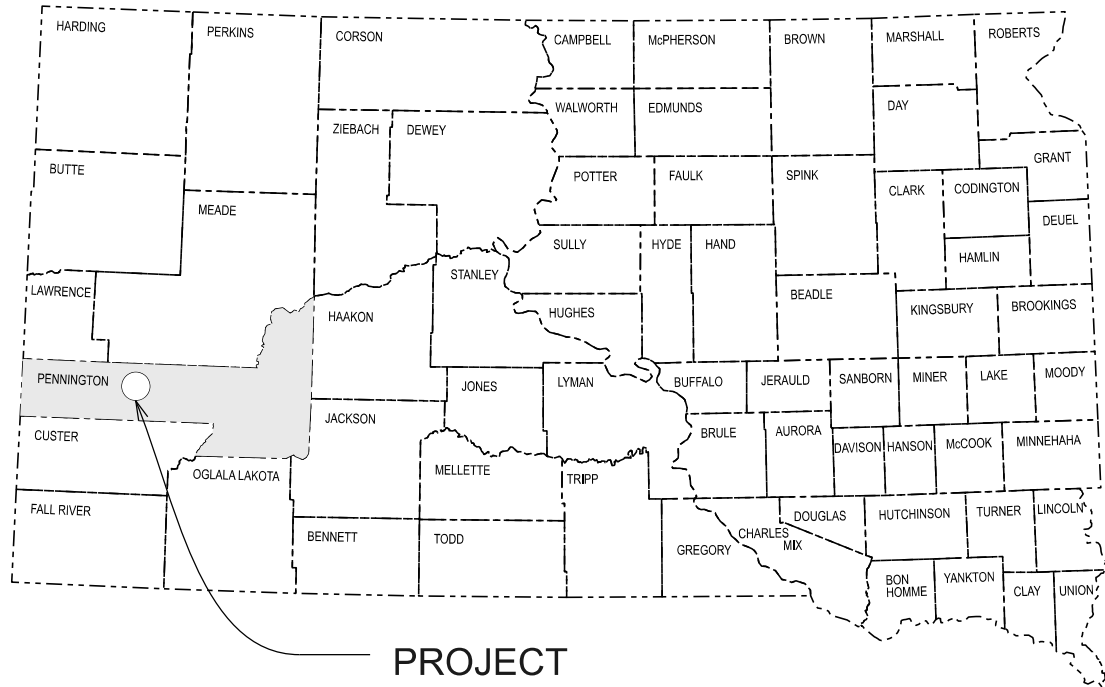


STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED  
**PROJECT 190 N-468**  
**INTERSTATE 190**  
**PENNINGTON COUNTY**  
REPLACE SIGN BRACKETS ON BRIDGE  
OVER I-90 WEST  
PCN i6TF

INDEX OF SHEETS

- Sheet 1: Title Sheet
- Sheet 2 - 5: Estimate of Quantities and Plan Notes
- Sheet 6: Sign Overlay Detail
- Sheet 7 - 8: Traffic Control Details
- Sheet 9 - 21: Structure Details
- Sheet 22 - 24: Standard Plates

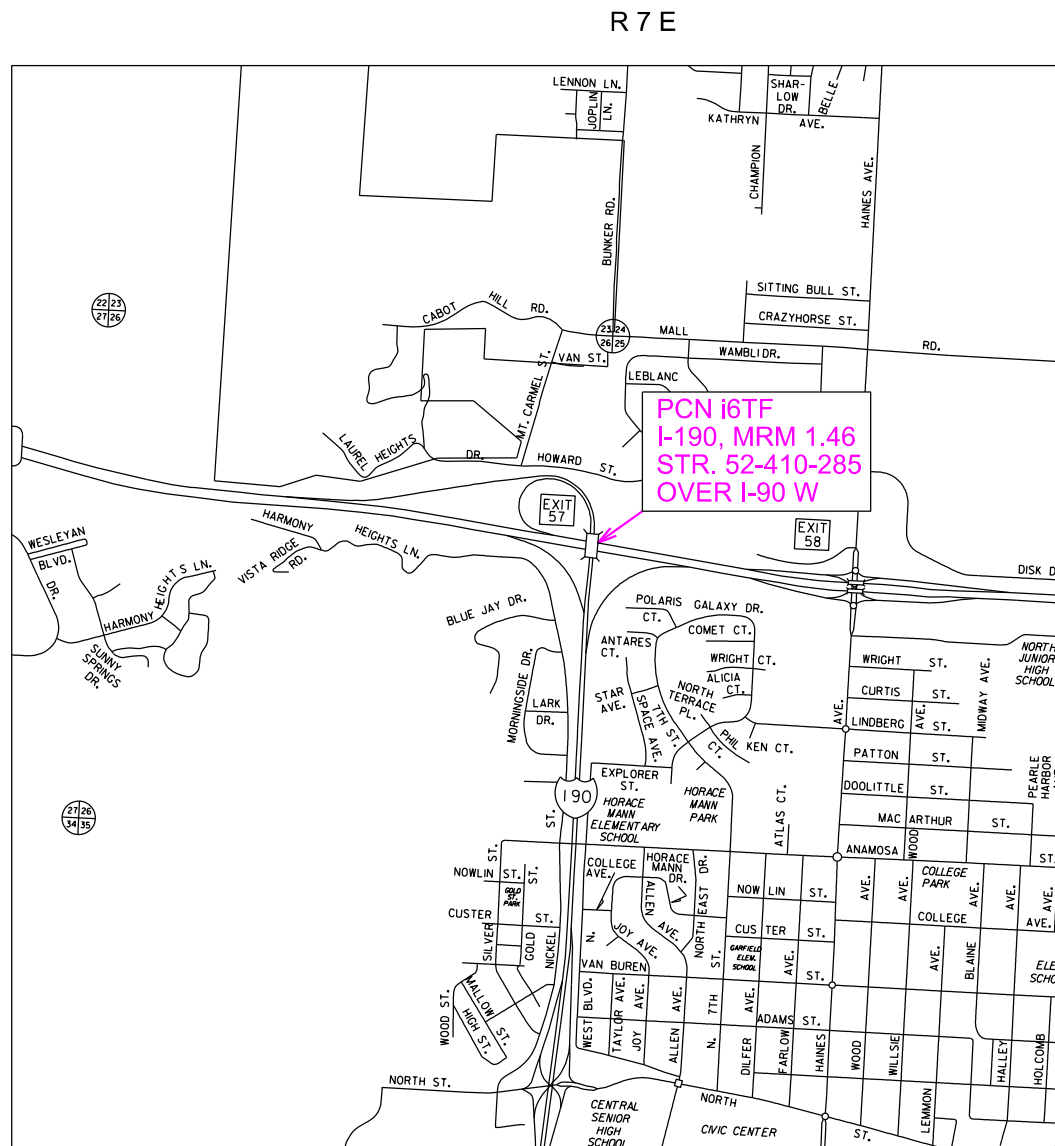


PROJECT

DESIGN DESIGNATION (I90W)

ADT (2023)	16001
ADT (2043)	23186
DHV	2439
D	50%
T DHV	4.1%
T ADT	9.0%
V	65 MPH

STORM WATER PERMIT  
No Permit Required



## ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
460E0070	Class A45 Concrete, Bridge Repair	0.4	CuYd
460E0300	Breakout Structural Concrete	0.4	CuYd
632E3526	Install State Furnished Sign	2	Each
633E1222	High Build Waterborne Pavement Marking Paint, 4" Yellow	980	Ft
634E0010	Flagging	100.0	Hour
634E0110	Traffic Control Signs	234.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	10	Each
634E0310	Temporary Flexible Vertical Markers (Tabs)	1,960	Ft
634E0420	Type C Advance Warning Arrow Board	1	Each
634E0560	Remove Pavement Marking, 4" or Equivalent	980	Ft
634E1002	Detour and Restriction Signing	209.0	SqFt
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each
634E1240	Queue Detection System	1	Each
634E1260	Truck/Trailer Mounted Attenuator	1	Each

## 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 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.

STATE OF SOUTH DAKOTA	PROJECT	SECTION	SHEET
	190N-468	non	2/24

## 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.

## INSTALLATION OF OVERLAY

The Contractor will install new 168"x24" overlays on the existing overhead signs on westbound Interstate 90 between Exit 58 and Exit 57 in Rapid City. New overlays will be provided by the DOT. Overlays can be picked up by contacting the Rapid City Region Traffic Office.

Excess amounts of dirt or other foreign material will be removed from the surface of the extruded aluminum panels. Any surface irregularities (bullet holes) will be repaired prior to the installation of the new overlay.

The new overlays will be installed on the in place extruded aluminum panels. Overlays will be centered horizontally between the edges of the existing sign. Overlays will be centered vertically overtop of the existing words "Civic Center".

Overlays will be attached to the extruded aluminum panels beginning with the pieces along the top of the sign. Fastening will proceed from the top of the overlay downward working out any bulges.

Fasteners will be aluminum rivets 5/32" in diameter. Rivets will be placed at 9" +/- 1" centers along the horizontal and vertical seams. Rivets will be placed 1/4" to 1/2" from the edges of the overlay pieces. Adjoining overlays will be butted tightly together before fastening begins. In addition to the perimeter rivets, fasteners are required inside the overlay spaced approximately 1' vertically and 2' horizontally from the overlay piece edges.

All costs for installing the sign overlay will be included in the contract unit price for "Install State Furnished Sign".

## SEQUENCE OF OPERATIONS

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

- Close Exit 58 WB on ramp and install detour signing
- Using Standard Plate 634.63, close I-90 WB driving lane – start taper at the Exit 58 WB off ramp gore, the Exit 57 WB off ramp will remain open after the work area
- Using Standard Plate 634.69, shift traffic on NB I-190 to the west to allow a 12' traffic lane – pavement marking removal and temporary flexible vertical markers will be required
- Remove "West 14 90 Gillette" sign – this work to be done at sunrise when traffic flows are minimal
- Complete all sign bracket work
- Remove all traffic control

## COORDINATION BETWEEN CONTRACTORS

A separate contract for Project IM-B 1905(67)0 – PCN 065K has been awarded to Heavy Constructors for Bridge and PCCP construction on I-190 adjacent to this project.

The Contractor will schedule work so as not to interfere with or hinder the progress of the work performed on PCN 065K. Conflicting traffic control devices may need to be temporarily adjusted or removed as directed by the Engineer and at no additional cost to the contract.

## 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 temporary speed limit signs will have a minimum mounting height of 5 feet in rural locations, even when mounted on portable supports.

Portable sign supports will not be located on sidewalks, bicycle facilities, or other areas designated for pedestrian or bicycle traffic.

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.

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.

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 3 or more calendar days. 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.

## DETOUR SIGNING

The Contractor will furnish and install the detour signs as shown in these plans. Prior to installing the signs, the Contractor will mark the sign locations and review them with the Engineer. Detour signs will be installed on fixed location, ground mounted, breakaway supports. It will be the responsibility of the Contractor to maintain and reinstall these signs during the project as required by the construction progress. Upon completion of the project, the Contractor will remove the detour signs.

All costs for furnishing the signs, posts, and mounting hardware, and for installing, maintaining, covering, and removing the detour signs will be incidental to the contract unit price per square foot for "Detour and Restriction Signing".

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R11-2	ROAD CLOSED	2	48" x 30"	10.0	20.0
M1-1	INTERSTATE ROUTE MARKER (2 digits)	9	36" x 36"	9.0	81.0
M3-4	DIRECTION MARKER - WEST	9	36" x 18"	4.5	40.5
M4-8	DETOUR	9	30" x 15"	3.1	27.9
M5-1	ADVANCE TURN ARROW 90° (L or R)	3	30" x 21"	4.4	13.2
M6-1	DIRECTION ARROW - Horizontal Single Head (L or R)	4	30" x 21"	4.4	17.6
M6-2	DIRECTION ARROW - 45° Single Head (L or R)	1	30" x 21"	4.4	4.4
M6-3	DIRECTION ARROW - Vertical Single Head	1	30" x 21"	4.4	4.4
<b>EXPRESSWAY / INTERSTATE DETOUR AND RESTRICTION SIGNING SQFT</b>					<b>209.0</b>

## WORK ZONE SPEED REDUCTION

The Department is required to obtain a speed reduction resolution prior to the installation of any SPEED LIMIT (R2-1) signs shown on standard plate 634.63. To provide adequate time for the resolution to be enacted, the Contractor will inform the Engineer a minimum of 3 weeks prior to the scheduled installation of any work zone speed reduction signs on the project. The information provided by the Contractor will include the anticipated date of sign installation, the newly reduced speed limit, the location of the work zone, and the anticipated completion date of work requiring the speed reduction.

## TEMPORARY FLEXIBLE VERTICAL MARKERS

TFVM quantity/locations:  
980' x 2 lines for lane shift on I-190  
780' lane closure taper on I-90

Covers on the tabs will be sufficiently secured to prevent traffic from dislodging the cover and when removed, the covers will be properly disposed of. The Contractor will remove and properly dispose of the tabs after permanent pavement marking is applied. Method of removal will be nondestructive to the road surface and will be accomplished within one week of completion of the permanent pavement marking.

Full reflectivity of all temporary flexible vertical markers (tabs) is required at all times. The Contractor will be required to replace any missing or non-reflective tabs after each installation.

All costs to furnish, install, replace if necessary, and remove the markers will be incidental to the contract unit price per foot for "Temporary Flexible Vertical Markers".

**CONTRACTOR FURNISHED PORTABLE CHANGEABLE MESSAGE SIGN**

One week prior to starting work affecting the traveling public, portable changeable message signs (PCMS) will be installed at locations detailed in the plans to notify drivers of the upcoming construction. The Contractor will program the portable changeable message signs with the following message:

ROAD WORK  
STARTS (Date)

When work begins that will affect traffic patterns, the Contractor will re-program the PCMS with the messages as directed by the Engineer.

**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.

**TRUCK/TRAILER MOUNTED ATTENUATOR**

If the Contractor elects to use the truck or trailer mounted attenuator, the Contractor will furnish truck or trailer mounted attenuator(s) to be used 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.

**QUEUE DETECTION SYSTEM**

The Contractor will furnish and install a Queue Detection System for I-90 westbound 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" will be displayed.

During times of major congestion, very slow or stopped traffic (30 mph or less): "STOPPED TRAFFIC" and "REDUCE SPEED" will be displayed.

There will be four message boards on I-90, 2 sets of 2.

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

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 closure 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 the 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 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.

All costs for furnishing, installing, maintenance, operation, relocation, including all equipment such as Portable Changeable Message Signs, detection, and all miscellaneous parts and materials will be incidental to contract unit price per each for Queue Detection System.

**TRAFFIC CONTROL SIGNS**

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 45	2	36" x 48"	12.0	24.0
R2-1	SPEED LIMIT 65	1	36" x 48"	12.0	12.0
R2-6aP	FINES DOUBLE (plaque)	1	36" x 24"	6.0	6.0
W3-5	SPEED REDUCTION AHEAD ( MPH)	1	48" x 48"	16.0	16.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W5-4	RAMP NARROWS	1	48" x 48"	16.0	16.0
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	1	48" x 48"	16.0	16.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
<b>EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT</b>					<b>234.0</b>

**RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT**

980' of 4" yellow is estimated on the I-190 WB on ramp.

- Solid 4" line = 27.8 Gals/Mile
- Dashed 4" line = 7.6 Gal/Mile
- Glass Beads = 5.3 Lbs/Gal.
- Composite Reflective Elements = 2.1 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.

**HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT**

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.

Reflective media consisting of glass beads as well as bonded core reflective elements will be adhered to the paint.

The bonded core reflective elements will contain either clear or yellow tinted microcrystalline ceramic beads bonded to the outer surface. The bonded core reflective elements will provide a 50/50 blend of dry to wet ratio of reflective element. All microcrystalline ceramic beads bonded to reflective elements will have a minimum index of refraction of 1.8 for dry retroreflectivity and 2.4 for wet retroreflectivity when tested using the liquid oil immersion method.

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

The Department will take retroreflectivity readings on the pavement marking lines no sooner than 3 days and no later than 30 days after the completion of all line applications required for an individual highway route using a portable retroreflectometer conforming to 30-meter geometry. Retroreflectivity readings will be taken on a test location with cleaning being limited to light hand brooming.

Pavement markings not conforming to the retroreflectivity requirements will be removed and replaced. If replacement of markings cannot be applied within the same year, the Contractor will schedule subject work to be completed no later than June 15<sup>th</sup> in the following year. Upon replacement, the retroreflectivity testing process will be done again requiring new readings.

The Department will randomly select one test location per mile of each edge line including ramps and one test location per mile of centerline (solid and/or skip line will be considered as one centerline). Three retroreflectivity readings will be taken at each test location. The three readings will be averaged and become the reading for that test location.

Initial readings:

Pavement Marking Color	Minimum Value
White	350 mc/m <sup>2</sup> /lux
Yellow	275 mc/m <sup>2</sup> /lux

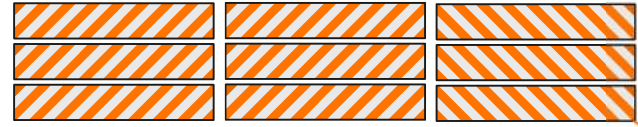
All pavement markings not conforming to the requirements provided in these plans will be considered deficient and will be removed and replaced. Additional retroreflectivity readings will be taken by the Department to determine the limits of removal. The removal will be accomplished using suitable sand blasting or grinding equipment unless the Engineer authorizes other means. The removal process will remove at least 90% of the deficient line, with no excessive scarring of the existing pavement. The removal width will be one inch wider all around the nominal width of the pavement marking to be removed. Removal and replacement of the pavement markings will be at the Contractor's expense, with no cost incurred by the State.



