

STATE OF NEBRASKA
DEPARTMENT OF TRANSPORTATION
PLANS FOR CONSTRUCTION
**ELKHORN RIVER BR
SOUTHEAST OF STANTON**
STANTON COUNTY

PROJECT NO.	SHEET NO.
ER-57-3(110)	A1
▲ CONTROL NO.	32322
▲ CONTROL NO.	
■ CONTROL NO.	

THE 2017 EDITION OF THE NEBRASKA STANDARD SPECIFICATIONS AND THE SPECIAL PROVISIONS APPLY TO THIS PROJECT.

THE WORK ON THIS PROJECT CONSISTS OF GROUPS
1-GRADING, 3-PAVEMENT, 5-SEEDING,
6-BRIDGE, 7-GUARDRAIL & 10-GENERAL

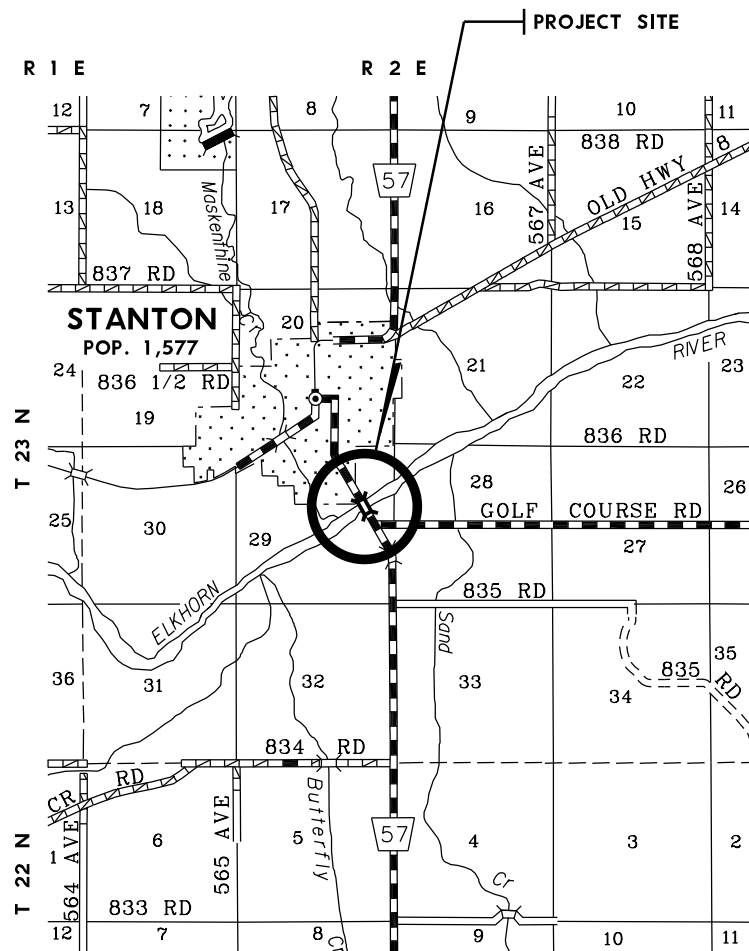
▲ GROUPS	1, 3, 5, 6, 7 & 10	ARE INCLUDED
	IN THE LETTING OF	MAY 28, 2019
▲ GROUPS		ARE INCLUDED
	IN THE LETTING OF	
■ GROUPS		ARE INCLUDED
	IN THE LETTING OF	

INDEX OF SHEETS

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740-R1	(3 SHEETS) MIDWEST GUARDRAIL SYSTEM BRIDGE APPROACH SECTION
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920-R7	(3 SHEETS) TRAFFIC CONTROL, CONSTRUCTION AND MAINTENANCE
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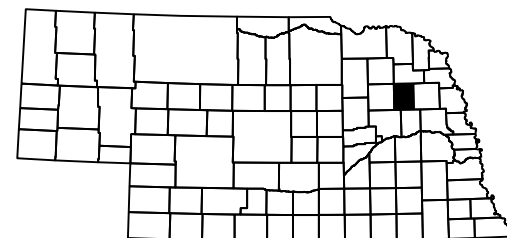
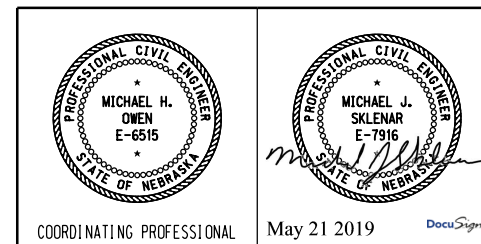
CONVENTIONAL SIGNS

FENCE R.O.W. OR WIRE	
GUARDRAIL	
TRAVELED WAY	
DIKE	
CULVERT	
POWER POLE	
TELEPHONE POLE	
MAILBOX	
RAILROAD TRACKS	
MARSH	
TREE - CONIFEROUS	
TREE - DECIDUOUS	

R.O.W. LEGEND

NEW CONTROLLED ACCESS	
PREVIOUS CONTROLLED ACCESS	
LIMITS OF CONSTRUCTION	
PREVIOUS R.O.W.	
NEW R.O.W.	
EXISTING PERMANENT EASEMENT	
TEMPORARY EASEMENT	
EXCESS TAKING	
PERMANENT EASEMENT	
EXISTING RAILROAD EASEMENT	
NEW RAILROAD PERMANENT EASEMENT	
NEW RAILROAD TEMPORARY EASEMENT	

REFERENCE POST NO. TO REFERENCE POST NO.
EXCEPTIONS: FROM STA. TO STA.
TOTAL NET LENGTH OF PROJECT: FEET MILES

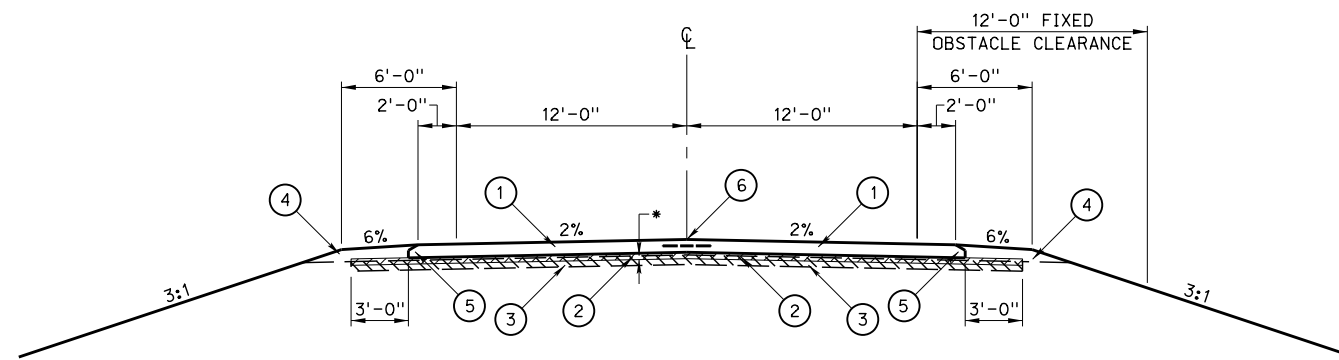


ROADWAY DESIGN DIVISION

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TYPICAL CROSS SECTIONS



HWY. N-57
STATION TO STATION
418+65 - 419+45

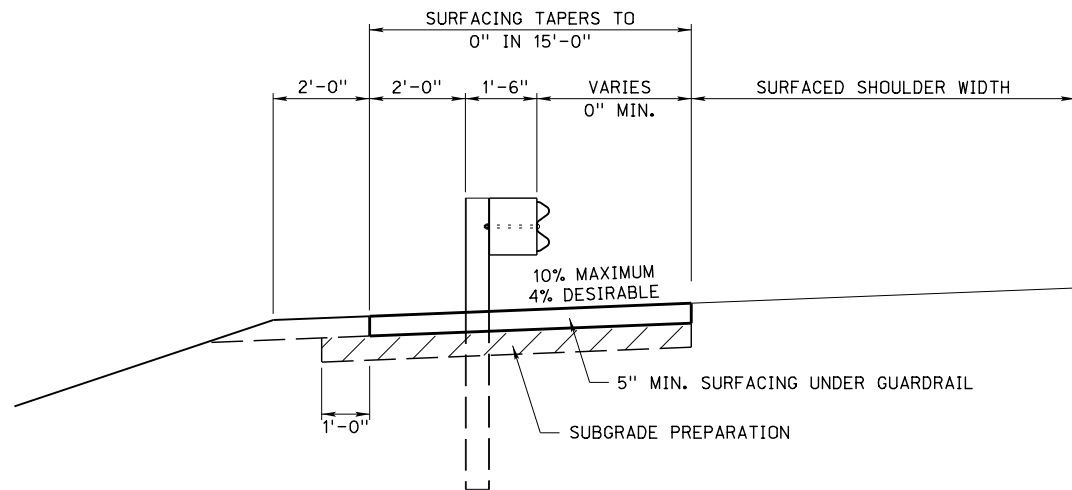
BRIDGE STATION: STA. 413+61.60 TO STA. 418+65.30

LEGEND

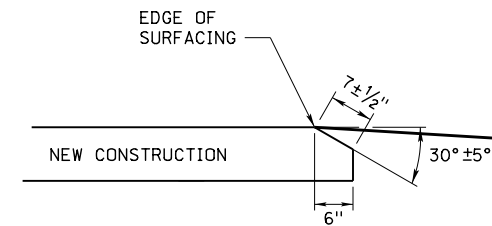
- ① 9" DOWELED CONCRETE PAVEMENT
- ② 4" FOUNDATION COURSE
- ③ SUBGRADE PREPARATION
- ④ EARTH SHOULDER CONSTRUCTION
- ⑤ BEVELED EDGE (SEE DETAIL A)
- ⑥ PROFILE GRADE POINT

FOR DETAILS NOT SHOWN
SEE PLANS 301 & 329

* THIS MATERIAL TO BE REMOVED BY
THE SURFACING CONTRACTOR AND
INCORPORATED INTO THE SHOULDERS.

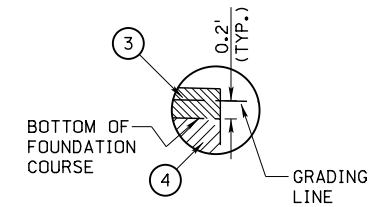


SURFACED SHOULDER AT GUARDRAIL LOCATIONS



NEW CONSTRUCTION
BEVELED EDGE DETAIL A

THE BEVELED EDGE IS INCLUDED IN
THE DOWELED CONCRETE QUANTITIES



DETAIL "B"

GRADING LINE UNDERCUT DETAIL.
APPLIES TO ALL CONCRETE PAVED
TYPICAL SECTIONS.

ROADWAY DESIGN DIVISION

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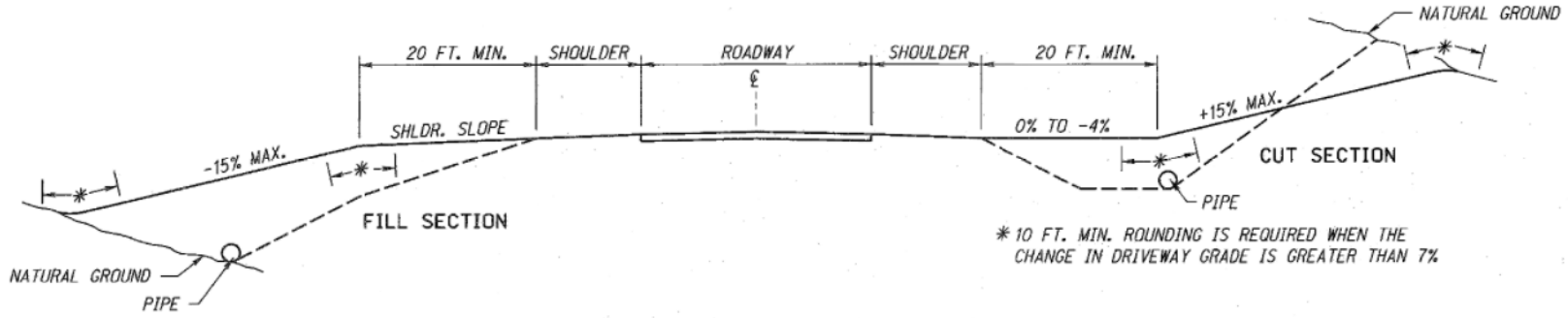
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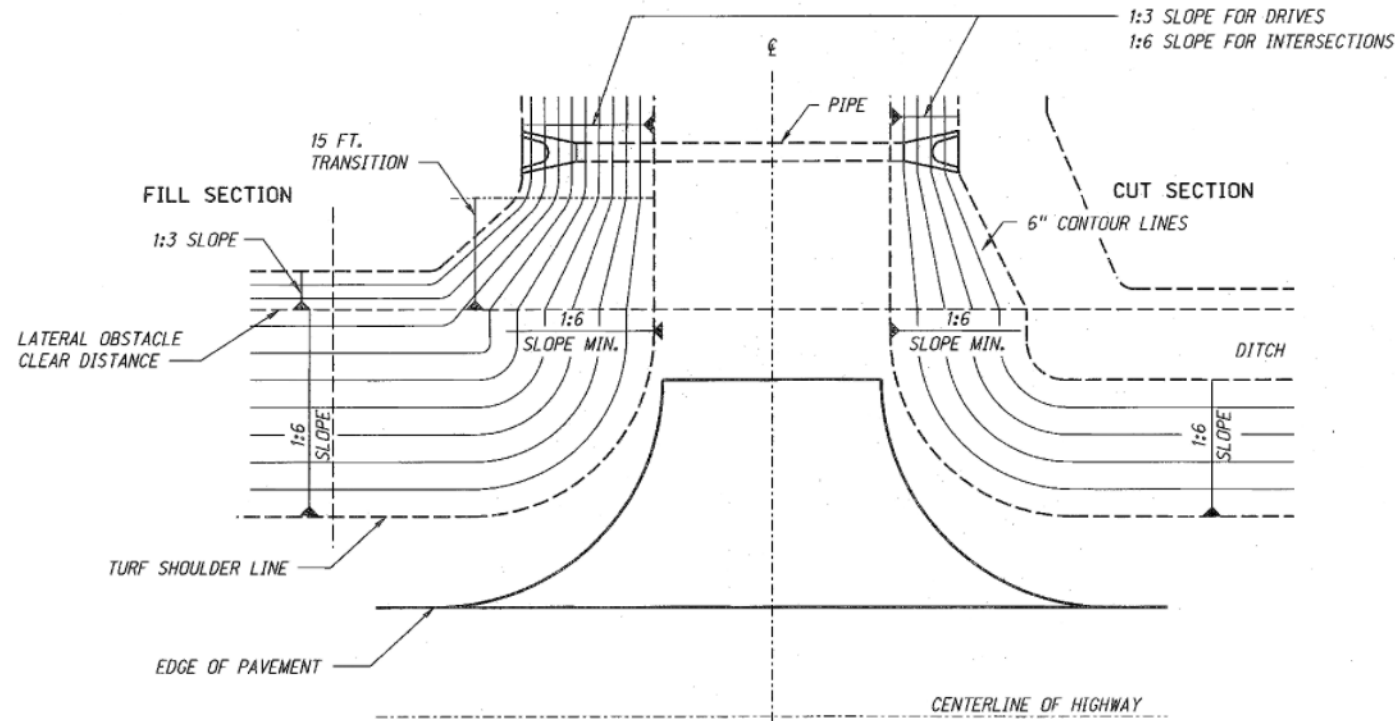


RURAL INTERSECTIONS & DRIVEWAYS

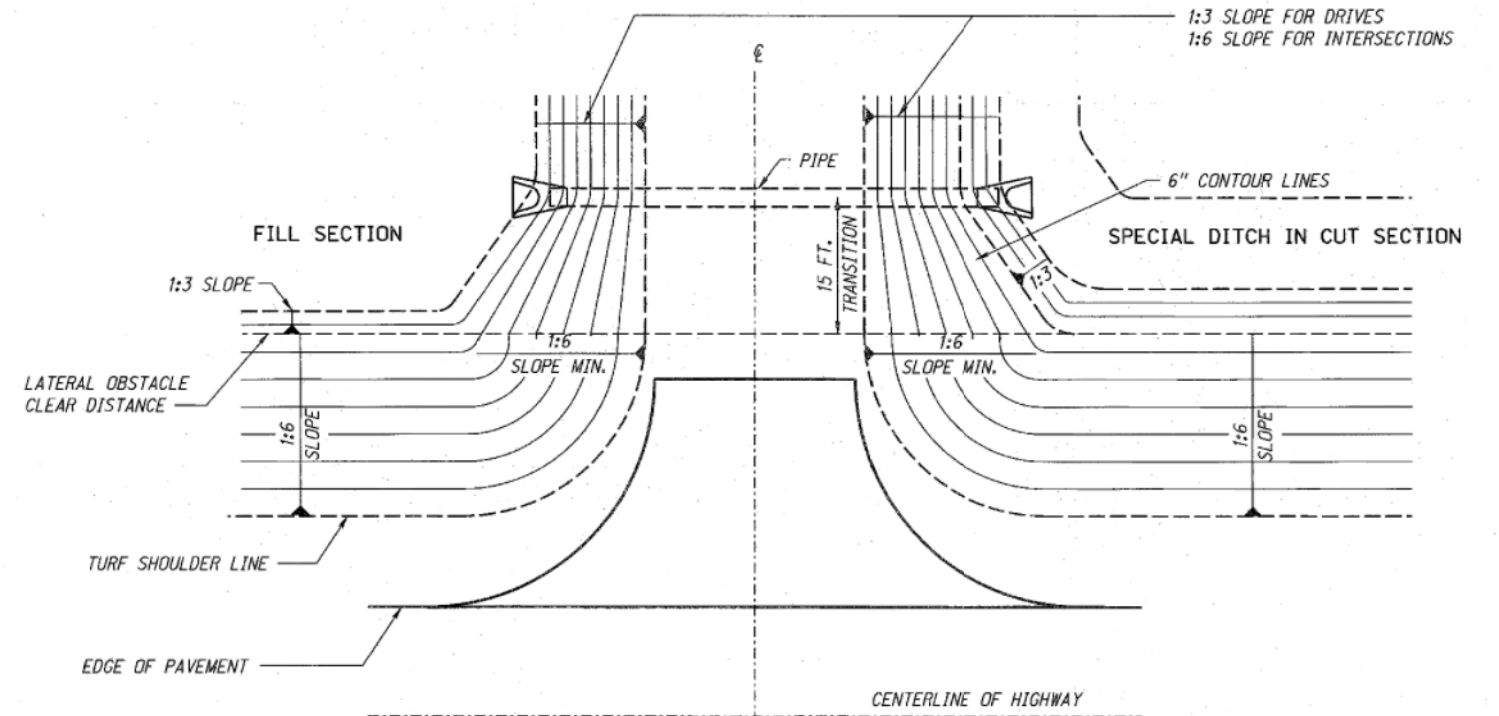
PROJECT NO. 57-3(110)	SHEET NO. B2
C.N. 32322	



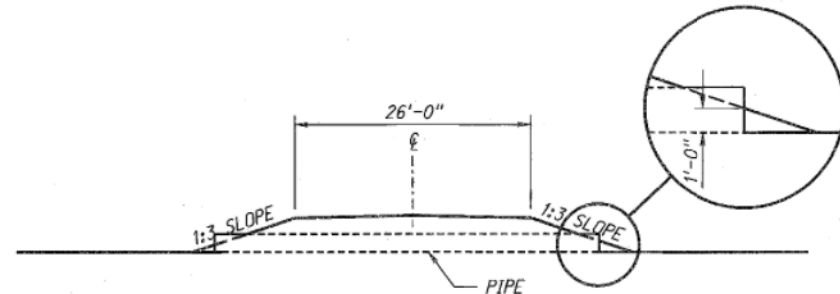
PROFILES FOR DRIVEWAY OR INTERSECTION GRADE EXCEEDING 8%



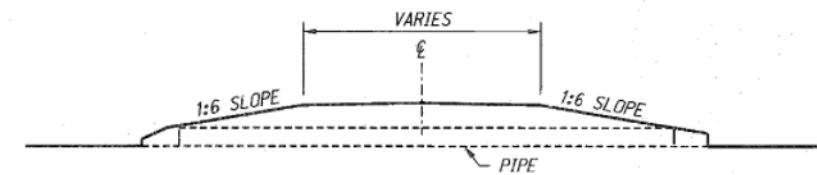
INTERSECTION OR DRIVEWAY WITHOUT SPECIAL DITCH



INTERSECTION OR DRIVEWAY WITH SPECIAL DITCH



SECTION OF DRIVEWAY WITH PIPE



SECTION OF INTERSECTION WITH PIPE



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 SHEET 1 OF 1

SUMMARY OF QUANTITIES

PROJECT NO. ER-57-3(110)	SHEET NO. C1
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C.N. 32322

ROADWAY DESIGN DIVISION

GRADING ITEMS GROUP 1

ITEM	QUANTITY	UNITS
MOBILIZATION	1.000	LS
GENERAL CLEARING AND GRUBBING	1.000	LS
WATER	12.000	MGAL
EARTHWORK MEASURED IN EMBANKMENT	860.000	CY
REMOVE ASPHALT SURFACE	742.000	SY
REMOVE DRIVEWAY	65.000	SY
REMOVE GUARDRAIL	250.000	LF

CONCRETE PAVEMENT ITEMS GROUP 3

ITEM	QUANTITY	UNITS
PERMANENT PAVEMENT MARKING, PAINT	2,000.000	LF
MOBILIZATION	1.000	LS
GRAVEL SURFACE COURSE	24.000	CY
9" DOWELED CONCRETE PAVEMENT, CLASS 47B-3500	249.000	SY
FOUNDATION COURSE 4"	249.000	SY
GRANULAR SUBDRAIN	2.000	EACH
WATER	2.000	MGAL
EARTH SHOULDER CONSTRUCTION	2.110	STA
SUBGRADE PREPARATION	249.000	SY
SURFACING UNDER GUARDRAIL	165.000	SY

GUARDRAIL ITEMS GROUP 7

ITEM	QUANTITY	UNITS
MOBILIZATION	1.000	LS
W-BEAM GUARDRAIL	12.500	LF
BRIDGE APPROACH SECTIONS	2.000	EACH
GUARDRAIL END TREATMENT, TYPE II	2.000	EACH

COMPACTION REQUIREMENTS Class III (See Specifications)

	SOIL TYPE	DEPTH BELOW FINISH SUBGRADE	PERCENT DENSITY	MOISTURE REQUIREMENTS	
				MINIMUM	MAXIMUM
Embankment / Roadway Grading, including driveways, temporary roads, and driveways, to receive concrete pavement	Silt-Clay	Upper 3 feet	98 Mn.	Opt. -3%	Opt. +2%
	Silt-Clay	At depths greater than 3 feet	95 Mn.	Opt. -3%	Opt. +2%
	Granular	All depths	100 Mn.	**	**
Embankment / Roadway Grading, including detours, temporary roads, and driveways, to receive flexible pavement	Silt-Clay	Upper 3 feet	100 Mn.	Opt. -2%	Opt. +1%
	Silt-Clay	At depths greater than 3 feet	95 Mn.	Opt. -3%	Opt. +2%
	Granular	All depths	100 Mn.	**	**
Embankment / Roadway Grading not to be surfaced	All	All depths	95 Mn.	Opt. -3%	Opt. +2%
Embankment / Roadway Grading to receive gravel surfacing / crushed rock embedment	All	All depths	95 Mn.	**	**
Subgrade Preparation, Shoulder Subgrade Preparation (Concrete Pavement)	Silt-Clay	The upper 6 inches of subgrade soil	98 Mn.	Opt. -3%	Opt. +2%
	Granular	The upper 6 inches of subgrade soil	100 Mn.	**	**
Subgrade Preparation, Shoulder Subgrade Preparation (Flexible Pavement)	Silt-Clay	The upper 6 inches of subgrade soil	100 Mn.	Opt. -2%	Opt. +1%
	Granular	The upper 6 inches of subgrade soil	100 Mn.	**	**
Trench Widening	--	--		(See Special Provisions)	
Bituminous Pavement Patching	All	Underlying Material	100 Mn.	(See Specifications)	
Foundation Course / Subgrade Stabilization	--	--	100 Mn.	(See Specifications)	
Stabilized Subgrade (ie Lime, Flyash, etc.)	--	--	100 Mn.	(See Special Provisions)	
Granular Structural Fill (MSE Walls, Granular Fill for bridges, Culverts, etc)	Granular	All depths	100 Mn.	Opt. -3%	Opt. +3%

** Moisture as necessary to obtain density.
(A moisture target value at maximum density shall be established in the field by the Contractor during the compaction process. The acceptable moisture content shall be ± 2% of the target value.)

SEEDING ITEMS GROUP 5

ITEM	QUANTITY	UNITS
MOBILIZATION	1.000	LS
SEEDING, TYPE B	1.000	ACRE
COVER CROP SEEDING	1.000	ACRE
EROSION CONTROL, CLASS 1D	1,514.000	SY
FABRIC SILT FENCE-LOW POROSITY	585.000	LF
MULCH	2.000	TON

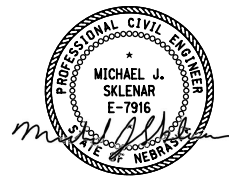
GENERAL ITEMS GROUP 10

ITEM	QUANTITY	UNITS
BARRICADE, TYPE II	50.000	BDAY
BARRICADE, TYPE III	25.000	BDAY
SIGN DAY	100.000	EACH
FIELD OFFICE	1.000	EACH
TRAINING	100.000	HR
MOBILIZATION	1.000	LS
RENTAL OF LOADER, FULLY OPERATED	10.000	HR
RENTAL OF MOTOR GRADER, FULLY OPERATED	10.000	HR
RENTAL OF DUMP TRUCK, FULLY OPERATED	10.000	HR
RENTAL OF SKID LOADER, FULLY OPERATED	10.000	HR
RENTAL OF CRAWLER MOUNTED HYDRAULIC EXCAVATOR, FULLY OPERATED	5.000	HR
TEMPORARY SEEDING	1.000	ACRE
TEMPORARY EROSION CONTROL BLANKET	1,500.000	SY
TEMPORARY SILT CHECK	600.000	LF
TEMPORARY SILT FENCE	600.000	LF
ENVIRONMENTAL COMMITMENTS - CONTRACTOR COMPLIANCE	1.000	LS

BRIDGE AT STATION 415+87.45 ITEMS GROUP 6

ITEM	QUANTITY	UNITS
MOBILIZATION	1.000	LS
ROCK RIPRAP, TYPE B	225.000	TON
RIPRAP FILTER FABRIC	273.000	SY
CONCRETE FOR PAVEMENT APPROACHES CLASS 47BD-4000	87.100	CY
EPOXY COATED REINFORCING STEEL FOR PAVEMENT APPROACHES	15,124.000	LB
ABUTMENT NO.2 EXCAVATION	1.000	LS
PIER NO.6 EXCAVATION	1.000	LS
PREFORMED EXPANSION JOINT, TYPE A	40.300	LF
PREFORMED EXPANSION JOINT, TYPE B	40.300	LF
INSTALL EXPANSION BEARING, PTFE TYPE	1.000	LS
INSTALL FIXED BEARING	1.000	LS
BRIDGE DECK GROOVING	520.000	SY
CLASS 47B-3000 CONCRETE FOR BRIDGE	246.400	CY
CLASS 47BD-4000 CONCRETE FOR BRIDGE	148.800	CY
PREPARATION OF BRIDGE AT STATION 415+87.45	1.000	EACH
ACCESS CROSSING AT STATION 415+87.45	1.000	LS
INSTALL STEEL SUPERSTRUCTURE AT STATION 415+87.45	1.000	LS
STRUCTURAL STEEL FOR SUBSTRUCTURE	12,211.000	LB
EPOXY COATED REINFORCING STEEL	41,263.000	LB
SUBSURFACE DRAINAGE MATTING	33.000	SY
PIPE PILING	2,000.000	LF
STEEL SHEET PILING	2,315.000	SF
GRANULAR BACKFILL	165.000	CY

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May 21 2019 DocuSign

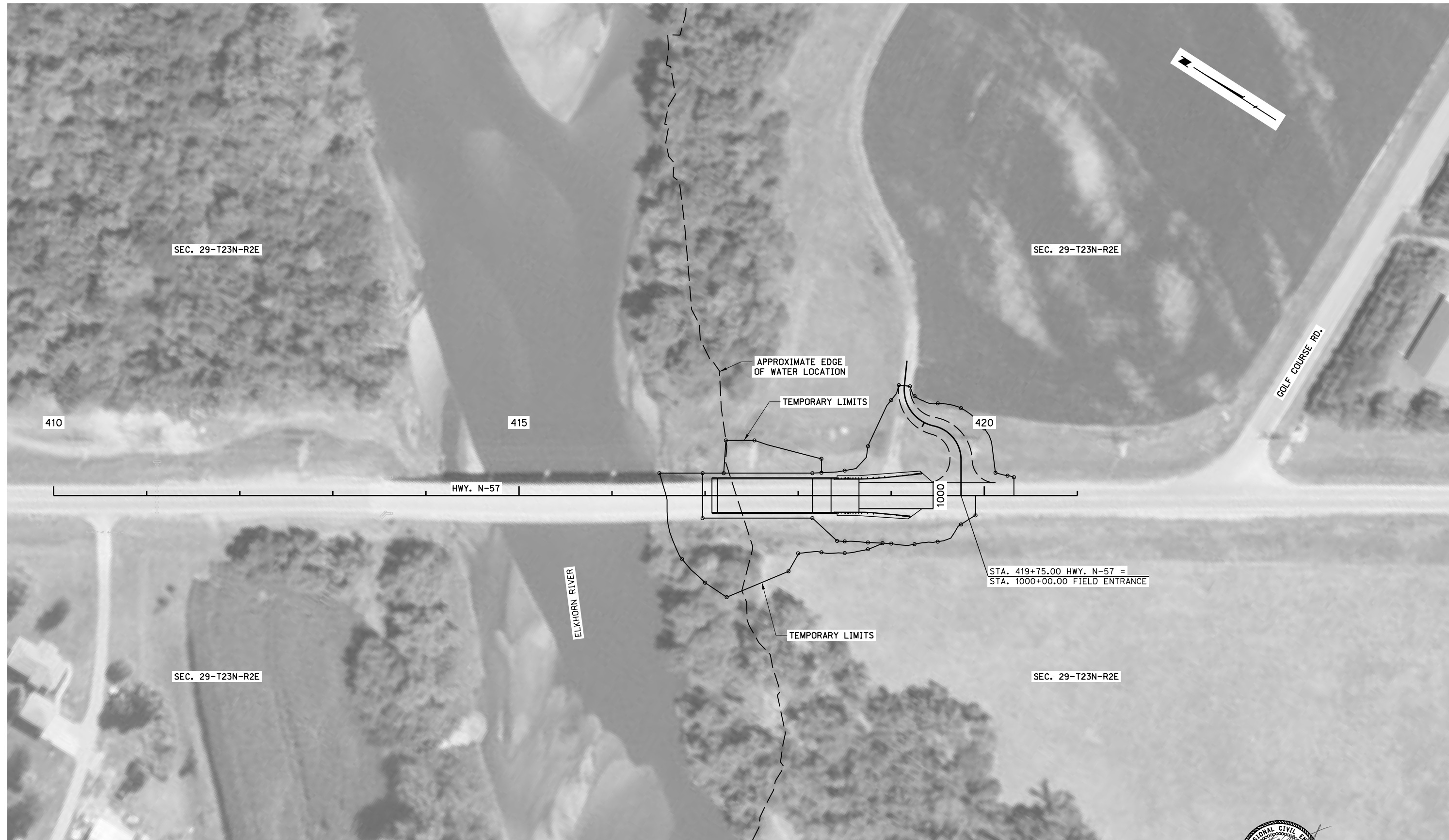
ROADWAY DESIGN DIVISION

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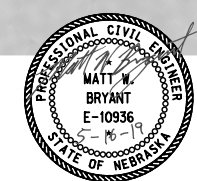
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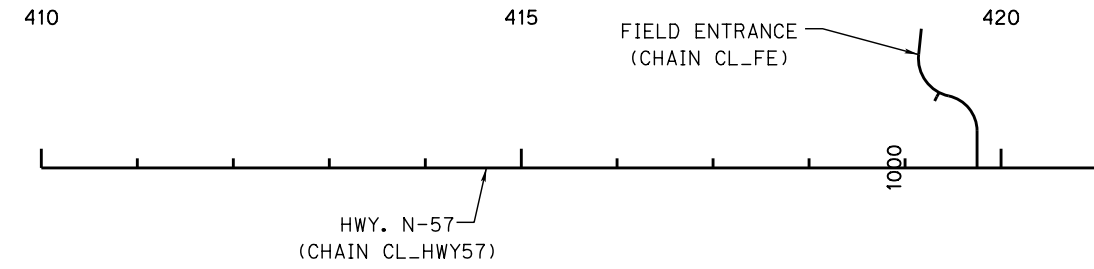
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ELKHORN RIVER BRIDGE SOUTHEAST OF STANTON
STANTON COUNTY



DATE: 07/20/2016
 FLIGHT: NAIP 2016
 SCALE: 1" = 50'



GEOPAK ALIGNMENT INFORMATION		
ALIGNMENT	CHAIN	PROFILE
HWY. N-57	CL_HWY57	PRO_HWY57
FIELD ENTRANCE	CL_FE	PRO_FE

* ALIGNMENT HAS BEEN CREATED FROM ASBUILT INFORMATION, AND MODIFIED TO REPRESENT THE FIELD SURVEY DATA COLLECTED.

HWY N-57

Beginning chain CL_HWY57 description
Feature: Mainline

Point 1	X	780,210.5215	Y	2,396,774.1636	Sta	410+00.00
Course from 5 to 6 147° 20' 54.33" Dist 1100.0000						
Point 2	X	779,284.3577	Y	2,397,367.6454	Sta	421+00.00

Ending chain CL_HWY57 description

N-57 CONTROL POINT DATA					
DESCRIPTION	X	Y	Z	STATION	OFFSET
CP-1 ALUM. CAP	2396638.85	780461.03	1453.57	-	-
CP-2 ALUM. CAP	2396847.82	780038.79	1455.46	411+84.34	30.64'
CP-3 ALUM. CAP	2397200.69	779507.38	1459.67	418+22.14	20.25'
CP-4 ALUM. CAP	2397426.06	779153.69	1454.21	-	-
CP-5 10 IN SPIKE	2397023.26	779917.28	1449.51	413+81.30	-51.52'
CP-6 10 IN SPIKE	2396952.19	779846.40	1445.50	414+02.63	46.56'

FIELD ENTRANCE

Beginning chain CL_FE description
Feature: County Road

Point 9	X	2,397,300.2043	Y	779,389.6036	Sta	1000+00.00
Course from 9 to PC CL_FE_3 57° 20' 54.33" Dist 38.7605						

Curve Data						

Curve CL_FE_3						
P.I. Station	=	1000+68.75	X	2,397,358.0856	Y	779,426.6937
Delta	=	78° 02' 33.54"	(LT)			
Degree	=	154° 51' 12.45"				
Tangent	=	29.9848				
Length	=	50.3977				
Radius	=	37.0000				
External	=	10.6245				
Long Chord	=	46.5911				
Mid. Ord.	=	8.2543				
P.C. Station	=	1000+38.76	X	2,397,332.8394	Y	779,410.5160
P.T. Station	=	1000+89.16	X	2,397,347.4895	Y	779,454.7439
C.C.	=		X	2,397,312.8768	Y	779,441.6688
Back	=	57° 20' 54.33"				
Ahead	=	339° 18' 20.79"				
Chord Bear	=	18° 19' 37.56"				

Curve Data						

Curve CL_FE_4						
P.I. Station	=	1001+25.12	X	2,397,334.7820	Y	779,488.3836
Delta	=	83° 54' 39.12"	(RT)			
Degree	=	143° 14' 22.02"				
Tangent	=	35.9599				
Length	=	58.5808				
Radius	=	40.0000				
External	=	13.7877				
Long Chord	=	53.4842				
Mid. Ord.	=	10.2534				
P.C. Station	=	1000+89.16	X	2,397,347.4895	Y	779,454.7439
P.T. Station	=	1001+47.74	X	2,397,366.8840	Y	779,504.5877
C.C.	=		X	2,397,384.9087	Y	779,468.8791
Back	=	339° 18' 20.79"				
Ahead	=	63° 12' 59.91"				
Chord Bear	=	21° 15' 40.35"				

Course from PT CL_FE_4 to 10 63° 12' 59.91" Dist 27.0651						
Point 10	X	2,397,391.0455	Y	779,516.7838	Sta	1001+74.80

Ending chain CL_FE description



GENERAL INFORMATION

WILSON & COMPANY

PROJECT NO.	SHEET NO.
ER-57-3(110)	G1
C.N. 32322	

ROADWAY DESIGN DIVISION

NOTES

- The locations of all aerial and underground utility facilities may not be indicated in these plans. Underground utilities, whether indicated or not will be located and flagged by the Utilities at the request of the Contractor.

No excavation will be permitted in the area of underground utility facilities until all such facilities have been located and identified to the satisfaction of all parties. The excavation must be accomplished with extreme care in order to avoid any possibility of damage to the utility facility.

FOR INFORMATION ONLY

- As indicated by the Typical Section, Embankment will be required to construct the earth portion of the shoulder. This material will be furnished by the Contractor from sources other than State Right-of-Way.
- The Contractor will be required to furnish Borrow on this Project.

EARTHWORK QUANTITIES			
STATION	TO	STATION	
			EXCAVATION AVAILABLE (CU. YDS.)
418+65	-	420+32	220
1000+14	-	1001+48	32
TOTAL			252
			EARTHWORK MEASURED IN EMBANKMENT (CU. YDS.)
			185
			675
TOTAL			860

EARTHWORK QUANTITIES FOR CHANNEL SHAPING			
STATION	TO	STATION	
			*EXCAVATION ESTABLISHED QUANTITY (CU. YDS.)
ABUTMENT NO. 2			7,024
TOTAL			7,024

*GROUP 6

LEGEND

- G --- GAS LINE
- E ---- ELECTRICAL SERVICE
- P --- POWER LINE
- OP --- OVERHEAD POWER LINE
- SAN --- SANITARY SEWER
- SS --- STORM SEWER
- T --- TELEPHONE LINE
- FO --- FIBER OPTIC TELE. LINE
- OT --- OVERHEAD TELEPHONE LINE
- TV --- CABLE TV LINE
- OTV --- OVERHEAD CABLE TV LINE
- W --- WATER LINE
- O --- FENCE - CHAIN LINK
- X --- FENCE - R.O.W. OR WIRE
- □ --- FENCE - WOOD
- FLOWLINE
- CENTER LINE DRIVE
- Ⓜ BENCH MARK
- Ⓢ CENTER PIVOT
- ⊙ CONTROL POINT
- XXXXXXXXX DIKE
- ⊙ GAS METER
- ⊗ GAS VALVE
- ⊕ GRID TICK
- GUARDRAIL
- GUARD POST
- GUY POLE
- GUY WIRE
- ☀ OR ☀ LIGHT POLE
- MAILBOX
- ⊙ MANHOLE
- ⊕ MARSH
- OIL WELL
- Ⓜ PHOTO CODE POINT
- Ⓜ POWER BOX
- Ⓜ POWER POLE
- Ⓜ POWER PULL BOX
- PROPANE TANK
- Ⓜ R.O.W. MARKER
- Ⓜ ADVANCED R.R. WARNING SIGN
- Ⓜ RAILROAD WARNING
- Ⓜ RAILROAD TRACKS
- /// RETAINING WALL
- ⊙ SATELLITE DISH
- Ⓜ SIGN
- ☀ TRAFFIC SIGNAL
- ☀ TRAFFIC SIGNAL/ST. LIGHT
- Ⓜ TELEPHONE BOX
- Ⓜ TELE. FIBER OPTICS BOX
- Ⓜ TELEPHONE PULL BOX
- Ⓜ TELEPHONE POLE
- Ⓜ TELEVISION BOX
- ☀ TREE - CONIFEROUS
- ☀ TREE - DECIDUOUS
- ☀ TREE STUMP
- ☀ WATER (FIRE) HYDRANT
- Ⓜ WATER VALVE
- Ⓜ WATER METER
- Ⓜ WELL
- Ⓜ WINDMILL

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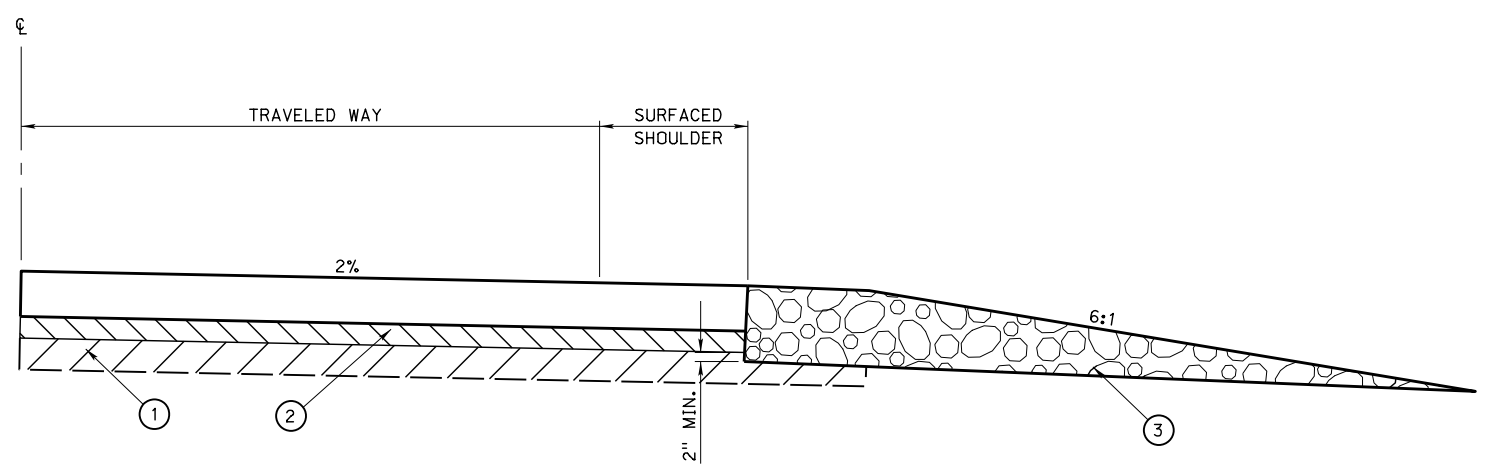


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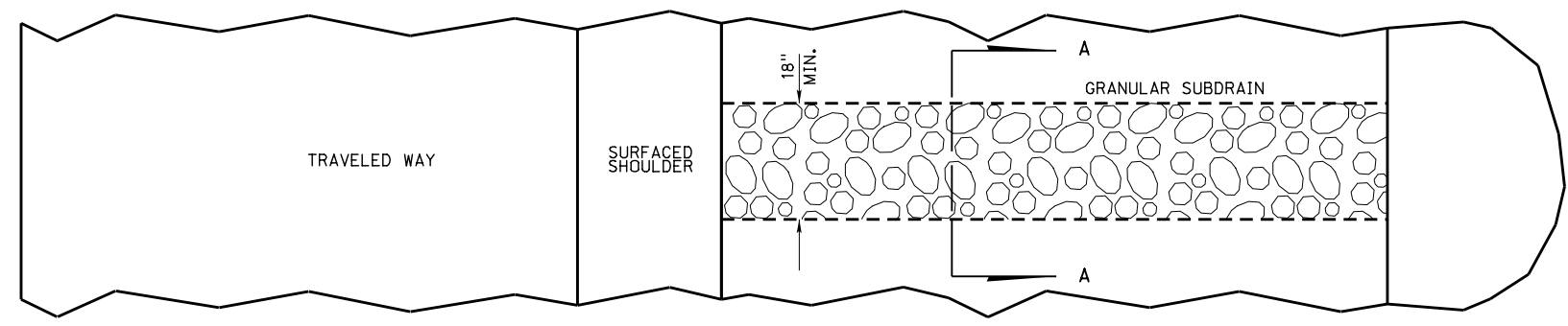
WILSON & COMPANY

PROJECT NO. ER-57-3(110) SHEET NO. G2
C.N. 32322

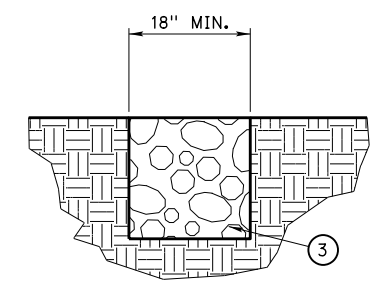
ROADWAY DESIGN DIVISION



GRANULAR SUB-DRAIN DETAILS



GRANULAR SUB-DRAIN DETAILS



SECTION A-A

- ① SUBGRADE PREPARATION
- ② FOUNDATION COURSE
- ③ GRANULAR SUBDRAIN

CONSTRUCTION NOTES:

THE GRANULAR SUB-DRAIN SHALL BE CONSTRUCTED WITH POSITIVE DRAINAGE.
 GRANULAR SUB-DRAIN SHALL BE INSTALLED AFTER ALL SHOULDERING & EARTH WORK IS COMPLETED AND PRIOR TO SEEDING.
 GRANULAR SUB-DRAINS SHALL BE CONSTRUCTED AT INTERVALS OF 200'-0" WHERE THE GRADE IS 1% OR OVER AND AT INTERVALS OF 100'-0" ON GRADES UNDER 1%.
 GRANULAR SUB-DRAINS SHALL BE BUILT PERPENDICULAR TO THE CENTER LINE.

BUILD GRANULAR SUB-DRAIN				
STATION TO	STATION	SIDE	EACH	SPACING
418+65	- 419+45	Rt.	1	200'
418+65	- 419+45	Lt.	1	200'



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GENERAL INFORMATION

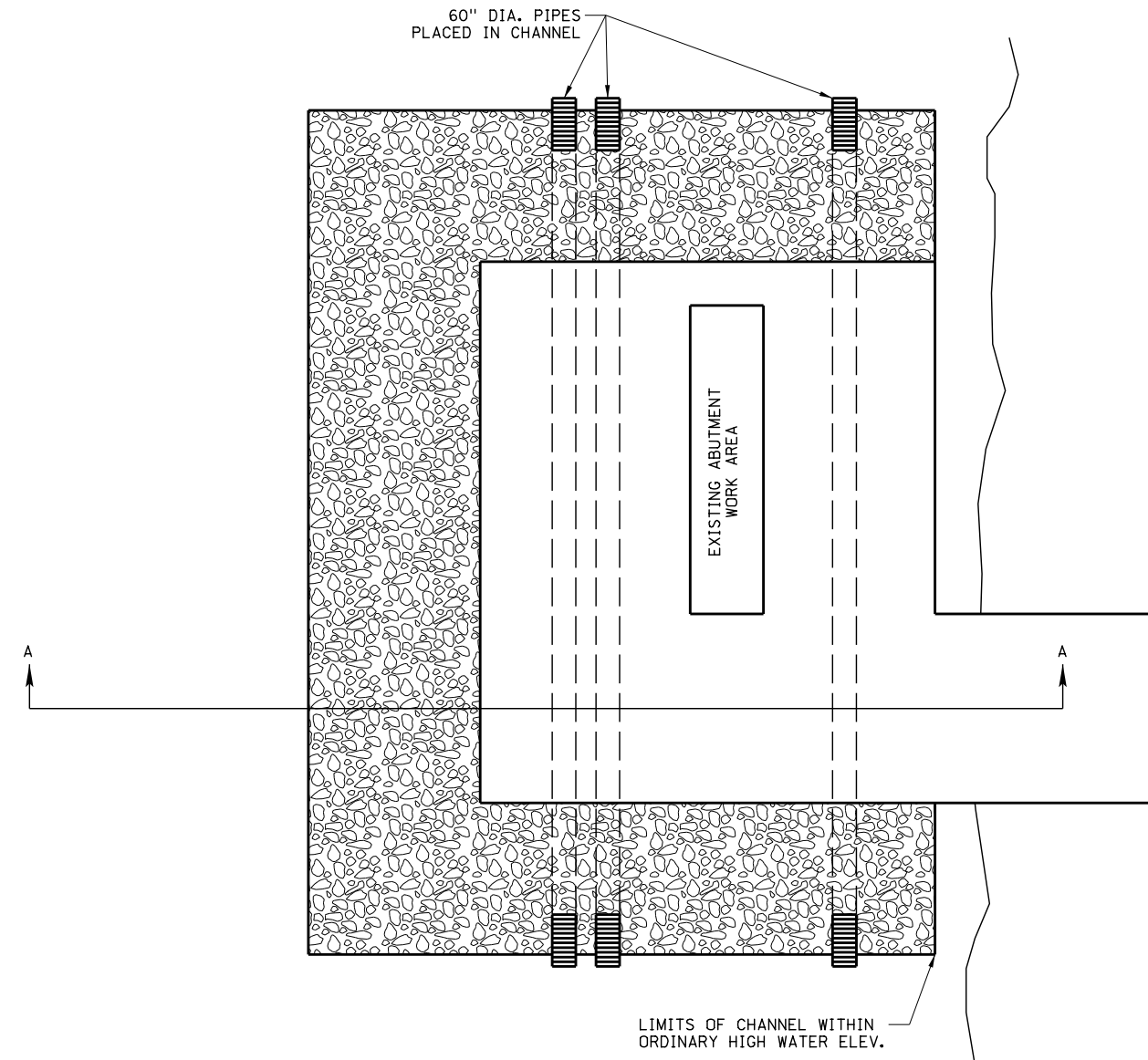
ROADWAY DESIGN DIVISION

Computer: A13433

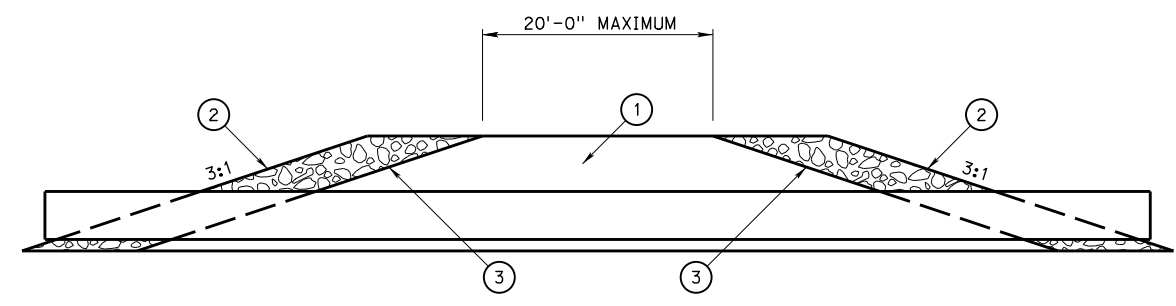
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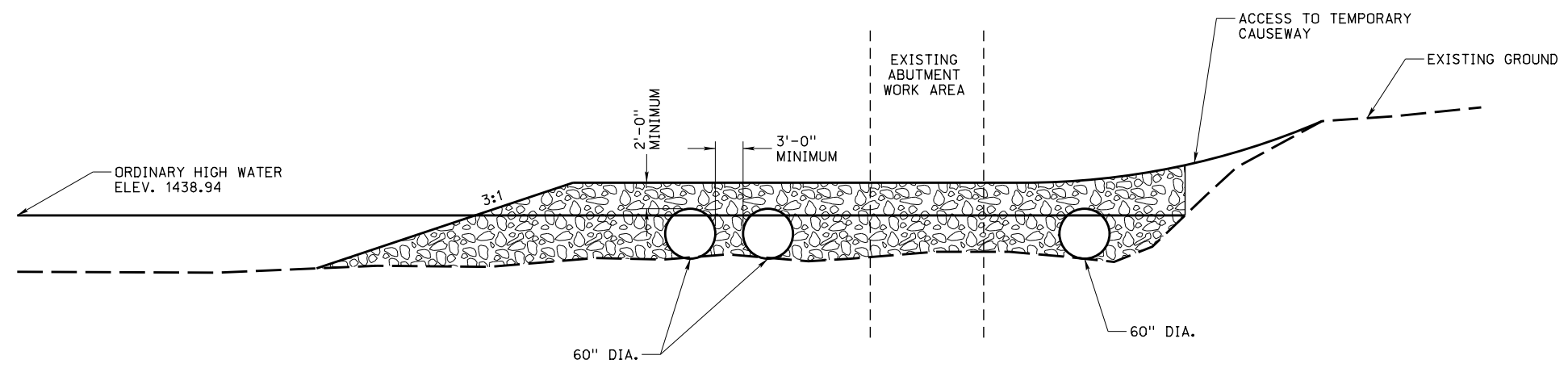


PLAN CROSSING



TYPICAL SECTION OF CROSSING

NOTE:
Access crossing must be constructed to pass the ordinary high water flow, and will not restrict or impede the passage of normal flows.



ELKHORN RIVER SECTION A-A

LEGEND

- ① MATERIAL SHALL BE CLEAN EARTHEN FILL.
- ② MINIMUM 2'-0" CLASS B ROCK RIPRAP OR BROKEN CONCRETE RIPRAP THAT MEETS THE REQUIREMENTS OF THE NDOR STANDARD SPECIFICATIONS.
- ③ FILTER FABRIC



GENERAL INFORMATION

WILSON
& COMPANY

PROJECT NO.	SHEET NO.
ER-57-3(110)	G4
C.N. 32322	

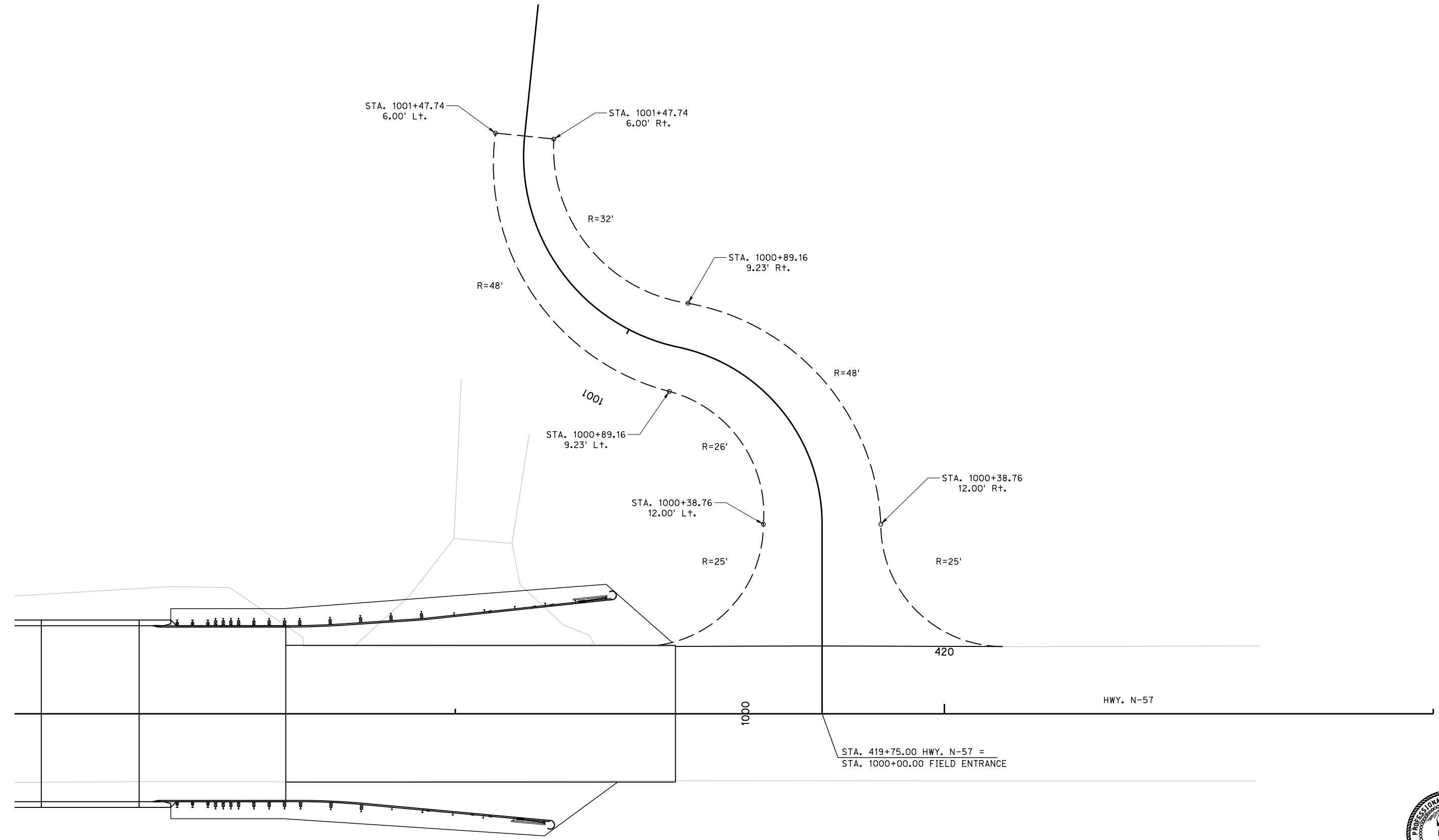
ROADWAY DESIGN DIVISION

Computer: A13433

User: KMEvans

Date: 16-MAY-2019 15:13

File: 323220en04
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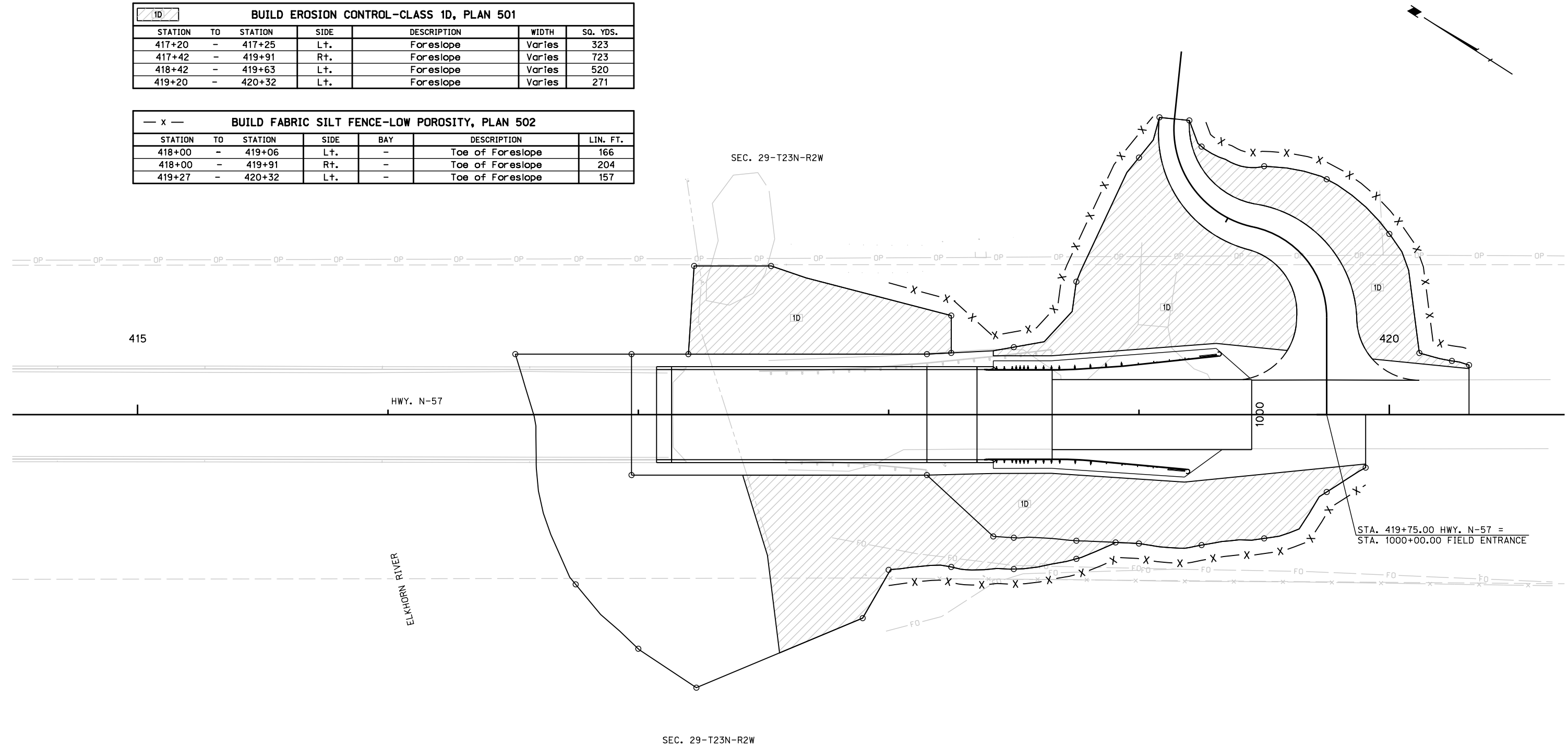


FIELD ENTRANCE DETAILS

ROADWAY DESIGN DIVISION

BUILD EROSION CONTROL-CLASS 1D, PLAN 501						
STATION	TO	STATION	SIDE	DESCRIPTION	WIDTH	SQ. YDS.
417+20	-	417+25	Lt.	Foreslope	Varies	323
417+42	-	419+91	Rt.	Foreslope	Varies	723
418+42	-	419+63	Lt.	Foreslope	Varies	520
419+20	-	420+32	Lt.	Foreslope	Varies	271

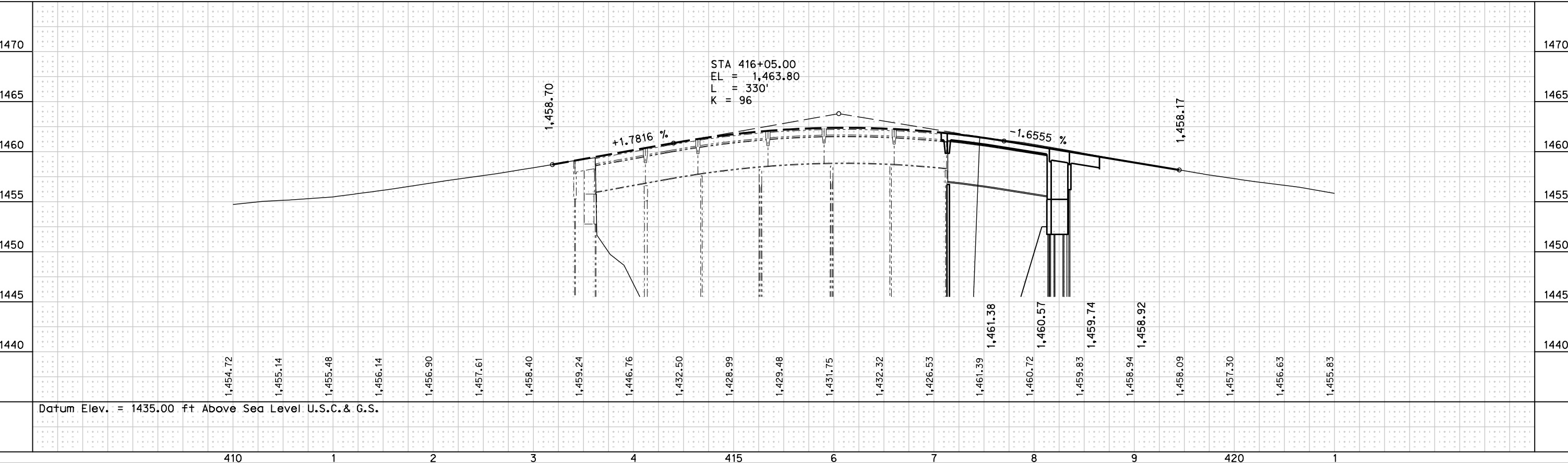
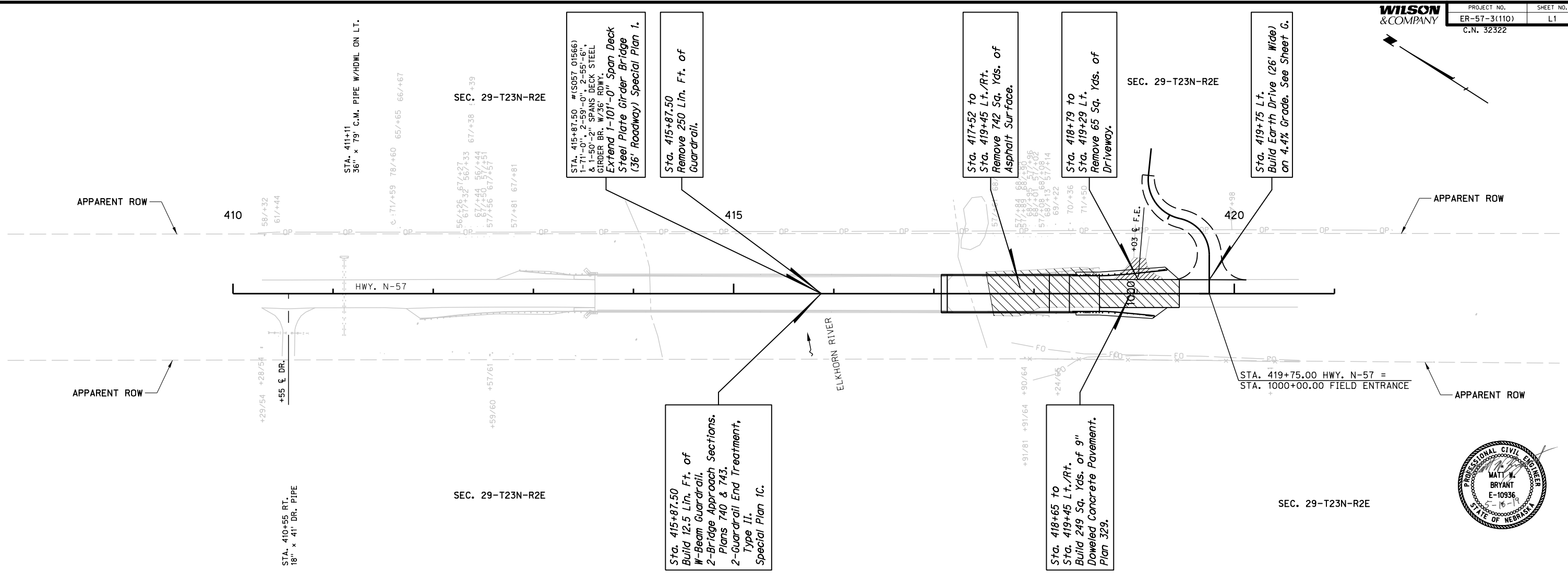
BUILD FABRIC SILT FENCE-LOW POROSITY, PLAN 502						
STATION	TO	STATION	SIDE	BAY	DESCRIPTION	LIN. FT.
418+00	-	419+06	Lt.	-	Toe of Foreslope	166
418+00	-	419+91	Rt.	-	Toe of Foreslope	204
419+27	-	420+32	Lt.	-	Toe of Foreslope	157



LEGEND
 ○—○ LIMITS OF CONSTRUCTION
 --- WETLANDS - DO NOT DISTURB UNIMPACTED WETLANDS, SEE SHEET E



EROSION & SEDIMENT CONTROL



Datum Elev. = 1435.00 ft Above Sea Level U.S.C. & G.S.

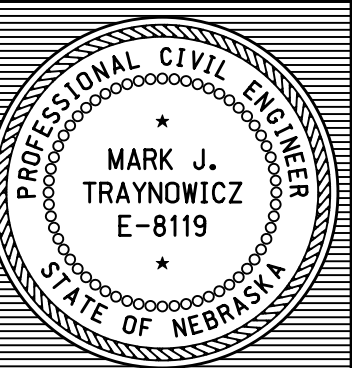


ELKHORN RIVER BR SOUTHEAST OF STANTON

PROJECT NUMBER
ER-57-3(110)

SHEET NO.
S1

C.N. 32322
STRUCTURE NUMBER
S057 01566



BRIDGE ENGINEER

LOCATION ELKHORN RIVER BR SE OF STANTON
NEW 101'-0" SPAN EXTENSION FOR 35 1/2" MULTI-SPAN EXISTING BRIDGE
ROADWAY 36'-0" DESIGN LIVE LOAD Single Truck
COUNTY Stanton HWY. NO. N-57 REF. POST. 15.66 STA. 415+88.45
DETAILED BY WAO CHECKED BY SDK DATE MAY 2019

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

= NOTES =

This structure is designed in accordance with the AASHTO LRFD Bridge Design Specifications, Eighth Edition. A single design truck was used for the design live load.

The concrete bridge deck is designed by the empirical design method.

The superstructure is designed for the allowance of stay-in-place forms (5 lb./ft²) between girders.

All structural steel for stiffeners and separators shall conform to the requirements of ASTM A709/A709M, Grade 50W weathering steel.

All other structural steel shall conform to the requirements of ASTM A709/A709M, Grade 36.

All fasteners shall be 7/8" ϕ high strength bolts, ASTM A325.

Nuts, bolts, and washers used in the assembly of weathering steel shall be Type 3.

During girder fabrication, the final camber tolerance shall not exceed those in Table 3.3 of A.W.S. "S" is the length of girder between splices.

When assembling the girders, they shall be set according to the blocking diagram before any bolts are tightened to a snug-tight condition.

The girders for this bridge are not designed to resist any torsional or lateral forces due to temporary construction loads. The Contractor must provide any temporary bracing necessary to support the girder web and flanges against all torsional or lateral forces resulting from construction loads.

Field tack welding of form hangers or miscellaneous hardware to any part of the steel girder, with the exception of the shear connectors, shall be prohibited.

All bearing stiffeners and girder ends, except at field splices, shall be vertical after final erection. All other stiffeners and all field splices shall be normal to the top flange.

Concrete for slab, approach slabs, turndowns, and rails shall be Class "47BD", with a 28-day strength of 4,000 psi.

All other cast-in-place concrete shall be Class "47B" concrete, with a 28-day strength of 3,000 psi.

All reinforcing steel shall be epoxy coated and conform to the requirements of ASTM A615/A615M, Grade 60 steel.

Girder shims that will be provided to the Contractor account for the dead load deflection due to weight of the slab, rail or barrier, and median (if present) only. The Contractor is responsible for making the necessary adjustments for the particular forming system used to achieve the slab grades and elevations shown on the plans.

All plastic pipe, galvanized wire screen, and miscellaneous drainage items at the abutments shall be considered subsidiary to the Pay Item "SUBSURFACE DRAINAGE MATTING".

All dimensions shown are in horizontal plane only. No allowances have been made for vertical curve or roadway cross slope.

Unless noted as "Optional" all construction joints shown are mandatory.

7/8" ϕ x 0'-5" end welded studs have an in-place weight of 98.0 lb./100 studs.

Steel (weight) quantities are based upon 490 pcf and 1 lb. per bolt.

No form work, reinforcing steel, or construction loads shall be placed on the girders until the abutment concrete has set for 72 hours or reached a minimum compressive strength of 2,000 psi.

All exposed pipe piles shall be filled with concrete. This concrete shall be Class "47B" with a minimum 28-day compressive strength of 3,000 psi. This concrete shall be subsidiary to the Pay Item, "PIPE PILING".

The minimum clearance, measured from the face of the concrete to the surface of any reinforcing bar shall be 3", except where otherwise noted.

The Pay Item, "STRUCTURAL STEEL FOR SUBSTRUCTURE", shall include tie rods in the abutments and nose armor angles in the pier.

Tie Rods shall conform to ASTM A709/A709M, Grade 36 steel. Turnbuckles shall conform to ASTM A668/A668M, Class C.

Structural steel for all "Pipe" piles shall conform to ASTM A709/A709M, Grade 36.

After fabrication, tie rods, turnbuckles, and all other hardware shall be galvanized according to ASTM A123/A123M.

= QUANTITIES =

GROUP 6

PREPARATION OF BRIDGE AT STATION 415+88.45		1	EA
PIER NO. 6 EXCAVATION		1	LS
ABUTMENT NO. 2 EXCAVATION		1	LS
CLASS 47B-3000 CONCRETE FOR BRIDGE		246.4	CY
ABUTMENT	82.3		CY
PIER	164.1		CY
CLASS 47BD-4000 CONCRETE FOR BRIDGE		148.8	CY
SLAB	130.1		CY
HAUNCHES	4.0		CY
CONCRETE RAILS	14.7		CY
● INSTALL STEEL SUPERSTRUCTURE AT STA. 415+88.45		1	LS
EPOXY COATED REINFORCING STEEL		41,263	LB
SLAB	22,948		LB
CONCRETE RAILS	3,371		LB
ABUTMENT	6,954		LB
PIER	7,990		LB
STRUCTURAL STEEL FOR SUBSTRUCTURE		12,211	LB
STEEL SHEET PILING		2,315	SF
PIPE PILING		2,000	LF
● INSTALL FIXED BEARING		1	LS
● INSTALL EXPANSION BEARING, PTFE TYPE		1	LS
GRANULAR BACKFILL		165	CY
SUBSURFACE DRAINAGE MATTING		33	SY
ROCK RIPRAP, TYPE B		225	TON
RIPRAP FILTER FABRIC		273	SY
CONCRETE FOR PAVEMENT APPROACHES		87.1	CY
CLASS 47BD-4000			
SLABS	82.2		CY
CONCRETE RAILS	4.9		CY
EPOXY COATED REINFORCING STEEL FOR PAVEMENT APPROACHES		15,124	LB
SLABS	13,286		LB
CONCRETE RAILS	1,838		LB
PREFORMED EXPANSION JOINT, TYPE A		40.3	LF
PREFORMED EXPANSION JOINT, TYPE B		40.3	LF
BRIDGE DECK GROOVING		520	SY
ACCESS CROSSING AT STATION 415+88.45		1	LS

= INDEX =

GENERAL NOTES, QUANTITIES, & INDEX	1
GENERAL PLAN & ELEVATION	2
PILE LAYOUT & PILE DATA	3
REMOVAL DETAILS	4
ABUTMENT NO. 2 PLAN & ELEVATION	5
ABUTMENT NO. 2 DETAILS	6
ANCHOR BLOCK DETAILS	7
GRANULAR BACKFILL & ABUTMENT BILL OF BARS	8
PIER NO. 6 PLAN & NORTH FACE ELEVATION	9
PIER NO. 6 PLAN & SOUTH FACE ELEVATION	10
PIER NO. 6 DETAILS & BILL OF BARS	11
BEARING DETAILS	12
GIRDER LAYOUT & ELEVATION	13
GIRDER DETAILS	14
SLAB REINFORCING LAYOUT	15
SLAB TURNDOWN	16
CONCRETE RAIL ON BRIDGE	17
APPROACH SLAB DETAILS	18
CONCRETE RAIL ON APPROACH SLAB	19
BILL OF BARS	20

● FOR INFORMATION ONLY

STEEL SUPERSTRUCTURE AT STA. 415+88.45		1	LS
GIRDERS	122,350		LB
SEPARATORS & MISC.	11,670		LB
SHEAR CONNECTORS	953		LB
BOLTS	370		LB
TOTAL	135,343		LB
FIXED BEARING		6	EA
EXPANSION BEARING, PTFE TYPE		6	EA

Steel Superstructure, Expansion Bearings, and Fixed Bearings to be furnished by NDOT. Shop drawings are available from the NDOT Bridge Division upon request. The CONTRACTOR shall coordinate delivery of Superstructure and Bearings with CAPITAL CONTRACTORS, INC. Contact CHUCK SIDLES or DAVID CRIST at (402) 476-1021.

Shop plans for review
Steel Superstructure
Substructure Steel (Tie Rods, etc.)
Bearing Devices
Steel Sheet Piling
Shop plans for records
Stay-In-Place Forms

WILSON & COMPANY

SPECIAL PLAN NO. 1/20

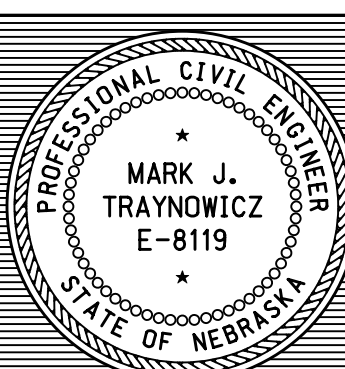
DESIGN HISTORY

CONTROL #	PROJECT #	YEAR	TYPE OF WORK
---	S-22(3)-1	1947	Original Construction
---	S-22 B-1	1962	50' Span Extension
---	57(15.66)	1978	Painting
---	BHS-57-3(103)	1983	Widening
31889	57-3(107)	2013	Joint Repair, Modify Buttresses

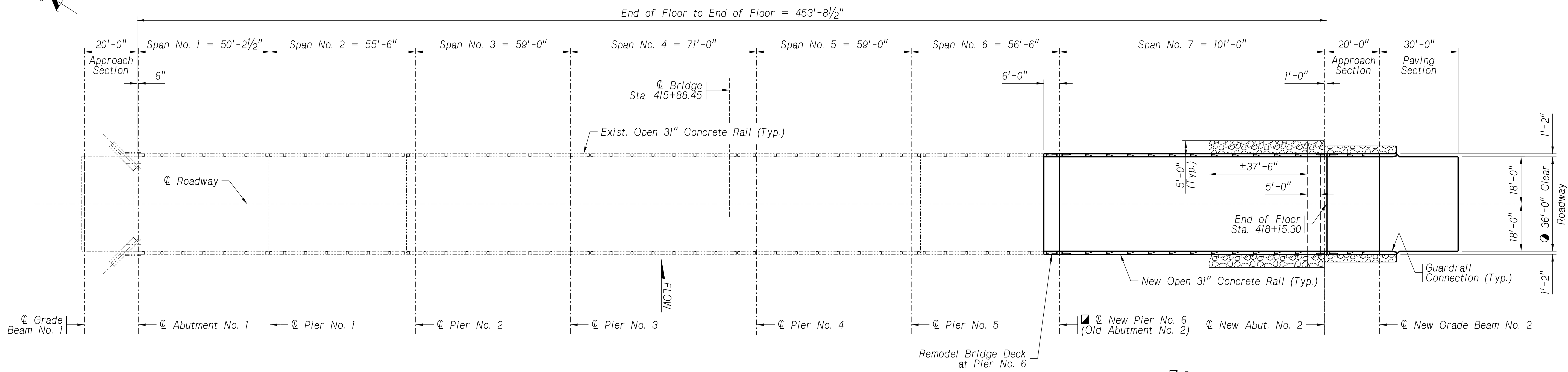
This structure is in Stanton County over the Elkhorn River in Section 29 T23N R2E.

