

PROJECT ID: 1021-00-73
WITH: N/A

COUNTY: ST. CROIX

ORDER OF SHEETS

Section No. 1	Title
Section No. 2	Typical Sections and Details (Incl. Erosion Ctrl)
Section No. 3	Estimate of Quantities
Section No. 3	Miscellaneous Quantities
~~Section No. 4~~	~~Right of Way Plat~~
Section No. 5	Plan and Profile
Section No. 6	Standard Detail Drawings
Section No. 7	Sign Plates
~~Section No. 8~~	~~Structure Plans~~
~~Section No. 9~~	~~Computer Earthwork Data~~
Section No. 9	Cross Sections

TOTAL SHEETS = 172



DESIGN DESIGNATION

	CTH T - USH 63	USH 63 - CTH BB
A.A.D.T. (2015)	= 39,100	34,800
A.A.D.T. (2035)	= 52,500	46,400
D.H.V.	= 5,100	4,500
D.D.	= 58/42	58/42
T.	= 27.7%	27.7%
DESIGN SPEED	= 70 MPH	70 MPH
ESALS	= 30,000,000	30,000,000

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	

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

HUDSON - MENOMONIE

CTH T - CTH BB (EB & WB)

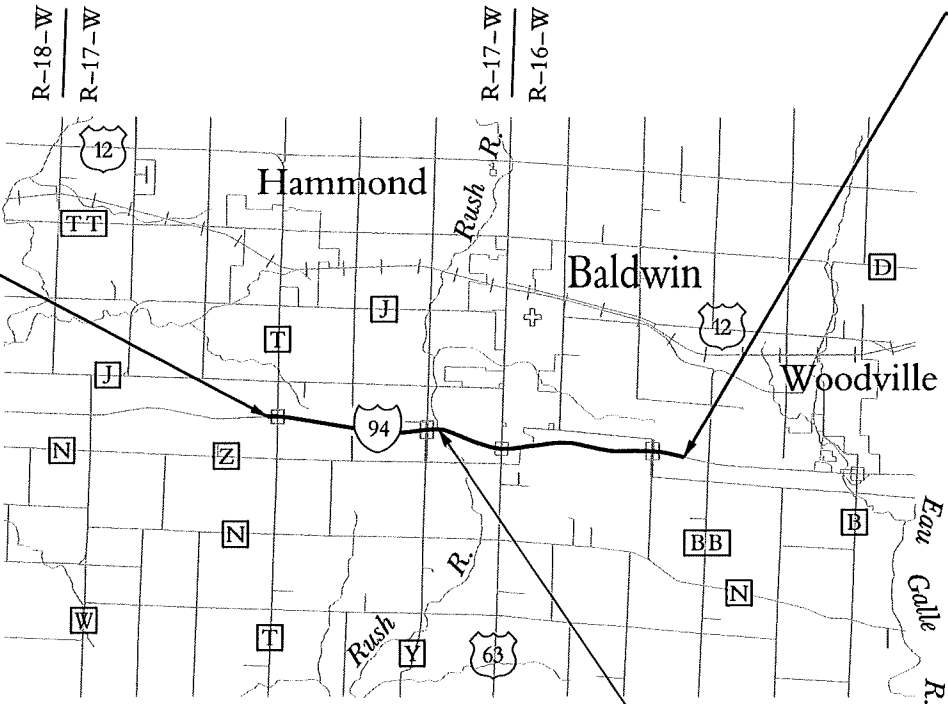
IH 94

ST. CROIX COUNTY

STATE PROJECT NUMBER
1021-00-73

BEGIN PROJECT
STA 820'EB'+37
Y = 330,290.032
X = 592,113.321

END PROJECT
STA 1123'EB'+07



EXCEPTION TO NET CENTERLINE
STA 955'EB'+03 - STA 956'EB'+30

LAYOUT
SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 5.709 MI.

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), ST. CROIX COUNTY, HORIZONTAL DATUM NAD 83 (91). ALL DISTANCES ARE GROUND. ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO VERTICAL DATUM NATIONAL GEODETIC VERTICAL DATUM 1929 ADJUSTMENT (NGVD 29).

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
1021-00-73	WISC 2014312	1

ORIGINAL PLANS PREPARED BY

emcs inc

630 South 36th Avenue
Wausau, WI 54401
715.845.1081 Fax 715.845.1099



4/22/2014
(Date) (Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY	
Surveyor	NW REGION/EMCS, INC.
Designer	EMCS, INC.
Project Manager	TARA WEISS
Regional Examiner	DAN OJBWAY
Regional Supervisor	RICHARD SHERMO

APPROVED FOR THE DEPARTMENT
DATE: 4/24/14 (Signature)

GENERAL NOTES

NO TREES OR SHRUBS SHALL BE REMOVED WITHOUT APPROVAL OF THE ENGINEER.

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

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

THE EROSION CONTROL ITEMS SHOWN ON THE PLANS ARE AT SUGGESTED LOCATIONS. THE ENGINEER MAY MODIFY LOCATIONS AS NEEDED. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL SUCH TIME AS THE ENGINEER DETERMINES THE MEASURE IS NO LONGER NECESSARY.

UTILITIES

AT&T LEGACY

(COMMUNICATIONS - LONG DISTANCE)
WILLIAM KOENIG
JMC ENGINEERS
PO BOX 244
LAKE MILLS, WI 53551
CELL (608) 628-0575
JMC140@FRONTIER.COM

BALDWIN TELECOM, INC.

(COMMUNICATIONS)
KEN CARLSRUD
930 MAPLE STREET
PO BOX 420
BALDWIN, WI 54002
(715) 684-3346
ken.carlsrud@baldwin-telecom.net

CENTURYLINK

(COMMUNICATIONS)
BRUCE LARSON
20 S WILSON AVE
RICE LAKE, WI 54868
(715) 234-5573
bruce.larson@centurylink.com

CENTURYLINK

(COMMUNICATIONS - LONG DISTANCE)
ROBERT SAMPSON
1310 EAST MARY ST
OTTUMWA, IA 52501
(636) 887-5367
Robert.Sampson@centurylink.com

DAIRYLAND POWER COOPERATIVE

(ELECTRIC - TRANSMISSION)
KURT CHILDS
3200 EAST AVE S
PO BOX 817
LACROSSE, WI 54602
(608) 788-4000
kdc@ dairynet.com

LEVEL 3 COMMUNICATIONS

(COMMUNICATIONS - LONG DISTANCE)
BRAD MORSETH
715 N 2ND STREET
MINNEAPOLIS, MN 55401
(612) 343-3257
brad.morseth@level3.com

NORTHERN NATURAL GAS COMPANY

(GAS)
JOHN DELASKE
4685 212TH STREET WEST
PO BOX 188
FARMINGTON, MN 55024-0188
(612) 581-3386
john.delaske@nngco.com

ST. CROIX ELECTRIC COOPERATIVE

(ELECTRIC - DISTRIBUTION)
ROBERT DOOLEY
1925 RIDGEWAY STREET
PO BOX 160
HAMMOND, WI 54015-5039
(715) 796-7000
RobDoo@scecnnet.net

VILLAGE OF BALDWIN

(WATER AND SANITARY SEWER)
JOHN TRAXLER, DPW
1980 4TH STREET
BALDWIN, WI 54002
(715) 684-2535
baldpw@baldwin-telecom.net

WE ENERGIES

(GAS)
24-HOUR EMERGENCY CONTACT:
(800)-261-5325

SEND ALL WE ENERGIES

CORRESPONDENCE TO:

LATROY BRUMFIELD
333 W EVERETT STREET, A299
MILWAUKEE, WI 53203
(414) 221-5617
LaTroy.Brumfield@we-energies.com

WE ENERGIES PROJECT

CONSTRUCTION FIELD CONTACT:

LEWIS KNAPP
104 W SOUTH STEET
RICE LAKE, WI 54868
(715) 234-9605
lewis.knapp@we-energies.com

WISCONSIN DEPARTMENT

OF TRANSPORTATION

(COMMUNICATIONS - LONG DISTANCE)
JEFF MADSON
433 W ST PAUL AVE
SUITE 300
MILWAUKEE, WI 53203-3007
(414) 225-3723
Jeffrey.Madson@dot.wi.gov

XCEL ENERGY

(ELECTRIC - DISTRIBUTION)
DARREN NORSKOG
1201 LIVINGSTONE ROAD
HUDSON, WI 54016
(715) 386-4798
CELL (715) 577-7703
DARREN.M.NORSKOG@XCELENERGY.COM

OTHER CONTACTS

DNR LIAISON

DNR - WEST CENTRAL REGION
CHRIS WILLGER
1300 W CLAIREMONT AVENUE
EAU CLAIRE, WI 54701
715-839-1600

WISCONSIN HIGHWAY BUSINESS SIGNS/
DIVISION OF DERSE, INC.

MARK ROGNSVOOG
3800 W. CANAL STREET
MILWAUKEE, WI 53208
414-257-2000

ST. CROIX COUNTY
HIGHWAY DEPARTMENT

TIM RAMBERG
COMMISSIONER
920 THIRD STREET
P.O. BOX 108
HAMMOND, WI 54015
715-796-2227
SCHWY@SCHWY.ORG

WISCONSIN STATE PATROL

MIKE MELGAARD
SERGEANT
WISCONSIN STATE PATROL DISTRICT NO. 6
JTN. I-94 & USH 53
5005 HWY. 53 SOUTH
EAU CLAIRE, WI 54701
715-236-2242
MICHAEL.MELGAARD@DOT.WI.GOV



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

www.DiggersHotline.com

TO OBTAIN LOCATION OF
PARTICIPANTS UNDERGROUND
FACILITIES BEFORE YOU
DIG IN WISCONSIN

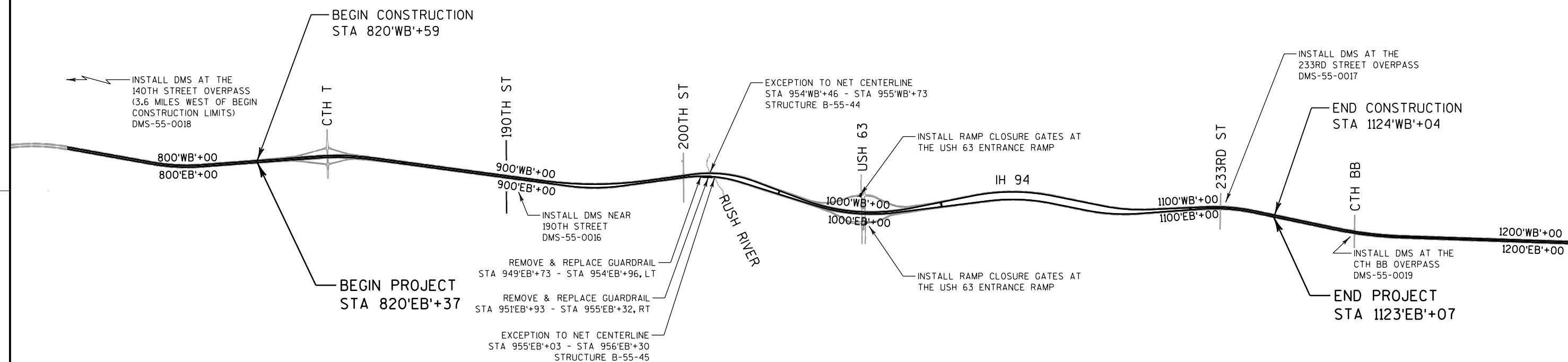
ORDER OF SECTION 2 SHEETS

PROJECT OVERVIEW
TYPICAL SECTIONS
CONSTRUCTION DETAILS
FREEWAY TRAFFIC MANAGEMENT SYSTEM (FTMS) DETAILS
PERMANENT SIGNING & PAVEMENT MARKING
TRAFFIC CONTROL

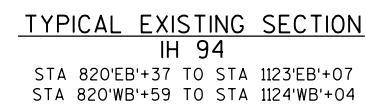
REFERENCE LINE CALL OUTS

'EB' IH 94 EASTBOUND
'WB' IH 94 WESTBOUND
'SB' USH 63 SOUTHBOUND
'A' USH 63 INTERCHANGE SOUTHEAST RAMP
'B' USH 63 INTERCHANGE NORTHWEST RAMP

ITEMS OF WORK:
STA 820'EB'+37 - STA 1123'EB'+07 AND STA 820'WB'+59 - STA 1124'WB'+04
MILL & OVERLAY, MAINTENANCE CROSSOVER GRADING AND PAVING, SIGNING,
PAVEMENT MARKING, ITS WORK, RAMP GATES AND GUARDRAIL REPLACEMENT (AT
RUSH RIVER) ON IH 94



2 |



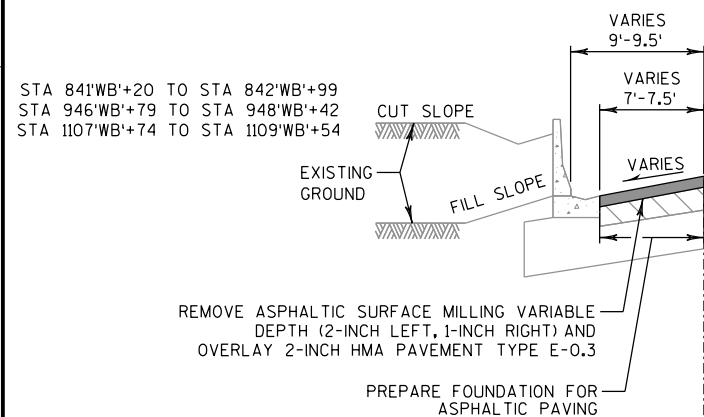
PLACE HMA PAVEMENT LAYERS WITH THE FOLLOWING THICKNESS AND NOMINAL SIZES:

HMA PAVEMENT TYPE E-10 4.5-INCH (MAINLINE & INSIDE SHOULDER)
UPPER LAYER THICKNESS = 2-INCH (12.5 MM) (SMA SPECIAL) PG70-28
LOWER LAYER THICKNESS = 2.5-INCH (19.0 MM) PG64-28P

HMA PAVEMENT TYPE E-10 2.0-INCH (RAMPS)
UPPER LAYER THICKNESS = 2.0-INCH (12.5 MM) PG64-28P
UPPER LAYER THICKNESS = 1.75-INCH (12.5 MM) PG58-28

HMA PAVEMENT TYPE E-0.3 2.0-INCH (OUTSIDE SHOULDER)
UPPER LAYER THICKNESS = 2.0-INCH (12.5 MM) PG58-28

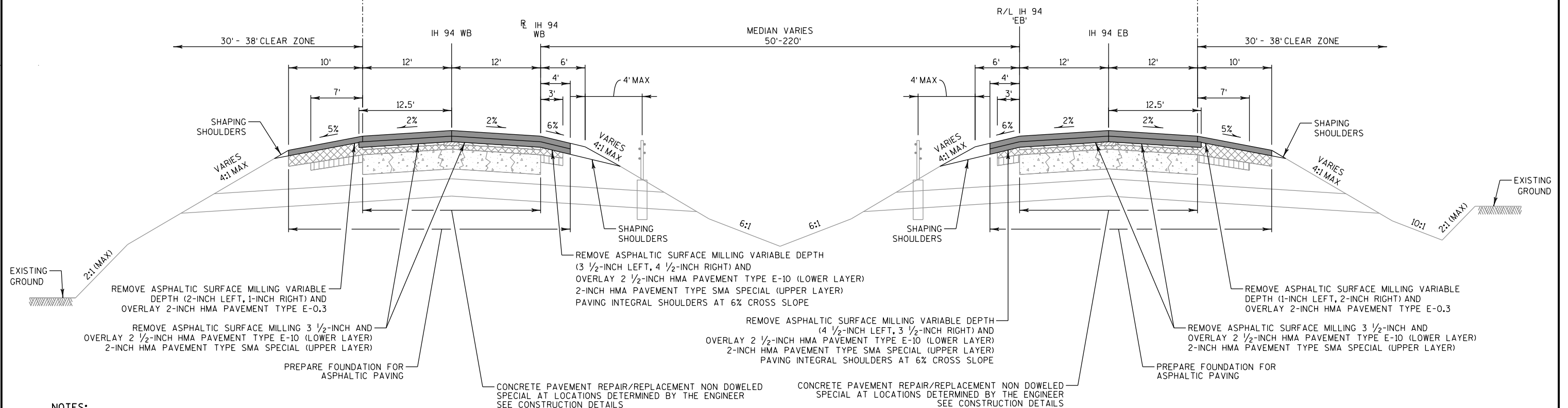
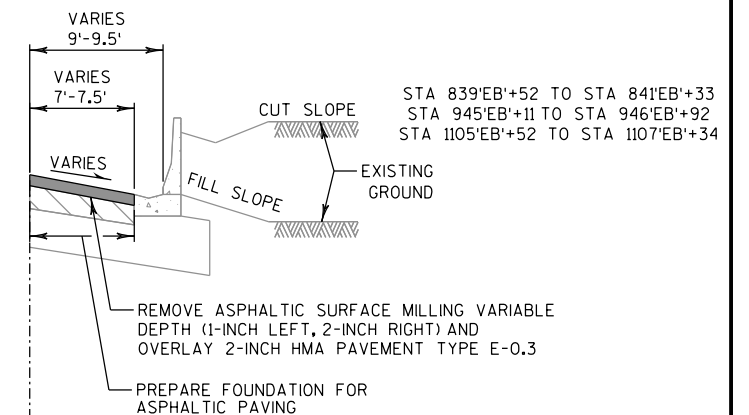
HMA PAVEMENT TYPE E-0.3 1.75-INCH (MAINTENANCE CROSSOVERS)



PI STATION	CURVE #	RADIUS (FT)	EXISTING SUPERELEVATION	PROPOSED SUPERELEVATION	NOTES
846'EB'+37.14	EB-1	7640.00	2.60%	2.60%	--
920'EB'+49.18	EB-2	5730.00	3.30%	3.40%	ADJUST SUPERELEVATION AROUND REFERENCE LINE
955'EB'+60.51	EB-3	3820.00	4.20%	4.20%	--
998'EB'+70.19	EB-4	5730.00	3.30%	3.40%	ADJUST SUPERELEVATION AROUND REFERENCE LINE
1047'EB'+91.56	EB-5	5730.00	3.30%	3.40%	ADJUST SUPERELEVATION AROUND REFERENCE LINE
1075'EB'+23.16	EB-6	5730.00	3.30%	3.40%	ADJUST SUPERELEVATION AROUND REFERENCE LINE
1109'EB'+24.21	EB-7	5730.00	3.30%	3.40%	ADJUST SUPERELEVATION AROUND INSIDE EDGE LINE
846'WB'+70.71	WB-1	7640.00	2.60%	2.70%	ADJUST SUPERELEVATION AROUND OUTSIDE EDGE LINE
920'WB'+75.63	WB-2	11460.00	RC (2.00%)	RC (2.00%)	--
959'WB'+22.65	WB-3	3820.00	4.20%	4.20%	--
999'WB'+83.18	WB-4	5656.16	3.30%	3.40%	ADJUST SUPERELEVATION AROUND REFERENCE LINE
1046'WB'+53.69	WB-5	5975.67	3.30%	3.30%	--
1079'WB'+90.89	WB-6	5730.00	3.30%	3.40%	ADJUST SUPERELEVATION AROUND REFERENCE LINE
1110'WB'+76.16	WB-7	5804.16	3.30%	3.30%	--

NOTES:

CURVE DATA INCLUDING SUPERELEVATION RUNOFF AND TRANSITIONS ARE SHOWN ON SECTION 5 PLAN SHEETS.
ADJUST SUPERELEVATIONS WITH VARIABLE DEPTH MILLING.



NOTES:

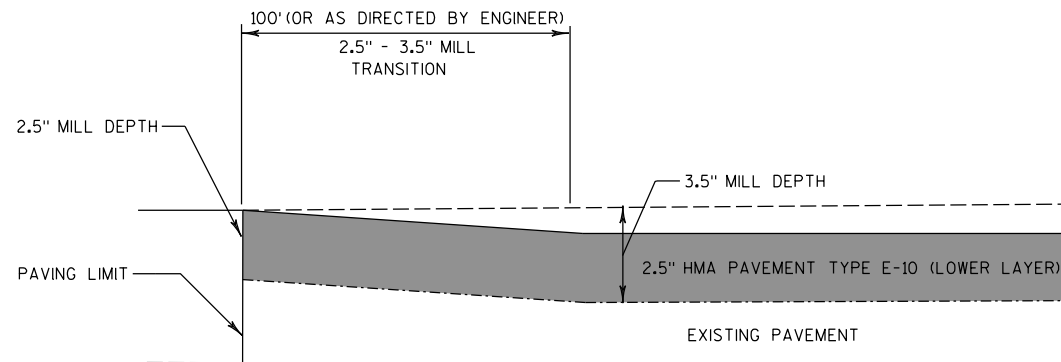
CROSS SLOPES VARY, SEE SUPERELEVATION TABLE.

PLACE ADDITIONAL BASE AGGREGATE DENSE 3/4-INCH AS NEEDED ON SHOULDERS.

FOR AREAS OF GUARDRAIL AND MEDIAN CROSSOVER GRADING SEE CONSTRUCTION DETAILS, SECTION 5 PLAN SHEETS, MISCELLANEOUS QUANTITIES AND CROSS SECTIONS.

TYPICAL FINISHED SECTION
IH 94

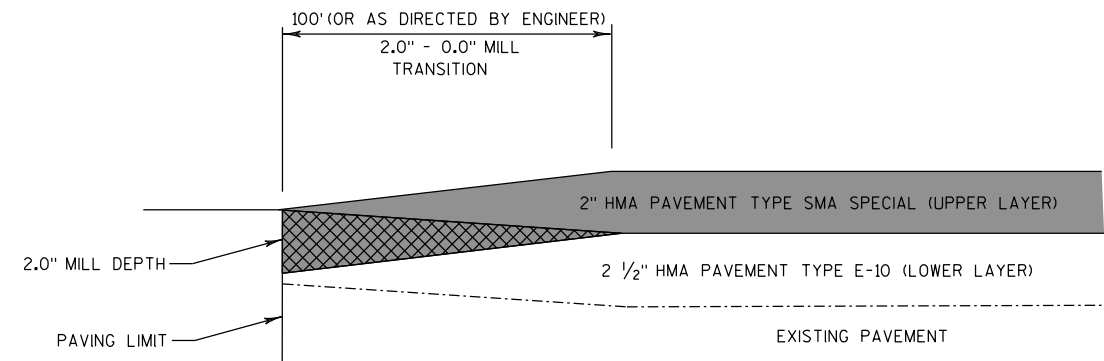
STA 820'EB'+37 TO STA 1123'EB'+07
STA 820'WB'+59 TO STA 1124'WB'+04



MILL AND REMOVE 3.5" OF EXISTING SURFACE, EXCEPT IN TRANSITION AREA
MILL AND REMOVE 2.5" TO 3.5" OF EXISTING SURFACE IN TRANSITION AREA
OVERLAY 2.5" HMA PAVEMENT TYPE E-10 (LOWER LAYER)
(NOTE: AREA EXTENDS ACROSS MAINLINE AND INSIDE SHOULDERS)

IH 94 JOINT TRANSITION DETAIL: LOWER LAYER

REQUIRED AT BEGIN AND END OF PROJECT, BRIDGES, AND RAMPS
(EXACT LOCATION AND LENGTH TO BE DETERMINED BY THE ENGINEER)



OVERLAY WITH HMA PAVEMENT TYPE SMA-SPECIAL (UPPER LAYER) AS SHOWN ON TYPICAL SECTIONS
(NOTE: AREA EXTENDS ACROSS MAINLINE AND INSIDE SHOULDERS)

 PAID FOR AS "REMOVING ASPHALTIC SURFACE BUTT JOINTS"

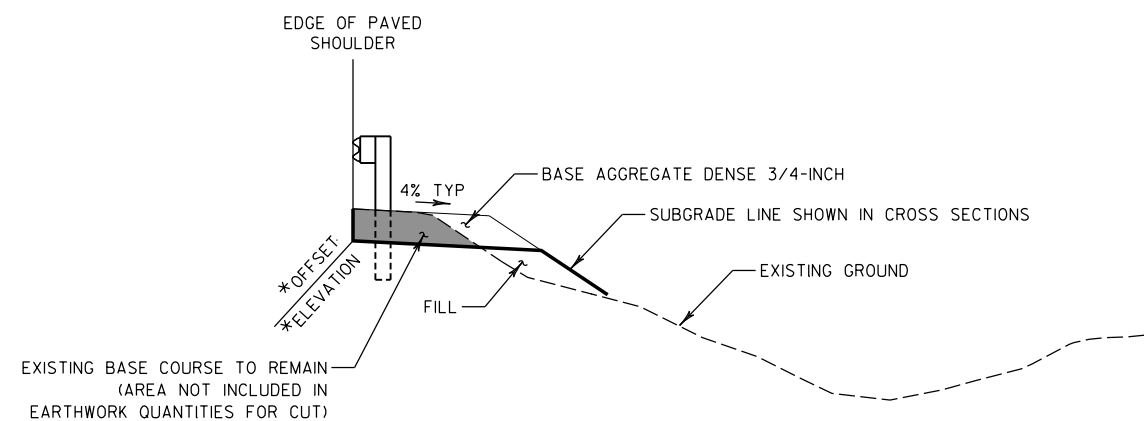
IH 94 MAINLINE REMOVING ASPHALTIC SURFACE BUTT JOINT DETAIL: UPPER LAYER

REQUIRED AT BEGIN AND END OF PROJECT, BRIDGES, AND RAMPS
(EXACT LOCATION AND LENGTH TO BE DETERMINED BY THE ENGINEER)

NOTES:

FOR OUTSIDE SHOULDER BUTT JOINTS THE
LOWER LAYER IS EXISTING PAVEMENT.

FOR RAMP BUTT JOINTS THE TRANSITION
DEPTH OF THE MILL IS 2-INCHES TO 1-INCH.



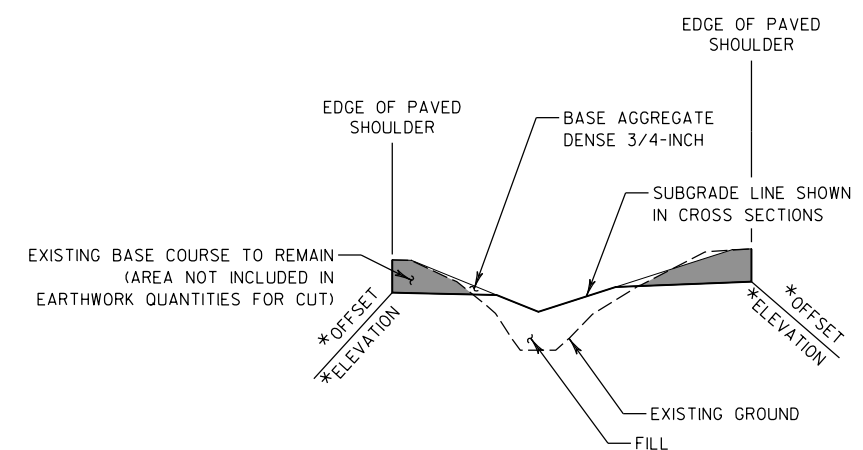
SHOULDER WIDENING EARTHWORK & BASE AGGREGATE FOR GUARDRAIL DETAIL

*OFFSET AND ELEVATION PROVIDED FOR REFERENCE ONLY

NOTES:

GUARDRAIL INSTALLATION LOCATION TO BE
MEASURED FROM EXISTING EDGE OF
PAVEMENT.

ANY CUT AND FILL REQUIRED IS INCIDENTAL
TO THE BARRIER SYSTEM GRADING SHAPING
FINISHING ITEM.

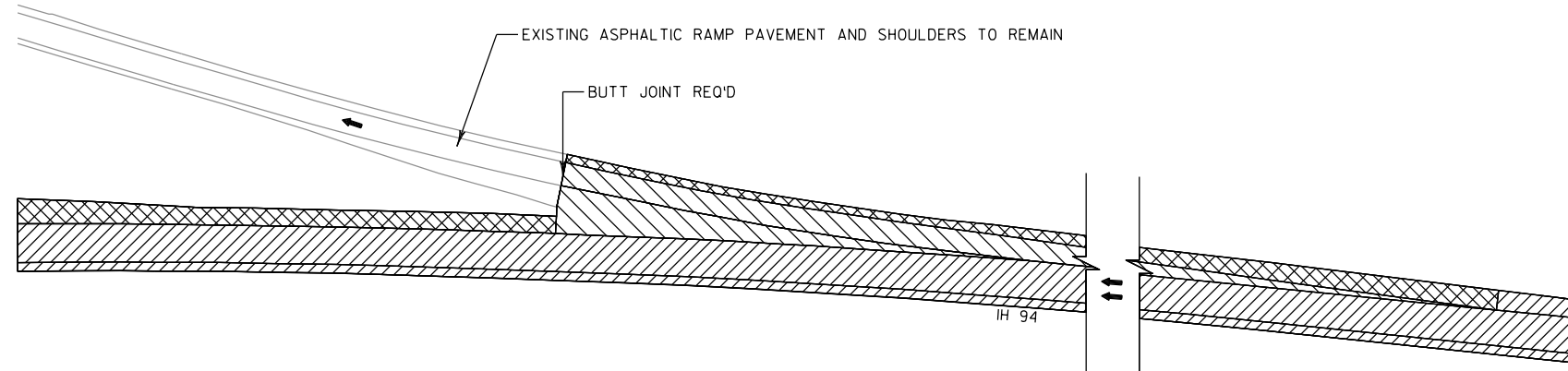


EARTHWORK & BASE AGGREGATE FOR CROSSOVER GRADING DETAIL

*OFFSET AND ELEVATION PROVIDED FOR REFERENCE ONLY

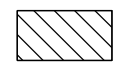
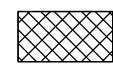
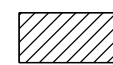
NOTE:

ANY CUT AND FILL REQUIRED IS INCIDENTAL
TO THE GRADING, SHAPING AND FINISHING
CROSSOVERS ITEM.

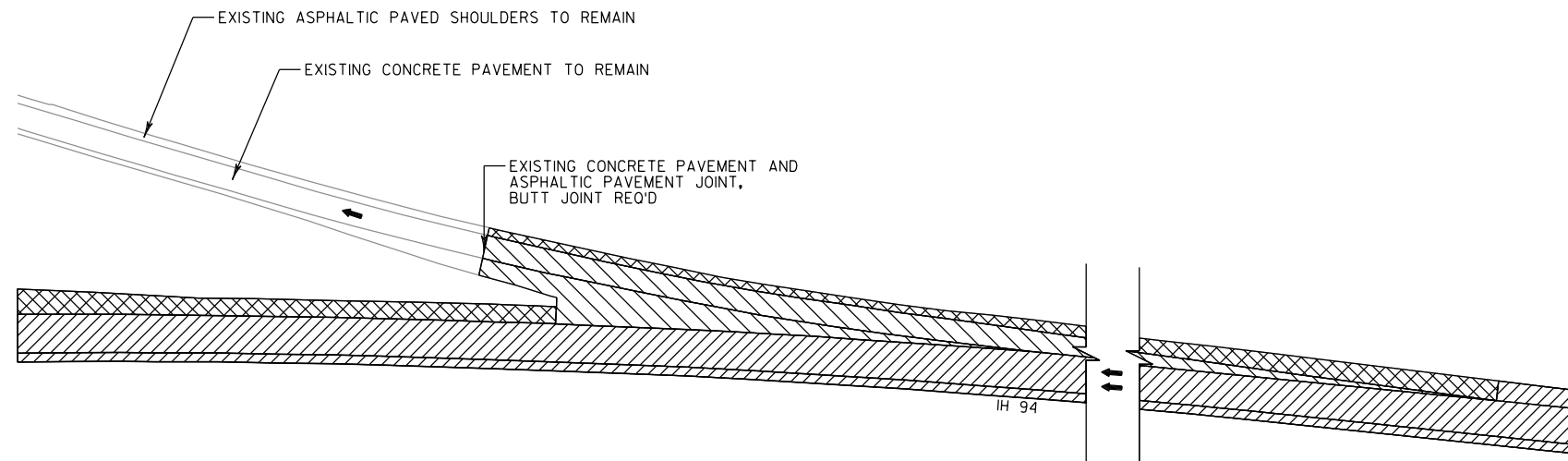


PAVING LIMITS AT RAMPS DETAIL

CTH T

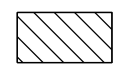
-  REMOVING ASPHALTIC SURFACE MILLING VARIABLE DEPTH (1-INCH TYP) AND OVERLAY 2-INCH HMA PAVEMENT TYPE E-10
-  REMOVING ASPHALTIC SURFACE MILLING VARIABLE DEPTH (2-INCH TO 1-INCH) AND OVERLAY 2-INCH HMA PAVEMENT TYPE E-0.3
-  SEE TYPICAL SECTIONS FOR MILL AND OVERLAY THICKNESSES ON THE IH 94 SHOULDERS AND TRAVEL LANES

NOTE:
MIRROR DETAIL FOR OTHER RAMPS AT CTH T

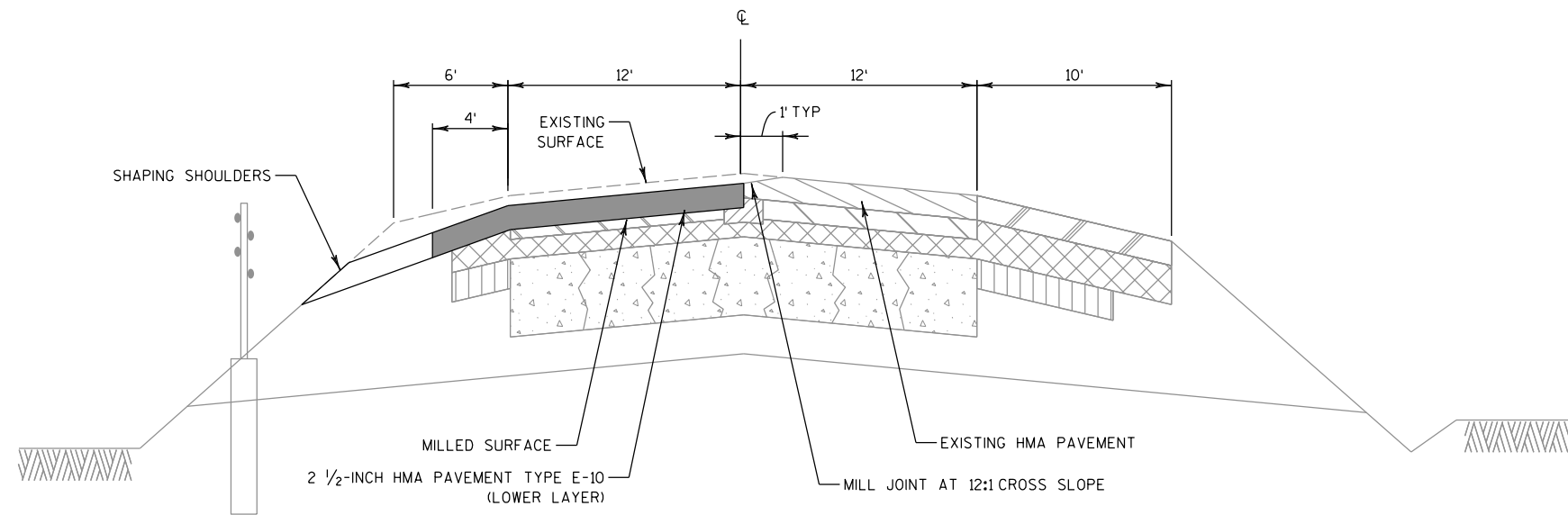


PAVING LIMITS AT RAMPS DETAIL

USH 63

-  REMOVING ASPHALTIC SURFACE MILLING VARIABLE DEPTH (1-INCH TYP) AND OVERLAY 2-INCH HMA PAVEMENT TYPE E-10
-  REMOVING ASPHALTIC SURFACE MILLING VARIABLE DEPTH (2-INCH TO 1-INCH) AND OVERLAY 2-INCH HMA PAVEMENT TYPE E-0.3
-  SEE TYPICAL SECTIONS FOR MILL AND OVERLAY THICKNESSES ON THE IH 94 SHOULDERS AND TRAVEL LANES

NOTE:
MIRROR DETAIL FOR OTHER RAMPS AT USH 63



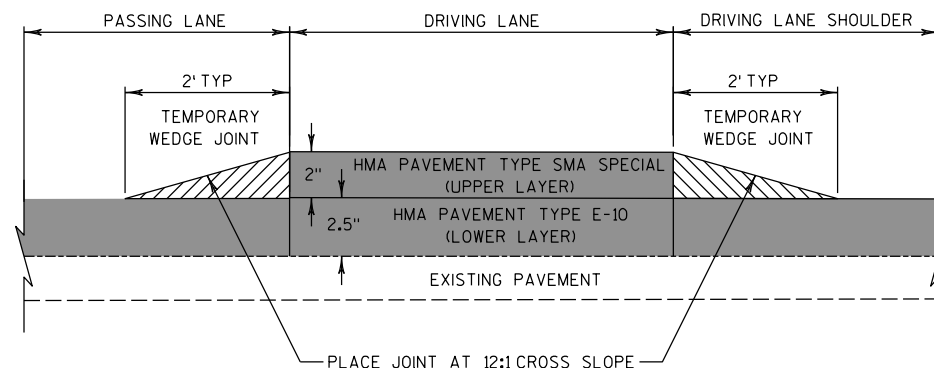
TEMPORARY LONGITUDINAL JOINT DETAIL

MILL JOINT PRIOR TO OPENING NEW PAVEMENT TO TRAFFIC

NOTES:

TEMPORARY LONGITUDINAL JOINT MILLING TO BE PAID AS "MILLING AND REMOVING TEMPORARY JOINT".

DETAIL ASSUMES MILL & OVERLAY IN PASSING LANE FIRST, MIRROR JOINT IF MILL & OVERLAY IS COMPLETED IN DRIVING LANE FIRST.



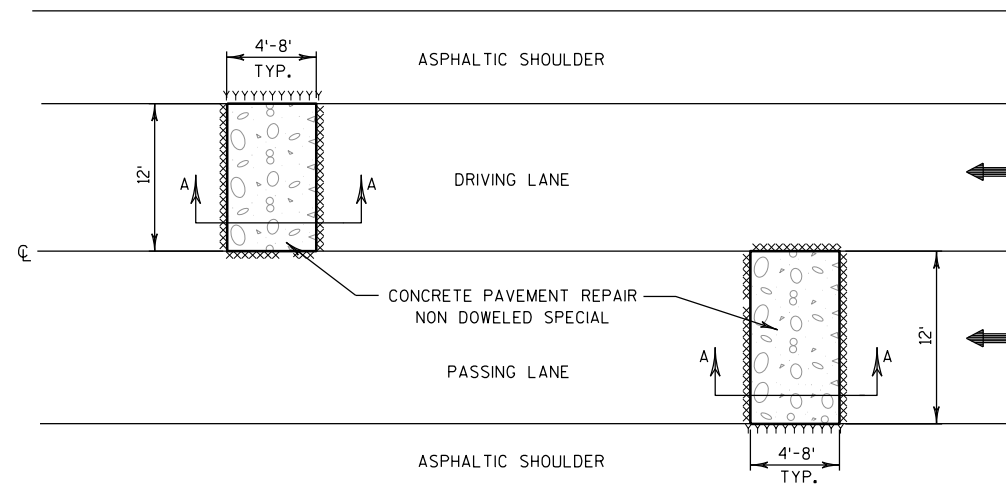
TEMPORARY WEDGE JOINT DETAIL

REQUIRED AT LONGITUDINAL JOINT PRIOR TO OPENING TO TRAFFIC

NOTES:

REMOVE TEMPORARY WEDGE JOINT PRIOR TO PLACING ADJACENT SURFACE LAYERS.

TEMPORARY WEDGE JOINT REMOVAL TO BE PAID AS "MILLING AND REMOVING TEMPORARY JOINT".



NOTES:

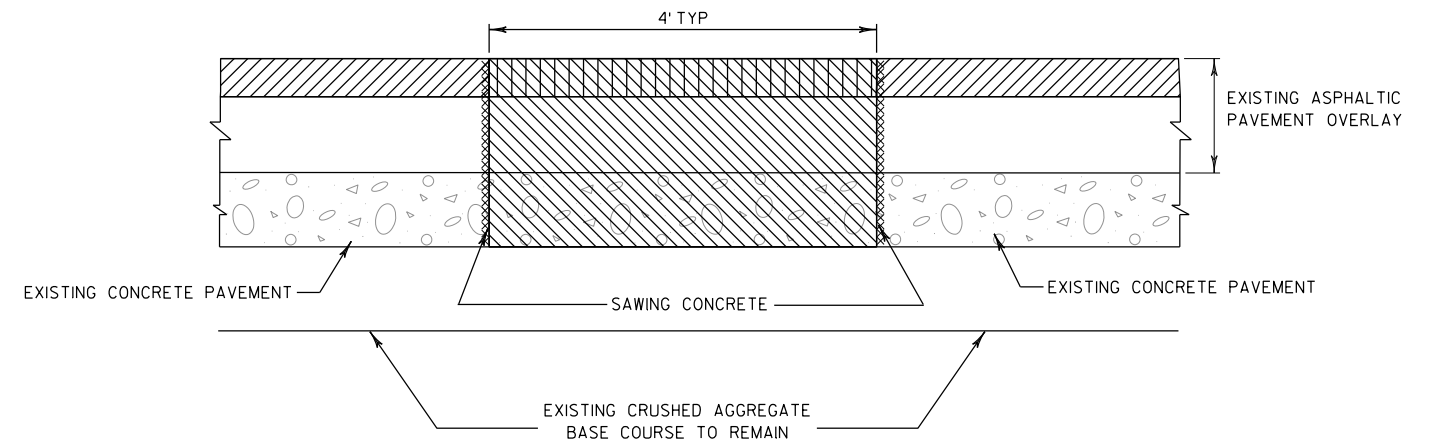
DAMAGE TO EITHER EXISTING PAVEMENTS OR EXISTING SHOULDERS SHALL BE REPAIRED AS DIRECTED BY ENGINEER AND WILL BE INCIDENTAL TO THE ITEM OF CONCRETE PAVEMENT REPAIR NON DOWELED SPECIAL.

SAWING EXISTING ASPHALTIC PAVEMENT OVERLAY WILL BE INCIDENTAL TO SAWING CONCRETE.

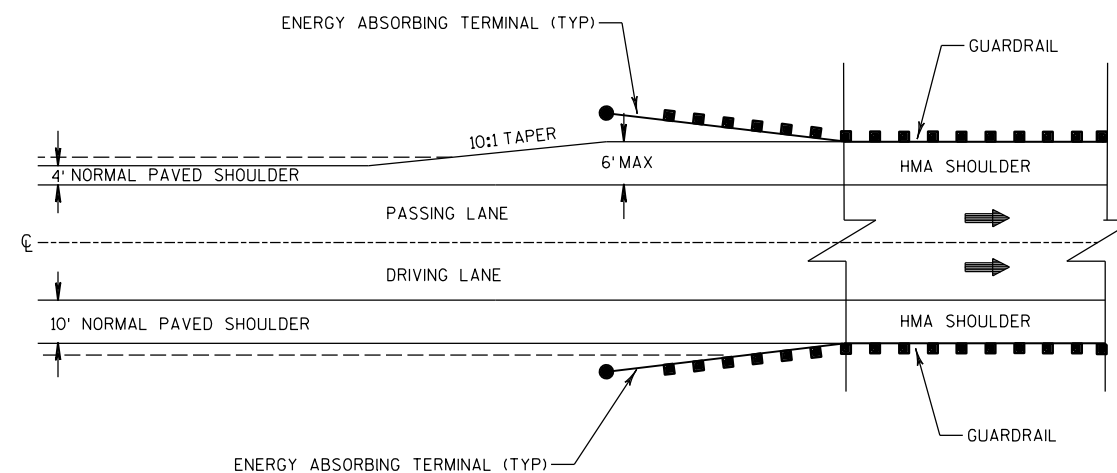
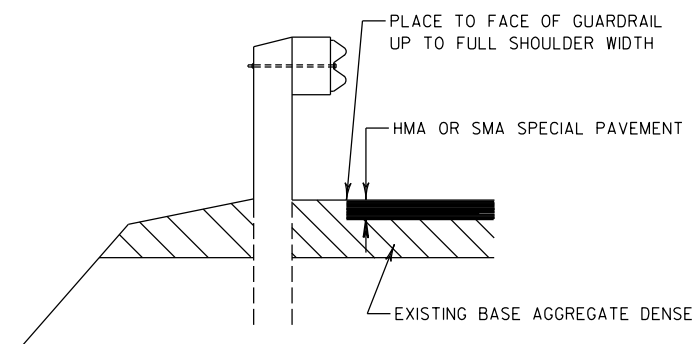
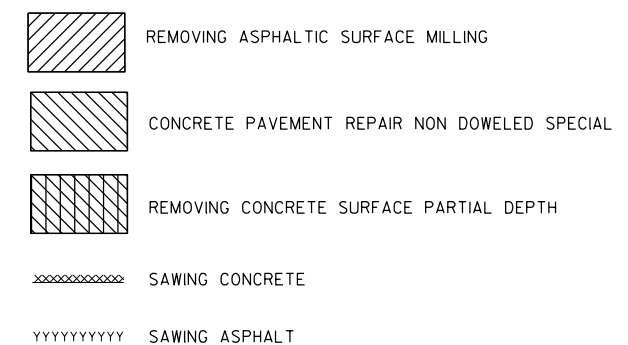
COMPLETE CONCRETE PAVING REPAIRS PRIOR TO MILLING.

SEE TYPICAL SECTIONS FOR AREAS OF EXISTING CRACKED AND SEATED CONCRETE PAVEMENT.

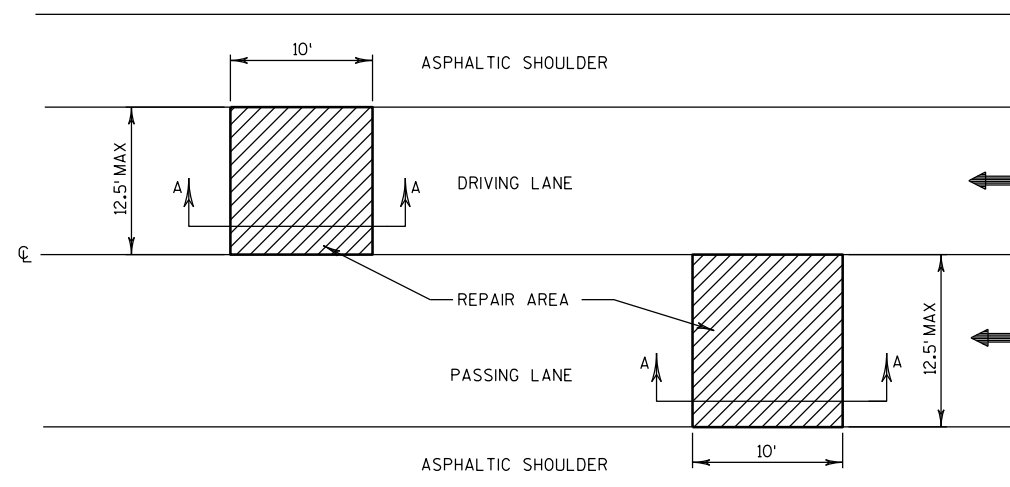
CONCRETE PAVEMENT REPAIR NON DOWELED SPECIAL DETAIL



SECTION A-A

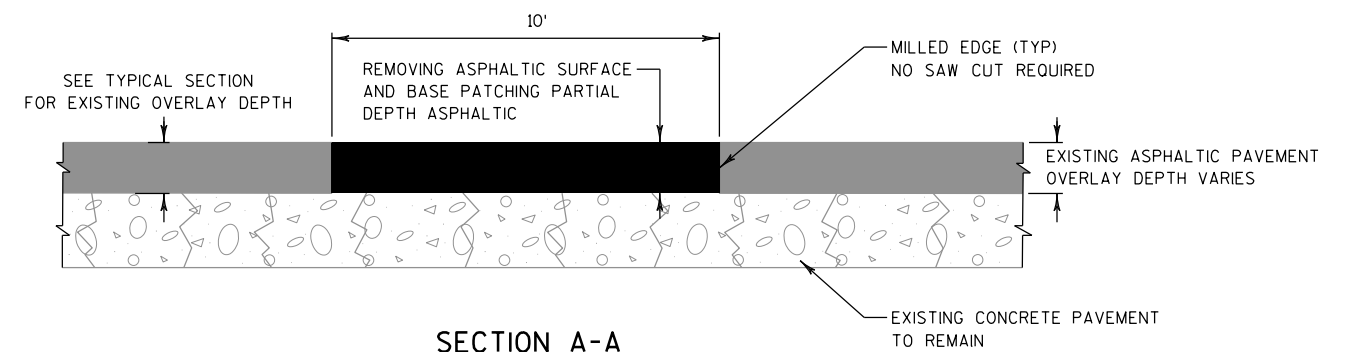


PAVED SHOULDER AT GUARDRAIL DETAIL



ASPHALTIC BASE PATCHING PARTIAL DEPTH

LOCATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER



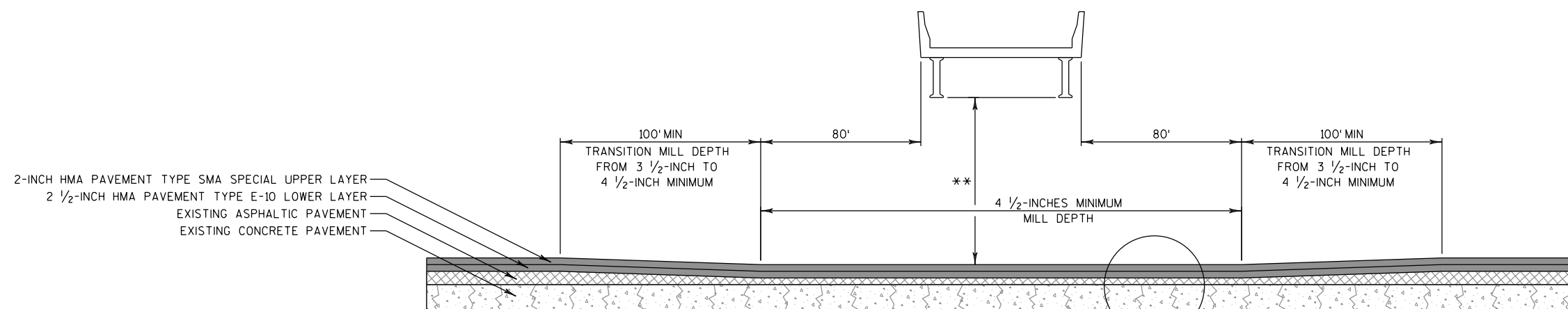
NOTES:

PARTIAL DEPTH ASPHALT REPAIR AREA SIZE IS ESTIMATED AND MAY VARY DEPENDING ON FIELD CONDITIONS.

SEE TYPICAL SECTIONS FOR AREAS OF EXISTING CRACKED AND SEATED CONCRETE PAVEMENT.

ANY PATCHING PARTIAL DEPTH REPAIR MUST BE COMPLETED AT LEAST ONE DAY PRIOR TO THE SURFACE MILLING AND LOWER LAYER HMA PAVEMENT PLACEMENT IN THE TRAVEL LANES.

THE ASPHALTIC BASE PATCHING PARTIAL DEPTH PAVEMENT SHALL BE PLACED AT A MAXIMUM THICKNESS OF 4-INCHES FOR EACH LAYER.



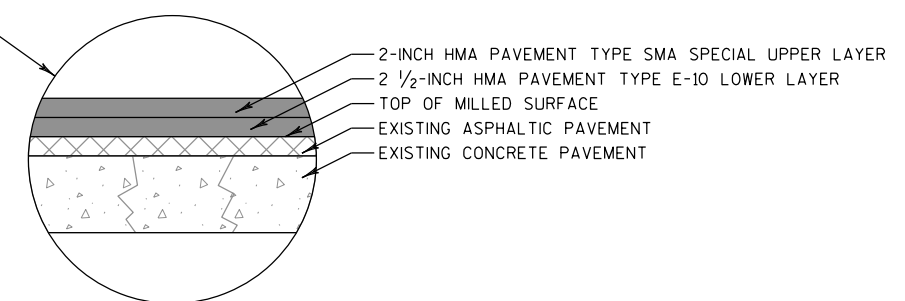
PROFILE VIEW

NOTES:

STRUCTURE CLEARANCE MILLING PAID FOR AS REMOVING ASPHALTIC SURFACE MILLING.

** 16' 0" MINIMUM CLEARANCE IS REQUIRED FOR TRAVEL LANES AND FULL WIDTH SHOULDERS.

STRUCTURE CLEARANCE DETAIL



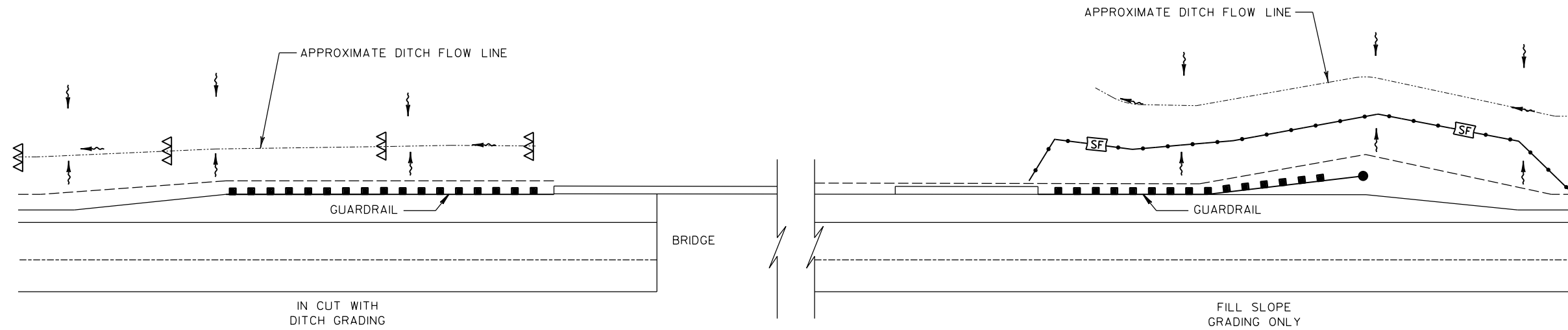
RUNOFF COEFFICIENT TABLE

	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	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	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 = 290 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 57 ACRES

2

2 |

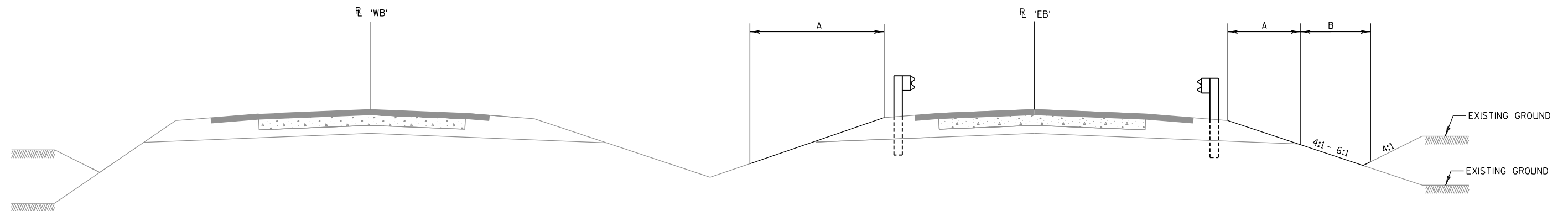


DETAIL FOR EROSION CONTROL FOR GUARDRAIL REPLACEMENT

FINISH DISTURBED AREA WITH TOPSOIL, SEED, AND FERTILIZER
(INCIDENTAL TO THE BARRIER SYSTEM GRADING SHAPING FINISHING)
COVER DISTURBED AREAS WITH E-MAT CLASS I TYPE B
(PAID UNDER E-MAT ITEM INCLUDED IN THE CONTRACT)
(SILT FENCE, EROSION BALES, AND TEMPORARY DITCH
CHECKS PAID UNDER ITEM INCLUDED IN THE CONTRACT)

LEGEND

- | | |
|---|-----------------------------------|
|  | SILT FENCE |
|  | TEMPORARY DITCH CHECK |
|  | SILT FENCE RELIEF (EROSION BALES) |

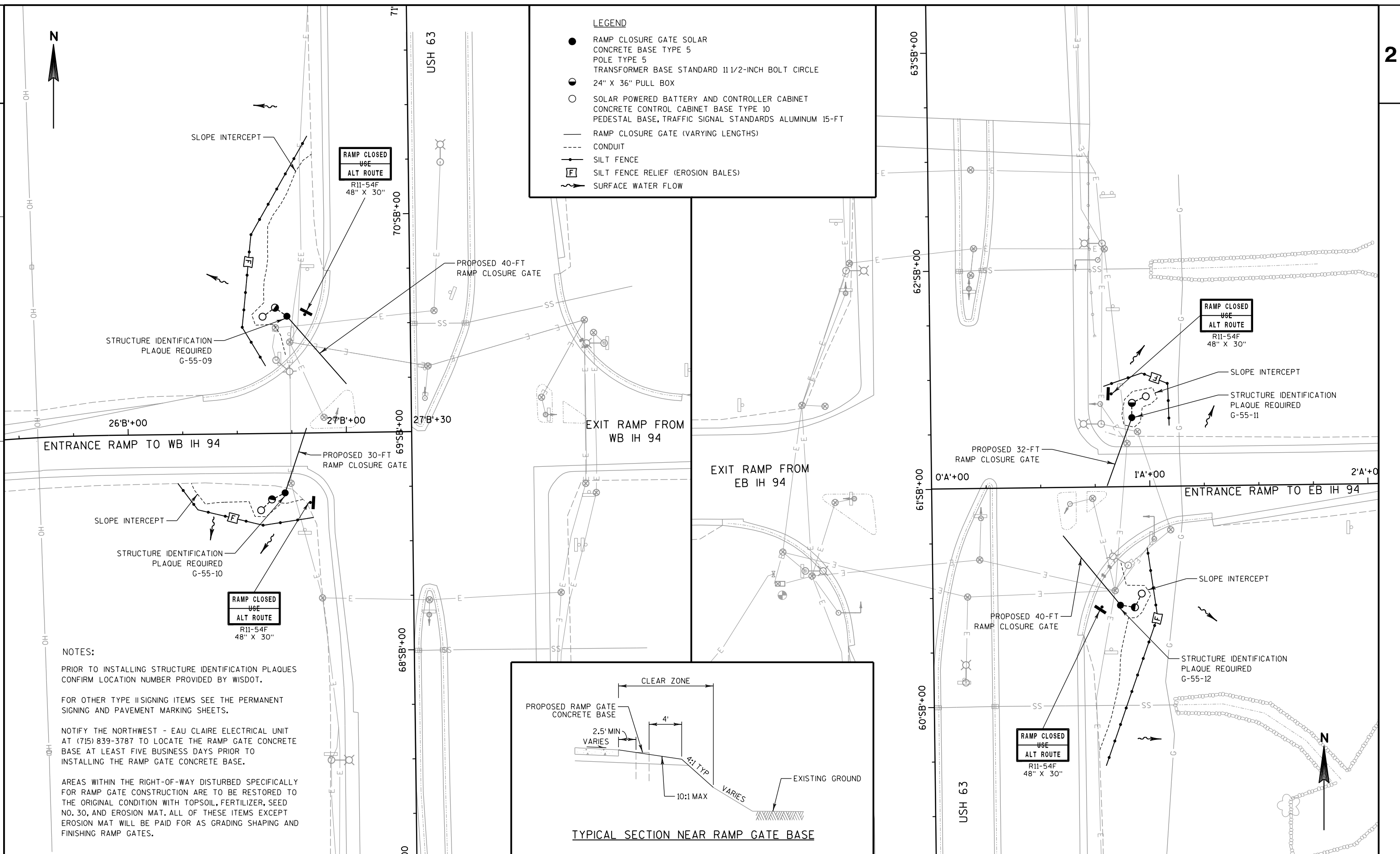


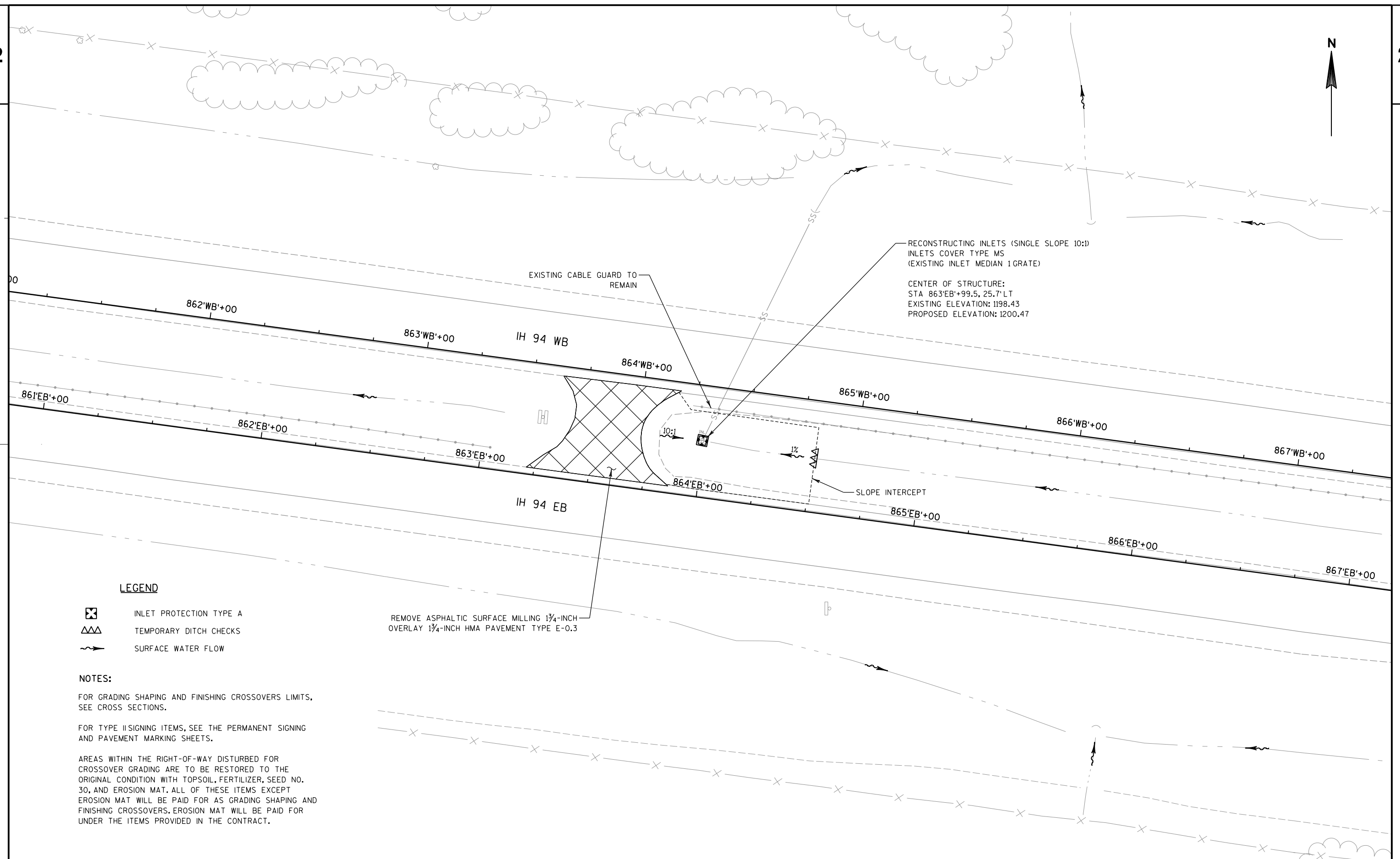
NOTES:

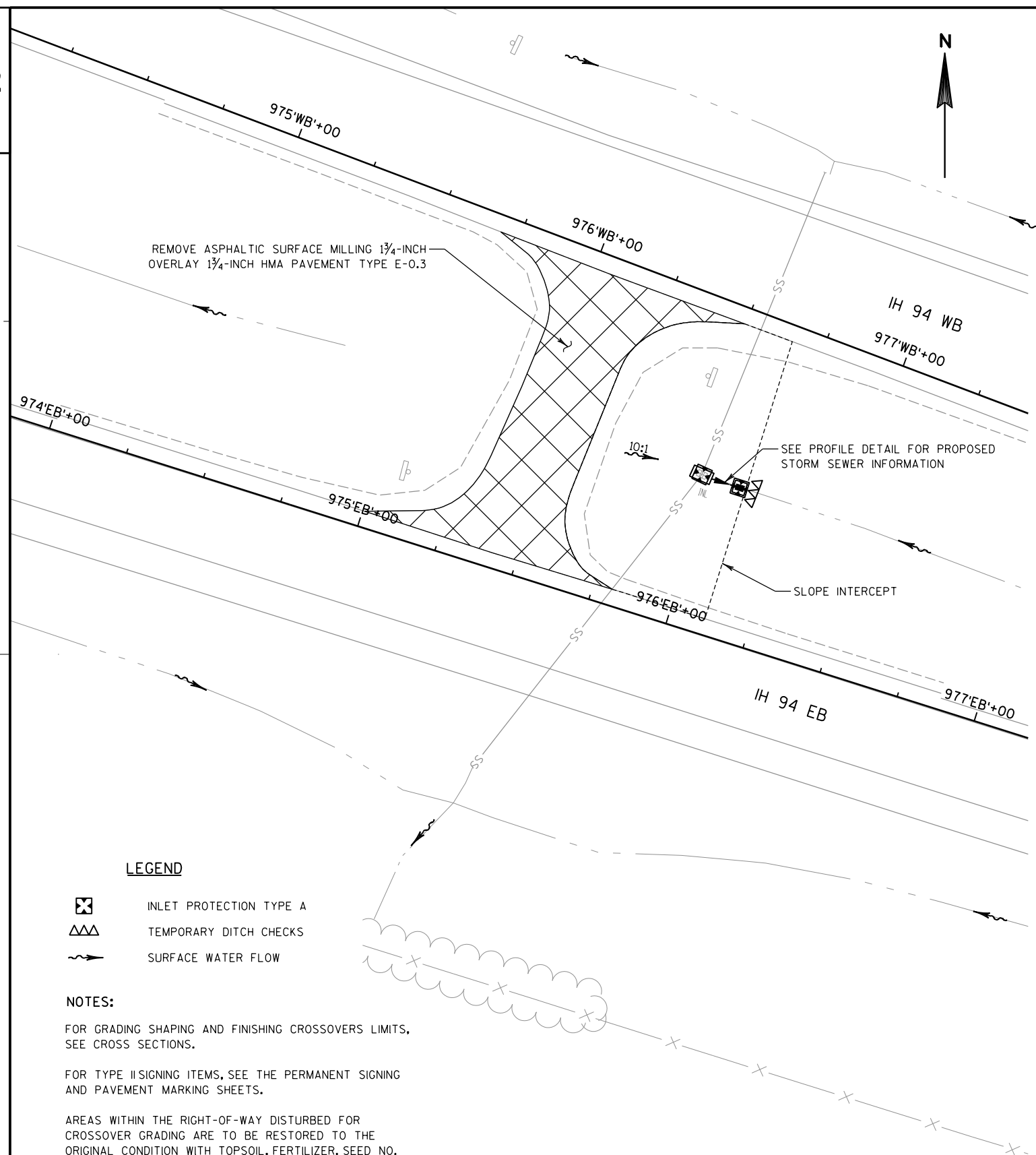
- A= FERTILIZER TYPE B & SEEDING MIXTURE NO. 30
- B= TOPSOIL, FERTILIZER TYPE B, SEEDING MIXTURE NO. 30 & EROSION MAT
CLASS 1 TYPE B
- TOPSOIL, FERTILIZER TYPE B, & SEEDING MIXTURE NO. 30 ARE INCIDENTAL
TO BARRIER SYSTEM GRADING SHAPING FINISHING ITEM

FINISHING ITEMS AT GUARDRAIL INSTALLATIONS

IH 94 MAINLINE
RUSH RIVER







LEGEND

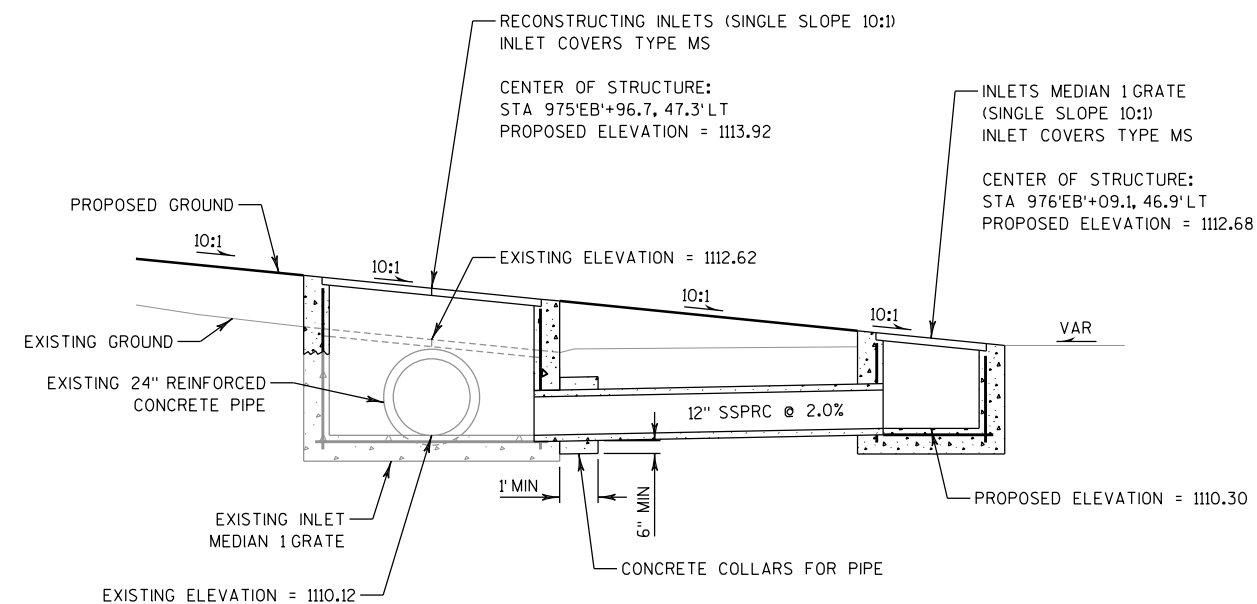
-  INLET PROTECTION TYPE A
-  TEMPORARY DITCH CHECKS
-  SURFACE WATER FLOW

NOTES:

FOR GRADING SHAPING AND FINISHING CROSSEVERS LIMITS, SEE CROSS SECTIONS.

FOR TYPE II SIGNING ITEMS, SEE THE PERMANENT SIGNING AND PAVEMENT MARKING SHEETS.

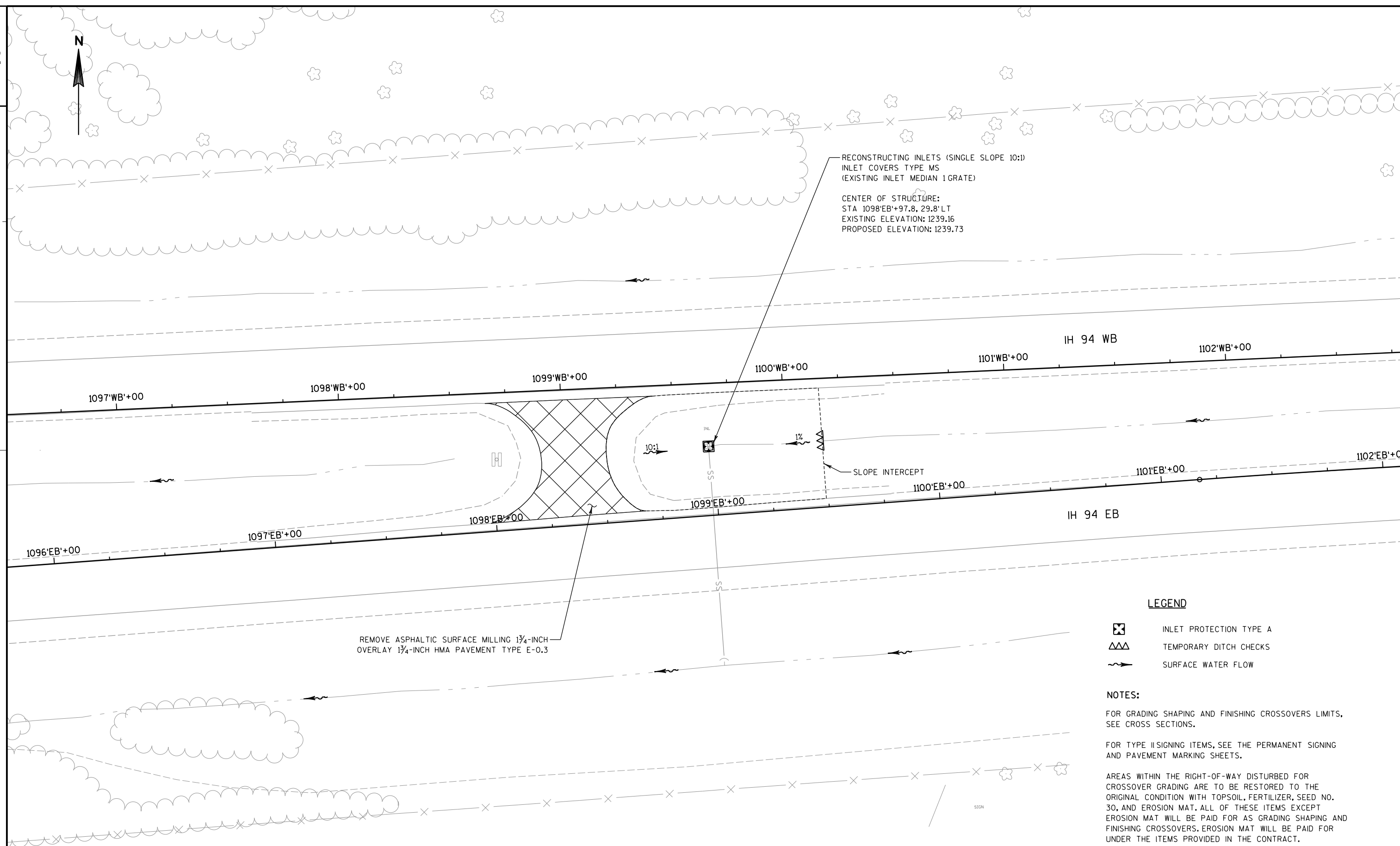
AREAS WITHIN THE RIGHT-OF-WAY DISTURBED FOR Crossover GRADING ARE TO BE RESTORED TO THE ORIGINAL CONDITION WITH TOPSOIL, FERTILIZER, SEED NO. 30, AND EROSION MAT. ALL OF THESE ITEMS EXCEPT EROSION MAT WILL BE PAID FOR AS GRADING SHAPING AND FINISHING CROSSEVERS. EROSION MAT WILL BE PAID FOR UNDER THE ITEMS PROVIDED IN THE CONTRACT.



PROPOSED STORM SEWER PROFILE

NOTE:

FOR INFORMATION NOT SHOWN SEE SDD "INLETS MEDIAN 1 & 2 GRATE"

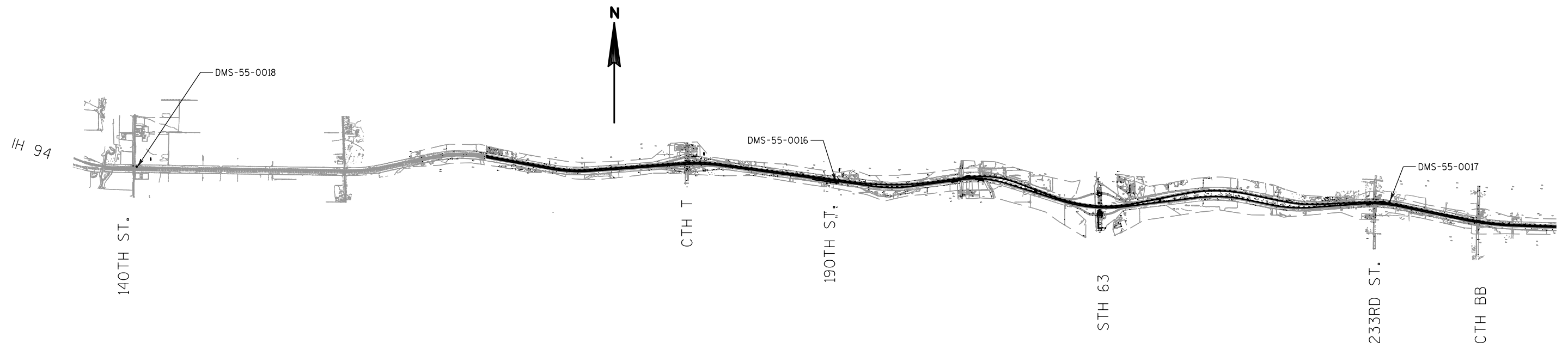


LEGEND	EXISTING	PROPOSED
FTMS CONVENTIONAL SYMBOLS		
CCTV CAMERA AND POLE - - - - -		◀
POLE MOUNTED CABINET- - - - -		⊠
METER BREAKER PEDESTAL- - - - -		⊠
24"X36" STEEL PULL BOX - - - - -		⊙
FTMS (ITS) CONDUIT- - - - -	- -	- -
BREAKER DISCONNECT BOX - - - - -		⊞
COMMUNICATIONS VAULT, TYPE 1- - - - -	⊞	⊞
SIDE MOUNT DMS AND STRUCTURAL STEEL- - -		⊞

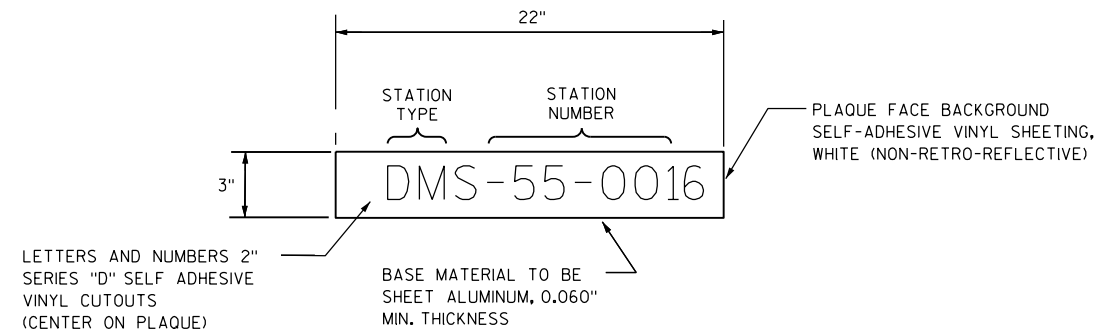
FTMS STANDARD ABBREVIATIONS	
CCTV	CLOSED CIRCUIT TELEVISION SITE
CV	COMMUNICATIONS VAULT
DMS	DYNAMIC MESSAGE SIGN
PB	PULL BOX
S-F	STATE-FURNISHED

FTMS GENERAL NOTES

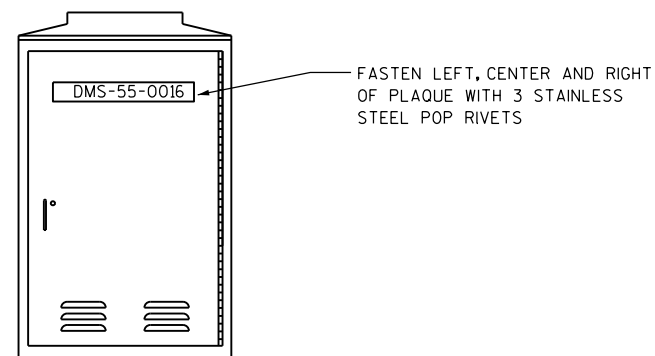
1. THESE PLANS AND THE ASSOCIATED SPECIAL PROVISIONS REFLECT CONDITIONS KNOWN DURING THE DEVELOPMENT OF THE PLANS AND TECHNICAL SPECIAL PROVISIONS. ALL SCALES, DIMENSIONS AND LOCATIONS SHOWN IN THESE PLANS ARE APPROXIMATE. ACTUAL PHYSICAL FIELD CONDITIONS SHALL PROVIDE THE BASIS FOR THE APPLICATION OF WORK SHOWN IN THE PLANS. THE CONTRACTOR IS FULLY RESPONSIBLE FOR THE APPLICATION OF ALL WORK SHOWN IN THE PLANS TO THE ACTUAL PHYSICAL FIELD CONDITIONS TO PROVIDE A COMPLETE AND ACCEPTED PROJECT. IN THE EVENT THAT ACTUAL PHYSICAL FIELD CONDITIONS AFFECT OR PREVENT THE APPLICATION OR PROGRESSION OF ANY WORK SHOWN IN THE PLANS OR TECHNICAL SPECIAL PROVISIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY, AND PRIOR TO ANY FURTHER WORK ACTIVITY. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY LOCATION CHANGES OTHER THAN MINOR ADJUSTMENTS.
2. BE AWARE THAT ALL EXISTING UNDERGROUND AND ABOVE GROUND STRUCTURES AND FACILITIES WITHIN THE SCOPE OF THIS PROJECT MAY NOT BE LOCATED IN THE PLANS. THE CONTRACTOR IS FULLY RESPONSIBLE FOR LOCATING AND AVOIDING ALL UNDERGROUND AND ABOVE GROUND STRUCTURES AND FACILITIES.
3. BE AWARE THAT NO TEST BORINGS WERE MADE WHERE CONDUITS, PULLBOXES, POLES, CABINET FOUNDATIONS, OR OTHER EQUIPMENT IS TO BE INSTALLED. THE CONTRACTOR IS FULLY RESPONSIBLE FOR EXAMINING THE JOB SITE CONDITIONS BEFORE SUBMITTING BID PROPOSALS.
4. NO TREES (AND/OR SHRUBS) SHALL BE REMOVED WITHOUT APPROVAL OF THE ENGINEER.
5. AREAS WITHIN THE RIGHT-OF-WAY DISTURBED SPECIFICALLY FOR FTMS CONSTRUCTION SHALL BE RESTORED TO THE ORIGINAL CONDITION WITH TOPSOIL, FERTILIZER, SEED, AND EROSION MAT, AND SHALL BE INCLUDED IN THE COST OF INSTALLING FTMS ITEMS. RESTORATION FOR AREAS DISTURBED FOR OTHER CONSTRUCTION OPERATIONS BUT ALSO CONTAINING FTMS CONSTRUCTION SHALL BE DONE ACCORDING TO REQUIREMENTS AND PAYMENT PROVISIONS FOR THE OTHER CONSTRUCTION OPERATIONS.
6. THE LOCATION OF EXISTING AND PROPOSED UTILITY INSTALLATIONS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.
7. DUE TO RAMP, LANE, SHOULDER CLOSURE RESTRICTIONS, AND WORK UNDER OTHER CONTRACTS, SOME WORK MAY BE REQUIRED TO BE PERFORMED AT NIGHT.
8. THE CONTRACTOR IS FULLY RESPONSIBLE FOR COORDINATING RAMP, LANE, SHOULDER, AND ROADWAY CLOSURES WITH OTHER CONTRACTS IN THE AREA.
9. THE CONTRACTOR SHALL CONTACT THE WISDOT STATEWIDE TRAFFIC OPERATIONS CENTER AT (414) 227-2166 FIVE (5) WORKING DAYS PRIOR TO ENTERING ANY EXISTING WISDOT FTMS OR ITS CABINET.
10. ALL LOOP DETECTORS ARE STATIONED TO CENTER OF LEADING EDGE AS APPROACHED BY NORMAL VEHICLE PATH.
11. HAND DIG TRENCHES CROSSING EXISTING CONDUIT CONTAINING FIBER OPTIC CABLE.
12. VISUALLY VERIFY DEPTHS OF EXISTING CONDUITS CONTAINING FIBER OPTIC CABLE PRIOR TO CROSSING BY DIRECTIONAL BORE OR SPECIAL METHOD.



FTMS PROJECT DEPLOYMENT OVERVIEW MAP



ITS FIELD CABINET IDENTIFICATION PLAQUE DETAIL



ITS FIELD CABINET IDENTIFICATION PLAQUE REQUIREMENTS AND PLACEMENTS
(TYPICAL ALL CONTROL CABINETS)

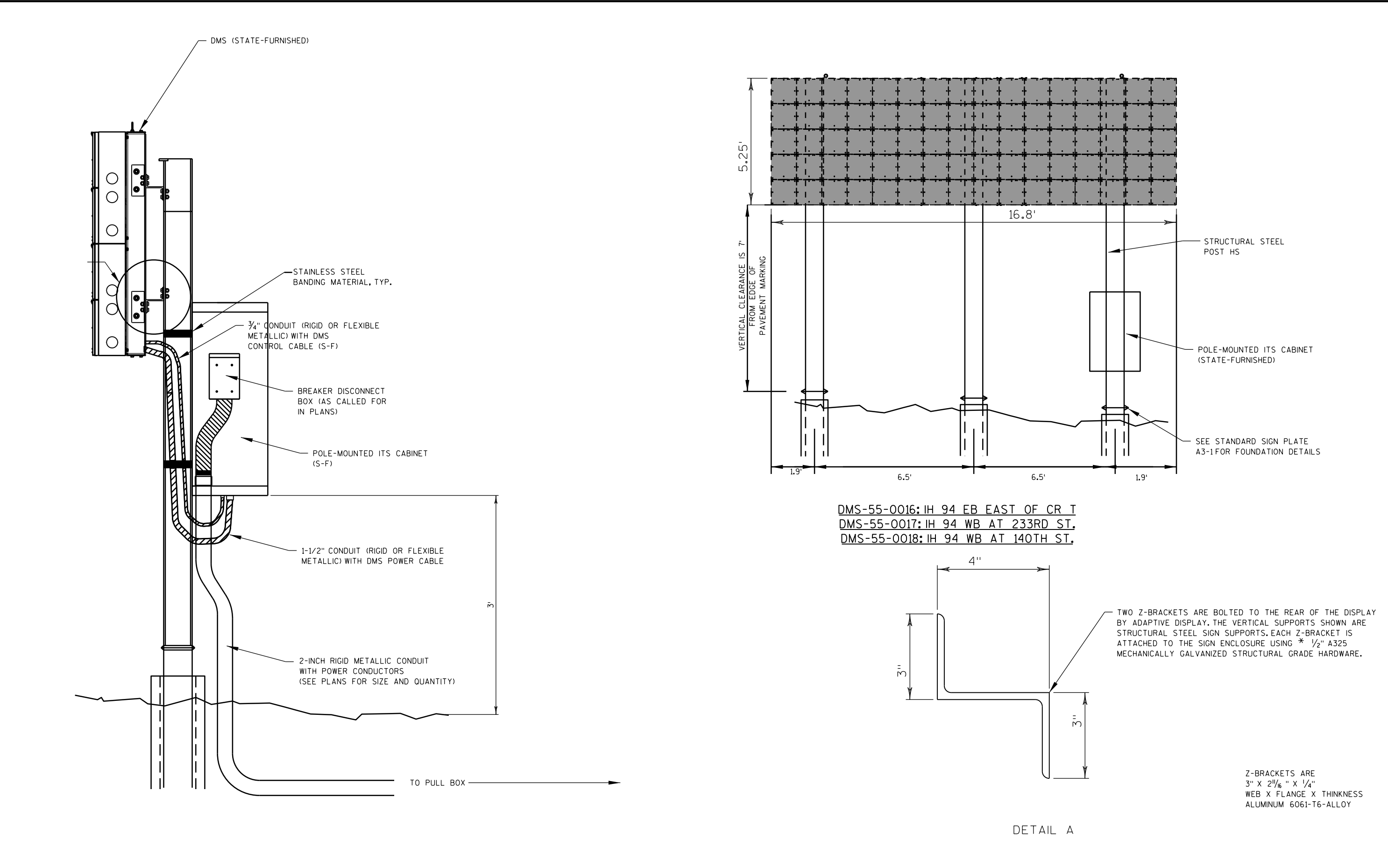
LEGEND STATION TYPE

RM - RAMP METER
CCTV - CLOSED CIRCUIT TELEVISION
ATR - AUTOMATIC TRAFFIC RECORDER
SDS - SYSTEM DETECTOR STATION
MD - MICROWAVE DETECTOR

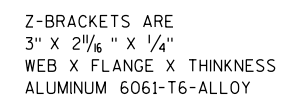
NOTES

- 1) TWO PLAQUES PER CABINET REQUIRED ON CONTROL CABINET.
- 2) FASTEN ONE PLAQUE ON FRONT DOOR, UPPER HALF.
- 3) FASTEN ONE PLAQUE ON SIDE FACING LOCAL STREET. IF NO LOCAL STREET NEARBY, OR IF SUCH LOCATION COINCIDES WITH LOCATION OF PLAQUE IN NOTE 2, FASTEN PLAQUE ON REAR OF CABINET, UPPER HALF.
- 4) COUNTY NUMBER NOT REQUIRED ON RAMP METER CABINETS.

2



DMS-55-0016: IH 94 EB EAST OF CR T
DMS-55-0017: IH 94 WB AT 233RD ST.
DMS-55-0018: IH 94 WB AT 140TH ST.



DETAIL A

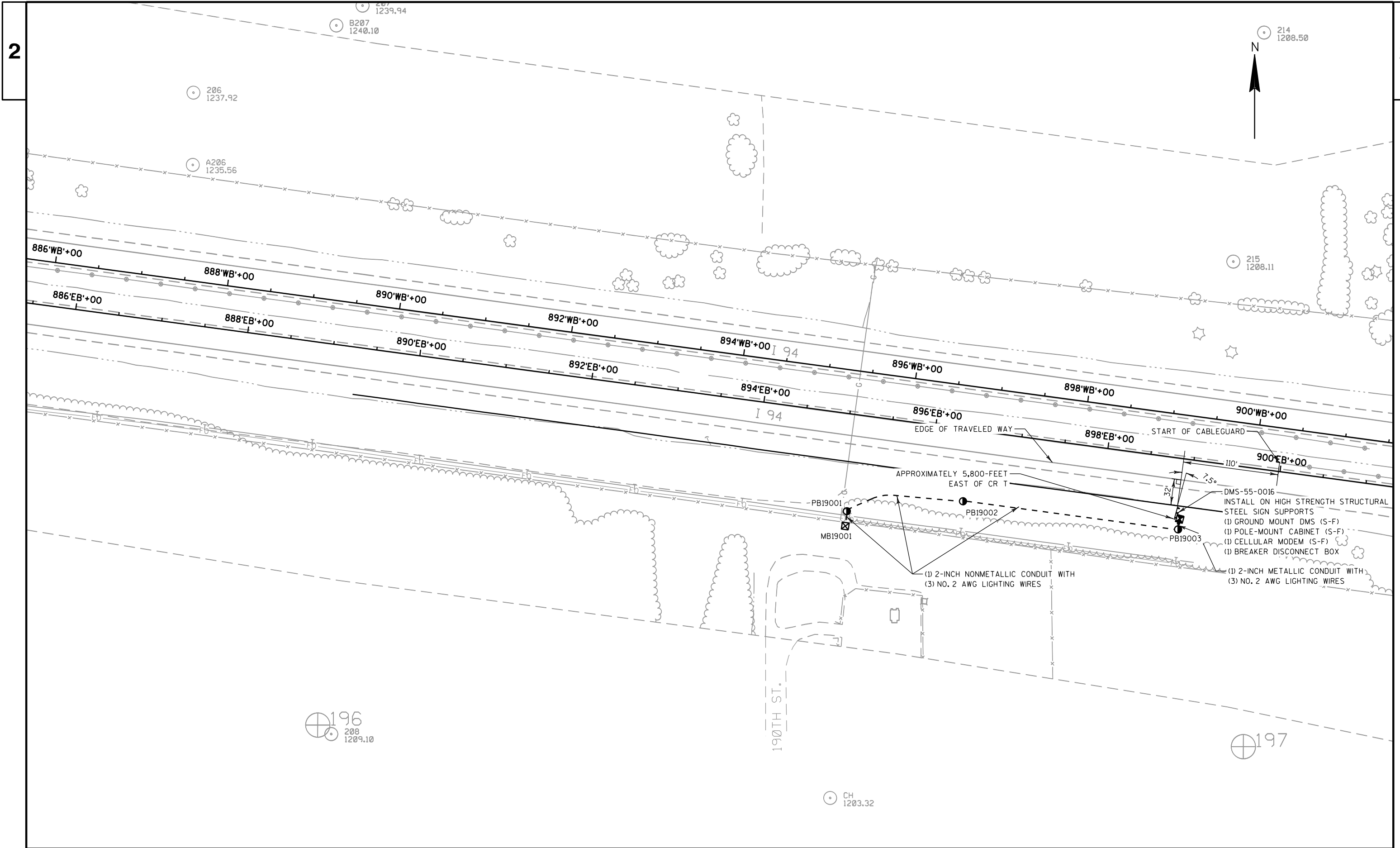
(1) 2-INCH NONMETALLIC CONDUIT, SPECIAL WITH
(3) NO. 6 AWG LIGHTING WIRES

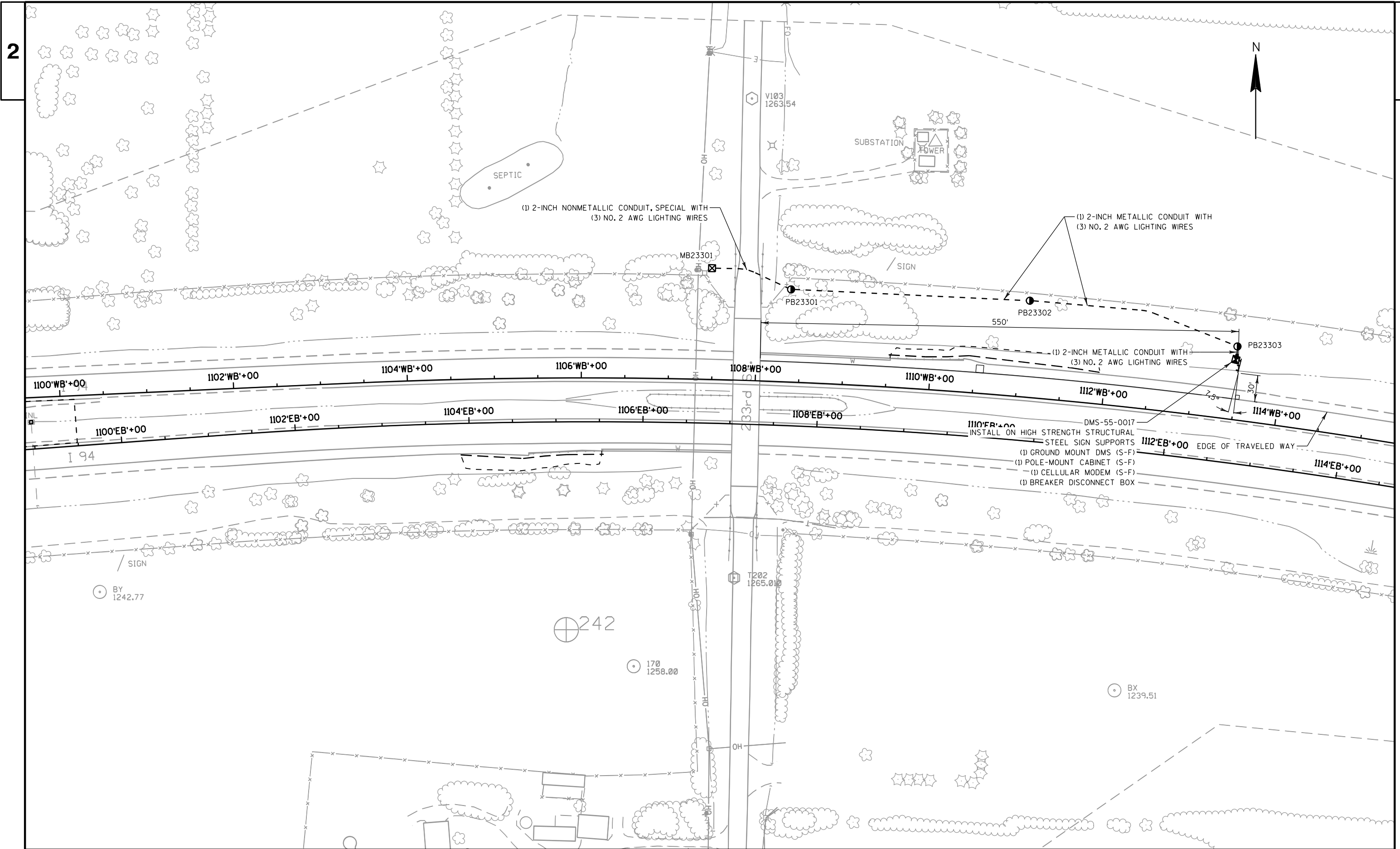
(1) 2-INCH METALLIC CONDUIT WITH
(3) NO. 6 AWG LIGHTING WIRES

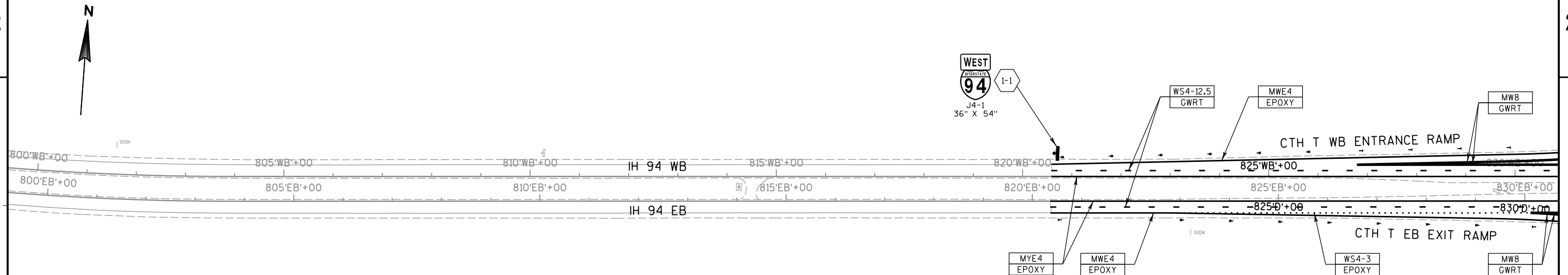
DMS-55-0018
INSTALL ON HIGH STRENGTH STRUCTURAL
STEEL SIGN SUPPORTS
(1) GROUND MOUNT DMS (S-F)
(1) POLE-MOUNT CABINET (S-F)
(1) CELLULAR MODEM (S-F)
(1) BREAKER DISCONNECT BOX

EDGE OF TRAVELED WAY

140th ST.







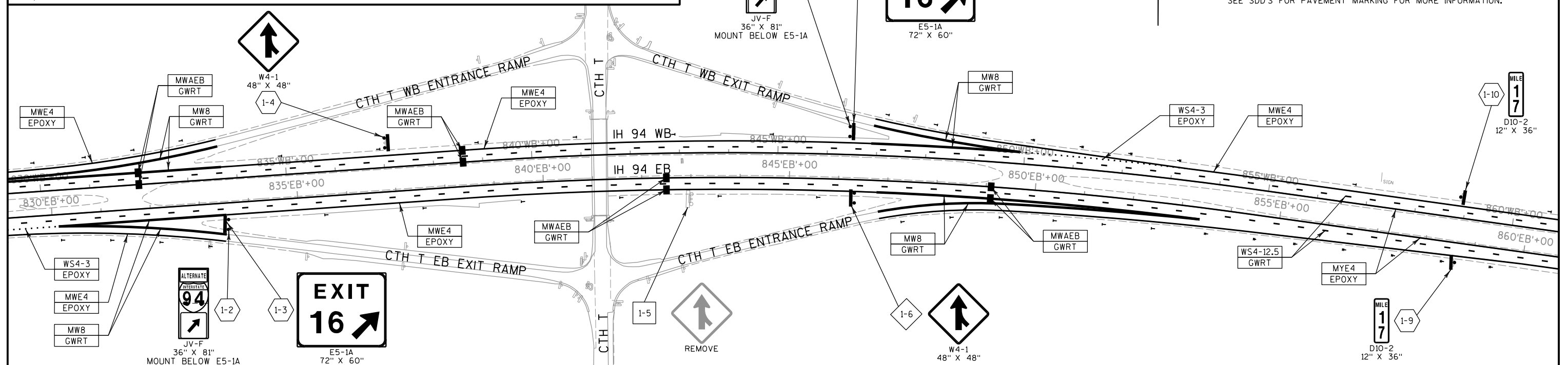
LEGEND	
	EXISTING SIGN MOUNTED ON SINGLE POST
	PROPOSED SIGN MOUNTED ON SINGLE POST
	EXISTING SIGN MOUNTED ON DOUBLE POST
	PROPOSED SIGN MOUNTED ON DOUBLE POST
	EXISTING SIGN MOVED ON NEW POSTS
	SIGN - REMOVE AND REPLACE
	SIGN - REMOVE
	SIGN - MOVE
	SIGN - PLACE NEW
	EPOXY
	PAVEMENT MARKING 8-INCH (WHITE)
	PAVEMENT MARKING 4-INCH (WHITE EDGE LINE)
	PAVEMENT MARKING 4-INCH (YELLOW EDGE LINE)
	PAVEMENT MARKING 4-INCH (WHITE SKIP) (3' LINE, 9' GAP)
	PAVEMENT MARKING 4-INCH (WHITE SKIP) (12 1/2' LINE, 37 1/2' GAP)
	PAVEMENT MARKING AERIAL ENFORCEMENT BARS (WHITE)
	GROOVED WET REFLECTIVE TAPE
	SINGLE DELINEATOR
	DOUBLE DELINEATOR

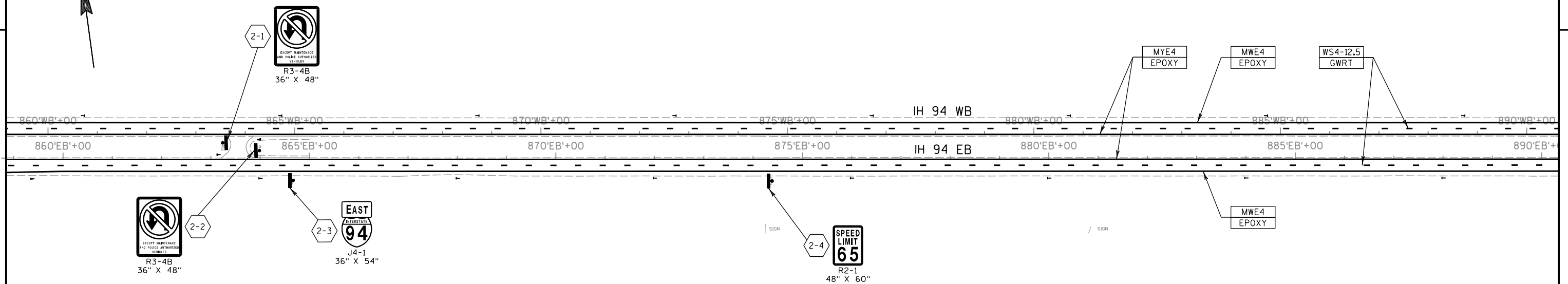
NOTES:

ALL EXISTING TYPE I AND TYPE II SIGNS NOT SHOWN ARE TO REMAIN IN PLACE.

REMOVE EXISTING DELINEATORS, REPLACE IN ACCORDANCE WITH SDD "DELINEATOR LAYOUT".

SEE SDD'S FOR PAVEMENT MARKING FOR MORE INFORMATION.





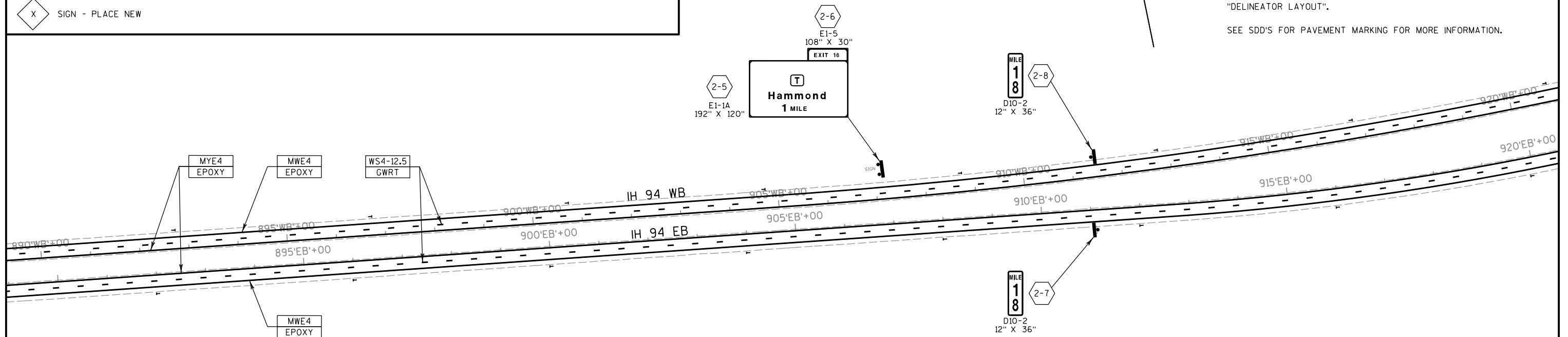
LEGEND	
	EXISTING SIGN MOUNTED ON SINGLE POST
	PROPOSED SIGN MOUNTED ON SINGLE POST
	EXISTING SIGN MOUNTED ON DOUBLE POST
	PROPOSED SIGN MOUNTED ON DOUBLE POST
	EXISTING SIGN MOVED ON NEW POSTS
	SIGN - REMOVE AND REPLACE
	SIGN - REMOVE
	SIGN - MOVE
	SIGN - PLACE NEW
	EPOXY
	PAVEMENT MARKING 8-INCH (WHITE)
	PAVEMENT MARKING 4-INCH (WHITE EDGE LINE)
	PAVEMENT MARKING 4-INCH (YELLOW EDGE LINE)
	PAVEMENT MARKING 4-INCH (WHITE SKIP) (3' LINE, 9' GAP)
	PAVEMENT MARKING 4-INCH (WHITE SKIP) (12 1/2' LINE, 37 1/2' GAP)
	GROOVED WET REFLECTIVE TAPE
	SINGLE DELINEATOR
	DOUBLE DELINEATOR

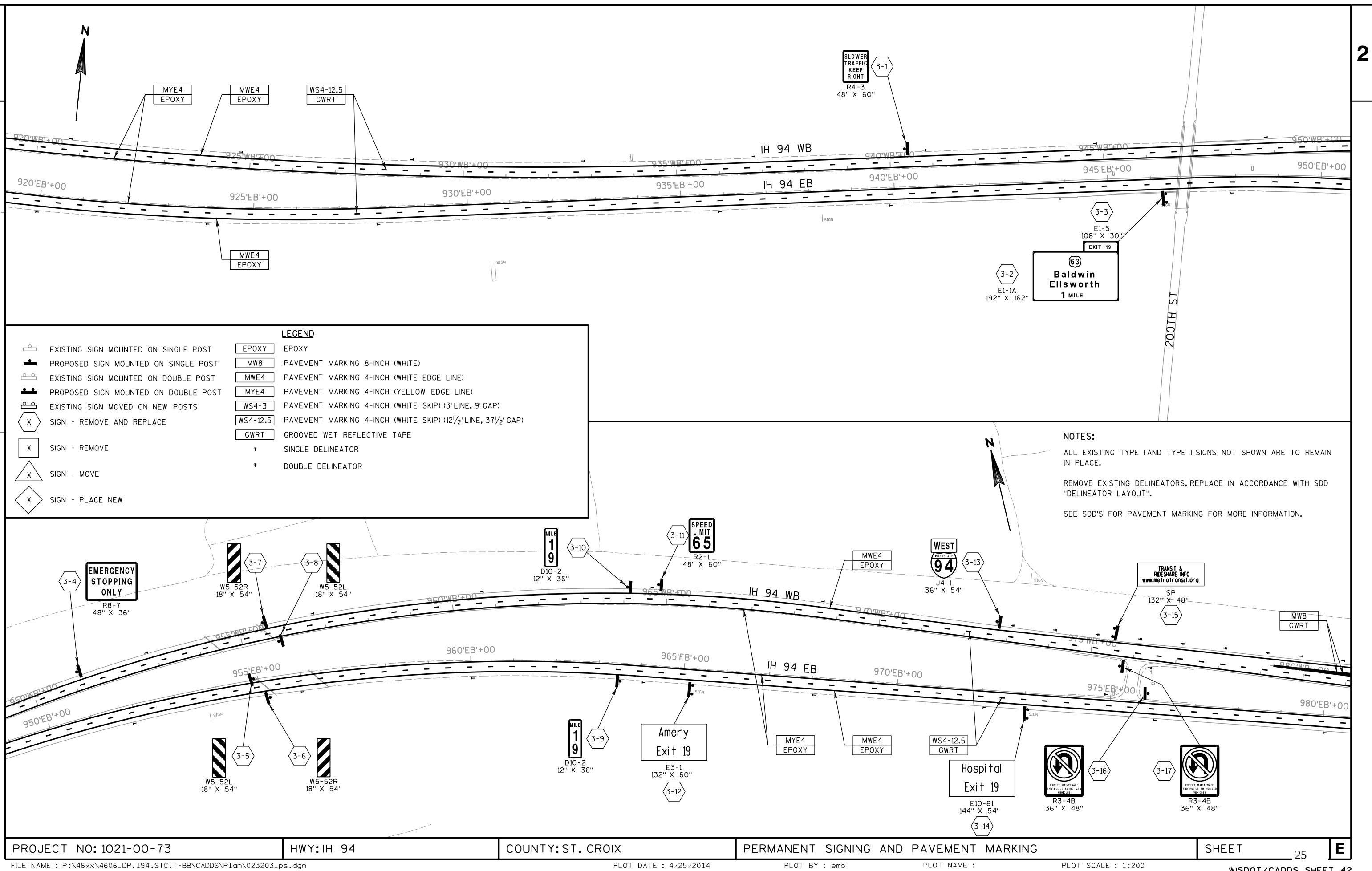
NOTES:

ALL EXISTING TYPE I AND TYPE II SIGNS NOT SHOWN ARE TO REMAIN IN PLACE.