# TRAFFIC CONTROL

## WB ON RAMP DETOUR

ROAD CLOSED (R11-2)



I-90 WB ON RAMP  
CLOSED AHEAD  
FOLLOW DETOUR  
( SPECIAL )



ADVANCE SB DETOUR SIGNING



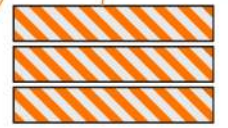
CLOSE TURN LANE



ADVANCE NB DETOUR SIGNING



CLOSE TURN LANE



I-90 WB ON RAMP  
CLOSED AHEAD  
FOLLOW DETOUR  
( SPECIAL )



# TRAFFIC CONTROL

## WB ON RAMP DETOUR

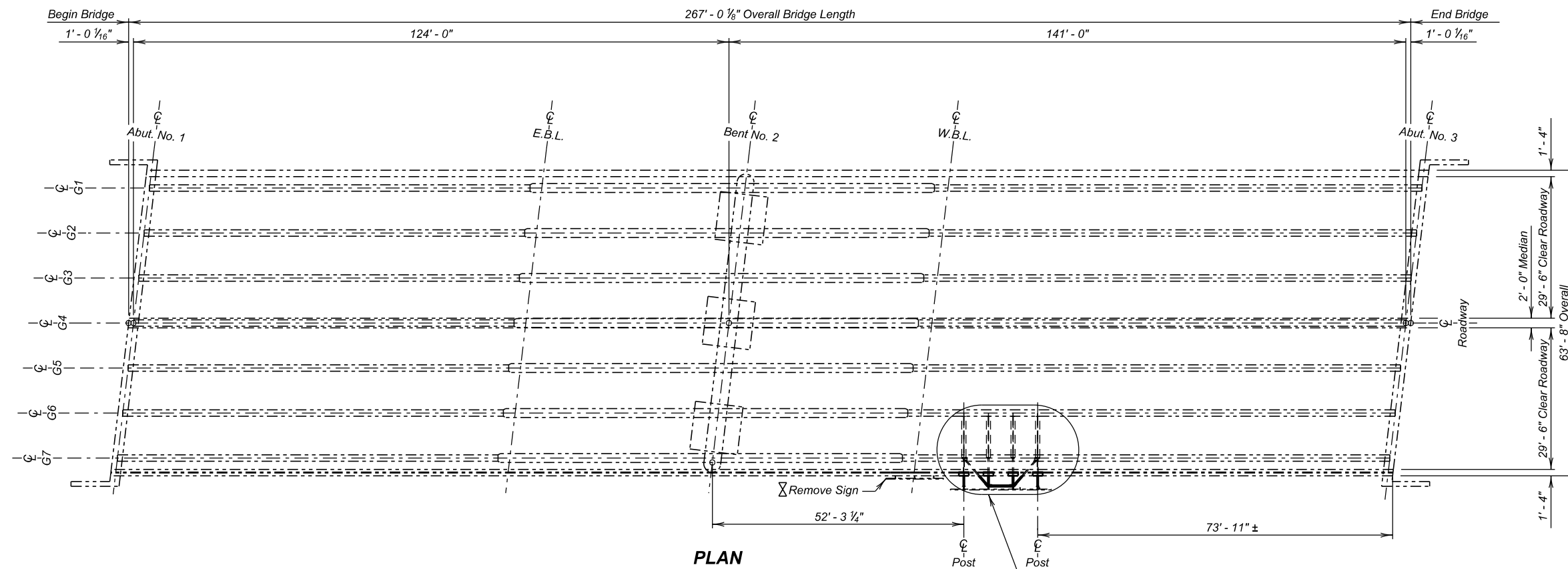


- (M4-8)
- (M3-4)
- (M1-1)
- (M5-2)

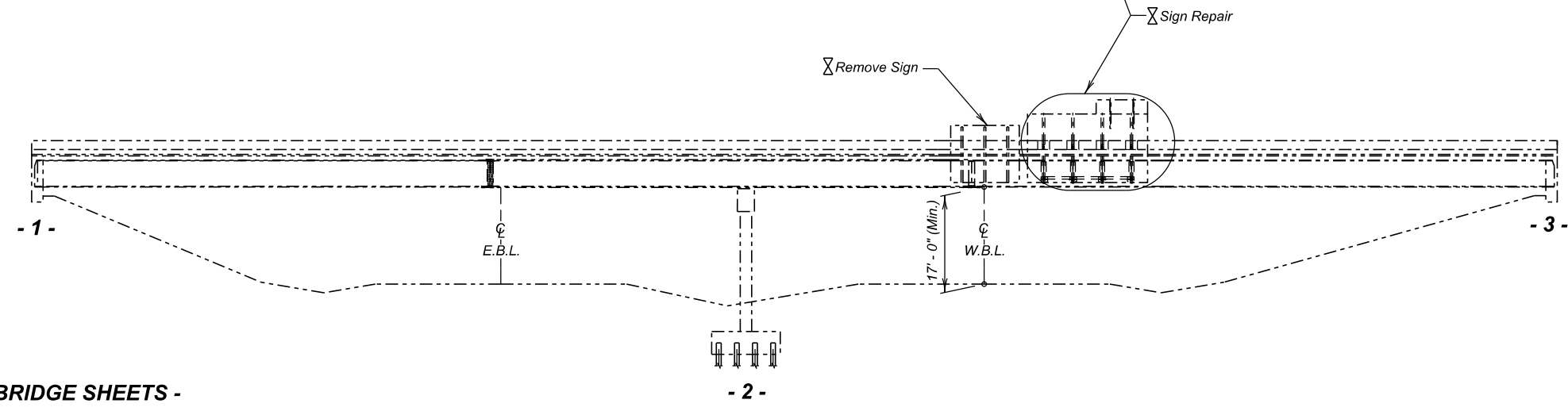
- (M4-8)
- (M3-4)
- (M1-1)
- (M5-2)

- (M4-8)
- (M3-4)
- (M1-1)
- (M6-1)





**PLAN**



**ELEVATION**

⊗ The existing sign for Mt Rushmore and the Civic Center will be modified and reinstalled. The Gillette sign and sign supports at this location will be removed. See Original Construction Plans for existing sign details. All the existing bolt holes in the girders will be filled with bolts.

**-X271-  
INDEX OF BRIDGE SHEETS -**

- Sheet No. 1 - Layout for Upgrading
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Sign Support Details (A)
- Sheet No. 4 - Sign Support Details (B)
- Sheet No. 5 - Sign Support Details (C)
- Sheet No. 6 thru 13 - Original Construction Plans

**LAYOUT FOR UPGRADING  
FOR**

**267' - 0 1/8" CONT. COMP. GIRDER BRIDGE**  
 2 - 29' - 6" ROADWAYS                      6°46' 20" L.H.F. SKEW  
 OVER I90    SEC. 25/26-T2N-R7E  
 STR. NO. 52-410-285    190 N-468  
 PCN I6TF

PENNINGTON COUNTY  
 S. D. DEPT. OF TRANSPORTATION

MAY 2024

**-X271-**

DESIGNED BY JH PENN16TF	CK. DES. BY TJM I6TFRA01	DRAFTED BY KR	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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## ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
460E0070	Class A45 Concrete, Bridge Repair	0.4	CuYd
460E0300	Breakout Structural Concrete	0.4	CuYd

### SPECIFICATIONS

- Design Specifications: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, 2015 Edition using Load Resistance Factored Design.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.
- All Welding and Welding Inspection for the hollow structural sections will be in conformance with the latest edition of the AWS D1.1M/D1.1 Structural Steel Welding Code.

### 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. 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.
- The stationing shown in the original construction plans is reversed from the current project. As such, labels for the begin and end of bridge as well as the substructure units are reversed.

### GENERAL CONSTRUCTION NOTES

- All work on this structure will be accomplished with the traffic control shown in the plans.
- All exposed concrete corners and edges will be chamfered 3/4-inch unless noted otherwise in plans. Match existing chamfer if the existing chamfer differs.
- All steel hollow structural sections will be ASTM A1085. All steel plates and angles will be ASTM A709, Gr. 36 T2. All steel components will be galvanized after shop welding in accordance with ASTM A123. Weep holes for galvanizing will be on the bottom on members and centered under the HSS sections on plates.
- New bolts will be ASTM F3125, Grade A325. Each bolt will be supplied with a heavy hex nut, 1 hardened washer and 1 direct tension indicator.
- Anchor Rods will be 3/4-inch diameter x 9" ASTM F1554, Grade 55 and supplied with 2 heavy hex nuts, a hardened washer, and a cut washer.

### BOLT TESTING

The certified mill test reports for all bolts used on the project will include the test results for all the testing specified in section 972.2.D of the Standard Specifications. Some of these tests are supplemental tests that must be requested at the time the bolts are ordered. It is the responsibility of the Contractor to notify the bolt supplier of these requirements.

### SIGN REPAIR

- One existing sign on the Interstate 190 overpass structure will be modified with new structural supports fabricated. The second sign will be removed from the structure. The existing sign panel that is to be reinstalled will be salvaged and temporarily stored by the Contractor as needed. The sign assembly that is removed will be become property of the Contractor.
- All existing holes in the girders from previous sign structures will have a new ASTM F3125, Grade A325 bolt installed using the turn of the nut method. Direct tension indicators are not required in the existing hole locations, 2 hardened washers and a heavy hex nut are required.
- Holes in the girder for the reinstallation of the sign on the bridge will be field drilled.
- The sign repair will be paid for at the contract unit price lump sum for Structural Steel, Miscellaneous. This payment will be full compensation for removal of signs and supports from existing bridge, temporary storage, fabrication of the new sign bracket, disposal of existing sign brackets, and installing new sign support including all material, labor, equipment, and any incidentals necessary to complete this item of work.

### CONCRETE BREAKOUT

- The existing barrier 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.
- 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 Commitments.
- During concrete removal operations, no concrete will be allowed to fall onto the roadway below.

- 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.

### EPOXY COATING EXISTING REINFORCING STEEL

- The existing reinforcing steel in the barriers that is exposed during concrete breakout, and is to be reused, will be epoxy coated in the field.
- The reinforcing steel will be cleaned by abrasive blasting and then epoxy coated. The epoxy coating will be inert in concrete and compatible with the coating applied to the new epoxy coated reinforcing steel. This coating will be the epoxy touch up coating material supplied by an epoxy coating manufacturer who supplies coating material for new epoxy coated reinforcing steel. The reinforcing steel that has been cleaned by abrasive blasting will be coated promptly and before detrimental oxidation occurs. The coating will be allowed to cure for 24 hours or as per the manufacturer's recommendations, whichever is more stringent, before concrete can be placed. These bars will be clean and free from all surface contaminants before coating.
- The cost of cleaning and epoxy coating the existing reinforcing steel will be incidental to the various bid items.

### CLASS A45 CONCRETE, BRIDGE REPAIR

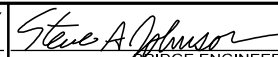
The type of cement, concrete strength requirements, aggregate requirements, slump and air requirements for the contract item Class A45 Concrete, Bridge Repair will conform to the requirements of Section 460 of the Construction Specifications for A45 concrete used in bridge decks.

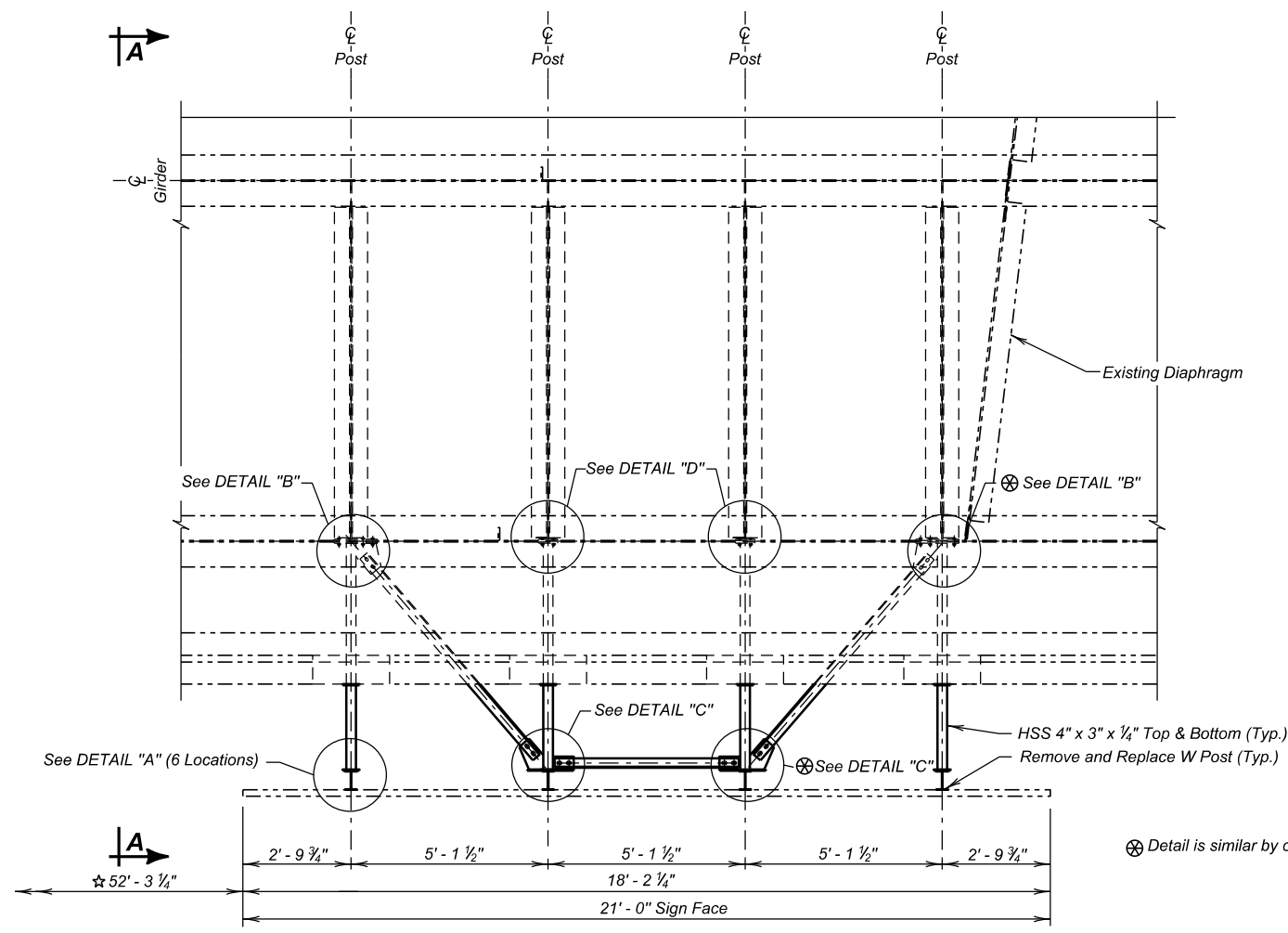
## ESTIMATE OF STRUCTURE QUANTITIES AND NOTES FOR 267'-0<sup>1</sup>/<sub>8</sub>" CONT. COMP. GIRDER BRIDGE

STR. NO. 52-410-285

MAY 2024

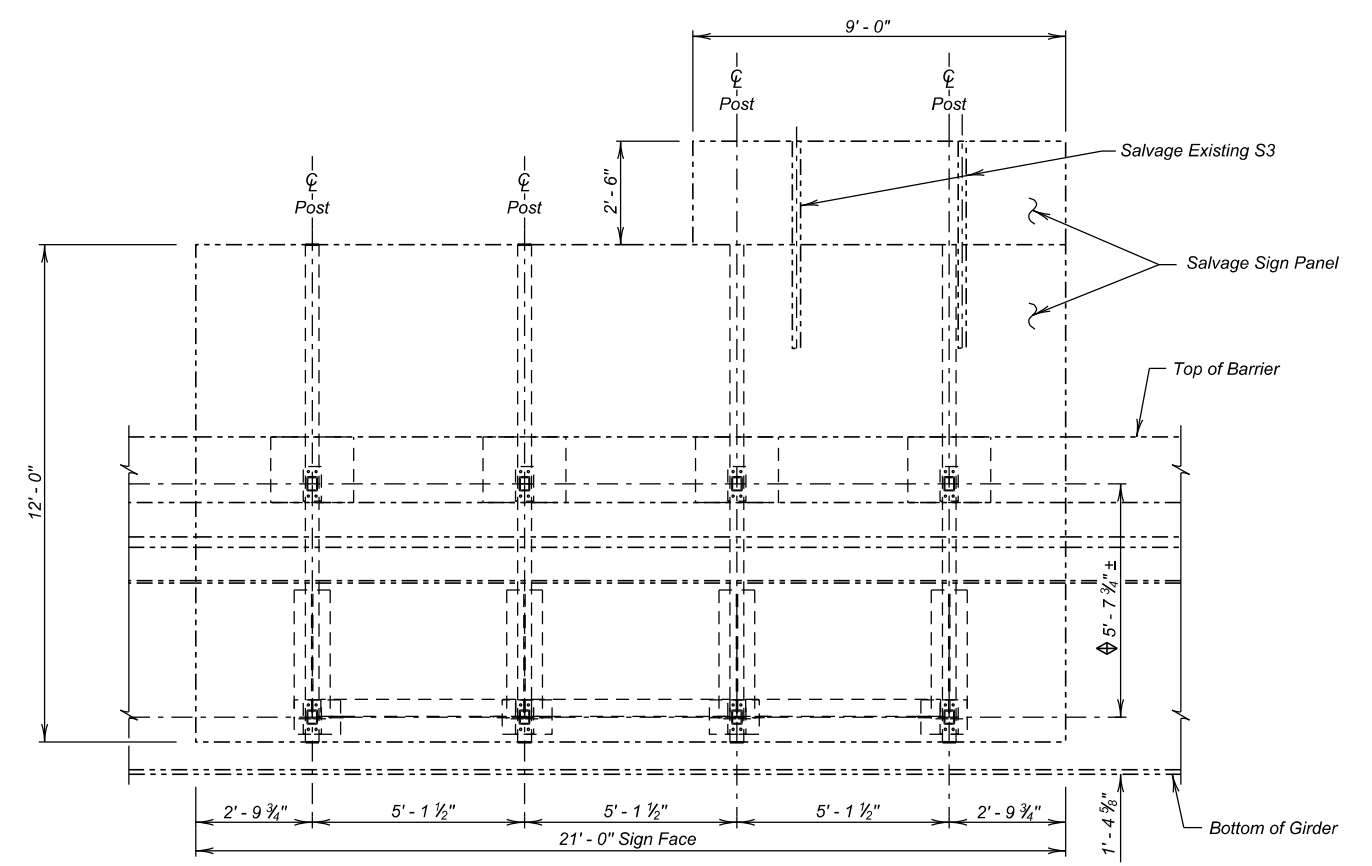
2 OF 13

DESIGNED BY JH PENNI6TF	CK. DES. BY TJM I6TFHA02	DRAFTED BY JH	 BRIDGE ENGINEER
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**PLAN**

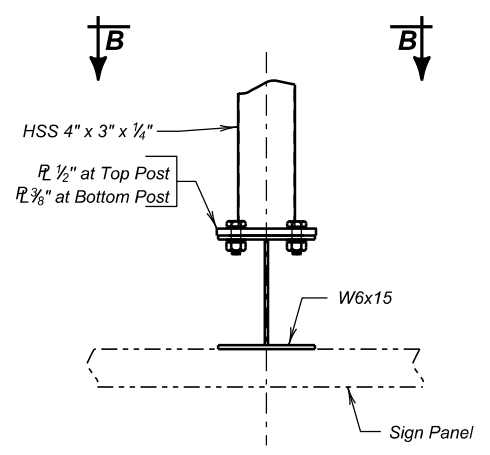
⊗ Detail is similar by opposite hand



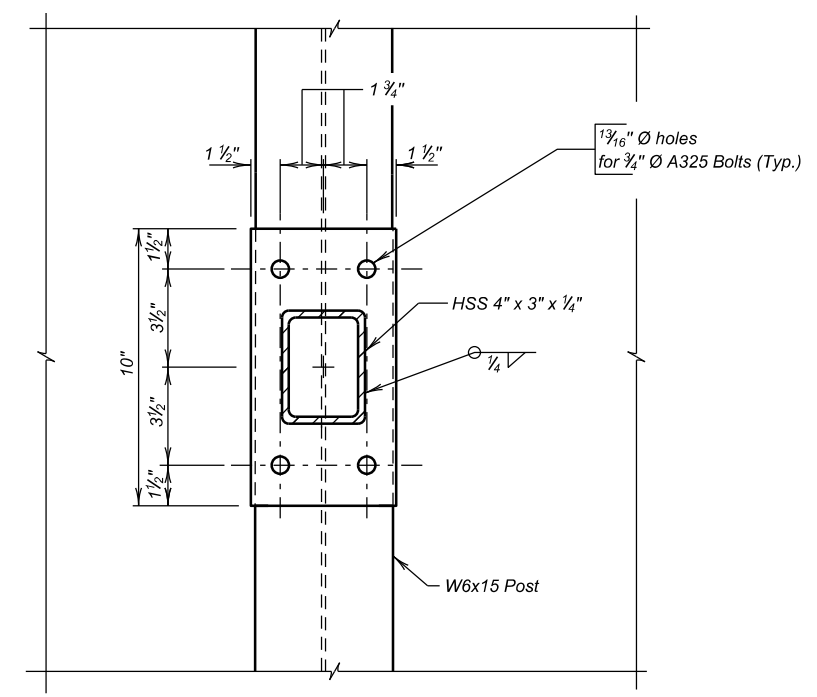
**ELEVATION**

⬠ The top support location will be adjusted as required to maintain 2" clear from bottom of anchor rod and concrete replacement.