C.N. 32322

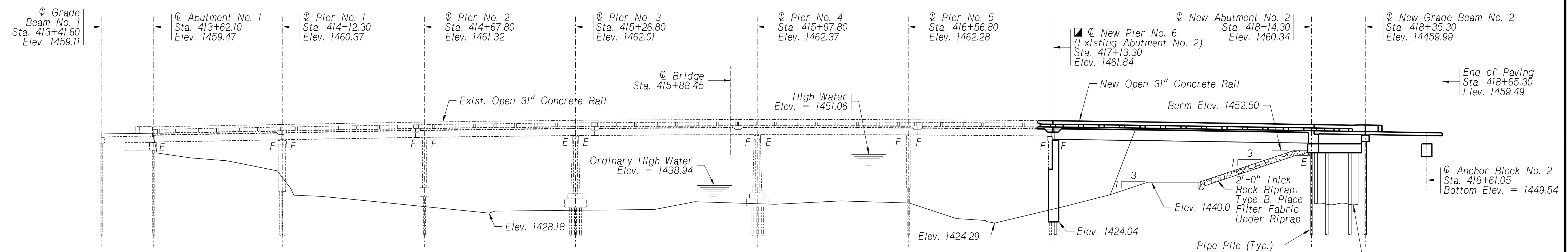
STRUCTURE NUMBER
S057 01566



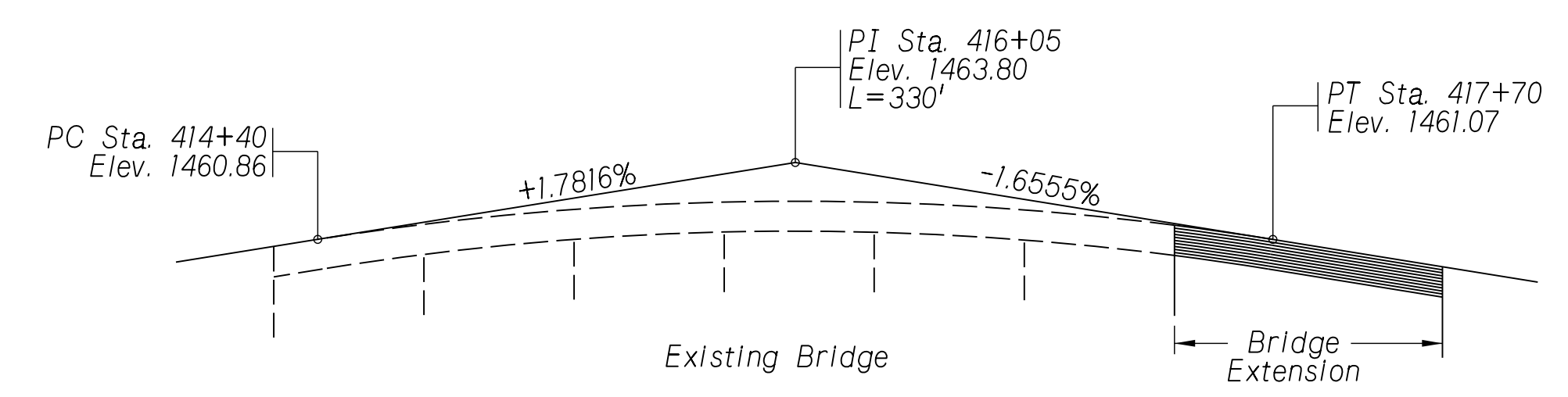
BRIDGE ENGINEER



GENERAL PLAN
Scale: 1" = 20'-0"



SECTIONAL ELEVATION
Scale: 1" = 20'-0"



PROFILE GRADE
Not to Scale

BRIDGE HYDRAULIC INFORMATION

STREAM: ELKHORN RIVER
 D.A. = 4,170 SQ. MI.
 Q100 = 49,730 CFS (DESIGN FLOOD)
 H.W. ELEV. = 1451.06 (D.S. SIDE)
 W.W.A. BELOW H.W. = 6,445 SQ. FT.
 Q (OHW) = ±8,630 CFS
 ORDINARY HIGH WATER ELEV. = 1438.94
 Q100 GENERAL SCOUR = 5.22 FT
 Q100 LOCAL SCOUR (PIER) = 9.28 FT
 Q100 LOCAL SCOUR (ABUTMENT) = 19.25 FT
 Q500 SCOUR ELEV. = 1412.77

WILSON & COMPANY

LOCATION ELKHORN RIVER BR SE OF STANTON

SKW 0°

ROADWAY 36'-0"

DESIGN LIVE LOAD Single Truck

DETAILED BY WAO

CHECKED BY SDK

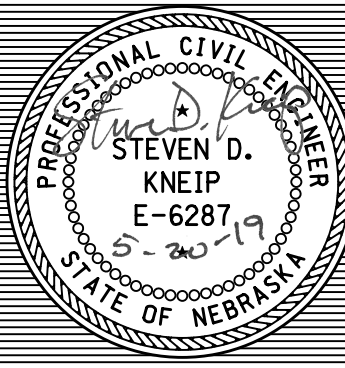
DATE MAY 2019

GENERAL PLAN & ELEVATION

NEW 101'-0" SPAN EXTENSION FOR 351'-8 1/2" MULTI-SPAN EXISTING BRIDGE

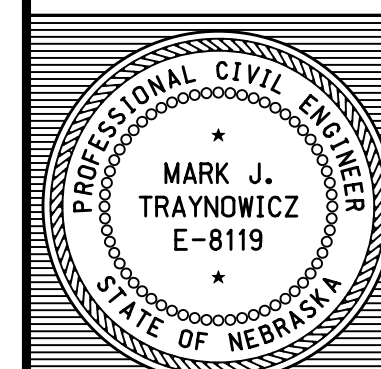
NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

NEBRASKA
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DEPARTMENT OF TRANSPORTATION



PROFESSIONAL CIVIL ENGINEER
STEVEN D. KNEIP
E-6287

SPECIAL PLAN NO.	2
1	20

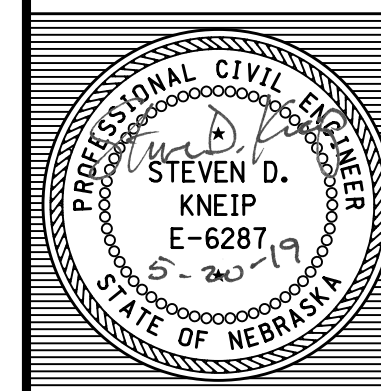


BRIDGE ENGINEER

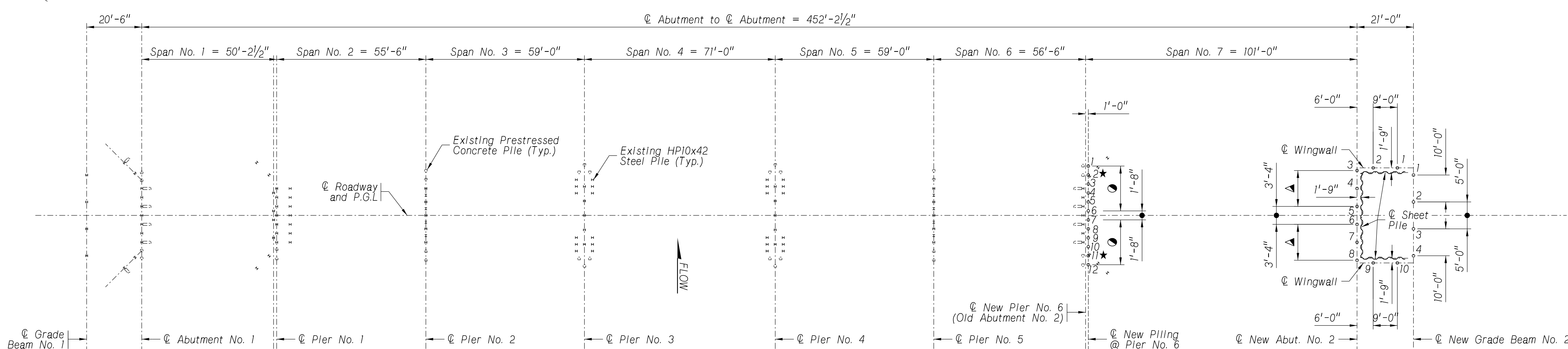
NEW 101'-0" SPAN EXTENSION FOR
35 1/2' MULTI-SPAN EXISTING BRIDGE
PILE LAYOUT & PILE DATA

ELKHORN RIVER BR
SE OF STANTON
ROADWAY 36'-0"
DESIGN LIVE LOAD Single Truck
CHECKED BY WAO
DATE MAY 2019

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SPECIAL PLAN NO. 3
1 20



PILE LAYOUT
Not to Scale

★ Remove Existing HPI0x42 Pile. Work required to remove the existing pile shall be subsidiary to the piling bid item.

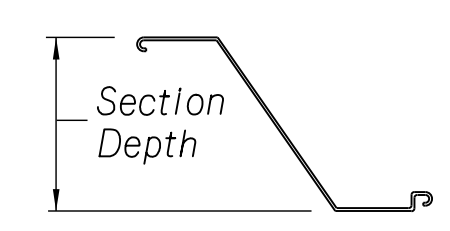
● 5 Spa. @ 3'-4"
▲ 2 Spa. @ 6'-8"

PILE DATA						
LOCATION	PILE NUMBER	CUT-OFF ELEVATION	MINIMUM PENETRATION BELOW CUT-OFF (feet)	PILE ORDER LENGTH (feet)	DESIGN PILE BEARING (kips/pile)	PILE TYPE
Pier No. 6	1-12	1455.04	80	85	197	Pipe
Abutment No. 2	1, 2, 9, 10	1452.04	45	50	50	Pipe
	3-8	1452.04	75	80	169	Pipe
Grade Beam No. 2	1-4	1456.66	70	75	115	Pipe

All pile spacing is given at the bottom of concrete.

As a minimum, all steel sheet piling shall conform to ASTM A328/A328M steel and shall meet the following requirements:

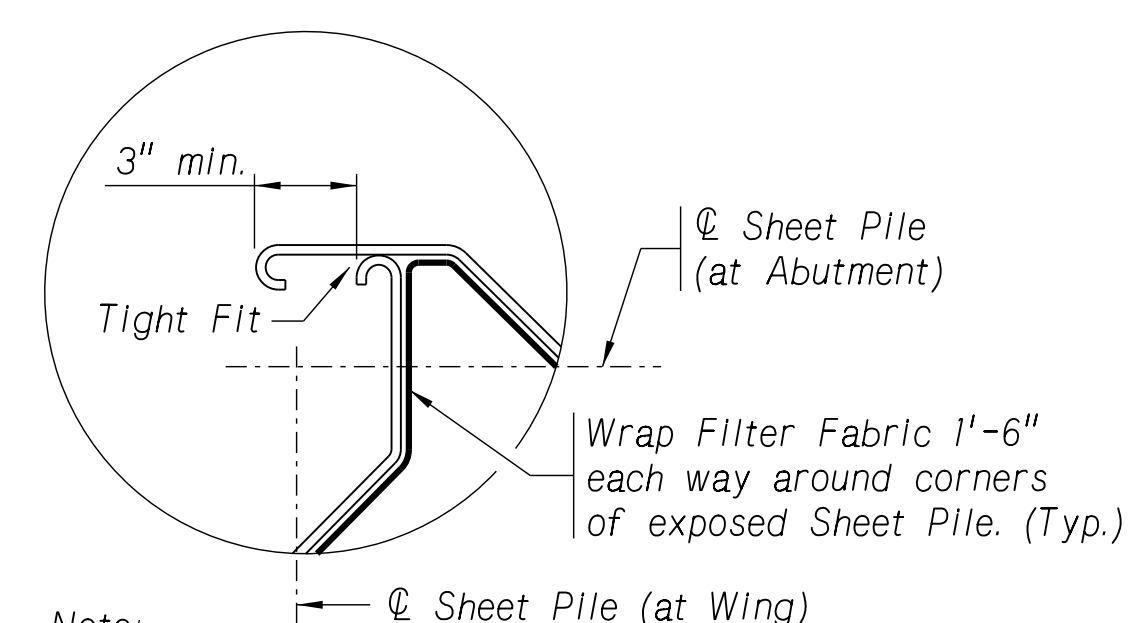
- Section Length _____ 35 ft.
- Maximum Section Depth _____ 13 in.
- Minimum Section Thickness _____ 0.3125 in.
- Elastic Section Modulus _____ 19.3 in³/ft



The Contractor shall submit for approval a shop plan of the sheet pile layout showing all pertinent dimensions, details, and section properties.

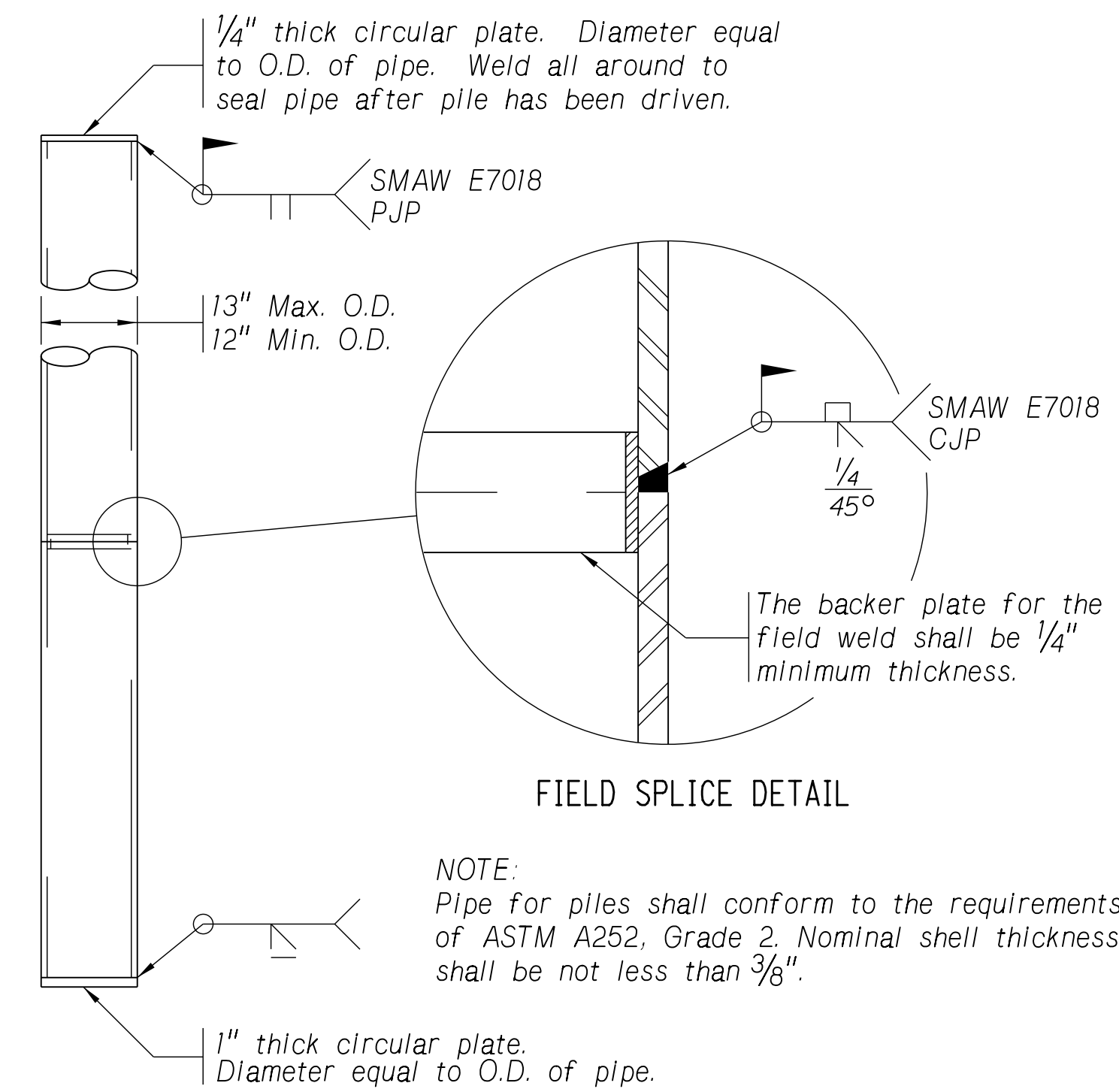
The pay quantity will be based on the sheet pile wall dimensions shown. The constructed wall length will be within ± 2'-0" of the sheet pile wall dimensions shown.

All exposed pipe piles shall be filled with concrete. This concrete shall be Class "47B" with a minimum 28-day compressive strength of 3,000 psi. This concrete shall be subsidiary to the Pay Item, "PIPE PILING".



Note: Corner Filter Fabric shall be Subsidiary to the pay item "STEEL SHEET PILING".

SHEET PILE CORNER DETAIL (TYP.)
Not to Scale



NOTE: Pipe for piles shall conform to the requirements of ASTM A252, Grade 2. Nominal shell thickness shall be not less than 3/8".

PIPE PILE DETAIL
Not to Scale

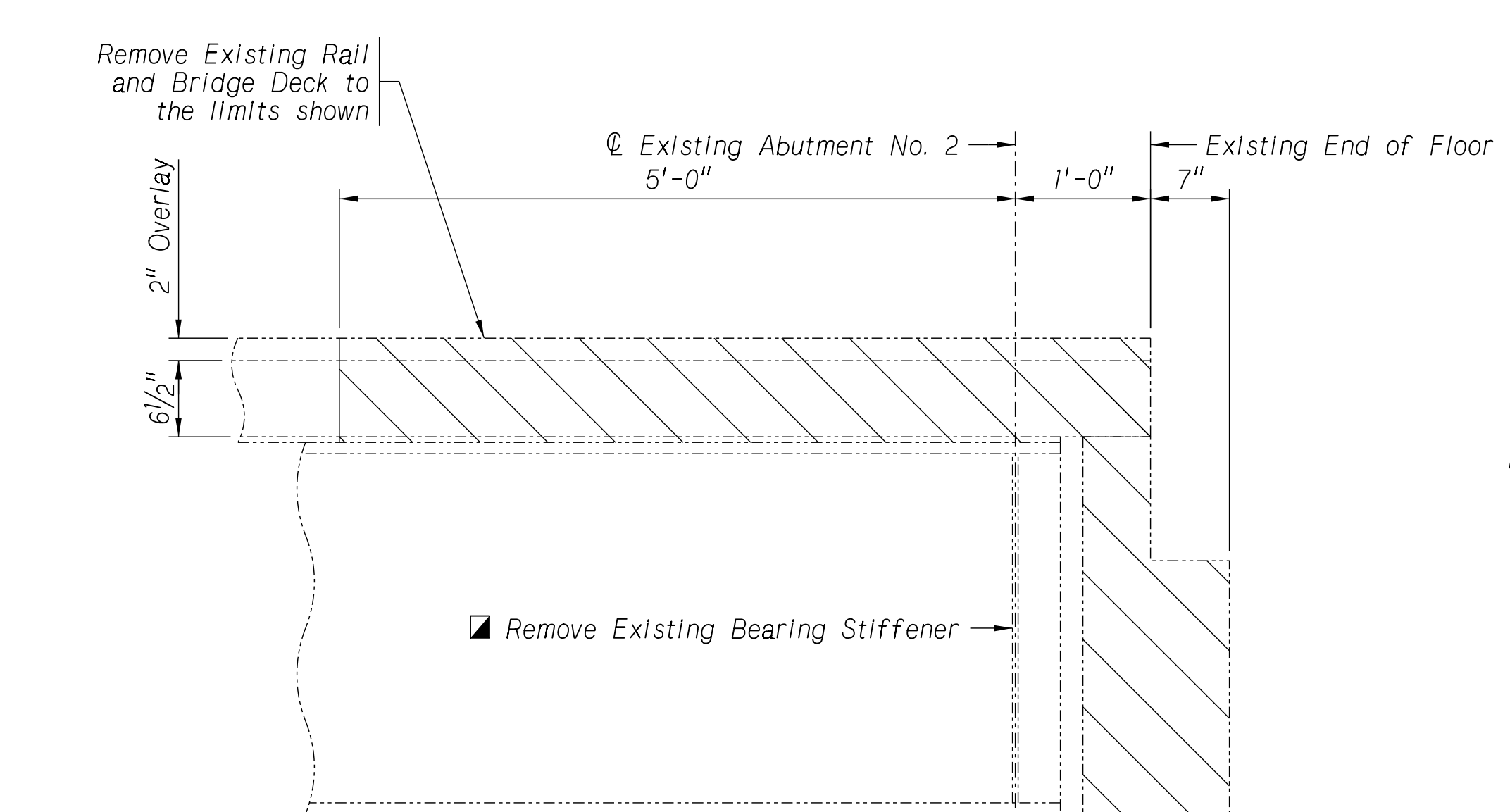
WILSON & COMPANY

Computer: A13433

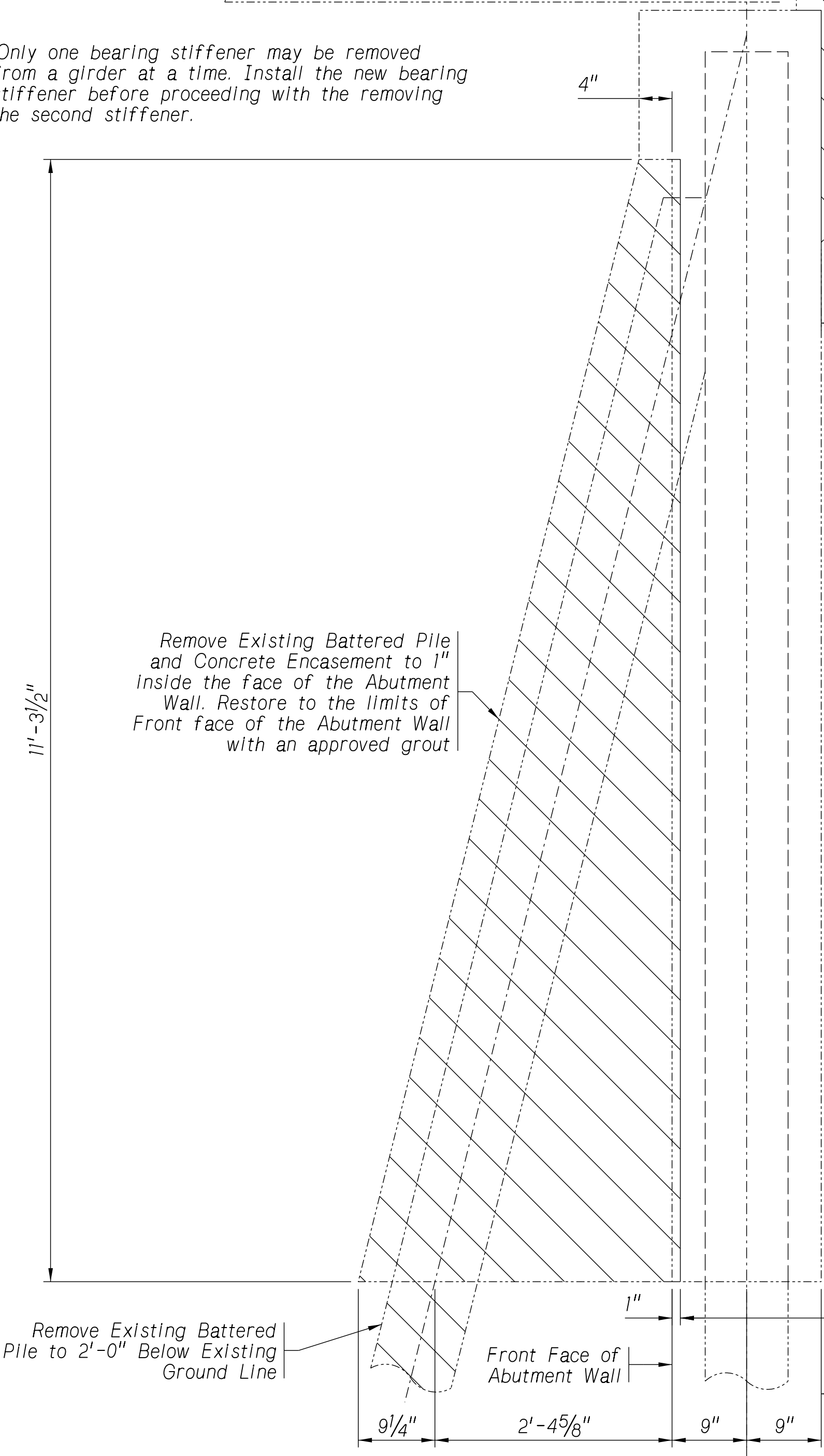
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Date: 20-MAY-2019 10:04

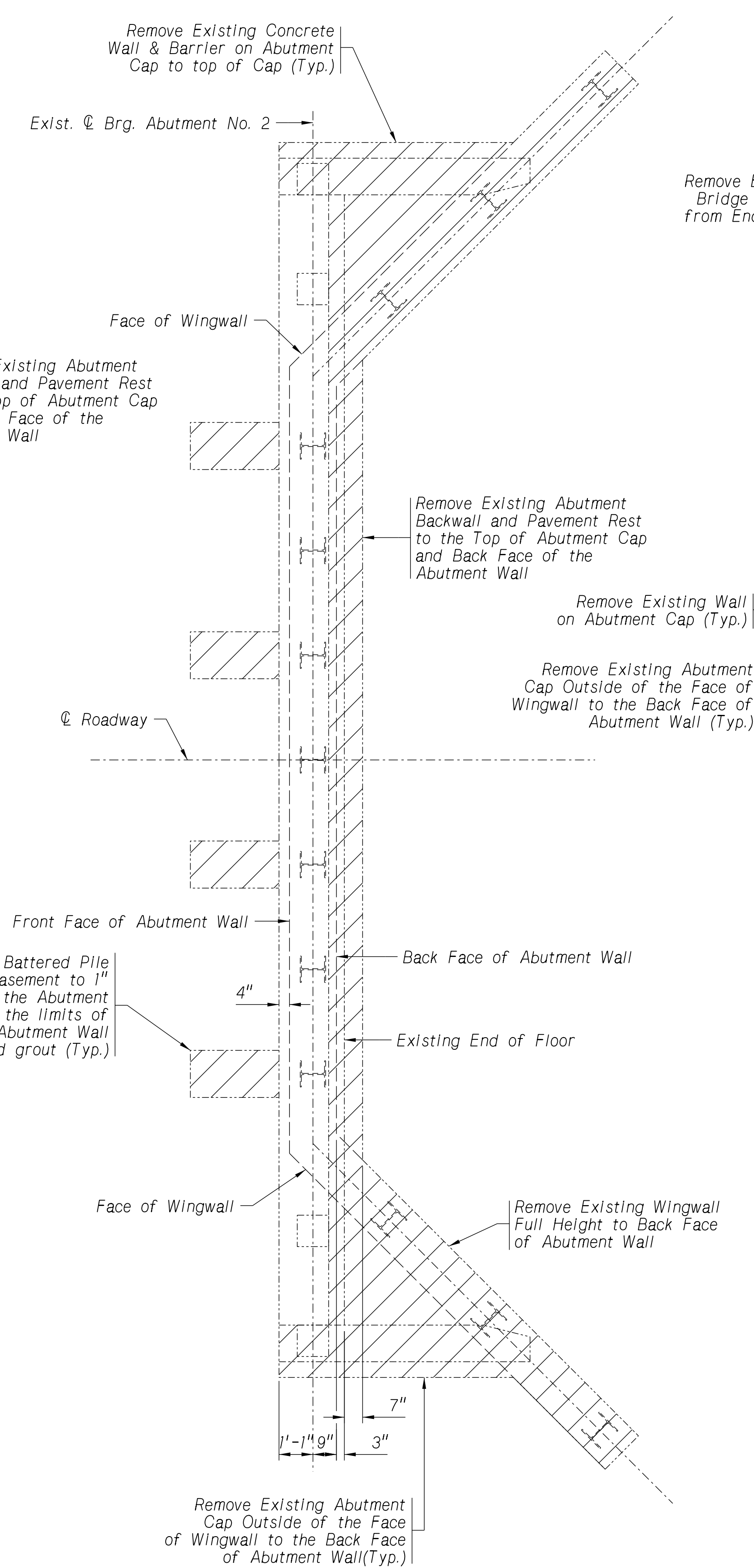
File: 3 Pile Layout & Pile Data



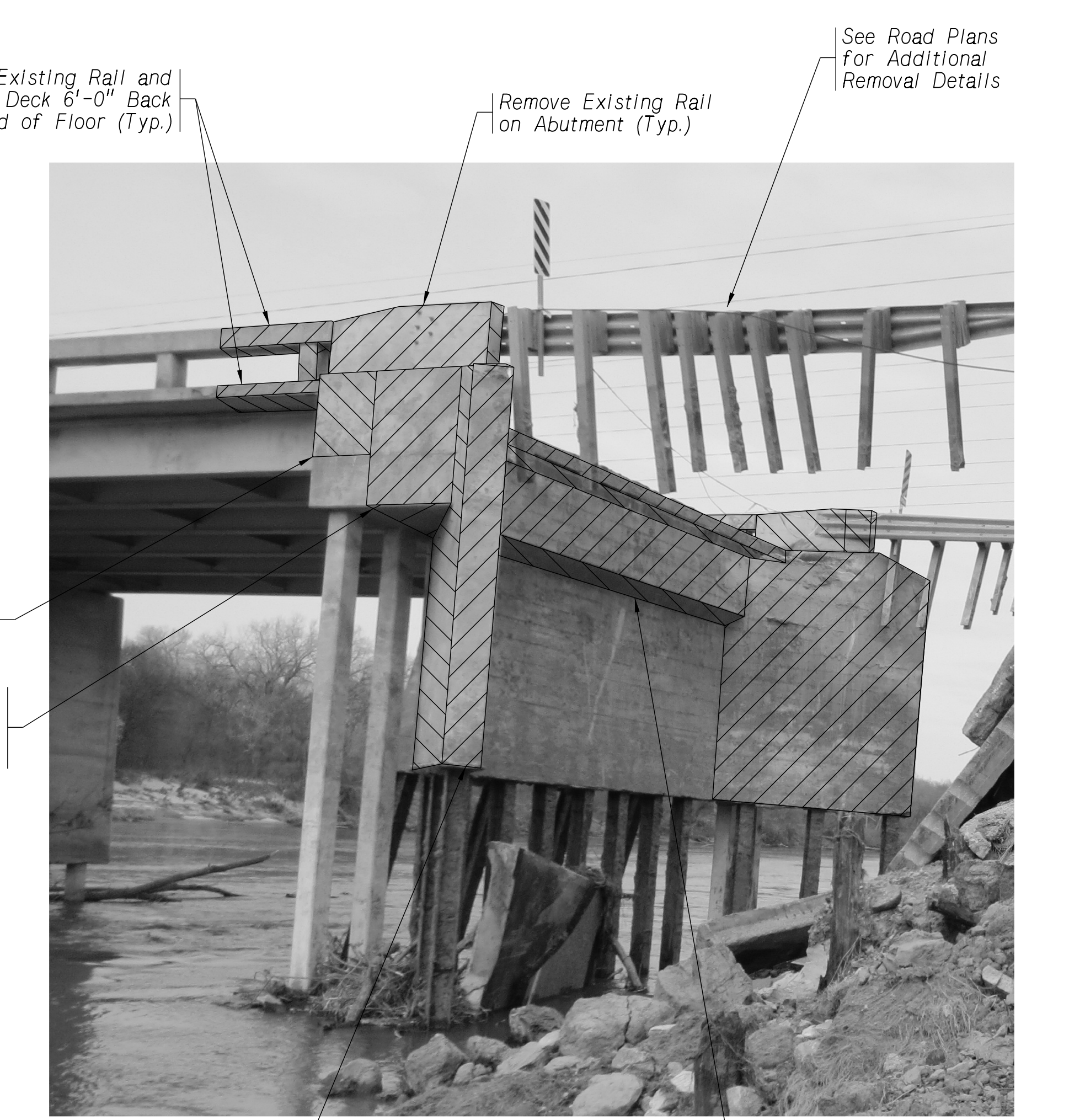
Only one bearing stiffener may be removed from a girder at a time. Install the new bearing stiffener before proceeding with the removing the second stiffener.



SECTION OF ABUTMENT
 Not to Scale

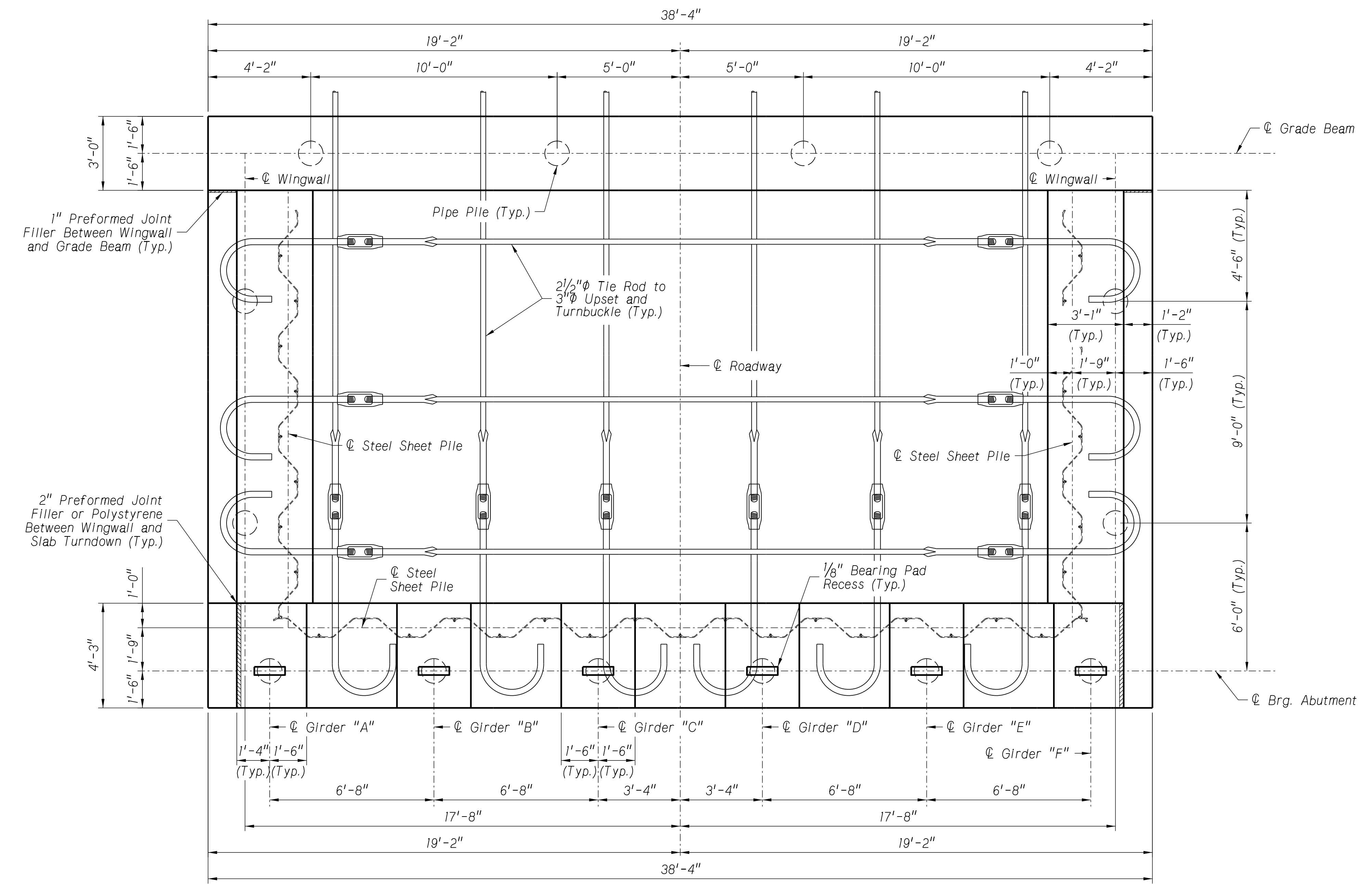


PLAN OF ABUTMENT
 Not to Scale



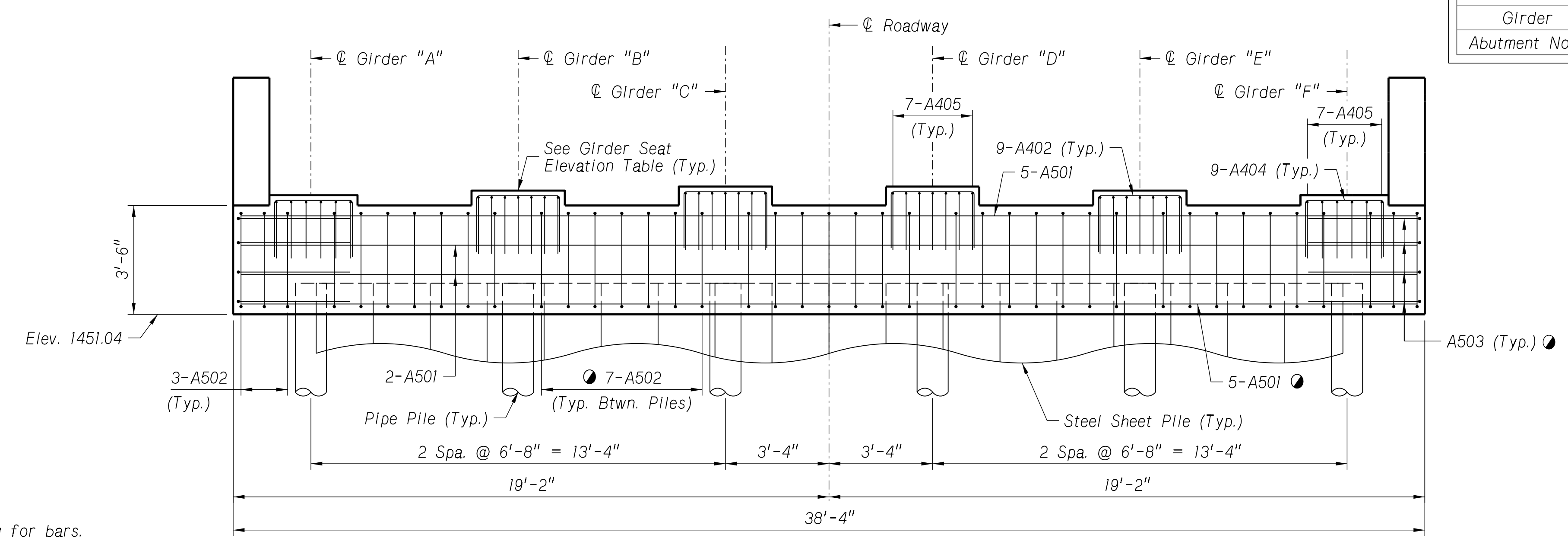
REMOVAL DETAILS
 Not to Scale

Date: 20-MAY-2019 10:04
 User: KMEVans
 Computer: A13433
 File: 4 Removal Details



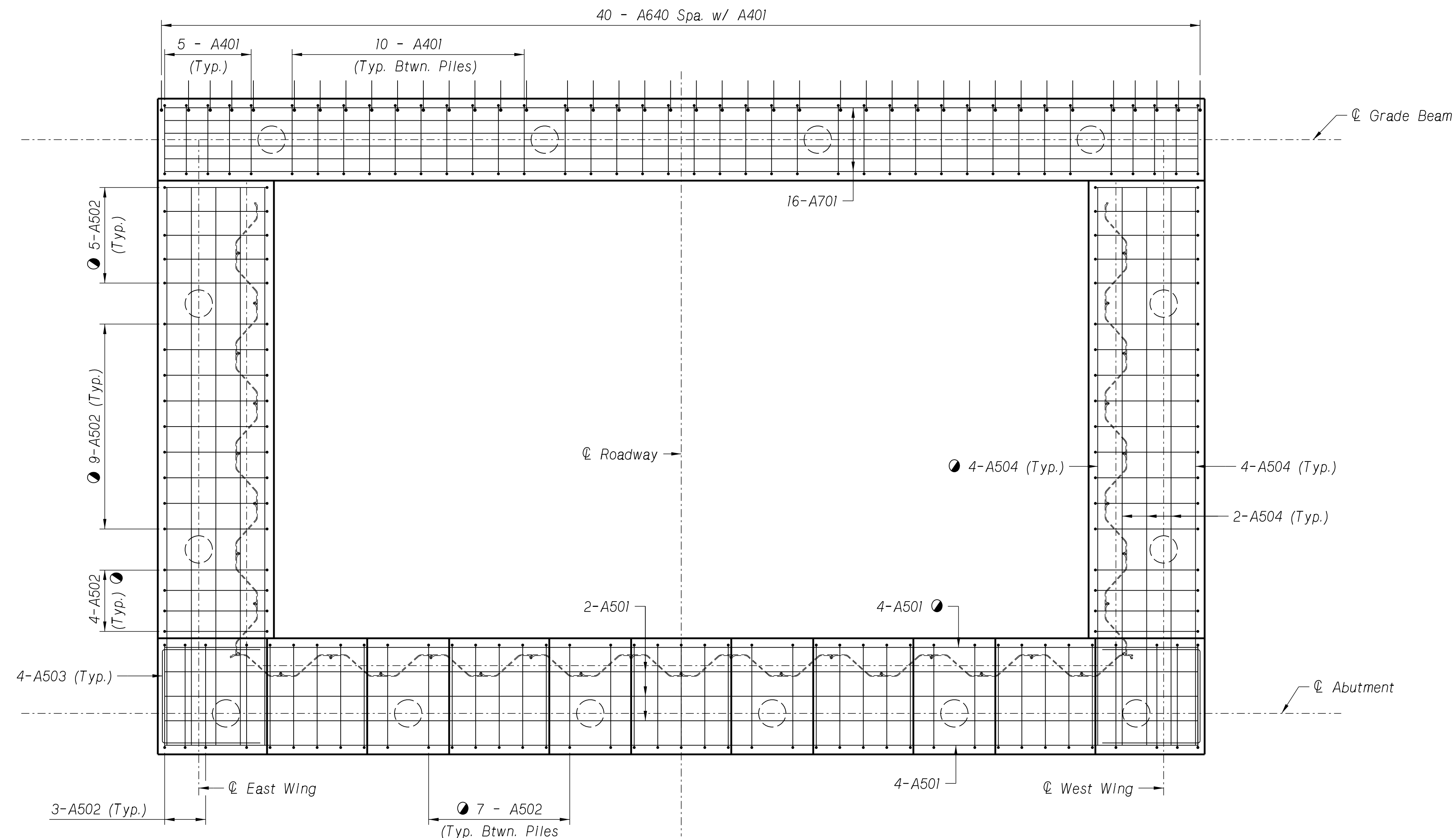
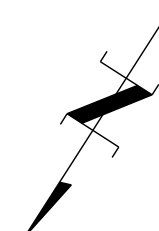
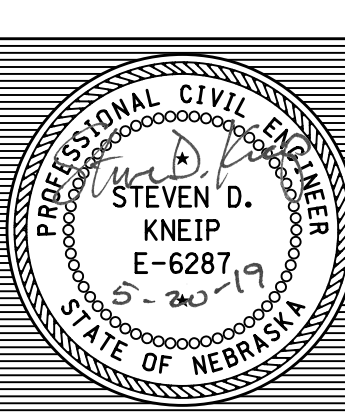
PLAN OF ABUTMENT
Scale: 3/8" = 1'-0"

GIRDER SEAT ELEVATIONS						
Girder	"A"	"B"	"C"	"D"	"E"	"F"
Abutment No. 1	1454.87	1455.02	1455.15	1455.15	1455.02	1454.87



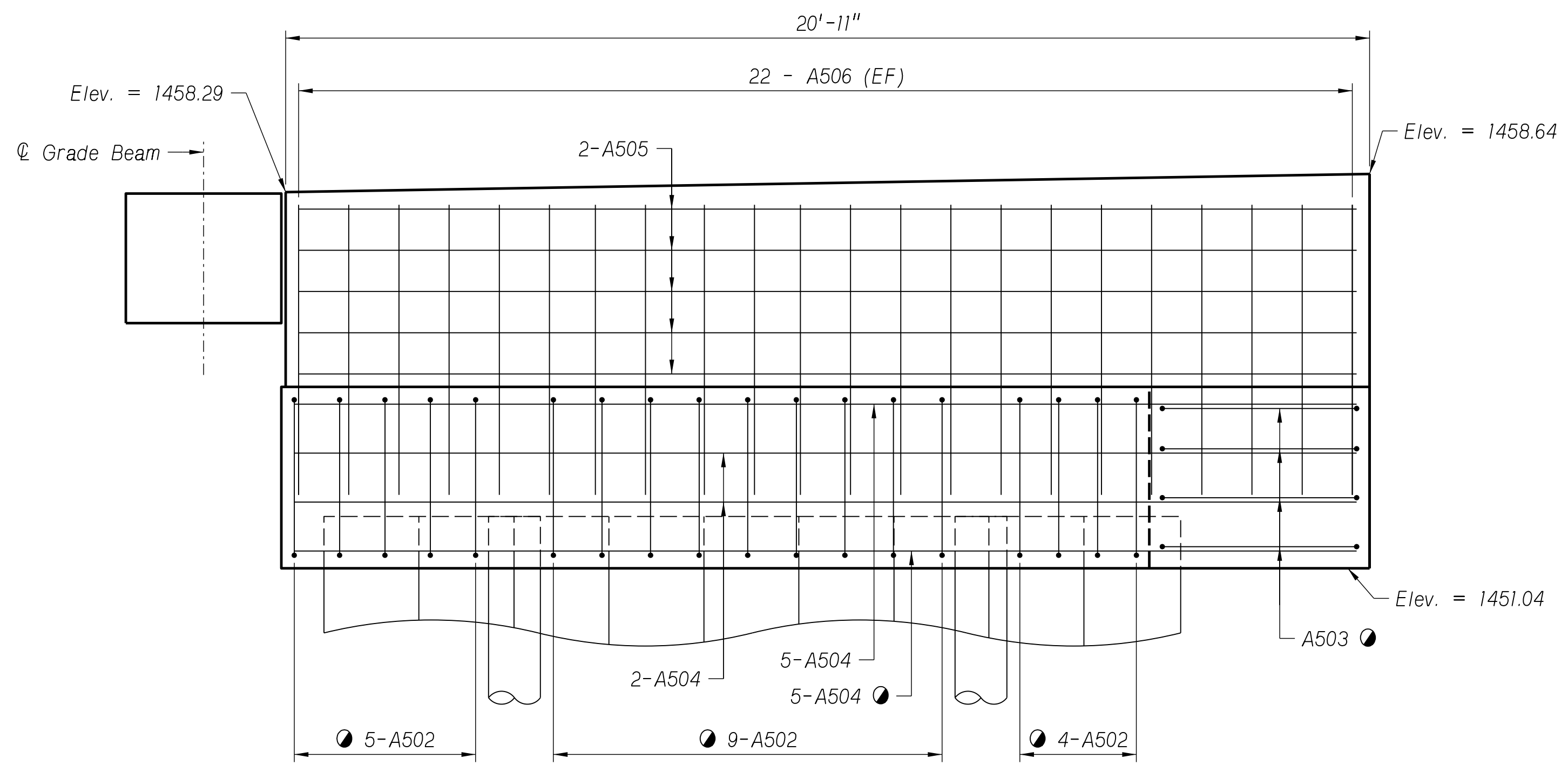
ELEVATION OF ABUTMENT
Scale: 3/8" = 1'-0"

● Burn 1.5" ϕ holes in steel sheet piling for bars.
See "Abutment Details" Sheet for additional details.

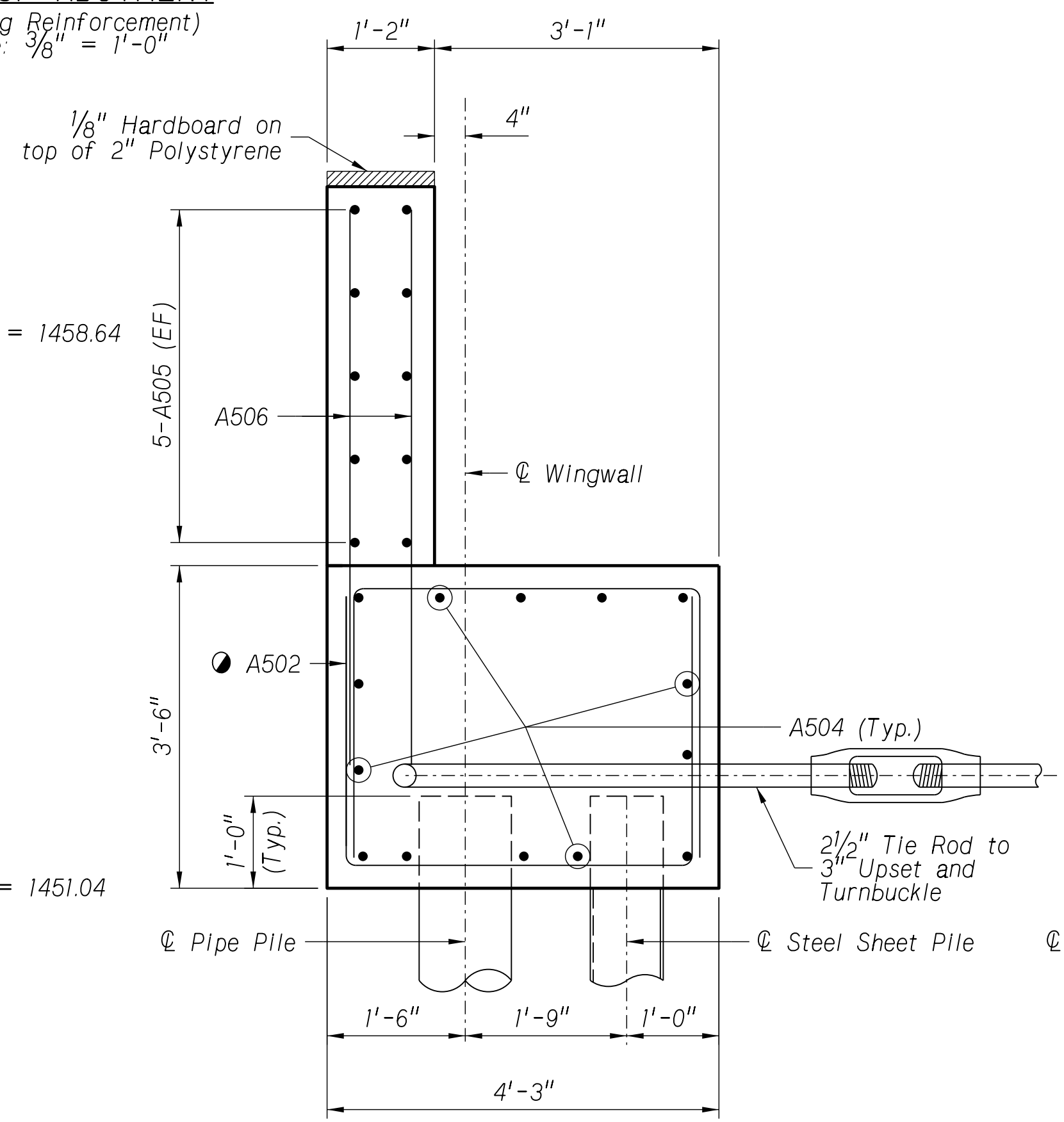


Note: Tie rods not shown for clarity.

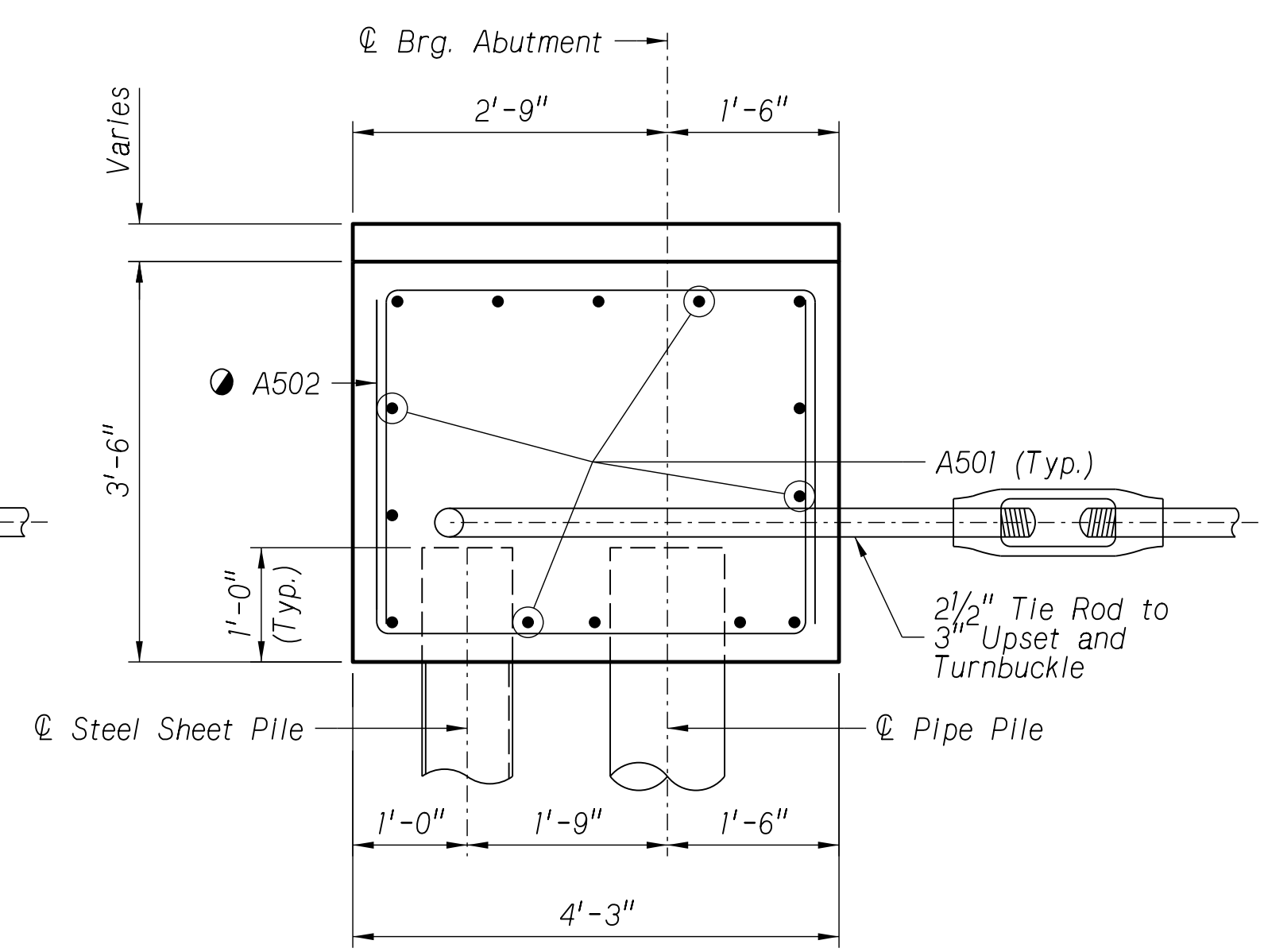
PLAN OF ABUTMENT
(Showing Reinforcement)
Scale: 3/8" = 1'-0"



WING ELEVATION
Scale: 1/2" = 1'-0"

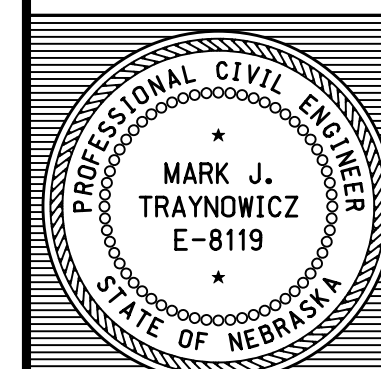


WING SECTION
Scale: 3/4" = 1'-0"



ABUTMENT SECTION
Scale: 3/4" = 1'-0"

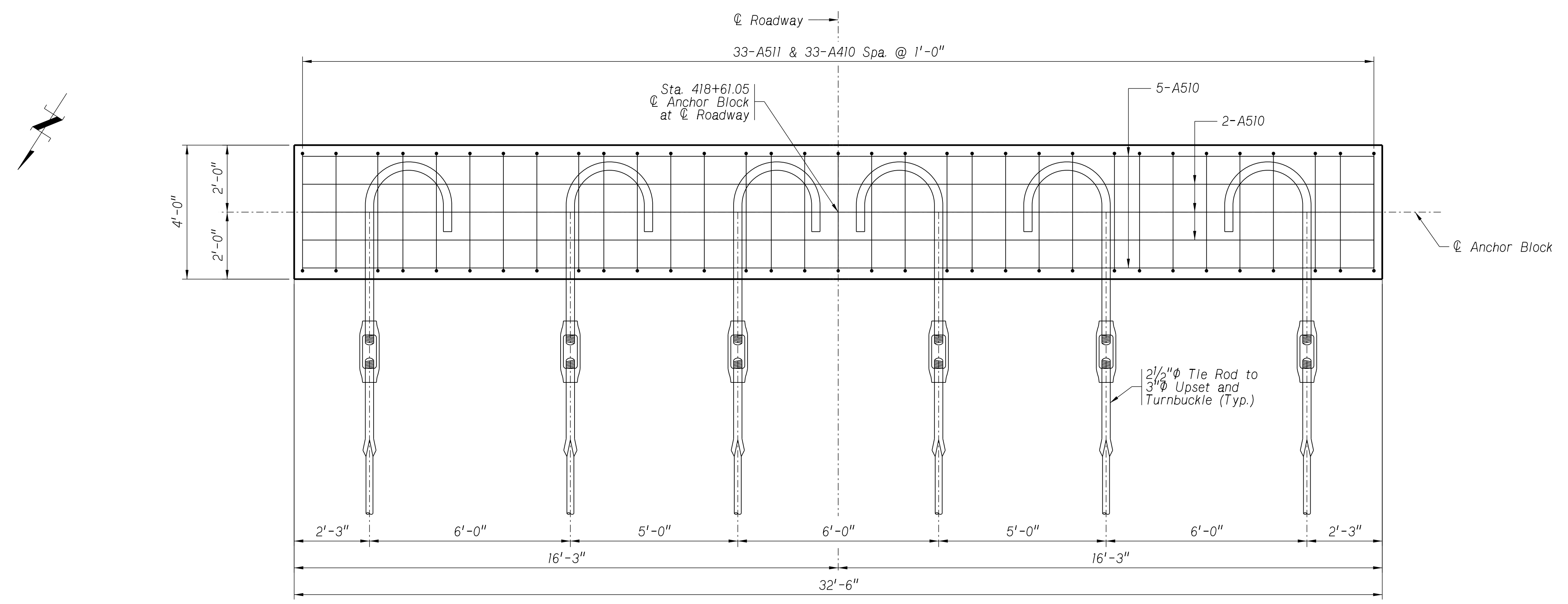
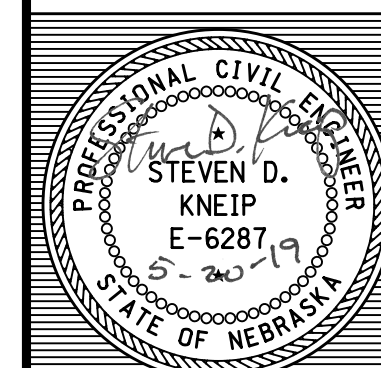
● Burn 1.5" φ holes in steel sheet piling for bars.
EF = Each Face



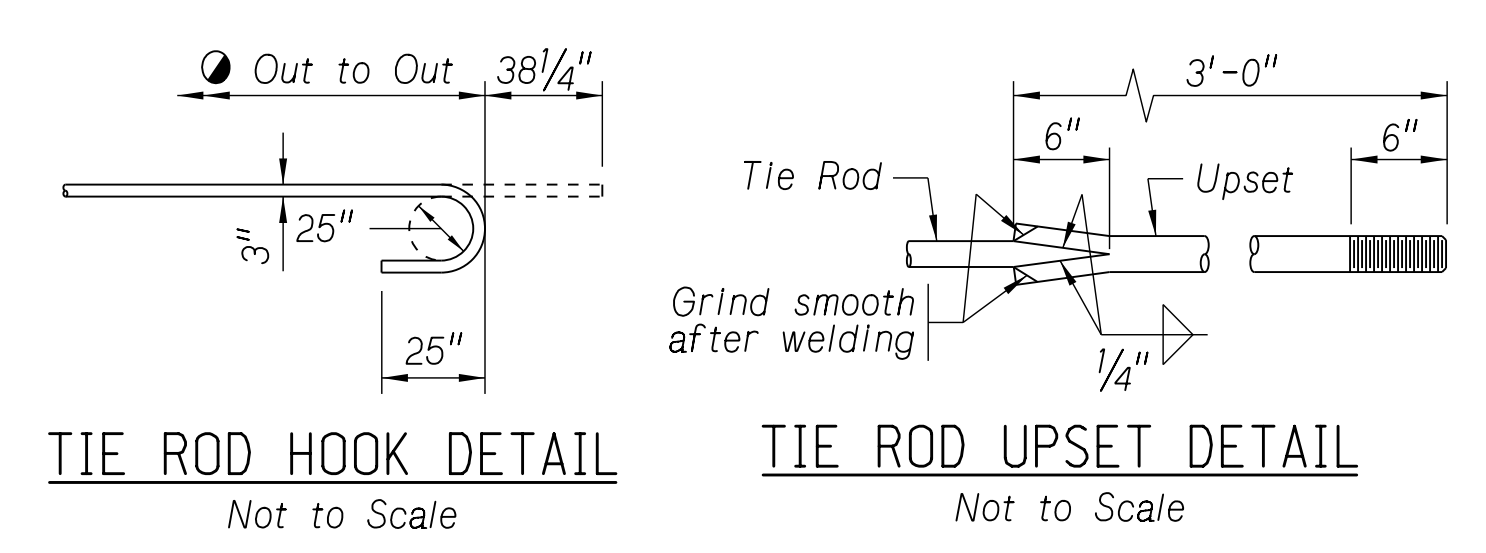
BRIDGE ENGINEER

LOCATION ELKHORN RIVER BR NEW 101'-0" SPAN EXTENSION FOR
SE OF STANTON 351'-8 1/2" MULTI-SPAN EXISTING BRIDGE
COUNTY Stanton HWY. NO. N-57
SKEW 0° ROADWAY 36'-0"
DESIGN LIVE LOAD Single Truck
STA. 415+88.45
DESIGNED BY WAO CHECKED BY WAO DATE MAY 2019
NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

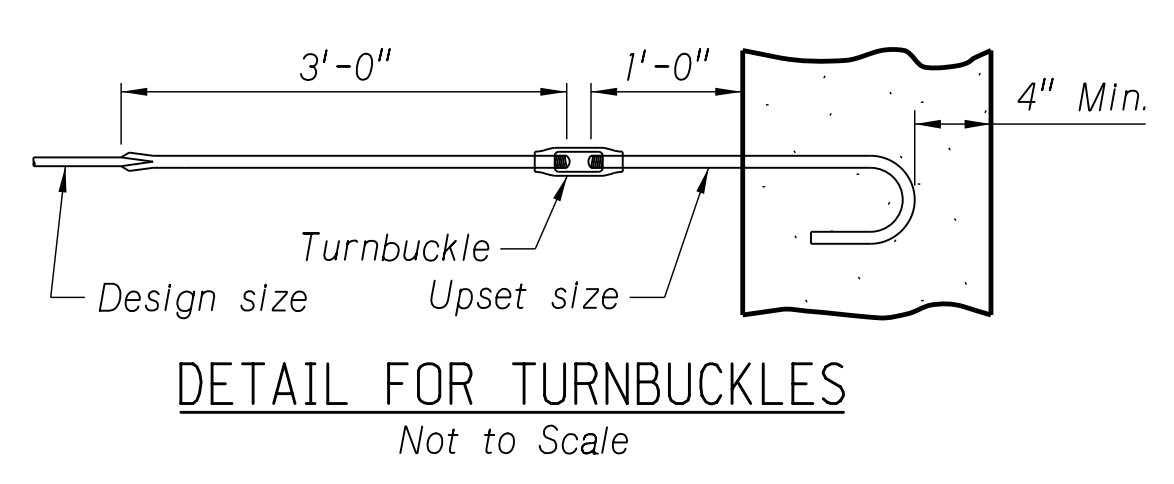
NEBRASKA
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DEPARTMENT OF TRANSPORTATION



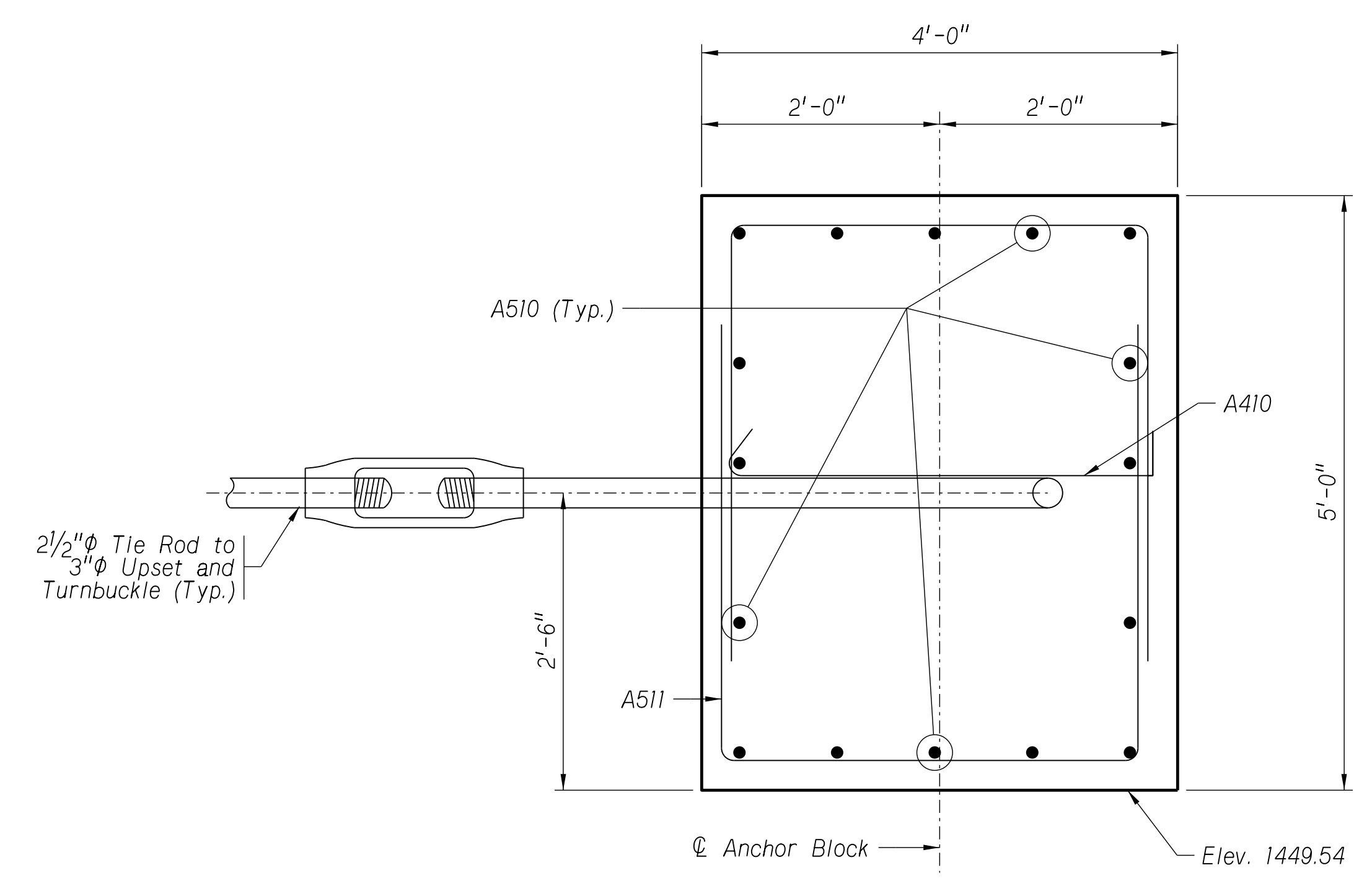
PLAN OF ANCHOR BLOCK
Scale: 1/2" = 1'-0"



Note: As an alternate, the entire tie rod may be of the size shown for the upset.



Out to Out Tie Rod Lengths:
49'-3" Abutment to Anchor Block
37'-4" Wing to Wing



SECTION OF ANCHOR BLOCK
Scale: 1" = 1'-0"

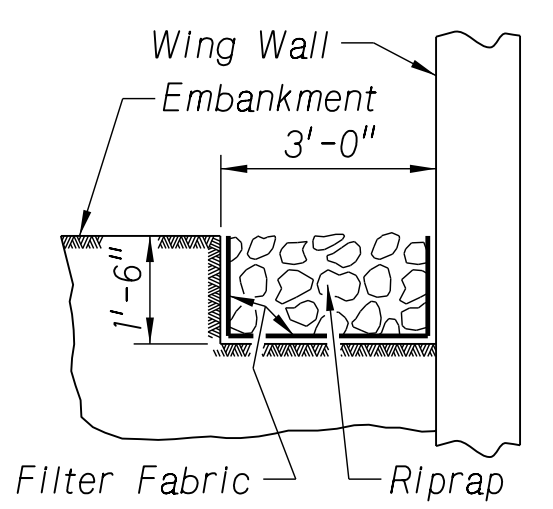
BILL OF BARS

WEIGHT
LB

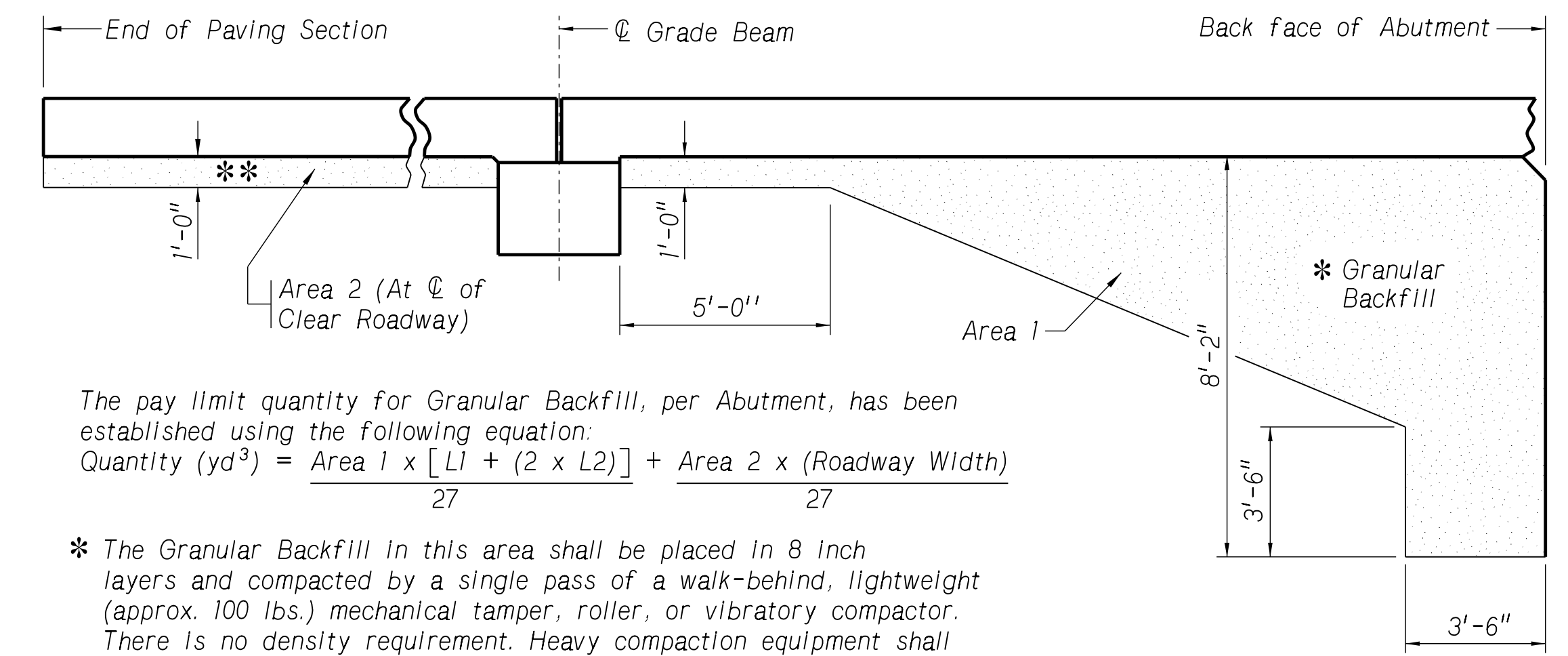
MARK	NO.	LENGTH	TYPE	"A"	"B"	"C"	"D"	"E"	"F"	PIN	HOOK	WEIGHT LB
A701	16	37'-10"	STR									1,237
A640	40	3'-0"	101	1'-6"	1'-6"	1' 1"				4 1/2"		180
A501	14	37'-10"	STR									552
A502	77	19'-6"	108	3'-0"	3'-9"	3' 0"	3'-0"			2 1/2"		1,566
A503	8	10'-2"	103	3'-7"	3'-0"	3' 7"				2 1/2"		85
A504	14	20'-5"	STR									298
A505	20	20'-5"	STR									426
A506	88	5'-8"	STR									520
A510	16	32'-0"	STR									534
A511	33	21'-8"	108	3'-8"	3'-6"	3' 8"	2'-10"			2 1/2"		746
A401	40	9'-9"	107	2'-0"	2'-6"					2"	4 1/2"	261
A402	36	6'-8"	103	2'-0"	2'-8"	2' 0"				2"		160
A403	42	7'-9"	103	2'-0"	3'-9"	2' 0"				2"		217
A404	18	6'-4"	103	2'-0"	2'-4"	2' 0"				2"		76
A410	33	4'-4"	113		3'-7"					2"	4 1/2"	96

TOTAL = 6,954 LB

NOTES:
FOR PIN DIAMETERS, HOOK LENGTHS, & BENDING DIAGRAMS SEE SHEET 20 OF 20.



WING RIPRAP DETAIL
Not to Scale

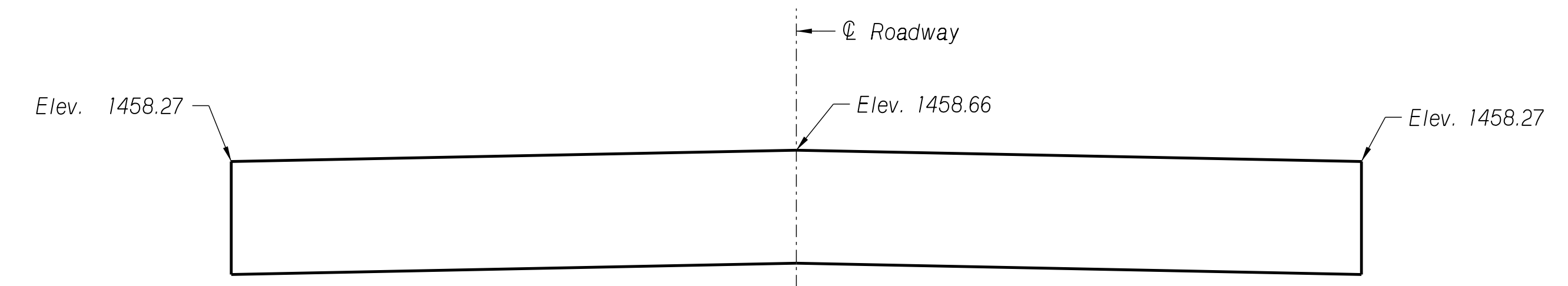


The pay limit quantity for Granular Backfill, per Abutment, has been established using the following equation:
Quantity (yd³) = $\frac{\text{Area 1} \times [L1 + (2 \times L2)]}{27} + \frac{\text{Area 2} \times (\text{Roadway Width})}{27}$

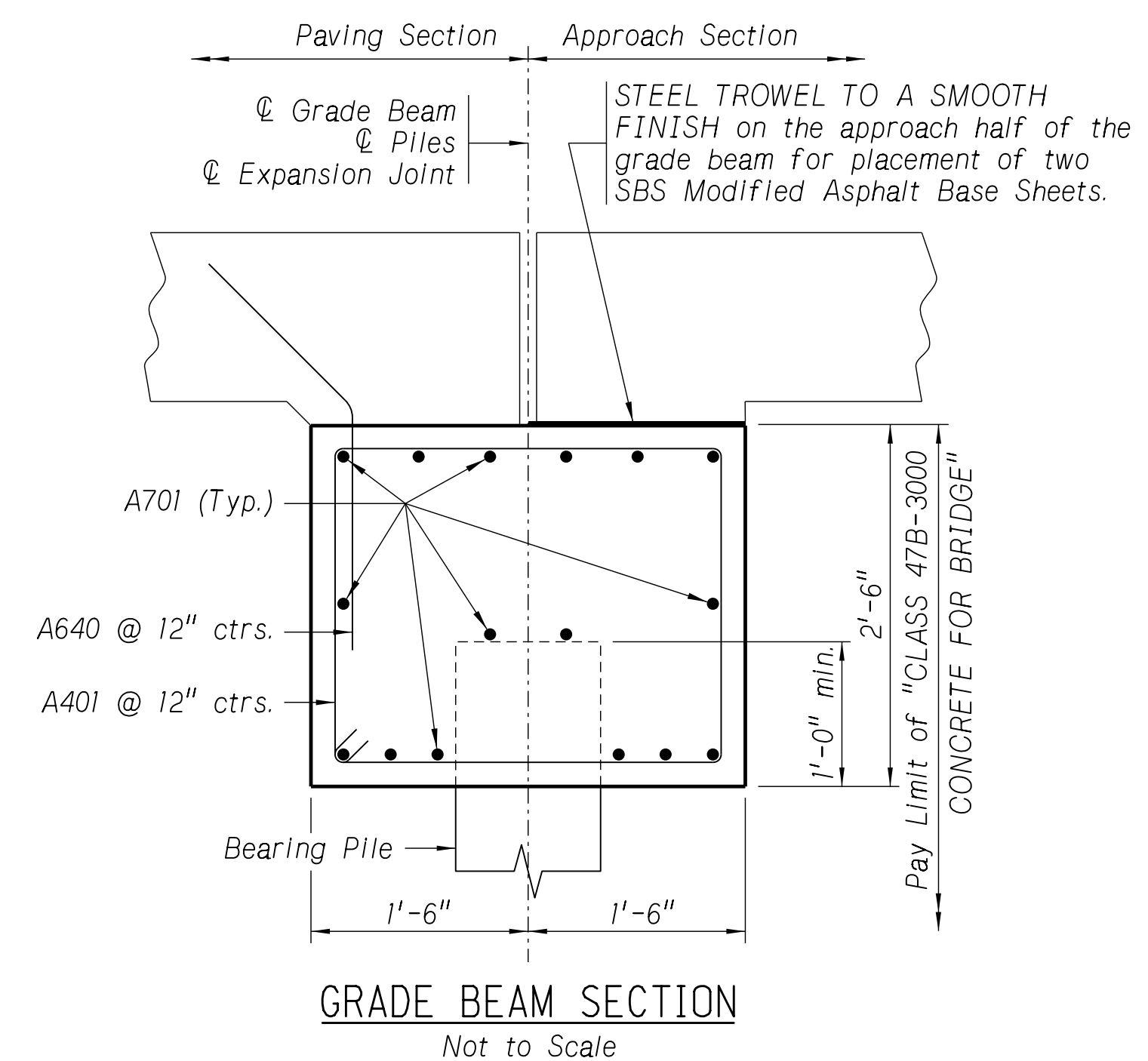
* The Granular Backfill in this area shall be placed in 8 inch layers and compacted by a single pass of a walk-behind, lightweight (approx. 100 lbs.) mechanical tamper, roller, or vibratory compactor. There is no density requirement. Heavy compaction equipment shall not be used in this area. Flooding the granular backfill with water is not allowed.

