

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	029S-288	1	25

Plotting Date: 08/22/2017

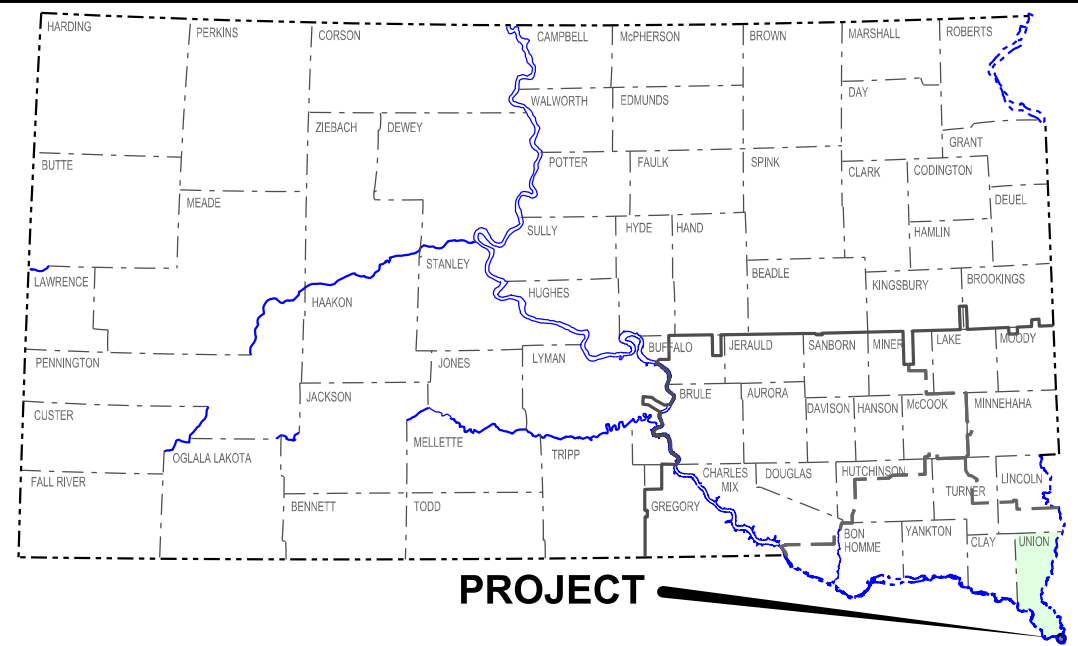
PLANS FOR PROPOSED
PROJECT 029S-288
INTERSTATE 29 SBL
UNION COUNTY

BRIDGE REPAIR
PCN I4H9

INDEX OF SHEETS

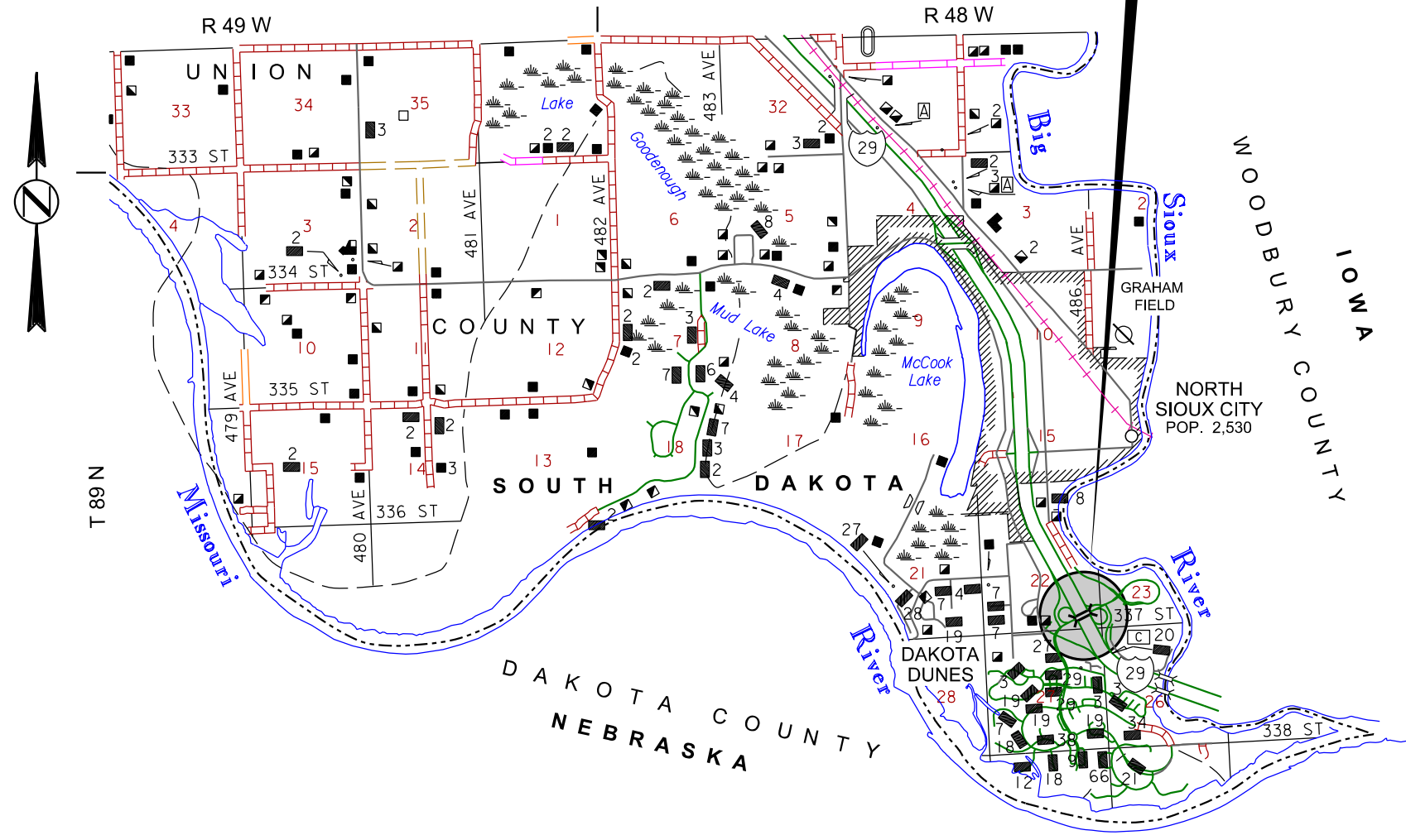
Sheet 1	Layout Map & Index of Sheets
Sheet 2	Estimate of Quantities & Environmental Commitments
Sheets 3-13	Traffic Control
Sheets 14-25	Bridge Work at I29 Structure 64-158-399

PLOT SCALE - 1" = 7000'



PROJECT

STRUCTURE 64-158-399
Cont. Comp. Girder Bridge
252'-6"=0.048 Mile
MRM 0.98 (SBL)



STORM WATER PERMIT
(None required)

I29N ADT (2016) 13,259
I29S ADT (2016) 12,136
DAKOTA DUNES BLVD ADT (2016) 8,995

PLOTTED FROM - TRM1INT15

FILE - ... \UNINI4H9\TTLI4H9.DGN

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
250E0030	Incidental Work, Structure	Lump Sum	LS
410E0350	Remove and Replace Web	1	Each
410E0365	Remove and Replace Transverse Stiffener	3	Each
410E0380	Remove and Replace Steel Diaphragm	1	Each
410E3010	Magnetic Particle Weld Inspection	48	In
410E3020	Ultrasonic Weld Inspection	54	In
410E3030	Magnetic Particle Weld Inspection, Impact Damage Repair	540	SqIn
412E0100	Bridge Repainting, Class I	Lump Sum	LS
634E0010	Flagging	40.0	Hour
634E0110	Traffic Control Signs	286.6	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	5	Each
634E0330	Temporary Raised Pavement Markers	8,040	Ft
634E0420	Type C Advance Warning Arrow Board	2	Each
634E0525	Linear Delineation System Panel, Barrier Mounted	168	Each
634E0700	Traffic Control Movable Concrete Barrier	84	Each
634E0750	Temporary Concrete Barrier End Protection	1	Each
634E0760	Temporary Concrete Barrier End Protection Module Set or Repair Kit	1	Each
634E1215	Contractor Furnished Portable Changeable Message Sign	1	Each

ENVIRONMENTAL COMMITMENTS

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

COMMITMENT C: WATER SOURCE

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

The Contractor shall not withdraw water directly from streams of the James, Big Sioux and Vermillion watersheds without prior approval from the SDDOT Environmental Office.

COMMITMENT C: WATER SOURCE (CONTINUED)

Action Taken/Required:

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

COMMITMENT E: STORM WATER

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

Action Taken/Required:

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

The waste disposal site(s) shall 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 Environment and Natural Resources.

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

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

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

COMMITMENT H: WASTE DISPOSAL SITE (CONTINUED)

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.

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

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

Action Taken/Required:

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

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

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

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

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

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

SEQUENCE OF OPERATIONS

The following Sequence of Operations is to be followed unless an alternative is submitted a minimum of two weeks prior to the preconstruction meeting and approved.

Exit 1 crossroad (structure number 64-158-399):

Traffic shall be controlled with southbound I29 lane closures, circular entrance Ramp C closure, and Dakota Dunes Boulevard/ 2 Rivers Drive crossroad lane closure. During the closure of the I29 southbound right lane and entrance Ramp C acceleration/merge lane, access to I29 South shall be via Sioux Point Road.

Upon closure of the circular entrance Ramp C, the bridge repair work shall be pursued continuously to completion to minimize disruption to traffic and the lack of use of Ramp C.

1. Install Traffic Control devices to close the I29 entrance Ramp C.
2. Install traffic control devices to close the I29 southbound mainline right lane and circular entrance Ramp C acceleration/merge lane. Maintain I29 traffic in the left southbound mainline lane.
3. Install traffic control devices to close the Dakota Dunes Boulevard/ 2 Rivers Drive lane immediately over the bridge repair work as necessary while maintaining traffic in the adjacent lane per the details in these plans.
4. Complete bridge repair work and painting.
5. Adjust traffic control devices to close the I29 southbound mainline left lane. Maintain I29 traffic in the right southbound lane. Open the I29 entrance Ramp C.
6. Install traffic control devices to close the appropriate Dakota Dunes Boulevard/ 2 Rivers Drive lane as necessary immediately over the bridge repair work while maintaining traffic in the adjacent lane per the details in these plans.
7. Complete bridge repair work and painting.
8. Remove traffic control devices open all roadways to traffic.

PROJECT COORDINATION

Project IM-PH0291(122)0, PCN 02PT, Union & Lincoln Counties on Interstate 29 at structures on the northbound and southbound lanes is scheduled to be completed by November 15, 2017.

Work for project 029S-288, PCN I4H9 shall not begin until after the completion of project IM-PH0291(122)0, PCN 02PT structure work in the southbound Interstate 29 lanes.

MAINTENANCE OF TRAFFIC

Sufficient traffic control devices have been included in these plans for one interstate mainline structure lane closure and one crossroad lane closures.

In tangent sections of interstate crossroad lane closures, Channelizing device spacing shall be reduced from 2G to G.

TRAFFIC CONTROL MOVABLE CONCRETE BARRIER

The work at the structure number 64-158-399, Exit 1 mainline will require traffic control movable concrete barrier to be used during closure of a lane on I29.

84 traffic control movable concrete barrier shall be obtained from the State DOT Junction City Maintenance shop located just east of I29 Exit 26, hauled, used on the project, and 84 traffic control movable concrete barrier returned to the SDDOT Junction City maintenance yard at the completion of the project.

The number of traffic control movable concrete barrier used shall be approved by the Engineer.

Cost to pick up the traffic control movable concrete barrier from the Junction City DOT Maintenance Yard, place it for traffic control, and return the traffic control movable barrier to the yard shall be included in the contract unit price per each for Traffic Control Movable Concrete Barrier.

TEMPORARY CONCRETE BARRIER END PROTECTION MODULE SET OR REPAIR KIT

The Contractor shall furnish crash tested and approved end protection on movable concrete barrier installed on this project. End protection shall be installed parallel to the roadway and a minimum of two traffic control movable concrete barrier shall be installed in line with and behind the end protection. The end protection shall be attached to the traffic control movable concrete barrier as specified by the manufacturer.

Cost for furnishing, installing, maintaining and removing the end protection will be included in the contract unit price per each for Temporary Concrete Barrier End Protection. The Concrete Barrier End Protection shall meet the requirements of TL3 for NCHRP 350 or MASH.

The Contractor will be required to have immediately available replacement parts for the end protection. The Contractor will be expected to repair the end protection within 24 hours after impact or damage.

Cost for replacement modules shall be included in the contract unit price per each for Temporary Concrete Barrier End Protection Module Set or Repair Kit.

REMOVE AND RESET TEMPORARY CONCRETE BARRIER END PROTECTION

Cost to move and reset the concrete barrier end protection shall be included in the contract unit price per each for Remove and Reset Temporary Concrete Barrier End Protection.

REDUCED SPEED LIMITS

The R2-1 Speed Limit 55 and 45 signs and W3-5 Speed Reduction (45 and 55 MPH) signs are to be continuously used 24 hours per day 7 days per week for lane closures at structure locations.

The R2-1 Speed Limit 45 signs and the W3-5 Speed Reduction 45 shall be covered or removed when the work space is not manned at the non-structure mainline locations. The signs shall be installed in accordance with Standard Plate 634.63, Sheet 1 of 2 and Sheet 2 of 2.

TEMPORARY RAISED PAVEMENT MARKERS

Temporary Raised Pavement Markers shall be used on closure tapers and temporary edgelines.

Cost for furnishing, installing, maintaining (including cleaning and replacing, as necessary), and removal shall be included in the contract unit price per foot (4" equivalent) for Temporary Raised Pavement Markers.

LINEAR DELINEATION SYSTEM PANEL, BARRIER MOUNTED

A linear delineation system panel shall be attached to each side of the barrier section. The color shall be the same as the nearest pavement marking, white along outside edge lines or yellow for the left side on one way traffic sections. The linear delineation system shall be 34 inches long and 6 inches in height and be constructed of aluminum formed into a shape to provide retroreflective properties across a wide range of angles. It shall be sheeted with ASTM D4956 Type XI sheeting. The panel shall be installed at the center of the barrier when measured along the length, with the top of the panel 4 inches below the top of the barrier. Installation shall be as per the manufacturer's recommendation using stainless steel inserts and bolts. This will allow for easy removal for replacement of damaged panels or to replace with an alternate color.

Replacement of damaged linear delineation system panels shall be furnished and replaced by the Contractor. Cost associated with furnishing, installing, and maintaining the linear delineation system shall be included in the contract unit price per each for Linear Delineation System Panel, Barrier Mounted.

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 an accident, hazardous materials spill, or similar event.

The Contractor shall set up a meeting prior to start of work to plan and coordinate responses to an incident. The Contractor shall invite the Department of Transportation, the South Dakota Highway Patrol, the City of North Sioux City, the City of Sioux City, Clay County, and other local emergency response and law enforcement entities as deemed necessary to the meeting. The Engineer shall conduct the meeting.

The Contractor will assist in maintaining traffic as required by these plan notes and as agreed to at the meeting.

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

No additional payment will be made for the modification of portable changeable message sign messages or the relocation of portable changeable message sign. Cost for flagging shall be paid at the contract unit price per Hour for Flagging. Cost for the relocation of an advanced warning sign due to an incident shall be 50% of the designated sign rate as per Section 634.5 Basis of Payment in the Standard Specifications. Cost for additional signs shall be paid at the contract unit bid price per square foot for Traffic Control Signs.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	029S-288	4	25

PORTABLE CHANGEABLE MESSAGE SIGNS

One portable changeable message signs will be provided and may be used to supplement other traffic control warning signs or notify motorists of crashes and stopped traffic due to crashes. These signs are to assist when the queue of stopped traffic extends past fixed location ground mounted warning signs. Messages used during incidents on these signs may be:

CRASH AHEAD
BE PREPARED TO STOP
or
CRASH AHEAD
STOPPED TRAFFIC AHEAD

The portable changeable message signs shall be ready for immediate use for incident management for crash response or other emergency. The above messages shall be preprogrammed and ready for activation. These signs shall be equipped with cell phone activation. The cell phone number shall be provided only to responsible individuals in charge of the project.

If Interstate 29 is closed due to an incident and traffic must be detoured, messages may be displayed to warn of the closure and the detour.

TRAFFIC SIGNAL TIMING ADJUSTMENT

The retiming of traffic signals due to the repair work is not anticipated. Should the need for retiming of the traffic signals become apparent during the work, the Engineer shall contact the Region Traffic Engineer for assistance, 605-995-3313.

WIDTH RESTRICTION

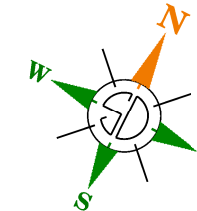
Traffic control shall be installed to maintain a minimum of 16' of width to allow overwidth vehicles to pass. A width restriction detour is not anticipated to be necessary.

TRAFFIC CONTROL

RAMP C CLOSURE {TYPICAL}

STATE OF SOUTH DAKOTA	PROJECT 029S-288	SHEET 5	TOTAL SHEETS 25
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Plotting Date: 08/08/2017



For Southbound driving and accel lane closure see PLATE 634.63.

COVER EXISTING
RAMP
35
MPH

EXISTING SOUTH INTERSTATE 29
INSTALL OVER EXISTING

SOUTH INTERSTATE 29 EXISTING
INSTALL OVER EXISTING

EXISTING SOUTH INTERSTATE 29

EXISTING

NEW INSTALLATION SOUTH INTERSTATE 29

SOUTH INTERSTATE 29
RAMP CLOSED AHEAD

INSTALL 150±' IN ADVANCE OF RAMP

ROAD CLOSED

END OF TANGENT MOVABLE BARRIER SHOWN IN 634.65.

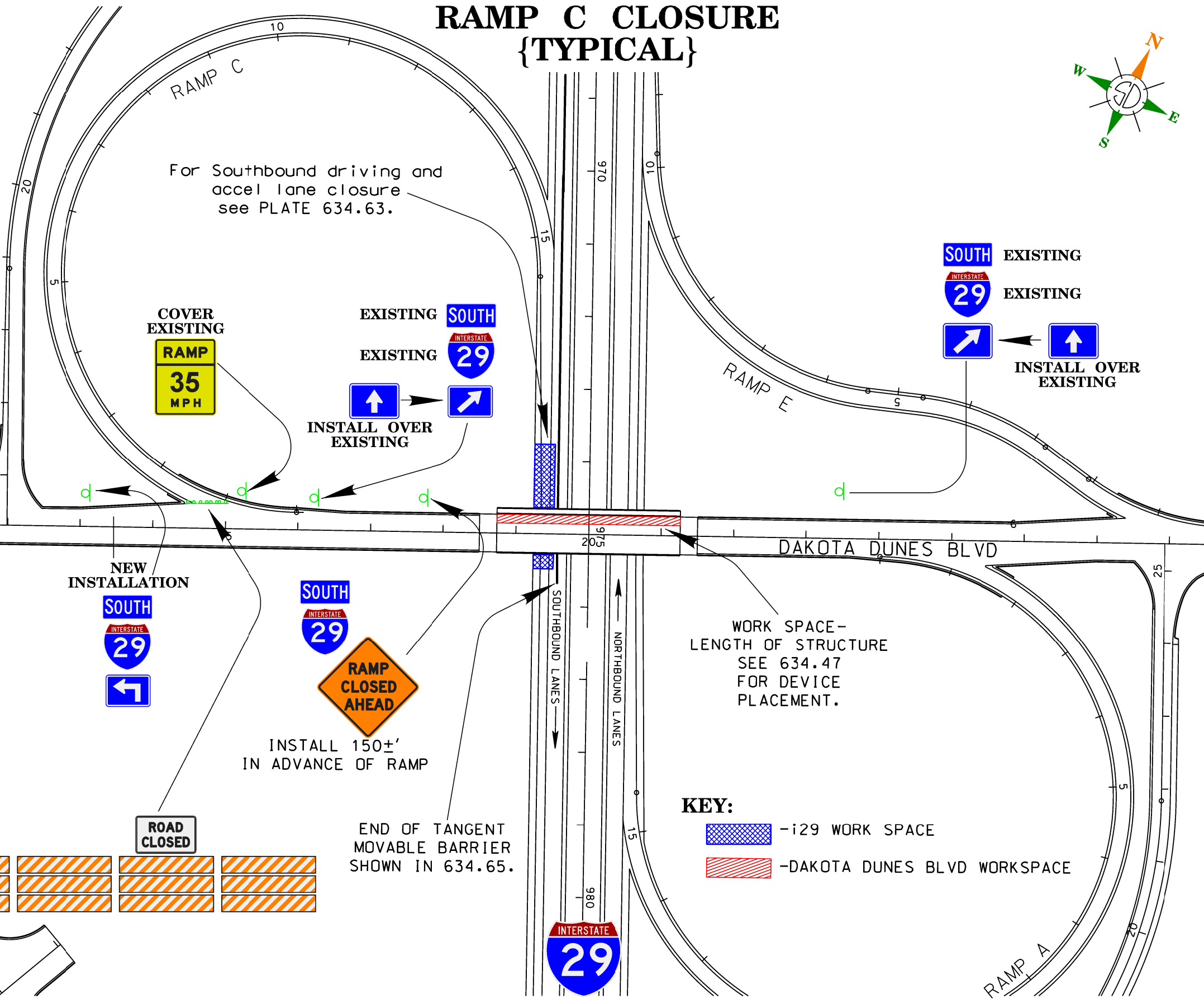
WORK SPACE - LENGTH OF STRUCTURE SEE 634.47 FOR DEVICE PLACEMENT.