☆ Dimension given from the centerline of bent at the centerline of Girder No. 7.



**DETAIL "A"**  
(4 locations at top of post & 2 locations at bottom of post)

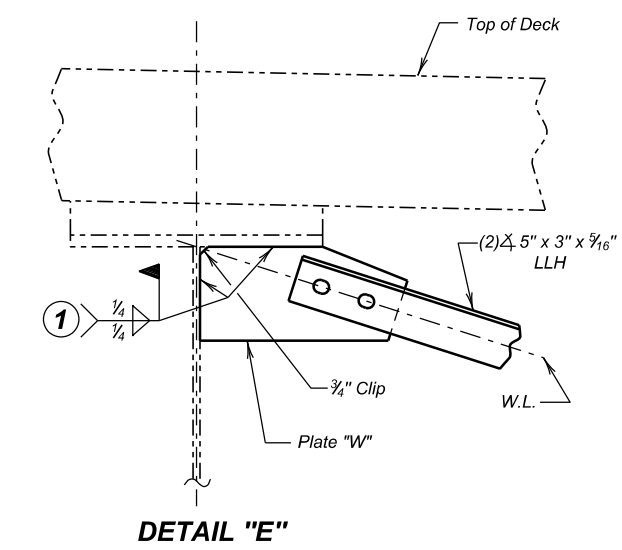
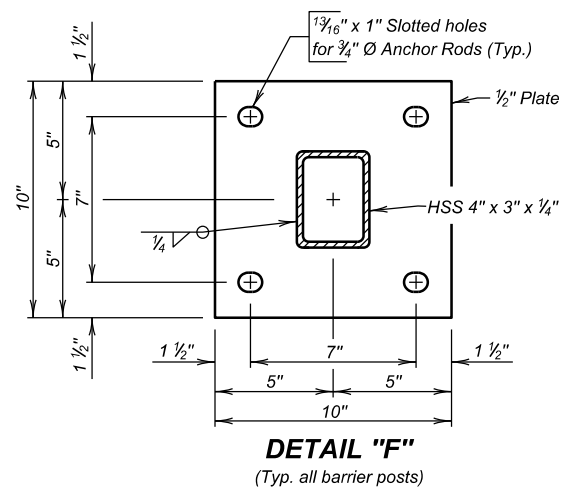
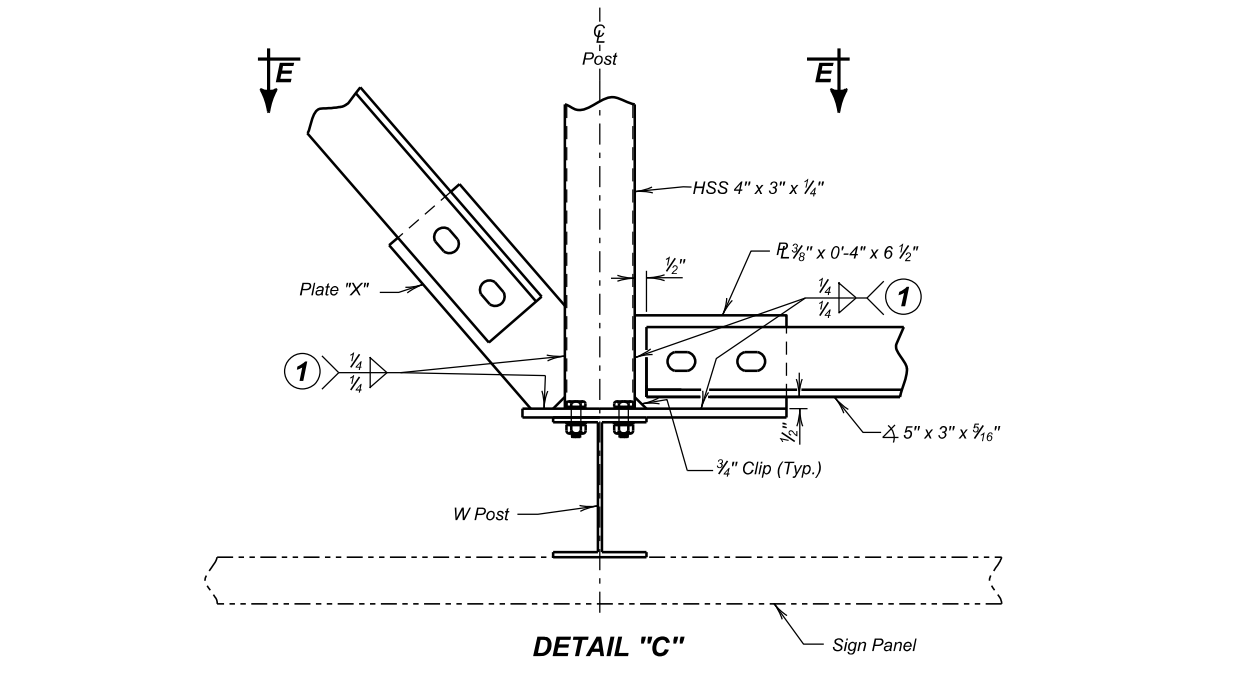
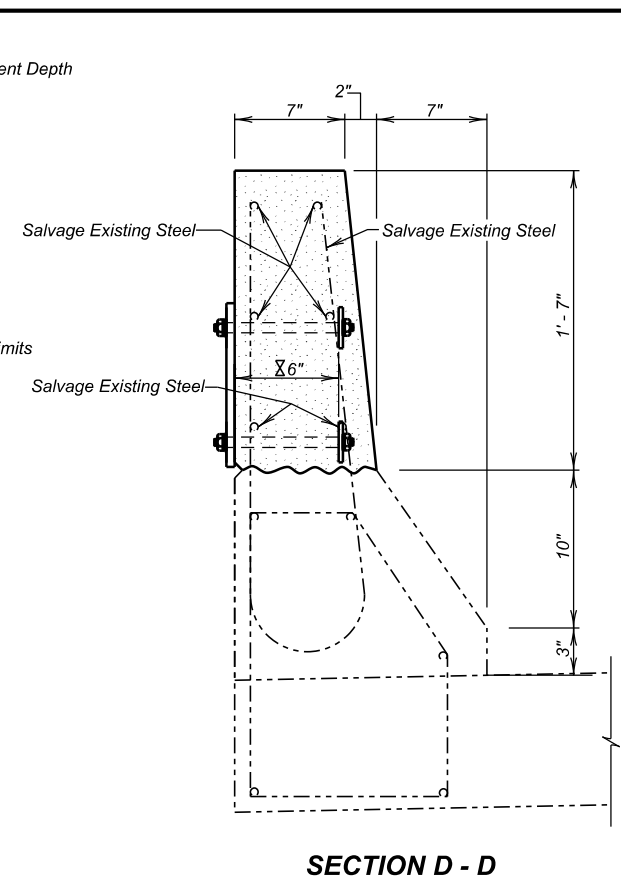
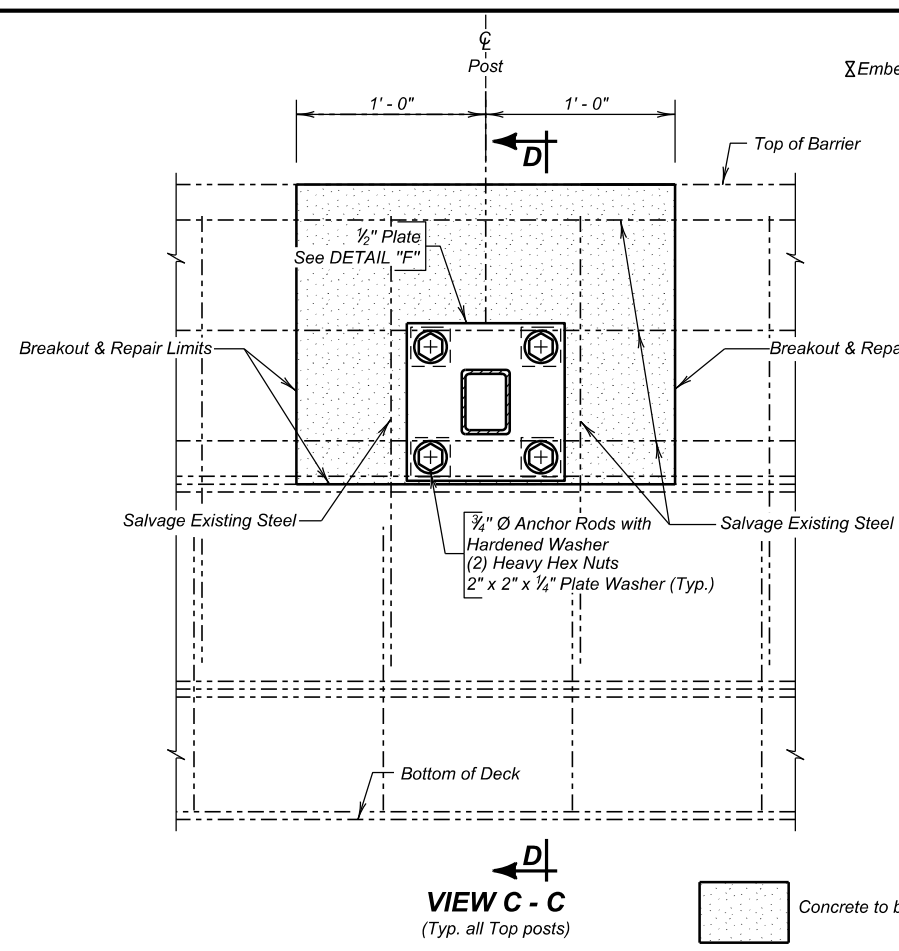


**VIEW B - B**

**SIGN SUPPORT DETAILS (A)**  
FOR  
**267' - 0 1/8" CONT. COMP. GIRDER BRIDGE**  
2 - 29' - 6" ROADWAYS  
OVER I90  
STA. 44+87.59 TO 47+54.61  
STR. NO. 52-410-285

6°46' 20" L.H.F. SKEW  
SEC. 25/26-T2N-R7E  
190 N-468

PENNINGTON COUNTY  
S. D. DEPT. OF TRANSPORTATION  
MAY 2024

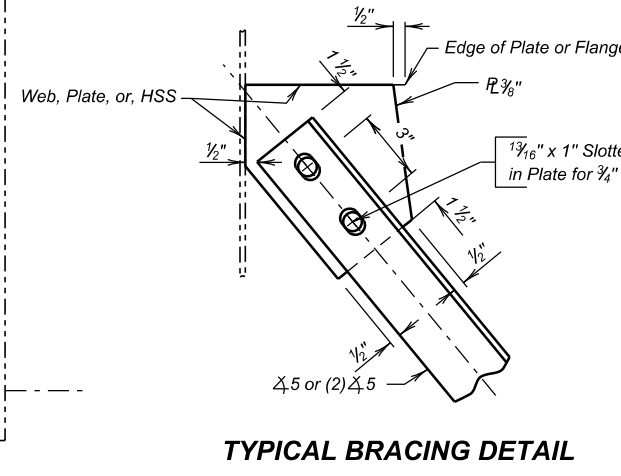
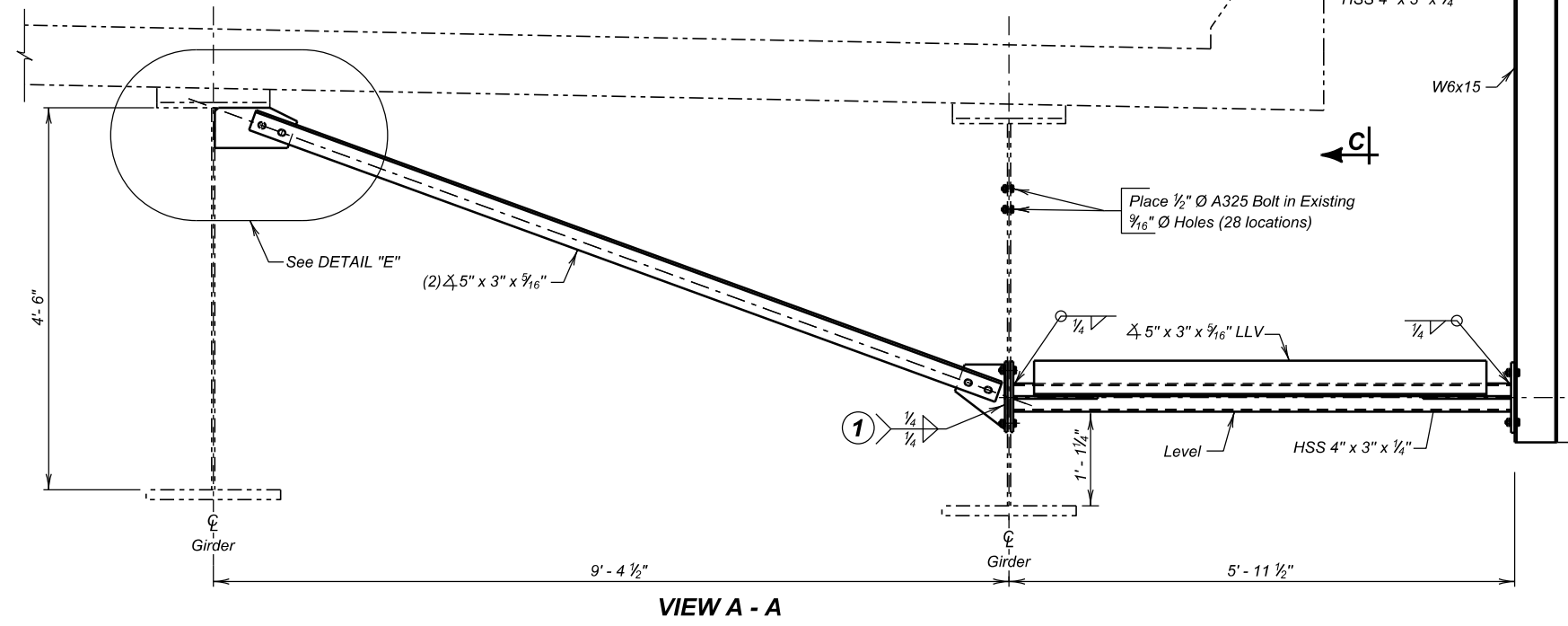


NOTES:

