

MAD

JANUARY 2021

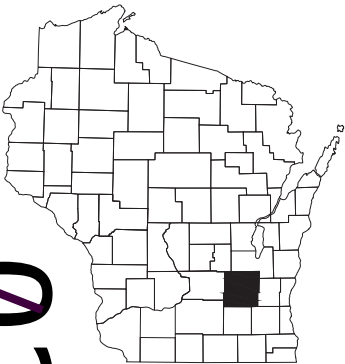
PROJECT ID: 1400-00-84

WITH: 1400-00-84

COUNTY: DODGE

ORDER OF SHEETS		
Section No. 1	Title	
Section No. 2	Typical Sections and Details	
Section No. 3	Estimate of Quantities	
Section No. 3	Miscellaneous Quantities	
Section No. 4	Right of Way Plan	
Section No. 5	Plan and Profile	
Section No. 6	Standard Detail Drawings	
Section No. 7	Sign Plates	
Section No. 8	Structure Plans	
Section No. 9	Computer Earthwork Data	
Section No. 9	Cross Sections	

TOTAL SHEETS = 90



DESIGN DESIGNATION 1400-00-04

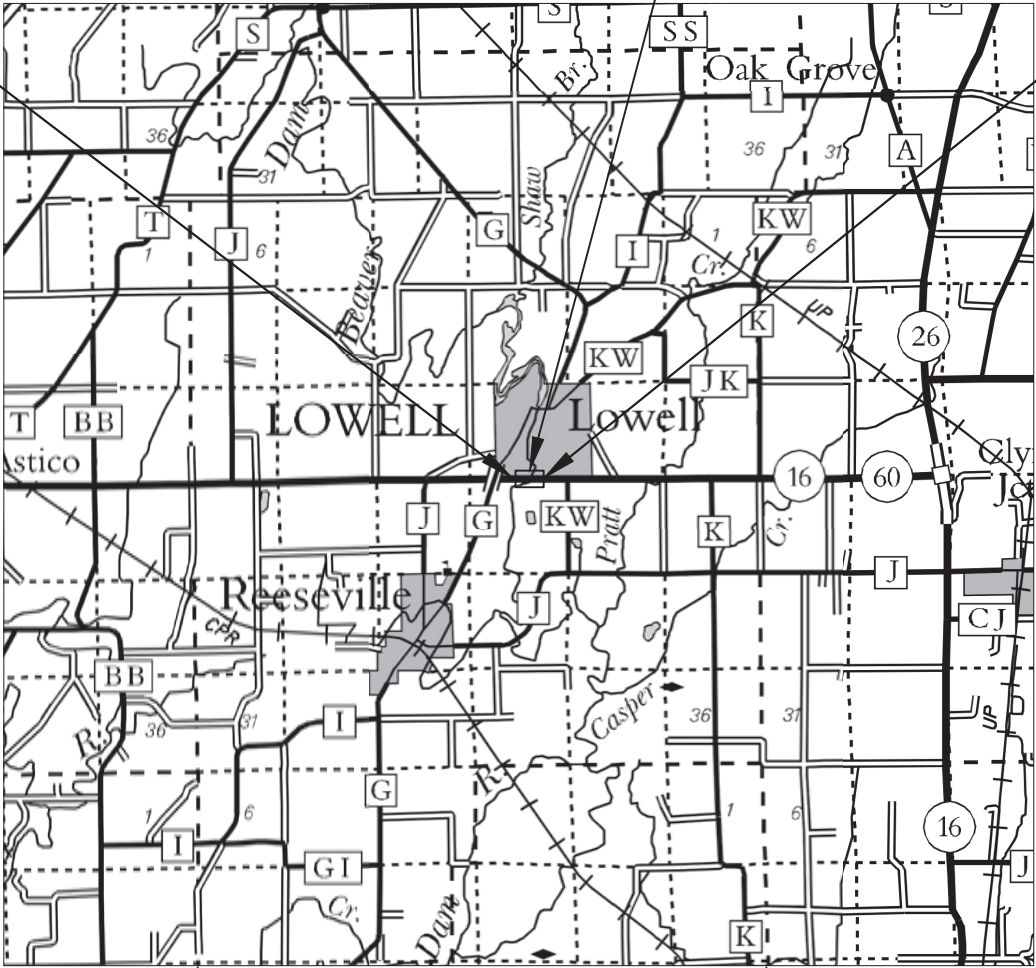
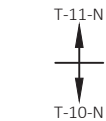
A.A.D.T.	2011	=	3500
A.A.D.T.	2021	=	3900
D.H.V.		=	23.6%
D.D.		=	60/40
T.		=	28.1%
DESIGN SPEED		=	60 MPH
ESALS		=	2,400,000

CONVENTIONAL SYMBOLS

PLAN	
CORPORATE LIMITS	
PROPERTY LINE	
LOT LINE	
LIMITED HIGHWAY EASEMENT	
EXISTING RIGHT OF WAY	
PROPOSED OR NEW R/W LINE	
SLOPE INTERCEPT	
REFERENCE LINE	
EXISTING CULVERT	
PROPOSED CULVERT (Box or Pipe)	
COMBUSTIBLE FLUIDS	
MARSH AREA	
WOODED OR SHRUB AREA	

PROFILE	
GRADE LINE	
ORIGINAL GROUND	
MARSH OR ROCK PROFILE (To be noted as such)	
SPECIAL DITCH	
GRADE ELEVATION	
CULVERT (Profile View)	
UTILITIES	
ELECTRIC	
FIBER OPTIC	
GAS	
SANITARY SEWER	
STORM SEWER	
TELEPHONE	
WATER	
UTILITY PEDESTAL	
POWER POLE	
TELEPHONE POLE	

	ROCK
	LABEL
	95.36
	E
	FO
	G
	SAN
	SS
	T
	W



LAYOUT
SCALE 0 2 MILES

TOTAL NET LENGTH OF CENTERLINE = 0.122 MI.

STRUCTURE B-14-0060

END PROJECT
STA. 176+45

VERTICAL DATUM: NAVD88 (2012) GEOID 12B
HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, DODGE COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
PLAN OF PROPOSED IMPROVEMENT
COLUMBUS - WATERTOWN
BEAVER DAM RIVER STRUCT B-14-0060
STH 16
DODGE COUNTY

STATE PROJECT NUMBER
1400-00-84

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
PROJECT ID		
1400-00-84	WISC 2021076	1

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor MSA PROFESSIONAL SERVICES

Designer MEGAN SCHERER, P.E.

Project Manager MATTHEW LAMB, P.E.

Regional Examiner SW REGION

Regional Supervisor JAMES OETTINGER, P.E.

APPROVED FOR THE DEPARTMENT

DATE: 7/15/2020

(Signature)

E

STANDARD ABBREVIATIONS

AC.	ACRE	MAX.	MAXIMUM
AGG.	AGGREGATE	MGAL	1000 GALLONS
AH	AHEAD	MIN.	MINIMUM
<	ANGLE	N.C.	NORMAL CROWN OR NO CHANGE
AE, AEW	APRON ENDWALL	N	NORTH
ASPH.	ASPHALTIC	NO.	NUMBER
A.D.T.	AVERAGE DAILY TRAFFIC	PAV'T	PAVEMENT
B.F.	BACK FACE	P.L.E.	PERMANENT LIMITED EASEMENT
BK.	BACK	P.C.	POINT OF CURVATURE
BEG.	BEGIN	P.I.	POINT OF INTERSECTION
B.M.	BENCH MARK	P.T.	POINT OF TANGENCY
C/L	CENTER LINE	V.P.C.	VERTICAL POINT OF CURVATURE
D	CENTRAL ANGLE OR DELTA	V.P.I.	VERTICAL POINT OF INTERSECTION
C.M.C.P.	CORRUGATED METAL CULVERT PIPE	V.P.T.	VERTICAL POINT OF TANGENCY
C.M.P.	CORRUGATED METAL PIPE	PCC	PORTLAND CEMENT CONCRETE
CO.	COUNTY	P.E.	PRIVATE ENTRANCE
CTH	COUNTY TRUNK HIGHWAY	P.L.	PROPERTY LINE
CR.	CREEK	R	RADIUS OR RANGE
C.A.B.C.	CRUSHED AGGREGATE BASE COURSE	R/L	REFERENCE LINE
C.Y.	CUBIC YARD	R.C.C.P.	REINFORCED CONCRETE CULVERT PIPE
C.P.	CULVERT PIPE	RT	RIGHT
C. & G.	CURB AND GUTTER	REQ'D	REQUIRED
D	DEGREE OF CURVE	R.H.F.	RIGHT HAND FORWARD
D.H.V.	DESIGN HOUR VOLUME	R/W	RIGHT OF WAY
DIA.	DIAMETER	R.	RIVER
DISCH.	DISCHARGE	RD.	ROAD
EA	EACH	SHLD.	SHOULDER(S)
E	EAST	SHR.	SHRINKAGE
ELEC.	ELECTRIC(AL), ELEC. CABLE	S	SOUTH
EL., ELEV.	ELEVATION	S.F.	SQUARE FOOT (FEET)
EXC.	EXCAVATION	SDD	STANDARD DETAIL DRAWING(S)
F.F.	FACE TO FACE	STH	STATE TRUNK HIGHWAY
FERT.	FERTILIZER	STA.	STATION
F.E.	FIELD ENTRANCE	S.E.	SUPERELEVATION
F/L, F.L.	FLOW LINE	S/L	SURVEY LINE
CWT.	HUNDRED WEIGHT	T	TANGENT
INL	INLET	TEL.	TELEPHONE
INTER.	INTERSECTION	TEMP.	TEMPORARY
JT.	JOINT	T.L.E.	TEMPORARY LIMITED EASEMENT
LT	LEFT	T.O.C.	TOP OF CURB
L.H.F.	LEFT HAND FORWARD	T.	(TRUCKS) PERCENT OF
L.	LENGTH OF CURVE	TYP.	TYPICAL
L.F.	LINEAR FOOT (FEET)	UNCL.	UNCLASSIFIED
LC.	LONG CHORD	U.G.	UNDERGROUND (CABLE)
LS	LUMP SUM	V.C.	VERTICAL CURVE
M.P.	MARKER POST	W	WEST

GENERAL NOTES

DIMENSIONS GIVEN FOR EXISTING FEATURES SHALL BE CONSIDERED AS APPROXIMATE AND MEASURED IN THE FIELD FOR MATCHING PURPOSES.

ASPHALTIC SURFACE WEIGHT CALCULATIONS ARE BASED ON 112 LB/SY/IN.

THE CONTRACTORS PAVING OPERATIONS SHALL BE CONSISTENT WITH THE PLAN TYPICAL SECTIONS AND CONSTRUCTION TO PREVENT ASPHALTIC SURFACE LONGITUDINAL JOINTS FROM BEING LOCATED WITHIN DRIVING, TURNING, BIKE, OR PARKING LANES.

APPLY TACK COAT TO THE MILLED SURFACE AT A RATE OF 0.07 GAL/SY, PRIOR TO PLACING ASPHALTIC SURFACE.

SAWCUTS, AS SHOWN ON PLANS, ARE APPROXIMATE LOCATIONS AND MAY BE ADJUSTED BY THE FIELD ENGINEER BASED ON FIELD CONDITIONS.

SIGN LOCATIONS ON THE PLAN ARE APPROXIMATE AND MY BE ADJUSTED BY THE FIELD ENGINEER BASED ON FIELD CONDITIONS.

EROSION CONTROL ITEMS ON THE PLAN ARE APPROXIMATE AND SHALL BE ADJUSTED BY THE FIELD ENGINEER TO FIT FIELD CONDITIONS.

CONTRACTOR WILL BE RESPONSIBLE FOR RESHAPING AND SEEDING ANY PREVIOUSLY GRASSED AREAS WHICH ARE DISTURBED BY HIS OPERATION OUTSIDE OF THE NORMAL CONSTRUCTION LIMITS.

TRAFFIC CONTROL DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

THERE ARE NO KNOWN UTILITY FACILITIES WITHIN THE PROJECT AREA. HOWEVER, IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM THIS.

PRIOR TO PLACEMENT OF MGS RAIL, THE SHOULDERS SHALL BE IN PLACE, SHAPED AND COMPACTED.

EXISTING SHOULDER AGGREGATE SHALL BE INCORPORATED INTO THE NEW SHOULDERS UNLESS OTHERWISE DIRECTED BY THE ENGINEER IN THE FIELD.

PROTECT WETLANDS AND OTHER WATERWAYS THAT ARE PRESENT WITH IN THE PROJECT LIMITS. KEEP ALL EQUIPMENT AND MATERIALS OUT OF ENVIRONMENTALLY SENSITIVE AREAS. DO NOT PARK IN THESE AREAS.

D.O.T. BRIDGE BENCHMARK MONUMENT TO BE FURNISHED BY THE STATE AND PLACED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.

DNR CONTACT

ERIC HEGGELUND
ENVIRONMENTAL ANALYSIS & REVIEW SPECIALIST
WISCONSIN DEPT. OF NATURAL RESOURCES
SOUTH CENTRAL REGION
3911 FISH HATCHERY ROAD
FITCHBURG, WI 53711
(608) 275-3301
eric.heggelund@wisconsin.gov

WISDOT CONTACTS

WISDOT PROJECT MANAGER MATTHEW LAMB, P.E. 2101 WRIGHT ST. MADISON, WI 53704 (262) 548-5698 matthew.lamb@dot.wi.gov	WISDOT PROJECT LEADER MEGAN SCHERER, P.E. 944 VANDERPERREN WAY GREEN BAY, WI 54304-5344 (920) 492-7702 megan.scherer@dot.wi.gov
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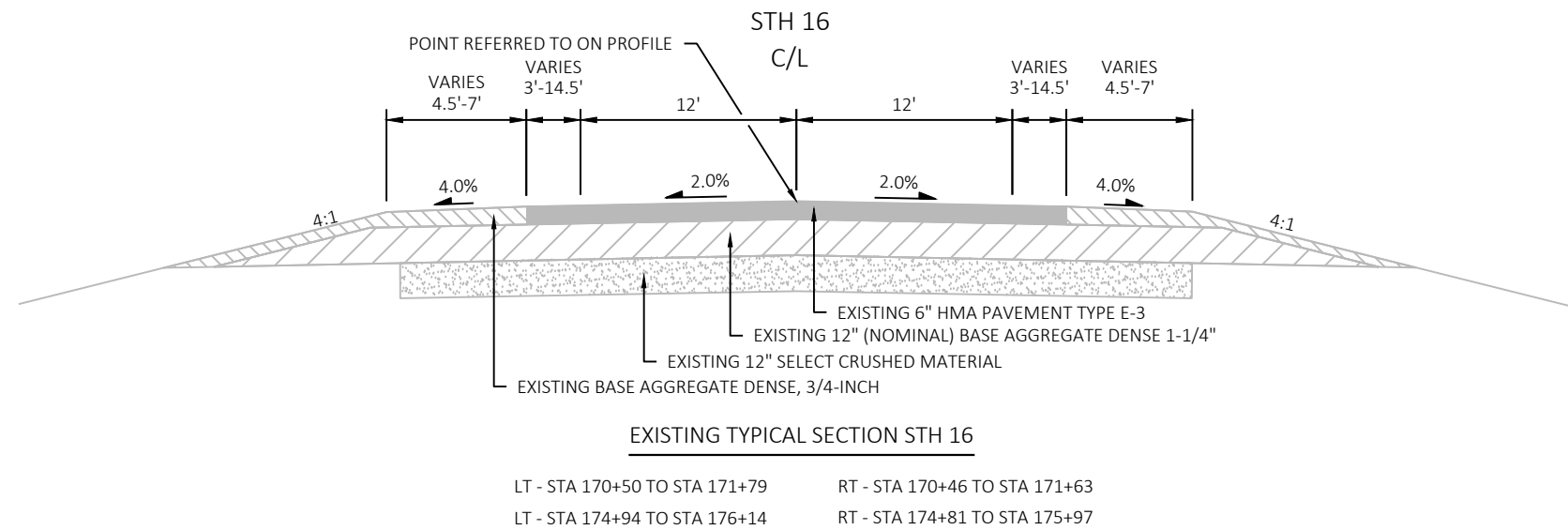
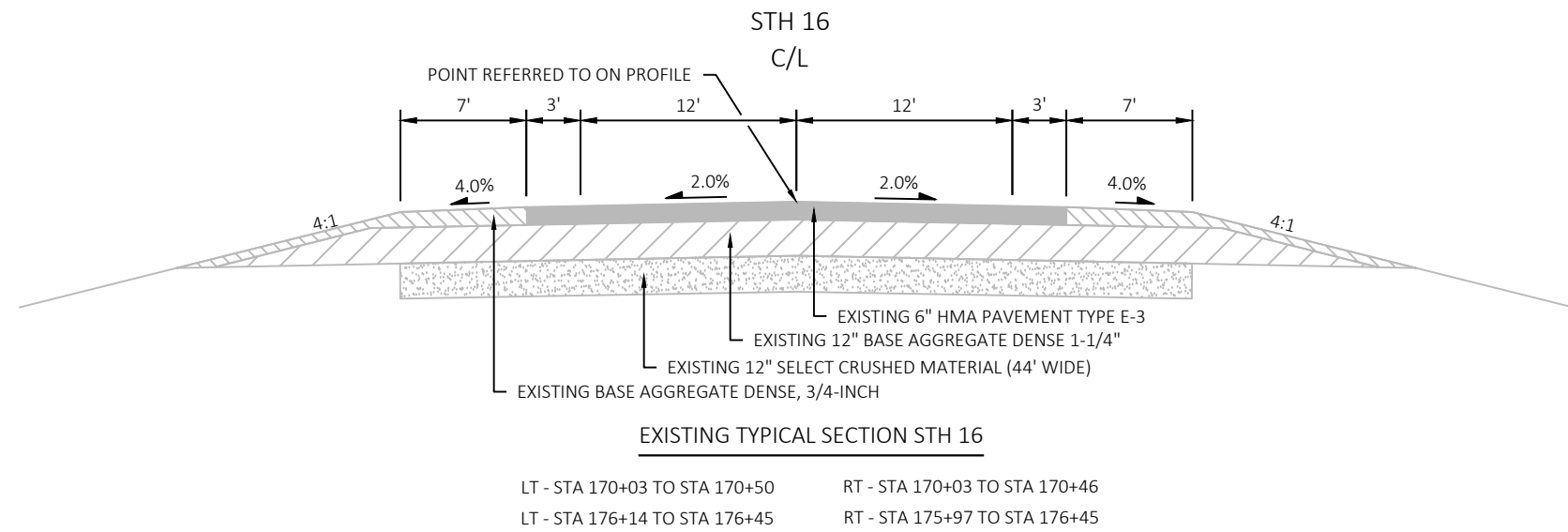
ORDER OF SECTION 2 SHEETS

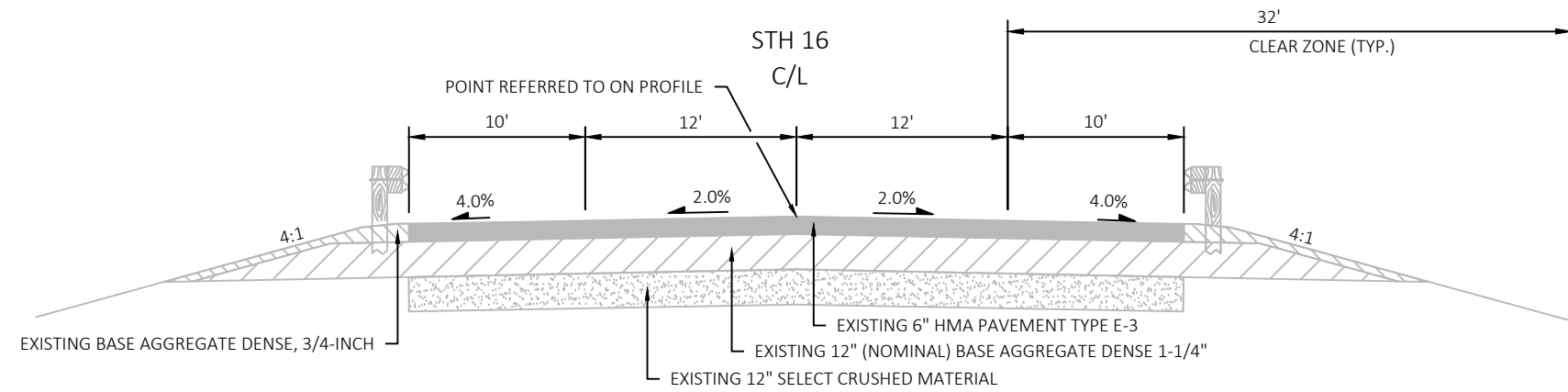
GENERAL NOTES
PROJECT HORIZONTAL & VERTICAL CONTROL
EXISTING TYPICAL SECTIONS
PROPOSED TYPICAL SECTIONS
CONSTRUCTION DETAILS
PLAN DETAILS
EROSION CONTROL PLAN
PAVEMENT MARKING & PERMANENT SIGN PLAN
TRAFFIC CONTROL PLAN
TRAFFIC CONTROL - DETOUR ROUTE



HORIZONTAL DATUM: NAD83 (2011)			
DODGE COUNTY COORDINATE SYSTEM			
CP	N	E	DESCRIPTION
900	676676.2490'	851251.7680'	CP FENO
901	676730.3150'	851646.7730'	CP FENO
902	676669.8170'	851946.6050'	CP FENO
903	676729.9260'	852397.8170'	CP FENO
VERTICAL DATUM POINTS			
VERTICAL DATUM: NAVD88 (2012) Geoid 12B			
DODGE COUNTY COORDINATE SYSTEM			
BM	ELEVATION	LOCATION	
463	800.298	BM DISK	
SECTION CORNER MONUMENT			
SM	N	E	DESCRIPTION
24151	676664.36	851125.1	Cast Aluminum

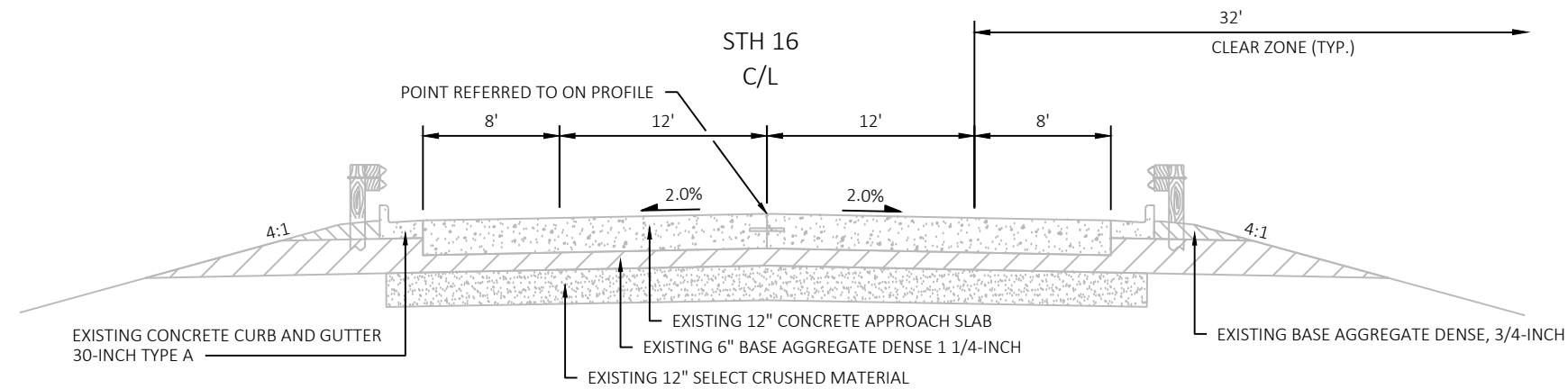






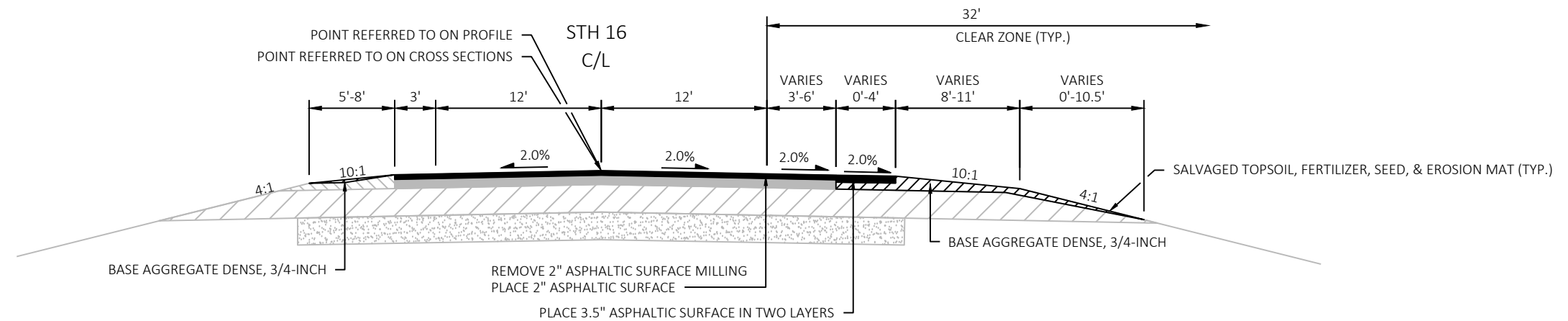
EXISTING TYPICAL SECTION STH 16

LT - STA 171+79 TO STA 172+40
RT - STA 171+63 TO STA 172+40
LT - STA 174+05 TO STA 174+94
RT - STA 174+05 TO STA 174+81



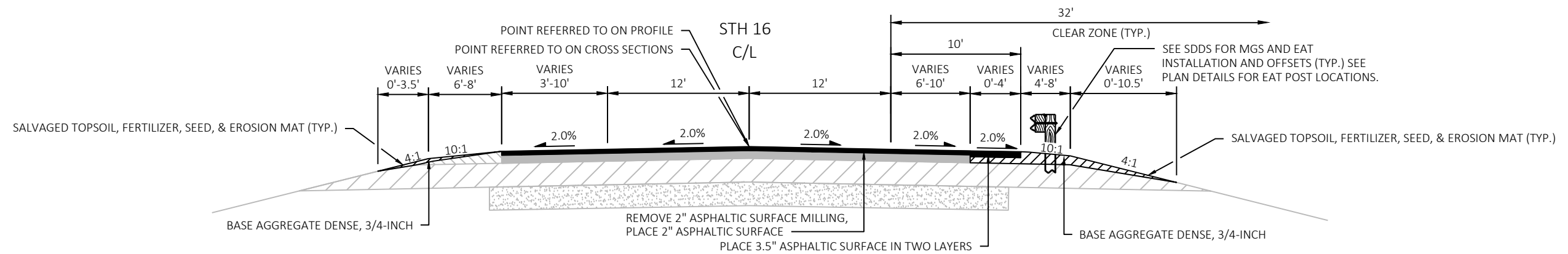
EXISTING TYPICAL SECTION STH 16 - WEST & EAST APPROACH

STA 172+40 TO STA 172+62
STA 173+84 TO STA 174+05



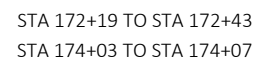
PROPOSED TYPICAL SECTION STH 16

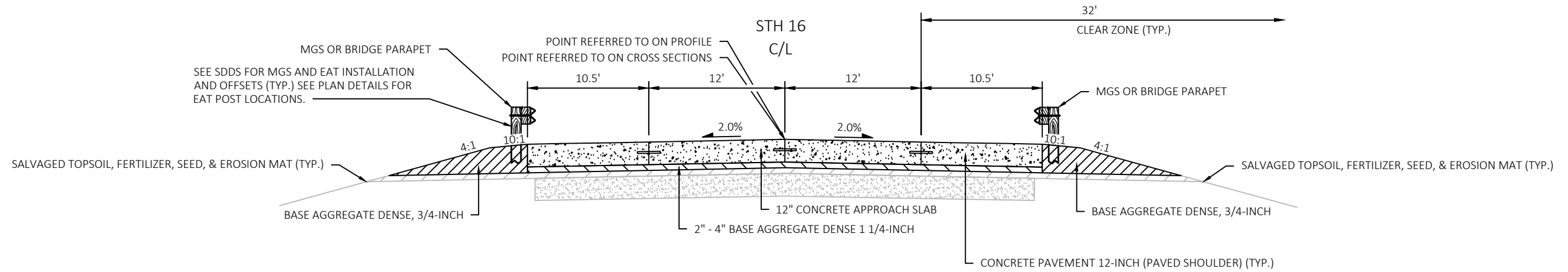
LT - STA 170+03 TO STA 170+50 RT - STA 170+03 TO STA 170+76



PROPOSED TYPICAL SECTION STH 16

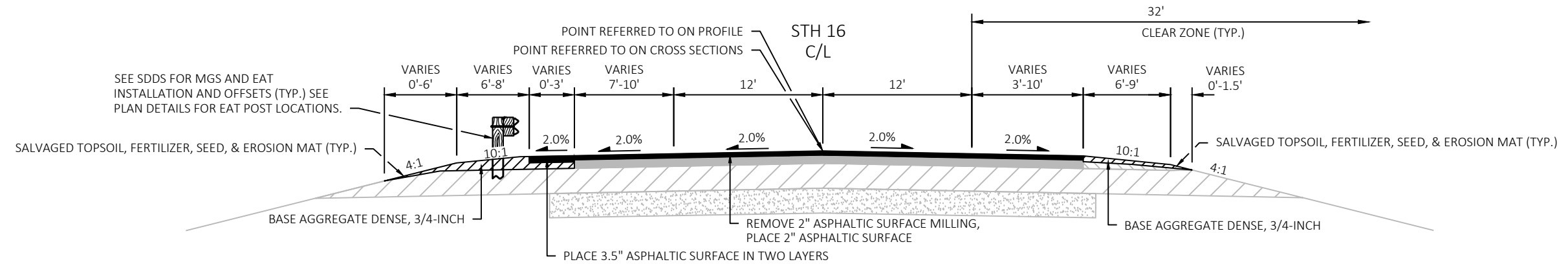
LT - STA 170+50 TO STA 171+40 RT - STA 170+76 TO STA 171+26





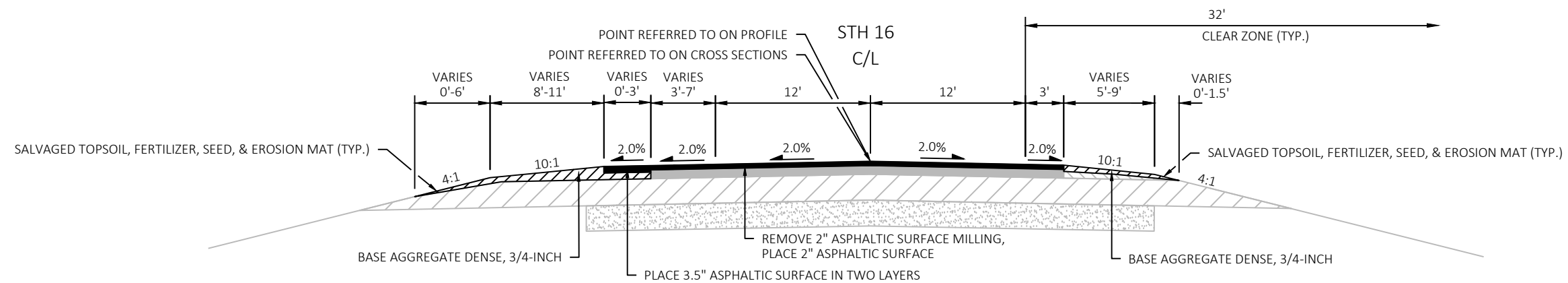
PROPOSED TYPICAL SECTION STH 16 - WEST & EAST APPROACH SLABS

STA 172+43 TO STA 172+62
STA 173+84 TO STA 174+03



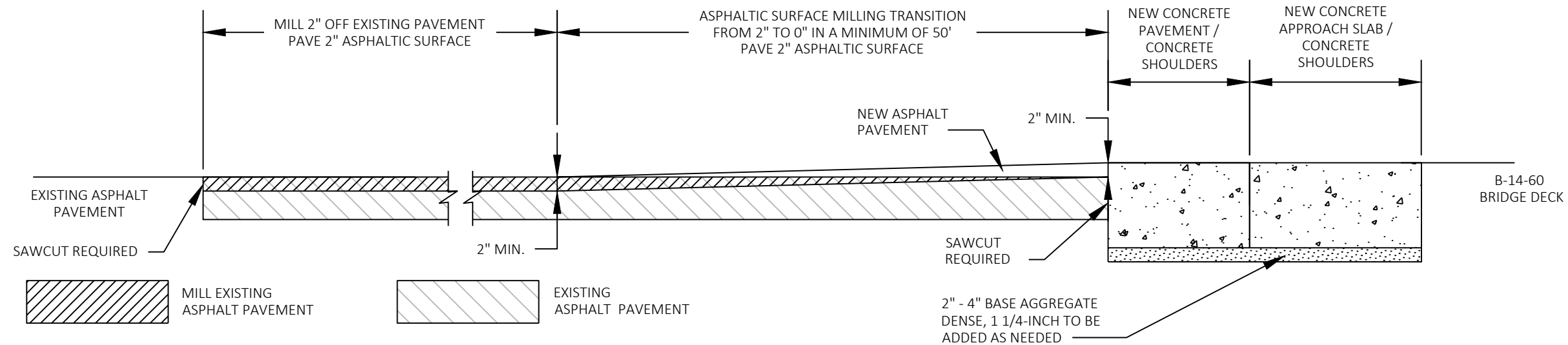
PROPOSED TYPICAL SECTION STH 16

LT - STA 175+20 TO STA 175+68 RT - STA 175+06 TO STA 175+97



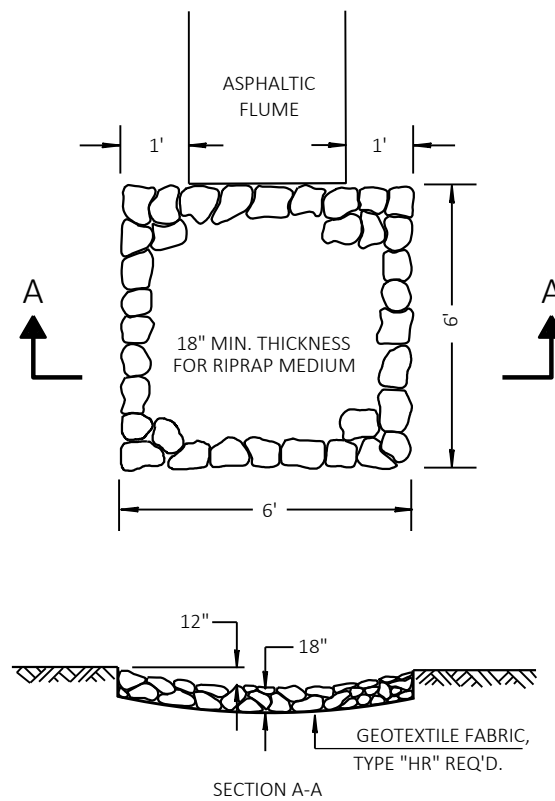
PROPOSED TYPICAL SECTION STH 16

LT - STA 175+68 TO STA 176+45 RT - STA 175+97 TO STA 176+45



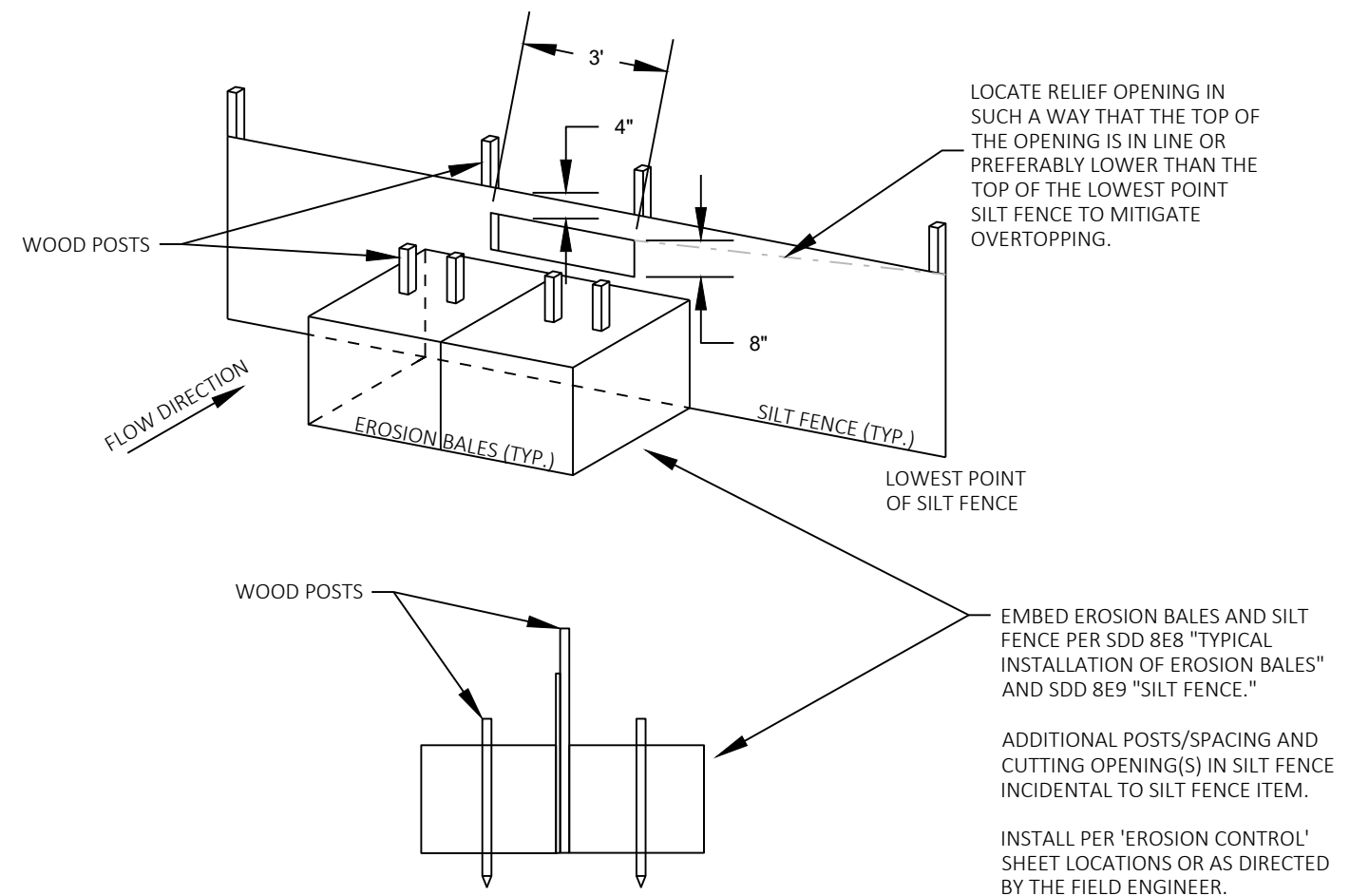
REMOVING ASPHALTIC SURFACE MILLING DETAIL

STA 170+03 TO STA 172+19
STA 174+07 TO STA 176+45



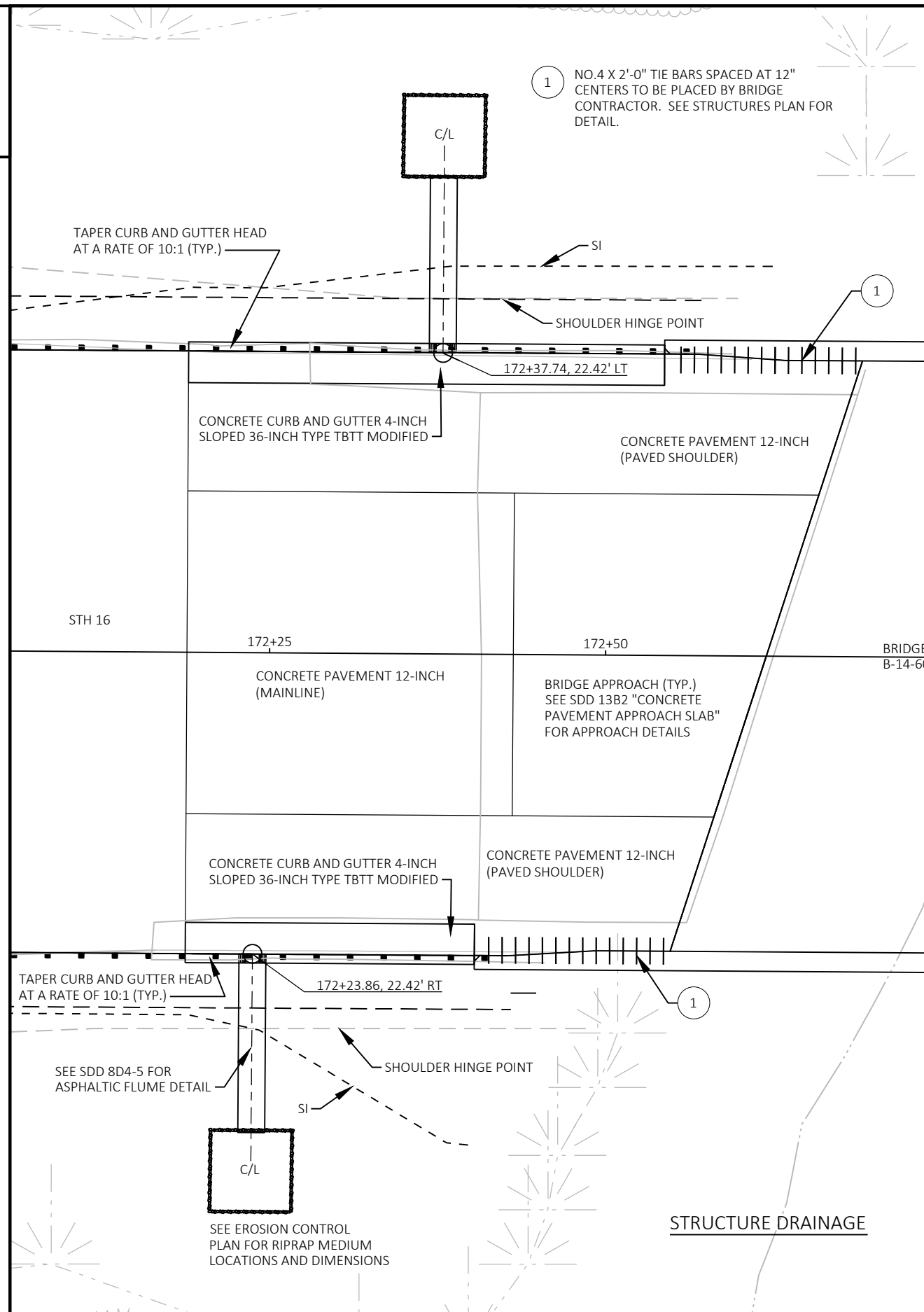
RIPRAP MEDIUM TREATMENT AT FLUMES DETAIL

SEE EROSION CONTROL PLAN FOR LOCATIONS

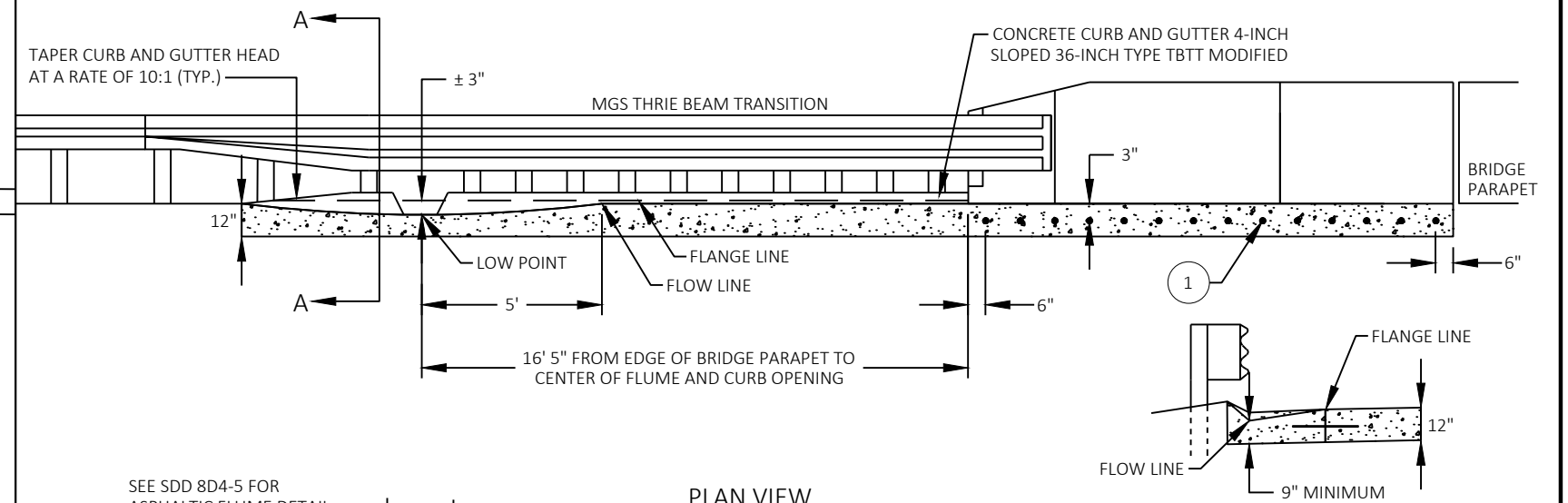


BALE & SILT FENCE RELIEF DETAIL

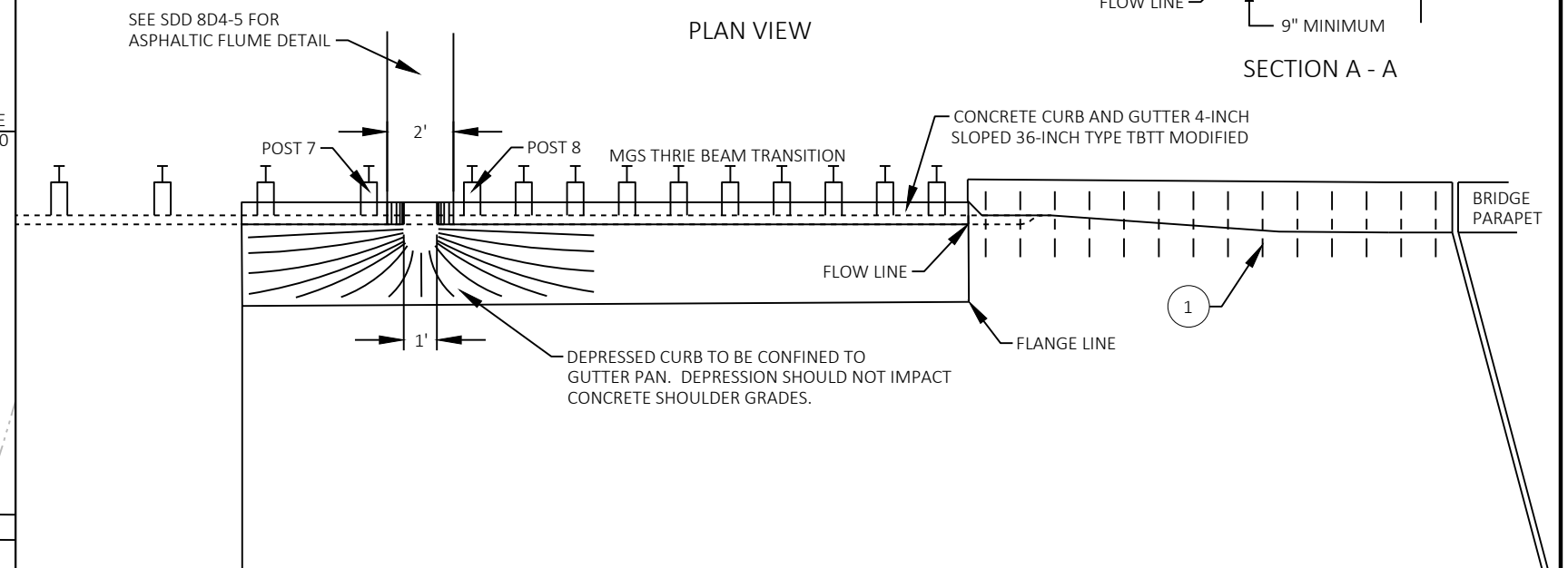
SEE EROSION CONTROL PLAN FOR LOCATIONS



PROFILE VIEW



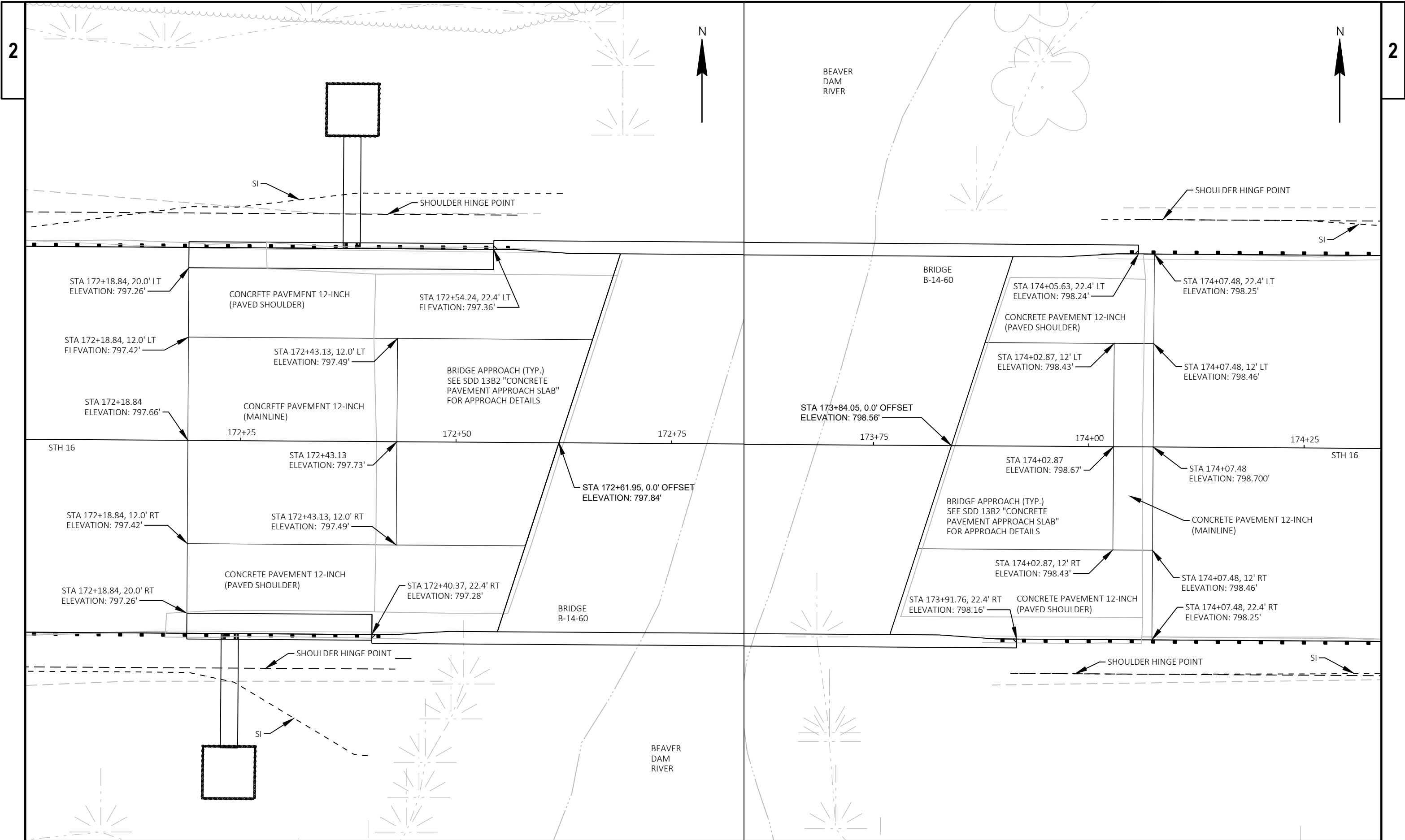
PLAN VIEW



1 NO.4 X 2'-0" TIE BARS SPACED AT 12" CENTERS TO BE PLACED BY BRIDGE CONTRACTOR. SEE STRUCTURES PLAN FOR DETAIL.

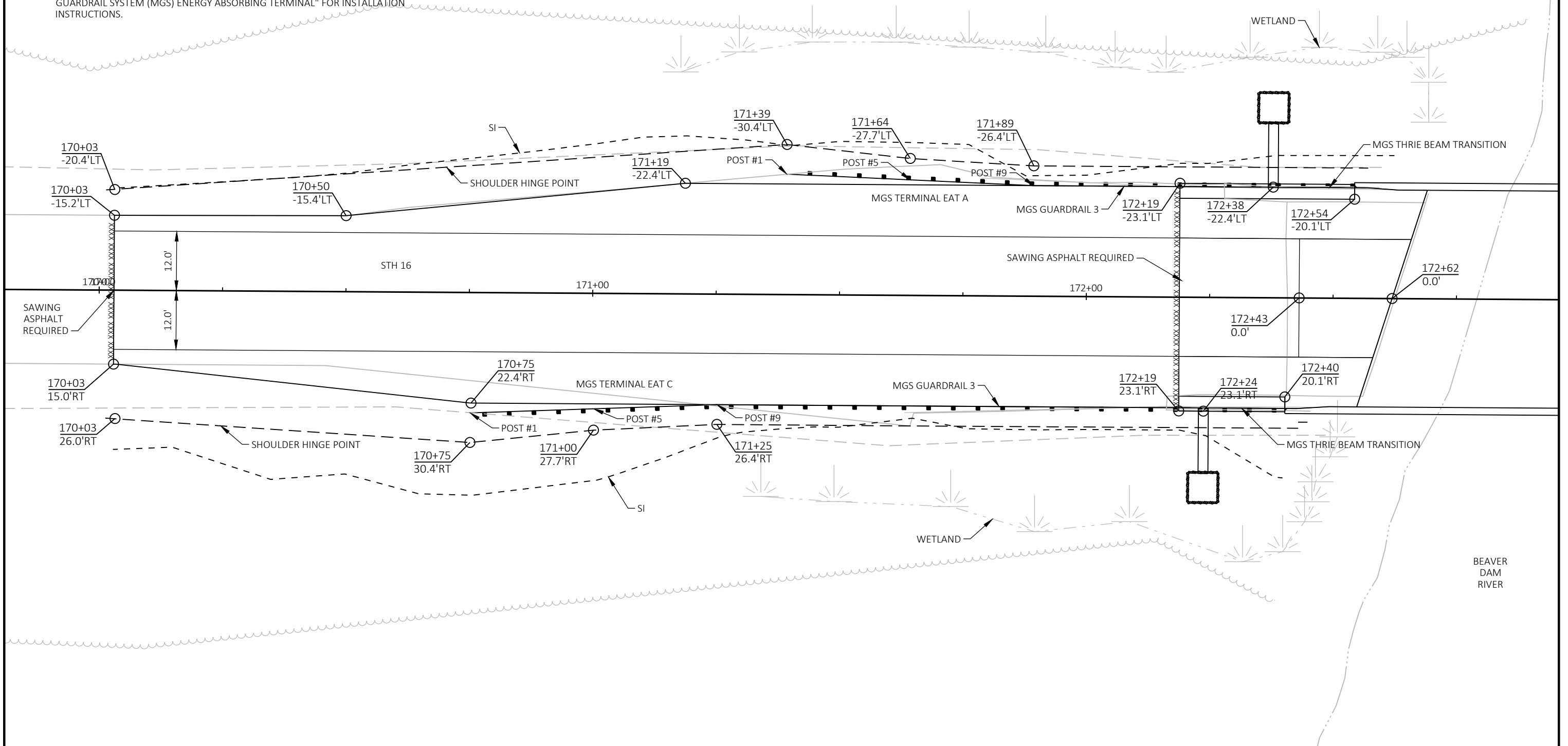
CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE TBTT MODIFIED

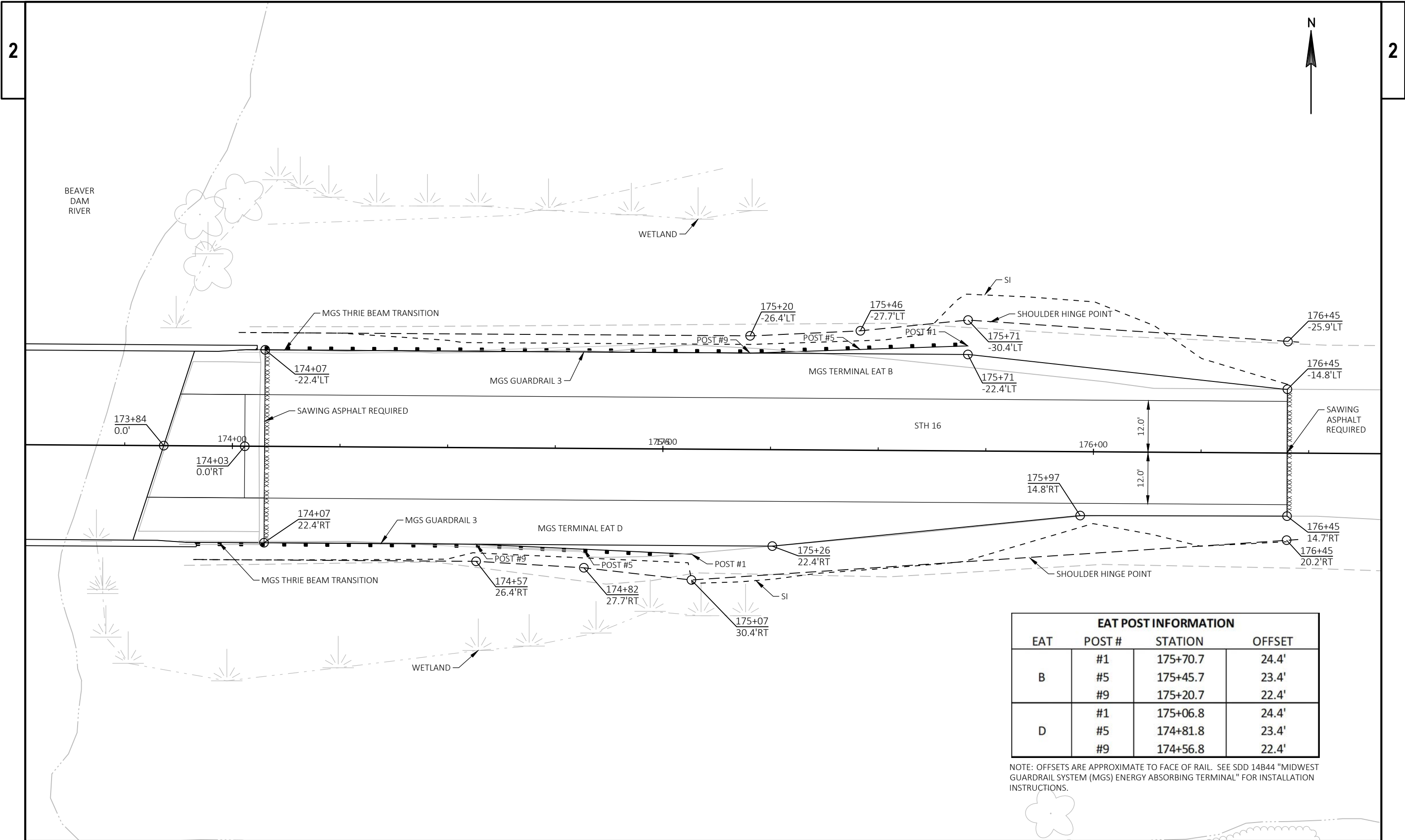
STA 172+35 LT TO STA 172+58 LT
STA 172+21 RT TO STA 172+44 RT



EAT POST INFORMATION			
EAT	POST #	STATION	OFFSET
A	#1	171+39.2	24.4'
	#5	171+64.2	23.4'
	#9	171+89.2	22.4'
C	#1	170+75.3	24.4'
	#5	171+00.3	23.4'
	#9	171+25.3	22.4'

NOTE: OFFSETS ARE APPROXIMATE TO FACE OF RAIL. SEE SDD 14B44 "MIDWEST GUARDRAIL SYSTEM (MGS) ENERGY ABSORBING TERMINAL" FOR INSTALLATION INSTRUCTIONS.

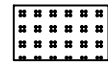
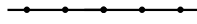




EAT POST INFORMATION			
EAT	POST #	STATION	OFFSET
B	#1	175+70.7	24.4'
	#5	175+45.7	23.4'
	#9	175+20.7	22.4'
D	#1	175+06.8	24.4'
	#5	174+81.8	23.4'
	#9	174+56.8	22.4'

NOTE: OFFSETS ARE APPROXIMATE TO FACE OF RAIL. SEE SDD 14B44 "MIDWEST GUARDRAIL SYSTEM (MGS) ENERGY ABSORBING TERMINAL" FOR INSTALLATION INSTRUCTIONS.

LEGEND

EROSION MAT URBAN
CLASS I TYPE A

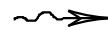
SILT FENCE



EROSION BALES



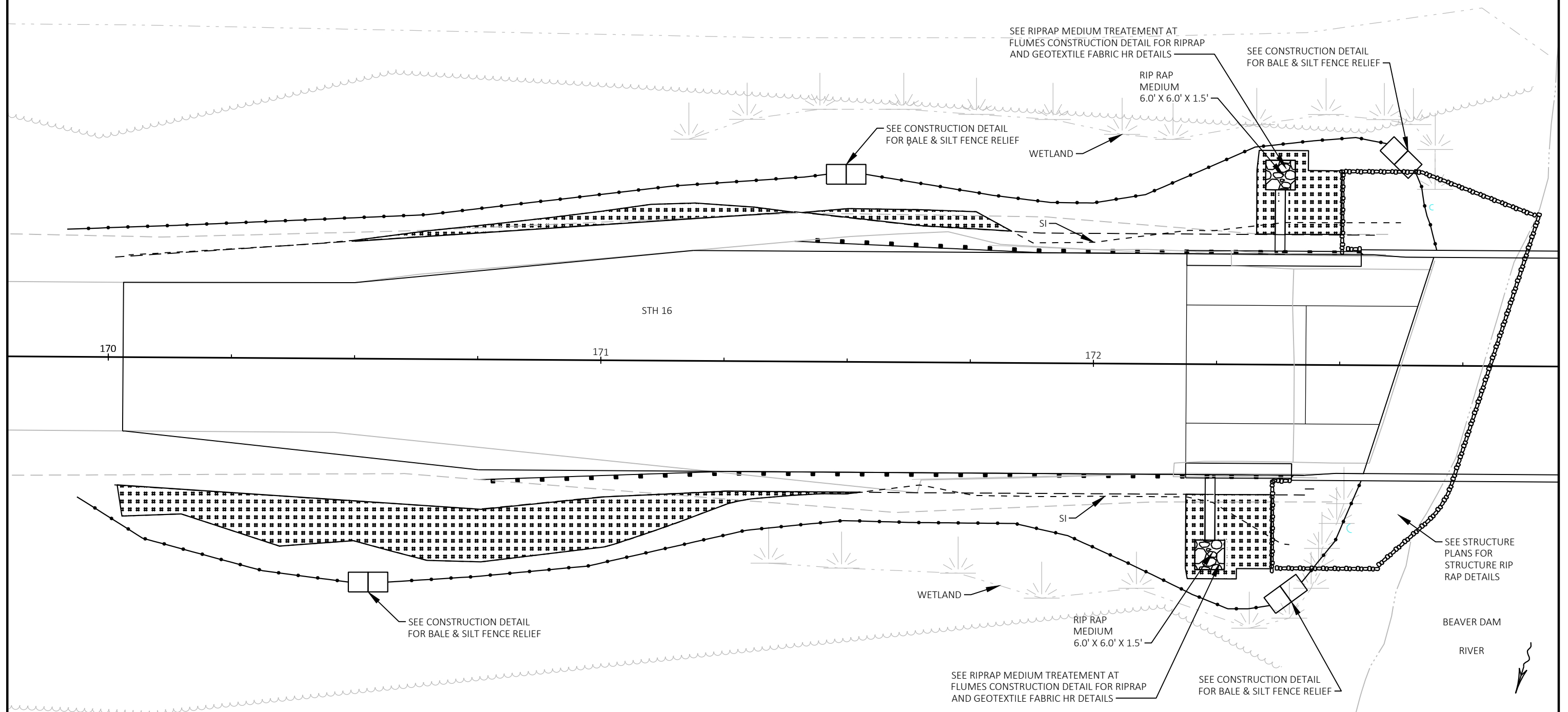
RIPRAP MEDIUM



SURFACE WATER FLOW

NOTES

1. DISTURBED SLOPES SHALL BE RESTORED WITH SALVAGED TOPSOIL, SEED MIXTURE NO. 60, FERTILIZER TYPE B, AND EROSION MAT URBAN CLASS I TYPE A.
2. SEE SDD 8E9 "SILT FENCE" FOR INSTALLATION INSTRUCTIONS.
3. DO NOT STORE SALVAGED TOPSOIL, EQUIPMENT, OR MATERIAL IN DELINEATED WETLANDS AND DITCH LINES FOR THE DURATION OF THE PROJECT.