** The Granular Backfill in this area shall be compacted in accordance with the Standard Specifications.

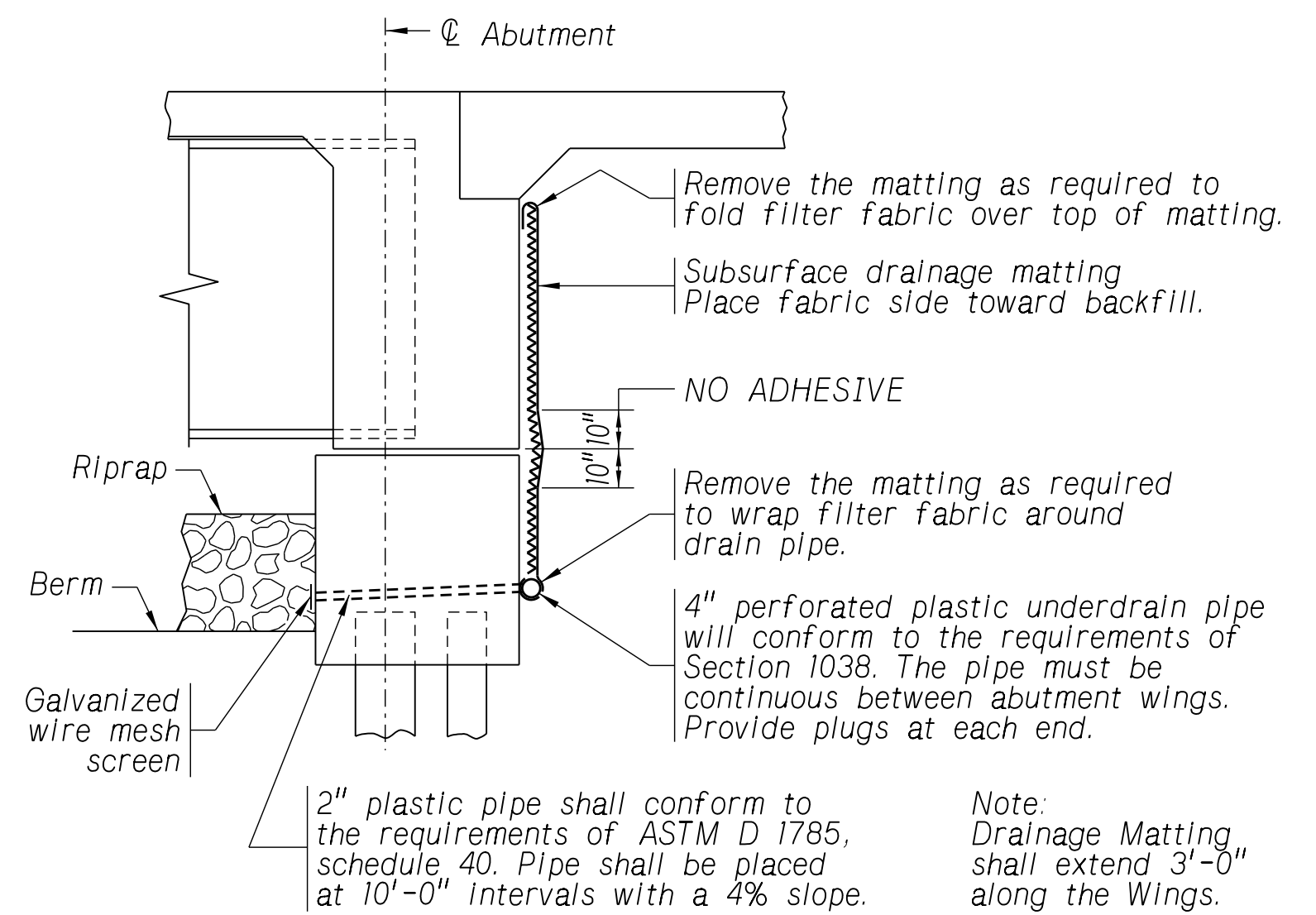
SECTION A-A
Not to Scale



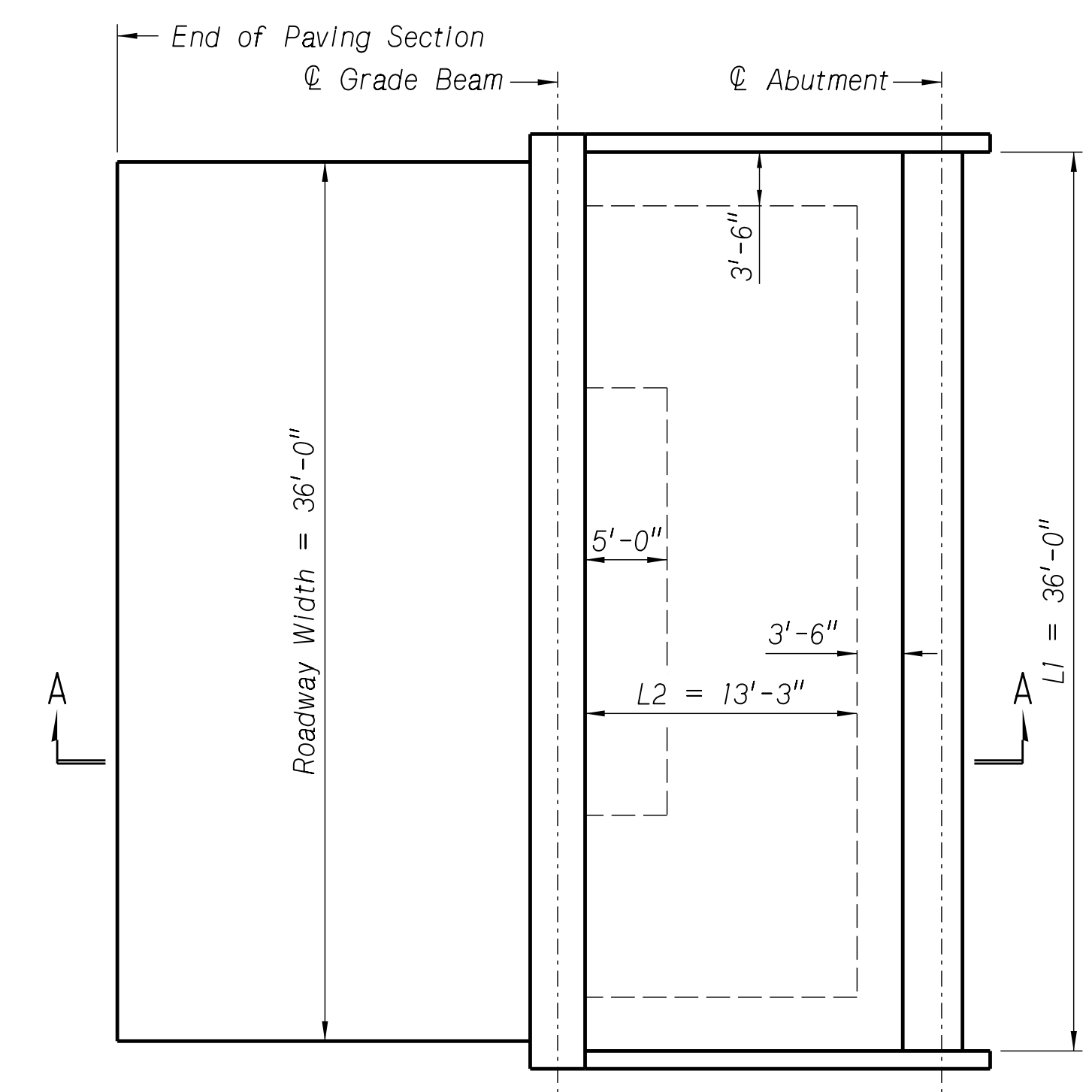
GRADE BEAM ELEVATION
Not to Scale



GRADE BEAM SECTION
Not to Scale



DRAINAGE DETAIL
Not to Scale

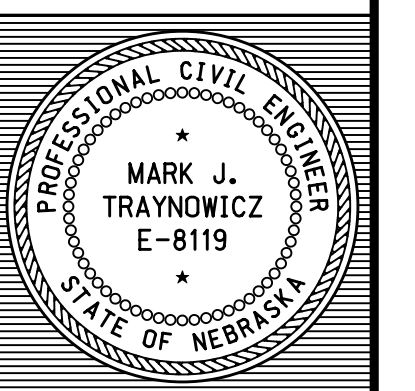


PLAN OF GRANULAR BACKFILL
Not to Scale

PROJECT NUMBER
ER-57-3(110)

SHEET NO.
S8

C.N. 32322
STRUCTURE NUMBER
S057 01566



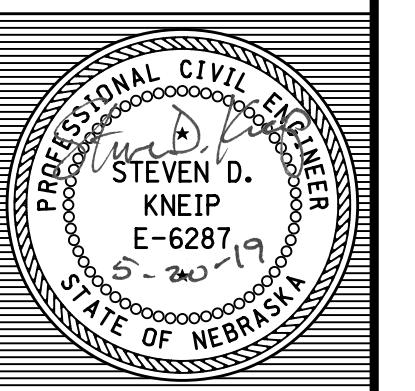
BRIDGE ENGINEER

LOCATION ELKHORN RIVER BR
NEW 101'-0" SPAN EXTENSION FOR
SE OF STANTON
35 1/2" MULTI-SPAN EXISTING BRIDGE
ROADWAY 36'-0"
DESIGN LIVE LOAD Single Truck
ABUTMENT BACKFILL &
BILL OF BARS
DATE MAY 2019

CHECKED BY SDK
DESIGNED BY WAO

NEBRASKA
DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

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SPECIAL PLAN NO.
1

8
20

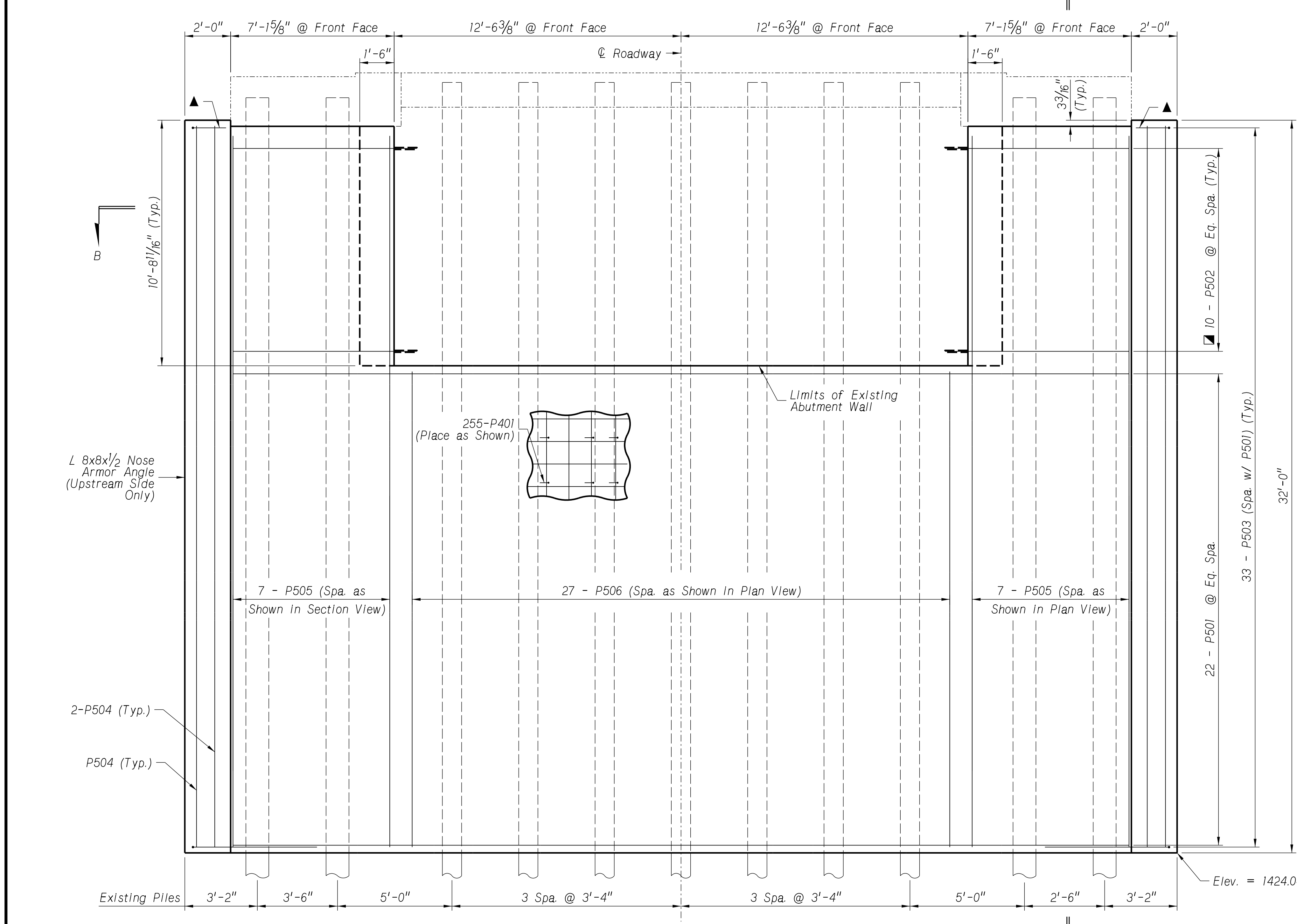
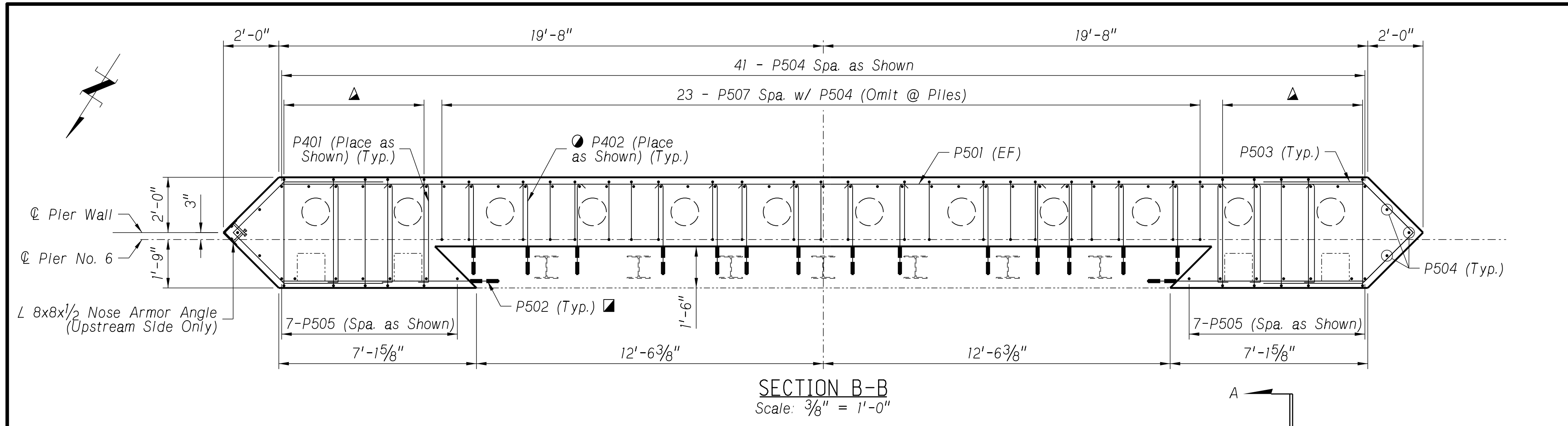
WILSON
& COMPANY

Computer: A13433

User: KMEvans

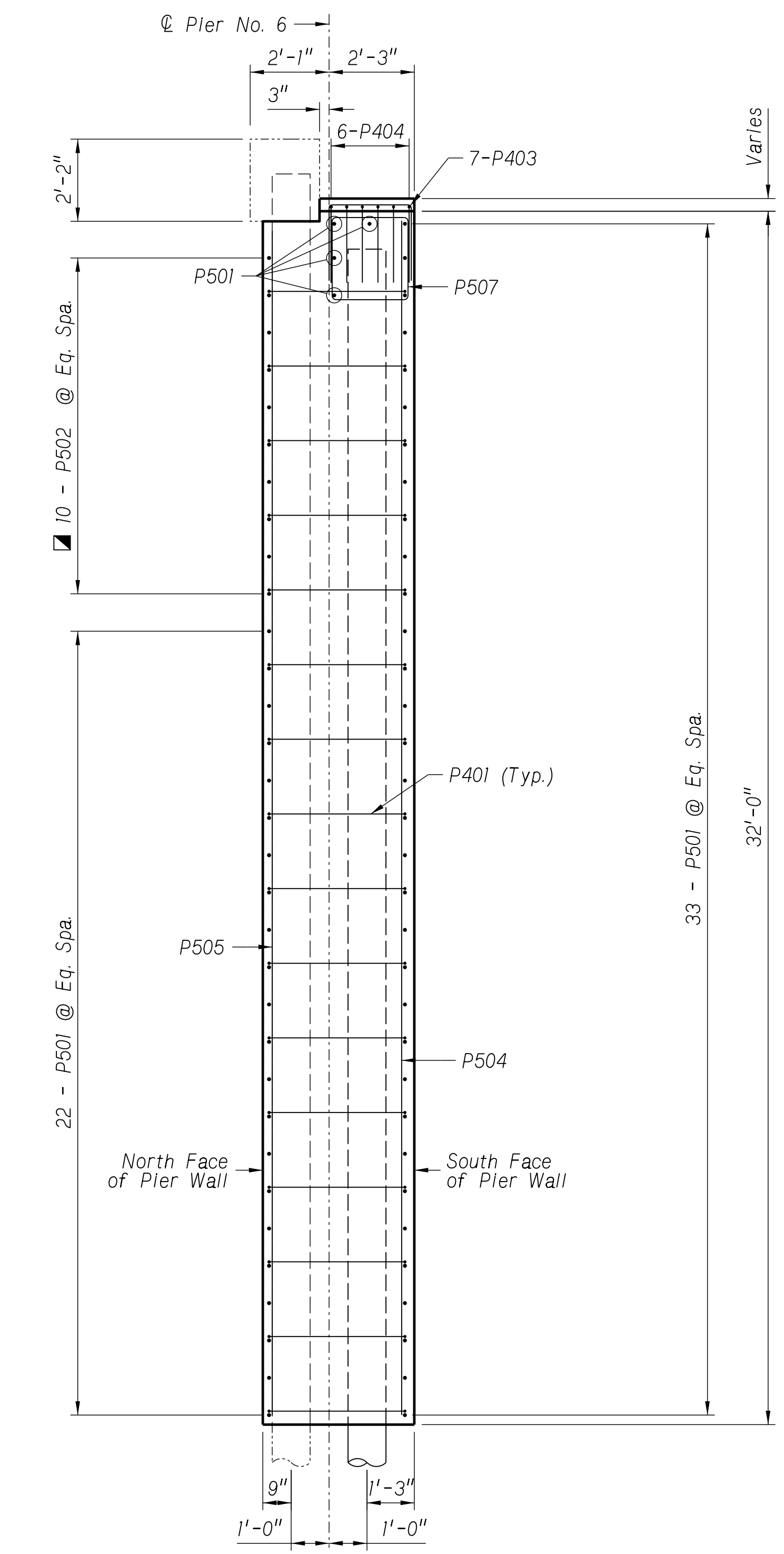
Date: 20-MAY-2019 10:05

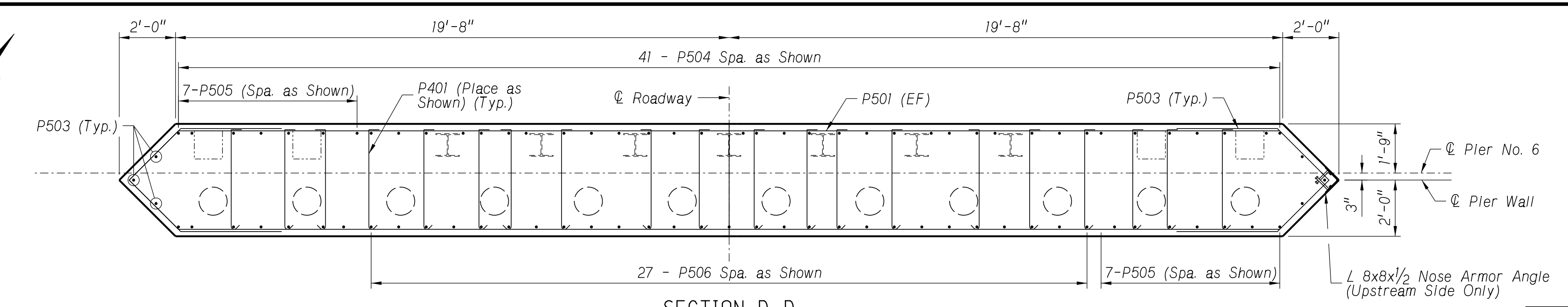
File: 8 Granular Backfill & Abutment Bill of Bars



File: 9 Pier No. 6 Plan & North Face Elevation
Date: 20-MAY-2019 10:05
User: KMEvans
Computer: A13433

- ▲ 5 - P507 Spa. w/ P504 (Omit @ Piles)
- Drill 1"φ x 12" holes for P502 into existing abutment wing wall as shown. Inject epoxy compound into holes prior to inserting P502 (20 Req'd)
- Drill 1"φ x 12" holes for P402 into existing abutment wall as shown. Inject epoxy compound into holes prior to inserting P402 (70 Req'd)
- ▲ Field clip as needed to maintain clearances to the existing concrete. Epoxy coat clipped ends.

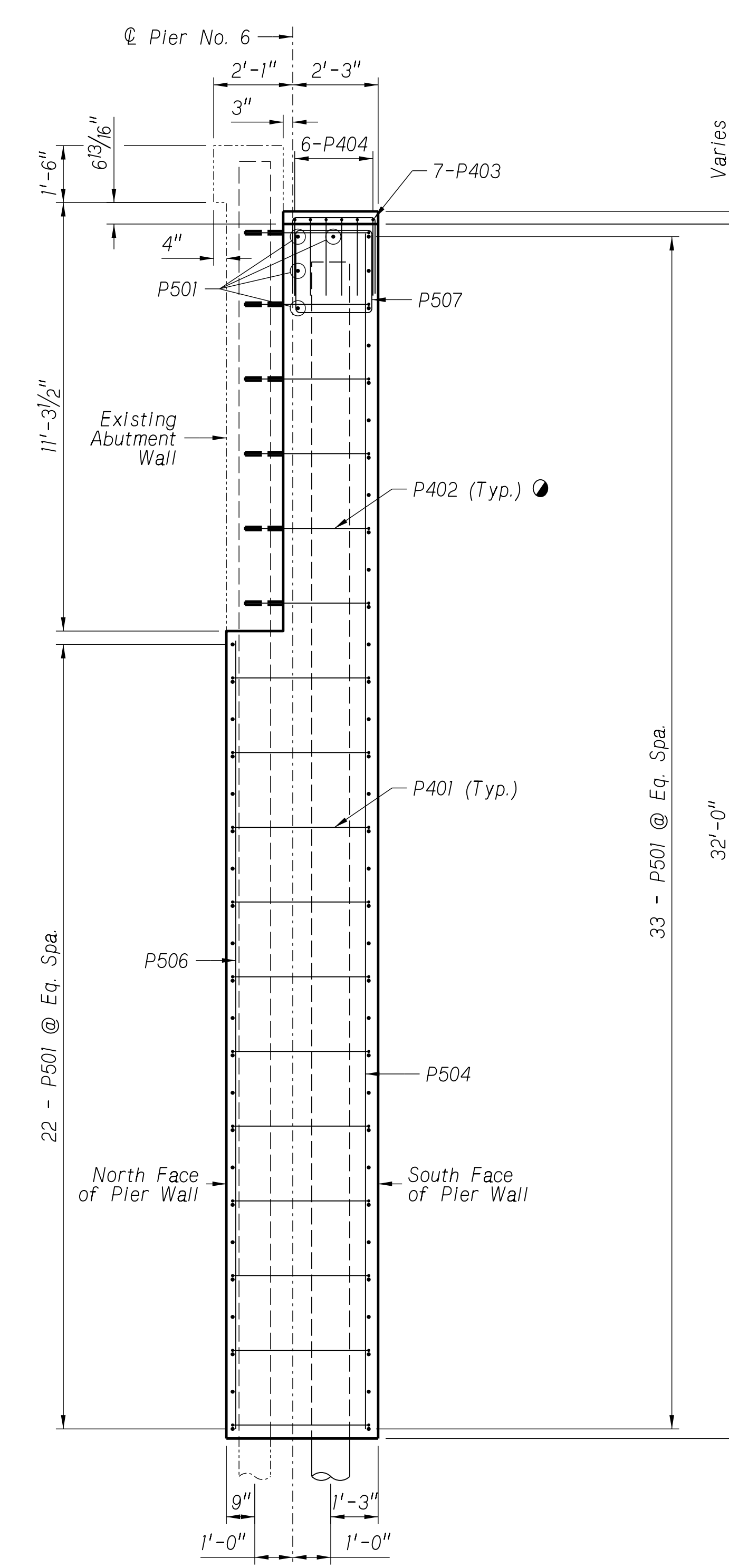
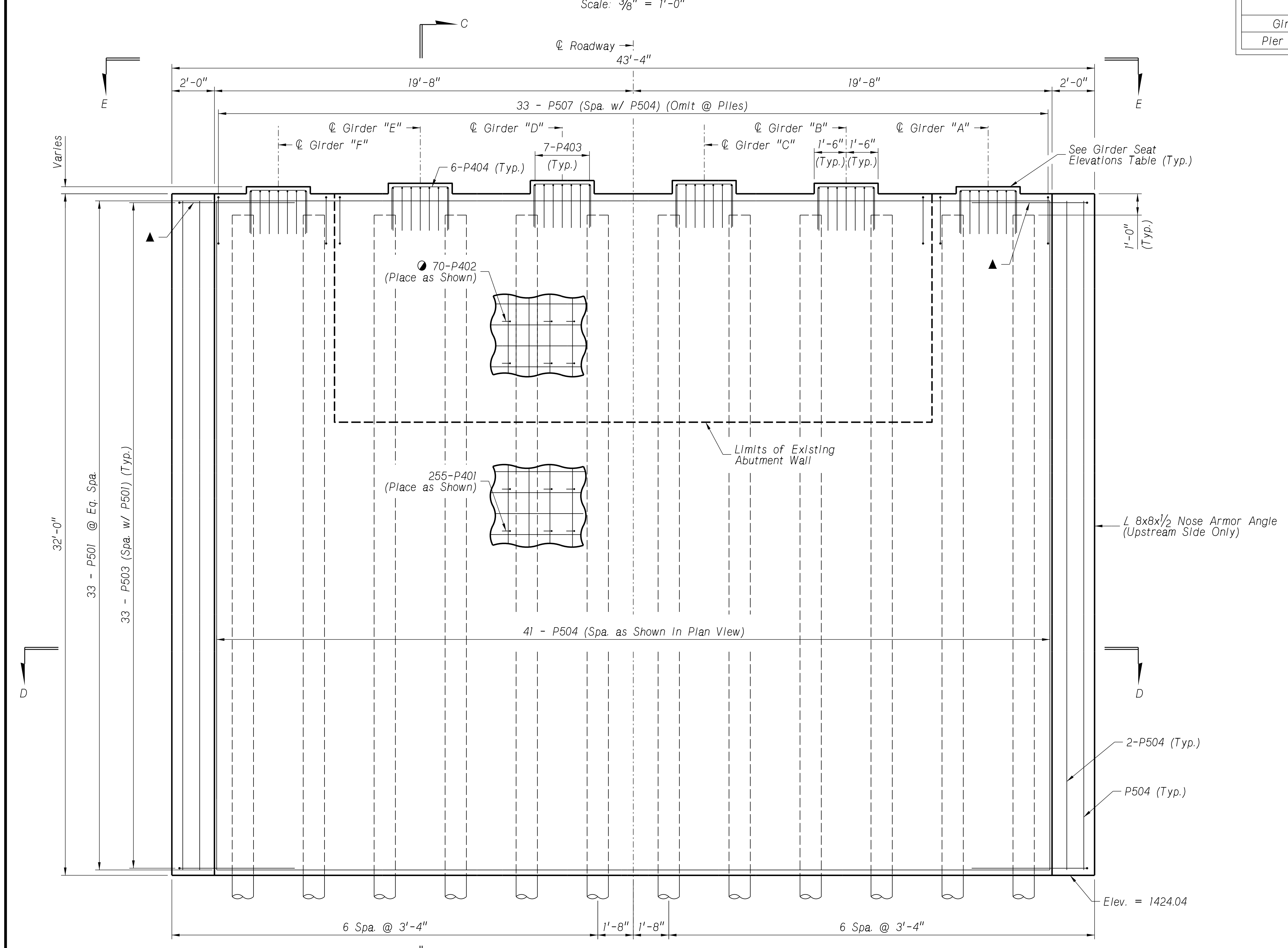




- ▲ 5 - P507 Spa. w/ P504 (Omit @ Piles)
- Drill 1"φ x 12" holes for P402 into existing abutment wall as shown. Inject epoxy compound into holes prior to inserting P402 (70 Req'd)
- ▲ Field clip as needed to maintain clearances to the existing concrete. Epoxy coat clipped ends.

GIRDER SEAT ELEVATIONS

Girder	"A"	"B"	"C"	"D"	"E"	"F"
Pier No. 6	1456.37	1456.53	1456.66	1456.66	1456.53	1456.37

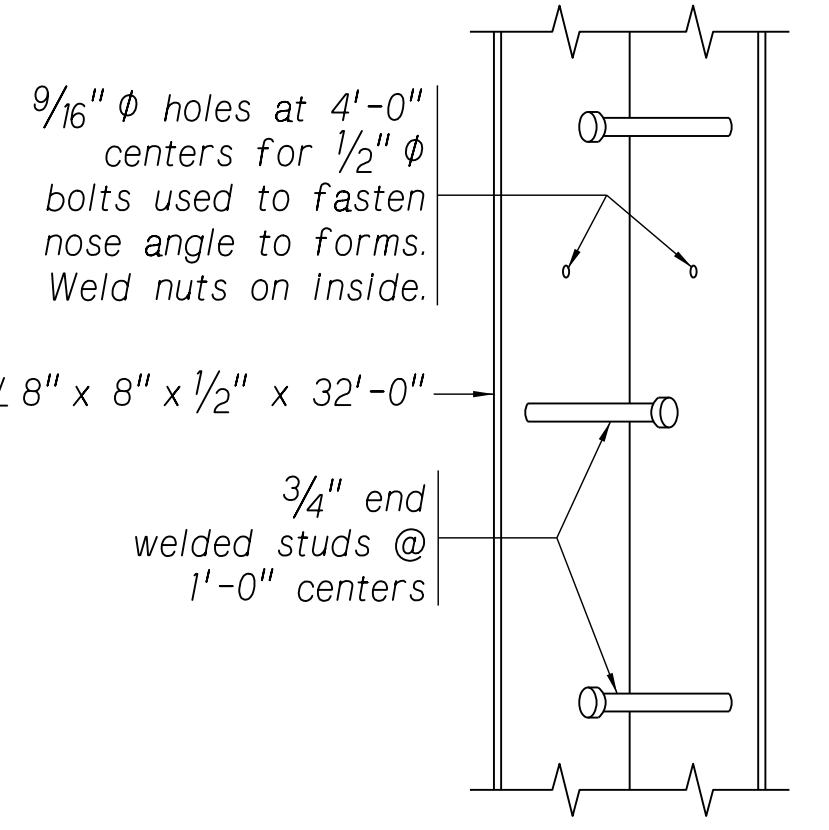
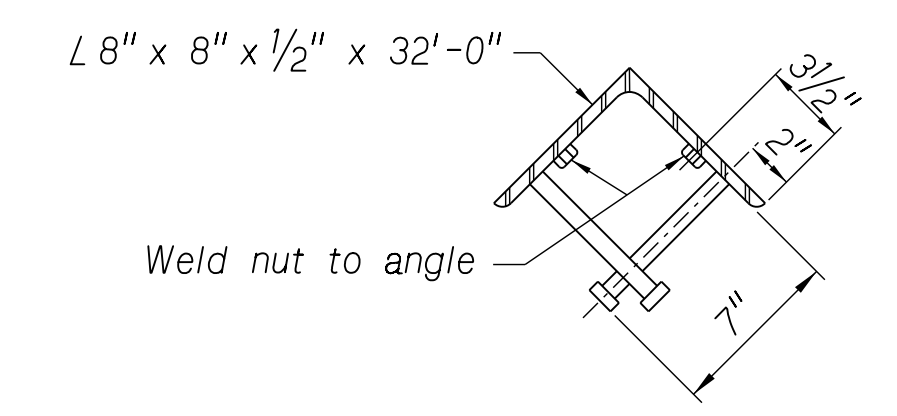


B I L L O F B A R S

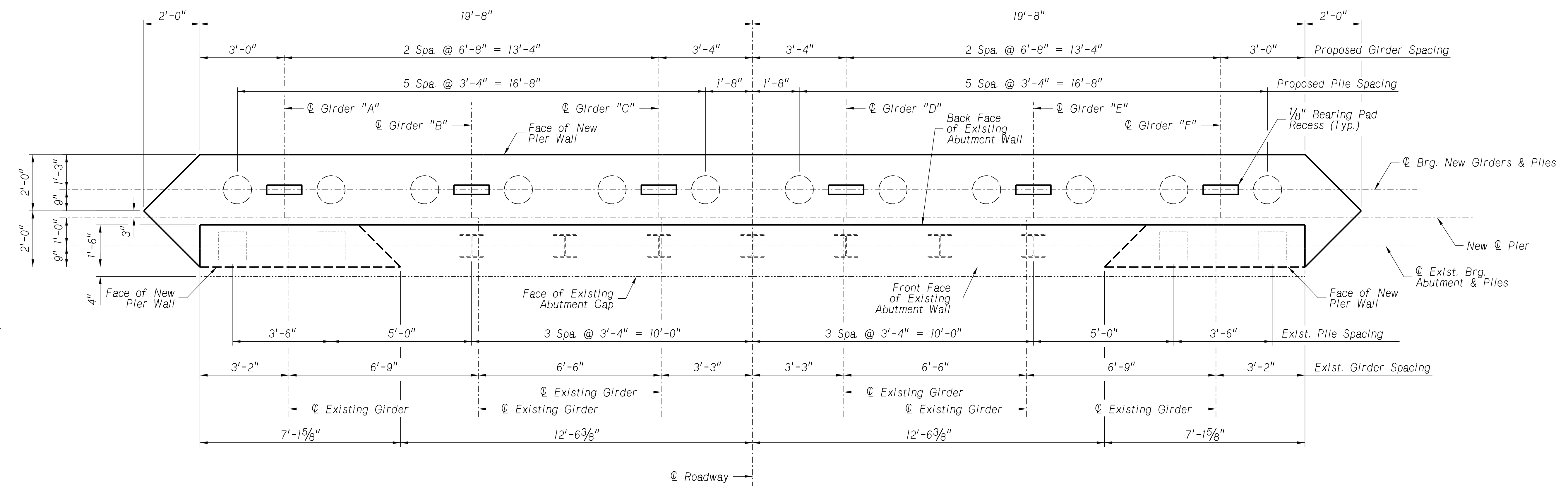
MARK	NO.	LENGTH	TYPE	"A"	"B"	"C"	"D"	"E"	"F"	PIN	HOOK	WEIGHT
												LB
P501	55	39'-2"	STR									2,247
P502	20	7'-10"	STR									163
P503	66	12'-5"	122	3'-7"	2'-7"	2'-7"	1'-10"	1'-10"		2 1/2"		855
P504	47	31'-6"	STR									1,544
P505	14	31'-2"	STR									455
P506	27	20'-9"	STR									584
P507	33	9'-3"	107	2'-2"	2'-0"					2 1/2"	5 1/2"	318
P401	255	7'-9"	113		3'-6"					2"	4 1/2"	1,320
P402	70	3'-8"	150		3'-3"					2"	4 1/2"	171
P403	42	6'-2"	103	2'-0"	2'-2"	2'-0"				2"		173
P404	36	6'-8"	103	2'-0"	2'-8"	2'-0"				2"		160

TOTAL = 7,990 LB

NOTES:
FOR PIN DIAMETERS, HOOK LENGTHS, & BENDING DIAGRAMS SEE SHEET 20 OF 20.



NOSE ARMOR ANGLE DETAILS
Not to Scale



VIEW E-E
Scale: 3/8" = 1'-0"

PROJECT NUMBER
ER-57-3(110)

SHEET NO.
S11

C.N. 32322

STRUCTURE NUMBER
S057 01566

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

NEW 101'-0" SPAN EXTENSION FOR
351'-8 1/2" MULTI-SPAN EXISTING BRIDGE
PIER NO. 6 DETAILS &
BILL OF BARS
DATE MAY 2019

ELKHORN RIVER BR
SE OF STANTON
SKW 0°
ROADWAY 36'-0"
DESIGN LIVE LOAD Single Truck
DETAILED BY WAO
CHECKED BY SDK

COUNTY Stanton
HWY. NO. N-57
REF. POST. 15.66
STA. 415+88.45
DESIGNED BY WAO

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

NEBRASKA
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DEPARTMENT OF TRANSPORTATION

PROFESSIONAL CIVIL ENGINEER
STEVEN D. KNEIP
E-6287
STATE OF NEBRASKA

SPECIAL PLAN NO. 11
1 20

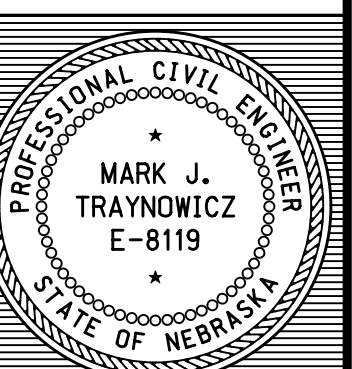
WILSON & COMPANY

Computer: A13433

User: KMEvans

Date: 20-MAY-2019 10:05

File: 11 Pier Details & Bill of Bars



BRIDGE ENGINEER

LOCATION ELKHORN RIVER BR
NEW 101'-0" SPAN EXTENSION FOR
351'-8 1/2" MULTI-SPAN EXISTING BRIDGE

SEWINGTON
SE OF STANTON

ROADWAY 36'-0"

DESIGN LIVE LOAD Single Truck

DATE MAY 2019

COUNTY Stanton

HWY. NO. N-57

REF. POST. 15.66

STA. 415+88.45

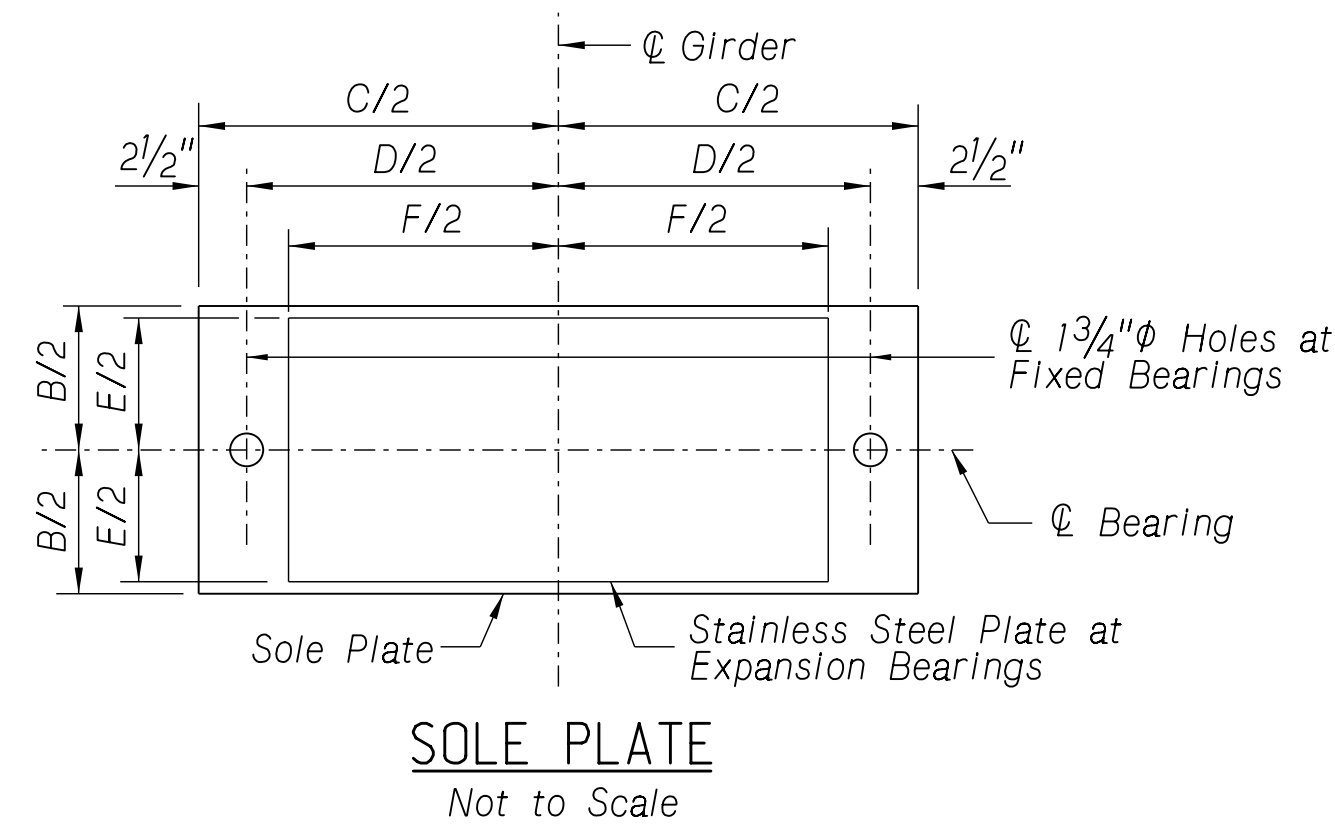
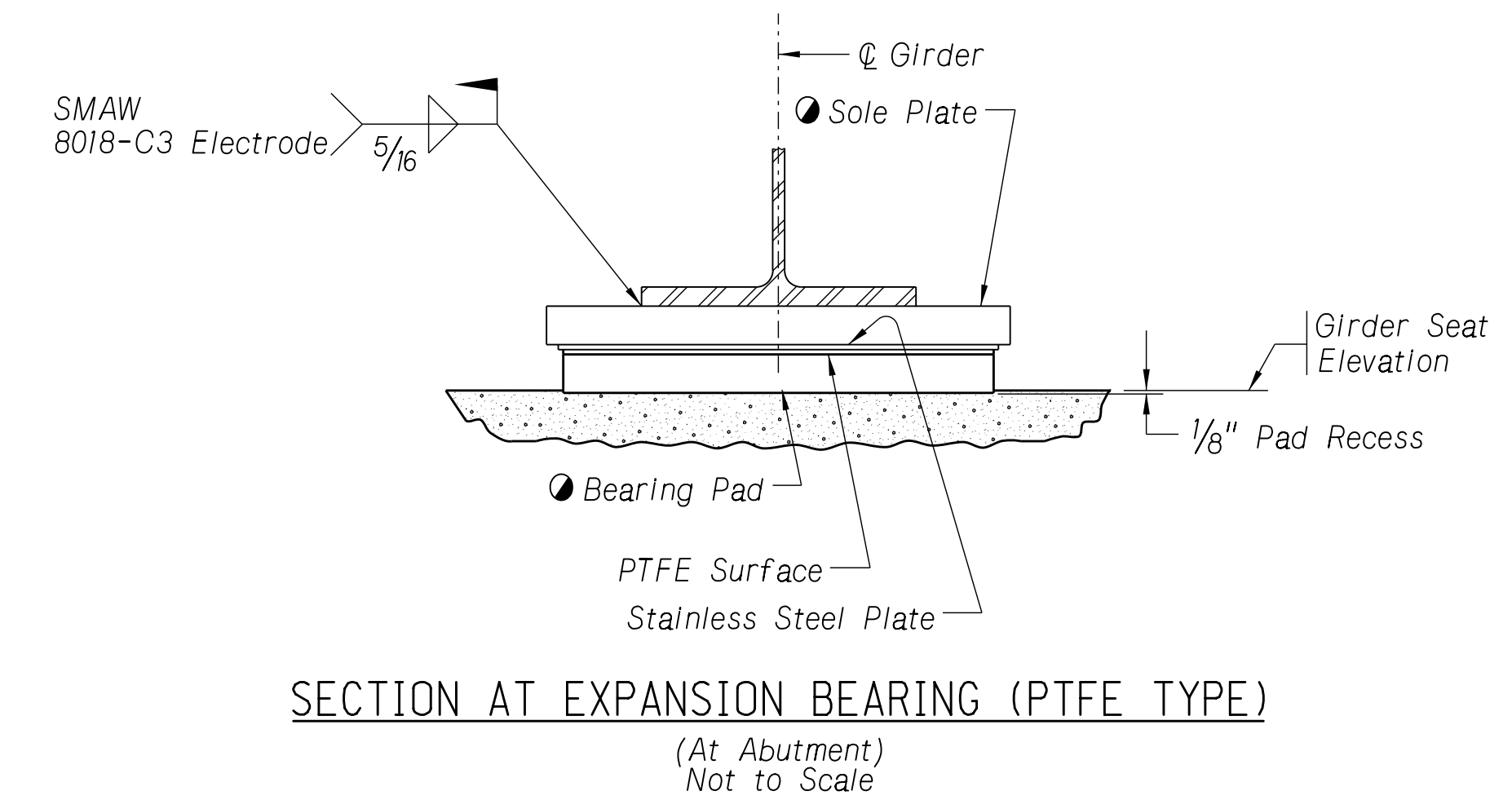
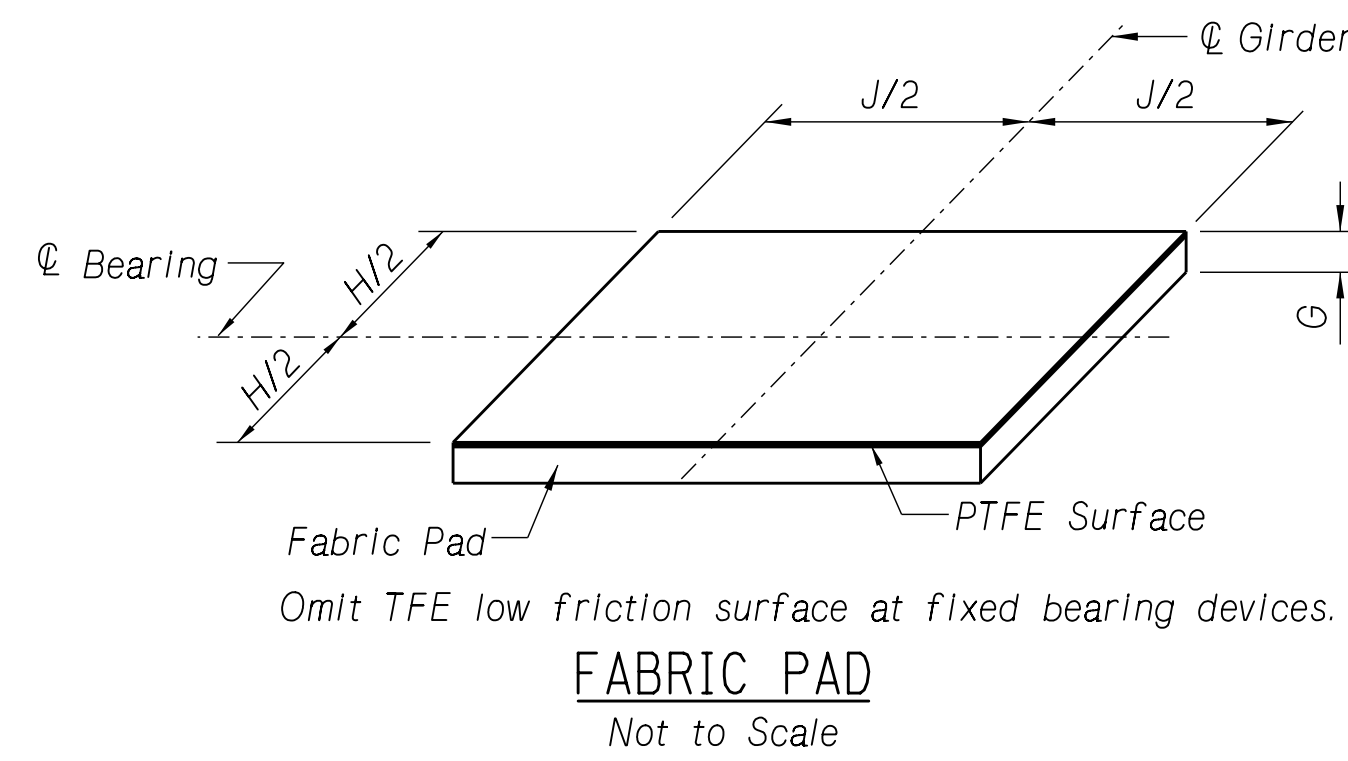
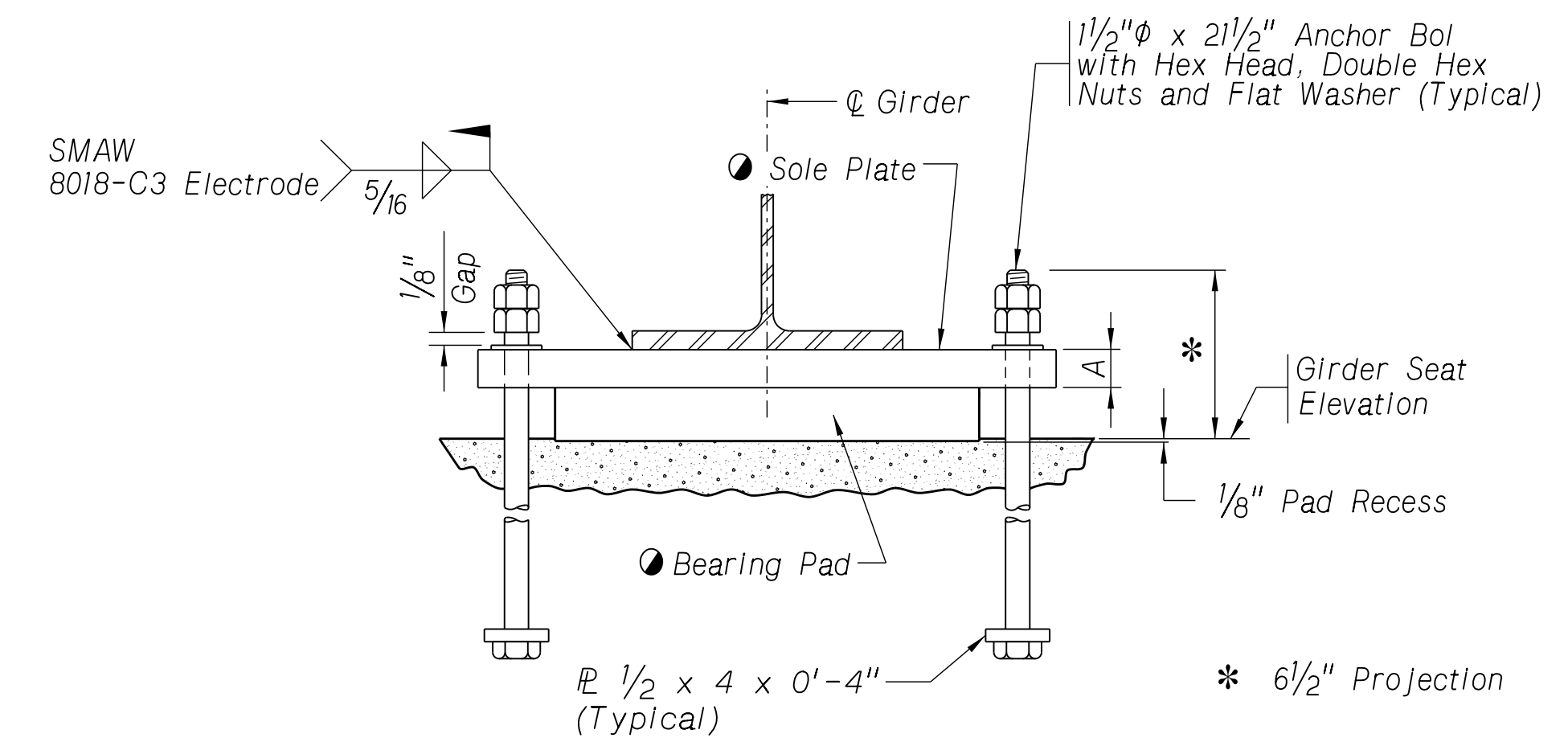
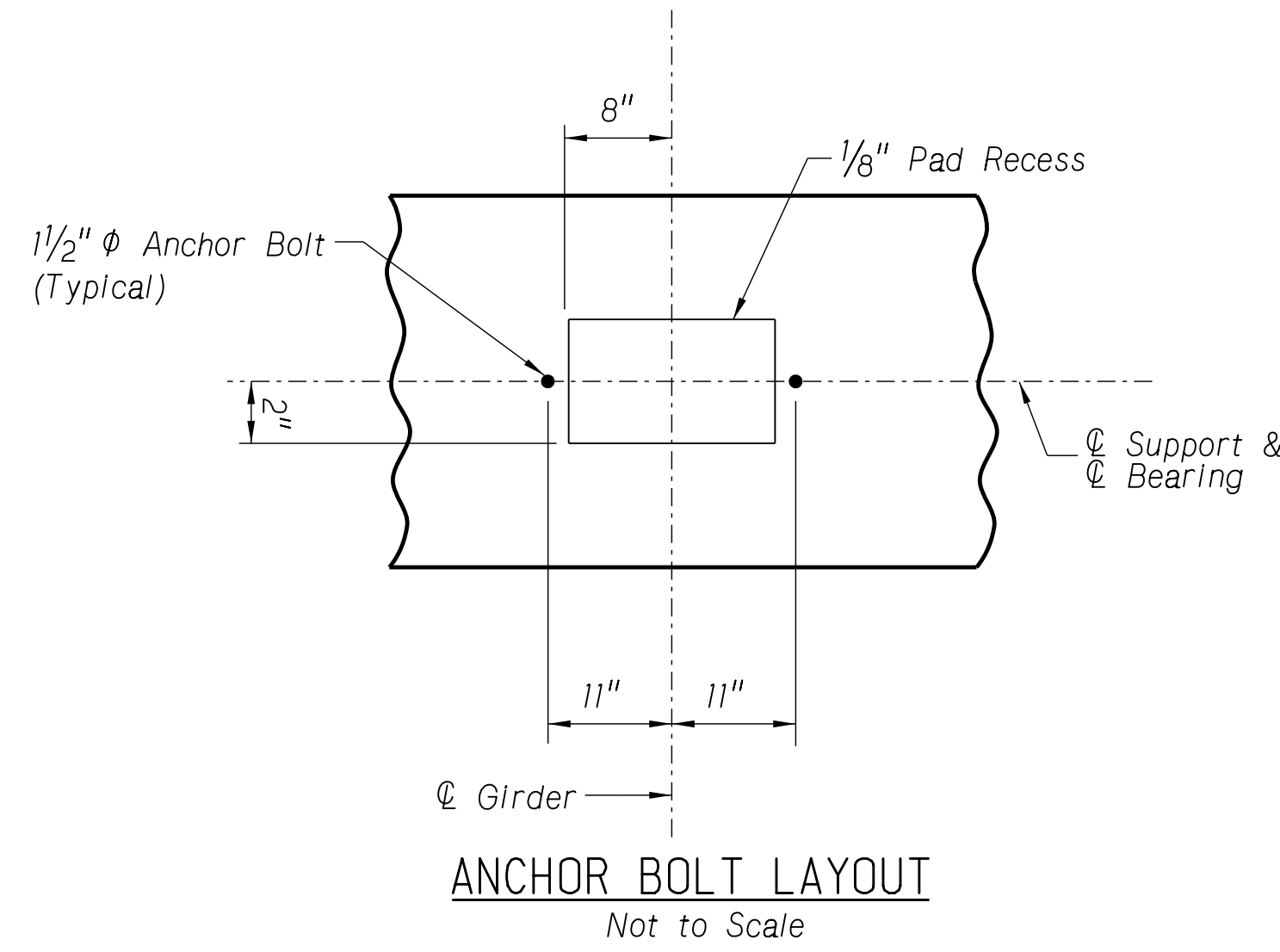
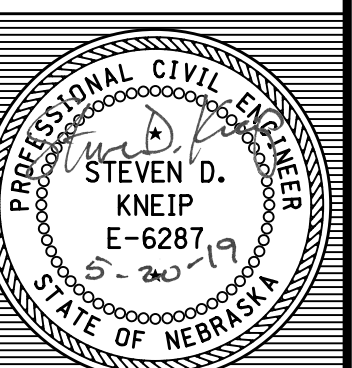
DESIGNED BY WAO

CHECKED BY WAO

DETAILED BY WAO

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

NEBRASKA
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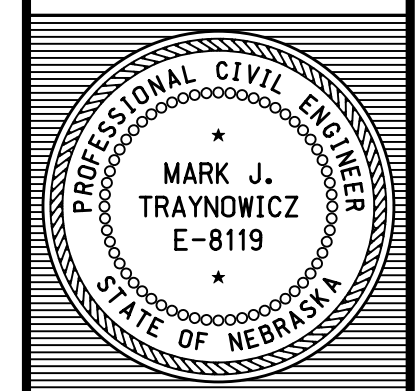


LOCATION	DIMENSIONS FOR BEARING DEVICES									
	SOLE PLATE					STAINLESS STEEL		FABRIC PAD		
	A	B	C	D	E	F	G	H	J	
Pier No. 6	1 1/2"	12"	27"	22"	--	--	1"	4"	16"	
Abutment No. 2	1 1/2"	12"	18 1/2"	--	11"	17"	1"	4"	16"	

● Sole Plates and Fabric Pads need to be Inspected prior to Installation.

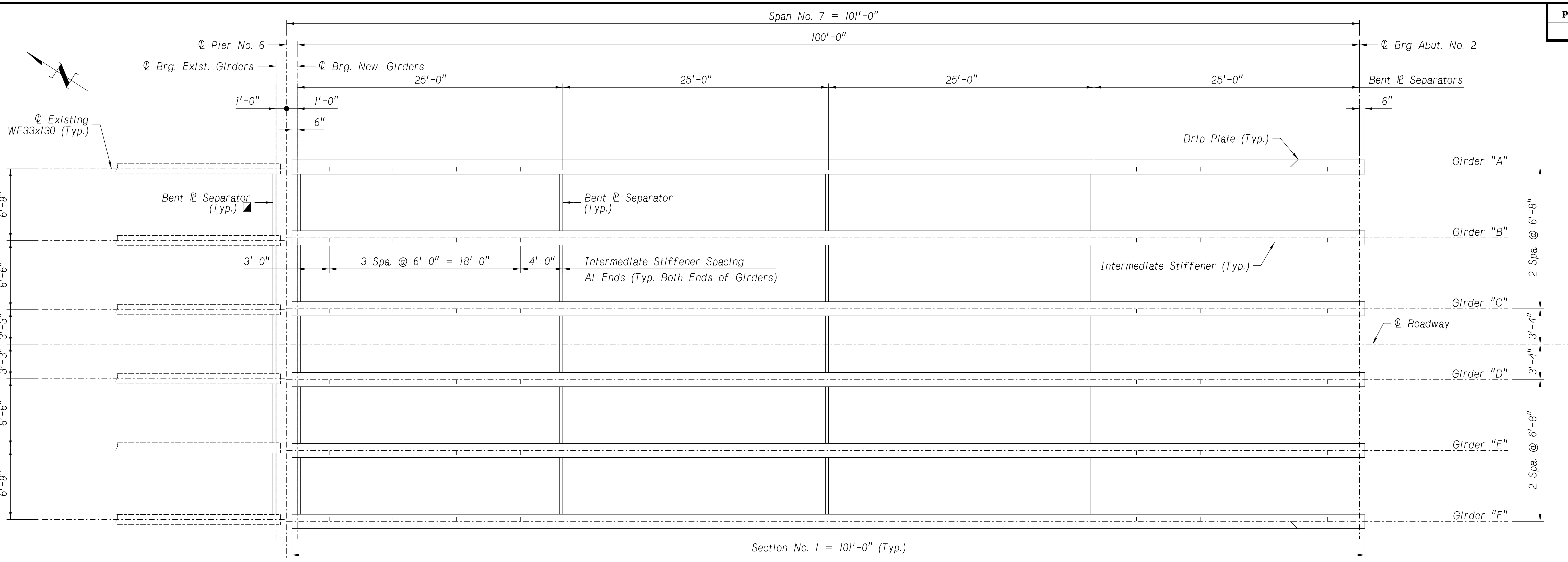
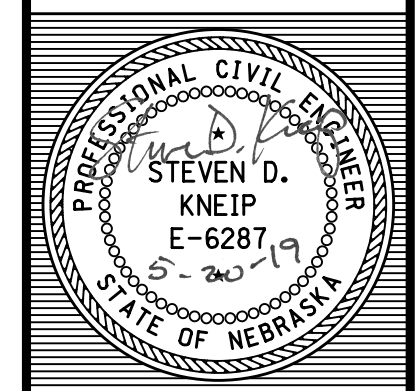
Contact the Bridge Office a minimum of three weeks before contractor's scheduled installation for inspection.

Sole plates shall be centered over the anchor bolts.



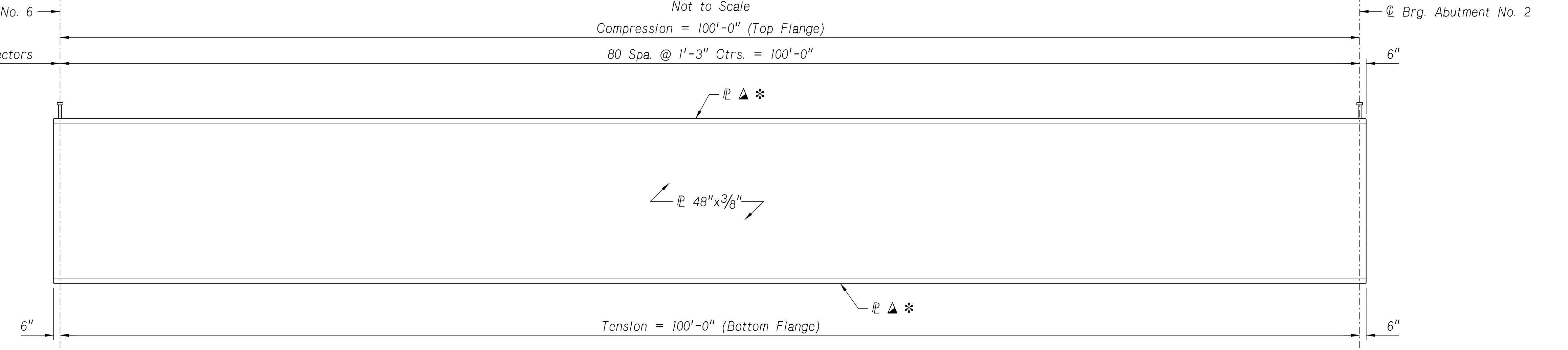
LOCATION: ELKHORN RIVER BR SE OF STANTON
 COUNTY: Stanton
 HWY. NO.: N-57
 SKEW: 0°
 ROADWAY: 36'-0"
 DESIGN LIVE LOAD: Single Truck
 STA.: 415+88.45
 GIRDERS: NEW 101'-0" SPAN EXTENSION FOR
 35 1/8" MULTI-SPAN EXISTING BRIDGE
 GIRDERS: GIRDER LAYOUT & ELEVATION
 DATE: MAY 2019
 CHECKED BY: WAO
 DESIGNED BY: WAO

NEBRASKA
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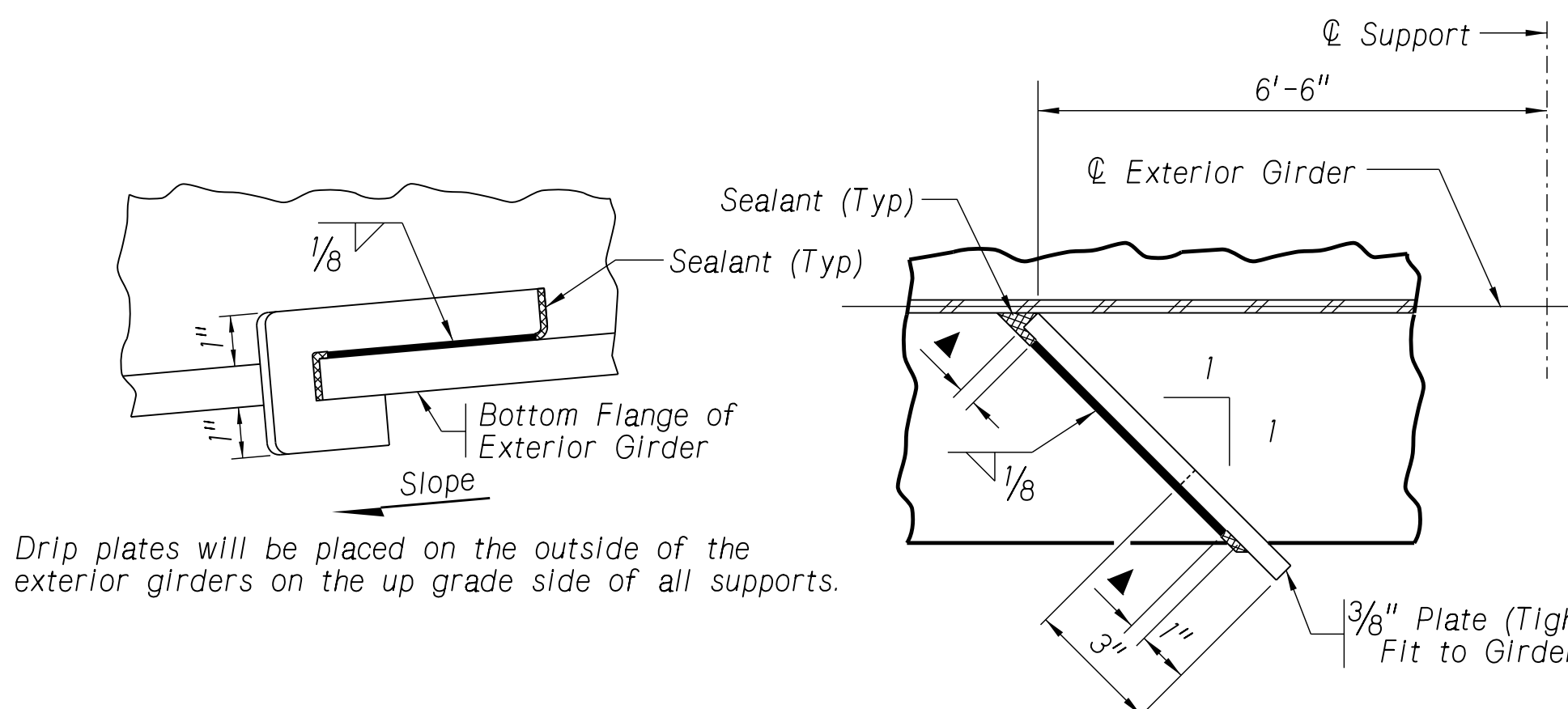
GIRDER LAYOUT
 Not to Scale

Compression = 100'-0" (Top Flange)
 80 Spa. @ 1'-3" Ctrs. = 100'-0"



GIRDER ELEVATION
 Not to Scale

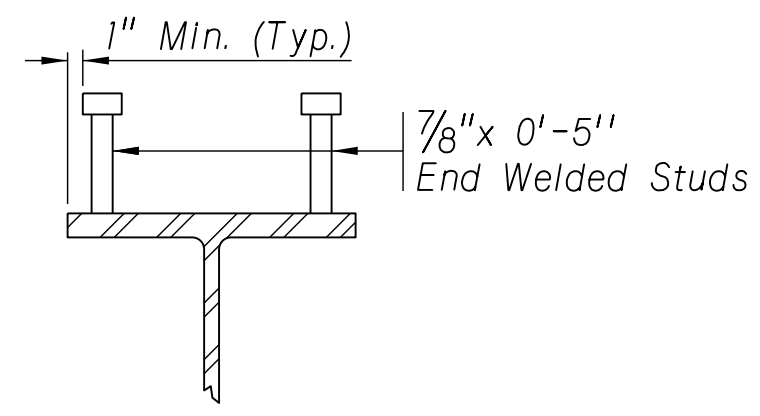
- Notes:
- The State will furnish the steel girders for the Contractor's use.
 - Install new Bearing Stiffeners and Bent R Separators between the existing girders at Pier No. 6. See sheet 14 of 20 for additional details.
 - Remove any existing Intermediate stiffeners that conflict with new stiffeners.



TYPICAL DRIP PLATE DETAIL FOR EXTERIOR GIRDERS
 Not to Scale

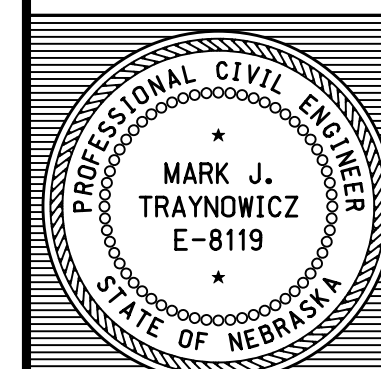
▲ Stop weld 1/2" from end of drip plate and from edge of girder. Fill with 100% silicone sealant as manufactured by GE, DAP, Dow Corning, DuPont, or Titebond as shown.

CHARPY IMPACT TEST REQUIREMENTS FOR MAIN TENSION MEMBERS
 For the purpose of impact test the following material shall be classified as main tension members:
 All flange plates marked thus *
 All web plates



SHEAR CONNECTOR DETAIL
 Not to Scale

When Shear Connectors (Studs) are field applied, the following notes shall apply:
 The Bridge Office shall be notified a minimum of one week prior to the application of the field welded studs.
 Stud welding shall be accomplished in accordance with the AWS D1.5 Standard Specifications, Section 7.
 All stud welding shall be done by a certified stud welder. At the time of stud welding, the studs and base metal shall be free from rust, scale, oil, moisture, falling rain or snow, and any other foreign material. Areas must be wire brushed or cleaned by grinding before any welding can occur.
 Any studs that do not exhibit a 360° collar must be repaired by a SMAW fillet weld (E8018-C3 Electrode) and the repair shall extend 3/8" beyond each end of the missing collar.
 Mill Certification for the studs shall be submitted to the Engineer.



BRIDGE ENGINEER

NEW 101'-0" SPAN EXTENSION FOR
351'-8 1/2" MULTI-SPAN EXISTING BRIDGE

ELKHORN RIVER BR
SE OF STANTON

SKW 0°

ROADWAY 36'-0"

DESIGN LIVE LOAD Single Truck

DATE MAY 2019

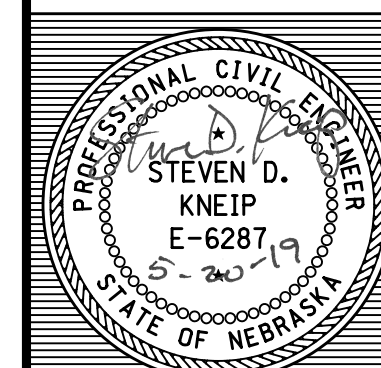
CHECKED BY SDK

DETAILED BY WAO

DESIGNED BY WAO

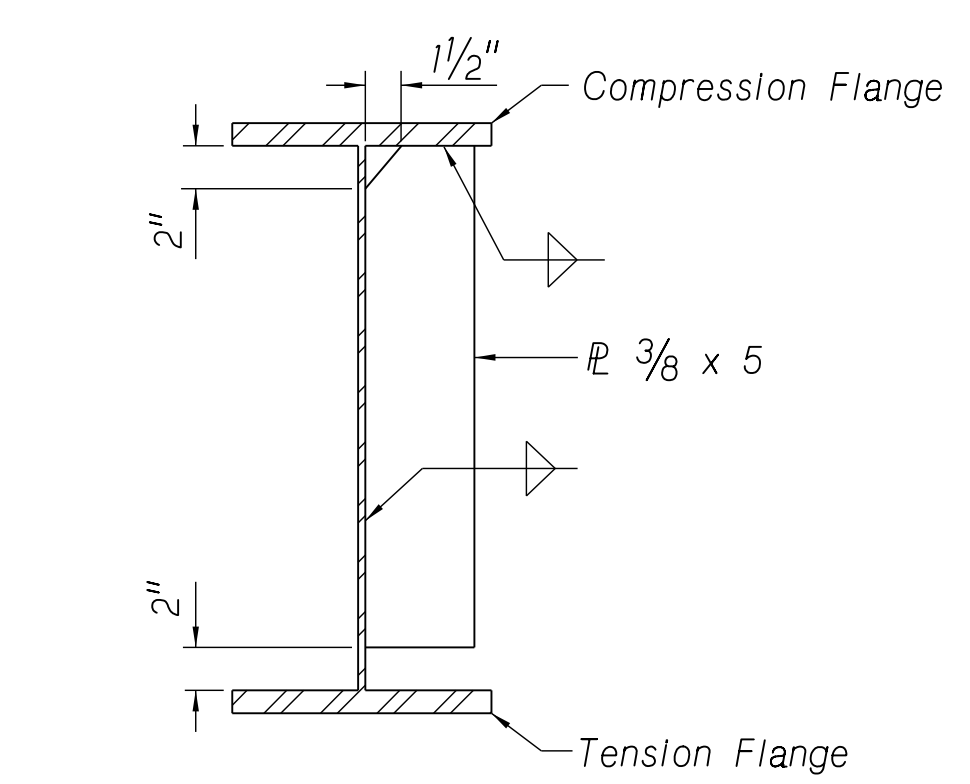
NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

NEBRASKA
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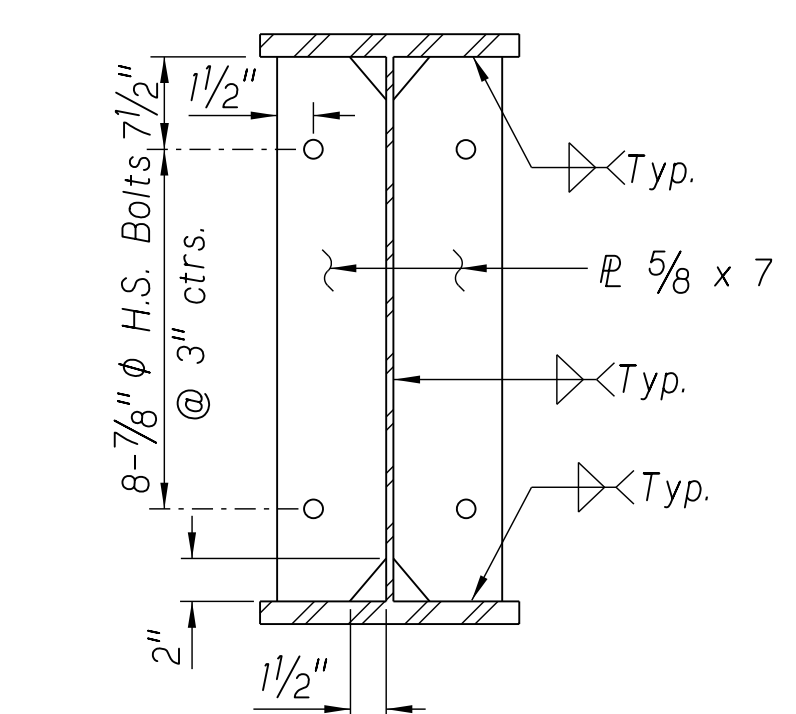


SPECIAL PLAN NO. 14
1

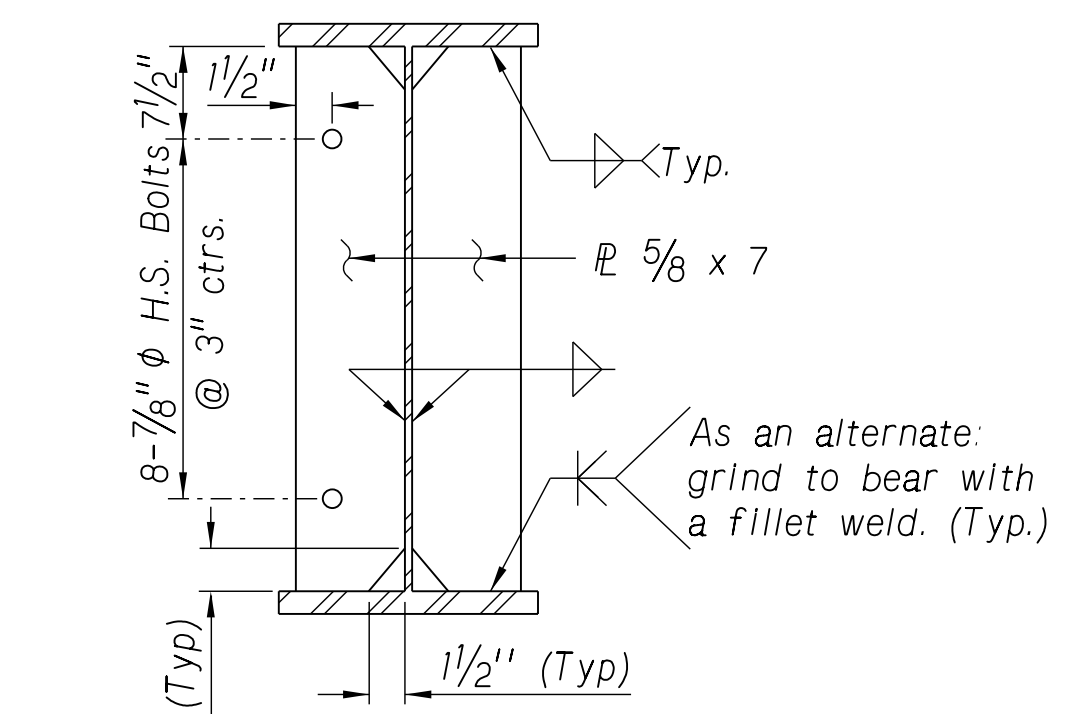
DEFLECTION AND BLOCKING			
	Tenth Point	DL Deflection for Shims (In.)	Blocking Ordinate (In.)
Girders Pier No. 6	A-F	A & F	B-E
	7.0	0.000	0.000
	7.1	0.711	0.837
	7.2	1.345	1.584
	7.3	1.842	2.169
	7.4	2.157	2.540
	7.5	2.265	2.667
	7.6	2.157	2.540
	7.7	1.842	2.169
Abutment No. 2	7.8	1.345	1.584
	7.9	0.711	0.837
	8.0	0.000	0.000
			0"



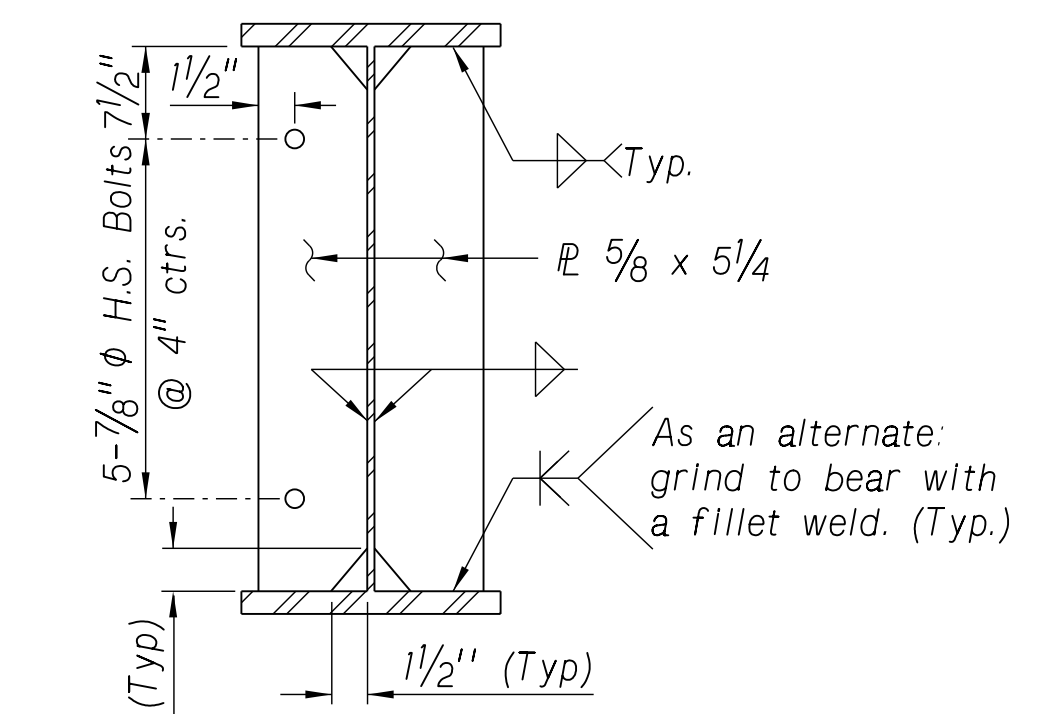
INTERMEDIATE STIFFENERS
Not to Scale



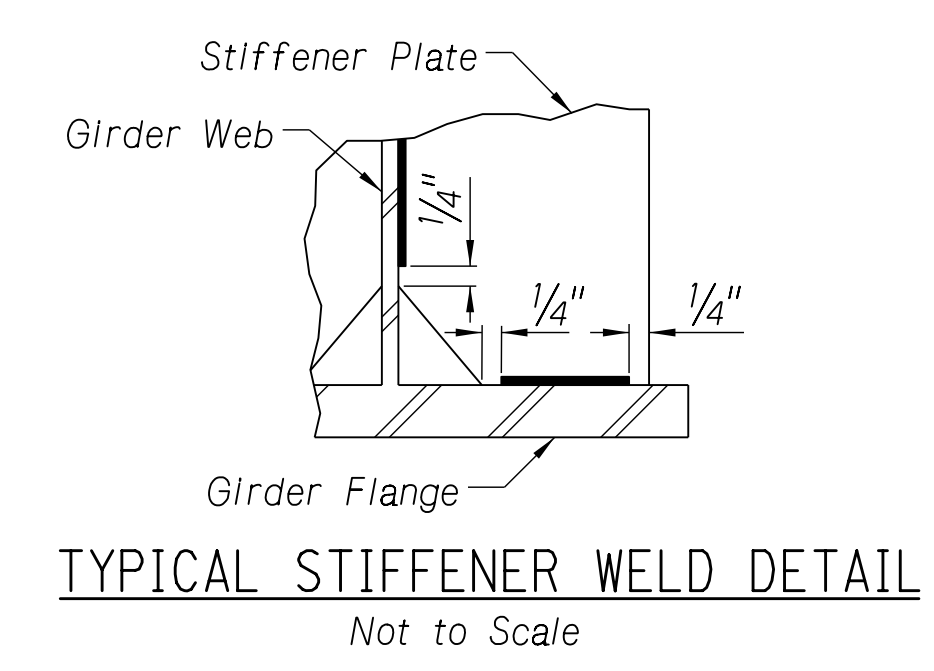
STIFFENER PLATES AT INTERMEDIATE SEPARATORS
Not to Scale



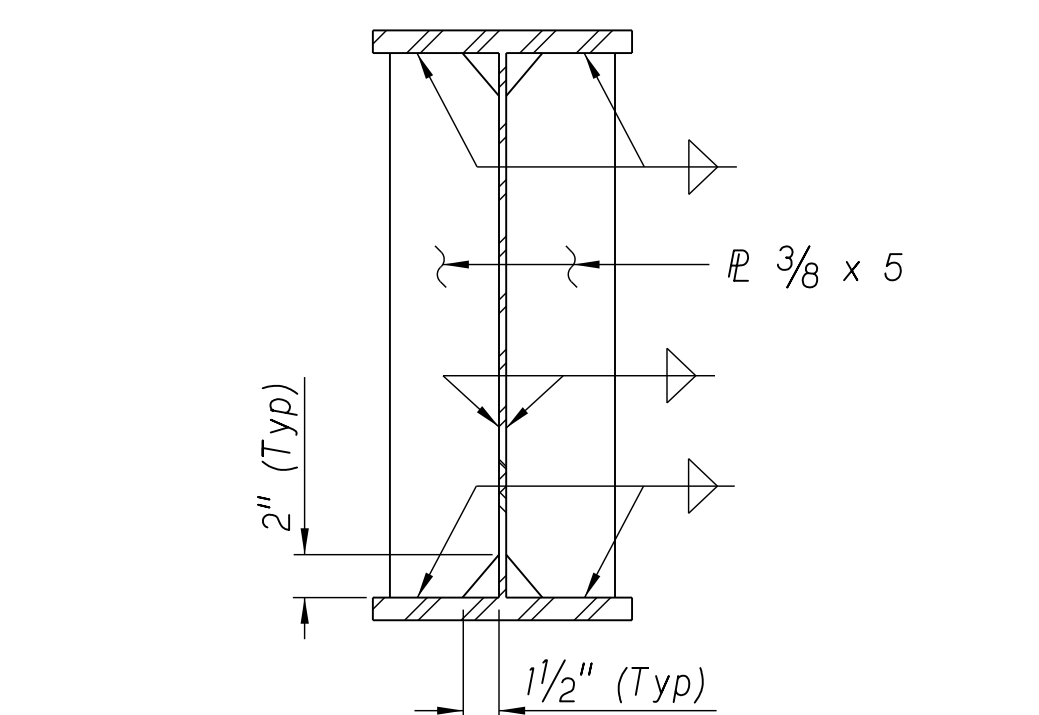
BEARING STIFFENERS FOR NEW GIRDERS AT PIER NO. 6
Not to Scale



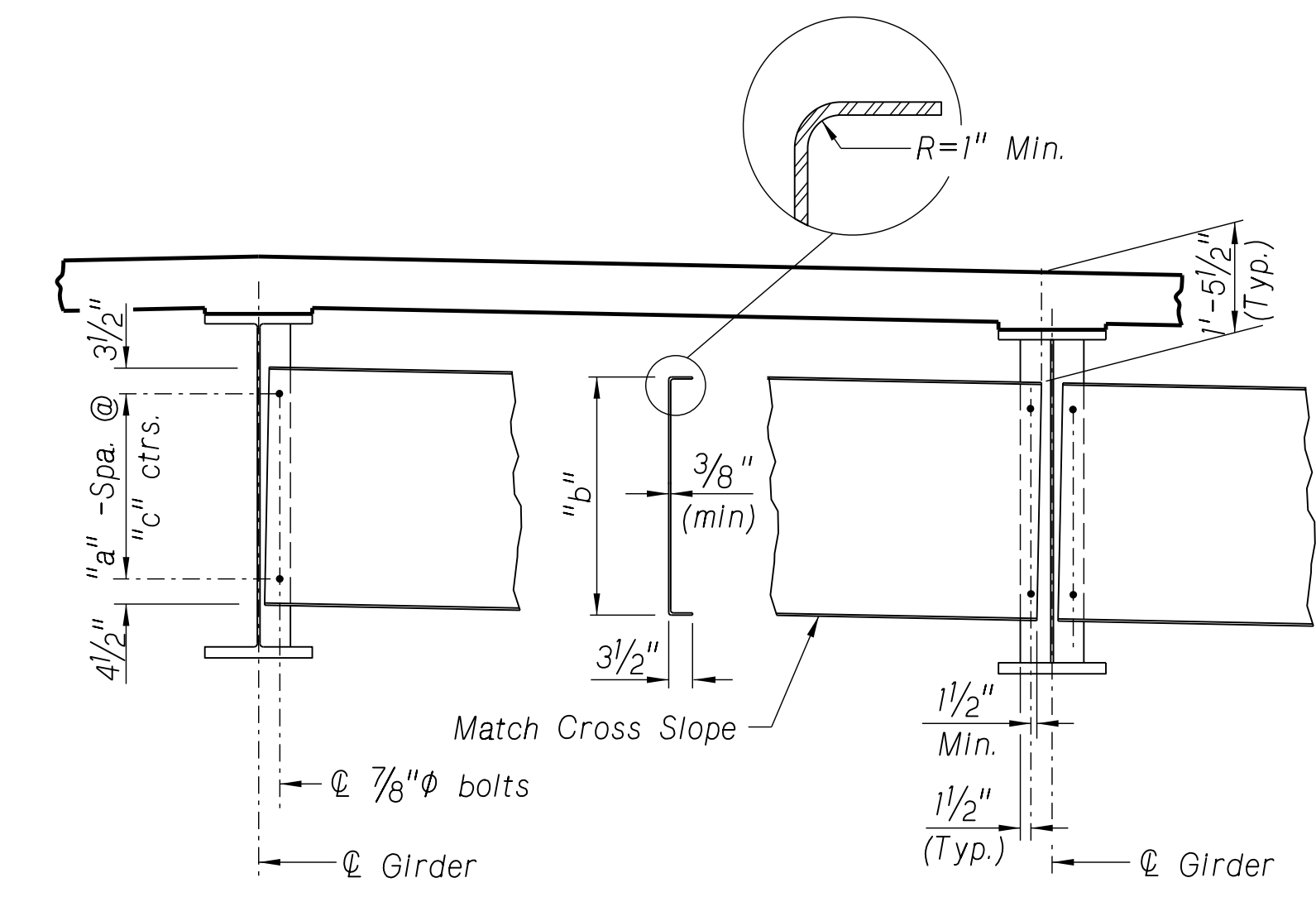
BEARING STIFFENERS FOR EXISTING GIRDERS AT PIER NO. 6
Not to Scale



TYPICAL STIFFENER WELD DETAIL
Not to Scale

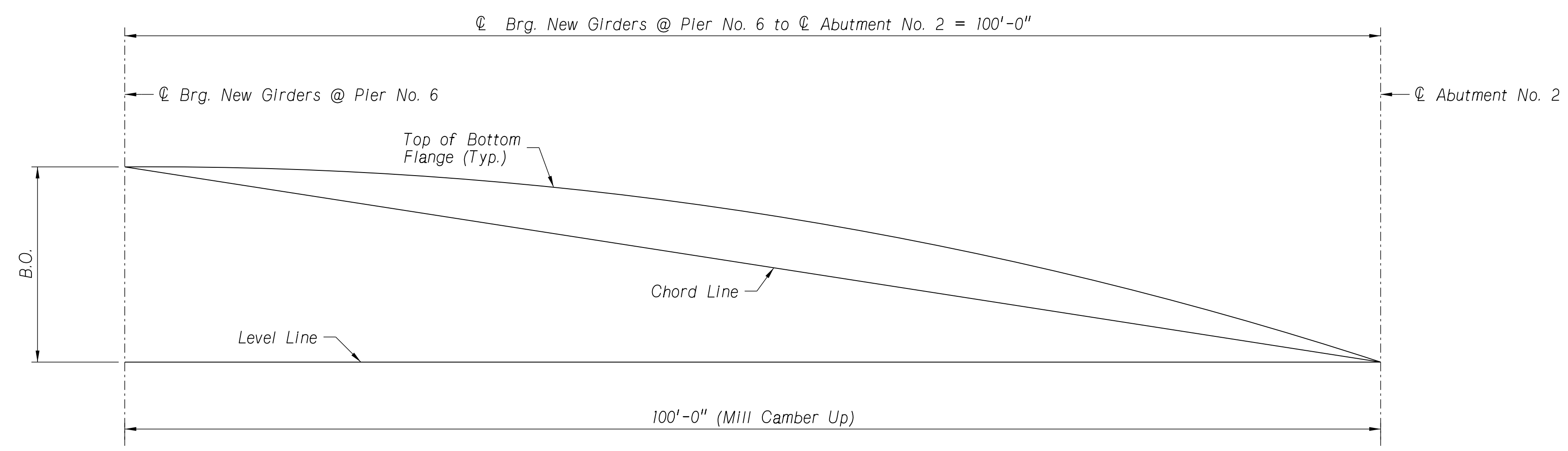


ANCHORAGE STIFFENER AT ABUTMENT
(Where Bearing Stiffeners are not required)
Not to Scale



BENT PLATE SEPARATOR
Not to Scale

SEPARATOR DIMENSIONS			
Location	"a"	"b"	"c"
Span No. 6 (@ Pier No. 6)	4	2'-0"	4"
Span No. 7	7	2'-6"	3"

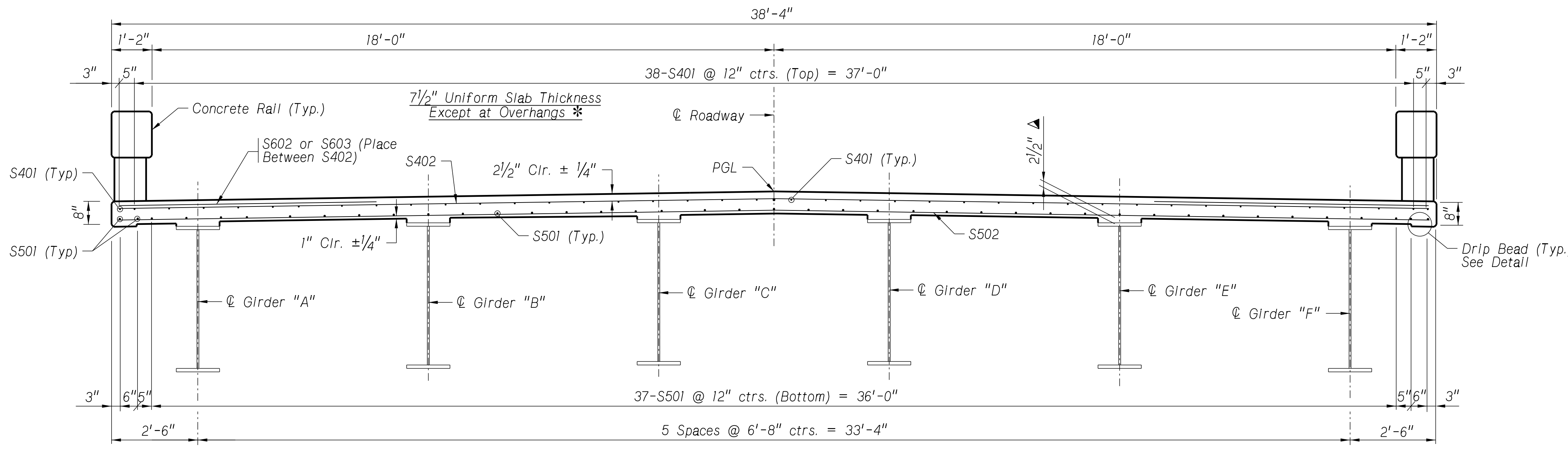


CAMBER & BLOCKING DIAGRAM
Not to Scale

WILSON & COMPANY

File: 14 Girder Details
Date: 20-MAY-2019 10:06
User: KMEvans
Computer: A13433

▲ Bottom of Slab to Top of Web at Supports (Typ.)