1 All fillet welds attaching plates will terminate 1/2 inch from edge of plate, edge of flange, or clip as appropriate.

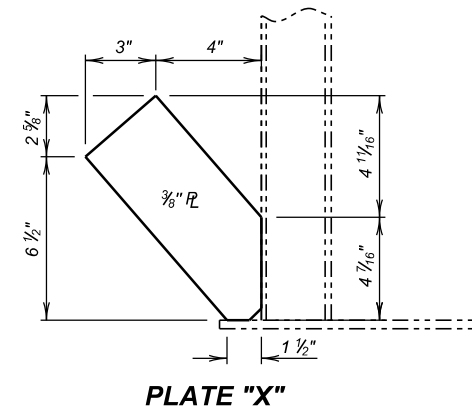
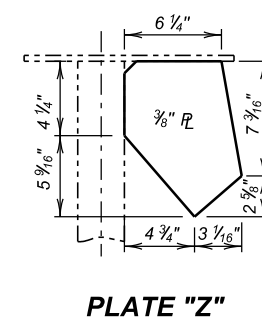
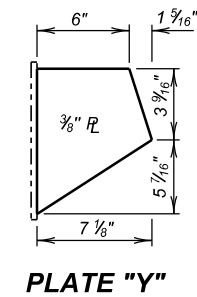
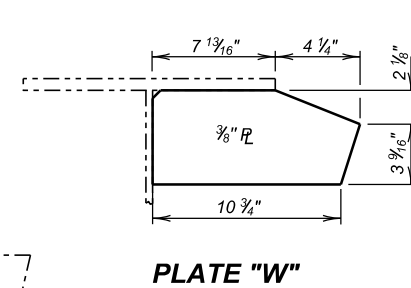
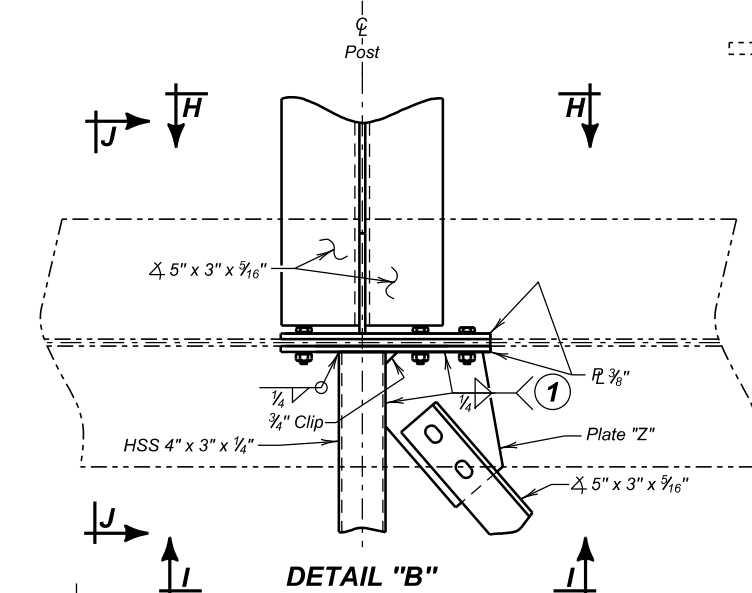
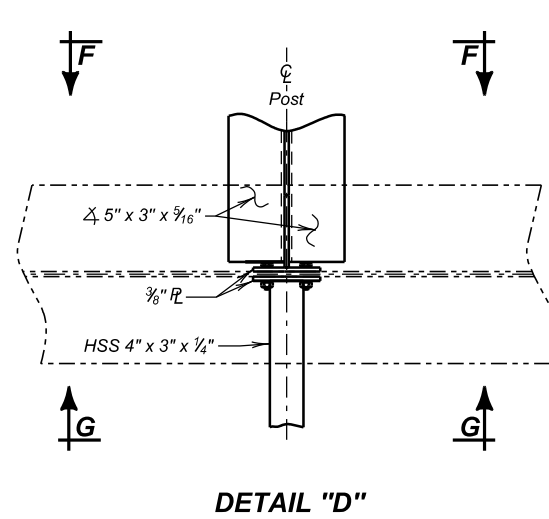
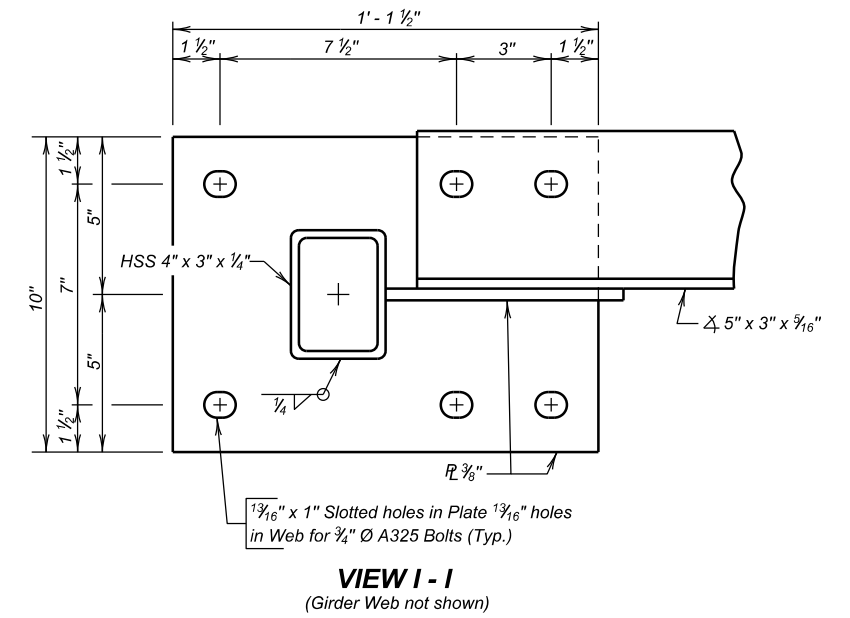
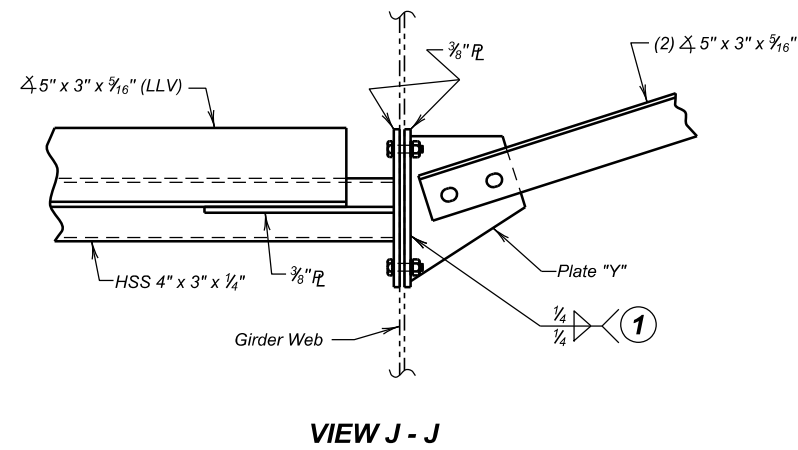
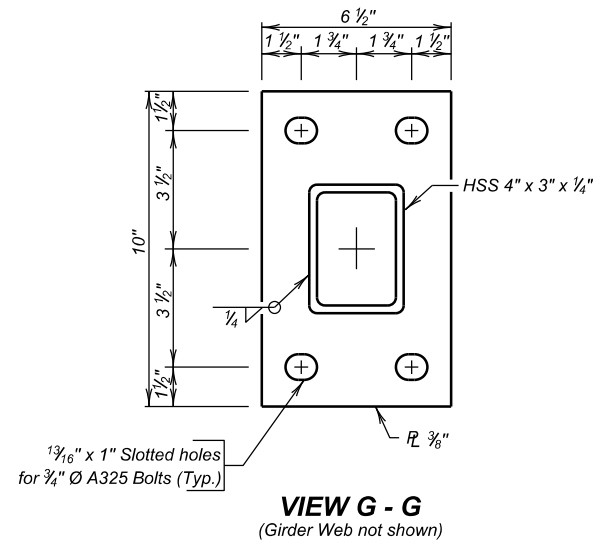
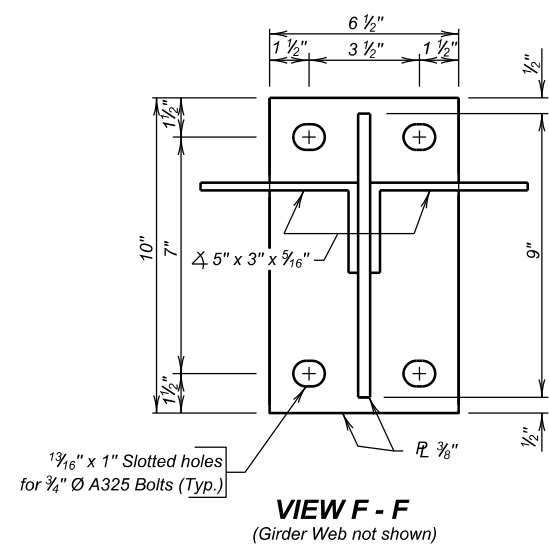
Bolt spacing and edge distances follow the TYPICAL BRACING DETAIL unless noted otherwise.

The Contractor will confirm reinforcing steel locations prior to breakout.



**SIGN SUPPORT DETAILS (B)**  
FOR  
**267' - 0 1/8" CONT. COMP. GIRDER BRIDGE**  
2 - 29' - 6" ROADWAYS  
OVER I90  
STA. 44+87.59 TO 47+54.61  
STR. NO. 52-410-285

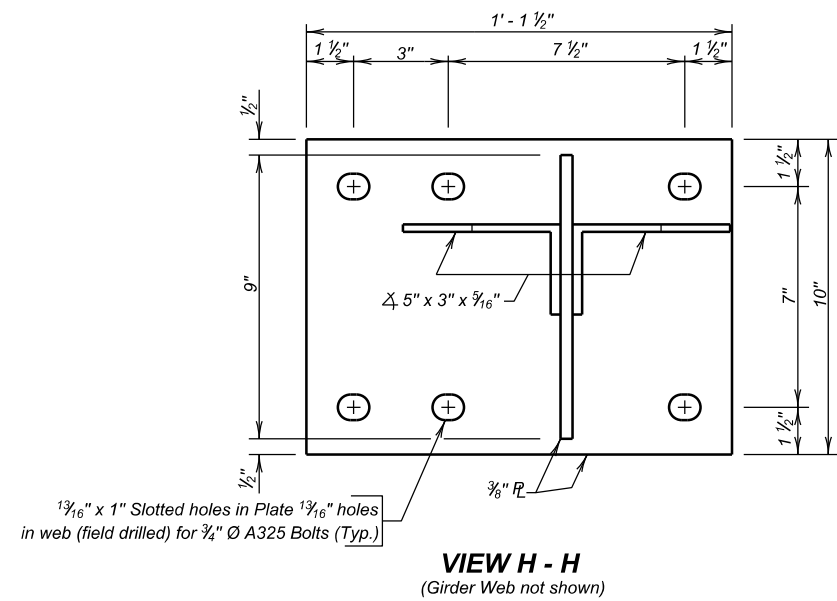
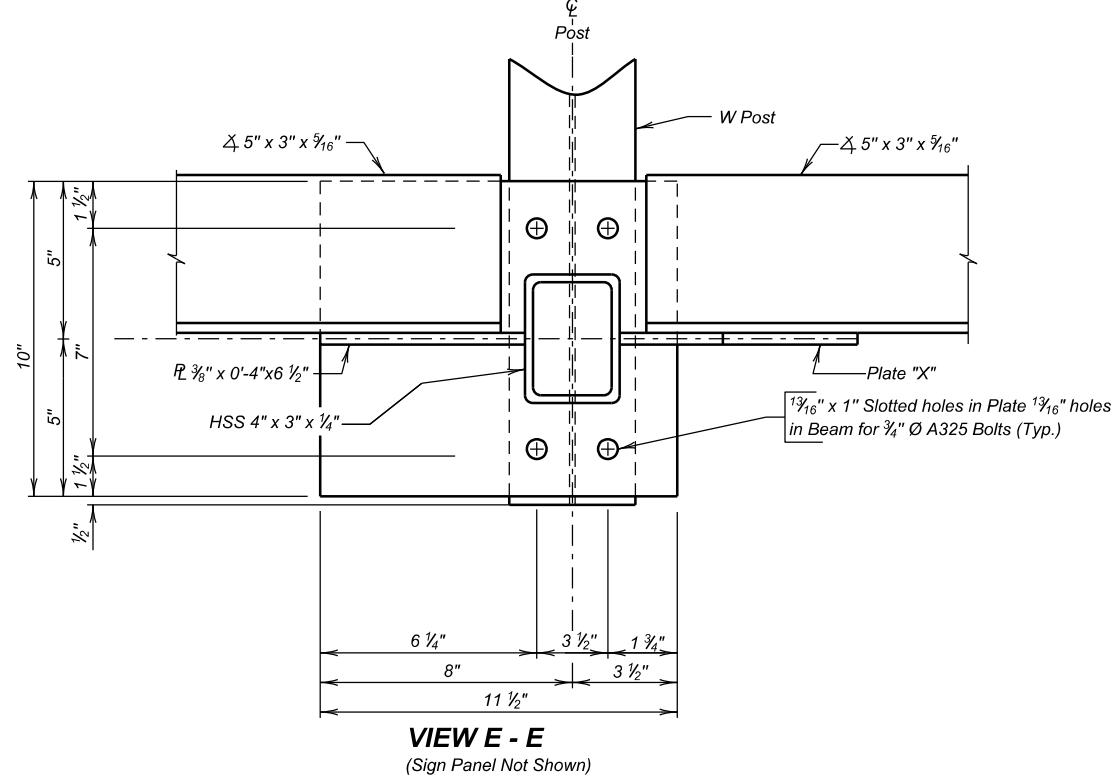
6°46' 20" L.H.F. SKEW  
SEC. 25/26-T2N-R7E  
190 N-468



**NOTES :**  
 ① All fillet welds attaching plates as specified by denotation will terminate 1/2" from edge of plate, edge of flange, or clip as appropriate.  
 For bolt spacing and geometry of braces see TYPICAL BRACING DETAIL

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
★ Structural Steel, Miscellaneous	LS	Lump Sum
Class A45 Concrete, Bridge Repair	CuYd	0.4
Breakout Structural Concrete	CuYd	0.4

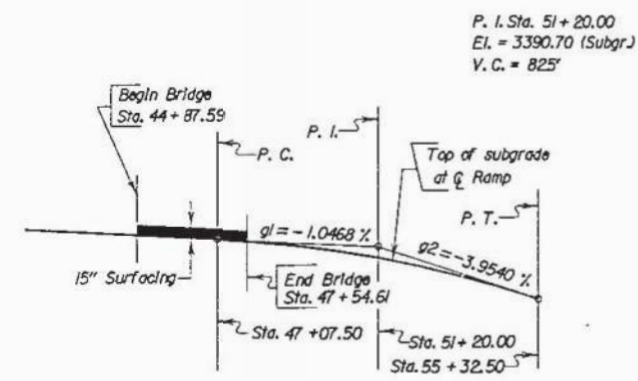
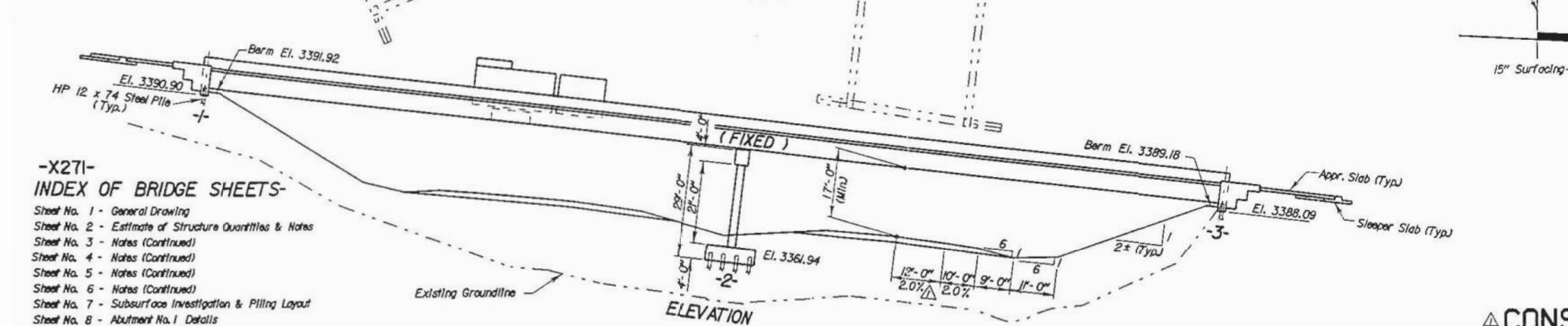
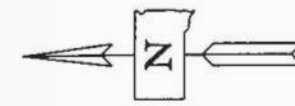
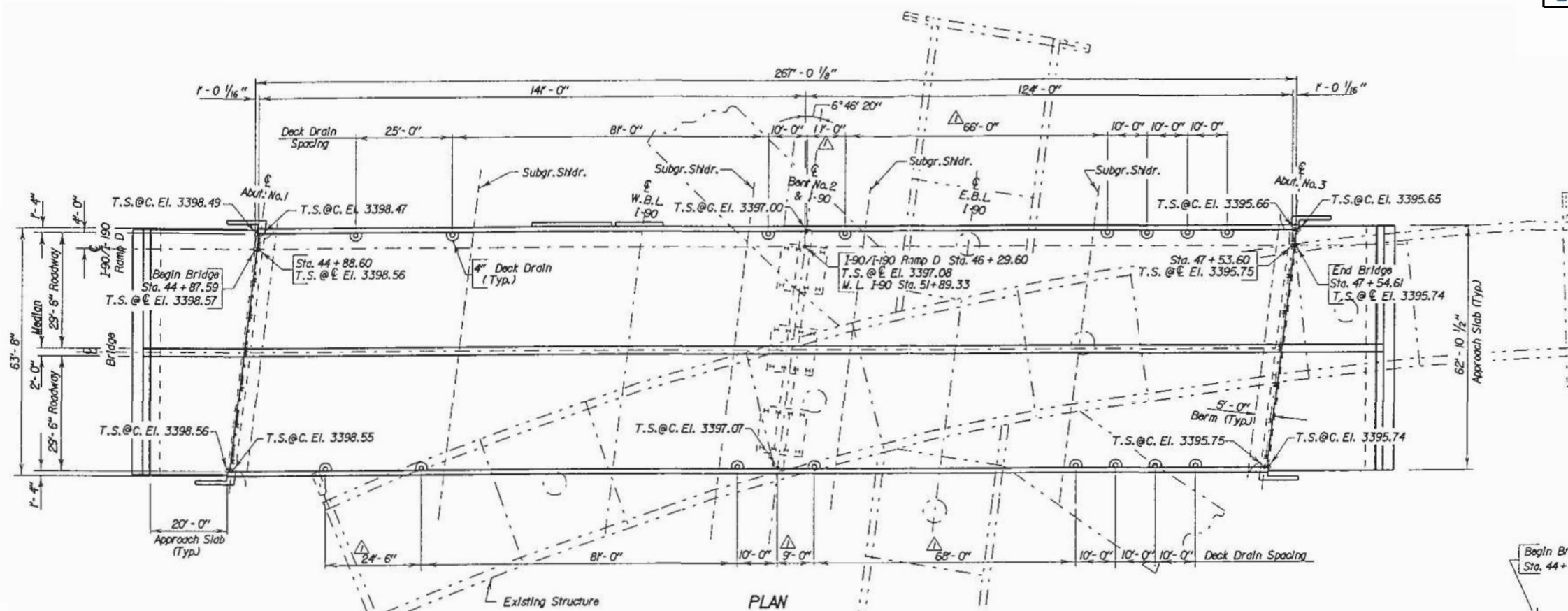
★ For informational purposes only, the estimated total structural steel quantity for sign Support including plates, bolts, nuts, direct tension indicators, washers, and steel used for dowels is 2090 lbs.



**SIGN SUPPORT DETAILS (C)**  
 FOR  
 267' - 0 1/8" CONT. COMP. GIRDER BRIDGE  
 2 - 29' - 6" ROADWAYS  
 STA. 44+87.59 TO 47+54.61  
 STR. NO. 52-410-285

PENNINGTON COUNTY  
 S. D. DEPT. OF TRANSPORTATION

MAY 2024



**-X271-  
INDEX OF BRIDGE SHEETS-**

- Sheet No. 1 - General Drawing
- Sheet No. 2 - Estimate of Structure Quantities & Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Notes (Continued)
- Sheet No. 5 - Notes (Continued)
- Sheet No. 6 - Notes (Continued)
- Sheet No. 7 - Subsurface Investigation & Piling Layout
- Sheet No. 8 - Abutment No. 1 Details
- Sheet No. 9 - Abutment No. 3 Details
- Sheet No. 10 - Abutment Details (Continued)
- Sheet No. 11 - Bent Details
- Sheet No. 12 - Superstructure Details
- Sheet No. 13 - Superstructure Details (Continued)
- Sheet No. 14 - End Block, Barrier Curb & Drain Details
- Sheet No. 15 - Diaphragm Details
- Sheet No. 16 - Girder Layout and Details
- Sheet No. 17 - Slab Form Elevations
- Sheet No. 18 - Framing Diagram & Erection Data
- Sheet No. 19 - Details of Bolted Field Splices and Bearings
- Sheet No. 20 - Details of MSE Bridge End Backfill
- Sheet No. 21 - Details of Approach Slab Adjacent to Bridge
- Sheet No. 22 - Details of Approach Slab Adjacent to Bridge (Continued)
- Sheet No. 23 - Median Barrier Expansion Device Details
- Sheet No. 24 - Median Barrier Expansion Device Details (Continued)
- Sheet No. 25 - Approach Slab Joint Details
- Sheet No. 26 - Slope Protection Details
- Sheet No. 27 - Details for Mounting Signs
- Sheet No. 28 - Details for Mounting Signs (Continued)
- Sheet No. 29 - As Built Elevation Survey
- Sheet No. 30 - Details of Standard Plate No. 460.11 & No. 510.40
- Sheet No. 31 - Details of Standard Plate No. 630.70