PROJECT NO: 1400-00-84

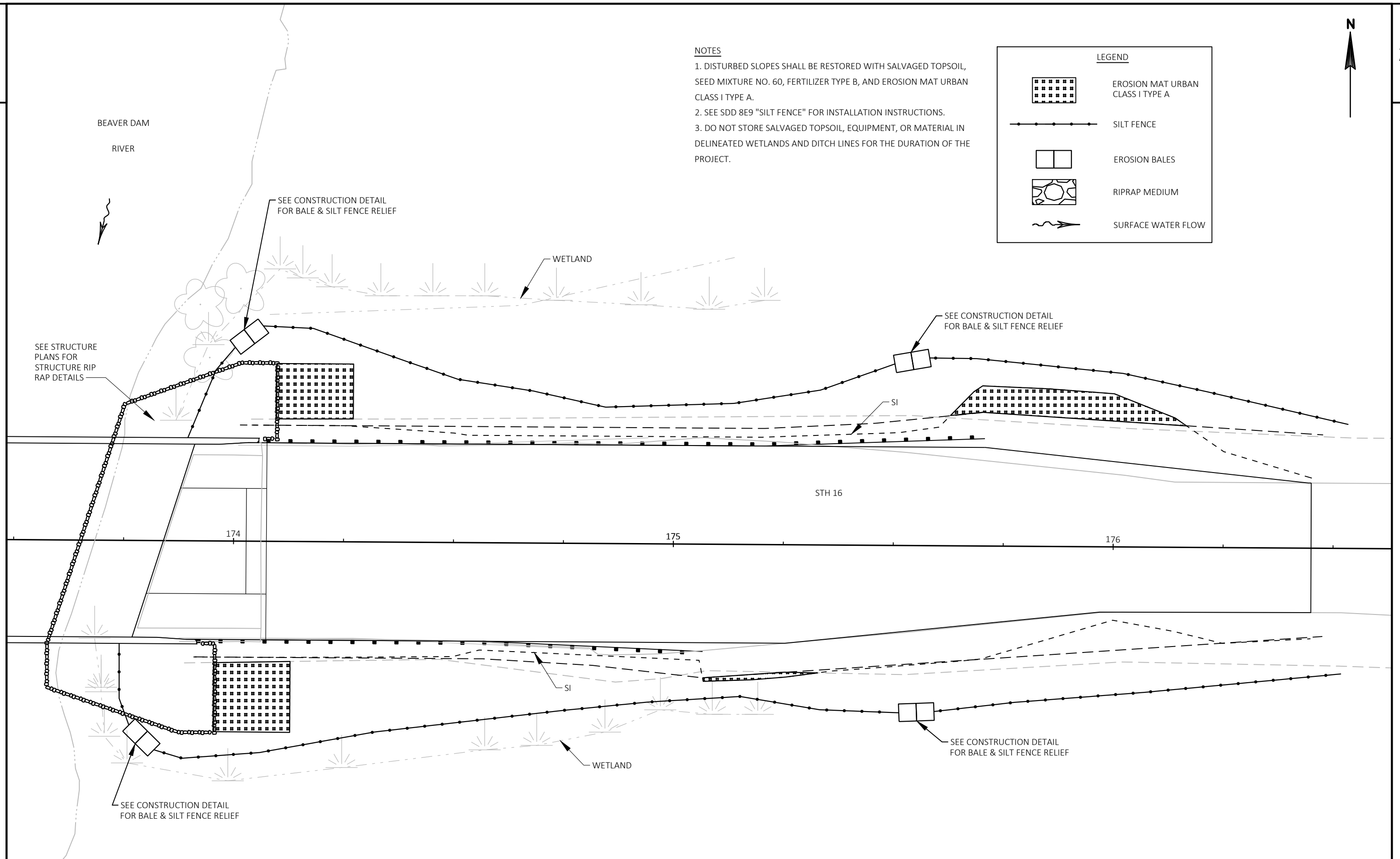
HWY: STH 68

COUNTY: DODGE

EROSION CONTROL PLAN

SHEET

E



PROJECT NO: 1400-00-84

HWY: STH 68

COUNTY: DODGE

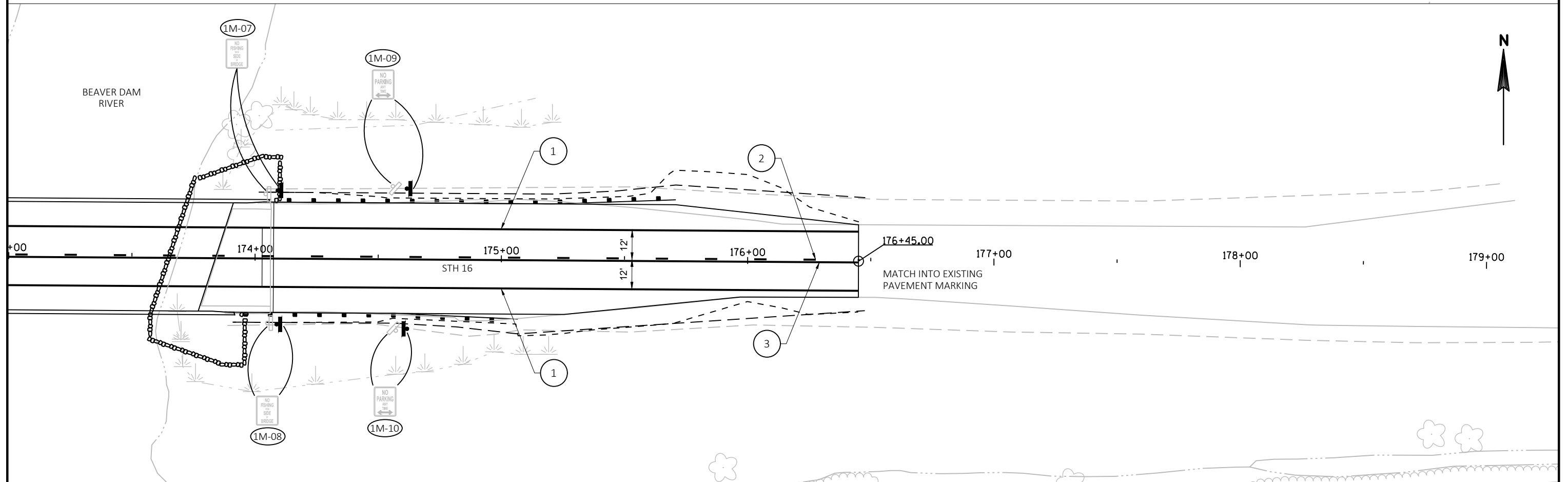
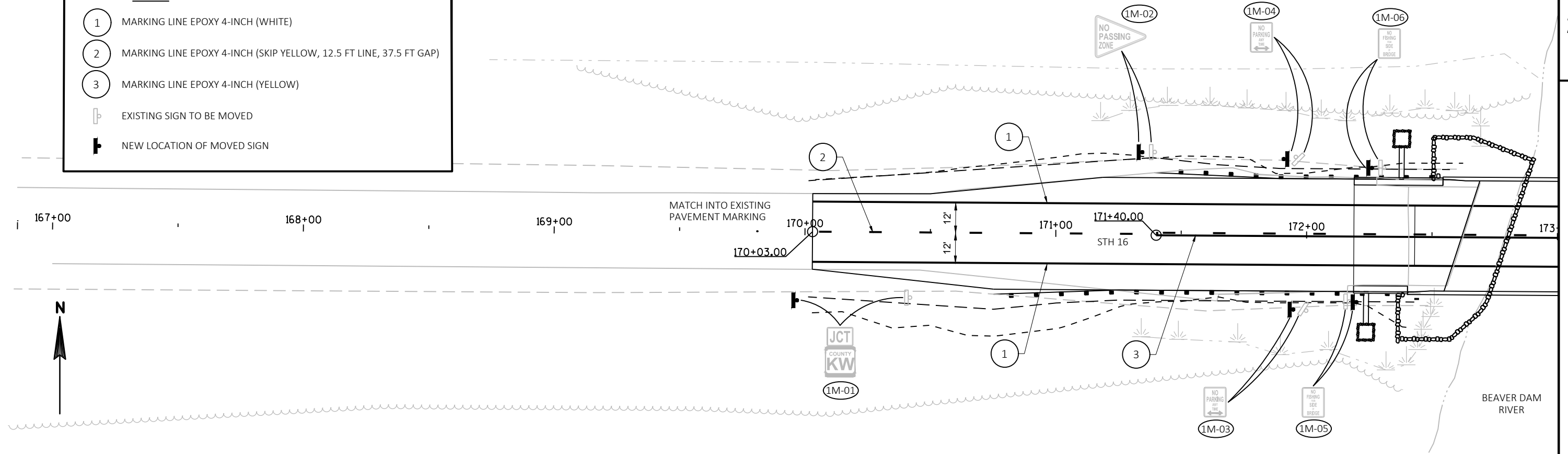
EROSION CONTROL PLAN

SHEET

E

LEGEND

- 1 MARKING LINE EPOXY 4-INCH (WHITE)
- 2 MARKING LINE EPOXY 4-INCH (SKIP YELLOW, 12.5 FT LINE, 37.5 FT GAP)
- 3 MARKING LINE EPOXY 4-INCH (YELLOW)
- EXISTING SIGN TO BE MOVED
- NEW LOCATION OF MOVED SIGN



PROJECT NO: 1400-00-84

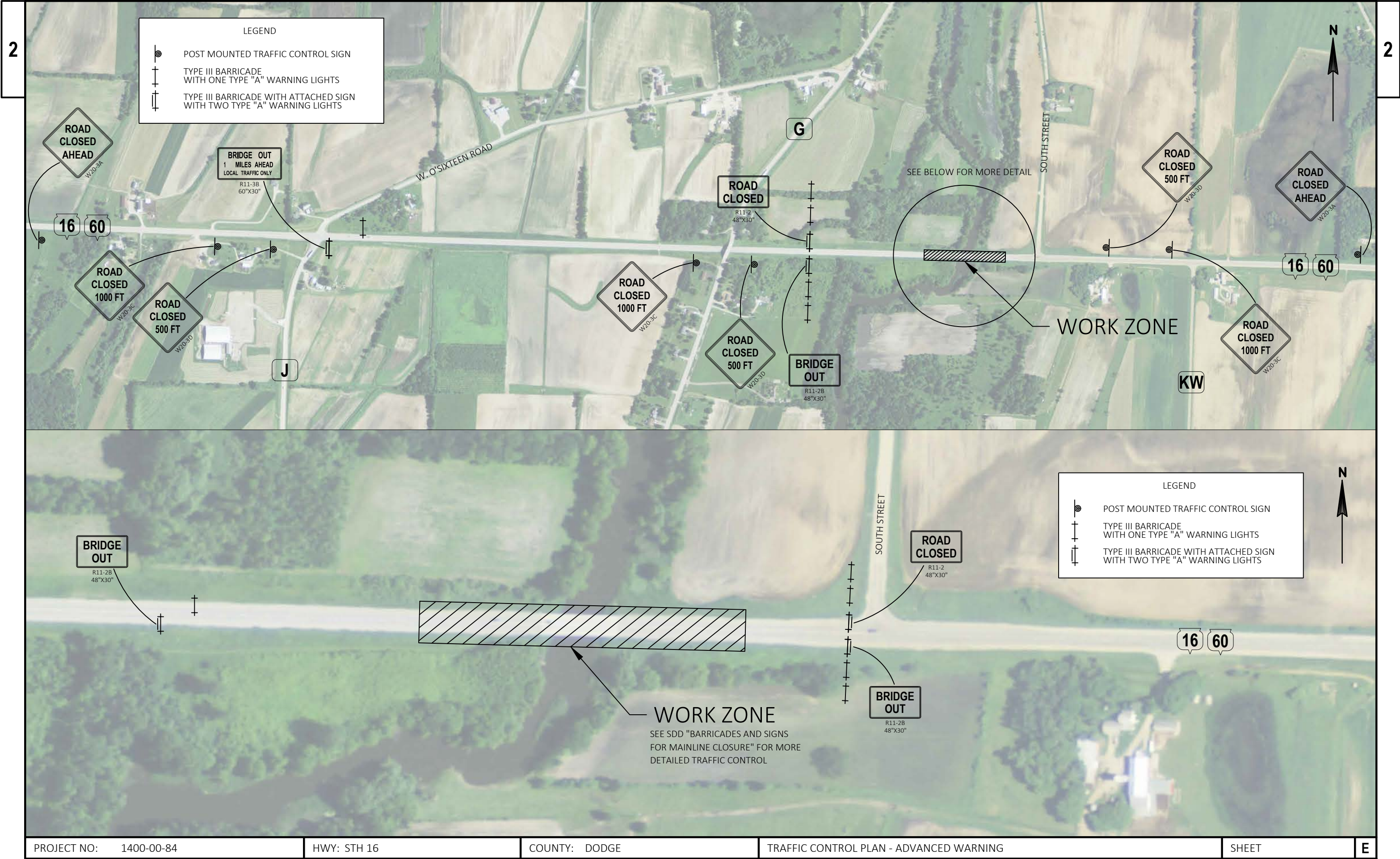
HWY: STH 16

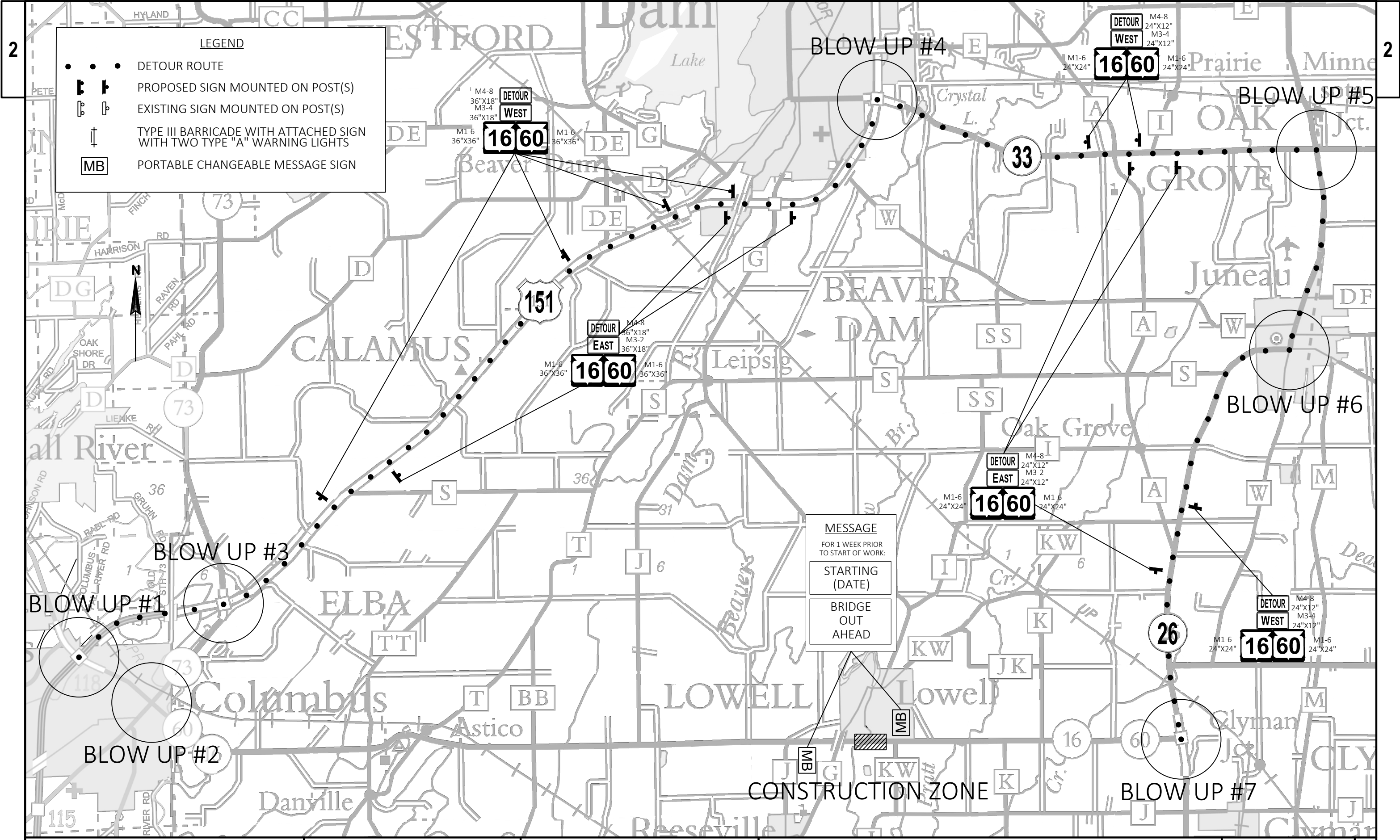
COUNTY: DODGE

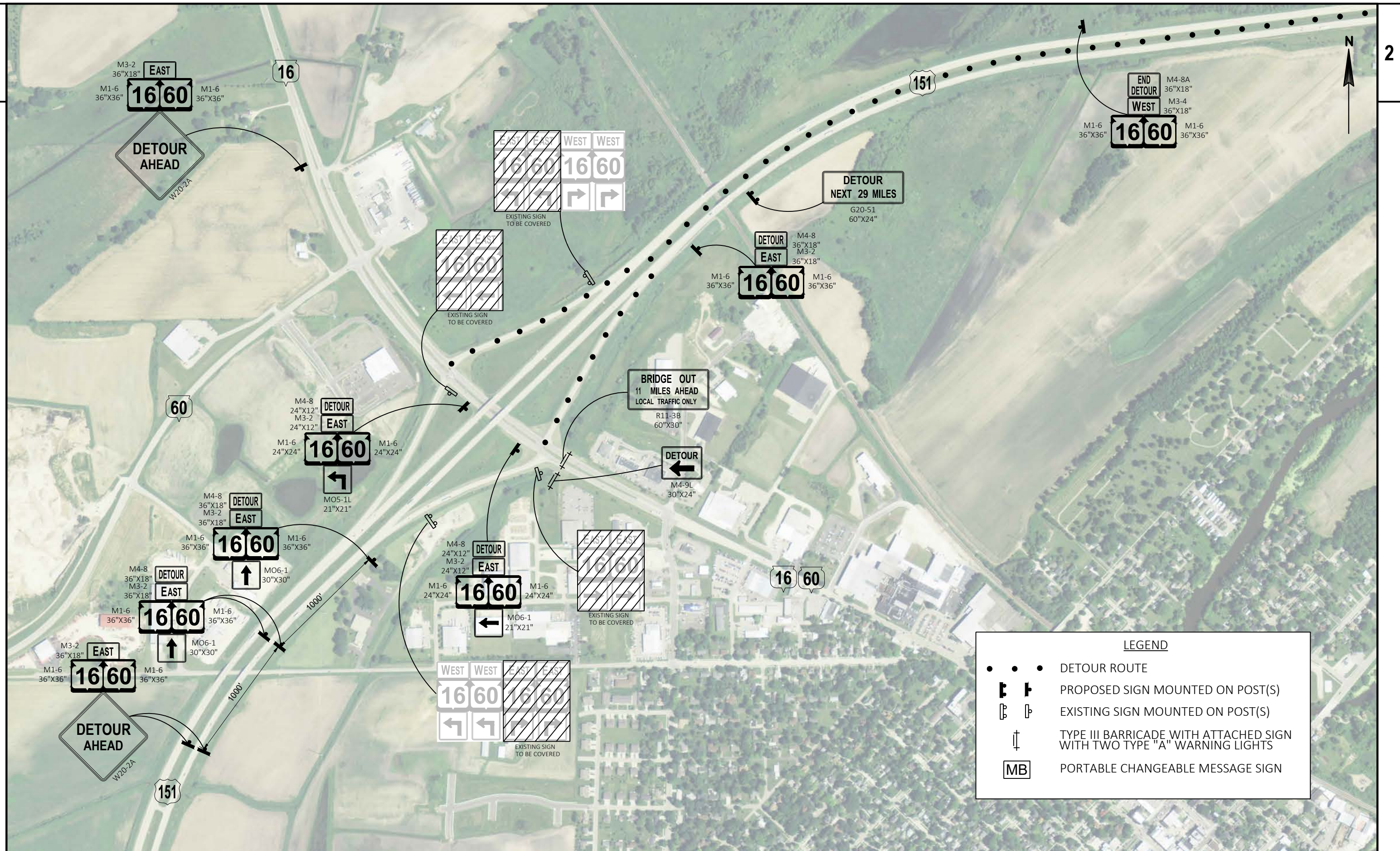
PAVEMENT MARKING & PERMANENT SIGN PLAN

SHEET

E







PROJECT NO: 1400-00-84

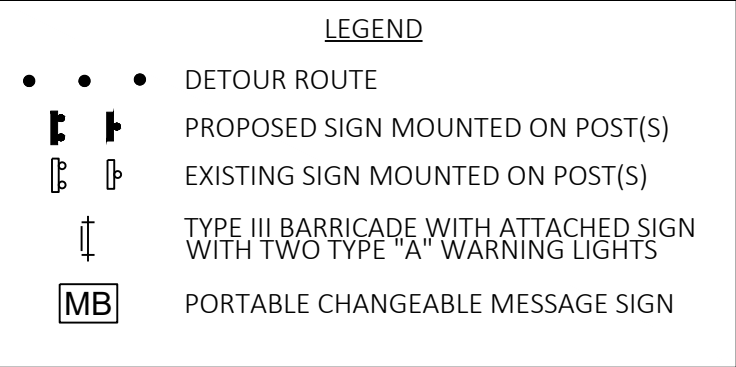
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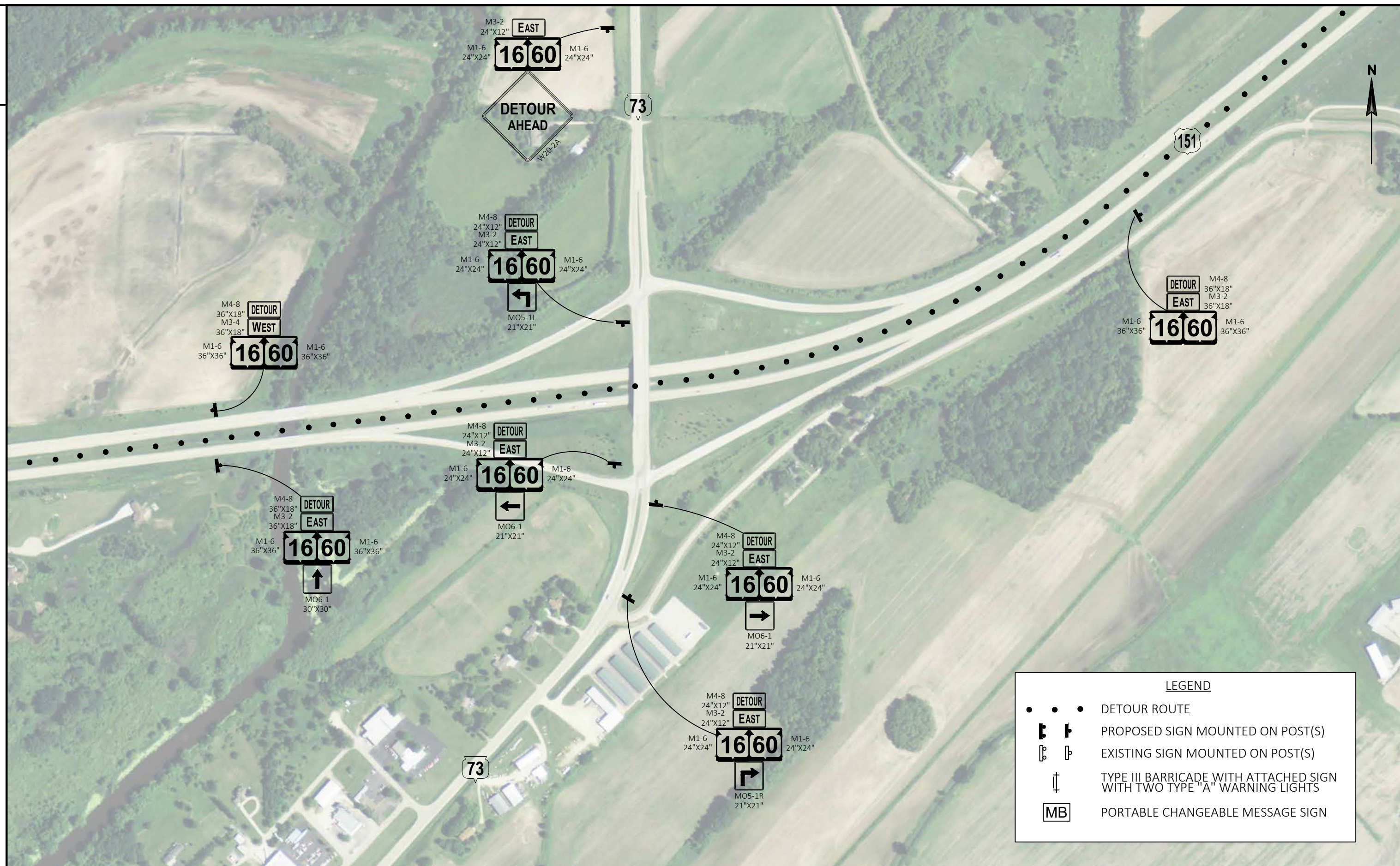
COUNTY: DODGE

TRAFFIC CONTROL - DETOUR ROUTE (BLOW UP #1 - STH 16/60 & USH 151)

SHEET

E





PROJECT NO: 1400-00-84

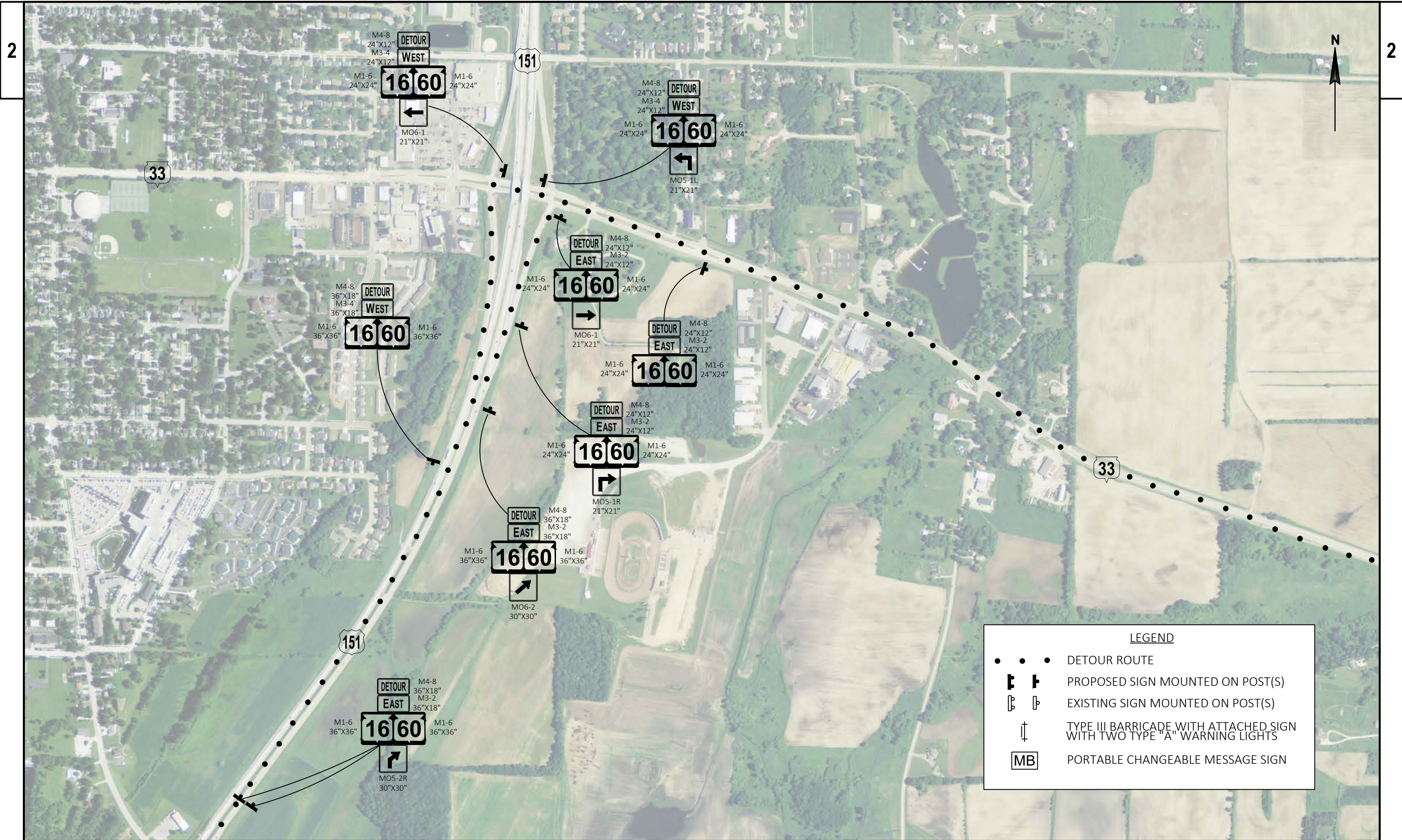
HWY: STH 16

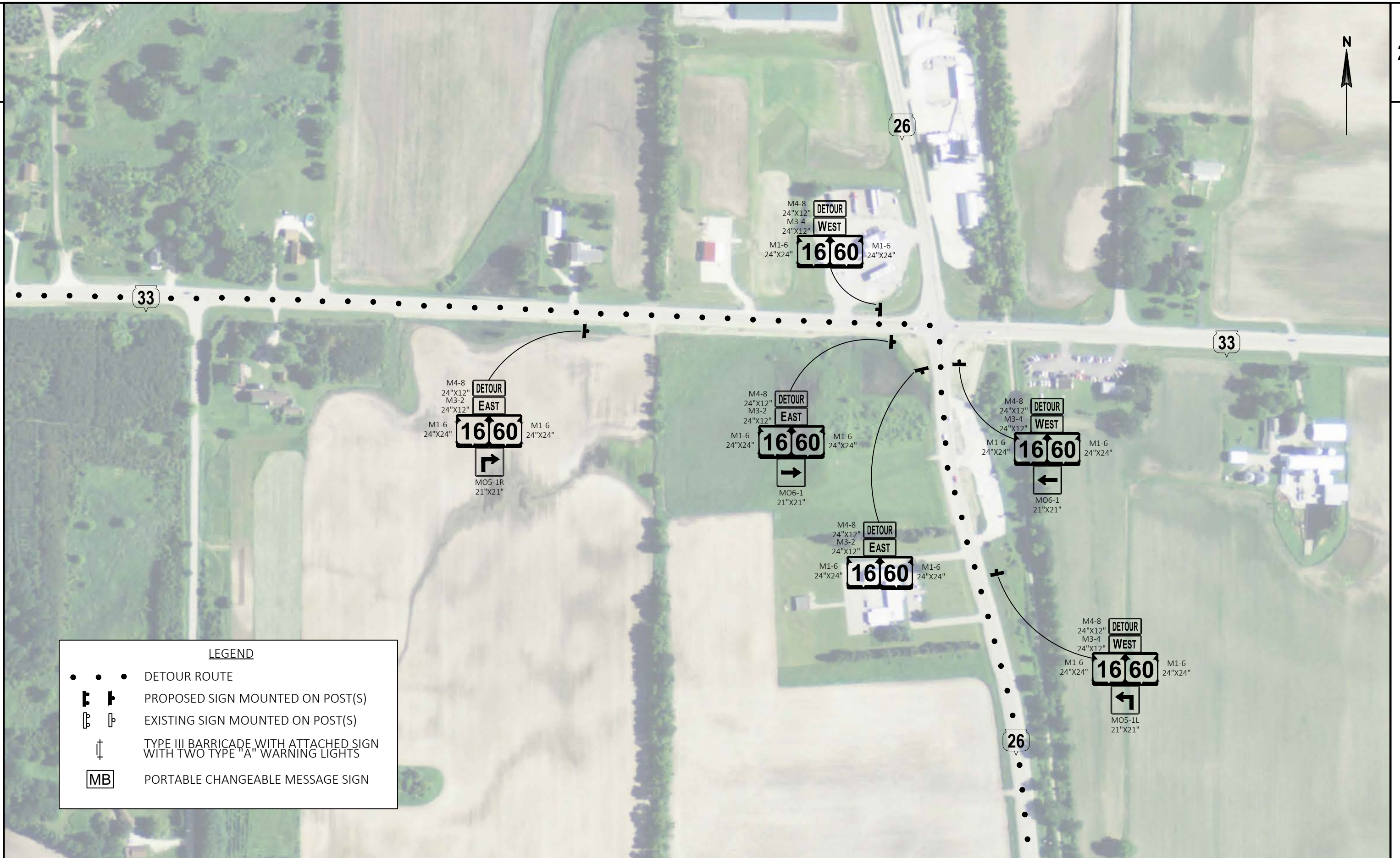
COUNTY: DODGE

TRAFFIC CONTROL - DETOUR ROUTE (BLOW UP #3 - STH 73 & USH 151)

SHEET

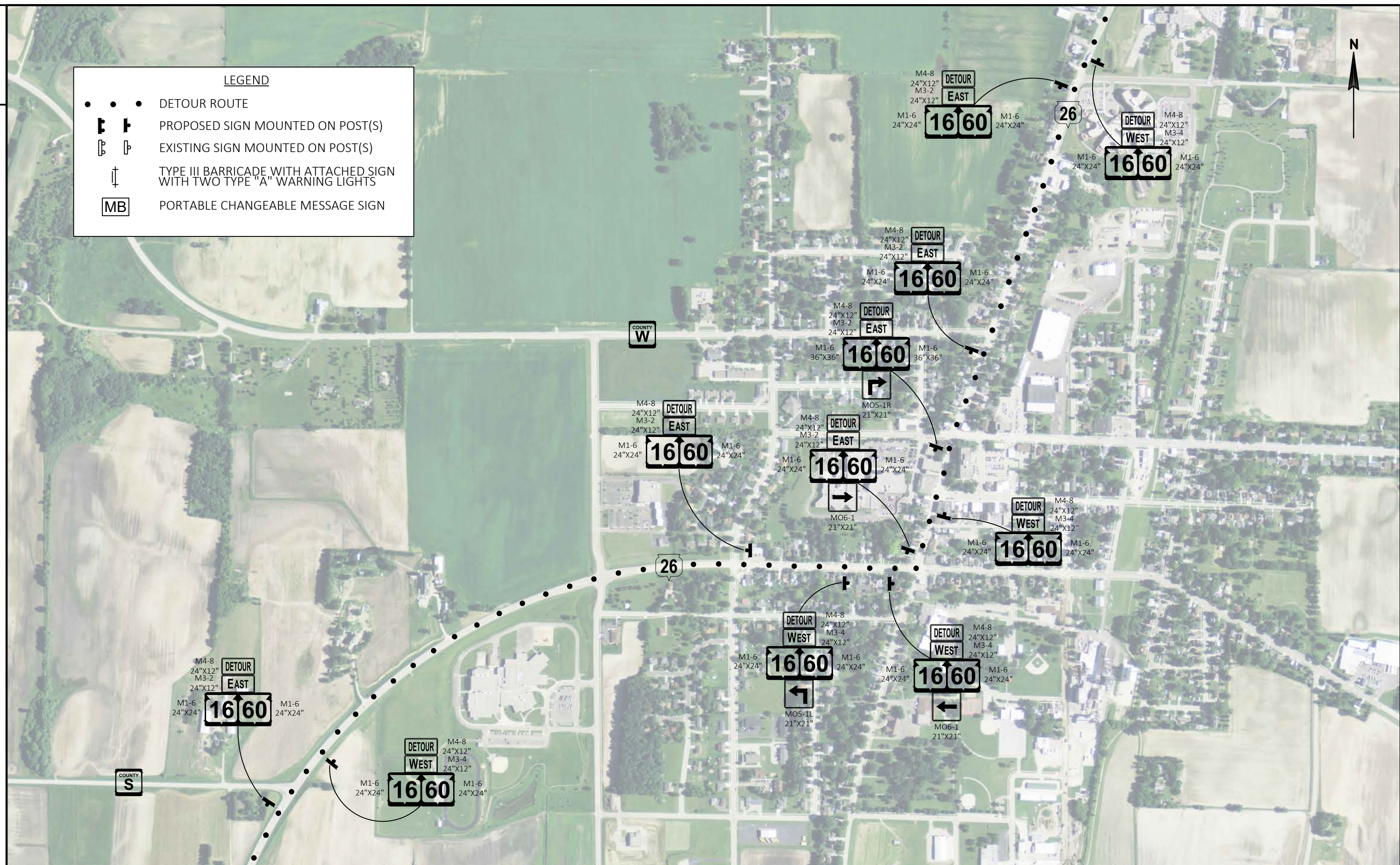
E





LEGEND

- • • DETOUR ROUTE
- ⏏ PROPOSED SIGN MOUNTED ON POST(S)
- ⏏ EXISTING SIGN MOUNTED ON POST(S)
- ⏏ TYPE III BARRICADE WITH ATTACHED SIGN WITH TWO TYPE "A" WARNING LIGHTS
- MB PORTABLE CHANGEABLE MESSAGE SIGN



PROJECT NO: 1400-00-84

HWY: STH 16

COUNTY: DODGE

TRAFFIC CONTROL - DETOUR ROUTE (BLOW UP #6 - STH 33, JUNEAU)

SHEET

E

FILE NAME : \\MAD31ZP1\N3PUBLIC\PD\3D\14000004\SHEETS\PLAN\027001_DT.DWG
LAYOUT NAME - 027007_dt

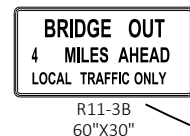
PLOT DATE : 6/5/2019 10:59 AM

PLOT BY : SCHERER, MEGAN S

PLOT NAME :

PLOT SCALE : 1 IN:200 FT

WISDOT/CADDs SHEET 42



Estimate Of Quantities

1400-00-84

Line	Item	Item Description	Unit	Total	Qty
0002	203.0210.S	Abatement of Asbestos Containing Material (structure) 01. B-14-0060	LS	1.000	1.000
0004	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 01. 172+63	LS	1.000	1.000
0006	204.0100	Removing Concrete Pavement	SY	217.000	217.000
0008	204.0120	Removing Asphaltic Surface Milling	SY	2,006.000	2,006.000
0010	204.0150	Removing Curb & Gutter	LF	38.000	38.000
0012	204.0165	Removing Guardrail	LF	355.000	355.000
0014	206.1000	Excavation for Structures Bridges (structure) 01. B-14-0060	LS	1.000	1.000
0016	210.1500	Backfill Structure Type A	TON	214.000	214.000
0018	213.0100	Finishing Roadway (project) 01. 1400-00-84	EACH	1.000	1.000
0020	305.0110	Base Aggregate Dense 3/4-Inch	TON	94.000	94.000
0022	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	80.000	80.000
0024	312.0110	Select Crushed Material	TON	60.000	60.000
0026	415.0120	Concrete Pavement 12-Inch	SY	218.000	218.000
0028	415.0410	Concrete Pavement Approach Slab	SY	102.000	102.000
0030	415.5110.S	Concrete Pavement Joint Layout	LS	1.000	1.000
0032	455.0605	Tack Coat	GAL	121.000	121.000
0034	465.0105	Asphaltic Surface	TON	238.000	238.000
0036	465.0315	Asphaltic Flumes	SY	8.000	8.000
0038	502.0100	Concrete Masonry Bridges	CY	259.000	259.000
0040	502.3200	Protective Surface Treatment	SY	627.000	627.000
0042	502.3210	Pigmented Surface Sealer	SY	151.000	151.000
0044	502.4205	Adhesive Anchors No. 5 Bar	EACH	72.000	72.000
0046	505.0400	Bar Steel Reinforcement HS Structures	LB	2,200.000	2,200.000
0048	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	56,720.000	56,720.000
0050	506.4000	Steel Diaphragms (structure) 01. B-14-0060	EACH	12.000	12.000
0052	509.1500	Concrete Surface Repair	SF	59.000	59.000
0054	509.9020.S	Epoxy Crack Sealing	LF	7.000	7.000
0056	516.0500	Rubberized Membrane Waterproofing	SY	16.000	16.000
0058	601.0590	Concrete Curb & Gutter 4-Inch Sloped 36-Inch Type TBTT	LF	58.000	58.000
0060	606.0200	Riprap Medium	CY	4.000	4.000
0062	606.0300	Riprap Heavy	CY	275.000	275.000
0064	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	136.000	136.000
0066	614.0150	Anchor Assemblies for Steel Plate Beam Guard	EACH	4.000	4.000
0068	614.2300	MGS Guardrail 3	LF	200.000	200.000
0070	614.2500	MGS Thrie Beam Transition	LF	158.000	158.000
0072	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0074	618.0100	Maintenance And Repair of Haul Roads (project) 01.	EACH	1.000	1.000

Estimate Of Quantities

1400-00-84

Line	Item	Item Description	Unit	Total	Qty
		1400-00-84			
0076	619.1000	Mobilization	EACH	1.000	1.000
0078	624.0100	Water	MGAL	1.100	1.100
0080	625.0500	Salvaged Topsoil	SY	346.000	346.000
0082	628.1104	Erosion Bales	EACH	100.000	100.000
0084	628.1504	Silt Fence	LF	1,298.000	1,298.000
0086	628.1520	Silt Fence Maintenance	LF	1,298.000	1,298.000
0088	628.1905	Mobilizations Erosion Control	EACH	2.000	2.000
0090	628.1910	Mobilizations Emergency Erosion Control	EACH	2.000	2.000
0092	628.2006	Erosion Mat Urban Class I Type A	SY	346.000	346.000
0094	628.7570	Rock Bags	EACH	10.000	10.000
0096	629.0210	Fertilizer Type B	CWT	0.500	0.500
0098	630.0160	Seeding Mixture No. 60	LB	15.400	15.400
0100	630.0500	Seed Water	MGAL	0.260	0.260
0102	634.0614	Posts Wood 4x6-Inch X 14-FT	EACH	10.000	10.000
0104	638.2102	Moving Signs Type II	EACH	10.000	10.000
0106	638.3000	Removing Small Sign Supports	EACH	10.000	10.000
0108	642.5001	Field Office Type B	EACH	1.000	1.000
0110	643.0300	Traffic Control Drums	DAY	70.000	70.000
0112	643.0420	Traffic Control Barricades Type III	DAY	1,540.000	1,540.000
0114	643.0705	Traffic Control Warning Lights Type A	DAY	2,310.000	2,310.000
0116	643.0900	Traffic Control Signs	DAY	26,565.000	26,565.000
0118	643.0910	Traffic Control Covering Signs Type I	EACH	9.000	9.000
0120	643.1050	Traffic Control Signs PCMS	DAY	14.000	14.000
0122	643.5000	Traffic Control	EACH	1.000	1.000
0124	645.0120	Geotextile Type HR	SY	246.000	246.000
0126	646.1020	Marking Line Epoxy 4-Inch	LF	2,050.000	2,050.000
0128	650.6500	Construction Staking Structure Layout (structure) 01. B-14-0060	LS	1.000	1.000
0130	650.7000	Construction Staking Concrete Pavement	LF	67.000	67.000
0132	650.8000	Construction Staking Resurfacing Reference	LF	453.000	453.000
0134	650.9910	Construction Staking Supplemental Control (project) 01. 1400-00-84	LS	1.000	1.000
0136	650.9920	Construction Staking Slope Stakes	LF	520.000	520.000
0138	690.0150	Sawing Asphalt	LF	484.000	484.000
0140	715.0415	Incentive Strength Concrete Pavement	DOL	500.000	500.000
0142	715.0502	Incentive Strength Concrete Structures	DOL	1,554.000	1,554.000
0144	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	275.000	275.000
0146	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	200.000	200.000

3

REMOVING PAVEMENT AND CURB & GUTTER <table><tr><th colspan="4"></th><th>204.0100 REMOVING PAVEMENT SY</th><th>204.0150 REMOVING CURB & GUTTER LF</th></tr><tr><th>CATEGORY</th><th colspan="2">STATION TO STATION</th><th>LOCATION</th><th></th><th></th></tr><tr><td>0010</td><td>172+16</td><td>- 172+40</td><td>RT</td><td>-</td><td>25</td></tr><tr><td>0010</td><td>172+27</td><td>- 172+40</td><td>LT</td><td>-</td><td>13</td></tr><tr><td>0010</td><td>172+40</td><td>- 172+69</td><td>WEST APPROACH SLAB</td><td>108</td><td>-</td></tr><tr><td>0010</td><td>173+77</td><td>- 174+06</td><td>EAST APPROACH SLAB</td><td>109</td><td>-</td></tr><tr><td colspan="4">TOTAL 0010</td><td>217</td><td>38</td></tr></table>														204.0100 REMOVING PAVEMENT SY	204.0150 REMOVING CURB & GUTTER LF	CATEGORY	STATION TO STATION		LOCATION			0010	172+16	- 172+40	RT	-	25	0010	172+27	- 172+40	LT	-	13	0010	172+40	- 172+69	WEST APPROACH SLAB	108	-	0010	173+77	- 174+06	EAST APPROACH SLAB	109	-	TOTAL 0010				217	38	REMOVING ASPHALTIC SURFACE MILLING <table><tr><th colspan="4"></th><th>204.0120 REMOVING ASPHALTIC SURFACE MILLING SY</th></tr><tr><th>CATEGORY</th><th colspan="2">STATION TO STATION</th><th>LOCATION</th><th></th></tr><tr><td>0010</td><td>170+03</td><td>- 172+19</td><td>STH 16 - WEST OF BRIDGE</td><td>950</td></tr><tr><td>0010</td><td>174+07</td><td>- 176+45</td><td>STH 16 - EAST OF BRIDGE</td><td>1056</td></tr><tr><td colspan="4">TOTAL 0010</td><td>2006</td></tr></table>														204.0120 REMOVING ASPHALTIC SURFACE MILLING SY	CATEGORY	STATION TO STATION		LOCATION		0010	170+03	- 172+19	STH 16 - WEST OF BRIDGE	950	0010	174+07	- 176+45	STH 16 - EAST OF BRIDGE	1056	TOTAL 0010				2006	FINISHING ROADWAY <table><tr><th colspan="2"></th><th>213.0100 FINISHING ROADWAY (1400-00-04) EACH</th></tr><tr><th>CATEGORY</th><th>LOCATION</th><th></th></tr><tr><td>0010</td><td>PROJECT 1400-00-04</td><td>1</td></tr><tr><td colspan="2">TOTAL 0010</td><td>1</td></tr></table>												213.0100 FINISHING ROADWAY (1400-00-04) EACH	CATEGORY	LOCATION		0010	PROJECT 1400-00-04	1	TOTAL 0010		1																							
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0010	172+43	- 172+62	MAINLINE	-	51	-																																																																																																																													
0010	173+84	- 174+03	MAINLINE	-	51	-																																																																																																																													
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BASE AGGREGATE ITEMS <table><tr><th colspan="4"></th><th>305.0110 BASE AGGREGATE DENSE 3/4-INCH TON</th><th>305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON</th><th>624.0100 WATER MGAL</th><th>REMARKS</th></tr><tr><th>CATEGORY</th><th>STATION</th><th>TO</th><th>STATION LOCATION</th><th></th><th></th><th></th><th></th></tr><tr><td>0010</td><td>170+03</td><td>- 172+43</td><td>STH 16 RT - WEST OF BRIDGE</td><td>65</td><td>-</td><td>0.3</td><td>SHOULDERS</td></tr><tr><td>0010</td><td>170+03</td><td>- 172+57</td><td>STH 16 LT - WEST OF BRIDGE</td><td>12</td><td>-</td><td>0.1</td><td>SHOULDERS</td></tr><tr><td>0010</td><td>172+19</td><td>- 172+43</td><td>STH 16 - WEST OF BRIDGE</td><td>-</td><td>40</td><td>0.2</td><td>CONCRETE PAVEMENT</td></tr><tr><td>0010</td><td>172+40</td><td>- 172+69</td><td>STH 16 - WEST OF BRIDGE</td><td>-</td><td>12</td><td>0.1</td><td>CONCRETE APPROACH</td></tr><tr><td>0010</td><td>173+77</td><td>- 174+06</td><td>STH 16 - EAST OF BRIDGE</td><td>-</td><td>12</td><td>0.1</td><td>CONCRETE APPROACH</td></tr><tr><td>0010</td><td>174+03</td><td>- 174+07</td><td>STH 16 - EAST OF BRIDGE</td><td>-</td><td>16</td><td>0.1</td><td>CONCRETE PAVEMENT</td></tr><tr><td>0010</td><td>173+89</td><td>- 176+45</td><td>STH 16 RT - EAST OF BRIDGE</td><td>4</td><td>-</td><td>0.1</td><td>SHOULDERS</td></tr><tr><td>0010</td><td>174+03</td><td>- 176+45</td><td>STH 16 LT - EAST OF BRIDGE</td><td>13</td><td>-</td><td>0.1</td><td>SHOULDERS</td></tr><tr><td colspan="4">TOTAL 0010</td><td>94</td><td>80</td><td>1.1</td><td></td></tr></table>														305.0110 BASE AGGREGATE DENSE 3/4-INCH TON	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON	624.0100 WATER MGAL	REMARKS	CATEGORY	STATION	TO	STATION LOCATION					0010	170+03	- 172+43	STH 16 RT - WEST OF BRIDGE	65	-	0.3	SHOULDERS	0010	170+03	- 172+57	STH 16 LT - WEST OF BRIDGE	12	-	0.1	SHOULDERS	0010	172+19	- 172+43	STH 16 - WEST OF BRIDGE	-	40	0.2	CONCRETE PAVEMENT	0010	172+40	- 172+69	STH 16 - WEST OF BRIDGE	-	12	0.1	CONCRETE APPROACH	0010	173+77	- 174+06	STH 16 - EAST OF BRIDGE	-	12	0.1	CONCRETE APPROACH	0010	174+03	- 174+07	STH 16 - EAST OF BRIDGE	-	16	0.1	CONCRETE PAVEMENT	0010	173+89	- 176+45	STH 16 RT - EAST OF BRIDGE	4	-	0.1	SHOULDERS	0010	174+03	- 176+45	STH 16 LT - EAST OF BRIDGE	13	-	0.1	SHOULDERS	TOTAL 0010				94	80	1.1		CONCRETE PAVEMENT JOINT LAYOUT ITEM <table><tr><th colspan="2"></th><th>415.5110.S CONCRETE PAVEMENT JOINT LAYOUT LS</th></tr><tr><th>CATEGORY</th><th>LOCATION</th><th></th></tr><tr><td>0010</td><td>PROJECT LIMITS</td><td>1</td></tr><tr><td colspan="2">TOTAL 0010</td><td>1</td></tr></table>												415.5110.S CONCRETE PAVEMENT JOINT LAYOUT LS	CATEGORY	LOCATION		0010	PROJECT LIMITS	1	TOTAL 0010		1												
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PROJECT NO: 1400-00-84				HWY: STH 16				COUNTY: DODGE				MISCELLANEOUS QUANTITIES				SHEET:		E																																																																																																																	

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ASPHALTIC FLUME, RIPRAP, AND GEOTEXILE FABRIC ITEMS						
			465.0315 ASPHALTIC FLUMES	606.0200 RIPRAP MEDIUM	645.0120 GEOTEXILE FABRIC TYPE HR	
CATEGORY	STATION	LOCATION	SY	CY	SY	
0010	172+24	STH 16 RT - WEST OF BRIDGE	4	2	8	
0010	172+38	STH 16 LT - WEST OF BRIDGE	4	2	8	
TOTAL 0010			8	4	16	

CONCRETE CURB & GUTTER 4-INCH SLOPED 36-INCH TYPE TBTT MODIFIED						
					601.0590 CONCRETE CURB & GUTTER 4-INCH SLOPED 36-INCH TYPE TBTT MODIFIED	
CATEGORY	STATION	TO	STATION	LOCATION	LF	
0010	172+19	-	172+55	LT - WEST OF BRIDGE	36	
0010	172+19	-	172+41	RT - WEST OF BRIDGE	22	
TOTAL 0010					58	

MAINTENANCE & REPAIR OF HAUL ROADS		
		618.0100 MAINTENANCE & REPAIR OF HAUL ROADS (1400-00-84)
CATEGORY	LOCATION	EACH
0010	PROJECT LIMITS	1
TOTAL 0010		1

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ASPHALTIC SURFACE ITEMS							
					455.0605 TACK COAT GAL	465.0105 ASPHALTIC SURFACE TON	REMARKS
CATEGORY	STATION	TO	STATION	LOCATION			
0010	170+03	-	172+19	STH 16 - MAINLINE	57	106	2-INCH
0010	170+03	-	171+23	STH 16 RT - WIDENING	-	8	3 1/2-INCH
0010	174+08	-	176+45	STH 16 - MAINLINE	64	118	2-INCH
0010	175+36	-	176+45	STH 16 LT - WIDENING	-	6	3 1/2-INCH
TOTAL 0010					121	238	

MGS GUARDRAIL ITEMS								
						614.2300 MGS GUARDRAIL 3 LF	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH
CATEGORY	STATION	TO	STATION	LOCATION				
0010	171+39	-	172+57	STH 16 LT - WEST OF BRIDGE	25	39.4	1	
0010	174+03	-	175+71	STH 16 LT - EAST OF BRIDGE	75	39.4	1	
0010	170+75	-	172+43	STH 16 RT - WEST OF BRIDGE	75	39.4	1	
0010	173+89	-	175+07	STH 16 RT - EAST OF BRIDGE	25	39.4	1	
TOTAL 0010						200	157.6	4

EROSION CONTROL & RESTORATION ITEMS													
					625.0500 SALVAGED TOPSOIL	628.1104 EROSION BALES	628.1504 SILT FENCE	628.1520 SILT FENCE MAINTENANCE	628.2006 EROSION MAT URBAN CLASS I TYPE A	628.7570 ROCK BAGS	629.0210 FERTILIZER TYPE B	630.0160 SEEDING MIXTURE NO. 60	630.0500 SEED WATER
CATEGORY	STATION	TO	STATION	LOCATION	SY	EACH	LF	LF	SY	EACH	CWT	LB	MGAL
0010	170+03	-	173+25	STH 16 RT - WEST OF BRIDGE	152	20	290	290	152	-	0.1	3	0.11
0010	170+03	-	173+25	STH 16 LT - WEST OF BRIDGE	60	20	300	300	60	-	0.1	4	0.05
0010	173+25	-	176+45	STH 16 RT - EAST OF BRIDGE	42	20	300	300	42	-	0.1	3	0.03
0010	173+25	-	176+45	STH 16 LT - EAST OF BRIDGE	60	20	290	290	60	-	0.1	4	0.05
0010	UNDISTRIBUTED				32	20	118	118	32	10	0.1	1	0.02
TOTAL 0010					346	100	1298	1298	346	10	0.5	15	0.26

MOBILIZATION ITEMS							TRAFFIC CONTROL			FIELD OFFICE			
		619.1000		628.1905		628.1910				643.5000		642.5001	
		MOBILIZATION		MOBILIZATION		MOBILIZATION				TRAFFIC		FIELD OFFICE	
				EROSION CONTROL		EROSION CONTROL				CONTROL		TYPE B	
CATEGORY	STATION TO	STATION	LOCATION	EACH	EACH	EACH	EACH	CATEGORY	LOCATION	EACH	CATEGORY	LOCATION	EACH
0010	170+03	- 176+45	PROJECT LIMITS	1	2	2	2	0010	PROJECT LIMITS	1	0010	PROJECT LIMITS	1
TOTAL 0010				1	2	2	2	TOTAL 0010		1	TOTAL 0010		1

PAVEMENT MARKING ITEMS							SIGN AND POST ITEMS								
		646.1020 MARKING LINE EPOXY 4-INCH		634.0614 POSTS WOOD 4X6-INCH		638.2102 MOVING SIGNS TYPE II		638.3 REMOVING SMALL SIGN SUPPORTS							
CATEGORY	STATION TO STATION	LOCATION	YELLOW SOLID LF	YELLOW 12.5' SKIP LF	WHITE SOLID LF	CATEGORY	SIGN NO.	SIGN CODE	STATION	LOCATION	EACH	EACH	EACH	REMARKS	REMARKS
0010	170+03 - 176+45	STH 16 RT	-	-	642	0010	1M-01	J1-1	169+97	STH 16 RT	1	1	1	JCT KW	JCT KW
0010	170+03 - 176+45	STH 16 LT	-	-	642	0010	1M-02	W14-3	171+35	STH 16 LT	1	1	1	NO PASSING ZONE	NO PASSING ZONE
0010	170+03 - 176+45	STH 16 CL	-	161	-	0010	1M-03	R7-ID	171+95	STH 16 RT	1	1	1	NO PARKING ANYTIME	NO PARKING ANYTIME
0010	170+40 - 176+45	STH 16 CL	605	-	-	0010	1M-04	R7-ID	171+95	STH 16 LT	1	1	1	NO PARKING ANYTIME	NO PARKING ANYTIME
SUBTOTAL 0010			605	161	1284	0010	1M-05	R9-98	172+19	STH 16 RT	1	1	1	NO FISHING FROM SIDE OF BRIDGE	NO FISHING FROM SIDE OF BRIDGE
TOTAL 0010			2050				0010	1M-06	R9-98	172+25	STH 16 LT	1	1	1	NO FISHING FROM SIDE OF BRIDGE
							0010	1M-07	R9-98	174+10	STH 16 LT	1	1	1	NO FISHING FROM SIDE OF BRIDGE
							0010	1M-08	R9-98	174+10	STH 16 RT	1	1	1	NO FISHING FROM SIDE OF BRIDGE
							0010	1M-09	R7-ID	174+60	STH 16 LT	1	1	1	NO PARKING ANYTIME
							0010	1M-10	R7-ID	174+60	STH 16 RT	1	1	1	NO PARKING ANYTIME
							TOTAL 0010		10	10	10	10	10	10	10

TRAFFIC CONTROL ITEMS															

			643.0300 TRAFFIC CONTROL DRUMS			643.0420 TRAFFIC CONTROL BARRICADES TYPE III		643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A		643.0900 TRAFFIC CONTROL SIGNS		643.0910 TRAFFIC CONTROL COVERING SIGNS TYPE I		643.1050 TRAFFIC CONTROL SIGNS PCMS	
CATEGORY	LOCATION	DAYS	EACH	DAYS	EACH	DAYS	EACH	DAYS	EACH	DAYS	EACH	EACH	DAYS		
0010	STH 16 - WEST OF B-14-16	77	5	35	10	770	14	1078	9	693	-	1	7		
0010	STH 16 - EAST OF B-14-16	77	5	35	6	462	8	616	5	385	-	1	7		
0010	STH 16 & USH 151	77	-	-	2	154	4	308	48	3696	4	-	-		
0010	STH 16 & STH 73	77	-	-	2	154	4	308	29	2233	-	-	-		
0010	STH 73 & USH 151	77	-	-	-	-	-	-	37	2849	-	-	-		
0010	USH 151	77	-	-	-	-	-	-	28	2156	-	-	-		
0010	USH 151 & STH 33	77	-	-	-	-	-	-	43	3311	-	-	-		
0010	STH 33	77	-	-	-	-	-	-	16	1232	-	-	-		
0010	STH 33 & STH 26	77	-	-	-	-	-	-	28	2156	-	-	-		
0010	CITY OF JUNEAU	77	-	-	-	-	-	-	48	3696	-	-	-		
0010	STH 26	77	-	-	-	-	-	-	8	616	-	-	-		
0010	STH 26 & STH 16	77	-	-	-	-	-	-	46	3542	5	-	-		
TOTAL 0010				70	1540		2310		26565		9	14			
*** 1 CYCLE FOR ALL TRAFFIC CONTROL COVERING SIGNS TYPE I															

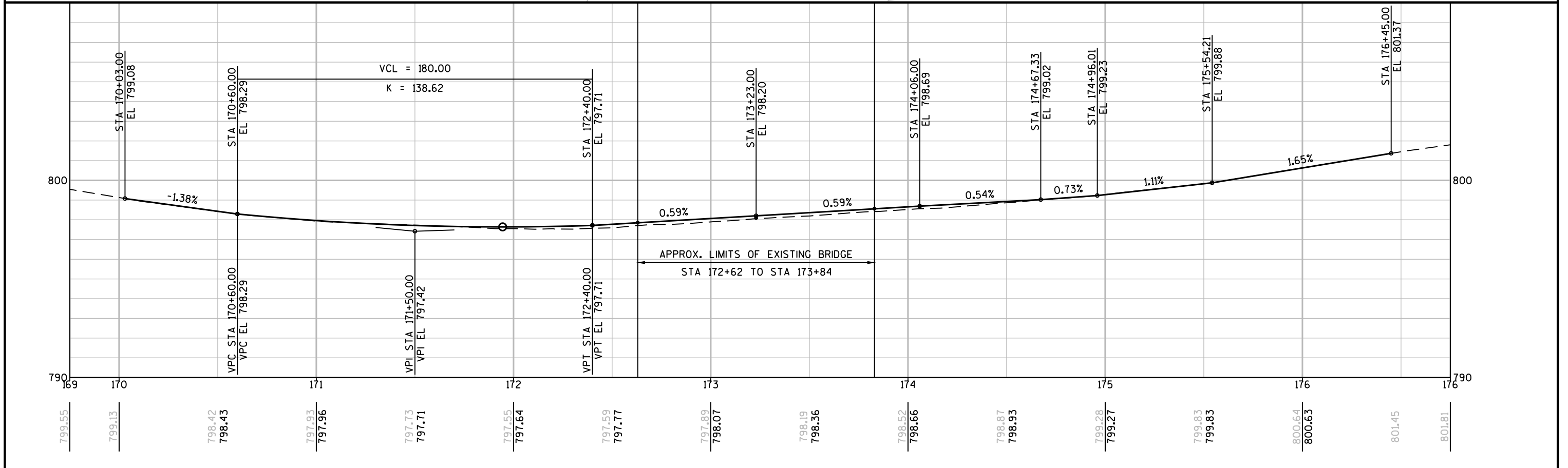
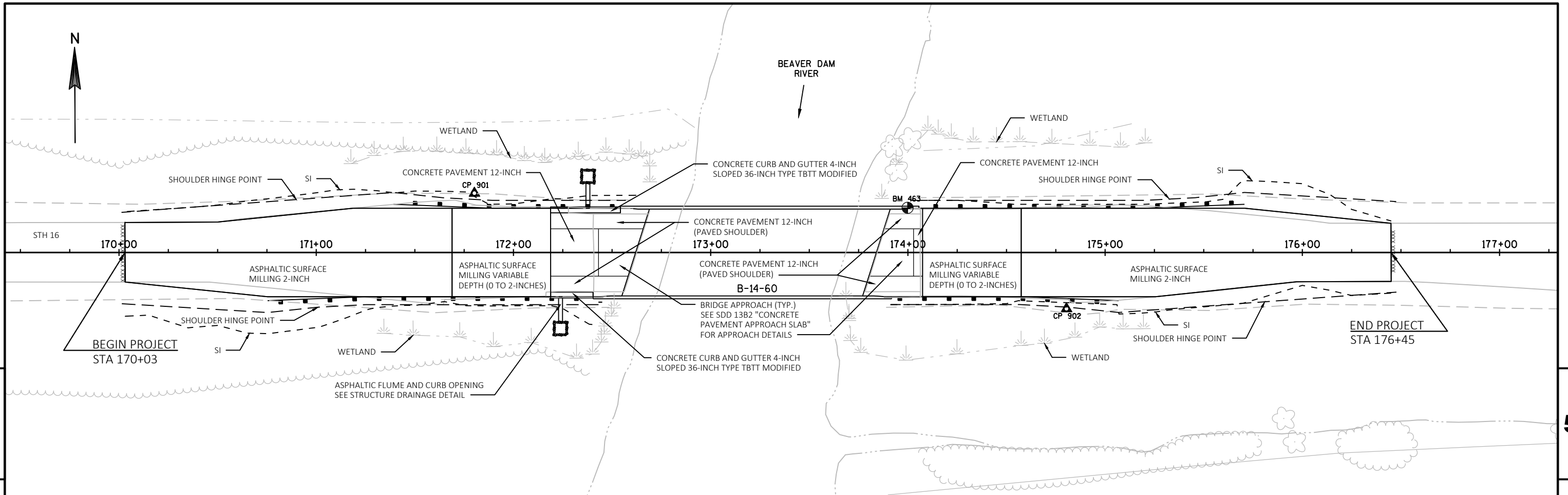
PROJECT NO: 1400-00-84	HWY: STH 16	COUNTY: DODGE	MISCELLANEOUS QUANTITIES	SHEET:	E
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3