KEY:
 -i29 WORK SPACE
 -DAKOTA DUNES BLVD WORKSPACE

PLOT SCALE - 1:147.637

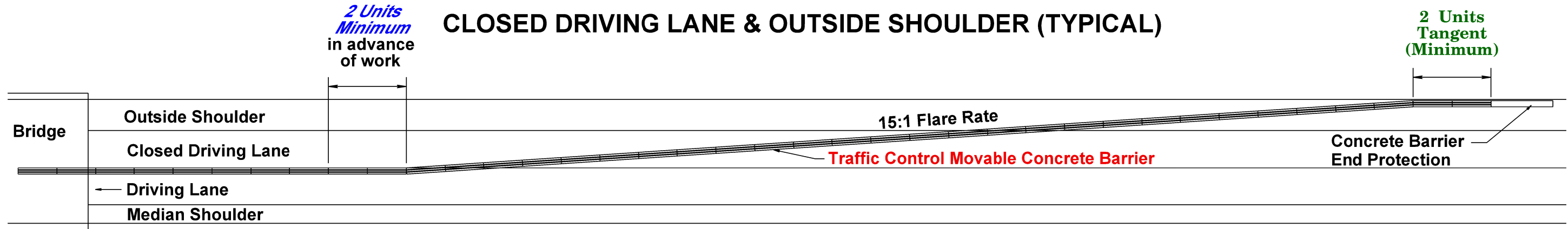
PLOTTED FROM - IRMLINT17

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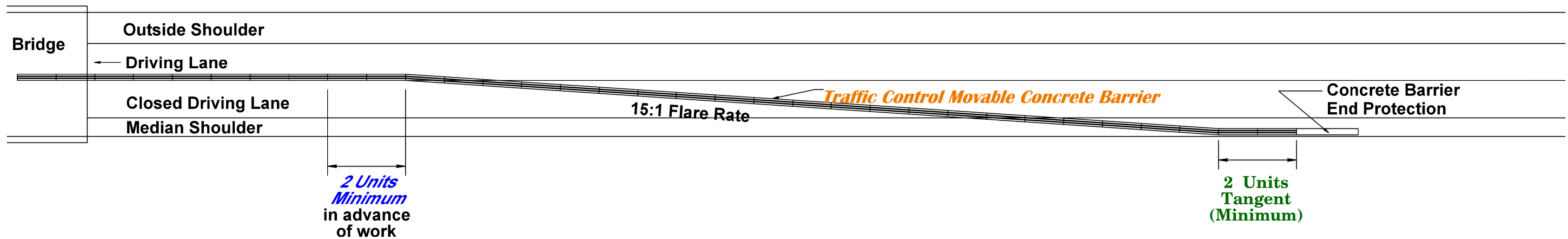


TRAFFIC CONTROL MOVABLE CONCRETE BARRIER

CLOSED DRIVING LANE & OUTSIDE SHOULDER (TYPICAL)



CLOSED DRIVING LANE & MEDIAN SHOULDER (TYPICAL)



NOTES:

BARRIER FOR CLOSURE OF DRIVING LANE & OUTSIDE SHOULDER

USING 12.5' BARRIER, THE CONTRACTOR WILL NEED A TOTAL OF 84 BARRIER (53+2 BARRIER TANGENT, 27 BARRIER FOR THE 15:1 TAPER AND 2 BARRIER TANGENT).

BARRIER FOR CLOSURE OF DRIVING LANE & MEDIAN SHOULDER

USING 12.5' BARRIER, THE CONTRACTOR WILL NEED A TOTAL OF 78 BARRIER (53+2 BARRIER TANGENT, 21 BARRIER FOR THE 15:1 TAPER AND 2 BARRIER TANGENT).

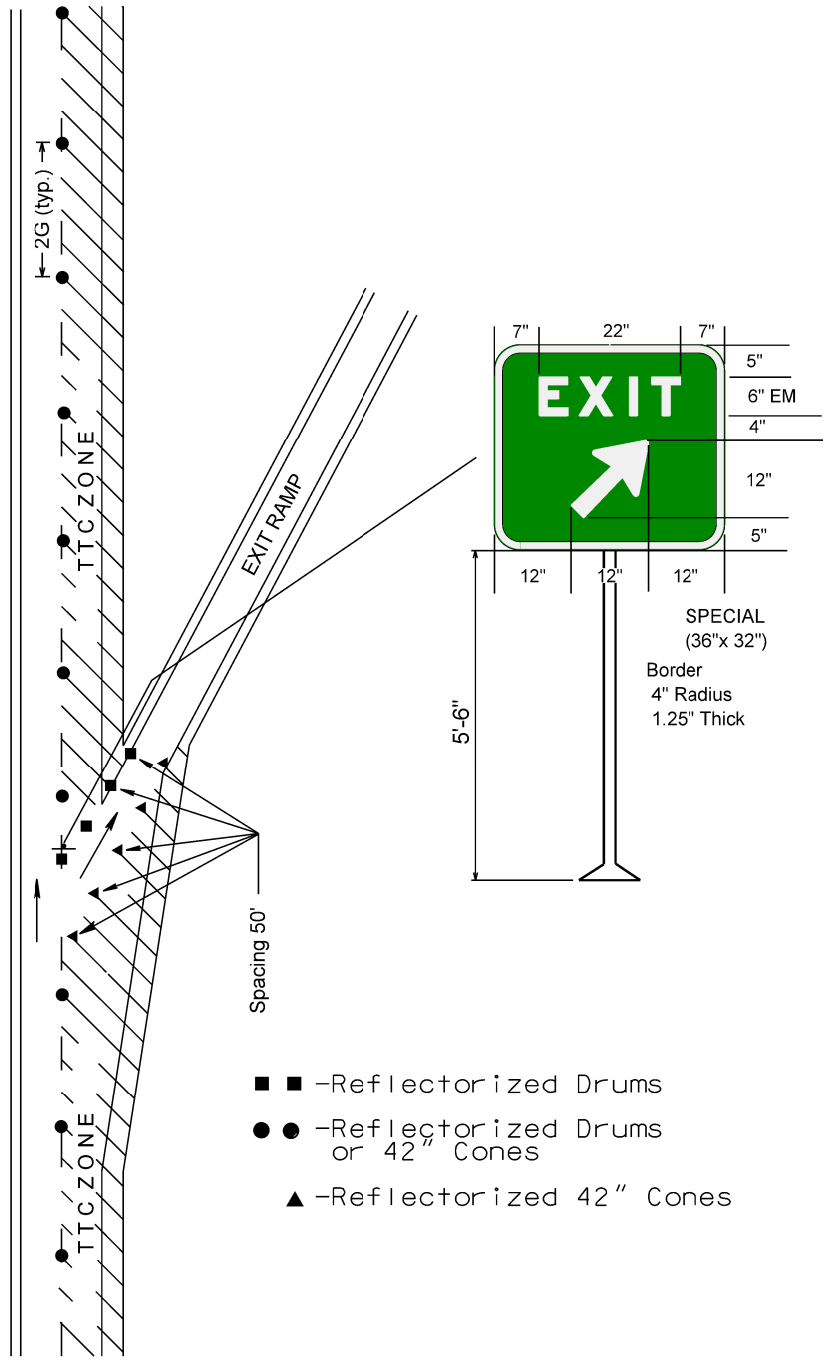
PLOT SCALE - 1:200.64

PLOTTED FROM - IRMLINT17

PLOT NAME - 3

FILE - ... \UNINI4H9\14H9 TC CONTAINER.DGN

SEE 634.63
FOR TTC ZONE
DEVICES.



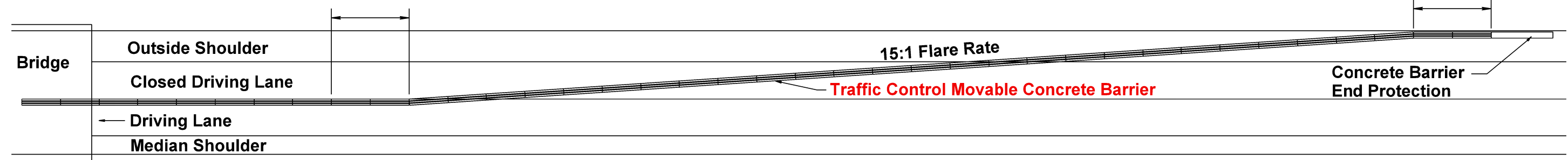
**GUIDES FOR TRAFFIC CONTROL DEVICES
AT EXIT RAMPS**

TRAFFIC CONTROL MOVABLE CONCRETE BARRIER

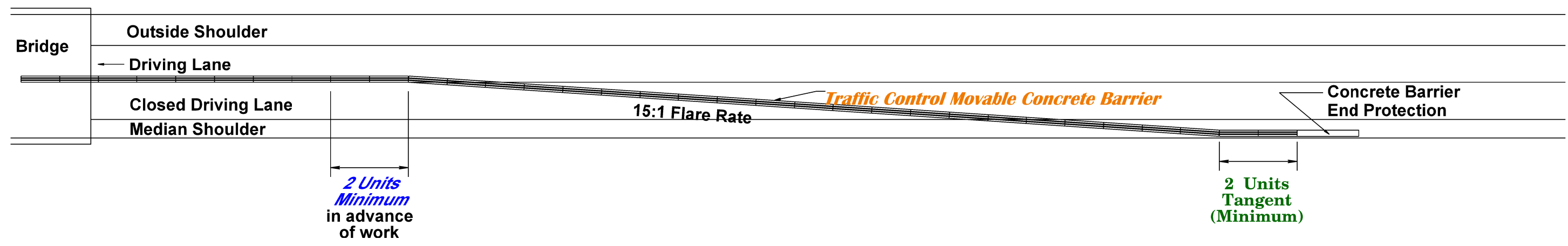
2 Units
Minimum
in advance
of work

CLOSED DRIVING LANE & OUTSIDE SHOULDER (TYPICAL)

2 Units
Tangent
(Minimum)



CLOSED DRIVING LANE & MEDIAN SHOULDER (TYPICAL)



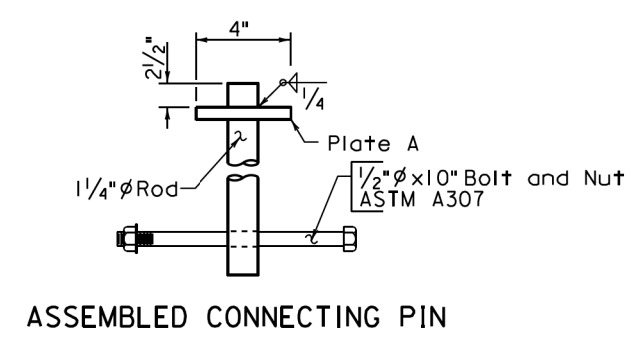
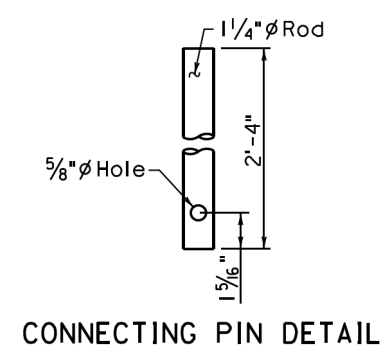
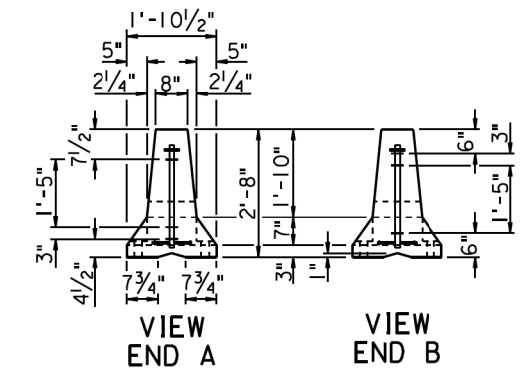
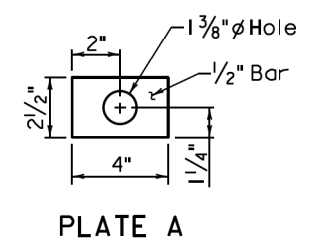
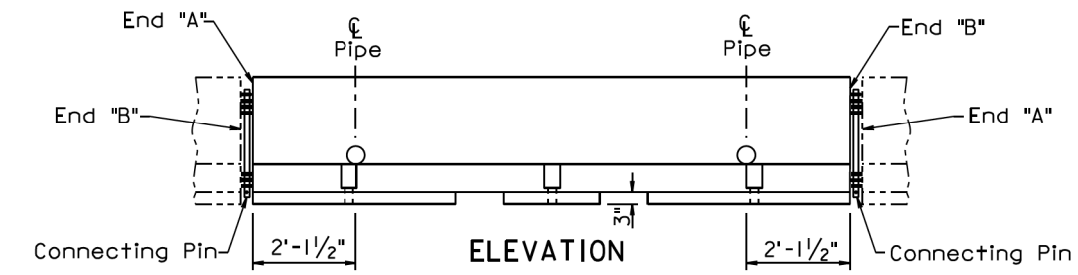
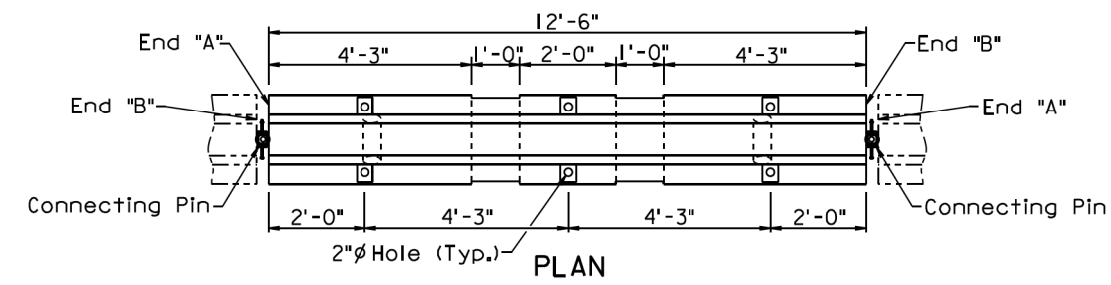
NOTES:

BARRIER FOR CLOSURE OF DRIVING LANE & OUTSIDE SHOULDER

USING 12.5' BARRIER, THE CONTRACTOR WILL NEED A TOTAL OF 84 BARRIER
(53+2 BARRIER TANGENT, 27 BARRIER FOR THE 15:1 TAPER AND 2 BARRIER TANGENT).

BARRIER FOR CLOSURE OF DRIVING LANE & MEDIAN SHOULDER

USING 12.5' BARRIER, THE CONTRACTOR WILL NEED A TOTAL OF 78 BARRIER
(53+2 BARRIER TANGENT, 21 BARRIER FOR THE 15:1 TAPER AND 2 BARRIER TANGENT).



June 26, 2009

S D D O T	TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS (F SHAPE INTERIOR SECTION)	PLATE NUMBER 628.01
		Sheet 1 of 2
<i>Published Date: 3rd Qtr. 2017</i>		

GENERAL NOTES:

The detailed drawings are for illustrative purpose and depicts the current version of the F shape concrete barrier. If new movable concrete barriers are requested on a project, they shall be constructed according to the F shape movable concrete barrier details on standard plate 628.10.

Each movable concrete barrier section weighs 5030 \pm pounds.

Each movable concrete barrier section is detailed to provide end "A" to end "B" connection by insertion of a pin through steel loops.

The Jersey shape or any version of the F shape traffic control movable concrete barriers may be used on a project, however, only the same type or version shall be used for each run of barriers.

Movable concrete barrier sections shall be placed to provide uniform bearing of the sections with the paved surface as approved by the Engineer.

Movable concrete barrier sections shall never be moved or lifted using the end loops.

Movable concrete barrier sections that have been damaged shall not be used. Barrier sections are considered damaged if the loops are end welded onto existing damaged loops, loops are fractured, or there is exposed rebar from fractured concrete.

All cost for transporting the barriers from the specified location to the project site, installing, and returning the barriers to the specified location shall be incidental to the contract unit price per each for "Traffic Control Movable Concrete Barrier".

If the concrete barriers need to be moved and reset on the project, requiring the barriers to be transported by truck, all cost for removing, transporting, and resetting the barriers shall be incidental to the contract unit price per each for "Remove and Reset Traffic Control Movable Concrete Barrier". All cost for small shifts in alignment of the barriers, not requiring the barriers to be transported by truck, shall be incidental to various contract items.

June 26, 2009

S D D O T	TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS (F SHAPE INTERIOR SECTION)	PLATE NUMBER 628.01
		Sheet 2 of 2
<i>Published Date: 3rd Qtr. 2017</i>		

PLOT SCALE - 1:200.64

PLOTTED FROM - IRMLINT17

FILE - ... \UNIN14H9\14H9 TC CONTAINER.DGN PLOT NAME - 3

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 *

* Spacing is 40' for 42" cones.

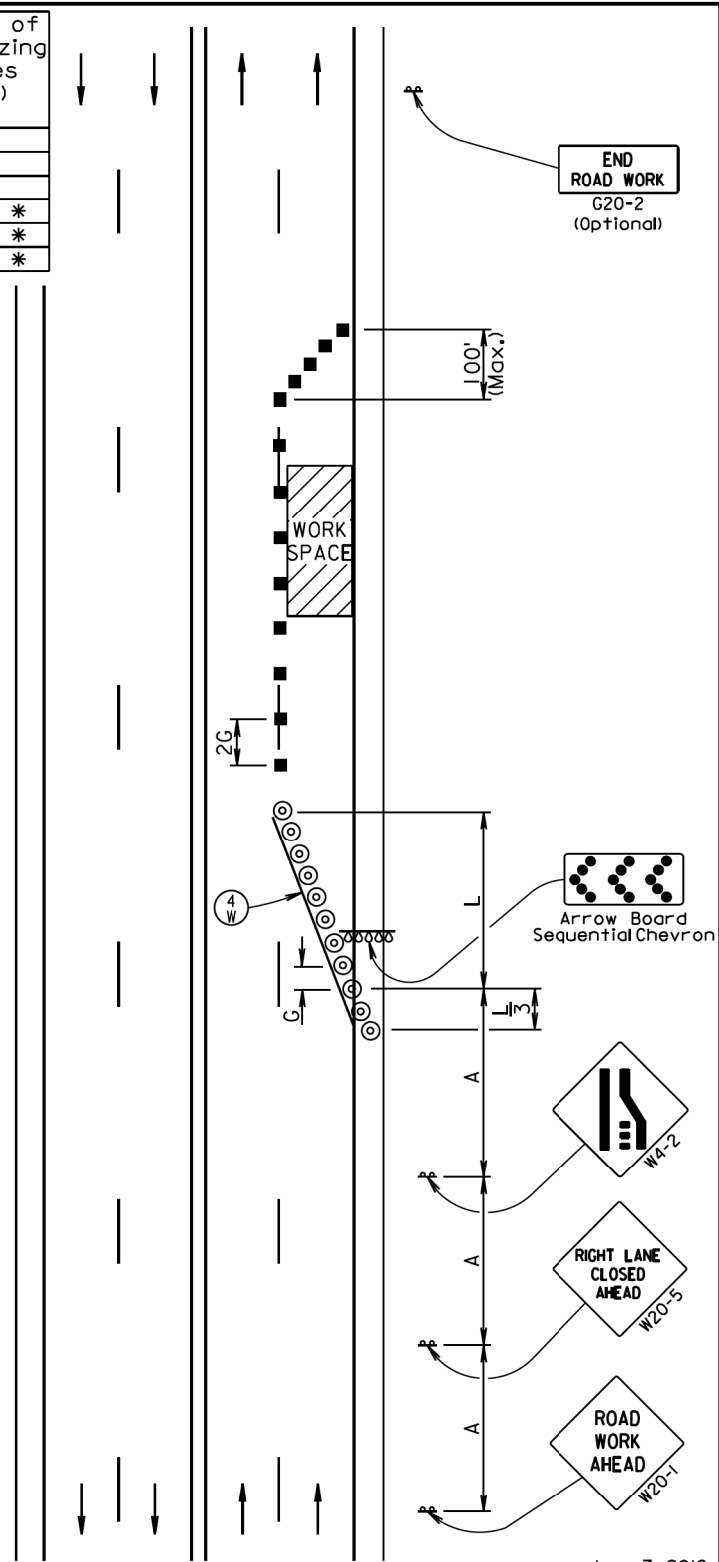
- ⊙ Reflectorized Drum
- Channelizing Device
- ④ 4" White Temporary Pavement Marking

The channelizing devices shall be 42" cones or drums.

