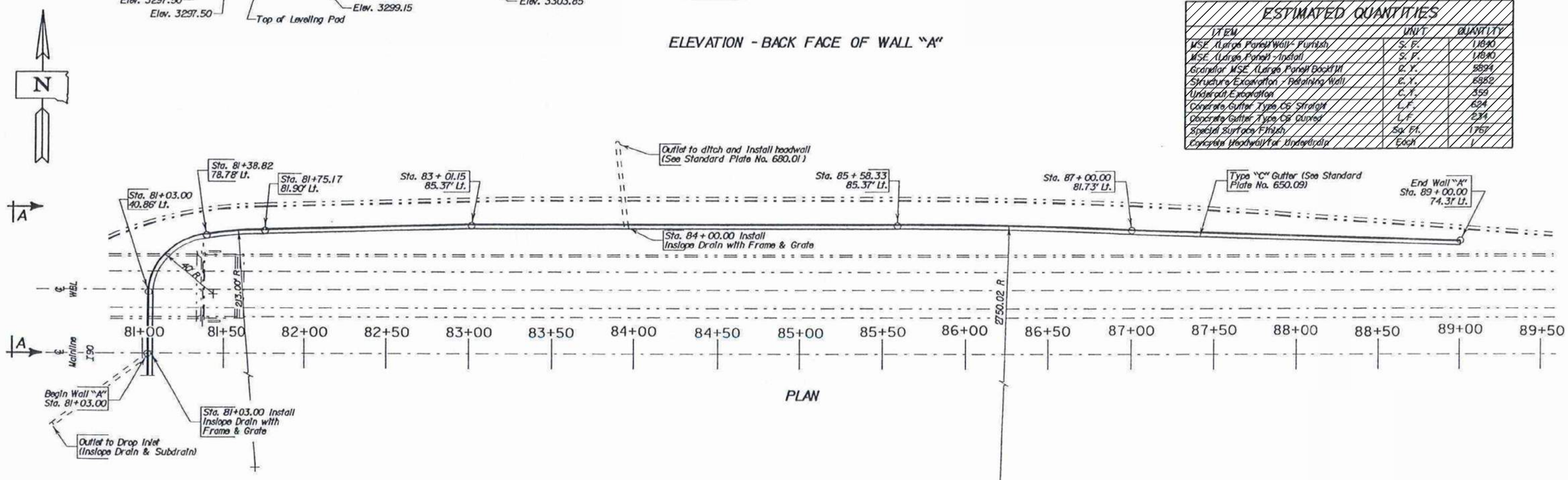
PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 1999

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
HE	REM	TJD	John C. Cole
PENN3453	3453RM03		BRIDGE ENGINEER

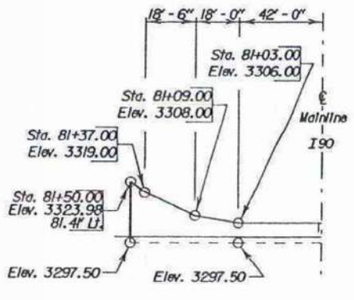


ELEVATION - BACK FACE OF WALL "A"

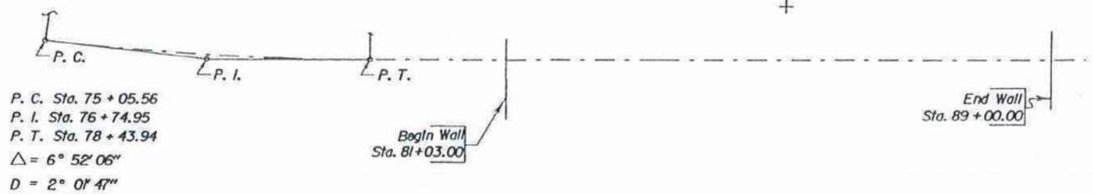
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
MSE (Large Panel Wall) - Furnish	S. F.	11810
MSE (Large Panel) - Install	S. F.	11810
Granular MSE (Large Panel Backfill	C. Y.	5834
Structure Excavation - Retaining Wall	C. Y.	6852
Undercut Excavation	C. Y.	359
Concrete Gutter Type CG Straight	L.F.	624
Concrete Gutter Type CG Curved	L.F.	234
Special Surface Finish	Sq. Ft.	1767
Concrete Headwall for Underdrain	Each	1



PLAN



VIEW A - A



P. C. Sta. 75 + 05.56
P. I. Sta. 76 + 74.95
P. T. Sta. 78 + 43.94
△ = 6° 52' 06"
D = 2° 01' 47"
R = 2822.79'
T = 169.39'
Lc = 338.38'

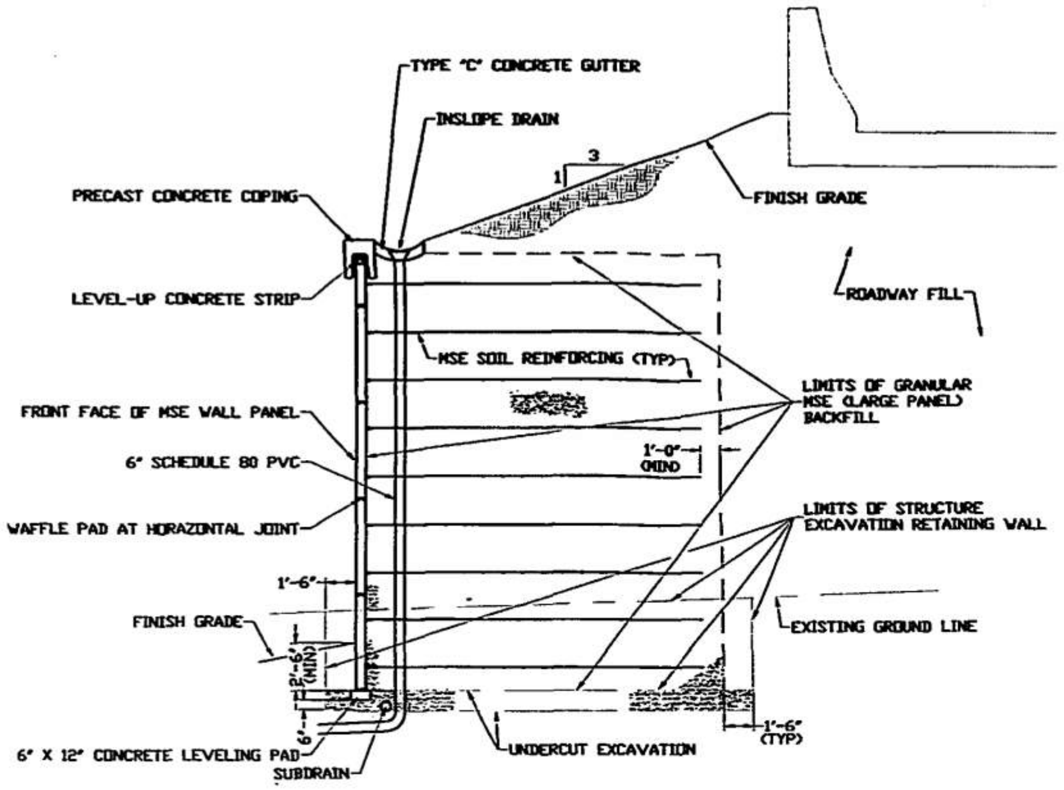
HORIZONTAL CURVE DATA

ORIGINAL CONSTRUCTION PLANS

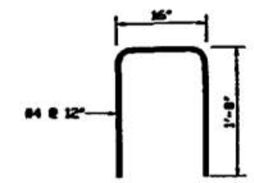
WALL "A" LAYOUT
FOR
M. S. E. RETAINING WALL

ADJACENT TO I90 — SEC. 25-T2N-R7E
STA. 81+03.00 TO 89+00.00 — IM 90-2(119)57
PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 1999

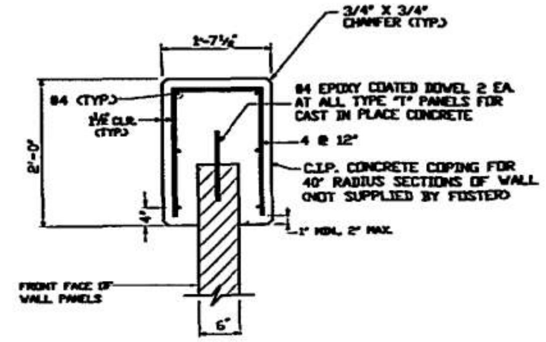
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
HE	REM	TJD	BRIDGE ENGINEER
PENN3453	3453RM04		



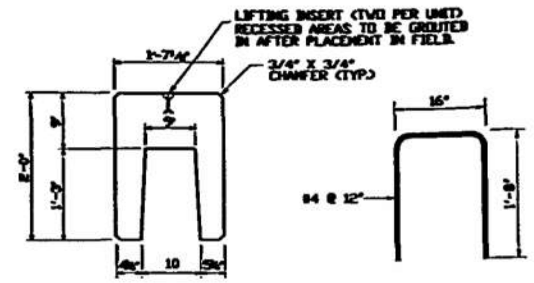
TYPICAL WALL SECTION
N.T.S.



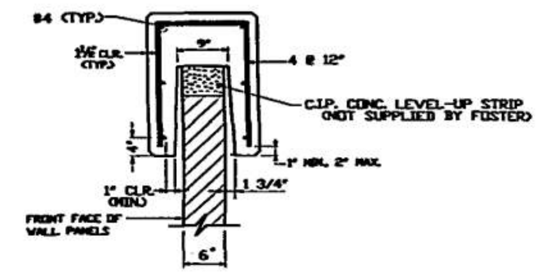
C. I. P. COPING REINFORCING DETAIL
N.T.S.



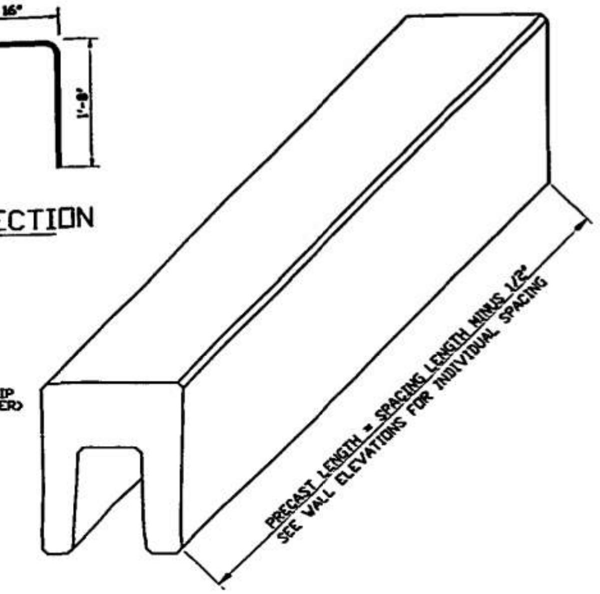
CAST IN PLACE COPING DETAIL
N.T.S.