CONSTRUCTION STAKING ITEMS								
			650.6500	650.7000	650.8000	650.9910	650.9920	
			CONST. STAKING	CONST. STAKING	CONST. STAKING	CONST. STAKING	CONST. STAKING	
			STRUCTURE LAYOUT	CONCRETE	RESURFACING	SUPPLEMENTAL CONTROL	SLOPE STAKES	
			(B-14-0060)	PAVEMENT	REFERENCE	(1400-00-84)		
CATEGORY	STATION	TO STATION	LOCATION	LS	LF	LF	LS	LF
0010	170+03	- 172+19	MAINLINE	-	-	216	-	216
0010	172+19	- 172+62	MAINLINE	-	43	-	-	43
0010	173+84	- 174+08	MAINLINE	-	24	-	-	24
0010	174+08	- 176+45	MAINLINE	-	-	237	-	237
0010	170+03	- 176+45	PROJ. LIMITS	1	-	-	1	-
TOTAL 0010				1	67	453	1	520

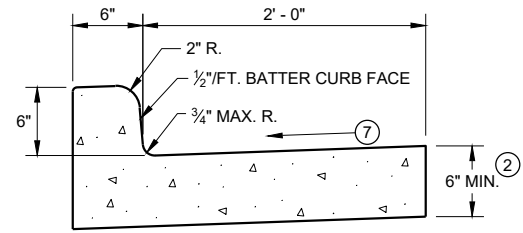
SAWING ASPHALT		
		690.0150
		SAWING
		ASPHALT
CATEGORY	LOCATION	LF
0010	STA 170+03 - STH 16 MAINLINE	31
0010	STH 16 - SHOULDER RT WEST END	95
0010	STH 16 - SHOULDER LT WEST END	99
0010	STA 172+14 - STH 16 MAINLINE	45
0010	STA 174+15 - STH 16 MAINLINE	45
0010	STH 16 - SHOULDER RT EAST END	70
0010	STH 16 - SHOULDER LT EAST END	69
0010	STA 176+45 - STH 16 MAINLINE	30
TOTAL 0010		484

3

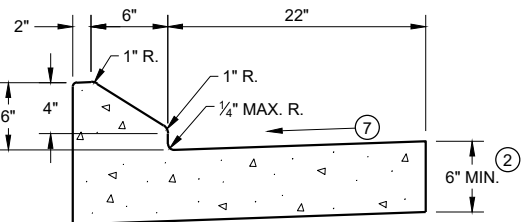


Standard Detail Drawing List

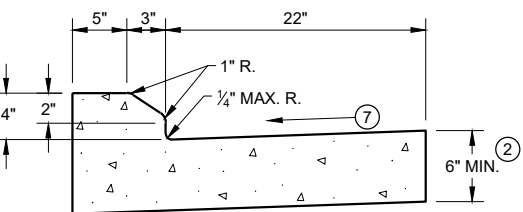
08D01-21A	CONCRETE CURB & GUTTER
08D01-21B	CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS
08D02-07A	CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES
08D02-07B	CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES
08D02-07C	CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES
08D04-05	CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
12A03-10	NAME PLATE (STRUCTURES)
13A03-06	CONCRETE PAVEMENT SHOULDERS
13A11-03A	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13A11-03B	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13B02-09A	CONCRETE PAVEMENT APPROACH SLAB
13C01-19	CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES
13C11-12A	RURAL DOWELED CONCRETE PAVEMENT
13C11-12B	RURAL DOWELED CONCRETE PAVEMENT
13C18-07A	CONCRETE PAVEMENT JOINTING
14B29-01	SAFETY EDGE
14B42-06A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-08A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-08B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C02-08C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C08-20A	LONGITUDINAL MARKING (MAINLINE)



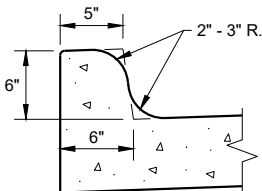
TYPES A^① & D



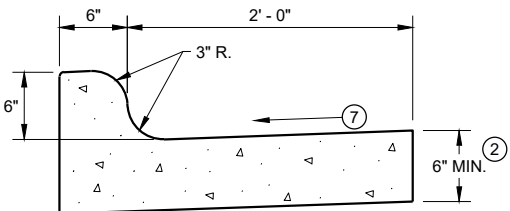
6" SLOPED CURB TYPES G^① & J



4" SLOPED CURB TYPES G^① & J

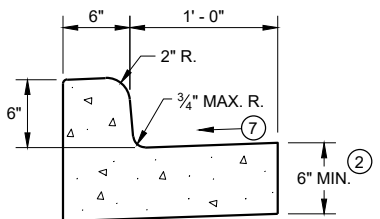


TYPES K^① & L
(OPTIONAL CURB SHAPE)



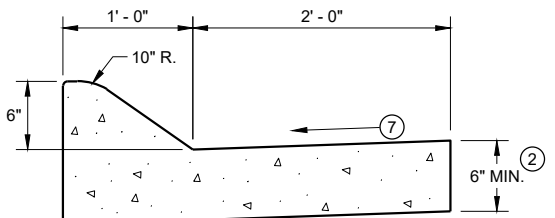
TYPES K^① & L

CONCRETE CURB AND GUTTER 30"

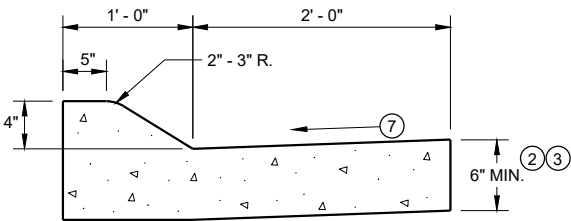


TYPES A^① & D

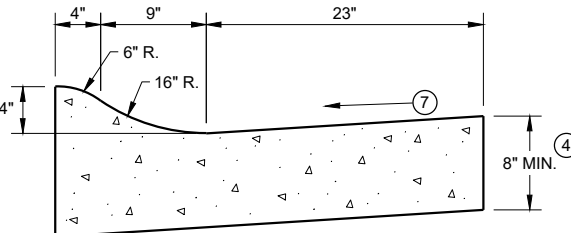
CONCRETE CURB AND GUTTER 18"



6" SLOPED CURB TYPES A^① & D



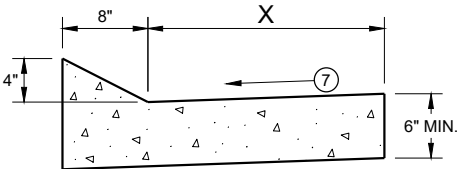
4" SLOPED CURB TYPES A^① & D



4" SLOPED CURB TYPES R^① & T^⑤

CONCRETE CURB AND GUTTER 36"

TBT & TBTT	X
30"	22"
36"	28"

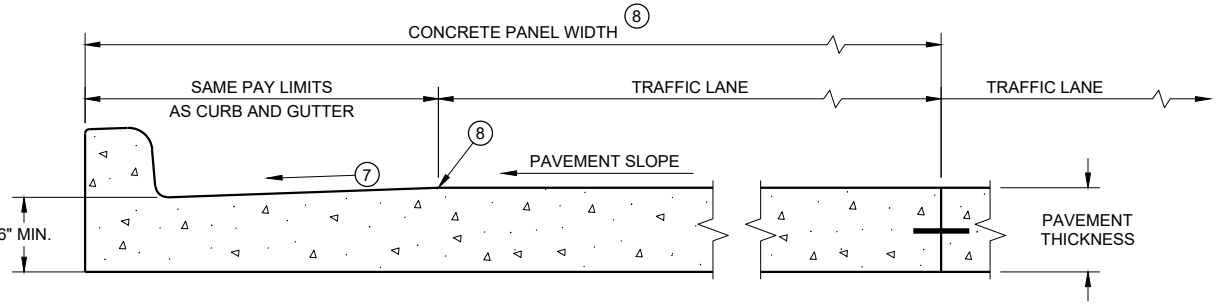


TYPES TBT & TBTT^①

CONCRETE CURB AND GUTTER

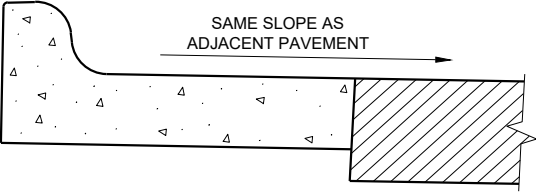
PAVEMENT THICKNESS
AND MAXIMUM CONCRETE
PANEL WIDTH TABLE

PAVEMENT THICKNESS	MAXIMUM PANEL WIDTH
LESS THAN 10"	12'
10" & ABOVE	15'



PARTIAL SECTION OF PAVEMENT *
WITH INTEGRAL CURB AND GUTTER

* BIKE LANE IS NOT SHOWN



REVERSE SLOPE GUTTER^⑥
(TYPICAL FOR ALL CURB & GUTTER TYPES)

GENERAL NOTES

DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

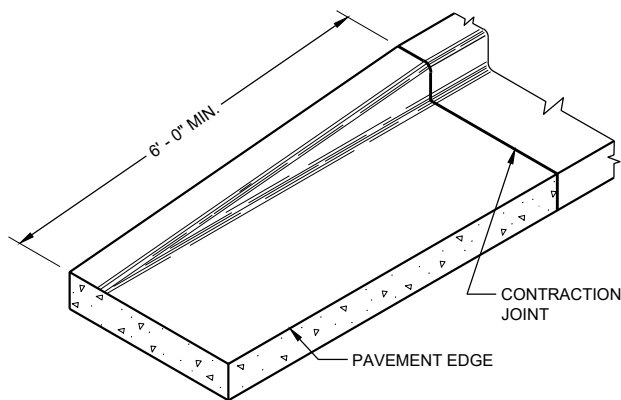
INTEGRAL CURB AND GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB AND GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE AGGREGATE AND COMMON EXCAVATION LIMITS ARE 2' - 0" BEHIND THE BACK OF CURBS.

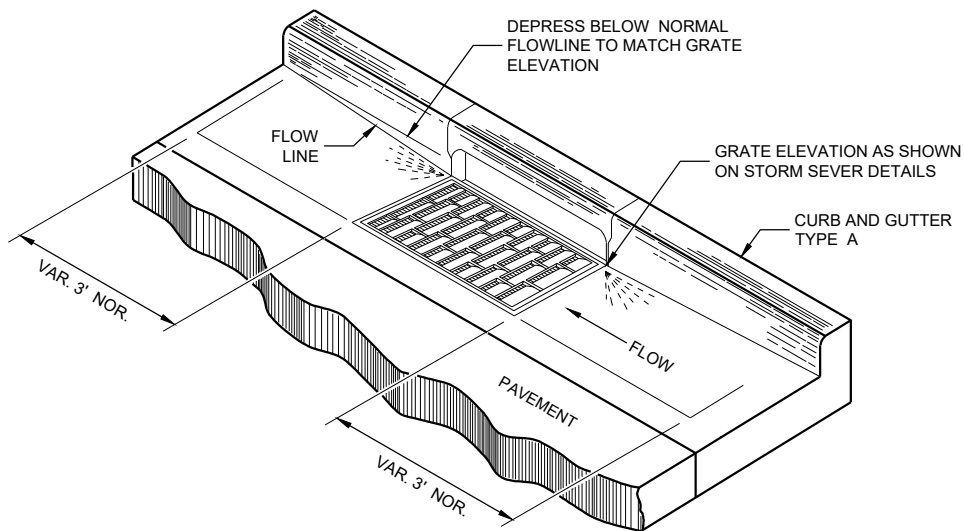
- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ③ USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.
- ④ THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ⑤ THE FACE OF CURB IS 6" FROM THE BACK OF CURB.
- ⑥ WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.
- ⑦ USE 4% GUTTER CROSS SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.
- ⑧ INCLUDE LONGITUDINAL JOINT AND TIE BARS ALONG LANE EDGE WHEN CONCRETE PANEL WIDTH EXCEEDS THE MAXIMUM WIDTH PER TABLE BELOW. LONGITUDINAL JOINT(S) ARE NOT ALLOWED WITHIN TRAFFIC LANES AND BIKE LANES. LONGITUDINAL JOINT MAY BE SAWED.

CONCRETE CURB AND GUTTER

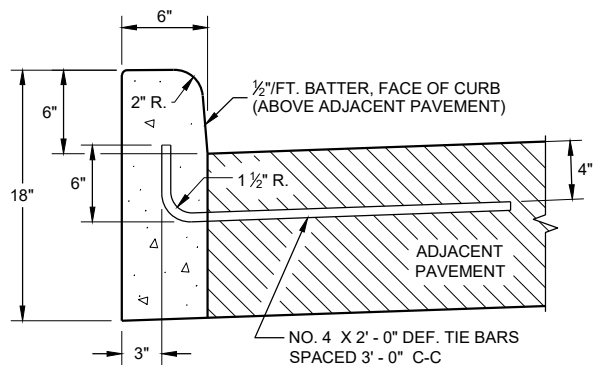
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



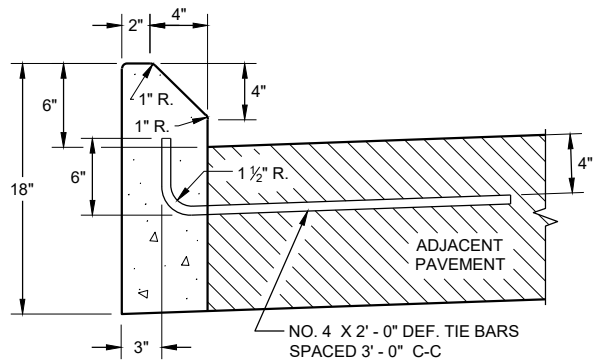
END SECTION CURB AND GUTTER



DETAIL OF CURB AND GUTTER AT INLETS
(TYPICAL H INLET COVER SHOWN)

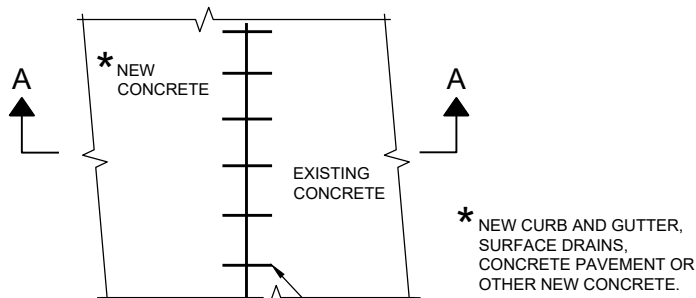


TYPES A^① & D

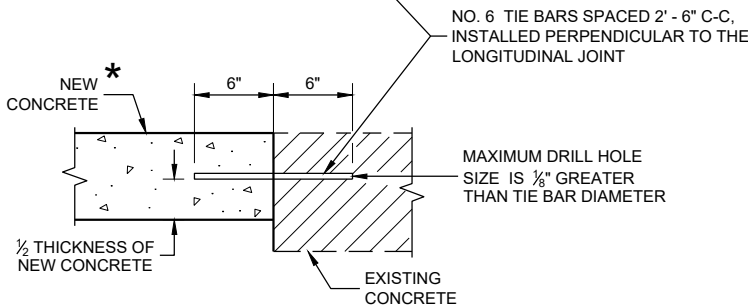


TYPES G^① & J

CONCRETE CURB



PLAN VIEW



SECTION A - A

TIE BARS DRILLED
INTO EXISTING PAVEMENT

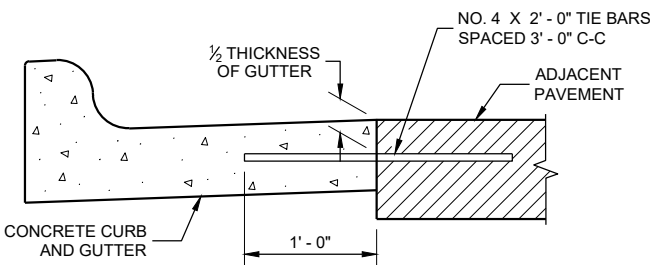
GENERAL NOTES

DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

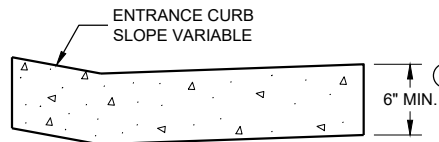
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE AGGREGATE AND COMMON EXCAVATION LIMITS ARE 2' - 0" BEHIND THE BACK OF CURBS.

- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ③ REFER TO SDD 08D18 AND 08D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.



TYPICAL TIE BAR LOCATION^①



DRIVEWAY ENTRANCE CURB^③
(WHEN DIRECTED BY THE ENGINEER)

CONCRETE CURB, TIES
AND CURB AND GUTTER
APPLICATIONS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020
DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

FHWA

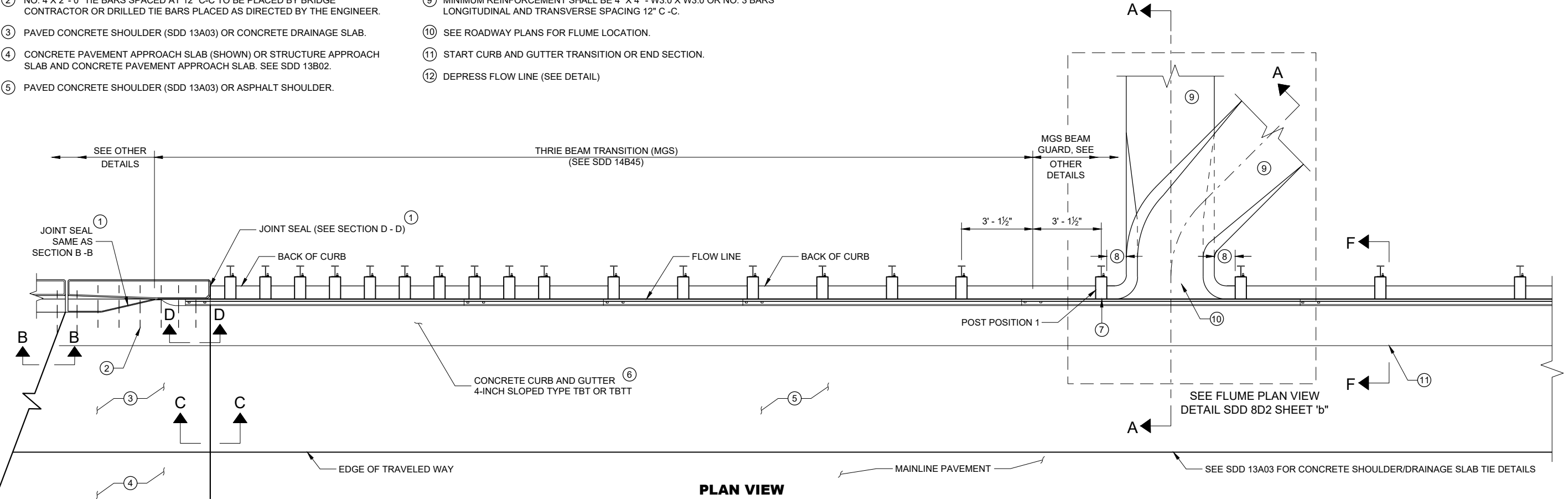
GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

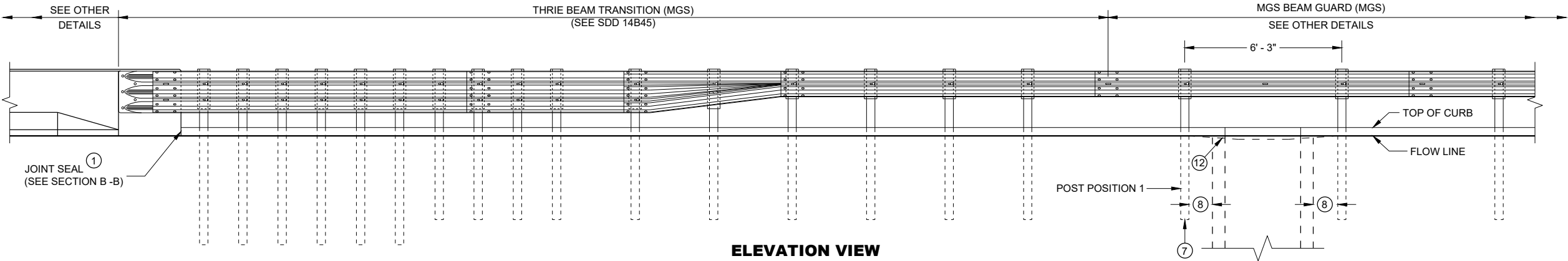
ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

- 1 USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- 2 NO. 4 X 2' - 0" TIE BARS SPACED AT 12" C-C TO BE PLACED BY BRIDGE CONTRACTOR OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
- 3 PAVED CONCRETE SHOULDER (SDD 13A03) OR CONCRETE DRAINAGE SLAB.
- 4 CONCRETE PAVEMENT APPROACH SLAB (SHOWN) OR STRUCTURE APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB. SEE SDD 13B02.
- 5 PAVED CONCRETE SHOULDER (SDD 13A03) OR ASPHALT SHOULDER.

- 6 CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE TBT OR TBTT. USE TYPE TBTT CURB WITH NO. 4 X 2' - 0" TIE BARS SPACED AT 3' - 0" C-C ONLY WHEN ADJACENT TO CONCRETE PAVEMENTS.
- 7 PLACE FLUME BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- 8 CENTER FLUME BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE EDGE OF FLUME TO POSTS.
- 9 MINIMUM REINFORCEMENT SHALL BE 4" X 4" - W3.0 X W3.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C-C.
- 10 SEE ROADWAY PLANS FOR FLUME LOCATION.
- 11 START CURB AND GUTTER TRANSITION OR END SECTION.
- 12 DEPRESS FLOW LINE (SEE DETAIL)



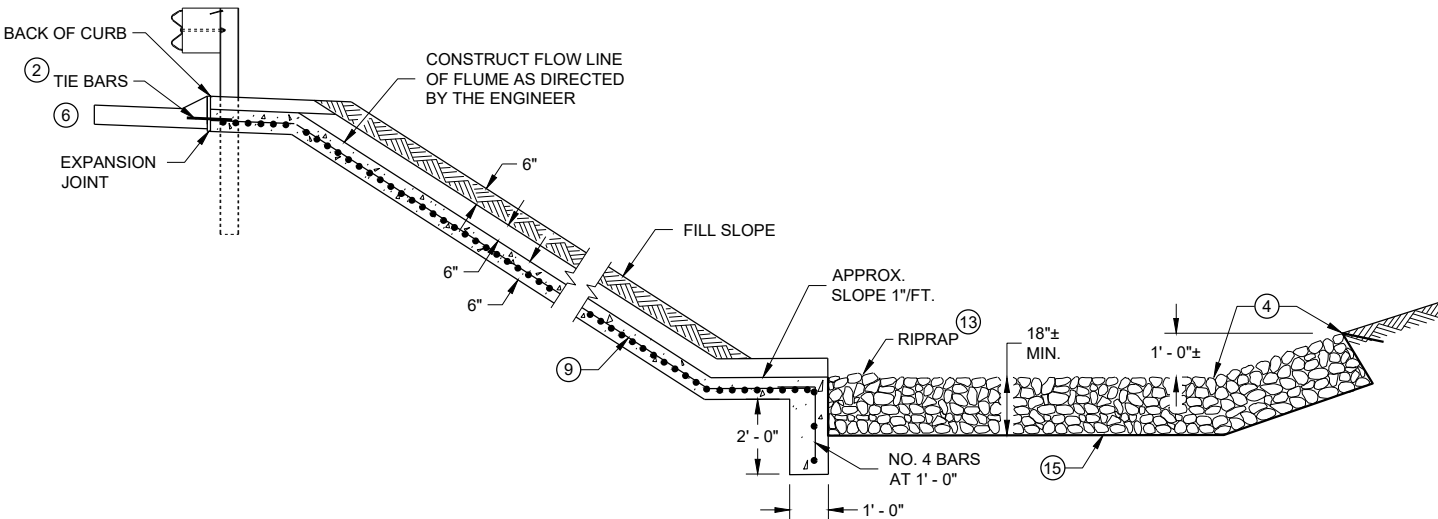
PLAN VIEW



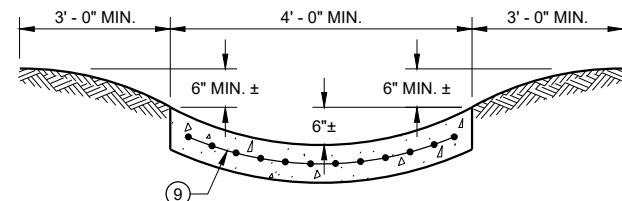
ELEVATION VIEW

CONCRETE SURFACE
DRAINS FLUME TYPE
AT STRUCTURES

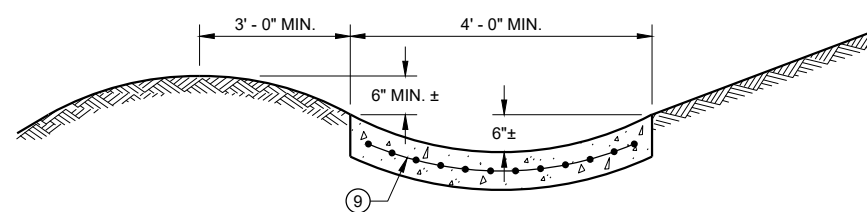
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



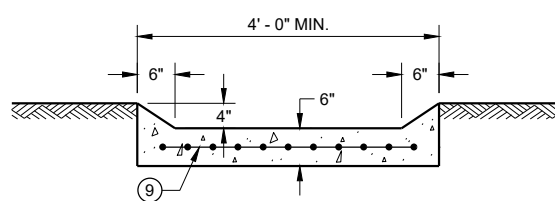
SECTION A - A



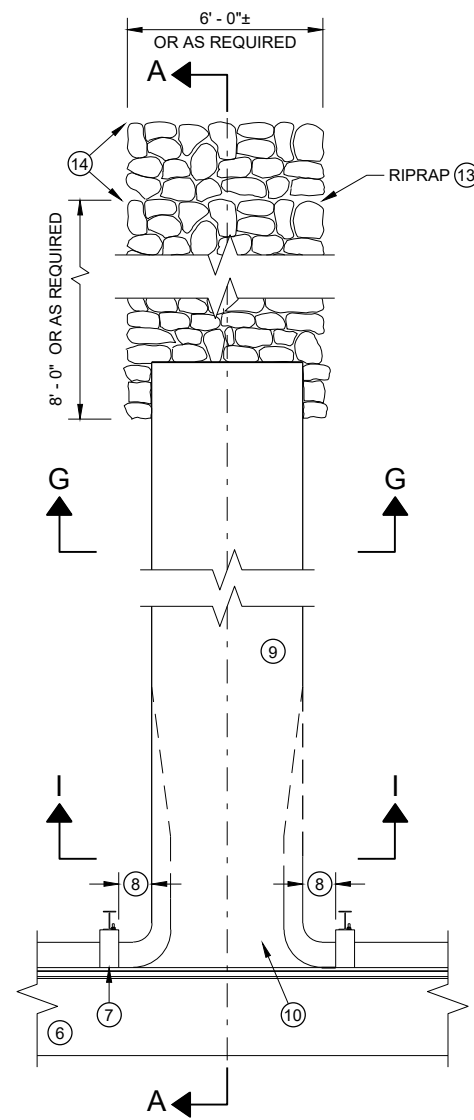
SECTION G - G



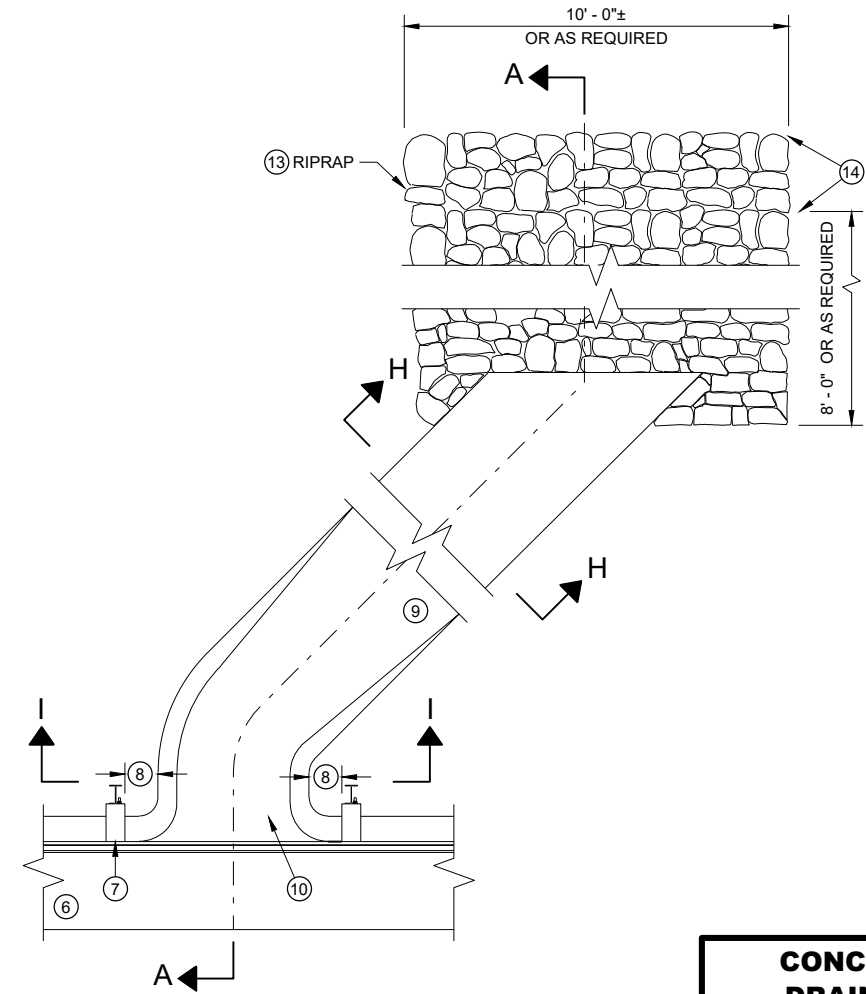
SECTION H - H



SECTION I - I



**PLAN VIEW
PERPENDICULAR FLUME**



**PLAN VIEW
SKEWED FLUME**

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

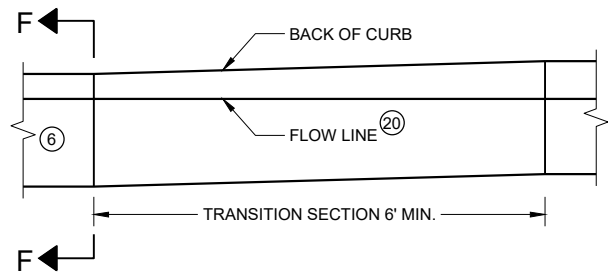
ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

- ① USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- ② NO. 4 X 2' - 0" TIE BARS SPACED AT 12" C-C TO BE PLACED BY BRIDGE CONTRACTOR OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
- ③ PAVED CONCRETE SHOULDER (SDD 13A03) OR CONCRETE DRAINAGE SLAB.
- ④ CONCRETE PAVEMENT APPROACH SLAB (SHOWN) OR STRUCTURE APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB. SEE SDD 13B02 AND STRUCTURE PLANS.
- ⑤ PAVED CONCRETE SHOULDER (SDD 13A03) OR ASPHALT SHOULDER.
- ⑥ CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE TBT OR TBT. USE TYPE TBT CURB WITH NO. 4 X 2' - 0" TIE BARS SPACED AT 3' - 0" C-C ONLY WHEN ADJACENT TO CONCRETE PAVEMENTS.

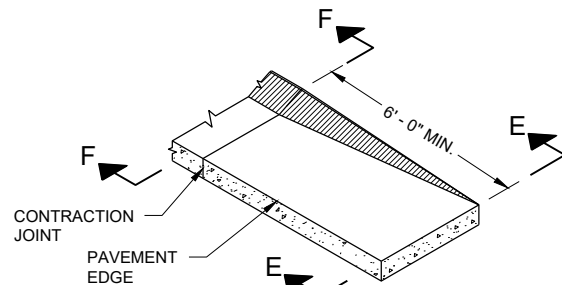
- ⑦ PLACE FLUME BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- ⑧ CENTER FLUME BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE EDGE OF FLUME TO POSTS.
- ⑨ MINIMUM REINFORCEMENT SHALL BE 4" X 4" - W3.0 X W3.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C - C.
- ⑩ SEE ROADWAY PLANS FOR FLUME LOCATION.
- ⑪ START CURB AND GUTTER TRANSITION OR END SECTION.
- ⑫ DEPRESS FLOW LINE (SEE DETAIL)
- ⑬ MEDIUM RIPRAP UNLESS OTHERWISE SPECIFIED.
- ⑭ LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH AS REQUIRED.
- ⑮ GEOTEXTILE FABRIC TYPE HR.

**CONCRETE SURFACE
DRAINS FLUME TYPE
AT STRUCTURES**

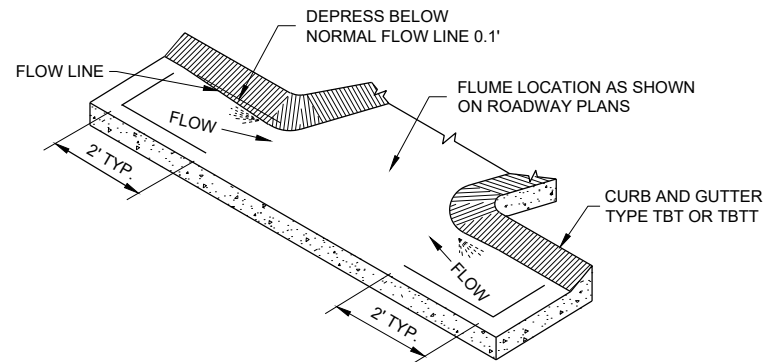
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



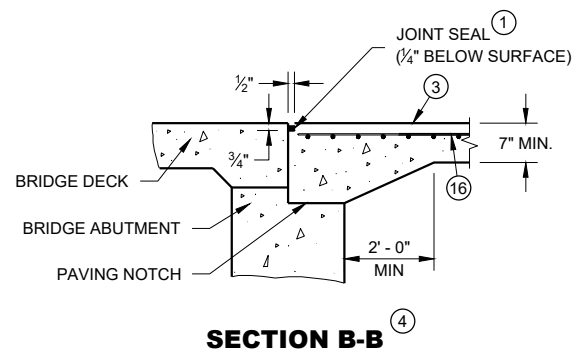
**CURB AND GUTTER TRANSITION SECTION
CONCRETE CURB AND GUTTER 4-INCH SLOPED
36 INCH TYPE TBT OR TBTT**



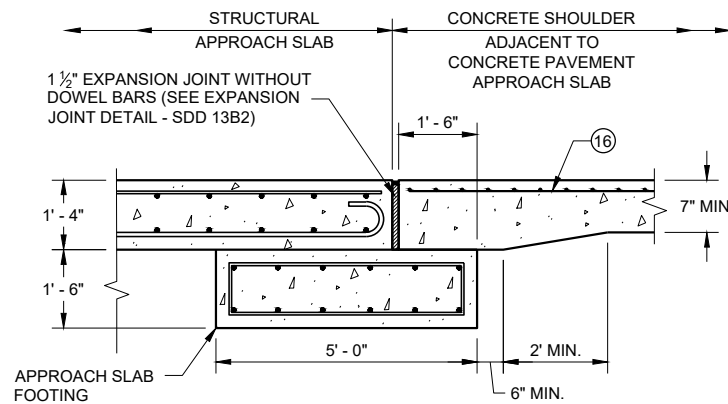
**CURB AND GUTTER END SECTION
CONCRETE CURB AND GUTTER 4-INCH SLOPED
36 INCH TYPE TBT OR TBTT**



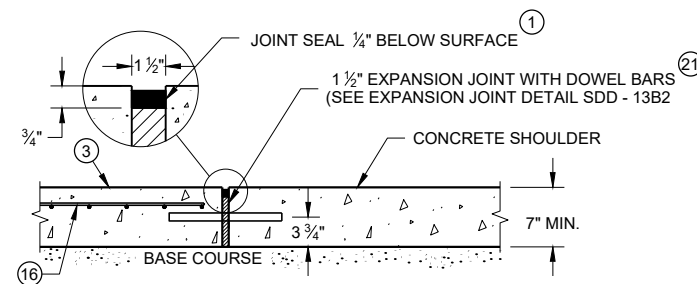
**CURB AND GUTTER FLOW LINE DEPRESSION
AT FLUMES CONCRETE CURB AND GUTTER
4-INCH SLOPED 36 INCH TYPE TBT OR TBTT**



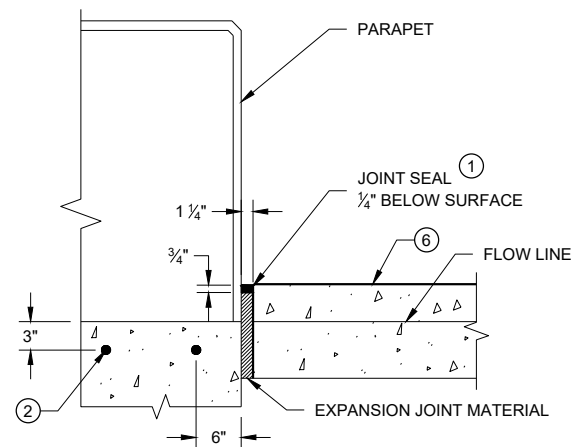
SECTION B-B



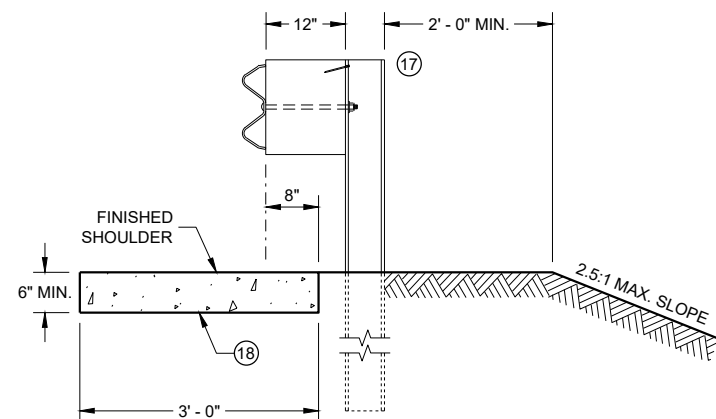
**SECTION C - C
JOINT DETAIL FOR BRIDGE WITH STRUCTURAL
APPROACH SLAB AND CONCRETE APPROACH SLAB**



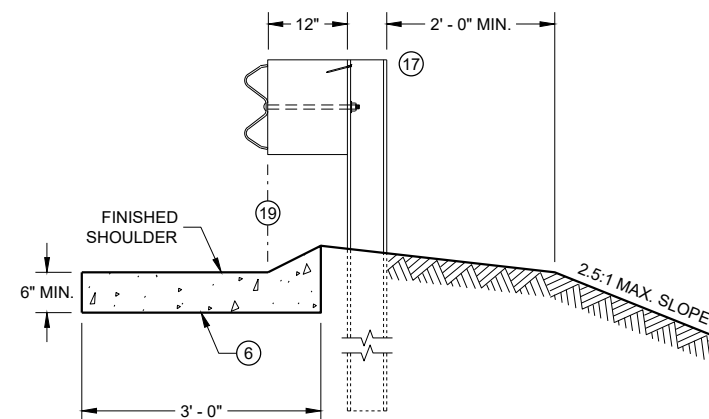
**SECTION C - C
JOINT DETAIL FOR BRIDGE APPROACH
WITH CONCRETE SHOULDERS**



SECTION D - D



SECTION E - E



SECTION F - F

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

- ① USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- ② NO. 4 X 2' - 0" TIE BARS SPACED AT 12" C-C TO BE PLACED BY BRIDGE CONTRACTOR OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
- ③ PAVED CONCRETE SHOULDER (SDD 13A03) OR CONCRETE DRAINAGE SLAB.
- ④ CONCRETE PAVEMENT APPROACH SLAB (SHOWN) OR STRUCTURE APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB. SEE SDD 13B02 AND STRUCTURE PLANS.
- ⑤ PAVED CONCRETE SHOULDER (SDD 13A03) OR ASPHALT SHOULDER.
- ⑥ CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE TBT OR TBTT. USE TYPE TBTT CURB WITH NO. 4 X 2' - 0" TIE BARS SPACED AT 3' - 0" C-C ONLY WHEN ADJACENT TO CONCRETE PAVEMENTS.
- ⑦ PLACE FLUME BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- ⑧ CENTER FLUME BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE EDGE OF FLUME TO POSTS.
- ⑨ MINIMUM REINFORCEMENT SHALL BE 4" X 4" - W3.0 X W3.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C-C.
- ⑩ SEE ROADWAY PLANS FOR FLUME LOCATION.
- ⑪ START CURB AND GUTTER TRANSITION OR END SECTION.
- ⑫ DEPRESS FLOW LINE (SEE DETAIL)
- ⑬ MEDIUM RIPRAP UNLESS OTHERWISE SPECIFIED.
- ⑭ LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH IS REQUIRED.
- ⑮ GEOTEXTILE FABRIC TYPE HR.
- ⑯ MINIMUM REINFORCEMENT SHALL BE 6" X 6" - W4.0 X W4.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C-C.
- ⑰ MSG THRIE BEAM TRANSITION POST 1. SEE SDD 14B45 FOR ADDITIONAL CONSTRUCTION DETAILS AND ACCEPTABLE MATERIALS.
- ⑱ MAINTAIN WIDTH, THICKNESS AND CROSS SLOPE OF ADJACENT TYPE TBT OR TBTT CURB. SEE NOTE 6 FOR TIE BAR SPACING.
- ⑲ ALIGN FACE OF POST BLOCK WITH FLOW LINE.
- ⑳ MAINTAIN FLOW LINE AT EDGE OF PAVEMENT/FACE OF BEAM GUARD AS APPLICABLE.
- ㉑ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING HMA PAVEMENTS.

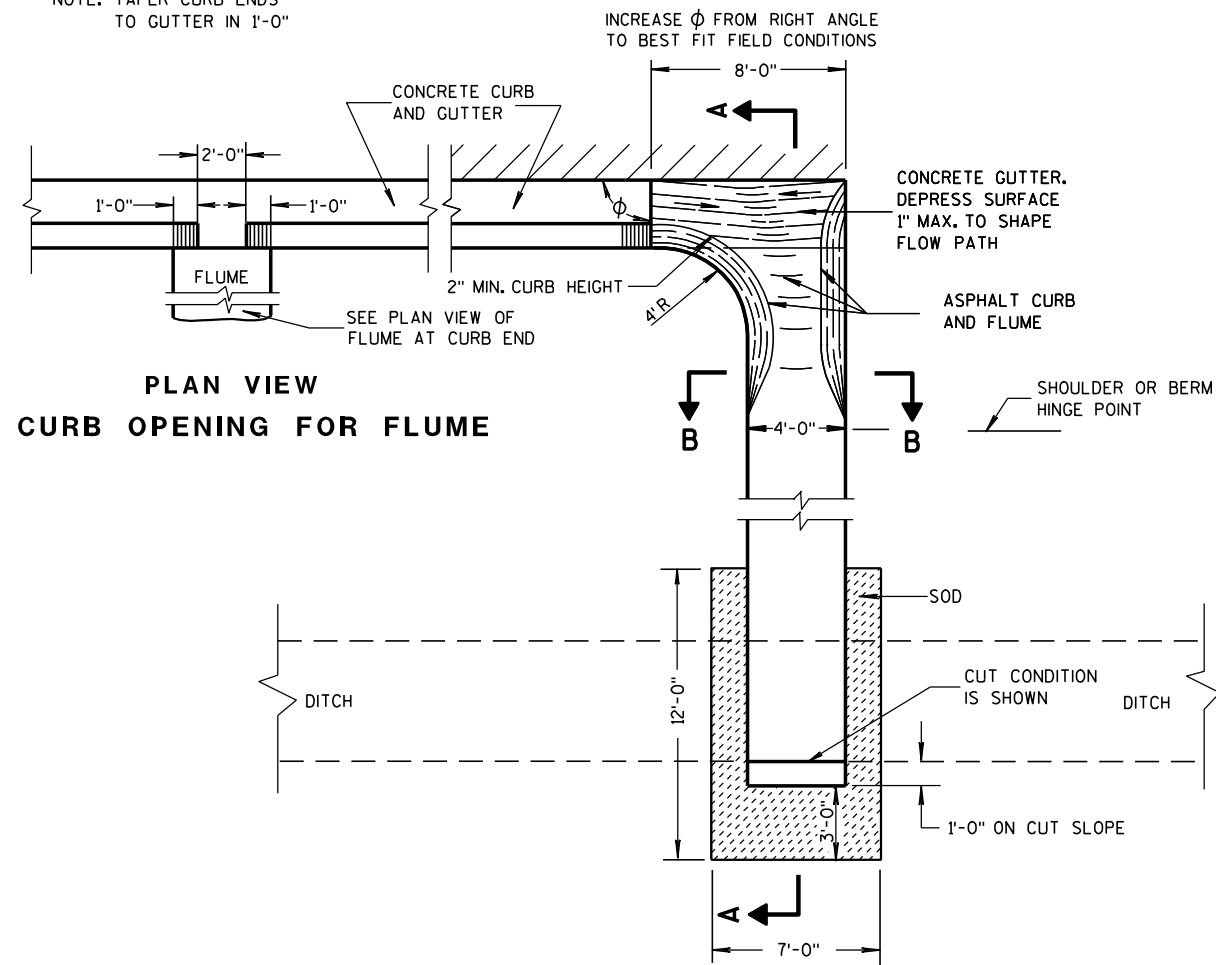
CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA

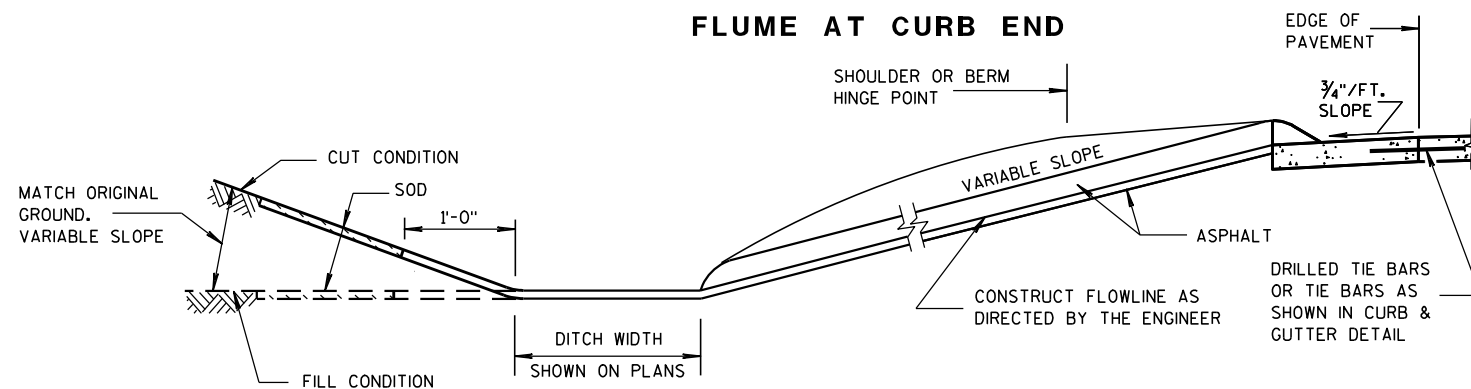
ASPHALTIC FLUME

NOTE: TAPER CURB ENDS
TO GUTTER IN 1'-0"

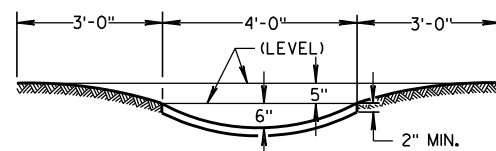


PLAN VIEW
CURB OPENING FOR FLUME

PLAN VIEW
FLUME AT CURB END



SECTION A-A



SECTION B-B

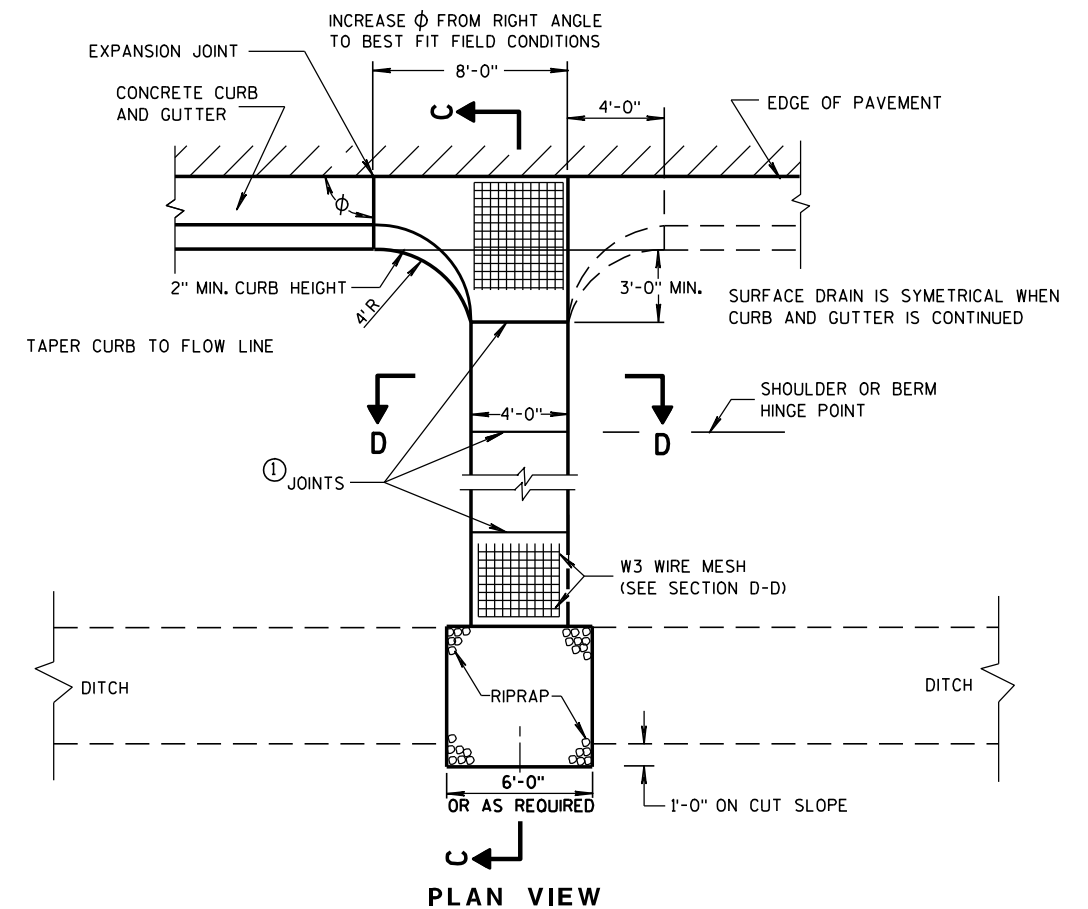
GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

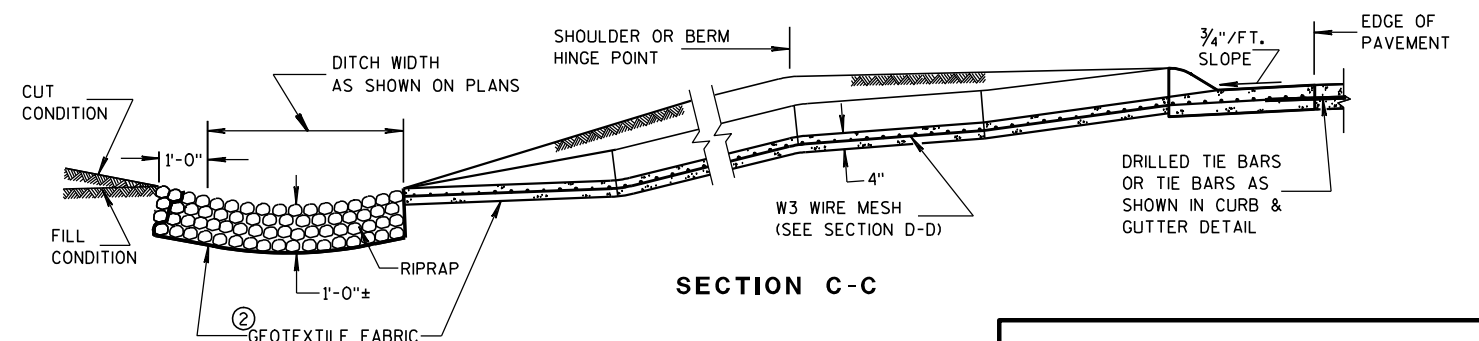
WELDED STEEL WIRE FABRIC SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

- ① JOINTS SHALL BE 1/8 TO 1/4 INCH WIDE BY 1 1/2 INCHES DEEP AND SPACED AT UNIFORM INTERVALS OF APPROXIMATELY 4 FEET.
- ② GEOTEXTILE FABRIC TYPE "R" SHALL UNDERLAY THE FULL LENGTH AND WIDTH OF THE CONCRETE SURFACE DRAIN AND RIPRAP.
- ③ CONCRETE SURFACE DRAIN WITHOUT CURB AND GUTTER MAY BE USED ON BACKSLOPES WHEN SPECIFIED

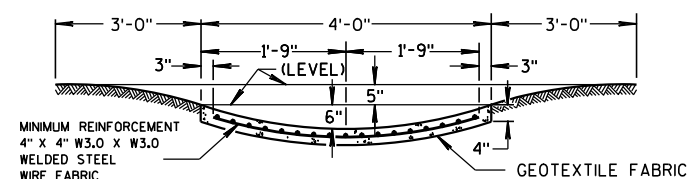
③ CONCRETE SURFACE DRAIN



PLAN VIEW



SECTION C-C



SECTION D-D

CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

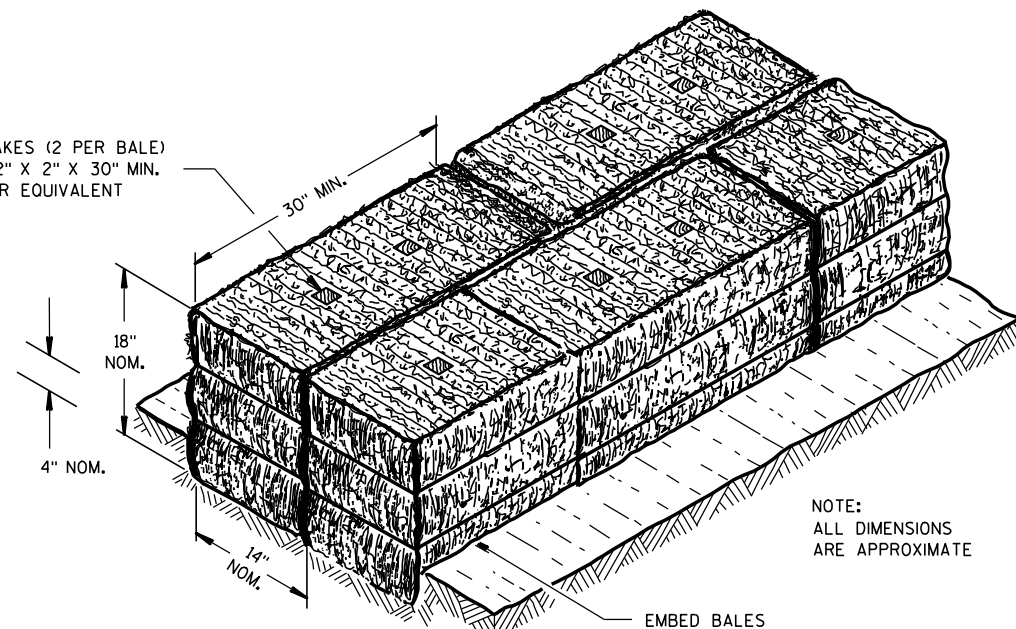
9-4-08

DATE

FHWA

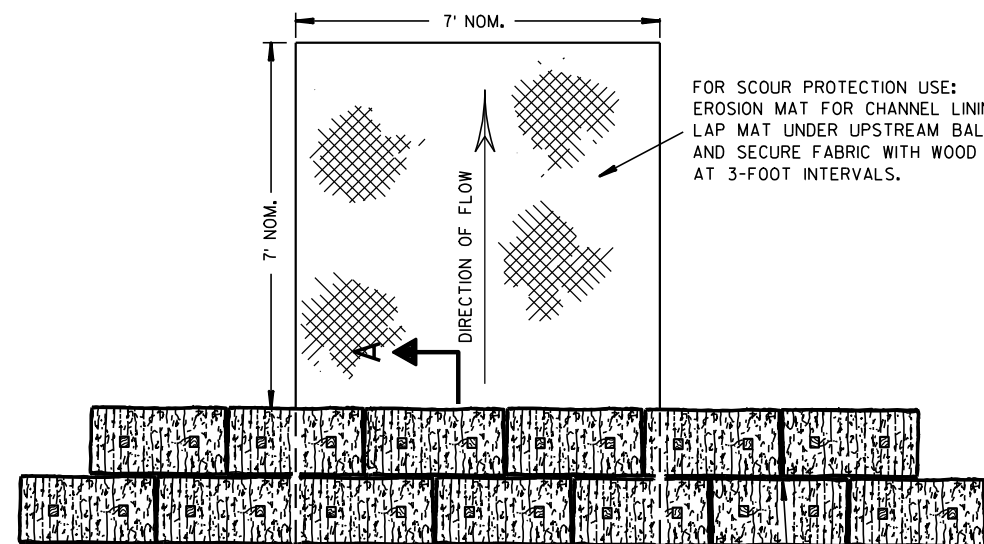
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

WOOD STAKES (2 PER BALE)
NOMINAL 2" X 2" X 30" MIN.
LENGTH OR EQUIVALENT



SECTION A-A

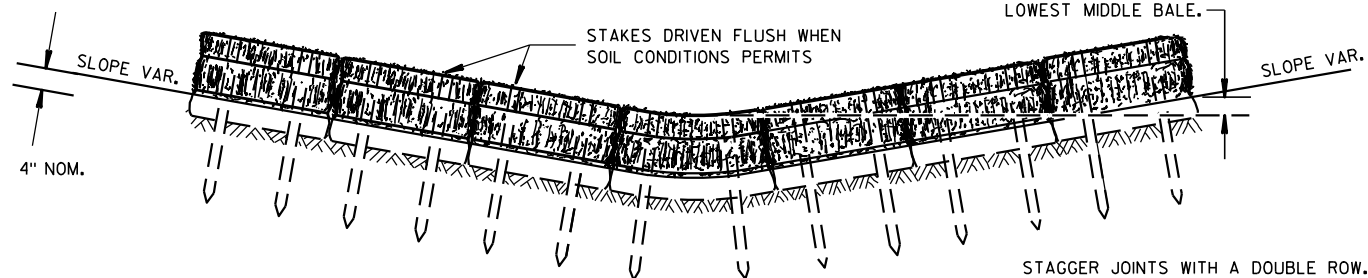
NOTE:
ALL DIMENSIONS
ARE APPROXIMATE



PLAN VIEW

STAGGER JOINTS BETWEEN ADJACENT
ROWS OF BALES.

BOTTOM ELEVATION OF END BALE SHALL
BE EQUAL TO OR GREATER THAN TOP OF
LOWEST MIDDLE BALE.



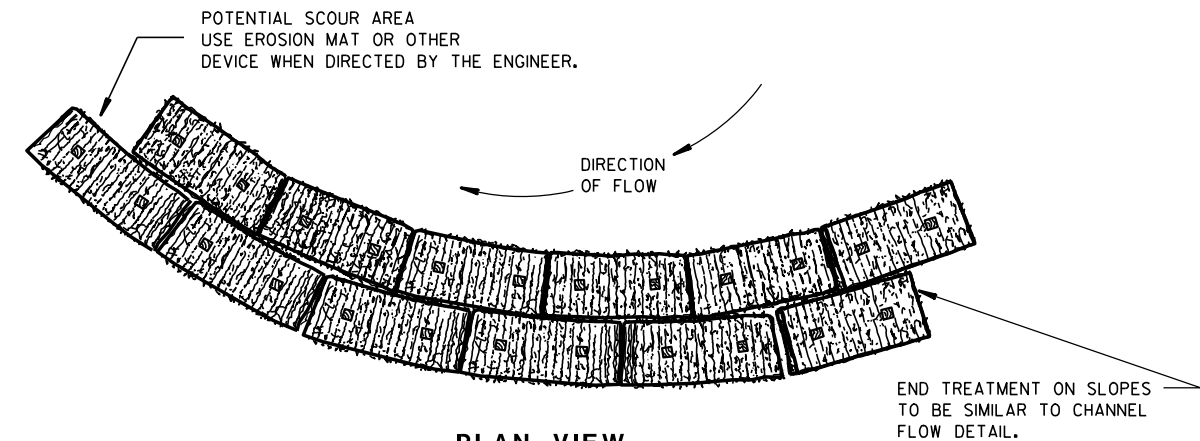
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

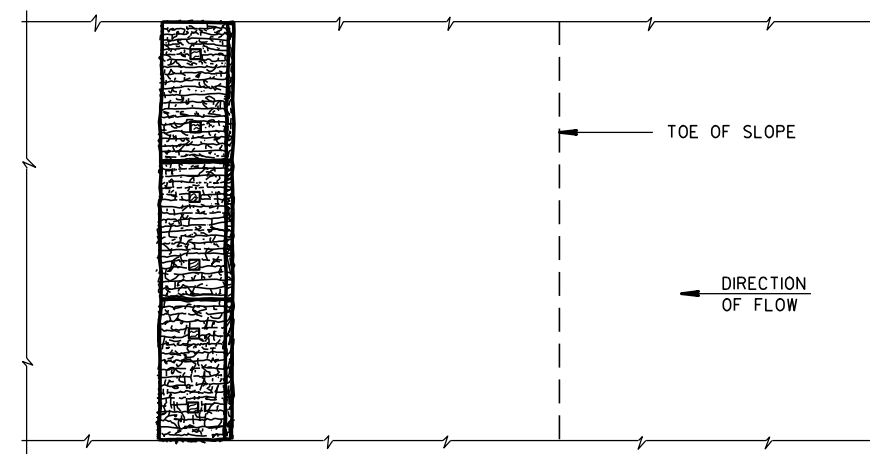
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

- ① TEMPORARY DITCH CHECKS EITHER EROSION BALES OR MANUFACTURED SHALL BE PAID FOR UNDER THE BID ITEM OF TEMPORARY DITCH CHECK. THE DEPARTMENT WILL NOT PAY FOR TEMPORARY DITCH CHECKS CONSTRUCTED OF A SINGLE ROW OF EROSION BALES.