REMOVE EXISTING DELINEATORS, REPLACE IN ACCORDANCE WITH SDD "DELINEATOR LAYOUT".

SEE SDD'S FOR PAVEMENT MARKING FOR MORE INFORMATION.





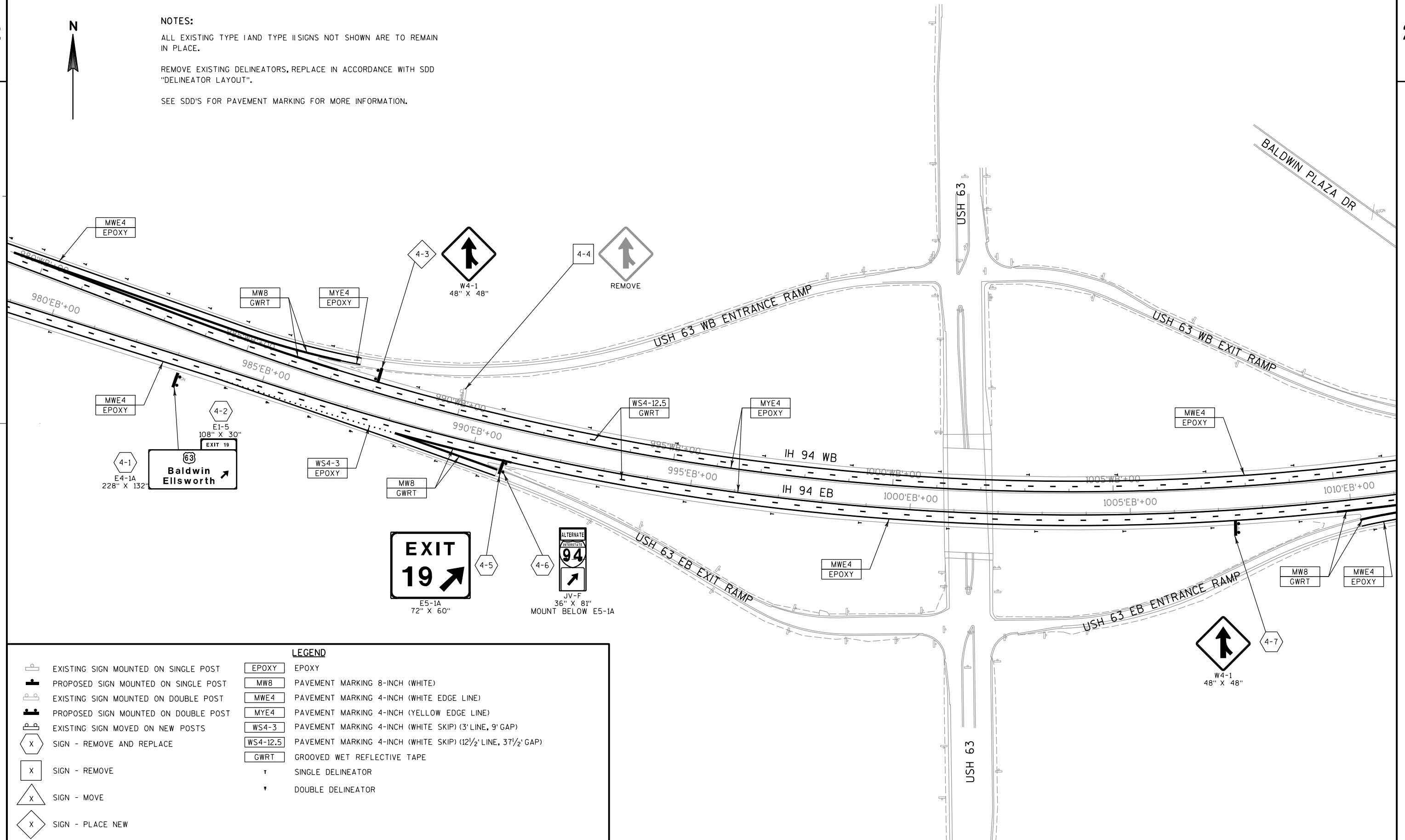


NOTES:

ALL EXISTING TYPE I AND TYPE II SIGNS NOT SHOWN ARE TO REMAIN IN PLACE.

REMOVE EXISTING DELINEATORS, REPLACE IN ACCORDANCE WITH SDD "DELINEATOR LAYOUT".

SEE SDD'S FOR PAVEMENT MARKING FOR MORE INFORMATION.



PROJECT NO: 1021-00-73

HWY: IH 94

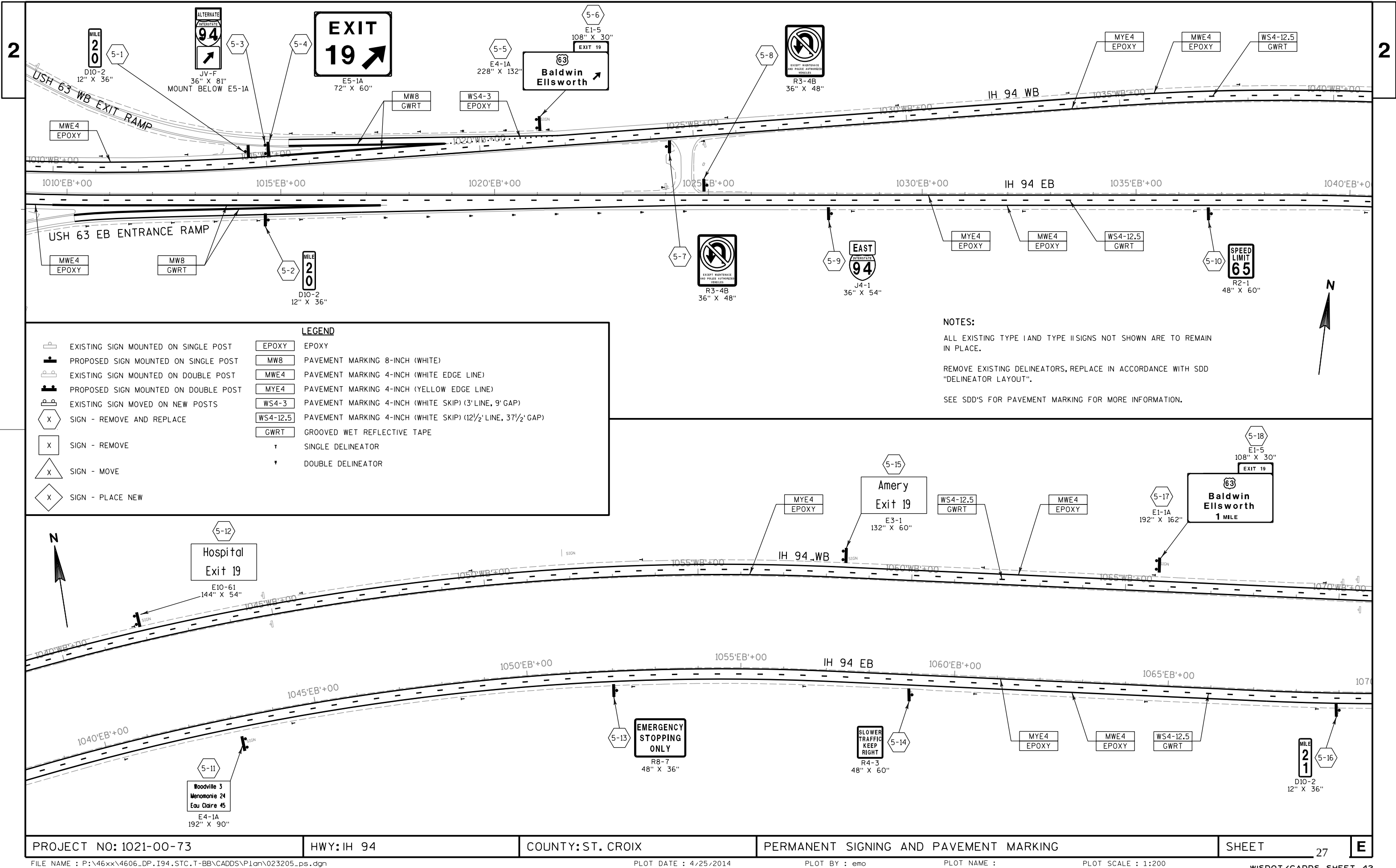
COUNTY: ST. CROIX

PERMANENT SIGNING AND PAVEMENT MARKING

SHEET

26

E



PROJECT NO: 1021-00-73

HWY: IH 94

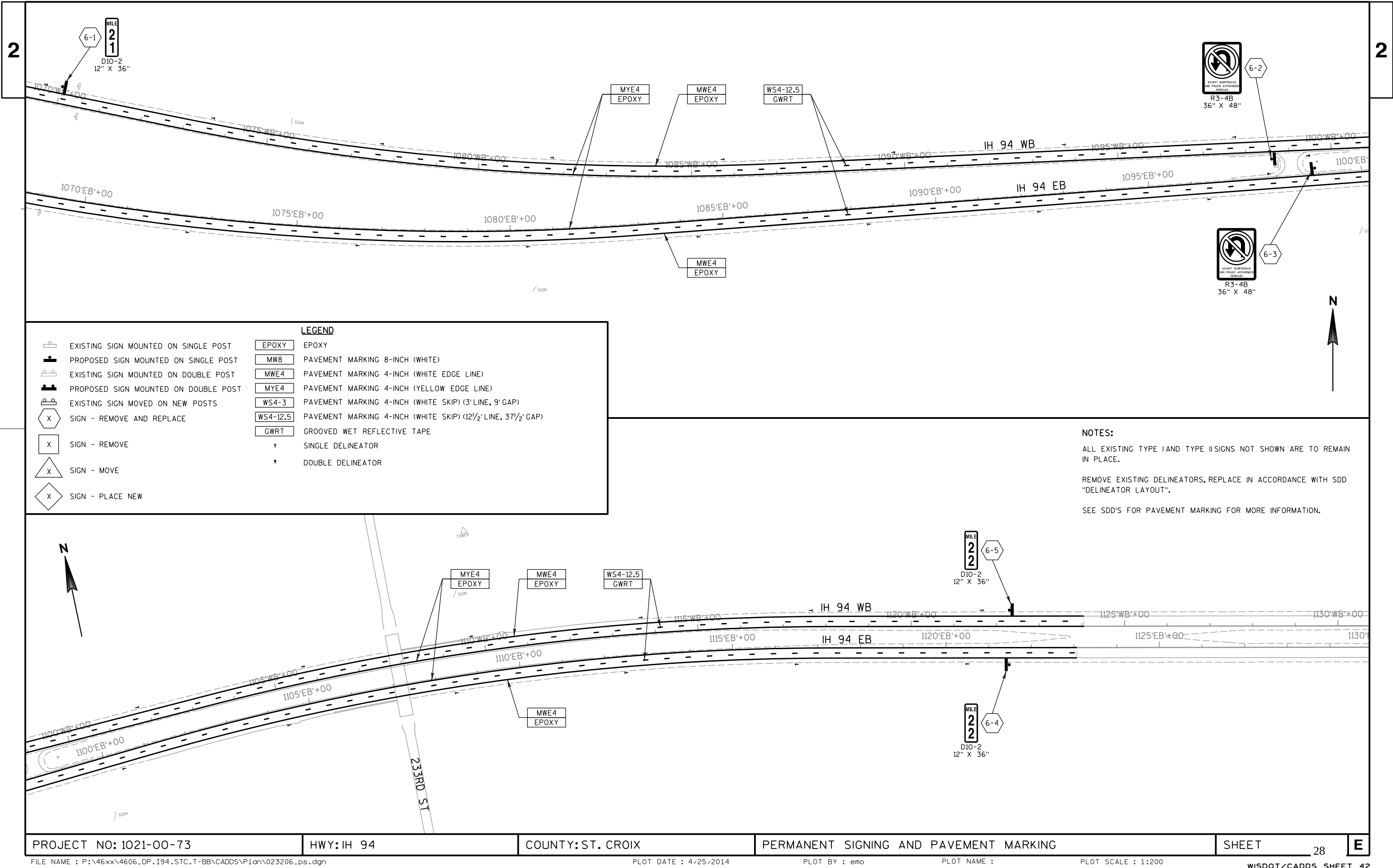
COUNTY: ST. CROIX

PERMANENT SIGNING AND PAVEMENT MARKING

SHEET

27

E



LEGEND

- ▤ POST WITH ATTACHED SIGN
- ➡ DIRECTION OF TRAFFIC
- ▤ WORK ZONE
- MB PORTABLE CHANGEABLE MESSAGE SIGN REMOTE COMMUNICATIONS
- * A SPEED LIMIT SIGN SHALL BE LOCATED 1500 FEET BEYOND THE END OF THE ACCELERATION LANE OF EACH ENTRANCE RAMP. THERE SHALL BE A SPEED LIMIT SIGN INCORPORATED A MINIMUM OF EVERY 2 TO 3 MILES WITHIN THE LANE CLOSURE.
- ** SEE SDD "TRAFFIC CONTROL, LANE CLOSURE, SPEEDS GREATER THAN 40 M.P.H." FOR TRAFFIC CONTROL LOCATED WITHIN THE TRANSITION AREA, BUFFER SPACE, AND WORK SPACE (WORK AREA).

NOTES:

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

TRAFFIC CONTROL SHOWN IS FOR LANE CLOSURES IN ONE DIRECTION AT ANY GIVEN TIME. IMPLEMENT TRAFFIC CONTROL IN BOTH DIRECTIONS IF LANE CLOSURES ARE IMPLEMENTED FOR BOTH DIRECTIONS.

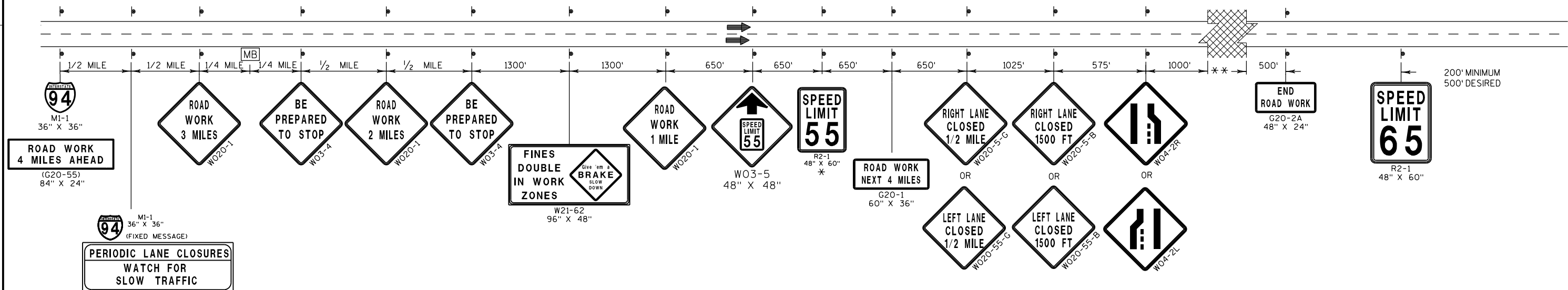
COORDINATE LOCATIONS OF LANE CLOSURES/SPEED REDUCTION ADVANCED SIGNING WITH DETAILS SHOWN ON ALTERNATE ROUTE DETAIL.

RETURN SPEED LIMIT TO 65 MPH AND COVER SIGNS DURING NON-WORKING HOURS.

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

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. NO WARNING LIGHTS SHALL BE WORKING ON "COVERED" OR "DOWNED" SIGNS.

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.



GENERAL NOTES FOR TRAFFIC CONTROL

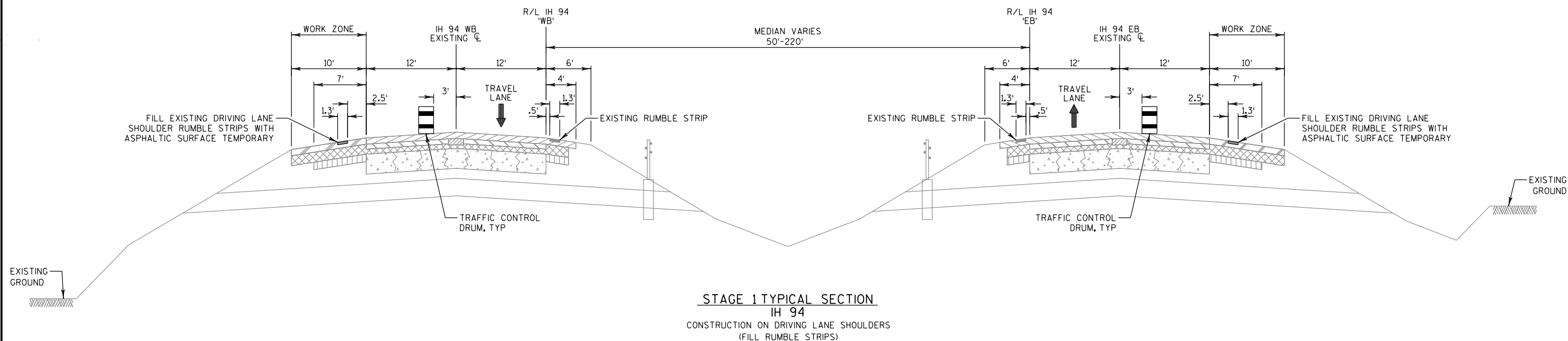
- 1) THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
- 2) CONFLICTING TRAFFIC SIGNS SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.
- 3) A FLAGGER MAY BE REQUIRED WHERE CONSTRUCTION VEHICLES ENTER OR LEAVE WORK AREAS IF WARRANTED BY CONDITIONS OR AS DIRECTED BY THE ENGINEER. HOWEVER, THE CONTRACTOR SHALL NOT USE FLAG PERSONS TO DIRECT, STOP OR CONTROL TRAFFIC ON IH 94 AT ANY TIME.
- 4) ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.
- 5) "WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.
- 6) FOR NIGHTTIME OPERATION ALL DRUMS IN TAPERS SHALL HAVE A TYPE C WARNING LIGHT.
- 7) ALL TYPE III BARRICADES SHALL BE 8' WIDE, UNLESS OTHERWISE NOTED. EQUIP WITH TYPE "A" (LOW INTENSITY FLASHING) LIGHTS PER SDDS.
- 8) SEE SPECIAL PROVISIONS FOR ADDITIONAL TRAFFIC CONTROL REQUIREMENTS.
- 9) TRAFFIC CONTROL PLANS FOR IH 94 PROVIDE SUGGESTED STAGING WITH TRAFFIC CONTROL DEVICE LOCATIONS. STAGING MAY BE ALTERED WITH APPROVAL OF ENGINEER BASED ON OPERATIONS PROPOSED BY CONTRACTOR.
- 10) FOR LANE CLOSURES SEE SDD "TRAFFIC CONTROL, LANE CLOSURE, SPEED REDUCTION" AND THE DETAIL FOR TRAFFIC CONTROL ADVANCED WARNING.
- 11) FOR EXIT AND ENTRANCE RAMP SEE SDD "TRAFFIC CONTROL, EXIT AND ENTRANCE RAMP WITHIN LANE CLOSURE".

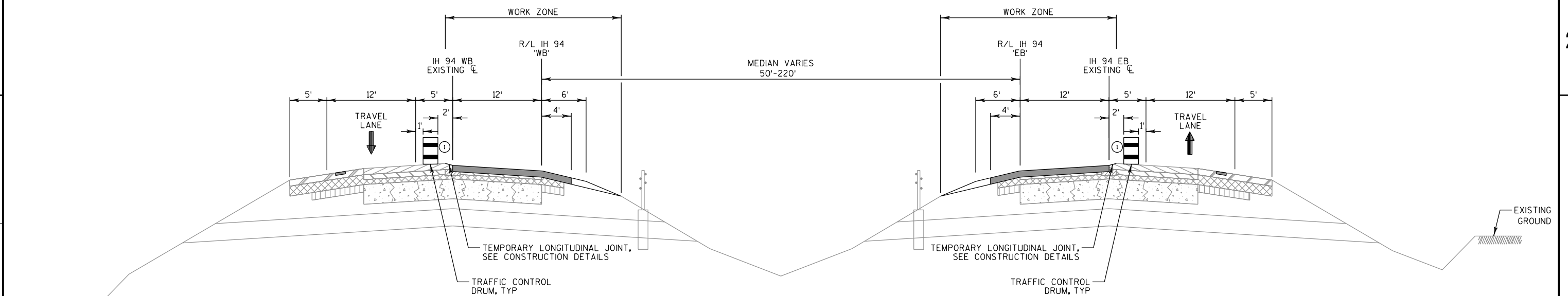
SPEED REDUCTION

REDUCE THE SPEED LIMIT ON IH 94 TO 55 MPH WHEN WORK IS BEING PERFORMED ON IH 94. SEE THE PLAN SHEET FOR TRAFFIC CONTROL ADVANCED WARNING FOR TRAFFIC CONTROL SIGNS REQUIRED.

PCMS FOR CTH T AND USH 63

PLACE PCMS ON CTH T AND USH 63 TO NOTIFY THE PUBLIC OF RAMP RESTRICTIONS DURING MILL AND OVERLAY OF RAMP AND GORE AREA.

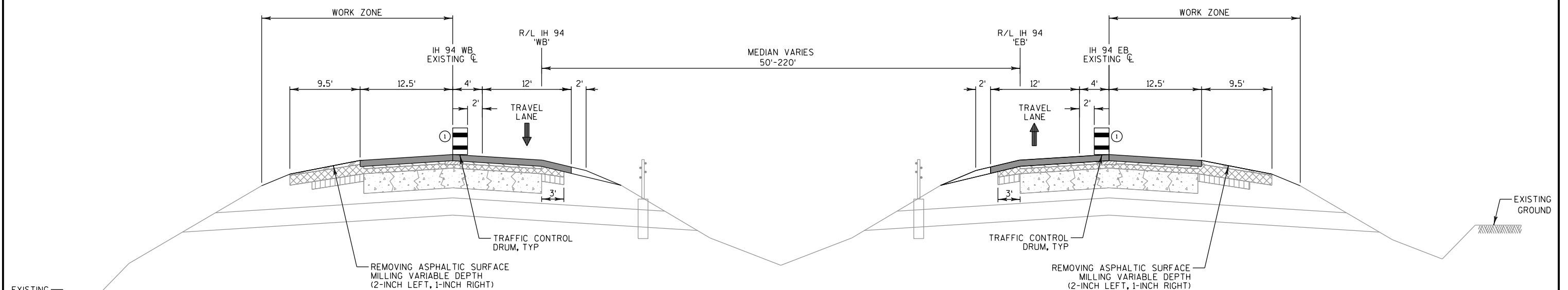




STAGE 2 TYPICAL SECTION IH 94

CONSTRUCTION ON PASSING LANES
AND PASSING LANE SHOULDERS
(LOWER HMA LAYER)

- ① DRUM LOCATION SHOWN FOR AREAS
IMMEDIATELY ADJACENT TO CONSTRUCTION
ACTIVITIES, SHIFT DRUMS PAST LANE LINE IN
AREAS WITH NO CONSTRUCTION ACTIVITIES

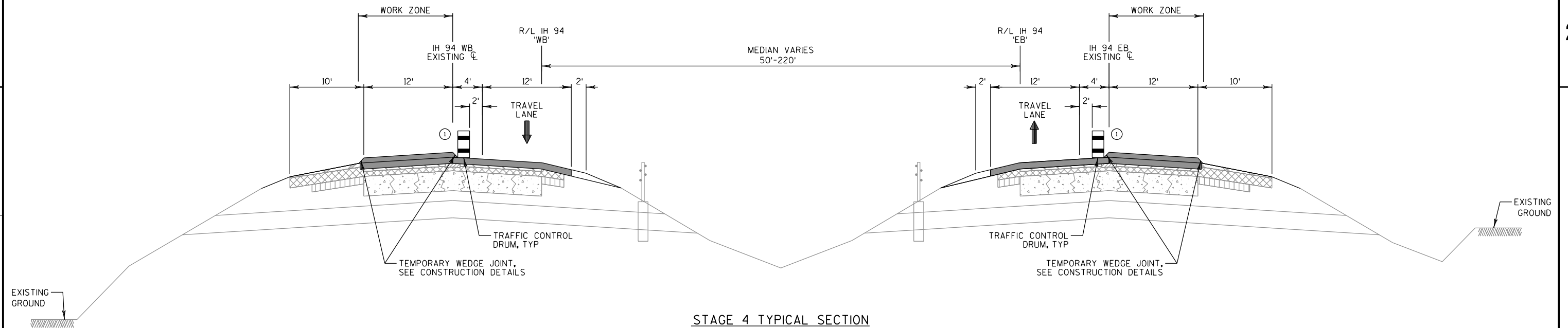


STAGE 3 TYPICAL SECTION IH 94

CONSTRUCTION ON DRIVING LANES
AND DRIVING LANE SHOULDERS
(LOWER HMA LAYER)

- ① DRUM LOCATION SHOWN FOR AREAS
IMMEDIATELY ADJACENT TO CONSTRUCTION
ACTIVITIES, SHIFT DRUMS PAST LANE LINE IN
AREAS WITH NO CONSTRUCTION ACTIVITIES

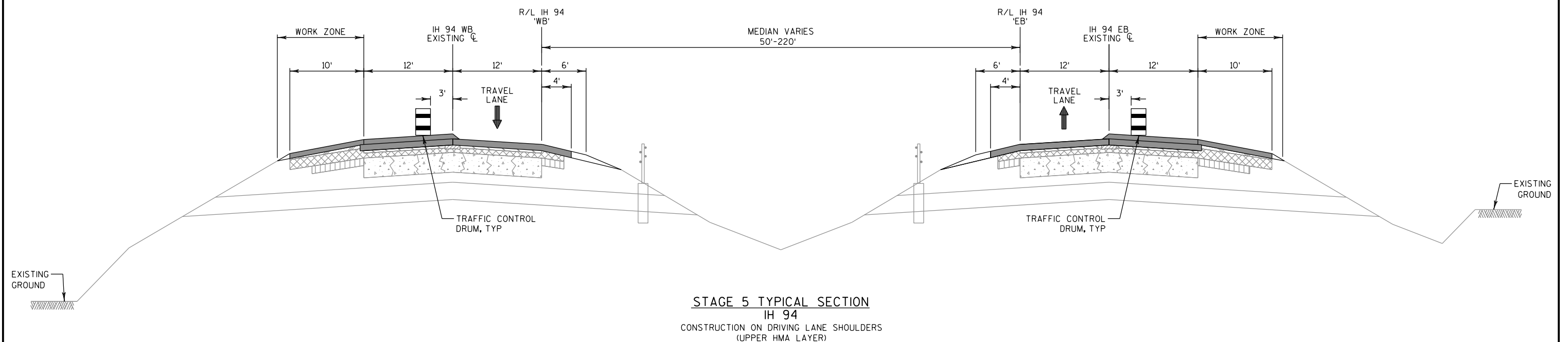
2



STAGE 4 TYPICAL SECTION IH 94

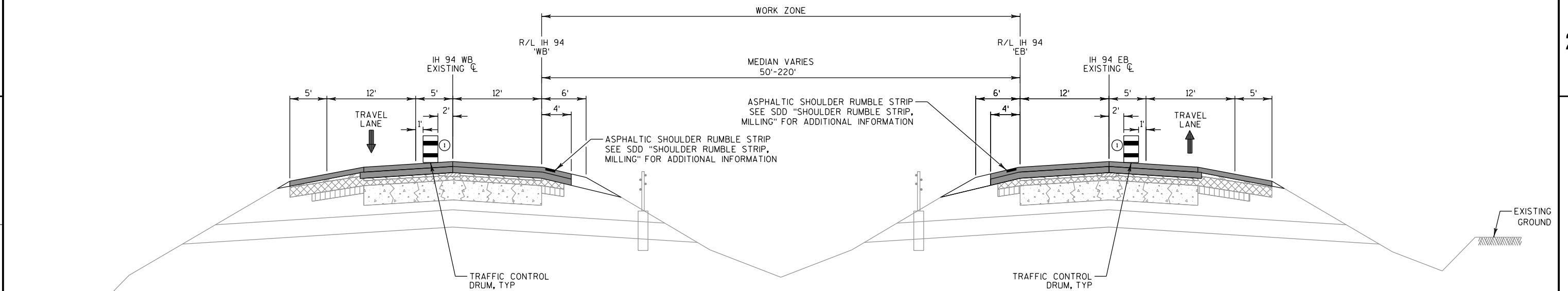
CONSTRUCTION ON DRIVING LANES
(UPPER SMA SPECIAL LAYER)

- ① DRUM LOCATION SHOWN FOR AREAS IMMEDIATELY ADJACENT TO CONSTRUCTION ACTIVITIES, SHIFT DRUMS PAST LANE LINE IN AREAS WITH NO CONSTRUCTION ACTIVITIES



STAGE 5 TYPICAL SECTION IH 94

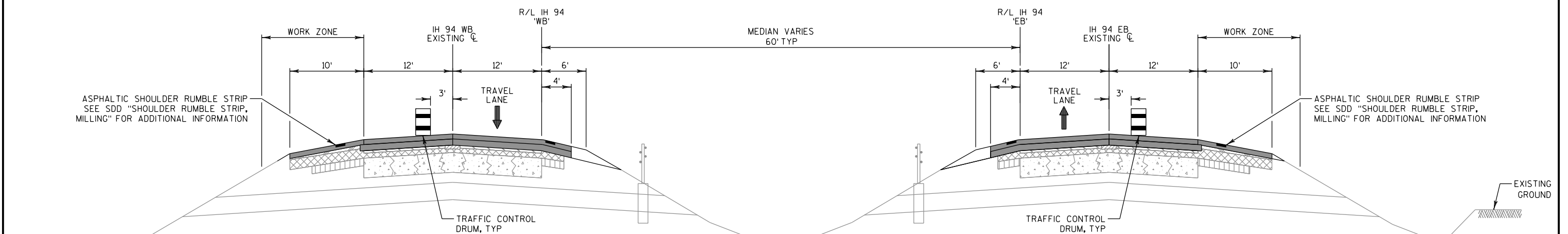
CONSTRUCTION ON DRIVING LANE SHOULDERS
(UPPER HMA LAYER)



STAGE 6 TYPICAL SECTION IH 94

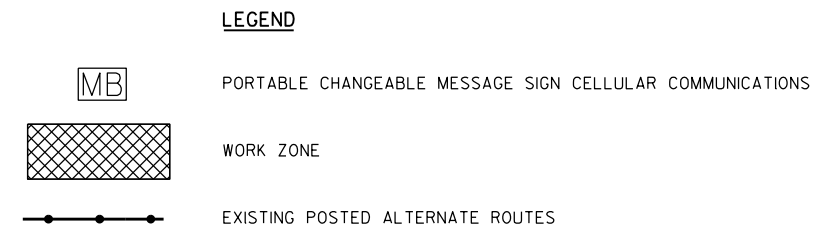
CONSTRUCTION ON PASSING LANES
AND PASSING LANE SHOULDERS
(UPPER SMA SPECIAL LAYER AND INSIDE RUMBLE STRIP INSTALLATION)

- ① DRUM LOCATION SHOWN FOR AREAS
IMMEDIATELY ADJACENT TO CONSTRUCTION
ACTIVITIES, SHIFT DRUMS PAST LANE LINE IN
AREAS WITH NO CONSTRUCTION ACTIVITIES



STAGE 7 TYPICAL SECTION IH 94

CONSTRUCTION ON DRIVING LANE SHOULDERS
(OUTSIDE RUMBLE STRIP INSTALLATION)



LOCATIONS OF PCMS SHOWN ARE FOR USE
THROUGHOUT THE DURATION OF THE PROJECT
AND FOR INCIDENT MANAGEMENT.

WISDOT/CADDS SHEET 42

3

DATE 17JUN14		E S T I M A T E O F Q U A N T I T I E S			
LINE				1021-00-73	
NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	QUANTITY
0010	204.0109.S	REMOVING CONCRETE SURFACE PARTIAL DEPTH	SF	68,900.000	68,900.000
0020	204.0110	REMOVING ASPHALTIC SURFACE	SY	10.000	10.000
0030	204.0115	REMOVING ASPHALTIC SURFACE BUTT JOINTS	SY	6,010.000	6,010.000
0040	204.0120	REMOVING ASPHALTIC SURFACE MILLING	SY	261,750.000	261,750.000
0050	204.0180	REMOVING DELINEATORS AND MARKERS	EACH	236.000	236.000
0060	213.0100	FINISHING ROADWAY (PROJECT) 01. 1021-00-03	EACH	1.000	1.000
0070	305.0110	BASE AGGREGATE DENSE 3/4-INCH	TON	970.000	970.000
0080	305.0500	SHAPING SHOULDERS	STA	1,185.000	1,185.000
0090	440.4410.S	INCENTIVE IRI RIDE	DOL	45,740.000	45,740.000
0100	455.0105	ASPHALTIC MATERIAL PG58-28	TON	380.000	380.000
0110	455.0140	ASPHALTIC MATERIAL PG64-28P	TON	1,560.000	1,560.000
0120	455.0605	TACK COAT	GAL	11,550.000	11,550.000
0130	460.1100	HMA PAVEMENT TYPE E-0.3	TON	6,710.000	6,710.000
0140	460.1110	HMA PAVEMENT TYPE E-10	TON	28,120.000	28,120.000
0150	460.2000	INCENTIVE DENSITY HMA PAVEMENT	DOL	22,150.000	22,150.000
0160	465.0110	ASPHALTIC SURFACE PATCHING	TON	250.000	250.000
0170	465.0125	ASPHALTIC SURFACE TEMPORARY	TON	120.000	120.000
0180	465.0400	ASPHALTIC SHOULDER RUMBLE STRIPS	LF	112,393.000	112,393.000
0190	520.8000	CONCRETE COLLARS FOR PIPE	EACH	1.000	1.000
0200	608.0412	STORM SEWER PIPE REINFORCED CONCRETE CLASS IV 12-INCH	LF	13.000	13.000
0210	611.0430	RECONSTRUCTING INLETS	EACH	3.000	3.000
0220	611.0642	INLET COVERS TYPE MS	EACH	5.000	5.000
0230	611.3901	INLETS MEDIAN 1 GRATE	EACH	1.000	1.000
0240	614.0010	BARRIER SYSTEM GRADING SHAPING FINISHING	EACH	2.000	2.000
0250	614.0920	SALVAGED RAIL	LF	416.000	416.000
0260	614.0925	SALVAGED GUARDRAIL END TREATMENTS	EACH	2.000	2.000
0270	614.2300	MGS GUARDRAIL 3	LF	450.000	450.000
0280	614.2500	MGS THRIE BEAM TRANSITION	LF	78.800	78.800
0290	614.2610	MGS GUARDRAIL TERMINAL EAT	EACH	2.000	2.000
0300	618.0100	MAINTENANCE AND REPAIR OF HAUL ROADS (PROJECT) 01. 1021-00-03	EACH	1.000	1.000
0310	619.1000	MOBILIZATION	EACH	1.000	1.000
0320	624.0100	WATER	MGAL	5.000	5.000
0330	628.1104	EROSION BALES	EACH	68.000	68.000
0340	628.1504	SILT FENCE	LF	2,010.000	2,010.000
0350	628.1520	SILT FENCE MAINTENANCE	LF	2,010.000	2,010.000
0360	628.1905	MOBILIZATIONS EROSION CONTROL	EACH	4.000	4.000
0370	628.1910	MOBILIZATIONS EMERGENCY EROSION CONTROL	EACH	4.000	4.000
0380	628.2004	EROSION MAT CLASS I TYPE B	SY	4,390.000	4,390.000
0390	628.7005	INLET PROTECTION TYPE A	EACH	5.000	5.000
0400	628.7504	TEMPORARY DITCH CHECKS	LF	75.000	75.000
0410	633.0100	DELINEATOR POSTS STEEL	EACH	244.000	244.000
0420	633.0500	DELINEATOR REFLECTORS	EACH	298.000	298.000
0430	634.0614	POSTS WOOD 4X6-INCH X 14-FT	EACH	4.000	4.000
0440	634.0616	POSTS WOOD 4X6-INCH X 16-FT	EACH	18.000	18.000
0450	634.0618	POSTS WOOD 4X6-INCH X 18-FT	EACH	34.000	34.000
0460	634.0620	POSTS WOOD 4X6-INCH X 20-FT	EACH	4.000	4.000
0470	635.0200	SIGN SUPPORTS STRUCTURAL STEEL HS	LB	11,853.000	11,853.000
0480	636.0100	SIGN SUPPORTS CONCRETE MASONRY	CY	24.500	24.500
0490	636.0500	SIGN SUPPORTS STEEL REINFORCEMENT	LB	1,386.000	1,386.000
0500	637.1220	SIGNS TYPE I REFLECTIVE SH	SF	1,504.500	1,504.500
0510	637.2210	SIGNS TYPE II REFLECTIVE H	SF	511.000	511.000

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DATE 17JUN14		E S T I M A T E O F Q U A N T I T I E S			
LINE				1021-00-73	
NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	QUANTITY
0520	637.2215	SIGNS TYPE II REFLECTIVE H FOLDING	SF	40.000	40.000
0530	637.2230	SIGNS TYPE II REFLECTIVE F	SF	91.000	91.000
0540	638.2601	REMOVING SIGNS TYPE I	EACH	11.000	11.000
0550	638.2602	REMOVING SIGNS TYPE II	EACH	53.000	53.000
0560	638.3000	REMOVING SMALL SIGN SUPPORTS	EACH	56.000	56.000
0570	638.3100	REMOVING STRUCTURAL STEEL SIGN SUPPORTS	EACH	22.000	22.000
0580	642.5201	FIELD OFFICE TYPE C	EACH	1.000	1.000
0590	643.0200	TRAFFIC CONTROL SURVEILLANCE AND MAINTENANCE (PROJECT) 01. 1021-00-03	DAY	95.000	95.000
0600	643.0300	TRAFFIC CONTROL DRUMS	DAY	37,178.000	37,178.000
0610	643.0420	TRAFFIC CONTROL BARRICADES TYPE III	DAY	2,550.000	2,550.000
0620	643.0705	TRAFFIC CONTROL WARNING LIGHTS TYPE A	DAY	5,100.000	5,100.000
0630	643.0715	TRAFFIC CONTROL WARNING LIGHTS TYPE C	DAY	4,950.000	4,950.000
0640	643.0800	TRAFFIC CONTROL ARROW BOARDS	DAY	300.000	300.000
0650	643.0900	TRAFFIC CONTROL SIGNS	DAY	11,164.000	11,164.000
0660	643.0920	TRAFFIC CONTROL COVERING SIGNS TYPE II	EACH	385.000	385.000
0670	643.1000	TRAFFIC CONTROL SIGNS FIXED MESSAGE	SF	408.000	408.000
0680	643.1050	TRAFFIC CONTROL SIGNS PCMS	DAY	1,176.000	1,176.000
0690	646.0106	PAVEMENT MARKING EPOXY 4-INCH	LF	121,670.000	121,670.000
0700	646.0881.S	PAVEMENT MARKING GROOVED WET REFLECTIVE TAPE 4-INCH	LF	15,220.000	15,220.000
0710	646.0883.S	PAVEMENT MARKING GROOVED WET REFLECTIVE TAPE 8-INCH	LF	8,310.000	8,310.000
0720	647.0803	PAVEMENT MARKING AERIAL ENFORCEMENT BARS EPOXY 24-INCH	LF	48.000	48.000
0730	649.0100	TEMPORARY PAVEMENT MARKING 4-INCH	LF	152,100.000	152,100.000
0740	649.0701	TEMPORARY PAVEMENT MARKING 8-INCH	LF	16,610.000	16,610.000
0750	650.4000	CONSTRUCTION STAKING STORM SEWER	EACH	1.000	1.000
0760	650.8000	CONSTRUCTION STAKING RESURFACING REFERENCE	LF	60,615.000	60,615.000
0770	650.8500	CONSTRUCTION STAKING ELECTRICAL INSTALLATIONS (PROJECT) 01. 1021-00-73	LS	1.000	1.000
0780	650.9910	CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT) 01. 1021-00-03	LS	1.000	1.000
0790	652.0125	CONDUIT RIGID METALLIC 2-INCH	LF	30.000	30.000
0800	652.0225	CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH	LF	1,050.000	1,050.000
0810	652.0605	CONDUIT SPECIAL 2-INCH	LF	235.000	235.000
0820	653.0135	PULL BOXES STEEL 24X36-INCH	EACH	11.000	11.000
0830	654.0105	CONCRETE BASES TYPE 5	EACH	4.000	4.000
0840	654.0220	CONCRETE CONTROL CABINET BASES TYPE 10	EACH	4.000	4.000
0850	655.0625	ELECTRICAL WIRE LIGHTING 6 AWG	LF	465.000	465.000
0860	655.0635	ELECTRICAL WIRE LIGHTING 2 AWG	LF	3,120.000	3,120.000
0870	656.0200	ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 01. DMS-55-0018	LS	1.000	1.000
0880	656.0200	ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 02. DMS-55-0016	LS	1.000	1.000
0890	656.0200	ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 03. DMS-55-0017	LS	1.000	1.000
0900	656.0500	ELECTRICAL SERVICE BREAKER DISCONNECT BOX (LOCATION) 01. DMS-55-0018	LS	1.000	1.000
0910	656.0500	ELECTRICAL SERVICE BREAKER DISCONNECT BOX (LOCATION) 02. DMS-55-0016	LS	1.000	1.000
0920	656.0500	ELECTRICAL SERVICE BREAKER DISCONNECT BOX (LOCATION) 03. DMS-55-0017	LS	1.000	1.000
0930	657.0100	PEDESTAL BASES	EACH	4.000	4.000

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DATE 17JUN14		E S T I M A T E O F Q U A N T I T I E S			
LINE					1021-00-73
NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	QUANTITY
0940	657.0255	TRANSFORMER BASES BREAKAWAY 11 1/2-INCH BOLT CIRCLE	EACH	4.000	4.000
0950	657.0425	TRAFFIC SIGNAL STANDARDS ALUMINUM 15-FT	EACH	4.000	4.000
0960	659.0802	PLAQUES SEQUENCE IDENTIFICATION	EACH	3.000	3.000
0970	662.2030.S	RAMP CLOSURE GATES SOLAR 30-FT	EACH	1.000	1.000
0980	662.2032.S	RAMP CLOSURE GATES SOLAR 32-FT	EACH	1.000	1.000
0990	662.2040.S	RAMP CLOSURE GATES SOLAR 40-FT	EACH	2.000	2.000
1000	662.3040.S	RAMP CLOSURE GATE ARMS STOCKPILE 40-FT	EACH	2.000	2.000
1010	662.4000.S	RAMP CLOSURE GATE FLASHERS STOCKPILE	EACH	12.000	12.000
1020	670.0100	FIELD SYSTEM INTEGRATOR	LS	1.000	1.000
1030	670.0200	ITS DOCUMENTATION	LS	1.000	1.000
1040	673.0225.S	INSTALL POLE MOUNTED CABINET	EACH	3.000	3.000
1050	690.0150	SAWING ASPHALT	LF	6,130.000	6,130.000
1060	690.0250	SAWING CONCRETE	LF	40,210.000	40,210.000
1070	ASP.1T0A	ON-THE-JOB TRAINING APPRENTICE AT \$5.00/HR	HRS	2,500.000	2,500.000
1080	ASP.1T0G	ON-THE-JOB TRAINING GRADUATE AT \$5.00/HR	HRS	1,440.000	1,440.000
1090	SPV.0045	SPECIAL 01. PCMS REMOTE COMMUNICATIONS	DAY	1,156.000	1,156.000
1100	SPV.0060	SPECIAL 01. GRADING, SHAPING AND FINISHING CROSSTOVS	EACH	3.000	3.000
1110	SPV.0060	SPECIAL 02. GRADING, SHAPING AND FINISHING RAMP GATES	EACH	4.000	4.000
1120	SPV.0060	SPECIAL 03. INSTALL GROUND MOUNT DYNAMIC MESSAGE SIGN	EACH	3.000	3.000
1130	SPV.0105	SPECIAL 01.MILLING AND REMOVING TEMPORARY JOINT	LS	1.000	1.000
1140	SPV.0105	SPECIAL 02. MATERIAL TRANSFER VEHICLE	LS	1.000	1.000
1150	SPV.0105	SPECIAL 03. PAVING INTEGRAL SHOULDERS AT 6% CROSS SLOPE	LS	1.000	1.000
1160	SPV.0105	SPECIAL 04. PREPARATION OF FOUNDATION FOR ASPHALTIC PAVING SPECIAL	LS	1.000	1.000
1170	SPV.0170	SPECIAL 01. REHEATING HMA PAVEMENT LONGITUDINAL JOINTS SPECIAL	STA	1,210.000	1,210.000
1180	SPV.0180	SPECIAL 01.CONCRETE PAVEMENT REPAIR NON DOWELED SPECIAL	SY	7,660.000	7,660.000
1190	SPV.0195	SPECIAL 01. HMA PAVEMENT TYPE SMA-SPECIAL	TON	22,560.000	22,560.000
1200	SPV.0195	SPECIAL 02. SMA PAVEMENT COMPACTION ACCEPTANCE	TON	22,560.000	22,560.000
1210	SPV.0195	SPECIAL 03. ASPHALTIC BASE PATCHING PARTIAL DEPTH SPECIAL	TON	940.000	940.000

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REMOVING CONCRETE SURFACE PARTIAL DEPTH

STATION - STATION		LOCATION	204.0109.S SF
CAT 0010			
820'EB+37 - 1123'EB'+07		RT	34,400
820'WB'+59 - 1124'WB'+04		LT	34,500
TOTAL			68,900

NOTE: AREA IS FOR MILLING OF CONCRETE PAVEMENT REPAIR NON DOWELED AREAS

REMOVING ASPHALTIC SURFACE

STATION - STATION		LOCATION	204.0110 SY	COMMENTS
CAT 0010				
952'EB'+90 - 953'EB'+75		RT	10	EXISTING PAVED SHOULDER AT GUARDRAIL EAT
TOTAL			10	

REMOVING ASPHALTIC SURFACE BUTT JOINTS

STATION		LOCATION	204.0115 BUTT JOINTS SY	COMMENTS
CAT 0010				
820'EB'+37		LT & RT	424	BEGIN PROJECT
832'EB'+99		RT	390	IH 94 EB EXIT RAMP AT CTH T
847'EB'+32		RT	380	IH 94 EB ENTRANCE RAMP AT CTH T
955'EB'+03		LT & RT	423	RUSH RIVER BRIDGE
956'EB'+30		LT & RT	423	RUSH RIVER BRIDGE
990'EB'+64		RT	273	IH 94 EB EXIT RAMP AT USH 63
1010'EB'+18		RT	266	IH 94 EB ENTRANCE RAMP AT USH 63
1123'EB'+07		LT & RT	424	END PROJECT
820'WB'+59		LT & RT	424	BEGIN CONSTRUCTION
833'WB'+12		LT	404	IH 94 WB ENTRANCE RAMP AT CTH T
847'WB'+28		LT	374	IH 94 WB EXIT RAMP AT CTH T
954'WB'+46		LT & RT	423	RUSH RIVER BRIDGE
955'WB'+73		LT & RT	423	RUSH RIVER BRIDGE
987'WB'+55		LT	267	IH 94 WB ENTRANCE RAMP AT USH 63
1015'WB'+55		LT	268	IH 94 WB EXIT RAMP AT USH 63
1124'WB'+04		LT & RT	424	END CONSTRUCTION
TOTAL			6,010	

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REMOVING ASPHALTIC SURFACE MILLING

STATION - STATION		LOCATION	204.0120 MILLING SY	COMMENTS
CAT 0010				
820'EB'+37 - 864'EB'+00		LT	1,940	PASSING LANE SHOULDER
820'EB'+37 - 864'EB'+00		RT	5,540	PASSING LANE
820'EB'+37 - 864'EB'+00		RT	5,779	DRIVING LANE
820'EB'+37 - 864'EB'+00		RT	2,494	DRIVING LANE SHOULDER
825'EB'+84 - 832'EB'+99		RT	1,691	RAMP AND RAMP SHOULDERS
847'EB'+32 - 859'EB'+98		RT	2,703	RAMP AND RAMP SHOULDERS
863'EB'+55		LT	197	MAINTENANCE CROSSOVER
864'EB'+00 - 955'EB'+03		LT	4,046	PASSING LANE SHOULDER
864'EB'+00 - 955'EB'+03		RT	11,568	PASSING LANE
864'EB'+00 - 955'EB'+03		RT	12,089	DRIVING LANE
864'EB'+00 - 955'EB'+03		RT	9,638	DRIVING LANE SHOULDER
956'EB'+30 - 1024'EB'+00		LT	3,010	PASSING LANE SHOULDER
956'EB'+30 - 1024'EB'+00		RT	8,592	PASSING LANE
956'EB'+30 - 1024'EB'+00		RT	8,957	DRIVING LANE
956'EB'+30 - 1024'EB'+00		RT	4,998	DRIVING LANE SHOULDER
975'EB'+50		LT	353	MAINTENANCE CROSSOVER
983'EB'+97 - 990'EB'+64		RT	1,439	RAMP AND RAMP SHOULDERS
1010'EB'+18 - 1023'EB'+83		RT	3,348	RAMP AND RAMP SHOULDERS
1024'EB'+00 - 1123'EB'+07		LT	4,404	PASSING LANE SHOULDER
1024'EB'+00 - 1123'EB'+07		RT	12,579	PASSING LANE
1024'EB'+00 - 1123'EB'+07		RT	13,124	DRIVING LANE
1024'EB'+00 - 1123'EB'+07		RT	10,447	DRIVING LANE SHOULDER
1024'EB'+50		LT	478	MAINTENANCE CROSSOVER
1098'EB'+35		LT	235	MAINTENANCE CROSSOVER
820'WB'+59 - 864'WB'+00		RT	1,930	PASSING LANE SHOULDER
820'WB'+59 - 864'WB'+00		LT	5,515	PASSING LANE
820'WB'+59 - 864'WB'+00		LT	5,760	DRIVING LANE
820'WB'+59 - 864'WB'+00		LT	2,843	DRIVING LANE SHOULDER
822'E'WB'+73 - 833'WB'+12		LT	2,755	RAMP AND RAMP SHOULDERS
847'WB'+28 - 853'WB'+33		LT	1,500	RAMP AND RAMP SHOULDERS
864'WB'+00 - 954'WB'+46		RT	4,022	PASSING LANE SHOULDER
864'WB'+00 - 954'WB'+46		LT	11,481	PASSING LANE
864'WB'+00 - 954'WB'+46		LT	11,970	DRIVING LANE
864'WB'+00 - 954'WB'+46		LT	9,522	DRIVING LANE SHOULDER
955'WB'+73 - 1024'WB'+00		RT	3,035	PASSING LANE SHOULDER
955'WB'+73 - 1024'WB'+00		LT	8,674	PASSING LANE
955'WB'+73 - 1024'WB'+00		LT	9,063	DRIVING LANE
955'WB'+73 - 1024'WB'+00		LT	5,261	DRIVING LANE SHOULDER
974'EB'+01 - 987'WB'+55		LT	3,441	RAMP AND RAMP SHOULDERS
1015'WB'+55 - 1021'WB'+84		LT	1,612	RAMP AND RAMP SHOULDERS
1024'WB'+00 - 1124'WB'+04		RT	4,446	PASSING LANE SHOULDER
1024'WB'+00 - 1124'WB'+04		LT	12,708	PASSING LANE
1024'WB'+00 - 1124'WB'+04		LT	13,270	DRIVING LANE
1024'WB'+00 - 1124'WB'+04		LT	10,573	DRIVING LANE SHOULDER
820'EB'+37 - 1123'EB'+07		RT	1,360	PARTIAL DEPTH ASPHALT REPAIR AREAS
820'WB'+59 - 1124'WB'+04		LT	1,360	PARTIAL DEPTH ASPHALT REPAIR AREAS
TOTAL			261,750	

REMOVING DELINEATORS AND MARKERS

			204.0180
STATION - STATION		LOCATION	EACH
CAT 0010			
820'EB+37 - 1123'EB'+07		RT	119
820'WB'+59 - 1124'WB'+04		LT	117
TOTAL			236

BASE AGGREGATE DENSE ITEMS

		305.0110	
		3/4-INCH	
STATION - STATION	LOCATION	TON	COMMENTS
CAT 0010			
863'EB'+71 - 864'EB'+52	LT	25	CROSSOVER GRADING
949'EB'+73 - 954'EB'+96	LT	249	GUARDRAIL GRADING
951'EB'+93 - 955'EB'+32	RT	141	GUARDRAIL GRADING
975'EB'+61 - 976'EB'+12	LT	77	CROSSOVER GRADING
1098'EB'+52 - 1099'EB'+49	LT	5	CROSSOVER GRADING
UNDISTRIBUTED		473	LOW SHOULDERS
TOTAL		970	

SHAPING SHOULDERS

STATION - STATION		LOCATION	305.0500 STA
CAT 0010			
820'EB'+37 - 864'EB'+00	LT	44	
820'EB'+37 - 864'EB'+00	RT	42	
864'EB'+00 - 955'EB'+03	LT	88	
864'EB'+00 - 955'EB'+03	RT	86	
956'EB'+30 - 1024'EB'+00	LT	68	
956'EB'+30 - 1024'EB'+00	RT	68	
1024'EB'+00 - 1123'EB'+07	LT	100	
1024'EB'+00 - 1123'EB'+07	RT	97	
820'WB'+59 - 864'WB'+00	LT	41	
820'WB'+59 - 864'WB'+00	RT	44	
864'WB'+00 - 954'WB'+46	LT	88	
864'WB'+00 - 954'WB'+46	RT	91	
955'WB'+73 - 1024'WB'+00	LT	64	
955'WB'+73 - 1024'WB'+00	RT	65	
1024'WB'+00 - 1124'WB'+04	LT	98	
1024'WB'+00 - 1124'WB'+04	RT	101	
TOTAL			1,185

ASPHALTIC SURFACE PATCHING

		465.0110	
STATION - STATION	LOCATION	TON	COMMENTS
CAT 0010			
820'EB+37 - 1123'EB'+07	LT	100	DRIVING LANE SHOULDER
820'WB'+59 - 1124'WB'+04	RT	100	DRIVING LANE SHOULDER
UNDISTRIBUTED		50	FOR PREPARE FOUNDATION FOR ASPHALTIC PAVING
TOTALS		250	

NOTE: ASPHALTIC SURFACE PATCHING FOR SHOULDER REPAIR IS TO BE USED PRIOR TO SHIFTING TRAFFIC ONTO THE EXISTING DRIVING LANE SHOULDER IN STAGE 2

HMA AND ASPHALTIC PAVEMENT ITEMS										
STATION - STATION	LOCATION	455.0105	455.0140	455.0605	460.1100	460.1110	465.0125	SPV.0195.01	SPV.0195.02	COMMENTS
		ASPHALTIC MATERIAL PG 58-28 TON	ASPHALTIC MATERIAL PG 64-28P TON	TACK COAT GAL	HMA PAVEMENT TYPE E-0.3 TON	HMA PAVEMENT TYPE E-10 TON	ASPHALTIC SURFACE TEMPORARY TON	HMA PAVEMENT TYPE SMA-SPECIAL TON	SMA PAVEMENT COMPACTION ACCEPTANCE TON	
CAT 0010										
820'EB'+37 - 864'EB'+00	LT	--	15	97	--	272	--	218	218	PASSING LANE SHOULDER
820'EB'+37 - 864'EB'+00	RT	--	45	296	--	815	--	652	652	PASSING LANE
820'EB'+37 - 864'EB'+00	RT	--	48	302	--	848	--	652	652	DRIVING LANE
820'EB'+37 - 864'EB'+00	RT	17	--	66	294	--	7	--	--	DRIVING LANE SHOULDER
820'EB'+37 - 864'EB'+00	RT	--	--	--	--	--	--	109	109	TEMPORARY LONGITUDINAL JOINT
825'EB'+84 - 832'EB'+99	RT	--	6	43	--	106	--	--	--	RAMP AND RAMP SHOULDERS
847'EB'+32 - 859'EB'+98	RT	--	9	68	--	156	--	--	--	RAMP AND RAMP SHOULDERS
863'EB'+55	LT	2	--	5	20	--	--	--	--	MAINTENANCE CROSSOVER
864'EB'+00 - 955'EB'+03	LT	--	32	203	--	567	--	454	454	PASSING LANE SHOULDER
864'EB'+00 - 955'EB'+03	RT	--	94	613	--	1,701	--	1,361	1,361	PASSING LANE
864'EB'+00 - 955'EB'+03	RT	--	98	626	--	1,774	--	1,363	1,363	DRIVING LANE
864'EB'+00 - 955'EB'+03	RT	64	--	254	1,137	--	20	--	--	DRIVING LANE SHOULDER
864'EB'+00 - 955'EB'+03	RT	--	--	--	--	--	--	227	227	TEMPORARY LONGITUDINAL JOINT
956'EB'+30 - 1024'EB'+00	LT	--	24	151	--	422	--	338	338	PASSING LANE SHOULDER
956'EB'+30 - 1024'EB'+00	RT	--	70	452	--	1,263	--	1,011	1,011	PASSING LANE
956'EB'+30 - 1024'EB'+00	RT	--	74	460	--	1,314	--	1,010	1,010	DRIVING LANE
956'EB'+30 - 1024'EB'+00	RT	33	--	132	590	--	11	--	--	DRIVING LANE SHOULDER
956'EB'+30 - 1024'EB'+00	RT	--	--	--	--	--	--	170	170	TEMPORARY LONGITUDINAL JOINT
975'EB'+50	LT	2	--	9	35	--	--	--	--	MAINTENANCE CROSSOVER
983'EB'+97 - 990'EB'+64	RT	--	5	36	--	79	--	--	--	RAMP AND RAMP SHOULDERS
1010'EB'+18 - 1023'EB'+83	RT	--	12	84	--	201	--	--	--	RAMP AND RAMP SHOULDERS
1024'EB'+00 - 1123'EB'+07	LT	--	34	221	--	617	--	494	494	PASSING LANE SHOULDER
1024'EB'+00 - 1123'EB'+07	RT	--	104	661	--	1,849	--	1,480	1,480	PASSING LANE
1024'EB'+00 - 1123'EB'+07	RT	--	108	674	--	1,926	--	1,480	1,480	DRIVING LANE
1024'EB'+00 - 1123'EB'+07	RT	69	--	275	1,234	--	22	--	--	DRIVING LANE SHOULDER
1024'EB'+00 - 1123'EB'+07	RT	--	--	--	--	--	--	247	247	TEMPORARY LONGITUDINAL JOINT
1024'EB'+50	LT	3	--	12	47	--	--	--	--	MAINTENANCE CROSSOVER
1098'EB'+35	LT	2	--	6	24	--	--	--	--	MAINTENANCE CROSSOVER
820'WB'+59 - 864'WB'+00	RT	--	15	97	--	271	--	217	217	PASSING LANE SHOULDER
820'WB'+59 - 864'WB'+00	LT	--	45	295	--	811	--	649	649	PASSING LANE
820'WB'+59 - 864'WB'+00	LT	--	47	301	--	845	--	649	649	DRIVING LANE
820'WB'+59 - 864'WB'+00	LT	20	--	75	336	--	7	--	--	DRIVING LANE SHOULDER
820'WB'+59 - 864'WB'+00	LT	--	--	--	--	--	--	109	109	TEMPORARY LONGITUDINAL JOINT
822'EWB'+73 - 833'WB'+12	LT	--	10	69	--	167	--	--	--	RAMP AND RAMP SHOULDERS
847'WB'+28 - 853'WB'+33	LT	--	5	38	--	73	--	--	--	RAMP AND RAMP SHOULDERS
864'WB'+00 - 954'WB'+46	RT	--	32	202	--	564	--	451	451	PASSING LANE SHOULDER
864'WB'+00 - 954'WB'+46	LT	--	93	608	--	1,688	--	1,352	1,352	PASSING LANE
864'WB'+00 - 954'WB'+46	LT	--	97	620	--	1,756	--	1,350	1,350	DRIVING LANE
864'WB'+00 - 954'WB'+46	LT	62	--	251	1,123	--	20	--	--	DRIVING LANE SHOULDER
864'WB'+00 - 954'WB'+46	LT	--	--	--	--	--	--	225	225	TEMPORARY LONGITUDINAL JOINT
955'WB'+73 - 1024'WB'+00	RT	--	24	152	--	425	--	340	340	PASSING LANE SHOULDER
955'WB'+73 - 1024'WB'+00	LT	--	71	456	--	1,275	--	1,020	1,020	PASSING LANE
955'WB'+73 - 1024'WB'+00	LT	--	75	466	--	1,330	--	1,022	1,022	DRIVING LANE
955'WB'+73 - 1024'WB'+00	LT	36	--	139	621	--	11	--	--	DRIVING LANE SHOULDER
955'WB'+73 - 1024'WB'+00	LT	--	--	--	--	--	--	171	171	TEMPORARY LONGITUDINAL JOINT
974'EB'+01 - 987'WB'+55	LT	--	12	88	--	216	--	--	--	RAMP AND RAMP SHOULDERS
1015'WB'+55 - 1021'WB'+84	LT	--	6	41	--	94	--	--	--	RAMP AND RAMP SHOULDERS
1024'WB'+00 - 1124'WB'+04	RT	--	35	226	--	625	--	498	498	PASSING LANE SHOULDER
1024'WB'+00 - 1124'WB'+04	LT	--	105	672	--	1,871	--	1,495	1,495	PASSING LANE
1024'WB'+00 - 1124'WB'+04	LT	--	110	686	--	1,949	--	1,496	1,496	DRIVING LANE
1024'WB'+00 - 1124'WB'+04	LT	70	--	282	1,249	--	22	--	--	DRIVING LANE SHOULDER
1024'WB'+00 - 1124'WB'+04	LT	--	--	--	--	--	--	250	250	TEMPORARY LONGITUDINAL JOINT
UNDISTRIBUTED	--	--	--	--	--	250	--	--	--	FOR USE WITH PREPARE FOUNDATION FOR ASPHALTIC PAVING
UNDISTRIBUTED	--	--	--	40	--	--	--	--	--	FOR USE WITH ASPHALTIC BASE PATCHING PARTIAL DEPTH
UNDISTRIBUTED	--	--	--	--	--	--	--	--	--	SHOULDER REPAIRS PRIOR TO TRAFFIC SHIFT
TOTALS		380	1,560	11,550	6,710	28,120	120	22,560	22,560	

NOTE: ASPHALTIC SURFACE TEMPORARY IS FOR FILLING IN EXISTING RUMBLE STRIPS PRIOR TO SHIFTING TRAFFIC ONTO THE SHOULDER

ASPHALTIC SHOULDER RUMBLE STRIP

STATION - STATION		LOCATION	465.0400 LF	COMMENTS
CAT 0010				
820'EB'+37 - 864'EB'+00	LT	4,363	PASSING LANE SHOUDLER	
820'EB'+37 - 824'EB'+84	RT	447	DRIVING LANE SHOULDER	
833'EB'+03 - 847'EB'+29	RT	1,426	DRIVING LANE SHOULDER	
860'EB'+98 - 864'EB'+00	RT	302	DRIVING LANE SHOULDER	
864'EB'+00 - 955'EB'+03	LT	9,103	PASSING LANE SHOUDLER	
864'EB'+00 - 955'EB'+25	RT	9,125	DRIVING LANE SHOULDER	
956'EB'+30 - 1024'EB'+00	LT	6,770	PASSING LANE SHOUDLER	
956'EB'+53 - 982'EB'+97	RT	2,644	DRIVING LANE SHOULDER	
990'EB'+41 - 1010'EB'+16	RT	1,975	DRIVING LANE SHOULDER	
1024'EB'+00 - 1123'EB'+07	LT	9,907	PASSING LANE SHOUDLER	
1024'EB'+83 - 1123'EB'+07	RT	9,824	DRIVING LANE SHOULDER	
820'WB'+59 - 821'WB'+73	LT	114	DRIVING LANE SHOULDER	
820'WB'+59 - 864'WB'+00	RT	4,341	PASSING LANE SHOUDLER	
833'WB'+16 - 847'WB'+24	LT	1,408	DRIVING LANE SHOULDER	
854'WB'+33 - 864'WB'+00	LT	967	DRIVING LANE SHOULDER	
864'WB'+00 - 954'WB'+28	LT	9,028	DRIVING LANE SHOULDER	
864'WB'+00 - 954'WB'+28	RT	9,028	PASSING LANE SHOUDLER	
955'WB'+54 - 973'WB'+01	LT	1,747	DRIVING LANE SHOULDER	
955'WB'+73 - 1024'WB'+00	RT	6,827	PASSING LANE SHOUDLER	
986'WB'+61 - 1015'WB'+84	LT	2,923	DRIVING LANE SHOULDER	
1022'WB'+84 - 1024'WB'+00	LT	116	DRIVING LANE SHOULDER	
1024'WB'+00 - 1124'WB'+04	LT	10,004	DRIVING LANE SHOULDER	
1024'WB'+00 - 1124'WB'+04	RT	10,004	PASSING LANE SHOUDLER	
TOTAL		112,393		

STORM SEWER AND INLET ITEMS

		520.8000		608.0412		611.0642		611.3901	
		CONCRETE	PIPE REINFORCED	CONCRETE	RECONSTRUCTING	INLET	INLETS	COVERS	INLETS
		COLLARS	CONCRETE	CLASS IV 12-INCH	INLETS	TYPE MS	1 GRATE		
		FOR PIPE	LF	LF	EACH	EACH	EACH		
CAT 0010									
863'EB'+99	LT	--	--		1	1	--		
975'EB'+97	LT	1	--		1	2	--		
975'EB'+97 - 976'EB'+09	LT	--	13		--	--	--		
976'EB'+09	LT	--	--		--	1	1		
1098'EB'+98	LT	--	--		1	1	--		
TOTALS		1	13		3	5	1		

NOTE: FOR ELEVATIONS, INVERTS AND OTHER INFORMATION SEE CONSTRUCTION DETAILS

BARRIER SYSTEM GRADING SHAPING FINISHING

		614.0010		**COMMON		**BORROW		**TOPSOIL		**FERTILIZER		**SEEDING #20		**SEEDING #30	
STATION - STATION	LOCATION	EACH	EXC.	CY	**FILL	EXC.	CY	SY	TYPE B	CWT		LB		LB	
CAT 0010															
949'EB'+73 - 954'EB'+96	LT	1	--	202	202	908	0.6	--				17			
951'EB'+93 - 955'EB'+32	RT	1	--	212	212	816	0.6	12				8			
TOTALS		2	0	414	414	1,724	1.2	12				25			

**NON-BID ITEM, ITEMS AND QUANTITIES LISTED FOR BID INFORMATION ONLY. ITEMS INCIDENTAL TO BARRIER SYSTEM GRADING SHAPING FINISHING.

SALVAGED RAIL AND GUARDRAIL ITEMS

STATION - STATION		LOCATION	614.0920 RAIL LF	614.0925 GUARDRAIL END TREATMENTS EACH
CAT 0010				
951'EB'+91 - 955'EB'+01		LT	258	1
953'EB'+25 - 955'EB'+38		RT	158	1
TOTALS			416	2

WATER

LOCATION	624.0100 MGAL
CAT 0010	
PROJECT	5
TOTAL	5

NOTE: WATER PROVIDED FOR BASE AGGREGATE COMPACTION

GUARDRAIL ITEMS

STATION - STATION		LOCATION	614.2300 MGS GUARDRAIL 3 LF	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH
CAT 0010					
951'EB'+46 - 955'EB'+01		LT	262.5	39.4	1
955'EB'+55 - 954'EB'+38		RT	187.5	39.4	1
TOTALS			450.0	78.8	2

MOBILIZATIONS EROSION CONTROL

LOCATION		628.1905 MOBILIZATIONS EROSION CONTROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH
CAT 0010			
PROJECT		4	4
TOTALS		4	4

3

3

EROSION CONTROL ITEMS

STATION - STATION	LOCATION	628.1104	628.1504	628.1520	628.2004	628.7005	628.7504	COMMENTS
		EROSION		SILT FENCE	EROSION MAT	INLET	TEMPORARY	
		BALES EACH	SILT FENCE LF	MAINTENANCE LF	CLASS 1 TYPE B SY	PROTECTION TYPE A EACH	DITCH CHECKS LF	
CAT 0010								
863'EB'+71 - 864'EB'+52	LT	--	--	--	310	1	15	MAINTENANCE CROSSOVER
949'EB'+73 - 954'EB'+96	LT	12	570	570	910	--	--	GUARDRAIL
951'EB'+93 - 955'EB'+32	RT	12	410	410	820	--	--	GUARDRAIL
975'EB'+61 - 976'EB'+12	LT	--	--	--	460	2	15	MAINTENANCE CROSSOVER
1098'EB'+52 - 1099'EB'+49	LT	8	220	220	240	--	--	MAINTENANCE CROSSOVER
59'SB'+79 - 60'SB'+66	RT	4	100	100	120	--	--	RAMP GATE
69'SB'+35 - 70'SB'+28	LT	4	120	120	190	--	--	RAMP GATE
0'A'+87 - 1'A'+04	LT	4	50	50	20	--	--	RAMP GATE
26'B'+28 - 26'B'+80	RT	4	70	70	50	--	--	RAMP GATE
UNDISTRIBUTED	--	20	470	470	1270	2	45	
TOTALS		68	2,010	2,010	4,390	5	75	

NOTE: EROSION BALES ARE FOR SILT FENCE RELIEF

DELINEATOR ITEMS

		633.0100	633.0500	
		POSTS	REFLECTORS	
		STEEL	(WHITE)	(YELLOW)
STATION - STATION	LOCATION	EACH	EACH	EACH
CAT 0010				
820'EB+37 - 1123'EB'+07	RT	123	145	8
820'WB'+59 - 1124'WB'+04	LT	121	137	8
TOTALS		244	282	16
			298	

TYPE II SIGNS AND SUPPORTS

SIGN NO.	SIGN CODE	W	X	H	634.0614	634.0616*	634.0618	634.0620	637.2210	637.2230	638.2602	638.3000	COMMENTS
					POSTS	POSTS	POSTS	POSTS			REMOVING	REMOVING	
					WOOD	WOOD	WOOD	WOOD	SIGNS	SIGNS	SIGNS	SMALL SIGN	
					4x6-INCH	4x6-INCH	4x6-INCH	4x6-INCH	TYPE II	TYPE II	TYPE II	SUPPORTS	
					X 14-FT	X 16-FT	X 18-FT	X 20-FT	REFLECTIVE H	REFLECTIVE F			
					EACH	EACH	EACH	EACH	SF	SF	EACH	EACH	
CAT 0010													
1-1	J4-1	36	X	54	--	--	1	--	13.50	--	1	1	
1-2	JV-F	36	X	81	--	--	--	--	20.25	--	1	--	MOUNT ON SAME POST AS 1-3
1-3	E5-1A	72	X	60	--	--	2	--	30.00	--	2	2	MOUNT ON SAME POST AS 1-2
1-4	W4-1	48	X	48	--	--	2	--	--	16.00	1	2	
1-5	--	--	X	--	--	--	--	--	--	--	1	2	
1-6	W4-1	48	X	48	--	--	2	--	--	16.00	--	--	
1-7	JV-F	36	X	81	--	--	--	--	20.25	--	1	--	MOUNT ON SAME POST AS 1-8
1-8	E5-1A	72	X	60	--	--	2	--	30.00	--	2	2	MOUNT ON SAME POST AS 1-7
1-9	D10-2	12	X	36	--	1	--	--	3.00	--	1	1	
1-10	D10-2	12	X	36	--	1	--	--	3.00	--	1	1	
2-1	R3-4B	36	X	48	--	--	1	--	12.00	--	2	1	
2-2	R3-4B	36	X	48	--	--	1	--	12.00	--	2	--	
2-3	J4-1	36	X	54	--	--	1	--	13.50	--	1	1	
2-4	R2-1	48	X	60	--	--	2	--	20.00	--	1	2	
2-7	D10-2	12	X	36	--	1	--	--	3.00	--	1	1	
2-8	D10-2	12	X	36	--	1	--	--	3.00	--	1	1	
3-1	R4-3	48	X	60	--	--	2	--	20.00	--	1	2	
3-4	R8-7	48	X	36	--	1	--	--	12.00	--	1	1	
3-5	W5-52L	18	X	54	1	--	--	--	--	6.75	1	1	
3-6	W5-52R	18	X	54	1	--	--	--	--	6.75	1	1	
3-7	W5-52R	18	X	54	1	--	--	--	--	6.75	1	1	
3-8	W5-52L	18	X	54	1	--	--	--	--	6.75	1	1	
3-9	D10-2	12	X	36	--	1	--	--	3.00	--	1	1	
3-10	D10-2	12	X	36	--	1	--	--	3.00	--	1	1	
3-11	R2-1	48	X	60	--	--	2	--	20.00	--	1	2	
3-13	J4-1	36	X	54	--	--	1	--	13.50	--	1	1	
3-16	R3-4B	36	X	48	--	--	1	--	12.00	--	1	1	
3-17	R3-4B	36	X	48	--	--	1	--	12.00	--	1	1	
4-3	W4-1	48	X	48	--	--	--	2	--	16.00	--	--	
4-4	--	--	X	--	--	--	--	--	--	--	1	2	
4-5	E5-1A	72	X	60	--	--	2	--	30.00	--	2	2	MOUNT ON SAME POST AS 4-6
4-6	JV-F	36	X	81	--	--	--	--	20.25	--	--	1	MOUNT ON SAME POST AS 4-5
4-7	W4-1	48	X	48	--	--	--	2	--	16.00	1	2	
5-1	D10-2	12	X	36	--	1	--	--	3.00	--	1	1	
5-2	D10-2	12	X	36	--	1	--	--	3.00	--	1	1	
5-3	JV-F	36	X	81	--	--	--	--	20.25	--	1	--	MOUNT ON SAME POST AS 5-4
5-4	E5-1A	72	X	60	--	--	2	--	30.00	--	2	2	MOUNT ON SAME POST AS 5-3
5-7	R3-4B	36	X	48	--	--	1	--	12.00	--	2	1	
5-8	R3-4B	36	X	48	--	--	1	--	12.00	--	2	1	
5-9	J4-1	36	X	54	--	--	1	--	13.50	--	1	1	
5-10	R2-1	48	X	60	--	--	2	--	20.00	--	1	2	
5-13	R8-7	48	X	36	--	1	--	--	12.00	--	1	1	
5-14	R4-3	48	X	60	--	--	2	--	20.00	--	1	2	
5-16	D10-2	12	X	36	--	1	--	--	3.00	--	1	1	
6-1	D10-2	12	X	36	--	1	--	--	3.00	--	1	1	
6-2	R3-4B	36	X	48	--	--	1	--	12.00	--	1	1	
6-3	R3-4B	36	X	48	--	--	1	--	12.00	--	--	1	
6-4	D10-2	12	X	36	--	1	--	--	3.00	--	1	1	
6-5	D10-2	12	X	36	--	1	--	--	3.00	--	1	1	
TOTALS					4	14	34	4	511.00	91.00	53	56	

* ADDITIONAL QUANTITIES LOCATED ELSEWHERE

TYPE I SIGNS AND SUPPORTS

SIGN NO.	SIGN CODE	W	X	H	635.0200*	636.0100*	636.0500*	637.1220	638.2601 REMOVING SIGNS TYPE I EACH	638.3100	COMMENTS	
					SIGN	SIGN	SIGN	SIGNS		REMOVING		REMOVING
					SUPPORTS	SUPPORTS	SUPPORTS	TYPE I		STRUCTURAL		
					STRUCTURAL	CONCRETE	STEEL	REFLECTIVE		STEEL SIGN		
STEEL HS	MASONRY	REINFORCEMENT	SH	TYPE I	SUPPORTS							
LB	CY	LB	SF	EACH	EACH							
CAT 0010												
2-5	E1-1A	192	X	120	790	1.6	98	160.00	1	2	MOUNT WITH 2-6	
2-6	E1-5	108	X	30	--	--	--	22.50	--	--	MOUNT WITH 2-5	
3-2	E1-1A	192	X	162	1,080	1.8	100	216.00	1	2	MOUNT WITH 3-3	
3-3	E1-5	108	X	30	--	--	--	22.50	--	--	MOUNT WITH 3-2	
3-12	E3-1	132	X	60	500	1.2	68	55.00	1	2		
3-14	E10-61	144	X	54	415	1.2	68	54.00	1	2		
3-15	SP	132	X	48	375	1.2	68	44.00	1	2		
4-1	E4-1A	228	X	132	975	1.8	100	209.00	1	2	MOUNT WITH 4-2	
4-2	E1-5	108	X	30	--	--	--	22.50	--	--	MOUNT WITH 4-1	
5-5	E4-1A	228	X	132	890	1.8	100	209.00	1	2	MOUNT WITH 5-6	
5-6	E1-5	108	X	30	--	--	--	22.50	--	--	MOUNT WITH 5-5	
5-11	E8-1	192	X	90	670	1.6	98	120.00	1	2		
5-12	E10-61	144	X	54	375	1.2	68	54.00	1	2		
5-15	E3-1	132	X	60	445	1.2	68	55.00	1	2		
5-17	E1-1A	192	X	162	935	1.8	100	216.00	1	2	MOUNT WITH 6-3	
5-18	E1-5	108	X	30	--	--	--	22.50	--	--	MOUNT WITH 6-2	
TOTALS					7,450	16.4	936	1,504.50	11	22		

* ADDITIONAL QUANTITIES LOCATED ELSEWHERE

TRAFFIC CONTROL ITEMS

		643.0420				643.0705		643.0715		643.0800			
		643.0300		BARRICADES		WARNING LIGHTS		WARNING LIGHTS		ARROW		643.0900	
		DRUMS		TYPE III		TYPE A		TYPE C		BOARDS		SIGNS	
LOCATION	DAYS	NO.	DAYS	NO.	DAYS	NO.	DAYS	NO.	DAYS	NO.	DAYS	NO.	DAYS
CAT 0010													
IH 94 EB & RAMPS	75	247	18,525	17	1,275	34	2,550	33	2,475	2	150	74	5,550
IH 94 WB & RAMPS	75	247	18,525	17	1,275	34	2,550	33	2,475	2	150	74	5,550
USH 63 NB	4	16	64	--	--	--	--	--	--	--	--	8	32
USH 63 SB	4	16	64	--	--	--	--	--	--	--	--	8	32
TOTALS		37,178		2,550		5,100		4,950		300		11,164	

TRAFFIC CONTROL SURVEILLANCE AND MAINTENANCE

		643.0200.01 (1021-00-73)
CAT 0010	LOCATION	DAY
	IH 94 AND RAMPS	95
TOTAL		95

TRAFFIC CONTROL COVERING SIGNS TYPE II

STAGE	NUMBER OF CYCLES	NUMBER OF SIGNS	643.0920 EACH	COMMENTS
CAT 0010				
1	4	3	12	SPEED LIMIT SIGNS
1	1	5	5	EXIT SIGNS
3	24	3	72	SPEED LIMIT SIGNS
3	11	5	55	EXIT SIGNS
4	24	3	72	SPEED LIMIT SIGNS
4	11	5	55	EXIT SIGNS
5	19	3	57	SPEED LIMIT SIGNS
5	8	5	40	EXIT SIGNS
7	4	3	12	SPEED LIMIT SIGNS
7	1	5	5	EXIT SIGNS
TOTAL			385	

TRAFFIC CONTROL SIGNS FIXED MESSAGE

		643.1000
CAT 0010	STATION - STATION	SF COMMENTS
	IH 94 EB	92.0 ROAD WORK 4 MILES AHEAD
	IH 94 EB	112.0 PERIODIC LANE CLOSURES WATCH FOR SLOW TRAFFIC
	IH 94 WB	92.0 ROAD WORK 4 MILES AHEAD
	IH 94 WB	112.0 PERIODIC LANE CLOSURES WATCH FOR SLOW TRAFFIC
TOTAL		408.0

TRAFFIC CONTROL PCMS ITEMS

		643.1050		SPV.0045.01		
		TRAFFIC		PCMS		
		CONTROL		REMOTE		
		SIGNS PCMS		COMMUNICATIONS		
LOCATION	DAYS	NO.	DAYS	NO.	DAYS	COMMENTS
CAT 0010						
IH 94 EB & RAMPS	123	1	123	1	123	ADVANCED WARNING
IH 94 EB & RAMPS	130	3	390	3	390	ALTERNATE ROUTE
IH 94 WB & RAMPS	123	1	123	1	123	ADVANCED WARNING
IH 94 WB & RAMPS	130	4	520	4	520	ALTERNATE ROUTE
USH 63 NB	5	1	5	--	--	RAMP RESTRICTION WARNING
USH 63 SB	5	1	5	--	--	RAMP RESTRICTION WARNING
CTH T NB	5	1	5	--	--	RAMP RESTRICTION WARNING
CTH T SB	5	1	5	--	--	RAMP RESTRICTION WARNING
TOTALS		1,176		1,156		

PAVEMENT MARKING ITEMS

STATION - STATION	LOCATION	646.0106		646.0881.S	646.0883.S	647.0803	COMMENTS
		EPOXY 4-INCH		GROOVED WET	GROOVED WET	AERIAL	
		(WHITE)		REFLECTIVE	REFLECTIVE	ENFORCEMENT BARS	
		LF	(YELLOW) LF	TAPE 4-INCH LF	TAPE 8-INCH LF	EPOXY 24-INCH LF	
CAT 0010							
820'EB'+37 - 864'EB'+00	LT	--	4,364	--	--	--	EDGE LINE
820'EB'+37 - 864'EB'+00	RT	--	--	1,100	--	--	LANE LINE SKIPS
820'EB'+37 - 833'EB'+49	RT	1,315	--	--	--	--	EDGE LINE
822'EB'+83 - 830'EB'+12	RT	--	183	--	--	--	EDGE LINE SKIPS
830'EB'+12 - 833'EB'+53	RT	--	--	--	685	--	RAMP GORE
833'EB'+53 - 846'EB'+78	RT	1,323	--	--	--	--	EDGE LINE
842'EB'+50 - 849'EB'+10	LT & RT	--	--	--	--	24	AERIAL BARS
846'EB'+78 - 852'EB'+39	RT	--	--	--	1,316	--	RAMP GORE
846'EB'+84 - 864'EB'+00	RT	1,713	--	--	--	--	EDGE LINE
864'EB'+00 - 955'EB'+03	LT	--	9,104	--	--	--	EDGE LINE
864'EB'+00 - 955'EB'+03	RT	--	--	2,289	--	--	LANE LINE SKIPS
864'EB'+00 - 955'EB'+03	RT	9,105	--	--	--	--	EDGE LINE
955'EB'+03 - 1024'EB'+00	LT	--	6,897	--	--	--	EDGE LINE
955'EB'+03 - 1024'EB'+00	RT	--	--	1,726	--	--	LANE LINE SKIPS
955'EB'+03 - 990'EB'+63	RT	3,559	--	--	--	--	EDGE LINE
983'EB'+97 - 988'EB'+21	RT	--	108	--	--	--	EDGE LINE SKIPS
988'EB'+21 - 990'EB'+92	RT	--	--	--	521	--	RAMP GORE
990'EB'+92 - 1009'EB'+67	RT	1,882	--	--	--	--	EDGE LINE
1009'EB'+67 - 1017'EB'+34	RT	--	--	--	1,487	--	RAMP GORE
1010'EB'+19 - 1024'EB'+00	RT	1,383	--	--	--	--	EDGE LINE
1024'EB'+00 - 1123'EB'+07	LT	--	9,907	--	--	--	EDGE LINE
1024'EB'+00 - 1123'EB'+07	RT	--	--	2,489	--	--	LANE LINE SKIPS
1024'EB'+00 - 1123'EB'+07	RT	9,899	--	--	--	--	EDGE LINE
820'WB'+59 - 833'WB'+62	LT	1,306	--	--	--	--	EDGE LINE
820'WB'+59 - 864'WB'+00	LT	--	--	1,089	--	--	LANE LINE SKIPS
820'WB'+59 - 864'WB'+00	RT	--	4,342	--	--	--	EDGE LINE
826'WB'+79 - 833'WB'+69	LT	--	--	--	1,379	--	RAMP GORE
832'WB'+00 - 838'WB'+60	LT & RT	--	--	--	--	24	AERIAL BARS
833'WB'+69 - 846'WB'+89	LT	1,323	--	--	--	--	EDGE LINE
846'WB'+89 - 849'WB'+90	LT	--	--	--	604	--	RAMP GORE
846'WB'+96 - 864'WB'+00	LT	1,712	--	--	--	--	EDGE LINE
849'WB'+90 - 853'WB'+33	LT	--	88	--	--	--	EDGE LINE SKIPS
864'WB'+00 - 954'WB'+46	LT	9,043	--	--	--	--	EDGE LINE
864'WB'+00 - 954'WB'+46	LT	--	--	2,264	--	--	LANE LINE SKIPS
864'WB'+00 - 954'WB'+46	RT	--	9,046	--	--	--	EDGE LINE
954'WB'+46 - 987'WB'+54	LT	3,315	--	--	--	--	EDGE LINE
954'WB'+46 - 1024'WB'+00	LT	--	--	1,750	--	--	LANE LINE SKIPS
954'WB'+46 - 1024'WB'+00	RT	--	6,955	--	--	--	EDGE LINE
978'WB'+28 - 987'WB'+11	LT	--	--	--	1,564	--	RAMP GORE
987'WB'+11 - 987'WB'+55	LT	--	47	--	--	--	EDGE LINE
987'WB'+11 - 1015'WB'+33	LT	2,812	--	--	--	--	EDGE LINE
1015'WB'+33 - 1019'WB'+19	LT	--	--	--	754	--	RAMP GORE
1015'WB'+56 - 1024'WB'+00	LT	847	--	--	--	--	EDGE LINE
1019'WB'+19 - 1021'WB'+85	LT	--	71	--	--	--	EDGE LINE SKIPS
1024'WB'+00 - 1124'WB'+04	LT	10,015	--	--	--	--	EDGE LINE
1024'WB'+00 - 1124'WB'+04	LT	--	--	2,513	--	--	LANE LINE SKIPS
1024'WB'+00 - 1124'WB'+04	RT	--	10,006	--	--	--	EDGE LINE
TOTALS		60,552	61,118	15,220	8,310	48	
			121,670				

TEMPORARY PAVEMENT MARKING ITEMS

		649.0100		649.0701	
		4-INCH		8-INCH	
		(WHITE)	(YELLOW)	(WHITE)	
STATION - STATION	LOCATION	LF	LF	LF	COMMENTS
CAT 0010					
820'EB'+37 - 864'EB'+00	LT	--	4,364	--	EDGE LINE
820'EB'+37 - 864'EB'+00	RT	2,200	--	--	LANE LINE SKIPS
820'EB'+37 - 833'EB'+49	RT	1,315	--	--	EDGE LINE
822'EB'+83 - 830'EB'+12	RT	183	--	--	EDGE LINE SKIPS
830'EB'+12 - 833'EB'+53	RT	--	--	1,370	RAMP GORE
833'EB'+53 - 846'EB'+78	RT	1,323	--	--	EDGE LINE
846'EB'+78 - 852'EB'+39	RT	--	--	2,630	RAMP GORE
846'EB'+84 - 864'EB'+00	RT	1,713	--	--	EDGE LINE
864'EB'+00 - 955'EB'+03	LT	--	9,104	--	EDGE LINE
864'EB'+00 - 955'EB'+03	RT	4,576	--	--	LANE LINE SKIPS
864'EB'+00 - 955'EB'+03	RT	9,105	--	--	EDGE LINE
955'EB'+03 - 1024'EB'+00	LT	--	6,897	--	EDGE LINE
955'EB'+03 - 1024'EB'+00	RT	3,450	--	--	LANE LINE SKIPS
955'EB'+03 - 990'EB'+63	RT	3,559	--	--	EDGE LINE
984'EB'+97 - 988'EB'+21	RT	108	--	--	EDGE LINE SKIPS
988'EB'+21 - 990'EB'+92	RT	--	--	1,040	RAMP GORE
990'EB'+92 - 1009'EB'+67	RT	1,882	--	--	EDGE LINE
1009'EB'+67 - 1017'EB'+34	RT	--	--	2,972	RAMP GORE
1010'EB'+19 - 1024'EB'+00	RT	1,383	--	--	EDGE LINE
1024'EB'+00 - 1123'EB'+07	LT	--	9,907	--	EDGE LINE
1024'EB'+00 - 1123'EB'+07	RT	4,976	--	--	LANE LINE SKIPS
1024'EB'+00 - 1123'EB'+07	RT	9,899	--	--	EDGE LINE
820'WB'+59 - 833'WB'+62	LT	1,306	--	--	EDGE LINE
820'WB'+59 - 864'WB'+00	LT	2,176	--	--	LANE LINE SKIPS
820'WB'+59 - 864'WB'+00	RT	--	4,342	--	EDGE LINE
826'WB'+79 - 833'WB'+69	LT	--	--	2,756	RAMP GORE
833'WB'+69 - 846'WB'+89	LT	1,323	--	--	EDGE LINE
846'WB'+89 - 849'WB'+90	LT	--	--	1,206	RAMP GORE
846'WB'+96 - 864'WB'+00	LT	1,712	--	--	EDGE LINE
849'WB'+90 - 853'WB'+33	LT	87	--	--	EDGE LINE SKIPS
864'WB'+00 - 954'WB'+46	LT	9,043	--	--	EDGE LINE
864'WB'+00 - 954'WB'+46	LT	4,529	--	--	LANE LINE SKIPS
864'WB'+00 - 954'WB'+46	RT	--	9,046	--	EDGE LINE
954'WB'+46 - 987'WB'+54	LT	3,315	--	--	EDGE LINE
954'WB'+46 - 1024'WB'+00	LT	3,500	--	--	LANE LINE SKIPS
954'WB'+46 - 1024'WB'+00	RT	--	6,955	--	EDGE LINE
978'WB'+28 - 987'WB'+11	LT	--	--	3,128	RAMP GORE
987'WB'+11 - 987'WB'+55	LT	--	47	--	EDGE LINE
987'WB'+11 - 1015'WB'+33	LT	2,812	--	--	EDGE LINE
1015'WB'+33 - 1019'WB'+19	LT	--	--	1,508	RAMP GORE
1015'WB'+56 - 1024'WB'+00	LT	847	--	--	EDGE LINE
1019'WB'+19 - 1021'WB'+85	LT	69	--	--	EDGE LINE SKIPS
1024'WB'+00 - 1124'WB'+04	LT	10,015	--	--	EDGE LINE
1024'WB'+00 - 1124'WB'+04	LT	5,026	--	--	LANE LINE SKIPS
1024'WB'+00 - 1124'WB'+04	RT	--	10,006	--	EDGE LINE
TOTALS		91,432	60,668	16,610	
		152,100			

NOTE: TEMPORARY PAVEMENT MARKING FOR LANE LINE SKIPS AND RAMP GORES ARE PROVIDED FOR THE HMA AND SMA LAYER, ALL OTHER TEMPORARY PAVEMENT MARKING IS FOR THE HMA LAYER

CONSTRUCTION STAKING ITEMS

		650.4000	650.8000	650.9910
		STORM	RESURFACING	SUPPLEMENTAL
STATION	LOCATION	SEWER	REFERENCE	CONTROL (1021-00-73)
		EACH	LF	LS
CAT 0010				
IH 94 EB	LT & RT	--	30,270	--
976'EB'+09	LT	1	--	--
IH 94 WB	LT & RT	--	30,345	--
PROJECT	LT & RT	--	--	1
TOTALS		1	60,615	1

SAWING ITEMS

		690.0150 ASPHAL T	690.0250 CONCRETE	
STATION - STATION	LOCATION	LF	LF	COMMENTS
CAT 0010				
820'EB'+37	LT & RT	38	--	BEGIN PROJECT, BUTT JOINT
832'EB'+99	RT	36	--	CTH T EXIT RAMP, BUTT JOINT
847'EB'+32	RT	35	--	CTH T ENTRANCE RAMP, BUTT JOINT
952'EB'+90 - 953'EB'+75	RT	85	--	EXISTING PAVED SHOULDER AT GUARDRAIL EAT
1123'EB'+07	LT & RT	38	--	END PROJECT, BUTT JOINT
820'EB+37 - 1123'EB'+07	RT	2,872	20,078	CONCRETE PAVEMENT REPAIR NON DOWELED SPECIAL AREAS
820'WB'+59 - 1124'WB'+04	LT	2,879	20,132	CONCRETE PAVEMENT REPAIR NON DOWELED SPECIAL AREAS
820'WB'+59	LT & RT	38	--	BEGIN CONSTRUCTION, BUTT JOINT
833'WB'+12	LT	37	--	CTH T ENTRANCE RAMP, BUTT JOINT
847'WB'+28	LT	34	--	CTH T EXIT RAMP, BUTT JOINT
1124'WB'+04	LT & RT	38	--	END CONSTRUCTION, BUTT JOINT
TOTALS		6,130	40,210	

3

GRADING, SHAPING AND FINISHING CROSSOVERS

STATION - STATION	LOCATION	SPV.0060.01	**COMMON	**FILL	**BORROW	**TOPSOIL	**FERTILIZER	**SEEDING #30
		EACH	EXC. CY	CY	EXC. CY	SY	TYPE B CWT	LB
CAT 0010								
863'EB'+71 - 864'EB'+52	LT	1	2	39	37	307	0.2	6
975'EB'+61 - 976'EB'+12	LT	1	1	89	88	460	0.3	9
1098'EB'+52 - 1099'EB'+49	LT	1	15	31	16	524	0.4	10
TOTALS		3	18	159	141	1,291	0.9	25

**NON-BID ITEM, ITEMS AND QUANTITIES LISTED FOR BID INFORMATION ONLY. ITEMS INCIDENTAL TO BARRIER SYSTEM GRADING SHAPING FINISHING.

3

MILLING AND REMOVING TEMPORARY JOINT

SPV.0105.01 LOCATION LS	
CAT 0010	
PROJECT	1
TOTAL	1

GRADING, SHAPING AND FINISHING RAMP GATES

		SPV.0060.02		**COMMON	**BORROW		**FERTILIZER		**SEEDING #30
STATION - STATION	LOCATION	EACH	EXC. CY	**FILL CY	EXC. CY	**TOPSOIL SY	TYPE B CWT	LB	
CAT 0010									
59'SB'+79 - 60'SB'+66	RT	1	2	2	--	119	0.1	3	
69'SB'+35 - 70'SB'+28	LT	1	1	21	20	183	0.2	4	
0'A'+87 - 1'A'+04	LT	1	--	--	--	16	0.1	1	
26'B'+28 - 26'B'+80	RT	1	--	3	3	46	0.1	1	
TOTALS		4	3	26	23	364	0.5	9	

**NON-BID ITEM, ITEMS AND QUANTITIES LISTED FOR BID INFORMATION ONLY. ITEMS INCIDENTAL TO BARRIER SYSTEM GRADING SHAPING FINISHING.

MATERIAL TRANSFER VEHICLE

SPV.0105.02 LOCATION LS	
CAT 0010	
PROJECT	1
TOTAL	1

PAVING INTEGRAL SHOULDERS AT 6% CROSS SLOPE

LOCATION		SPV.0105.03
		LS
CAT 0010		
PROJECT		1
TOTAL		1

REHEATING HMA PAVEMENT LONGITUDINAL JOINTS SPECIAL

STATION - STATION		LOCATION	SPV.0170.01 STA
CAT 0010			
820'EB+37 - 1123'EB'+07		RT	604
820'WB'+59 - 1124'WB'+04		LT	606
TOTAL			1,210

CONCRETE PAVEMENT REPAIR NON DOWELLED SPECIAL

STATION - STATION		LOCATION	SPV.0180.01 SY
CAT 0010			
820'EB+37 - 1123'EB'+07		RT	3,825
820'WB'+59 - 1124'WB'+04		LT	3,835
TOTAL			7,660

ASPHALTIC BASE PATCHING PARTIAL DEPTH SPECIAL

STATION - STATION		LOCATION	SPV.0195.03 TON
CAT 0010			
820'EB+37 - 1123'EB'+07		RT	470
820'WB'+59 - 1124'WB'+04		LT	470
TOTAL			940

NOTE: ASPHALTIC BASE PATCHING PARTIAL DEPTH SPECIAL IS FOR PARTIAL DEPTH ASPHALT REPAIR AREAS

TYPE II FOLDING SIGNING ITEMS						
SIGN CODE	W	X	H	634.0616* POSTS WOOD 4X6-INCH X 16-FT	637.2215 SIGNS TYPE II REFLECTIVE H FOLDING	COMMENTS
				EACH	SF	
CAT 0020						
R11-54F	48	X	30	1	10.00	USH 63 EB ENTRANCE RAMP CLOSURE GATES
R11-54F	48	X	30	1	10.00	USH 63 EB ENTRANCE RAMP CLOSURE GATES
R11-54F	48	X	30	1	10.00	USH 63 WB ENTRANCE RAMP CLOSURE GATES
R11-54F	48	X	30	1	10.00	USH 63 WB ENTRANCE RAMP CLOSURE GATES
TOTALS				4	40.00	

* ADDITIONAL QUANTITIES LOCATED ELSEWHERE

CONSTRUCTION STAKING	
650.8500 ELECTRICAL INSTALLATIONS (1021-00-73)	
LOCATION	LS
CAT 0020	
PROJECT	1
TOTAL	1

ITS DYNAMIC MESSAGE SIGNS

							INFO ONLY - POST LENGTHS TO			
							BE VERIFIED BY CONTRACTOR			
			635.0200*	636.0100*	636.0500*	SPV.0060.03	POST	POST	POST	SIGN
			SIGN SUPPORTS	SIGN SUPPORTS	SIGN SUPPORTS	INSTALL				
			STRUCTURAL	CONCRETE	STEEL	GROUND MOUNT	NO. 1	NO. 2	NO. 3	OFFSET
			STEEL HS	MASONRY	REINFORCEMENT	DMS	LENGTH	LENGTH	LENGTH	DISTANCE
ITEM ID	LOCATION	STEEL POST TYPE	LB	CY	LB	EACH	FT	FT	FT	FT
CAT 0020										
DMS-55-0018	IH 94 WB @ 140TH ST	C	1,488	2.7	150	1	16.55	16.75	16.25	30
DMS-55-0016	IH 94 EB @ 190TH ST	C	1,380	2.7	150	1	16.25	14.80	12.85	32
DMS-55-0017	IH 94 WB @ 233RD ST	C	1,535	2.7	150	1	16.80	17.75	17.50	30
TOTALS			4,403	8.1	450	3				

* ADDITIONAL QUANTITIES LOCATED ELSEWHERE

3

ITS CONDUIT					
FROM	TO	LINEAR DISTANCE	652.0125 CONDUIT RIGID METALLIC 2-INCH LF	652.0225* CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH LF	652.0605 CONDUIT SPECIAL 2-INCH LF
CAT 0020					
MB14001	PB14001	135	--	--	135
PB14001	DMS-55-0018	5	10	--	--
MB19001	PB19001	10	--	10	--
PB19001	PB19002	110	--	110	--
PB19002	PB19003	220	--	220	--
PB19003	DMS-55-0016	5	10	--	--
MB23301	PB23301	100	--	--	100
PB23301	PB23302	270	--	270	--
PB23302	PB23303	240	--	240	--
PB23303	DMS-55-0017	5	10	--	--
TOTALS			30	850	235
* ADDITIONAL QUANTITIES LOCATED ELSEWHERE					

3

ITS PULL BOXES		
ITEM ID	LOCATION	653.0135* PULL BOXES STEEL 24 × 36-INCH EACH
CAT 0020		
PB14001	IH 94 WB @ 140TH ST	1
PB19001	IH 94 EB @ 190TH ST	1
PB19002	IH 94 EB @ 190TH ST	1
PB19003	IH 94 EB @ 190TH ST	1
PB23301	IH 94 WB @ 233RD ST	1
PB23302	IH 94 WB @ 233RD ST	1
PB23303	IH 94 WB @ 233RD ST	1
TOTAL		7
* ADDITIONAL QUANTITIES LOCATED ELSEWHERE		

RAMP CLOSURE GATE ASSEMBLY ITEMS														
STATION	LOCATION	652.0225*	653.0135*	654.0105	654.0220	657.0100	657.0255	657.0425	662.2030.S	662.2032.S	662.2040.S	662.3040.S	662.4000.S	
		CONDUIT RIGID			CONCRETE		TRANSFORMER	TRAFFIC	RAMP	RAMP	RAMP	RAMP		
		NONMETALLIC			PULL BOXES		CONTROL	BASES	SIGNAL	CLOSURE	CLOSURE	CLOSURE	CLOSURE	
		SCHEDULE			STEEL		CABINET BASES	PEDESTAL	BREAKAWAY	STANDARDS	GATES	GATES	GATES	GATE ARMS
		40 2-INCH			24X36-INCH		TYPE 5	TYPE 10	BASES	BOLT CIRCLE	15-FT	30-FT	32-FT	40-FT
EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
CAT 0020														
60'SB'+46	86' RT	50	1	1	1	1	1	1	--	--	1	1	3	
61'SB'+32	92' RT	50	1	1	1	1	1	1	--	1	--	--	3	
68'SB'+73	58' LT	50	1	1	1	1	1	1	1	--	--	--	3	
69'SB'+54	57' RT	50	1	1	1	1	1	1	--	--	1	1	3	
TOTALS		200	4	4	4	4	4	4	1	1	2	2	12	
* ADDITIONAL QUANTITIES LOCATED ELSEWHERE														

ITS POWER												
ITEM ID	LOCATION	MB ID	NUMBER OF WIRES	WIRE LINEAR DISTANCE FROM CABINET TO METER BREAKER PEDESTAL	655.0625	655.0635	656.0200.01	656.0200.02	656.0200.03	656.0500.01	656.0500.02	656.0500.03
					ELECTRICAL	ELECTRICAL	ELECTRICAL	ELECTRICAL	ELECTRICAL	ELECTRICAL	ELECTRICAL	
					WIRE	WIRE	SERVICE	SERVICE	SERVICE	SERIVCE	SERIVCE	SERIVCE
					LIGHTING	LIGHTING	METER	METER	METER	BREAKER	BREAKER	BREAKER
					6 AWG	2 AWG	BREAKER PEDESTAL DMS-55-0018	BREAKER PEDESTAL DMS-55-0016	BREAKER PEDESTAL DMS-55-0017	DISCONNECT BOX DMS-55-0018	DISCONNECT BOX DMS-55-0016	DISCONNECT BOX DMS-55-0017
					LF	LF	LS	LS	LS	LS	LS	LS
CAT 0020												
DMS-55-0018	IH 94 WB @ 140TH ST	MB14001	3	140	465	--	1	--	--	1	--	--
DMS-55-0016	IH 94 EB @ 190TH ST	MB19001	3	400	--	1,245	--	1	--	--	1	--
DMS-55-0017	IH 94 WB @ 233RD ST	MB23301	3	610	--	1,875	--	--	1	--	--	1
TOTALS					465	3,120	1	1	1	1	1	1

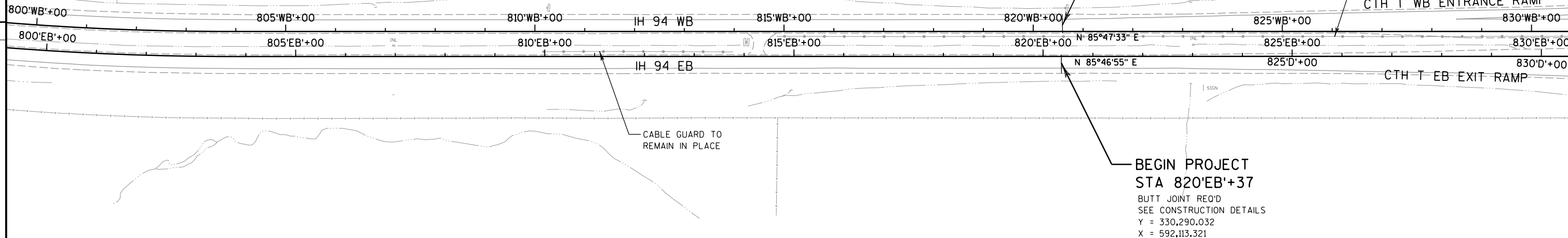
ITS CABINETS				
ITEM ID	LOCATION	659.0802	673.0225.S	
		PLAQUES	INSTALL	
		SEQUENCE	POLE MOUNTED	
		IDENTIFICATION	CABINET	
		EACH	EACH	
CAT 0020				
DMS-55-0018	IH 94 WB @ 140TH ST	1	1	
DMS-55-0016	IH 94 EB @ 190TH ST	1	1	
DMS-55-0017	IH 94 WB @ 233RD ST	1	1	
TOTALS		3	3	



5

5

INSTALL DMS AT 140TH STREET
OVERPASS (3.6 MILES WEST OF
BEGIN CONSTRUCTION LIMITS),
SEE ITS PLAN



PROPOSED WORK
STA 820'EB'+37 TO STA 830'EB'+00
STA 820'WB'+59 TO STA 830'WB'+00
MILL AND OVERLAY

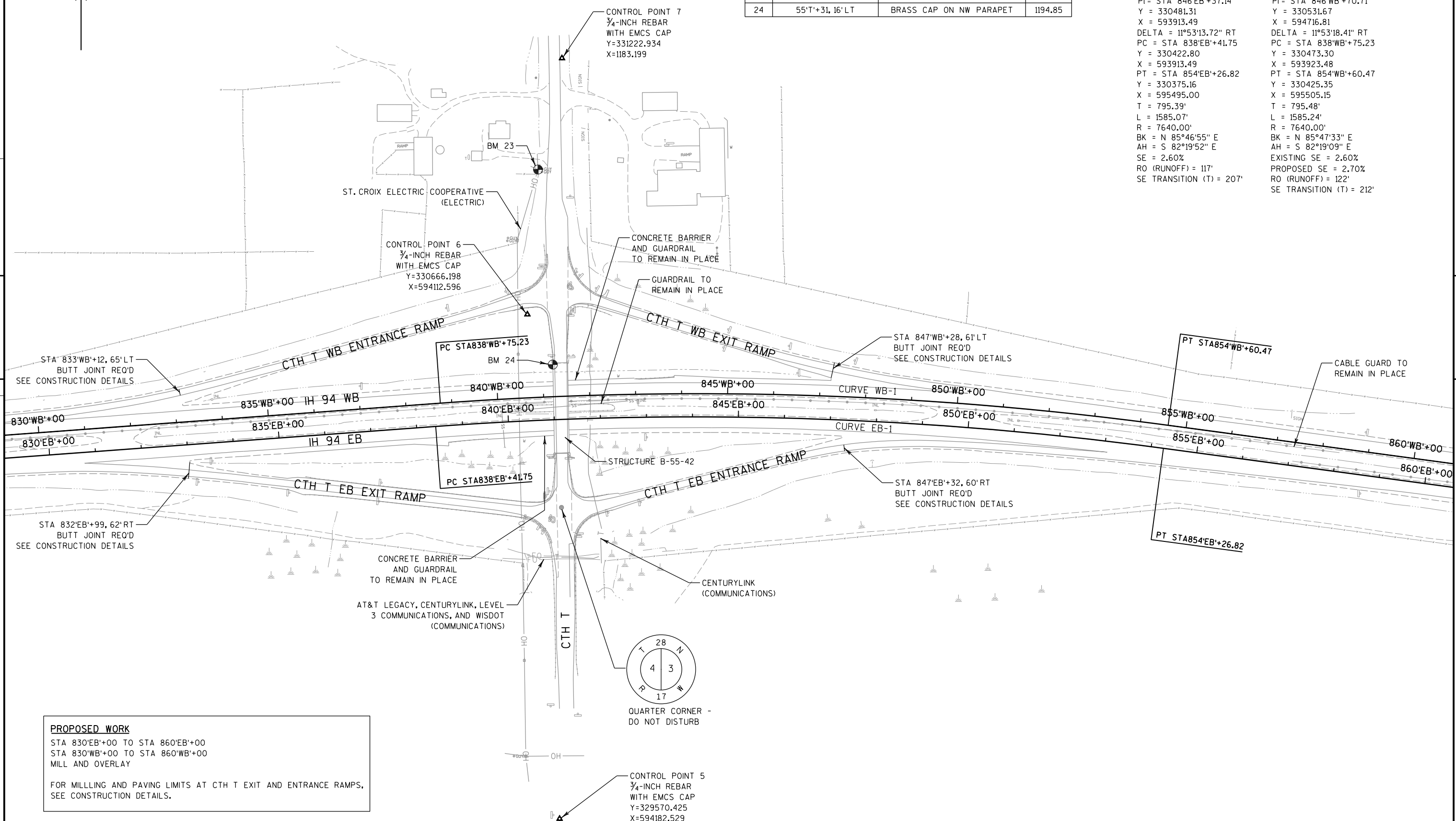


BENCH MARKS			
NO.	STATION	DESCRIPTION	ELEV.
23	59'T+56, 40'LT	RR SPIKE IN POWER POLE	1188.50
24	55'T+31, 16'LT	BRASS CAP ON NW PARAPET	1194.85

CURVE EB-1		CURVE WB-1	
PI =	STA 846'EB'+37.14	PI =	STA 846'WB'+70.71
Y =	330481.31	Y =	330531.67
X =	593913.49	X =	594716.81
DELTA =	11°53'13.72" RT	DELTA =	11°53'18.41" RT
PC =	STA 838'EB'+41.75	PC =	STA 838'WB'+75.23
Y =	330422.80	Y =	330473.30
X =	593913.49	X =	593923.48
PT =	STA 854'EB'+26.82	PT =	STA 854'WB'+60.47
Y =	330375.16	Y =	330425.35
X =	595495.00	X =	595505.15
T =	795.39'	T =	795.48'
L =	1585.07'	L =	1585.24'
R =	7640.00'	R =	7640.00'
BK =	N 85°46'55" E	BK =	N 85°47'33" E
AH =	S 82°19'52" E	AH =	S 82°19'09" E
SE =	2.60%	EXISTING SE =	2.60%
RO (RUNOFF) =	117'	PROPOSED SE =	2.70%
SE TRANSITION (T) =	207'	RO (RUNOFF) =	122'
		SE TRANSITION (T) =	212'

5

5

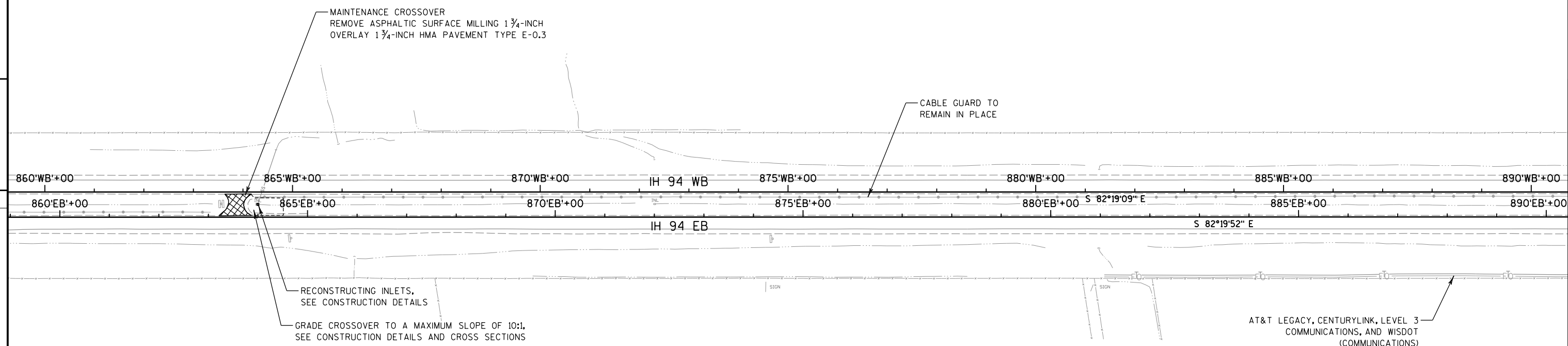


PROPOSED WORK
STA 830'EB'+00 TO STA 860'EB'+00
STA 830'WB'+00 TO STA 860'WB'+00
MILL AND OVERLAY

FOR MILLING AND PAVING LIMITS AT CTH T EXIT AND ENTRANCE RAMP,
SEE CONSTRUCTION DETAILS.