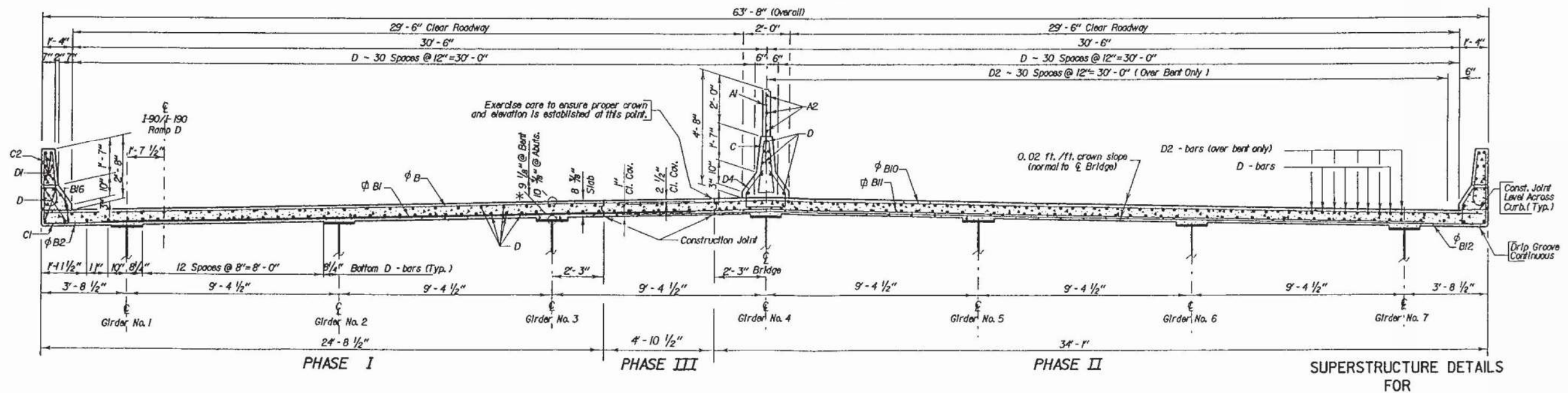
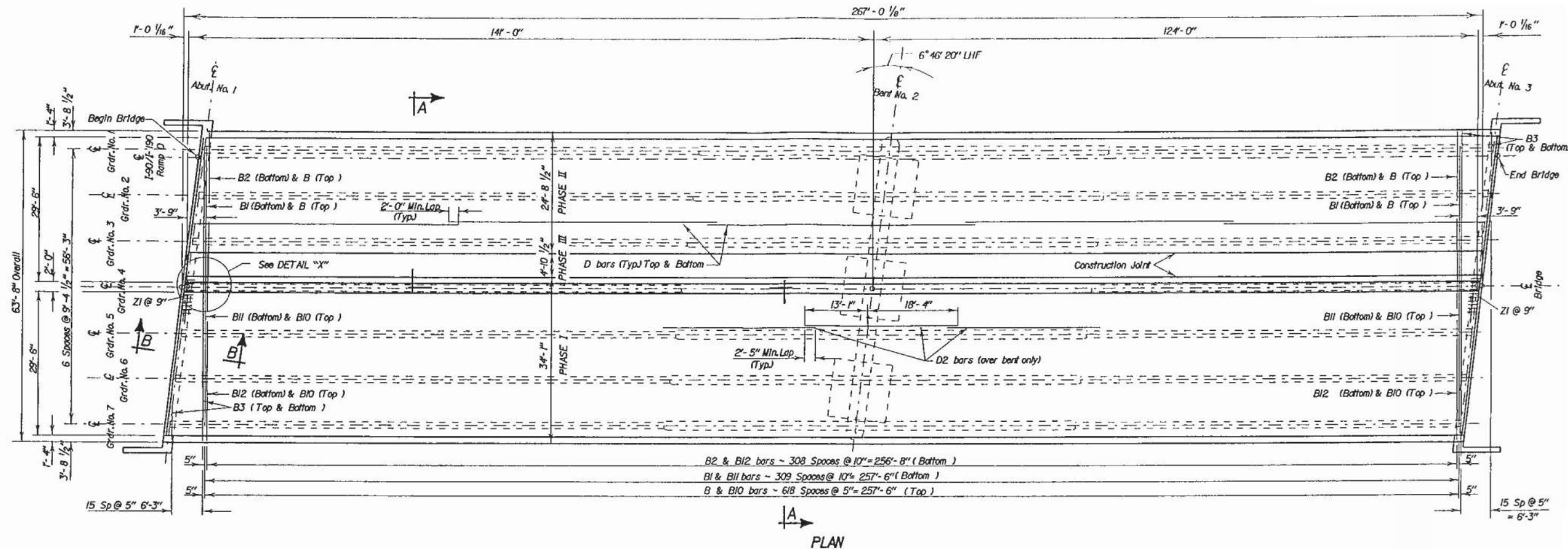
NOTE : T.S. @ C. El. = Top of Slab at Centerline Elevation  
T.S. @ C. El. = Top of Slab at Curb Elevation

**ORIGINAL CONSTRUCTION PLANS**

**△ CONSTRUCTION CHANGE**

GENERAL DRAWING  
FOR  
**267'-0 1/8" CONT. COMP. GIRDER BRIDGE**  
2 - 29'-6" ROADWAYS SEC. 25/26-T2N-R7E  
OVER I90 6° 46' 20" L.H.F. SKEW  
STR. NO. 52-410-285 IM 90-2(119) 57  
STA. 44+87.59 TO 47+54.61 HS25-44  
PCEMS NO. 3453 (& ALT.)  
PENNINGTON COUNTY  
S. D. DEPT. OF TRANSPORTATION  
- X271- JULY 1999

△ Revised March 27, 2000



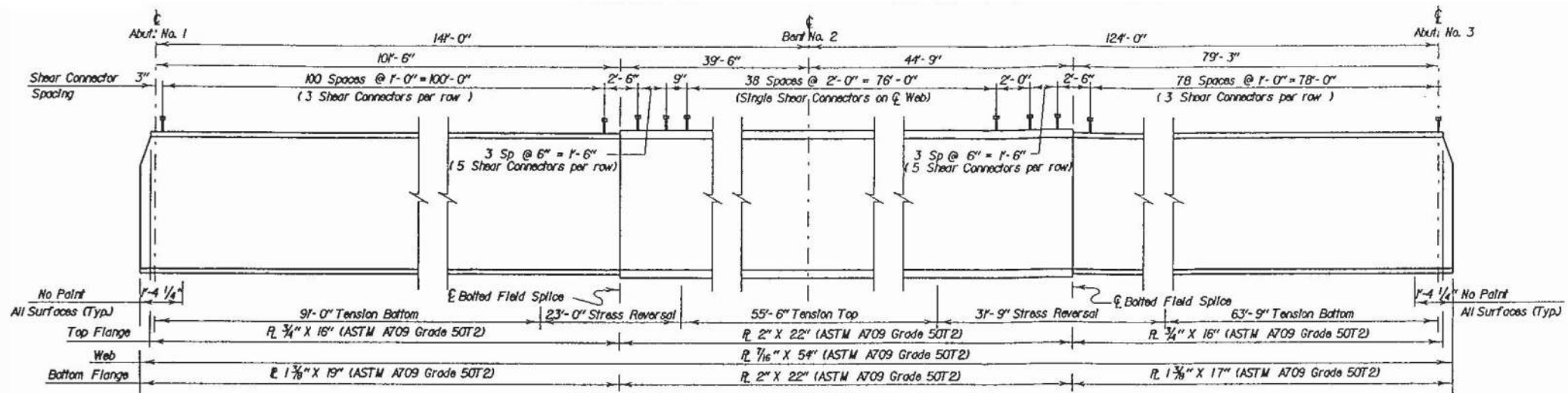
\* Dimensions are at  $\epsilon$  bearing; at other points along the girders this dimension shall be computed as shown on the Slab Form Elevations Sheet.

NOTE: All Barrier Curb Details Shown on sheet 14 of 31.

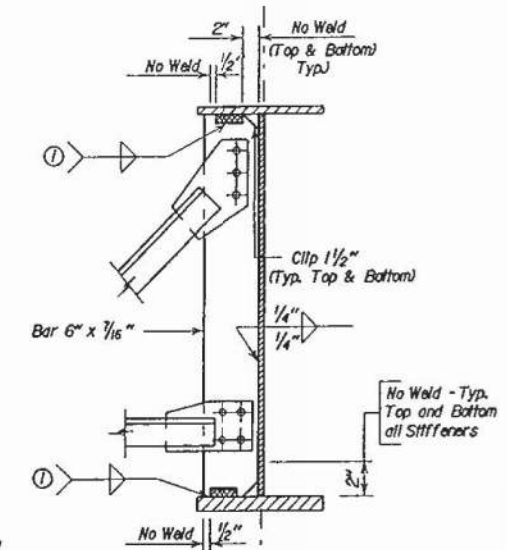
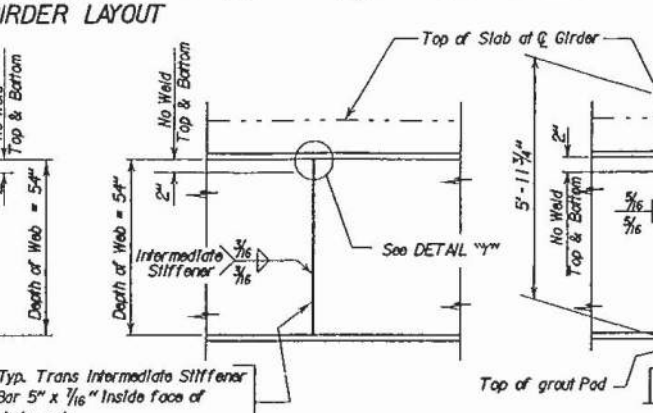
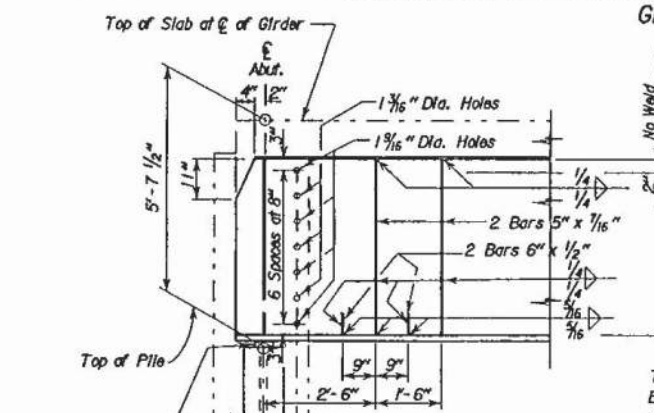
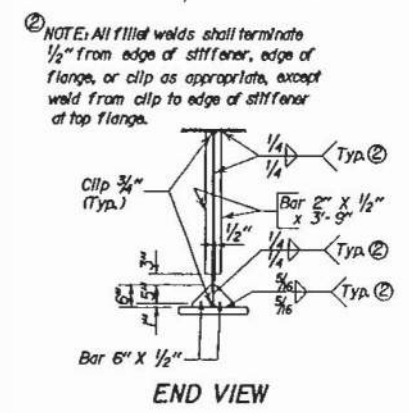
NOTE- This sheet is to be used in conjunction with sheet 13 of 31.

$\phi$  Min. Lap = 2'-6"  
 $\psi$  Min. Lap = 3'-3"

267'-0 1/8" CONT. COMP. GIRDER BRIDGE  
STR. NO. 52-410-285  
PENNINGTON COUNTY



- NOTES -**
- See Sheet No. 15 of 31 for Diaphragm Details.
  - See Sheet No. 18 of 31 for spacing of Diaphragms and Stiffeners.
  - All dimensions shown are horizontal or vertical.
  - All Stiffeners and Girder Ends shall be made normal to flanges, except bearing stiffeners at bent & abutments shall be vertical.
  - Stiffeners to have tight fit top and bottom.
  - Dimensions shown are for steel temperature of 45° F.



NOTE: All fillet welds shall terminate 1/2" from edge of stiffener, edge of flange, or clip as appropriate, except weld from clip to edge of stiffener at top flange.

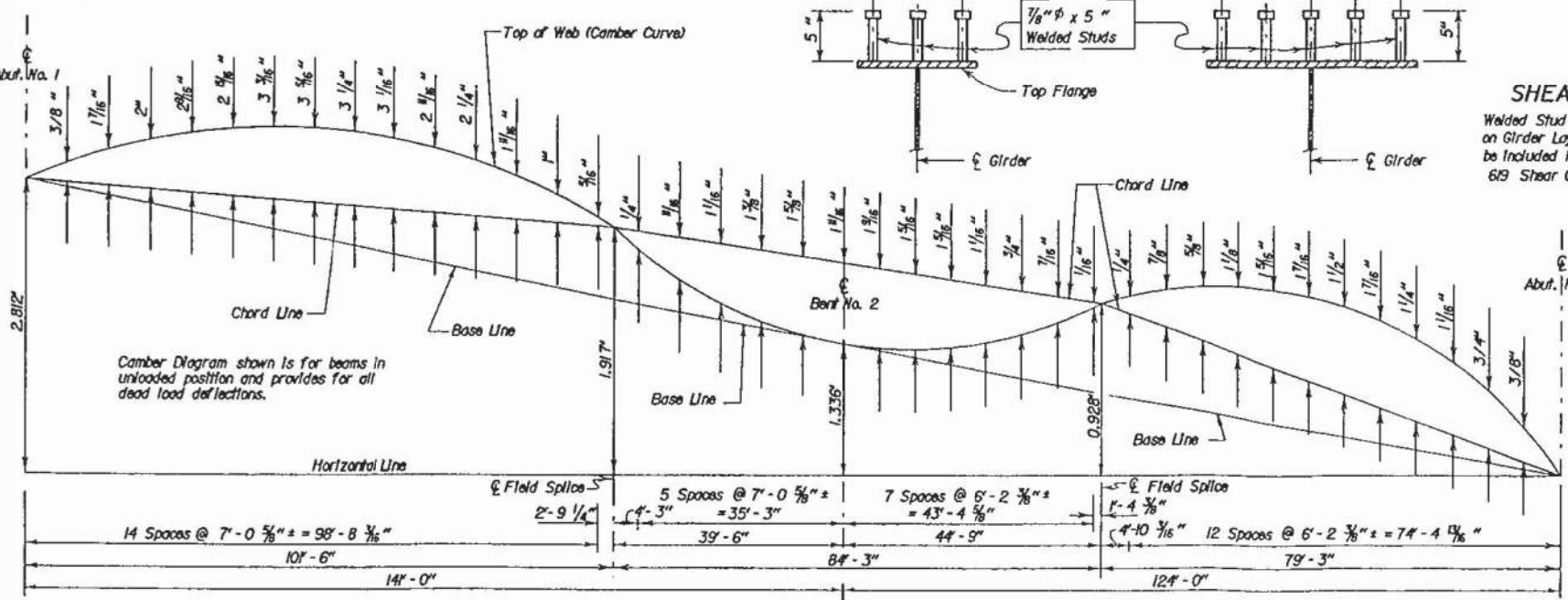
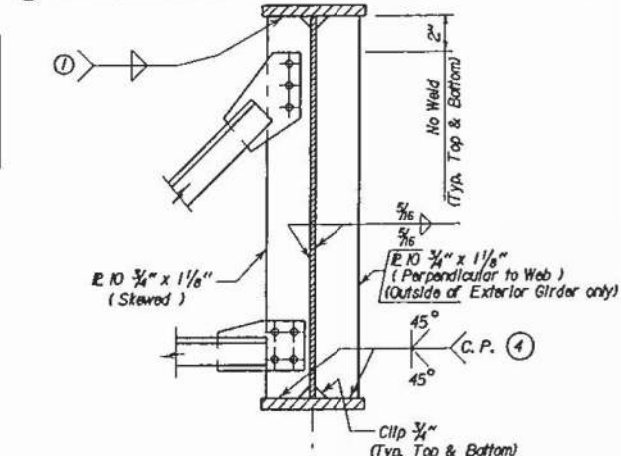
Bar 6" x 1" x 1'-9" Abut. No. 1, 1'-7" Abut. No. 3 Slip loose for Field Weld. See DETAIL "X" on Sheet No. 10 of 31.

NOTE: All fillet welds attaching diaphragm or bearing stiffeners to girder flanges, shall terminate 1/2" from edge of stiffener, edge of flange, or clip as appropriate. Weld size to be as indicated in the table of Flange to Web Welds.

NOTE: All fillet welds attaching diaphragm or bearing stiffeners to girder flanges, shall terminate 1/2" from edge of stiffener, edge of flange, or clip as appropriate. Weld size to be as indicated in the table of Flange to Web Welds.

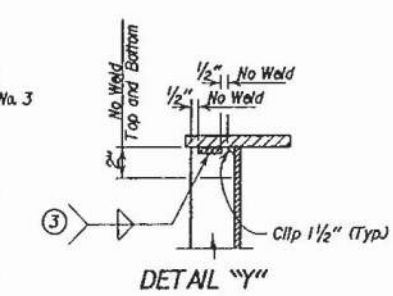
FLANGE TO WEB WELDS	Fillet Welds
Flange Thickness	
3/4"	1/4"
1 1/8"	3/8"
2"	5/8"

Alternately, Mill Stiffeners to Bear & use Fillet weld, same as at Top Flange.



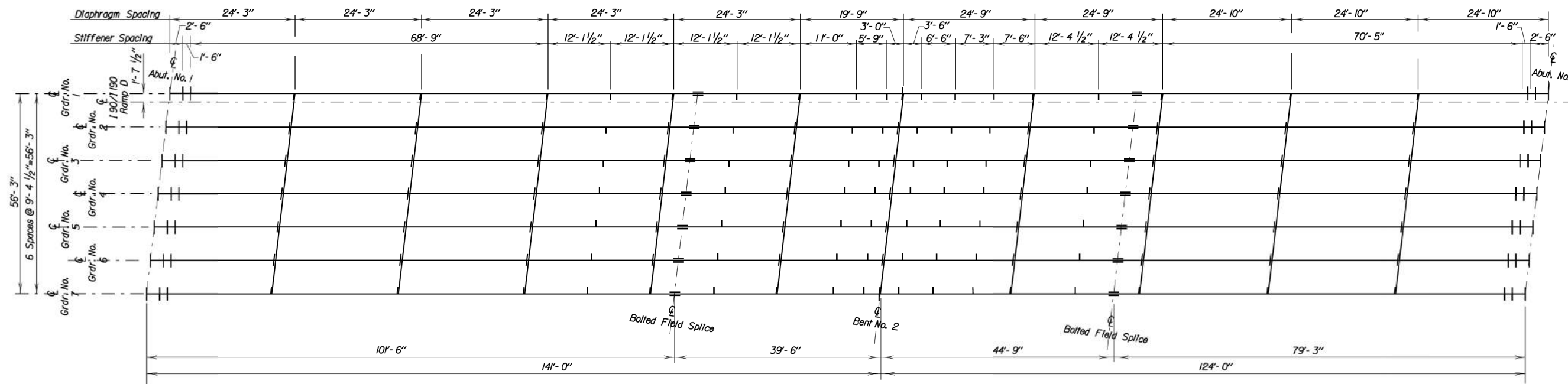
**SHEAR CONNECTOR DETAILS**

Welded Stud Shear Connectors are spaced as shown on Girder Layout. Payment for Shear Connectors will be included in the Lump Sum bid for Structural Steel. 689 Shear Connectors per Girder.