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

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

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



June 3, 2016

S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES 4-LANE UNDIVIDED, RIGHT LANE CLOSED	PLATE NUMBER 634.47
		Sheet 1 of 1

Published Date: 3rd Qtr. 2017

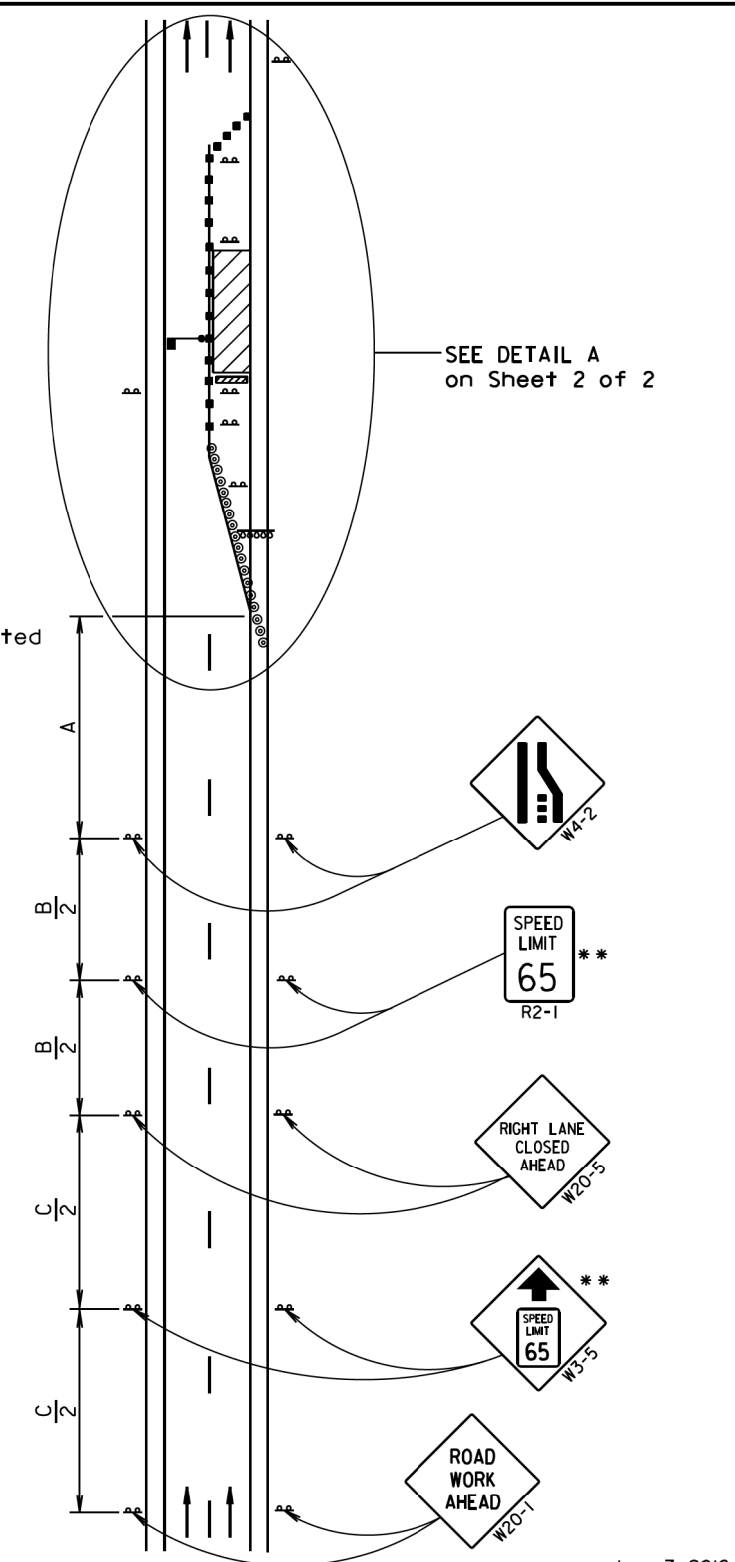
Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)		
0 - 30	200		
35 - 40	350		
45 - 50	500		
55	750		
60 - 65	1000		
	(A)	(B)	(C)
70 - 80	1000	1500	2640

** 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.



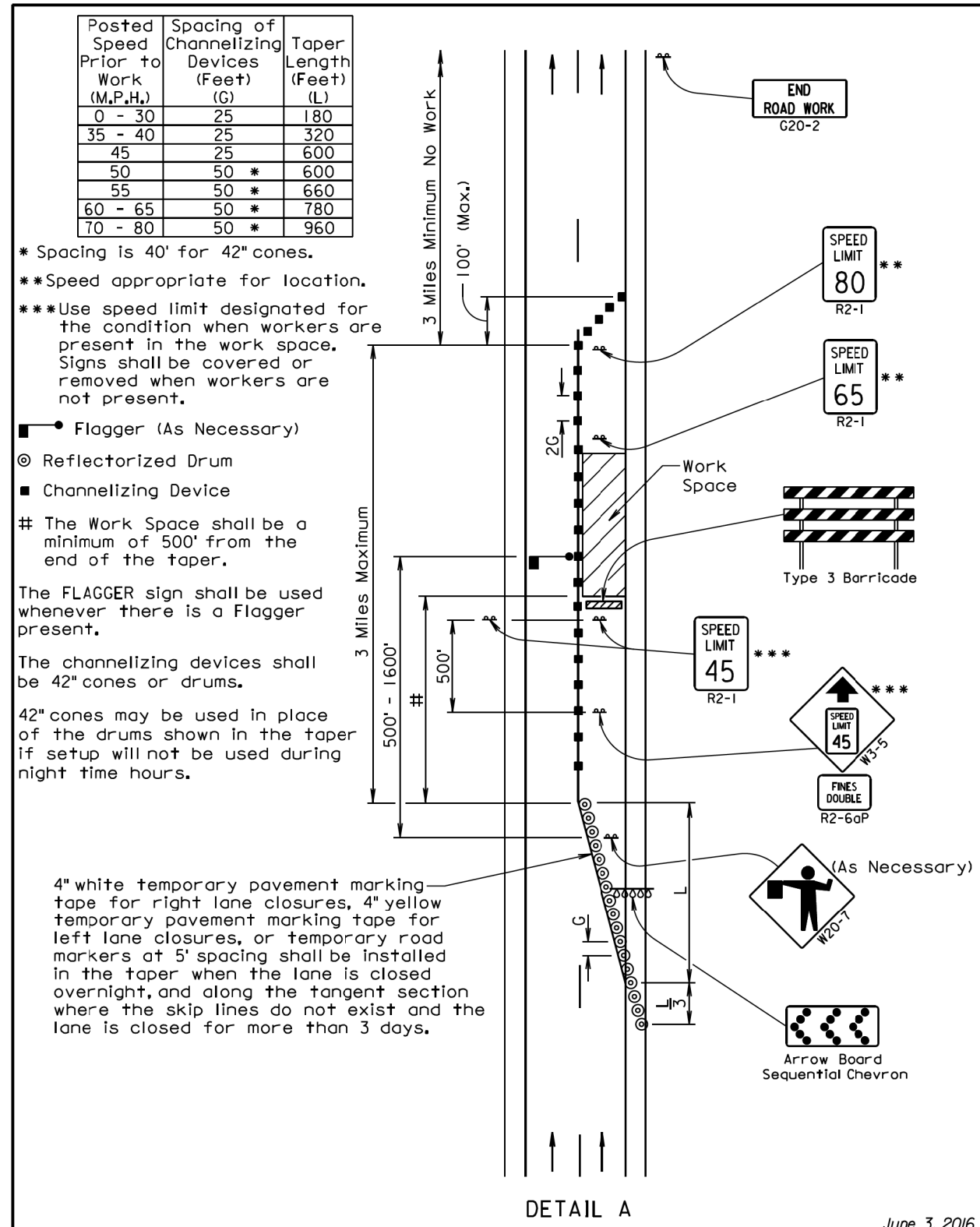
June 3, 2016

S D D O T	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
		Sheet 1 of 2

Published Date: 3rd Qtr. 2017

Plotting Date: 08/08/2017

PLOT SCALE - 1:200.64

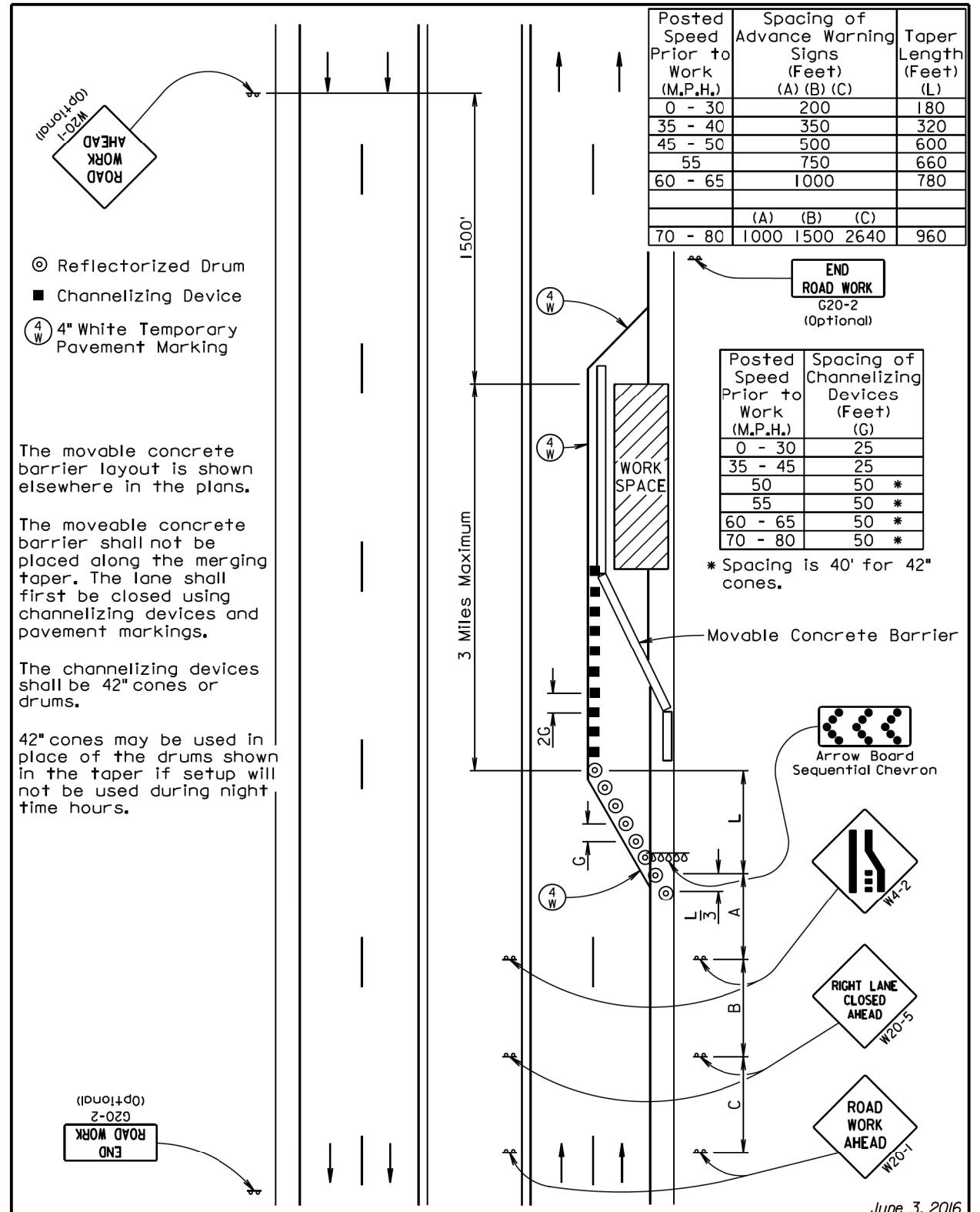


June 3, 2016

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

Published Date: 3rd Qtr. 2017

PLOT NAME - 6

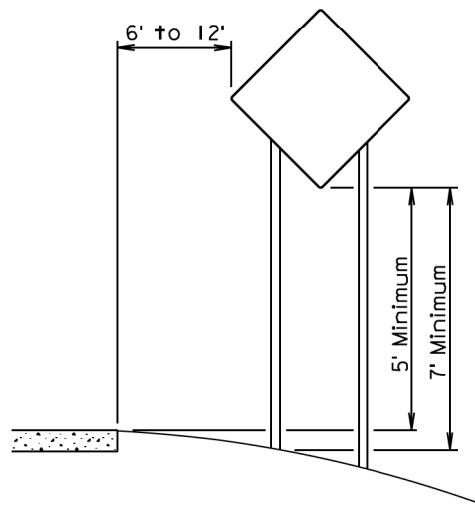


SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH BARRIER	PLATE NUMBER 634.65
		Sheet 1 of 1

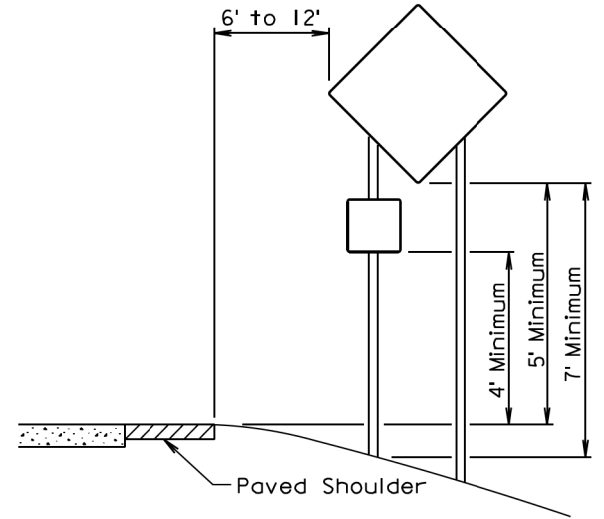
Published Date: 3rd Qtr. 2017

PLOTTED FROM - IRMLINT17

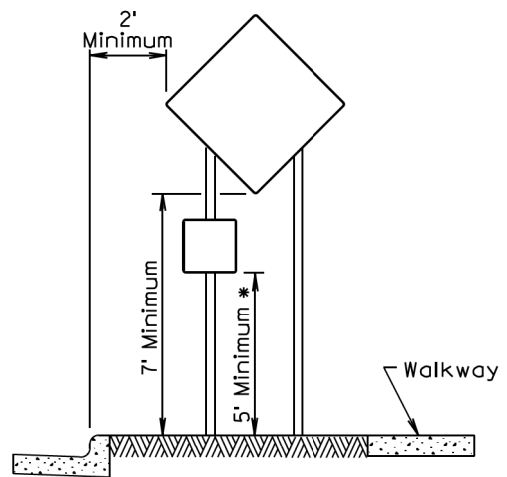
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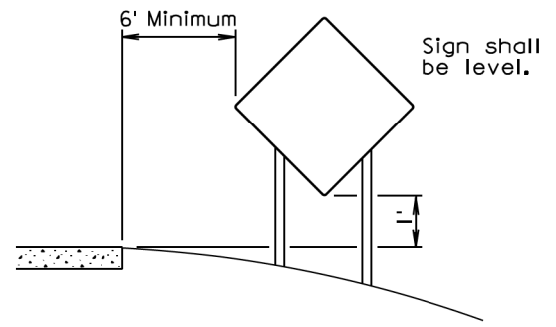
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

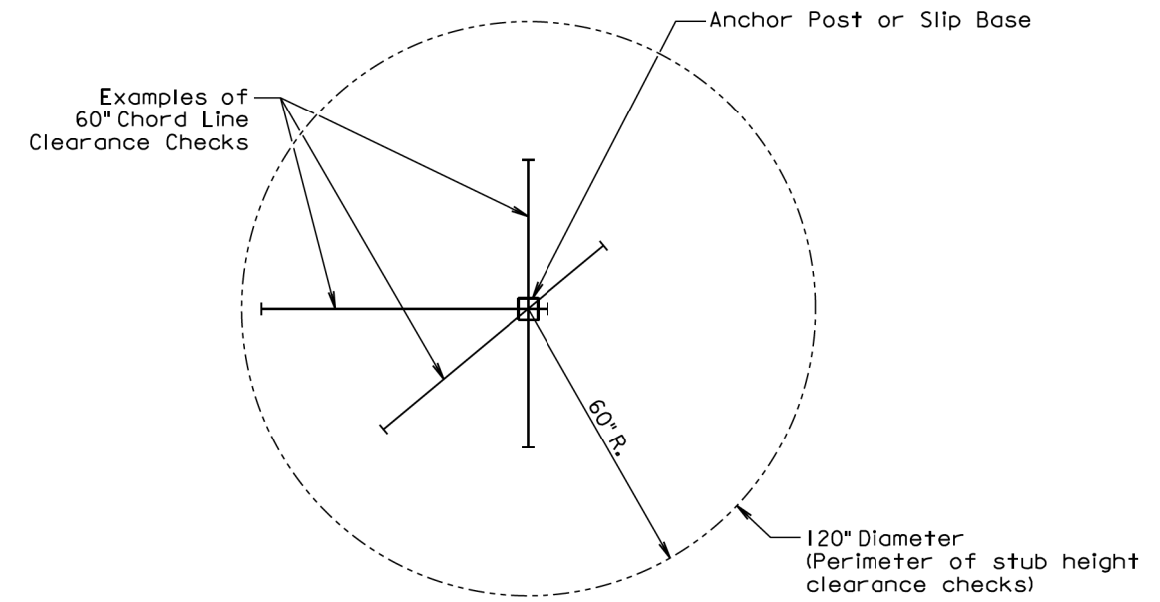


RURAL DISTRICT 3 DAY MAXIMUM
(Not applicable to regulatory signs)

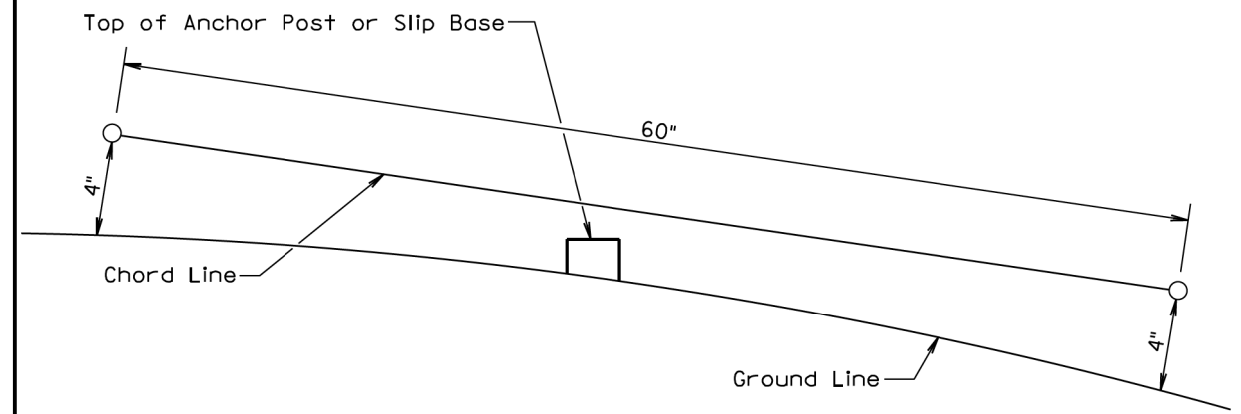
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

September 22, 2014

Published Date: 3rd Qtr. 2017	S D D O T	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 SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.
- At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.
- The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

Published Date: 3rd Qtr. 2017	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

PLOT SCALE - 1:200.64

PLOTTED FROM - IRMLINT17

PLOT NAME - 5

FILE - ... \UNINI4H9\14H9 TC CONTAINER.DGN

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD				EXPRESSWAY / INTERSTATE					
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT		
R2-1	SPEED LIMIT 45		30" x 36"	7.5		2	36" x 48"	12.0	24.0		
R2-1	SPEED LIMIT 65		36" x 48"	12.0		1	36" x 48"	12.0	12.0		
R2-6aP	FINES DOUBLE (plaque)		24" x 18"	3.0		1	36" x 24"	6.0	6.0		
R11-2	ROAD CLOSED	1	48" x 30"	10.0	10.0		48" x 30"	10.0			
W3-5	SPEED REDUCTION AHEAD (45 MPH)		48" x 48"	16.0		2	48" x 48"	16.0	32.0		
W4-2	LEFT or RIGHT LANE ENDS (symbol)	1	48" x 48"	16.0	16.0	2	48" x 48"	16.0	32.0		
W20-1	ROAD WORK AHEAD	1	48" x 48"	16.0	16.0	2	48" x 48"	16.0	32.0		
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	1	48" x 48"	16.0	16.0	2	48" x 48"	16.0	32.0		
W20-7	FLAGGER (symbol)		48" x 48"	16.0		1	48" x 48"	16.0	16.0		
SPECIAL	RAMP CLOSED AHEAD	1	48" x 48"	16.0	16.0		" x "				
G20-2	END ROAD WORK		36" x 18"	4.5		1	48" x 24"	8.0	8.0		
M1-1	INTERSTATE ROUTE MARKER (2 digits)	2	24" x 24"	4.0	8.0		36" x 36"	9.0			
M3-3	DIRECTION MARKER - SOUTH (INTERSTATE)	2	24" x 12"	2.0	4.0		36" x 18"	4.5			
M5-1	ADVANCE TURN ARROW 90° (L or R) (INTERSTATE)	1	21" x 15"	2.2	2.2		30" x 21"	4.4			
M6-3	DIRECTION ARROW - Vertical Single Head (INTERSTATE)	2	21" x 15"	2.2	4.4		30" x 21"	4.4			
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT				92.6	EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT				194.0