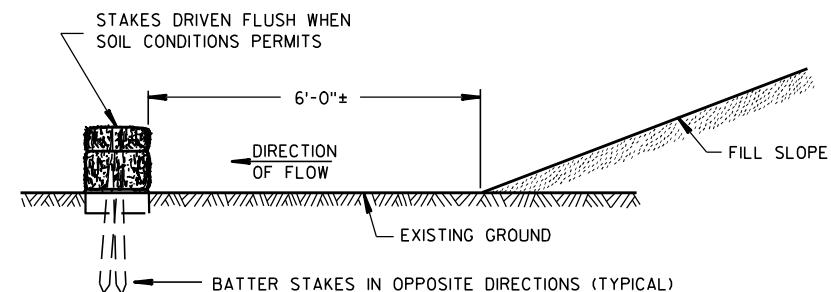


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF
EROSION BALES / TEMPORARY
DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

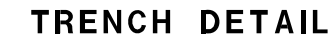
6/04/02
DATE

FHWA

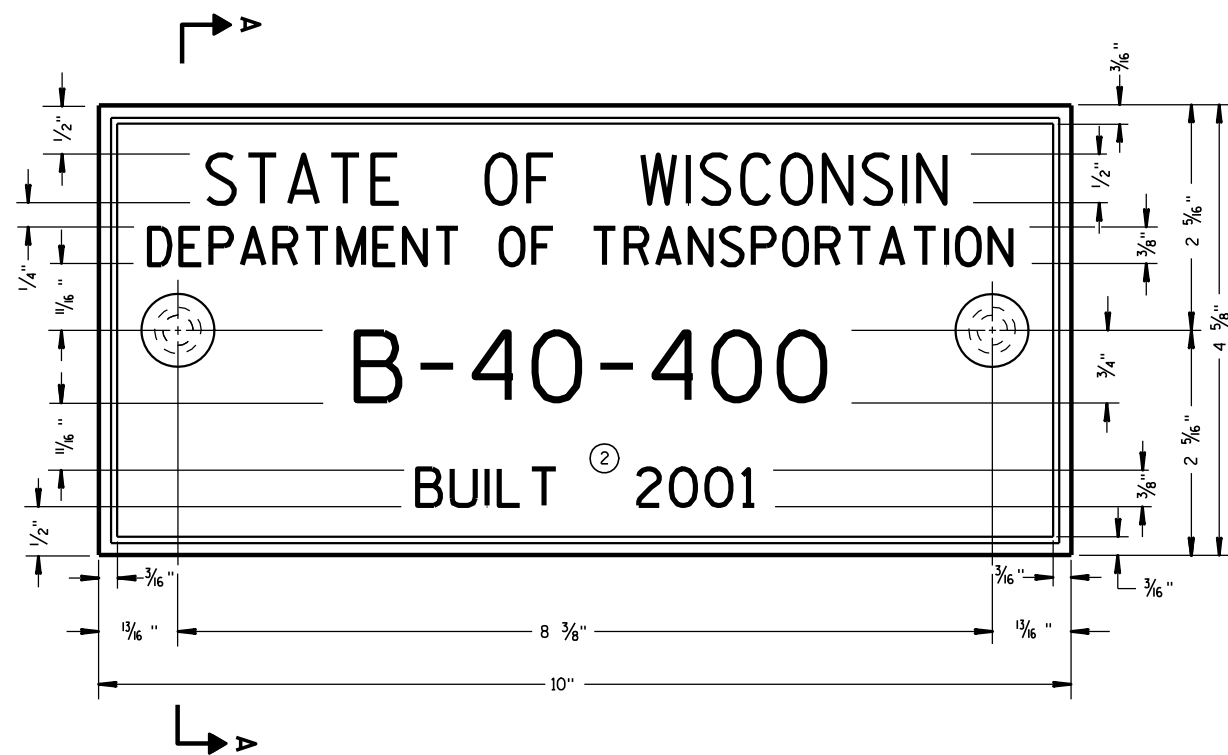
/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT ENGINEER



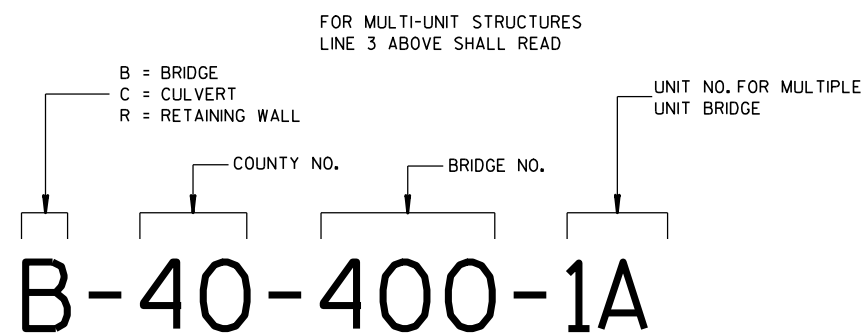
- ① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
- ② FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
- ③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1½" X 1½" OF OAK OR HICKORY.
- ④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
- ⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.



SILT FENCE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 4-29-05 _____ DATE	/S/ Beth Canestra _____ CHIEF ROADWAY DEVELOPMENT ENGINEER



TYPICAL NAME PLATE
(BRIDGES, CULVERTS, AND RETAINING WALLS)



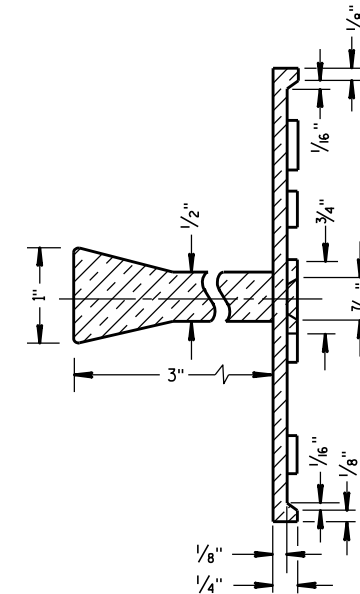
**NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES**

GENERAL NOTES

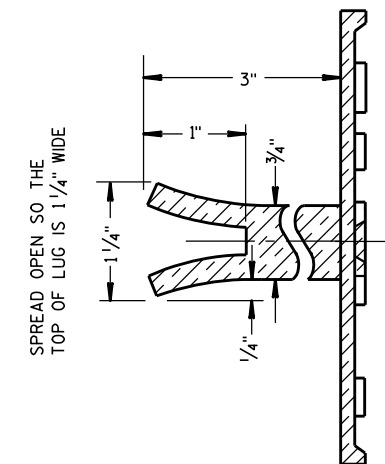
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

- ① EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ② REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.

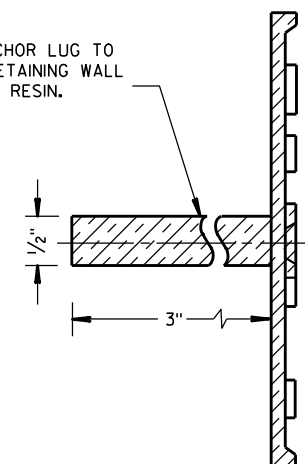


SECTION A-A



ALTERNATE LUG

- ① ADHERE ANCHOR LUG TO PRECAST RETAINING WALL WITH EPOXY RESIN.



ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

**NAME PLATE
(STRUCTURES)**

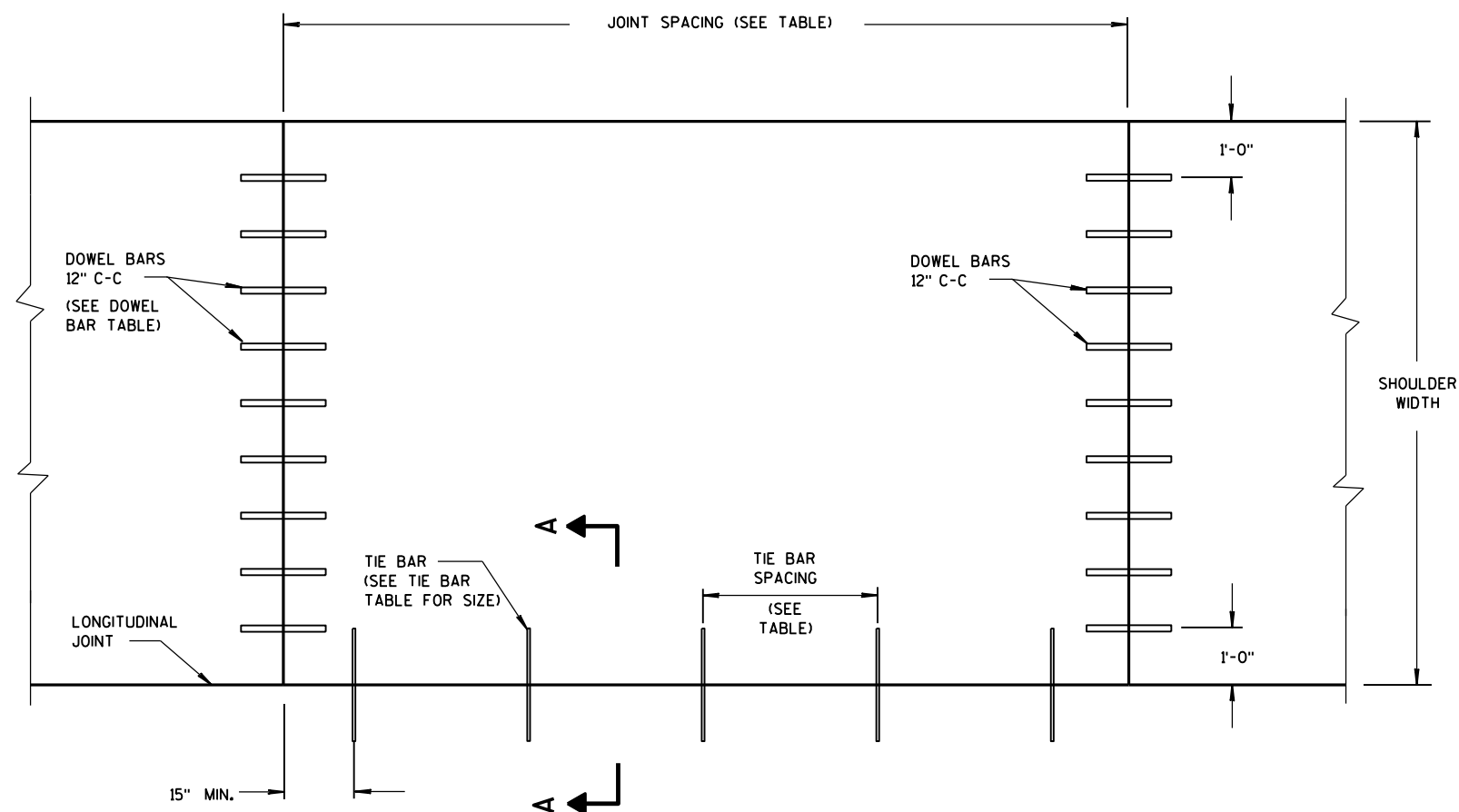
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

3/26/10
DATE

FHWA

/S/ Scot Becker
CHIEF STRUCTURAL DEVELOPMENT ENGINEER



PLAN VIEW
CONCRETE PAVEMENT SHOULDER

TIE BAR TABLE

PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 1/2"	NO. 4	30"	36"
≥ 10 1/2"	NO. 5	36"	36"
	NO. 4 *	30"	24" **

* SUBSTITUTE BENT BARS AT LONGITUDINAL JOINTS WHEN EQUIPMENT LIMITATIONS DURING CONSTRUCTION WARRANT (e.g., AUXILIARY LANES OR TURN LANES)

** CONFORM TO 15" MINIMUM SPACING FROM TRANSVERSE JOINTS; SPACING BETWEEN TIE BARS WILL BE 30" AT TRANSVERSE JOINTS.

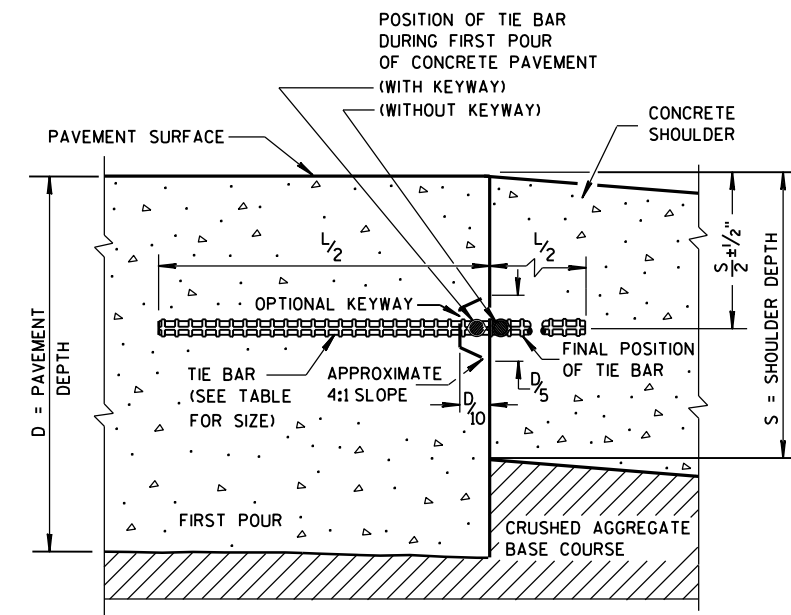
GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

TRANSVERSE JOINT DETAILS ARE SHOWN ELSEWHERE IN THE PLAN.

FINISH THE SHOULDER PAVEMENT CONFORMING TO SUBSECTION 415.3.8 OF THE STANDARD SPECIFICATIONS.

TIE BARS SHALL CONFORM TO SUBSECTION 505.2.4 OF THE STANDARD SPECIFICATIONS.



SECTION A-A
LONGITUDINAL CONSTRUCTION JOINT

PAVEMENT DEPTH, DOWEL BAR SIZE
AND JOINT SPACING TABLE

PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER***	CONTRACTION JOINT SPACING
5 1/2", 6", 6 1/2"	NONE	12'
7", 7 1/2"	1"	14'
8", 8 1/2"	1 1/4"	15'
9", 9 1/2"	1 1/4"	15'
10" & ABOVE	1 1/2"	15'

*** FOR DOWELED CONCRETE SHOULDERS WITH TRAPEZOIDAL CROSS SECTIONS, CHOSE THE APPROPRIATE DOWEL BAR DIAMETER BASED ON THE SMALLER PAVEMENT DEPTH (LIKELY THE OUTSIDE EDGE OF THE SHOULDER). IF USING BASKETS, USE BASKETS FOR THE AVERAGE THICKNESS OF THE CROSS SECTION.

CONCRETE PAVEMENT SHOULDERS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

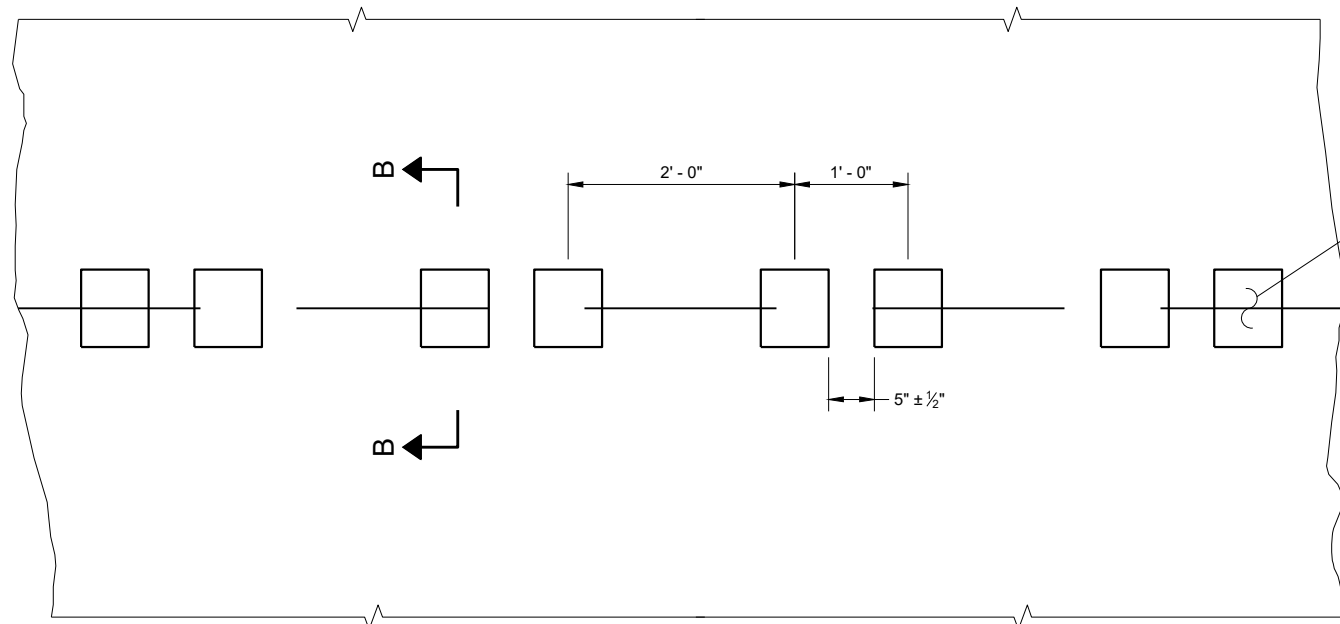
June, 2015

DATE

FHWA

/S/ Peter Kemp, P.E.

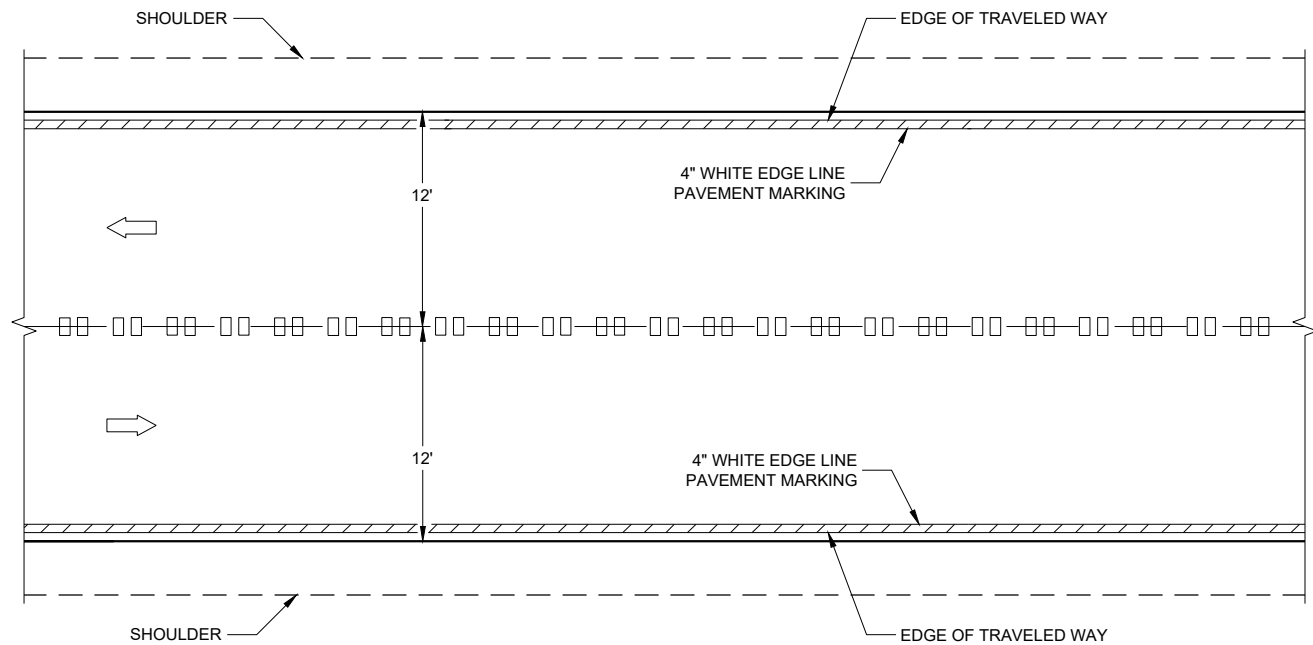
PAVEMENT SUPERVISOR



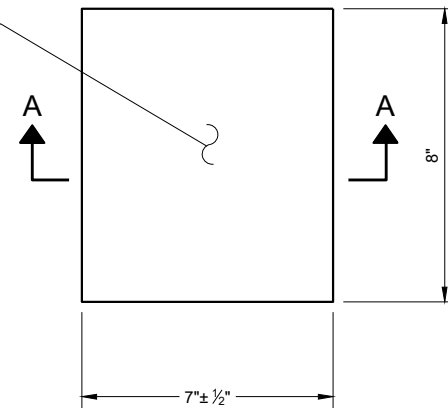
PLAN VIEW
SHOULDER WITH GROOVES

6

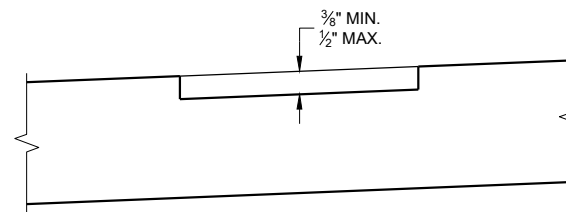
PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP



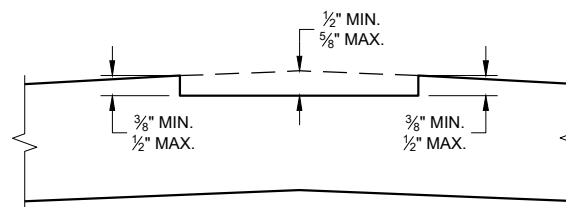
CENTERLINE GROOVES ON TWO-WAY ROADWAYS



PLAN VIEW
(SINGLE GROOVE)



SECTION B - B
SUPERELEVATED ROADWAY



SECTION B - B
CROWNED ROADWAY

GENERAL NOTES

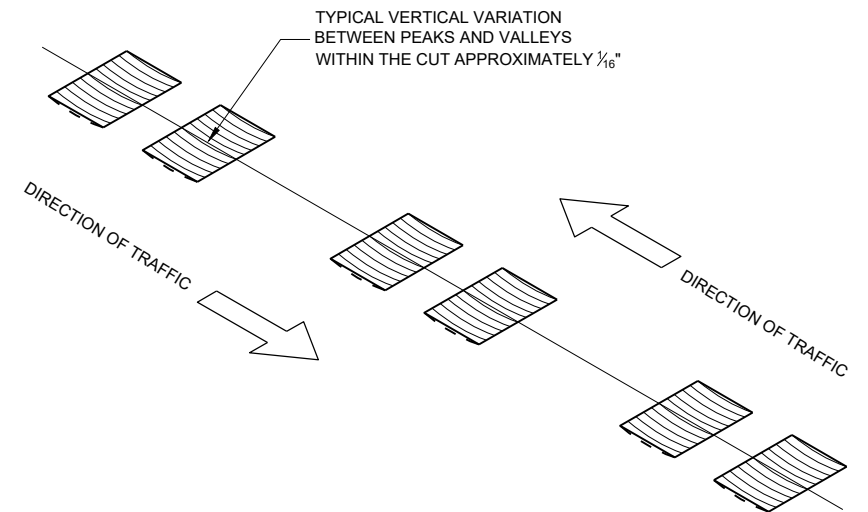
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

DO NOT MILL CENTERLINE GROOVES THROUGH ANY INTERSECTION, MARKED CROSSWALK, NON-MOTORIZED PATH CROSSING, OR SNOWMOBILE CROSSING.

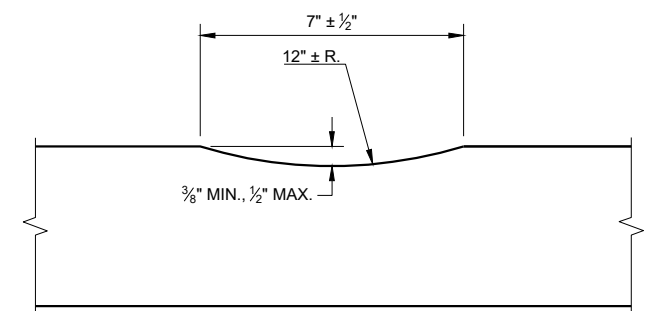
INSTALL PAVEMENT MARKING AFTER THE GROOVES ARE INSTALLED.

SEE SIGNING PLAN FOR SIGN REQUIREMENTS THAT MAY BE NEEDED.

- ① CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



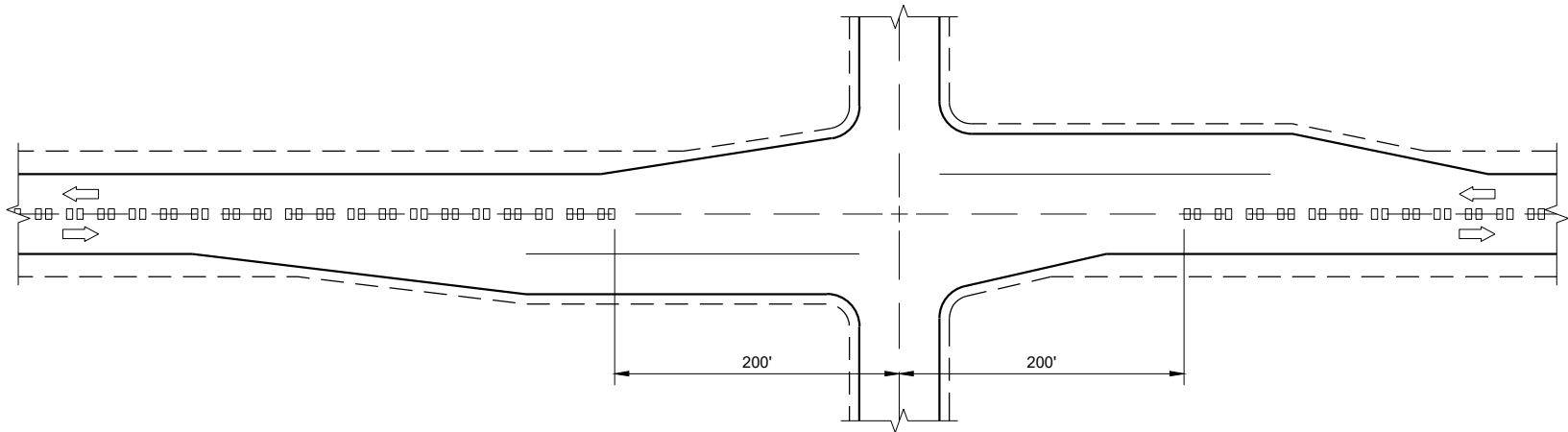
ISOMETRIC



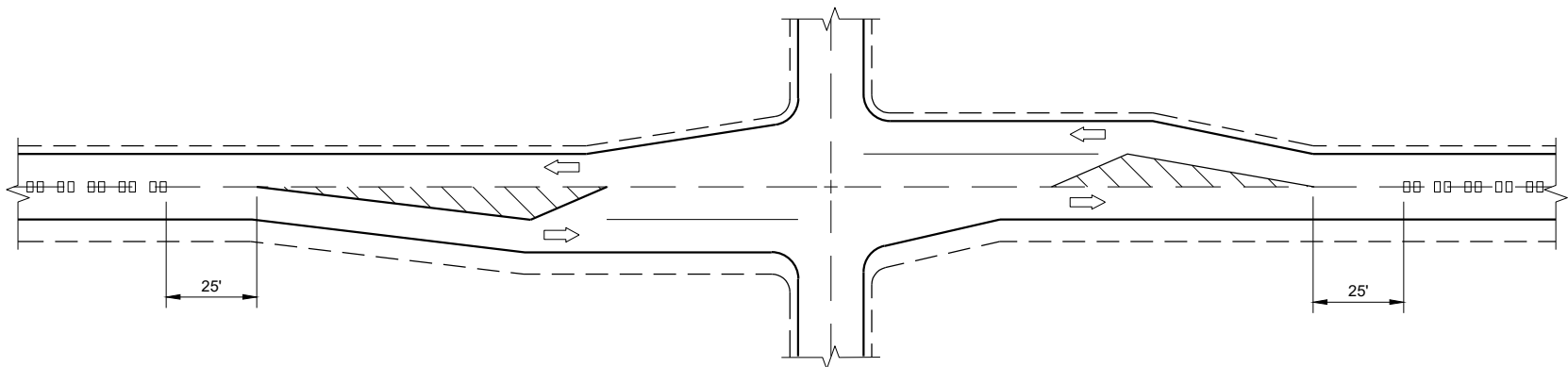
SECTION A - A

**2-LANE RURAL
CENTER LINE RUMBLE STRIP,
MILLING**

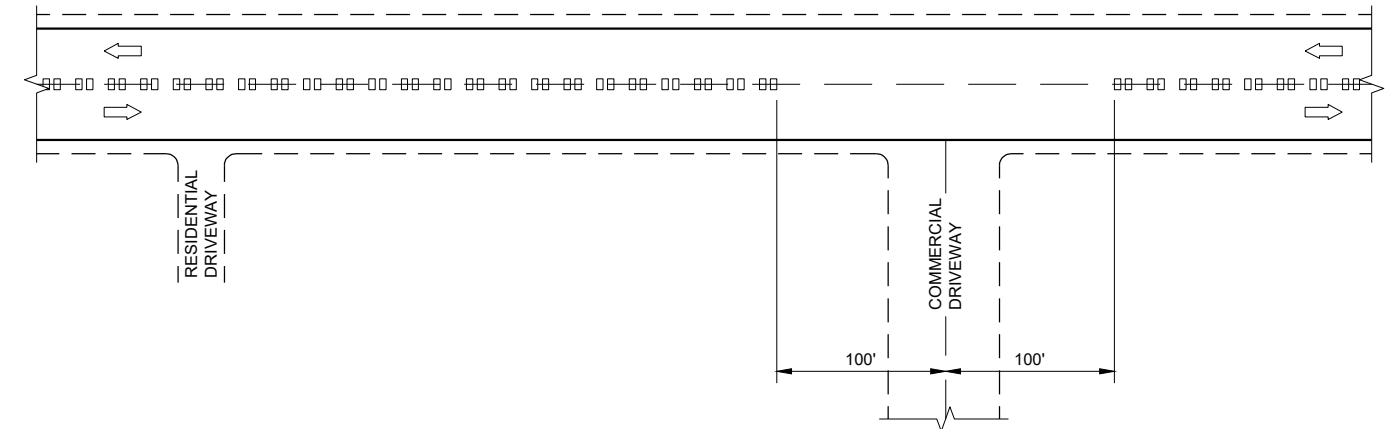
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



CENTERLINE GROOVES AT INTERSECTIONS



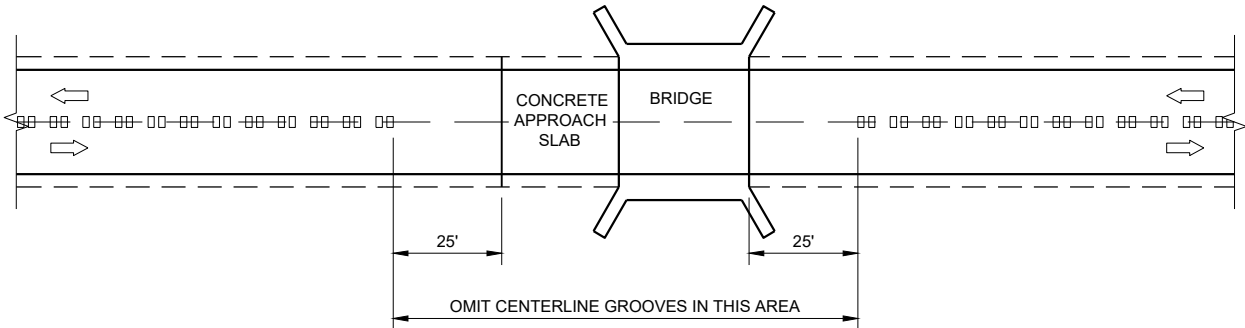
CENTERLINE GROOVES AT INTERSECTIONS
(WITH LEFT TURN LANES)



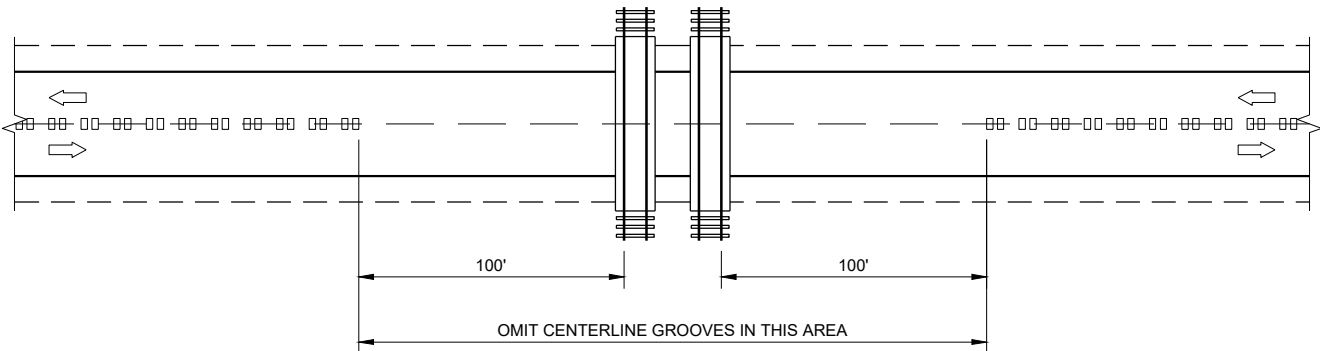
CENTERLINE GROOVES AT DRIVEWAYS^①

GENERAL NOTES

- ① CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



CENTERLINE GROOVES AT BRIDGES



CENTERLINE GROOVES AT RAILROADS

2-LANE RURAL
CENTERLINE RUMBLE STRIP,
MILLING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

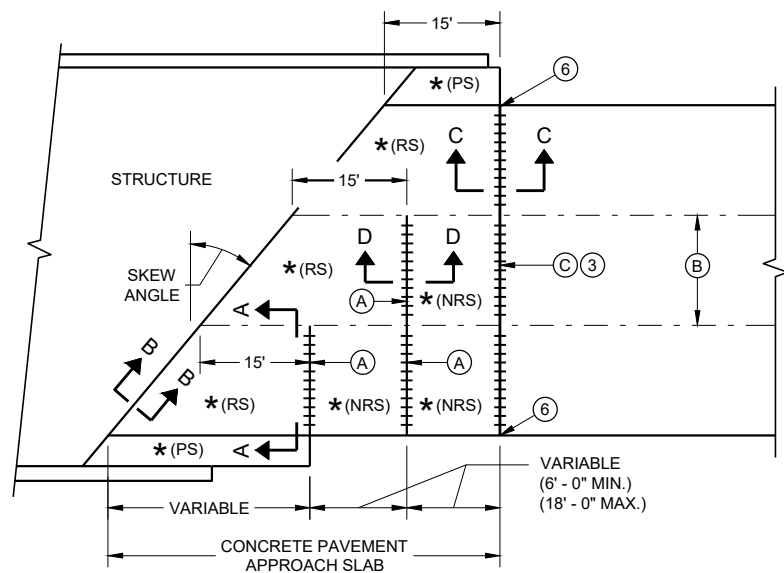
APPROVED

7/2018

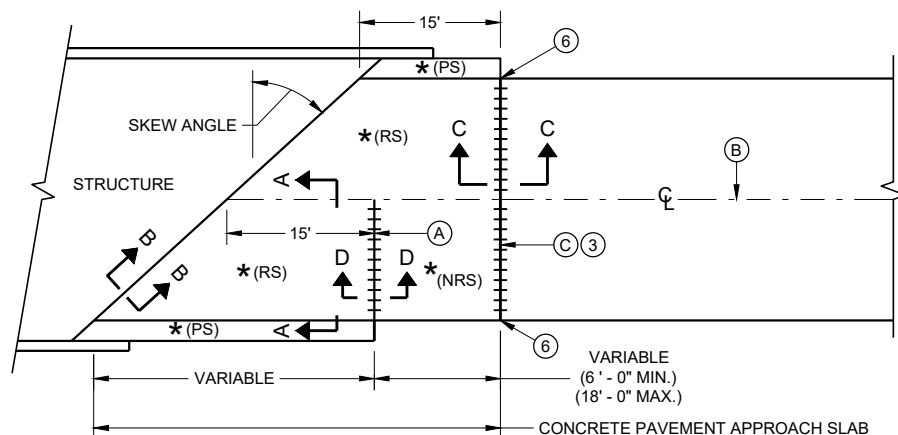
DATE

FHWA

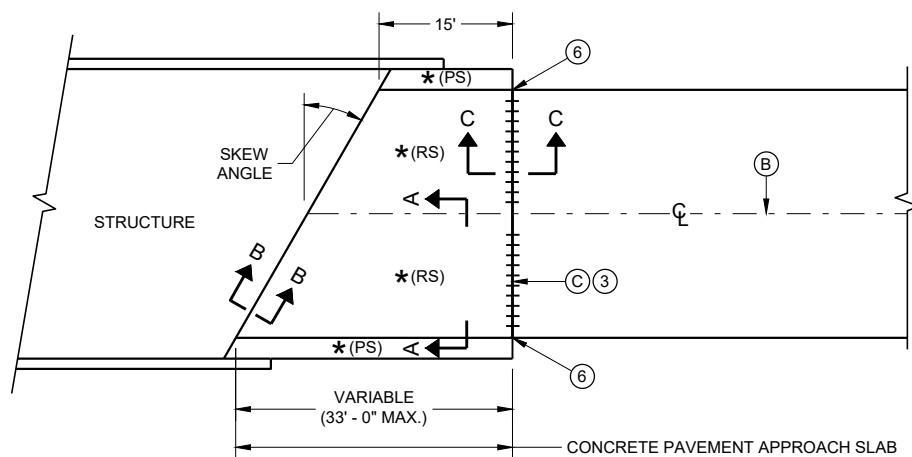
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
ENGINEER



SKewed APPROACH
(PAVEMENT MORE THAN TWO LANES)



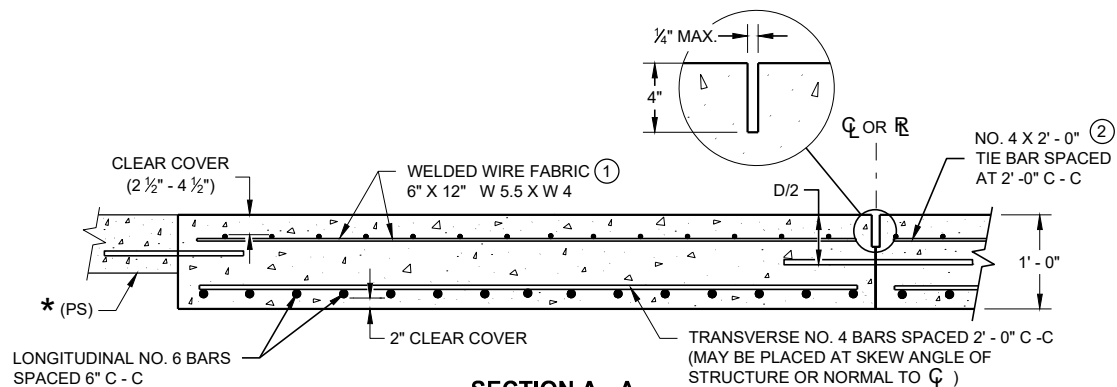
SKews > 20°
(PAVEMENT WIDTH ≤ 30')



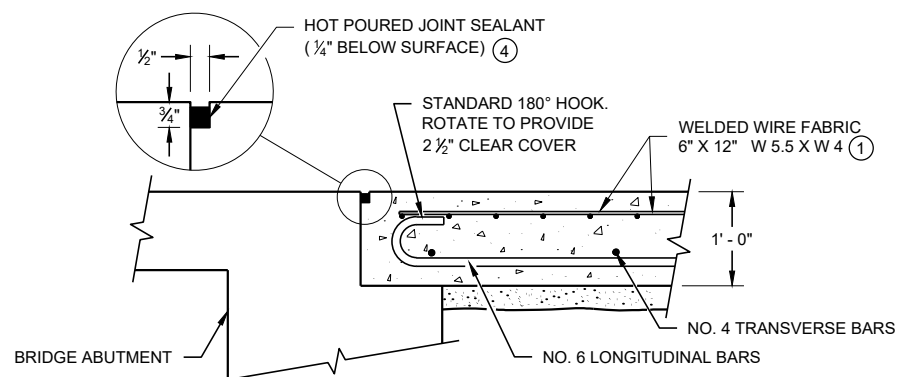
SKews ≤ 20°
(PAVEMENT WIDTH ≤ 30')

APPROACH SLAB AND ADJACENT PAVEMENT

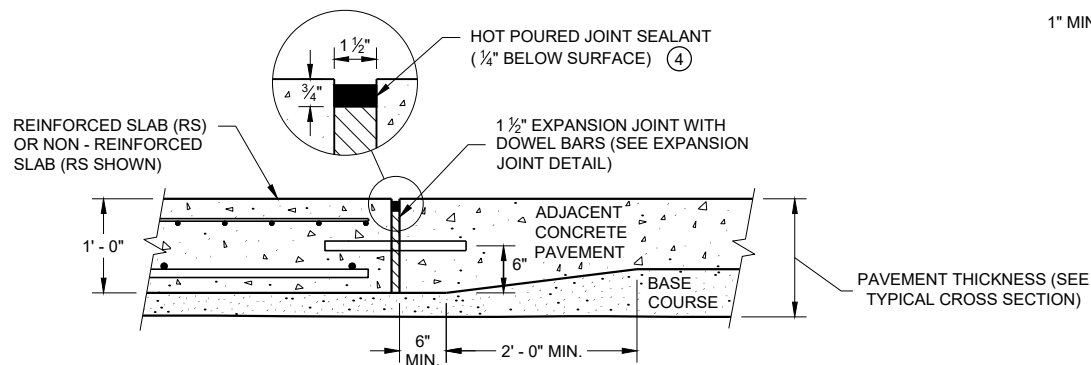
- * (RS) = REINFORCED CONCRETE SLAB
- * (PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
- * (NRS) - NON - REINFORCED CONCRETE SLAB
- *** STANDARD DOWEL BAR DIAMETER (SEE SDD 13C11 AND SDD 13C13)



SECTION A - A
REINFORCEMENT POSITIONING DETAIL



SECTION B - B
BEND DETAIL
BOTTOM REINFORCEMENT



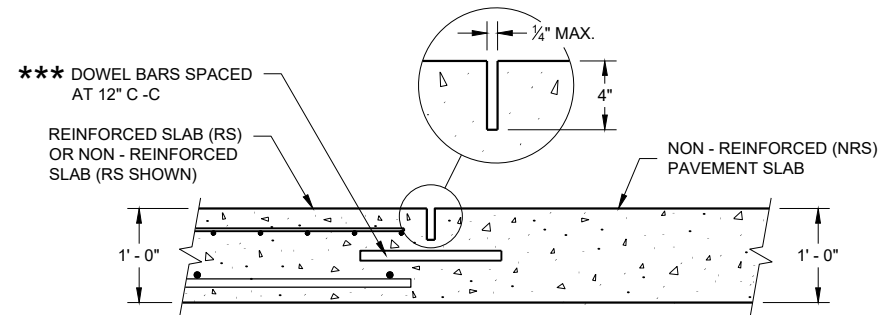
SECTION C - C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT

GENERAL NOTES

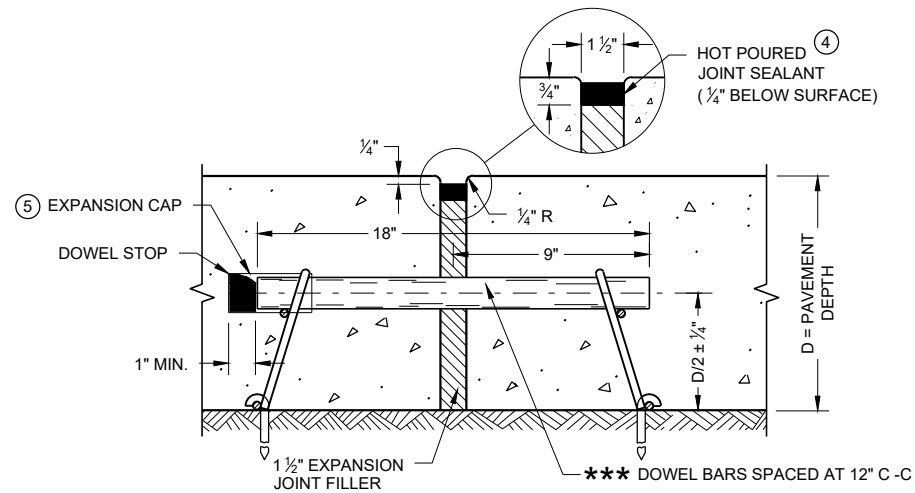
THE CONTRACTOR MAY SPLICE NO. 6 BARS IN THE APPROACH SLAB FOR SKEWED STRUCTURES ONLY. STAGGER SPLICES WITH A MAXIMUM OF ONE SPLICE PER BAR. THE LENGTH OF LAP IS 20 INCHES.

TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.

- ① THE CONTRACTOR MAY USE NO. 4 BARS SPACED AT 2' - 0" C - C IN BOTH THE LONGITUDINAL AND TRANSVERSE DIRECTIONS FOR TOP REINFORCEMENT AS AN ALTERNATIVE TO THE WELDED WIRE FABRIC.
- ② THE CONTRACTOR MAY OMIT THE BARS BETWEEN REINFORCED SLABS WHERE SLAB REINFORCEMENT BARS EXTEND ACROSS THE CENTERLINE OR REFERENCE LINE.
- ③ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.
- ④ USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- ⑤ PLACE EXPANSION CAP ON THE END OF THE DOWEL THAT IS NOT TACK WELDED TO THE BASKET. DO NOT FORCE DOWEL BAR PAST THE DOWEL STOP.
- ⑥ EXTEND EXPANSION JOINT THROUGH ANY ADJACENT TIED CONCRETE.
- (A) STANDARD CONTRACTION JOINT NORMAL TO $\mathcal{C}$ OR $\mathcal{R}$.
- (B) STANDARD LONGITUDINAL JOINT WITH TIE BARS.
- (C) 1 1/2" EXPANSION JOINT WITH DOWEL BARS NORMAL TO $\mathcal{C}$ OR $\mathcal{R}$.



SECTION D - D
CONTRACTION JOINT

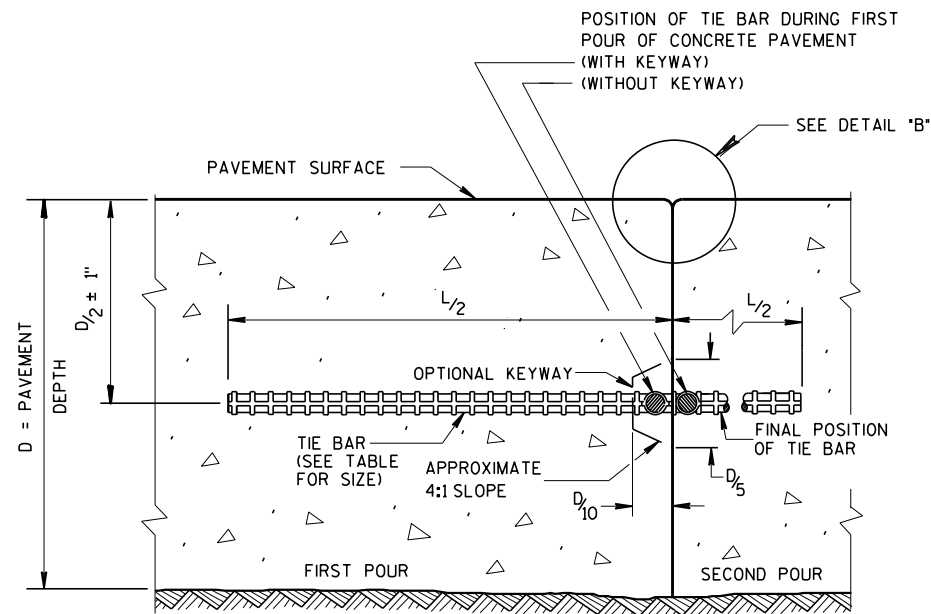


EXPANSION JOINT DETAIL

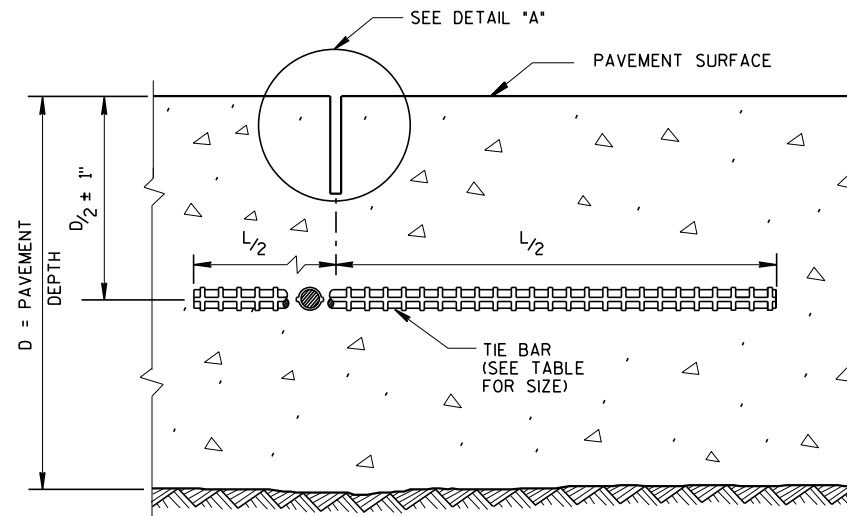
CONCRETE PAVEMENT APPROACH SLAB

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018 /S/ Peter Kemp, P.E.
DATE PAVEMENT SUPERVISOR
FHWA



CONSTRUCTION JOINT



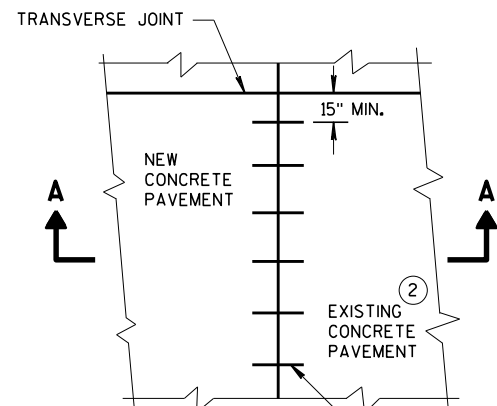
SAWED JOINT

GENERAL NOTES

CREATE A LONGITUDINAL JOINT FOR PAVEMENT WIDTHS GREATER THAN 15 FEET.

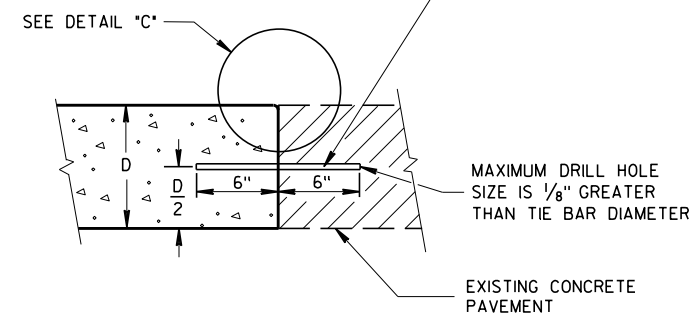
CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

- ① ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.
- ② PAVEMENT THAT WAS IN PLACE PRIOR TO THE CONTRACT.

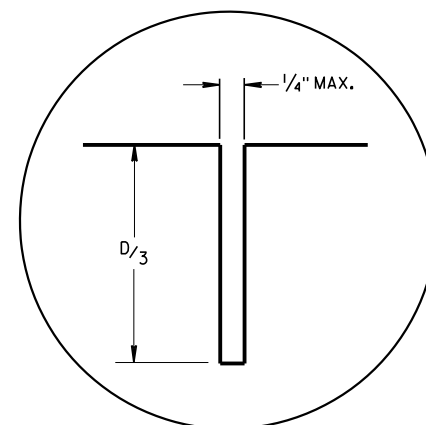


PLAN VIEW

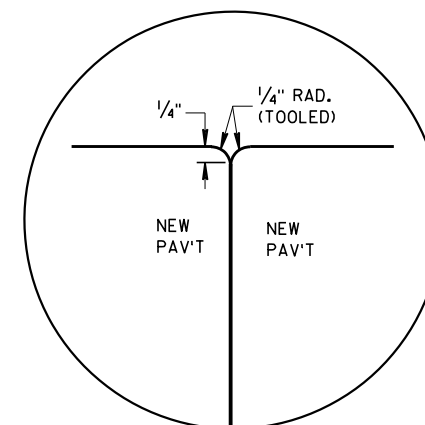
NO. 6 TIE BARS SPACED 30" C-C, INSTALLED PERPENDICULAR TO THE LONGITUDINAL JOINT. ①



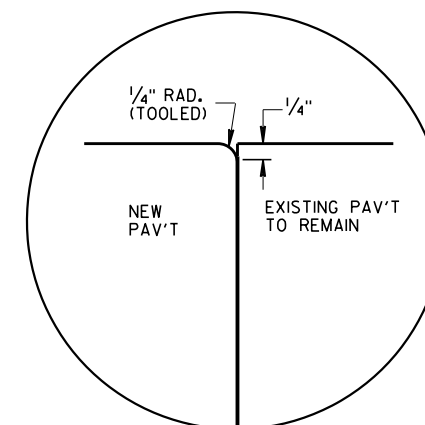
SECTION A-A
LONGITUDINAL CONSTRUCTION JOINT
TIE BARS ANCHORED
INTO EXISTING PAVEMENT



DETAIL "A"



DETAIL "B"



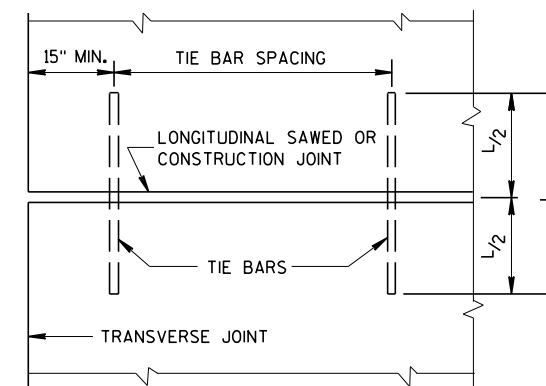
DETAIL "C"

TIE BAR TABLE

PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 1/2"	NO. 4	30"	36"
≥ 10 1/2"	NO. 5	36"	36"
	NO. 4 *	30"	24" **

* SUBSTITUTE BENT BARS AT LONGITUDINAL JOINTS WHEN EQUIPMENT LIMITATIONS DURING CONSTRUCTION WARRANT (e.g. AUXILIARY LANES OR TURN LANES)

** CONFORM TO 15" MINIMUM SPACING FROM TRANSVERSE JOINTS; SPACING BETWEEN TIE BARS WILL BE 30" AT TRANSVERSE JOINTS.

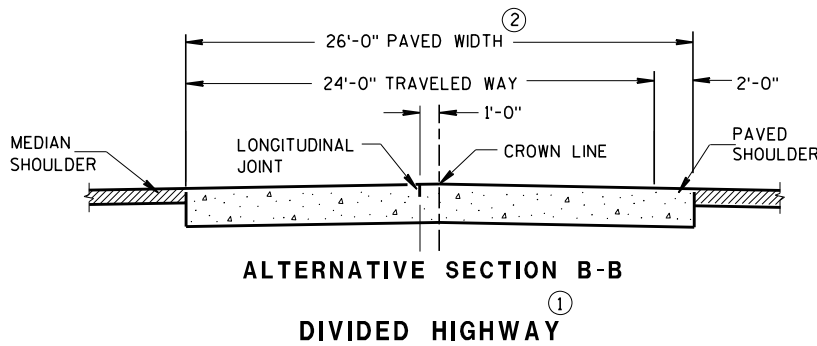
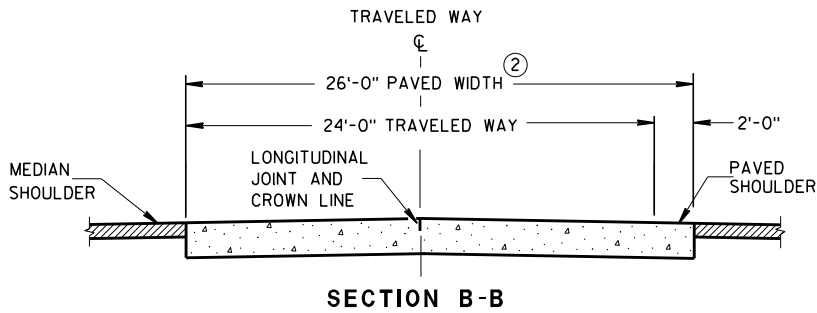
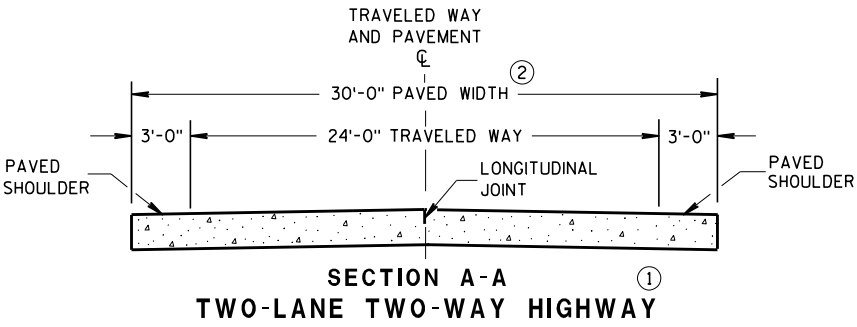


PLAN VIEW
SHOWING LOCATION OF TIE BARS

CONCRETE PAVEMENT
LONGITUDINAL JOINTS AND TIES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2018 /S/ Peter Kemp, P.E.
DATE PAVEMENT SUPERVISOR
FHWA



GENERAL NOTES

CONTRACTION JOINTS

CONSTRUCT TRANSVERSE CONTRACTION JOINTS NORMAL TO THE CENTERLINE. SHOW THE LOCATION OF CONTRACTION JOINTS THROUGH INTERSECTIONS ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

INSTALL DOWEL BARS PARALLEL TO THE PAVEMENT CENTERLINE AND PAVEMENT SURFACE.

FOR PAVEMENT SLABS OF VARYING WIDTHS, LOCATE THE OUTER MOST DOWEL BAR SO THAT THE CENTER OF THE BAR IS A MINIMUM OF 6 INCHES AND A MAXIMUM OF 18 INCHES FROM THE FREE EDGE OF PAVEMENT.

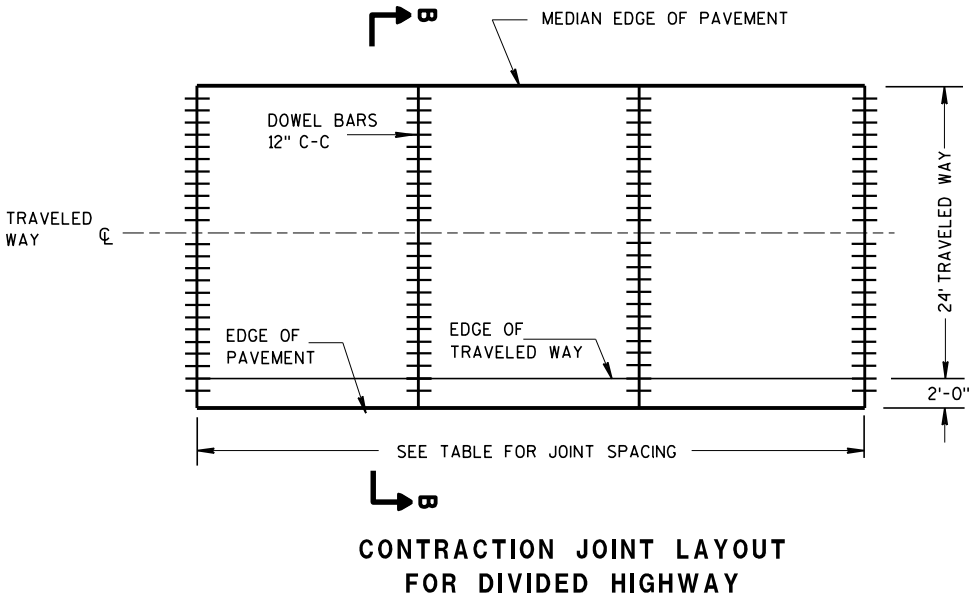
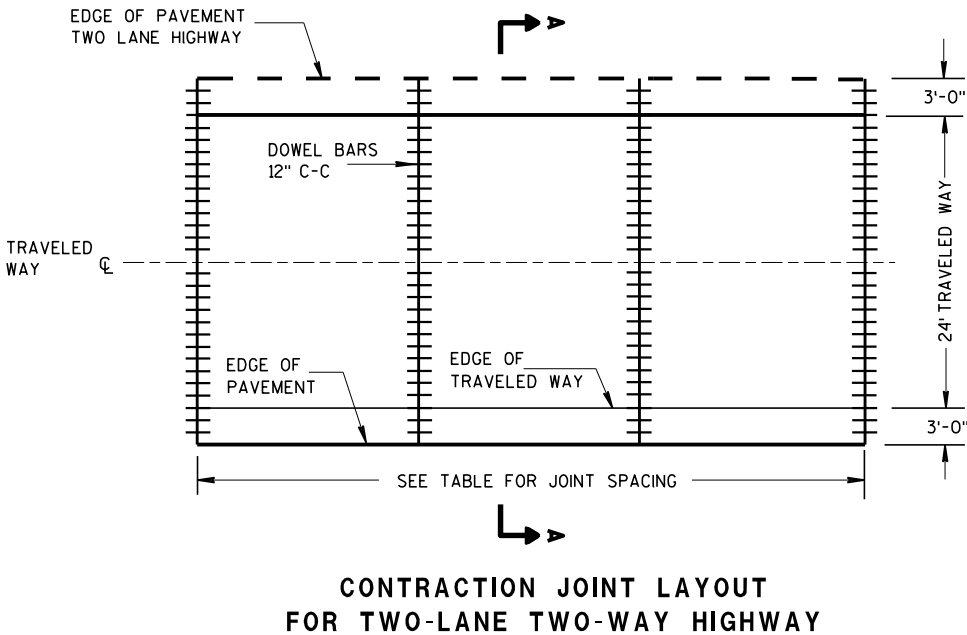
CONSTRUCTION JOINTS

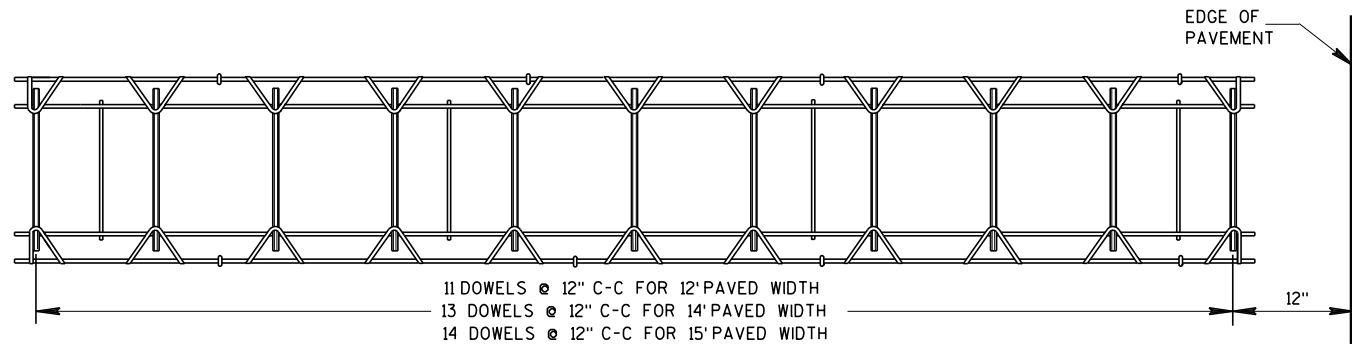
LOCATE CONSTRUCTION JOINTS A MINIMUM OF 6 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGN PARALLEL TO CONTRACTION JOINTS.