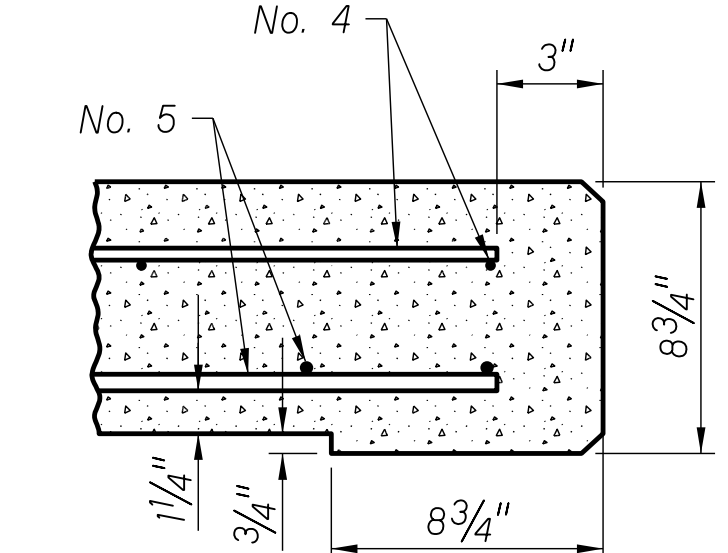
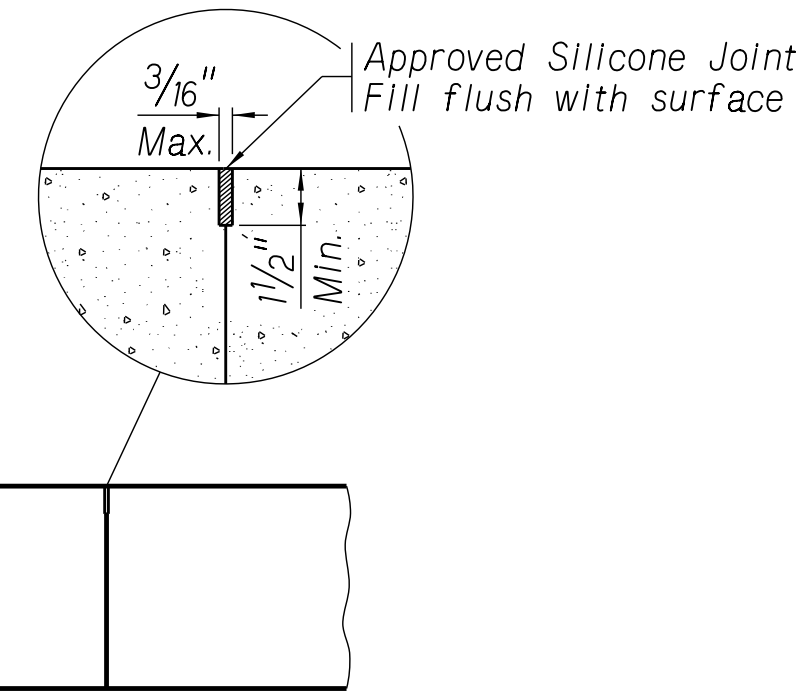
ROADWAY CROSS SECTION

Scale: 1/2" = 1'-0"

SLAB CONSTRUCTION JOINT

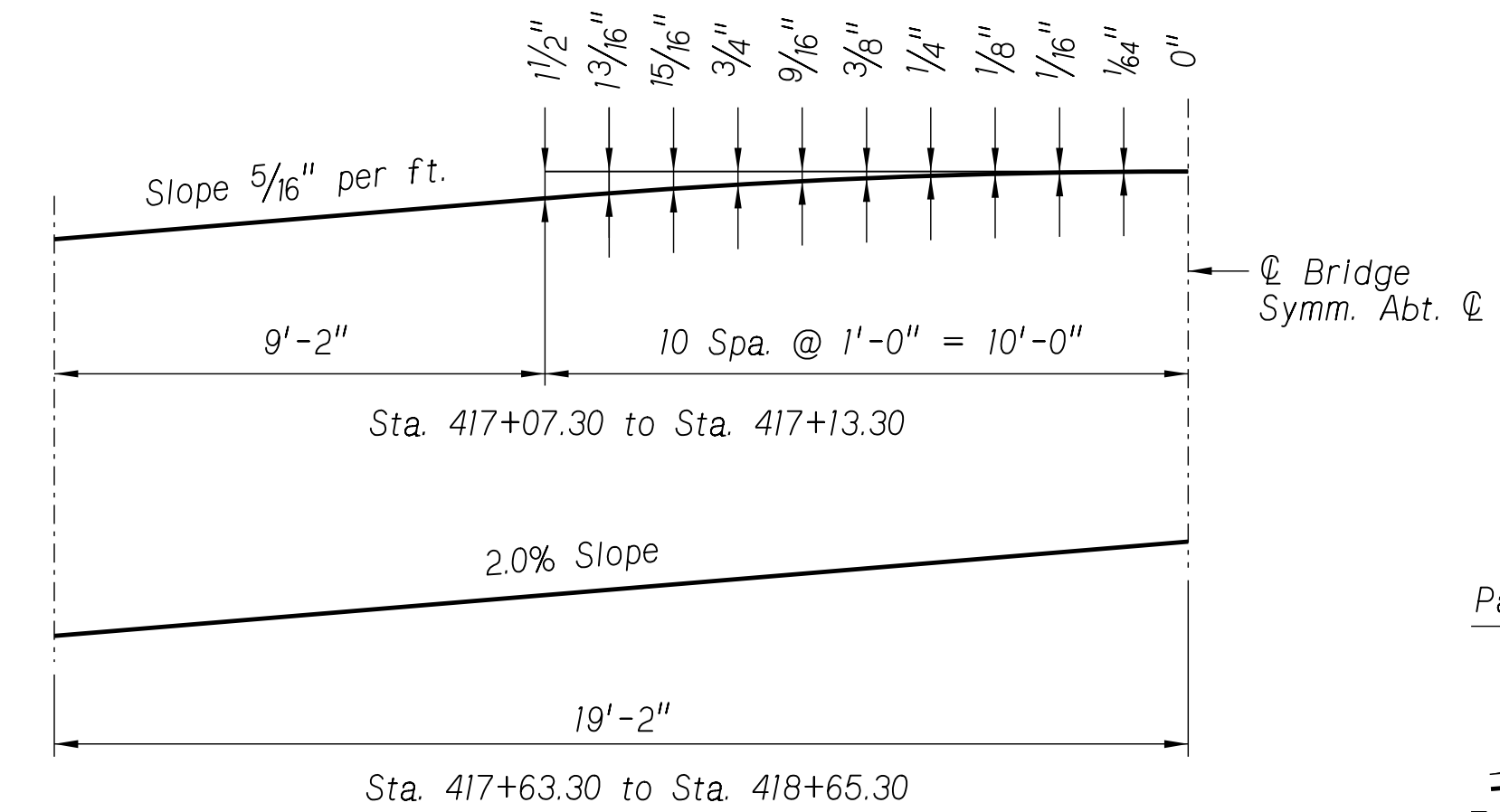
Not to Scale

The Contractor shall prepare and seal the joint according to the manufacturer's recommendation. Before sealing the joint wall surfaces shall be sandblasted to remove any deleterious material. After sandblasting the entire joint shall be cleaned with compressed air having a minimum pressure of 90 psi. The compressed air shall be free of any contaminants. The joint shall be dry at the time of sealing.



DRIP BEAD DETAIL

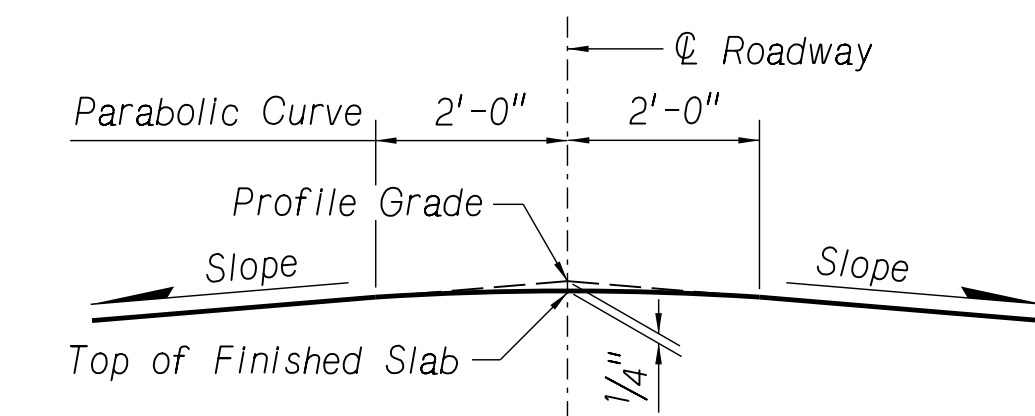
Not to Scale



SLAB CROSS SLOPE DIAGRAM

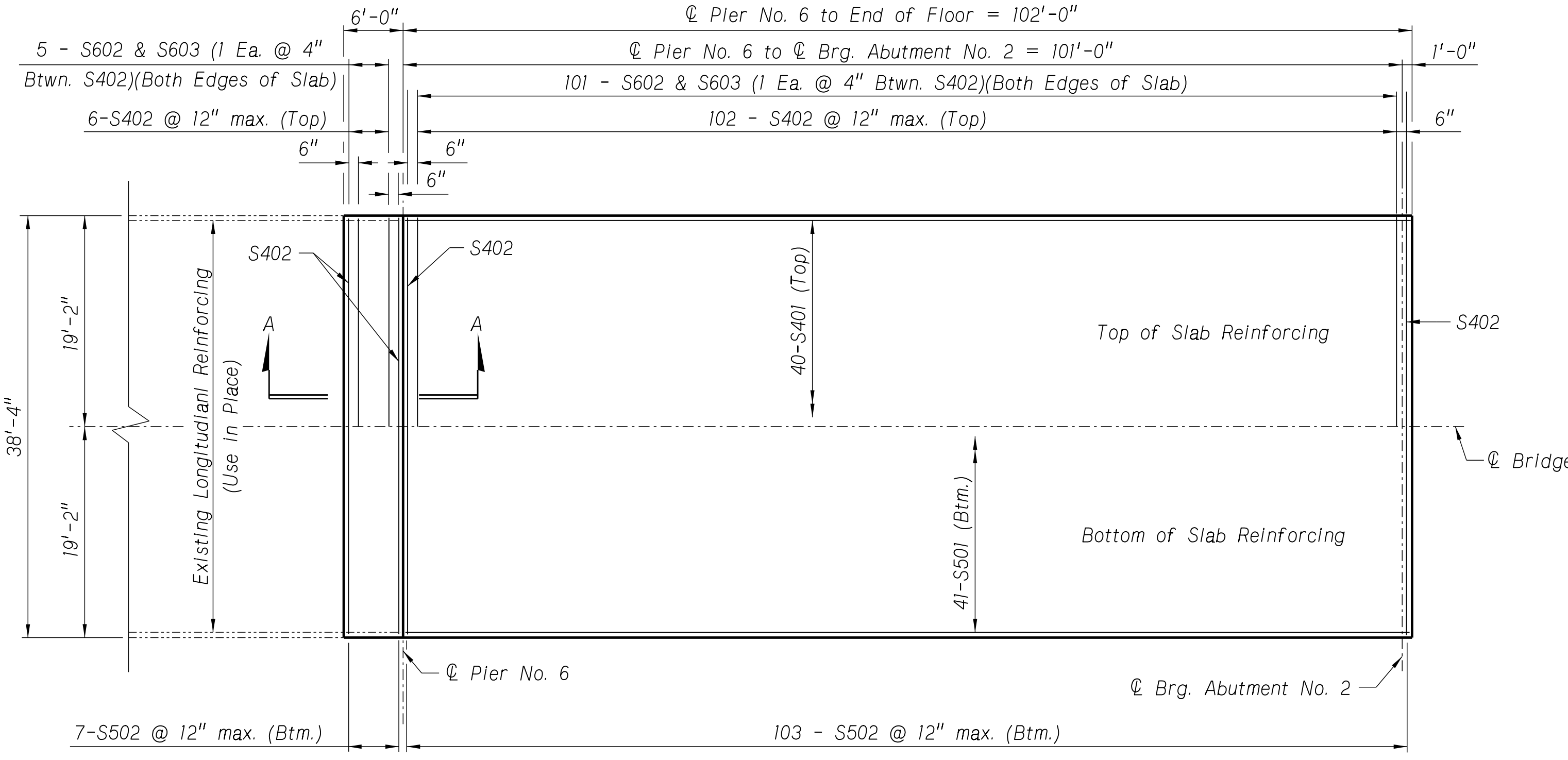
Not to Scale

Note: Transition top of slab cross slope from Sta. 417+13.30 to Sta. 417+63.30. Maintain 2.0% bottom of slab cross slope full width.



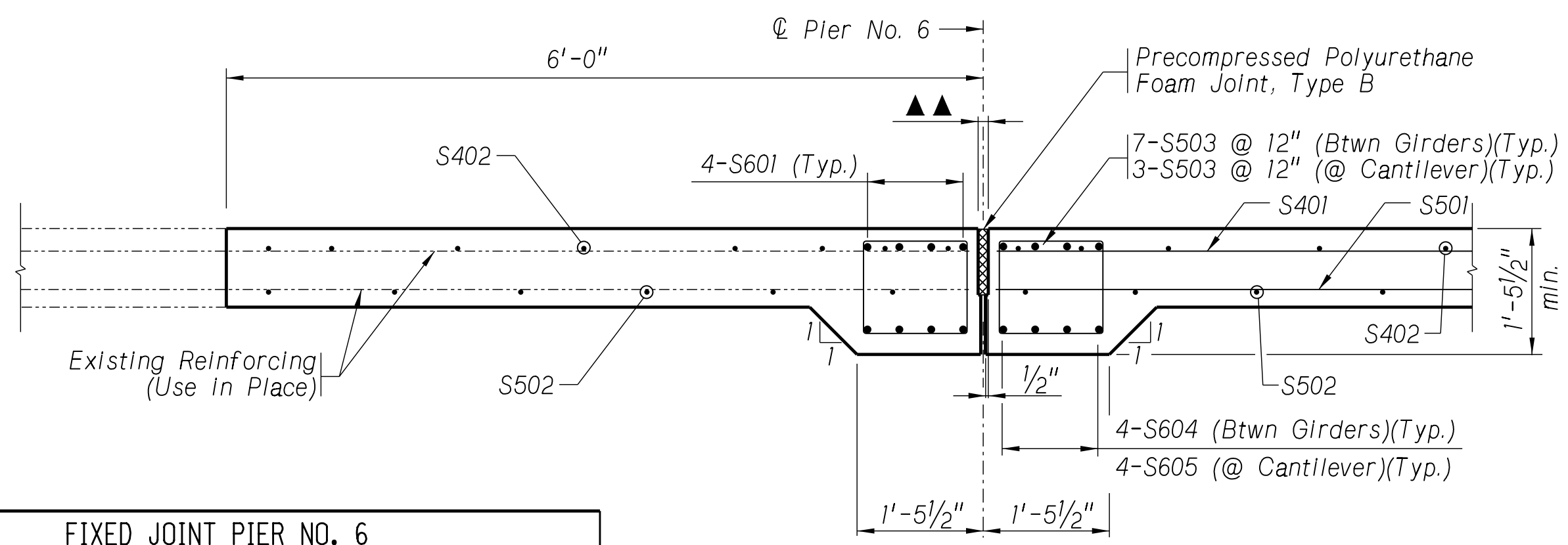
CROWN TEMPLET

Not to Scale



SLAB REINFORCING PLAN

Scale: 1" = 20'-0"



SECTION A-A

Not to Scale

FIXED JOINT PIER NO. 6			
PPF ORDER SIZE ▲	2.25"		
AMBIENT TEMPERATURE RANGE DURING POUR	PPF ▲▲▲	SyltccFlex ▲▲▲	Wobdo ▲▲▲
35° - 85°	2.00"	2.75"	2.50"

▲ PPF Joint material, size to be ordered for a 50° opening + 1/4".

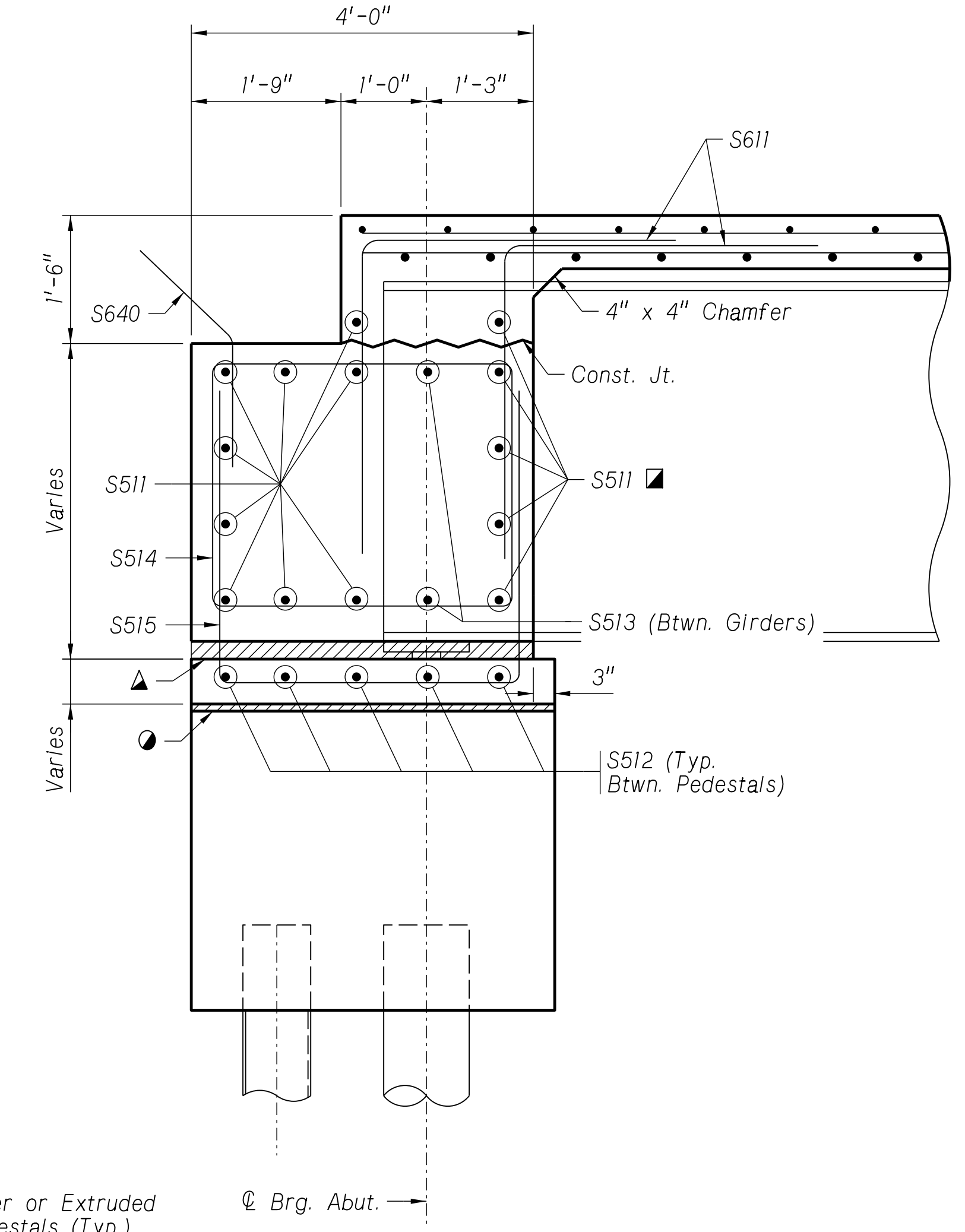
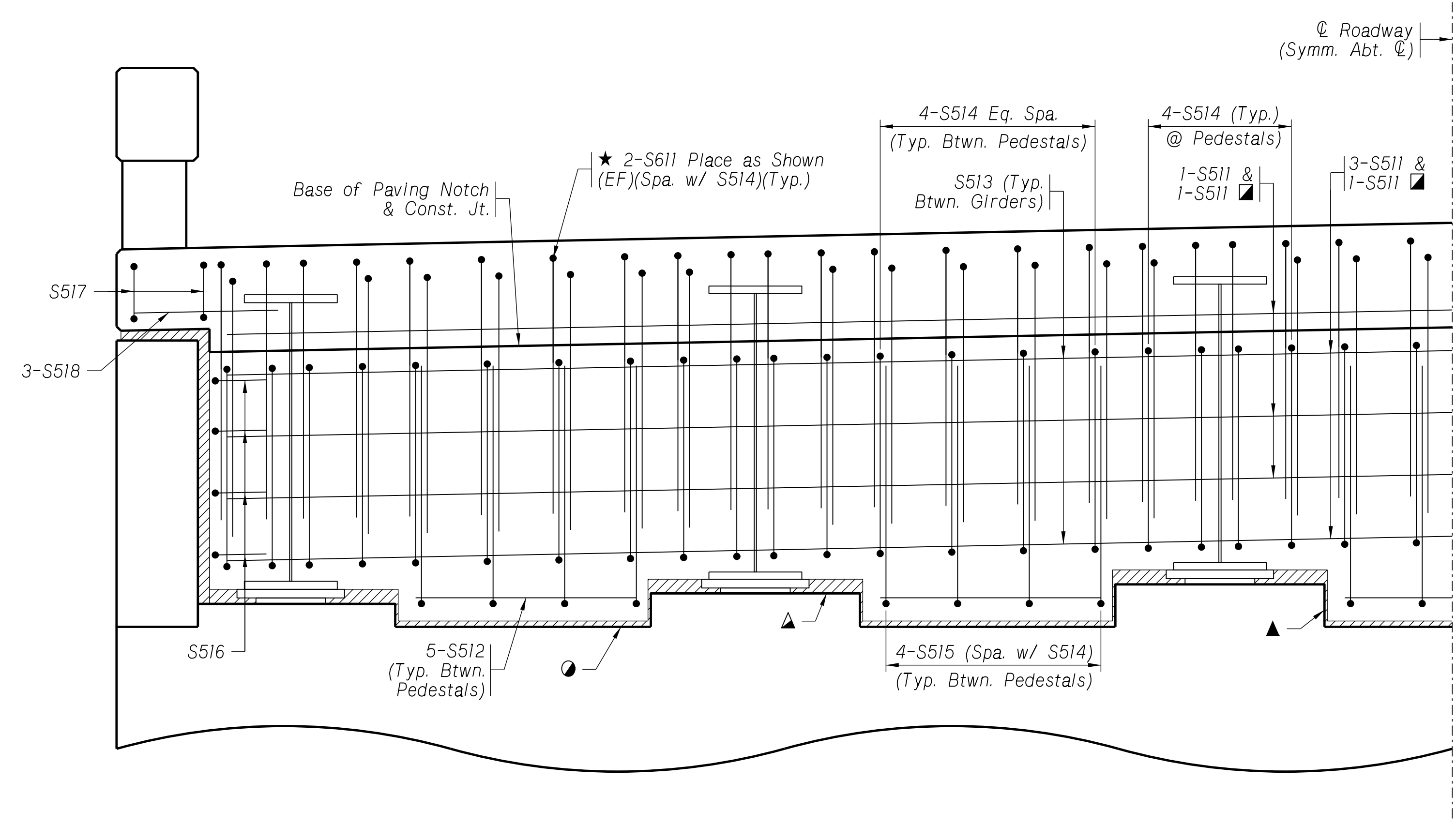
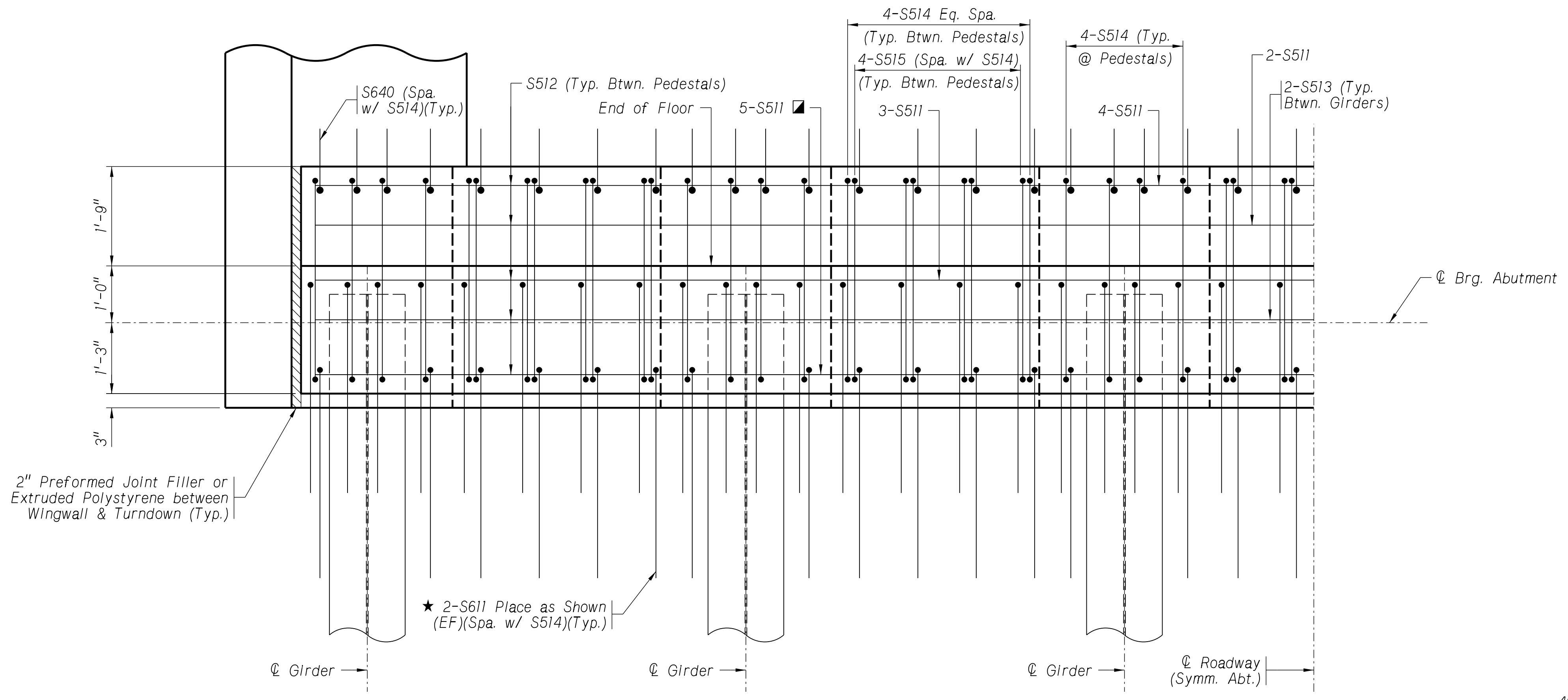
▲▲ Nominal Joint Opening at time of pour.

Computer: A13433

User: KMEvans

Date: 20-MAY-2019 10:06

File: 15 Slab Reinforcing Layout



PARTIAL ELEVATION OF SLAB TURNDOWN

Scale: 3/4" = 1'-0"

SECTION THRU SLAB TURNDOWN

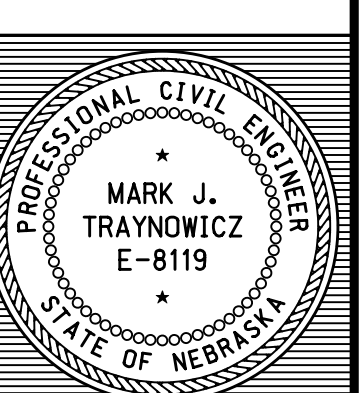
Scale: 3/4" = 1'-0"

Note:
 S640 not shown for clarity.

- ▲ 1/2" Preformed Joint Filler or Extruded Polystyrene on sides of pedestals (Typ.)
- 1" Preformed Joint Filler or Extruded Polystyrene between pedestals (Typ.)
- Thru 1 1/4" open holes in girder webs
- ▲ 2 3/8" Preformed Joint Filler or Extruded Polystyrene on Pedestals (Typ.)
- ★ Omit front face S611 at Girders

WILSON & COMPANY

File: 16 Slab Turndown Details Date: 20-MAY-2019 10:06 User: KMEvans Computer: A13433

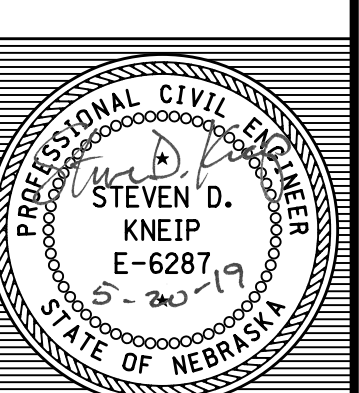


BRIDGE ENGINEER

LOCATION ELKHORN RIVER BR SE OF STANTON
SKW 0°
ROADWAY 36'-0"
DESIGN LIVE LOAD Single Truck
DETAILED BY WAO
CHECKED BY SDK
DATE MAY 2019

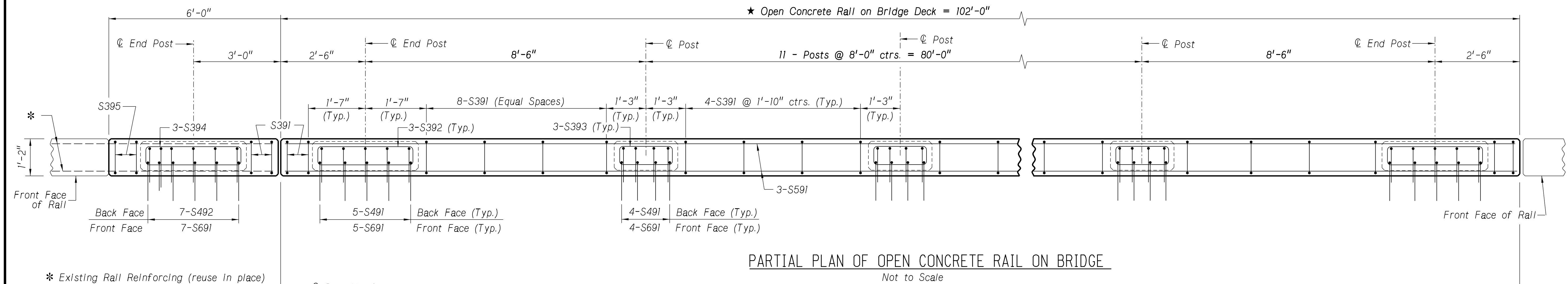
NEW 101'-0" SPAN EXTENSION FOR
35'-8 1/2" MULTI-SPAN EXISTING BRIDGE
CONCRETE RAIL ON BRIDGE

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

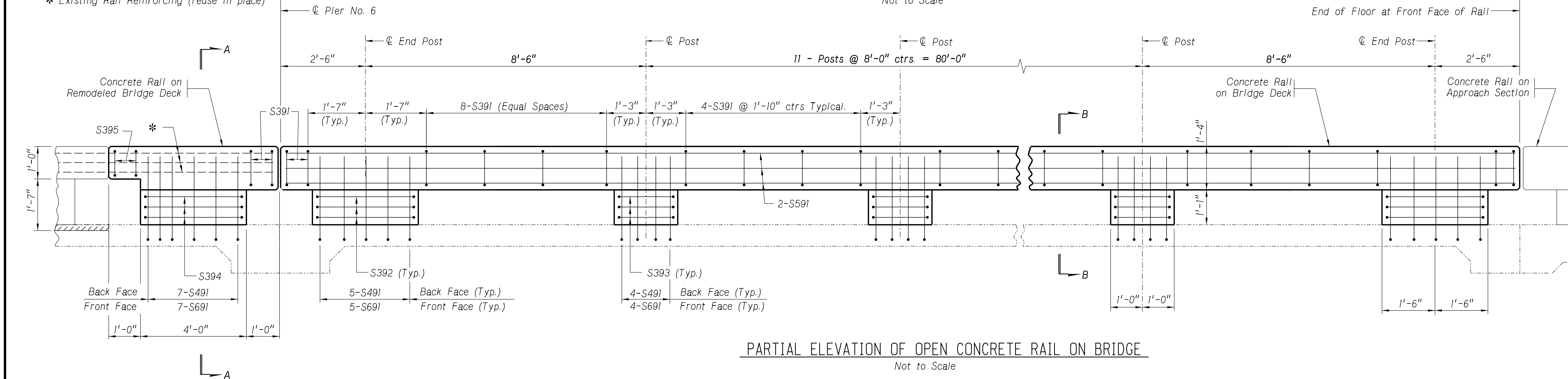


SPECIAL PLAN NO. 17
1 20

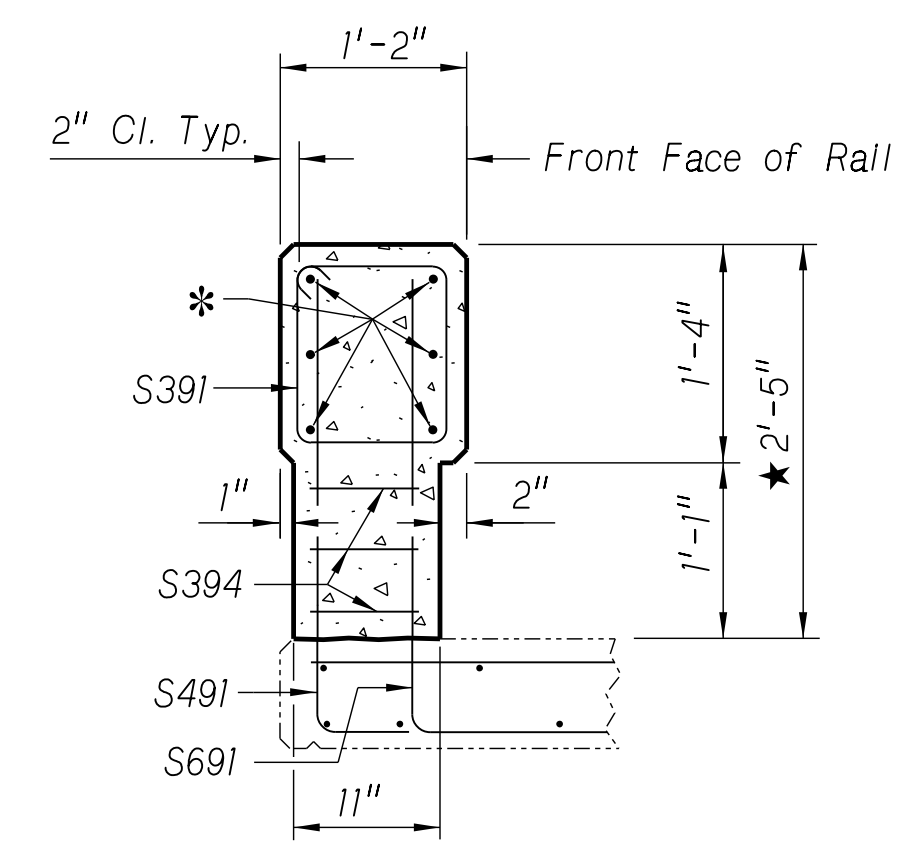
WILSON & COMPANY



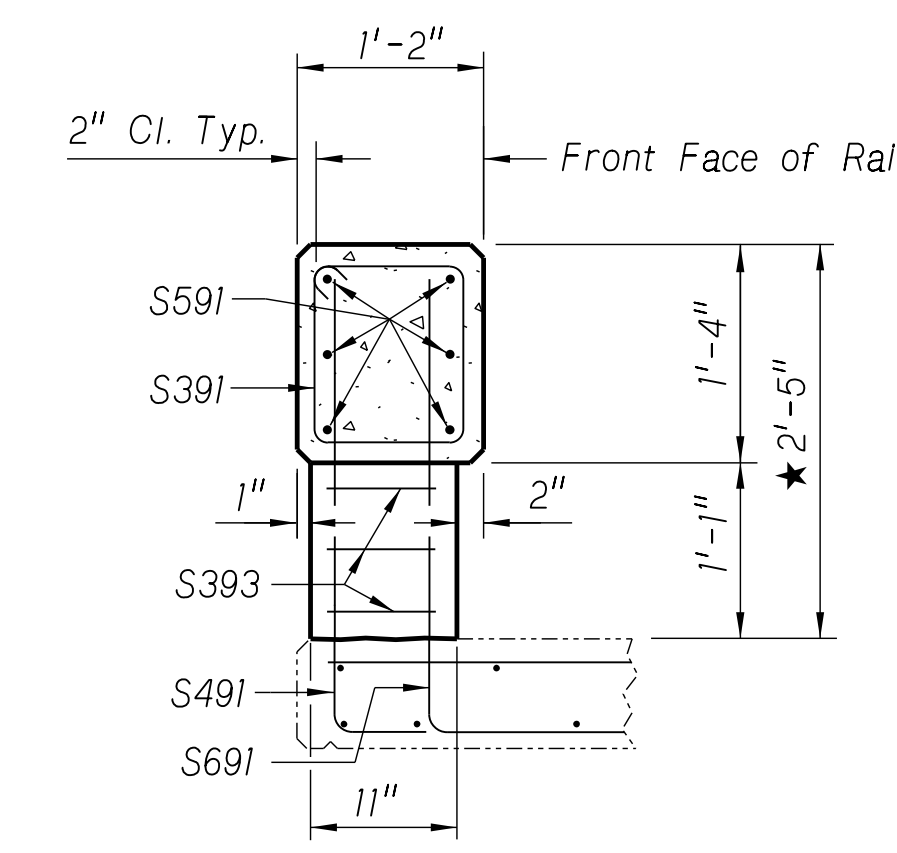
PARTIAL PLAN OF OPEN CONCRETE RAIL ON BRIDGE
Not to Scale



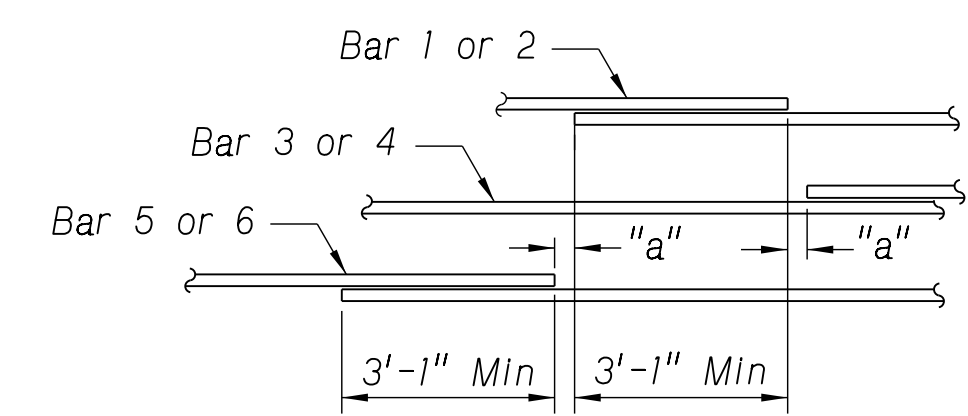
PARTIAL ELEVATION OF OPEN CONCRETE RAIL ON BRIDGE
Not to Scale



SECTION A-A
Not to Scale

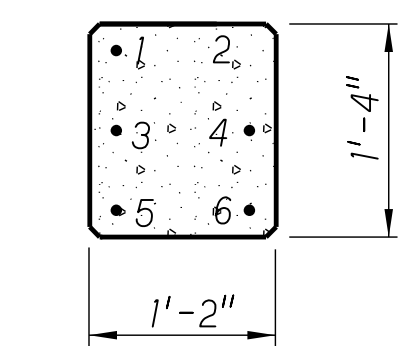


SECTION B-B
Not to Scale



▲ LAP DETAIL
Not to Scale

▲ Laps for Bars 1 and 5 shall be staggered.
Laps for Bars 2 and 6 shall be staggered.
Bar 3 to be continuous through laps for Bars 1 and 5
Bar 4 to be continuous through laps for Bars 2 and 6
"a" ≥ Zero



RAIL SECTION
See Lap Detail
Not to Scale

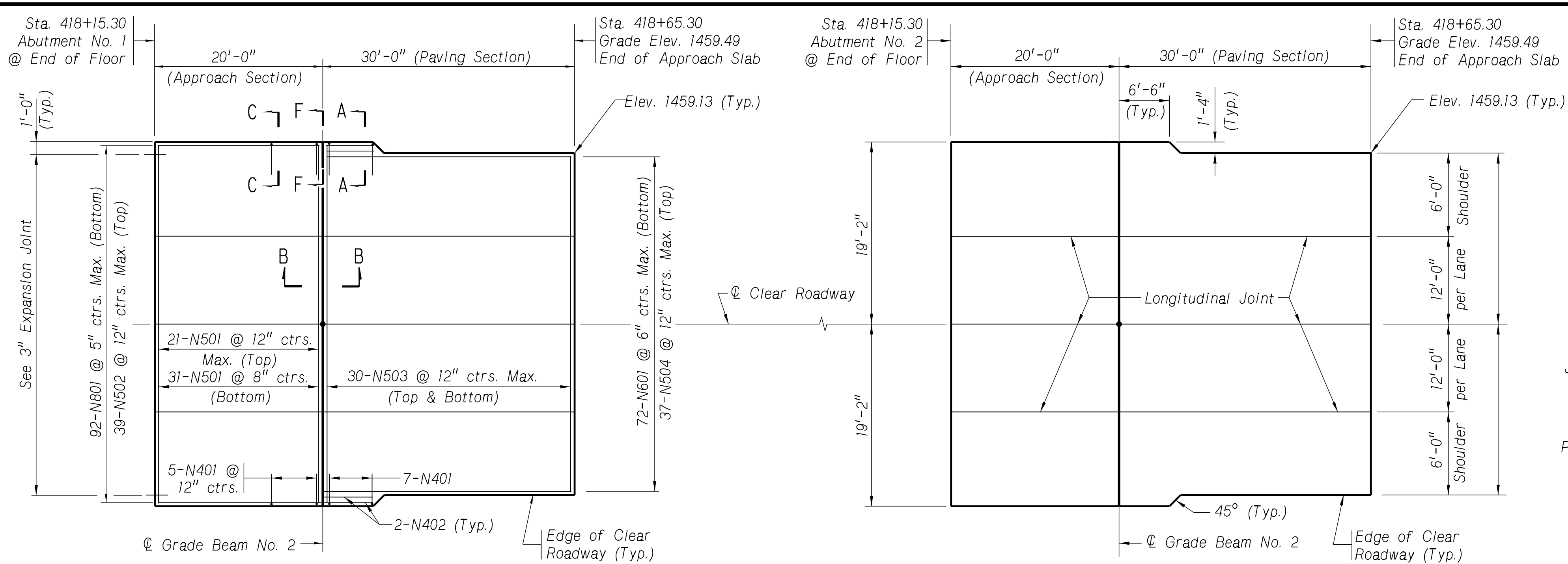
NOTES:
Posts must be plumb.
★ Measured at front face of rail

Computer: A13433

User: KMEvans

Date: 20-MAY-2019 10:06

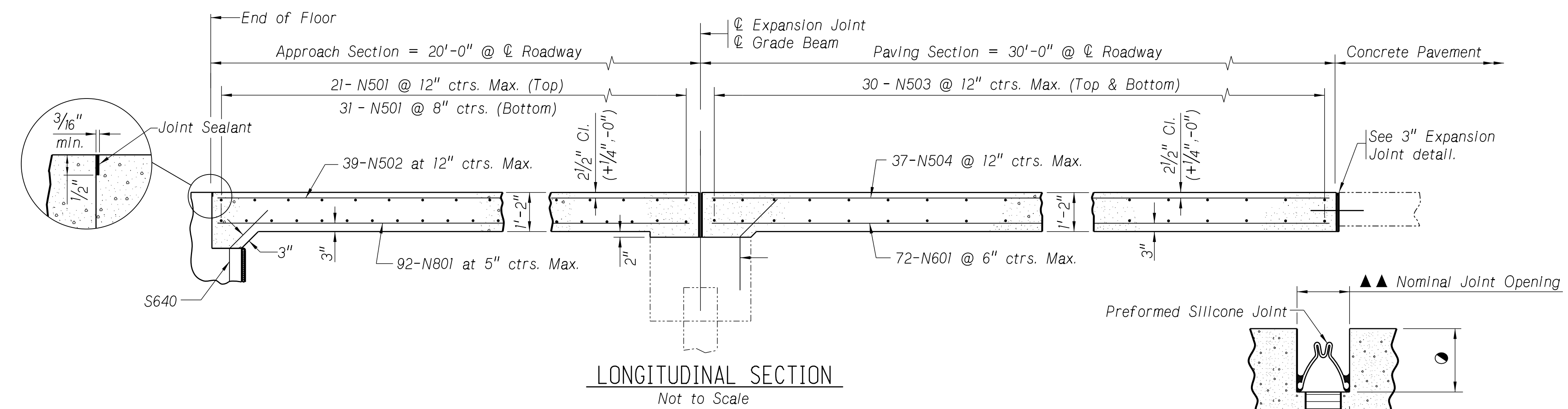
File: 17 Concrete Rail on Bridge



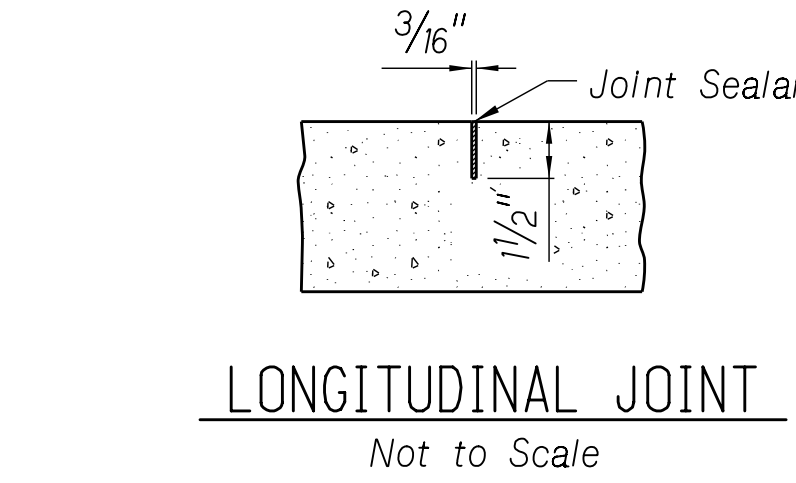
APPROACH SLAB NO. 2
SHOWING REINFORCING

GENERAL PLAN OF APPROACH SLABS
Not to Scale

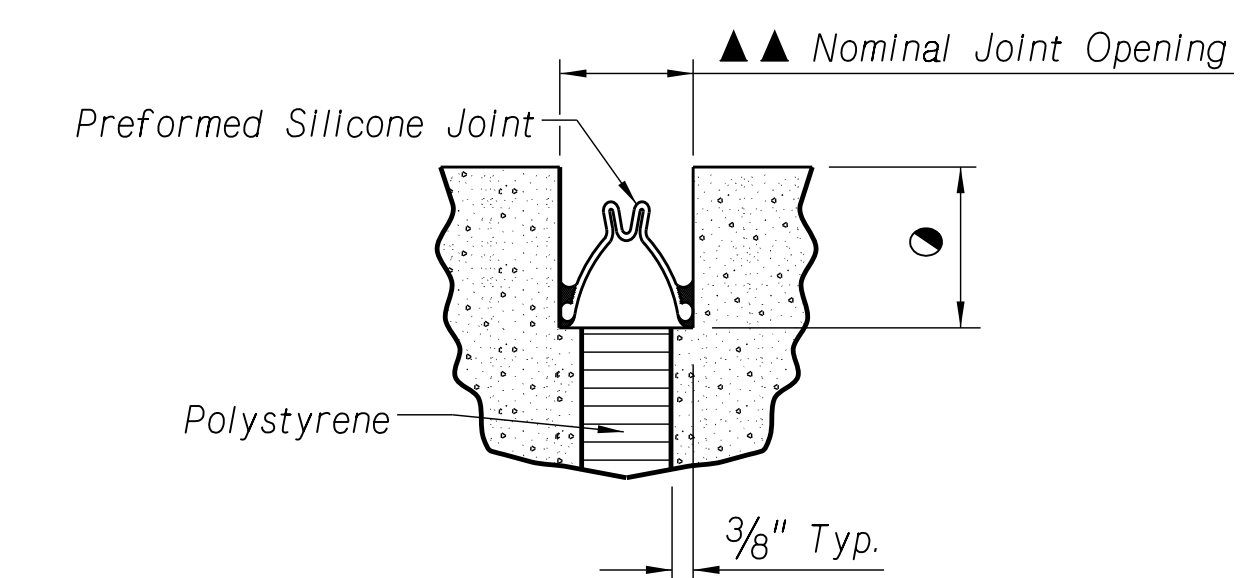
APPROACH SLAB NO. 2
SHOWING DIMENSIONS



LONGITUDINAL SECTION
Not to Scale

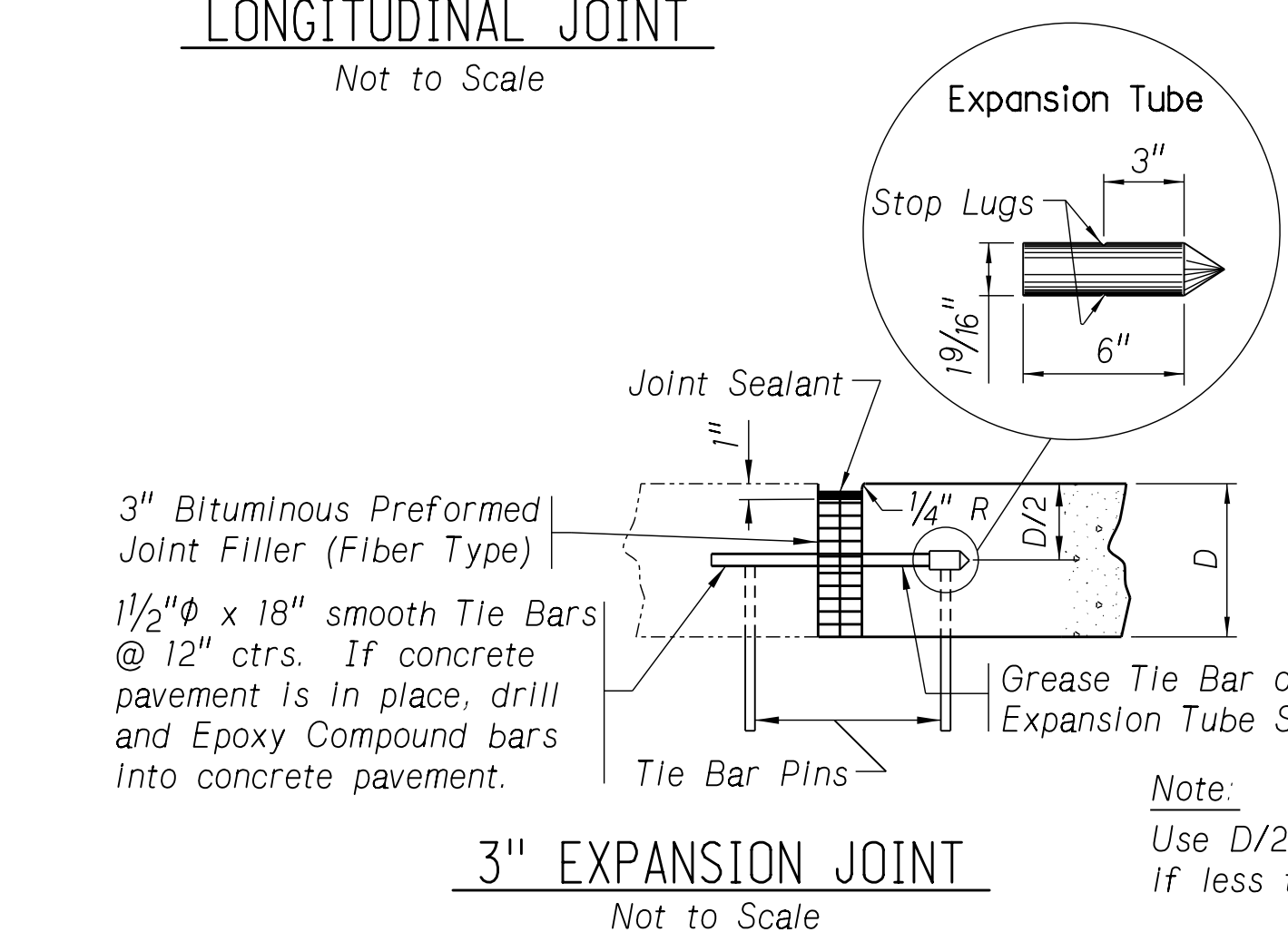


LONGITUDINAL JOINT
Not to Scale



DETAIL FOR PREFORMED SILICONE JOINT
AT GRADE BEAM
Not to Scale

(Preformed Silicone Joint Substitution for Precompressed Polyurethane Foam)

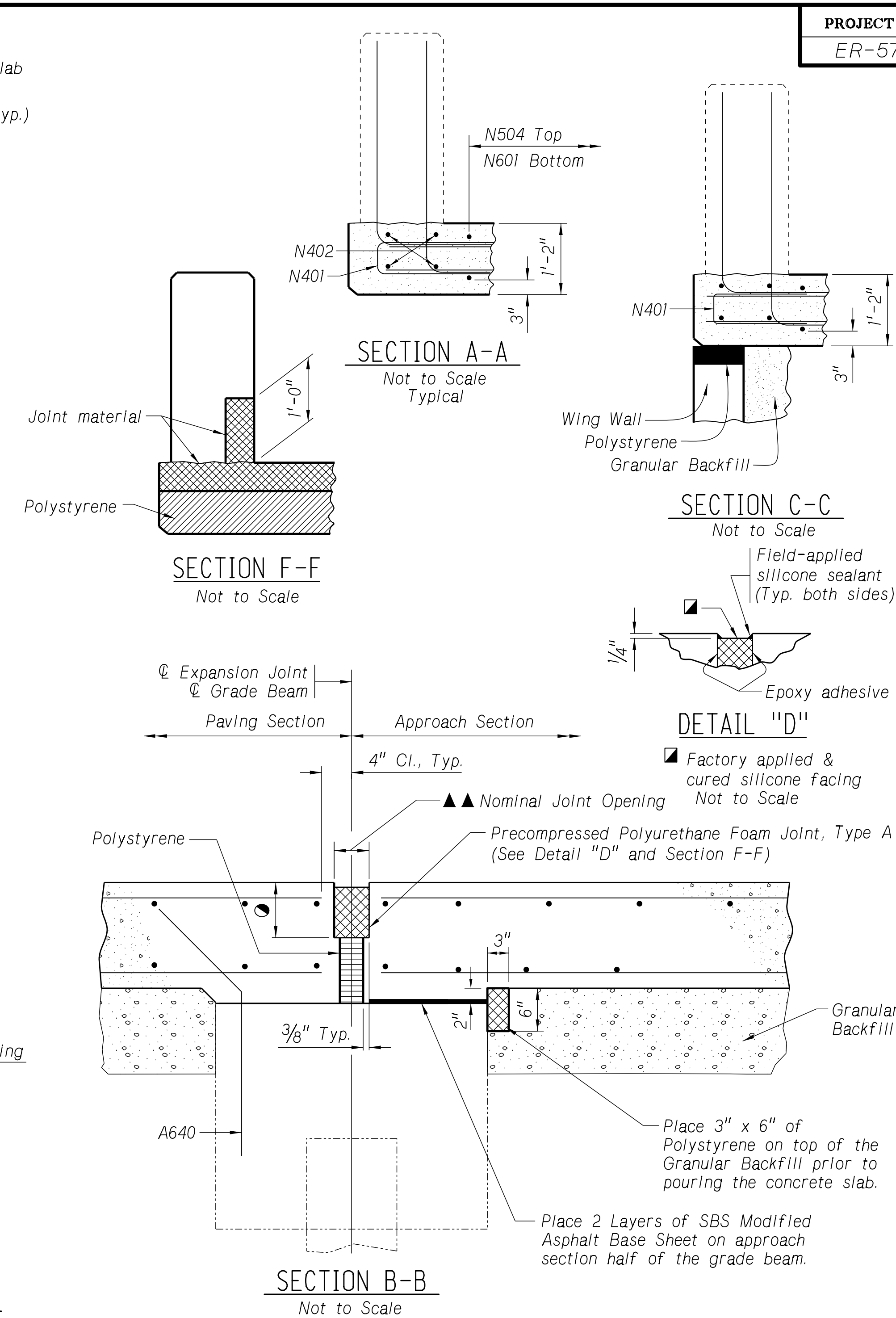


3" EXPANSION JOINT
Not to Scale

Note:
Use D/2 of Roadway Pavement
If less than D/2 of Paving Section.

ALTERNATE JOINT DETAIL
AT END OF FLOOR
Not to Scale

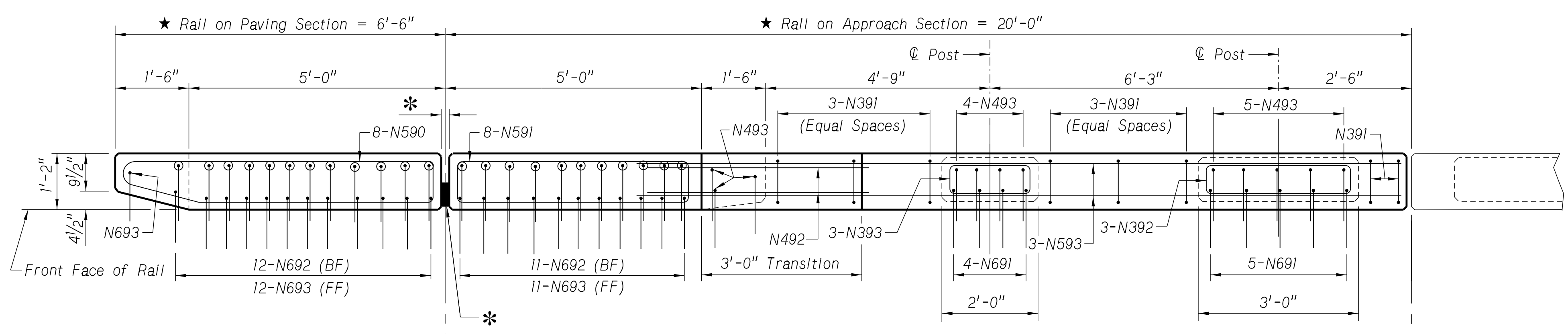
To be used if approach slab is
poured continuous with bridge deck.



APPROACH SLAB NOTES:

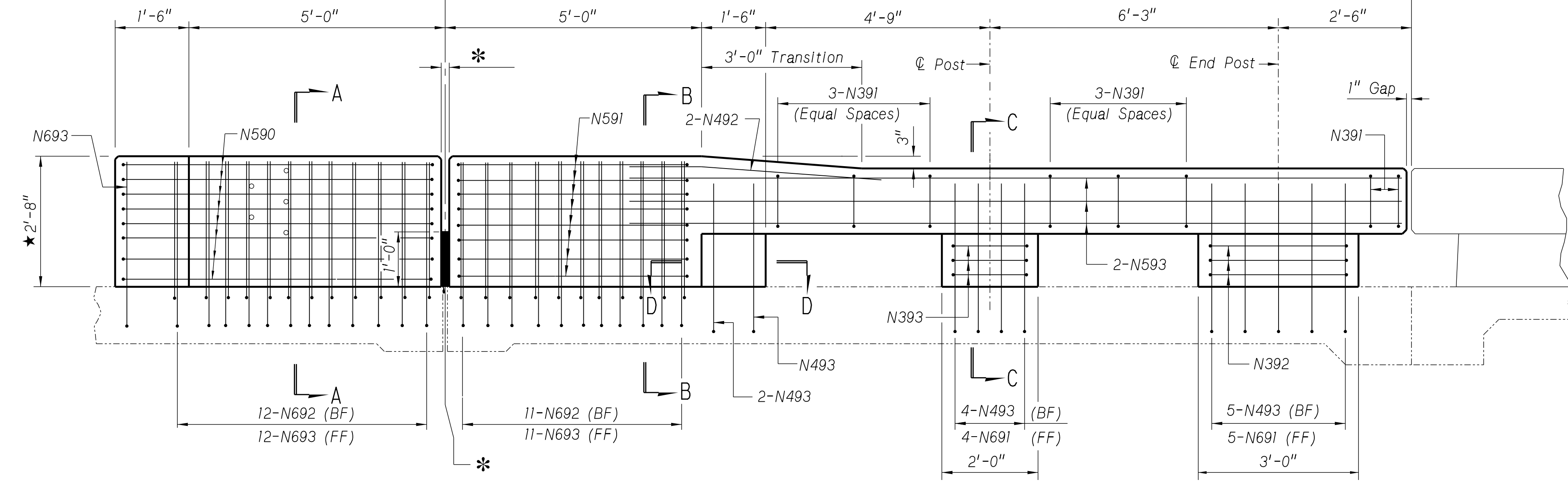
- Concrete Rail Width = 1'-2". See sheet 19 of 20 for placement of rail reinforcement. See Standard Specifications for tining and finishing of approach slabs.
- SBS Modified Asphalt base sheets and all other miscellaneous items shall be considered subsidiary to the Pay Item, CONCRETE FOR PAVEMENT APPROACHES CLASS 47BD-4000.
- SBS Modified Asphalt base sheets shall be modified bitumen roofing material, with a minimum thickness of 0.090 inch and a minimum weight of 60 lbs. per 100 sq. feet.
- Longitudinal Joints shall be 1/2" deep and placed in the paving and approach slabs in accordance with section 603.03 paragraph 8 of the Standard Specifications. Contractor shall exercise care not to damage reinforcing steel placed in the top layer of the slabs.
- The expansion gap between approach section and paving section shall be cleaned of all foreign matter before the installation of the expansion device or the filler material.
- This depth is to be determined by the preformed joint manufacturer.
- ▲ PPF Joint material, size to be ordered for a 50° opening + 1/4".
- ▲▲ Nominal Joint Opening at time of pour.

PPF ORDER SIZE ▲	2.25"		
	PPF ▲▲	Silicoflex ▲▲	Wobo ▲▲
35°-40°	2.25"	3.00"	2.75"
40°-60°	2.00"	2.75"	2.50"
60°-80°	1.75"	2.50"	2.25"
80°-85°	1.50"		2.00"

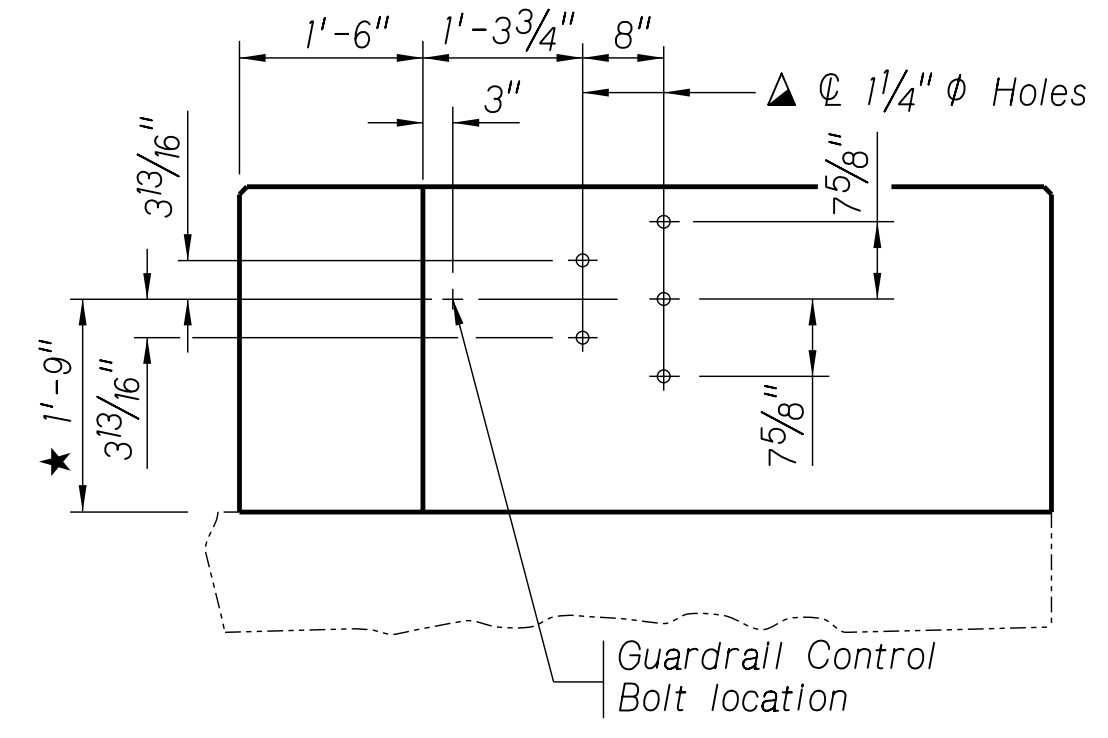


PLAN OF OPEN CONCRETE RAIL ON APPROACH SLABS
Not to Scale

* Joint material and opening width shall match what is shown on Approach Slab sheet, see sheet 18 of 20.

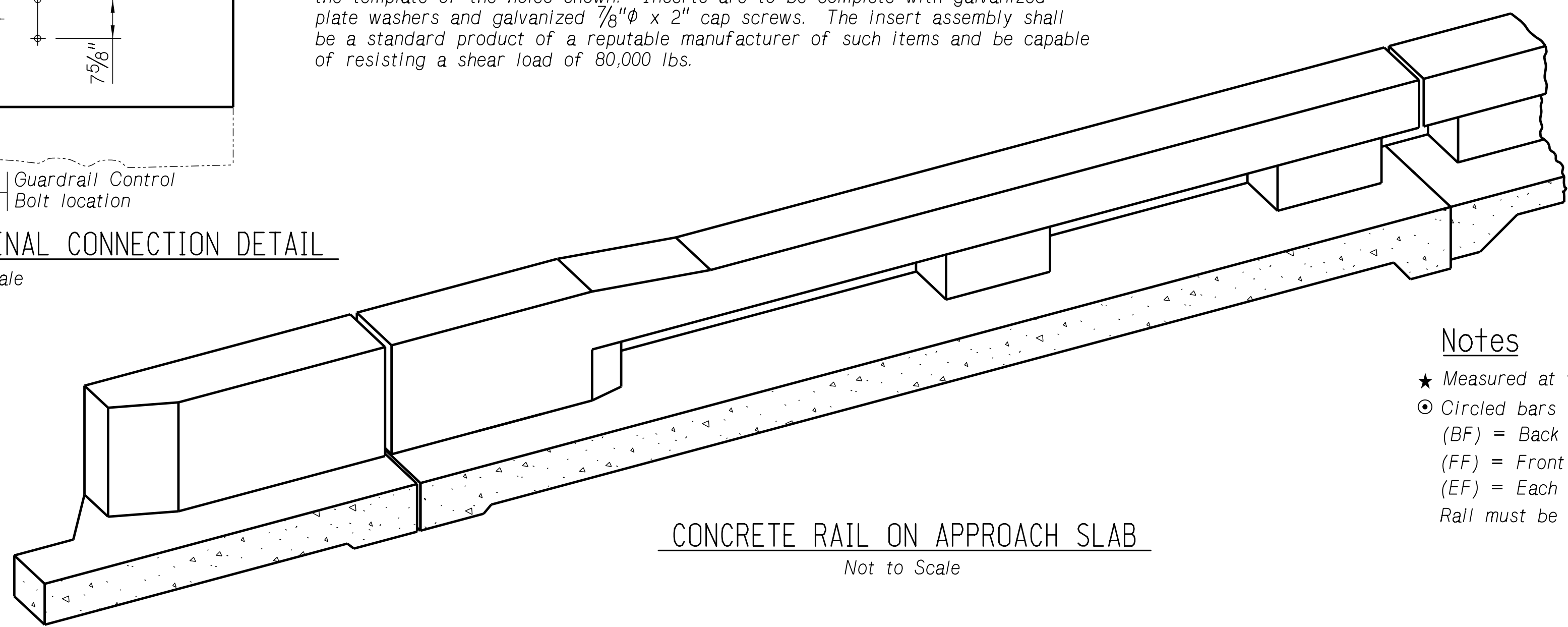


ELEVATION OF OPEN CONCRETE RAIL ON APPROACH SLABS
Not to Scale



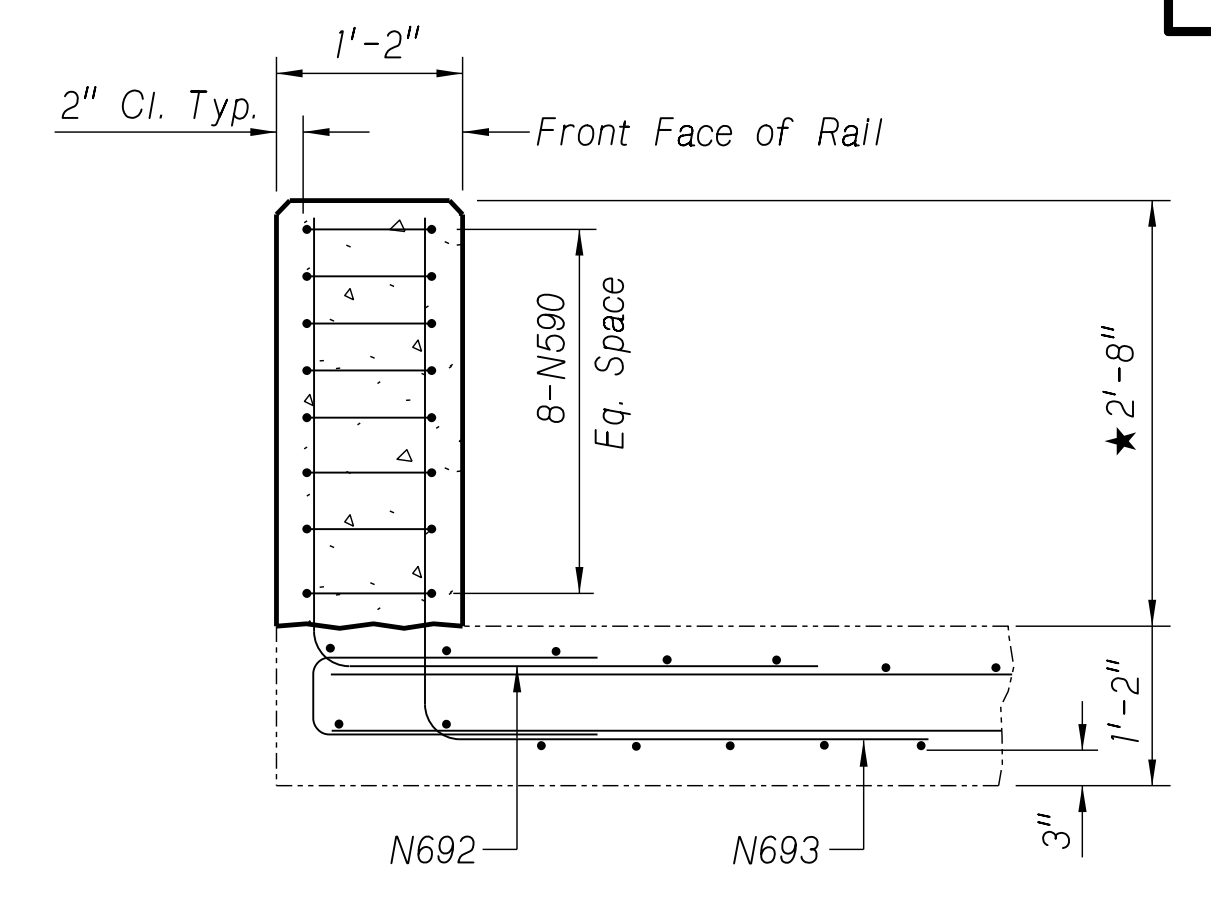
THREE BEAM TERMINAL CONNECTION DETAIL
Not to Scale

▲ As an alternate method, the contractor shall furnish and cast into the concrete an approved welded assembly consisting of threaded inserts, held accurately to the template of the holes shown. Inserts are to be complete with galvanized plate washers and galvanized 7/8"φ x 2" cap screws. The insert assembly shall be a standard product of a reputable manufacturer of such items and be capable of resisting a shear load of 80,000 lbs.

