

EAU JUNE 2022  
PROJECT ID: 1196-00-61  
WITH:

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION  
PLAN OF PROPOSED IMPROVEMENT

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
1196-00-61	WISC 2022425	1

MINONG - SOLON SPRINGS

CTH M - WIS. CENTRAL LTD. RR  
USH 53  
DOUGLAS COUNTY

STATE PROJECT NUMBER  
1196-00-61

ORDER OF SHEETS

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

TOTAL SHEETS = 110



14

DESIGN DESIGNATION 1196-00-31

A.A.D.T.	2016	=	5300
A.A.D.T.	2042	=	7050
D.H.V.		=	1290
D.D.		=	61/39
T.		=	9.6%
DESIGN SPEED		=	65 MPH
ESALS		=	1,700,000

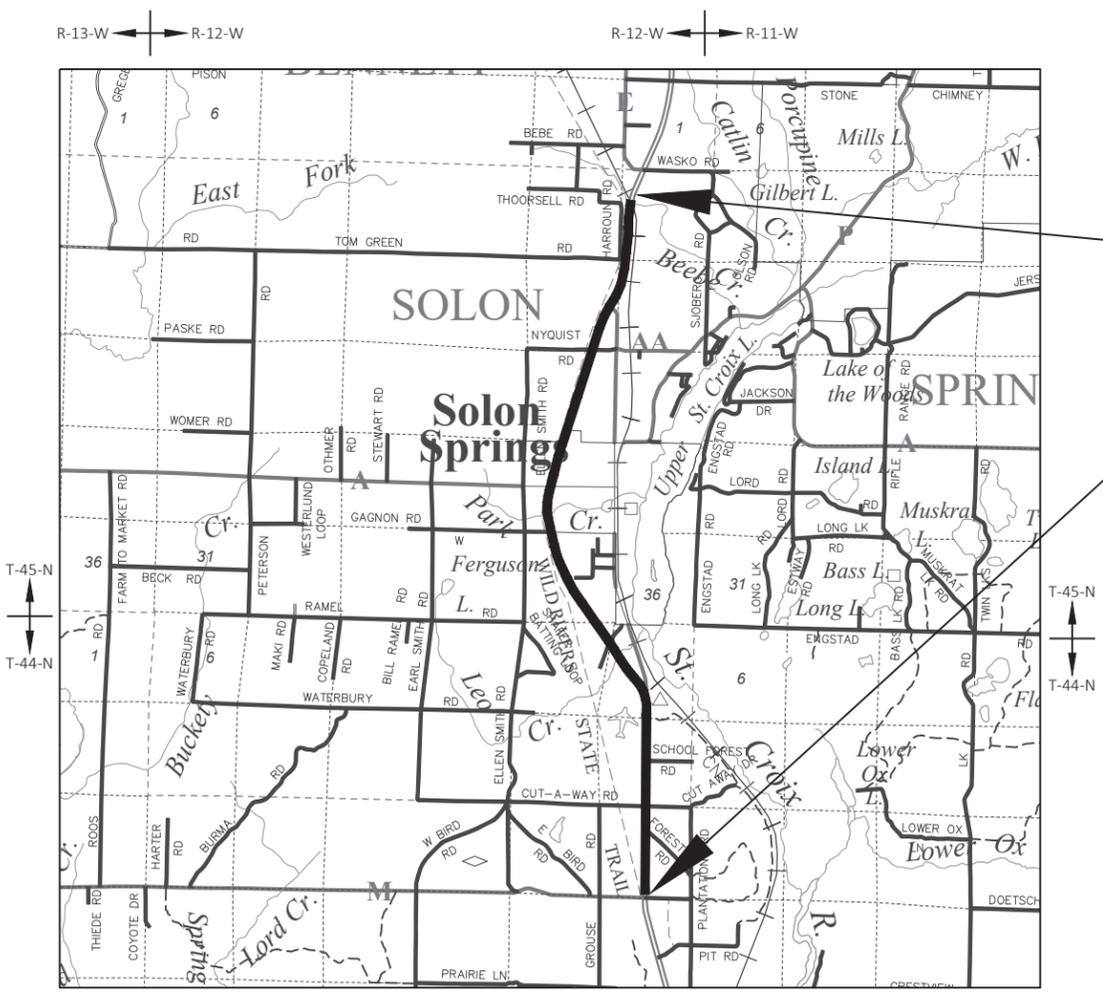
CONVENTIONAL SYMBOLS

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	



LAYOUT  
SCALE 0 2 MI  
TOTAL NET LENGTH OF CENTERLINE = 8.01 MILES

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), DOUGLAS COUNTY, NAD83 ( 1991 ), IN U.S. SURVEY FEET. POSITIONS SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES ARE THE SAME AS GROUND DISTANCES. ELEVATIONS ARE REFERENCED TO NAVD 88 ( 1991 ). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 03.

END PROJECT  
NB STA 1119+38.45  
X = 218,854.814  
Y = 187,313.523  
SB STA 1118+62.58  
X = 218,748.700  
Y = 187,407.111  
BEGIN PROJECT  
NB STA 695+00  
X = 220,674.490  
Y = 147,368.055  
SB STA 695+00  
X = 220,570.530  
Y = 147,381.572

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PREPARED BY	Surveyor	WISCONSIN DEPARTMENT OF TRANSPORTATION
Designer	TRAVIS JENSEN / STEPHANIE KING	
Project Manager	NICHOLAS PITTSCH	
Regional Examiner	TOU YANG	
Regional Supervisor	DAVE KOEPP	
APPROVED FOR THE DEPARTMENT	Digitally signed by Stephanie J. King, P.E. 35215-6 Date: 2022.03.22 11:33:21-05'00'	

UTILITIES

ELECTRICITY - TRANSMISSION

ATC MANAGEMENT, INC.  
 TONY MARCINIAK  
 W234 N2000 RIDGEWAY PARKWAY COURT  
 PO BOX 47  
 WAUKESHA, WI 53187-0047  
 PHONE: 262-506-6814  
 EMAIL: AMARCINIAK@ATCLLC.COM

COMMUNICATIONS

ASTREA  
 RUSSELL KENNY  
 105 KENT ST  
 PO BOX 190  
 IRON MOUNTAIN, MI 49801  
 PHONE: 906-282-6434  
 EMAIL: RUSSELL.KENNY@ASTREACONNECT.COM

CENTURY LINK  
 RUSS VANCE  
 135 N 21ST ST  
 SUPERIOR, WI 54880  
 PHONE: 715-919-8003  
 EMAIL: RUSSELL.VANCE@LUMEN.COM

WISCONSIN INDEPENDENT NETWORK, LLC  
 JOHN LOUIS  
 SUITE 219  
 800 WISCONSIN AVENUE  
 EAU CLAIRE, WI 54703  
 PHONE: 715-838-4012  
 EMAIL: JOHN.LOUIS@WINTECHNOLOGY.COM

SEWER

VILLAGE OF SOLON SPRINGS  
 KATHY BURGER  
 11523 S BUSINESS 53  
 SOLON SPRINGS, WI 54873  
 PHONE: 7155-378-2235  
 EMAIL: KATHYB@VILLAGEOF SOLONS SPRINGS.COM

GORDAN SANITARY DISTRIC #1  
 DOUG MACDONALD  
 PO BOX 5  
 GORDON, WI 54838  
 PHONE: 218-590-5000  
 EMAIL: CLERK@GORDONWI.US.COM

GAS / PETROLEUM

SUPERIOR WATER, LIGHT, AND POWER CO  
 JAMISON MEHLE  
 2915 HILL AVE  
 SUPERIOR WI 54880  
 PHONE: 715-395-6288  
 EMAIL: JMEHLE@SWLP.COM

STANDARD ABBREVIATIONS

ABUT.	ABUTMENT	ESALS	EQUIVALENT SINGLE AXLE LOADS	REQ'D	REQUIRED
AGG.	AGGREGATE	E.B.S.	EXCAVATION BELOW SUBGRADE	R/L	REFERENCE LINE
AH.	AHEAD	EL.	EXISTING	RT	RIGHT
AADT	ANNUAL AVERAGE DAILY TRAFFIC	FERT.	FERTILIZE	R.H.F.	RIGHT-HAND FORWARD
APPROX.	APPROXIMATE	FE	FIELD ENTRANCE	R/W	RIGHT-OF-WAY
AEW	APRON END WALL	FIN.	FINISHED	RD	ROAD
ASPH.	ASPHALTIC	FL OR $\epsilon$	FLOW LINE	SHLD	SHOULDER
BK.	BACK	HOR.	HORIZONTAL	S.	SOUTH
BEG.	BEGIN	INL.	INLET	SDD	STANDARD DETAIL DRAWINGS
B.M.	BENCH MARK	INTER.	INTERSECTION	SR	SIDE ROAD
C/L OR $\epsilon$	CENTER LINE	INV.	INVERT	SSPRC	STORM SEWER PIPE REINFORCED CONCRETE
C.E.	COMMERCIAL ENTRANCE	LT	LEFT	STH	STATE TRUNK HIGHWAYS
CONC.	CONCRETE	L.H.F.	LEFT-HAND FORWARD	STA.	STATION
CONSTRUT.	CONSTRUCTION	LF	LINEAR FOOT	STRUCT.	STRUCTURE
CO.	COUNTY	LS	LUMP SUM	TEL	TELEPHONE
CTH	COUNTY TRUNK HIGHWAY	MAX.	MAXIMUM	TEMP.	TEMPORARY
X-SEC.	CROSS SECTION	MISC.	MISCELLANEOUS	T	TOWN
CR.	CRUSHED	N.	NORTH	T.	TRUCKS (PERCENT OF)
CULV.	CULVERT	NE	NORTHEAST	TYP.	TYPICAL
DOT	DEPARTMENT OF TRANSPORTATION	NW	NORTHWEST	UG	UNDERGROUND
D.H.V.	DESIGN HOUR VOLUME	PAVT.	PAVEMENT	VAR.	VARIABLE
DIA.	DIAMETER	PC	POINT OF CURVATURE	V	VELOCITY OR DESIGN SPEED
DISCH.	OR DIS. DISCHARGE	PI	POINT OF INTERSECTION	VC	VERTICAL CURVE
E.	EAST	PT	POINT OF TANGENCY	W.	WEST
EB	EASTBOUND	POT	POINT ON TANGENT	WB	WESTBOUND
EA.	EACH	PE	PRIVATE ENTRANCE	WD	WORKING DAY
ELEC.	ELECTRIC	PROJ.	PROJECT	WZ	WORK ZONE
OR ELEV.	ELEVATION	R	RANGE	X	EAST GRID COORDINATE
				Y	NORTH GRID COORDINATE

DNR CONTACT

WISCONSIN DEPARTMENT OF NATURAL RESOURCES  
 AMY CRONK  
 810 WEST MAPLE STREET  
 SPOONER, WI 54801  
 PHONE: 715-520-3976  
 EMAIL: AMY.CRONK@WISCONSIN.GOV

DESIGN CONTACT

WISCONSIN DEPARTMENT OF TRANSPORTATION  
 STEPHANIE J. KING  
 1701 N 4TH STREET  
 SUPERIOR, WI 54880  
 PHONE: 715-392-7874  
 EMAIL: STEPHANIE.KING@DOT.WI.GOV

GENERAL NOTES

THE LOCATION OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS IS APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.

CURVE DATA SHOWN IS ARC DEFINITION.

NO TREES OR SHRUBS ARE TO BE REMOVED WITHOUT APPROVAL FROM ENGINEER.

ACCESS TO ALL RESIDENCES, BUSINESS, AND DRIVEWAYS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.

THE CONTRACTOR SHALL NOTIFY DIGGERS HOTLINE AND AFFECTED UTILITIES PRIOR TO THE START OF WORK. ANY LOCAL MUNICIPAL UTILITY WHICH IS NOT A MEMBER OF THE DIGGERS HOTLINE MUST BE CONTACTED SEPARATELY.

THE ENGINEER WILL DETERMINE ANY DETAILS OF CONSTRUCTION NOT SHOWN ON THE PLAN.

ALL WASTE MATERIAL RESULTING FROM THE VARIOUS OPERATIONS UNDER THIS CONTRACT SHALL BE COLLECTED TO BE PROPERLY DISPOSED OF PRIOR TO REOPENING LANES TO TRAFFIC.

DISTURBED AREAS WITHIN THE RIGHT OF WAY AS A RESULT OF THIS PROJECT SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

WHEN THE QUANTITY OF THE ITEM OF BASE AGGREGATE DENSE OR HMA PAVEMENT IS MEASURED BY THE TON, THE DEPTH OR THICKNESS OF THE COURSE SHOWN ON THE PLANS IS APPROXIMATE, AND THE ACTUAL THICKNESS WILL DEPEND ON THE DISTRIBUTION OF THE MATERIAL AS DIRECTED BY THE ENGINEER.

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

MATCH EXISTING SUPERELEVATION RATES.

THE EXACT LOCATION OF THE EROSION CONTROL DEVICES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

SDD 15C12-8 "TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION" SHALL ONLY BE USED AS NEEDED FOR WORK OPERATIONS ON SIDE ROADS AND MEDIANS. THIS ITEM SHALL NOT BE USED FOR MAINLINE WORK ON USH 53 NB OR SB.

FOR MAINLINE HMA PAVING (1031+00 - 1119+38.45NB), PAVING OPERATIONS SHALL ALTERNATE SIDES WHEN CONSTRUCTING HMA PAVEMENT. LOWER LIFT ON OUTSIDE LANE AND INSIDE LANE SHALL BE PLACED BEFORE CONSTRUCTION ON UPPER LIFT BEGINS. IN ADDITION, THE CENTERLINE JOINT SHALL BE A VERTICAL CONSTRUCTION JOINT ON BOTH THE UPPER AND LOWER LIFTS.

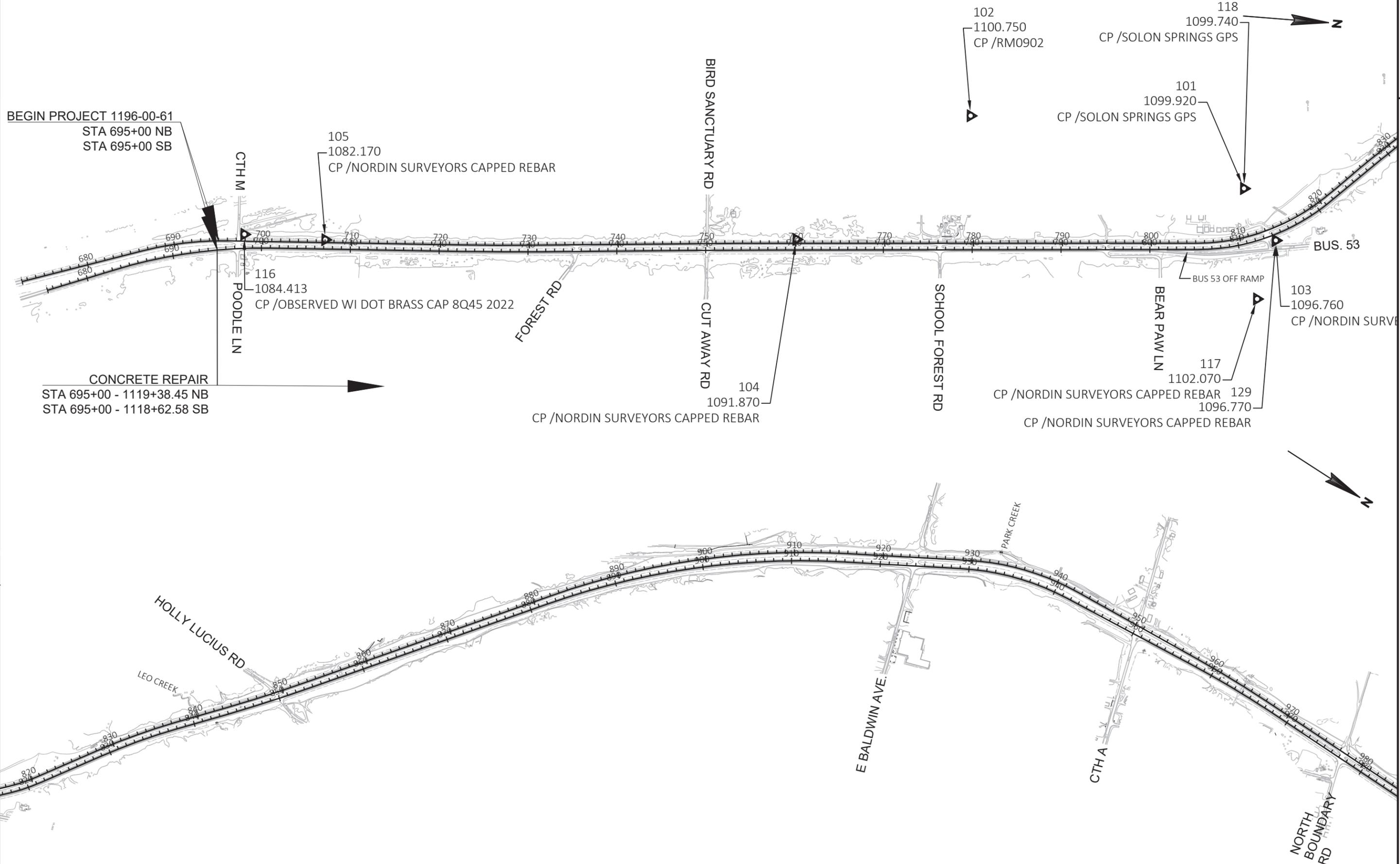
THIS PROJECT HAS POTENTIAL FOR SPREADING EMERALD ASH BORER BEETLE. IT IS ILLEGAL TO MOVE OR TRANSPORT ASH MATERIALS, THE EMERALD ASH BORER, AND HARDWOOD DEBRIS FROM EMERALD ASH BOER QUARANTINED AREAS TO NON-QUARANTINED AREAS WITHOUT COMPLIANCE FROM THE DEPARTMENT OF AGRICULTURE, THE WISCONSIN DNR, AND THE WISCONSIN DEPARTMENT OF TRADE AND CONSUMER PROTECTION,



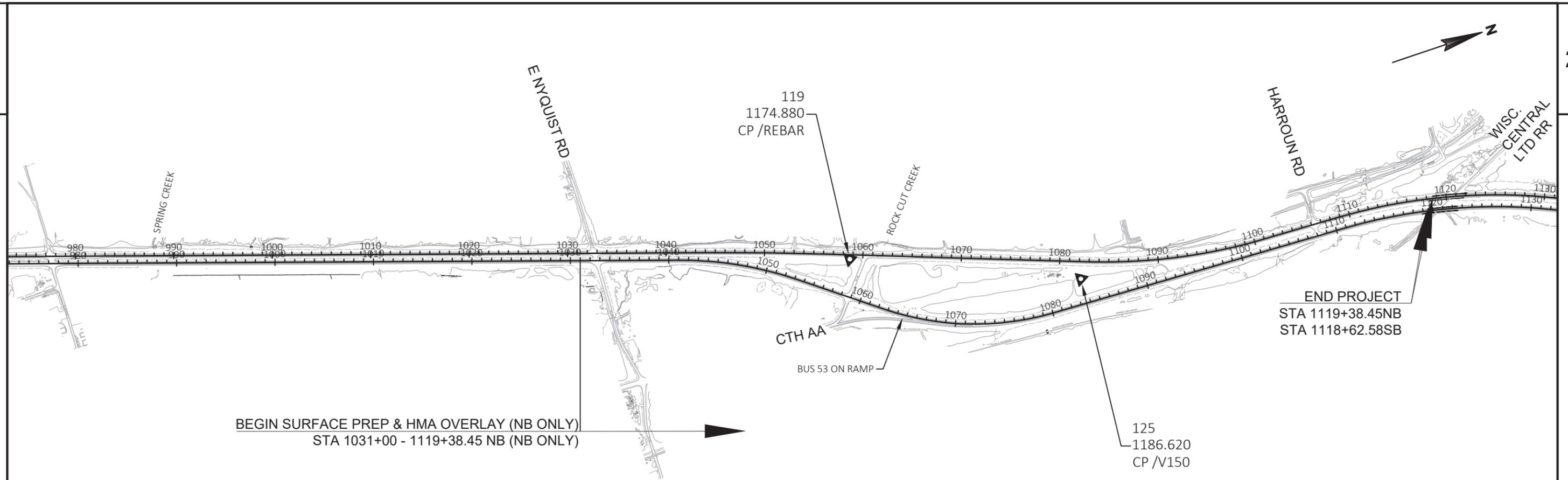
Dial **811** or (800)242-8511

www.DiggersHotline.com

PROJECT NO: 1196-00-61	HWY: USH 53	COUNTY: DOUGLAS	GENERAL NOTES	SHEET	E
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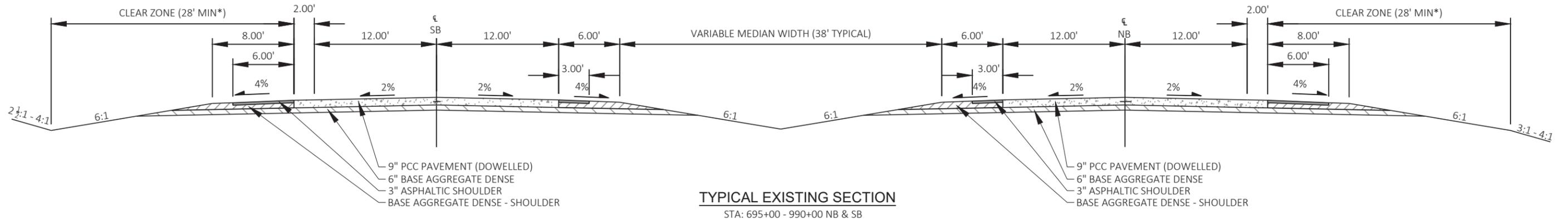


PROJECT NO: 1196-00-61	HWY: USH 53	COUNTY: DOUGLAS	PROJECT OVERVIEW	SHEET	E
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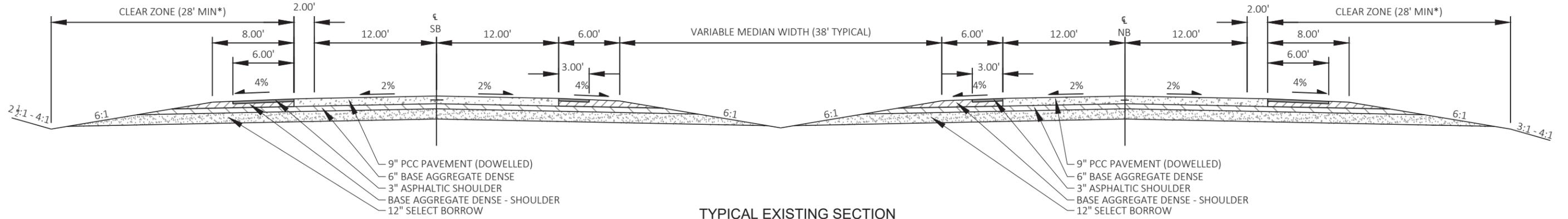


CONTROL POINT TABLE							
NO.	STATION	OFFSET	ALI	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	WEST OF PROJECT			220080.55	99403.12	1065.91	CP /AG9607
101	812+15.79	-530.63' LT	53-SB	158911.5	219770.5	1099.92	CP /SOLON SPRINGS GPS
102	779+67.28	-1432.30' LT	53-SB	155820.31	219011.1	1100.75	CP /RM0902
103	814+13.87	66.01' RT	53-NB	159280.38	220348.1	1096.76	CP /NORDIN SURVEYORS CAPPED REBAR
104	760+05.81	-44.92 LT	53-SB	153885.45	220435.4	1091.87	CP /NORDIN SURVEYORS CAPPED REBAR
105	707+00	-35.00' LT	53-SB	148583.33	220535.9	1082.17	CP /NORDIN SURVEYORS CAPPED REBAR
106	SOUTH OF PROJECT			143296.46	221530.5	1062.44	CP /NORDIN SURVEYORS CAPPED REBAR
116	697+90.19	-76.04' LT	53-SB	147670.881	220492.3	1084.413	CP /OBSERVED WI DOT BRASS CAP 8Q45 2022
117	810+67.62	631.56' RT	53-NB	159081.17	221008.3	1102.07	CP /NORDIN SURVEYORS CAPPED REBAR
118	812+15.79	-530.63' LT	53-SB	158911.59	219770.6	1099.74	CP /SOLON SPRINGS GPS
119	1058+67.01	44.55' RT	53-SB	181559.45	217631.3	1174.88	CP /REBAR
120	855+65.46	-7592.39' LT	53-SB	158108.85	211682.5	1094.46	CP /NORDIN SURVEYORS CAPPED REBAR
125	1082+19.28	174.31' RT	53-SB	183750.14	218497.8	1186.62	CP /V150
	1083+68.2	-254.18' LT	53-NB				
124	NORTH OF PROJECT			198367.21	220476.2	1239.08	CP /Y150
129	814+13.87	66.01' RT	53-NB	159280.4	220348	1096.77	CP /NORDIN SURVEYORS CAPPED REBAR

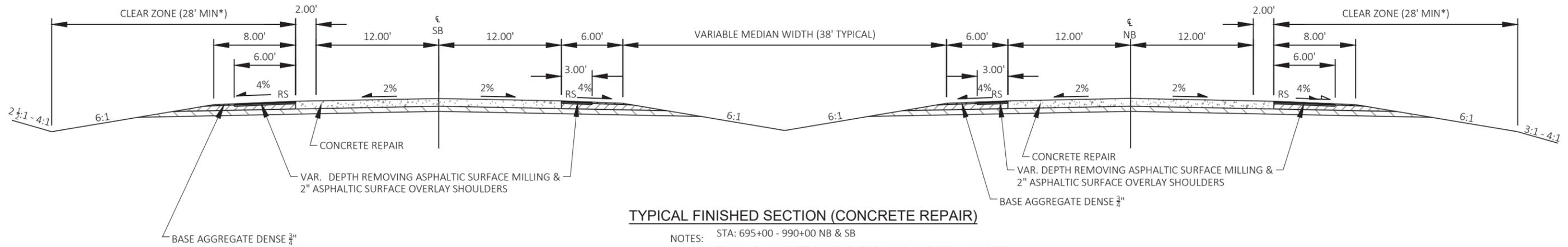
\* CLEAR ZONE: 715+00 - 802+00 SB = 30.0'



TYPICAL EXISTING SECTION  
STA: 695+00 - 990+00 NB & SB

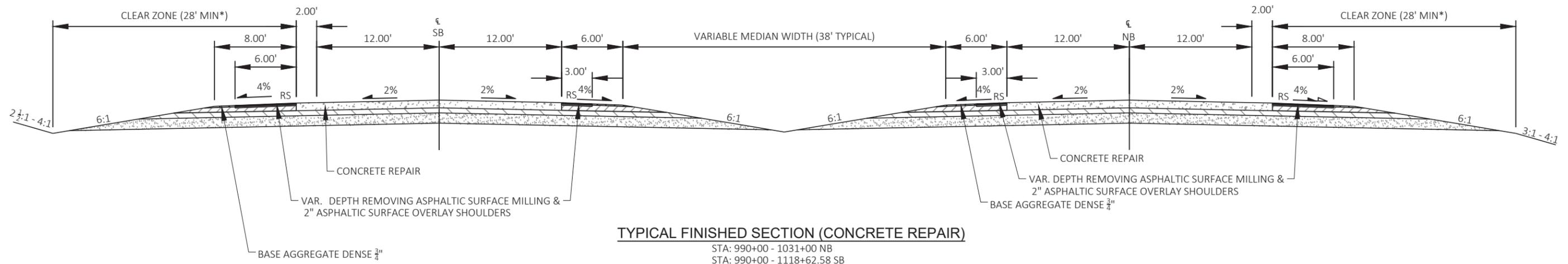


TYPICAL EXISTING SECTION  
STA: 990+00 - 1119+38.45NB  
STA: 990+00 - 1118+62.58SB

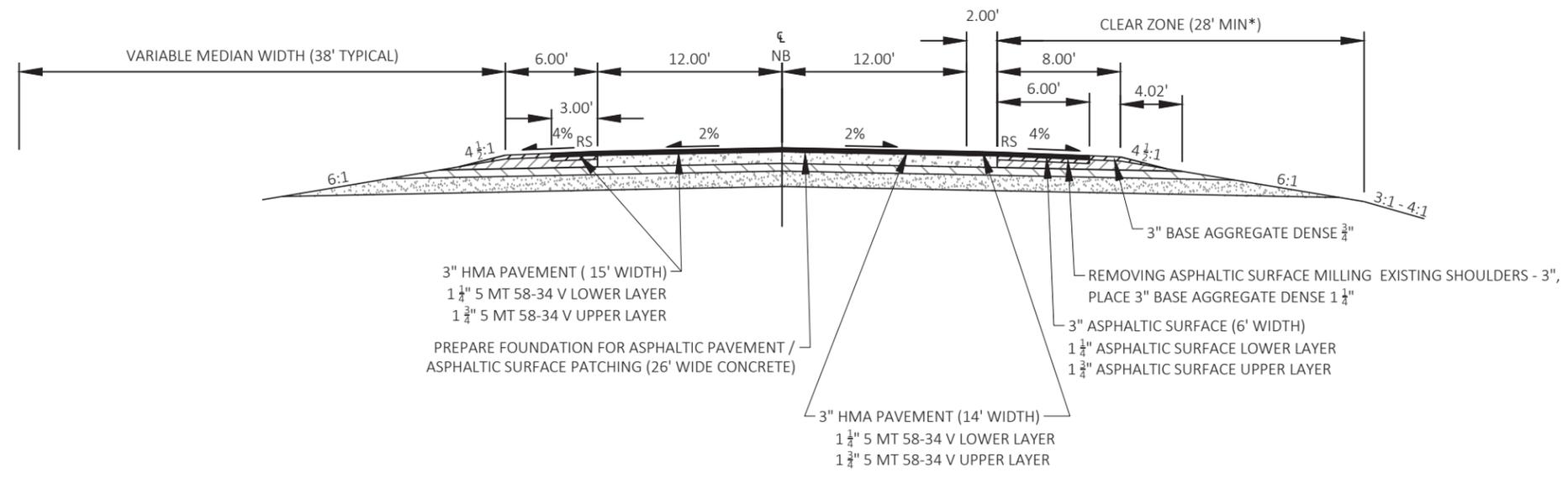


**TYPICAL FINISHED SECTION (CONCRETE REPAIR)**

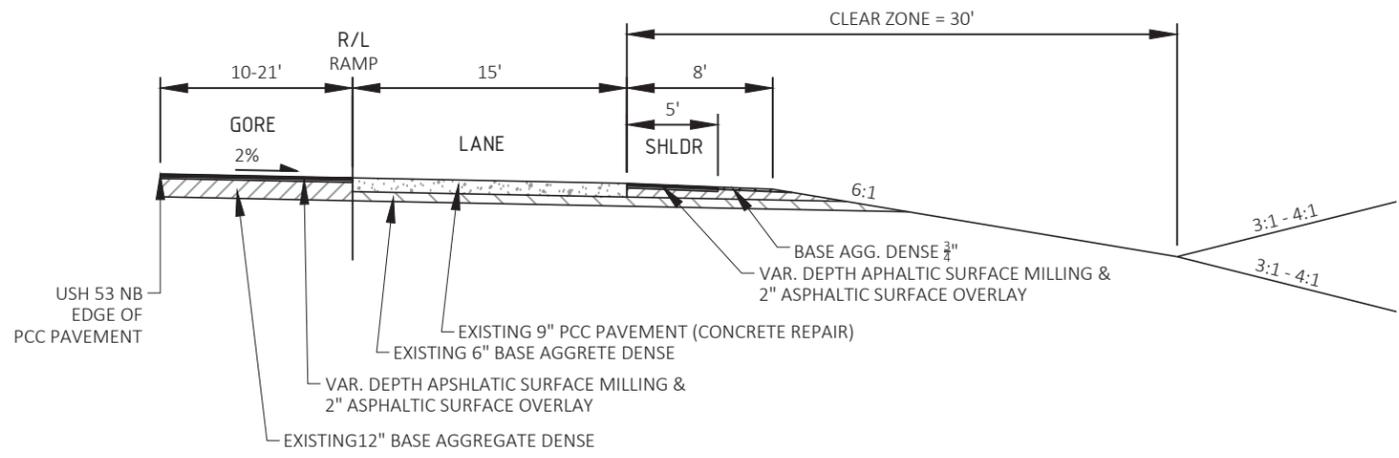
- NOTES:
- LOCATIONS OF CONCRETE PAVEMENT REPAIR DOWELLED, CONCRETE PAVEMENT REPLACEMENT DOWELLED, CONCRETE PAVEMENT 9-INCH, AND CONCRETE PAVEMENT CENTERLINE JOINT REPAIR SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
  - MILL DEPTH IS EXPECTED TO BE LESS THAN 2". EXISTING ASPHALTIC SHOULDER HAS SETTLED AND SITS BELOW EDGE OF CONCRETE.
- RS = ASPHALTIC SHOULDER RUMBLE STRIPS



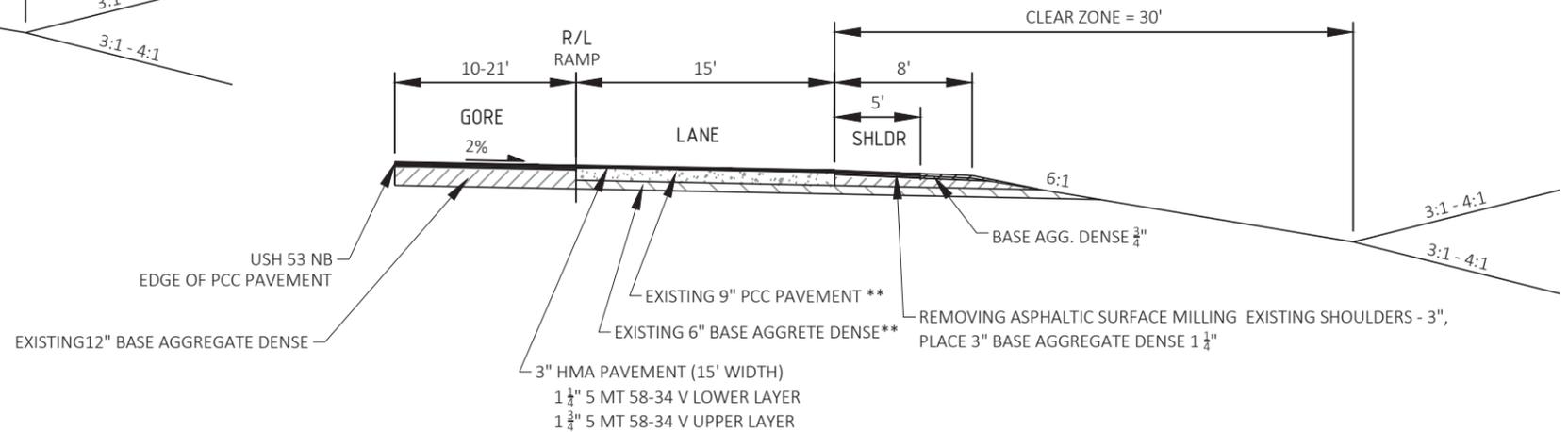
**TYPICAL FINISHED SECTION (CONCRETE REPAIR)**



**TYPICAL FINISHED SECTION (OVERLAY)**  
STA: 1031+00 - 1119+38.45 NB



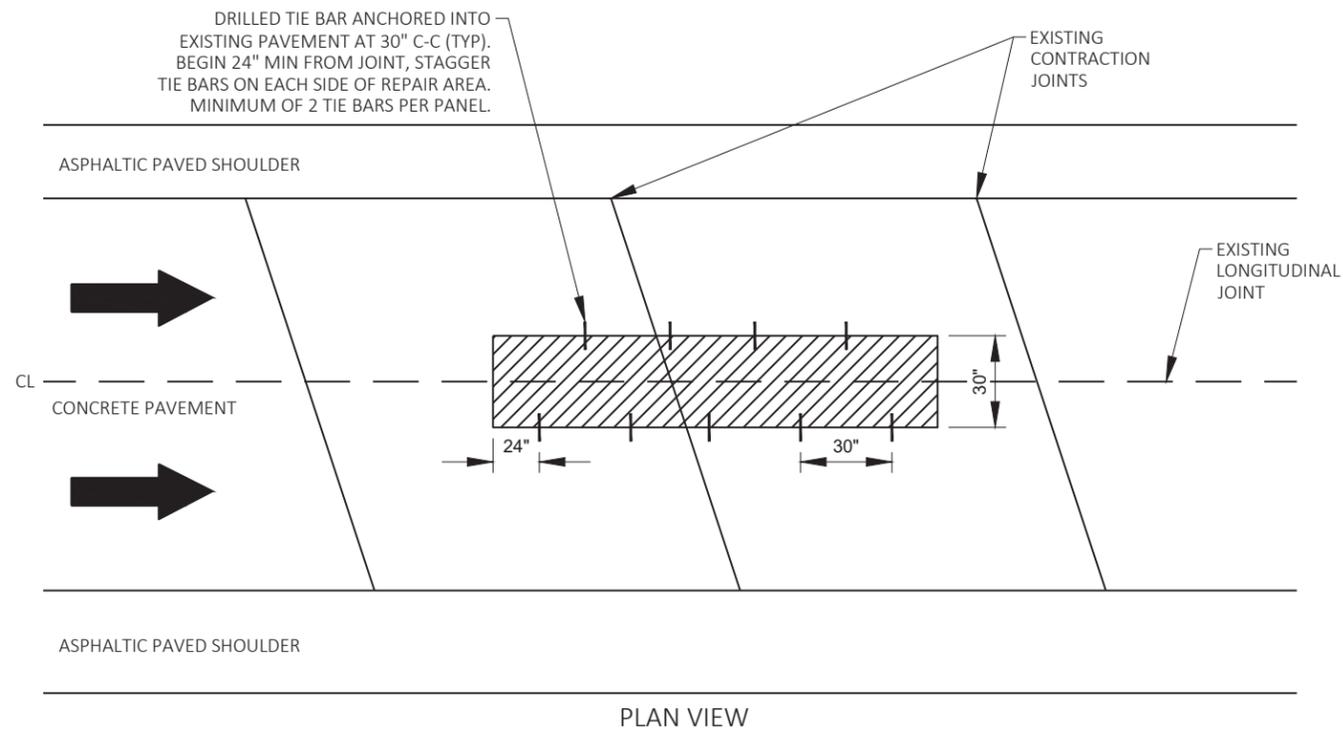
**TYPICAL FINISHED SECTION (CONCRETE REPAIR)**  
STA 0+00 - 4+05.96 (BUS. 53 OFF RAMP)



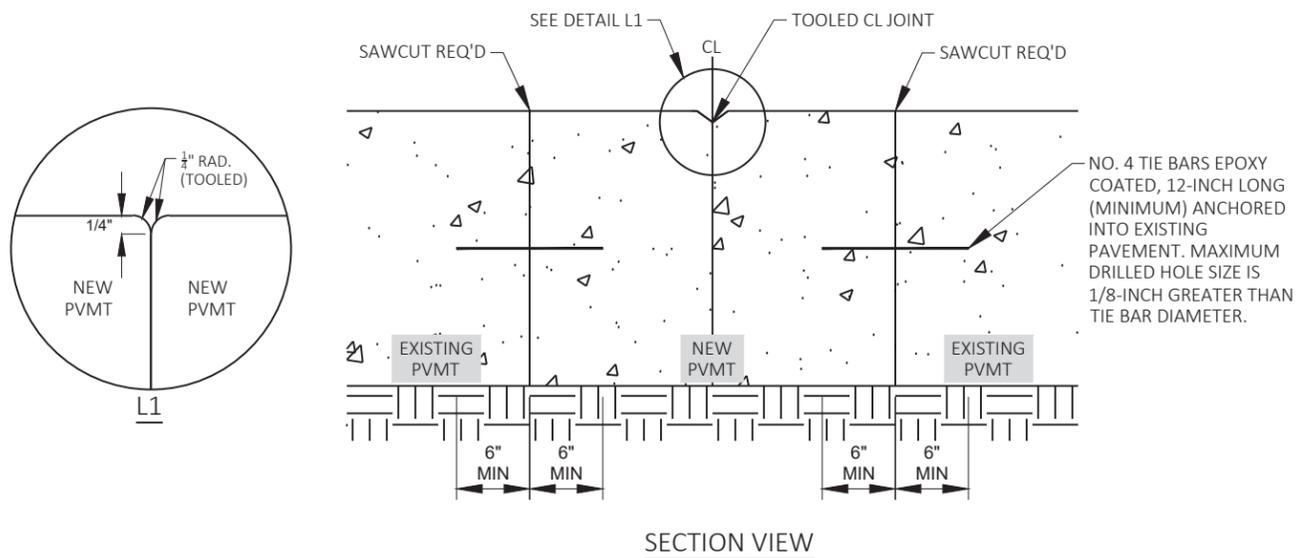
**TYPICAL FINISHED SECTION (OVERLAY)**

STA 7+68 -16+00 (BUS. 53 ON RAMP)  
\*\*STA 7+18 - 7+68 (BUS. 53 ON RAMP)  
\*\*3" EXISTING ASPHALTIC CONCRETE PAVEMENT TYPE LV  
8" EXISTING CRUSHED AGGREGATE BASE COURSE

- NOTES:
- LOCATIONS OF CONCRETE PAVEMENT REPAIR DOWELLED, CONCRETE PAVEMENT REPLACEMENT DOWELLED, CONCRETE PAVEMENT 9-INCH, AND CONCRETE PAVEMENT CENTERLINE JOINT REPAIR SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
  - MILL DEPTH IS EXPECTED TO BE LESS THAN 2". EXISTING ASPHALTIC SHOULDER HAS SETTLED AND SITS BELOW EDGE OF CONCRETE.
- RS = ASPHALTIC SHOULDER RUMBLE STRIPS



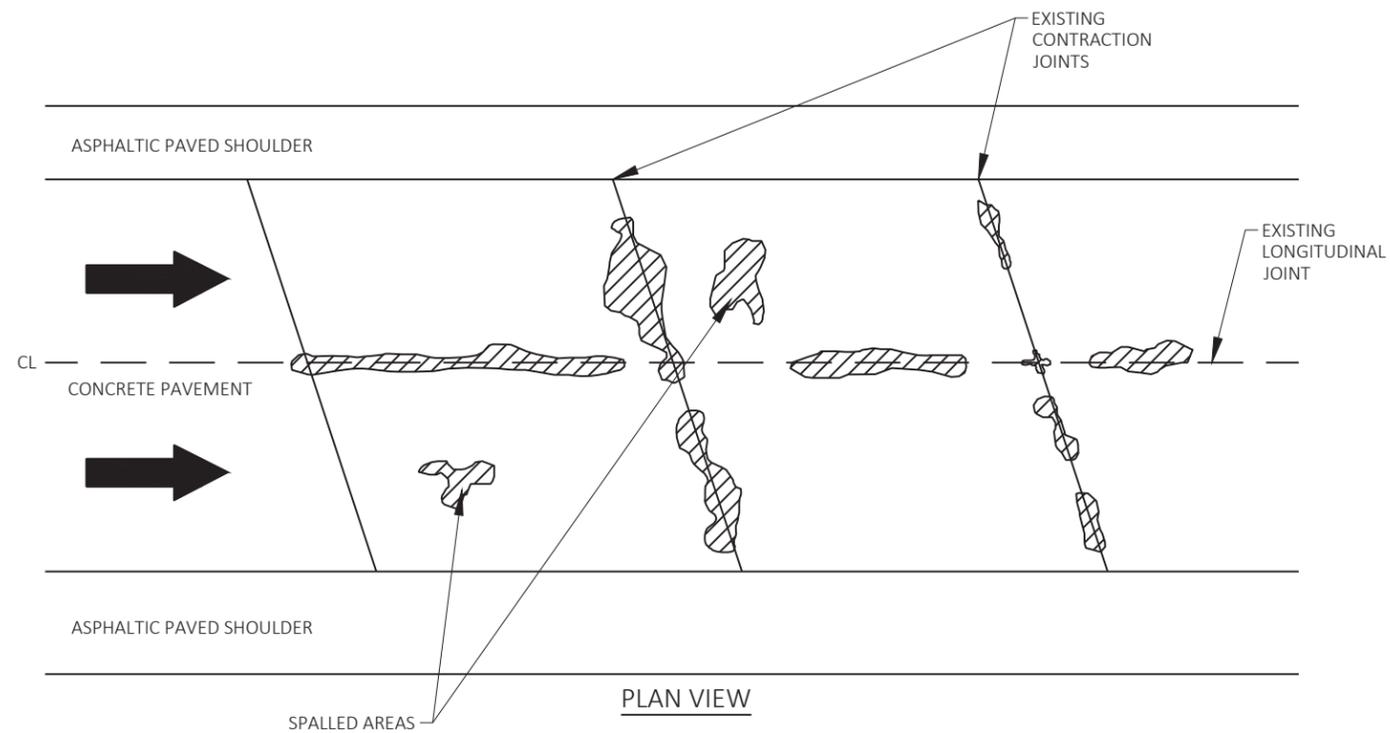
PLAN VIEW



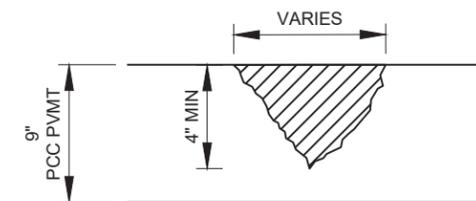
SECTION VIEW

### CONCRETE PAVEMENT CENTERLINE JOINT REPAIR

NOTE  
LOCATIONS WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.



PLAN VIEW

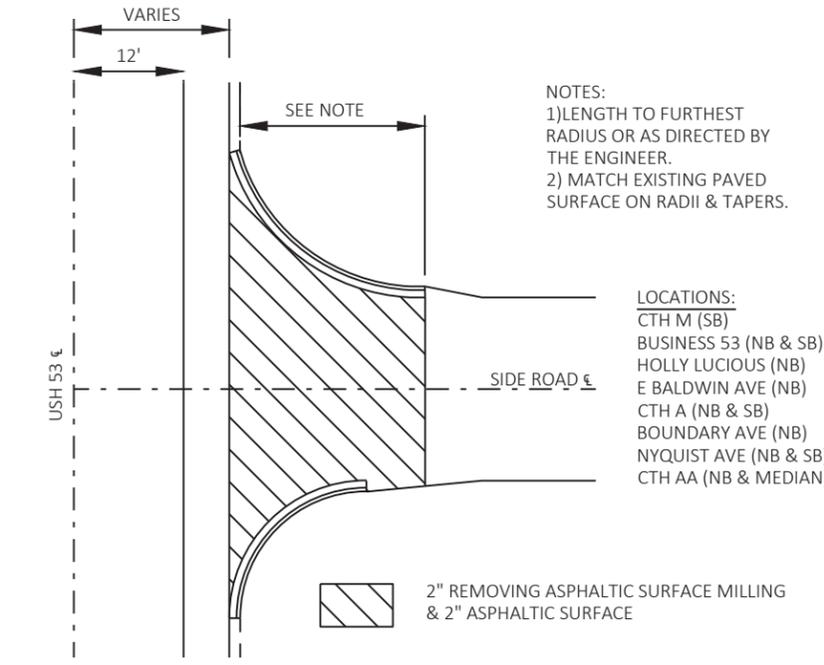


**NOTES**

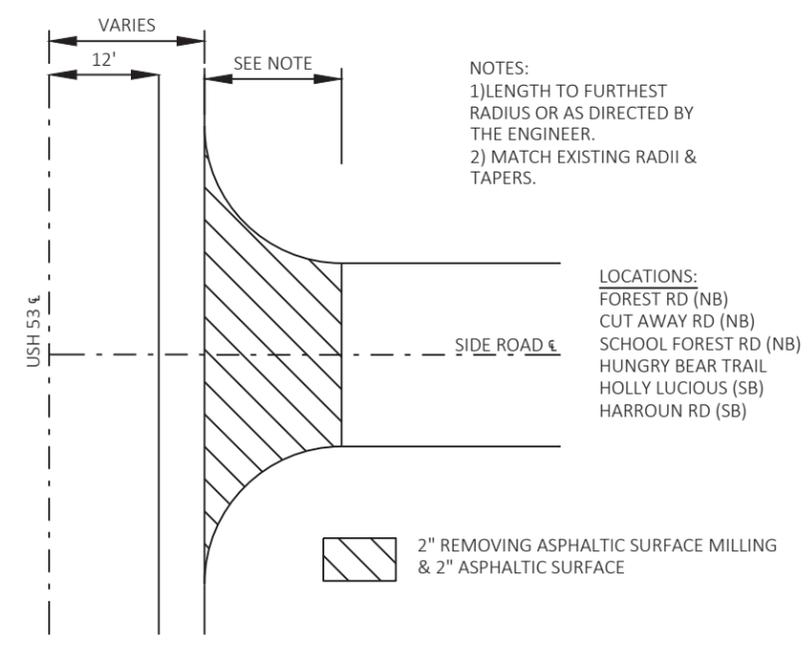
1. REMOVE ALL CONCRETE, ASPHALT, AND ANY UNSOUND MATERIAL FROM TRAVERSE AND LONGITUDINAL CRACKS AS WELL AS ANY RANDOM CRACKS. LOCATIONS WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.
2. ASPHALTIC SURFACE SHALL BE PLACED IN THE JOINT REPAIR AREA. PATCHING SHALL BE COMPACTED IN LIFTS (2 LIFTS MINIMUM) UNTIL FLUSH WITH THE SURFACE OF THE CONCRETE. ASPHALTIC SURFACE PAID SEPARATELY FROM THIS ITEM.
3. DEPTH VARIES FROM A MINIMUM DEPTH OF 4 INCHES TO A FULL DEPTH JOINT AS CONDITIONS DICTATE.

### PREPARE FOUNDATION FOR ASPHALTIC PAVING (1196-00-61)

CLEANING AND REPAIRING DISTRESSED PCC AREAS



**DETAIL OF PAVED SIDE ROAD WITH OR WITHOUT CURB & GUTTER**



**DETAIL OF UNPAVED SIDE ROAD WITH PAVED APPROACH**

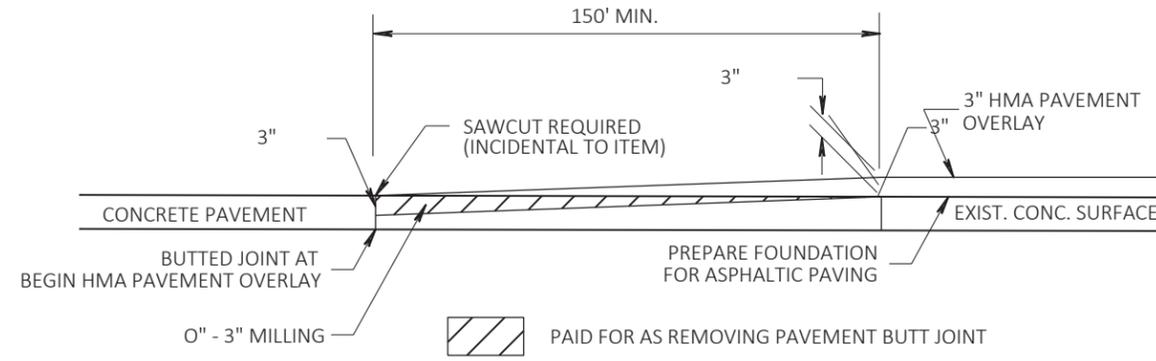
NOTE:  
 BELOW IS A LIST OF SIDEROADS AND MEDIANS THAT ARE CONCRETE PAVEMENT. THIS PROJECT DOES NOT INCLUDE MILLING AND OVERLAYING THESE LOCATIONS. ONLY ASPHALTIC AREAS WILL RECEIVE A MILL AND OVERLAY.

- STA 697+32.03 NB - POODLE LN
- STA 750+02 SB - BIRD SANCTUARY RD

**RUNOFF COEFFICIENT TABLE**

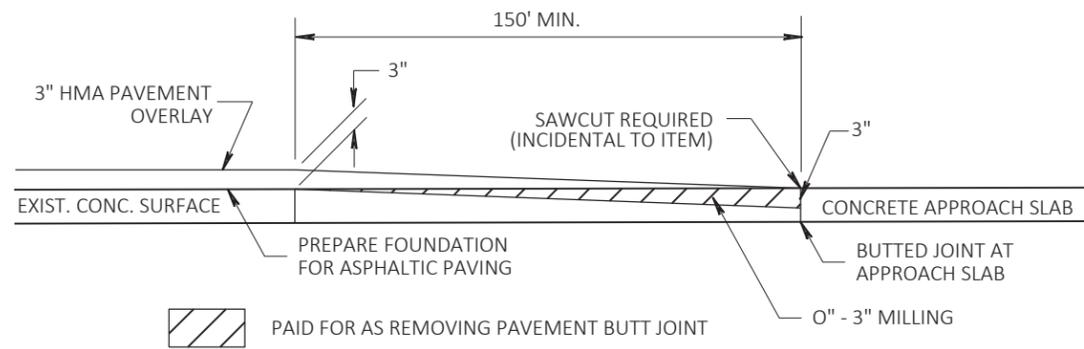
	HYDROLOGIC SOIL GROUP											
	A			B			C			D		
	SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)		
LAND USE:	0-2	2-6	6 & OVER									
ROW CROPS	.08	.16	.22	.12	.20	.27	.15	.24	.33	.19	.28	.38
	.22	.30	.38	.26	.34	.44	.30	.37	.50	.34	.41	.56
MEDIAN STRIP-TURF	.19	.20	.24	.19	.22	.26	.20	.23	.30	.20	.25	.30
	.24	.26	.30	.25	.28	.33	.26	.30	.37	.27	.32	.40
SIDE SLOPE-TURF			.25			.27			.28			.30
			.32			.34			.36			.38
PAVEMENT:												
ASPHALT	.70 - .95											
CONCRETE	.80 - .95											
BRICK	.70 - .80											
DRIVES, WALKS	.75 - .85											
ROOFS	.75 - .95											
GRAVEL ROADS, SHOULDERS	.40 - .60											

TOTAL PROJECT AREA = \_\_\_\_\_ ACRES  
 TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = \_\_\_\_\_ ACRES



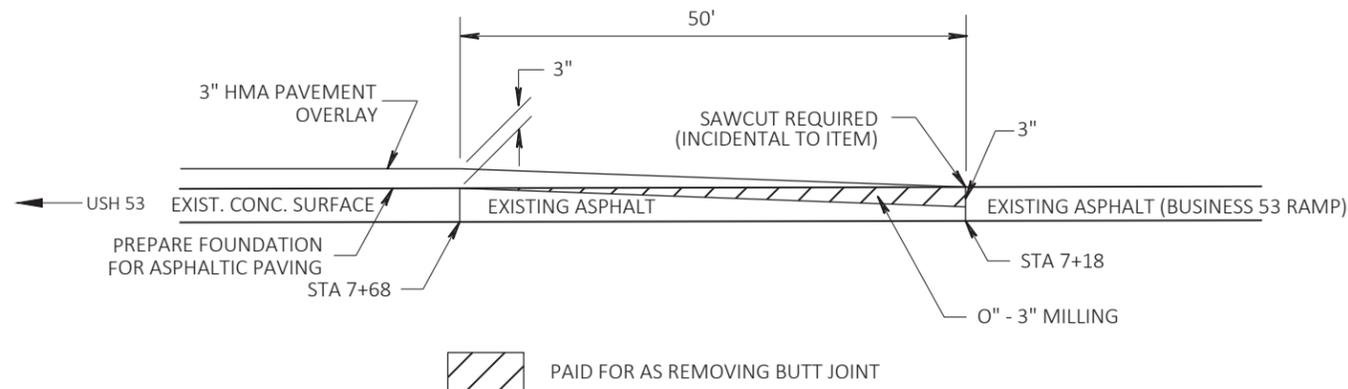
**REMOVING PAVEMENT BUTT JOINT DETAIL**

1031+00 - 1032+50 NB



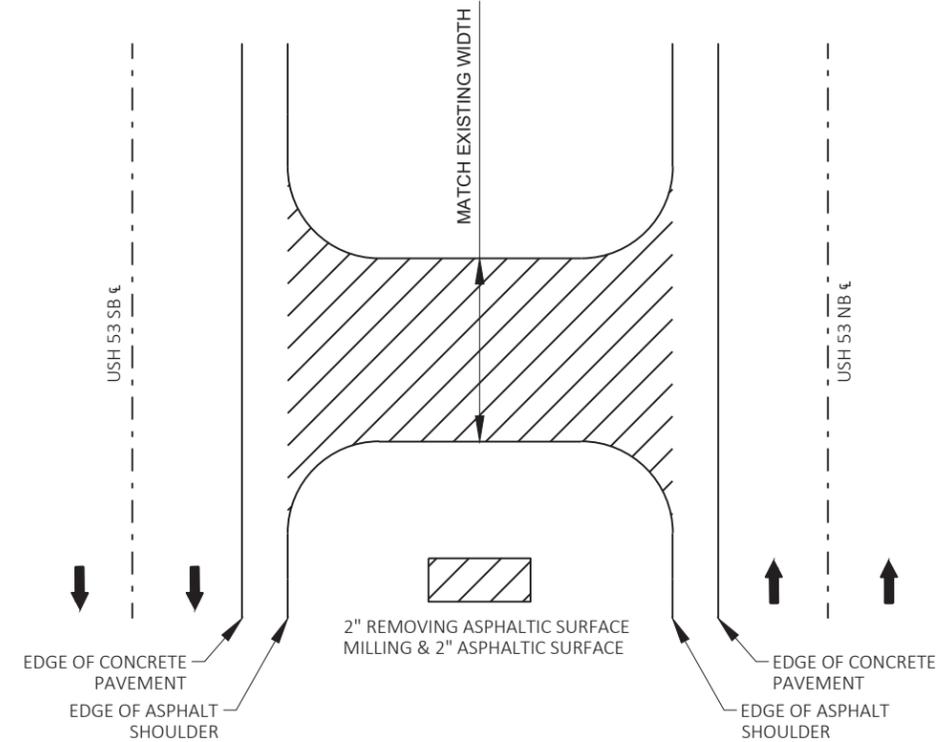
**REMOVING PAVEMENT BUTT JOINT DETAIL**

1117+53 - 1119+03 NB



**RAMP TERMINAL BUTT JOINT DETAIL**

7+18 - 7+68 (BUS. 53 RAMP - NORTH SIDE OF PROJECT)



**SIDEROAD MEDIAN AND MAINTENANCE CROSSOVER DETAIL**

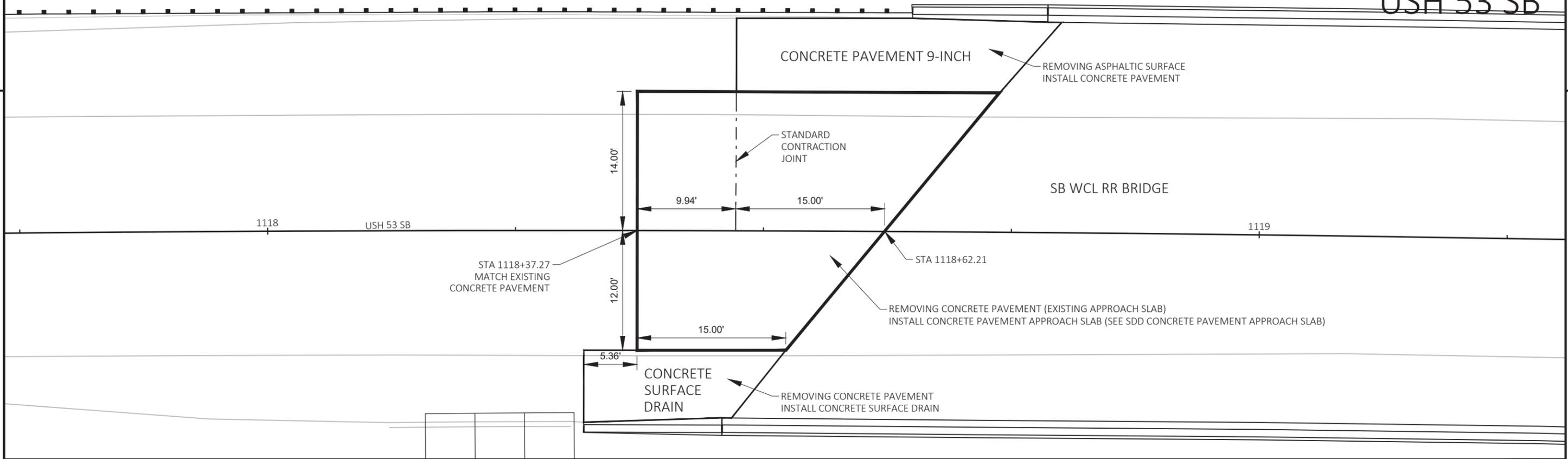
BUSINESS 53  
 HOLLY LUCIOUS RD  
 857+13  
 BALDWIN AVE  
 CTH A  
 BOUNDARY AVE  
 NYQUIST AVE  
 CTH AA  
 HARROUND RD

EXCLUDES:  
 CTH M / POODLE LN  
 FOREST RD  
 CUT AWAY ROAD  
 SCHOOL FOREST ROAD  
 HUNGRY BEAR TRAIL

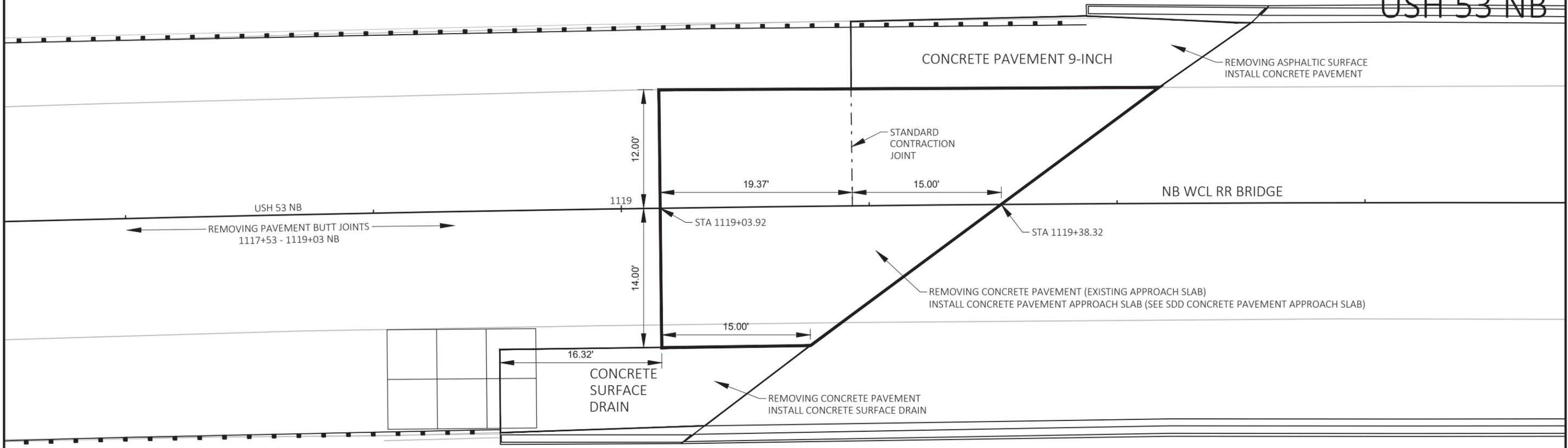
USH 53 SB

2

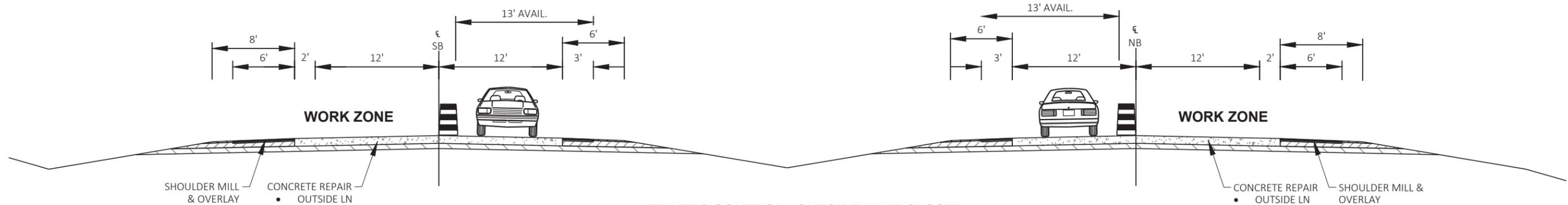
2



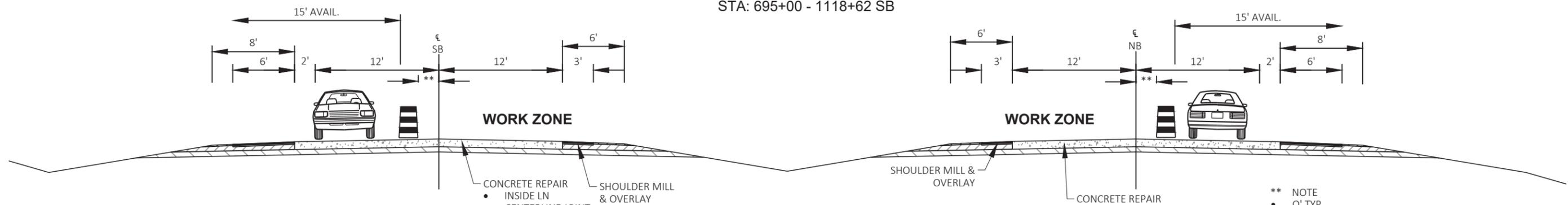
USH 53 NB



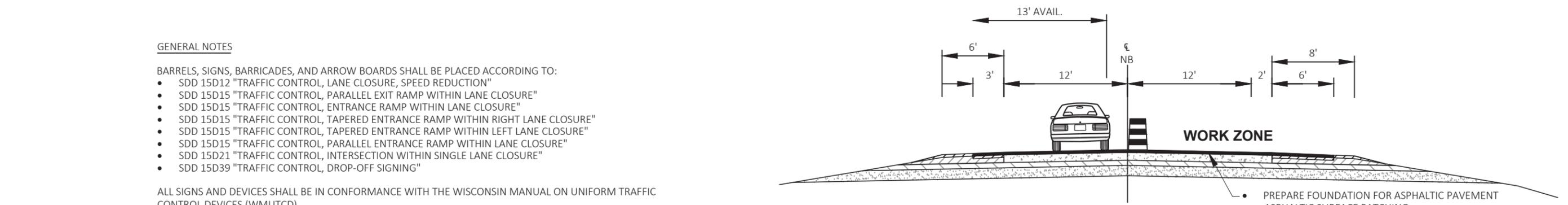
PROJECT NO: 1196-00-61	HWY: USH 53	COUNTY: DOUGLAS	CONSTRUCTION DETAILS - WCL RR BRIDGE CONCRETE APPROACH SLABS	SHEET	<b>E</b>
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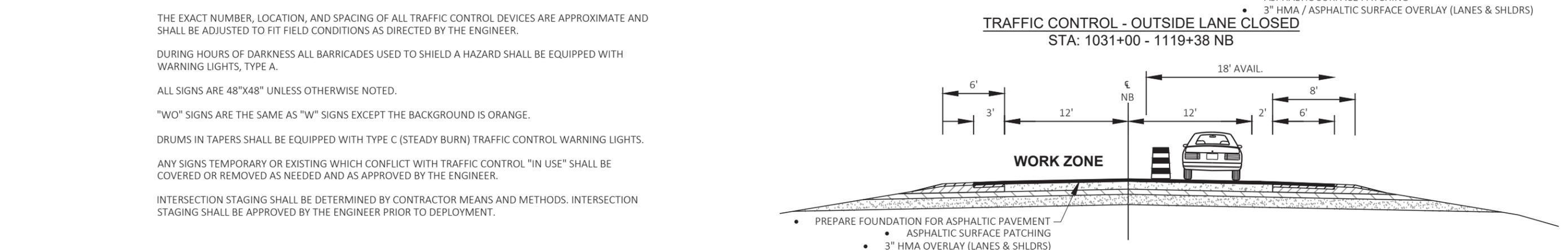
**TRAFFIC CONTROL - OUTSIDE LANE CLOSED**  
 STA: 695+00 - 1031+00 NB  
 STA: 695+00 - 1118+62 SB



**TRAFFIC CONTROL - INSIDE LANE CLOSED**  
 STA: 695+00 - 1031+00 NB  
 STA: 695+00 - 1118+62 SB



**TRAFFIC CONTROL - OUTSIDE LANE CLOSED**  
 STA: 1031+00 - 1119+38 NB



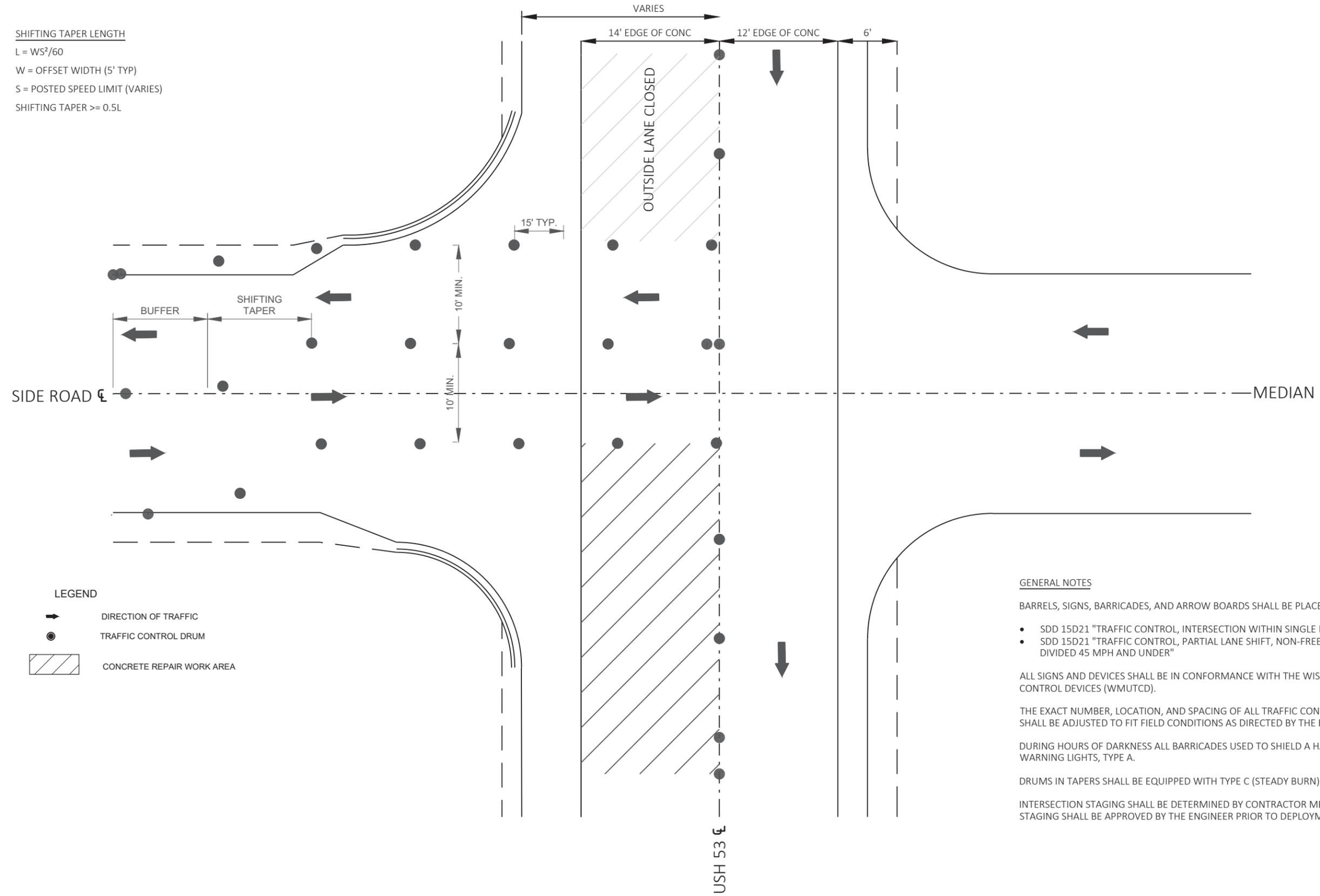
**TRAFFIC CONTROL - INSIDE LANE CLOSED**  
 STA: 1031+00 - 1119+38 NB

**GENERAL NOTES**

- BARRELS, SIGNS, BARRICADES, AND ARROW BOARDS SHALL BE PLACED ACCORDING TO:
  - SDD 15D12 "TRAFFIC CONTROL, LANE CLOSURE, SPEED REDUCTION"
  - SDD 15D15 "TRAFFIC CONTROL, PARALLEL EXIT RAMP WITHIN LANE CLOSURE"
  - SDD 15D15 "TRAFFIC CONTROL, ENTRANCE RAMP WITHIN LANE CLOSURE"
  - SDD 15D15 "TRAFFIC CONTROL, TAPERED ENTRANCE RAMP WITHIN RIGHT LANE CLOSURE"
  - SDD 15D15 "TRAFFIC CONTROL, TAPERED ENTRANCE RAMP WITHIN LEFT LANE CLOSURE"
  - SDD 15D15 "TRAFFIC CONTROL, PARALLEL ENTRANCE RAMP WITHIN LANE CLOSURE"
  - SDD 15D21 "TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE"
  - SDD 15D39 "TRAFFIC CONTROL, DROP-OFF SIGNING"
- ALL SIGNS AND DEVICES SHALL BE IN CONFORMANCE WITH THE WISCONSIN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (WMUTCD).
- THE EXACT NUMBER, LOCATION, AND SPACING OF ALL TRAFFIC CONTROL DEVICES ARE APPROXIMATE AND SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
- DURING HOURS OF DARKNESS ALL BARRICADES USED TO SHIELD A HAZARD SHALL BE EQUIPPED WITH WARNING LIGHTS, TYPE A.
- ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.
- "WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.
- DRUMS IN TAPERS SHALL BE EQUIPPED WITH TYPE C (STEADY BURN) TRAFFIC CONTROL WARNING LIGHTS.
- ANY SIGNS TEMPORARY OR EXISTING WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE COVERED OR REMOVED AS NEEDED AND AS APPROVED BY THE ENGINEER.
- INTERSECTION STAGING SHALL BE DETERMINED BY CONTRACTOR MEANS AND METHODS. INTERSECTION STAGING SHALL BE APPROVED BY THE ENGINEER PRIOR TO DEPLOYMENT.

\*\* NOTE  
 • 0' TYP.  
 • UP TO 3' FOR CENTERLINE JOINT REPAIR

SHIFTING TAPER LENGTH  
 $L = WS^2/60$   
 W = OFFSET WIDTH (5' TYP)  
 S = POSTED SPEED LIMIT (VARIES)  
 SHIFTING TAPER  $\geq 0.5L$



- LEGEND**
- ➔ DIRECTION OF TRAFFIC
  - TRAFFIC CONTROL DRUM
  - ▨ CONCRETE REPAIR WORK AREA

GENERAL NOTES

BARRELS, SIGNS, BARRICADES, AND ARROW BOARDS SHALL BE PLACED ACCORDING TO:

- SDD 15D21 "TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE"
- SDD 15D21 "TRAFFIC CONTROL, PARTIAL LANE SHIFT, NON-FREEWAY/EXPRESSWAY OR MULTILANE DIVIDED 45 MPH AND UNDER"

ALL SIGNS AND DEVICES SHALL BE IN CONFORMANCE WITH THE WISCONSIN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (WMUTCD).

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL TRAFFIC CONTROL DEVICES ARE APPROXIMATE AND SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

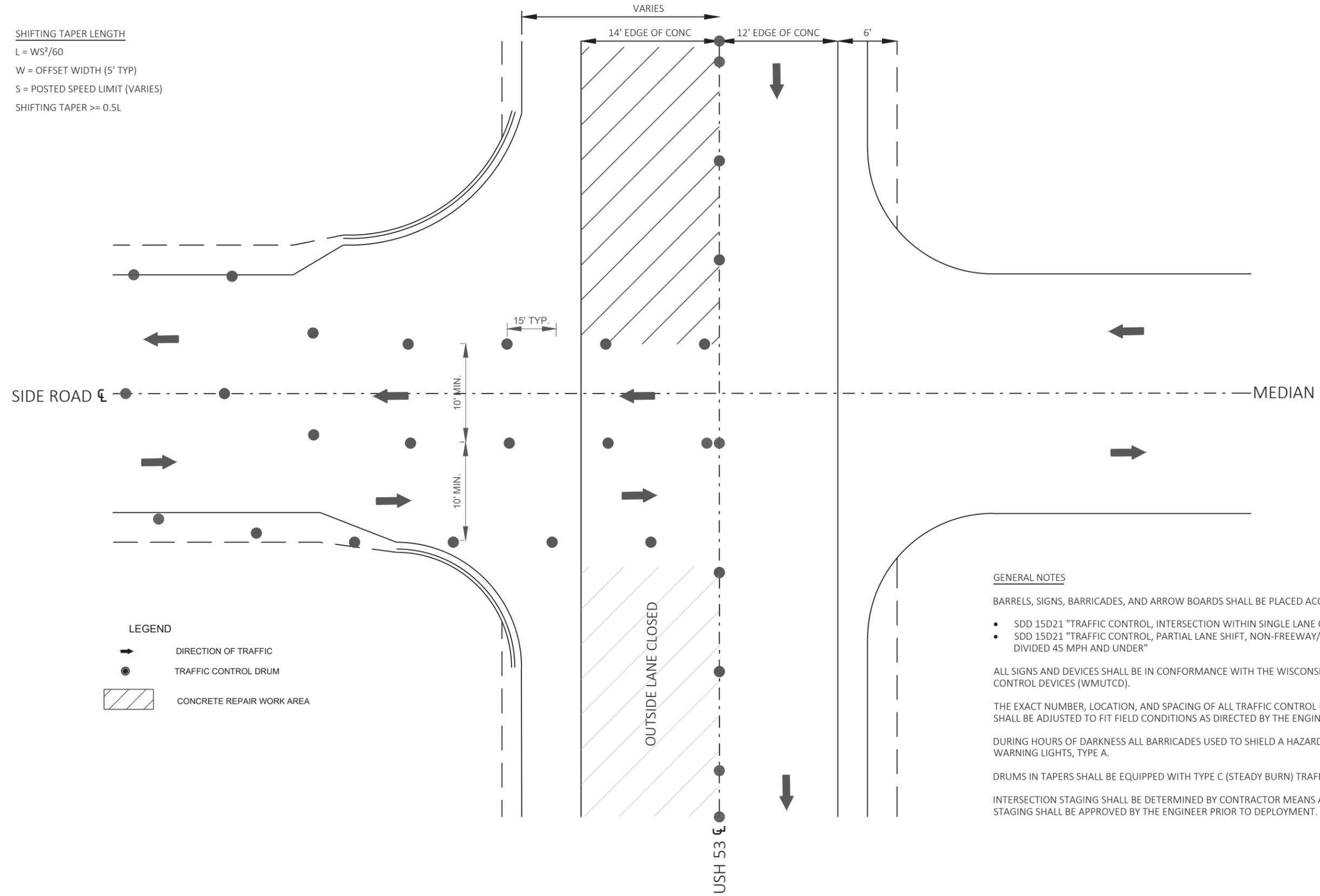
DURING HOURS OF DARKNESS ALL BARRICADES USED TO SHIELD A HAZARD SHALL BE EQUIPPED WITH WARNING LIGHTS, TYPE A.

DRUMS IN TAPERS SHALL BE EQUIPPED WITH TYPE C (STEADY BURN) TRAFFIC CONTROL WARNING LIGHTS.

INTERSECTION STAGING SHALL BE DETERMINED BY CONTRACTOR MEANS AND METHODS. INTERSECTION STAGING SHALL BE APPROVED BY THE ENGINEER PRIOR TO DEPLOYMENT.

**INTERSECTION STAGING DETAIL**  
**STAGE 1**  
 NOT TO SCALE

SHIFTING TAPER LENGTH  
 $L = WS^2/60$   
 W = OFFSET WIDTH (5' TYP)  
 S = POSTED SPEED LIMIT (VARIES)  
 SHIFTING TAPER  $\geq 0.5L$

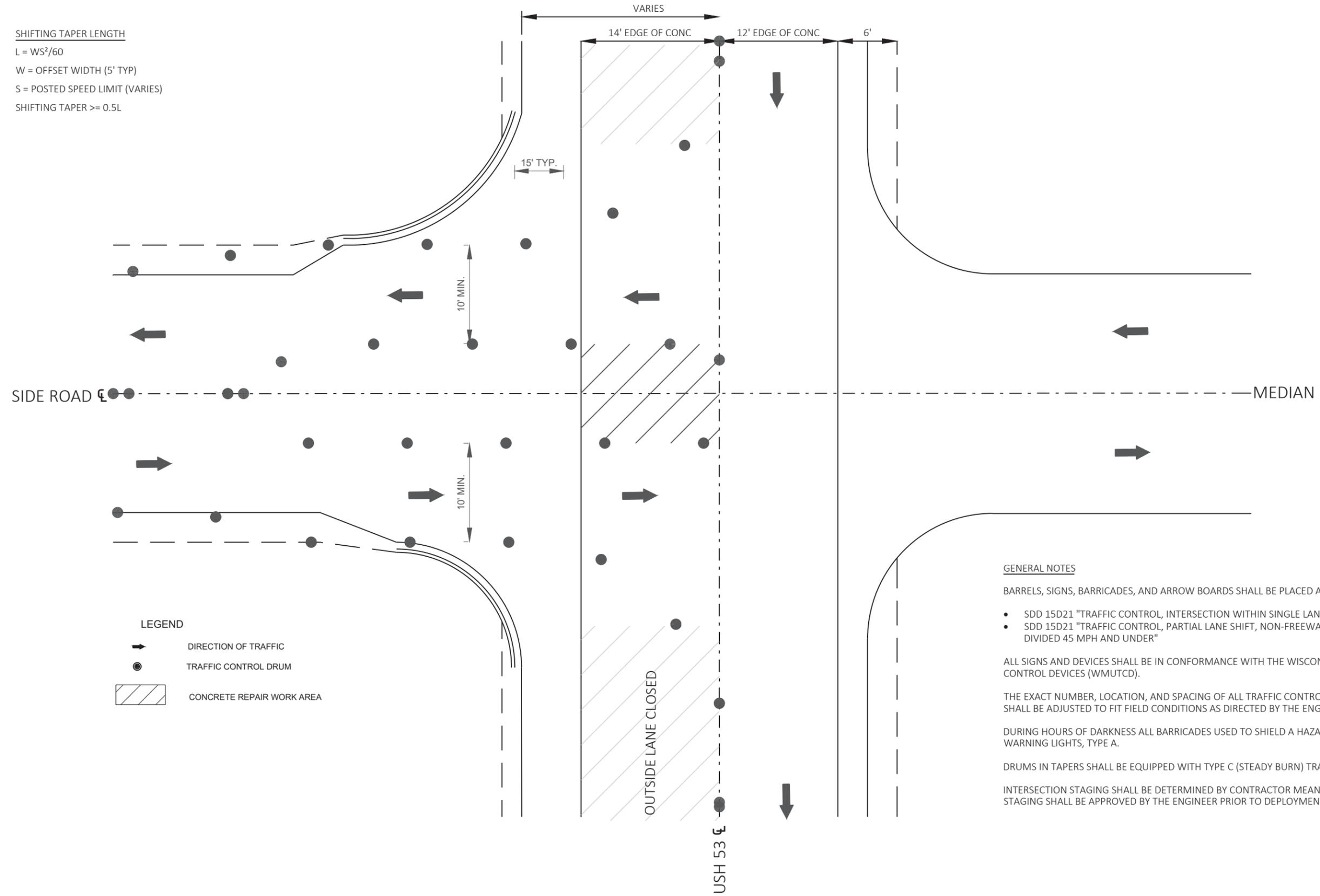


**LEGEND**  
 → DIRECTION OF TRAFFIC  
 ● TRAFFIC CONTROL DRUM  
 [Hatched Box] CONCRETE REPAIR WORK AREA

GENERAL NOTES  
 BARRELS, SIGNS, BARRICADES, AND ARROW BOARDS SHALL BE PLACED ACCORDING TO:  
 • SDD 15D21 "TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE"  
 • SDD 15D21 "TRAFFIC CONTROL, PARTIAL LANE SHIFT, NON-FREEWAY/EXPRESSWAY OR MULTILANE DIVIDED 45 MPH AND UNDER"  
 ALL SIGNS AND DEVICES SHALL BE IN CONFORMANCE WITH THE WISCONSIN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (WMUTCD).  
 THE EXACT NUMBER, LOCATION, AND SPACING OF ALL TRAFFIC CONTROL DEVICES ARE APPROXIMATE AND SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.  
 DURING HOURS OF DARKNESS ALL BARRICADES USED TO SHIELD A HAZARD SHALL BE EQUIPPED WITH WARNING LIGHTS, TYPE A.  
 DRUMS IN TAPERS SHALL BE EQUIPPED WITH TYPE C (STEADY BURN) TRAFFIC CONTROL WARNING LIGHTS.  
 INTERSECTION STAGING SHALL BE DETERMINED BY CONTRACTOR MEANS AND METHODS. INTERSECTION STAGING SHALL BE APPROVED BY THE ENGINEER PRIOR TO DEPLOYMENT.