STANDARD PRECAST COPING SECTION
N.T.S.

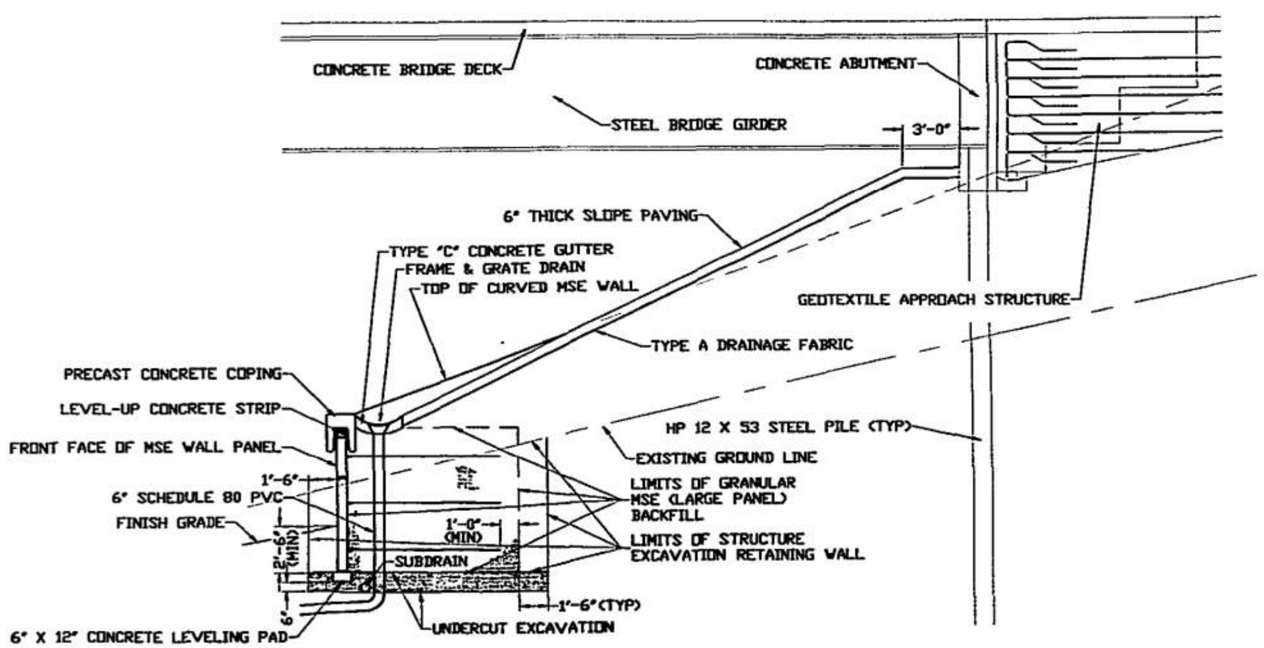


PRECAST COPING DETAIL
N.T.S.

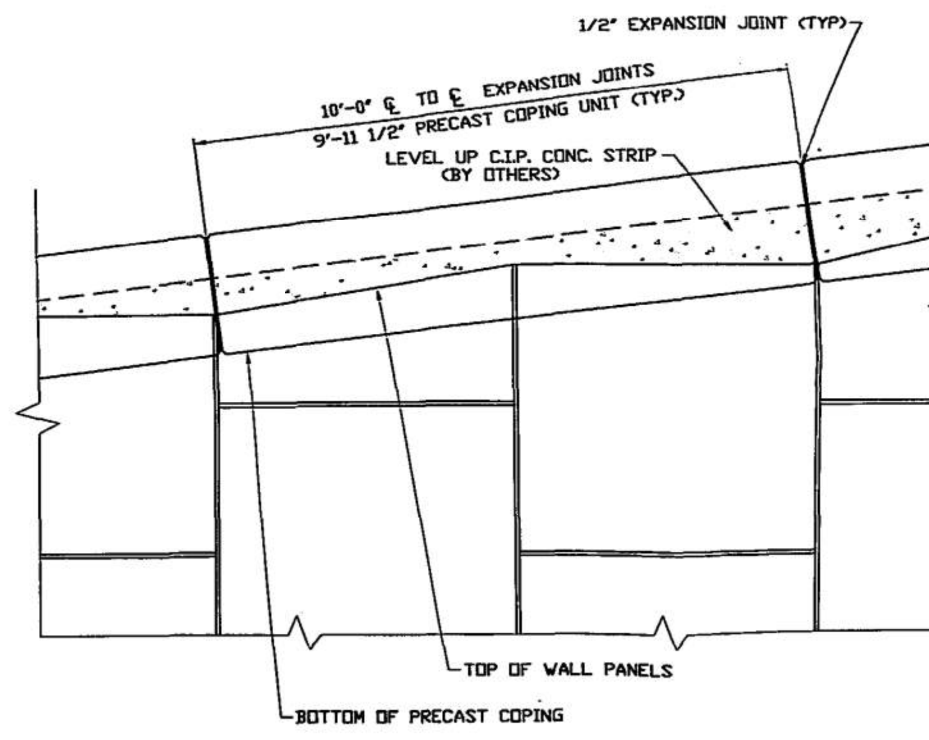


PRECAST COPING UNIT
N.T.S.

EXAMPLE H10 SPACING = 10'-0"
PRECAST COPING LENGTH = 9'-11 1/2"



TYPICAL ABUTMENT SECTION
N.T.S.



PRECAST COPING DETAIL

NO.	DATE	REVISION	BY	CHK
2	3/20/00	APPROVED MINOR CORRECTIONS		
1	3/1/00	MINOR NOTES		

DES. 1/4/00 MM
DRN. 1/4/00 JG
CHK. 1/4/00 MM
RETAINED EARTH™

FOSTER•GEOTECHNICAL
A Division of L. B. Foster Company
1372 Old Bridge Road, Suite 101, Woodbridge, VA 22192
Telephone: (703) 492-9818 / Fax: (703) 492-9148
SAN DIEGO, CA / WOODBRIDGE, VA / NORCROSS, GA

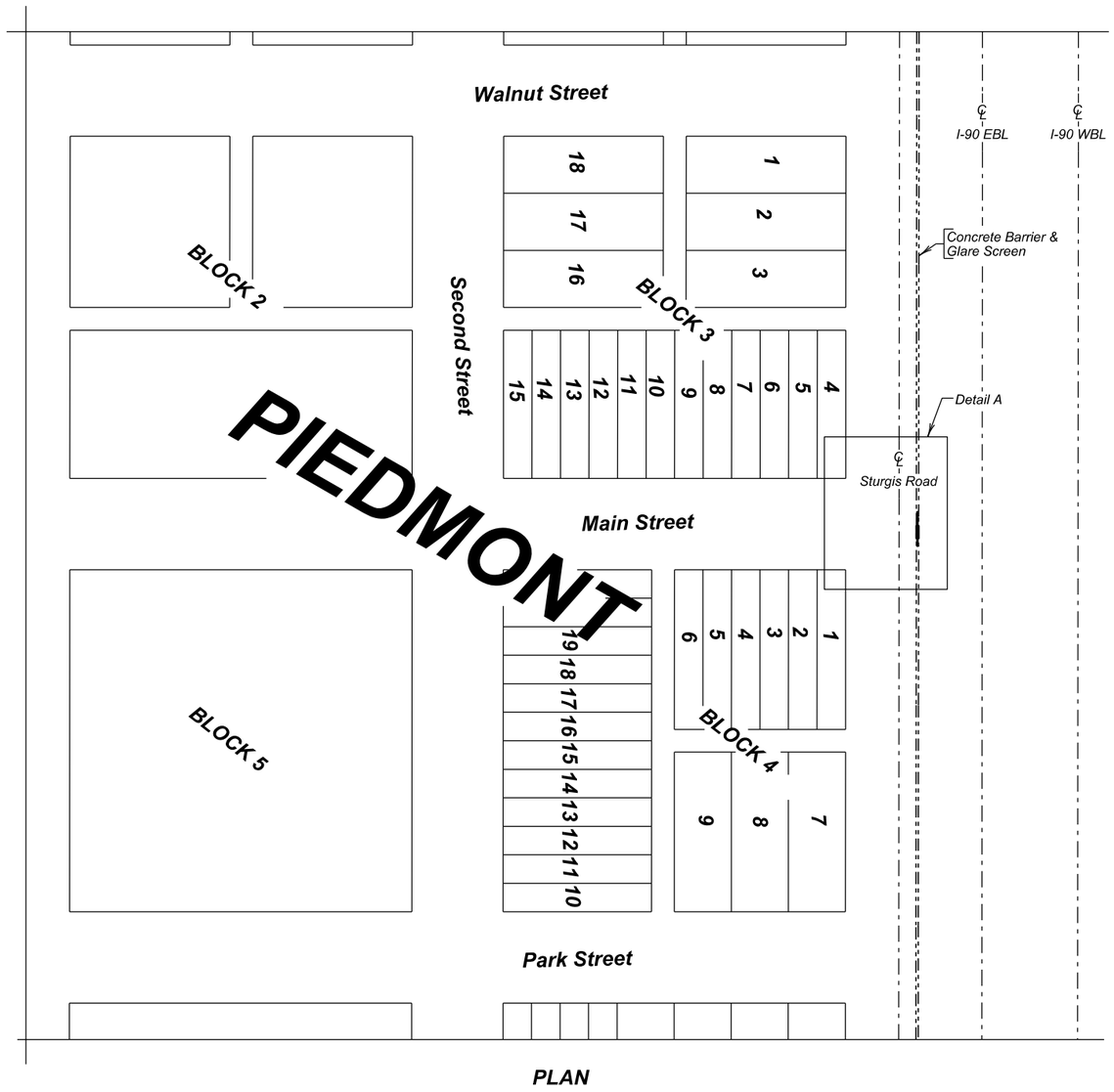
RETAINED EARTH™ WALLS
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PROJECT NO. IM 90-2(119)57 & P 1669(7)
INTERSTATE 90 & HAINES AVE.
PENNINGTON COUNTY
WALL SECTIONS & COPING DETAILS

