NCL FEB 13

PROJECT ID: 6987-01-70
WITH: N/A

COUNTY: WAUSHARA

ORDER OF SHEETS

Section No.	1	Title
Section No.	2	Typical Sections and Details (Includes Erosion Control Plans)
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 = 104

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

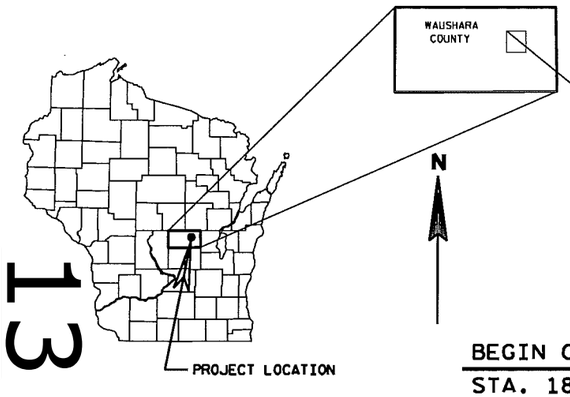
REDGRANITE - PINE RIVER

PINE RIVER BRIDGE, TOWN OF LEON

CTH E

WAUSHARA COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
6987-01-70	WISC 2013052	1



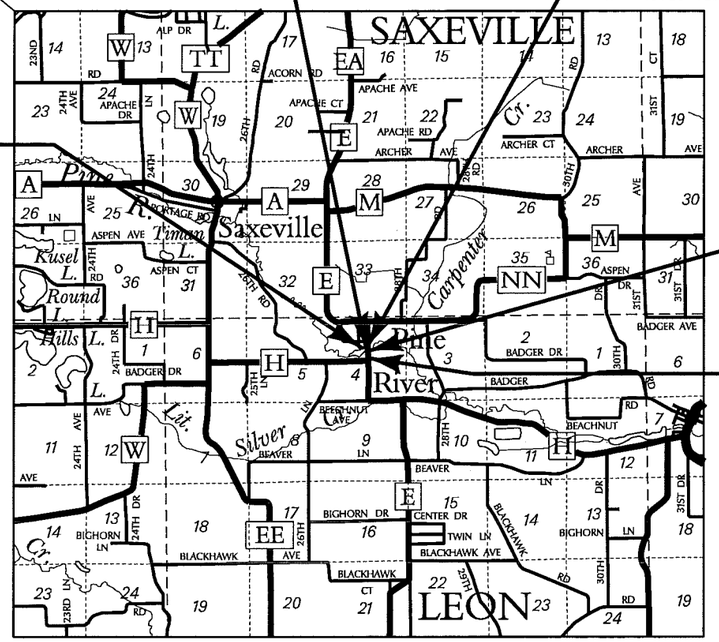
13

STATE PROJECT NUMBER
6987-01-70

END CONSTRUCTION
STA. 19+86
Y = 161483.84
X = 437173.87

END PROJECT
STA. 11+75
Y = 161596.44
X = 437182.11

BEGIN CONSTRUCTION
STA. 18+70
Y = 161471.08
X = 437058.58



STRUCTURE B-69-47

T-20-N
T-19-N

BEGIN PROJECT
STA. 8+50
Y = 161272.21
X = 437203.99

LAYOUT
SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.062 MI.

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM, (WCCS) WAUSHARA COUNTY

DESIGN DESIGNATION

A.D.T.	(2013)	=	970
A.D.T.	(2033)	=	1090
D.H.V.		=	100
D.		=	50/50
T.		=	6.9%
DESIGN SPEED		=	25 MPH
ESALS		=	N/A

CONVENTIONAL SYMBOLS

PLAN

CORPORATE LIMITS
PROPERTY LINE — PL + 58.1
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 — CAUTION
HIGH VOLTAGE — CAUTION
MARSH AREA
WOODED OR SHRUB AREA

PROFILE

GRADE LINE
ORIGINAL GROUND
MARSH OR ROCK PROFILE (To be noted as such) — ROCK
SPECIAL DITCH — LABEL
GRADE ELEVATION — 95.36
CULVERT (Profile View)

UTILITIES

OVERHEAD ELECTRIC — OH
ELECTRIC — E
FIBER OPTIC — FO
GAS — G
SANITARY SEWER — SAN
STORM SEWER — SS
TELEPHONE — T
WATER — W
UTILITY PEDESTAL
POWER POLE
TELEPHONE POLE

ACCEPTED FOR
County of Waushara
6-20-12 Date
Thomas A. DeMaster County Highway Commissioner

ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

CHRISTOPHER B. McMAHON E-28254 EAU CLAIRE WI
WISCONSIN PROFESSIONAL ENGINEER

DATE 7/26/12

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY
Surveyor AYRES ASSOCIATES INC
Designer AYRES ASSOCIATES INC
Management Consultant CEDAR CORPORATION
C.O. Examiner Cyle Haag

APPROVED FOR THE DEPARTMENT
DATE: 7-27-12
Management Consultant Signature

E

2

NOTES:
IF ANY SEEPAGE IS NOTED IN THE EXCAVATED AREAS, CONTACT CHRIS McMAHON, AYRES ASSOCIATES & LINDA HYATT, WISCONSIN DEPARTMENT OF NATURAL RESOURCES IMMEDIATELY.

IMPOUNDMENT LEVELS MAY NOT BE ADJUSTED.

GENERAL NOTES

EROSION CONTROL ITEMS TO BE PLACED AS SHOWN ON THE PLAN OR AS DIRECTED BY THE ENGINEER.

NO TREES AND/OR SHRUBS ARE TO BE REMOVED WITHOUT THE 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 DEPARTMENT OF TRANSPORTATION WILL FURNISH THE CONTRACTOR WITH A MONUMENT TO BE INSTALLED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCLUSIVE OF THE ROADBED, SHALL BE FERTILIZED, SEEDED, AND MULCHED AS DIRECTED BY THE ENGINEER.

SEED MIXTURE NO. 20 AND SEEDING TEMPORARY SHALL BE USED IN THE PROJECT AND SHALL BE PLACED AS SHOWN IN THE PLANS AND/OR AS DIRECTED BY THE ENGINEER.

SILT FENCE IS TO BE PLACED AS SHOWN ON THE ON THE PLAN, OR AS DIRECTED BY THE ENGINEER. SILT FENCE TO BE PLACED PRIOR TO CONSTRUCTION AND IN PLACE PRIOR TO BRIDGE REMOVAL.

WHEN THE QUANTITY OF THE ITEM OF BASE LAYER OR SURFACE LAYER IS MEASURED FOR PAYMENT BY THE TON, THE DEPTH OR THICKNESS OF THE LAYER SHOWN ON THE PLANS IS APPROXIMATE AND THE ACTUAL THICKNESS WILL DEPEND ON THE DISTRIBUTION OF THE MATERIAL AS DIRECTED BY THE ENGINEER.

ASPHALTIC SURFACE SHALL BE CONSTRUCTED WITH ONE 2" LAYER.

ASPHALTIC SURFACE SHALL USE ½" NOMINAL AGGREGATE SIZE.

ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) 1988.

SHRINKAGE IS ESTIMATED AT 30%

ABBREVIATIONS

AC	ACRES
CHIS	CHISELED
℄	CENTERLINE
COR	CORNER
CWT	COUNT
CY	CUBIC YARD
EL	ELEVATION
GAL	GALLON
H	HOUSE
IP	IRON PIPE
LB	POUND
LF	LINEAR FEET
LS	LUMP SUM
LT	LEFT
MAX	MAXIMUM
MIN	MINIMUM
MON	MONUMENT
NORM	NORMAL
OAL	OVERALL LENGTH
PC	POINT OF CURVATURE
PD	PEDESTAL
PI	POINT OF INTERSECTION
PK	PARKER-KALON
PL	PROPERTY LINE
PLE	PERMANENT LIMITED EASEMENT
PP	POWER POLE
PT	POINT OF TANGENCY
R	RADIUS
REQ'D	REQUIRED
RT	RIGHT
R/W	RIGHT-OF-WAY
SF	SQUARE FEET
SHLDR	SHOULDER
STA	STATION
SY	SQUARE YARD
TLE	TEMPORARY LIMITED EASEMENT
VAR	VARIES
WL	WELL

UTILITIES

ALLIANT ENERGY
880 N. WISCONSIN STREET
BERLIN, WI 54923
ATTN: TED SCHMITZ
920-361-5629
tedschmitz@alliantenergy.com

WE ENERGIES
1921 8th STREET SOUTH
WISCONSIN RAPIDS, WI 54494
ATTN: BILL GARSKI
715-421-7259
715-421-9882 cell
bill.garski@we-energies.com

NORTH AMERICAN HYDRO
116 NORTH STATE STREET
NESHKORO, WI 54960-0167
ATTN: GREG BRZOZOWSKI
1-800-775-9376 ext. 25
greg.brzozowski@nahydro.com

TOWN OF LEON
W3995 COUNTY ROAD H
PINE RIVER, WI 54965
ATTN: CHRIS SORENSON
920-987-5495

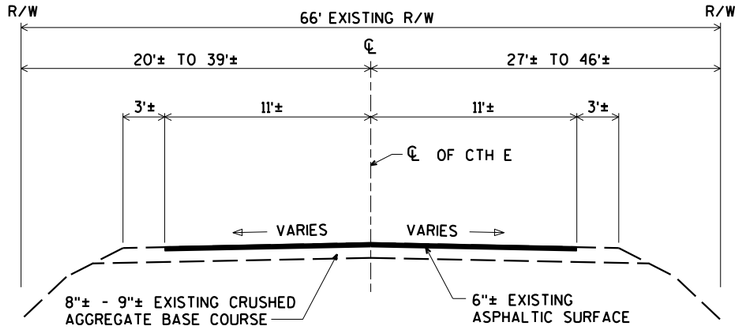
** DENOTES UTILITIES THAT ARE NOT DIGGERS HOTLINE MEMBERS

DIGGERS HOTLINE
Toll Free (800) 242-8511
Milwaukee Area (414) 259-1181
Hearing Impaired TDD (800) 542-2289
www.DiggersHotline.com

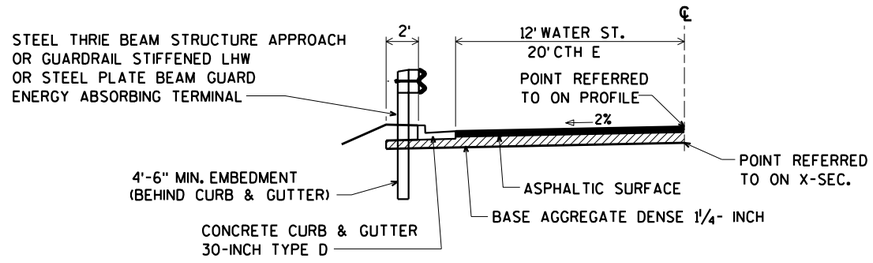
DESIGNER
AYRES ASSOCIATES
3433 OAKWOOD HILLS PARKWAY
EAU CLAIRE, WI 54701
ATTN: CHRIS McMAHON
715-834-3161
mcmahonc@AyresAssociates.com

WISCONSIN DEPARTMENT OF NATURAL RESOURCES CONTACTS:
BOBBI JO FISCHER
427 EAST TOWER DRIVE, SUITE 100
WAUTOMA, WI 54982
920-787-4686 EXT. 3007
bobbi.fischer@wisconsin.gov

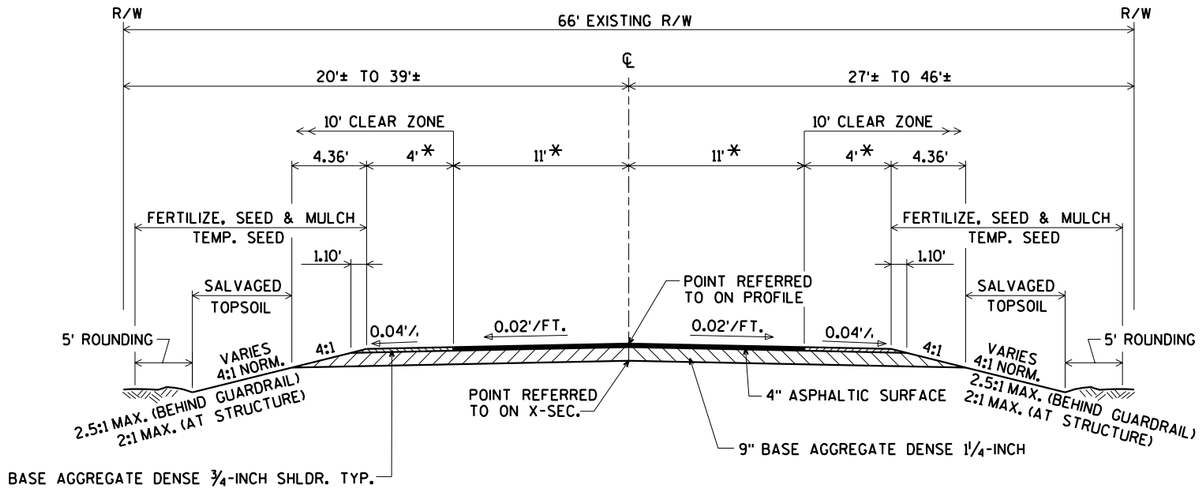
LINDA HYATT
427 EAST TOWER DRIVE, SUITE 100
WAUTOMA, WI 54982
920-787-7604
linda.hyatt@wisconsin.gov



TYPICAL EXISTING SECTION
CTH E

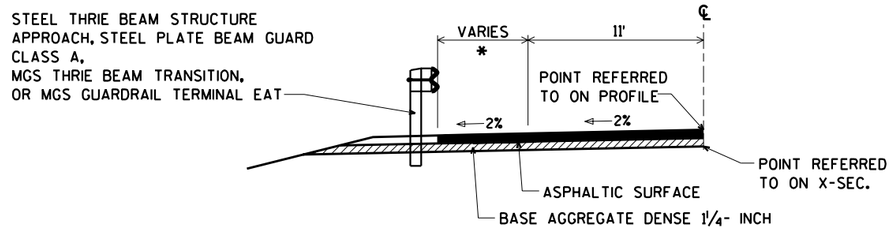


TYPICAL FINISHED HALF SECTION WITH BEAM GUARD BEHIND CURB & GUTTER



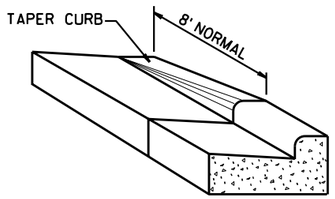
TYPICAL FINISHED SECTION
CTH E

* THE ASPHALTIC SURFACE SHALL BE PLACED 40 FEET WIDE AT THE ENDS OF THE BRIDGE AND FOLLOW THE FACE OF GUIRDRAIL, AND TAPER TO 22 FEET AT THE ENDS OF PROJECT.



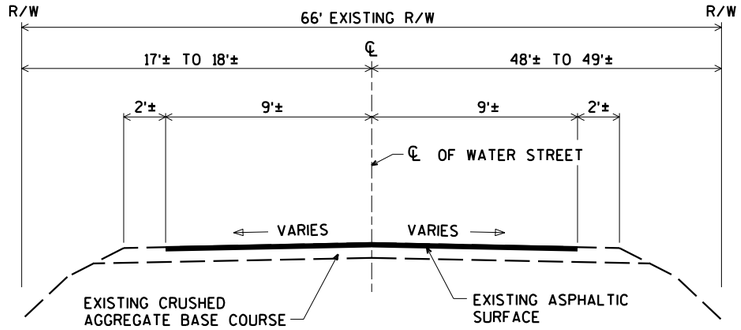
TYPICAL FINISHED HALF SECTION WITH BEAM GUARD

* 4' NORMAL
5' MIN. RT. / 11' MAX. LT. (AT END OF BRIDGE)
7' MAX. RT. / 13' MAX. LT. (AT END TERMINAL)

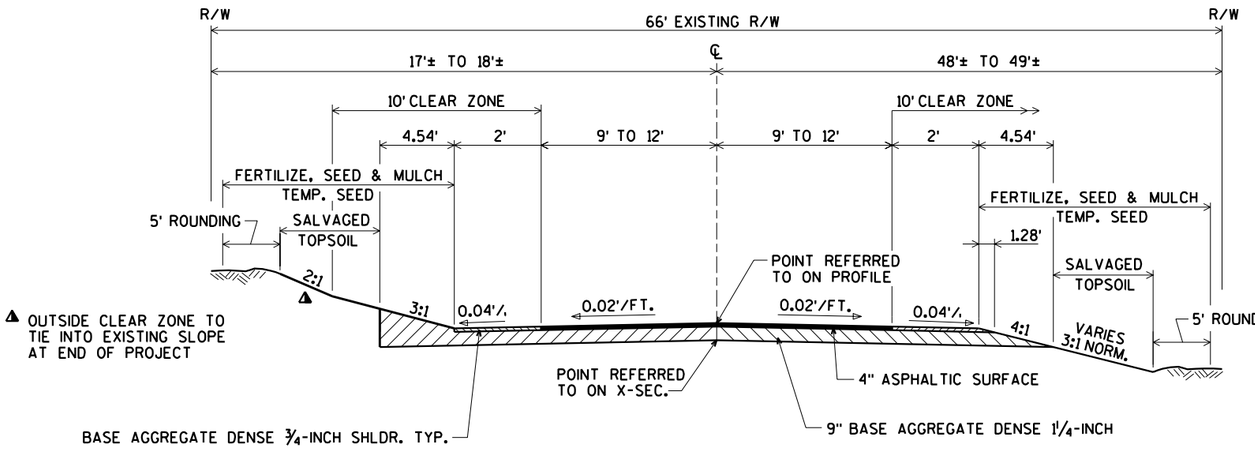


DETAIL OF CURB & GUTTER TRANSITION SECTION

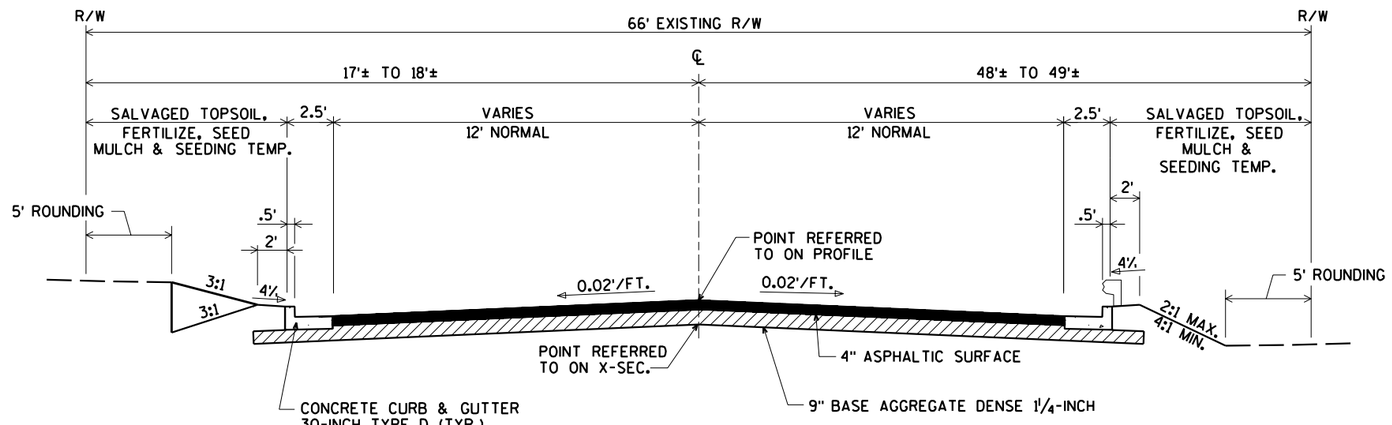
PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	TYPICAL SECTIONS	SHEET 3	E



TYPICAL EXISTING SECTION
WATER STREET



TYPICAL FINISHED SECTION
WATER STREET



TYPICAL FINISHED SECTION
WATER STREET

PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	TYPICAL SECTIONS	SHEET 4	E

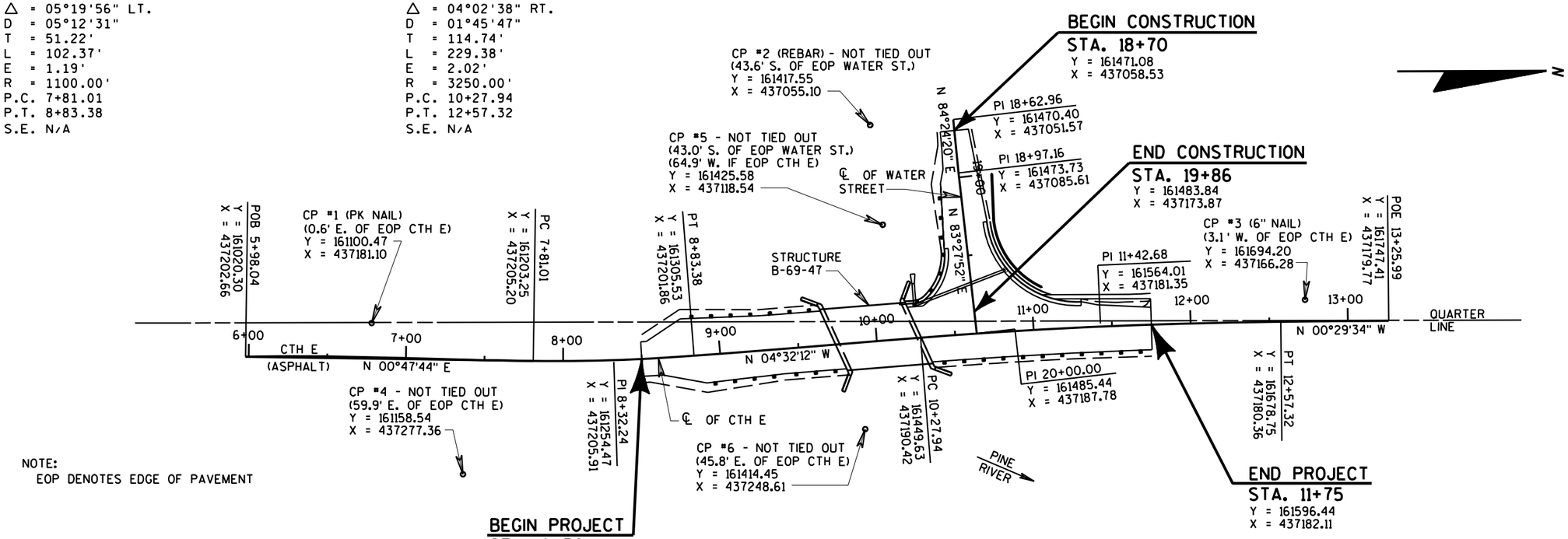
2

CURVE DATA

P.I. 8+32.24
△ = 05°19'56" LT.
D = 05°12'31"
T = 51.22'
L = 102.37'
E = 1.19'
R = 1100.00'
P.C. 7+81.01
P.T. 8+83.38
S.E. N/A

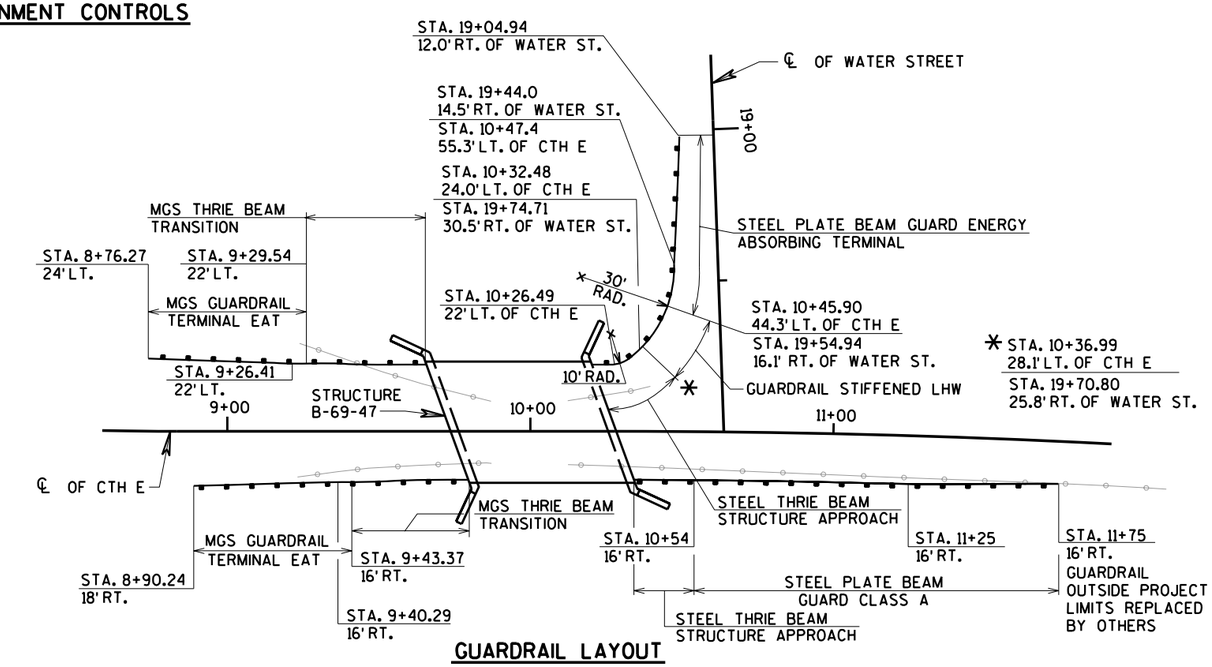
CURVE DATA

P.I. 11+42.68
△ = 04°02'38" RT.
D = 01°45'47"
T = 114.74'
L = 229.38'
E = 2.02'
R = 3250.00'
P.C. 10+27.94
P.T. 12+57.32
S.E. N/A



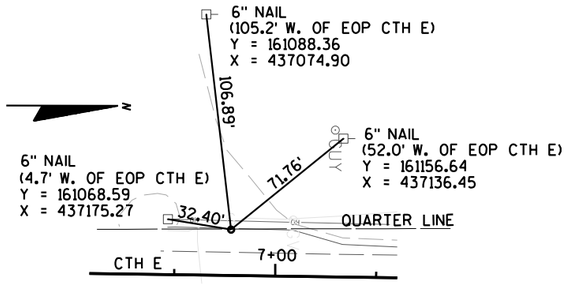
NOTE:
EOP DENOTES EDGE OF PAVEMENT

ALIGNMENT CONTROLS

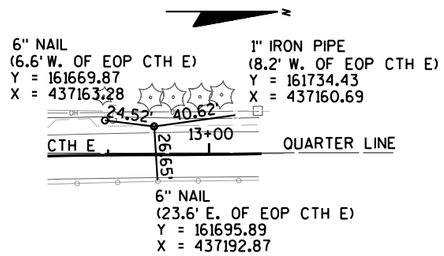


GUARDRAIL LAYOUT

CONTROL POINT TIES

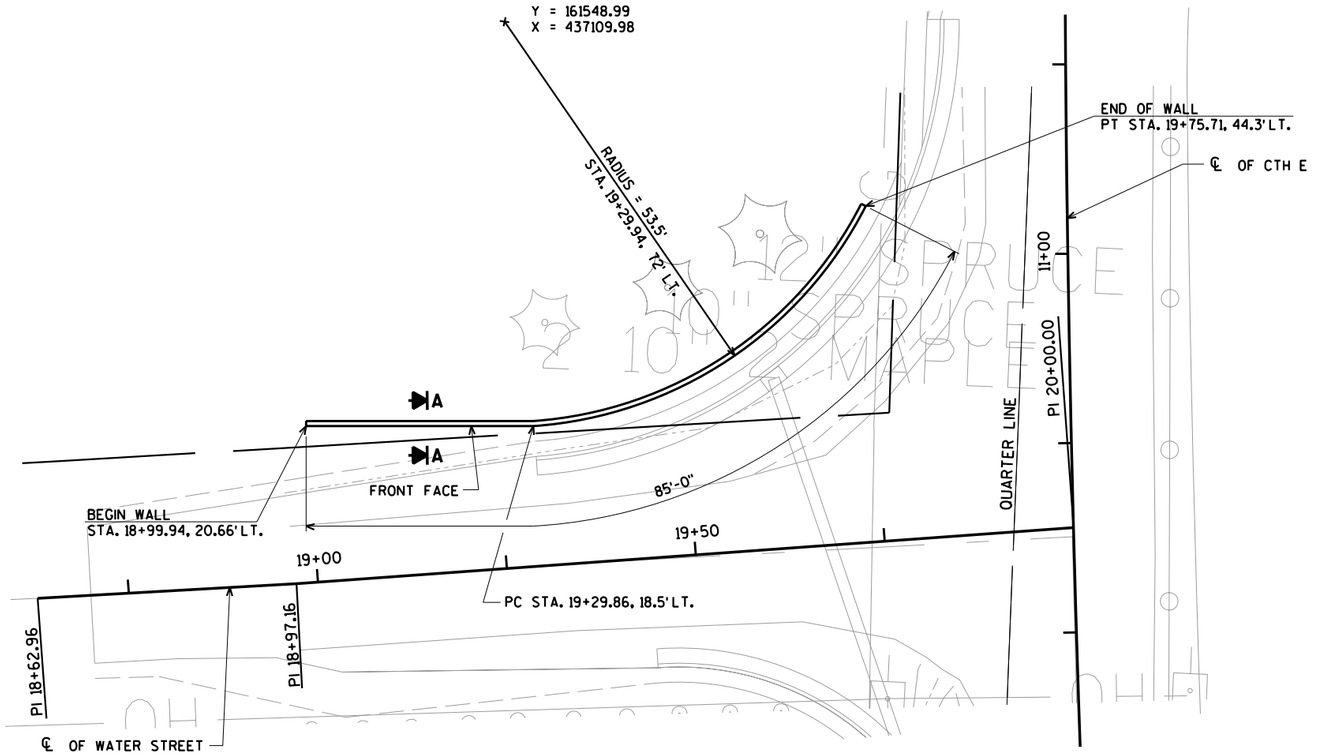


CP #1 (PK NAIL)
(0.6' E. OF EOP CTH E)
Y = 161100.47
X = 437181.10



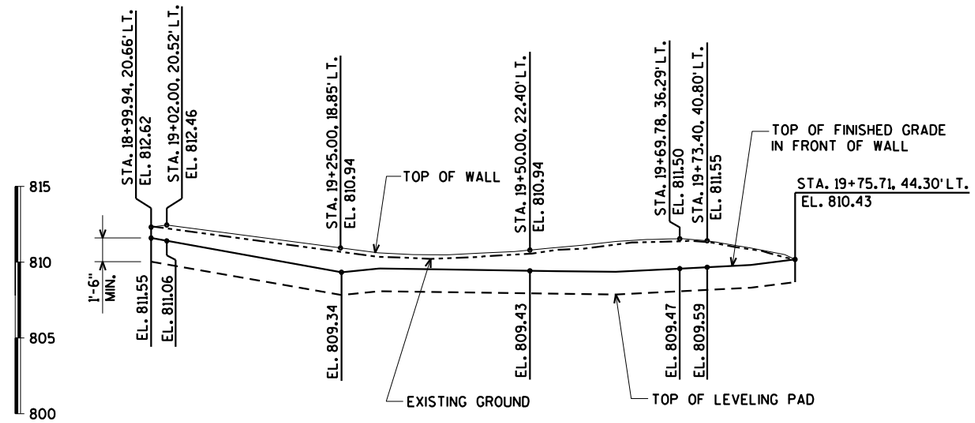
CP #3 (6" NAIL)
(3.1' W. OF EOP CTH E)
Y = 161694.20
X = 437166.28

PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	ALIGNMENT CONTROLS AND TIES	SHEET 5	E



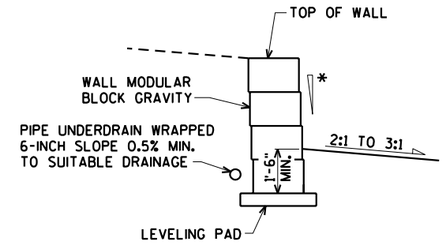
PLAN

ALL DIMENSIONS ARE MEASURED ALONG FRONT FACE



ELEVATION

(LOOKING AT FRONT FACE OF WALL)



* SET BACK VARIES BY MANUFACTURER, MAX. FRONT FACE FROM VERTICAL BLOCK IS 1 HORIZ. TO 12 VERT.