- ① REFER TO TYPICAL CROSS SECTIONS FOR ADDITIONAL DETAILS.
- ② MEASURE THE ENTIRE PAVED WIDTH INCLUDING THE PORTION(S) LABELED PAVED SHOULDER AS CONCRETE PAVEMENT.

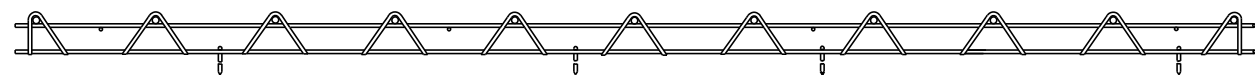
PAVEMENT DEPTH, DOWEL BAR SIZE AND JOINT SPACING TABLE

PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER	CONTRACTION JOINT SPACING
5 1/2", 6", 6 1/2"	NONE	12'
7", 7 1/2"	1"	14'
8", 8 1/2"	1 1/4"	15'
9", 9 1/2"	1 1/4"	15'
10" & ABOVE	1 1/2"	15'





PLAN VIEW

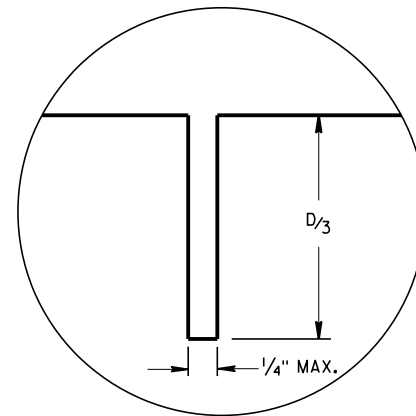


②

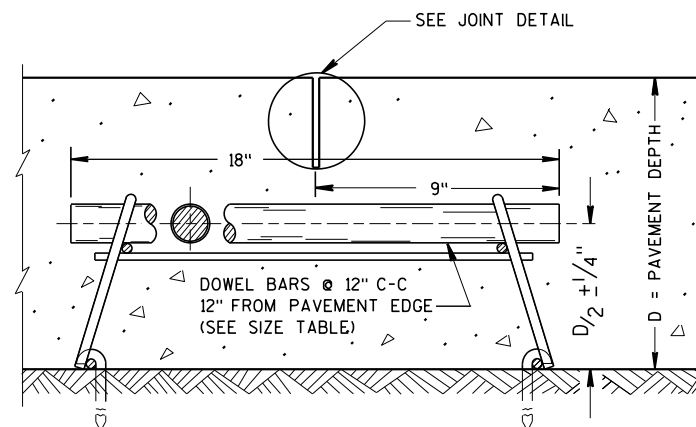
SIDE VIEW

(NORMAL TO CENTERLINE)

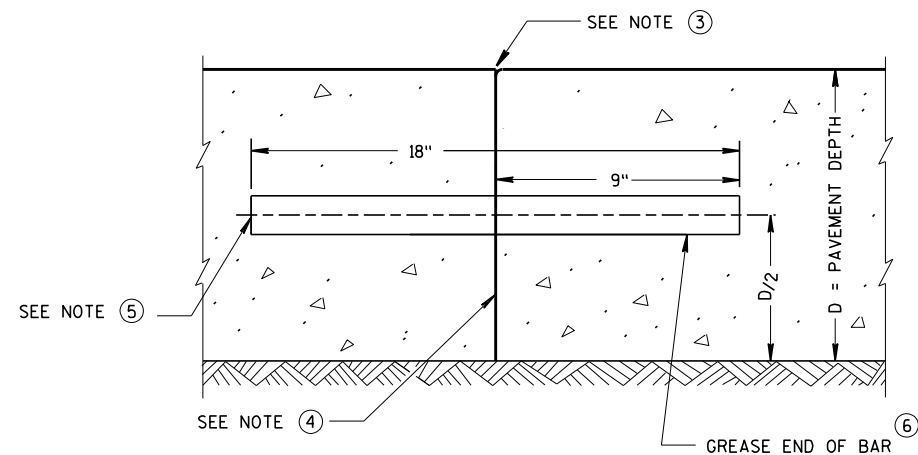
CONTRACTION JOINT DOWEL ASSEMBLY ①



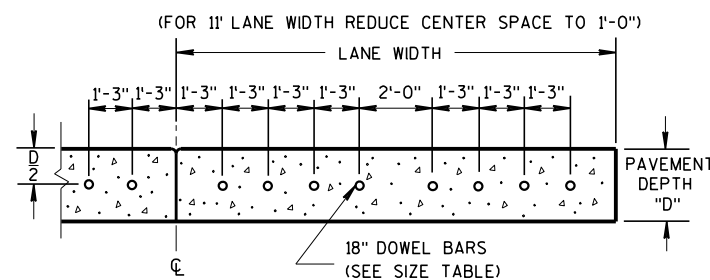
JOINT DETAIL



DOWELED CONTRACTION JOINT



TRANSVERSE CONSTRUCTION JOINT



DRILLED DOWEL BAR CONSTRUCTION JOINT ⑦

GENERAL NOTES

- ① OBTAIN THE ENGINEER'S APPROVAL FOR THE USE OF ALTERNATIVE DESIGNS OF THE DOWEL ASSEMBLY. USE MECHANICAL DOWEL BAR INSERTERS OR DOWEL ASSEMBLIES WHEN CONSTRUCTING CONTRACTION JOINTS.
- ② SECURE BASKETS WITH ANCHORS TO HOLD DOWEL BARS IN THE CORRECT POSITION AND ALIGNMENT. TYPE, LOCATION, NUMBER AND LENGTH OF ANCHORS ARE DEPENDENT UPON FIELD CONDITIONS.
- ③ FORM OR SAW CONSTRUCTION JOINTS. PROVIDE A 1/4-INCH RADIUS AT FORMED JOINTS.
- ④ PROVIDE A SMOOTH VERTICAL FACE FOR THE ENTIRE DEPTH OF THE PAVEMENT WHEN FORMING CONSTRUCTION JOINTS.
- ⑤ INSTALL DOWEL BARS AT CONSTRUCTION JOINTS BY FORMING OR DRILLING. INSTALL FORMED DOWEL BARS 12 INCHES C-C AND 12 INCHES FROM PAVEMENT EDGE. REMOVE EXCESS CONCRETE FROM THE FREE END OF THE DOWEL BAR IF DOWEL BARS ARE FORMED THROUGH A HEADER BOARD. INSTALL DRILLED DOWEL BARS ACCORDING TO *DRILLED DOWEL BAR CONSTRUCTION JOINT* DETAIL.
- ⑥ APPLY A THIN UNIFORM COATING OF SURFACE TREATMENT TO THE FREE END OF DOWEL BARS TO PREVENT BONDING.
- ⑦ ANCHOR DOWEL BARS INTO DRILLED HOLES WITH AN EPOXY. MAXIMUM DRILLED HOLE SIZE IS 1/8-INCH GREATER THAN DOWEL BAR DIAMETER, 9 INCHES IN LENGTH.

RURAL DOWELED
CONCRETE PAVEMENT

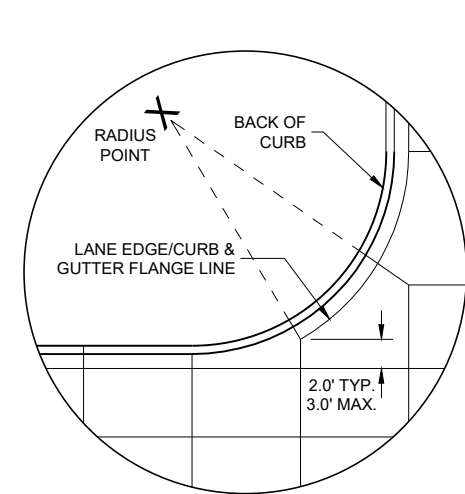
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

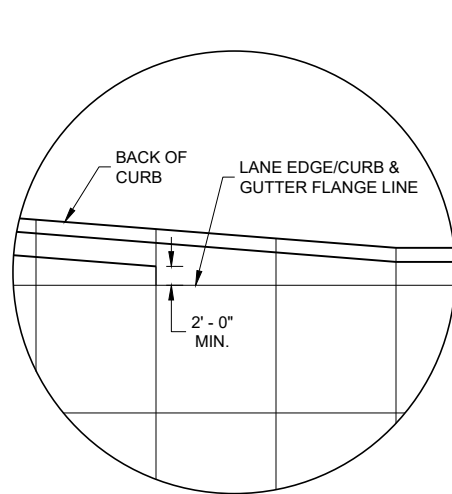
March 2018
DATE

/S/ Peter Kemp, P.E.
PAVEMENT SUPERVISOR

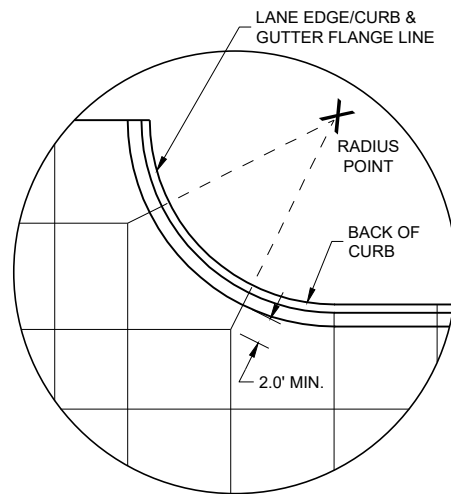
FHWA



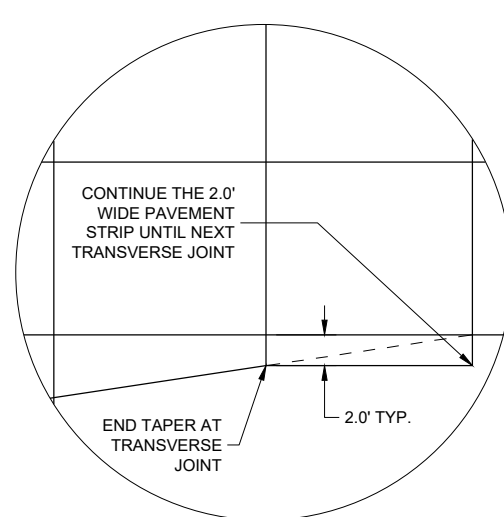
DETAIL "A"



DETAIL "B"



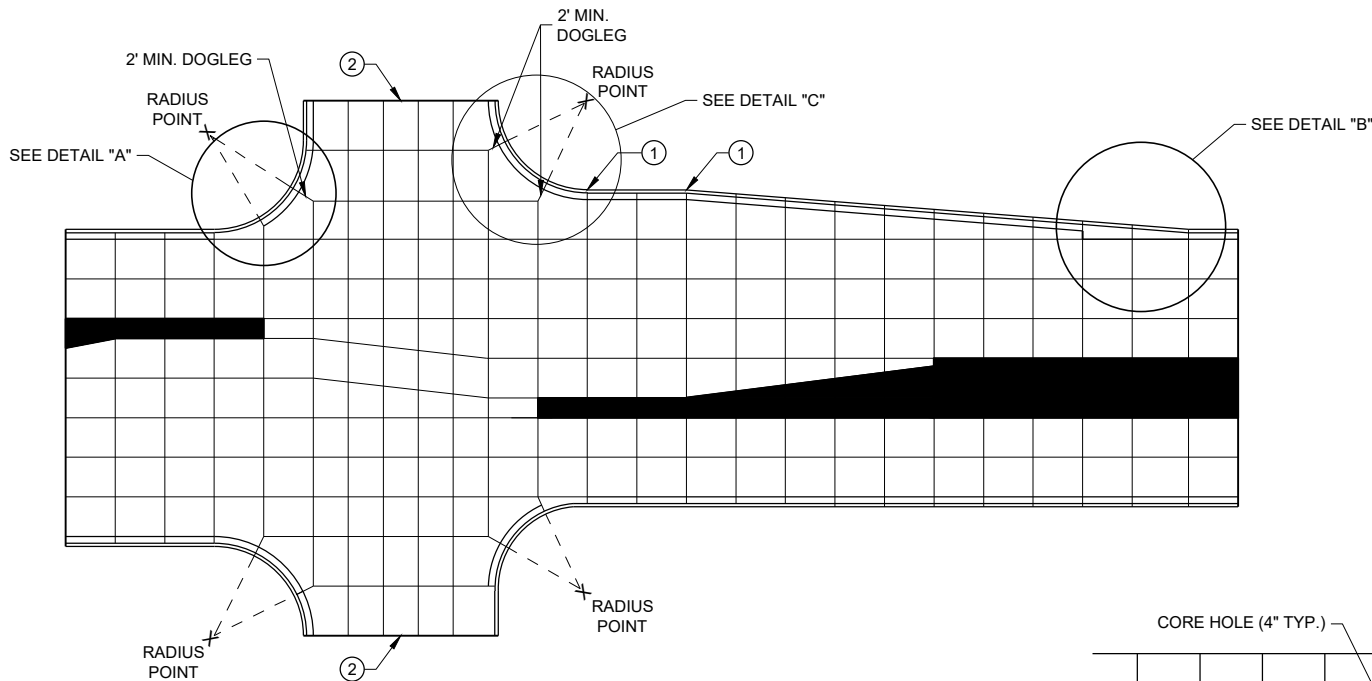
DETAIL "C"



DETAIL "D"

GENERAL NOTES

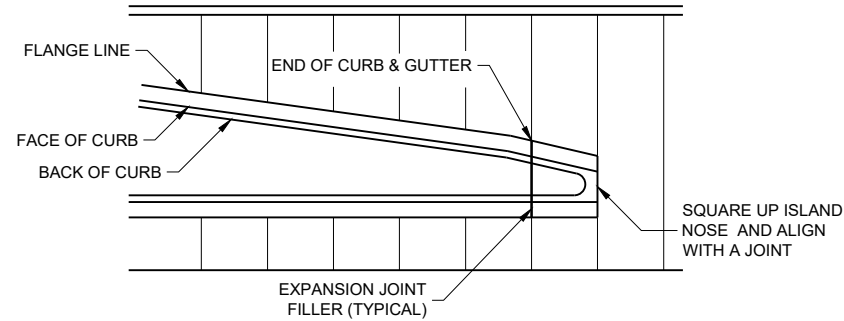
- THE PRIMARY ROADWAY CONTROLS THE TRANSVERSE JOINT PATTERN.
 - ALIGN NEW JOINTS WITH EXISTING JOINTS OR CRACKS.
 - CONSTRUCT TRANSVERSE JOINTS PERPENDICULAR TO THE ROADWAY.
 - ADJUST TRANSVERSE JOINTS TO ALIGN WITH UTILITY FIXTURES (E.G MANHOLES AND INLETS) IN THE PAVEMENT STRUCTURE WHEN POSSIBLE. WATER VALVES DO NOT REQUIRE JOINT ADJUSTMENT.
 - AVOID SLABS LESS THAN 2 FEET WIDE OR GREATER THAN 15 FEET WIDE.
 - SEE TABLE FOR TRANSVERSE JOINT SPACING. JOINT SPACING SPECIFIED IS MAXIMUM AND ACTUAL SPACING CAN BE ADJUSTED TO ACCOMMODATE INTERSECTIONS.
 - AVOID ANGLES LESS THAN 60° BY DOGLEGGING JOINTS THROUGH CURVE RADIUS POINTS. USE 90° ANGLES WHEN POSSIBLE.
 - CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.
- 1 PROVIDE TRANSVERSE JOINTS AT ALL PAVEMENT WIDTH CHANGES.
 - 2 CONSTRUCT DOWELED EXPANSION JOINT ON THE SIDE ROAD OF AN INTERSECTION IF THE SIDE ROAD IS CONCRETE PAVEMENT AND GREATER THAN 300 FEET IN LENGTH. ALIGN EXPANSION JOINT WITH HEDGE OF RADIUS.
 - 3 THE ENGINEER MAY APPROVE SLIGHT VARIATIONS FROM THESE JOINTING DETAILS.



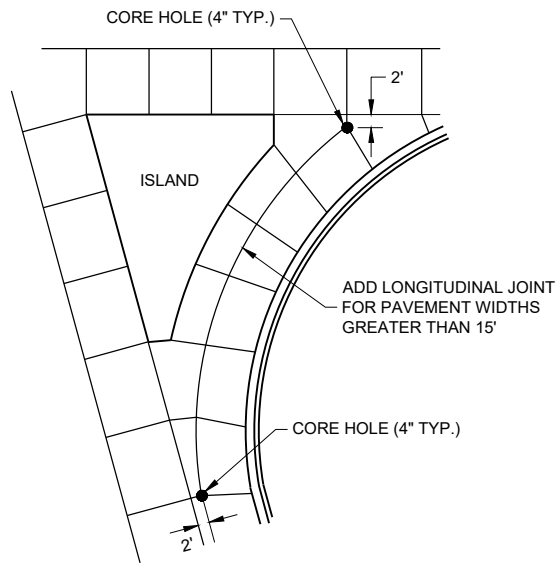
STANDARD INTERSECTION

PAVEMENT DEPTH AND JOINT SPACING TABLE

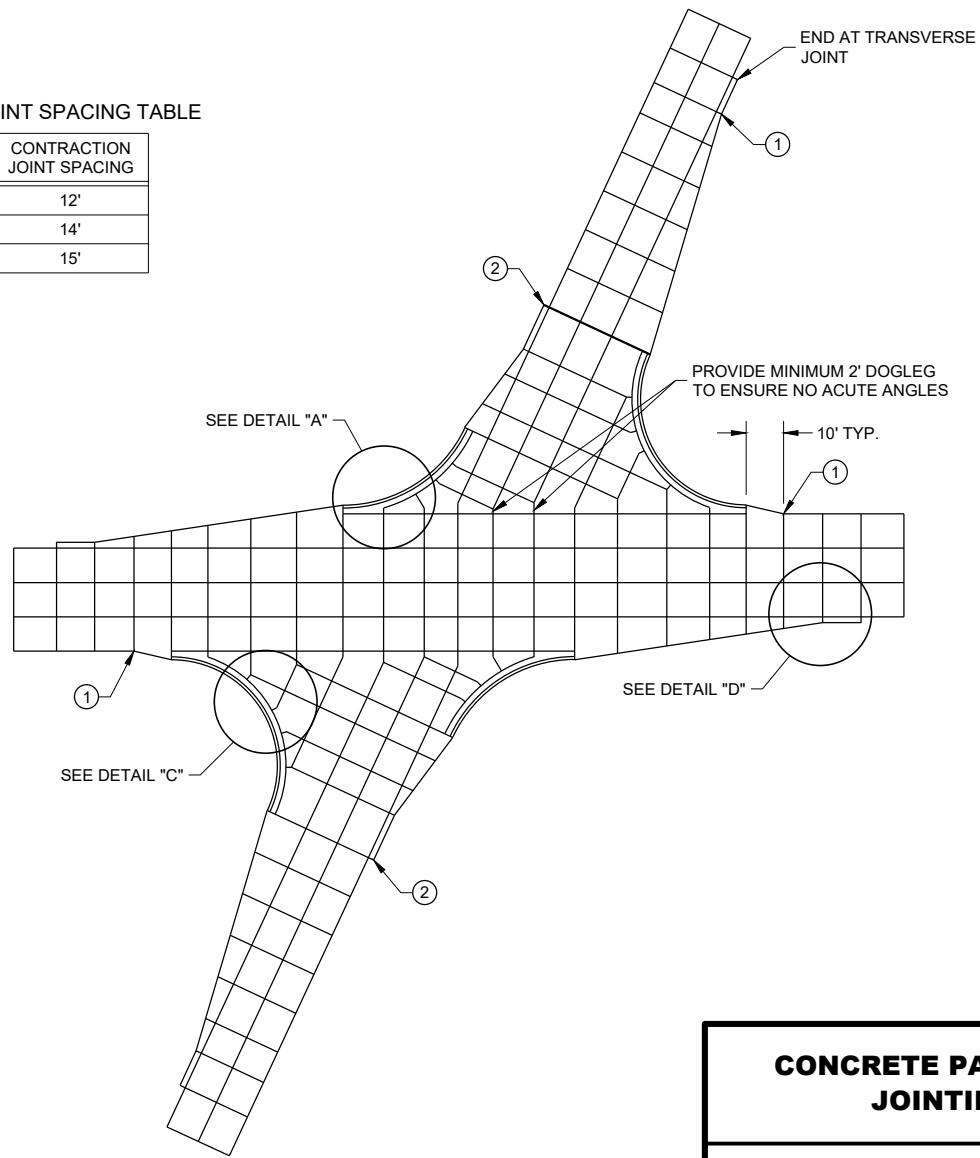
PAVEMENT DEPTH (D)	CONTRACTION JOINT SPACING
6", 6 1/2"	12'
7", 7 1/2"	14'
8" & ABOVE	15'



APPROACH TO MEDIAN



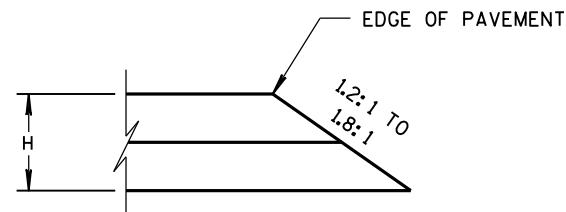
LARGE RIGHT TURN



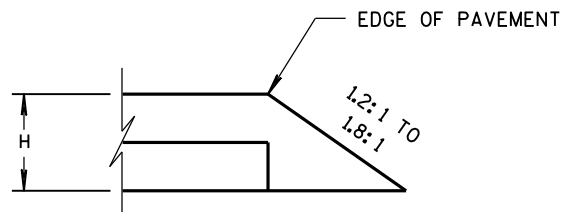
SKEWED INTERSECTION

CONCRETE PAVEMENT JOINTING

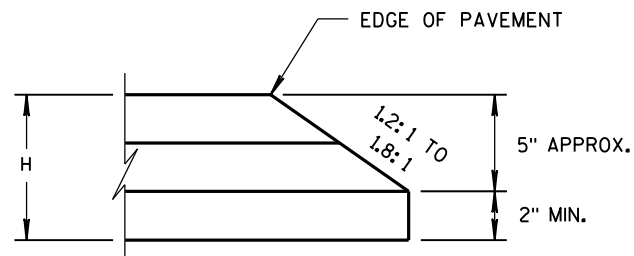
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



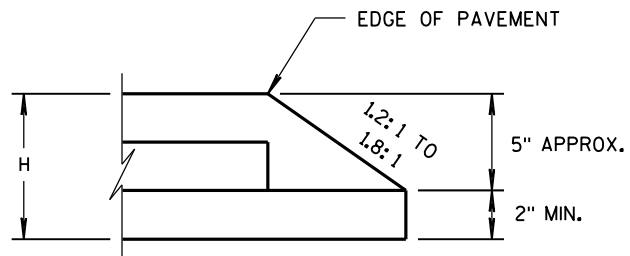
CONSTRUCTED WITH FINAL TWO LAYERS
FOR H 5" OR LESS



CONSTRUCTED WITH FINAL LAYER
FOR H 5" OR LESS

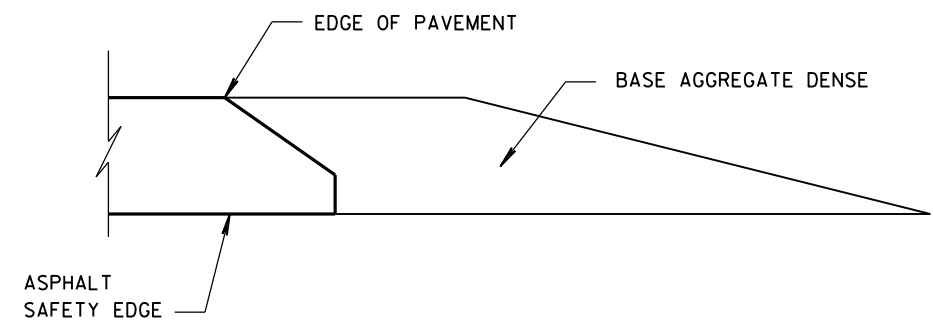


CONSTRUCTED WITH FINAL TWO LAYERS
FOR H GREATER THAN 5"



CONSTRUCTED WITH FINAL LAYER
FOR H GREATER THAN 5"

HMA PAVEMENT AND HMA OVERLAYS



FINISHED SHOULDER AGGREGATE PLACEMENT

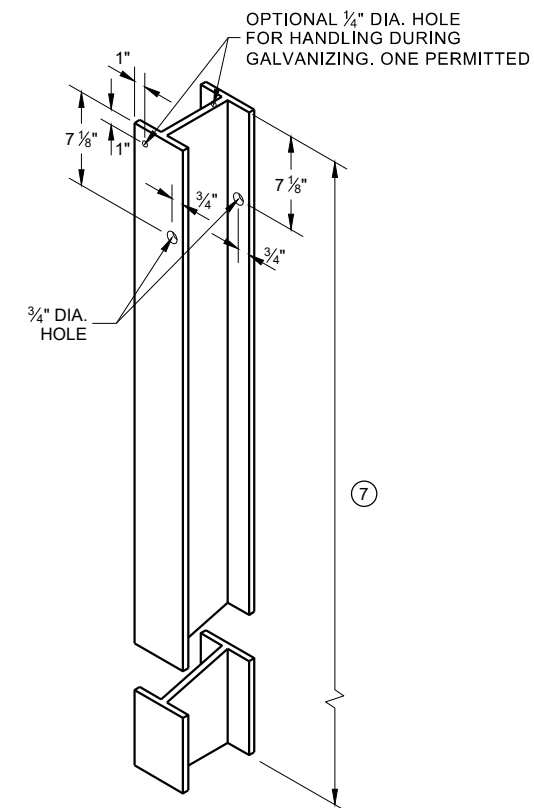
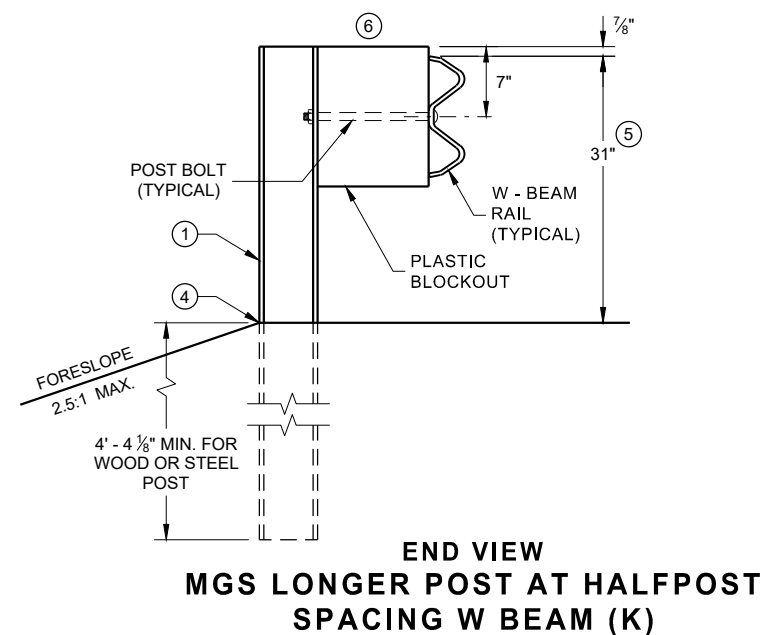
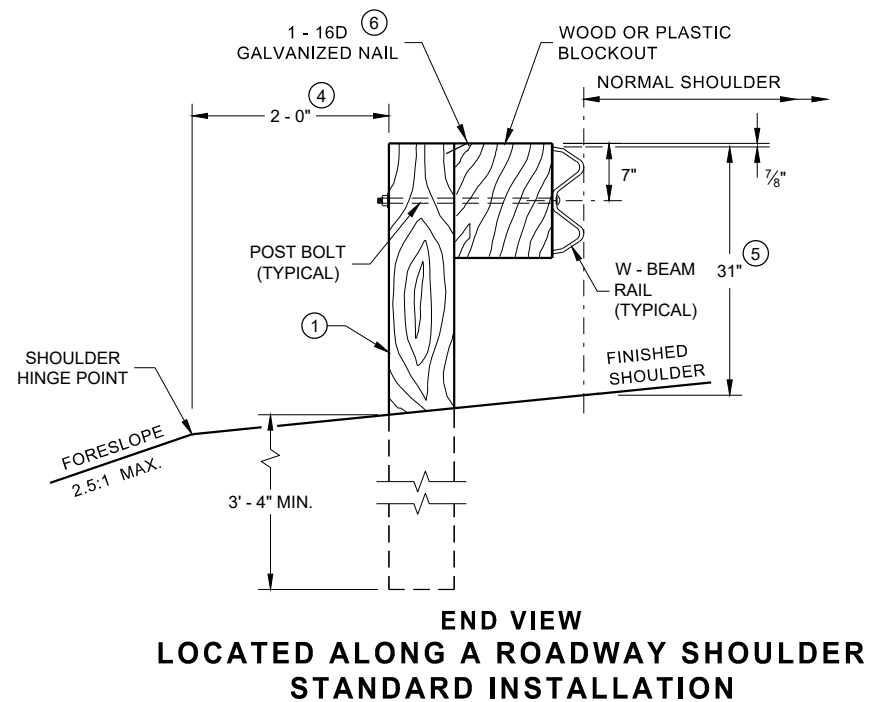
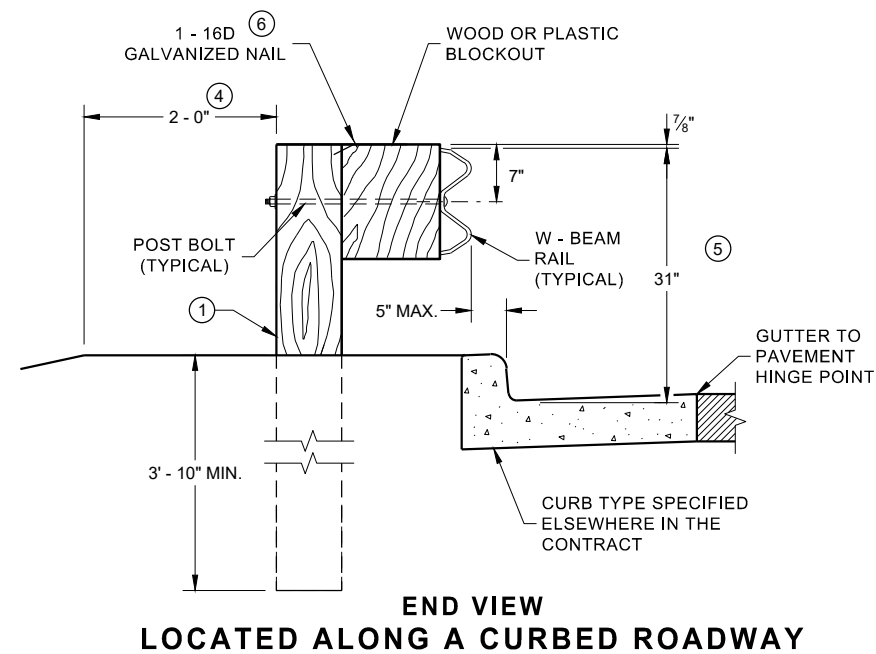
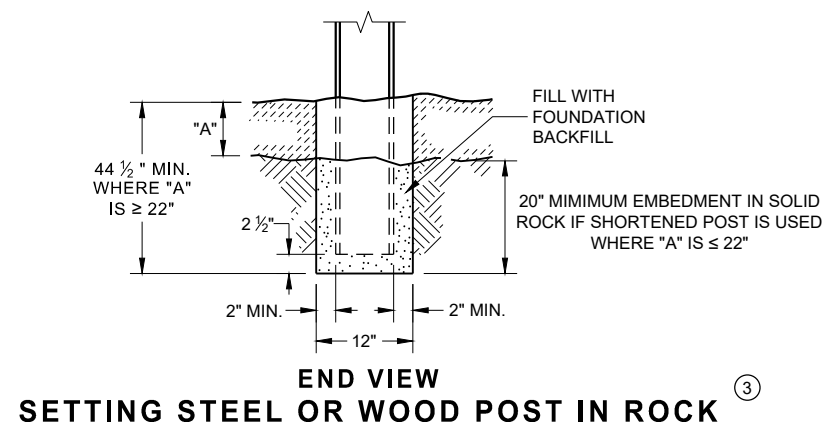
SAFETY EDGE_{SM}

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

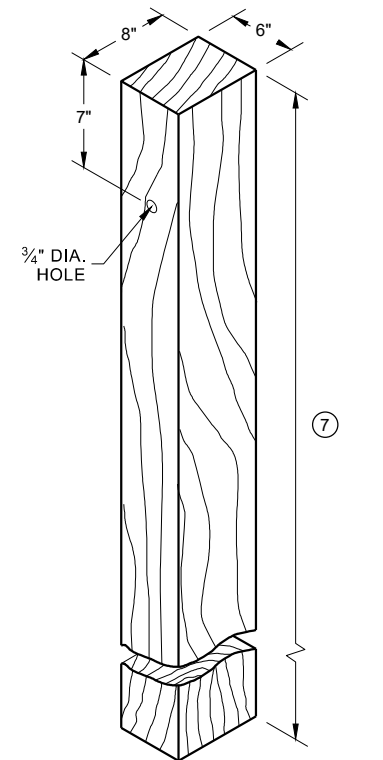
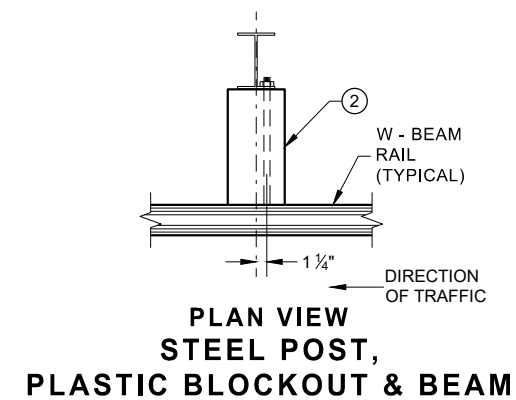
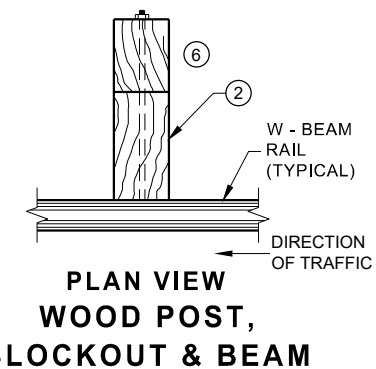
APPROVED
11/30/2012
DATE
FHWA

/s/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

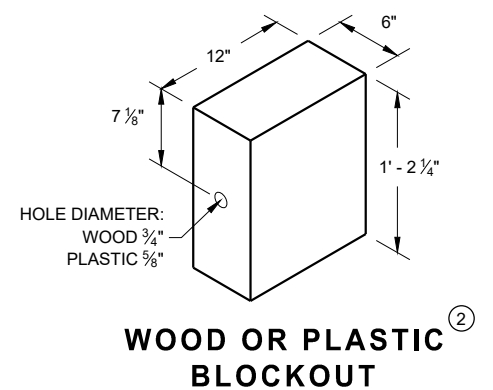
- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.
- ③ IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AND INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.
- ④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).
- ⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS +1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 3/4" TO 32".
- ⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ⑦ TOTAL POST LENGTH FOR TYPE K IS 7' - 0".
TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".

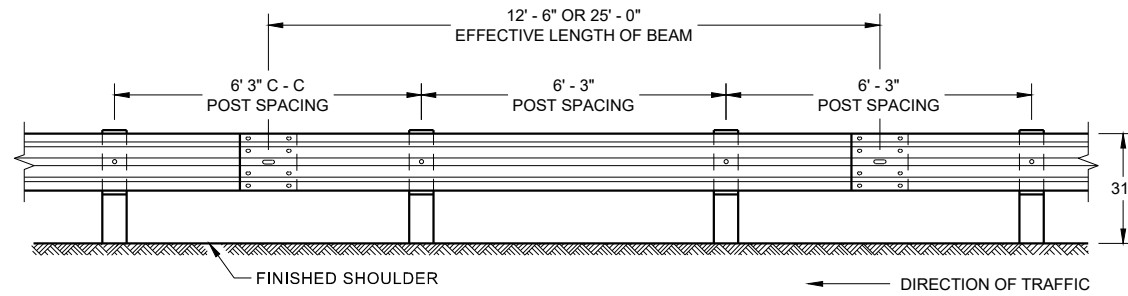


**STEEL POST & HOLE
PUNCHING DETAIL
(W 6 X 9) ①**

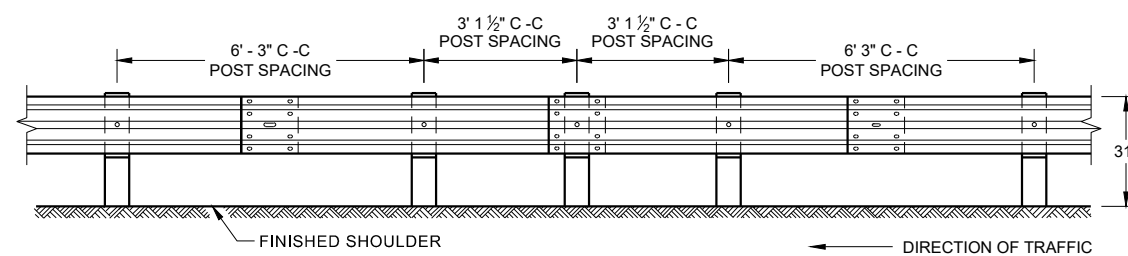


WOOD POST (6" X 8") NOMINAL ⁽¹⁾

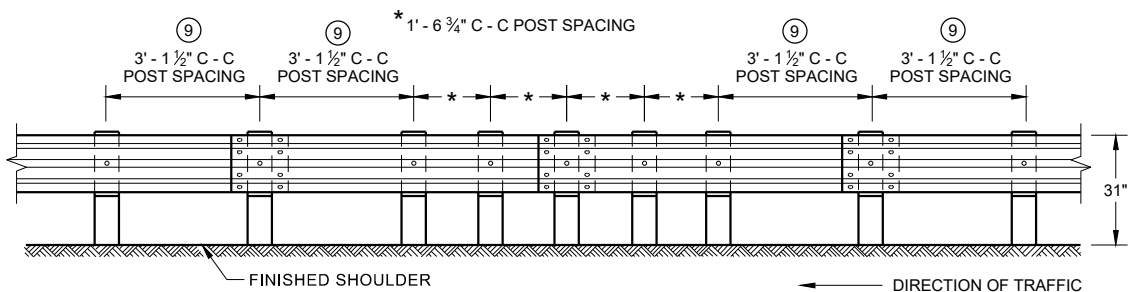




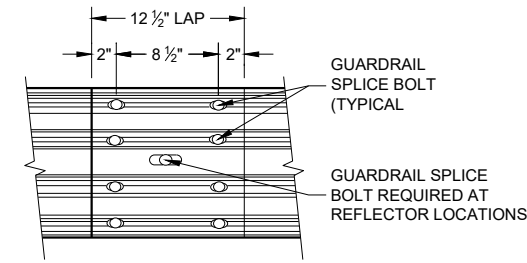
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



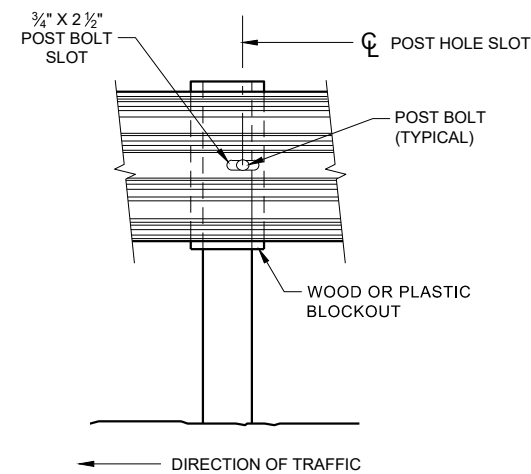
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



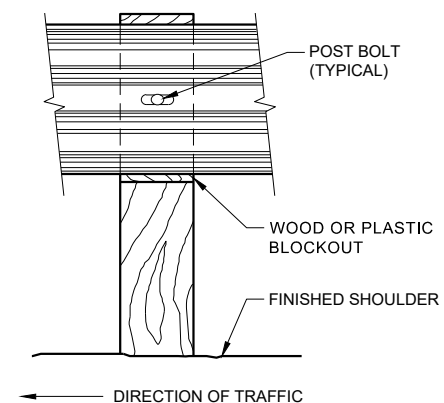
**FRONT VIEW
QUARTER POST SPACING (QS)**



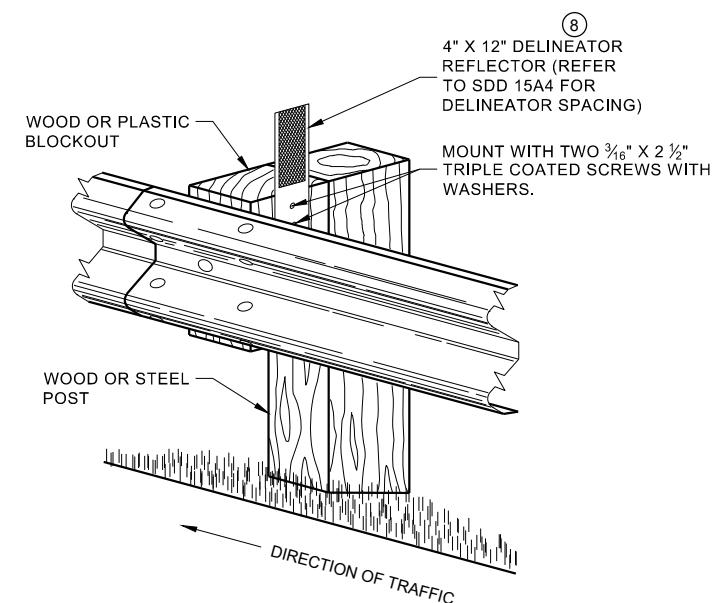
**FRONT VIEW
MID-SPAN BEAM SPLICE**



FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



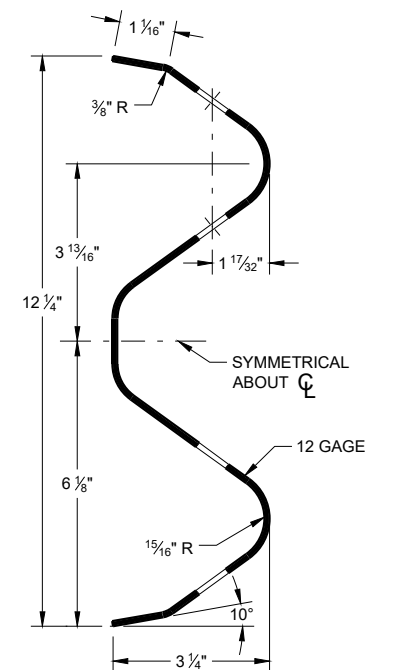
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

GENERAL NOTES

- 8 DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
- 9 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 3/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

GUARD RAIL SPLICE BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



SECTION THRU W-BEAM RAIL

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.

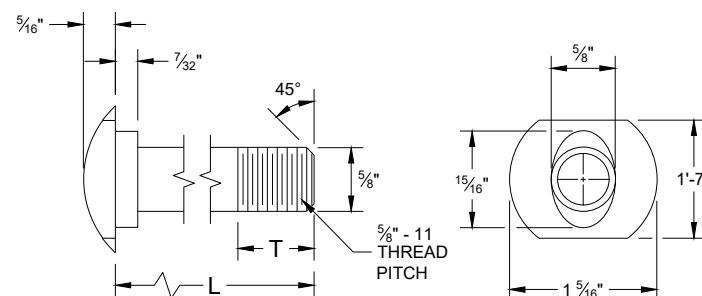


NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.

DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

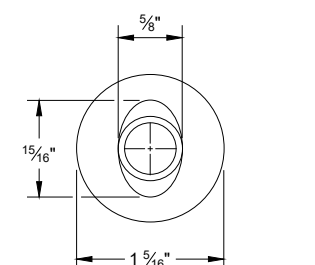
NOTE:

1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF $\frac{3}{16}$ ".
2. IF THE BOLT EXTENDS MORE THAN $\frac{1}{4}$ " FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.

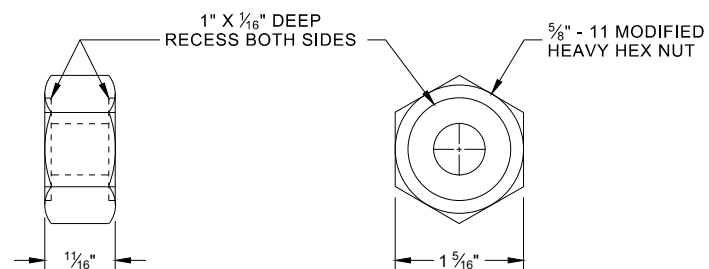


POST BOLT TABLE

L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"

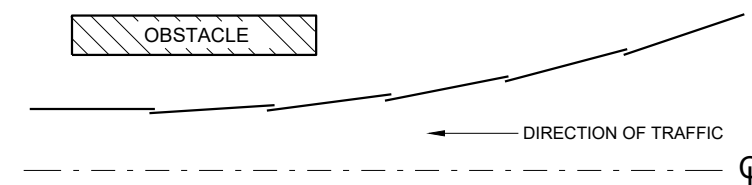


ALTERNATE BOLT HEAD

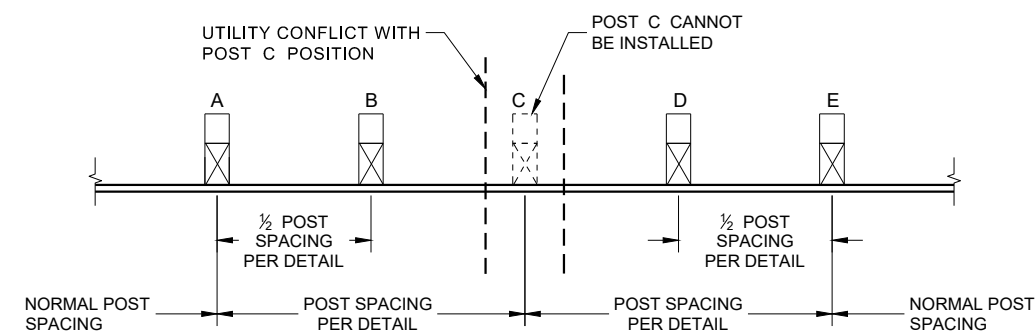


POST BOLT, SPLICE BOLT AND RECESS NUT

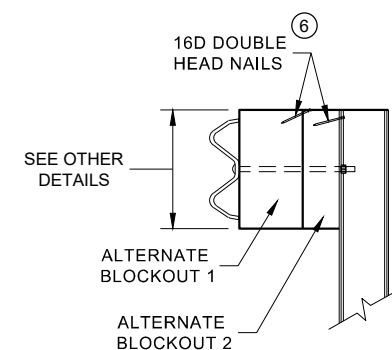
⑥ WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



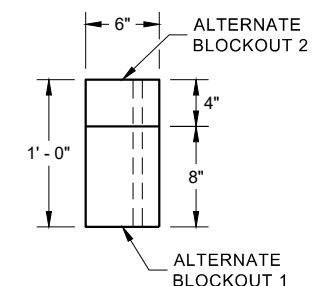
**PLAN VIEW
BEAM LAPPING DETAIL**



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW

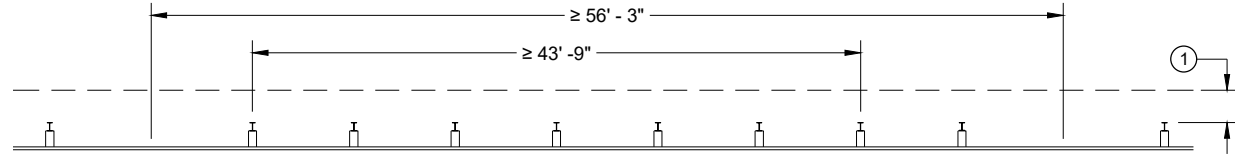


PLAN VIEW

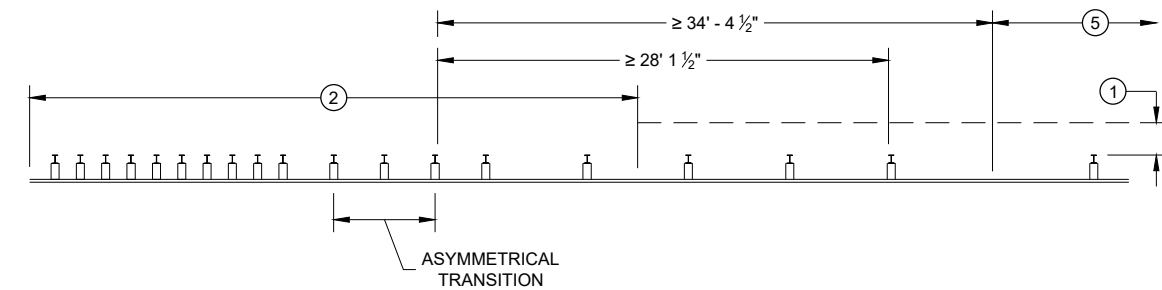
ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

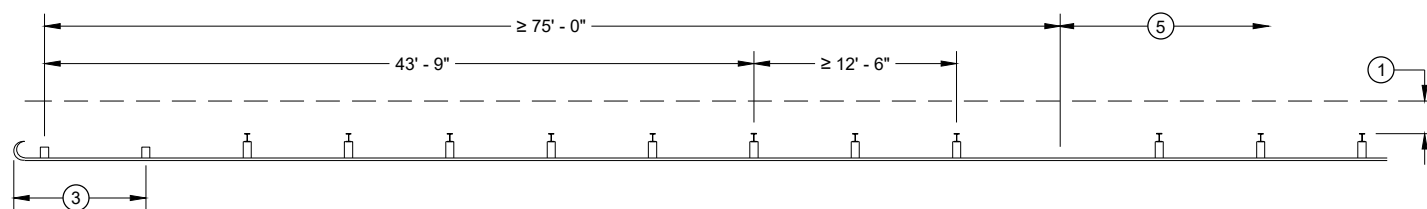
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



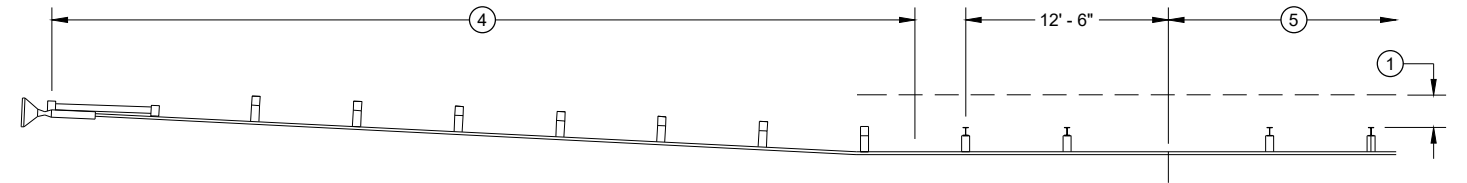
MISSING POST IN NORMAL BEAM GUARD RUN



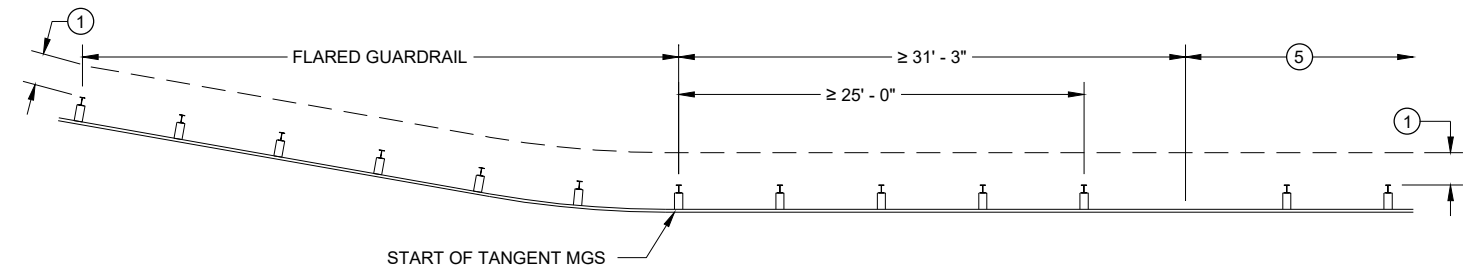
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



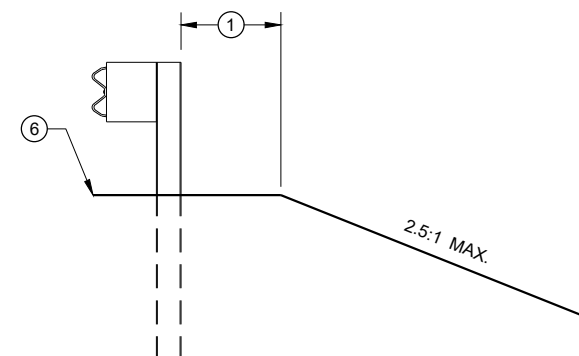
MISSING POST IN NORMAL BEAM GUARD RUN
NEAR TYPE 2 TERMINAL



MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR FLARED BEAM GUARD



CROSS SECTION VIEW

- (1) MINIMUM OF 2 FEET OF GRADING BEHIND POST.
- (2) SEE SDD 14B45 FOR MORE DETAILS.
- (3) SEE SDD 14B47 FOR MORE DETAILS.
- (4) SEE SDD 14B44 FOR MORE DETAILS.
- (5) SEE MISSING POST IN NORMAL BEAM GUARD RUN FOR DISTANCE TO NEXT MISSING POST AND AREA FOR WELL DRAINED, COMPACTED SOILS.
- (6) SEE PLAN FOR SHOULDER DESIGN.

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA

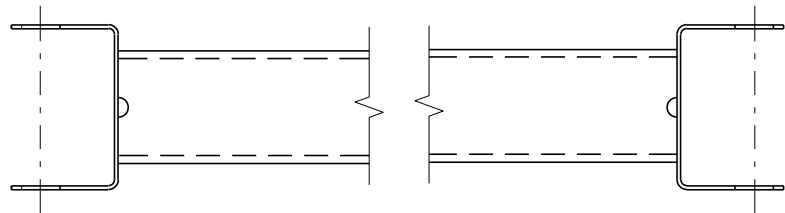
- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL) AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED
- (C) DIFFERENT MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS. SEE MANUFACTURER'S INFORMATION.
- (D) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF - TAPPING SCREWS. ONE SCREW PER CORNER.
- (E) HARDWARE MAY VARY BETWEEN MANUFACTURER. SEE MANUFACTURER'S DRAWING FOR INFORMATION.

DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

THE CENTER OF THE UPPER 3 1/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.