SCALE:
JOB NO: G20189

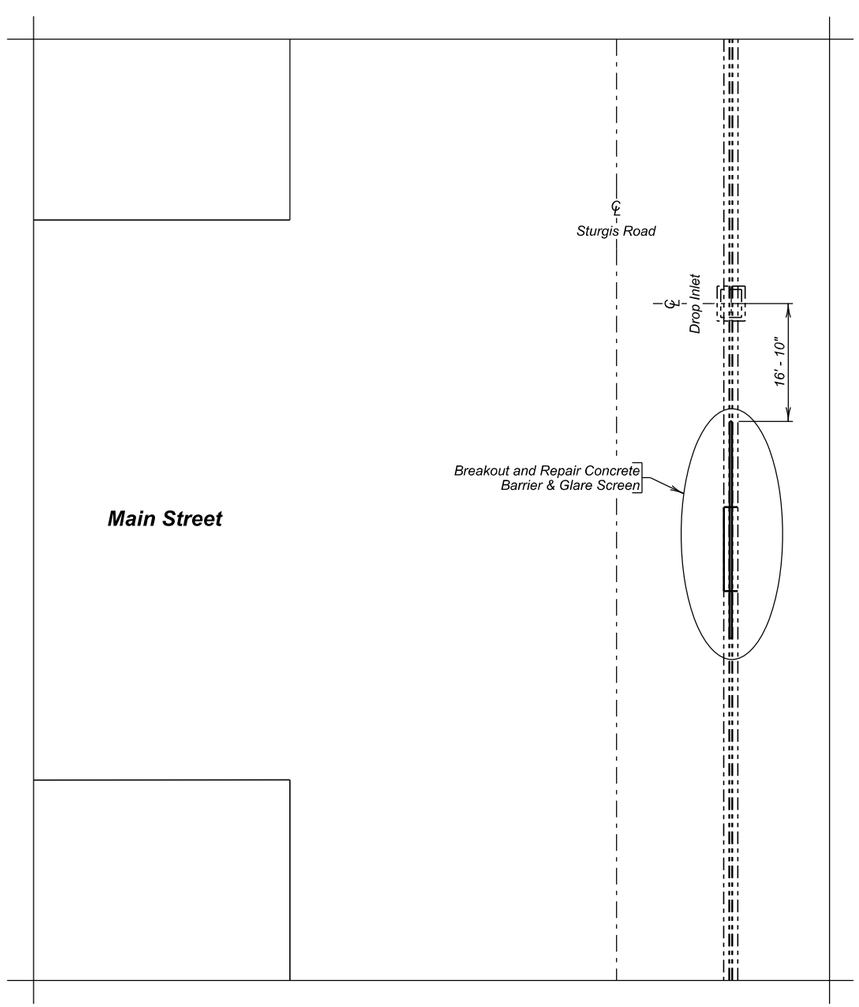
REGISTERED PROFESSIONAL ENGINEER — SOUTH DAKOTA
3/20/00

ORIGINAL CONSTRUCTION PLANS

SD DOT	PROJECT	SECTION	SHEET
	090 EF-452 & 000I-452	non	16/28



PLAN



DETAIL A

INDEX OF SHEETS -

LAYOUT FOR REPAIR

FOR

CONCRETE BARRIER AND GLARE SCREEN

I - 90 SEC. 10-T3N-R6E

PCN i7Y7 090 EF - 452

MEADE COUNTY

S. D. DEPT. OF TRANSPORTATION

SEPTEMBER 2025

1 OF 9

PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY	CK. DES. BY	DRAFTED BY	
TJM	JKI	KR/TJM	Steve A Johnson BRIDGE ENGINEER
MEADi7Y7	i7Y7RA01		

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
460E0100	Class A45 Concrete, Miscellaneous	2.1	CuYd
460E0300	Breakout Structural Concrete	2.1	CuYd
460E0380	Install Dowel in Concrete	31	Each
480E0200	Epoxy Coated Reinforcing Steel	90	Lb

SPECIFICATIONS

Construction Specifications: Standard Specifications for Roads and Bridges, 10-1-25 Version; Required Provisions; and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges is available for download and viewing at https://dot.sd.gov/doing-business/contractors/standard-specifications.

DETAILS AND DIMENSIONS OF EXISTING BARRIER

All details and dimensions of the existing barrier, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

SCOPE OF BARRIER WORK & SEQUENCE OF OPERATIONS

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to beginning the work.

1. Breakout and remove portions of glare screen and median barrier.
2. Place new concrete median barrier and glare screen.

GENERAL CONSTRUCTION - BARRIER

1. All reinforcing steel will conform to ASTM A615, Grade 60.
2. All exposed concrete corners and edges will be chamfered ¾-inch unless noted otherwise in the plans. Match existing chamfer if the existing chamfer differs.
3. Use 2-inch clear cover on all reinforcing steel except as shown otherwise.
4. Barrier curbs will be built perpendicular to the grade.
5. Requests for construction joints or reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.
6. Snap ties, if used in the barrier curb formwork, will be corrosion resistant. The corrosion resistant ties will be inert in concrete and compatible with the reinforcing steel.
7. All lap splices are contact lap splices unless noted otherwise.

CONCRETE BREAKOUT

1. The existing barrier and glare screen will be broken out to the limits shown in the plans. Breakout limits will be defined with a 3/4" deep sawcut (unless specified otherwise in the plans), where practical, as approved by the Engineer.
2. All broken out concrete and discarded reinforcing steel will become the property of the Contractor and will be disposed of at a site obtained by the Contractor and approved by the Engineer. An appropriate site will be as described in the Environmental Commitment Notes.
3. The contract unit price per cubic yard for Breakout Structural Concrete will include breaking out concrete and disposal of all broken out material.

INSTALL DOWEL IN CONCRETE

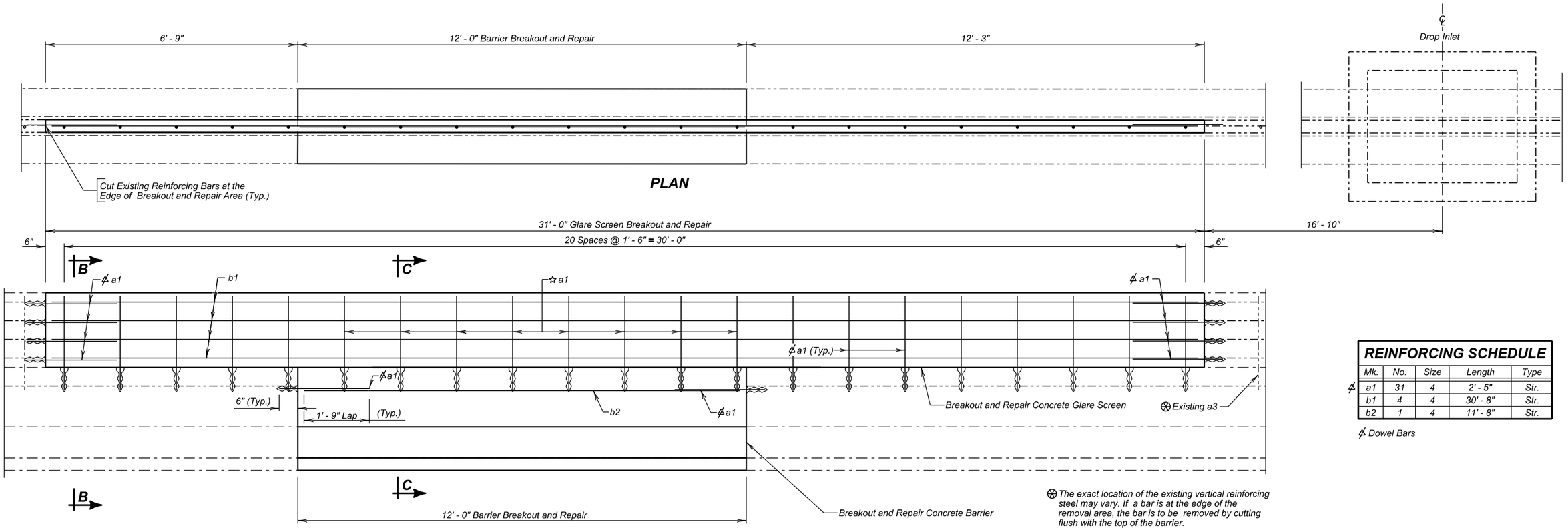
1. Holes drilled in the existing concrete will be true and normal or as shown in the plans. Drilling holes using a core drill will not be allowed. Care will be taken not to damage the existing reinforcing steel. It is likely that some of the existing reinforcing steel shown in the original construction plans may have been placed out of position during original construction. Therefore, prior to the start of drilling any holes in the concrete, an effort will be made by Department forces to mark on the concrete surface where practical any locations of the in-place reinforcing steel. Despite this precaution, the Contractor can still expect to encounter and have to drill through reinforcing steel or shift the dowel spacing as approved by the Engineer to miss the existing reinforcing steel. If the Contractor shifts the dowel spacing, the unused drill holes will be filled with epoxy resin as approved by the Engineer.
2. The epoxy resin mixture will be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV, Grade 1, 2, or 3 (Equivalent to ASTM C881, Type IV). Grade 1, 2 or 3 may be used for vertical dowels, Grade 3 epoxy will be used for all horizontal dowels.
3. The diameter of the drilled holes will not be less than 1/8-inch greater, nor more than 3/8-inch greater than the diameter of the dowels or as per the Manufacturer's recommendations. The drilled holes will be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.
4. Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel bar. Care will be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting method will not be allowed.
5. Dowel bars will be deformed bars conforming to ASTM A615, Grade 60.
6. The cost of epoxy resin, dowels, installation, and other incidental items will be incidental to the contract unit price per each for Install Dowel in Concrete.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
CONCRETE BARRIER AND GLARE SCREEN

SEPTEMBER 2025 — 2 OF 9

DESIGNED BY	CK. DES. BY	DRAFTED BY	
TJM	JKI	TJM	BRIDGE ENGINEER
MEADI7Y7	I7Y7MA02		

SD DOT	PROJECT	SECTION	SHEET
	090 EF-452 & 000I-452	non	18/28



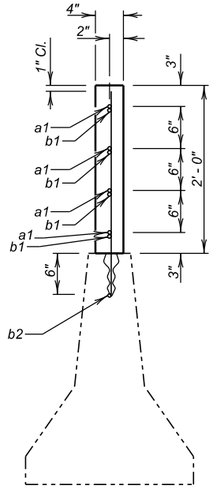
⊛ The exact location of the existing vertical reinforcing steel may vary. If a bar is at the edge of the removal area, the bar is to be removed by cutting flush with the top of the barrier.