5



5

PROPOSED WORK

STA 860'EB'+00 TO STA 890'EB'+00
STA 860'WB'+00 TO STA 890'WB'+00
MILL AND OVERLAY

FOR GRADING, SHAPING AND FINISHING CROSSOVER LIMITS SEE THE CROSS
SECTIONS AND MISCELLANEOUS QUANTITIES.

PROJECT NO: 1021-00-73

HWY: IH 94

COUNTY: ST. CROIX

PLAN

SHEET

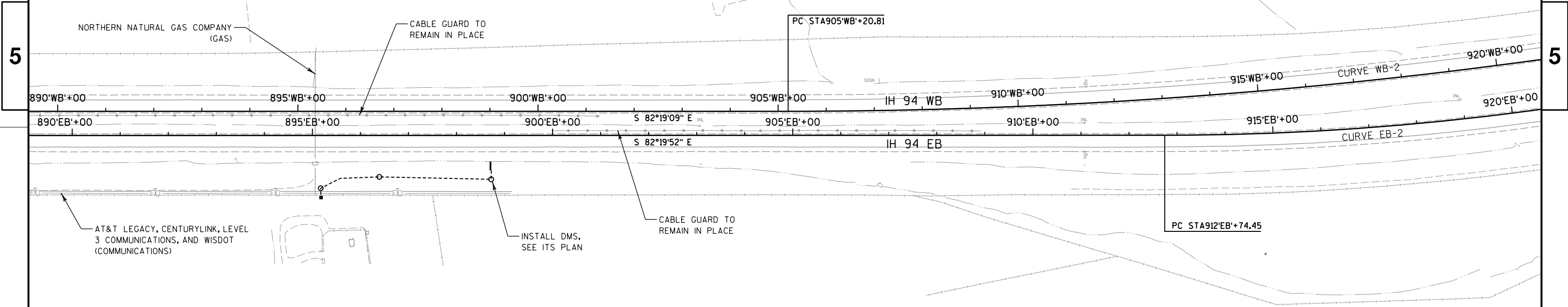
56

E



CONTROL POINT 4
3/4-INCH REBAR WITH EMCS CAP
(NEAR 190TH ST)
Y=330533.873
X=599412.492

CURVE EB-2	CURVE WB-2
PI= STA 920'EB'+49.18	PI= STA 920'WB'+75.63
Y = 329491.41	Y = 329541.19
X = 602058.13	X = 602060.95
DELTA = 15°24'00.72" LT	DELTA = 15°27'09.48" LT
PC = STA 912'EB'+74.45	PC = STA 905'WB'+20.81
Y = 329594.80	Y = 329749.00
X = 601290.33	X = 600520.09
PT = STA 928'EB'+14.58	PT = STA 936'WB'+11.57
Y = 329595.64	Y = 329751.45
X = 602825.83	X = 603601.48
T = 774.74'	T = 1554.81'
L = 1540.13'	L = 3090.75'
R = 5730.00'	R = 11460.00'
BK = S 82°19'52" E	BK = S 82°19'09" E
AH = N 82°16'08" E	AH = N 82°13'42" E
EXISTING SE = 3.30%	SE = RC (2.00%)
PROPOSED SE = 3.40%	RO (RUNOFF) = 90'
RO (RUNOFF) = 153'	SE TRANSITION (T) = 180'
SE TRANSITION (T) = 243'	



PROPOSED WORK
STA 890'EB'+00 TO STA 920'EB'+00
STA 890'WB'+00 TO STA 920'WB'+00
MILL AND OVERLAY



LEGEND

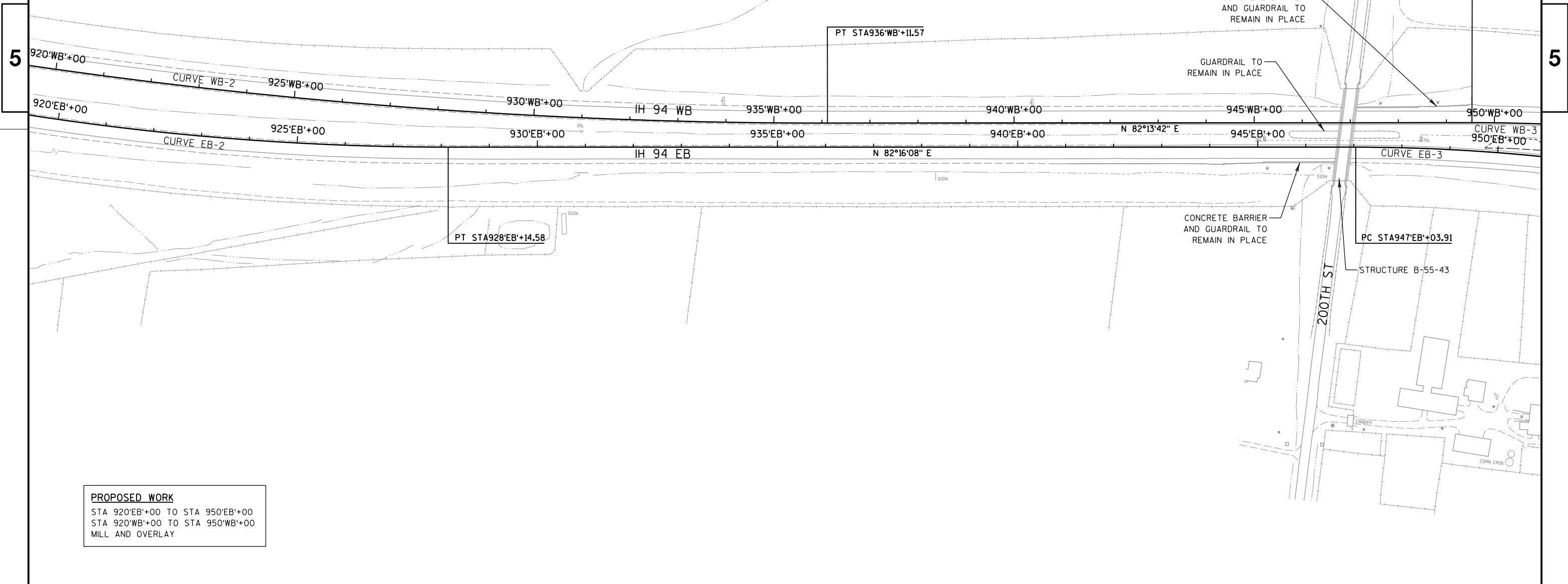
--- SLOPE INTERCEPT

CURVE EB-2

PI = STA 920'EB'+49.18
Y = 329491.41
X = 602058.13
DELTA = 15°24'00.72" LT
PC = STA 912'EB'+74.45
Y = 329594.80
X = 601290.33
PT = STA 928'EB'+14.58
Y = 329595.64
X = 602825.83
T = 774.74'
L = 1540.13'
R = 5730.00'
BK = S 82°19'52" E
AH = N 82°16'08" E
EXISTING SE = 3.30%
PROPOSED SE = 3.40%
RO (RUNOFF) = 153'
SE TRANSITION (T) = 243'

CURVE WB-2

PI = STA 920'WB'+75.63
Y = 329541.19
X = 602060.95
DELTA = 15°27'09.48" LT
PC = STA 905'WB'+20.81
Y = 329749.00
X = 600520.09
PT = STA 936'WB'+11.57
Y = 329751.45
X = 603601.48
T = 1554.81'
L = 3090.75'
R = 11460.00'
BK = S 82°19'09" E
AH = N 82°13'42" E
SE = RC (2.00%)
RO (RUNOFF) = 90'
SE TRANSITION (T) = 180'



PROPOSED WORK

STA 920'EB'+00 TO STA 950'EB'+00
STA 920'WB'+00 TO STA 950'WB'+00
MILL AND OVERLAY

PROJECT NO: 1021-00-73

HWY: IH 94

COUNTY: ST. CROIX

PLAN

SHEET

58

E

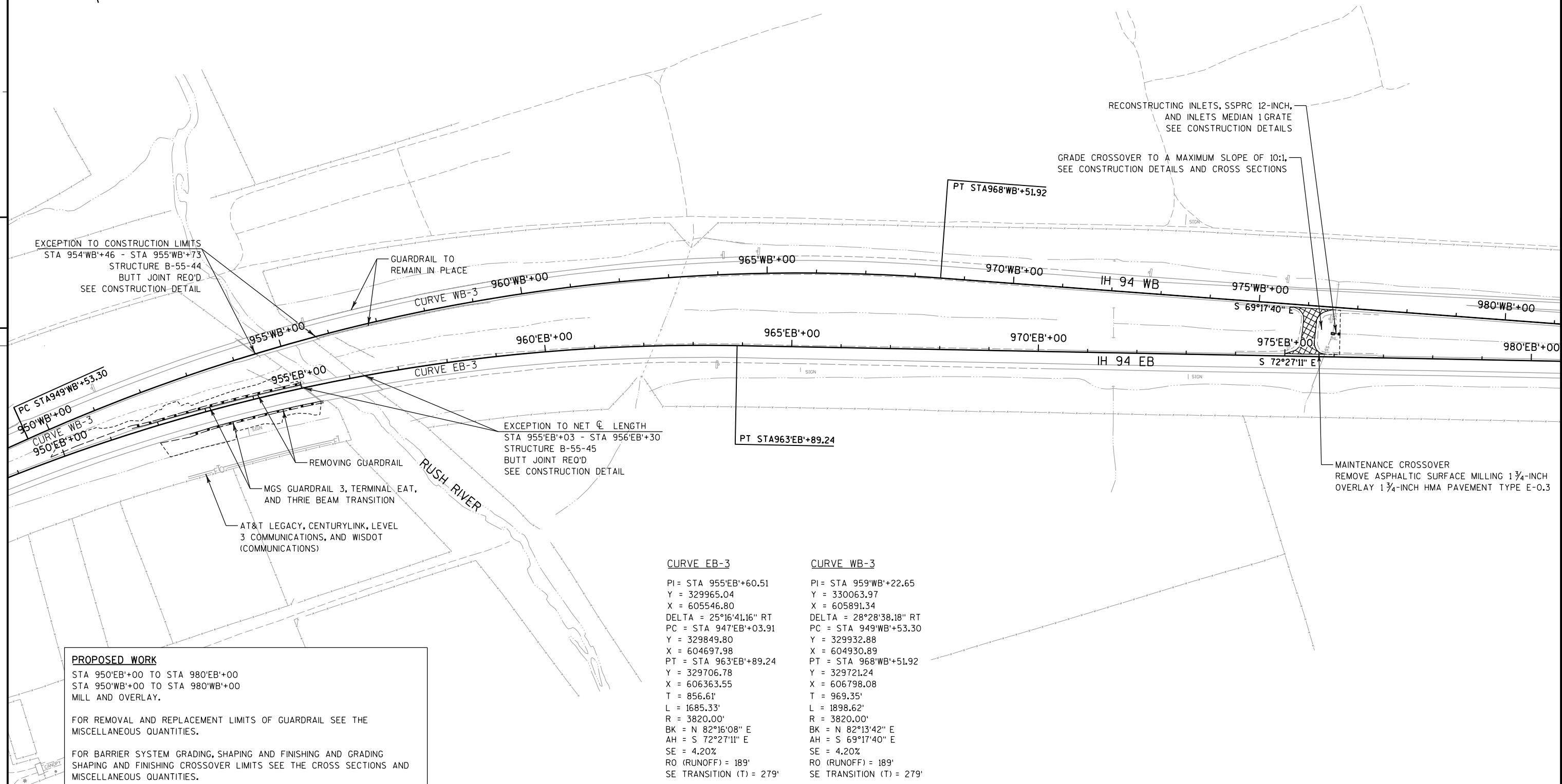


LEGEND

--- SLOPE INTERCEPT

5

5



PROPOSED WORK
STA 950'EB'+00 TO STA 980'EB'+00
STA 950'WB'+00 TO STA 980'WB'+00
MILL AND OVERLAY.

FOR REMOVAL AND REPLACEMENT LIMITS OF GUARDRAIL SEE THE
MISCELLANEOUS QUANTITIES.

FOR BARRIER SYSTEM GRADING, SHAPING AND FINISHING AND GRADING
SHAPING AND FINISHING CROSSOVER LIMITS SEE THE CROSS SECTIONS AND
MISCELLANEOUS QUANTITIES.



CURVE EB-4

PI = STA 998'EB'+70.19
Y = 328657.33
X = 609682.53
DELTA = 24°39'58.89" LT
PC = STA 986'EB'+17.37
Y = 329035.03
X = 608488.01
PT = STA 1010'EB'+84.19
Y = 328812.60
X = 610925.69
T = 1252.82'
L = 2466.82'
R = 5730.00'
BK = S 72°27'11" E
AH = N 82°52'50" E
EXISTING SE = 3.30%
PROPOSED SE = 3.40%
RO (RUNOFF) = 153'
SE TRANSITION (T) = 243'

CURVE WB-4

PI = STA 999'WB'+83.18
Y = 328614.13
X = 609727.09
DELTA = 31°55'51.54" LT
PC = STA 983'WB'+64.99
Y = 329186.27
X = 608213.42
PT = STA 1015'WB'+17.18
Y = 328929.15
X = 611314.32
T = 1618.19'
L = 3152.18'
R = 5656.16'
BK = S 69°17'40" E
AH = N 78°46'28" E
EXISTING SE = 3.30%
PROPOSED SE = 3.40%
RO (RUNOFF) = 153'
SE TRANSITION (T) = 243'

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
21	1001'WB'+10, 105' LT	BRASS CAP ON NW PARAPET	1139.92
22	1000'EB'+65, 312' RT	CHISELED SQUARE IN CONCRETE	1137.55

5

5

PROPOSED WORK

STA 980'EB'+00 TO STA 1010'EB'+00
STA 980'WB'+00 TO STA 1010'WB'+00
MILL AND OVERLAY

FOR MILLING AND PAVING LIMITS AT USH 63 EXIT AND ENTRANCE RAMP,
SEE CONSTRUCTION DETAILS.

PROJECT NO: 1021-00-73

HWY: IH 94

COUNTY: ST. CROIX

PLAN

SHEET

60

E

FILE NAME : P:\46xx\4606_DP.I94.STC.T-BB\CADD5\PIan\050207.pn.dgn

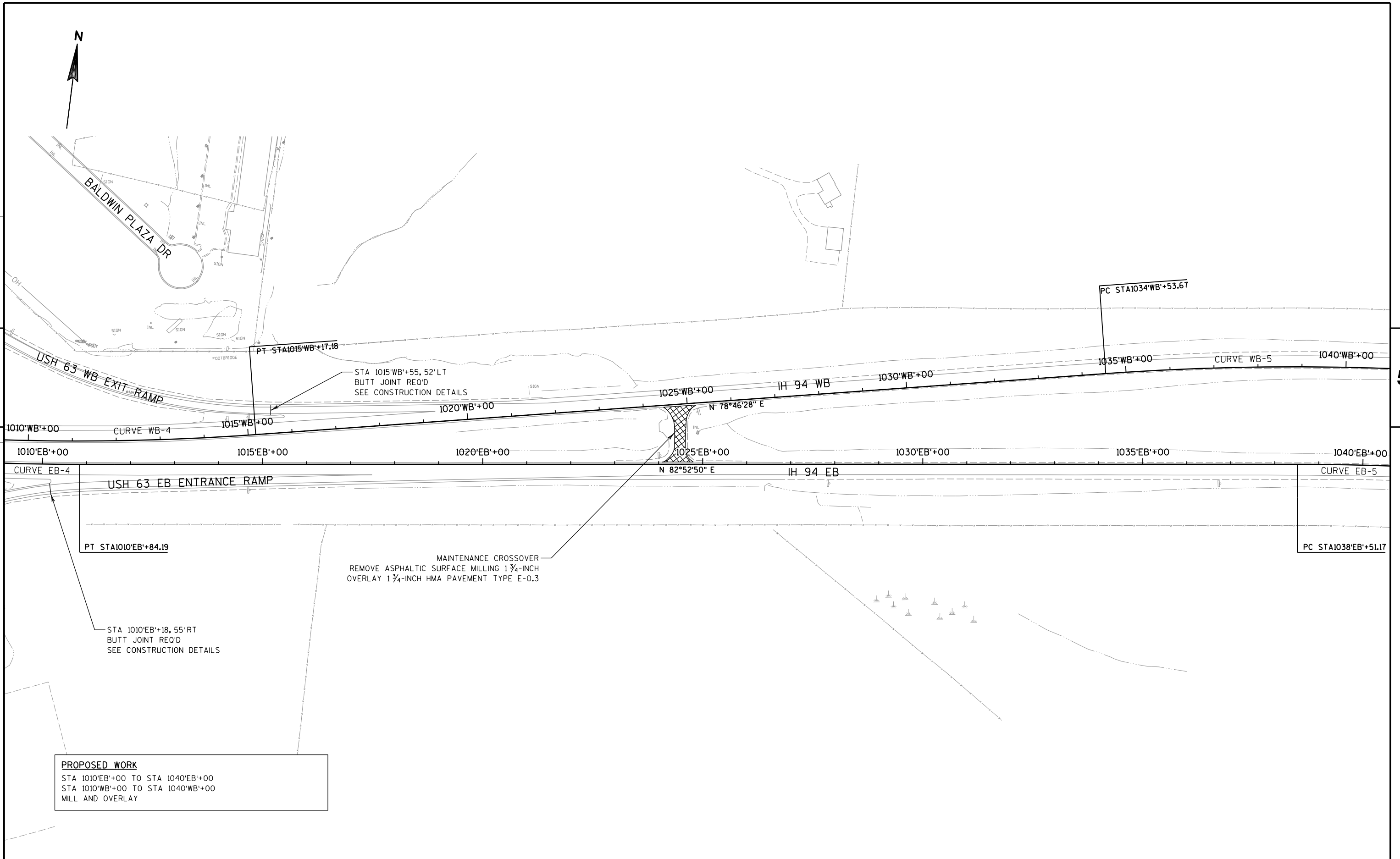
PLOT DATE : 4/25/2014

PLOT BY : emo

PLOT NAME :

PLOT SCALE : 1:200

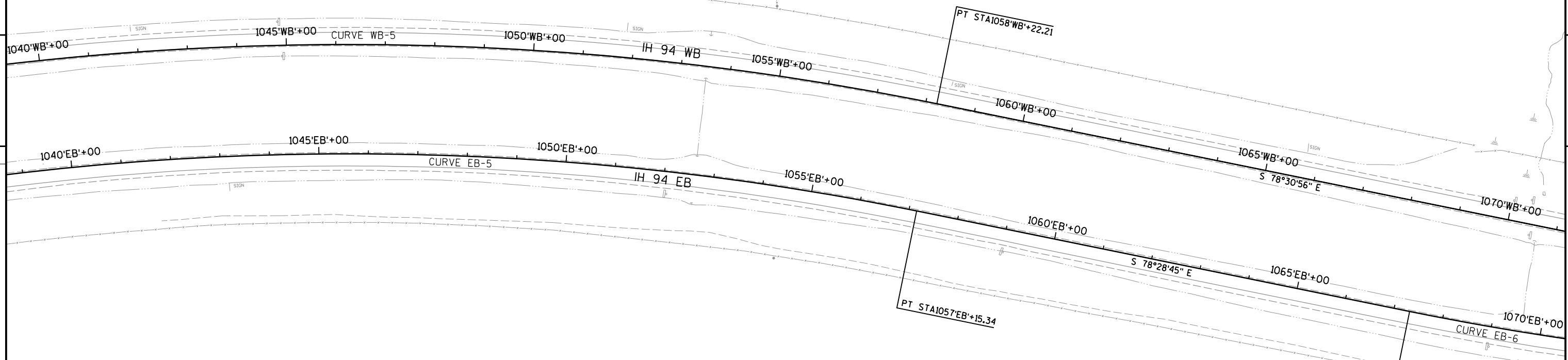
WISDOT/CADD5 SHEET 44





5

5



CURVE EB-5
PI = STA 1047'EB'+91.56
Y = 329272.09
X = 614604.48
DELTA = 18°38'25.13" RT
PC = STA 1038'EB'+51.17
Y = 329155.54
X = 613671.34
PT = STA 1057'EB'+15.34
Y = 329084.27
X = 615525.93
T = 940.39'
L = 1864.17'
R = 5730.00'
BK = N 82°52'50" E
AH = S 78°28'45" E
EXISTING SE = 3.30%
PROPOSED SE = 3.40%
RO (RUNOFF) = 153'
SE TRANSITION (T) = 243'

CURVE WB-5
PI = STA 1046'WB'+53.69
Y = 329539.73
X = 614390.83
DELTA = 22°42'35.62" RT
PC = STA 1034'WB'+53.67
Y = 329306.12
X = 613213.77
PT = STA 1058'WB'+22.21
Y = 329300.81
X = 615566.82
T = 1200.02'
L = 2368.53'
R = 5975.67'
BK = N 78°46'28" E
AH = S 78°30'56" E
SE = 3.30%
RO (RUNOFF) = 149'
SE TRANSITION (T) = 239'

PROPOSED WORK

STA 1040'EB'+00 TO STA 1070'EB'+00
STA 1040'WB'+00 TO STA 1070'WB'+00
MILL AND OVERLAY

PROJECT NO: 1021-00-73

HWY: IH 94

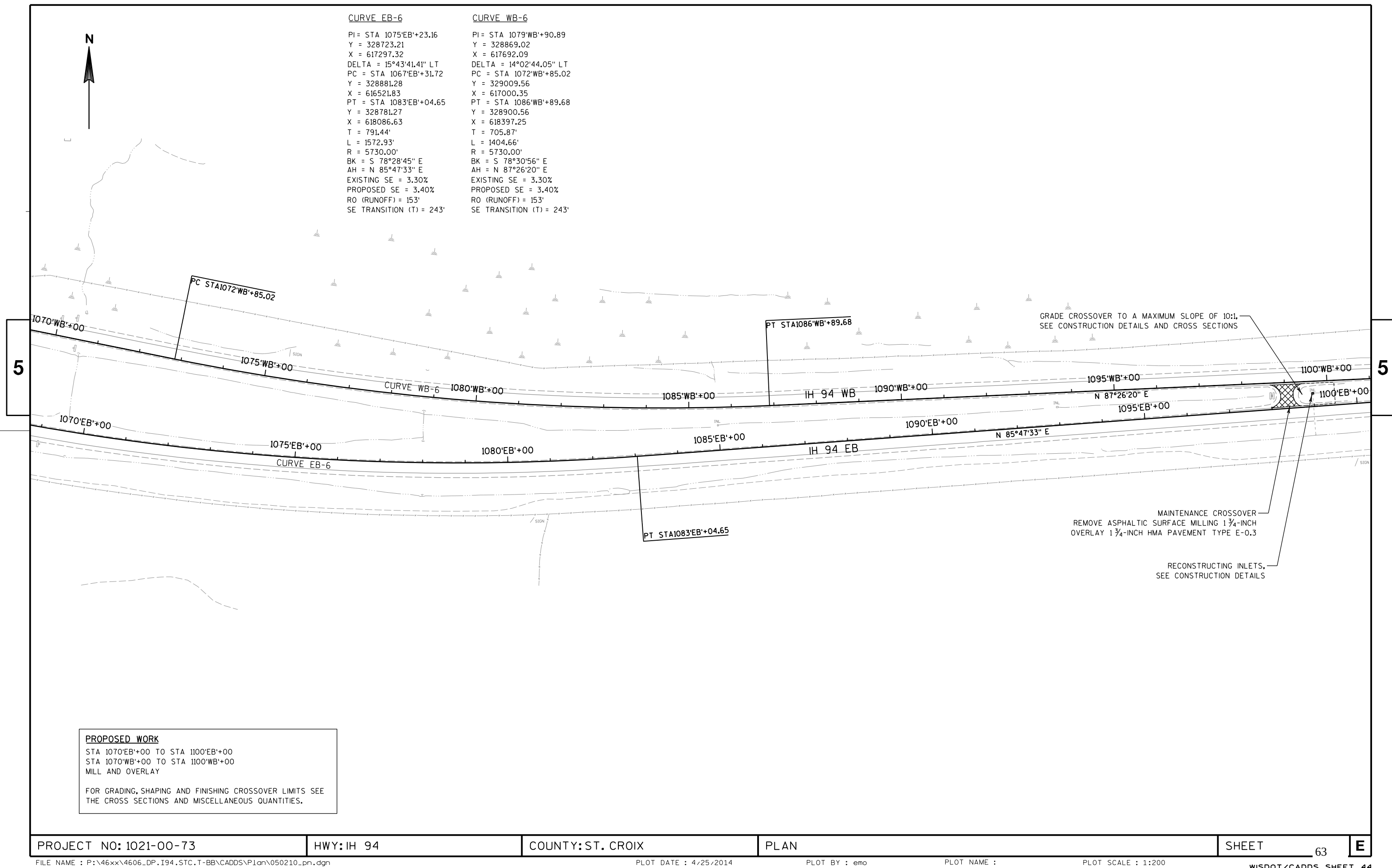
COUNTY: ST. CROIX

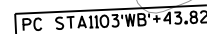
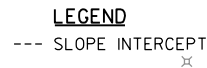
PLAN

SHEET

62

E





The diagram shows a substation on the left, represented by a circle with a cross inside, labeled "SUBSTATION". A line connects it to a power source on the right, represented by a triangle with a cross inside, labeled "POWER". There are also two rectangular boxes, one above and one below the "POWER" source, connected to the same line. A dashed line extends from the substation towards the left.

— CONCRETE BARRIER
TO REMAIN IN PLACE

- INSTALL DMS, SEE ITS PLAN

END CONSTRUCTION
STA 1124'WB'+04
BUTT JOINT REQ'D
SEE CONSTRUCTION DETAILS

PT STA1118'WB'+00.81

GUARDRAIL TO
REMAIN IN PLACE

GUARDRAIL TO
REMAIN IN PLACE

1110'WB'+00

CURVE WB-7

1115WMS

 $B' + 00$

1120'WB'+00

110

1125

WB'+00

11 94

1130...

1150' WB' + 00

IH 94 FB 18-10'43" E 1130.5

S 78°10'E

INSTALL DMS AT CTH BB
OVERPASS (0.4 MILES EAST
OF END PROJECT LIMITS),
SEE ITS PLAN

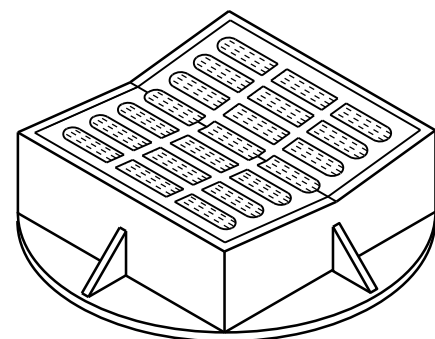
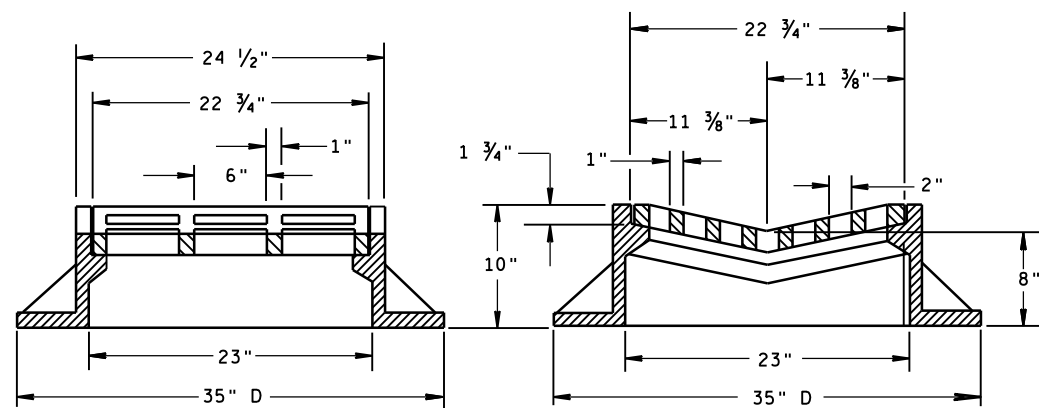
—END PROJECT
STA 1123'EB'+07
BUTT JOINT REQ'D
SEE CONSTRUCTION DETAILS

FOR BARRIER SYSTEM GRADING SHAPING AND FINISHING LIMITS SEE THE CROSS SECTIONS AND MISCELLANEOUS QUANTITIES.

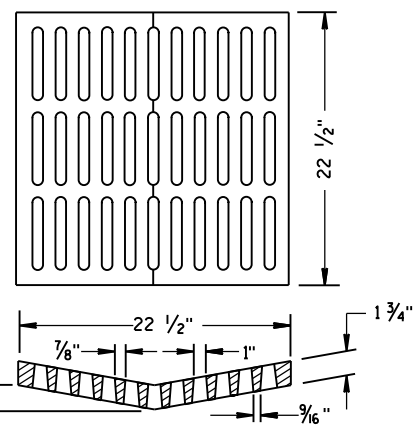
PI = STA 1110'WB'+76.16
 Y = 329007.20
 X = 620781.35
 DELTA = 14°22'57.48" RT
 PC = STA 1103'WB'+43.82
 Y = 328974.48
 X = 620049.74
 PT = STA 1118'WB'+00.81
 Y = 328857.17
 X = 621498.16
 T = 732.34'
 L = 1456.99'
 R = 5804.16'
 BK = N 87°26'20" E
 AH = S 78°10'43" E
 SE = 3.30%
 RO (RUNOFF) = 149'
 ST TRANSITION (T) = 239'

Standard Detail Drawing List

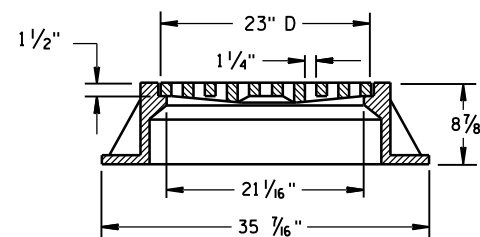
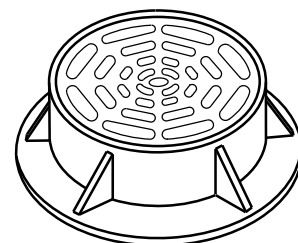
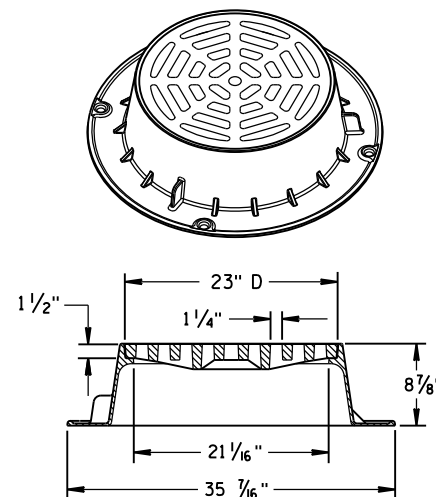
08A05-19B	INLET COVERS TYPE B, B-A, C, MS, MS-A, & WM
08C08-01	INLETS MEDIAN 1 AND 2 GRATE
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
09B02-07	CONDUIT
09B04-10	PULL BOX
09C02-06	CONCRETE BASES, TYPES 1, 2 & 5
09C03-03	TRANSFORMER/PEDESTAL BASES
09C05-08	CONCRETE CONTROL CABINET BASES
09D01-04	CABINET SERVICE INSTALLATION (METER BREAKER PEDESTAL)
11A01-05	MAINTENANCE CROSSOVER FOR FREEWAYS
12A04-03	STRUCTURE IDENTIFICATION PLAQUES, RAMP GATES, SIGN BRIDGES & OVERHEAD SIGN SUPPORTS & TRAFFIC SIGNALS
13A05-05A	SHOULDER RUMBLE STRIP, MILLING
13A05-05B	SHOULDER RUMBLE STRIP, MILLING
14B42-02A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-02B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-02C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-01A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-01B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-01C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-03A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03E	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03F	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03G	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03I	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03J	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15A02-08	DELINEATOR POST, DELINEATOR, AND DELINEATOR BRACKET WITH REFLECTIVE SHEETING
15A06-02	DELINEATOR LAYOUT
15C08-16A	PAVEMENT MARKING (MAINLINE)
15C14-01	AERIAL ENFORCEMENT BARS PAVEMENT MARKING DETAILS
15C31-01A	PAVEMENT MARKING (RAMPS AND GORES)
15D12-04	TRAFFIC CONTROL, LANE CLOSURE, SPEED REDUCTION
15D15-01	TRAFFIC CONTROL, EXIT AND ENTRANCE RAMP WITHIN LANE CLOSURE
15D27-02	TRAFFIC CONTROL, SHOULDER CLOSURE ON DIVIDED ROADWAY, SPEEDS GREATER THAN 40 MPH
15D34-01A	RAMP GATE SOLAR POWER
15D34-01B	RAMP GATE SOLAR POWER
15D34-01C	RAMP GATE SOLAR POWER
15D34-01D	RAMP GATE SOLAR POWER



TYPE "B"

ALTERNATIVE GRATE FOR
TYPE "B" COVER

USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS POSSIBLE.
 NOTED AS TYPE B-A ON THE DRAINAGE TABLE



TYPE "C"

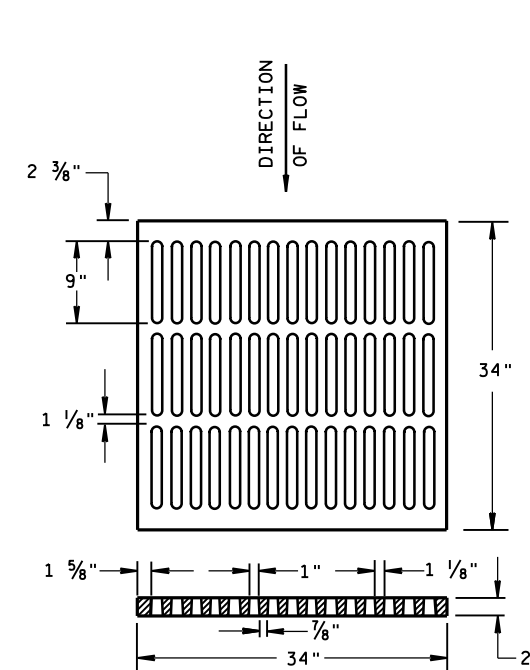
NOTE: EITHER CASTING IS ACCEPTABLE

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.

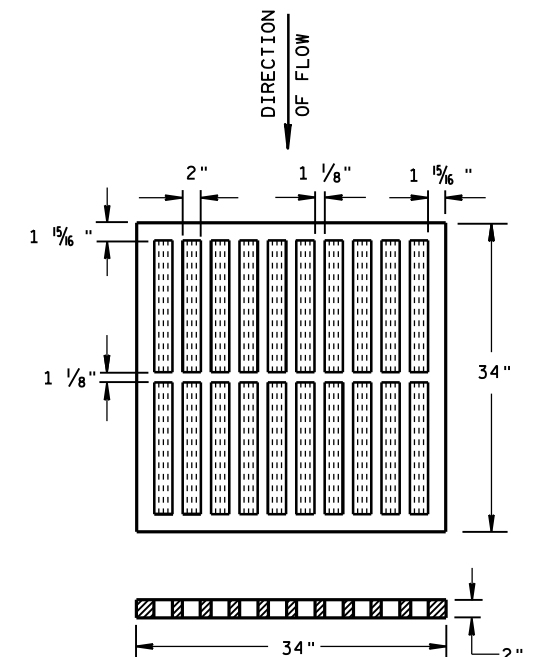
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.



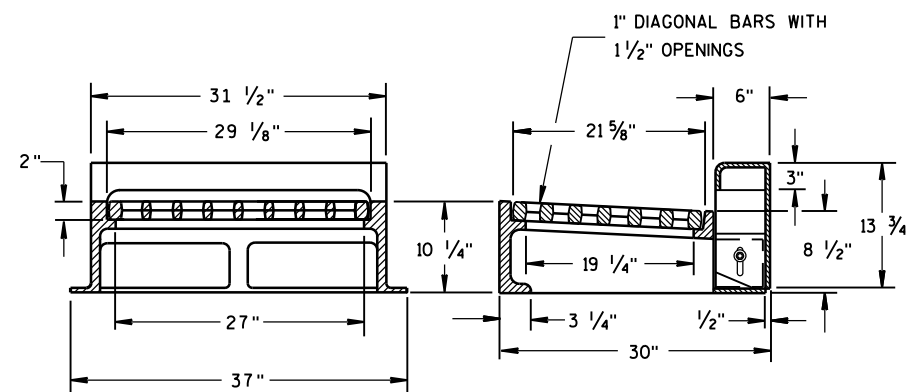
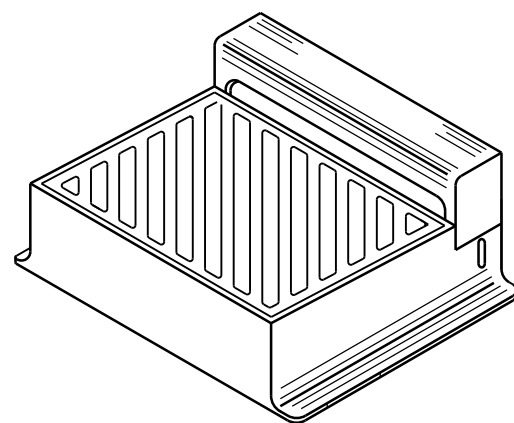
ALTERNATIVE TYPE "MS"

USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS PERMITTED
 NOTED AS TYPE MS-A ON THE DRAINAGE TABLE



TYPE "MS"

USE ON FREEWAYS AND EXPRESSWAYS
 NOTED AS TYPE MS ON DRAINAGE TABLE



NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"

TYPE "WM"

DIAGONAL SLOTS, SHALL BE ORIENTED
 TO THE DIRECTION OF FLOW AS ILLUSTRATED.
 GRATES ARE MANUFACTURED TO BE REVERSIBLE.

DIRECTION
OF FLOW

INLET COVERS
 TYPE B, B-A, C,
 MS, MS-A, & WM

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

APPROVED

11/27/2013
 DATE

FHWA

/S/ Jerry H. Zogg
 ROADWAY STANDARDS ENGINEER

NT



GRATE ELEVATION SHOWN ON PLANS

3.5"

2 1/4"

2 1/4"

2" CL.

DISCHARGE PIPE

MORTAR

CONCRETE (MIN. SLOPE 1 IN./FT.)

DEPTH AS SHOWN ON PLANS

8"

2'-6"

8"

8"

①

PRECAST REINFORCED CONCRETE
SECTION A-A



INLETS MEDIAN 1 GRATE



Diagram illustrating the cross-section detail of a concrete curb and grate assembly. The assembly is shown in a cross-section view, with dimensions and materials specified.

Dimensions:

- Top width: 3.5" (overall), 2 1/4" (from curb face to grate edge).
- Grate Elevation: SHOWN ON PLANS.
- Grate Thickness: 2" CL. (Center Line).
- Discharge Pipe: 8" diameter.
- Grate Opening: 5'-4" (overall).
- Grate Edge: 8" (overall).
- Grate Depth: 8" (overall).
- Grate Slope: MIN. SLOPE 1 IN./FT. (Minimum Slope 1 inch per foot).

Materials:

- CONCRETE (MIN. SLOPE 1 IN./FT.)
- MORTAR

Labels:

- DETAIL "B"
- DEPTH AS SHOWN ON PLANS
- DISCHARGE PIPE
- MORTAR
- CONCRETE (MIN. SLOPE 1 IN./FT.)

PRECAST REINFORCED CONCRETE
SECTION B-B



INLETS MEDIAN 2 GRATE

	MAXIMUM INSIDE PIPE DIAMETER	
INLET SIZE	WIDTH (IN)	LENGTH (IN)
1 GRATE	18	18
2 GRATE	18	42



JOINTS TO BE SEALED WITH
A BUTYL RUBBER SEAL PER
SEALANT MANUFACTURERS
RECOMMENDATIONS
CONFORMING TO ASTM C 990
(TYP)

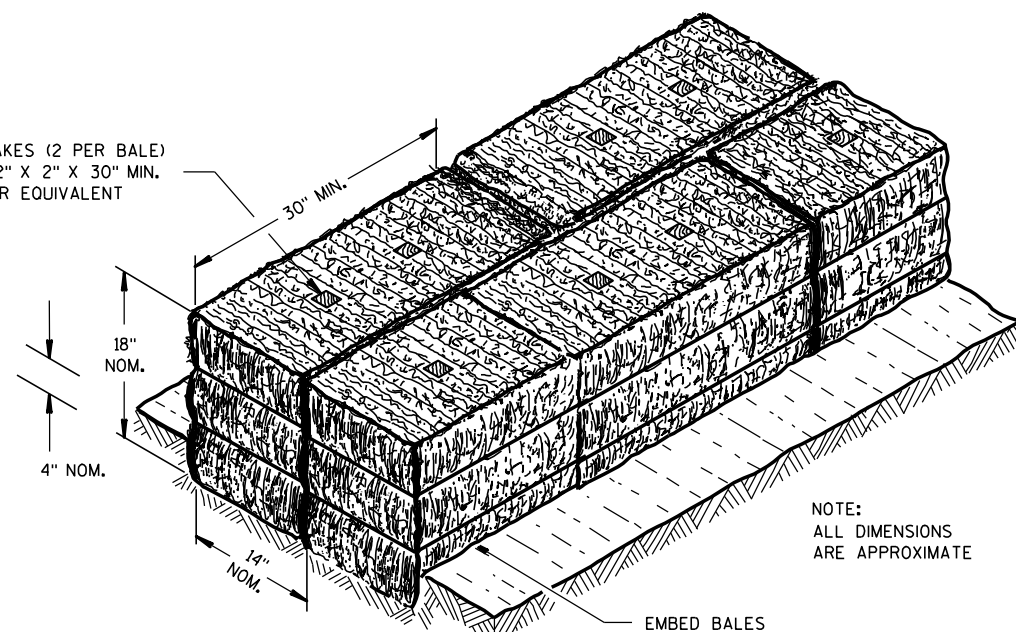
INLETS MEDIAN 1 AND 2 GRATE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

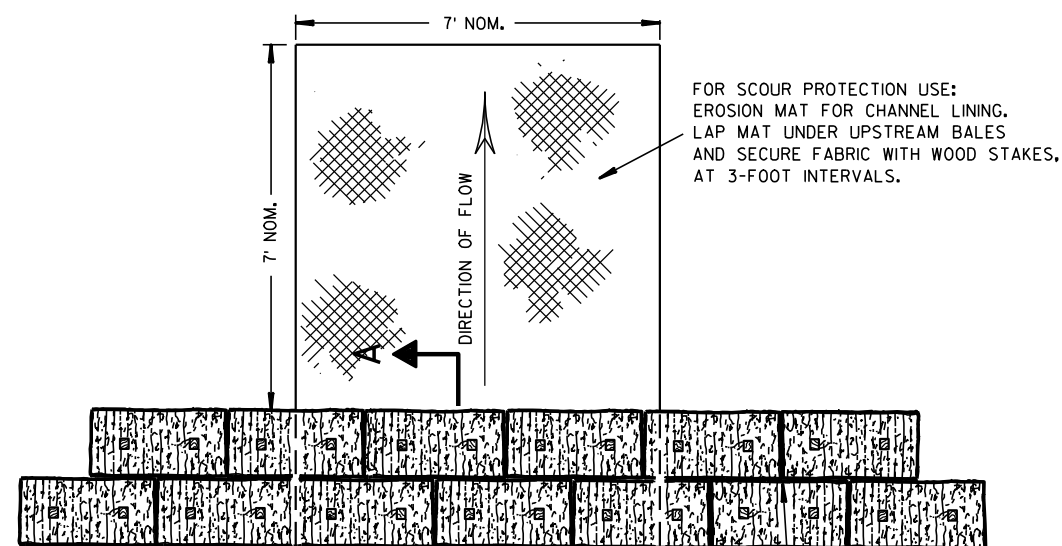
APPROVED
6/5/2012
DATE

/S/ Jerry H. Zogg
ROADWAY STANDARDS [67
ENGINEER

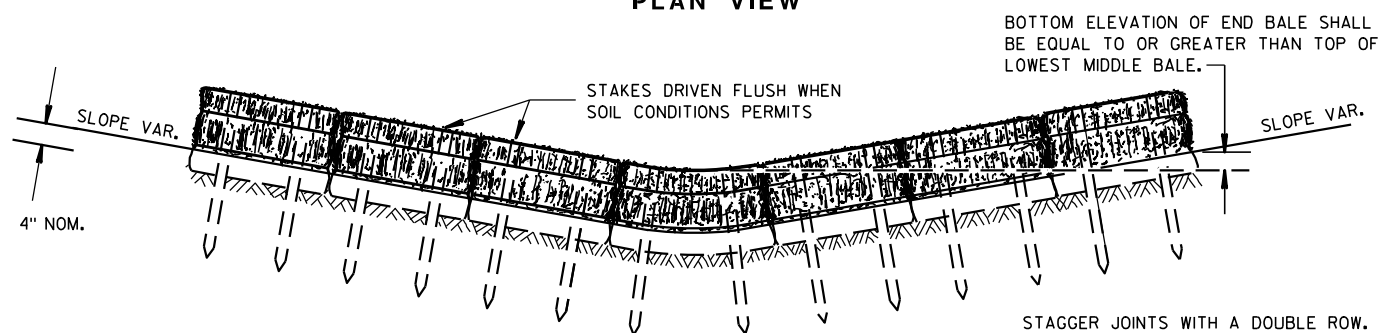
WOOD STAKES (2 PER BALE)
NOMINAL 2" X 2" X 30" MIN.
LENGTH OR EQUIVALENT



SECTION A-A



PLAN VIEW



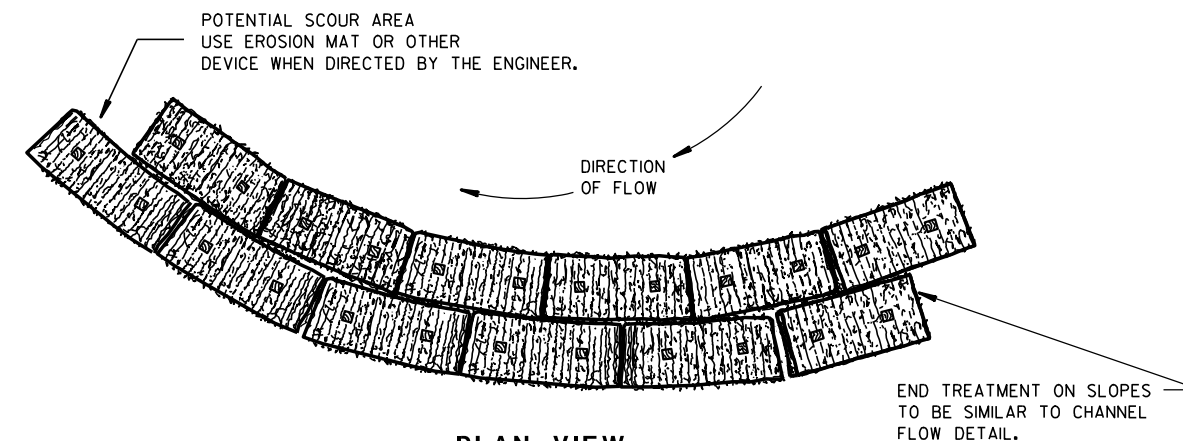
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

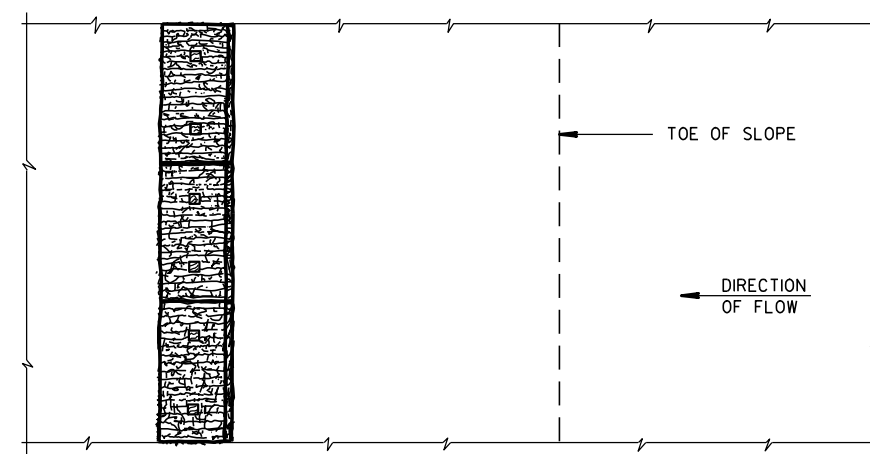
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

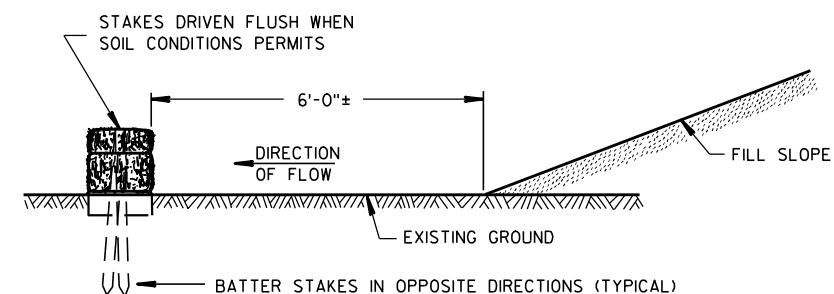


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF
EROSION BALES / TEMPORARY
DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

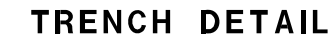
6/04/02
DATE

/S/ Beth Conn-----
CHIEF ROADWAY DEVELOPER 68 ENGINEER

FHWA



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

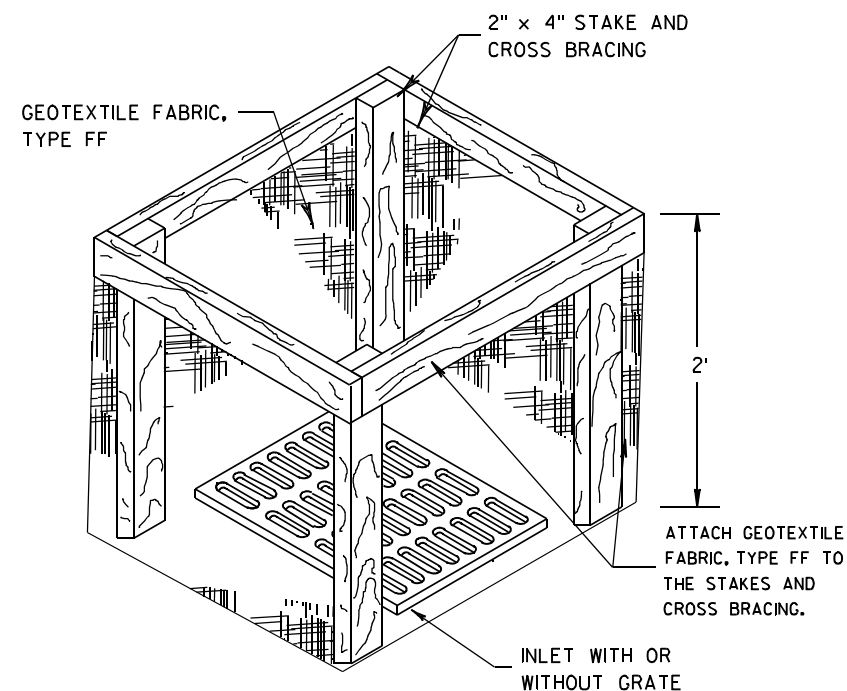
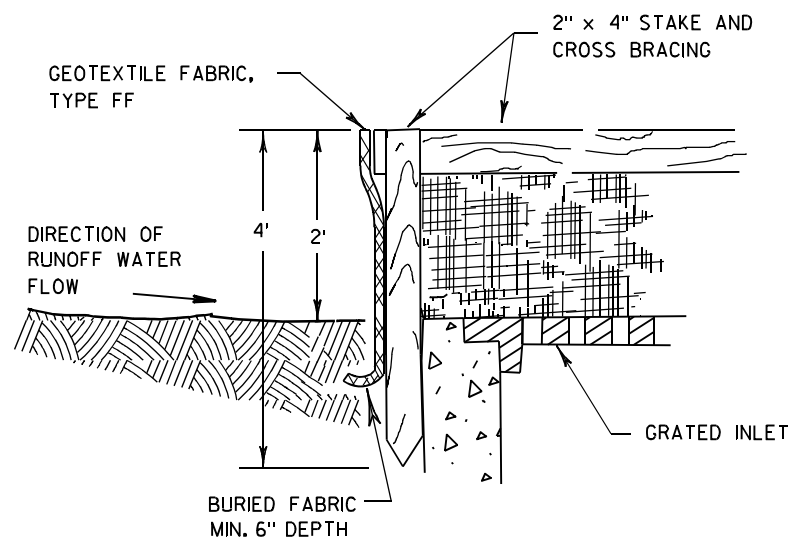


SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-29-05
DATE /S/ Beth Cannata
CHIEF ROADWAY DEVELOPMENT **69** INCH

FHWA



INLET PROTECTION, TYPE A

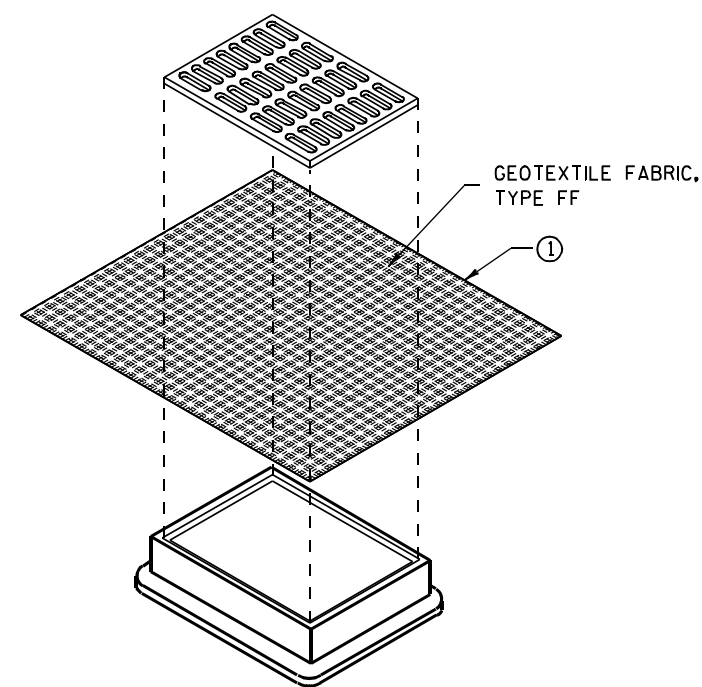
GENERAL NOTES

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.

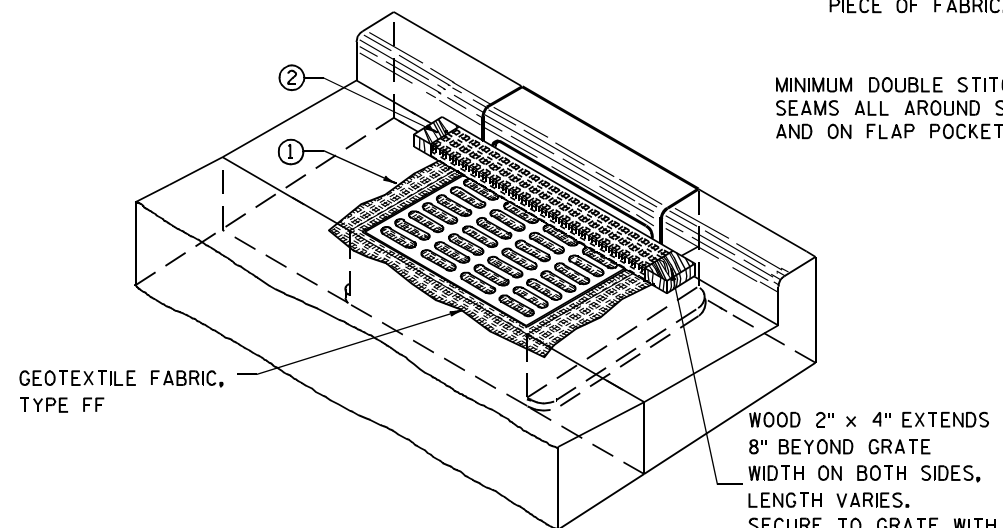
WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

- 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.

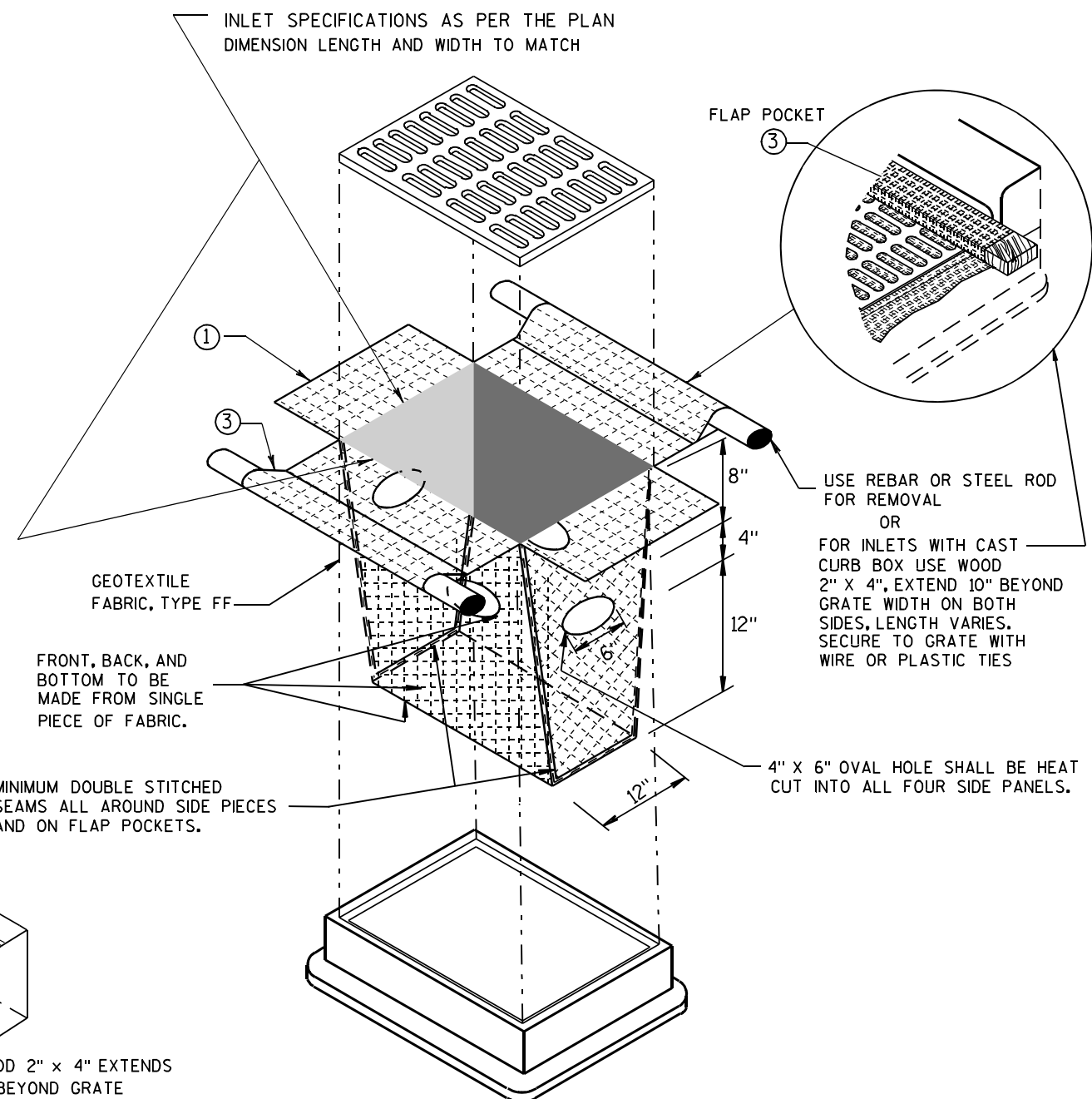
THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

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.

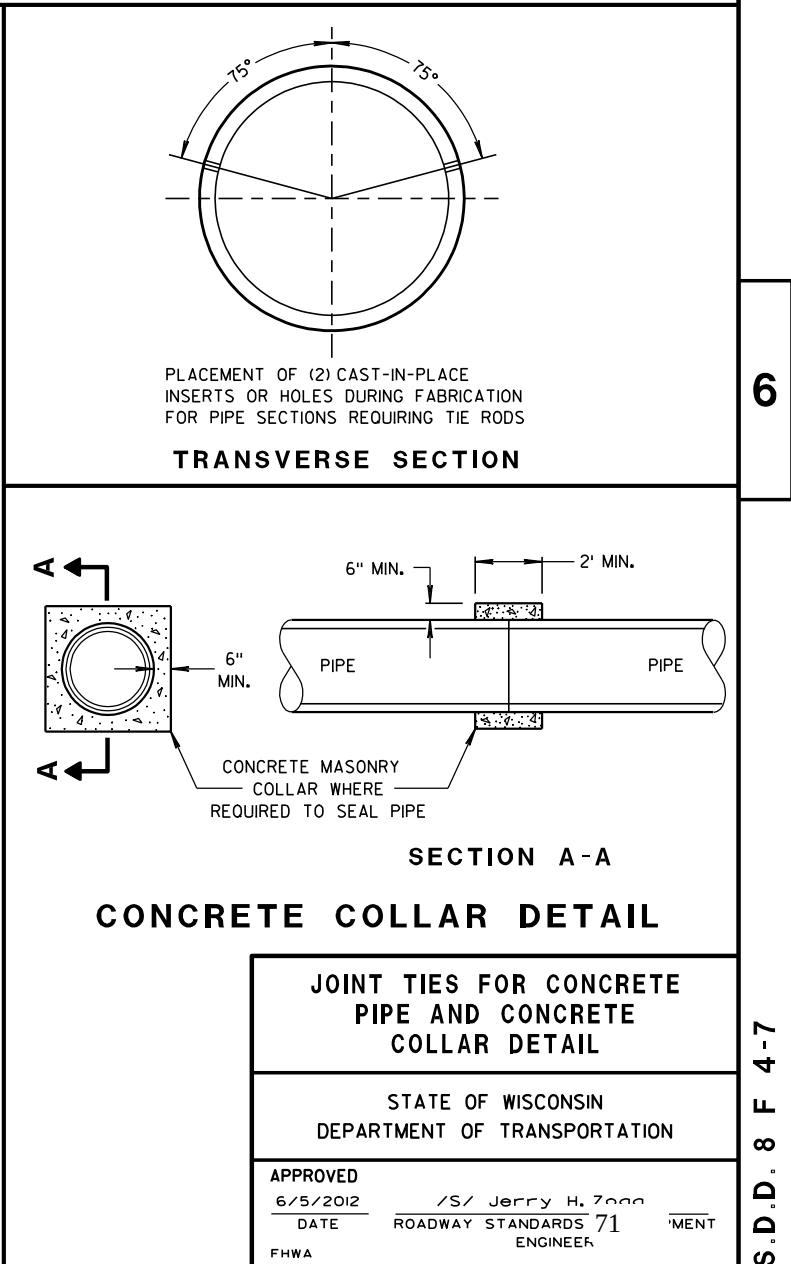
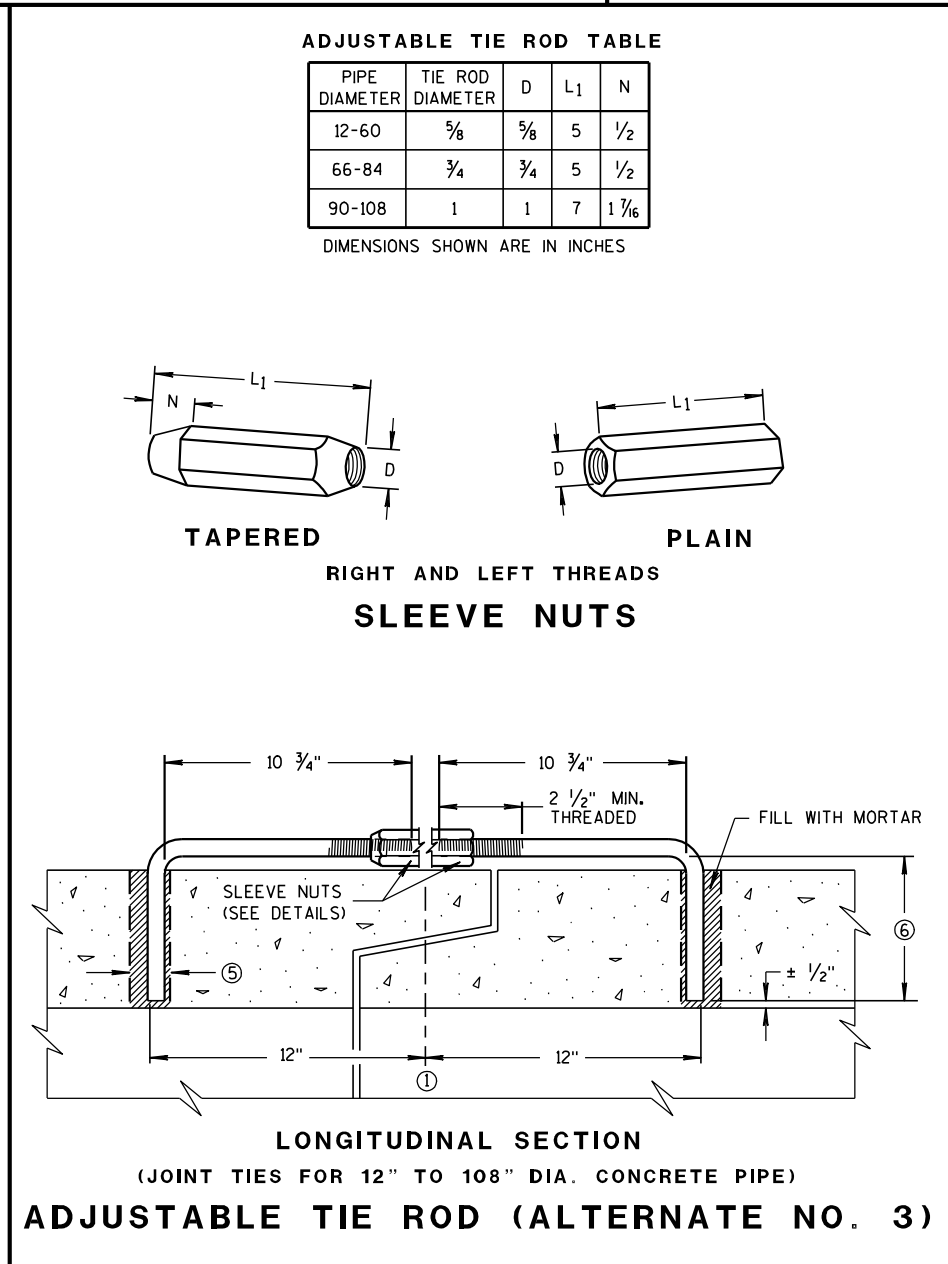
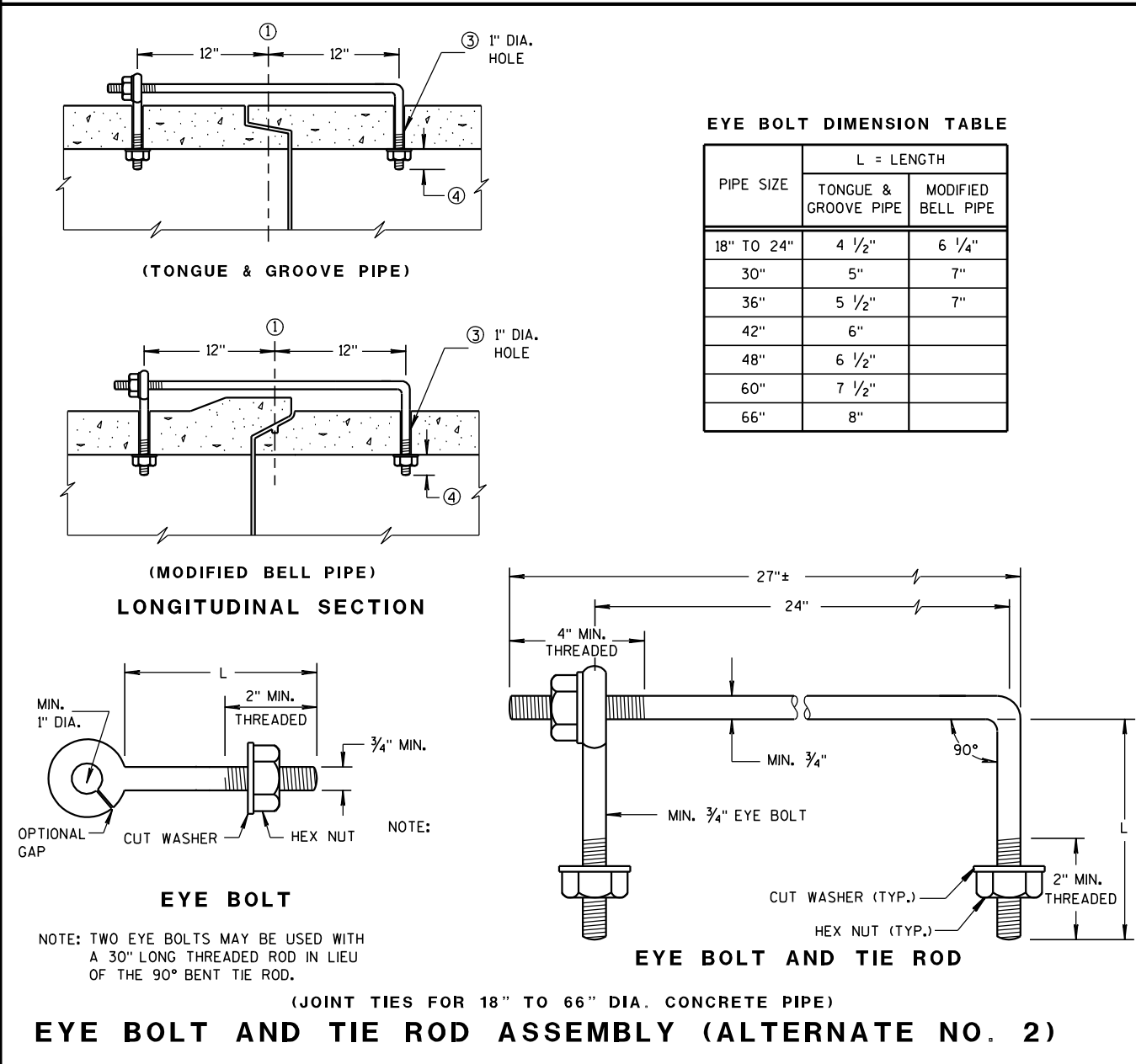
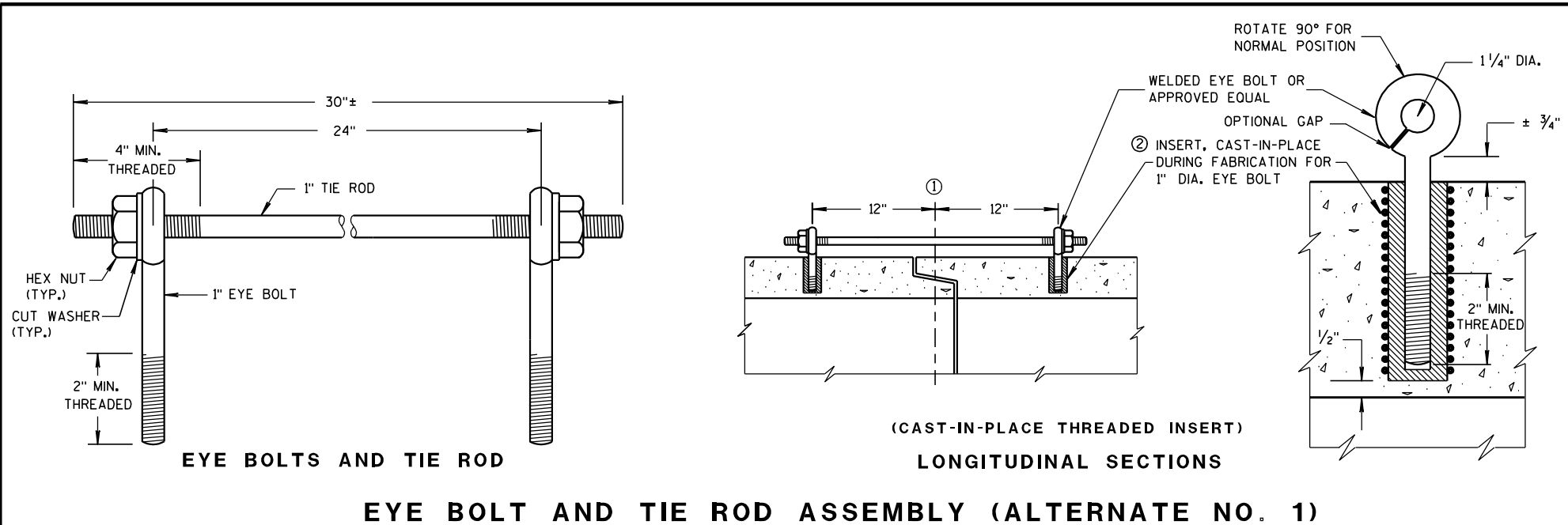
THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE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

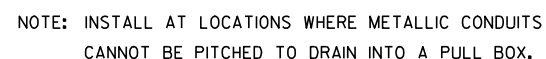


INLET PROTECTION, TYPE D

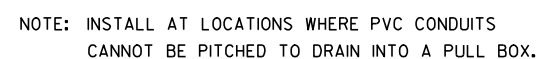
(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX AS PER NOTE ②)

INLET PROTECTION TYPE A, B, C, AND D	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 10/16/02 DATE	/S/ Beth Connolly 70 CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA	





DRAIN SUMP FOR METALLIC CONDUIT



DRAIN SUMP FOR PVC CONDUIT

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

METALLIC (STANDARD SPECIFICATION 652.2.2) OR NONMETALLIC (STANDARD SPECIFICATION 652.2.3) CONDUIT SHALL BE FURNISHED AND PLACED AS SHOWN.

DEPTH OF CONDUIT INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES MINIMUM AND 36 INCHES MAXIMUM.

DEPTH OF CONDUIT INSTALLED THAT IS NOT BELOW THE TRAVELED WAY SHALL BE 18 INCHES MINIMUM AND 36 INCHES MAXIMUM.

ANY EXCEPTION TO THE MAXIMUM DEPTH SHALL BE ONLY WITH THE WRITTEN APPROVAL OF THE ENGINEER.

THE TRENCH SHALL NOT BE BACKFILLED PRIOR TO INSPECTION OF THE CONDUIT.

ALL METALLIC CONDUIT RACEWAY ENDS SHALL BE REAMED AND THREADED.

ALL METALLIC CONDUIT IN WHICH WIRE OR CABLE IS TO BE INSTALLED SHALL BE BUSHED WITH APPROVED THREADED BUSHINGS BEFORE INSTALLATION OF THE WIRE OR CABLE.

ALL METALLIC CONDUITS IN WHICH WIRE OR CABLE IS NOT TO BE INSTALLED SHALL BE CAPPED WITH THREADED PROTECTIVE CAPS, AS APPROVED BY THE ENGINEER.

ALL NONMETALLIC CONDUIT SHALL BE CAPPED OR PLUGGED IMMEDIATELY AFTER INSTALLATION AND SHALL REMAIN CAPPED OR PLUGGED UNTIL WIRE/CABLES ARE INSTALLED.

NONMETALLIC CONDUITS IN WHICH WIRE OR CABLE IS NOT BEING INSTALLED SHALL REMAIN CAPPED OR PLUGGED.

BENDING OF PVC ELECTRICAL CONDUIT SHALL BE ACCOMPLISHED BY USING A BLANKET OR EMERSION TYPE TANK DESIGNED FOR THE PURPOSE OF BENDING PVC ELECTRICAL CONDUIT.

ALL CUT ENDS SHALL BE TRIMMED INSIDE AND OUTSIDE TO REMOVE ALL ROUGH EDGES ON NONMETALLIC CONDUIT. (SEE NEC 347.5)

WHEN REQUIRED TO CONNECT NONMETALLIC CONDUIT TO METALLIC CONDUIT, ONLY U.L. LISTED ADAPTER FITTINGS SHALL BE USED.

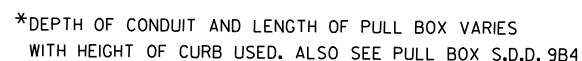
PRIOR TO CONDUIT ACCEPTANCE, CONDUIT CAPS OR PLUGS SHALL BE REMOVED, AND THE CAPS, PLUGS AND CONDUIT ENDS SHALL BE THOROUGHLY CLEANED AND THEN THE CAPS OR PLUGS REINSTALLED TO ENSURE THAT THE CAPS OR PLUGS CAN BE EASILY REMOVED IN THE FUTURE.

ALL CONDUIT BEING FURNISHED AND INSTALLED SHALL HAVE THE U.L. LABEL FIRMLY ATTACHED.

CONDUIT RUNS SHALL BE THE SAME SIZE OF CONDUIT FROM ONE END TO THE OTHER (FROM PULL BOX TO PULL BOX-OR-JUNCTION BOX TO JUNCTION BOX-OR-BASE TO BASE, ETC.).

POLY ROPE OR A PULL WIRE SHALL BE INSTALLED AS STATED IN THE STANDARD SPECIFICATION, ITEM 652.3.1.1.

ALL CONDUIT RUNS SHALL BE STRAIGHT (WITHOUT BENDS) FROM PULL BOX TO PULL BOX, PULL BOX TO BASE AND BASE TO BASE AS SHOWN ON THE PLANS.



SIDE ELEVATION
DETAIL FOR CONDUIT UNDER PAVED HIGHWAYS

CONDUIT	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED <u>10/23/03</u> DATE	<u>/S/ Balu Ananthanagovan</u> STATE ELECTRICAL ENGR 72 HWYS

TABLE OF NOMINAL DIMENSIONS AND WEIGHTS

DIMENSION IN INCHES		CORRUGATED STEEL PIPE								
PIPE DIAMETER (INSIDE)	A	12	12	12	18	18	18	24	24	24
PIPE LENGTH **	B	24	30	36	24	30	36	36	42	48
WALL THICKNESS	C	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
COVER	D	10 1/4	10 1/4	10 1/4	16 1/4	16 1/4	16 1/4	22 1/4	22 1/4	22 1/4
FRAME	E	14 1/2	14 1/2	14 1/2	20 1/2	20 1/2	20 1/2	26 1/2	26 1/2	26 1/2
FRAME	F	8 1/2	8 1/2	8 1/2	14 1/2	14 1/2	14 1/2	20 1/2	20 1/2	20 1/2
FRAME	G	11 1/2	11 1/2	11 1/2	17 1/2	17 1/2	17 1/2	23 1/2	23 1/2	23 1/2
WEIGHT IN POUNDS *										
FRAME AND COVER		60	60	60	110	110	110	155	155	155

* THE ACTUAL WEIGHT OF THE MANHOLE FRAME AND COVER MAY VARY WITHIN 5 PERCENT PLUS OR MINUS OF THE WEIGHTS SHOWN.

** NORMALLY USED LENGTHS. THE PROJECT ENGINEER SHALL DETERMINE IF PIPE LENGTHS, OTHER THAN THOSE SPECIFIED, SHALL BE USED, TO A MAXIMUM OF 48" (CONTINUOUS LENGTH, NON-SPLICED). THE ADDITIONAL LENGTH SHALL BE INCIDENTAL TO THE PULL BOX BID PRICE.

GENERAL NOTES

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

ALL FRAMES AND COVERS SHALL BE HEAVY DUTY TYPE, SUITABLE FOR VEHICULAR TRAFFIC LOADS.

PULL BOXES LOCATED IN THE ROADWAYS SHALL HAVE LOCKING COVERS.

ENTRANCE HOLES INTO PULL BOXES SHALL BE CUT WITH A CIRCULAR HOLE SAW OR HYDRAULIC CONDUIT PUNCH. HOLE SIZE SHALL BE THE OUTSIDE DIAMETER OF THE CONDUIT THAT IS TO FIT IN THE OPENING PLUS NO MORE THAN 1/4".

THE CONTRACTOR SHALL NOT INSTALL WIRE IN ANY PULL BOX UNTIL ITS INSTALLATION HAS BEEN INSPECTED AND ACCEPTED BY THE ENGINEER.

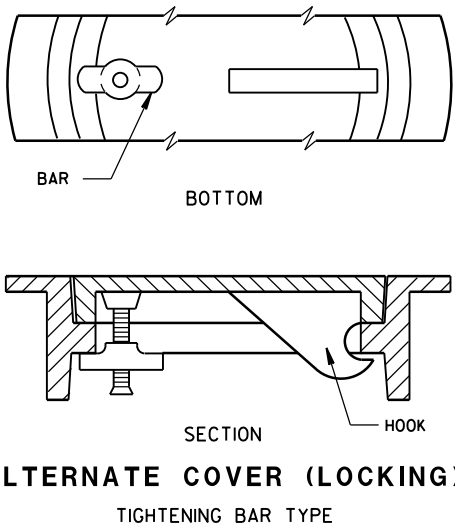
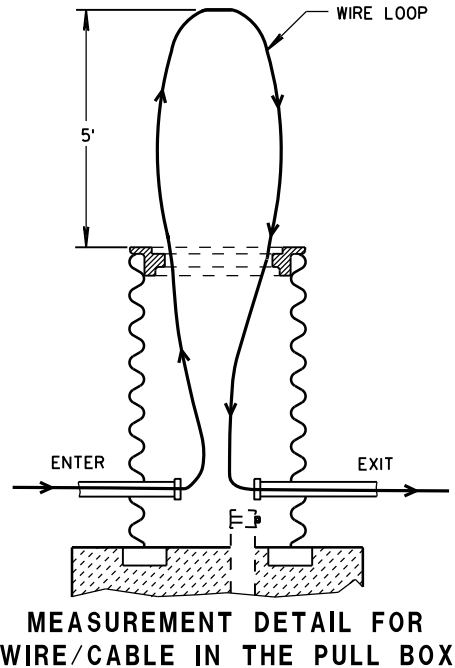
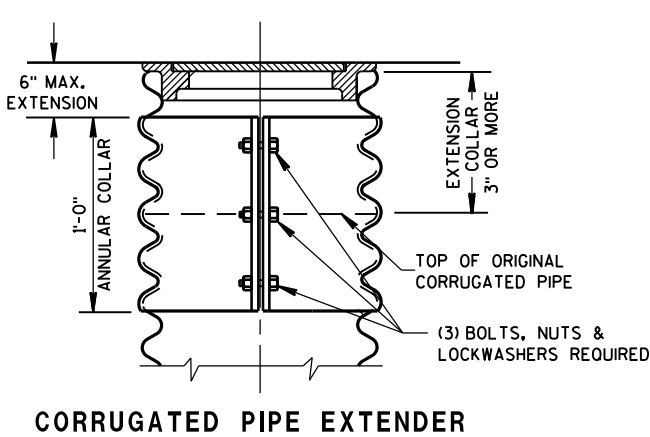
GROUNDING LUGS (MECHANICAL CONNECTORS) SHALL BE U.L. LISTED AND APPROVED FOR USE WITH COPPER WIRE.

GROUNDING LUGS ARE NOT REQUIRED IN PULL BOXES WHEN VOLTAGES OF LESS THAN 50 VOLTS AC ARE THE ONLY VOLTAGES ENCOUNTERED IN THE BOXES.

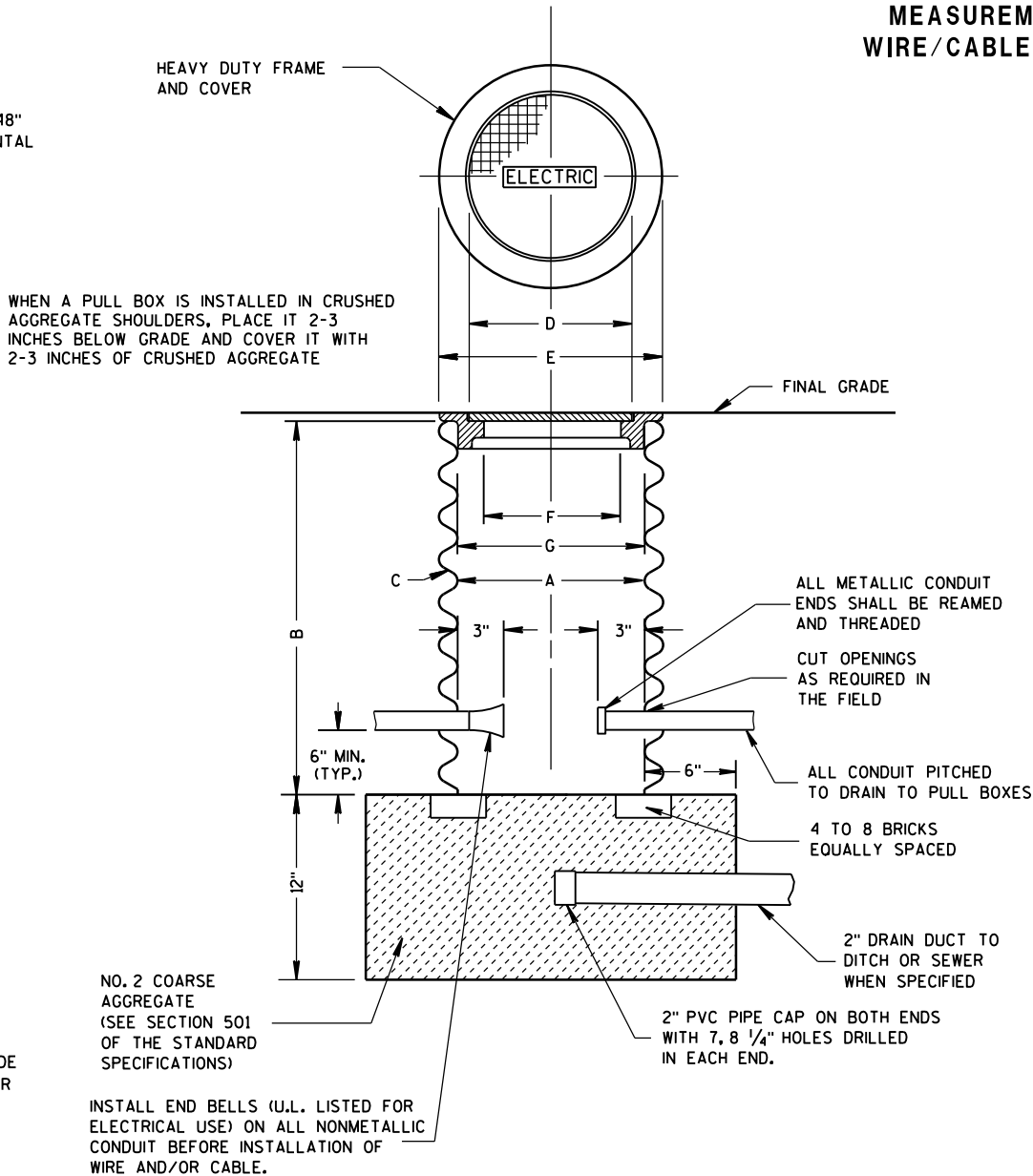
ALL METALLIC CONDUIT IN WHICH WIRE AND/OR CABLE IS TO BE INSTALLED, SHALL BE BUSHED BEFORE INSTALLATION OF THE WIRE AND/OR CABLE.

S.D.D. 9B2, "CONDUIT", APPLIES TO THIS DRAWING.

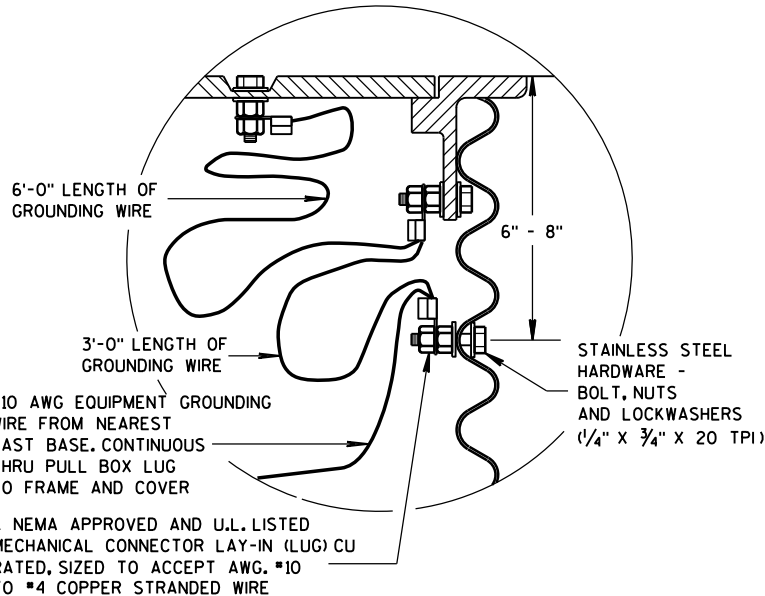
WHEN PULL BOXES ARE INSTALLED FOR FUTURE USE, DO NOT INSTALL THE EQUIPMENT GROUNDING LUG. THE EQUIPMENT GROUNDING LUG, THE EQUIPMENT GROUNDING ELECTRODE AND THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE REQUIRED AND INSTALLED UNDER A FUTURE WIRING CONTRACT.



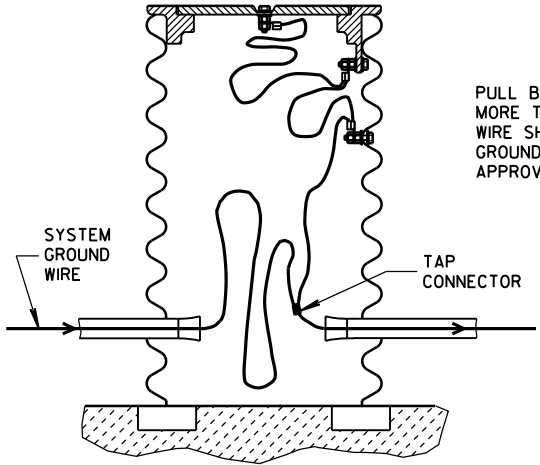
ALTERNATE COVER (LOCKING)
TIGHTENING BAR TYPE



PULL BOX



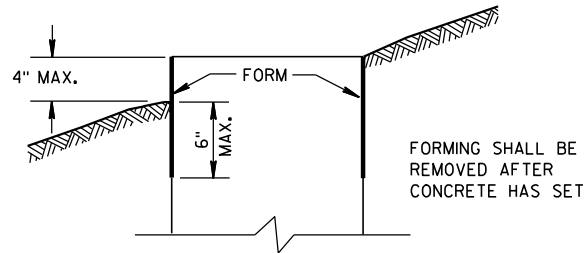
EQUIPMENT GROUNDING LUG AND
LOCATION IN STEEL PULL BOXES



EQUIPMENT GROUNDING LUG AND
LOCATION IN STEEL PULL BOXES

PULL BOX	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 2-7-2013 DATE	/S/ Ahmet Demirbilek STATE ELECTRICAL 73
FHWA	

FORM DEPTH SHALL BE NO MORE THAN 6" BELOW GRADE ON THE LOWER SIDE OF BASE



FORMING DETAIL

QUANTITY REQUIREMENTS	CONCRETE BASE TYPE		
	1	2	5
APPROX. CUBIC YARDS OF CONCRETE	0.40	0.57	0.40
LBS. OF HOOP BAR STEEL	NONE	23	16
LBS. OF VERTICAL BAR STEEL	NONE	60	18

GENERAL NOTES

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

BASES SHALL BE EXCAVATED BY USE OF A CIRCULAR AUGER.

TOP SURFACES OF CONCRETE BASES SHALL BE TROWEL FINISHED SMOOTH AND LEVEL.

CONDUIT SIZES AND LOCATIONS SHALL BE AS SHOWN ON THE PLANS.

THE FINAL OR TERMINATING CONCRETE BASE IN A CONDUIT RUN SHALL HAVE A 6" EXIT STUB INSTALLED FOR FUTURE CABLING USE. THE EXIT STUB SHALL BE SIZED AS USED THROUGHOUT THE CONDUIT RUN AS SHOWN AT THE ENTRANCE OF THE BASE.

MINIMUM BENDING RADIUS OF CONDUIT IS EQUAL TO 6 X THE DIAMETER.

CONDUIT HEIGHT ABOVE CONCRETE BASES SHALL BE 1 INCH. ALL METALLIC CONDUIT ENDS SHALL BE REAMED AND THREADED.

ALL CONDUIT ENDS AT THE TOP OF CONCRETE BASES SHALL BE CAPPED IF METALLIC OR PLUGGED IF NONMETALLIC IMMEDIATELY AFTER PLACEMENT AND BEFORE CONCRETE IS POURED. CONDUITS IN WHICH WIRE OR CABLE IS NOT INSTALLED SHALL REMAIN CAPPED OR PLUGGED.

GENERAL NOTES (CONTINUED)

BELL ENDS SHALL BE INSTALLED ON ALL PVC CONDUIT EXPOSED AT THE TOP OF CONCRETE BASES BEFORE INSTALLATION OF CABLE OR WIRE.

ENDS OF CONDUIT INSTALLED BELOW GRADE FOR FUTURE USE SHALL BE CAPPED IF METALLIC OR PLUGGED IF NONMETALLIC.

WHEN REQUIRED TO CONNECT NONMETALLIC CONDUIT TO METALLIC CONDUIT, ONLY ADAPTER FITTINGS, U.L. LISTED FOR ELECTRICAL USE, SHALL BE USED.

IF A BASE REQUIRES A DEEP FORM BECAUSE OF LOOSE DIRT OR FILL, THE FORM SHALL BE REMOVED BEFORE BACKFILLING AROUND THE BASE. BACKFILL SHALL BE TAMPED TIGHT AGAINST THE BARE CONCRETE BASE IN LAYERS OF 1 FOOT OR LESS.

A NO. 4 AWG, STRANDED COPPER EQUIPMENT GROUNDING CONDUCTOR SHALL BE EXOTHERMICALLY WELDED TO THE EQUIPMENT GROUNDING ELECTRODE (GROUND ROD) FOR TYPE 2 AND TYPE 5 BASES.

THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE FURNISHED AND INSTALLED TO ENTER THE BASE OF THE TYPE 2 AND TYPE 5 BASES THROUGH A 1 INCH CONDUIT INSTALLED FOR GROUNDING PURPOSES, LEAVING A 4 FOOT COIL OF WIRE ABOVE THE CONCRETE BASE. THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE NEATLY COILED AND THE COILS TIED TOGETHER.

ANCHOR RODS SHALL BE THREADED 12" IN LENGTH ON EACH END OF THE ROD, ANCHOR RODS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 654.2.1 AND 641.2.2 OF THE STANDARD SPECIFICATIONS, ASTM A-449, OR ASTM A-687 (GRADE 105).

WASHERS AND LOCK WASHERS ARE REQUIRED ON ALL ANCHOR RODS.

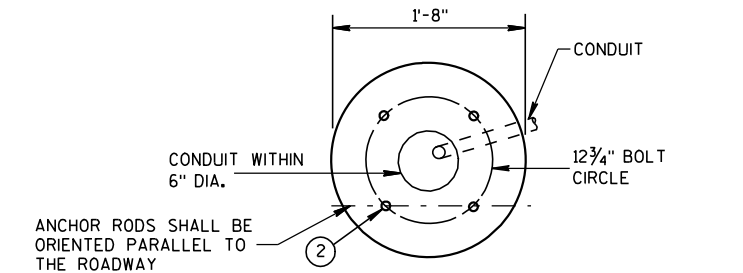
WHEN ANCHOR RODS USING THE ALTERNATE "L" BEND ARE FURNISHED, THE 4" "L" BEND SHALL BE IN ADDITION TO THE SPECIFIED ANCHOR ROD BAR LENGTH. THE "L" BEND END SHALL NOT BE THREADED.

ANCHOR RODS SHALL BE INSTALLED WITH MISALIGNMENTS OF LESS THAN 1:40 FROM VERTICAL.

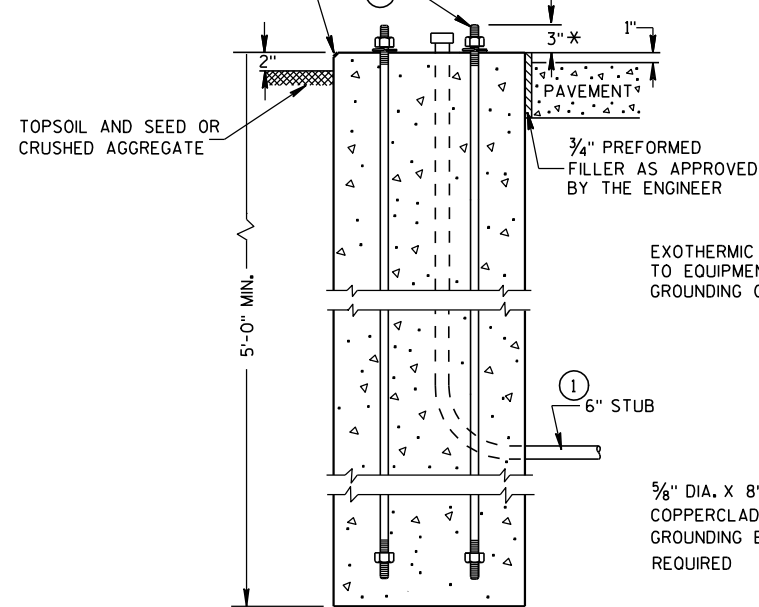
WELDING OF THE ANCHOR RODS TO THE CAGE IS UNACCEPTABLE. TIE WIRES SHALL BE USED.

BAR STEEL REINFORCEMENT SHALL BE COATED WITH POWDERED EPOXY RESIN IN ACCORDANCE WITH SECTION 505 OF THE STANDARD SPECIFICATIONS (LATEST EDITION).

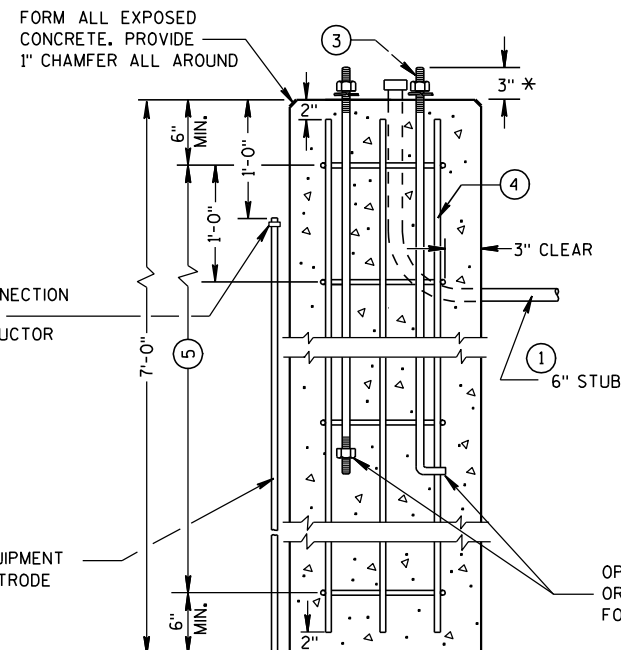
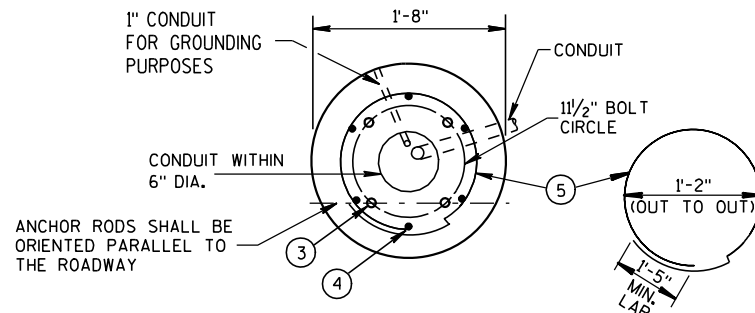
- 1 THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE AND INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES. THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE THAT IS NOT INSTALLED BELOW THE TRAVELED WAY SHALL BE 18 INCHES. THE MAXIMUM DEPTH OF ALL CONDUIT SHALL BE 36 INCHES EXCEPT WITH WRITTEN APPROVAL BY THE ENGINEER.
- 2 (4) 1" DIA. X 3'-6" ANCHOR RODS.
- 3 (4) 1" DIA. X 5'-0" ANCHOR RODS.
- 4 (6) NO. 6 X 6'-8" BAR STEEL REINFORCEMENT.
- 5 (7) NO. 4 X 5'-1" BAR STEEL REINFORCEMENT @ 1'-0" C-C.
- 6 (4) 1" DIA. X 3'-6" ANCHOR RODS.
- 7 (6) NO. 4 X 4'-8" BAR STEEL REINFORCEMENT.
- 8 (5) NO. 4 X 5'-1" BAR STEEL REINFORCEMENT @ 1'-0" C-C.



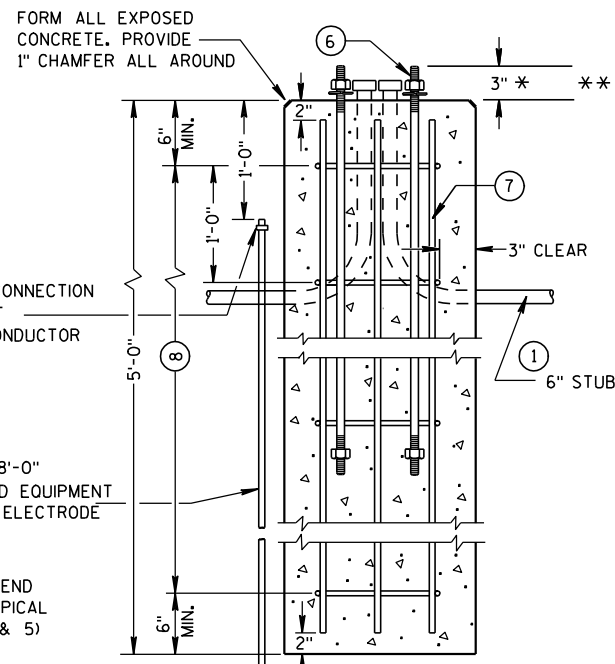
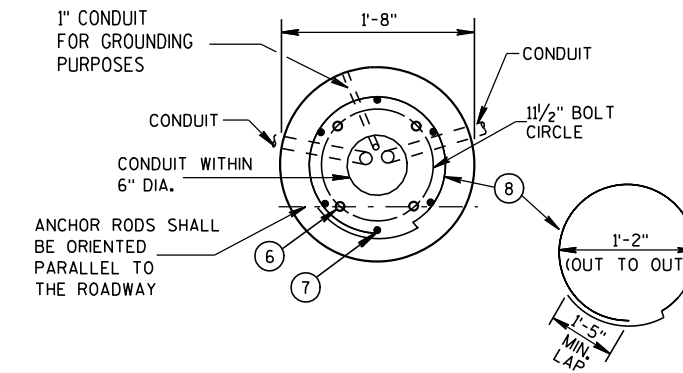
HALF SECTION IN UNPAVED AREA (TYPICAL FOR TYPES 1, 2 & 5)



TYPE 1



TYPE 2



TYPE 5

CONCRETE BASES

* ANY ANCHOR ROD PROJECTION SHORTER THAN 2 3/4" OR LONGER THAN 3 1/4" SHALL REQUIRE THE BASE TO BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE.

** FOR NONBREAKAWAY INSTALLATIONS, 4 1/2" ± ANCHOR ROD PROJECTION WITH THE USE OF LEVELING NUTS. RODENT SCREEN REQUIRED.

CONCRETE BASES, TYPES 1, 2 & 5

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

3/3/10

DATE

FHWA

/S/ Joanna L. Bush

STATE ELECTRICAL ENGR 74

HWYS

GENERAL NOTES

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

FOUR (4) BOLTS SHALL BE FURNISHED WITH EACH TRANSFORMER BASE. BOLTS SHALL BE 1" DIAMETER, 4" IN LENGTH, WITH WASHERS, LOCK WASHERS AND NUTS. BOLTS, NUTS AND WASHERS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 641.2.2 OF THE STANDARD SPECIFICATIONS, ASTM A-325, (92,000 YIELD) HEAVY HEX NUT AND BE GALVANIZED IN ACCORDANCE WITH ASTM A-153, CLASS C.