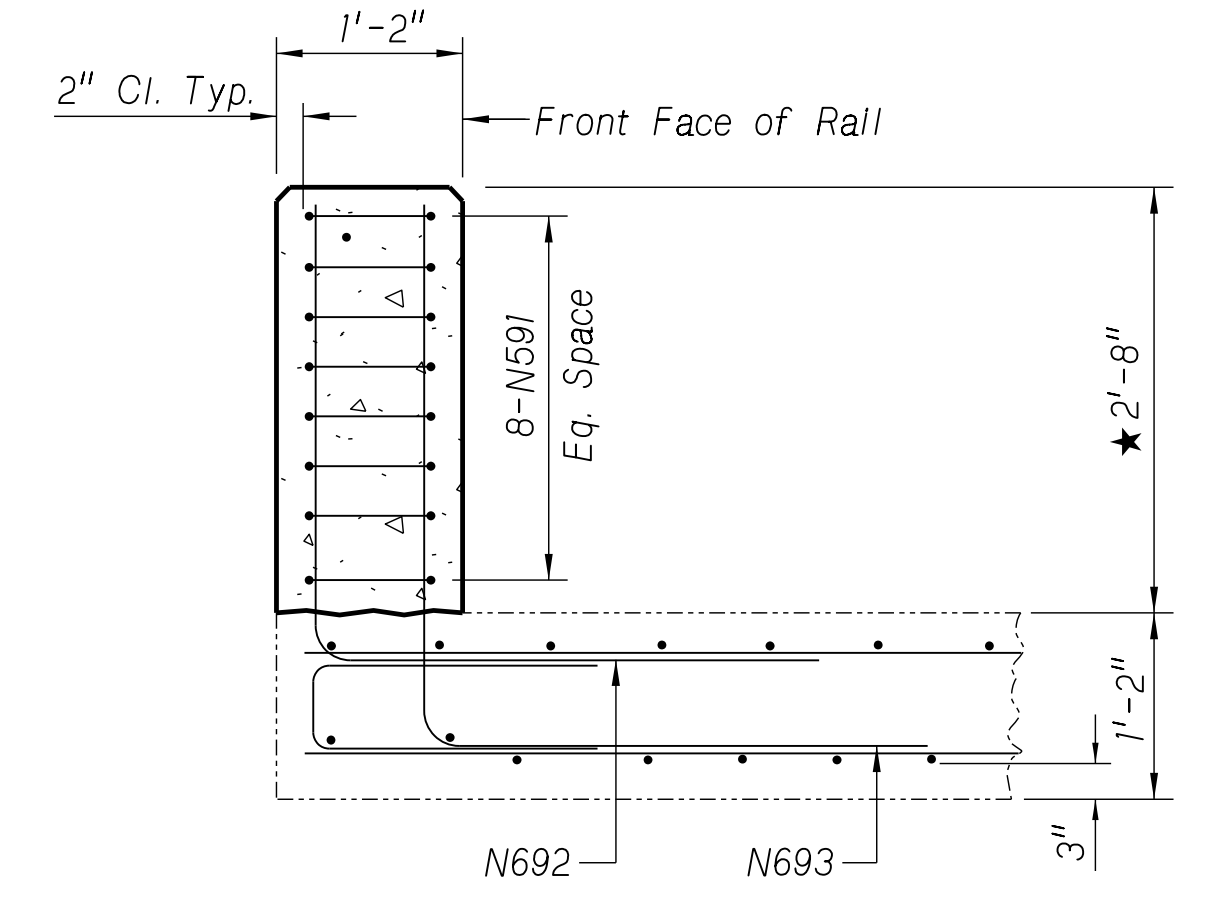


CONCRETE RAIL ON APPROACH SLAB
Not to Scale

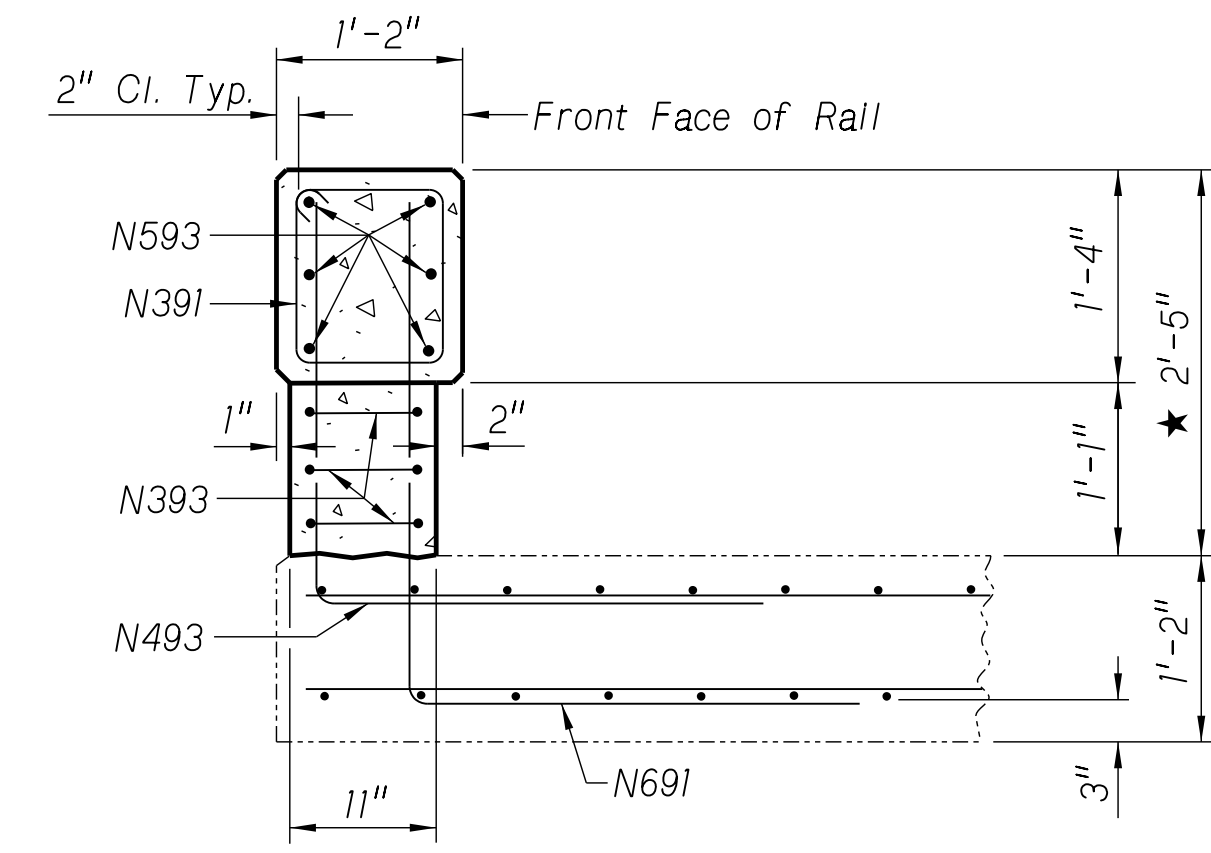
- Notes
- ★ Measured at front face of rail.
 - Circled bars indicate placement in the top layer.
 - (BF) = Back Face
 - (FF) = Front Face
 - (EF) = Each Face
 - Rail must be plumb.



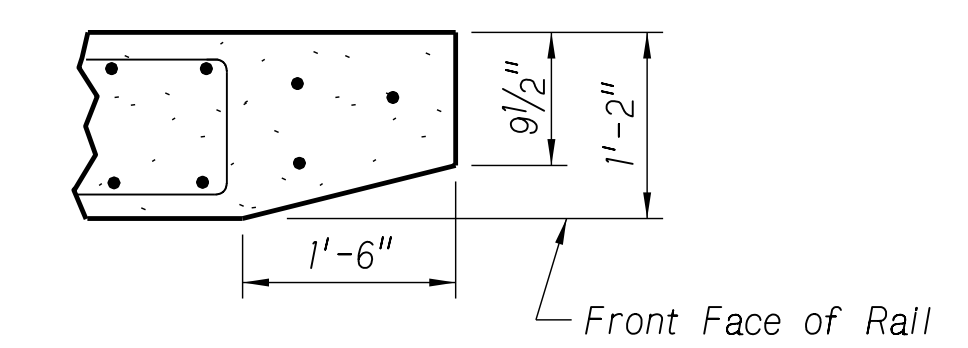
SECTION A-A
Not to Scale



SECTION B-B
Not to Scale



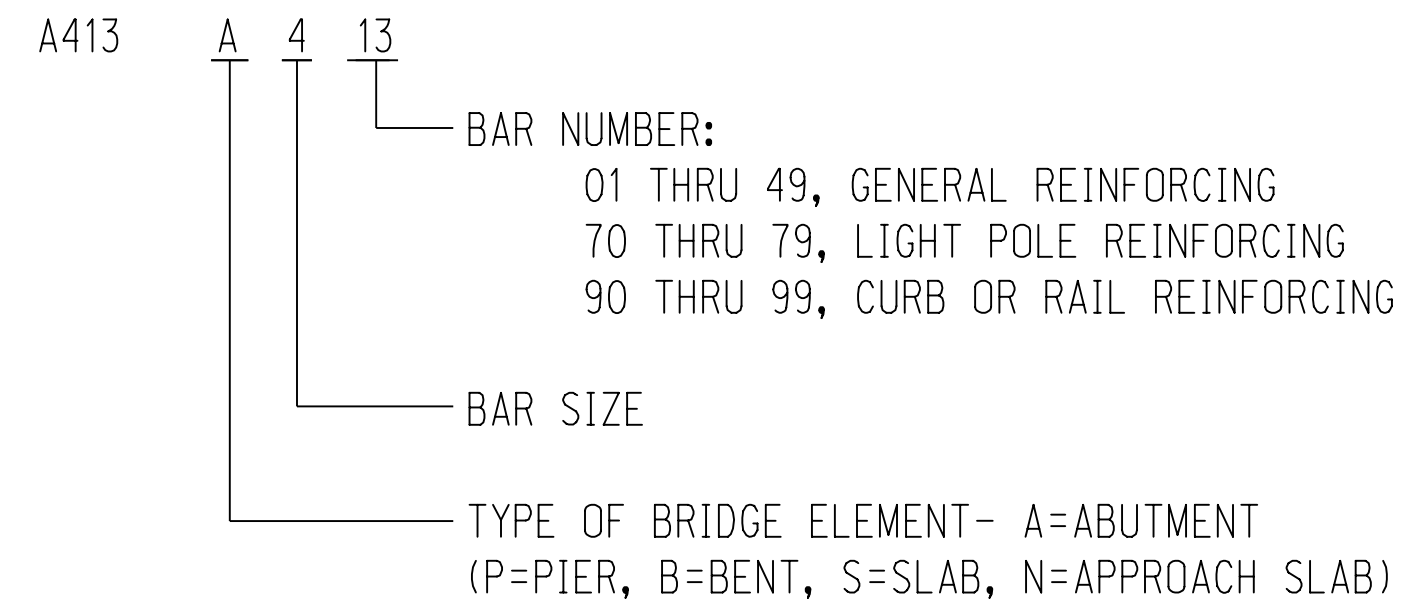
SECTION C-C
Not to Scale



SECTION D-D
Not to Scale

BILL OF BARS													
	MARK	NO.	LENGTH	TYPE	"A"	"B"	"C"	"D"	"E"	"F"	PIN	HOOK	WEIGHT LB
SLAB	S601	8	37'-10"	STR									455
	S602	214	5'-10"	STR									1,875
	S603	214	8'-4"	STR									2,679
	S604	40	6'-2"	STR									370
	S605	16	2'-0"	STR									48
	S501	41	104'-6"	STR	(INCLUDES 1 - 3'-0" LAP)								4,469
	S502	110	37'-10"	STR							2 1/2"	5 1/2"	4,341
	S503	82	4'-11"	107	1'-0"	1'-0"							421
	S401	40	103'-5"	STR	(INCLUDES 1 - 1'-11" LAP)								2,763
	S402	110	37'-10"	STR									2,780
	TOTAL =											20,201 LB	
SLAB TURNDOWN	S611	88	7'-4"	104	3'-8"	3'-8"					4 1/2"		969
	S640	44	3'-0"	101	1'-6"	1'-6"	1'-1"				4 1/2"		198
	S511	14	35'-2"	STR									514
	S512	25	3'-2"	STR									83
	S513	10	6'-2"	STR									64
	S514	44	13'-7"	107	2'-10"	3'-6"					2 1/2"	5 1/2"	623
	S515	20	10'-4"	103	3'-5"	3'-6"	3'-5"				2 1/2"		216
	S516	8	5'-0"	103	9"	3'-6"	9"				2 1/2"		42
	S517	4	5'-11"	107	9"	1'-9"					2 1/2"	5 1/2"	25
S518	6	2'-0"	STR									13	
	TOTAL =											2,747 LB	
APPROACH SLAB	N801	92	19'-6"	STR									4,790
	N601	72	29'-6"	STR									3,190
	N501	52	37'-10"	STR									2,052
	N502	39	19'-6"	STR									793
	N503	30	37'-10"	STR									1,184
	N504	37	29'-6"	STR									1,138
	N401	24	6'-8"	103	3'-0"	0'-8"	3'-0"				2"		107
	N402	8	6'-0"	STR									32
	TOTAL =											13,286 LB	
CONCRETE RAIL ON BRIDGE	S691	122	6'-6"	104	2'-11"	3'-7"					4 1/2"		1,191
	S591	12	104'-7"	STR	(INCLUDES 1 - 3'-1" LAP)								1,309
	S491	122	5'-10"	104	2'-11"	2'-11"							475
	S391	128	4'-4"	107	1'-0"	10"					1 1/2"	4"	209
	S392	12	7'-2"	107	2'-8"	7"					1 1/2"	4"	32
	S393	66	5'-2"	107	1'-8"	7"					1 1/2"	4"	128
S394	6	9'-2"	107	3'-8"	7"					1 1/2"	4"	21	
S395	4	3'-8"	107	8"	10"					1 1/2"	4"	6	
	TOTAL =											3,371 LB	
CONCRETE RAIL ON APPR. SLABS	N691	18	6'-2"	104	3'-1"	3'-1"					4 1/2"		167
	N692	46	5'-6"	104	2'-8"	2'-10"					4 1/2"		380
	N693	48	6'-8"	104	3'-4"	3'-4"							481
	N590	16	14'-5"	130	4'-8"	10"	6'-1"	5"	1'-6"	1'-5"	2 1/2"	5 1/2"	241
	N591	16	11'-3"	107	4'-6"	8"						5 1/2"	188
	N593	12	18'-7"	STR									233
	N492	4	6'-6"	STR									17
	N493	24	4'-10"	104	2'-5"	2'-5"							77
	N391	16	4'-4"	107	1'-0"	10"					1 1/2"	4"	26
N392	6	7'-2"	107	2'-8"	7"					1 1/2"	4"	16	
N393	6	5'-2"	107	1'-8"	7"					1 1/2"	4"	12	
	TOTAL =											1,838 LB	

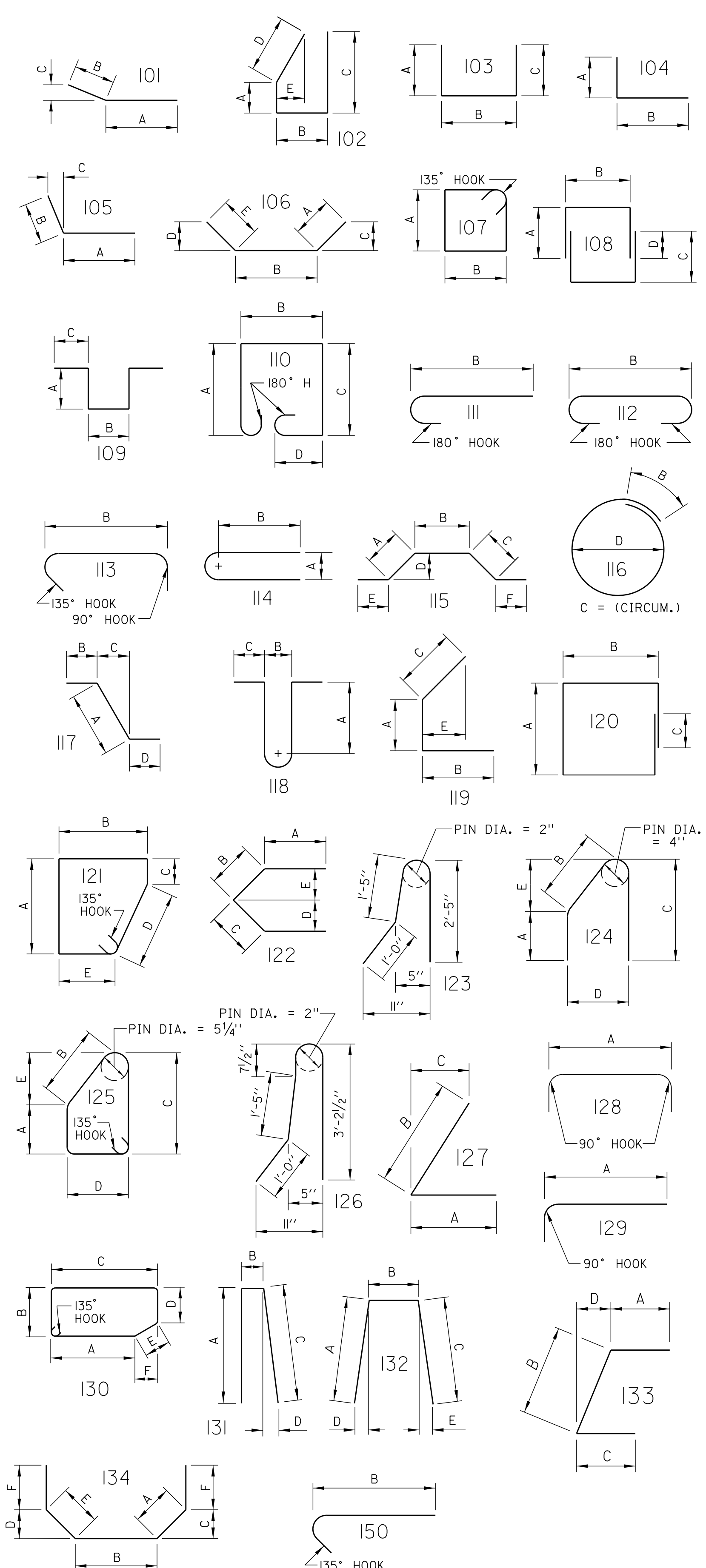
BAR MARK



THE NUMBER OF LAP SPLICES ARE CALCULATED BASED ON 60'-0" LENGTHS OF REINFORCING STEEL BARS. SPLICES ON BARS SHORTER THAN 60'-0" WILL REQUIRE ADDITIONAL LAP SPLICES AT NO ADDITIONAL EXPENSE TO NDOT.

BENDING DIAGRAMS

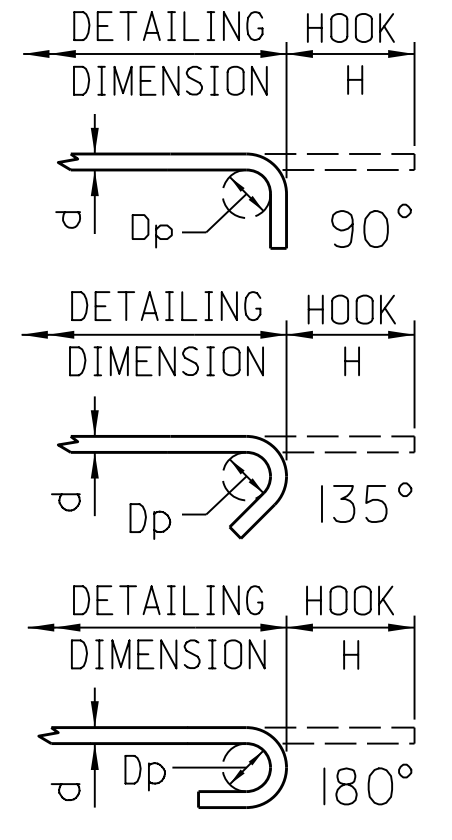
ALL DIMENSIONS ARE OUT TO OUT & NOT TO SCALE
 ALL REINFORCING STEEL SHALL BE EPOXY COATED



BAR SETS					BAR SETS				
MARK	MAX. LENGTH	MIN. LENGTH	NO. OF SETS	BARS PER SET	MARK	MAX. LENGTH	MIN. LENGTH	NO. OF SETS	BARS PER SET

STANDARD HOOK LENGTH				PIN DIAMETER			
PRIMARY STRESS BARS		STIRRUPS & TIES		PRIMARY STRESS		STIRRUPS & TIES	
BAR SIZE	HOOK H	BAR SIZE	HOOK H	BAR SIZE	Dp	BAR SIZE	Dp
4	8"	3	4"	4	3"	3	1 1/2"
5	10"	4	4 1/2"	5	3 3/4"	4	2"
6	12"	5	6"	6	4 1/2"	5	2 1/2"
7	15"	6	12"	7	5 1/4"	6	4 1/2"
8	17"	7	14"	8	6"	7	5 1/4"
9	19"	8	16"	9	9 1/2"	8	6"
10	23"	10	11"	10	11"	11	12"
11	24"	11	12"	11	12"	11	12"

d = BAR SIZE
Dp = PIN DIAMETER



<p>PROJECT NUMBER ER-57-3(110)</p> <p>STRUCTURE NUMBER S057 01566</p> <p>PROFESSIONAL CIVIL ENGINEER MARK J. TRAYNOWICZ E-8119 STATE OF NEBRASKA</p> <p>BRIDGE ENGINEER</p>	<p>C.N. 32322</p> <p>LOCATION ELKHORN RIVER BR NEW 101'-0" SPAN EXTENSION FOR SE OF STANTON 351'-8 1/2" MULTI-SPAN EXISTING BRIDGE</p> <p>COUNTY Stanton HWY. NO. N-57 REF. POST. 15.66 STA. 415+88.45</p> <p>DESIGN LIVE LOAD Single Truck DETAILED BY WAO CHECKED BY SDK DATE MAY 2019</p> <p>NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION</p> <p>PROFESSIONAL CIVIL ENGINEER STEVEN D. KNEIP E-6287 STATE OF NEBRASKA</p> <p>SPECIAL PLAN NO. 20 1 20</p>
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ROADWAY DESIGN DIVISION

Computer: A13433

User: KMEvans

Date: 16-MAY-2019 15:13

File: 323220sp01
Scale: 1:40

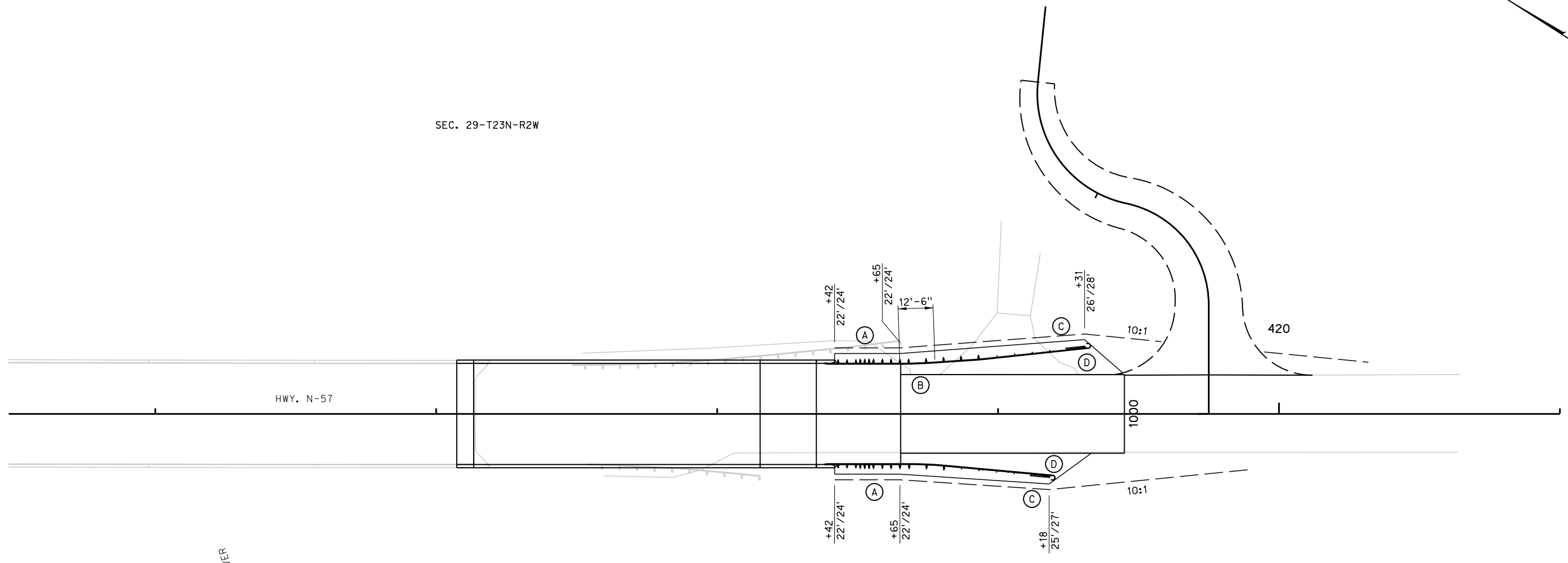
SEC. 29-T23N-R2W

HWY. N-57

ELKHORN RIVER

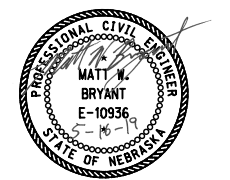
SEC. 29-T23N-R2W

GUARDRAIL INSTALLATION AT STA. 415+87.50
BRIDGE # (S057 01566)



LEGEND

- (A) BRIDGE APPROACH SECTION (25'-0")
- (B) R=187.77' (TABLE "D")
- (C) END TREATMENT, TYPE II (53'-1 1/2")
- (D) SURFACING UNDER GUARDRAIL
- GRADING LINE



SHEET 1 OF 1

SPECIAL PLAN 1C

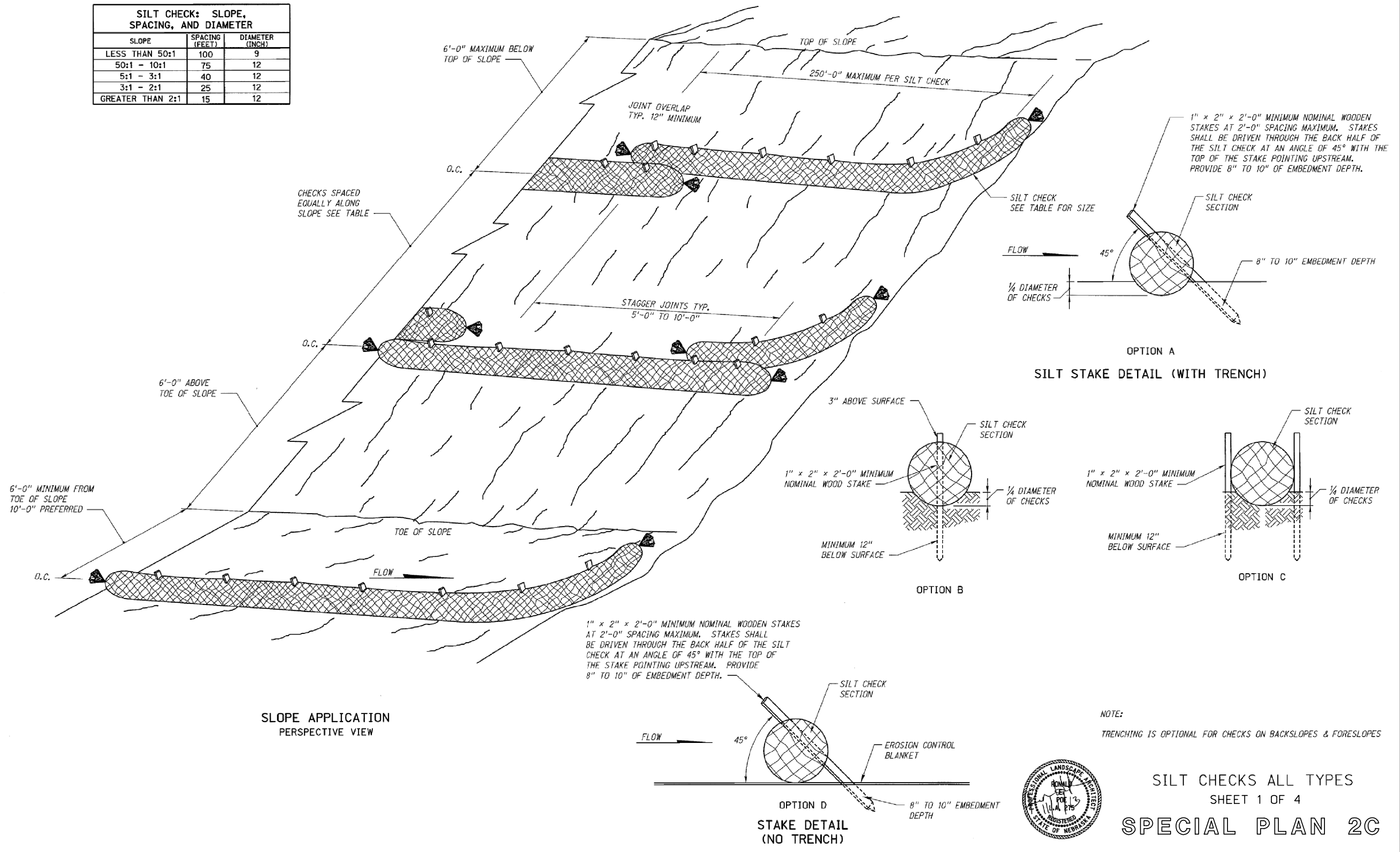
SILT CHECK: SLOPE, SPACING, AND DIAMETER		
SLOPE	SPACING (FEET)	DIAMETER (INCH)
LESS THAN 50:1	100	9
50:1 - 10:1	75	12
5:1 - 3:1	40	12
3:1 - 2:1	25	12
GREATER THAN 2:1	15	12

ROADWAY DESIGN DIVISION

Computer: NDOTDESIGN13

Date: 03-MAY-2019 07:38

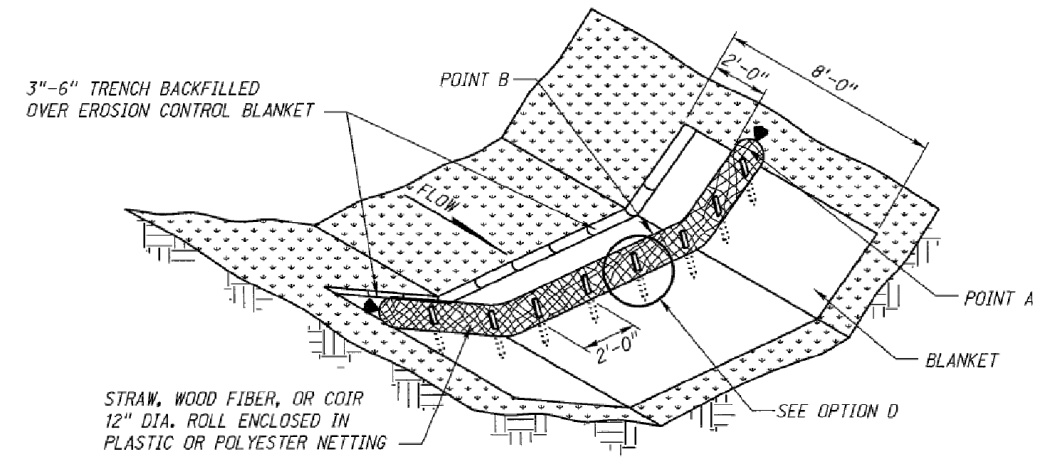
File: 323220ds01.dgn
SHEET 1 OF 4



NOTE:
TRENCHING IS OPTIONAL FOR CHECKS ON BACKSLOPES & FORESLOPES



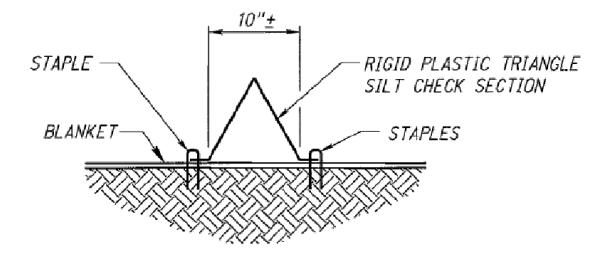
ROADWAY DESIGN DIVISION



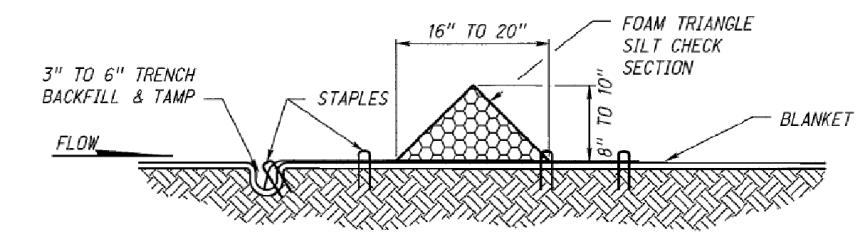
TYPE 2 & 3: HIGH & LOW WITH EROSION CONTROL

STRAW, WOOD FIBER, OR COIR
12" DIA. ROLL ENCLOSED IN
PLASTIC OR POLYESTER NETTING

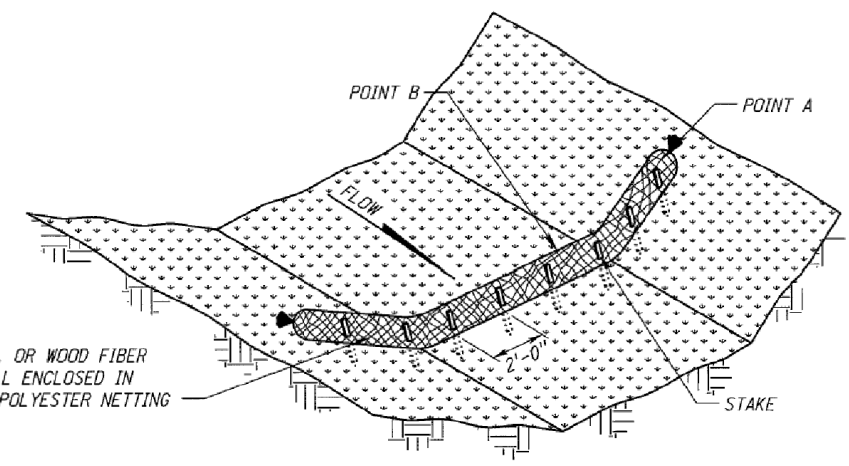
SEE OPTION D



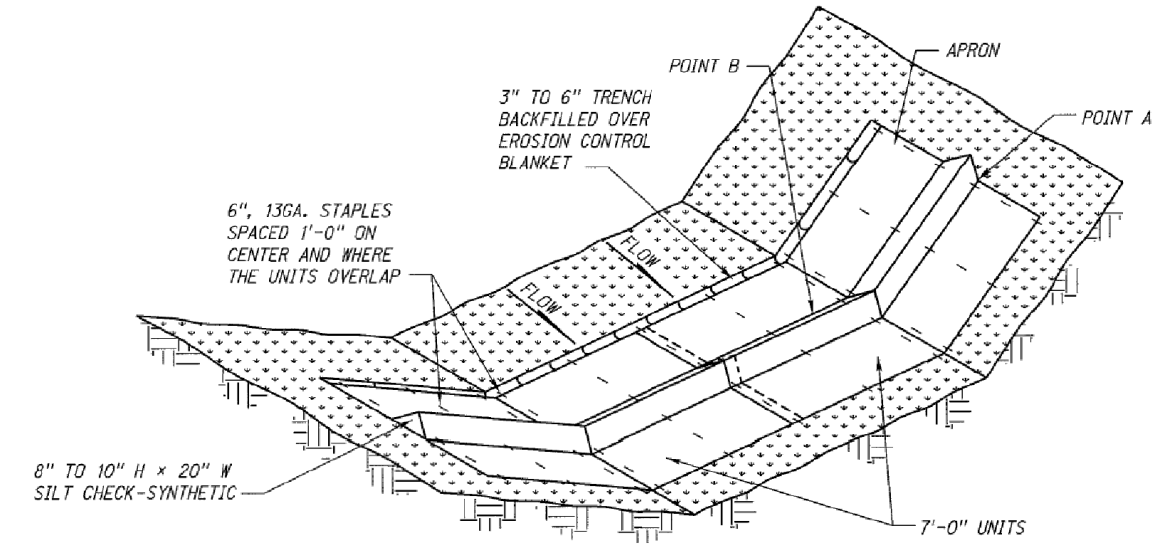
TYPE 4 SECTION



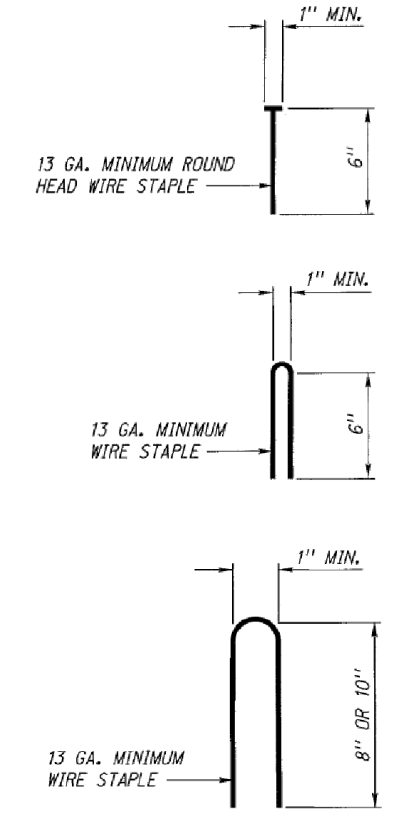
TYPE 4 SECTION



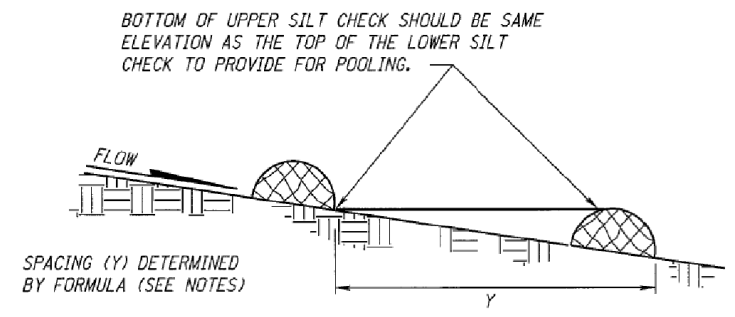
TYPE 1, 2 & 3: HIGH & LOW USE ON ROUGH GRADED & BARE SOIL AREAS



SILT CHECK: TYPE 4



WIRE STAPLE DETAIL



BOTTOM OF UPPER SILT CHECK SHOULD BE SAME ELEVATION AS THE TOP OF THE LOWER SILT CHECK TO PROVIDE FOR POOLING.

SPACING (Y) DETERMINED BY FORMULA (SEE NOTES)

SILT CHECK SPACING-DITCH

NOTES:

APPROXIMATE SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM THE FOLLOWING SPACING FORMULA:

$$\text{APPROXIMATE SPACING OF DITCH CHECKS (FT.)} = Y = \frac{\text{SILT CHECK HEIGHT (FT.)}}{\% \text{ CHANNEL SLOPE}} \times 100$$

POINT A MUST BE A MINIMUM OF 6" HIGHER THAN POINT B TO ENSURE THAT WATER FLOWS OVER THE CHECK AND NOT AROUND THE ENDS.

PERMANENT ROCK CHECKS PLACED WITHIN THE CLEAR ZONE WILL NEED TO BE 18" OR LESS IN HEIGHT. A 10:1 APPROACH AND DEPARTURE SLOPE SHALL BE PROVIDED.

THE TRENCH ON THE UPSTREAM SIDE OF THE SILT CHECK IS NOT REQUIRED IF THE EROSION CONTROL BLANKET CONTINUES IN THE ENTIRE LENGTH OF THE DITCH.

THE MANUFACTURERS RECOMMENDED INSTALLATION DETAILS SHALL GOVERN OVER THE PLANS.

SEE STAKING DETAIL SHEET 1 OF 4



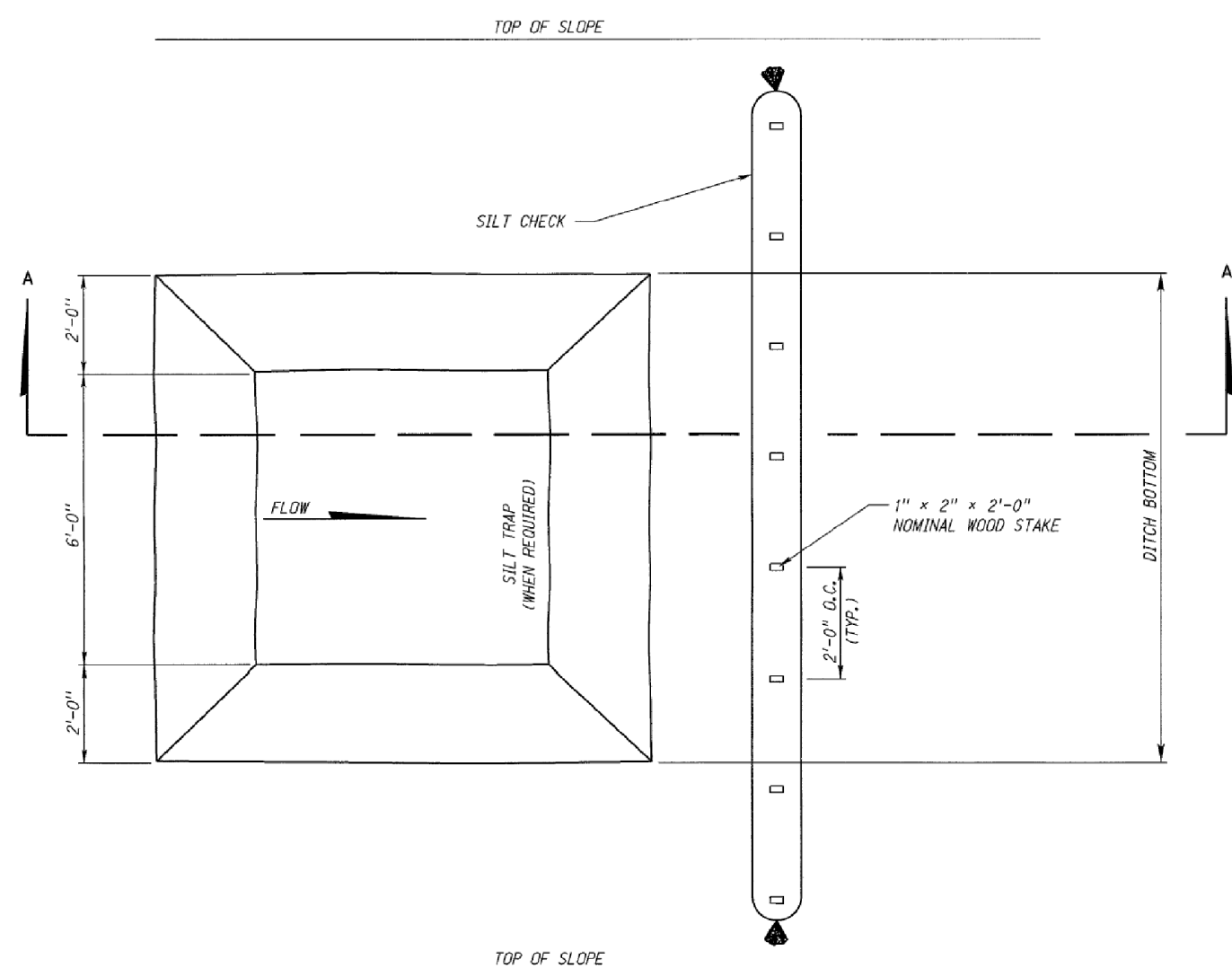
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SHEET 2 OF 4
Date: 03-MAY-2019 07:38
Computer: NDOTDESIGN13

ROADWAY DESIGN DIVISION

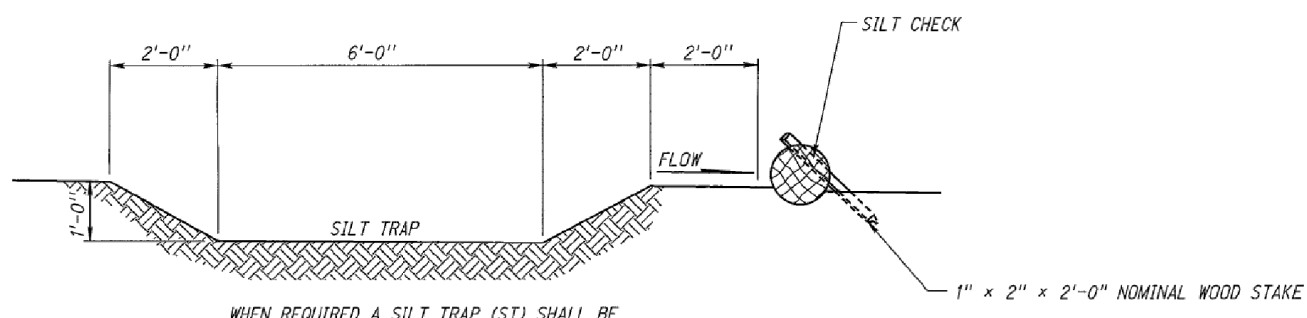
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SHEET 3 OF 4

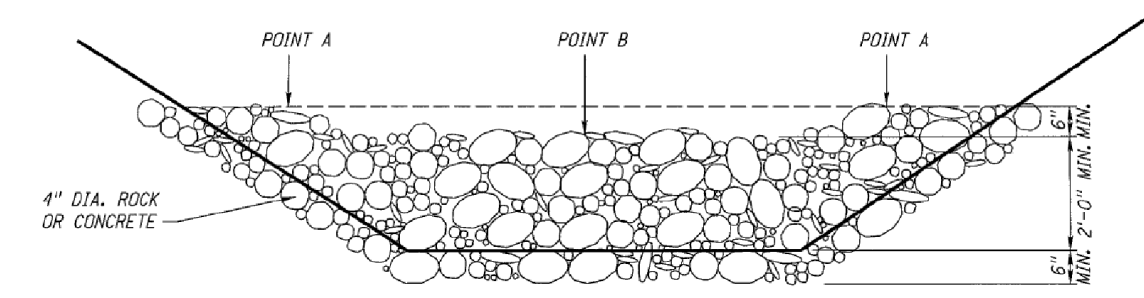


PLAN VIEW
FOR FLAT BOTTOM DITCH

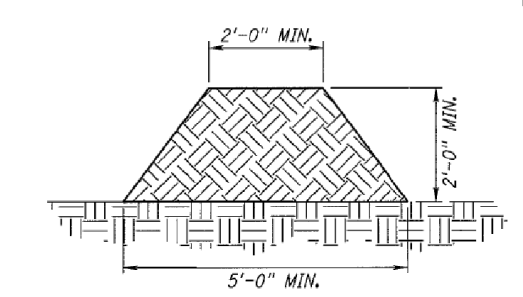


WHEN REQUIRED A SILT TRAP (ST) SHALL BE EXCAVATED TO THE WIDTH OF THE DITCH AND NO DIRECT PAYMENT WILL BE MADE.

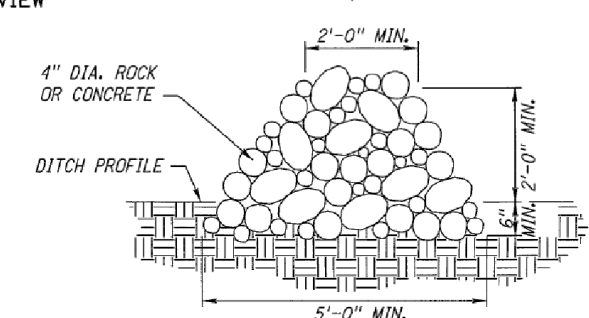
SECTION A-A



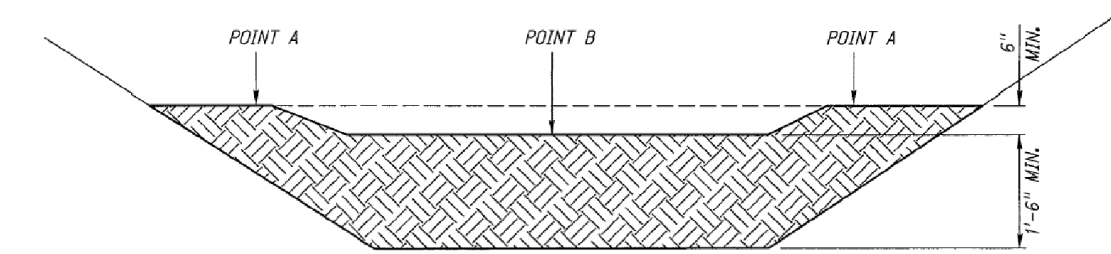
ROCK CHECK
ELEVATION VIEW



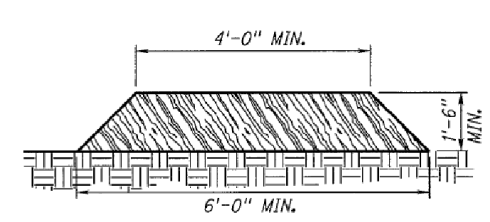
EARTH-SLASH MULCH PERIMETER BERM
CROSS SECTION



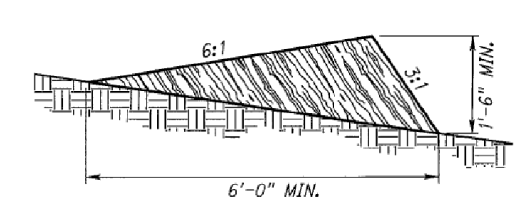
ROCK CHECK
CROSS SECTION



EARTH-SLASH MULCH CHECK
ELEVATION VIEW



CROSS SECTION
SILT CHECK-SLASH MULCH
OPTION A



CROSS SECTION
SILT CHECK-SLASH MULCH
OPTION B

SEE STAKING DETAIL SHEET 1 OF 4

SILT CHECKS ALL TYPES
SHEET 3 OF 4



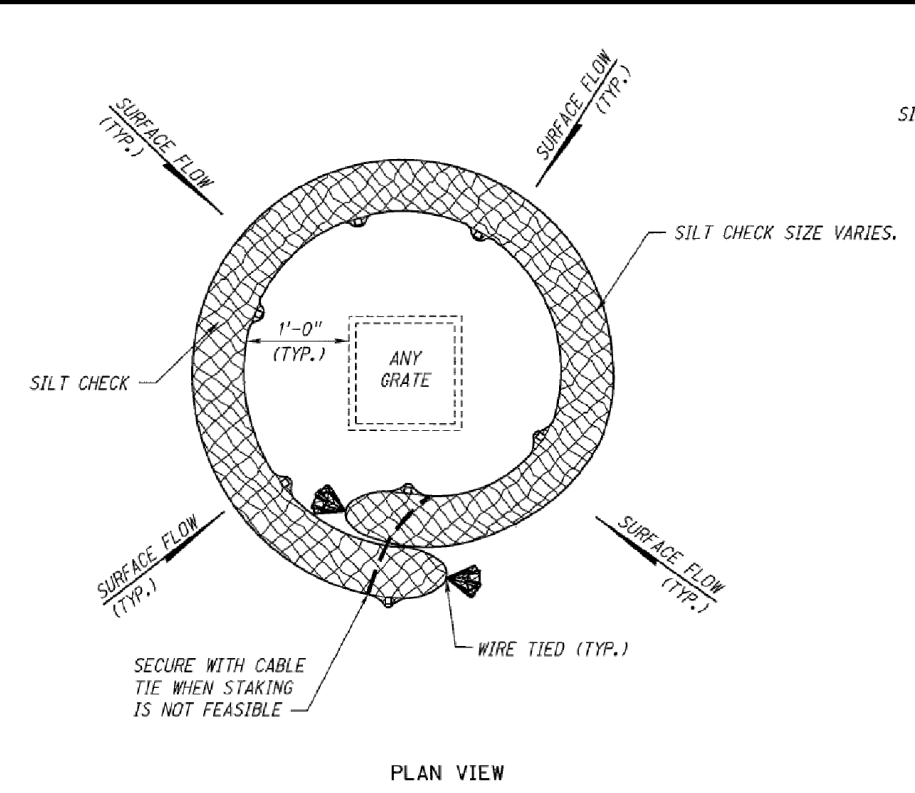
SPECIAL PLAN 2C

ROADWAY DESIGN DIVISION

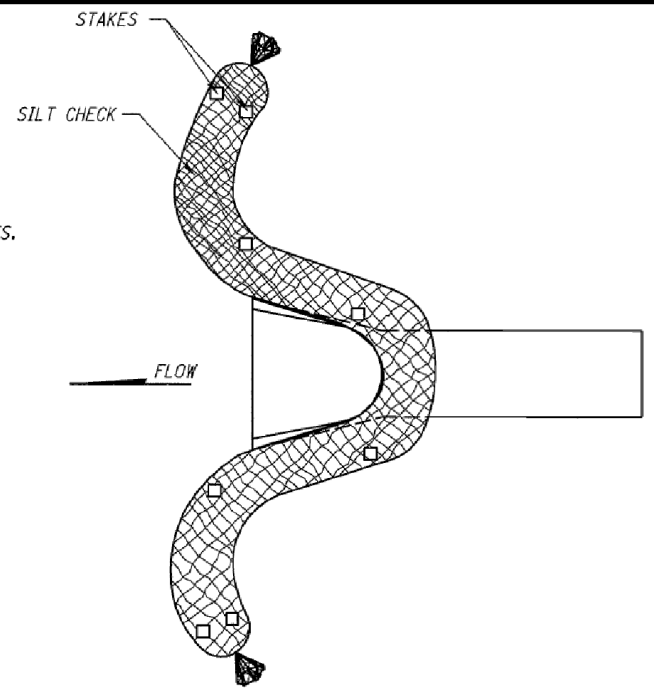
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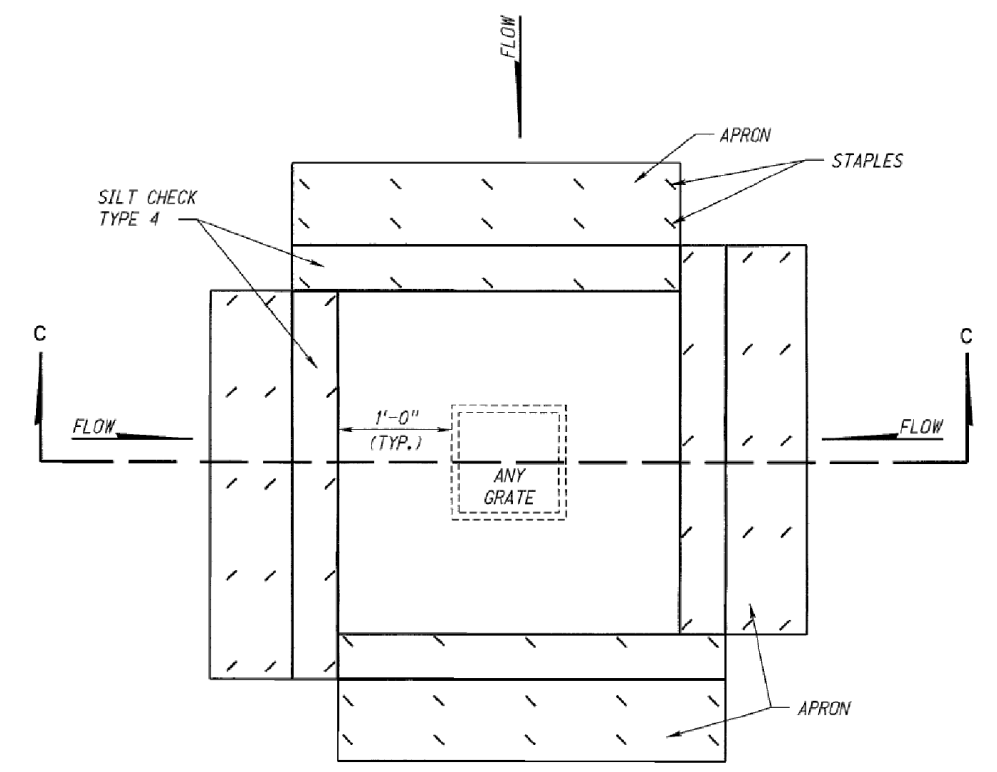
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SHEET 4 OF 4



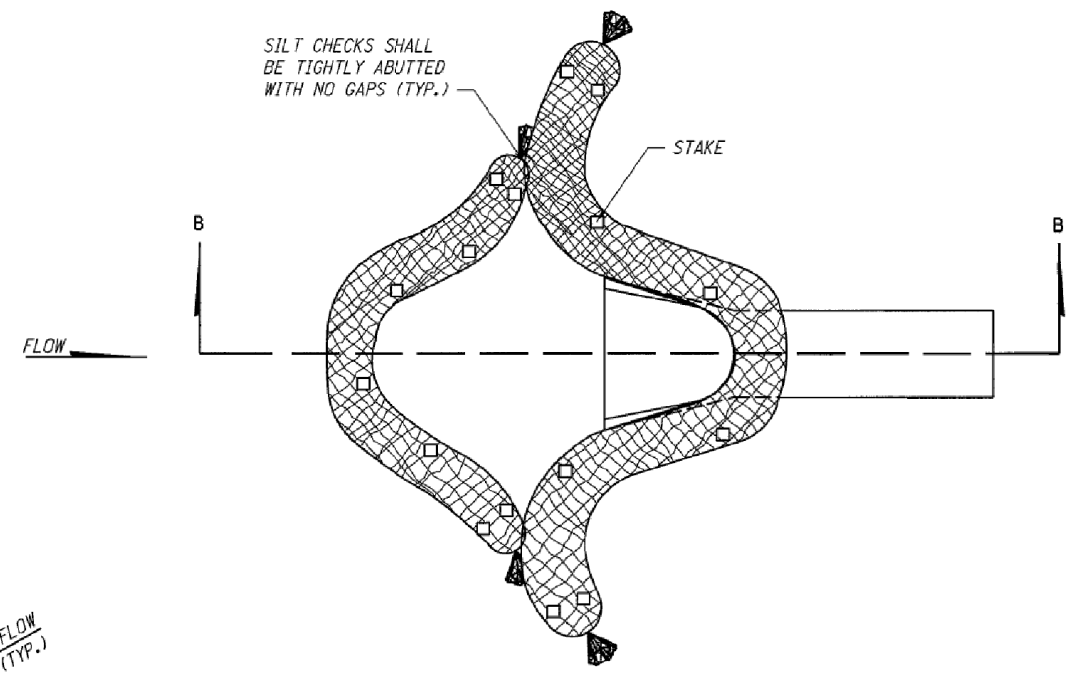
PLAN VIEW



SILT CHECK OUTLET PROTECTION

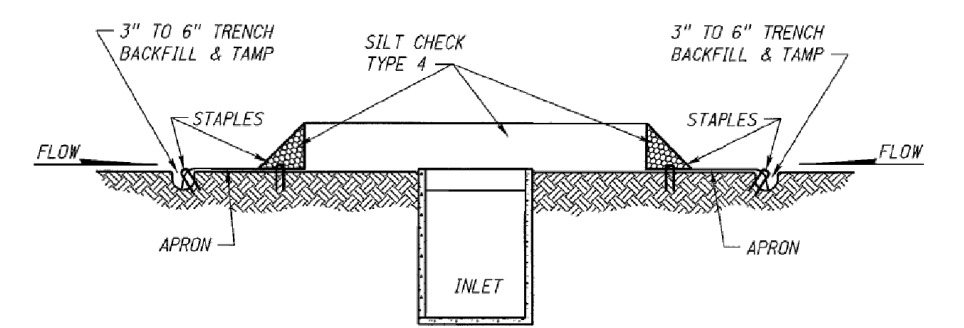


PLAN VIEW

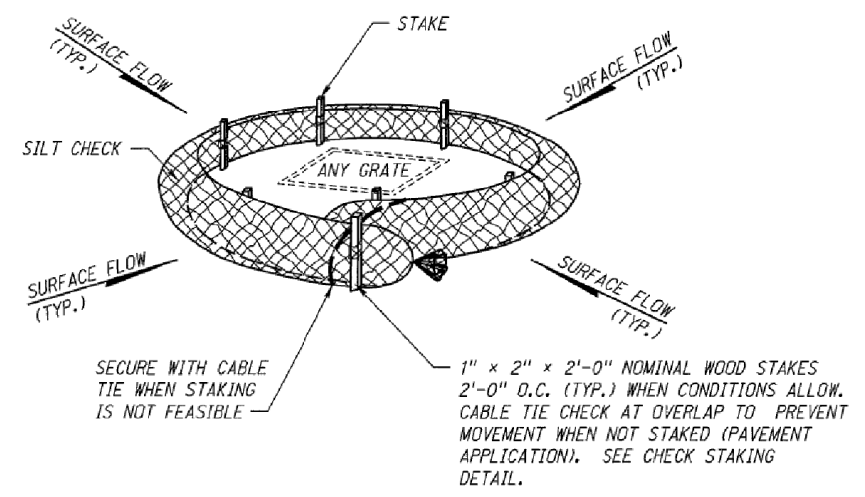


PLAN VIEW

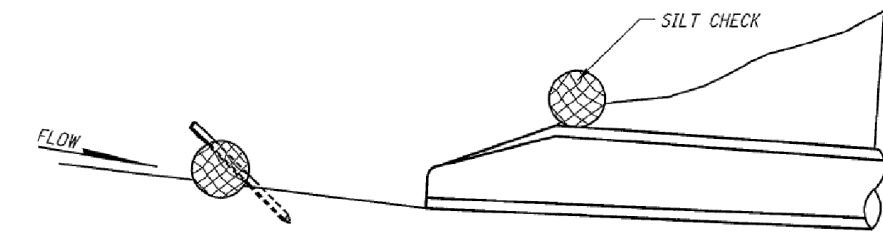
SILT CHECK INLET PROTECTION



SECTION C-C
SILT CHECK TYPE 4
AT INLET



SILT CHECK INLET FILTER
PERSPECTIVE VIEW



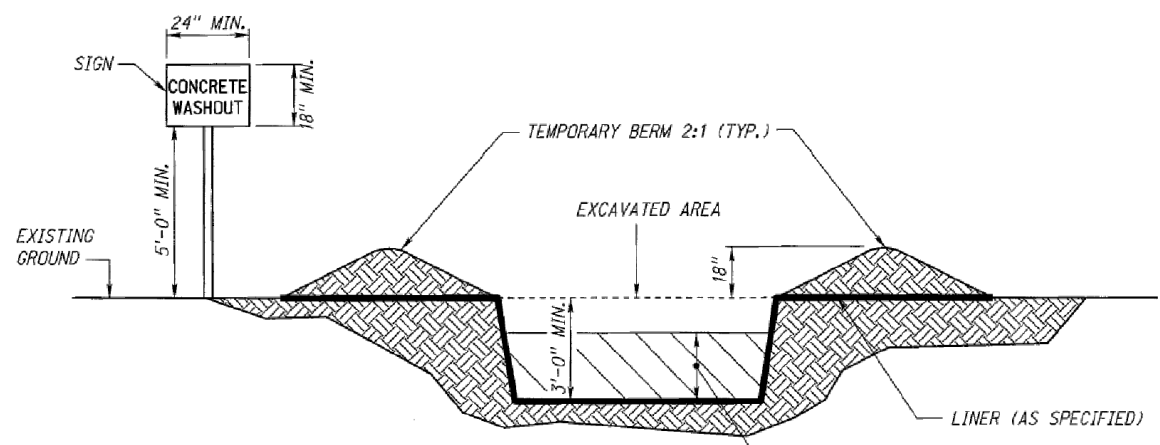
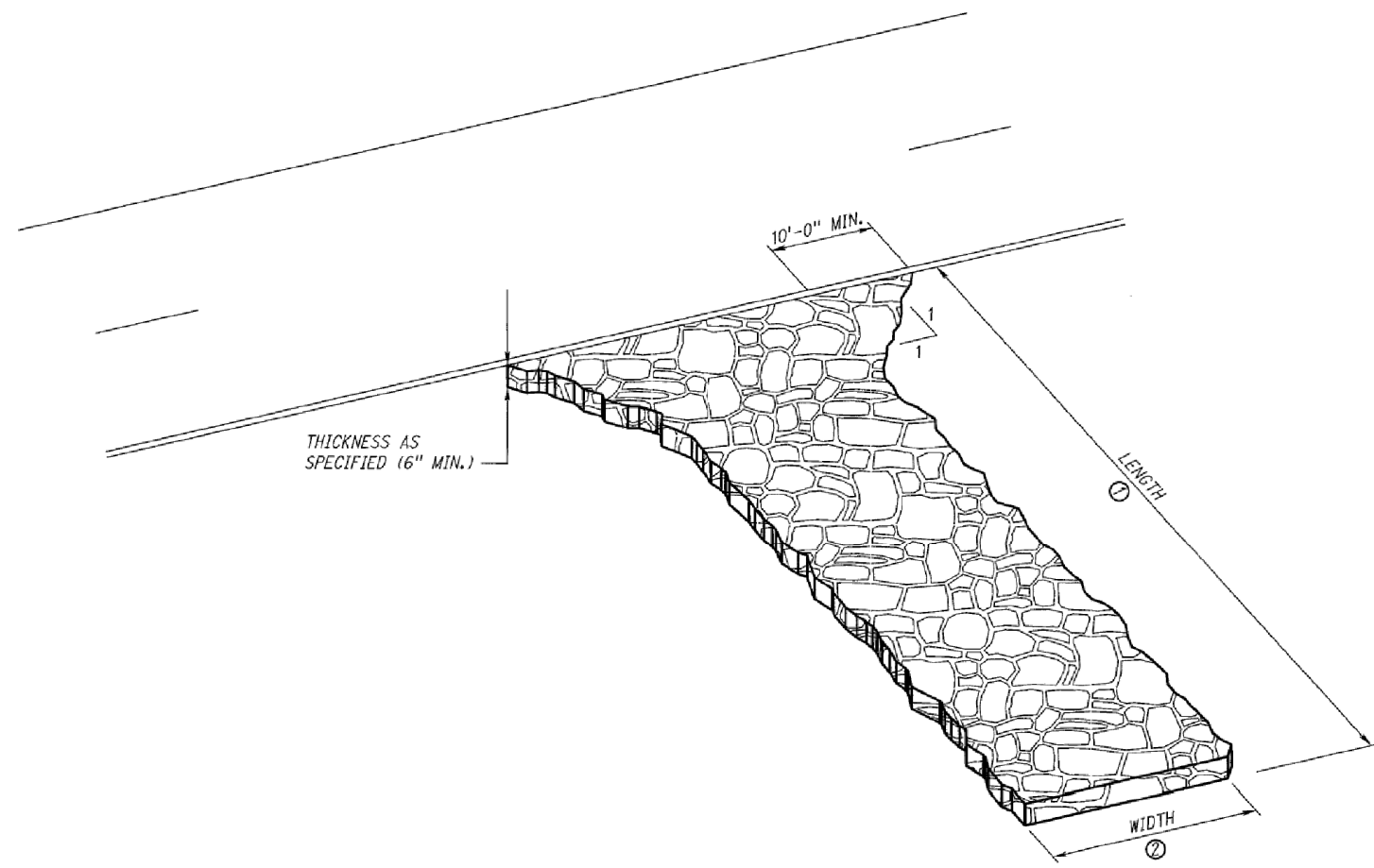
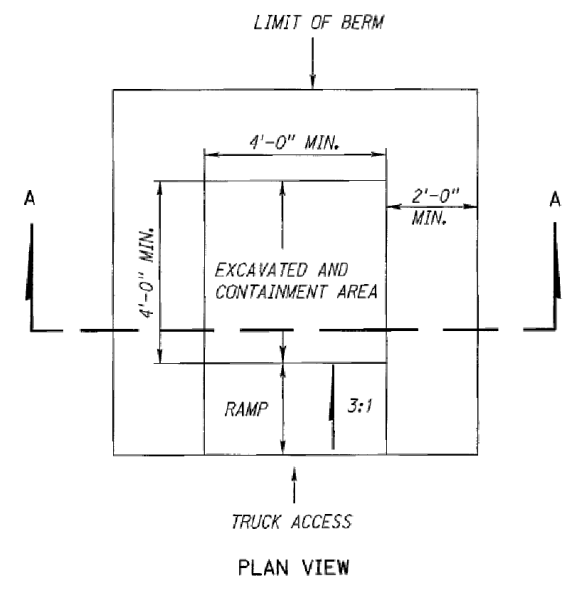
SECTION B-B

SEE STAKING DETAIL SHEET 1 OF 4



SILT CHECKS ALL TYPES
SHEET 4 OF 4
SPECIAL PLAN 2C

ROADWAY DESIGN DIVISION



SECTION A-A

NOTES:
 EROSION BALES MAY BE USED AS AN ALTERNATIVE FOR THE BERM AREA, EXCEPT AT THE OPENING.
 THE CONCRETE WASHOUT SIGN SHALL HAVE LETTERS AT LEAST 3 INCHES HIGH.
 STRUCTURE MUST BE LINED WITH MATERIAL NOTED IN SPECIAL PROVISIONS.

CONCRETE WASHOUT STRUCTURE

NOTES:

- REMOVE VEGETATION AND EXCAVATE SOFT SOILS FROM EXIT AREA. THOROUGHLY COMPACT SUBGRADE PRIOR TO PLACING STONE.
- INSTALL CULVERT UNDER EXIT IF NECESSARY TO MAINTAIN DRAINAGE.
- GRADE EXIT TO PREVENT RUNOFF FROM FLOWING ONTO STREET. DIRECT ALL RUNOFF FROM EXIT TO A SEDIMENT RETENTION DEVICE.
- WHEN SPECIFIED, INSTALL SUBGRADE STABILIZATION FABRIC PRIOR TO PLACING CRUSHED STONE.
- INSTALL LAYER OF CRUSHED STONE TO THE THICKNESS (6 INCH MINIMUM) AND DIMENSIONS SPECIFIED.

- ① EXIT LENGTH: 30 FT. MINIMUM OR AS SPECIFIED. LENGTH OF EXIT MAY BE INCREASED IF SEDIMENT TRACK-OUT OCCURS.
- ② EXIT WIDTH: 20 FT. MINIMUM.

STABILIZED CONSTRUCTION EXIT

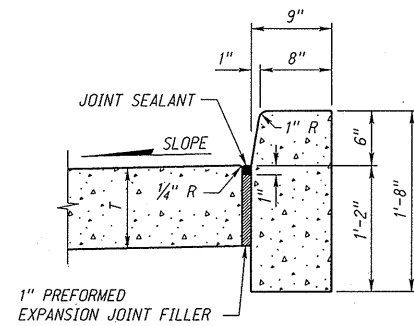
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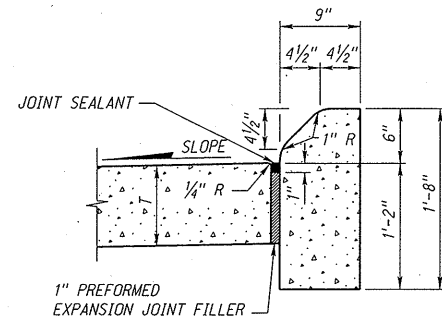


CONCRETE WASHOUT &
 CONSTRUCTION EXIT
 SHEET 1 OF 1
SPECIAL PLAN 3C



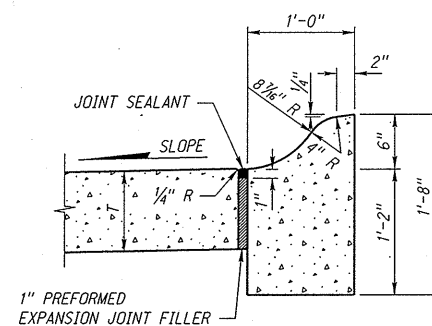
CONCRETE BARRIER CURB *

QUANTITIES
 CONCRETE 4.55 CU. YDS./STA.
 AREA 1.228 SQ. FT.



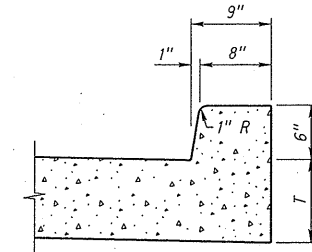
CONCRETE MEDIAN CURB *

QUANTITIES
 CONCRETE 4.42 CU. YDS./STA.
 AREA 1.192 SQ. FT.



CONCRETE CURB, *
 TYPE I

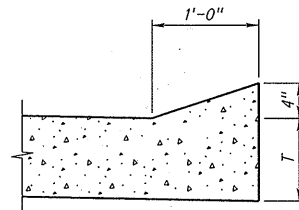
QUANTITIES
 CONCRETE 5.22 CU. YDS./STA.
 AREA 1.408 SQ. FT.



NOTE: MAY BE USED WHEN T IS LESS THAN 1 FOOT.
 INTEGRAL CONCRETE BARRIER CURB

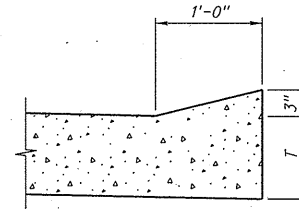
QUANTITIES
 CONCRETE 1.33 CU. YDS./STA.
 AREA 0.359 SQ. FT.

NOTE: *ONE INCH PREFORMED EXPANSION JOINT FILLER SHALL BE PLACED AT INTERVALS OF NOT MORE THAN 100 FEET THRU CONCRETE BARRIER CURB, CONCRETE MEDIAN CURB, AND CONCRETE CURB, TYPE I.



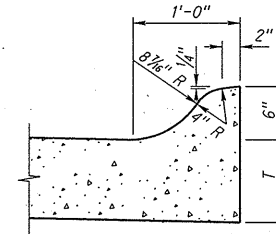
INTEGRAL CONCRETE SLOPING CURB

QUANTITIES
 CONCRETE 0.62 CU. YDS./STA.
 AREA 0.167 SQ. FT.



INTEGRAL CONCRETE SLOPING CURB

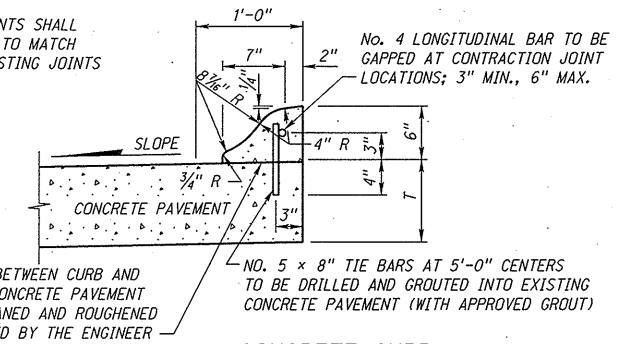
QUANTITIES
 CONCRETE 0.46 CU. YDS./STA.
 AREA 0.123 SQ. FT.



INTEGRAL CONCRETE CURB

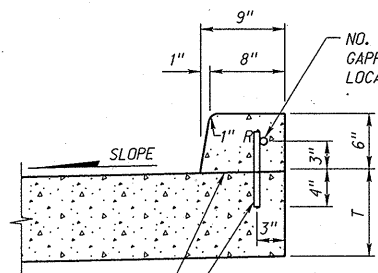
QUANTITIES
 CONCRETE 0.89 CU. YDS./STA.
 AREA 0.239 SQ. FT.

CONTRACTION JOINTS SHALL BE CONSTRUCTED TO MATCH LOCATION OF EXISTING JOINTS



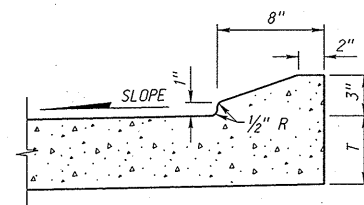
CONCRETE CURB, *
 TYPE II

QUANTITIES
 CONCRETE 0.87 CU. YDS./STA.
 AREA 0.234 SQ. FT.



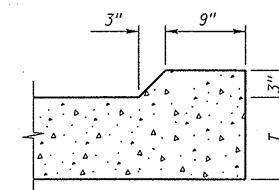
CONCRETE BARRIER CURB ALTERNATE

QUANTITIES
 CONCRETE 1.33 CU. YDS./STA.
 AREA 0.359 SQ. FT.



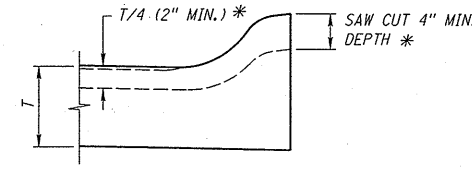
INTEGRAL CONCRETE TRUCK APRON CURB

QUANTITIES
 CONCRETE 0.47 CU. YDS./STA.
 AREA 0.127 SQ. FT.



EROSION CONTROL CURB

QUANTITIES
 CONCRETE 0.81 CU. YDS./STA.
 AREA 0.219 SQ. FT.



CONTRACTION JOINT THRU CURB

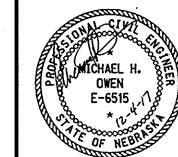
* FOR NON-INTEGRAL CURB THE CONTRACTION JOINTS MAY BE MADE WITH A DOUBLE EDGER WHILE THE CONCRETE IS STILL PLASTIC.

NOTE: T = PAVEMENT THICKNESS

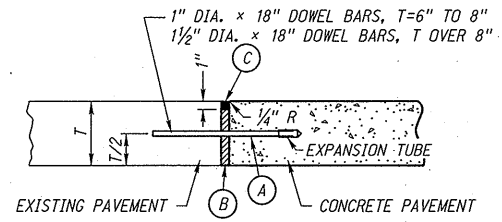
REV. NO.	DATE	DESCRIPTION OF REVISION
R12	JAN 18	NDOR BORDER TO NDOT BORDER
R11	JUL 15	ADDED TRUCK APRON CURB
R10	FEB 09	MULTIPLE REVISIONS

NEBRASKA DEPARTMENT OF TRANSPORTATION
 STANDARD PLAN NO. 301-R12
PAVEMENT DETAILS

ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:



DATE: 12/16/2017
 ORIGINAL: JANUARY 31, 1974
 DATE

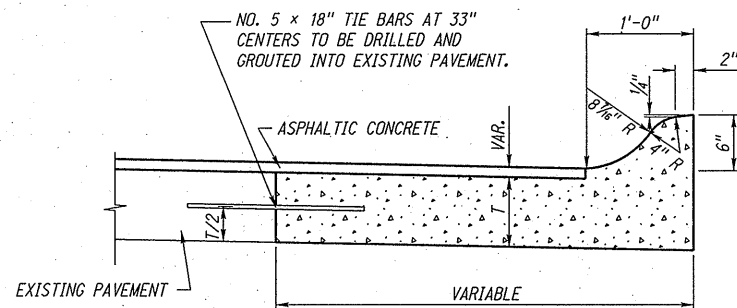


- (A) GREASE DOWEL BAR ON EXPANSION TUB SIDE
- (B) 1" PREFORMED EXPANSION JOINT FILLER
- (C) JOINT SEALANT

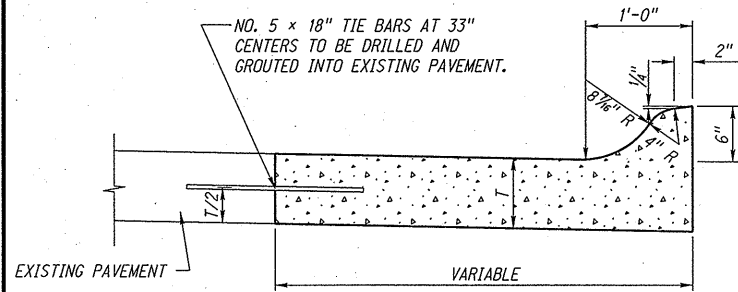
NOTES:

DOWEL BARS SHALL BE DRILLED TO A DEPTH OF 8" INTO EXISTING PAVEMENT AND GROUTED.
 DOWEL BARS SHALL BE PLACED AT 1 FOOT CENTERS. THE OUTSIDE DOWEL BAR SHALL BE PLACED 6" FROM THE EDGE OF THE PAVEMENT.
 THIS JOINT SHALL BE CONSTRUCTED TRANSVERSE TO THE ROADWAY WHERE THE NEW CONCRETE ABUTS THE EXISTING CONCRETE.
 DOWEL BARS SHALL BE PLACED PARALLEL TO THE ROADWAY \bar{C} AND TO THE ROAD BED.