☆ The a1 bars in the glare screen located over the barrier repair can be doweled or cast in place. If the Contractor elects to use cast in place, the a1 bars in these locations will be 2'-11". The use of cast in place bars will be at no additional cost to the Department.

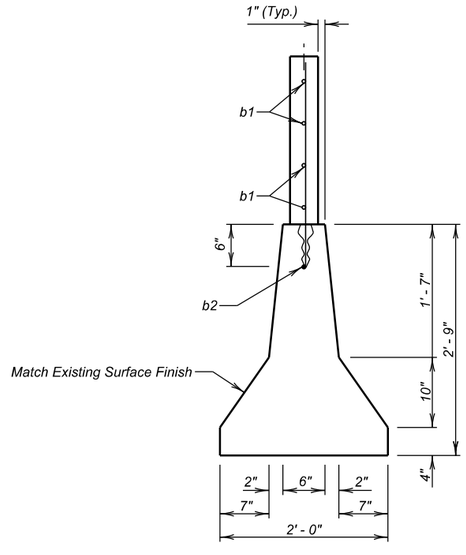
REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type
∉	a1	31	4	2' - 5"	Str.
	b1	4	4	30' - 8"	Str.
	b2	1	4	11' - 8"	Str.

∉ Dowel Bars



SECTION B - B



SECTION C - C

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
	Class A45 Concrete, Miscellaneous	CuYd	2.1
	Breakout Structural Concrete	CuYd	2.1
	Install Dowel in Concrete	Each	31
⚹	Epoxy Coated Reinforcing Steel	Lb	90

⚹ Does not include the quantities for a1 bars as these are incidental to the contract unit price per each for Install Dowel in Concrete. The dowels are estimated to weight 50 pounds.

BARRIER REPAIR DETAILS

FOR

CONCRETE BARRIER AND GLARE SCREEN

I - 90 SEC. 10-T3N-R6E

PCN i7Y7 090 EF - 452

MEADE COUNTY

S. D. DEPT. OF TRANSPORTATION

SEPTEMBER 2025

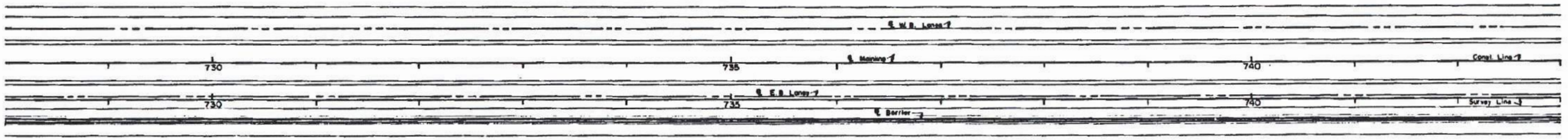
3 OF 9

DESIGNED BY	CK. DES. BY	DRAFTED BY	
TJM	JKI	KR/TJM	Steve A Johnson BRIDGE ENGINEER
MEADI7Y7	i7Y7RA03		

ORIGINAL CONSTRUCTION PLANS

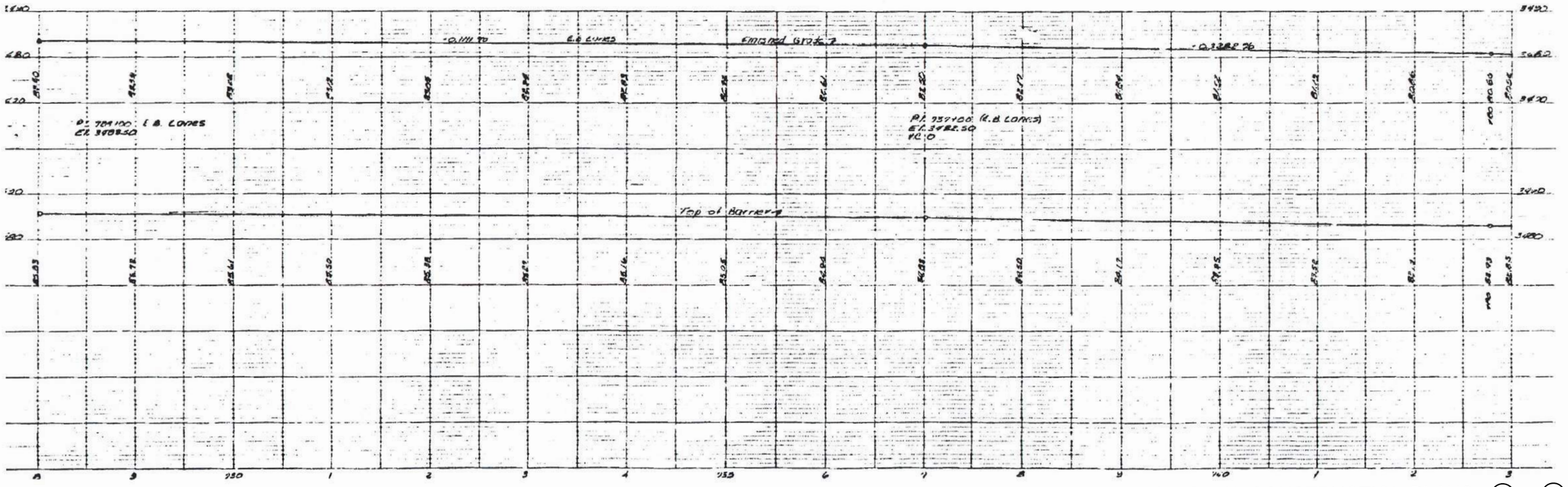
④ OF ⑨

Sec. 10-T3N-R6E



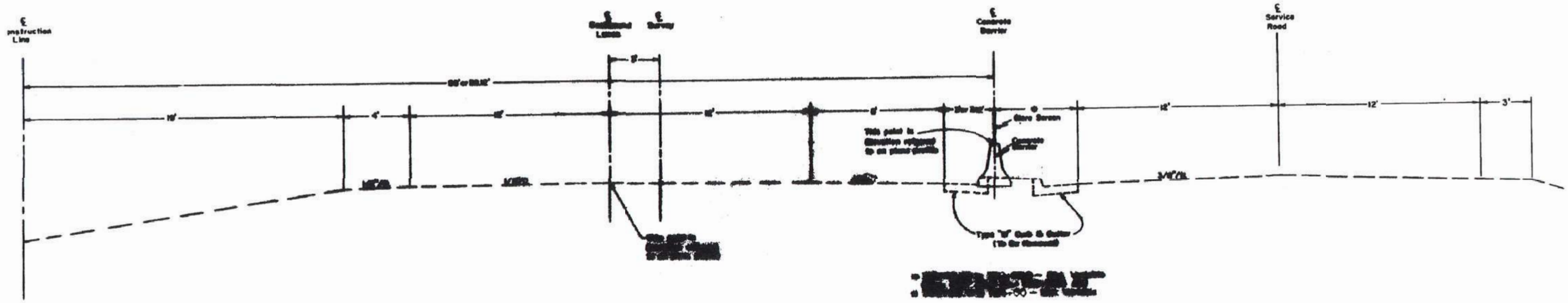
728+00 to 743+00
Remove 3000 Lin. Ft of
Concrete Curb & Gutter

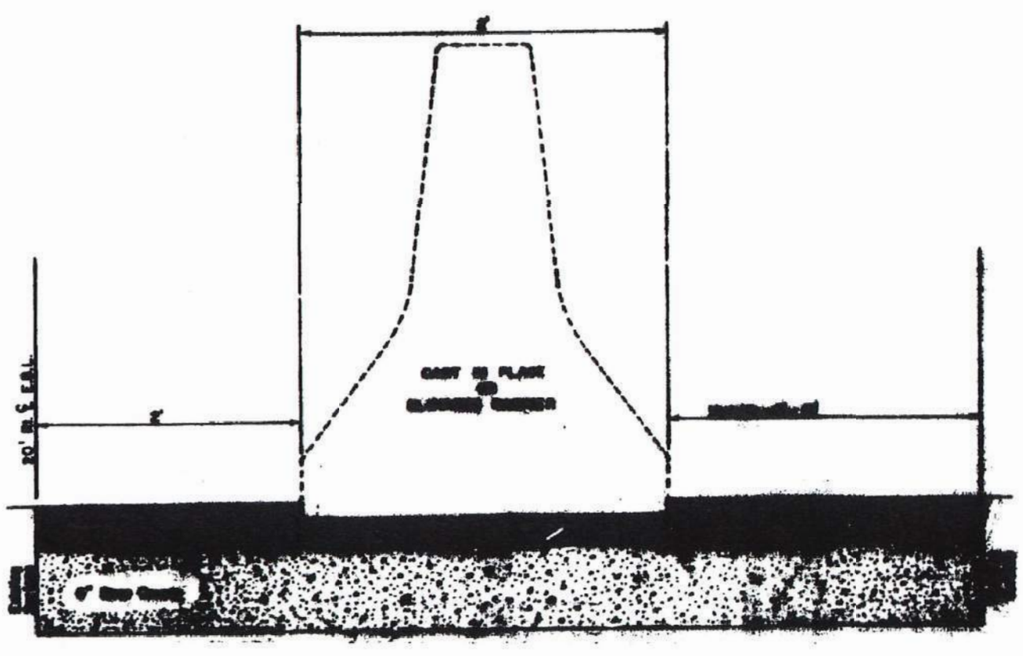
728+00 to 743+00 - Rt.
Install 1500.0 Lin. Ft.
Straight Median Barrier