**267'-0 1/8" CONT. COMP. GIRDER BRIDGE**  
STR. NO. 52-410-285  
PENNINGTON COUNTY

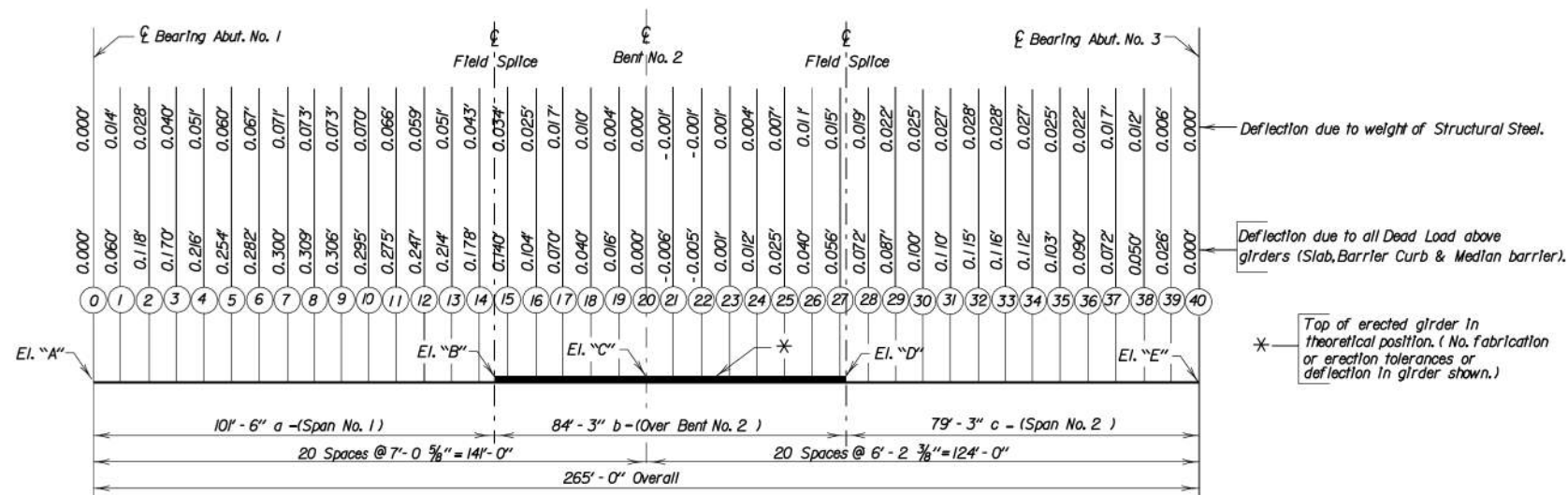




FRAMING DIAGRAM

Girder No.	ELEVATIONS (Top of Girder)					SLOPES (%)		
	"A"	"B"	"C"	"D"	"E"	a	b	c
1	3397.660	3396.864	3396.289	3395.879	3394.849	0.887	-1.169	-1.168
2	3397.860	3397.063	3396.488	3396.079	3395.050	0.888	-1.168	-1.167
3	3398.059	3397.262	3396.687	3396.279	3395.251	0.888	-1.167	-1.167
4	3398.258	3397.462	3396.886	3396.479	3395.451	0.887	-1.167	-1.166
5	3398.082	3397.286	3396.710	3396.304	3395.277	0.887	-1.166	-1.164
6	3397.906	3397.110	3396.534	3396.128	3395.103	0.887	-1.166	-1.162
7	3397.730	3396.934	3396.358	3395.953	3394.929	0.887	-1.164	-1.161

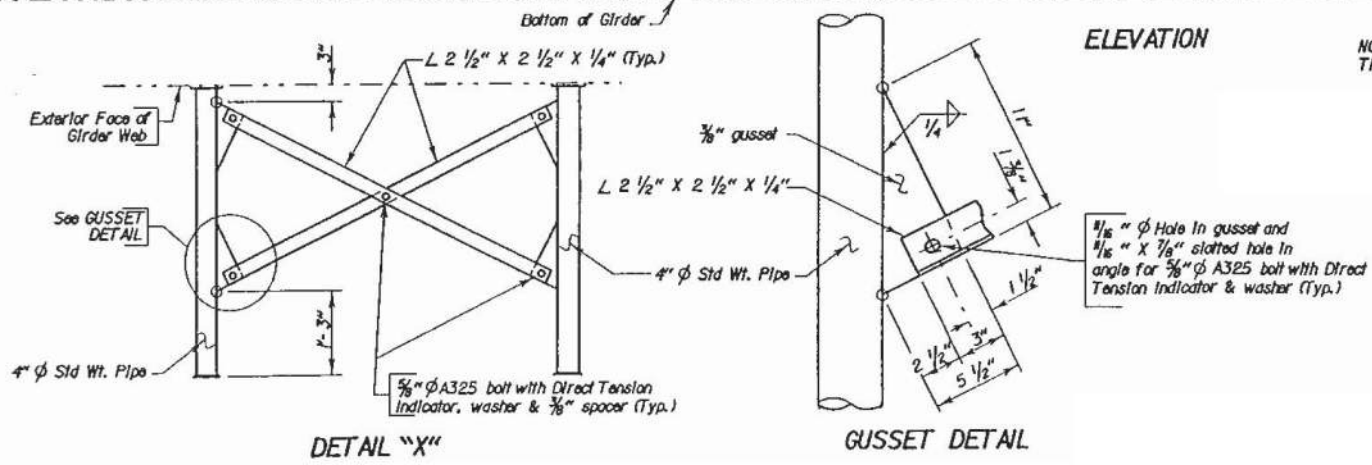
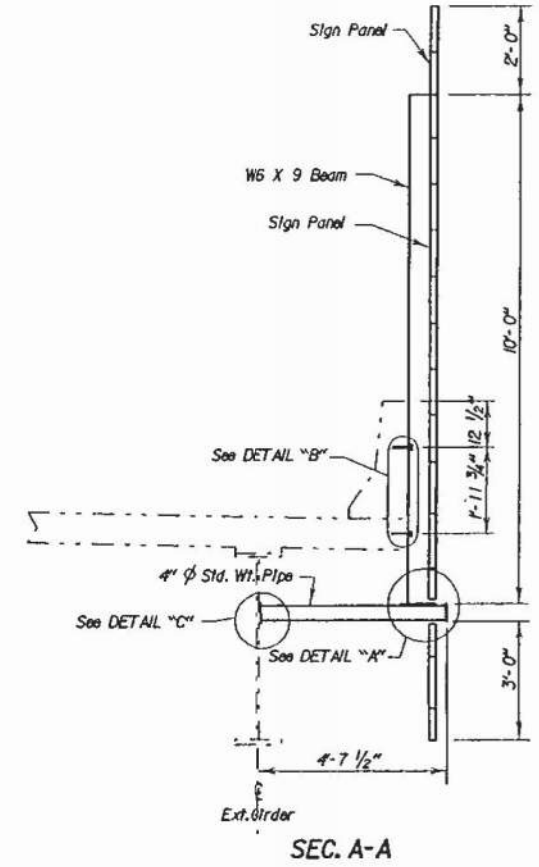
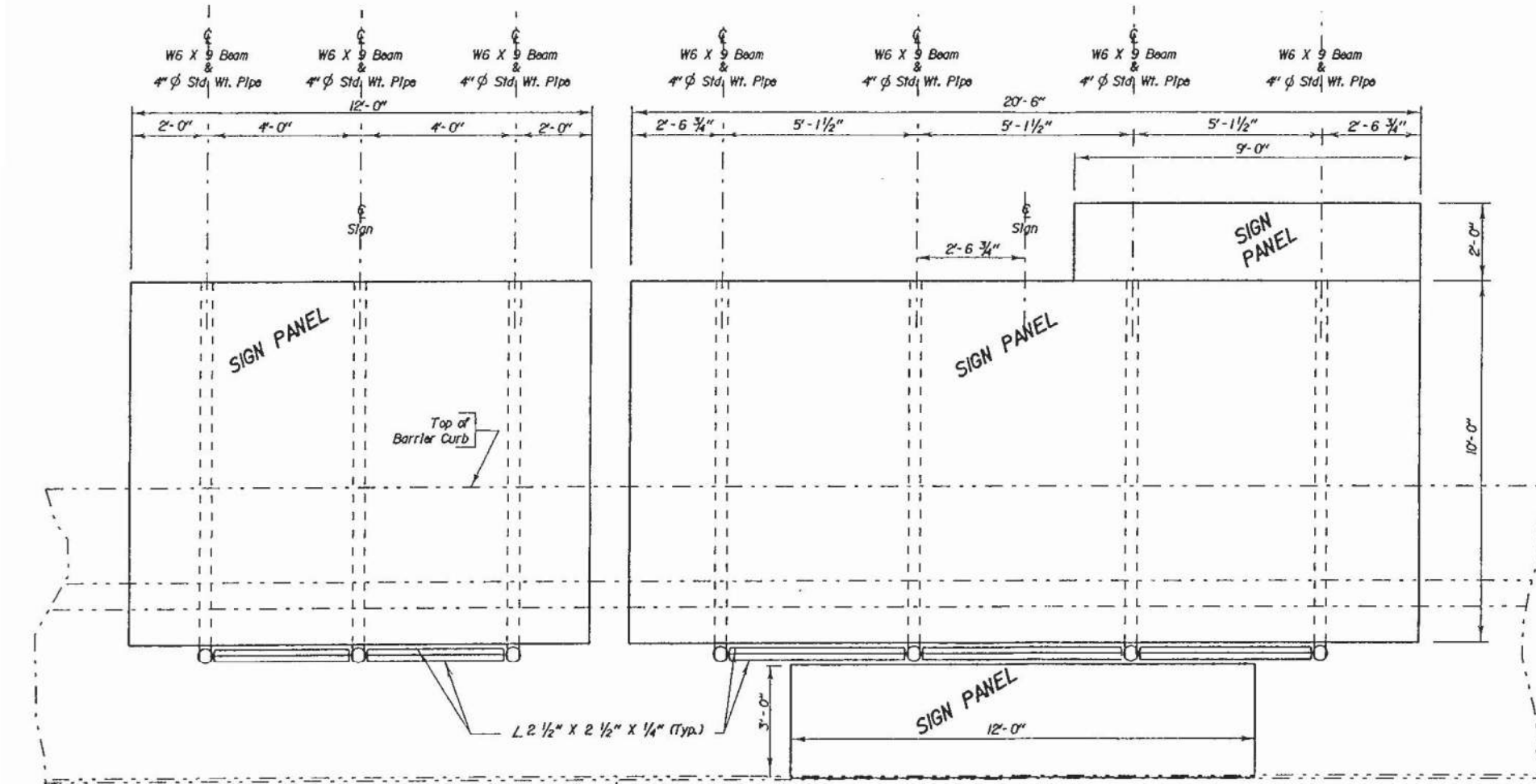
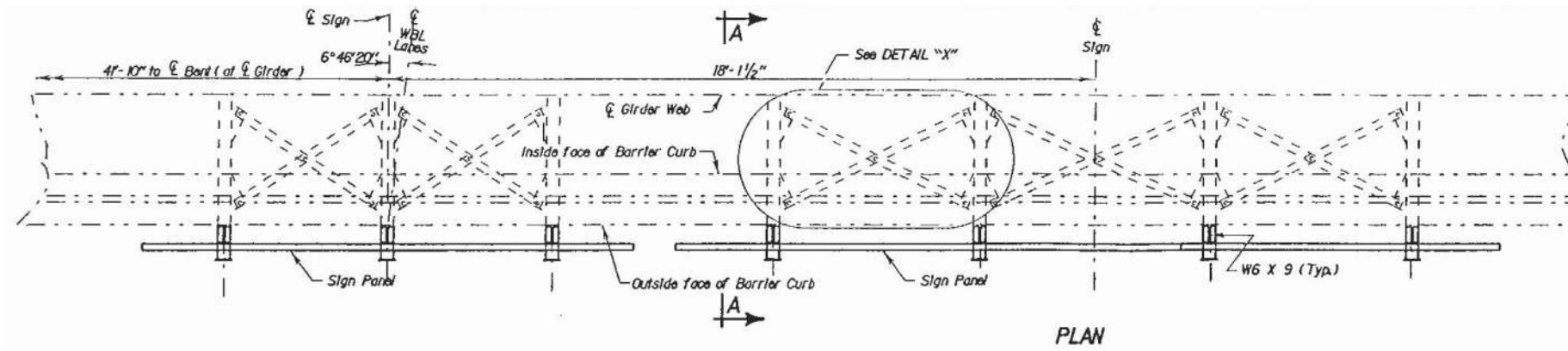
NOTE - These elevations and slopes occur at a time after girder erection is completed but prior to any placement of concrete. Slopes shown are an imaginary straight line between points at beam ends and are (+) towards increasing stations.



GIRDER ERECTION DIAGRAM

## ORIGINAL CONSTRUCTION PLANS

FRAMING DIAGRAM & ERECTION DATA  
FOR  
267'-0 1/8" CONT. COMP. GIRDER BRIDGE  
STR. NO. 52-410-285  
PENNINGTON COUNTY

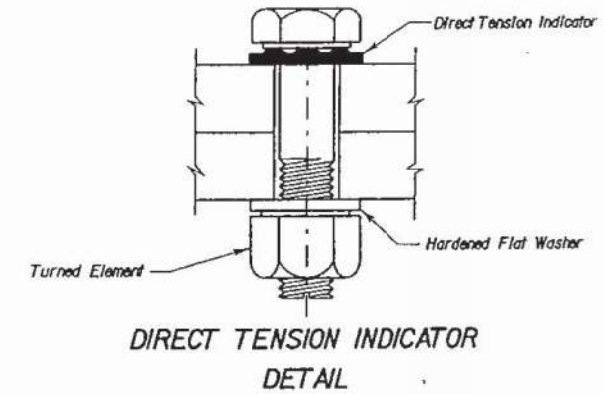
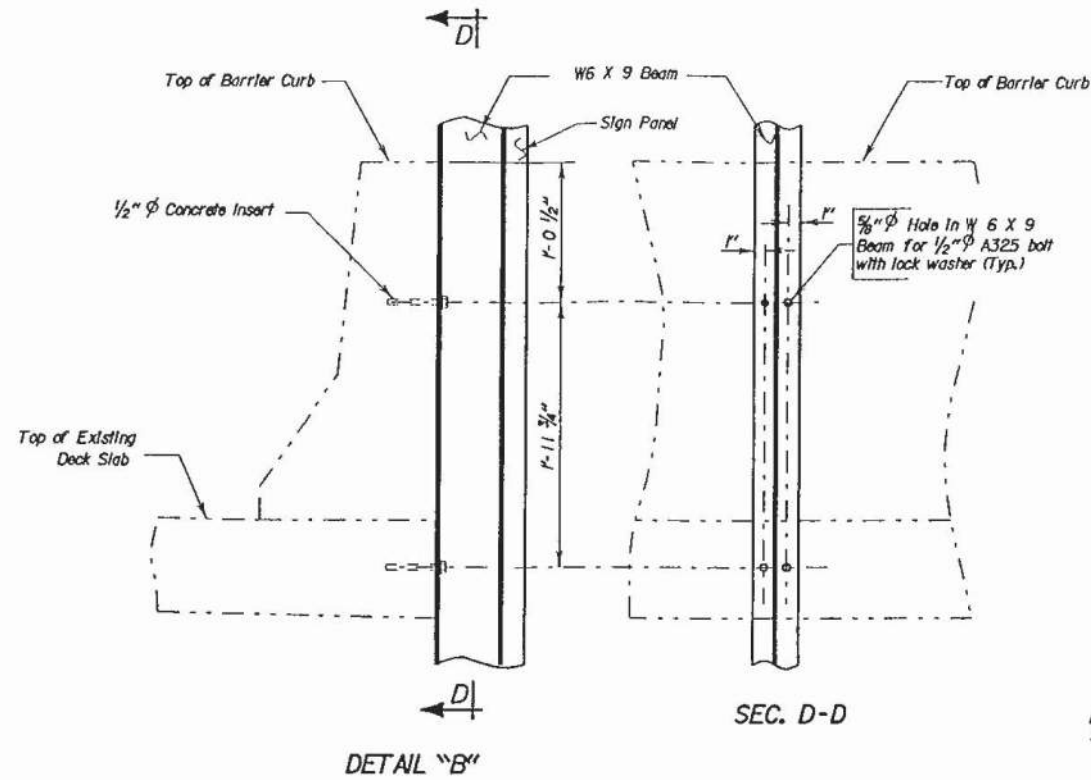
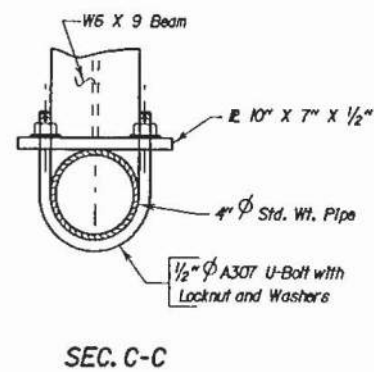
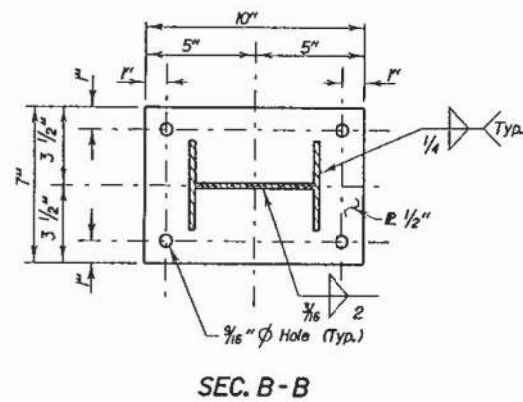
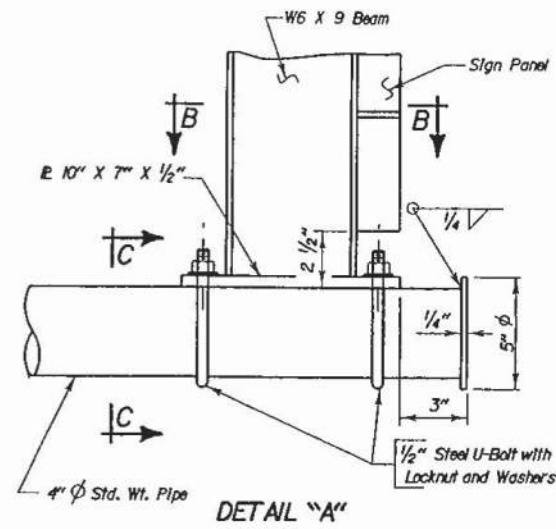


NOTE:  
THIS sheet is to be used in conjunction with sheet 28 of 31.

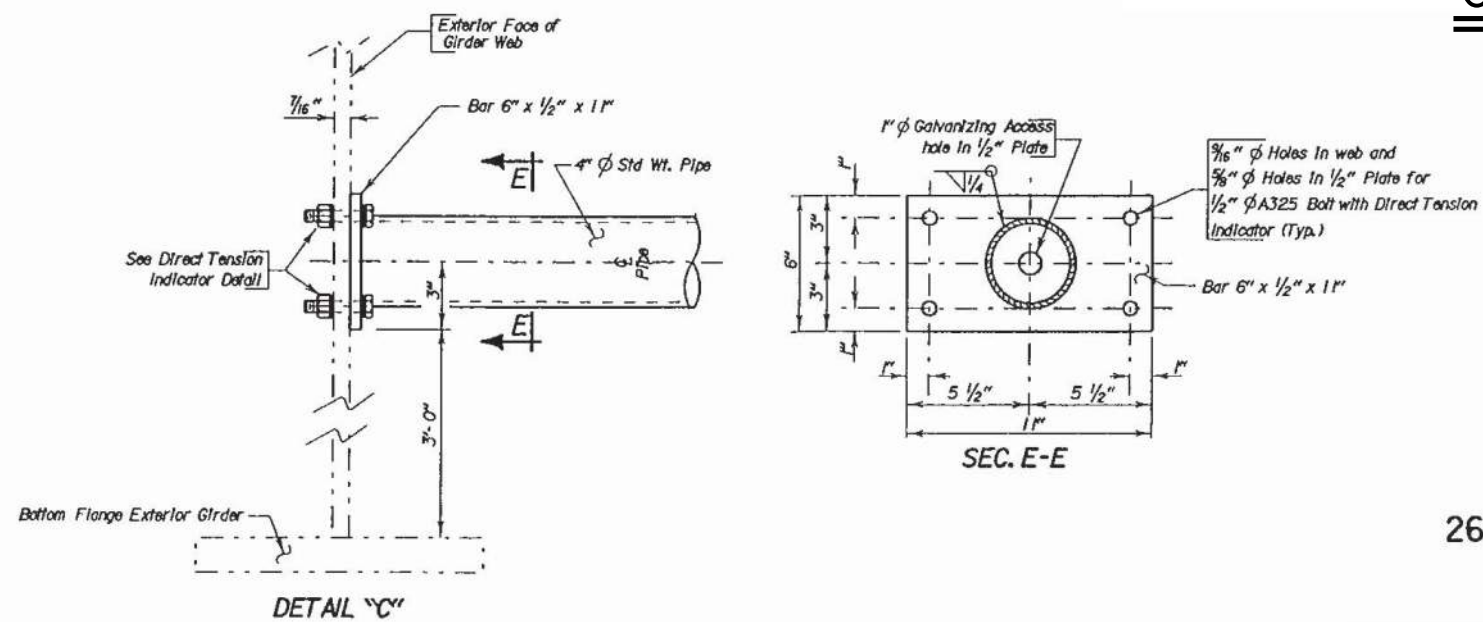
## ORIGINAL CONSTRUCTION PLANS

NOTE:  
For informational purposes only, the estimated weight of Structural Steel in sign brackets & hardware is 1439 lbs.