EXPANSION JOINT (SUBSIDIARY)

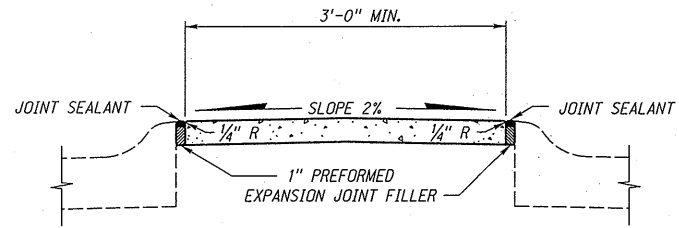


CONCRETE BASE COURSE W/INTEGRAL CURB



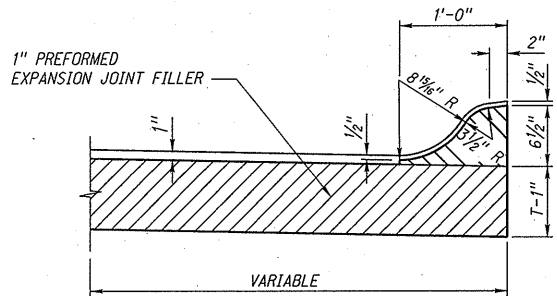
THE FOLLOWING NOTE IS TYPICAL FOR CONCRETE BASE COURSE WITH INTEGRAL CURB AND CONCRETE PAVEMENT WIDENING: CONTRACTION AND EXPANSION JOINTS SHALL BE CONSTRUCTED TO MATCH LOCATIONS OF EXISTING JOINTS.

CONCRETE PAVEMENT WIDENING



CONCRETE MEDIAN SURFACING

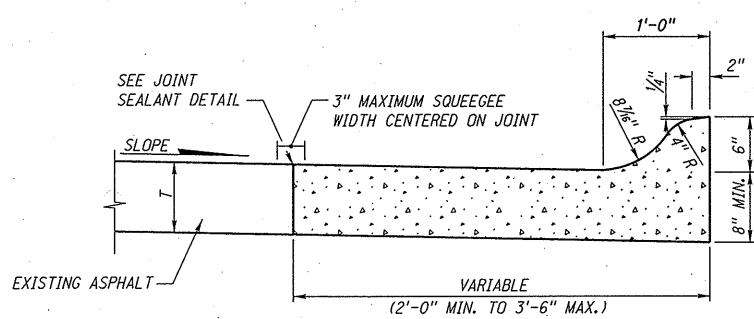
ONE INCH PREFORMED EXPANSION JOINT FILLER SHALL BE PLACED ACROSS THE FULL WIDTH OF THE MEDIAN SURFACING AT INTERVALS OF NOT MORE THAN 49 FEET.
 LONGITUDINAL JOINTS ONE INCH DEEP SHALL BE MADE IN ALL MEDIANS WHEN SURFACING WIDTH IS 16 FEET OR GREATER.
 TRANSVERSE JOINTS ONE INCH DEEP SHALL BE MADE IN ALL MEDIANS AT INTERVALS OF NOT MORE THAN 8 FEET.
 TRANSVERSE AND LONGITUDINAL JOINTS SHALL NOT BE FILLED.



ONE INCH PREFORMED EXPANSION JOINT FILLER SHALL BE PLACED AT INTERSECTION RETURNS AND WHERE SHOWN ON THE PLANS. TRANSVERSE JOINTS SHALL BE PLACED EVERY 8 FEET OR WHERE SHOWN ON THE PLANS.

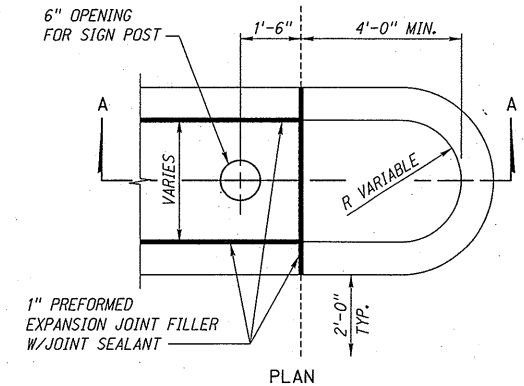
NOTE: RECESS THE EXPANSION JOINT FILLER 1/2" FROM THE TOP SURFACE OF THE CURB UNDER CONSTRUCTION

DETAIL FOR CUTTING & PLACEMENT OF EXPANSION JOINT FILLER

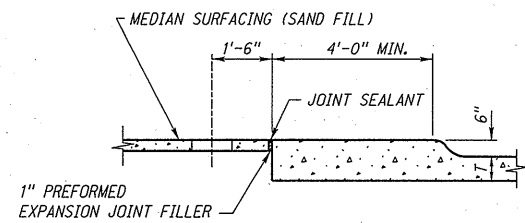


COMBINATION CONCRETE CURB & GUTTER

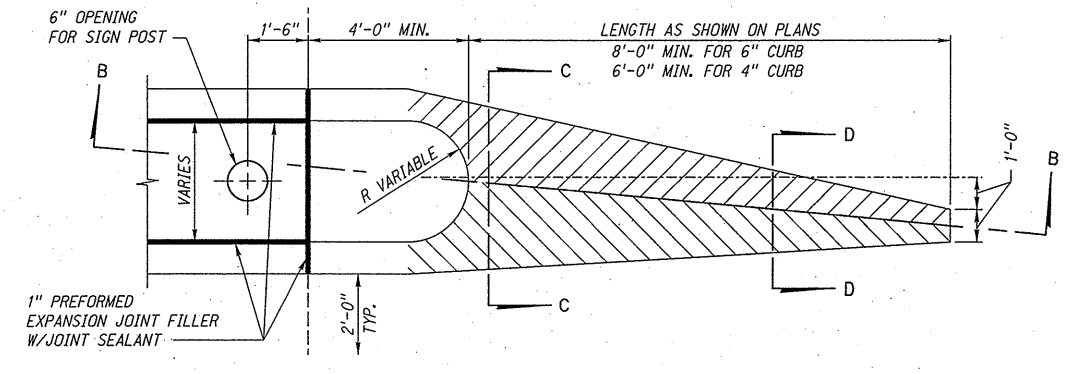
NOTE: TRANSVERSE JOINTS SHALL BE PLACED EVERY 8 FEET AND JOINTS SHALL BE PLACED AT EACH HEADER, 2-NO. 5 x 18" TIE BARS ARE TO BE USED.
 PLACE 1" PREFORMED EXPANSION JOINT FILLER AND SEAL AT THE RETURN OF RADIUS AT INTERSECTIONS.



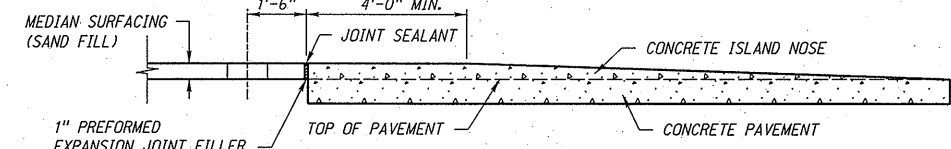
END OF MEDIAN ISLAND



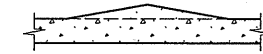
SECTION A-A



PLAN



SECTION B-B



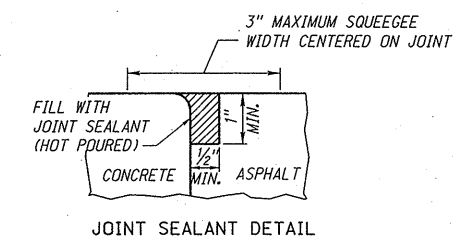
SECTION C-C



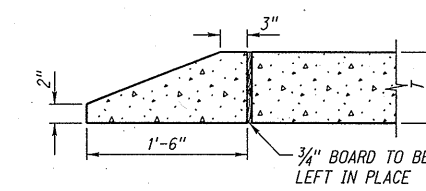
SECTION D-D

CONCRETE ISLAND NOSE

NOTE: EXISTING CONCRETE PAVEMENT IS TO BE REMOVED TO BUILD CONCRETE ISLAND NOSE.



JOINT SEALANT DETAIL



CONCRETE HEADER

NOTE: T = PAVEMENT THICKNESS

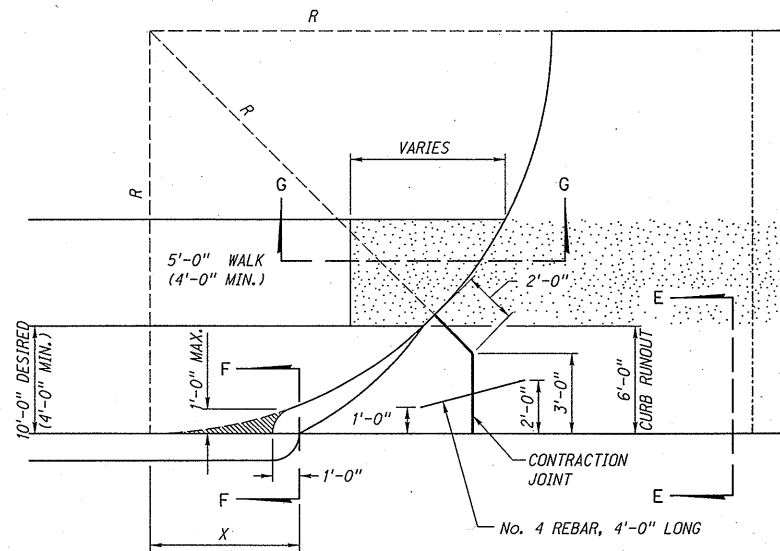
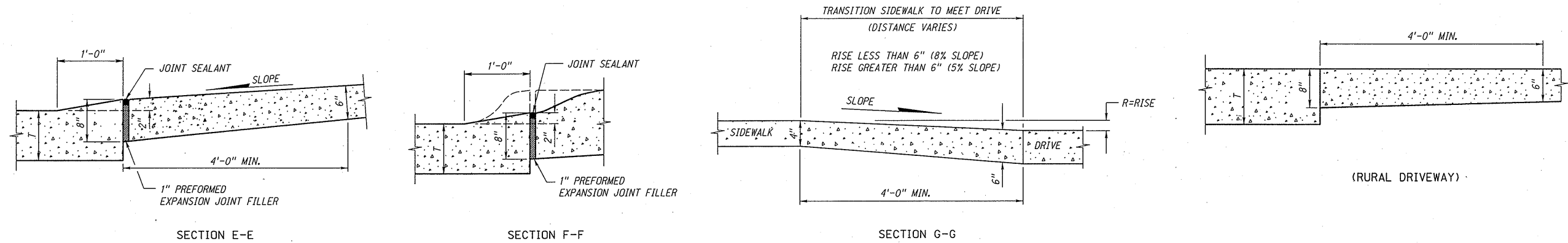
R12	JAN 18	NDOR BORDER TO NDOT BORDER
R11	JUL 15	ADDED TRUCK APRON CURB
R10	FEB 09	MULTIPLE REVISIONS
REV. NO.	DATE	DESCRIPTION OF REVISION

NEBRASKA DEPARTMENT OF TRANSPORTATION
 STANDARD PLAN NO. 301-R12
PAVEMENT DETAILS

ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:
 MARY BURROUGHS
 12/16/2017
 DATE

MICHAEL H. OWEN
 E-6515
 STATE OF NEBRASKA

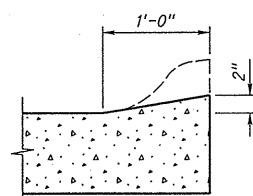
ORIGINAL: JANUARY 31, 1974
 DATE



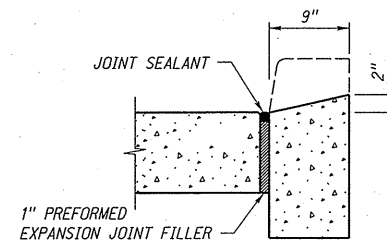
URBAN DRIVEWAY PLAN

R	X
10'-0"	4.6'
15'-0"	5.6'
20'-0"	6.0'
25'-0"	7.0'
30'-0"	8.0'
35'-0"	8.6'
40'-0"	9.0'

R = RADIUS
X = $\sqrt{(2R-1)}$
(X & R IN FEET)

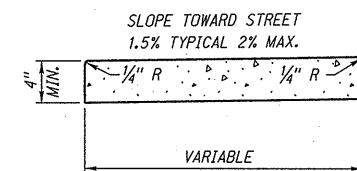


INTEGRAL CURB

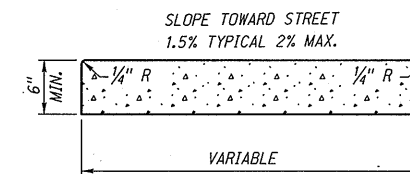


BARRIER CURB

DETAILS OF CURB DROPS



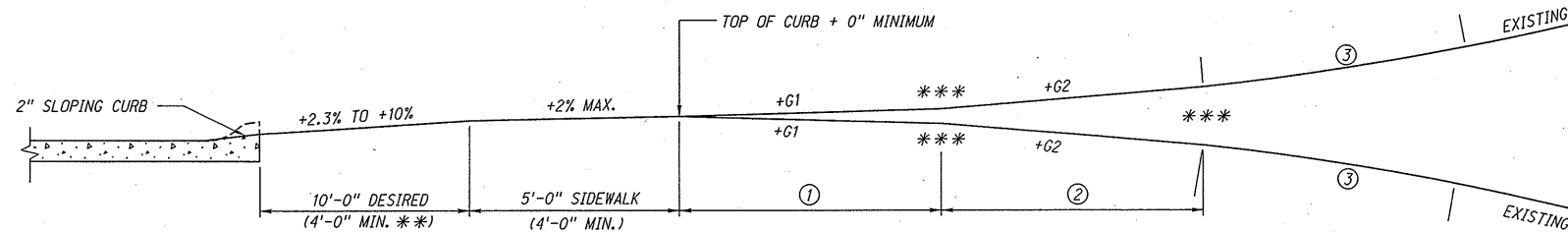
SIDEWALK



SIDEWALK AT DRIVEWAY

NOTE:

1 INCH PREFORMED EXPANSION JOINT FILLER SHALL BE PLACED IN ALL SIDEWALKS OR CROSSWALKS AT INTERVALS OF NOT MORE THAN 50 FOOT, AND AT ALL POINTS WHERE SIDEWALKS OR CROSSWALKS ARE ADJACENT TO CURB. IF SIDEWALK OR CROSSWALK TO BE CONSTRUCTED IS LESS THAN 50 FOOT IN LENGTH, ONE SUCH EXPANSION JOINT SHALL BE PLACED AS DIRECTED BY THE ENGINEER.



PROFILE URBAN DRIVEWAY WITH SIDEWALK (MAXIMUM PERCENT OF GRADE)

DRIVEWAY TYPE	G1 (MAX.)	G2 (MAX.)
COMMERCIAL, INDUSTRIAL	±5%	±8%
DWELLINGS (RESIDENTIAL)	±8%	±15%

- ① 10'-0" MINIMUM IS REQUIRED WHEN THE EXISTING GRADE IS GREATER THAN ±8%
- ② 10'-0" MINIMUM IS REQUIRED WHEN THE EXISTING GRADE IS GREATER THAN ±15%
- ③ 10'-0" MINIMUM ROUNDING IS REQUIRED WHEN THE EXISTING GRADE IS GREATER THAN ±22%

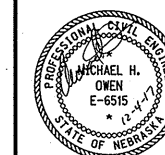
*** 0 FEET IS ALLOWED IN URBAN BUSINESS DISTRICTS WITH SIDEWALKS OF 6 FEET MINIMUM WIDTH.
*** 10 FEET MINIMUM ROUNDING DESIRABLE FOR THE FOLLOWING GRADE CHANGES.

NOTE: T = PAVEMENT THICKNESS

REV. NO.	DATE	DESCRIPTION OF REVISION
R12	JAN 18	NDOR BORDER TO NDOT BORDER
R11	JUL 15	ADDED TRUCK APRON CURB
R10	FEB 09	MULTIPLE REVISIONS

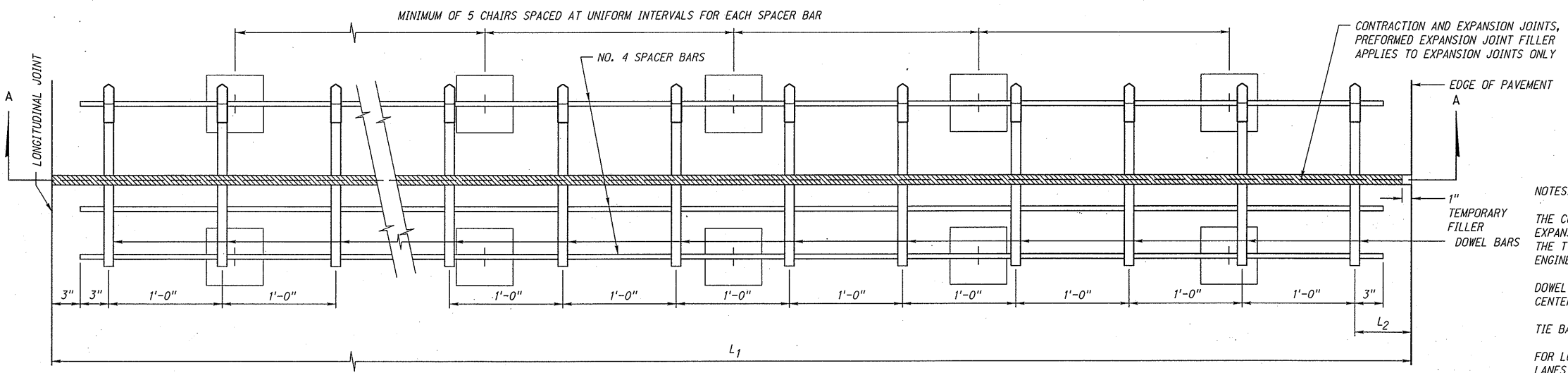
NEBRASKA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NO. 301-R12
PAVEMENT DETAILS

ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:



MARK BURROUGHS
12/6/2017
DATE

ORIGINAL:
JANUARY 31, 1974
DATE



NOTES:

THE CONTRACTOR MAY SUBSTITUTE OTHER DESIGNS FOR EXPANSION AND CONTRACTION JOINT SUPPORTS IN LIEU OF THE TYPE SHOWN WITH PRIOR WRITTEN APPROVAL BY THE ENGINEER.

DOWEL BARS SHALL BE A MINIMUM OF 17 3/4" IN LENGTH, CENTERED ON JOINTS AND BE SMOOTH BARS.

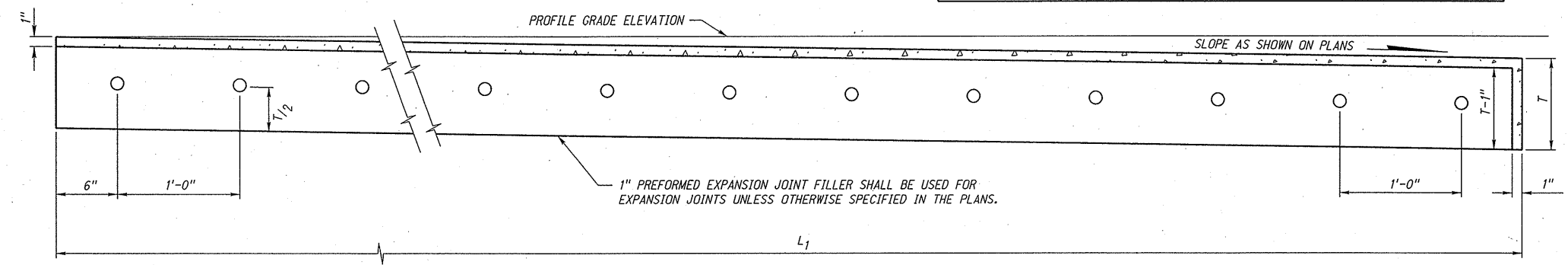
TIE BARS SHALL BE DEFORMED BARS.

FOR LOAD TRANSFER DEVICES AT EXPANSION JOINTS IN LANES OTHER THAN THE LANES SHOWN, MAINTAIN THE SPACING OF THE 1'-6" DOWEL BARS AT 1'-0" INTERVALS.

DOWEL BAR HEIGHT AND DIAMETER			
PAVEMENT THICKNESS (T)	MINIMUM BAR DIA.	DOWEL BAR HEIGHT (T/2)	SKEW TOLERANCE
LESS THAN 10"	1 1/4"	T/2 ± 1/2"	1/4"
10" OR MORE	1 1/2"	T/2 ± 1/2"	1/4"

ASSEMBLY PLAN

DOWEL BAR LOCATION TABLE			
L ₁	L ₂	#BARS	DESCRIPTION
* LESS THAN 12'-0"	6"	VARIES	IRREGULAR AREAS (WIDEN, FILLETS, GORE....)
12'-0"	6"	12	12'-0" PAVEMENT
14'-0"	2'-6"	12	14'-0" PAVEMENT
15'-0"	2'-6"	13	15'-0" PAVEMENT (INCLUDES 3'-0" SHOULDER)
16'-0"	3'-6"	13	16'-0" PAVEMENT (INCLUDES 4'-0" SHOULDER)
16'-0"	6"	16	16'-0" RAMP & LOOPS
LESS THAN 14'-6"	1'-6"	VARIES	PAVEMENT WITH CURB
14'-6" OR MORE	2'-6"	VARIES	



THE ENDS OF THE NO. 4 SPACER BARS SHALL NOT BE LESS THAN 3" FROM THE EDGES OF THE PAVEMENT OR THE LONGITUDINAL JOINT.

THE CONTRACTOR MAY USE A MACHINE FOR PLACING THE LONGITUDINAL TIE BARS IN LIEU OF THE TIE BAR PINS. IF A MECHANICAL TIE BAR PLACEMENT MACHINE IS NOT USED, TIE BAR PINS AS SHOWN SHALL BE USED.

TIE, DOWEL & SPACER BARS SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS.

KEY TYPE LONGITUDINAL JOINTS AND TRANSVERSE CONSTRUCTION JOINTS SHALL BE EDGED WITH 1/4" R. AT TIME OF CONCRETE PLACEMENT.

CONCRETE PAVEMENT SHALL BE TINED UNLESS OTHERWISE SHOWN IN THE PLANS.

EXPANSION JOINTS SHALL BE INSTALLED AT LOCATIONS SHOWN IN THE PLANS.

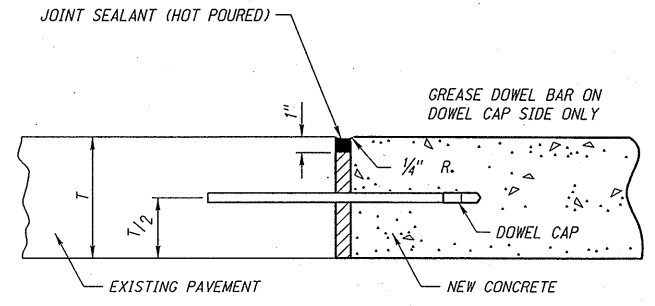
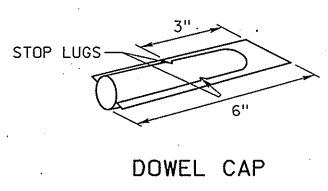
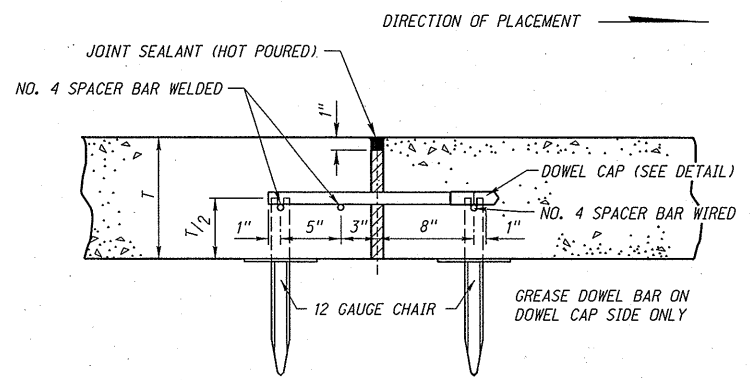
PAVEMENT PLACED ADJACENT TO R.R. TRACKS REQUIRES 3'-EXPANSION JOINTS SPACED AT APPROXIMATELY 49'-6" INTERVALS.

EXPANSION JOINTS SHALL NOT BE SKEWED.

T = PAVEMENT THICKNESS

* THE DEPARTMENT REQUIRES THAT DOWEL BASKETS BE PLACED IN ALL CONTRACTION JOINTS WHICH ARE 6'-0" OR WIDER. THE DOWEL BASKETS SHALL BE PLACED TRANSVERSE TO THE DIRECTION OF THE PREDOMINANT TRAFFIC DIRECTION.

SECTION A-A
CONSTRUCTION AND EXPANSION JOINTS (PREFORMED EXPANSION JOINTS FILLER APPLIES TO EXPANSION JOINTS ONLY)



NOTES:
DOWEL BARS SHALL BE DRILLED TO A DEPTH OF 8" INTO EXISTING PAVEMENT AND GROUTED.


EXPANSION JOINT (SUBSIDIARY)

REV. NO.	DATE	DESCRIPTION OF REVISION
R10	JAN 18	CHANGED DOWEL BAR LOCATION TABLE
R9	JUL 11	JOINT: EARLY SAW CUT
R8	OCT 10	CHANGED TINDING INFORMATION

NEBRASKA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NO. 329-R10

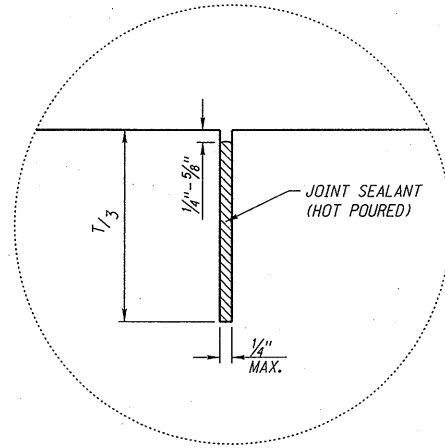
8 TO 16 INCH CONCRETE PAVEMENT

ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:

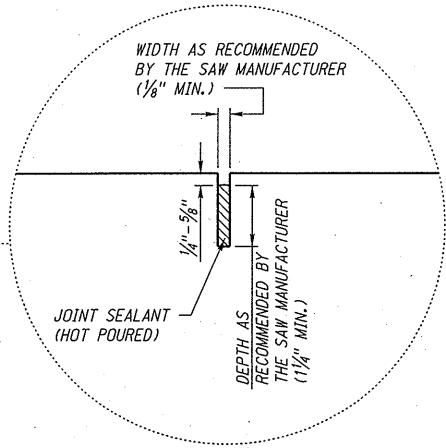

 MARY BURROUGHS
 12/6/2017
 DATE

ORIGINAL:
 OCTOBER 25, 1994
 DATE

1
4



CONVENTIONAL SAWING

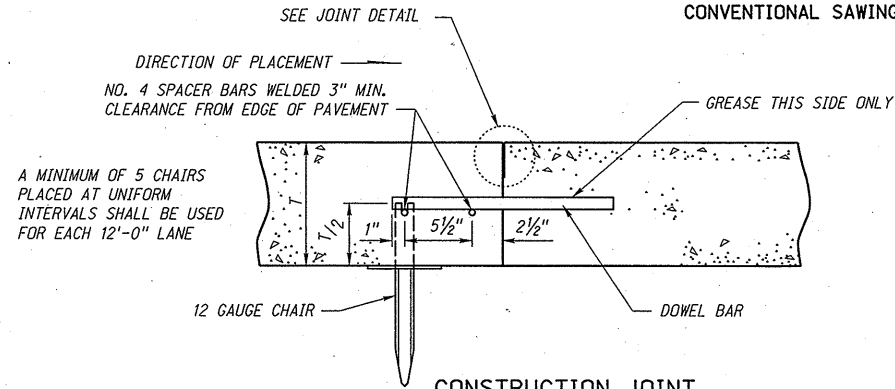


EARLY-SAW CUT

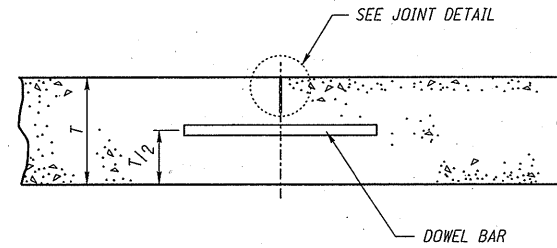
OR

JOINT DETAIL

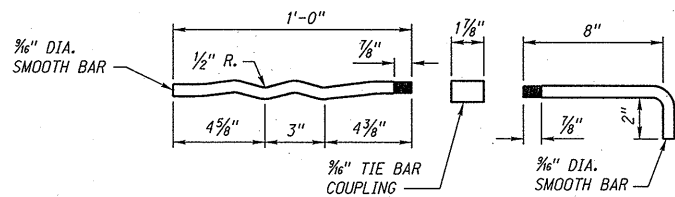
THE DOWEL BAR SPACING SHALL BE THE SAME AS SHOWN FOR THE EXPANSION JOINT. REFER TO DOWEL BAR LOCATION TABLE AND THE DOWEL BAR HEIGHT AND DIAMETER TABLE ON SHEET 1 OF 4.



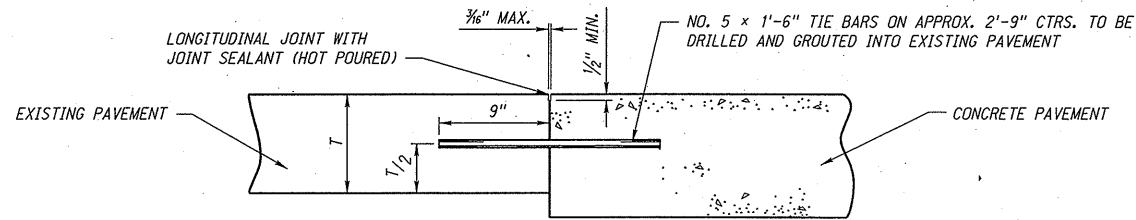
CONSTRUCTION JOINT
(BARS ARE SUBSIDIARY) TO PAVEMENT



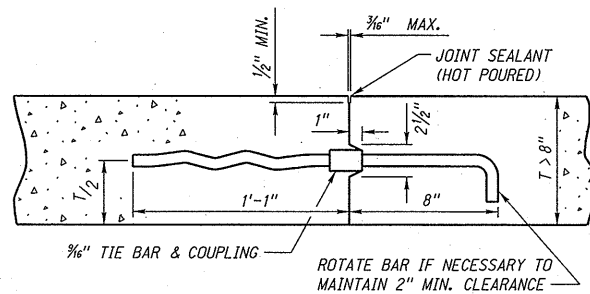
CONTRACTION JOINT



DETAILS OF "W" BAR

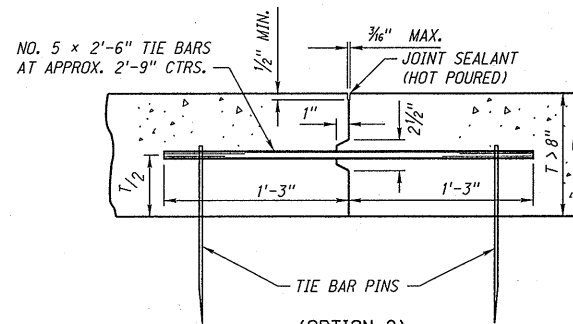


DETAILS OF TIE BAR



(OPTION 1)
KEY TYPE

NO. 5 HOOK AND W-BARS AT APPROX. 2'-9" CTRS.
OR 3/8" HOOK AND W-BARS AT APPROX. 2'-9" CTRS.

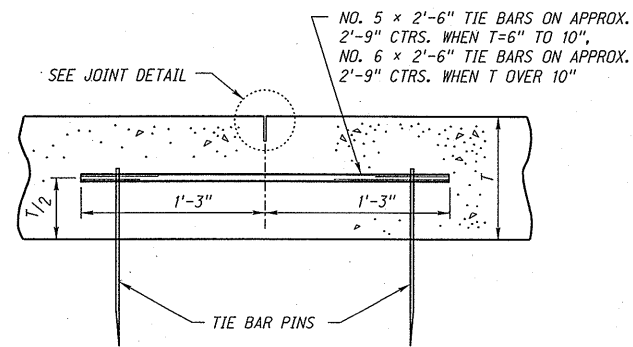


(OPTION 2)
KEY TYPE

KEY TYPE JOINT SHALL BE USED ON ALL LONGITUDINAL CONSTRUCTION JOINTS WHEN THE ADJACENT LANE IS NOT PLACED AT THE SAME TIME

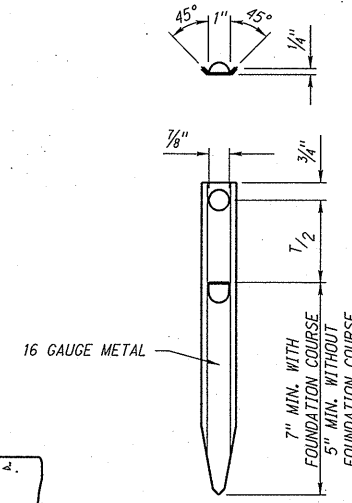
NOTE:
NO TIE BARS SHALL BE CLOSER THAN 1'-3" TO A TRANSVERSE JOINT. ALL LONGITUDINAL JOINTS BETWEEN LANES AND BETWEEN LANES AND SHOULDERS MUST BE TIED. MEDIAN SHOULD NOT BE TIED.

LONGITUDINAL JOINTS

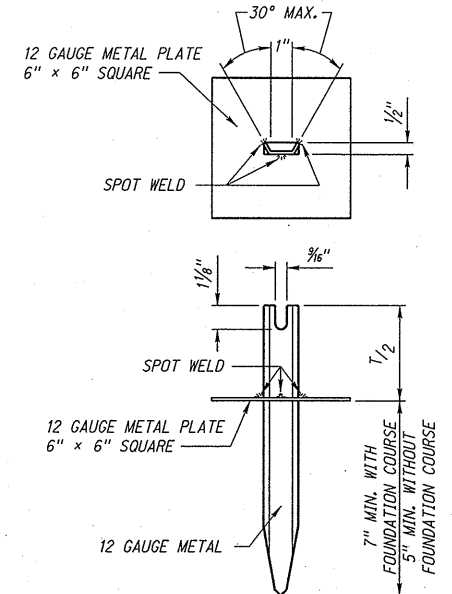


SAWED

WHEN TWO ADJACENT LANES ARE PLACED AT THE SAME TIME, THE LONGITUDINAL JOINT COMMON TO THE LANES SHALL BE SAWED



TIE BAR PIN



CHAIR

NOTE: T = PAVEMENT THICKNESS

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R9	JUL 11	JOINT: EARLY SAW CUT
R8	OCT 10	CHANGED TYPING INFORMATION

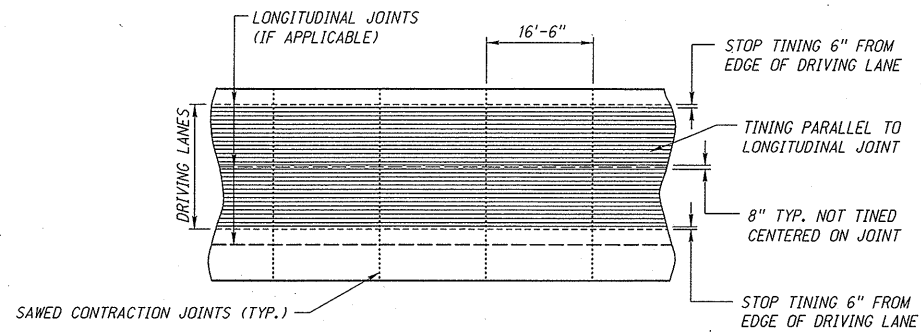
NEBRASKA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NO. 329-R10
8 TO 16 INCH
CONCRETE PAVEMENT

ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:

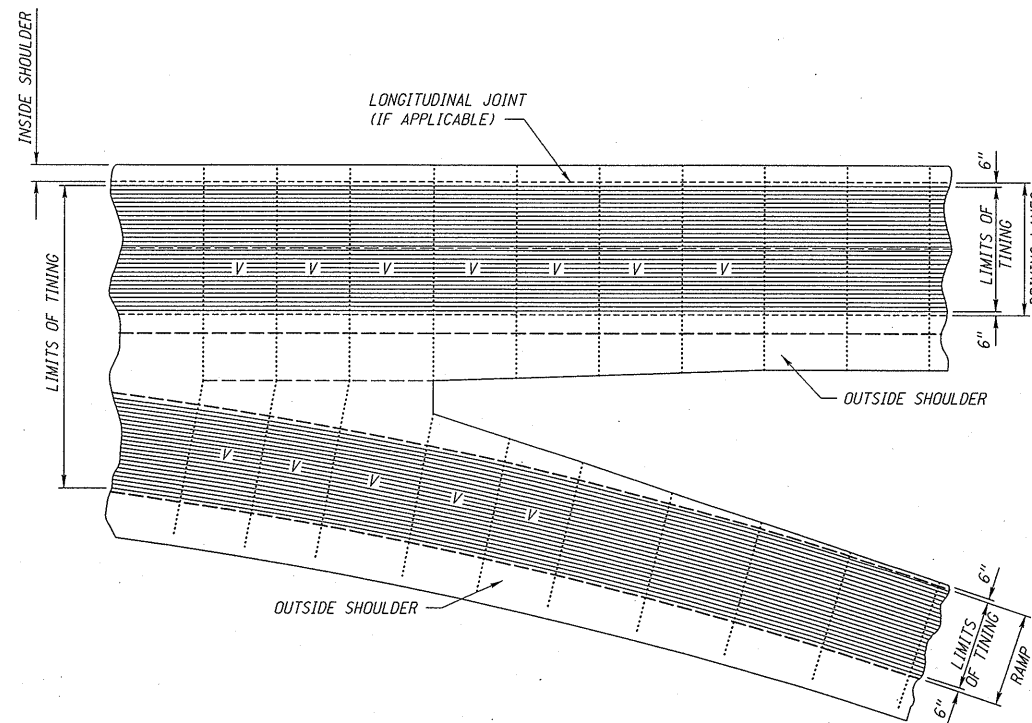


MARY BARROUGHS
DATE 12/17/2017

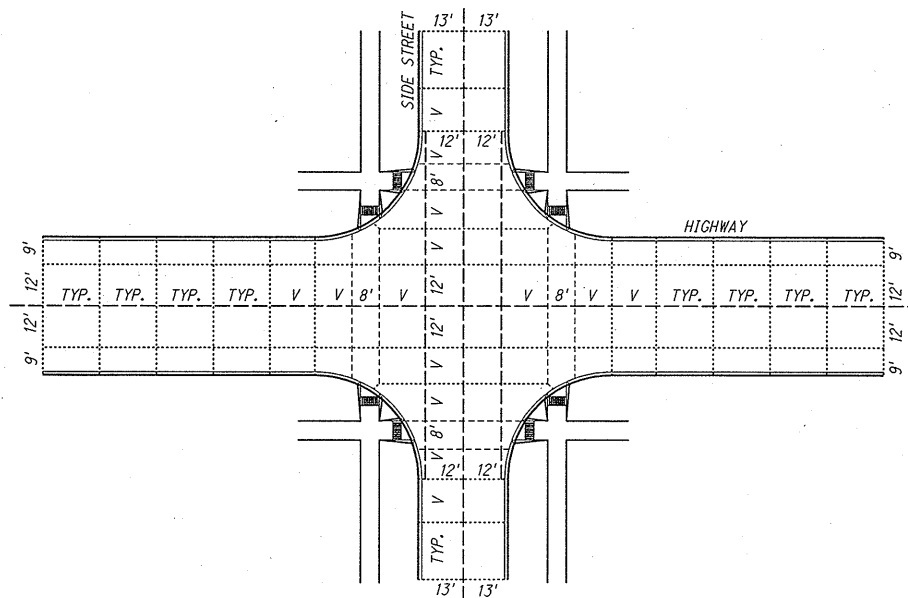
ORIGINAL:
OCTOBER 25, 1994
DATE



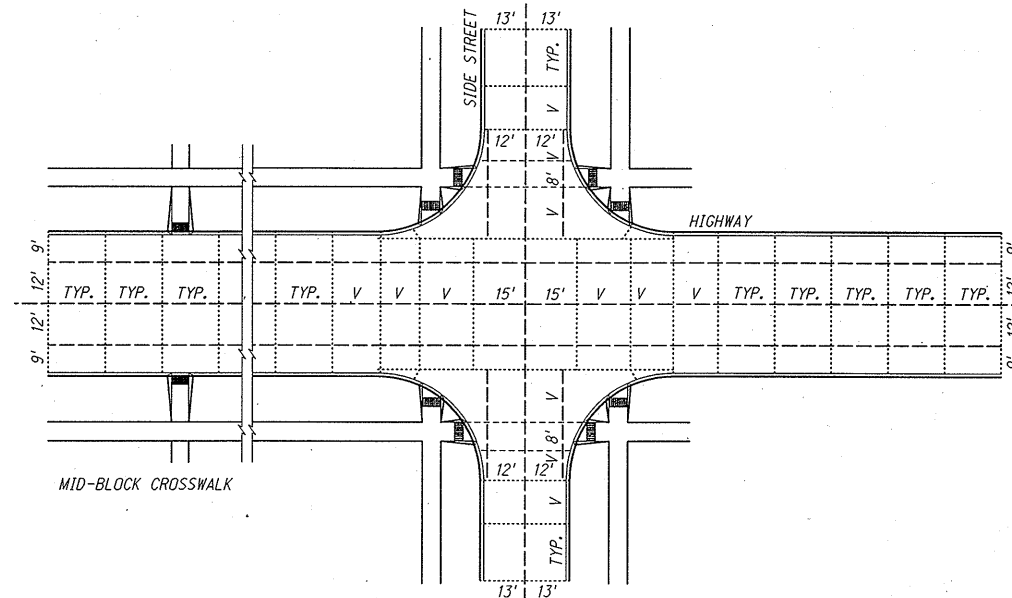
TINING WITH CONCRETE SHOULDER



TINING LIMITS GORE AREA



STOP OR YIELD CONTROL ON ALL FOUR LEGS



STOP OR YIELD CONTROL ON THE SIDE STREETS ONLY

NOTES:

TINING REQUIRED FOR POSTED SPEEDS GREATER THAN 40 MPH.

16'-6" TRANSVERSE JOINT SPACING IS THE STANDARD JOINT SPACING REGARDLESS OF THE PAVEMENT THICKNESS.

V VARIES FROM 10'-0" TO MAX. 16'-6".

THE LONGITUDINAL JOINT BETWEEN THE SHOULDER AND THE 12'-0" DRIVING LANE IS NOT REQUIRED FOR SHOULDER WIDTHS OF 4'-0" OR LESS.

TRANSVERSE JOINTS FOR DOWELED CONCRETE PAVEMENT SHALL BE CONSTRUCTED PERPENDICULAR TO THE ROADWAY.

ALL CONCRETE SURFACES, NOT TINED, WILL REQUIRE TRANSVERSE BROOMING OR BURLAP DRAG. (NOT APPLICABLE TO SHOULDERS)

REV. NO.	DATE	DESCRIPTION OF REVISION
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R9	JUL 11	JOINT: EARLY SAW CUT
R8	OCT 10	CHANGED TINING INFORMATION

NEBRASKA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NO. 329-R10

8 TO 16 INCH
CONCRETE PAVEMENT

ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:

PROFESSIONAL CIVIL ENGINEER
MICK S. SYSL0
E-10043
STATE OF NEBRASKA
DATE: 12/16/2017
SIGNATURE: MARY BURROUGHS
ORIGINAL: OCTOBER 25, 1994

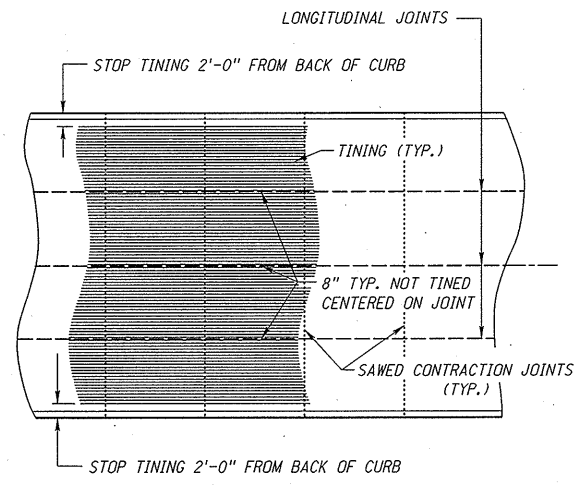
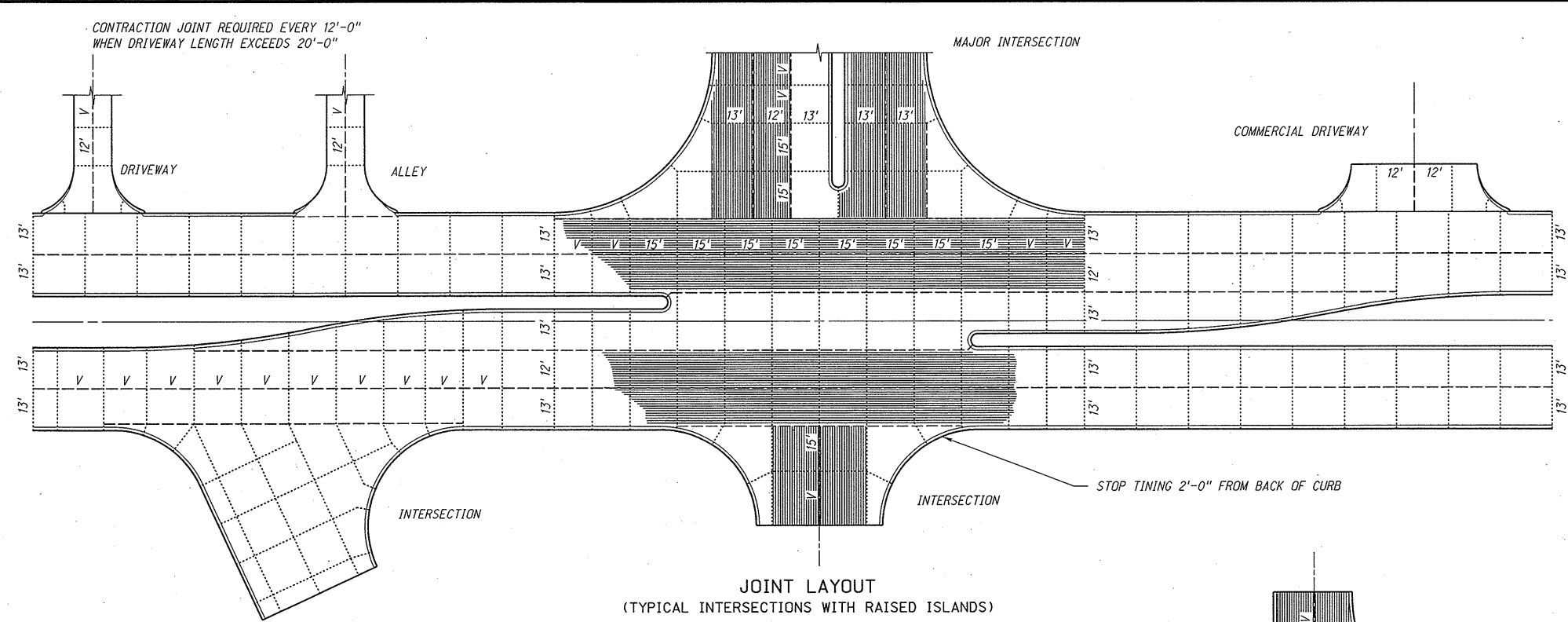
ROADWAY DESIGN DIVISION

Computer: N00TDESIGN147

User: ddr13017

Date: 17-NOV-2017 09:05

File: 32900e10.dgn
SHEET 1 OF 1



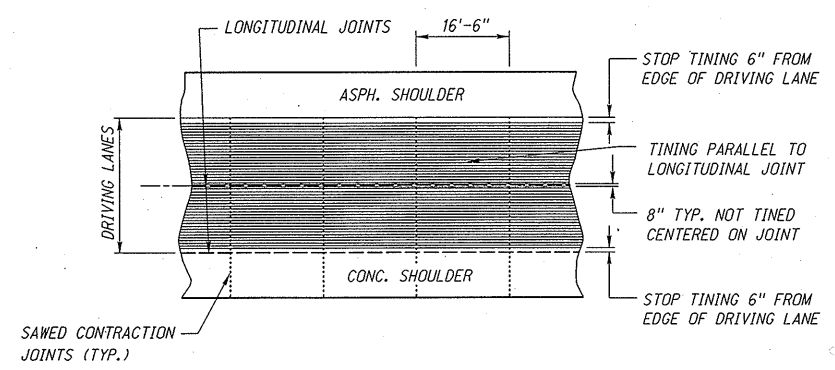
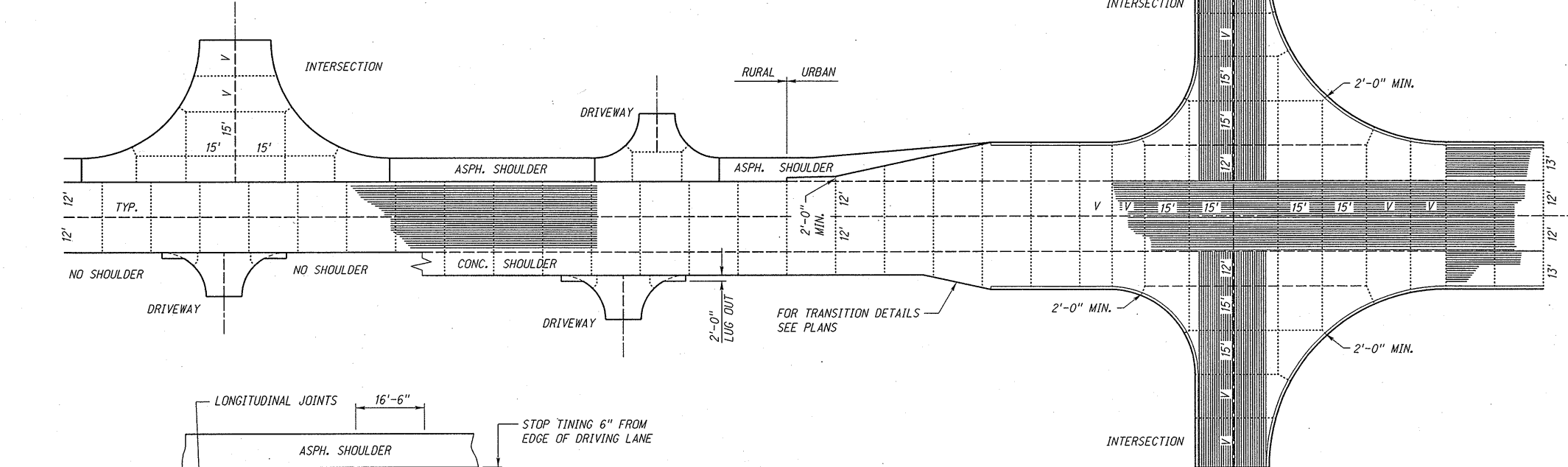
TINING LIMITS

LEGEND

- SAWED CONTRACTION JOINT
- LONGITUDINAL JOINT

NOTES:

- TINING REQUIRED FOR POSTED SPEEDS GREATER THAN 40 MPH.
- 16'-6" TRANSVERSE JOINT SPACING IS THE STANDARD JOINT SPACING REGARDLESS OF THE PAVEMENT THICKNESS.
- V VARIES FROM 10'-0" TO MAX. 16'-6".
- VARIABLE SPACING IS USED AROUND INTERSECTIONS AND LARGE DRIVEWAYS WHICH IS TIED TO THE CONCRETE LANES OR SHOULDERS TO MATCH THE JOINTS.
- ALL CONCRETE SURFACES, NOT TINED, WILL REQUIRE TRANSVERSE BROOMING OR BURLAP DRAG. (NOT APPLICABLE TO SHOULDERS)




RURAL TINING LIMITS WITH SURFACED SHOULDERS

REV. NO.	DATE	DESCRIPTION OF REVISION
R10	JAN 18	CHANGED DOWEL BAR LOCATION TABLE
R9	JUL 11	JOINT: EARLY SAW CUT
R8	OCT 10	CHANGED TINING INFORMATION

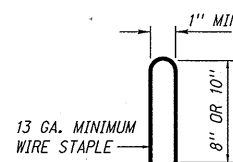
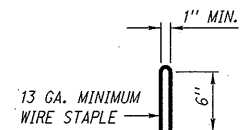
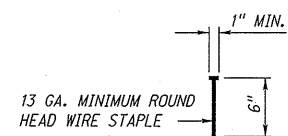
NEBRASKA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NO. 329-R10
**8 TO 16 INCH
CONCRETE PAVEMENT**

ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:

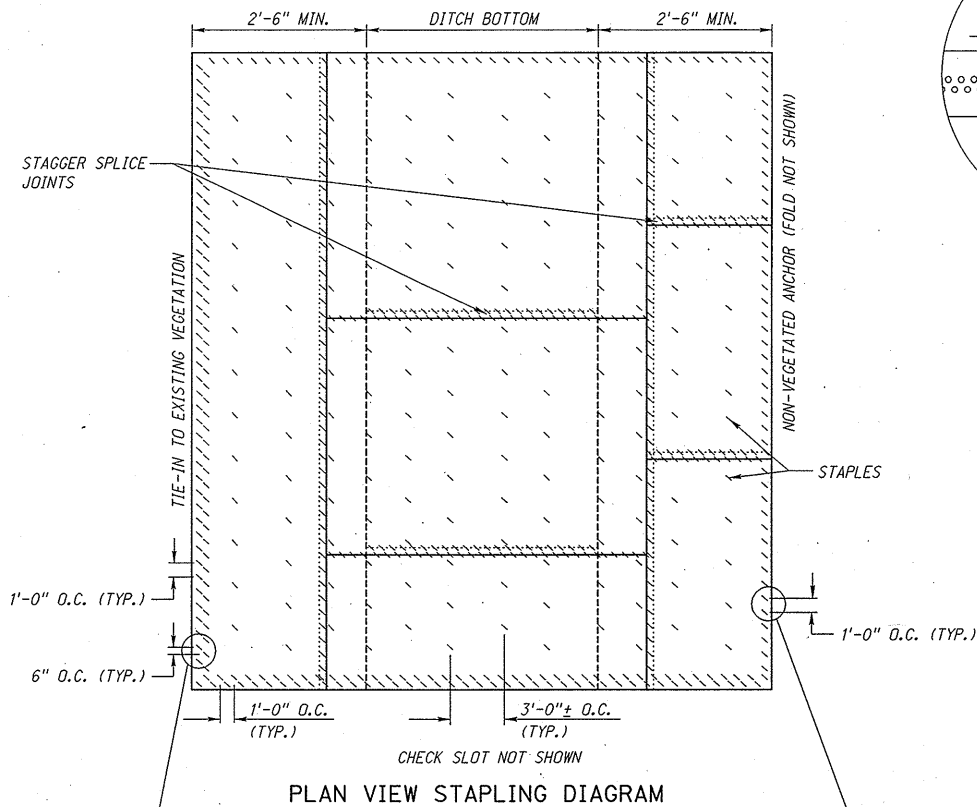

MARY BURROUGHS
DATE 12/16/2017

ORIGINAL:
OCTOBER 25, 1994
DATE

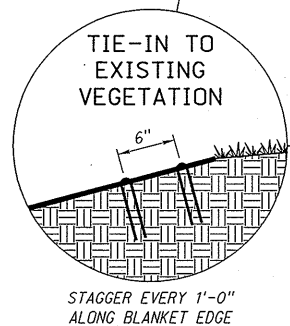
4
4



WIRE STAPLE DETAIL

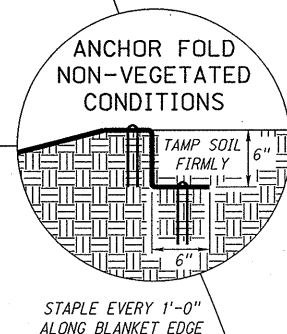


PLAN VIEW STAPLING DIAGRAM

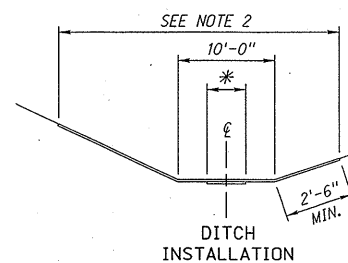


TIE-IN TO EXISTING VEGETATION
 STAGGER EVERY 1'-0" ALONG BLANKET EDGE

OR



ANCHOR FOLD NON-VEGETATED CONDITIONS
 STAPLE EVERY 1'-0" ALONG BLANKET EDGE

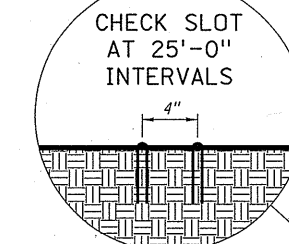
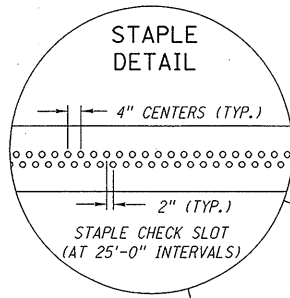


DITCH INSTALLATION

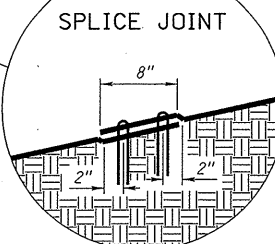
TYPICAL CROSS-SECTION

FORESLOPE AND BACKSLOPE INSTALLATION

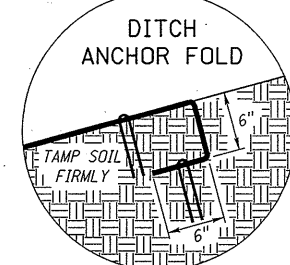
* THE FIRST ROLL OF BLANKET SHALL BE LAID DOWN THE CENTER OF THE DITCH



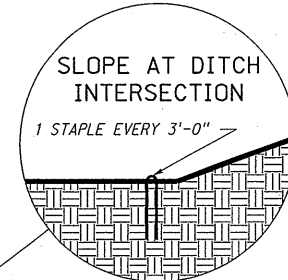
CHECK SLOT AT 25'-0" INTERVALS
 STAGGER STAPLES 4" O.C. AS SHOWN ON STAPLE DETAIL



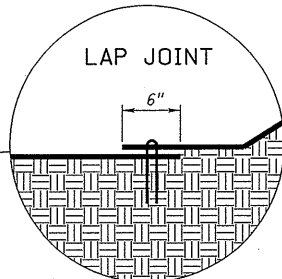
SPLICE JOINT
 STAGGER STAPLES 4" O.C. AS SHOWN ON STAPLE DETAIL



FOR EDGES ADJOINING AREAS TO BE SEEDED
 STAPLE EVERY 1'-0" ALONG BLANKET EDGE

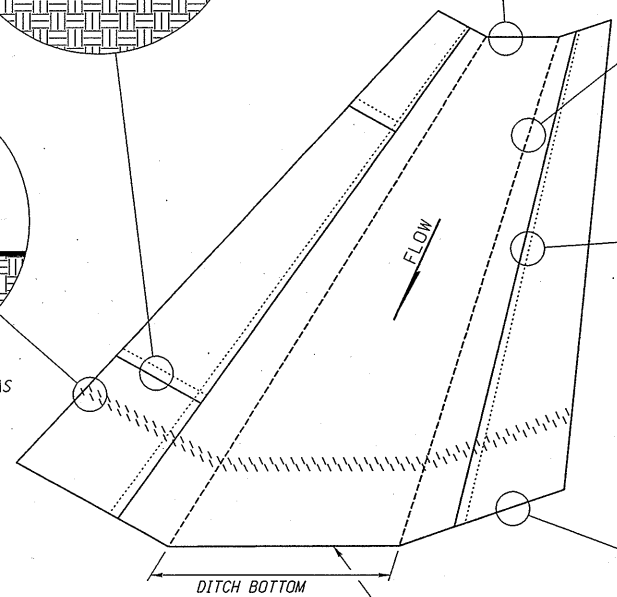


SLOPE AT DITCH INTERSECTION
 1 STAPLE EVERY 3'-0"

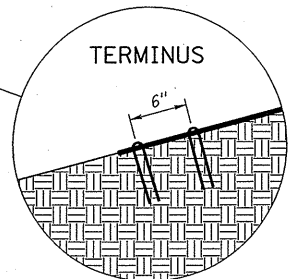


LAP JOINT

STAPLE EVERY 1'-0" ALONG BLANKET EDGE



TYPICAL EROSION CONTROL BLANKET INSTALLATION



TERMINUS

STAGGER EVERY 1'-0" ALONG BLANKET EDGE

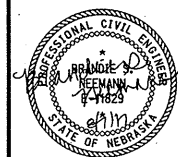
NOTES:

1. THIS PLAN IS APPLICABLE FOR THE FOLLOWING: EROSION CONTROL CLASS 1B, 1C, 1D, 1E, 1F, 2A, 2B & 2C.
2. SOIL RETENTION BLANKET SHALL BE LAID A MINIMUM OF 2'-6" UP THE BACKSLOPE AND FORESLOPE.
3. CHECK SLOTS ARE PLACED PERPENDICULAR TO DITCH CENTER LINE ON 25'-0" INTERVALS.
4. THE MANUFACTURERS' RECOMMENDED STAPLING PATTERNS SHALL GOVERN OVER THE PLANS.

R7	JAN 18	NDOR BORDER TO NDOT BORDER
R6	APR 14	UPDATE INSTALLATION METHOD
R5	OCT 07	EROSION CONTROL AT SPLASH BASIN
REV. NO.	DATE	DESCRIPTION OF REVISION

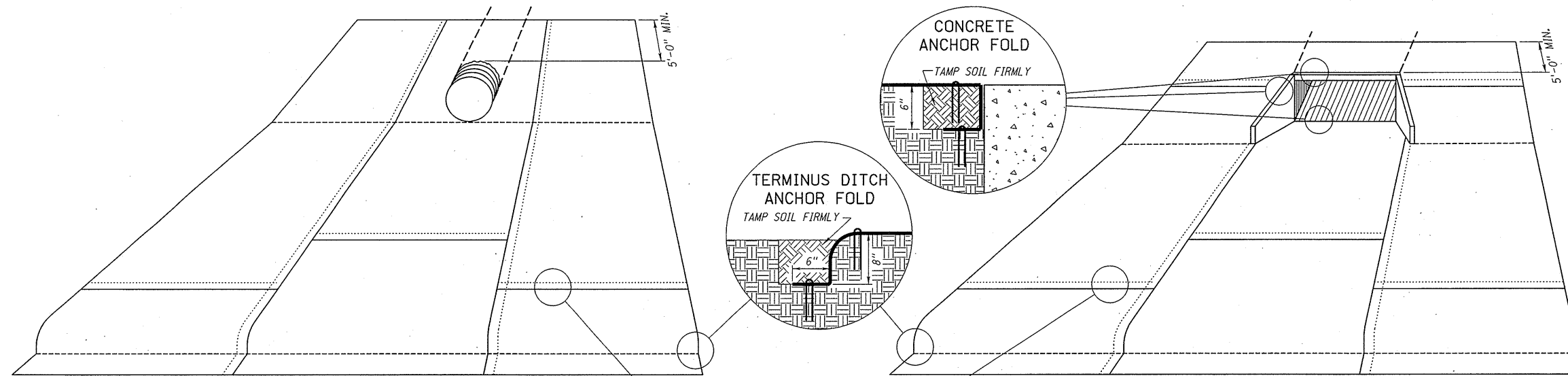
NEBRASKA DEPARTMENT OF TRANSPORTATION
 STANDARD PLAN NO. 501-R7
 EROSION CONTROL

ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:



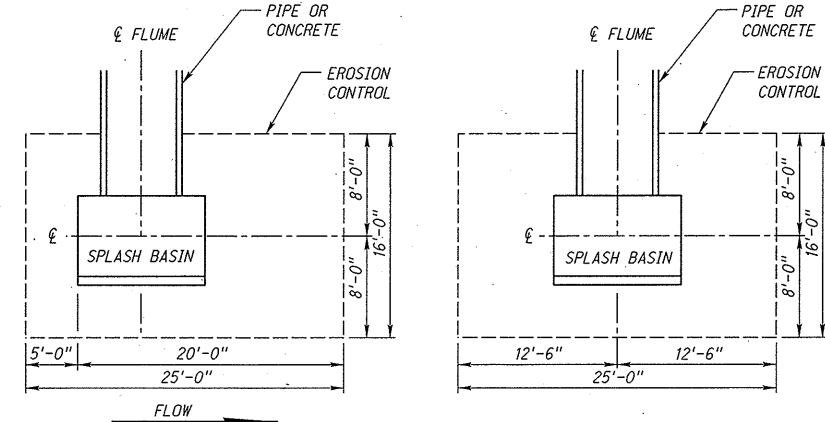
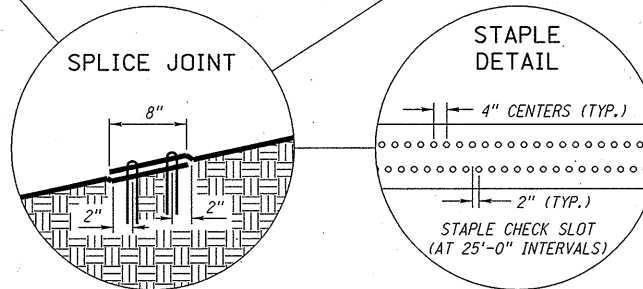
David May
 8-16-2017
 DATE

ORIGINAL:
 NOVEMBER 14, 1973
 DATE



TYPICAL INSTALLATION AT PIPE CULVERT
(SHOWING STRAIGHT PIPE)

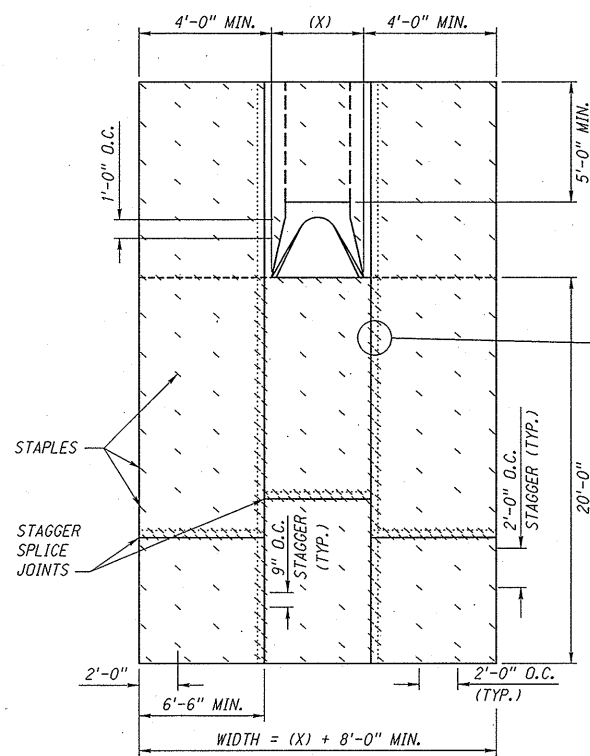
TYPICAL INSTALLATION AT BOX CULVERT



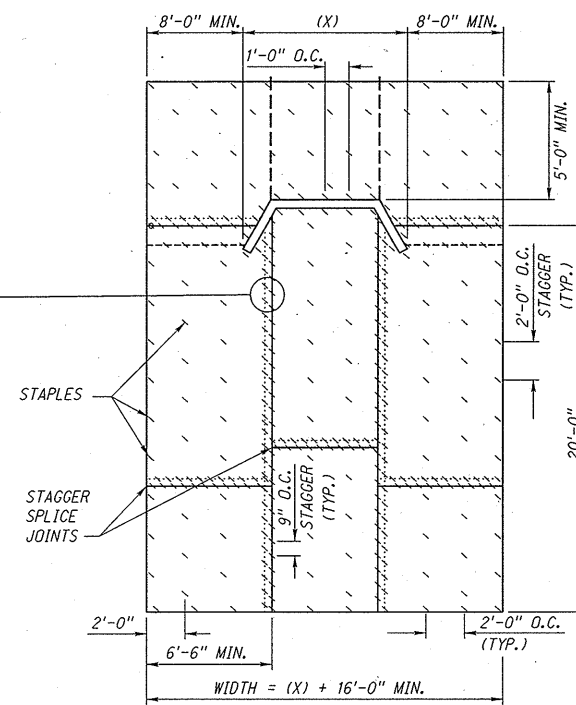
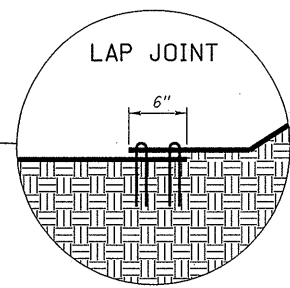
NOTE:
OFFSET EROSION CONTROL PLACEMENT
ALONG THE DRAINAGE PATH

NOTE:
CENTER EROSION CONTROL ON FLUME WHERE
THERE IS NO DEFINED DRAINAGE PATH

EROSION CONTROL BLANKET PLACEMENT AT SPLASH BASIN



PLAN VIEW STAPLING DIAGRAM
(X) IS EQUAL TO THE OUTSIDE WIDTH
OF THE FLARED END SECTION



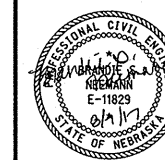
PLAN VIEW STAPLING DIAGRAM
(X) IS EQUAL TO THE OUTSIDE WIDTH
OF THE WING WALLS

REV. NO.	DATE	DESCRIPTION OF REVISION
R7	JAN 18	NDOR BORDER TO NDOT BORDER
R6	APR 14	UPDATE INSTALLATION METHOD
R5	OCT 07	EROSION CONTROL AT SPLASH BASIN

NEBRASKA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NO. 501-R7

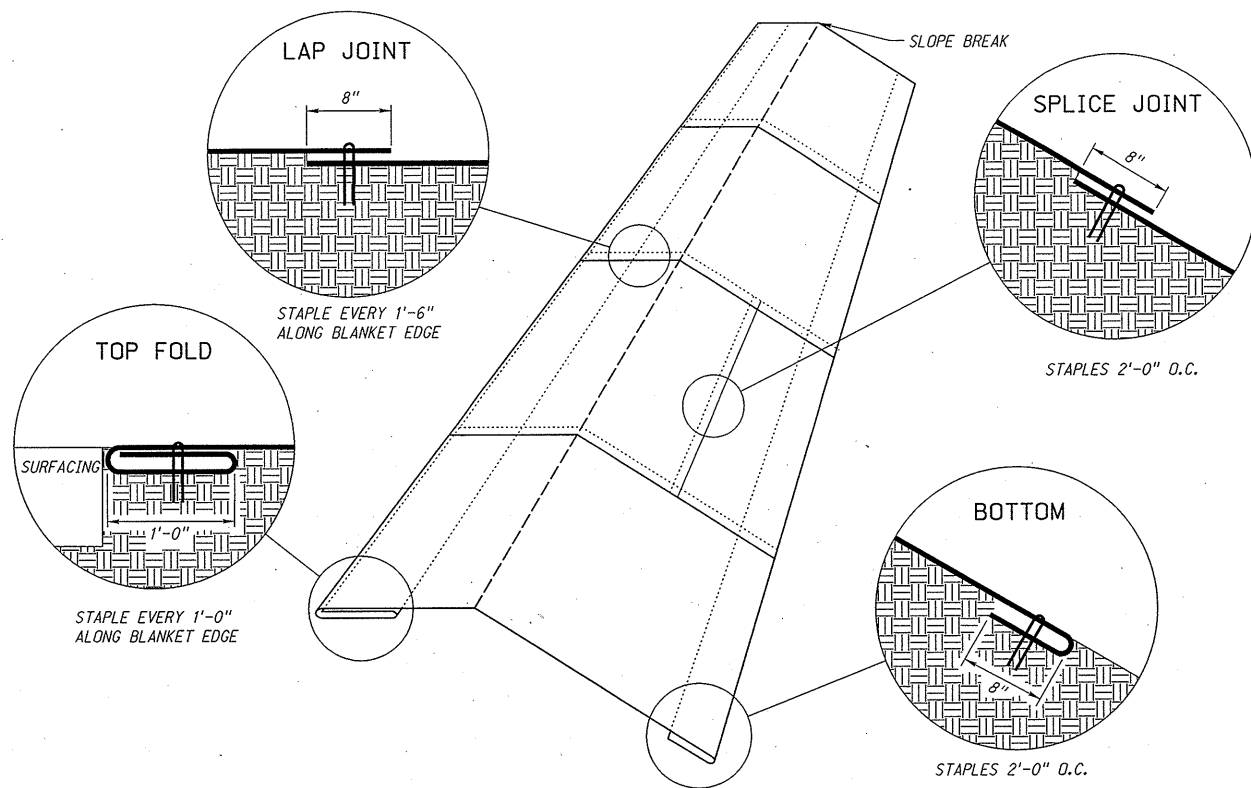
EROSION CONTROL

ACCEPTED BY FHWA FOR USE ON THE
NATIONAL HIGHWAY SYSTEM:

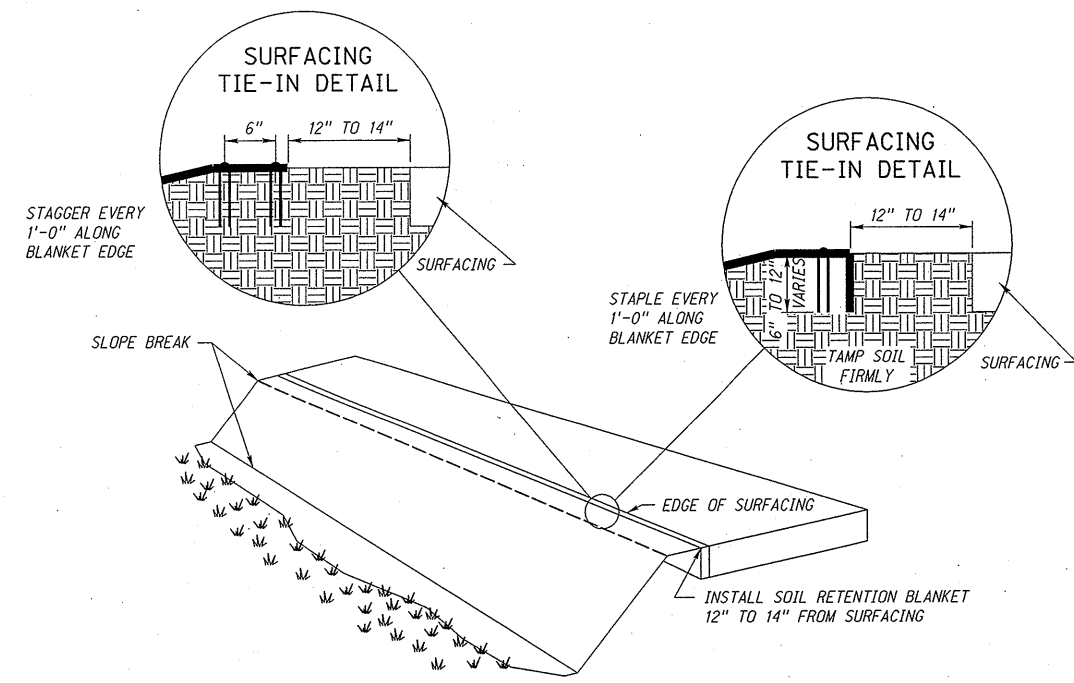


David M. M...
8-16-2017
DATE

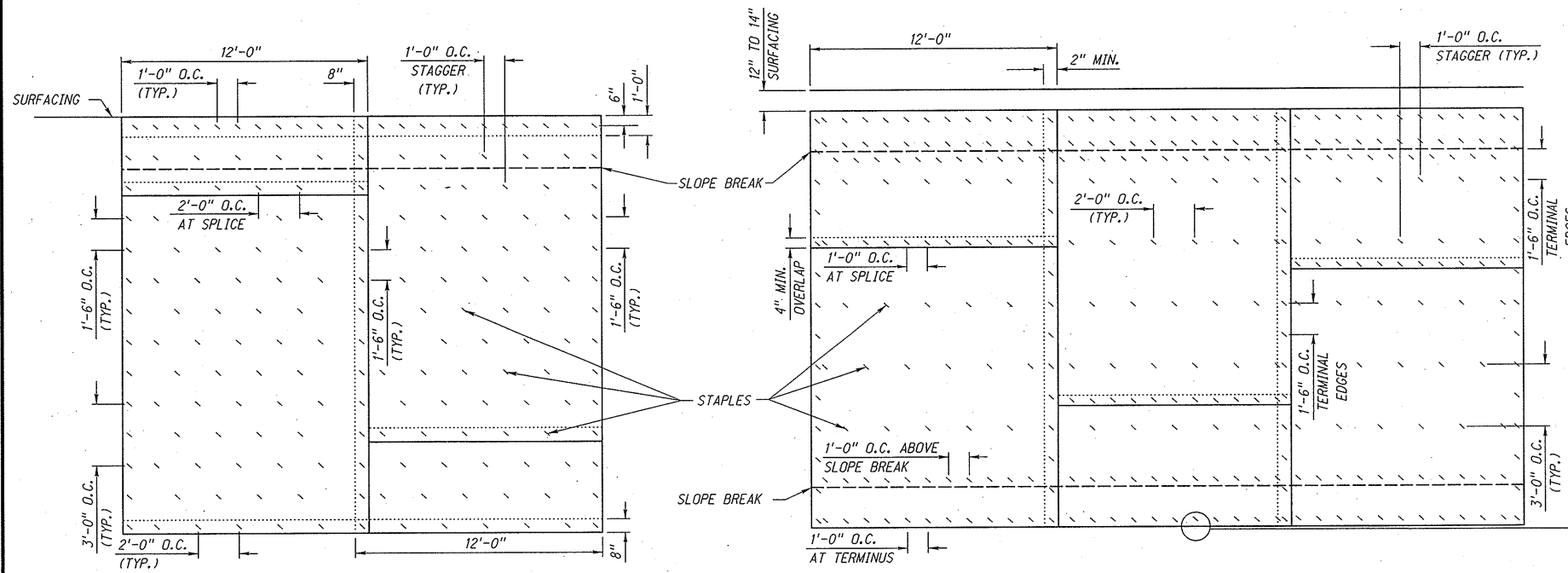
ORIGINAL:
NOVEMBER 14, 1973
DATE



TYPICAL INSTALLATION
CLASS 1A (SLOPE PROTECTION, SAND)



SURFACING INSTALLATION

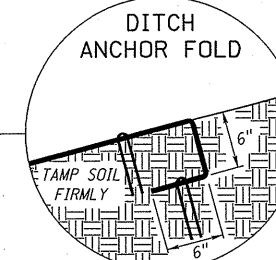


PLAN VIEW STAPLING DIAGRAM FOR
CLASS 1A (SLOPE PROTECTION, SAND)

TERMINATE BLANKET AT THE TOE OF SLOPE OR AT UNDISTURBED VEGETATION

PLAN VIEW STAPLING DIAGRAM FOR
CLASS 1B, 1C, 1D, 1E, 1F, 2A, 2B, & 2C

FOR EDGES ADJOINING
AREAS TO BE SEED



STAPLE EVERY 1'-0"
ALONG BLANKET EDGE

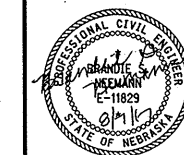
NOTES:

1. THE MANUFACTURERS' RECOMMENDED STAPLING PATTERNS SHALL GOVERN OVER THE PLANS.
2. SURFACING INSTALLATION IS APPLICABLE FOR ASPHALT, CONCRETE, OR BEVELLED EDGE.