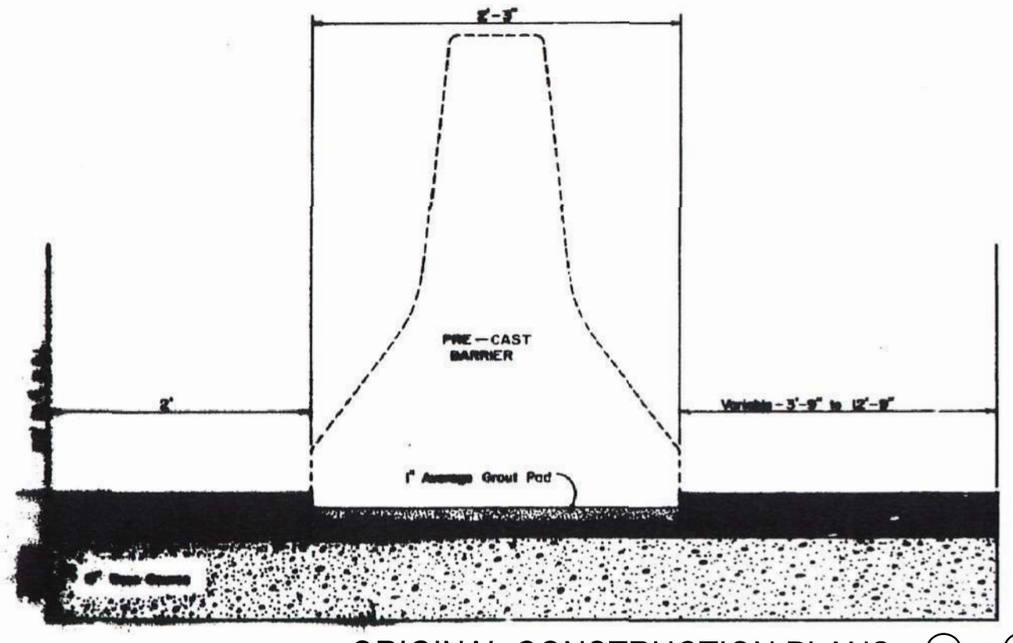


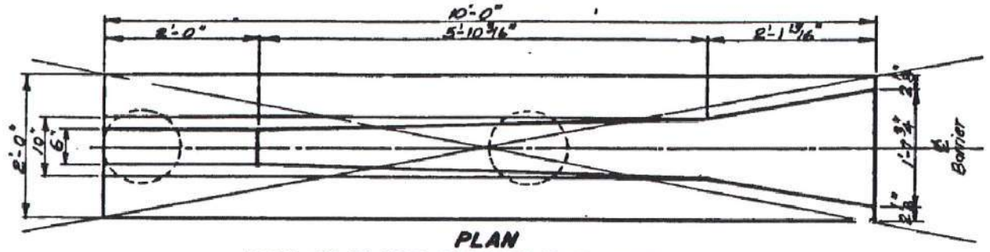
TYPICAL BARRIER INSTALLATION

710+62.69 to 784+00

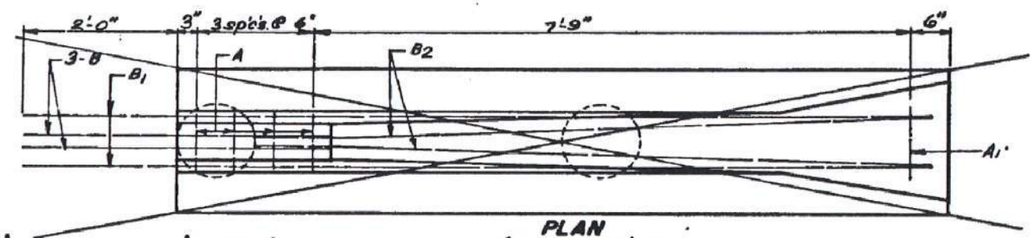




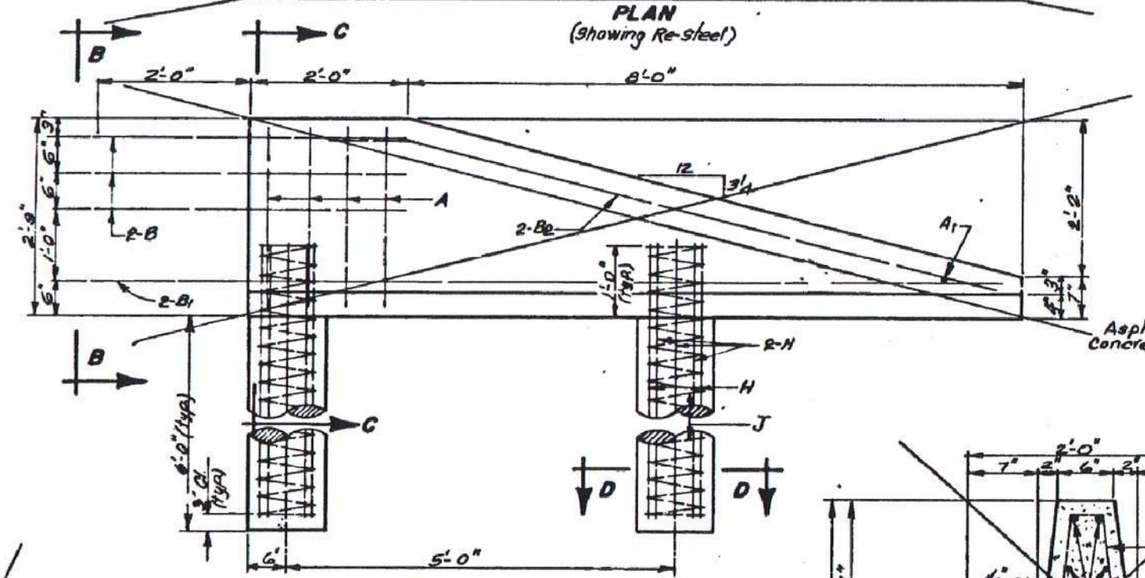




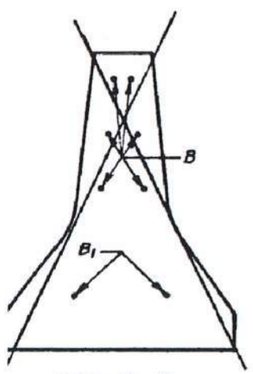
PLAN
CAST IN PLACE BARRIER END UNIT



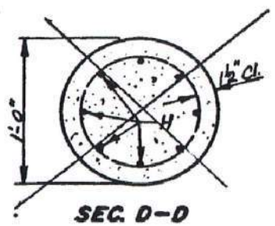
PLAN
(Showing Re-steel)



ELEVATION



VIEW B-B

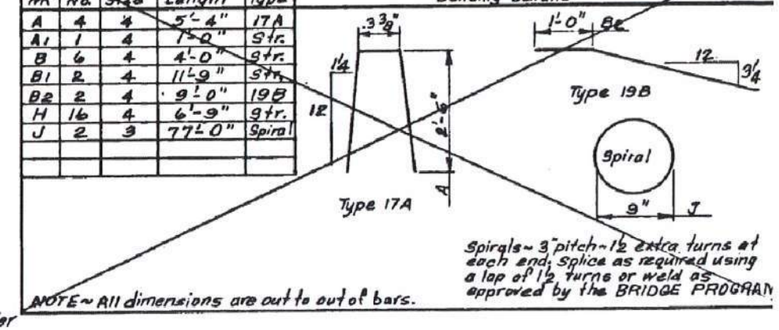


SEC. D-D

REINFORCING SCHEDULE 47315
(For one End Unit)

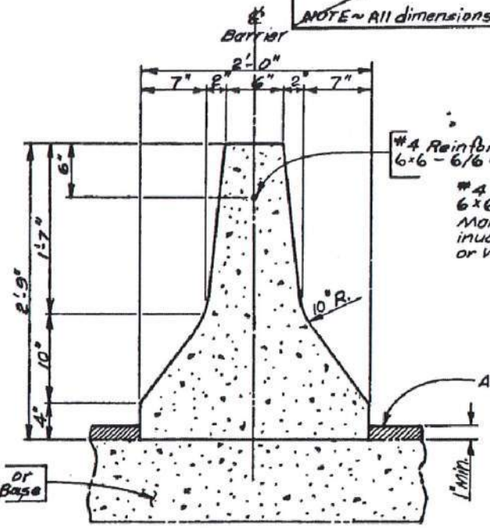
Mk	No.	Size	Length	Type
A	4	4	5'-4"	17A
A1	1	4	7'-0"	Str.
B	6	4	4'-0"	Str.
B1	2	4	11'-9"	Str.
B2	2	4	9'-0"	19B
H	16	4	6'-9"	Str.
J	2	3	77'-0"	Spiral

Bending Details

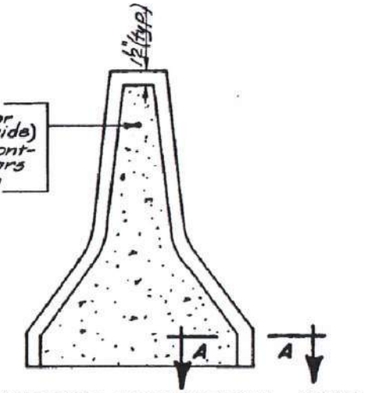


Spirals - 3" pitch - 1 1/2 extra turns at each end. Splice as required using a lap of 1 1/2 turns or weld as approved by the BRIDGE PROGRAM

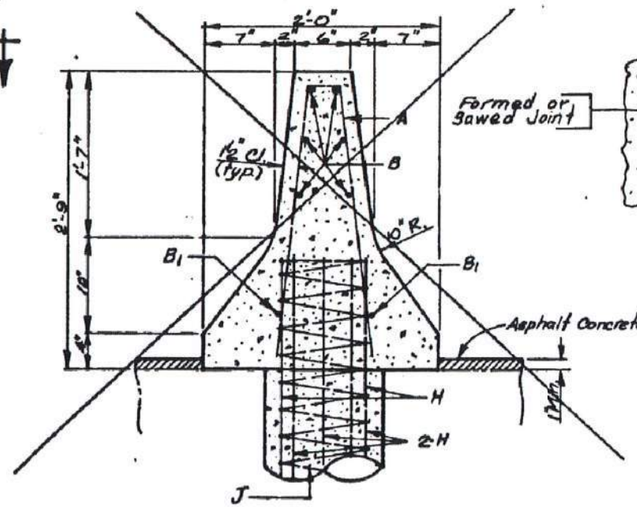
NOTE - All dimensions are out to out of bars.

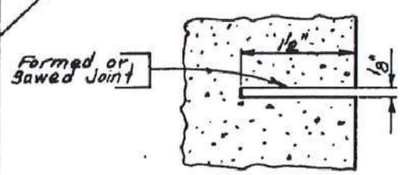


TYPICAL SECTION AT INTERIOR UNIT



TYPICAL INTERIOR CONTRACTION JOINT





SEC. A-A

NOTE:-
1. Each Cast in Place Barrier End Unit contains 1.2 Cubic Yards of concrete and 189 Lbs. of Reinforcing Steel.
2. Each Foot of Interior Unit contains 0.4 Cubic Yards of Concrete and one lineal foot of either No. 4 Reinforcing Bar or 6x6-6/6 Welded Wire Fabric (24" Wide).