SECTION A-A

GENERAL NOTES

WALL PROFILE SHOWS MINIMUM ELEVATION FOR THE TOP OF WALL. THE AREA CALCULATED FOR ESTIMATED QUANTITIES IS FROM THE MINIMUM TOP OF WALL ELEVATION TO THE TOP OF LEVELING PAD.

DRAWINGS SHALL NOT BE SCALED.

BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS SHOWN OR NOTED OTHERWISE.

DESIGN DATA

THE CONTRACTOR SHALL PROVIDE COMPLETE DESIGN PLANS, DETAILS, SPECIFICATIONS AND SHOP DRAWINGS FOR THE RETAINING WALLS IN ACCORDANCE WITH THE SPECIAL PROVISIONS. THE RETAINING WALL MANUFACTURER SHALL PROVIDE TECHNICAL ASSISTANCE TO THE CONTRACTOR DURING CONSTRUCTION. THE COST OF FURNISHING THESE ITEMS SHALL BE INCLUDED IN THE BID ITEM "WALL MODULAR BLOCK GRAVITY".

PLANS, ELEVATIONS AND DETAILS SHOWN ON THESE DRAWINGS ARE INTENDED TO INDICATE WALL LOCATIONS, LENGTHS, HEIGHTS AND DETAILS COMMON TO THE WALL SYSTEM SELECTED. THE CONTRACTOR SHALL VERIFY THAT THE WALL SYSTEM SELECTED WILL CONFORM TO THE REQUIRED ALIGNMENTS AND DETAILS.

THE RETAINING WALL IS TO BE DESIGNED USING THE ELEVATIONS GIVEN ON THIS SHEET.

BLOCKS SHALL BE STRAIGHT FACE. COLOR SHALL BE SELECTED BY THE ENGINEER.

DESIGN FOR RETAINING WALL TO PROVIDE FOR FINISHED GRADE SLOPED BEHIND WALL AS SHOWN.

DESIGN RETAINING WALL FOR A LIVE LOAD SURCHARGE OF 100 psf

SOIL PARAMETERS

ALLOWABLE BEARING CAPACITY = 0.75 TONS/SF
ANGLE OF INTERNAL FRICTION = 30 DEGREE
COHESION = 0 TONS/SF
COEFFICIENT OF SLIDING FRICTION = 0.4

SAFETY FACTORS

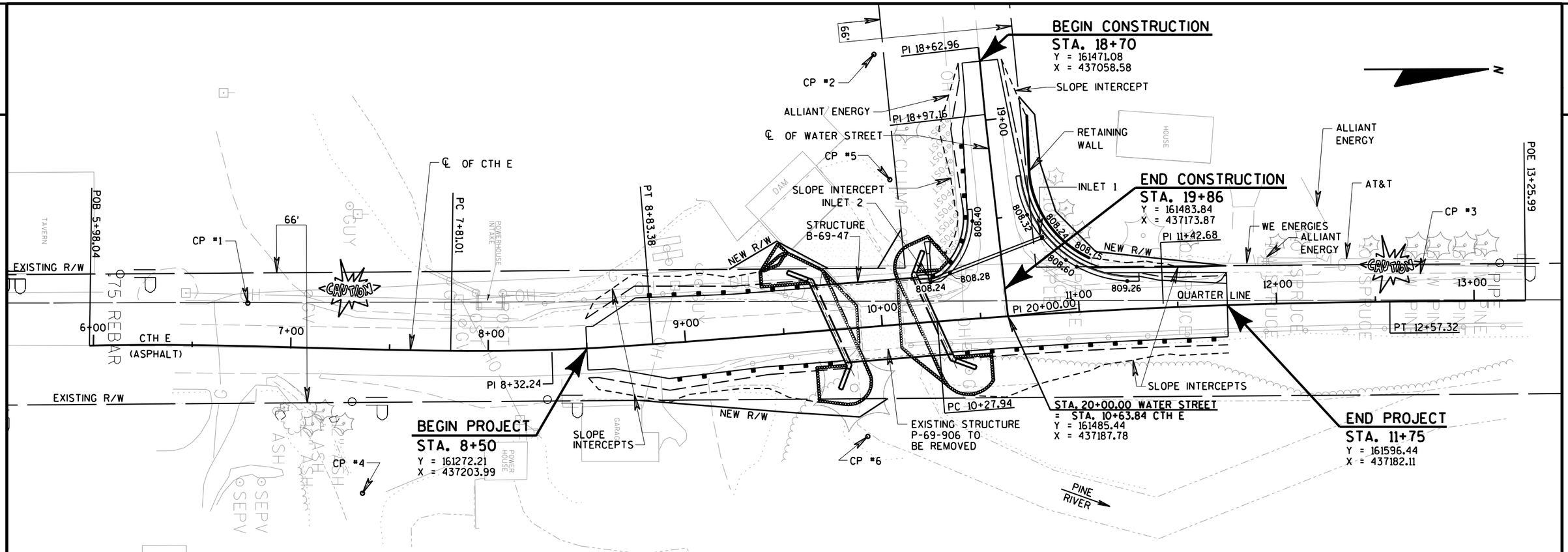
SLIDING (FS > 1.5)
OVERTURNING (FS > 2.0)
GLOBAL STABILITY (FS > 1.3)
MINIMUM WALL EMBEDMENT 1'-6"

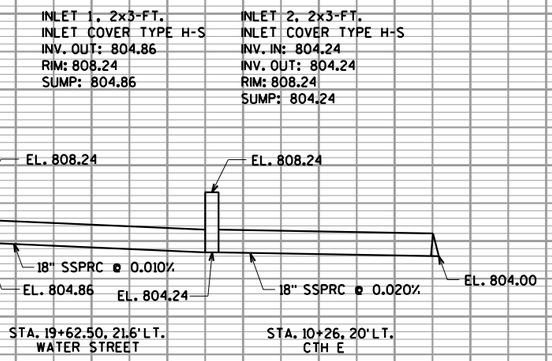
TOTAL ESTIMATED QUANTITIES

532.0200.S	WALL MODULAR BLOCK GRAVITY	250 SF
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	105 LF

PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	RETAINING WALL LAYOUT	SCALE, FEET 0 10 20	SHEET 6	E

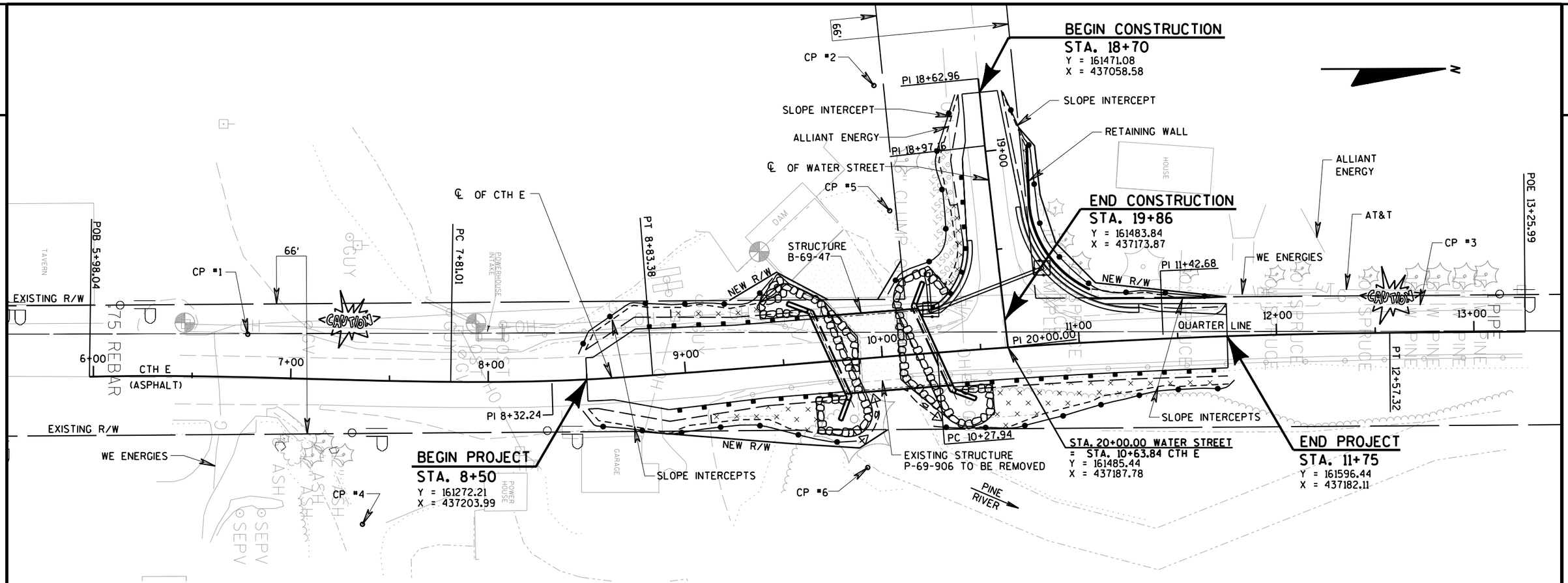
2





820 810 800 790

PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	STORM SEWER	SCALE, FEET 0 25 50	SHEET 7	E



	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 .22	.16 .30	.22 .38	.12 .26	.20 .34	.27 .44	.15 .30	.24 .37	.33 .50	.19 .34	.28 .41	.38 .56
MEDIAN STRIP-TURF	.19 .24	.20 .26	.24 .30	.19 .25	.22 .28	.26 .33	.20 .26	.23 .30	.30 .37	.20 .27	.25 .32	.30 .40
SIDE SLOPE-TURF			.25 .32			.27 .34			.28 .36			.30 .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 = 0.74 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.51 ACRES

HIGH WATER 2 EL. 798.3

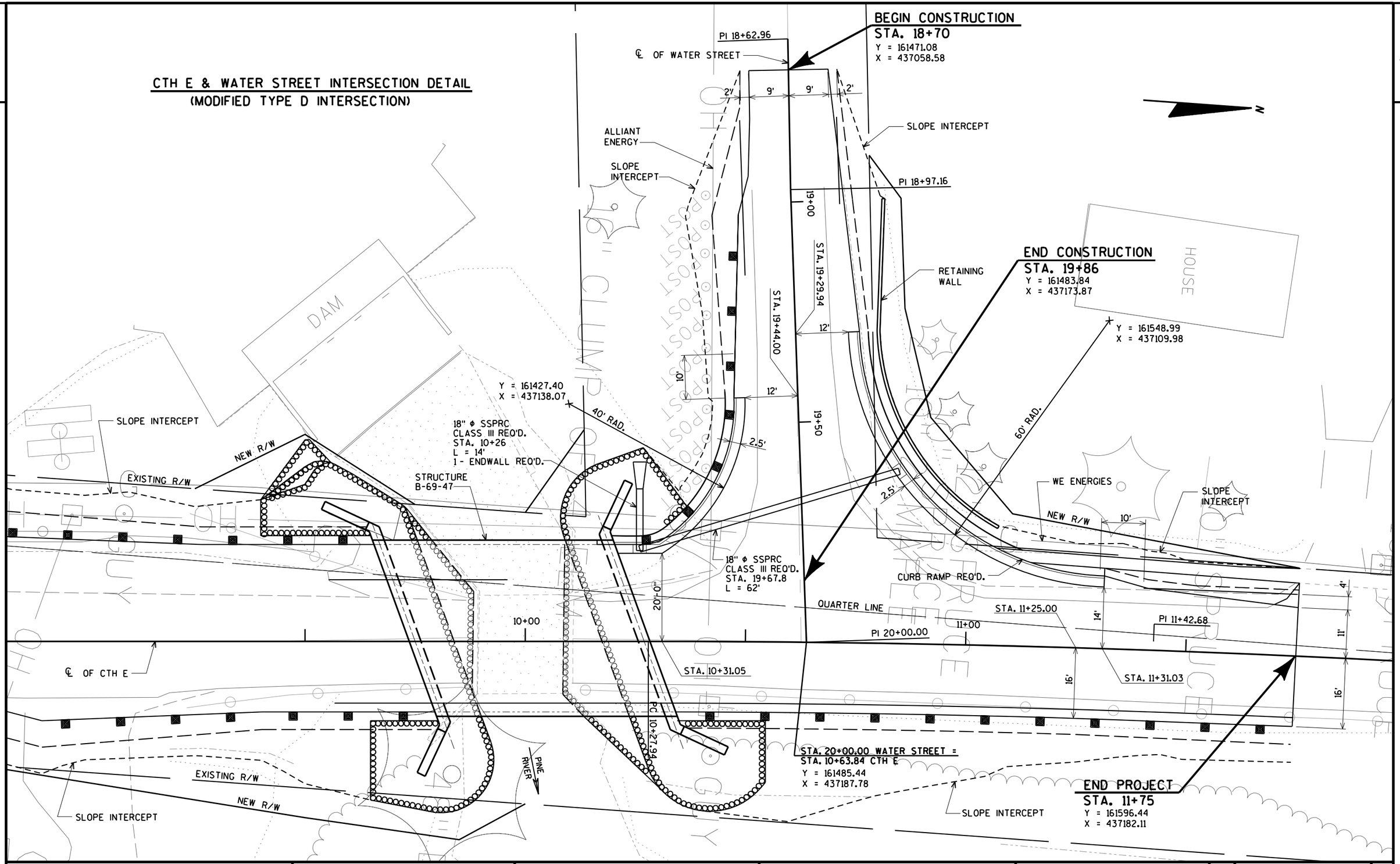
LEGEND

- EROSION MAT CLASS II TYPE B
- TEMPORARY DITCH CHECKS (UNDISTRIBUTED)
- SILT FENCE
- RIPRAP HEAVY
- TURBIDITY BARRIER
- INLET PROTECTION TYPE C

PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	EROSION CONTROL	SCALE, FEET 0 25 50	SHEET 8	E

2

CTH E & WATER STREET INTERSECTION DETAIL
(MODIFIED TYPE D INTERSECTION)



PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	INTERSECTION DETAIL	SCALE, FEET 0 10 20	SHEET	E

U:\42-0800.00 - Waushara County - CTH E - Pine River\RDWY\420800_INTERSECT.dgn PENTABLE:BReau_shd_util.tbl BRIDGE 1:20

WISDOT/CADDS SHEET 42

2

2

BEGIN CONSTRUCTION
STA. 18+70
Y = 161471.08
X = 437058.58

PI 18+62.96

℄ OF WATER STREET

ALLIANT ENERGY

SLOPE INTERCEPT

SLOPE INTERCEPT

PI 18+97.16

19+00

19+50

END CONSTRUCTION
STA. 19+86
Y = 161483.84
X = 437173.87

RETAINING WALL

HOUSE

DAM

STOP
R1-1
30" X 30"

NEW LOCATION OF STREET SIGN

SLOPE INTERCEPT

NEW R/W

EXISTING R/W

STRUCTURE B-69-47

WE ENERGIES

SLOPE INTERCEPT

NEW R/W

PAVEMENT MARKING
4-INCH, EPOXY
(DBL SOLID YELLOW)

PAVEMENT MARKING
4-INCH, EPOXY
(WHITE EDGELINE)

10+00

QUARTER LINE

11+00

PI 20+00.00

PAVEMENT MARKING
4-INCH, EPOXY
(WHITE EDGELINE)

PI 11+42.68

℄ OF CTH E

PC 10+27.94

PINE RIVER

STA. 20+00.00 WATER STREET =
STA. 10+63.84 CTH E
Y = 161485.44
X = 437187.78

EXISTING R/W

NEW R/W

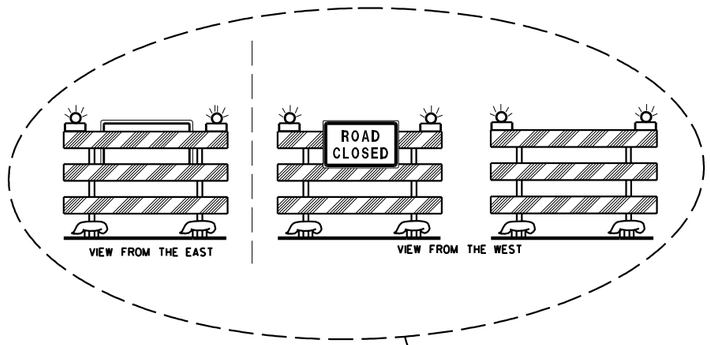
SLOPE INTERCEPT

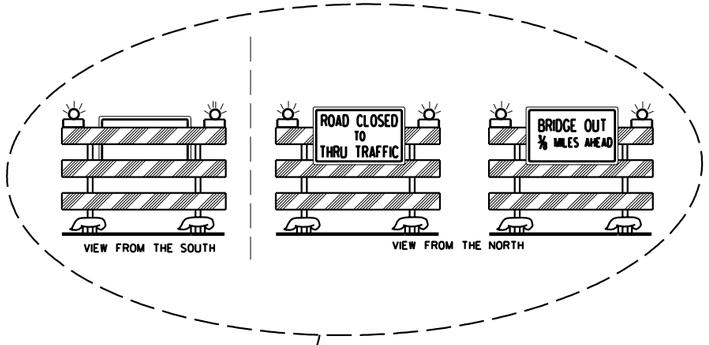
SLOPE INTERCEPT

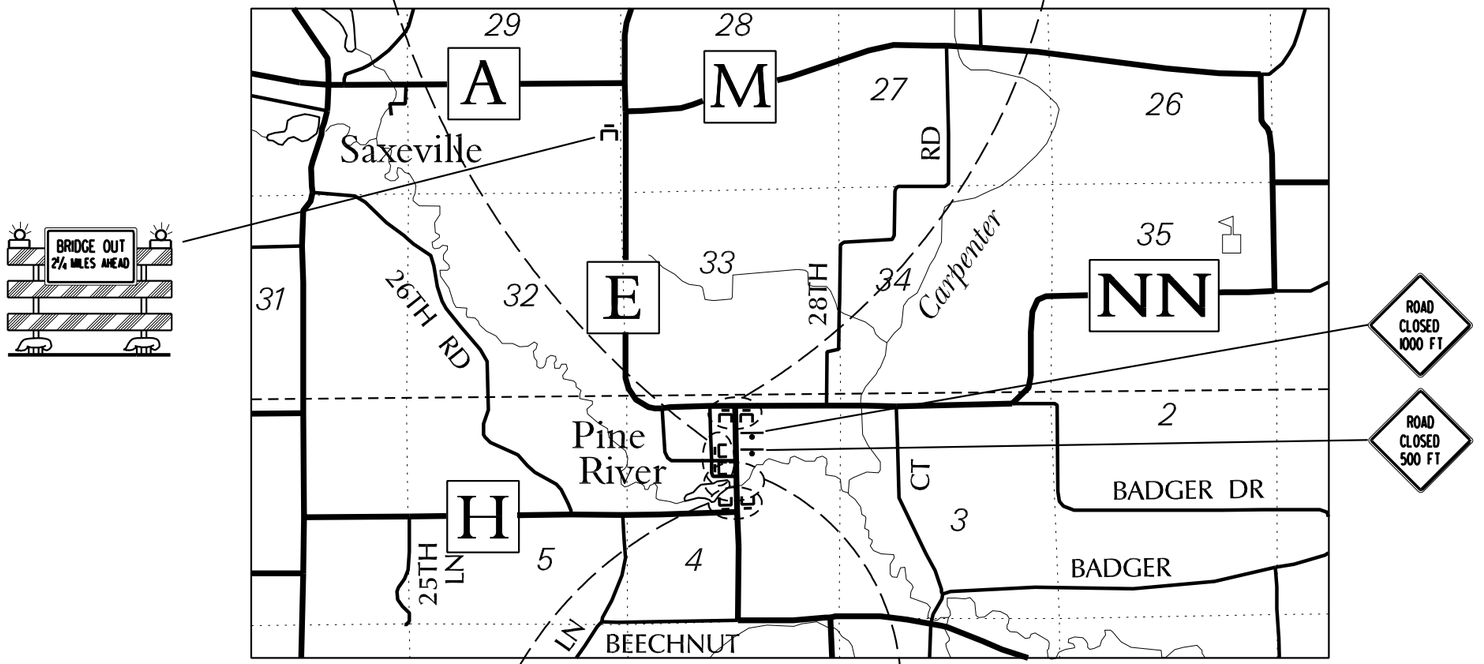
END PROJECT
STA. 11+75
Y = 161596.44
X = 437182.11

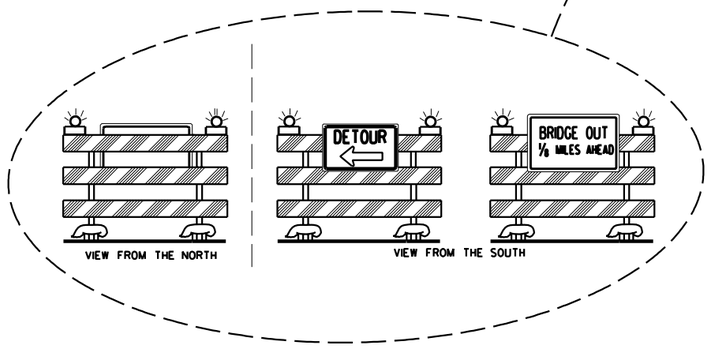
PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	SIGNING DETAIL	SCALE, FEET 0 10 20		SHEET 10	E

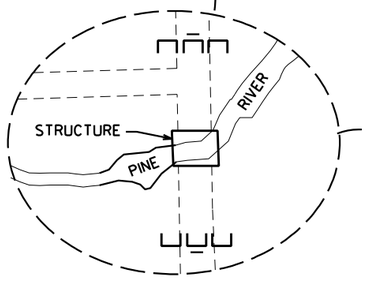
WORK THIS SHEET WITH "DETOUR LAYOUT" SHEET

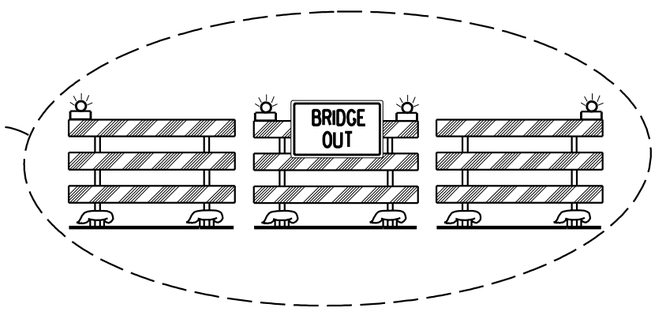












LEGEND

- POST MOUNTED SIGN
- TYPE III BARRICADE WITH TYPE "A" FLASHING LIGHTS

ROAD CLOSED	R11-2
ROAD CLOSED TO THRU TRAFFIC	R11-4
DETOUR	M4-9L
BRIDGE OUT	R11-2B
BRIDGE OUT MILE AHEAD	R11-3C
ROAD CLOSED .. FT	W20-3C, W20-3D

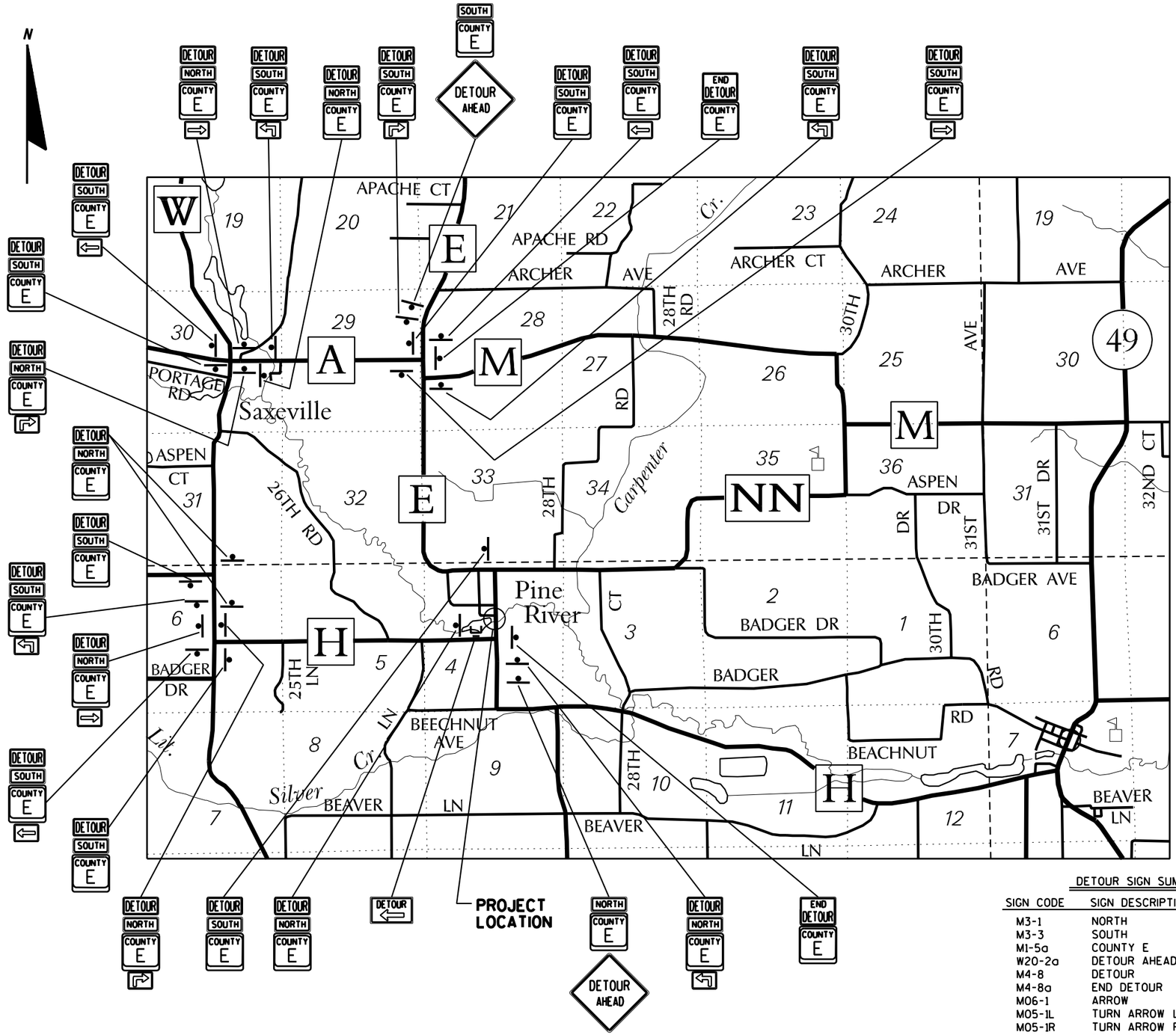
TRAFFIC CONTROL SIGN SUMMARY

SIGN CODE	SIGN DESCRIPTION	NO. OF SIGNS
R11-2	ROAD CLOSED	1
R11-2B	BRIDGE OUT	2
R11-3C	BRIDGE OUT _ MILES AHEAD	3
W20-3D	ROAD CLOSED 500 FT	1
W20-3C	ROAD CLOSED 1000 FT	1
R11-4	ROAD CLOSED TO THRU TRAFFIC	1
	TOTAL NO. OF SIGNS/DAY	9

TRAFFIC CONTROL ITEMS SUMMARY

ITEM	NO. OF ITEM/DAY
BARRICADES	13
WARNING LIGHTS TYPE A	22

PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	TRAFFIC CONTROL LAYOUT	SHEET 11	E



WORK THIS SHEET WITH "TRAFFIC CONTROL LAYOUT" SHEET

GENERAL NOTES

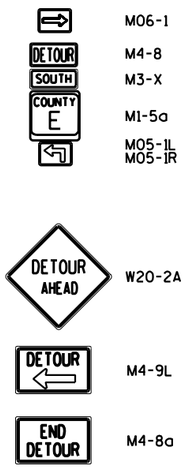
1. DRAWINGS SHOW TRAFFIC CONTROL FOR A TYPICAL SITUATION. ADDITIONAL TRAFFIC CONTROL DEVICES MAY BE REQUIRED AND/OR LAYOUT DETAILS MODIFIED DEPENDING ON CONTRACTORS METHODS OR SEQUENCE OF OPERATION.
2. ALL SIGN LOCATIONS ARE APPROXIMATE. DETOUR SIGN LOCATIONS NEED TO BE LOCATED SO THAT THEY DO NOT BLOCK OR OBSTRUCT THE VIEW OF EXISTING HIGHWAY SIGNS. THE ACTUAL LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
3. SIGN FACE LAYOUTS SHALL BE IN ACCORDANCE WITH THE FEDERAL HIGHWAY ADMINISTRATION MANUAL OF STANDARD HIGHWAY SIGNS. UNLESS OTHERWISE PROVIDED IN THE PLAN.
4. EXISTING TRAFFIC SIGNS MAY REQUIRE RELOCATION DURING STAGES OF CONSTRUCTION AND SHALL BE LOCATED AS REQUIRED BY THE ENGINEER IN THE FIELD.
5. "WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