REV. NO.	DATE	DESCRIPTION OF REVISION
R7	JAN 18	NDOR BORDER TO NDOT BORDER
R6	APR 14	UPDATE INSTALLATION METHOD
R5	OCT 07	EROSION CONTROL AT SPLASH BASIN

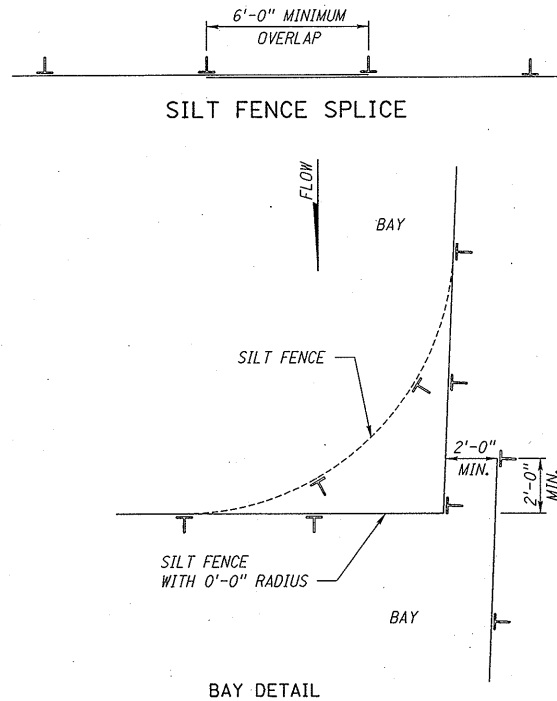
NEBRASKA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NO. 501-R7
EROSION CONTROL

ACCEPTED BY FHWA FOR USE ON THE
NATIONAL HIGHWAY SYSTEM:

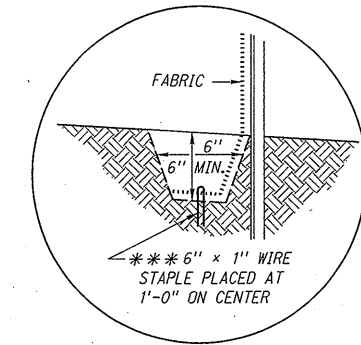
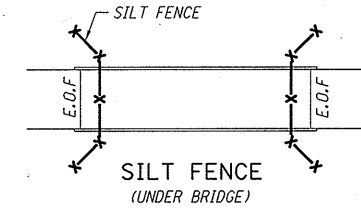
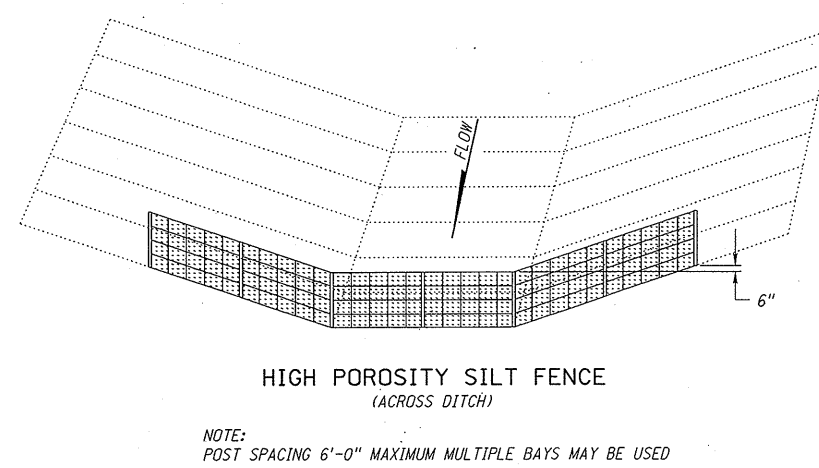
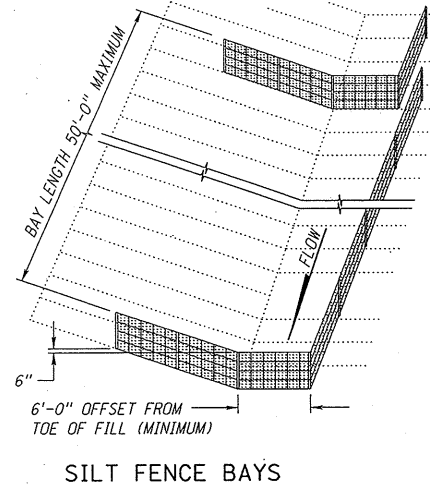
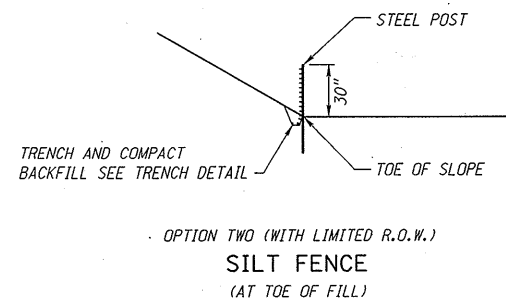
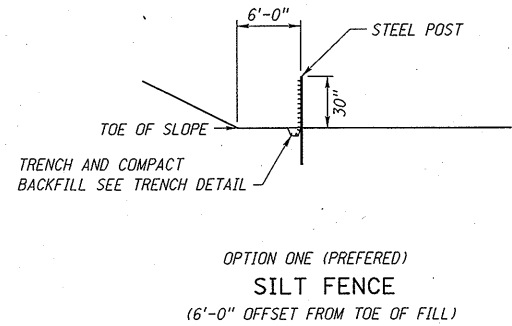


David May
8-16-2017
DATE

ORIGINAL:
NOVEMBER 14, 1973
DATE



NOTE:
SILT FENCE AT CORNERS SHALL HAVE A RADIUS OF 0'-0" MINIMUM TO 10'-0" MAXIMUM



TRENCH DETAIL

*** SILT FENCE MAY ALSO BE INSTALLED WITH A SILT FENCE PLOW. NO STAPLING IS REQUIRED WHEN THE SILT FENCE PLOW IS USED.

NOTES:

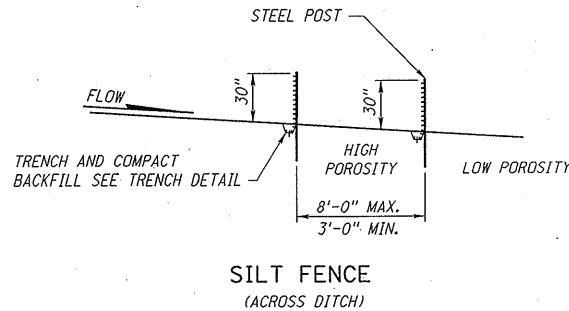
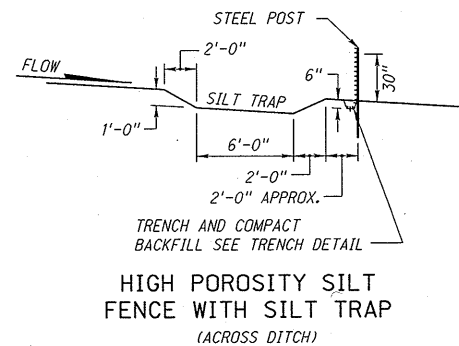
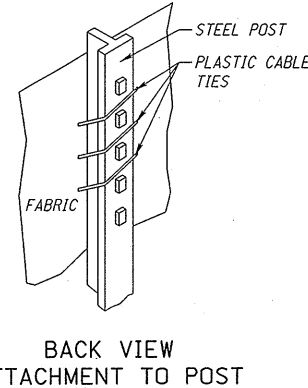
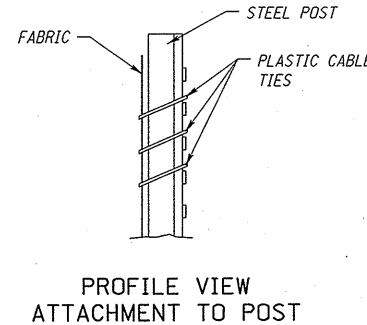
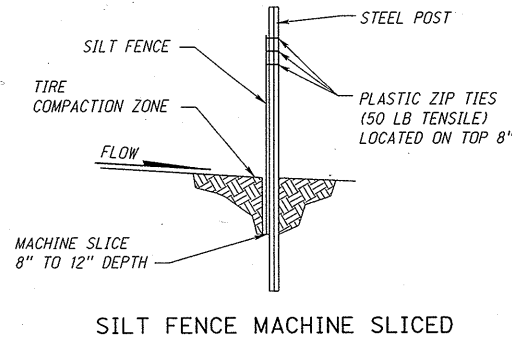
SILT FENCE SHOULD BE 30" ABOVE GRADE (MAY VARY)

SILT FENCE MINIMUM ROLL WIDTH:
LOW POROSITY = 42"
HIGH POROSITY = 42"
LOW PROFILE = 36"
COIR SILT FENCE = 36"

STEEL STUDDED "T" LINE POSTS 5'-6" LENGTH;
6'-0" MAXIMUM SPACING.

FOR EACH STEEL STUDDED "T" LINE POST, 3 PLASTIC CABLE TIES ARE REQUIRED.

2" x 2" x 6'-0" NOMINAL WOOD STAKES SPACING,
6'-0" MAXIMUM ON CENTER DRIVEN UNTIL FIRM.



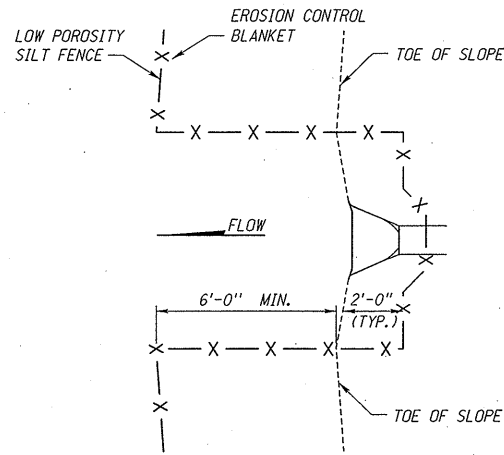
R2	JAN 18	NDOR BORDER TO NDOT BORDER
R1	APR 14	STEEL POST INSTALLATION
REV. NO.	DATE	DESCRIPTION OF REVISION

NEBRASKA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NO. 502-R2
SILT FENCE DETAILS

ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:



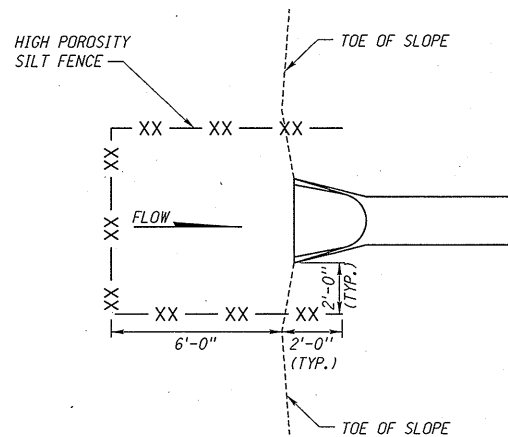
David May
8-16-2017
DATE
ORIGINAL:
DECEMBER 18, 2006
DATE



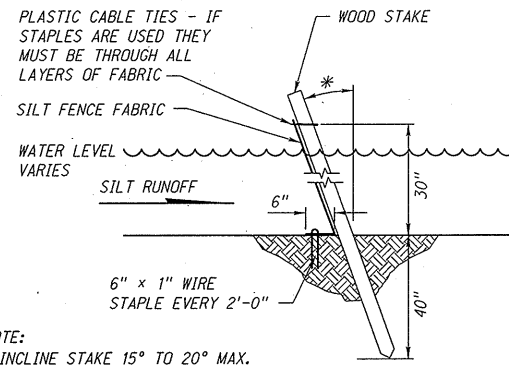
SILT FENCE OUTLET PROTECTION

NOTES:

1. SILT FENCE SHOULD BE BROUGHT FLUSH WITH WING WALLS ON BOX CULVERTS IF IT CAN NOT BE INSTALLED ABOVE THE BOX CULVERT.
2. IF APPLICABLE, SILT FENCE AROUND THE CULVERT SHOULD BE ADJUSTED TO ALLOW FOR THE INSTALLATION OF EROSION CONTROL AS SHOWN IN STANDARD PLAN 501.
3. SILT CHECKS MAY BE USED IN PLACE OF SILT FENCE ABOVE THE OPENING OF A CULVERT, AS SHOWN IN SPECIAL PLAN C.

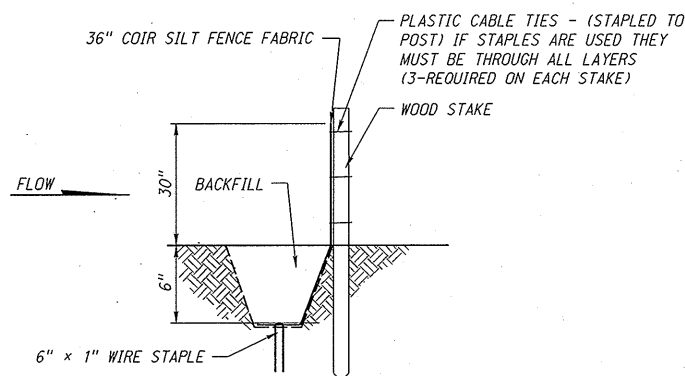


SILT FENCE INLET PROTECTION

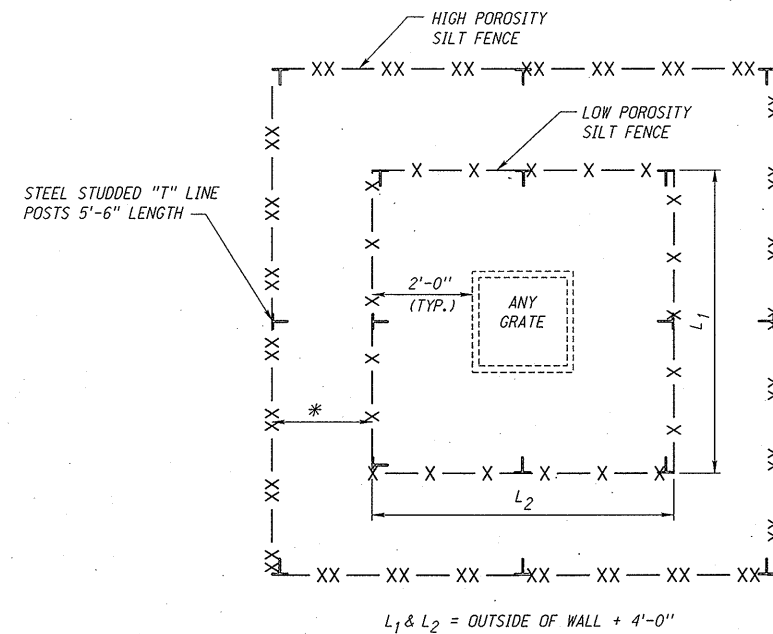


NOTE:
* INCLINE STAKE 15° TO 20° MAX. FROM VERTICAL, TOWARD FLOW.

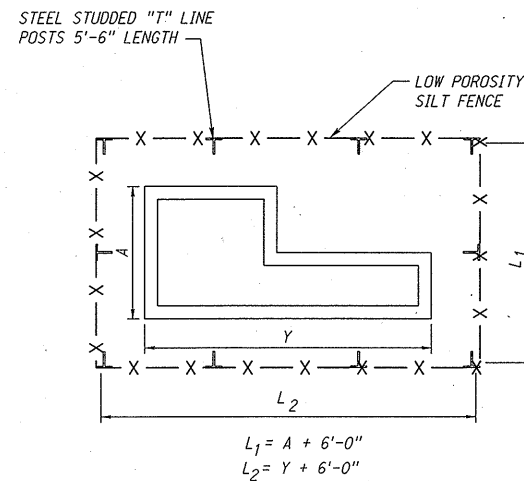
SILT FENCE
(WET & BELOW WATER INSTALLATION)



COIR SILT FENCE - ON WOOD POSTS - DRY INSTALLATION



PLAN VIEW
SILT FENCE FOR GRATE, AREA, MEDIAN INLETS
OR JUNCTION BOXES
* 3'-0" IF POSSIBLE (MAY VARY)



PLAN VIEW
SILT FENCE CURB INLET

REV. NO.	DATE	DESCRIPTION OF REVISION
R2	JAN 18	NDOR BORDER TO NDOT BORDER
R1	APR 14	STEEL POST INSTALLATION

NEBRASKA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NO. 502-R2
SILT FENCE DETAILS

ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:

David May
8-16-2017
DATE

ORIGINAL:
DECEMBER 18, 2006
DATE

2
2

ROADWAY DESIGN DIVISION

CONNECTION NOTES:

FOR DIVIDED ROADWAY

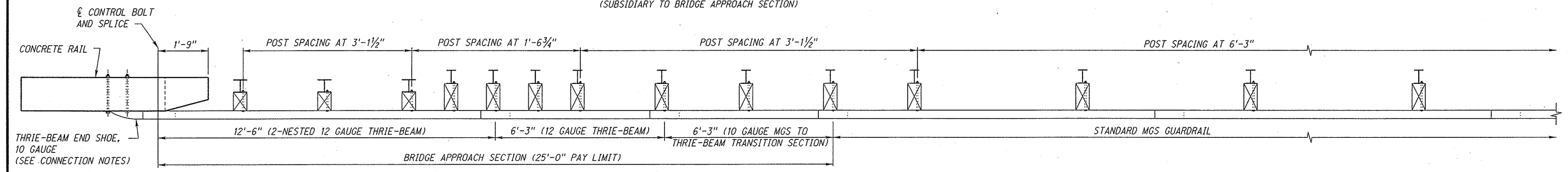
INSTALL THRIE-BEAM END SHOE,
BETWEEN NESTED GUARDRAIL ELEMENTS.
(SUBSIDIARY TO BRIDGE APPROACH SECTION)

FOR 2-LANE ROADWAY

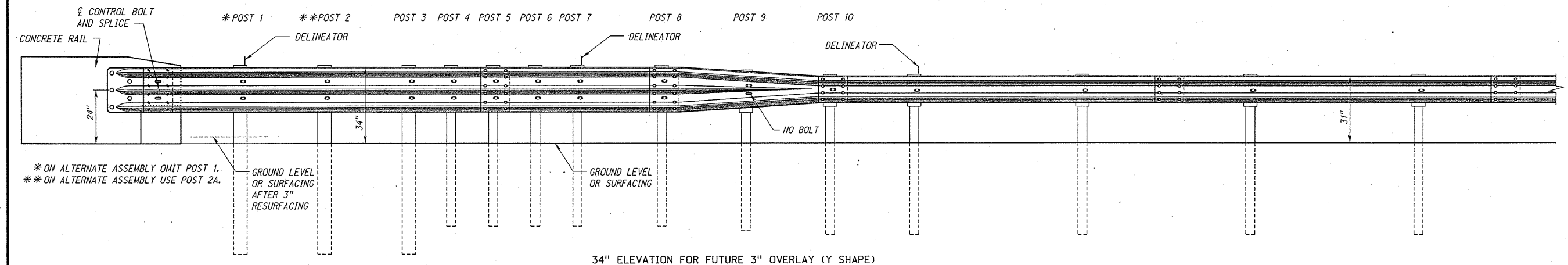
FOR APPROACHING TRAFFIC
INSTALL THRIE-BEAM END SHOE,
BETWEEN NESTED GUARDRAIL ELEMENTS.
(SUBSIDIARY TO BRIDGE APPROACH SECTION)

FOR DEPARTING TRAFFIC
INSTALL THRIE-BEAM END SHOE,
OUTSIDE OF THE NESTED GUARDRAIL ELEMENTS.
(SUBSIDIARY TO BRIDGE APPROACH SECTION)

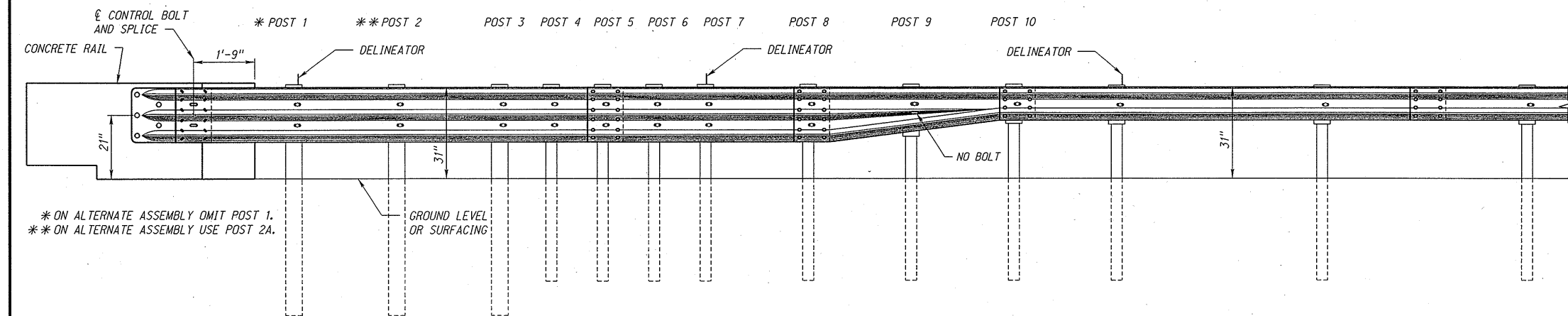
TRAFFIC FLOW →



PLAN VIEW



34" ELEVATION FOR FUTURE 3" OVERLAY (Y SHAPE)



31" ELEVATION STANDARD INSTALLATION (ASYMMETRICAL SHAPE)

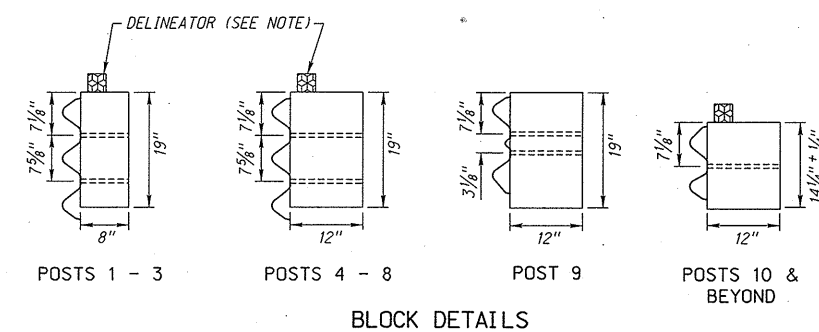
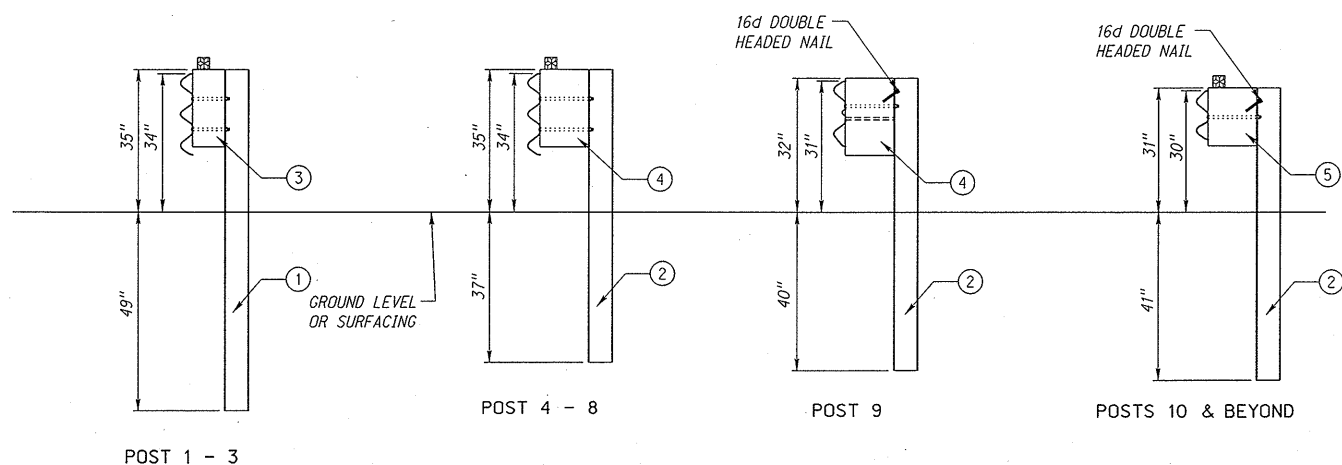
Computer: NDOTDESIGN61

User: dor13199

Date: 15-DEC-2011 09:01

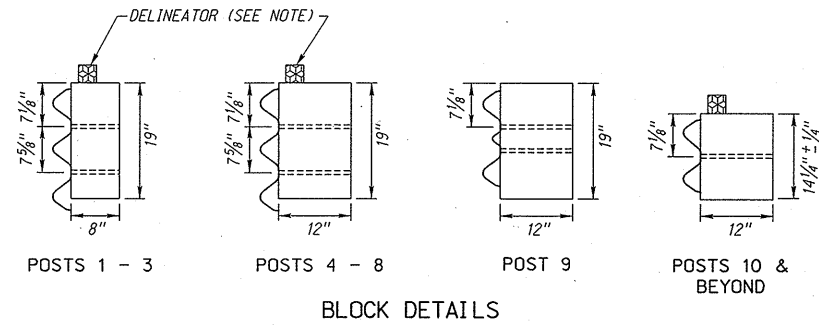
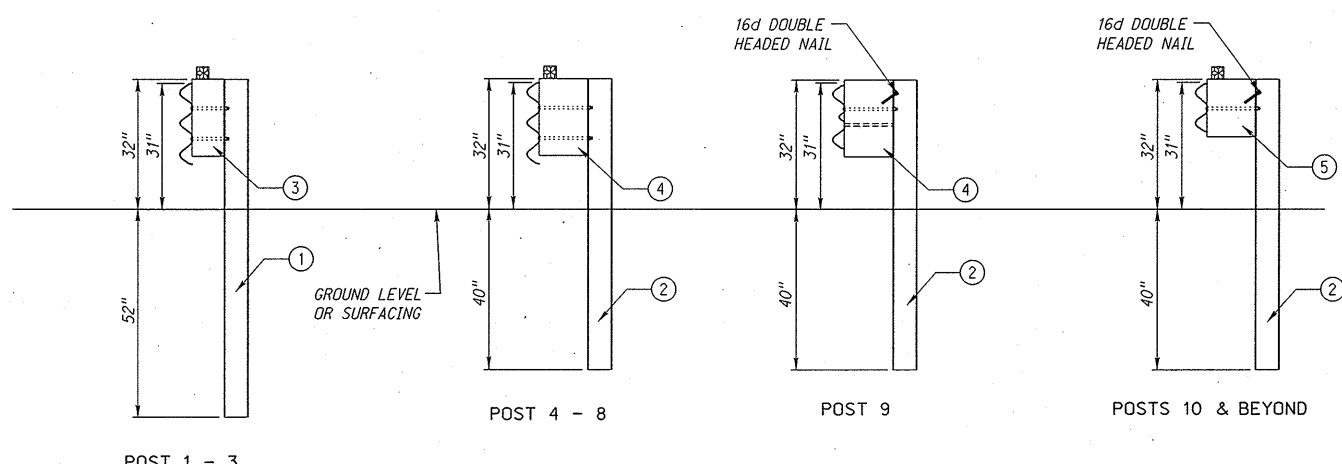
File: 7400e01.dgn
Scale: 1:100

R1	JAN 18	NEW 34 INCH B.A.S.
REV. NO.	DATE	DESCRIPTION OF REVISION
NEBRASKA DEPARTMENT OF TRANSPORTATION STANDARD PLAN NO. 740-R1 MIDWEST GUARDRAIL SYSTEM BRIDGE APPROACH SECTION		
ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:		
	 DATE: 12/15/11	1 3
	ORIGINAL: AUGUST 2011 DATE	

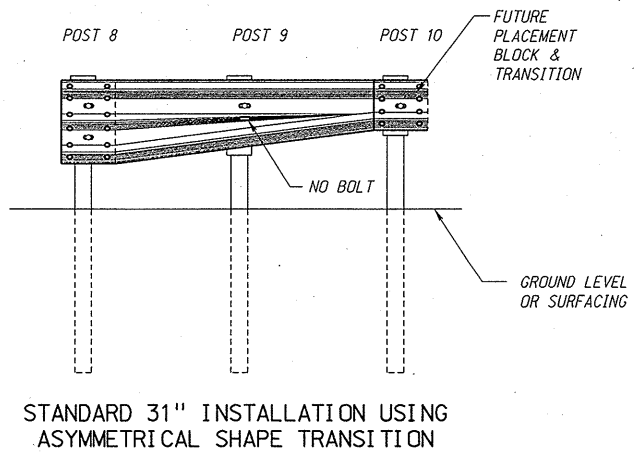
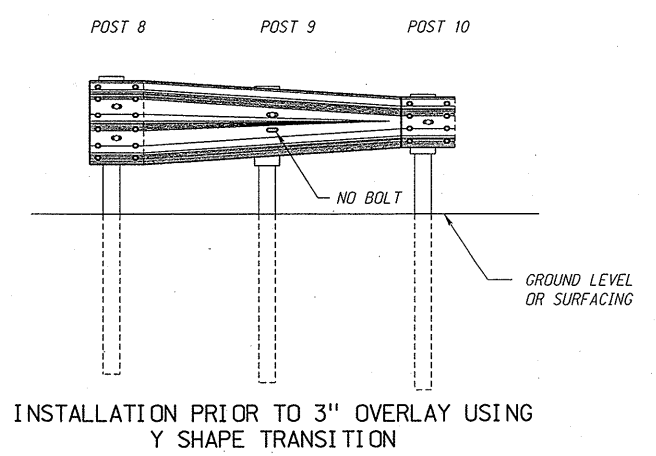


- LEGEND**
- ① W6 x 15 x 7' POST
 - ② W6 x 9 x 6' POST OR W6 x 8.5 x 6' POST
 - ③ 6" x 8" x 19" OFFSET BLOCK
 - ④ 6" x 12" x 19" OFFSET BLOCK
 - ⑤ 6" x 12" x 14 1/4" +/- 1/4" OFFSET BLOCK

POSTS FOR FUTURE 3" OVERLAY PLACEMENT PRIOR TO 3" OVERLAY USING Y SHAPE W-BEAM



POSTS FOR ASYMMETRICAL SHAPE



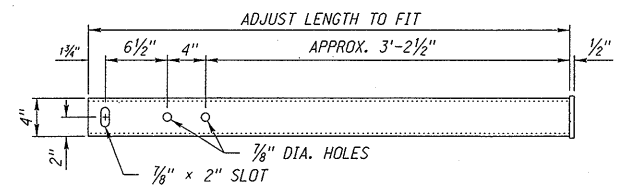
NOTES:

DELINEATORS SUBSIDIARY TO BRIDGE APPROACH SECTION.

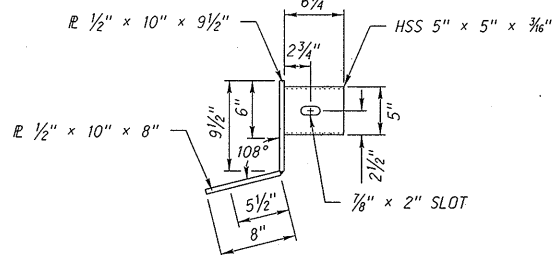
BUTTON HEAD BOLT 5/8" DIA. x LENGTH AS REQUIRED, SECURED WITH HEX NUT.

ALL STEEL MEMBERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

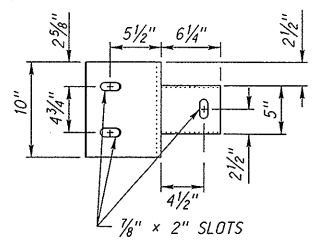
R1	JAN 18	NEW 34 INCH B.A.S.
REV. NO.	DATE	DESCRIPTION OF REVISION
NEBRASKA DEPARTMENT OF TRANSPORTATION STANDARD PLAN NO. 740-R1 MIDWEST GUARDRAIL SYSTEM BRIDGE APPROACH SECTION		
ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:		
ORIGINAL: AUGUST 2011 DATE:		
		2 3



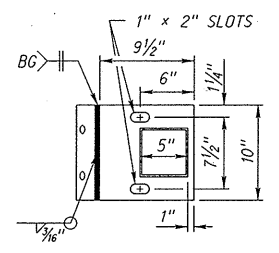
PLAN VIEW



TOP VIEW

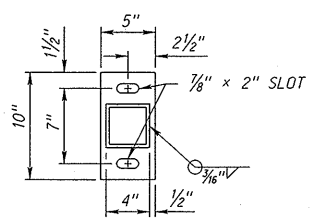


ELEVATION VIEW

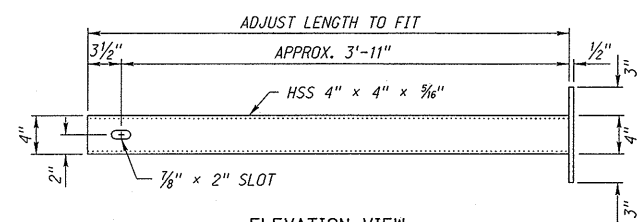


SIDE VIEW

END BRACKET DETAIL

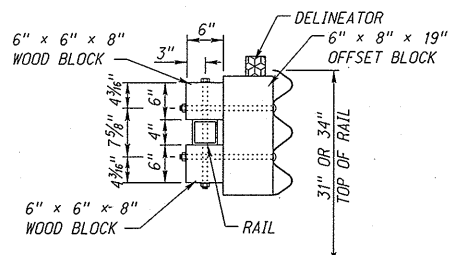


SIDE VIEW
1/2" x 10" x 5"

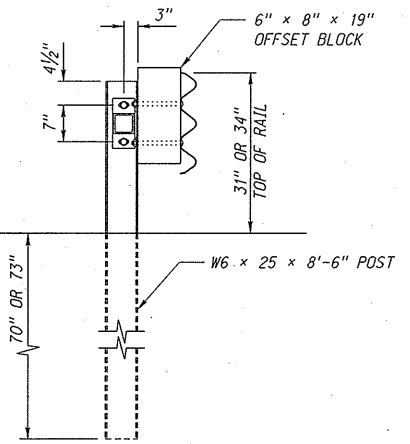


ELEVATION VIEW

RAIL DETAIL



MIDSPAN RAIL SUPPORT



POST 2A

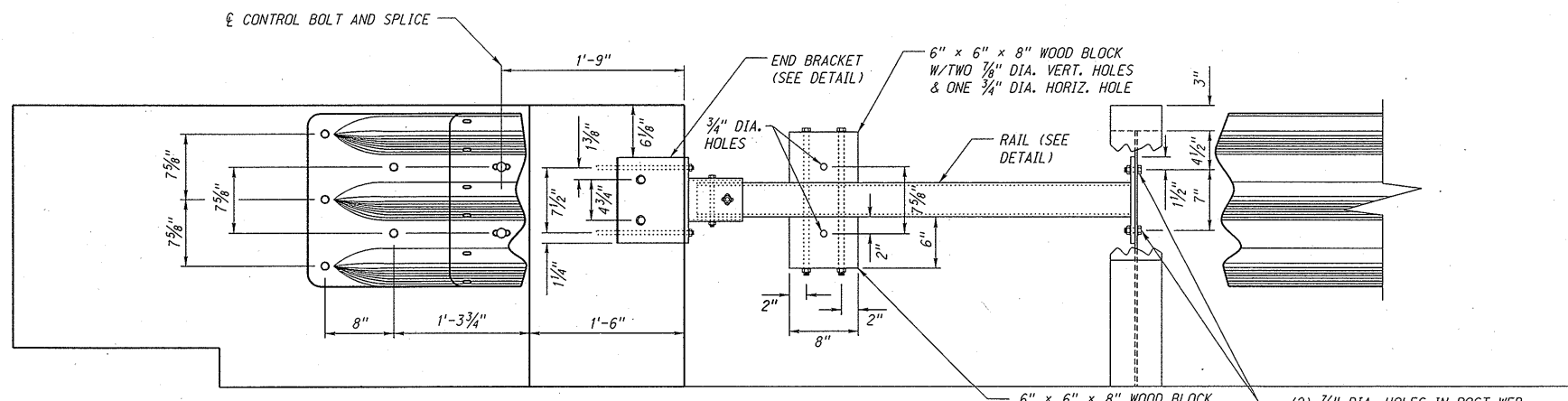
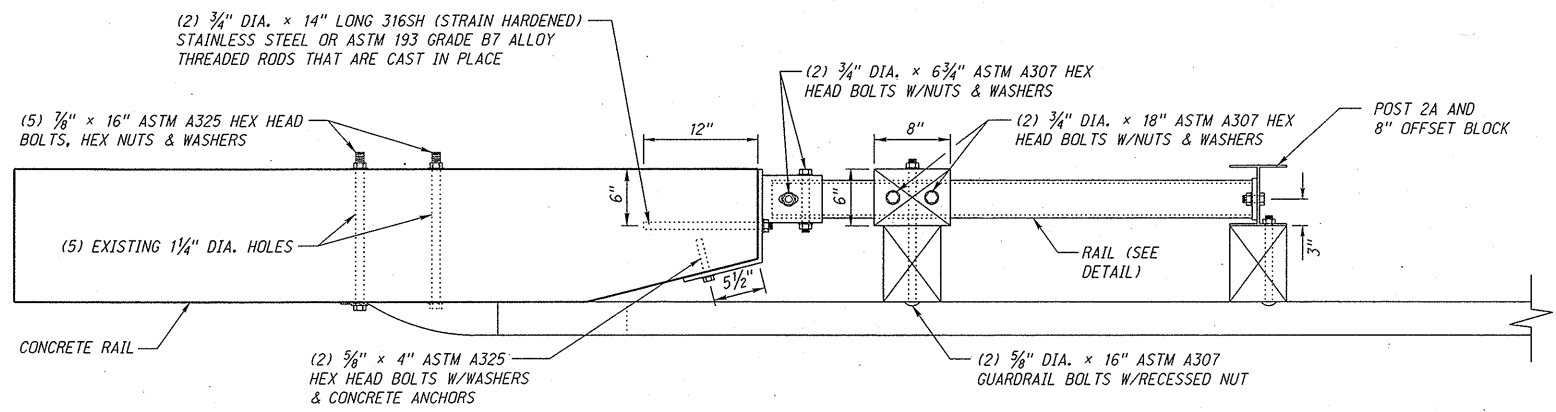
SIDE VIEW

NOTE:
OFFSET BLOCK LISTED ON THE APPROVED PRODUCTS LIST MAY ALSO BE USED.


NOTE:

ALL STEEL MEMBERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

IN LIEU OF THE CAST IN PLACE 3/4" DIA. x 14" ANCHOR BOLTS, THE CONTRACTOR MAY GROUT 3/4" DIA. x 12" BOLTS INTO 7/8" DIA. x 12" DRILLED HOLES. ALL GROUT USED SHALL BE AN APPROVED NON-SHRINK GROUT. FOR 5/8" DIA. BOLTS USE 3/4" DIA. HOLES. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR THIS OPTION.



ELEVATION VIEW
MIDSPAN RAIL SUPPORT DETAIL
MUST USE POST 2A (W6 x 25 x 8'-6")

R1	JAN 18	NEW 34 INCH B.A.S.
REV. NO.	DATE	DESCRIPTION OF REVISION
NEBRASKA DEPARTMENT OF TRANSPORTATION STANDARD PLAN NO. 740-R1 MIDWEST GUARDRAIL SYSTEM BRIDGE APPROACH SECTION		
ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:		 12/16/17 DATE ORIGINAL: AUGUST 2011 DATE
		3 3

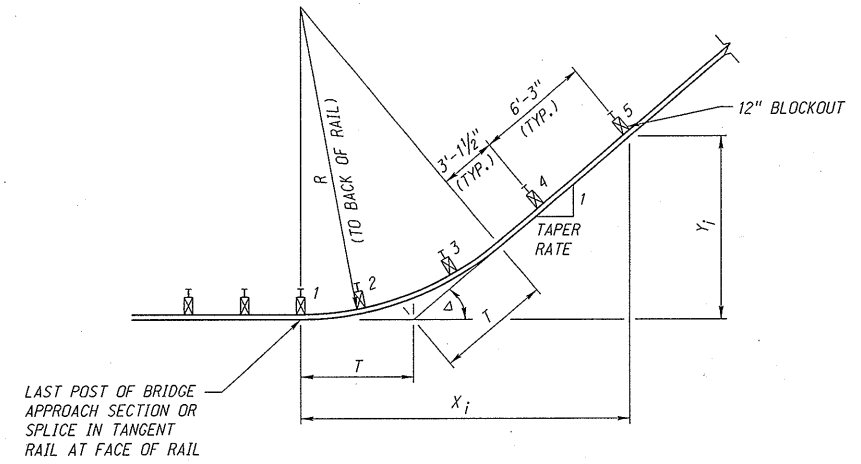
POST SPACING = 6.25'
POST NO. 1: X = 0 & Y = 0

TABLE A		
DEFLECTION, Δ = 1°54'33" TAPER = 30:1 RADIUS, R = 375.10' TANGENT, T = 6.25'		
POST NUMBER	X _i	Y _i
1	0.0	0.0
2	3.1	0.0
3	9.4	0.1
4	15.6	0.3
5	21.8	0.5
6	28.1	0.7
7	34.3	0.9
8	40.6	1.1
9	46.8	1.4
10	53.1	1.6
11	59.3	1.8
12	65.6	2.0
13	71.8	2.2
14	78.1	2.4
15	84.3	2.6
16	90.6	2.8
17	96.8	3.0
18	103.1	3.2
19	109.3	3.4
20	115.6	3.6
21	121.8	3.9
22	128.1	4.1
23	134.3	4.3
24	140.6	4.5
25	146.8	4.7
26	153.1	4.9
27	159.3	5.1
28	165.5	5.3
29	171.8	5.5
30	178.0	5.7
31	184.3	5.9
32	190.5	6.1
33	196.8	6.4
34	203.0	6.6
35	209.3	6.8
36	215.5	7.0
37	221.8	7.2
38	228.0	7.4
39	234.3	7.6
40	240.6	7.8
41	246.8	8.0
42	253.0	8.2
43	259.2	8.4
44	265.5	8.7
45	271.7	8.8
46	278.0	9.1
47	284.2	9.3
48	290.5	9.5
49	296.7	9.7
50	303.0	9.9
51	309.2	10.1
52	315.5	10.3
53	321.7	10.5
54	328.0	10.7
55	334.2	10.9
56	340.4	11.1
57	346.7	11.3
58	352.9	11.6
59	359.2	11.8
60	365.4	12.0

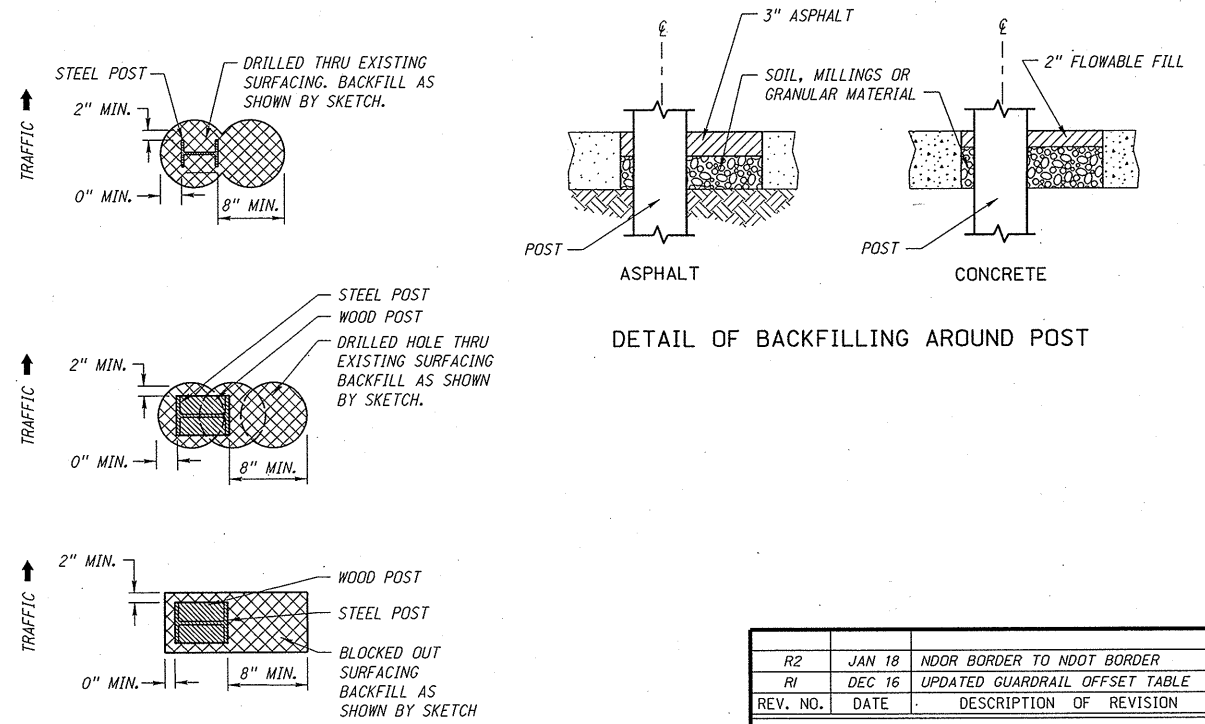
TABLE B		
DEFLECTION, Δ = 2°17'26" TAPER = 25:1 RADIUS, R = 312.67' TANGENT, T = 6.25'		
POST NUMBER	X _i	Y _i
1	0.0	0.0
2	3.1	0.0
3	9.4	0.1
4	15.6	0.4
5	21.9	0.6
6	28.1	0.9
7	34.4	1.1
8	40.6	1.4
9	46.9	1.6
10	53.1	1.9
11	59.3	2.1
12	65.6	2.4
13	71.8	2.6
14	78.1	2.6
15	84.3	3.1
16	90.6	3.4
17	96.8	3.6
18	103.1	3.9
19	109.3	4.1
20	115.6	4.4
21	121.8	4.6
22	128.0	4.9
23	134.3	5.1
24	140.5	5.4
25	146.8	5.6
26	153.0	5.9
27	159.3	6.1
28	165.5	6.4
29	171.8	6.6
30	178.0	6.9
31	184.2	7.1
32	190.5	7.4
33	196.7	7.6
34	202.9	7.9
35	209.2	8.1
36	215.5	8.4
37	221.8	8.6
38	228.0	8.9
39	234.2	9.1
40	240.5	9.4
41	246.7	9.6
42	253.0	9.9
43	259.2	10.1
44	265.4	10.4
45	271.7	10.6
46	278.0	10.9
47	284.2	11.1
48	290.4	11.4
49	296.7	11.6
50	302.9	11.9
51	309.1	12.1
52	315.4	12.4
53	321.6	12.6
54	327.9	12.9
55	334.1	13.1
56	340.4	13.4
57	346.6	13.6
58	352.9	13.9
59	359.1	14.1
60	365.4	14.4

TABLE C		
DEFLECTION, Δ = 2°51'44" TAPER = 20:1 RADIUS, R = 250.20' TANGENT, T = 6.25'		
POST NUMBER	X _i	Y _i
1	0.0	0.0
2	3.1	0.0
3	9.4	0.2
4	15.6	0.5
5	21.9	0.8
6	28.1	1.1
7	34.4	1.4
8	40.6	1.7
9	46.8	2.0
10	53.1	2.3
11	59.3	2.7
12	65.6	3.0
13	71.8	3.3
14	78.1	3.6
15	84.3	3.9
16	90.5	4.2
17	96.8	4.5
18	103.0	4.8
19	109.3	5.1
20	115.6	5.5
21	121.7	5.8
22	128.0	6.1
23	134.2	6.4
24	140.5	6.7
25	146.7	7.0
26	153.0	7.3
27	159.2	7.6
28	165.4	8.0
29	171.7	8.3
30	177.9	8.6
31	184.2	8.9
32	190.4	9.2
33	196.7	9.5
34	202.9	9.8
35	209.1	10.1
36	215.4	10.4
37	221.6	10.8
38	227.9	11.0
39	234.1	11.4
40	240.3	11.7
41	246.6	12.0
42	252.8	12.3
43	259.0	12.6
44	265.3	12.9
45	271.6	13.3
46	277.8	13.6
47	284.0	13.9
48	290.3	14.2
49	296.5	14.5
50	302.8	14.8
51	309.0	15.1
52	315.3	15.4
53	321.5	15.7
54	327.7	16.1
55	334.0	16.4
56	340.2	16.7
57	346.5	17.0
58	352.7	17.3
59	359.0	17.6
60	365.2	17.9

TABLE D		
DEFLECTION, Δ = 3°48'51" TAPER = 15:1 RADIUS, R = 187.77' TANGENT, T = 6.25'		
POST NUMBER	X _i	Y _i
1	0.0	0.0
2	3.1	0.0
3	9.4	0.2
4	15.6	0.6
5	21.9	1.0
6	28.1	1.5
7	34.3	1.9
8	40.6	2.3
9	46.8	2.7
10	53.0	3.1
11	59.3	3.5
12	65.5	4.0
13	71.8	4.4
14	78.0	4.8
15	84.2	5.2
16	90.5	5.6
17	96.7	6.0
18	102.9	6.4
19	109.2	6.9
20	115.4	7.3
21	121.6	7.7
22	127.9	8.1
23	134.1	8.5
24	140.4	8.9
25	146.6	9.3
26	152.8	9.8
27	159.0	10.2
28	165.3	10.6
29	171.5	11.0
30	177.8	11.4
31	184.0	11.8
32	190.2	12.2
33	196.5	12.7
34	202.7	13.1
35	209.0	13.5
36	215.2	13.9
37	221.4	14.3
38	227.7	14.7
39	233.9	15.1
40	240.1	15.6
41	246.4	16.0
42	252.6	16.4
43	258.8	16.8
44	265.0	17.2
45	271.3	17.6
46	277.5	18.1
47	283.8	18.5
48	290.0	18.9
49	296.3	19.3
50	302.5	19.7
51	308.7	20.1
52	315.0	20.5
53	321.2	21.0
54	327.4	21.4
55	333.7	21.8
56	339.9	22.2
57	346.1	22.6
58	352.4	23.0
59	358.6	23.4
60	364.9	23.9



NOTE
THE X_i AND Y_i DISTANCES FOUND IN THE TABLES SHALL BE MEASURED FROM A LINE THAT PARALLELS THE EDGE OF THE PAVEMENT.

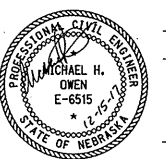


GUARDRAIL POSTS IN SURFACING

R2	JAN 18	NDOR BORDER TO NDOT BORDER
R1	DEC 16	UPDATED GUARDRAIL OFFSET TABLE
REV. NO.	DATE	DESCRIPTION OF REVISION

NEBRASKA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NO. 743-R2
GUARDRAIL DETAILS

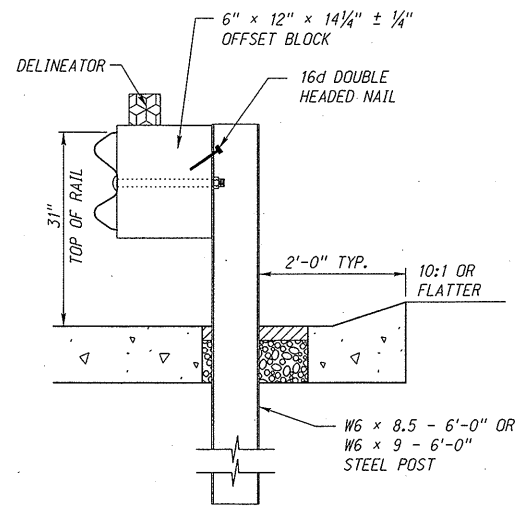
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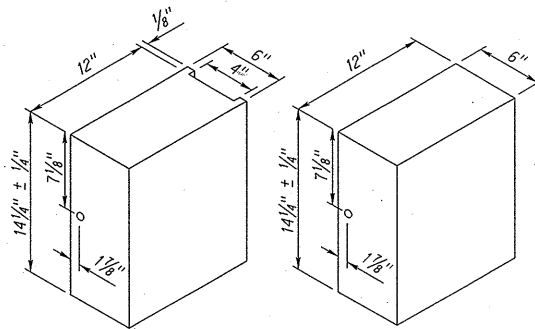
 Michael H. Owen
 E-6515
 DATE: 12/15/17

ORIGINAL: AUGUST 25, 2011
DATE

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SIDE VIEW
CURBED LOCATIONS:



NOTES:

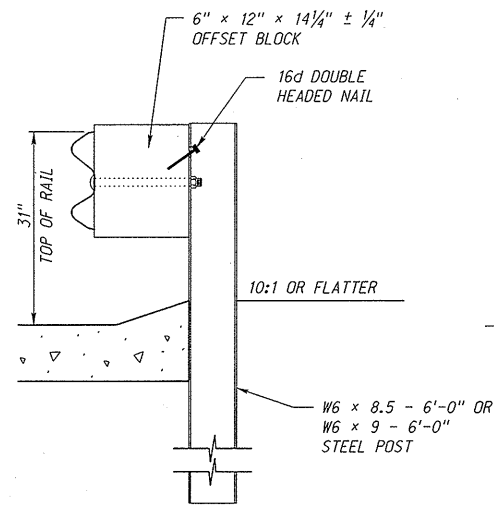
ALL HOLE DIAMETERS ARE 3/4"

W6 x 8.5 OR W6 x 9 POST & 1 1/4" ± 1/4" OFFSET BLOCKS, TO BE USED WITH MGS INSTALLATIONS.

OFFSET BLOCKS LISTED ON THE APPROVED PRODUCTS LIST MAY ALSO BE USED.

16d NAIL NEEDS TO BE PUT IN OFFSET BLOCK AGAINST POST IN EMPTY HOLE AS NEEDED TO PREVENT ROTATION WHEN NO RIBS ARE PRESENT.

ALTERNATE OFFSET BLOCK & STEEL POST
(FOR W-BEAM)



SIDE VIEW
NON-CURBED LOCATIONS:

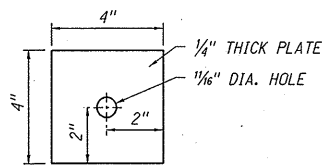
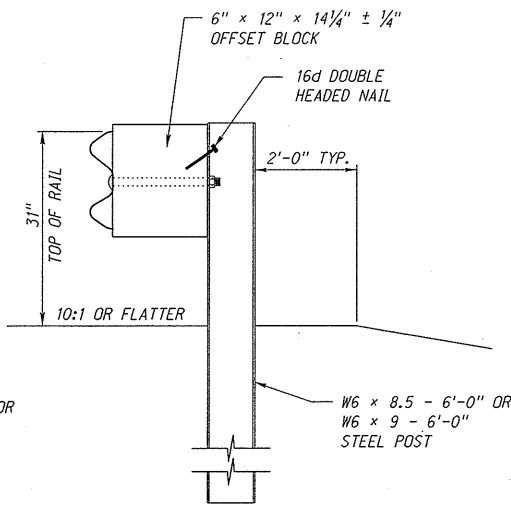
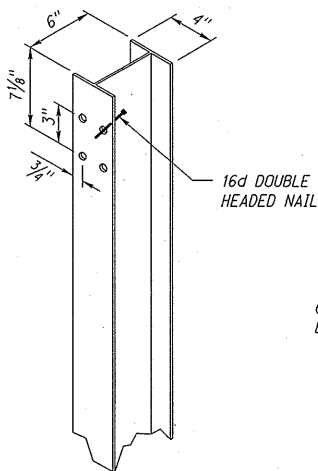
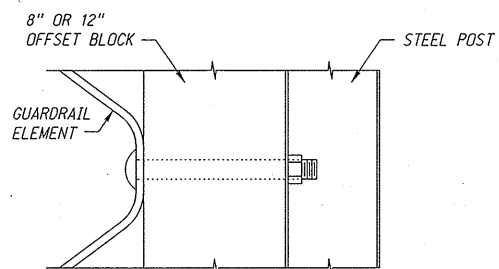
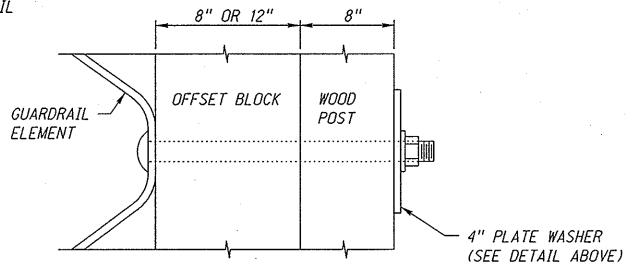


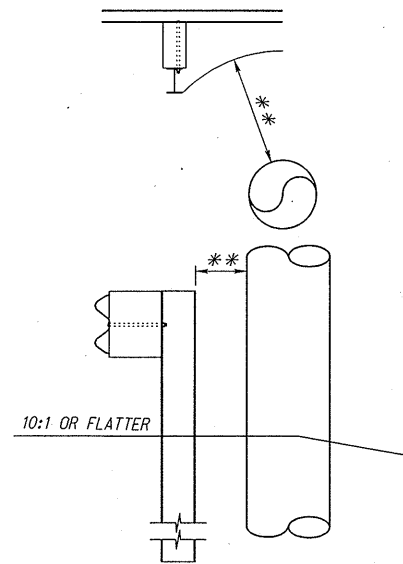
PLATE WASHER



WOOD POST BOLT ASSEMBLY



STEEL POST BOLT ASSEMBLY



MINIMUM REQUIRED GUARDRAIL OFFSET	
FROM BACK OF POST TO A POINT OBSTACLE (e.g. PIER COLUMN)**	
GUARDRAIL INSTALLATION TYPE	MINIMUM OFFSET*
THREE STRAND CABLE GUARDRAIL (LOW-TENSION)	12'-0" (4'-0" AND 16'-0" POST SPACING)
CABLE GUARDRAIL (HIGH-TENSION)	7'-0" TO 12'-0", DEPENDING ON THE SYSTEM
MIDWEST GUARDRAIL SYSTEM (MGS) & W-BEAM GUARDRAIL *	3'-0" 10'-0" FOR NORMAL POST SPACING (6'-3") 3'-5" FOR 1/2 POST SPACING (3'-1 1/2") 2'-6" FOR 1/4 POST SPACING (1'-6 3/4")
THREE-BEAM GUARDRAIL	2'-3" FOR NORMAL POSTS SPACING (6'-3")
FROM BACK OF POST TO A LINEAR OBSTRUCTION (e.g. MSE WALL)	
MGS & W-BEAM GUARDRAIL	4'-1" FROM NORMAL POST SPACING (6'-3") 3'-5" FOR 1/2 POST SPACING (3'-1 1/2") 2'-6" FOR 1/4 POST SPACING (1'-6 3/4")
THREE-BEAM GUARDRAIL	2'-10" FOR NORMAL POST SPACING (6'-3")

* BASED ON THE DYNAMIC DEFLECTIONS FROM THE NCHRP REPORT 350 STANDARD STRENGTH TEST FOR THE 4,400 LB. PICKUP TRUCK IMPACTING A BARRIER AT AN ANGLE OF 25° AT A VELOCITY OF 60 MPH.
**ADJUST THE POSTS LONGITUDINALLY SO THAT THEY WILL NOT BE PLACED DIRECTLY OPPOSITE A POINT OBSTACLE (E.G. PIER COLUMN, TREE). THE MINIMUM OFFSET BETWEEN THE BACK OF THE GUARDRAIL POST AND THE POINT OBSTACLE MAY BE FOUND IN THE TABLE ABOVE.

MINIMUM GUARDRAIL OFFSETS WHEN ADJACENT TO A FIXED OBSTACLE

DELINEATOR NOTES:

4 LANE: YELLOW ON LEFT AND WHITE ON RIGHT.
2 LANE: WHITE ON BOTH SIDES.

DELINEATORS ARE A MINIMUM OF 3" HIGH AND ARE DOUBLE-FACED HIGH INTENSITY DELINEATORS ON 2 LANE ROADWAYS, SINGLE-FACED HIGH INTENSITY DELINEATORS ON 4 LANE ROADWAYS.

WHEN GUARDRAIL IS ATTACHED TO A BRIDGE APPROACH SECTION: GUARDRAIL DELINEATION AT 12'-6" SPACING FOR THE FIRST 50', THEN 25' SPACING WHEN THE REMAINING GUARDRAIL LENGTH IS 150' OR LESS; USE 50' SPACING WHEN THE REMAINING GUARDRAIL LENGTH IS GREATER THAN 150'.

WHEN GUARDRAIL IS INDEPENDENT OF A BRIDGE: GUARDRAIL DELINEATION AT 25' SPACING WHEN THE GUARDRAIL LENGTH IS 200' OR LESS; USE 50' SPACING WHEN THE GUARDRAIL LENGTH IS GREATER THAN 200'.

DELINEATORS SUBSIDIARY TO GUARDRAIL.

NOTES:

BUTTON HEAD BOLT 5/8" DIA. x LENGTH AS REQUIRED, SECURED WITH HEX NUT.

ALL STEEL MEMBERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

POST SPACING SHALL BE 6'-3" UNLESS OTHERWISE NOTED IN THE PLANS.

GUARDRAIL LAPPING PROCEDURE TRAFFIC FLOW →

R2	JAN 18	NDOR BORDER TO NDOT BORDER
R1	DEC 16	UPDATED GUARDRAIL OFFSET TABLE
REV. NO.	DATE	DESCRIPTION OF REVISION
NEBRASKA DEPARTMENT OF TRANSPORTATION STANDARD PLAN NO. 743-R2 GUARDRAIL DETAILS		
ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:		
ORIGINAL: AUGUST 25, 2011		2 4

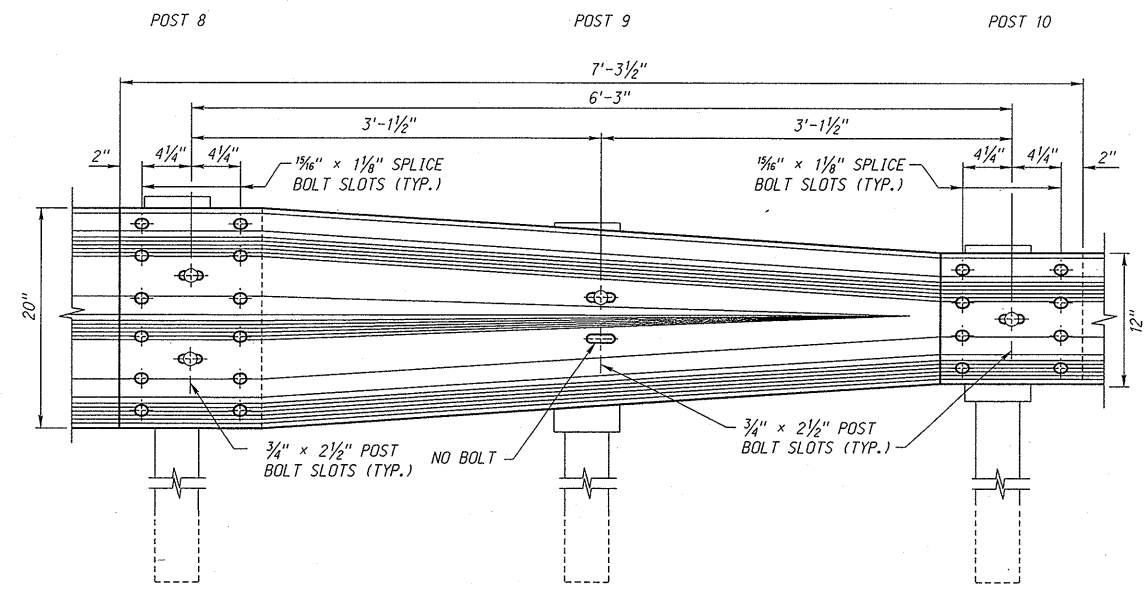
ROADWAY DESIGN DIVISION

Computer: NDOTDESIGN61

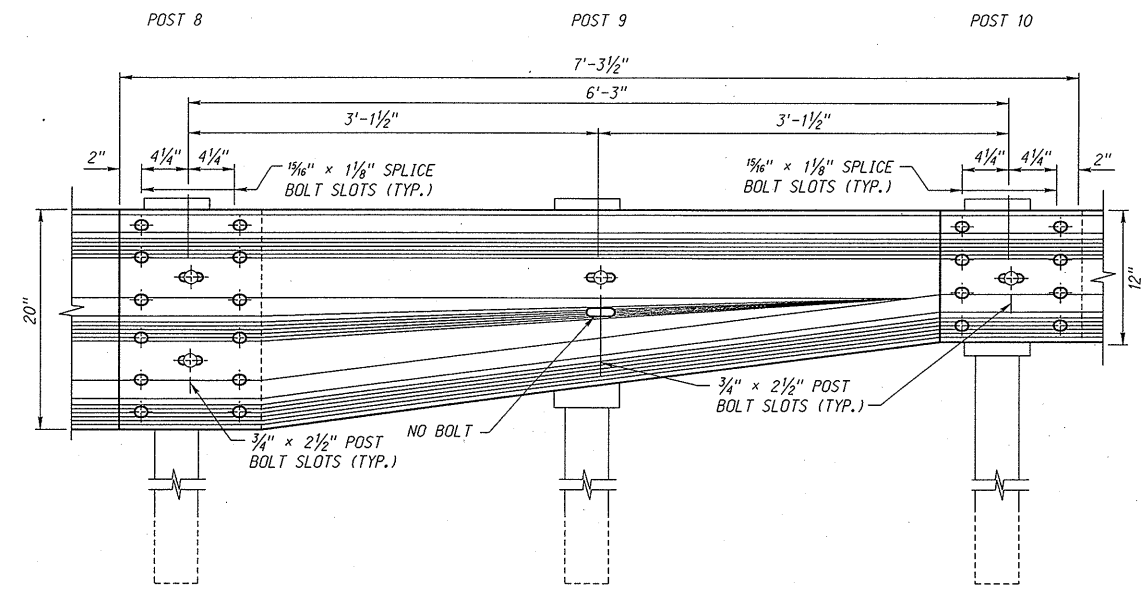
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Date: 15-DEC-2017 09:01

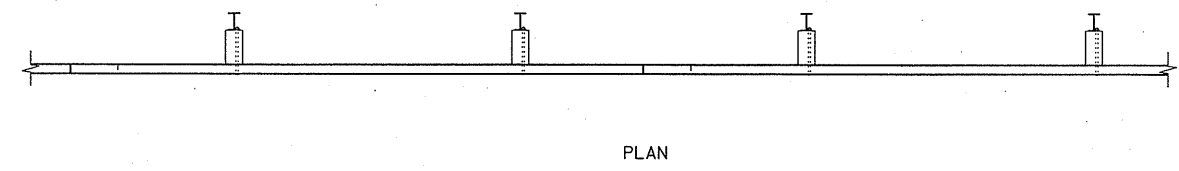
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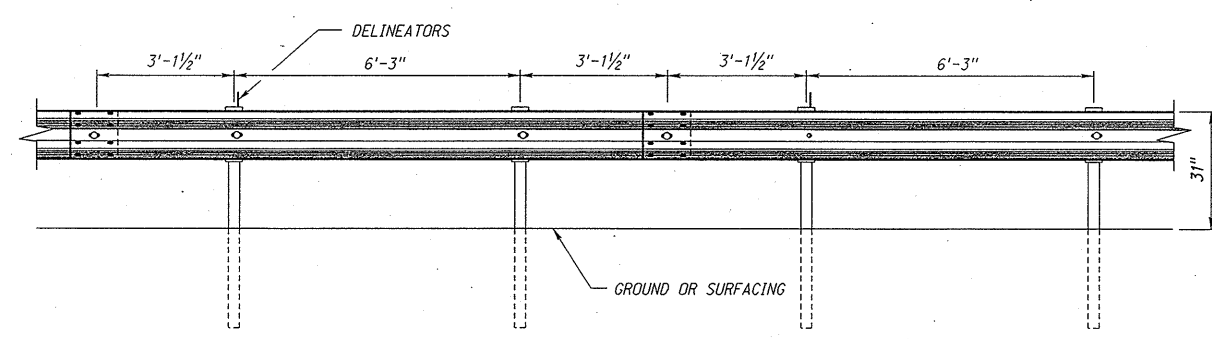
W-THRIE BEAM TRANSITION (10 GAUGE)
(34" ELEVATION FOR FUTURE 3" OVERLAY Y SHAPE)



W-THRIE BEAM TRANSITION (10 GAUGE)
31" ELEVATION (ASYMMETRICAL SHAPE)

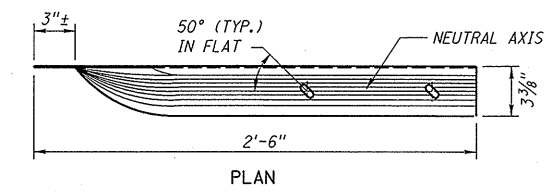


PLAN

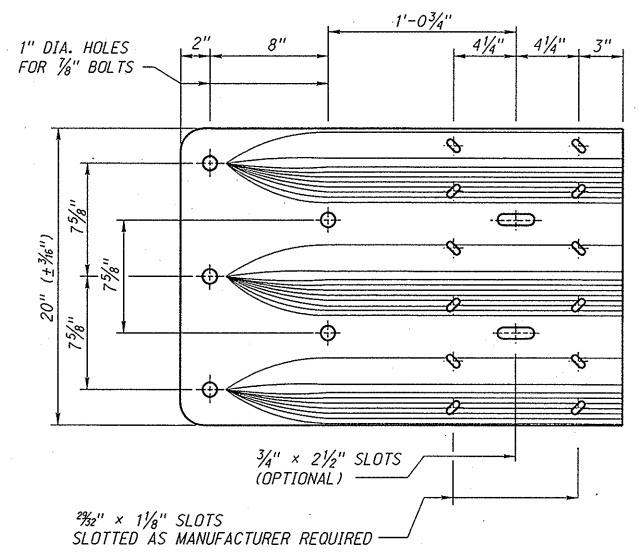


ELEVATION

MIDWEST GUARDRAIL SYSTEM (MGS) INSTALLATION
(PAID FOR AS W-BEAM GUARDRAIL)



PLAN



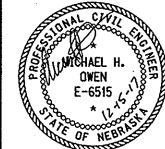
ELEVATION

THRIE-BEAM END SHOE

REV. NO.	DATE	DESCRIPTION OF REVISION
R2	JAN 18	NDOR BORDER TO NDOT BORDER
R1	DEC 16	UPDATED GUARDRAIL OFFSET TABLE

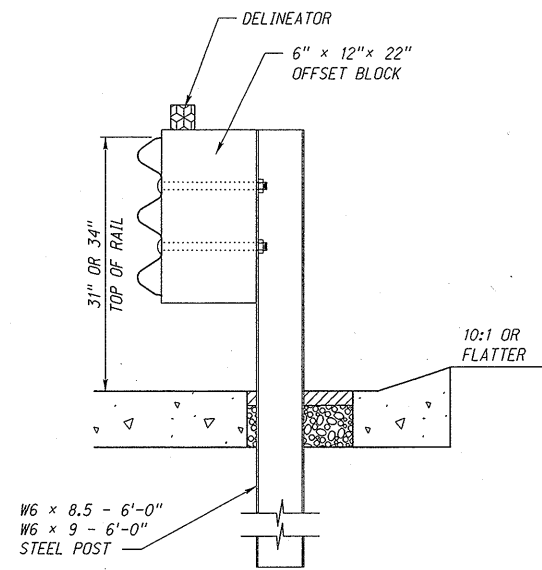
NEBRASKA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NO. 743-R2
GUARDRAIL DETAILS

ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:



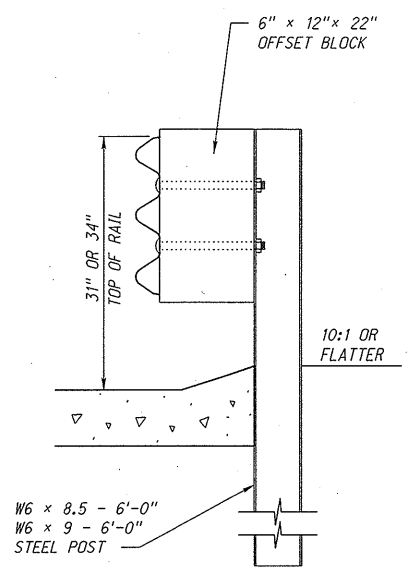
 MARK BARKGRENDS
 12/15/17
 DATE
 ORIGINAL:
 AUGUST 25, 2011
 DATE

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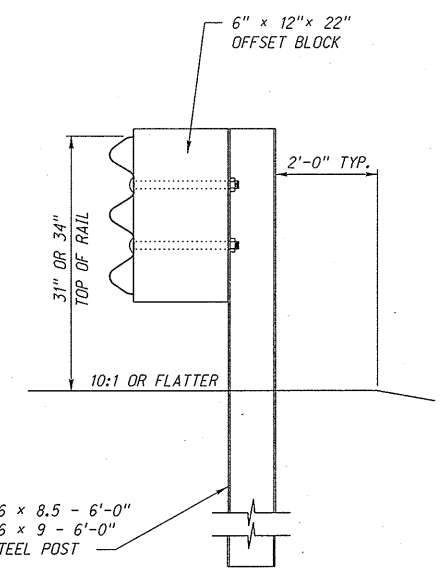
SIDE VIEW

THRIE-BEAM (CURBED LOCATIONS)

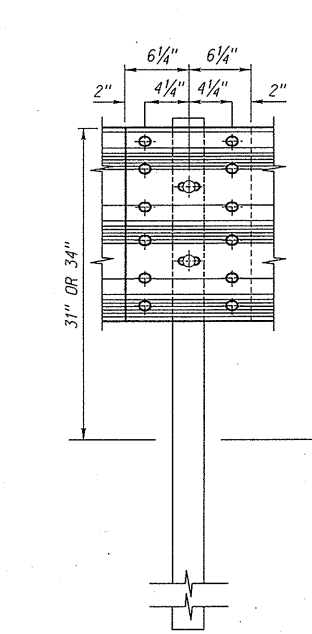


SIDE VIEW

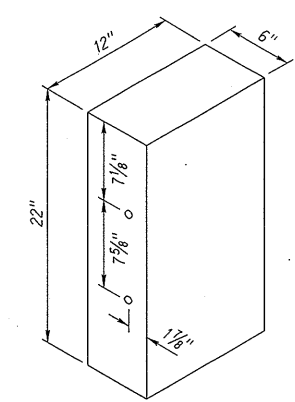
THRIE-BEAM (NON-CURBED LOCATIONS)



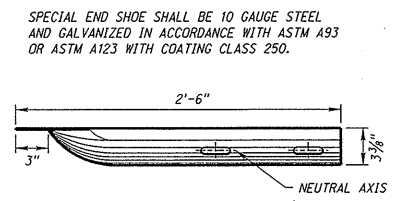
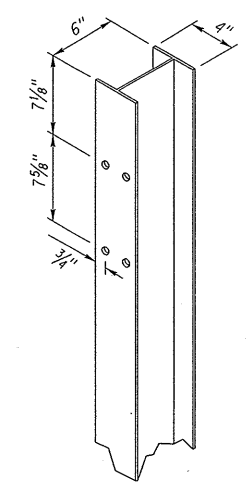
SIDE VIEW



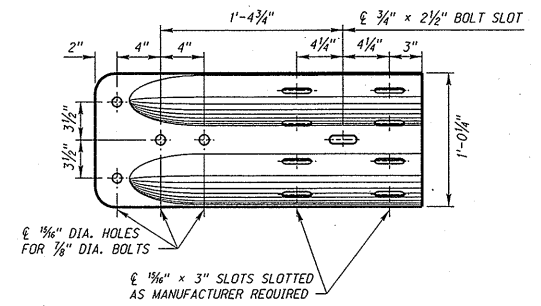
RAIL ELEMENT SPLICING AND POST MOUNTING DETAIL FOR 1/4 OR 1/2 POST SPACING



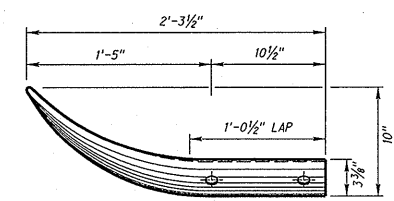
OFFSET BLOCK & STEEL POST (FOR THRIE-BEAM)



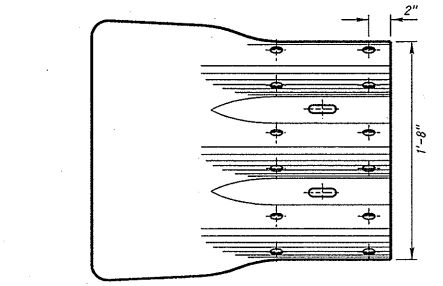
PLAN



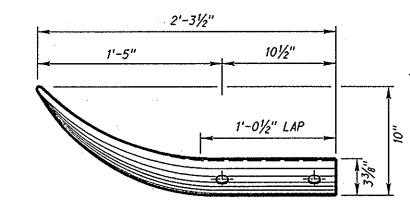
ELEVATION
W-BEAM END SHOE



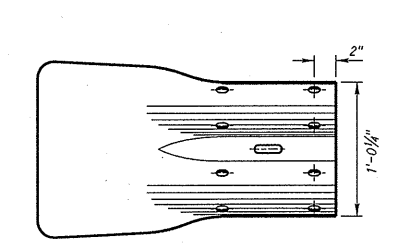
PLAN



ELEVATION
THRIE-BEAM TERMINAL SECTION



PLAN



ELEVATION
W-BEAM TERMINAL SECTION

NOTES:
ALL HOLE DIAMETERS ARE 3/4"
W6 x 8.5 POST & W6 x 9 & 22" OFFSET BLOCK, TO BE USED WITH THRIE-BEAM GUARDRAIL INSTALLATIONS.
OFFSET BLOCKS LISTED ON THE APPROVED PRODUCTS LIST MAY ALSO BE USED.

REV. NO.	DATE	DESCRIPTION OF REVISION
R2	JAN 18	NDOR BORDER TO NDOT BORDER
R1	DEC 16	UPDATED GUARDRAIL OFFSET TABLE

NEBRASKA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NO. 743-R2
GUARDRAIL DETAILS

ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:

	<p>M. Owen MIRY BARRONENS 12/15/17 DATE</p>
	<p>ORIGINAL: AUGUST 25, 2011 DATE</p>

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4

CHANNELIZATION DEVICES

THE FUNCTION OF CHANNELIZATION DEVICES IS TO WARN ROAD USERS OF CONDITIONS CREATED BY WORK ACTIVITIES IN OR NEAR THE TRAVELED WAY, TO PROTECT WORKERS IN THE TEMPORARY TRAFFIC CONTROL ZONE, AND TO GUIDE DRIVERS AND PEDESTRIANS SAFELY. CHANNELIZING DEVICES INCLUDE BUT ARE NOT LIMITED TO CONES, TUBULAR POSTS, VERTICAL PANELS, DRUMS, BARRICADES, TRAFFIC LANE DIVIDERS, TEMPORARY RAISED ISLANDS, AND BARRIERS.

DEVICES USED FOR CHANNELIZATION SHOULD PROVIDE FOR SMOOTH AND GRADUAL TRAFFIC MOVEMENT FROM ONE LANE TO ANOTHER, ONTO A BYPASS OR DETOUR, OR TO REDUCE THE WIDTH OF THE TRAVELED WAY. THEY MAY ALSO BE USED TO SEPARATE TRAFFIC FROM THE WORK SPACE, PAVEMENT DROP-OFFS, PEDESTRIAN PATHS, OR OPPOSING DIRECTIONS OF TRAFFIC.

CHANNELIZING DEVICES SHALL MEET THE CRASHWORTHY PERFORMANCE CRITERIA CONTAINED IN THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MSH). THEY SHOULD BE CONSTRUCTED AND BALLASTED TO PERFORM IN A PREDICTABLE MANNER WHEN INADVERTENTLY STRUCK BY A VEHICLE. IF STRUCK, THE DEVICE SHOULD YIELD OR BREAK AWAY, FRAGMENTS OR OTHER DEBRIS FROM THE DEVICE SHOULD NOT PENETRATE THE PASSENGER COMPARTMENT OF THE VEHICLE OR BE A POTENTIAL HAZARD TO WORKERS OR PEDESTRIANS IN THE IMMEDIATE AREA.

SPACING OF CHANNELIZING DEVICES SHOULD NOT EXCEED A DISTANCE IN FEET EQUAL TO THE SPEED WHEN USED FOR THE TAPER CHANNELIZATION, AND A DISTANCE IN FEET OF TWICE THE SPEED WHEN USED FOR TANGENT CHANNELIZATION.

SPACING OF CHANNELIZATION DEVICES		
SPEED (MPH)	SPACING OF DEVICES (FEET)	
	TAPER	TANGENT
25	25	50
35	35	70
45	45	90
55	55	110
60	60	120
65	65	130
75	75	150

WARNING LIGHTS MAY BE ADDED TO CHANNELIZING DEVICES IN AREAS WITH FREQUENT FOG, SNOW, OR SEVERE ROADWAY CURVATURE, OR WHERE VISUAL DISTRACTIONS ARE PRESENT, EXCEPT FOR THE SEQUENTIAL FLASHING WARNING LIGHTS. WARNING LIGHTS PLACED ON CHANNELIZING DEVICES USED IN A SERIES TO CHANNELIZE ROAD USERS SHALL BE STEADY-BURN.

THE RETROREFLECTIVE MATERIAL USED ON CHANNELIZING DEVICES SHALL HAVE A SMOOTH, SEALED OUTER SURFACE, MEETING THE REQUIREMENTS OF THE ASTM SPECIFICATION D4956, FOR TYPE IV SHEETING OR TYPE V REBOUNDABLE SHEETING (OR GREATER).