ORIGINAL CONSTRUCTION PLANS

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

DETAILS FOR CONSTRUCTION OF CAST IN PLACE CONCRETE MEDIAN BARRIER

7 OF 9

APPROVED _____
BRIDGE ENGINEER

Prepared by Bridge Program Oct, 197

Sheet 10 of 21

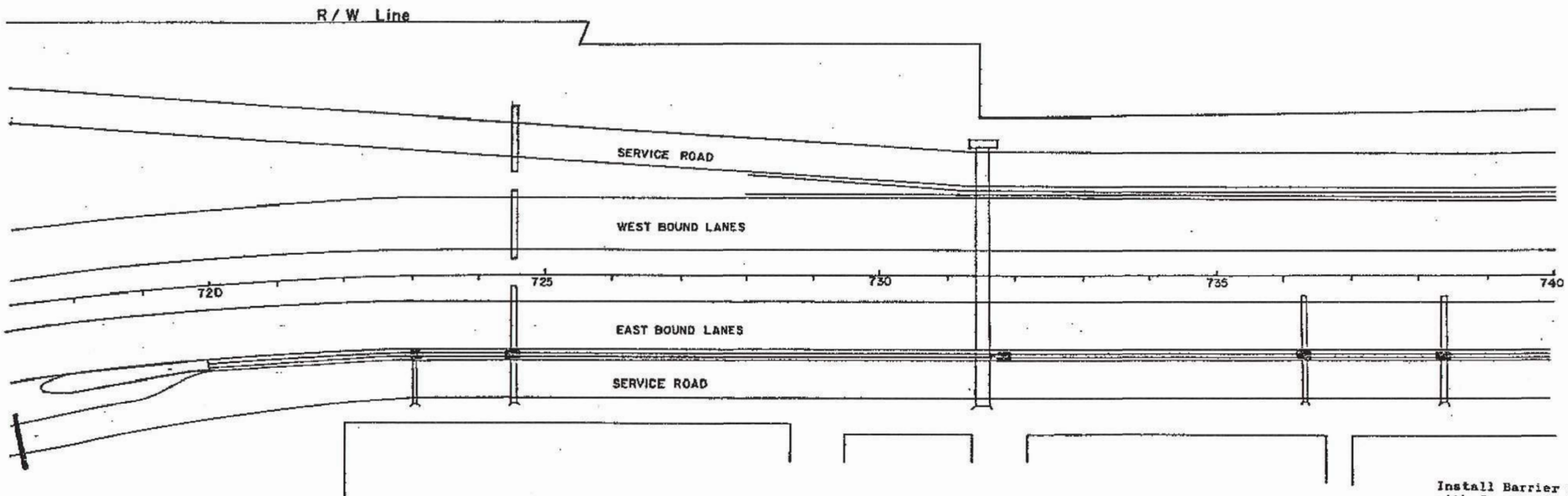
tation 716+75 (Service Road)
nstall 18" x 32' RCP
nd 2 Flared Ends

Station 717+35.35 to Station 719+82 (Bull Nose)
Remove for reset 525' Steel W Beam Guard Rail
Install 25' Dbl. St. Thrie Beam Guard Rail Str. Cl. A Wood Posts
Install 2 W Beam-Thrie Beam Trans. Sections
Install 125' St. W Beam Guard Rail Str. Cl. A Wood Posts
Reset 350' St. W Beam Guard Rail
Install 12.5' St. W Beam Guard Rail CVD Cl. A Wood Posts
Install 1 St. Beam Breakaway End Anchorage

Station 719+82 to Station 720+03
Remove 21' Barrier Wall (Incidental Work)
Install 2' Barrier Wall and 2' Concrete Glare Screen
Install Barrier End Section Type 1

Station 719+82 to Station 754+34
Remove Existing Glare Screen
(To become the property of the State of South Dakota)
(Incidental Work)

Station 720+03 to Station 754+13
Install Concrete Glare Screen (3410')



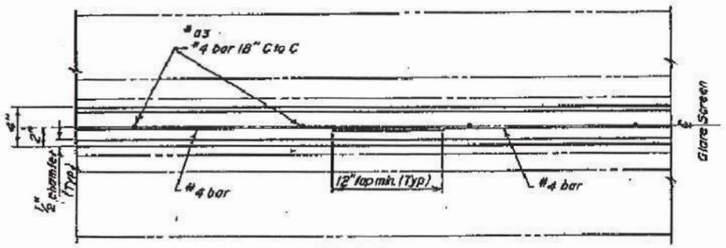
Station 716+80 to Station 719+82
Embankment required for Guard Rail construction
300 Cu.Yds.

CITY OF PIEDMONT

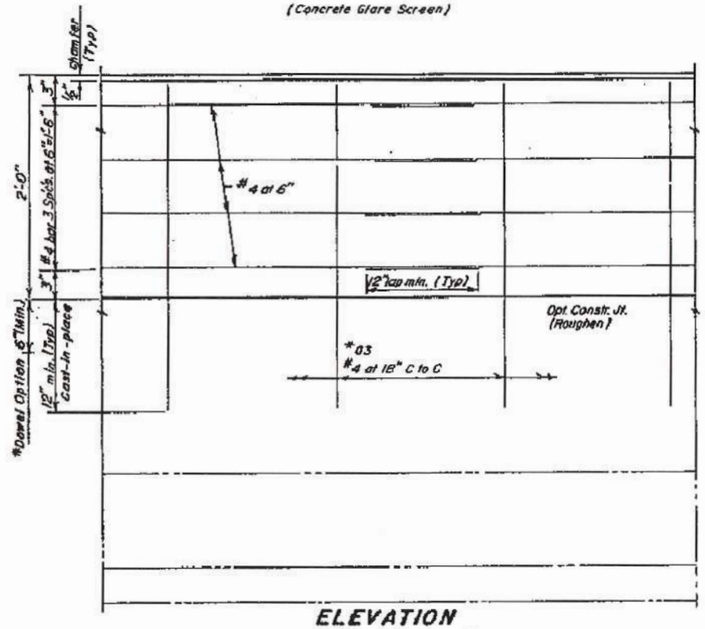
Install Barrier Drop Inlets Double Unit with frame and grate at the following locations:
723+00 (18" outfall)
724+58 (30" crosspipe)
731+76 (new 18" outfall to twin 6 x 6 box culver
736+34 (24" crosspipe)
738+40 (24" crosspipe)
743+85 (24" crosspipe)
751+00 (18" outfall)
Remove existing Drop Inlets at the following locations:
723+00
751+00

Station 731+76 to Station 731+54
Install 18"-10' RCP
from new Barrier Drop Inlet double unit to existing box culvert at 731+56
(Contractor to break into existing drop inlet wall place outfall pipe & remortared edges)(Incidental Work)

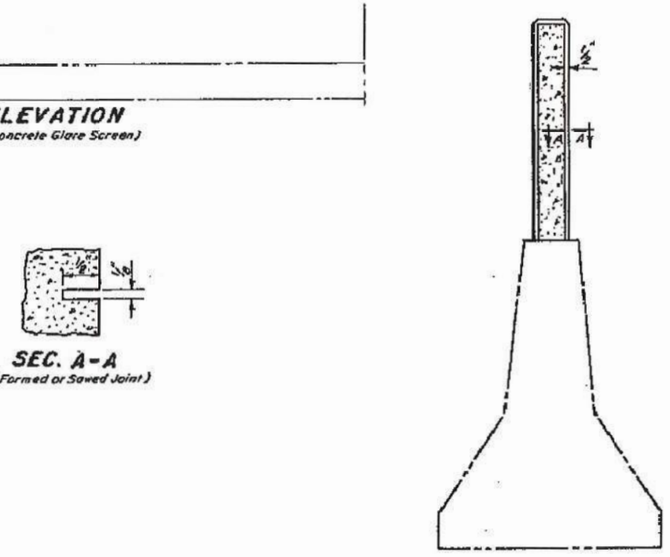
ORIGINAL CONSTRUCTION PLANS



PLAN
(Concrete Glare Screen)

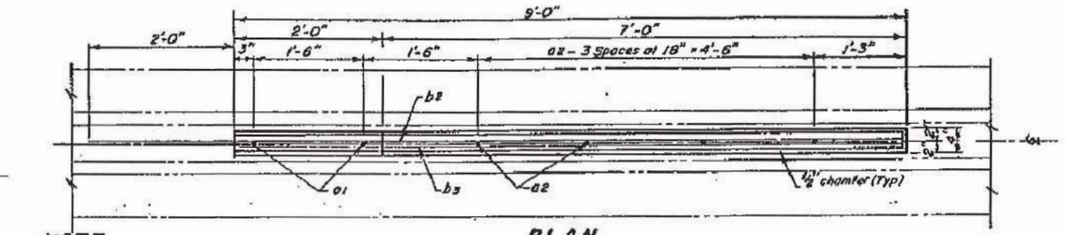


ELEVATION
(Concrete Glare Screen)



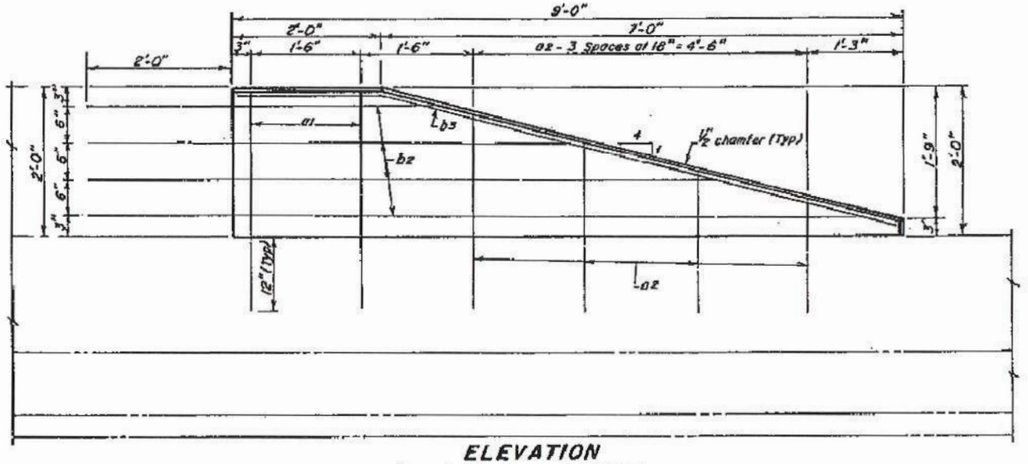
CONTRACTION JOINT
(TYP)

SEC. A-A
(Formed or Sawed Joint)