**INTERSECTION STAGING DETAIL**  
**STAGE 2**  
 NOT TO SCALE

SHIFTING TAPER LENGTH  
 $L = WS^2/60$   
 W = OFFSET WIDTH (5' TYP)  
 S = POSTED SPEED LIMIT (VARIES)  
 SHIFTING TAPER  $\geq 0.5L$



**LEGEND**

-  DIRECTION OF TRAFFIC
-  TRAFFIC CONTROL DRUM
-  CONCRETE REPAIR WORK AREA

GENERAL NOTES

BARRELS, SIGNS, BARRICADES, AND ARROW BOARDS SHALL BE PLACED ACCORDING TO:

- SDD 15D21 "TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE"
- SDD 15D21 "TRAFFIC CONTROL, PARTIAL LANE SHIFT, NON-FREEWAY/EXPRESSWAY OR MULTILANE DIVIDED 45 MPH AND UNDER"

ALL SIGNS AND DEVICES SHALL BE IN CONFORMANCE WITH THE WISCONSIN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (WMUTCD).

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL TRAFFIC CONTROL DEVICES ARE APPROXIMATE AND SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

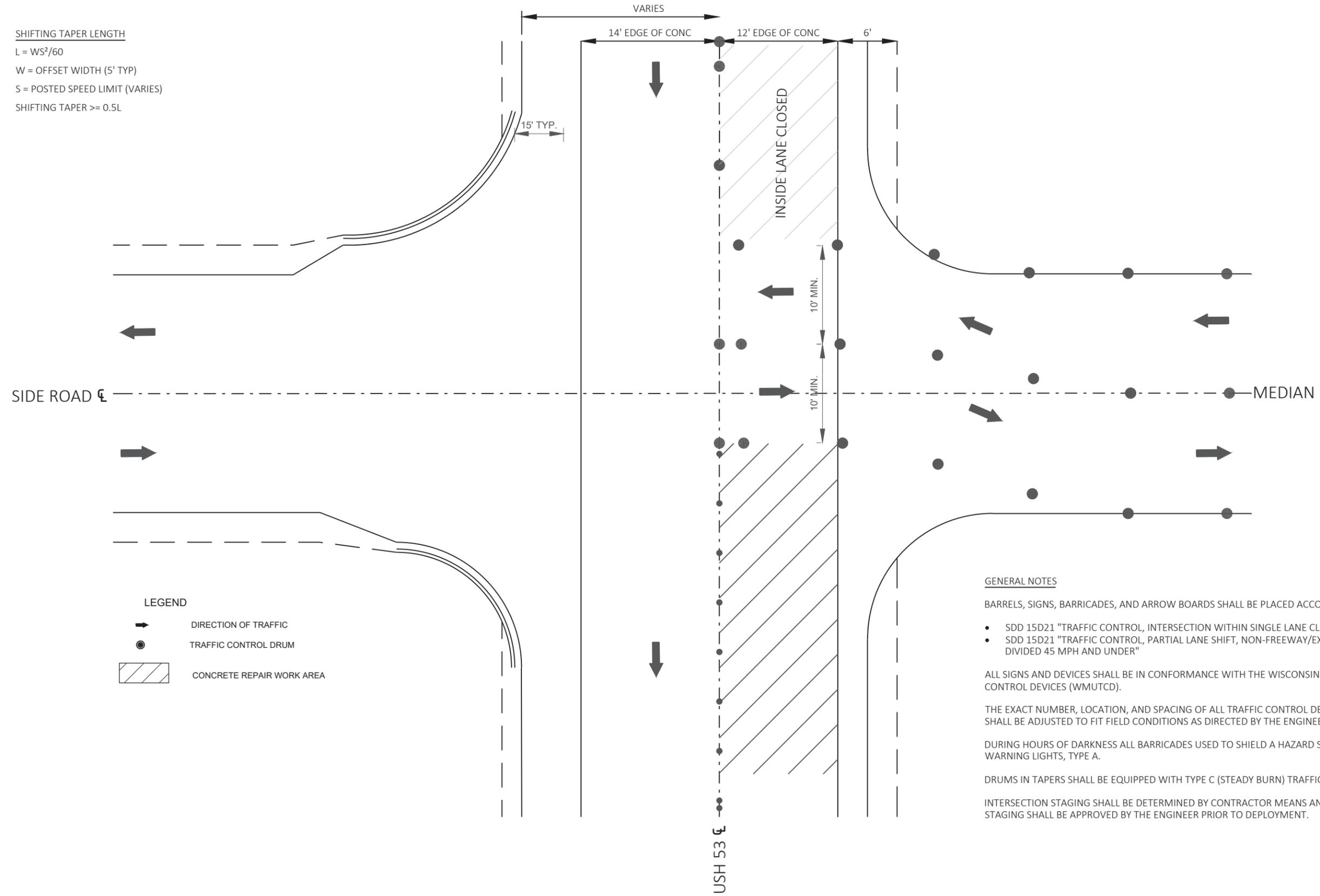
DURING HOURS OF DARKNESS ALL BARRICADES USED TO SHIELD A HAZARD SHALL BE EQUIPPED WITH WARNING LIGHTS, TYPE A.

DRUMS IN TAPERS SHALL BE EQUIPPED WITH TYPE C (STEADY BURN) TRAFFIC CONTROL WARNING LIGHTS.

INTERSECTION STAGING SHALL BE DETERMINED BY CONTRACTOR MEANS AND METHODS. INTERSECTION STAGING SHALL BE APPROVED BY THE ENGINEER PRIOR TO DEPLOYMENT.

**INTERSECTION STAGING DETAIL**  
**STAGE 3**  
 NOT TO SCALE

SHIFTING TAPER LENGTH  
 $L = WS^2/60$   
 W = OFFSET WIDTH (5' TYP)  
 S = POSTED SPEED LIMIT (VARIES)  
 SHIFTING TAPER  $\geq 0.5L$



LEGEND

-  DIRECTION OF TRAFFIC
-  TRAFFIC CONTROL DRUM
-  CONCRETE REPAIR WORK AREA

GENERAL NOTES

BARRELS, SIGNS, BARRICADES, AND ARROW BOARDS SHALL BE PLACED ACCORDING TO:

- SDD 15D21 "TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE"
- SDD 15D21 "TRAFFIC CONTROL, PARTIAL LANE SHIFT, NON-FREEWAY/EXPRESSWAY OR MULTILANE DIVIDED 45 MPH AND UNDER"

ALL SIGNS AND DEVICES SHALL BE IN CONFORMANCE WITH THE WISCONSIN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (WMUTCD).

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL TRAFFIC CONTROL DEVICES ARE APPROXIMATE AND SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

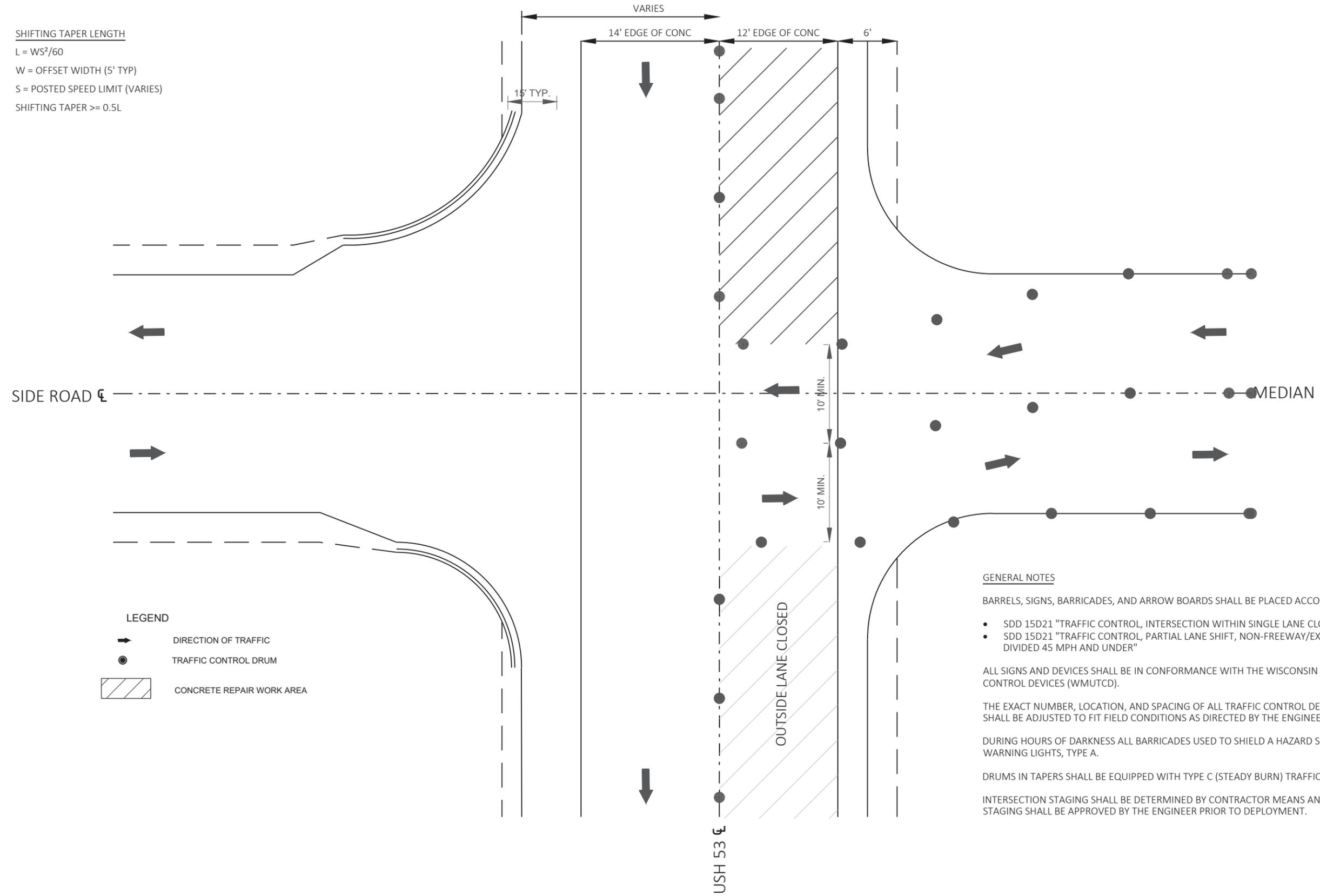
DURING HOURS OF DARKNESS ALL BARRICADES USED TO SHIELD A HAZARD SHALL BE EQUIPPED WITH WARNING LIGHTS, TYPE A.

DRUMS IN TAPERS SHALL BE EQUIPPED WITH TYPE C (STEADY BURN) TRAFFIC CONTROL WARNING LIGHTS.

INTERSECTION STAGING SHALL BE DETERMINED BY CONTRACTOR MEANS AND METHODS. INTERSECTION STAGING SHALL BE APPROVED BY THE ENGINEER PRIOR TO DEPLOYMENT.

**INTERSECTION STAGING DETAIL**  
**STAGE 4**  
 NOT TO SCALE

SHIFTING TAPER LENGTH  
 $L = WS^2/60$   
 W = OFFSET WIDTH (5' TYP)  
 S = POSTED SPEED LIMIT (VARIES)  
 SHIFTING TAPER  $\geq 0.5L$



**LEGEND**

- DIRECTION OF TRAFFIC
- TRAFFIC CONTROL DRUM
- CONCRETE REPAIR WORK AREA

GENERAL NOTES

BARRELS, SIGNS, BARRICADES, AND ARROW BOARDS SHALL BE PLACED ACCORDING TO:

- SDD 15D21 "TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE"
- SDD 15D21 "TRAFFIC CONTROL, PARTIAL LANE SHIFT, NON-FREEWAY/EXPRESSWAY OR MULTILANE DIVIDED 45 MPH AND UNDER"

ALL SIGNS AND DEVICES SHALL BE IN CONFORMANCE WITH THE WISCONSIN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (WMUTCD).

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL TRAFFIC CONTROL DEVICES ARE APPROXIMATE AND SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

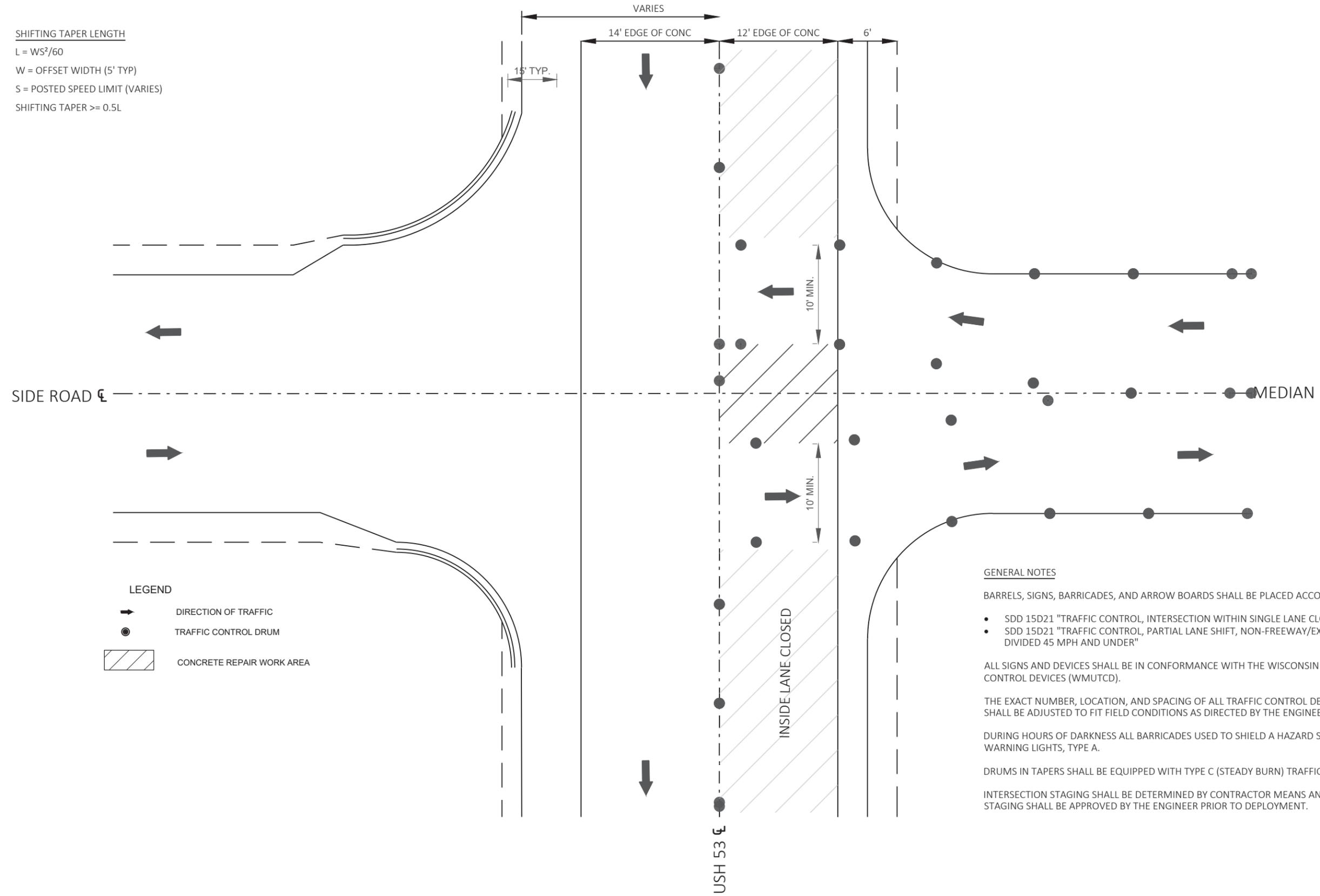
DURING HOURS OF DARKNESS ALL BARRICADES USED TO SHIELD A HAZARD SHALL BE EQUIPPED WITH WARNING LIGHTS, TYPE A.

DRUMS IN TAPERS SHALL BE EQUIPPED WITH TYPE C (STEADY BURN) TRAFFIC CONTROL WARNING LIGHTS.

INTERSECTION STAGING SHALL BE DETERMINED BY CONTRACTOR MEANS AND METHODS. INTERSECTION STAGING SHALL BE APPROVED BY THE ENGINEER PRIOR TO DEPLOYMENT.

**INTERSECTION STAGING DETAIL**  
**STAGE 5**  
 NOT TO SCALE

SHIFTING TAPER LENGTH  
 $L = WS^2/60$   
 W = OFFSET WIDTH (5' TYP)  
 S = POSTED SPEED LIMIT (VARIES)  
 SHIFTING TAPER  $\geq 0.5L$



**LEGEND**

- ➔ DIRECTION OF TRAFFIC
- TRAFFIC CONTROL DRUM
- ▨ CONCRETE REPAIR WORK AREA

GENERAL NOTES

BARRELS, SIGNS, BARRICADES, AND ARROW BOARDS SHALL BE PLACED ACCORDING TO:

- SDD 15D21 "TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE"
- SDD 15D21 "TRAFFIC CONTROL, PARTIAL LANE SHIFT, NON-FREEWAY/EXPRESSWAY OR MULTILANE DIVIDED 45 MPH AND UNDER"

ALL SIGNS AND DEVICES SHALL BE IN CONFORMANCE WITH THE WISCONSIN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (WMUTCD).

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL TRAFFIC CONTROL DEVICES ARE APPROXIMATE AND SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

DURING HOURS OF DARKNESS ALL BARRICADES USED TO SHIELD A HAZARD SHALL BE EQUIPPED WITH WARNING LIGHTS, TYPE A.

DRUMS IN TAPERS SHALL BE EQUIPPED WITH TYPE C (STEADY BURN) TRAFFIC CONTROL WARNING LIGHTS.

INTERSECTION STAGING SHALL BE DETERMINED BY CONTRACTOR MEANS AND METHODS. INTERSECTION STAGING SHALL BE APPROVED BY THE ENGINEER PRIOR TO DEPLOYMENT.

**INTERSECTION STAGING DETAIL**  
**STAGE 6**  
 NOT TO SCALE

Estimate Of Quantities

1196-00-61

Line	Item	Item Description	Unit	Total	Qty
0002	203.0100	Removing Small Pipe Culverts	EACH	1.000	1.000
0004	204.0100	Removing Concrete Pavement	SY	1,523.000	1,523.000
0006	204.0105	Removing Pavement Butt Joints	SY	868.000	868.000
0008	204.0115	Removing Asphaltic Surface Butt Joints	SY	100.000	100.000
0010	204.0120	Removing Asphaltic Surface Milling	SY	102,366.000	102,366.000
0012	204.0165	Removing Guardrail	LF	573.000	573.000
0014	211.0100	Prepare Foundation for Asphaltic Paving (project) 01. 1196-00-61	LS	1.000	1.000
0016	213.0100	Finishing Roadway (project) 01. 1196-00-61	EACH	1.000	1.000
0018	305.0110	Base Aggregate Dense 3/4-Inch	TON	6,075.000	6,075.000
0020	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,733.000	1,733.000
0022	305.0500	Shaping Shoulders	STA	9.000	9.000
0024	415.0090	Concrete Pavement 9-Inch	SY	1,379.000	1,379.000
0026	415.0410	Concrete Pavement Approach Slab	SY	169.000	169.000
0028	416.0610	Drilled Tie Bars	EACH	11,251.000	11,251.000
0030	416.0620	Drilled Dowel Bars	EACH	14,146.000	14,146.000
0032	416.1010	Concrete Surface Drains	CY	10.000	10.000
0034	455.0605	Tack Coat	GAL	11,014.000	11,014.000
0036	460.2000	Incentive Density HMA Pavement	DOL	2,750.000	2,750.000
0038	460.6645	HMA Pavement 5 MT 58-34 V	TON	4,936.000	4,936.000
0040	460.9000.S	Material Transfer Vehicle (project) 01. 1196-00-61	EACH	1.000	1.000
0042	465.0105	Asphaltic Surface	TON	11,496.000	11,496.000
0044	465.0400	Asphaltic Shoulder Rumble Strips	LF	168,694.000	168,694.000
0046	520.1018	Apron Endwalls for Culvert Pipe 18-Inch	EACH	2.000	2.000
0048	520.3418	Culvert Pipe Class III-A Non-metal 18-Inch	LF	60.000	60.000
0050	520.8000	Concrete Collars for Pipe	EACH	2.000	2.000
0052	520.8700	Cleaning Culvert Pipes	EACH	3.000	3.000
0054	524.0124	Culvert Pipe Salvaged 24-Inch	LF	24.000	24.000
0056	614.2300	MGS Guardrail 3	LF	525.000	525.000
0058	614.2500	MGS Thrie Beam Transition	LF	117.000	117.000
0060	614.2610	MGS Guardrail Terminal EAT	EACH	2.000	2.000
0062	614.2620	MGS Guardrail Terminal Type 2	EACH	1.000	1.000
0064	618.0100	Maintenance And Repair of Haul Roads (project) 01. 1196-00-61	EACH	1.000	1.000
0066	619.1000	Mobilization	EACH	1.000	1.000
0068	624.0100	Water	MGAL	76.000	76.000
0070	625.0500	Salvaged Topsoil	SY	780.000	780.000
0072	627.0200	Mulching	SY	1,238.000	1,238.000
0074	628.1104	Erosion Bales	EACH	20.000	20.000
0076	628.1504	Silt Fence	LF	200.000	200.000
0078	628.1520	Silt Fence Maintenance	LF	200.000	200.000
0080	628.1905	Mobilizations Erosion Control	EACH	3.000	3.000
0082	628.1910	Mobilizations Emergency Erosion Control	EACH	2.000	2.000
0084	628.7020	Inlet Protection Type D	EACH	2.000	2.000
0086	629.0205	Fertilizer Type A	CWT	0.780	0.780
0088	630.0120	Seeding Mixture No. 20	LB	33.710	33.710
0090	642.5001	Field Office Type B	EACH	1.000	1.000
0092	643.0300	Traffic Control Drums	DAY	172,952.000	172,952.000
0094	643.0420	Traffic Control Barricades Type III	DAY	13,760.000	13,760.000
0096	643.0705	Traffic Control Warning Lights Type A	DAY	27,520.000	27,520.000
0098	643.0715	Traffic Control Warning Lights Type C	DAY	2,580.000	2,580.000

Estimate Of Quantities

1196-00-61

Line	Item	Item Description	Unit	Total	Qty
0100	643.0800	Traffic Control Arrow Boards	DAY	344.000	344.000
0102	643.0900	Traffic Control Signs	DAY	29,240.000	29,240.000
0104	643.5000	Traffic Control	EACH	1.000	1.000
0106	646.1040	Marking Line Grooved Wet Ref Epoxy 4-Inch	LF	171,178.000	171,178.000
0108	646.1555	Marking Line Grooved Contrast Permanent Tape 4-Inch	LF	21,087.000	21,087.000
0110	646.3555	Marking Line Grooved Contrast Permanent Tape 8-Inch	LF	5,830.000	5,830.000
0112	646.5020	Marking Arrow Epoxy	EACH	42.000	42.000
0114	646.6120	Marking Stop Line Epoxy 18-Inch	LF	262.000	262.000
0116	646.9000	Marking Removal Line 4-Inch	LF	1,400.000	1,400.000
0118	649.0105	Temporary Marking Line Paint 4-Inch	LF	4,295.000	4,295.000
0120	649.0150	Temporary Marking Line Removable Tape 4-Inch	LF	2,640.000	2,640.000
0122	650.6000	Construction Staking Pipe Culverts	EACH	1.000	1.000
0124	650.8000	Construction Staking Resurfacing Reference	LF	84,346.000	84,346.000
0126	650.9910	Construction Staking Supplemental Control (project) 01. 1196-00-61	LS	1.000	1.000
0128	690.0250	Sawing Concrete	LF	49,718.000	49,718.000
0130	715.0720	Incentive Compressive Strength Concrete Pavement	DOL	500.000	500.000
0132	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	1,500.000	1,500.000
0134	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	990.000	990.000
0136	SPV.0180	Special 01. Concrete Pavement Centerline Joint Repair	SY	2,982.000	2,982.000
0138	SPV.0180	Special 02. Concrete Pavement Repair Doweled	SY	5,211.000	5,211.000
0140	SPV.0180	Special 03. Concrete Pavement Replacement Doweled	SY	9,380.000	9,380.000

3

204.0120  
REMOVING ASPHALTIC  
SURFACE MILLING

CATEGORY	STATION	TO	STATION	LOCATION	SY	REMARKS
<b>NORTHBOUND</b>						
0010	695+00	-	735+36	CTH M- FOREST RD	4036	SHOULDERS
0010	735+36	-	750+11	FOREST RD - CUT AWAY RD	1475	SHOULDERS
0010	750+11	-	776+37	CUT AWAY RD - SCHOOL FOREST RD	2626	SHOULDERS
0010	776+37	-	795+04	SCHOOL FOREST RD - HUNGRY BEAR TR	1867	SHOULDERS
0010	795+04	-	813+50	HUNGRY BEAR TR - BUSINESS 53	1846	SHOULDERS
0010	813+50	-	849+99	BUSINESS 53 - HOLLY LUCIOUS RD	3649	SHOULDERS
0010	849+99	-	923+87	HOLLY LUCIOUS RD - BALDWIN AVE	7388	SHOULDERS
0010	923+87	-	950+36	BALDWIN AVE - CTH A	2649	SHOULDERS
0010	950+36	-	977+27	CTH A - BOUNDARY AVE	2691	SHOULDERS
0010	977+27	-	1032+66	BOUNDARY AVE - NYQUIST RD	5539	SHOULDERS
0010	1032+66	-	1058+83	NYQUIST RD - CTH AA	2617	SHOULDERS
0010	1058+83	-	1108+03	CTH AA - HARROUN RD	4920	SHOULDERS
0010	1108+03	-	1119+38	HARROUN RD - WISC CEN. LTD RR	1135	SHOULDERS
<b>SOUTHBOUND</b>						
0010	695+00	-	735+31	CTH M- FOREST RD	4031	SHOULDERS
0010	735+31	-	750+02	FOREST RD - CUT AWAY RD	1471	SHOULDERS
0010	750+02	-	776+21	CUT AWAY RD - SCHOOL FOREST RD	2619	SHOULDERS
0010	776+21	-	794+88	SCHOOL FOREST RD - HUNGRY BEAR TR	1867	SHOULDERS
0010	794+88	-	813+00	HUNGRY BEAR TR - BUSINESS 53	1812	SHOULDERS
0010	813+00	-	849+12	BUSINESS 53 - HOLLY LUCIOUS RD	3612	SHOULDERS
0010	849+12	-	923+79	HOLLY LUCIOUS RD - BALDWIN AVE	7467	SHOULDERS
0010	923+79	-	950+35	BALDWIN AVE - CTH A	2656	SHOULDERS
0010	950+35	-	977+56	CTH A - BOUNDARY AVE	2721	SHOULDERS
0010	977+56	-	1032+72	BOUNDARY AVE - NYQUIST RD	5516	SHOULDERS
0010	1032+72	-	1060+32	NYQUIST RD - CTH AA	2760	SHOULDERS
0010	1060+32	-	1106+33	CTH AA - HARROUN RD	4601	SHOULDERS
0010	1106+33	-	1118+62	HARROUN RD - WISC CEN. LTD RR	1229	SHOULDERS
<b>SIDERoads &amp; MEDIANS</b>						
0010				CTH M	591	SB
0010				FOREST RD	444	NB
0010				CUT AWAY RD	333	NB
0010				SCHOOL FOREST RD	346	NB
0010				HUNGRY BEAR TRAIL	326	NB
0010				BUSINESS 53 RAMP	509	NB/MED
0010				BUSINESS 53	2199	NB/SB/MED
0010				HOLLY LUCIOUS RD	927	NEB/SB/MED
0010		857+10		NORTH COUNTRY SCENIC TRAIL	257	MED
0010				BALDWIN AVE	2175	NB/MED
0010				CTH A	3781	NB/SB/MED
0010				BOUNDARY AVE	1332	NB/SB/MED
0010				NYQUIST RD	1376	NB/SB/MED
0010				CTH AA	2646	NB/MED
0010				HARROUN RD	325	SB/MED
				TOTAL 0010	102,366	

204.0105

REMOVING PAVEMENT  
BUTT JOINTS

STATION	TO	STATION	LOCATION	SY
1031+00	-	1032+50	BEGIN HMA PAVEMENT OVERLAY (NB)	434
1117+53	-	1119+03	PROFILE ADJUSTMENT (NB)	434
			TOTAL 0010	868

204.0115

REMOVING ASPHALTIC  
SURFACE BUTT JOINTS

CATEGORY	STATION	TO	STATION	LOCATION	SY
0010	7+18	-	7+68	BUS. 53 ON RAMP	100
				TOTAL 0010	100

211.0100.01  
PREPARE FOUNDATION  
FOR ASPHALTIC PAVING  
(PROJECT) (01. 1196-00-  
61)

460.9000.S.01  
MATERIAL TRANSFER  
VEHICLE (PROJECT) (01.  
1196-00-61)

CATEGORY	STATION	TO	STATION	LOCATION	LS	EACH
0010	1031+00	-	1119+38	NORTHBOUND HMA OVERLAY	1	
0010				HMA PAVING		1
				TOTAL 0010	1	1

213.0100.01

619.1000

642.5001

650.9910.01

CATEGORY	LOCATION	FINISHING ROADWAY (1196-00-61) (01.) EACH	MOBILIZATION EACH	FIELD OFFICE TYPE B EACH	CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT) (01. 1196-00-61) LS
0010	PROJECT	1	1	1	1
	TOTAL 0010	1	1	1	1

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BASE AGGREGATE SUMMARY					305.0110	305.0120	305.0500	624.0100	
CATEGORY	STATION	TO	STATION	LOCATION	BASE AGGREGATE DENSE 3/4-INCH TON	BASE AGGREGATE DENSE 1 1/4-INCH TON	SHAPING SHOULDERS STA	WATER MGAL	REMARKS
<b>NORTHBOUND</b>									
0010	697+32	-	735+36	CTH M- FOREST RD	211	--	--	2	SHOULDERS
0010	735+36	-	750+11	FOREST RD - CUT AWAY RD	82	--	--	1	SHOULDERS
0010	750+11	-	776+37	CUT AWAY RD - SCHOOL FOREST RD	146	--	--	1	SHOULDERS
0010	776+37	-	795+04	SCHOOL FOREST RD - HUNGRY BEAR TR	104	--	--	1	SHOULDERS
0010	795+04	-	813+50	HUNGRY BEAR TR - BUSINESS 53	103	--	--	1	SHOULDERS
0010	813+50	-	849+99	BUSINESS 53 - HOLLY LUCIOUS RD	203	--	--	2	SHOULDERS
0010	849+99	-	923+87	HOLLY LUCIOUS RD - BALDWIN AVE	410	--	--	4	SHOULDERS
0010	923+87	-	950+36	BALDWIN AVE - CTH A	147	--	--	1	SHOULDERS
0010	950+36	-	977+27	CTH A - BOUNDARY AVE	150	--	--	1	SHOULDERS
0010	977+27	-	1031+00	BOUNDARY AVE - NYQUIST RD	299	--	--	3	SHOULDERS
0010	1031+00	-	1058+83	NYQUIST RD - CTH AA	433	464	--	9	SHOULDERS (OVERLAY AREA)
0010	1058+83	-	1108+03	CTH AA - HARROUN RD	765	820	--	16	SHOULDERS (OVERLAY AREA)
0010	1108+03	-	1119+38	HARROUN RD - WISC CEN. LTD RR	177	189	--	4	SHOULDERS (OVERLAY AREA)
0010	1115+72	-	1116+83	BEAM GUARD E.A.T.	--	110	--	1	MINOR FILL FOR E.A.T.
0010	1116+03	-	1118+87	GUARDRAIL	--	--	3	--	NB-R @ WCL RR
0010	1116+32	-	1119+46	GUARDRAIL	--	--	4	--	NB-L @ WCL RR
<b>SOUTHBOUND</b>									
0010	697+22	-	735+31	CTH M- FOREST RD	212	--	--	2	SHOULDERS
0010	735+31	-	750+02	FOREST RD - CUT AWAY RD	82	--	--	1	SHOULDERS
0010	750+02	-	776+21	CUT AWAY RD - SCHOOL FOREST RD	146	--	--	1	SHOULDERS
0010	776+21	-	794+88	SCHOOL FOREST RD - HUNGRY BEAR TR	104	--	--	1	SHOULDERS
0010	794+88	-	813+00	HUNGRY BEAR TR - BUSINESS 53	101	--	--	1	SHOULDERS
0010	813+00	-	849+12	BUSINESS 53 - HOLLY LUCIOUS RD	201	--	--	2	SHOULDERS
0010	849+12	-	923+79	HOLLY LUCIOUS RD - BALDWIN AVE	415	--	--	4	SHOULDERS
0010	923+79	-	950+35	BALDWIN AVE - CTH A	148	--	--	1	SHOULDERS
0010	950+35	-	977+56	CTH A - BOUNDARY AVE	151	--	--	2	SHOULDERS
0010	977+56	-	1032+72	BOUNDARY AVE - NYQUIST RD	306	--	--	3	SHOULDERS
0010	1032+72	-	1060+32	NYQUIST RD - CTH AA	153	--	--	2	SHOULDERS
0010	1060+32	-	1106+33	CTH AA - HARROUN RD	256	--	--	3	SHOULDERS
0010	1106+33	-	1118+62	HARROUN RD - WISC CEN. LTD RR	68	--	--	1	SHOULDERS
0010	1117+25	-	1118+64	GUARDRAIL	--	--	2	--	SB-L @ WCL RR
<b>SIDEROADS &amp; MEDIANS</b>									
0010				CTH M	20	--	--	0.2	
0010				FOREST RD	10	--	--	0.1	
0010				CUT AWAY RD	10	--	--	0.1	
0010				SCHOOL FOREST RD	10	--	--	0.1	
0010				HUNGRY BEAR TRAIL	10	--	--	0.1	
0010				BUSINESS 53 RAMP	10	--	--	0.1	
0010				BUSINESS 53	20	--	--	0.2	
0010				HOLLY LUCIOUS RD	20	--	--	0.2	
0010		857+10		NORTH COUNTRY SCENIC TRAIL	5	--	--	0.1	
0010				BALDWIN AVE	10	--	--	0.1	
0010				CTH A	20	--	--	0.2	
0010				BOUNDARY AVE	10	--	--	0.1	
0010				NYQUIST RD	20	--	--	0.2	
0010				CTH AA	20	--	--	0.2	
0010				HARROUN RD	10	--	--	0.1	
<b>UNDISTRIBUTED</b>									
0010				UNDISTRIBUTED	300	150	--	3	
TOTAL 0010					6,075	1,733	9	76	

PROJECT NO: 1196-00-61

HWY: USH 53

COUNTY: DOUGLAS

MISCELLANEOUS QUANTITIES

SHEET:

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**CONCRETE REPAIR SUMMARY**

CATEGORY 0010

STATION TO	STATION	LOCATION	204.0100	415.0090	415.0410	CONCRETE REPAIR/REPLACE/ PVT	CENTERLINE JOINT REPAIR	416.0620	416.1010	CONCRETE REPAIR/REPLACE/ PVT	CENTERLINE JOINT REPAIR	SPV.0180.01	SPV.0180.02	SPV.0180.03	
			REMOVING CONCRETE PAVEMENT SY	CONCRETE PAVEMENT 9-INCH SY	CONCRETE PAVEMENT APPROACH SLAB SY	DRILLED TIE BARS EACH	DRILLED TIE BARS EACH	DRILLED DOWEL BARS EACH	CONCRETE SURFACE DRAINS CY	SAWING CONCRETE LF	SAWING CONCRETE LF	SPECIAL (01. CONCRETE PAVEMENT CENTERLINE JOINT REPAIR) SY	SPECIAL (02. CONCRETE PAVEMENT REPAIR DOWELED) SY	SPECIAL (03. CONCRETE PAVEMENT REPLACEMENT DOWELED) SY	
<b>NORTHBOUND - CONCRETE REPAIR</b>															
697+32 -	735+36	CTH M- FOREST RD	0	0	0	0	103	952	0	1588	284	45	486	0	
735+36 -	750+11	FOREST RD - CUT AWAY RD	0	0	0	24	399	1354	0	2232	1038	170	642	104	
750+11 -	776+37	CUT AWAY RD - SCHOOL FOREST RD	0	0	0	19	57	1136	0	1938	156	25	555	64	
776+37 -	795+04	SCHOOL FOREST RD - HUNGRY BEAR TR	0	0	0	0	170	731	0	1244	440	72	356	52	
795+04 -	813+50	HUNGRY BEAR TR - BUSINESS 53	0	0	0	0	186	850	0	1396	492	81	434	0	
813+50 -	849+99	BUSINESS 53 - HOLLY LUCIOUS RD	0	0	0	27	780	3231	0	5438	1990	330	1622	104	
849+99 -	923+87	HOLLY LUCIOUS RD - BALDWIN AVE	0	0	0	24	49	85	0	232	150	23	18	130	
923+87 -	950+36	BALDWIN AVE - CTH A	0	0	0	0	130	34	0	52	380	60	18	0	
950+36 -	977+27	CTH A - BOUNDARY AVE	754	754	0	694	182	255	0	1290	496	80	79	520	
977+27 -	1032+66	BOUNDARY AVE - NYQUIST RD	0	0	0	352	345	340	0	1264	950	153	70	1040	
1032+66 -	1058+83	NYQUIST RD - CTH AA	0	0	0	63	0	192	0	695	0	0	41	304	
1058+83 -	1108+03	CTH AA - HARROUN RD	0	0	0	205	0	254	0	1553	0	0	64	794	
1108+03 -	1119+38	HARROUN RD - WISC CEN. LTD RR	0	0	0	35	0	74	0	316	0	0	16	137	
<b>NORTHBOUND - BRIDGE APPROACH</b>															
	1119+38	WISC. CENT. LTD RR - APPROACH	108	28	94	0	0	0	6	0	0	0	0	0	
<b>SOUTHBOUND - CONCRETE REPAIR</b>															
697+32 -	735+36	CTH M- FOREST RD	0	0	0	62	110	901	0	1,786	304	49	434	388	
735+36 -	750+11	FOREST RD - CUT AWAY RD	0	0	0	0	0	0	0	0	0	0	0	0	
750+11 -	776+37	CUT AWAY RD - SCHOOL FOREST RD	0	0	0	0	0	0	0	0	0	0	0	0	
776+37 -	795+04	SCHOOL FOREST RD - HUNGRY BEAR TR	0	0	0	0	0	0	0	0	0	0	0	0	
795+04 -	813+50	HUNGRY BEAR TR - BUSINESS 53	0	0	0	37	0	68	0	164	0	0	9	78	
813+50 -	849+99	BUSINESS 53 - HOLLY LUCIOUS RD	0	0	0	129	710	2,363	0	4,256	1,838	302	36	439	
849+99 -	923+87	HOLLY LUCIOUS RD - BALDWIN AVE	0	0	0	293	308	238	0	796	798	131	78	624	
923+87 -	950+36	BALDWIN AVE - CTH A	0	0	0	53	339	51	0	156	876	143	9	182	
950+36 -	977+27	CTH A - BOUNDARY AVE	0	0	0	54	435	136	0	304	1,134	185	53	104	
977+27 -	1032+66	BOUNDARY AVE - NYQUIST RD	572	572	0	616	724	289	0	1,354	1,854	305	70	728	
1032+66 -	1058+83	NYQUIST RD - CTH AA	0	0	0	742	662	187	0	1,402	1,698	279	52	1,612	
1058+83 -	1108+03	CTH AA - HARROUN RD	0	0	0	673	1,087	323	0	1,658	2,792	459	52	1,664	
1108+03 -	1119+38	HARROUN RD - WISC CEN. LTD RR	0	0	0	165	208	102	0	384	550	90	17	312	
<b>SOUTHBOUND - BRIDGE APPROACH</b>															
	1119+38	WISC. CENT. LTD RR - APPROACH	89	25	75	0	0	0	4	0	0	0	0	0	
CATEGORY TOTAL 0010			1,523	1,379	169	11,251		14,146		10	49,718		2,982	5,211	9,380

**CULVERT SUMMARY**

CATEGORY	STATION	LOCATION	<u>203.0100</u>	<u>520.1018</u>	<u>520.3418</u>	<u>520.8000</u>	<u>520.8700</u>	<u>524.0124</u>	<u>650.6000</u>
			REMOVING SMALL PIPE CULVERTS EACH	APRON ENDWALLS FOR CULVERT PIPE 18-INCH EACH	CULVERT PIPE CLASS III-A NON- METAL 18-INCH LF	CONCRETE COLLARS FOR PIPE EACH	CLEANING CULVERT PIPES EACH	CULVERT PIPE SALVAGED 24- INCH LF	CONSTRUCTION STAKING PIPE CULVERTS EACH
0010	712+31	NB-LT	--	--	--	1	1	8	--
0010	750+00	MEDIAN	--	--	--	--	1	--	--
0010	844+97	SB-LT	--	--	--	1	1	16	--
0010	1108+02	HARROUN RD - MEDIAN	1	2	60	--	--	--	1
TOTAL 0010			1	2	60	2	3	24	1

**EROSION CONTROL SUMMARY**

CATEGORY	STATION	LOCATION	<u>625.0500</u>	<u>627.0200</u>	<u>628.1104</u>	<u>628.1504</u>	<u>628.1520</u>	<u>628.1905</u>	<u>628.1910</u>	<u>628.7020</u>	<u>629.0205</u>	<u>630.0120</u>
			SALVAGED TOPSOIL SY	MULCHING SY	EROSION BALES EACH	SILT FENCE LF	SILT FENCE MAINTENANCE LF	MOBILIZATIONS EROSION CONTROL EACH	MOBILIZATIONS EMERGENCY EROSION CONTROL EACH	INLET PROTECTION TYPE D EACH	FERTILIZER TYPE A CWT	SEEDING MIXTURE NO. 20 LB
0010	712+31	NB-LT	44	44	--	--	--	--	--	--	0.03	1.20
0010	750+00	MEDIAN	--	--	--	--	--	--	--	--	--	--
0010	844+97	SB-LT	69	69	--	--	--	--	--	--	0.04	1.88
0010	1108+02	HARROUN RD - MEDIAN	667	667	--	--	--	--	--	--	0.42	18.00
0010	--	BEAM GUARD NB	--	458	--	--	--	--	--	--	0.29	12.63
0010	1118+25	SB-RT (CONC SURFACE DRAIN)	--	--	--	--	--	--	--	1.00	--	--
0010	1118+83	NB-RT (CONC SURFACE DRAIN)	--	--	--	--	--	--	--	1.00	--	--
0010	--	UNDISTRIBUTED	--	--	20	200	200	3	2	--	--	--
TOTAL 0010			780	1,238	20	200	200	3	2	2.00	0.78	33.71

**GUARDRAIL SUMMARY**

CATEGORY	STATION	TO	STATION	LOCATION	<u>204.0165</u>	<u>614.2300</u>	<u>614.2500</u>	<u>614.2610</u>	<u>614.2620</u>
					REMOVING GUARDRAIL LF	MGS GUARDRAIL 3 LF	MGS THRIE BEAM TRANSITION LF	MGS GUARDRAIL TERMINAL EAT EACH	MGS GUARDRAIL TERMINAL TYPE 2 EACH
0010	1116+03	-	1118+87	NB-R @ WCL RR	282	200	39	1	--
0010	1116+32	-	1119+46	NB-L @ WCL RR	171	225	39	1	--
0010	1117+25	-	1118+64	SB-L @ WCL RR	120	100	39	--	1
TOTAL 0010					573	525	117	2	1

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<u>HMA SUMMARY</u>					<u>455.0605</u>	<u>460.6645</u>	<u>465.0105</u>	<u>465.0400</u>	<u>650.8000</u>
CATEGORY	STATION	TO	STATION	LOCATION	TACK COAT GAL	HMA PAVEMENT 5 MT 58-34 V TON	ASPHALTIC SURFACE TON	ASPHALTIC SHOULDER RUMBLE STRIPS LF	CONSTRUCTION STAKING RESURFACING REFERENCE LF
<b>NORTHBOUND</b>									
0010	697+32	-	735+36	CTH M- FOREST RD	266	--	426	7,610	3,804
0010	735+36	-	750+11	FOREST RD - CUT AWAY RD	103	--	165	2,950	1,475
0010	750+11	-	776+37	CUT AWAY RD - SCHOOL FOREST RD	184	--	294	5,252	2,626
0010	776+37	-	795+04	SCHOOL FOREST RD - HUNGRY BEAR TR	131	--	209	3,734	1,867
0010	795+04	-	813+50	HUNGRY BEAR TR - BUSINESS 53	129	--	207	3,692	1,846
0010	813+50	-	849+99	BUSINESS 53 - HOLLY LUCIOUS RD	255	--	409	7,298	3,649
0010	849+99	-	923+87	HOLLY LUCIOUS RD - BALDWIN AVE	517	--	827	14,776	7,388
0010	923+87	-	950+36	BALDWIN AVE - CTH A	185	--	297	5,298	2,649
0010	950+36	-	977+27	CTH A - BOUNDARY AVE	188	--	301	5,382	2,691
0010	977+27	-	1031+00	BOUNDARY AVE - NYQUIST RD	376	--	602	10,746	5,373
0010	1031+00	-	1058+83	NYQUIST RD - CTH AA	1,385	1,510	312	5,566	2,783
0010	1058+83	-	1108+03	CTH AA - HARROUN RD	2,449	2,660	551	9,840	4,920
0010	1108+03	-	1119+38	HARROUN RD - WISC CEN. LTD RR	565	610	127	2,270	1,135
<b>SOUTHBOUND</b>									
0010	697+22	-	735+31	CTH M- FOREST RD	267	--	427	7,618	3,809
0010	735+31	-	750+02	FOREST RD - CUT AWAY RD	103	--	165	2,942	1,471
0010	750+02	-	776+21	CUT AWAY RD - SCHOOL FOREST RD	183	--	293	5,238	2,619
0010	776+21	-	794+88	SCHOOL FOREST RD - HUNGRY BEAR TR	131	--	209	3,734	1,867
0010	794+88	-	813+00	HUNGRY BEAR TR - BUSINESS 53	127	--	203	3,624	1,812
0010	813+00	-	849+12	BUSINESS 53 - HOLLY LUCIOUS RD	253	--	405	7,224	3,612
0010	849+12	-	923+79	HOLLY LUCIOUS RD - BALDWIN AVE	523	--	836	14,934	7,467
0010	923+79	-	950+35	BALDWIN AVE - CTH A	186	--	297	5,312	2,656
0010	950+35	-	977+56	CTH A - BOUNDARY AVE	190	--	305	5,442	2,721
0010	977+56	-	1032+72	BOUNDARY AVE - NYQUIST RD	386	--	618	11,032	5,516
0010	1032+72	-	1060+32	NYQUIST RD - CTH AA	193	--	309	5,520	2,760
0010	1060+32	-	1106+33	CTH AA - HARROUN RD	322	--	515	9,202	4,601
0010	1106+33	-	1118+62	HARROUN RD - WISC CEN. LTD RR	86	--	138	2,458	1,229
<b>SIDEROADS &amp; MEDIANS</b>									
0010				CTH M	41	--	66		
0010				FOREST RD	31	--	50		
0010				CUT AWAY RD	23	--	37		
0010				SCHOOL FOREST RD	24	--	39		
0010				HUNGRY BEAR TRAIL	23	--	37		
0010	0+00	-	4+06	BUSINESS 53 OFF RAMP	36	--	57		
0010				BUSINESS 53	154	--	246		
0010				HOLLY LUCIOUS RD	65	--	104		
0010			857+10	NORTH COUNTRY SCENIC TRAIL	18	--	29		
0010				BALDWIN AVE	152	--	244		
0010				CTH A	265	--	423		
0010				BOUNDARY AVE	93	--	149		
0010				NYQUIST RD	96	--	154		
0010				CTH AA	185	--	296		
0010	7+18	-	16+00	BUSINESS 53 ON RAMP	99	156	82		
0010				HARROUN RD	23	--	36		
TOTAL 0010					11,014	4,936	11,496	168,694	84,346

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HMA ACCEPTANCE TABLE - 1196-00-61												
LOCATION			STATION		MIXTURE USE	UNDERLYING SURFACE	ASPHALT	TONS	THICKNESS	QUALITY MANAGEMENT PROGRAM TO BE USED FOR:		
							BID ITEM			MIXTURE ACCEPTANCE	DENSITY ACCEPTANCE	
DRIVING LANE SHLD NB & SB	14'-20'	6'	695+00 NB	to	1031+00 NB	Shoulders	REMAINING 1" Milled Asphalt Shoulder	465.0105 ASPHALTIC SURFACE	5638	2 IN	QMP per SS 465	Acceptance testing by the department; Not eligible for incentive or disincentive.
			695+00 SB		1118+62.6 SB							
PASSING LANE SHLD NB & SB	12-15'	3'	695+00 NB	to	1031+00 NB	Shoulders	REMAINING 1" Milled Asphalt Shoulder	465.0105 ASPHALTIC SURFACE	2819	2 IN	QMP per SS 465	Acceptance testing by the department; Not eligible for incentive or disincentive.
			695+00 SB		1118+62.6 SB							
BUS 53 RAMP	GORE & 15-20'	RT	0+00	to	4+05.96	Gore & Shoulder	REMAINING 1" Milled Asphalt Shoulder	465.0105 ASPHALTIC SURFACE	139	2 IN	QMP per SS 465	Acceptance testing by the department; Not eligible for incentive or disincentive.
			7+18		16+00							
BUS 53 ON RAMP LANE	0-15	RT	7+18	to	7+68	Lower Layer	REMAINING 1" Milled Asphalt	460.6645 HMA 5 MT 58-34 V	6	1.25 IN	QMP per SS 465	Acceptance testing by the department; Not eligible for incentive or disincentive.
BUS 53 ON RAMP LANE	0-15	RT	7+68	to	16+00	Lower Layer	Existing Concrete surface	460.6645 HMA 5 MT 58-34 V	59	1.25 IN	QMP per SS 465	Acceptance testing by the department; Not eligible for incentive or disincentive.
BUS 53 ON RAMP LANE	0-15	RT	7+18	to	16+00	Upper Layer	1.25" HMA 5 MT 58-34 V	460.6645 HMA 5 MT 58-34 V	91	1.75 IN	QMP per SS 465	Acceptance testing by the department; Not eligible for incentive or disincentive.
SIDEROADS & MEDIANS	Various					Resurface	REMAINING 1" Milled Asphalt Shoulder	465.0105 ASPHALTIC SURFACE	1910	2 IN	QMP per SS 465	Acceptance testing by the department; Not eligible for incentive or disincentive.
DRIVING LANE NB	0-14'	RT	1031+00	to	119+38.45	Lower Layer	Existing Concrete surface	460.6645 HMA 5 MT 58-34 V	963	1.25 IN	QMP per SS 460	Incentive Density HMA Pavement 460.2000
DRIVING LANE NB	0-14'	RT	1031+00	to	119+38.45	Upper Layer	1.25" HMA 5 MT 58-34 V	460.6645 HMA 5 MT 58-34 V	1347	1.75 IN	QMP per SS 460	Incentive Density HMA Pavement 460.2000
DRIVING LANE SHLD NB	14'-20'	RT	1031+00	to	119+38.45	Lower Layer	BASE AGGREGATE DENSE 1.25"	465.0105 ASPHALTIC SURFACE	412	1.25 IN	QMP per SS 465	Acceptance testing by the department; Not eligible for incentive or disincentive.
DRIVING LANE SHLD NB	14'-20'	RT	1031+00	to	119+38.45	Upper Layer	1.25" HMA 5 MT 58-34 V	465.0105 ASPHALTIC SURFACE	577	1.75 IN	QMP per SS 465	Acceptance testing by the department; Not eligible for incentive or disincentive.
PASSING LANE NB	0-12'	LT	1031+00	to	119+38.45	Lower Layer	Existing Concrete surface	460.6645 HMA 5 MT 58-34 V	825	1.25 IN	QMP per SS 460	Incentive Density HMA Pavement 460.2000
PASSING LANE NB	0-12'	LT	1031+00	to	119+38.45	Upper Layer	1.25" HMA 5 MT 58-34 V	460.6645 HMA 5 MT 58-34 V	1155	1.75 IN	QMP per SS 460	Incentive Density HMA Pavement 460.2000
PASSING LANE SHLD NB	12-15'	LT	1031+00	to	119+38.45	Lower Layer	Existing Asphalt Shoulder	460.6645 HMA 5 MT 58-34 V	206	1.25 IN	QMP per SS 460	Acceptance testing by the department; Not eligible for incentive or disincentive.
PASSING LANE SHLD NB	12-15'	LT	1031+00	to	119+38.45	Upper Layer	Existing Asphalt Shoulder	460.6645 HMA 5 MT 58-34 V	289	1.75 IN	QMP per SS 460	Acceptance testing by the department; Not eligible for incentive or disincentive.

PROJECT NO: 1196-00-61

HWY: USH 53

COUNTY: DOUGLAS

MISCELLANEOUS QUANTITIES

SHEET:

E

**PAVEMENT MARKING SUMMARY**

**646.1040**

**646.1555**  
 MARKING LINE GROOVED  
 CONTRAST PERMANENT TAPE

MAINLINE TURN BAYS  
**646.3555**  
 MARKING LINE GROOVED  
 CONTRAST PERMANENT TAPE 8-

MAINLINE TURN BAYS  
**646.5020**  
 MARKING ARROW  
 EPOXY

**646.6120**  
 MARKING STOP LINE  
 EPOXY 18-INCH

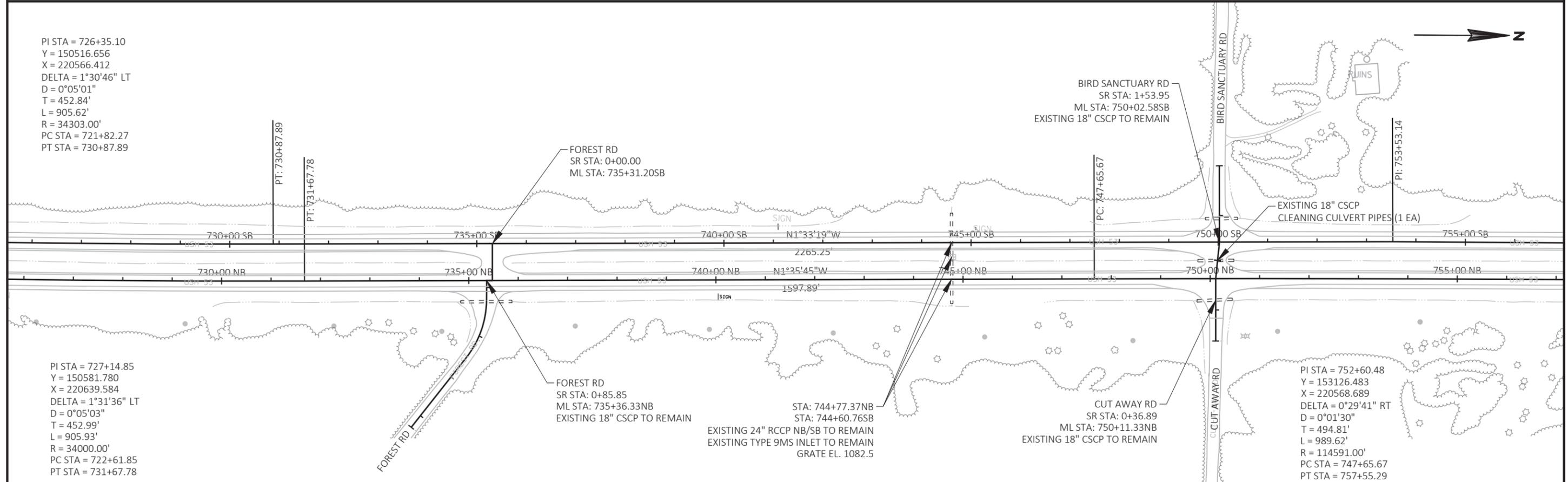
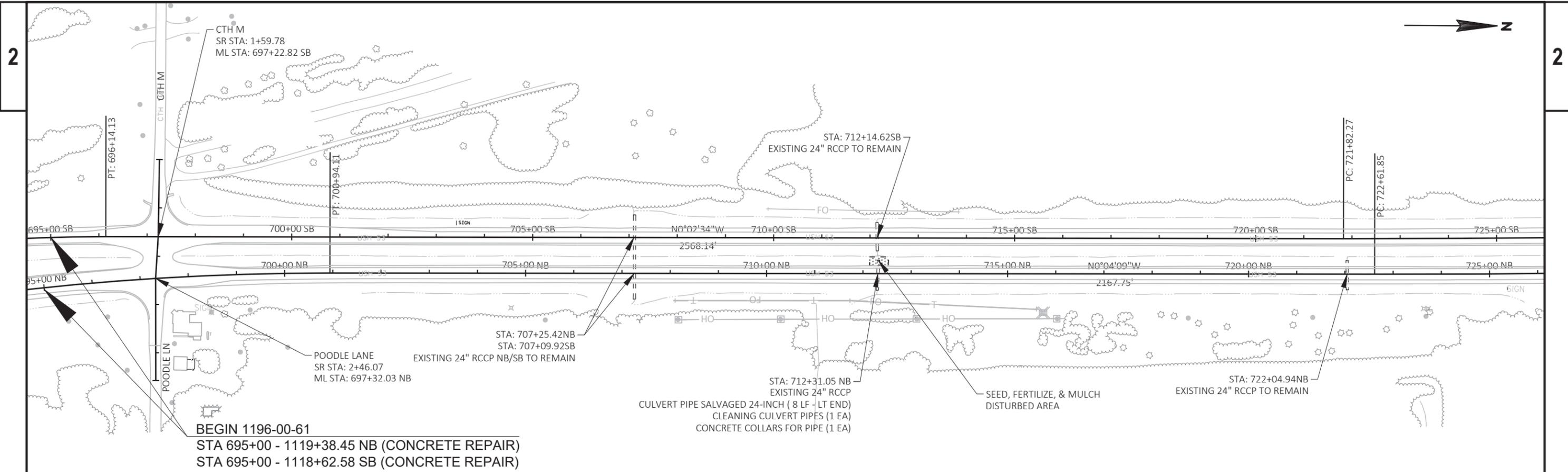
**649.0105**  
 TEMPORARY  
 MARKING LINE  
 PAINT 4-INCH

CATEGORY	STATION	TO	STATION	LOCATION	MARKING LINE GROOVED WET REF EPOXY 4-INCH LF	MARKING LINE GROOVED CONTRAST PERMANENT TAPE 4-INCH LF	MARKING LINE GROOVED CONTRAST PERMANENT TAPE 8- INCH LF	MARKING ARROW EPOXY EACH	MARKING STOP LINE EPOXY 18-INCH LF	TEMPORARY MARKING LINE PAINT 4-INCH LF				
<b>NORTHBOUND</b>					<b>WHITE EDGELINE</b>	<b>YELLOW EDGELINE</b>	<b>CENTERLINE</b>							
0010	697+32	-	735+36	CTH M- FOREST RD	3,804	3,804	951	--	--	--				
0010	735+36	-	750+11	FOREST RD - CUT AWAY RD	1,475	1,475	369	--	--	--				
0010	750+11	-	776+37	CUT AWAY RD - SCHOOL FOREST RD	2,626	2,626	657	--	--	--				
0010	776+37	-	795+04	SCHOOL FOREST RD - HUNGRY BEAR TR	1,867	1,867	467	--	--	--				
0010	795+04	-	813+50	HUNGRY BEAR TR - BUSINESS 53	1,846	1,846	462	--	--	--				
0010	813+50	-	849+99	BUSINESS 53 - HOLLY LUCIOUS RD	3,649	3,649	912	--	--	--				
0010	849+99	-	923+87	HOLLY LUCIOUS RD - BALDWIN AVE	7,388	7,388	1,847	--	--	--				
0010	923+87	-	950+36	BALDWIN AVE - CTH A	2,649	2,649	662	--	--	--				
0010	950+36	-	977+27	CTH A - BOUNDARY AVE	2,691	2,691	673	--	--	--				
0010	977+27	-	1031+00	BOUNDARY AVE - NYQUIST RD	5,373	5,373	1,343	--	--	--				
0010	1031+00	-	1058+83	NYQUIST RD - CTH AA	2,783	2,783	696	--	--	--				
0010	1058+83	-	1108+03	CTH AA - HARROUN RD	4,920	4,920	1,230	--	--	--				
0010	1108+03	-	1119+38	HARROUN RD - WISC CEN. LTD RR	1,135	1,135	284	--	--	--				
<b>SOUTHBOUND</b>														
0010	697+22	-	735+31	CTH M- FOREST RD	3,809	3,809	952	--	--	--				
0010	735+31	-	750+02	FOREST RD - CUT AWAY RD	1,471	1,471	368	--	--	--				
0010	750+02	-	776+21	CUT AWAY RD - SCHOOL FOREST RD	2,619	2,619	655	--	--	--				
0010	776+21	-	794+88	SCHOOL FOREST RD - HUNGRY BEAR TR	1,867	1,867	467	--	--	--				
0010	794+88	-	813+00	HUNGRY BEAR TR - BUSINESS 53	1,812	1,812	453	--	--	--				
0010	813+00	-	849+12	BUSINESS 53 - HOLLY LUCIOUS RD	3,612	3,612	903	--	--	--				
0010	849+12	-	923+79	HOLLY LUCIOUS RD - BALDWIN AVE	7,467	7,467	1,867	--	--	--				
0010	923+79	-	950+35	BALDWIN AVE - CTH A	2,656	2,656	664	--	--	--				
0010	950+35	-	977+56	CTH A - BOUNDARY AVE	2,721	2,721	680	--	--	--				
0010	977+56	-	1032+72	BOUNDARY AVE - NYQUIST RD	5,516	5,516	1,379	--	--	--				
0010	1032+72	-	1060+32	NYQUIST RD - CTH AA	2,760	2,760	690	--	--	1,380				
0010	1060+32	-	1106+33	CTH AA - HARROUN RD	4,601	4,601	1,150	--	--	2,301				
0010	1106+33	-	1118+62	HARROUN RD - WISC CEN. LTD RR	1,229	1,229	307	--	--	615				
<b>SIDEROADS &amp; MEDIANS</b>								<b>NB</b>	<b>SB</b>	<b>NB</b>	<b>SB</b>	<b>NB</b>	<b>SB</b>	
0010				CTH M	--	--	--	315	200	4	4	18	15	--
0010				FOREST RD	--	--	--	--	150	0	2	--	--	--
0010				CUT AWAY RD	--	--	--	150	300	2	4	--	15	--
0010				SCHOOL FOREST RD	--	--	--	--	150	--	2	--	--	--
0010				HUNGRY BEAR TRAIL	--	--	--	--	150	--	2	--	--	--
0010	0+00	-	4+06	BUSINESS 53 OFF RAMP	812	--	--	--	--	--	--	--	--	--
0010				BUSINESS 53	--	--	--	370	325	2	2	20	--	--
0010				HOLLY LUCIOUS RD	--	--	--	--	--	--	--	--	--	--
0010				BALDWIN AVE	--	--	--	130	370	2	2	17	--	--
0010				CTH A	--	--	--	700	680	4	4	38	36	--
0010				BOUNDARY AVE	--	--	--	740	740	2	2	20	--	--
0010				NYQUIST RD	--	--	--	--	--	--	--	18	20	--
0010				CTH AA	--	--	--	--	360	--	2	15	30	--
0010	7+18	-	16+00	BUSINESS 53 ON RAMP	1,674	--	--	--	--	--	--	--	--	--
0010				HARROUN RD	--	--	--	--	--	--	--	--	--	--
<b>TOTAL 0010</b>					<b>171,178</b>	<b>21,087</b>	<b>5,830</b>	<b>42</b>	<b>262</b>	<b>4,295</b>				

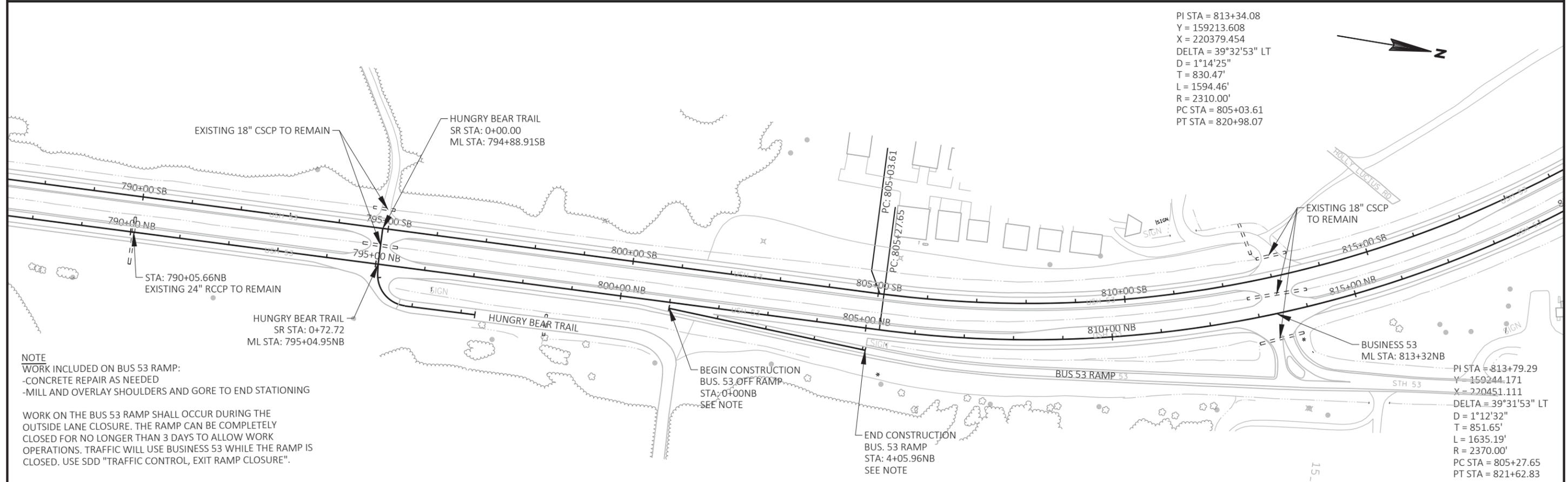
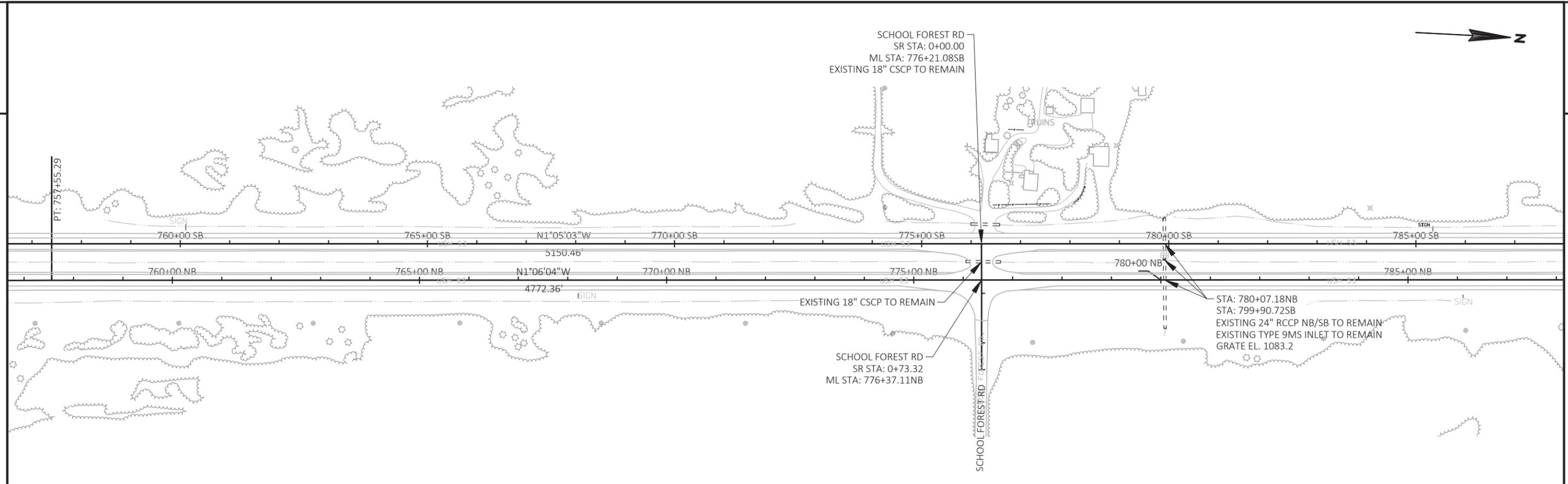
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CATEGORY 0010		<b>TRAFFIC CONTROL SUMMARY</b>										REMARKS
		643.0300	643.0420	643.0705	643.0715	643.0800	643.0900	643.5000	646.9000	649.0150		
STATION TO STATION	LOCATION	TRAFFIC CONTROL DRUMS DAY	TRAFFIC CONTROL BARRICADES TYPE III DAY	TRAFFIC CONTROL WARNING LIGHTS TYPE A DAY	TRAFFIC CONTROL WARNING LIGHTS TYPE C DAY	TRAFFIC CONTROL ARROW BOARDS DAY	TRAFFIC CONTROL SIGNS DAY	TRAFFIC CONTROL EACH	MARKING REMOVAL LINE 4-INCH LF	TEMPORARY MARKING LINE REMOVABLE TAPE 4-INCH LF		
<b>PROJECT WIDE</b>												
-- -- --	PROJECT WIDE	--	--	--	--	--	--	1	--	--		
<b>NORTHBOUND</b>												
627+80 - 695+00	ADVANCE WARNING / LANE CLOSURE	3,496	184	368	1,380	184	1,288	--	700	1,320	SDD TRAFFIC CONTROL, LANE CLOSURE, SPEED REDUCITON	
697+32 - 735+36	CTH M- FOREST RD	7,268	552	1,104	0	0	1,104	--	--	--		
735+36 - 750+11	FOREST RD - CUT AWAY RD	5,060	460	920	0	0	1,012	--	--	--		
750+11 - 776+37	CUT AWAY RD - SCHOOL FOREST RD	6,164	460	920	0	0	1,012	--	--	--		
776+37 - 795+04	SCHOOL FOREST RD - HUNGRY BEAR TR	5,428	460	920	0	0	1,012	--	--	--		
795+04 - 813+50	HUNGRY BEAR TR - BUSINESS 53	5,428	460	920	0	0	1,012	--	--	--		
813+50 - 849+99	BUSINESS 53 - HOLLY LUCIOUS RD	7,084	552	1,104	0	0	1,104	--	--	--		
849+99 - 923+87	HOLLY LUCIOUS RD - BALDWIN AVE	10,488	828	1,656	0	0	1,380	--	--	--		
923+87 - 950+36	BALDWIN AVE - CTH A	6,164	552	1,104	0	0	1,104	--	--	--		
950+36 - 977+27	CTH A - BOUNDARY AVE	6,164	552	1,104	0	0	1,104	--	--	--		
977+27 - 1031+00	BOUNDARY AVE - NYQUIST RD	8,648	736	1,472	0	0	1,288	--	--	--		
1031+00 - 1058+83	NYQUIST RD - CTH AA	6,256	552	1,104	0	0	1,104	--	--	--		
1058+83 - 1108+03	CTH AA - HARROUN RD	8,280	644	1,288	0	0	1,196	--	--	--		
1108+03 - 1119+38	HARROUN RD - WISC CEN. LTD RR	4,784	368	736	0	0	920	--	--	--		
<b>SOUTHBOUND</b>												
697+22 - 735+31	CTH M- FOREST RD	6,320	480	960	0	0	960	--	--	--		
735+31 - 750+02	FOREST RD - CUT AWAY RD	4,400	400	800	0	0	880	--	--	--		
750+02 - 776+21	CUT AWAY RD - SCHOOL FOREST RD	5,360	400	800	0	0	880	--	--	--		
776+21 - 794+88	SCHOOL FOREST RD - HUNGRY BEAR TR	4,720	400	800	0	0	880	--	--	--		
794+88 - 813+00	HUNGRY BEAR TR - BUSINESS 53	4,720	400	800	0	0	880	--	--	--		
813+00 - 849+12	BUSINESS 53 - HOLLY LUCIOUS RD	6,160	480	960	0	0	960	--	--	--		
849+12 - 923+79	HOLLY LUCIOUS RD - BALDWIN AVE	9,200	720	1,440	0	0	1,200	--	--	--		
923+79 - 950+35	BALDWIN AVE - CTH A	5,360	480	960	0	0	960	--	--	--		
950+35 - 977+56	CTH A - BOUNDARY AVE	5,440	480	960	0	0	960	--	--	--		
977+56 - 1032+72	BOUNDARY AVE - NYQUIST RD	7,680	640	1,280	0	0	1,120	--	--	--		
1032+72 - 1060+32	NYQUIST RD - CTH AA	5,440	480	960	0	0	960	--	--	--		
1060+32 - 1106+33	CTH AA - HARROUN RD	6,960	560	1,120	0	0	1,040	--	--	--		
1106+33 - 1118+62	HARROUN RD - WISC CEN. LTD RR	4,240	320	640	0	0	800	--	--	--		
1118+62 - 1185+82	ADVANCE WARNING / LANE CLOSURE	6,240	160	320	1,200	160	1,120	--	700	1,320	SDD TRAFFIC CONTROL, LANE CLOSURE, SPEED REDUCITON	
TOTAL 0010		172,952	13,760	27,520	2,580	344	29,240	1	1,400	2,640		



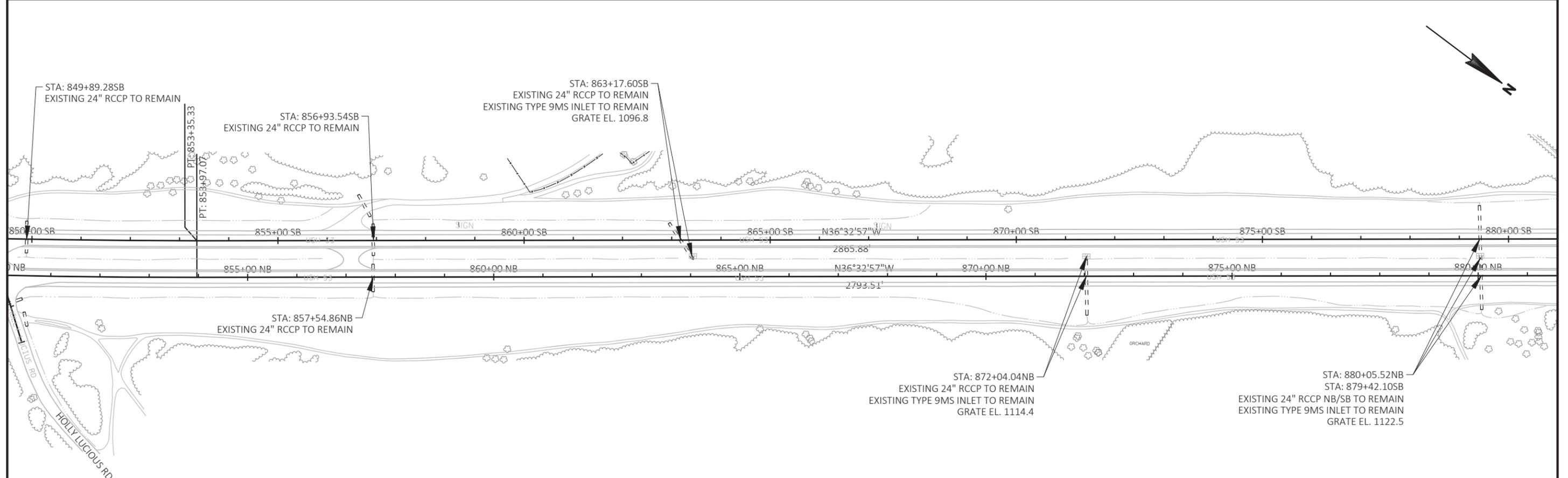
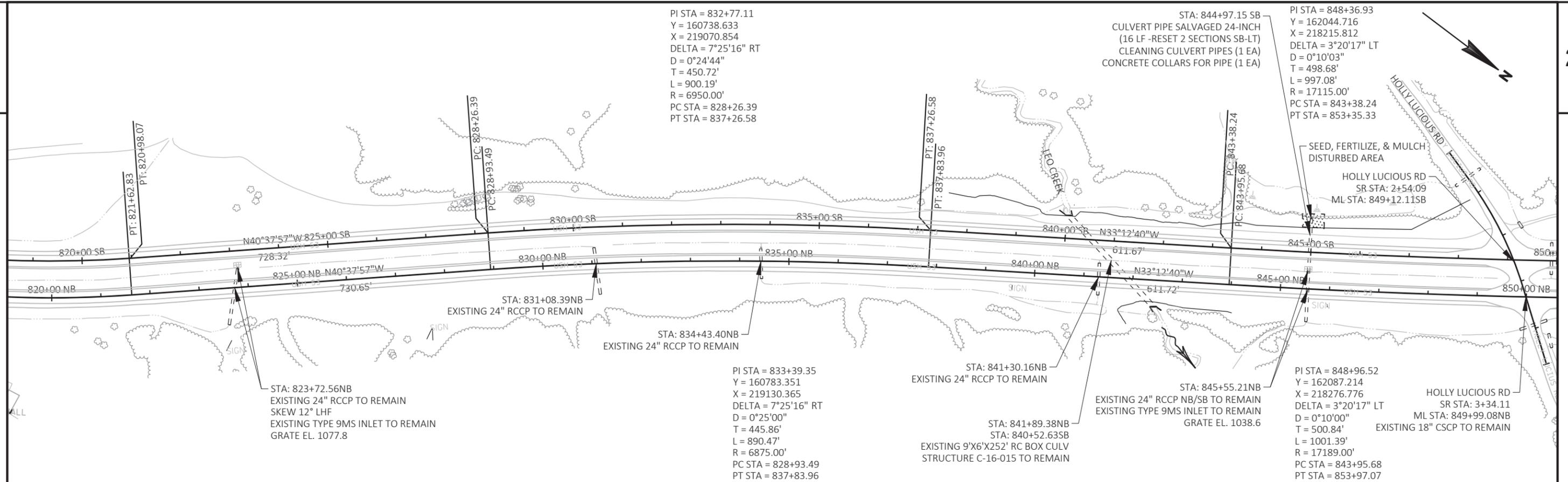
PROJECT NO: 1196-00-61	HWY: USH 53	COUNTY: DOUGLAS	PLANS - USH 53	SHEET	E
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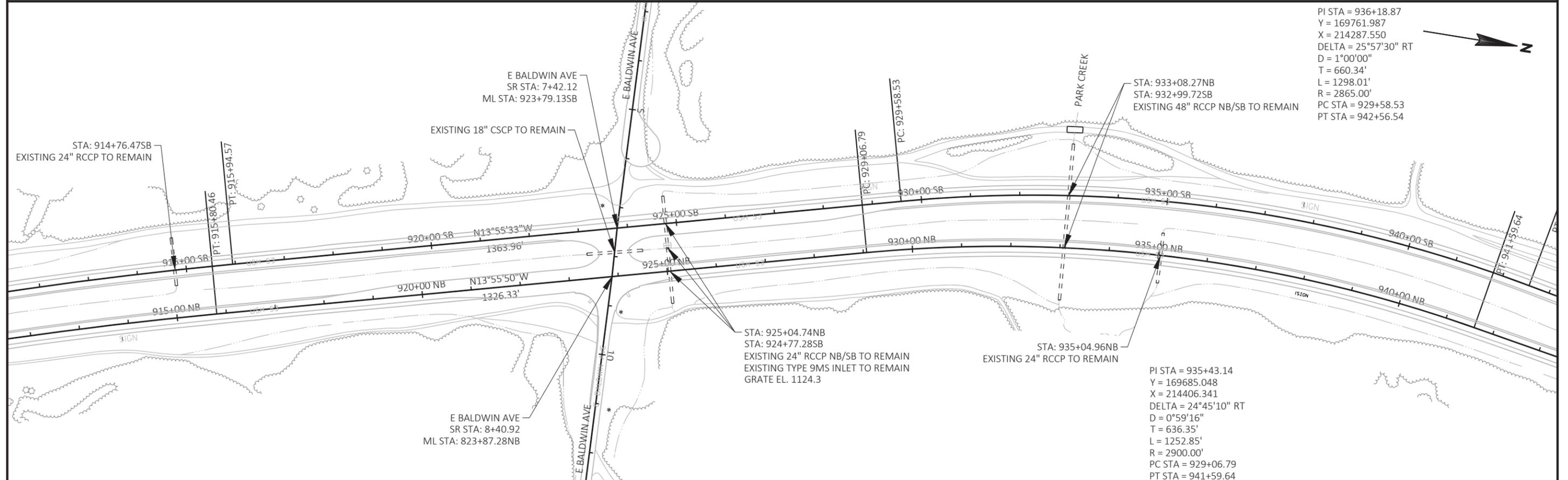
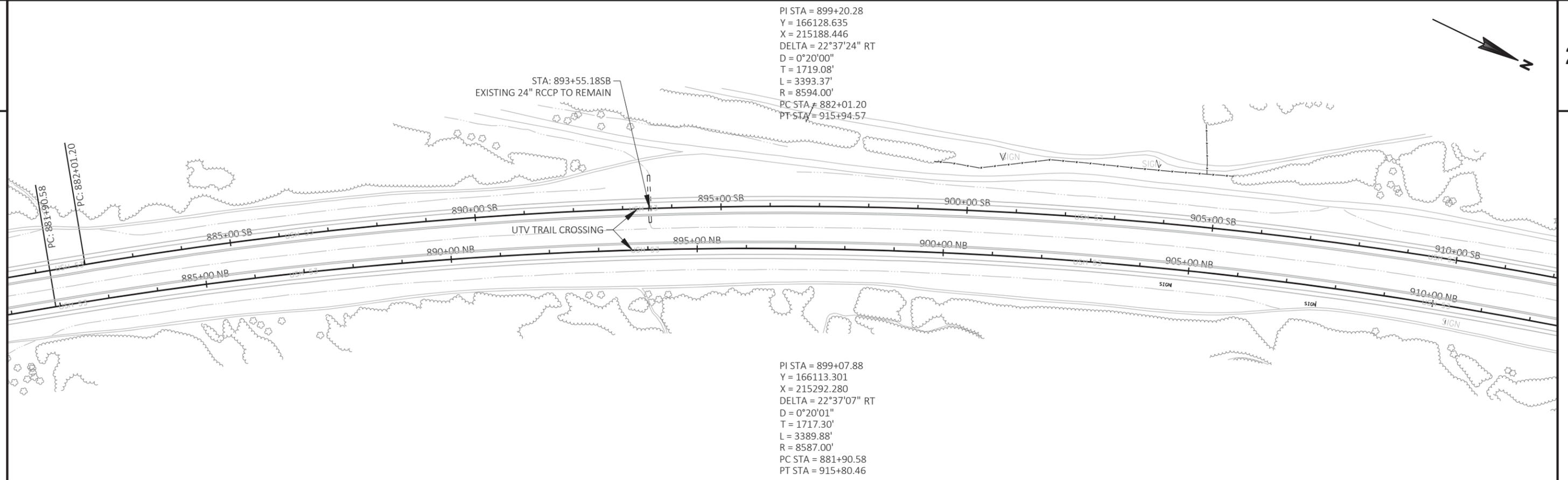
NOTE  
 WORK INCLUDED ON BUS 53 RAMP:  
 -CONCRETE REPAIR AS NEEDED  
 -MILL AND OVERLAY SHOULDERS AND GORE TO END STATIONING

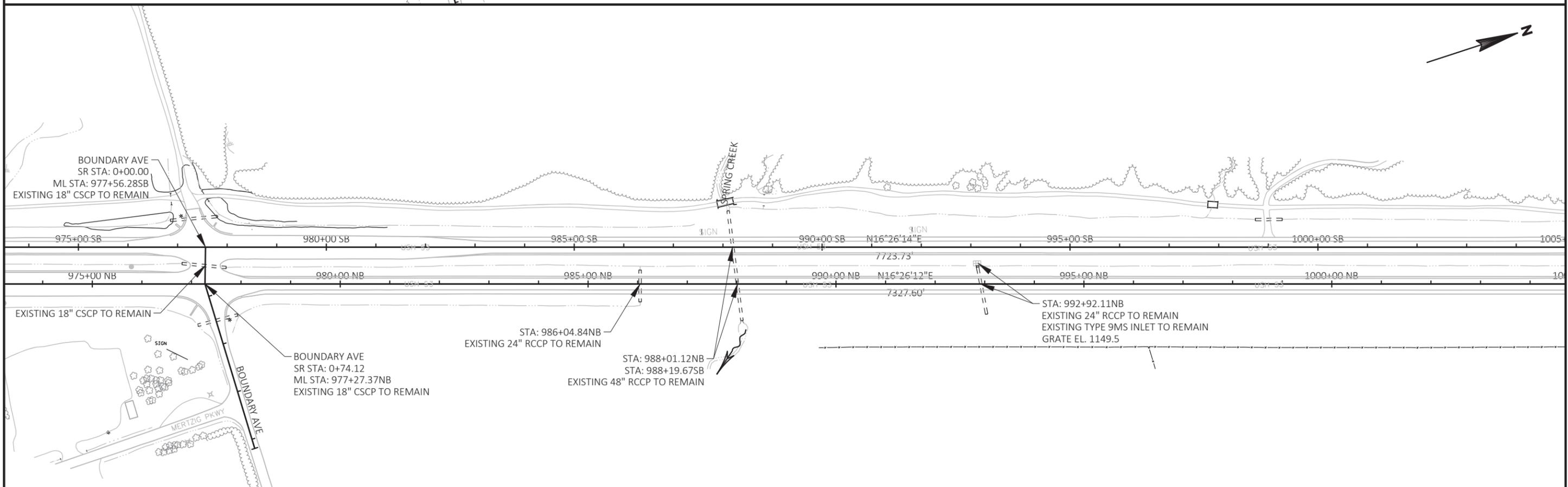
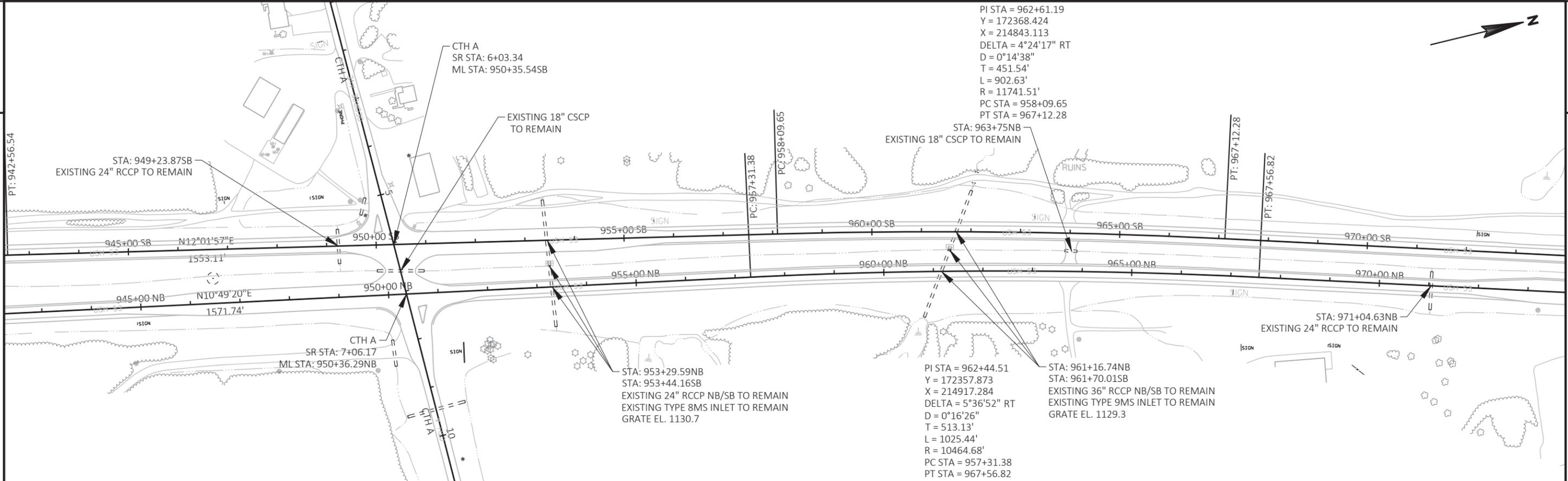
WORK ON THE BUS 53 RAMP SHALL OCCUR DURING THE OUTSIDE LANE CLOSURE. THE RAMP CAN BE COMPLETELY CLOSED FOR NO LONGER THAN 3 DAYS TO ALLOW WORK OPERATIONS. TRAFFIC WILL USE BUSINESS 53 WHILE THE RAMP IS CLOSED. USE SDD "TRAFFIC CONTROL, EXIT RAMP CLOSURE".