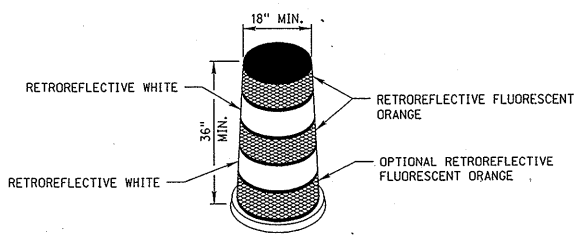
COEFFICIENT OF RETROREFLECTION (CD/LUX/M ²)			
WHITE	ORANGE	RED	YELLOW
250	100	45	170

THE AMERICAN TRAFFIC SAFETY SERVICES ASSOCIATION (ATSSA) "QUALITY GUIDELINES FOR WORK ZONE TRAFFIC CONTROL DEVICES" SHALL BE USED AS A VISUAL GUIDE FOR DETERMINING IF A TRAFFIC CONTROL DEVICE OR SIGN IS ACCEPTABLE, MARGINAL OR UNACCEPTABLE.

THE NAME AND TELEPHONE NUMBER OF THE AGENCY, CONTRACTOR, OR SUPPLIER MAY BE SHOWN ON THE CHANNELIZING DEVICE BACK OR SUPPORT, BUT NOT ON THE DEVICE FACE. THE LETTERS AND NUMBERS SHALL BE A NON-REFLECTIVE COLOR AND NOT OVER 15 SQUARE INCHES IN TOTAL AREA.

PARTICULAR ATTENTION SHOULD BE GIVEN TO MAINTAINING THE CHANNELIZING DEVICES TO KEEP THEM CLEAN, VISIBLE, AND PROPERLY POSITIONED. DEVICES SHALL BE REPLACED THAT ARE DAMAGED AND/OR HAVE LOST A SIGNIFICANT AMOUNT OF THEIR RETROREFLECTIVITY AND EFFECTIVENESS.

REFLECTORIZED PLASTIC DRUMS



DESIGN

REFLECTORIZED PLASTIC DRUMS USED FOR TRAFFIC WARNING OR CHANNELIZATION SHALL BE CONSTRUCTED OF LIGHTWEIGHT, FLEXIBLE, AND DEFORMABLE MATERIALS AND BE A MINIMUM OF 36 INCHES IN HEIGHT AND HAVE A MINIMUM WIDTH OF AT LEAST 18 INCHES. REGARDLESS OF ORIENTATION, THE PREDOMINANT COLOR OF THE DRUM SHALL BE ORANGE. METAL DRUMS SHALL NOT BE USED. THE MARKINGS ON DRUMS SHALL BE HORIZONTAL, SHALL BE CIRCUMFERENTIAL, AND SHALL DISPLAY FOUR 6 INCH WIDE BANDS OF RETROREFLECTIVE SHEETING, ALTERNATING FLUORESCENT ORANGE-WHITE-FLUORESCENT ORANGE-WHITE. DRUMS SHALL HAVE CLOSED TOPS THAT WILL NOT ALLOW COLLECTION OF CONSTRUCTION OR OTHER DEBRIS.

APPLICATION

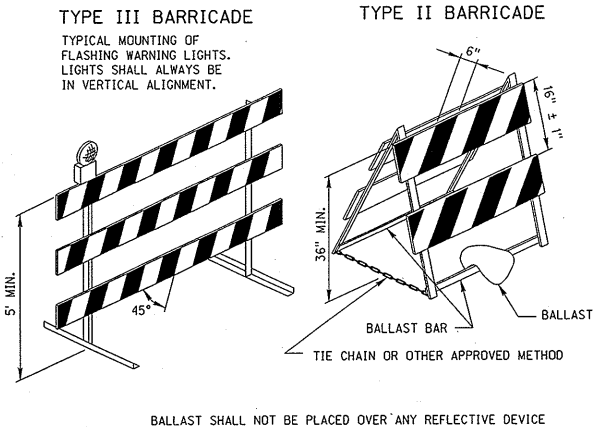
DRUMS ARE MOST COMMONLY USED TO CHANNELIZE OR DELINEATE TRAFFIC FLOW BUT MAY ALSO BE USED INDIVIDUALLY OR IN GROUPS TO MARK SPECIFIC LOCATIONS. DRUMS ARE HIGHLY VISIBLE AND HAVE GOOD TARGET VALUE; THEY GIVE THE APPEARANCE OF BEING FORMIDABLE OBSTACLES AND, THEREFORE, COMMAND THE RESPECT OF ROAD USERS.

BALLAST SHALL NOT BE PLACED ON TOP OF THE DRUM. DRUMS SHOULD NOT BE WEIGHED WITH SAND, WATER, OR ANY MATERIAL.

BARRICADES

BARRICADE TYPE	TYPE II	TYPE III
WIDTH OF RAIL *	8 INCHES MIN. - 12 INCHES MAX.	8 INCHES MIN. - 12 INCHES MAX.
LENGTH OF RAIL	36 INCHES	8 FEET **
WIDTH OF STRIPES	6 INCHES	6 INCHES
HEIGHT	36 INCHES	5 FEET
REFLECTIVE SHEETING	TYPE IV	TYPE IV
NUMBER OF REFLECTORIZED RAIL FACES	4 (TWO EACH DIRECTION)	6 (THREE EACH DIRECTION)

*NOMINAL DIMENSIONS ARE PERMISSIBLE WHEN CONSTRUCTED FROM LUMBER. **WHEN LATERAL SPACE IS LIMITED, SOME TYPE III BARRICADES WITH A 4 FOOT LENGTH OF RAIL, MAY BE ALLOWED WHEN APPROVED BY THE ENGINEER.



DESIGN

A BARRICADE IS A PORTABLE OR FIXED DEVICE HAVING TWO OR THREE RAILS WITH APPROPRIATE MARKINGS. IT IS USED TO CONTROL ROAD USERS BY CLOSING, RESTRICTING, OR DELINEATING ALL OR A PORTION OF THE RIGHT-OF-WAY.

BARRICADES SHALL BE ONE OF TWO TYPES: TYPE II OR TYPE III.

STRIPES ON BARRICADE RAILS SHALL BE ALTERNATING ORANGE AND WHITE RETROREFLECTIVE STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION ROAD USERS ARE TO PASS. THE STRIPES SHALL BE 6 INCHES WIDE. THE MINIMUM RAIL LENGTH FOR A TYPE II BARRICADE IS 36 INCHES.

WHERE BARRICADES EXTEND ENTIRELY ACROSS A ROADWAY, THE STRIPES SHOULD SLOPE DOWNWARD IN THE DIRECTION TOWARD WHICH ROAD USERS MUST TURN. WHERE BOTH RIGHT AND LEFT TURNS ARE PROVIDED, THE STRIPES MAY SLOPE DOWNWARD IN BOTH DIRECTIONS FROM THE CENTER OF THE BARRICADE OR BARRICADES. WHERE NO TURNS ARE INTENDED, THE STRIPES SHOULD SLOPE DOWNWARD TOWARD THE CENTER OF THE BARRICADE OR BARRICADES.

BARRICADE RAILS SHOULD BE SUPPORTED IN A MANNER THAT WILL ALLOW THEM TO BE SEEN BY THE ROAD USER, AND IN A MANNER THAT PROVIDES A STABLE SUPPORT THAT IS NOT EASILY BLOWN OVER OR DISPLACED.

ON HIGH-SPEED ROADWAYS OR IN OTHER SITUATIONS WHERE BARRICADES MAY BE SUSCEPTIBLE TO OVERTURNING IN THE WIND, SANDBAGS SHOULD BE USED FOR BALLASTING. SANDBAGS MAY BE PLACED ON LOWER PARTS OF THE FRAME OR STAYS TO PROVIDE THE REQUIRED BALLAST BUT SHALL NOT BE PLACED ON TOP OF ANY STRIPED RAIL. BARRICADES SHALL NOT BE BALLASTED BY HEAVY OBJECTS SUCH AS ROCKS OR CHUNKS OF CONCRETE.

THE BARRICADE OWNERS NAME, NOT TO EXCEED 15 SQUARE INCHES SHALL BE SHOWN ON THE BARRICADE BACK OR SUPPORT BUT NOT ON ITS FACE.

** WHEN LATERAL SPACE IS LIMITED, SOME TYPE III BARRICADES WITH A 4 FOOT LENGTH OF RAIL, MAY BE ALLOWED WHEN APPROVED BY THE ENGINEER.

APPLICATION

TYPE II BARRICADES ARE INTENDED FOR USE IN SITUATIONS WHERE TRAFFIC IS MAINTAINED THROUGH THE TEMPORARY TRAFFIC CONTROL ZONE. THEY MAY BE USED INDIVIDUALLY OR IN GROUPS TO MARK A SPECIFIC CONDITION, OR THEY MAY BE USED IN A SERIES FOR CHANNELIZING TRAFFIC. ON THE INTERSTATE, FREEWAY AND EXPRESSWAY SYSTEM, TYPE II BARRICADES SHALL NOT BE USED FOR CHANNELIZATION.

TYPE III BARRICADES USED AT A ROAD CLOSURE MAY EXTEND COMPLETELY ACROSS A ROADWAY FROM CURB TO CURB. WHERE PROVISION IS MADE FOR ACCESS OF AUTHORIZED EQUIPMENT AND VEHICLES, THE RESPONSIBILITY FOR THE TYPE III BARRICADES SHOULD BE ASSIGNED TO A PERSON WHO SHALL PROVIDE PROPER CLOSURE AT THE END OF EACH WORK DAY.

WHEN A HIGHWAY IS LEGALLY CLOSED BUT ACCESS MUST STILL BE ALLOWED FOR LOCAL TRAFFIC, THE TYPE III BARRICADES MAY NOT BE EXTENDED COMPLETELY ACROSS A ROADWAY. A SIGN WITH THE APPROPRIATE LEGEND CONCERNING PERMISSIBLE USE BY LOCAL TRAFFIC SHALL BE MOUNTED.

NORMALLY PERMANENT SIGNS MOUNTED ON BARRICADES SHALL BE ERRECTED ABOVE THE BARRICADE. THE SIGNS "ROAD CLOSED", OR "ROAD WORK AHEAD", FOR EXAMPLE CAN EFFECTIVELY BE MOUNTED ABOVE THE BARRICADE THAT CLOSURES THE ROADWAY. TYPE III BARRICADES SHALL BE SUPPLEMENTED WITH A LIGHTING DEVICE UNLESS SPECIFICALLY OMITTED BY THE ENGINEER. DETOUR ARROW AND LARGE WARNING ARROW SIGNS SHOULD BE PLACED ON THE FACE OF BARRICADE.

CONES



DESIGN

CONES SHALL BE PREDOMINANTLY ORANGE, FLUORESCENT RED-ORANGE, OR FLUORESCENT YELLOW/ORANGE, NOT LESS THAN 28 INCHES IN HEIGHT, AND SHALL BE MADE OF A MATERIAL THAT CAN BE STRUCK WITHOUT DAMAGING VEHICLES ON IMPACT. CONES WHEN ALLOWED ON THE INTERSTATE, FREEWAY OR EXPRESSWAY SYSTEM SHALL BE A MINIMUM OF 36 INCHES IN HEIGHT.

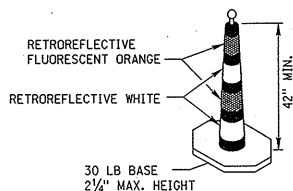
FOR NIGHTTIME USE, CONES SHALL BE RETROREFLECTIVE OR EQUIPPED WITH LIGHTING DEVICES FOR MAXIMUM VISIBILITY. RETROREFLECTION OF 28 INCH OR 36 INCH CONES SHALL BE PROVIDED BY A WHITE BAND 6 INCHES WIDE, NO MORE THAN 4 INCHES FROM THE TOP OF THE CONE, AND AN ADDITIONAL 4 INCH WIDE WHITE BAND A MINIMUM OF 2 INCHES BELOW THE 6 INCH BAND.

APPLICATION

TRAFFIC CONES ARE USED TO CHANNELIZE TRAFFIC, DIVIDE OPPOSING TRAFFIC LANES, DIVIDE TRAFFIC LANES WHEN TWO OR MORE LANES ARE KEPT OPEN IN THE SAME DIRECTION, AND DELINEATE SHORT-DURATION MAINTENANCE AND UTILITY WORK. CONES SHALL NOT BE USED FOR LANE CLOSURE TAPERS OR SHIFTS, CONES SMALLER THAN 42 INCHES SHALL NOT BE USED AT NIGHT ON RURAL HIGHWAYS, UNLESS SHOWN ON THE PLANS OR AS APPROVED OR DIRECTED BY THE ENGINEER.

STEPS SHOULD BE TAKEN TO ENSURE THAT CONES WILL NOT BE BLOWN OVER OR DISPLACED BY WIND OR MOVING TRAFFIC. CONES CAN BE DOUBLED UP TO INCREASE THEIR WEIGHT. SOME CONES ARE CONSTRUCTED WITH BASES THAT CAN BE FILLED WITH BALLAST. OTHERS HAVE SPECIAL WEIGHTED BASES, OR WEIGHTS SUCH AS SANDBAG RINGS THAT CAN BE DROPPED OVER THE CONES AND ONTO THE BASE TO PROVIDE ADDED STABILITY. BALLAST, HOWEVER, SHOULD NOT PRESENT A HAZARD IF THE CONES ARE INADVERTENTLY STRUCK.

42 INCH CONES



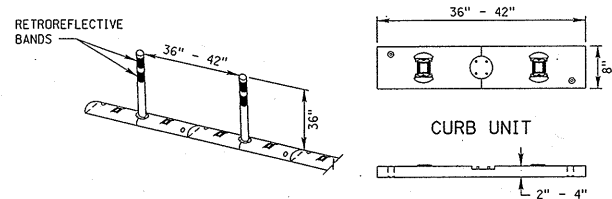
DESIGN

42 INCH CONES SHALL INCLUDE A 30 POUND RUBBER BASE AND DISPLAY FOUR 6 INCH WIDE BANDS OF RETROREFLECTIVE SHEETING, ALTERNATING FLUORESCENT ORANGE-WHITE-FLUORESCENT ORANGE-WHITE.

APPLICATION

WHEN APPROVED BY THE ENGINEER OR SHOWN IN THE PLANS, 42 INCH REFLECTIVE CONES MAY BE USED IN LIEU OF TYPE II BARRICADES OR REFLECTORIZED DRUMS. 42 INCH CONES SHALL NOT BE USED FOR LANE-CLOSURE TAPERS OR SHIFTS. IF A RECTANGULAR BASE IS USED, THE LONG SIDE OF THE BASE SHOULD BE ORIENTED PARALLEL TO THE DIRECTION OF TRAFFIC.

TUBULAR POST AND CURB SYSTEM



DESIGN

TUBULAR POSTS USED IN THE SYSTEM SHALL BE 36 INCHES HIGH AND A MINIMUM OF 2 INCHES WIDE WHEN FACING TRAFFIC. THE TUBULAR POST AND CURB SYSTEM SHALL BE MADE OF A MATERIAL THAT CAN BE STRUCK WITHOUT DAMAGING IMPACTING VEHICLES. THE COLOR SHALL BE AS SHOWN IN THE PLANS.

THE TUBULAR POSTS SHALL BE RETROREFLECTIVE. RETROREFLECTION OF TUBULAR POSTS SHALL BE PROVIDED BY TWO 3-INCH WIDE RETROREFLECTIVE BANDS PLACED A MAXIMUM OF 2 INCHES FROM THE TOP WITH A MAXIMUM OF 6 INCHES BETWEEN THE BANDS. EACH CURB SECTION SHALL CONTAIN ONE RETROREFLECTIVE MARKER FACING EACH DIRECTION OF TRAFFIC. THE COLOR OF THE RETROREFLECTIVE BANDS AND MARKERS SHALL MATCH THE POST/CURB COLOR.

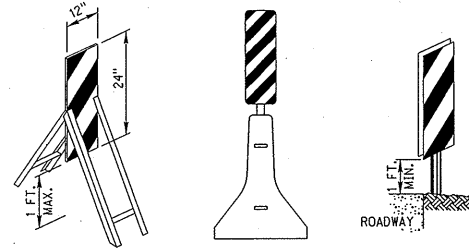
THE CURB SECTIONS SHALL BE CONFIGURED TO ALLOW FOR DRAINAGE FROM THE PAVEMENT SURFACE.

APPLICATION

TUBULAR POST AND CURB SYSTEMS MAY BE USED TO DIVIDE OPPOSING LANES OF TRAFFIC OR TO DIVIDE TRAFFIC LANES WHEN TWO OR MORE LANES ARE KEPT OPEN IN THE SAME DIRECTION. FASTENING THE CURBS TO THE PAVEMENT WITH ANCHOR BOLTS OR OTHER SUITABLE METHODS AS DIRECTED BY THE MANUFACTURER IS REQUIRED TO MINIMIZE THE CHANCE OF BEING MOVED BY TRAFFIC.

TUBULAR POST AND CURB SYSTEMS SHALL BE INSTALLED IN THE LOCATIONS SHOWN IN THE PLANS OR DIRECTED BY THE ENGINEER.

VERTICAL PANELS



DESIGN

RETROREFLECTIVE MATERIAL ON VERTICAL PANELS SHALL BE 12 INCHES WIDE AND AT LEAST 24 INCHES HIGH. THEY SHALL HAVE ALTERNATING ORANGE AND WHITE STRIPES, WHERE THE HEIGHT OF THE RETROREFLECTIVE MATERIAL ON THE VERTICAL PANEL IS MORE THAN 36 INCHES, A PANEL STRIPE WIDTH OF 6 INCHES SHALL BE USED. WHERE THE HEIGHT OF THE RETROREFLECTIVE MATERIAL ON THE VERTICAL PANEL IS 36 INCHES OR LESS, A PANEL STRIPE WIDTH OF 4 INCHES SHALL BE USED. IF USED FOR TWO-WAY TRAFFIC, BACK-TO-BACK PANELS SHALL BE USED.

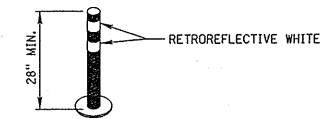
MARKINGS FOR VERTICAL PANELS SHALL BE ALTERNATING ORANGE AND WHITE RETROREFLECTORIZED STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION TRAFFIC IS TO PASS.

POST MOUNTED VERTICAL PANELS SHALL BE MOUNTED WITH THE BOTTOM A MINIMUM OF 1 FOOT ABOVE THE ROADWAY. VERTICAL PANELS ON A TEMPORARY STAND SHALL BE MOUNTED WITH THE BOTTOM A MAXIMUM OF 1 FOOT ABOVE THE ROADWAY.

APPLICATION

WHERE SPACE IS LIMITED VERTICAL PANELS MAY BE USED TO CHANNEL TRAFFIC, DIVIDE OPPOSING LANES OF TRAFFIC, DIVIDE TRAFFIC LANES OR REPLACE BARRICADES. WHEN APPROVED BY THE ENGINEER, VERTICAL PANELS MAY BE POST-MOUNTED ALONG THE SIDE OF THE ROADWAY.

TUBULAR POSTS



DESIGN

TUBULAR POSTS SHALL BE PREDOMINANTLY ORANGE, NOT LESS THAN 28 INCHES HIGH, BE A MINIMUM OF 2 INCHES WIDE WHEN FACING TRAFFIC, AND MADE OF A MATERIAL THAT CAN BE STRUCK WITHOUT DAMAGING IMPACTING VEHICLES.

TUBULAR POSTS SHALL BE RETROREFLECTIVE. RETROREFLECTION OF TUBULAR POSTS SHALL BE PROVIDED BY TWO 3 INCHES WIDE WHITE BANDS PLACED A MAXIMUM OF 2 INCHES FROM THE TOP, WITH A MAXIMUM OF 6 INCHES BETWEEN THE BANDS. THE BASE SHALL NOT BE WIDER THAN 12 INCHES OR HIGHER THAN 2 INCHES.

APPLICATION

TUBULAR POSTS HAVE LESS VISIBLE AREA THAN OTHER DEVICES AND SHOULD BE USED ONLY WHERE SPACE RESTRICTIONS DO NOT ALLOW FOR THE USE OF OTHER MORE VISIBLE DEVICES. THEY MAY BE USED EFFECTIVELY TO DIVIDE OPPOSING LANES OF TRAFFIC OR TO DIVIDE TRAFFIC LANES WHEN TWO OR MORE LANES ARE KEPT OPEN IN THE SAME DIRECTION.

STEPS SHOULD BE TAKEN TO ASSURE THAT TUBULAR POSTS WILL NOT BE BLOWN OVER OR DISPLACED BY TRAFFIC BY EITHER AFFIXING THEM TO THE PAVEMENT WITH ANCHOR BOLTS OR ADHESIVE. IF A NONCYLINDRICAL DEVICE IS USED, IT SHALL BE ATTACHED TO THE PAVEMENT TO ENSURE THAT THE WIDTH FACING TRAFFIC MEETS THE MINIMUM REQUIREMENTS.

TUBULAR POSTS SHOULD NOT BE USED FOR PEDESTRIAN CHANNELIZATION OR A PEDESTRIAN BARRIERS IN TEMPORARY TRAFFIC CONTROL ZONES ON OR ALONG SIDEWALKS.

R7	JAN 18	NDOR BORDER TO NDOT BORDER
R6	JUN 14	2009 MUTCD UPDATE
R5	OCT 98	REVISE CHANNELIZATION DEVICES, TAPER
REV. NO.	DATE	DESCRIPTION OF REVISION

NEBRASKA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NO. 920-R7
**TRAFFIC CONTROL,
CONSTRUCTION AND MAINTENANCE**

ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:

DATE: 9-1-2017

DANIEL J. WADDLE

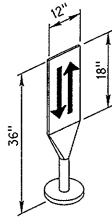
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STATE OF NEBRASKA

DATE: OCTOBER 1998

1
3

OPPOSING TRAFFIC LANE DIVIDERS



DESIGN

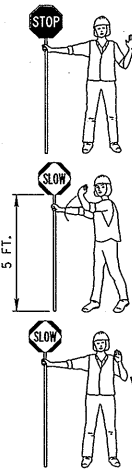
OPPOSING TRAFFIC LANE DIVIDERS SHALL BE A TWO SIDED UPRIGHT RETROREFLECTORIZED ORANGE PANEL, WITH A WIDTH OF 12 INCHES AND A HEIGHT OF 18 INCHES. THE TOP OF THE PANEL SHALL BE 36 INCHES ABOVE THE PAVEMENT. THE SYMBOL ON EACH SIDE SHALL BE TWO OPPOSING BLACK ARROWS. THE LANE DIVIDER SHALL BE MADE OF LIGHTWEIGHT MATERIAL THAT WILL YIELD UPON IMPACT BY A VEHICLE. THE LANE DIVIDER BASE SHALL NOT BE WIDER THAN 12 INCHES OR HIGHER THAN 4 INCHES. THE BASE SHALL BE ATTACHED TO THE EXISTING SURFACE BY EPOXY OR OTHER SUITABLE ADHESIVE, TO ENSURE THAT THE PANEL REMAINS FACING TRAFFIC.

APPLICATION

OPPOSING TRAFFIC LANE DIVIDERS ARE DELINEATION DEVICES USED AS CENTER LANE DIVIDERS TO SEPARATE OPPOSING TRAFFIC ON A TWO-LANE, TWO-WAY OPERATION.

FLAGGERS

REQUIRED METHOD



TO STOP TRAFFIC

TRAFFIC PROCEED

TO ALERT AND SLOW TRAFFIC

EMERGENCY USE ONLY



FLAGGER PADDLE

THE STOP/SLOW PADDLE SHALL HAVE AN OCTAGONAL SHAPE ON A RIGID HANDLE. STOP/SLOW PADDLES SHALL BE AT LEAST 18 INCHES WIDE WITH LETTERS AT LEAST 6 INCHES HIGH. IF THE STOP/SLOW PADDLE IS PLACED ON A RIGID STAFF, THE MINIMUM LENGTH OF THE STAFF, MEASURED FROM THE BOTTOM OF THE SIGN TO THE END OF THIS STAFF THAT RESTS ON THE GROUND, SHOULD BE 5 FEET. THE STOP/SLOW PADDLE SHOULD BE THE PRIMARY AND PREFERRED HAND-SIGNALING DEVICE BECAUSE THE STOP/SLOW PADDLE GIVES ROAD USERS MORE POSITIVE GUIDANCE THAN RED FLAGS. USE OF FLAGS SHOULD BE LIMITED TO EMERGENCY SITUATIONS.

FLAGGERS

A FLAGGER MUST BE DRESSED FOR SAFETY. IN ADDITION TO THE REQUIREMENTS OF THE "WORKER VISIBILITY" SECTION LISTED BELOW, FLAGGERS SHALL WEAR:

1. AN ORANGE OR YELLOW/GREEN CAP OR HARD HAT.
2. A SHIRT WITH SLEEVES, PANTS AND SHOES (TANK TOPS, SHORTS OR SANDALS SHALL NOT BE WORN).

FLAGGERS SHALL BE INSTRUCTED IN THE PROPER LOCATION, DUTIES AND PROCEDURES FOR FLAGGING AS OUTLINED IN THE CURRENT MUTCD AND THE DEPARTMENT OF ROADS FLAGGER'S HANDBOOK. AS REQUIRED BY THE DEPARTMENT OF ROADS, THE FLAGGER SHALL BE CERTIFIED, AND HAVE IN THEIR POSSESSION, A VALID FLAGGER CERTIFICATION CARD.

WORKER VISIBILITY

ALL WORKERS WITHIN THE RIGHT-OF-WAY WHO ARE EXPOSED EITHER TO TRAFFIC (VEHICLES USING THE HIGHWAY FOR PURPOSES OF TRAVEL) OR TO CONSTRUCTION EQUIPMENT WITHIN THE WORK AREA SHALL WEAR HIGH-VISIBILITY SAFETY APPAREL. HIGH-VISIBILITY SAFETY APPAREL IS DEFINED TO MEAN PERSONAL PROTECTIVE SAFETY CLOTHING THAT:

1. IS INTENDED TO PROVIDE CONSPICUITY DURING BOTH DAYTIME AND NIGHTTIME USAGE, AND
2. MEETS THE PERFORMANCE CLASS 2 OR CLASS 3 REQUIREMENTS OF THE ANSI/ISEA 107-2004 PUBLICATION ENTITLED "AMERICAN NATIONAL STANDARDS FOR HIGH-VISIBILITY SAFETY APPAREL AND HEADWEAR"

LIGHTING DEVICES

FUNCTION

CONSTRUCTION AND MAINTENANCE ACTIVITIES OFTEN CREATE CONDITIONS ON OR NEAR THE TRAVELED WAY THAT ARE PARTICULARLY HAZARDOUS AT NIGHT. IT IS OFTEN DESIRABLE AND NECESSARY TO SUPPLEMENT THE REFLECTORIZED SIGNS, BARRIERS, AND CHANNELIZING DEVICES WITH LIGHTING DEVICES. STROBE TYPE LIGHTS ARE NOT PERMITTED.

BARRICADE WARNING LIGHTS DESIGN (BATTERY OPERATED)

TYPE "A" LOW INTENSITY FLASHING WARNING LIGHTS ARE MOST COMMONLY MOUNTED ON BARRICADES, OR WITH SIGNS AND ARE INTENDED TO WARN THE DRIVER THAT THEY ARE PROCEEDING IN A HAZARDOUS AREA. THESE LIGHTS SHALL NOT BE USED FOR DELINEATION, AS A SERIES OF FLASHING LIGHTS IN A ROW WOULD TEND TO OBSCURE THE DESIRED PATH.

TYPE "A" HIGH INTENSITY FLASHING WARNING LIGHTS ARE NORMALLY MOUNTED ON THE TYPE III BARRICADE THAT ACCOMPANIES THE ADVANCE WARNING SIGNS.

TYPE "C" STEADY BURN LIGHTS AS USED HEREIN, SHALL MEAN A SERIES OF LOW WATTAGE YELLOW ELECTRIC LIGHTS. WHERE LIGHTS ARE NEEDED TO DELINEATE OR MARK THE TRAVELED WAY THROUGH AND AROUND OBSTRUCTIONS IN A CONSTRUCTION MAINTENANCE AREA, THE DELINEATION SHALL BE ACCOMPLISHED BY USE OF STEADY BURNING LIGHTS. WHEN USED TO SUPPLEMENT CHANNELIZATION, THE MAXIMUM SPACING FOR WARNING LIGHTS SHOULD BE IDENTICAL TO THE CHANNELIZING DEVICE SPACING REQUIREMENTS. WHEN USED TO DELINEATE A CURVE, TYPE "C" WARNING LIGHTS SHOULD ONLY BE USED ON DEVICES ON THE OUTSIDE OF THE CURVE, AND NOT ON THE INSIDE OF THE CURVE.

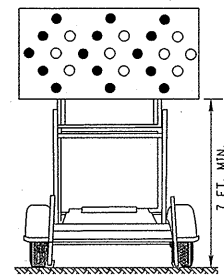
FLASHING ARROW PANEL (DISPLAY)

AN ARROW PANEL IS A SIGN WITH A MATRIX OF ELEMENTS, CAPABLE OF EITHER FLASHING OR SEQUENTIAL DISPLAYS. THIS SIGN SHALL PROVIDE ADDITIONAL WARNING AND DIRECTIONAL INFORMATION TO ASSIST IN MERGING AND CONTROLLING ROAD USERS THROUGH OR AROUND A TEMPORARY TRAFFIC CONTROL ZONE. AN ARROW PANEL SHOULD BE USED IN COMBINATION WITH APPROPRIATE SIGNS, CHANNELIZING DEVICES OR OTHER TRAFFIC CONTROL DEVICES.

DESIGN

ARROW PANELS SHALL MEET THE SIZE AND SPECIFICATIONS OF THE MUTCD FOR TYPE "C" ARROW DISPLAYS.

FLASHING ARROW PANEL SHALL BE RECTANGULAR, OF SOLID APPEARANCE AND FINISHED IN NON-REFLECTIVE BLACK. THE PANEL SHALL BE MOUNTED ON A VEHICLE, TRAILER OR OTHER SUITABLE SUPPORT. MINIMUM MOUNTING HEIGHT MEASURED VERTICALLY FROM THE BOTTOM OF THE PANEL TO THE ROADWAY BELOW IT OR TO THE ELEVATION OF THE NEAR EDGE OF THE ROADWAY, SHALL BE 7 FEET EXCEPT ON VEHICLE-MOUNTED PANELS, WHICH SHOULD BE AS HIGH AS PRACTICAL.



THE FOLLOWING SELECTIONS SHALL BE PROVIDED ON THE ARROW PANEL	
OPERATING MODE	PANEL DISPLAY
FLASHING ARROW	RIGHT SHOWN; LEFT OPPOSITE
SEQUENTIAL ARROW	RIGHT SHOWN; LEFT OPPOSITE
SEQUENTIAL CHEVRON	RIGHT SHOWN; LEFT OPPOSITE
FLASHING DOUBLE ARROW	
FLASHING OR ALTERNATING CAUTION	OR OR

THE ARROW PANEL SHALL HAVE A MINIMUM SIZE OF 96 INCHES WIDE AND 48 INCHES HIGH. THE MINIMUM LEGIBILITY DISTANCE SHALL BE 1 MILE. THE PANEL SHALL CONTAIN 25 LAMP ELEMENTS. ARROW PANEL ELEMENTS SHALL BE CAPABLE OF A MINIMUM 50 PERCENT DIMMING, AUTOMATICALLY WHEN AMBIENT LIGHT FALLS BELOW 50 LUX.

THE MINIMUM ELEMENT "ON TIME" SHALL BE 50 PERCENT FOR THE FLASHING MODE AND EQUAL INTERVALS OF 25 PERCENT FOR EACH SEQUENTIAL CHEVRON PHASE. THE FLASHING RATE SHALL BE NO FEWER THAN 25 NOR MORE THAN 40 FLASHES PER MINUTE.

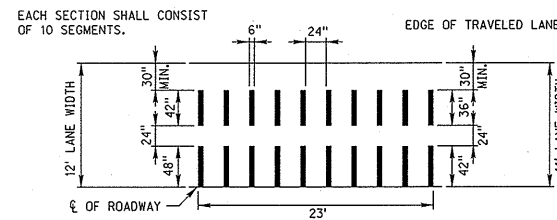
APPLICATION

A FLASHING ARROW OR SEQUENTIAL CHEVRON MODE SHALL ONLY BE USED FOR STATIONARY OR MOVING LANE CLOSURES.

FOR SHOULDER WORK BLOCKING THE SHOULDER, FOR ROADSIDE WORK NEAR THE SHOULDER, OR FOR TEMPORARILY CLOSING ONE LANE ON A TWO-LANE, TWO-WAY ROADWAY, AN ARROW PANEL SHALL BE USED ONLY IN THE CAUTION MODE.

AN ARROW DISPLAY MODE SHALL NOT BE USED ON A TWO-LANE TWO-WAY ROADWAY FOR TEMPORARY ONE-LANE OPERATION OR LANE SHIFTS. AN ARROW DISPLAY SHALL NOT BE USED TO LATERALLY SHIFT TRAFFIC.

TEMPORARY RUMBLE STRIPS



DESIGN

TEMPORARY RUMBLE STRIPS MAY BE MADE OF ASPHALT PAVING MATERIAL, EPOXY AND AGGREGATE OR OTHER SUITABLE MATERIAL WHICH WILL MAINTAIN A DESIRABLE RUMBLE EFFECT. THE TEMPORARY RUMBLE STRIP SHOULD HAVE AN INSTALLED HEIGHT OF 3/8". PREFORMED RUMBLE STRIPS MAY BE USED PROVIDED THEY HAVE A MINIMUM 1/2" HEIGHT.

TRAFFIC SIGNALS

TRAFFIC SIGNALS MAY BE ALLOWED AT CERTAIN EQUIPMENT CROSSINGS WHERE THE VOLUME OF TRAFFIC AND THE NUMBER OF EQUIPMENT CROSSINGS PER HOUR IS HIGH. TRAFFIC SIGNALS MAY BE ALLOWED AT CERTAIN BRIDGE CONSTRUCTION SITES WHERE A COMBINATION OF ONE-WAY TRAFFIC AND HIGH TRAFFIC VOLUMES WOULD BE BEST SERVED WITH THIS TYPE OF TRAFFIC CONTROL.

ALL TRAFFIC SIGNAL REQUESTS AND METHOD OF INSTALLATION ON THE STATE HIGHWAY SYSTEM SHALL BE IN COMPLIANCE WITH THE MUTCD AND MUST BE APPROVED BY THE STATE TRAFFIC ENGINEER.

IF, AFTER THE SIGNAL ASSEMBLIES ARE ERECTED AND THE ROAD IS OPEN TO PUBLIC TRAVEL, THE SIGNAL SYSTEM IS NOT PUT IMMEDIATELY INTO OPERATION, THE SIGNAL FACES SHALL BE COVERED WITH BURLAP OR OTHER OPAQUE MATERIAL SUBJECT TO THE APPROVAL OF THE ENGINEER. INOPERATIVE SIGNALS ON ROADS OPEN TO THE PUBLIC SHALL ALWAYS BE COVERED. TILTING THE SIGNALS UPWARD IS NOT AN ACCEPTABLE ALTERNATIVE TO COVERING THE HEADS.

FLOODLIGHTS

WHEN NIGHTTIME WORK IS REQUIRED, FLOODLIGHTS SHALL BE USED TO ILLUMINATE FLAGGER STATIONS. FLOODLIGHTS SHOULD BE USED TO ILLUMINATE EQUIPMENT CROSSINGS, AND OTHER AREAS WHERE EXISTING LIGHT IS NOT ADEQUATE FOR THE WORK TO BE PERFORMED SAFELY.

IN NO CASE SHALL FLOODLIGHTING BE PERMITTED TO CREATE A DISABLING GLARE FOR DRIVERS. THE ADEQUACY OF THE FLOODLIGHT PLACEMENT AND ELIMINATION OF POTENTIAL GLARE SHOULD BE CHECKED BY DRIVING THROUGH THE PROJECT.

PAVEMENT MARKING

IT IS INTENDED TO THE EXTENT POSSIBLE, THAT MOTORISTS BE PROVIDED MARKINGS WITHIN A WORK AREA COMPARABLE TO THE MARKINGS NORMALLY MAINTAINED ALONG ADJACENT ROADWAYS, PARTICULARLY AT EITHER END OF THE WORK AREA.

ALL MARKINGS AND DEVICES USED TO DELINEATE VEHICLE AND PEDESTRIAN PATHS SHALL BE CAREFULLY REVIEWED DURING DAYTIME AND NIGHTTIME PERIODS TO AVOID INADVERTENTLY LEADING DRIVERS OR PEDESTRIANS FROM THE INTENDED PATH.

PAVEMENT MARKINGS NO LONGER APPLICABLE SHALL BE REMOVED UNLESS OTHERWISE APPROVED BY THE ENGINEER.

TAPERS

TAPERS ARE CREATED USING A SERIES OF CHANNELIZING DEVICES OR PAVEMENT MARKINGS TO MOVE TRAFFIC OUT OF OR INTO ITS NORMAL PATH.

MERGING TAPER

A MERGING TAPER REQUIRES THE LONGEST DISTANCE BECAUSE DRIVERS ARE REQUIRED TO MERGE INTO COMMON ROAD SPACE. THE TAPER SHOULD BE LONG ENOUGH TO ENABLE MERGING DRIVERS TO HAVE ADEQUATE ADVANCE WARNING AND SUFFICIENT LENGTH TO ADJUST THEIR SPEEDS AND MERGE INTO A SINGLE LANE BEFORE THE DOWNSTREAM END OF THE TRANSITION.

SHIFTING TAPER

A SHIFTING TAPER IS USED WHEN MERGING IS NOT REQUIRED, BUT A LATERAL SHIFT IS NEEDED. APPROXIMATELY ONE-HALF "L" HAS BEEN FOUND TO BE ADEQUATE, WHERE MORE SPACE IS AVAILABLE, IT MAY BE BENEFICIAL TO USE LONGER TAPERS. GUIDANCE FOR CHANGES IN ALIGNMENT MAY ALSO BE ACCOMPLISHED BY USING HORIZONTAL CURVES DESIGNED FOR NORMAL HIGHWAY SPEEDS.

SHOULDER TAPERS

A SHOULDER TAPER MAY BE BENEFICIAL ON HIGH-SPEED ROADWAYS WHERE SHOULDERS ARE PART OF THE ACTIVITY AREA AND ARE CLOSED, OR WHEN IMPROVED SHOULDERS MIGHT BE MISTAKEN AS A DRIVING LANE IN THESE INSTANCES, THE SAME TYPE, BUT ABBREVIATED, CLOSURE PROCEDURES USED ON A NORMAL PORTION OF THE ROADWAY CAN BE USED. IF USED, SHOULDER TAPERS APPROACHING THE ACTIVITY AREA SHOULD HAVE A LENGTH OF ABOUT ONE-THIRD "L".

DOWNSTREAM TAPERS

THE DOWNSTREAM TAPER MAY BE USEFUL IN TERMINATION AREAS TO PROVIDE A VISUAL CUE TO THE DRIVER THAT ACCESS IS AVAILABLE TO THE ORIGINAL LANE OR PATH THAT WAS CLOSED. WHEN USED, IT SHOULD HAVE A MINIMUM LENGTH OF ABOUT 100 FEET PER LANE, WITH DEVICES SPACED ABOUT 20 FEET APART.

ONE LANE, TWO WAY TAPER

THE ONE-LANE, TWO-WAY TAPER IS USED IN ADVANCE OF AN ACTIVITY AREA THAT OCCUPIES PART OF A TWO-WAY ROADWAY IN SUCH A WAY THAT A PORTION OF THE ROAD IS USED ALTERNATELY BY TRAFFIC IN EACH DIRECTION. A SHORT TAPER HAVING A MINIMUM LENGTH OF 50 FEET AND A MAXIMUM LENGTH OF 100 FEET WITH CHANNELIZING DEVICES AT APPROXIMATELY 20 FOOT SPACINGS SHOULD BE USED TO GUIDE TRAFFIC INTO THE ONE-LANE-SECTION AND A DOWNSTREAM TAPER WITH A LENGTH OF APPROXIMATELY 100 FEET SHOULD BE USED TO GUIDE TRAFFIC BACK INTO THEIR ORIGINAL LANE.

TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES	
TYPE OF TAPER	TAPER LENGTH (FEET)
MERGING TAPER	L MINIMUM
SHIFTING TAPER	1/2 L MINIMUM
SHOULDER TAPER	1/3 L MINIMUM
TWO-WAY TAPER	100 FEET MAXIMUM

FORMULAS FOR L	
SPEED	FORMULA
40 MPH OR LESS	$L = \frac{WS^2}{60}$
45 MPH OR GREATER	$L = WS$

L = TAPER LENGTH IN FEET
W = WIDTH OF OFFSET IN FEET
S = POSTED SPEED LIMIT PRIOR TO WORK IN MPH

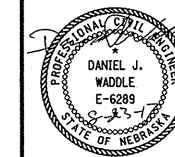
TAPER LENGTH L (FEET)				
SPEED (MPH)	LANE WIDTH			
	5	10 FT.	11 FT.	12 FT.
25	105	115	125	
30	150	165	180	
35	205	225	245	
40	270	295	320	
45	450	495	540	
50	500	550	600	
55	550	605	660	
60	600	660	720	
65	650	715	780	
75	750	825	900	

R7	JAN 18	NDOR BORDER TO NDOT BORDER
R6	JUN 14	2009 MUTCD UPDATE
R5	OCT 98	REVISE CHANNELIZATION DEVICES, TAPER
REV. NO.	DATE	DESCRIPTION OF REVISION

NEBRASKA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NO. 920-R7

TRAFFIC CONTROL,
CONSTRUCTION AND MAINTENANCE

ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:

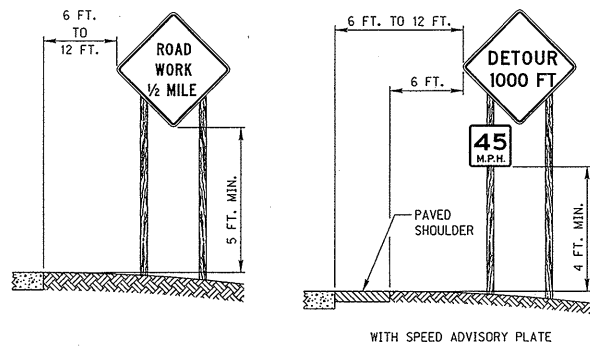


Daniel J. Waddle
DATE
9-1-2017

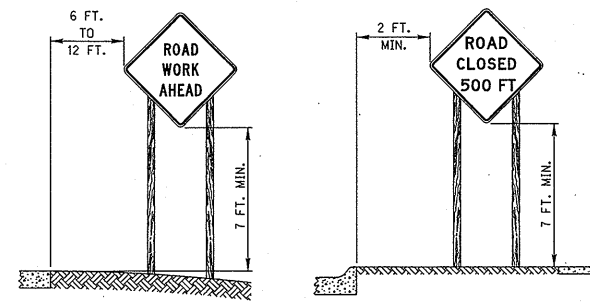
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ROADSIDE SIGNS HEIGHT AND LATERAL LOCATION OF SIGNS RURAL AREA



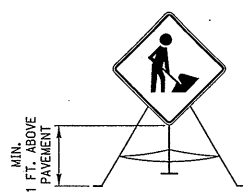
URBAN AREA



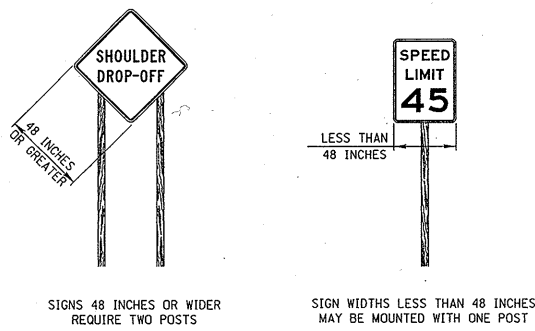
TYPICAL FIRST SIGN AT CONSTRUCTION SITE



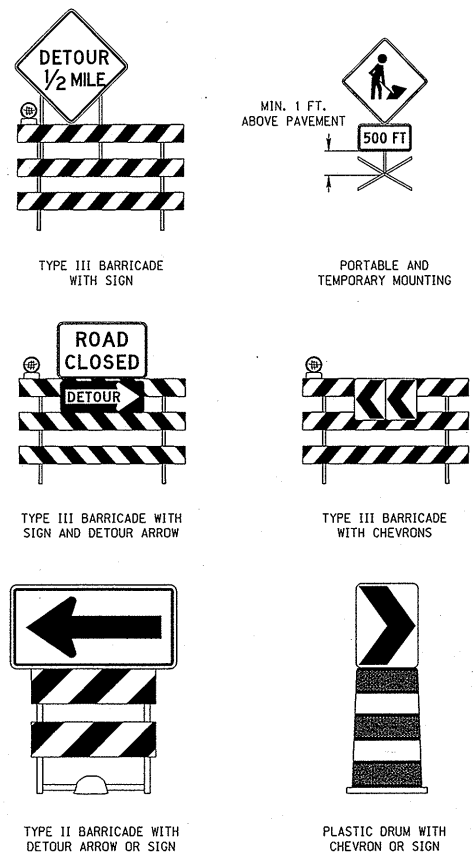
PORTABLE AND TEMPORARY MOUNTING



TYPICAL SIGN MOUNTINGS POST MOUNTED



TYPICAL SIGN MOUNTINGS OTHER THAN POST MOUNTED



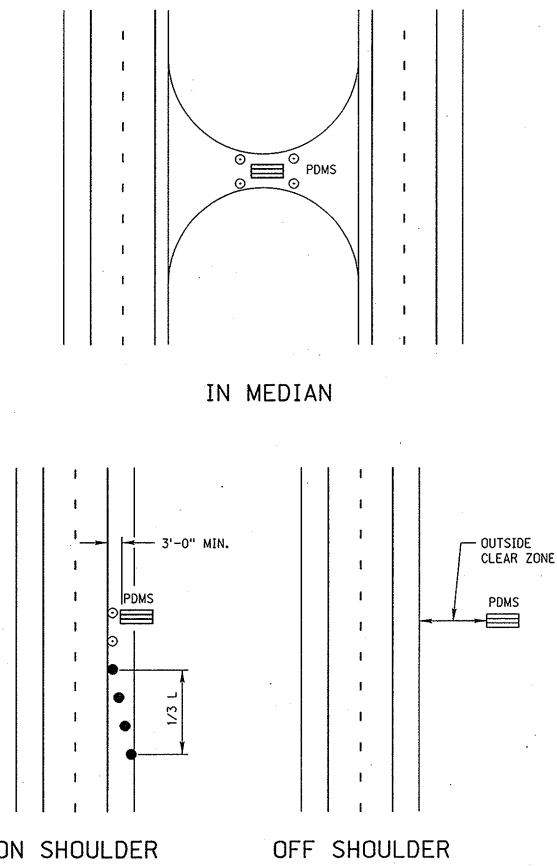
TEMPORARY SIGN SUPPORTS

ALL "TEMPORARY SIGN" SUPPORTS (BASES) SHALL BE NCHRP 350 OR MASH (TL-3) APPROVED.

"TEMPORARY SIGNS" ARE ALL TEMPORARILY MOUNTED WORK ZONE SIGNS THAT ARE NOT POST MOUNTED IN THE GROUND AT THE TYPICAL 5 FOOT MOUNTING HEIGHT. TEMPORARY SIGNS ARE CONSIDERED NCHRP 350 OR MASH CATEGORY 2 DEVICES AND ARE MOUNTED ON TEMPORARY SIGN STANDS. TEMPORARY SIGNS SHALL BE MOUNTED A MINIMUM OF 1 FOOT ABOVE THE GROUND, UNLESS OTHERWISE REQUIRED TO BE MOUNTED AT A HIGHER HEIGHT.

TEMPORARY SIGNS AND THEIR SUPPORTS SHALL NOT BE IN PLACE LONGER THAN 3 DAYS. ANY SIGN THAT IS TO BE IN PLACE LONGER THAN 3 DAYS SHALL BE POST MOUNTED OR MOUNTED TO A DRUM, BARRICADE, OR BARRIER, AS REQUIRED BY THE PLANS OR SPECIFICATIONS.

PORTABLE DYNAMIC MESSAGE SIGN DELINEATION



PORTABLE DYNAMIC MESSAGE SIGNS (PDMS)

THE PLACEMENT OF PDMS SHOULD BE IN THE FOLLOWING ORDER:

WHENEVER POSSIBLE, PDMS SHOULD BE PLACED OFF OF ANY USABLE PORTION OF THE ROADWAY ON THE RIGHT SIDE OF THE ROADWAY. WHEN PLACED OUTSIDE THE CLEAR ZONE OR BEHIND GUARDRAIL OR CONCRETE PROTECTION BARRIERS, DELINEATION IS NOT REQUIRED.

WHERE FIELD CONDITIONS DO NOT ALLOW FOR THIS PLACEMENT, THE SIGNS MAY BE LOCATED ON THE OUTSIDE SHOULDER OF THE ROADWAY OR WITHIN THE MEDIAN.

- A MINIMUM CLEARANCE OF 3 FEET MEASURED HORIZONTALLY FROM THE EDGE OF THE SIGN TO THE EDGE OF THE TRAVELED WAY IS RECOMMENDED.
- THE PDMS SHOULD HAVE A MINIMUM MOUNTED HEIGHT OF 7 FEET ON FREEWAYS, EXPRESSWAYS AND IN URBAN AREAS.
- ALL OTHER RURAL APPLICATIONS SHOULD HAVE A MINIMUM HEIGHT OF 5 FEET.

THESE HEIGHTS ARE MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE ELEVATION OF THE NEAR EDGE OF THE PAVEMENT.

REFLECTORIZED PLASTIC DRUMS SHOULD BE USED TO DELINEATE EACH SIGN USING A 1/3 L TAPER. THESE DRUMS SHOULD BE POSITIONED ON THE UPSTREAM END OF THE SIGN TO FORM A TAPER LEADING UP TO THE TRAFFIC SIDE OF THE SIGN. FOR A SIGN LOCATED IN THE MEDIAN, THE SIGN SHOULD BE DELINEATED WITH A 42 INCH CONE ON ALL FOUR CORNERS.

WHEN DEPLOYED, THE SIGN SHALL BE SIGHTED AND ALIGNED WITH APPROACHING TRAFFIC TO ENSURE VISIBILITY OF THE MESSAGE. IF MULTIPLE SIGNS ARE USED, THE SIGNS SHOULD BE LOCATED ON THE SAME SIDE OF THE ROAD AND SEPARATED ACCORDING TO PROPER SIGN SPACING.

WHEN PRACTICAL, PDMS SHOULD NOT BE USED TO REPLACE STATIC SIGNS FOR LONG TERM USAGE (OVER 10 DAYS).

WHEN PDMS ARE TO BE DEPLOYED FOR LONG PERIODS, SUCH AS INCIDENT MANAGEMENT ROLES, CONCRETE PADS WITH APPROPRIATE TIE DOWNS SHOULD BE CONSTRUCTED FOR THEIR PLACEMENT.

PDMS NOT ACTIVELY BEING USED IN A CONSTRUCTION OR INCIDENT MANAGEMENT ROLE SHOULD BE REMOVED.

REFER TO NDOR "DMS GUIDELINES" FOR PROPER PDMS MESSAGE INFORMATION.

NOTES

- ALL TRAFFIC CONTROL DEVICES SHALL MEET THE APPLICABLE STANDARDS AND SPECIFICATIONS PRESCRIBED IN PART 6 OF THE LATEST ADOPTED EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)" AND THE STATE OF NEBRASKA SUPPLEMENT TO THE MUTCD. ALL TRAFFIC CONTROL DEVICES SHALL BE CRASHWORTHY AND QUALIFY AS SUCH ACCORDING TO THE TESTING AND ACCEPTANCE GUIDELINES OF THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
- TRAFFIC CONTROL PLANS AND DEVICES SHOULD FOLLOW THE PRINCIPLES SET FORTH, BUT MAY DEVIATE FROM THE TYPICAL DRAWINGS TO ALLOW FOR CONDITIONS AND REQUIREMENTS OF THE PROJECT.
- TRAFFIC CONTROL DEVICES SHALL BE INSTALLED SO AS NOT TO OBSTRUCT THE VIEW OF OTHER TRAFFIC CONTROL DEVICES.
- THE ENGINEER SHALL HAVE THE AUTHORITY TO REQUIRE THE USE, AND APPROVE THE LOCATION OF ANY OF THE DEVICES SHOWN IN THESE PLANS.

WORK ZONE SPEED LIMIT NOTES

- WORK ZONE SPEED LIMITS SHALL NOT BE INSTALLED WITHOUT A SPEED ZONE AUTHORIZATION COMPLETED BY THE DEPARTMENT.
- REDUCED SPEED LIMITS SHOULD BE USED ONLY IN THE SPECIFIC PORTION OF THE WORK ZONE WHERE CONDITIONS OR RESTRICTIVE FEATURES ARE PRESENT. HOWEVER, FREQUENT CHANGES IN THE SPEED LIMIT SHOULD BE AVOIDED. THE REDUCTION OF SPEED SHOULD BE DESIGNED SO VEHICLES CAN SAFELY TRAVEL THROUGH THE WORK ZONE WITH A SPEED LIMIT REDUCTION OF NO MORE THAN 10 MPH UNLESS OTHERWISE NOTED IN THE PLANS.
- WORK ZONE SPEED LIMITS SHOWN ARE TYPICAL APPLICATIONS ONLY AND ARE NOT TO BE ASSUMED AS THE SPEED LIMITS REQUIRED FOR THE WORK.
- EXISTING SPEED LIMIT SIGNS SHALL BE REMOVED OR COVERED WHEN A REDUCED WORK ZONE SPEED LIMIT IS IN EFFECT IN THE SAME AREA.
- WORK ZONE SPEED LIMIT SIGNS SHALL BE INSTALLED EVERY MILE THROUGH THE WORK AREA WHEN SPEED ZONE IS REDUCED.
- A SPEED LIMIT SIGN ENDING THE REDUCED SPEED ZONE SHALL BE INSTALLED AT THE END OF EACH ZONE.
- DOUBLE FINES AND REDUCED SPEED ZONE SIGNING ARE NOT REQUIRED FOR SHORT-DURATION WORK LESS THAN 12 HOURS.

TAPER FORMULA

$L = S \times W$ FOR SPEEDS OF 45 MPH OR MORE

$L = \frac{WS^2}{80}$ FOR SPEEDS OF 40 MPH OR LESS.

WHERE:

- L - MINIMUM LENGTH OF TAPER.
- S - NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK.
- W - WIDTH OF OFFSET (LANE WIDTH).

LEGEND

- TYPE III BARRICADE
- REFLECTORIZED PLASTIC DRUM
- REFLECTORIZED PLASTIC DRUM OR 42" CONE
- PORTABLE DYNAMIC MESSAGE SIGN

R7	JAN 18	NDOR BORDER TO NDOT BORDER
R6	JUN 14	2009 MUTCD UPDATE
R5	OCT 98	REVISE CHANNELIZATION DEVICES, TAPER
REV. NO.	DATE	DESCRIPTION OF REVISION

NEBRASKA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NO. 920-R7

TRAFFIC CONTROL, CONSTRUCTION AND MAINTENANCE

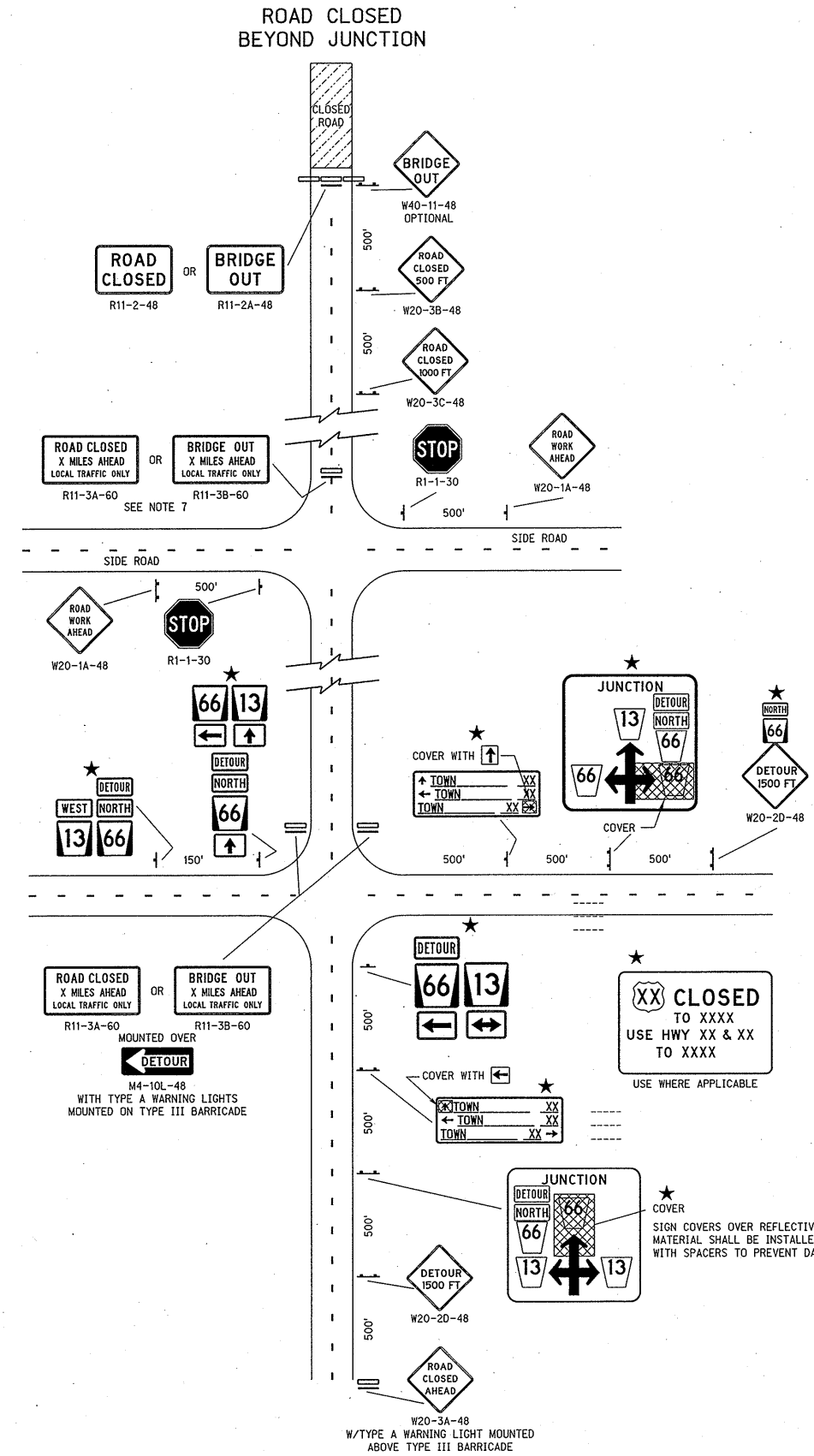
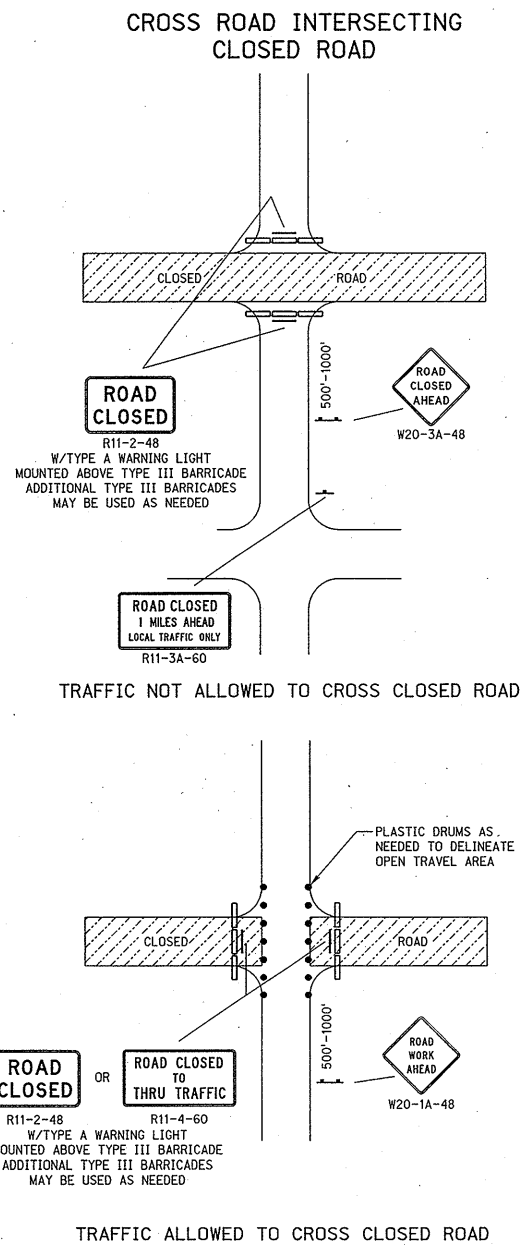
ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:

Daniel J. Waddle
DATE: 9-1-2017

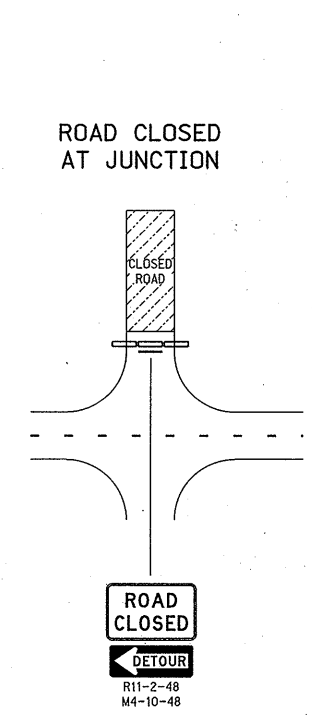
DANIEL J. WADDLE
E-6289
STATE OF NEBRASKA

ORIGINAL: OCTOBER 1998

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- ### NOTES
1. SIGNS SHOWN ARE USUALLY FOR ONE DIRECTION OF TRAVEL ONLY.
 2. THE CONTRACTOR SHALL INSTALL, MAINTAIN, AND REMOVE ALL SIGNS IN ACCORDANCE WITH THE DETAILS OF AND AT THE LOCATIONS SHOWN IN THE PLANS. SIGNS INSTALLED BY THE DEPARTMENT OR OTHER GOVERNMENT AGENCY SHALL BE MAINTAINED AND REMOVED BY THEIR FORCES.
 3. WHEN MESSAGE IS NOT PERTINENT, SIGNS SHALL BE TAKEN DOWN, COVERED OR FOLDED. TAPE IS NOT PERMITTED ON THE FACE OF THE SIGN.
 4. VEHICLES OR EQUIPMENT SHALL NOT BE PARKED SO AS TO OBTAIN OR DISTRACT FROM TRAFFIC CONTROL DEVICES.
 5. FLAGS MAY BE USED TO CALL ATTENTION TO WARNING SIGNS.
 6. WHEN APPROPRIATE THE SIGN R11-2B "BRIDGE OUT" MAY BE USED INSTEAD OF R11-2 "ROAD CLOSED".
 7. BARRICADE AND SIGN MAY BE PLACED ALONG EDGE OF ROAD IF NEEDED FOR LOCAL TRAFFIC.
 8. REFER TO STANDARD PLAN 920 FOR GENERAL INFORMATION NOT SHOWN.



- ### LEGEND
- TYPE III BARRICADE
 - REFLECTORIZED PLASTIC DRUM
 - SINGLE POSTED SIGN
 - DOUBLE POSTED SIGN
 - ★ INSTALLED BY OTHERS

TAPER FORMULA

L - S x W FOR SPEEDS OF 45 MPH OR MORE.

$L = \frac{WS^2}{60}$ FOR SPEEDS OF 40 MPH OR LESS.

WHERE:
 L - MINIMUM LENGTH OF TAPER.
 S - NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK.
 W - WIDTH OF OFFSET (LANE WIDTH).

R2	JAN 18	NDOR BORDER TO NDOT BORDER
R1	JUN 14	2009 MUTCD UPDATES
REV. NO.	DATE	DESCRIPTION OF REVISION

NEBRASKA DEPARTMENT OF TRANSPORTATION
 STANDARD PLAN NO. 923-R2

TRAFFIC CONTROL ROAD CLOSURE

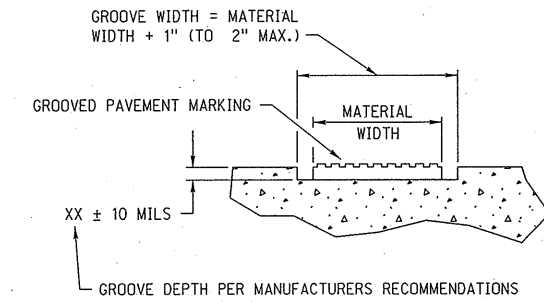
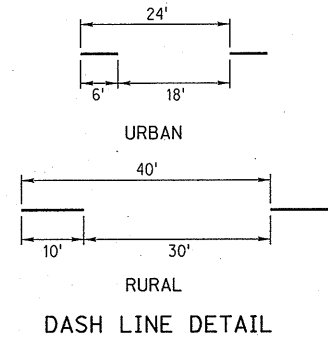
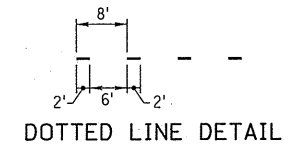
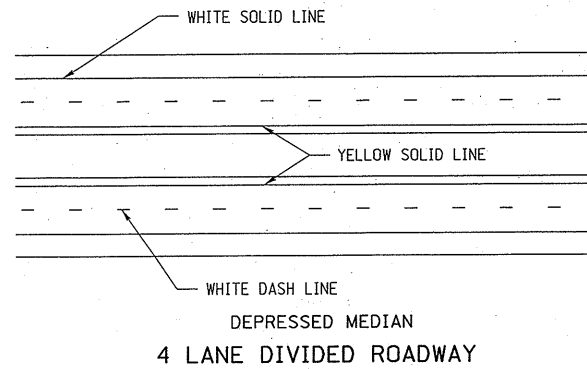
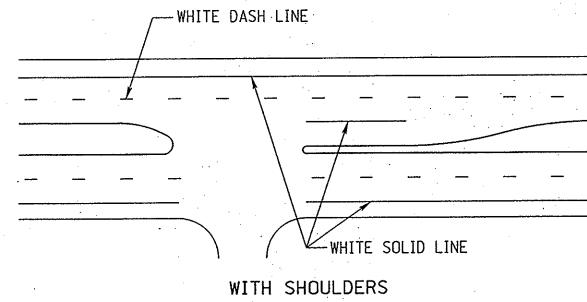
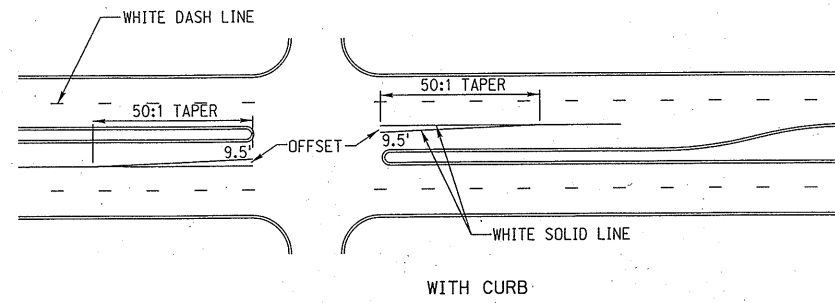
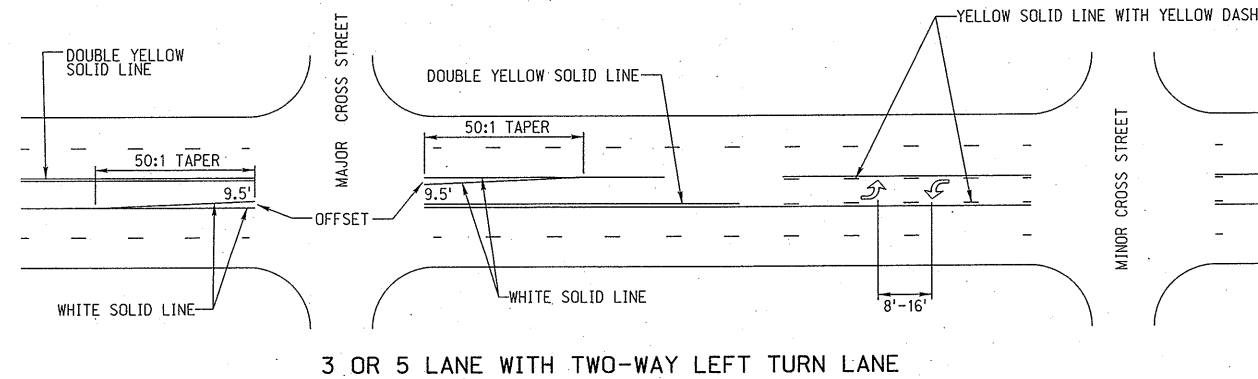
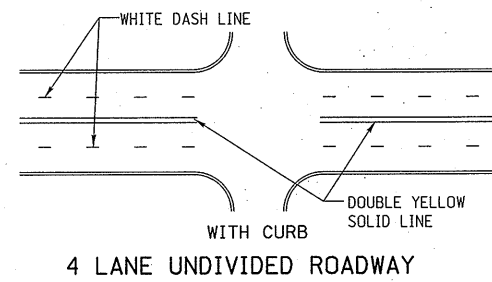
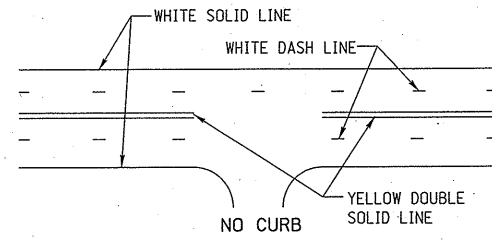
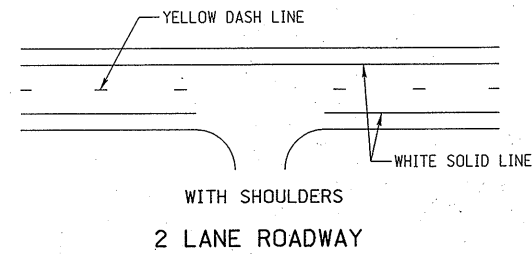
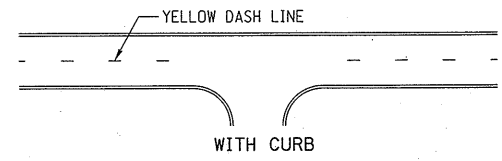
ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:

PROFESSORIAL CIVIL ENGINEER
 DANIEL J. WADDLE
 E-6289
 STATE OF NEBRASKA

David May
 DATE 11-8-2017

ORIGINAL:
 AUGUST 1998
 DATE

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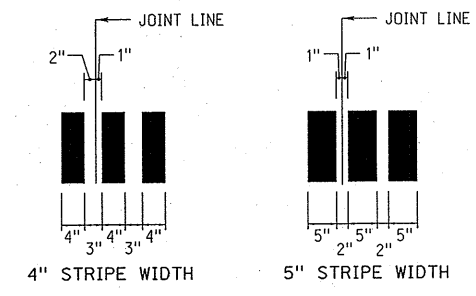
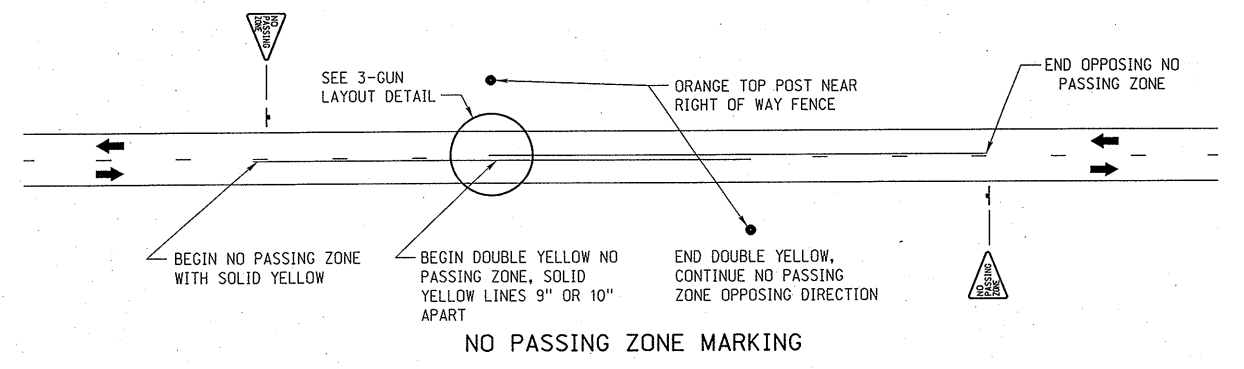
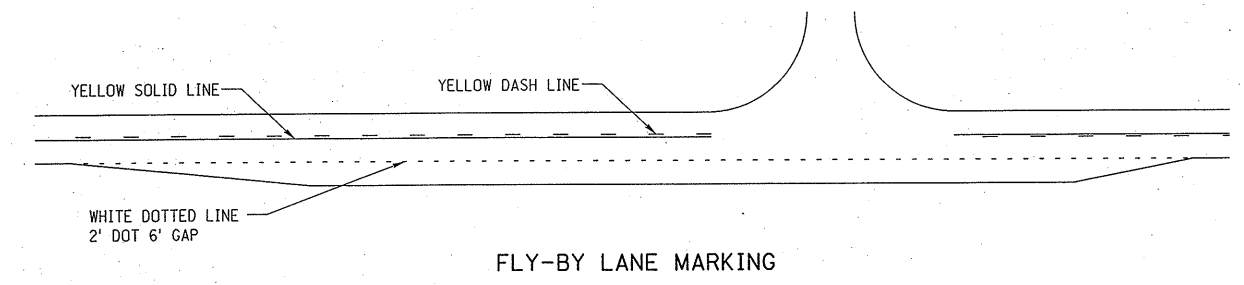
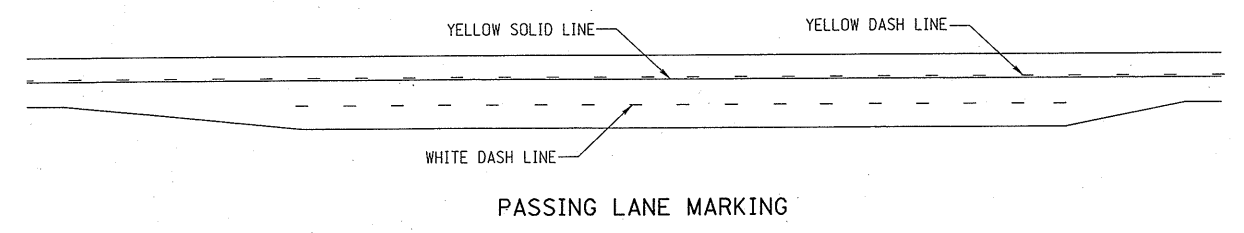
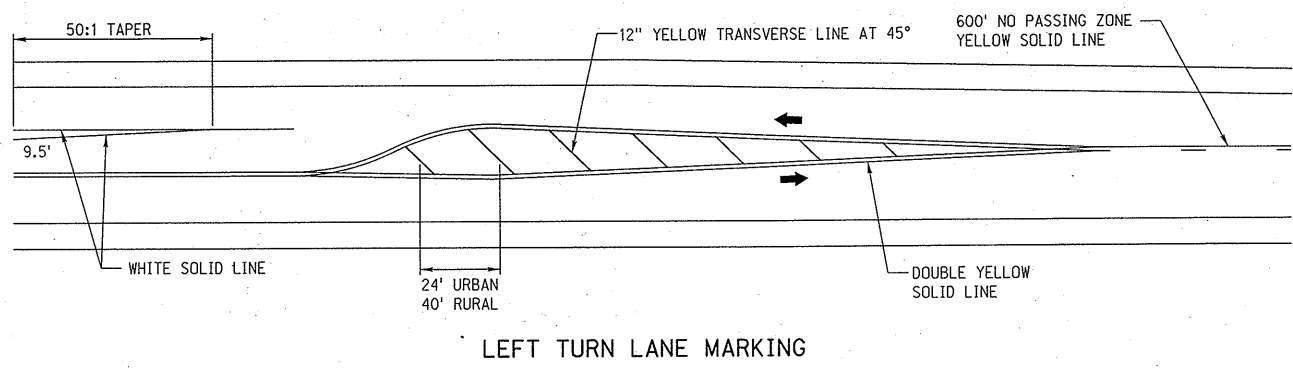
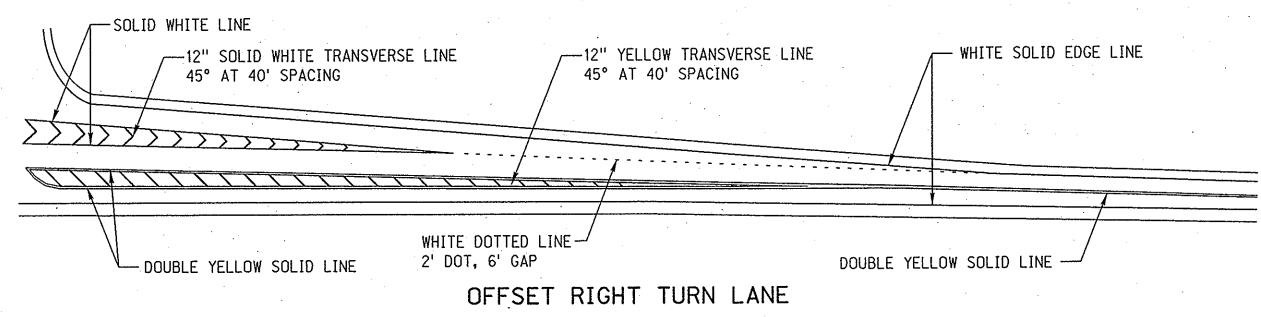
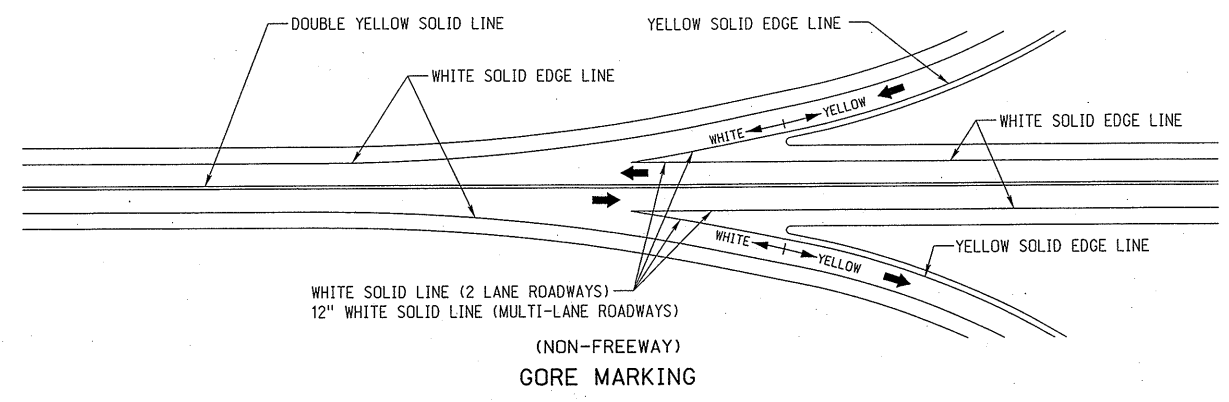


PERMANENT PAVEMENT MARKINGS INSTALLED IN GROOVES

2-LANE ROADWAY REQUIRED LOCATION FOR EDGE LINES		
ROADWAY WIDTH	SHOULDER TYPE	DISTANCE FROM CENTERLINE OF ROADWAY TO OUTSIDE EDGE OF PAVEMENT EDGELINE
LESS THAN 24 FT	SURFACED	12 FT 0 IN
LESS THAN 24 FT	EARTH	PAVEMENT EDGE
24 FT	EARTH	PAVEMENT EDGE
24 FT	SURFACED	12 FT 0 IN
GREATER THAN 24 FT	EARTH	12 FT 0 IN

CENTERLINE MARKING SHALL BE PLACED ON THE "SOUTH" SIDE OF THE CENTER JOINT ON EAST-WEST ROADS AND ON THE "EAST" SIDE OF THE CENTER JOINT ON NORTH-SOUTH ROADS

REV. NO.	DATE	DESCRIPTION OF REVISION
NEBRASKA DEPARTMENT OF ROADS STANDARD PLAN NO. 941 PAVEMENT MARKING		
ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:		
		DATE 5/14/2018 ORIGINAL: OCT. 2018 DATE
		1 2



LEGEND
→
TRAFFIC FLOW

REV. NO.	DATE	DESCRIPTION OF REVISION
NEBRASKA DEPARTMENT OF ROADS STANDARD PLAN NO. 941 PAVEMENT MARKING		
ACCEPTED BY FHWA FOR USE ON THE NATIONAL HIGHWAY SYSTEM:		 ORIGINAL: OCT. 2018 DATE
DANIEL J. WADDLE E-6289 STATE OF NEBRASKA MARY BURROUGHS 5/14/18 DATE		
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