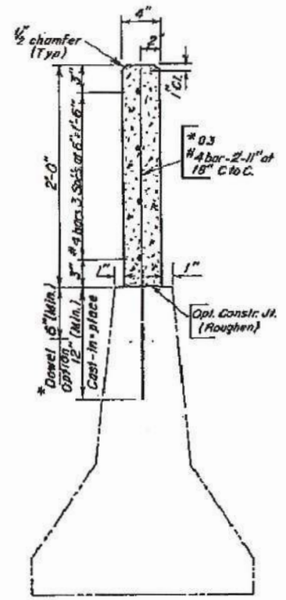


NOTE —
*12" Min. lap

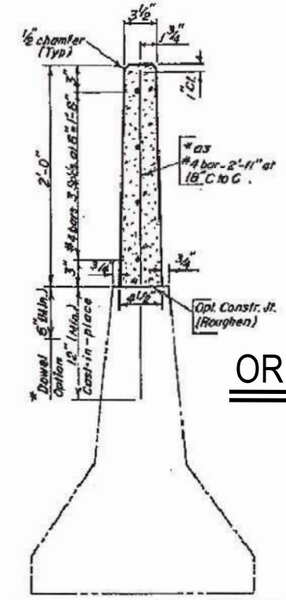
PLAN
(Concrete Glare Screen End Section)



ELEVATION
(Concrete Glare Screen End Section)



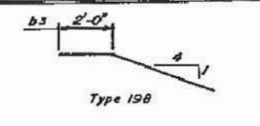
TYPICAL SECTION
(Concrete Glare Screen)

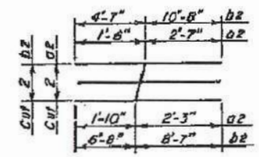


OPTIONAL TYPICAL SECTION
(Concrete Glare Screen)

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
a1	2	4	2'-11"	Str.	
A a2	2	4	4'-1"	Str.	
A b2	2	4	15'-3"	Str.	
b3	1	4	3'-0"	19B	





A See Cutting Diagram
All dimensions are out to out of bars

QUANTITIES FOR CONCRETE GLARE SCREEN END SECTION
(For Information Only) Class "AA" Concrete = 0.13 Cu. Yd.
Reinforcing Steel = 36 Lbs.

QUANTITIES FOR CONCRETE GLARE SCREEN
(For Information Only) Each linear foot of concrete glare screen contains 0.0247 Cu. Yd. of concrete and 3.570 Lbs. of reinforcing steel, (Not Including Lap.)

D NOTE —
For one Concrete Glare Screen End Section

NOTE —
All Re-Steel shall be Epoxy Coated.

* NOTE —
If the Dowel Option is used, the a3 bar shall be 2'-5".

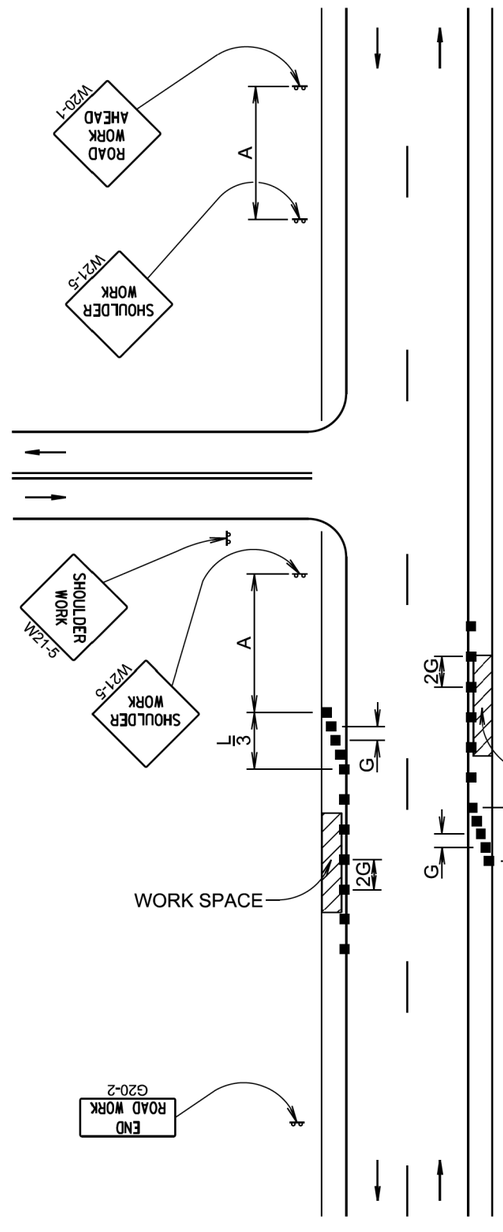
ORIGINAL CONSTRUCTION PLANS

S.D. DEPT. OF TRANSPORTATION

DETAILS FOR CAST-IN-PLACE CONC GLARE SCREEN AND CONC. GLARE SCREEN END SECTION

Prepared by Bridge Program July, 1988

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
M.H.	T. G. A.	M.H.	



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: 2026	SDDOT	WORK ON SHOULDERS	PLATE NUMBER 634.03
			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.

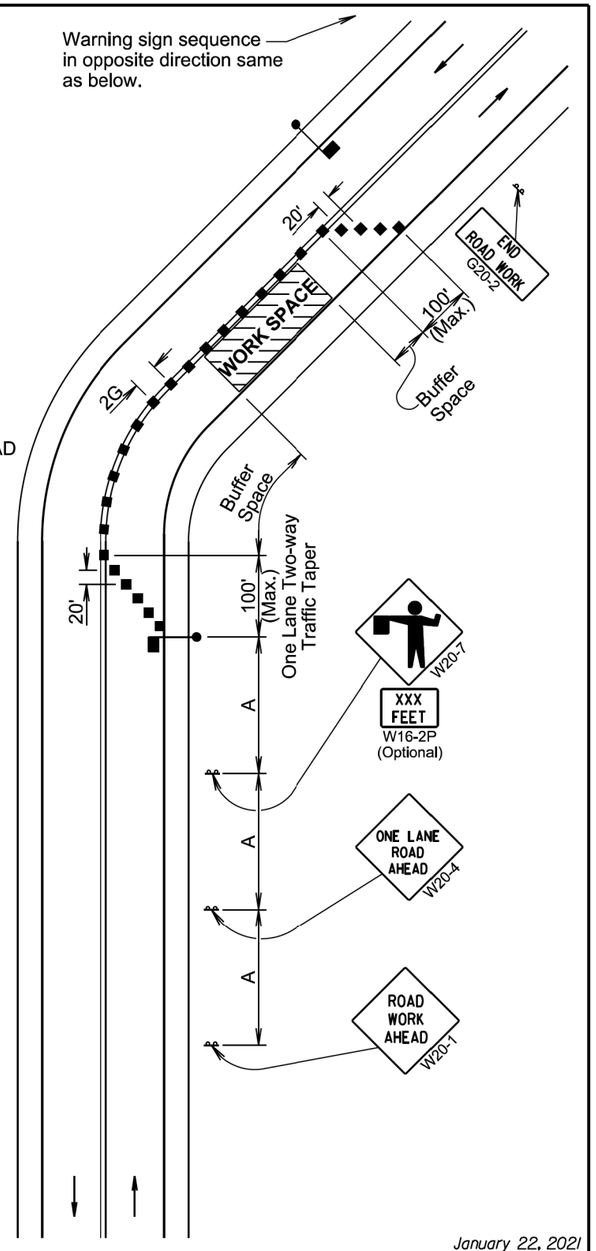
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

END ROAD WORK
G20-2

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: 2026	SDDOT	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
			Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000
	(A) (B) (C)
70 - 80	1000 1500 2640

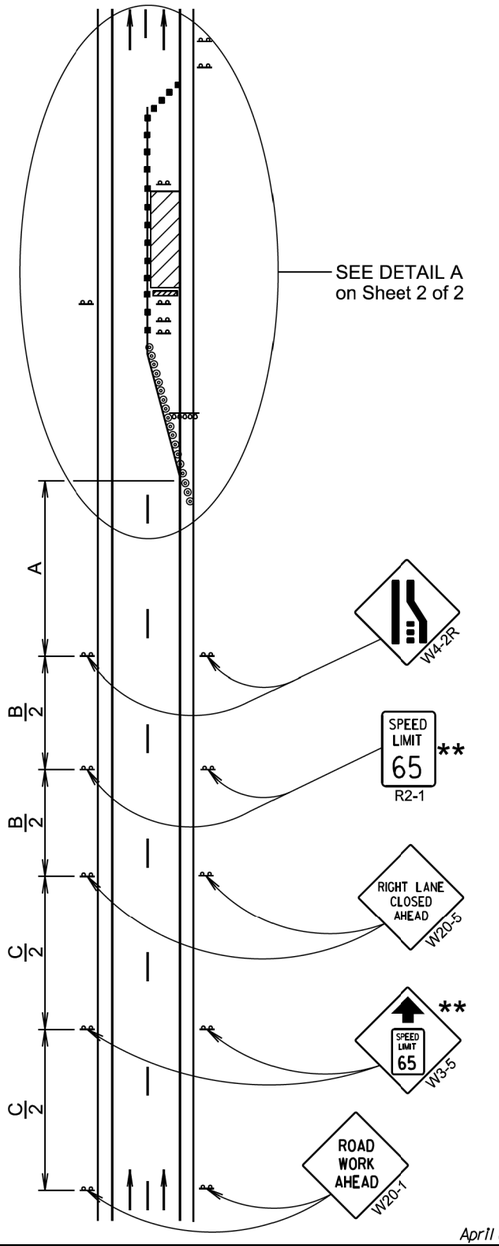
** Speed appropriate for location.

◎ Reflectorized Drum

▪ Channelizing Device

ROAD WORK AHEAD sign is only required in advance of the first lane closure.

High speed is defined as having a posted speed limit greater than 45 mph.



April 8, 2025

Published Date: 2026	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
			Sheet 1 of 2

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)	Taper Length (Feet) (L)
0 -30	25	180
35 - 40	25	320
45	25	600
50	50 *	600
55	50 *	660
60 - 65	50 *	780
70 - 80	50 *	960

* Spacing is 40' for 42" cones.

** Speed appropriate for location.

*** Use speed limit designated for the condition when workers are present in the work space. Signs will be covered or removed when workers are not present.