LEGEND

- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE WITH TWO (2) TYPE "A" FLASHING LIGHTS

SIGN SIZES

M1-5a	= 24" x 24"
M2-1	= 21" x 15"
M3-1	= 24" x 12"
M3-2	= 24" x 12"
M3-3	= 24" x 12"
M3-4	= 24" x 12"
M4-8	= 24" x 12"
M4-8a	= 24" x 18"
M5-1R	= 21" x 21"
M5-1L	= 21" x 21"
M6-1	= 21" x 21"
M6-3	= 21" x 21"
MR4-6	= 24" x 8"
R1-1	= 30" x 30"
R11-2	= 48" x 30"
R11-3	= 60" x 30"
R11-3C	= 60" x 24"
W020-3	= 48" x 48"
W1-6	= 48" x 24"
W01-1R	= 36" x 36"
W013-1	= 18" x 18"



DETOUR SIGN SUMMARY

SIGN CODE	SIGN DESCRIPTION	NO. OF SIGNS
M3-1	NORTH	10
M3-3	SOUTH	14
M1-5a	COUNTY E	26
W20-2a	DETOUR AHEAD	2
M4-8	DETOUR	22
M4-8a	END DETOUR	2
M06-1	ARROW	6
M05-1L	TURN ARROW LEFT	4
M05-1R	TURN ARROW RIGHT	3
M4-9L	DETOUR ARROW LEFT	1
	TOTAL NO. OF SIGNS/DAY	90

PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	DETOUR LAYOUT	SHEET 12	E

DATE 17DEC12 — E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	6987-01-70 QUANTITY
0010	201.0105	CLEARING	STA	3.000	3.000
0020	201.0205	GRUBBING	STA	3.000	3.000
0030	203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS (STATION) 01. 10+00	LS	1.000	1.000
0040	205.0100	EXCAVATION COMMON	CY	629.000	629.000
0050	206.1000	EXCAVATION FOR STRUCTURES BRIDGES (STRUCTURE) 01. B-69-47	LS	1.000	1.000
0060	206.5000	COFFERDAMS (STRUCTURE) 01. B-69-47	LS	1.000	1.000
0070	210.0100	BACKFILL STRUCTURE	CY	740.000	740.000
0080	213.0100	FINISHING ROADWAY (PROJECT) 01. 6987-01-70	EACH	1.000	1.000
0090	305.0110	BASE AGGREGATE DENSE 3/4-INCH	TON	55.000	55.000
0100	305.0120	BASE AGGREGATE DENSE 1 1/4-INCH	TON	935.000	935.000
0110	455.0605	TACK COAT	GAL	36.000	36.000
0120	465.0105	ASPHALTIC SURFACE	TON	325.000	325.000
0130	502.0100	CONCRETE MASONRY BRIDGES	CY	213.000	213.000
0140	502.3200	PROTECTIVE SURFACE TREATMENT	SY	265.000	265.000
0150	503.0128	PRESTRESSED GIRDER TYPE I 28-INCH	LF	318.000	318.000
0160	505.0405	BAR STEEL REINFORCEMENT HS BRIDGES	LB	6,840.000	6,840.000
0170	505.0605	BAR STEEL REINFORCEMENT HS COATED BRIDGES	LB	17,530.000	17,530.000
0180	506.2605	BEARING PADS ELASTOMERIC NON-LAMINATED	EACH	12.000	12.000
0190	506.4000	STEEL DIAPHRAGMS (STRUCTURE) 01. B-69-47	EACH	5.000	5.000
0200	513.4052	RAILING TUBULAR TYPE F-4 MODIFIED (STRUCTURE) 01. B-69-47	LS	1.000	1.000
0210	516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	25.000	25.000
0220	522.1018	APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 18-INCH	EACH	1.000	1.000
0230	532.0200.S	WALL MODULAR BLOCK GRAVITY	SF	250.000	250.000
0240	550.0500	PILE POINTS	EACH	20.000	20.000
0250	550.1120	PILING STEEL HP 12-INCH X 53 LB	LF	500.000	500.000
0260	601.0411	CONCRETE CURB & GUTTER 30-INCH TYPE D	LF	142.000	142.000
0270	601.0600	CONCRETE CURB PEDESTRIAN	LF	24.000	24.000
0280	602.0405	CONCRETE SIDEWALK 4-INCH	SF	180.000	180.000
0290	602.0505	CURB RAMP DETECTABLE WARNING FIELD YELLOW	SF	4.000	4.000
0300	606.0300	RIPRAP HEAVY	CY	240.000	240.000
0310	608.0318	STORM SEWER PIPE REINFORCED CONCRETE CLASS III 18-INCH	LF	76.000	76.000
0320	611.0639	INLET COVERS TYPE H-S	EACH	2.000	2.000
0330	611.3230	INLETS 2X3-FT	EACH	2.000	2.000
0340	612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	305.000	305.000
0350	614.0200	STEEL THRIE BEAM STRUCTURE APPROACH	LF	42.000	42.000
0360	614.0305	STEEL PLATE BEAM GUARD CLASS A	LF	125.000	125.000
0370	614.0370	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL	EACH	1.000	1.000
0380	614.0515	GUARDRAIL STIFENED LHW	LF	18.750	18.750
0390	614.0920	SALVAGED RAIL	LF	411.000	411.000
0400	614.2500	MGS THRIE BEAM TRANSITION	LF	80.000	80.000
0410	614.2610	MGS GUARDRAIL TERMINAL EAT	EACH	2.000	2.000
0420	619.1000	MOBILIZATION	EACH	1.000	1.000
0430	625.0500	SALVAGED TOPSOIL	SY	465.000	465.000
0440	627.0200	MULCHING	SY	775.000	775.000
0450	628.1504	SILT FENCE	LF	910.000	910.000
0460	628.1520	SILT FENCE MAINTENANCE	LF	2,730.000	2,730.000

3

DATE 17DEC12 E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	6987-01-70 QUANTITY
0470	628.1905	MOBILIZATIONS EROSION CONTROL	EACH	5.000	5.000
0480	628.1910	MOBILIZATIONS EMERGENCY EROSION CONTROL	EACH	2.000	2.000
0490	628.2023	EROSION MAT CLASS II TYPE B	SY	315.000	315.000
0500	628.6005	TURBIDITY BARRIERS	SY	55.000	55.000
0510	628.7015	INLET PROTECTION TYPE C	EACH	2.000	2.000
0520	628.7504	TEMPORARY DITCH CHECKS	LF	50.000	50.000
0530	629.0210	FERTILIZER TYPE B	CWT	1.000	1.000
0540	630.0120	SEEDING MIXTURE NO. 20	LB	30.000	30.000
0550	630.0200	SEEDING TEMPORARY	LB	30.000	30.000
0560	634.0612	POSTS WOOD 4X6-INCH X 12-FT	EACH	5.000	5.000
0570	637.0202	SIGNS REFLECTIVE TYPE II	SF	17.200	17.200
0580	638.2102	MOVING SIGNS TYPE II	EACH	1.000	1.000
0590	638.2602	REMOVING SIGNS TYPE II	EACH	5.000	5.000
0600	642.5001	FIELD OFFICE TYPE B	EACH	1.000	1.000
0610	643.0100	TRAFFIC CONTROL (PROJECT) 01. 6987-01-70	EACH	1.000	1.000
0620	643.0420	TRAFFIC CONTROL BARRICADES TYPE III	DAY	1,105.000	1,105.000
0630	643.0705	TRAFFIC CONTROL WARNING LIGHTS TYPE A	DAY	1,870.000	1,870.000
0640	643.0900	TRAFFIC CONTROL SIGNS	DAY	765.000	765.000
0650	643.2000	TRAFFIC CONTROL DETOUR (PROJECT) 01. 6987-01-70	EACH	1.000	1.000
0660	643.3000	TRAFFIC CONTROL DETOUR SIGNS	DAY	7,650.000	7,650.000
0670	645.0120	GEOTEXTILE FABRIC TYPE HR	SY	450.000	450.000
0680	646.0106	PAVEMENT MARKING EPOXY 4-INCH	LF	1,202.000	1,202.000
0690	650.4000	CONSTRUCTION STAKING STORM SEWER	EACH	2.000	2.000
0700	650.4500	CONSTRUCTION STAKING SUBGRADE	LF	441.000	441.000
0710	650.5000	CONSTRUCTION STAKING BASE	LF	441.000	441.000
0720	650.5500	CONSTRUCTION STAKING CURB GUTTER AND CURB & GUTTER	LF	142.000	142.000
0730	650.6500	CONSTRUCTION STAKING STRUCTURE LAYOUT (STRUCTURE) 01. B-69-47	LS	1.000	1.000
0740	650.9910	CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT) 01. 6987-01-70	LS	1.000	1.000
0750	650.9920	CONSTRUCTION STAKING SLOPE STAKES	LF	441.000	441.000
0760	690.0150	SAWING ASPHALT	LF	69.000	69.000
0770	690.0250	SAWING CONCRETE	LF	3.000	3.000
0780	715.0502	INCENTIVE STRENGTH CONCRETE STRUCTURES	DOL	1,278.000	1,278.000
0790	999.1000.S	SEISMOGRAPH	LS	1.000	1.000
0800	ASP.1T0A	ON-THE-JOB TRAINING APPRENTICE AT $5.00/HR	HRS	1,200.000	1,200.000
0810	ASP.1T0G	ON-THE-JOB TRAINING GRADUATE AT $5.00/HR	HRS	600.000	600.000

3

CLEARING AND GRUBBING (CATEGORY 0010)

STATION TO STATION	201.0105 CLEARING STA	201.0205 GRUBBING STA
Sta. 9+00 to Sta. 111+75	3	3

213.0100 FINISHING ROADWAY (CATEGORY 0010)

LOCATION	EACH
PROJECT 6987-01-70	1

EARTHWORK SUMMARY (CATEGORY 0010)

DIVISION	STATION TO STATION	205.0100 EXCAVATION COMMON (1) CUT (2) CY	205.0100 EXCAVATION COMMON (1) EBS (3) CY	SALVAGED/ UNUSEABLE PAVEMENT MATERIAL (4) CY	AVAILABLE MATERIAL (5) CY	UNEXPANDED FILL CY	EXPANDED FILL (7) CY	MASS ORDINATE ±(8) CY	WASTE CY	COMMENTS:
1 / CTH E	8+50 TO 9+73.67	205	0	0	205	45	59	147	147	
	10+28.33 TO 11+75	197	0	0	197	78	101	96	96	
DIVISION 1/SUBTOTAL		402	0	0	402	123	160	243	243	
2 / WATER ST.	18+70 TO 19+86	227	0	0	227	8	10	217	217	
DIVISION 2/SUBTOTAL		227	0	0	227	8	10	217	217	
GRANDTOTAL		629	0	0	629	131	170	460	460	

TOTAL EXCAVATION COMMON 630

NOTES:
1) EXCAVATION COMMON IS THE SUM OF THE CUT AND EBS EXCAVATION COLUMNS. ITEM NUMBER 205.0100
2) SALVAGED/UNUSEABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
3) EBS EXCAVATION TO BE BACKFILLED WITH BORROW MATERIAL.
4) SALVAGED/UNUSEABLE PAVEMENT MATERIAL
5) AVAILABLE MATERIAL = CUT - SALVAGED/UNUSEABLE PAVEMENT MATERIAL
6) EXCAVATION MARSH - TO BE BACKFILLED WITH BORROW. ITEM NUMBER 205.0400
7) EXPANDED FILL FACTOR = 1.30
   EXPANDED FILL = UNEXPANDED FILL * FILL FACTOR
8) THE MASS ORDINATE ± QTY CALCUTATED FOR THE DIVISION.
   PLUS (+) QUANTITY INDICATES AN EXCESS OF MATERIAL WITHIN THE DIVISION.
   MINUS (-) QUANTITY INDICATES A SHORTAGE OF MATERIAL WITHIN THE DIVISION.

BASE AGGREGATE DENSE (CATEGORY 0010)

STATION TO STATION	LOCATION	305.0110 3/4-INCH TON	305.0120 1 1/4-INCH TON
Sta. 8+50 to Sta. 9+73.67	CTH E	---	350
Sta. 10+28.33 to Sta. 11+75	CTH E	---	320
Sta. 8+50 to Sta. 9+73.67	CTH E, Shoulders	28	---
Sta. 10+28.33 to Sta. 11+75	CTH E, Shoulders	16	---
Sta. 18+70 to Sta. 19+86	Water St.	---	265
Sta. 18+70 to Sta. 19+86	Water St., Shoulders	11	---
TOTALS		55	935

455.0605 TACK COAT (CATEGORY 0010)

STATION TO STATION	LOCATION	GAL
Sta. 8+50 to Sta. 9+73.67	CTH E	13
Sta. 10+28.33 to Sta. 11+75	CTH E	13
Sta. 18+70 to Sta. 19+86	Water St.	10
TOTAL		36

465.0105 ASPHALTIC SURFACE (CATEGORY 0010)

STATION TO STATION	LOCATION	TON
Sta. 8+50 to Sta. 9+73.67	CTH E	115
Sta. 10+28.33 to Sta. 11+75	CTH E	120
Sta. 18+70 to Sta. 19+86	Water St.	90
TOTAL		325

APRONS ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE (CATEGORY 0010)

STATION	LOCATION	522.1018 18-INCH EACH
Sta. 10+26, 34.5' LT	CTH E	1

532.0200.S WALL MODULAR BLOCK GRAVITY (CATEGORY 0010)

STATION	LOCATION	SF
Sta. 18+99.94, 20.66' LT to Sta. 19+75.71, 44.3' LT	Water St.	250

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE NOTED.

601.0411 CONCRETE CURB & GUTTER 30-INCH TYPE D (CATEGORY 0010)

STATION TO STATION	LOCATION	LF
Sta. 19+30 to Sta. 19+86, LT	Water St.	90
Sta. 19+44 to Sta. 19+80, RT	Water St.	52
TOTAL		142

601.0600 CONCRETE CURB PEDESTRIAN (CATEGORY 0010)

STATION TO STATION	LOCATION	LF
Sta. 11+07 to Sta. 11+22, 22' LT	CTH E	16
Sta. 11+14 to Sta. 11+22, 19' LT	CTH E	8
TOTAL		24

602.0405 CONCRETE SIDEWALK 4-INCH (CATEGORY 0010)

STATION TO STATION	LOCATION	SF
Sta. 11+07 to Sta. 11+75, LT	CTH E	180

602.0505 CURB RAMP DETECTABLE WARNING FIELD YELLOW (CATEGORY 0010)

STATION TO STATION	LOCATION	SF
Sta. 11+17, 20' LT	CTH E	4

STORM SEWER PIPE REINFORCED CONCRETE CLASS III (CATEGORY 0010)

STATION	LOCATION	608.0318 18-INCH LF
Sta. 10+26, 20' LT	CTH E	14
Sta. 19+67.80	Water St.	62
TOTAL		76

611.0639 INLET COVERS TYPE H-S (CATEGORY 0010)

STATION TO STATION	LOCATION	EACH
Sta. 10+26, 20' LT	CTH E	1
Sta. 19+62.50, 21.6' LT	Water St.	1
TOTAL		2

611.3230 INLETS 2X3-FT (CATEGORY 0010)

STATION TO STATION	LOCATION	EACH
Sta. 10+26, 20' LT	CTH E	1
Sta. 19+62.50, 21.6' LT	Water St.	1
TOTAL		2

612.0406 PIPE UNDERDRAIN WRAPPED 6-INCH (CATEGORY 0010)

STATION	LOCATION	LF
Retaining Wall @ Sta. 18+99.94 to Sta. 19+75.71	Water St.	105

614.0200 STEEL THRIE BEAM STRUCTURE APPROACH (CATEGORY 0010)

STATION TO STATION	LOCATION	LF
Sta. 10+21.05 to Sta. 10+36.99, LT	CTH E	21
Sta. 10+34.15 to Sta. 10+54.00, RT	CTH E	21
TOTAL		42

614.0305 STEEL PLATE BEAM GUARD CLASS A (CATEGORY 0010)

STATION TO STATION	LOCATION	LF
Sta. 10+54.00 to Sta. 11+75, RT	CTH E	125

614.0370 STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL (CATEGORY 0010)

STATION TO STATION	LOCATION	EACH
Sta. 19+04.94 to Sta. 19+54.94, RT	Water St.	1

614.0515 GUARDRAIL STIFFENED LHW (CATEGORY 0010)

STATION TO STATION	LOCATION	LF
Sta. 19+54.94 to Sta. 19+70.80, RT	Water St.	18.75

614.0920 SALVAGED RAIL (CATEGORY 0010)

STATION TO STATION	LOCATION	LF
Sta. 8+19 to Sta. 9+10, LT	CTH E	90
Sta. 9+23 to Sta. 9+87, RT	CTH E	65
Sta. 9+24 to Sta. 9+87, LT	CTH E	66
Sta. 10+12 to Sta. 10+40, LT	CTH E	28
Sta. 10+12 to Sta. 11+75, RT	CTH E	162
TOTAL		411

614.2500 MGS THRIE BEAM TRANSITION (CATEGORY 0010)

STATION TO STATION	LOCATION	LF
Sta. 9+29.54 to Sta. 9+65.66, LT	CTH E	40
Sta. 9+43.37 to Sta. 9+79.49, RT	CTH E	40
TOTAL		80

614.2610 MGS GUARDRAIL TERMINAL EAT (CATEGORY 0010)

STATION TO STATION	LOCATION	EACH
Sta. 8+76.27 to Sta. 9+29.54, LT	CTH E	1
Sta. 8+90.24 to Sta. 9+43.37, RT	CTH E	1
TOTAL		2

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE NOTED.

3

619.1000 MOBILIZATION

LOCATION	EACH
PROJECT 6987-01-70 (CATEGORY 0010)	0.3
PROJECT 6987-01-70 (CATEGORY 0020)	0.7
TOTAL	1

SALVAGED TOPSOIL, MULCHING, FERTILIZER, SEED & TEMPORARY SEED (CATEGORY 0010)

STATION TO STATION	LOCATION	**P** 625.0500 SALVAGED TOPSOIL SY	**P** 627.0200 MULCHING SY	**P** 629.0210 FERTILIZER TYPE B CWT	630.0120 SEEDING NO. 20 LB	630.0200 SEEDING TEMPORARY LB
Sta. 8+50 to Sta. 11+75	CTH E	330	385	0.4	16	16
Sta. 18+70 to Sta. 19+86	Water St.	135	235	0.2	7	7
Undistributed		---	155	0.4	7	7
TOTALS		465	775	1	30	30

SILT FENCE & SILT FENCE MAINTENANCE (CATEGORY 0010)

STATION TO STATION	LOCATION	628.1504 LF	628.1520 MAINTENANCE LF
Sta. 8+50 to Sta. 9+48, LT	CTH E	120	360
Sta. 8+50 to Sta. 9+84, RT	CTH E	145	435
Sta. 10+23 to Sta. 11+75, RT	CTH E	160	480
Sta. 11+31 to Sta. 11+75, LT	CTH E	45	135
Sta. 18+70 to Sta. 19+66, RT	Water St.	120	360
Sta. 18+70 to Sta. 19+79, LT	Water St.	140	420
Undistributed		180	540
TOTALS		910	2,730

MOBILIZATIONS EROSION CONTROL & EMERGENCY EROSION CONTROL (CATEGORY 0010)

LOCATION	628.1905 MOBILIZATIONS EROSION CONTROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH
PROJECT 6987-01-70	5	2

628.2023 EROSION MAT CLASS II TYPE B (CATEGORY 0010)

STATION TO STATION	LOCATION	SY
Sta. 9+00 to Sta. 9+40, LT	CTH E	15
Sta. 9+10 to Sta. 9+65, RT	CTH E	60
Sta. 10+41 to Sta. 11+75, RT	CTH E	150
Sta. 18+95 to Sta. 19+23, LT	Water St.	5
Sta. 19+25 to Sta. 19+68, RT	Water St.	25
Undistributed		60
TOTAL		315

628.6005 TURBIDITY BARRIERS (CATEGORY 0010)

LOCATION	SY
South Abutment	25
North Abutment	20
Undistributed	10
TOTAL	55

628.7015 INLET PROTECTION TYPE C (CATEGORY 0010)

STATION TO STATION	LOCATION	EACH
Sta. 10+26, 20' LT	CTH E	1
Sta. 19+62.50, 21.6' LT	Water St.	1
TOTAL		2

628.7504 TEMPORARY DITCH CHECKS (CATEGORY 0010)

LOCATION	LF
UNDISTRIBUTED	50

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE NOTED.

3

634.0612 WOOD POSTS 4X6 INCH X 12 FT (CATEGORY 0010)

STATION	LOCATION	DESCRIPTION	EACH
Sta. 9+64, LT	CTH E	Object Marker	1
Sta. 9+80, RT	CTH E	Object Marker	1
Sta. 10+20, LT	CTH E	Object Marker	1
Sta.10+36, RT	CTH E	Object Marker	1
Sta. 19+62, 24' RT	Water St.	Stop Sign	1
TOTAL			5

637.0202 SIGNS REFLECTIVE TYPE II (CATEGORY 0010)

STATION	LOCATION	DESCRIPTION	SIGN	SF
Sta. 9+64, LT	CTH E	Object Marker	W5-52R	3
Sta. 9+80, RT	CTH E	Object Marker	W5-52L	3
Sta. 10+20, LT	CTH E	Object Marker	W5-52L	3
Sta.10+36, RT	CTH E	Object Marker	W5-52R	3
Sta. 19+62, 24'	Water St.	Stop Sign	R-1	5.2
TOTAL				17.2

638.2102 MOVING SIGNS TYPE II (CATEGORY 0010)

LOCATION	CURRENT LOCATION	PROPOSED LOCATION	DESCRIPTION	EACH
Water St.	Sta.19+78, 19' RT	Sta. 19+66, 27' RT	Street Sign	1

638.2602 REMOVING SIGNS TYPE II (CATEGORY 0010)

LOCATION	STATION	DESCRIPTION	EACH
CTH E	Before Pine Street	Narrow Bridge	1
CTH E	Sta.9+27, 15' RT	Weigh Limit 40 Ton	1
CTH E	Sta.10+33, 14' LT	Weigh Limit 40 Ton	1
CTH E	Sta.10+44, 28' LT	Stop Sign	1
CTH E	After Middleton Street	Narrow Bridge	1
TOTAL			5

642.5001 FIELD OFFICE TYPE B (CATEGORY 0010)

LOCATION	EACH
PROJECT 6987-01-70	1

TRAFFIC CONTROL (CATEGORY 0010)

LOCATION	643.0100 EACH	643.0420 BARRICADES TYPE III DAY	643.0705 WARNING LIGHTS TYPE A DAY	643.0900 SIGNS DAY	643.2000 DETOUR EACH	643.3000 DETOUR SIGNS DAY
PROJECT 6987-01-70	1	1,105	1,870	765	1	7,650

646.0106 PAVEMENT MARKING EPOXY 4-INCH (CATEGORY 0010)

LOCATION	STATION	DESCRIPTION	LF
CTH E	Sta. 8+50 to. Sta. 11+75	White Edgeline	552
CTH E	Sta. 8+50 to. Sta. 11+75	Double Yellow Centerline	650
TOTAL			1,202

CONSTRUCTION STAKING

CATEGORY	LOCATION	650.4000 STORM SEWER EACH	650.4500 SUBGRADE LF	650.5000 BASE LF	650.5500 CURB GUTTER & CURB & GUTTER LF	650.6500 STRUCTURE LAYOUT LS	650.9910 SUPPLEMENTARY CONTROL LS	650.9920 SLOPE STAKES LF
0010	CTH E	1	325	325	---	---	1	325
0010	Water St.	1	116	116	142	---	---	116
0020	B-21-27	---	---	---	---	1	---	---
TOTALS		2	441	441	142	1	1	441

690.0150 SAWING ASPHALT (CATEGORY 0010)

STATION	LOCATION	LF
Sta. 8+50	CTH E	24
Sta. 11+75	CTH E	28
Sta. 18+70	Water St.	17
TOTAL		69

690.0250 SAWING CONCRETE (CATEGORY 0010)

STATION	LOCATION	LF
Sta. 11+75	CTH E, Sidewalk	3

999.1000.S SEISMOGRAPH (CATEGORY 0020)

LOCATION	LS
PROJECT 6987-01-70	1

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE NOTED.

R/W PROJECT NUMBER	SHEET NUMBER	TOTAL SHEETS
6987-01-00	4.1	1
FEDERAL PROJECT NUMBER		

PLAT OF RIGHT-OF-WAY REQUIRED FOR

REDGRANITE-PINE RIVER

PINE RIVER BRIDGE, TOWN OF LEON

CTH E — WAUSHARA COUNTY

CONSTRUCTION PROJECT NUMBER
6987-01-70

CONVENTIONAL ABBREVIATIONS

ACCESS POINT/ DRIVEWAY CONNECTION	AP	REFERENCE LINE	R/L
ACCESS RIGHTS	AR	RELEASE OF RIGHTS	ROR
ACRES	AC.	REMAINING	REM.
AND OTHERS	ET.AL.	RIGHT-OF-WAY	R/W
CENTERLINE	C/L	SECTION	SEC.
CERTIFIED SURVEY MAP	CSM	STATION	STA.
CORNER	COR.	TEMPORARY LIMITED EASEMENT	TLE
DOCUMENT	DOC.	VOLUME	V.
EASEMENT	EASE.		
HIGHWAY EASEMENT	H.E.		
LAND CONTRACT	LC		
MONUMENT	MON.		
PAGE	P.		
PERMANENT LIMITED EASEMENT	PLE		
PROPERTY LINE	PL		
RECORDED AS	(100')		

CURVE DATA

LONG CHORD	LCH
LONG CHORD BEARING	LCB
RADIUS	R
DEGREE OF CURVE	D
CENTRAL ANGLE OR DELTA	DELTA
LENGTH OF CURVE	L
TANGENT	TAN

CONVENTIONAL SYMBOLS

FOUND IRON PIPE/PIN (1" UNLESS NOTED); R/W MONUMENT (SET); R/W STANDARD (SET); SIGN; SECTION CORNER MONUMENT; SECTION CORNER SYMBOL; FEE (HATCH VARIES); TEMPORARY LIMITED EASEMENT; PERMANENT LIMITED EASEMENT; R/W BOUNDARY POINT; PARCEL NUMBER; UTILITY PARCEL NUMBER; SIGN NUMBER (OFF PREMISE); BUILDING

PROPOSED R/W LINE; EXISTING H.E. LINE; PROPERTY LINE; LOT & TIE LINES; SLOPE INTERCEPTS; CORPORATE LIMITS; NO ACCESS (BY PREVIOUS ACQUISITION/CONTROL); NO ACCESS (BY ACQUISITION); NO ACCESS (BY STATUTORY AUTHORITY); SECTION LINE; QUARTER LINE; SIXTEENTH LINE; EXISTING CENTERLINE; PROPOSED REFERENCE LINE; PARALLEL OFFSET

CONVENTIONAL UTILITY SYMBOLS

WATER —W—; GAS —G—; TELEPHONE —T—; OVERHEAD TRANSMISSION LINES —OH—; ELECTRIC —E—; CABLE TELEVISION —TV—; FIBER OPTIC —FO—

SANITARY SEWER —SAN—; STORM SEWER —SS—; NON COMPENSABLE / COMPENSABLE: POWER POLE; TELEPHONE POLE; TELEPHONE PEDESTAL; ELECTRIC TOWER

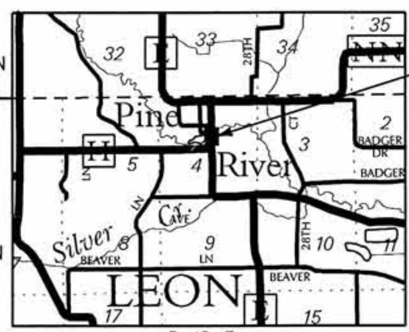
PARCEL 3

COURSE	BEARING	DISTANCE	Y	X
100-129	S 00°07'29" E	1565.28	163161.055	437176.296
129-130	S 89°57'02" W	17.57	161595.781	437179.706
130-131	S 06°10'34" W	66.26	161595.766	437162.139
131-132	S 44°58'08" W	28.75	161529.891	437155.010
132-133	S 77°45'14" W	50.25	161509.551	437134.692
133-134	S 47°59'57" W	11.91	161498.892	437085.586
134-135	S 05°35'40" E	17.97	161490.920	437076.732
135-136	N 84°24'20" E	7.16	161473.033	437078.484
136-101	N 83°27'52" E	94.96	161473.731	437085.607
101-129	N 00°07'29" W	111.24	161484.539	437179.948

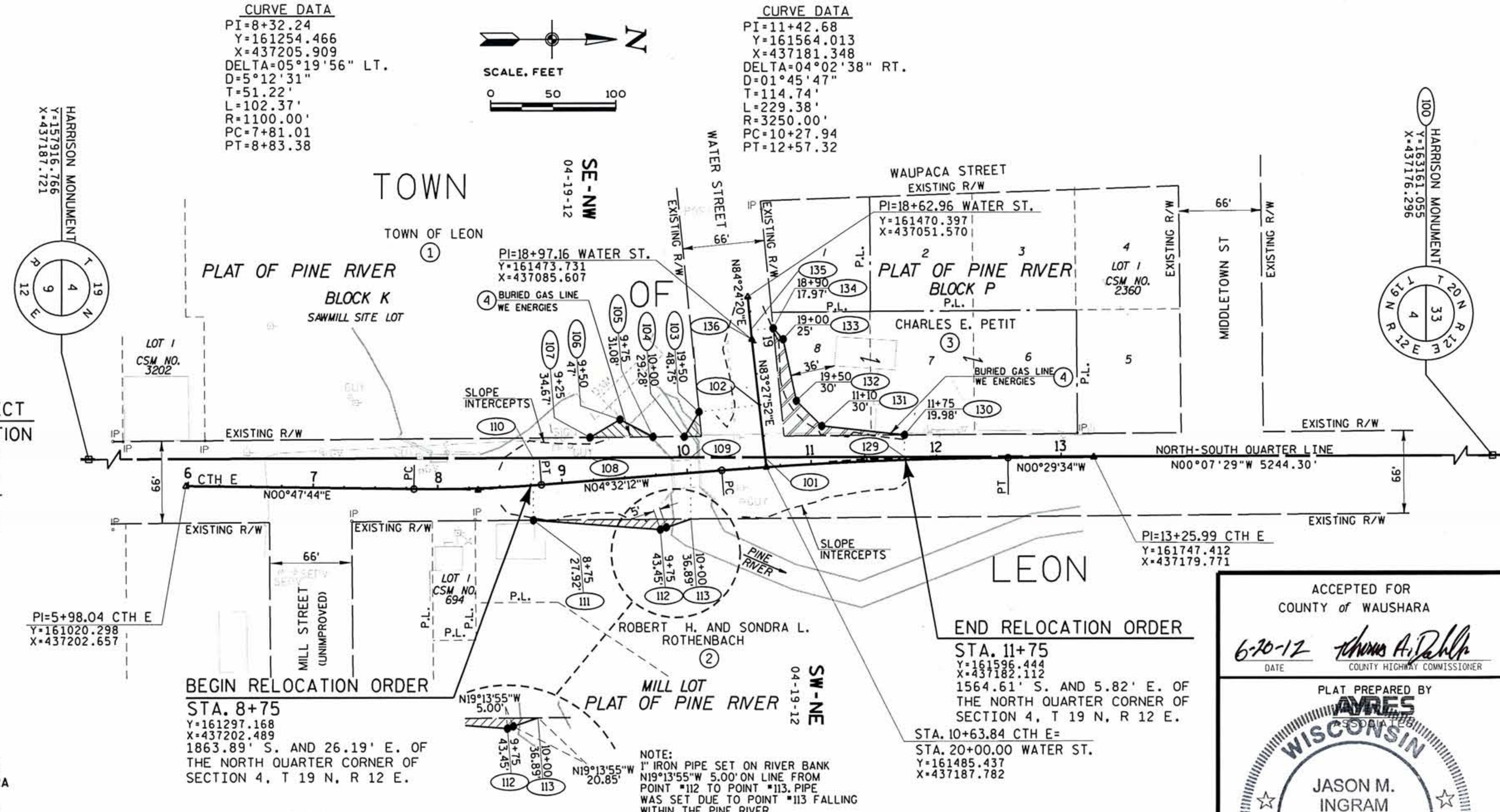
SCHEDULE OF LANDS AND INTERESTS REQUIRED

PARCEL NO.	OWNERSHIP	INTEREST REQUIRED	R/W (SQUARE FEET) NEW	EXISTING	TOTAL
1	TOWN OF LEON	FEE	489	----	489
2	ROBERT H. AND SONDRA L. ROTHENBACH	FEE	523	----	523
3	CHARLES E. PETIT	FEE	1454	----	1454
4	WE ENERGIES	RELEASE	----	----	----

OWNER'S NAMES ARE SHOWN FOR REFERENCE PURPOSES ONLY AND ARE SUBJECT TO CHANGE PRIOR TO THE TRANSFER OF LAND INTERESTS TO THE COUNTY.