LEVELING SHIMS, IF NEEDED, SHALL BE DESIGNED FOR THE PURPOSE AND USED UNDER CAST BASES WHEN PLUMBING POLES OR STANDARDS DURING INSTALLATION. THE USE OF WASHERS IN LIEU OF PROPER LEVELING SHIMS IS NOT ACCEPTABLE.

SHIM LENGTH SHALL BE LONG ENOUGH TO COMPLETELY COVER THE AREA UNDER THE LENGTH AND WIDTH OF THE BASE MOUNTING FLANGE.

DOUBLE NUTTING IS NOT ACCEPTABLE FOR LEVELING OR MOUNTING PURPOSES.

A NEMA APPROVED AND U.L. LISTED MECHANICAL CONNECTOR (LUG) AL/CU RATED AND SIZED TO ACCEPT #10 AWG STRANDED WIRE, SHALL BE FURNISHED AND INSTALLED IN THE PEDESTAL AND TRANSFORMER BASES.

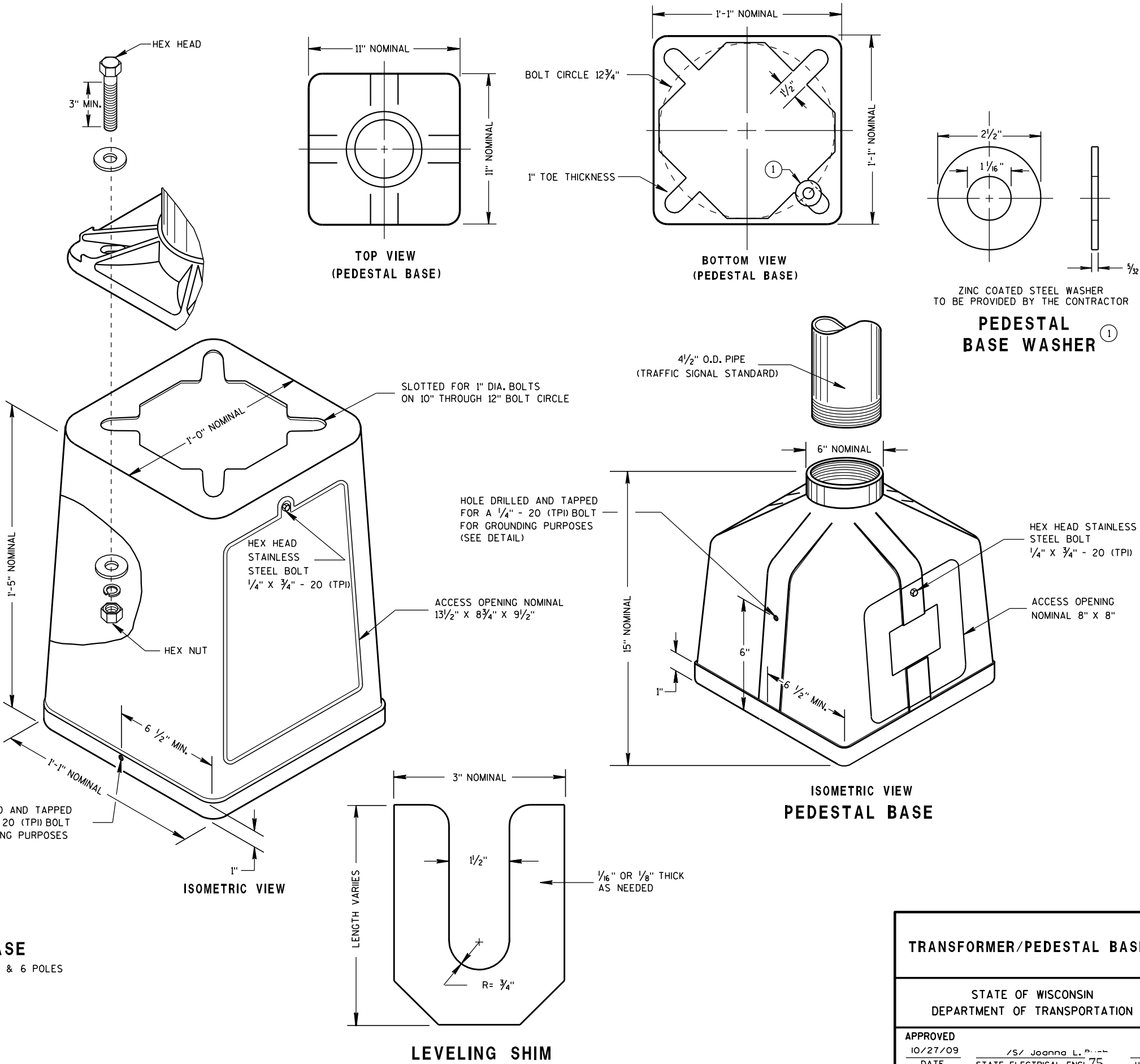
THE MECHANICAL CONNECTOR SHALL BE INSTALLED USING A 1/4" - 20 (TPI) STAINLESS STEEL HEX HEAD BOLT OF SUFFICIENT LENGTH TO FIRMLY ATTACH THE LUG TO THE BASE.

SHOULD THE MANNER OF ATTACHMENT OF THE LUG REQUIRE WASHERS, HEX NUTS, LOCK WASHER - THEY SHALL BE STAINLESS STEEL AS IS THE BOLT. THE MANNER OF ATTACHMENT SHALL NOT BLOCK ACCESSIBILITY TO WIRE PLACEMENT IN THE CONNECTOR.

PEDESTAL BASE COLLAR THREADING SHALL BE TAPERED AND IN ACCORDANCE WITH NATIONAL PIPE THREADING DIMENSIONS.

BASE COLLAR THREADING SHALL EXTEND INTO THE BASE COLLAR WITH SUFFICIENT DEPTH TO ACCEPT THE INSTALLATION OF TRAFFIC SIGNAL STANDARDS TO A DEPTH OF 1 1/2", THEN TIGHTENING TO A POINT OF BEING IMMOVABLE.

THE ACCESS DOOR SHALL BE OF THE SAME MATERIAL AS THE BASE.



TYPICAL MECHANICAL CONNECTOR LUG
TO BE FURNISHED WITH EACH BASE

TRANSFORMER BASE
INTENDED FOR USE WITH TYPE 2, 3, 4, 5 & 6 POLES

TRANSFORMER/PEDESTAL BASES

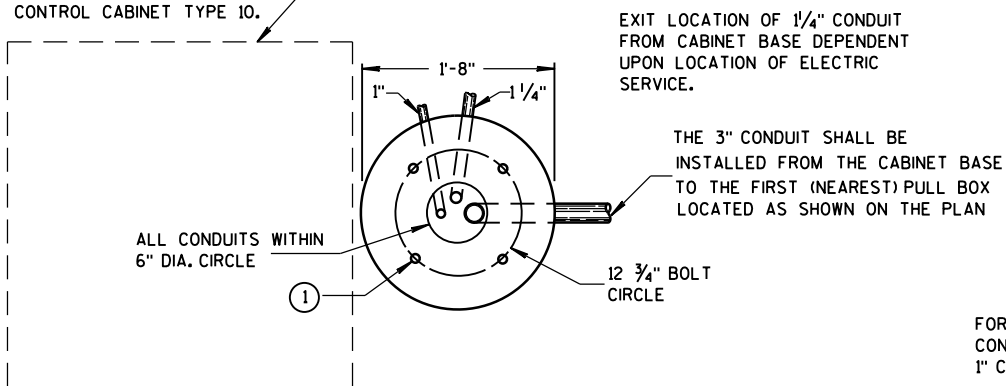
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/27/09
DATE
/S/ Joanna L. P...
STATE ELECTRICAL ENGI 75
HWYS
FHWA

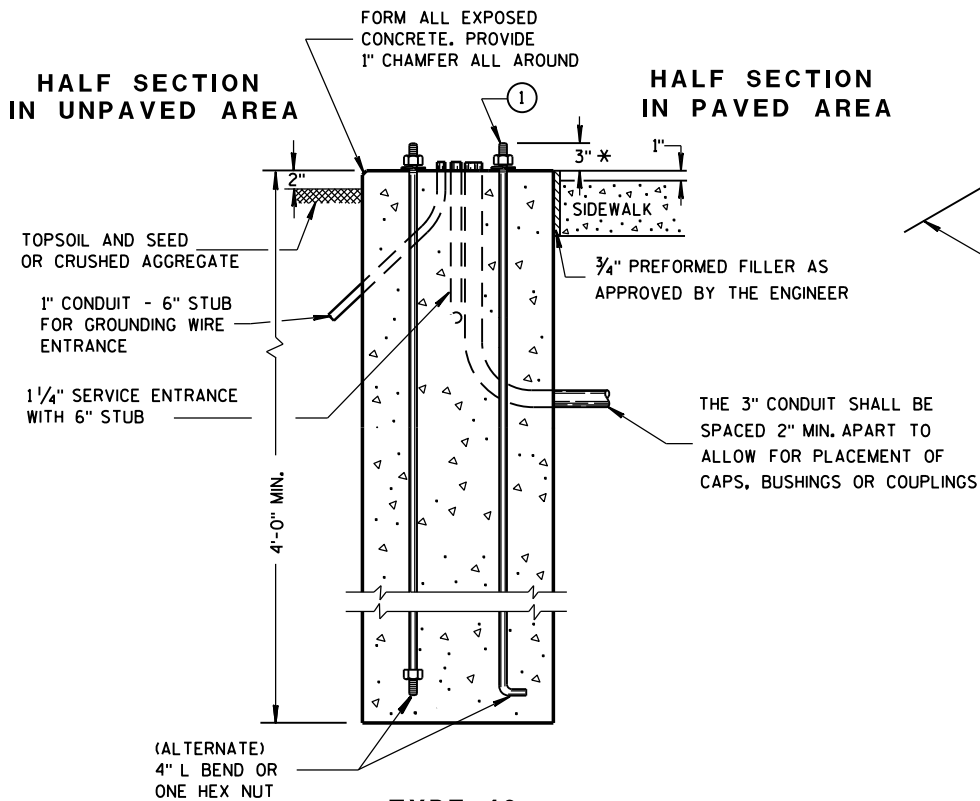
CONTROL CABINET BASE TYPE	DIMENSIONS				C.Y. CONCRETE (APPROX.)
	H	I	J	K	
TYPE 6 - 30" CABINET	34"	60"	10"	17"	.64
TYPE 7 - 38" CABINET	42"	60"	10"	21"	.93
TYPE 8 - 38" CABINET	42"	72"	12"	21"	1.29
TYPE 9 - VARIABLE	54"	72"	14"	27"	1.56
TYPE 10 - POST MOUNT	AS SHOWN				.65 *

* INCLUDES MAINTENANCE PLATFORM.

TYPICAL 3'-0" X 3'-0" X 4" THICK MAINTENANCE PLATFORM. LOCATION TO BE DETERMINED IN THE FIELD. COST TO BE INCLUDED UNDER CONCRETE CONTROL CABINET TYPE 10.



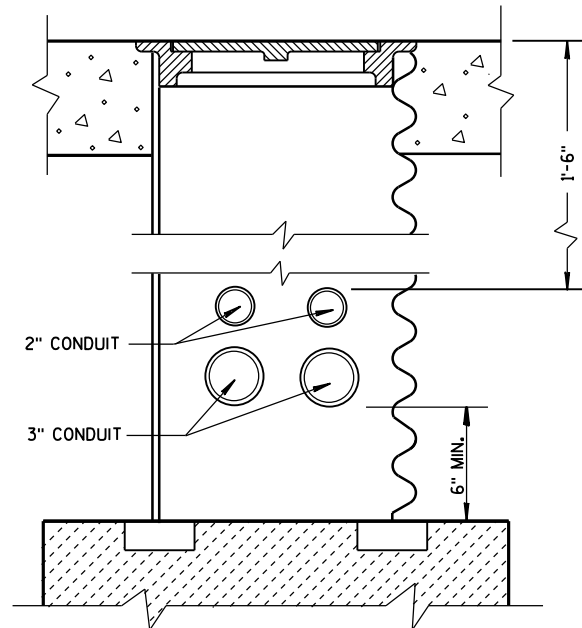
HALF SECTION IN UNPAVED AREA



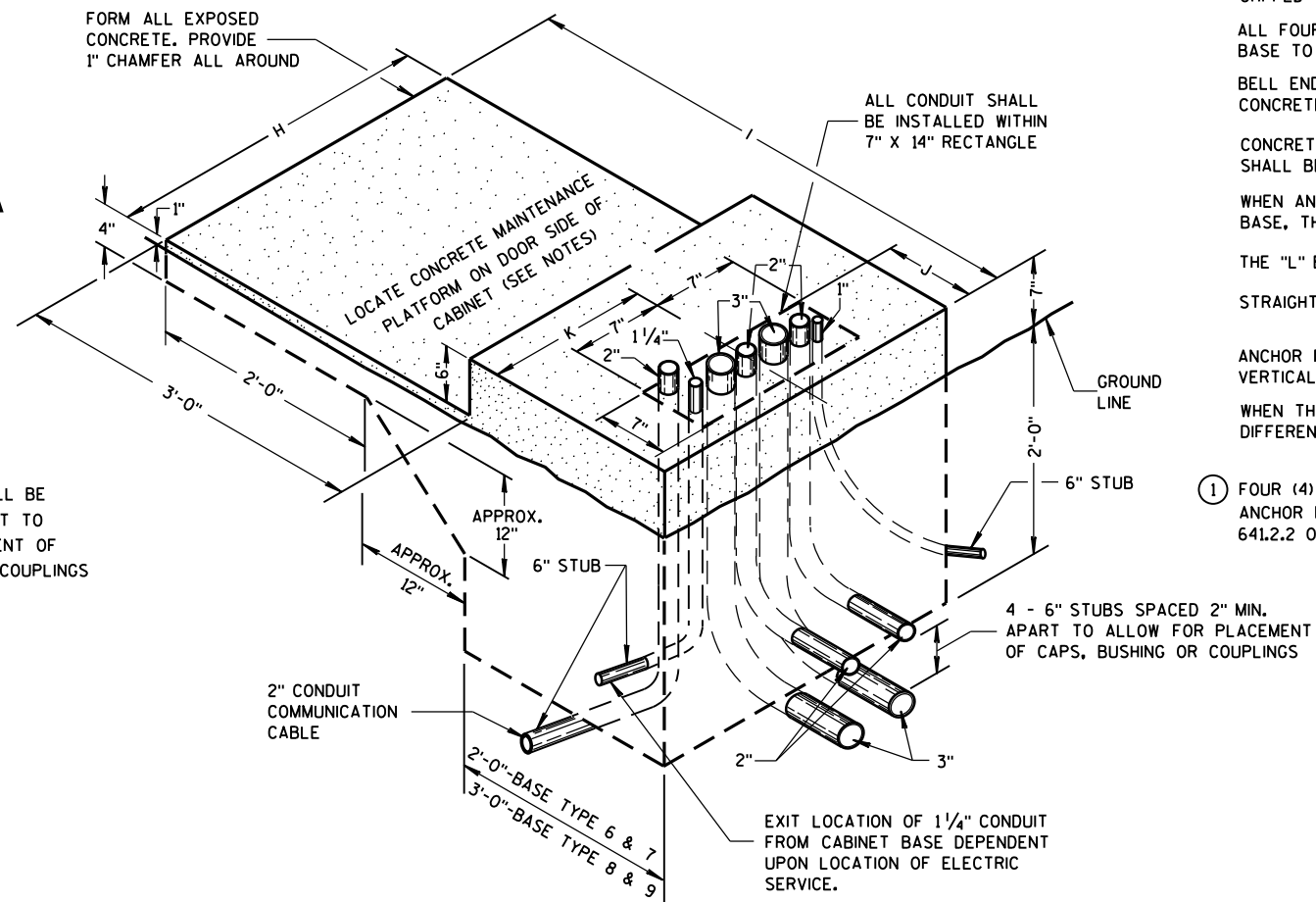
TYPE 10

* ANY ANCHOR ROD PROJECTION SHORTER THAN 2 3/4" OR LONGER THAN 3 3/4" SHALL REQUIRE THE BASE TO BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE.

CONCRETE CONTROL CABINET BASES



CONDUIT LOCATIONS IN 24" X 36" PULL BOX (LEADING TO CONTROLLER CABINET BASE TYPE 6, 7, 8 AND 9)



TYPE 6, 7, 8 AND 9
(ISOMETRIC VIEW)

GENERAL NOTES

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

INSTALL FOUR 1/2 INCH MINIMUM DIAMETER X 4 INCH MINIMUM LENGTH APPROVED CONCRETE MASONRY ANCHORS TO ANCHOR THE CABINET TO TYPE 6, 7, 8, AND 9 BASES. THE ANCHOR STUDS SHALL BE LOCATED AS DIRECTED BY THE ENGINEER TO PROPERLY ANCHOR THE CONTROL CABINET TO THE BASE.

WHEN REQUIRED TO CONNECT NONMETALLIC CONDUIT TO METALLIC CONDUIT, ONLY ADAPTER FITTINGS, U.L. LISTED FOR ELECTRICAL USE, SHALL BE USED.

CONDUIT HEIGHT ABOVE THE CONCRETE BASE SHALL BE 1 INCH.

DEPTH OF CONDUIT INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES MINIMUM AND 36 INCHES MAXIMUM.

DEPTH OF CONDUIT INSTALLED THAT IS NOT BELOW THE TRAVELED WAY SHALL BE 18 INCHES MINIMUM AND 36 INCHES MAXIMUM.

ANY EXCEPTION TO THE MAXIMUM DEPTH SHALL BE ONLY WITH THE WRITTEN APPROVAL OF THE ENGINEER.

CONTROL CABINET BASE TOP SURFACES SHALL BE TROWEL FINISHED SMOOTH AND LEVEL.

WHEN A TYPE 10 CONTROL CABINET BASE IS USED TO POST MOUNT A CONTROL CABINET, A 36" SQUARE 4" THICK CONCRETE MAINTENANCE PLATFORM SHALL BE REQUIRED ON THE DOOR SIDE OF THE CABINET. THE TOP 1 INCH SHALL BE ABOVE FINISHED GRADE AND BE BROOM FINISHED AND LEVEL.

MAINTENANCE PLATFORMS ARE NOT REQUIRED WHEN THE SURROUNDING AREA IS PAVED.

MINIMUM BENDING RADIUS OF CONDUIT = 6 X THE DIAMETER.

ALL METALLIC CONDUIT ENDS SHALL BE REAMED AND THREADED.

ALL CONDUIT ENDS AT THE TOP OF CONCRETE BASES SHALL BE CAPPED IF METALLIC OR PLUGGED IF NONMETALLIC IMMEDIATELY AFTER PLACEMENT AND BEFORE CONCRETE IS POURED. CONDUITS IN WHICH WIRE OR CABLE IS NOT BEING INSTALLED SHALL REMAIN CAPPED OR PLUGGED.

ALL FOUR (TWO INCH AND THREE INCH) CONDUIT SHALL BE INSTALLED FROM THE CABINET BASE TO THE FIRST (NEAREST) PULL BOX LOCATED AS SHOWN ON THE PLANS.

BELL ENDS SHALL BE INSTALLED ON ALL PVC CONDUIT EXPOSED AT THE TOP OF THE CONCRETE BASE BEFORE INSTALLATION OF CABLE OR WIRE.

CONCRETE FORM DEPTH BELOW FINISHED GRADE SHALL BE 6" MAXIMUM. CONCRETE FORMS SHALL BE REMOVED AFTER CONCRETE HAS SET.

WHEN ANCHOR RODS USING THE ALTERNATE L BEND ARE FURNISHED FOR THE TYPE 10 BASE, THE 4" L BEND SHALL BE IN ADDITION TO THE SPECIFIED ANCHOR ROD BAR LENGTH.

THE "L" BEND SHALL NOT BE THREADED.

STRAIGHT ANCHOR RODS SHALL BE THREADED 12" IN LENGTH ON EACH END OF THE ROD.

ANCHOR RODS SHALL BE INSTALLED WITH MISALIGNMENTS OF LESS THAN 1:40 FROM VERTICAL.

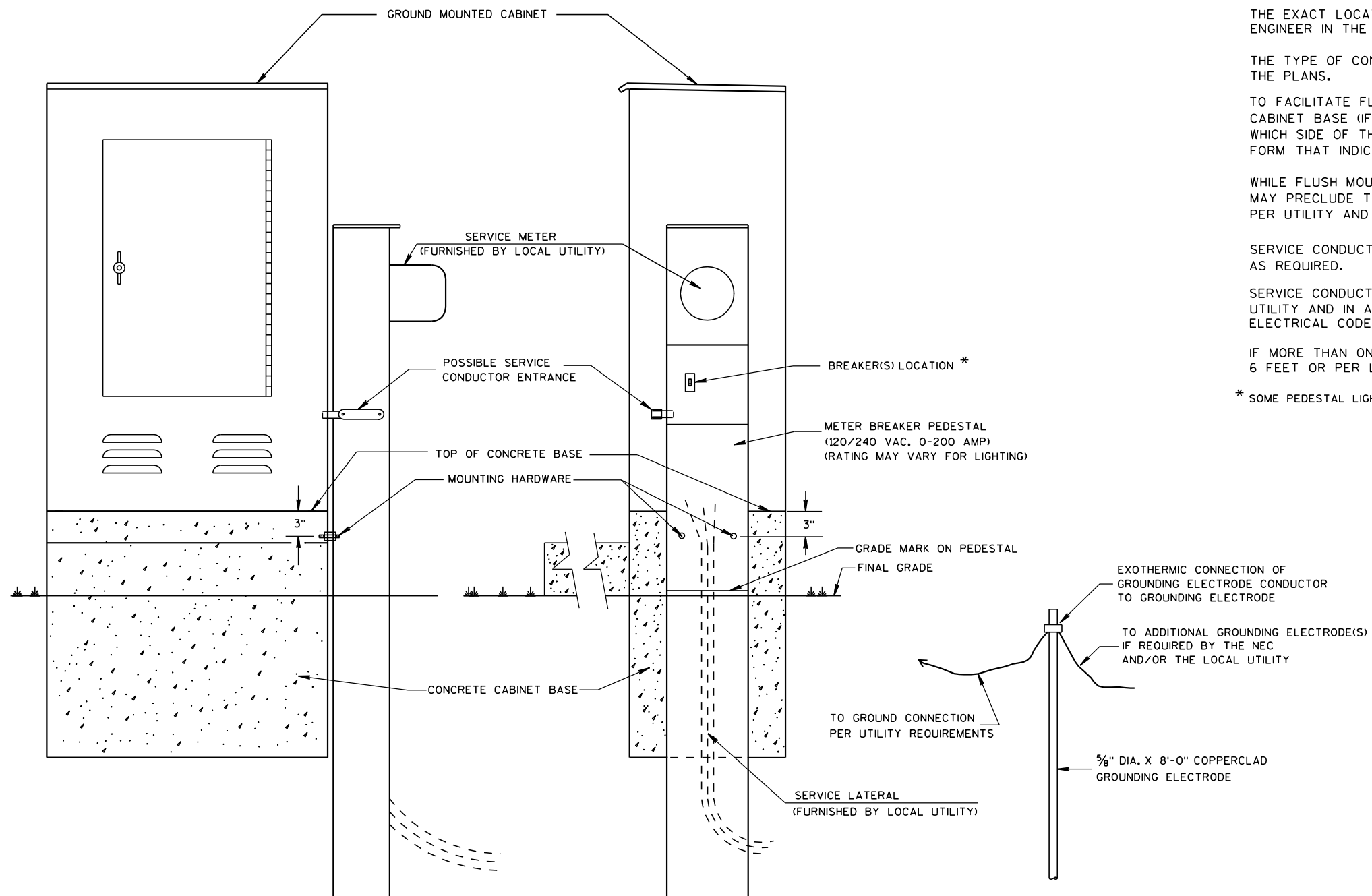
WHEN THIS DRAWING IS USED FOR STREET LIGHTING CABINET BASES, CONDUIT MAY BE DIFFERENT AS SHOWN ON THE PLAN OR AS DIRECTED BY THE ENGINEER.

- ① FOUR (4) ANCHOR RODS, 1" DIA. X 3'-6" ANCHOR RODS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 654.2.1 AND 641.2.2 OF THE STANDARD SPECIFICATIONS.

CONCRETE CONTROL CABINET BASES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/26/2013
DATE /S/ Ahmet Demirbilek
STATE ELECTRICAL 76
FHWA



TYPICAL CABINET SERVICE INSTALLATION

GENERAL NOTES

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

THE EXACT LOCATION OF THE METER BREAKER PEDESTAL SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

THE TYPE OF CONCRETE CABINET BASE TO BE INSTALLED SHALL BE AS CALLED FOR IN THE PLANS.

TO FACILITATE FLUSH MOUNTING OF THE METER BREAKER PEDESTAL AGAINST THE SIDE OF THE CABINET BASE (IF FLUSH MOUNTING POSSIBLE, CONFER WITH THE LOCAL UTILITY TO DETERMINE WHICH SIDE OF THE CONCRETE BASE THE ELECTRICAL SERVICE LATERAL WILL APPROACH, THEN FORM THAT INDICATED SIDE FOR FULL SIDE DEPTH.

WHILE FLUSH MOUNTING IS THE MOST DESIRABLE MOUNTING CONFIGURATION UTILITY REQUIREMENTS MAY PRECLUDE THIS OPTION. CONTRACTOR MUST PROVIDE UTILITY APPROVED PEDESTAL AND INSTALL PER UTILITY AND MANUFACTURERS REQUIREMENTS.

SERVICE CONDUCTOR ENTRANCES SHALL BE RIGID METALLIC CONDUIT, NIPPLES AND/OR CONDULETS AS REQUIRED.

SERVICE CONDUCTOR ENTRANCES SHALL BE SIZED AND LOCATED AS REQUIRED BY THE LOCAL UTILITY AND IN ACCORDANCE WITH APPROPRIATE ARTICLES OF THE LATEST ACCEPTED NATIONAL ELECTRICAL CODE.

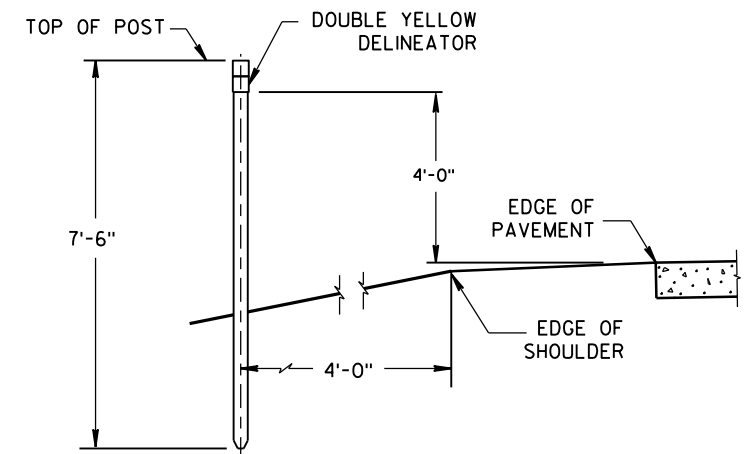
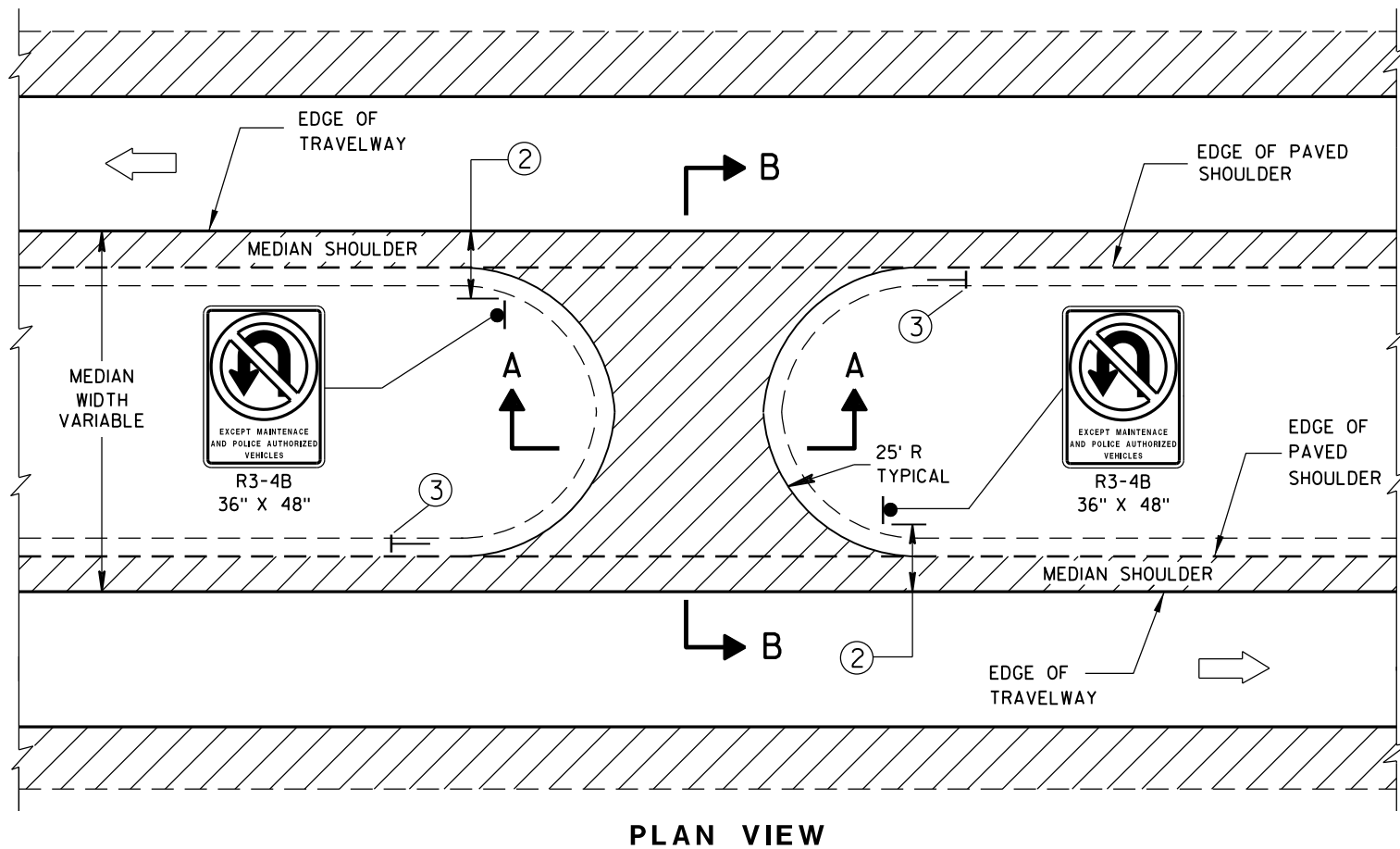
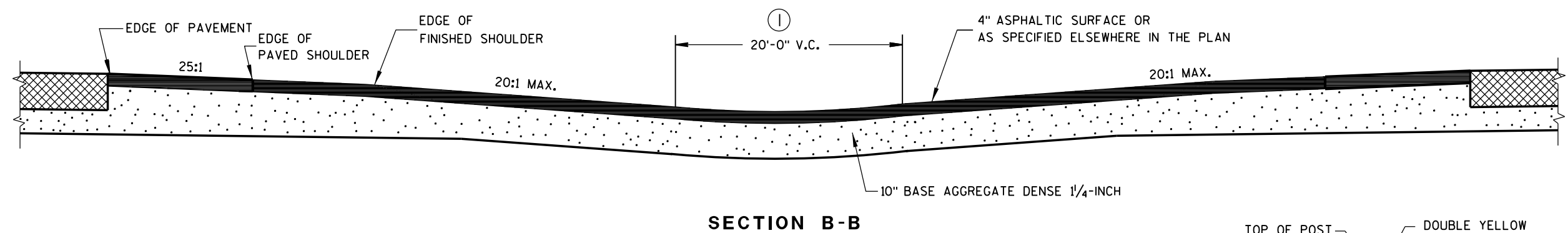
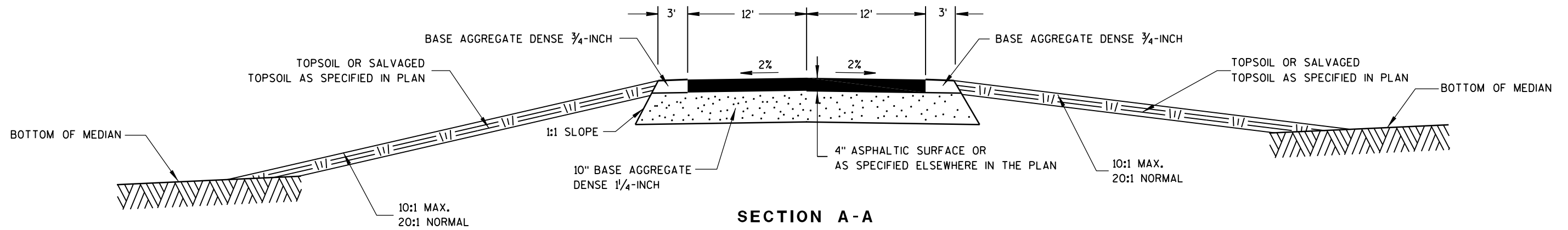
IF MORE THAN ONE GROUNDING ELECTRODE IS REQUIRED, THE DISTANCE APART SHALL BE 6 FEET OR PER LOCAL UTILITY REGULATIONS.

* SOME PEDESTAL LIGHTING PLANS SHOW MAIN LUGS ONLY.

CABINET SERVICE INSTALLATION
(METER BREAKER PEDESTAL)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/27/09
DATE
/S/ Joanna L. Bush
STATE ELECTRICAL ENGR 77
HWYS
FHWA



GENERAL NOTES

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

- ① ADJUST VERTICAL CURVE LOCATION Laterally TO MAINTAIN 20:1 MAX.
- ② SIGNING DETAILS AND SPECIFICATIONS ARE PROVIDED ELSEWHERE IN THE CONTRACT.
- ③ INSTALL DOUBLE YELLOW DELINEATOR. SEE STANDARD DETAIL DRAWING 15A2.

MAINTENANCE CROSSOVER FOR FREEWAYS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

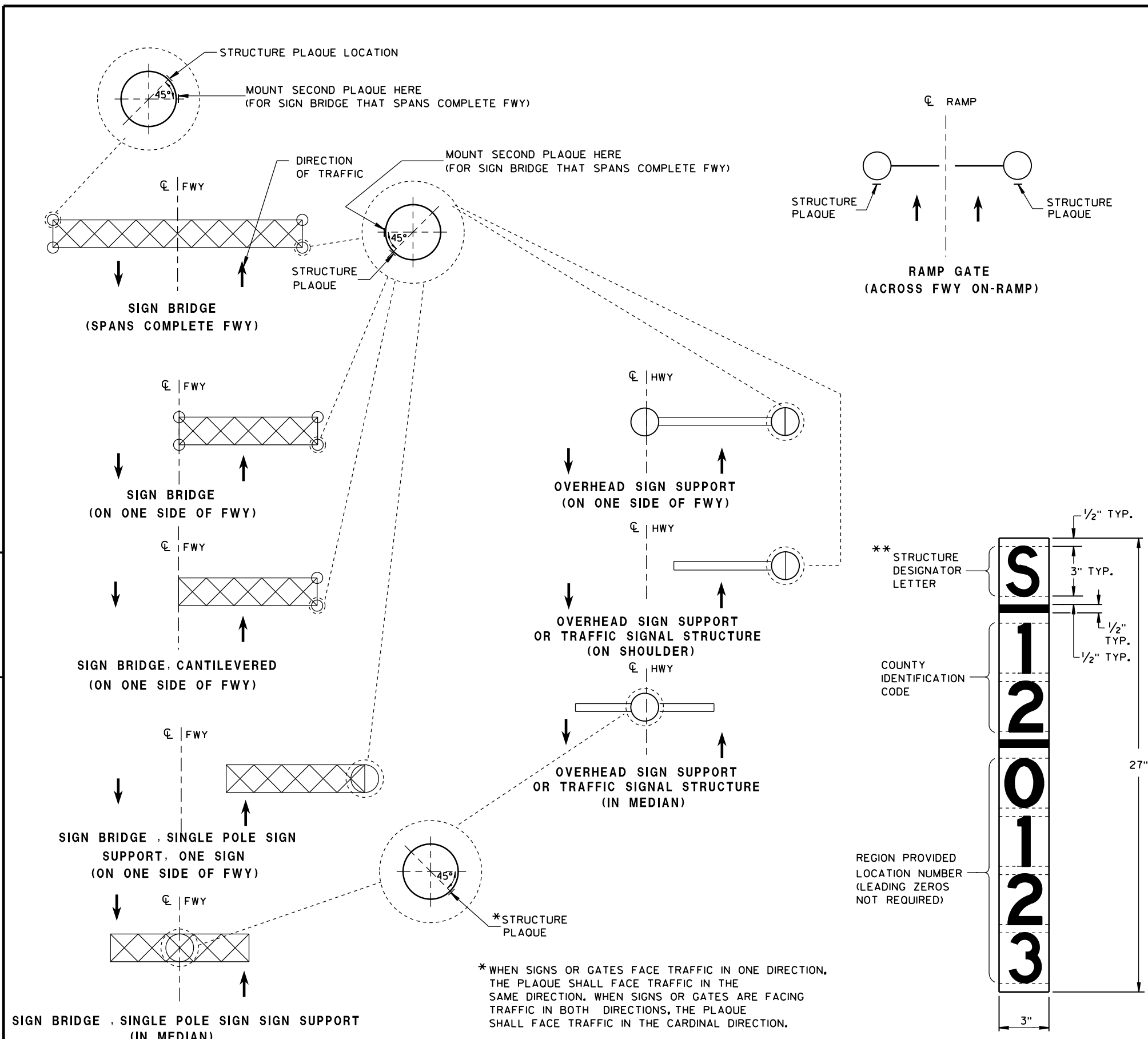
APPROVED

8/2013
DATE

FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER

NT



LOCATION OF RAMP GATE, SIGN BRIDGE, OVERHEAD SIGN SUPPORT & TRAFFIC SIGNAL STRUCTURE PLAQUES

RAMP GATE, SIGN BRIDGE, OVERHEAD SIGN SUPPORT AND TRAFFIC SIGNAL STRUCTURE PLAQUE FOR SIGN BRIDGES AND OVERHEAD SIGN SUPPORT WHICH ARE NOT STRUCTURE MOUNTED

GENERAL NOTES

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

PLAQUES SHALL BE INCIDENTAL TO ALL NEW INSTALLATIONS.

IF THE PROPOSED SIGN BRIDGE OR OVERHEAD SIGN SUPPORT IS REPLACING AN EXISTING SIGN BRIDGE OR OVERHEAD SIGN SUPPORT, A NEW IDENTIFICATION PLAQUE WILL BE REQUIRED.

FASTEN TOP, CENTER AND BOTTOM OF PLAQUE TO POLE OR OTHER LOCATION AS FOLLOWS:

- GALVANIZED STEEL SHAFT - 3 STAINLESS STEEL POP RIVETS
- A588 STEEL SHAFT - SHIM FOR DRAINAGE WITH STAINLESS WASHERS; FASTEN WITH STAINLESS SELF-TAPPING SCREWS
- ALUMINUM SHAFTS - 3 ALUMINUM POP RIVETS

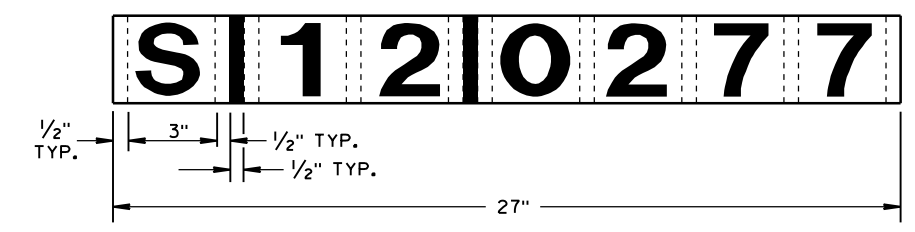
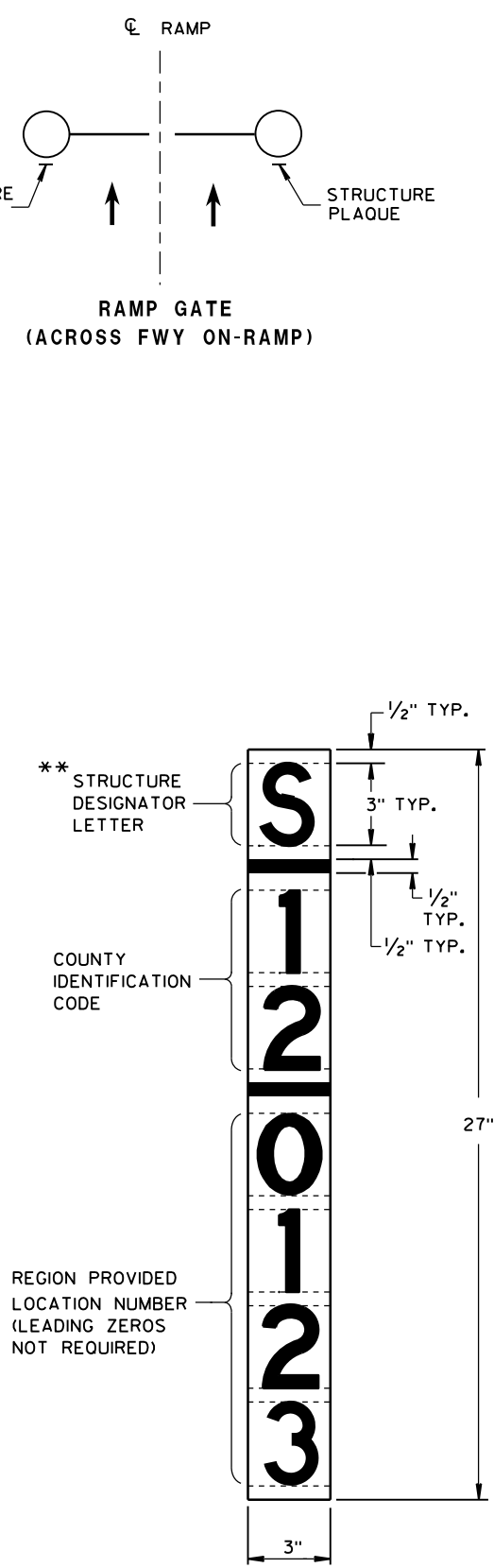
MOUNTING HEIGHT SHALL BE APPROXIMATELY 5.0' ABOVE CURB OR SHOULDER. ADJUST IF IT IS KNOWN THAT REQUIRED TRAFFIC SIGNS WILL OBSTRUCT.

PLAQUE MATERIALS:

- BASE - SHEET ALUMINUM, 0.060" THICK.
- FACE - WHITE, SELF-ADHESIVE VINYL SHEETING, NON-RETROREFLECTIVE
- LINES - BLACK, 1/2" WIDE, SELF-ADHESIVE
- CHARACTERS:- BLACK, SELF ADHESIVE, SERIES "D", SIZE AS SHOWN.

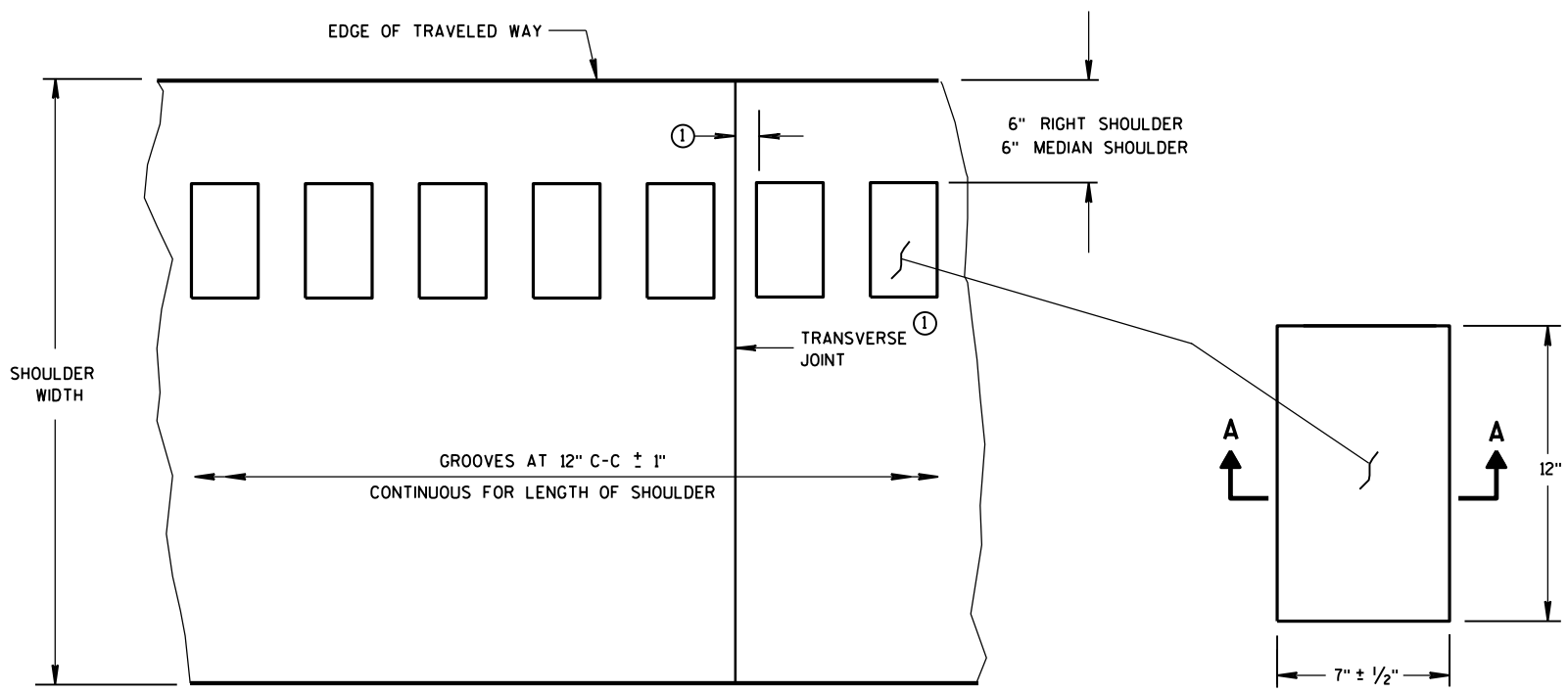
FOR SIGN BRIDGES, STRUCTURE MOUNTED, THE STRUCTURE PLAQUE SHALL BE MOUNTED HORIZONTALLY AS SHOWN ON THE DRAWING. THE STRUCTURE PLAQUE SHALL BE MOUNTED HORIZONTALLY TO THE BACK OF THE SIGN, BETWEEN THE ALUMINUM EXTRUSIONS, NEAR THE TOP LEFT HAND CORNER OF THE SIGN. THE BASE MATERIAL SHALL BE OMITTED AND THE FACE ADHERED DIRECTLY TO THE ALUMINUM SURFACE. PRIOR TO ADHERING THE MATERIAL, THE ALUMINUM SURFACE SHALL BE SMOOTH, CLEAN AND DRY.

WHERE SIGN BRIDGE ILLUMINATION IS PROVIDED, THE STRUCTURE MUST ALSO HAVE A SIGN BRIDGE CIRCUIT PLAQUE AS SHOWN IN THE ELECTRICAL DETAILS.

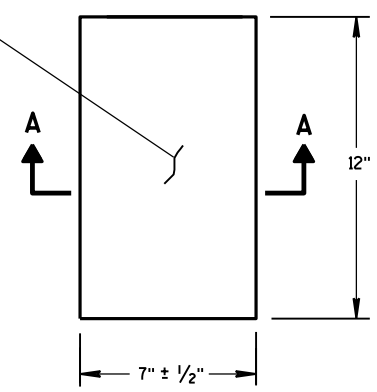


** LETTER "G" UTILIZED FOR RAMP GATES. LETTER "S" UTILIZED FOR SIGN BRIDGES, OVERHEAD SIGN SUPPORTS, AND TRAFFIC SIGNALS.

STRUCTURE IDENTIFICATION PLAQUES, RAMP GATES, SIGN BRIDGES, OVERHEAD SIGN SUPPORTS, & TRAFFIC SIGNALS		
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION		
APPROVED 12/4/2012 DATE	/S/ Travis Feltes STATE TRAFFIC ENGINE 79	SIGN
FHWA		



PLAN VIEW
SHOULDER WITH GROOVES



PLAN VIEW
(SINGLE GROOVE)

PLACEMENT DETAIL FOR MILLED RUMBLE STRIP

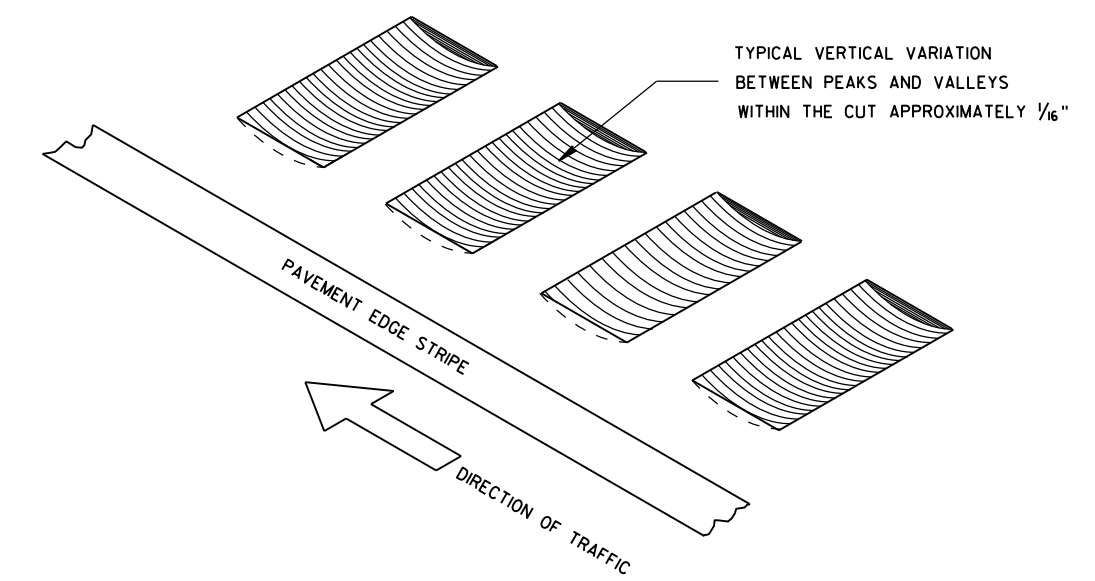
GENERAL NOTES

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

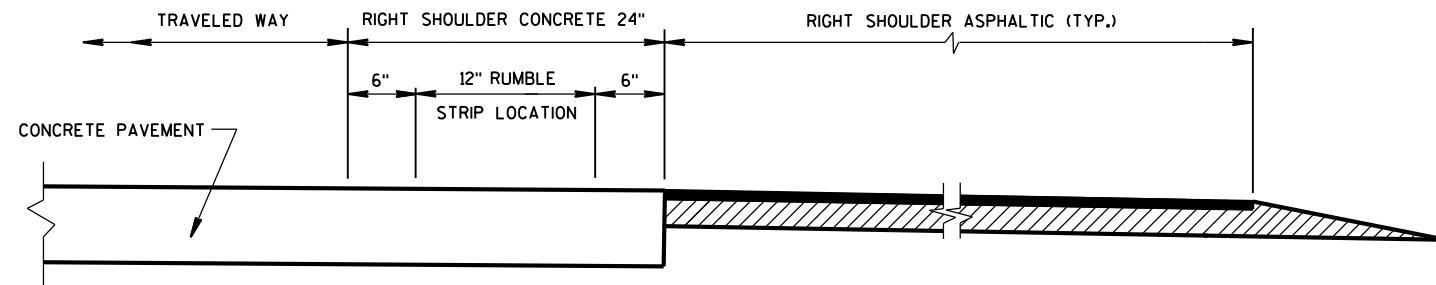
RUMBLE STRIPS ON EXPRESSWAYS

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.

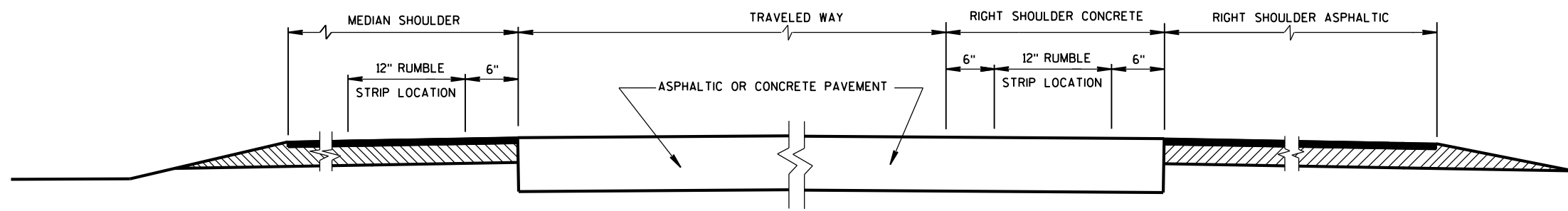
① CONCRETE PAVEMENT - RUMBLE STRIPS SHALL BE A MINIMUM OF 6" AWAY FROM TRANSVERSE JOINTS.



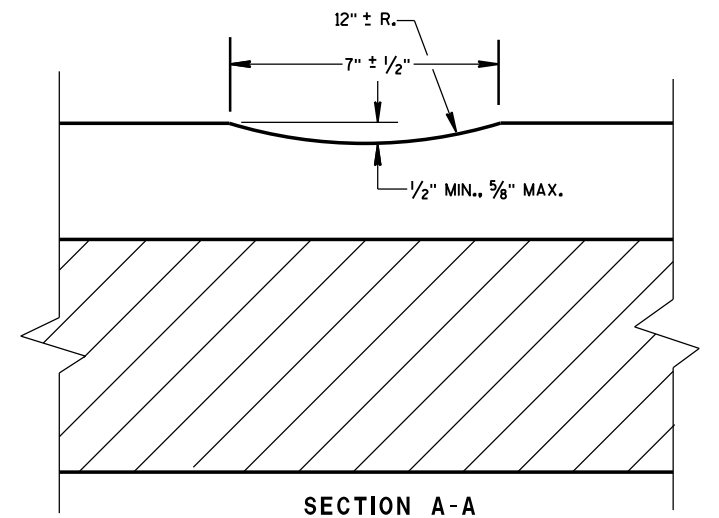
ISOMETRIC



SECTION VIEW
CONCRETE PAVEMENT EXTENDS INTO RIGHT SHOULDER)



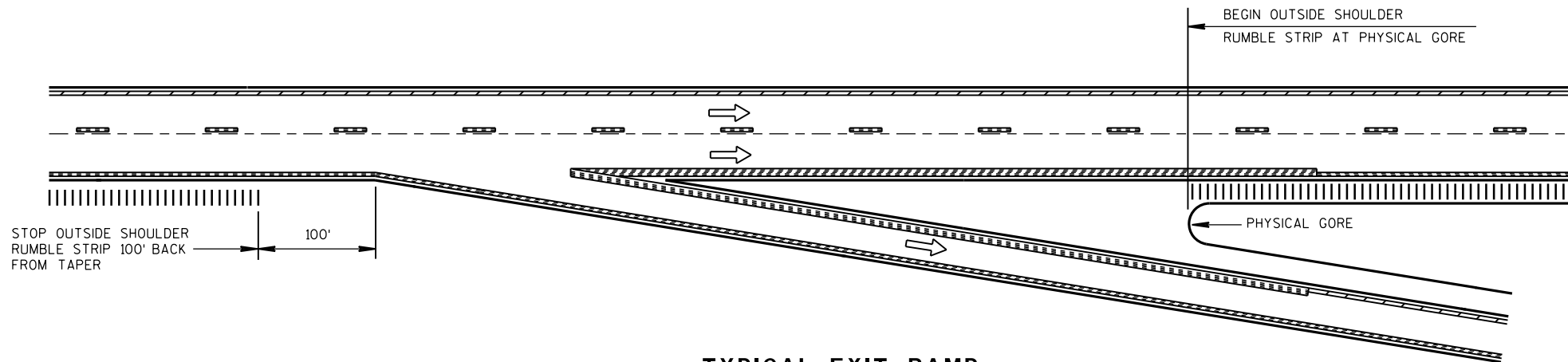
SECTION VIEW
TYPICAL LOCATIONS OF SHOULDER RUMBLE STRIPS
IN RURAL DIVIDED HIGHWAYS
(ONE ROADWAY IS SHOWN)



SECTION A-A

SHOULDER RUMBLE STRIP,
MILLING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



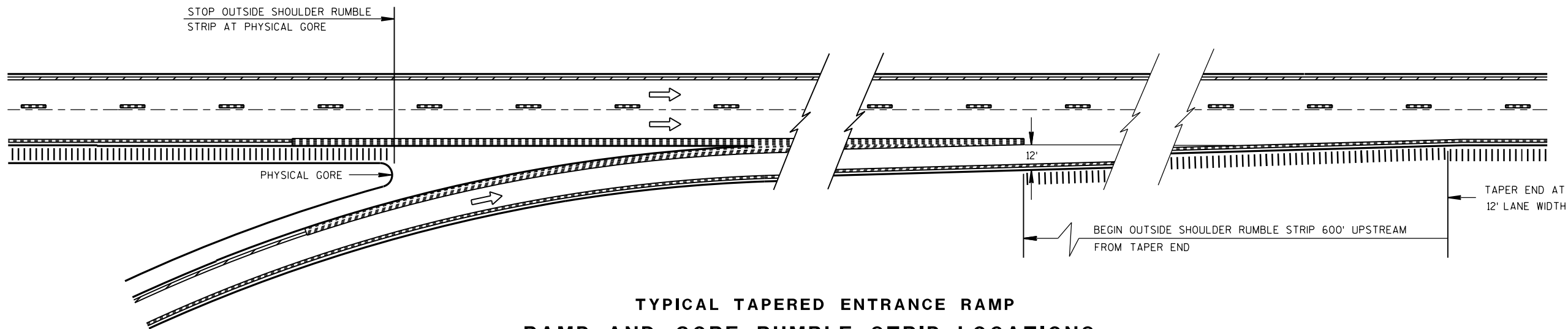
TYPICAL EXIT RAMP

NOTES:

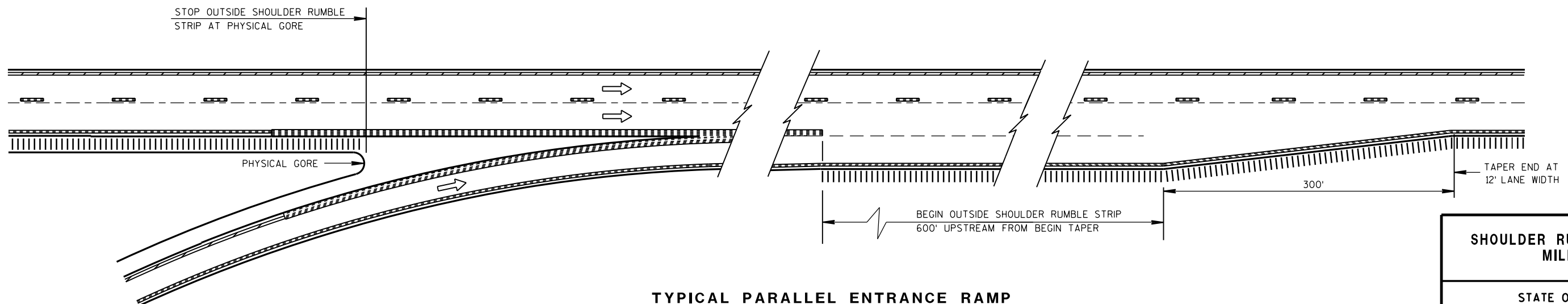
NO RUMBLE STRIP ON EXIT, DIRECTIONAL, OR ENTRANCE RAMPS, EXCEPT NEAR THE ENTRANCE TAPER END AND ALONG THE PARALLEL RAMP AREA AS SHOWN.

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**

**SHOULDER RUMBLE STRIP,
MILLING**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

12/17/2012
DATE

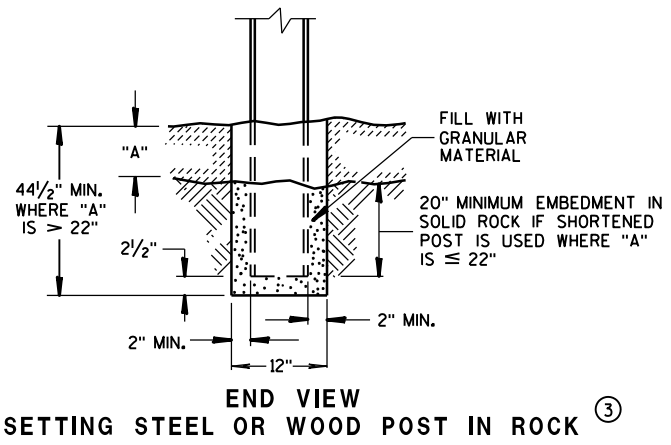
FHWA

/S/ Jerry H. Zoagg
ROADWAY STANDARDS ENGINEER

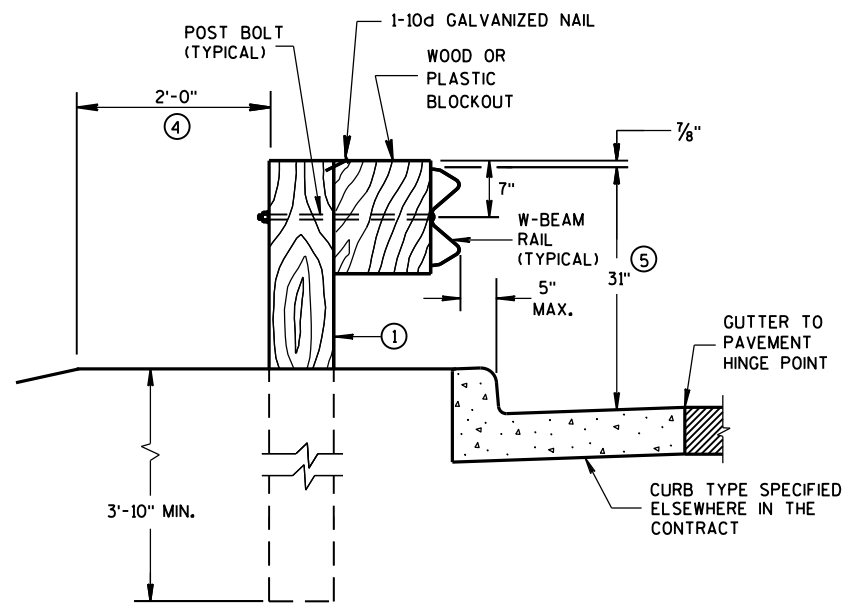
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GENERAL NOTES

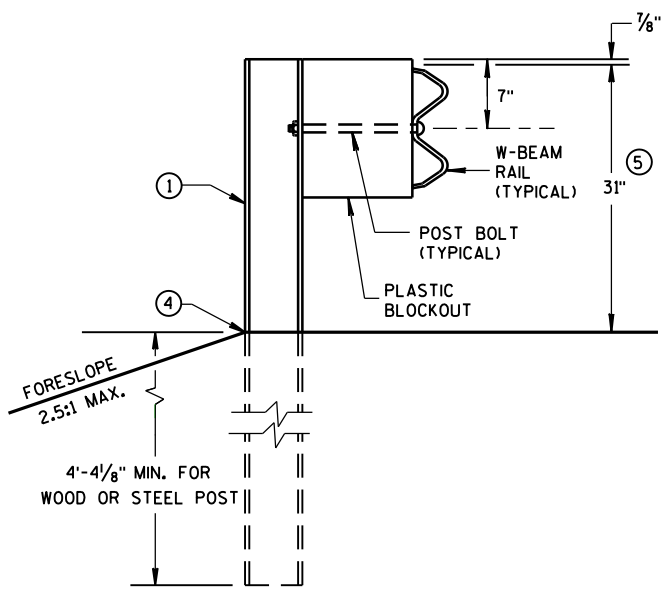
- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL.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



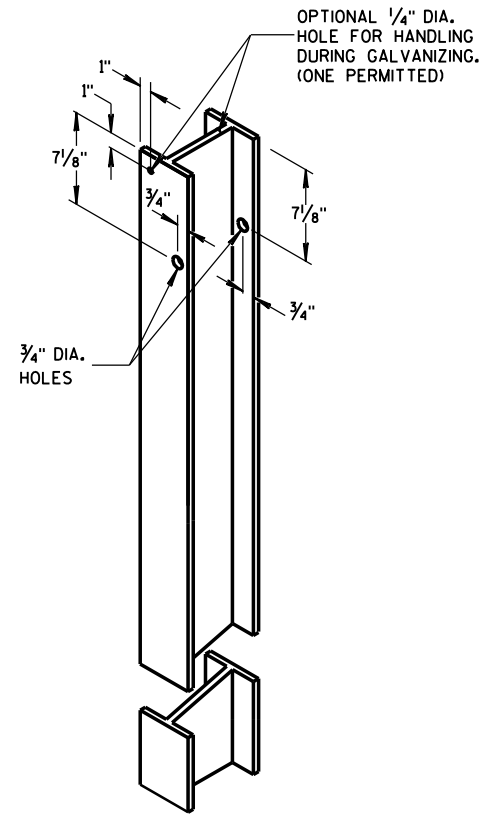
END VIEW
SETTING STEEL OR WOOD POST IN ROCK ③



END VIEW
LOCATED ALONG A CURBED ROADWAY



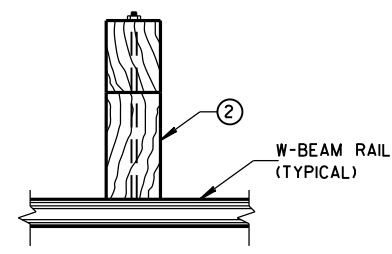
END VIEW
MGS LONGER POST AT HALFPST SPACING W BEAM (K)



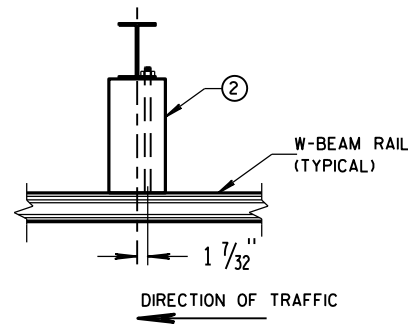
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) ①



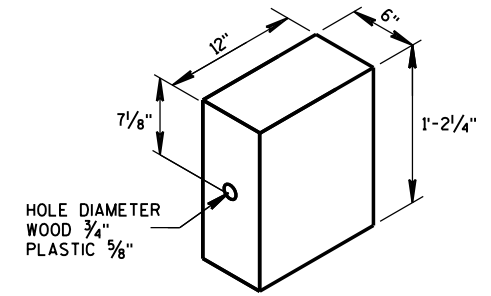
WOOD POST
(6" X 8") NOMINAL ①



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



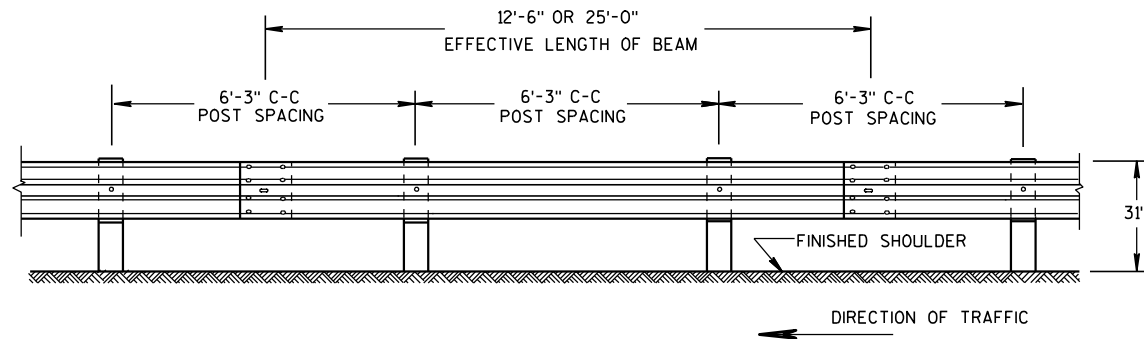
PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM



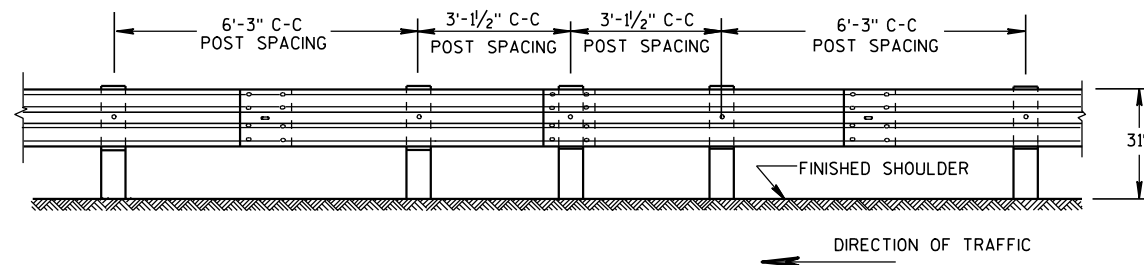
WOOD OR
PLASTIC BLOCKOUT ②

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

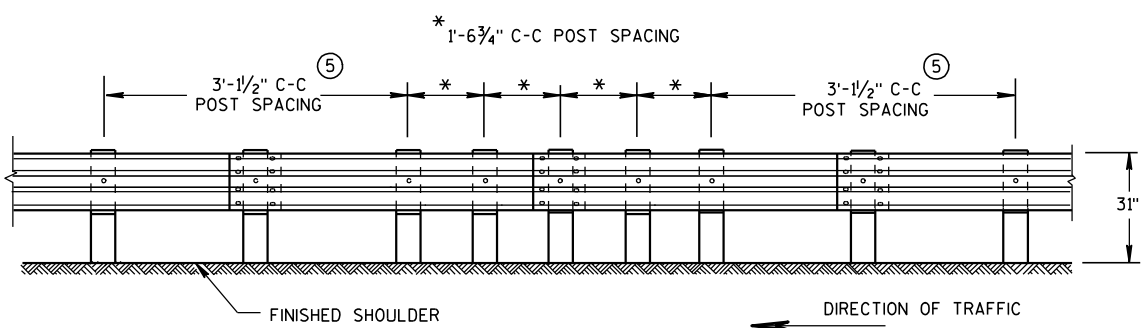
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



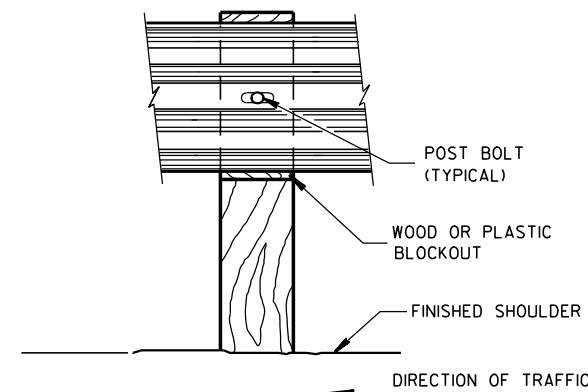
FRONT VIEW
POST SPACING STANDARD INSTALLATION



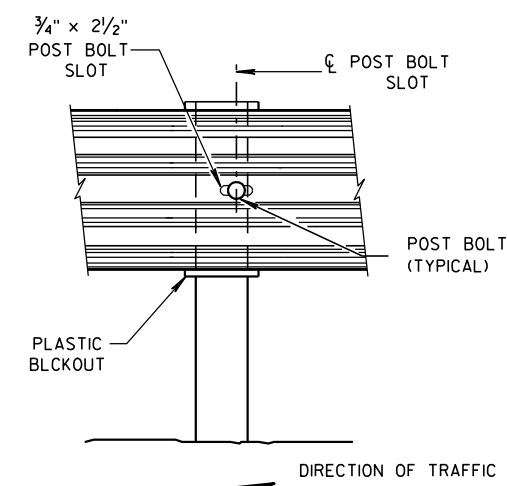
FRONT VIEW
**HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



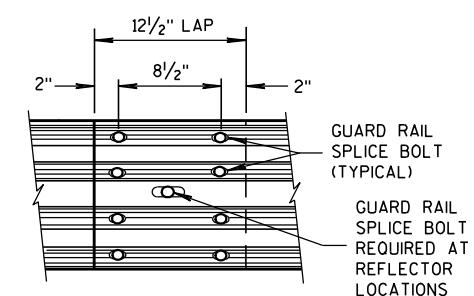
FRONT VIEW
QUARTER POST SPACING (QS)



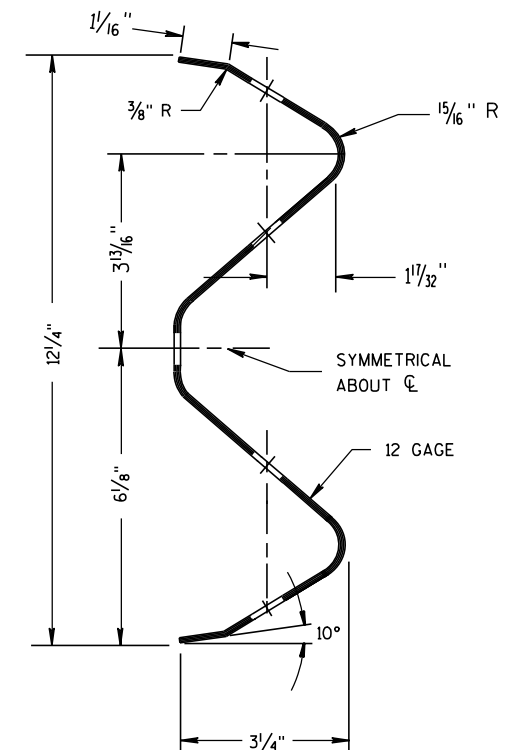
FRONT VIEW AT WOOD POST



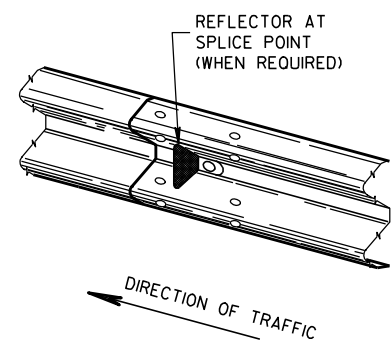
FRONT VIEW AT STEEL POST



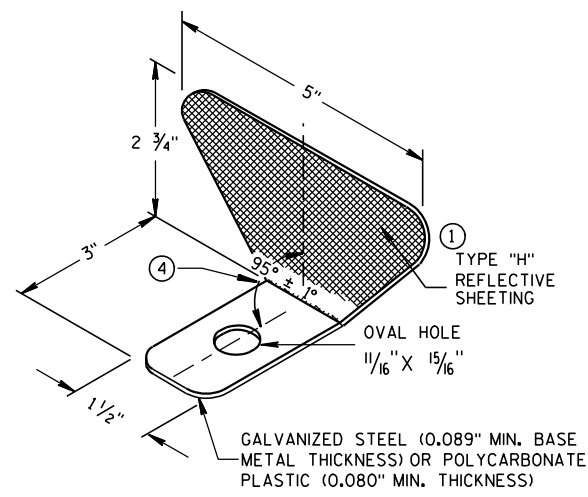
FRONT VIEW
MID-SPAN BEAM SPLICE



SECTION THRU W-BEAM RAIL



ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION



GENERAL NOTES

- ① PROVIDE TYPE "H" SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH TYPE "H" YELLOW REFLECTIVE SHEETING.
- ② DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.
- ③ REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.
- ④ PROVIDE AN ANGLE OF BEND OF 90° ± 1° FOR TWO-SIDED REFLECTORS.
- ⑤ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

POST BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 5/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

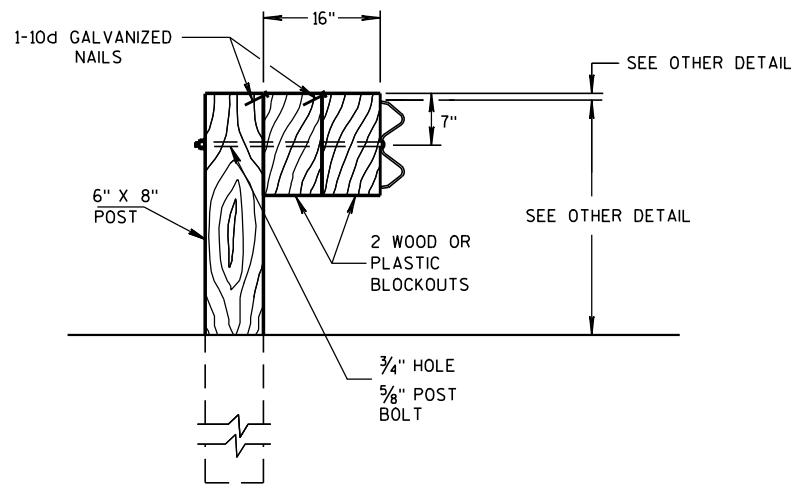
GUARD RAIL SPLICE BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.

REFLECTOR SPACING

	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200'	50' C-C	1	3
	> 200'	100' C-C	1	
TWO WAY TRAFFIC	< 200'	25' C-C	1 ③	6
	> 200'	50' C-C	1	
TWO WAY TRAFFIC	< 200'	50' C-C	2 ④	3
	> 200'	100' C-C	2	

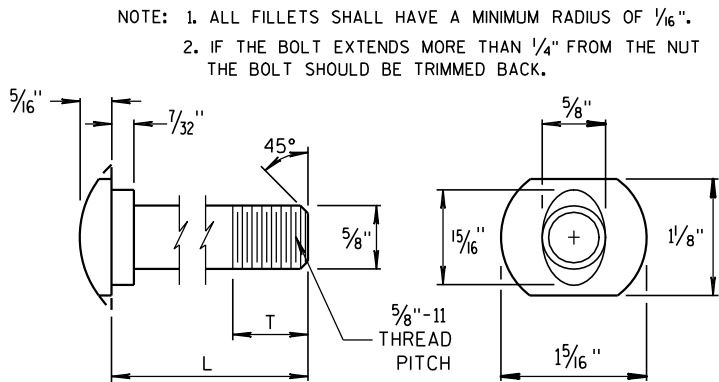
MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

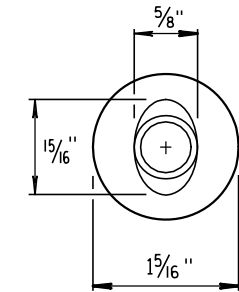


DETAIL FOR 16" BLOCKOUT DEPTH

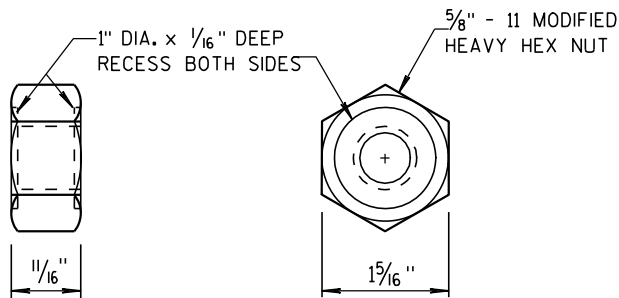
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



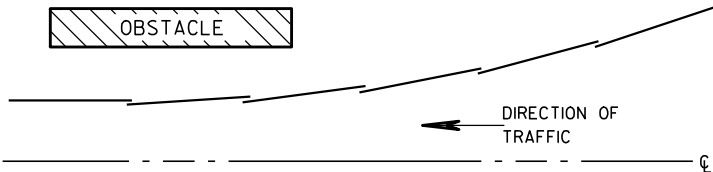
POST BOLT TABLE



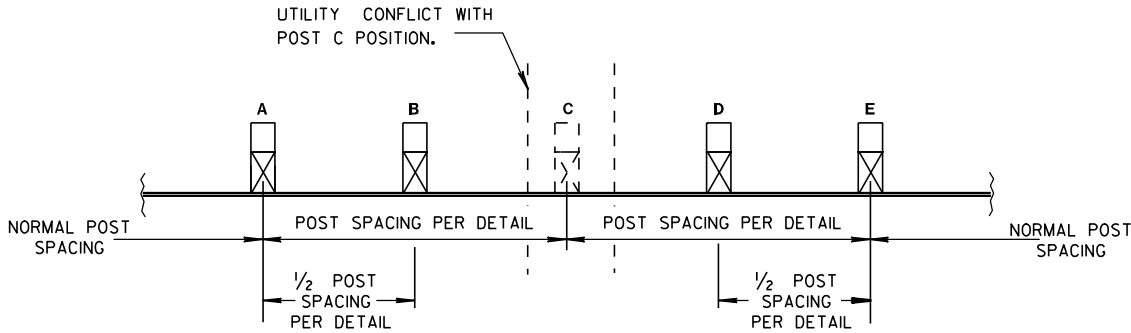
ALTERNATE BOLT HEAD



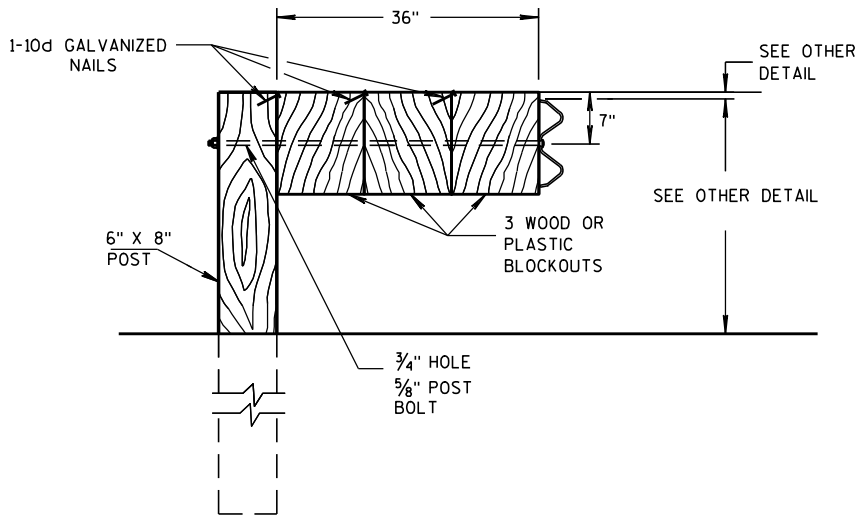
POST BOLT AND RECESS NUT



PLAN VIEW
BEAM LAPPING DETAIL



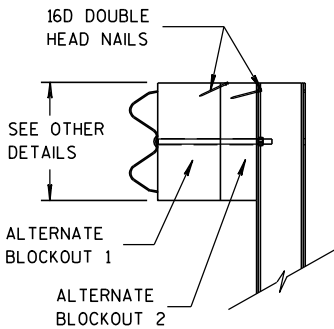
POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



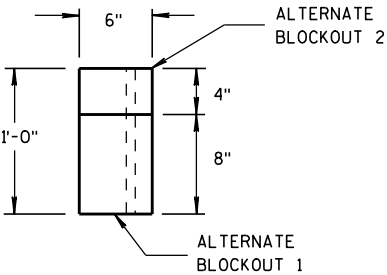
DETAIL FOR 36" BLOCKOUT DEPTH

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.



SIDE VIEW



TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
DATE 11/15/2011
FHW

15/ Jerry H. 3000
ROADWAY STANDARDS 84
ENGINEER ENT

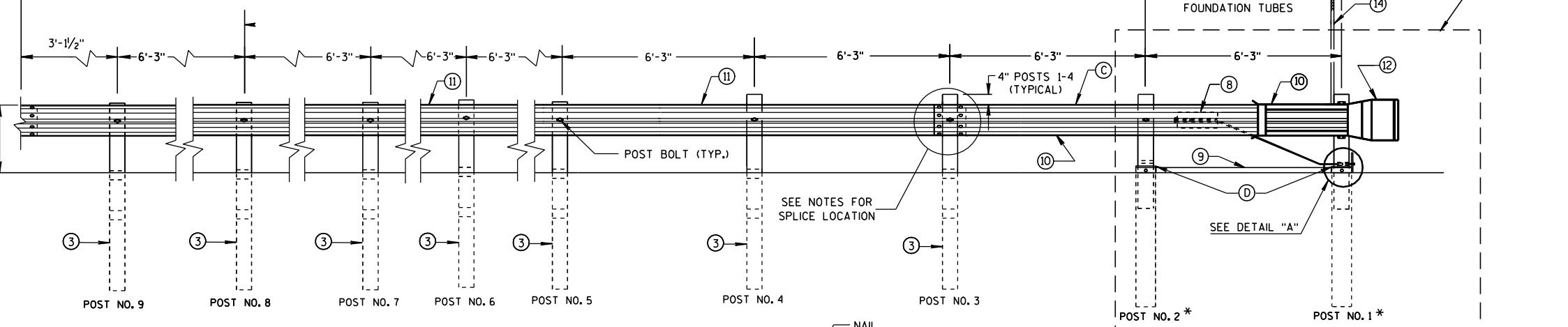
6

- S.D.D. 14 B 44-1a**

* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

W-BEAM RAIL SPLICES ARE LOCATED AT POST NUMBER 3, AND BETWEEN POST 5 AND 6, BETWEEN POSTS 7 AND 8, AND MIDDLE OF THE SPAN AFTER POST 9.

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 (+ 3/4")



A circular inset diagram showing a close-up of a nail being driven into a wooden board. The nail is angled downwards and to the right. A label 'NAIL' points to the nail head. A label 'B' points to the nail's shaft. A label '5' points to the nail's head. A label '6' points to the board's surface. Dashed lines indicate the nail's path into the wood.

EDGE OF SHOULDER

2'-0" OFFSET TO FACE OF RAIL

5'-0" MIN. TO HINGE POINT

SHOULDER HINGE POINT

SLOPE 10:1 OR FLATTER

SLOPE 4:1 OR FLATTER

NORMAL SLOPE

NAILS

DETAIL "A"

14

13

1

2

F

12

6

8

C

10

14

12

1

7

1

9

D

FINISHED GROUND ELEVATION

BOTTOM OF STRUT IS PLACED FLUSH WITH AND PARALLEL TO THE FINISHED SURFACE

2

2

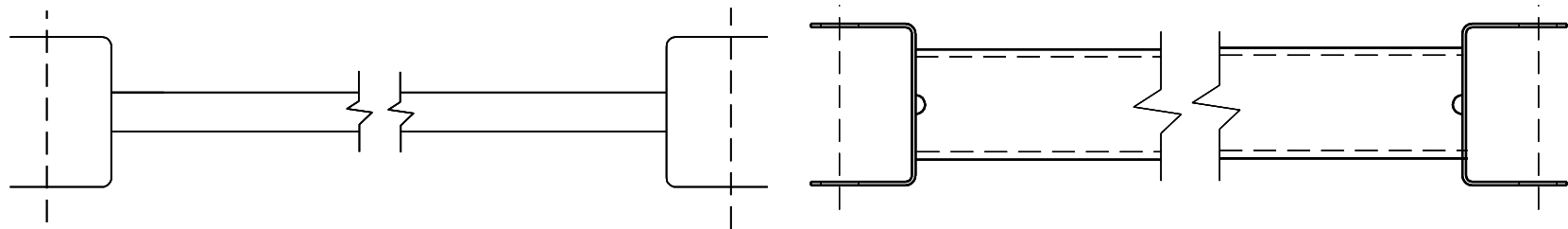
POST NO. 2*

DETAIL "B"

POST NO. 1*

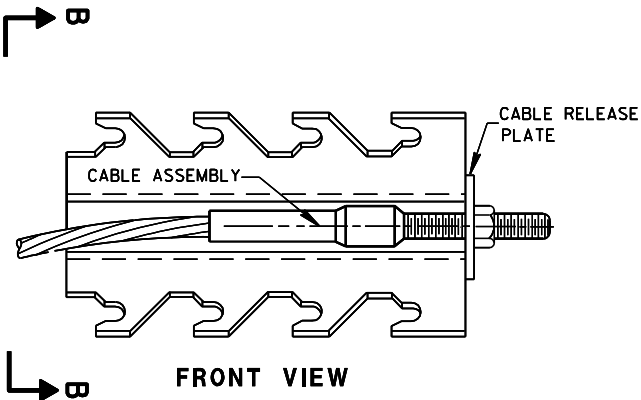
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

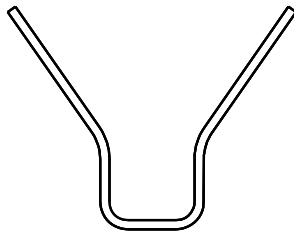


GENERIC GROUND STRUT

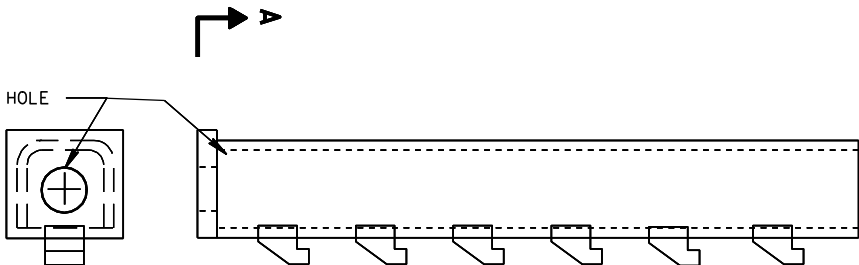
9 H



FRONT VIEW



SECTION B-B



SECTION A-A

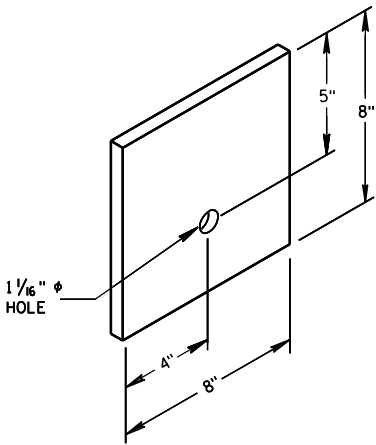
PLAN VIEW

GENERIC ANCHOR CABLE BOX

8 H

BILL OF MATERIALS

PART NO.	DESCRIPTION
MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.	
①	WOOD BREAKAWAY POST
②	6" X 8" X 0.188", 6'-0" LONG FOUNDATION TUBE AT POSTS 1 AND 2
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	END SECTION EAT
⑬	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE H (ONLY THE SHEETING IS SUPPLIED BY THE MANUFACTURER)
⑭	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)

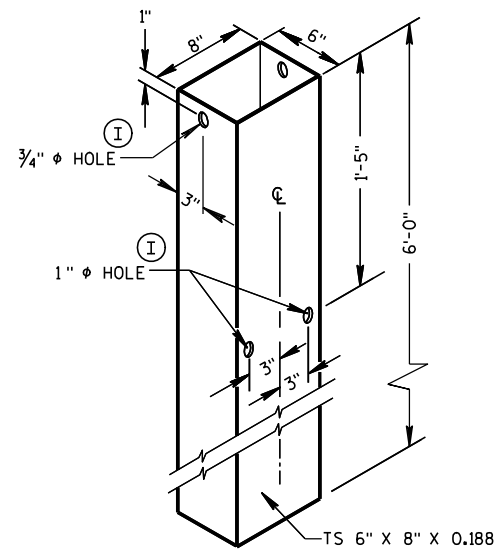


BEARING PLATE

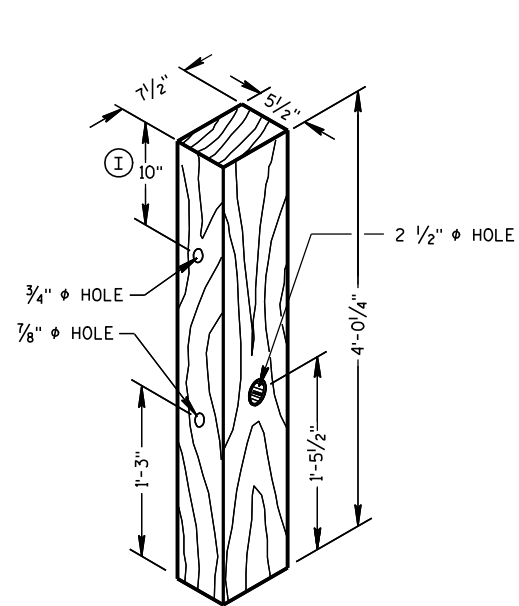
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MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

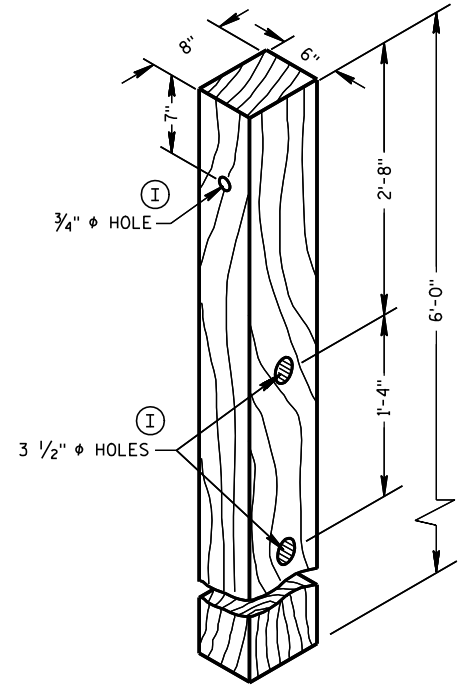
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



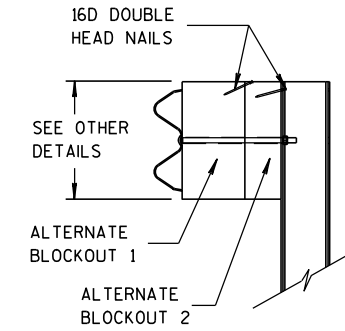
FOUNDATION TUBE ②



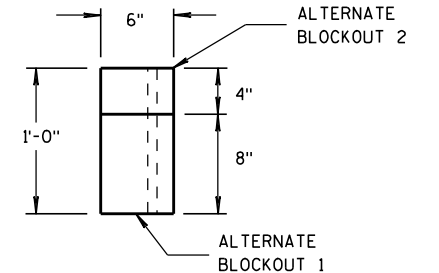
WOOD BREAKAWAY POST ①



WOOD CRT POST ③

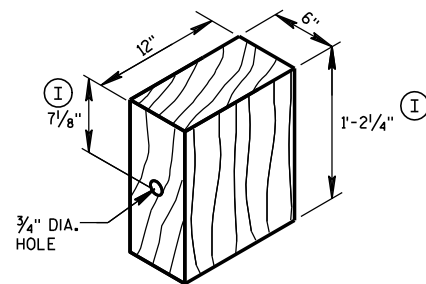


SIDE VIEW



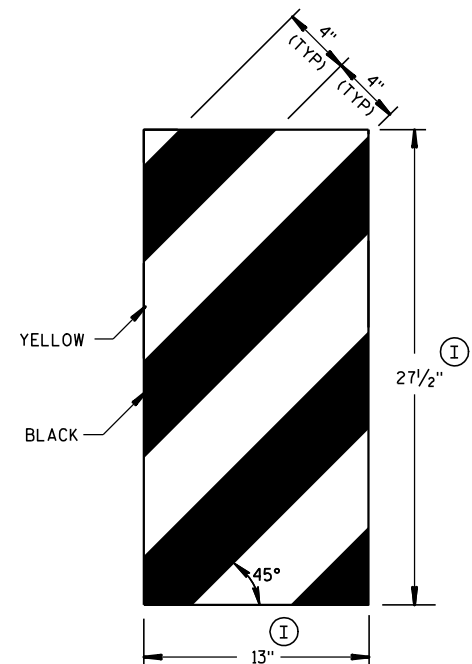
TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

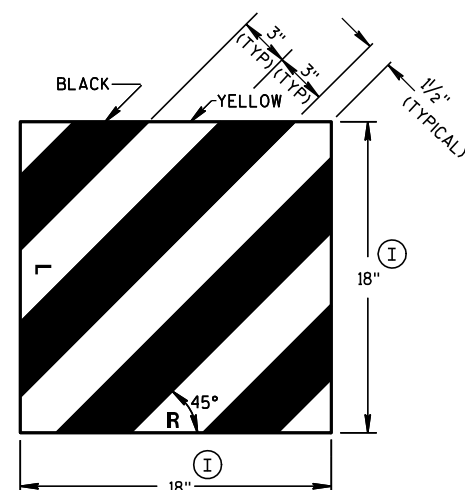


WOOD BLOCKOUT ④

YELLOW REFLECTIVE TAPE
3" X 9" TYPE H
REFLECTIVE SHEETING



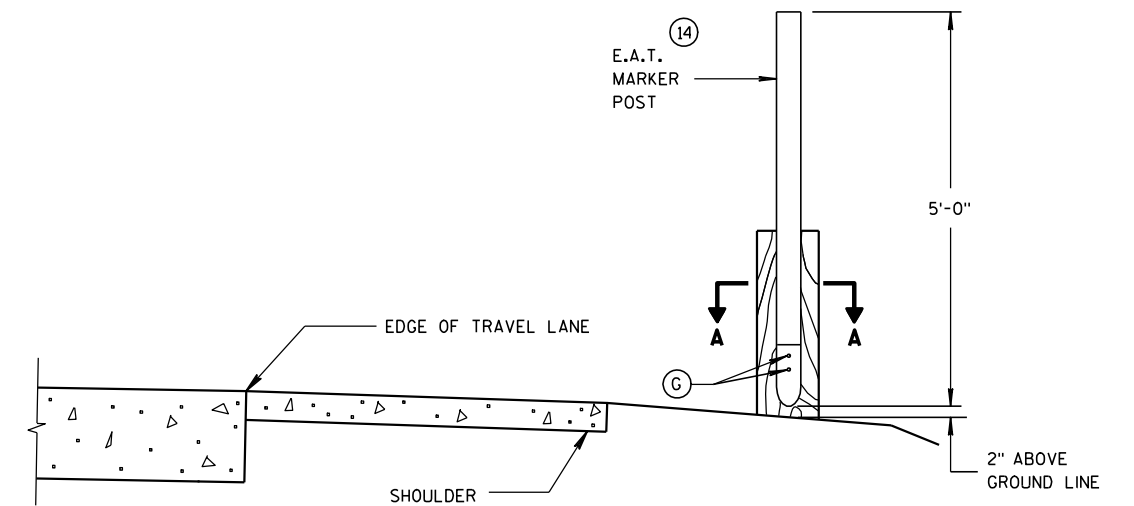
GENERIC REFLECTIVE SHEETING ⑬ ④



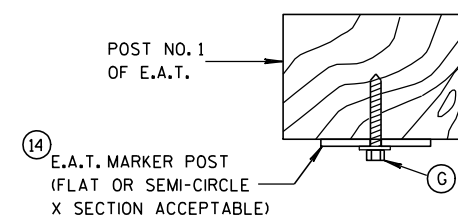
FRONT VIEW

SIDE VIEW

E.A.T. MARKER POST ⑭



TYPICAL INSTALLATION OF E.A.T.
MARKER POST BACKSIDE OF POST NO. 1
(E.A.T. AND RAIL REMOVED FOR CLARITY)

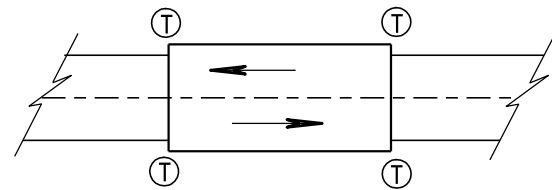


SECTION A-A

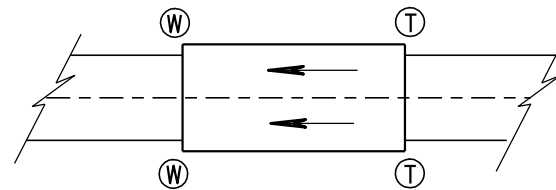
MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
5/23/2011 /S/ Jerry H. 3000
DATE ROADWAY STANDARDS 87 1ENT
FHWA ENGINEER



TWO WAY TRAFFIC



ONE WAY TRAFFIC

Ⓣ THRIE BEAM CONNECTION

Ⓦ W-BEAM CONNECTION WHEN REQUIRED

GENERAL NOTES

BOLT THE THRIE BEAM TO ALL POSTS AND BLOCKOUTS. DRILL OR PUNCH BOLT HOLES IN THE BEAM IF THE POST SPACING IS LESS THAN 6'-3".