◎ Reflectorized Drum

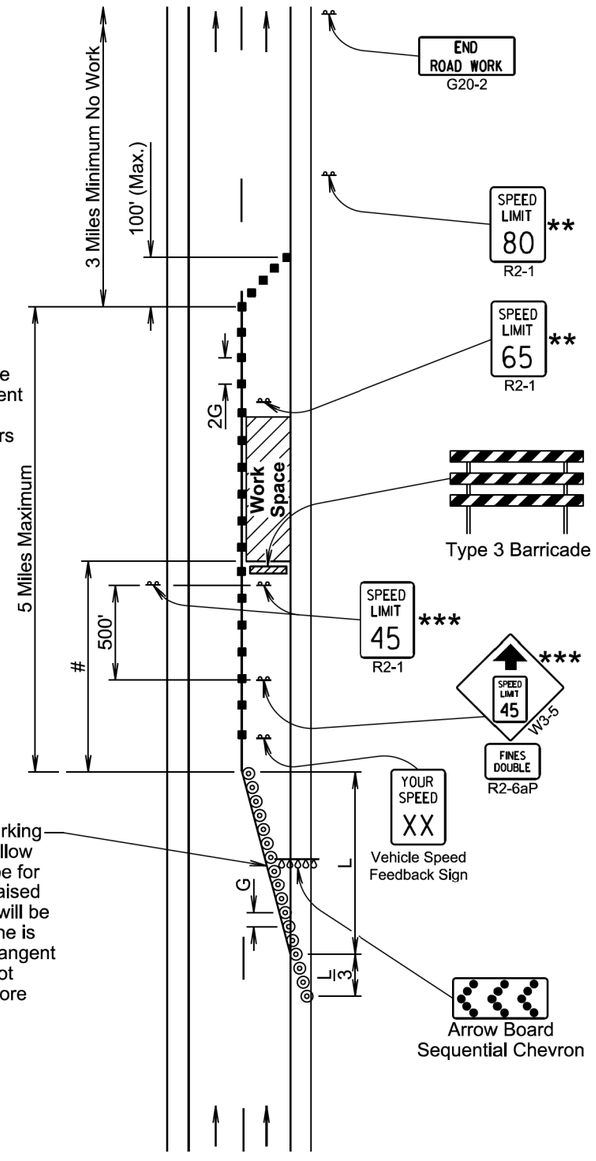
■ Channelizing Device

The Work Space will be a minimum of 500' from the end of the taper.

The channelizing devices will be 42" cones or drums.

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

4" white temporary pavement marking tape for right lane closures, 4" yellow temporary pavement marking tape for left lane closures, or temporary raised pavement markers at 5' spacing will be installed in the taper when the lane is closed overnight, and along the tangent section where the skip lines do not exist and the lane is closed for more than 3 days.



DETAIL A

April 8, 2025

Published Date: 2026	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
			Sheet 2 of 2

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B)	Taper Length (Feet) (L)
45 - 50	500	600
55	750	660
60 - 65	1000	780
	(A) (B)	
70 - 80	1000 1500	1125

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 45	25
50	50 *
55	50 *
60 - 80	50 *

* Spacing is 40' for 42" cones.

■ Channelizing Device

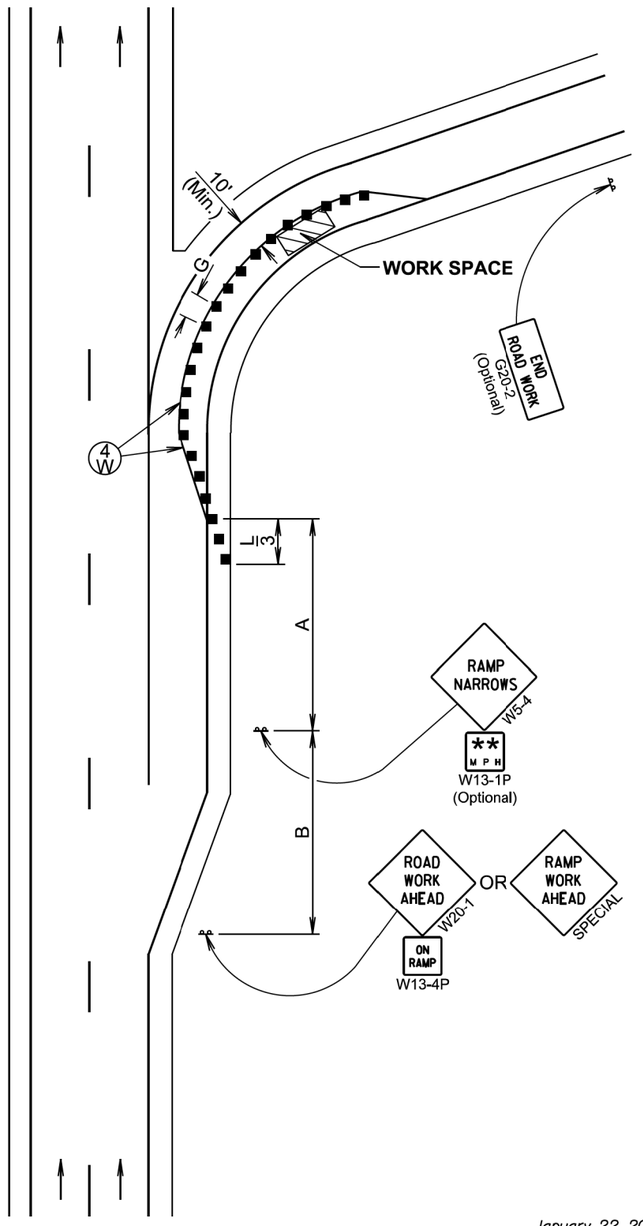
(4W) 4" White Temporary Pavement Marking

** Need and safe speed to be determined by the Engineer.

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

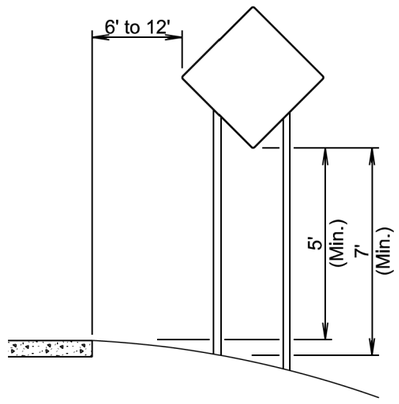
The channelizing devices will be drums or 42" cones if traffic control must remain overnight.

Truck off-tracking should be considered when determining whether the 10-foot minimum lane width is adequate.

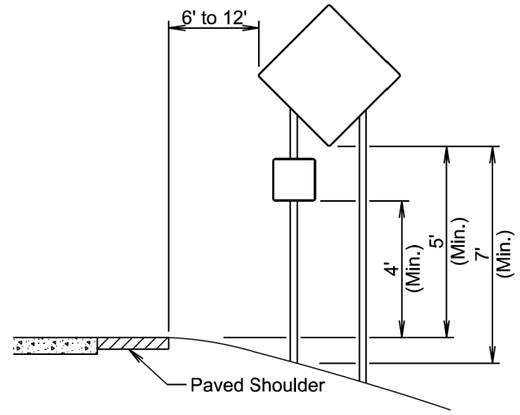


January 22, 2021

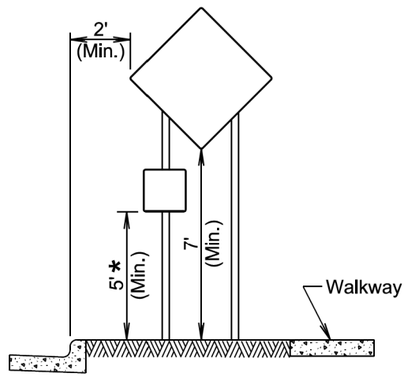
Published Date: 2026	SDDOT	PARTIAL EXIT RAMP CLOSURE	PLATE NUMBER 634.69 Sheet 1 of 1



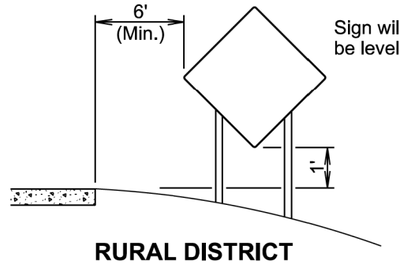
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

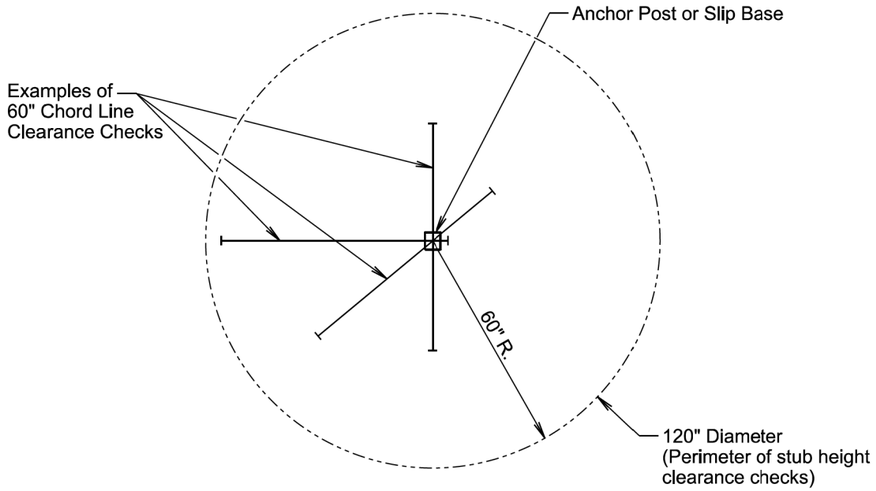


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

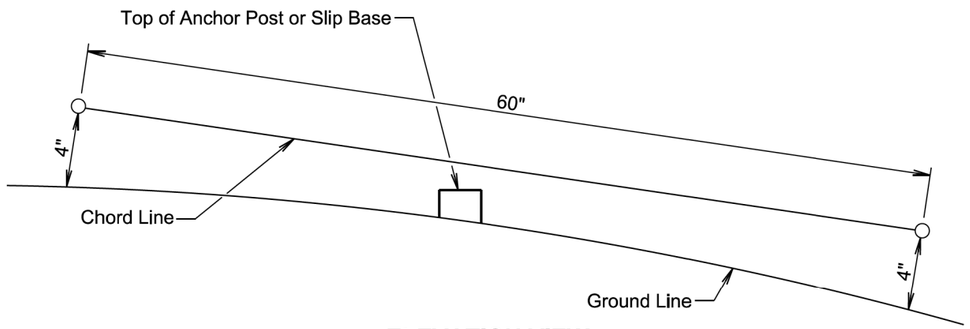
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2026	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: 2026	SDDOT	***BREAKAWAY SUPPORT STUB CLEARANCE***	*PLATE NUMBER* 634.99
			Sheet 1 of 1