TOTAL NET LENGTH OF RELOCATION ORDER=0.057 MILES



NOTES

COORDINATES AND BEARINGS ON THIS PLAT ARE ORIENTED TO THE WISCONSIN COUNTY COORDINATE SYSTEM, WAUSHARA COUNTY ZONE, NAD 83 (2007) ADJUSTMENT. THE COORDINATES SHOWN ARE GRID COORDINATES AND ARE TO BE USED AS GRID OR GROUND VALUES ON THIS PLAT.

RIGHT-OF-WAY MONUMENTS ARE TYPE 2 (1"x24" IRON PIPE WEIGHING 1.13 LBS./LN.FT.) AND WILL BE PLACED PRIOR TO THE COMPLETION OF THE PROJECT. -RIGHT-OF-WAY BOUNDARIES ARE DEFINED WITH COURSES OF THE PERIMETER OF THE HIGHWAY LANDS REFERENCED TO THE U.S. PUBLIC LAND SURVEY SYSTEM OR OTHER SURVEYS OF PUBLIC RECORD.

EXISTING RIGHT-OF-WAY FOR CTH E AND WATER STREET WAS DETERMINED FROM THE PLAT OF PINE RIVER.

PARCEL 1

COURSE	BEARING	DISTANCE	Y	X
100-101	S 00°07'29" E	1676.52	163161.055	437176.296
101-102	S 83°27'52" W	42.12	161484.539	437179.948
102-103	S 06°32'08" E	48.75	161479.746	437138.107
103-104	S 59°05'31" E	23.07	161431.312	437143.655
104-105	S 00°25'30" E	25.06	161419.463	437163.446
105-106	S 27°57'30" W	29.64	161394.400	437163.632
106-107	S 30°47'17" E	27.87	161368.218	437149.736
107-108	N 89°52'31" E	16.25	161344.272	437164.004
108-101	N 00°07'29" W	140.23	161344.307	437180.254

PARCEL 2

COURSE	BEARING	DISTANCE	Y	X
100-109	S 00°07'29" E	1736.47	163161.055	437176.296
109-110	S 00°07'29" E	125.53	161424.590	437180.079
110-111	N 89°52'31" E	49.99	161299.056	437180.352
111-112	N 04°17'16" E	101.41	161299.165	437230.340
112-113	N 19°13'55" W	25.85	161400.294	437237.922
113-109	S 89°52'31" W	49.33	161424.697	437229.409

REVISION DATE

ACCEPTED FOR COUNTY of WAUSHARA

6-20-12 — Thomas A. Dahlk
DATE — COUNTY HIGHWAY COMMISSIONER

PLAT PREPARED BY AYRES ASSOCIATES

WISCONSIN JASON M. INGRAM S-2630 OCONTO FALLS, WI LAND SURVEYOR

5-10-12
JASON M. INGRAM, R.L.S. S-2630 — DATE

E

FILE NAME : R:\Survey\42-0800 Waushara E Bridge\Realestate\Files from EC 2-14-12\040101_rp.dgn — PLOT DATE : 5/10/2012 — PLOT BY : ingramj — PLOT NAME : — PLOT SCALE : 1:100 — WISDOT/CADDS SHEET 50

NOTES:

FOR GUARDRAIL LAYOUT SEE ALIGNMENT CONTROLS AND TIE SHEET.

FOR RETAINING WALL LAYOUT SEE RETAINING WALL LAYOUT SHEET.

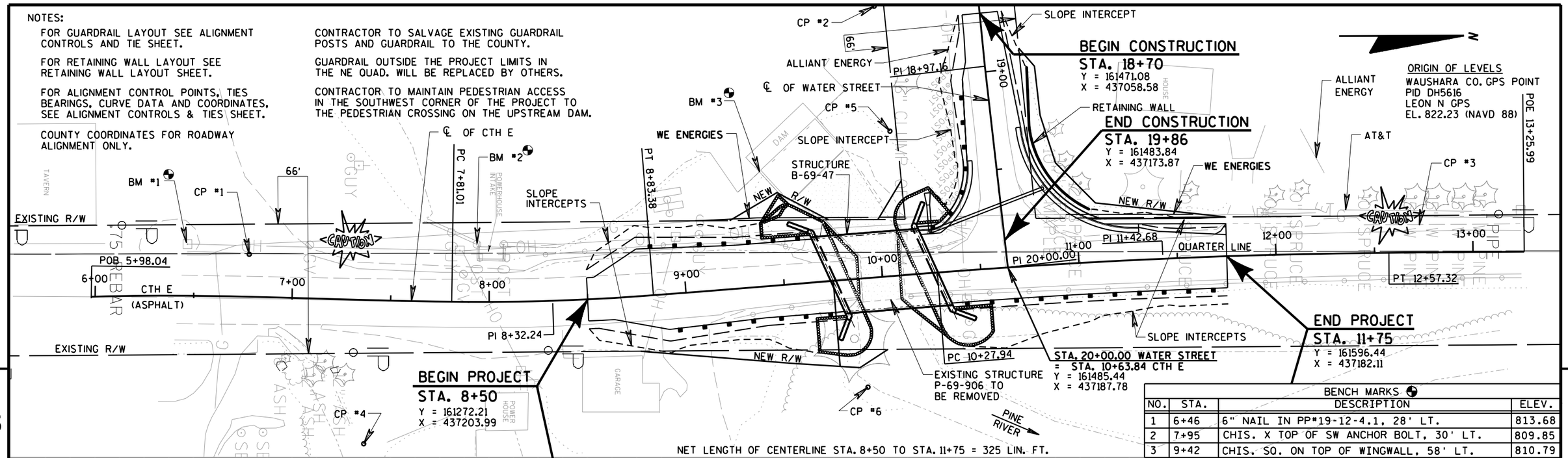
FOR ALIGNMENT CONTROL POINTS, TIES BEARINGS, CURVE DATA AND COORDINATES, SEE ALIGNMENT CONTROLS & TIES SHEET.

COUNTY COORDINATES FOR ROADWAY ALIGNMENT ONLY.

CONTRACTOR TO SALVAGE EXISTING GUARDRAIL POSTS AND GUARDRAIL TO THE COUNTY.

GUARDRAIL OUTSIDE THE PROJECT LIMITS IN THE NE QUAD. WILL BE REPLACED BY OTHERS.

CONTRACTOR TO MAINTAIN PEDESTRIAN ACCESS IN THE SOUTHWEST CORNER OF THE PROJECT TO THE PEDESTRIAN CROSSING ON THE UPSTREAM DAM.



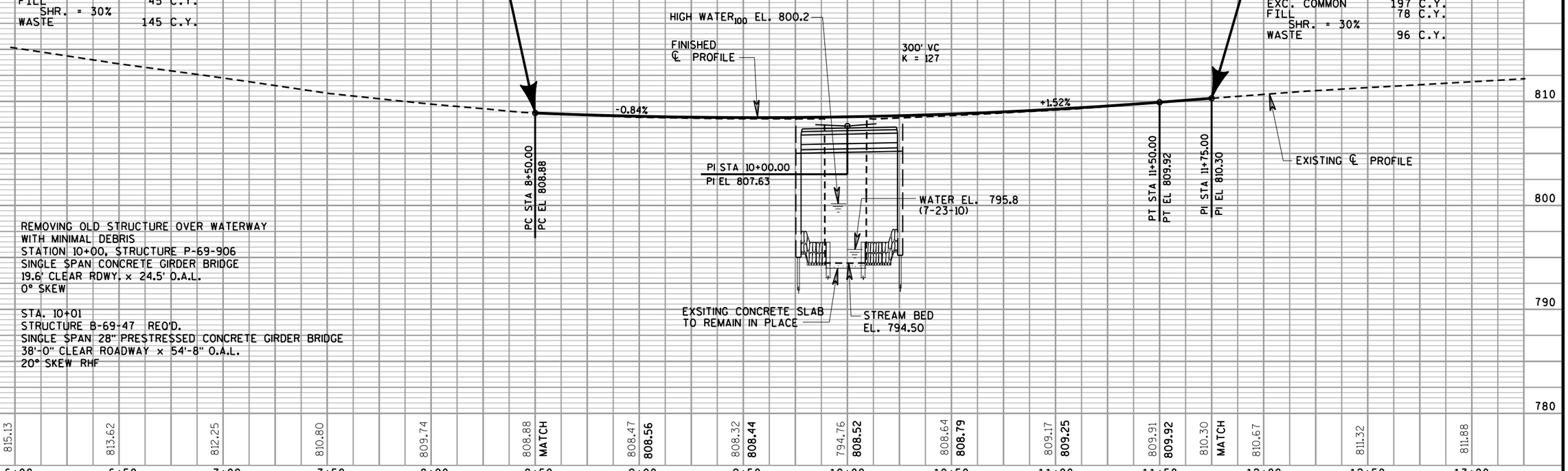
BENCH MARKS			
NO.	STA.	DESCRIPTION	ELEV.
1	6+46	6" NAIL IN PP#19-12-4.1, 28' LT.	813.68
2	7+95	CHIS. X TOP OF SW ANCHOR BOLT, 30' LT.	809.85
3	9+42	CHIS. SQ. ON TOP OF WINGWALL, 58' LT.	810.79

EARTHWORK SUMMARY

STA.8+50 TO STA. 9+73.67
EXC. COMMON 203 C.Y.
FILL 45 C.Y.
SHR. = 30%
WASTE 145 C.Y.

EARTHWORK SUMMARY

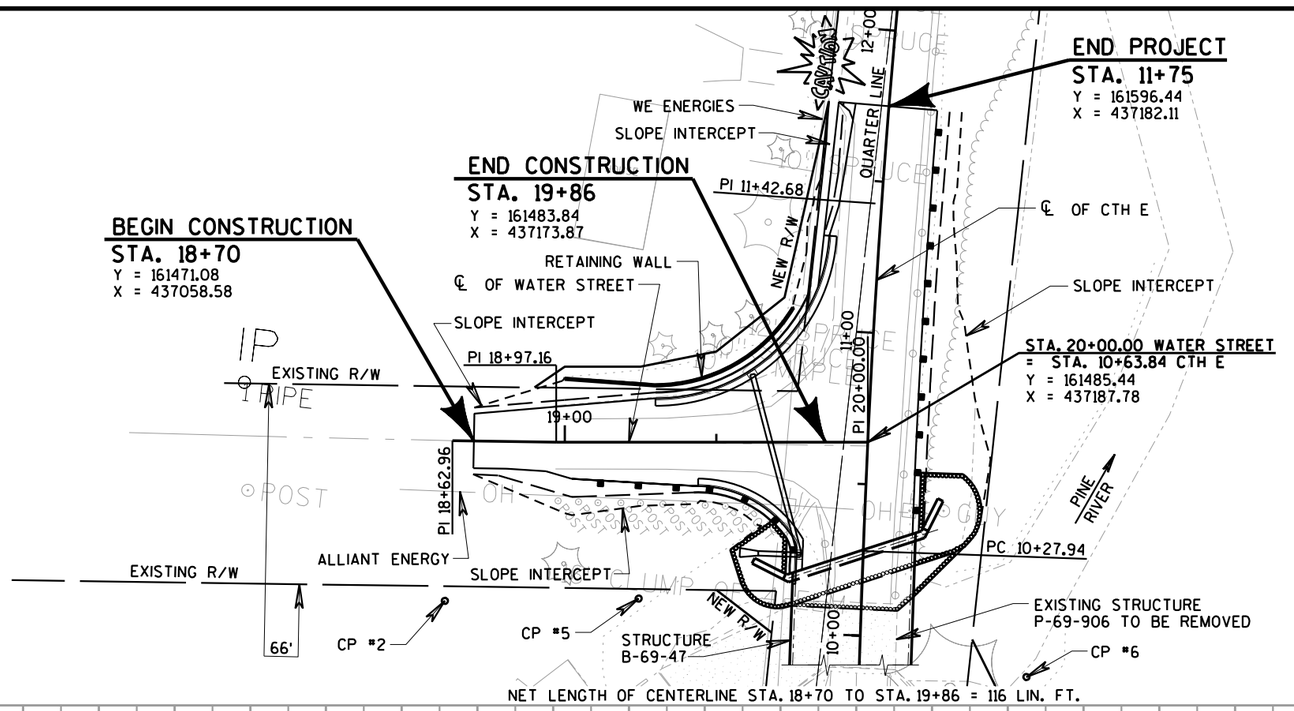
STA. 10+28.33 TO STA. 11+75
EXC. COMMON 197 C.Y.
FILL 78 C.Y.
SHR. = 30%
WASTE 96 C.Y.



REMOVING OLD STRUCTURE OVER WATERWAY
WITH MINIMAL DEBRIS
STATION 10+00, STRUCTURE P-69-906
SINGLE SPAN CONCRETE GIRDER BRIDGE
19.6' CLEAR RDWY. x 24.5' O.A.L.
0° SKEW

STA. 10+01
STRUCTURE B-69-47 REQ'D.
SINGLE SPAN 28" PRESTRESSED CONCRETE GIRDER BRIDGE
38'-0" CLEAR ROADWAY x 54'-8" O.A.L.
20° SKEW RHF

PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	PLAN AND PROFILE - CTH E	SCALE, FEET 0 25 50	SHEET 20	E



NOTES:

FOR ALIGNMENT CONTROL POINTS, BEARINGS, CURVE DATA AND COORDINATES, SEE ALIGNMENT CONTROLS & TIES SHEET.

COUNTY COORDINATES FOR ROADWAY ALIGNMENT ONLY.

CONTRACTOR TO SALVAGE EXISTING GUARDRAIL POSTS AND GUARDRAIL TO THE COUNTY.

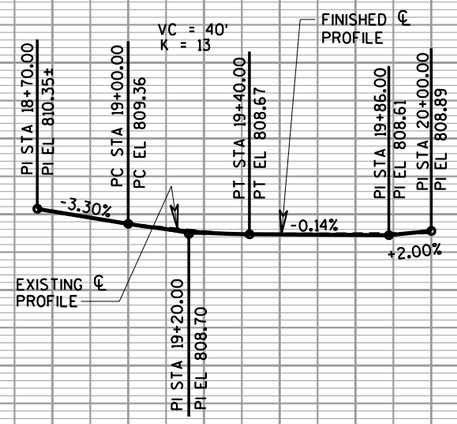
FOR GUARDRAIL LAYOUT SEE ALIGNMENT CONTROLS AND TIE SHEET.

FOR RETAINING WALL LAYOUT SEE RETAINING WALL LAYOUT SHEET.

GUARDRAIL OUTSIDE THE PROJECT LIMITS IN THE NE QUAD. WILL BE REPLACED BY OTHERS.

EARTHWORK SUMMARY

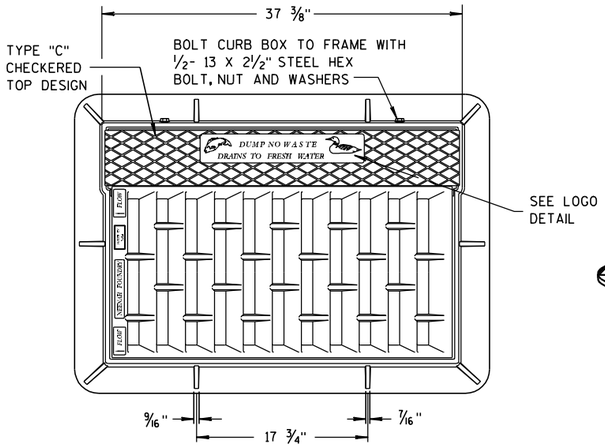
STA. 18+70 TO STA. 19+86
EXC. COMMON 227 C.Y.
FILL 8 C.Y.
SHR. = 30%
WASTE 217 C.Y.



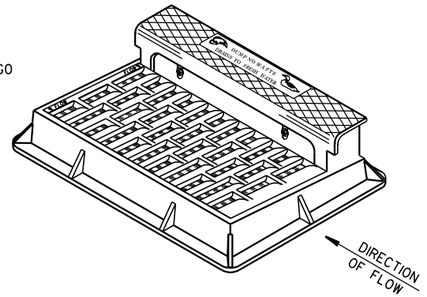
PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	PLAN AND PROFILE - WATER STREET	SCALE, FEET 0 25 50	SHEET 21	E

Standard Detail Drawing List

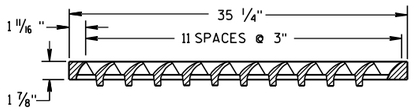
08A05-18A	INLET COVERS TYPE A, H, A-S, & H-S
08C07-01	INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT
08D01-17	CONCRETE CURB, CONCRETE CURB AND GUTTER AND TIES
08D05-14A	CURB RAMPS TYPES 1 AND 1-A
08D05-14B	CURB RAMPS TYPES 2 AND 3
08D05-14C	CURB RAMPS TYPE 4A
08D05-14D	CURB RAMPS TYPE 4B
08D05-14E	CURB RAMPS TYPES 5, 6, 7A, 7B & 8
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
08E11-02	TURBIDITY BARRIER
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
09A01-12A	AT-GRADE SIDE ROAD INTERSECTION, TYPES "B1", "B2", "C" AND D AND TEE INTERSECTION BYPASS LANE
12A03-10	NAME PLATE (STRUCTURES)
14B15-07A	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-07B	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-07C	STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS
14B18-06A	STEEL PLATE BEAM GUARD, CLASS "A" (AT BRIDGES, OBSTACLES AND SIDEROADS/DRIVEWAYS)
14B20-10A	STEEL THRIE BEAM STRUCTURE APPROACH
14B20-10E	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO BRIDGE RAILING TYPES "F" AND "W"
14B24-07A	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B24-07B	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B24-07C	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
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)
14B45-02A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-02B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-02C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-02G	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-04A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-04B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-04C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C03-01	BARRICADES AND SIGNS FOR SIDEROAD CLOSURES
15C06-05	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-14A	PAVEMENT MARKING (MAINLINE)

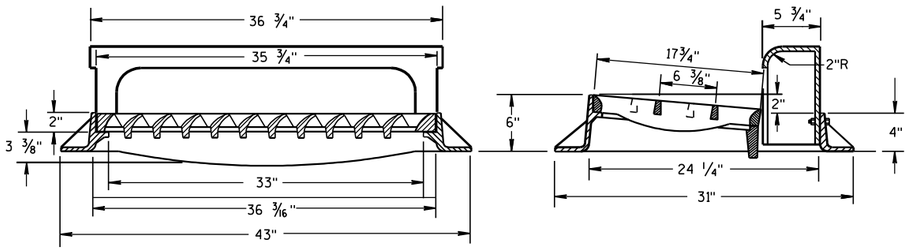


NOTE:
GRATE IS REVERSIBLE.



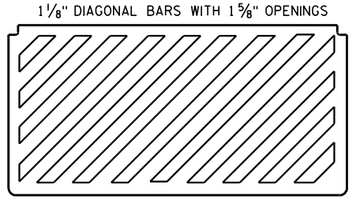
NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"





TYPE "H"

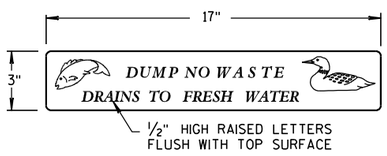
(APPROXIMATE WEIGHT 441 LBS.)
FRAME..... 181 LBS.
GRATE..... 146 LBS.
CURB BOX..... 114 LBS.



SPECIAL GRATE FOR TYPE "H" COVER

(MEASURES 35 1/4" X 17 3/4" X 2")
(APPROXIMATE WEIGHT 159 LBS.)
GRATE..... 159 LBS.

(NOTED AS TYPE H-S ON DRAINAGE TABLE)



LOGO DETAIL

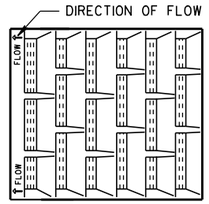
GENERAL NOTES

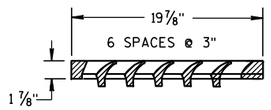
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

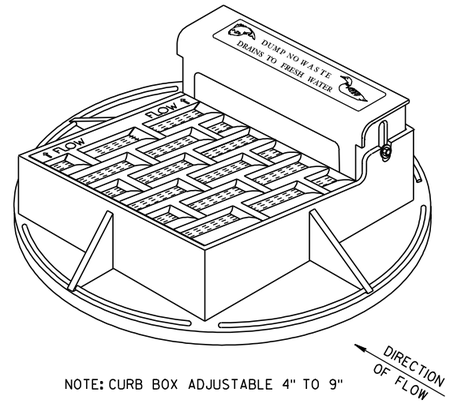
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

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

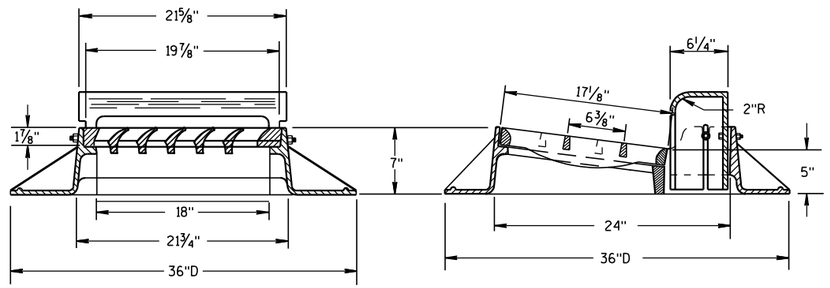
THE ACTUAL WEIGHT OF COVERS MAY VARY WITHIN 5 PERCENT, PLUS OR MINUS, OF THE APPROXIMATE WEIGHT.





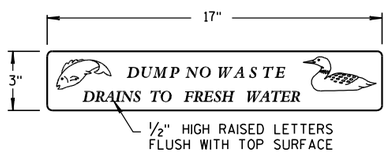


NOTE: CURB BOX ADJUSTABLE 4" TO 9"



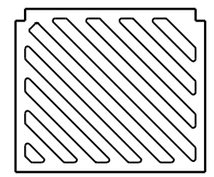
TYPE "A"

(APPROXIMATE WEIGHT 340 LBS.)
FRAME..... 185 LBS.
GRATE..... 71 LBS.
CURB BOX..... 84 LBS.



LOGO DETAIL

NOTE:
GRATE IS REVERSIBLE.



SPECIAL GRATE FOR TYPE "A" COVER

(MEASURES 19 3/4" X 17" X 1 7/8"
GRATE..... 84 LBS.

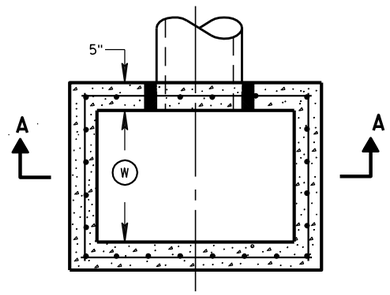
(NOTED AS TYPE A-S ON DRAINAGE TABLE)

INLET COVERS
TYPE A, H, A-S, & H-S

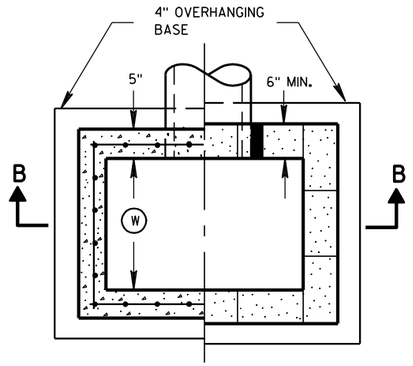
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6/5/2012 DATE
/S/ Jerry H. [illegible]
ROADWAY STANDARDS ENGINEER
FHWA

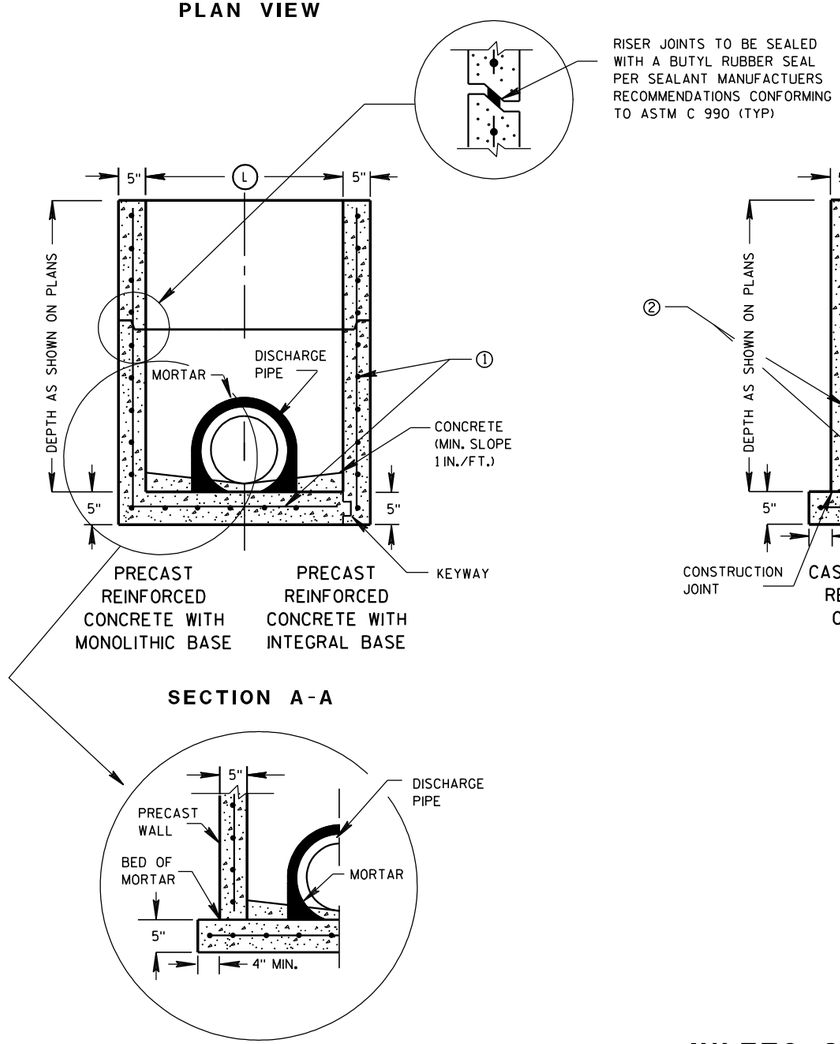
6
S.D.D. 8 A 5-18a



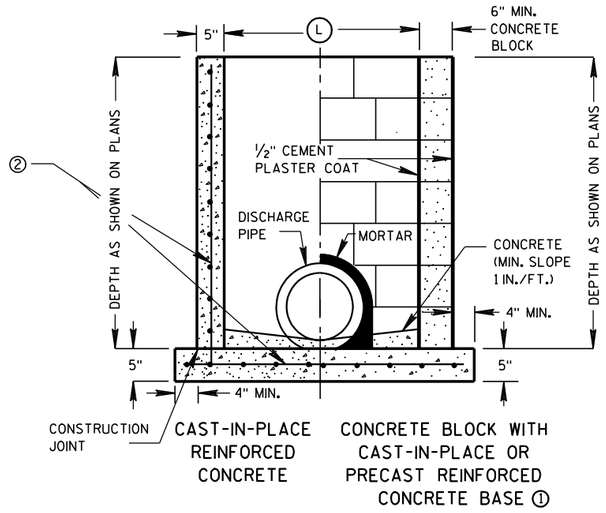
PLAN VIEW



PLAN VIEW



SECTION A-A



SECTION B-B

SEPERATE PRECAST REINFORCED CONCRETE BASE OPTION

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.

UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST INLET UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR UNDERGROUND DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF ASTM C 913.

ALL DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 3X3-L", "CATCH BASINS 4-B", "INLETS 2X3-H", ETC. THE FIRST NUMBERS DESIGNATES THE SIZE OF THE STRUCTURE, AND THE FOLLOWING LETTER DESIGNATES THE TYPE OF COVER TO BE USED TO COMPRISE THE COMPLETE UNIT.

BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6 INCHES IN DEPTH, WHICH MEETS THE REQUIREMENTS OF GRANULAR BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

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

PRECAST REINFORCED RISERS SHALL HAVE A TONGUE AND GROOVE JOINT WITH TONGUE UP OR DOWN.

4" OVERHANGING BASES ARE REQUIRED FOR CAST-IN-PLACE REINFORCED CONCRETE AND CONCRETE BLOCK INSTALLATIONS. 4" OVERHANG IS REQUIRED WHEN SEPERATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

MAXIMUM INSIDE PIPE DIAMETER DETERMINED BY 3 INCH CLEARANCE ON EACH SIDE OF THE OUTSIDE WALL OF THE PIPE. SEE DETAIL "A". ASSUMES PIPE ENTERS PERPENDICULAR TO THE STRUCTURE.

① FOR PRECAST INLETS PROVIDE REINFORCING STEEL IN ACCORDANCE TO ASTM C 913.

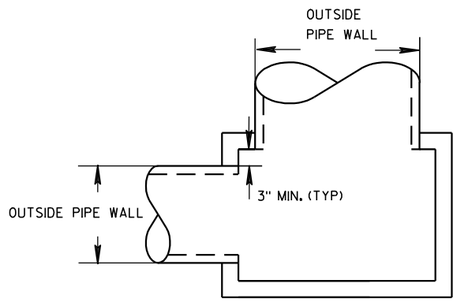
② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

INLET COVER MATRIX

INLET SIZE		INLET COVER TYPE	ALL A'S	ALL B'S	BW	F	ALL H'S	S	T	V	WM
	WIDTH (W) (FT)	LENGTH (L) (FT)									
2X2-FT	2	2	X	X				X		X	
2X2.5-FT	2	2.5			X			X	X	X	X
2X3-FT	2	3					X				
2.5X3-FT	2.5	3				X					

PIPE MATRIX

INLET SIZE	MAXIMUM INSIDE PIPE DIAMETER	
	WIDTH (IN)	LENGTH (IN)
2X2-FT	12	12
2X2.5-FT	12	18
2X3-FT	12	24
2.5X3-FT	18	24



DETAIL "A"

INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6/5/2012 — DATE
/S/ Jerry H. Zoda — ROADWAY STANDARDS D ENGINEER
FHWA

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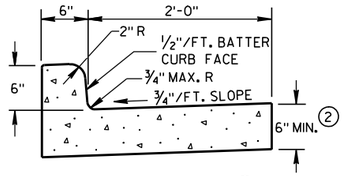
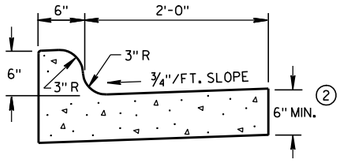
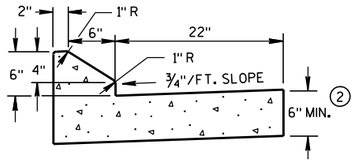
S.D.D. 8 C 7-1



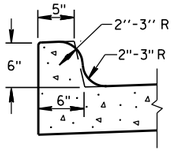
TYPES A & D (1)



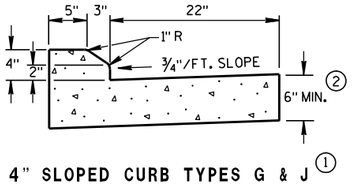
TYPES K & L (1)



6" SLOPED CURB TYPES G & J (1)

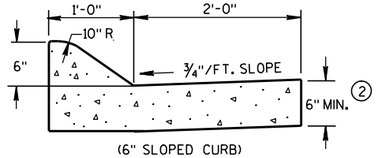


OPTIONAL CURB SHAPE
FOR TYPES K & L (1)

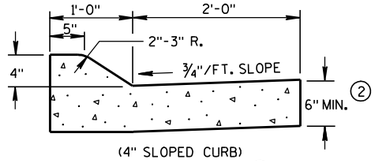


4" SLOPED CURB TYPES G & J (1)

CONCRETE CURB & GUTTER 30"

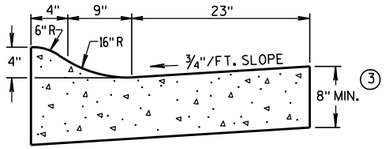


(6" SLOPED CURB)



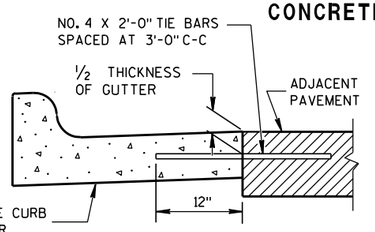
(4" SLOPED CURB)

TYPES A & D (1)

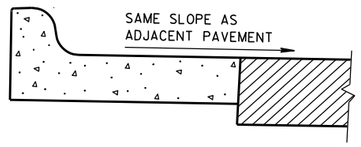


4" SLOPED CURB TYPES R & T (1) (4)

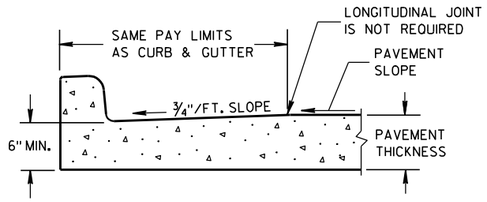
CONCRETE CURB & GUTTER 36"



TYPICAL TIE BAR LOCATION (1)



REVERSE SLOPE GUTTER (5)
(TYPICAL FOR ALL CURB & GUTTER TYPES)



PARTIAL SECTION OF PAVEMENT
WITH INTEGRAL CURB & GUTTER

GENERAL NOTES

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

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

INTEGRAL CURB & GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB & GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE. A LONGITUDINAL CONSTRUCTION JOINT IS NOT REQUIRED WITH INTEGRAL CURB AND GUTTER.

WHERE THE TRANSVERSE JOINTS IN THE PAVEMENT ARE REQUIRED TO BE SEALED, THE JOINTS IN THE INTEGRAL CURB AND GUTTER SHALL BE SEALED TO THE FACE OF CURB WITH THE SAME TYPE OF SEALANT. THE COST OF FURNISHING AND INSTALLING THIS SEALANT SHALL BE INCIDENTAL TO THE ITEM CONCRETE CURB AND GUTTER.

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

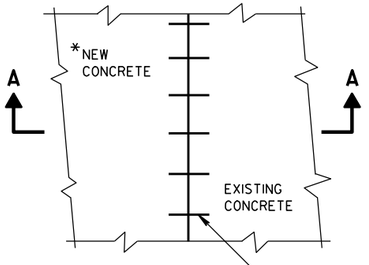
(1) TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, G, K AND R.

(2) THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.

(3) THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.

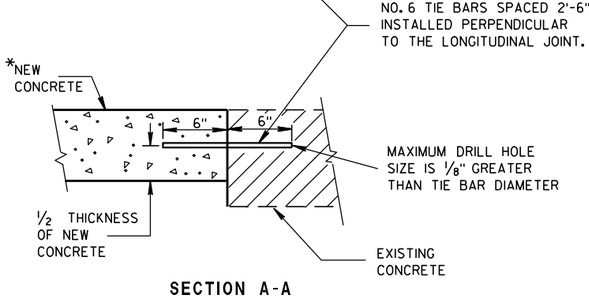
(4) THE FACE OF CURB IS 6" FROM THE BACK OF CURB.

(5) WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.



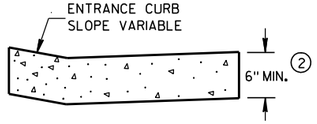
PLAN VIEW

*NEW CURB & GUTTER, SURFACE DRAINS, CONCRETE PAVEMENT OR OTHER NEW CONCRETE.

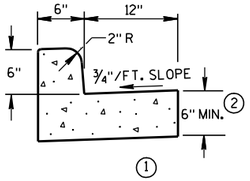


SECTION A-A

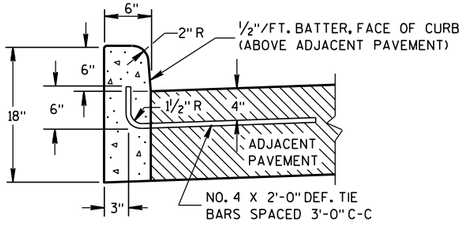
TIE BARS DRILLED
INTO EXISTING PAVEMENT



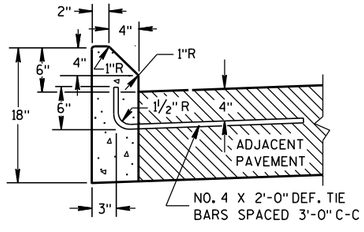
DRIVEWAY ENTRANCE CURB
(WHEN DIRECTED BY THE ENGINEER)



(1)
TYPES A & D
CONCRETE CURB & GUTTER 18"

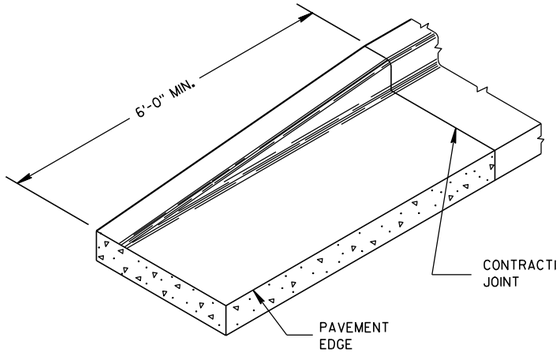


(1)
TYPES A & D



(1)
TYPES G & J

CONCRETE CURB



END SECTION CURB & GUTTER

CONCRETE CURB, CONCRETE CURB & GUTTER AND TIES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
9/4/08 DATE
/S/ Jerry H. [illegible]
ROADWAY STANDARDS ENGINEER
FHWA

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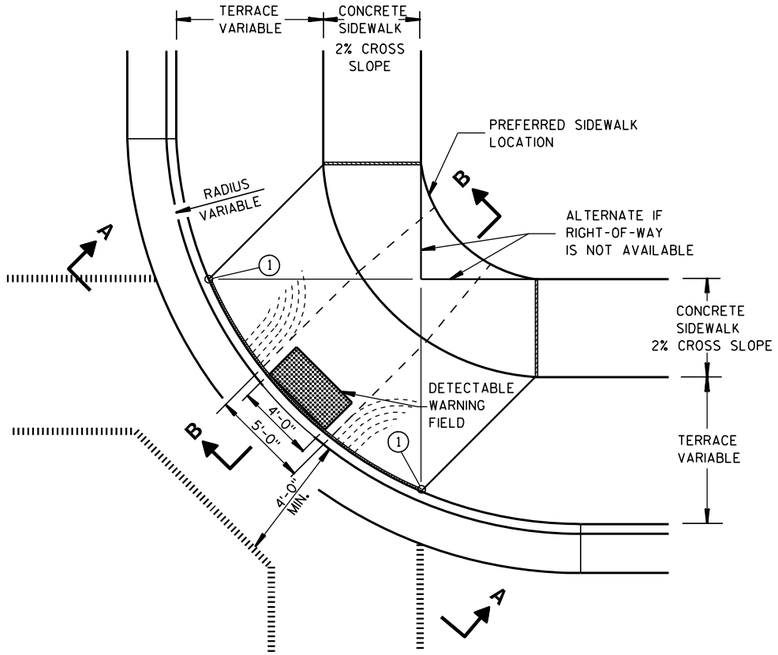
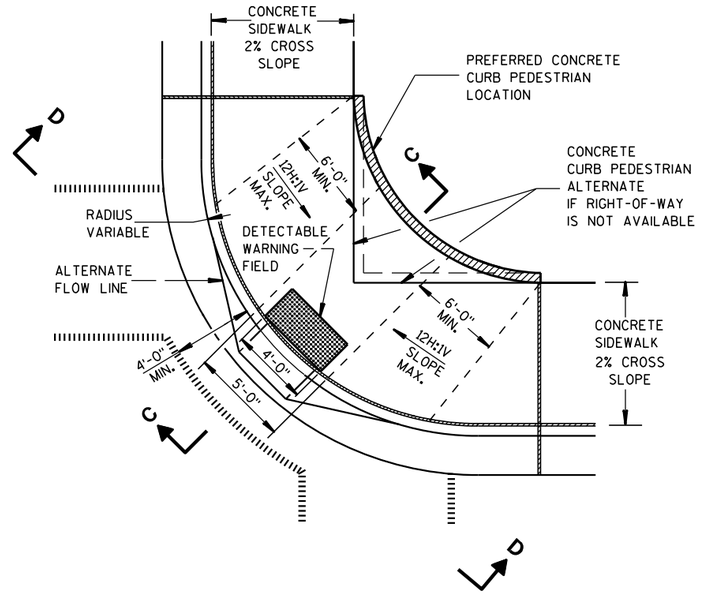
S.D.D. 8 D 1-17



PLAN VIEW

TYPE 1 RAMP

(CENTER OF CORNER RADIUS)



PLAN VIEW

TYPE 1-A RAMP

(NO TERRACE)

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.

RAMPS SHALL BE BUILT AT 12H:1V OR FLATTER. WHEN NECESSARY, THE SIDEWALK ELEVATION MAY BE LOWERED TO MEET THE HIGH POINT ON THE RAMP.

TYPE 1 RAMPS SHALL HAVE A NORMAL SIDEWALK APRON AND CURB ON BOTH SIDES OF RAMP.

DETECTABLE WARNING FIELD SHALL BE MEASURED AND PAID BY THE SQUARE FOOT AS "CURB RAMP DETECTABLE WARNING FIELD". THE CONCRETE PEDESTRIAN CURB, IF NEEDED, SHALL BE MEASURED AND PAID BY THE LINEAL FOOT AS "CONCRETE CURB PEDESTRIAN". CONCRETE SIDEWALK IN THE CURB RAMP AREA SHALL BE MEASURED AND PAID BY THE SQUARE FOOT AS CONCRETE SIDEWALK, INCLUDING THE AREA UNDER THE DETECTABLE WARNING FIELD.

SELECT CURB RAMP DETECTABLE WARNING FIELD MATERIALS AND DEVICES FROM THE DEPARTMENT'S APPROVED MATERIALS LIST. THE COLOR OF THE DETECTABLE WARNING FIELD IS SPECIFIED ELSEWHERE AND IS INCIDENTAL TO THE BID ITEM OF "CURB RAMP DETECTABLE WARNING FIELD".

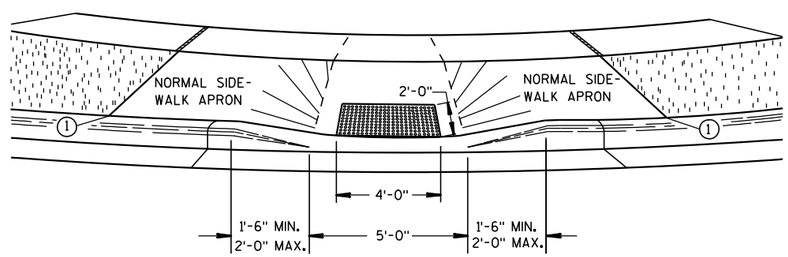
SURFACE TEXTURE OF THE RAMP SHALL BE OBTAINED BY COARSE BROOMING TRANSVERSE TO THE SLOPE OF THE RAMP.

(1) THIS POINT IS AN EXTENSION OF OUTSIDE EDGE OF APPROACHING SIDEWALK WHERE IT MEETS THE BACK OF CONCRETE CURB.

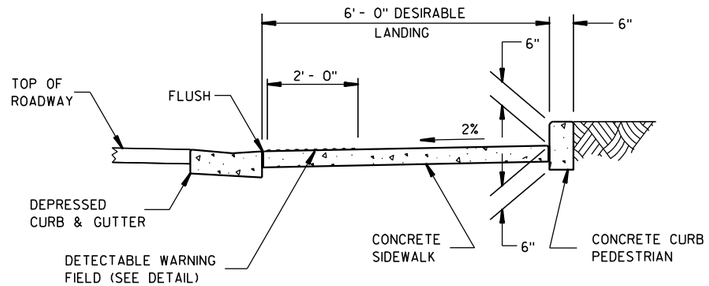
(2) GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. PROVIDE DRAINAGE AWAY FROM CURB RAMP AT GUTTER FLAG INTERFACE.

LEGEND

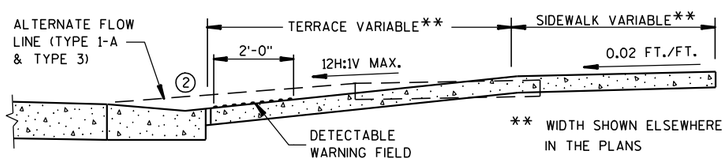
- ½" EXPANSION JOINT-SIDEWALK
- CONTRACTION JOINT FIELD LOCATED
- PAVEMENT MARKING CROSSWALK (WHITE)
- ALTERNATIVE LAYOUT



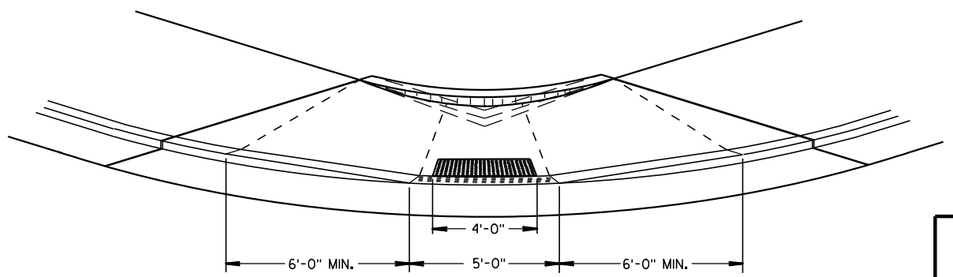
VIEW A-A



SECTION C-C



SECTION B-B



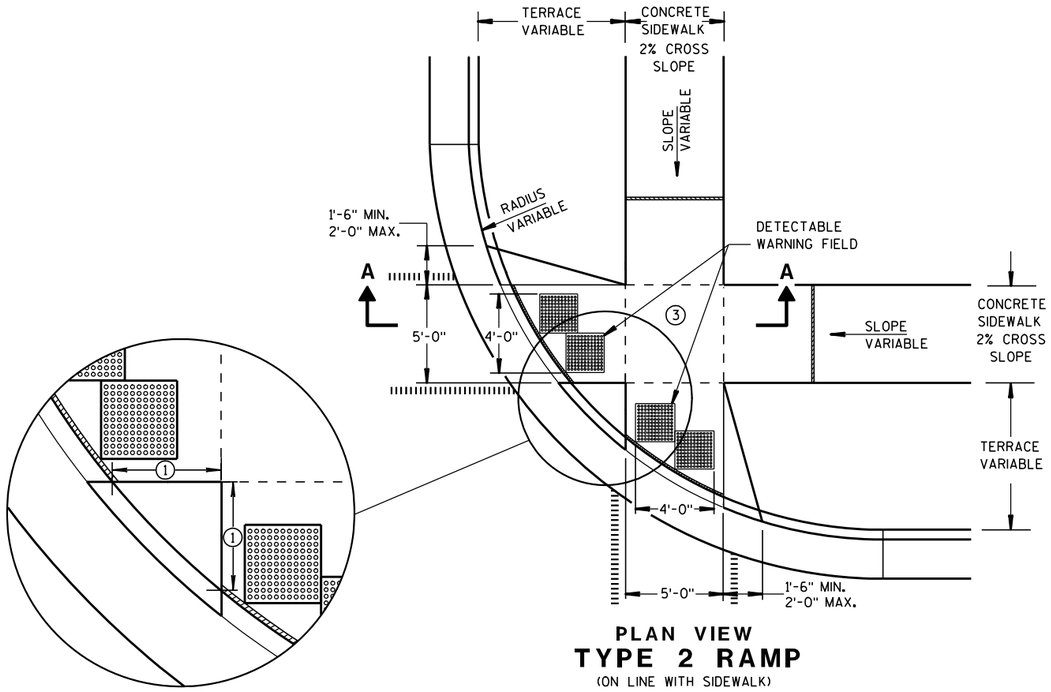
VIEW D-D

CURB RAMPS TYPES 1 AND 1-A

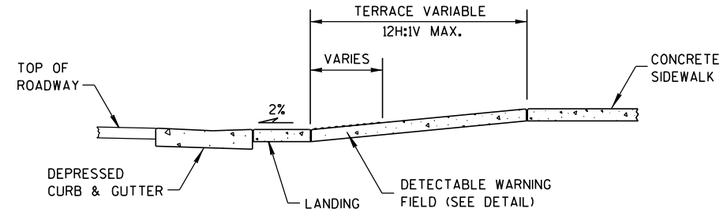
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

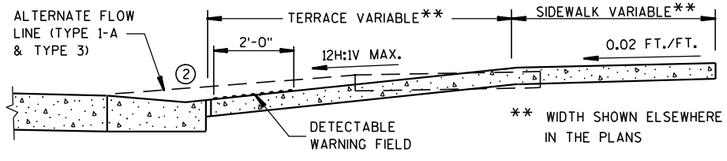
S.D.D. 8 D 5-14a



PLAN VIEW
TYPE 2 RAMP
(ON LINE WITH SIDEWALK)



SECTION A-A



SECTION B-B

GENERAL NOTES

USE THE TYPE 3 RAMP ONLY WHEN A TYPE 1 OR TYPE 2 CANNOT BE ACHIEVED BECAUSE OF FIELD CONDITIONS.

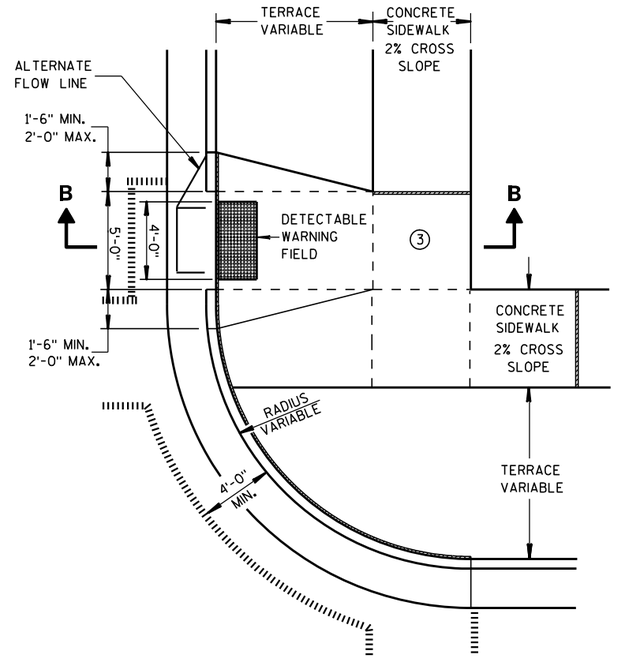
(1) WHEN THIS DISTANCE IS LESS THAN 6'-0" IT MAY BE DIFFICULT TO ACHIEVE A 12H:1V SLOPE, OR FLATTER, ON THE RAMP. REDUCE CURB HEIGHT IN TRIANGLE AREA TO ACHIEVE 12H:1V SLOPE, OR FLATTER, ON RAMP. 2" MINIMUM CURB HEIGHT.

(2) GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. PROVIDE DRAINAGE AWAY FROM CURB RAMP AT GUTTER FLAG INTERFACE.

(3) PROVIDE LANDING AT TOP OF RAMP WITH NO MORE THAN 2% SLOPE IN ANY DIRECTION.

LEGEND

- ½" EXPANSION JOINT-SIDEWALK
- CONTRACTION JOINT FIELD LOCATED
- PAVEMENT MARKING CROSSWALK (WHITE)
- ALTERNATIVE LAYOUT

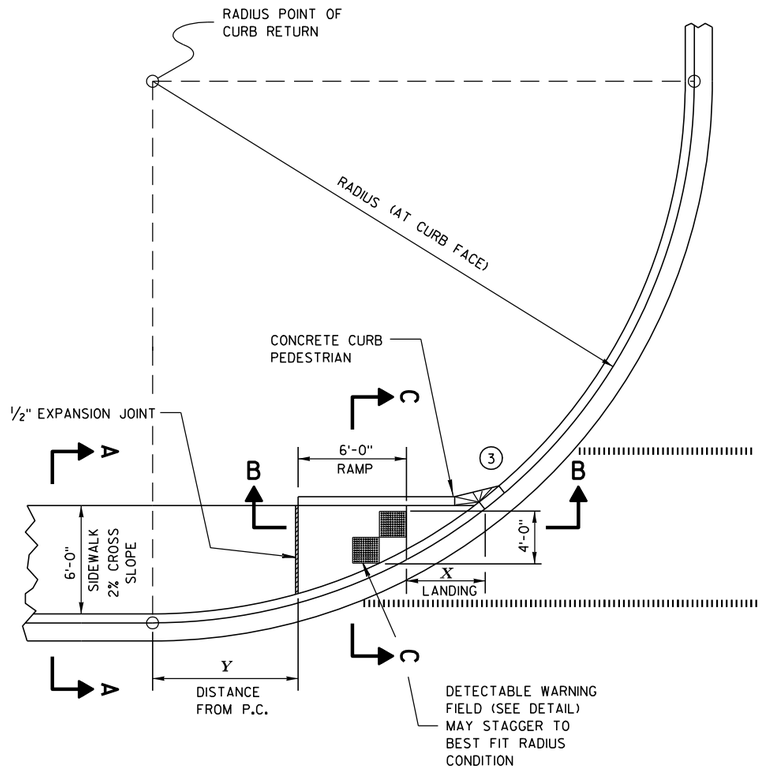


PLAN VIEW
TYPE 3 RAMP
(OUTSIDE OF CROSSWALK AREA)

CURB RAMPS
TYPES 2 AND 3

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

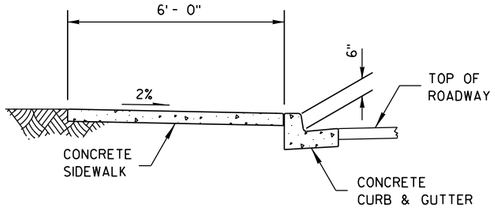
6
S.D.D. 8 D 5-14b



CURB RAMP TYPE 4A
PLAN VIEW

RADIUS (AT CURB FACE)	X	Y
20 FEET	6'-1¾"	2'-7¼"
30 FEET	7'-11¾"	4'-8¼"
40 FEET	9'-5¼"	6'-5"
50 FEET	10'-8¾"	7'-11¼"
60 FEET	11'-10¼"	9'-3½"

INTERMEDIATE RADII CAN BE INTERPOLATED



SECTION A-A

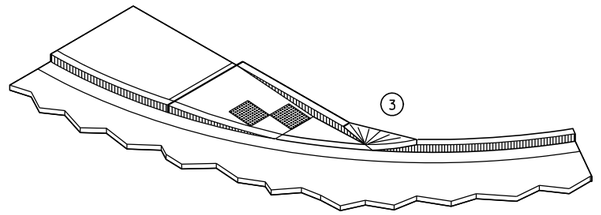
GENERAL NOTES

AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS.

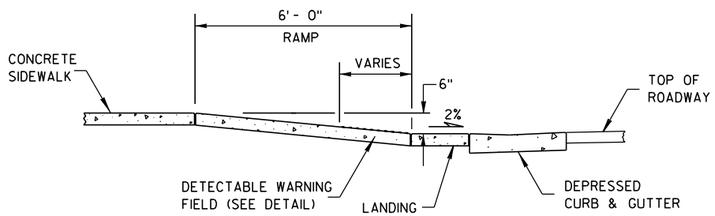
RAMP SLOPES SHALL NOT BE STEEPER THAN 12:1.

SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.

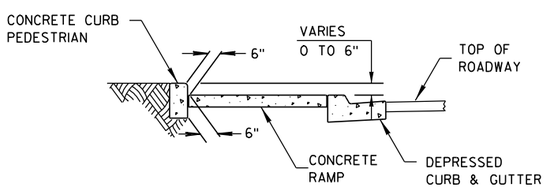
(3) INSTALL TRANSITION NOSE. (INCIDENTAL TO OTHER PAY ITEMS.) DO NOT MARK TRANSITION NOSE.



ISOMETRIC VIEW



SECTION B-B



SECTION C-C

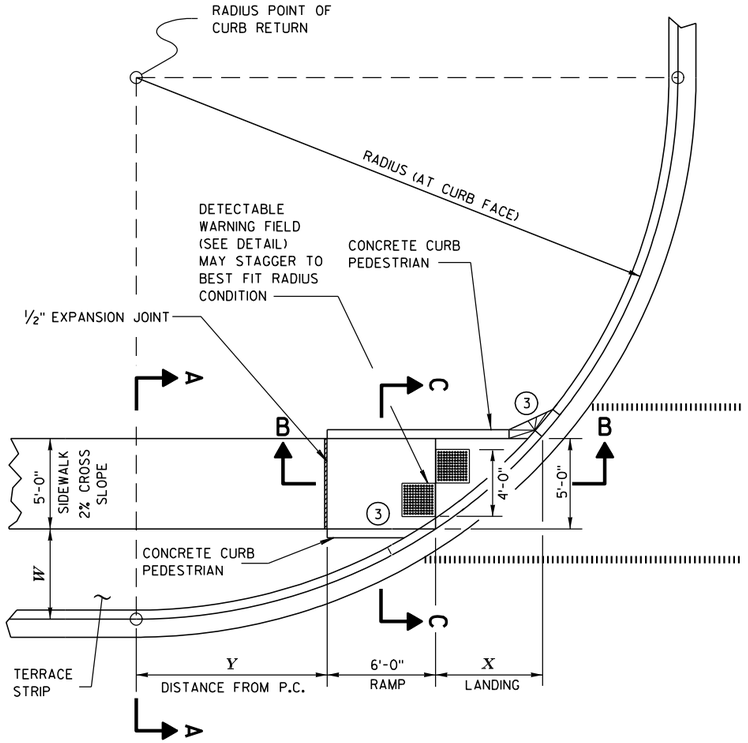
LEGEND

- ½" EXPANSION JOINT-SIDEWALK
- CONTRACTION JOINT FIELD LOCATED
- PAVEMENT MARKING CROSSWALK (WHITE)

CURB RAMPS
TYPE 4A

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6
S.D.D. 8 D 5-14c



CURB RAMP TYPE 4B
PLAN VIEW

GENERAL NOTES

AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS.