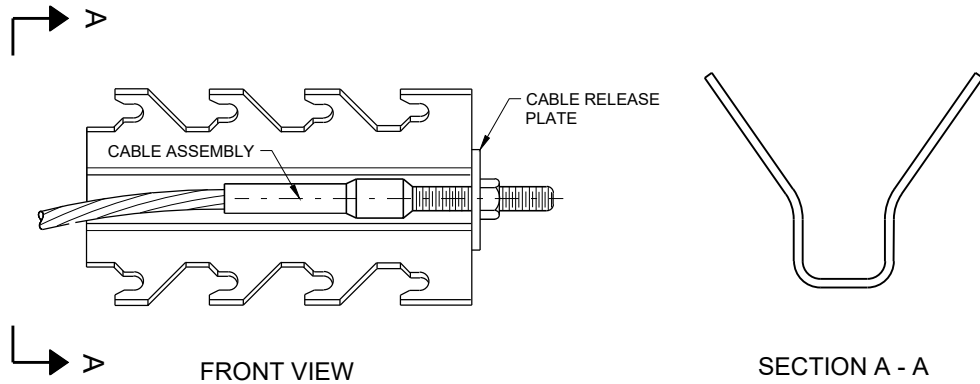


STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

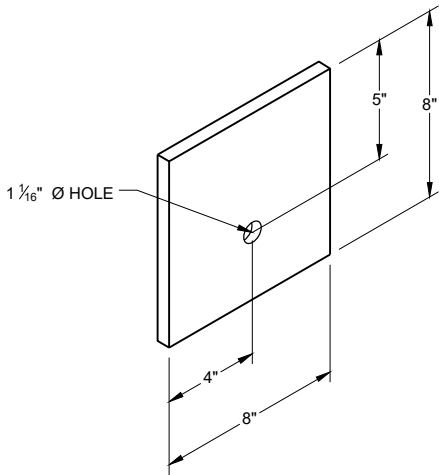


GENERIC GROUND STRUT^⑨ [Ⓔ]

BILL OF MATERIALS	
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED W-BEAM RAIL END PANEL, 12'-6" LONG.
⑪	STANDARD W-BEAM RAIL. MULTIPLE SECTIONS REQUIRED. SECTIONS VARY IN LENGTH.
⑫	IMPACT HEAD
⑬	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)
⑭	SOIL PLATE
⑮	UPPER POST NO. 2
⑯	LOWER POST NO. 2



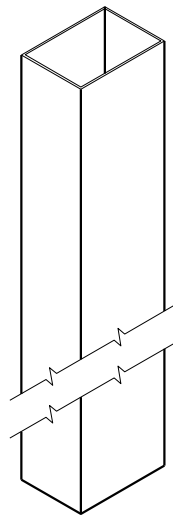
GENERIC ANCHOR CABLE BOX^⑨ [Ⓔ]



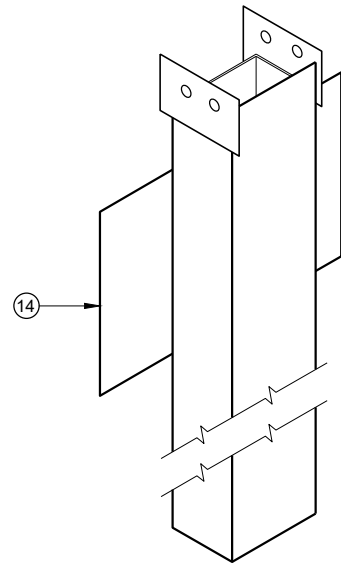
BEARING PLATE^⑥ [Ⓔ]

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

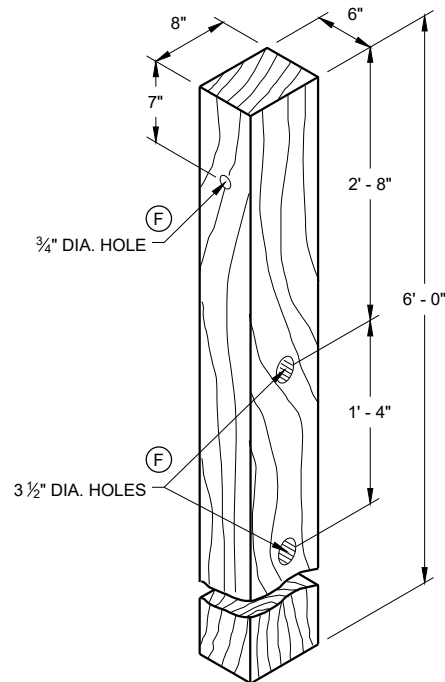
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



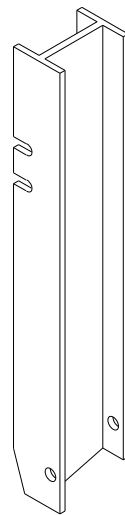
UPPER POST NO. 1 ⁽¹⁾ (E)



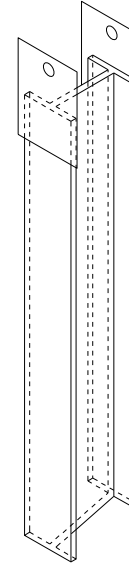
LOWER POST NO. 1 ⁽²⁾ (E)



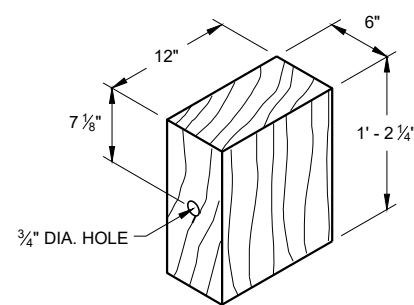
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



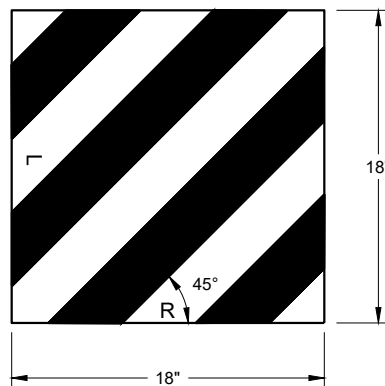
UPPER POST NO. 2 ⁽¹⁵⁾ (E)



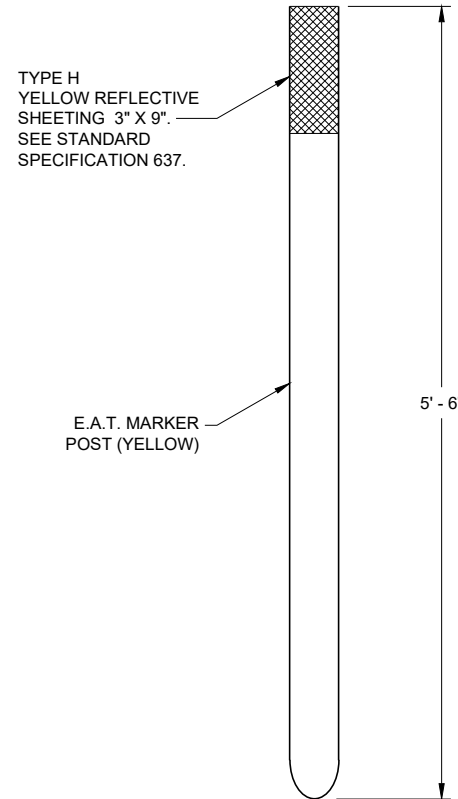
LOWER POST NO. 2 ⁽¹⁶⁾ (E)



WOOD BLOCKOUT ⁽⁴⁾
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2

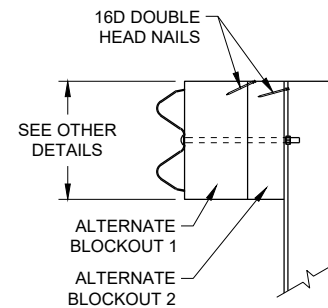


REFLECTIVE SHEETING DETAIL ^(E)
W5 - 59



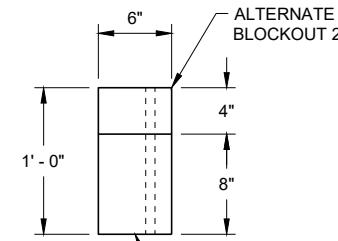
FRONT VIEW SIDE VIEW

E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

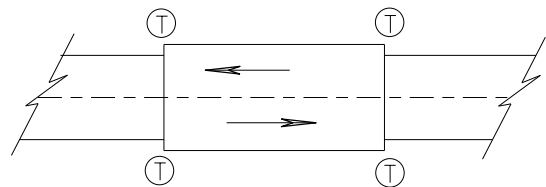


TOP VIEW

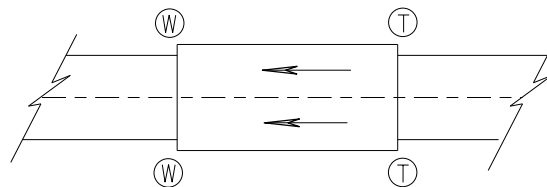
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE

GENERAL NOTES

IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

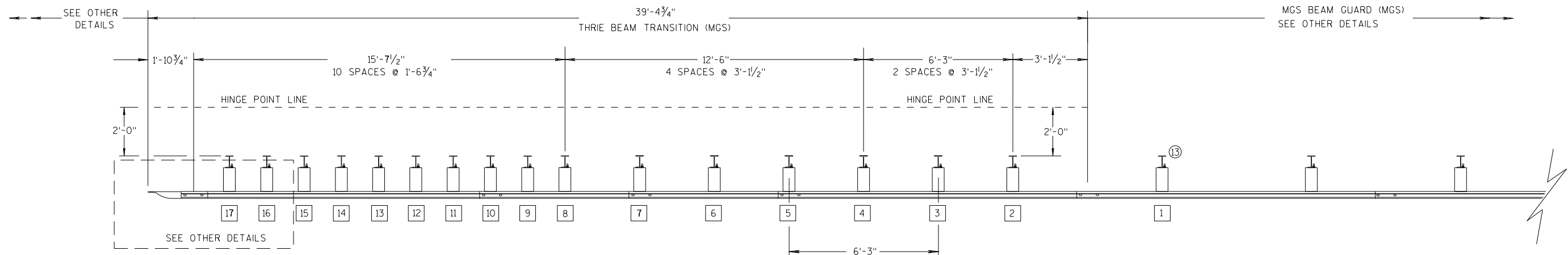
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

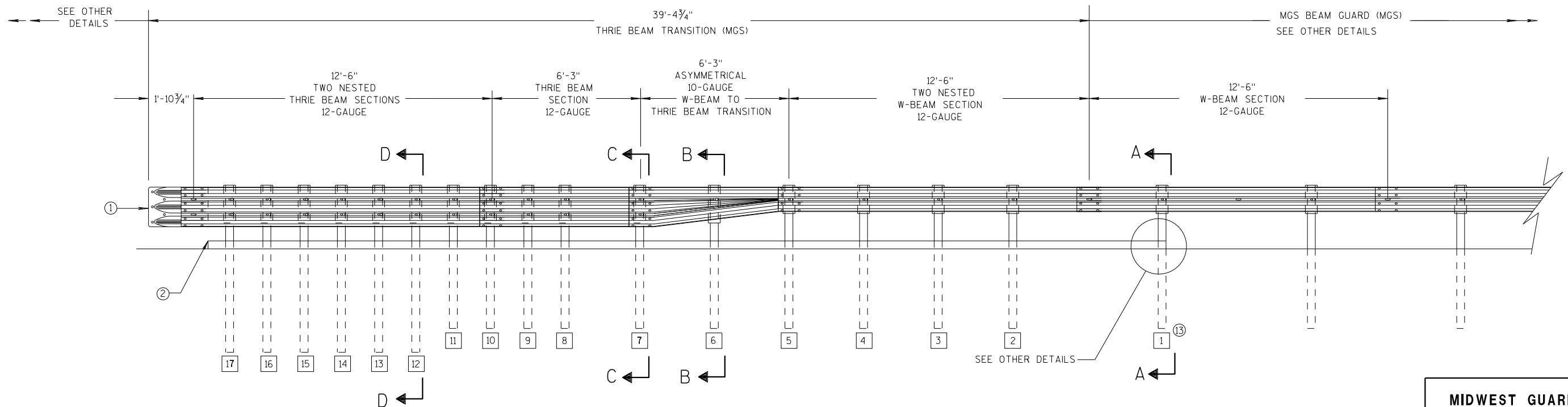
① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD14B42



PLAN VIEW



ELEVATION VIEW

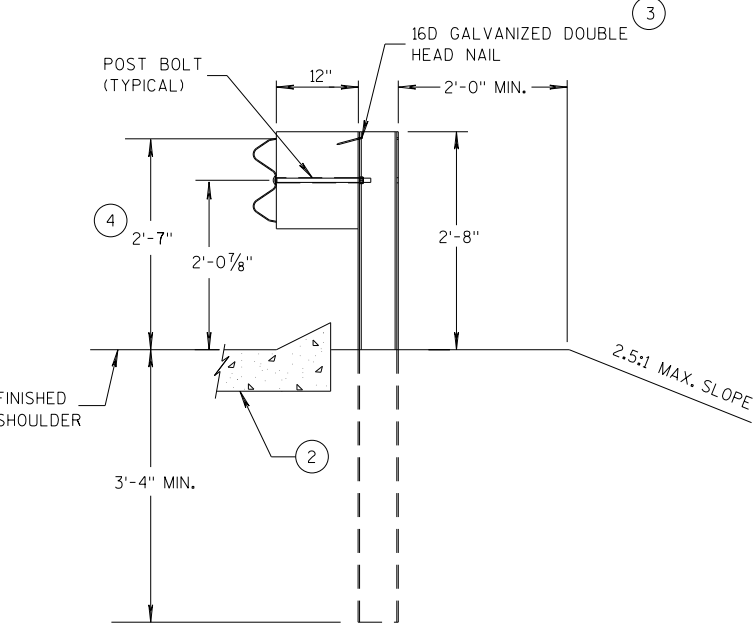
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

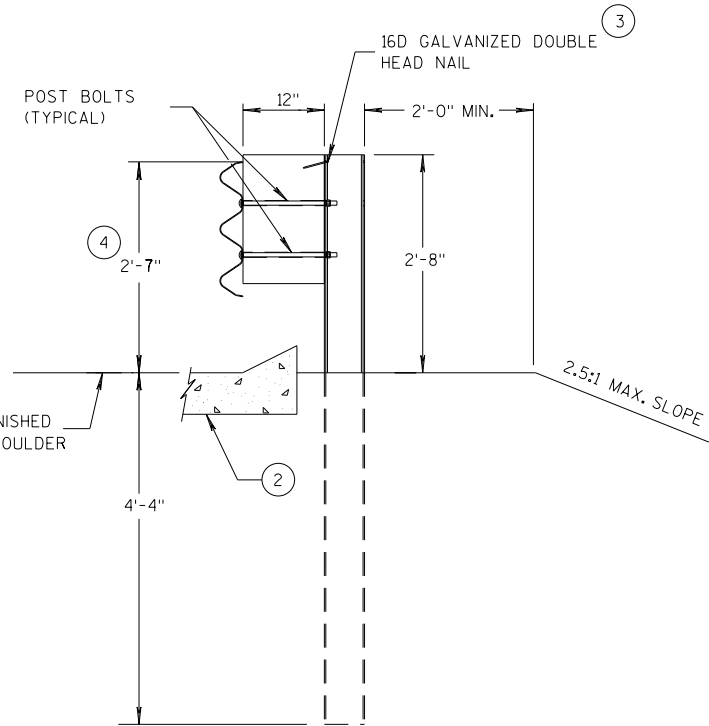
STATE OF WISCONSIN
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GENERAL NOTES

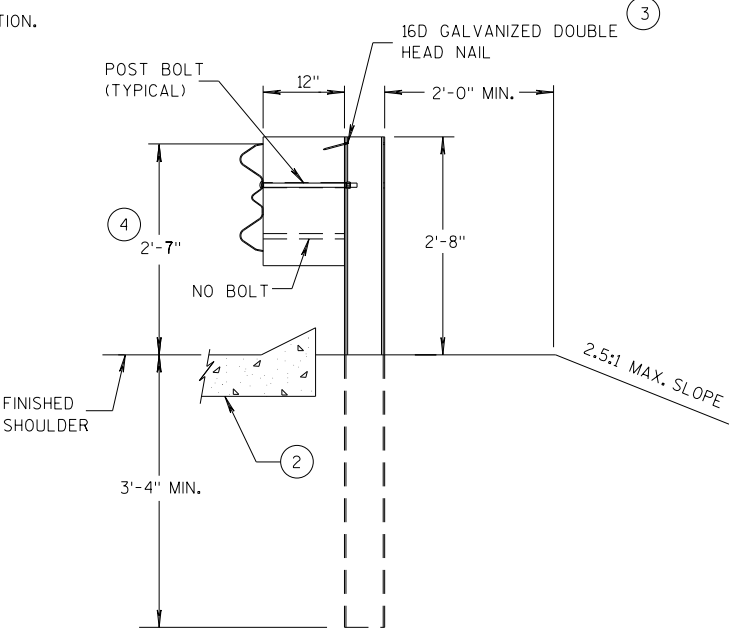
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm 1"$.
- 13 STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42



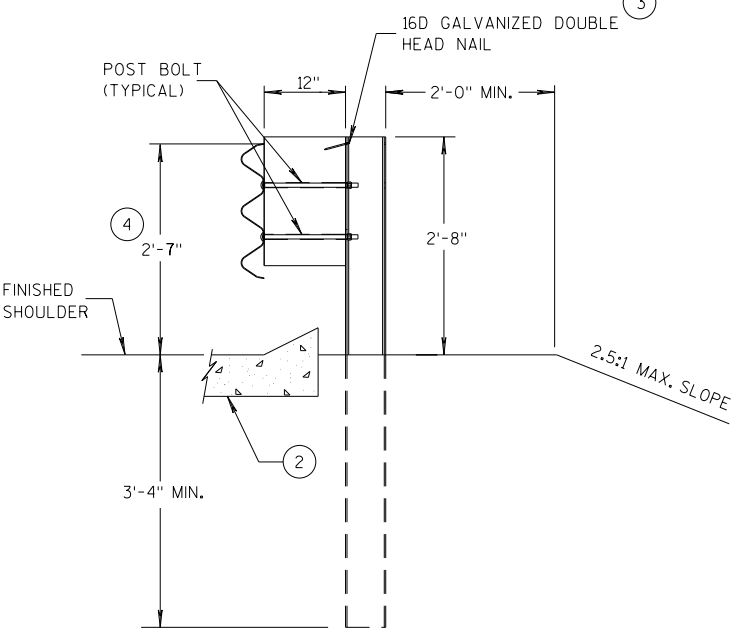
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

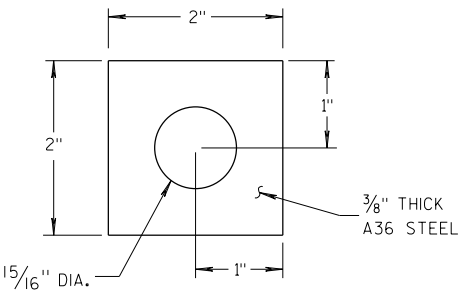
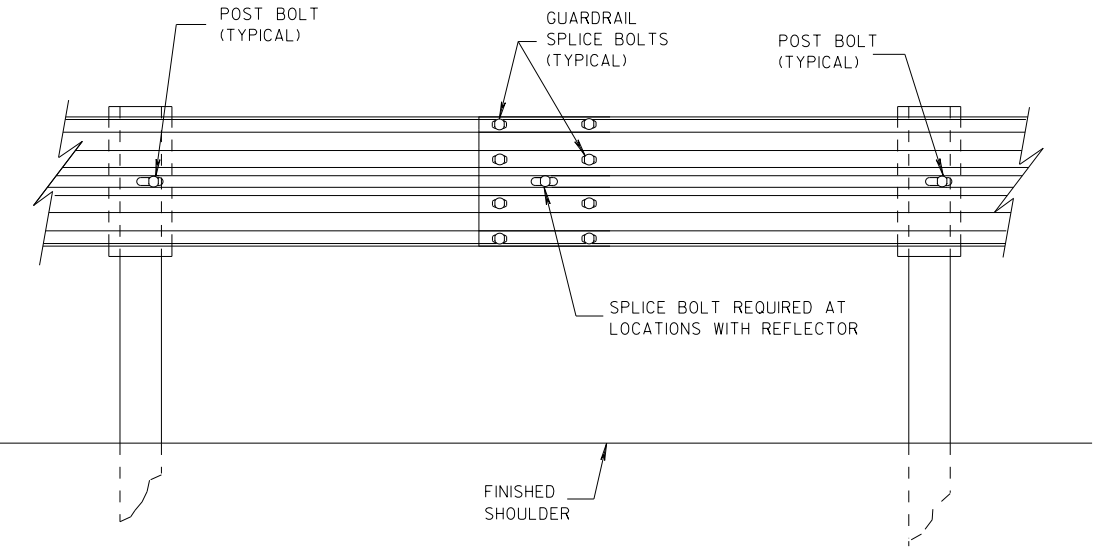
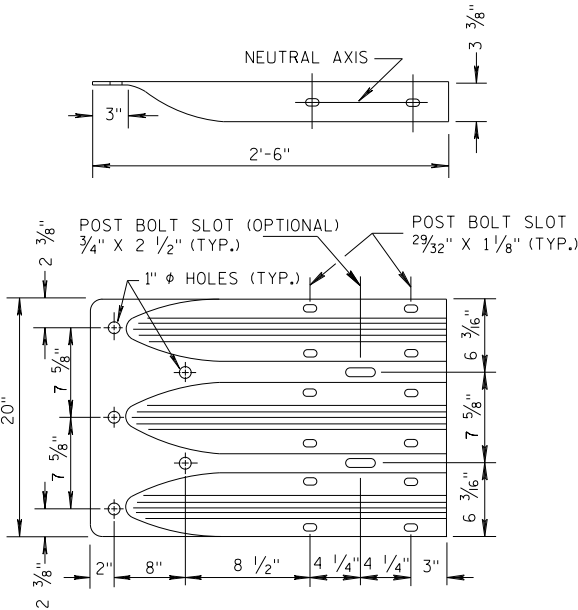


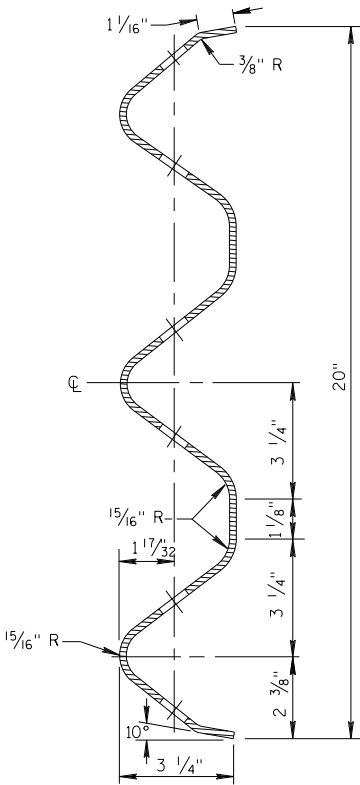
PLATE WASHER DETAIL



SPLICE DETAIL



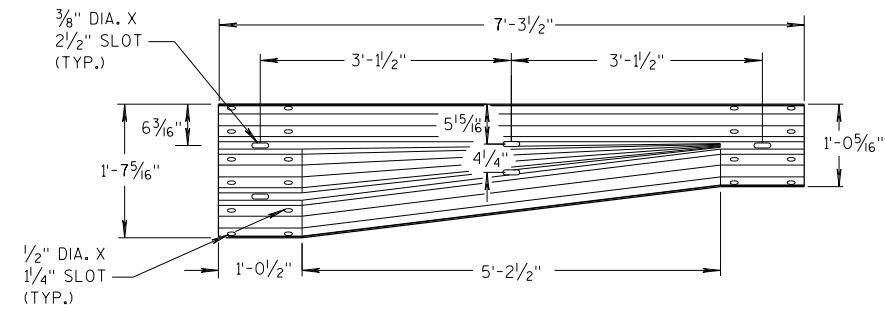
THRIE BEAM
TERMINAL CONNECTOR



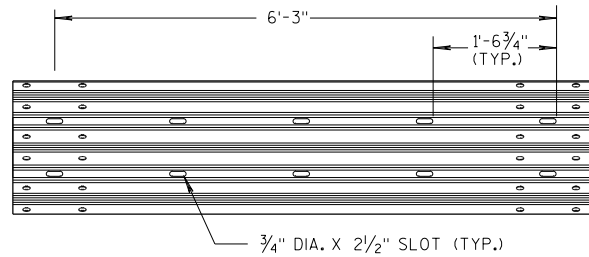
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

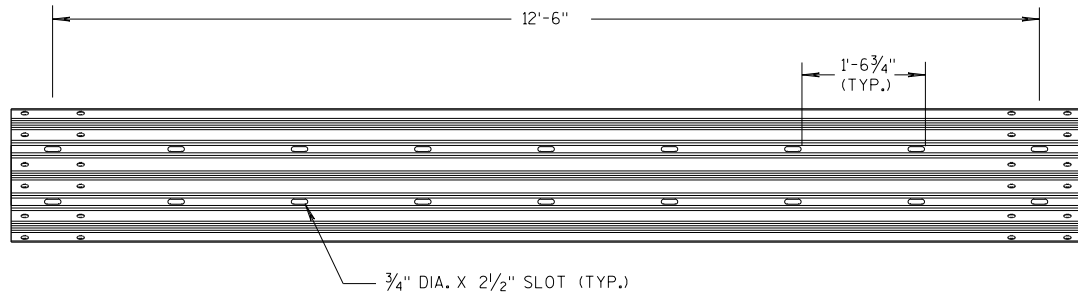
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



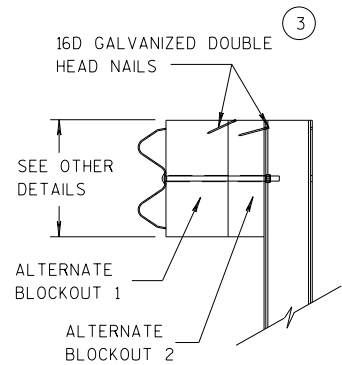
W-BEAM TO THRIE BEAM TRANSITION SECTION



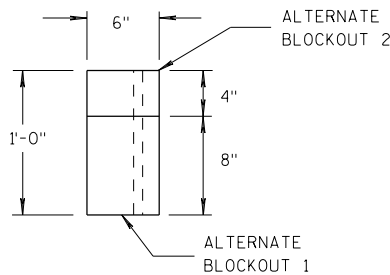
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

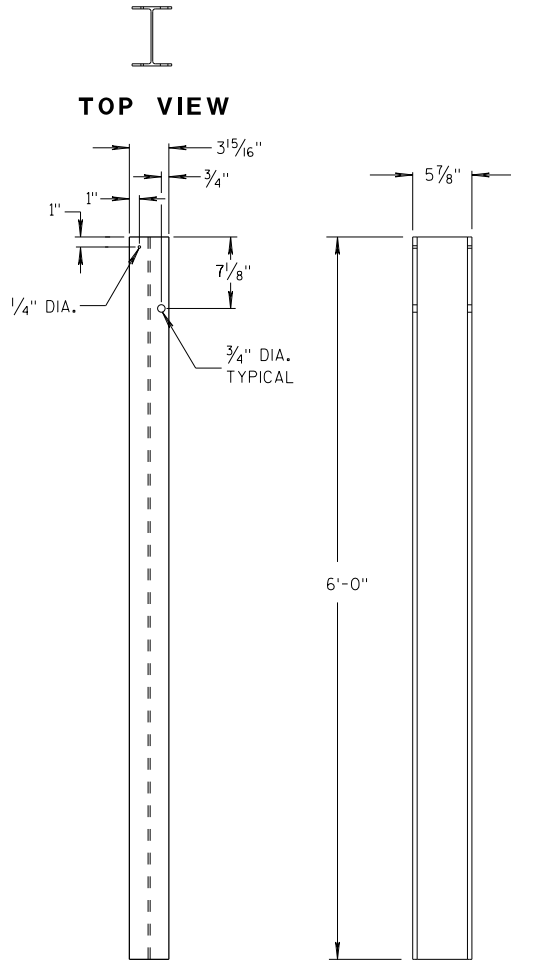


SIDE VIEW



TOP VIEW

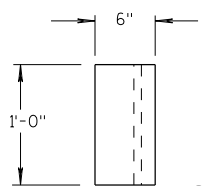
ALTERNATE WOOD BLOCKOUT DETAIL



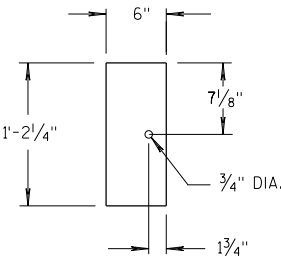
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

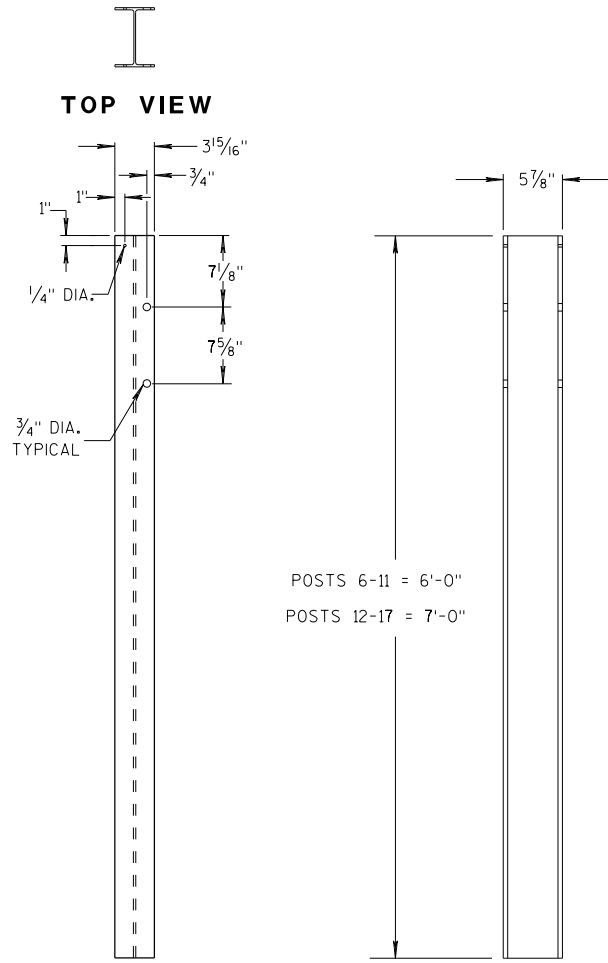


TOP VIEW



FRONT VIEW

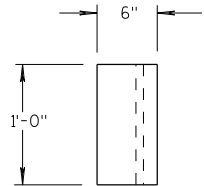
BLOCKOUT POSTS 1-5



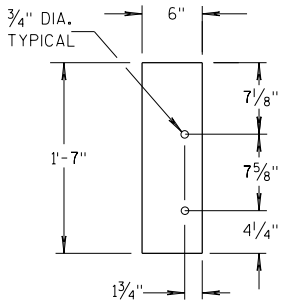
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

BOLT HOLES FOR POST ARE ON FRONT AND OF SIDE OF POST.

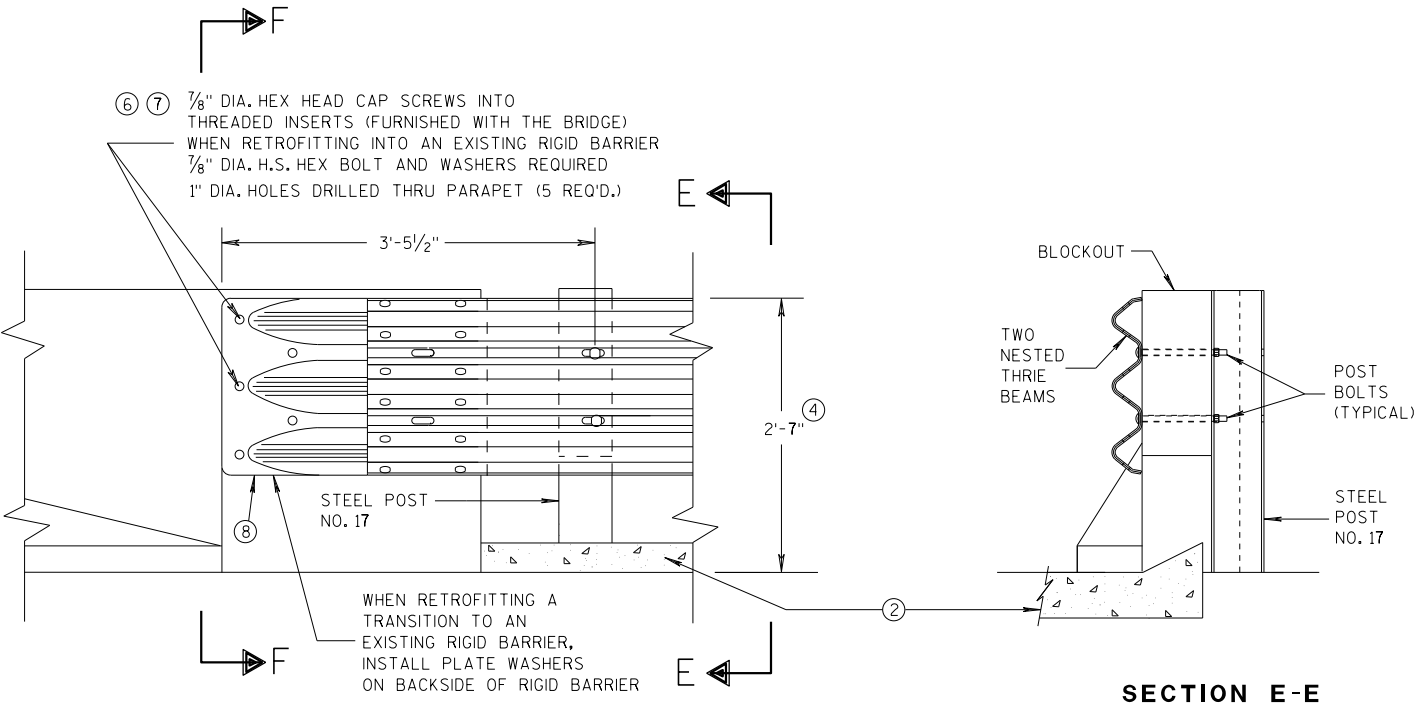
③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

⑤ WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.

⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

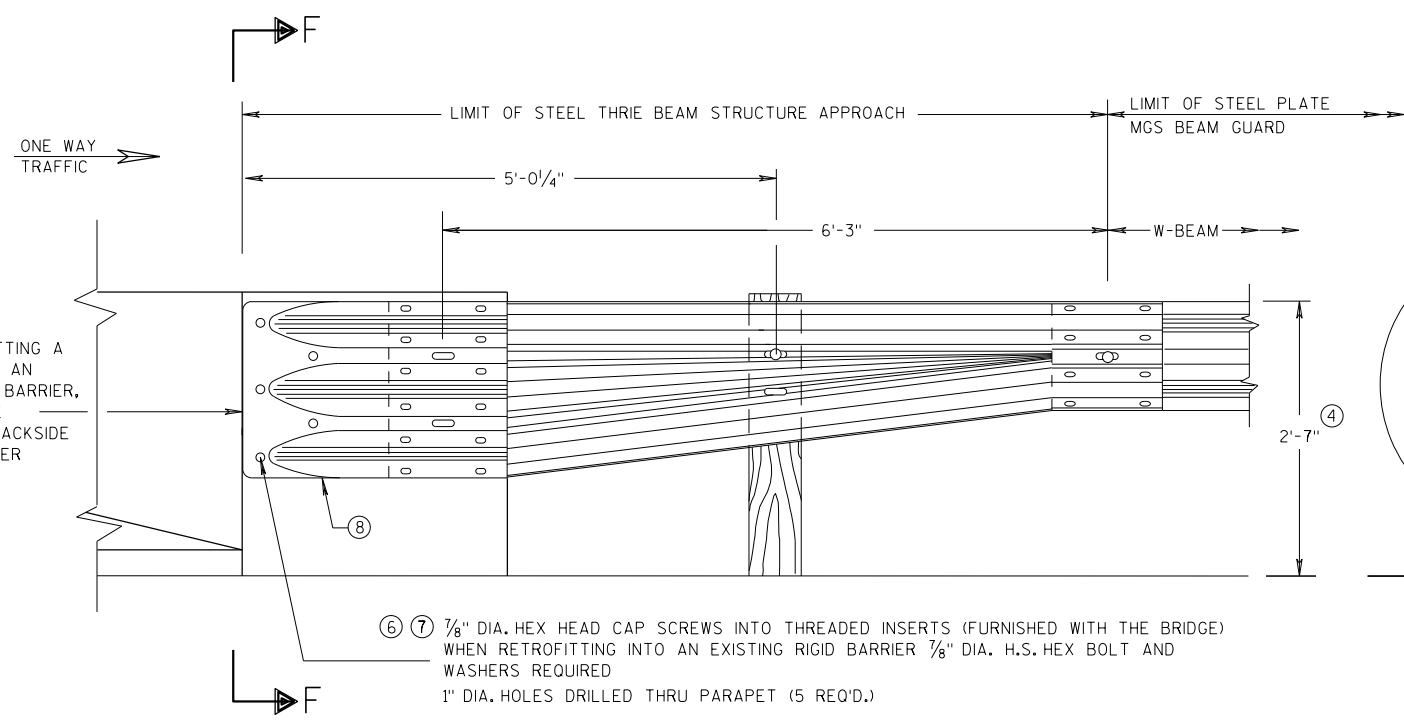
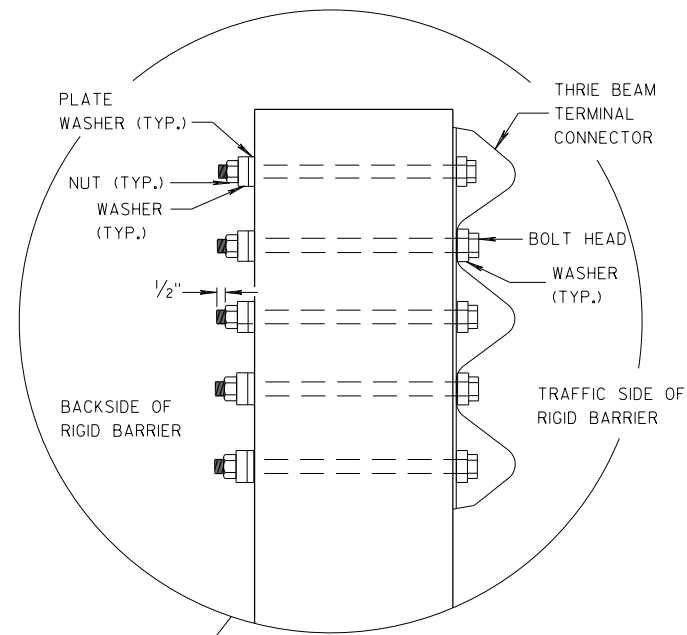
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

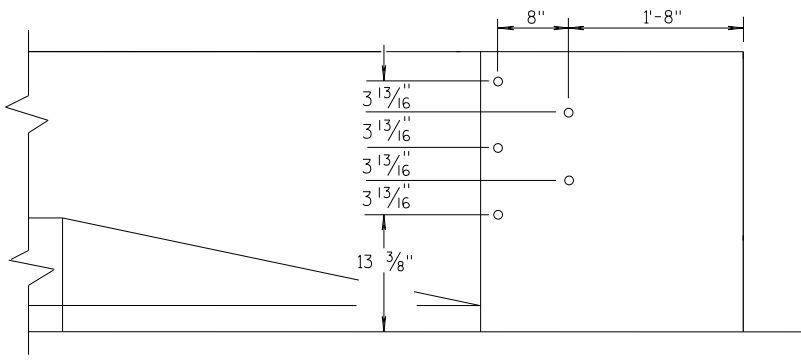


GENERAL NOTES

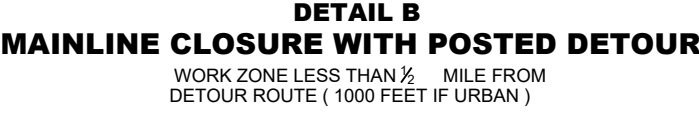
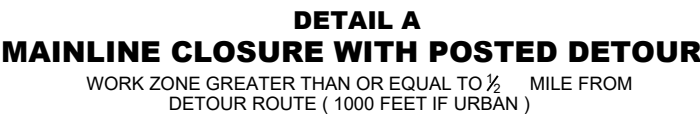
- THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ⑧ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".



SECTION F-F



MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

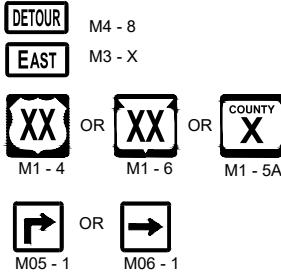


SPEED LIMIT (MPH)	"STOP AHEAD" ADVANCE WARNING DISTANCE (FT)
25	200
30	200
35	350
40	350
45	500
50	550
55	750

SEE SDD 15C2-SHEET "b"
FOR GENERAL NOTES
AND FOOTNOTES ① THROUGH ⑦



	SIGN ON PERMANENT SUPPORT
	TYPE III BARRICADE
	TYPE III BARRICADE WITH ATTACHED SIGN
	TYPE "A" WARNING LIGHT (FLASHING)
	WORK AREA
	FLAGS, 16" X 16" MIN. (ORANGE)

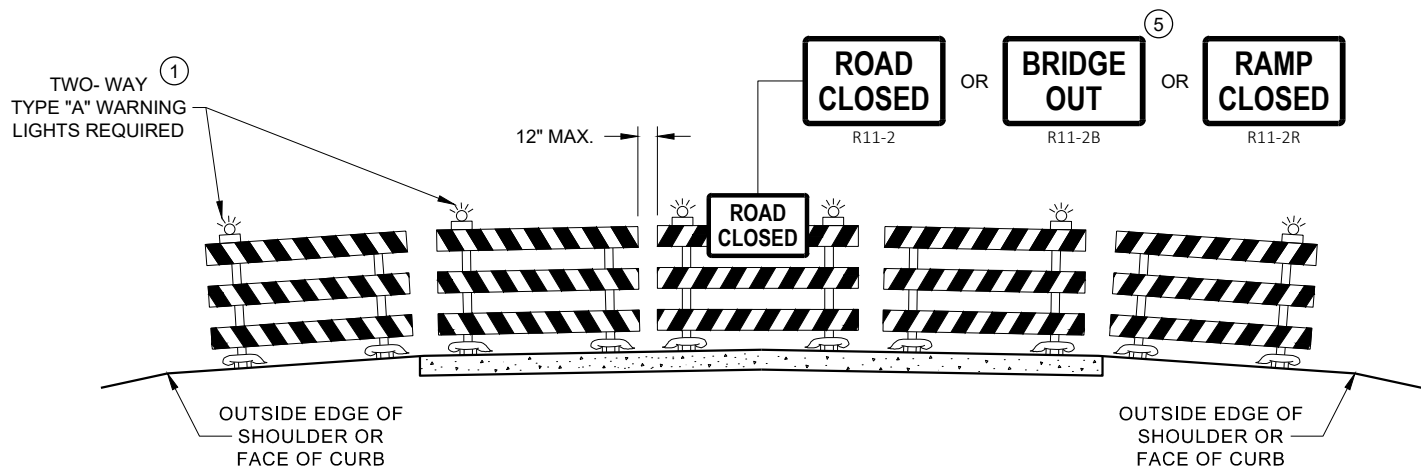


BARRICADES AND SIGNS FOR MAINLINE CLOSURES

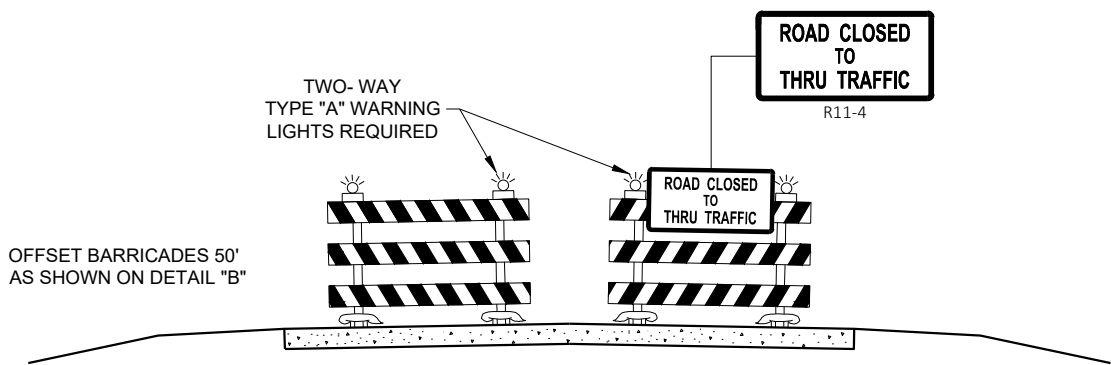
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEER



DETAIL D
ROAD CLOSURE BARRICADE DETAIL
APPROACH VIEW



DETAIL E
LANE CLOSURE BARRICADE DETAIL
APPROACH VIEW

SEE SDD 15C2 - SHEET "a" FOR LEGEND

GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND BARRICADES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE", SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

BARRICADES THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY RE-ESTABLISHED UPON COMPLETION OF THE OPERATION, OR FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

ALL TYPE III BARRICADES SHALL HAVE RAILS REFLECTORIZED ON BOTH FACES. STRIPES SHALL BE PROPERLY SLOPED DOWN TOWARD THE TRAFFIC SIDE OR AS SHOWN IN THE ROAD CLOSURE BARRICADE DETAIL "D" FOR FULL ROAD CLOSURES.

TYPE "A" LOW - INTENSITY FLASHING WARNING LIGHTS SHALL BE VISIBLE ON BOTH SIDES OF THE BARRICADE.

THE R11 - 2, R11 - 3, M4 - 9, R11 - 4, AND R10 - 61 SIGNS PLACED ON THE BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE RAIL OR BOTTOM RAILS.

"WO" AND "MO" SIGNS ARE THE SAME AS "W" AND "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:

- R11 - 2 SHALL BE 48" X 30"
- R11 - 3 SHALL, R11 - 4 AND R10 - 61 SHALL BE 60 " X 30"
- M4 - 9 SHALL BE 30" X 24"
- M3 - X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4 - 8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1 - 4, M1 - 5A AND M1 - 6 SHALL BE 24" X 24" (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS)
- MO5 - 1 AND MO6 - 1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- D1 - X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
- R1 - 1 SHALL BE 36" X 36"

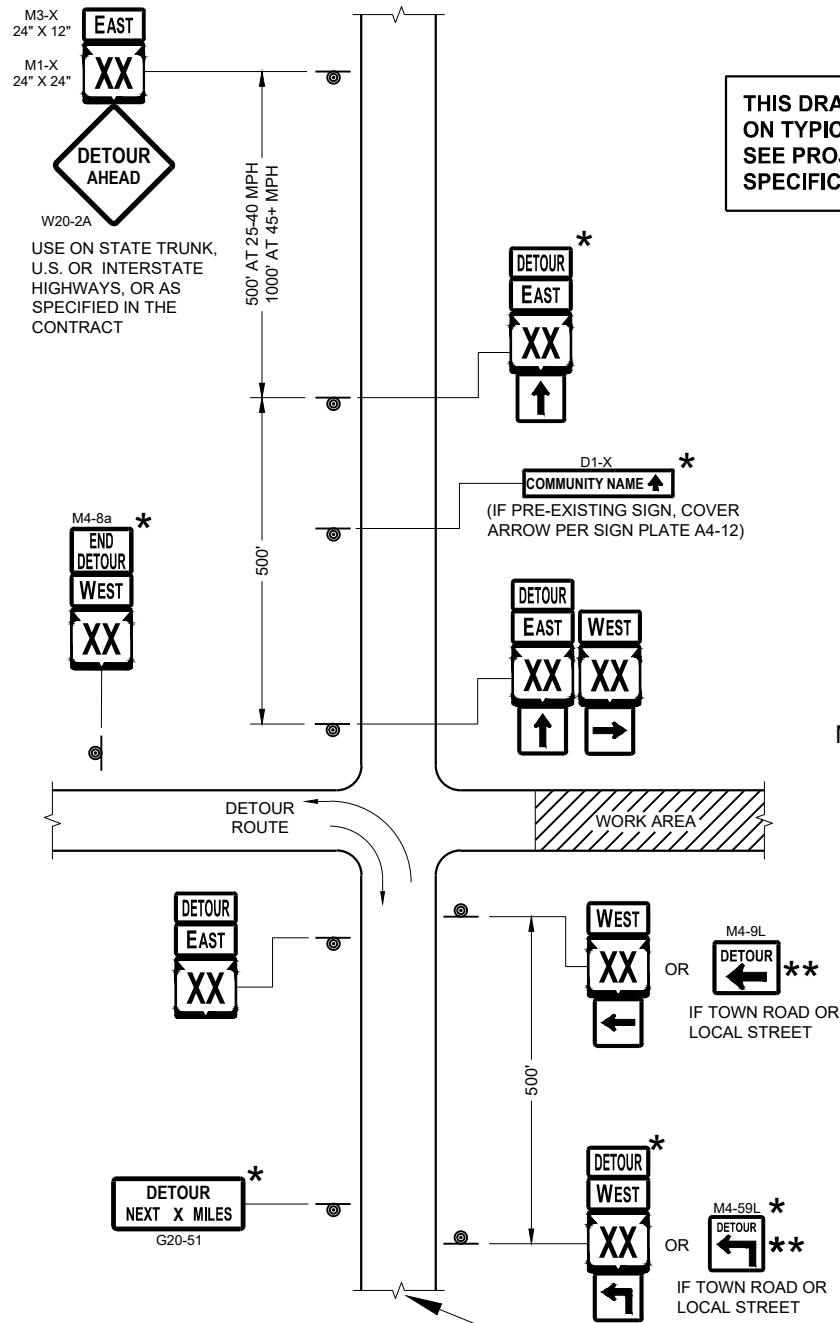
- 1 TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8 FOOT LIGHT SPACING).
- 2 THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT AN INTERSECTION.
- 3 FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL "D".
- 4 FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL "E".
- 5 FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11 - 2 AND R11 - 3 SIGNS.
- 6 INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.
- 7 "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

BARRICADES AND SIGNS
FOR
VARIOUS CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

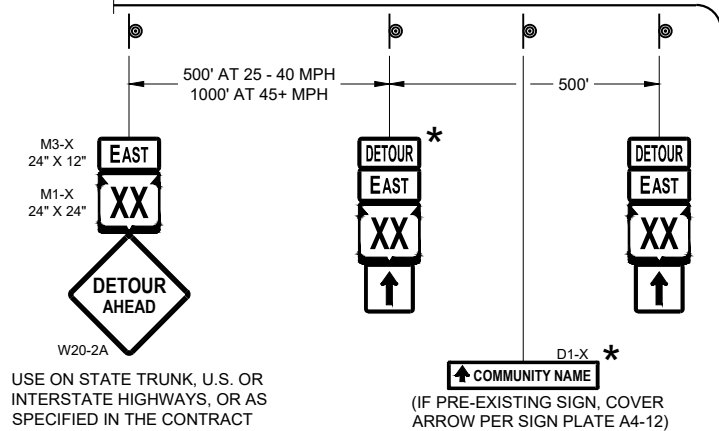
FHWA



SEE SPECIFIC PROJECT DETOUR
SIGNING DETAIL SHEETS AND
DETAIL A OR B ON SDD SHEET 15C02 - SHEET "a"

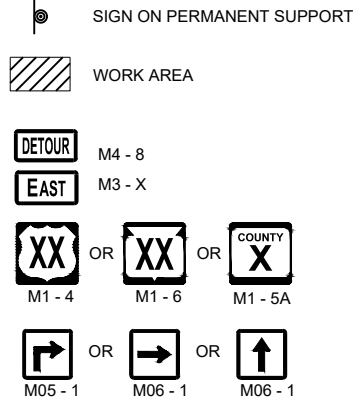
THIS DRAWING PROVIDES GENERAL GUIDANCE
ON TYPICAL DETOUR SIGN LAYOUT AND SPACING.
SEE PROJECT DETOUR SIGNING SHEETS FOR
SPECIFIC DETAILS FOR EACH PROJECT.

MATCH POINT



DETAIL F
DETOUR SIGNING

LEGEND



GENERAL NOTES

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. MODIFY EXISTING SIGNS WHERE POSSIBLE.

THE SPACING BETWEEN TRAFFIC CONTROL AND DETOUR SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

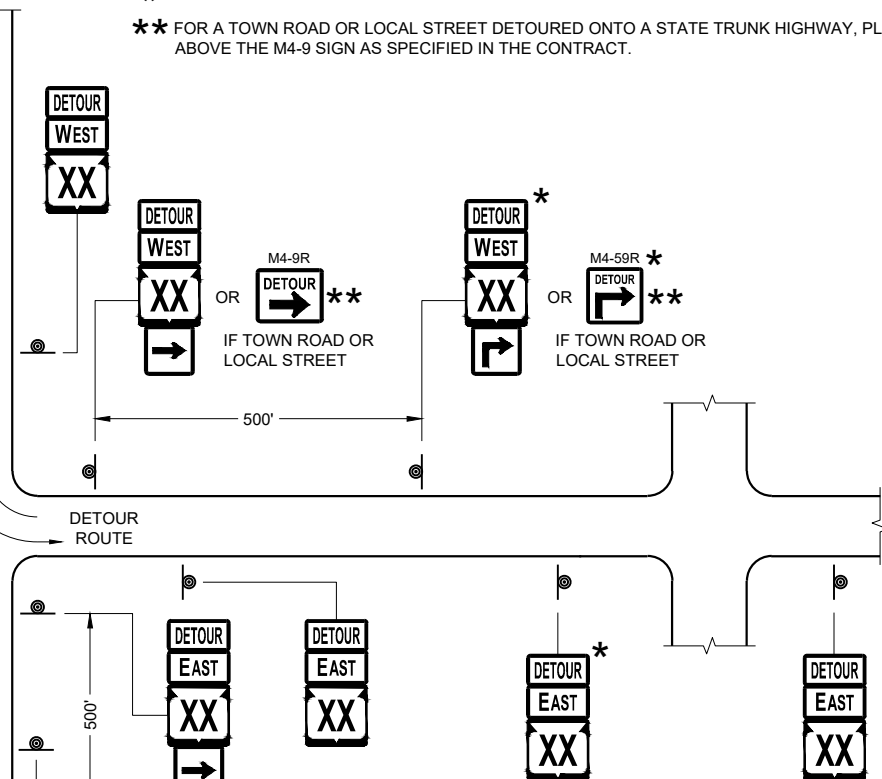
"MO" SIGNS ARE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGN SIZES SHALL BE AS FOLLOWS:

- M3-X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4-8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1-4, M1-5A AND M1-6 SHALL BE 24" X 24" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- M05-1 AND M06-1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- M4-9 AND M4-59 SHALL BE 30" X 24"
- M4-8a SHALL BE 24" X 18"
- G20-51 SHALL BE 60" X 24"
- W20-2A SHALL BE 48" X 48"
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

* OPTIONAL SIGNS. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS.

** FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.

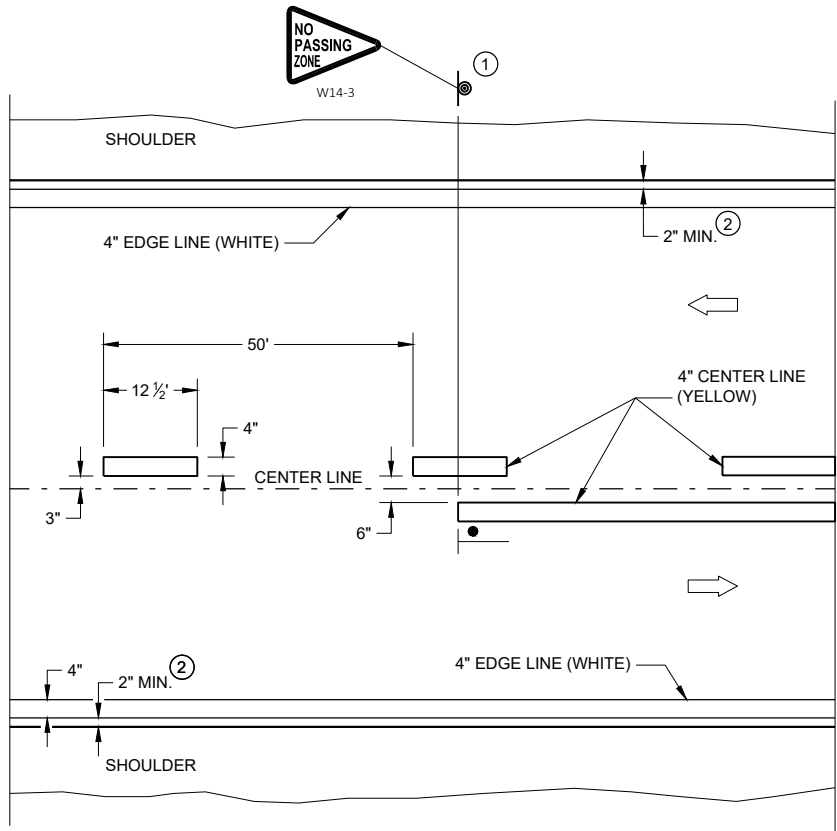


PLACE SIGNS BEYOND INTERSECTIONS
WITH STATE OR COUNTY TRUNK
HIGHWAYS OR AT 4 MILE MAXIMUM
SPACING (4 BLOCKS IF URBAN AREA)

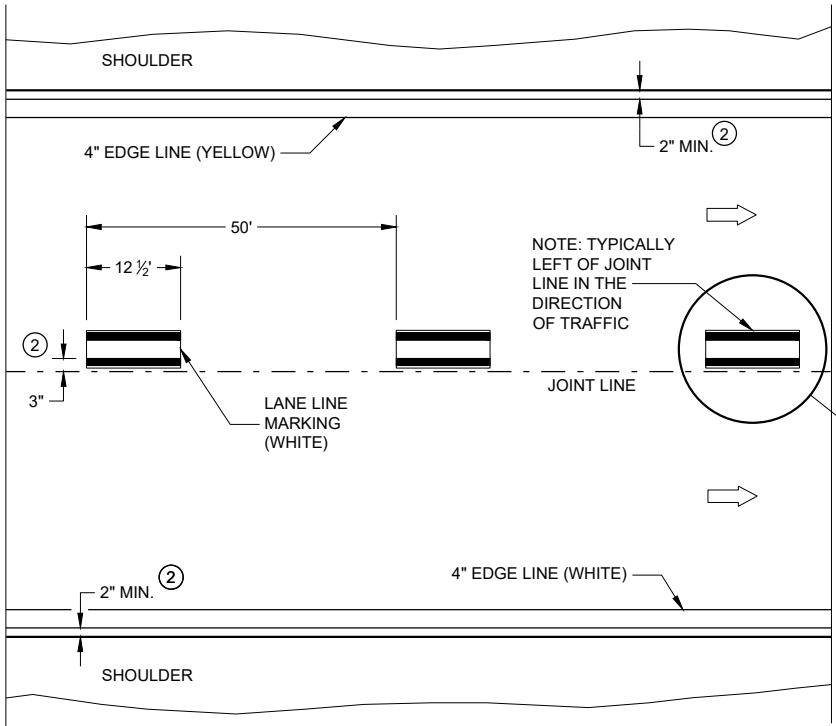
DETOUR SIGNING
FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER
FHWA

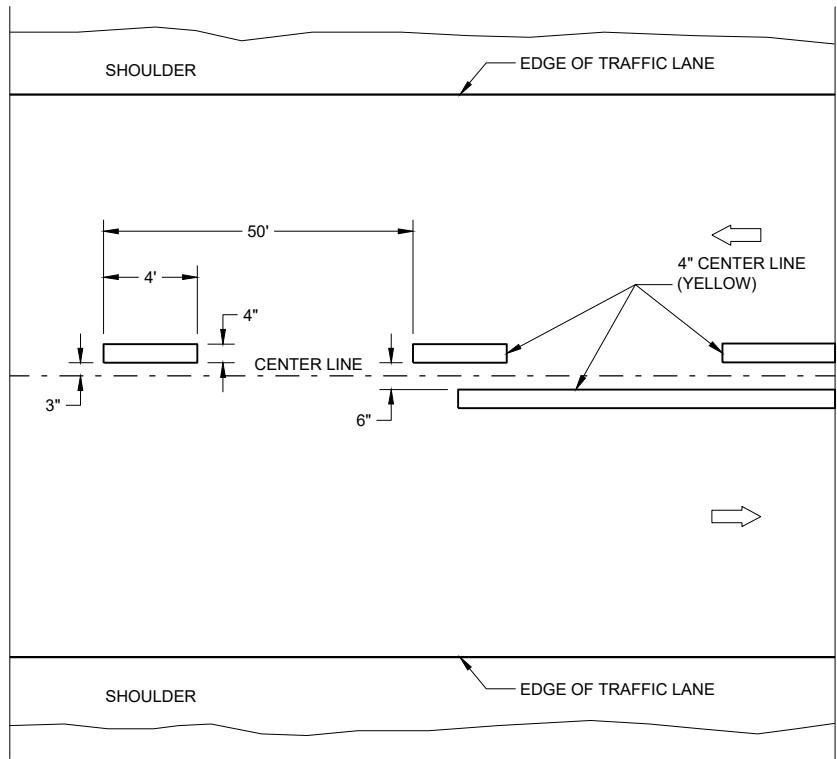


TWO WAY TRAFFIC

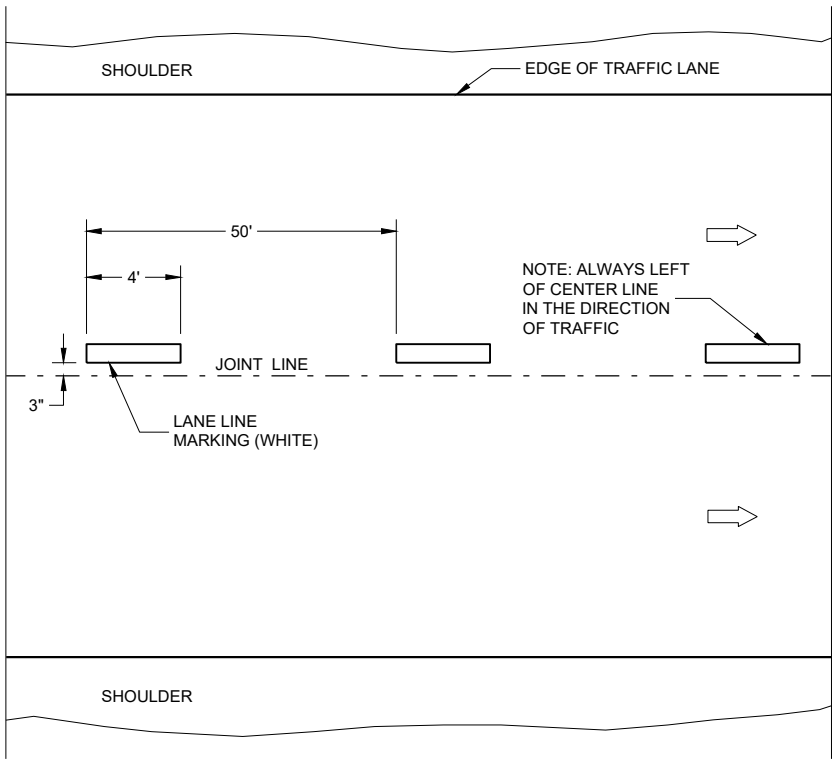


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

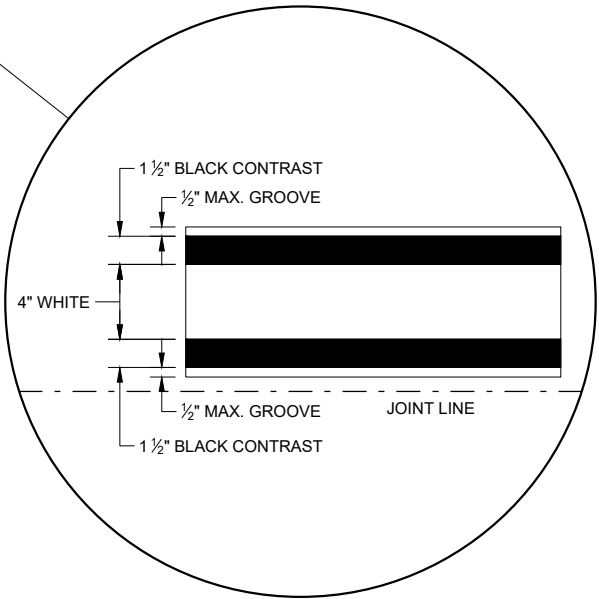
GENERAL NOTES

DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

- ① LOCATE THE NO PASSING ZONE W14-3 SIGN WITH 50 FEET OF THE "T" MARKING
- ② MEASURE FROM EDGE OF MARKING TO JOINT LINE. THIS DOES NOT INCLUDE SPACE NEEDED FOR GROOVING OPERATIONS.

LEGEND

- "T" MARKING
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC



LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020
DATE
/S/ Matthew Rauch
STATEWIDE SIGNING AND MARKING
ENGINEER
FHWA

* PROVIDE FOR THRIE BEAM GUARD RAIL ATTACHMENT. AT UNUSED ANCHOR ASSEMBLIES CAULK HOLES SHUT WITH "100% SILICONE CAULK".

① INDICATES WING NUMBER
② INDICATES GIRDER NUMBER

NOTE: SURFACE DRAIN ANCHORS REQUIRED ON WING WALLS 1 & 2.

BENCH MARK

NO.	STATION	DESCRIPTION	ELEV.
1	173+99.87	DISK LOCATED ON NE CORNER OF BRIDGE	22.62' LT 800.298

STATE PROJECT NUMBER

1400-00-84

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HS-20
INVENTORY RATING FACTOR: HS-17
OPERATING RATING FACTOR: HS-34
WISCONSIN STANDARD PERMIT VEHICLE (WIS.-SPV): 250 (KIPS)

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 POUNDS PER SQUARE FOOT.

MATERIAL PROPERTIES:

CONCRETE MASONRY: _____ f'c = 4,000 P.S.I.
SUPERSTRUCTURE _____ f'c = 3,500 P.S.I.
ALL OTHER _____

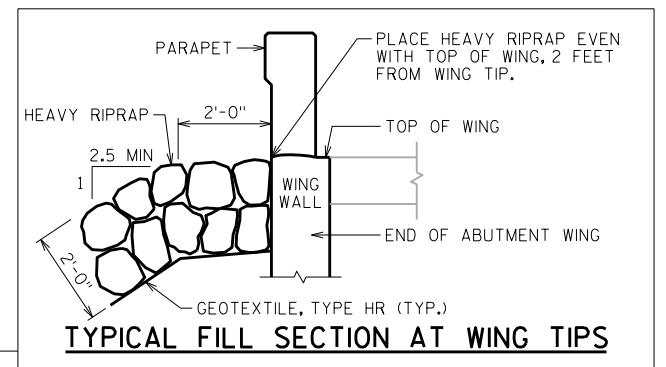
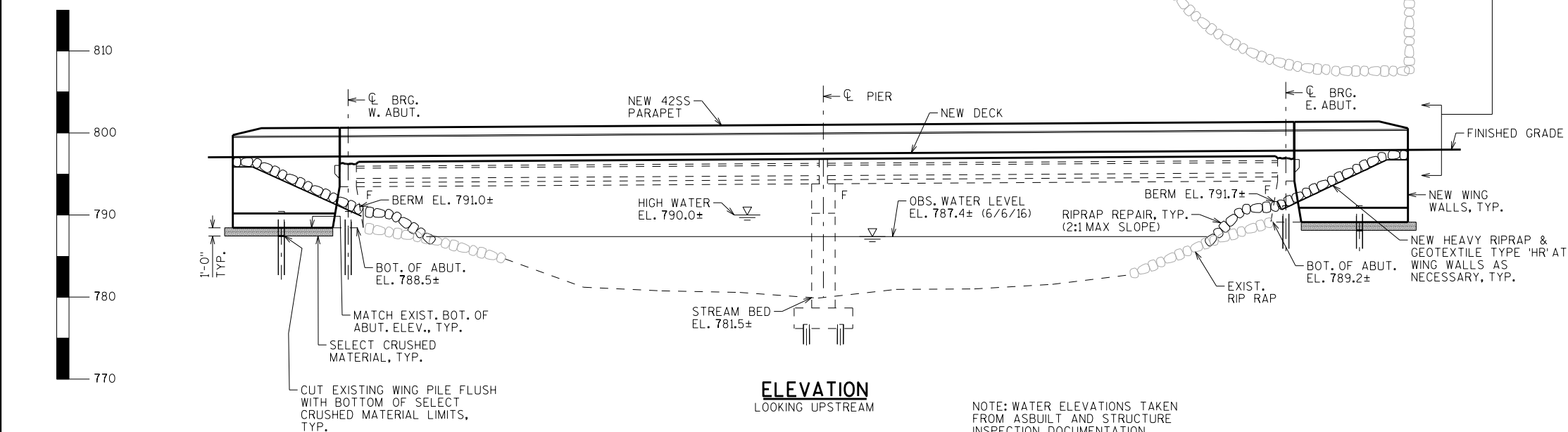
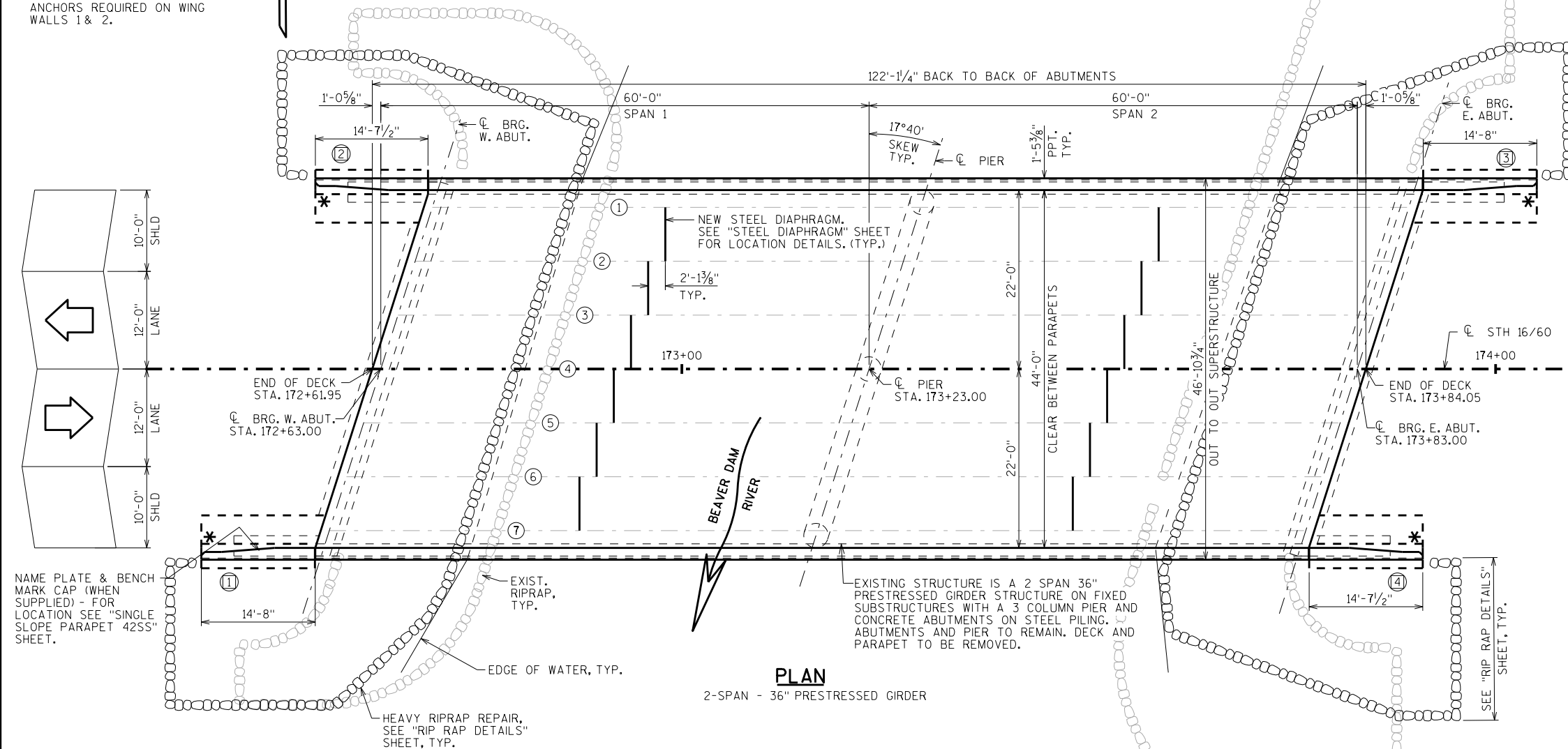
BAR STEEL REINFORCEMENT: _____ fy = 60,000 P.S.I.
GRADE 60 _____

TRAFFIC VOLUME

STH 16/60
ADT = 3800 (2021)
R.D.S. = 60 M.P.H.