DETAILS FOR MOUNTING SIGNS  
FOR  
267'-0 1/8" CONT. COMP. GIRDER BRIDGE  
STR. NO. 52-410-285  
PENNINGTON COUNTY

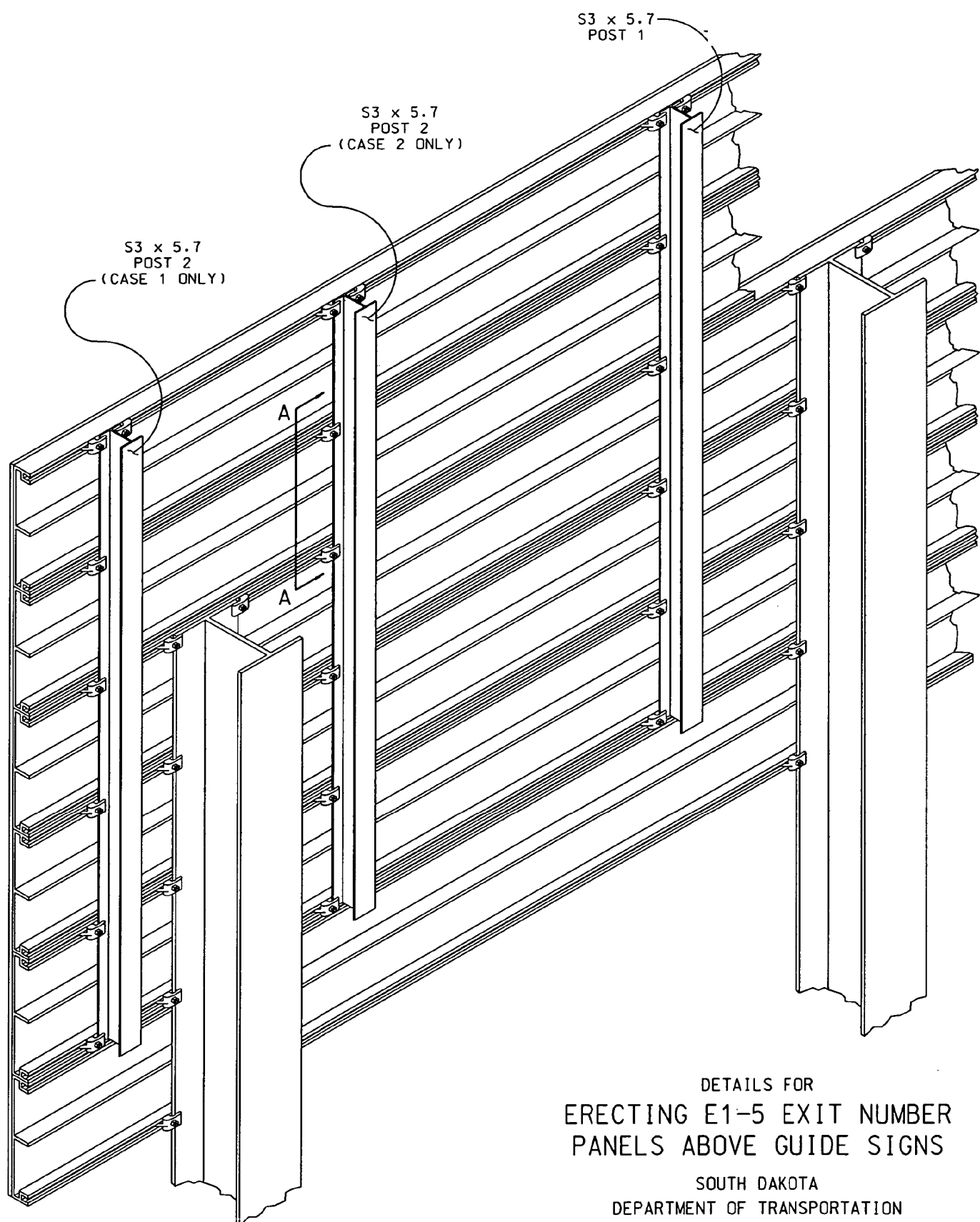
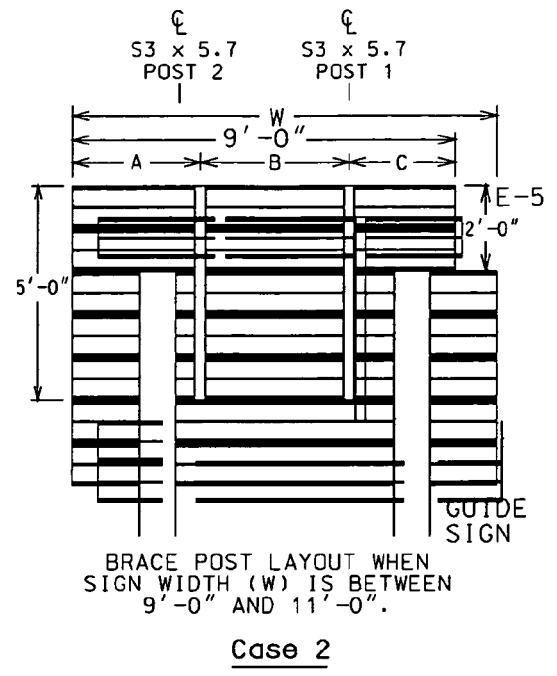
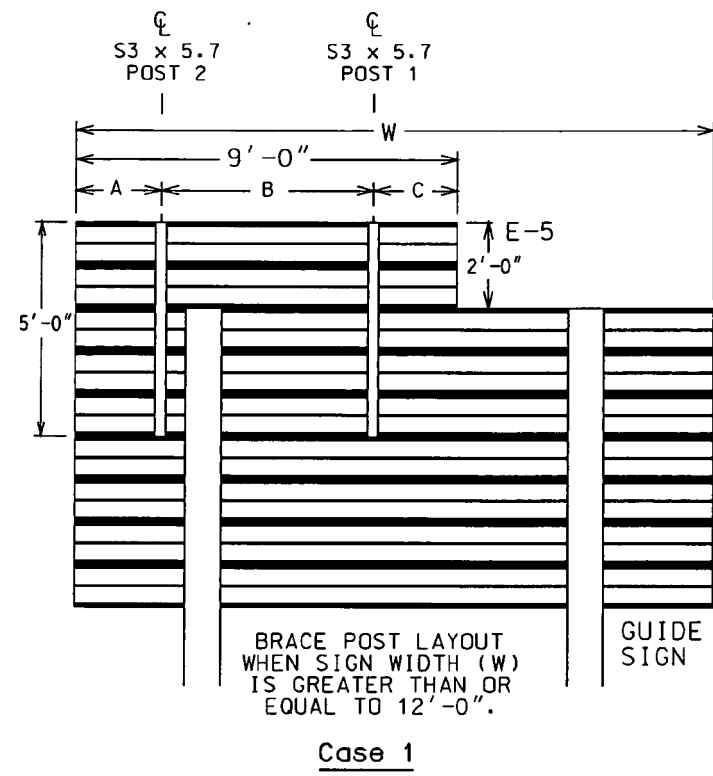


NOTE:  
See Section S: Permanent Signing Plans for sign panel attachment details.



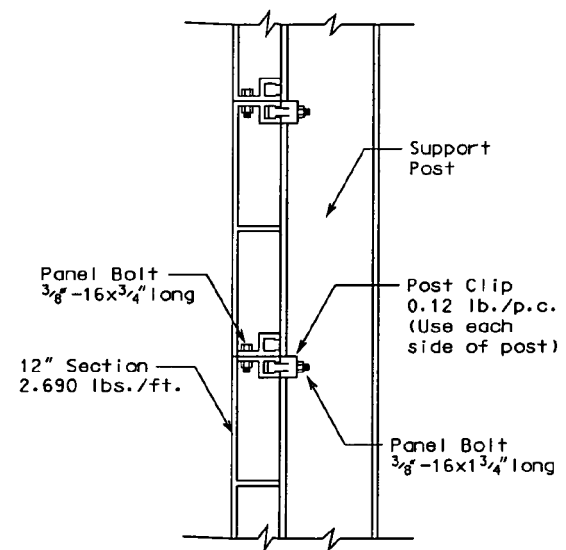
## ORIGINAL CONSTRUCTION PLANS

DETAILS FOR MOUNTING SIGNS (CONTINUED)  
FOR  
267'-0 1/8" CONT. COMP. GIRDER BRIDGE  
STR. NO. 52-410-285  
PENNINGTON COUNTY



	SIGN WIDTH (W)	A	B	C
CASE 2	9'-0"	2'-6"	4'-0"	2'-6"
CASE 2	10'-0" to 11'-0"	3'-0"	3'-6"	2'-6"
CASE 1	12'-0" to 13'-0"	1'-6"	5'-6"	2'-0"
CASE 1	14'-0" and up	2'-0"	5'-0"	2'-0"

• The A dimension may be adjusted (1" max.) to allow room for post clips.



**Section A-A**

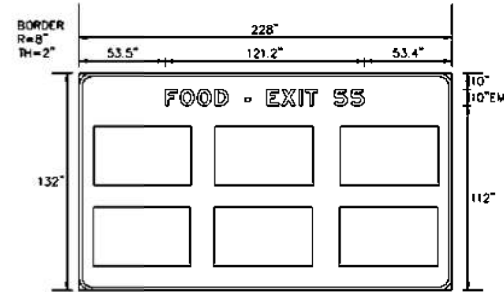
SIGN #	DESCRIPTION	STATION	LOCATION	LANE	FLANGED POST S3 X 5.7

DETAILS FOR  
ERECTING E1-5 EXIT NUMBER  
PANELS ABOVE GUIDE SIGNS

SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION

**ORIGINAL CONSTRUCTION PLANS**

SIGN DETAIL  
1/5



SIGN NUMBER	WB-025, EB-017
WIDTH x HEIGHT	19'-0" x 11'-0"
BORDER WIDTH	2
CORNER RADIUS	8
MOUNTING	Ground
BACKGROUND	TYPE: IV COLOR: Blue
LEGEND BORDER	TYPE: IV COLOR: White

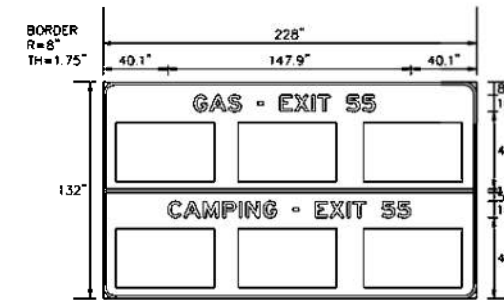
SYMBOL	POST	X	Y	WIDTH	HEIGHT

Panel Style: Freeway Logo 615  
Dimensions are in inches unless otherwise noted.

Letter locations are based on the lower left corner.

LETTER POSITIONS (X)															LENGTH	SPACING	
F	O	O	D	-	E	X	I	T	S	S						EM 2000	10
53.5	62.6	73	83.8	91.9	101.9	105.4	115.4	124.2	135	138.8	146.2	156.2	166.5				

SIGN DETAIL  
1/5



SIGN NUMBER	WB-024, EB-018
WIDTH x HEIGHT	19'-0" x 11'-0"
BORDER WIDTH	1.75
CORNER RADIUS	8
MOUNTING	Ground
BACKGROUND	TYPE: IV COLOR: Blue
LEGEND BORDER	TYPE: IV COLOR: White

SYMBOL	POST	X	Y	WIDTH	HT

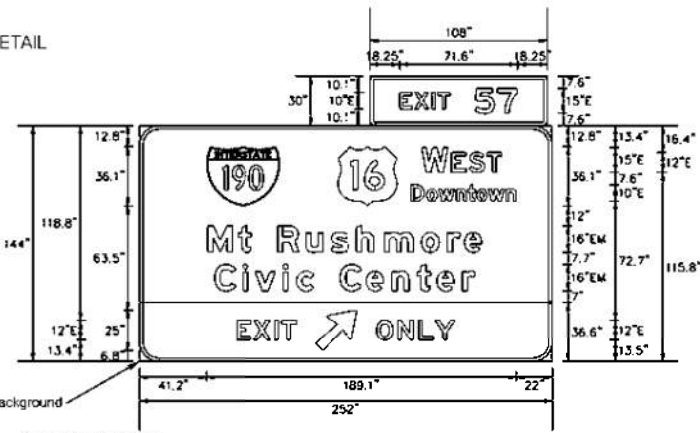
Panel Style: Freeway Logo Gas  
Dimensions are in inches unless otherwise noted.

Letter locations are based on the lower left corner.

LETTER POSITIONS (X)															LENGTH	SPACING	
G	A	S	-	E	X	I	T	S	S							E 2000	10
55.8	65.3	76.6	84.7	94.7	98.2	108.2	117.1	127.8	131.3	138.8	148.8	158.3					
C	A	M	P	I	N	G	-	E	X	I	T	S	S			E 2000	10
40.1	49.6	61.5	73.5	83.3	87.7	98.1	106.2	116.2	119.7	129.7	138.6	149.3	152.8	160.3	170.3	179.8	

## ORIGINAL CONSTRUCTION PLANS

SIGN DETAIL  
1/5



SIGN NUMBER	WB-027
WIDTH x HEIGHT	21'-0" x 12'-0"
BORDER WIDTH	2
CORNER RADIUS	12
MOUNTING	Overhead
BACKGROUND	TYPE: XI COLOR: Green-Yellow
LEGEND BORDER	TYPE: XI COLOR: White/Black/White

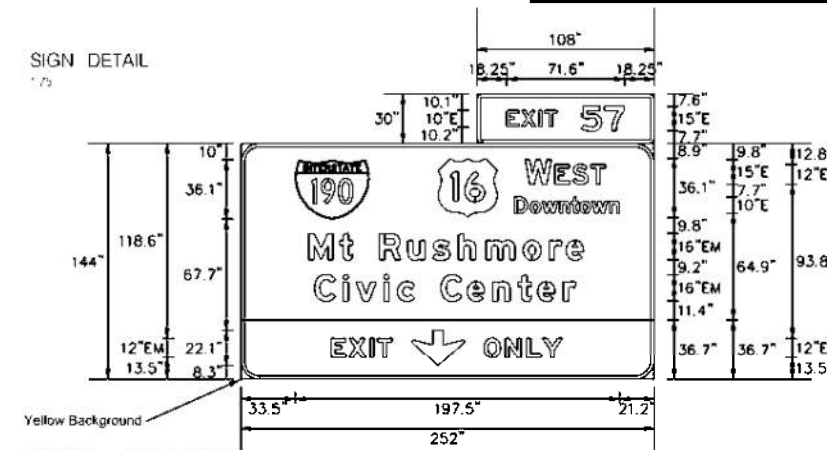
SYMBOL	POST	X	Y	WIDTH	HT
MT_1	0	41.2	95.3	45.1	36.1
MT_4	0	121.6	95.3	36.1	36.1
AR_Type A	315	108.1	6.8	20.2	31.6

Panel Style: Guide Way Overhead 55  
Dimensions are in inches unless otherwise noted.

Letter locations are based on the lower left corner.

LETTER POSITIONS (X)															LENGTH	SPACING	
E	X	I	T	S	7											E 2000	10,15
18.2	27.1	37.8	41.3	63.8	77.6												
W	E	S	T													E 2000	15,12
172.7	190.7	201.4	212.5														
D	O	W	N	L	O	W	N									E 2000	64.2
166.1	175.8	183	193.7	200.8	206.1	213.3	224										
M	T	R	U	S	H	M	O	R	E							EM 2000	167.4
41.9	60.6	68.9	84.9	102.2	117.4	132.9	149.9	172.4	188.3	198.7							
C	I	V	I	C	C	E	N	T	E	R						EM 2000	159.5
46	63.4	71.3	85.2	96.4	106.9	122.9	138.9	154.5	169.8	181.8	197.3						
E	X	I	T													E 2000	36.8
59.6	70.2	83.1	87.3														
O	N	L	Y													E 2000	48
145.1	158	170.8	180.8														

SIGN DETAIL  
1/5



SIGN NUMBER	WB-027
WIDTH x HEIGHT	21'-0" x 12'-0"
BORDER WIDTH	2
CORNER RADIUS	12
MOUNTING	Overhead
BACKGROUND	TYPE: XI COLOR: Green-Yellow
LEGEND BORDER	TYPE: XI COLOR: White/Black/White

SYMBOL	POST	X	Y	WIDTH	HT
MT_4	0	120.5	99.1	36.1	36.1
MT_1	0	33.5	98	45.1	36.1
ARDOWN	0	104.5	8.3	32	22.1

Panel Style: Guide Way Overhead 55  
Dimensions are in inches unless otherwise noted.

Letter locations are based on the lower left corner.