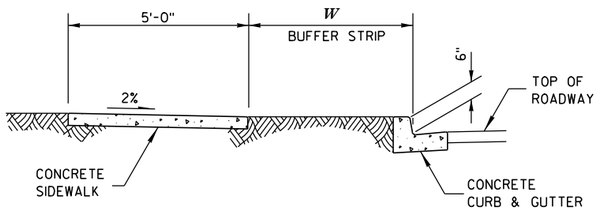
RAMP SLOPES SHALL NOT BE STEEPER THAN 12:1.

SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.

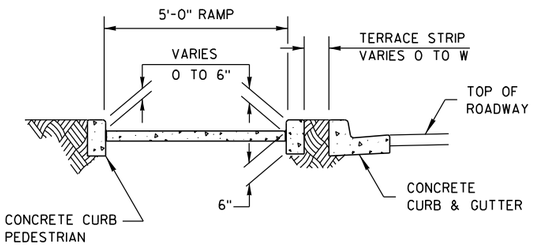
(3) INSTALL TRANSITION NOSE. (INCIDENTAL TO OTHER PAY ITEMS.) DO NOT MARK TRANSITION NOSE.

RADIUS (AT CURB FACE)	W = 3'- 0"		W = 4'- 0"		W = 5'- 0"		W = 6'- 0"		W = 7'- 0"	
	X	Y	X	Y	X	Y	X	Y	X	Y
20 FEET	5'-5½"	4'-6½"	4'-8½"	6'-0"	4'-1"	7'-2¾"	3'-7"	8'-3½"	3'-1½"	9'-2½"
30 FEET	7'-3¾"	7'-1"	6'-5½"	8'-11½"	5'-9¼"	10'-7"	5'-2½"	12'-0"	4'-8¾"	13'-3¼"
40 FEET	8'-9½"	9'-2½"	7'-10"	11'-5¼"	7'-1"	13'-4½"	6'-5¾"	15'-¾"	5'-11½"	16'-7¼"
50 FEET	10'-¾"	11'-¾"	9'-¼"	13'-7¼"	8'-2½"	15'-9½"	7'-6½"	17'-9"	6'-11¾"	19'-6¼"
60 FEET	11'-2½"	12'-8¾"	10'-¾"	15'-6½"	9'-2¼"	17'-11¾"	8'-5¾"	20'-1¾"	7'-10½"	22'-1½"
70 FEET	12'-2¾"	14'-3¼"	11'-¼"	17'-4"	10'-1"	19'-11¾"	9'-3¾"	22'-4¼"	8'-8¼"	24'-6¼"
80 FEET	13'-2"	15'-8½"	11'-10½"	18'-11¾"	10'-10¾"	21'-10"	10'-1"	24'-4¾"	9'-5"	26'-8¾"
90 FEET	14'- ½"	17'-½"	12'-8¼"	20'-6½"	11'-7¾"	23'-7"	10'-9¾"	26'-3¾"	10'-1¼"	28'-9½"
100 FEET	14'-10½"	18'-3¾"	13'-5½"	22'-0"	12'-4¼"	25'-2¾"	11'-5¾"	28'-1½"	10'-9"	30'-9"

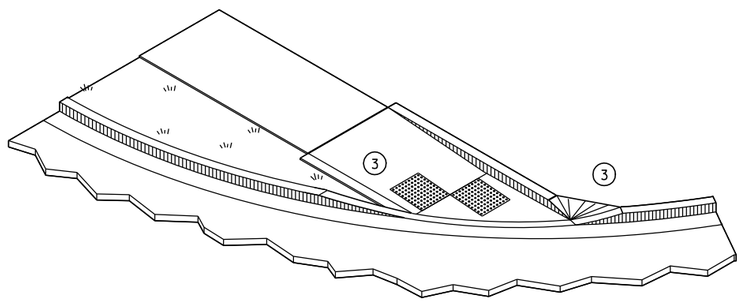
INTERMEDIATE RADII CAN BE INTERPOLATED



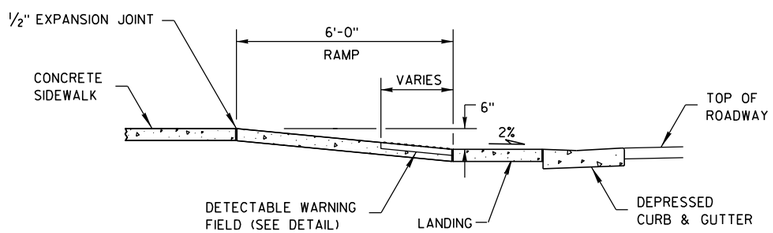
SECTION A-A



SECTION C-C



ISOMETRIC VIEW



SECTION B-B

LEGEND

½" EXPANSION JOINT-SIDEWALK

CONTRACTION JOINT FIELD LOCATED

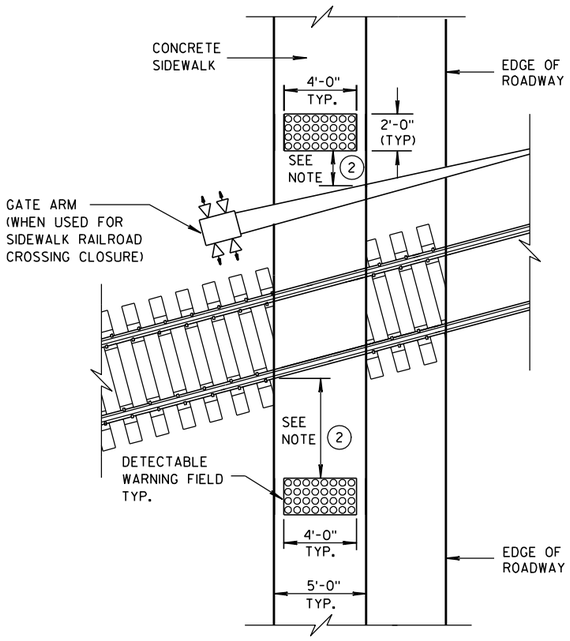
PAVEMENT MARKING CROSSWALK (WHITE)

CURB RAMPS TYPE 4B

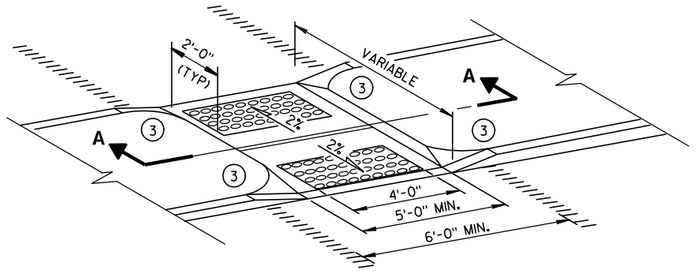
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

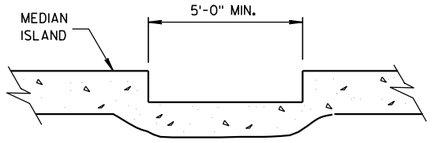
S.D.D. 8 D 5-14d



TYPE 8
DETECTABLE WARNINGS AT RAILROAD CROSSING



MEDIAN ISLAND
NON-ELEVATED CROSSING
TYPE 5



SECTION A-A

GENERAL NOTES

SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.

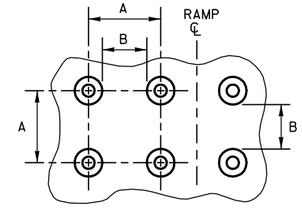
(1) SLOPE SIDEWALK TOWARD LANDING AS SHOWN WHERE THERE IS NO TERRACE OR WHERE THE TERRACE WIDTH IS LESS THAN 6 FEET WIDE.

(2) THE EDGE OF THE DETECTABLE WARNING FIELD NEAREST TO A RAILROAD CROSSING SHALL BE 1.5 FEET ± 0.1' FROM THE FACE OF THE GATE ARM IF THE GATE ARM EXTENDS ACROSS THE SIDEWALK. WHERE THERE IS NO PEDESTRIAN GATE, THE EDGE OF THE DETECTABLE WARNING FIELD NEAREST TO THE RAILROAD CROSSING SHALL BE 15 FEET FROM THE NEAREST RAIL.

(3) INSTALL TRANSITION NOSE. (INCIDENTAL TO OTHER PAY ITEMS.) DO NOT MARK TRANSITION NOSE.

LEGEND

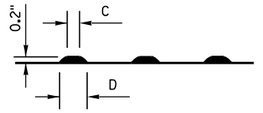
- ½" EXPANSION JOINT-SIDEWALK
- CONTRACTION JOINT FIELD LOCATED
- PAVEMENT MARKING CROSSWALK (WHITE)



PLAN VIEW

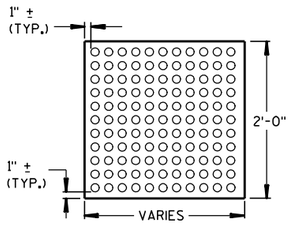
	MIN.	MAX.
A	1.6"	2.4"
B	0.65"	1.5"
C	*	*
D	0.9"	1.4"

* THE C DIMENSION IS 50% TO 65% OF THE D DIMENSION.



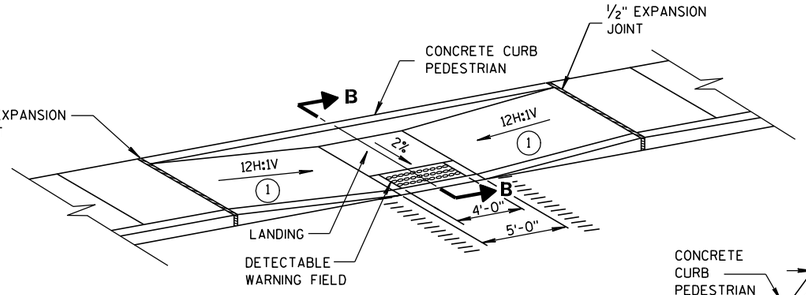
ELEVATION VIEW

TRUNCATED DOMES
DETECTABLE WARNING PATTERN DETAIL

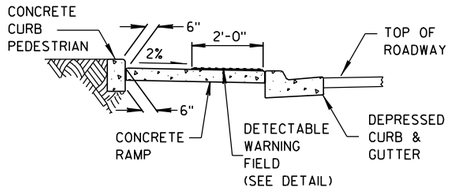


PLAN VIEW

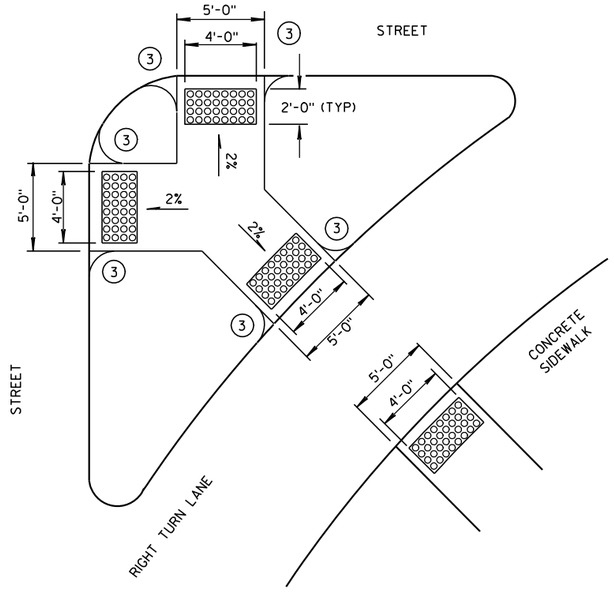
DETECTABLE WARNING FIELD (TYPICAL)



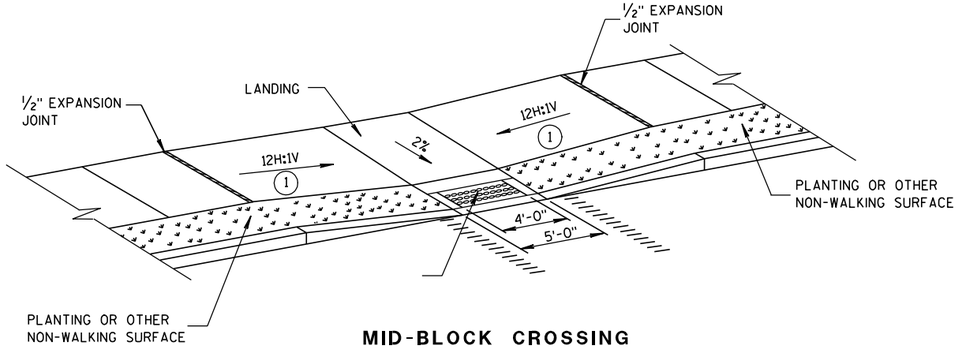
MID-BLOCK CROSSING
TYPE 7A



SECTION B-B



TYPE 6
DETECTABLE WARNING AT ISLANDS



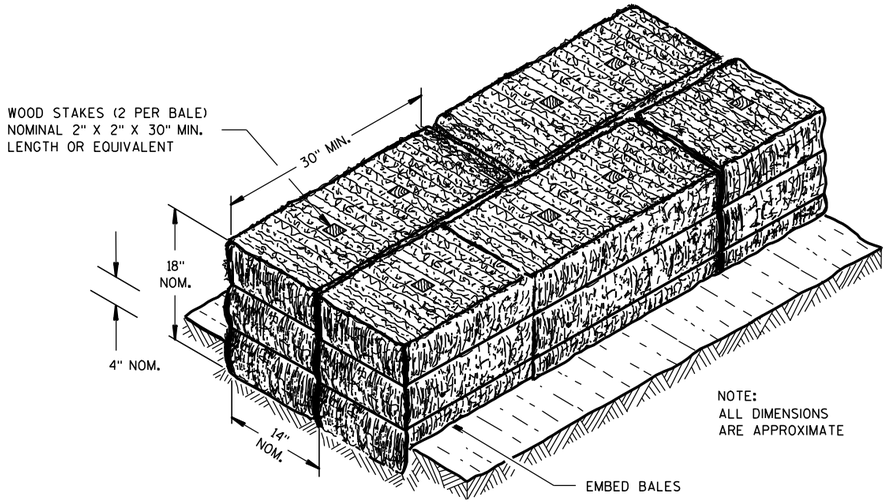
MID-BLOCK CROSSING
TYPE 7B

NOTE: THESE PARALLEL AND PARALLEL/PERPENDICULAR CURB RAMPS MAY BE USED AT INTERSECTIONS AND MID BLOCK LOCATIONS.

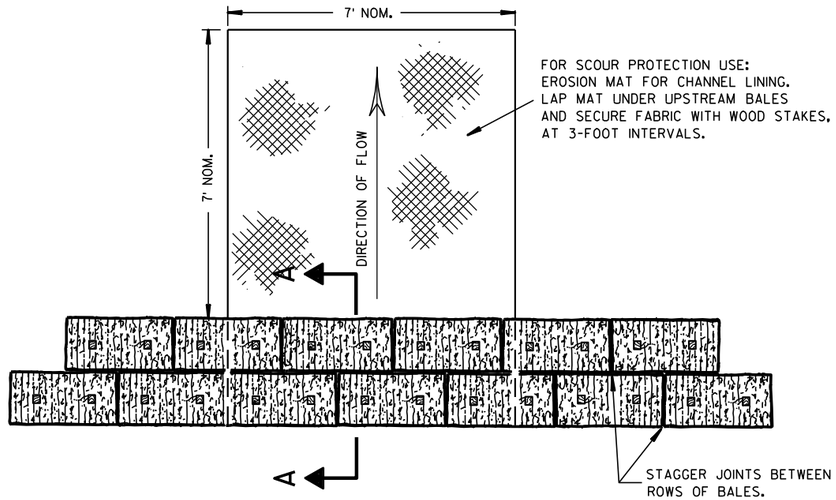
CURB RAMPS
TYPES 5, 6, 7A, 7B & 8

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

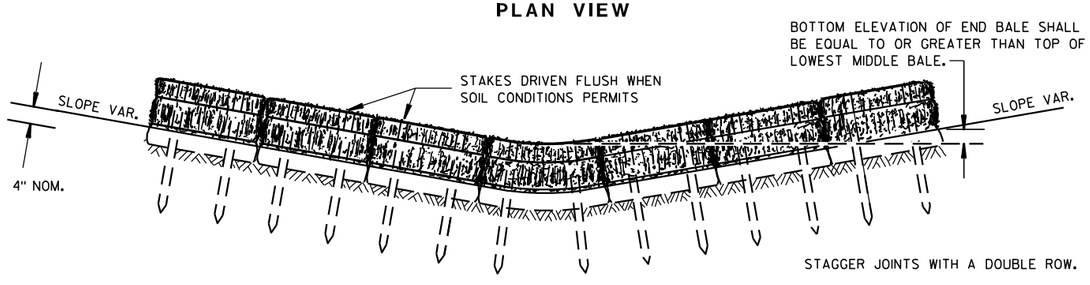
APPROVED
2-9-10 DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER
FHWA



SECTION A-A



PLAN VIEW



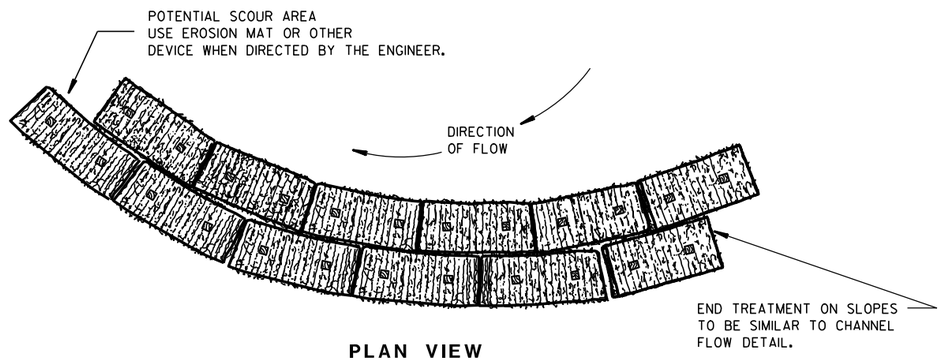
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

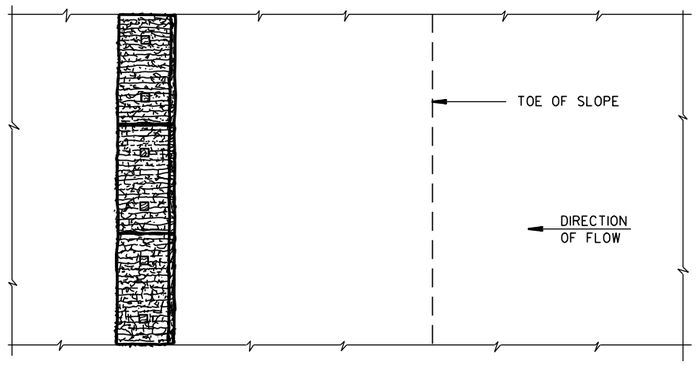
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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.

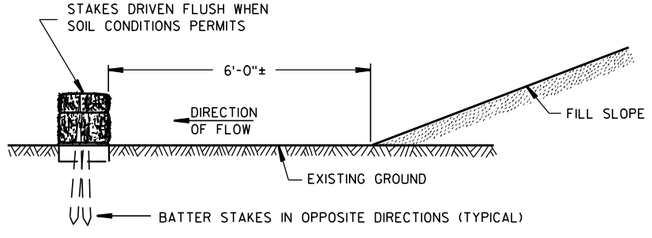


PLAN VIEW

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

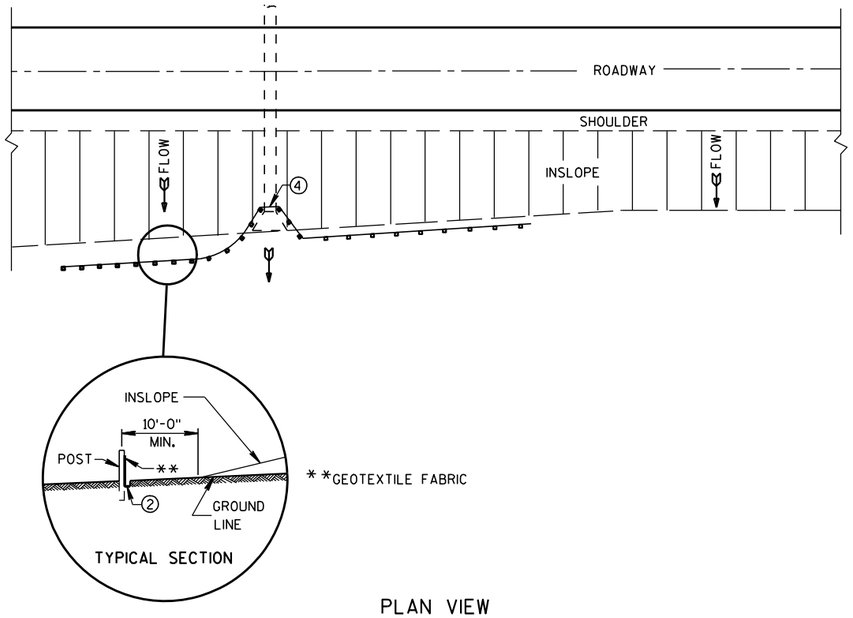
APPROVED

6/04/02 — DATE

/S/ Beth Cannestra — CHIEF ROADWAY DEVELOPMENT ENGINEER

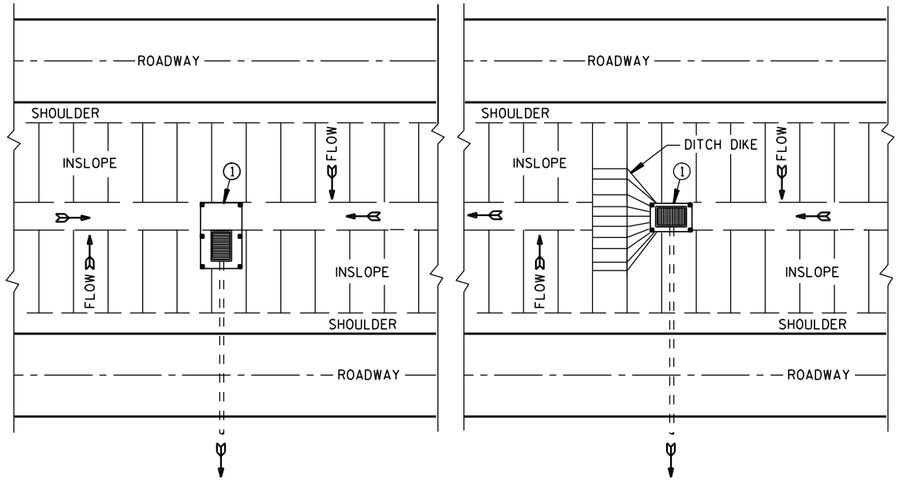
FHWA

6
S.D.D. 8 E 8-3



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

GENERAL NOTES

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

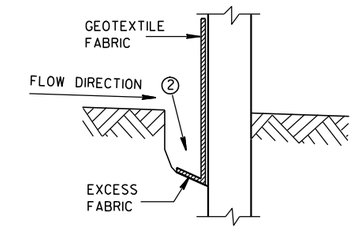
① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.

② FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.

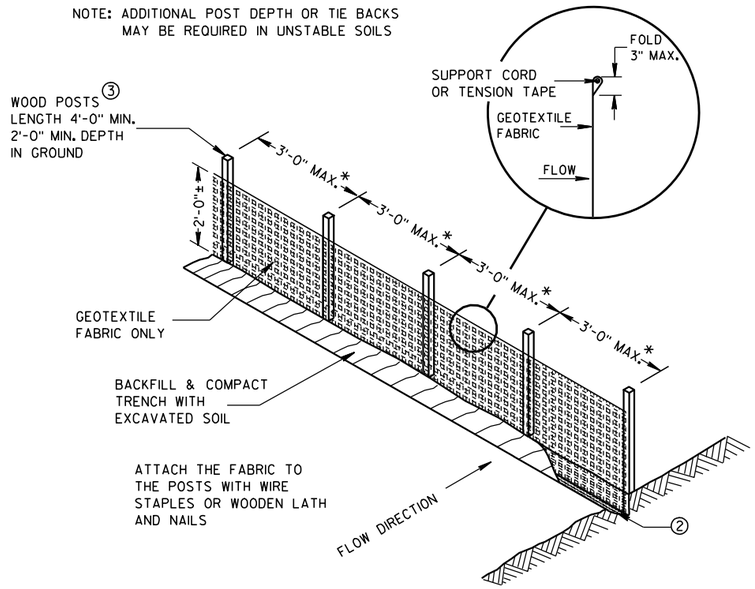
③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1⅛" X 1⅛" OF OAK OR HICKORY.

④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.

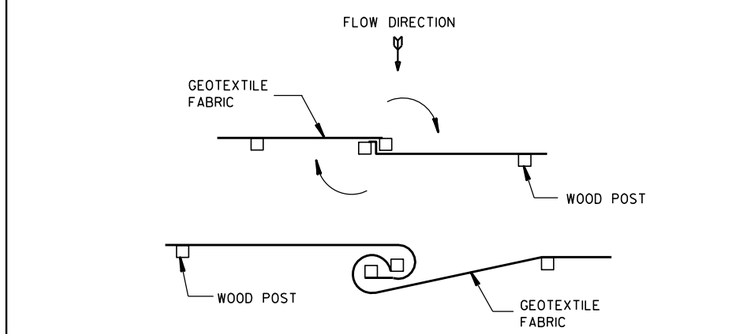
⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.