PROJECT NO: 1196-00-61	HWY: USH 53	COUNTY: DOUGLAS	PLANS - USH 53	SHEET	E
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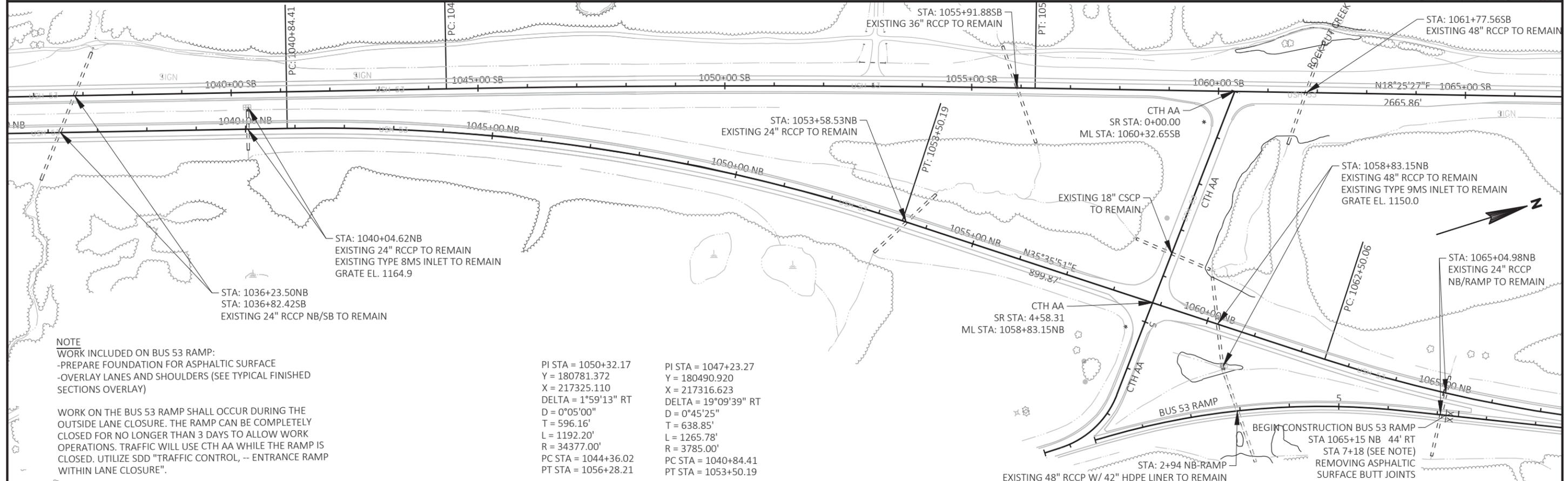
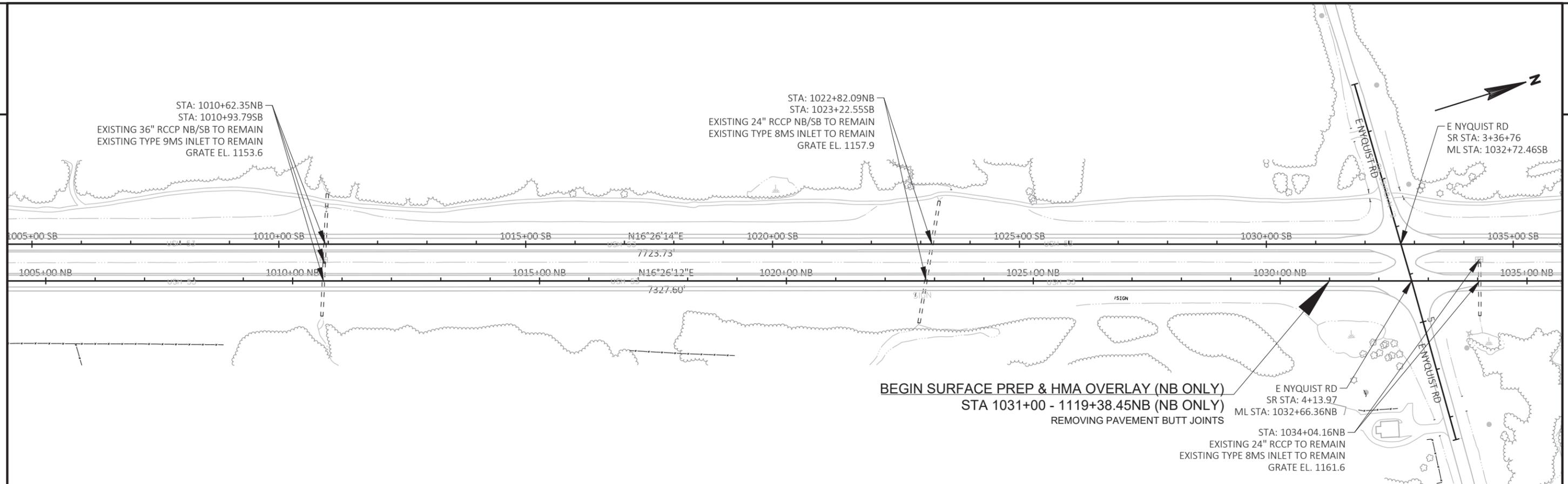


PROJECT NO: 1196-00-61	HWY: USH 53	COUNTY: DOUGLAS	PLANS - USH 53	SHEET	E
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PROJECT NO: 1196-00-61	HWY: USH 53	COUNTY: DOUGLAS	PLANS - USH 53	SHEET	E
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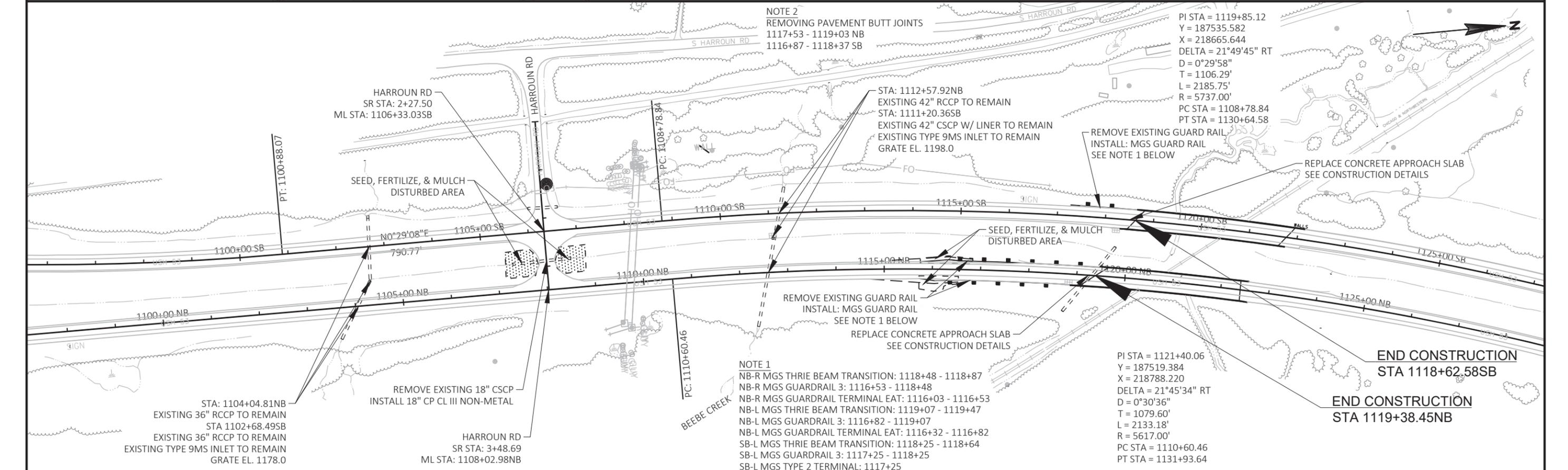
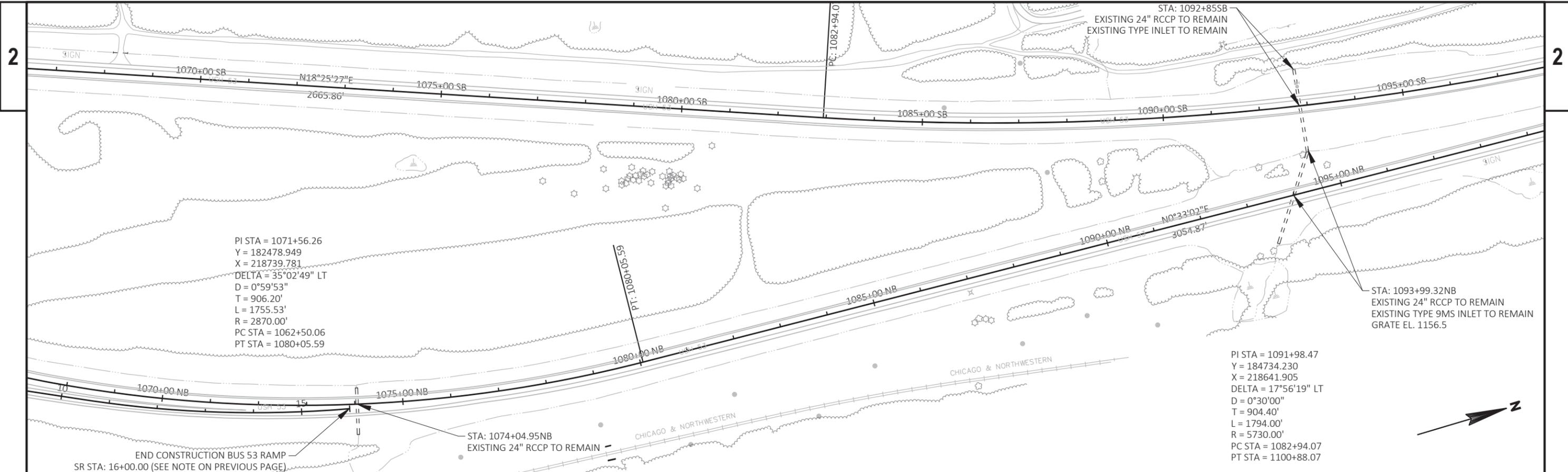


NOTE  
 WORK INCLUDED ON BUS 53 RAMP:  
 -PREPARE FOUNDATION FOR ASPHALTIC SURFACE  
 -OVERLAY LANES AND SHOULDERS (SEE TYPICAL FINISHED SECTIONS OVERLAY)

WORK ON THE BUS 53 RAMP SHALL OCCUR DURING THE OUTSIDE LANE CLOSURE. THE RAMP CAN BE COMPLETELY CLOSED FOR NO LONGER THAN 3 DAYS TO ALLOW WORK OPERATIONS. TRAFFIC WILL USE CTH AA WHILE THE RAMP IS CLOSED. UTILIZE SDD "TRAFFIC CONTROL, -- ENTRANCE RAMP WITHIN LANE CLOSURE".

PI STA = 1050+32.17  
 Y = 180781.372  
 X = 217325.110  
 DELTA = 1°59'13" RT  
 D = 0°05'00"  
 T = 596.16'  
 L = 1192.20'  
 R = 34377.00'  
 PC STA = 1044+36.02  
 PT STA = 1056+28.21

PI STA = 1047+23.27  
 Y = 180490.920  
 X = 217316.623  
 DELTA = 19°09'39" RT  
 D = 0°45'25"  
 T = 638.85'  
 L = 1265.78'  
 R = 3785.00'  
 PC STA = 1040+84.41  
 PT STA = 1053+50.19



PROJECT NO: 1196-00-61

HWY: USH 53

COUNTY: DOUGLAS

PLANS - USH 53

SHEET

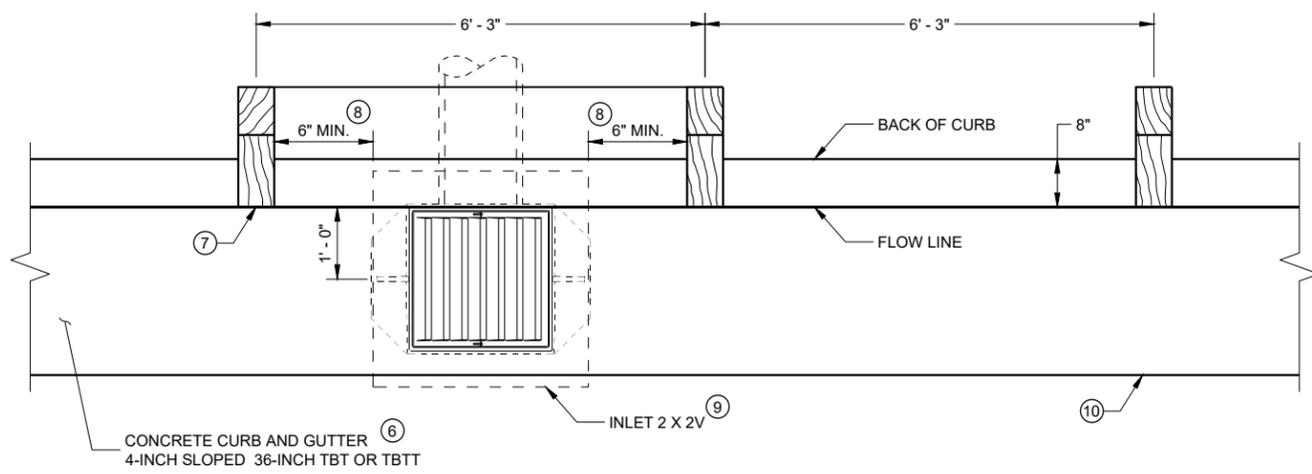
E

## Standard Detail Drawing List

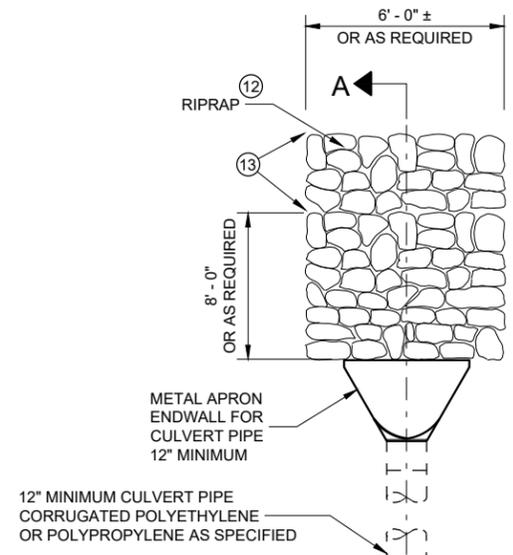
08D03-08A	CONCRETE SURFACE DRAINS DROP INLET TYPE AT STRUCTURES
08D03-08B	CONCRETE SURFACE DRAINS DROP INLET TYPE AT STRUCTURES
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F04-08	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
13A05-05A	SHOULDER RUMBLE STRIP, MILLING
13A05-05B	SHOULDER RUMBLE STRIP, MILLING
13B02-09A	CONCRETE PAVEMENT APPROACH SLAB
13C01-19	CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES
13C09-15A	CONCRETE PAVEMENT REPAIR AND REPLACEMENT
13C09-15B	CONCRETE PAVEMENT REPAIR AND REPLACEMENT
13C09-15C	CONCRETE PAVEMENT REPAIR AND REPLACEMENT
13C11-12A	RURAL DOWELED CONCRETE PAVEMENT
13C11-12B	RURAL DOWELED CONCRETE PAVEMENT
13C18-07A	CONCRETE PAVEMENT JOINTING
13C18-07B	CONCRETE PAVEMENT STEEL REINFORCEMENT
13C18-07C	CONCRETE PAVEMENT JOINT TYPES
13C18-07D	CONCRETE PAVEMENT JOINT TYPES AT UTILITY FIXTURES
13C18-07F	CONCRETE PAVEMENT INTERSECTION BOXOUT FOR INTEGRAL CURB AND GUTTER
13C19-03	HMA LONGITUDINAL JOINTS
14B42-07A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07D	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 THREE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05D	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05E	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05F	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05G	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05H	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05I	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05J	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05K	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05L	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B47-03A	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-03B	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-03C	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-03D	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-03E	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-03F	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-03G	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
15C08-20A	LONGITUDINAL MARKING (MAINLINE)
15C08-20B	PAVEMENT MARKING (TURN LANES)
15C08-20C	PAVEMENT MARKING (TURN LANES)
15C11-09A	CHANNELIZING DEVICES FLEXIBLE TUBULAR MARKER POST
15C11-09B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C12-08	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION
15C18-05A	MEDIAN ISLAND MARKING PAVEMENT MARKINGS
15C19-06C	MOVING PAVEMENT MARKING OPERATION MULTI-LANE DIVIDED ROADWAY
15C31-04A	PAVEMENT MARKING EXIT RAMP AND PARALLEL EXIT RAMP
15C31-04C	PAVEMENT MARKING ENTRANCE RAMP AND PARALLEL ENTRANCE RAMP
15C33-04	STOP LINE AND CROSSWALK PAVEMENT MARKING
15D12-09B	TRAFFIC CONTROL, LANE CLOSURE, SPEED REDUCTION
15D15-05A	TRAFFIC CONTROL, PARALLEL ENTRANCE RAMP WITHIN LANE CLOSURE
15D15-05B	TRAFFIC CONTROL, ENTRANCE RAMP WITHIN LANE CLOSURE
15D15-05C	TRAFFIC CONTROL, TAPERED ENTRANCE RAMP WITHIN LANE CLOSURE
15D15-05D	TRAFFIC CONTROL, TAPERED ENTRANCE RAMP WITHIN LANE CLOSURE
15D15-05E	TRAFFIC CONTROL, PARALLEL EXIT RAMP WITHIN LANE CLOSURE
15D16-04	TRAFFIC CONTROL, EXIT RAMP CLOSURE
15D21-07A	TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE
15D21-07B	TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE

## Standard Detail Drawing List

15D27-03	TRAFFIC CONTROL, SHOULDER CLOSURE ON DIVIDED ROADWAY, SPEEDS GREATER THAN 40 MPH
15D39-02	TRAFFIC CONTROL, DROP-OFF SIGNING
15D40-02C	TRAFFIC CONTROL, PARTIAL LANE SHIFT NON-FREEWAY OR MULTI LANE DIVIDED 45 MPH AND UNDER



**INLET PLAN VIEW**  
(NOTE: RAIL NOT SHOWN FOR CLARITY)

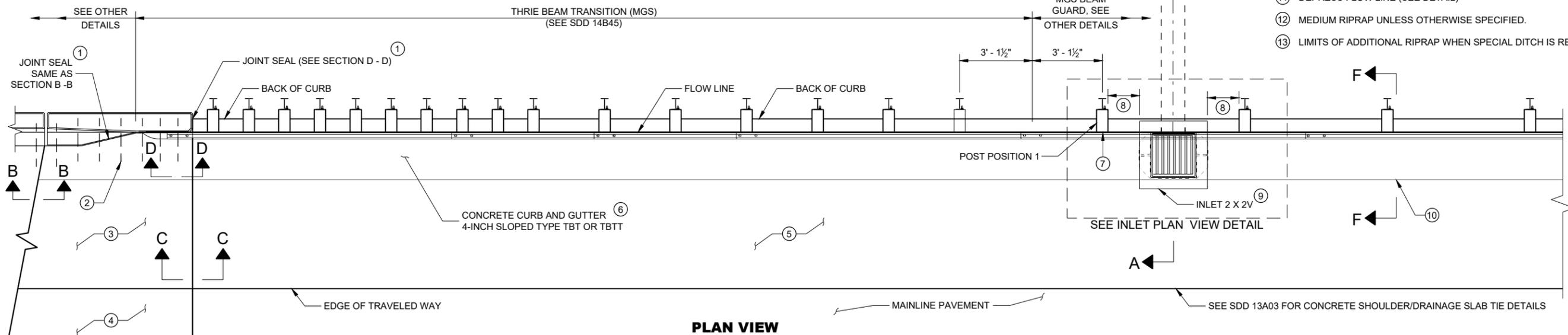


**GENERAL NOTES**

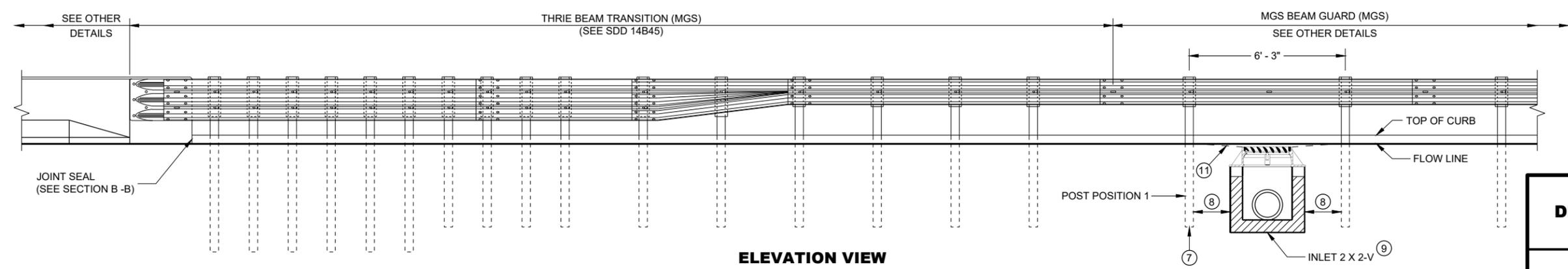
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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 DRAINAGE STRUCTURE BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- ⑧ CENTER DRAINAGE STRUCTURE BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE WALL OF DRAINAGE STRUCTURE TO POSTS.
- ⑨ SEE SDD 08A05 AND 08C07 FOR DETAILS. SEE ROADWAY PLANS FOR LOCATION.
- ⑩ START CURB AND GUTTER TRANSITION OR END SECTION.
- ⑪ DEPRESS FLOW LINE (SEE DETAIL)
- ⑫ MEDIUM RIPRAP UNLESS OTHERWISE SPECIFIED.
- ⑬ LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH IS REQUIRED.



**PLAN VIEW**



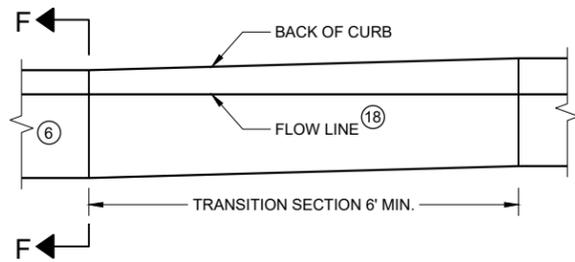
**ELEVATION VIEW**

**CONCRETE SURFACE  
DRAINS DROP INLET TYPE  
AT STRUCTURES**

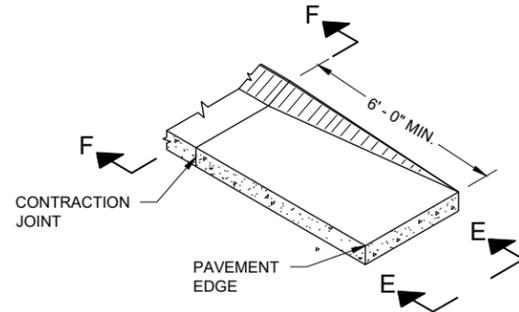
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

SDD 08D03 - 08a

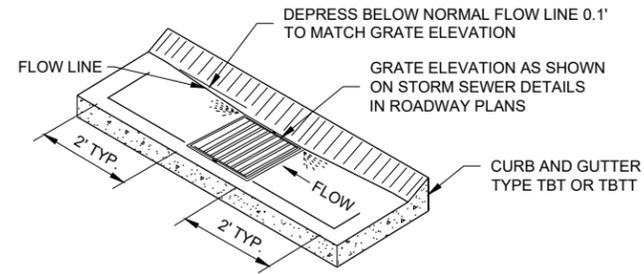
SDD 08D03 - 08a



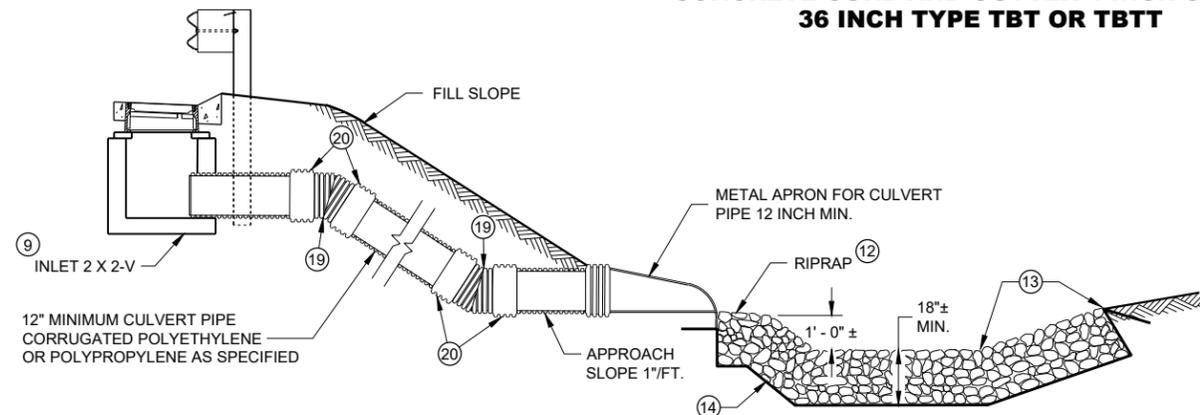
**CURB AND GUTTER TRANSITION SECTION  
CONCRETE CURB AND GUTTER 4-INCH SLOPED  
36 INCH TYPE TBT OR TBTT**



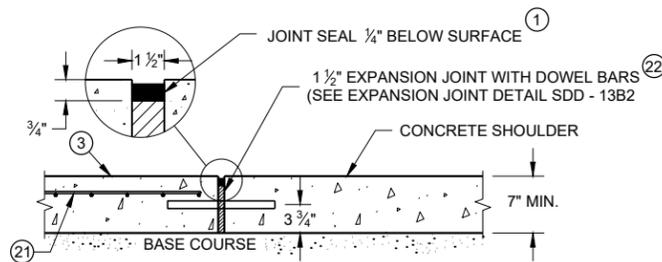
**CURB AND GUTTER END SECTION  
CONCRETE CURB AND GUTTER 4-INCH SLOPED  
36 INCH TYPE TBT OR TBTT**



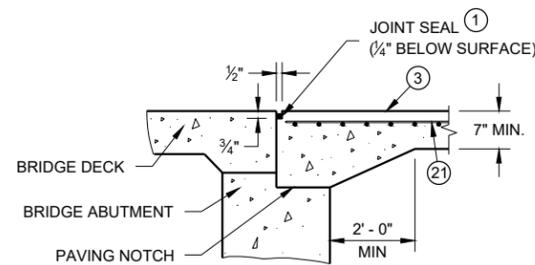
**CURB AND GUTTER FLOW LINE DEPRESSION  
AT INLETS CONCRETE CURB AND GUTTER  
4-INCH SLOPED 36 INCH TYPE TBT OR TBTT**



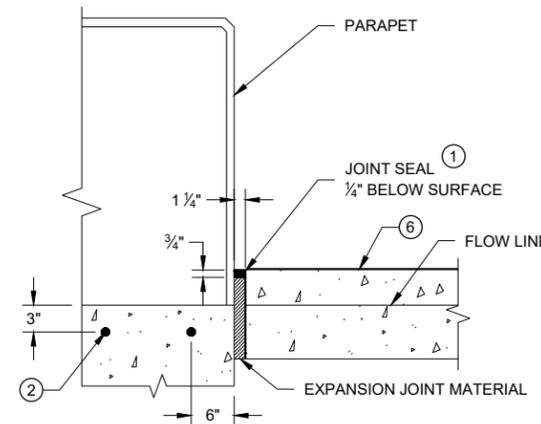
**SECTION A - A**



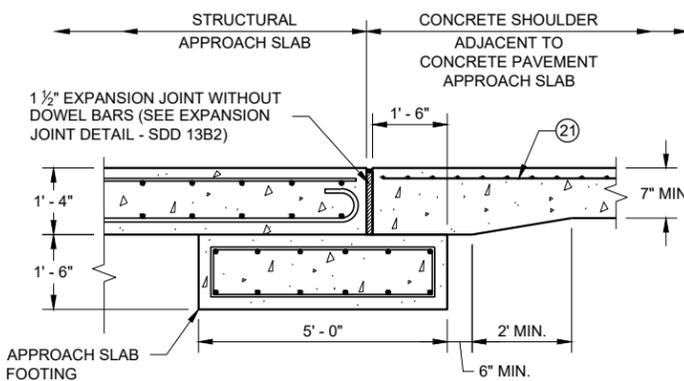
**SECTION C - C  
JOINT DETAIL FOR BRIDGE APPROACH  
WITH CONCRETE SHOULDERS**



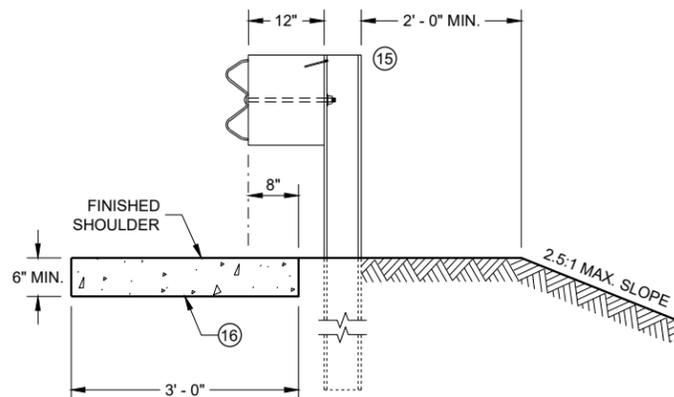
**SECTION B - B**



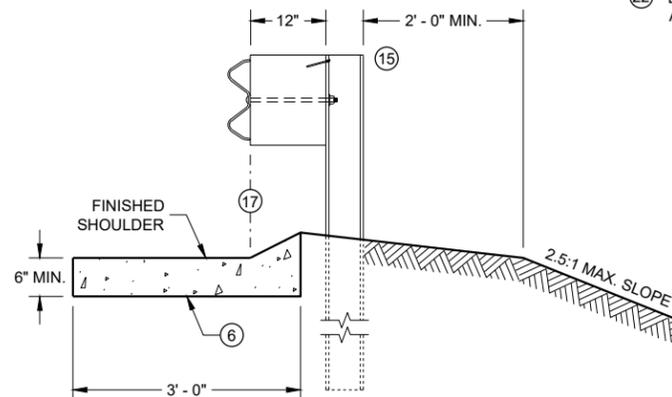
**SECTION D - D**



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



**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.

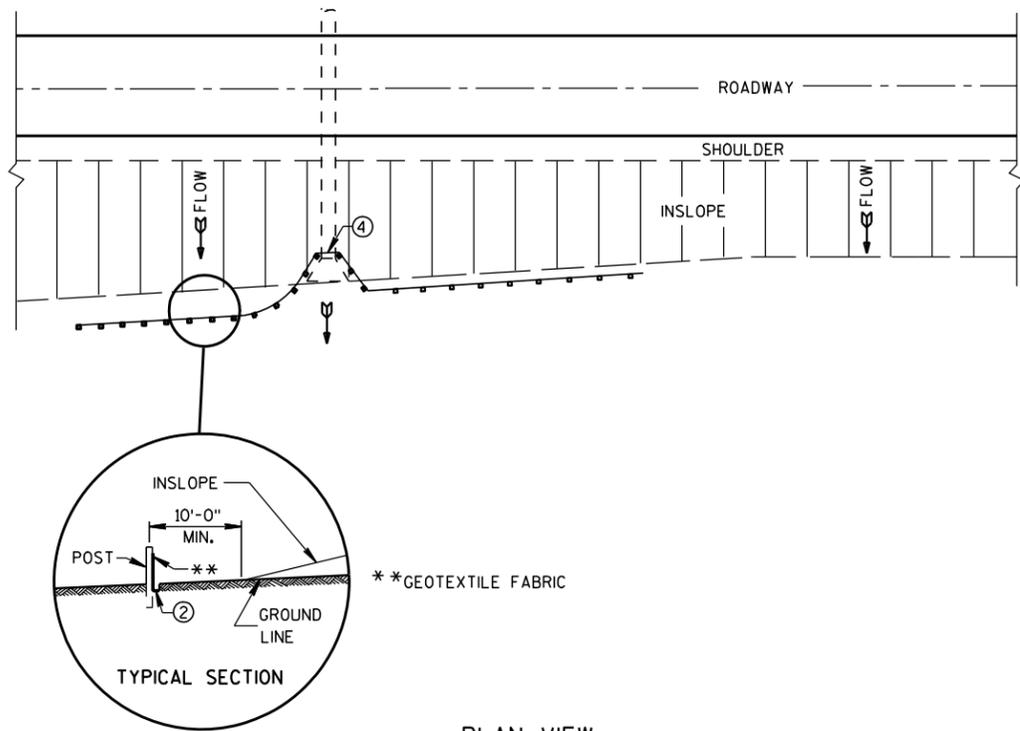
ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

- 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 DRAINAGE STRUCTURE BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- ⑧ CENTER DRAINAGE STRUCTURE BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE WALL OF DRAINAGE STRUCTURE TO POSTS.
- ⑨ SEE SDD 08A05 AND 08C07 FOR DETAILS. SEE ROADWAY PLANS FOR LOCATION.
- ⑩ START CURB AND GUTTER TRANSITION OR END SECTION.
- ⑪ DEPRESS FLOW LINE (SEE DETAIL)
- ⑫ MEDIUM RIPRAP UNLESS OTHERWISE SPECIFIED.
- ⑬ LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH IS REQUIRED.
- ⑭ GEOTEXTILE FABRIC TYPE HR.
- ⑮ MSG THRIE BEAM TRANSITION POST 1. SEE SDD 14B45 FOR ADDITIONAL CONSTRUCTION DETAILS AND ACCEPTABLE MATERIALS.
- ⑯ MAINTAIN WIDTH, THICKNESS AND CROSS SLOPE OF ADJACENT TYPE TBT OR TBTT CURB. SEE NOTE 6 FOR TIE BAR SPACING.
- ⑰ ALIGN FACE OF POST BLOCK WITH FLOW LINE.
- ⑱ MAINTAIN FLOW LINE AT EDGE OF PAVEMENT/FACE OF BEAM GUARD AS APPLICABLE.
- ⑲ MANUFACTURER SUPPLIED BEND.
- ⑳ MANUFACTURER SUPPLIED EXTERNAL MECHANICAL COUPLING OR A MANUFACTURER RECOMMENDED COUPLING WITH A MASTIC IMPREGNATED GEOTEXTILE WRAP AND MECHANICAL FASTENING BANDS.
- ㉑ MINIMUM REINFORCEMENT SHALL BE 6" X 6" - W4.0 X W4.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C - C.
- ㉒ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING HMA PAVEMENTS.

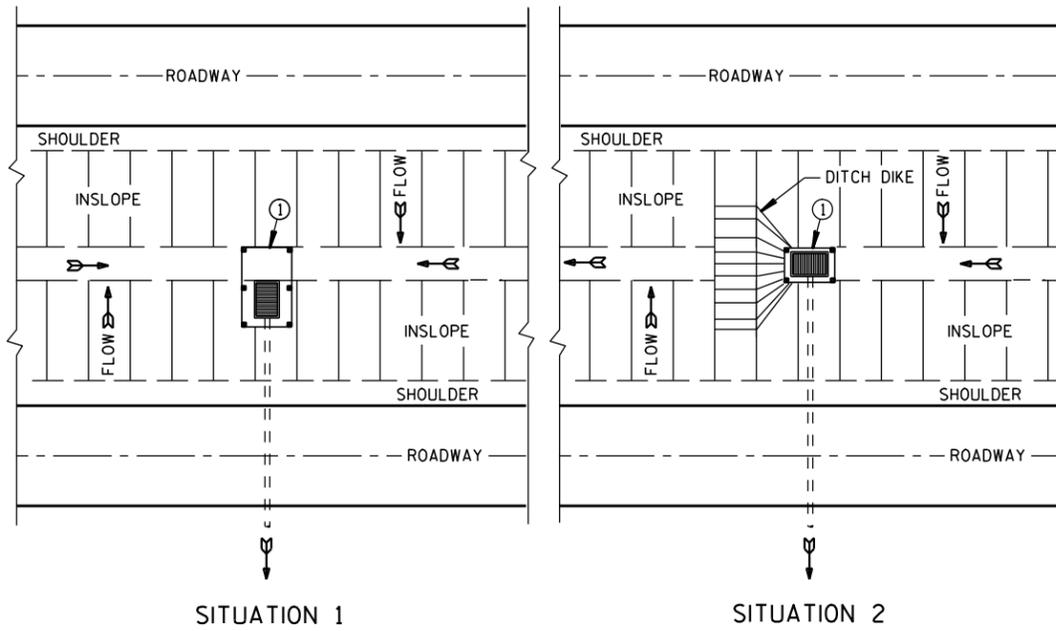
**CONCRETE SURFACE  
DRAINS DROP INLET TYPE  
AT STRUCTURES**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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



PLAN VIEW  
TYPICAL APPLICATION OF SILT FENCE

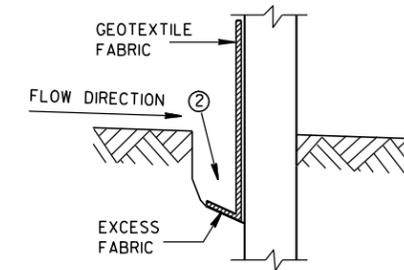


SITUATION 1 SITUATION 2  
PLAN VIEW  
SILT FENCE AT MEDIAN SURFACE DRAINS

**GENERAL NOTES**

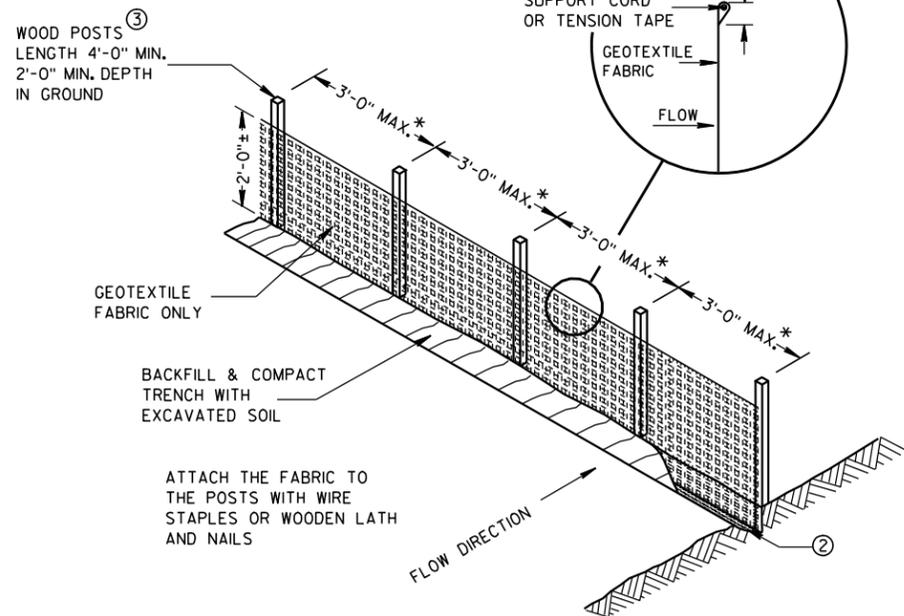
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

- 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 1 1/8" X 1 1/8" 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.

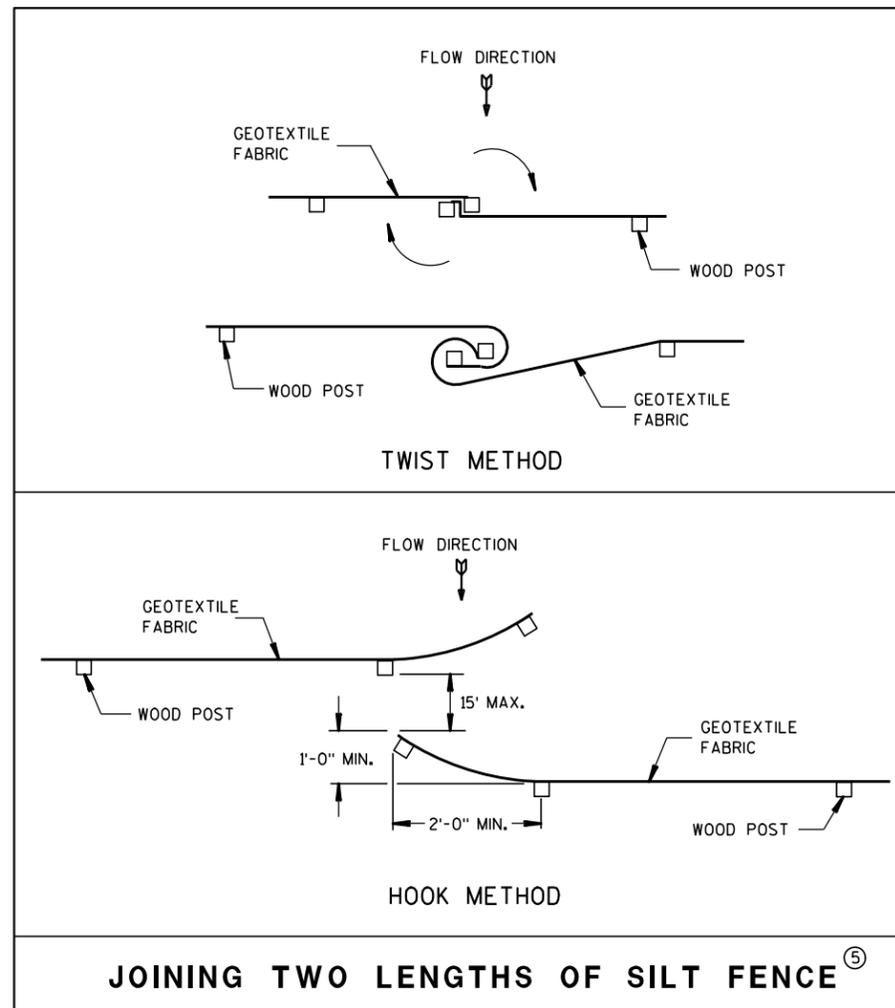


TRENCH DETAIL

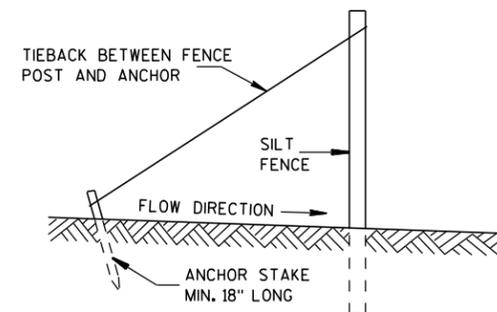
NOTE: ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS



SILT FENCE

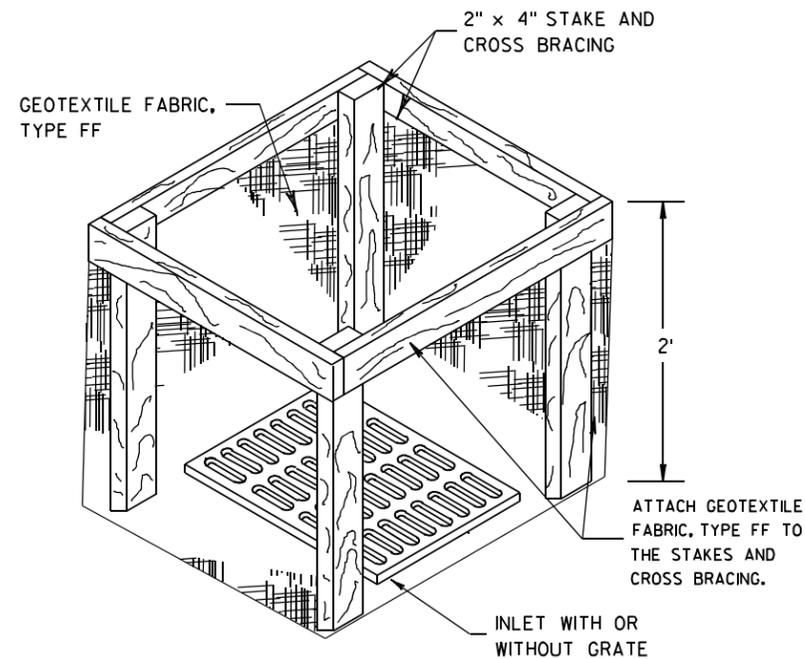
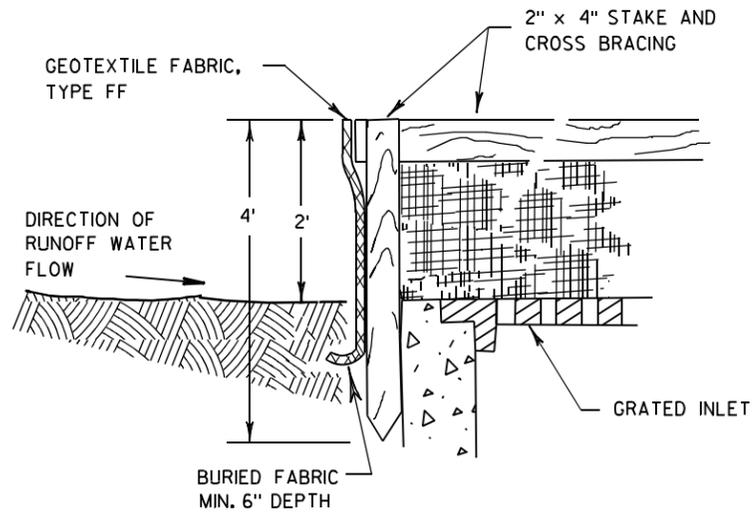


JOINING TWO LENGTHS OF SILT FENCE ⑤



SILT FENCE TIE BACK  
(WHEN REQUIRED BY THE ENGINEER)

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



**INLET PROTECTION, TYPE A**

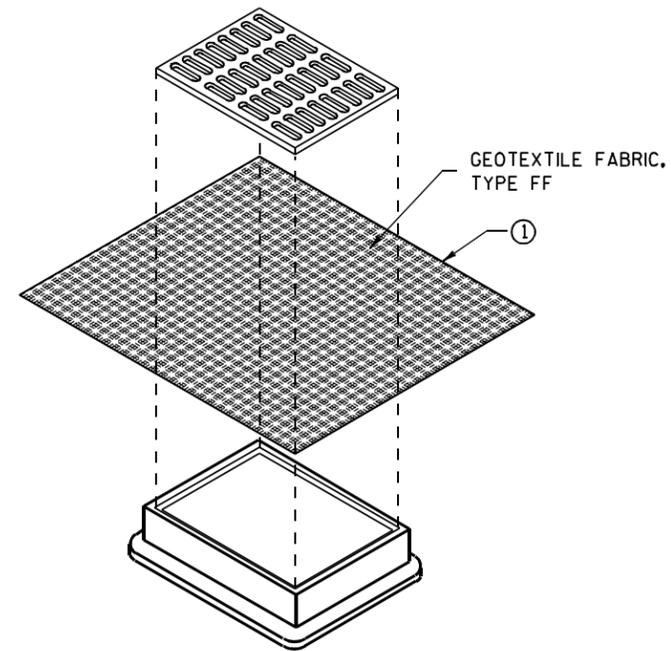
**GENERAL NOTES**

INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER.

MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENT'S EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.

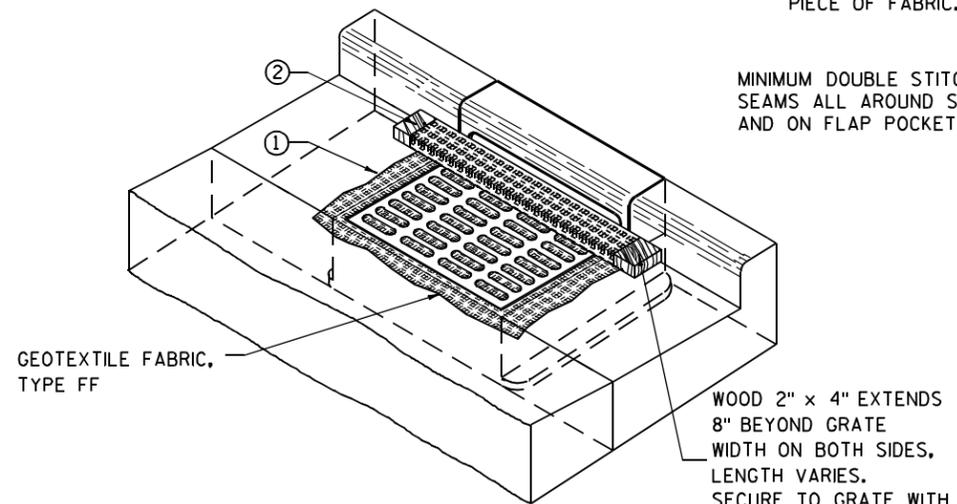
WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

- ① FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
- ② FOR INLET PROTECTION, TYPE C (WITH CURB BOX), AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.
- ③ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2X4.



**INLET PROTECTION, TYPE B  
(WITHOUT CURB BOX)**

(CAN BE INSTALLED IN ANY INLET WITHOUT A CURB BOX)



**INLET PROTECTION, TYPE C (WITH CURB BOX)**

**INSTALLATION NOTES**

**TYPE B & C**

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

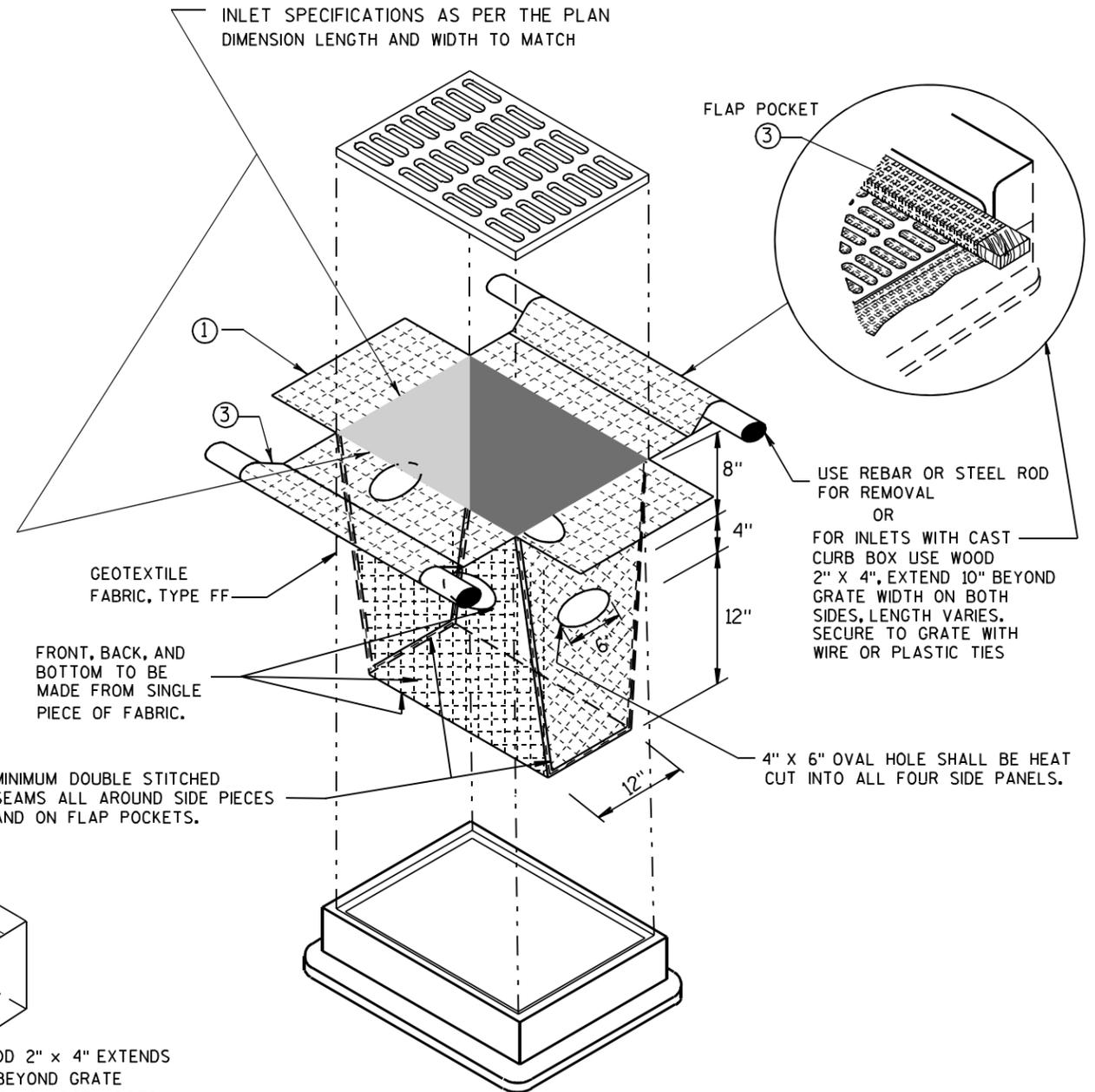
THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

**TYPE D**

DO NOT INSTALL INLET PROTECTION TYPE D IN INLETS SHALLOWER THAN 30", MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE BOTTOM OF THE BAG.



**INLET PROTECTION, TYPE D**

(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX AS PER NOTE ②)

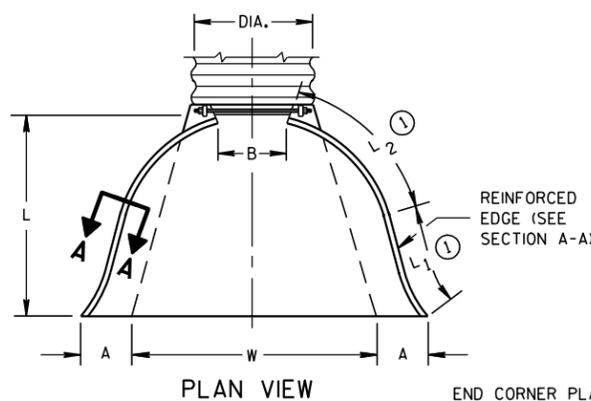
<b>INLET PROTECTION TYPE A, B, C, AND D</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 10/16/02 DATE	/S/ Beth Connestra CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA	

METAL APRON ENDWALLS											
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1	L2	W (±2")		
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to 1	1 Pc.
21	.064	.060	9	12	6	36	18	29 5/8	42	2 1/2 to 1	1 Pc.
24	.064	.075	10	13	6	41	18	37 1/4	48	2 1/2 to 1	1 Pc.
30	.079	.075	12	16	8	51	18	52 1/4	60	2 1/2 to 1	1 Pc.
36	.079	.105	14	19	9	60	24	59 3/4	72	2 1/2 to 1	2 Pc.
42	.109	.105	16	22	11	69	24	75 5/8	84	2 1/2 to 1	2 Pc.
48	.109	.105	18	27	12	78	24	81	90	2 1/4 to 1	3 Pc.
54	.109	.105	18	30	12	84	30	85 1/2	102	2 1/4 to 1	3 Pc.
60	.109x	.105x	18	33	12	87	—	—	114	2 to 1	3 Pc.
66	.109x	.105x	18	36	12	87	—	—	120	2 to 1	3 Pc.
72	.109x	.105x	18	39	12	87	—	—	126	2 to 1	3 Pc.
78	.109x	.105x	18	42	12	87	—	—	132	1 1/2 to 1	3 Pc.
84	.109x	.105x	18	45	12	87	—	—	138	1 1/2 to 1	3 Pc.
90	.109x	.105x	18	37	12	87	—	—	144	1 1/2 to 1	3 Pc.
96	.109x	.105x	18	35	12	87	—	—	150	1 1/2 to 1	3 Pc.

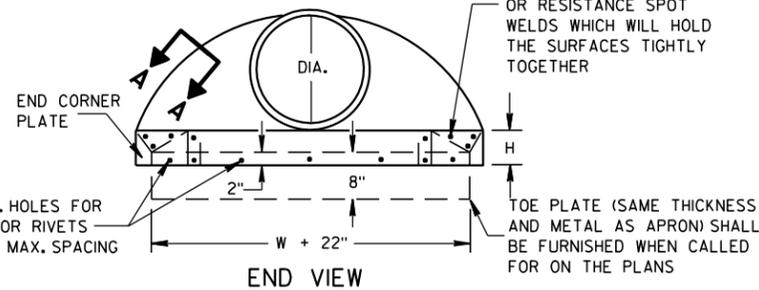
\* EXCEPT CENTER PANEL SEE GENERAL NOTES

REINFORCED CONCRETE APRON ENDWALLS									
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE	
	T	A	B	C	D	E	G		
12	2	4	24	48 1/8	72 1/8	24	2	3 to 1	
15	2 1/4	6	27	46	73	30	2 1/4	3 to 1	
18	2 1/2	9	27	46	73	36	2 1/2	3 to 1	
21	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	3 to 1	
24	3	9 1/2	43 1/2	30	73 1/2	48	3	3 to 1	
27	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	3 to 1	
30	3 1/2	12	54	19 3/4	73 1/2	60	3 1/2	3 to 1	
36	4	15	63	34 3/4	97 3/4	72	4	3 to 1	
42	4 1/2	21	63	35	98	78	4 1/2	3 to 1	
48	5	24	72	26	98	84	5	3 to 1	
54	5 1/2	27	65	33 1/4-35	98 1/4-100	90	5 1/2	2 1/2 to 1	
60	6	30-35	60	39	99	96	5	2 to 1	
66	6 1/2	24-30	72-78	21-27	99	102	5 1/2	2 to 1	
72	7	24-36	78	21	99	108	6	2 to 1	
78	7 1/2	24-36	78	21	99	114	6 1/2	2 to 1	
84	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2 to 1	
90	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	1 1/2 to 1	

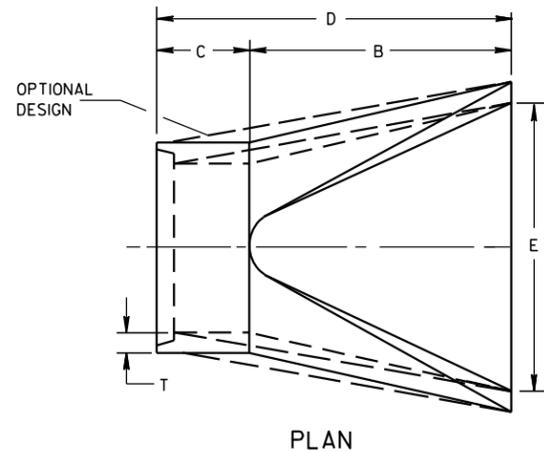
\* MINIMUM  
\*\* MAXIMUM



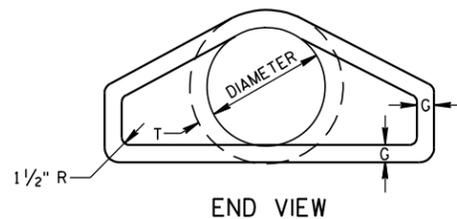
END CORNER PLATES MAY BE FASTENED TO APRON PROPER BY BOLTS, RIVETS, OR RESISTANCE SPOT WELDS WHICH WILL HOLD THE SURFACES TIGHTLY TOGETHER



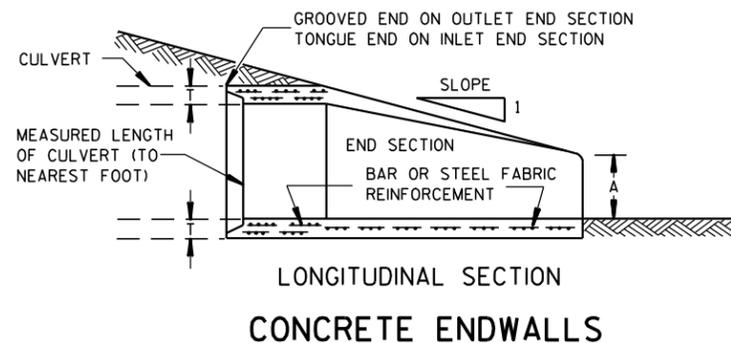
SIDE ELEVATION  
METAL ENDWALLS



PLAN

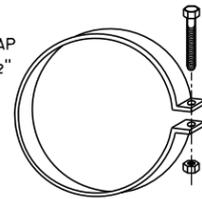


END VIEW

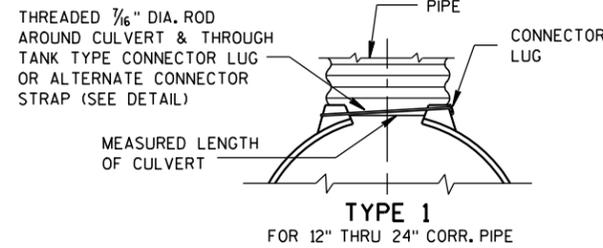


LONGITUDINAL SECTION  
CONCRETE ENDWALLS

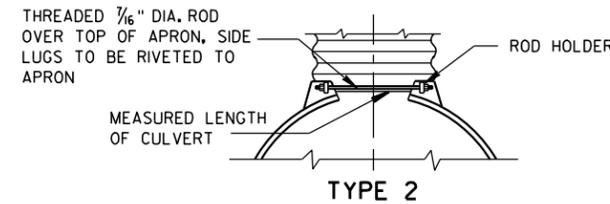
1" WIDE, 12 GA. (0.109" THICK) GALVANIZED STRAP WITH STANDARD 6" X 1/2" BAND BOLT AND NUT



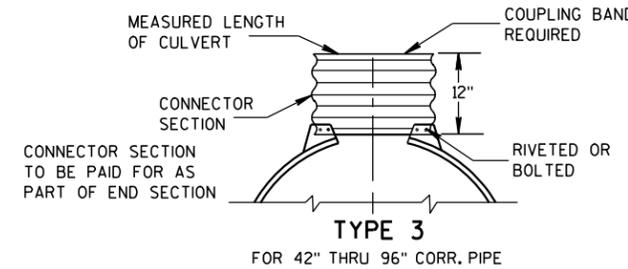
ALTERNATE FOR TYPE 1 CONNECTION  
END SECTION CONNECTOR STRAP



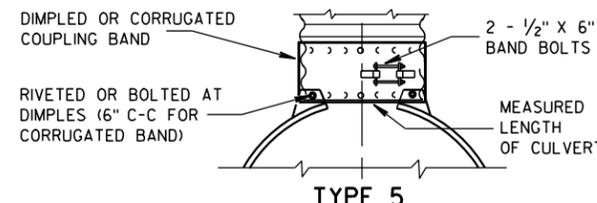
TYPE 1  
FOR 12" THRU 24" CORR. PIPE



TYPE 2  
FOR 30" THRU 96" CORR. PIPE



TYPE 3  
FOR 42" THRU 96" CORR. PIPE



TYPE 5  
ALTERNATE FOR:  
ALL SIZES CORRUGATED CIRCULAR PIPE

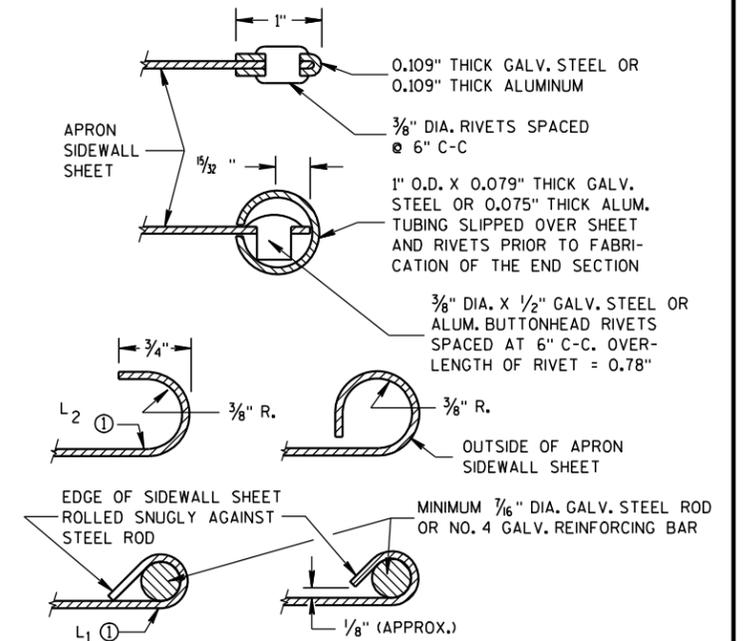
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

FOR CIRCUMFERENTIALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2, 3 OR 5 AS APPLICABLE.

FOR HELICALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2 OR 5.

FOR HELICALLY CORRUGATED PIPES WITH TWO CIRCUMFERENTIAL CORRUGATIONS AT EACH END USE ENDWALL CONNECTION DETAILS 1, 2 OR 3.

CONNECTION DETAILS



SECTION A-A

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.

CONCRETE CULVERT ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL OR ALUMINUM CULVERT PIPE OR VICE VERSA. GALVANIZED STEEL OR ALUMINUM ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE OF THE SAME METAL.

ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE PERIMETER.

LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 60" THROUGH 96" DIAMETER APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM UNITS.

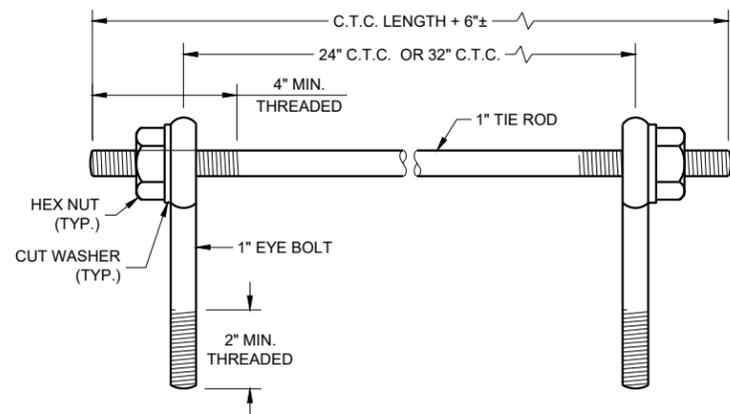
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR  
CULVERT PIPE

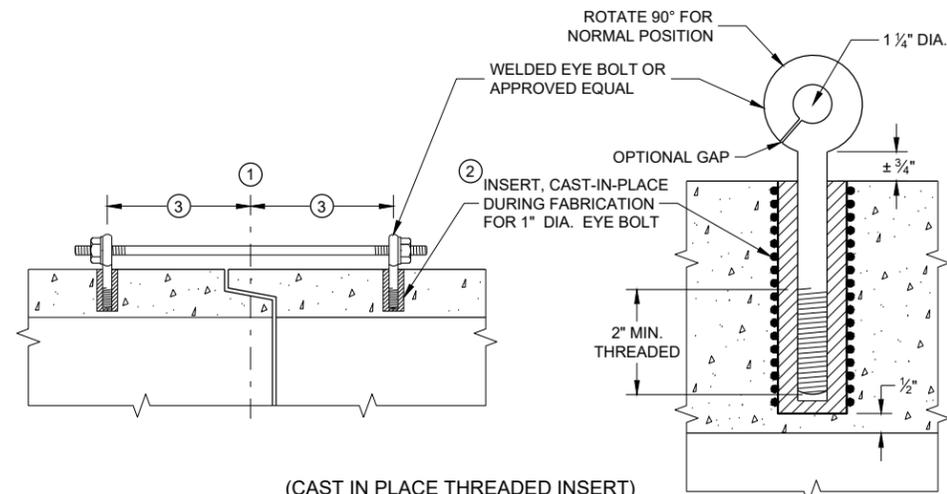
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
11/30/94 /S/ Rory L. Rhinesmith  
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER  
FHWA



**EYE BOLTS AND TIE ROD**

**EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 1)**



(CAST IN PLACE THREADED INSERT)  
**LONGITUDINAL SECTIONS**

**GENERAL NOTES**

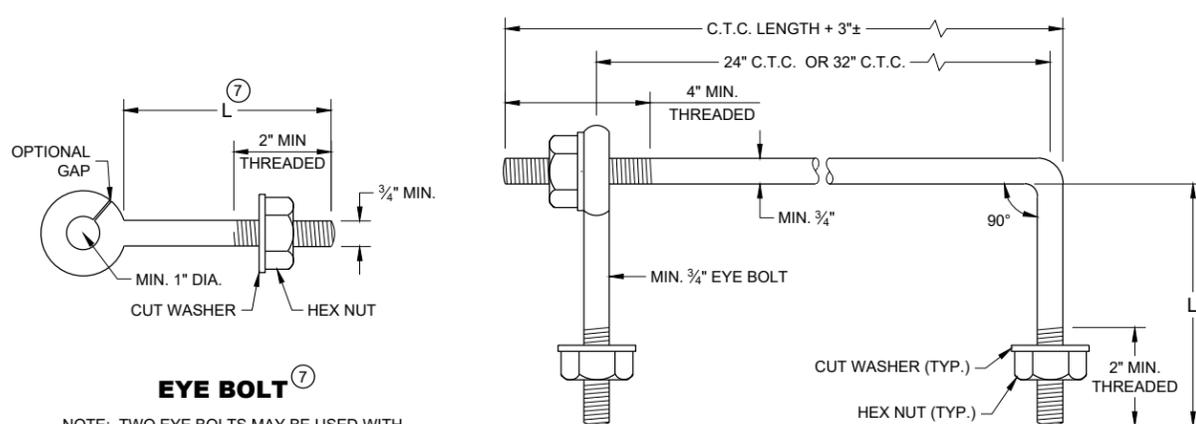
DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

CONCRETE CULVERT AND STORM SEWER PIPE SHALL BE TIED TOGETHER IN THE MANNER ILLUSTRATED BY THIS DETAIL AT LOCATIONS DESIGNATED IN THE STANDARD SPECIFICATIONS AND THE PLAN. THE CONTRACTOR MAY USE EITHER ALTERNATE 1, 2 OR 3 FOR DRAINAGE STRUCTURES. ONLY ALTERNATE 1 AND 3 MAY BE USED FOR CATTLE PASSES, UNLESS OTHERWISE STATED IN THE CONTRACT. THE MATERIALS, FABRICATION AND WORK NECESSARY TO TIE THE PIPE BY THIS DETAIL WILL BE CONSIDERED INCIDENTAL TO THE PIPE AND APRON ENDWALLS IF REQUIRED.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR JOINT TIES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

JOINT TIES TO BE HOT-DIP GALVANIZED PER ASTM A 153.

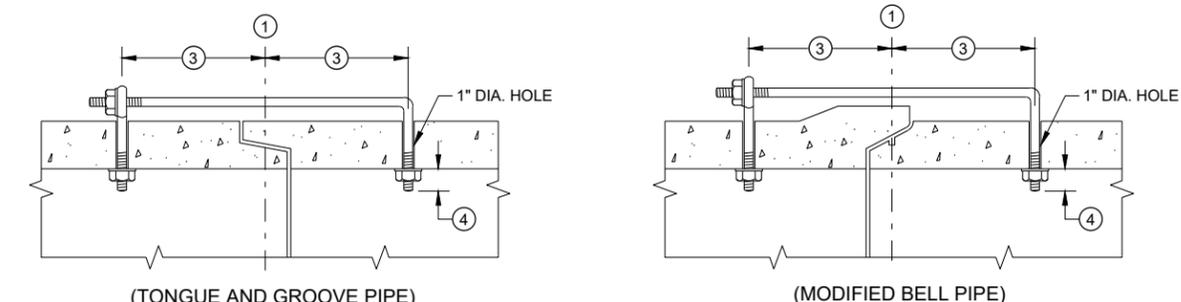
- ① CENTER LINE OF TONGUE AND GROOVE OR BELL AND SPIGOT JOINTS.
- ② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.
- ③ HOLES SHALL BE CAST-IN-PLACE OR DRILLED PER THE APPLICABLE DETAIL, AND EQUAL DISTANCE FROM THE CENTERLINE OF THE JOINT.
- ④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.
- ⑤ OPENING TO BE ROD DIAMETER PLUS 1 INCH.
- ⑥ LENGTH ADEQUATE TO EXTEND TO WITHIN 1/2 INCH OF THE INNER SURFACE OF THE PIPE.
- ⑦ EYE BOLT LENGTH DETERMINED BY WALL THICKNESS, BELL THICKNESS AND BOLT PROJECTION INSIDE PIPE.



**EYE BOLT AND TIE ROD**

**EYE BOLT ⑦**

NOTE: TWO EYE BOLTS MAY BE USED WITH A 30\"/>



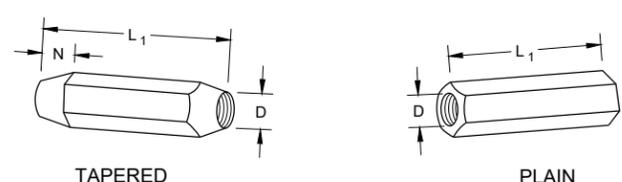
**LONGITUDINAL SECTION**  
(JOINT TIES FOR 18\"/>

**EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 2)**

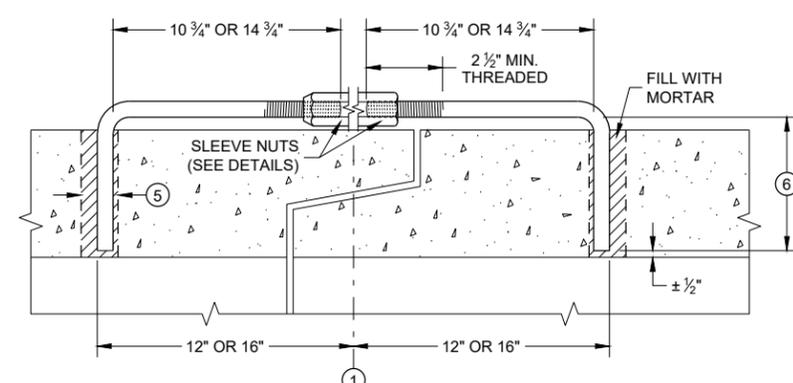
**ADJUSTABLE TIE ROD TABLE**

PIPE DIAMETER	TIE ROD DIAMETER	D	L <sub>1</sub>	N
12 - 60	5/8	5/8	5	1/2
66 - 84	3/4	3/4	5	1/2
90 - 144	1	1	7	1 1/16

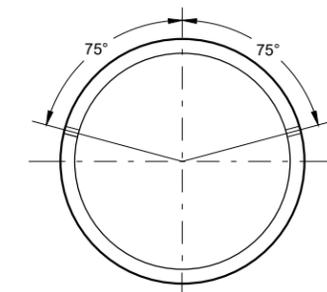
DIMENSIONS SHOWN ARE IN INCHES



**RIGHT AND LEFT THREADS SLEEVE NUTS**

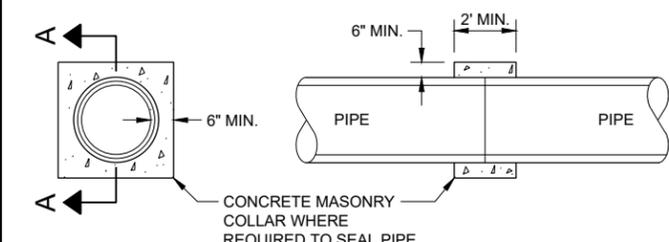


**LONGITUDINAL SECTION**  
**ADJUSTABLE TIE ROD (ALTERNATE NO. 3)**



PLACEMENT OF (2) CAST-IN-PLACE INSERTS OR HOLES DURING FABRICATION FOR PIPE SECTIONS REQUIRING TIE RODS

**TRANSVERSE SECTION**

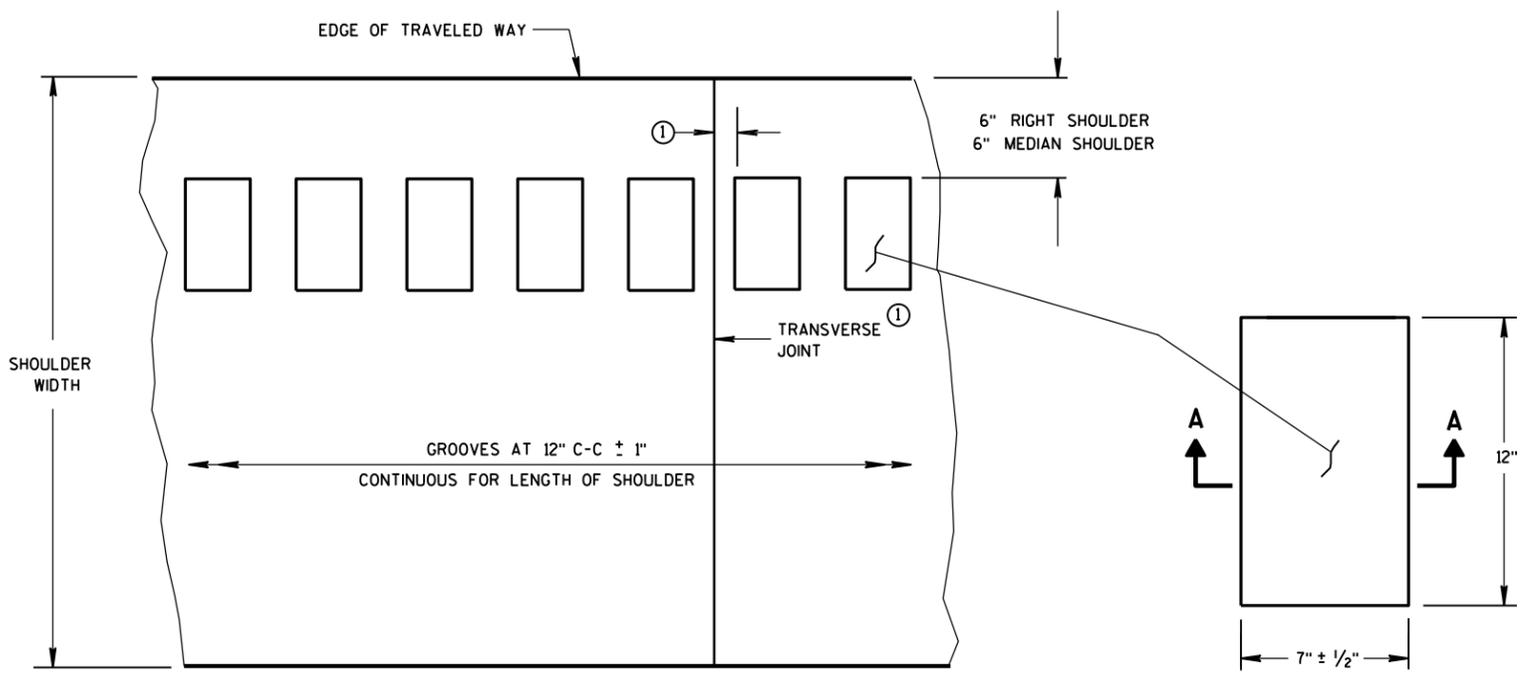


**SECTION A - A**  
**CONCRETE COLLAR DETAIL**

**JOINT TIES FO CONCRETE PIPE AND CONCRETE COLLAR DETAIL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
November 2021 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS DEVELOPMENT  
ENGINEER  
FHWA



PLAN VIEW  
SHOULDER WITH GROOVES

PLAN VIEW  
(SINGLE GROOVE)

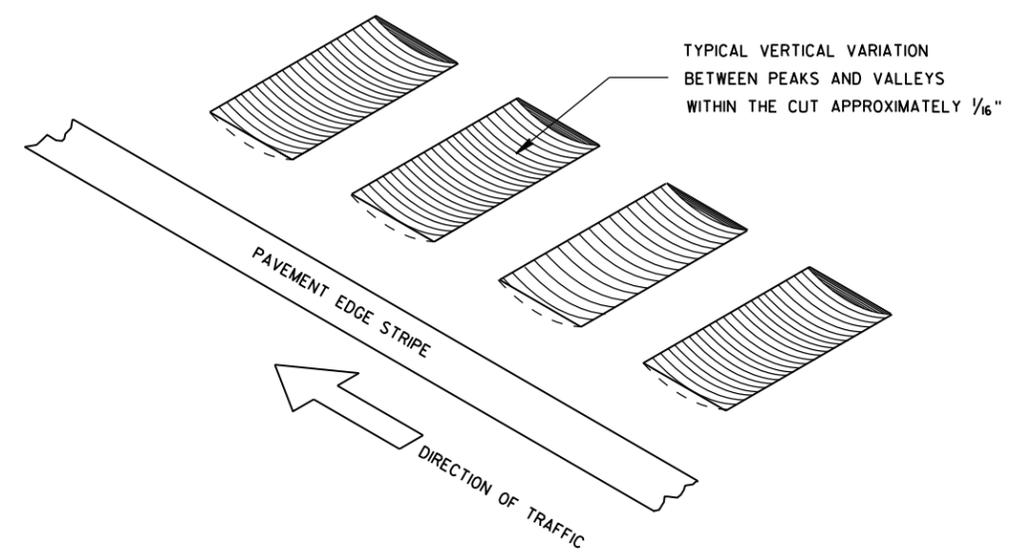
PLACEMENT DETAIL FOR MILLED RUMBLE STRIP

GENERAL NOTES

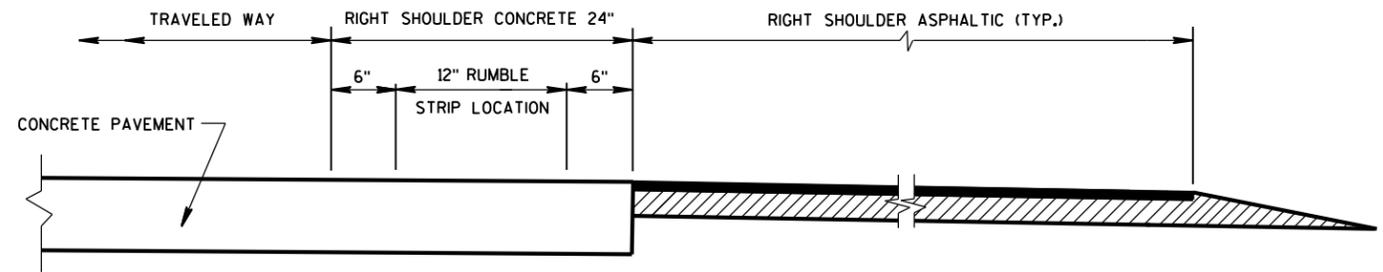
DETAILS OF CONSTRUCTION SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

RUMBLE STRIPS ON EXPRESSWAYS  
DO NOT INSTALL RUMBLE STRIPS ACROSS SIDE ROAD INTERSECTIONS, COMMERCIAL DRIVEWAYS, PRIVATE DRIVEWAYS OR ADJACENT TO RIGHT TURN LANES, LEFT TURN LANES, TURN LANE TAPERS, BRIDGE DECKS, BRIDGE APPROACHES, OR 100 FEET IN ADVANCE OF RAILROAD CROSSING. THE ATTACHED STANDARD DETAIL DRAWING SHOWS THE LOCATION OF THE RUMBLE STRIPS AT INTERCHANGE AREAS.