LETTER POSITIONS (X)															LENGTH	SPACING	
E	X	I	T	S	7											E 2000	10,15
18.2	27.1	37.8	41.3	63.8	77.6												
W	E	S	T													E 2000	15,12
173.6	191.6	202.3	213.3														
D	O	W	N	L	O	W	N									E 2000	64.1
166.9	176.6	183.8	194.5	201.6	206.9	214.1	224.8										
M	T	R	U	S	H	M	O	R	E							EM 2000	167.4
41.7	60.4	68.8	84.8	102	117.2	132.8	149.7	172.3	188.1	198.5							
C	I	V	I	C	C	E	N	T	E	R						EM 2000	159.4
45.3	62.7	70.6	87.5	95.7	106.2	122.2	138.2	153.8	169.1	181.1	196.6						
E	X	I	T													E 2000	37.1
55.6	66.1	79.1	83.6														
O	N	L	Y													E 2000	47.9
148.5	161.4	174.5	184.1														

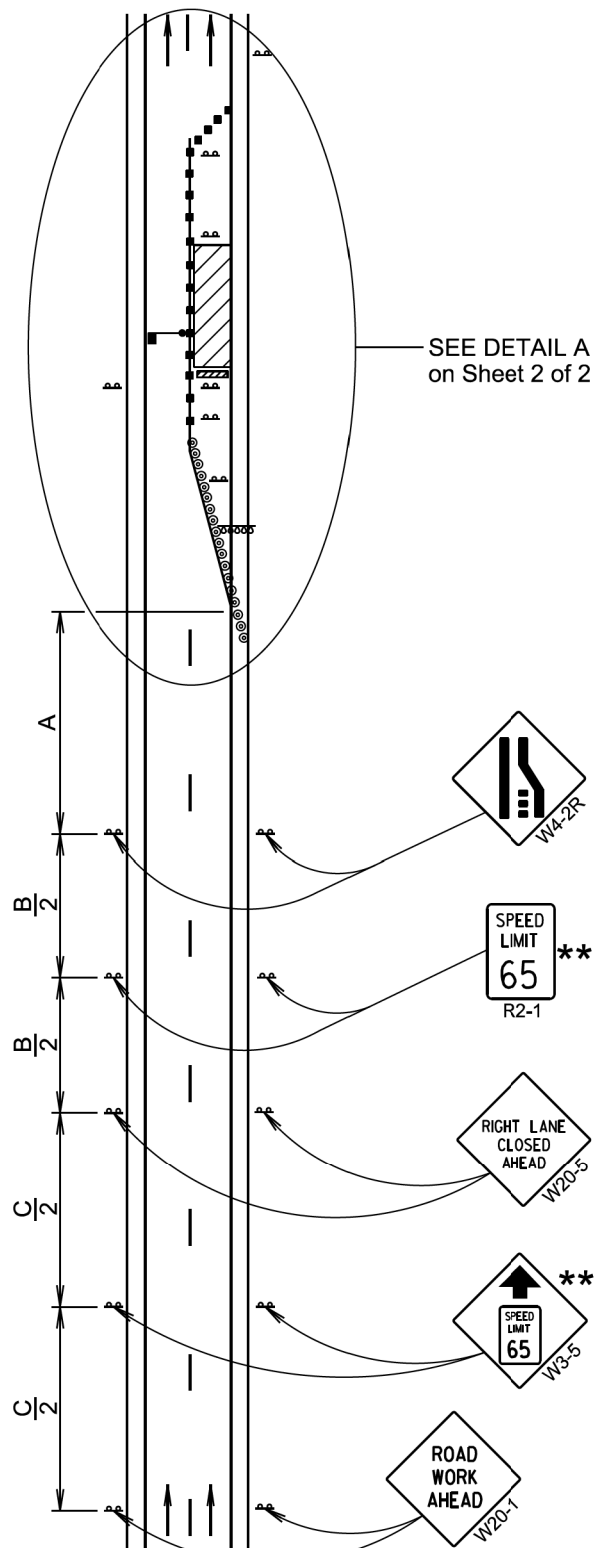
Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet)		
	(A)	(B)	(C)
0 - 30	200		
35 - 40	350		
45 - 50	500		
55	750		
60 - 65	1000		
70 - 80	1000	1500	2640

\*\* 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.



September 22, 2021

Published Date: 2025

SD  
DOT

**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.

■ Flagger (As Necessary)

⊙ Reflectorized Drum

■ Channelizing Device

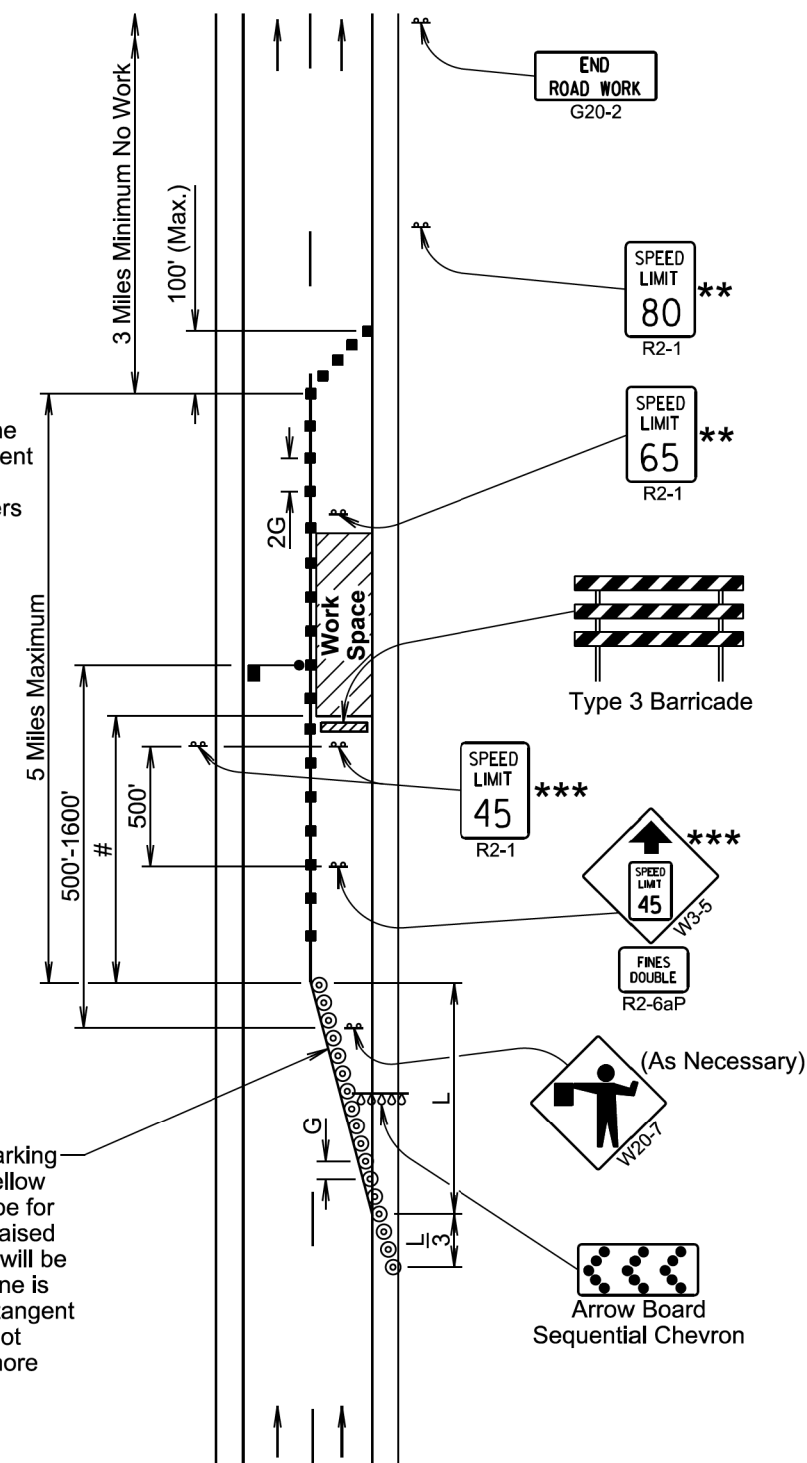
# The Work Space will be a minimum of 500' from the end of the taper.

The FLAGGER sign will be used whenever there is a Flagger present.

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

September 22, 2021

Published Date: 2025

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**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)		Taper Length (Feet) (L)
	(A)	(B)	
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

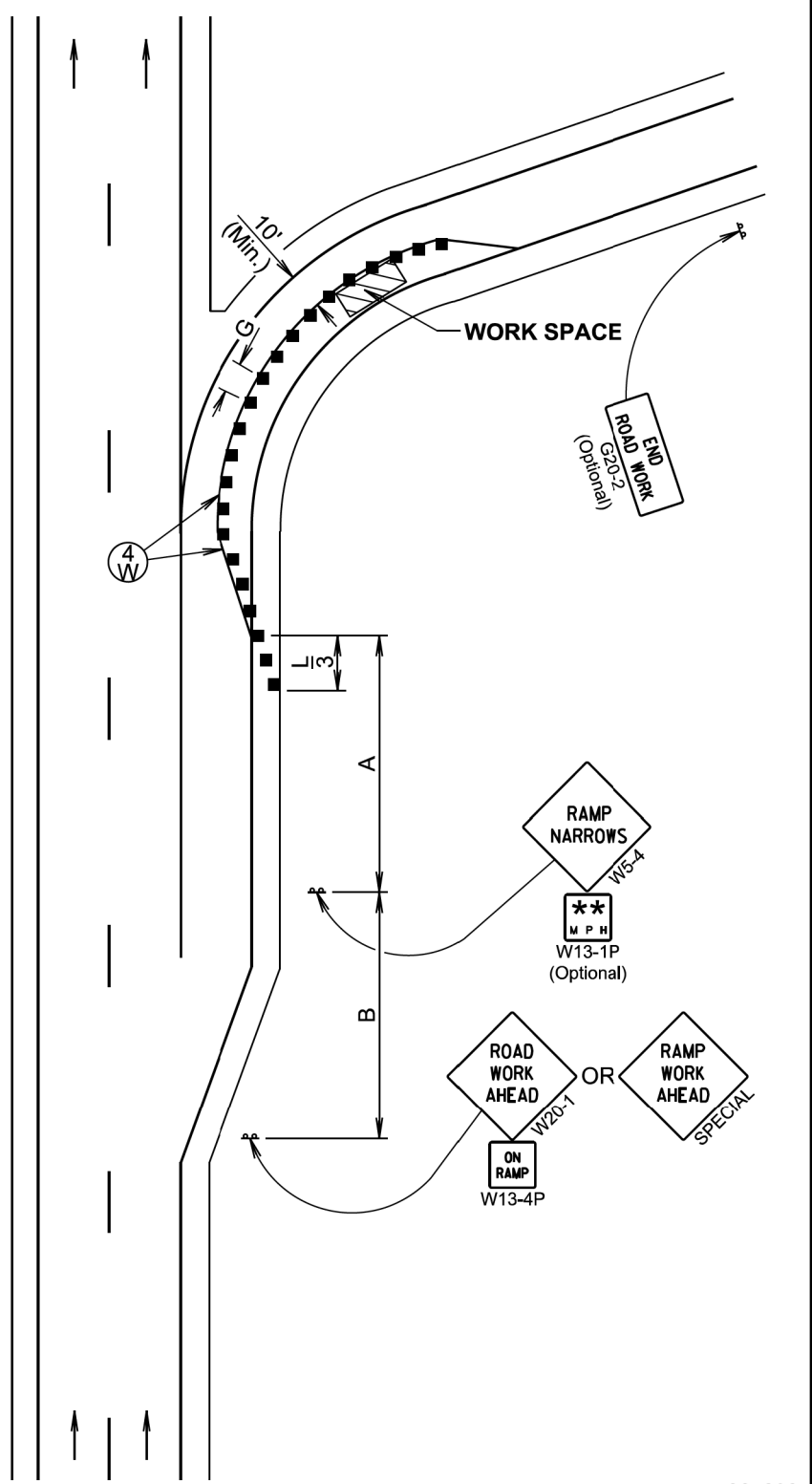
④ W 4" White Temporary Pavement Marking

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

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

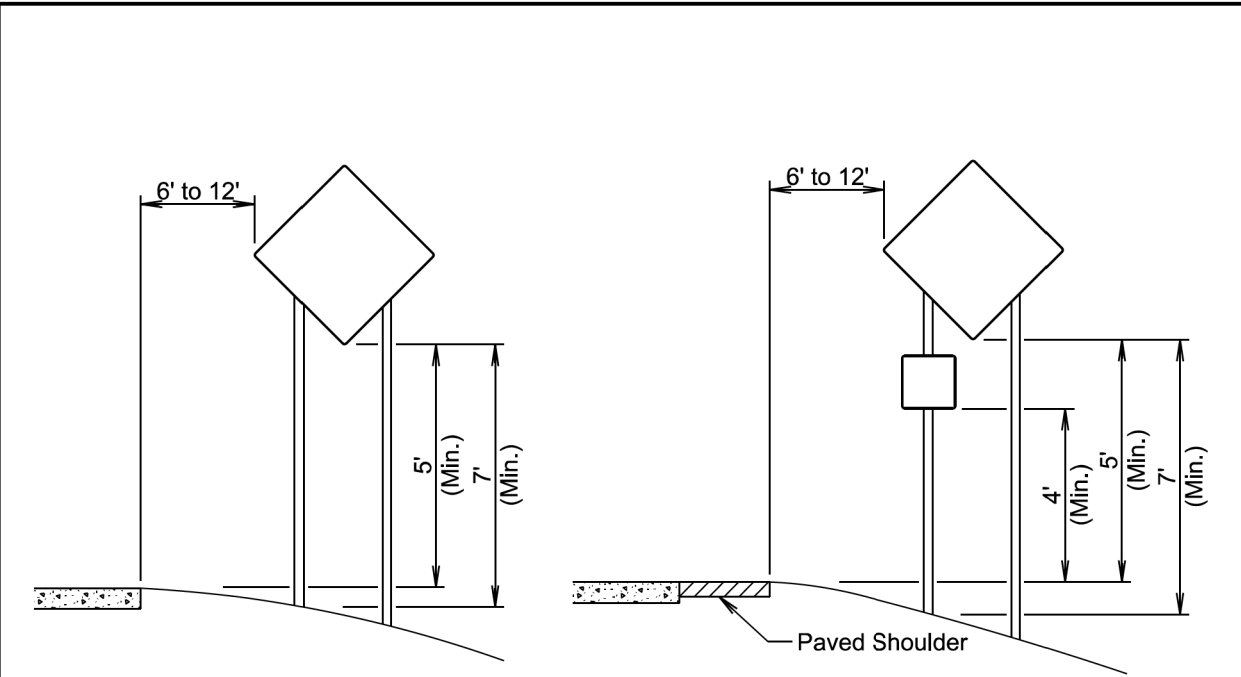
The channelizing devices will be drums or 42" cones if traffic control must remain overnight.

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



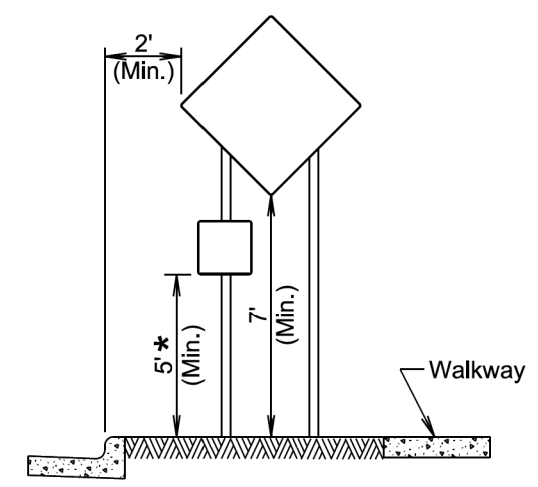
January 22, 2021

SD DOT	PARTIAL EXIT RAMP CLOSURE	PLATE NUMBER 634.69
		Sheet 1 of 1
Published Date: 2025		

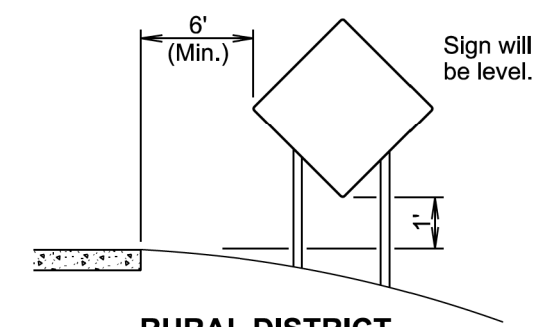


RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

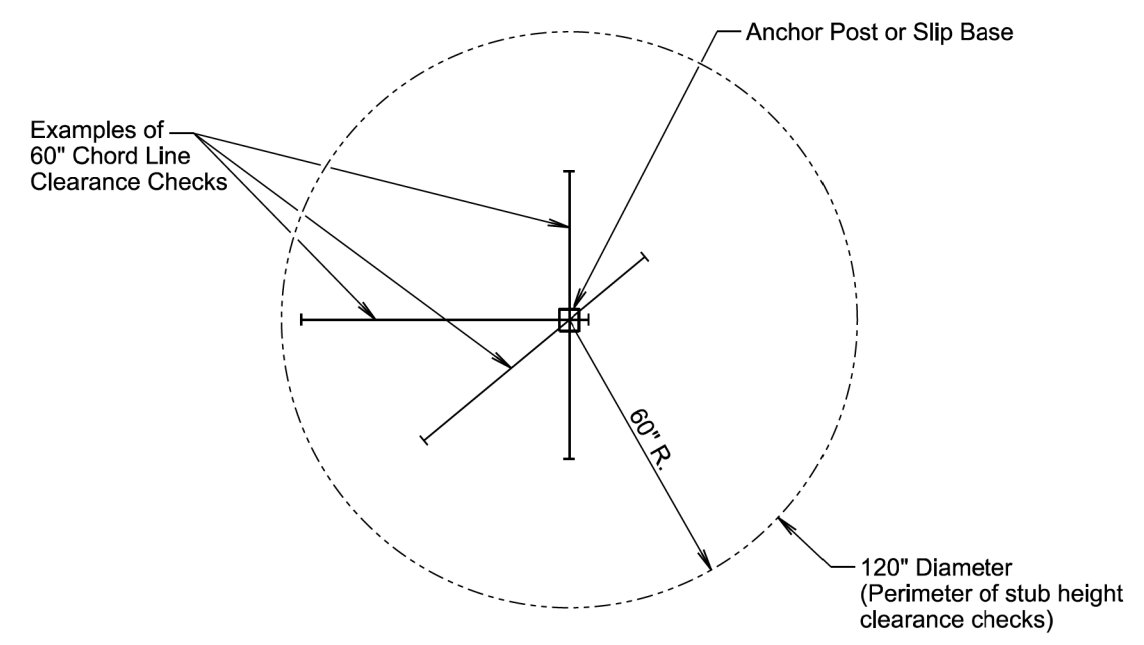


RURAL DISTRICT 3 DAY MAXIMUM

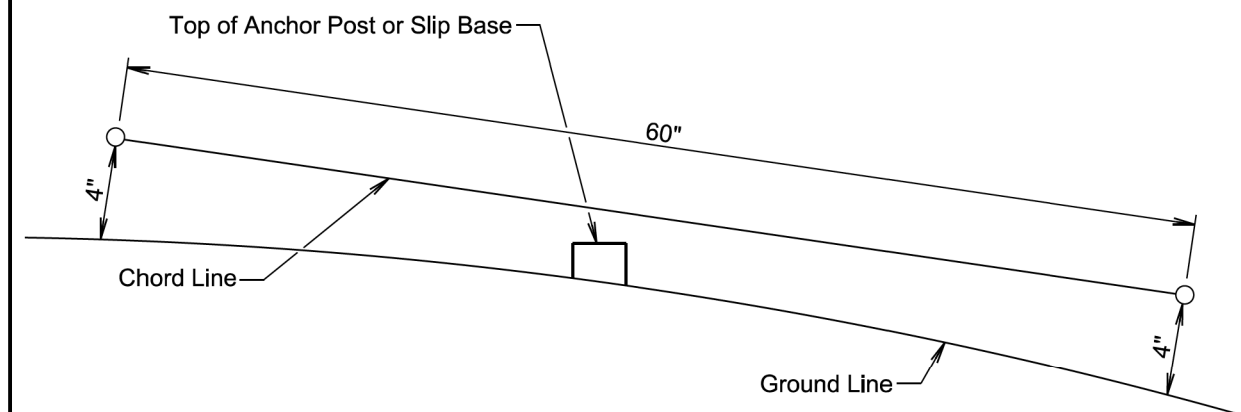
\* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

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



**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

<i>Published Date: 2025</i>	<b>S D D O T</b>	<b>BREAKAWAY SUPPORT STUB CLEARANCE</b>	PLATE NUMBER 634.99
			Sheet 1 of 1