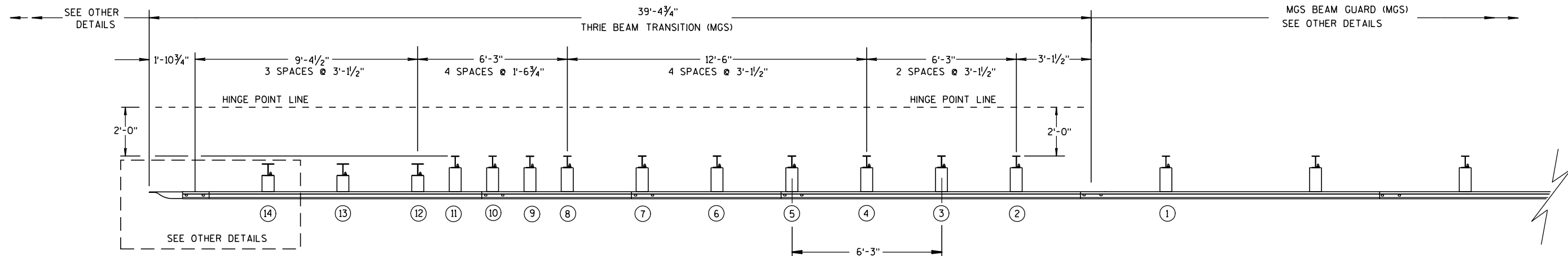
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2½", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

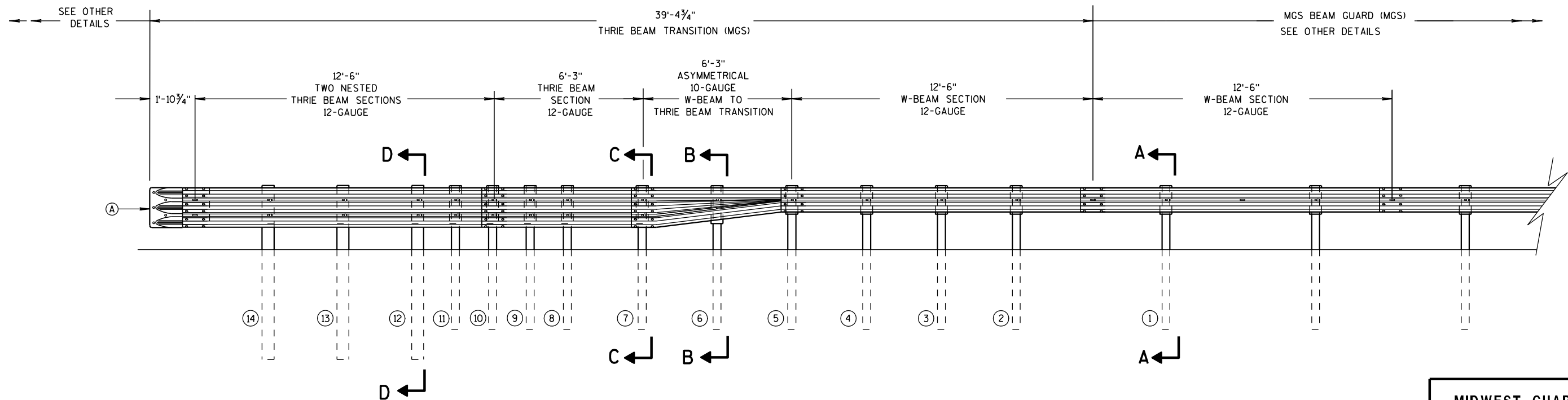
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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

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



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

88

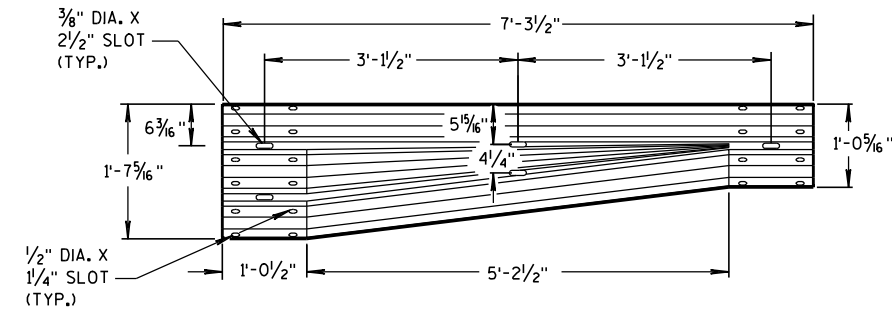
6

S.D.D. 14 B 45-3b

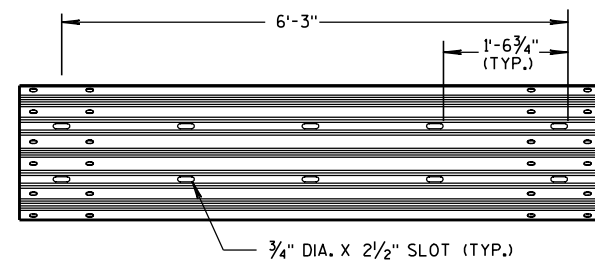


STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

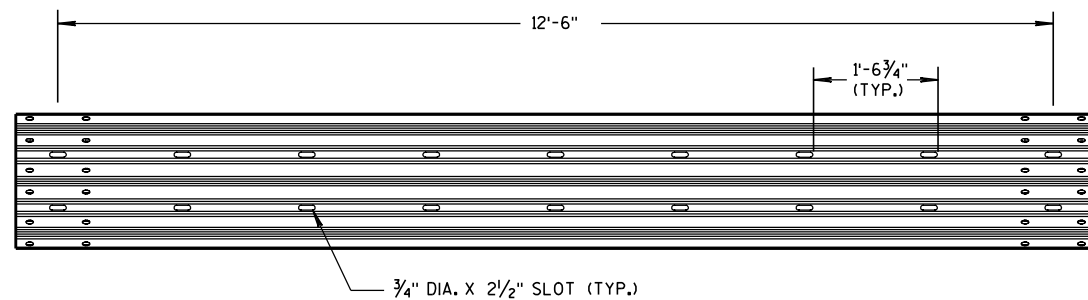
S.D.D. 14 B 45-3b



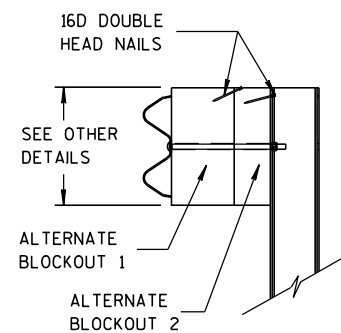
W-BEAM TO THRIE BEAM TRANSITION SECTION



6'-3" THRIE BEAM SECTION

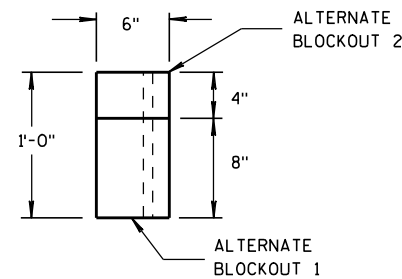


12'-6" THRIE BEAM SECTION

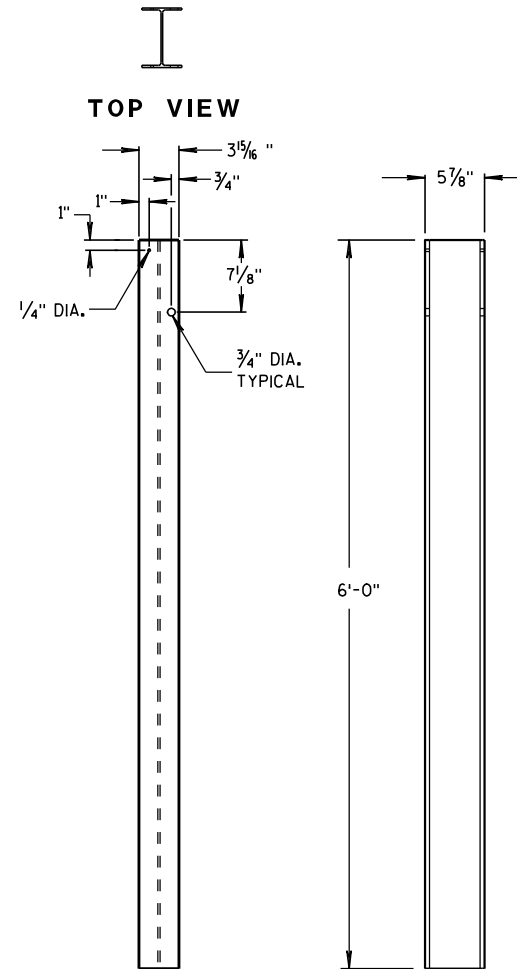


SIDE VIEW

ALTERNATE WOOD BLOCKOUT DETAIL



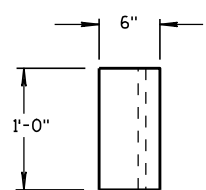
TOP VIEW



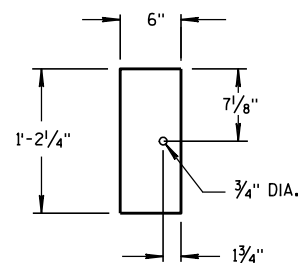
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

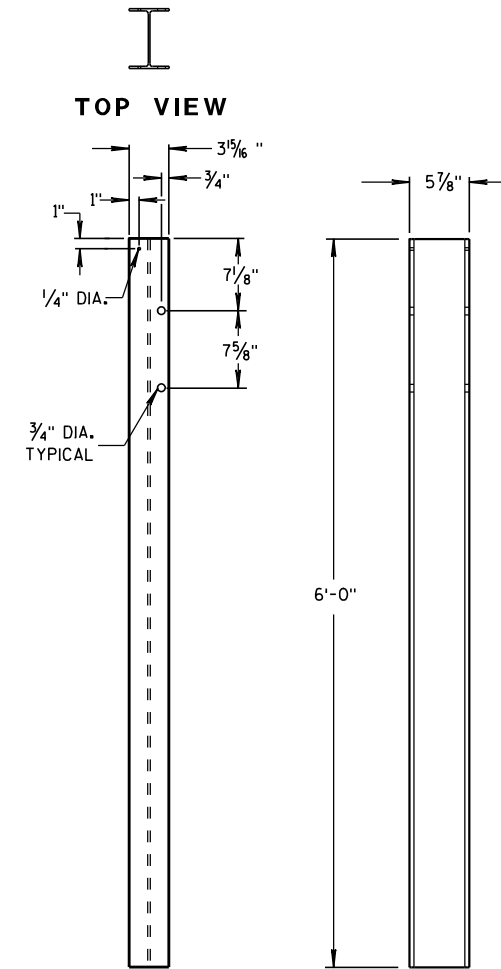


TOP VIEW



FRONT VIEW

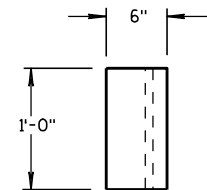
BLOCKOUT POSTS 1-5



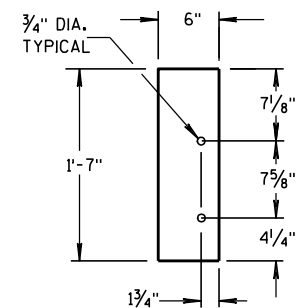
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-11

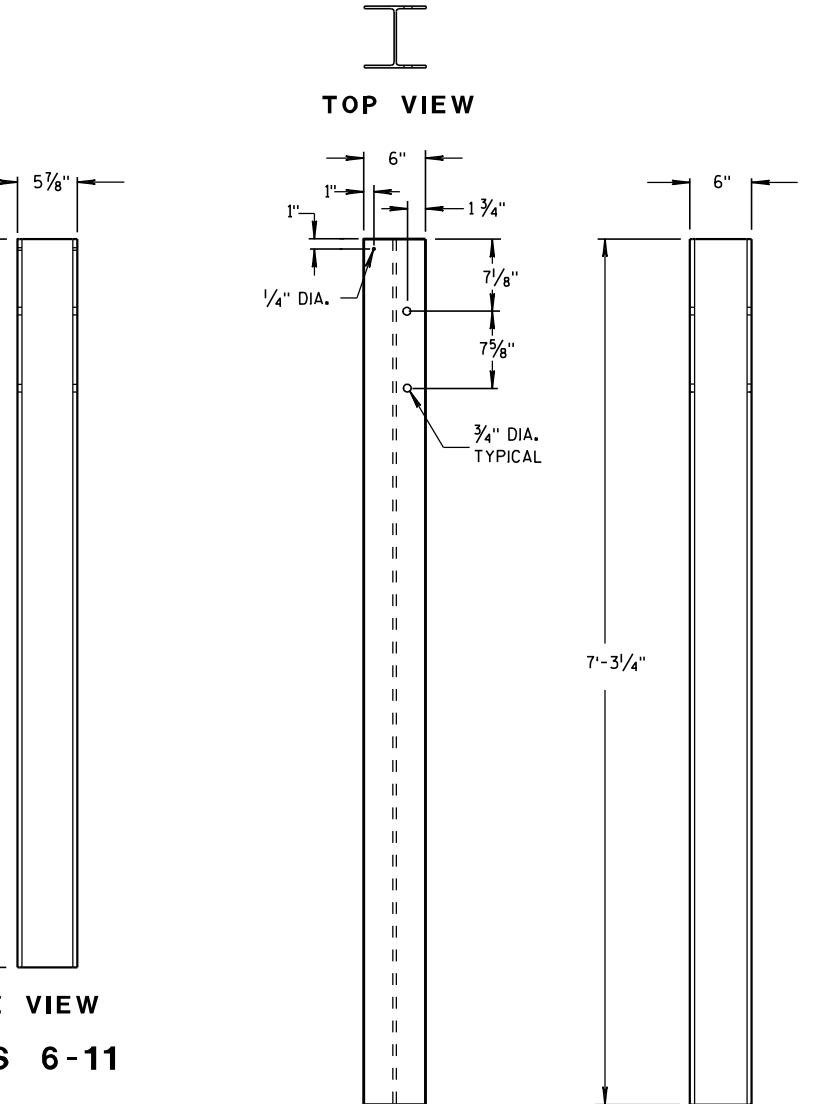


TOP VIEW



FRONT VIEW

BLOCKOUT POSTS 6-11



FRONT VIEW

SIDE VIEW

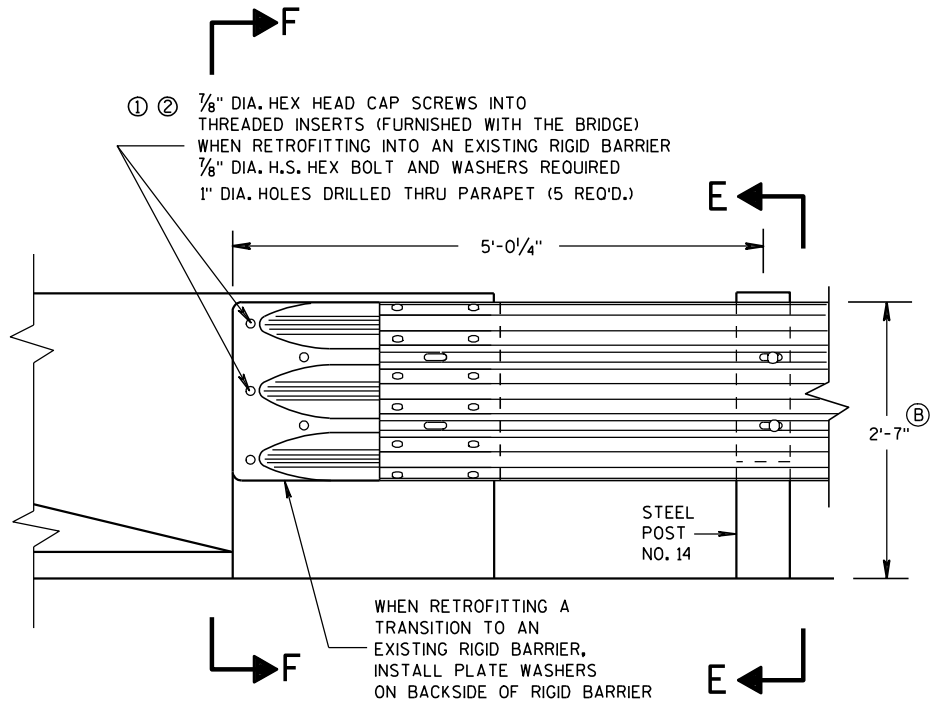
STEEL POSTS 12-14

STEEL POST SIZES

POST NUMBER	SECTION TYPE	LENGTH
①	W6x9	72"
②	W6x9	72"
③	W6x9	72"
④	W6x9	72"
⑤	W6x9	72"
⑥	W6x9	72"
⑦	W6x9	72"
⑧	W6x9	72"
⑨	W6x9	72"
⑩	W6x9	72"
⑪	W6x9	72"
⑫	W6x15	87 1/8"
⑬	W6x15	87 1/8"
⑭	W6x15	87 1/8"

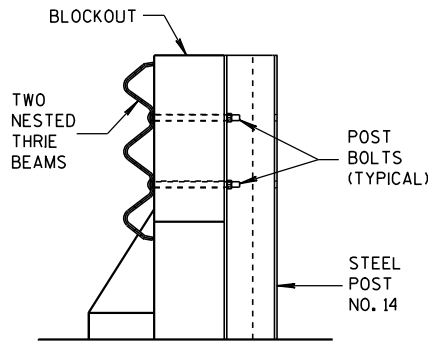
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



FRONT VIEW

THRIE BEAM CONNECTION TO BRIDGE
PARAPET WITH SQUARE ENDS

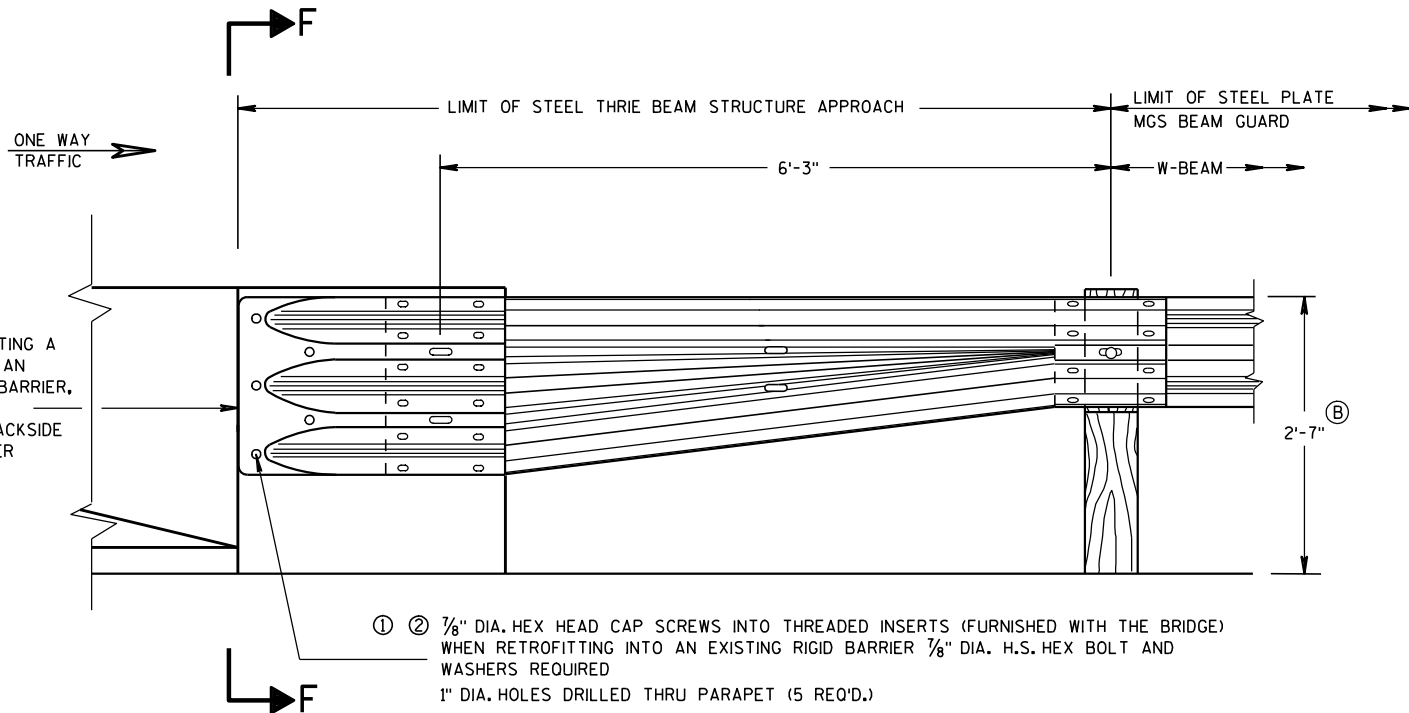


SECTION E-E

GENERAL NOTES

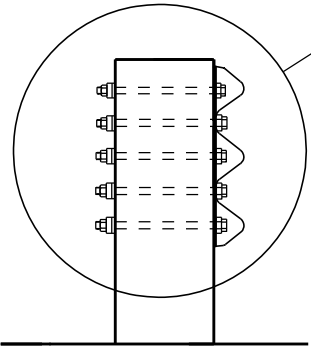
THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

- ① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ② 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 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ③ 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".
- (B) TOLERANCE FOR TOP OF BEAM IS ± 1".

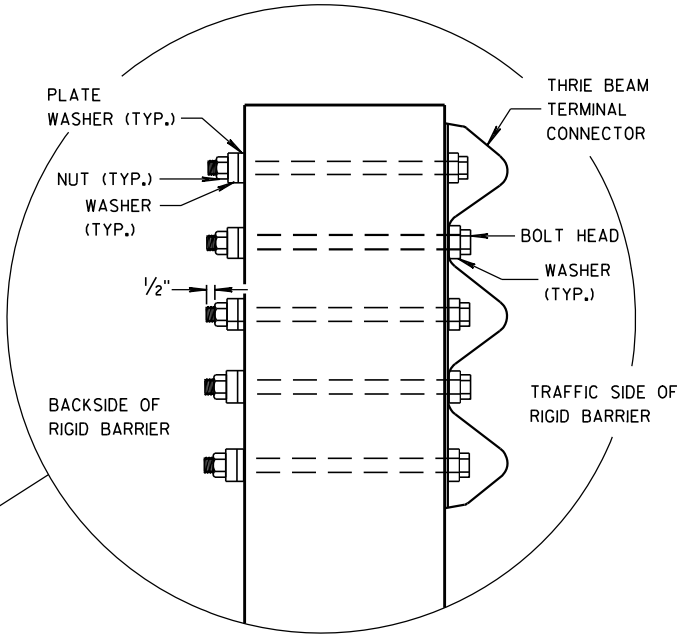


FRONT VIEW

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



SECTION F-F

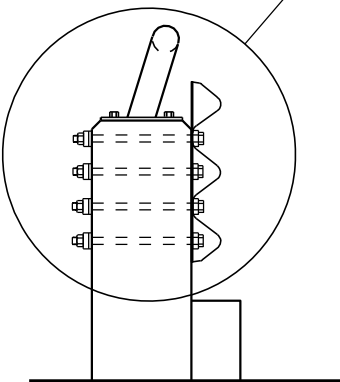
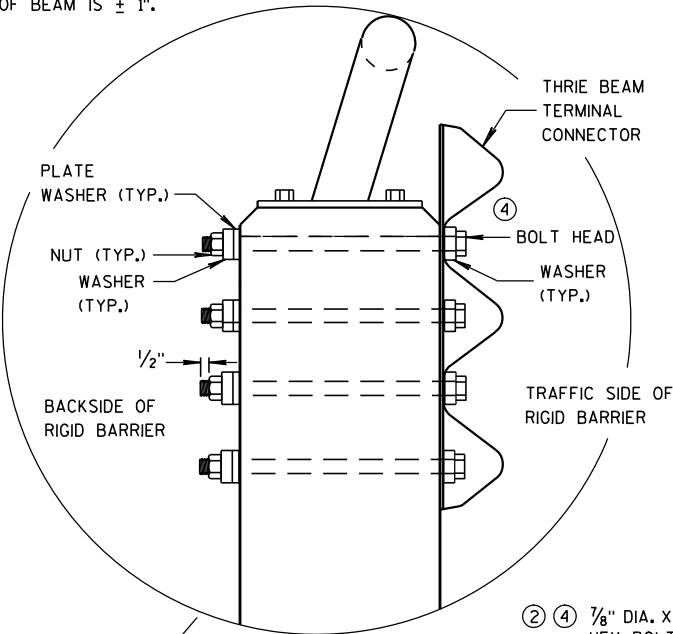


MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
APPROVED	8/31/2012	/S/ Jerry H. Zapp	ENT
	DATE	ROADWAY STANDARDS	ENGINEER
FHWA			

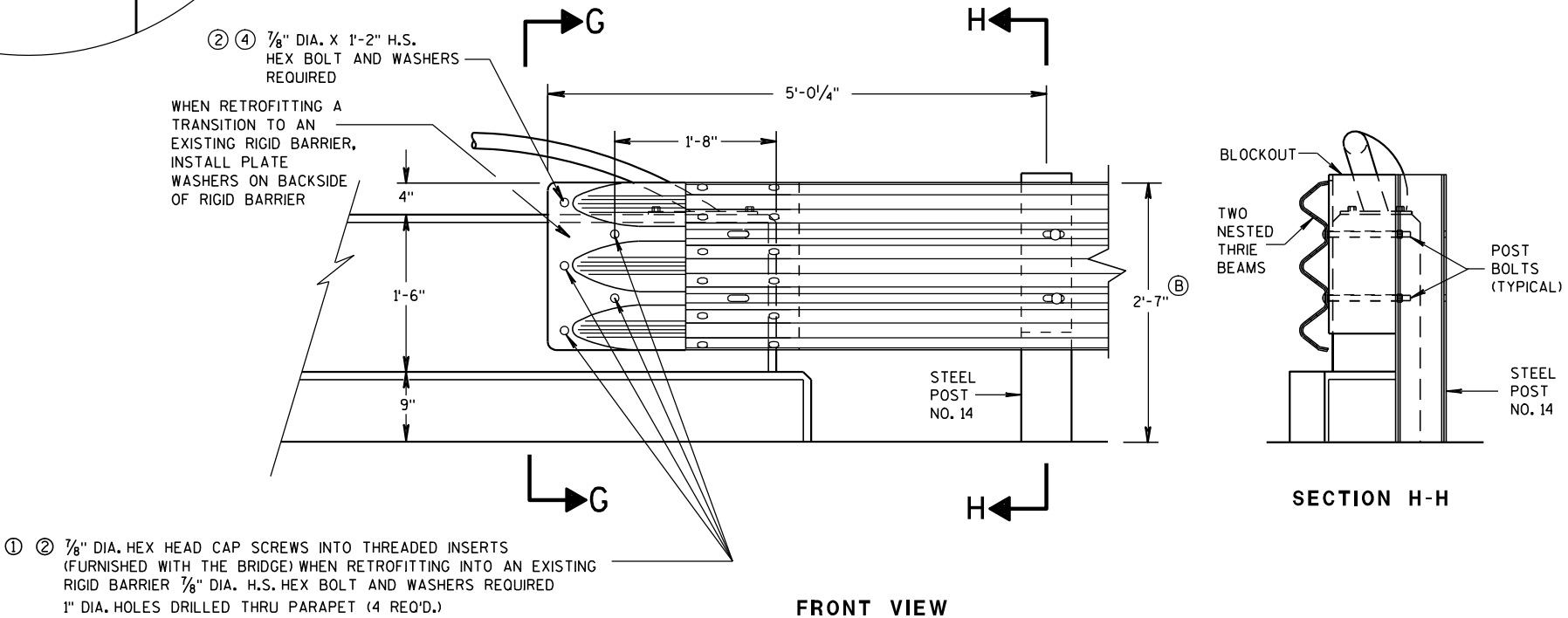
GENERAL NOTES

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

- ① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ② 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 $\frac{5}{8}$ " THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ③ 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 $\frac{1}{2}$ ". BLOCK IS INCIDENTAL TO THE CONTRACT.
- ④ 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.
- Ⓑ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.

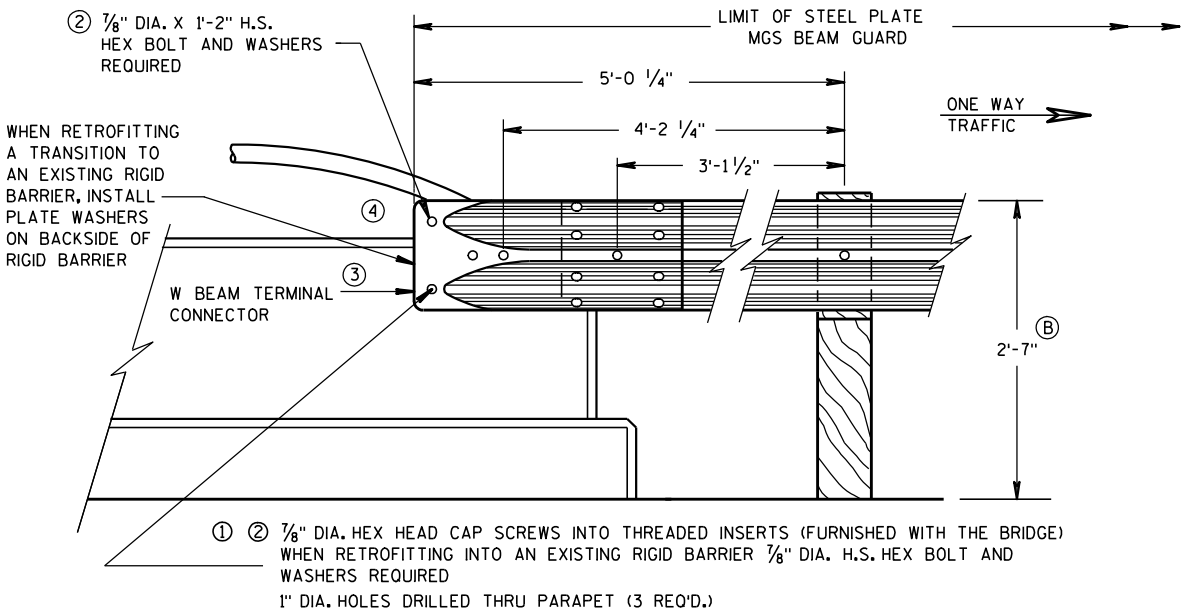


SECTION G-G



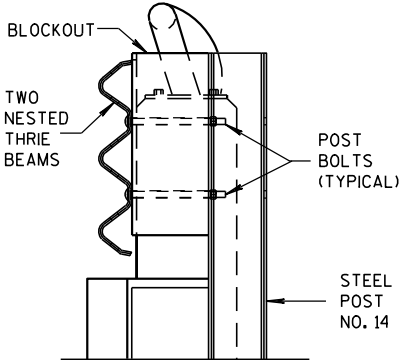
FRONT VIEW

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS



FRONT VIEW

W BEAM CONNECTION TO VERTICAL FACE PARAPET
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

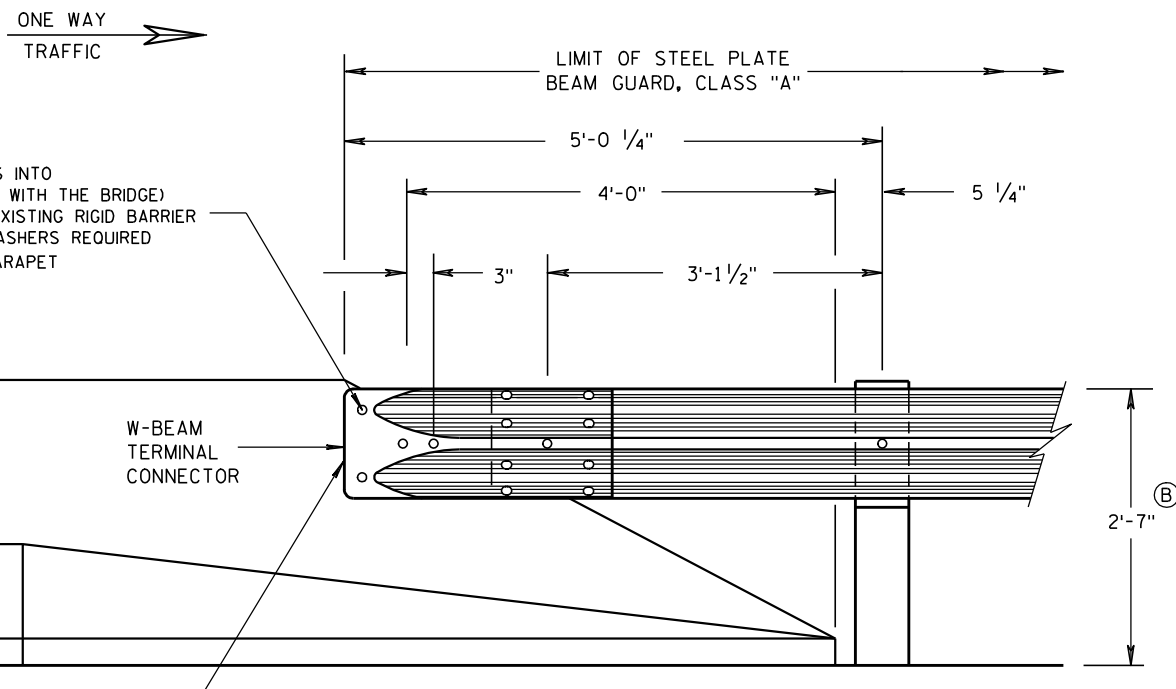


SECTION H-H

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8-31-2012 /S/ Jerry H. Zogg
DATE ROADWAY STANDARDS (92) ENT
FHWA ENGINEER



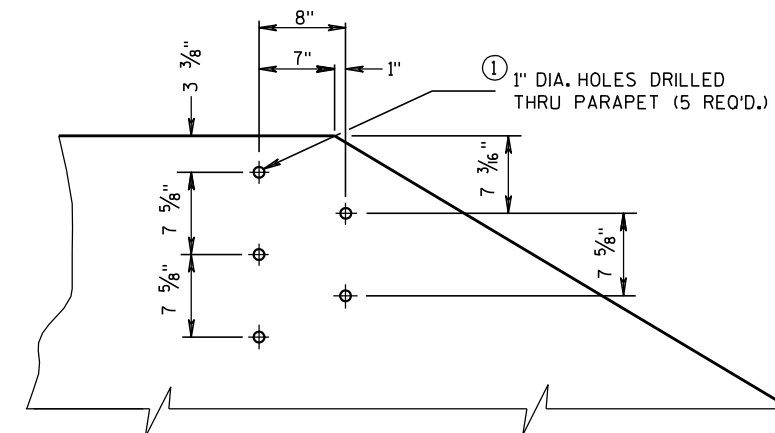
FRONT VIEW

W BEAM CONNECTION TO PARAPETS WITH SLOPED ENDS

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

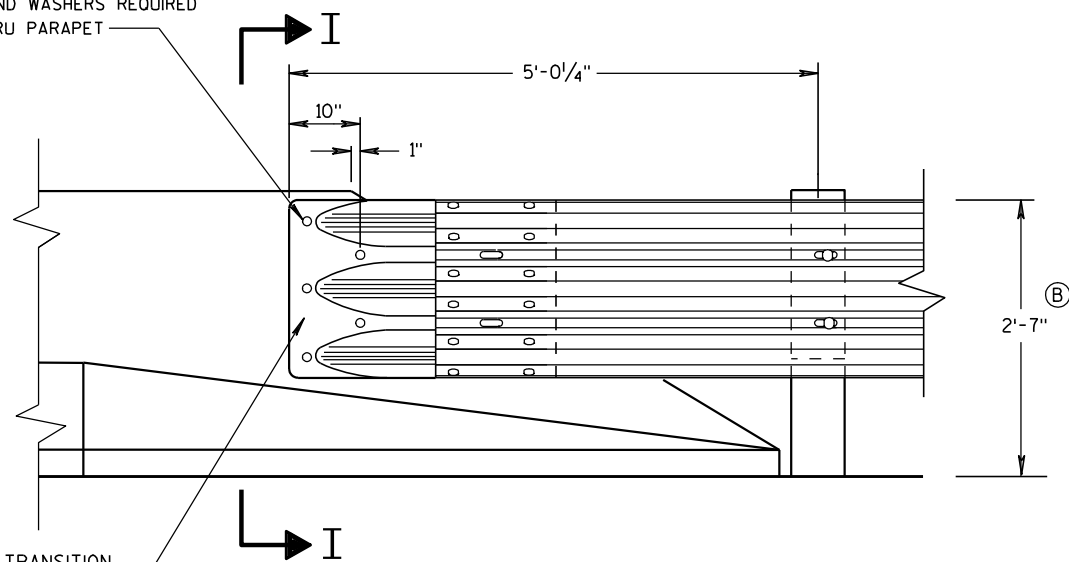
GENERAL NOTES

- ① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ② 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 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ③ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.



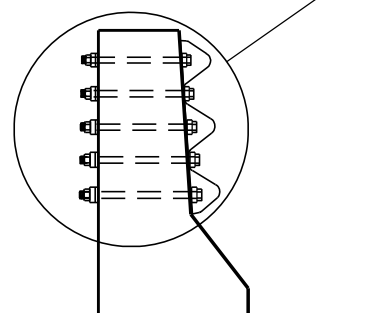
DRILL HOLE LOCATION AND PATTERN FOR THRIE BEAM CONNECTION

- ① ② 1/8" DIA. HEX HEAD CAP SCREWS INTO THREADED INSERTS (FURNISHED WITH THE BRIDGE) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER 1/8" DIA. H.S. HEX BOLT AND WASHERS REQUIRED 1" DIA. HOLES DRILLED THRU PARAPET (5 REQ'D.)

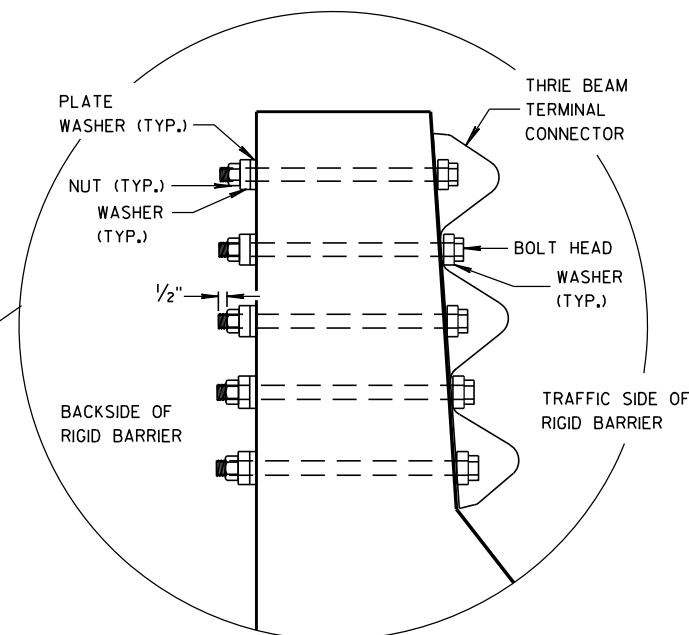


FRONT VIEW

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

8/31/2012

DATE

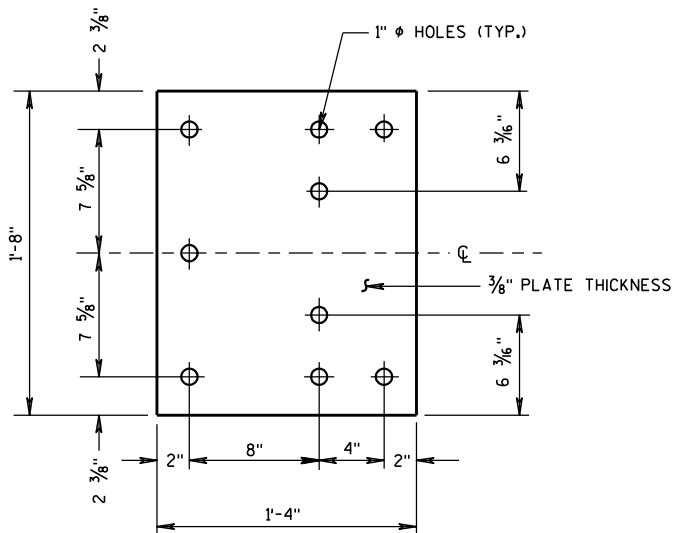
FHWA

/S/ Jerry H. Zapp

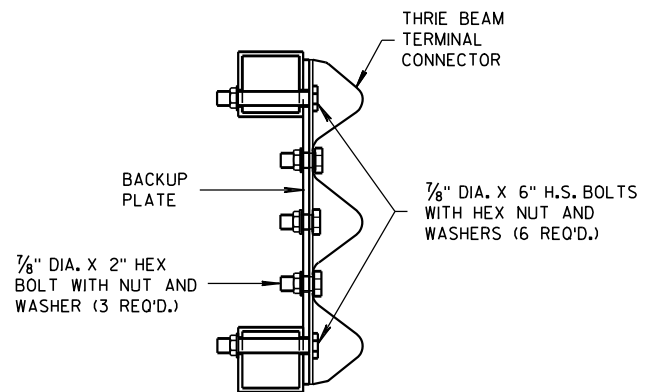
ROADWAY STANDARDS '93

ENGINEER

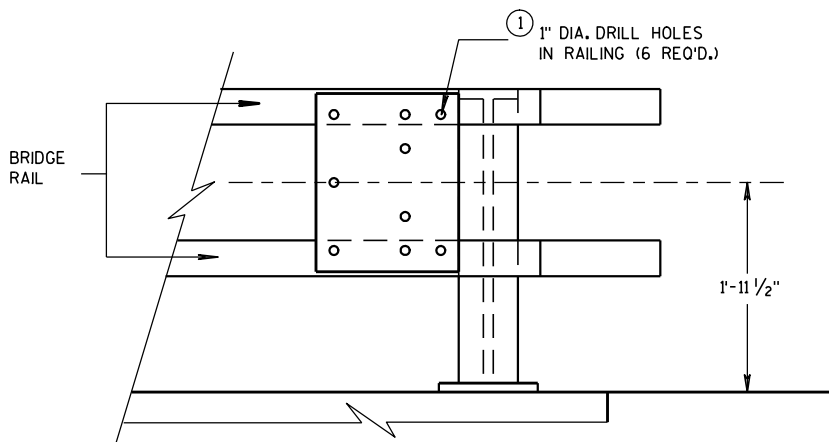
ENT



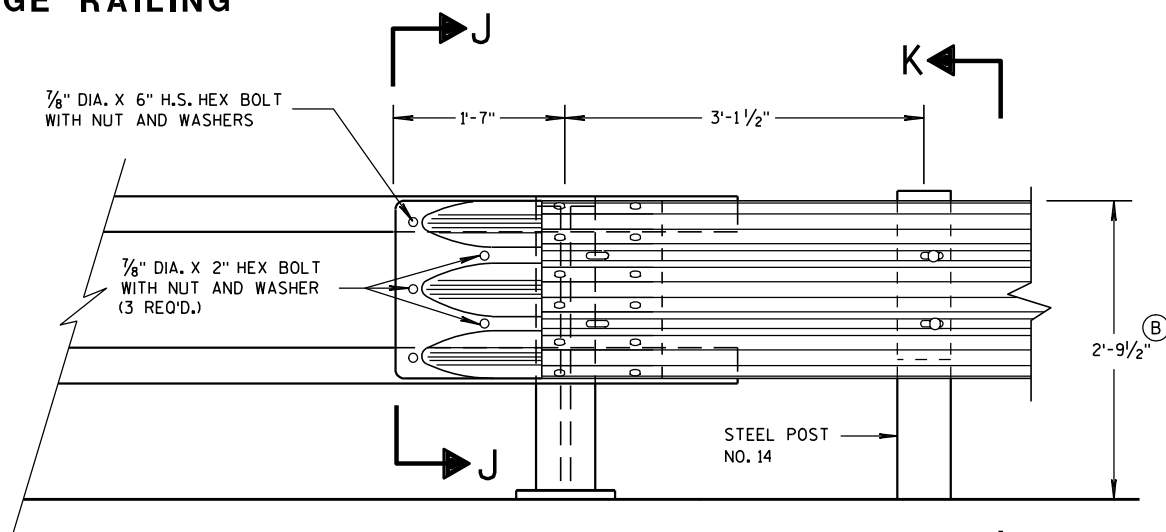
BACK-UP PLATE DETAIL



SECTION J-J

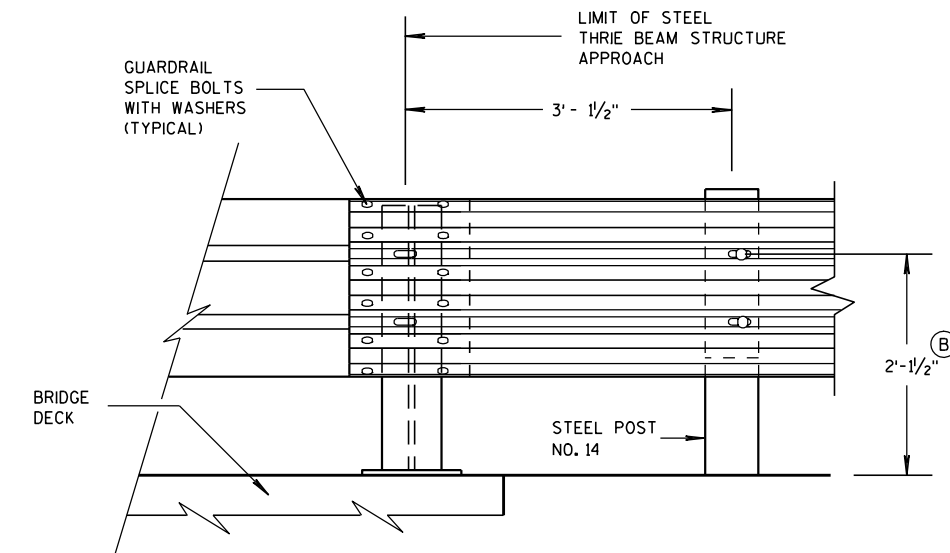


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



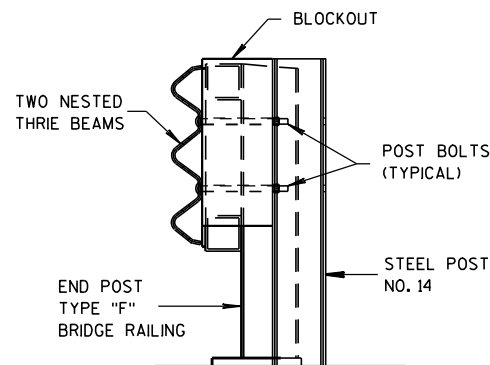
FRONT VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"



FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"



SECTION K-K

GENERAL NOTES

- ① DRILLING HOLES THROUGH THE PAPER, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ② TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012

DATE

FHWA

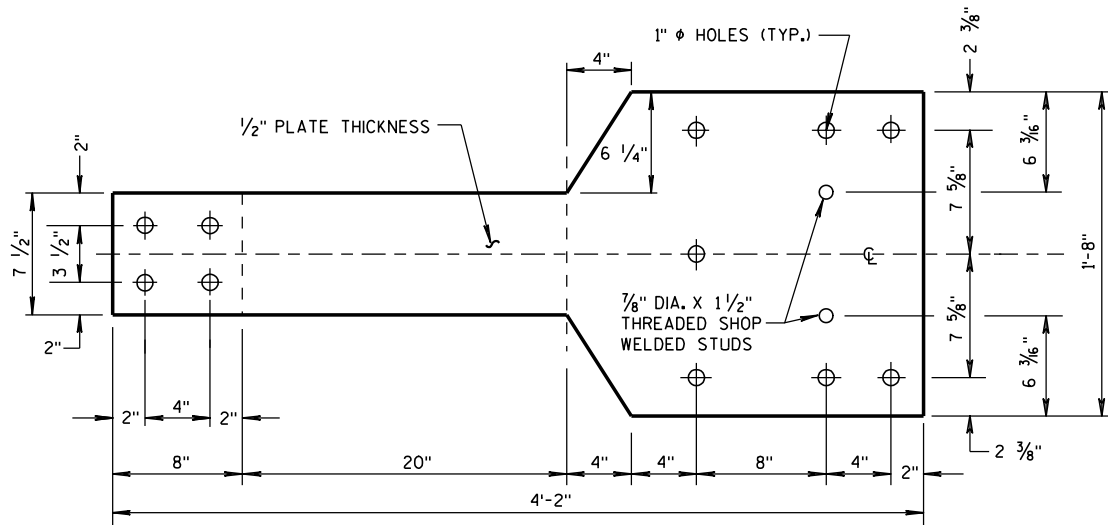
/S/ Jerry H. Zeng

ROADWAY STANDARDS ENGINEER

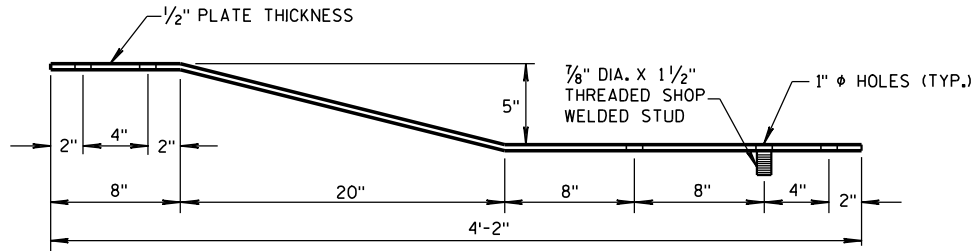
ENT

GENERAL NOTES

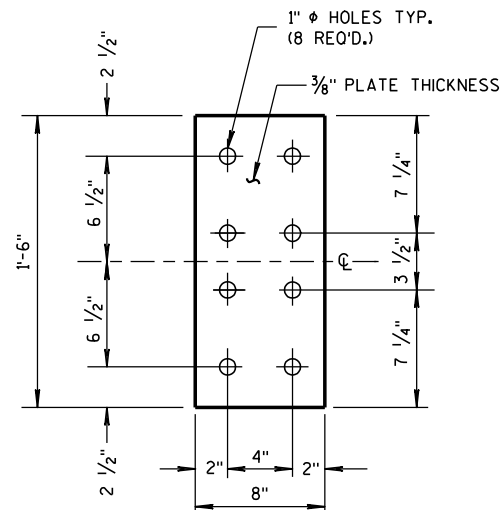
(B) TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm 1"$.



FRONT VIEW

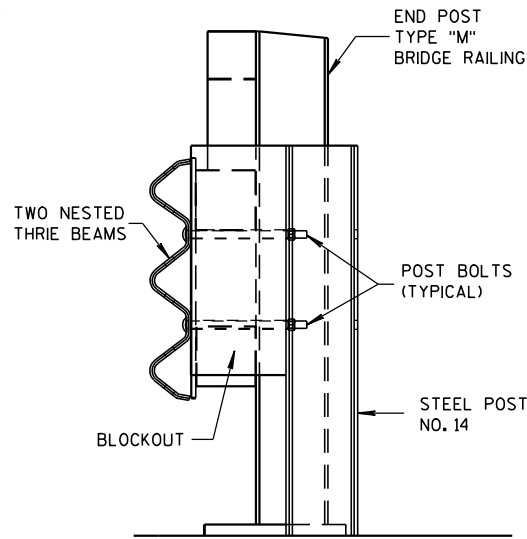


PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"

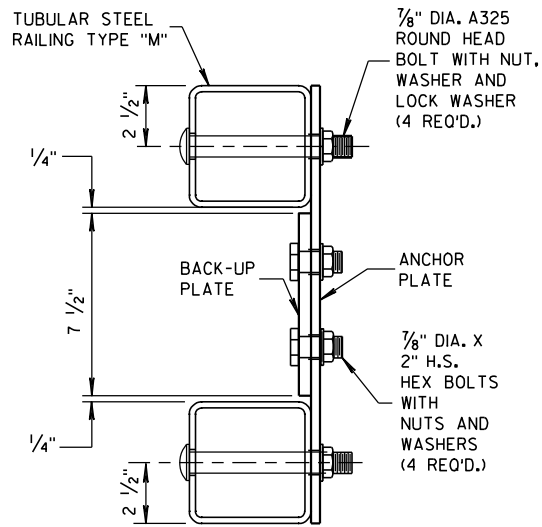


FRONT VIEW

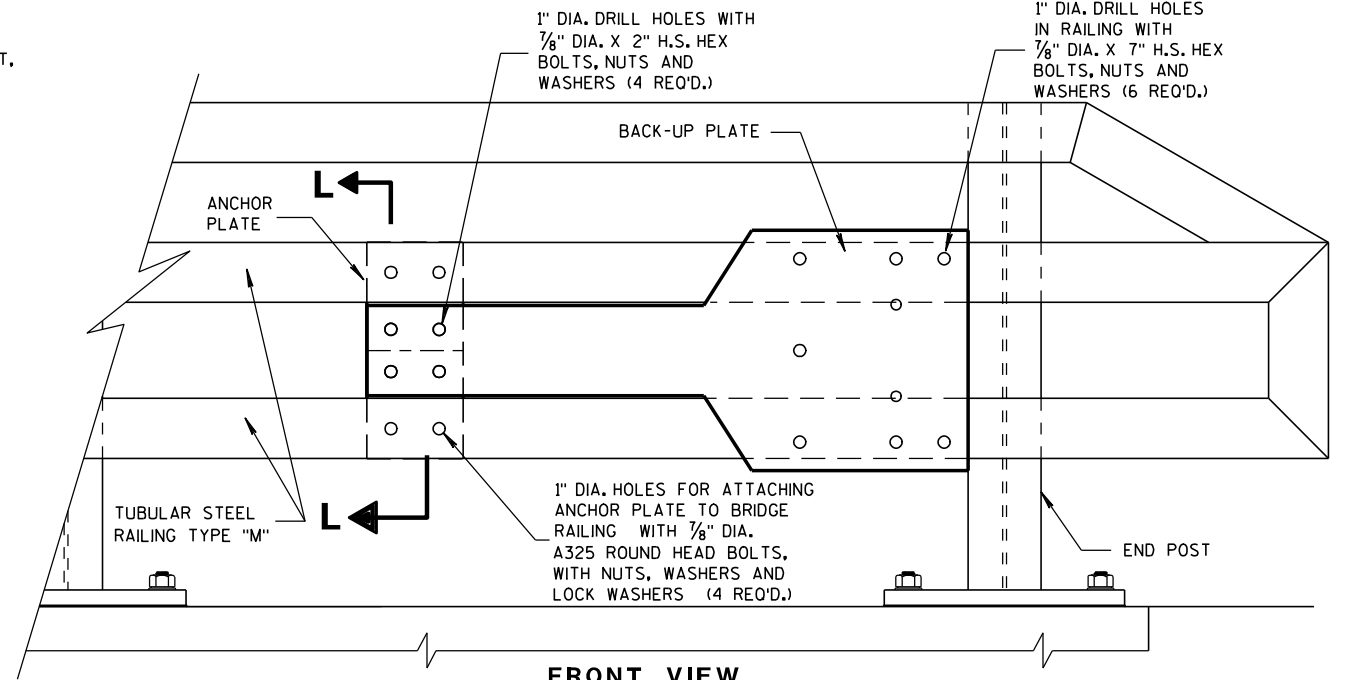
ANCHOR
PLATE DETAIL,
TYPE "M"



SECTION M-M

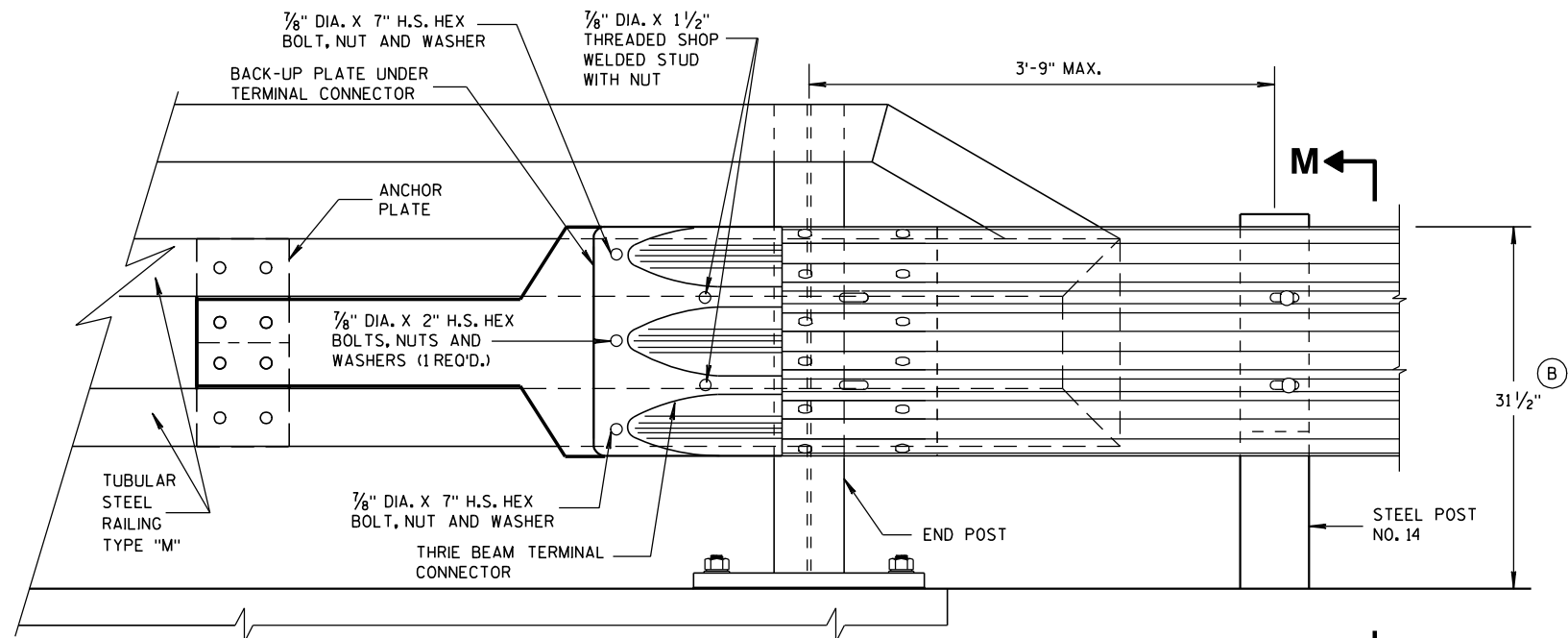


SECTION L-L

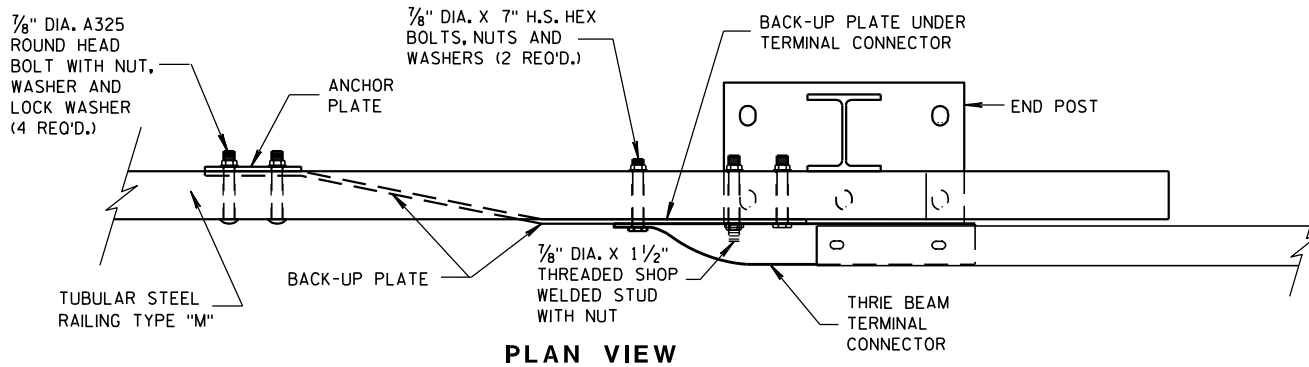


FRONT VIEW

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



FRONT VIEW



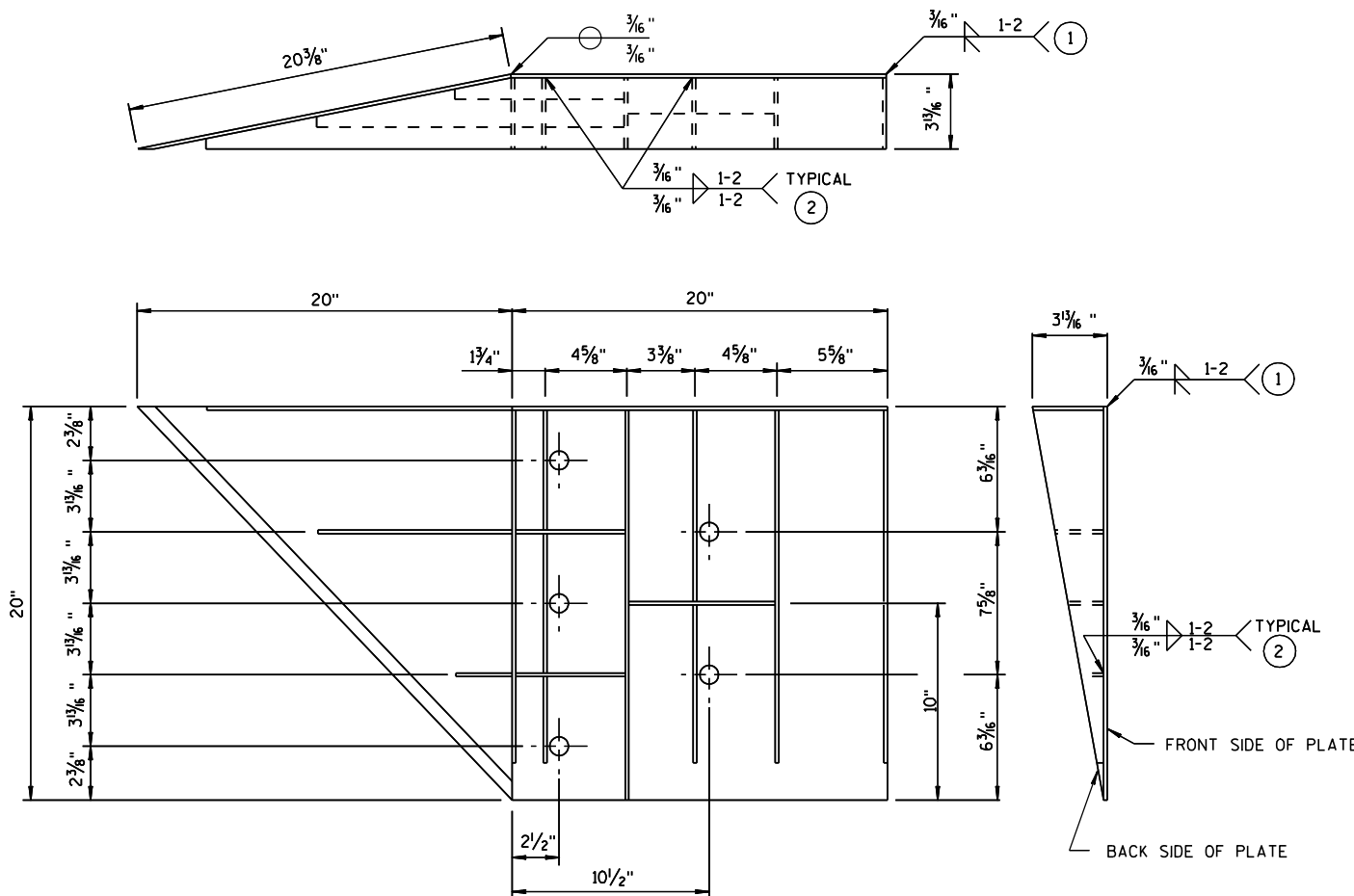
PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8-31-2012 DATE
JERRY H. ZOOZ ROADWAY STANDARDS 95 ENGINEER
FHWA

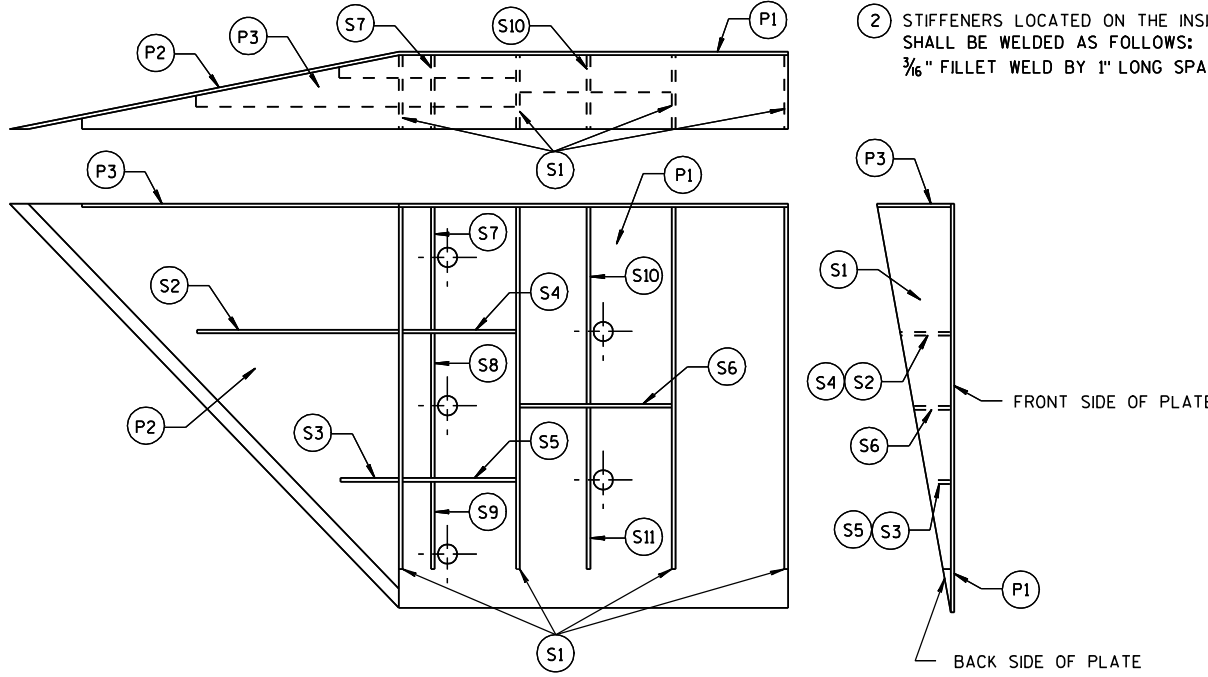


WELDING INSTRUCTION
(VIEWED FROM BACK SIDE OF PLATE)

SINGLE SLOPE CONNECTION 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 7/16" 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 9/16" x 6" x 3 5/8" x 5 7/8"	1/4"
S8	1		1 7/32" 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 7/32"	1/4"
S10	1		1 7/8" x 9 7/8" x 3 5/8" x 9 1/16"	1/4"
S11	1		8 1/2" x 8 3/4" x 1 1/16"	1/4"

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



GENERAL NOTES

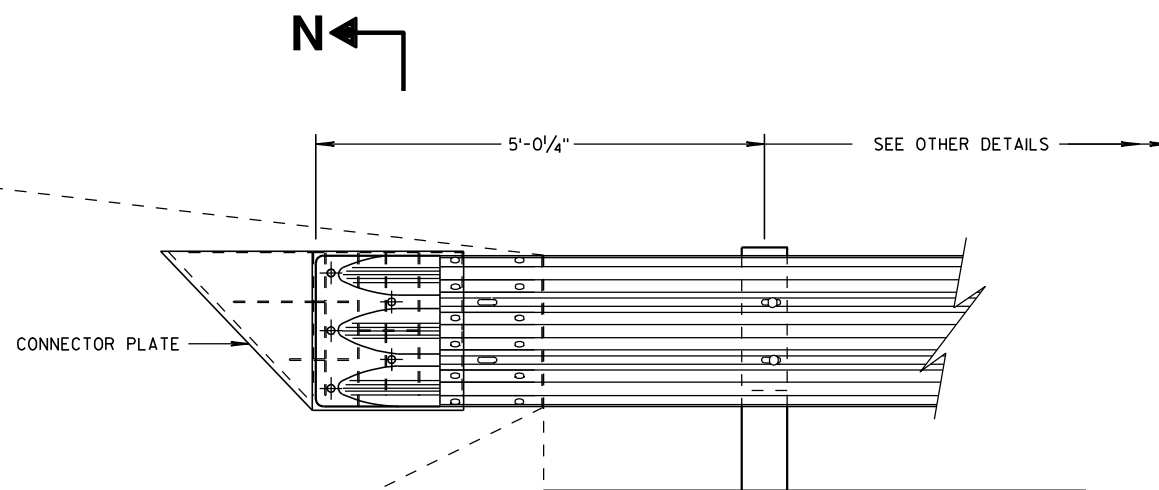
- COVER PLATE PANELS ARE 3/16" THICK.
- ALL STIFFENERS ARE 1/4" THICK.
- CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.
- FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.
- ALL HOLE DIAMETERS SHALL BE 1".
- FOR OPPOSITE SIDE INSTALLATION MIRROR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

- 1 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.
- 2 STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
3/16" FILLET WELD BY 1" LONG SPACED AT 2".

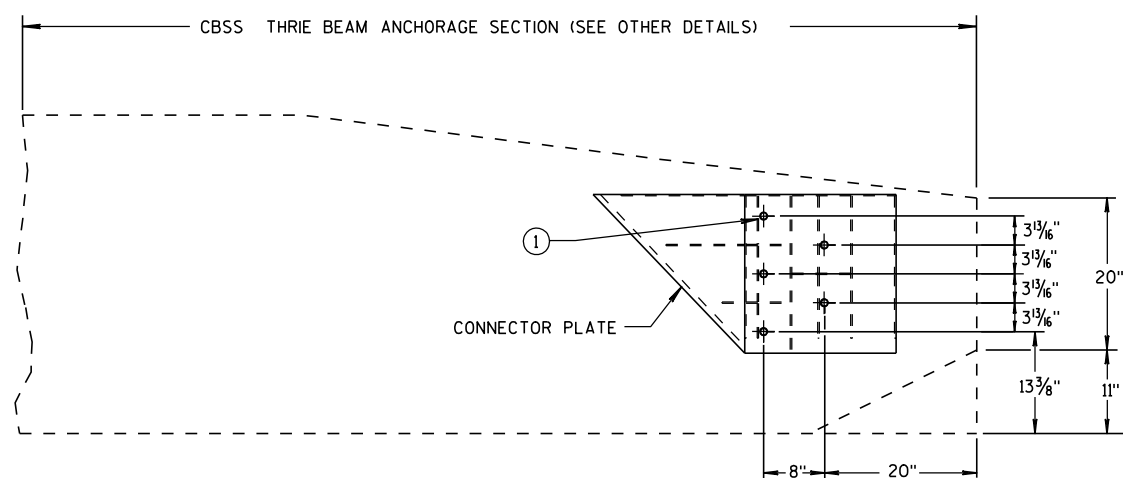
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/31/2012 DATE /S/ Jerry H. JENT ENGINEER
FHWA ROADWAY STANDARDS 96



THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER

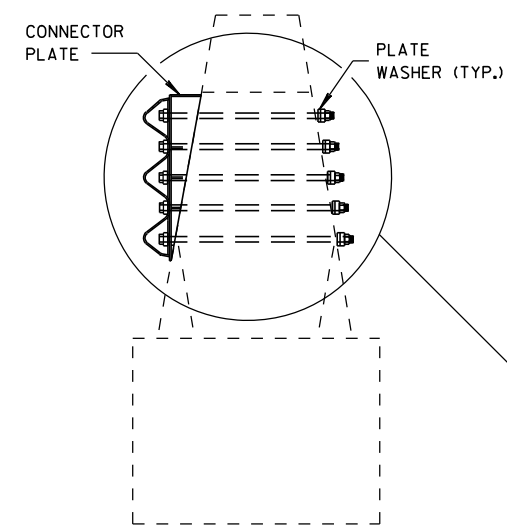


SINGLE SLOPE CONNECTION PLATE PLACEMENT

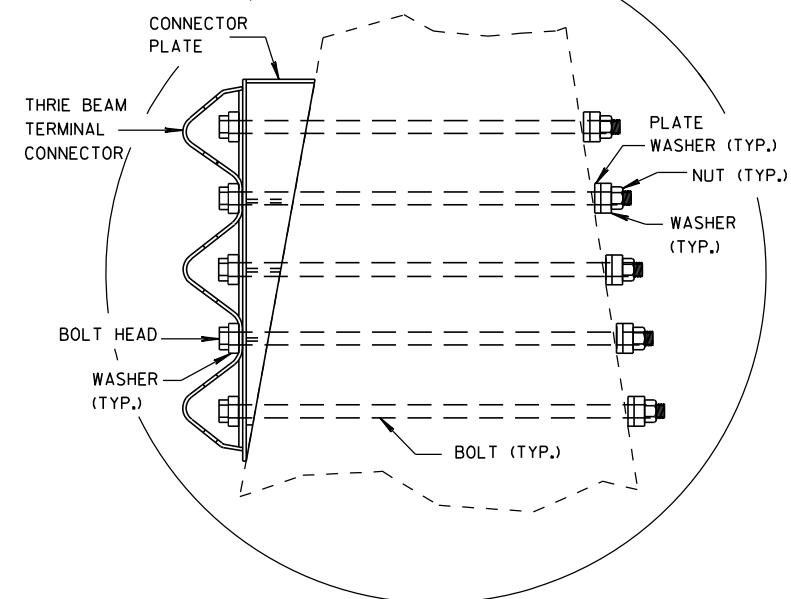
GENERAL NOTES

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

- ① 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 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



SECTION N-N



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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012

DATE

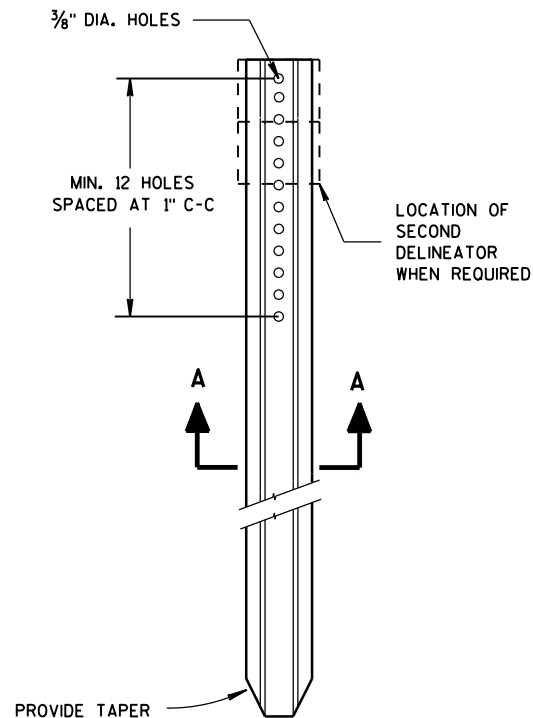
FHWA

/S/ Jerry H. 7----

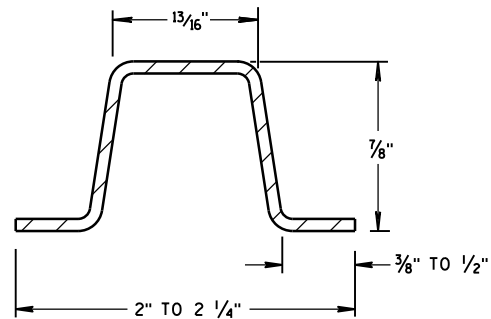
ROADWAY STANDARDS 197

ENGINEER

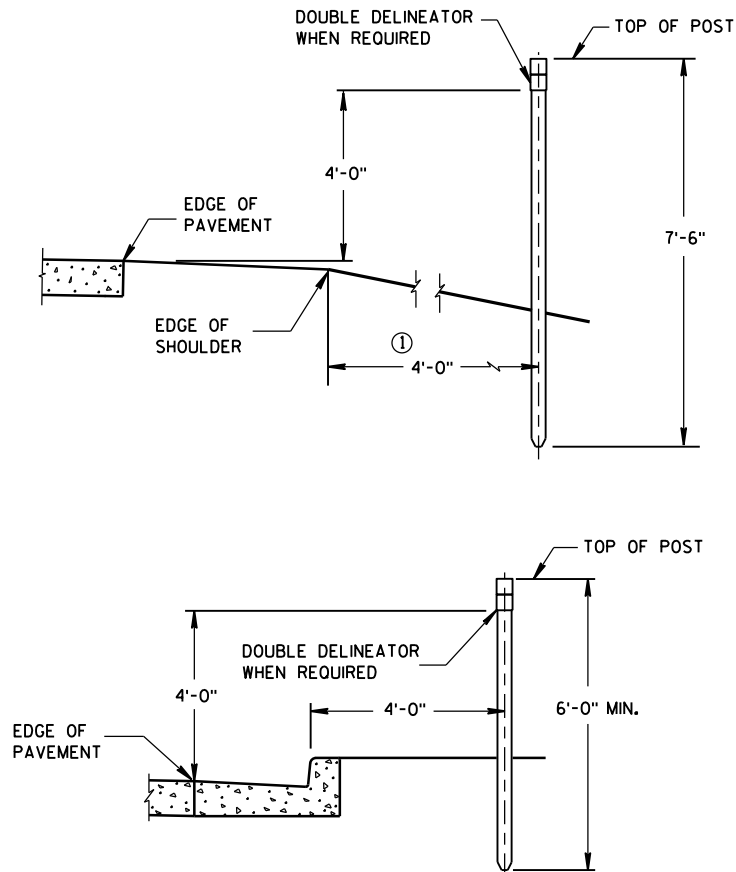
ENT



DELINEATOR POST



SECTION A-A
WEIGHT 1.12 LBS PER FT. ± 0.1 LB.

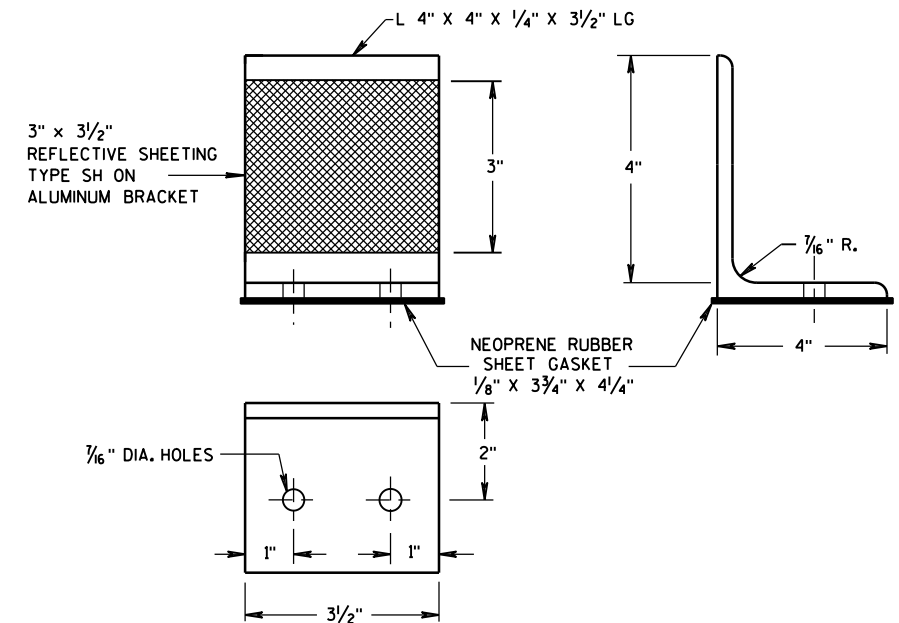


TYPICAL INSTALLATIONS OF DELINEATOR POSTS

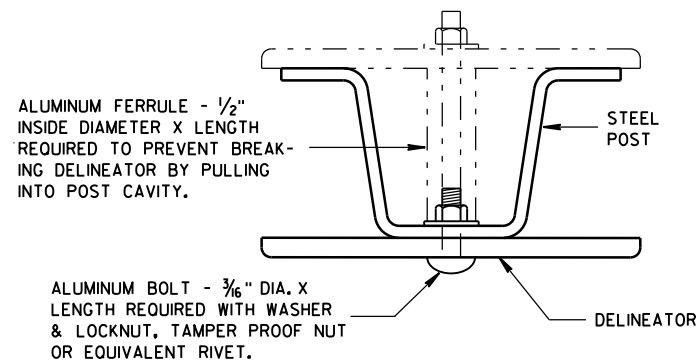
GENERAL NOTES

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

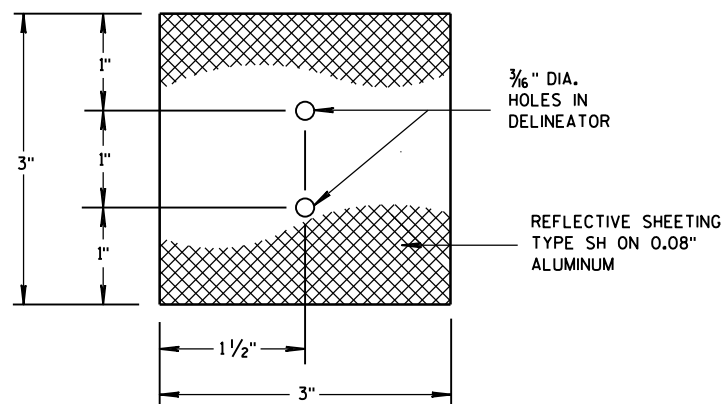
- ① DELINEATORS SHALL BE PLACED AT A CONSTANT DISTANCE FROM THE EDGE OF THE SHOULDER FOR THE LENGTH OF THE INSTALLATION.



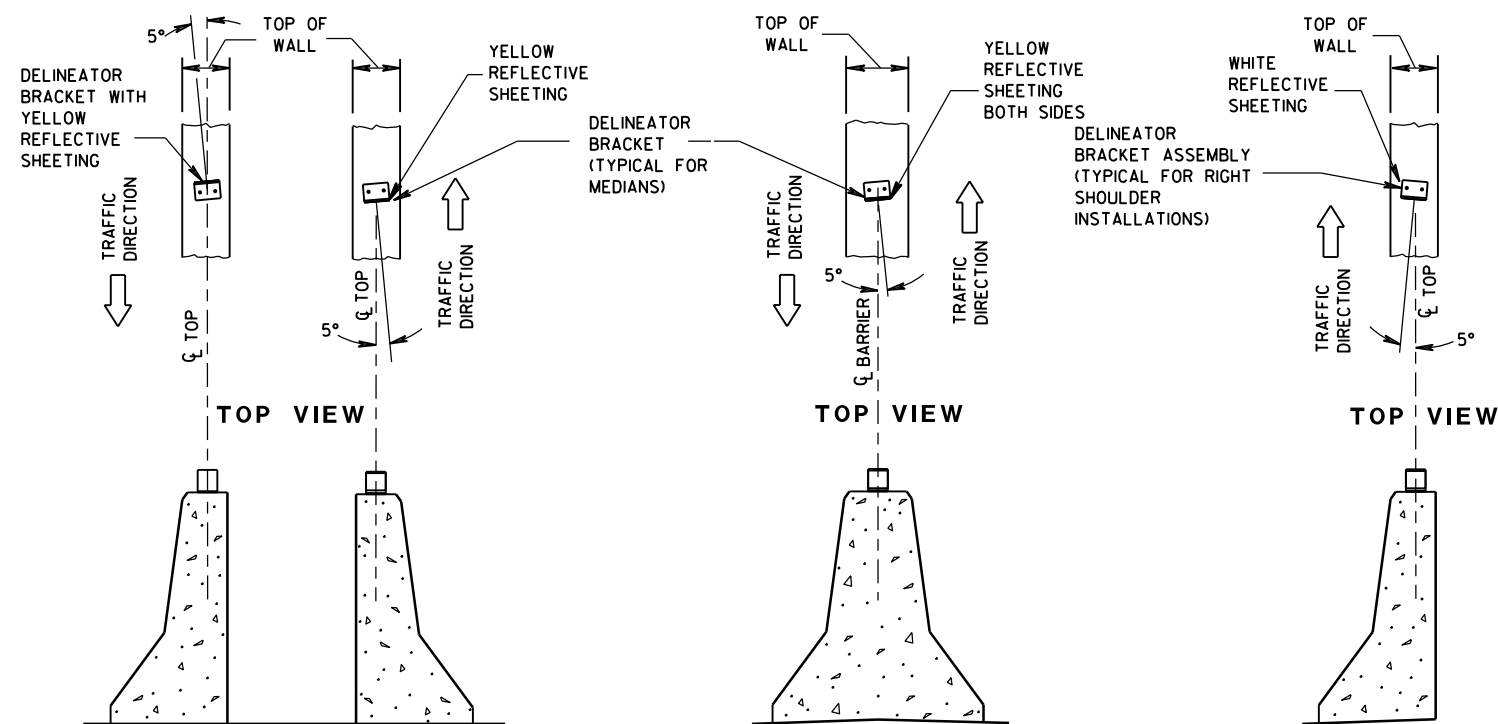
DELINEATOR BRACKET



MOUNTING DETAIL FOR DELINEATOR



3" x 3" DELINEATOR

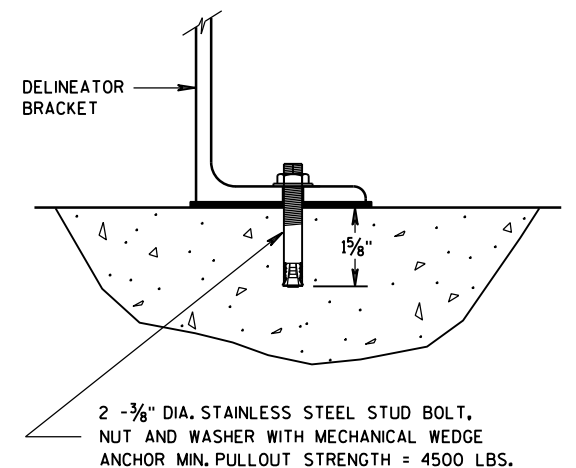


DOUBLE BARRIERS IN MEDIAN

MEDIAN BARRIER

BARRIER LOCATED
TO RT. OF TRAFFIC FLOW

LOCATION AND AIMING DETAILS FOR DELINEATOR BRACKETS MOUNTED ON CONCRETE BARRIERS



DELINEATOR BRACKET
MOUNTING DETAIL

DELINEATOR POST, DELINEATOR,
AND DELINEATOR BRACKET
WITH REFLECTIVE SHEETING

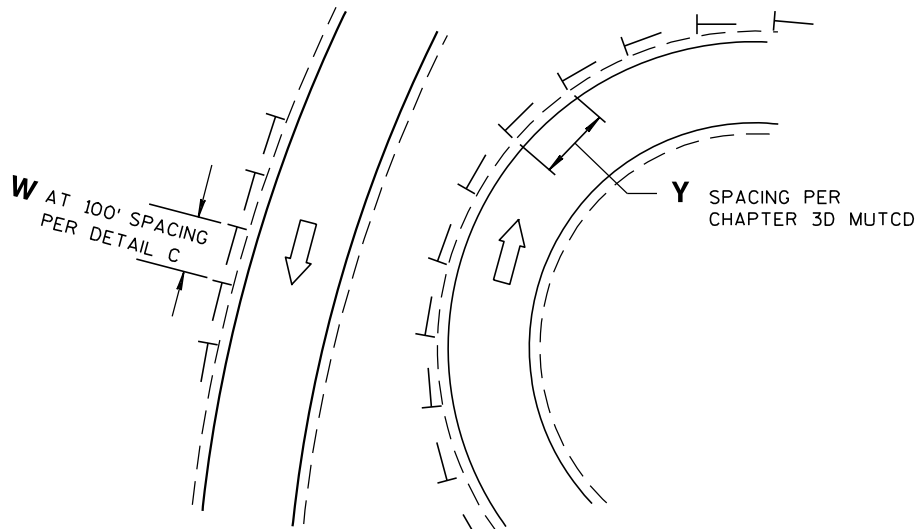
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

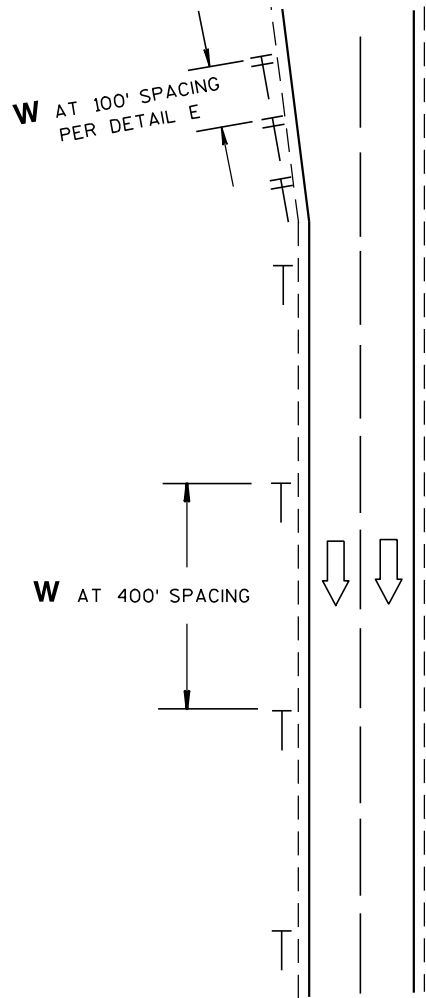
7/2013
DATE

/S/ Travis Feltes
STATE TRAFFIC ENGINEER

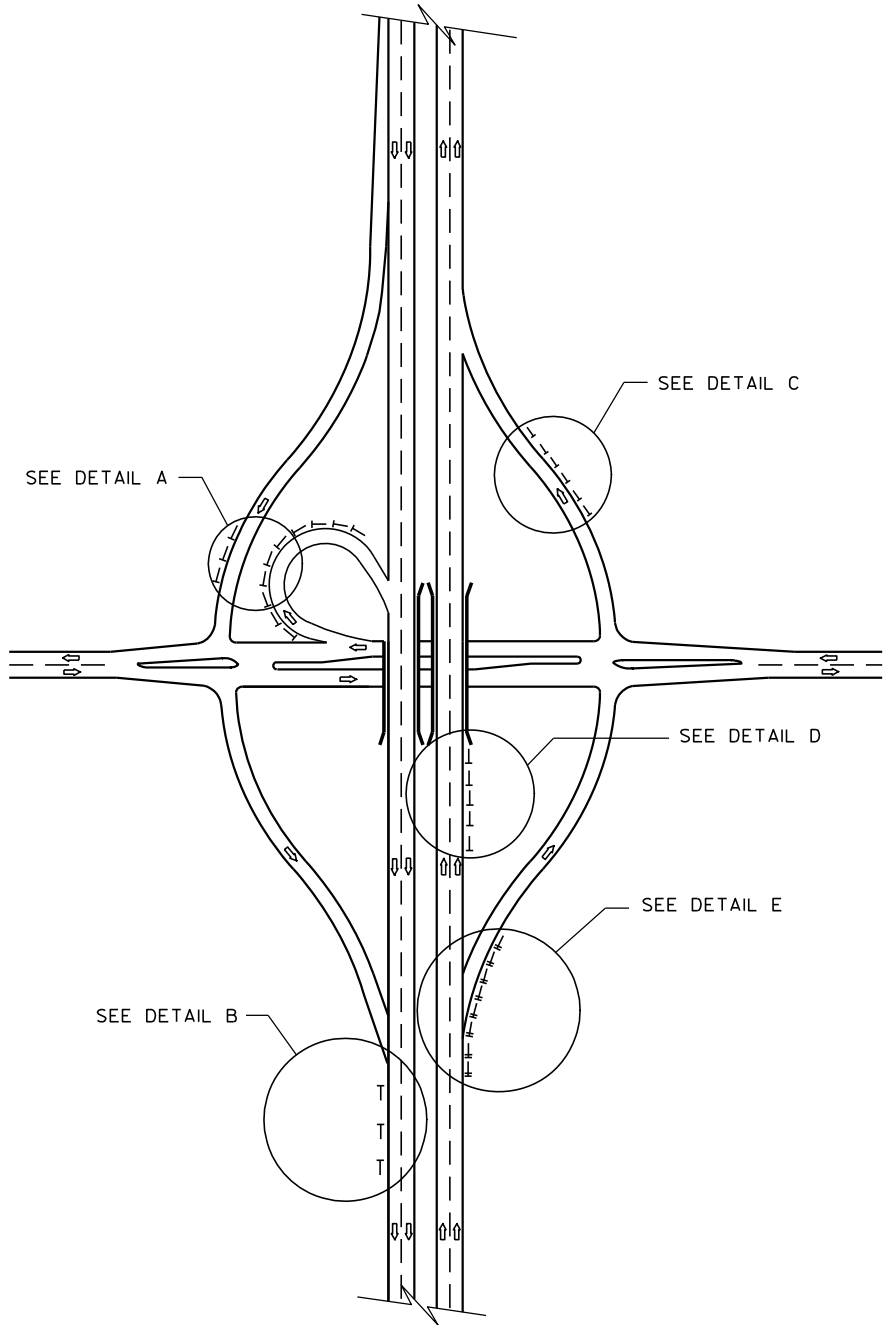
FHWA



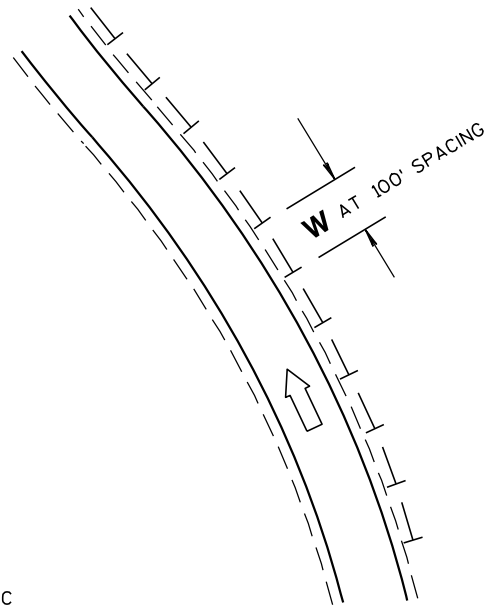
DETAIL A
DELINEATOR LAYOUT AT CURVED RAMP



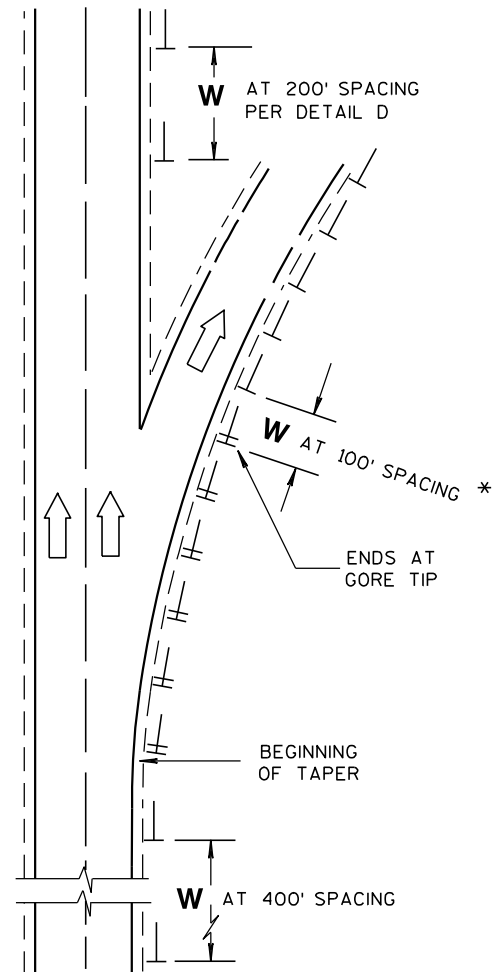
DETAIL B
DELINEATOR LAYOUT
ALONG MAINLINE



DELINEATOR LAYOUT



DETAIL C
DELINEATOR LAYOUT ALONG RAMP



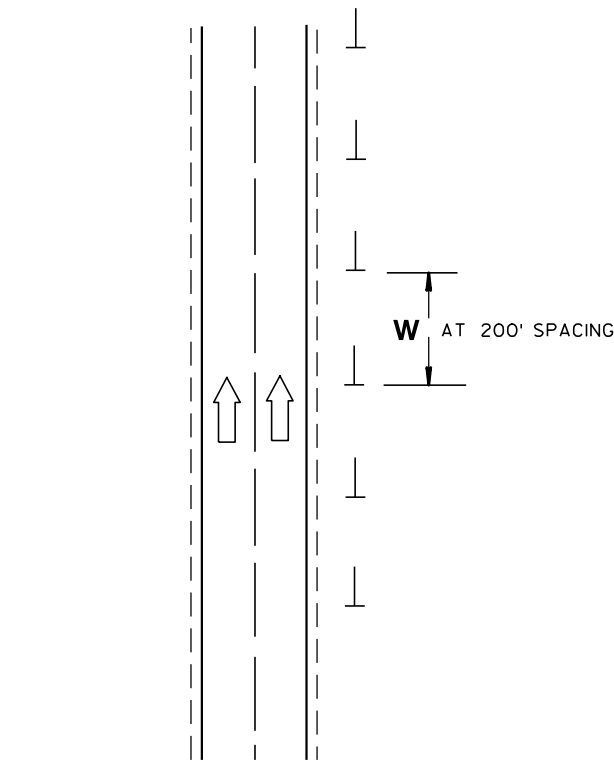
DETAIL E
DELINEATOR LAYOUT FOR ACCELERATION
- DECELERATION LANES AND TAPERS AT RAMPS

GENERAL NOTES

* USE DOUBLE DELINEATOR ALONG ACCELERATION-DECELERATION LANES AND TAPERS.
USE SINGLE DELINEATOR WHEN RAMP PAVEMENT IS FULL WIDTH.

LEGEND

- DIRECTION OF TRAFFIC FLOW
- SINGLE DELINEATOR
- DOUBLE DELINEATOR
- W** WHITE
- Y** YELLOW

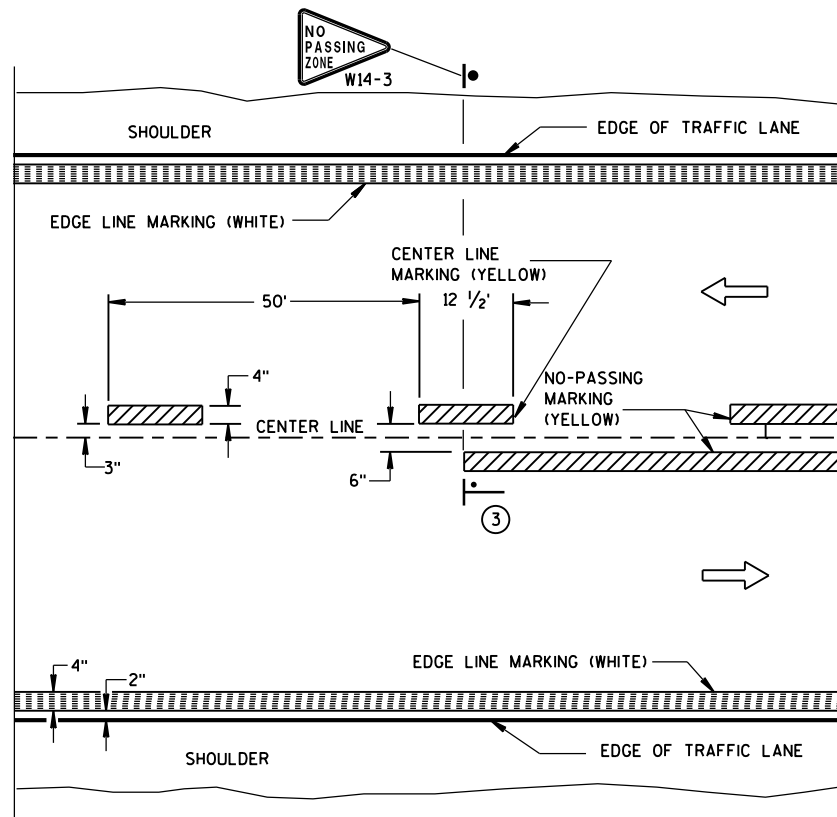


DETAIL D
DELINEATOR LAYOUT
BETWEEN INTERCHANGE RAMPS

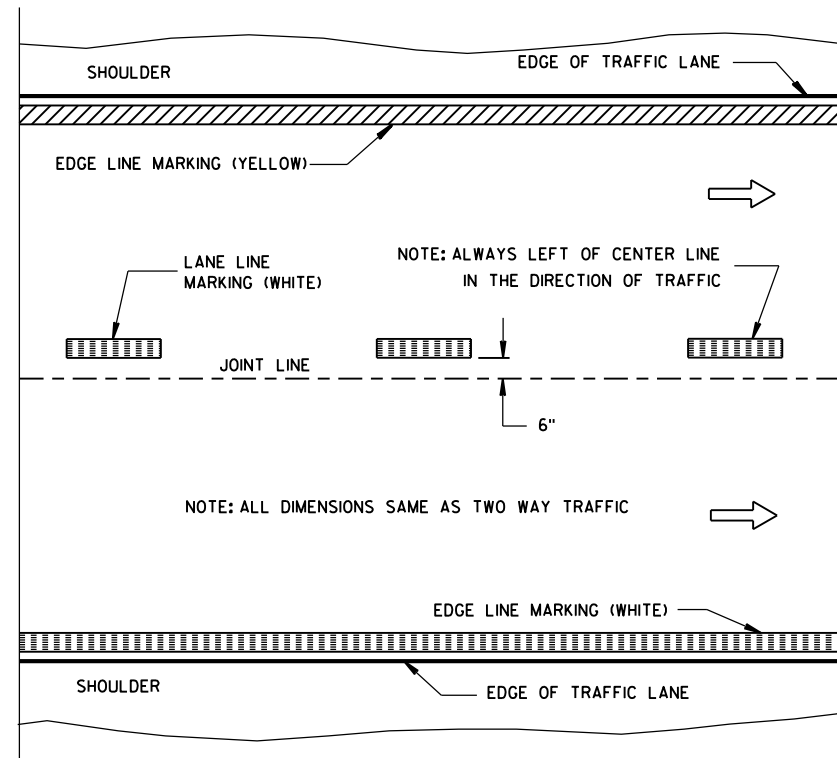
DELINEATOR LAYOUT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
2/5/09 /S/ Thomas N. Nothmann
DATE STATE TRAFFIC ENGINEER SIGN
FHWA

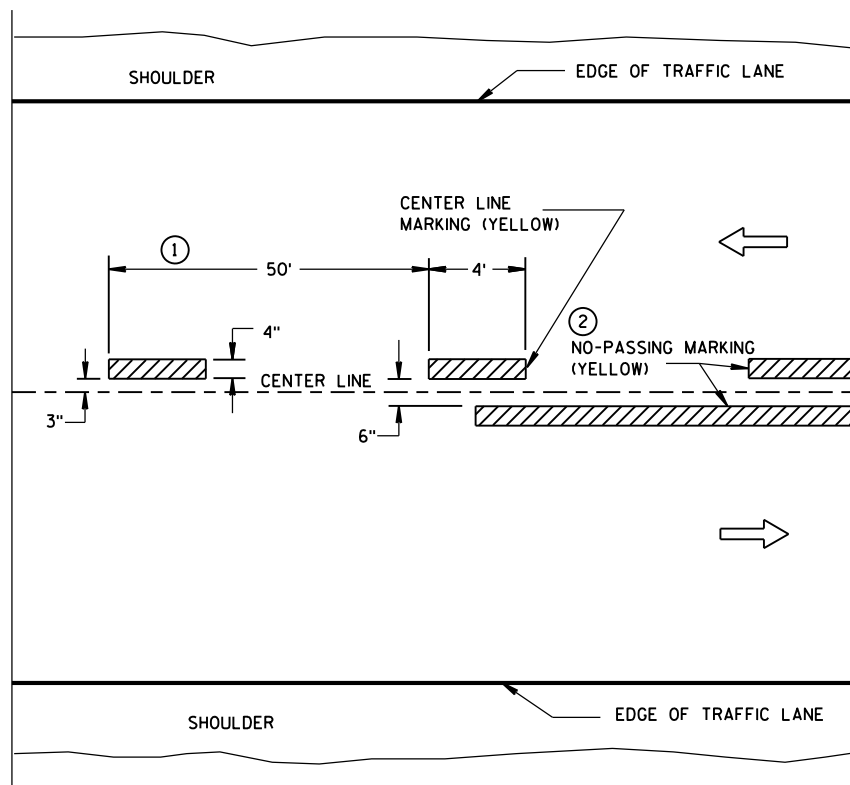


TWO WAY TRAFFIC

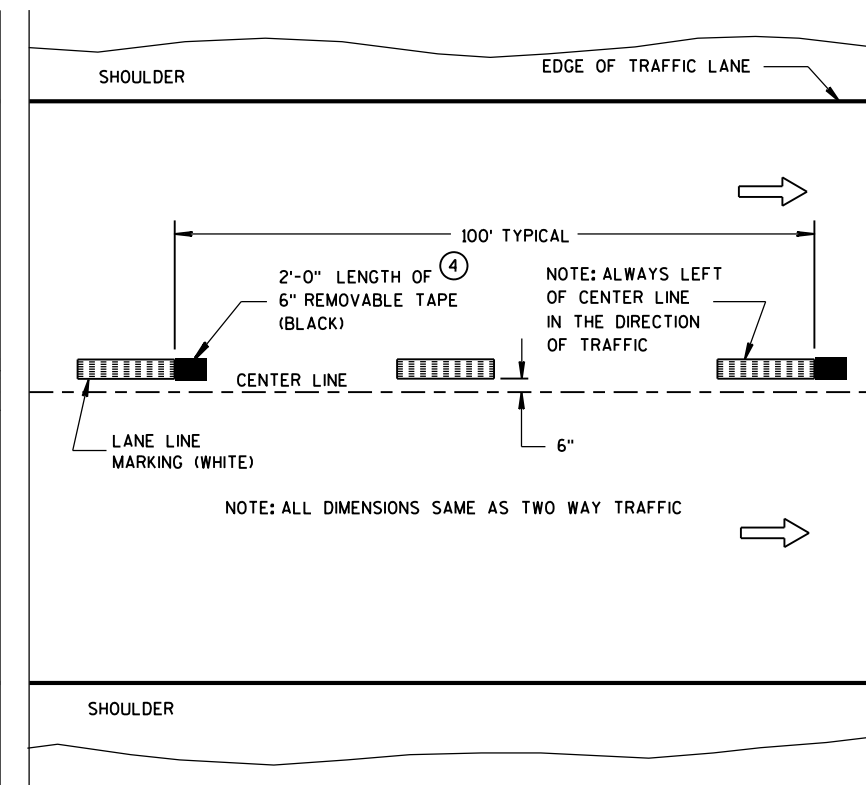


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY (INTERMEDIATE) PAVEMENT MARKING
(SHOWS CYCLE FOR TEMPORARY CENTER LINE OR TEMPORARY LANE LINE MARKING)

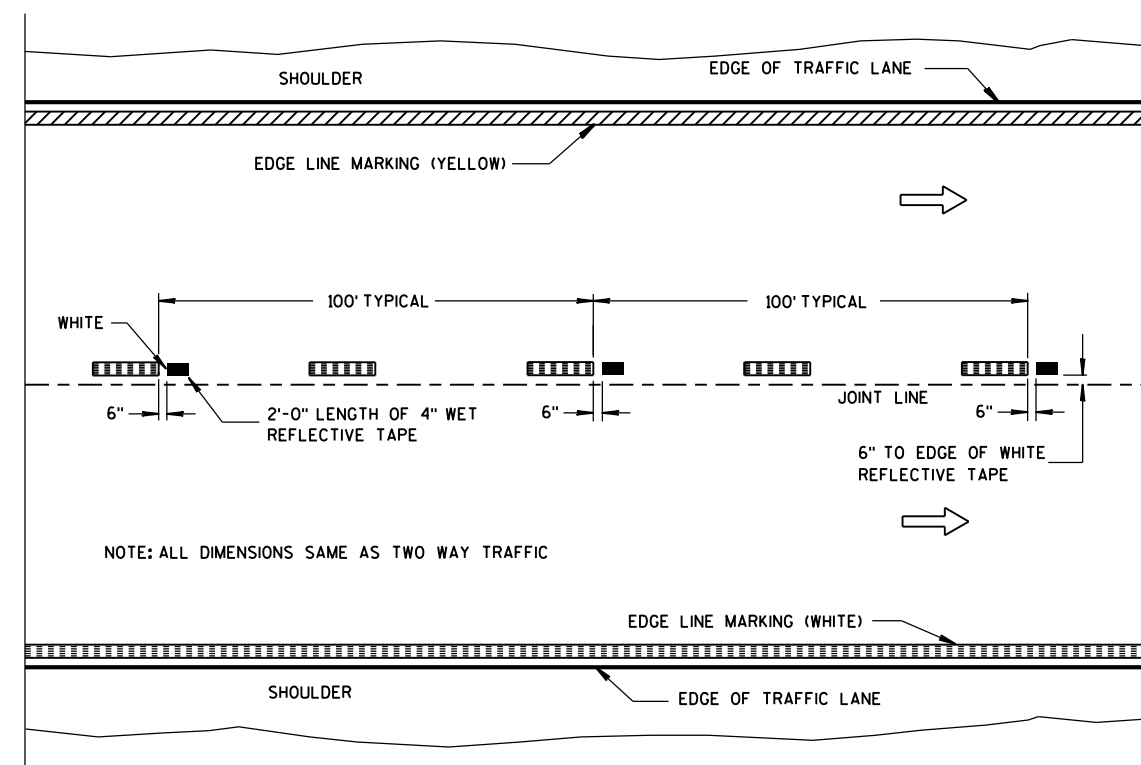
GENERAL NOTES

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

- ① HALF CYCLE LENGTHS (25'±) WITH 2' MINIMUM STRIPE LENGTHS SHALL BE PROVIDED ON ROADWAYS (INCLUDING TEMPORARY TRAVELED WAYS) WITH REVERSE CURVATURE, CURVATURE OF OVER 5 DEGREES OR WHEN DIRECTED BY THE ENGINEER TO MARK UNUSUAL ALIGNMENT OF THE TRAVELED WAY.
- ② NO PASSING ZONE TEMPORARY PAVEMENT MARKING IS REQUIRED TO BE PLACED, WHERE APPROPRIATE, ALONG WITH CENTERLINE TEMPORARY PAVEMENT MARKING WHEN A SAME DAY PERMANENT PAVEMENT MARKING ITEM IS INCLUDED IN THE CONTRACT.
- ③ NO PASSING ZONE MARKINGS ARE PLACED ACCORDING TO "T" MARKINGS. IF EXISTING NO PASSING ZONE W14-3 SIGNS ARE BEYOND 50 FEET IN EITHER DIRECTION, THE SIGNS SHALL BE MOVED TO THE "T" MARKINGS.
- ④ CONCRETE ONLY.

NOTE

ARROW SYMBOL (→) SHOWS DIRECTION OF TRAVEL



WET REFLECTIVE TAPE SUPPLEMENT TO
SPRAYED OR NON WET REFLECTIVE TAPE LANE LINE

LEGEND

- "T" MARKING
- POST MOUNTED SIGN

PAVEMENT MARKING
(MAINLINE)

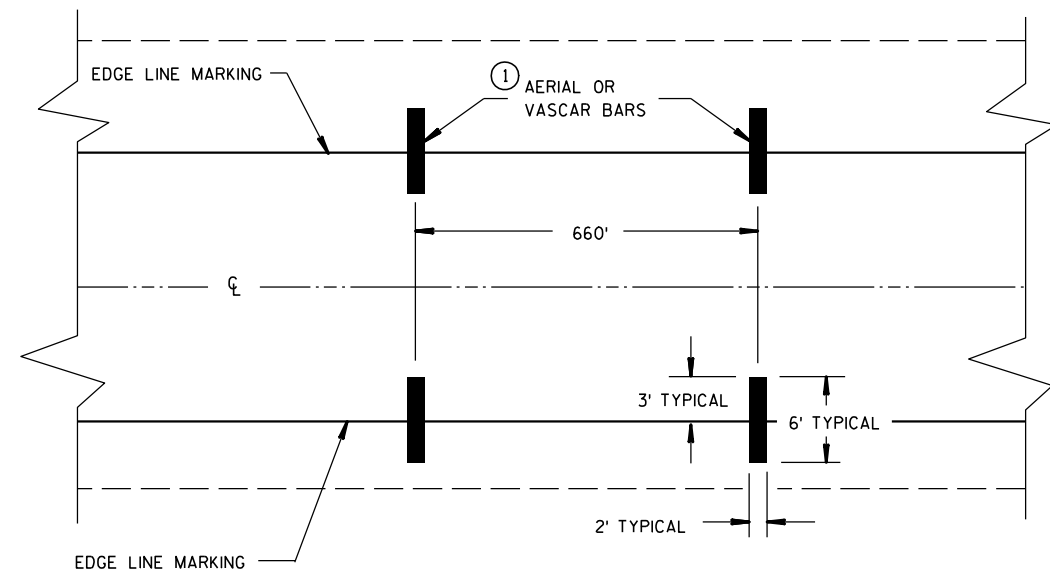
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

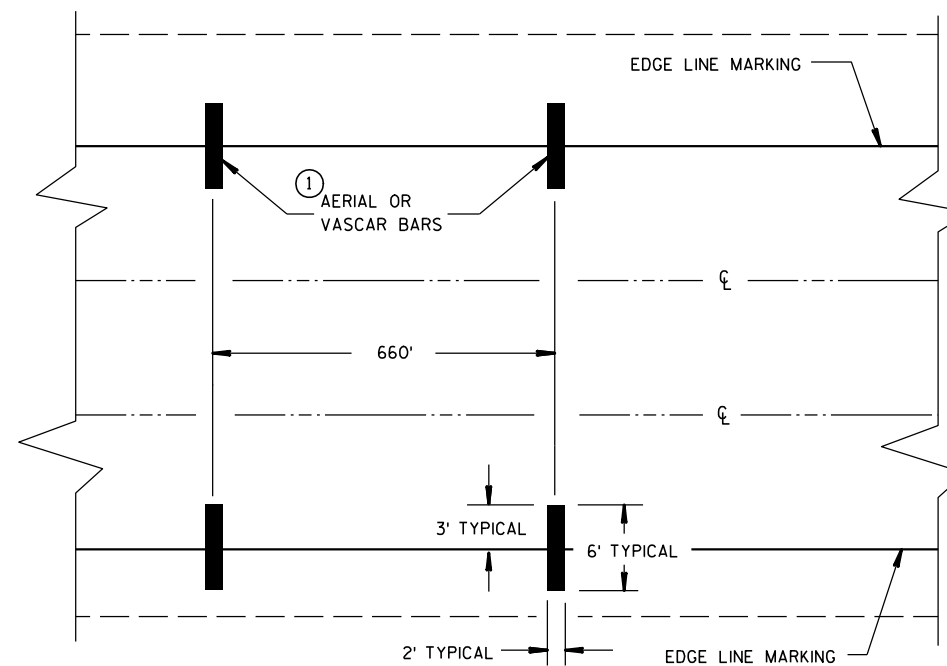
5-13-2013
DATE

FHWA

/S/ Travis Feltes
STATE TRAFFIC E 100



TYPICAL FOR TWO WAY OR ONE WAY TRAFFIC



TYPICAL FOR MULTILANE TRAFFIC

SPEED ENFORCEMENT ZONE WITH AERIAL OR VASCAR BARS

GENERAL NOTES

- ① NUMBER OF VASCAR OR AERIAL BARS SHALL BE A MINIMUM OF 2 OR A MAXIMUM OF 5 AT 660' SPACING.

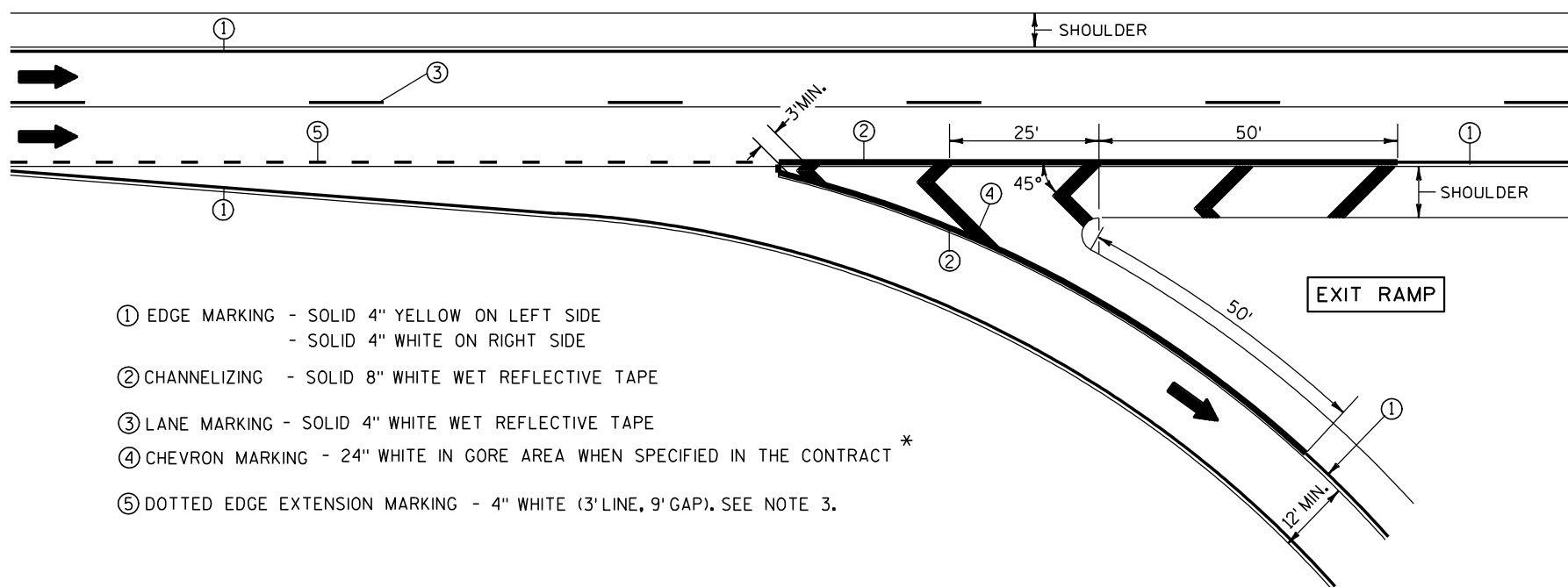
A CAR CAN BE PROVIDED BY THE WISCONSIN STATE PATROL FOR TRAFFIC CONTROL.