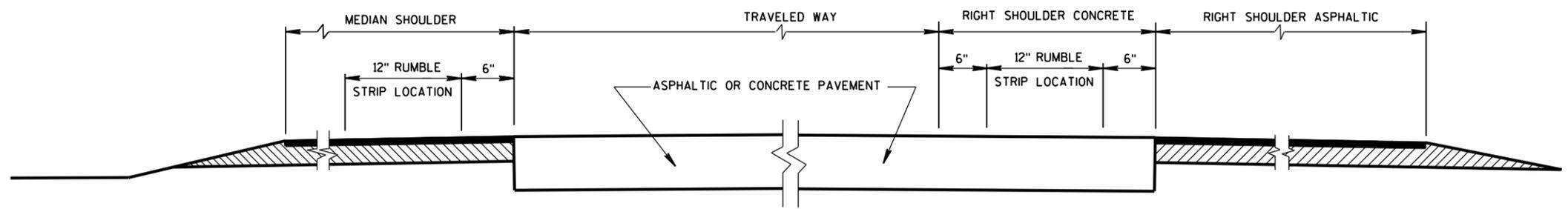
① CONCRETE PAVEMENT - RUMBLE STRIPS SHALL BE A MINIMUM OF 6" AWAY FROM TRANSVERSE JOINTS.



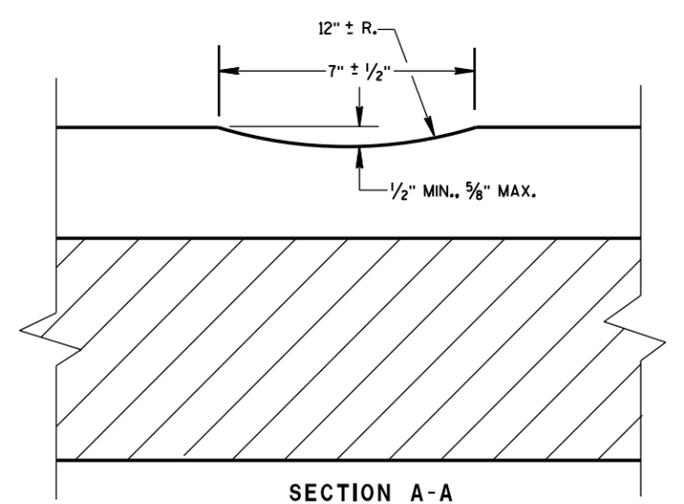
ISOMETRIC



SECTION VIEW  
CONCRETE PAVEMENT EXTENDS INTO RIGHT SHOULDER)



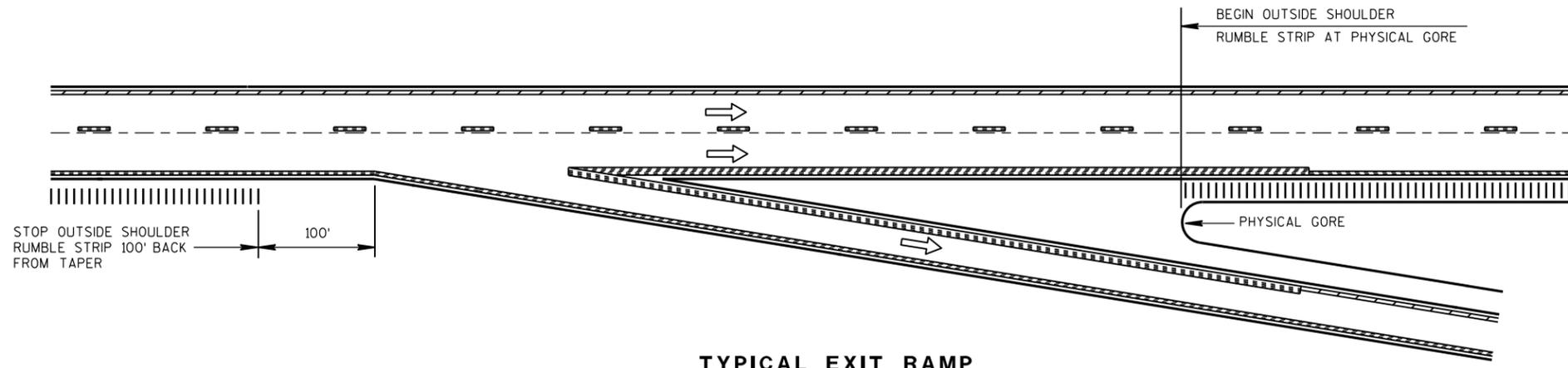
SECTION VIEW  
TYPICAL LOCATIONS OF SHOULDER RUMBLE STRIPS  
IN RURAL DIVIDED HIGHWAYS  
(ONE ROADWAY IS SHOWN)



SECTION A-A

SHOULDER RUMBLE STRIP,  
MILLING

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

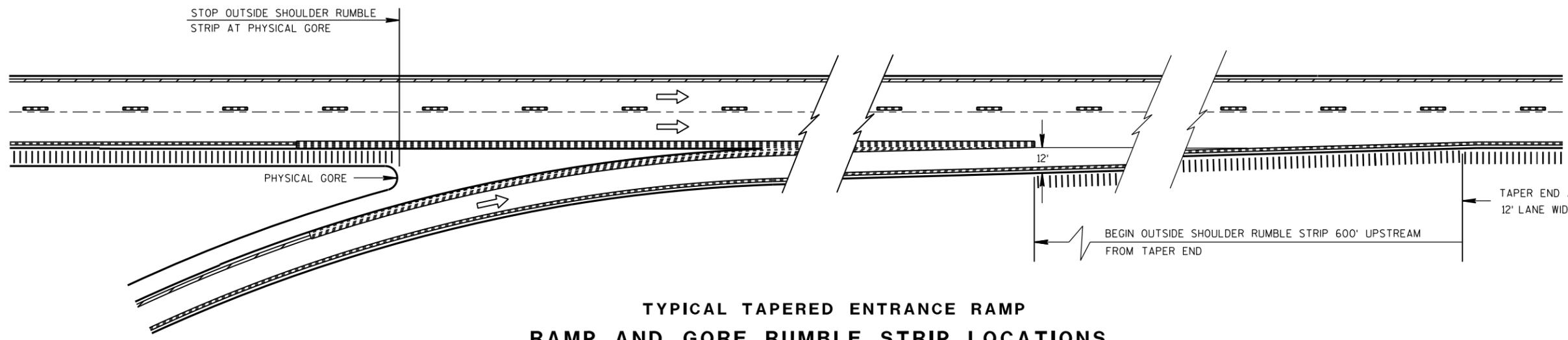


TYPICAL EXIT RAMP

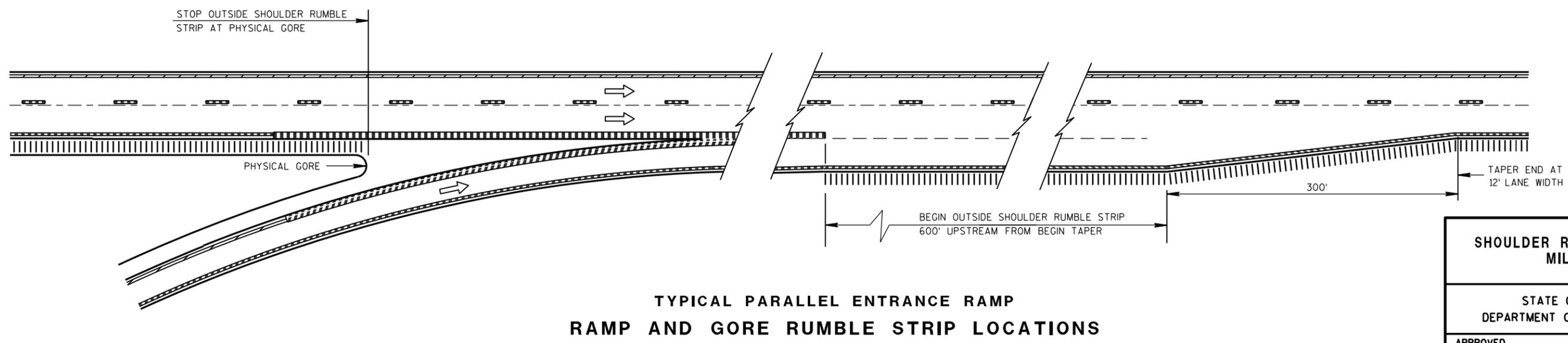
**NOTES:**

NO RUMBLE STRIP ON EXIT, DIRECTIONAL, OR ENTRANCE RAMPS, EXCEPT NEAR THE ENTRANCE TAPER END AND ALONG THE PARALLEL RAMP AREA AS SHOWN.  
 PAVEMENT MARKING DETAILS AND SPECIFICATIONS ARE PROVIDED ELSEWHERE IN THE CONTRACT.

NOTE:  
 ARROW SYMBOL (→) SHOWS DIRECTION OF TRAVEL



TYPICAL TAPERED ENTRANCE RAMP  
 RAMP AND GORE RUMBLE STRIP LOCATIONS



TYPICAL PARALLEL ENTRANCE RAMP  
 RAMP AND GORE RUMBLE STRIP LOCATIONS

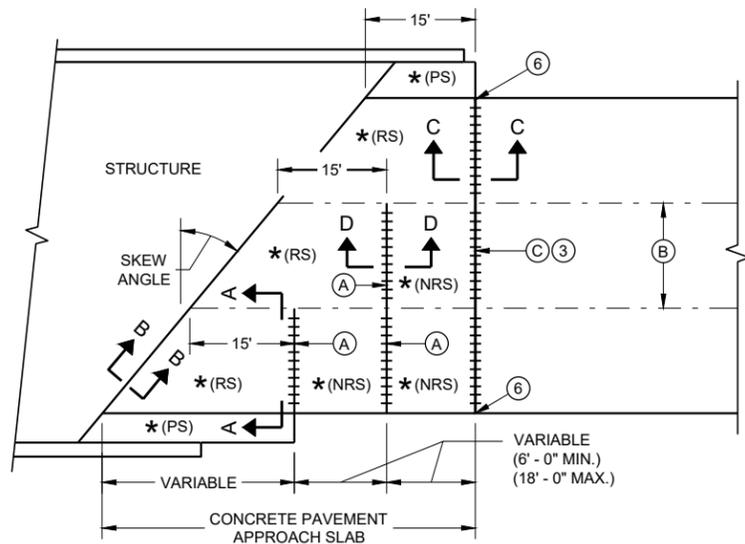
6

6

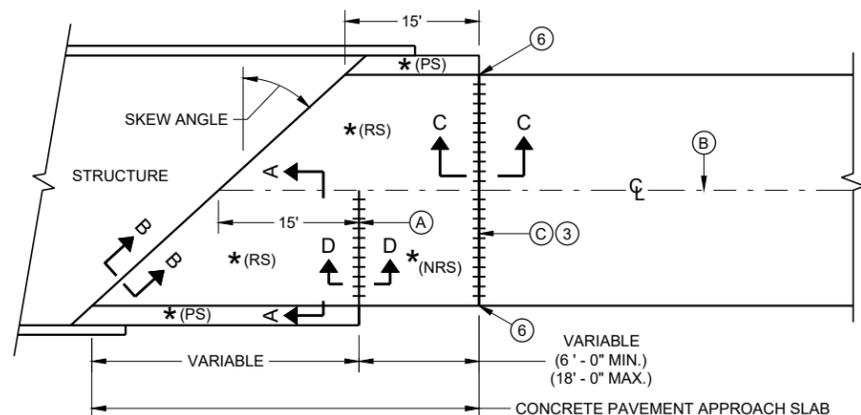
S.D.D. 13 A 5-5b

S.D.D. 13 A 5-5b

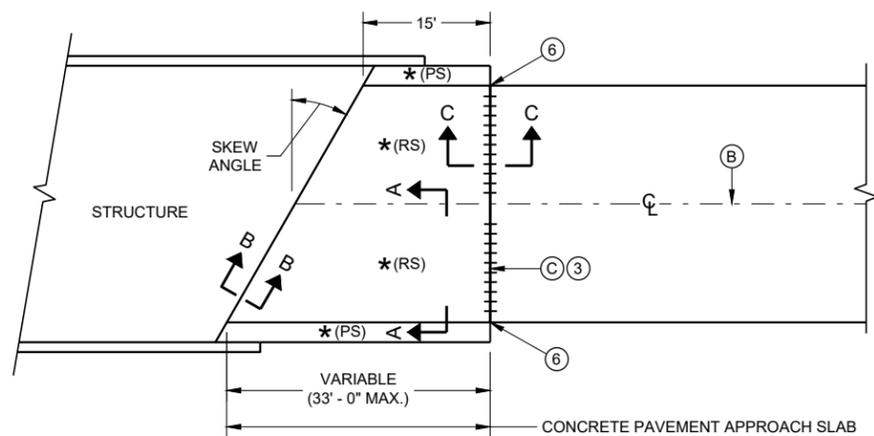
<b>SHOULDER RUMBLE STRIP, MILLING</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED DATE 12/17/2012 FHWA	/s/ Jerry H. Zogg ROADWAY STANDARDS DEVELOPMENT ENGINEER



**SKewed APPROACH  
(PAVEMENT MORE THAN TWO LANES)**

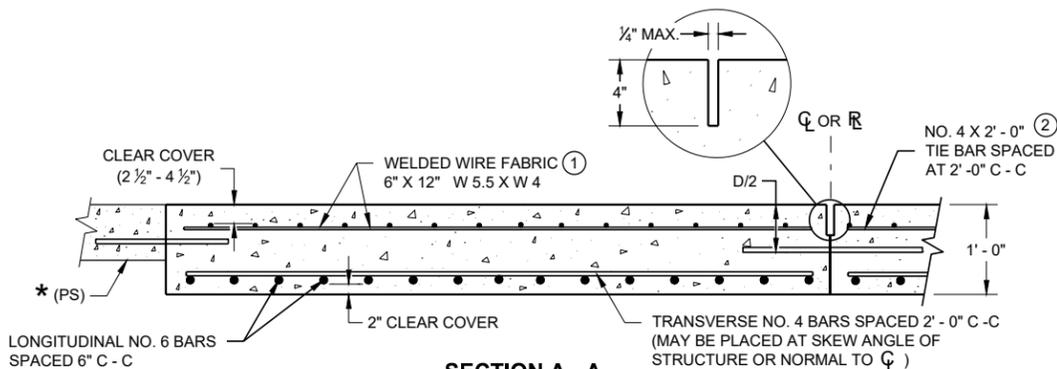


**SKews > 20°  
(PAVEMENT WIDTH ≤ 30')**

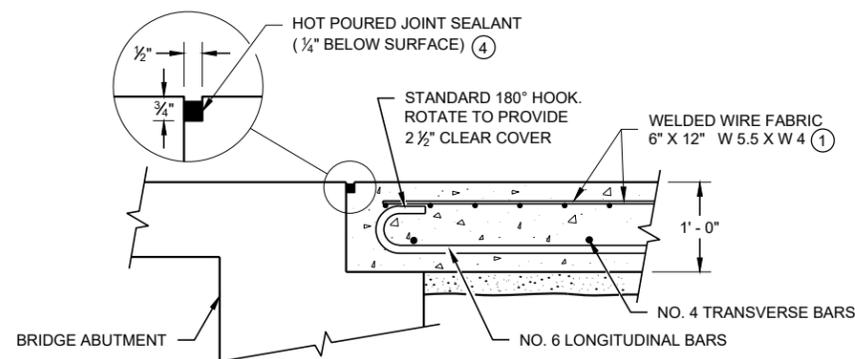


**SKews ≤ 20°  
(PAVEMENT WIDTH ≤ 30')**  
**APPROACH SLAB AND ADJACENT PAVEMENT**

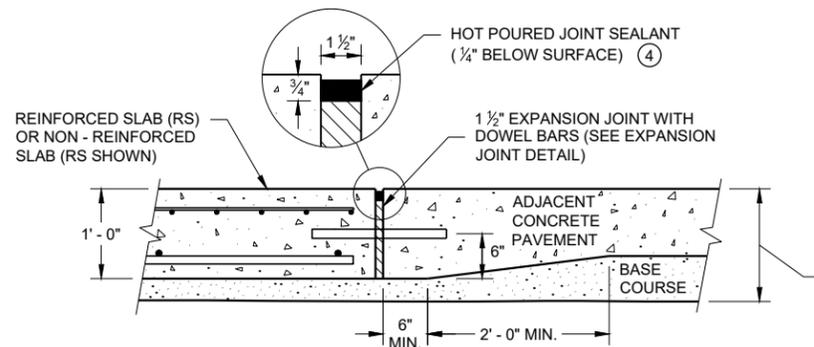
- \* (RS) = REINFORCED CONCRETE SLAB
- \* (PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
- \* (NRS) = NON - REINFORCED CONCRETE SLAB
- \*\*\* STANDARD DOWEL BAR DIAMETER (SEE SDD 13C11 AND SDD 13C13)



**SECTION A - A  
REINFORCEMENT POSITIONING DETAIL**



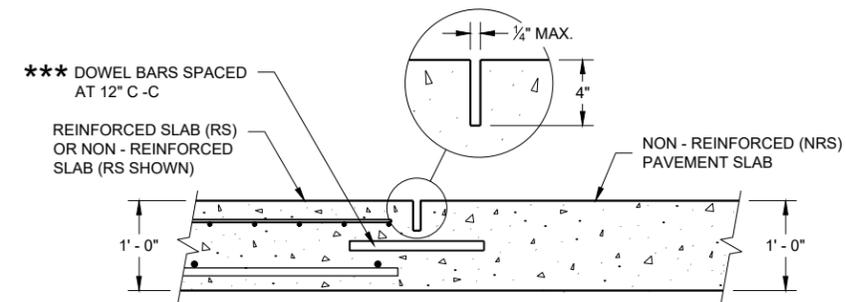
**SECTION B - B  
BEND DETAIL  
BOTTOM REINFORCEMENT**



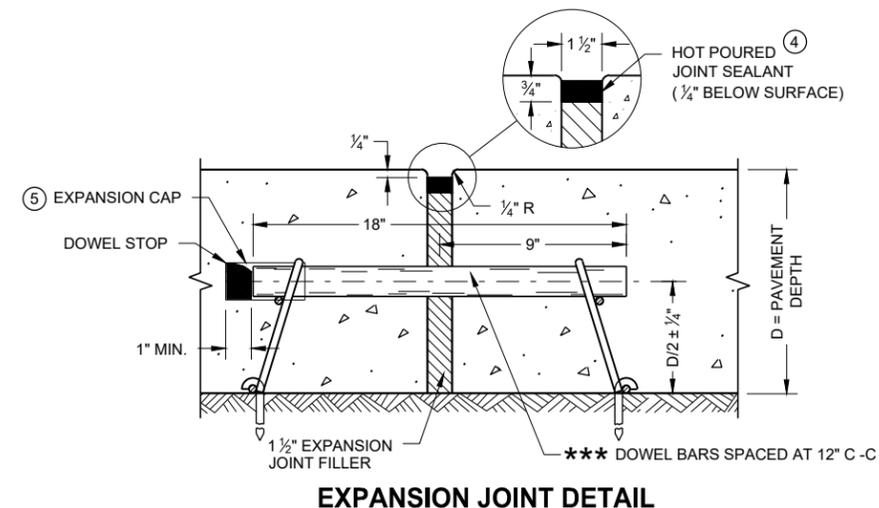
**SECTION C - C  
TRANSITION DETAIL  
APPROACH SLAB TO ADJACENT PAVEMENT**

**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**



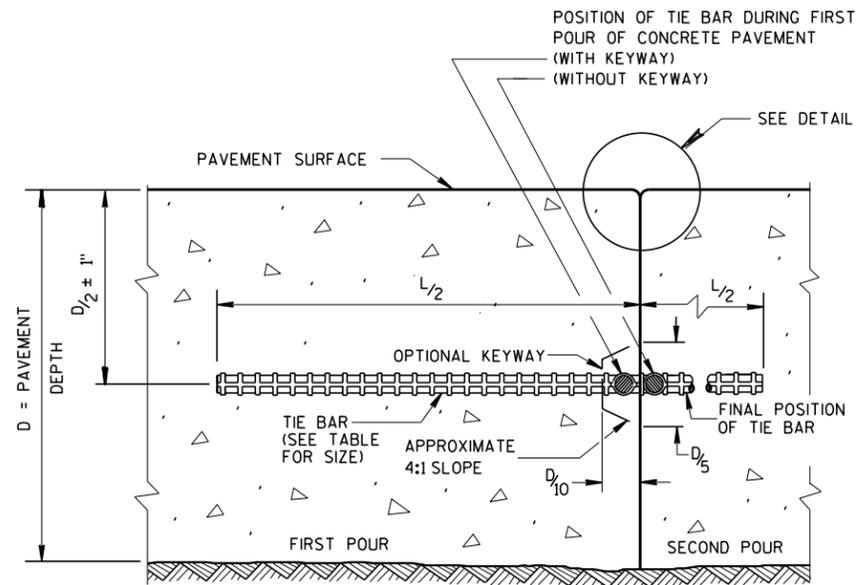
**EXPANSION JOINT DETAIL**

**CONCRETE PAVEMENT  
APPROACH SLAB**

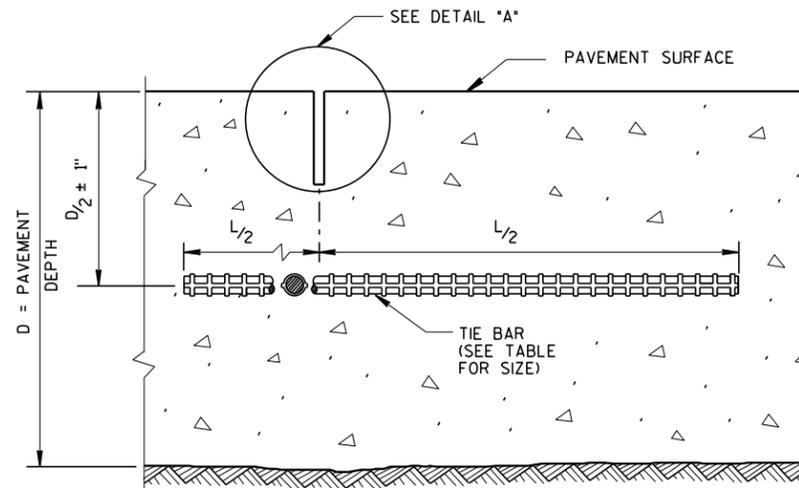
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

FHWA



**CONSTRUCTION JOINT**



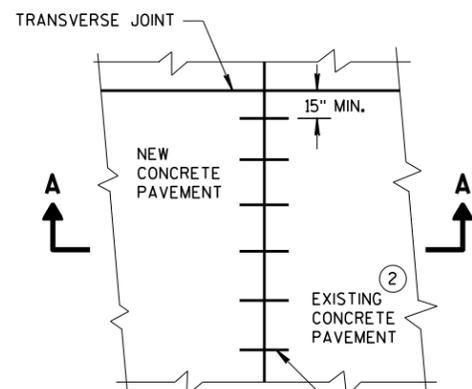
**SAWED JOINT**

**GENERAL NOTES**

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

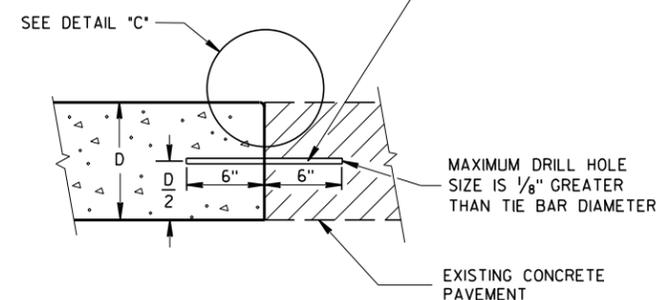
CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

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

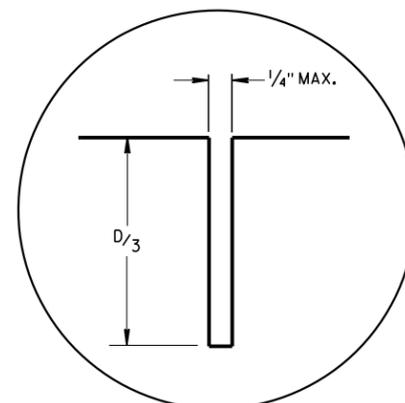


**PLAN VIEW**

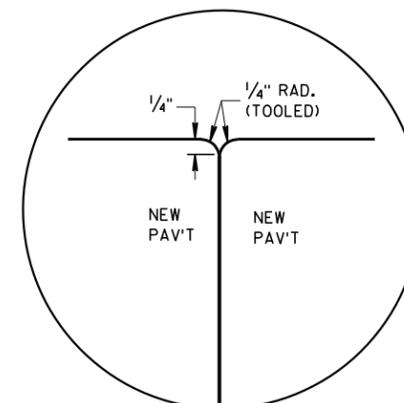
NO. 6 TIE BARS SPACED 30" C-C, INSTALLED PERPENDICULAR TO THE LONGITUDINAL JOINT. ①



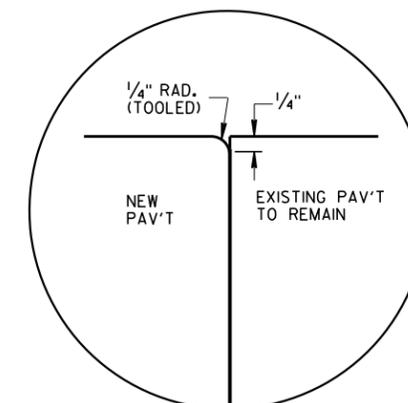
**SECTION A-A  
LONGITUDINAL CONSTRUCTION JOINT  
TIE BARS ANCHORED  
INTO EXISTING PAVEMENT**



**DETAIL "A"**



**DETAIL "B"**



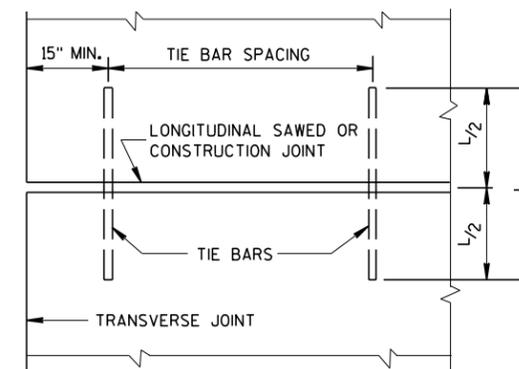
**DETAIL "C"**

**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

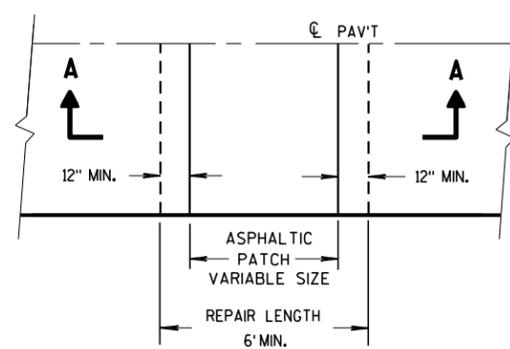
**GENERAL NOTES**

SAW CUT, DRILL, AND LIFT OUT EXISTING CONCRETE PAVEMENT WITHIN THE BOUNDARIES OF CONCRETE REPAIR AREAS. THE CONTRACTOR MAY MAKE ADDITIONAL SAW CUTS INSIDE THE REPAIR LIMITS TO REDUCE WEIGHT AND SIZE OF CONCRETE PIECES.

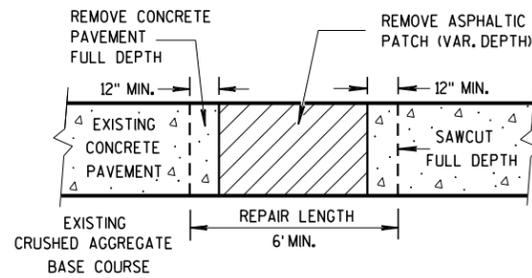
PROVIDE A 6-FOOT MINIMUM DISTANCE FROM BOUNDARIES OF CONCRETE REPAIR AREAS TO ADJACENT TRANSVERSE JOINT OR CRACK IN THE SAME LANE.

THE LENGTH OF THE REPAIRS MAY VARY FROM THE DIMENSIONS SHOWN IF THE EXISTING CONCRETE PAVEMENT IS NONDOWELED AND THE PAVEMENT IS TO BE OVERLAID AFTER REPAIRING.

① DOWEL BARS MIGHT NOT EXIST.

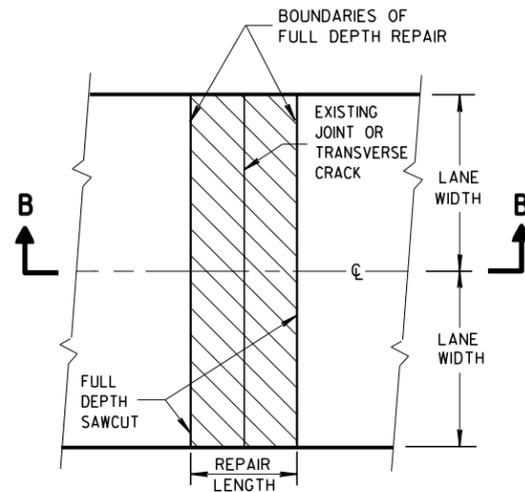


**PLAN VIEW**

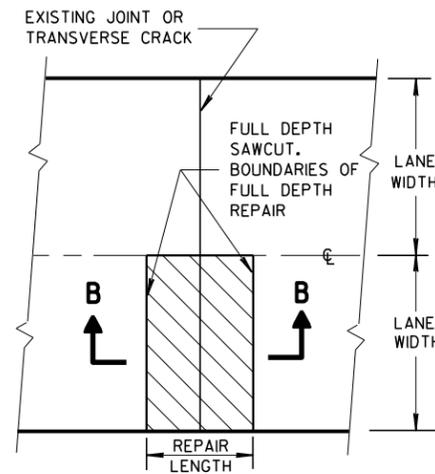


**SECTION A-A**

**HMA PATCH REMOVAL**

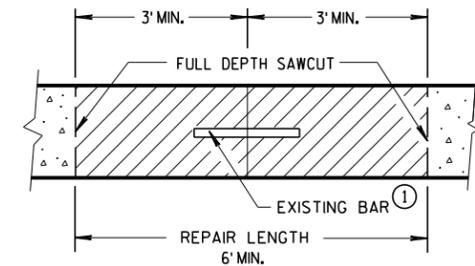


**PLAN VIEW  
(DOUBLE LANE REPAIR)**

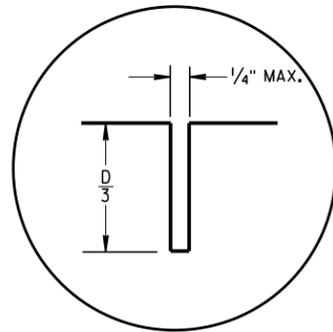


**PLAN VIEW  
(SINGLE LANE REPAIR)**

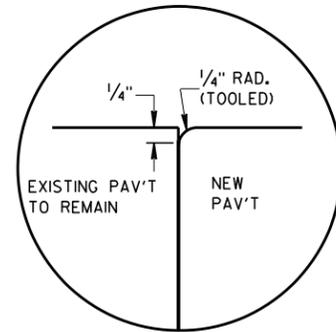
**FULL DEPTH CONCRETE PAVEMENT REMOVAL**



**SECTION B-B  
CONCRETE REMOVAL**

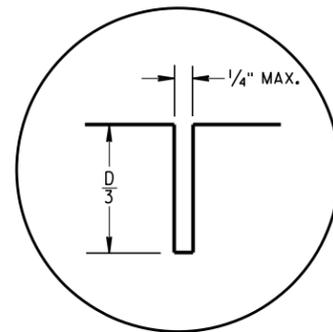


C1

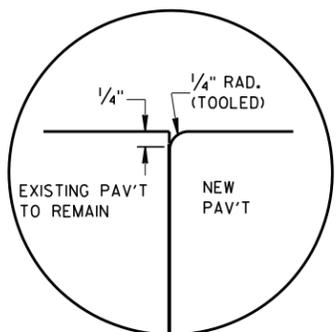


C2

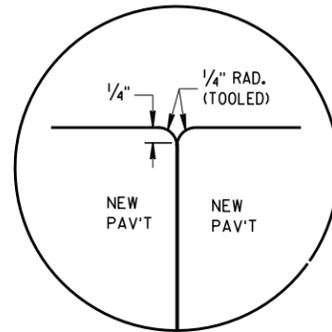
**TRANSVERSE JOINTS**



L1



L2



L3

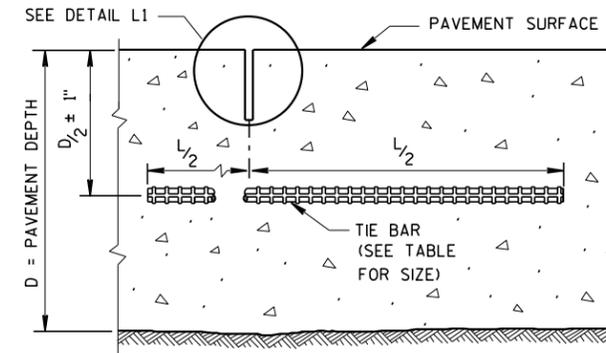
**LONGITUDINAL JOINTS**

**TIE BAR TABLE**

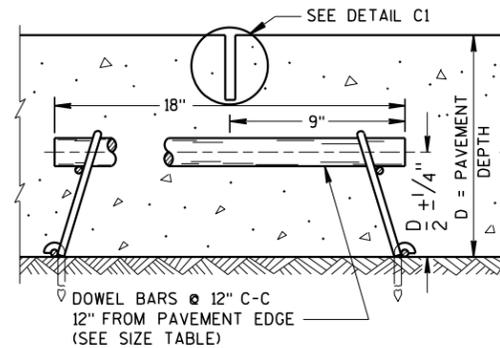
PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 1/2"	NO. 4	30"	36"
≥ 10 1/2"	NO. 5	36"	36"
	NO. 4*	30"	24" **

\* 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.



**SECTION C-C  
SAWED LONGITUDINAL JOINT**



**SECTION F-F  
CONTRACTION JOINT**

**GENERAL NOTES**

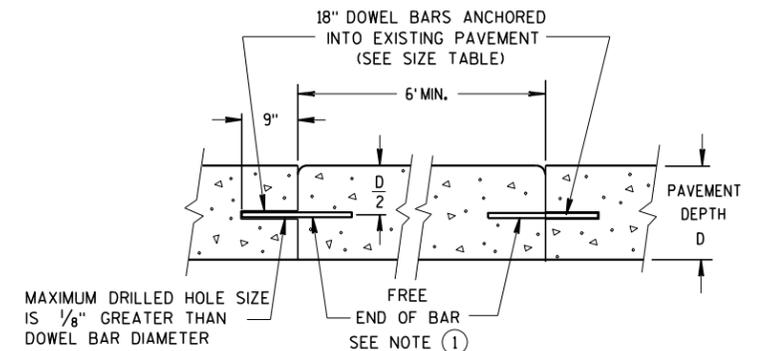
INSTALL DOWEL BARS PARALLEL TO THE PAVEMENT CENTERLINE AND PAVEMENT SURFACE.

CONCRETE PAVEMENT REPAIRS OF EXISTING NONDOWELED CONCRETE PAVEMENTS DO NOT NEED TO BE DOWELED.

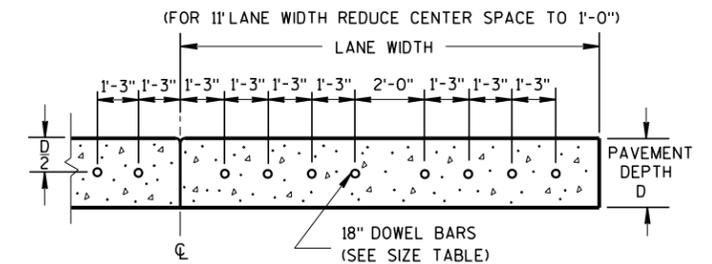
ANCHOR DOWEL BARS AND TIE BARS INTO DRILLED HOLES WITH AN EPOXY.

FOR MULTI-LANE CONCRETE PAVEMENT REPLACEMENTS, PROVIDE A MINIMUM DISTANCE OF 15 INCHES FROM ALL TRANSVERSE JOINTS OR EDGES OF REPLACEMENT TO THE CENTER OF THE TIE BAR NEAREST THAT JOINT OR EDGE.

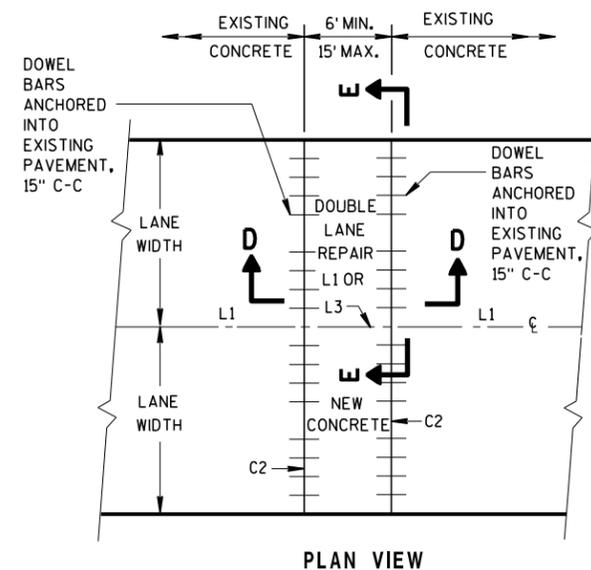
- ① APPLY A THIN UNIFORM COATING OF SURFACE TREATMENT TO THE FREE END OF DOWEL BARS TO PREVENT BONDING.



**SECTION D-D**

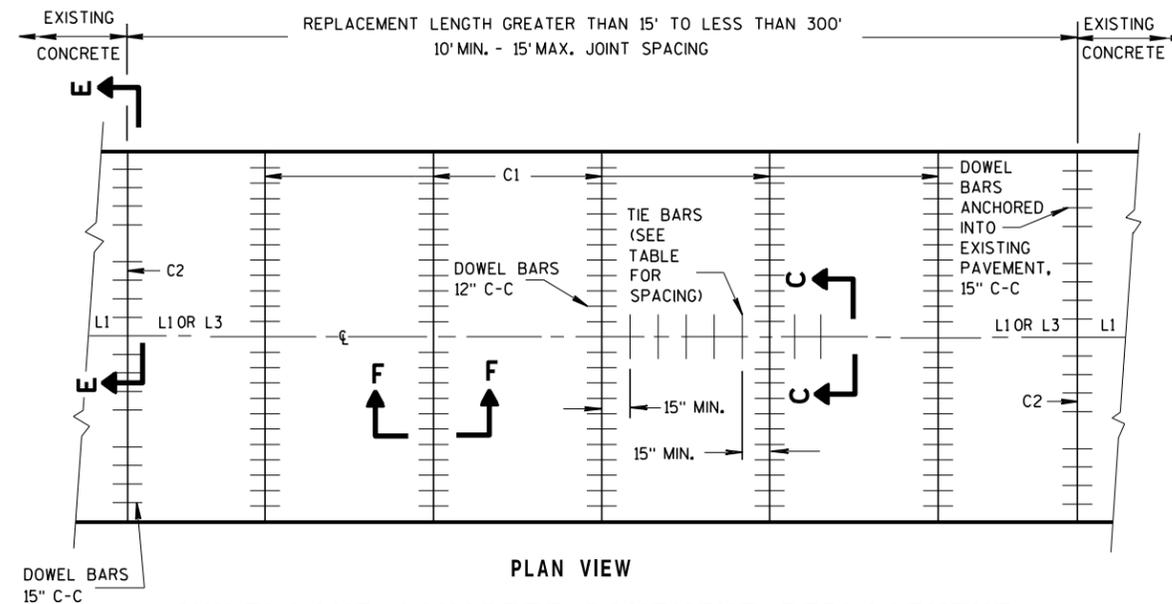


**SECTION E-E  
DRILLED DOWEL BAR CONSTRUCTION JOINT**



**PLAN VIEW**

**MULTI-LANE CONCRETE PAVEMENT REPAIR**



**PLAN VIEW**

**MULTI-LANE CONCRETE PAVEMENT REPLACEMENT**

**PAVEMENT DEPTH, DOWEL BAR SIZE AND JOINT SPACING TABLE**

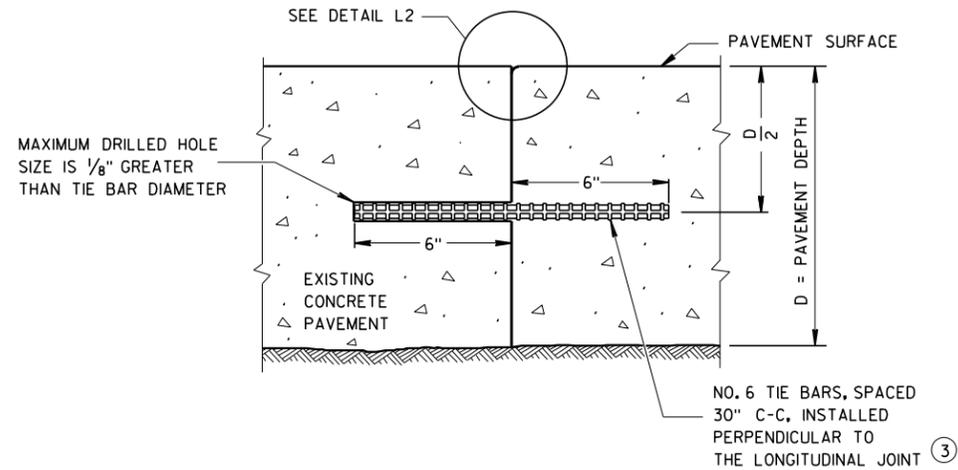
PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER	DRILLED DOWEL BAR DIAMETER	CONTRACTION JOINT SPACING
5 1/2", 6", 6 1/2"	NONE	NONE	12'
7", 7 1/2"	1"	1"	14'
8", 8 1/2"	1 1/4"	1 1/4"	15'
9", 9 1/2"	1 1/4"	1 1/4"	15'
10" & ABOVE	1 1/2"	1 1/4"	15'

**CONCRETE PAVEMENT REPAIR AND REPLACEMENT**

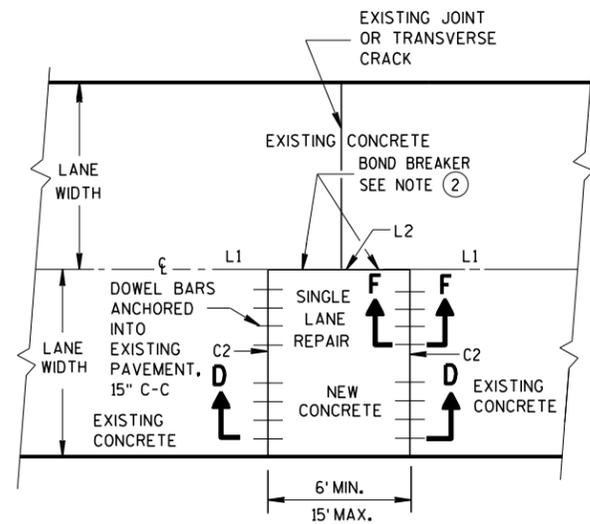
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

### GENERAL NOTES

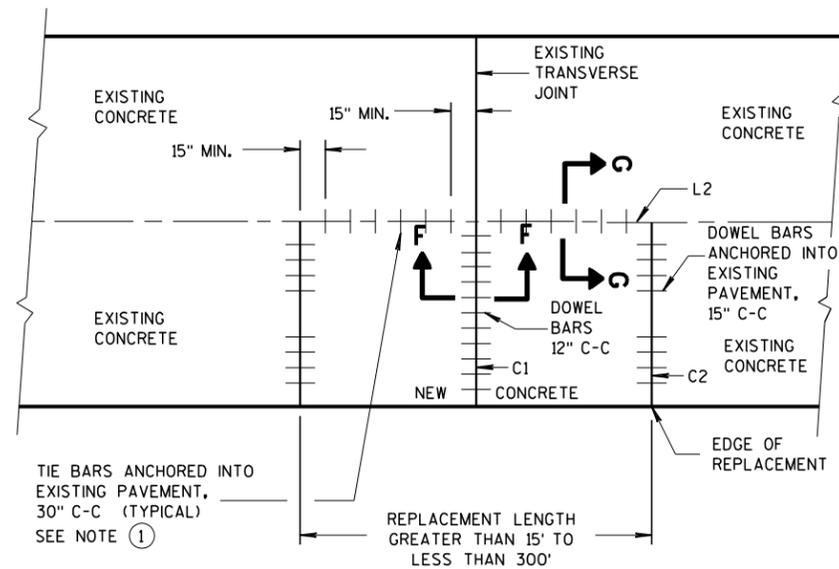
- ① WITH THE APPROVAL OF THE ENGINEER, FOR SINGLE LANE PAVEMENT REPLACEMENTS LESS THAN 30 FEET IN LENGTH, THE CONTRACTOR MAY INSTALL DRILLED TIE BARS ON 6:1 SKEW HORIZONTALLY, DIRECTION OF SKEW ALTERNATING WITH EACH SUCCESSIVE BAR. DRIVE SKEWED TIE BARS TO A DEPTH OF 6 INCHES IN A HOLE OF SUCH A DIAMETER AS TO PROVIDE A TIGHT DRIVEN FIT.
- ② USE AN ENGINEER-APPROVED BOND BREAKER (E.G. RELEASE AGENT, CURING COMPOUND) FOR SINGLE LANE REPAIRS UP TO 15 FEET IN LENGTH.
- ③ ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.



**SECTION G-G**  
**TIE BARS ANCHORED**  
**INTO EXISTING PAVEMENT**

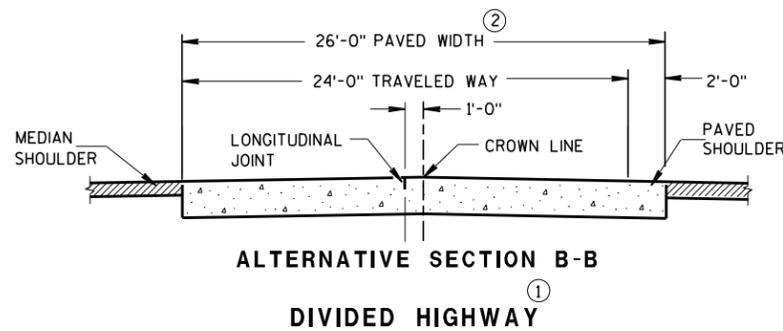
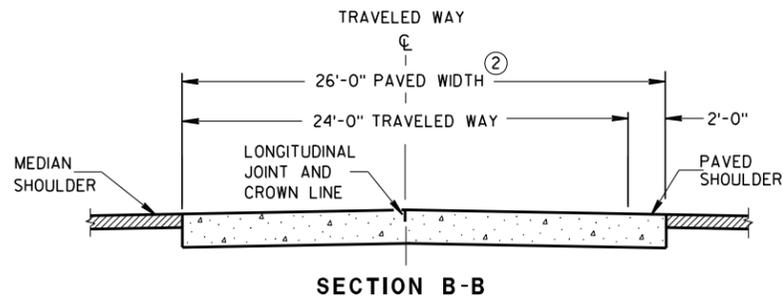
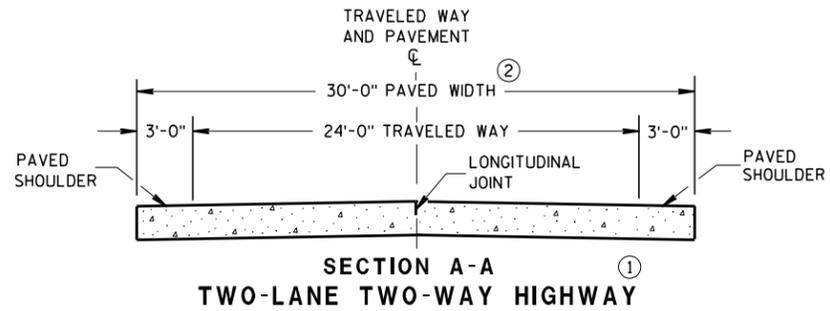


**PLAN VIEW**  
**SINGLE LANE**  
**CONCRETE PAVEMENT REPAIR**



**PLAN VIEW**  
**SINGLE LANE**  
**CONCRETE PAVEMENT REPLACEMENT**

<b>CONCRETE PAVEMENT REPAIR AND REPLACEMENT</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED March 2018 DATE	/s/ Peter Kemp, P.E. 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.

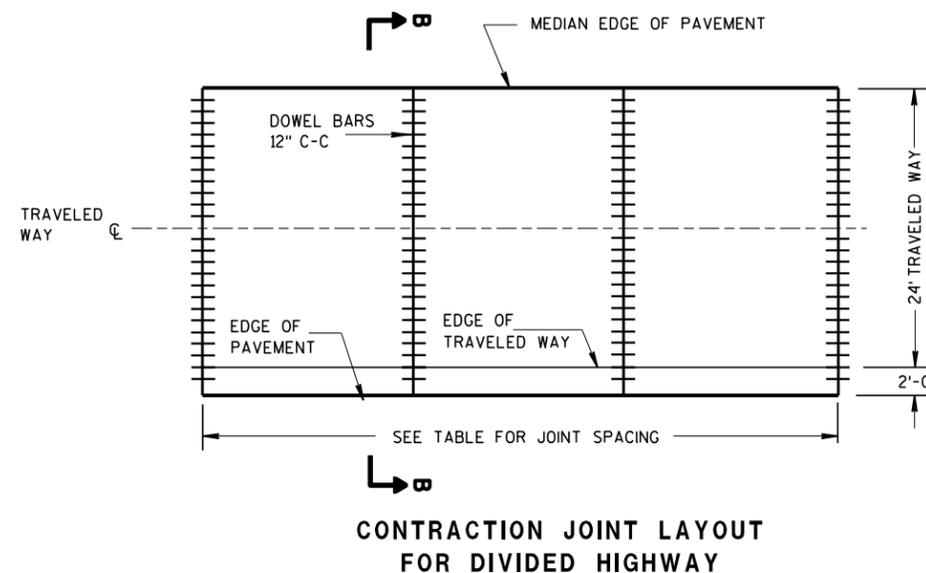
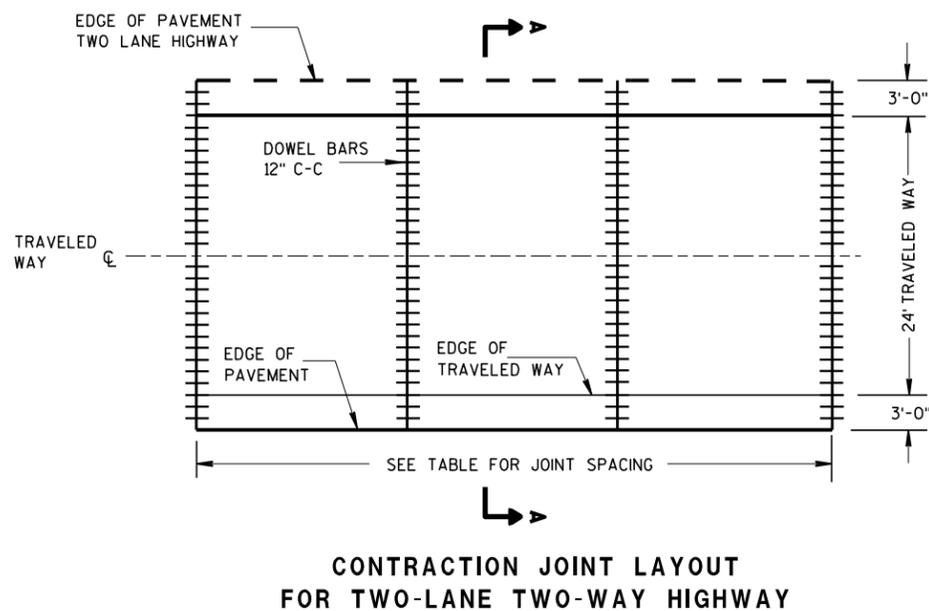
CONSTRUCTION JOINTS

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.

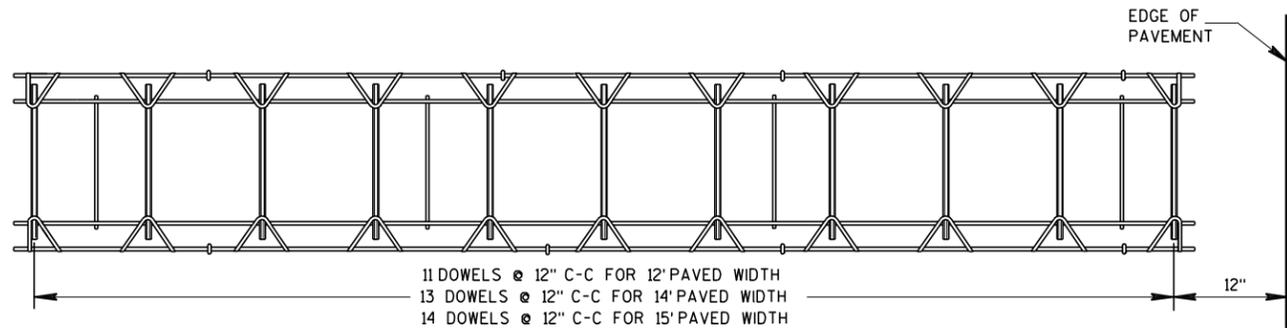
**PAVEMENT DEPTH, DOWEL BAR SIZE AND JOINT SPACING TABLE**

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'



**RURAL DOWELED CONCRETE PAVEMENT**

STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION



11 DOWELS @ 12" C-C FOR 12' PAVED WIDTH  
 13 DOWELS @ 12" C-C FOR 14' PAVED WIDTH  
 14 DOWELS @ 12" C-C FOR 15' PAVED WIDTH

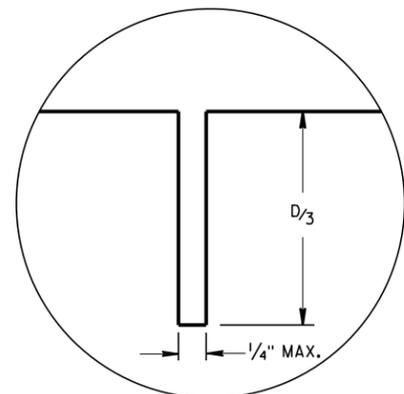
PLAN VIEW



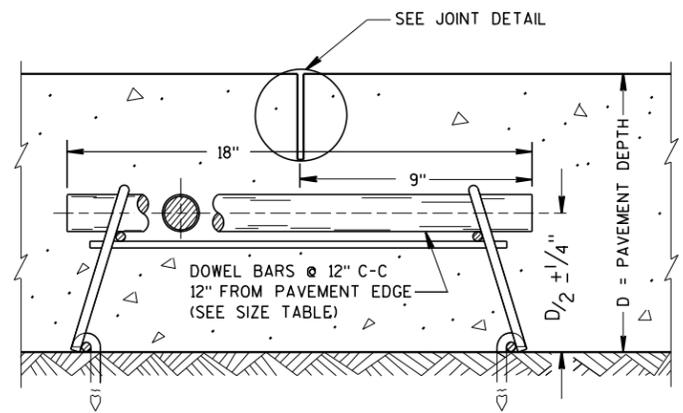
SIDE VIEW

(NORMAL TO CENTERLINE)

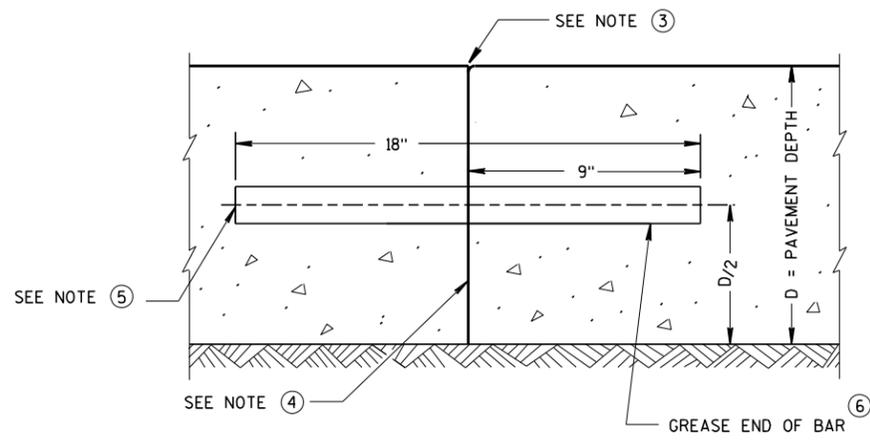
CONTRACTION JOINT DOWEL ASSEMBLY ①



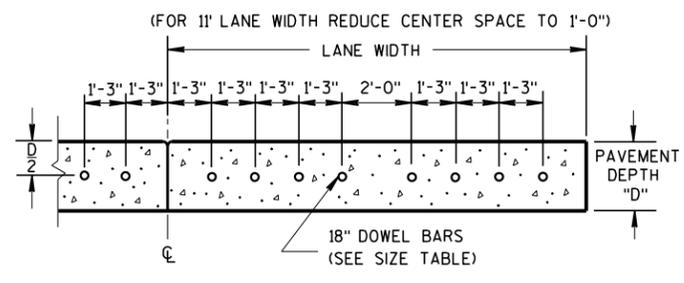
JOINT DETAIL



DOWELED CONTRACTION JOINT



TRANSVERSE CONSTRUCTION JOINT

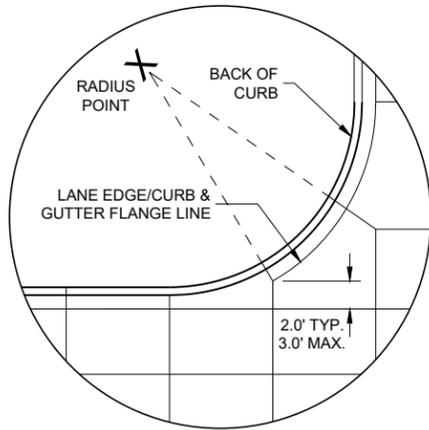


DRILLED DOWEL BAR CONSTRUCTION JOINT ⑦

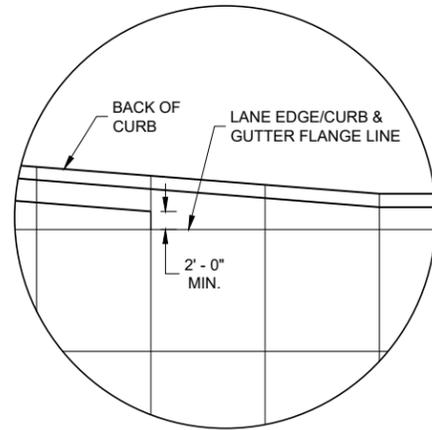
GENERAL NOTES

- 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.

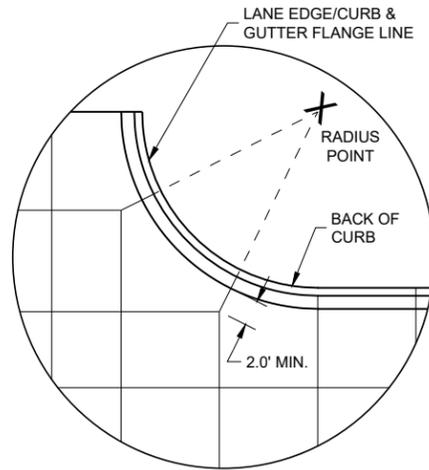
<b>RURAL DOWELED CONCRETE PAVEMENT</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED March 2018 DATE	/s/ Peter Kemp, P.E. PAVEMENT SUPERVISOR
FHWA	



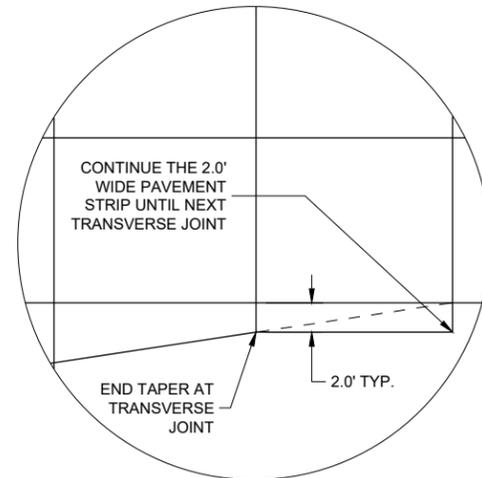
DETAIL "A"



DETAIL "B"



DETAIL "C"



DETAIL "D"

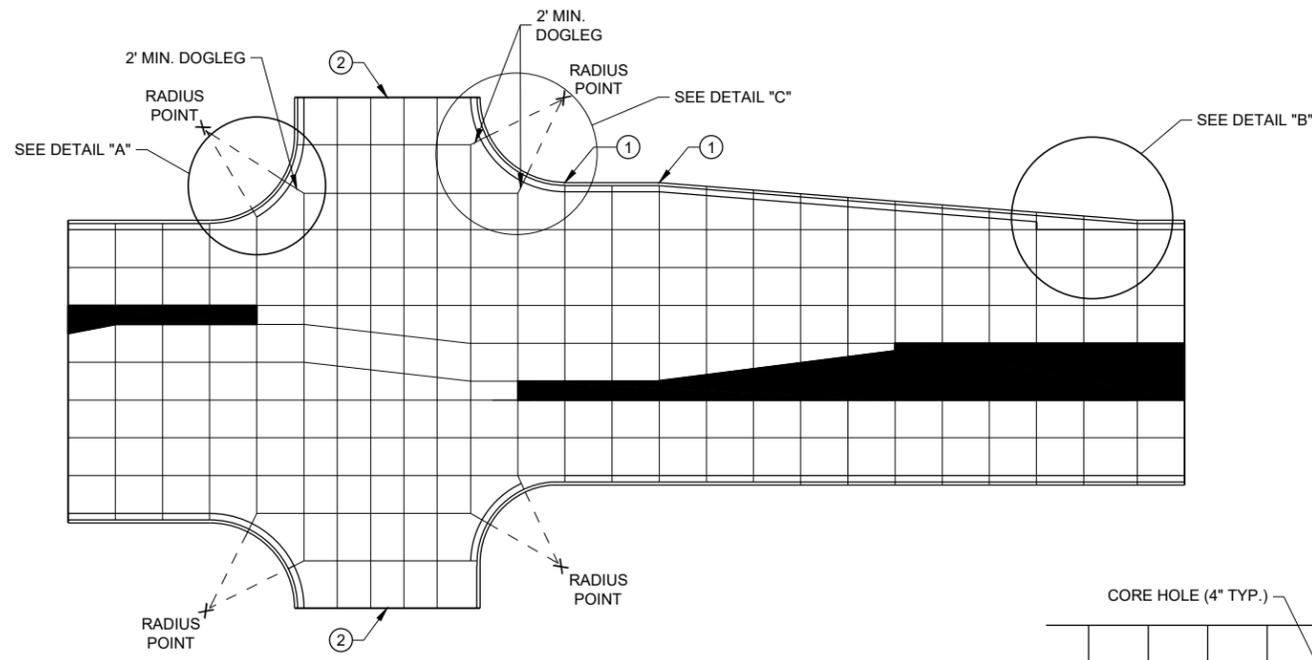
**GENERAL NOTES**

- 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.

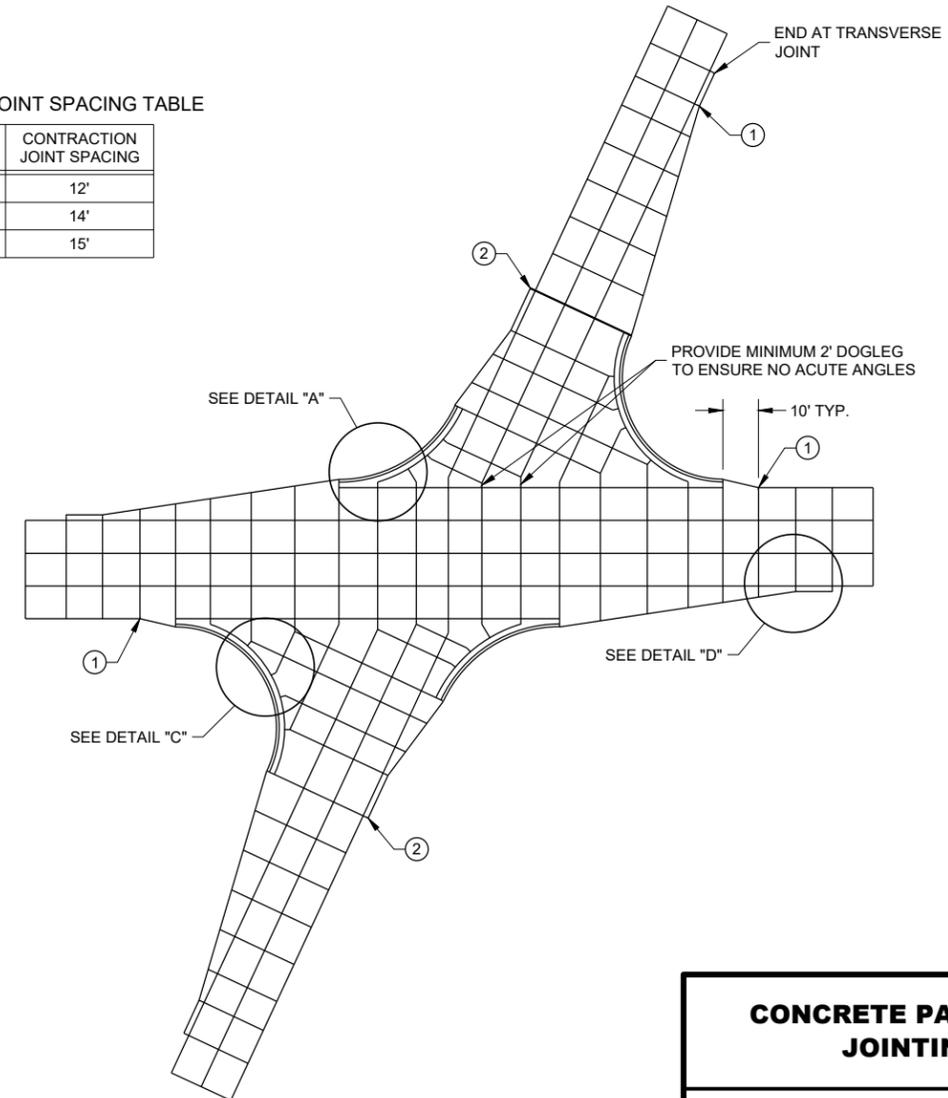
- ① PROVIDE TRANSVERSE JOINTS AT ALL PAVEMENT WIDTH CHANGES.
- ② CONSTRUCT DOWELED EXPANSION JOINT ON THE SIDE ROAD OF AN INTERSECTION IF THE SIDE ROAD IS CONCRETE PAVEMENT AND GREATER THAN 300 FEET IN LENGTH. ALIGN EXPANSION JOINT WITH EDGE OF RADIUS.
- ③ THE ENGINEER MAY APPROVE SLIGHT VARIATIONS FROM THESE JOINTING DETAILS.

PAVEMENT DEPTH AND JOINT SPACING TABLE

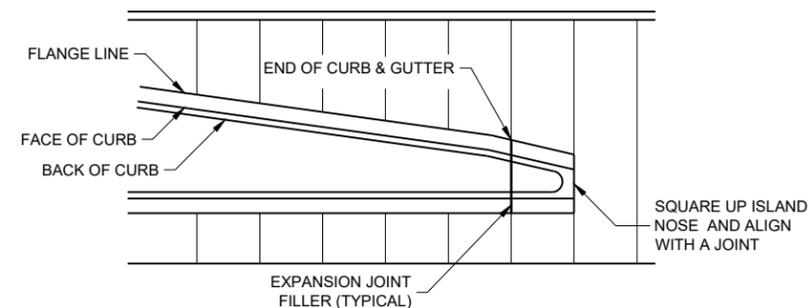
PAVEMENT DEPTH (D)	CONTRACTION JOINT SPACING
6", 6 1/2"	12'
7", 7 1/2"	14'
8" & ABOVE	15'



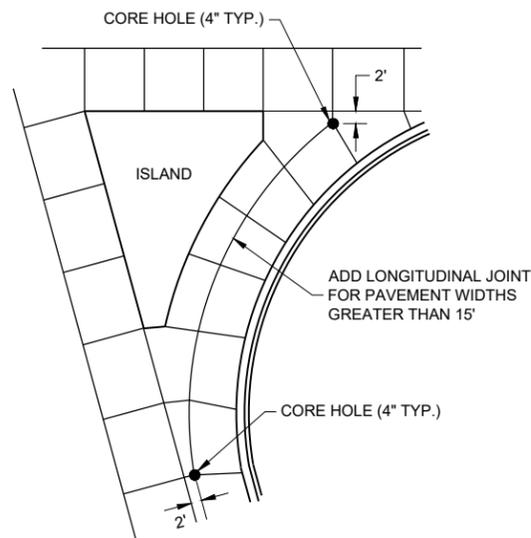
STANDARD INTERSECTION



SKEWED INTERSECTION



APPROACH TO MEDIAN



LARGE RIGHT TURN

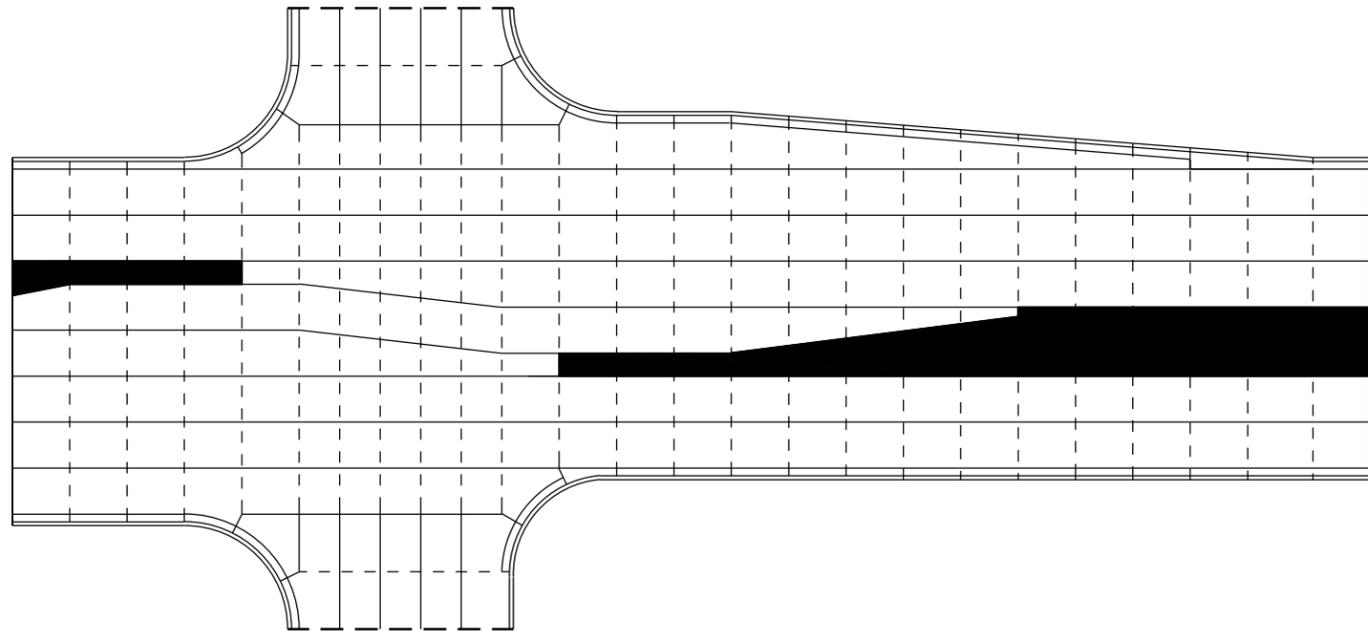
**LEGEND**

- - - - - POTENTIAL DOWELED EXPANSION JOINT
- - - - - DOWELED JOINT
- TIED JOINT

**GENERAL NOTES**

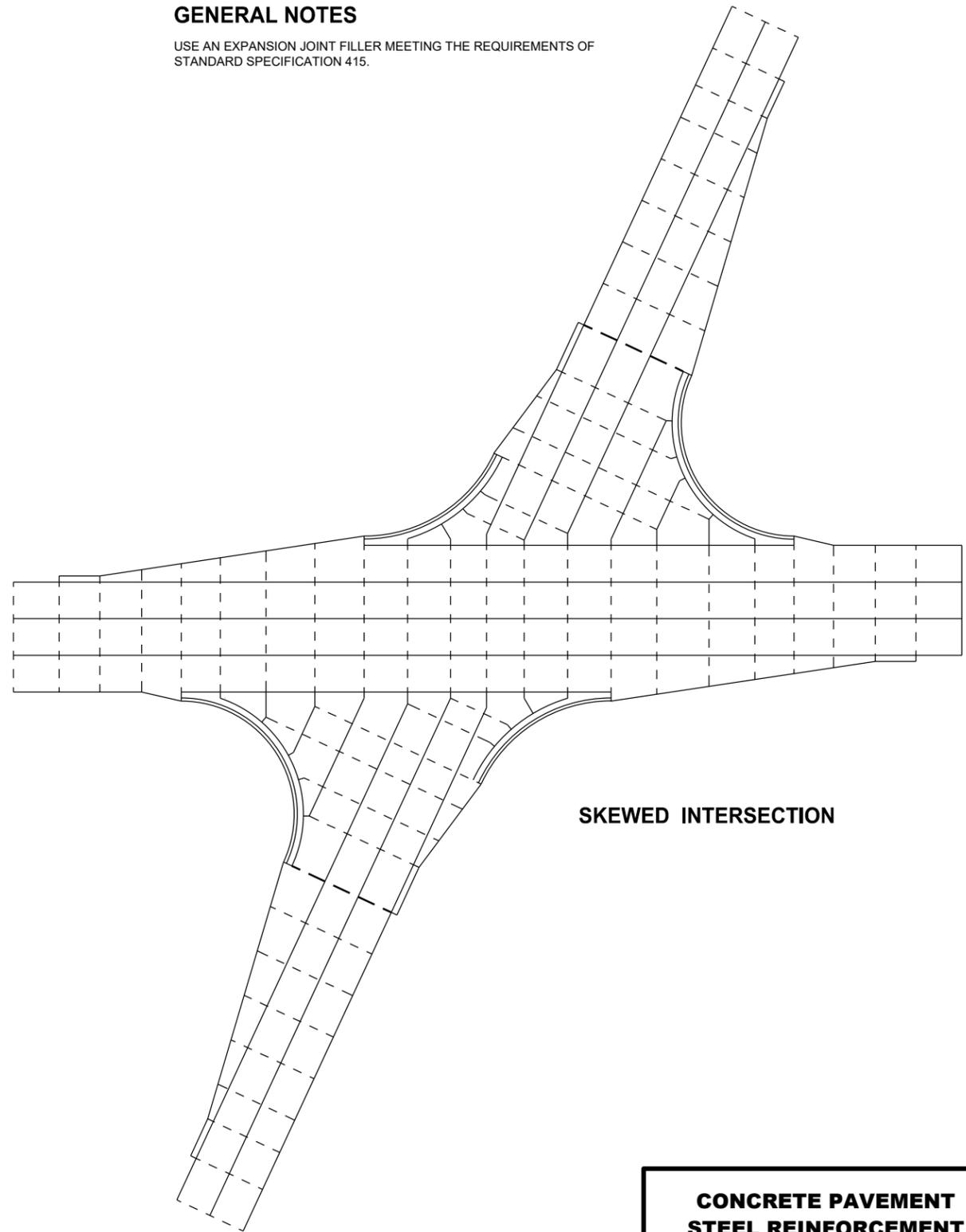
USE AN EXPANSION JOINT FILLER MEETING THE REQUIREMENTS OF STANDARD SPECIFICATION 415.

6



**STANDARD INTERSECTION**

6



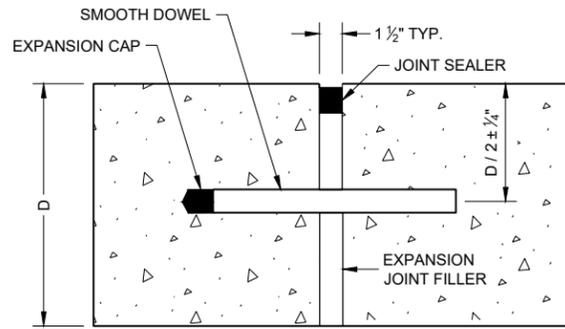
**SKewed INTERSECTION**

**SDD 13C18 - 07b**

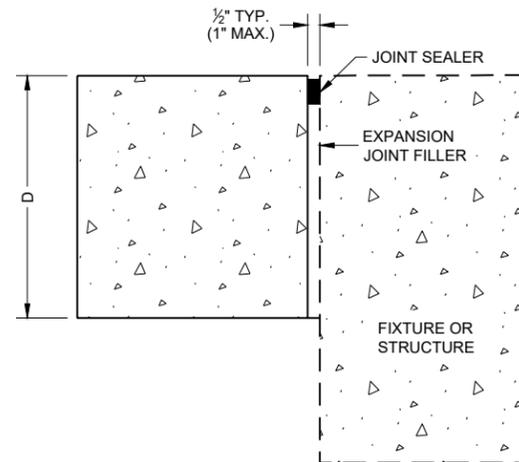
**SDD 13C18 - 07b**

**CONCRETE PAVEMENT  
STEEL REINFORCEMENT**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



**DOWELED TRANSVERSE** ①



**UNTIED - LONGITUDINAL**

**EXPANSION JOINTS**

**TIE BAR TABLE**

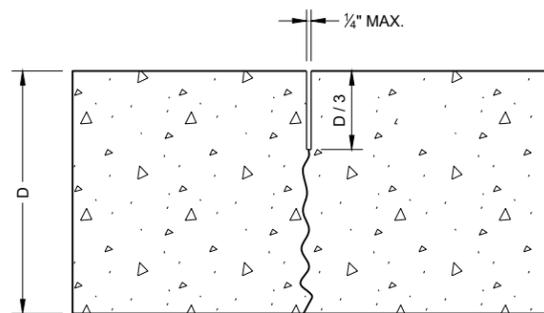
PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 1/2"	NO. 4	30"	36"
≥ 10 1/2"	NO. 5	36"	36"
	NO. 4*	30"	24" **

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

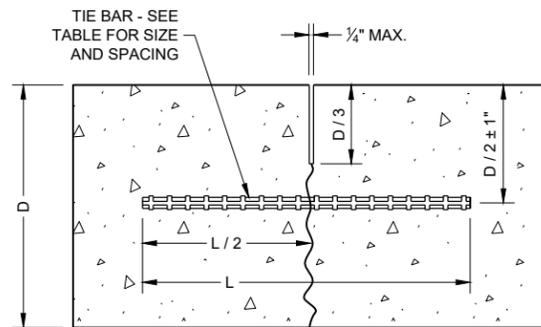
\*\* CONFORM TO 15" MINIMUM SPACING FROM TRANSVERSE JOINTS; SPACING BETWEEN TIE BARS WILL BE 30" AT TRANSVERSE JOINTS.