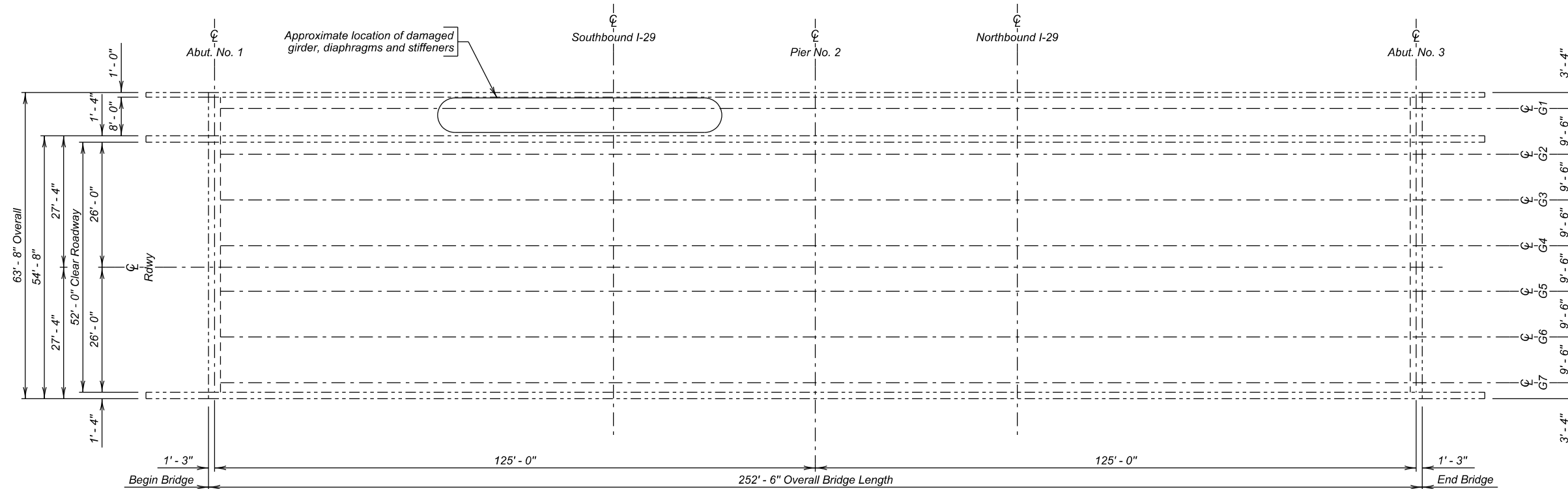
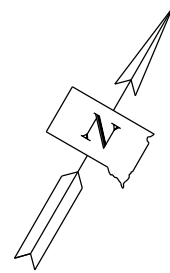
TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Single Sided	5 Each

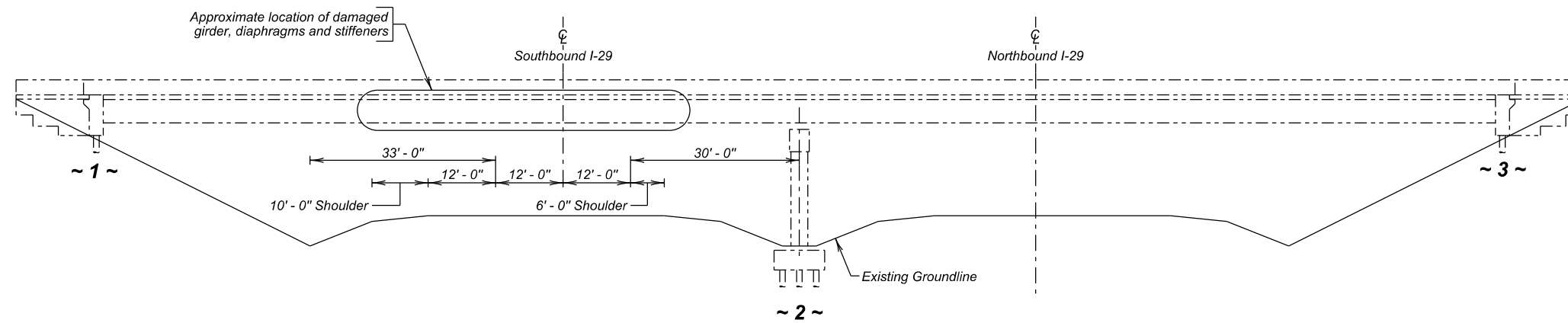
ARROW BOARDS

ITEM DESCRIPTION	QUANTITY
Type C Advance Warning Arrow Board	2 Each

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	029 S-288	14	25



PLAN



ELEVATION

INDEX OF BRIDGE SHEETS -

- Sheet No. 1 - Layout for Upgrading
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Notes (Continued)
- Sheet No. 5 - Girder No. 1 Repair Layout
- Sheet No. 6 - Girder No. 1 Repair Details
- Sheet No. 7 - Girder No. 1 Repair Details (Continued)
- Sheet No. 8 - Girder No. 1 Repair Details (Continued)
- Sheet No. 9 thru 12 - Original Construction Plans

**LAYOUT FOR UPGRADING
FOR**

252' - 6" CONT. COMP. GIRDER BRIDGE
 OVER I-29 0° SKEW
 STR. NO. 64-158-399 SEC. 22-T89N-R48W
 PCN I4H9 029 S-288

UNION COUNTY
 S. D. DEPT. OF TRANSPORTATION
 MAY 2017

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

DESIGNED BY MM UNIN14H9	CK. DES. BY RS I4H9RA01	DRAFTED BY KR	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
250E0030	Incidental Work, Structure	Lump Sum	LS
410E0350	Remove and Replace Web	1	Each
410E0365	Remove and Replace Transverse Stiffener	3	Each
410E0380	Remove and Replace Steel Diaphragm	1	Each
410E3010	Magnetic Particle Weld Inspection	48	In
410E3020	Ultrasonic Weld Inspection	54	In
410E3030	Magnetic Particle Weld Inspection, Impact Damage Repair	540	Sq in
412E0100	Bridge Repainting, Class I	Lump Sum	LS

SPECIFICATIONS

- Design Specifications: AASHTO Standard Specifications for Highway Bridges 17th Edition using Working Stress Design.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.
- All Welding and Welding Inspection shall be in conformance with the AASHTO/AWS Structural Welding Code D1.5 unless otherwise noted in this plan set.

PRE-CONSTRUCTION MEETING

A pre-construction meeting is required prior to beginning the repair work. The purpose of the meeting is to review the plans and procedures because of the specialty work involved. At a minimum, a representative from the Contractor and all Subcontractors shall attend this meeting along with Department personnel from the Area Office and Bridge Office. The contractor must notify the Bridge Construction Engineer and the Area Office at least three days prior to the meeting.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

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

SHOP PLANS

Shop plans shall be required as specified by Section 410.3 A of the Specifications.

GENERAL CONSTRUCTION

- Welder certification shall be in accordance with section 410.3 of the Specifications.
- The new structural steel shall be ASTM A709 Gr. 50 T2. Diaphragm and gusset plate may conform to ASTM A36.
- All bolts and nuts shall conform to ASTM F3125 Grade A325. Washers shall conform to ASTM F436.

SCOPE OF BRIDGE WORK

All work on this structure shall be accomplished under traffic with the traffic control as shown elsewhere in the plans.

- Remove and replace the plan specified damaged web, diaphragm stiffeners and diaphragm.
- Perform testing on all new welds and impact damage area.
- Paint all work areas.

FIELD WELDING PROCEDURES

- Approved Welding Procedure Specifications (WPS) will be required for this project, using the Shielded Metal Arc Welding (SMAW) process and an approved E7018 electrode from Table 4.1 of the Bridge Welding Code. The proposed WPS's for this project shall be submitted on Form N-2, from Annex N of the Bridge Welding Code, to the Bridge Construction Engineer for approval at least 2 weeks prior to construction.
- Preparation of the base metal prior to welding shall be in accordance with Clause 3 of the Bridge Welding Code. Existing paint shall be removed a distance of 2 inches from each side of the weld.
- Preheat will be required. Preheat and interpass temperature requirements shall be in accordance with Clause 4.2 of the Bridge Welding Code. The minimum preheat and interpass temperature shall be 320 degrees F for welds to the 1 1/4" and 5/8" girder flanges and 320 degrees F for welds to the 1/2" girder web as determined from Annex G of the Bridge Welding Code for high restraint conditions. Temperature indicating crayons shall be the minimum acceptable method for monitoring preheat and interpass temperatures.

- SMAW electrode atmospheric exposure requirements shall comply with Clause 4.5 of the Bridge Welding Code. Electrodes shall be purchased in hermetically sealed containers. If the container shows evidence of damage, the electrodes shall be dried in a drying oven for at least one hour at temperatures between 700 and 800 degrees F before they are used. Immediately after opening a hermetically sealed container or removal of the electrodes from a drying oven, electrodes shall be stored in ovens at a temperature of at least 250 degrees F. Electrodes exposed to the atmosphere upon removal from drying or storage ovens or hermetically sealed containers shall be used within four hours maximum or redried at 450 to 550 degrees F for two hours minimum. Electrodes exposed to the atmosphere for periods less than four hours may be returned to a storage oven and maintained at a minimum of 250 degrees F for a minimum of four hours before reissue. Electrodes shall be redried no more than one time. Electrodes which have been wet shall not be used.

- All welds shall be cleaned in accordance with Clause 3.11 of the Bridge Welding Code. Completed welds and adjacent areas shall be cleaned of all weld splatter, slag, smoke and heat affected paint. No intermittent or "stitch" welds will be allowed.

- E7018 electrodes shall be used for tack welds. The size of tack welds shall not be greater than 5/16". Tack welds shall be positioned so they will be incorporated into, and re-melted by, the final weld. This applies to run-off tabs also. Tack welds shall be thoroughly cleaned prior to any weld placement.

- Groove joint fit-up tolerances shall be +1/16", -1/8" for root opening and +10°, -5° for the bevel angle for Joint Designation B-U2 as per Clause 3.3.4 of the Bridge Welding Code. The removal dimensions of the damaged web material and the dimensions of the new web plates shall be closely controlled to achieve the specified fit-up tolerances. All groove welds shall be ground to a flush contour. Grinding shall be longitudinal. Transverse grinding will not be allowed.

**ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
252' - 6" CONT. COMP. GIRDER BRIDGE**

STR. NO. 64-158-399

MAY 2017

2 OF 12

DESIGNED BY MM UNIN4H9	CK. DES. BY RS I4H9RA02	DRAFTED BY KR	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	029 S-288	16	25

WELD INSPECTION & NONDESTRUCTIVE TESTING (NDT)

- The Contractor shall be responsible for retaining a qualified Testing Agency to perform Visual, Magnetic Particle (MT), and Ultrasonic (UT) inspection of new welds and to locate potential crack tips. Inspectors performing Visual, MT and UT inspection and crack tip location shall be certified in accordance with Section 410.3 D of the Construction Specifications. The Contractor shall submit the Testing Agency to the Department at the Preconstruction meeting for approval by the Bridge Construction Engineer.
- All Nondestructive Testing (NDT) and inspection shall be done in accordance with Clause 6 of the Bridge Welding Code. The MT inspection shall be performed by the yoke method using half-wave rectified direct or alternating current. Existing paint shall be removed from the steel surfaces that require NDT. MT inspection results shall be reported on Form N-7 of Annex L and UT results shall be reported on Form F-4 of Annex F of the Bridge Welding Code.
- New fillet welds shall be 100% visually inspected and 20% magnetic particle inspected. Based on the results of the magnetic particle and visual inspection, the Bridge Construction Engineer will determine the acceptability of the completed fillet welds and any recommended repairs. Rejectable defects in new welds shall be repaired in accordance with the Bridge Welding Code. Repaired welds shall be re-inspected after all repairs are complete. The estimated length for MT inspection is 48 linear inches.
- New groove welds shall be 100% visually inspected and 100% ultrasonically tested. Based on the results of the ultrasonic and visual inspection, the Bridge Construction Engineer will determine the acceptability of the completed groove welds and any recommended repairs. Rejectable defects in new welds shall be repaired in accordance with the Bridge Welding Code. Repaired welds shall be re-inspected after all repairs and complete. The estimated length for UT inspection is 54 linear inches.
- Impact Damage MT testing shall be in the area of the web replacement. The area tested shall be 6" outside the removal limits for an estimated 540 square inches. This is an estimate and may be adjusted in the field as approved by the Bridge Construction Engineer.
- All costs including labor, equipment and any incidentals necessary to perform the visual inspection, magnetic particle inspection and crack tip location shall be incidental to the contract unit price per inch for MAGNETIC PARTICLE WELD INSPECTION.
- All costs including labor, equipment and any incidentals necessary to perform the visual inspection, magnetic particle inspection and crack tip location in the area of web replacement, 6 inches outside the removal limits shall be incidental to the contract unit price per square inch for MAGNETIC PARTICLE WELD INSPECTION, IMPACT DAMAGE REPAIR.
- All costs to remove the paint and clean all fillet welds to be nondestructive tested and remove the paint and clean all visible or potential crack tip locations shall be incidental to the contract unit price per inch for MAGNETIC PARTICLE WELD INSPECTION or contract unit price per square inch for MAGNETIC PARTICLE WELD INSPECTION, IMPACT DAMAGE REPAIR.

- All costs including labor, equipment and any incidentals necessary to perform the visual inspection and ultrasonic inspection of groove welds shall be incidental to the contract unit price per inch for ULTRASONIC WELD INSPECTION.
- The total plans quantity for MT and UT weld inspection is only an estimate. The weld inspection will be measured and paid for as MAGNETIC PARTICLE WELD INSPECTION; MAGNETIC PARTICLE WELD INSPECTION, IMPACT DAMAGE REPAIR; or ULTRASONIC WELD INSPECTION.

REPAIRS FOR NDT DETERMINED FLAWS

- Repair options for weld defects and crack tips shall be determined by the Bridge Construction Engineer. Two repair options are:
 - Drill all crack tips in the web.
 - Repair fillet weld defects by removing the weld with the air carbon arc process and then grinding flush. Grinding shall be in the longitudinal direction. Transverse grinding will not be allowed. The repair shall then be re-welded in accordance with the Bridge Welding Code.
- Other repair options shall be at the discretion of the Bridge Construction Engineer.

REMOVE AND REPLACE WEB SECTION

- Cut and remove the portions of the web as shown on the plans by the air carbon arc process guided by a template. The air carbon arc process shall also be used to remove the web to bottom flange welds. All cut edges shall be ground smooth to their final size in preparation for welding. Grinding shall be longitudinal. Transverse grinding will not be allowed. The removed portions of the web shall be disposed of by the Contractor.
- The web sections shall be replaced and welded as shown in the plan details.
- During the removal and replacement procedure, additional nondestructive testing may be required. See notes regarding Weld Inspection & Nondestructive Testing (NDT).
- All labor, equipment, materials, welding and any incidentals necessary to remove and replace the damaged portions of the web and flange shall be incidental to the contract unit price per each for REMOVE AND REPLACE WEB.

REMOVE AND REPLACE TRANSVERSE STIFFENERS

- The damaged diaphragm stiffeners, as shown in the plans shall be removed by the air carbon arc process, operated electrode positive. The cuts shall be made short and the web and flanges ground smooth to remove the remaining portion of the stiffeners and welds. Grinding shall be longitudinal. Transverse grinding will not be permitted. The Contractor shall use care during the removal process not to gouge or damage the web or flanges in any way. The damaged stiffeners shall be disposed of by the Contractor.
- The stiffeners shall be replaced and welded as shown in the plans after the web repairs are complete. The stiffeners shall be field fit with tight joints to exclude water after painting.
- During the removal and replacement procedure, additional nondestructive testing may be required. See notes regarding Weld Inspection & Nondestructive Testing (NDT).
- All labor, materials, equipment, welding, field drilling of holes, 7/8" Dia. H.S. bolts, cutting of copes and any incidentals necessary to remove and replace the diaphragm stiffeners, as shown on the plans will be incidental to the contract unit price per each for REMOVE AND REPLACE TRANSVERSE STIFFENER.

NOTES (CONTINUED)

FOR
252' - 6" CONT. COMP. GIRDER BRIDGE

STR. NO. 64-158-399

MAY 2017

3 OF 12

DESIGNED BY MM UNIN4H9	CK. DES. BY RS I4H9RA03	DRAFTED BY KR	 BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	029 S-288	17	25

REMOVE AND REPLACE STEEL DIAPHRAGM

1. Cut and remove the portions of the Diaphragm as shown on the plans by the air carbon arc process. All cut edges shall be ground smooth to their final size in preparation for welding. Grinding shall be longitudinal. Transverse grinding will not be allowed. The removed portions of the diaphragm shall be disposed of by the Contractor.
2. The removed portion of the diaphragm shall be replaced and welded as shown in the plans. The diaphragm shall be field fit with tight joints to exclude water after painting.
3. During the removal and replacement procedure, additional nondestructive testing may be required. See notes regarding Weld Inspection & Nondestructive Testing (NDT).
4. All labor, equipment, materials, welding and any incidentals necessary to remove and replace the damaged portions of the diaphragm shall be incidental to the contract unit price per each for REMOVE AND REPLACE STEEL DIAPHRAGM.

BOLT TESTING

The certified mill test reports for all bolts used on the project shall include the test results for all of the testing specified in Section 972.2 D of the 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.

INCIDENTAL WORK, STRUCTURE

The following shall all be considered INCIDENTAL WORK, STRUCTURE:

1. The girder shall be solvent cleaned to SSPC SP-1 prior to any other work being done on the structure.
2. All power tool cleaning performed by the Contractor in preparation for Nondestructive Testing. Power tool cleaning shall be in accordance with SSPC SP-3.
3. All materials, labor, equipment, and any incidentals necessary to perform all that is described in the notes above shall be incidental to the contract lump sum price for "INCIDENTAL WORK, STRUCTURE."

AIR CARBON ARC CUTTING AND GOUGING

1. All removal of web sections, diaphragms, diaphragm stiffeners, diaphragm gusset plates, and welds called for by the plans shall be accomplished using the air carbon arc process unless noted otherwise. Plasma cutting will also be allowed. If the contractor plans to use plasma cutting the Bridge Construction Engineer shall be notified and will provide the Contractor with additional requirements for this cutting method.
2. Before any air carbon arc cutting or gouging begins, lay out all cut lines on the steel surfaces using a marker that will be visible during the cutting process.

3. When grinding to a specified shape or dimension is required after air carbon arc cutting, lay out the shape on the steel surface with a visible marker and grind to the layout line. Air carbon arc gouging shall be done using DC, electrode positive.
4. Extreme care shall be exercised during the cutting or gouging process so that absolutely no damage (such as nicks, gouges, splattering) to the surrounding metal occurs. Any damage caused by the air carbon arc process shall be repaired by the Contractor to the satisfaction of the Engineer at no cost to the Department.
5. Grind all surfaces cut or gouged with the air carbon arc process to remove high carbon deposits, provide a smooth finish, and prepare metal for welding and/or to accept paint.

BRIDGE REPAINTING, CLASS I

1. All existing and new structural steel within the work affected areas shall be painted. The finished girder shall have a uniform paint appearance as approved by the Engineer. The work affected areas shall be painted for a distance of six inches outside the affected areas on all sides. For informational purposes, the approximate total area under this item of repair is 34 square feet.
2. Paint residue shall be treated as construction debris. Paint residue shall be contained, collected, and disposed of by the contractor in accordance with environmental commitments. Removal and containment will be incidental to Bridge Repainting, Class I.
3. All work affected areas and all new structural steel shall be painted in accordance with Section 412 of the Standard Specifications and in accordance with SSPC Standard PA1.

4. Paint color

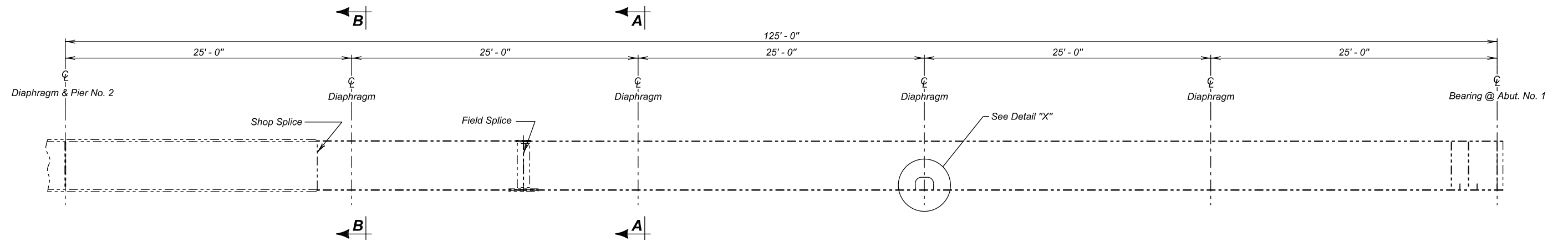
Top Coat - The paint color shall be an approved green color to match the existing paint. Prior to ordering the paint, a paint chip of the green color shall be submitted to the Department for color approval.

Primer or Intermediate Coats - Colors shall sharply contrast with each other and with the top coat.