**AERIAL ENFORCEMENT BARS
PAVEMENT MARKING DETAILS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

4/23/01 /S/ Chester L. Seng
DATE CHIEF SIGNS AND MARKS 101 ENGINEER
FHWA

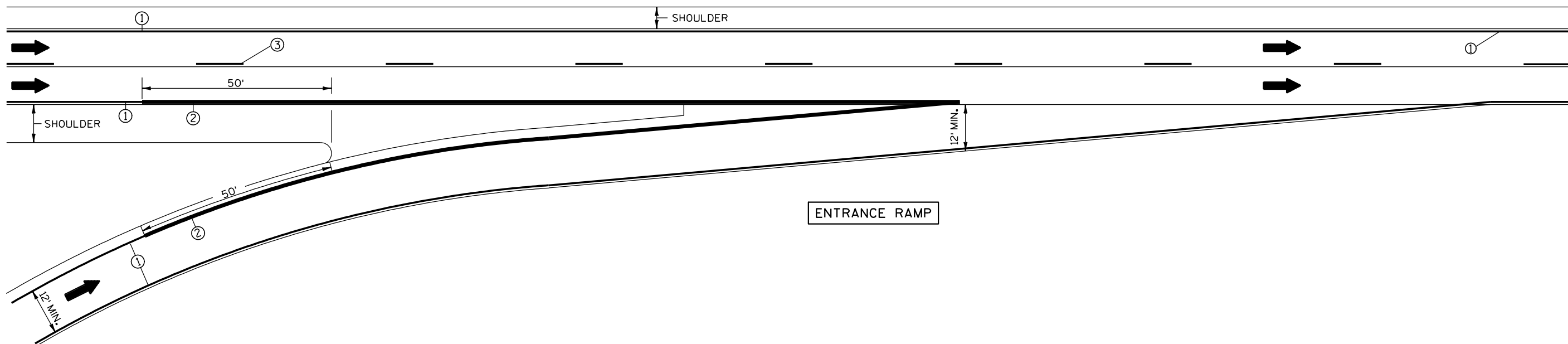


- ① EDGE MARKING - SOLID 4" YELLOW ON LEFT SIDE
- SOLID 4" WHITE ON RIGHT SIDE
- ② CHANNELIZING - SOLID 8" WHITE WET REFLECTIVE TAPE
- ③ LANE MARKING - SOLID 4" WHITE WET REFLECTIVE TAPE
- ④ CHEVRON MARKING - 24" WHITE IN GORE AREA WHEN SPECIFIED IN THE CONTRACT *
- ⑤ DOTTED EDGE EXTENSION MARKING - 4" WHITE (3' LINE, 9' GAP). SEE NOTE 3.

NOTES:

- 1. ARROWS SHOWN ON THIS MARKING PLAN DESIGNATE TRAFFIC FLOW, AND SHALL NOT BE TAKEN AS PROPOSED PAVEMENT MARKINGS.
- 2. PLACE WHITE EDGE OF TAPE 6" LEFT FROM JOINT.
- 3. 3' LINE 9' GAP, EXCEPT RETRACE THE EXISTING LINE-GAP PATTERN WHERE EXISTING MARKINGS ARE IN PLACE.
- 4. RETRACE EXISTING DIAGONAL MARKINGS.

* REFER TO DESIGN NOTES.



6

6

PAVEMENT MARKING
(RAMPS AND GORES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

LEGEND

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

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 DESIREABLE) DISTANCE TO EXISTING SIGNS.

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

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.

"W0" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.

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. NO WARNING LIGHTS SHALL BE WORKING ON "COVERED" OR "DOWNED" SIGNS.

CONSIDER GEOMETRICS WHEN LOCATING SIGNS AND ARROW BOARD SO THE DRIVER HAS A CLEAR VIEW OF THE ARROW BOARD AND LANE CLOSURE DRUMS FOR A MINIMUM 1500 FEET IN FRONT OF 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 FOR LONGER THAN 4 OR MORE DAYS AND NIGHTS.

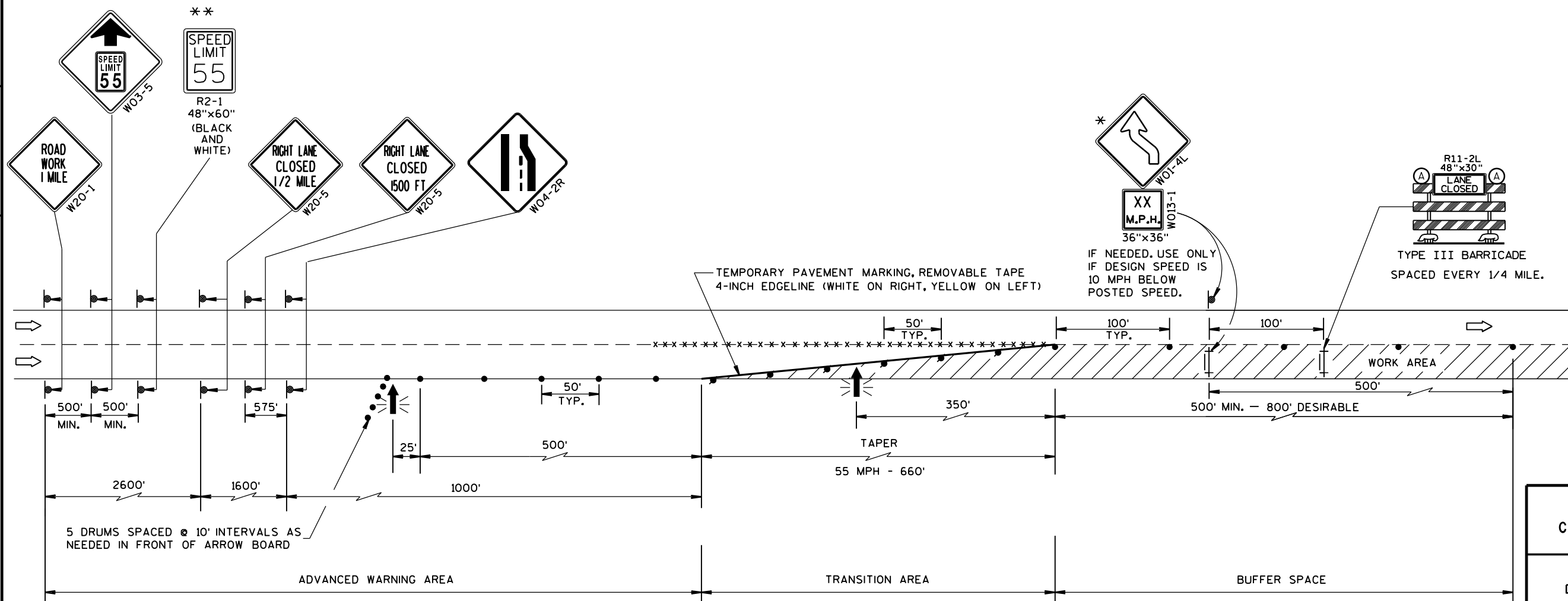
WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

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

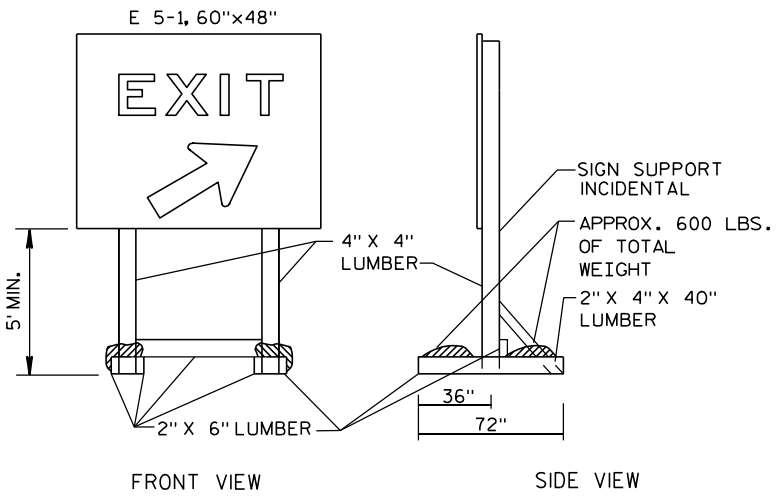
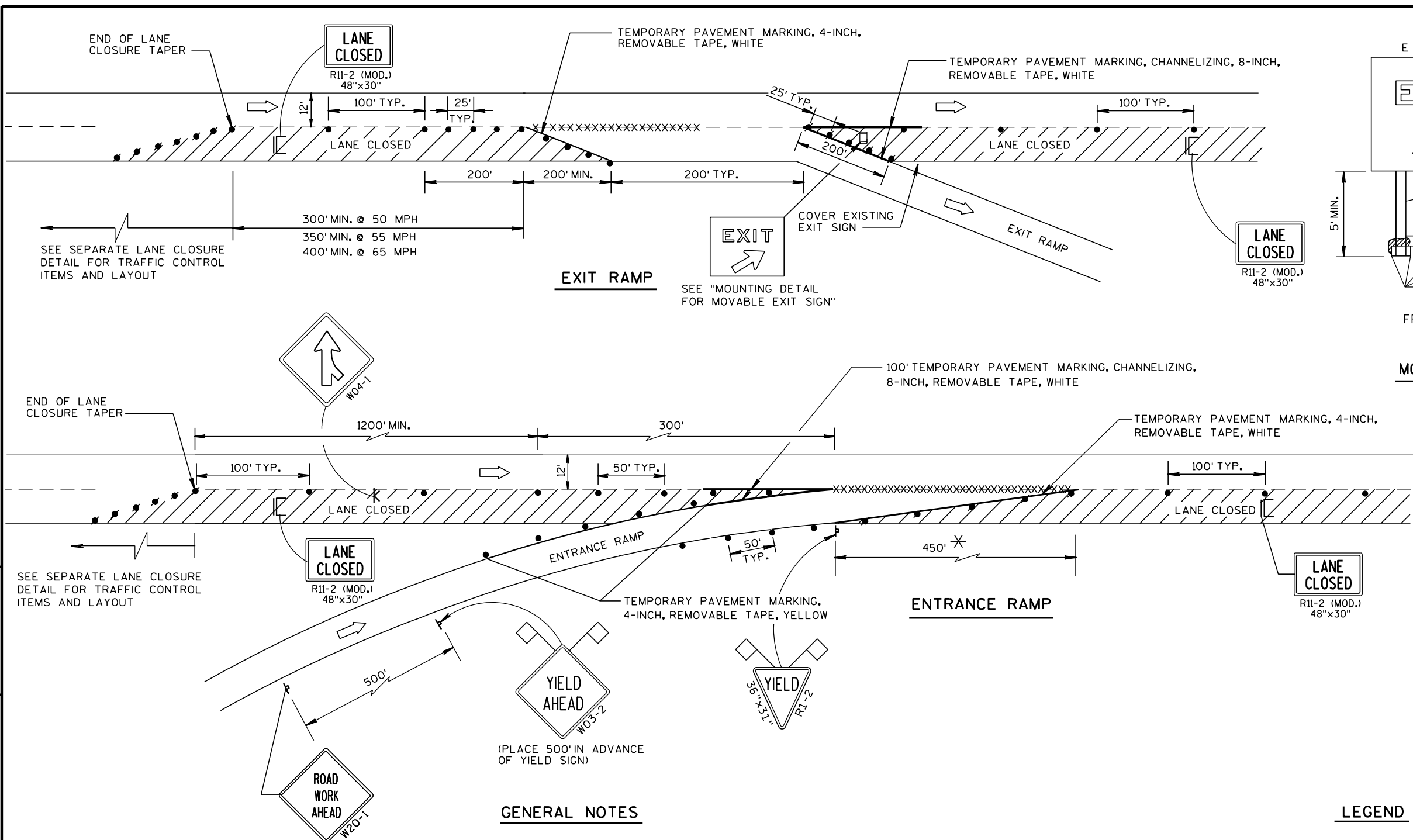
ADJUSTMENTS IN BUFFER SPACE NEED TO BE INCORPORATED WHEN THE LANE CLOSURE OCCURS NEAR AN INTERCHANGE EXIT OR ENTRANCE RAMP. THE LANE CLOSURE MUST MUST TAKE PLACE FAR ENOUGH IN ADVANCE OF AN EXIT OR ENTRANCE RAMP TO STILL ALLOW FOR ADEQUATE BUFFER SPACE. THE MINIMUM LENGTH OF THE BUFFER SPACE BEFORE AN EXIT RAMP SHOULD BE 1/2 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.

* THE LEFT REVERSE CURVE SIGN (W01-4L) IS ONLY REQUIRED WHEN THIS DETAIL IS USED IN COMBINATION WITH "SINGLE LANE CROSSOVER" DETAIL.

** A SPEED LIMIT SIGN SHALL BE LOCATED 1500 FEET BEYOND THE END OF THE ACCELERATION LANE OF EACH ENTRANCE RAMP. THERE SHOULD BE A SPEED LIMIT SIGN INCORPORATED A MINIMUM OF EVERY 2 OR 3 MILES. INCLUDE A 65 MPH RESUME SPEED LIMIT SIGN 200 FEET MINIMUM (500 FEET DESIREABLE) BEYOND THE "END OF ROADWORK" SIGN.



TRAFFIC CONTROL, LANE CLOSURE, SPEED REDUCTION	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 3-2014 DATE	/S/ Travis Feltes STATE TRAFFIC ENGINEER 103 SIGN
FHWA	



FRONT VIEW SIDE VIEW
NOTE: ALL LUMBER DIMENSIONS ARE NOMINAL
MOUNTING DETAIL FOR MOVABLE EXIT SIGN

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"x48" 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 R11-2 (MOD.) "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 CONTINUOUS 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 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 7 OR MORE CONTINUOUS DAYS AND NIGHTS.

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

* LENGTH OF OPENING MAY BE REDUCED TO 150 FEET DURING STAGING OF WORK IN IMMEDIATE AREA OF RAMP TAPER.

LEGEND

- POST MOUNTED SIGN
- SIGN ON PORTABLE SUPPORT
- TRAFFIC CONTROL, DRUM
- TRAFFIC CONTROL, DRUM WITH WARNING LIGHT, TYPE C (STEADY-BURN)
- REMOVING PAVEMENT MARKING (SEE GENERAL NOTES)
- TYPE III BARRICADE (8' EQUIVALENT) WITH SIGN
- FLAGS, 16"x16" MIN., ORANGE
- DIRECTION OF TRAFFIC FLOW

TRAFFIC CONTROL, EXIT AND ENTRANCE RAMP WITHIN LANE CLOSURE			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
APPROVED 5/24/2000 DATE		/S/ Chester J. CHIEF SIGNS AND MAR 104 INEER	
FHWA			

LEGEND

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

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.

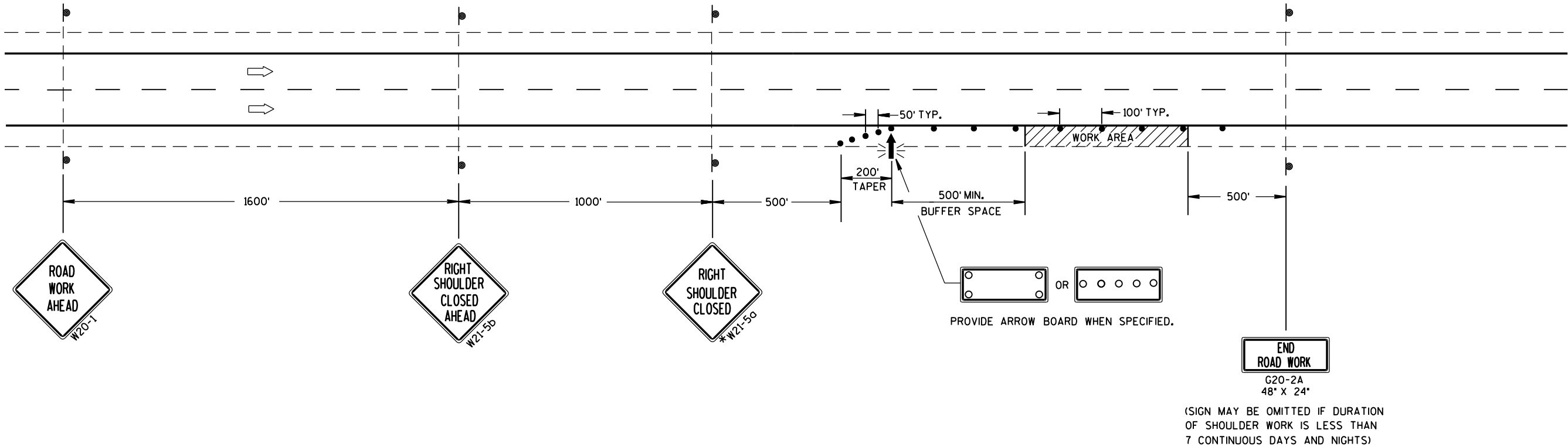
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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.

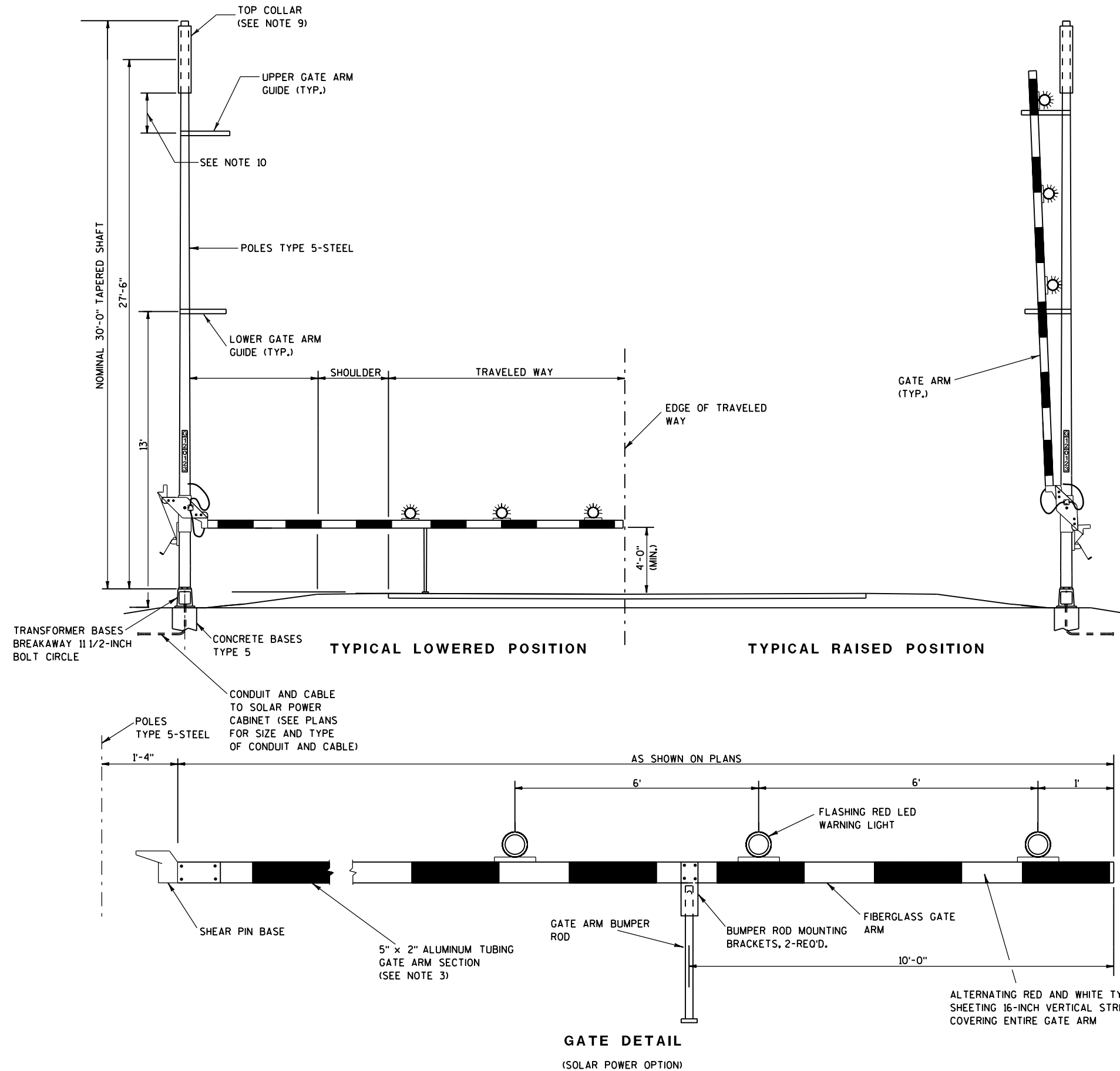
CHANNELIZING DEVICES PLACED ADJACENT TO THE WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

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 W21-5a SIGN MAY BE OMITTED.

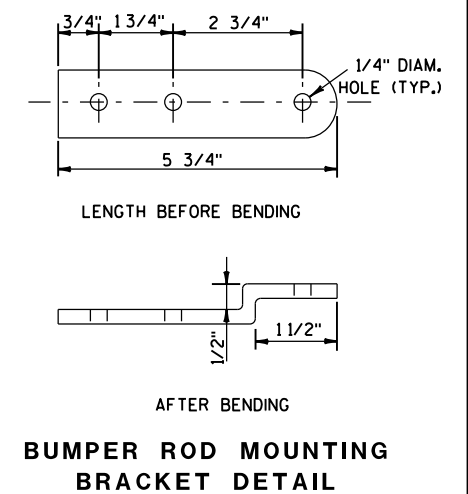
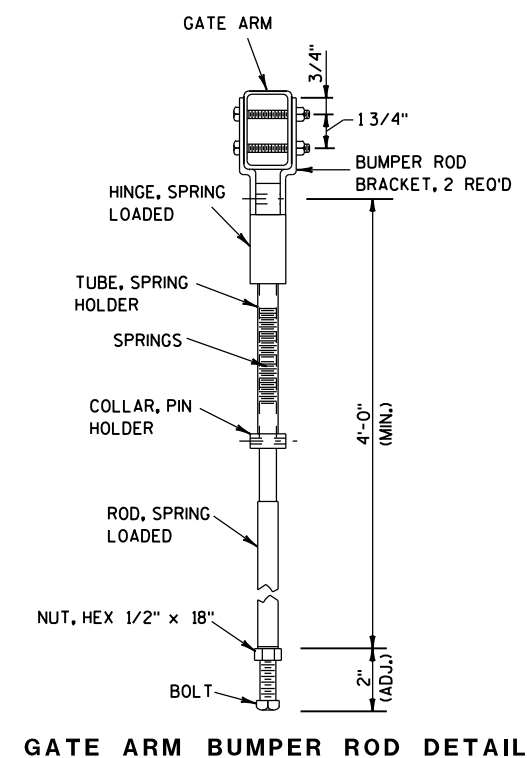


TRAFFIC CONTROL SHOULDER CLOSURE ON DIVIDED ROADWAY, SPEEDS GREATER THAN 40 MPH		
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION		
APPROVED		
8/2013	/S/ Travis Feltus	
DATE	STATE TRAFFIC ENGINE 105	SIGN
FHWA		



GENERAL NOTES

1. THE LOCATION OF RAMP CLOSURE GATES AND MOUNTING HEIGHT OF GATE ARM PIVOT SHALL BE VERIFIED BY THE ENGINEER.
2. HEIGHT OF GATE ARM GUIDES MAY BE VARIED AS REQUIRED FOR WARNING LIGHT CLEARANCE.
3. FIBERGLASS/ALUMINUM GATE ARM AND SHEAR PIN BASE SHALL BE SUPPLIED BY THE SAME VENDOR.
4. GATE ARM TO BE MOUNTED ON PROPOSED POLE AS INDICATED ON THE PLANS. PROPOSED POLE SHALL BE TYPE 5 POLE.
5. LOCATION OF THE CONCRETE BASE AND LENGTH OF THE GATE ARM WILL BE VERIFIED BY THE ENGINEER TO ENSURE ADEQUATE COVERAGE OF THE TRAVELED LANE.
6. GATE PIVOTS, SUPPORTS AND GUIDES, AND ALL ASSOCIATED HARDWARE SHALL BE GALVANIZED. ALL ROUGH EDGES AND BURRS SHALL BE GROUND SMOOTH PRIOR TO GALVANIZING.
7. ALL EXPOSED BOLT THREADS SHALL BE PAINTED WITH TWO COATS OF ZINC RICH PAINT CONFORMING WITH THE REQUIREMENTS OF ASTM A 780.
8. ANY FIELD DAMAGE TO THE GALVANIZING SHALL BE REPAIRED WITH TWO COATS OF ZINC RICH PAINT CONFORMING WITH THE REQUIREMENTS OF ASTM A 780.
9. A STANDARD LIGHTING LUMINAIRE ARM MAY BE MOUNTED TO THE TYPE 5 POLE IN LIEU OF THE TOP COLLAR.
10. UPPER GATE ARM GUIDE IS TO BE INSTALLED 6 TO 12-INCHES BELOW THE BOTTOM OF THE TOP COLLAR.

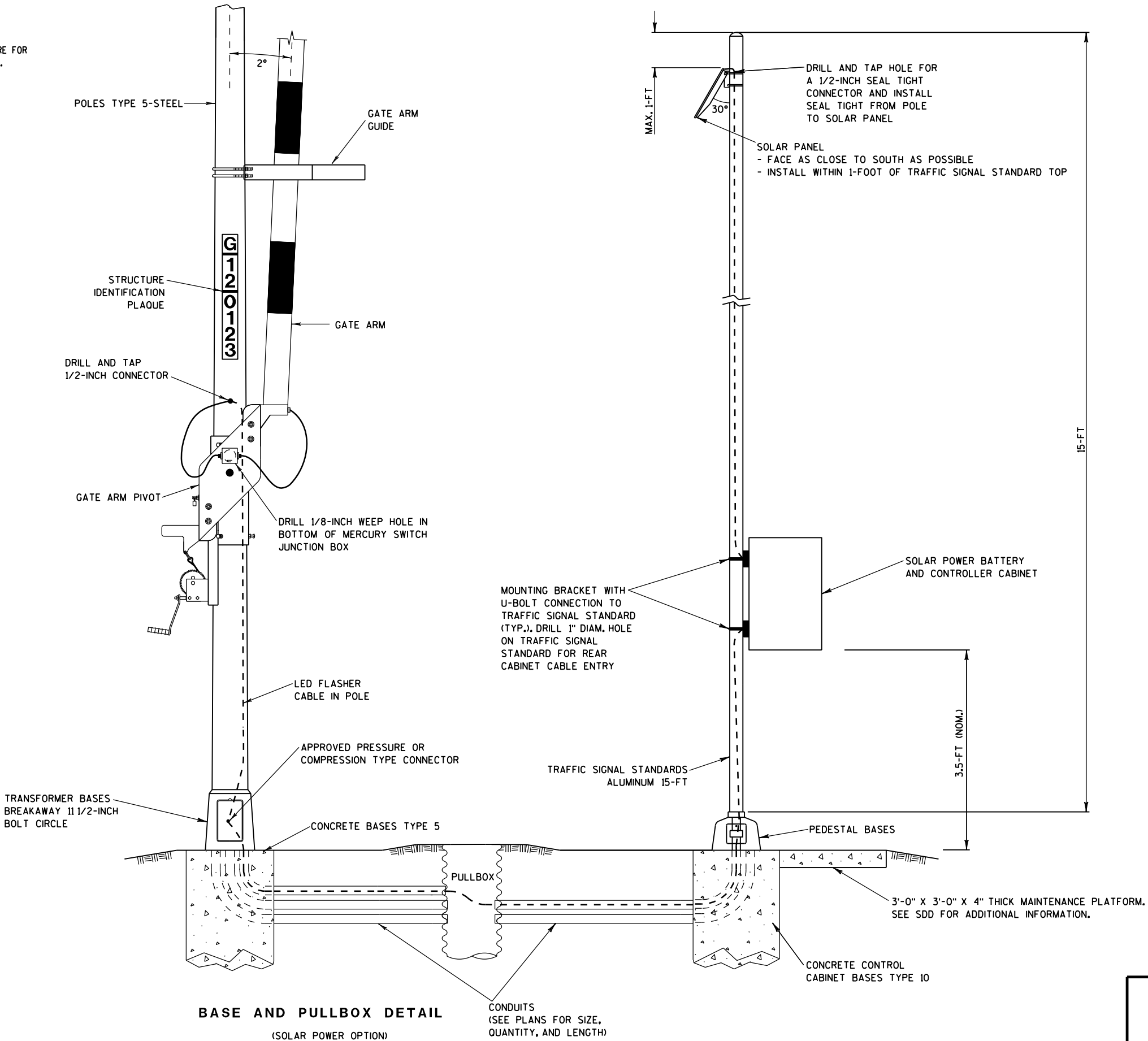


**RAMP GATE
SOLAR POWER**

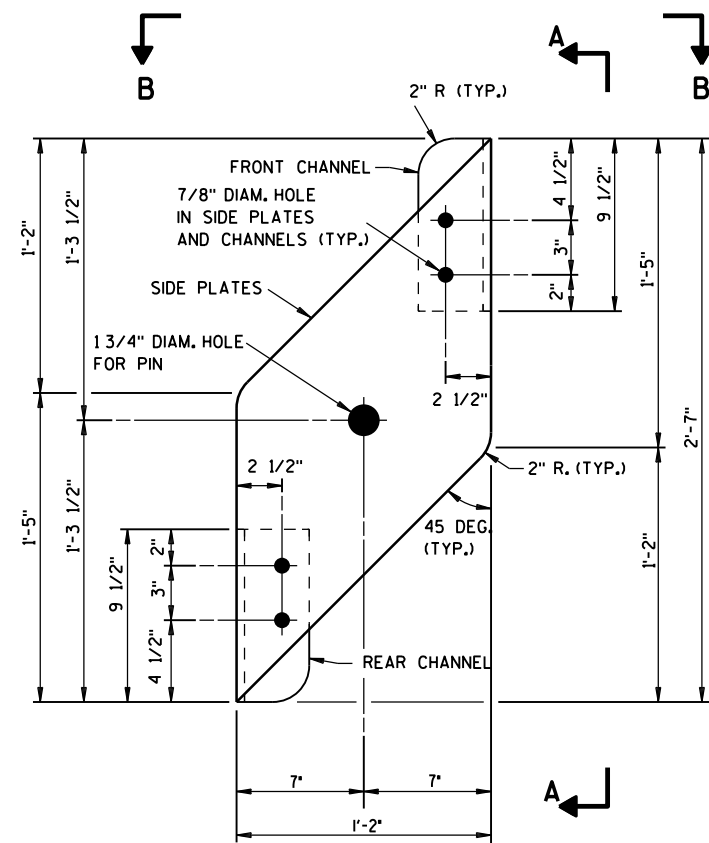
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 106

WIRING NOTES

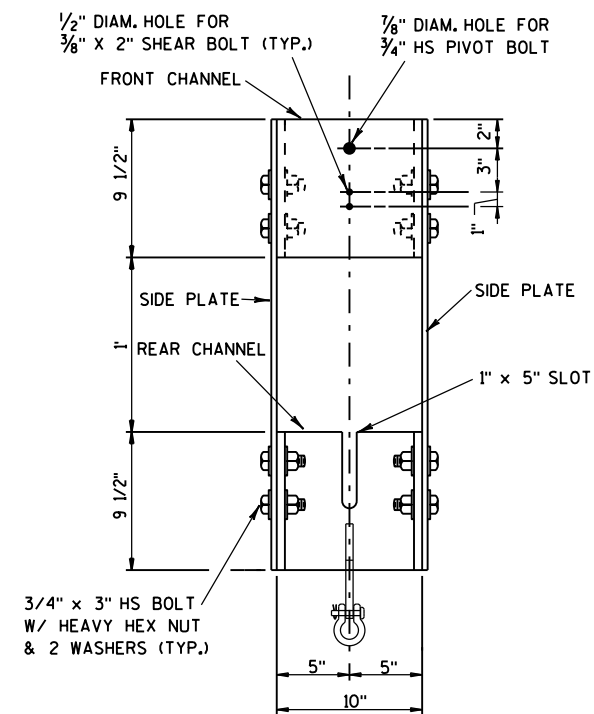
- 1. WIRING FROM SOLAR PANEL TO CABINET SHALL BE BLUE #10 XLP WIRE FOR POSITIVE CONDUCTOR AND WHITE #10 XLP FOR NEGATIVE CONDUCTOR.
- 2. WIRING FROM CABINET TO GATE ARM SHALL BE WHITE #10 XLP FOR COMMON, RED #10 XLP FOR FLASHER CIRCUIT 1, AND BLUE #10 XLP FOR FLASHER CIRCUIT 2.



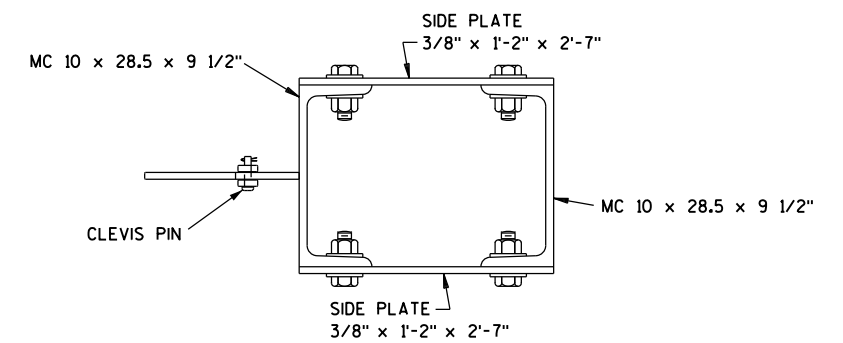
RAMP GATE SOLAR POWER
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION 107



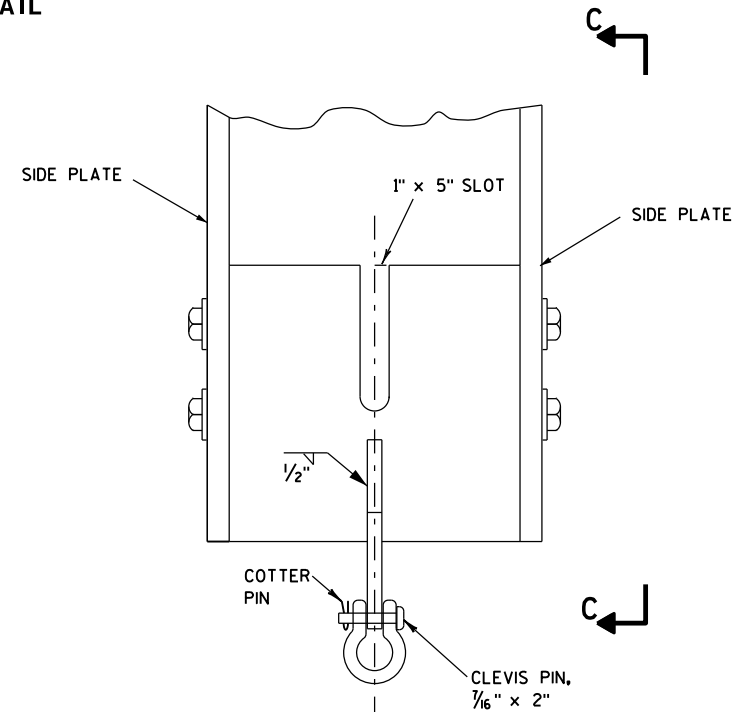
SIDE PLATE DETAIL



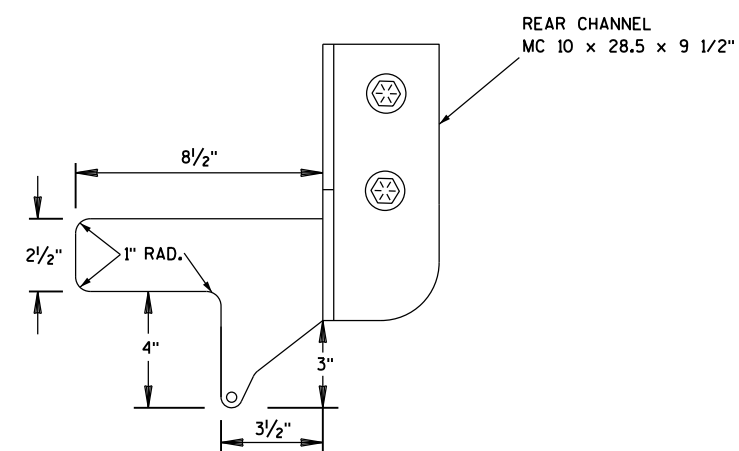
SECTION A-A



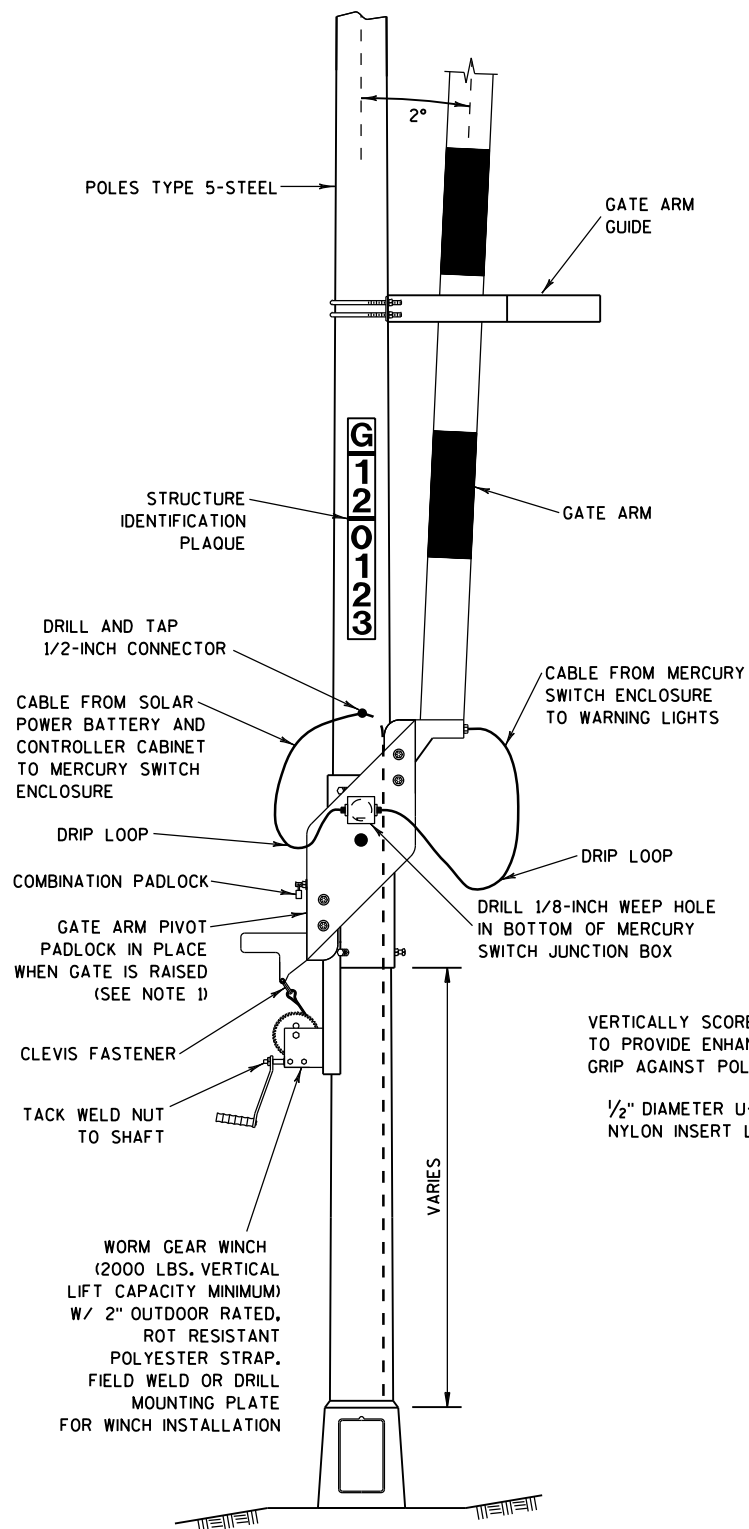
SECTION B-B



YOKE ASSEMBLY DETAIL



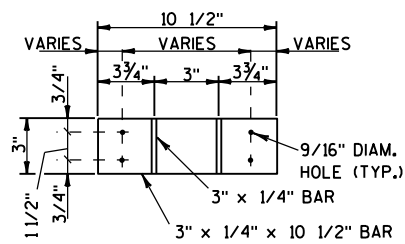
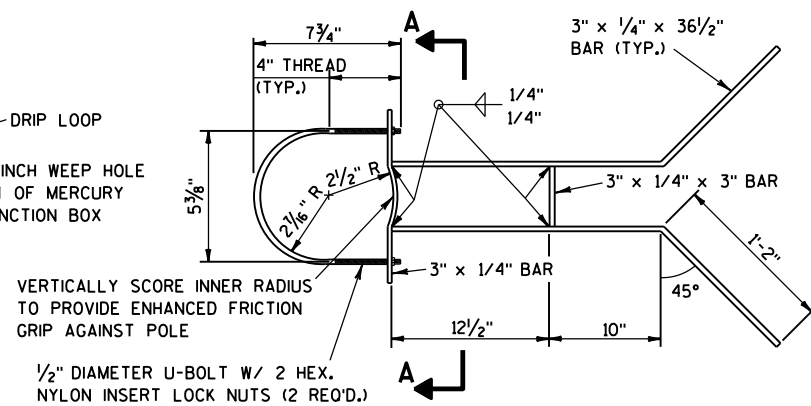
SECTION C-C



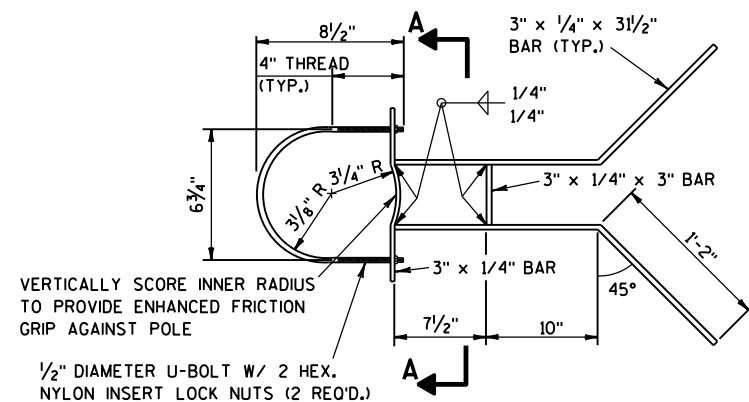
GATE PIVOT ASSEMBLY

GENERAL NOTES

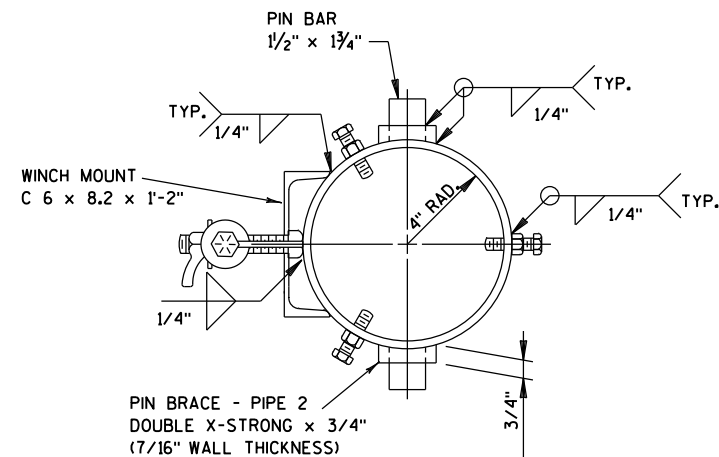
1. WHEN THE GATE IS FULLY RAISED, THE NUT AND WASHER SHALL BE PLACED SNUGLY AGAINST THE OUTSIDE OF THE REAR CHANNEL AND PADLOCKED IN PLACE.
2. WHEN THE GATE IS FULLY LOWERED, THE NUT AND WASHER SHALL BE PLACED SNUGLY AGAINST THE INSIDE OF THE REAR CHANNEL AND PADLOCKED INTO PLACE.
3. ANTI-SEIZE LUBRICATING MATERIAL SHALL BE USED ON ALL BOLT THREADS BEFORE INSTALLATION.
4. ALL BOLTS SHALL BE GALVANIZED AND CONFORM TO ASTM A307, GRADE A, UNLESS DESIGNATED AS HS (HIGH STRENGTH), WHICH SHALL CONFORM TO ASTM A325. BOLTS OF 1/2" NOMINAL DIAMETER OR LESS MAY BE STAINLESS STEEL.

SECTION A-A
U-BOLTS NOT SHOWN

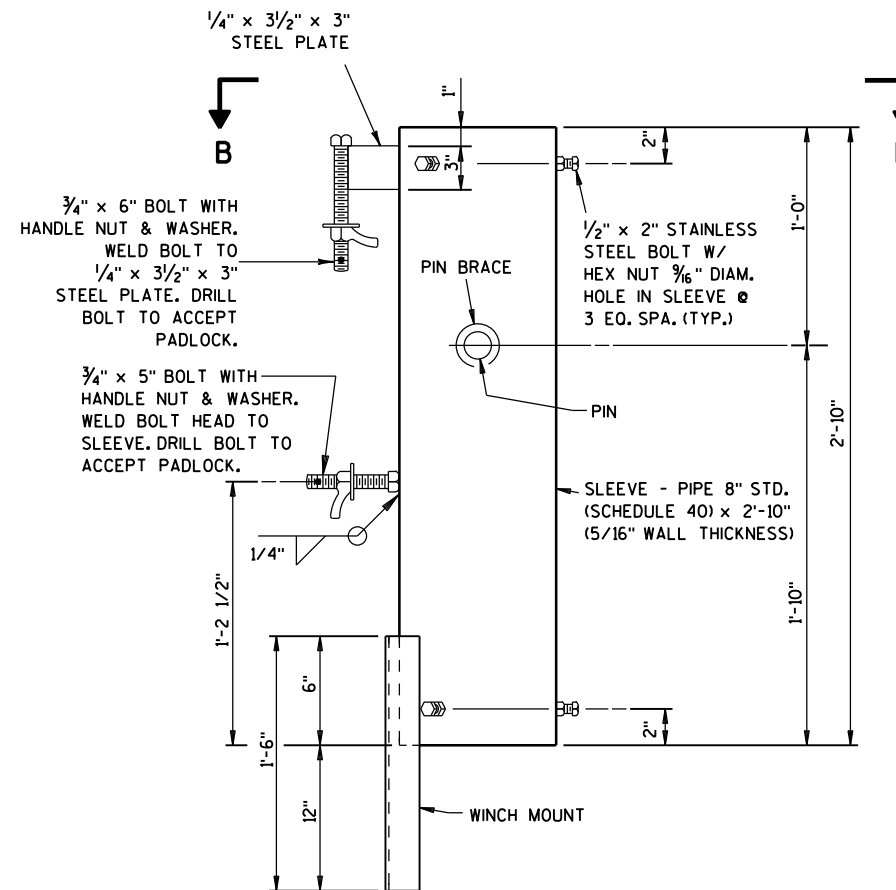
UPPER GATE ARM GUIDE DETAIL



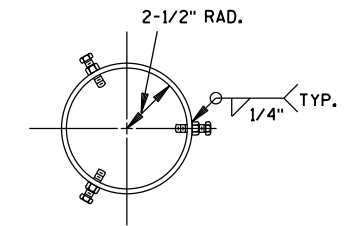
LOWER GATE ARM GUIDE DETAIL



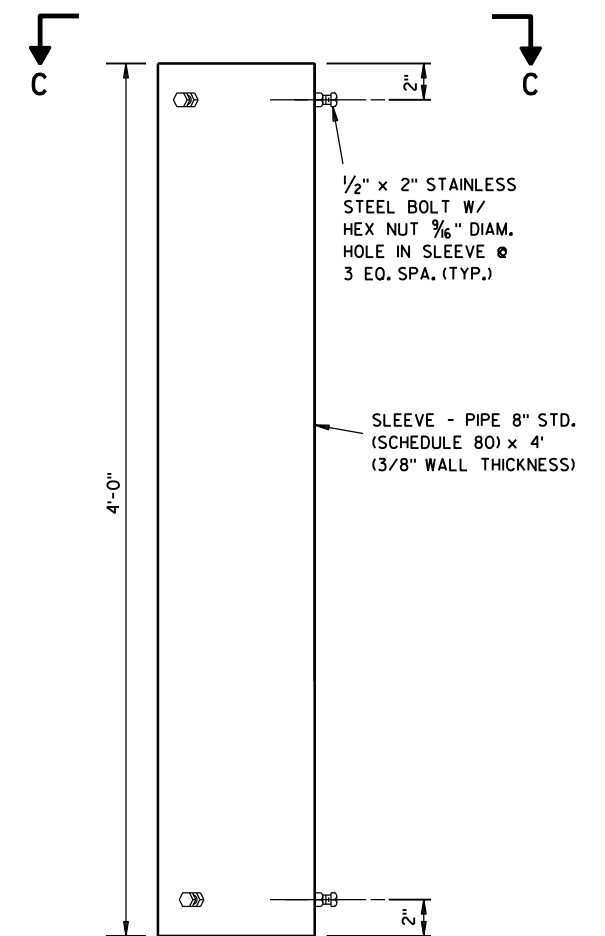
SECTION B-B



PIVOT SLEEVE DETAIL



SECTION C-C



TOP COLLAR

RAMP GATE
SOLAR POWERSTATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

4-30-2013

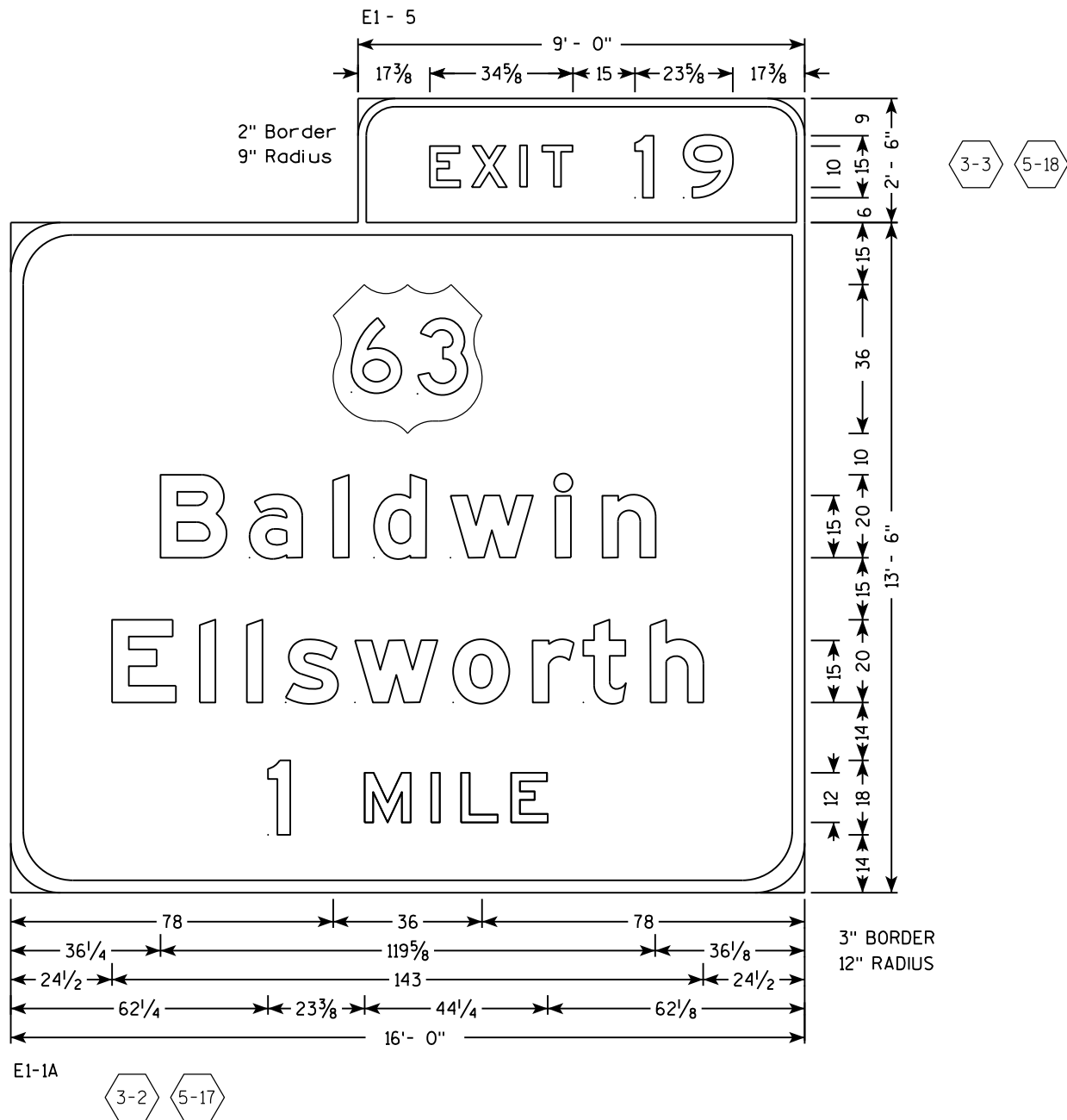
DATE

FHWA

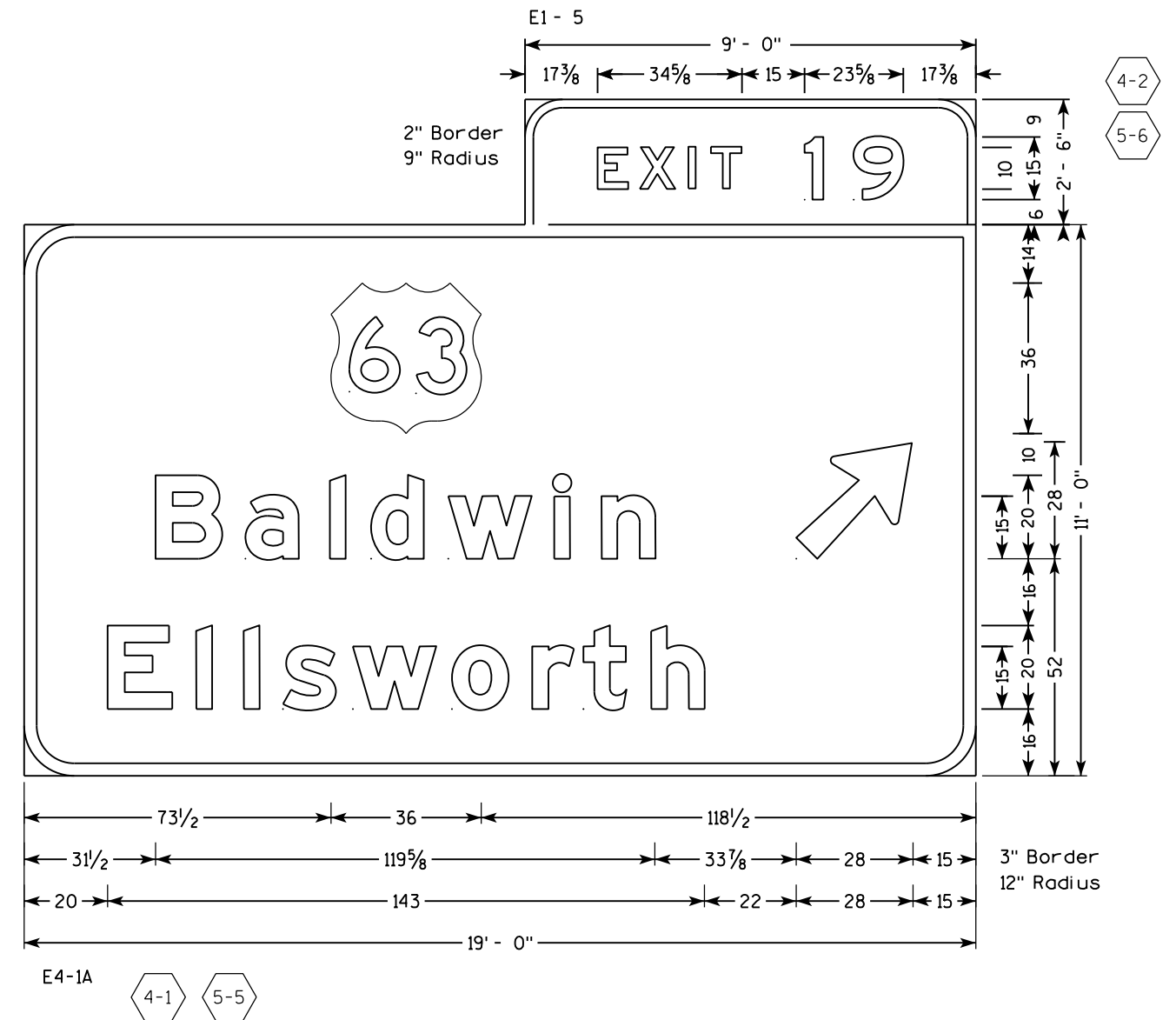
/S/ Bill Wondrachek

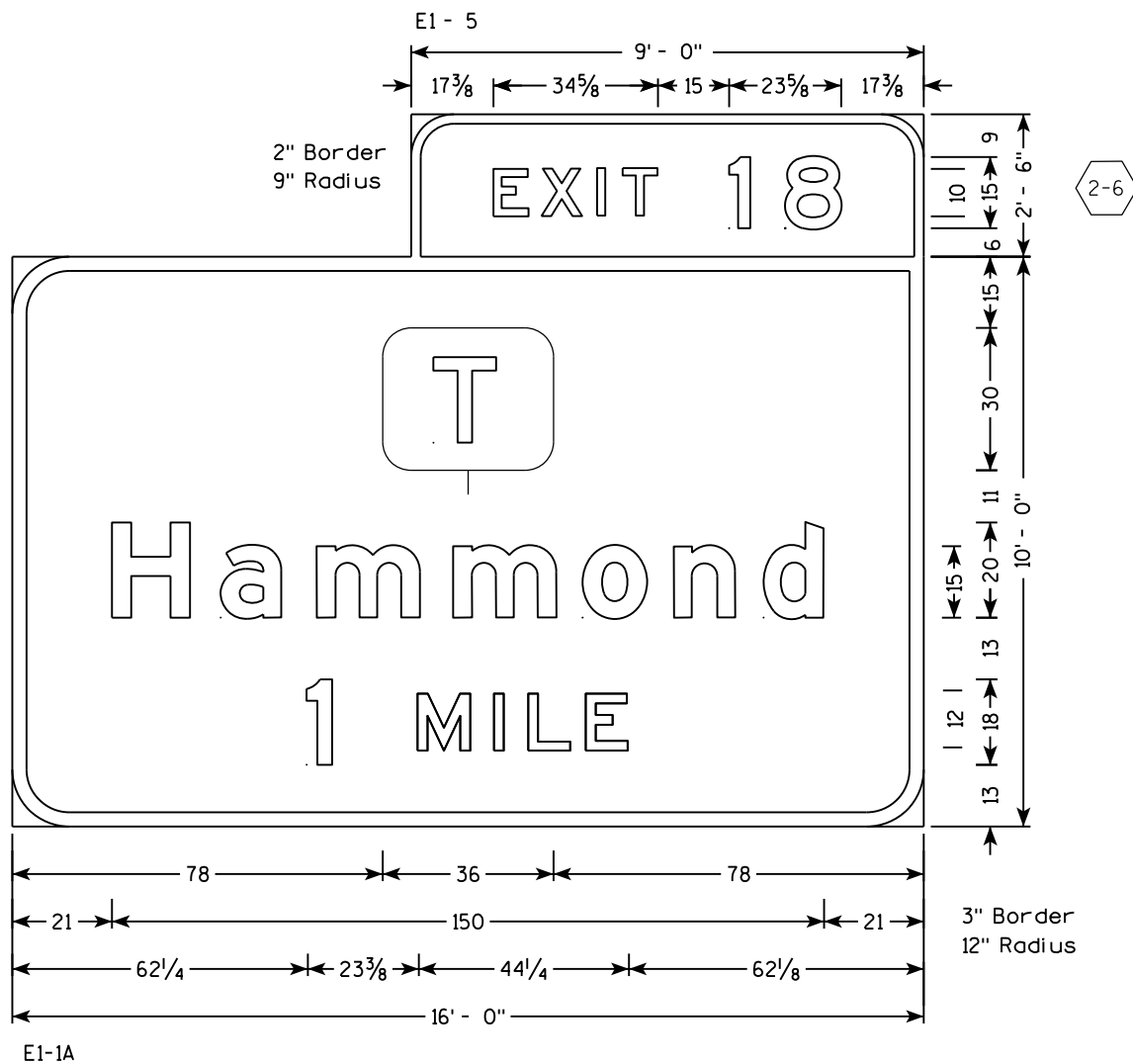
STATE TRAFFIC MANAGEMENT ENGINEER

109

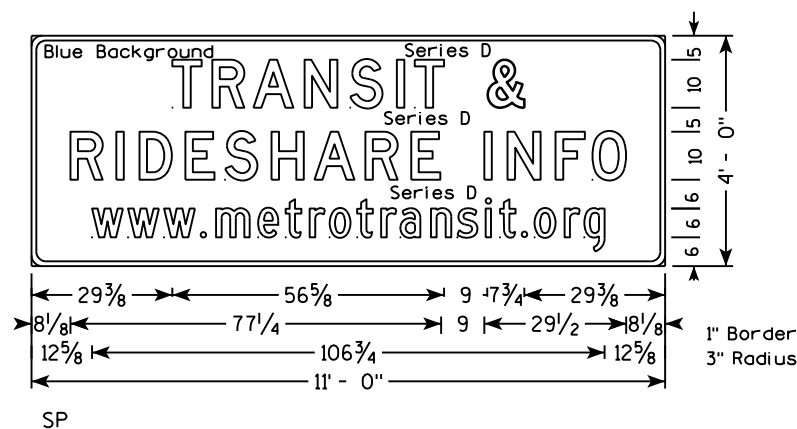


- NOTES**
1. All Signs are Type I - Type SH Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
 2. Color:
Background - Green
Message - White
 3. Message Series - E Modified except all cap WORDS are Series E





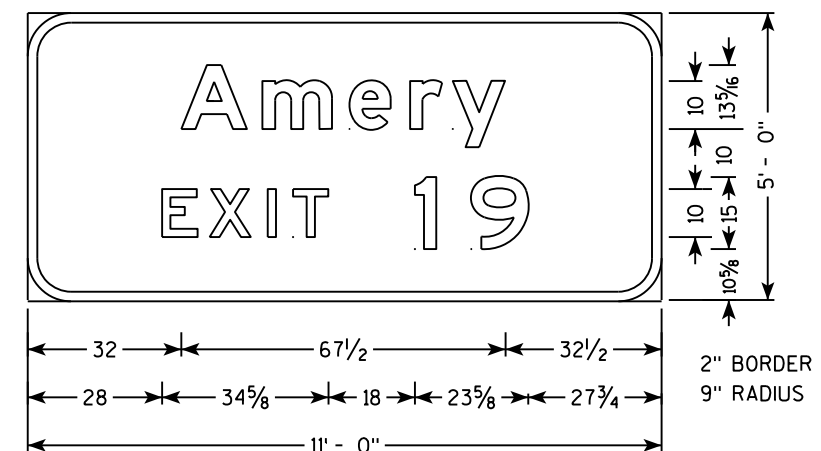
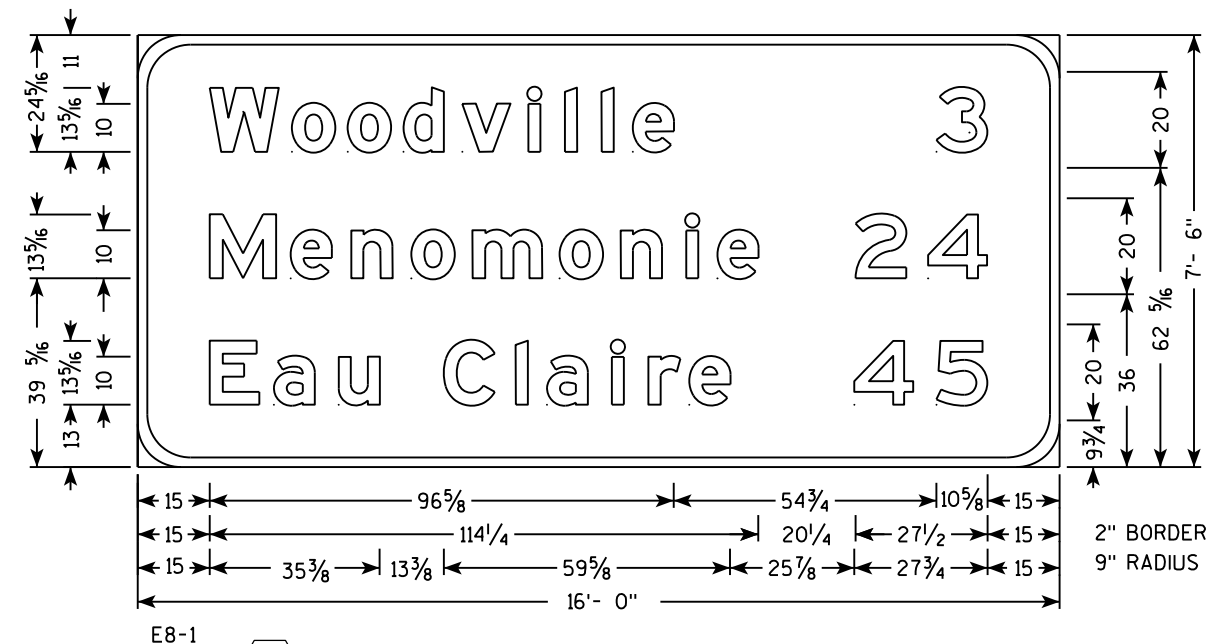
2-5



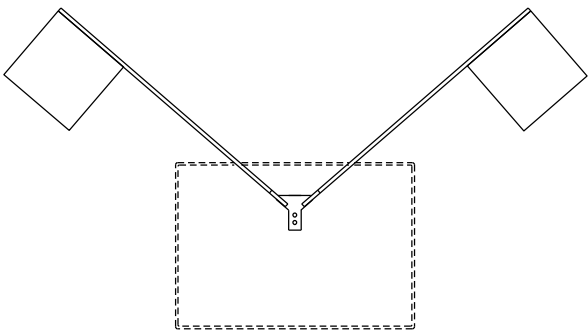
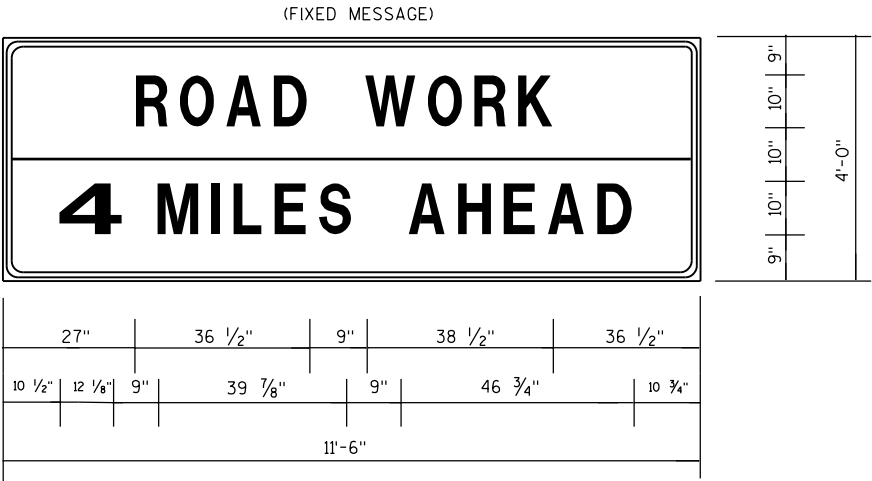
3-15

NOTES

1. All Signs are Type I - Type SH Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Green except as Shown
Message - White
3. Message Series - E Modified except all cap WORDS are Series E and Transit sign is Series D as Shown



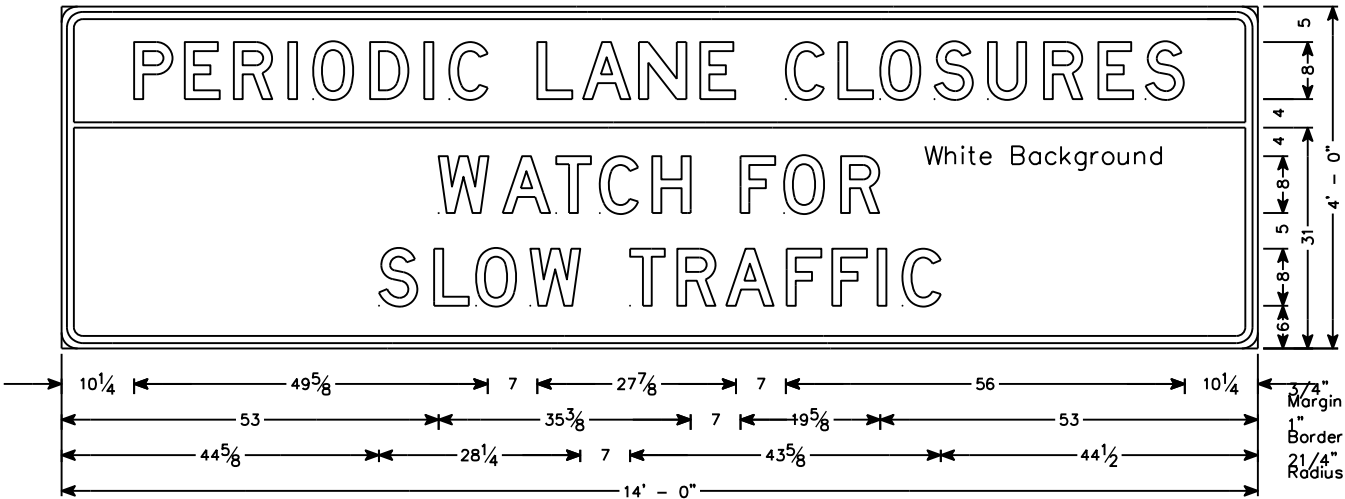
3-12 5-15



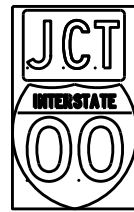
MOUNTING DETAIL FOR TRAFFIC CONTROL ASSEMBLIES

FLAGS: 16" X 16" MIN., ORANGE
ERECT FLAG ASSEMBLY USING ENGINEER-APPROVED MOUNTING METHODS

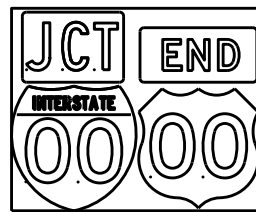
1. ALL SIGNS ARE TYPE II - REFLECTIVE - REFERENCE WISDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION LATEST EDITION
2. COLOR:
BACKGROUND - ORANGE EXCEPT AS NOTED
MESSAGE - BLACK
3. ALL LETTERS ARE SERIES D EXCEPT WHERE OTHERWISE NOTED
4. 1 1/4" BORDER EXCEPT WHERE OTHERWISE NOTED
6" RADIUS EXCEPT WHERE OTHERWISE NOTED



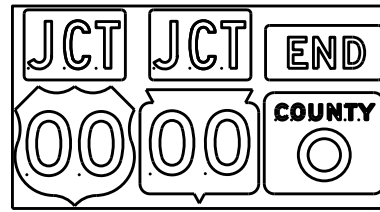
TYPICAL ASSEMBLIES



J1-1



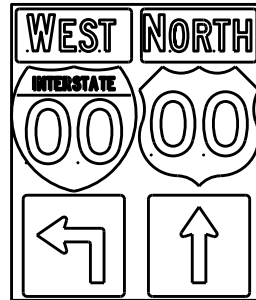
J1-2



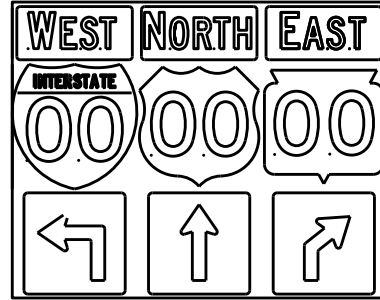
J1-3



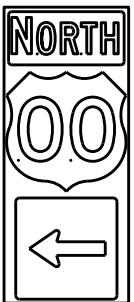
J2-1



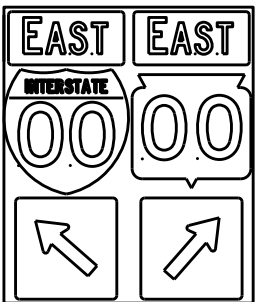
J2-2



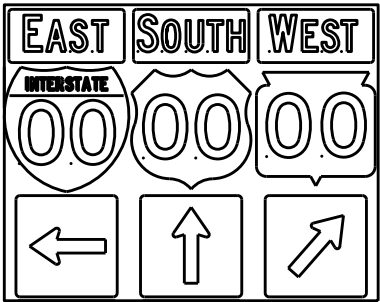
J2-3



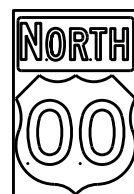
J3-1



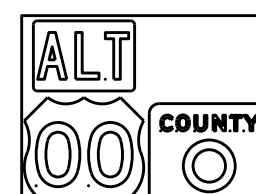
J3-2



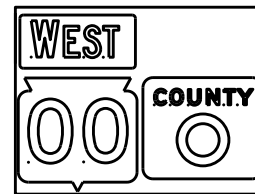
J3-3



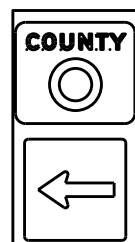
J4-1



J4-2



J4-2



J13-1



J12-1



J32-1



J33-1



J23-1

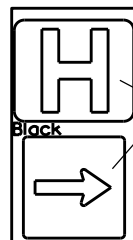


J22-1



JV

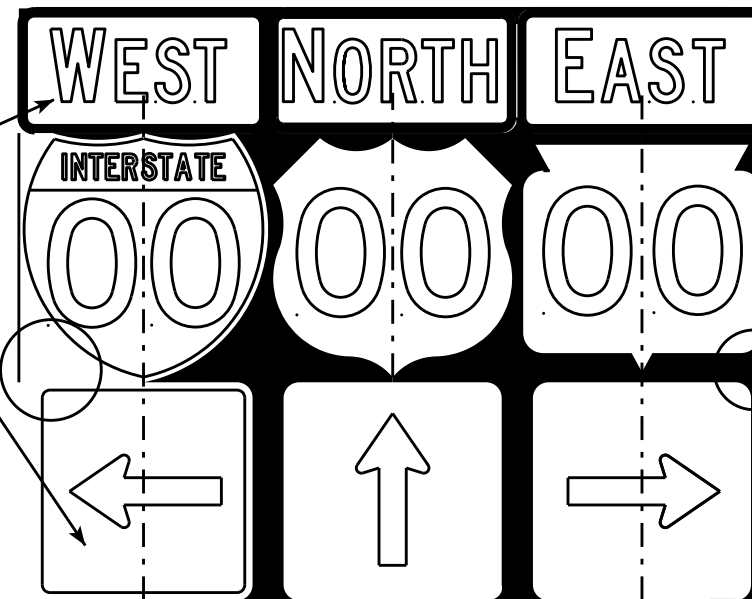
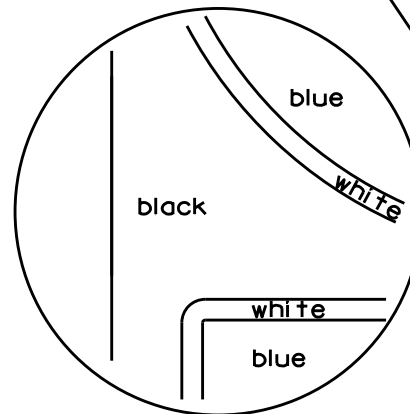
(Typical Vertical J-Assembly
See Note 10 and 11)



JH-1

Blue Background

[blue background
with interstate]



[black background]

ROUTE MARKERS & COMPONENTS
IN TYPICAL ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

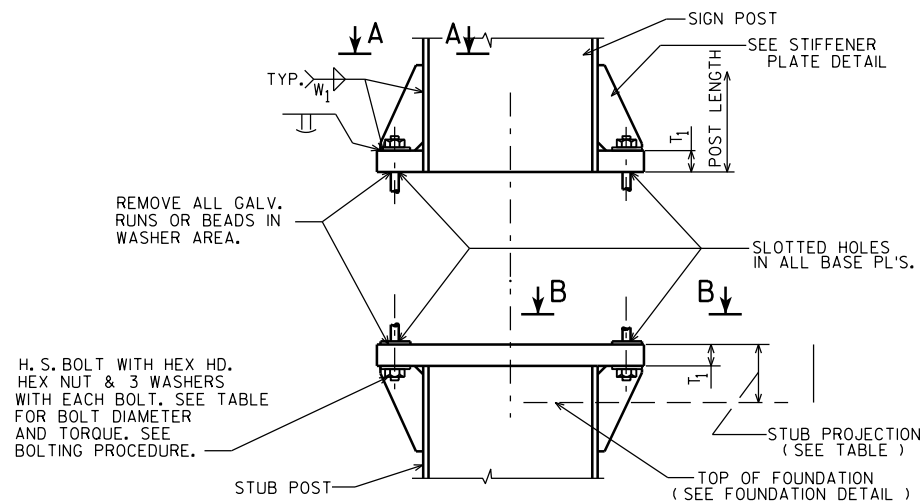
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 2/06/14 PL 113 A2-1S.8

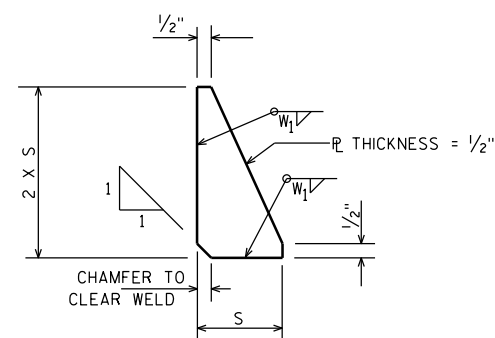
SHEET NO: E

NOTES

1. Signs are Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Black Non-reflective
Message - see Note 5
3. Message Series - See Note 5
4. Corners shall be square or rounded if base material is plywood. If base material is metal the corners shall be rounded.
5. The colors and message spacing on each marker shall be according to the applicable route marker panel specifications.
6. Certain marker heads require the component pieces to be the same color. As an example, all the components used with an M1-1 Interstate marker shall be blue.
7. Single panel j-assemblies shall only be used with route marker shields that are same size. If the route marker shields are different size use multiple piece component.
8. Route assemblies that have 24 inch route shields and have dimensions greater than 48 inches (both vertical and horizontal) shall have one horizontal splice between the arrows and route shields. Vertical splices shall not be used on route assemblies with a horizontal dimension of 144 inches or less. The contractor shall not use more than one vertical joint per sign and the joint shall be between route shields.
9. Route assemblies that have 36 inch shields and have dimensions greater than 48 inches (both vertical and horizontal) shall have two horizontal splices. One horizontal splice shall be between the cardinal direction and route shields and the other horizontal splice shall be between the arrows and route shields. Vertical splices shall not be used on route assemblies with a horizontal dimension of 144 or less. The contractor shall not use more than one vertical joint per sign and the joint shall be between route shields.
10. All Vertical J Assemblies are given a Sign Code of JV
11. For JV Assemblies that have a mixture of Interstate and non Interstate shields, arrows and cardinals shall be white on blue.

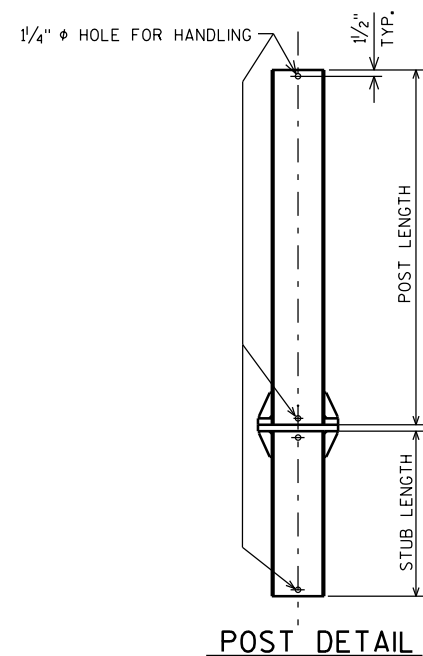


SIGN POST AND STUB POST ELEVATION

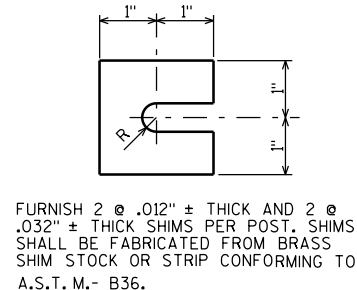


STIFFENER PLATE DETAIL

(SEE TABLE FOR DIMENSIONS)



POST DETAIL



SHIM DETAIL

QUANTITIES FOR 1 FOOTING		
	CONC. MASONRY C.Y.	REIN. STEEL LBS.
A	0.6	34
B	0.8	49
C	0.9	50
D	0.9	56
E	1.0	62

⑦

		TYPE	#3	#4
⑦	REIN.	A	8 @ 4'-5	5 @ 6'-3
		B	8 @ 6'-5	7 @ 6'-3
		C	8 @ 6'-11	7 @ 6'-3
		D	8 @ 7'-5	8 @ 6'-3
		E	8 @ 7'-11	9 @ 6'-3

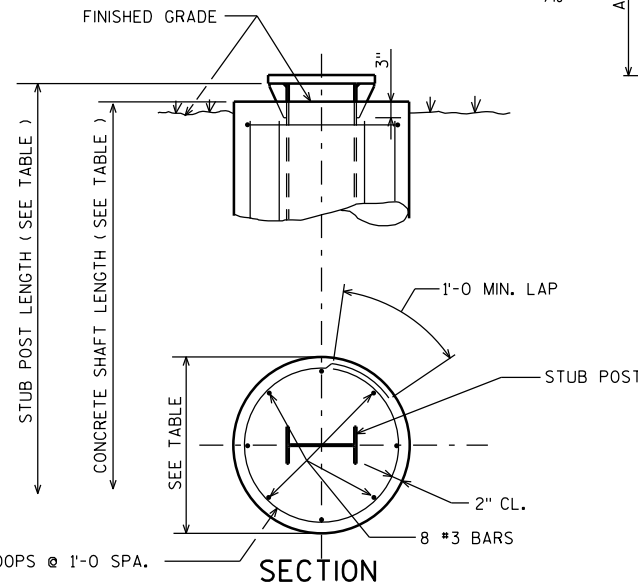
⑦

		BASE CONNECTION DATA TABLE													FOUNDATION DATA		K
TYPE	DIMENSION POST SIZE	BOLT SIZE & TORQUE	A	B	C	D	E	T ₁	T ₄	W ₁	R	S	STUB LENGTH	STUB PROJECTION	SHAFT DIAMETER	SHAFT LENGTH	
④ A	W10"x12.0 #/FT.	3/4" φ @ 75#-FT.	5/4"	1'-0 3/8"	7/8"	3 1/2"	7/8"	1"	3/16"	5/16"	13/32"	2 1/8"	3'-6"	3"	2'-0 φ	5'-0"	④ 76.0#
④ B	W12"x16.0 #/FT.	7/8" φ @ 85#-FT.	5/2"	1'-4 1/4"	1"	3 1/2"	1"	1 1/4"	1/4"	5/16"	15/32"	3"	5'-6"	3"	2'-0 φ	7'-0"	④ 146.5#
C	W12"x19.0 #/FT.	7/8" φ @ 85#-FT.	5/2"	1'-4 1/4"	1"	3 1/2"	1"	1 1/2"	5/16"	5/16"	15/32"	3"	6'-0"	3"	2'-0 φ	7'-6"	④ 182.1#
D	W12"x22.0 #/FT.	7/8" φ @ 85#-FT.	5/2"	1'-4 1/4"	1"	3 1/2"	1"	1 1/2"	3/8"	5/16"	15/32"	3"	6'-6"	3"	2'-0 φ	8'-0"	③ 210.5#
③ E	W12"x26.0 #/FT.	1" φ @ 90#-FT.	7"	1'-4 1/4"	1 1/4"	4"	1 1/2"	1 1/2"	3/8"	5/16"	17/32"	3"	7'-0"	3"	2'-0 φ	8'-6"	③ 293.0#

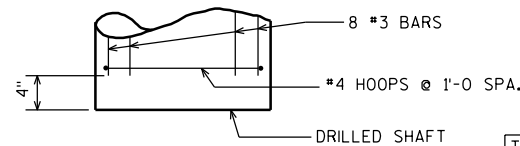
① ⑥ ①

STRUCTURAL CARBON STEEL PAY WTS. (1POST) = K + (POST LENGTH X POST WT.)
 "K" INCLUDES STUB, BASE PLATES, STIFFS., BOLTS, AND WASHERS.

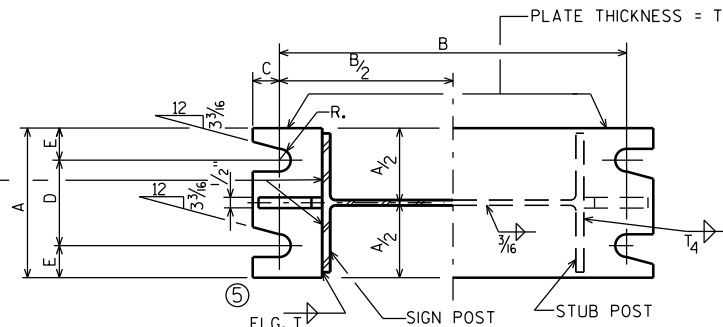
FTG. T + 1/16"
 FTG. T + 1/16"



SECTION

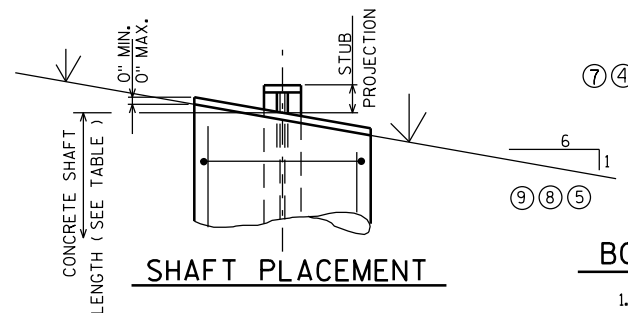


FOUNDATION DETAIL



SECTION A-A

SECTION B-B



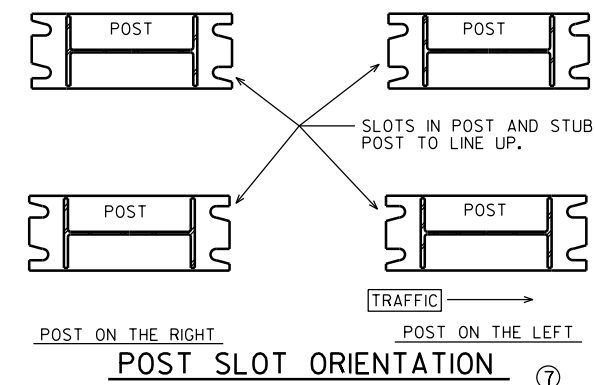
SHAFT PLACEMENT

BOLTING PROCEDURE - BASE CONNECTION

1. ASSEMBLE SIGN POST TO STUB POST WITH BOLTS AND ONE OF THE FLAT WASHERS ON EACH BOLT BETW. PLATES.
2. SHIM AS REQ'D. TO PLUMB POST.
3. PRIOR TO BOLT TIGHTENING LUBRICATE BASE CONNECTION BOLTS WITH BEESWAX OR OTHER HIGH-WAX LUBRICANT.
4. TIGHTEN ALL BOLTS THE MAXIMUM POSSIBLE WITH 12" OR 15" WRENCH TO BED WASHERS & SHIMS AND TO CLEAN BOLT THREADS, THEN LOOSEN EACH BOLT IN TURN AND RETIGHTEN IN A SYSTEMATIC ORDER TO THE PRESCRIBED TORQUE. (SEE TABLE)
5. BURR THREADS AT JUNCTION WITH NUT USING A CENTER PUNCH TO PREVENT NUT LOOSENING.

NOTE:

TIGHTEN THE HIGH STRENGTH BOLTS TO THE TORQUE SHOWN. DO NOT OVERTIGHTEN.



POST SLOT ORIENTATION

⑦

DESIGN DATA

WIND PRESSURE = 75 M.P.H.
 WIND COMPONENTS - NORMAL = 1.0 TRANSVERSE = 0.0
 ICE LOAD = 3 P.S.F.
 GROUP LOADS PERCENT OF ALLOWABLE STRESS
 1. DEAD 100
 2. DEAD & WIND 140
 3. DEAD, ICE & 1/2 WIND 140 Δ25 P.S.F. MIN.
 ALLOWABLE SOIL PRESSURE = 1/2 T / SQ. FT.
 WIND LOAD WAS APPLIED TO THE AREA OF THE SIGN AND TO THE SUPPORTING MEMBERS.
 ICE LOAD WAS APPLIED TO ONE FACE OF THE SIGN AND AROUND THE SURFACE OF THE SUPPORTING MEMBERS.

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.
 DESIGN CONFORMS WITH A.A.S.H.T.O. SPECIFICATIONS 1985.
 ALL POSTS, POST STUBS & ATTACHMENTS SHALL BE A.S.T.M. A709 GRADE 50.
 THE POST, BASE PLATES, UPPER SIX INCHES OF STUB POST FLANGE SPLICE PLATE AND FUSE PLATE SHALL BE GALVANIZED AFTER FABRICATION.
 H.S. BOLTS, WASHERS & NUTS SHALL BE A325 GALVANIZED WHEN POSTS, POST STUBS, AND ATTACHMENTS ARE A709 GRADE 50 AND GALVANIZED.

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Matthew R. Rauch
 For State Traffic Engineer

DATE 2/06/14

PLATE NO. A3-1.14

⑩	1-21-14	LUBRICATION OF BASE BOLTS
⑨	4-26-11	REMOVE NON-GALVANIZED
⑧	10-30-96	NOT GALVANIZED/GALVANIZED
⑦	10-30-92	QUANT., A588 EXCEPT., ADD SLOT VIEW
⑥	8-24-87	BASE CONN. WELD
⑤	10-13-81	BASE CONN. WELD & FUSE R WASHERS
④	10-19-79	POST A & B, A572 GR. 50, & K
②	11-28-78	"K" ③ 4-23-79 TYPE "E"
①	5-4-78	T ₁ • T ₂ & W ₁
NO.	DATE	REVISION

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS

TYPE A, B, C, D, & E

CONST. SPEC. 2011

DRAWN BY JPH

PLANS CK'D.

FTG. & SIGN SUPPORT
 DETAILS
 GROUND MOUNT
 BREAK-AWAY SIGNS

SHEET

114

PROJECT NO:

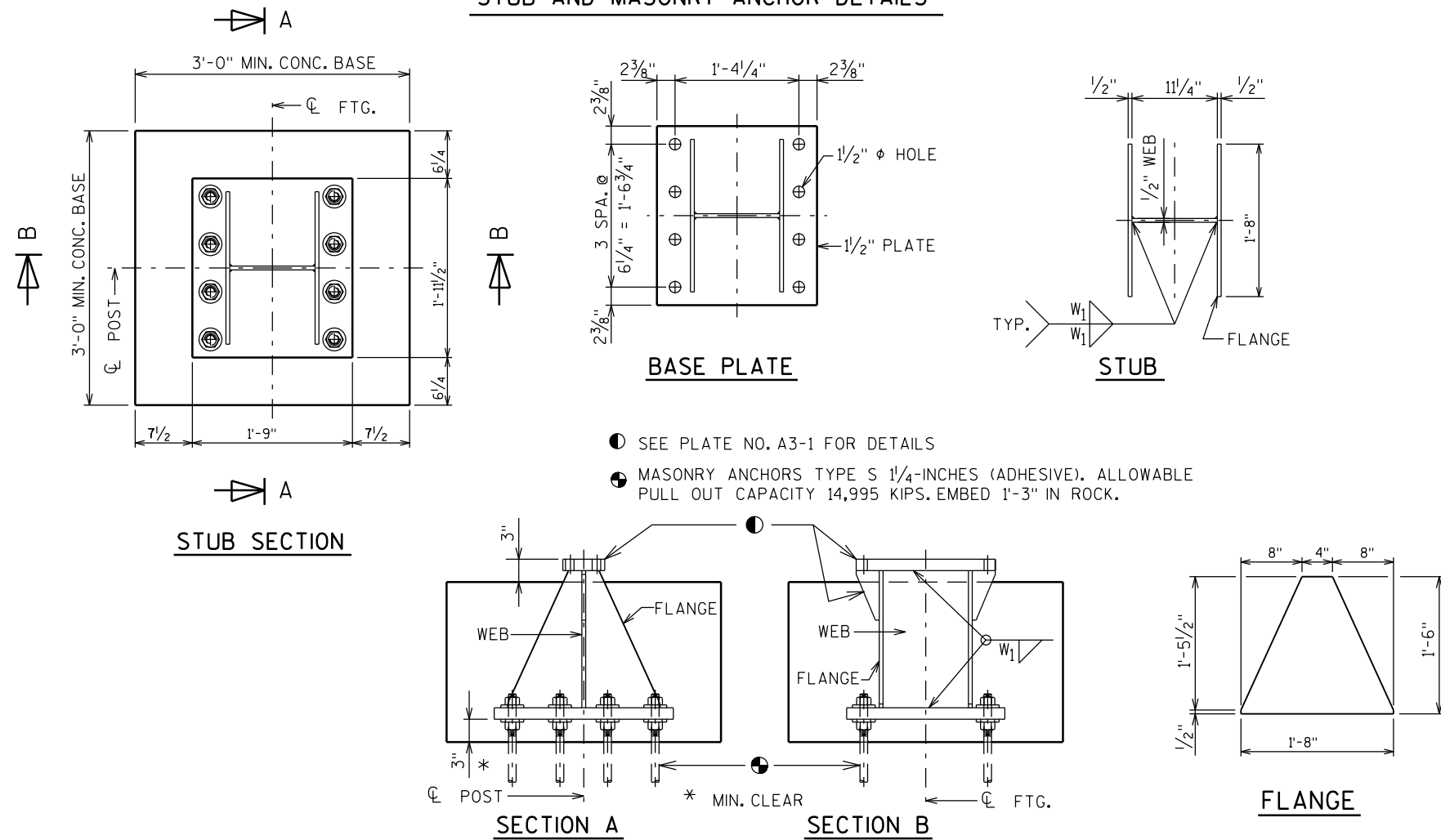
HWY:

COUNTY:

SHEET NO:

E

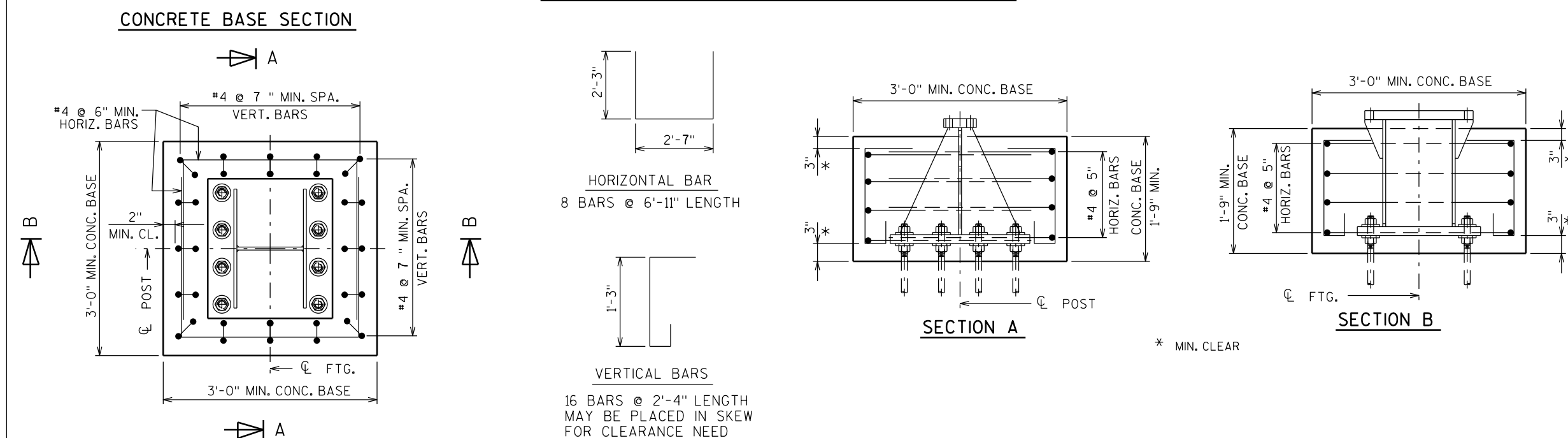
STUB AND MASONRY ANCHOR DETAILS



GENERAL NOTES

- Quantities per Base:
 - REINFORCING BAR STEEL = 62 LBS
 - CONCRETE = 0.6 C.Y.
 - STEEL WEIGHT = 335 LBS
- All materials, except anchor rod, nuts and washers, are to be A.S.T.M. A709 grade 50. All materials to be galvanized after fabrication.
- If the contractor encounters rock before reaching the footing depth, per the A3-1 Sign Detail, determine the pull-out capacity of a test adhesive anchor installed in the rock. If the test result equals or exceeds the pull-out capacity of 14,995 KIPS, the contractor may install the breakaway stub for rock, according to this detail.

CONCRETE BASE AND REINFORCING STEEL DETAILS



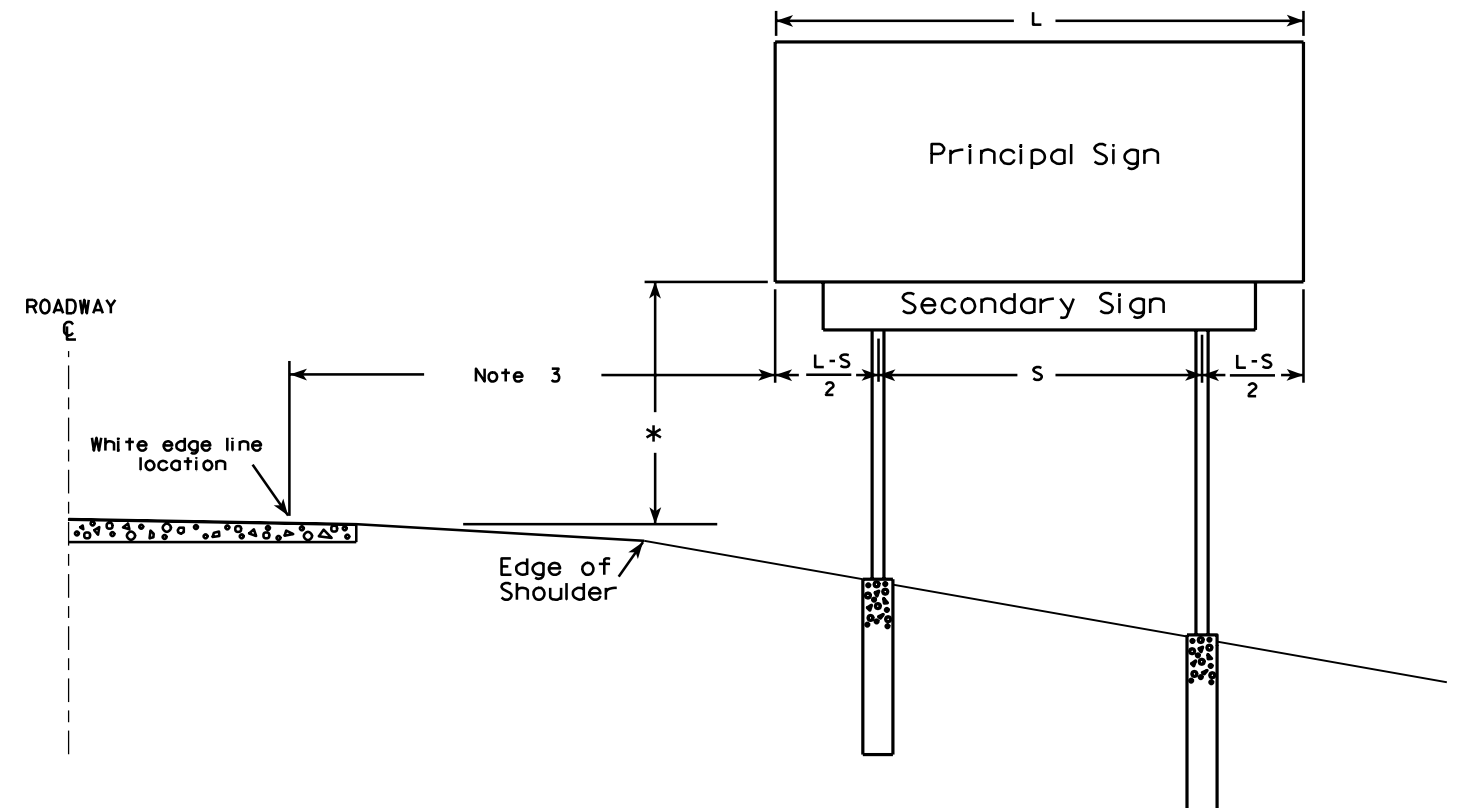
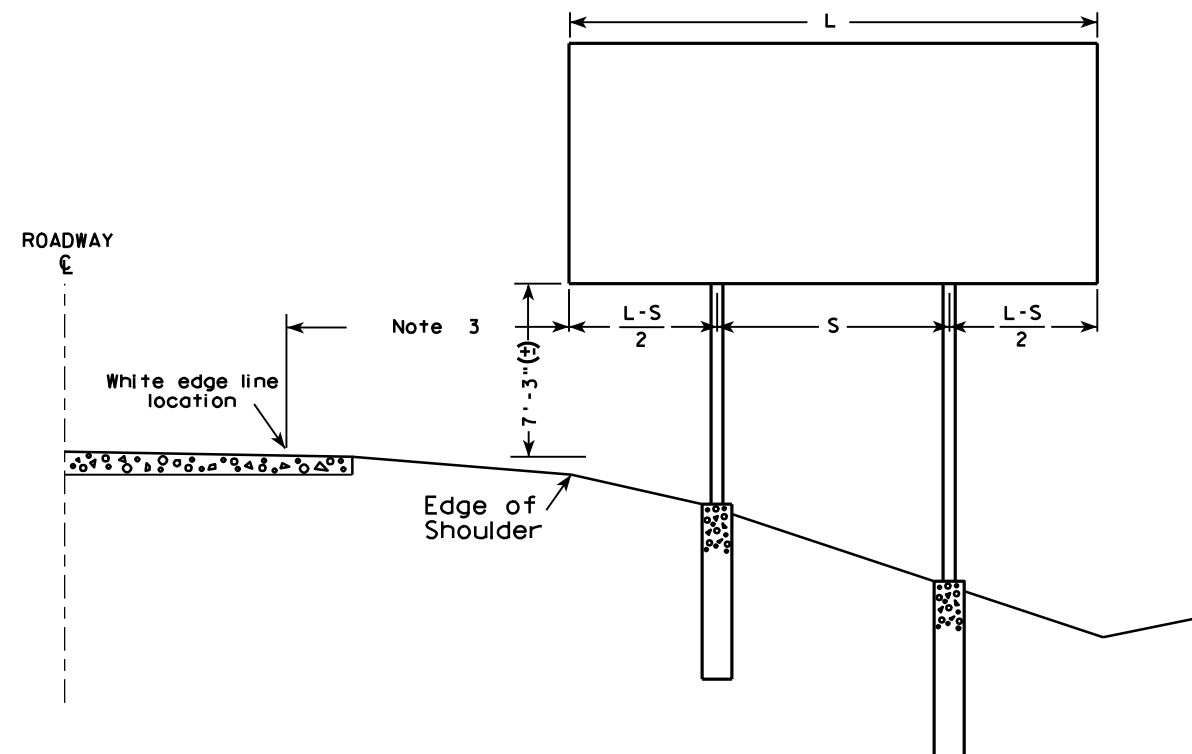
ALTERNATE BREAK-AWAY
BASE ON ROCK
A3-1M

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*

For State Traffic Engineer

DATE 2/06/2014 PL 115 A3-1M.1



GENERAL NOTES

1. For a 2 post installation, S equals $3L/5$, but shall not be less than 9 ft.
2. For a 3 post installation, S equals $5L/7$, but shall not be less than 18 ft., and the space between any two posts shall not be less than 9 ft.
3. Unless noted in the plan, the sign offset distance shall be a minimum of 17'-6", desirable 30'-0".
4. The (±) tolerance shown on this sheet is 3 in.
5. The vertical sign height clearance detailed is measured from the bottom of the sign to the near edge of pavement.
6. Post lengths shown in the miscellaneous quantities are estimated lengths. The contractor shall verify post lengths at the time of final grading.
7. Refer to the Traffic Guidelines Manual for further guidance on minimum vertical clearance requirements.

* Clearance is 8'-3" (±) when the secondary sign is 3 ft. or less in height. For secondary signs larger than 3 ft., the clearance to the bottom of the secondary sign shall be 5'-3" (±).

TYPICAL INSTALLATION OF TYPE I SIGNS

WISCONSIN DEPT OF TRANSPORTATION

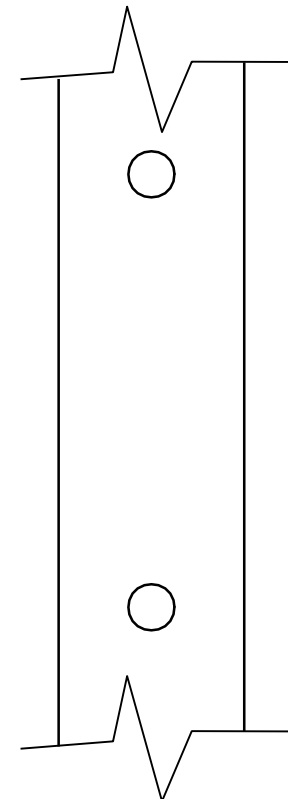
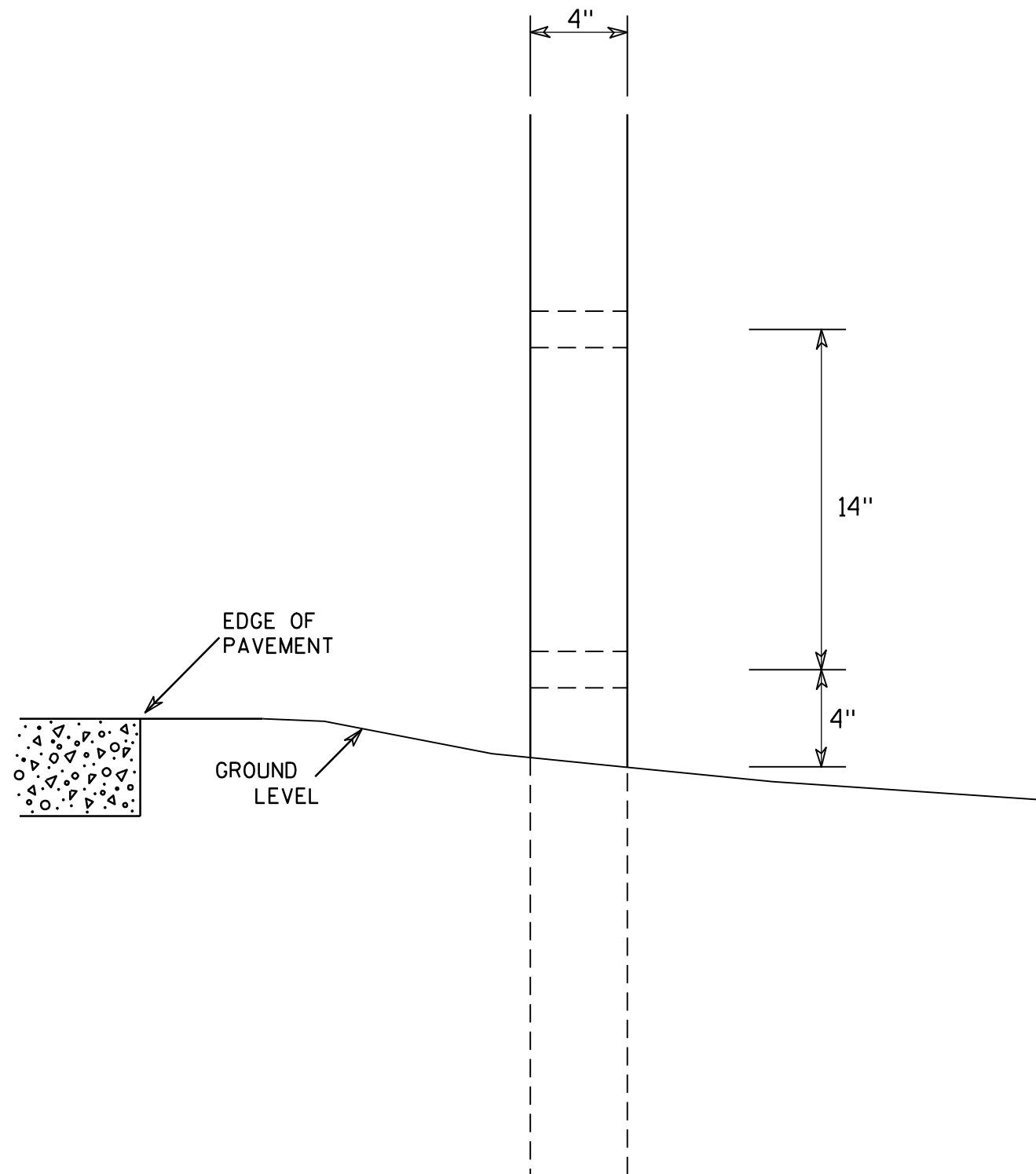
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 4/02/08 PLATE NO. A4-1.9

PROJECT NO:

SHEET NO: 116

E



SIDE VIEW

GENERAL NOTES

1. All 4 x 6 Wood Posts shall be modified by having two 1 1/2" diameter holes drilled perpendicular to the roadway centerline.