**GENERAL NOTES**

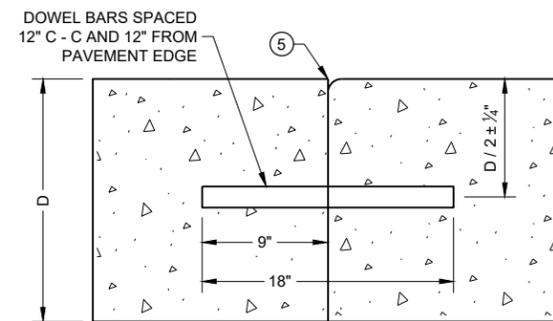
- ① USE DOWELED EXPANSION JOINTS ON SIDE ROADS AT INTERSECTIONS (TO ISOLATE THE SIDE ROAD FROM THE THROUGH STREET) IF THE SIDE ROAD IS CONCRETE PAVEMENT AND GREATER THAN 300 FEET IN LENGTH.
- ② SPACE CONTRACTION JOINTS IN ACCORDANCE WITH SDD 13C4, 13C11 OR 13C13.
- ③ LOCATE CONSTRUCTION JOINTS A MINIMUM OF 6 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGN PARALLEL TO CONTRACTION JOINTS.
- ④ CONSTRUCTION JOINTS CAN BE FORMED OR SAWED.
- ⑤ IF JOINT IS FORMED, PROVIDE A 1/4" RADIUS.
- ⑥ ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.



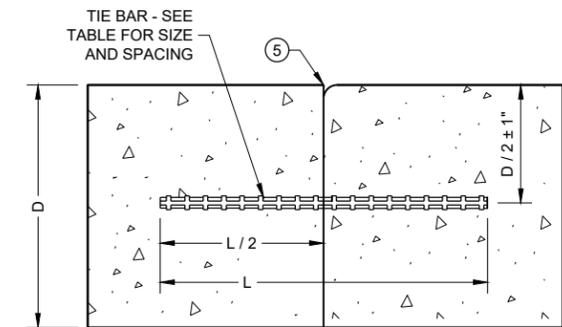
**UNDOWELED TRANSVERSE**



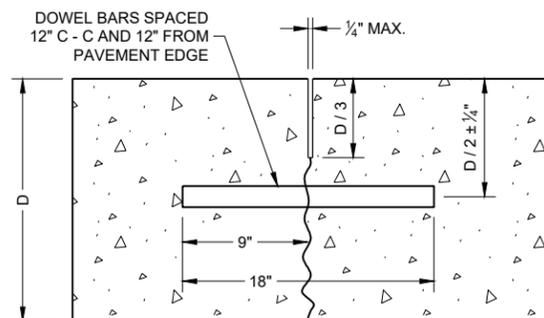
**TIED LONGITUDINAL**



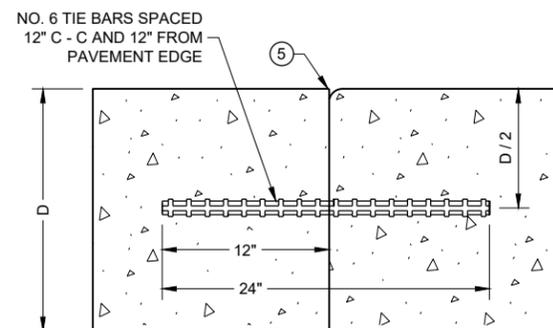
**DOWELED TRANSVERSE** ③



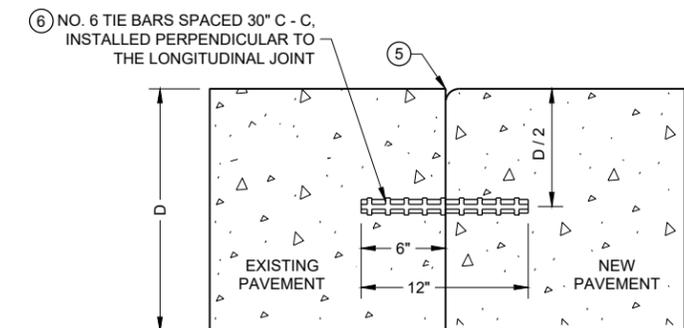
**TIED LONGITUDINAL**



**DOWELED TRANSVERSE**



**TIED TRANSVERSE** ③  
(FOR USE ON NON-DOWELED PAVEMENTS ONLY)



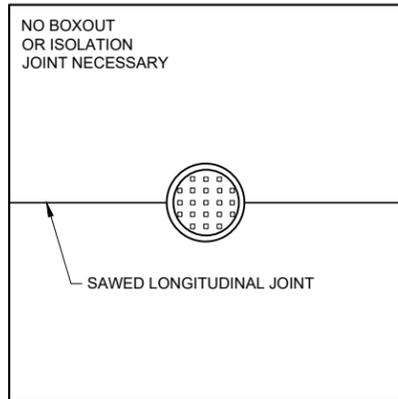
**TIED LONGITUDINAL TO EXISTING**

**CONTRACTION JOINTS** ②

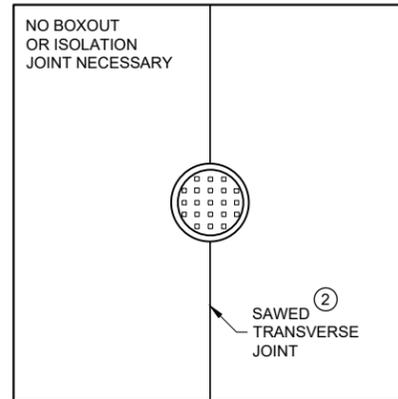
**CONSTRUCTION JOINTS** ④

**CONCRETE PAVEMENT JOINT TYPES**

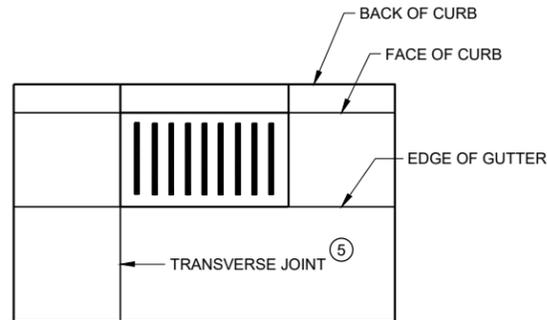
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



**MANHOLE WITH LONGITUDINAL JOINT**



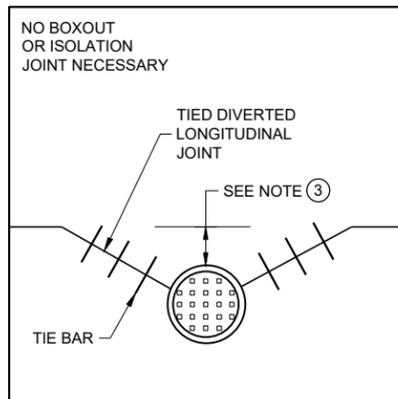
**MANHOLE WITH TRANSVERSE JOINT**



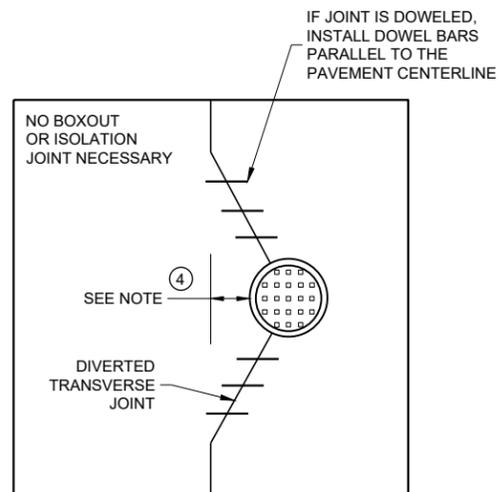
**INLET WITH TRANSVERSE JOINT**

**GENERAL NOTES**

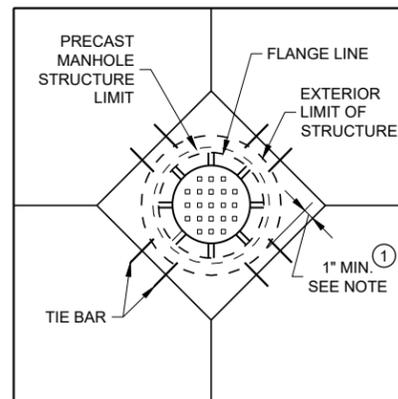
- ① USE BOXOUTS WHEN UTILITY STRUCTURE IS IN THE PATH OF CONSTRUCTION JOINTS. PROVIDE A 1 FOOT MINIMUM CLEARANCE BETWEEN THE EXTERIOR LIMIT OF THE STRUCTURE TO THE DIAMOND BOXOUT.
- ② ADJUST TRANSVERSE JOINT TO INTERSECT MANHOLE IF POSSIBLE.
- ③ IF DISTANCE BETWEEN THE LONGITUDINAL JOINT AND THE EDGE OF MANHOLE IS 2 FEET OR LESS, DIVERT THE LONGITUDINAL JOINT AT A 2:1 TAPER RATE TO THE CENTER OF THE MANHOLE. IF THE DISTANCE IS GREATER THAN 2 FEET, DO NOT DIVERT THE JOINT AND SAW AS NORMAL. PLACE REINFORCEMENT REBAR AROUND THE MANHOLE.
- ④ IF THE DISTANCE FROM THE EDGE OF THE MANHOLE TO THE NEAREST TRANSVERSE JOINT IS LESS 4 FEET OR LESS, REDIRECT JOINT TO INTERSECT THE CENTER OF THE MANHOLE. IF DISTANCE IS GREATER THAN 4 FEET, DO NOT DIVERT THE JOINT AND SAW AS NORMAL. PLACE REINFORCEMENT REBAR AROUND THE MANHOLE.
- ⑤ ALIGN TRANSVERSE JOINT WITH ONE EDGE OF INLET WHEN PRACTICAL.



**MANHOLE WITH DIVERTED LONGITUDINAL CONTRACTION JOINT**



**MANHOLE WITH DIVERTED TRANSVERSE CONTRACTION JOINT**



**DIAGONAL MANHOLE BOXOUT FOR CONSTRUCTION JOINTS**

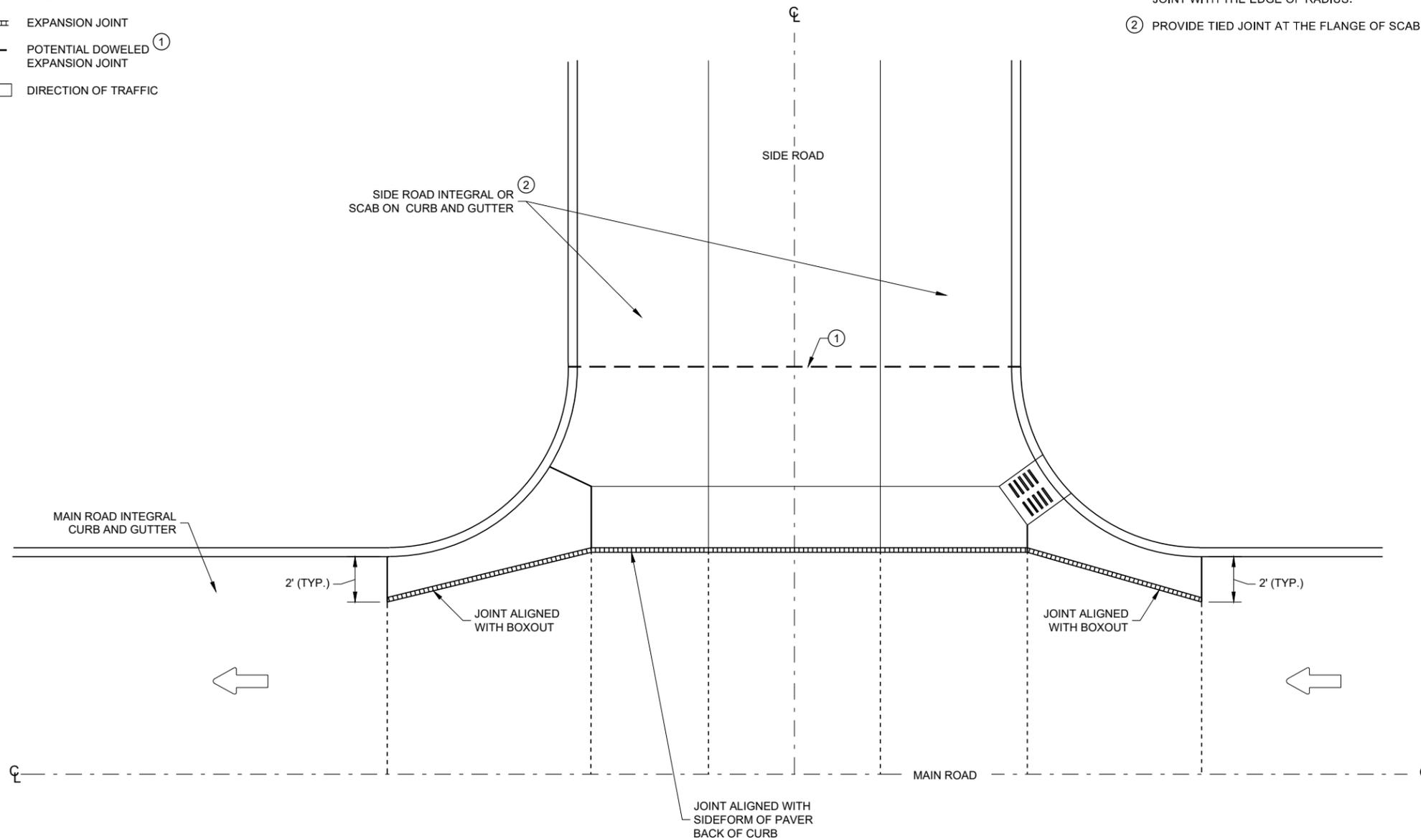
<b>CONCRETE PAVEMENT JOINTING AT UTILITY FIXTURES</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED November 2018 DATE	/s/ Peter Kemp P.E. PAVEMENT SUPERVISOR
<small>FHWA</small>	

**LEGEND**

- DOWELED JOINT
- TIED JOINT
- ▨▨▨▨ EXPANSION JOINT
- — — — POTENTIAL DOWELED <sup>①</sup> EXPANSION JOINT
- ← DIRECTION OF TRAFFIC

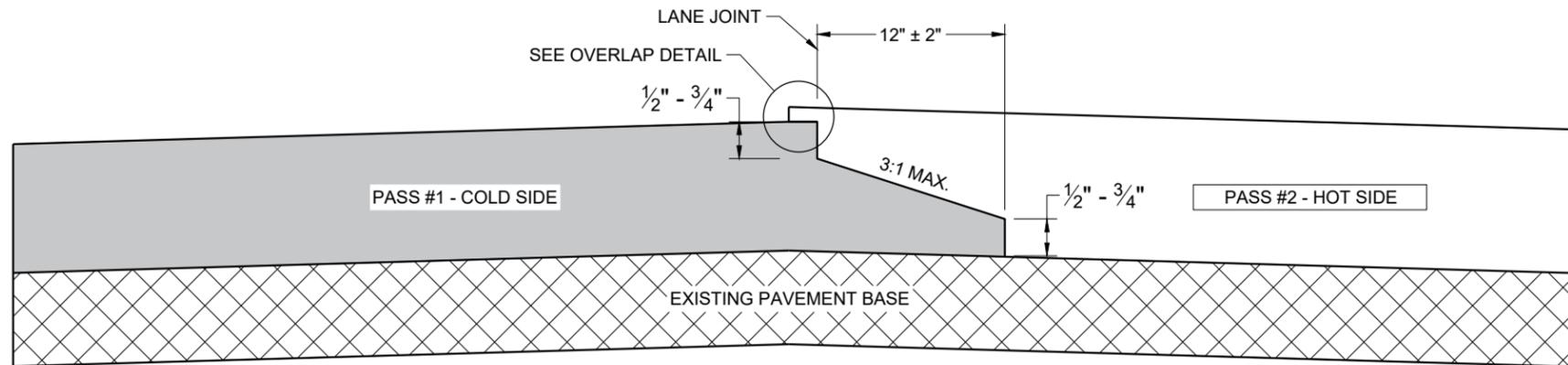
**GENERAL NOTES**

- ① 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 THE EDGE OF RADIUS.
- ② PROVIDE TIED JOINT AT THE FLANGE OF SCAB ON CURB IF SCAB ON CURB AND GUTTER IS USE.

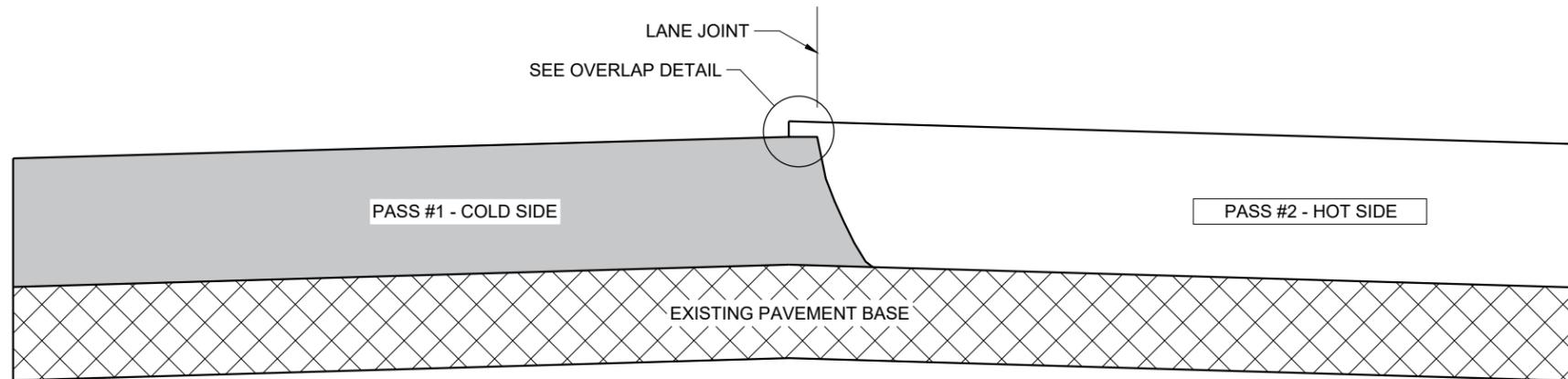


**INTERSECTION BOXOUT FOR INTEGRAL CURB AND GUTTER**

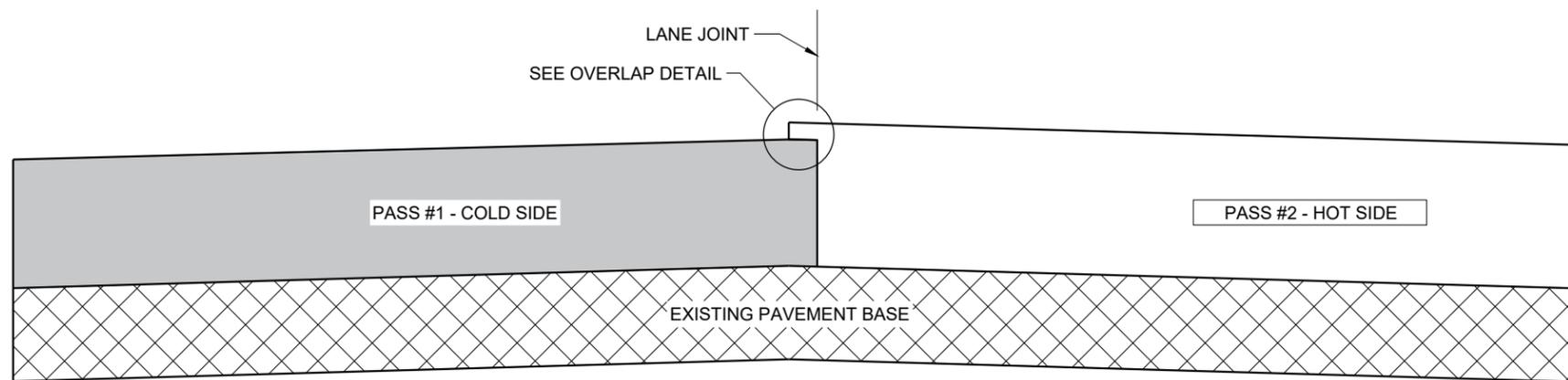
<b>CONCRETE PAVEMENT INTERSECTION BOXOUT FOR INTEGRAL CURB AND GUTTER</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED November 2018 DATE	/S/ Peter Kemp P.E. ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	



**TYPICAL PAVEMENT CROSS SECTION  
NOTCHED WEDGE JOINT**



**TYPICAL PAVEMENT CROSS SECTION  
VERTICAL JOINT**



**TYPICAL PAVEMENT CROSS SECTION  
VERTICAL JOINT (MILLED)**

**GENERAL NOTES**

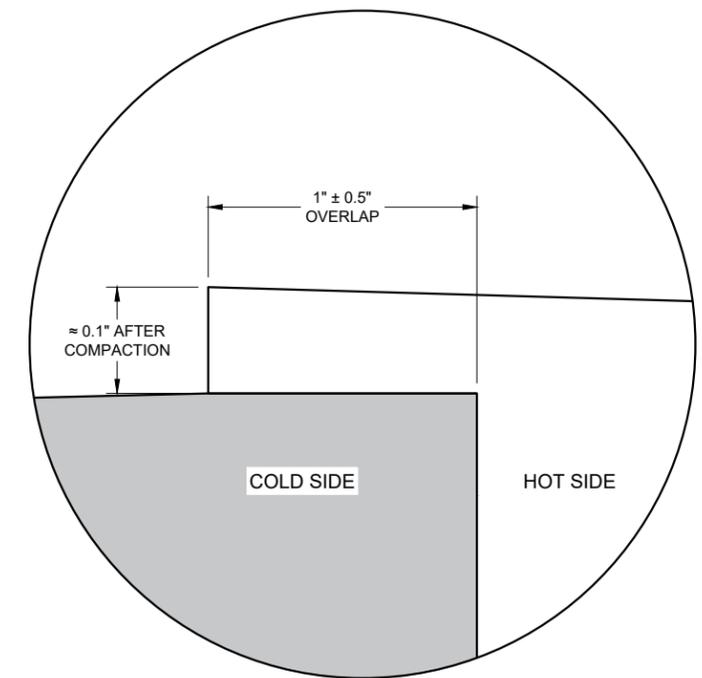
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

FOR ALL LONGITUDINAL JOINTS, ENSURE THE PAVER SCREED OVERLAPS THE PREVIOUSLY PLACED PAVEMENT BY  $1" \pm 0.5"$  AND THE HOT SIDE OF THE JOINT REMAINS HIGHER THAN THE COLD SIDE BY APPROXIMATELY 0.1" AFTER FINAL COMPACTION. (IT WILL BE FLUSH WHEN PAVING IN ECHELON.)

ONLY REMOVE THE LONGITUDINAL NOTCHED WEDGE JOINT FOR SMA PAVEMENT OR AS DIRECTED BY THE ENGINEER TO ADDRESS SPECIFIC LENGTHS OF JOINT DAMAGED BY TRAFFIC.

WHEN MILLING BACK OR REMOVING ANY LONGITUDINAL JOINT, LIMIT THE MATERIAL REMOVED TO 2" FROM THE TOP NOTCH OR FROM THE VERTICAL JOINT EDGE ON THE COLD SIDE OF THE JOINT.

USE LONGITUDINAL MILLED JOINT AS PLANS SHOW OR THE AS THE ENGINEER DIRECTS.



**OVERLAP DETAIL (TYPICAL)**

6

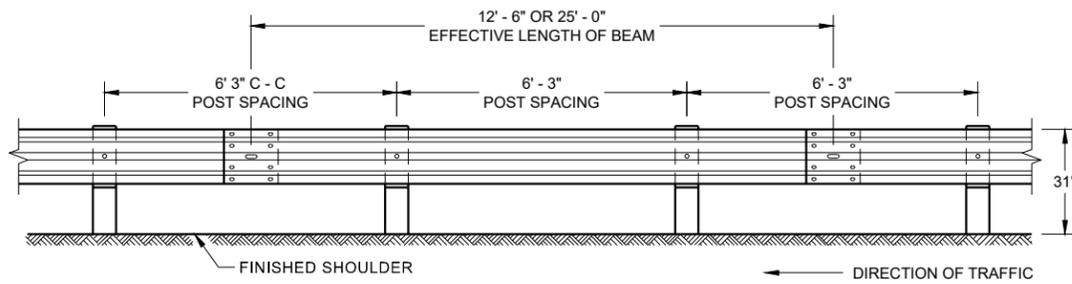
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SDD 13C19 - 03

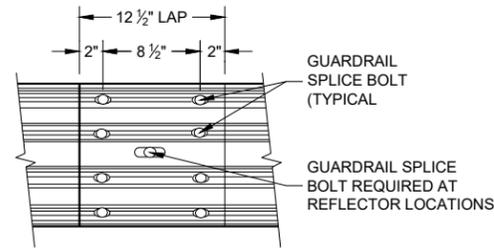
SDD 13C19 - 03

<b>HMA LONGITUDINAL JOINTS</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED November 2020 DATE	/S/ Steven Hefel HMA PAVEMENT ENGINEER
FHWA	





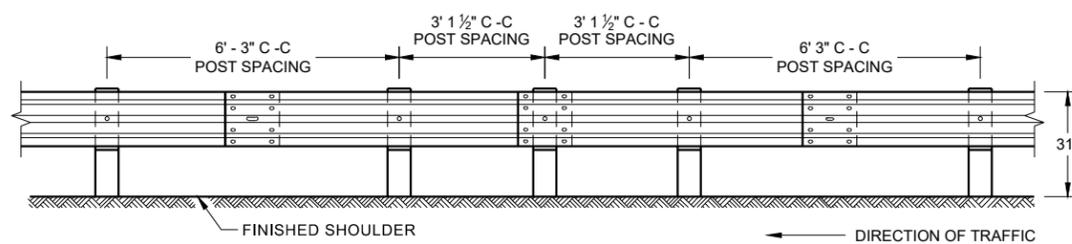
**FRONT VIEW  
POST SPACING STANDARD INSTALLATION**



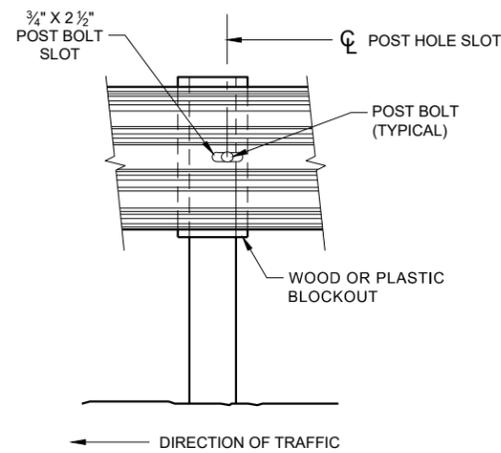
**FRONT VIEW  
MID-SPAN BEAM SPLICE**

**GENERAL NOTES**

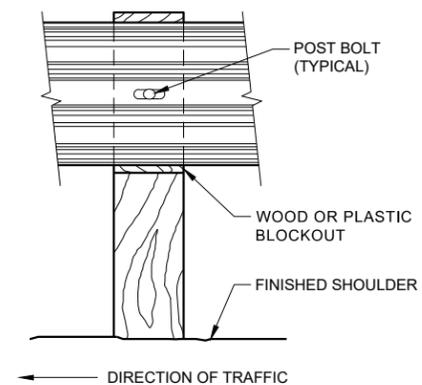
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
  - ⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER 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 3/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



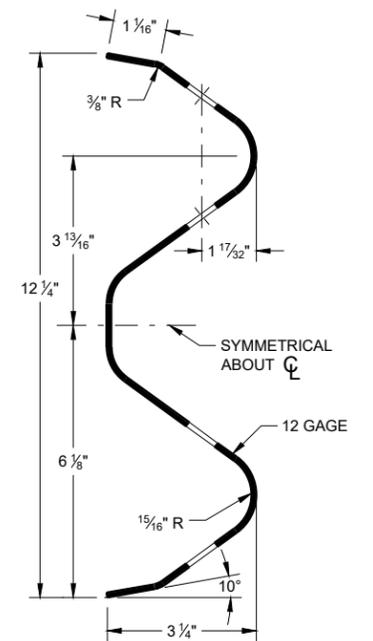
**FRONT VIEW  
HALF POST SPACING (HS) AND  
HALF POST SPACING WITH LONGER POSTS (K)**



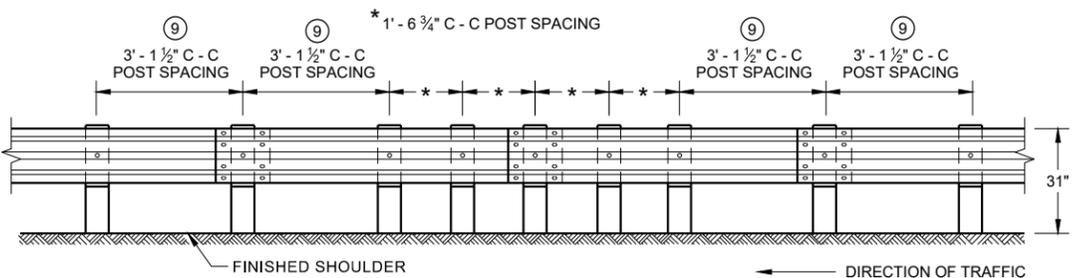
**FRONT VIEW AT STEEL POST**



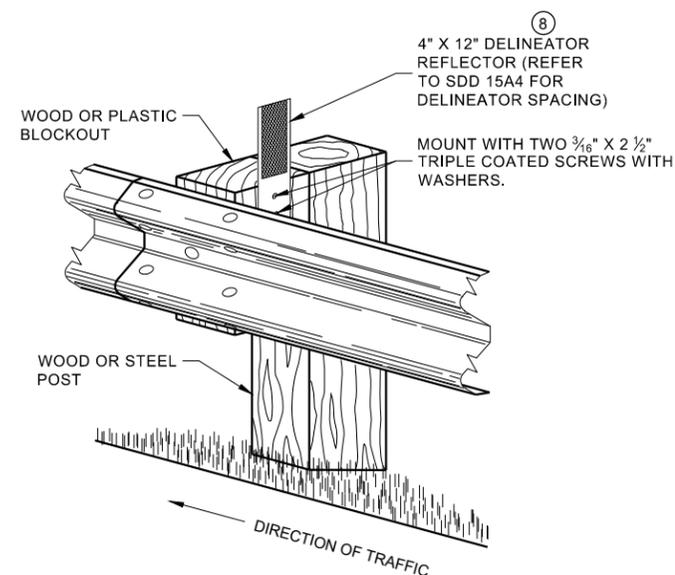
**FRONT VIEW AT WOOD POST**



**SECTION THRU W-BEAM RAIL**



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



**ONE SIDED REFLECTOR DETAIL  
AND TYPICAL INSTALLATION**

**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

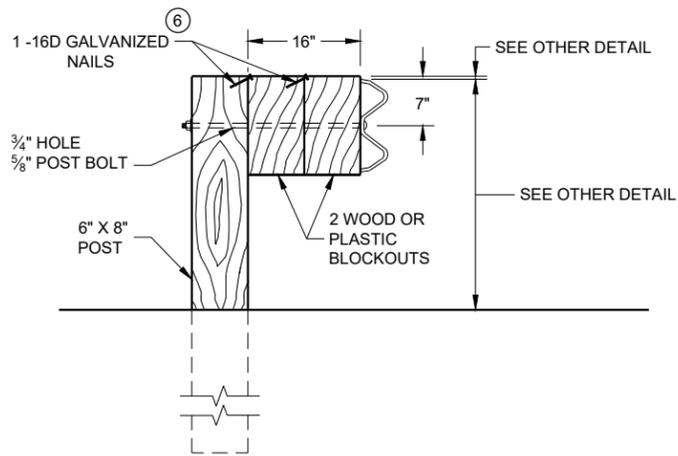
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

6

6

SDD 14B42 - 07b

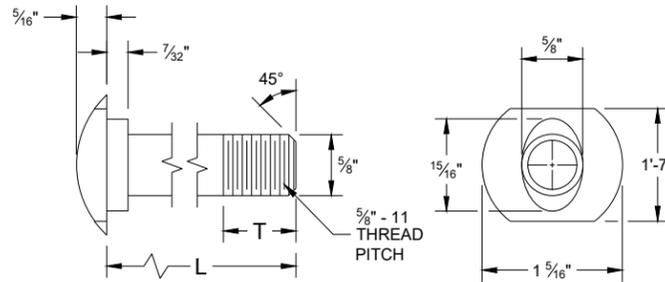
SDD 14B42 - 07b



**DETAIL FOR 16" BLOCKOUT DEPTH**

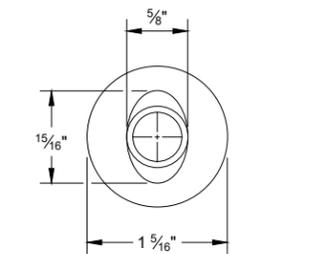
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.

- NOTE:
1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF 3/16".
  2. IF THE BOLT EXTENDS MORE THAN 1/4" FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.

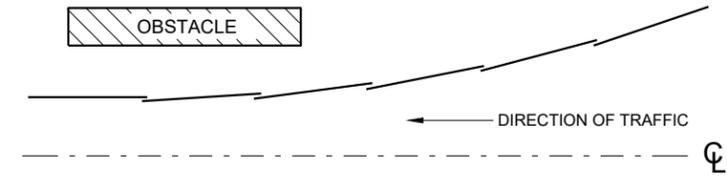


**POST BOLT TABLE**

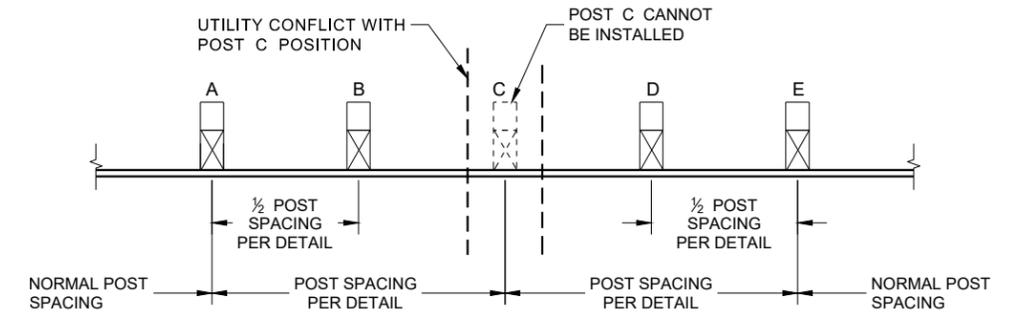
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



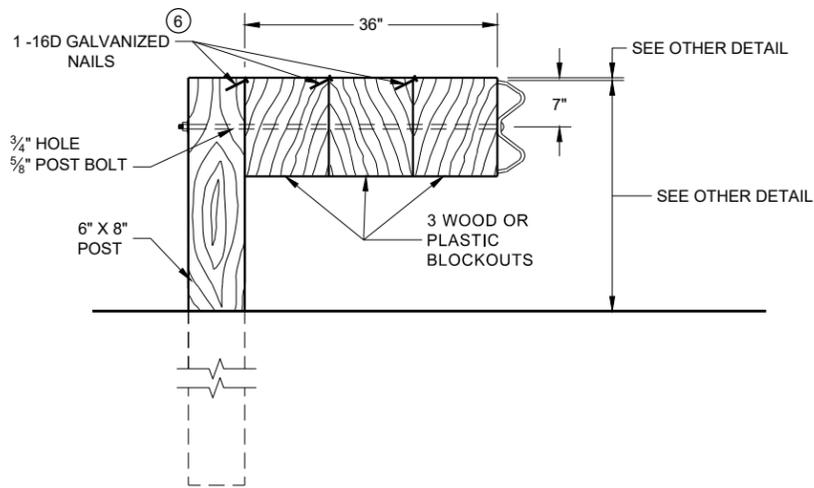
**ALTERNATE BOLT HEAD**



**PLAN VIEW  
BEAM LAPPING DETAIL**

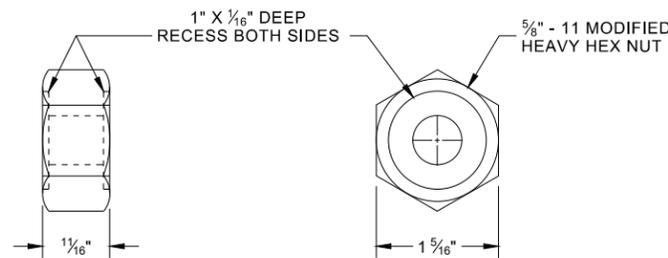


**POST DRIVING FOR CONTINUOUS  
UNDERGROUND OBSTRUCTION**

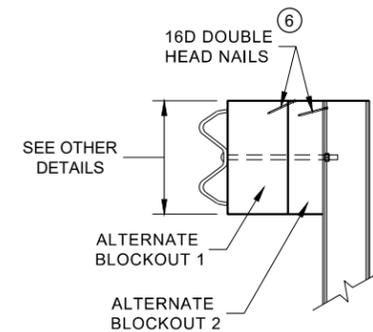


**DETAIL FOR 36" BLOCKOUT DEPTH**

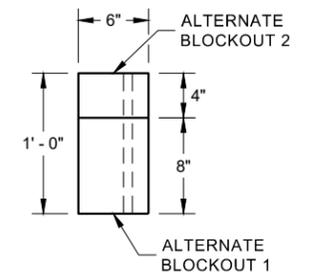
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.  
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.



**POST BOLT, SPLICE BOLT  
AND RECESS NUT**



**SIDE VIEW**



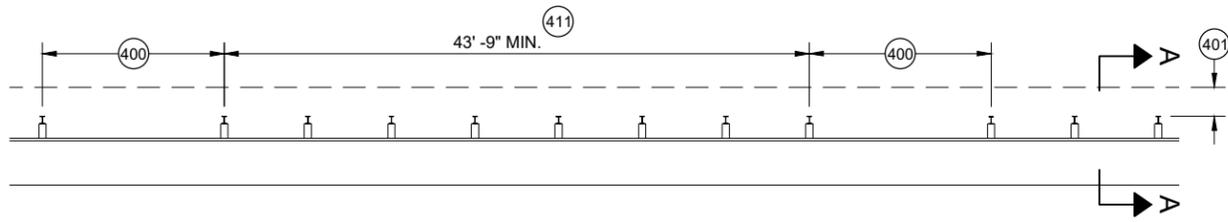
**PLAN VIEW**

**ALTERNATE WOOD  
BLOCKOUT DETAIL**

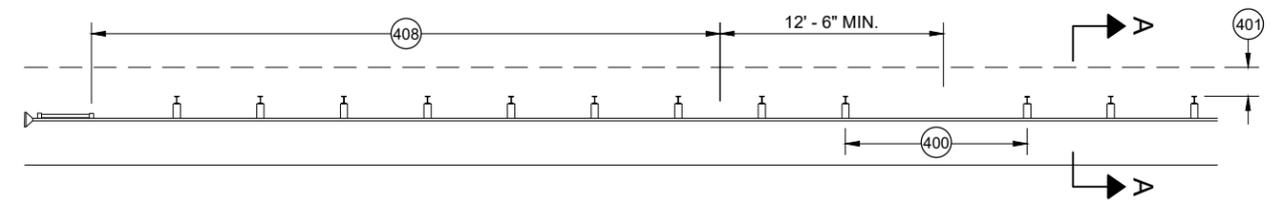
6 WHEN USING STEEL POST AND WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

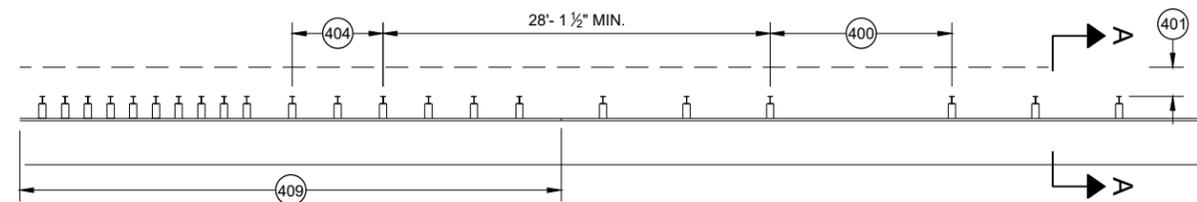
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



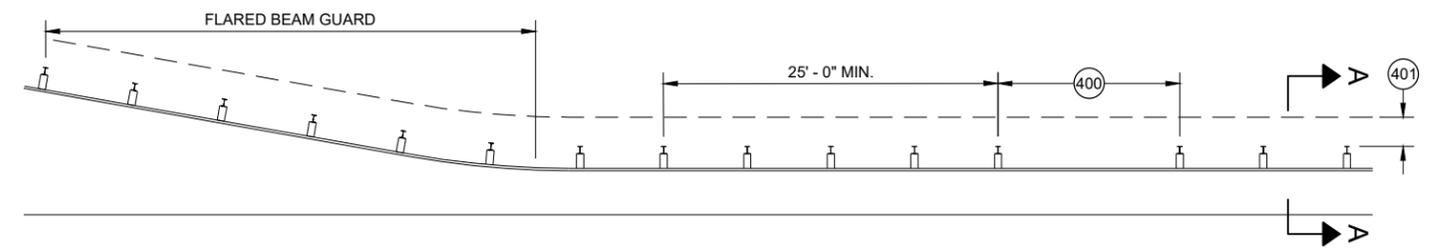
**MISSING POST IN MGS GUARDRAIL**



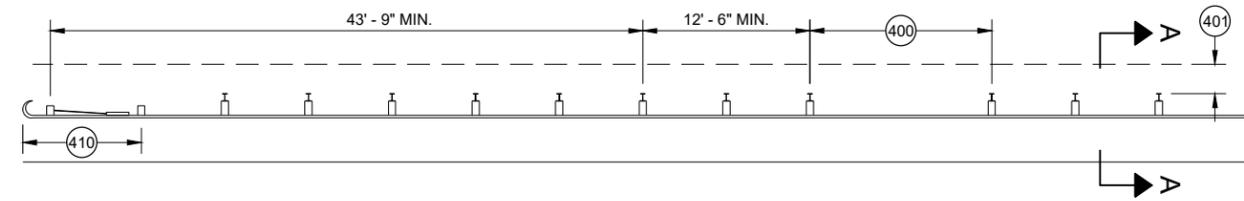
**MISSING POST IN MGS GUARDRAIL NEAR EAT**



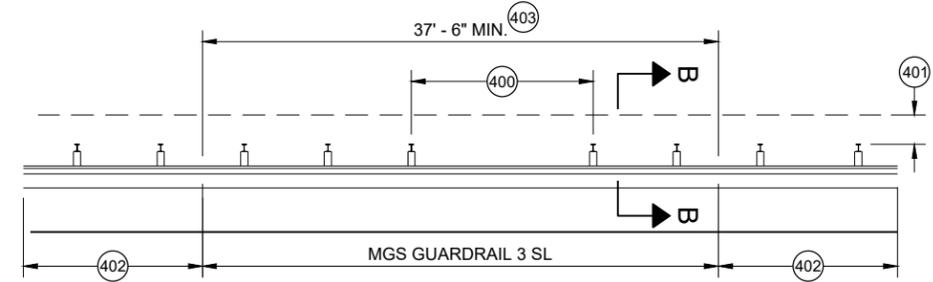
**MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION**



**MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD**

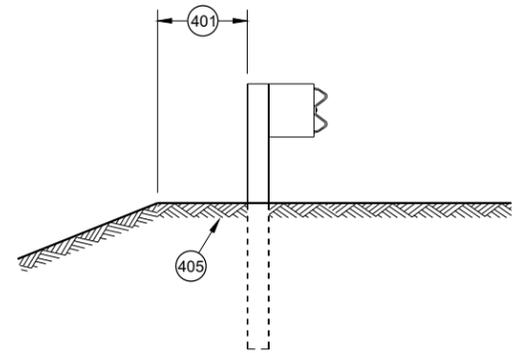


**MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL**

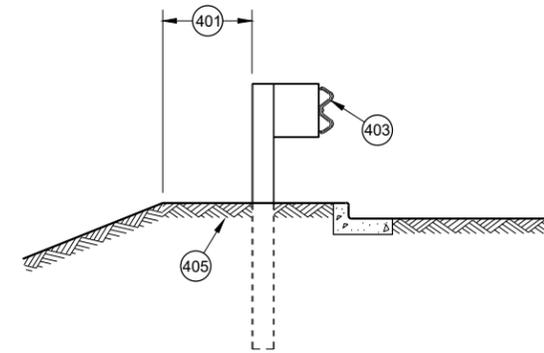


**MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)**

- 400 MAX SPAN 12' - 6"
- 401 2' MIN.
- 402 MGS GUARDRAIL 3
- 403 NESTING BEAM GUARD
- 404 ASYMMETRIC TRANSITION
- 405 SOIL WELL DRAINED AND COMPACTED
- 406 SEE OTHER DRAWINGS IN THIS SDD
- 407 SEE OTHER DRAWINGS FOR MIN. SPACING BETWEEN SPANS
- 408 SEE SDD 14B44
- 409 SEE SDD 14B45
- 410 SEE SDD 14B47
- 411 MINIMUM DISTANCE BETWEEN MISSING POST SPANS.



**SECTION A - A**



**SECTION B - B**

<b>MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2021 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
<small>FHWA</small>	

**GENERAL NOTES**

- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE 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.

SEE SDD 14B42 FOR MORE INFORMATION.

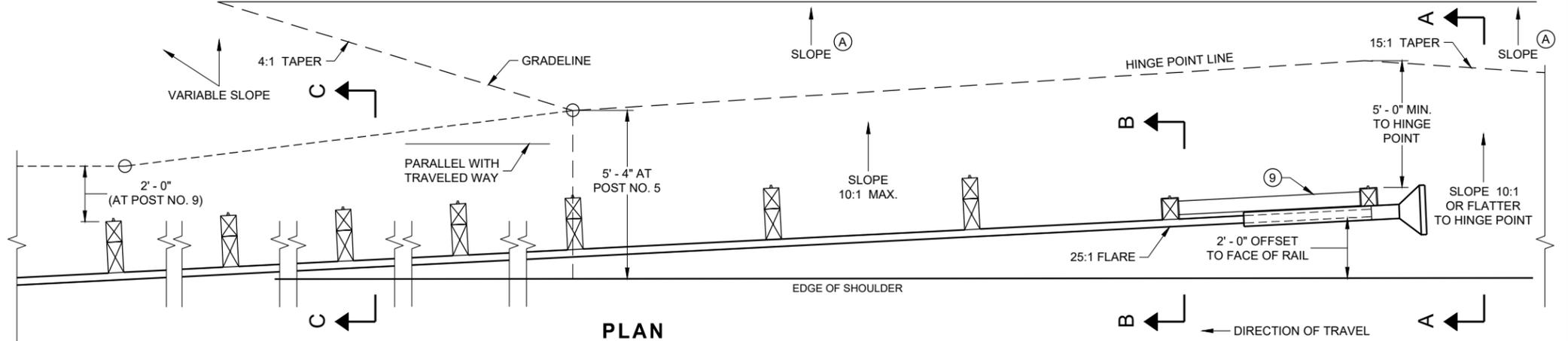
\* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

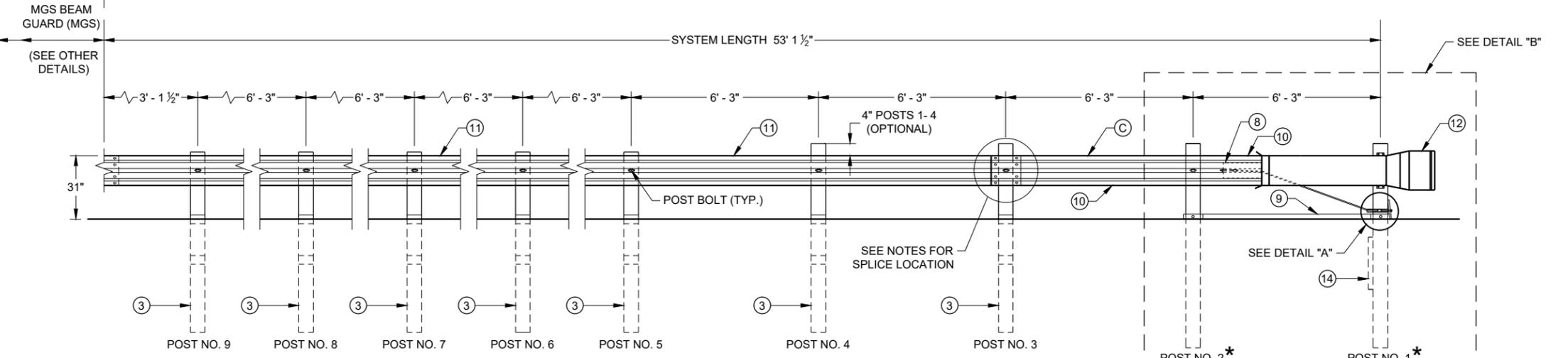
SEE MANUFACTURER'S DRAWING FOR SPLICE LOCATION, HARDWARE DIMENSIONS AND INSTALLATION INSTRUCTIONS.

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.

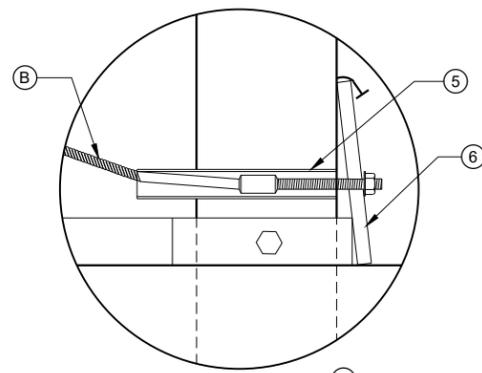
CLEAR ZONE LIMITS, EITHER AS SHOWN ELSEWHERE IN THE PLANS OR, IF NOT SHOWN ELSEWHERE IN THE PLANS, 15 FEET BEYOND THE HINGE POINT LINE



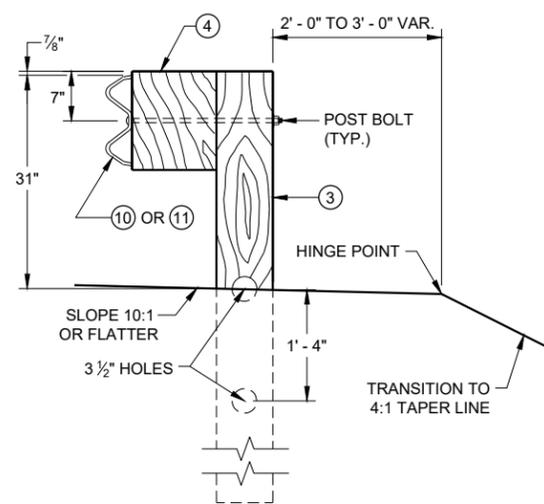
**PLAN**



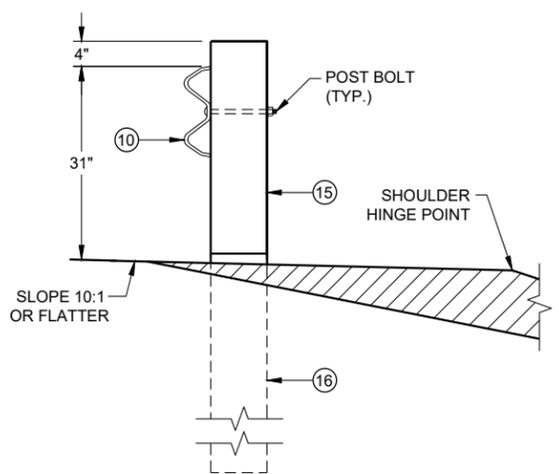
**ELEVATION**



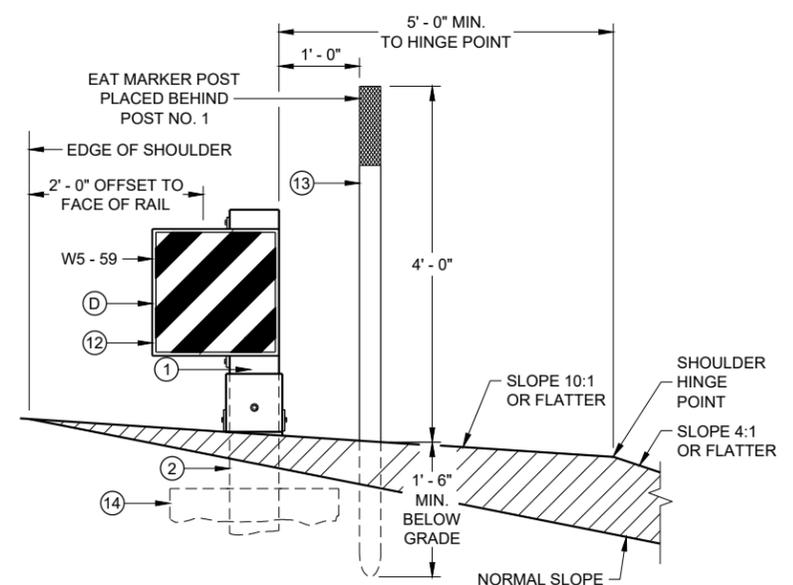
**DETAIL "A"**



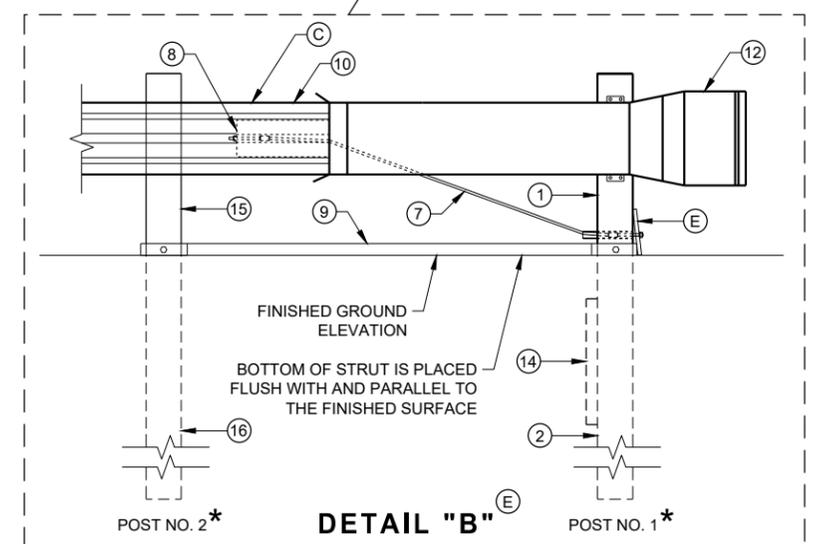
**SECTION C - C  
TYPICAL AT POST NOS. 3 - 9**



**SECTION B - B  
TYPICAL AT POST NO. 2\***



**SECTION A - A  
TYPICAL AT POST NO. 1\***



**DETAIL "B"**

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

6

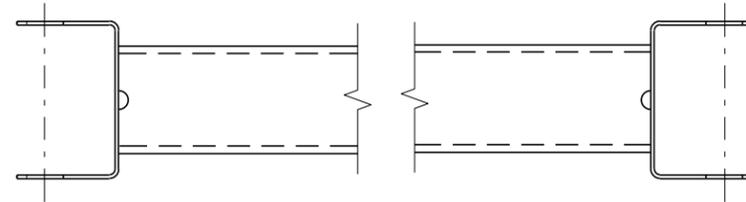
6

SDD 14B44 - 04a

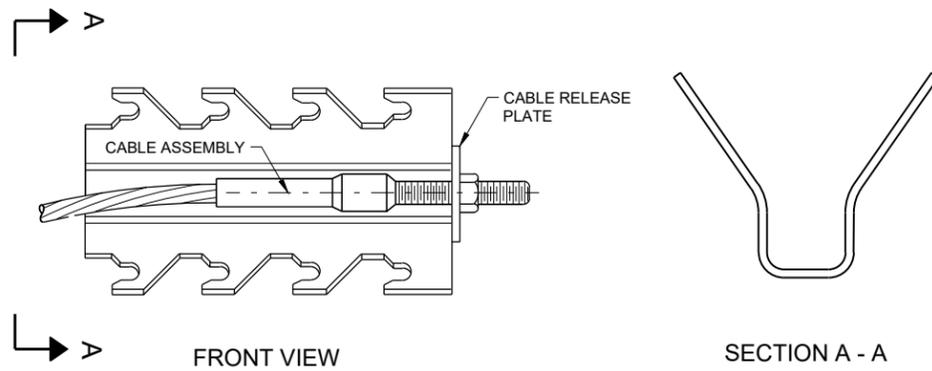
SDD 14B44 - 04a

**BILL OF MATERIALS**

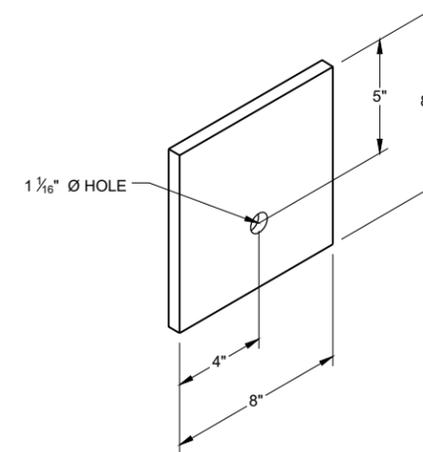
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED W-BEAM RAIL 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 GROUND STRUT** ⑨ ⑤



**GENERIC ANCHOR CABLE BOX** ⑨ ⑤



**BEARING PLATE** ⑥ ⑤

6

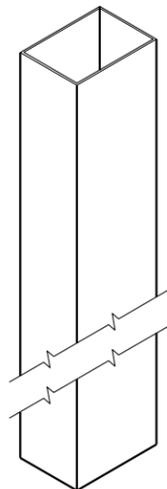
6

SDD 14B44 - 04b

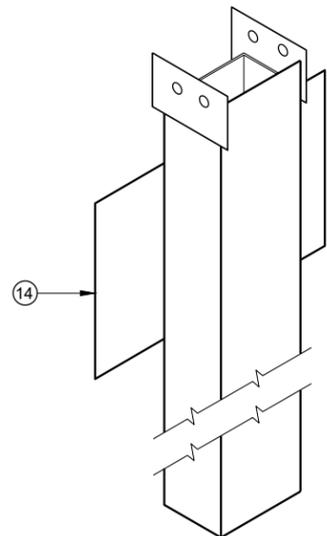
SDD 14B44 - 04b

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

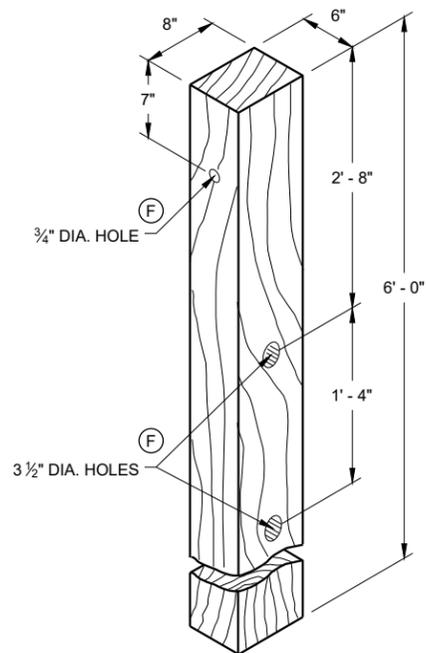
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



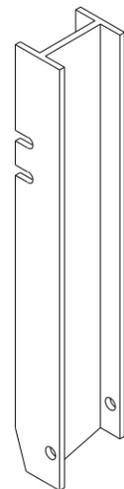
UPPER POST NO. 1 <sup>(1)</sup> (E)



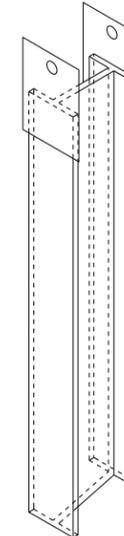
LOWER POST NO. 1 <sup>(2)</sup> (E)



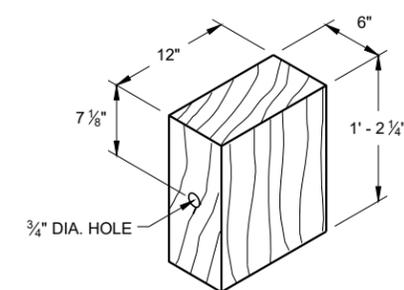
WOOD CRT POST <sup>(3)</sup> (E)  
POSTS NUMBER 3-9



UPPER POST NO. 2 <sup>(15)</sup> (E)

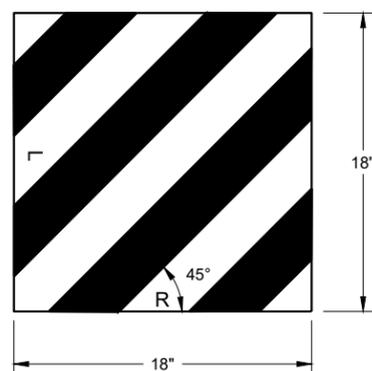


LOWER POST NO. 2 <sup>(16)</sup> (E)

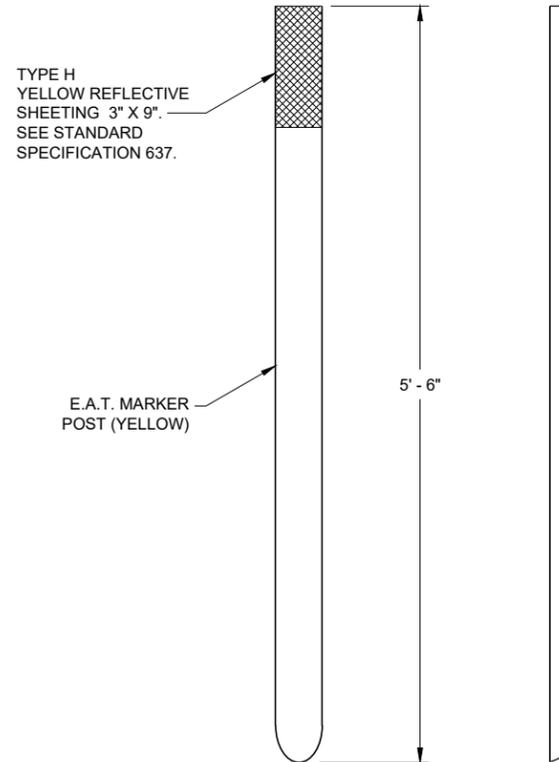


WOOD BLOCKOUT <sup>(4)</sup>  
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2

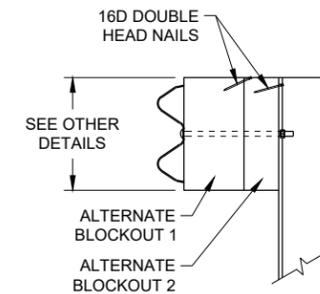
6



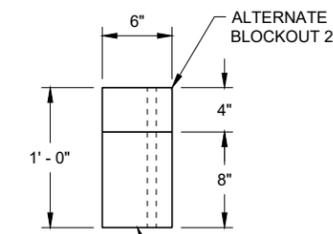
W5 - 59  
REFLECTIVE SHEETING DETAIL <sup>(E)</sup>



FRONT VIEW SIDE VIEW  
E.A.T. MARKER POST <sup>(13)</sup>



SIDE VIEW



TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL

6

SDD 14B44 - 04c

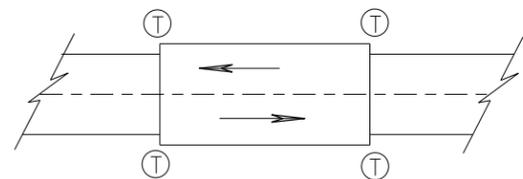
SDD 14B44 - 04c

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

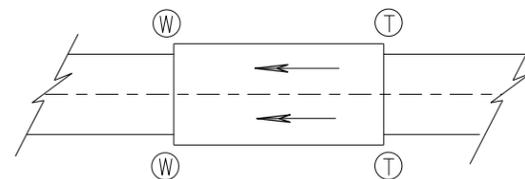
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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**

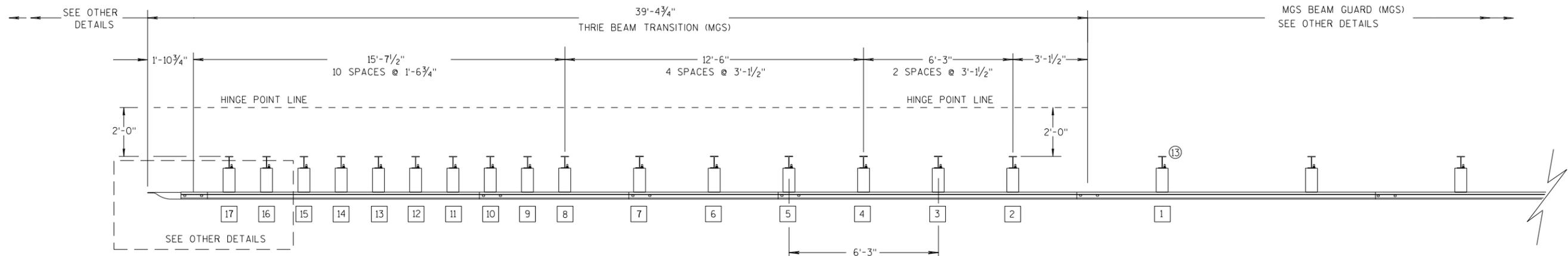
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

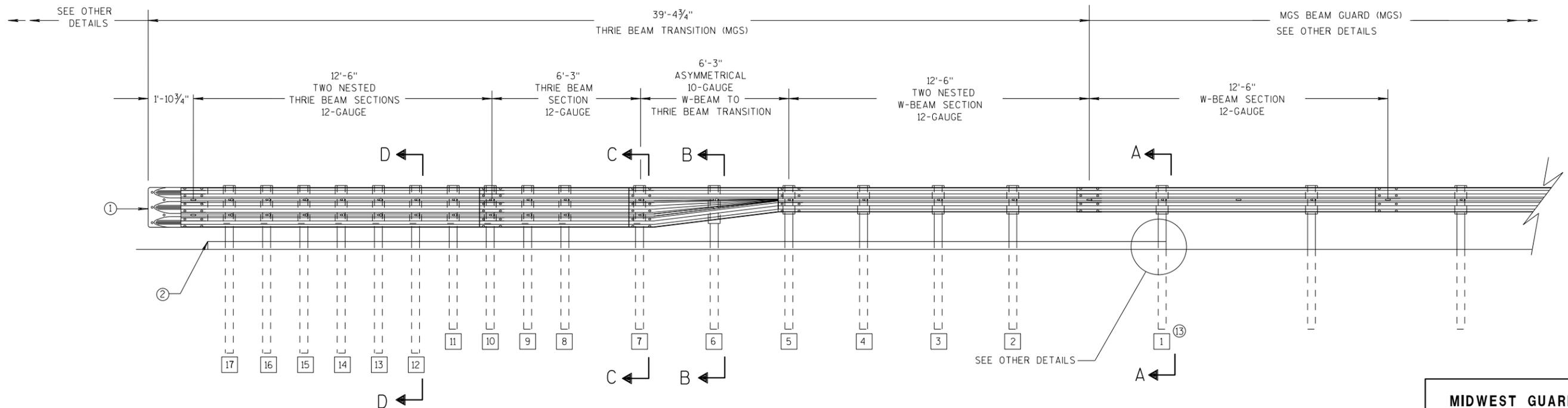
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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**

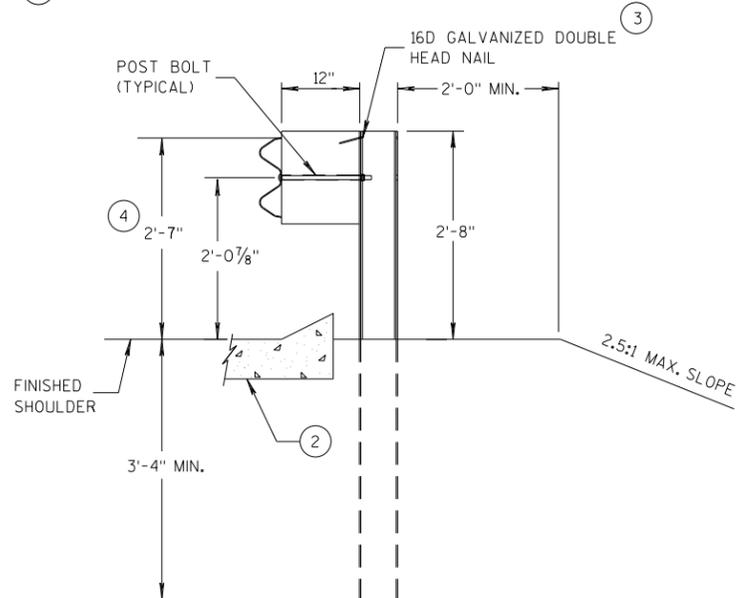
**MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION**

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

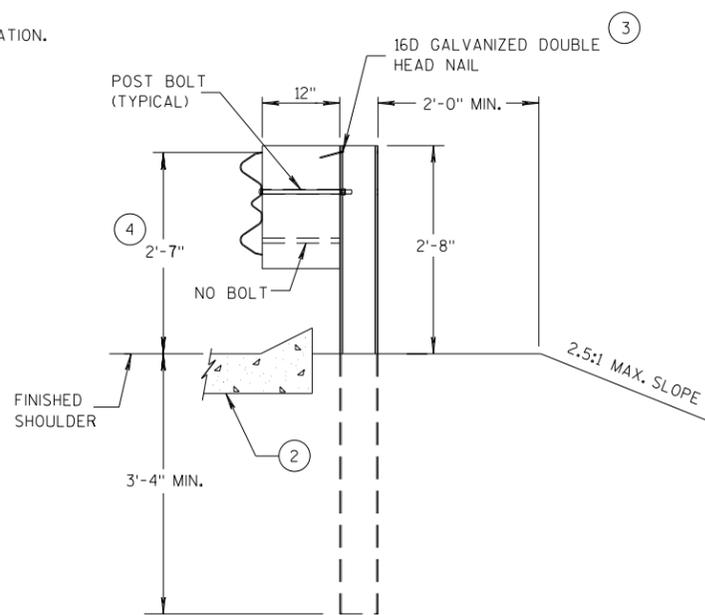
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

**GENERAL NOTES**

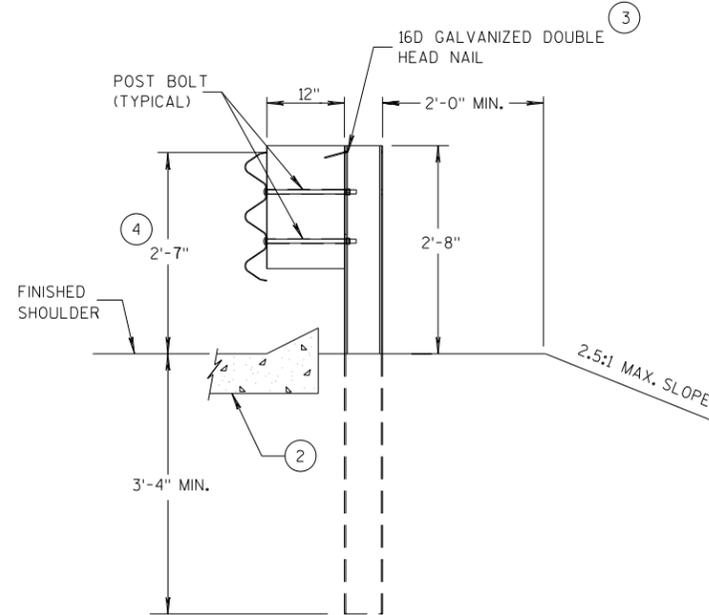
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".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



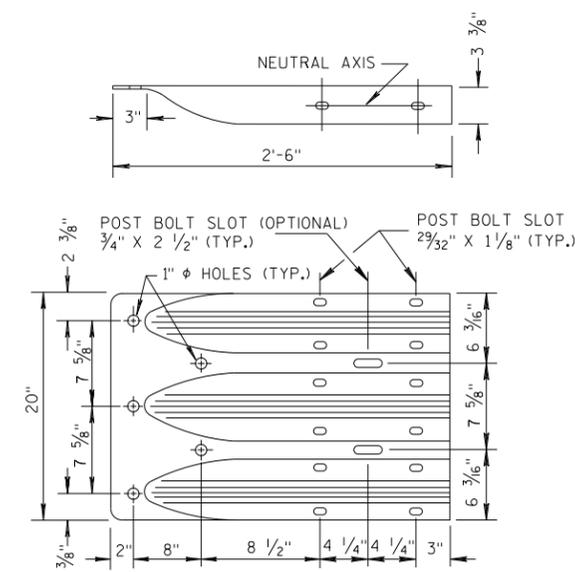
**SECTION A-A  
POSTS 1-5**



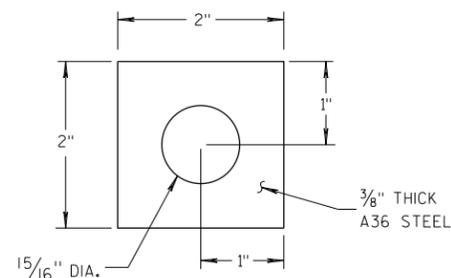
**SECTION B-B  
POST 6**



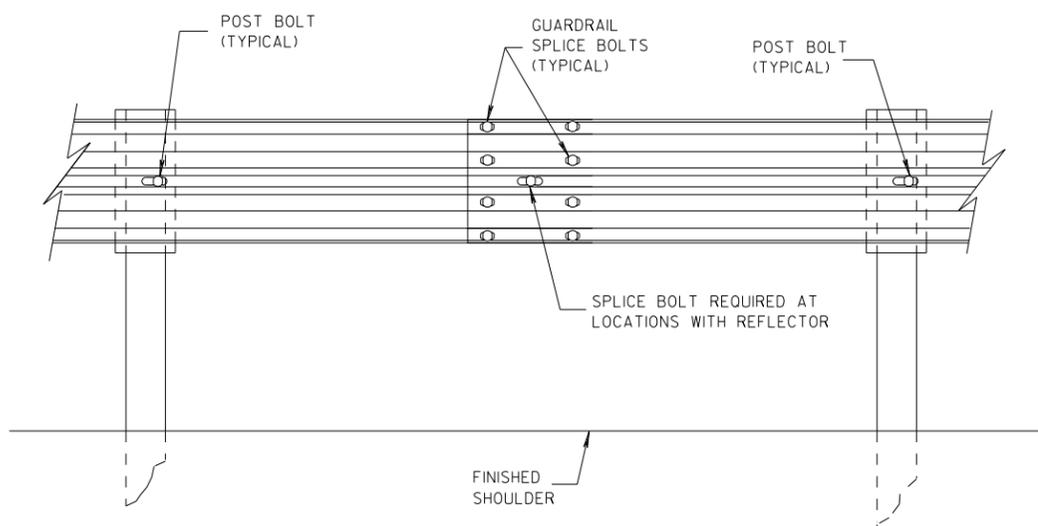
**SECTION C-C  
POSTS 7-11**



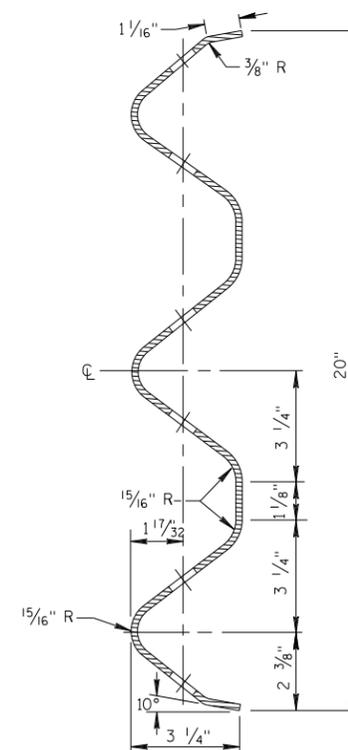
**THRIE BEAM  
TERMINAL CONNECTOR**



**PLATE WASHER DETAIL**



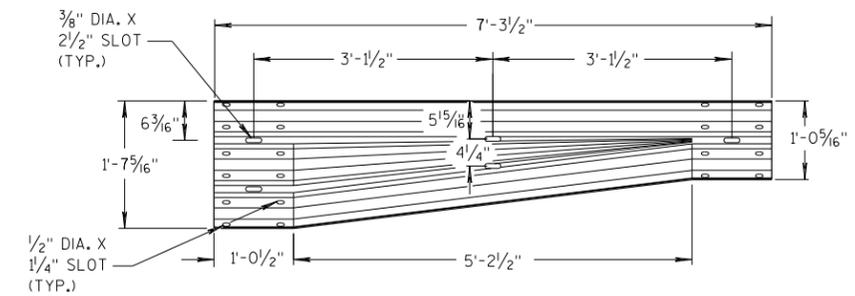
**SPLICE DETAIL**



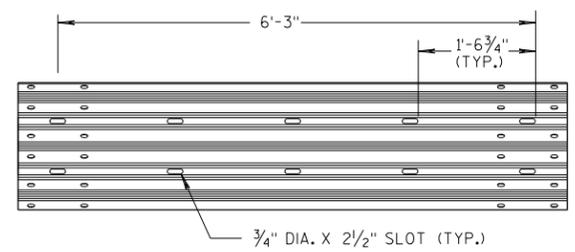
**SECTION THRU THRIE  
BEAM RAIL ELEMENT**

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

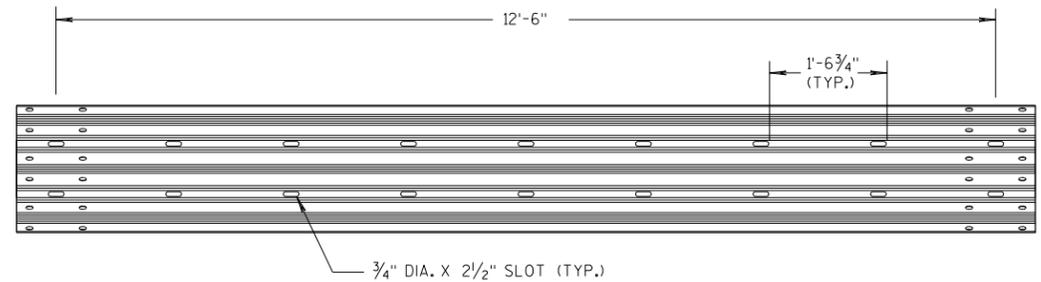
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



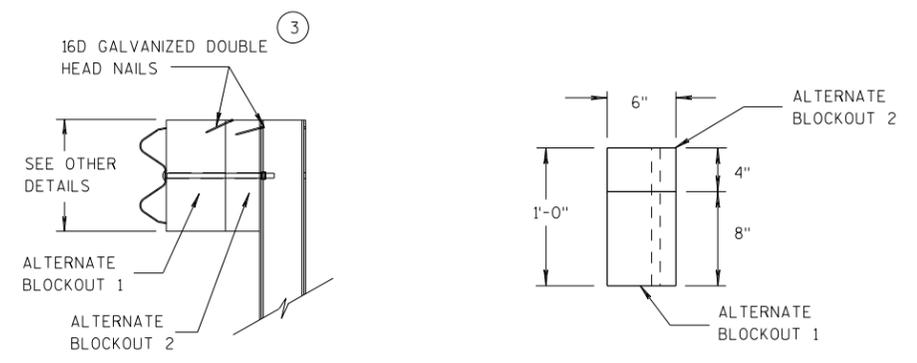
**W-BEAM TO THRIE BEAM TRANSITION SECTION**



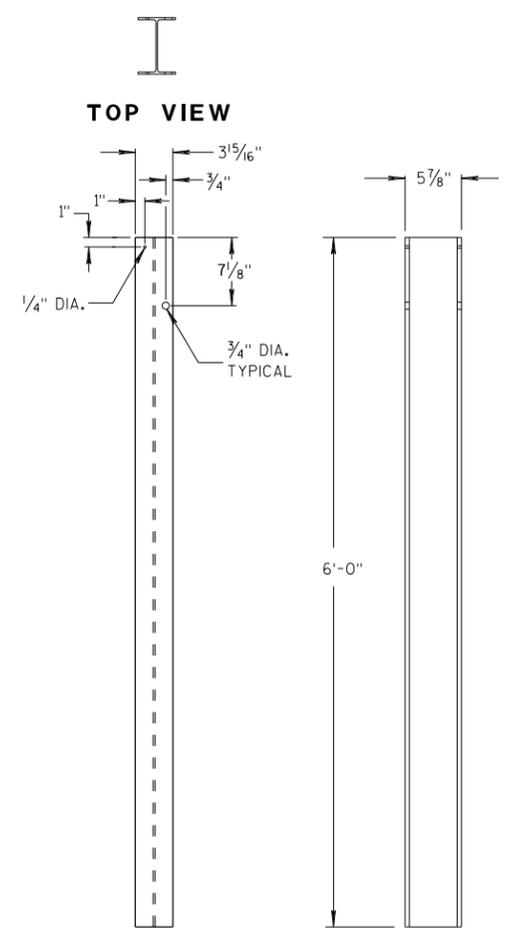
**6'-3\"/>**



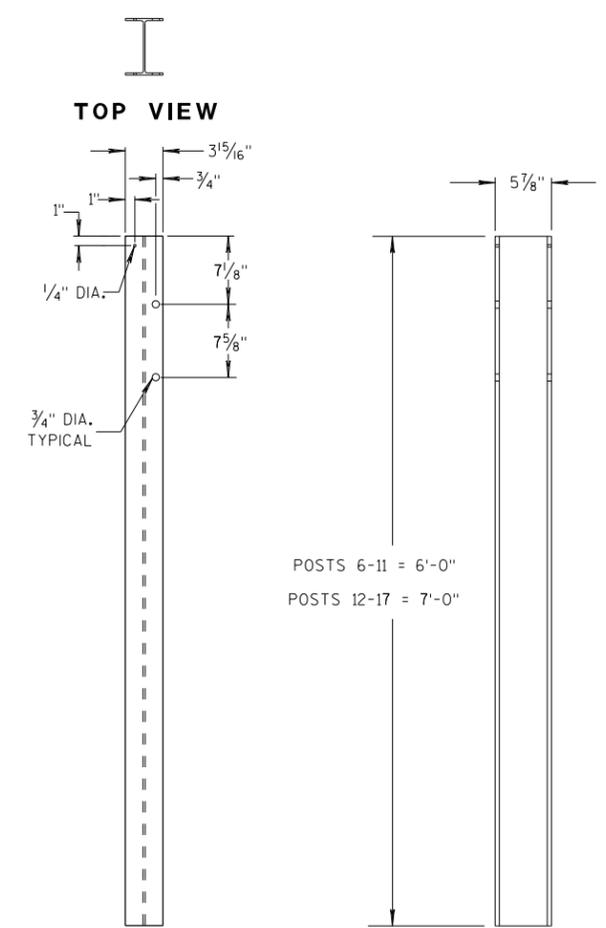
**12'-6\"/>**



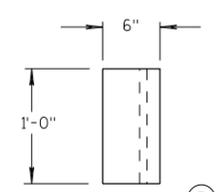
**ALTERNATE WOOD BLOCKOUT DETAIL**



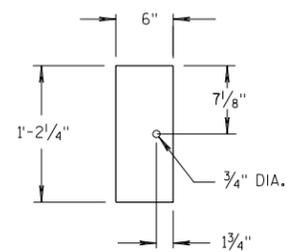
**STEEL POSTS 1-5**



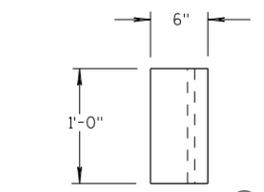
**STEEL POSTS 6-17**



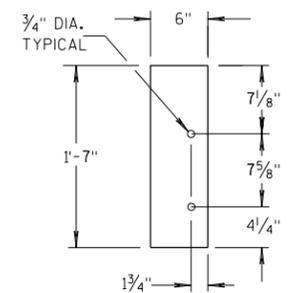
**TOP VIEW**



**FRONT VIEW  
BLOCKOUT  
POSTS 1-5**



**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)**

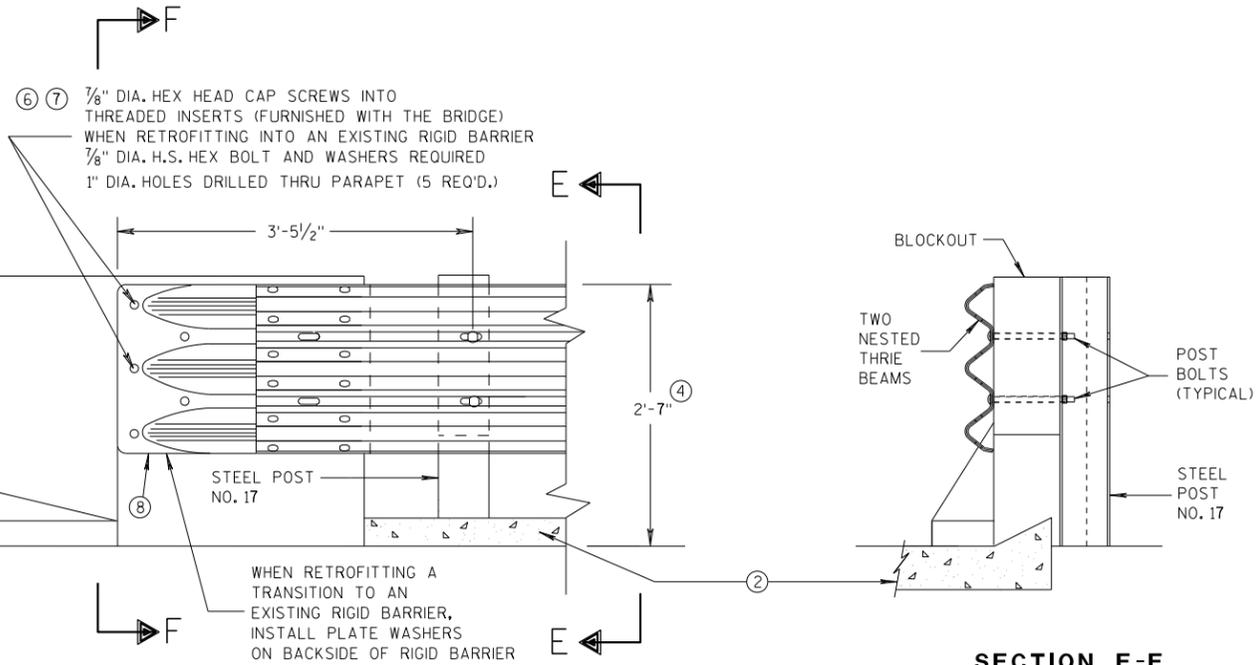
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

6

6

S.D.D. 14 B 45-5c

S.D.D. 14 B 45-5c



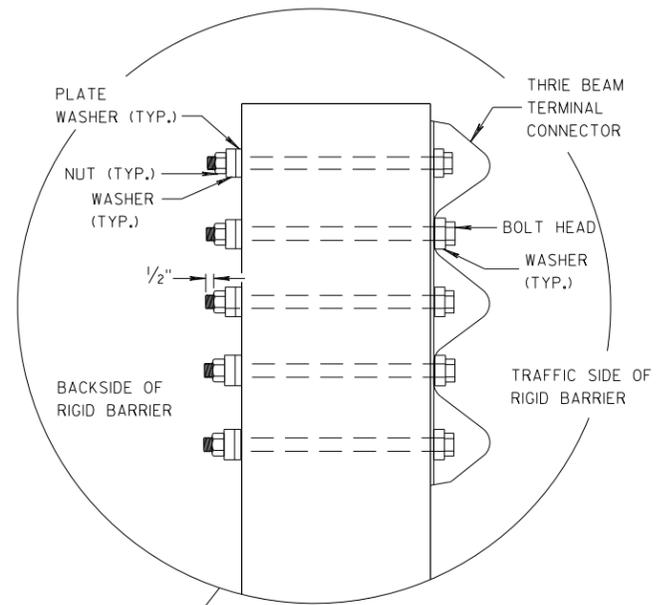
FRONT VIEW

**THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS**

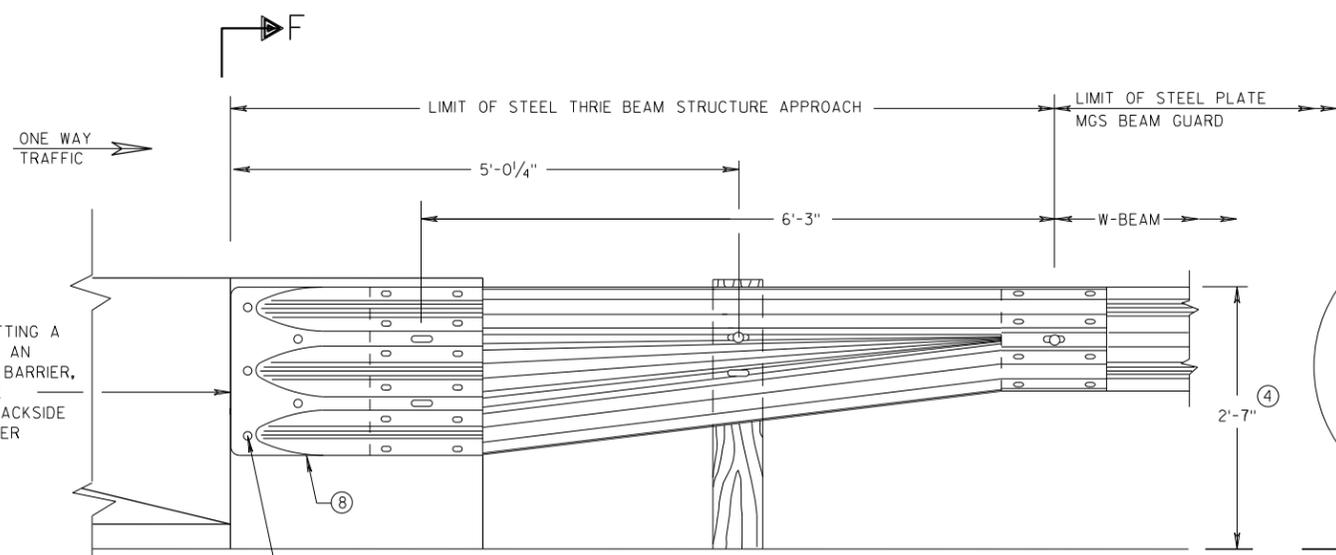
SECTION E-E

**GENERAL NOTES**

- THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSITION 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".