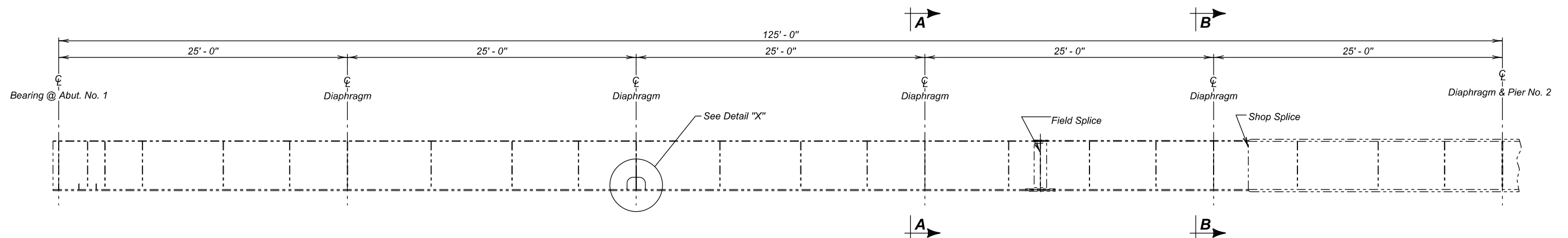
NOTES (CONTINUED)
FOR
252' - 6" CONT. COMP. GIRDER BRIDGE
STR. NO. 64-158-399
MAY 2017

DESIGNED BY MM UNIN4H9	CK. DES. BY RS I4H9RA04	DRAFTED BY KR <i>Steve A. Johnson</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	029 S-288	18	25



NORTH FACE GIRDER NO. 1
(Showing Outside Face of Girder No.1)



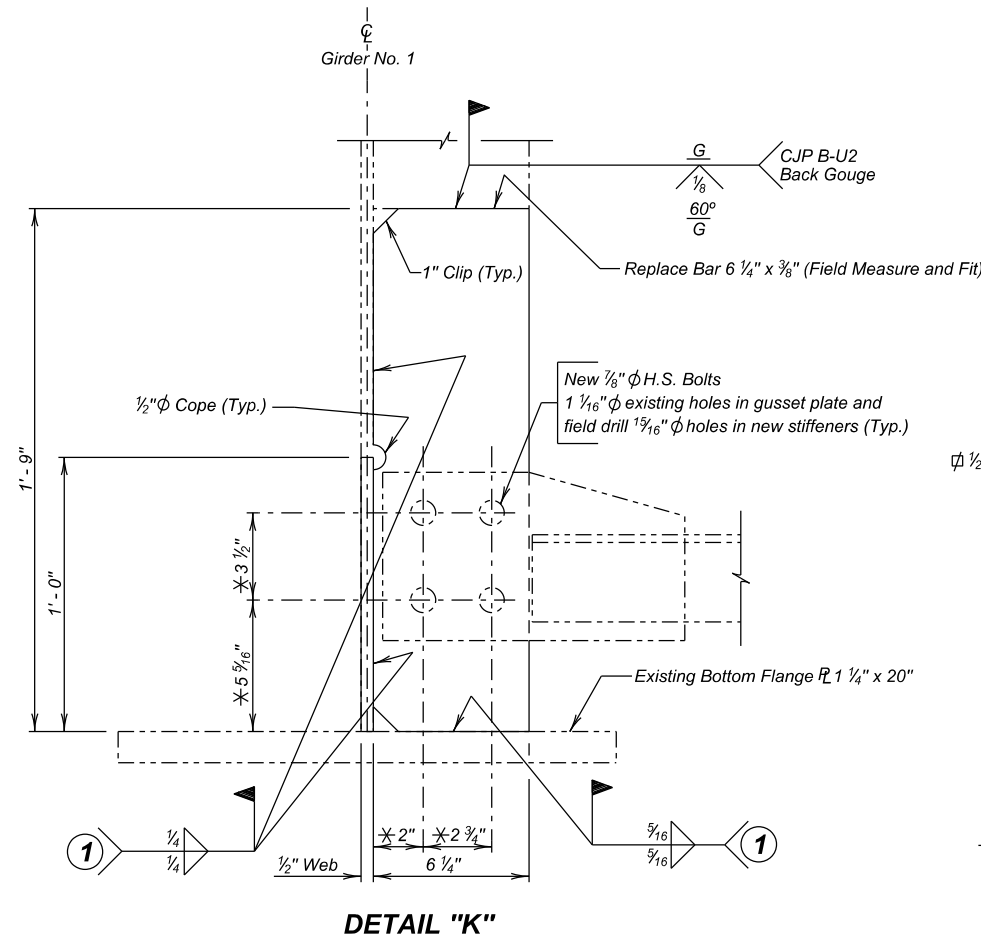
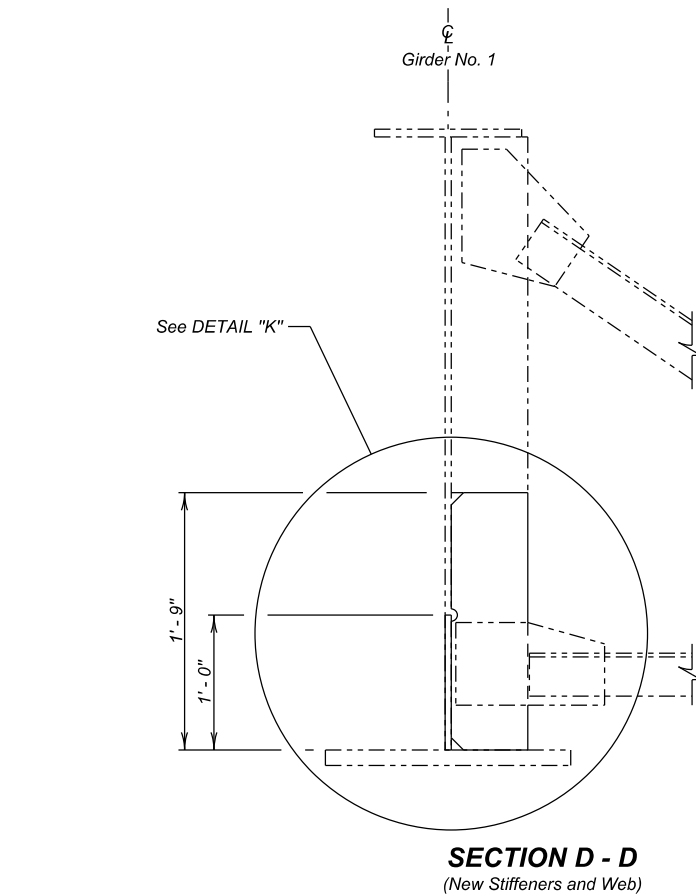
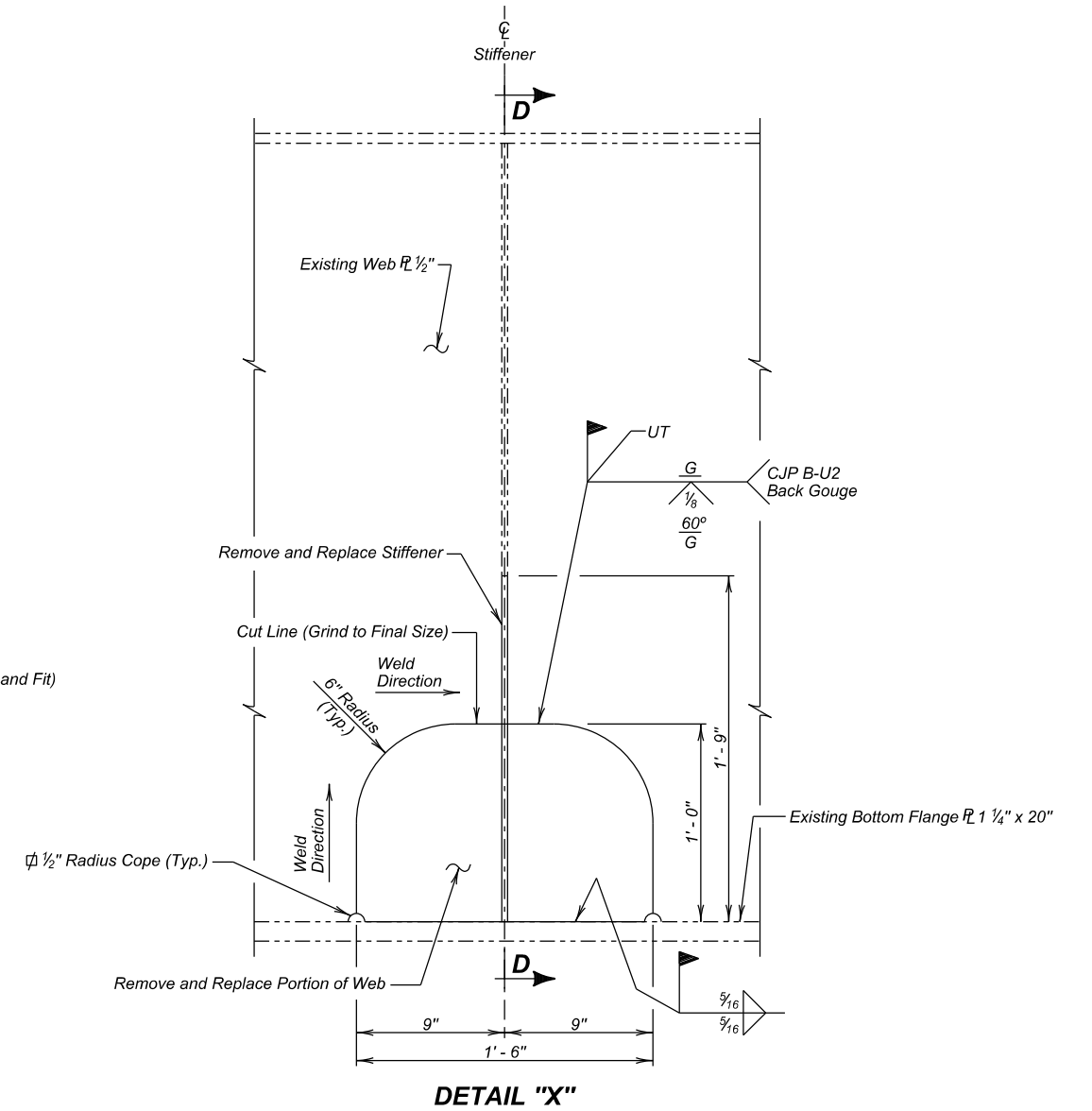
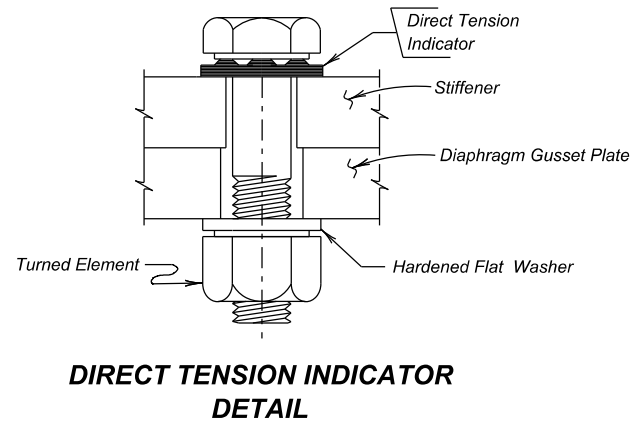
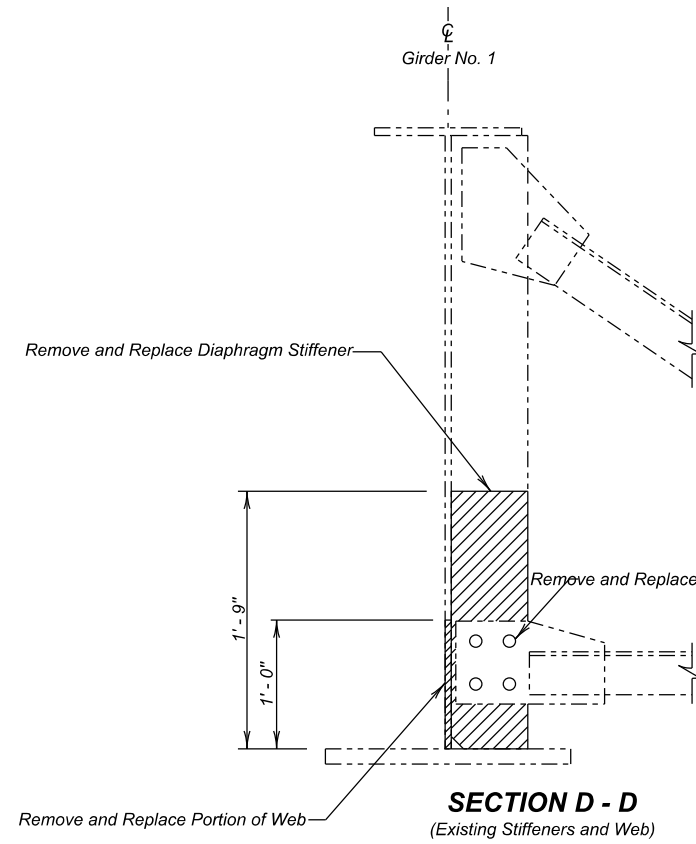
SOUTH FACE GIRDER NO. 1
(Showing Inside Face of Girder No.1)

NOTES:
Concrete deck not shown for clarity
Detail "X" is located on Sheet No. 6
Section A - A is located on Sheet No. 7
Section B - B is located on Sheet No. 8

GIRDER NO. 1 REPAIR LAYOUT
FOR
252' - 6" CONT. COMP. GIRDER BRIDGE
OVER INTERSTATE 29 0° SKEW
STR. NO. 64-158-399 SEC. 22-T89N-R48W
029 S-288

UNION COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2017

DESIGNED BY MM UNIN14H9	CK. DES. BY RS I4H9RA05	DRAFTED BY MG/KR	Steve A. Johnson BRIDGE ENGINEER
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⊕ After the new web section has been welded in place, resize the cope to a 1" radius by grinding the cut surface ensuring the weld tips are ground out. The finished surface shall be smooth.

① All fillet welds attaching stiffeners to girder flanges and webs shall terminate 1/2" from edge of stiffener, flange, stiffener clip or cope, which ever is applicable.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Remove and Replace Web	Each	1
Remove and Replace Transverse Stiffener	Each	1

For informational purposes only, the estimated total structural steel quantity for Remove and Replace Web is 28 lbs.

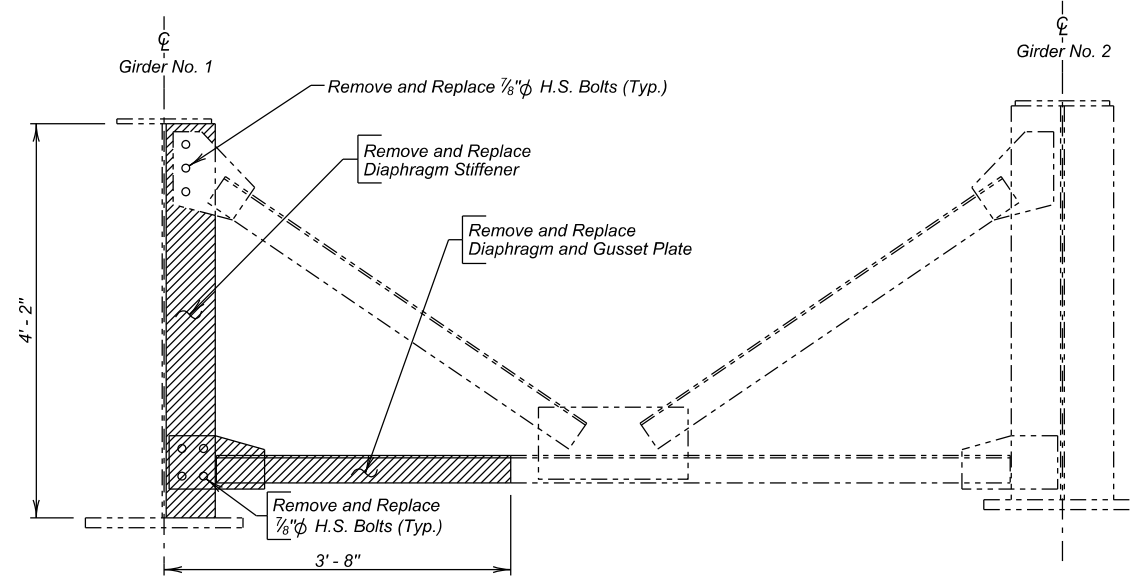
For informational purposes only, the estimated total structural steel quantity for Remove and Replace Transverse Stiffener is 18 lbs.

* Match Existing Field Verify

GIRDER NO. 1 REPAIR DETAILS
FOR
252' - 6" CONT. COMP. GIRDER BRIDGE
OVER I - 29
STR. NO. 64-158-399

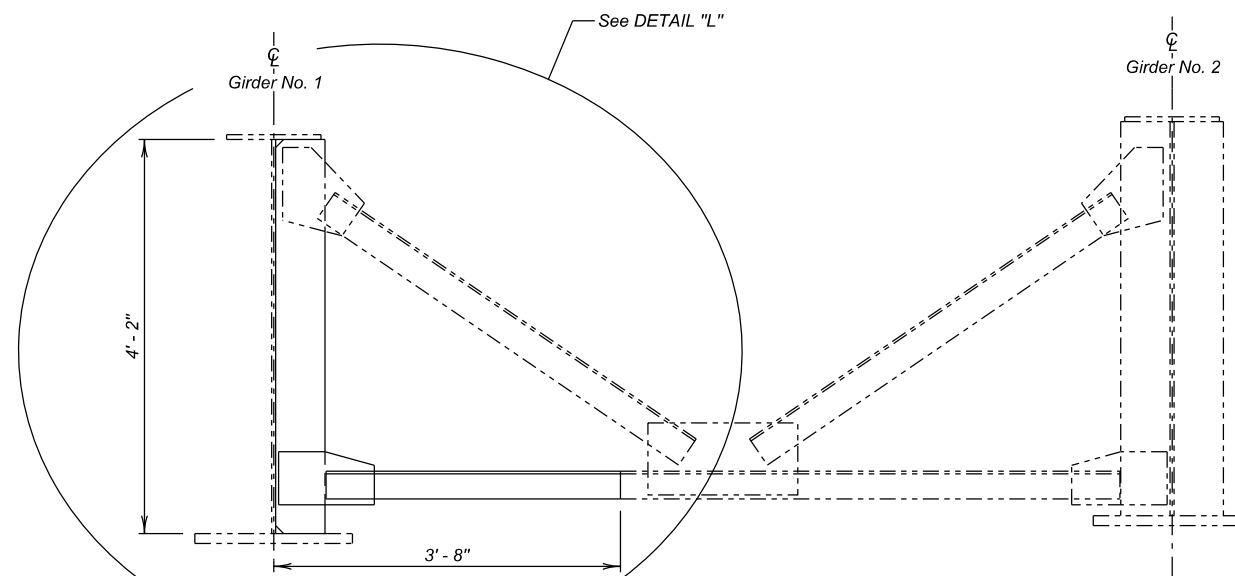
0° SKEW
SEC. 22-T89N-R48W
029 S-288

UNION COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2017



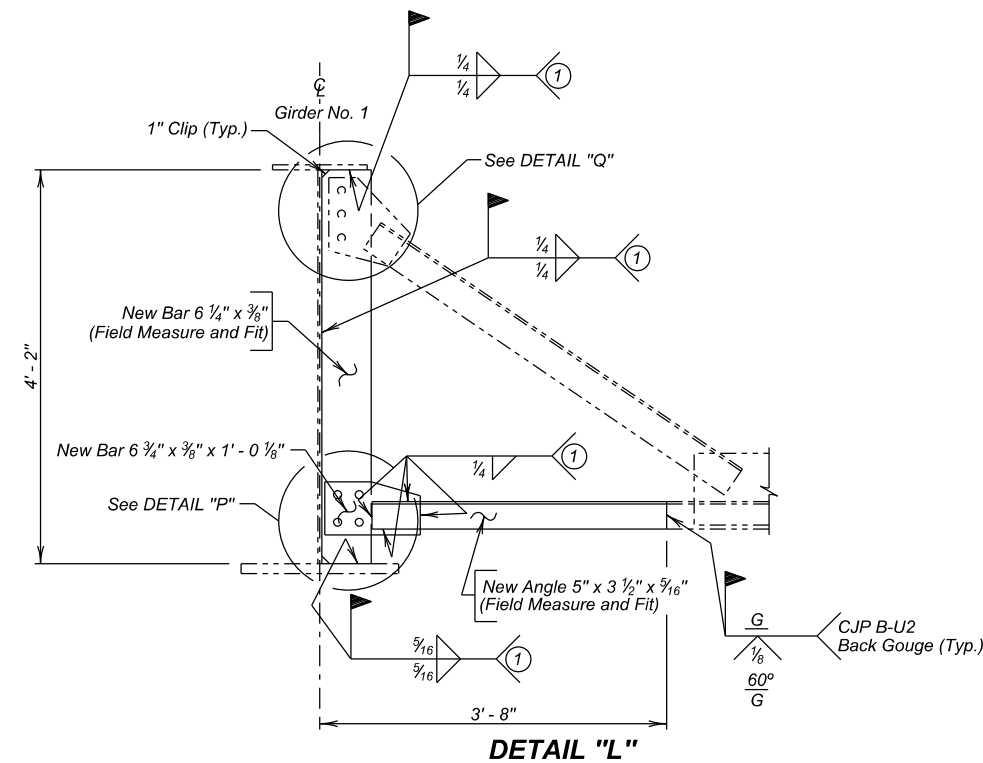
SEC. A - A
Existing Gusset Plate, Diaphragm and Stiffeners

① All fillet welds attaching stiffeners to girder flanges and webs as well as gusset plate to angle shall terminate 1/2" from edge of stiffener, flange, stiffener clip or cope, which ever is applicable.