LIST OF DRAWINGS

1. NEW DECK
2. CROSS SECTION & QUANTITIES
3. ABUTMENT REMOVAL DETAILS
4. WEST ABUTMENT WING DETAILS
5. EAST ABUTMENT WING DETAILS
6. CONCRETE SURFACE REPAIR DETAILS
7. STEEL DIAPHRAGM
8. SUPERSTRUCTURE PLAN
9. SUPERSTRUCTURE CROSS SECTION
10. SUPERSTRUCTURE DETAILS
11. SINGLE SLOPE PARAPET 42SS
12. RIP RAP DETAILS



STRUCTURE DESIGN CONTACTS:

ADAM SWIERCZEK (608) 267-4593
AARON BONK (608) 261-0261

NO.	DATE	REVISION	BY
BUREAU OF STRUCTURES			
ACCEPTED <i>William C. Dzielinski</i> 7/30/19 CHIEF STRUCTURES DESIGN ENGINEER DATE			
STRUCTURE B-14-60			
STH 16/60 OVER BEAVER DAM RIVER			
COUNTY	DODGE	TOWN	LOWELL
DESIGN SPEC. REHABILITATION	N/A		
DESIGNED BY	ABS	DESIGNED CK'D.	SEW
DRAWN BY	WWR	PLANS CK'D.	ABS
NEW DECK			SHEET 1 OF 12

I.D. 1400-00-04A

DATE: MAY 2019

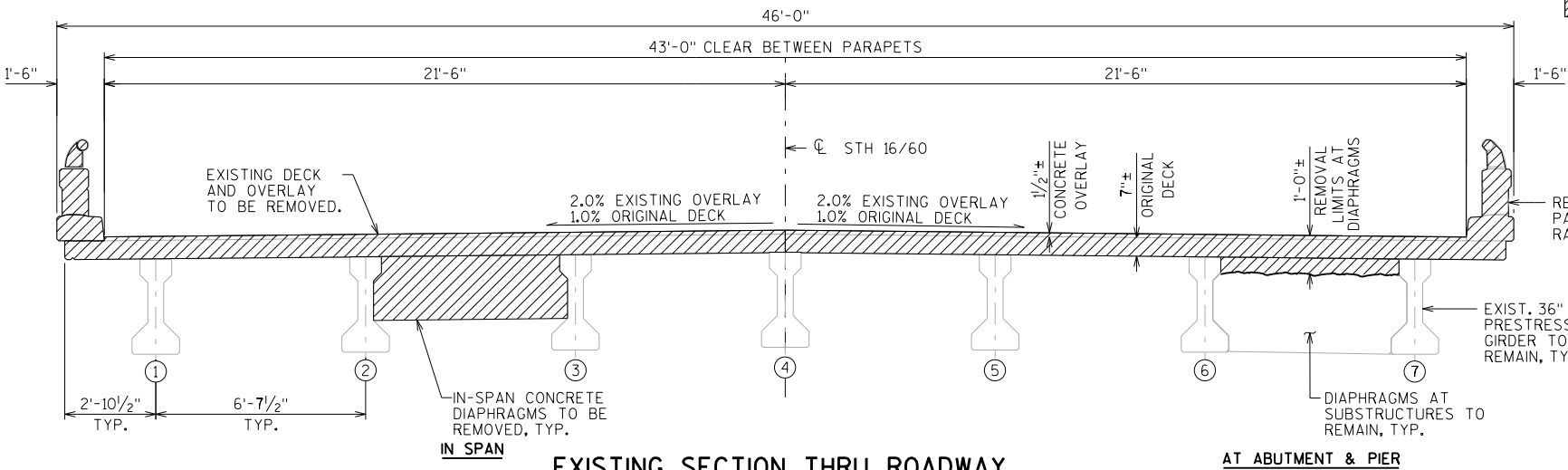
SCALE = 8.00

GENERAL NOTES

- DRAWINGS SHALL NOT BE SCALED.
- BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS OTHERWISE SHOWN OR NOTED.
- THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.
- BEVEL EXPOSED EDGES OF CONCRETE $\frac{3}{4}$ " UNLESS OTHERWISE NOTED.
- THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-14-60" SHALL BE THE EXISTING GROUNDLINE.
- AT THE BACK FACE OF WING WALLS ALL VOLUME WHICH CANNOT BE PLACED BEFORE WING WALL CONSTRUCTION AND IS NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL.
- THE QUANTITY FOR BACKFILL STRUCTURE IS CALCULATED BASED ON THE DETAIL SHOWN IN THE PLANS.
- PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE ENTIRE EXPOSED TOP OF DECK AND TO THE VERTICAL AND HORIZONTAL SURFACES OF THE PAVING NOTCHES AT ABUTMENT DIAPHRAGMS. ALSO INCLUDED ARE TOP HORIZONTAL SURFACES OF WINGS.
- PIGMENTED PROTECTIVE SURFACE SEALER TO BE APPLIED TO THE FRONT FACE AND THE TOP OF THE PARAPETS, INCLUDING PARAPETS ON WING WALLS.
- THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH HEAVY RIPRAP AND GEOTEXTILE TYPE "HR" TO THE EXTENT SHOWN ON SHEET 1 AND "RIP RAP DETAILS"
- THE GIRDER HAUNCH CONCRETE QUANTITY IS BASED ON THE AVERAGE HAUNCH OF 4.00".
- DIMENSIONS SHOWN ARE BASED ON THE ORIGINAL STRUCTURE PLANS.
- THE CONTRACTOR SHALL SUPPLY A NEW NAME PLATE IN ACCORDANCE WITH SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS AND THE STANDARD DETAIL DRAWINGS. NAME PLATE TO SHOW ORIGINAL CONSTRUCTION YEAR 1967.

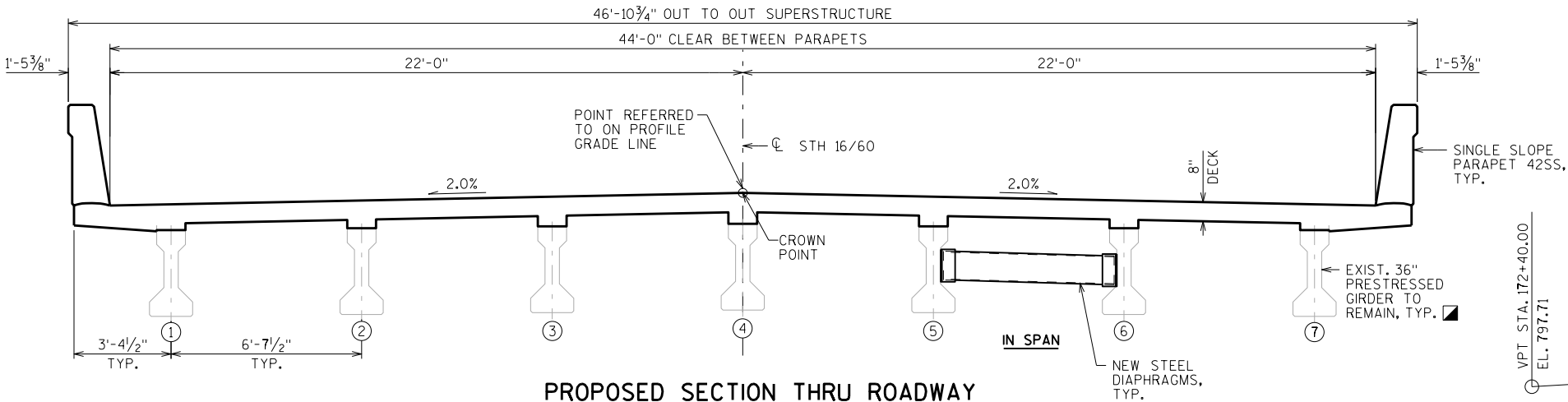
CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE TOP FLANGE OF GIRDER AND SHEAR STIRRUPS. THE ENGINEER SHALL INSPECT THE GIRDERS PRIOR TO PLACING THE DECK.

ASBESTOS MATERIAL IS IN GASKETS UNDER RAILING.

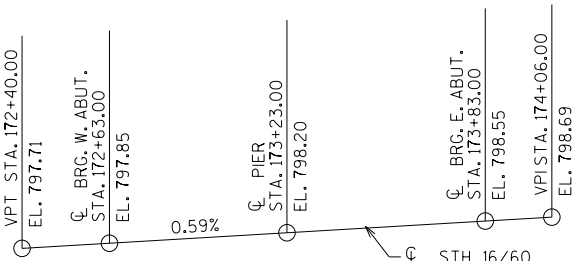


EXISTING SECTION THRU ROADWAY
LOOKING EAST

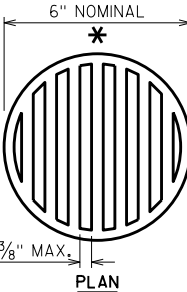
AT ABUTMENT & PIER



PROPOSED SECTION THRU ROADWAY
LOOKING EAST



PROFILE GRADE LINE - STH 16/60

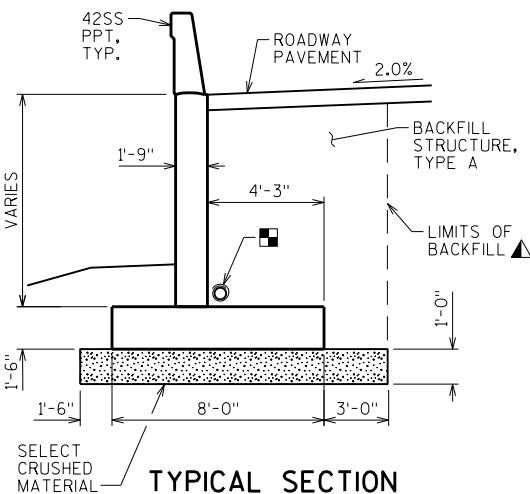


RODENT SHIELD DETAIL

- * DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.
- THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".
- THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO THE EXPOSED END OF THE PIPE UNDERDRAIN. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH STAINLESS STEEL SHEET METAL SCREWS.

TOTAL ESTIMATED QUANTITIES

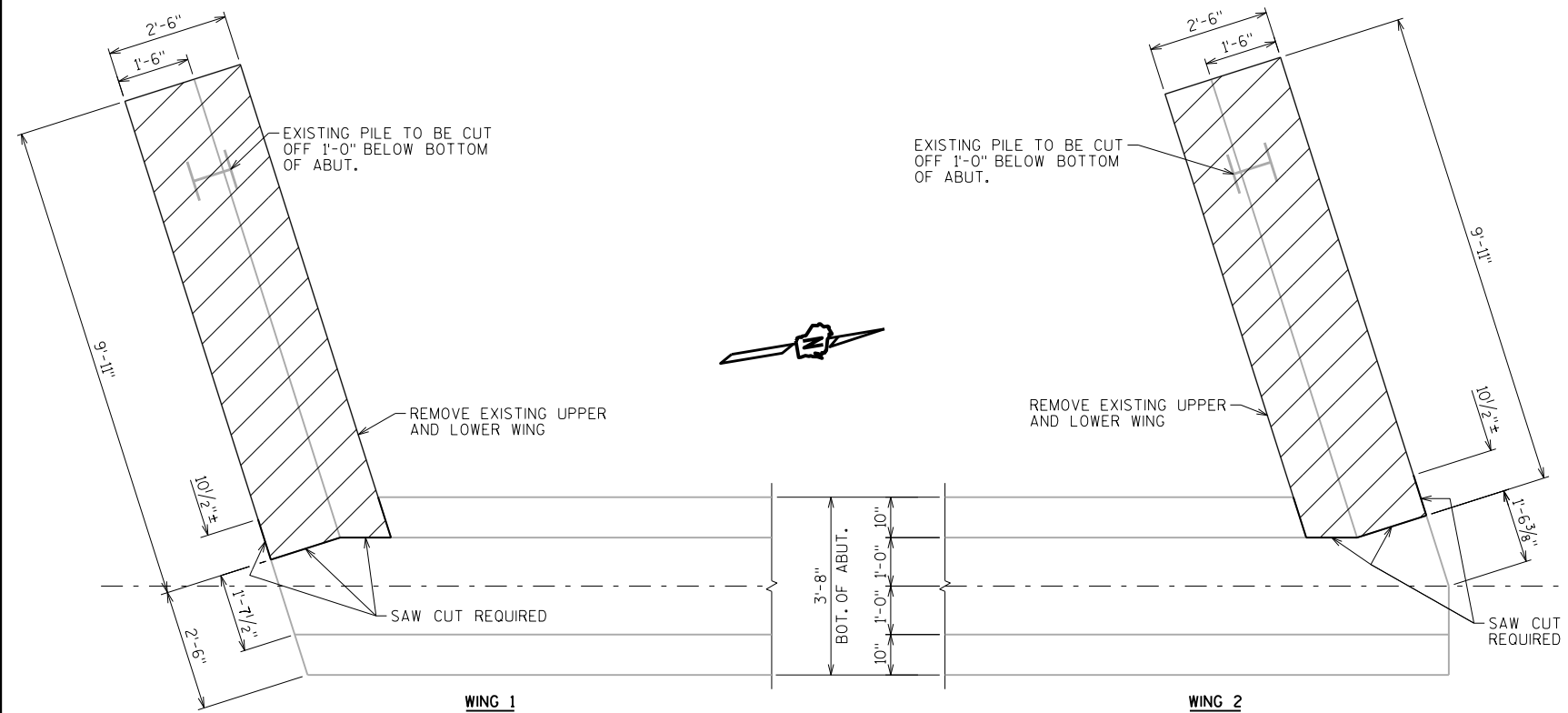
BID ITEM NUMBER	BID ITEMS	UNIT	SUPER.	WEST ABUT.	PIER 1	EAST ABUT.	TOTALS
203.0210.S	ABATEMENT OF ASBESTOS CONTAINING MATERIAL B-14-60	LS	---	---	---	---	1
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STA. 172+63	LS	---	---	---	---	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-14-60	LS	---	---	---	---	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	---	107	---	107	214
312.0110	SELECT CRUSHED MATERIAL	TON	---	30	---	30	60
502.0100	CONCRETE MASONRY BRIDGES	CY	199	30	---	30	259
502.3200	PROTECTIVE SURFACE TREATMENT	SY	623	2	---	2	627
502.3210	PIGMENTED SURFACE SEALER	SY	121	15	---	15	151
502.4205	ADHESIVE ANCHORS NO. 5 BAR	EACH	72	---	---	---	72
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	---	1,100	---	1,100	2,200
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	50,980	2,880	---	2,860	56,720
506.4000	STEEL DIAPHRAGMS B-14-60	EACH	12	---	---	---	12
509.1500	CONCRETE SURFACE REPAIR	SF	---	47	---	12	59
509.9020.S	EPOXY CRACK SEALING	LF	---	---	---	7	7
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	---	8	---	8	16
606.0300	RIPRAP HEAVY	CY	---	136	---	139	275
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	---	68	---	68	136
614.0150	ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD	EACH	4	---	---	---	4
645.0120	GEOTEXTILE TYPE HR	SY	---	115	---	115	230
NON-BID ITEMS							
	FILLER	SIZE	---	---	---	---	1/2" , 3/4"



TYPICAL SECTION
THRU WING WALL

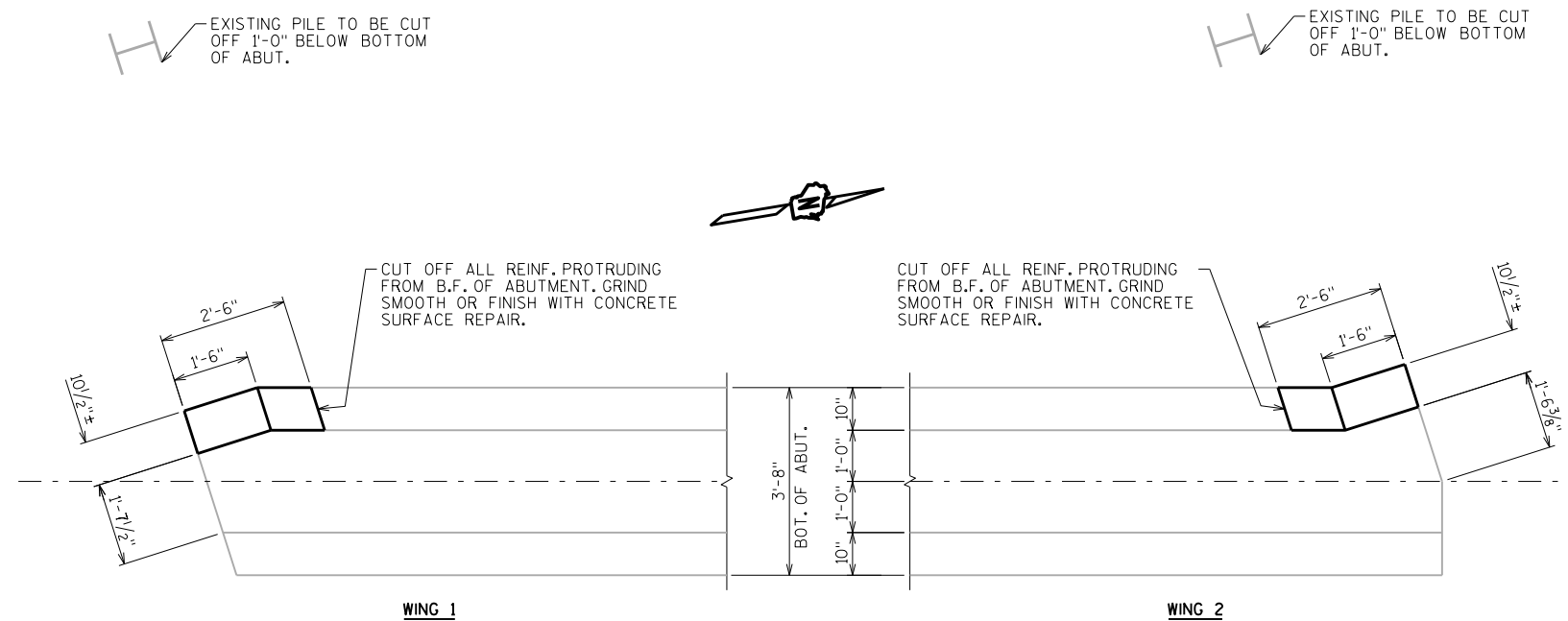
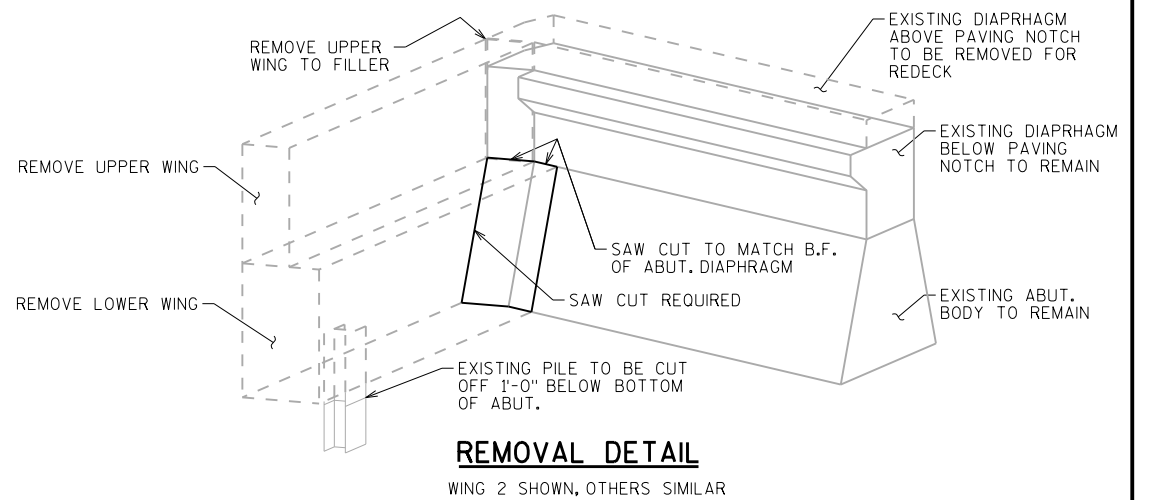
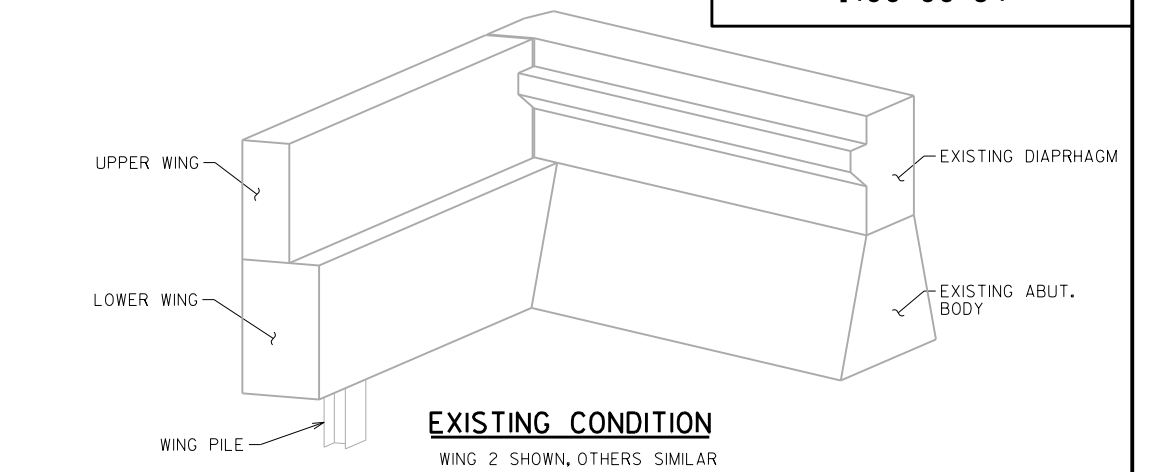
- BACKFILL PAY LIMITS. BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.
- PIPE UNDERDRAIN WRAPPED (6 INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-14-60			
DRAWN BY		WWR	PLANS CKD. ABS
CROSS SECTION & QUANTITIES			SHEET 2



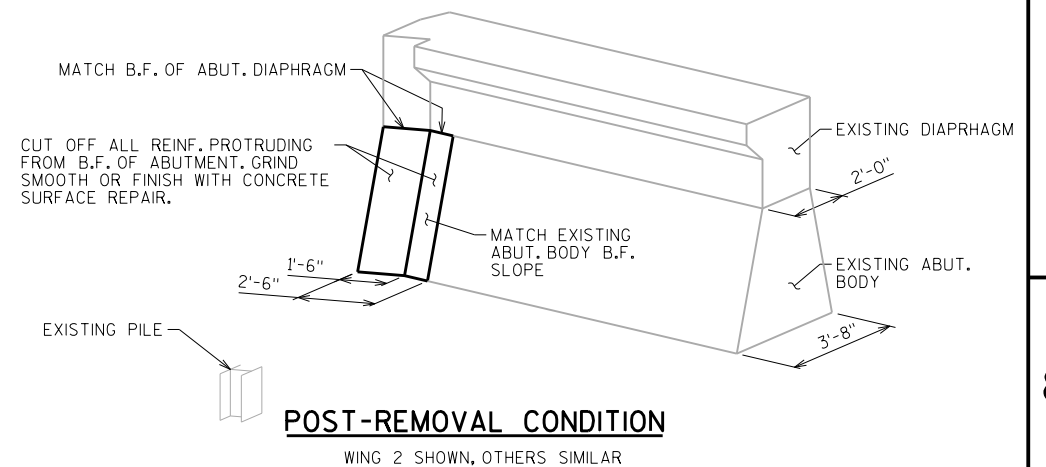
REMOVAL PLAN

WEST ABUT. SHOWN, EAST ABUT. SIMILAR
(CORBEL NOT SHOWN FOR CLARITY)



POST-REMOVAL PLAN

WEST ABUT. SHOWN, EAST ABUT. SIMILAR
(CORBEL NOT SHOWN FOR CLARITY)

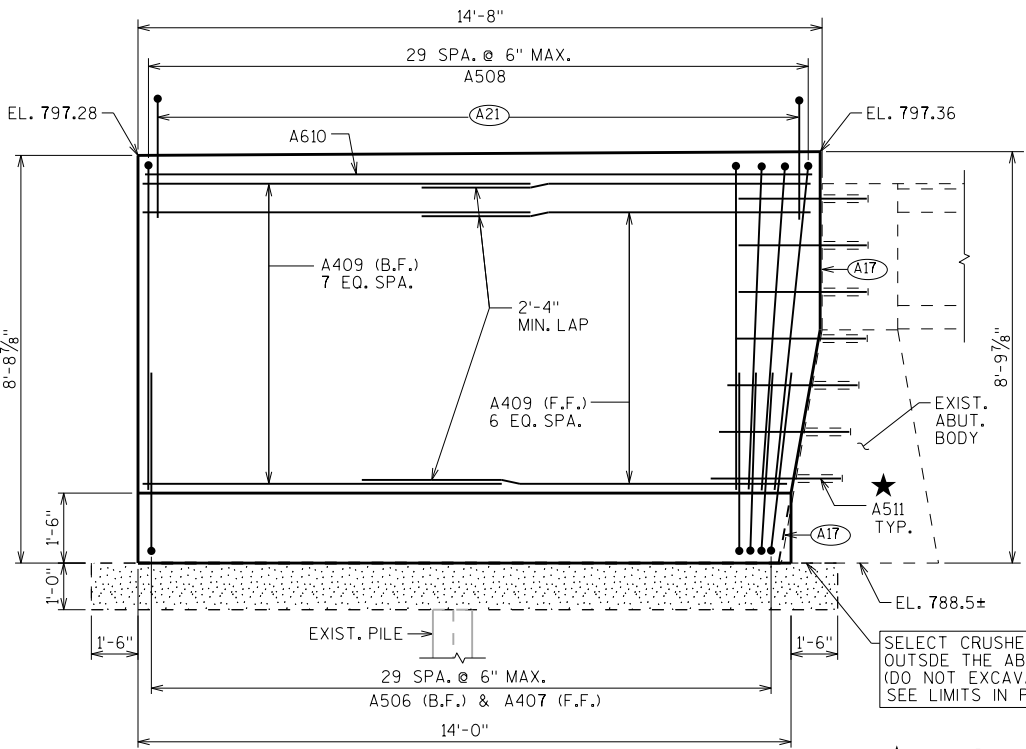


NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-14-60			
DRAWN BY		WWR	PLANS CK'D. ABS
ABUTMENT REMOVAL DETAILS		SHEET 3	

BILL OF BARS

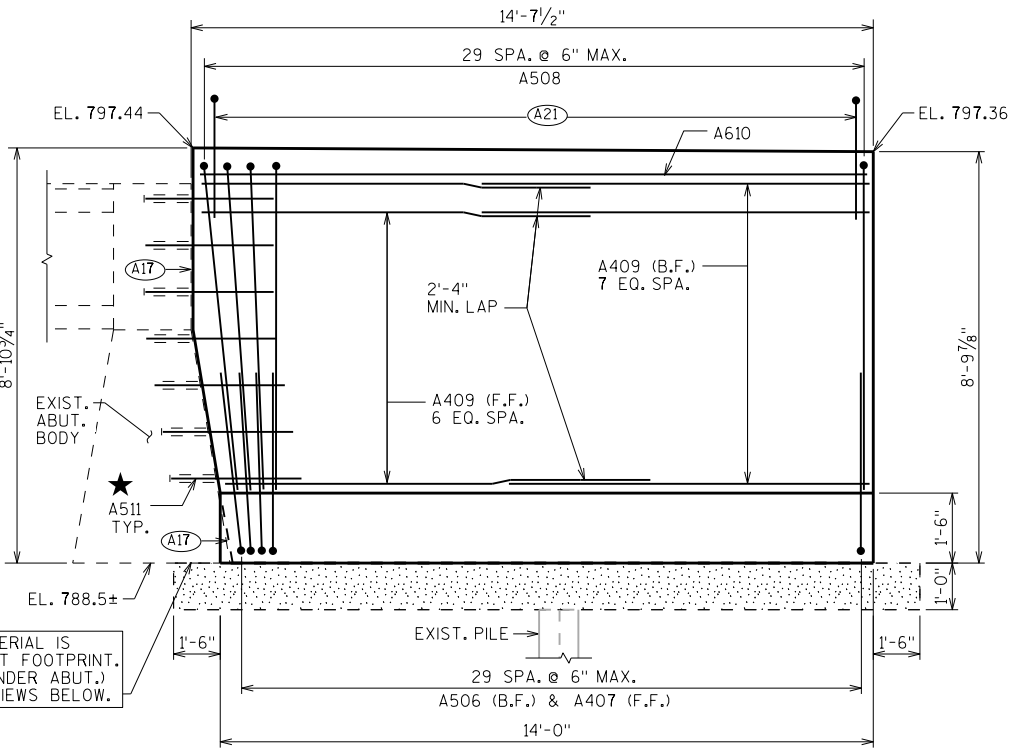
NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE

BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
A401		36	8'-6"			FOOTING-LONGIT.-WING 1
A602		54	7'-8"			FOOTING-TRANS.
A603		2	3'-3"			FOOTING-TRANS.-WING 1
A604		2	1'-9"			FOOTING-TRANS.-WING 1
A605		4	7'-9"	X		FOOTING-TRANS.
A506	X	60	4'-10"	X		FOOTING/WING WALL-VERT.-B.F.
A407	X	60	3'-9"	X		FOOTING/WING WALL-VERT.-F.F.
A508	X	60	15'-0"	X		WING WALL-VERT. U-BAR
A409	X	60	8'-4"			WING WALL-HORIZ. F.F. & B.F.
A610	X	4	14'-4"			WING WALL-TOP-HORIZ.
A511	X	14	2'-9"			ABUT./WING WALL-DOWEL
A412		36	8'-0"			FOOTING-LONGIT.-WING 2
A613		2	5'-8"			FOOTING-TRANS.-WING 2
A414	X	30	2'-0"			SURFACE DRAIN ANCHORS



WING 1 ELEVATION

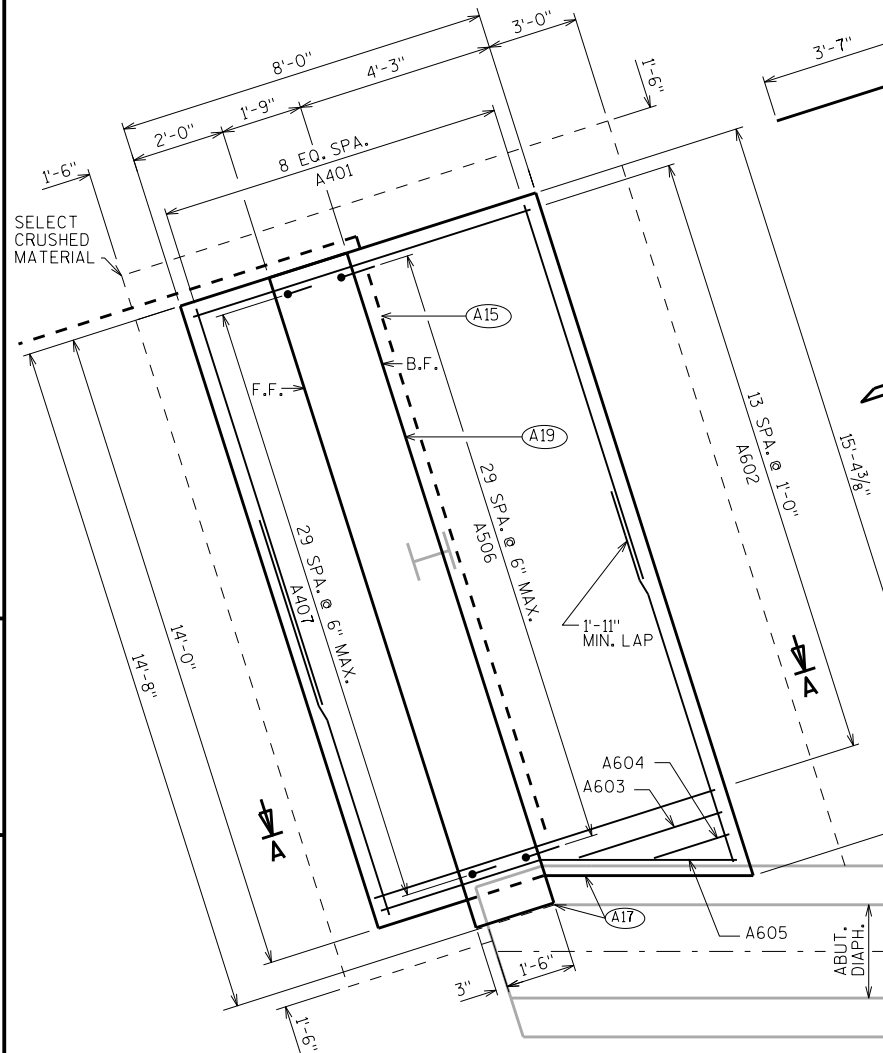
LOOKING NORTH AT F.F. OF WING



WING 2 ELEVATION

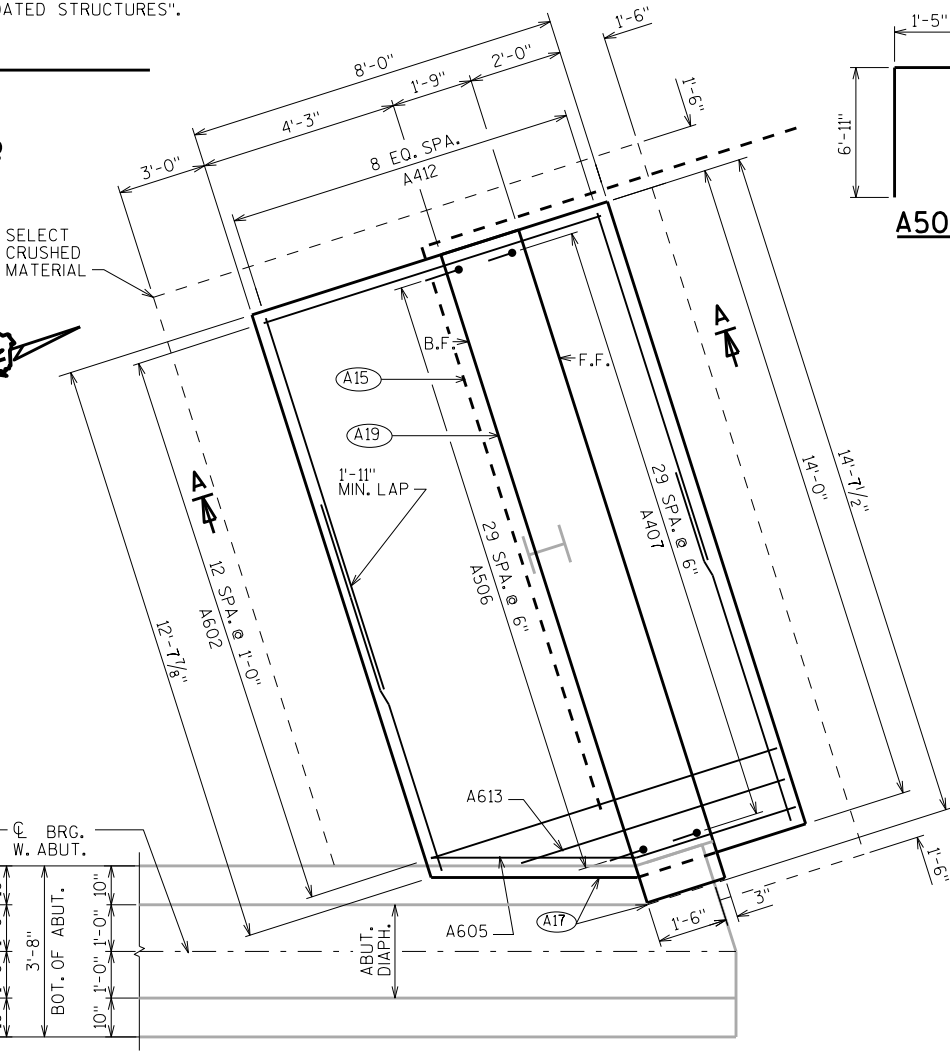
LOOKING SOUTH AT F.F. OF WING

★ DRILL 3/4" DIA., 6" DEEP HOLES FOR FOR A511 BARS. CLEAN HOLES PRIOR TO INSTALLING BARS. WORK INCLUDED IN THE BID ITEM "BAR STEEL REINFORCEMENT HS COATED STRUCTURES".



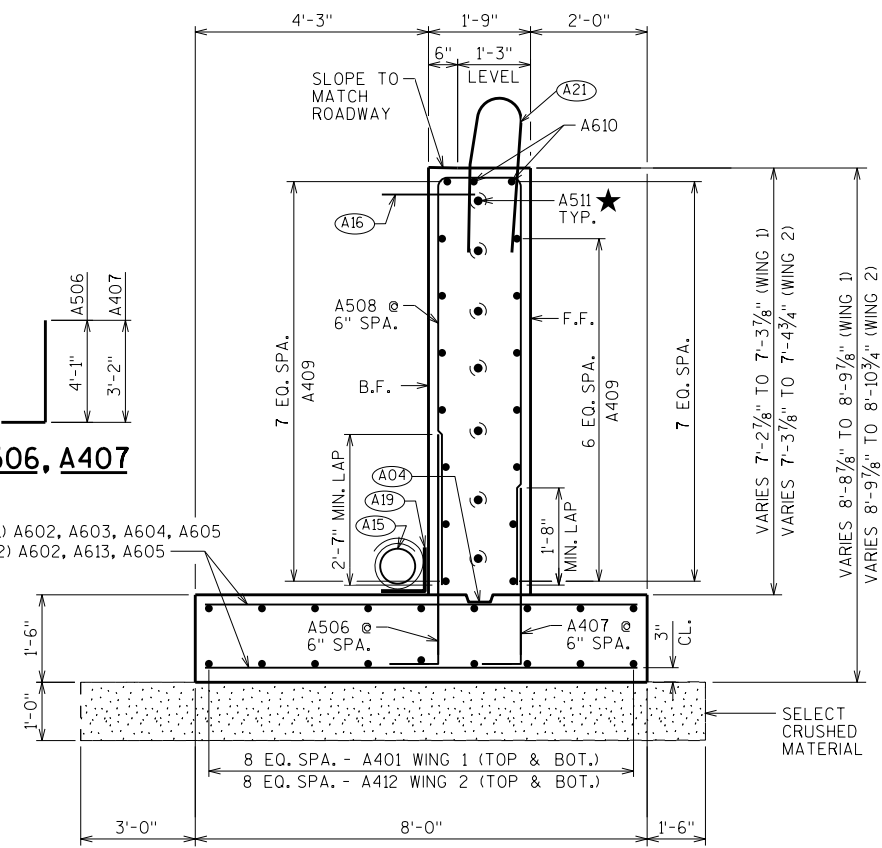
WING 1 PLAN

SHOWING LONGIT., TRANS., & DOWEL FOOTING STEEL ONLY



WING 2 PLAN

SHOWING LONGIT., TRANS., & DOWEL FOOTING STEEL ONLY



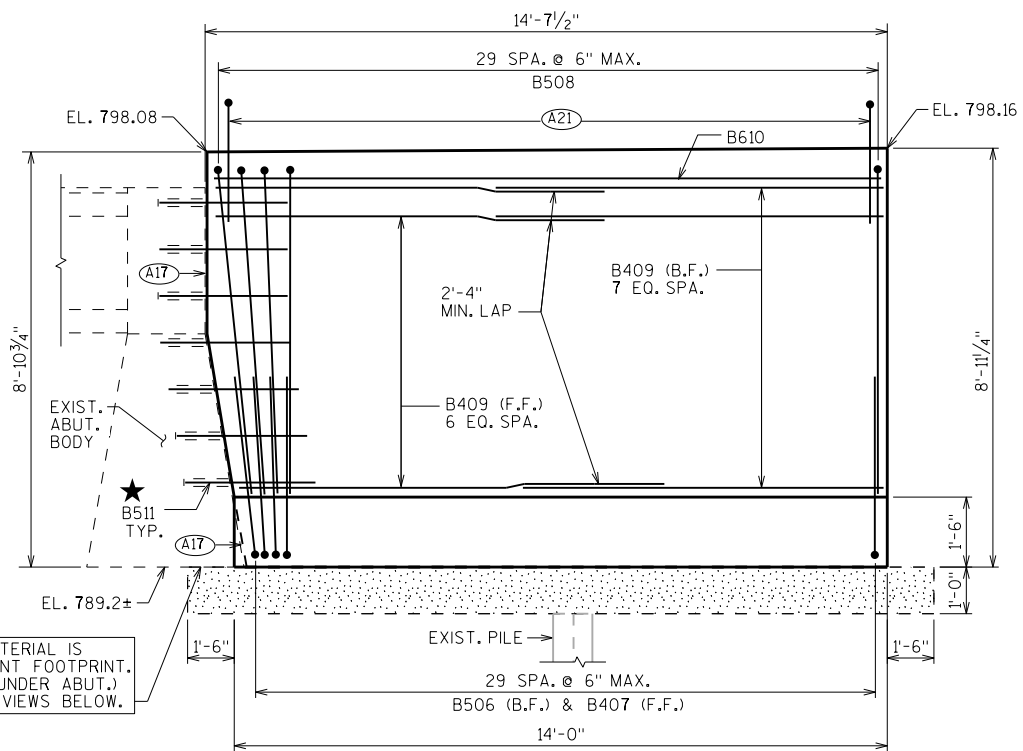
SECTION A-A

- (A04) CONST. JOINT FORMED BY A BEVELED 2 x 6.
- (A15) PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED.
- (A16) A414 BARS SPACED @ 1'-0" CTRS. EMBED 1'-0" INTO WING CONC. LOCATE 3" DOWN FROM TOP OF WING @ BACKFACE TO 6" DOWN @ WING TIP.
- (A17) 1/2" FILLER (INCLUDED IN WING LENGTH); SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.
- (A19) 18" (RMW) RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.
- (A21) FOR PPT. BARS & DIMENSIONS SEE PPT. SHEET.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-14-60			
DRAWN BY		PLANS CK'D.	ABS
WEST ABUTMENT WING DETAILS		SHEET 4	

NOTE: THE FIRST OR FIRST TWO DIGITS OF THE
BAR MARK SIGNIFIES THE BAR SIZE

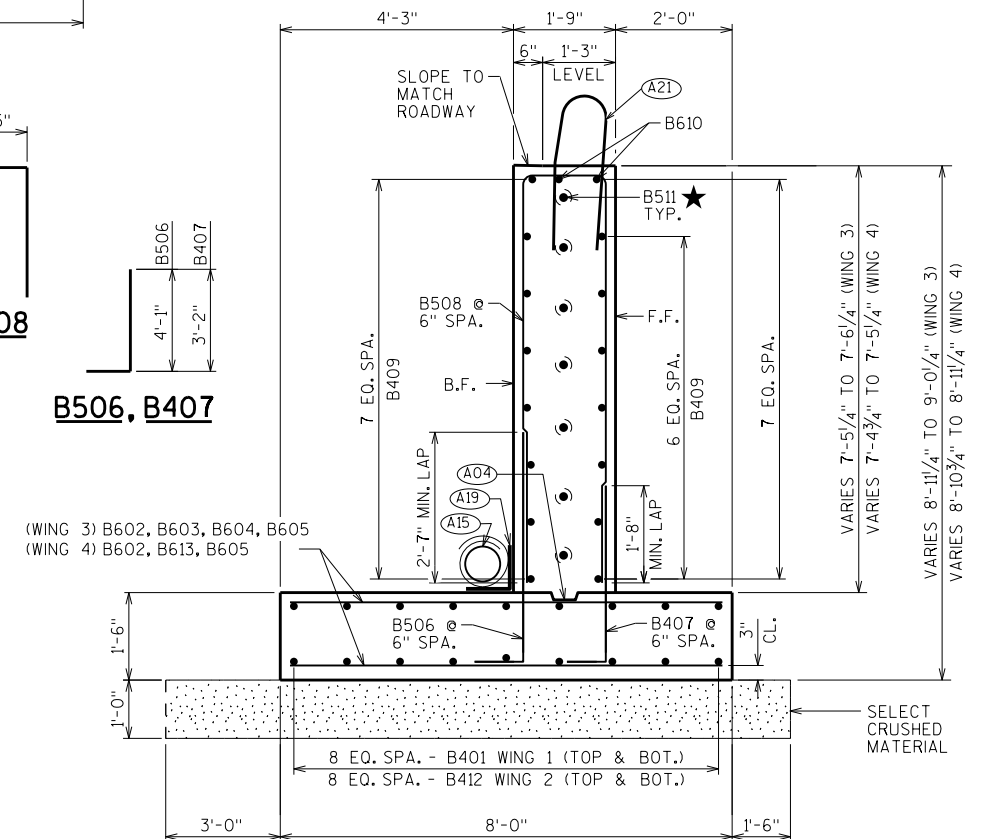
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
B401		36	8'-6"			FOOTING-LONGIT.-WING 3
B602		54	7'-8"			FOOTING-TRANS.
B603		2	3'-3"			FOOTING-TRANS.-WING 3
B604		2	1'-9"			FOOTING-TRANS.-WING 3
B605		4	7'-9"	X		FOOTING-TRANS.
B506	X	60	4'-10"	X		FOOTING/WING WALL-VERT.-B.F.
B407	X	60	3'-9"	X		FOOTING/WING WALL-VERT.-F.F.
B508	X	60	15'-4"	X		WING WALL-VERT. U-BAR
B409	X	60	8'-4"			WING WALL-HORIZ. F.F. & B.F.
B610	X	4	14'-4"			WING WALL-TOP-HORIZ.
B511	X	14	2'-9"			ABUT./WING WALL-DOWEL
B412		36	8'-0"			FOOTING-LONGIT.-WING 4
B613		2	5'-8"			FOOTING-TRANS.-WING 4



LOOKING SOUTH AT F.F. OF WING

★ DRILL 3/4" DIA., 6" DEEP HOLES FOR FOR B511BARS. CLEAN HOLES PRIOR TO INSTALLING BARS. WORK INCLUDED IN THE BID ITEM "BAR STEEL REINFORCEMENT HS COATED STRUCTURES".

LOOKING NORTH AT F.F. OF WING

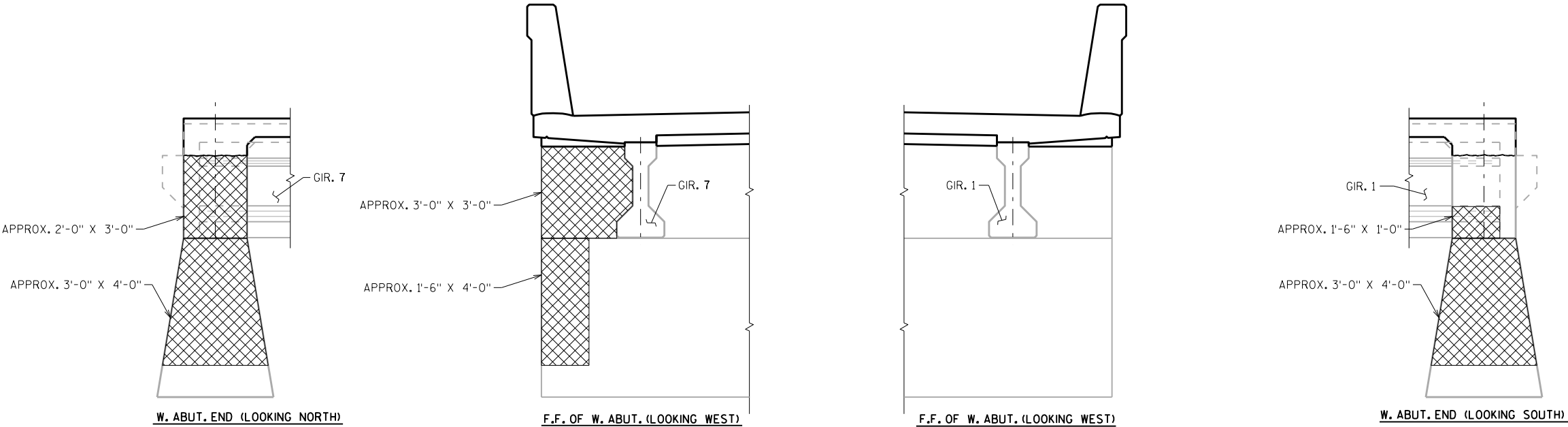


SECTION A-A

(A21) FOR PPT. BARS & DIMENSIONS SEE PPT. SHEET.

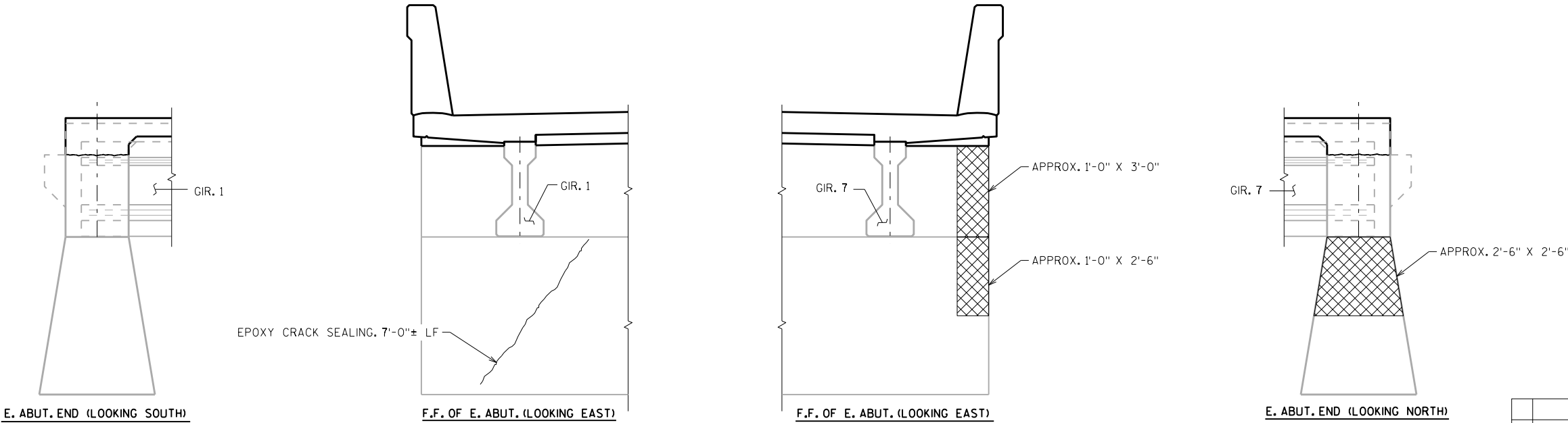
NO.	DATE	REVISION			BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION					
STRUCTURE B-14-60					
			DRAWN BY	PLANS CK'D.	ABS
EAST ABUTMENT WING DETAILS				SHEET 5	

CONCRETE SURFACE REPAIR AREAS



WEST ABUTMENT

NOTES:
CONCRETE SURFACE REPAIRS TO
BE COMPLETED AS DIRECTED BY
THE ENGINEER.



EAST ABUTMENT

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-14-60			
DRAWN BY		WWR	PLANS CK'D. ABS
CONCRETE SURFACE REPAIR DETAILS		SHEET 6	

NOTES

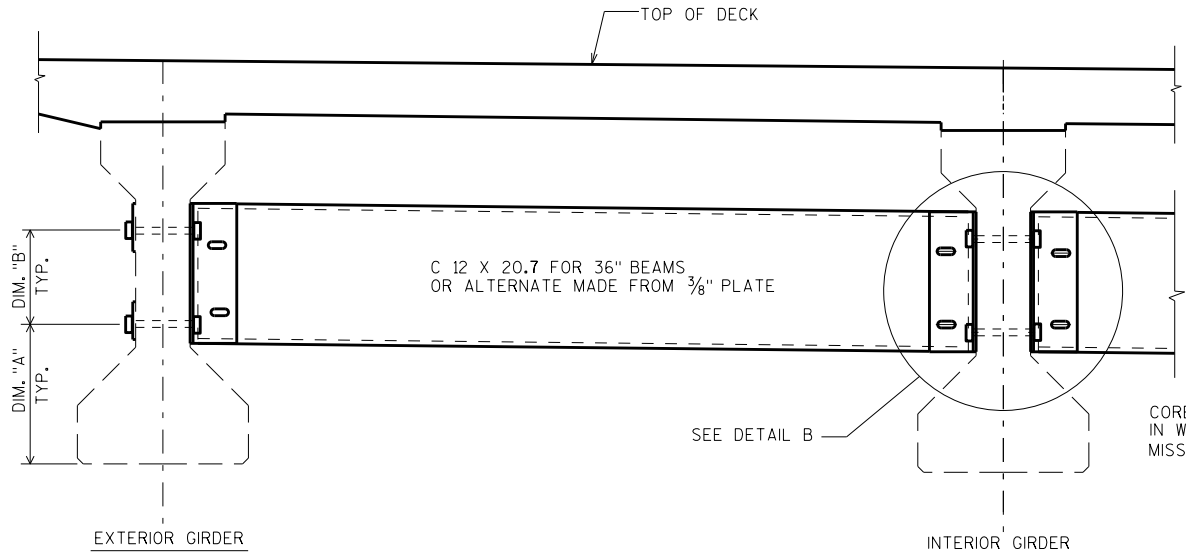
ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-14-60", EACH.

EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

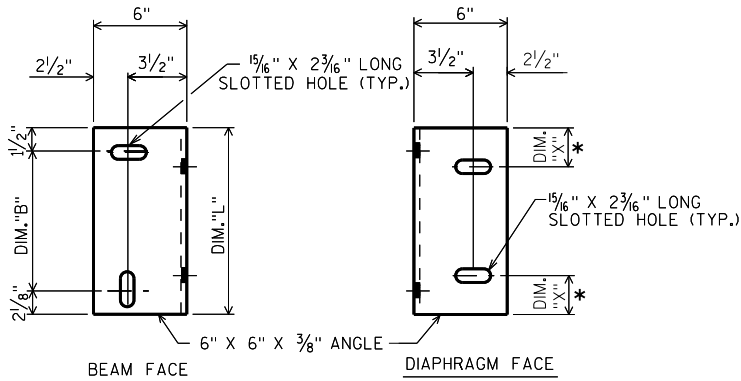
ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36.

ALL DIAPHRAGM MATERIAL INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION.

STEEL DIAPHRAGM TO CONCRETE WEB CONNECTION SHALL BE SNUG-TIGHT PLUS 1/4 TURN, UNLESS NOTED OTHERWISE. HIGH STRENGTH BOLTS FOR WEB CONNECTION SHALL MEET THE REQUIREMENTS FOR ASTM A325 OR ASTM A449.



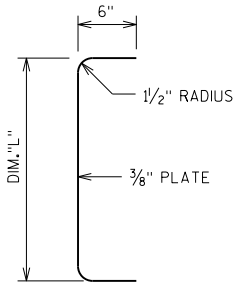
PART TRANSVERSE SECTION AT DIAPHRAGM



DIAPHRAGM SUPPORT

TABLE

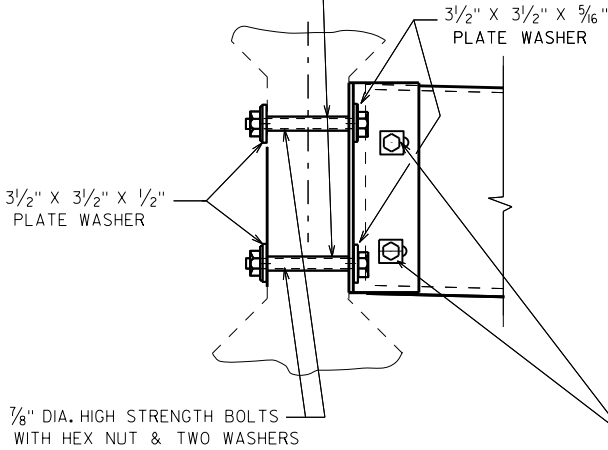
GIRDER HEIGHT	DIM. "A"	DIM. "B"	DIM. "L"	* DIM. "X"
28"	1'-0 7/8"	5 7/8"	9 1/2"	2 1/4"
36"	1'-2 7/8"	9 7/8"	1'-1 1/2"	3 1/4"
45"	1'-5 3/8"	1'-1 7/8"	1'-5 1/2"	2 1/4"
45W"	1'-9 1/8"	8 7/8"	1'-0 1/2"	2 3/4"
54"	1'-7 7/8"	1'-5 7/8"	1'-9 1/2"	4 1/4"
54W"	1'-9 1/8"	1'-5 7/8"	1'-9 1/2"	4 1/4"



SECTION THRU ALTERNATE DIAPHRAGM

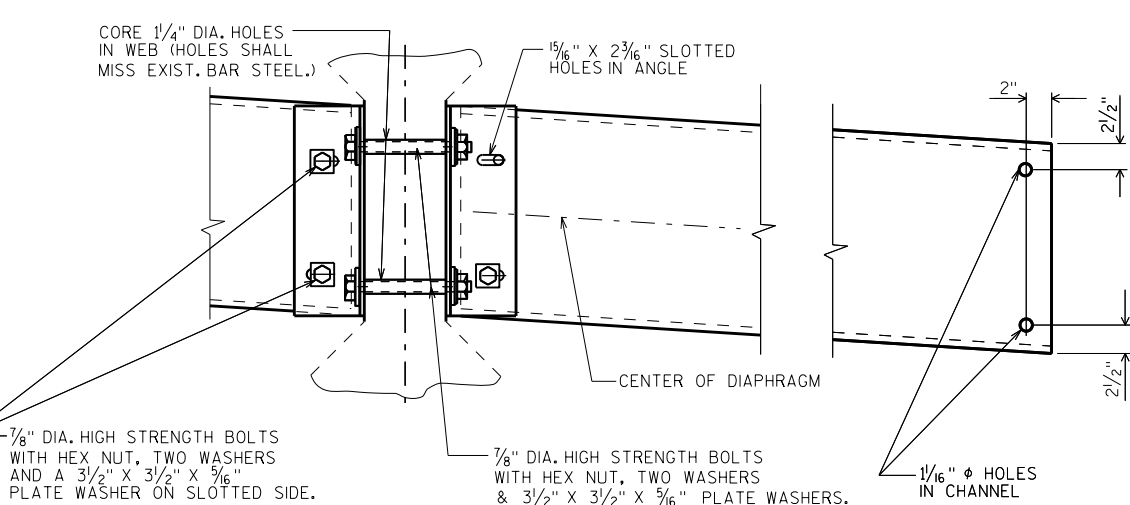
* DIM "X" = 2 1/2" FOR ALTERNATE PLATE DIAPHRAGM

CORE 1/4" DIA. HOLES IN WEB (HOLES SHALL MISS EXIST. BAR STEEL.)



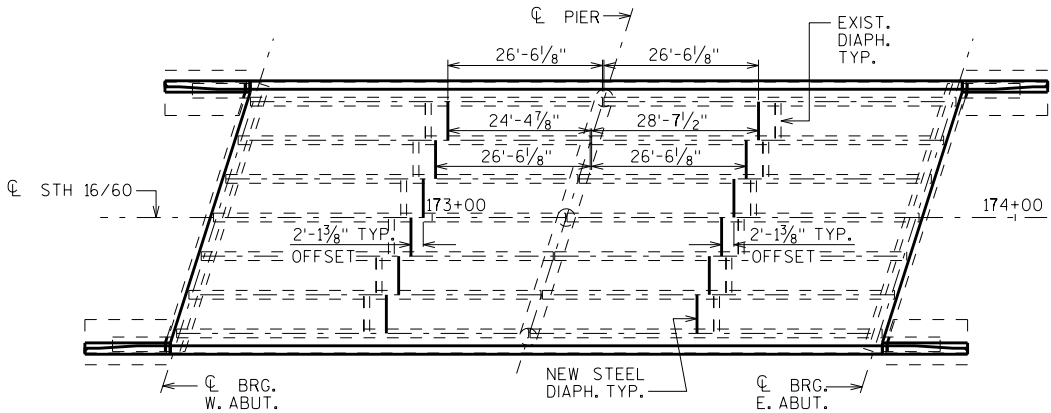
(FOR EXTERIOR GIRS. & STAGGERED DIAPHRAGMS)

CORE 1/4" DIA. HOLES IN WEB (HOLES SHALL MISS EXIST. BAR STEEL.)