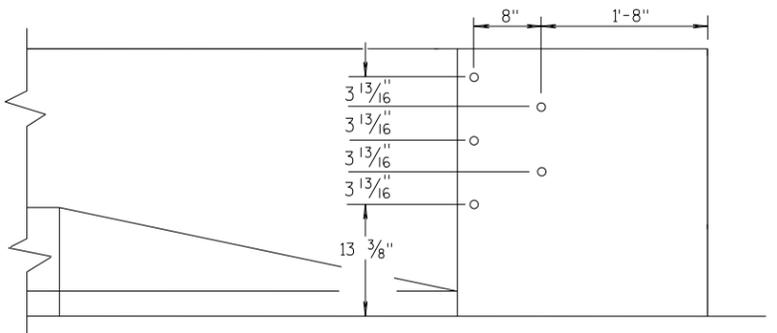


SECTION F-F



FRONT VIEW

**W BEAM TRANSITION AND CONNECTION TO BRIDGE PARAPETS WITH SQUARE ENDS  
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)**



DRILL HOLE LOCATION

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

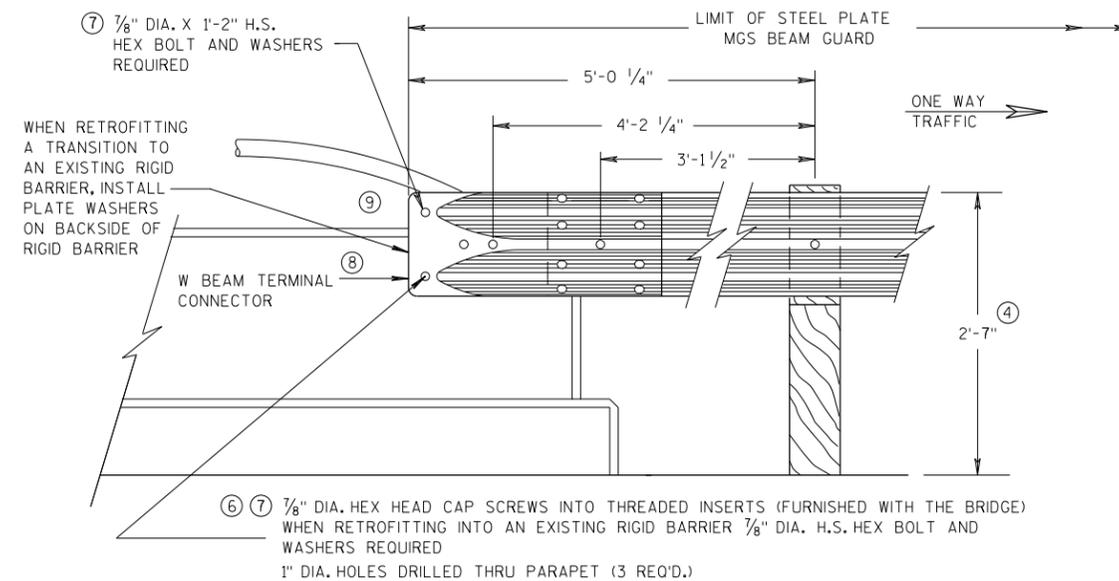
APPROVED  
DATE 07/2018  
FHWA

/S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT  
UNIT SUPERVISOR

## GENERAL NOTES

THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSITION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

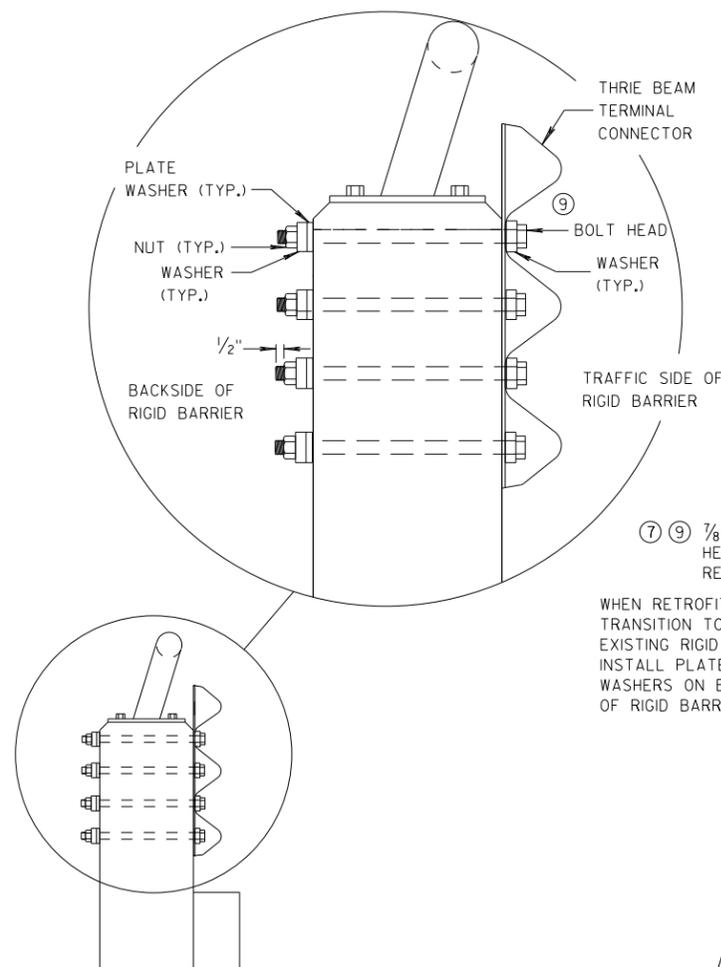
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS  $\pm 1"$ .
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
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- 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".
- ⑨ BOLT, NUT AND WASHERS NOT REQUIRED FOR THIS LOCATION WHEN RETROFITTING AN EXISTING PAPAPET AND THE HOLE IS EITHER ABOVE PARAPET OR WITHIN 4 INCHES OF THE EDGE OF PARAPET.



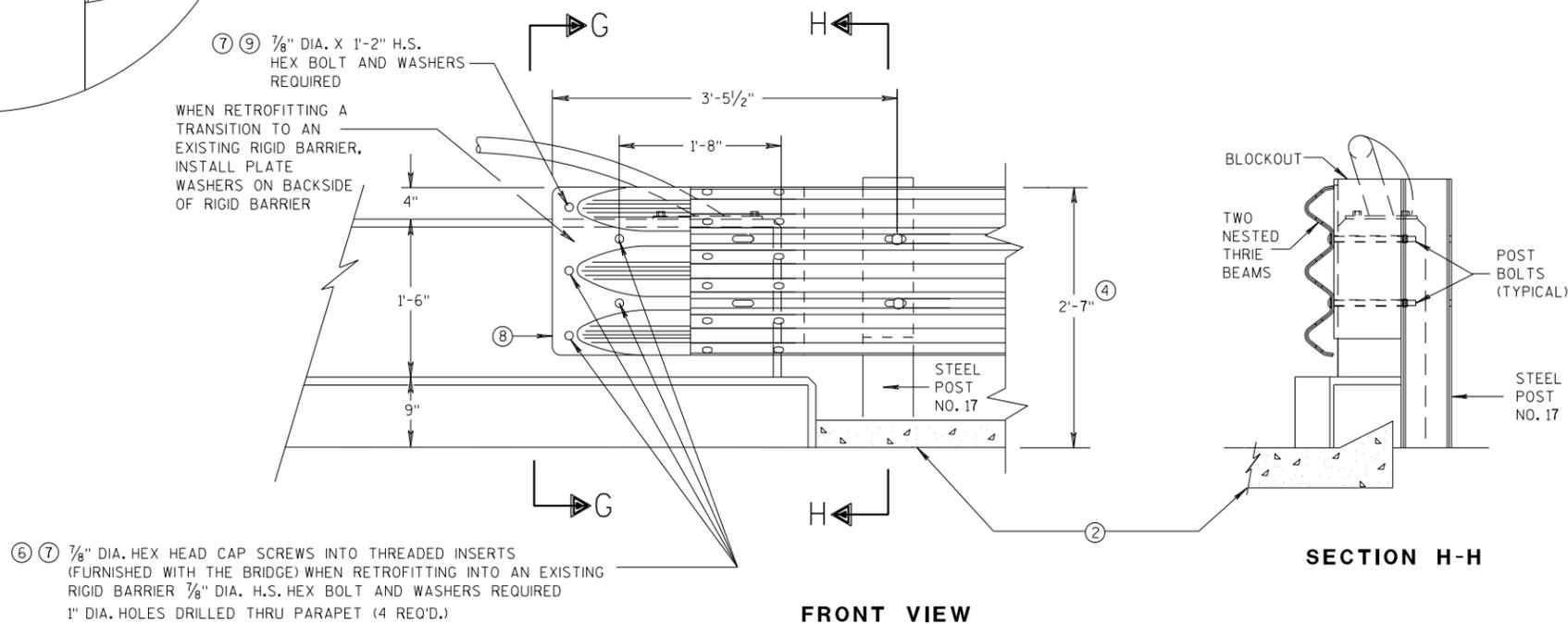
FRONT VIEW

### W BEAM CONNECTION TO VERTICAL FACE PARAPET

(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)



SECTION G-G



FRONT VIEW

### THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS

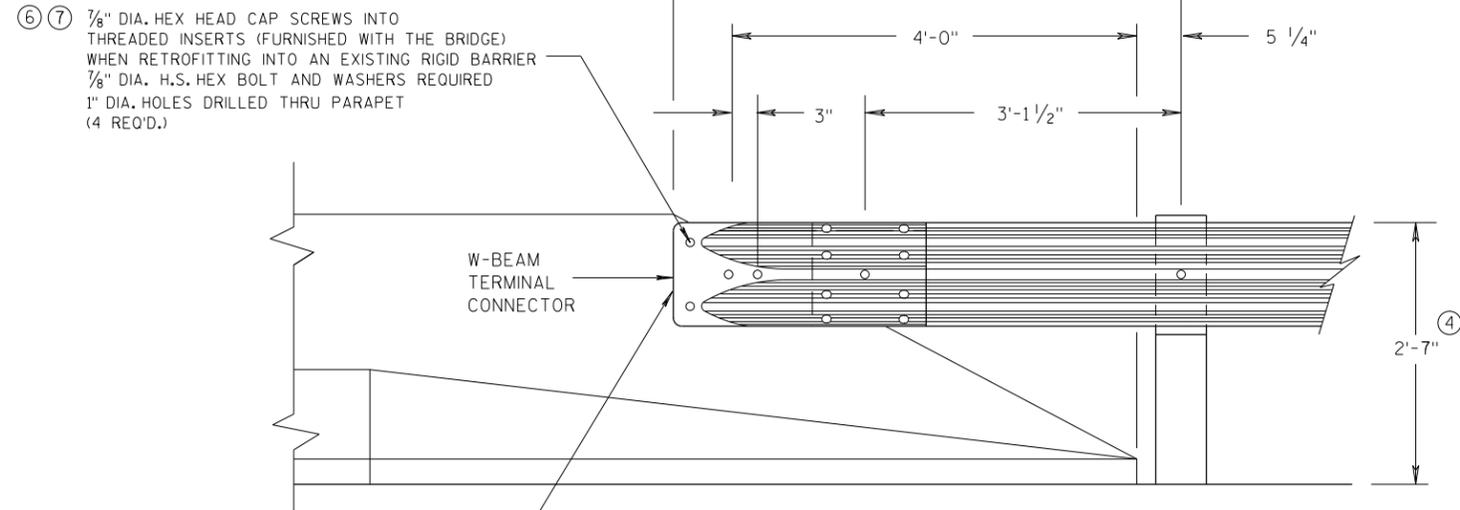
SECTION H-H

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
07/2018 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS DEVELOPMENT  
FHWA UNIT SUPERVISOR

ONE WAY  
TRAFFIC



WHEN RETROFITTING A TRANSITION TO AN EXISTING RIGID BARRIER, INSTALL PLATE WASHERS ON BACKSIDE OF RIGID BARRIER.

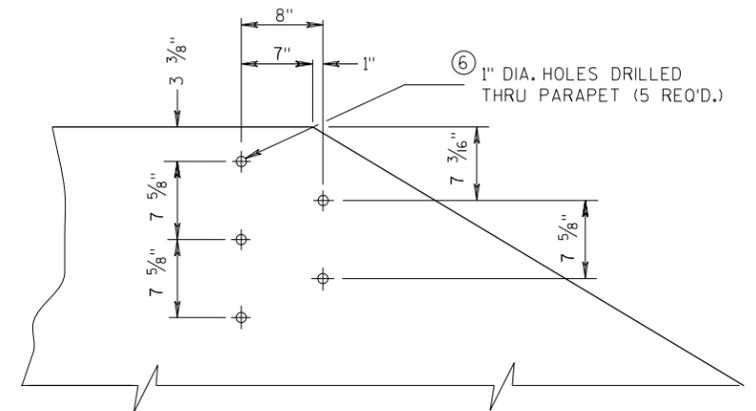
FRONT VIEW

**W BEAM CONNECTION TO PARAPETS WITH SLOPED ENDS**

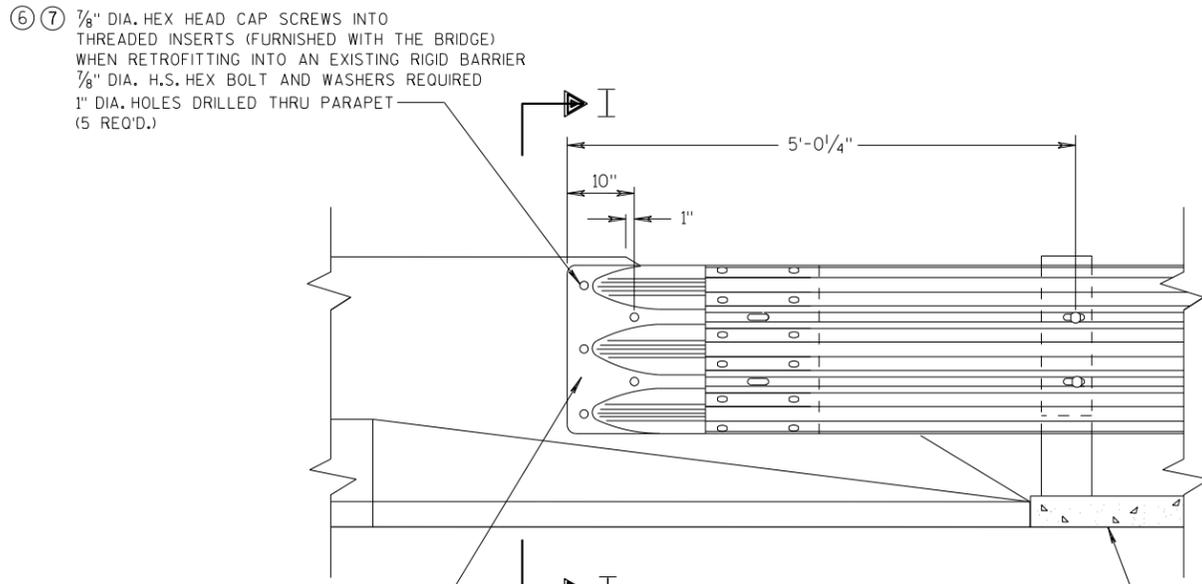
(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

**GENERAL NOTES**

- 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.



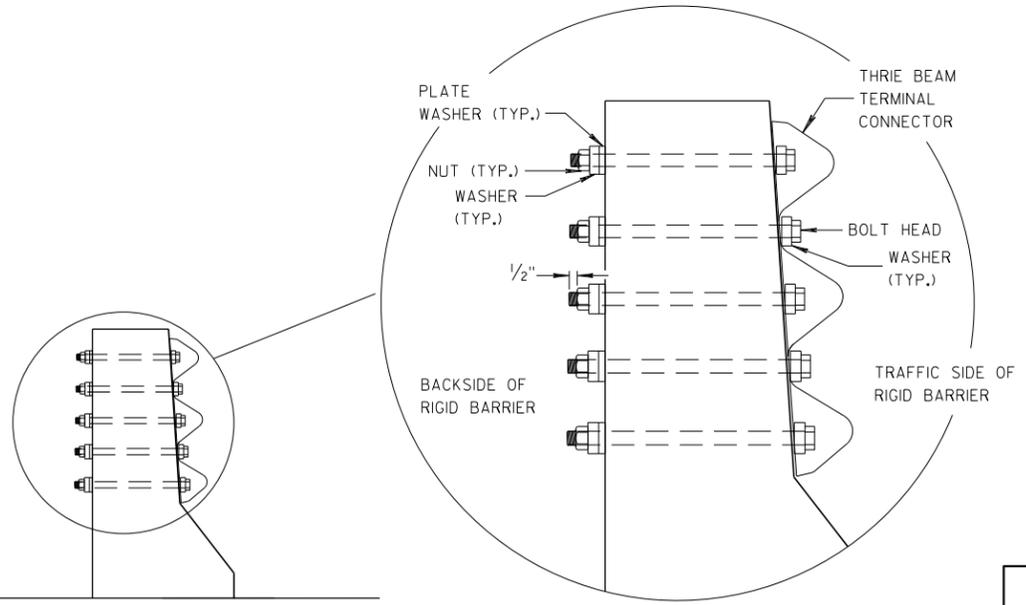
DRILL HOLE LOCATION AND PATTERN FOR THRIE BEAM CONNECTION



WHEN RETROFITTING A TRANSITION TO AN EXISTING RIGID BARRIER, INSTALL PLATE WASHERS ON BACKSIDE OF RIGID BARRIER.

FRONT VIEW

**THRIE BEAM CONNECTION TO BRIDGE PARAPETS WITH SLOPED ENDS**

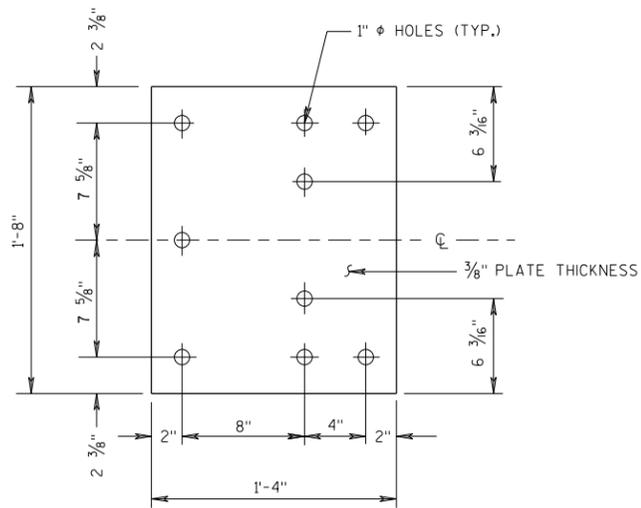


SECTION I-I

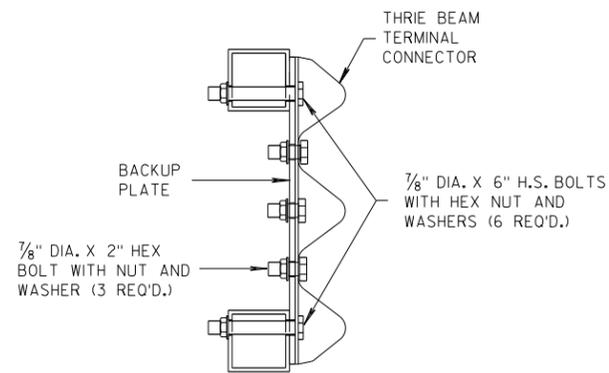
**MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

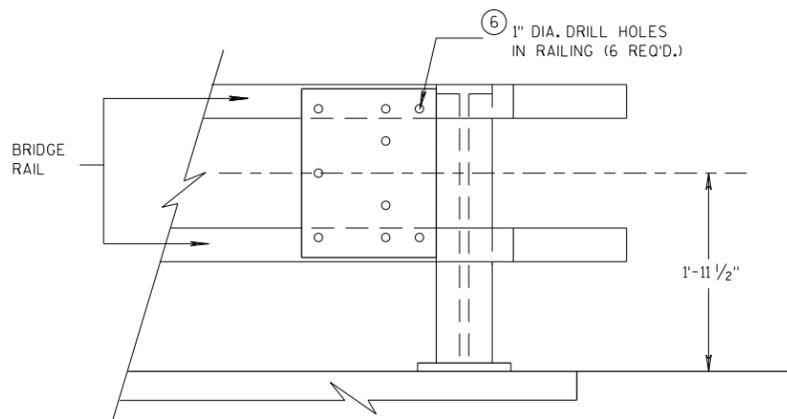
APPROVED  
DATE 07/2018 /S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT  
UNIT SUPERVISOR  
FHWA



**BACK-UP PLATE DETAIL**



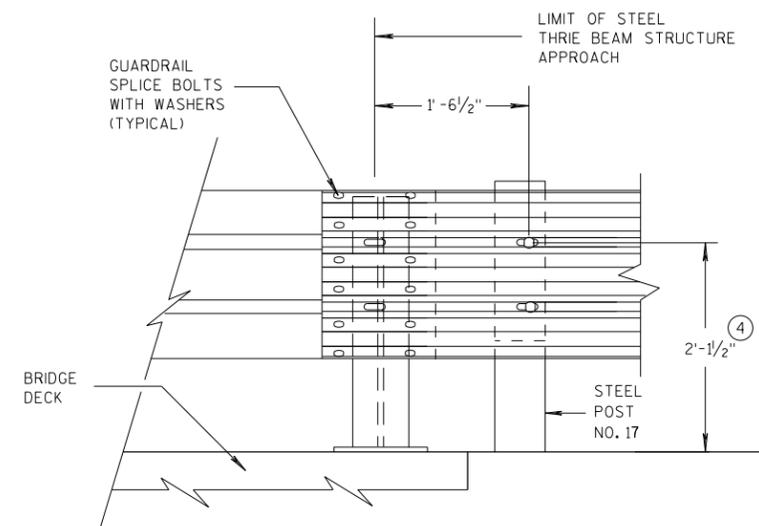
**SECTION J-J**



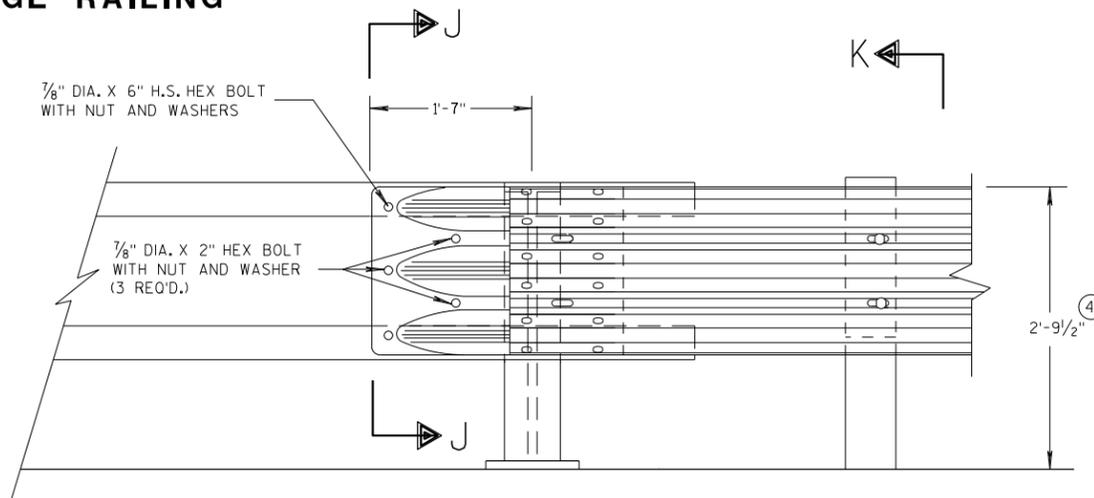
**BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING**

**GENERAL NOTES**

- ④ TOLERANCE FOR TOP OF BEAM IS  $\pm 1'$ .
- ⑥ DRILLING HOLES THROUGH THE PAPER, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

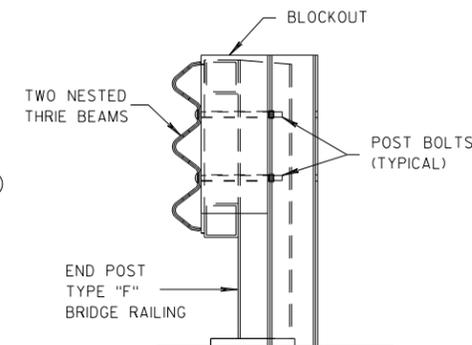


**FRONT VIEW  
THRIE BEAM CONNECTION TO  
STEEL RAILING TYPE "W"**



**FRONT VIEW**

**THRIE BEAM CONNECTION TO  
TUBULAR RAILING TYPE "F"**



**SECTION K-K**

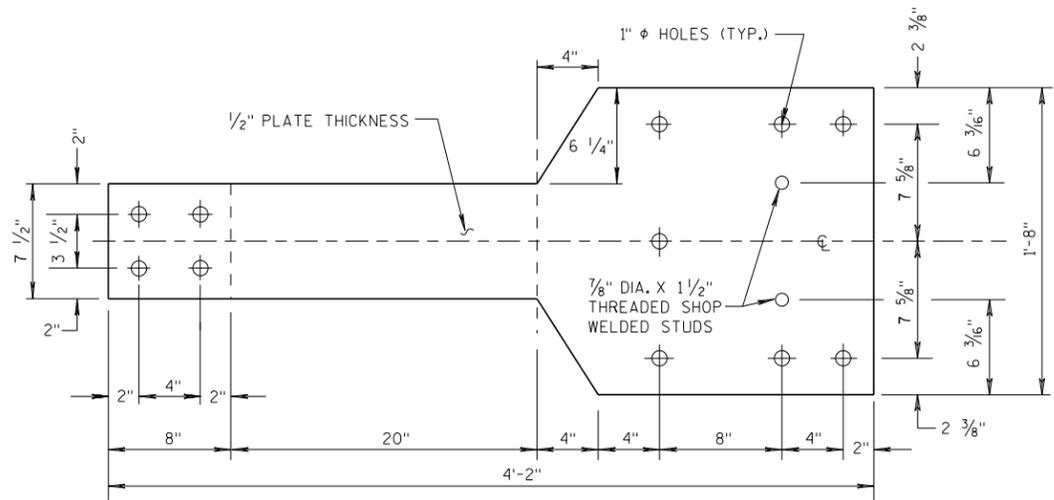
**MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

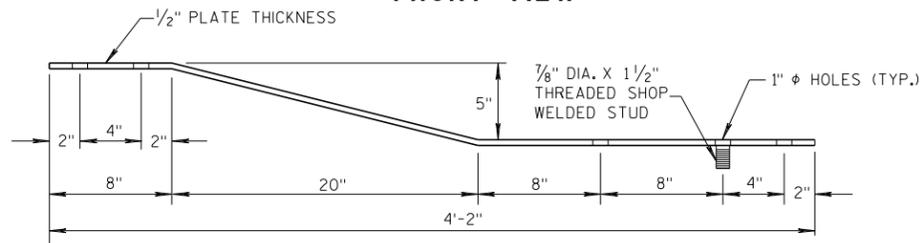
APPROVED  
07/2018 DATE /S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT  
UNIT SUPERVISOR  
FHWA

**GENERAL NOTES**

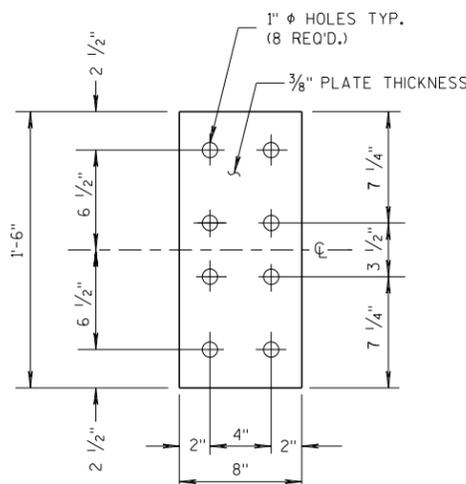
(4) TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



**FRONT VIEW**

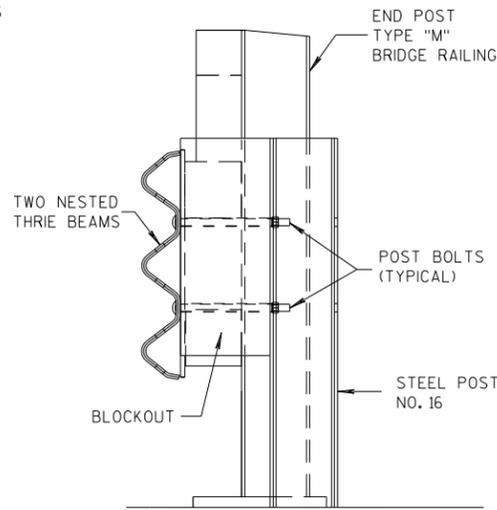


**PLAN VIEW  
BACK-UP PLATE DETAIL, TYPE "M"**

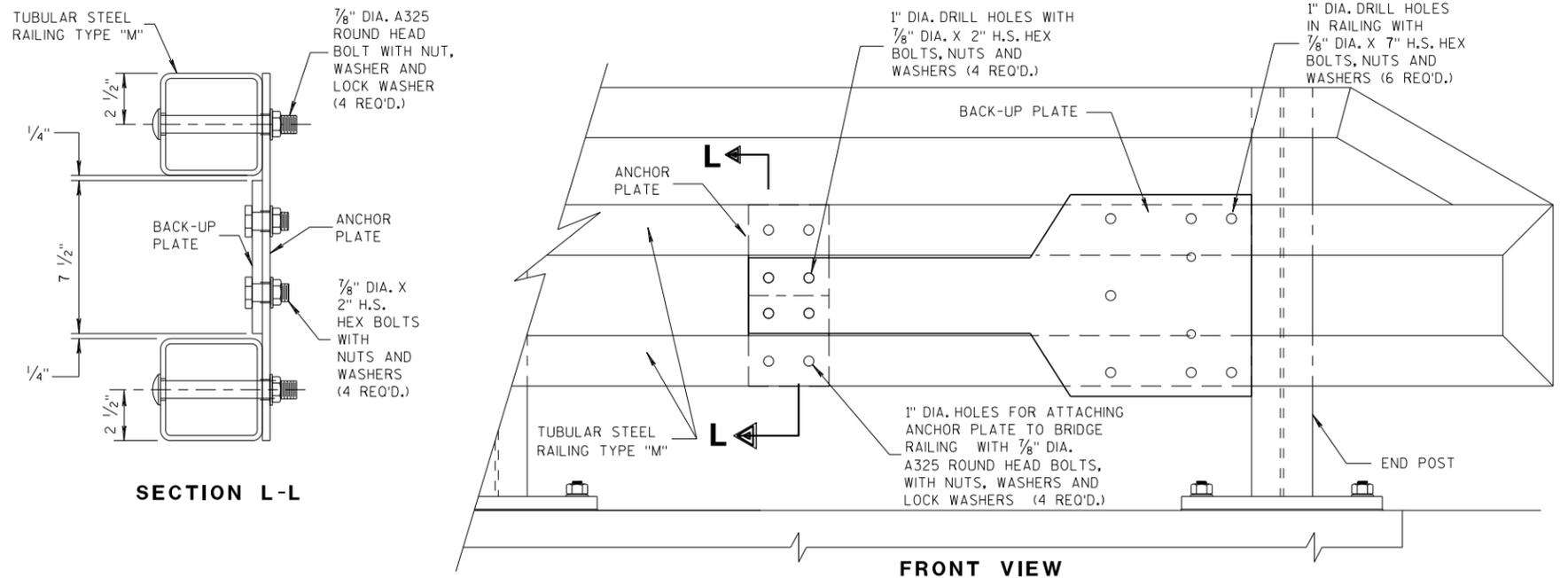


**FRONT VIEW**

**ANCHOR  
PLATE DETAIL,  
TYPE "M"**



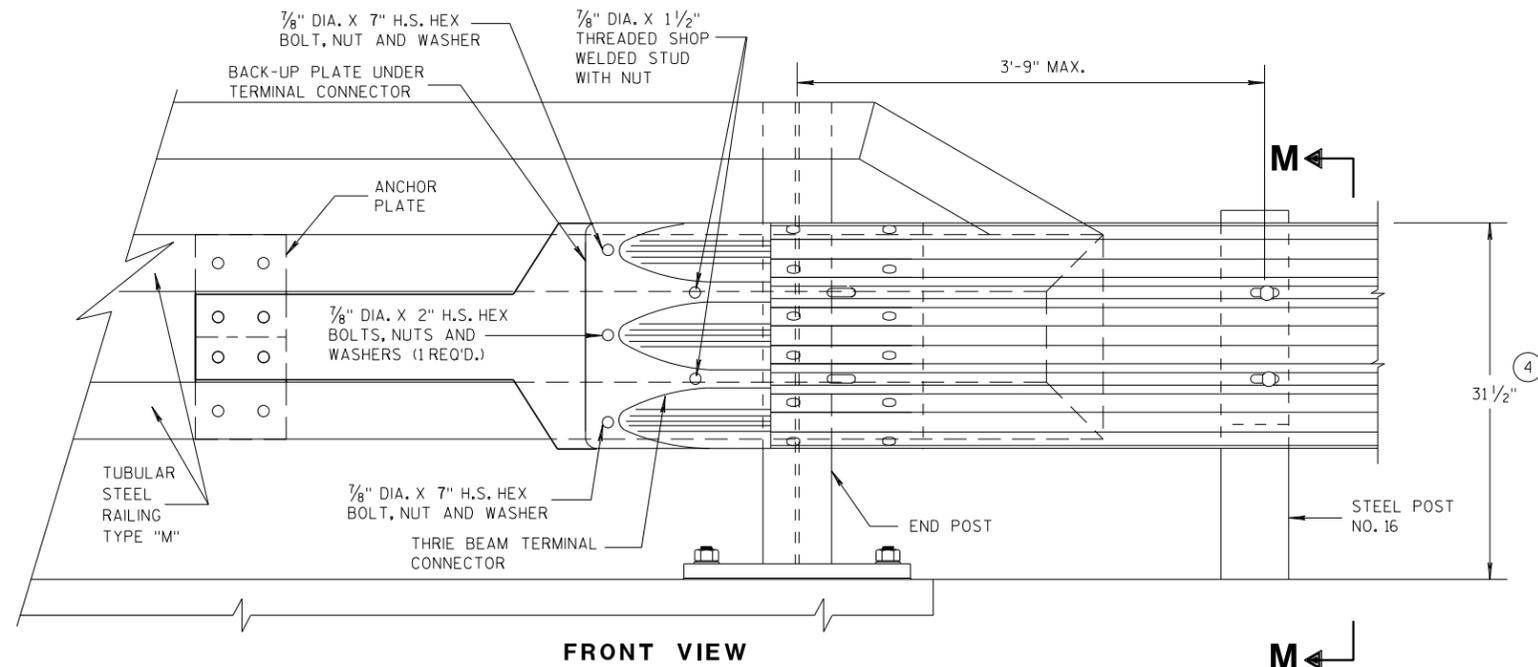
**SECTION M-M**



**SECTION L-L**

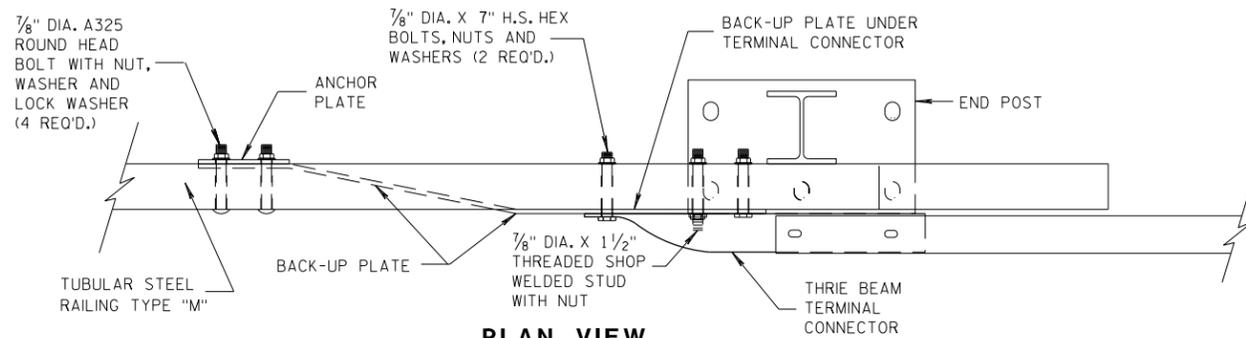
**FRONT VIEW**

**ANCHOR AND BACK-UP PLATE MOUNTING TO BRIDGE RAILING, TYPE "M"**



**FRONT VIEW**

**M**



**PLAN VIEW**

**THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"**

6

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S.D.D. 14 B 45-5h

S.D.D. 14 B 45-5h

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

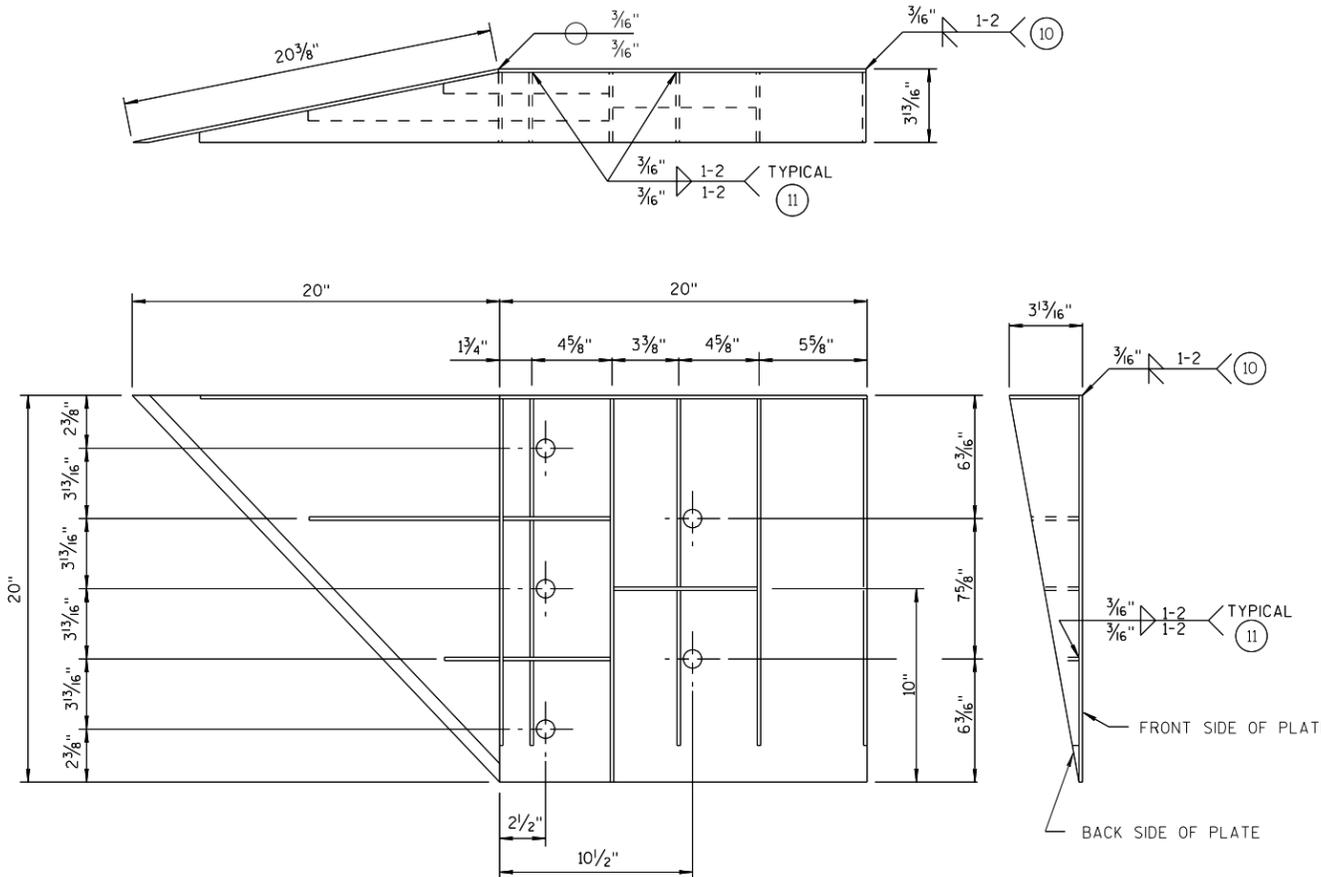
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
DATE 07/2018 /S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT  
UNIT SUPERVISOR  
FHWA

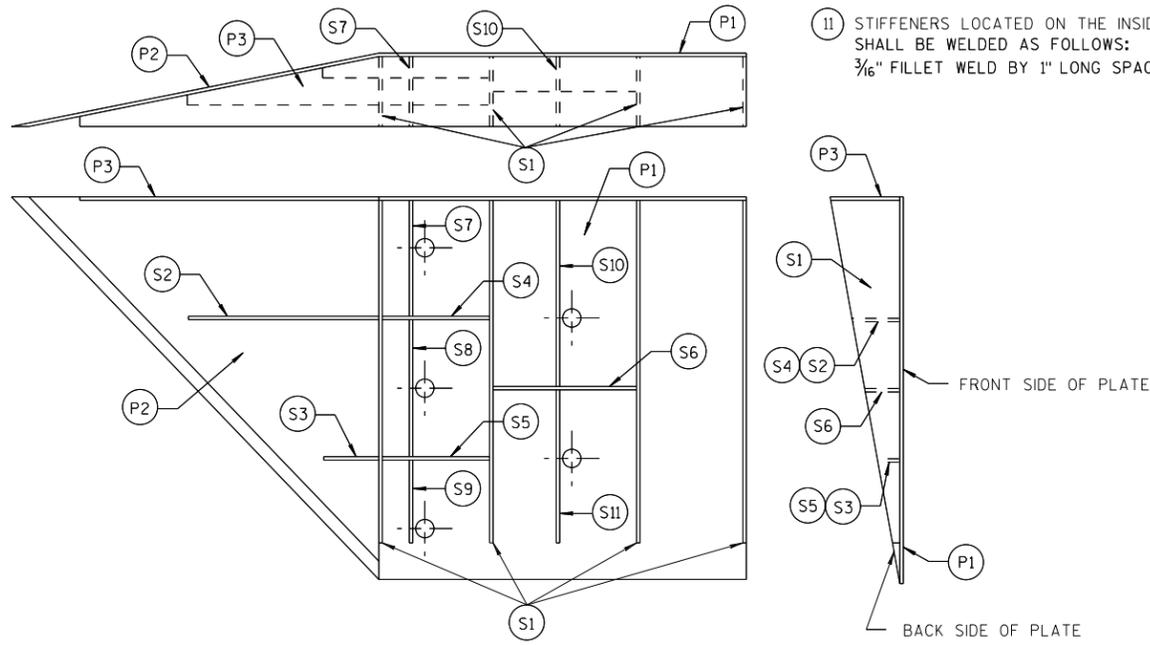
**GENERAL NOTES**

- COVER PLATE PANELS ARE 3/16" THICK.
- ALL STIFFENERS ARE 1/4" THICK.
- CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.
- FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.
- ALL HOLE DIAMETERS SHALL BE 1".
- FOR OPPOSITE SIDE INSTALLATION MIRROR DRAWINGS.

- (10) STIFFENERS LOCATED AT THE OUTSIDE EDGES OF THE COVER PLATES SHALL BE WELDED AS FOLLOWS:  
SINGLE BEVEL GROOVE WELD ON EXTERNAL SIDES AND 3/16" FILLET WELD BY 1" LONG SPACED AT 2" ON INTERNAL SIDES.
- (11) STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:  
3/16" FILLET WELD BY 1" LONG SPACED AT 2".



**WELDING INSTRUCTION**  
(VIEWED FROM BACK SIDE OF PLATE)



**PLATE AND STIFFENER IDENTIFICATION**  
(VIEWED FROM BACK SIDE OF PLATE)

CONNECTOR PLATE DIMENSION (PER ASSEMBLY)				
PLATE	QUANTITY	SHAPE	SIZE (A x B x C x D)	THICKNESS
P1	1		20" x 20"	3/16"
P2	1		20" x 20" x 28 3/16"	3/16"
P3	1		39" x 3 5/8" x 20" x 19 5/16"	3/16"
S1	4		18 7/16" x 3 5/8" x 18 3/4"	1/4"
S2	1		10 1/4" x 2 1/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 3/8" x 1/2"	1/4"
S4	1		6 1/8" x 2 7/16"	1/4"
S5	1		6 1/8" x 1 1/16"	1/4"
S6	1		7 3/4" x 1 3/4"	1/4"
S7	1		2 3/16" x 6" x 3 5/8" x 5 7/8"	1/4"
S8	1		1 5/32" x 7 1/2" x 2 1/2" x 7 3/8"	1/4"
S9	1		6 1/16" x 6 3/16" x 1 3/32"	1/4"
S10	1		1 7/8" x 9 7/8" x 3 3/8" x 9 11/16"	1/4"
S11	1		8 1/2" x 8 3/4" x 1 3/16"	1/4"

**SINGLE SLOPE CONNECTION PLATE**

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

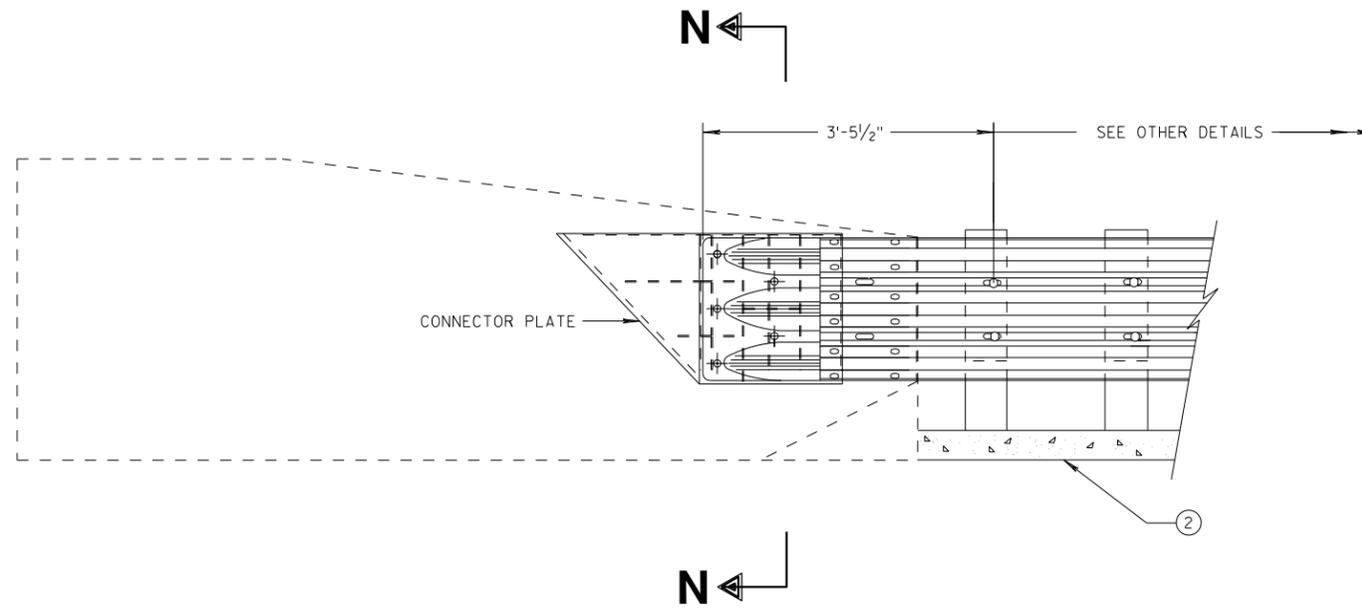
APPROVED: \_\_\_\_\_ /S/ Rodney Taylor  
DATE: 7/2018 ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR  
FHWA

**GENERAL NOTES**

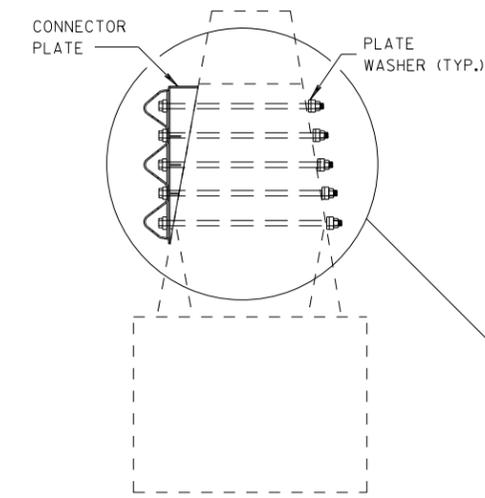
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

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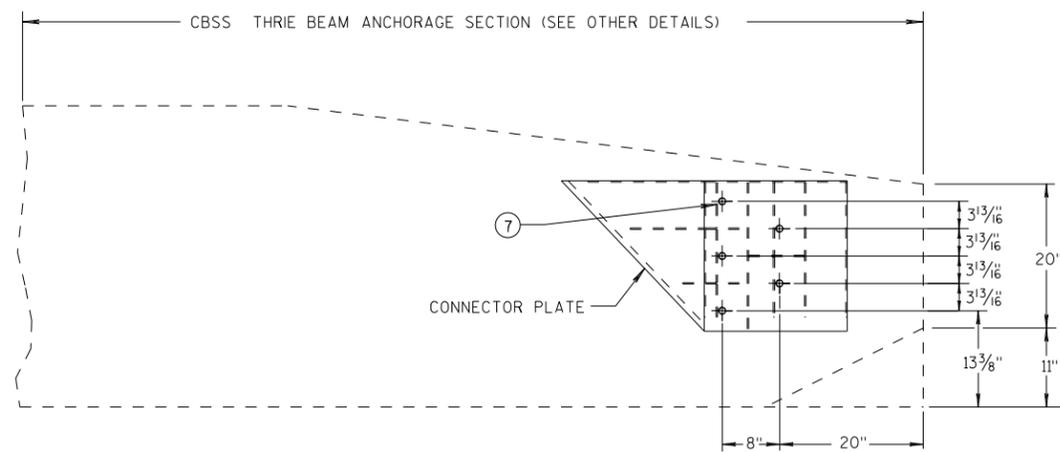
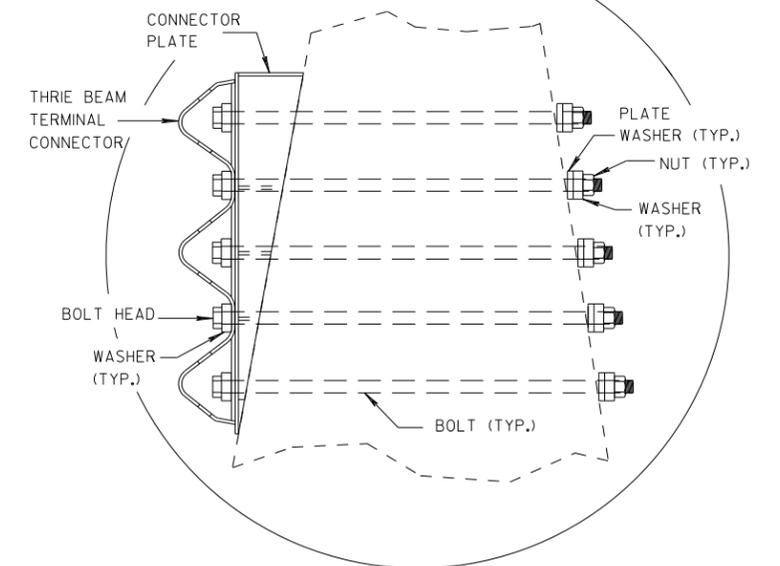
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**THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER**



**SECTION N-N**

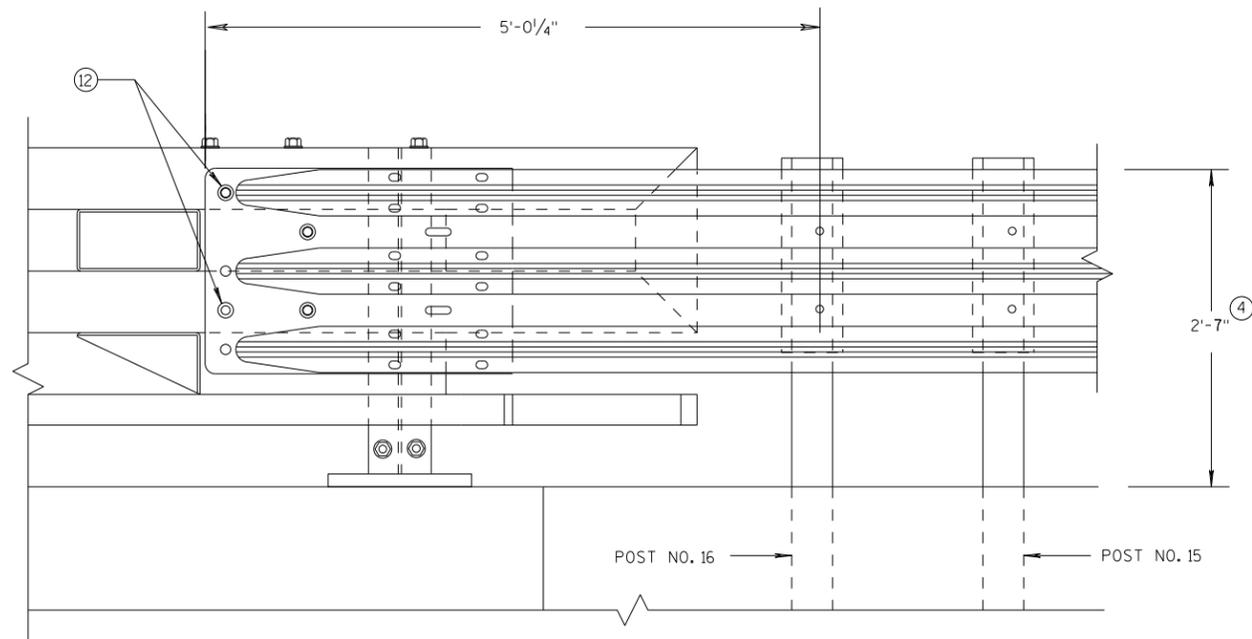


**SINGLE SLOPE CONNECTION PLATE PLACEMENT**

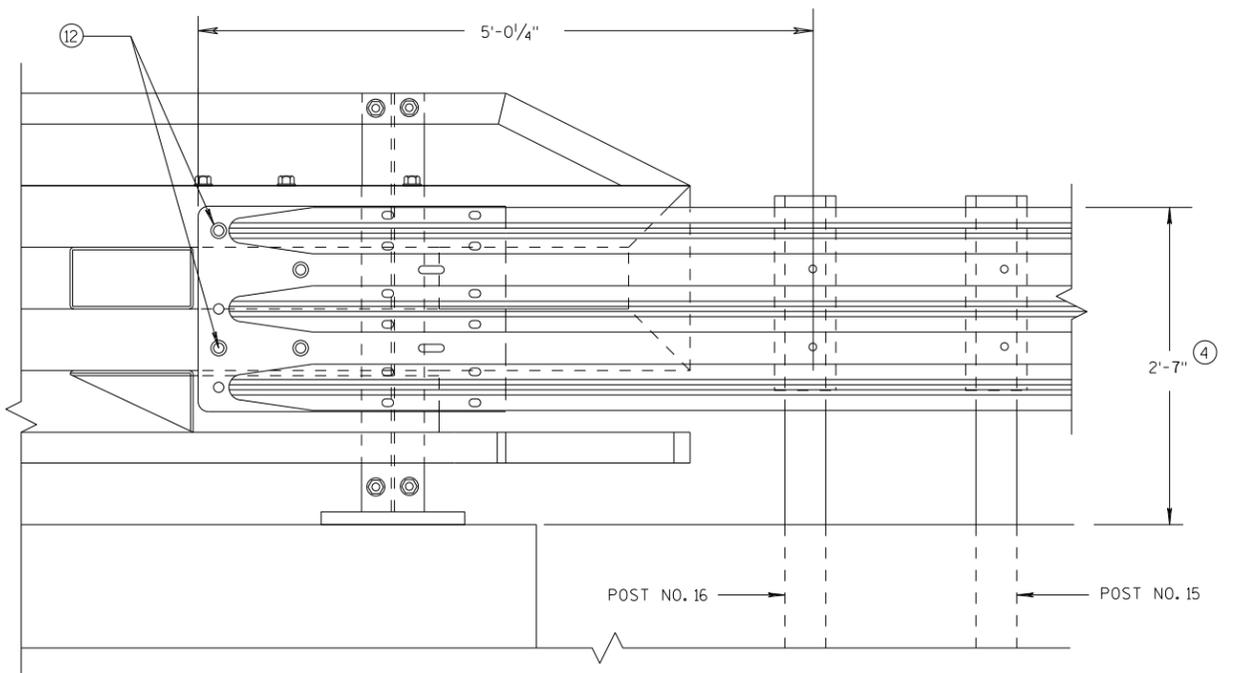
**MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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



**ELEVATION OF DETAIL AT NY3 END POST  
THRIE BEAM RAIL ATTACHMENT**



**ELEVATION OF DETAIL AT NY4 END POST  
THRIE BEAM RAIL ATTACHMENT**

**GENERAL NOTES**

- ④ TOLERANCE FOR TOP OF BEAM IS ± 1".
- ⑫ 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. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND 1/2-INCH BEYOND NUT.

6

6

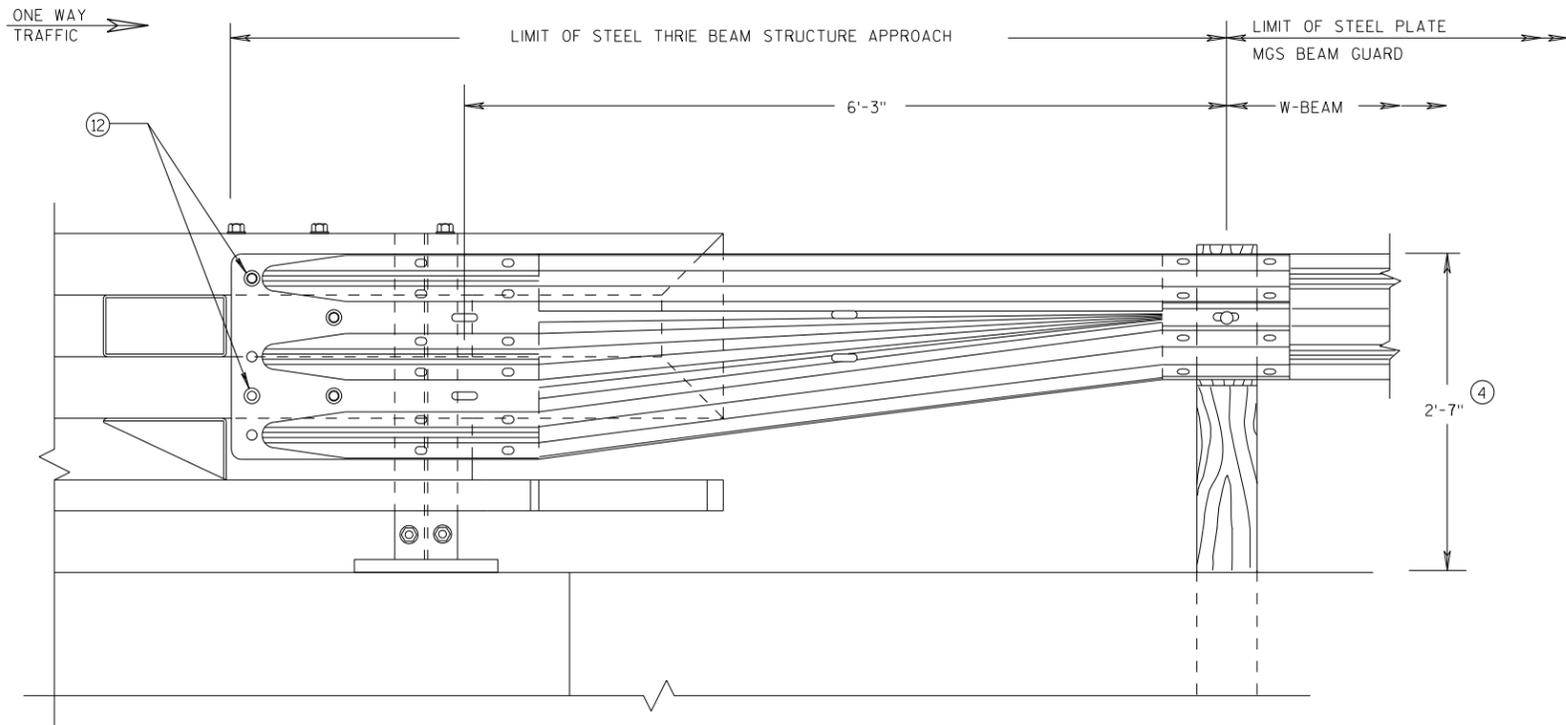
S.D.D. 14 B 45-5k

S.D.D. 14 B 45-5k

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

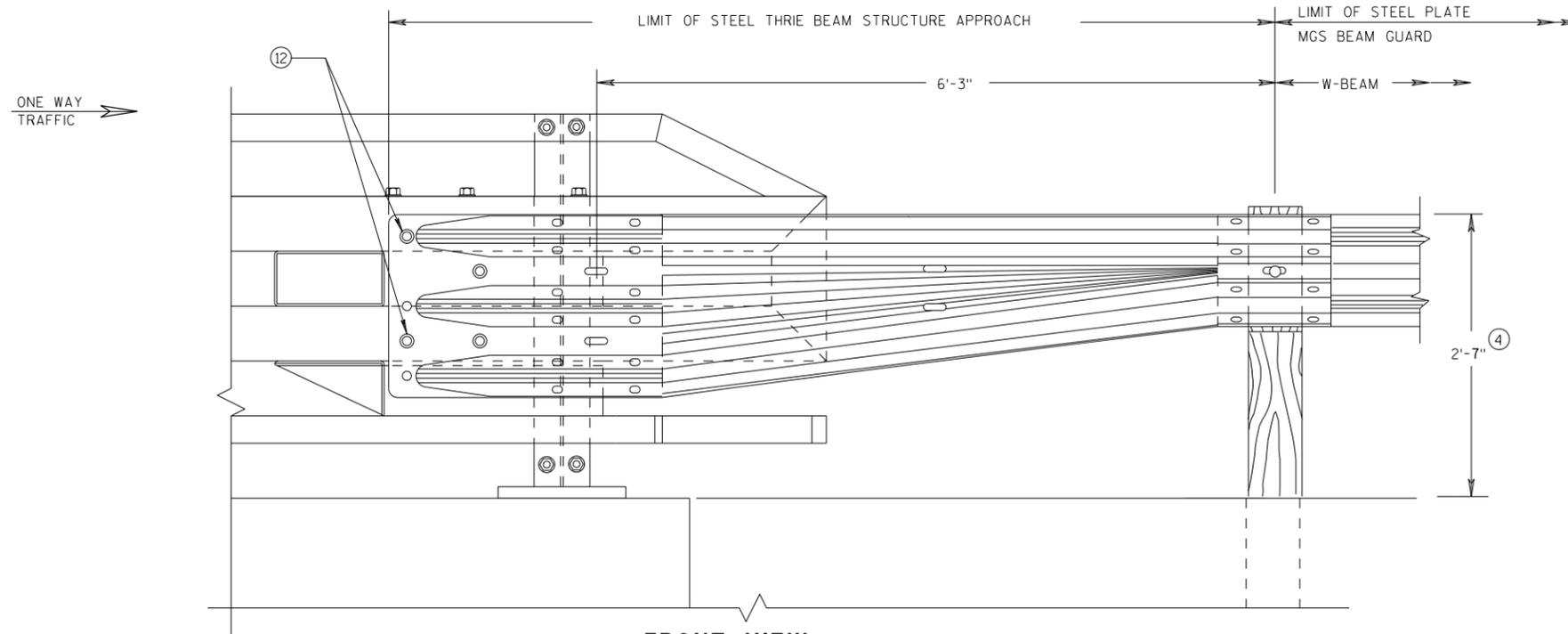
APPROVED  
DATE 7/2018 /S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT  
UNIT SUPERVISOR  
FHWA



**GENERAL NOTES**

- ④ TOLERANCE FOR TOP OF BEAM IS  $\pm 1"$ .
- ⑫ 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. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND  $\frac{1}{2}$ -INCH BEYOND NUT.

**FRONT VIEW**  
**W BEAM TRANSITION AND**  
**CONNECTION TO BRIDGE RAILING TYPE "NY3"**  
 (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

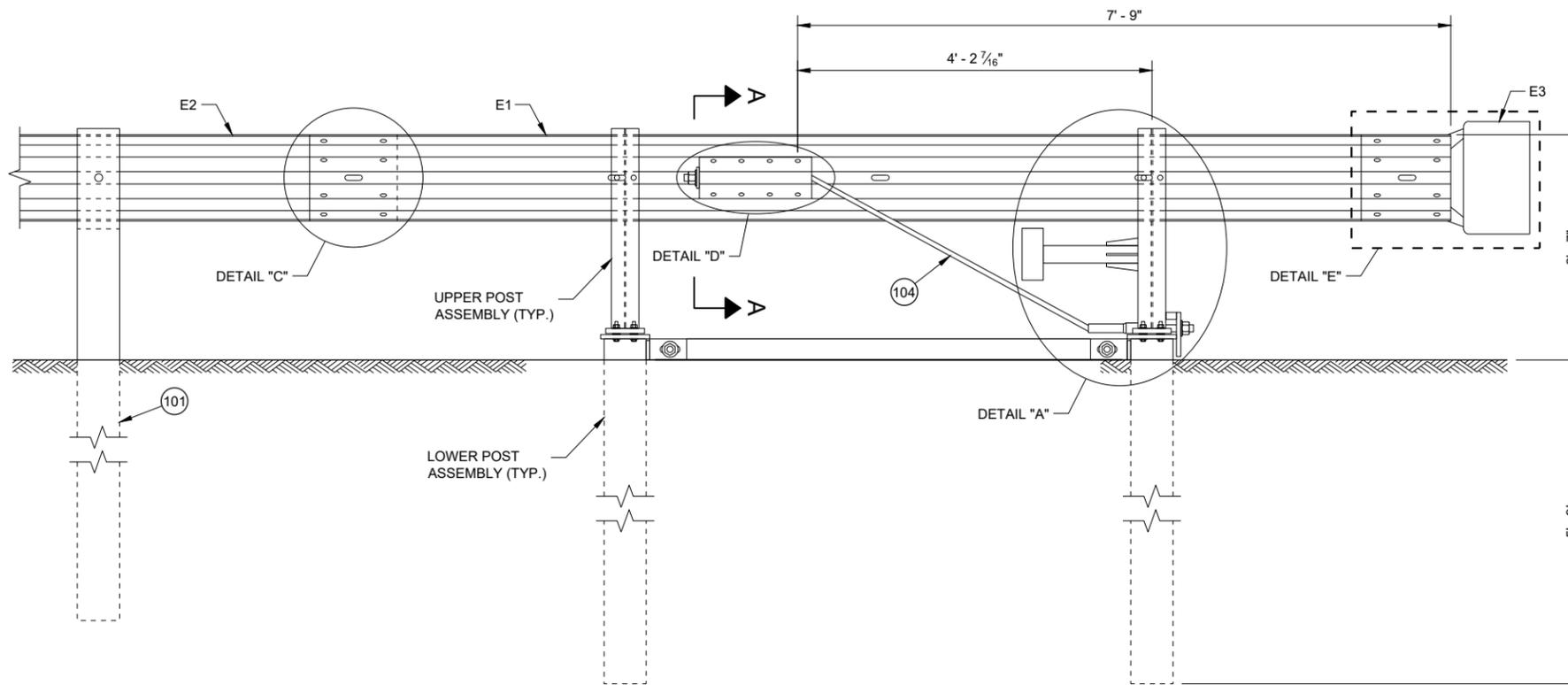


**FRONT VIEW**  
**W BEAM TRANSITION AND**  
**CONNECTION TO BRIDGE RAILING TYPE "NY4"**  
 (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

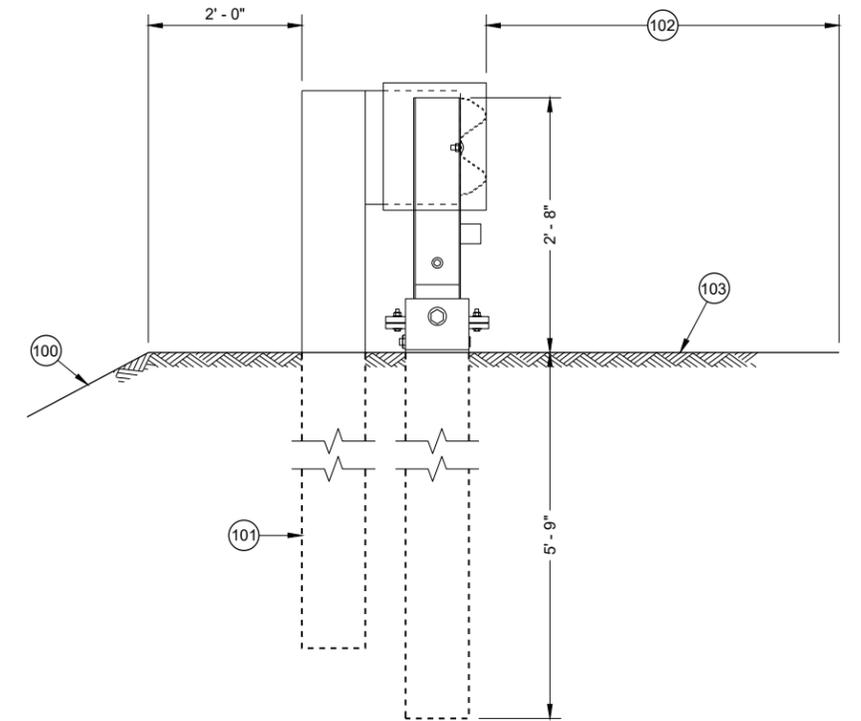
**MIDWEST GUARDRAIL SYSTEM**  
**THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION

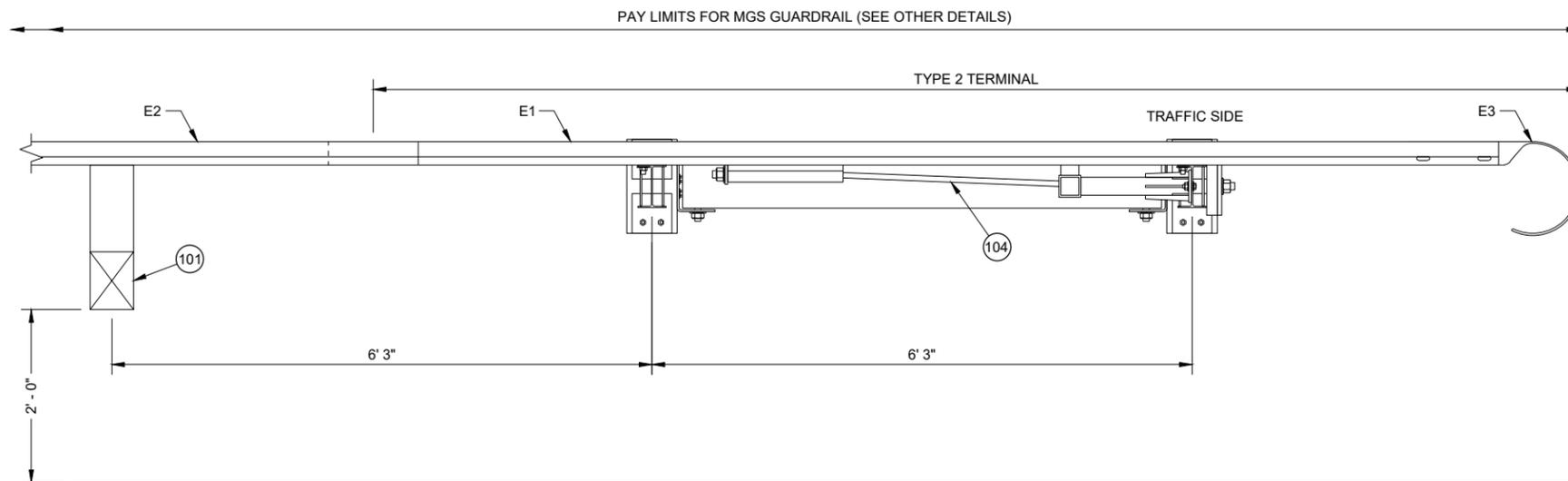
APPROVED  
 DATE 7/2018 /S/ Rodney Taylor  
 ROADWAY STANDARDS DEVELOPMENT  
 UNIT SUPERVISOR  
 FHWA



**BACK VIEW  
TYPE 2 TERMINAL**



**SIDE VIEW  
TYPE 2 TERMINAL**

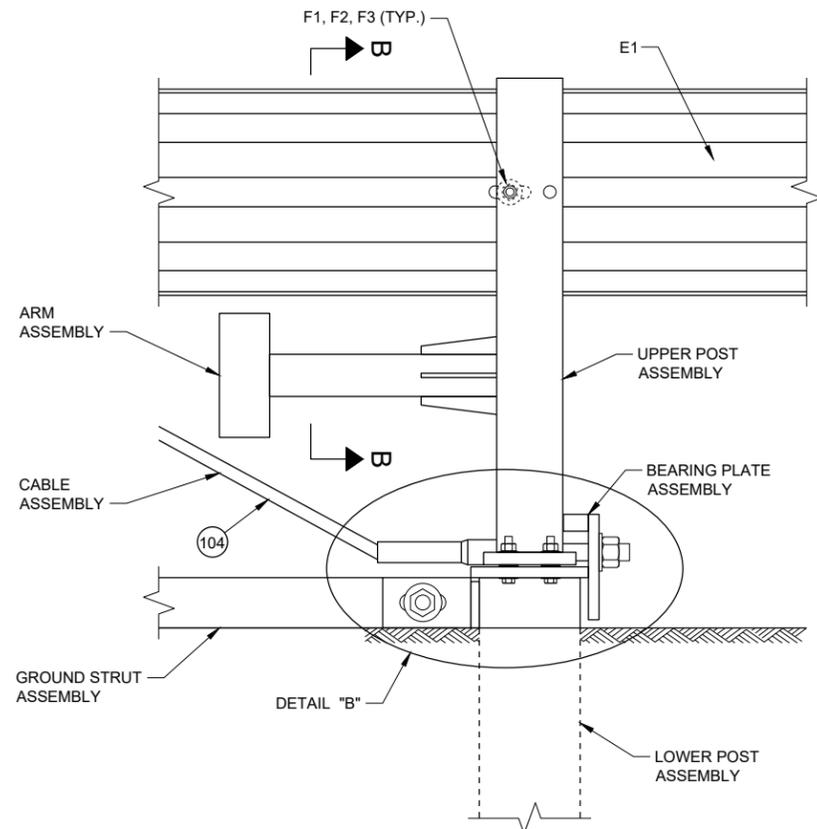


**TOP VIEW  
TYPE 2 TERMINAL**

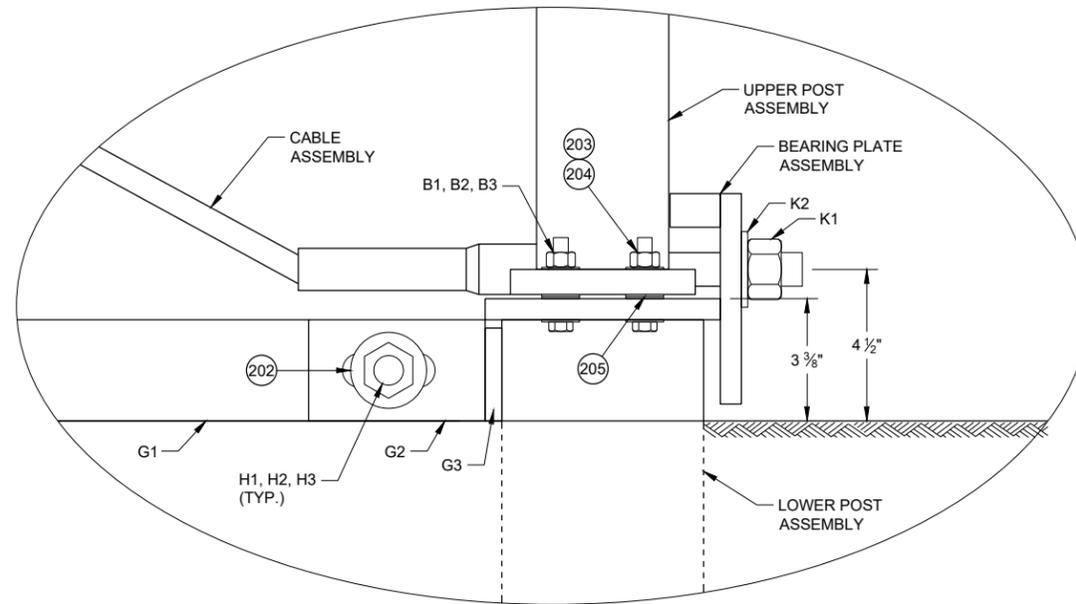
- GENERAL NOTES**
- (100) MAXIMUM SLOPE IS 2.5:1.
  - (101) SEE SDD 14B42 FOR MORE INFORMATION.
  - (102) SHOULDER
  - (103) MAXIMUM SLOPE IS 10:1.
  - (104) AFTER ASSEMBLY, CABLE IS TO BE TIGHTENED WITHOUT TWISTING THE CABLE.