4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Chester J. Spang
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

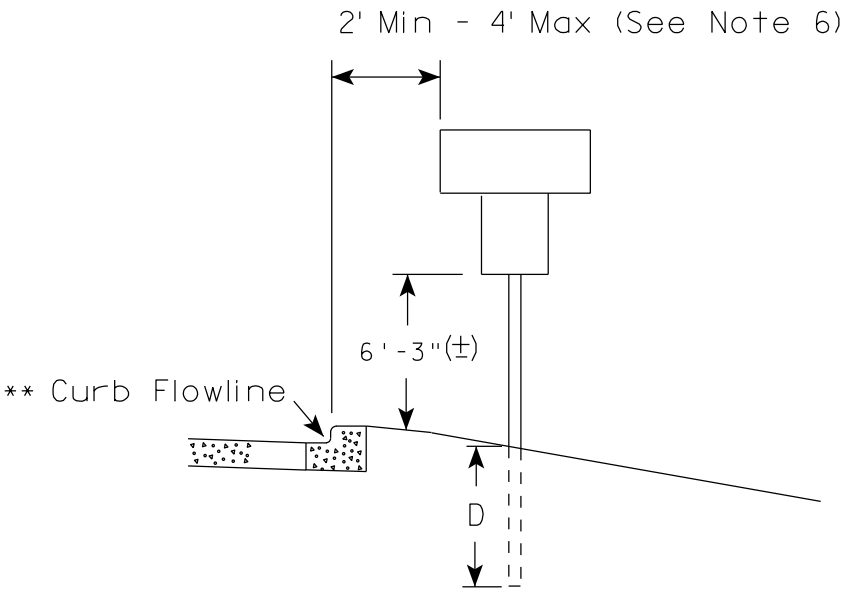
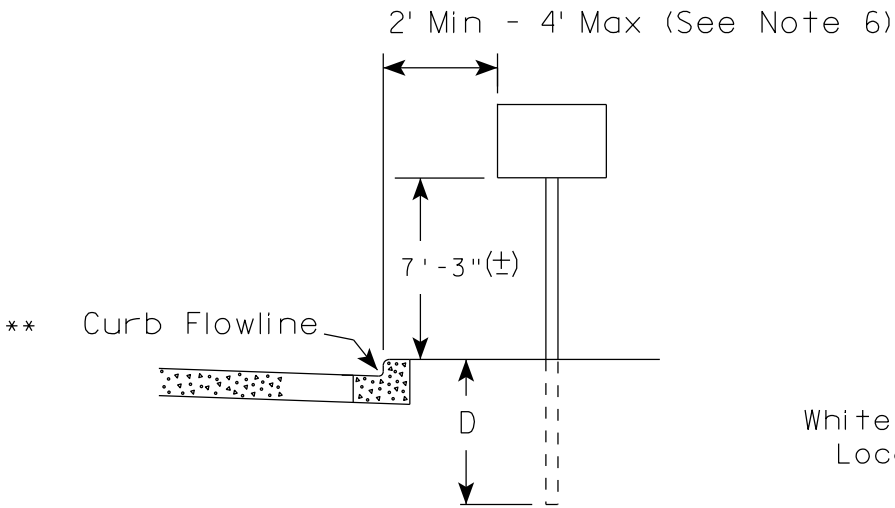
HWY:

COUNTY:

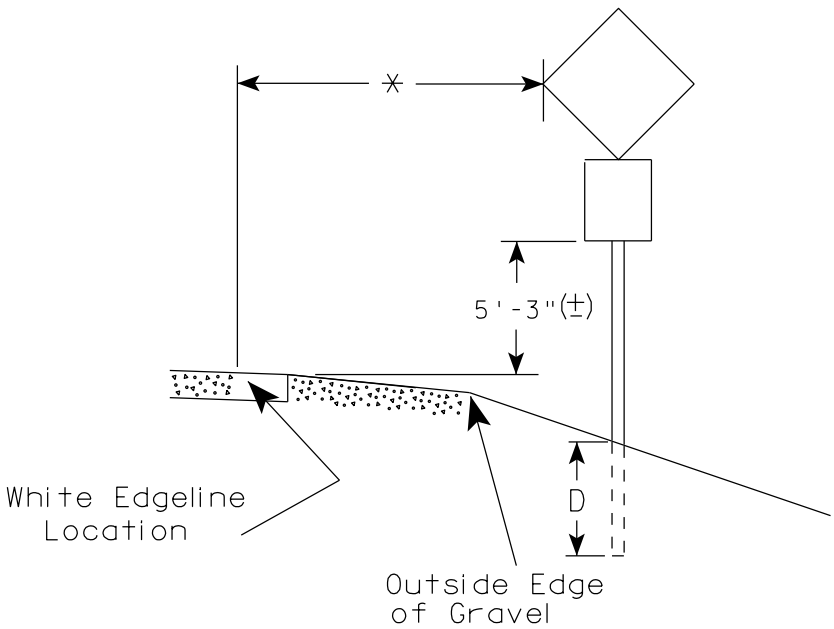
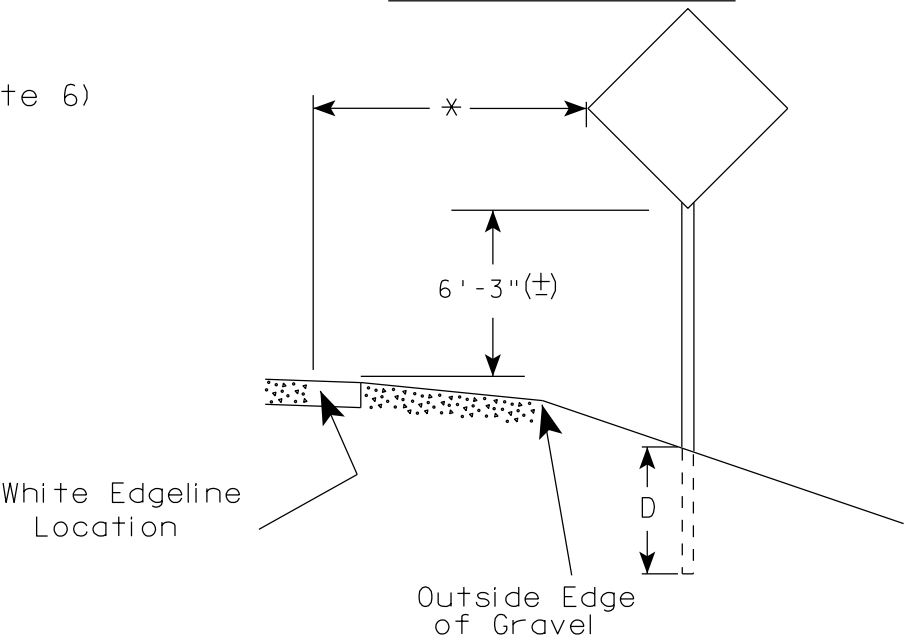
SHEET NO: 117

E

URBAN AREA



RURAL AREA (See Note 2)



GENERAL NOTES

1. Signs wider than 4 feet, 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on barrier wall, see A4-10 sign plate.
3. For expressways and freeways, mounting height is 7'- 3" (±) or 6'-3" (±) depending upon existence of a sub-sign.
4. Minimum mounting height for J assemblies (A4-5) is 7'-3" (±) or 6'-3" (±) per urban or rural detail respectively.
5. Minimum mounting height for signs mounted on traffic signal poles is 5'- 3" (±).
6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
7. The (±) tolerance for mounting height is 3 inches.
8. Folding stop signs (R1-1F) shall be mounted at a height of 5'-3" (±) or as directed by the Engineer.
9. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Enhanced Reference Markers, Clearance Markers (W5-52), Mile Markers (D10 series) & End of Rod Markers (W5-56 & W5-56A) shall be mounted at a height of 4'-3" (+).

POST EMBEDMENT DEPTH

Area of Sign Installation (Sq.Ft.)	D (Min)
20 or Less	4'
Greater than 20	5'

×× The existence of curb and gutter does not in itself mandate the vertical clearance illustrated. That height is typically measured where there is sidewalk adjacent to the roadway or parking is permitted. In the absence of sidewalk vertical clearance is measured from the top of the curb. Offset of signs is measured from the flow line.

* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

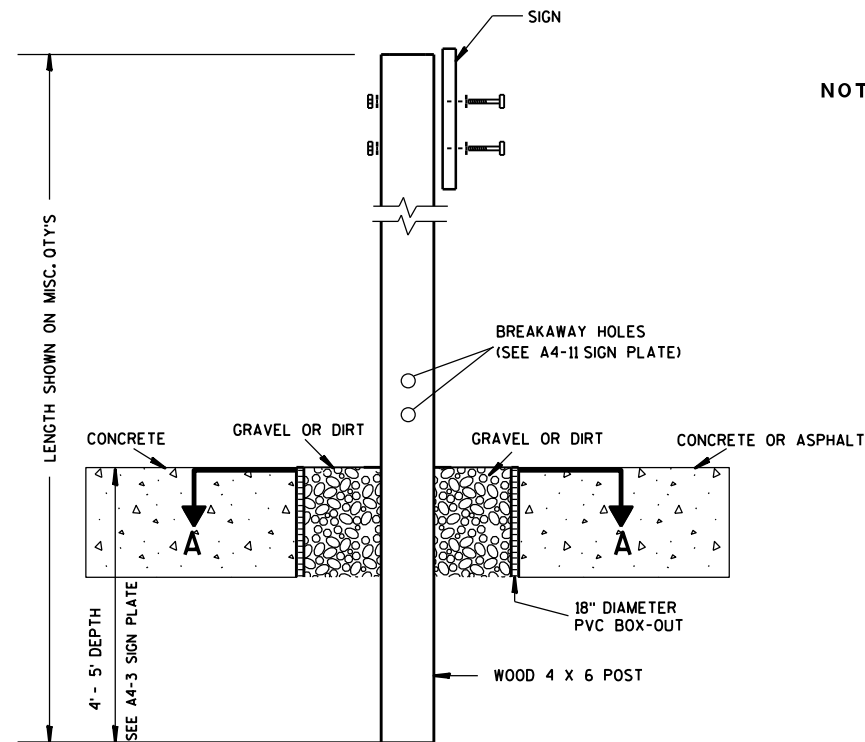
TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 9/30/13 PLATE NO. A4-3.18

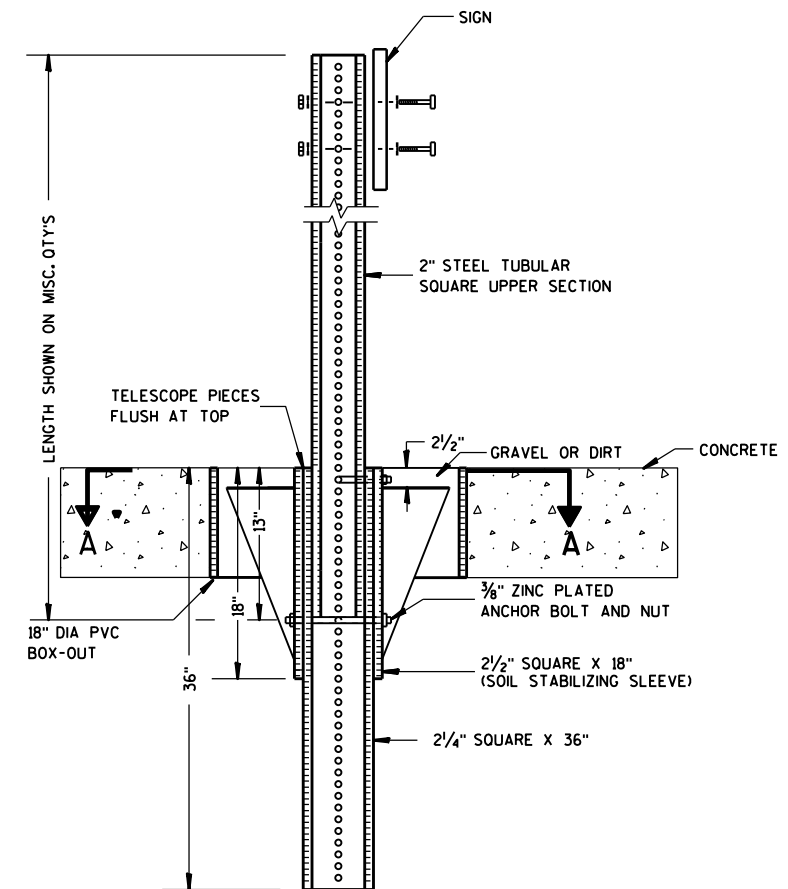
118



- NOTES: 1. ALL MATERIAL TO BE APPROVED BY ENGINEER PRIOR TO INSTALLATION
2. SEE SIGN PLATE A4-8 FOR SIGN HARDWARE REQUIREMENTS
3. 18 INCH X 18 INCH SQUARE BOX-OUTS MAY BE USED FOR INSTALLATIONS IN EXISTING CONCRETE OR ASPHALT LOCATIONS.

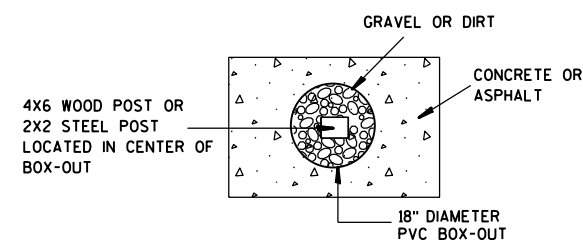
ELEVATION VIEW

DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT



ELEVATION VIEW

DETAIL OF STEEL 2 X 2 SIGN POST IN BOX-OUT



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST
BOX-OUTS
A4-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/27/14 PLAT 119 A4-3B.1

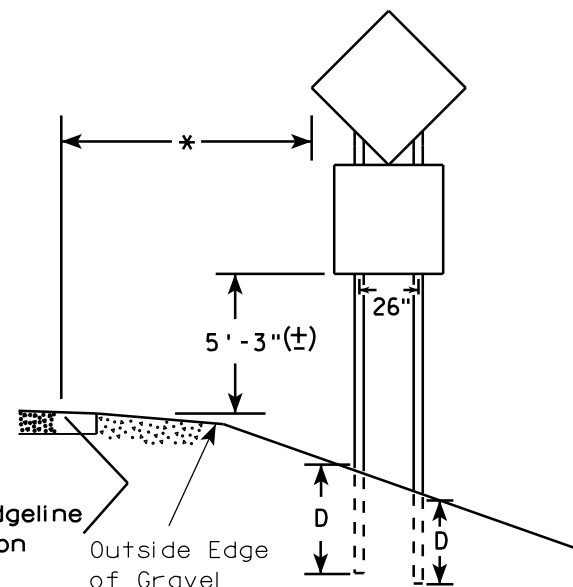
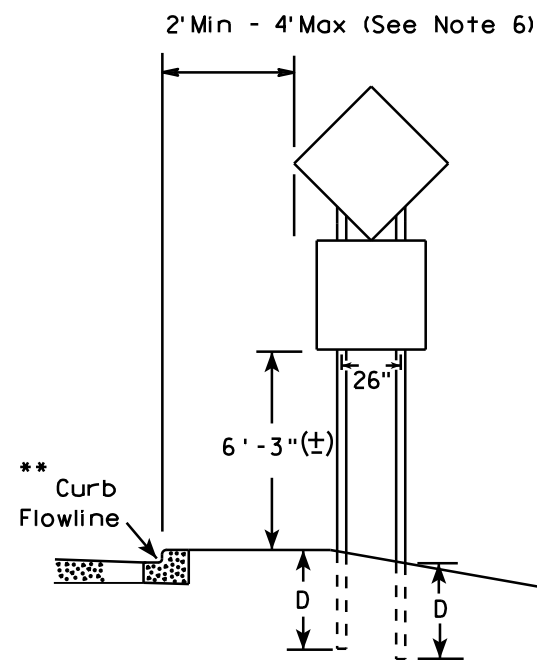
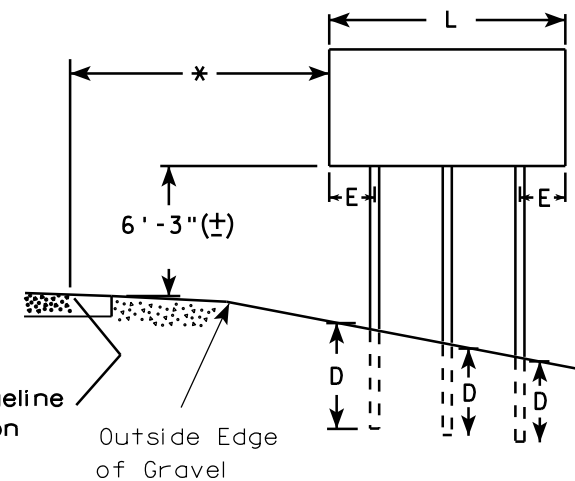
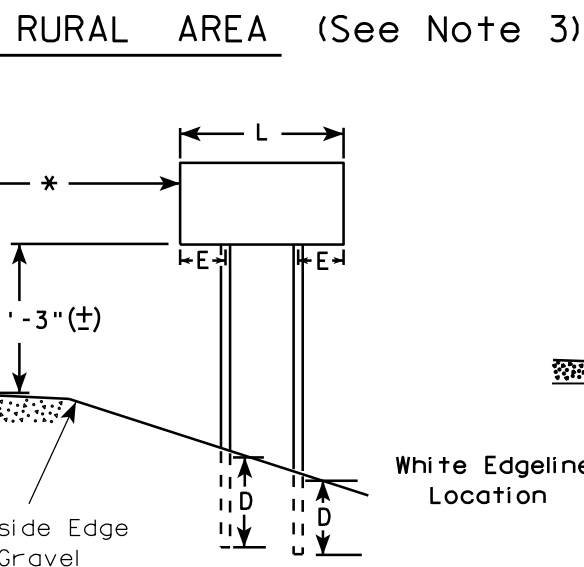
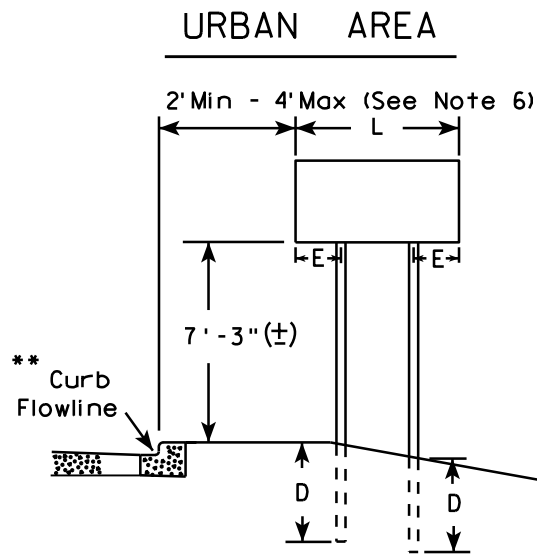
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



GENERAL NOTES

1. For 3 or 4 post installations, individual post spacing shall be greater than 3'-6".
2. See tables below for required number of posts.
3. For expressways and freeways, mounting height is 7'-3" (±) or 6'-3" (±) depending upon existence of sub-sign.
4. The (±) tolerance for mounting height is 3 inches.
5. Minimum mounting height for J assemblies (A4-5) is 7'-3" (±) or 6'-3" (±) per urban or rural detail respectively.
6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
7. Folding stop signs (R1-1F) shall be mounted at a height of 5'-3" (±) or as directed by the engineer.
8. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Clearance Markers (W5-52), Mile Markers (D10 series) & End of Road Markers (W5-56 & W5-56A) shall be mounted at a height of 4'-3" (±).

* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

** The existence of curb and gutter does not in itself mandate the vertical clearance illustrated. That height is typically measured where there is sidewalk adjacent to the roadway or parking is permitted. In the absence of sidewalk vertical clearance is measured from the top of the curb. Offset of signs is measured from the flow line.

*** See A4-3 sign plate for signs 4' or less in width or less than 20 S.F. in area.

SIGN SHAPE OTHER THAN DIAMOND (TWO POSTS REQUIRED)	
L	E
Greater than 48" Less than 60"	12"
60" to 120"	L/5

SIGN SHAPE OTHER THAN DIAMOND (THREE POSTS REQUIRED)	
L	E
Greater than 120" less than 168"	12"

SIGN SHAPE OTHER THAN DIAMOND (FOUR POSTS REQUIRED)	
L	E
168" and greater	12"

POST EMBEDMENT DEPTH

Area of Sign Installation (Sq. Ft.)	D (Min)
20 or Less	4'
Greater than 20	5'

TYPICAL INSTALLATION
OF TYPE II SIGNS
ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 4/29/14 PLATE NO. 13

PROJECT NO:

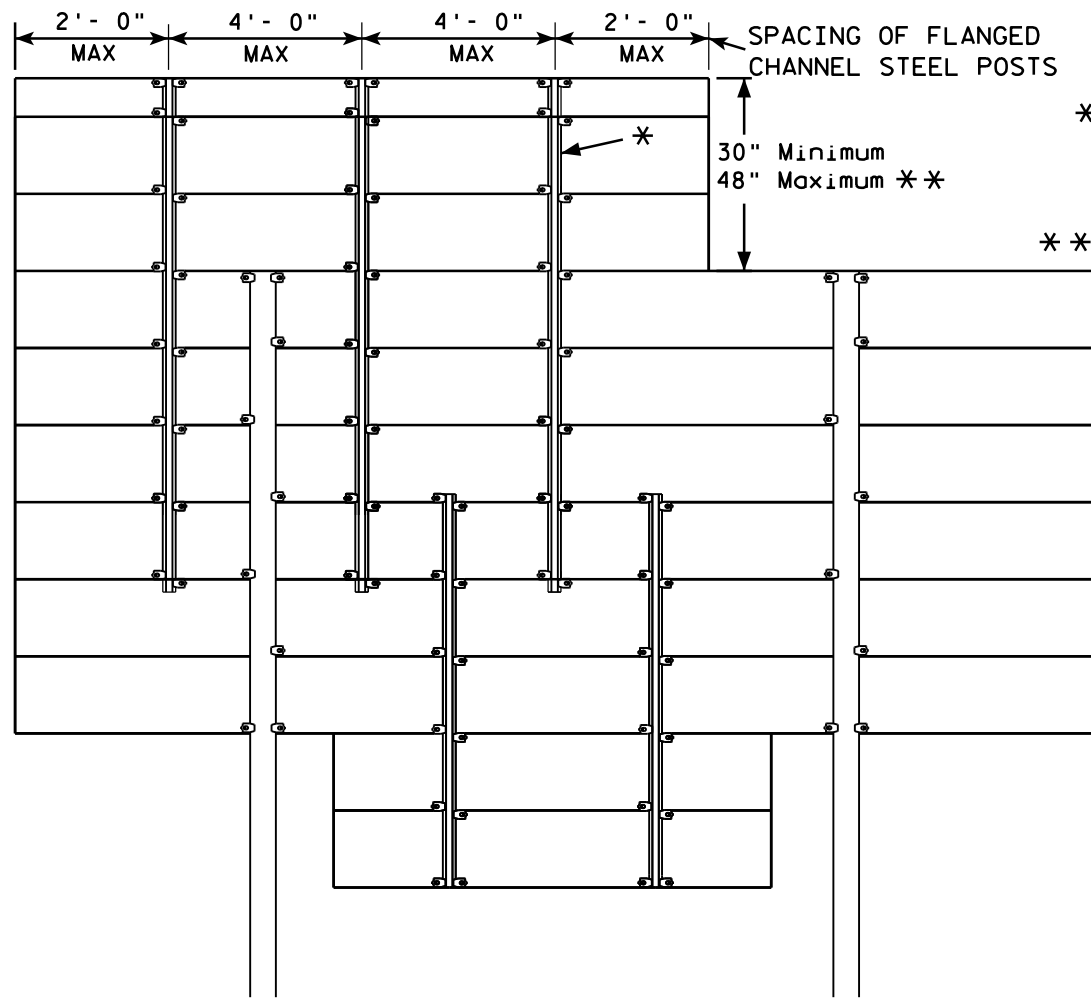
HWY:

COUNTY:

SHEET NO:

E

GROUND MOUNTED SIGN

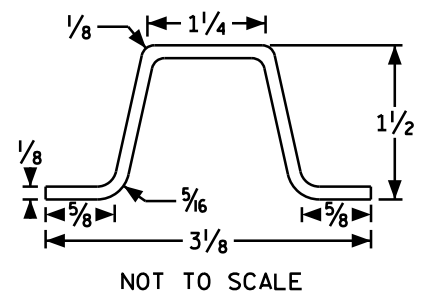


* = 2.00 lb/ft FLANGED CHANNEL, MIN. YIELD STRENGTH = 60,000 PSI (GRADE 60) GALVANIZED

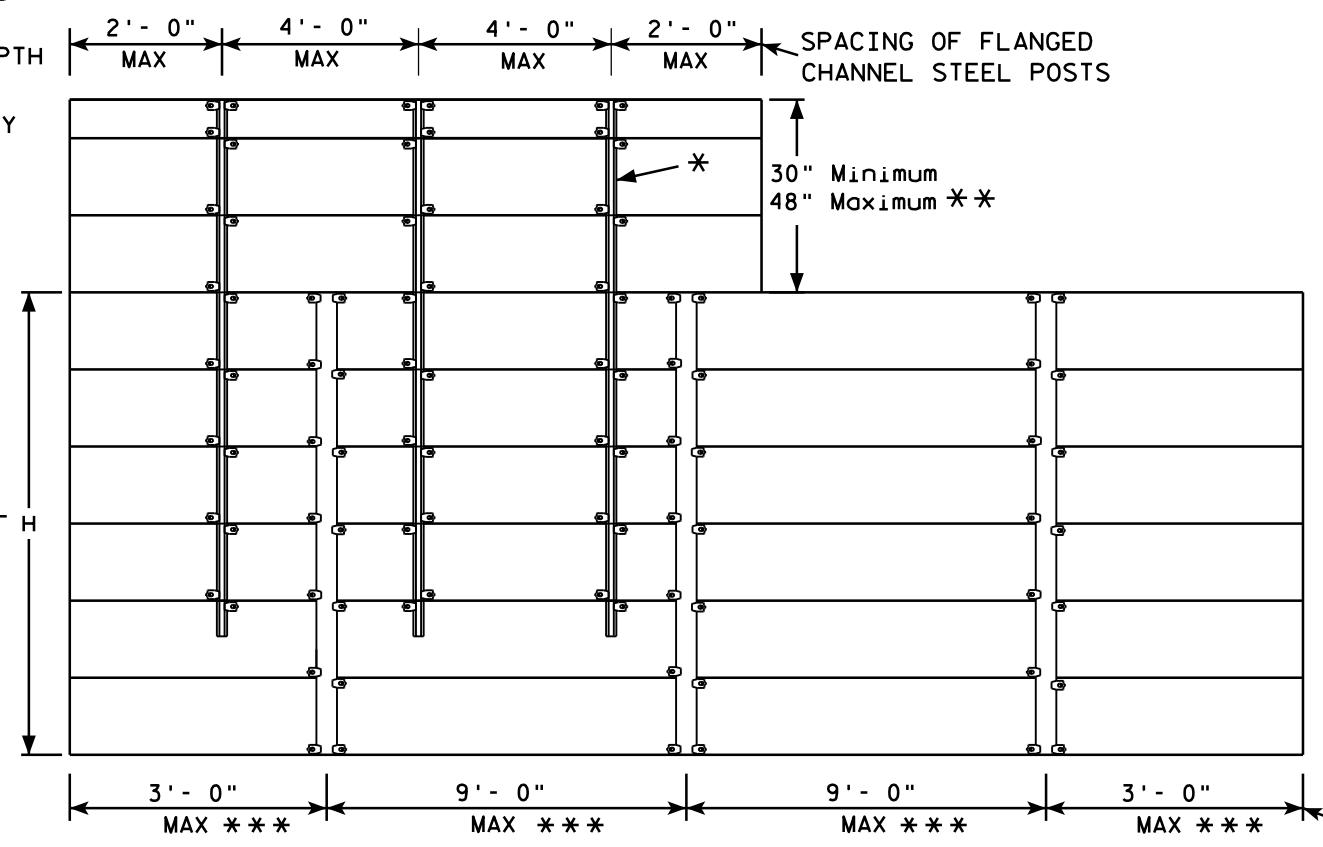
** = FOR 48" HEIGHT PANELS ON OVERHEAD STRUCTURES, ENTIRE SIGN SHALL BE CENTERED VERTICALLY ABOUT THE DEPTH OF THE TRUSS.

*** THESE SPACING DISTANCES SHALL ONLY BE USED WHEN THE MAIN SIGN HAS A MAXIMUM HEIGHT (DIMENSION H) OF 16 FT OR LESS. FOR SIGNS WITH A HEIGHT OF GREATER THAN 16 FT, STRUCTURAL CALCULATIONS SHALL BE PERFORMED.

FLANGE CHANNEL DETAIL



SIGN BRIDGE MOUNTED SIGN



SPACING OF ALUMINUM SIGN SUPPORTS
5" X 3.5" X 3.7 LBS./ft.

GENERAL NOTES

1. Flanged channel steel posts shall conform to size and material above, and shall be considered as incidental to other items in the contract.
2. Number of Flanged channel steel supports varies with length of panel and shall be spaced as shown:
PANEL LENGTH 8'-0" OR LESS = 2 CHANNELS
PANEL LENGTH 9'-0" - 12'-0" = 3 CHANNELS
PANEL LENGTH 13'-0" OR MORE = 4 CHANNELS
If the flanged channel steel posts can not be horizontally spaced as shown, they can be moved so as to securely hold the sign.

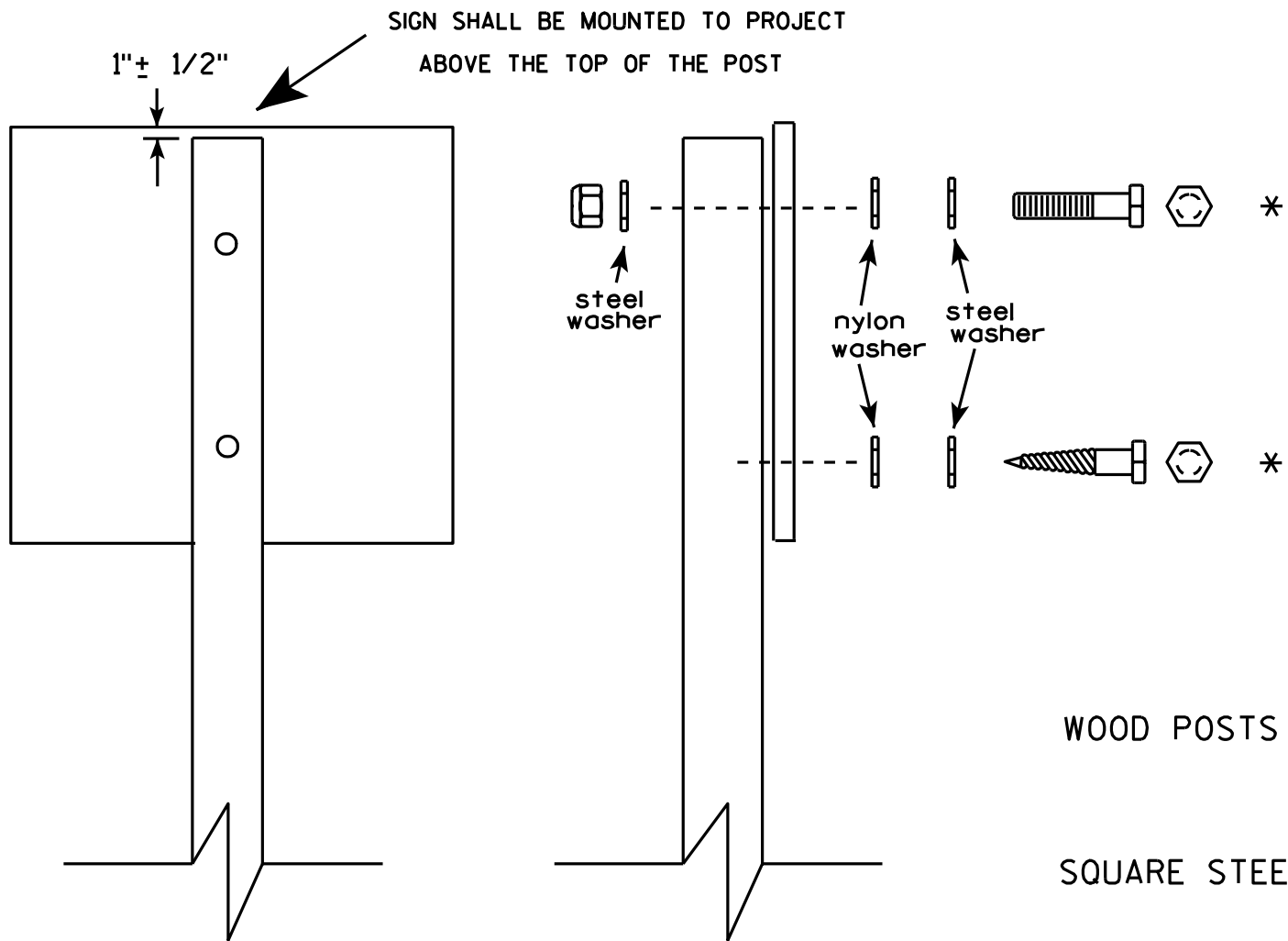
3. The EXIT NUMBER PANEL shall normally be positioned above the guide sign aligned with the right edge of the guide sign. If the guide sign indicates a left exit, the EXIT NUMBER PANEL shall be aligned with the left edge of the guide sign.
4. If the bolt holes in the top panel (EXIT NUMBER), or sub panel (NEXT EXIT) line up with holes in main sign panel, stitch bolts shall be used in addition to the channels.
5. Provide post clips for each sign as shown. (Please note the differences between a ground mounted versus Sign bridge mounted sign as far as number of clips required on the main supports or beams)
6. Structural steel sign supports shall extend to the top of the main signs, as shown on the above details.

ATTACHMENT OF GUIDE SIGNS TO SUPPORTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 12/05/13 PLAT 121 ^4-6.12

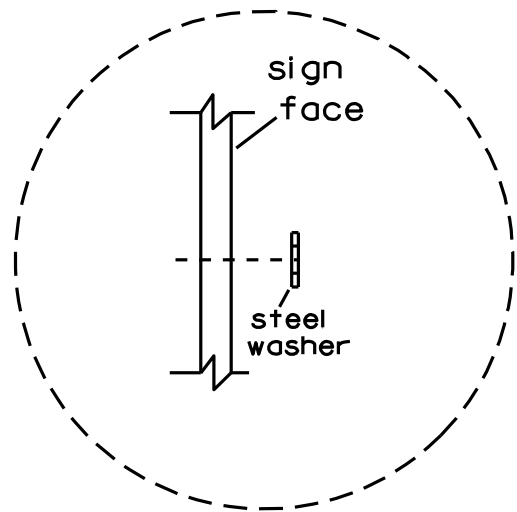


Nuts, bolts and lags used for mounting signs shall have hexagonal heads and shall be either :

- a. Hot dip galvanized in accordance with ASTM Designation: A 153, Class D, or SC 3
- b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

- WOOD POSTS (4" x 4" or 4" x 6")
- LAG SCREWS - $\frac{3}{8}$ " X 3"
- MACHINE BOLTS - $\frac{5}{16}$ " X 6-1/2" or 7" Length w/ nuts
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - $\frac{3}{8}$ " X 3-1/4" Length w/ nuts
- RIVETS - $\frac{9}{32}$ " (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL
- O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH
- WASHERS (ALL POSTS) -
- 1-1/4" O.D. X $\frac{3}{8}$ " I.D. X $\frac{1}{16}$ " STEEL
- 1-1/4" O.D. X $\frac{3}{8}$ " I.D. X .080 NYLON for all Type H signs.



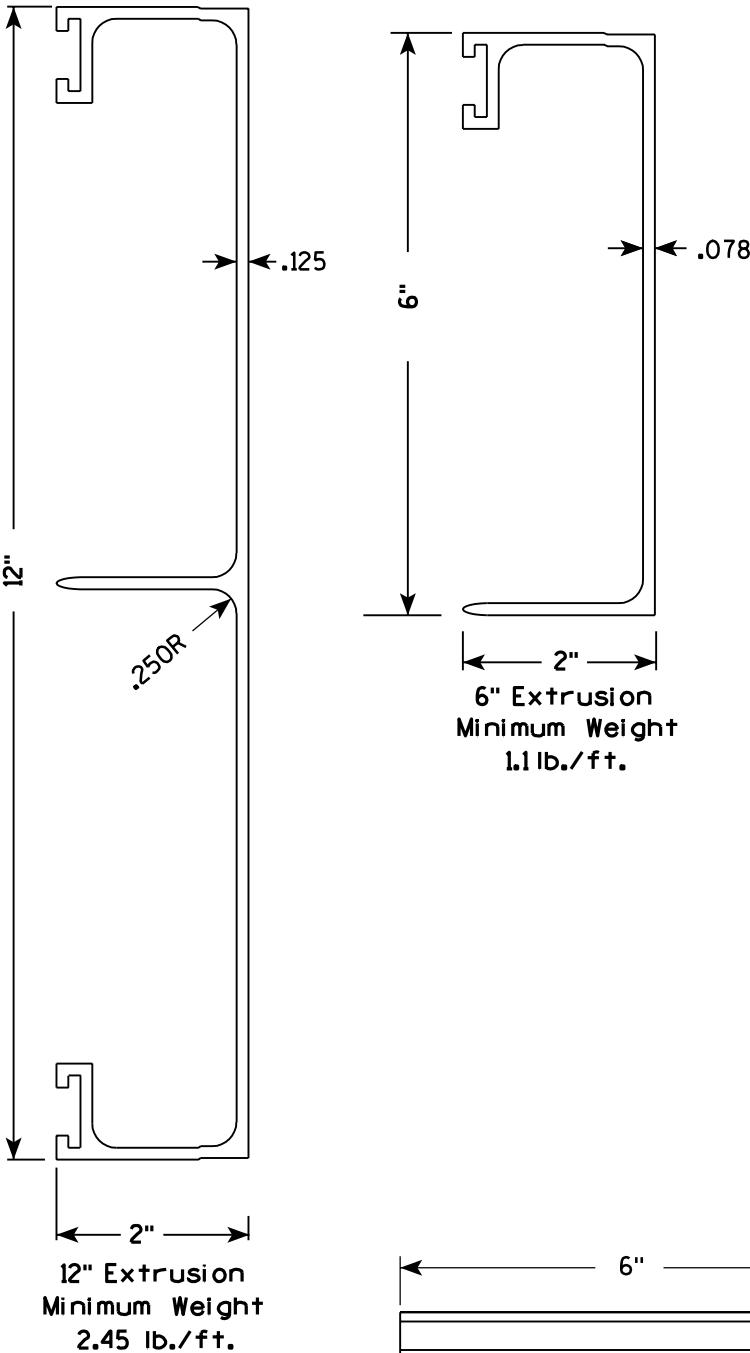
Washer Placement when Sign Has Other Than Type H or Type F Face

* Two different fastening systems are shown for illustration purposes. On any individual sign, either one or the other system shall be used. Actual number of fasteners per sign varies with the sign area, but normally there are two. For a single post installation, all signs greater than 9 sq. ft. require the use of 3 fasteners.

ATTACHMENT OF SIGNS TO POSTS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 3/23/10	PLATE NO. A4-8.7

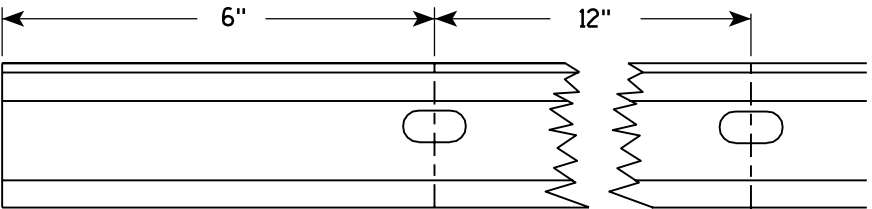
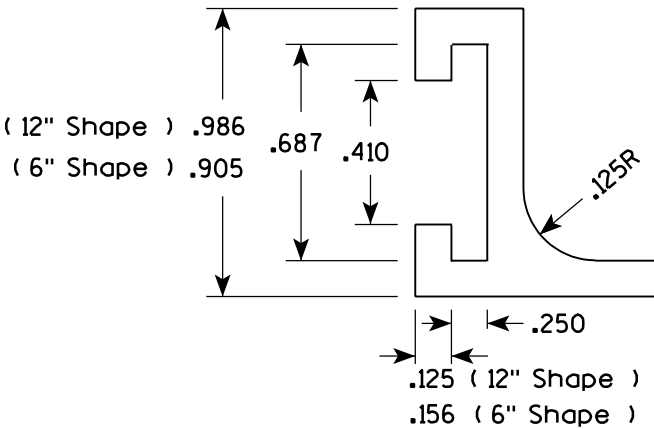
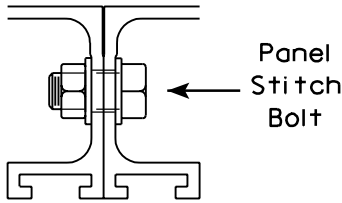
Extruded Shape

Hardware

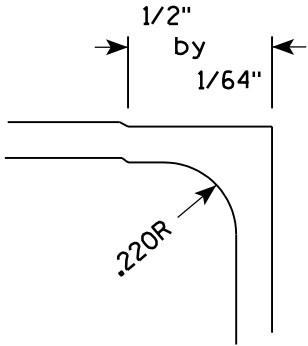


STITCH BOLT, WASHER & NUT

The hardware includes:
3/8 " - 16 X 3/4 " Economy Bolt 2024-T4 alloy
3/8 " - Stainless steel stop nut
3/8" X .064 Flat Washers, Alclad 2024-T4 alloy

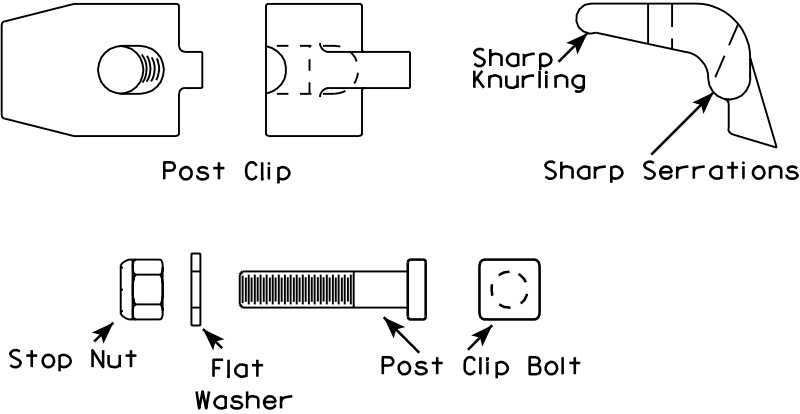


Punch 7/16" x 7/8" oval holes beginning 6" in from end of extrusion 12" CC on both edges of 6" and 12" panels.



POST CLIP, POST CLIP BOLT, WASHER & NUT

Post Clip shall be Alum. Alloy 356-T6
Post Clip Bolt shall be Stainless Steel.
Flat washer shall be 3/8" X .091, Stainless Steel.
Stop nut shall be stainless steel.



NOTES

1. The contractor may select any brand of extrusion that conforms to the illustrations or meets with the approval of the engineer, but all extrusions used on this contract shall be of the same brand.
2. Panel Stitch Bolts shall be used to assemble adjacent panels. Maximum stitch bolt spacing shall be 24" C-C, and a minimum of 4 bolts shall be used to connect any two extrusions.
3. Post Clips shall be used to attach the sign panel to the sign support.

ALUMINUM EXTRUSIONS FOR
TYPE I SIGNS

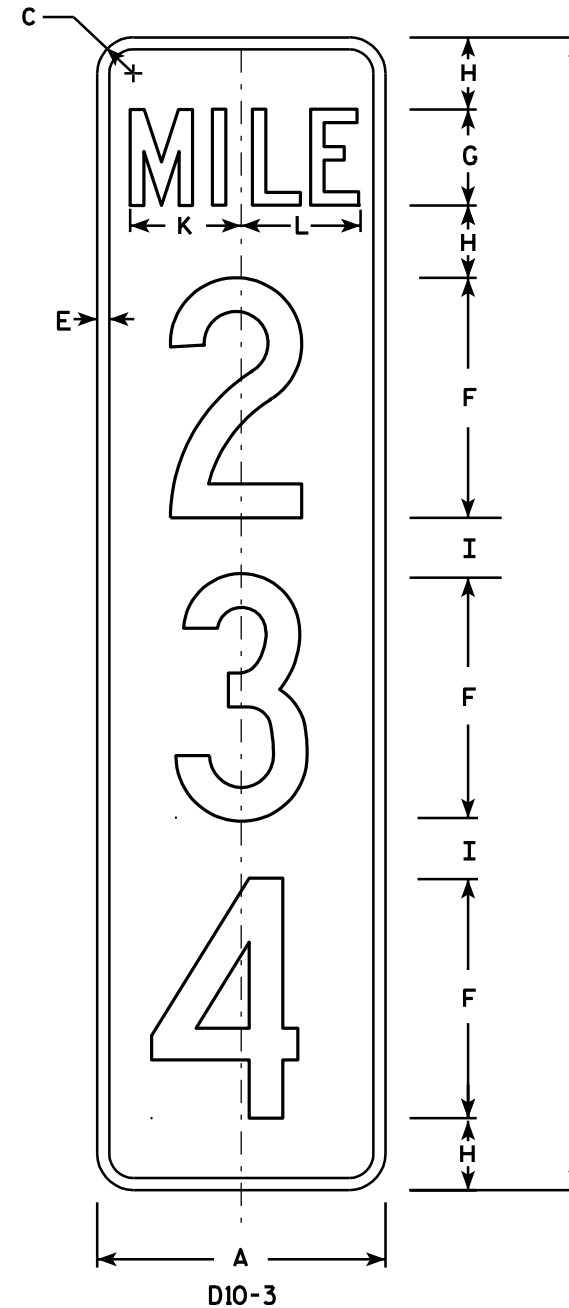
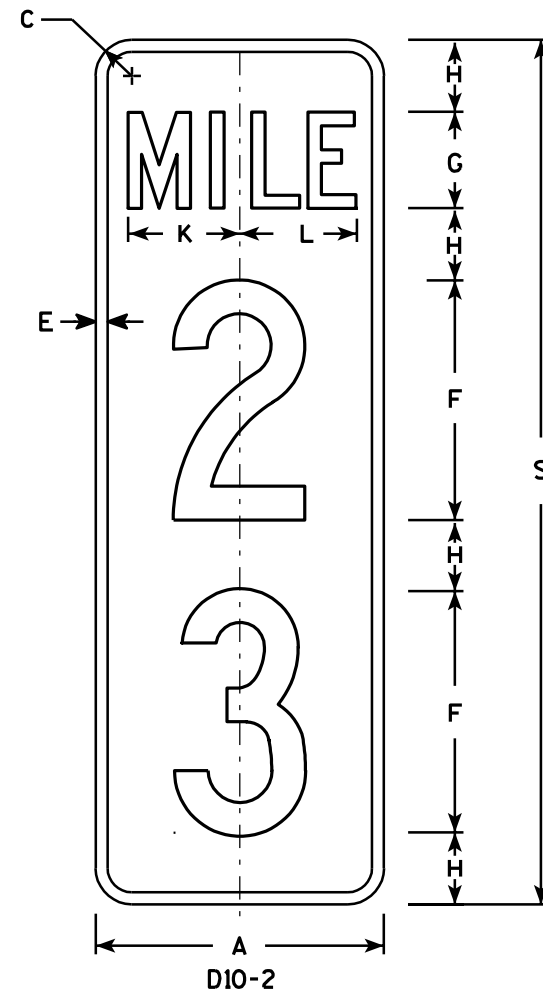
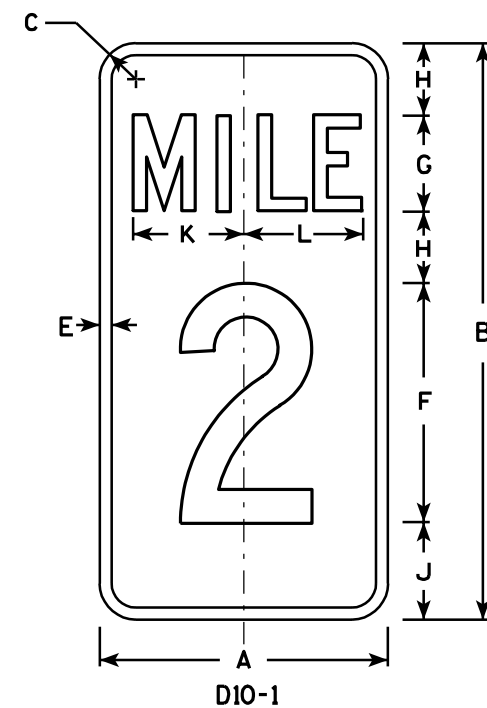
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Chester J. Spang*
for State Traffic Engineer
DATE 11/18/99 PLATE NO. A5-2.9

PROJECT NO:

SHEET NO: 123

E



NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
 - Background - Green
 - Message - White - Type H Reflective
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Optically adjust numerals about the centerline of the sign to achieve proper balance.

7

Metric equivalent
for this sign is:

PHY. SIZE	
12 X 24	300 mm X 600 mm
12 X 36	300 mm X 900 mm
12 X 48	300 mm X 1200 mm

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																										
3																										
4	12	24	1 1/2		1/2	10	4	3	2 1/2	4	4 5/8	4 7/8							36	48						
5	12	24	1 1/2		1/2	10	4	3	2 1/2	4	4 5/8	4 7/8							36	48						

D10-1	D10-2	D10-3
Area sq. ft.	Area sq. ft.	Area sq. ft.
2.0	3.0	4.0
Area m ²	Area m ²	Area m ²
.19	.28	.38

STANDARD SIGN
D10-1 , D10-2 & D10-3

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Chester J Spang
for Director, Office of Traffic

DATE 1/16/02 PLATE NO. D10-3.2

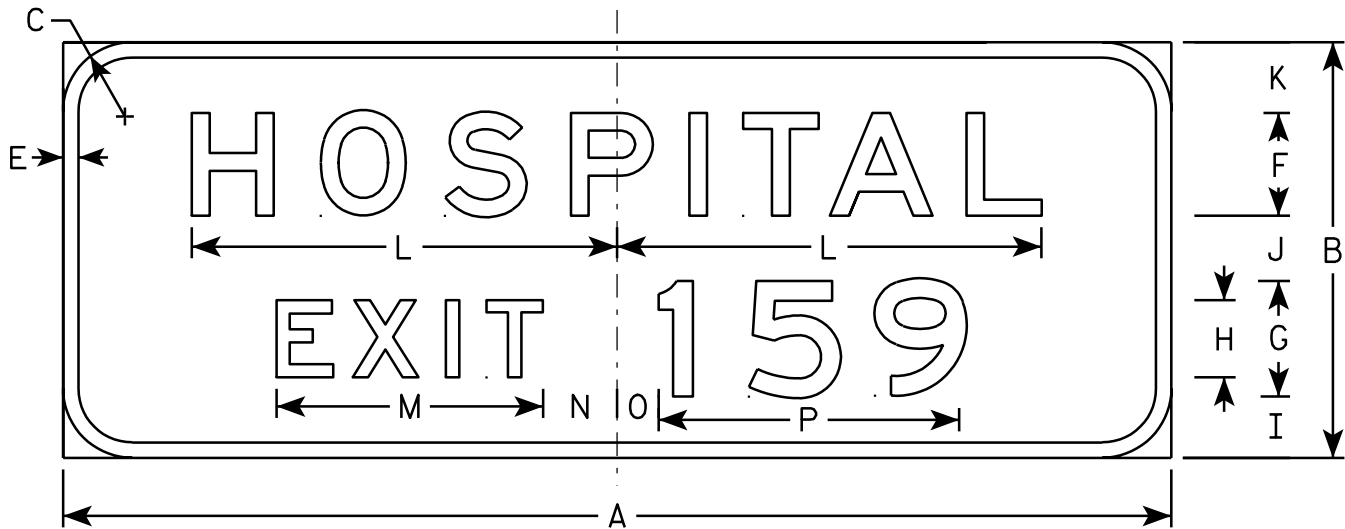
PROJECT NO:				SHEET NO: 124	E
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NOTES

1. Sign is Type I - Type SH Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:

Background - Blue

Message - White
3. Message Series - E
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, other than extrusions, the corners and borders shall be rounded.
5. Apply proper Exit Numbers and letters, optically adjust spacing to achieve proper balance.



E10-61

7

Metric equivalent
for this sign is:

SIZE	
1	
2	3600 mm X 1350 mm
3	
4	
5	

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m ²
1																												
2	144	54	9		2	13 3⁄8	15	10	8	8 1⁄2	9 1⁄4	55 1⁄4	34 5⁄8	9 5⁄8	5 3⁄8	39											54	4.86
3																												
4																												
5																												

PROJECT NO:

HWY:

COUNTY:

SHEET NO: 125

E

7

TYPICAL SIGNS
E10-61

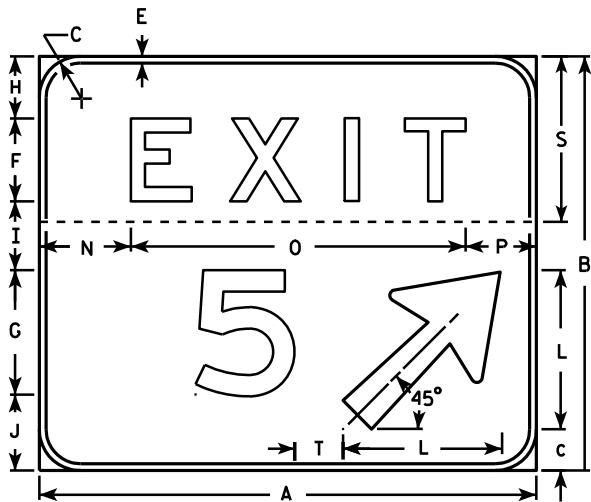
WISCONSIN DEPT OF TRANSPORTATION

APPROVED

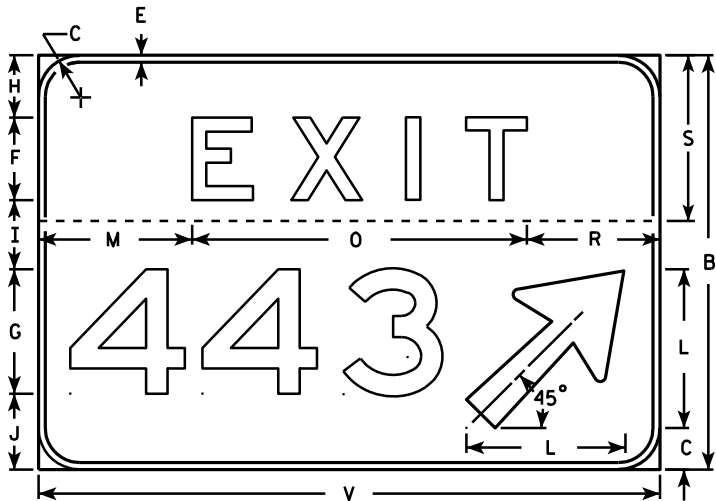
Matthew R. Rauch

for State Traffic Engineer

DATE 12/8/08 PLATE NO. E10-61.2



NOTE: T dimension shall be measured from the back of the number to the front of the arrow



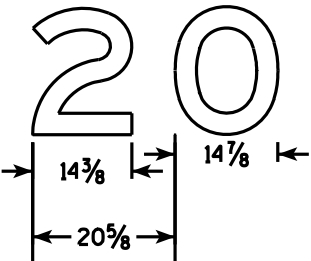
NOTES

1. Sign is Type II - Type H reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Green
Message - White (Type H reflective)
3. Message Series - E
4. Corners may be square or rounded but the border shall be rounded as shown.
5. Base material for this sign shall be plywood and shall be split into two separate pieces as shown on each detail by the dashed line (-----).
6. Arrow is Type "A" from sign plate A1-1.
7. Substitute appropriate message, space per the table and adjust placement on sign to achieve proper balance.
8. As per the Standard Spec's, these signs shall not have a vertical joint.

SPACING CHART FOR 18" NUMERALS

NUMBERS	WIDTH	0	1	2	3	4	5	6	7	8	9	A	B	C
0	14 7/8	21 5/8	21 5/8	21 1/4	20 3/8	21 1/4	21 1/4	21 5/8	19 7/8	22 1/8	21 5/8			
1	5 7/8	14	14	14	13 1/8	12 1/8	14	14	12 1/4	14	14			
2	14 3/8	20 5/8	21 1/8	20 5/8	19 3/4	20 1/4	20 5/8	20 5/8	18 7/8	21 1/8	20 5/8			
3	14 3/8	20 3/4	21 1/8	20 3/4	20 1/4	19 3/4	20 3/4	20 3/4	19 3/8	21 1/8	20 3/4			
4	16 5/8	22 7/8	22	22 1/2	21 5/8	21 5/8	22 7/8	22 7/8	20 5/8	23 3/8	22 7/8			
5	14 1/4	20 5/8	20 5/8	20 1/8	18 3/4	18 3/4	20 5/8	20 5/8	18 3/8	20 5/8	20 5/8			
6	14 1/2	21 1/4	20 3/4	20 3/4	19 7/8	19 1/2	20 3/8	20 3/4	19	20 3/4	20 3/8			
7	14 3/8	19 3/4	19 3/4	20 1/4	19 3/4	17	19 3/4	20 5/8	18 7/8	20 5/8	19 3/4			
8	14 1/4	21 1/2	21 1/2	20 5/8	19 1/4	19 3/4	20 5/8	21 1/2	19 5/8	21 1/2	20 5/8			
9	14 1/2	21 1/4	21 1/4	20 7/8	20	20 7/8	20 7/8	21 1/4	19 1/2	21 3/4	21 1/4			
A	18	19 3/4	19 3/4	20 1/4	19 3/4	17	19 3/4	20 5/8	18 7/8	20 5/8	19 3/4	21 5/8	23 7/8	23
B	14 1/4	21 1/2	21 1/2	20 5/8	19 1/4	19 3/4	20 5/8	21 1/2	19 5/8	21 1/2	20 5/8	19 1/2	22 3/8	21 1/2
C	14 1/4	21 1/4	21 1/4	20 7/8	20	20 7/8	20 7/8	21 1/4	19 1/2	21 3/4	21 1/4	18 3/8	21	19 3/4

EXAMPLE FOR USING SPACING CHART



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
2																										
3																										
4																										
5	72	60	6		1	12	18	9	10	11	8 7/8	23	22 1/4	13 1/4	48 1/2	10 1/4		19 1/4	24	7		90		96	7 1/2	

1-2 Digit Bid Area	3 Digit Bid Area
Sq. Ft.	
30	37.5

STANDARD SIGN
E5-1A

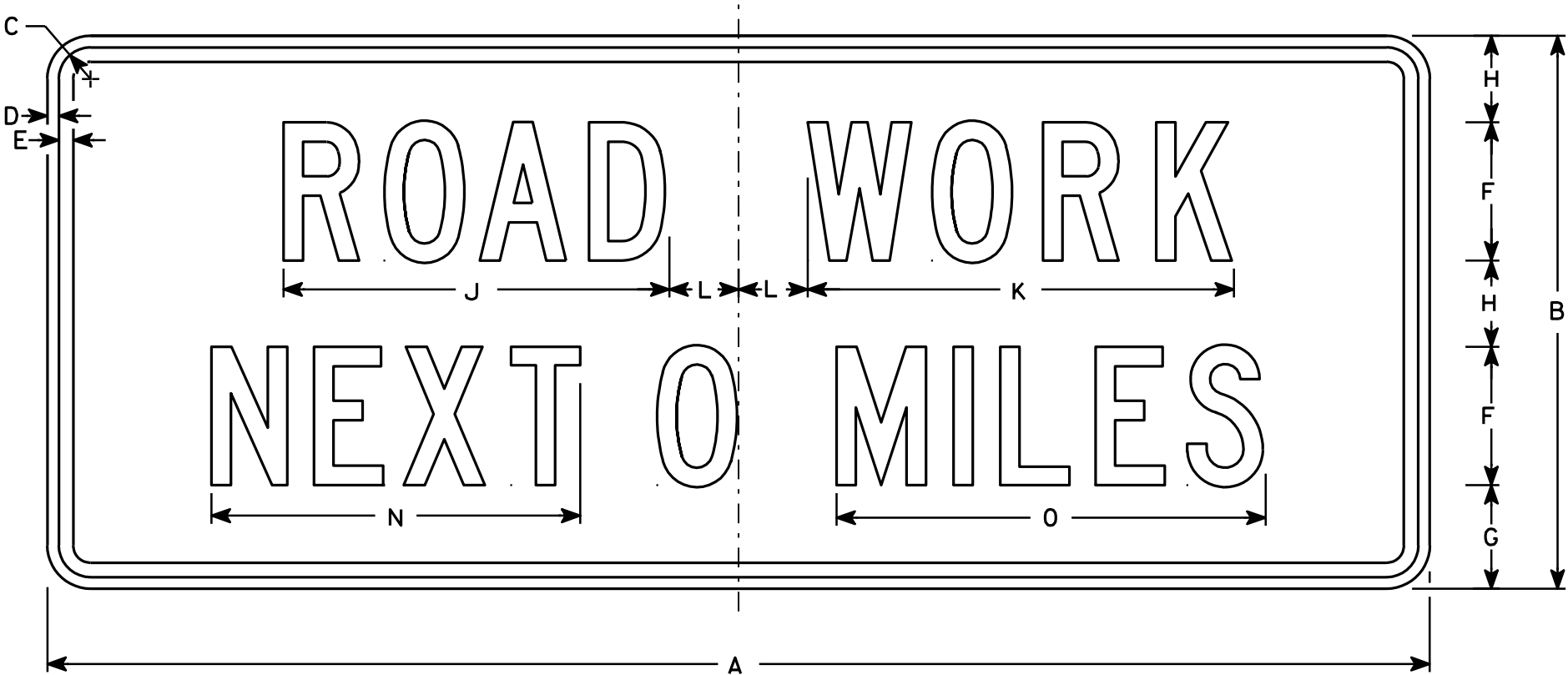
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer
DATE 5/11/10 PLATE NO. E5-1A.12

PROJECT NO: HWY: COUNTY: SHEET NO: 126 E

NOTES

- 1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- 2. Color:
Background - Orange
Message - Black
- 3. Message Series - C
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- 5. Substitute appropriate numerals and optically adjust spacing to achieve proper balance



G20-1

Metric equivalent
for this sign is:

SIZE	
1	
2	1500 mm X 600 mm
3	
4	1500 mm X 600 mm
5	

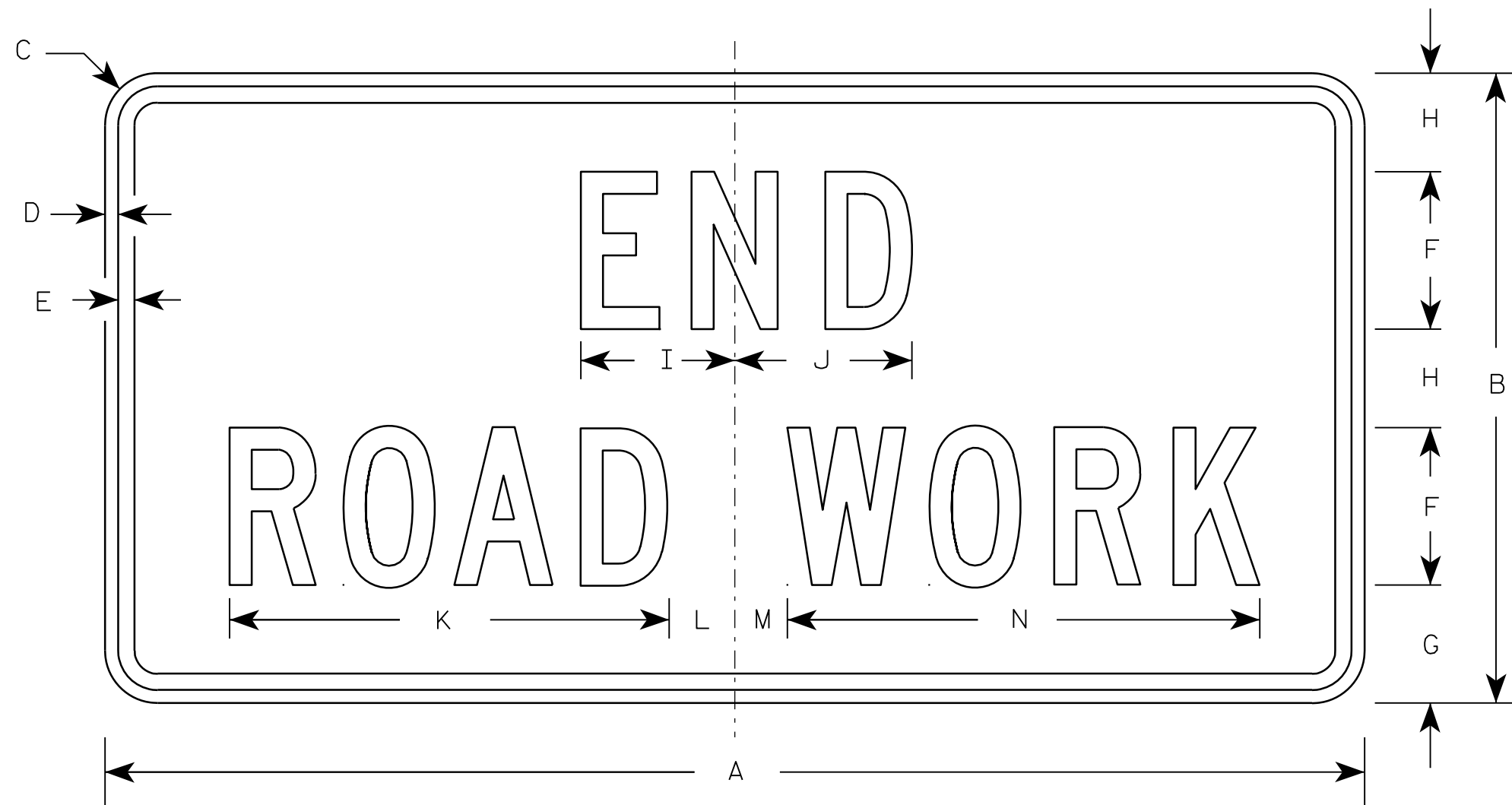
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m ²
1																												
2	60	24	1 3⁄8	1⁄2	5⁄8	6	4 1⁄2	3 3⁄4		16 3⁄4	18 1⁄2	3		16	18 5⁄8												10	.90
3																												
4	60	24	1 3⁄8	1⁄2	5⁄8	6	4 1⁄2	3 3⁄4		16 3⁄4	18 1⁄2	3		16	18 5⁄8												10	.90
5																												

STANDARD SIGN
G20-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Chris J. Spay
State Traffic Engineer
DATE 4/8/97 PLATE NO. G20-1.7

7



G20-2A

NOTES

- 1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- 2. Color:
 - Background - Orange
 - Message - Black
- 3. Message Series - C
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

Metric equivalent
for this sign is:

SIZE	
1	900 mm X 450 mm
2	1200 mm X 600 mm
3	1200 mm X 600 mm
4	1200 mm X 600 mm
5	1200 mm X 600 mm

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m ²
1	36	18	1 1/8	3/8	1/2	4	3 3/4	2 1/2	4 1/8	4 1/8	11 1/8	2	1	12 1/8													4.5	0.41
2	48	24	1 1/2	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0	0.72
3	48	24	1 1/2	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0	0.72
4	48	24	1 1/2	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0	0.72
5	48	24	1 1/2	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0	0.72

STANDARD SIGN

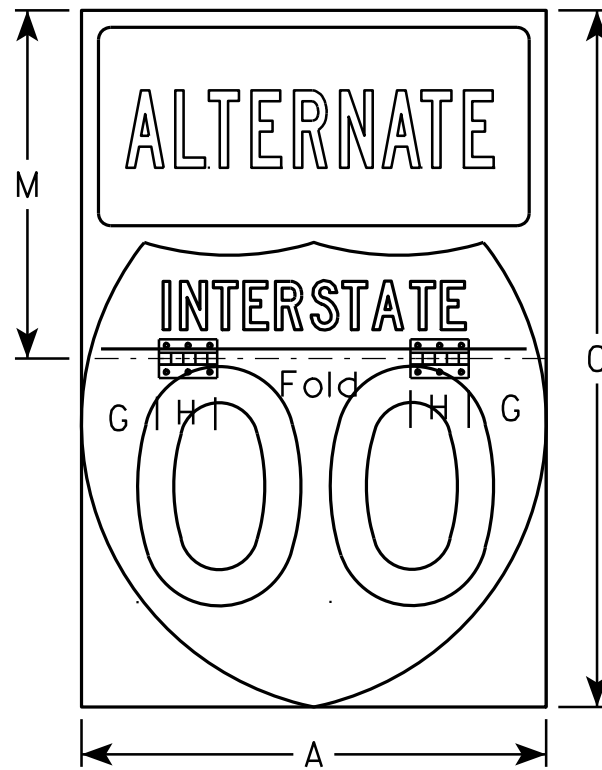
G20-2A

WISCONSIN DEPT OF TRANSPORTATION

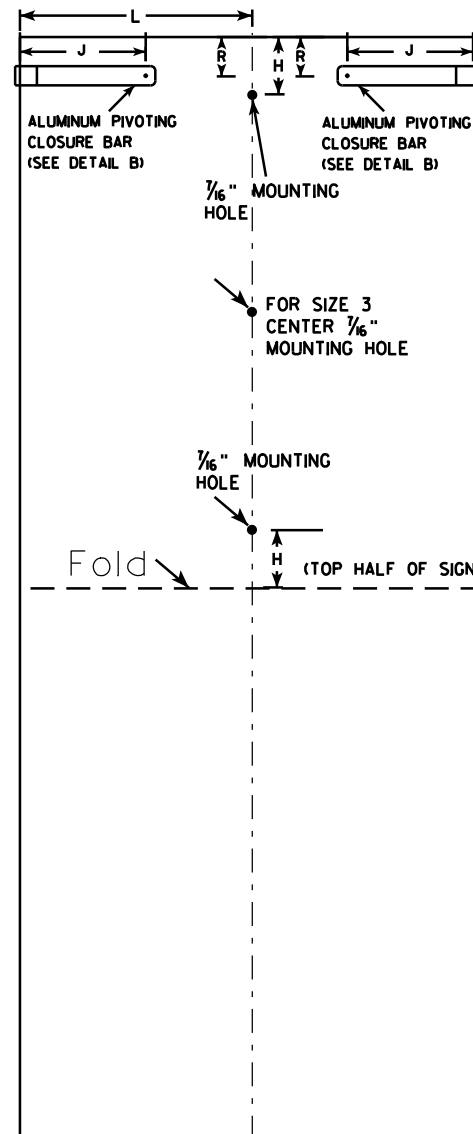
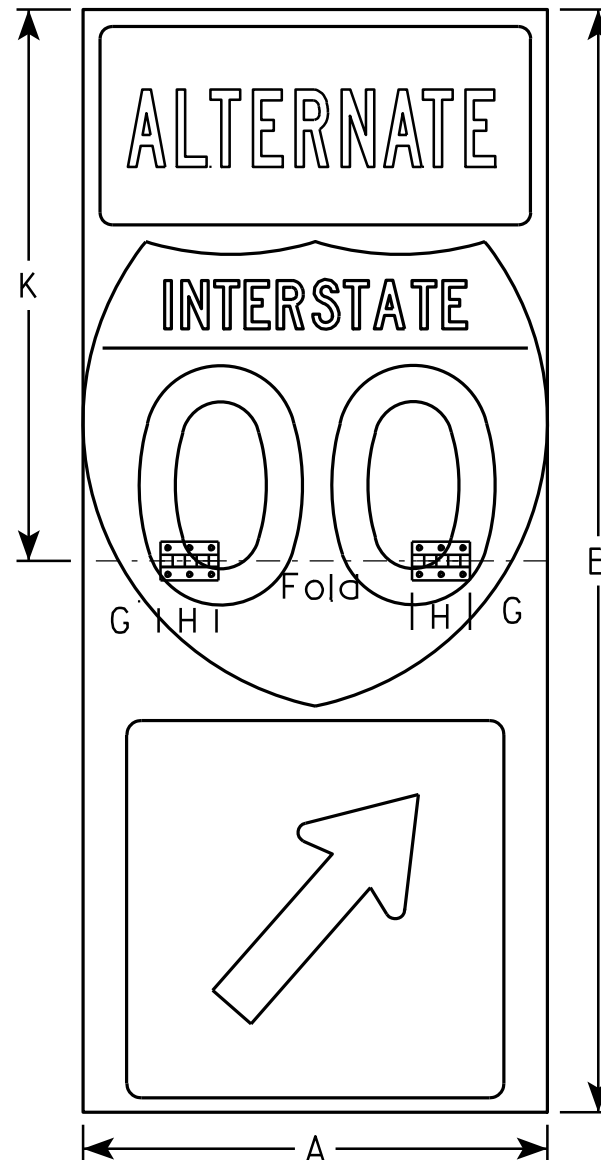
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 9/30/09 PLATE NO. G20-2A.8

7



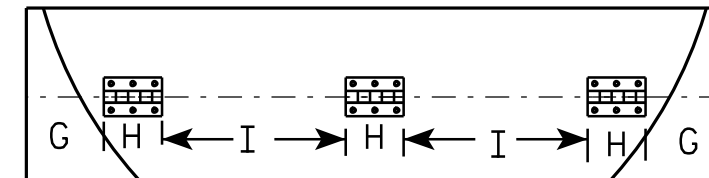
SIZE	Area sq. ft.
1	
2	6.0
3	13.5



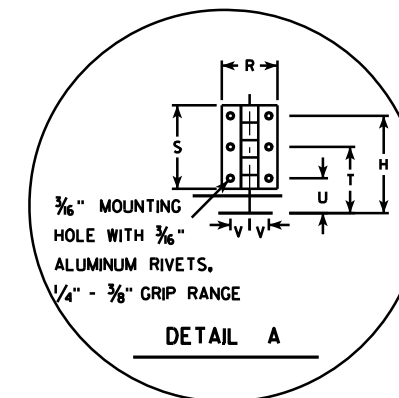
(BACK VIEW)

NOTES

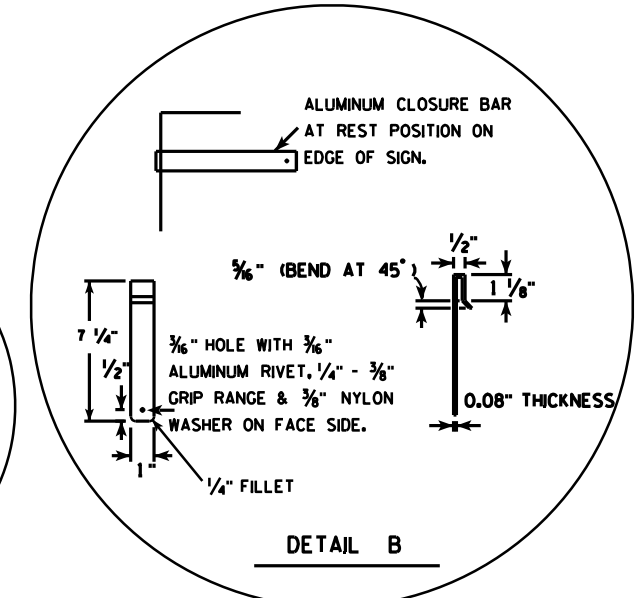
- Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- Color:
Background - *
Message - *
- Message Series - C
- Sign Base Material shall be aluminum and borders shall be rounded.
- All hardware used on the folding sign installation shall conform to 637.2.4 of the WIS DOT Standard Specification.
- Size 3 shall have 3 hinges see detail below
* See Appropriate Route Shield, Cardinals, Arrow, and A2-1S Sign Plates.



HINGE PLACEMENT FOR SIZE 3



DETAIL A



DETAIL B

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	57	36				4	3		6 1/2	28 1/2	12	18					2	3	2 5/8	1 1/4	11/16					9.5
3	36	81	54				4	3	9 1/2	6 1/2	40 1/2	18	27					2	3	2 5/8	1 1/4	11/16					20.2
4																											
5																											

STANDARD SIGN

JV-F

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 8/17/12 PLATE NO. JV-F.2

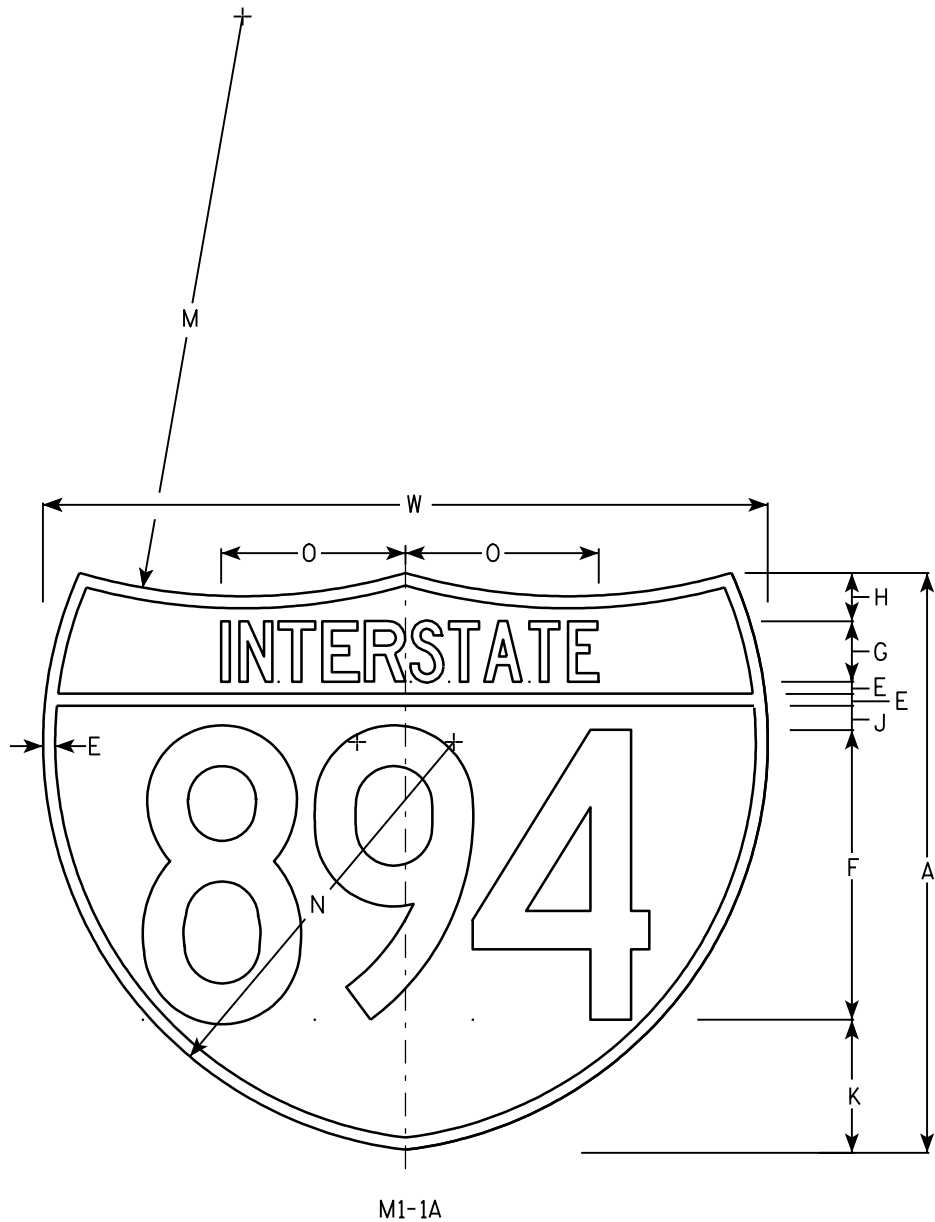
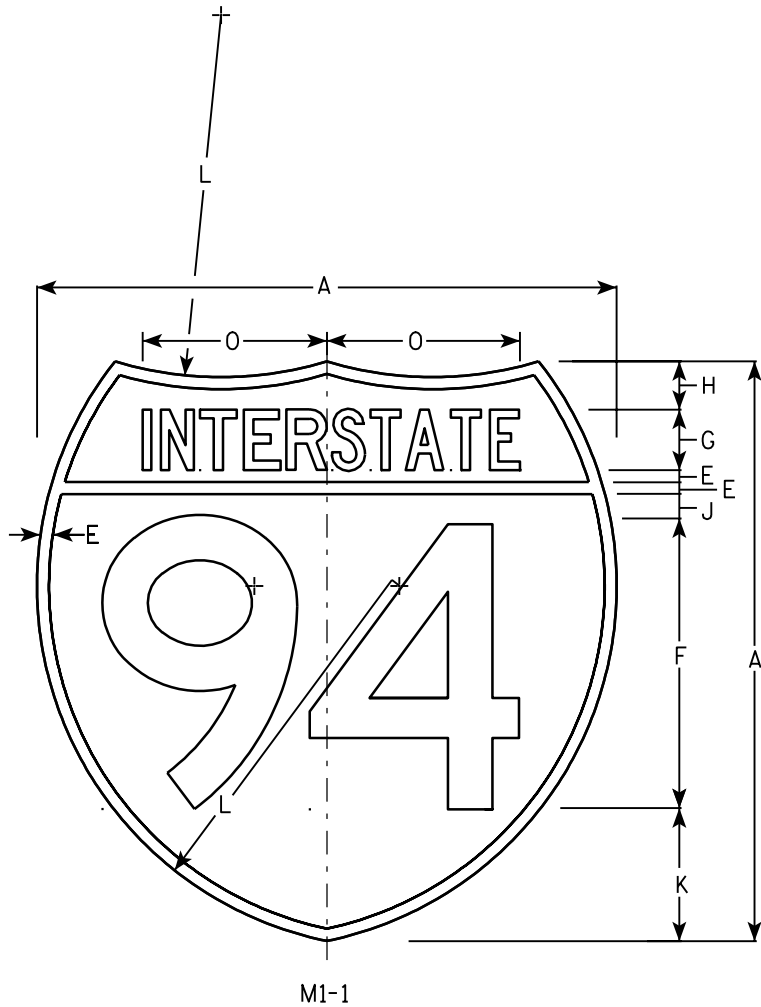
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 129

E



NOTES

- 1. Sign is Type II - See Note 6 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- 2. Color:
Background - Top Red - Bottom Blue (See Note 6)
Message - White - See Note 6
- 3. Message Series - See note 5
- 4. Substitute appropriate numerals & adjust spacing as per plate A10-1.
- 5. M1-1 - Numerals - D
Interstate - C
M1-1A - All copy - C
- 6. Permanent Signs
Message - Type H Reflective
Detour or other temporary signs
Background - Reflective
Message - Reflective

Metric equivalent for these signs are:

SIZE	M1 - 1	SIZE	M1 - 1A
1			
2	600 mm X 600 mm	2	600 mm X 750 mm
3	900 mm X 900 mm	3	900 mm X 1125 mm
4	900 mm X 900 mm	4	900 mm X 1125 mm
5	900 mm X 900 mm	5	900 mm X 1125 mm

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Area sq. ft.	Area sq. ft.	Area m ²	Area m ²
1																													
2	24				1/2	12	2 1/2	2		1	5 1/2	15	24	17	7 7/8								30			3.13	3.91	.36	.46
3	36				3/4	18	3 3/4	3		1 1/2	8 1/4	22 1/2	36	25 1/2	11 3/4								45			7.03	8.79	.81	1.05
4	36				3/4	18	3 3/4	3		1 1/2	8 1/4	22 1/2	36	25 1/2	11 3/4								45			7.03	8.79	.81	1.05
5	36				3/4	18	3 3/4	3		1 1/2	8 1/4	22 1/2	36	25 1/2	11 3/4								45			7.03	8.79	.81	1.05

INTERSTATE ROUTE MARKER
M1-1 FOR ASSEMBLIES

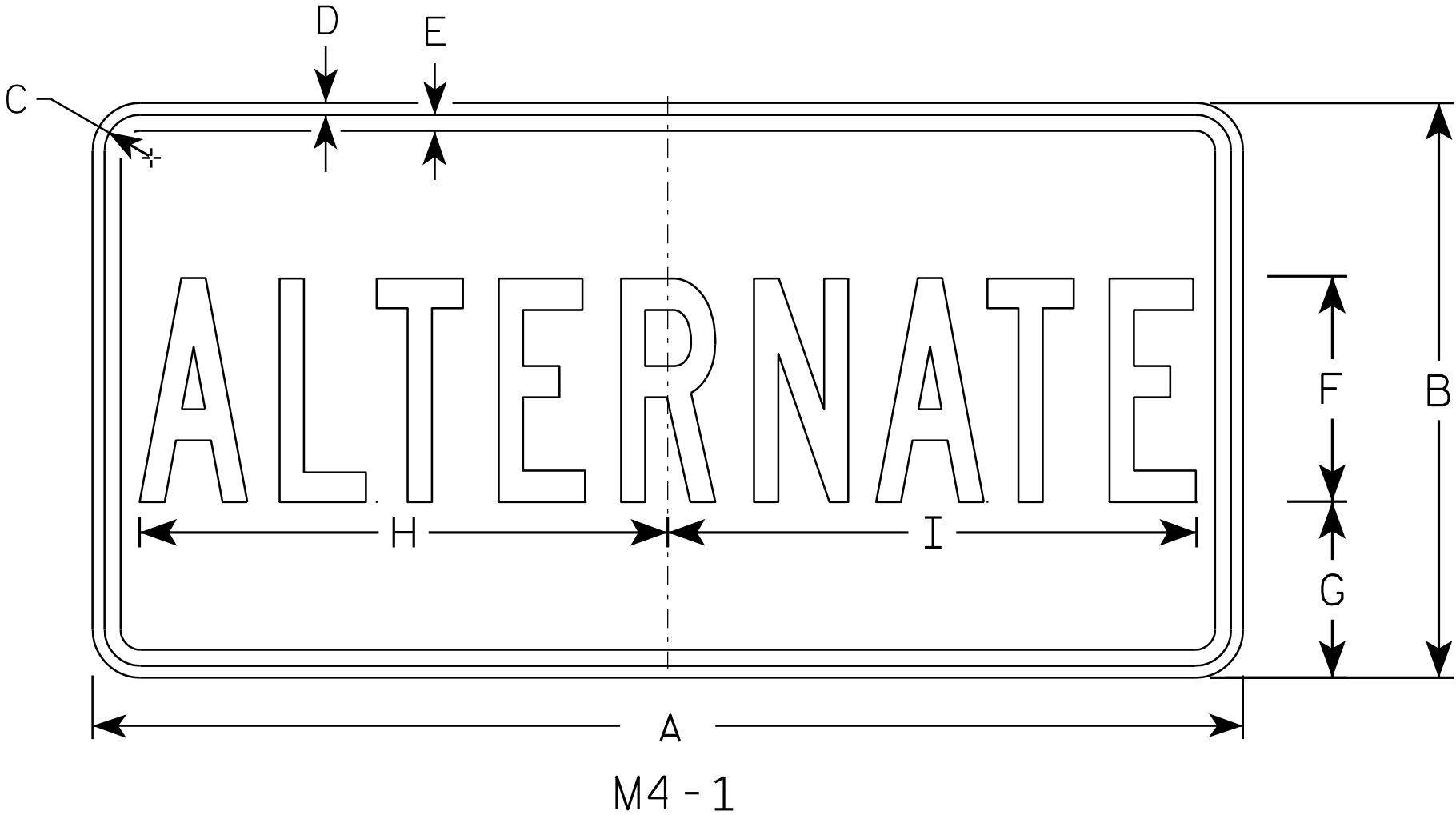
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 08/23/05 PLATE NO. M1-1.8

NOTES

1. Sign is Type II - See Note 5 - reference
WIS DOT Standard Specification for HIGHWAY
and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - See Note 5
Message - See note 5
3. Message Series - B
4. Corners may be square or rounded when base
material is plywood but borders shall be rounded
as shown. When base material is metal, the
corners and borders shall be rounded.
5. M4-1 Background - White - Type H Reflective
Message - Black
- MB4-1 Background - Blue
Message - White - Type H Reflective
- M04-1 Background - Orange - Reflective
Message - Black



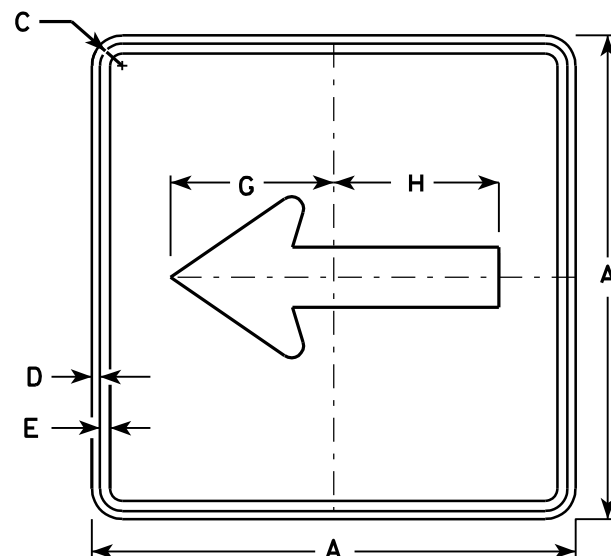
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	12	1 1/2	3/8	3/8	4	4	9 3/4	9 1/2																		2.00
3	36	18	1 1/2	3/8	1/2	7	5 1/2	16 3/8	16 1/2																		4.5
4	36	18	1 1/2	3/8	1/2	7	5 1/2	16 3/8	16 1/2																		4.5
5	36	18	1 1/2	3/8	1/2	7	5 1/2	16 3/8	16 1/2																		4.5

STANDARD SIGN
M4 - 1

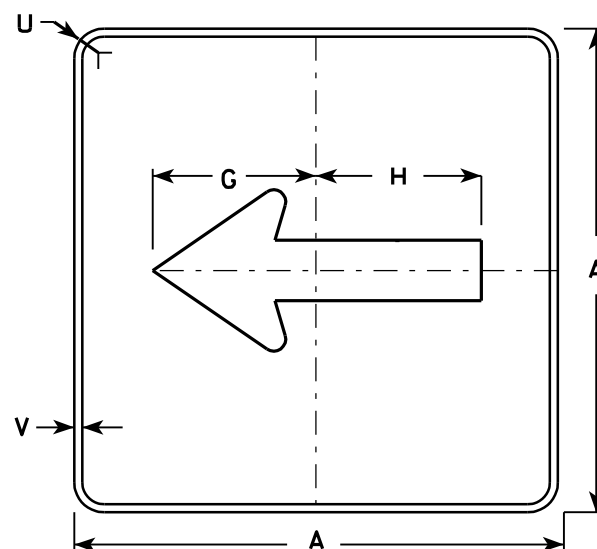
WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

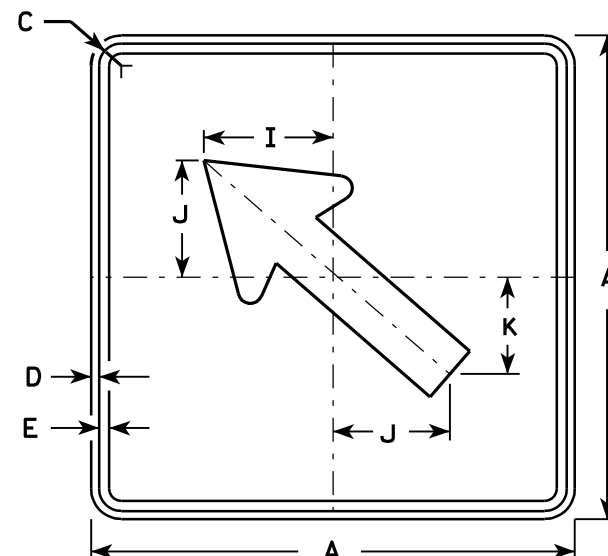
DATE 11/10/10 PLATE NO. M4-1.7



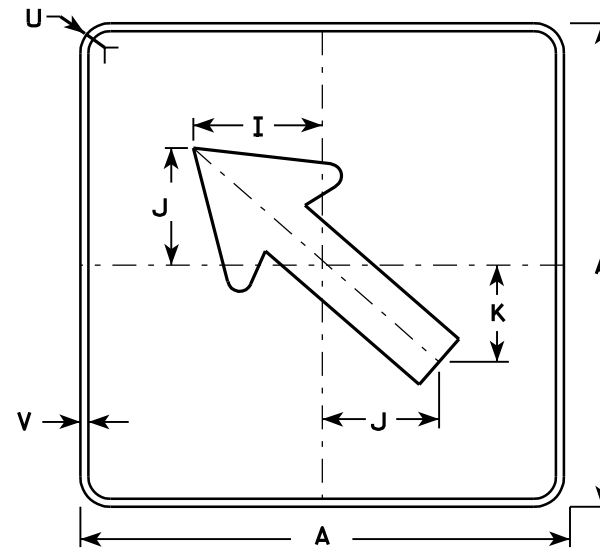
M6-1
MK6-1
MM6-1
MO6-1
MP6-1
MR6-1



MB6-1
MG6-1
MN6-1



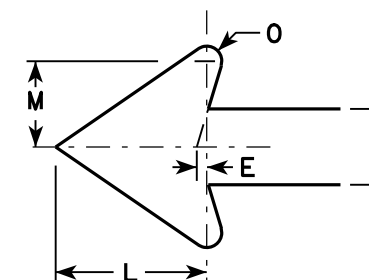
M6-2
MK6-2
MM6-2
MO6-2
MP6-2
MR6-2



MB6-2
MG6-2
MN6-2

NOTES

- Signs are Type II - See Note 4 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- Color:
 - Background - See note 4
 - Message - See note 4
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- M6-1 and M6-2 Background - White - Type H Reflective
Message - Black
 MB6-1 and MB6-2 Background - Blue
Message - White - Type H Reflective
 MG6-1 and MG6-2 Background - Green
Message - White - Type H Reflective
 MK6-1 and MK6-2 Background - Green
Message - White - Type H Reflective
 MM6-1 and MM6-2 Background - White - Type H Reflective
Message - Green
 MN6-1 and MN6-2 Background - Brown
Message - White - Type H Reflective
 MO6-1 and MO6-2 Background - Orange - Type F Reflective
Message - Black
 MP6-1 and MP6-2 Background - White - Type H Reflective
Message - Blue
 MR6-1 and MR6-2 Background - Brown
Message - Yellow - Type H Reflective



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	21		1 1/8	3/8	3/8		7 1/2	7 1/8	5 5/8	5	4 1/4	5 1/4	3	2 5/8	1/2						1 1/2	1/2					3.06
3	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25
4	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25
5	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25

STANDARD SIGN M6-1 & M6-2 SERIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 7/29/13 PLATE NO. M6-1.13

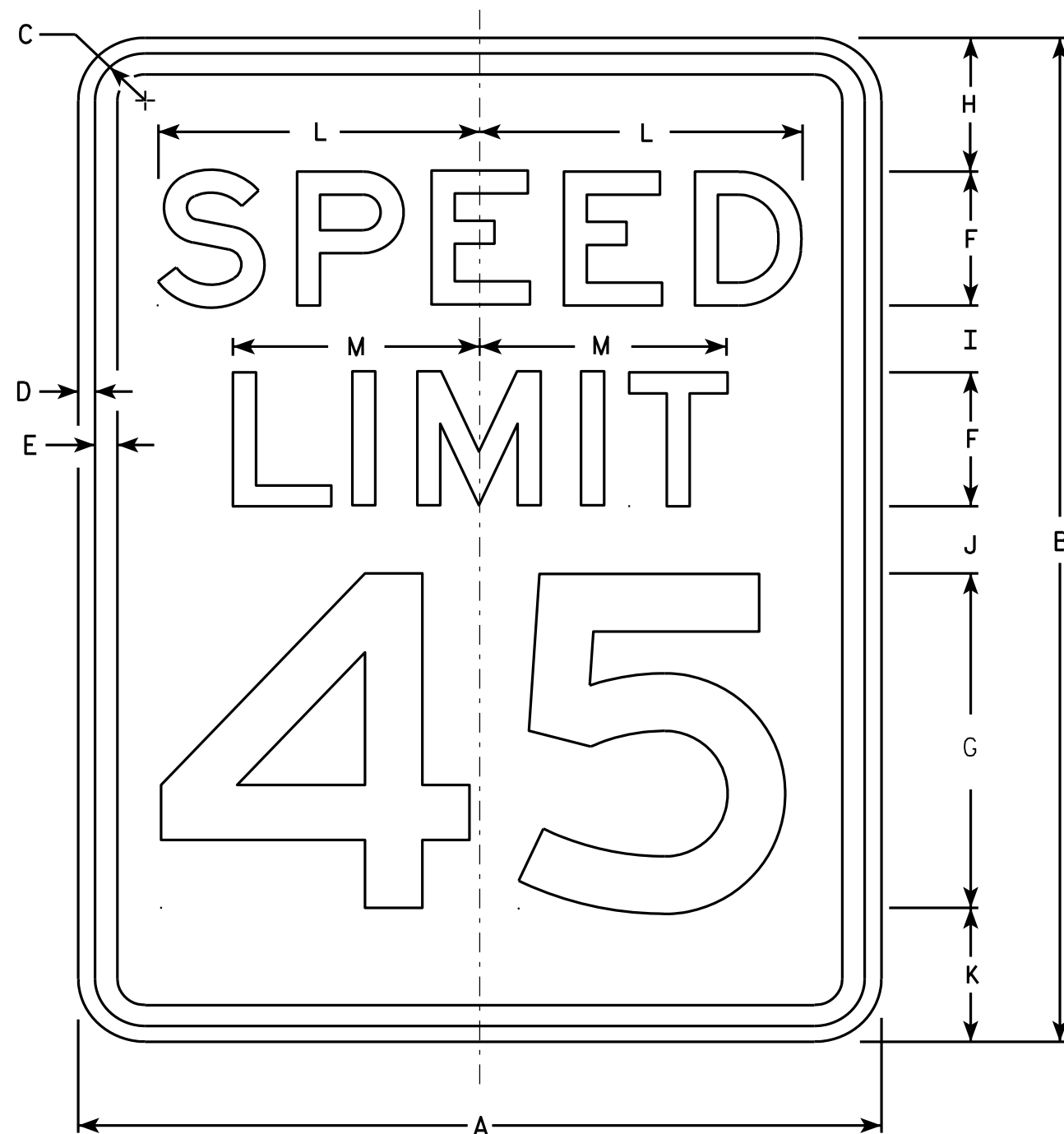
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 132

E



R2-1

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White
Message - Black
3. Message Series - E
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Substitute appropriate numerals and optically adjust spacing to achieve proper balance.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	18	24	1 1/8	3/8	1/2	3	8	3	2	2	3	7 1/4	5 1/2														3.0
2S	24	30	1 1/8	3/8	1/2	4	10	3	2 1/4	3 3/8	3 3/8	9 5/8	7 3/8														5.0
2M	30	36	1 3/8	1/2	5/8	5	12	5	2 1/2	2 1/2	4	12	9 1/4														7.5
3	36	48	1 3/8	1/2	5/8	6	14	6	5	5	6	14 3/8	11														12.0
4	36	48	1 3/8	1/2	5/8	6	14	6	5	5	6	14 3/8	11														12.0
5	48	60	2 1/4	3/4	1	8	20	6	4 1/2	6 3/4	6 3/4	19 1/4	14 5/8														20.0

STANDARD SIGN R2-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 5/26/10 PLATE NO. R2-1.13

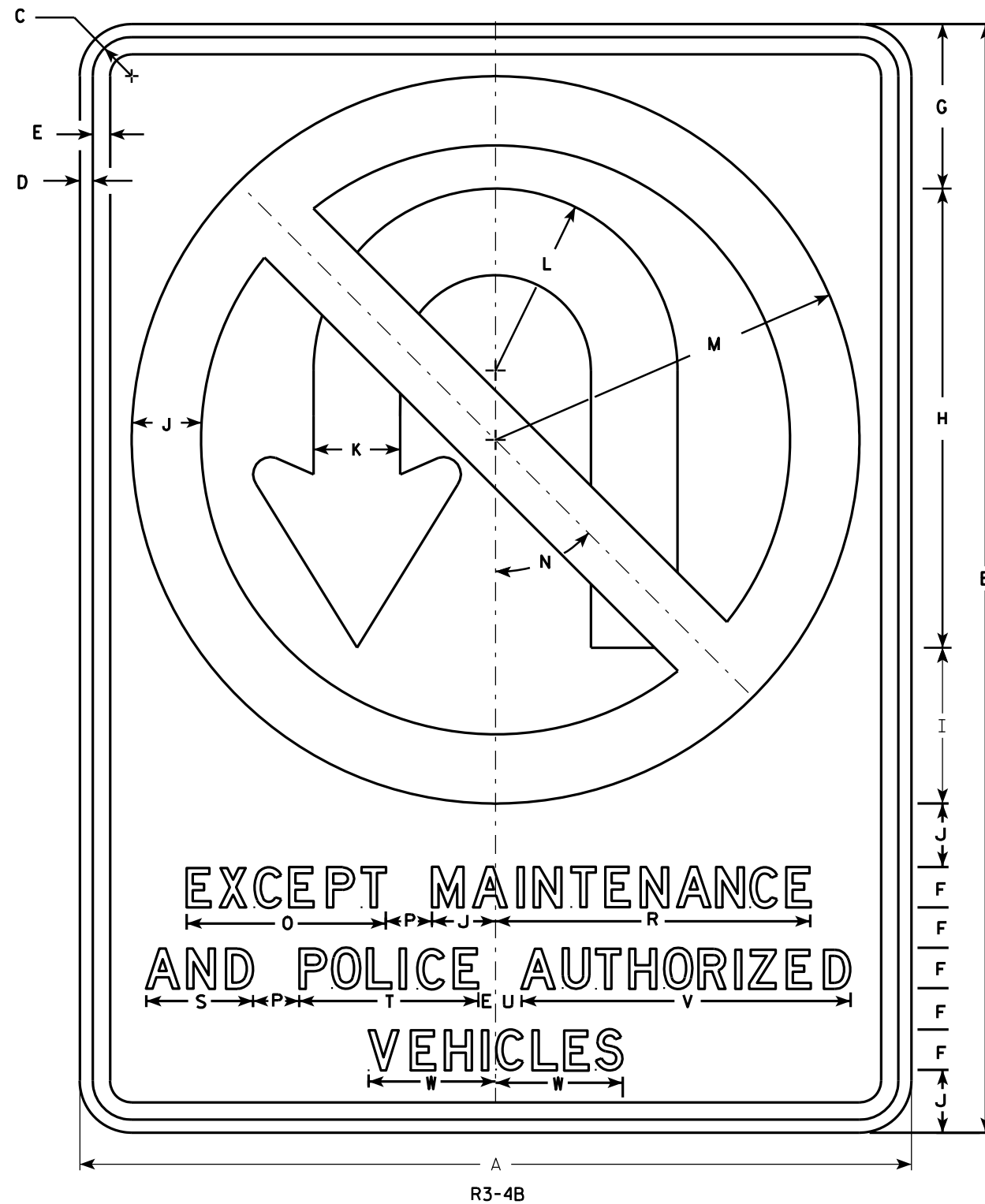
PROJECT NO:

HWY:

COUNTY:

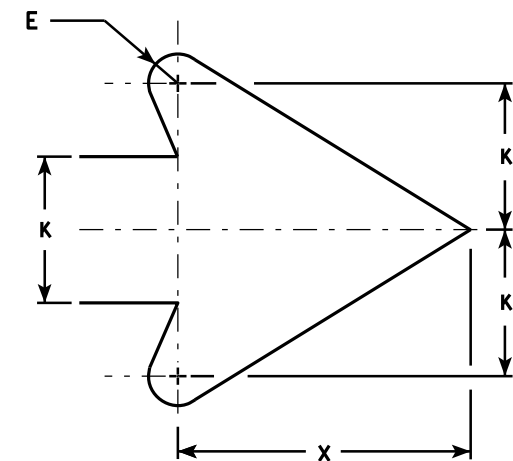
SHEET NO: 133

E



NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White
Message - See note 4
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. Border & Arrow are non reflective black, the circle with diagonal bar is reflective red.