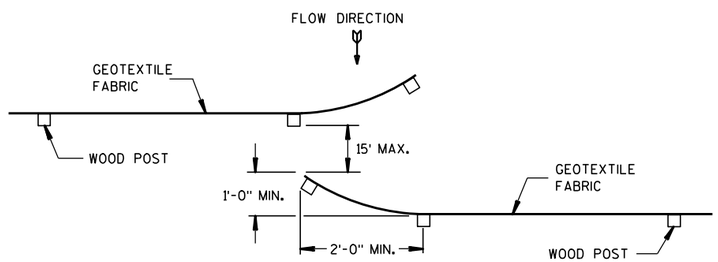
TRENCH DETAIL



SILT FENCE

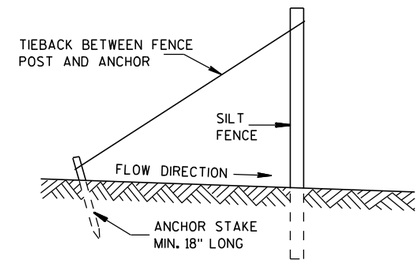


TWIST METHOD



HOOK METHOD

JOINING TWO LENGTHS OF SILT FENCE ⑤



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

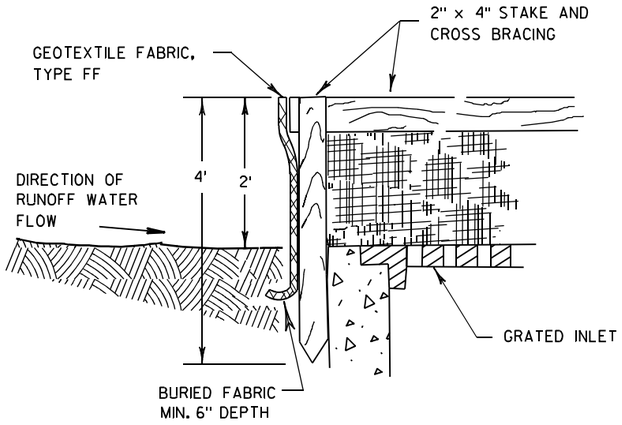
APPROVED
4-29-05 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

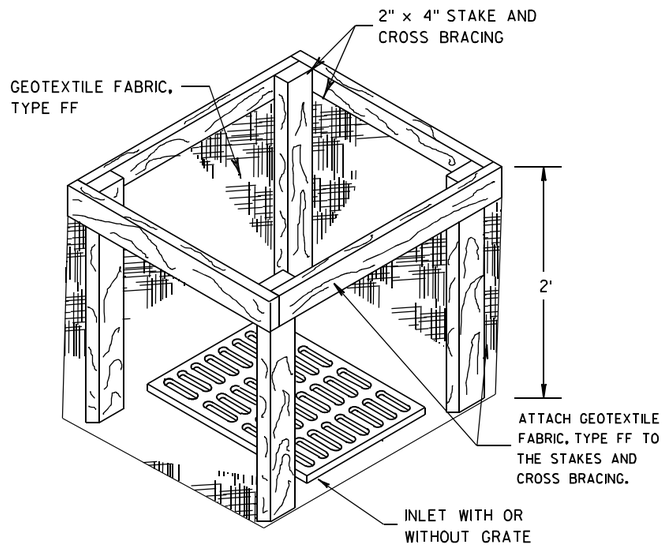
6

S.D.D. 8 E 9-6

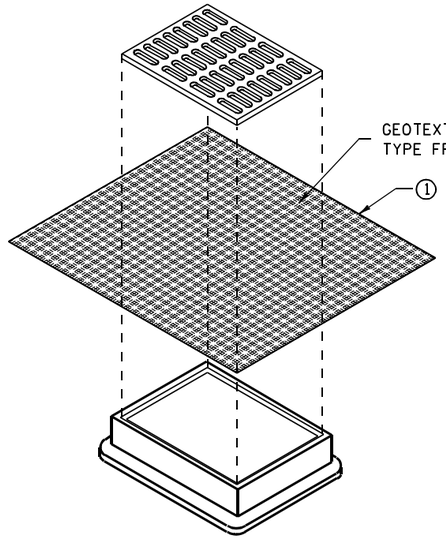
6

S.D.D. 8 E 9-6



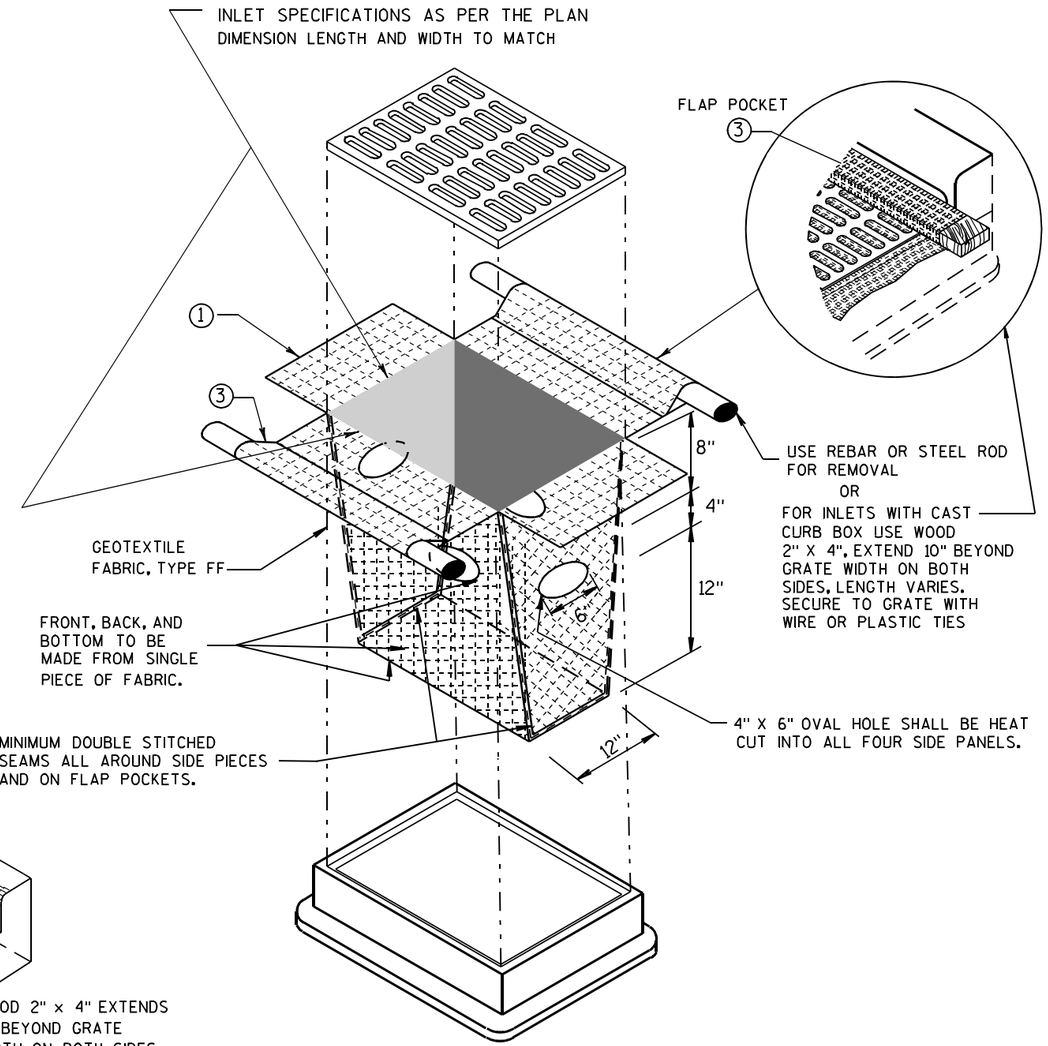


INLET PROTECTION, TYPE A



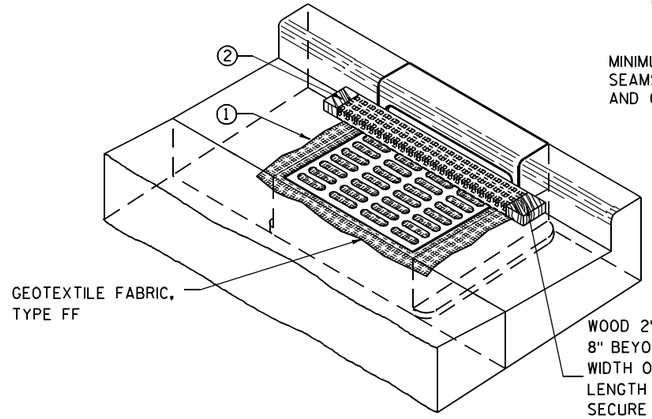
INLET PROTECTION, TYPE B
(WITHOUT CURB BOX)

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



INLET PROTECTION, TYPE D

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



INLET PROTECTION, TYPE C (WITH CURB BOX)

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.

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.

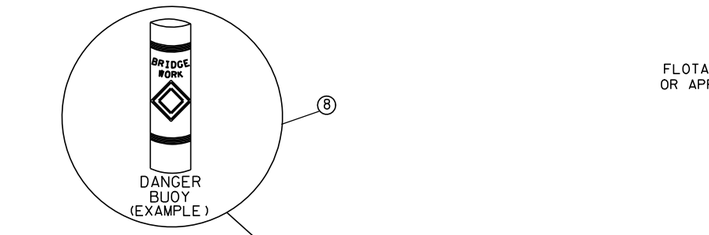
TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

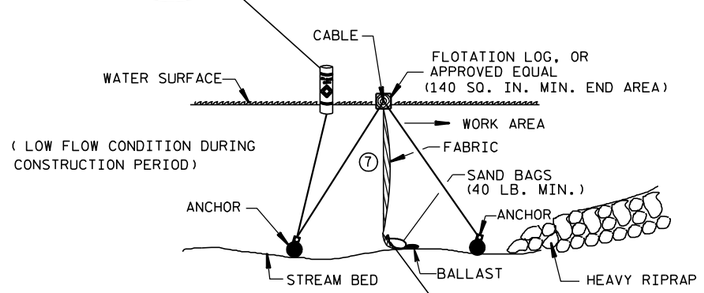
THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE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

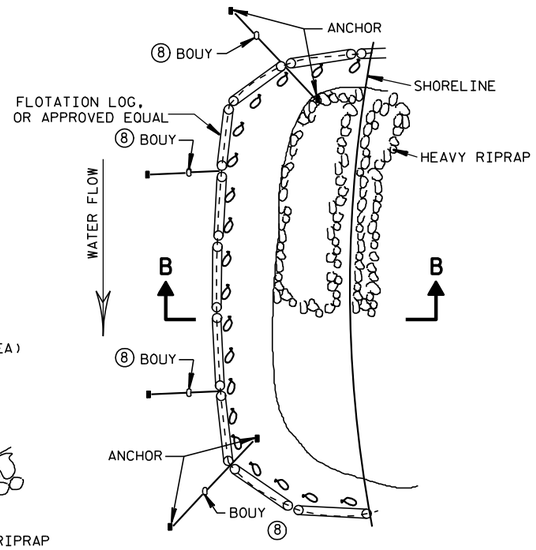
INLET PROTECTION
TYPE A, B, C, AND D

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

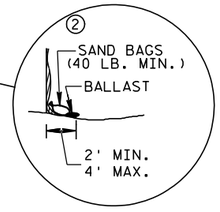
APPROVED
10/16/02
DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA



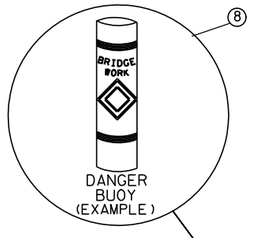


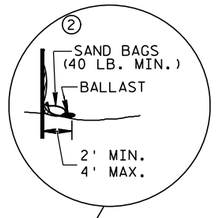


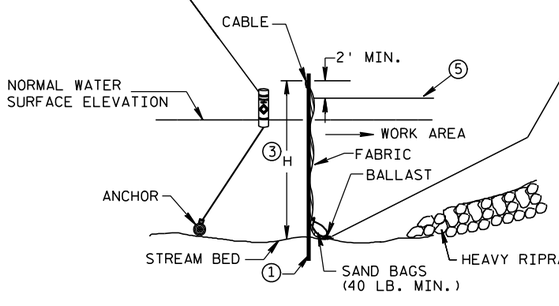
SECTION B-B



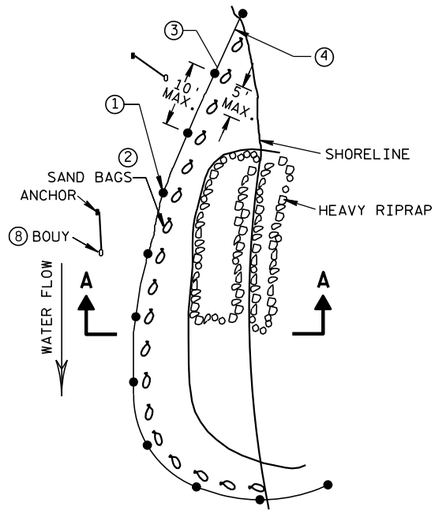
TURBIDITY BARRIER FLOAT ALTERNATIVE
CAUTION - SEE NOTE 6







SECTION A-A



PLAN VIEW

TURBIDITY BARRIER STANDARD POST INSTALLATION

TURBIDITY BARRIER PLACEMENT DETAILS

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.

TURBIDITY BARRIER MAY BE REMOVED AT THE ENGINEERS DISCRETION, WHEN PERMANENT EROSION CONTROL MEASURES HAVE BEEN ESTABLISHED.

① DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.

② SANDBAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER TO MEET ADVERSE FIELD CONDITIONS. SPACE AS APPROPRIATE FOR SITE CONDITIONS.

③ WHEN BARRIER HEIGHT, H, EXCEEDS 8 FT., POST SPACING MAY NEED TO BE DECREASED.

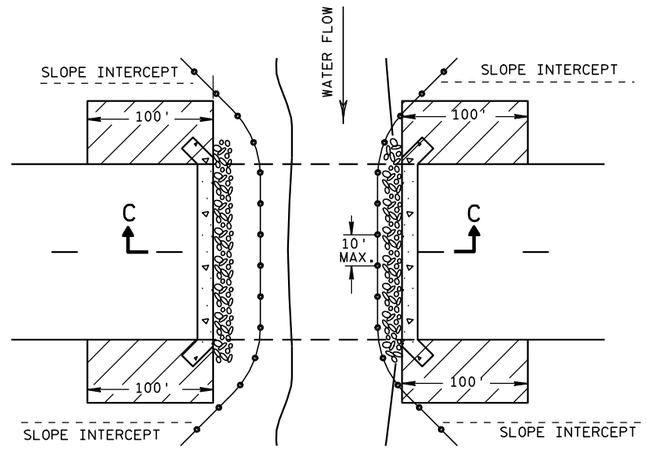
④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.

⑤ ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MIMIMUM BARRIER HEIGHT SHALL BE 2'GREATER THAN EITHER THE O2 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WICHEVER IS GREATER.

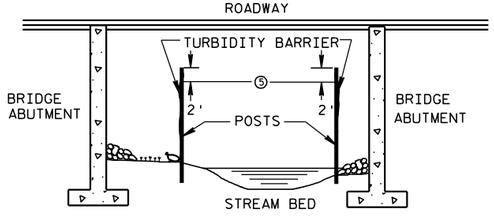
⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.

⑦ ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.

⑧ USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.



PLAN VIEW



SECTION C-C

TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

TURBIDITY BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6/04/02 DATE
/S/ Beth Cannestra CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

METAL APRON ENDWALLS

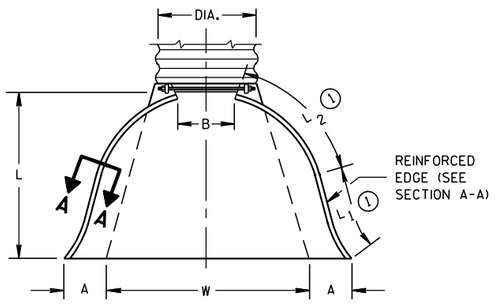
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")		
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to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

× EXCEPT CENTER PANEL SEE GENERAL NOTES

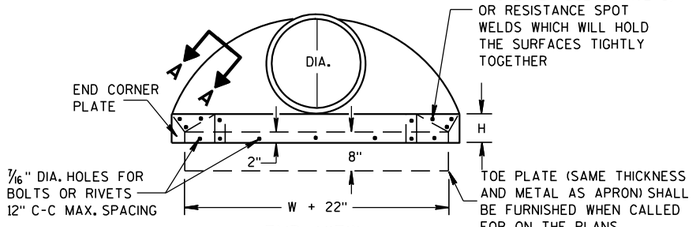
REINFORCED CONCRETE APRON ENDWALLS

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

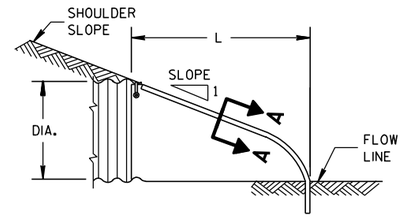
*MINIMUM
**MAXIMUM



PLAN VIEW

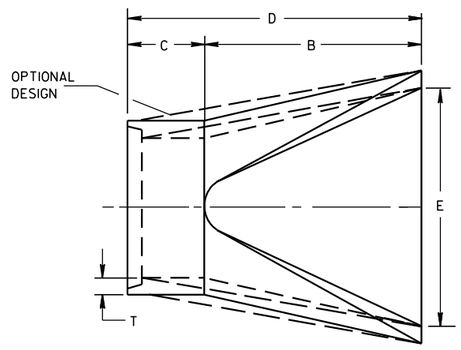


END VIEW

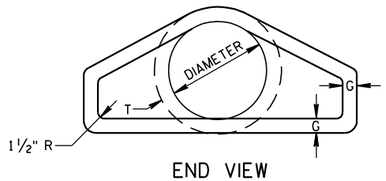


SIDE ELEVATION

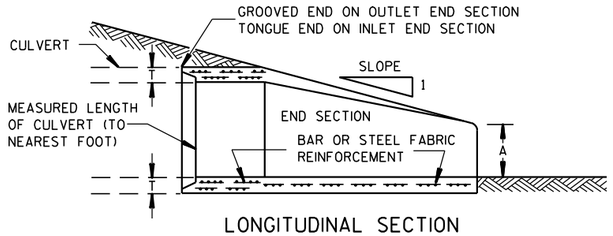
METAL ENDWALLS



PLAN

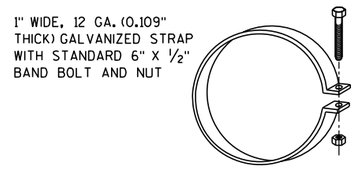


END VIEW



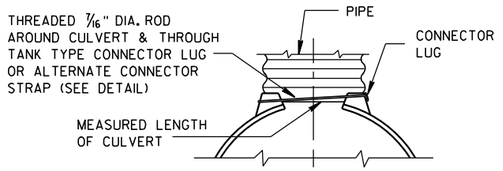
LONGITUDINAL SECTION

CONCRETE ENDWALLS

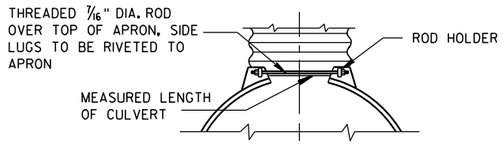


ALTERNATE FOR TYPE 1 CONNECTION

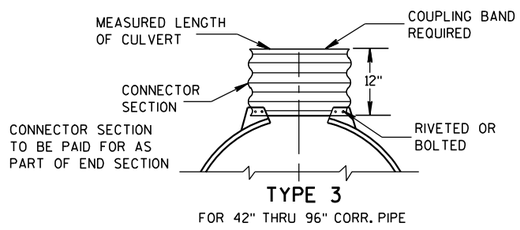
END SECTION CONNECTOR STRAP



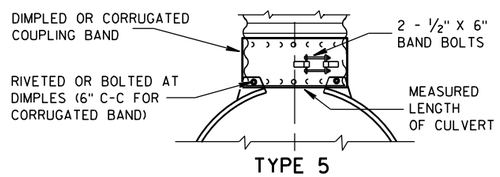
TYPE 1
FOR 12" THRU 24" CORR. PIPE



TYPE 2
FOR 30" THRU 96" CORR. PIPE



TYPE 3
FOR 42" THRU 96" CORR. PIPE



TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

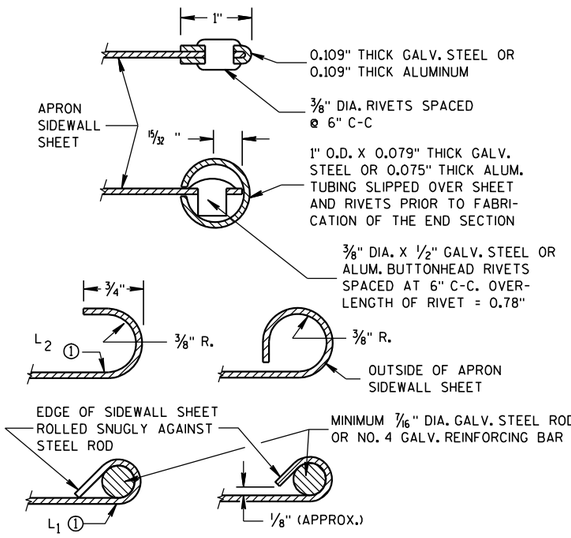
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

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

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

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

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

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

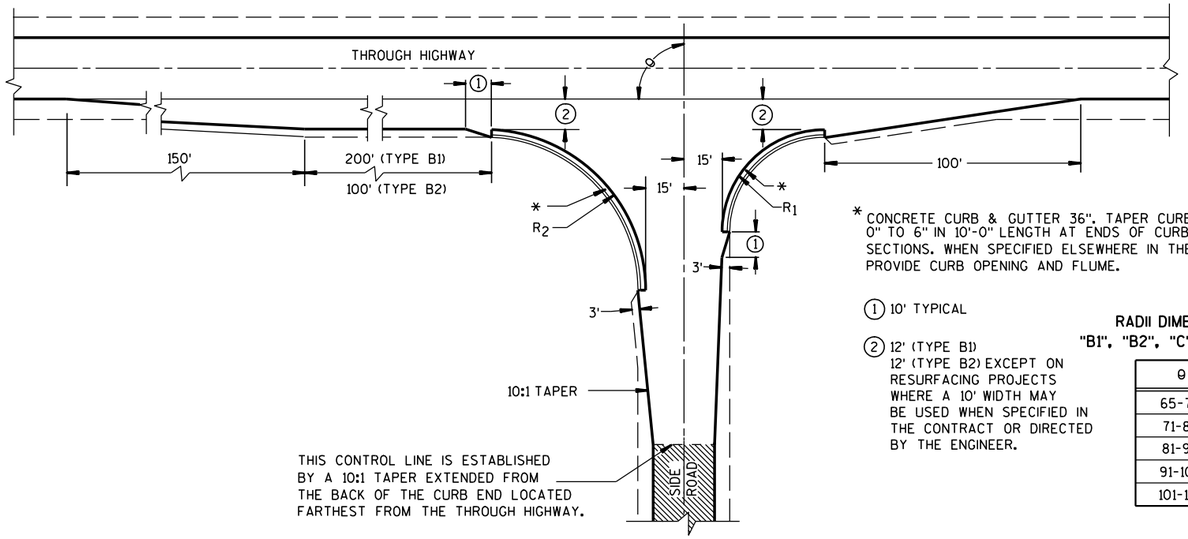
APRON ENDWALLS FOR CULVERT PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6

S.D.D. 8 F 1-11



TYPE "B1" AND "B2"

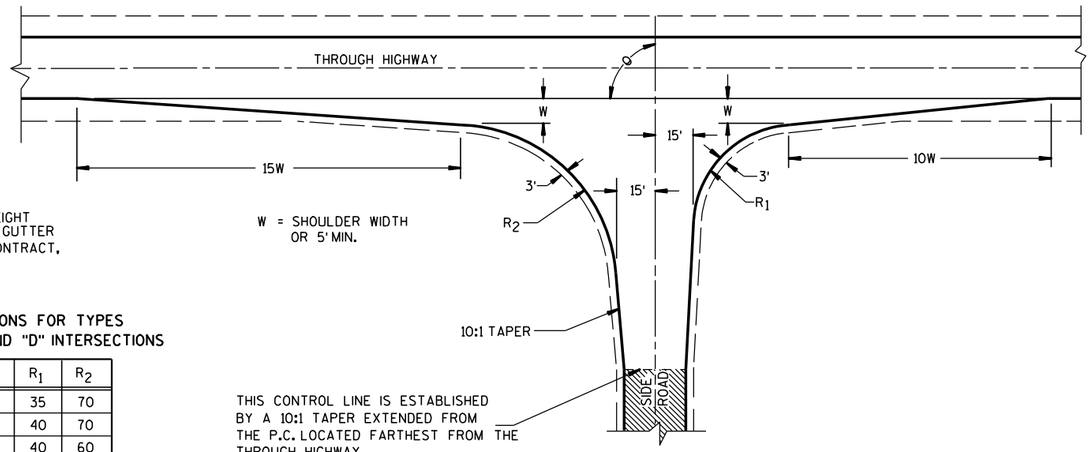
* CONCRETE CURB & GUTTER 36". TAPER CURB HEIGHT 0" TO 6" IN 10'-0" LENGTH AT ENDS OF CURB & GUTTER SECTIONS. WHEN SPECIFIED ELSEWHERE IN THE CONTRACT, PROVIDE CURB OPENING AND FLUME.

① 10' TYPICAL

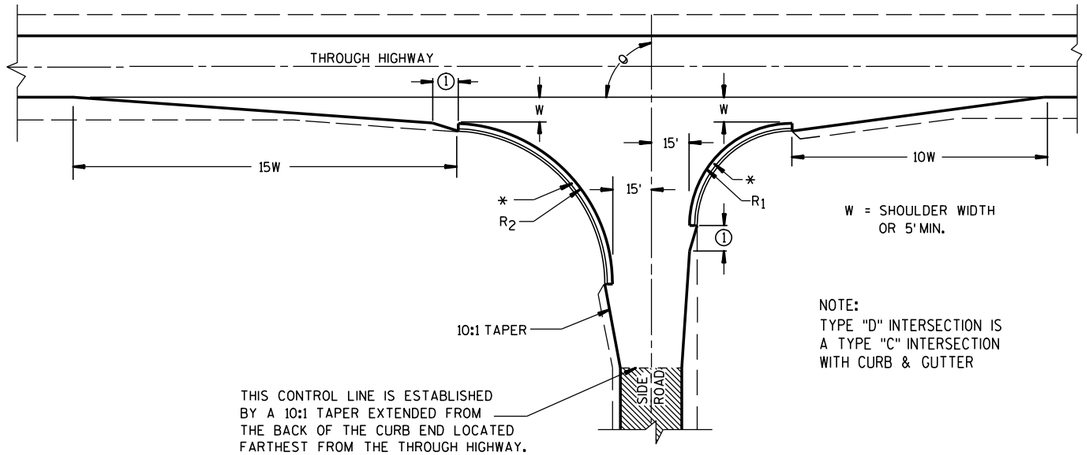
② 12' (TYPE B1)
12' (TYPE B2) EXCEPT ON RESURFACING PROJECTS WHERE A 10' WIDTH MAY BE USED WHEN SPECIFIED IN THE CONTRACT OR DIRECTED BY THE ENGINEER.

RADII DIMENSIONS FOR TYPES "B1", "B2", "C" AND "D" INTERSECTIONS

θ	R_1	R_2
65-70	35	70
71-80	40	70
81-90	40	60
91-100	50	55
101-110	60	45



TYPE "C"



TYPE "D"

NOTE:
TYPE "D" INTERSECTION IS A TYPE "C" INTERSECTION WITH CURB & GUTTER

GENERAL NOTES

DESIGNS MAY BE USED INTERCHANGEABLY IN COMBINATION OR SEPARATELY FOR ANY ONE COMPLETE INTERSECTION DEPENDING UPON INTERSECTION ANGLE AND SURFACING OF EACH APPROACH ROADWAY.

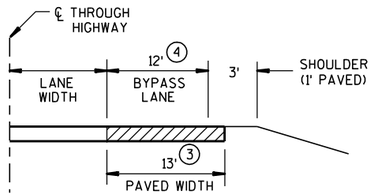
SIDE ROAD SURFACING NOTE

WHEN THE SIDE ROAD IS NOT PRESENTLY PAVED, PAVEMENT SHALL BE PLACED TO THE LIMITS SHOWN UNLESS OTHERWISE PROVIDED IN THE CONTRACT. WHERE THE CONSTRUCTION LIMITS ARE BEYOND THE PAVING LIMITS, CRUSHED AGGREGATE SURFACING SHALL BE PLACED BETWEEN THE PAVING LIMITS AND CONSTRUCTION LIMITS.

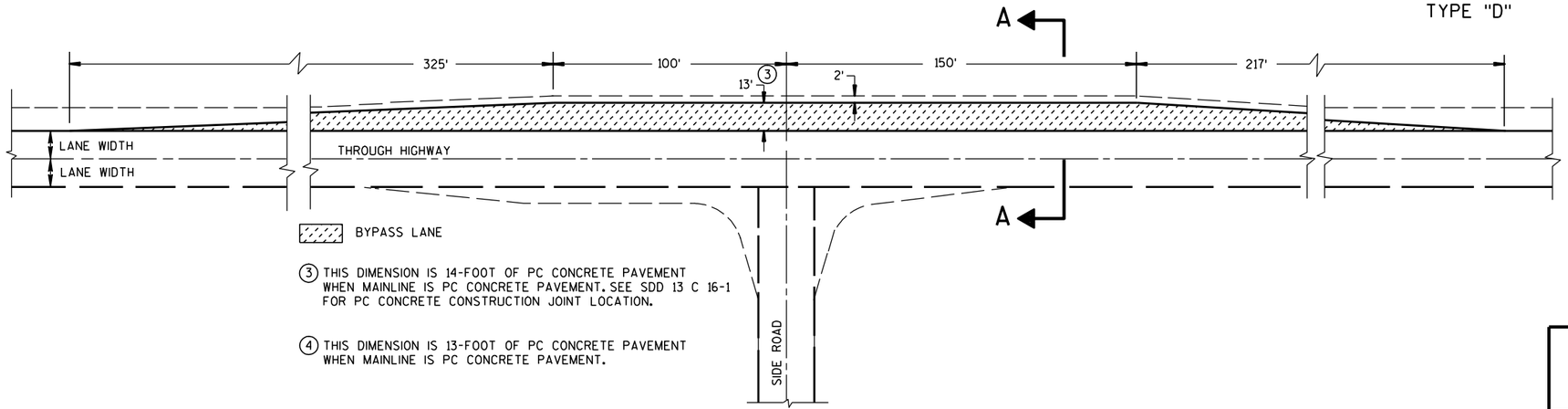
WHEN THE SIDE ROAD IS PRESENTLY PAVED, NEW PAVEMENT SHALL BE PLACED TO THE LIMITS OF DESIGN AS SHOWN AND BEYOND, IF NECESSARY, TO MEET EXISTING PAVEMENT.

WHEN THE SIDE ROAD IS THE CONSTRUCTION PROJECT, THE INTERSECTION SURFACING SHALL BE THE SAME AS FOR THE PROJECT.

▨ EXISTING SURFACE



SECTION A-A
(SHOWING BYPASS LANE AND SHOULDER)



③ THIS DIMENSION IS 14-FOOT OF PC CONCRETE PAVEMENT WHEN MAINLINE IS PC CONCRETE PAVEMENT. SEE SDD 13 C 16-1 FOR PC CONCRETE CONSTRUCTION JOINT LOCATION.

④ THIS DIMENSION IS 13-FOOT OF PC CONCRETE PAVEMENT WHEN MAINLINE IS PC CONCRETE PAVEMENT.

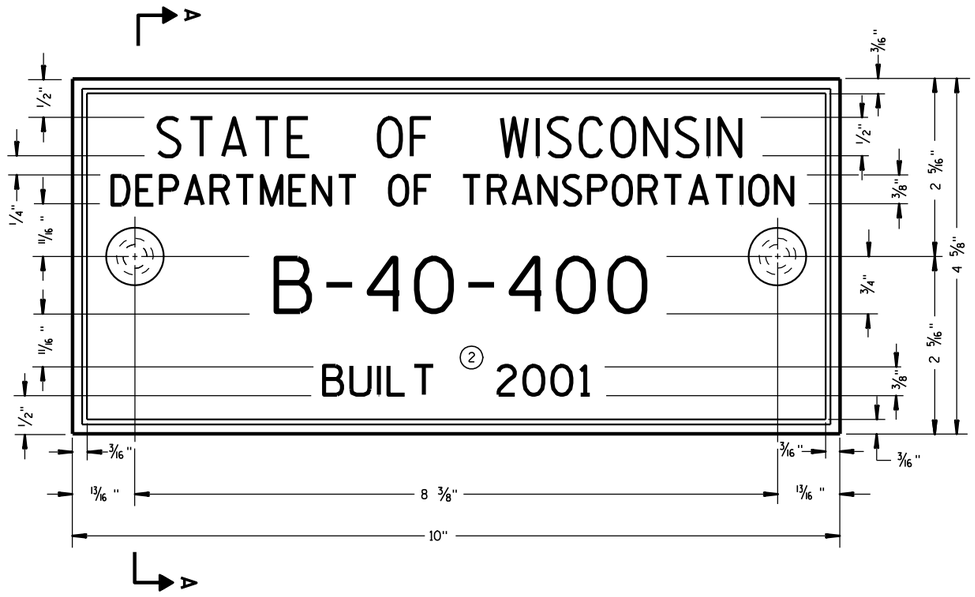
TEE INTERSECTION BYPASS LANE DETAIL

AT-GRADE SIDE ROAD INTERSECTION, TYPES "B1", "B2", "C" AND "D" AND TEE INTERSECTION BYPASS LANE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO...