**MIDWEST GUARDRAIL  
SYSTEM (MGS)  
TYPE 2 TERMINAL**

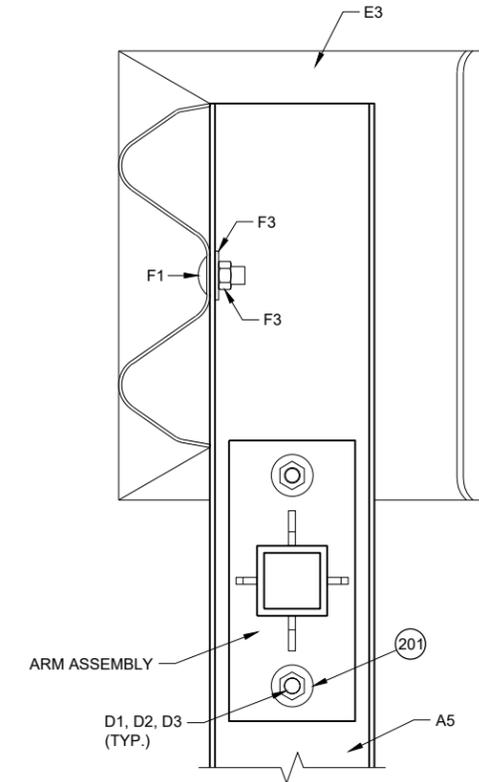
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



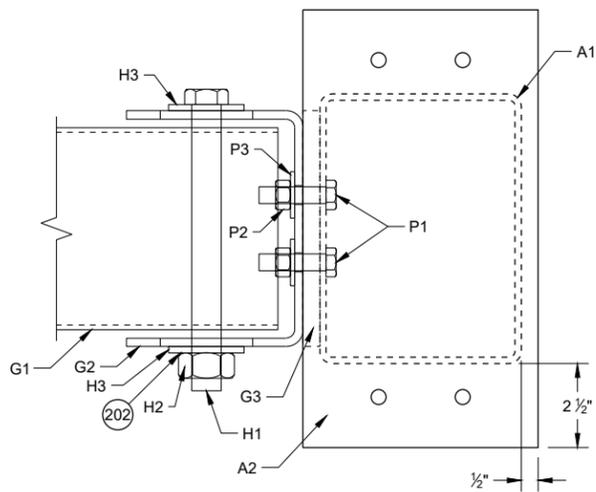
**DETAIL "A"**



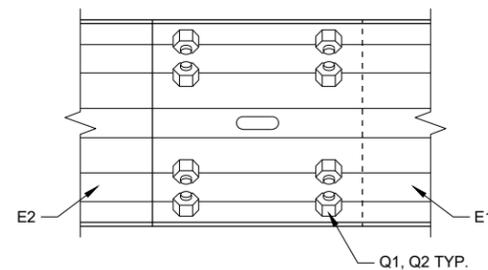
**DETAIL "B"**



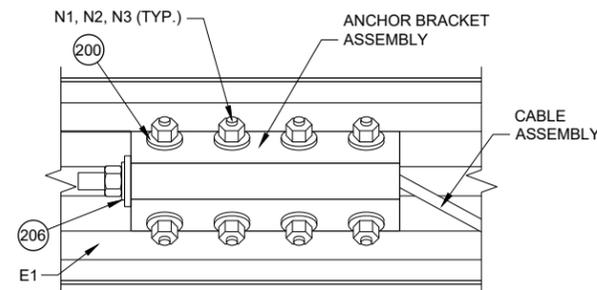
**SECTION B - B**



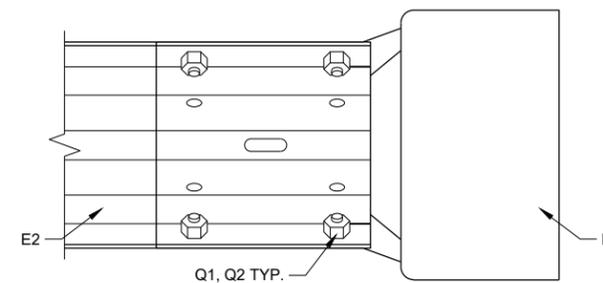
**TOP VIEW  
GROUND STRUT  
CONNECTION DETAIL**



**DETAIL "C"**



**DETAIL "D"**



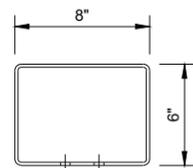
**DETAIL "E"**

**GENERAL NOTES**

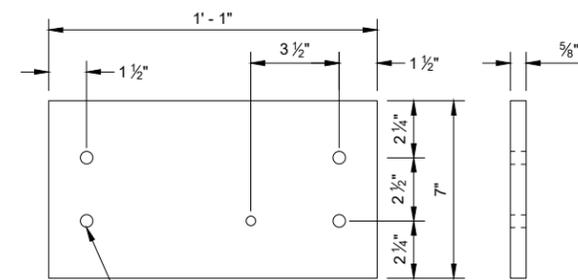
- 200 INSTALL ONE WASHER UNDER BOLT HEAD AND RAIL AND ON WASHER BETWEEN NUT AND ANCHOR BRACKET ASSEMBLY.
- 201 INSTALL ONE WASHER UNDER BOLT HEAD AND UPPER POST ASSEMBLY AND ONE WASHER BETWEEN NUT AND ARM PLATE.
- 202 INSTALL ONE WASHER UNDER BOLT HEAD AND GROUND STRUT CONNECTOR AND ONE WASHER BETWEEN NUT AND GROUND STRUT CONNECTOR.
- 203 INSTALL ONE WASHER UNDER BOLT HEAD AND LOWER POST ASSEMBLY AND ONE WASHER BETWEEN NUT AND UPPER POST ASSEMBLY.
- 204 TORQUE VALUE IS BETWEEN 60 - 75 FT-LB.
- 205 TWO WASHERS BETWEEN UPPER AND LOWER POST ASSEMBLY.
- 206 INSTALL ONE WASHER BETWEEN NUT AND ANCHOR BRACKET ASSEMBLY.

**MIDWEST GUARDRAIL  
SYSTEM (MGS)  
TYPE 2 TERMINAL**

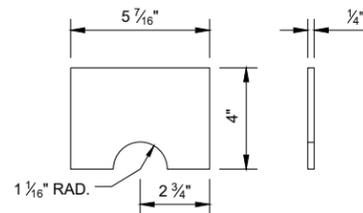
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



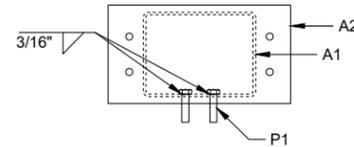
**TOP VIEW**



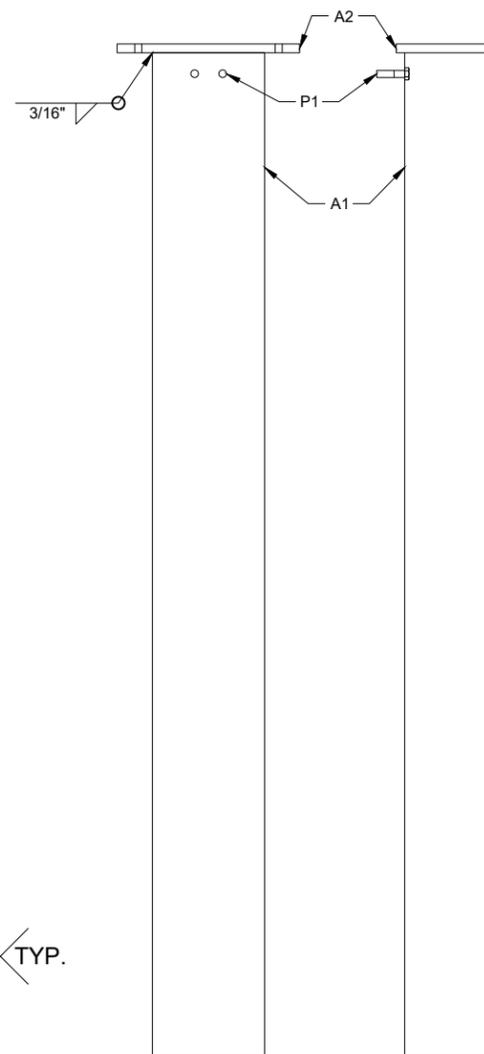
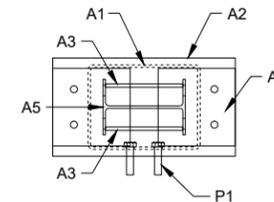
**LOWER PLATE (A2)**



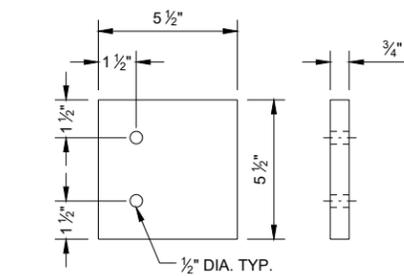
**POST GUSSET (A3)**



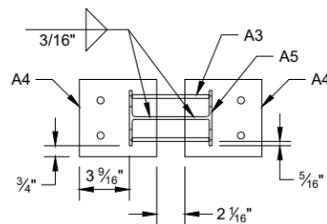
**PLAN VIEW**



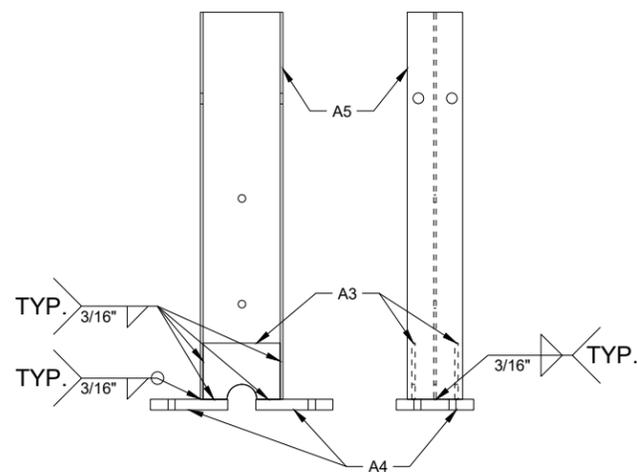
**FRONT VIEW SIDE VIEW**  
**LOWER POST ASSEMBLY**



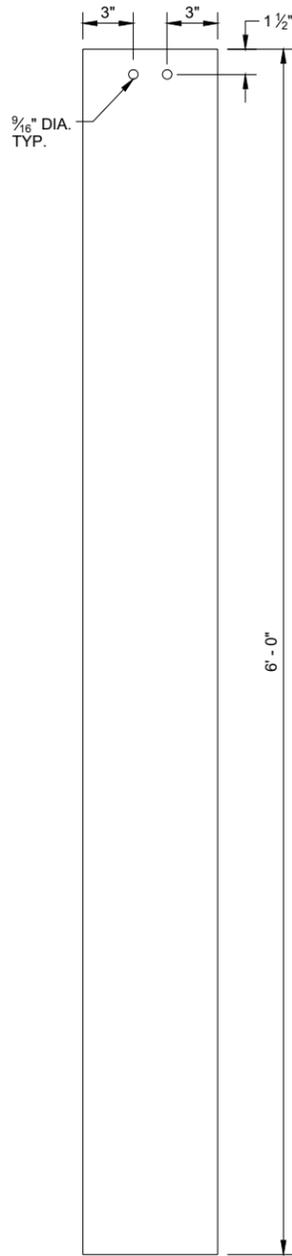
**UPPER PLATE (A4)**



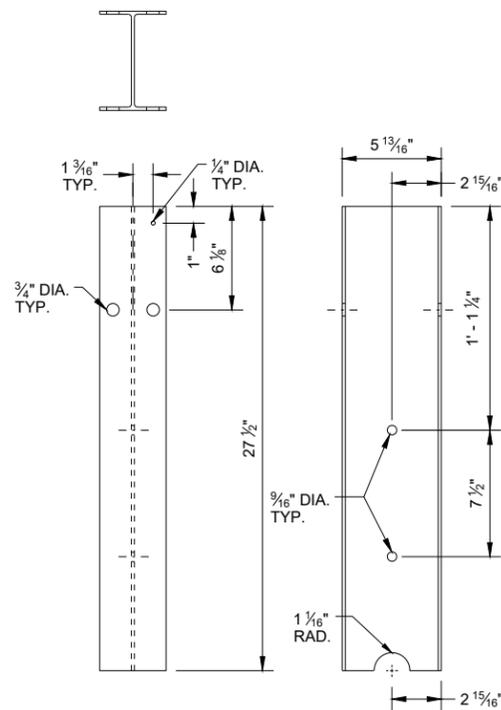
**PLAN VIEW**



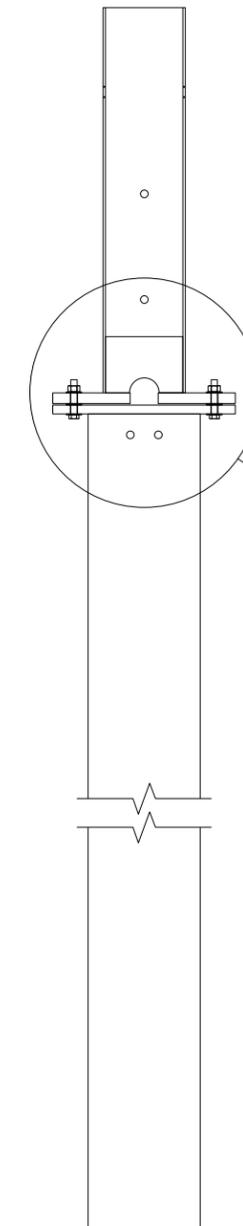
**FRONT VIEW SIDE VIEW**  
**UPPER POST ASSEMBLY**



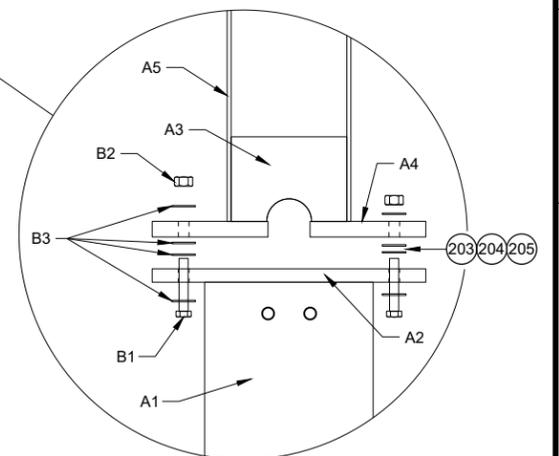
**SIDE VIEW**  
**FOUNDATION TUBE (A1)**



**FRONT VIEW SIDE VIEW**  
**TYPE 2 POST (A5)**



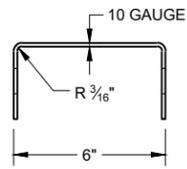
**ASSEMBLED POST**



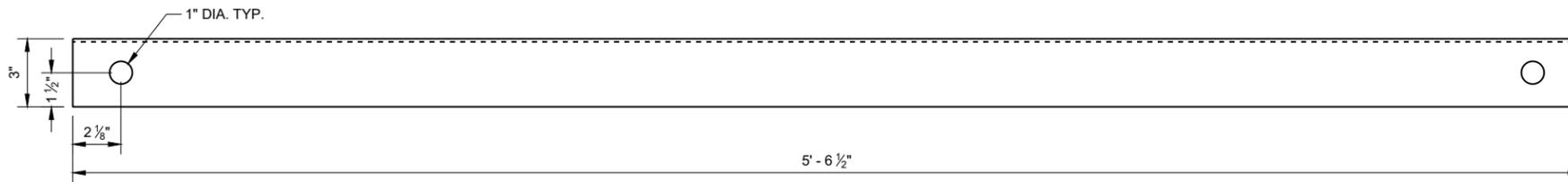
**POST CONNECTION DETAIL**

**MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

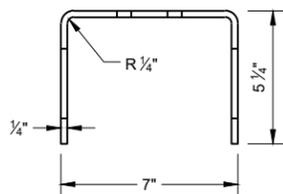


**SIDE VIEW**

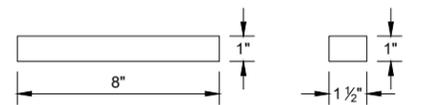


**FRONT VIEW**

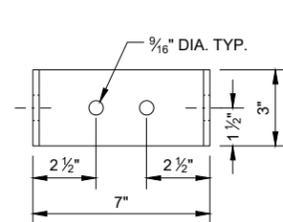
**GROUND STRUT CHANNEL (G1)**



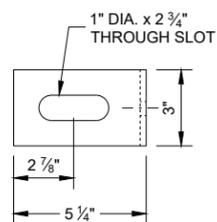
**TOP VIEW**



**BEARING PLATE FLANGE (L2)**

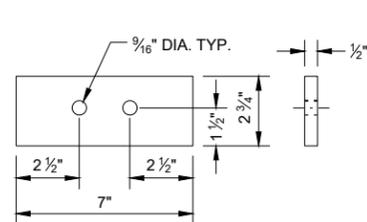


**FRONT VIEW**

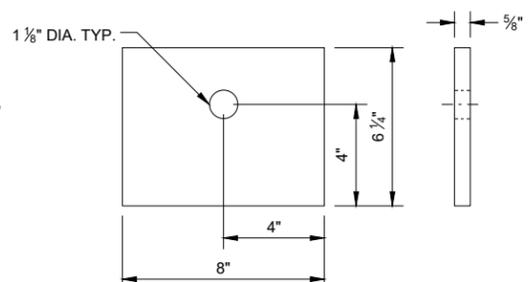


**SIDE VIEW**

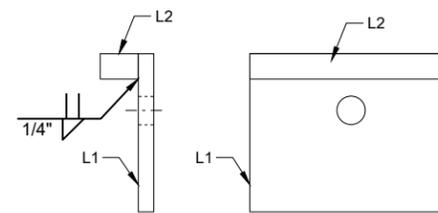
**GROUND STRUT CONNECTOR (G2)**



**GROUND STRUT PLATE (G3)**



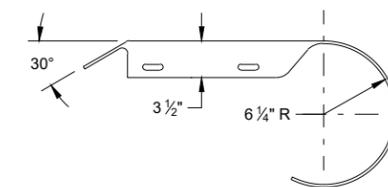
**BEARING PLATE (L1)**



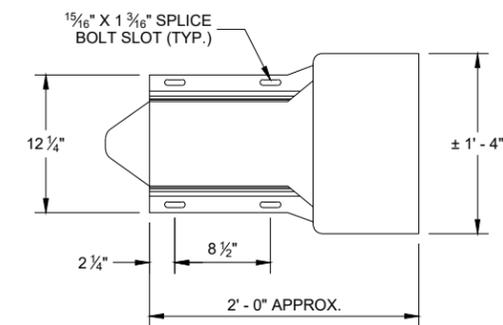
**SIDE VIEW**

**FRONT VIEW**

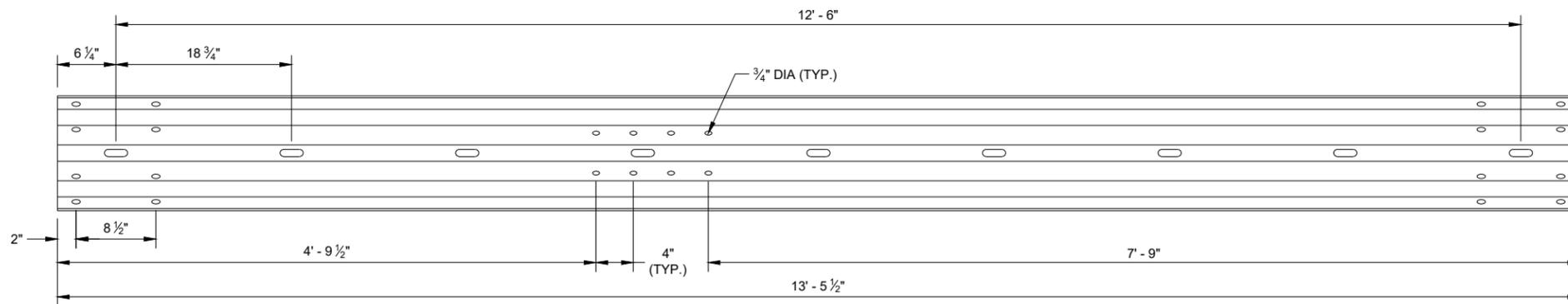
**BEARING PLATE ASSEMBLY**



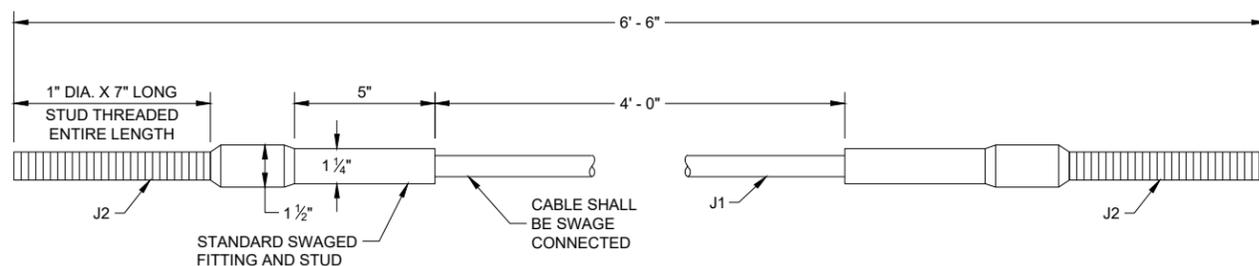
**PLAN VIEW**



**ELEVATION VIEW  
ROUNDED BUFFER END (E3)**



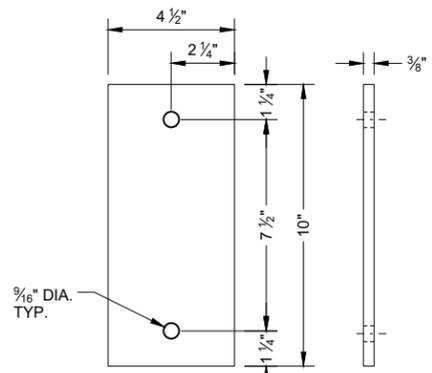
**TYPE 2 GUARDRAIL (E1)**



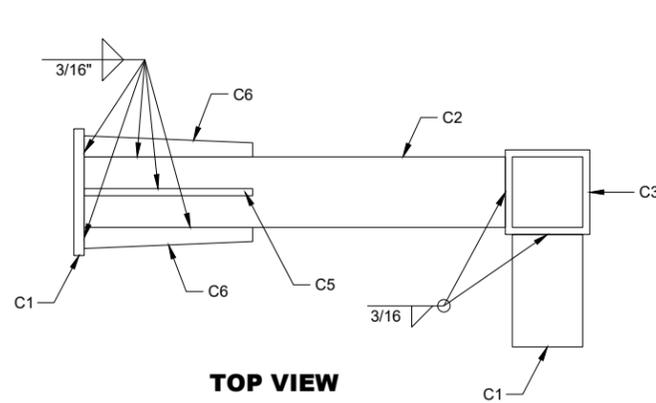
**CABLE ASSEMBLY**

**MIDWEST GUARDRAIL  
SYSTEM (MGS)  
TYPE 2 TERMINAL**

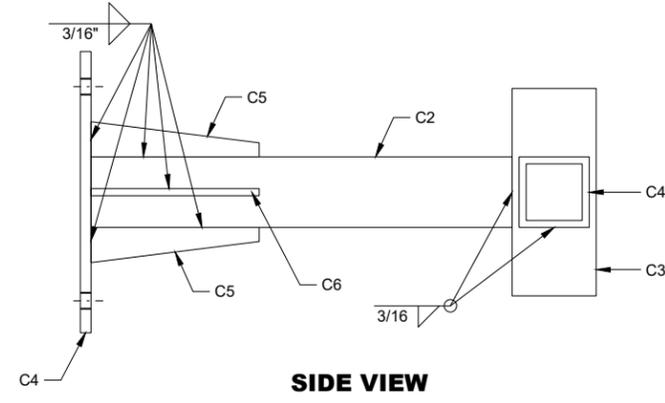
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



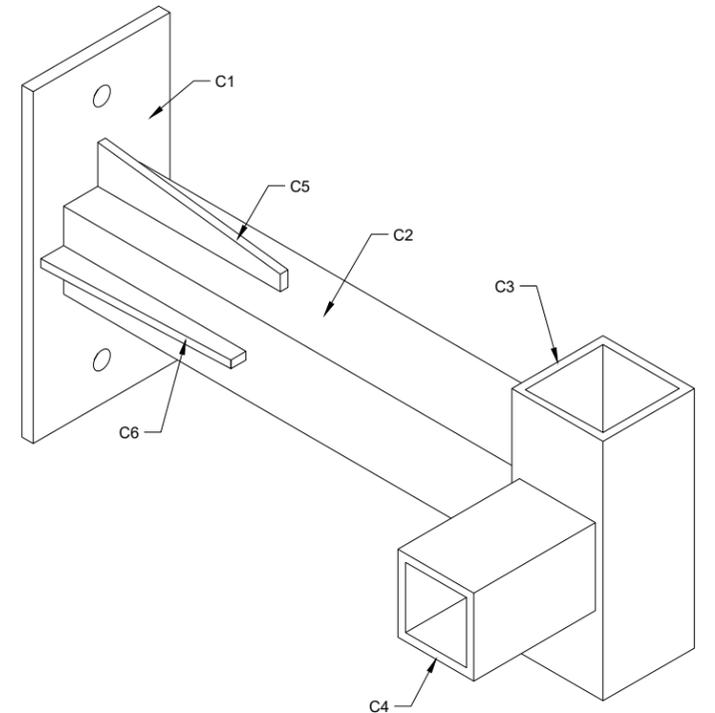
**ARM PLATE (C1)**



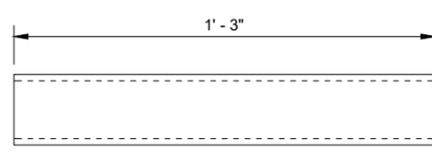
**TOP VIEW  
ARM ASSEMBLY**



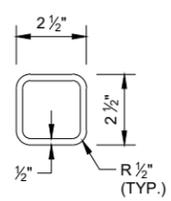
**SIDE VIEW  
ARM ASSEMBLY**



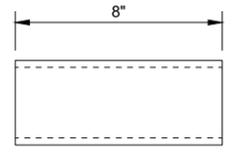
**ISOMETRIC VIEW  
ARM ASSEMBLY**



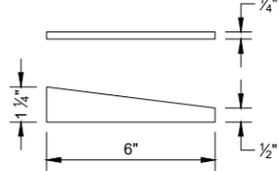
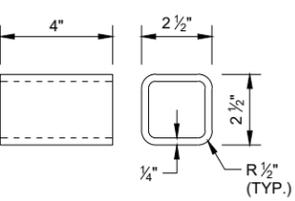
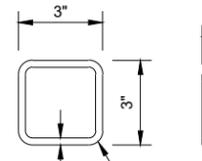
**ARM TUBE 1 (C2)**



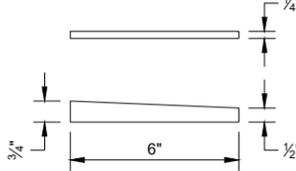
**ARM TUBE 2 (C3)**



**ARM TUBE 3 (C4)**

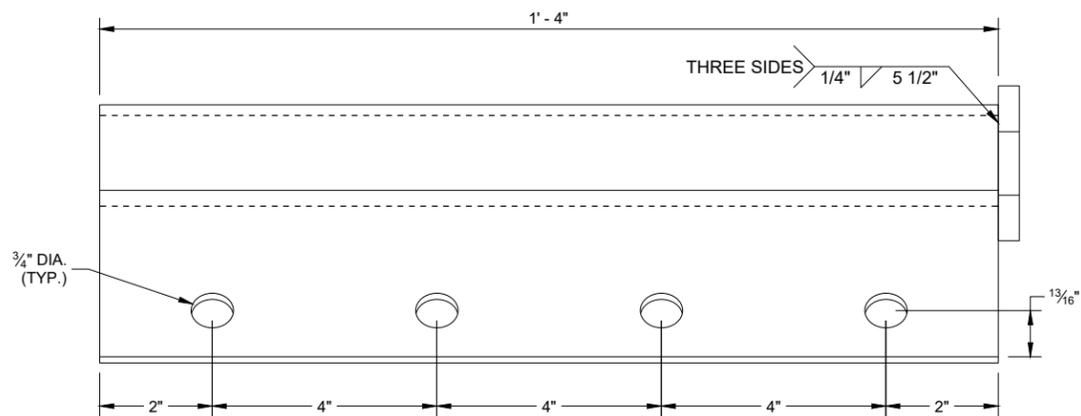


**ARM GUSSET  
PLATE 1 (C5)**

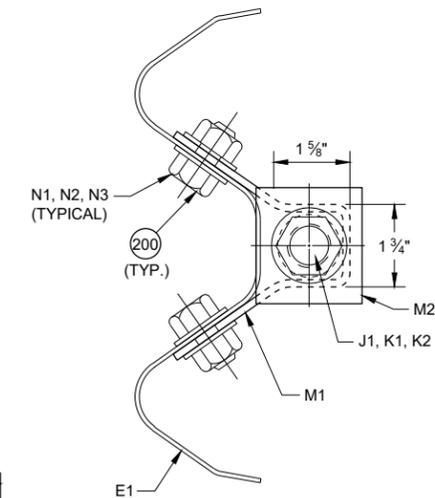


**ARM GUSSET  
PLATE 2 (C6)**

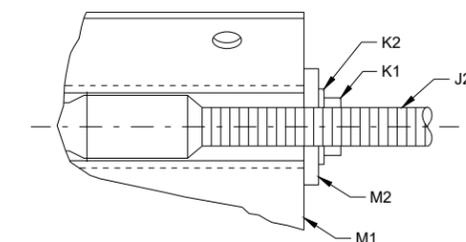
6



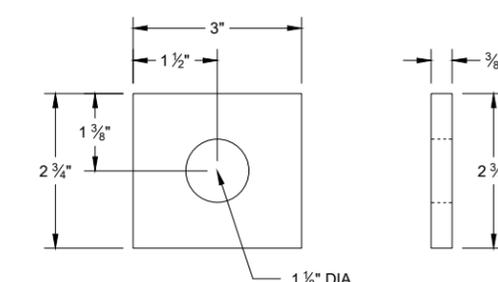
**ANCHOR BRACKET (M1, M2)**



**ANCHOR BRACKET BEARING PLATE (M2)**



**SECTION A - A**



SDD 14B47 - 03e

<p><b>MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL</b></p>
<p>STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION</p>

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SDD 14B47 - 03e

**BILL OF MATERIALS - TYPE 2 TERMINAL (MGS)**

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
A1	TYPE 2 FOUNDATION TUBE	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 8" x 6" x 3/16"
A2	LOWER PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	5/8" THICKNESS
A3	POST GUSSET	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1/4" THICKNESS
A4	UPPER PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	3/4" THICKNESS
A5	TYPE 2 POST	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	
B1	BREAKAWAY BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM F3125 GRADE A325 TYPE 1 HEAVY HEX HEAD OR SAE J429 GRADE 5 HEAVY HEX HEAD / ASTM A449 TYPE 1 HEAVY HEX HEAD. BOLTS MAY BE FULLY THREADED . PROVIDE ENOUGH THREADING FOR PROPER TIGHTENING OF BOLT.	7/16" DIA.
B2	BREAKAWAY BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	7/16" DIA.
B3	BREAKAWAY BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291/ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	
C1	ARM ASSEMBLY PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	5/8" THICKNESS
C2	ARM ASSEMBLY TUBE 1	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 8" x 6" x 3/16"
C3	ARM ASSEMBLY TUBE 2	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 3" x 3" x 1/4"
C4	ARM ASSEMBLY TUBE 3	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 2 1/2" x 2 1/2" X 1/4"
C5	ARM ASSEMBLY GUSSET PLATE 1	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1/4" THICKNESS
C6	ARM ASSEMBLY GUSSET PLATE 2	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1/4" THICKNESS
D1	ARM ASSEMBLY BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	1/2" DIA.
D2	ARM ASSEMBLY WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	1/2" DIA.
D3	ARM ASSEMBLY NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	1/2" DIA.
E1	TYPE 2 GUARD RAIL	AASHTO M180 CLASS A TYPE 2 12 GAUGE APPROVED PRODUCER	
E2	BEAM GUARD RAIL	AASHTO M180 CLASS A TYPE 2 12 GAUGE APPROVED PRODUCER	
E3	BEAM GUARD ROUNDED BUFFER END	AASHTO M180 CLASS A TYPE 2 12 GAUGE APPROVED PRODUCER	
F1	POST BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	5/8" DIA.
F2	POST BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	5/8" DIA.
F3	POST BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291/ASTM A 563 AASHTO M180 RECESSED HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	
G1	GROUND STRUT CHANNEL	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1/2" x 11 3/4" x 10 GAUGE
G2	GROUND STRUT CONNECTOR	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1/4" THICKNESS
G3	GROUND STRUT PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1/2" THICKNESS

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SDD 14B47 - 03f

SDD 14B47 - 03f

**MIDWEST GUARDRAIL  
SYSTEM (MGS)  
TYPE 2 TERMINAL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

**BILL OF MATERIALS - TYPE 2 TERMINAL (MGS)**

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
H1	GROUND STRUT BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	7/8" DIA.
H2	GROUND STRUT BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	7/8" DIA.
H3	GROUND STRUT BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD 5/8" ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	
J1	BCT CABLE	AASHTO M30 / ASTM A741 6 x 19 INDEPENDENT WIRE CORE (IWRC) IMPROVED PLOW STEEL (IPS), 6 x 19 INDEPENDENT WIRE CORE (IWRC) IMPROVED PLOW STEEL (IPS) TYPE II OR IIC, CLASS C ZINC COATED MIN. BREAKING STRENGTH OF 42.7 KIPS	3/4" DIA.
J2	BCT CABLE	UNC 1" ASTM A576 GRADE 1035 SWAGE FITTINGS ARE TO BE FACTORY SWEDGED. MIN BREAKING STRENGTH OF 42.7 KIPS ASME B30.26 "FORGED, CAST, OR DIE STAMPED WITH THE FOLLOWING IN TO CONNECTION: NAME OF MANUFACTURE OR TRADEMARK OF CONNECTION'S MANUFACTURER, SIZE OR RATED LOAD, GRADE FOR ALLOY EYEBOLTS."	
K1	CABLE ASSEMBLY NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	1" DIA.
K2	CABLE ASSEMBLY WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1	1" DIA.
L1	BEARING PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	5/8" THICKNESS
L2	BEARING PLATE FLANGE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1" THICKNESS
M1	BEAM GUARD ANCHOR BRACKET	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	
M2	BEAM GUARD ANCHOR END PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	3/8" THICKNESS
N1	ANCHOR BRACKET BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC AASHTO M180 HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	5/8" DIA.
N2	ANCHOR BRACKET BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	5/8" DIA.
N3	ANCHOR BRACKET BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	
P1	FOUNDATION TUBE BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	1/2" DIA.
P2	FOUNDATION TUBE WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 7/8" ASTM F844 TYPE 1 (HARDENED WASHER ONLY)	1/2" DIA.
P3	FOUNDATION TUBE NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 AASHTO M180 RECESSED HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	
Q1	SPLICE BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC AASHTO M180 HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	
Q2	SPLICE NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 AASHTO M180 RECESSED HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	5/8" DIA.

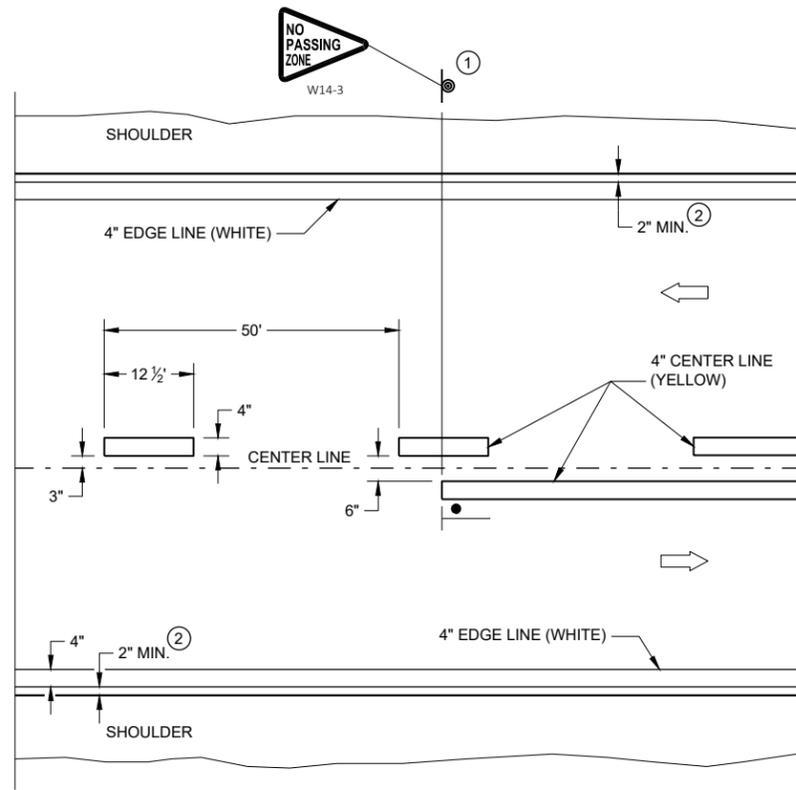
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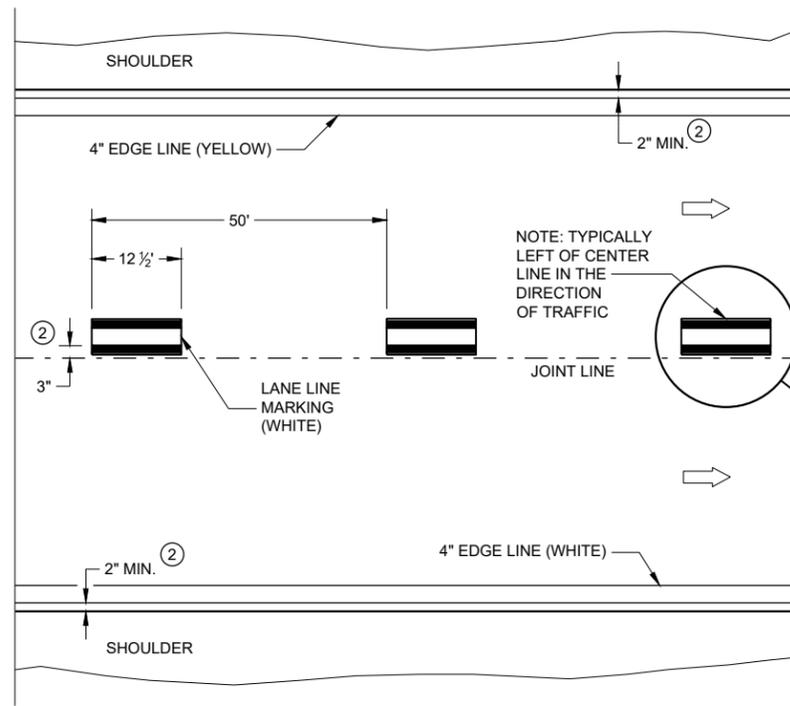
SDD 14B47 - 039

SDD 14B47 - 039

<b>MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED August 2021 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	

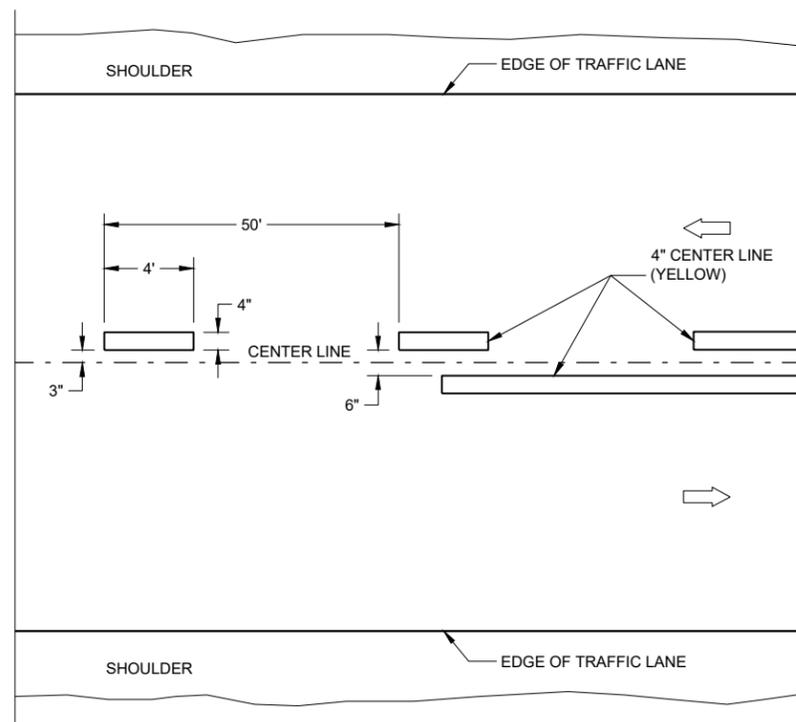


**TWO WAY TRAFFIC**

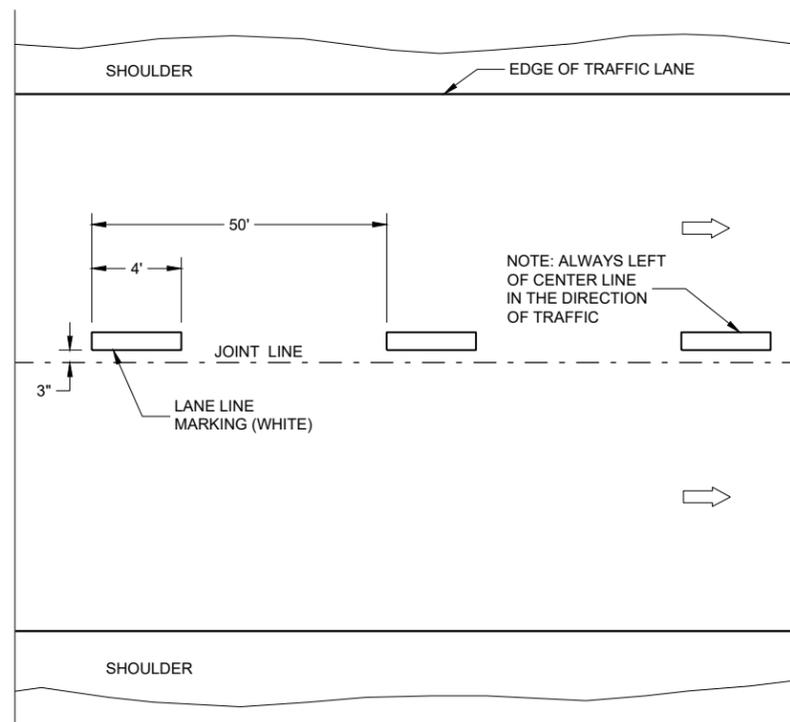


**ONE WAY TRAFFIC**

**PERMANENT PAVEMENT MARKING**



**TWO WAY TRAFFIC**



**ONE WAY TRAFFIC**

**TEMPORARY PAVEMENT MARKING**

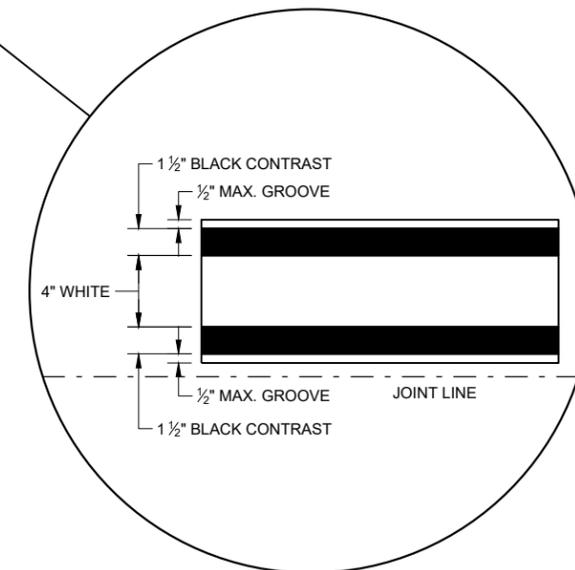
**GENERAL NOTES**

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 WITHIN 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)**

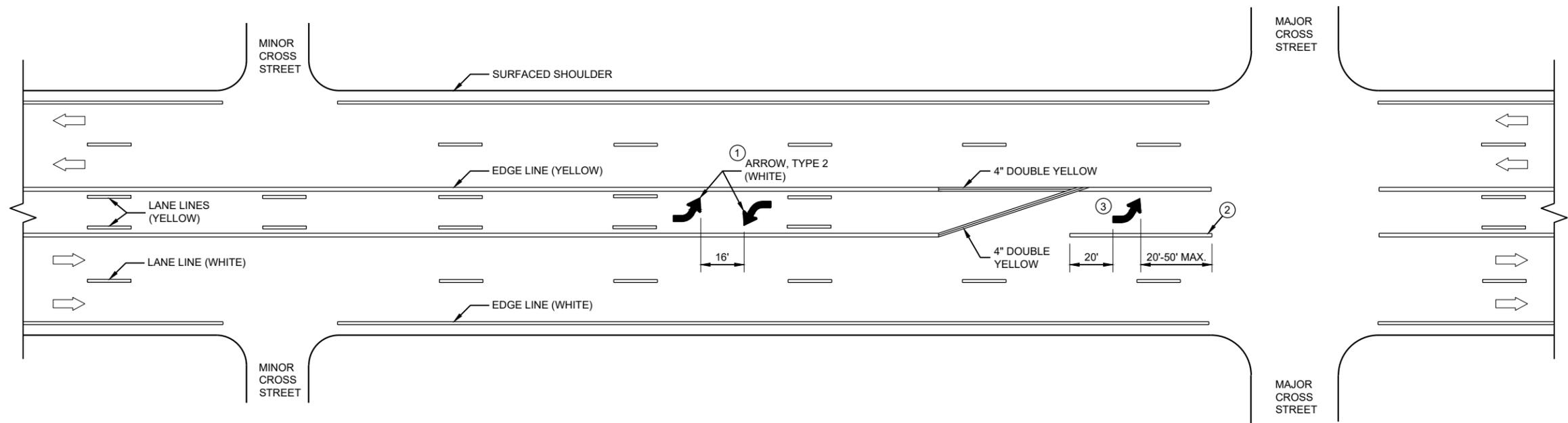
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

**GENERAL NOTES**

- ① A SET OF ARROWS IS REQUIRED EVERY 400 FEET OR NEAR INTERSECTIONS OR DRIVEWAYS WITH TURNING TRAFFIC.
- ② 8" WHITE
- ③ TURN BAY LENGTH OF LESS THAN 48' DOES NOT REQUIRE PAVEMENT ARROWS OR TEXT.

➡ DIRECTION OF TRAFFIC



**TWO WAY LEFT TURN LANE**

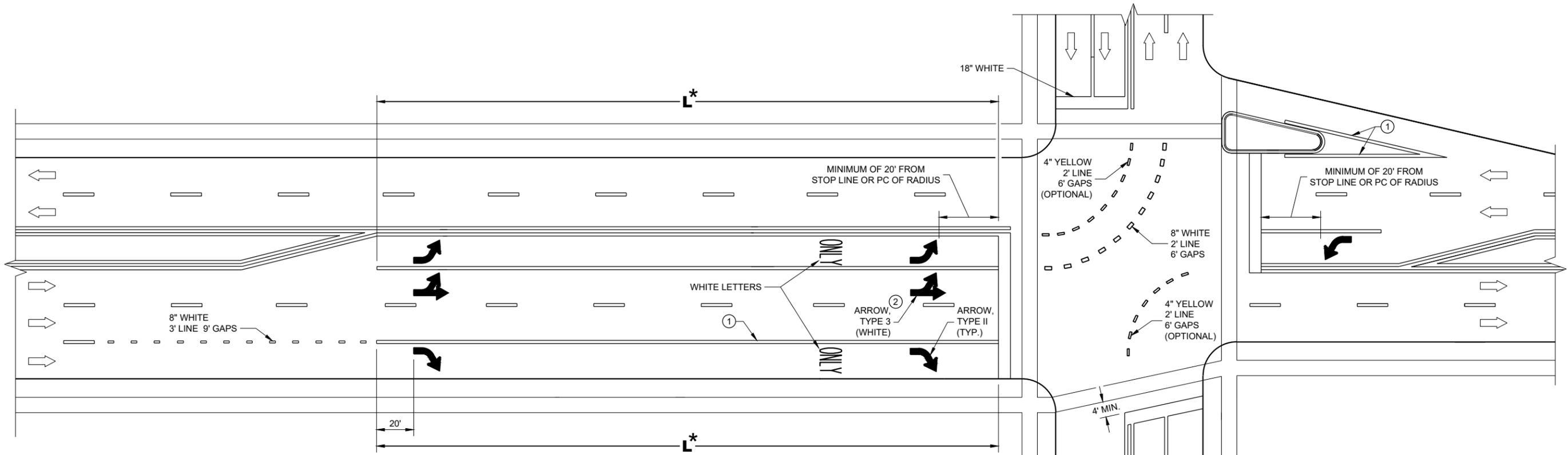
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SDD 15C08 - 20b

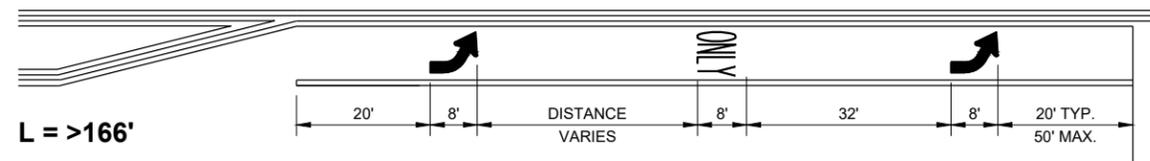
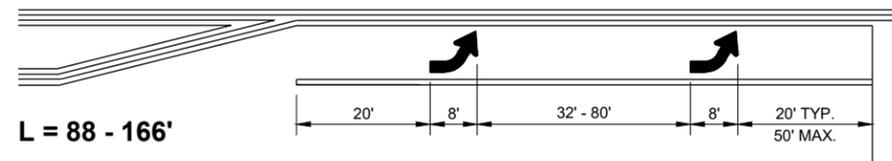
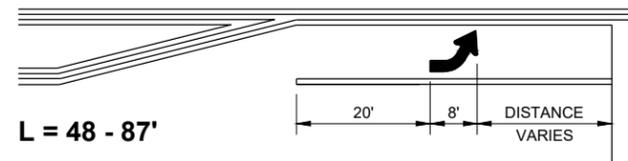
SDD 15C08 - 20b

<p><b>PAVEMENT MARKING (TURN LANES)</b></p>
<p>STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION</p>



**TURN LANE OPTIONS**

LENGTH OF TURN BAY ( **L** ) OF 0 - 47' DOES NOT REQUIRE PAVEMENT MARKING ARROWS OR WORDS



\*(SEE TURN LANE OPTIONS FOR PLACEMENT OF PAVEMENT MARKING ARROWS AND WORDS)

**GENERAL NOTES**

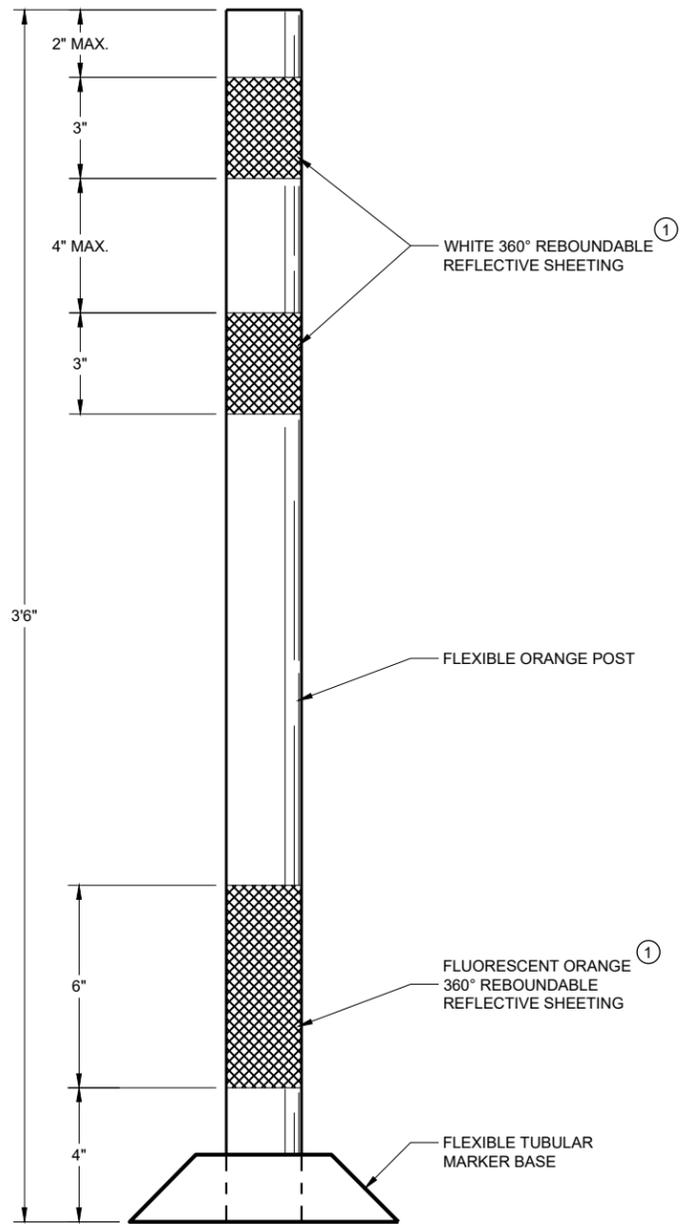
- ① 8" WHITE
- ② QUANTITY AND LOCATION OF TYPE 3 ARROWS ARE THE SAME AS THE TYPE II ARROWS IN THE ADJACENT TURN LANE. FOR TURN LANES WITH A PHYSICAL SEPARATION IN THE SAME DIRECTION OF TRAVEL, THE ARROWS AND "ONLY" MARKING MAY BE ELIMINATED.

➡ DIRECTION OF TRAFFIC

**L** = LENGTH OF TURN BAY

**PAVEMENT MARKING (TURN LANES)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



FLEXIBLE TUBULAR MARKER POST WORK ZONE

**GENERAL NOTES**

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

SURFACE MOUNTED BASES SHALL BE FURNISHED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS TO BE COMPATIBLE WITH FLEXIBLE TUBULAR MARKER POSTS TO A SIZE AND SHAPE THAT WILL PROVIDE A STABLE POST FOUNDATION WHEN SECURED TO THE PAVEMENT.

THE ASPHALTIC ADHESIVE OR BUTYL PAD FURNISHED SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, UNLESS DIRECTED BY THE ENGINEER TO USE BOLTS.

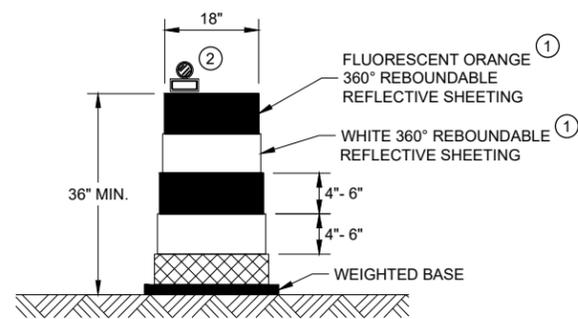
① REFLECTIVE SHEETING SHALL FOLLOW THE REQUIREMENTS IN THE APPROVED PRODUCTS LISTING FOR SIGN SHEETING.

**CHANNELIZING DEVICES  
FLEXIBLE TUBULAR  
MARKER POST**

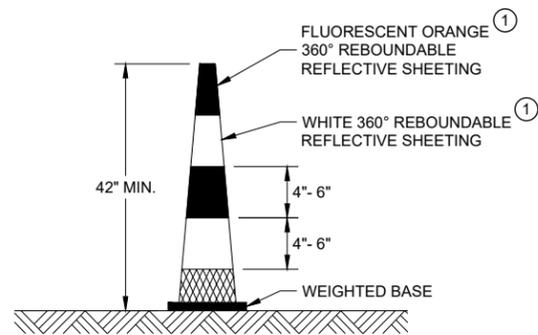
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
May 2021 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER

FHWA

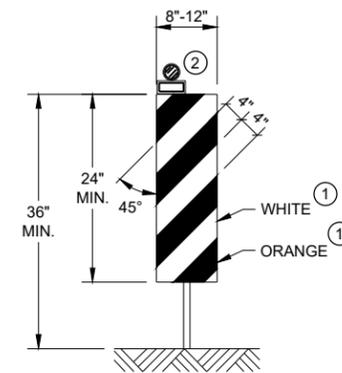


**DRUM**



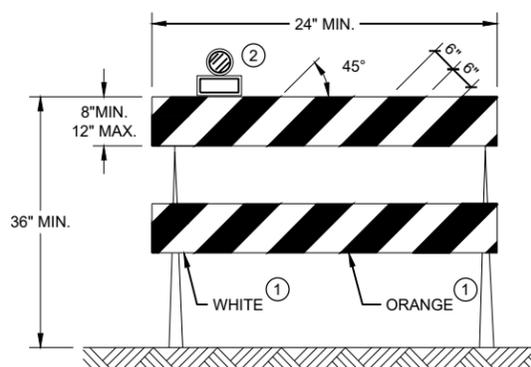
**42" CONE**

DO NOT USE IN TAPERS  
½ SPACING OF DRUMS



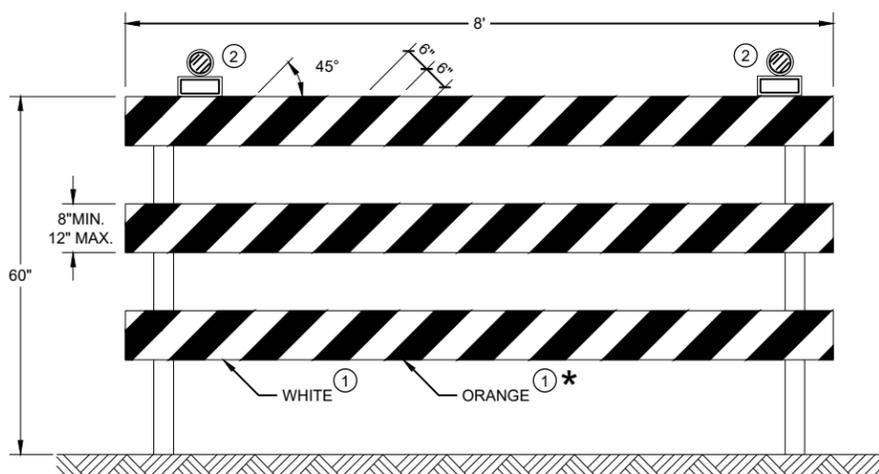
**VERTICAL PANEL**

THE STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.



**TYPE II BARRICADE**

FOR RAILS LESS THAN 36" LONG, 4" WIDE STRIPES MAY BE USED. ALL STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.



**TYPE III BARRICADE**

IF SIGN MOUNTED, DO NOT COVER MORE THAN 50% OF THE TOP TWO RAILS OR 33% OF THE TOTAL AREA OF THE THREE RAILS.

\* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

**GENERAL NOTES**

- ① REFLECTIVE SHEETING SHALL FOLLOW THE REQUIREMENTS IN THE APPROVED PRODUCTS LISTING FOR SIGN SHEETING.
- ② LOCATION OF WARNING LIGHTS WHEN SHOWN ON THE PLAN.

**CHANNELIZING DEVICES  
DRUMS, CONES, BARRICADES  
AND VERTICAL PANELS**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
May 2021 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER

**LEGEND**

-  SIGN ON PORTABLE OR PERMANENT SUPPORT
-  TEMPORARY PORTABLE RUMBLE STRIP ARRAY
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

**GENERAL NOTES**

DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

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

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

THE FIRST ADVANCE WARNING SIGN SHOULD TYPICALLY BE LOCATED IN ADVANCE OF THE ANTICIPATED TRAFFIC BACKUP OR QUEUE.

WHEN A SIDE ROAD OR RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

**FLAGGING**

FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT REMOVE TEMPORARY PORTABLE RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.

- ① FOR MOVING WORK OPERATIONS, POST ADDITIONAL W20-7A FLAGGER SIGNS AT APPROXIMATELY 3,500' INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.
- ② SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.

WHEN THE DISTANCE BETWEEN FLAGGERS EXCEEDS 2 MILES, A PILOT CAR IS REQUIRED. WHEN CURVES REDUCE SIGHT DISTANCE BELOW 400', A PILOT CAR IS REQUIRED.

**TEMPORARY PORTABLE RUMBLE STRIPS**

UTILIZE TEMPORARY PORTABLE RUMBLE STRIPS ON ALL FLAGGING OPERATIONS.

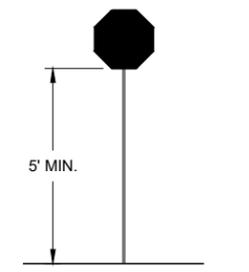
- ③ EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS PLACED TRANSVERSE ACROSS THE LANE AT THE LOCATIONS SHOWN. WITHIN EACH ARRAY, SPACING BETWEEN RUMBLE STRIPS SHALL BE 15 FEET ON CENTER

ONLY USE TEMPORARY PORTABLE RUMBLE STRIPS FROM THE APPROVED PRODUCTS LIST.

INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS.

PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.

DO NOT INSTALL TEMPORARY PORTABLE RUMBLE STRIPS ON GRAVEL, MILLED SURFACES, OR ASPHALT THAT HAS BEEN PAVED LESS THAN 12 HOURS.



**STOP/SLOW PADDLE ON SUPPORT STAFF**

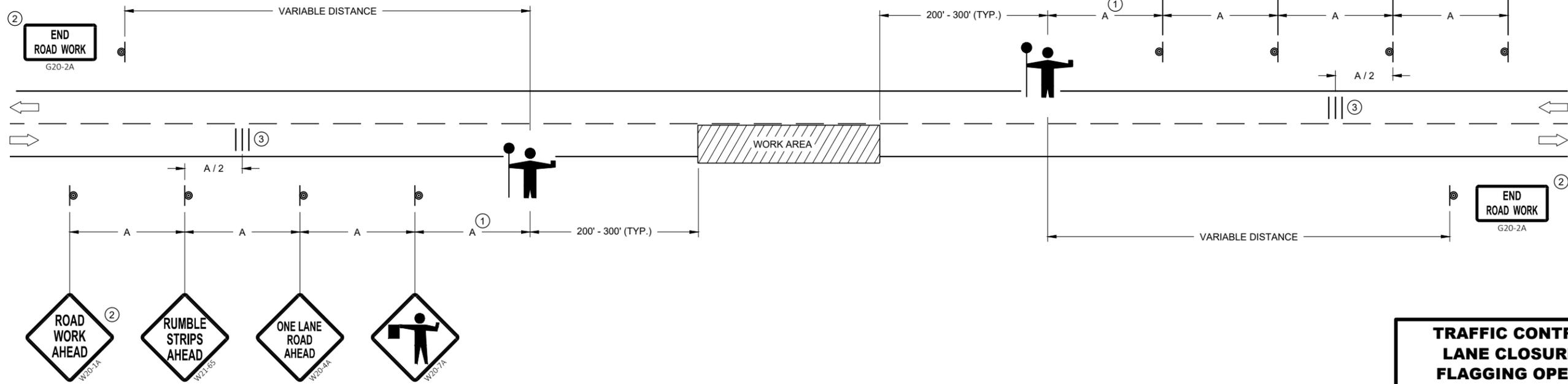
**SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE**

SPEED LIMIT	SPACING "A"
25-30 MPH	200'
35-40 MPH	350'
45-55 MPH	500'



W03-4

USE OF W03-4 SIGN IS OPTIONAL. WHEN USED, THIS SIGN SHALL BE LOCATED BETWEEN THE W20-7A AND W20-4A SIGNS, USING SPACING "A".



**TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

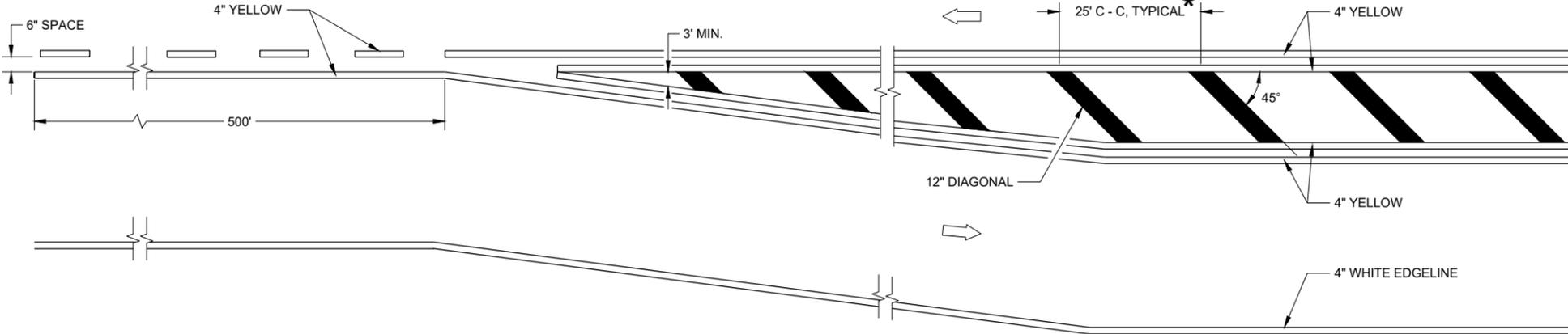
APPROVED  
November 2021 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER

**GENERAL NOTES**

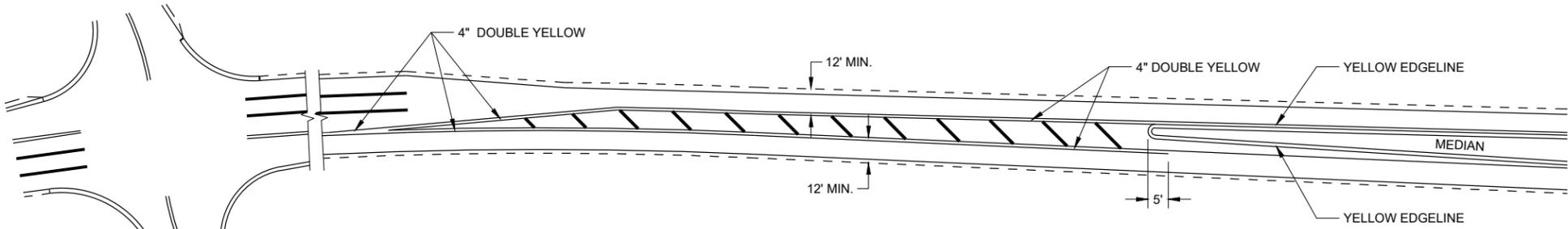
DIAGONALS ARE OPTIONAL WHEN PAINED ISLAND IS LESS THAN 6 FEET AT WIDEST POINT.

➡ DIRECTION OF TRAVEL

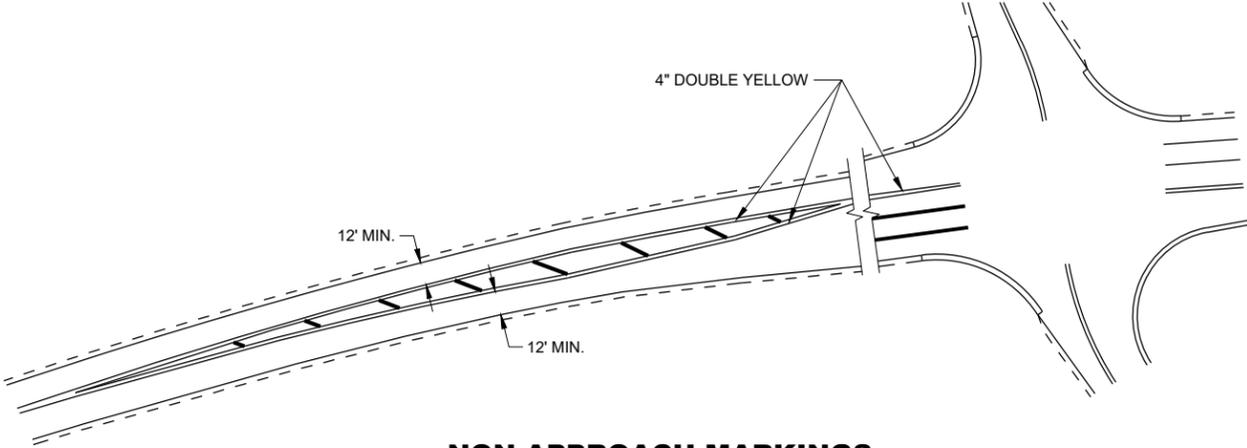
\* WHEN THE PAINTED MEDIAN LENGTH IS LESS THAN 50 FEET THE SPACING IS 10'.



**MEDIAN ISLAND DETAIL**



**APPROACH MARKINGS FOR OTHER MEDIAN TYPES**



**NON-APPROACH MARKINGS**

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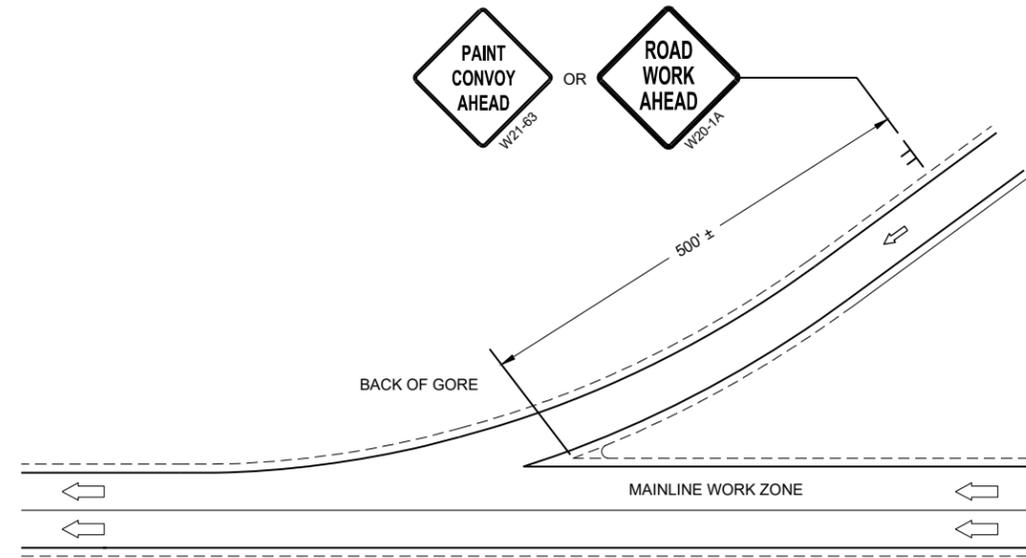
SDD 15C18 - 05a

SDD 15C18 - 05a

<b>MEDIAN ISLAND PAVEMENT MARKINGS</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED February 2021 DATE	/S/ Matthew R. Rauch STATE SIGNING AND MARKING ENGINEER
FHWA	

**LEGEND**

- V1 MARKING VEHICLE
- V2 SHADOW VEHICLE
- V3 TRAIL VEHICLE
-  TRUCK MOUNTED ATTENUATOR (TMA)
-  SIGN ON TEMPORARY SUPPORT
-  DIRECTION OF TRAFFIC
-  FLASHING ARROW PANEL (MERGE)
-  FLASHING ARROW PANEL (CAUTION)



**GENERAL NOTES**

ALL VEHICLES SHALL BE EQUIPPED WITH TWO 360 DEGREE HIGH INTENSITY YELLOW FLASHING LIGHTS OR STROBE LIGHTS AND OPERATED WITH HEADLIGHTS TURNED ON.

ALL VEHICLES SHALL BE EQUIPPED WITH REAR FACING TYPE B OR C FLASHING ARROW PANEL. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE SPECIFIED.

DISTANCE BETWEEN VEHICLES MAY VARY ACCORDING TO TERRAIN, SIGHT DISTANCE, PAINT DRYING TIME, AND OTHER FACTORS. WHENEVER ADEQUATE STOPPING SIGHT DISTANCE EXISTS TO THE REAR, SHADOW VEHICLES SHOULD MAINTAIN THE MINIMUM DISTANCE FROM THE WORK VEHICLE AND PROCEED AT THE SAME SPEED AS THE WORK VEHICLE. SHADOW VEHICLES SHOULD SLOW DOWN IN ADVANCE OF VERTICAL AND HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.

WHEN WORK ACTIVITY BLOCKS THE LEFT LANE, REVERSE TRAFFIC CONTROL.

WHEN A RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, PROVIDE ADDITIONAL TRAFFIC CONTROLS AS SPECIFIED IN THE CONTRACT OR AS APPROVED BY THE ENGINEER.

USE AN ATTENUATOR ON THE REAR MOST VEHICLE THAT BLOCKS ALL OR PART OF THE TRAFFIC LANE.

IF THE SHOULDER IS TOO NARROW TO ACCOMMODATE THE LAST TRAILING VEHICLE, THE VEHICLE SHOULD STRADDLE THE EDGE LINE.

WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR LAY STATIONARY SIGNS AND SUPPORTS FLAT ON THE GRADE WITH UPRIGHTS ORIENTED PARALLEL TO AND DOWNSTREAM FROM TRAFFIC

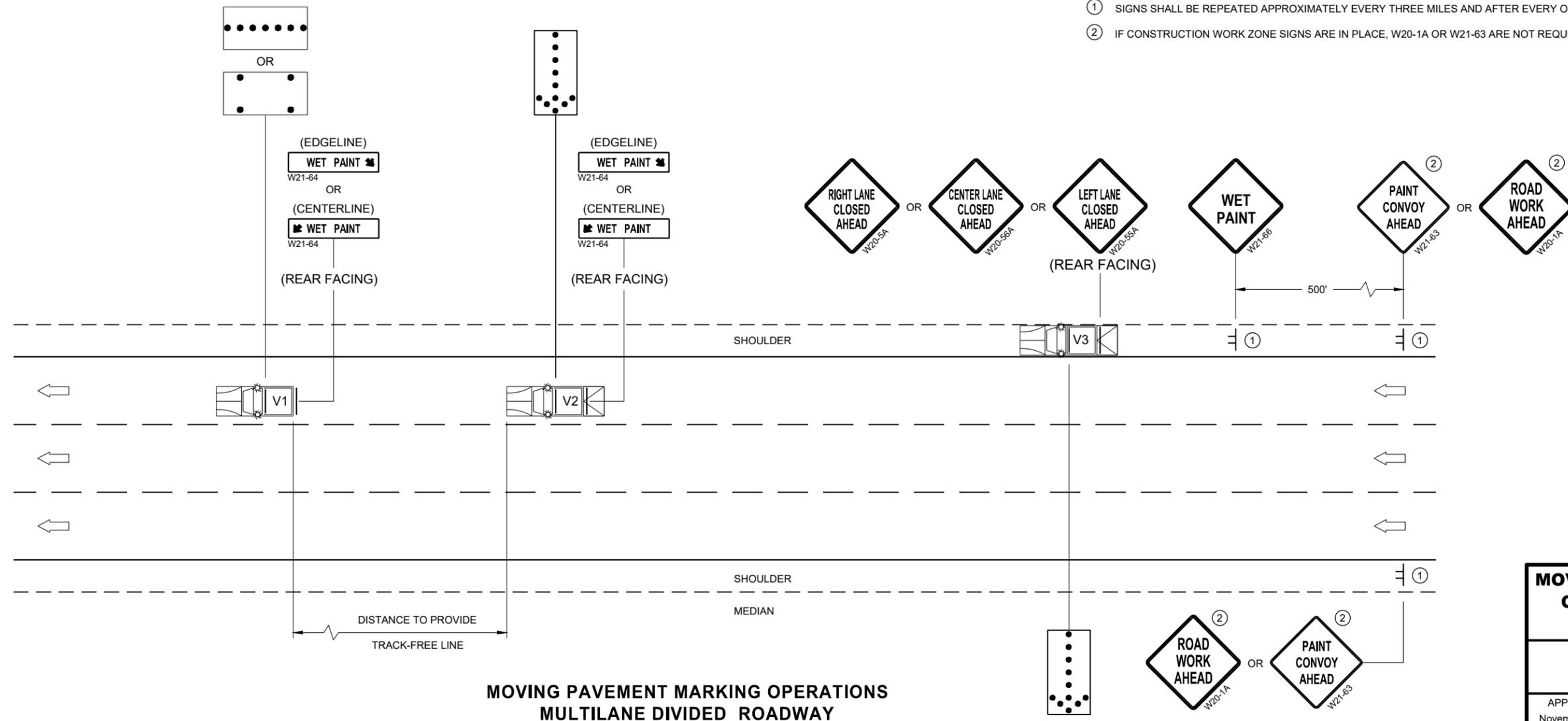
CONES SHOULD BE USED BETWEEN THE MARKING AND SHADOW VEHICLE AT 100 FOOT SPACING. CONES MAY BE OMITTED ON PAINTED LINE IF APPROVED BY THE ENGINEER. CONSIDER PAVEMENT MARKING DRY OR CURE TIMES AND TRAFFIC VOLUME.

CONES SHALL BE A MINIMUM HEIGHT OF 18" FOR WET PAVEMENT MARKINGS

- ① SIGNS SHALL BE REPEATED APPROXIMATELY EVERY THREE MILES AND AFTER EVERY ON RAMP.
- ② IF CONSTRUCTION WORK ZONE SIGNS ARE IN PLACE, W20-1A OR W21-63 ARE NOT REQUIRED.

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SDD 15C19 - 06C

SDD 15C19 - 06C

**MOVING PAVEMENT MARKING OPERATIONS  
MULTILANE DIVIDED ROADWAY**

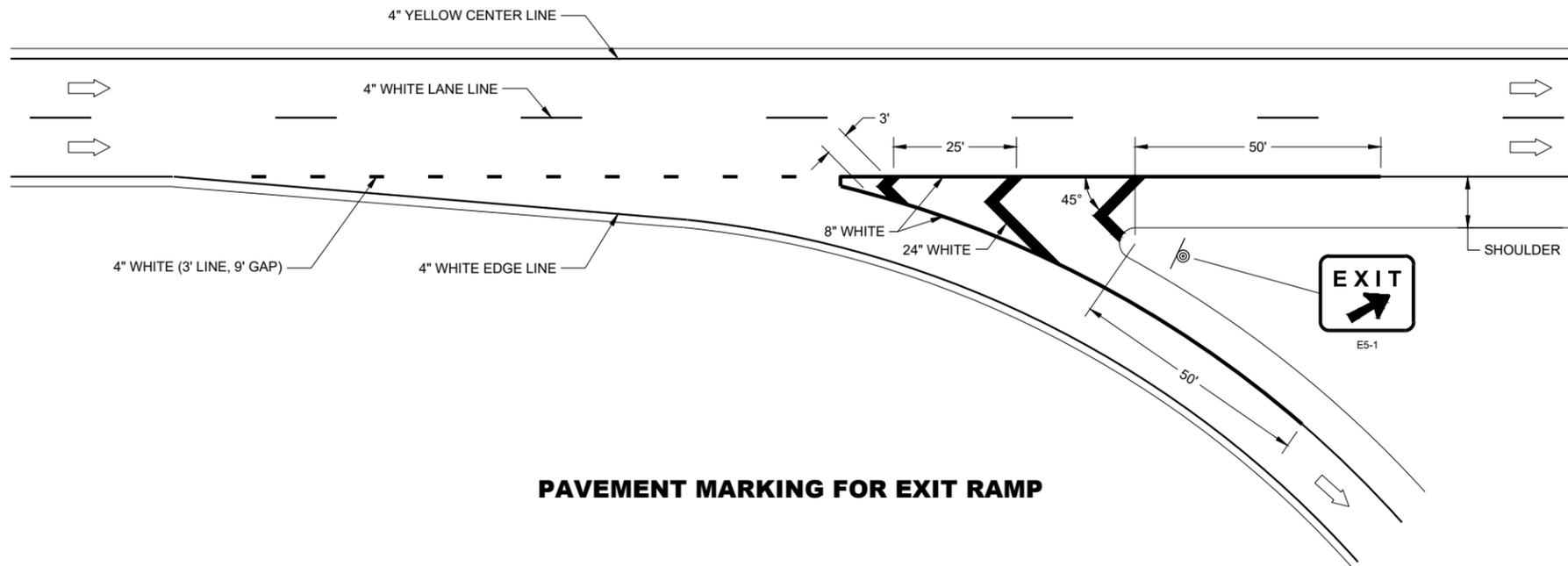
<b>MOVING PAVEMENT MARKING OPERATION MULTI-LANE DIVIDED ROADWAY</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED November 2019 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	

**GENERAL NOTES**

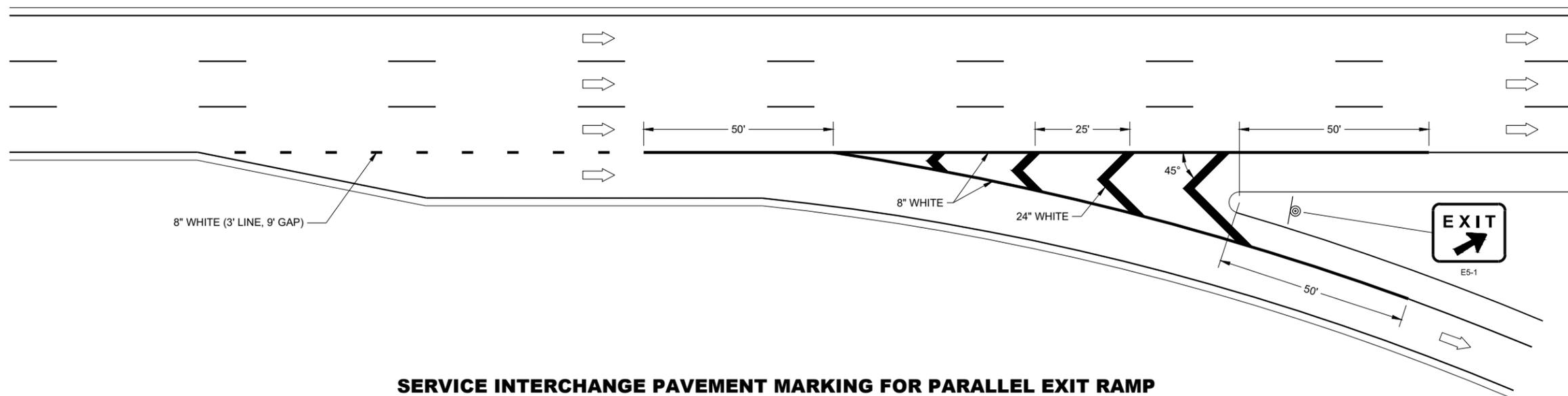
PLACE GROOVE 3 INCHES LEFT OF JOINT.

**LEGEND**

-  SIGN ON PERMANENT SUPPORT
-  DIRECTION OF TRAVEL



**PAVEMENT MARKING FOR EXIT RAMP**



**SERVICE INTERCHANGE PAVEMENT MARKING FOR PARALLEL EXIT RAMP**

**PAVEMENT MARKING,  
EXIT RAMP AND  
PARALLEL EXIT RAMP**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

6

6

SDD 15C31 - 04a

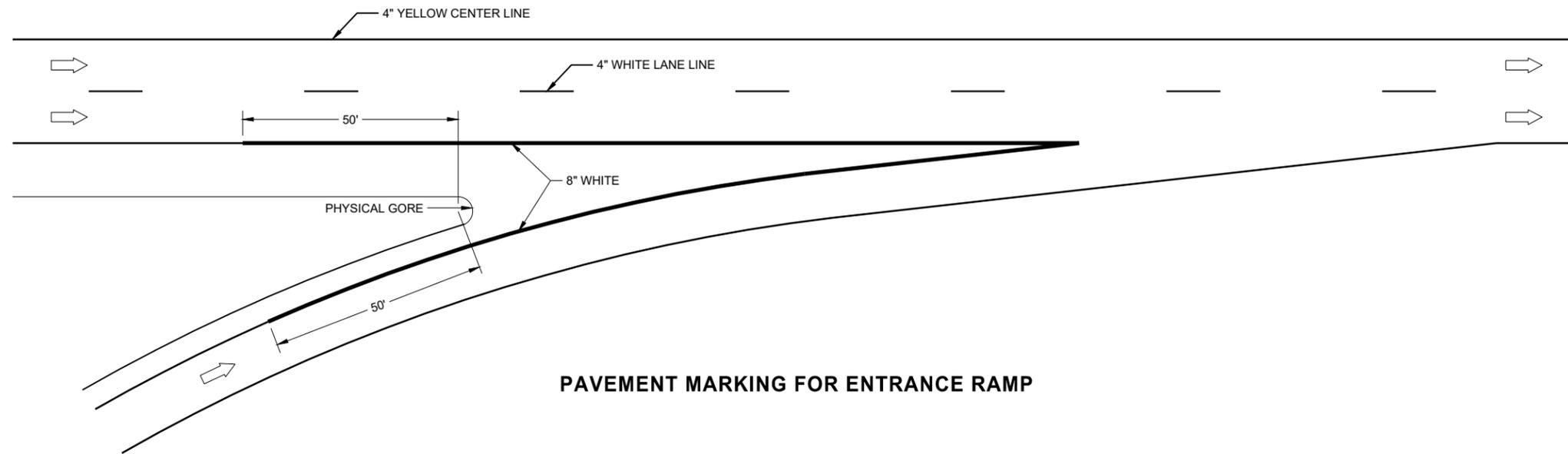
SDD 15C31 - 04a

**GENERAL NOTES**

- PLACE GROOVE 3 INCHES LEFT OF JOINT.
- ① ½ LENGTH OF FULL WIDTH ACCELERATION LANE.