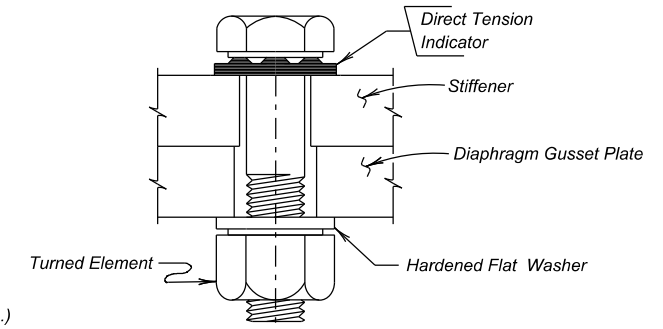


SEC. A - A
New Diaphragm, Gusset Plate and Stiffener

* Match Existing Field Verify



DETAIL "L"



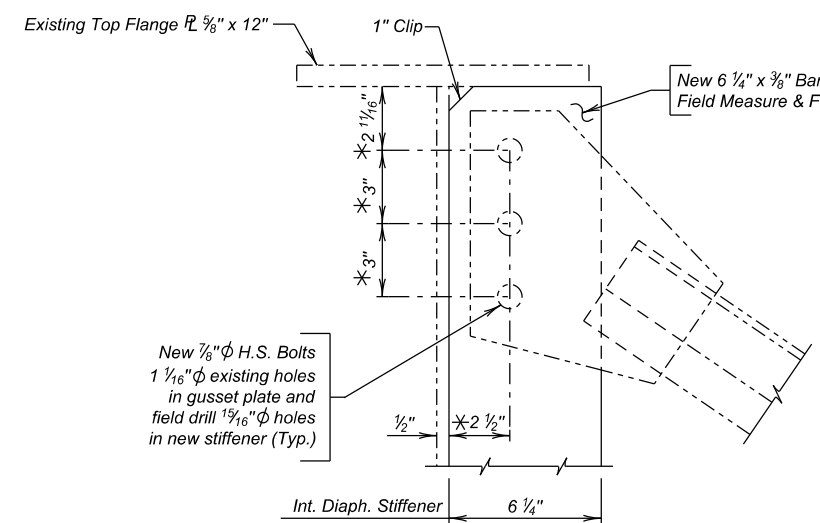
DIRECT TENSION INDICATOR DETAIL

① All fillet welds attaching stiffeners to girder flanges and webs shall terminate 1/2" from edge of stiffener, flange, stiffener clip or cope, which ever is applicable.

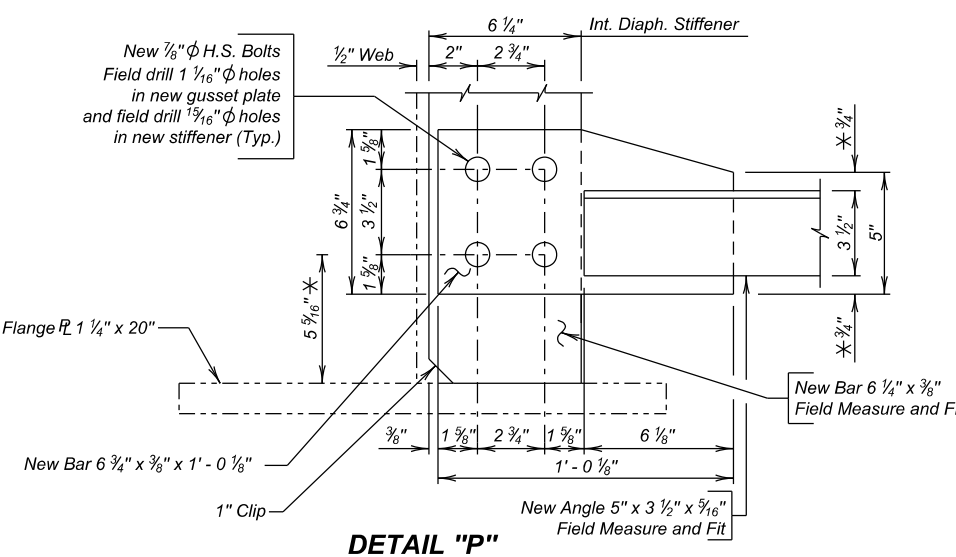
ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Remove and Replace Transverse Stiffener	Each	1
Remove and Replace Steel Diaphragm	Each	1

For informational purposes only, the estimated total structural steel quantity for Remove and Replace Transverse Stiffener is 41 lbs. Remove and Replace Steel Diaphragm is 36 lbs.



DETAIL "Q"

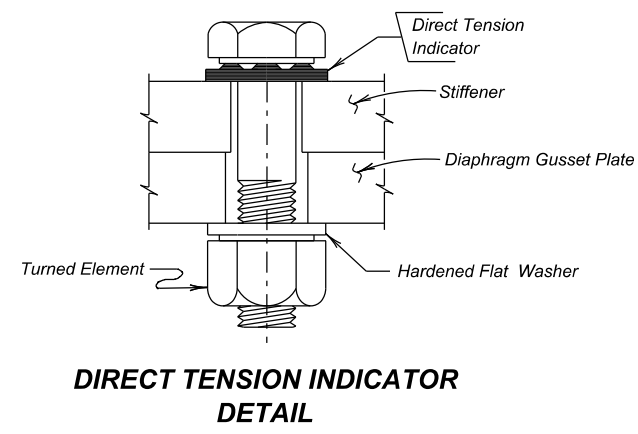
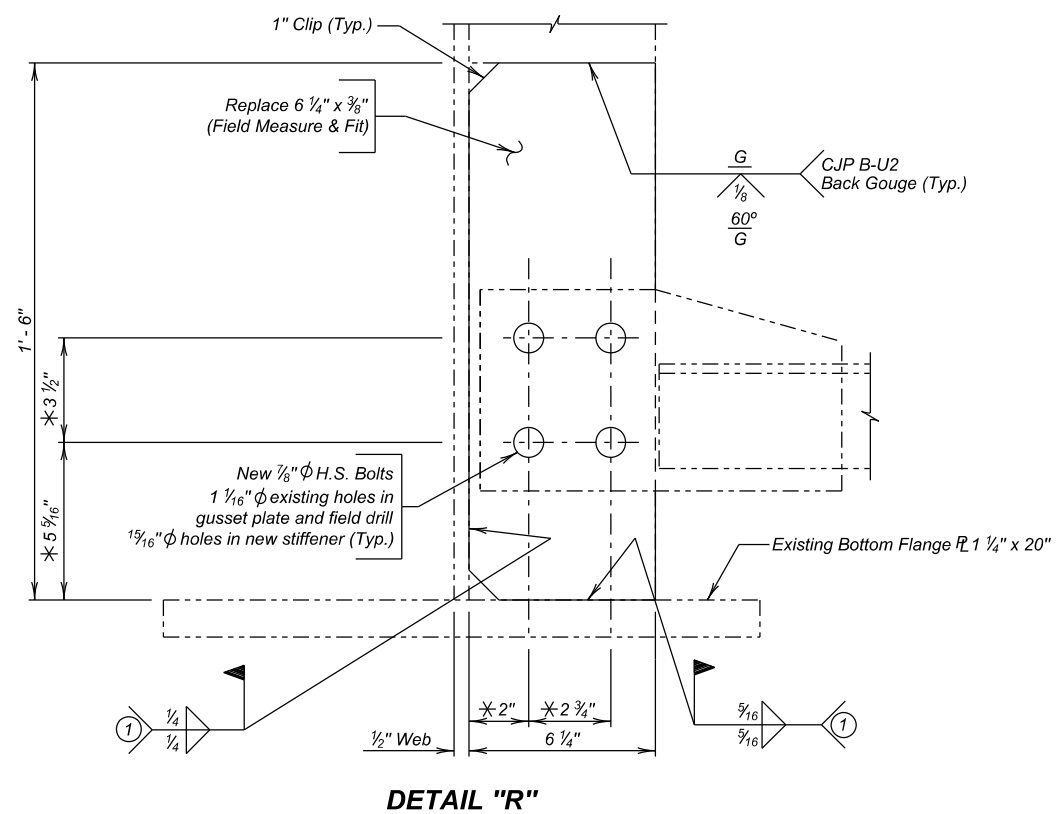
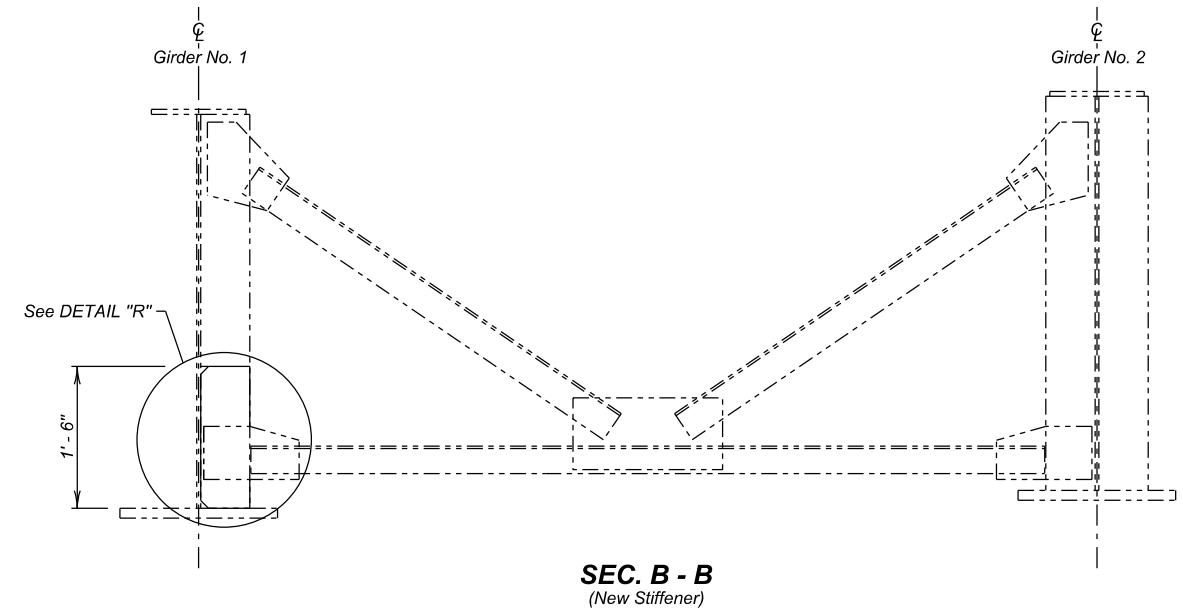
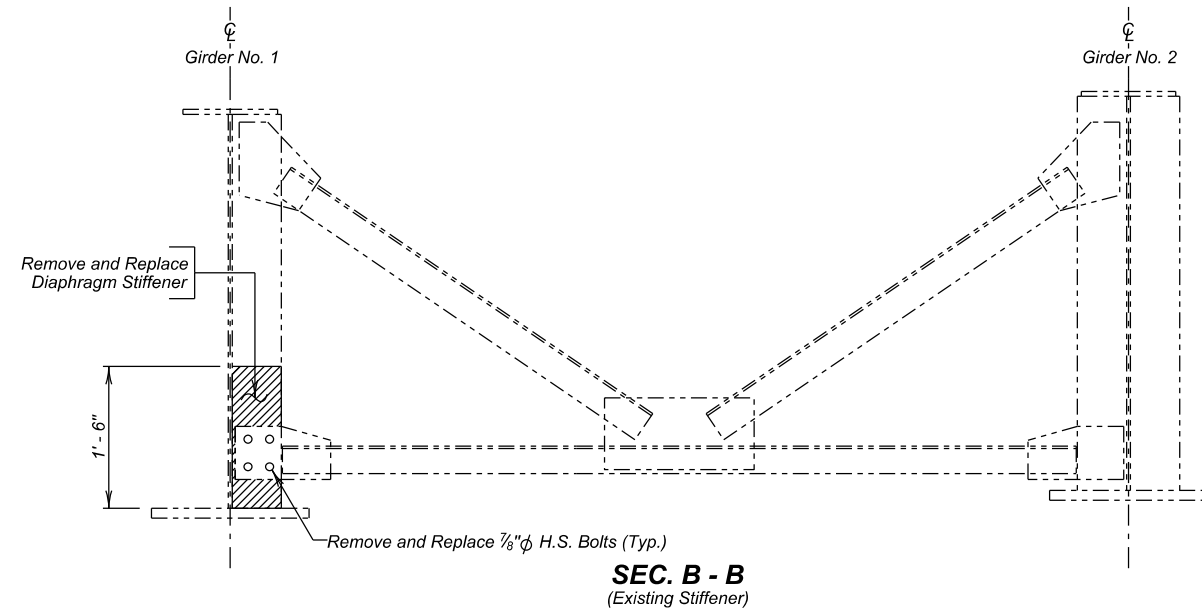


DETAIL "P"

GIRDER NO. 1 REPAIR DETAILS (CONTINUED)

FOR
252' - 6" CONT. COMP. GIRDER BRIDGE
OVER I - 29 0° SKEW
STR. NO. 64-158-399 SEC. 22-T89N-R48W
029 S-288

UNION COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2017



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Remove and Replace Transverse Stiffener	Each	1

For informational purposes only, the estimated total structural steel quantity for Remove and Replace Transverse Stiffener is 16 lbs.

① All fillet welds attaching stiffeners to girder flanges and webs shall terminate 1/2" from edge of stiffener, flange, stiffener clip or cope, whichever is applicable.

* Match Existing Field Verify

GIRDER NO. 1 REPAIR DETAILS (CONTINUED)
FOR
252' - 6" CONT. COMP. GIRDER BRIDGE
OVER I - 29
STR. NO. 64-158-399

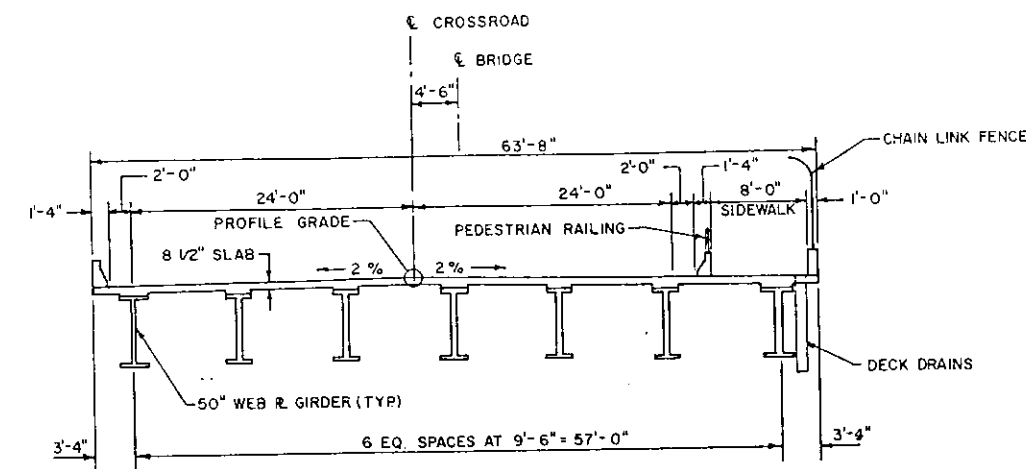
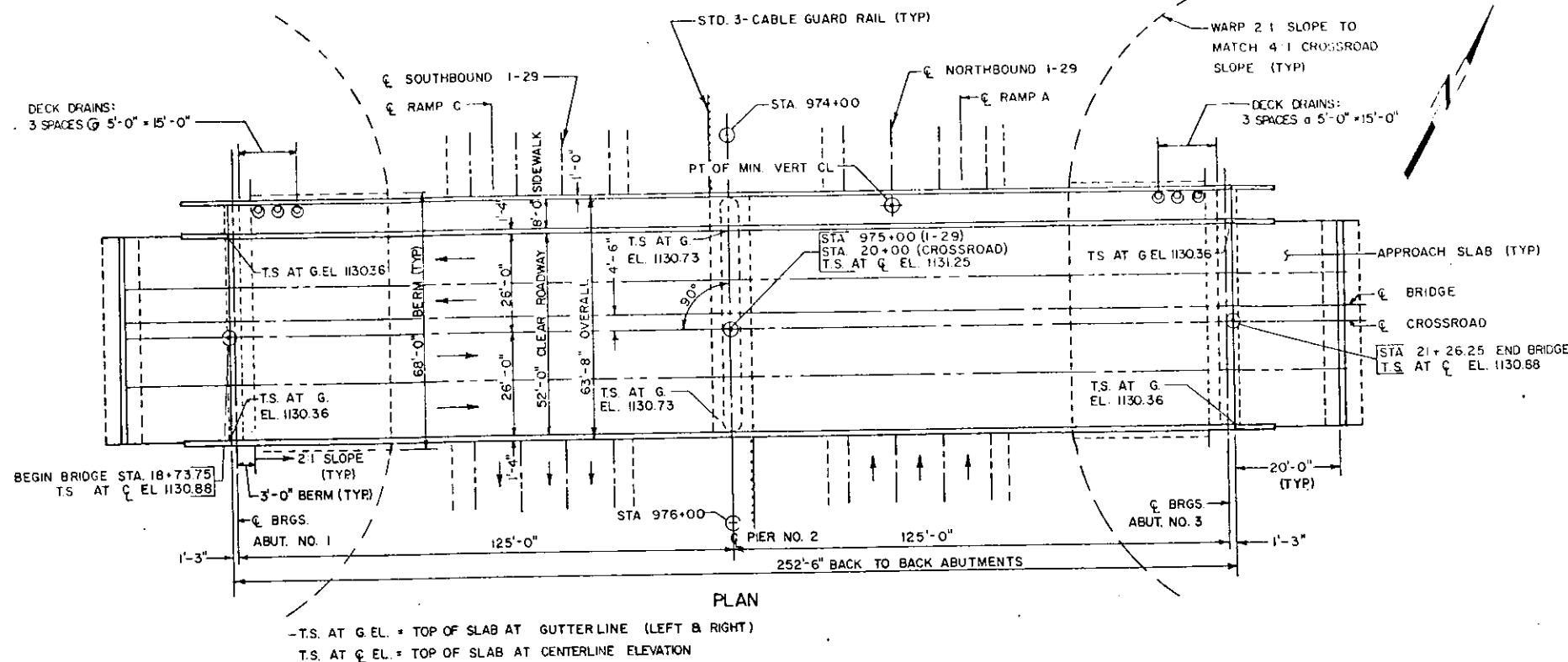
0° SKEW
SEC. 22-T89N-R48W
029 S-288

UNION COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2017

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	029 S-288	22	25

B.M. #1 ALUMINUM SERVING CAP
N56493.718, E 48921.8181
CROSSROAD STA. 17+34.53
EL. 1108.51

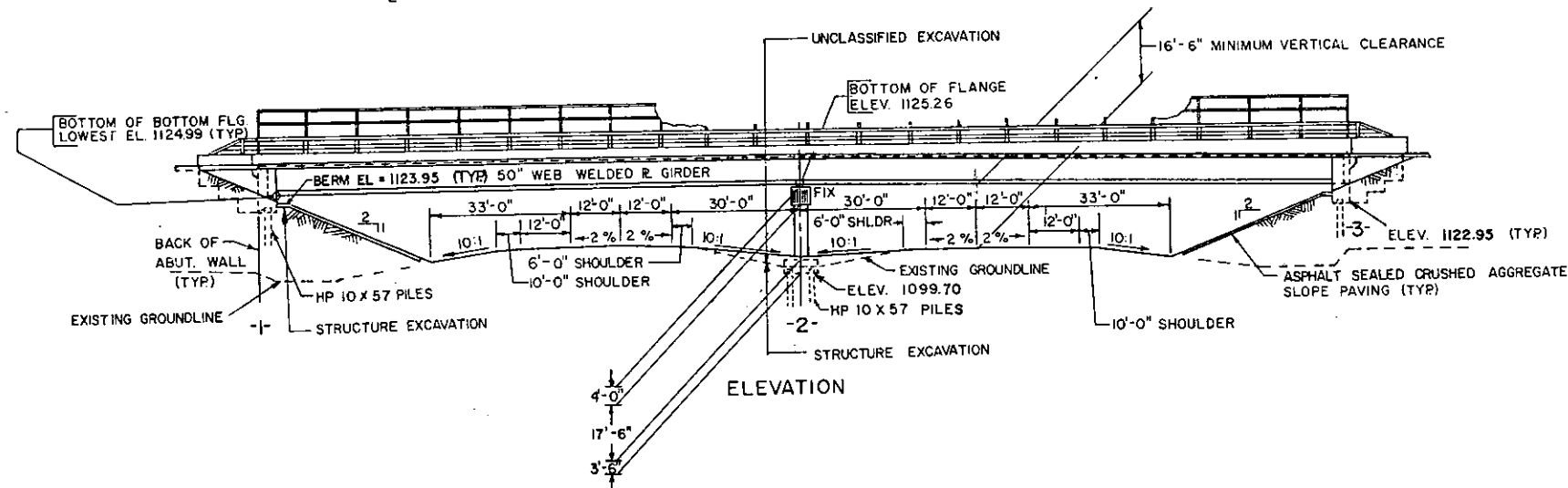
B.M. #2 5/8" REBAR
CROSSROAD STA. 17+63.30' LT.
EL. 1108.44