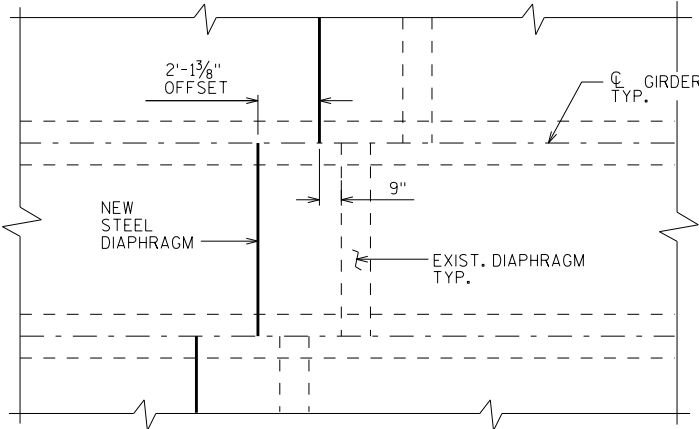
(FOR CONTINUOUS LINE OF DIAPHRAGMS)

DETAIL B



PLAN

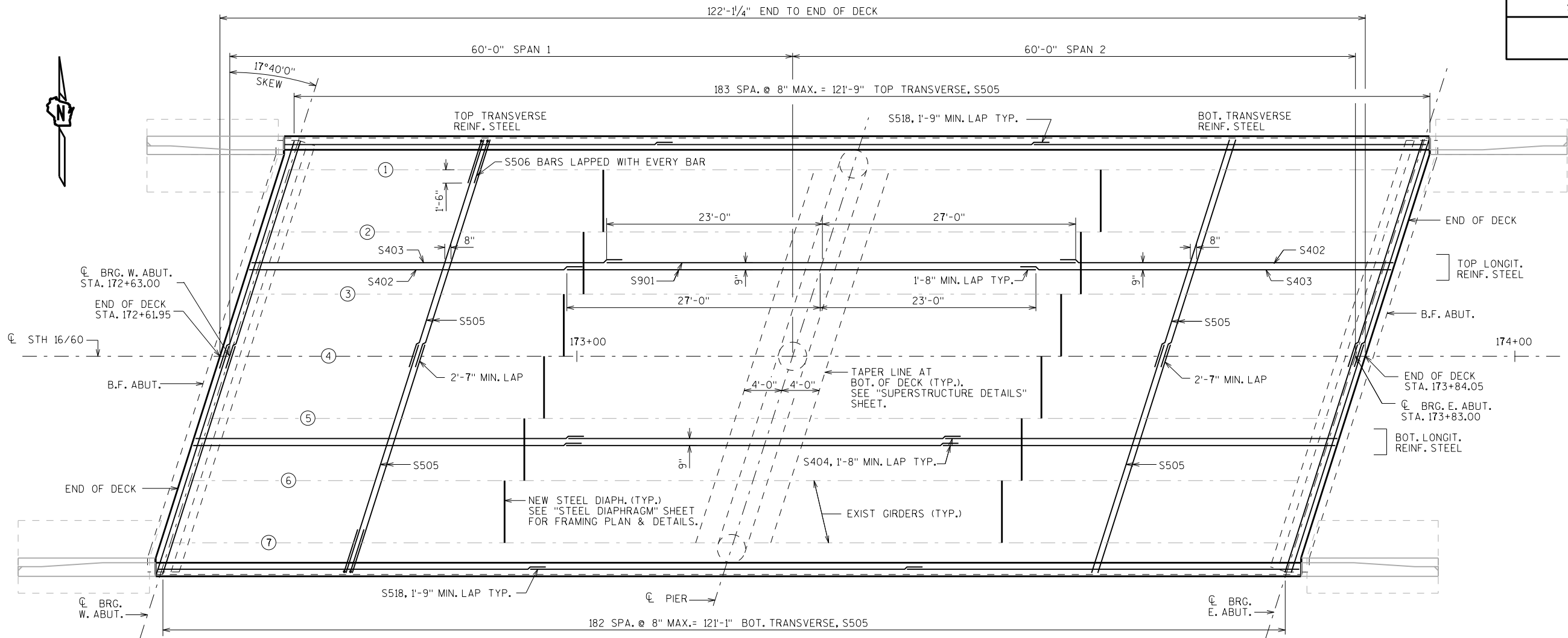
(MEASUREMENTS FROM END OF GIRDER AT PIER TO CL OF DIAPHRAGM INSERT HOLES)



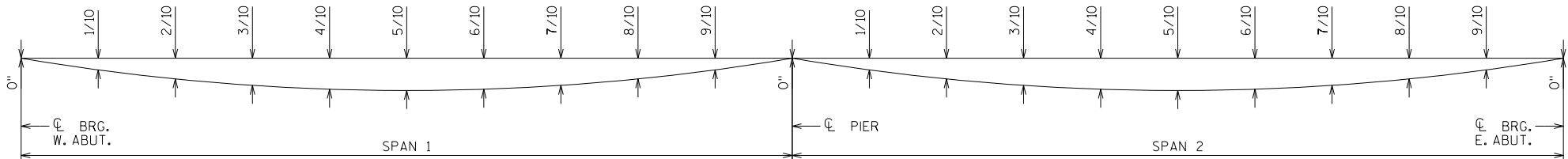
DIAPHRAGM CONNECTION DETAIL

(DIMENSIONS FOR CL OF DIAPHRAGM INSERT HOLE LOCATIONS)

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-14-60			
DRAWN BY		WWR	PLANS CKD. ABS
STEEL DIAPHRAGM		SHEET 7	



PLAN



DEFLECTION DIAGRAM

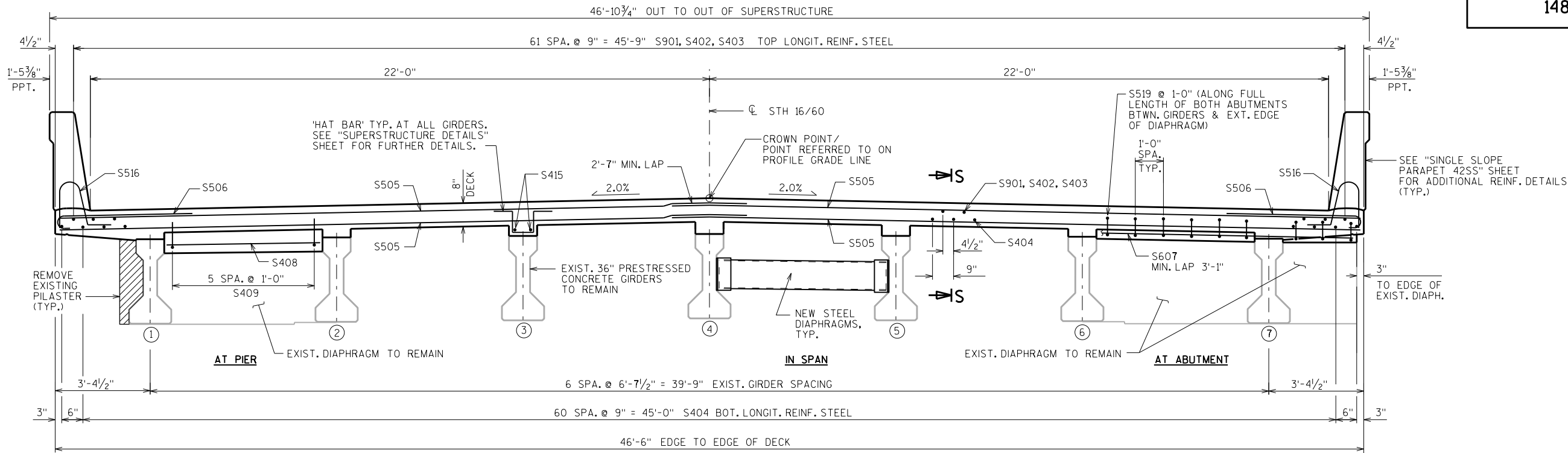
DEFLECTION DIAGRAM TABLE

	ALONG GIRDER	CL BRG. W. ABUT.	1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	CL PIER	1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	CL BRG. E. ABUT.
(IN.)	TOTAL DEFL.	0	0.3	0.5	0.7	0.8	0.9	0.8	0.7	0.5	0.3	0	0.3	0.5	0.7	0.8	0.9	0.8	0.7	0.5	0.3	0

TOP OF DECK ELEVATIONS

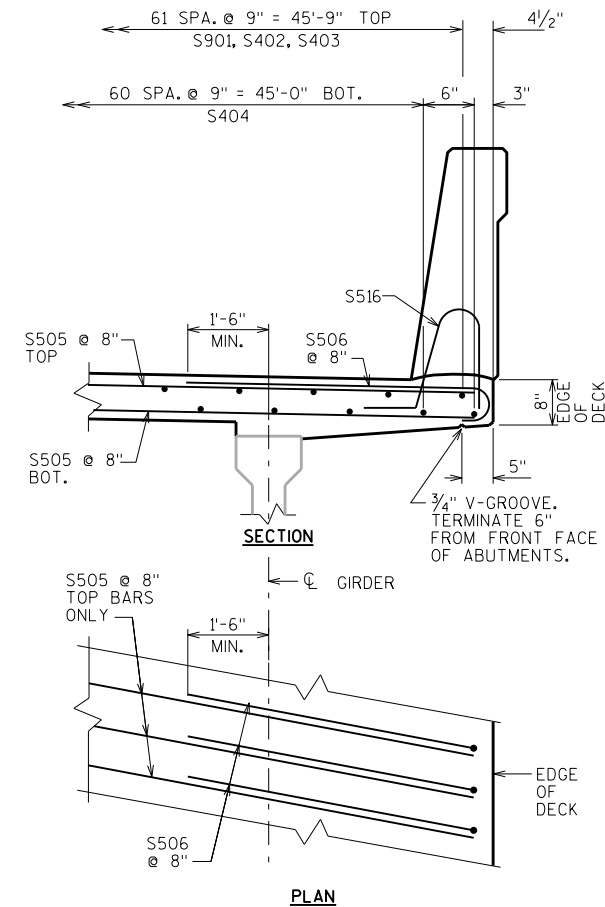
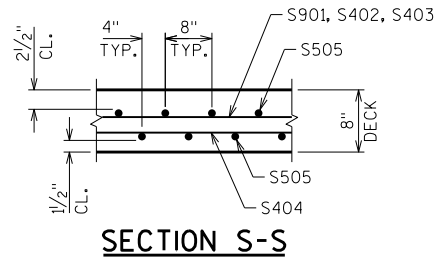
	CL BRG. W. ABUT.	1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	CL PIER	1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	CL BRG. E. ABUT.
N EOD	797.45	797.48	797.52	797.56	797.59	797.63	797.66	797.70	797.73	797.77	797.80	797.84	797.87	797.91	797.95	797.98	798.02	798.05	798.09	798.12	798.16
N GL	797.45	797.48	797.52	797.55	797.59	797.62	797.66	797.70	797.73	797.77	797.80	797.84	797.87	797.91	797.94	797.98	798.01	798.05	798.08	798.12	798.16
G1	797.49	797.52	797.56	797.59	797.63	797.66	797.70	797.73	797.77	797.80	797.84	797.88	797.91	797.95	797.98	798.02	798.05	798.09	798.12	798.16	798.19
G2	797.61	797.64	797.68	797.71	797.75	797.78	797.82	797.85	797.89	797.92	797.96	798.00	798.03	798.07	798.10	798.14	798.17	798.21	798.24	798.28	798.31
G3	797.73	797.76	797.80	797.83	797.87	797.90	797.94	797.97	798.01	798.04	798.08	798.12	798.15	798.19	798.22	798.26	798.29	798.33	798.36	798.40	798.43
G4/PGL	797.85	797.88	797.92	797.95	797.99	798.02	798.06	798.09	798.13	798.16	798.20	798.24	798.27	798.31	798.34	798.38	798.41	798.45	798.48	798.52	798.55
G5	797.70	797.74	797.77	797.81	797.84	797.88	797.91	797.95	797.98	798.02	798.06	798.09	798.13	798.16	798.20	798.23	798.27	798.30	798.34	798.37	798.41
G6	797.56	797.59	797.63	797.66	797.70	797.73	797.77	797.80	797.84	797.87	797.91	797.95	797.98	798.02	798.05	798.09	798.12	798.16	798.19	798.23	798.26
G7	797.41	797.45	797.48	797.52	797.55	797.59	797.62	797.66	797.69	797.73	797.77	797.80	797.84	797.87	797.91	797.94	797.98	798.01	798.05	798.08	798.12
S GL	797.36	797.40	797.44	797.47	797.51	797.54	797.58	797.61	797.65	797.68	797.72	797.75	797.79	797.82	797.86	797.90	797.93	797.97	798.00	798.04	798.07
S EOD	797.36	797.40	797.43	797.47	797.50	797.54	797.57	797.61	797.65	797.68	797.72	797.75	797.79	797.82	797.86	797.89	797.93	797.96	798.00	798.04	798.07

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-14-60			
		DRAWN BY	PLANS CK'D.
		WWR	ABS
SUPERSTRUCTURE PLAN		SHEET 8	



CROSS SECTION

LOOKING EAST



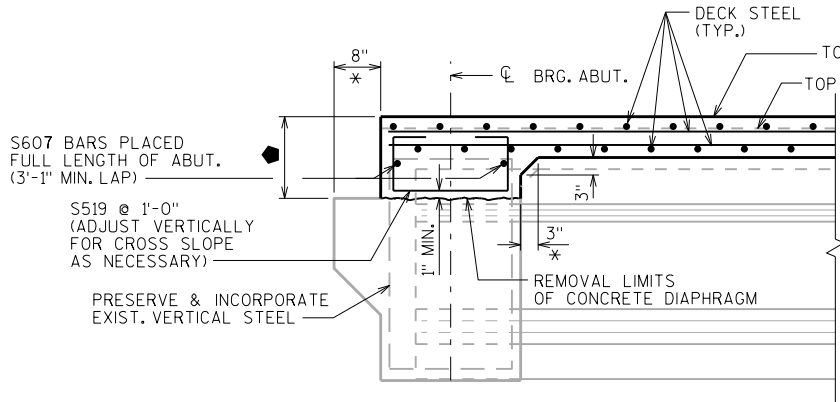
ADDITIONAL REINFORCEMENT DETAILS

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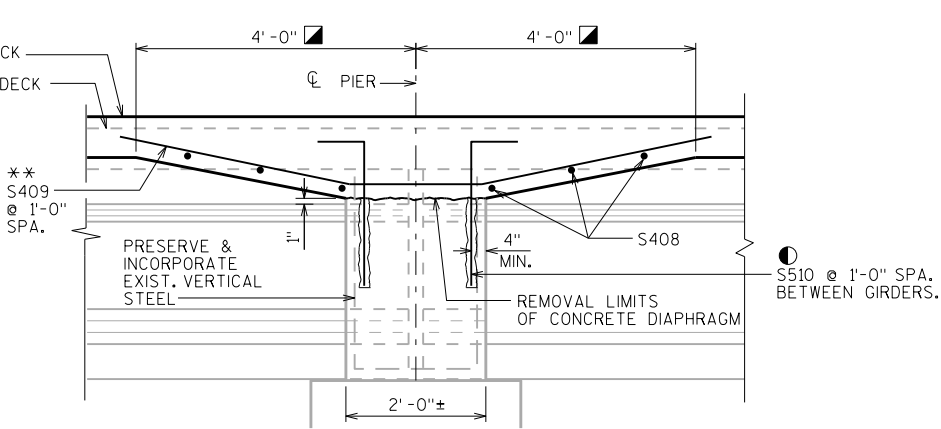
BILL OF BARS

NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE

BAR MARK	QTY	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
S901	X	62	50'-0"			DECK-LONGIT.-TOP-OVER PIER
S402	X	62	35'-7"			DECK-LONGIT.-TOP
S403	X	62	39'-7"			DECK-LONGIT.-TOP
S404	X	189	41'-10"			DECK-LONGIT.-BOT.
S505	X	734	25'-7"			DECK-TRANSVERSE-TOP & BOT.
S506	X	368	5'-5"	X		DECK-TRANSVERSE-EDGE-TOP
S607	X	8	25'-10"			DECK-TRANSVERSE-ABUT. DIAPH.
S408	X	36	5'-7"			DECK-BTWN. GIR.-PIER
S409	X	36	9'-4"	X		DECK-BTWN. GIR.-PIER
S510	X	72	2'-11"	X		PIER DIAPH./DECK-DOWEL
S411	X	248	2'-7"	X		GIRDERS 1 & 7-HAT BARS
S412	X	248	2'-9"	X		GIRDERS 2 & 6-HAT BARS
S413	X	248	3'-0"	X		GIRDERS 3 & 5-HAT BARS
S414	X	124	3'-1"	X		GIRDER 4-HAT BARS
S415	X	42	41'-6"			GIRDERS 1 THRU 7-LONGIT.
S516	X	368	4'-5"	X		DECK/PPT.-VERT.
S517	X	368	6'-8"	X		PARAPET @ DECK-VERT.
S518	X	48	41'-11"			PARPET @ DECK-HORIZ.
S519	X	84	3'-11"	X		ABUT. DIAPH./DECK-VERT.



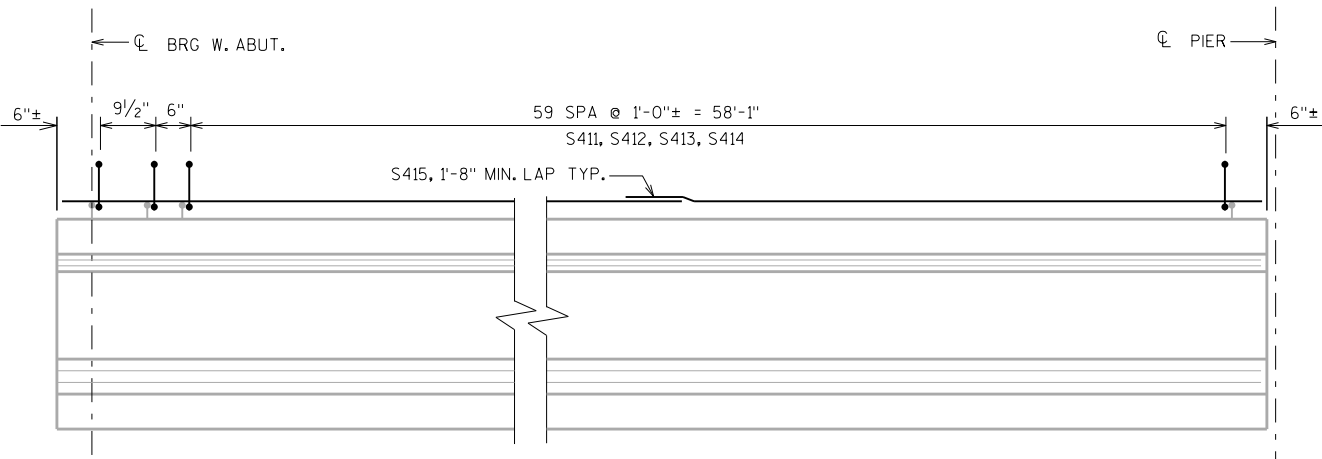
SECTION THRU ABUT. DIAPH.



SECTION THRU PIER DIAPH.

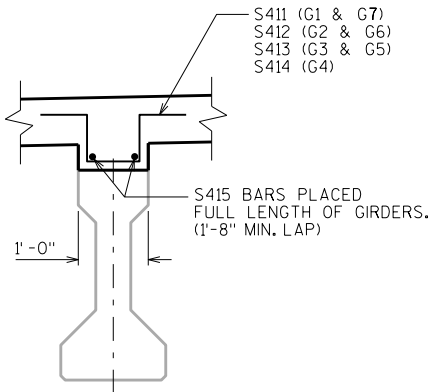
SHOWING ADDITIONAL DIAPHRAGM STEEL ONLY WITHIN THE CONCRETE DECK POUR. DECK BARS ARE SHOWN SEPARATELY.

- * DIMENSION IS TAKEN NORMAL TO ϕ SUBSTRUCTURE UNITS.
- ** BARS PLACED PARALLEL TO GIRDERS SPACING PERPENDICULAR TO ϕ GIRDERS
- VARIES. PRESERVE HORIZONTAL FACE OF EXISTING PAVING NOTCH.
- DIMENSION IS TAKEN PARALLEL TO ϕ GIRDERS.
- ADHESIVE ANCHORS EMBEDDED 1'-3" INTO EXISTING CONCRETE.

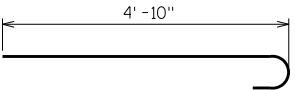


GIRDER ELEVATION SHOWING HAT BAR SPACING

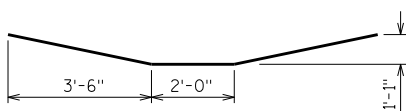
SPAN 1 SHOWN. SPAN 2 SYMMETRICAL ABOUT ϕ PIER



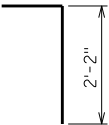
GIRDER SECTION



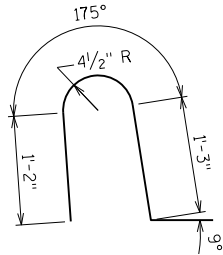
S506



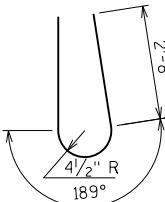
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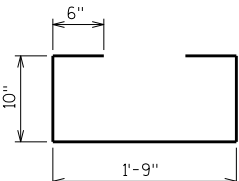
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S516



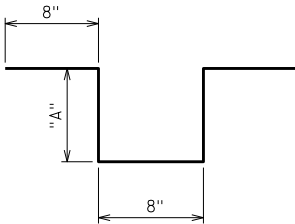
S517



S519

HAT BAR TABLE

BAR MARK	HAT BAR LOCATION	HEIGHT "A"
S411	G1 & G7	5 1/2"
S412	G2 & G6	6 1/2"
S413	G3 & G5	8"
S414	G4	8 1/2"



S411, S412, S413, S414

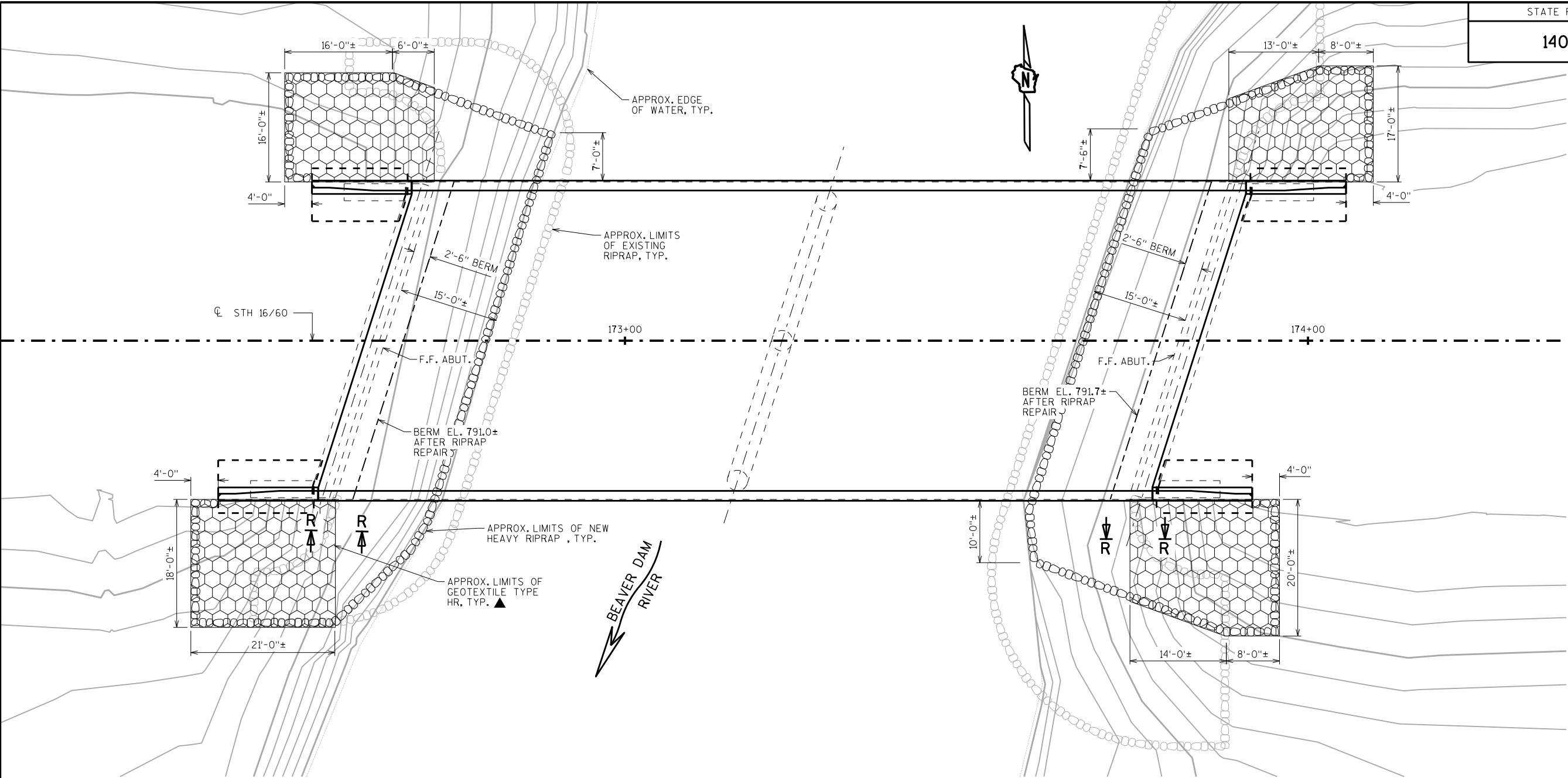
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-14-60			
DRAWN BY		WWR	PLANS CK'D. ABS
SUPERSTRUCTURE DETAILS			SHEET 10

BAR MARK	COAT	WEST ABUT.	EAST ABUT.	LENGTH	BENT	BAR SERIES	LOCATION
R501	X	20	20	5'-10	X		PARAPET VERT.
R502	X	20	20	6'-8"	X		PARAPET VERT.
R503	X	24	24	3'-0"	X		PARAPET VERT.
R504	X	34	34	5'-7"	X		PARAPET VERT.
R505	X	10	10	6'-5"	X		PARAPET VERT.
R506	X	12	12	6'-6"	X		PARAPET VERT.
R507	X	2	2	14'-4"	X		PARAPET HORIZ.
R508	X	10	10	14'-4"			PARAPET HORIZ.
R509	X	12	12	5'-5"	X	▲	PARAPET VERT.
R510	X	4	4	14'-4"	X		PARAPET HORIZ.

BUNDLE AND TAG EACH SERIES SEPARATELY.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-14-60			
		DRAWN BY WWR	PLANS CK'D. ABS
SINGLE SLOPE PARAPET 42SS		SHEET 11	

8



PLAN

SHOWING APPROXIMATE LIMITS RIP RAP REPAIR

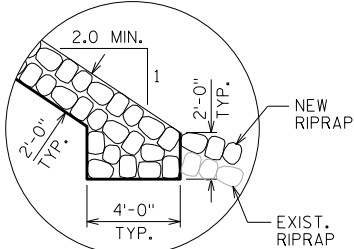
NOTES

ADD RIPRAP TO ABUTMENT SLOPES AS DIRECTED BY THE ENGINEER TO RESTORE TO ABUTMENT BERM ELEVATION. QUANTITIES ARE BASED ON AN AVERAGE THICKNESS OF 2'-0".

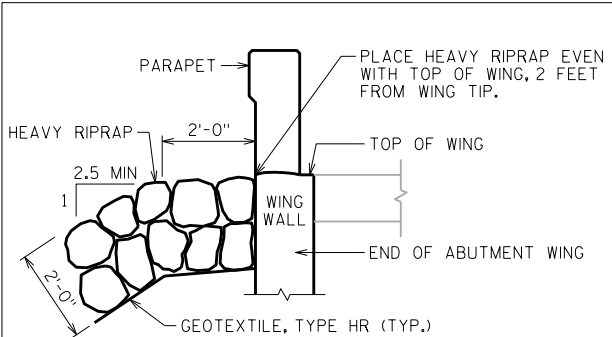
▲ INSTALL RIPRAP WITH GEOTEXTILE TYPE HR TO WING WALL SLOPES IN AREAS DISTURBED BY WING EXCAVATION. UTILIZE SECTION R-R DETAILS WHEN SLOPES ARE STEEPER THAN 3H:1V.



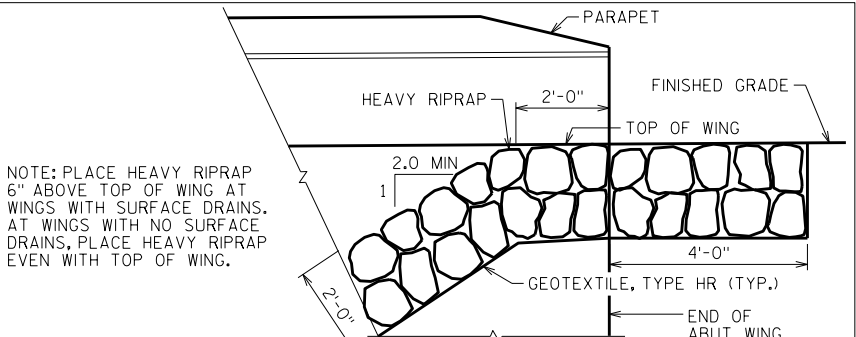
GEOTEXTILE TYPE HR LIMITS



SECTION R-R

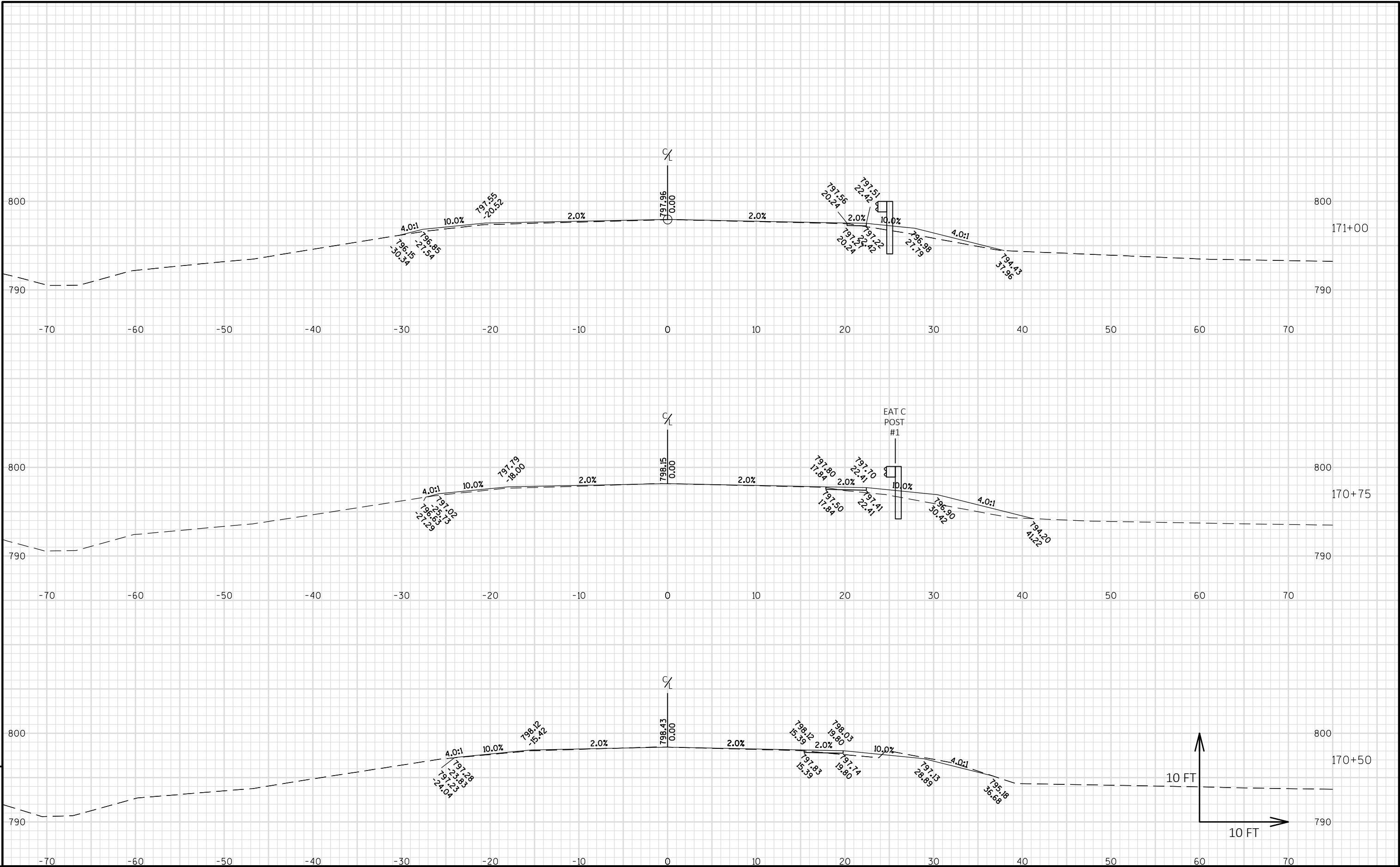


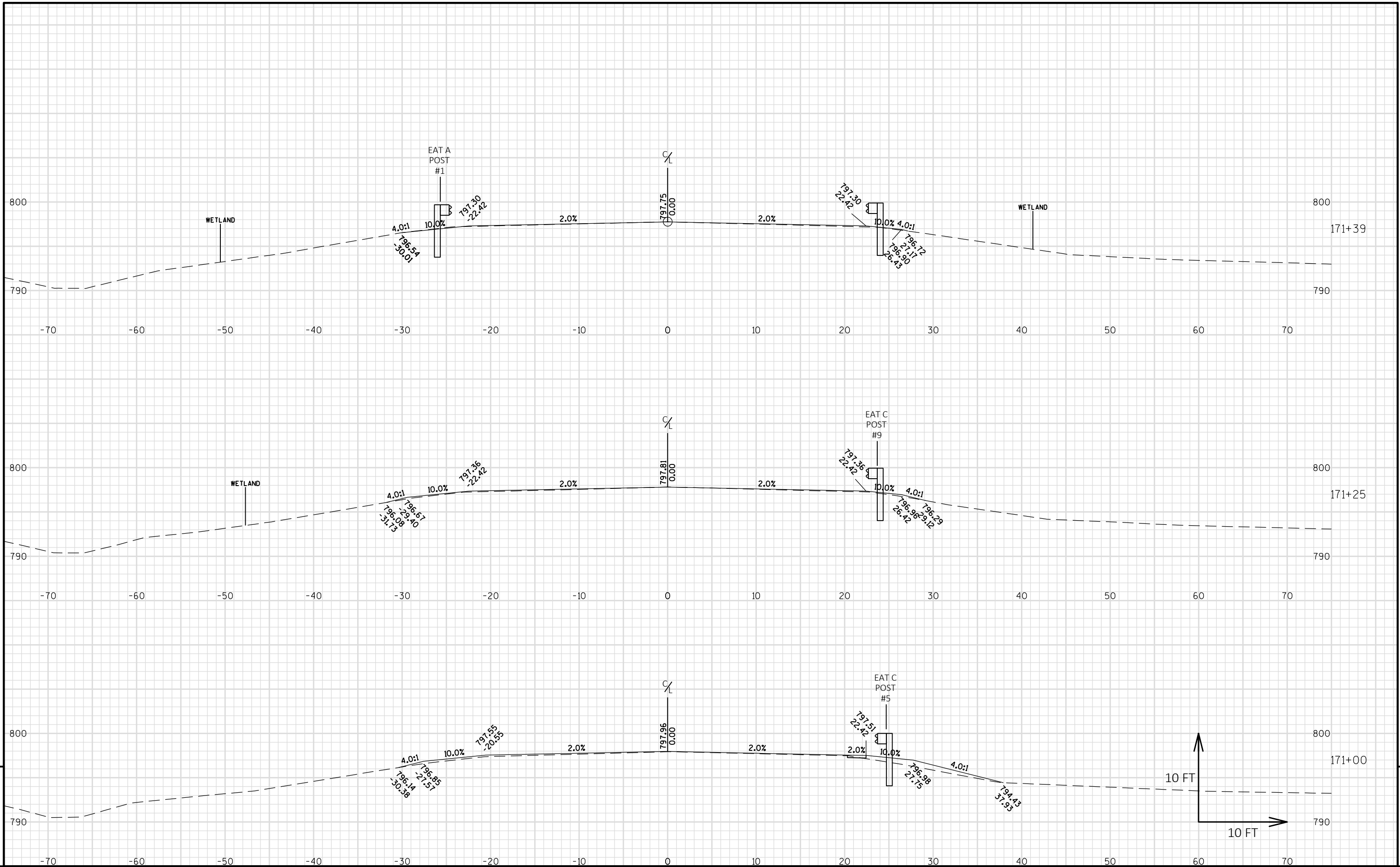
TYPICAL FILL SECTION AT WING TIPS

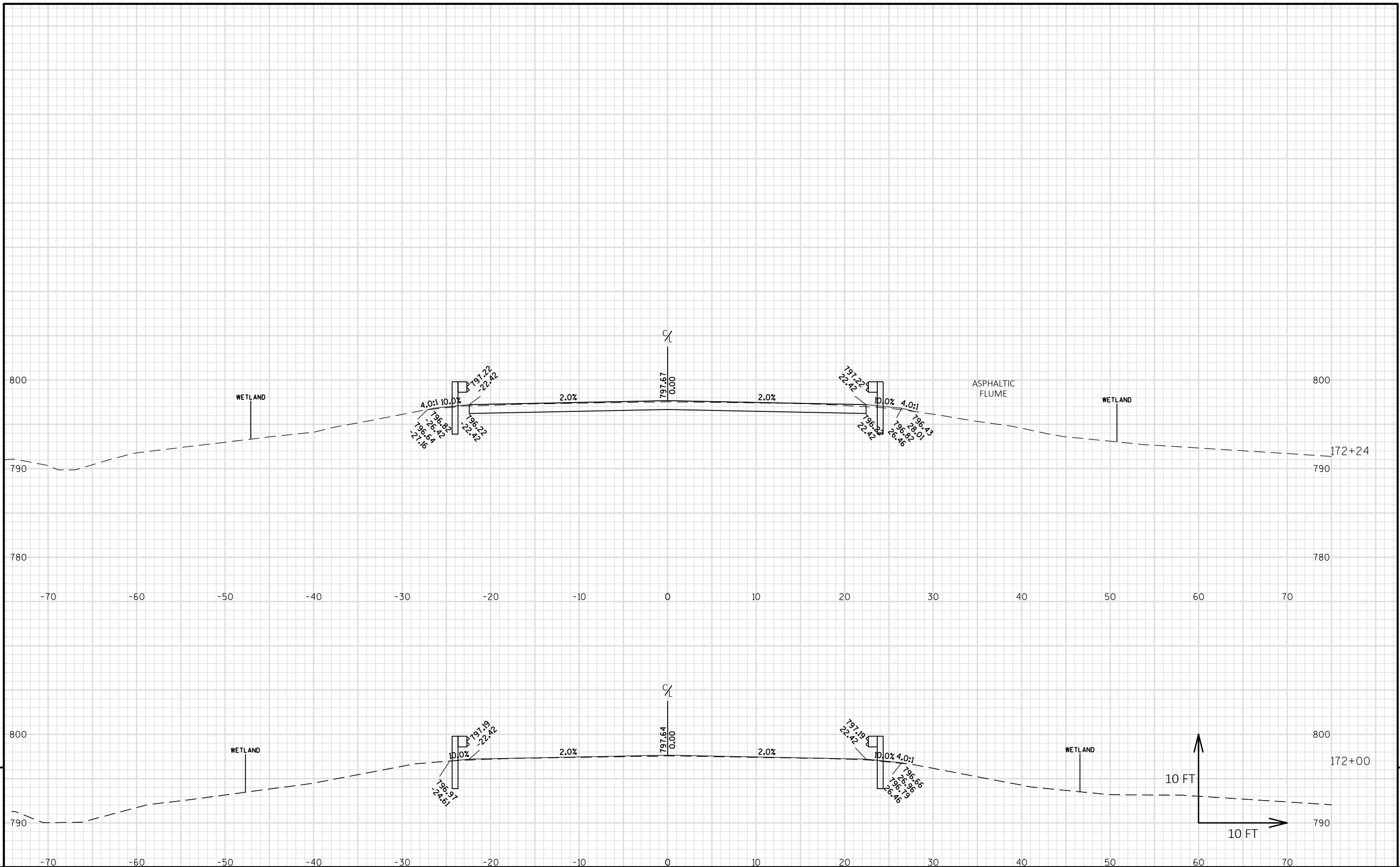


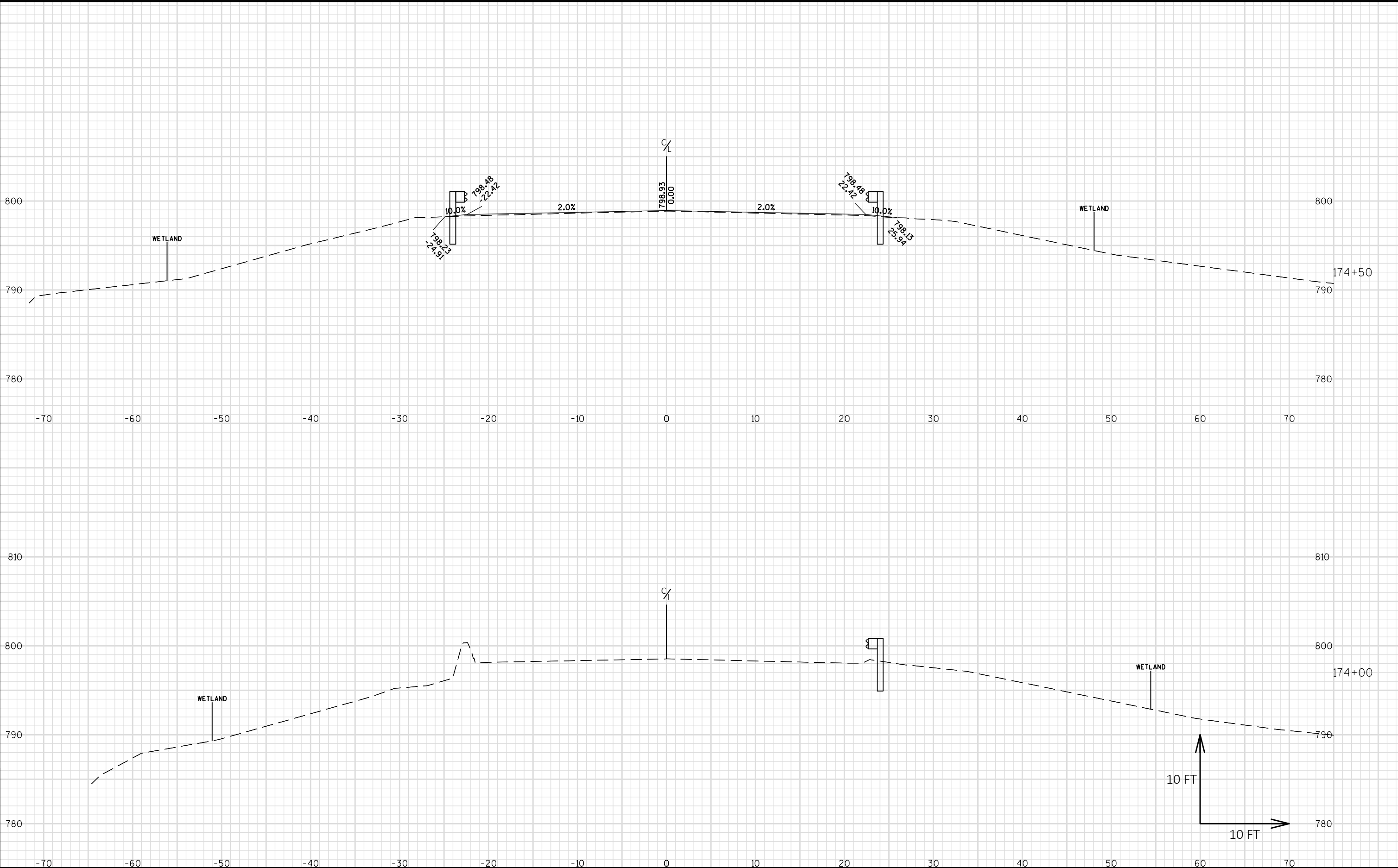
TYPICAL FILL SECTION AT F.F. WINGS

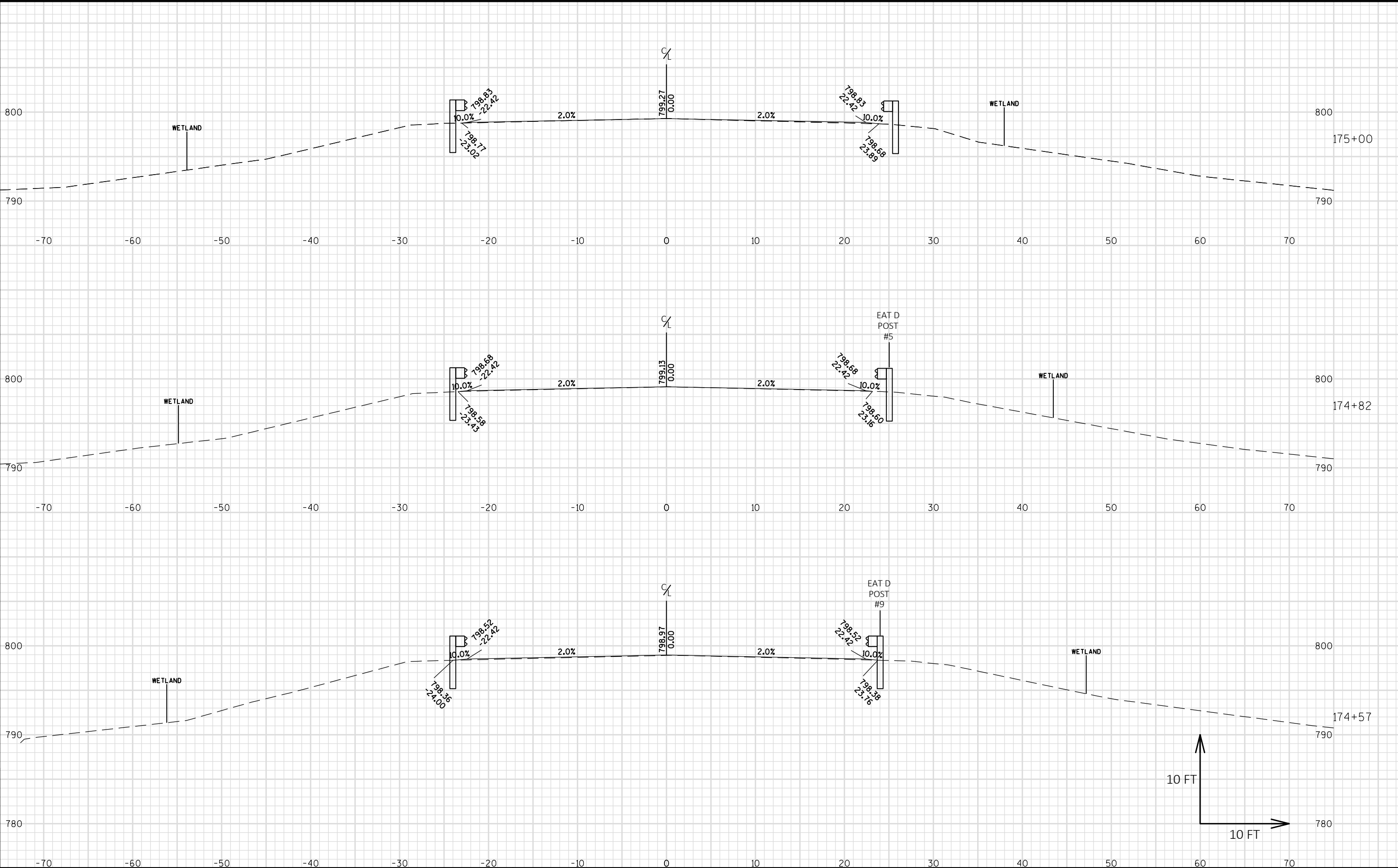
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-14-60			
DRAWN BY		WWR	PLANS CK'D. ABS
RIP RAP DETAILS		SHEET 12	





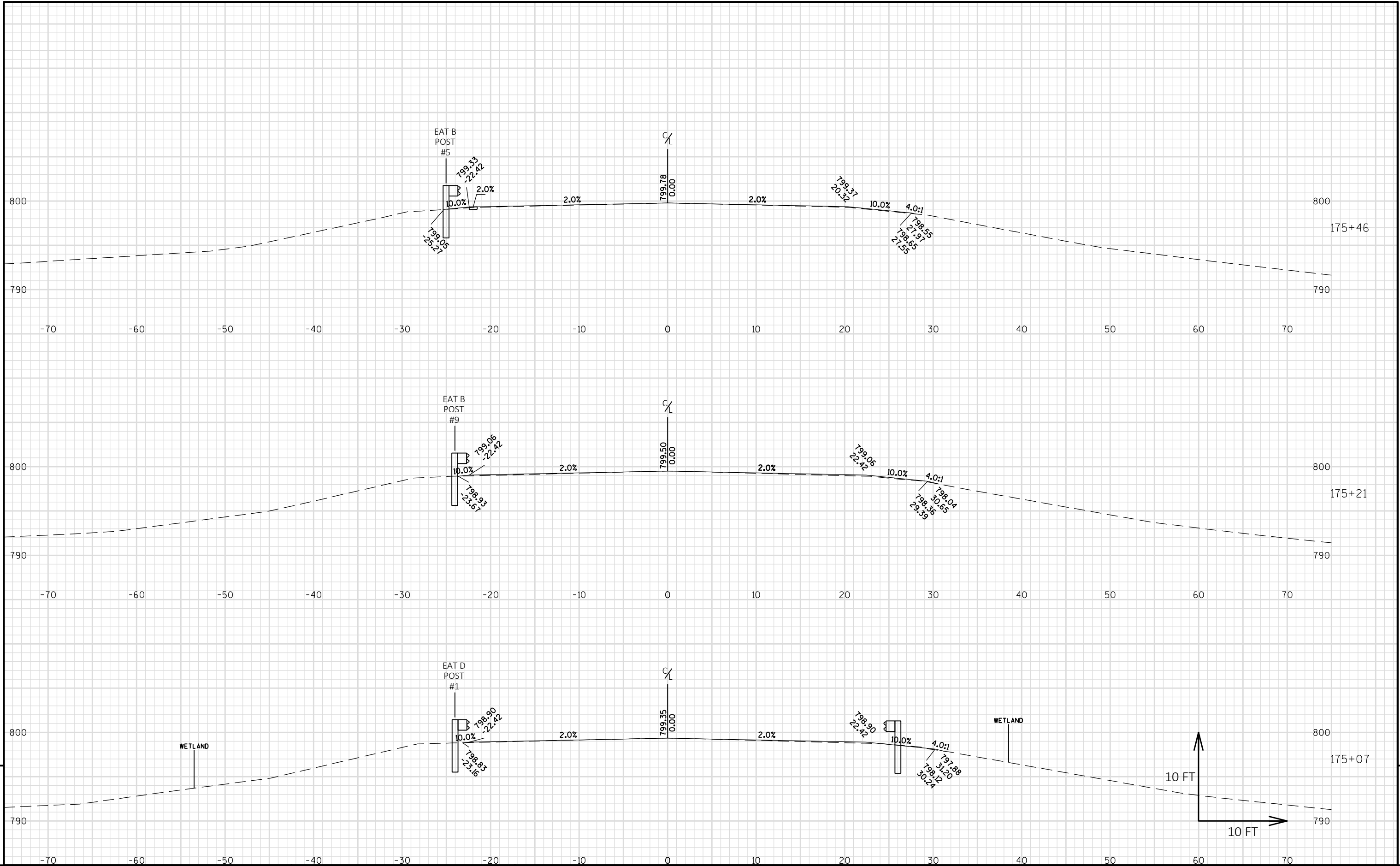


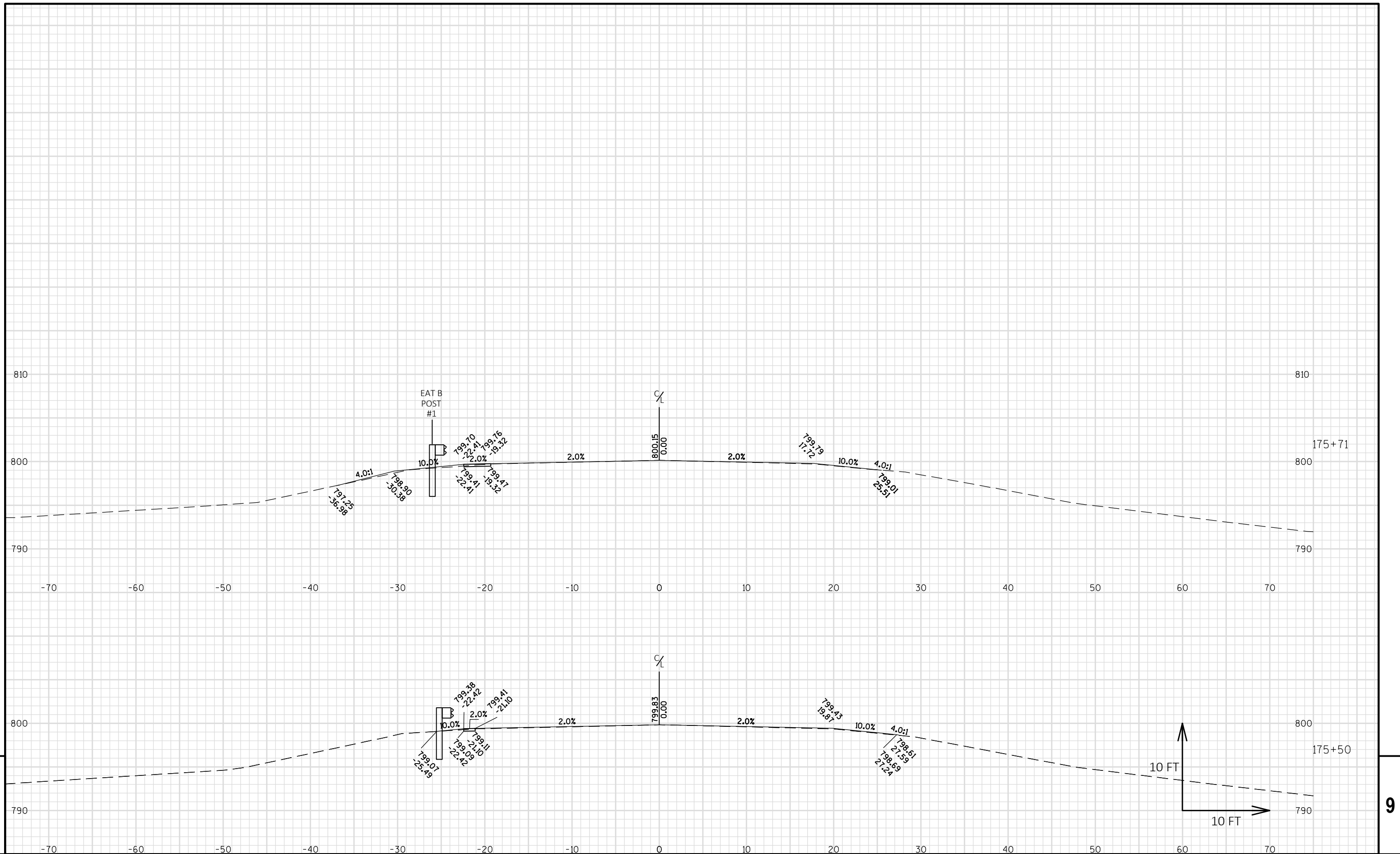
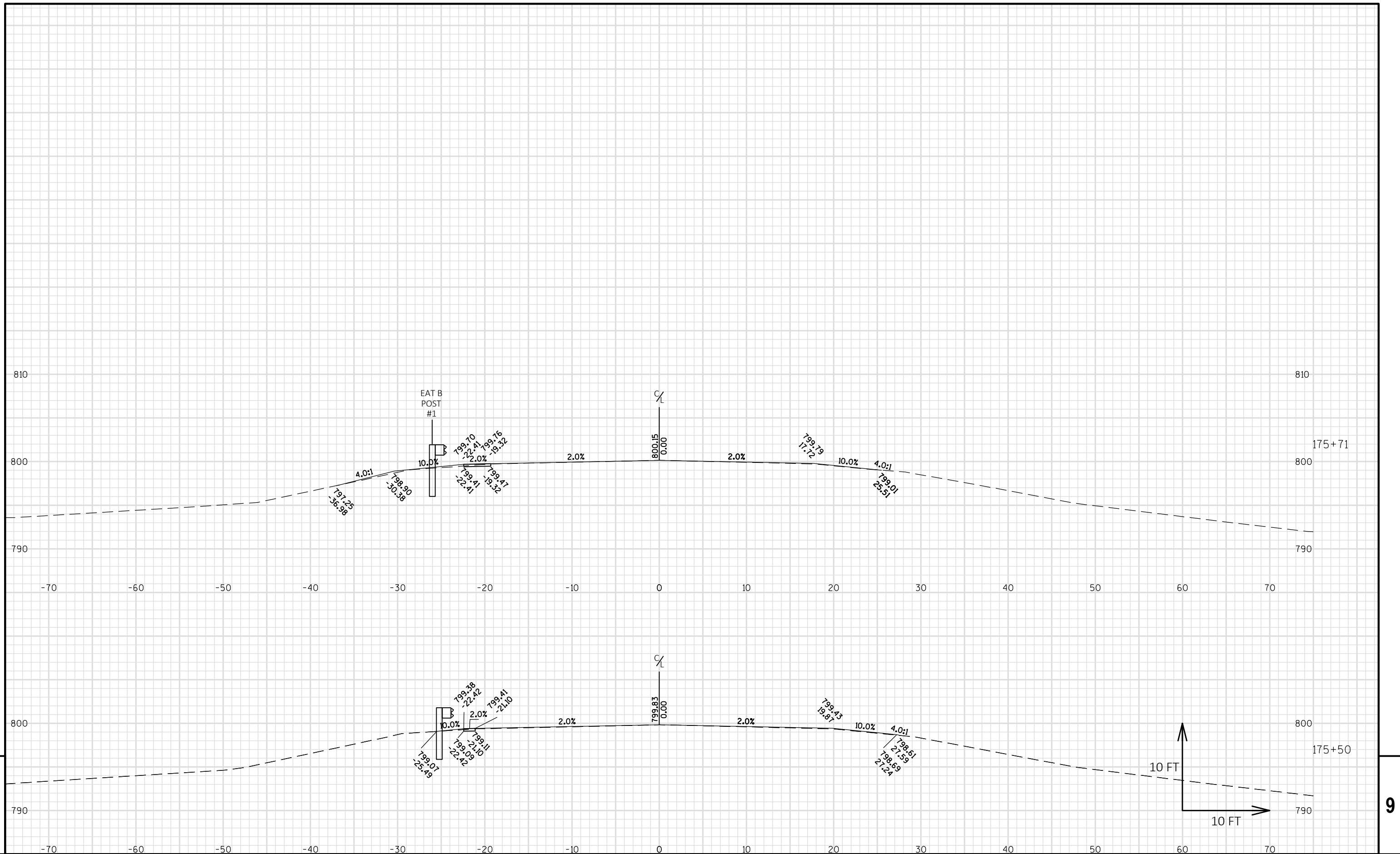




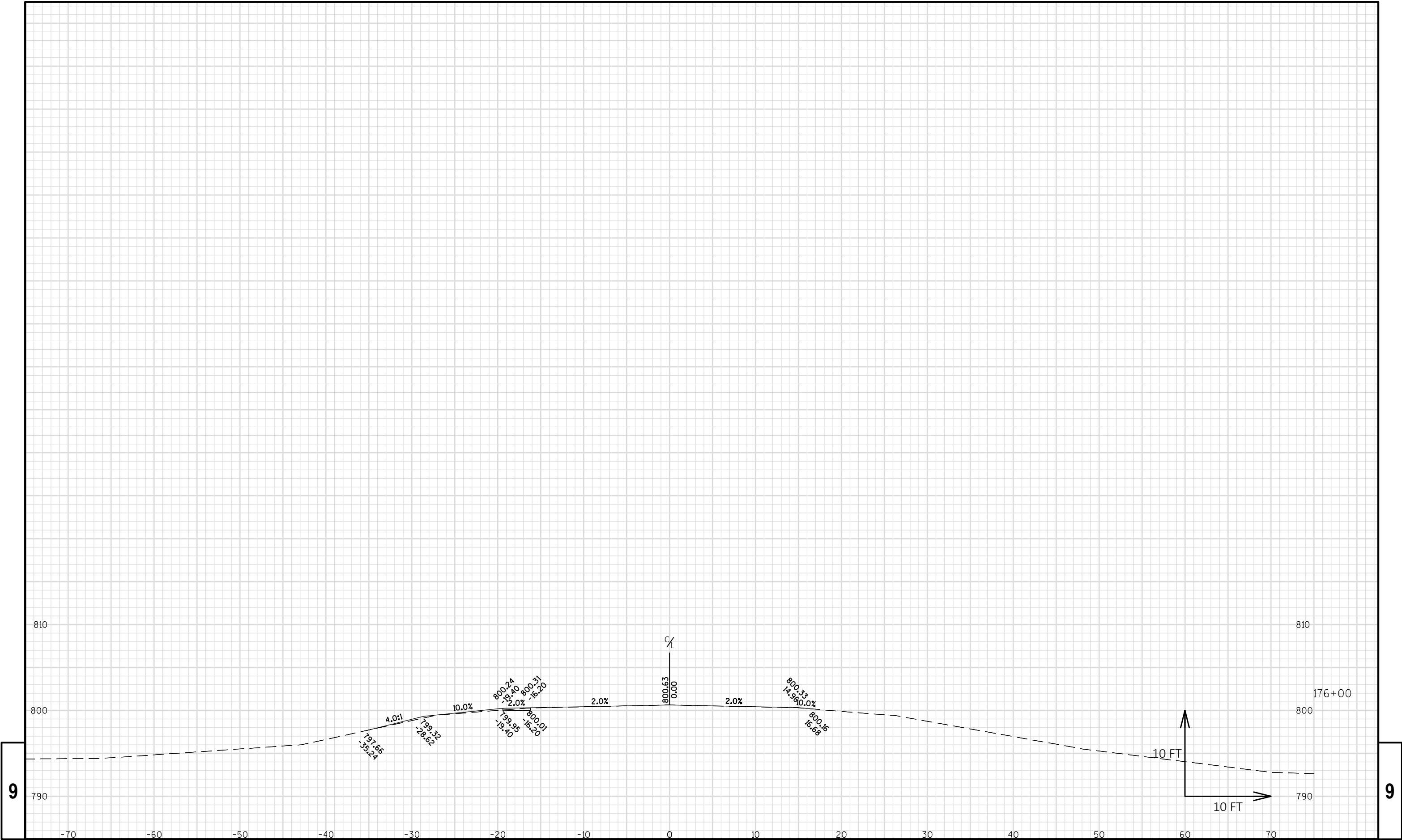
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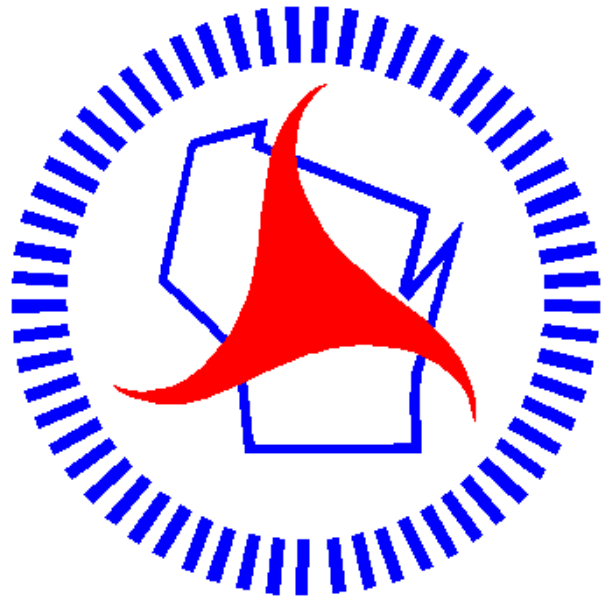




PROJECT NO: 1400-00-84	HWY: STH 16	COUNTY: DODGE	CROSS SECTIONS: STH 16	SHEET	E
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Notes



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