**LEGEND**

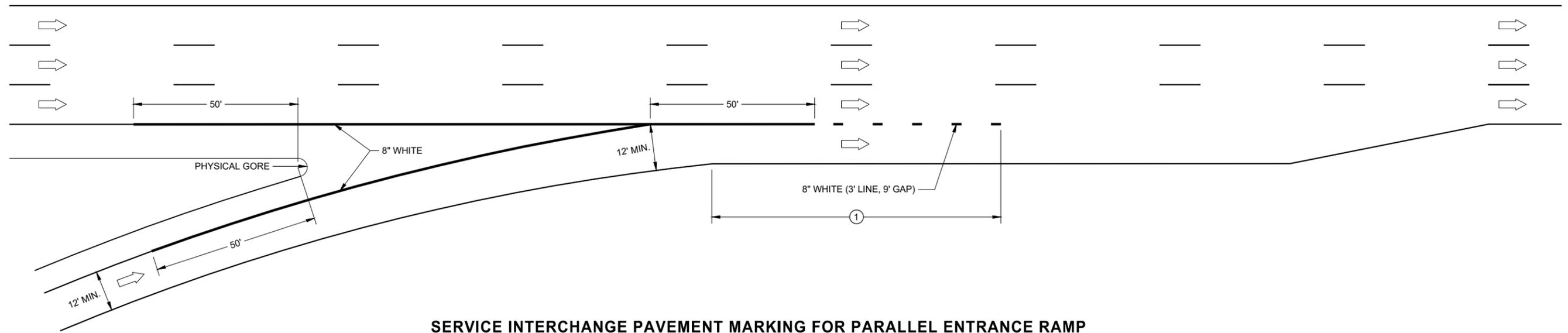
➡ DIRECTION OF TRAVEL



**PAVEMENT MARKING FOR ENTRANCE RAMP**

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**SERVICE INTERCHANGE PAVEMENT MARKING FOR PARALLEL ENTRANCE RAMP**

SDD 14C31 - 04c

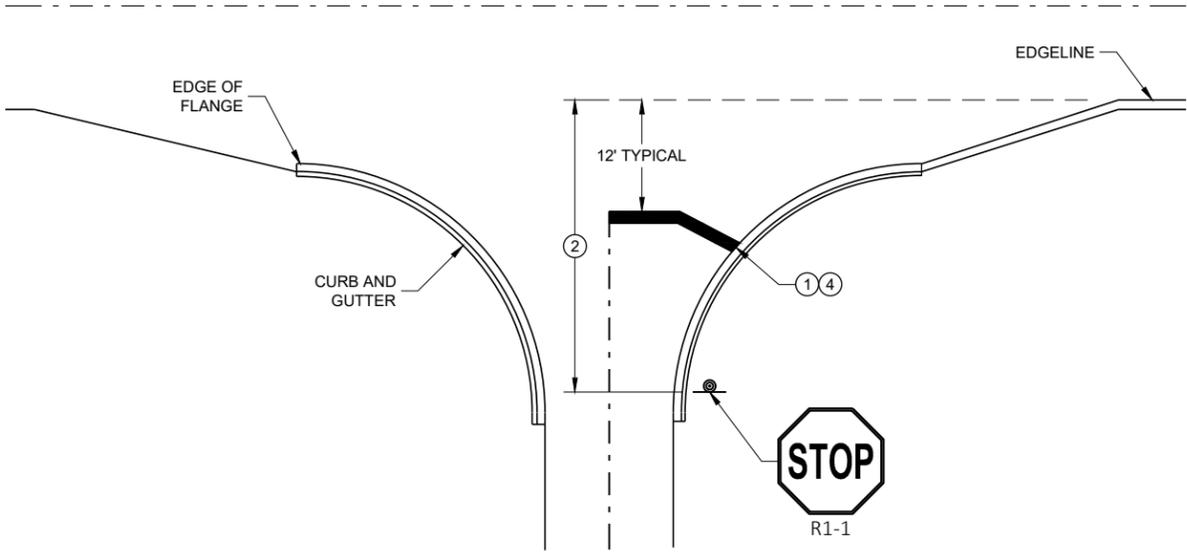
SDD 14C31 - 04c

<b>PAVEMENT MARKING, ENTRANCE RAMP AND PARALLEL ENTRANCE RAMP</b>
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

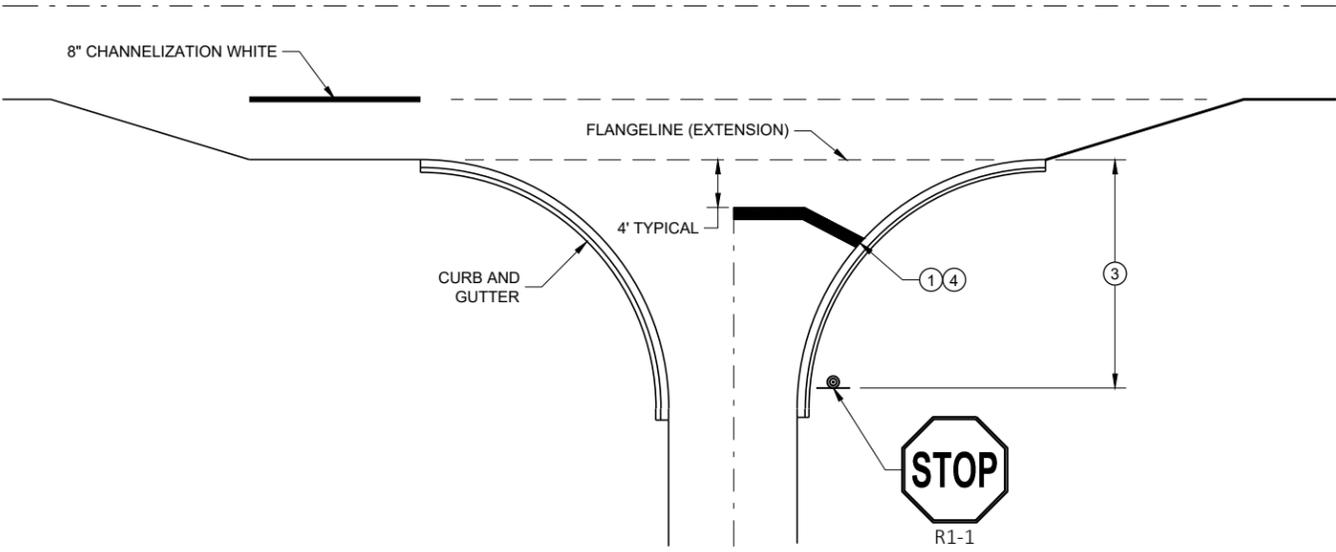
**GENERAL NOTES**

STOP SIGN SHALL BE PLACED A MINIMUM OF 6 FEET TO A MAXIMUM OF 50 FEET FROM THE EDGELINE LOCATION.

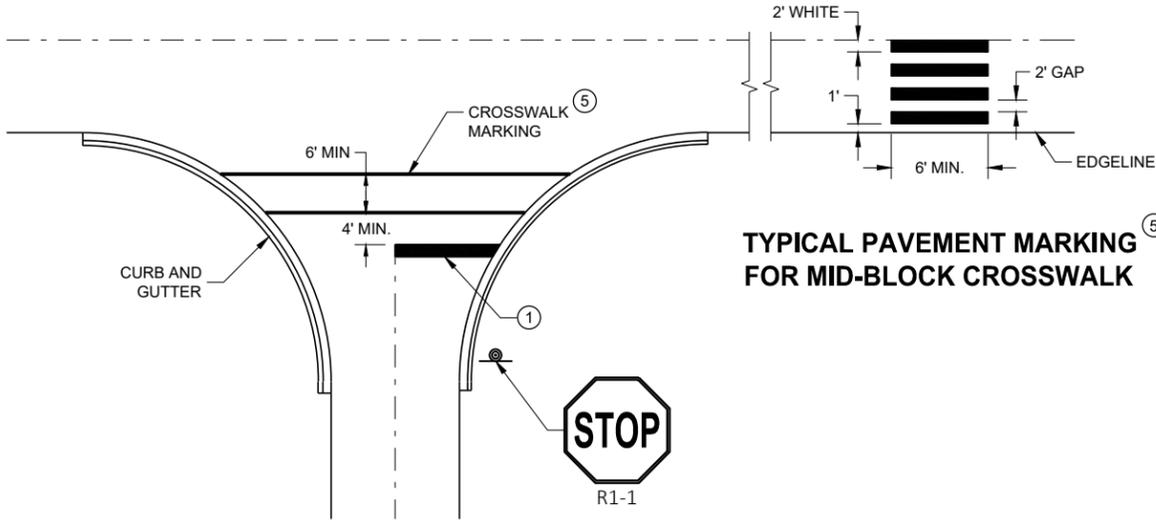
- ① 18-INCH STOP LINES MAY BE DELETED OR ADDED BY THE REGION MARKING ENGINEER BASED ON VISIBILITY AND SIGHT LINES.
- ② NO STOP LINE IS REQUIRED IF STOP SIGN IS LESS THAN OR EQUAL TO 40 FEET FROM THE EDGELINE.
- ③ NO STOP LINE IS REQUIRED IF STOP SIGN IS LESS THAN OR EQUAL TO 30 FEET FROM THE FLANGELINE EXTENSION.
- ④ MOVE CLOSER TO THE EDGE OF TRAVEL LINE AS NEEDED FOR VISIBILITY AND SIGHT LINES (NO CLOSER THAN 4 FEET).
- ⑤ LADDER BAR CROSSWALKS SHOULD ONLY BE USED FOR MID BLOCK CROSSINGS. USE 2 - 6" TRANSVERSE LINES INSTEAD.



**TYPICAL STOP LINE PAVEMENT MARKING WITH CURB AND GUTTER**

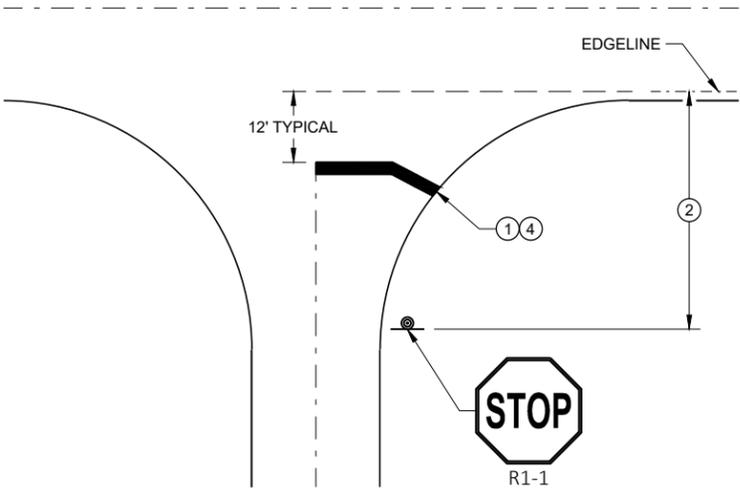


**TYPICAL STOP LINE PAVEMENT MARKING FOR SIDEROADS WITH RIGHT TURN LANE**



**TYPICAL STOP LINE PAVEMENT MARKING FOR SIDEROADS WITH CROSSWALK MARKING**

**TYPICAL PAVEMENT MARKING FOR MID-BLOCK CROSSWALK**



**TYPICAL STOP LINE PAVEMENT MARKING WITHOUT CURB AND GUTTER**

**STOP LINE AND CROSSWALK PAVEMENT MARKING**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
November 2019 /S/ Matthew Rauch  
DATE STATE SIGNING AND MARKING ENGINEER

FHWA

### GENERAL NOTES

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

THE SPACING BETWEEN SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS.

THIS LANE CLOSURE IS TYPICAL FOR CLOSING RIGHT LANE - REVERSE FOR CLOSING LEFT LANE.

ALL SIGNS ARE 48" x 48" UNLESS OTHERWISE NOTED.

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

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

CONSIDER ROADWAY GEOMETRICS WHEN LOCATING SIGNS AND ARROW BOARD SO THE DRIVER HAS A CLEAR VIEW OF THE ARROW BOARD AND LANE CLOSURE DRUMS.

FOR A LANE CLOSURE THAT IS IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, THE ADVANCED WARNING SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS.

REMOVE PAVEMENT MARKINGS IF LANE CLOSURE IS TO BE IN PLACE 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

IF THE HORIZONTAL ALIGNMENT IS SUCH THAT A CURVE MAY REQUIRE ADDITIONAL DELINEATION, THE DEVICE SPACING MAY BE DECREASED TO 50 FEET.

ADJUSTMENTS IN BUFFER SPACE NEED TO BE INCORPORATED WHEN THE LANE CLOSURE OCCURS NEAR AN INTERCHANGE EXIT OR ENTRANCE RAMP OR INTERSECTION. THE LANE CLOSURE MUST TAKE PLACE FAR ENOUGH IN ADVANCE OF AN EXIT OR ENTRANCE RAMP TO STILL ALLOW FOR ADEQUATE BUFFER SPACE. THE MINIMUM LENGTH OF THE BUFFER SPACE BEFORE AN EXIT RAMP SHOULD BE ONE HALF THE LENGTH OF THE TRANSITION AREA. THE ENTRANCE RAMP SHOULD BE FOLLOWED BY THE ORIGINAL BUFFER SPACE LENGTH OF 800 FEET DESIRABLE PRIOR TO ANOTHER TRAFFIC CONTROL CHANGE SUCH AS A CROSSOVER MANEUVER.

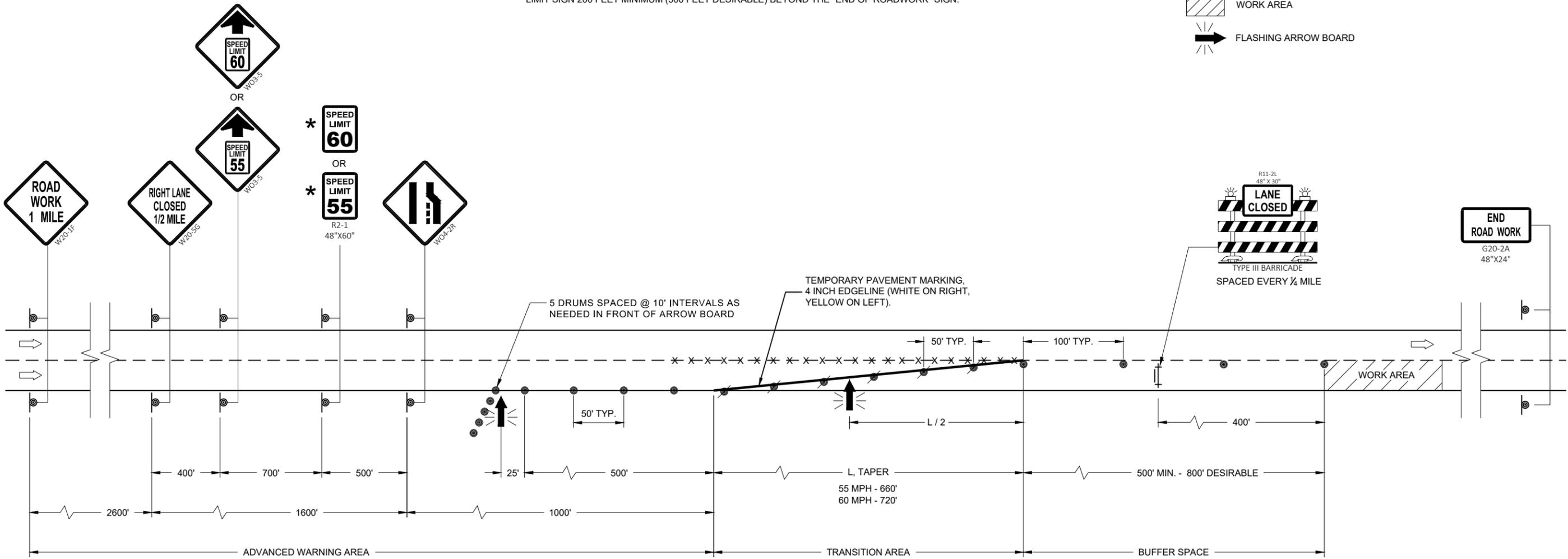
\* A SPEED LIMIT SIGN SHALL BE LOCATED 1500 FEET BEYOND THE END OF THE ACCELERATION LANE OF EACH ENTRANCE RAMP. PLACE A SPEED LIMIT SIGN A MINIMUM OF EVERY 3 MILES. INCLUDE A RESUME SPEED LIMIT SIGN 200 FEET MINIMUM (500 FEET DESIRABLE) BEYOND THE "END OF ROADWORK" SIGN.

### LEGEND

-  SIGN ON PERMANENT SUPPORT
-  TRAFFIC CONTROL DRUM
-  TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
-  TYPE III BARRICADE WITH ATTACHED SIGN
-  TYPE "A" WARNING LIGHT (FLASHING)
-  REMOVING PAVEMENT MARKINGS
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  FLASHING ARROW BOARD

6

SDD 15D12 - 09b



6

SDD 15D12 - 09b

<b>TRAFFIC CONTROL, LANE CLOSURE, SPEED REDUCTION</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED August 2020 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	

**LEGEND**

-  SIGN ON PERMANENT SUPPORT
-  SIGN ON TEMPORARY SUPPORT
-  TRAFFIC CONTROL DRUM
-  TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
-  REMOVING PAVEMENT MARKING (SEE GENERAL NOTES)
-  TYPE III BARRICADE WITH ATTACHED SIGN
-  DIRECTION OF TRAFFIC

**GENERAL NOTES**

THE INSTALLATIONS SHOWN ON THIS SHEET ARE TYPICAL EXAMPLES AND ARE NOT INTENDED TO REPRESENT ANY PARTICULAR RAMP. AT SPECIFIC FIELD LOCATIONS, SIMILAR INSTALLATIONS SHALL BE USED AND ADJUSTED TO THE GEOMETRICS OF THE RAMP AS COORDINATED WITH THE ENGINEER.

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

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

"WO" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.

SEE SEPARATE LANE CLOSURE DETAIL FOR TYPICAL SPACING OF TYPE III BARRICADES AND R11-2L "LANE CLOSED" SIGNS.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONSECUTIVE DAYS AND NIGHTS OR THAT WILL BE PLACED IN A CLOSED LANE, MAY BE MOUNTED ON PORTABLE SUPPORTS. USE SUPPORTS THAT PROVIDE A MINIMUM OF 5 FEET FROM THE BOTTOM OF THE SIGN TO THE PAVEMENT.

IF INDICATED IN MISCELLANEOUS QUANTITIES, SUBSTITUTE FLEXIBLE TUBULAR MARKERS FOR DRUMS IN THE GORE BETWEEN THE ENTRANCE RAMP AND MAINLINE TRAFFIC.

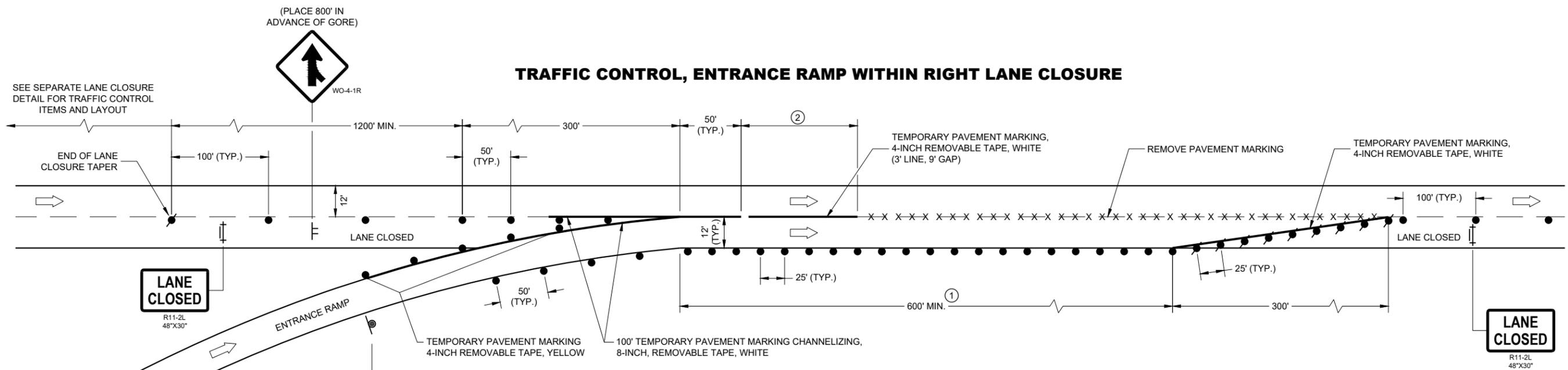
ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

REMOVE PAVEMENT MARKINGS AND PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF LANE CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

- ① EXTEND THE LENGTH OF THE MERGE ARE IF THE ENTERING (DESIGN) SPEED IS LESS THAN 50MPH OR IF THE MAINLINE GRADE EXCEEDS ±2.2%.
- ② END TEMPORARY MARKING AT ½ THE LENGTH OF FULL WIDTH OF THE ACCELERATION LANE.

**TRAFFIC CONTROL, ENTRANCE RAMP WITHIN RIGHT LANE CLOSURE**



**PARALLEL EXIT RAMP**

**TRAFFIC CONTROL,  
PARALLEL ENTRANCE RAMP  
WITHIN LANE CLOSURE**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
May 2019 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER

FHWA

**LEGEND**

-  SIGN ON PERMANENT SUPPORT
-  SIGN ON TEMPORARY SUPPORT
-  TRAFFIC CONTROL DRUM
-  TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
-  REMOVING PAVEMENT MARKING (SEE GENERAL NOTES)
-  TYPE III BARRICADE WITH ATTACHED SIGN
-  DIRECTION OF TRAFFIC

**GENERAL NOTES**

THE INSTALLATIONS SHOWN ON THIS SHEET ARE TYPICAL EXAMPLES AND ARE NOT INTENDED TO REPRESENT ANY PARTICULAR RAMP. AT SPECIFIC FIELD LOCATIONS, SIMILAR INSTALLATIONS SHALL BE USED AND ADJUSTED TO THE GEOMETRICS OF THE RAMP AS COORDINATED WITH THE ENGINEER.

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

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

"WO" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.

SEE SEPARATE LANE CLOSURE DETAIL FOR TYPICAL SPACING OF TYPE III BARRICADES AND R11-2L "LANE CLOSED" SIGNS.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONSECUTIVE DAYS AND NIGHTS OR THAT WILL BE PLACED IN A CLOSED LANE, MAY BE MOUNTED ON PORTABLE SUPPORTS.

IF INDICATED IN MISCELLANEOUS QUANTITIES, SUBSTITUTE FLEXIBLE TUBULAR MARKERS /OR DRUMS IN THE GORE BETWEEN THE EXIT RAMP AND MAINLINE TRAFFIC.

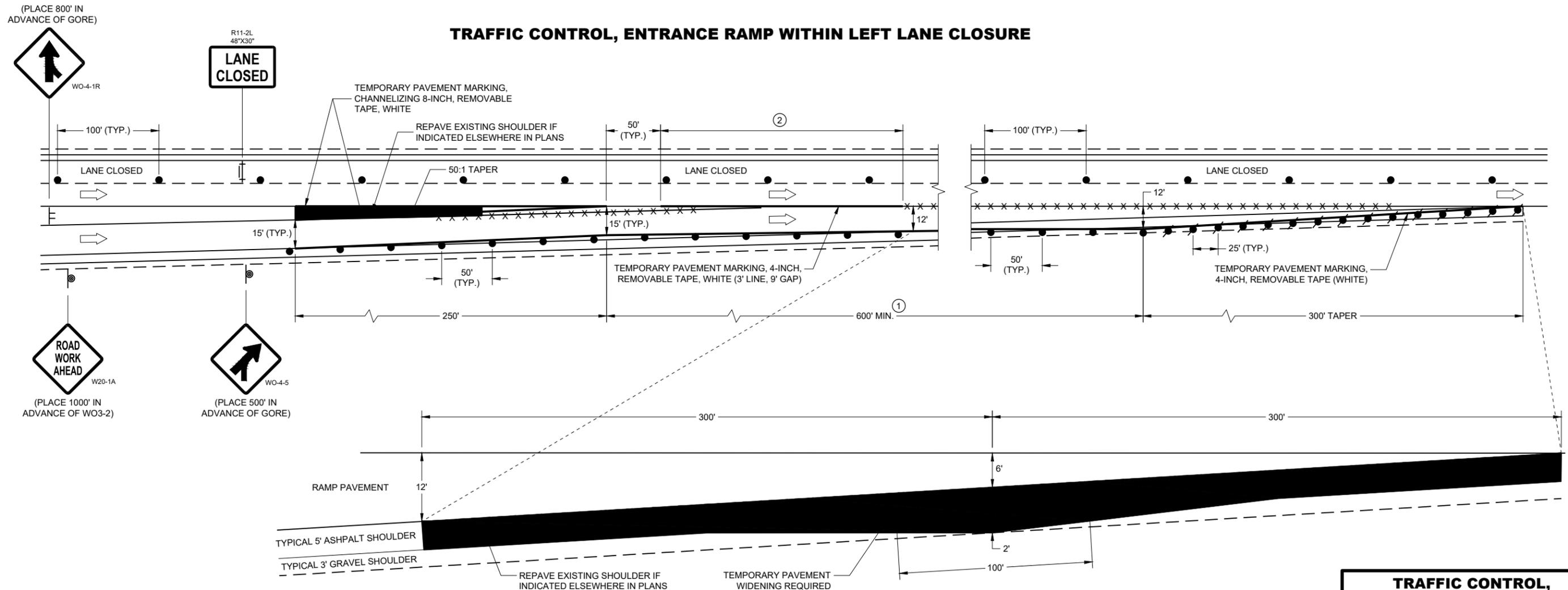
ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

REMOVE PAVEMENT MARKINGS AND PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF LANE CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

- ① EXTEND THE LENGTH OF THE MERGE AREA IF THE ENTERING (DESIGN) SPEED OF THE RAMP IS LESS THAN 50 MPH OR IF THE MAINLINE GRADE EXCEEDS ±2.2%.
- ② END TEMPORARY MARKING AT ½ THE LENGTH OF FULL WIDTH OF THE ACCELERATION LANE.

**TRAFFIC CONTROL, ENTRANCE RAMP WITHIN LEFT LANE CLOSURE**



**TEMPORARY PAVEMENT DETAIL**

(EXISTING RAMP DIMENSIONS MAY VARY, ADJUST TEMPORARY PAVEMENT ACCORDINGLY)

**TRAFFIC CONTROL, ENTRANCE RAMP WITHIN LANE CLOSURE**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
DATE: May 2019 /S/ Andrew Heidtke  
WORK ZONE ENGINEER

FHWA

SDD 15D15 - 05b

SDD 15D15 - 05b

**LEGEND**

-  SIGN ON PERMANENT SUPPORT
-  SIGN ON TEMPORARY SUPPORT
-  TRAFFIC CONTROL DRUM
-  TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
-  REMOVING PAVEMENT MARKING (SEE GENERAL NOTES)
-  TYPE III BARRICADE WITH ATTACHED SIGN
-  FLAGS, 16" X 16" MIN., ORANGE
-  DIRECTION OF TRAFFIC

**GENERAL NOTES**

THE INSTALLATIONS SHOWN ON THIS SHEET ARE TYPICAL EXAMPLES AND ARE NOT INTENDED TO REPRESENT ANY PARTICULAR RAMP. AT SPECIFIC FIELD LOCATIONS, SIMILAR INSTALLATIONS SHALL BE USED AND ADJUSTED TO THE GEOMETRICS OF THE RAMP AS COORDINATED WITH THE ENGINEER.

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

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

"WO" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.

SEE SEPARATE LANE CLOSURE DETAIL FOR TYPICAL SPACING OF TYPE III BARRICADES AND R11-2L "LANE CLOSED" SIGNS.

YIELD SIGN AND WARNING SIGNS ON ENTRANCE RAMP ARE ALSO APPROPRIATE FOR CLOSURE OF THE MAINLINE LEFT LANE. OMIT THE YIELD SIGN IF MORE THAN ONE LANE REMAINS OPEN ON THE MAINLINE AND THE RAMP TAPER IS AT LEAST AS LONG AS THE NORMAL ENTRANCE RAMP TAPER AT THE SITE.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONSECUTIVE DAYS AND NIGHTS OR THAT WILL BE PLACED IN A CLOSED LANE, MAY BE MOUNTED ON PORTABLE SUPPORTS. USE SUPPORTS THAT PROVIDE A MINIMUM OF 5 FEET FROM THE BOTTOM OF THE SIGN TO THE PAVEMENT.

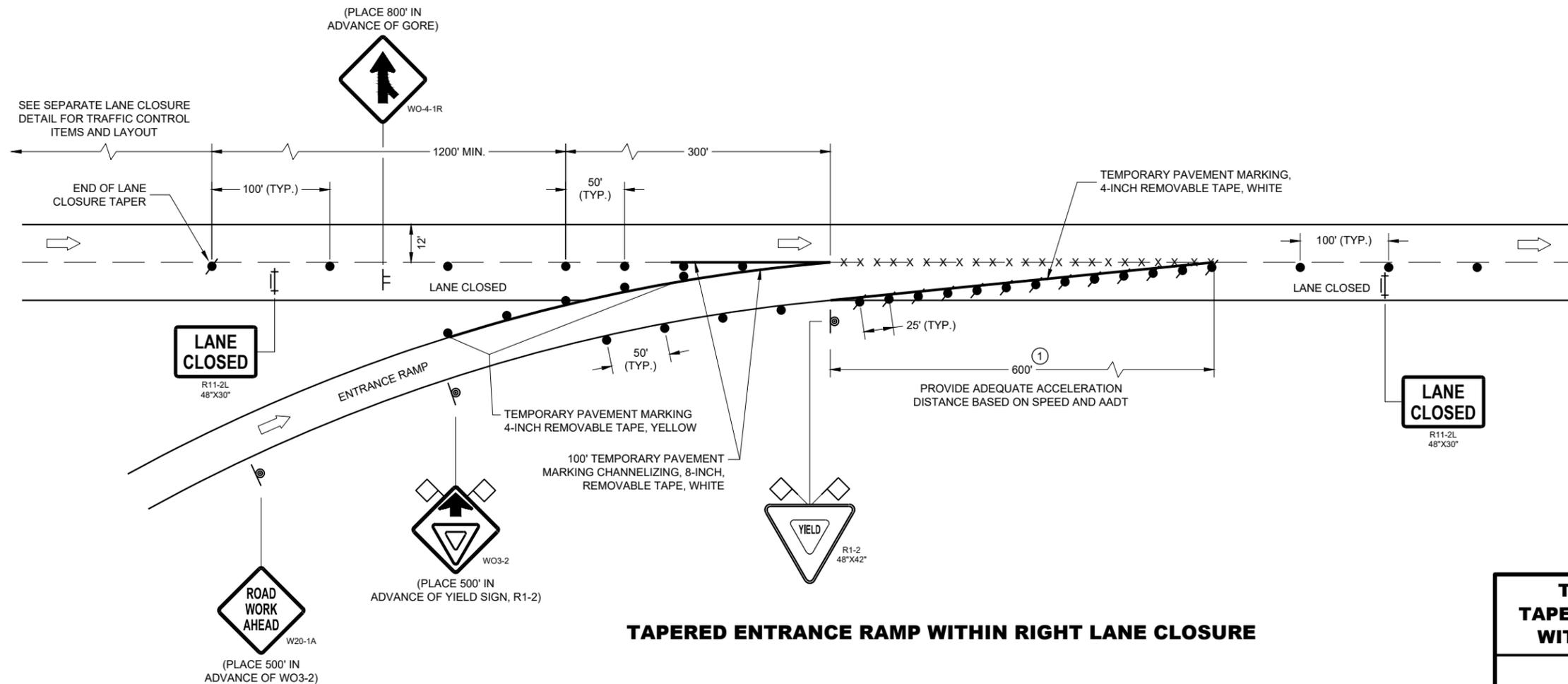
IF INDICATED IN MISCELLANEOUS QUANTITIES, SUBSTITUTE FLEXIBLE TUBULAR MARKERS FOR DRUMS IN THE GORE BETWEEN THE ENTRANCE RAMP AND MAINLINE TRAFFIC.

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.

REMOVE PAVEMENT MARKINGS AND PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF LANE CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

① CONSULT WITH REGIONAL WORK ZONE ENGINEER IF NEED TO REDUCE LENGTH EXISTS.



**TAPERED ENTRANCE RAMP WITHIN RIGHT LANE CLOSURE**

**TRAFFIC CONTROL,  
TAPERED ENTRANCE RAMP  
WITHIN LANE CLOSURE**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
DATE: May 2019 /S/ Andrew Heidtke  
WORK ZONE ENGINEER

FHWA



**LEGEND**

- ⊙ SIGN ON PERMANENT SUPPORT
- ⊞ SIGN ON TEMPORARY SUPPORT
- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- ×-×-× REMOVING PAVEMENT MARKING (SEE GENERAL NOTES)
- ⊞ TYPE III BARRICADE WITH ATTACHED SIGN
- ➡ DIRECTION OF TRAFFIC

**GENERAL NOTES**

THE INSTALLATIONS SHOWN ON THIS SHEET ARE TYPICAL EXAMPLES AND ARE NOT INTENDED TO REPRESENT ANY PARTICULAR RAMP. AT SPECIFIC FIELD LOCATIONS, SIMILAR INSTALLATIONS SHALL BE USED AND ADJUSTED TO THE GEOMETRICS OF THE RAMP AS COORDINATED WITH THE ENGINEER.

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

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

"WO" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.

SEE SEPARATE LANE CLOSURE DETAIL FOR TYPICAL SPACING OF TYPE III BARRICADES AND R11-2L "LANE CLOSED" SIGNS.

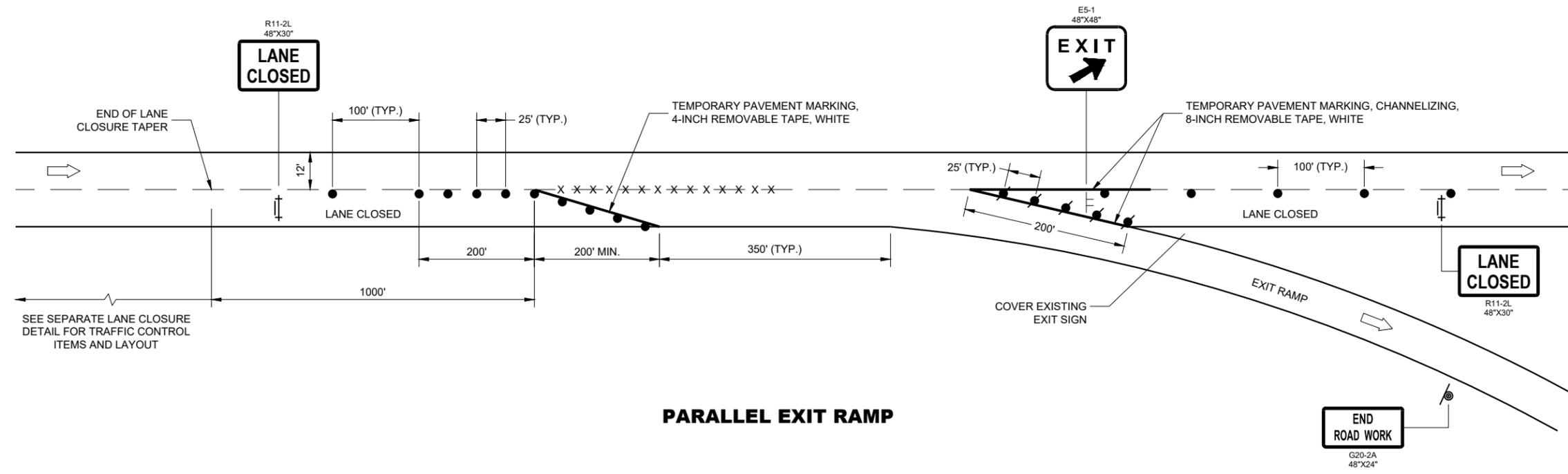
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONSECUTIVE DAYS AND NIGHTS OR THAT WILL BE PLACED IN A CLOSED LANE, MAY BE MOUNTED ON PORTABLE SUPPORTS.

IF INDICATED IN MISCELLANEOUS QUANTITIES, SUBSTITUTE FLEXIBLE TUBULAR MARKERS FOR DRUMS IN THE GORE BETWEEN THE EXIT RAMP AND MAINLINE TRAFFIC.

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.

REMOVE PAVEMENT MARKINGS AND PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF LANE CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.



**PARALLEL EXIT RAMP**

6

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SDD 15D15 - 05e

SDD 15D15 - 05e

<b>TRAFFIC CONTROL, PARALLEL EXIT RAMP WITHIN LANE CLOSURE</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2019 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	

**LEGEND**

- † TYPE III BARRICADE
- †† TYPE III BARRICADE WITH ATTACHED SIGN
- TRAFFIC CONTROL DRUM
- ⊙ SIGN ON PERMANENT SUPPORT
- ⚡ TYPE "A" WARNING LIGHT (FLASHING)
- ➔ DIRECTION OF TRAFFIC

**GENERAL NOTES**

THIS RAMP CLOSURE DETAIL IS TYPICAL FOR CLOSING A RIGHT SIDE EXIT RAMP. FOR A LEFT SIDE EXIT RAMP, REVERSE THE TRAFFIC CONTROL.

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

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

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

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.

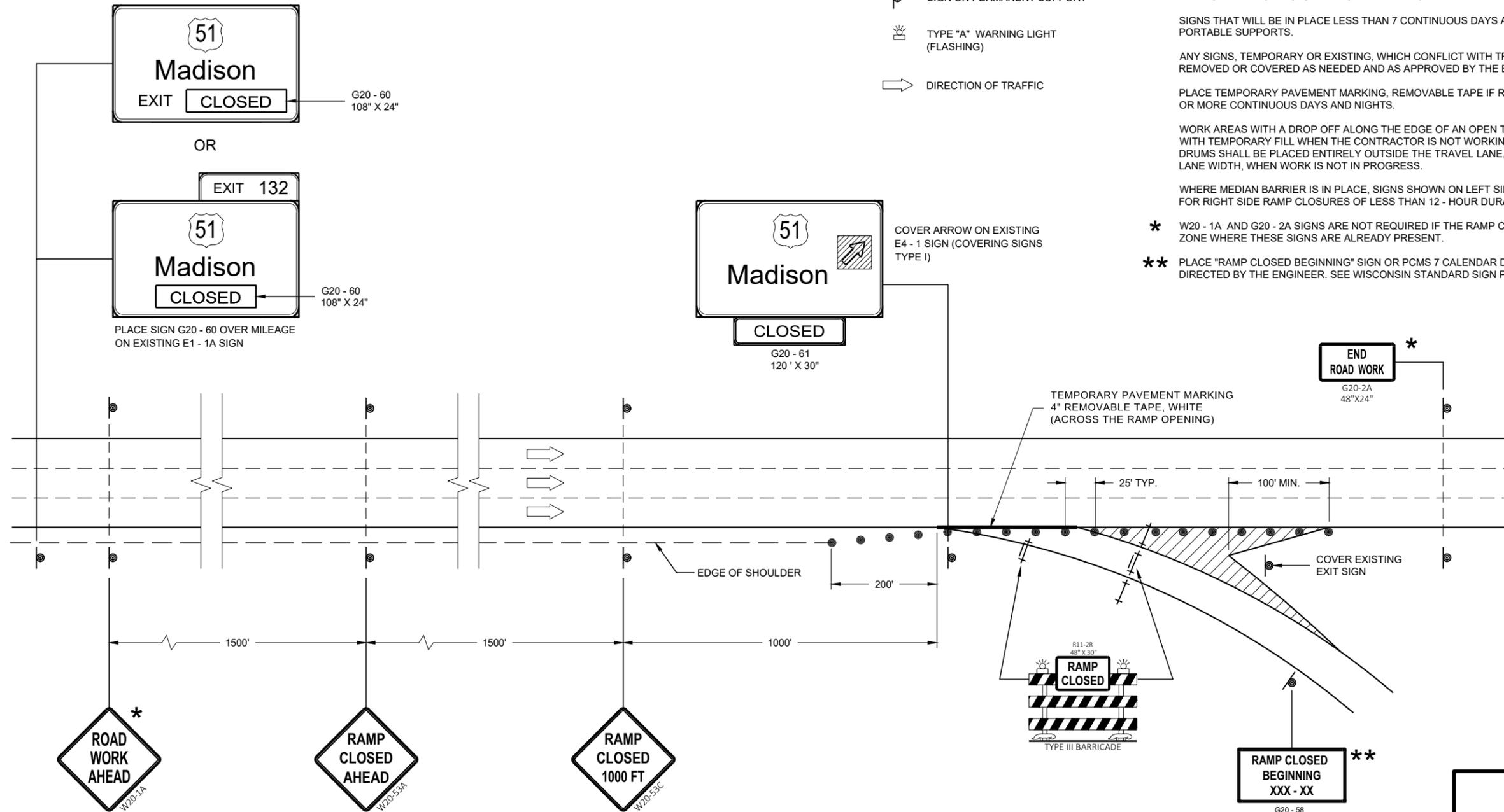
PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF RAMP CLOSURE IS TO BE IN PLACE 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

WORK AREAS WITH A DROP OFF ALONG THE EDGE OF AN OPEN TRAVEL LANE SHALL BE LEVELED WITH TEMPORARY FILL WHEN THE CONTRACTOR IS NOT WORKING ADJACENT TO THE TRAVEL LANE. DRUMS SHALL BE PLACED ENTIRELY OUTSIDE THE TRAVEL LANE, ALLOWING THE FULL UNOBSTRUCTED LANE WIDTH, WHEN WORK IS NOT IN PROGRESS.

WHERE MEDIAN BARRIER IS IN PLACE, SIGNS SHOWN ON LEFT SIDE OF ROADWAY MAY BE OMITTED FOR RIGHT SIDE RAMP CLOSURES OF LESS THAN 12 - HOUR DURATION.

\* W20 - 1A AND G20 - 2A SIGNS ARE NOT REQUIRED IF THE RAMP CLOSURE IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT.

\*\* PLACE "RAMP CLOSED BEGINNING" SIGN OR PCMS 7 CALENDAR DAYS PRIOR TO CLOSURE OR AS DIRECTED BY THE ENGINEER. SEE WISCONSIN STANDARD SIGN PLATES FOR SIGN LAYOUT.



**RAMP CLOSED BEGINNING** \*\*

G20 - 58  
OR  
PCMS MESSAGING

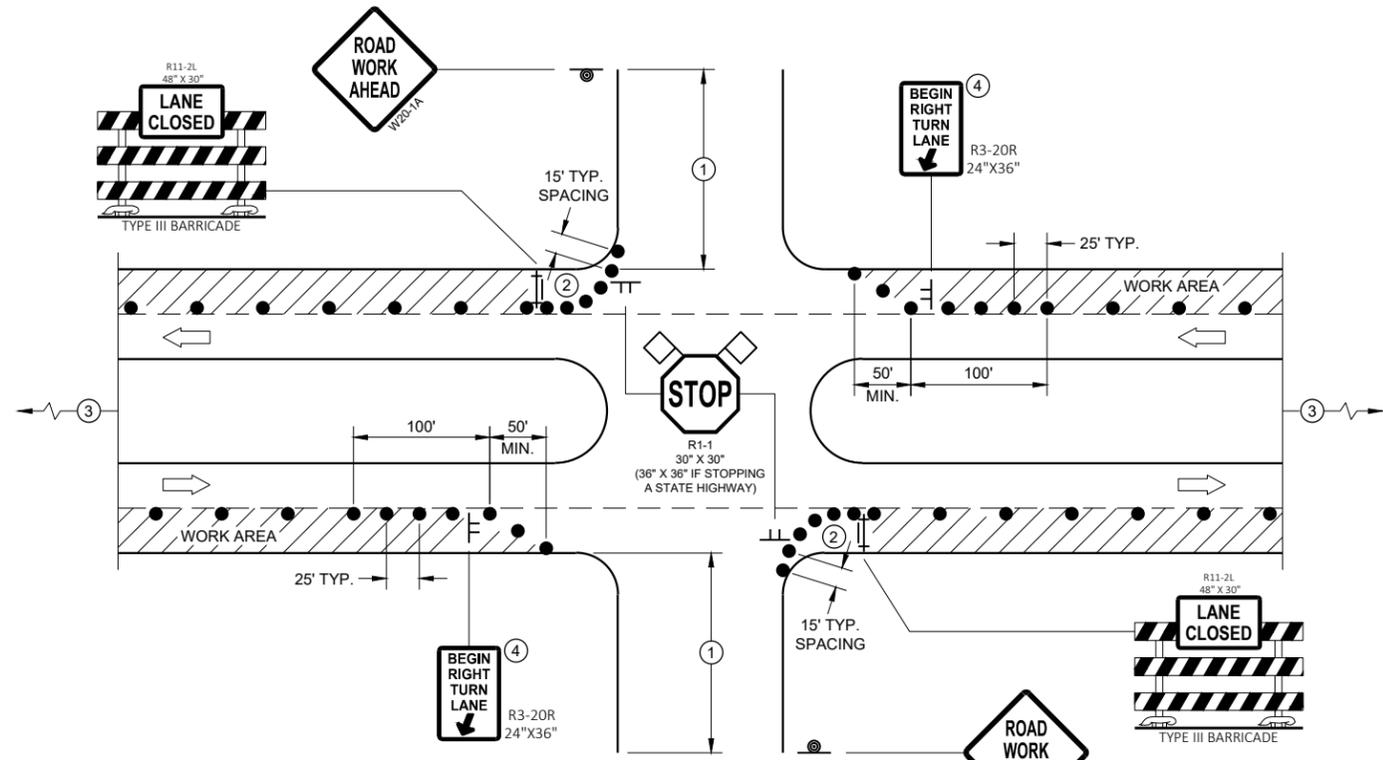
FRAME 1	FRAME 2
RAMP TO CLOSE	XXXDAY XX XX XX

**TRAFFIC CONTROL,  
EXIT RAMP CLOSURE**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
November 2018 DATE /S/ Andrew Heidtke  
ROADWAY STANDARDS DEVELOPMENT ENGINEER

FHWA



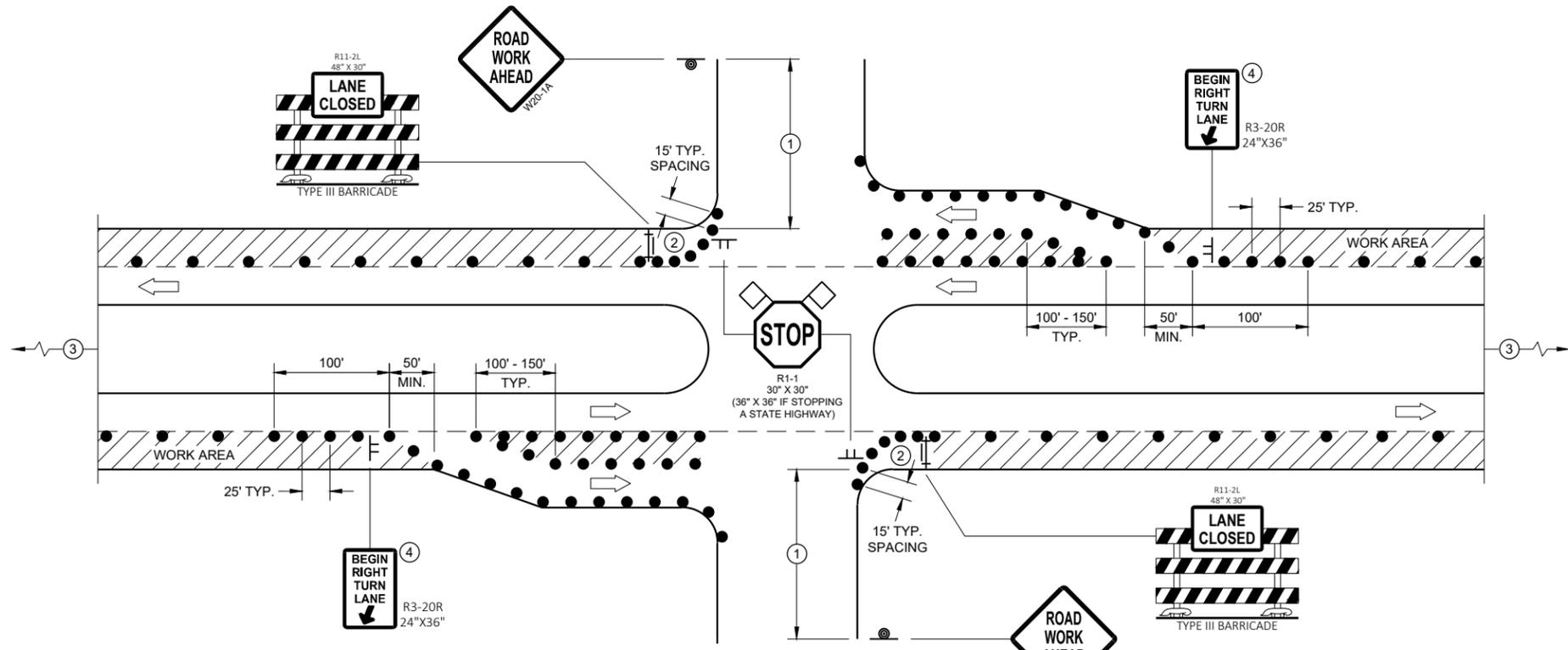
PROVIDE TURN LANES AT INTERSECTIONS WHENEVER STAGING OF WORK ALLOWS. TAPER AND TURN LANE LENGTHS BASED ON FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

**FOR RIGHT LANE CLOSURE AT INTERSECTION**

**GENERAL NOTES**

- ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" MAY BE USED IF APPROVED BY THE DISTRICT TRAFFIC UNIT.
- "WO" SIGN IS THE SAME AS "W" SIGN EXCEPT THE BACKGROUND IS ORANGE.
- ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH THE TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER. NO WARNING LIGHTS SHALL BE WORKING ON COVERED OR "DOWNED" SIGNS.
- THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.
- THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A MINIMUM OF 200 FEET (500' DESIRABLE) DISTANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE
- SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FHWA'S MANUAL OF STANDARD HIGHWAY SIGNS OR THE WISCONSIN STANDARD SIGN PLATES.
- SIGNS THAT WILL REMAIN IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS OR THAT WILL BE PLACED IN A CLOSED LANE MAY BE MOUNTED ON PORTABLE SUPPORTS.
- BARRICADES IN A CLOSED LANE THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY REESTABLISHED UPON COMPLETION OF THE OPERATION, OR FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.
- CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

- ① 500' TYPICAL OR AT LAST INTERSECTION, WHICHEVER IS CLOSER.  
350' IF 35 - 40 MPH.  
200' IF 25 - 30 MPH.
- ② ALSO USE BARRICADE AND 15 FOOT TYPICAL DRUM SPACING AT COMMERCIAL DRIVEWAYS
- ③ SEE SEPARATE LANE CLOSURE DETAIL FOR ADDITIONAL TRAFFIC CONTROL.
- ④ MINIMUM MOUNTING HEIGHT OF 5 FEET FROM EDGE OF PAVEMENT (AT EDGE LINE LOCATION) TO BOTTOM OF SIGN.



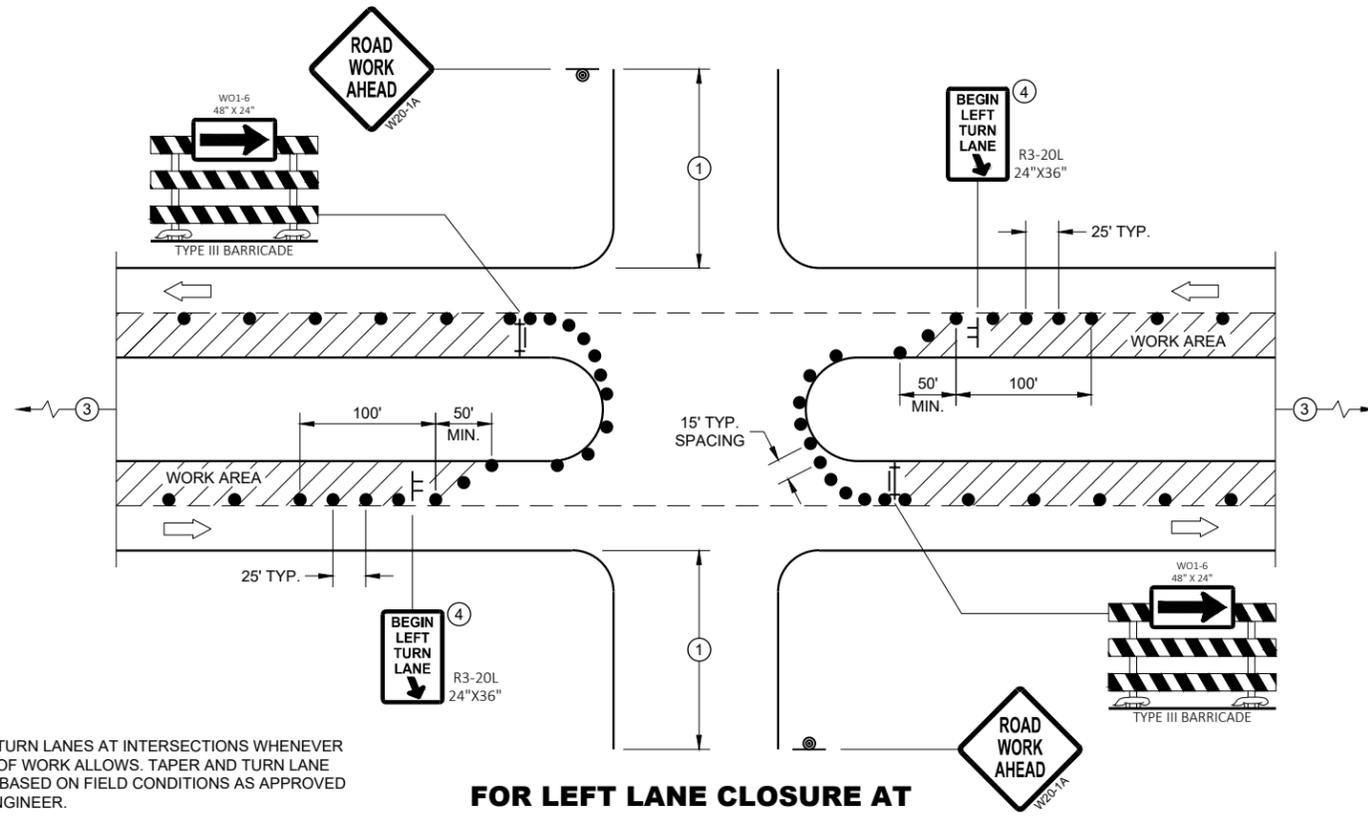
**FOR RIGHT LANE CLOSURE AT INTERSECTION (WITH RIGHT TURN BAY OPEN)**

**LEGEND**

- SIGN ON TEMPORARY SUPPORT
- SIGN ON PERMANENT SUPPORT
- TRAFFIC CONTROL DRUM
- TYPE III BARRICADE WITH ATTACHED SIGN
- DIRECTION OF TRAFFIC
- FLAGS, 16" X 16" MIN., ORANGE
- WORK AREA

**TRAFFIC CONTROL,  
INTERSECTION WITHIN SINGLE  
RIGHT LANE CLOSURE**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



PROVIDE TURN LANES AT INTERSECTIONS WHENEVER STAGING OF WORK ALLOWS. TAPER AND TURN LANE LENGTHS BASED ON FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

**FOR LEFT LANE CLOSURE AT INTERSECTION OR MEDIAN OPENING**

**GENERAL NOTES**

ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" MAY BE USED IF APPROVED BY THE DISTRICT TRAFFIC UNIT.

"WO" SIGN IS THE SAME AS "W" SIGN EXCEPT THE BACKGROUND IS ORANGE.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH THE TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER. NO WARNING LIGHTS SHALL BE WORKING ON COVERED OR "DOWNED" SIGNS.

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

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A MINIMUM OF 200 FEET (500' DESIRABLE) DISTANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE

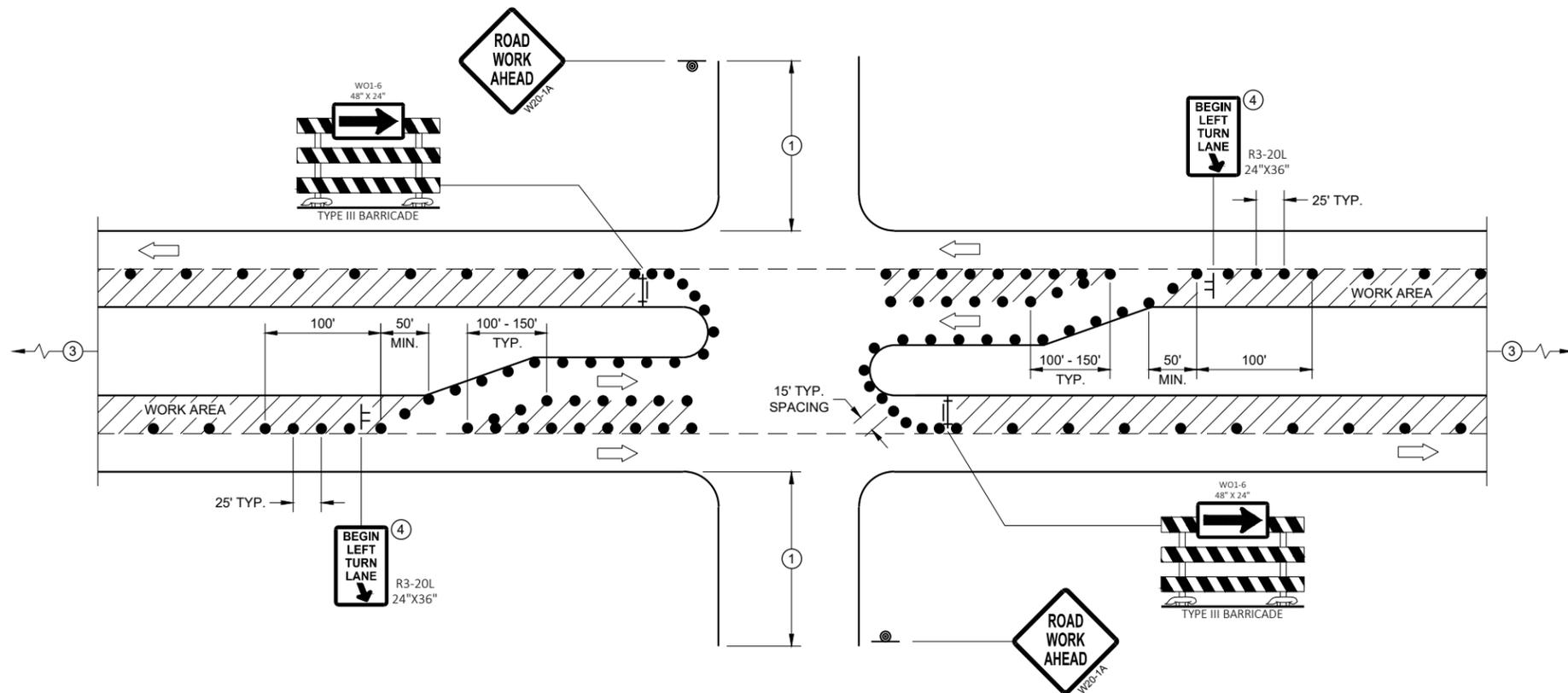
SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FHWA'S MANUAL OF STANDARD HIGHWAY SIGNS OR THE WISCONSIN STANDARD SIGN PLATES.

SIGNS THAT WILL REMAIN IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS OR THAT WILL BE PLACED IN A CLOSED LANE MAY BE MOUNTED ON PORTABLE SUPPORTS.

BARRICADES IN A CLOSED LANE THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY REESTABLISHED UPON COMPLETION OF THE OPERATION, OR FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

- ① 500' TYPICAL OR AT LAST INTERSECTION, WHICHEVER IS CLOSER.  
350' IF 35 - 40 MPH.  
200' IF 25 - 30 MPH.
- ② ALSO USE BARRICADE AND 15 FOOT TYPICAL DRUM SPACING AT COMMERCIAL DRIVEWAYS
- ③ SEE SEPARATE LANE CLOSURE DETAIL FOR ADDITIONAL TRAFFIC CONTROL.
- ④ MINIMUM MOUNTING HEIGHT OF 5 FEET FROM EDGE OF PAVEMENT (AT EDGE LINE LOCATION) TO BOTTOM OF SIGN.



**FOR LEFT LANE CLOSURE AT INTERSECTION OR MEDIAN OPENING (WITH LEFT TURN BAY OPEN)**

**LEGEND**

- SIGN ON TEMPORARY SUPPORT
- SIGN ON PERMANENT SUPPORT
- TRAFFIC CONTROL DRUM
- TYPE III BARRICADE WITH ATTACHED SIGN
- DIRECTION OF TRAFFIC
- FLAGS, 16" X 16" MIN., ORANGE
- WORK AREA

**TRAFFIC CONTROL,  
INTERSECTION WITHIN SINGLE  
LEFT LANE CLOSURE**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

FHWA

### GENERAL NOTES

THIS DETAIL IS TYPICAL FOR CLOSING THE RIGHT SHOULDER. FOR CLOSING THE LEFT SHOULDER, REVERSE THE TRAFFIC CONTROL.

THIS DETAIL MAY BE USED FOR DIVIDED ROADWAYS WITH ANY NUMBER OF TRAVEL LANES.

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

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FHWA'S MANUAL OF STANDARD HIGHWAY SIGNS OR THE WISCONSIN STANDARD SIGN PLATES.

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

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.

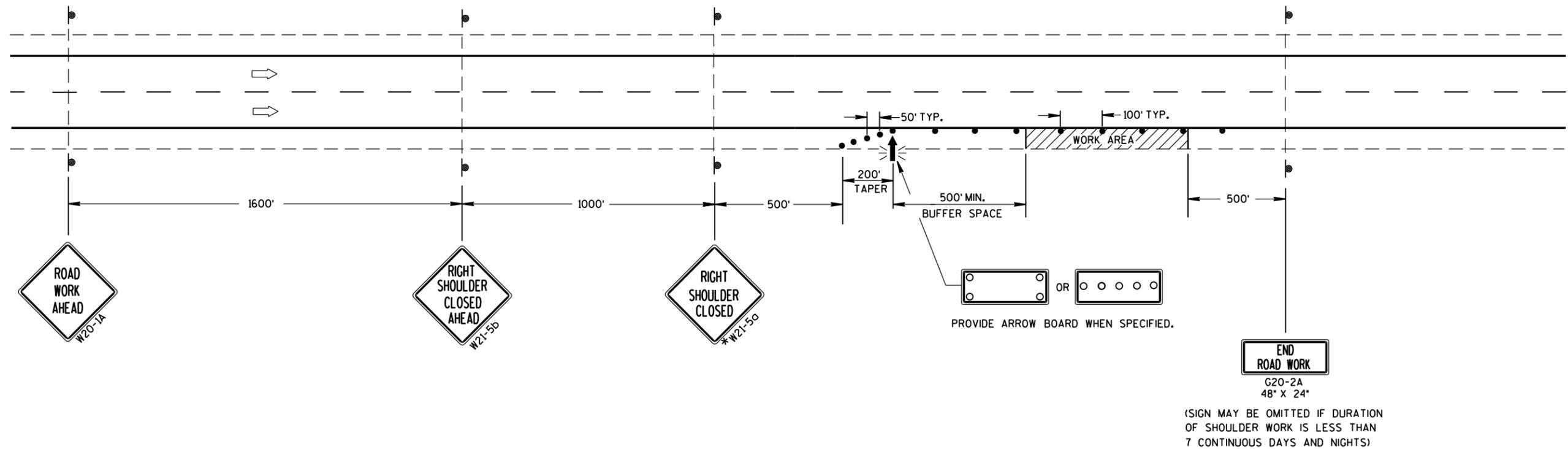
CHANNELIZING DEVICES PLACED ADJACENT TO THE WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

WHEN A RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

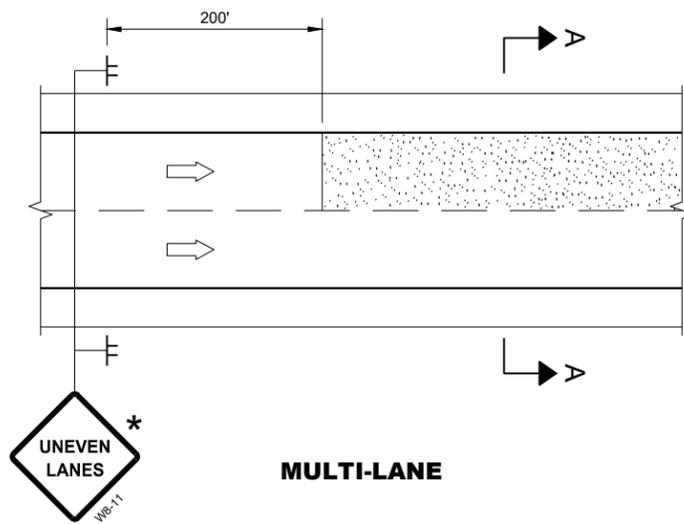
\*FOR SHORT DURATION SHOULDER WORK OF LESS THAN ONE HOUR, THE W21-50 SIGN MAY BE OMITTED.

### LEGEND

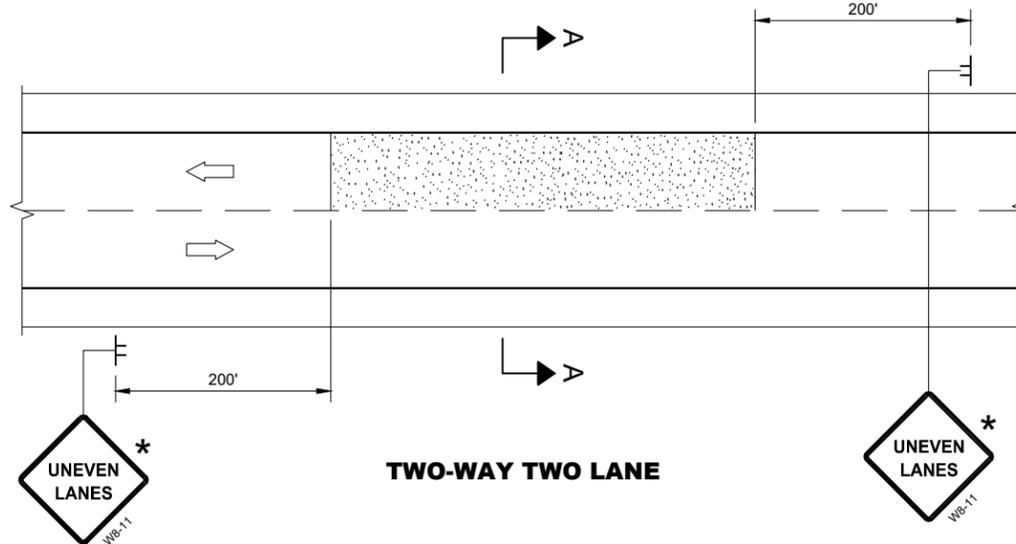
- TRAFFIC CONTROL DRUM
- ⊙ SIGN ON PERMANENT SUPPORT
- ➡ DIRECTION OF TRAFFIC
- ⚡ FLASHING ARROW BOARD
- ▨ WORK AREA



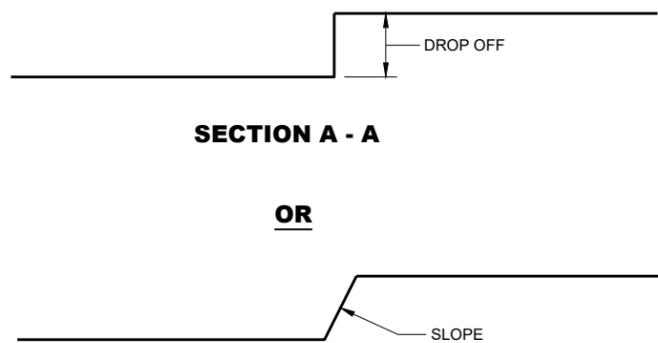
<b>TRAFFIC CONTROL SHOULDER CLOSURE ON DIVIDED ROADWAY, SPEEDS GREATER THAN 40 MPH</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2016 DATE	/s/ Peter Amakobe Atepe STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER
FHWA	



**MULTI-LANE**



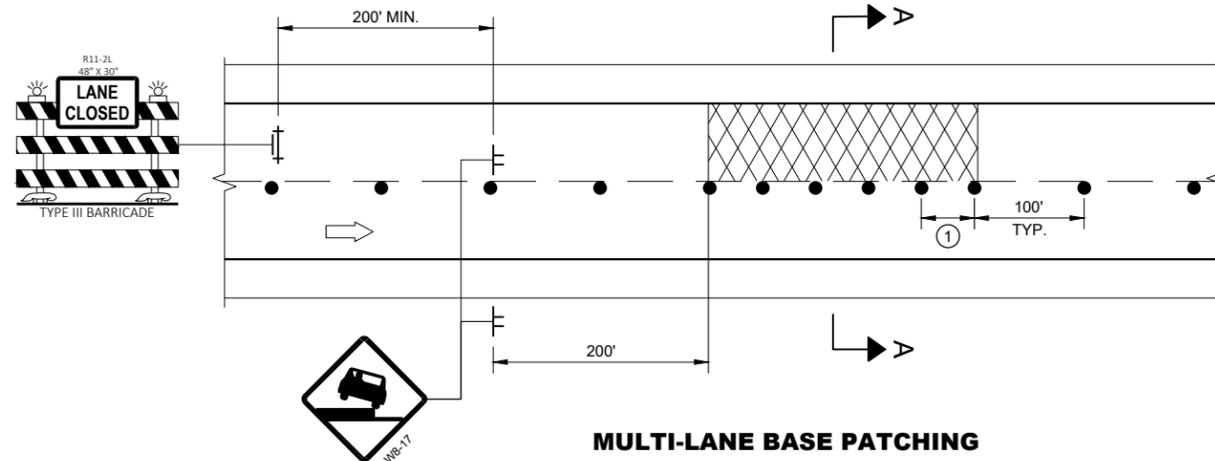
**TWO-WAY TWO LANE**



**SECTION A - A**

OR

**SECTION A - A**



**MULTI-LANE BASE PATCHING**

**ADJACENT LANE DROP-OFFS**

**GENERAL NOTES**

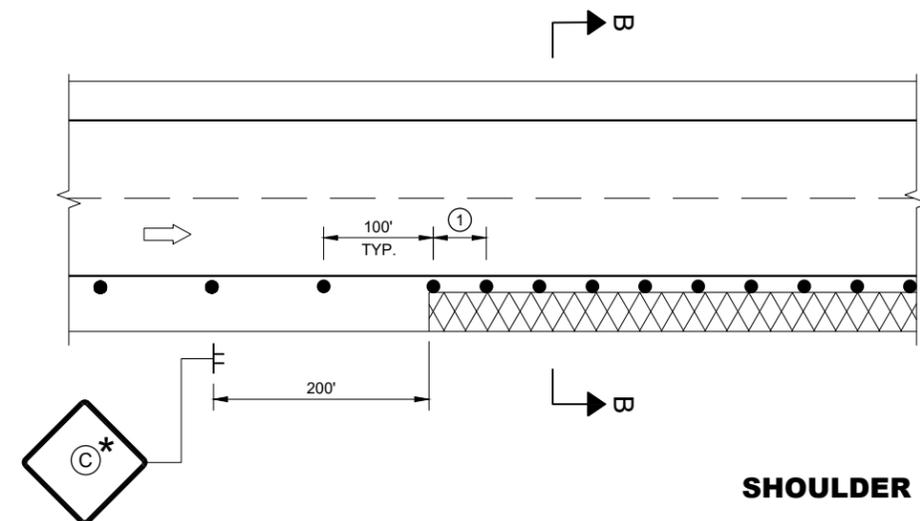
- FOR SPOT LOCATIONS USE ENGINEERING JUDGEMENT WHEN PLACING ADDITIONAL SIGNS.
- ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.
- "WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.
- WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.
- \* IF THE DROP-OFF IS CONTINUOUS ALONG THE PROJECT, PLACE ADDITIONAL SIGNS EVERY 1 MILE AND AFTER EVERY ENTRANCE RAMP.
- ① USE CLOSER SPACING WHEN DELINEATING DROP-OFF.

**LEGEND**

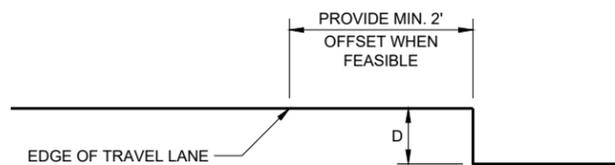
- SIGN ON TEMPORARY SUPPORT
- TRAFFIC CONTROL DRUM
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- DIRECTION OF TRAFFIC
- WORK AREA WITH DROP-OFF
- MILLED SURFACE

6

6



**SHOULDER DROP-OFFS**



**SECTION B - B**

D	SIGN (C)
< 2" WITH A SLOPE STEEPER THAN 3:1	LOW SHOULDER WO8-9
2" < 6" WITH A SLOPE STEEPER THAN 3:1	SHOULDER DROP-OFF W8-9A PROVIDE A 3:1 OR FLATTER SLOPE OF MATERIAL ADJACENT TO THE PAVEMENT

SDD 15D39 - 02

SDD 15D39 - 02

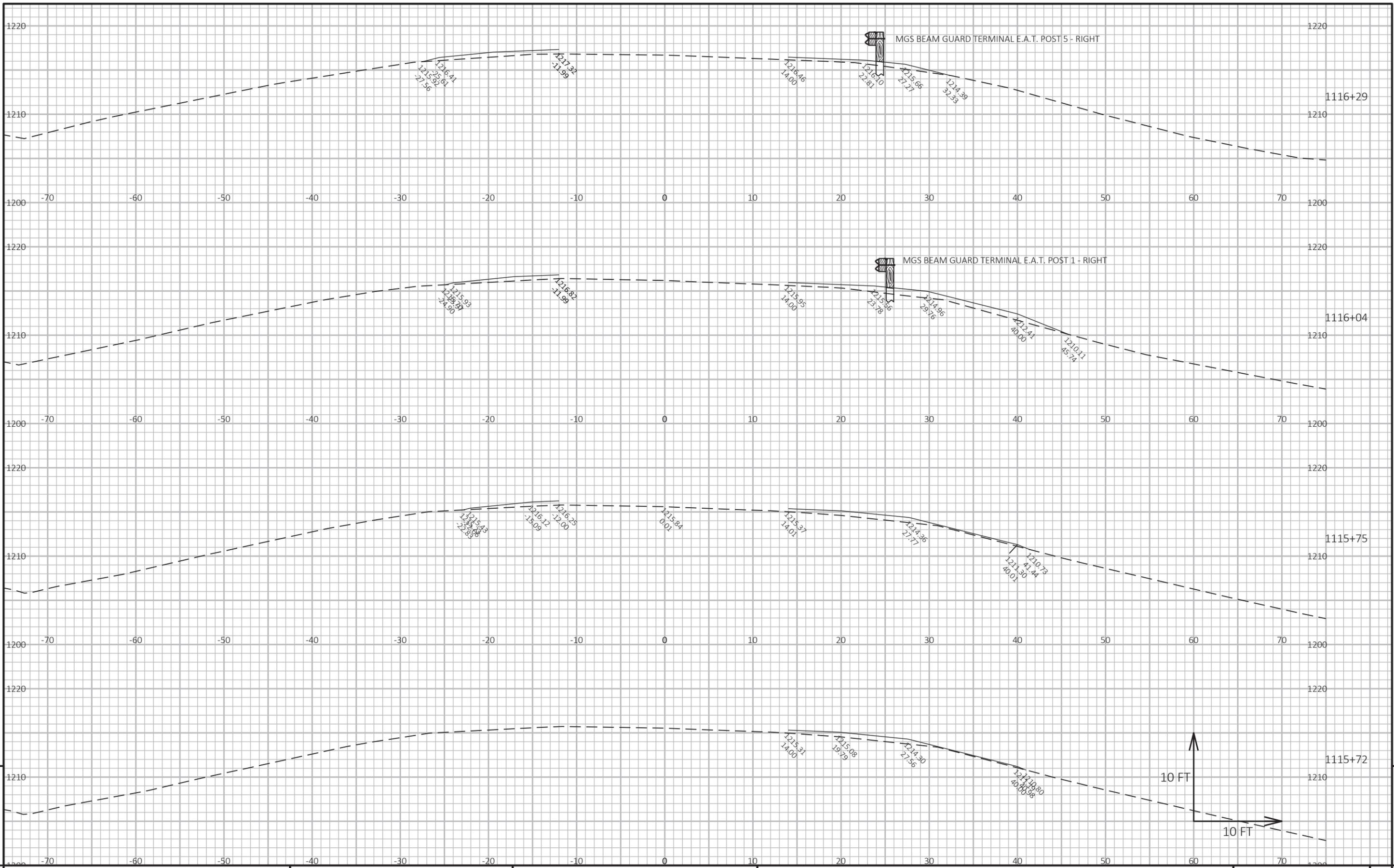
**TRAFFIC CONTROL,  
DROP-OFF SIGNING**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
March 2018 /S/ Andrew Heidtke  
DATE DATE WORK ZONE ENGINEER

FHWA





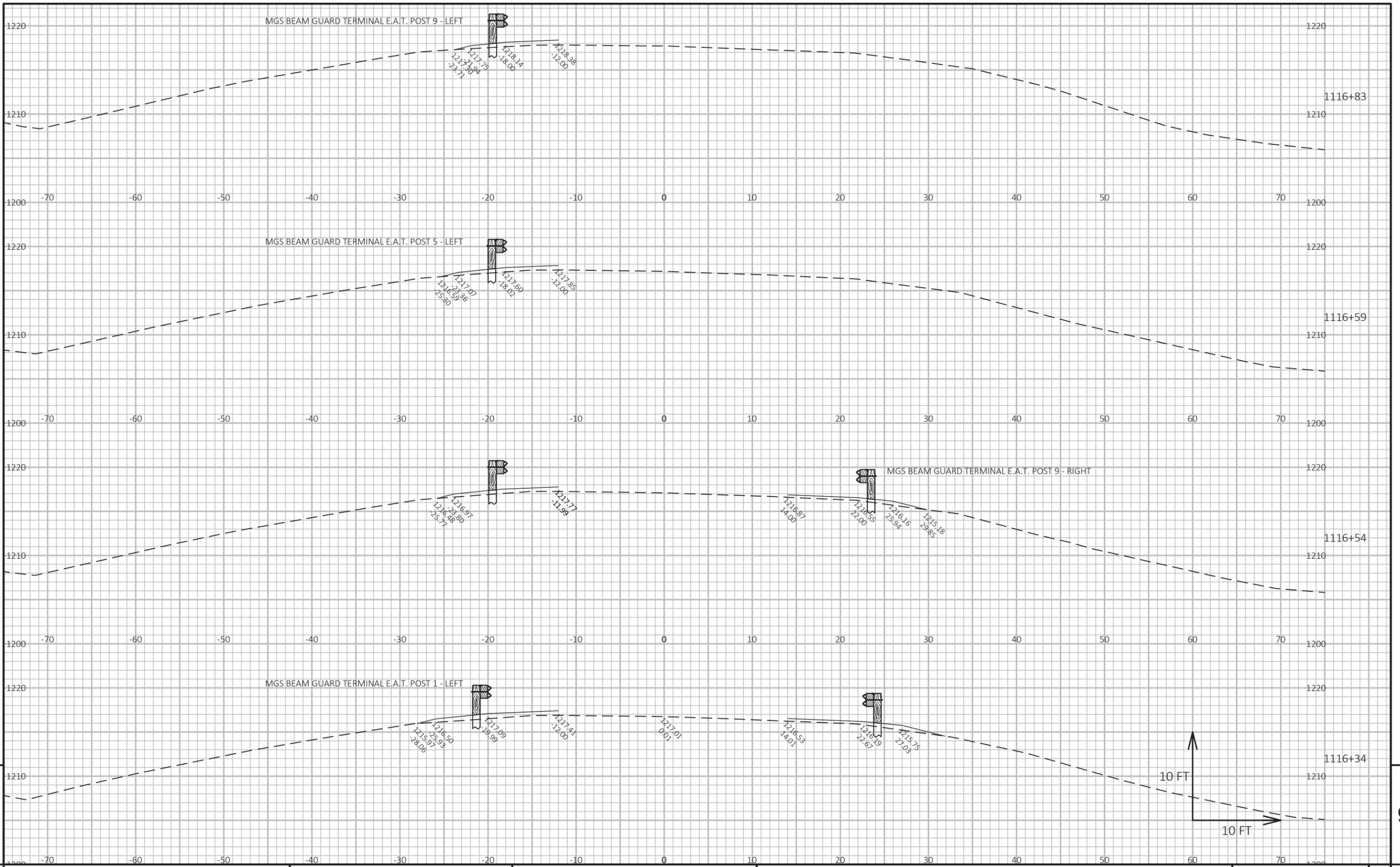
9

9

PROJECT NO: 1196-00-61      HWY: USH 53      COUNTY: DOUGLAS      CROSS SECTIONS: USH 53      SHEET      E

FILE NAME: N:\PDS\C3D\11960031\SHEETSP\11960031\_XS.DWG      PLOT DATE: 11/26/2019 1:29 PM      PLOT BY: JENSEN, TRAVIS G      PLOT NAME:      PLOT SCALE: 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49

LAYOUT NAME - XS1



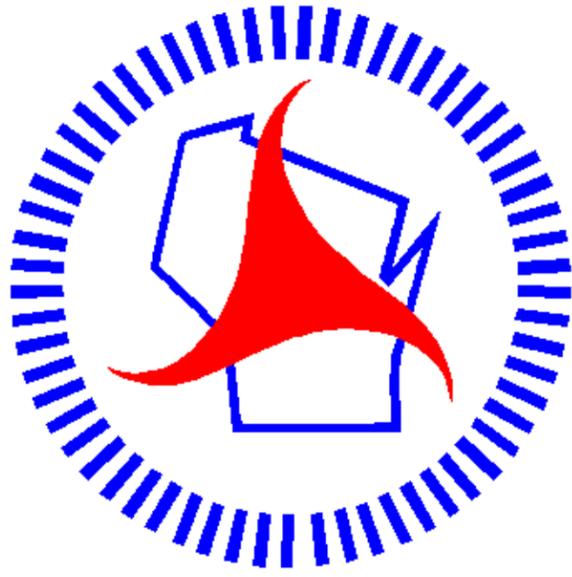
9

9

PROJECT NO: 1196-00-61      HWY: USH 53      COUNTY: DOUGLAS      CROSS SECTIONS: USH 53      SHEET      E

FILE NAME: N:\PDS\C3D\11960031\SHEETSP\11960031\_XS.DWG      PLOT DATE: 11/26/2019 1:29 PM      PLOT BY: JENSEN, TRAVIS G      PLOT NAME:      PLOT SCALE: 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49

LAYOUT NAME - XS2



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