BRIDGE CROSS-SECTION
(LOOKING WEST)

INDEX OF BRIDGE SHEETS

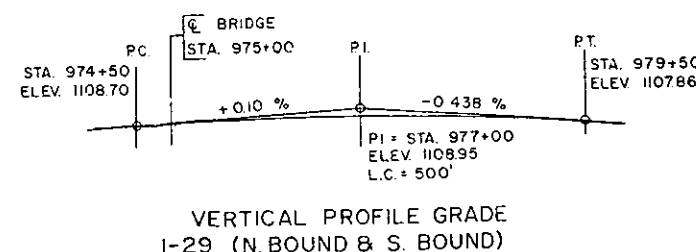
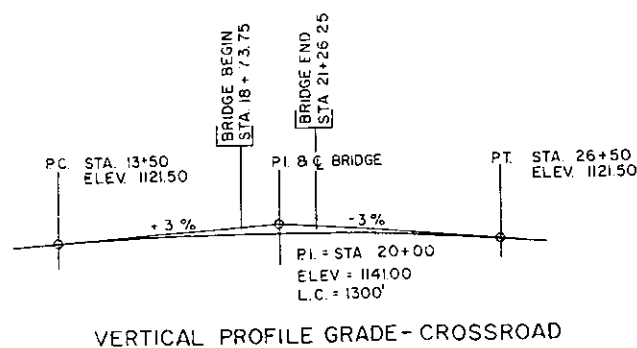
- Sheet No.1 - General Drawing
- Sheet No.2 - Estimate of Structure Quantities and Notes
- Sheet No.3 - Notes (Cont.)
- Sheet No.4 - Subsurface Investigation and Piling Layout
- Sheet No.5 - Details of Abutments
- Sheet No.6 - Details of Abutments
- Sheet No.7 - Wingwall Details
- Sheet No.8 - Wingwall Details
- Sheet No.9 - Pier Details
- Sheet No.10 - Slab Details
- Sheet No.11 - End Block, Barrier Curb - Southside
- Sheet No.12 - End Block, Barrier Curb - Northside
- Sheet No.13 - Steel Railing and Bridge Sidewalk Chain Link Fence Details
- Sheet No.14 - Diaphragm Details
- Sheet No.15 - Girder Layout and Details
- Sheet No.16 - Framing Diagram and Erection Details
- Sheet No.17 - Details of Shop Welded and Field Bolted Splices and Bearings
- Sheet No.18 - Details of Bridge End Backfill
- Sheet No.19 - Details of Approach Slabs Adjacent to Bridge
- Sheet No.20 - Approach Slab Joint Details
- Sheet No.21 - Details of Standard Plate No. 302
- Sheet No.22 - Details of Standard Plate No. 308 and 5-Bolt Insert Assembly
- Sheet No.23 - Details of Crushed Aggregate Slope Paving



ORIGINAL CONSTRUCTION PLANS

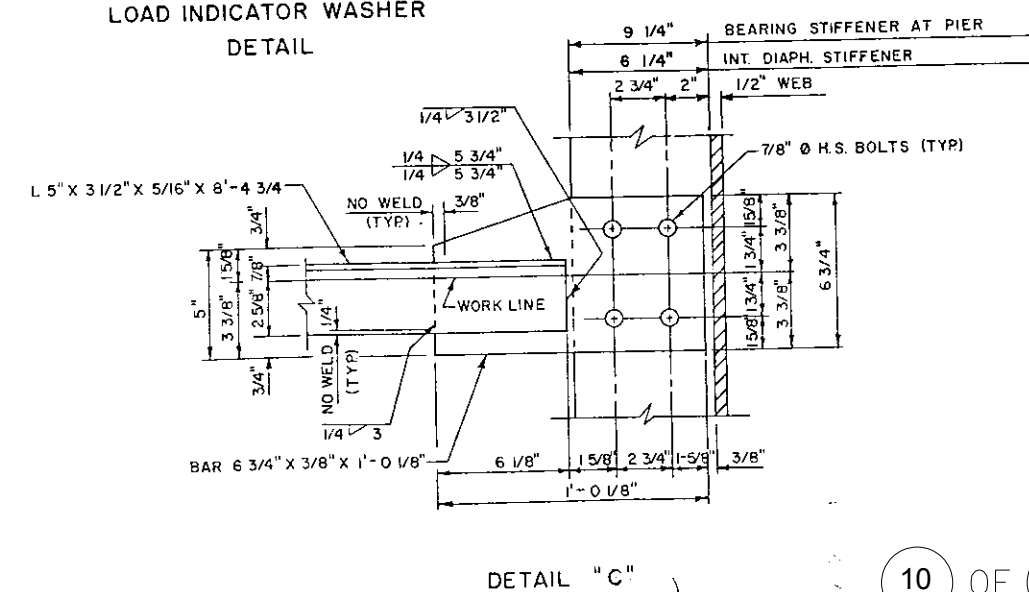
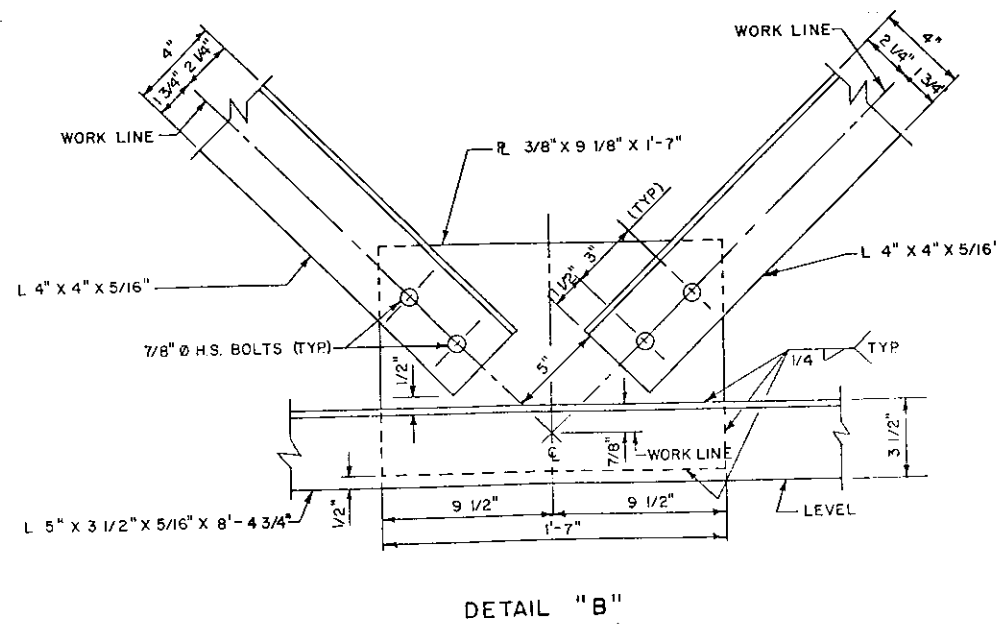
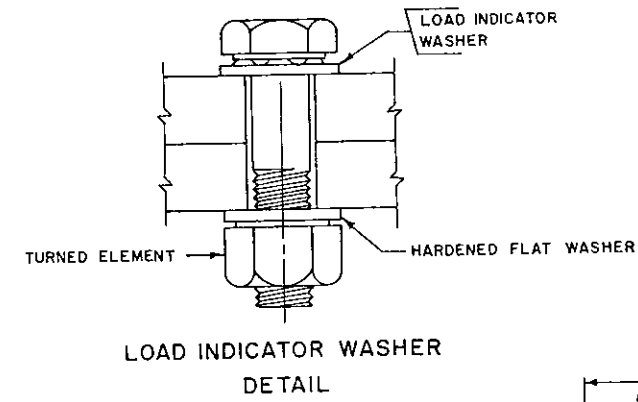
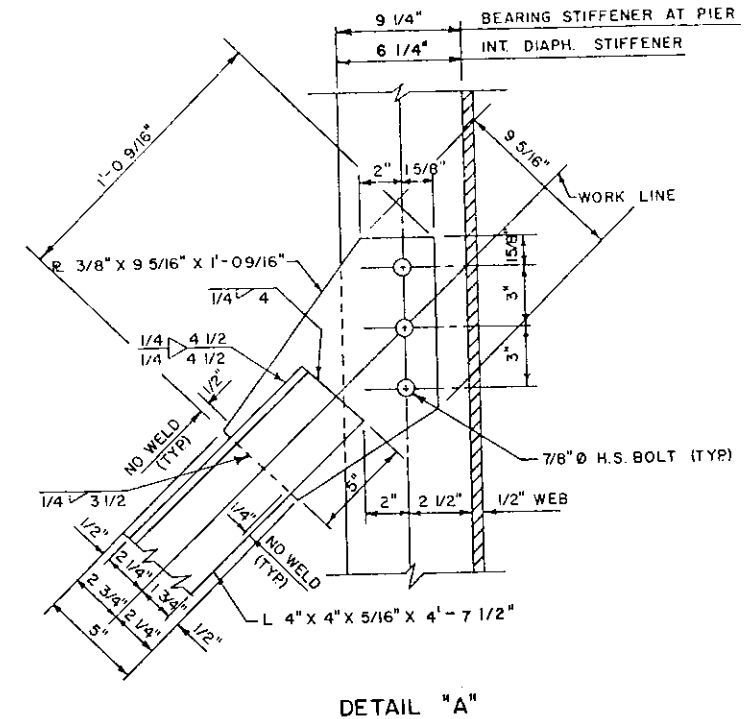
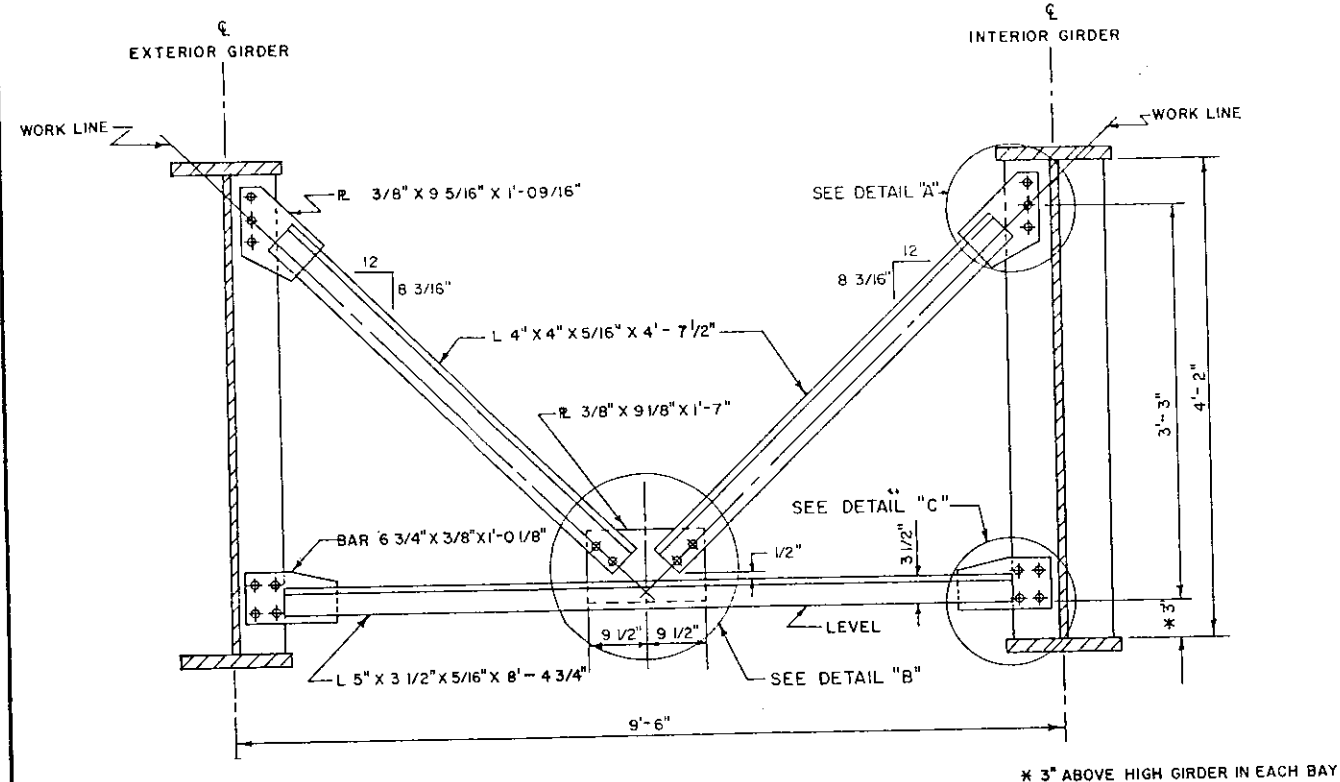
GENERAL DRAWING
OF

252'-6" CONT. COMP. GIRDER BRIDGE
52'-0" ROADWAY 1'-8" SIDEWALK 0° SKEW
OVER INTERSTATE 29 SEC. 22-T89N-R48W
STA. 18+73.75 TO 21+26.25 1R29-1 (76)1
STR. NO. 64-158-399
PCEMS 333W HS20-44 (& ALT.)



DESIGNED BY PS	DRAWN BY TP	CHECKED BY AK	APPROVED BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	029 S-288	23	25



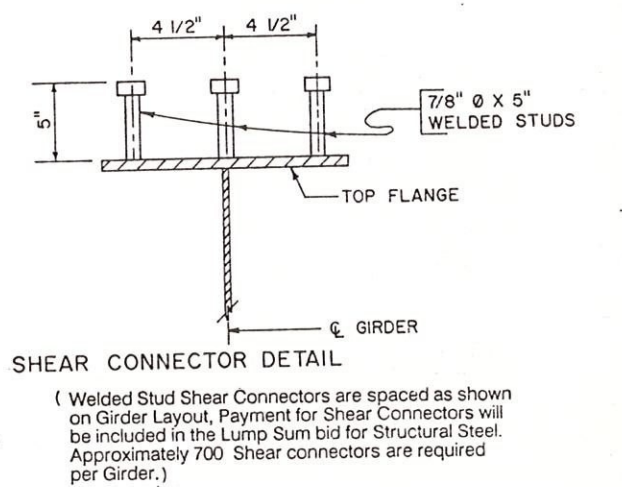
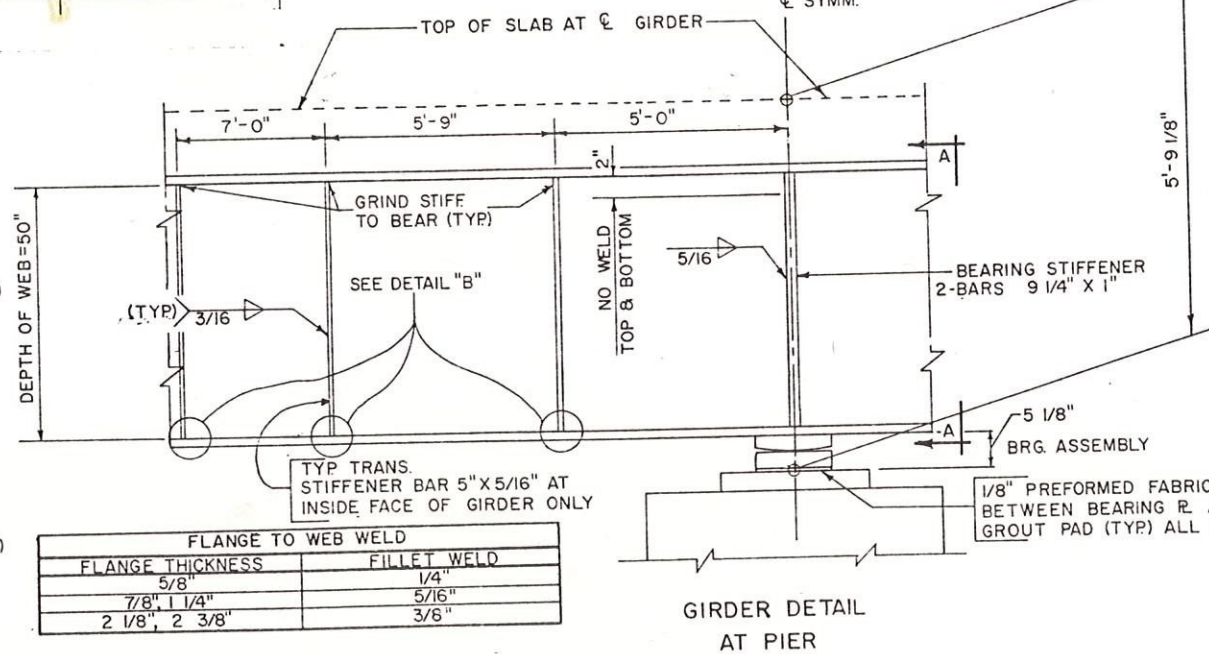
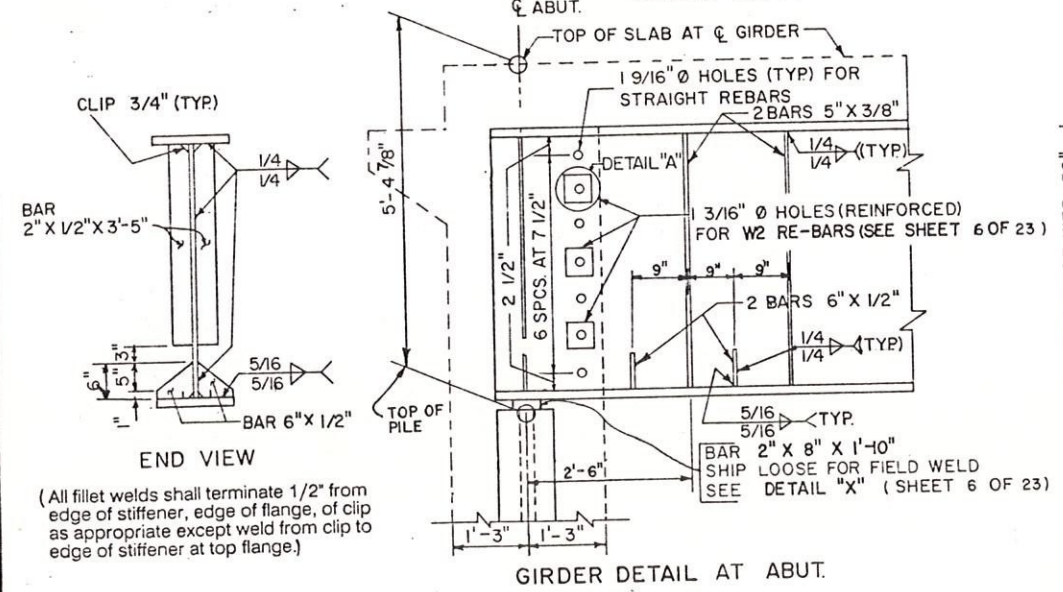
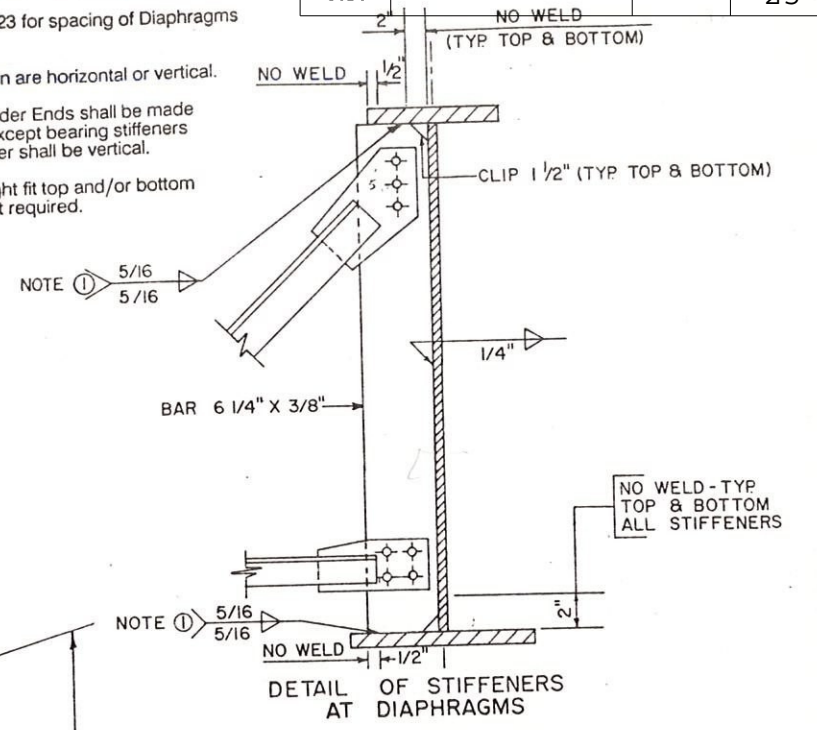
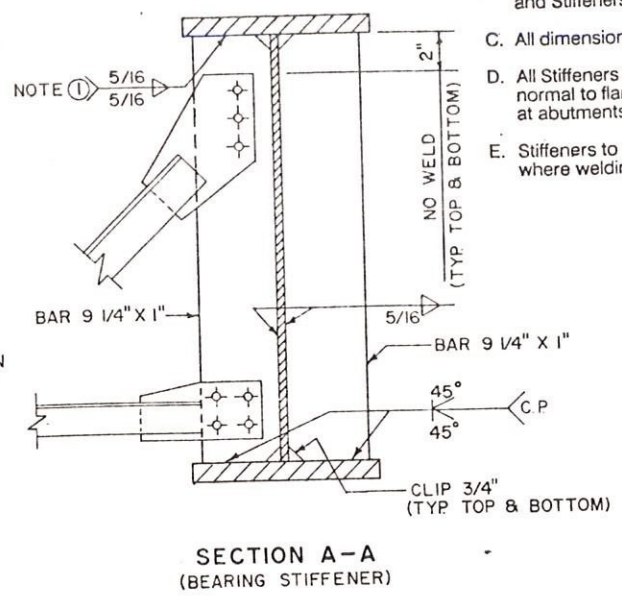
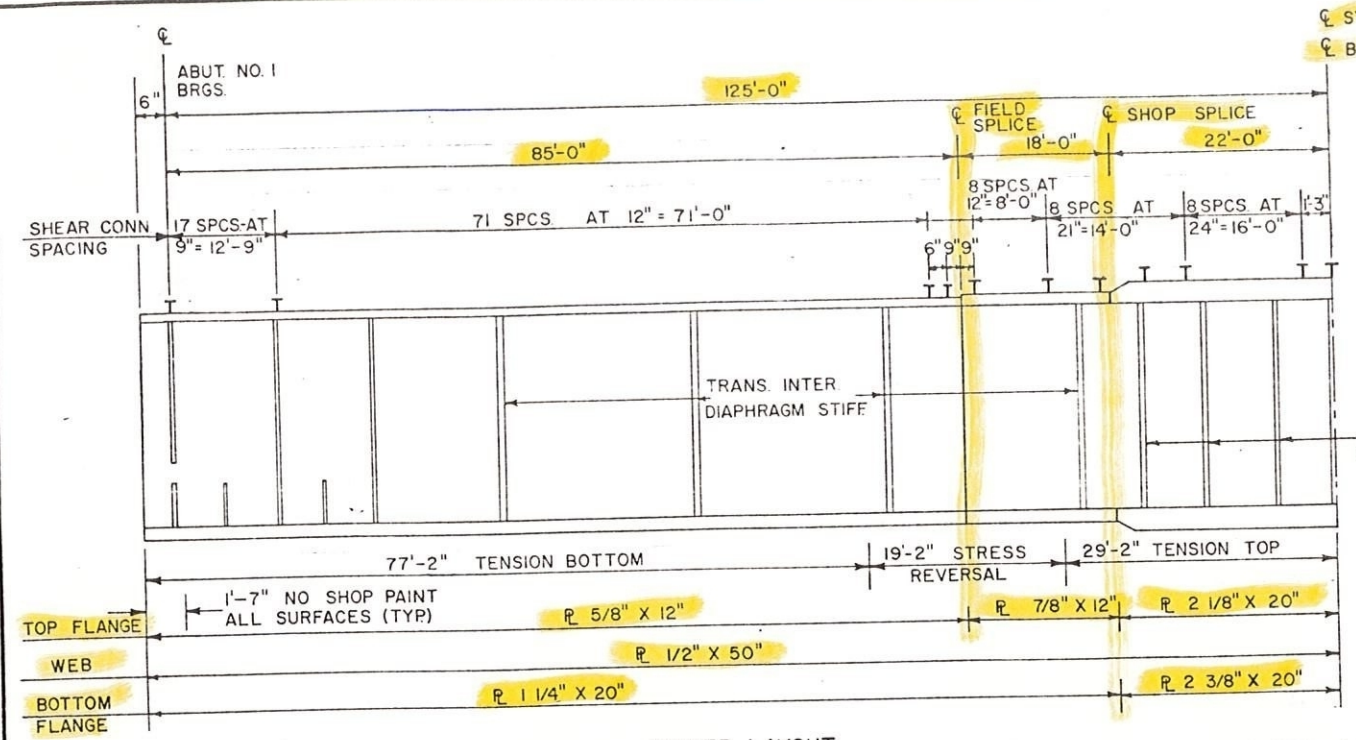
GENERAL NOTES