ARROW DETAIL

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S																											
2M																											
3																											
4	36	48	1 5⁄8	5⁄8	3⁄4	1 3⁄4	7 1⁄8	19 7⁄8	6 3⁄4	2 3⁄4	3 3⁄4	7 7⁄8	15 3⁄4	45°	8 5⁄8	2		13 5⁄8	4 5⁄8	7 3⁄4	1 1⁄8	14 1⁄4	5 1⁄2	7 5⁄8			12.0
5	36	48	1 5⁄8	5⁄8	3⁄4	1 3⁄4	7 1⁄8	19 7⁄8	6 3⁄4	2 3⁄4	3 3⁄4	7 7⁄8	15 3⁄4	45°	8 5⁄8	2		13 5⁄8	4 5⁄8	7 3⁄4	1 1⁄8	14 1⁄4	5 1⁄2	7 5⁄8			12.0

STANDARD SIGN R3-4B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 3/17/2011 PLATE NO. R3-4B.2

PROJECT NO: HWY: COUNTY: SHEET NO: 134 E



R4-3

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White
Message - Black
3. Message Series - D
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	24	30	1 1/8	3/8	1/2	4	3 5/8	2 1/4	9 3/4	10	6 1/4	6 3/4	7 1/8	7 5/8													5.0
2M	24	30	1 1/8	3/8	1/2	4	3 5/8	2 1/4	9 3/4	10	6 1/4	6 3/4	7 1/8	7 5/8													5.0
3	36	48	1 5/8	5/8	3/4	6	6	4	14 5/8	15	9 3/8	10	10 3/4	11 3/8													12.0
4	36	48	1 5/8	5/8	3/4	6	6	4	14 5/8	15	9 3/8	10	10 3/4	11 3/8													12.0
5	48	60	2 1/4	3/4	1	8	7 1/4	4 1/2	19 1/2	20	12 1/2	13 1/2	14 1/4	15 1/4													20.0

STANDARD SIGN

R4-3

WISCONSIN DEPT OF TRANSPORTATION

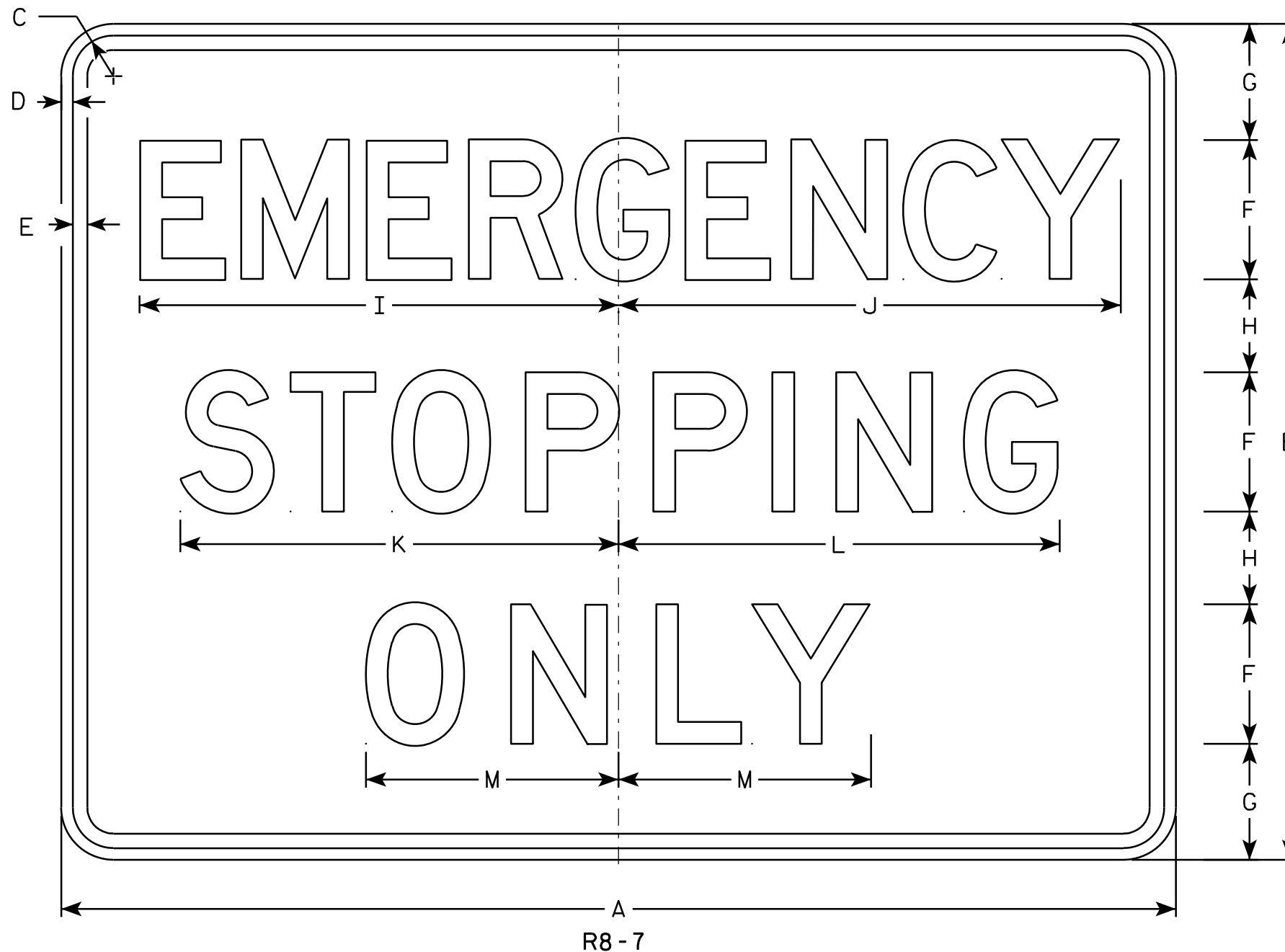
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 3/25/2011 PLATE NO. R4-3.8

PROJECT NO:

SHEET NO: 135

E



NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White
Message - Black
3. Message Series - D
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S																											
2M																											
3																											
4	48	36	1 ¾	½	⅝	6	5	4	20 ⅝	21 ⅝	18 ⅞	19	10 ⅞														12.0
5	48	36	1 ¾	½	⅝	6	5	4	20 ⅝	21 ⅝	18 ⅞	19	10 ⅞														12.0

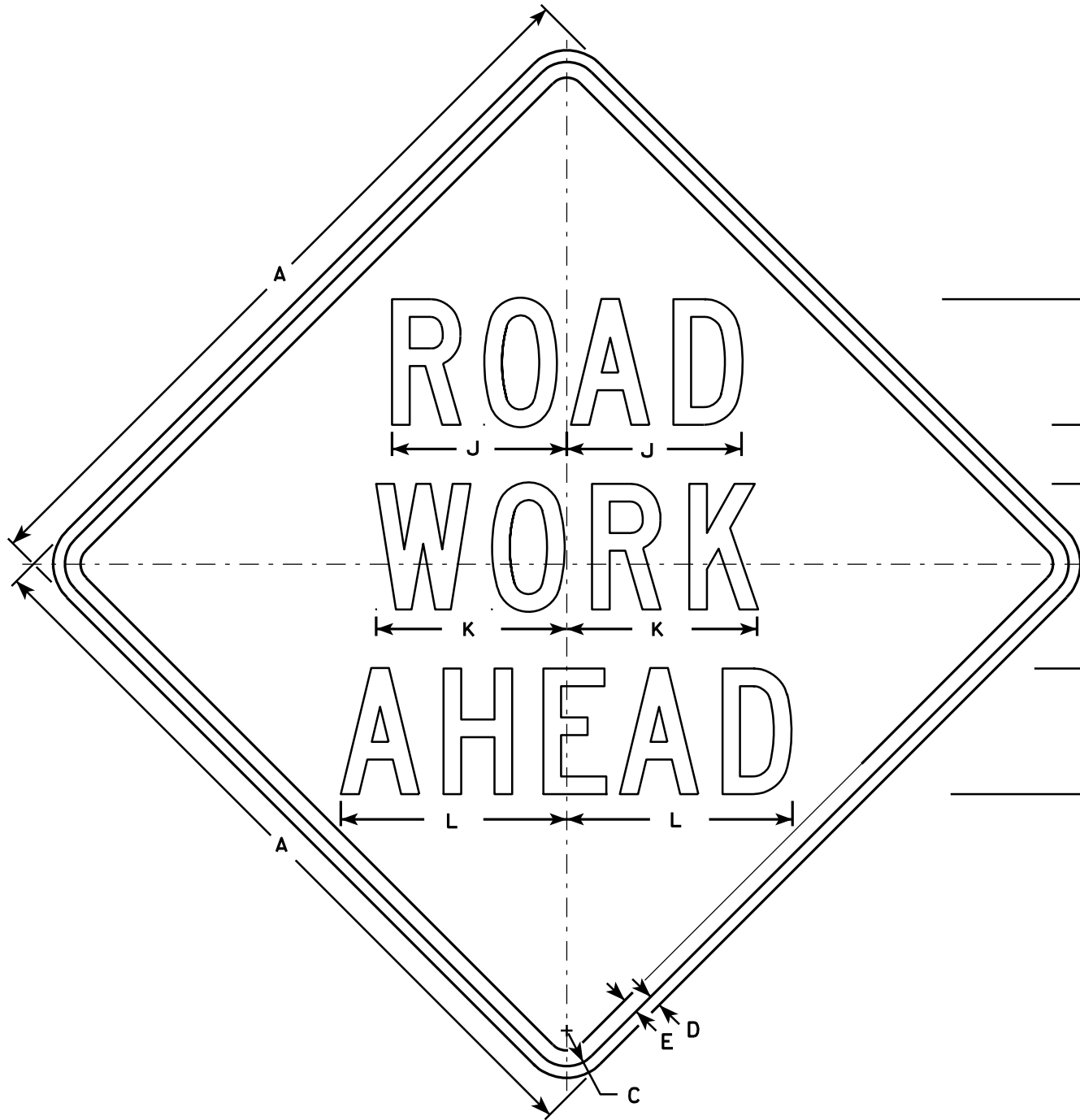
STANDARD SIGN R8 - 7

WISCONSIN DEPT OF TRANSPORTATION

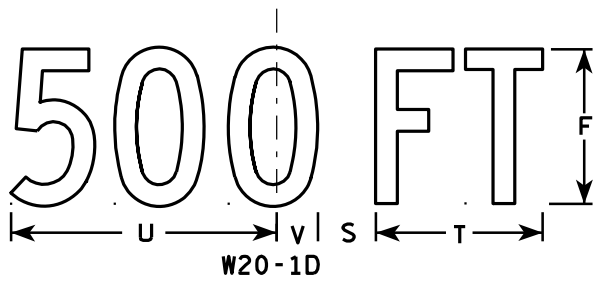
APPROVED Matthew R. Rauch
for State Traffic Engineer

DATE 3/31/2011 PLATE NO. R8-7.6

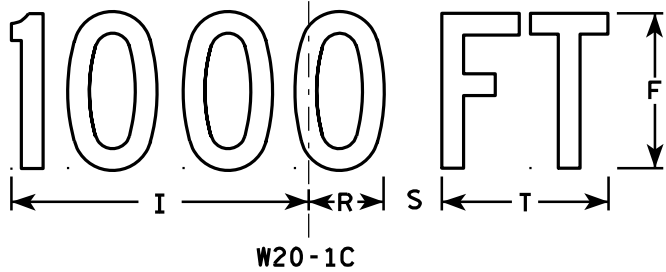
PROJECT NO: HWY: COUNTY: SHEET NO: 136 E



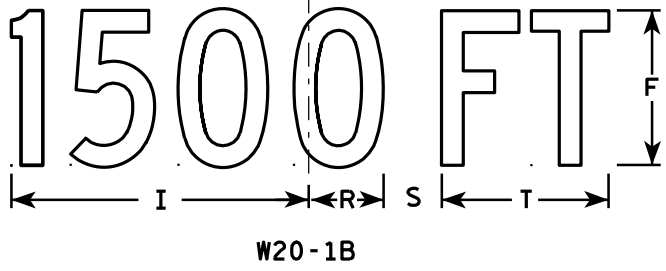
W20-1A



W20-1D



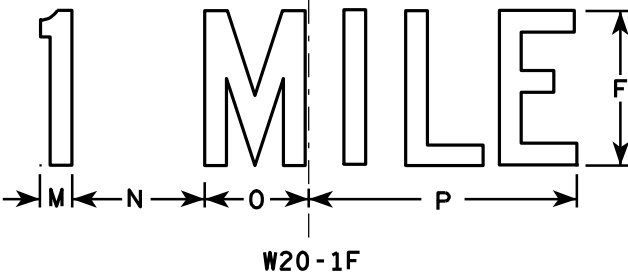
W20-1C



W20-1B



W20-1G



W20-1F

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Orange
Message - Black
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		1 3/8	1/2	5/8	5	2 5/8	3 1/4	10 1/8	7	7 5/8	8 7/8	1 1/8	4 1/2	3 1/2	9		2 1/2	1 7/8	5 5/8	9	1 3/8	8	1 3/4	10 3/4	6	9.0
2S	48		2 1/4	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8		3 7/8	3	8 5/8	13 3/4	2 1/8	11 7/8	2 3/4	16 3/8	9	16.0
2M	48		2 1/4	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8		3 7/8	3	8 5/8	13 3/4	2 1/8	11 7/8	2 3/4	16 3/8	9	16.0
3	48		2 1/4	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8		3 7/8	3	8 5/8	13 3/4	2 1/8	11 7/8	2 3/4	16 3/8	9	16.0
4	48		2 1/4	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8		3 7/8	3	8 5/8	13 3/4	2 1/8	11 7/8	2 3/4	16 3/8	9	16.0
5	48		2 1/4	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8		3 7/8	3	8 5/8	13 3/4	2 1/8	11 7/8	2 3/4	16 3/8	9	16.0

PROJECT NO:

STANDARD SIGN
W20-1A, B, C, D, F & G

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
For State Traffic Engineer
DATE 3/18/11 PLATE NO. W20-19

SHEET NO: 137

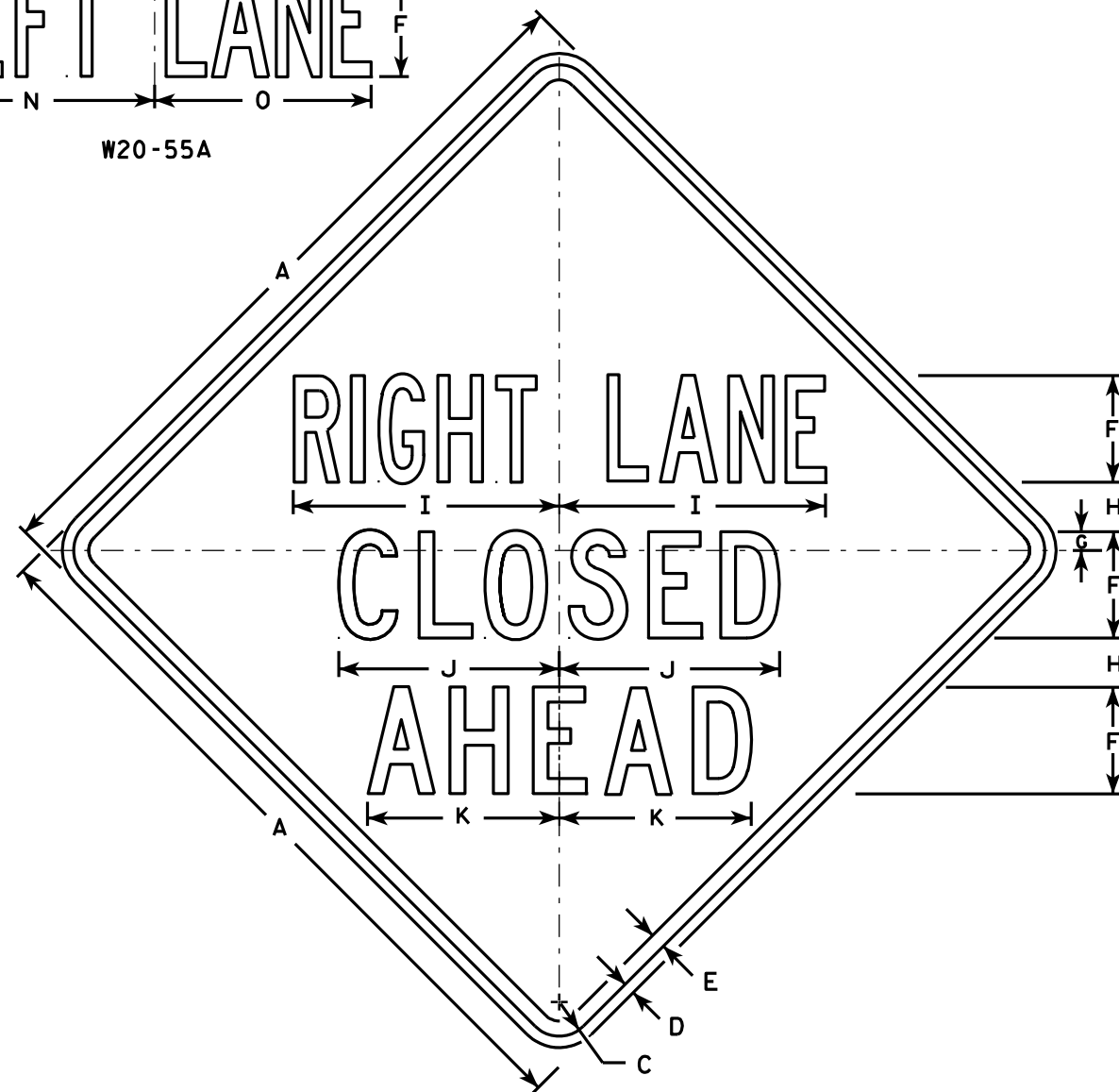
E

CENTER LANE

W20-56A

LEFT LANE

W20-55A



W20-5A

500 FT

W20-5D

1000 FT

W20-5C

1500 FT

W20-5B

1/2 MILE

W20-5G

1 MILE

W20-5F

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Orange
Message - Black
3. Message Series - See Note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. "-----LANE" is Series B.
All other copy is Series C.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	6	1 5/8	5/8	3/4	5	7/8	2 1/2	13 1/8	10 3/4	9 1/2	14 1/4	13 5/8	12	12	1 3/8	1 1/8	4 1/2	3 1/2	9	1 7/8	5 5/8	10 1/8	2 1/2	1 3/4	8	9.0
2S	48	8	2 1/4	3/4	1	7	1 1/4	3 1/4	17 1/2	14 3/8	12 5/8	19	18 3/8	16	14 1/4	1 7/8	1 1/2	6	4 5/8	12	2 5/8	7 1/2	13 1/2	3 3/8	2 3/8	10 5/8	16.0
2M	48	8	2 1/4	3/4	1	7	1 1/4	3 1/4	17 1/2	14 3/8	12 5/8	19	18 3/8	16	14 1/4	1 7/8	1 1/2	6	4 5/8	12	2 5/8	7 1/2	13 1/2	3 3/8	2 3/8	10 5/8	16.0
3	48	8	2 1/4	3/4	1	7	1 1/4	3 1/4	17 1/2	14 3/8	12 5/8	19	18 3/8	16	14 1/4	1 7/8	1 1/2	6	4 5/8	12	2 5/8	7 1/2	13 1/2	3 3/8	2 3/8	10 5/8	16.0
4	48	8	2 1/4	3/4	1	7	1 1/4	3 1/4	17 1/2	14 3/8	12 5/8	19	18 3/8	16	14 1/4	1 7/8	1 1/2	6	4 5/8	12	2 5/8	7 1/2	13 1/2	3 3/8	2 3/8	10 5/8	16.0
5	48	8	2 1/4	3/4	1	7	1 1/4	3 1/4	17 1/2	14 3/8	12 5/8	19	18 3/8	16	14 1/4	1 7/8	1 1/2	6	4 5/8	12	2 5/8	7 1/2	13 1/2	3 3/8	2 3/8	10 5/8	16.0

PROJECT NO:

HWY:

COUNTY:

STANDARD SIGN
W20-5A, B, C, D, F & G

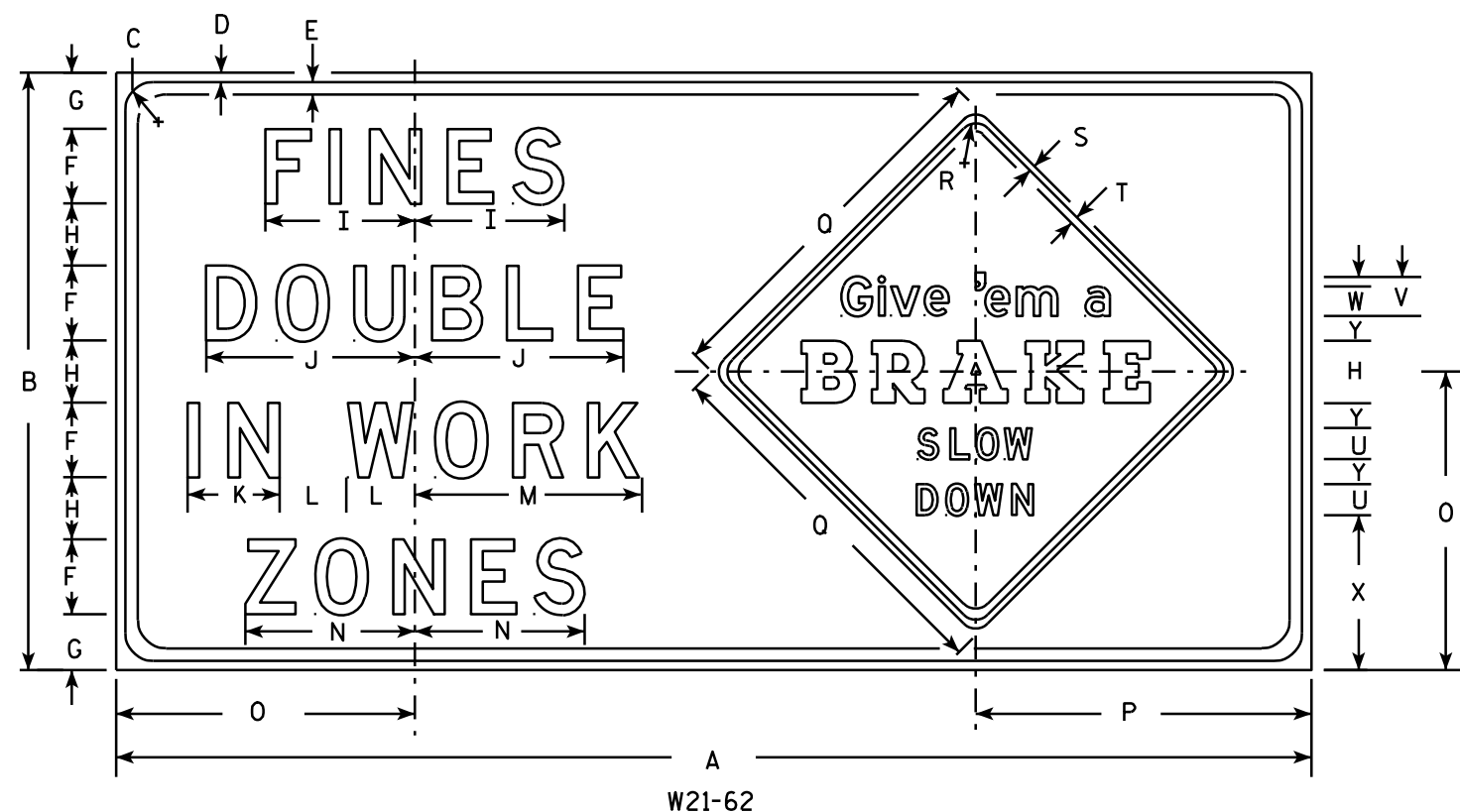
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

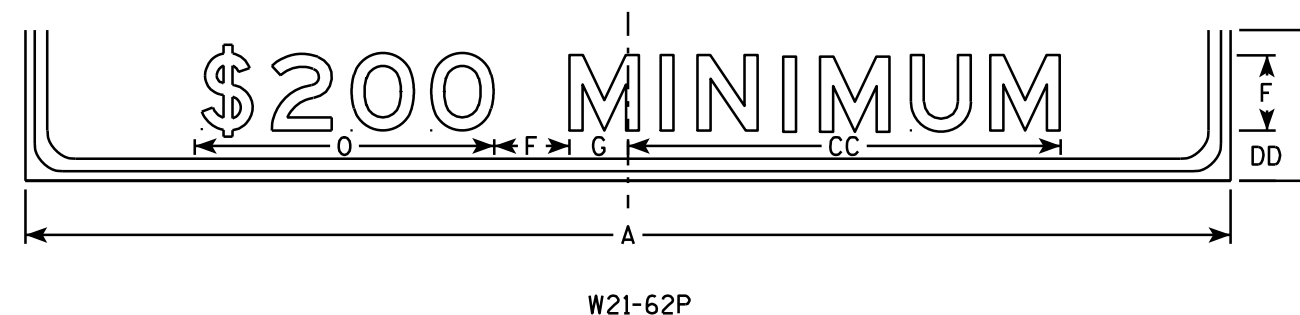
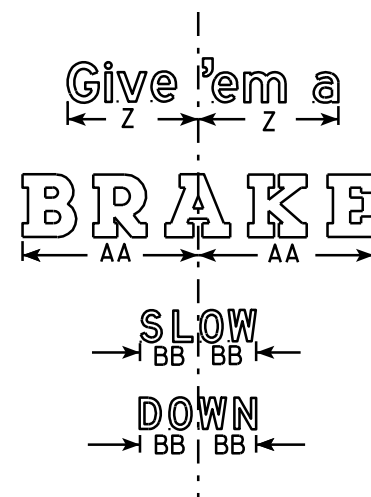
DATE 3/18/11 PLATE NO. W20-5.11

SHEET NO: 138

E



- NOTES**
- Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
 - Color:
Background - White - (See Note 5)
Message - Black
 - Message Series -
Fines Double Message - All lines are Series D
Give 'em a Brake -
Line one is Series E, line two is a Special Graphic Series and lines three and four are Series D.
 - The base material shall be plywood. Corners may be square or rounded, but borders shall be rounded as shown. The base material for Give 'em a Brake sign can be a separate sheet of aluminum with the corners and borders rounded as shown. This separate panel shall then be attached to the plywood with aluminum or stainless steel sheet metal screws.
 - Background for the Give 'em a Brake sign shall be Type F reflective orange.



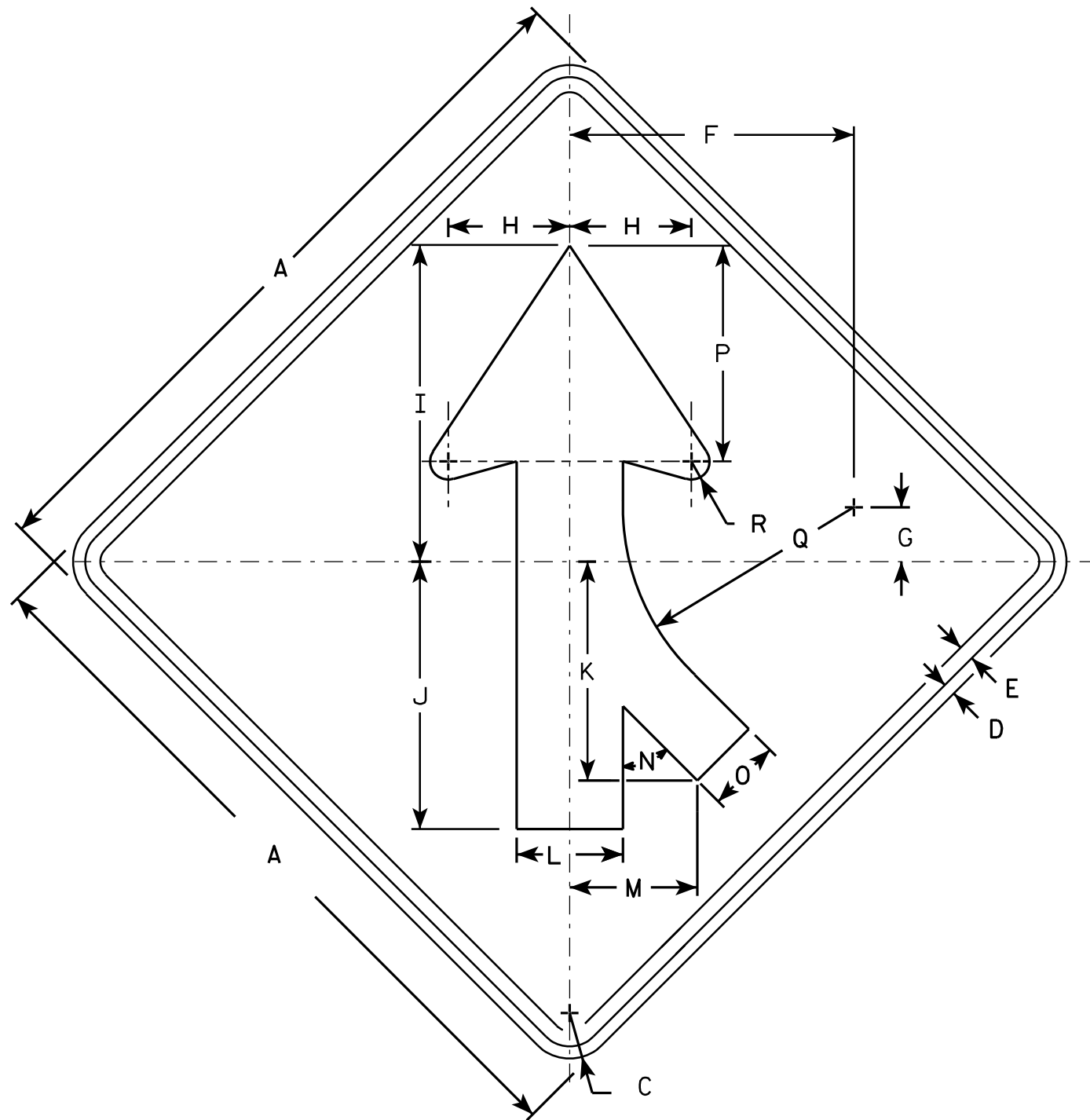
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	Area sq. ft.
1																															
2S																															
2M																															
3	96	48	2 1/4	3/4	1	6	4 1/2	5	12	16 3/4	7 3/8	5 1/2	18 1/4	13 5/8	24	27	30	1 3/8	1/2	5/8	2 1/2	3 1/8	2 3/8	12 1/2	2	10 3/4	14	4 5/8	34 1/2	4	32.0
4																															
5																															

STANDARD SIGN
W21-62

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 3/21/11 PLATE NO. W21-62.5



W4-1 R

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Yellow
Message - Black
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. W4-1L is the same as W4-1R except the arrow is reversed along the vertical centerline.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	30		1 3/8	1/2	5/8	11 5/8	2 1/2	5	13	11	9	4 3/8	5 1/4	45°	3	8 7/8	9 1/2	3/4									6.25
2S	36		1 5/8	5/8	3/4	14	2 3/4	6	15 3/4	13 1/4	10 1/4	5 1/4	6 3/8	45°	3 5/8	10 5/8	11 3/8	7/8									9.0
2M	36		1 5/8	5/8	3/4	14	2 3/4	6	15 3/4	13 1/4	10 1/4	5 1/4	6 3/8	45°	3 5/8	10 5/8	11 3/8	7/8									9.0
3	36		1 5/8	5/8	3/4	14	2 3/4	6	15 3/4	13 1/4	10 1/4	5 1/4	6 3/8	45°	3 5/8	10 5/8	11 3/8	7/8									9.0
4	48		2 1/4	3/4	1	18 3/4	3 5/8	8	20 1/2	17 1/2	14 3/8	7	8 3/8	45°	4 3/4	14 1/4	15 1/4	1 1/4									16.0
5	48		2 1/4	3/4	1	18 3/4	3 5/8	8	20 1/2	17 1/2	14 3/8	7	8 3/8	45°	4 3/4	14 1/4	15 1/4	1 1/4									16.0

STANDARD SIGN

W4-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 03/12/13 PLATE NO. W4-1.14

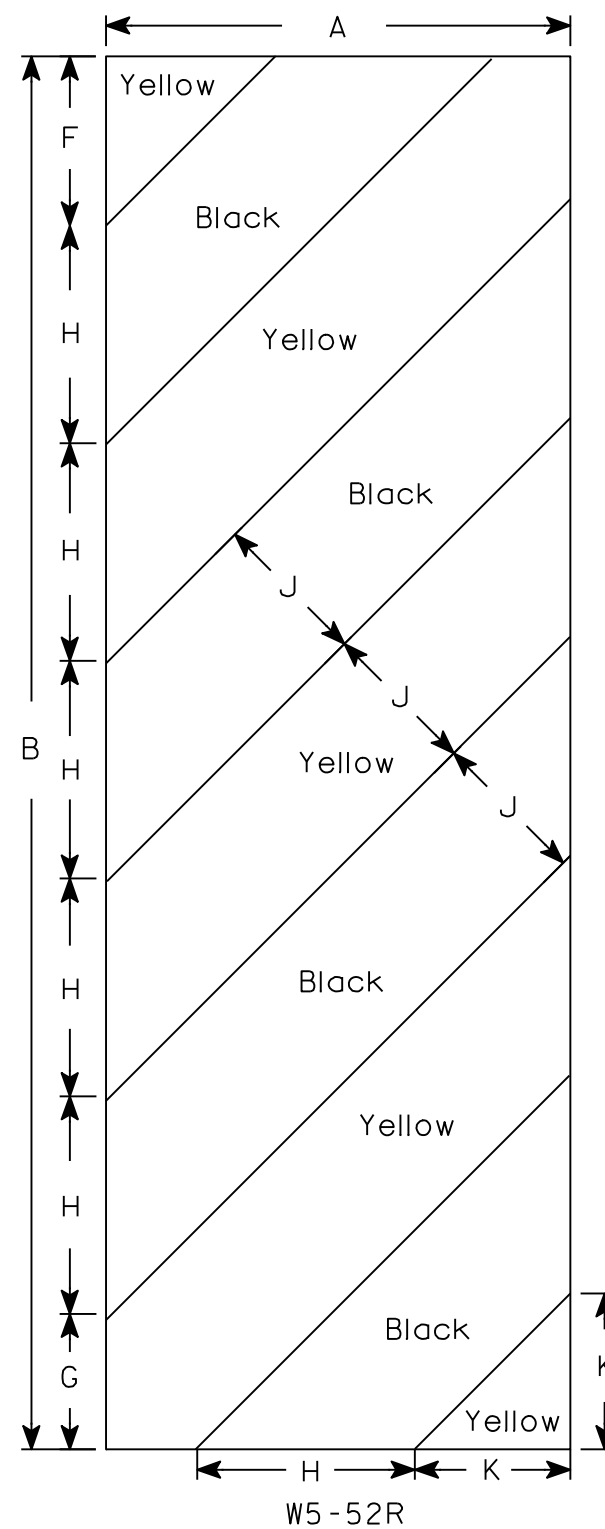
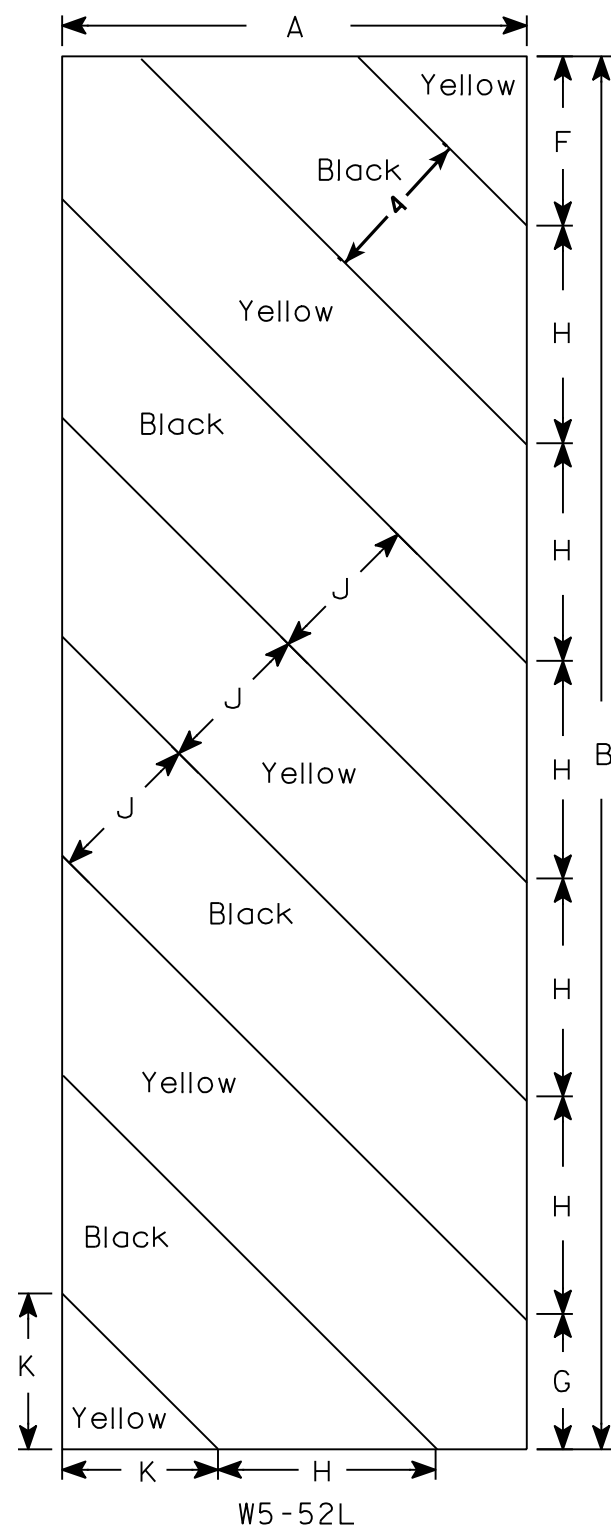
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 140

E



NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
 - Background - Yellow
 - Message - Black
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. Alternate colors of stripes as shown.

[illegible]

STANDARD SIGN
W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer
DATE 5/29/12 PLATE NO. W5-52.9

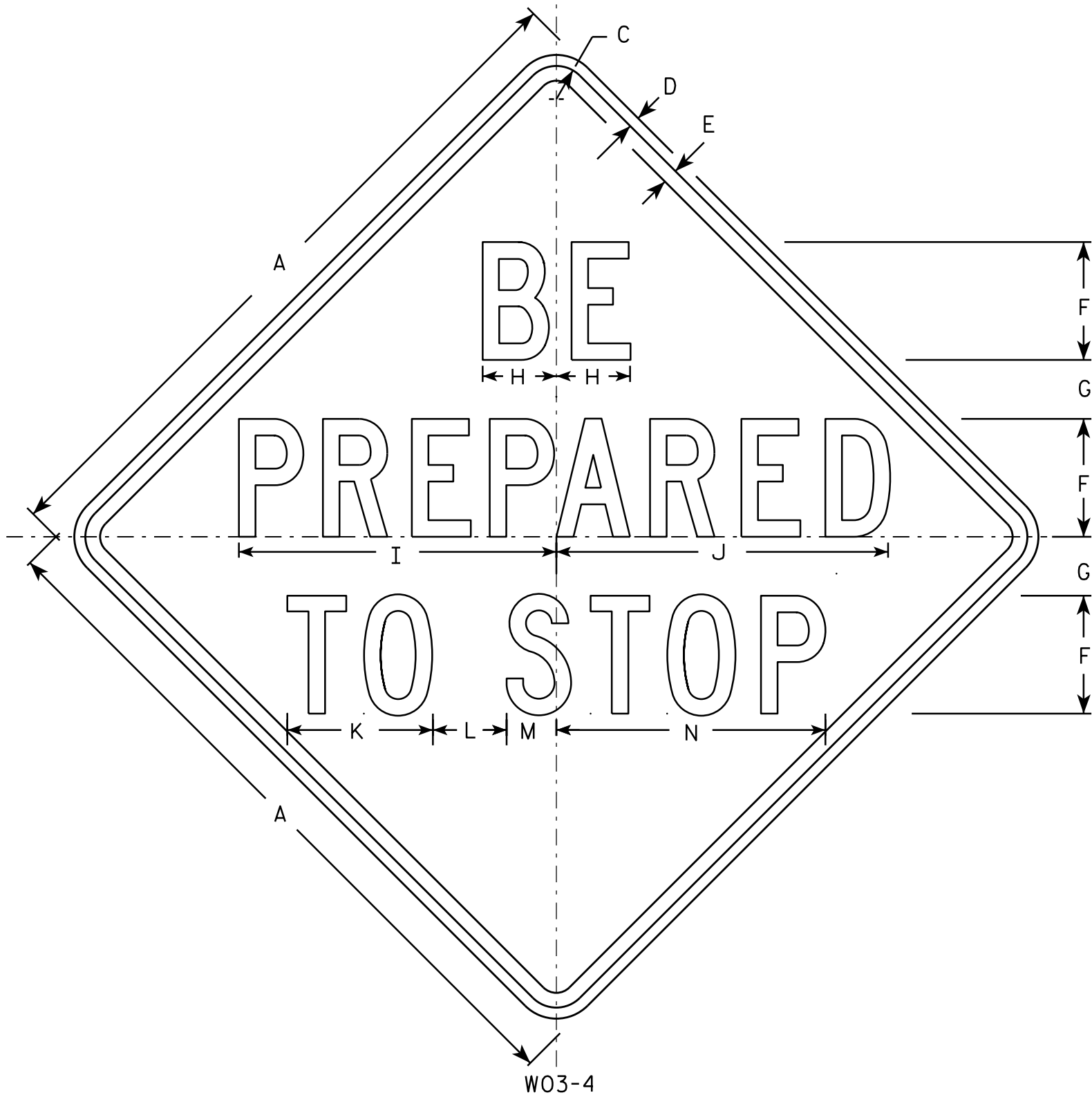
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 141

E



NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Orange
Message - Black
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		1 3/8	1/2	5/8	6	2 1/2	3 3/4	15 7/8	16 7/8	7 3/8	4	2 3/8	13 3/4													9.0
2S	48		2 1/4	3/4	1	8	4	5	21 1/2	22 1/2	9 7/8	5	3 3/8	18 1/4													16.0
2M	48		2 1/4	3/4	1	8	4	5	21 1/2	22 1/2	9 7/8	5	3 3/8	18 1/4													16.0
3	48		2 1/4	3/4	1	8	4	5	21 1/2	22 1/2	9 7/8	5	3 3/8	18 1/4													16.0
4	48		2 1/4	3/4	1	8	4	5	21 1/2	22 1/2	9 7/8	5	3 3/8	18 1/4													16.0
5	48		2 1/4	3/4	1	8	4	5	21 1/2	22 1/2	9 7/8	5	3 3/8	18 1/4													16.0

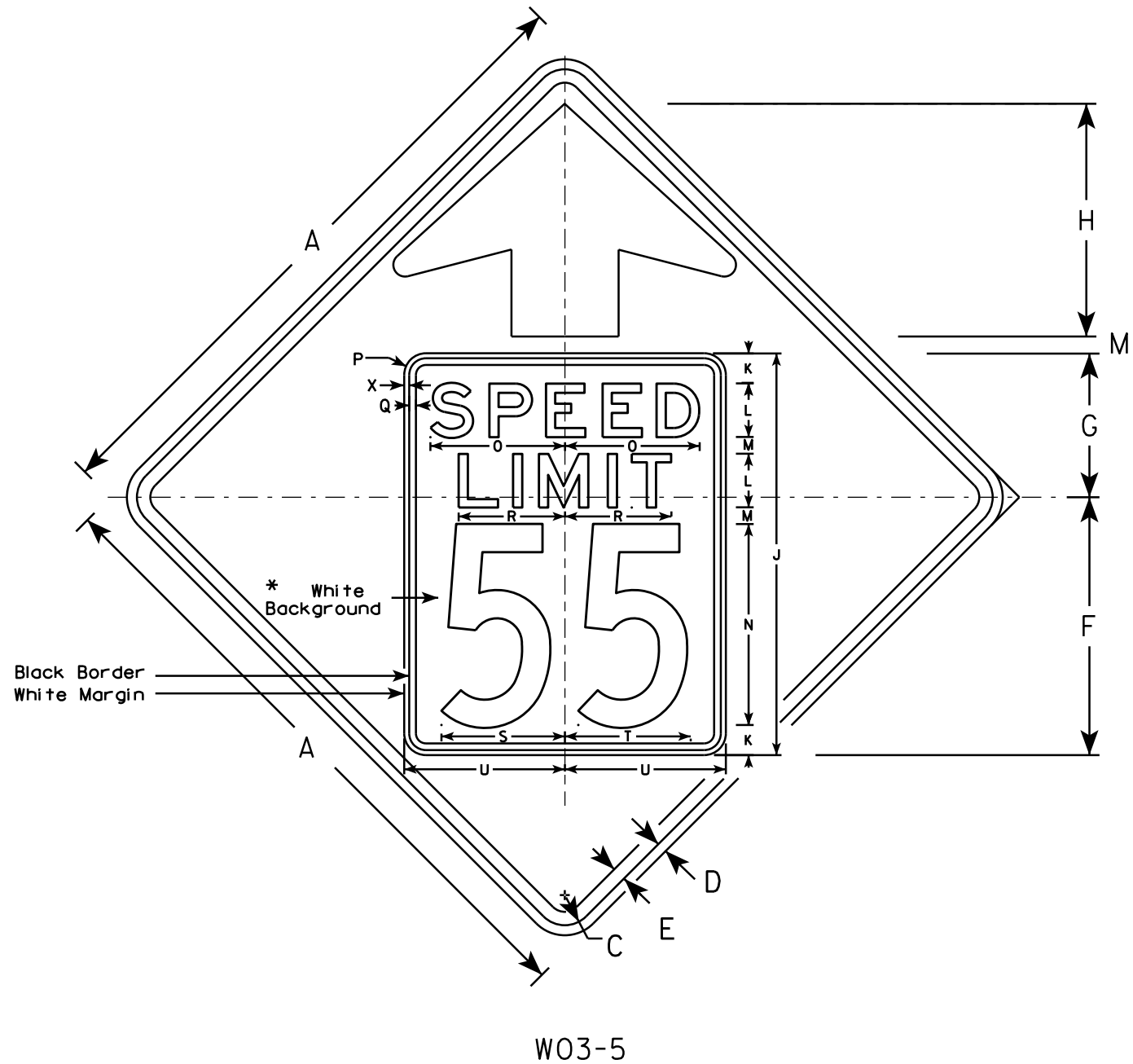
STANDARD SIGN
W03-4

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 12/02/13 PLATE 142 W03-4.1

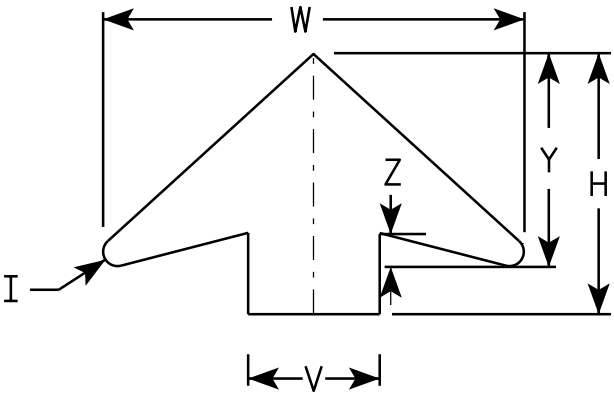
PROJECT NO: HWY: COUNTY: SHEET NO: E



NOTES

- 1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- 2. Color: *
Background - ORANGE*
Message - BLACK
- 3. Message Series - C for numbers Series E for wording
- 4. Substitute appropriate numerals and optically adjust spacing to achieve proper balance

*Speed Limit Sign shall have a White Background



ARROW DETAIL

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		1 5/8	5/8	3/4	14 1/2	9 1/2	11 1/2	5/8	24	2	3	1	12	7 1/8	1 1/2	3/8	5 3/4	7 1/4	7 1/8	9	6	19 1/4	3/8	9 3/4	1 5/8	9.0
2S	48		2 1/4	3/4	1	19 1/4	10 3/4	17 3/8	7/8	30	2 1/4	4	1 1/4	15	10	1 5/8	1/2	8	9 1/4	9 3/8	12	8	25 5/8	3/8	13	2	16.0
2M	48		2 1/4	3/4	1	19 1/4	10 3/4	17 3/8	7/8	30	2 1/4	4	1 1/4	15	10	1 5/8	1/2	8	9 1/4	9 3/8	12	8	25 5/8	3/8	13	2	16.0
3	48		2 1/4	3/4	1	19 1/4	10 3/4	17 3/8	7/8	30	2 1/4	4	1 1/4	15	10	1 5/8	1/2	8	9 1/4	9 3/8	12	8	25 5/8	3/8	13	2	16.0
4	48		2 1/4	3/4	1	19 1/4	10 3/4	17 3/8	7/8	30	2 1/4	4	1 1/4	15	10	1 5/8	1/2	8	9 1/4	9 3/8	12	8	25 5/8	3/8	13	2	16.0
5	48		2 1/4	3/4	1	19 1/4	10 3/4	17 3/8	7/8	30	2 1/4	4	1 1/4	15	10	1 5/8	1/2	8	9 1/4	9 3/8	12	8	25 5/8	3/8	13	2	16.0

PROJECT NO:

STANDARD SIGN
W03-5

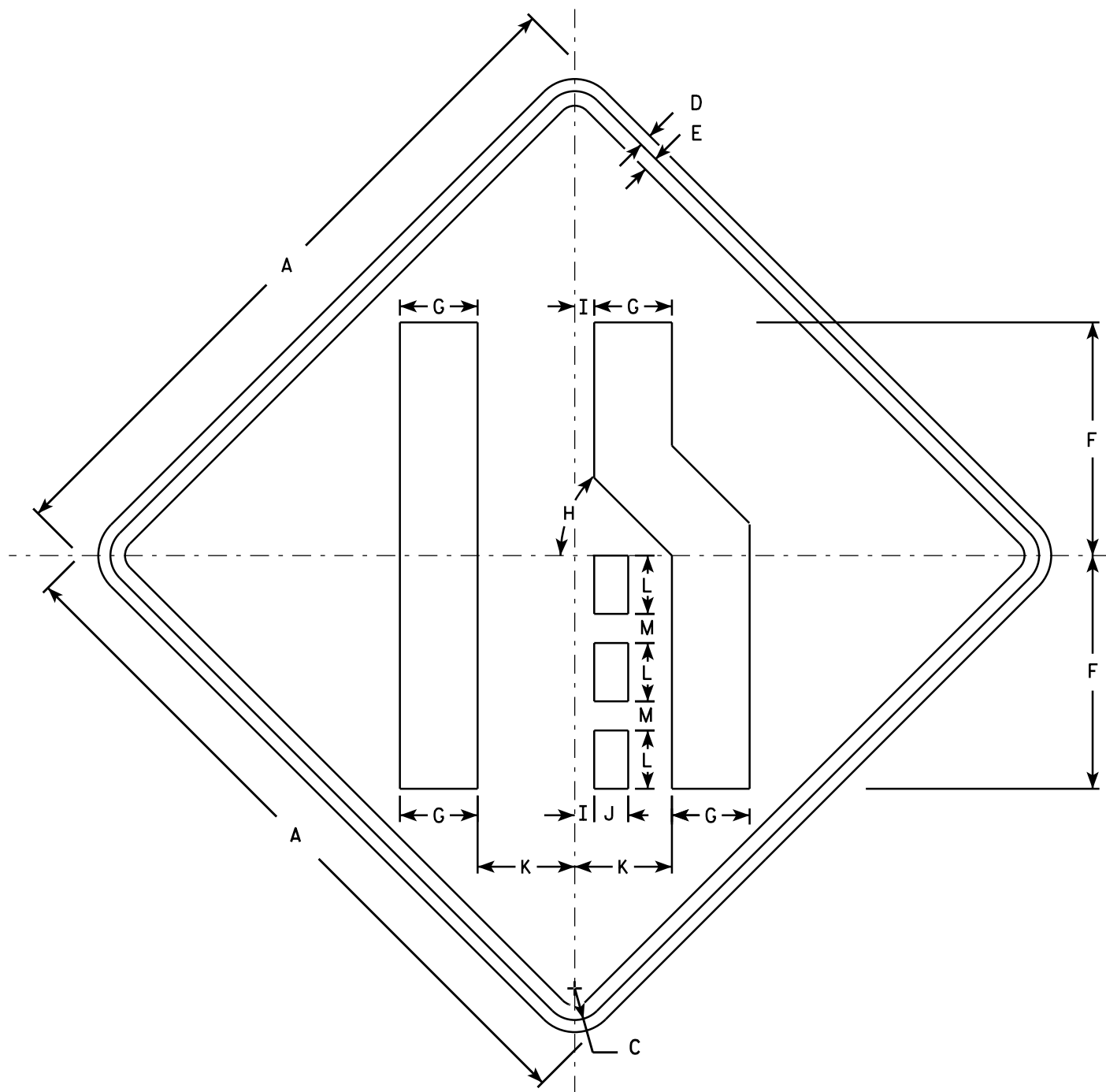
WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 11/20/13 PLATE 143 W03-5.1

SHEET NO:

E



W04-2R

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Orange
Message - Black
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. W04-2L is the same as W04-2R except the symbol is reversed along the vertical centerline.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		1 5/8	5/8	3/4	12	4	45°	1	1 3/4	5	3	1 1/2														9.0
2S	48		2 1/4	3/4	1	16	5 3/8	45°	1 1/4	2 3/8	6 3/4	4	2														16.0
2M	48		2 1/4	3/4	1	16	5 3/8	45°	1 1/4	2 3/8	6 3/4	4	2														16.0
3	48		2 1/4	3/4	1	16	5 3/8	45°	1 1/4	2 3/8	6 3/4	4	2														16.0
4	48		2 1/4	3/4	1	16	5 3/8	45°	1 1/4	2 3/8	6 3/4	4	2														16.0
5	48		2 1/4	3/4	1	16	5 3/8	45°	1 1/4	2 3/8	6 3/4	4	2														16.0

STANDARD SIGN W04-2

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Matthew R. Rauch
For State Traffic Engineer

DATE 11/20/13

PLATE 144

W04-2.1

PROJECT NO:

SHEET NO:

E



EXISTING BASE AGGREGATE COURSE TO REMAIN

SURFACE SHOWN ON CROSS SECTIONS
IS SUBGRADE SURFACE

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

R/L 'EB'

4:1

2.18%

4:1

0.5%=-1.4
ELEV=1092.10

0.5%=-1.4
ELEV=1095.54

0.5%=-1.4
ELEV=1096.39

950'EB'+00

1080

BEGIN ABRUPT
MATCH EXISTING

R/L 'EB'

5 FT

10 FT

949'EB'+73

1080

9

9

PROJECT NO:1021-00-73

HWY: IH 94

COUNTY: ST. CROIX

CROSS SECTIONS: BEAM GUARD

SHEET

145

E

FILE NAME : P:\46xx\4606_DP.I94.STC.T-BB\CADDSP1an\090207_xs.dgn

PLOT DATE : 4/25/2014

PLOT BY : emo

PLOT NAME :

PLOT SCALE : 1:20

WISDOT/CADDs SHEET 21



EXISTING BASE AGGREGATE COURSE TO REMAIN

SURFACE SHOWN ON CROSS SECTIONS
IS SUBGRADE SURFACE

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

R/L 'EB'

4:1

4:1

0.5% = 26.5

ELEV = 1094.74

0.5% = 18.5

ELEV = 1096.09

0.5% = 4.1

ELEV = 1095.61

3.25%

R/L 'EB'

4:1

4:1

0.5% = 33.9

ELEV = 1092.30

0.5% = 17.9

ELEV = 1096.29

0.5% = 4.1

ELEV = 1095.32

2.71%

5 FT

10 FT

951'EB'+00

950'EB'+50

9

9

PROJECT NO: 1021-00-73

HWY: IH 94

COUNTY: ST. CROIX

CROSS SECTIONS: BEAM GUARD

SHEET

146

E

FILE NAME : P:\46xx\4606_DP.I94.STC.T-BB\CADD\S\Plan\090207_xs.dgn

PLOT DATE : 4/25/2014

PLOT BY : emo

PLOT NAME :

PLOT SCALE : 1:20

WISDOT/CADDs SHEET 21



EXISTING BASE AGGREGATE COURSE TO REMAIN

SURFACE SHOWN ON CROSS SECTIONS
IS SUBGRADE SURFACE

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

R/L 'EB'

2.04%

4:1

0.5%=-24.5

ELEV=1095.53

0.5%=-25.4

ELEV=1094.67

0.5%=-6.3

ELEV=1095.33

951'EB'+50

R/L 'EB'

2.00%

4:1

0.5%=-24.8

ELEV=1095.55

0.5%=-25.1

ELEV=1094.35

0.5%=-6.3

ELEV=1095.34

5 FT

10 FT

951'EB'+47

9

9

PROJECT NO:1021-00-73

HWY: IH 94

COUNTY: ST. CROIX

CROSS SECTIONS: BEAM GUARD

SHEET

147

E

FILE NAME : P:\46xx\4606_DP.I94.STC.T-BB\CADD\SP1an\090207_xs.dgn

PLOT DATE : 4/25/2014

PLOT BY : emo

PLOT NAME :

PLOT SCALE : 1:20

WISDOT/CADDs SHEET 21



EXISTING BASE AGGREGATE COURSE TO REMAIN

SURFACE SHOWN ON CROSS SECTIONS
IS SUBGRADE SURFACE

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

R/L 'EB'

2.89%

0.4%=-17.4

ELEV=1095.47

0.4%=-25.9

ELEV=1093.36

R/L 'EB'

2.38%

0.4%=-18.1

ELEV=1095.54

0.4%=-20.0

ELEV=1093.30

951'EB'+96

951'EB'+71

9

9

PROJECT NO:1021-00-73

HWY: IH 94

COUNTY: ST. CROIX

CROSS SECTIONS: BEAM GUARD

SHEET

148

E

FILE NAME : P:\46xx\4606_DP.I94.STC.T-BB\CADD\S\Plan\090207_xs.dgn

PLOT DATE : 4/25/2014

PLOT BY : emo

PLOT NAME :

PLOT SCALE : 1:20

WISDOT/CADDs SHEET 21



EXISTING BASE AGGREGATE COURSE TO REMAIN

SURFACE SHOWN ON CROSS SECTIONS
IS SUBGRADE SURFACE

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

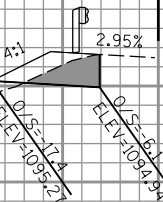
80

100

120

140

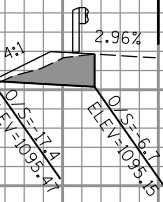
R/L 'EB'



952'EB'+50

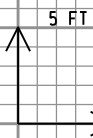
1080

R/L 'EB'



952'EB'+00

1080



9

9

PROJECT NO:1021-00-73

HWY: IH 94

COUNTY: ST. CROIX

CROSS SECTIONS: BEAM GUARD

SHEET

149

E

FILE NAME : P:\46xx\4606_DP.I94.STC.T-BB\CADD\SP1an\090207_xs.dgn

PLOT DATE : 4/25/2014

PLOT BY : emo

PLOT NAME :

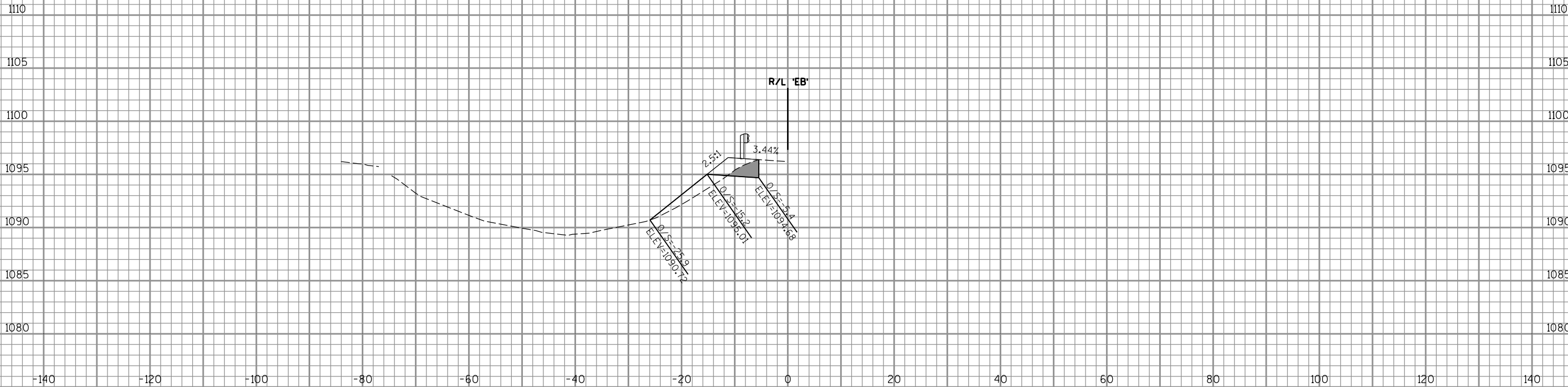
PLOT SCALE : 1:20

WISDOT/CADDs SHEET 21

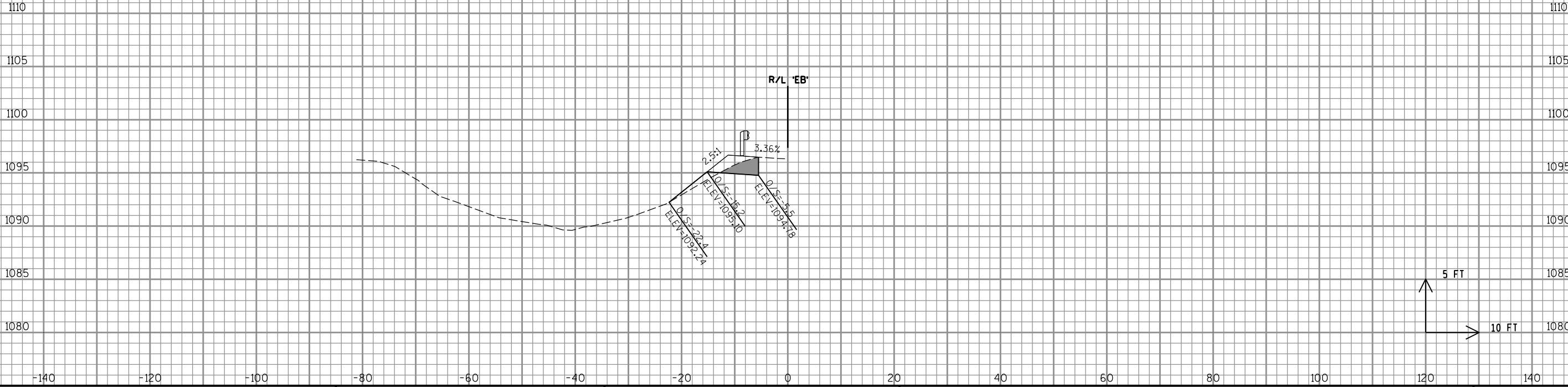


EXISTING BASE AGGREGATE COURSE TO REMAIN

SURFACE SHOWN ON CROSS SECTIONS
IS SUBGRADE SURFACE



953'EB'+50



953'EB'+00

9

9

PROJECT NO:1021-00-73

HWY: IH 94

COUNTY: ST. CROIX

CROSS SECTIONS: BEAM GUARD

SHEET

150

E

FILE NAME : P:\46xx\4606_DP.I94.STC.T-BB\CADDs\Plan\090207_xs.dgn

PLOT DATE : 4/25/2014

PLOT BY : emo

PLOT NAME :

PLOT SCALE : 1:20

WISDOT/CADDs SHEET 21

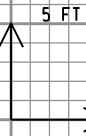


EXISTING BASE AGGREGATE COURSE TO REMAIN

SURFACE SHOWN ON CROSS SECTIONS
IS SUBGRADE SURFACE

END ABRUPT
MATCH EXISTING
BRIDGE

R/L 'EB'



954'EB'+96

9

9



EXISTING BASE AGGREGATE COURSE TO REMAIN

SURFACE SHOWN ON CROSS SECTIONS
IS SUBGRADE SURFACE

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

R/L 'EB'

4:1

O/S=34.3
ELEV=1093.30

4:1

O/S=44.5
ELEV=1092.88

O/S=68.5
ELEV=1091.41

952'EB'+00

R/L 'EB'

BEGIN ABRUPT
MATCH EXISTING

5 FT

10 FT

951'EB'+93

9

9

PROJECT NO:1021-00-73

HWY: IH 94

COUNTY: ST. CROIX

CROSS SECTIONS: BEAM GUARD

SHEET

153

E

FILE NAME : P:\46xx\4606_DP.I94.STC.T-BB\CADD\SPlan\090208_xs.dgn

PLOT DATE : 4/25/2014

PLOT BY : emo

PLOT NAME :

PLOT SCALE : 1:20

WISDOT/CADDs SHEET 21



EXISTING BASE AGGREGATE COURSE TO REMAIN

SURFACE SHOWN ON CROSS SECTIONS
IS SUBGRADE SURFACE

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

R/L 'EB'

R/L 'EB'

952'EB'+56

952'EB'+50

5 FT

10 FT

9

9

PROJECT NO:1021-00-73

HWY: IH 94

COUNTY: ST. CROIX

CROSS SECTIONS: BEAM GUARD

SHEET

154

E

FILE NAME : P:\46xx\4606_DP.I94.STC.T-BB\CADDSP1an\090208_xs.dgn

PLOT DATE : 4/25/2014

PLOT BY : emo

PLOT NAME :

PLOT SCALE : 1:20

WISDOT/CADDs SHEET 21



EXISTING BASE AGGREGATE COURSE TO REMAIN

SURFACE SHOWN ON CROSS SECTIONS
IS SUBGRADE SURFACE

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

R/L 'EB'



0'S+31.8
ELEV=1093.00

4:1

0'S+46.1
ELEV=1092.50

4:1

0'S+68.6
ELEV=1086.60

953'EB'+00

R/L 'EB'



0'S+31.1
ELEV=1093.05

4:1

0'S+47.1
ELEV=1092.52

4:1

0'S+68.8
ELEV=1087.03

952'EB'+81

5 FT

10 FT

9

9

PROJECT NO:1021-00-73

HWY:1H 94

COUNTY:ST. CROIX

CROSS SECTIONS: BEAM GUARD

SHEET

155

E

FILE NAME : P:\46xx\4606_DP.I94.STC.T-BB\CADDSP1an\090208_xs.dgn

PLOT DATE : 4/25/2014

PLOT BY : emo

PLOT NAME :

PLOT SCALE : 1:20

WISDOT/CADDs SHEET 21



EXISTING BASE AGGREGATE COURSE TO REMAIN

SURFACE SHOWN ON CROSS SECTIONS
IS SUBGRADE SURFACE

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

R/L 'EB'

1

0.6:33.6
ELEV=1092.93

3:1
0.5:33.7
ELEV=1092.53

3:1
0.6:33.0
ELEV=1089.33

953'EB'+50

R/L 'EB'

1

0.6:33.7
ELEV=1082.99

4:1
0.5:35.8
ELEV=1092.79

4:1
0.8:69.9
ELEV=1086.12

953'EB'+06

5 FT

10 FT

9

9

PROJECT NO:1021-00-73

HWY:1H 94

COUNTY:ST. CROIX

CROSS SECTIONS: BEAM GUARD

SHEET

156

E

FILE NAME : P:\46xx\4606_DP.I94.STC.T-BB\CADDSP1an\090208_xs.dgn

PLOT DATE : 4/25/2014

PLOT BY : emo

PLOT NAME :

PLOT SCALE : 1:20

WISDOT/CADDs SHEET 21



EXISTING BASE AGGREGATE COURSE TO REMAIN

SURFACE SHOWN ON CROSS SECTIONS
IS SUBGRADE SURFACE

1110

1105

1100

1095

1090

1085

1080

1075

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

1110

1105

1100

1095

1090

1085

1080

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

R/L 'EB'



0'S=33.2
ELEV=1092.89

2:1 0'S=42.7
ELEV=1092.32

2:1 0'S=46.9
ELEV=1090.59

1110

1105

1100

1095

1090

1085

1080

954'EB'+50

1075

1110

1105

1100

1095

1090

1085

954'EB'+00

1080

5 FT

10 FT

9

9

PROJECT NO:1021-00-73

HWY: IH 94

COUNTY: ST. CROIX

CROSS SECTIONS: BEAM GUARD

SHEET

157

E

FILE NAME : P:\46xx\4606_DP.I94.STC.T-BB\CADDSP1an\090208_xs.dgn

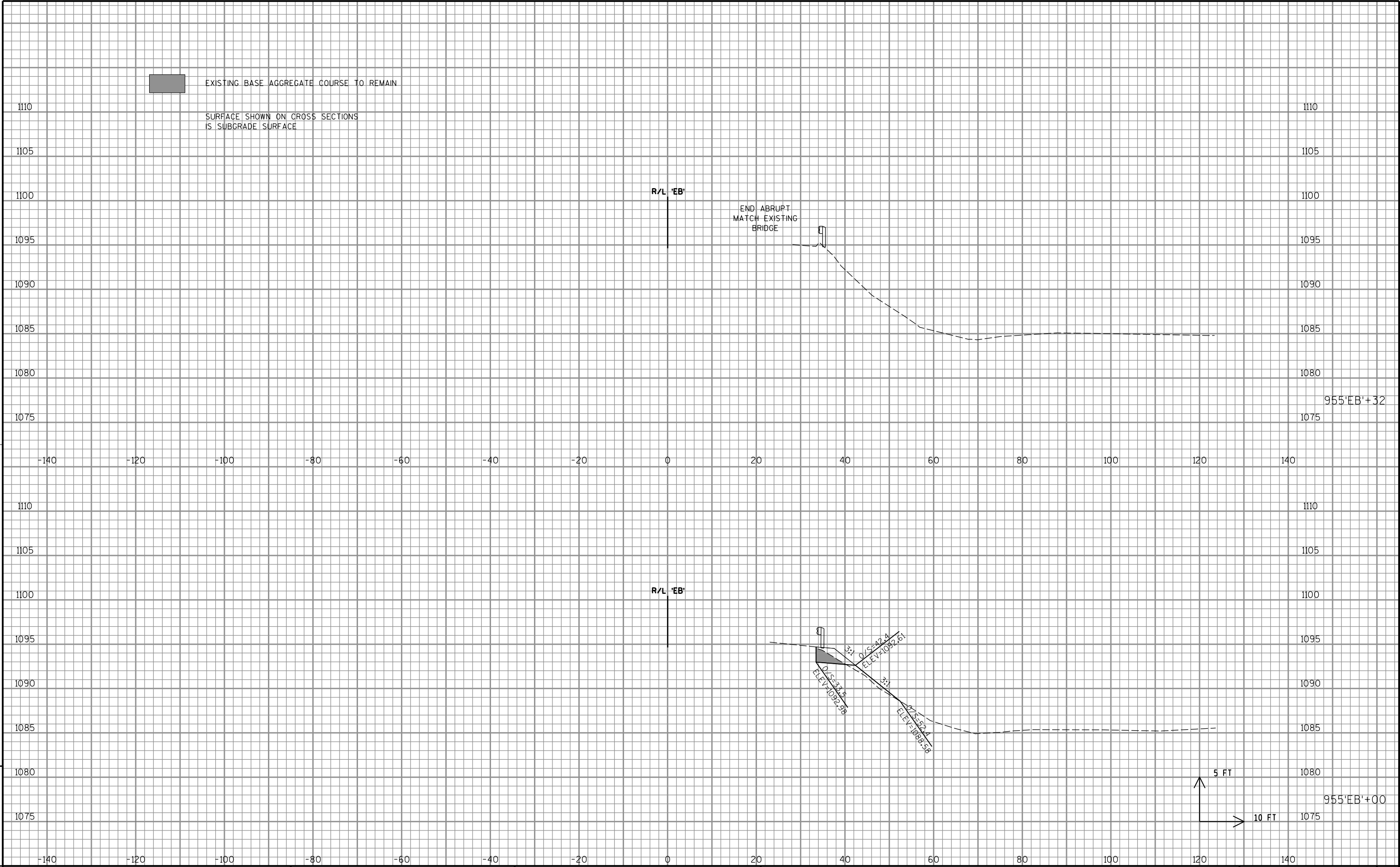
PLOT DATE : 4/25/2014

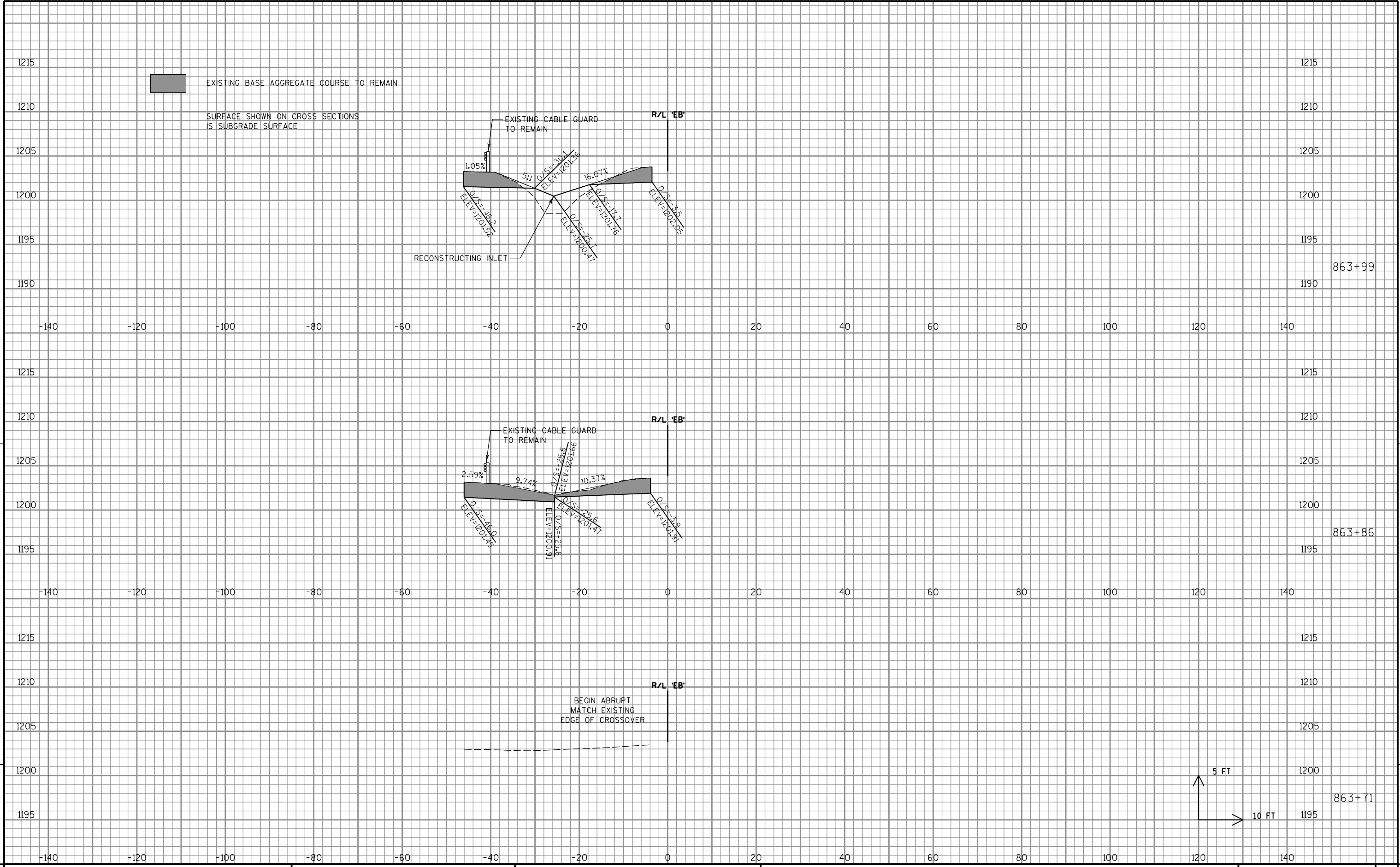
PLOT BY : emo

PLOT NAME :

PLOT SCALE : 1:20

WISDOT/CADDs SHEET 21





9

9



EXISTING BASE AGGREGATE COURSE TO REMAIN

SURFACE SHOWN ON CROSS SECTIONS
IS SUBGRADE SURFACE

1215

1210

1205

1200

1195

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

1215

1210

1205

1200

1195

1190

-140

-120

-100

-80

-60

-40

-20

0

20

40

60

80

100

120

140

END ABRUPT
MATCH EXISTING
DITCH

R/L 'EB'

864+52

1195

1215

1210

1205

1200

1195

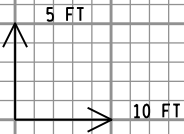
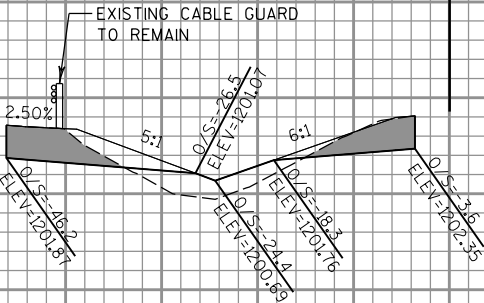
1190

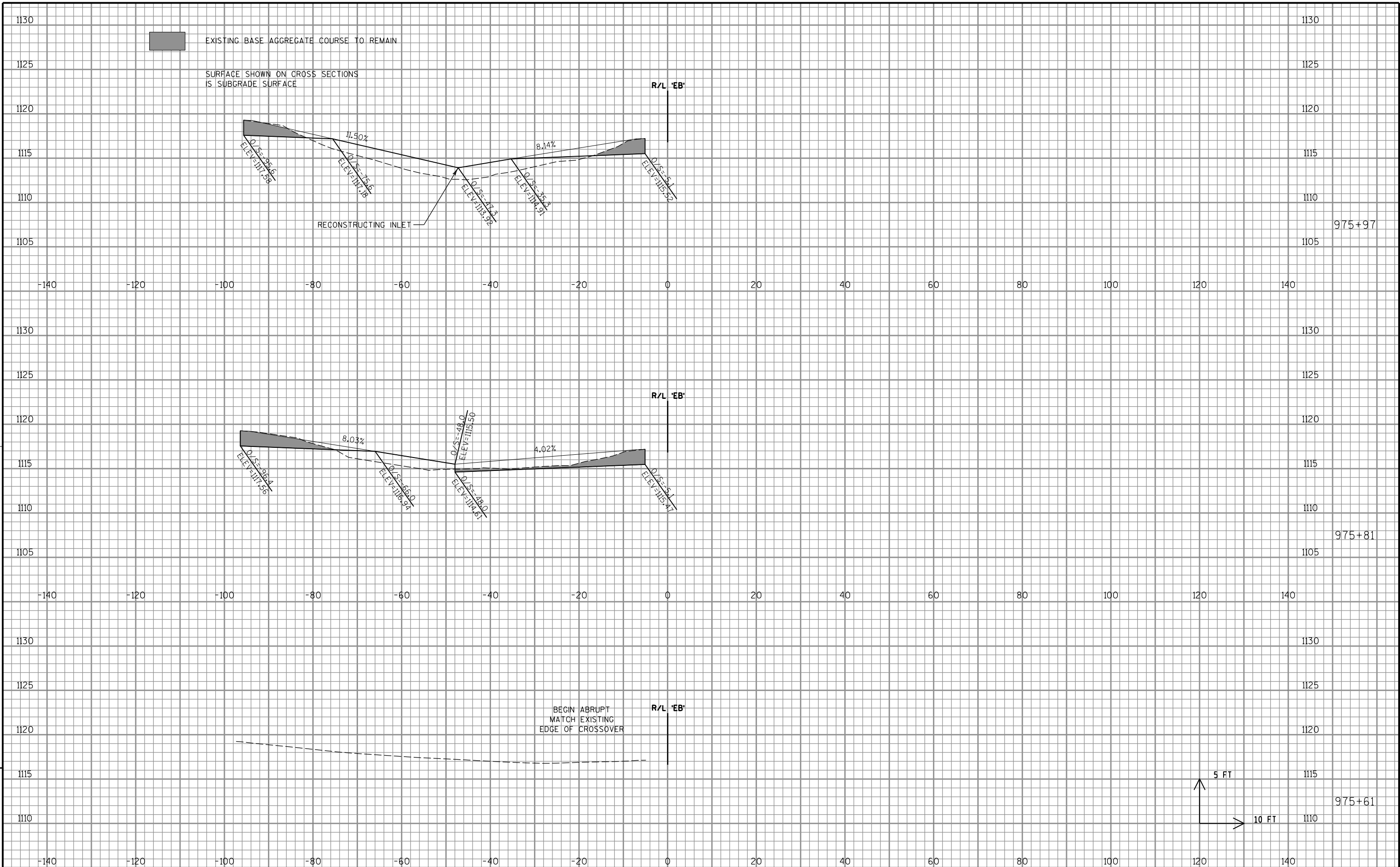
864+25

1190

9

9

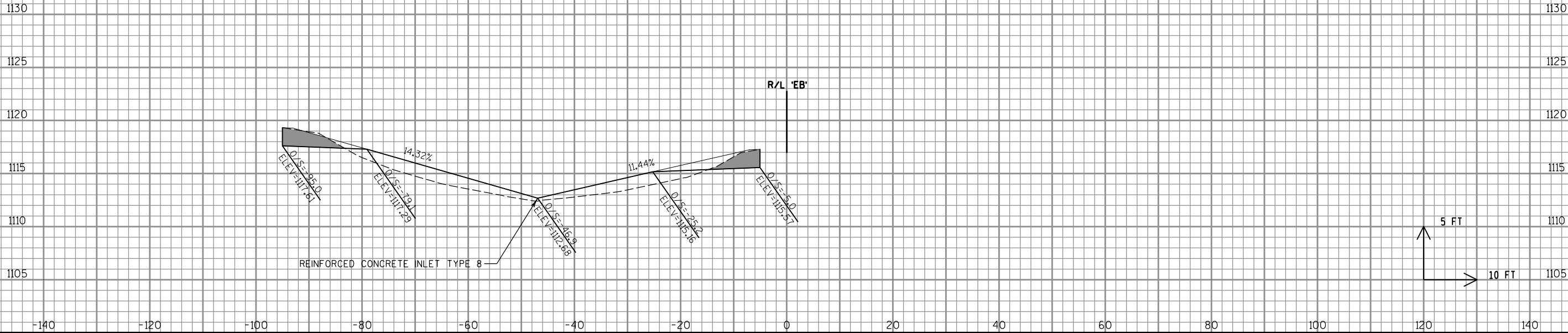
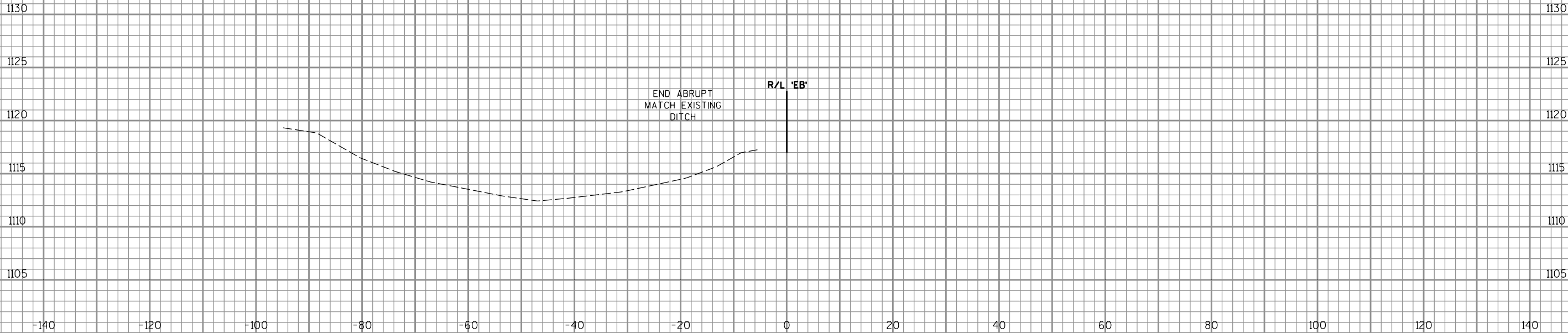






EXISTING BASE AGGREGATE COURSE TO REMAIN

SURFACE SHOWN ON CROSS SECTIONS
IS SUBGRADE SURFACE



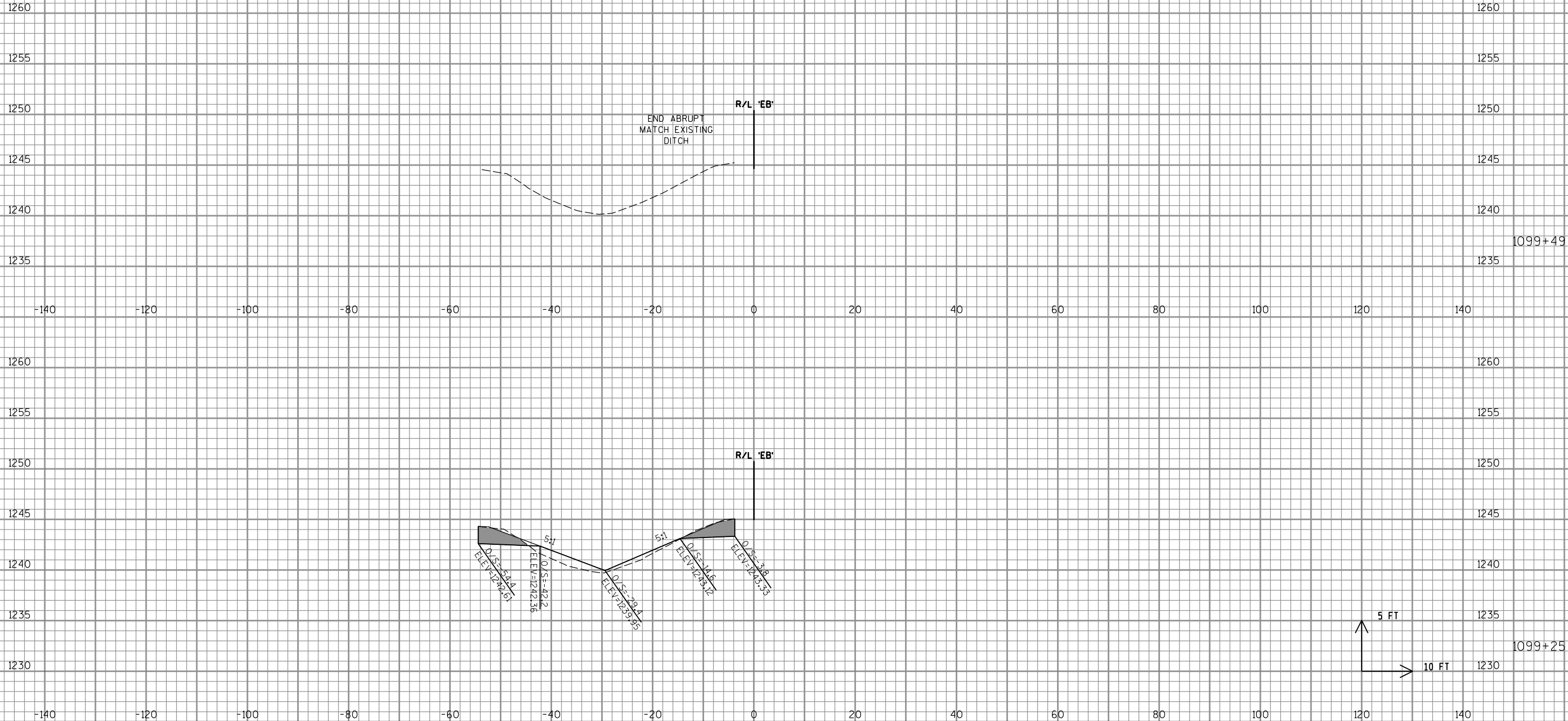
9

9



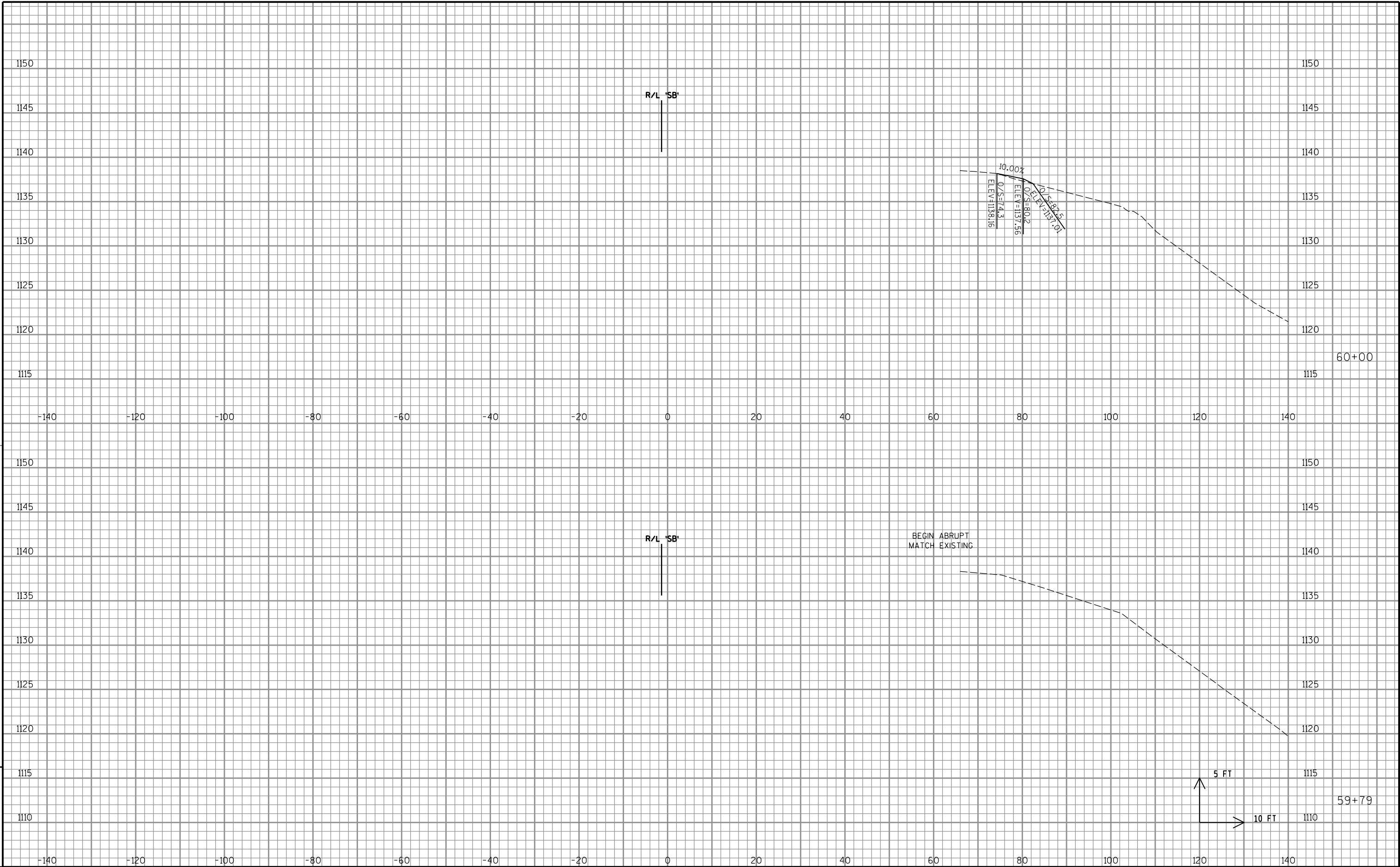
EXISTING BASE AGGREGATE COURSE TO REMAIN

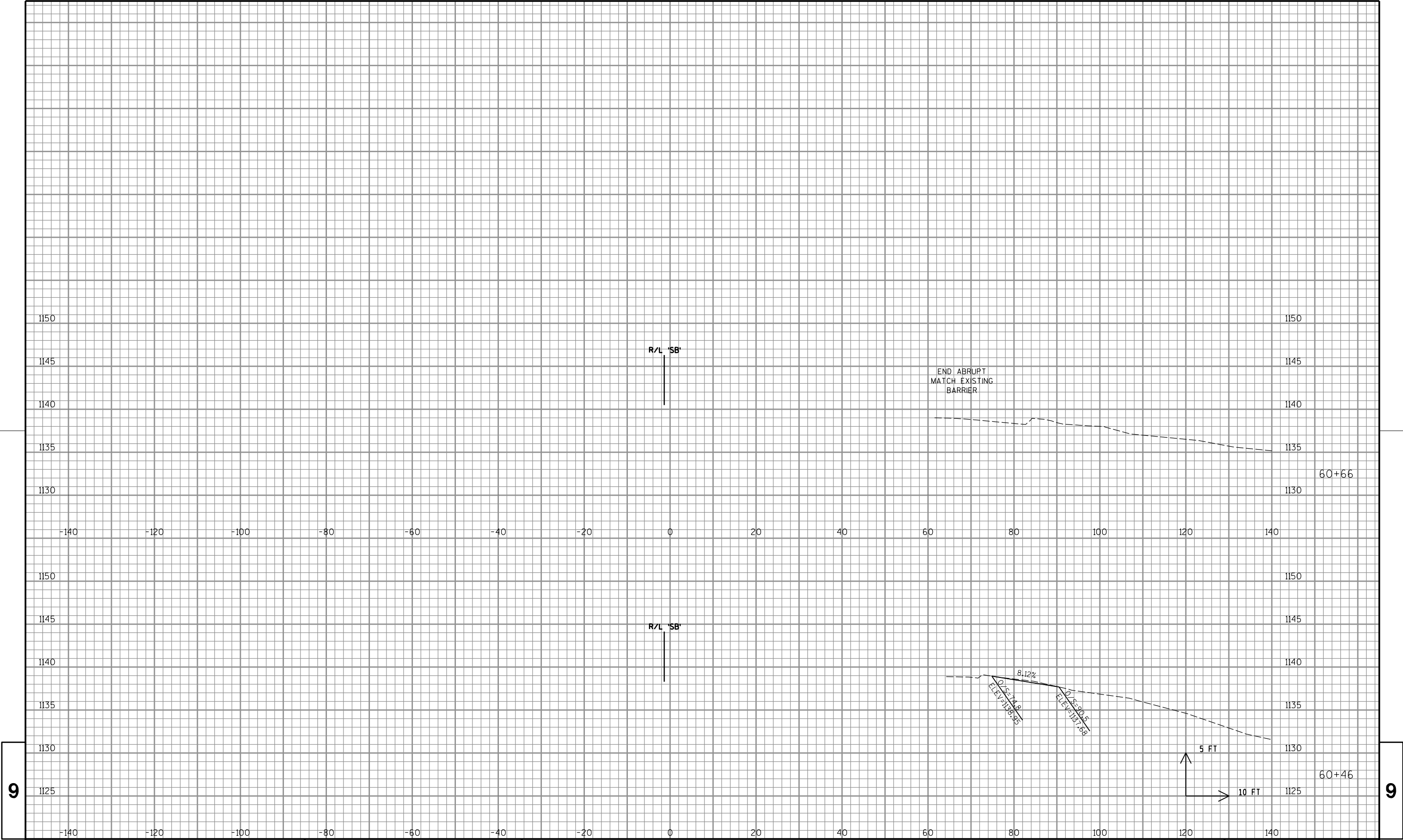
SURFACE SHOWN ON CROSS SECTIONS
IS SUBGRADE SURFACE

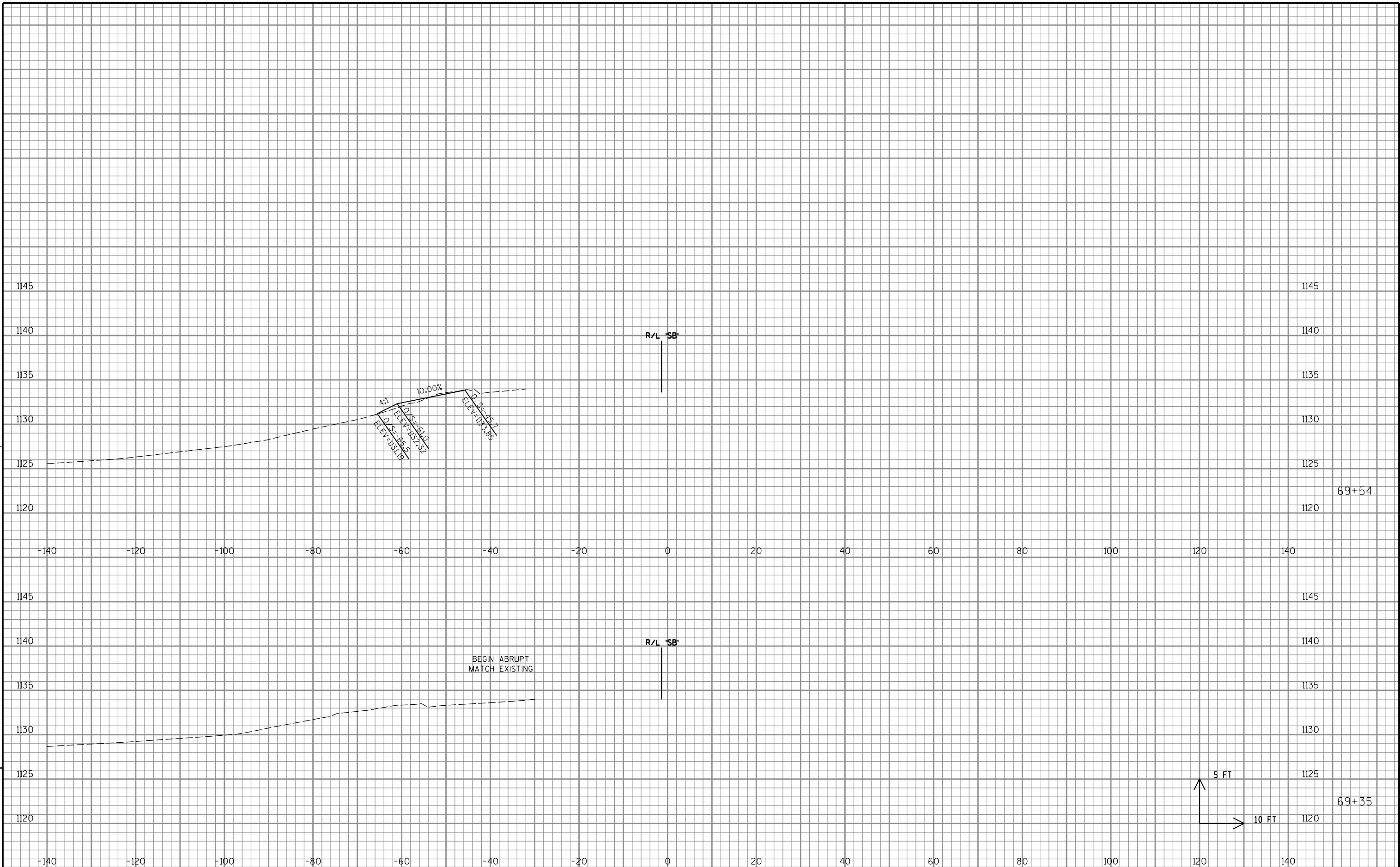


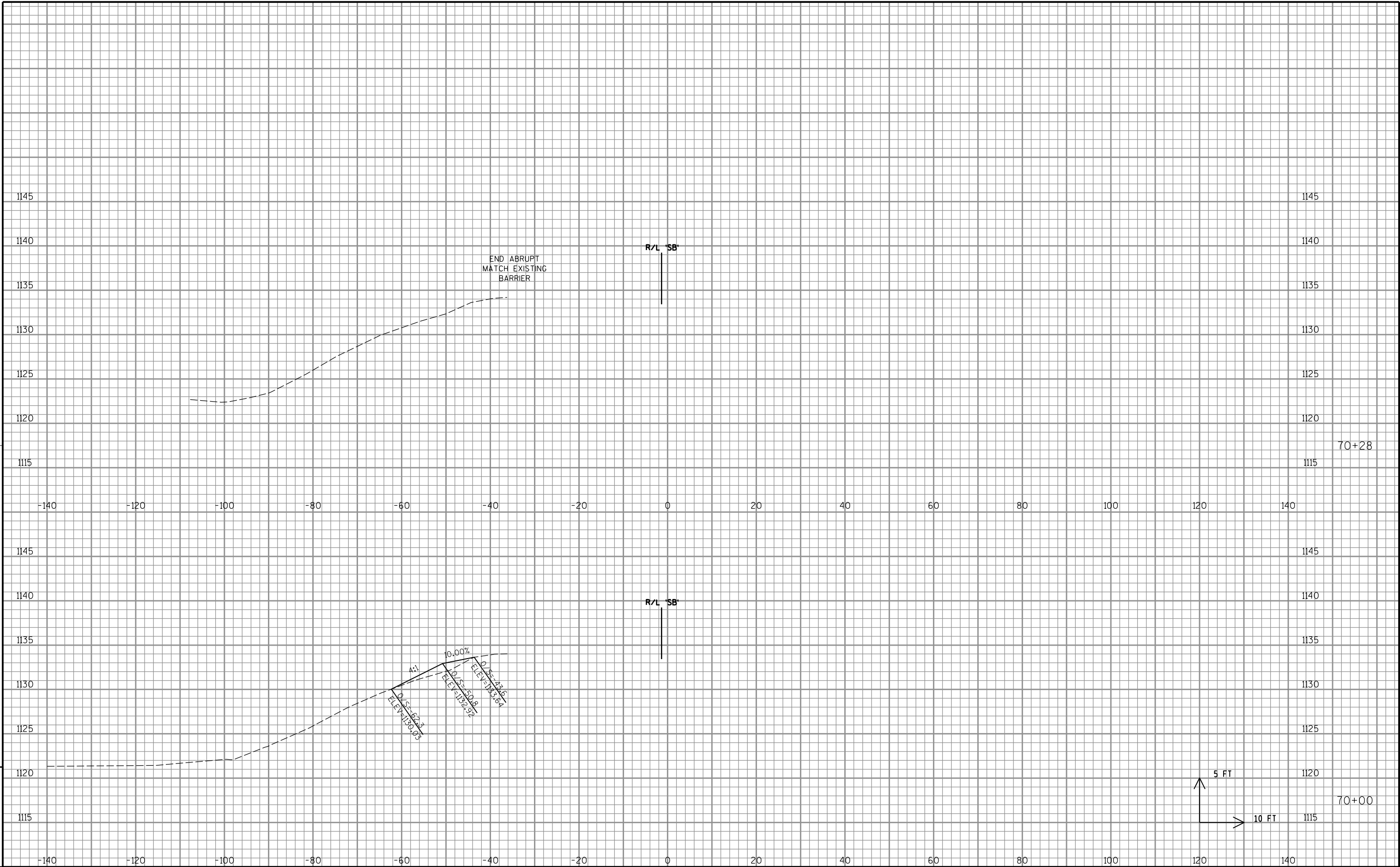
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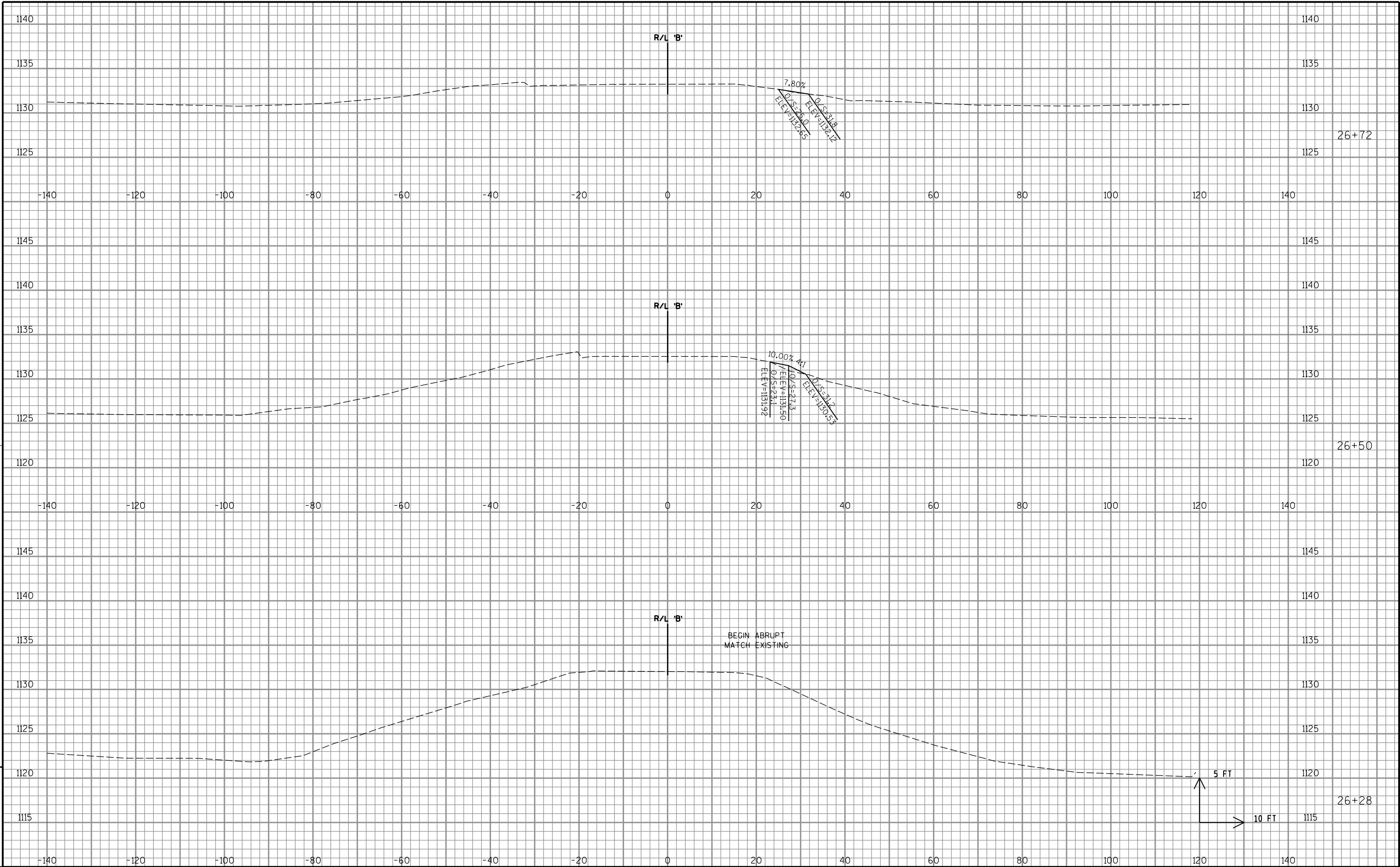
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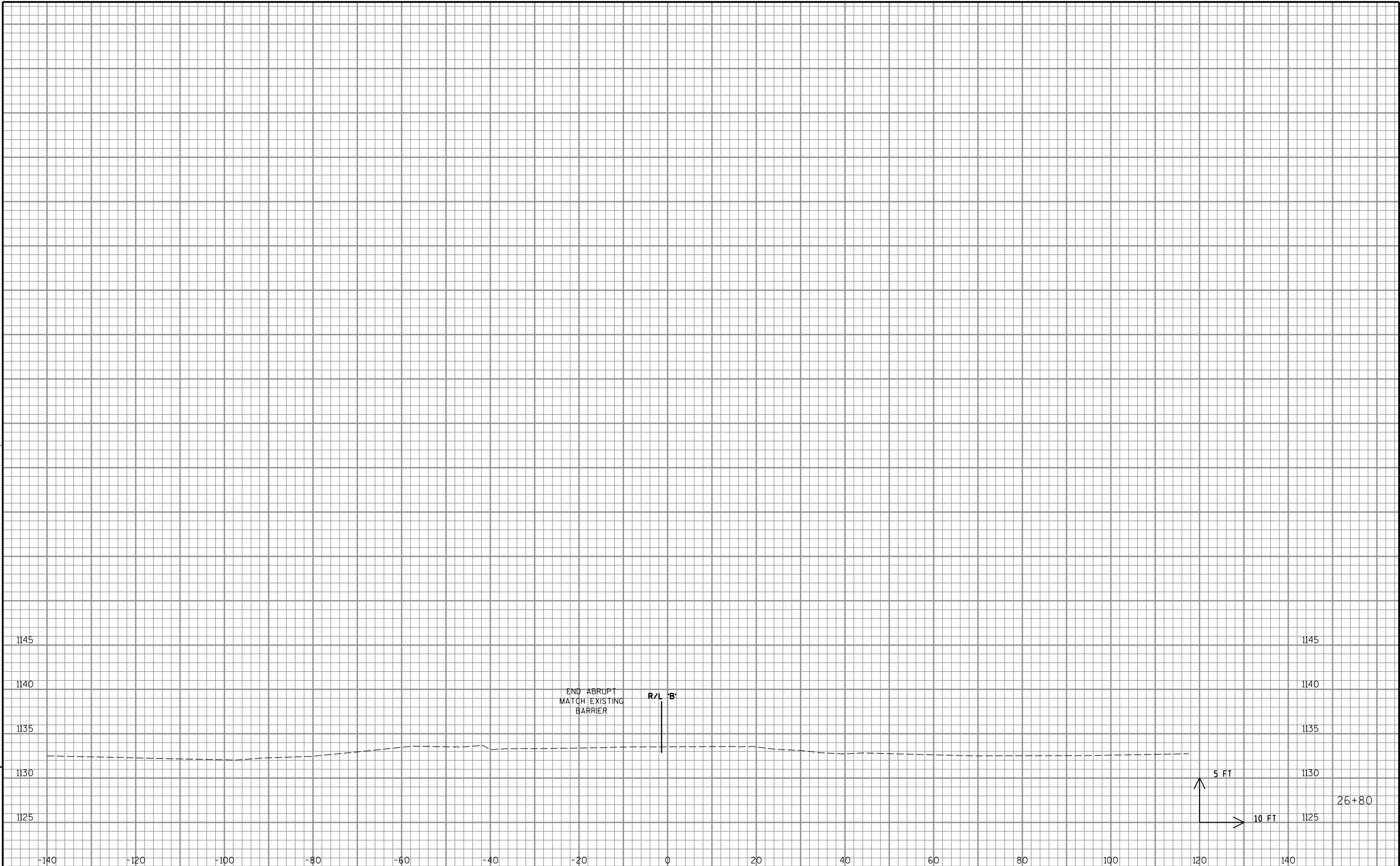






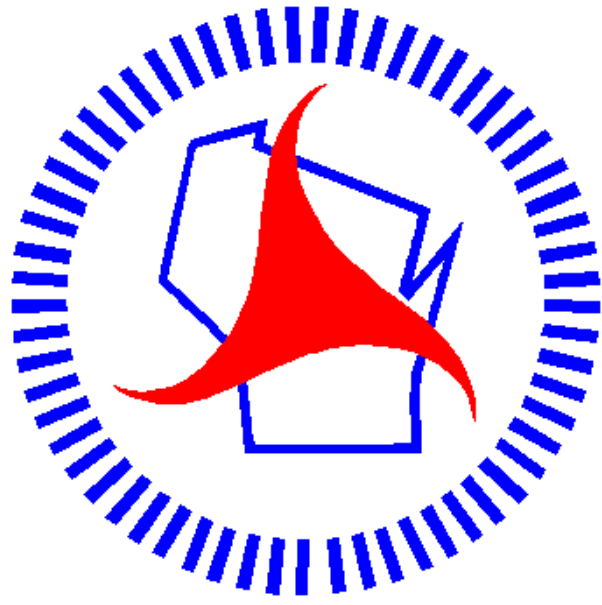


9



9

Notes



Wisconsin Department of Transportation

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<http://www.dot.wisconsin.gov>