1. The estimated weight of the Steel Diaphragms is included in the Quantity for Structural Steel shown for informational purposes on sheet no. 10 of 23.
2. The 7/8" High Strength bolts, nuts and washers shall conform to ASTM specifications A-325. The bolts shall be the heavy hexagon head structural type with heavy semi-finished hexagon nut and hardened washer.
3. Holes for the 7/8" High Strength bolts shall be 15/16" in the stiffener plates and angles and 1-1/16" in the 3/8" gusset plates.

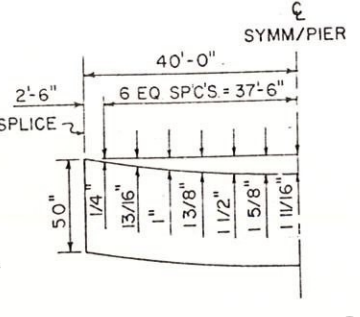
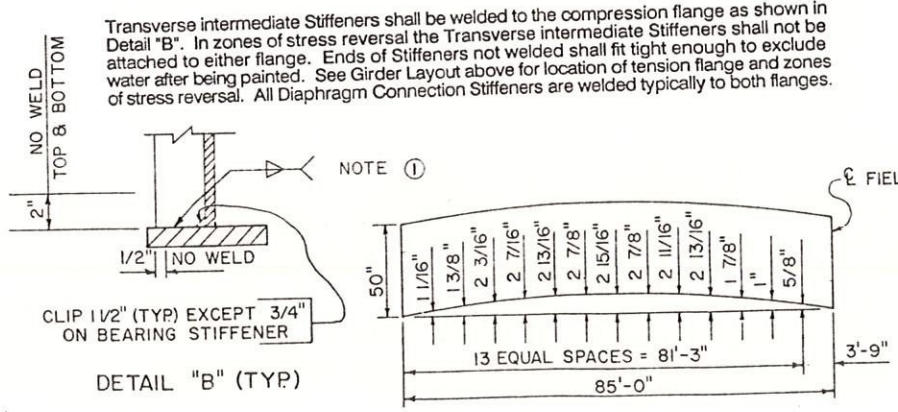
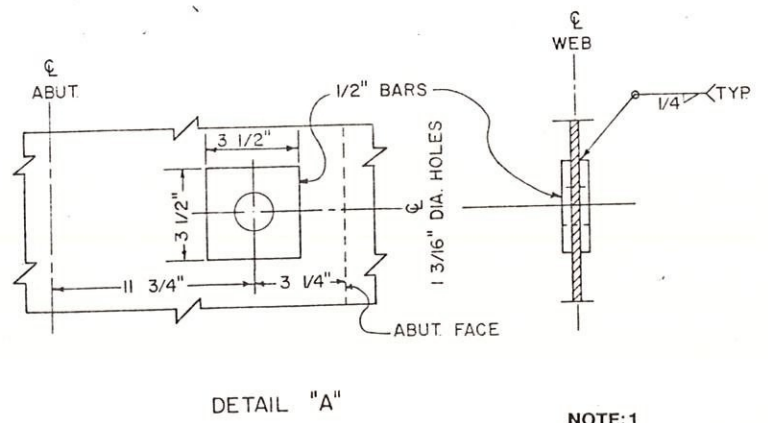
ORIGINAL CONSTRUCTION PLANS

DIAPHRAGM DETAILS
FOR
252'-6" CONT. COMP. GIRDER BRIDGE
52'-0" ROADWAY 1-8'-0" SIDEWALK 0° SKEW
OVER INTERSTATE 29 SEC. 22-T89N-R48W
STA. 18+73.75 TO 21+26.25 IR29-1 (76)1
STR. NO. 64-158-399
PCEMS 333W HS20-44 (& ALT.)
UNION COUNTY
S.D. DEPT. OF TRANSPORTATION
MARCH 1990

DESIGNED BY PS	DRAWN BY TP	CHECKED BY AK	APPROVED BRIDGE ENGINEER
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FLANGE TO WEB WELD	
FLANGE THICKNESS	FILLET WELD
5/8"	1/4"
7/8", 1 1/4"	5/16"
2 1/8", 2 3/8"	3/8"

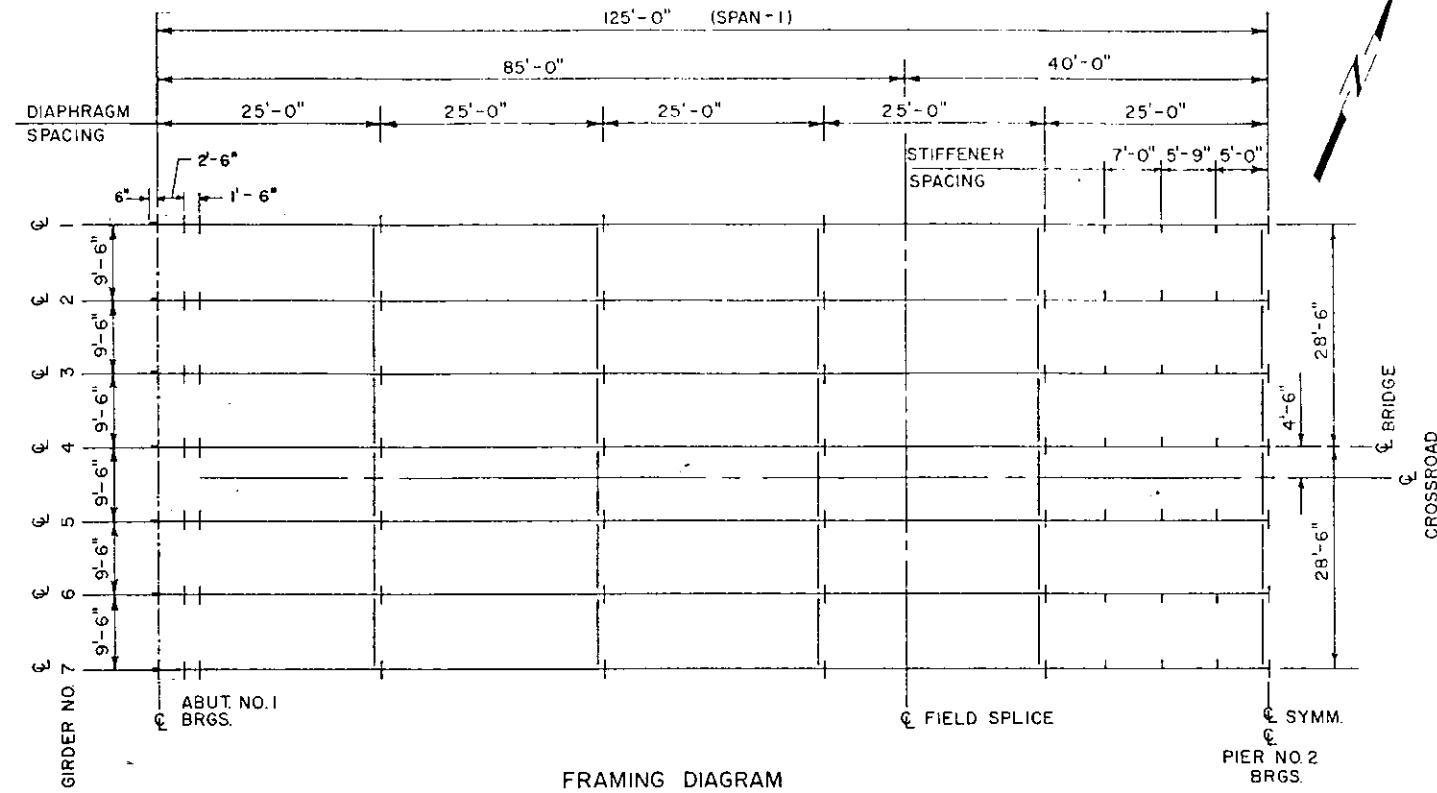


NOTE: 1
All fillet welds attaching transverse intermediate, diaphragm, or bearing stiffeners to girder flanges, shall terminate 1/2" from edge of stiffener, edge of flange, or clip as appropriate. Weld size to be as indicated in the table of Flange to Web Welds.

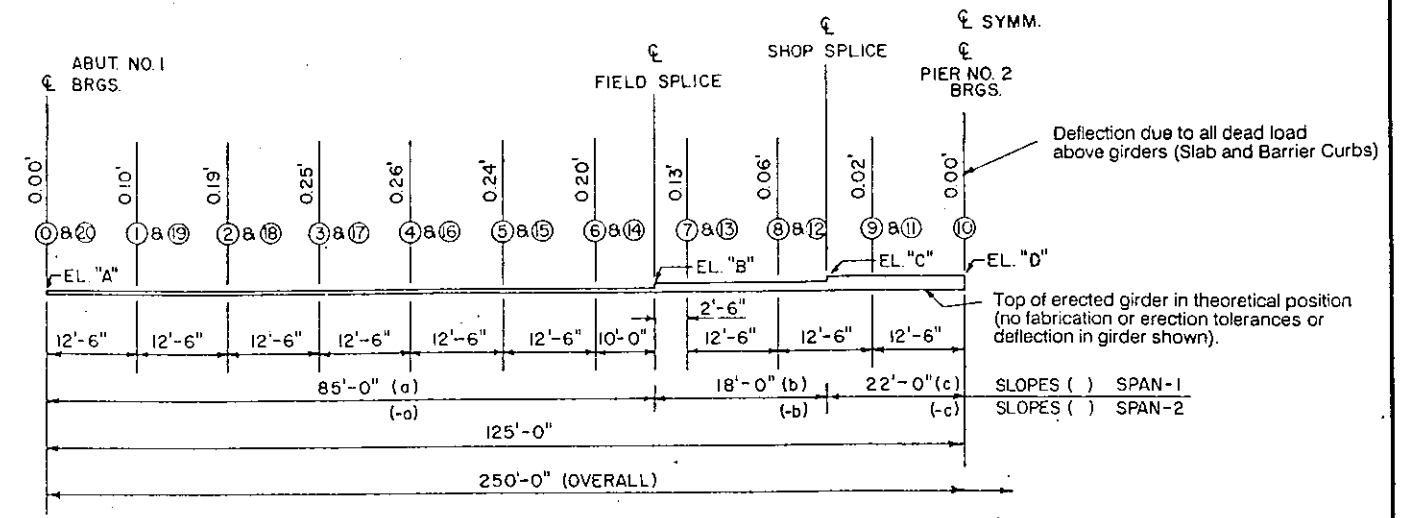
ORIGINAL CONSTRUCTION PLANS

GIRDER LAYOUT AND DETAILS
FOR
252'-6" CONT. COMP. GIRDER BRIDGE
52'-0" ROADWAY 1'-8" SIDEWALK 0° SKEW
OVER INTERSTATE 29 SEC. 22-T89N-R48W
STA. 18+73.75 TO 21+26.25 IR29-1 (76)1
STR. NO. 64-158-399
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UNION COUNTY
S.D. DEPT. OF TRANSPORTATION
MARCH 1990

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
PS	TP	AK	BRIDGE ENGINEER



FRAMING DIAGRAM



GIRDER ERECTION DIAGRAM

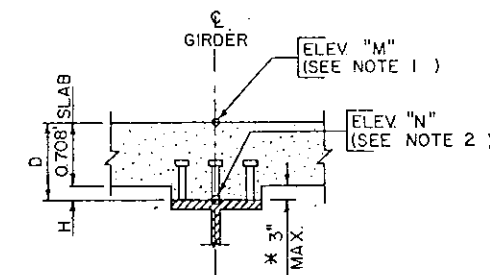
NOTE 1: These elevations and slopes occur at a time after girder erection is completed but prior to any placement of concrete. Slopes shown are an imaginary straight line between points at beam ends and are (+) towards increasing stations.

GIRDER NO.		ELEV. (TOP OF GIRDER)																				
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	ELEV. "M"	1130.23	1130.40	1130.55	1130.66	1130.72	1130.74	1130.73	1130.69	1130.64	1130.60	1130.59	1130.60	1130.64	1130.69	1130.73	1130.74	1130.72	1130.66	1130.55	1130.40	1130.23
	(-) ELEV. "N"																					
	(=) D																					
	(-) 0.708																					
2	ELEV. "M"	1130.42	1130.59	1130.74	1130.85	1130.91	1130.93	1130.92	1130.88	1130.83	1130.79	1130.78	1130.79	1130.83	1130.88	1130.92	1130.93	1130.91	1130.85	1130.74	1130.59	1130.42
	(-) ELEV. "N"																					
	(=) D																					
	(-) 0.708																					
3	ELEV. "M"	1130.61	1130.78	1130.93	1131.04	1131.10	1131.12	1131.11	1131.07	1131.02	1130.98	1130.97	1130.98	1131.02	1131.07	1131.11	1131.12	1131.10	1131.04	1130.93	1130.78	1130.61
	(-) ELEV. "N"																					
	(=) D																					
	(-) 0.708																					
4	ELEV. "M"	1130.80	1130.97	1131.12	1131.23	1131.29	1131.31	1131.30	1131.26	1131.21	1131.17	1131.16	1131.17	1131.21	1131.26	1131.30	1131.31	1131.29	1131.23	1131.12	1130.97	1130.80
	(-) ELEV. "N"																					
	(=) D																					
	(-) 0.708																					
5	ELEV. "M"	1130.79	1130.96	1131.11	1131.22	1131.28	1131.30	1131.29	1131.25	1131.20	1131.16	1131.15	1131.16	1131.20	1131.25	1131.29	1131.30	1131.28	1131.22	1131.11	1130.96	1130.79
	(-) ELEV. "N"																					
	(=) D																					
	(-) 0.708																					
6	ELEV. "M"	1130.60	1130.77	1130.92	1131.03	1131.09	1131.11	1131.10	1131.06	1131.01	1130.97	1130.96	1130.97	1131.01	1131.06	1131.10	1131.11	1131.09	1131.03	1130.92	1130.77	1130.60
	(-) ELEV. "N"																					
	(=) D																					
	(-) 0.708																					
7	ELEV. "M"	1130.41	1130.58	1130.73	1130.84	1130.90	1130.92	1130.91	1130.87	1130.82	1130.78	1130.77	1130.78	1130.82	1130.87	1130.91	1130.92	1130.90	1130.84	1130.73	1130.58	1130.41
	(-) ELEV. "N"																					
	(=) D																					
	(-) 0.708																					

GIRDER NO.	ELEV. (TOP OF GIRDER)				SLOPES (%)					
	"A"	"B"	"C"	"D"	a	b	c	-c	-b	-a
1	1129.31	1129.81	1129.82	1129.80	0.57	0.55	0.09	0.09	0.55	0.57
2	1129.50	1130.00	1130.01	1129.99	0.57	0.55	0.09	0.09	0.55	0.57
3	1129.69	1130.19	1130.20	1130.18	0.57	0.55	0.09	0.09	0.55	0.57
4	1129.88	1130.38	1130.39	1130.37	0.57	0.55	0.09	0.09	0.55	0.57
5	1129.87	1130.37	1130.38	1130.36	0.57	0.55	0.09	0.09	0.55	0.57
6	1129.68	1130.18	1130.19	1130.17	0.57	0.55	0.09	0.09	0.55	0.57
7	1129.49	1129.99	1130.00	1129.98	0.57	0.55	0.09	0.09	0.55	0.57

ORIGINAL CONSTRUCTION PLANS

NOTE 2: This Table contains the necessary information to determine the depth of concrete, in feet, over the girders at the points shown. All calculations can be carried out in the space provided. Elevation "M" is theoretical top of slab elevation before any concrete has been poured. This elevation includes correction for deflection due to Dead Load above girders. Elevation "N" is a field measured elevation taken on top of girders at points shown. This elevation must be taken after girder erection is complete, but prior to placing any of the slab concrete. Girders shall not be supported by construction shoring while elevations are taken.



* If during construction, it is found that this dimension will be exceeded or is less than zero, corrective measures must be taken as approved by the engineer.

FOR ESTIMATED WEIGHT OF STRUCTURAL STEEL SEE SHEET 10 OF 23

FRAMING DIAGRAM AND ERECTION DETAILS FOR
252'-6" CONT. COMP. GIRDER BRIDGE
 52'-0" ROADWAY 1-8'-0" SIDEWALK 0° SKEW
 OVER INTERSTATE 29 SEC. 22-T89N-R48W
 STA. 18+73.75 TO 21+26.25 IR29-1 (76)1
 STR. NO. 64-158-399
 PCEMS 333W HS20-44 (& ALT.)

UNION COUNTY
 S.D. DEPT. OF TRANSPORTATION
 MARCH 1990

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
PS	TP	AK	