6

S.D.D. 9 A 1-12a



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

NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

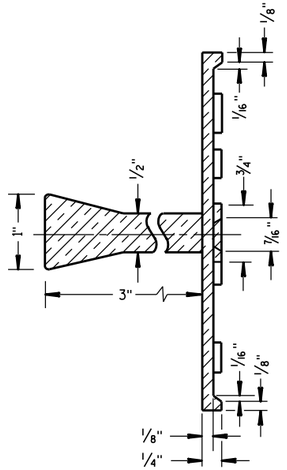
GENERAL NOTES

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

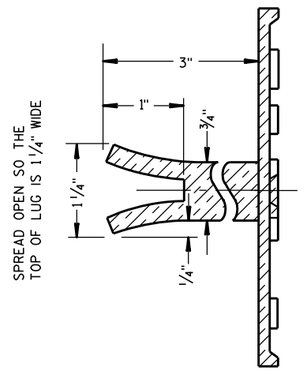
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

(1) EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

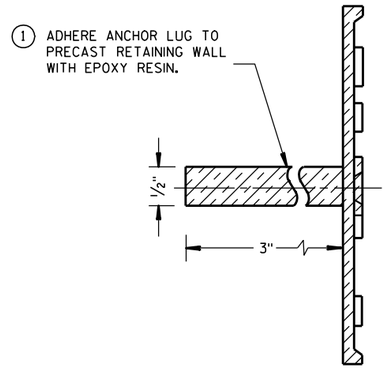
(2) REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



SECTION A-A



ALTERNATE LUG



ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

NAME PLATE (STRUCTURES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

3/26/10 DATE

/S/ Scot Beck -- CHIEF STRUCTURAL DEVELOP ENGINEER

FHWA

6

S.D.D. 12 A 3-10

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) W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS. APPROVED PLASTIC BLOCKOUT DESIGNS MAY VARY FROM THIS TYPICAL DETAIL WHEN USED IN CONJUNCTION WITH STEEL POSTS.

DO NOT MIX STEEL POSTS AND WOOD POSTS IN A SINGLE INSTALLATION.

(2) USE STRUCTURAL STEEL POSTS CONFORMING TO ASTM A 36. GALVANIZED POSTS ACCORDING TO AASHTO M 111. EITHER SET THE POSTS IN DRILLED HOLES OR DRIVE TO GRADE. REMOVE MUSHROOMING CAUSED BY DRIVING AND REPAIR DAMAGED SPELTER COATING ON GALVANIZED POSTS.

(3) INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

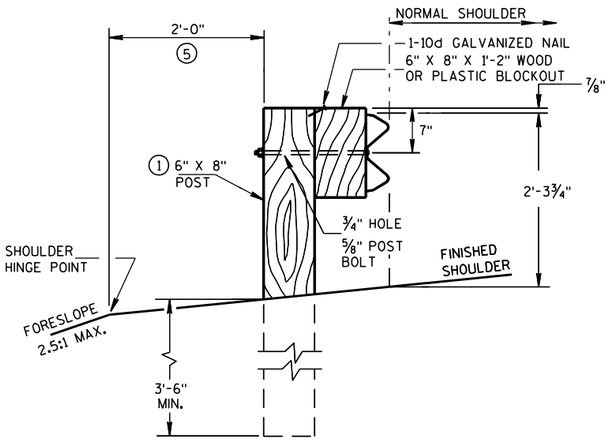
(4) USE EITHER WOOD OR APPROVED PLASTIC BLOCKOUTS ON WOOD POSTS.

(5) IF THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING, W BEAM (LHW).

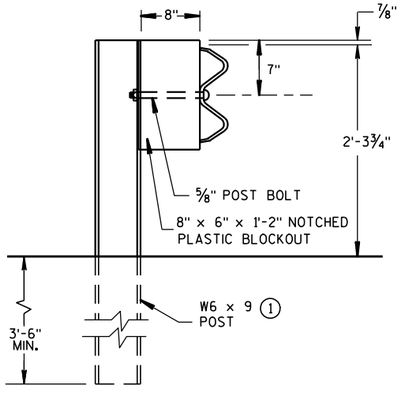
(6) IF ROCK IS ENCOUNTERED DURING EXCAVATION, THE ENGINEER MAY APPROVE USING A 12 INCH DIAMETER POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE APPROXIMATELY 2½ INCHES DEEP. CUT THE POSTS TO LENGTH AND PLACE IN YHE HOLE. BACKFILL WITH MATERIAL EXCAVATED FROM THE HOLE AND COMPACT ADEQUATEY.

INSTALL BEAM GUARD SECTIONS AND ALL NECESSARY HARDWARE ACCORDING TO THE APPLICABLE PLAN AND CURRENT STANDARD AND SUPPLEMENTAL SPECIFICATIONS.

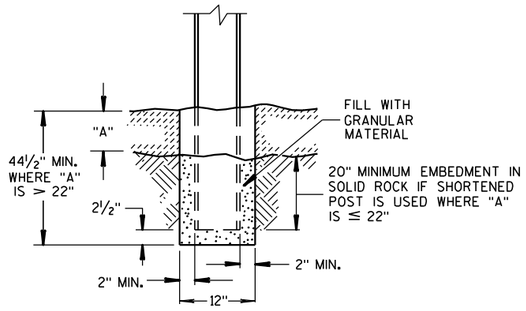
ALL DIMENSIONS ARE SUBJECT TO MANUFACTURER'S TOLERANCES EXCEPT WHERE ALLOWABLE TOLERANCES ARE SHOWN.



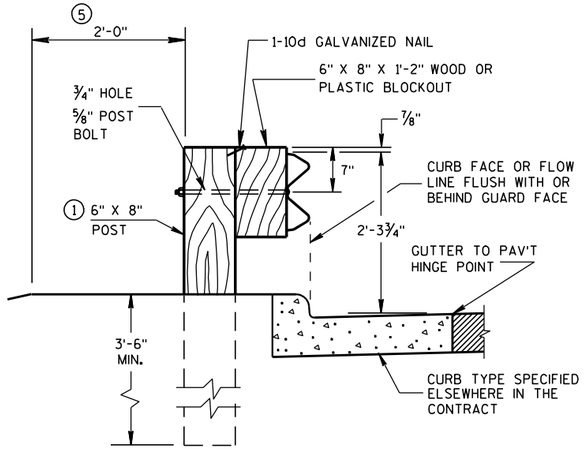
END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



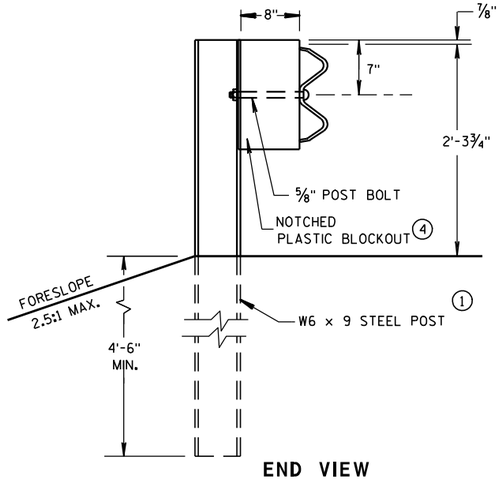
END VIEW
STEEL POST & NOTCHED
PLASTIC BLOCKOUT ALTERNATIVE
STANDARD INSTALLATION



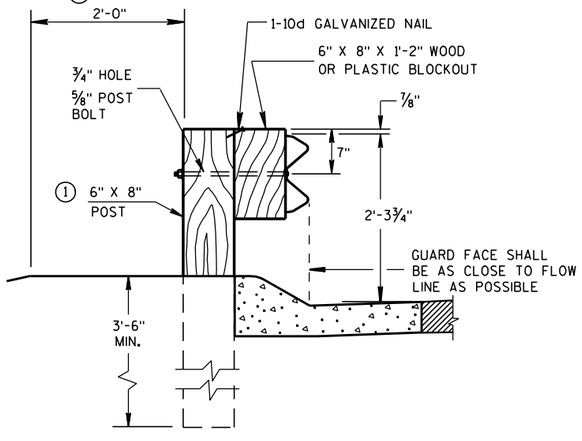
END VIEW
SETTING STEEL OR WOOD POST IN ROCK (6)



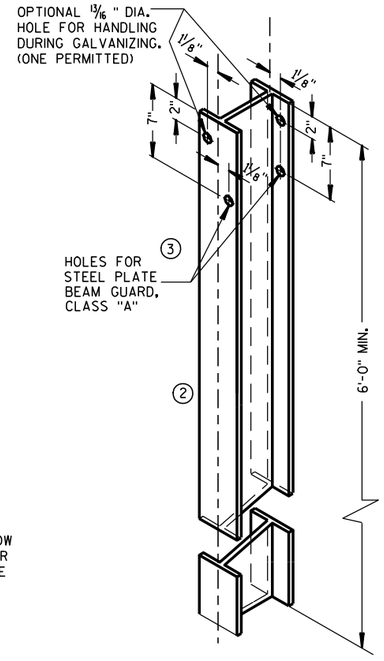
END VIEW
LOCATED ALONG A CURBED ROADWAY



END VIEW
LONGER POST AT HALF
POST SPACING W BEAM
(LHW)

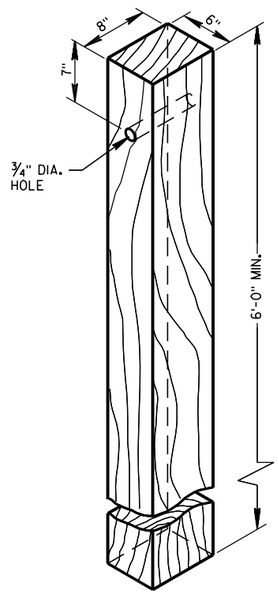


END VIEW
LOCATED ALONG A
MOUNTABLE CURBED ROADWAY

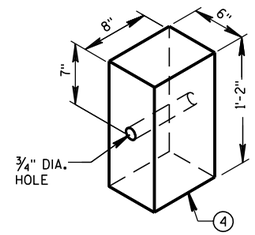


STEEL POST &
HOLE PUNCHING DETAIL
(W6 X 9) (1)

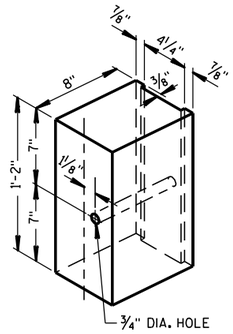
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED



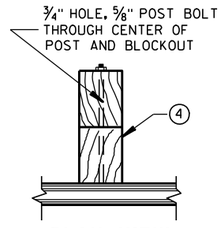
WOOD POST
(6"X8") NOMINAL



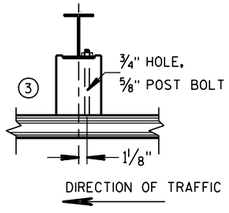
WOOD OR PLASTIC
BLOCKOUT FOR
WOOD POSTS



TYPICAL NOTCHED (1)
PLASTIC BLOCKOUT
FOR STEEL POSTS



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



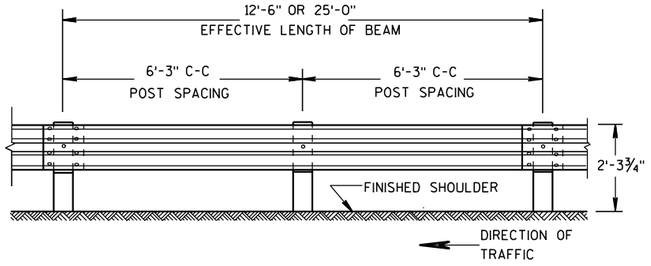
PLAN VIEW
STEEL POST, NOTCHED
PLASTIC BLOCKOUT & BEAM

STEEL PLATE BEAM GUARD,
CLASS "A"
INSTALLATION & ELEMENTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

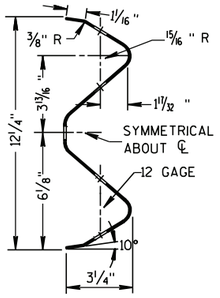
TYPICAL INSTALLATION OF STEEL PLATE BEAM GUARD

6
S.D.D. 14 B 15-7a

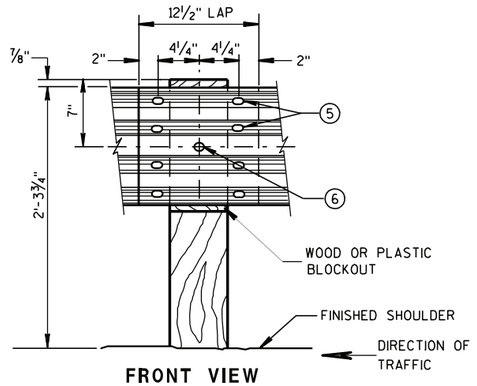


FRONT VIEW

POST SPACING STANDARD INSTALLATION



SECTION THRU W BEAM

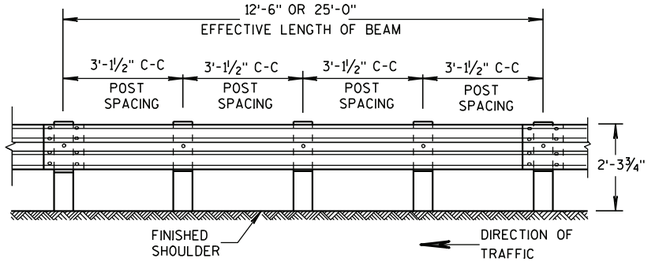


FRONT VIEW

BEAM SPLICE AT WOOD POST AND POST MOUNTING DETAIL

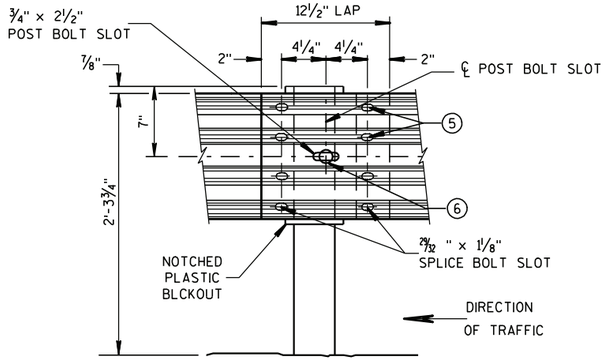
GENERAL NOTES

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.
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. 8 - 5/8" ϕ X 2 " BUTTON HEAD BOLTS WITH OVAL SHOULDERS & RECESS NUTS.
6. 5/8" ϕ X 1'-6" BUTTON HEAD BOLT AND AND RECESS NUT WITH ROUND WASHER UNDER NUT.



FRONT VIEW

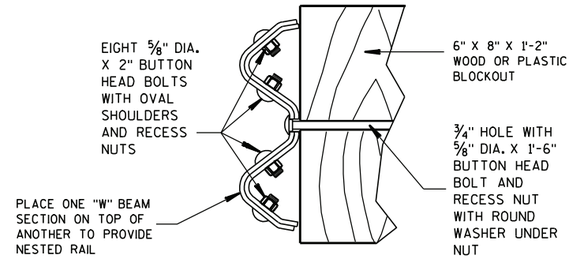
POST SPACING FOR LONGER POST AT HALF POST SPACING W BEAM (LHW)



FRONT VIEW

BEAM SPLICE AT STEEL POST

TYPICAL SPLICING DETAILS OF STEEL PLATE BEAM GUARD

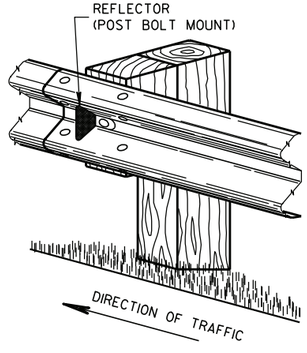


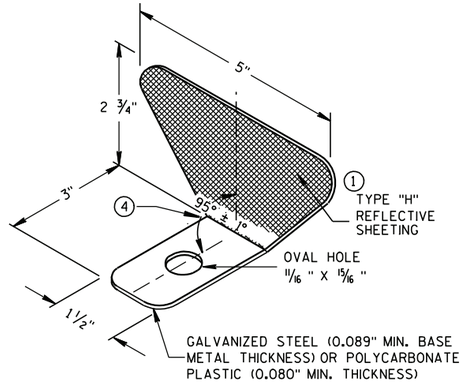
NESTED W BEAM (NW)

USE ALL OTHER STANDARD BEAM GUARD DETAILS FOR CONSTRUCTING NESTED W BEAM (NW)

REFLECTOR SPACING (2)

	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	3
	> 200'	100' C-C	2 (4)	



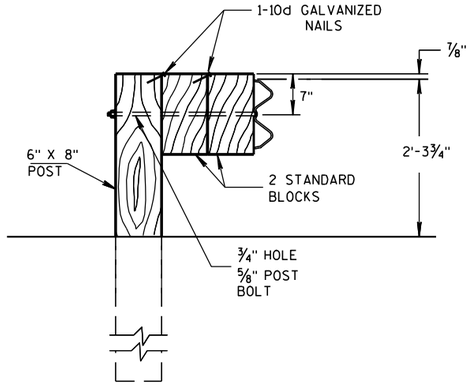


ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION (1)

STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS

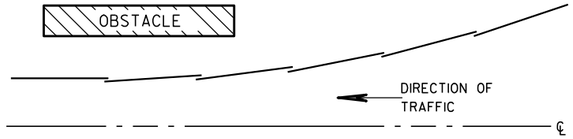
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6
S.D.D. 14 B 15-7b



DETAIL FOR DOUBLE BLOCKS

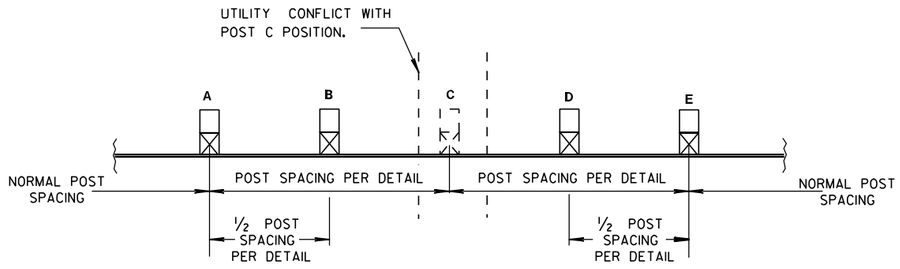
THE NUMBER OF DOUBLE BLOCK POSTS WITHIN A BARRIER RUN IS UNLIMITED



PLAN VIEW
BEAM LAPPING DETAIL

DETAIL FOR TRIPLE BLOCKS

TRIPLE BLOCK DETAIL IS LIMITED TO ONE LOCATION WITHIN A BEAM GUARD RUN.



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION

NOTES: USE DOUBLE OR TRIPLE BLOCKS WHEN UNDERGROUND OBSTACLES PREVENT THE POST FROM BEING INSTALLED.

DO NOT USE EXTRA 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.

STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS

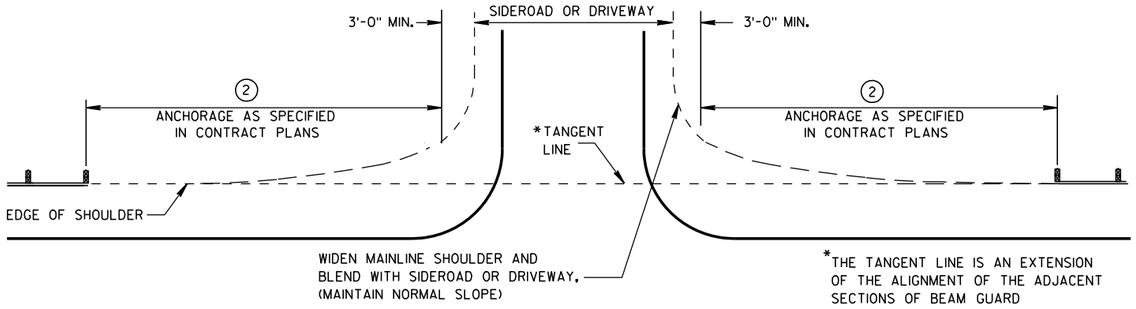
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

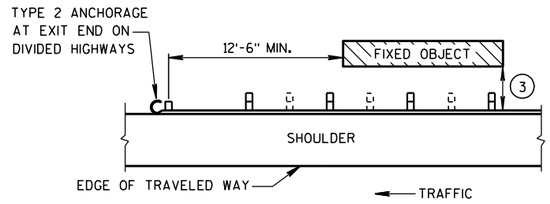
5/23/11	/S/ Jerry H. Zogg	
DATE	ROADWAY STANDARDS ENGINEER	ENT

FHWA

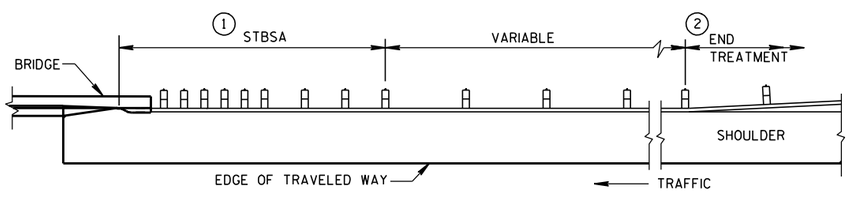
6
S.D.D. 14 B 15-7c



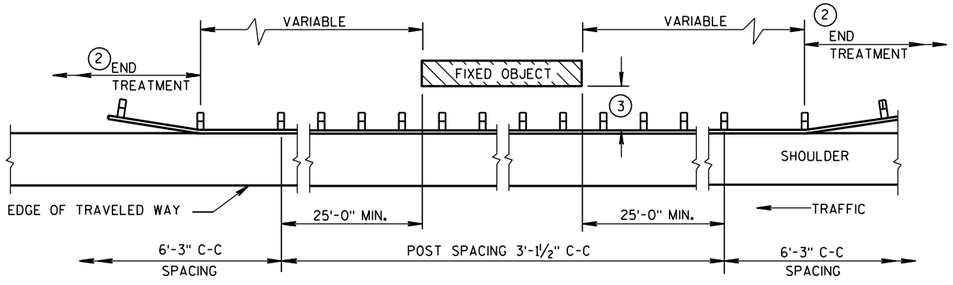
BEAM GUARD AT SIDEROADS OR DRIVEWAYS



BEAM GUARD AT OBSTACLES EXIT END - ONE WAY TRAFFIC

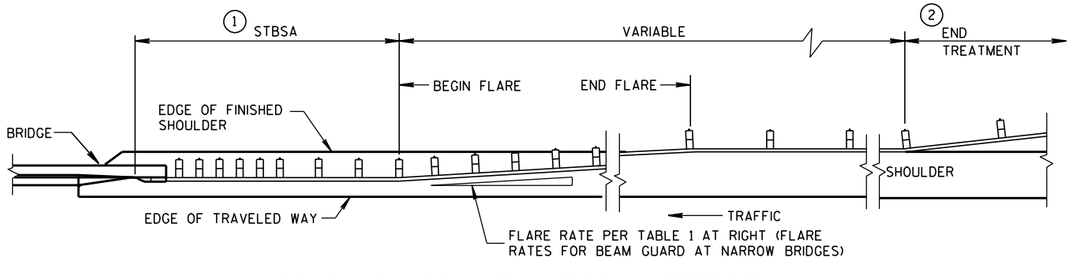


BEAM GUARD AT FULL WIDTH BRIDGES



BEAM GUARD AT OBSTACLES - TWO WAY TRAFFIC

(RAIL TO OBSTACLE CLEARANCE 3'-6" TO 4'-6")



BEAM GUARD AT NARROW BRIDGES

(FLARED TO SHOULDER EDGE, THEN PARALLEL TO ROADWAY)

TABLE 1
FLARE RATES FOR BEAM GUARD AT NARROW BRIDGES

POSTED SPEED (MPH)	FLARE RATE
25	13:1
30	15:1
35	16:1
40	18:1
45	21:1
50	24:1
55	26:1
65	30:1

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE PERTINENT STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

W6 X 9 OR W6 X 8.5 STEEL POSTS WITH NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

THE LOCATIONS AND LENGTHS OF BEAM GUARD ARE SHOWN ELSEWHERE IN THE PLAN.

(1) STEEL THRIE BEAM STRUCTURAL APPROACH (STBSA) - SEE CURRENT SDD 14B20.

(2) USE AN APPROVED END TREATMENT FOR THE TRAFFIC APPROACH SIDE OF BRIDGE/OBSTACLES. USE TYPE 2 ANCHORAGE ONLY AT THE DOWNSTREAM ENDS OF BEAM GUARD LOCATED ALONG ROADWAYS WITH ONE WAY TRAFFIC.

(3)

MINIMUM LATERAL DISTANCE FROM FACE OF BEAM GUARD TO FIXED OBJECT	POST SPACING
3'-6"	3' - 1½"
4'-6"	6' - 3"

STEEL PLATE BEAM GUARD CLASS "A" AT BRIDGES, OBSTACLES AND SIDEROADS/DRIVEWAYS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

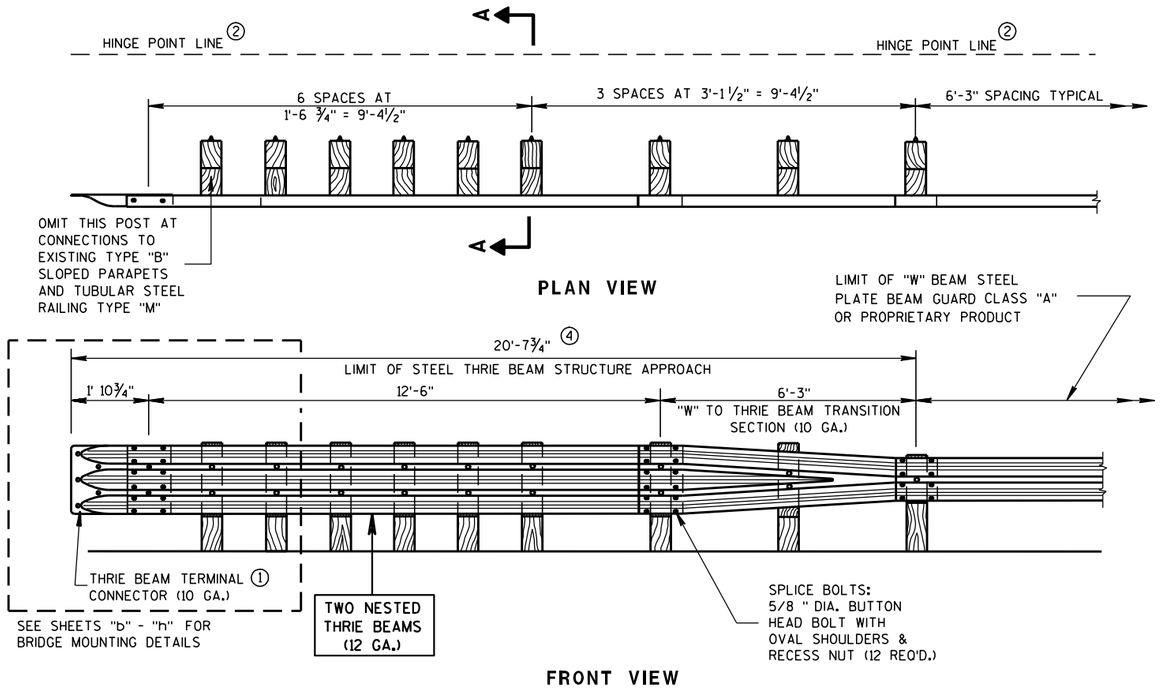
8-21-07 — DATE

/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER

FHWA

6

S.D.D. 14 B 18-6a



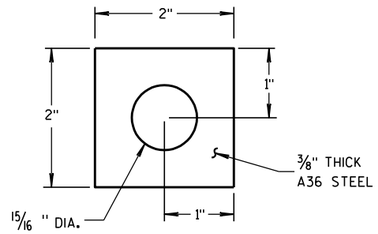


PLATE WASHER DETAIL

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".

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.

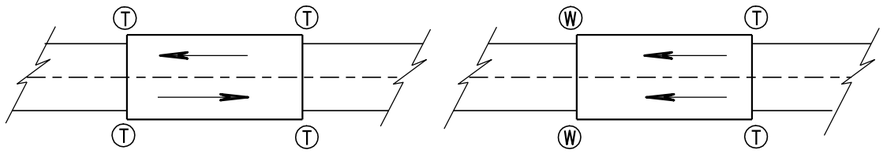
IF ROCK IS ENCOUNTERED DURING EXCAVATION, THE ENGINEER MAY APPROVE USING A 12 INCH DIAMETER POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE APPROXIMATELY 2 1/2 INCHES DEEP. CUT THE POSTS TO LENGTH AND PLACE IN THE HOLE. BACKFILL WITH MATERIAL EXCAVATED FROM THE HOLE AND COMPACT ADEQUATELY, (SEE SDD 14 B 15 - a).

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

(2) MINIMUM EMBEDMENT SHALL BE 4'-0". WHERE EXISTING CONDITIONS DO NOT PERMIT THE APPROPRIATE EARTHWORK SHOWN ON THE PLAN TYPICAL SECTIONS OR DETAILS, THE ENGINEER MAY ALLOW THE REDUCTION OR ELIMINATION OF THE 2 FOOT DISTANCE TO THE HINGE POINT. OTHERWISE BUILD AS THE PLAN SHOWS OR AS THE ENGINEER DIRECTS. IF THE 2 FOOT DISTANCE TO THE HINGE POINT IS REDUCED OR ELIMINATED, INCREASE THE POST EMBEDMENT DEPTH TO 4'-6" OR MORE.

(3) POST BOLTS ARE 5/8" DIAMETER ASTM A307 BUTTON HEAD BOLT. A POST BOLT REQUIRES A 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX AND A 5/8" DIAMETER F844 FLAT WASHER. LENGTH OF POST BOLT MAY VARY.

(4) ALL WOOD POSTS MUST BE 6" X 8" AND AT LEAST 7'-0" LONG.



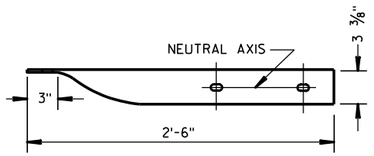
TWO WAY TRAFFIC

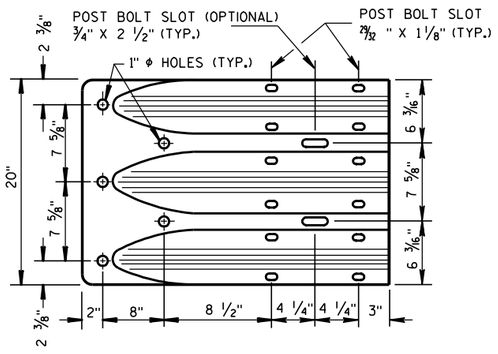
ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

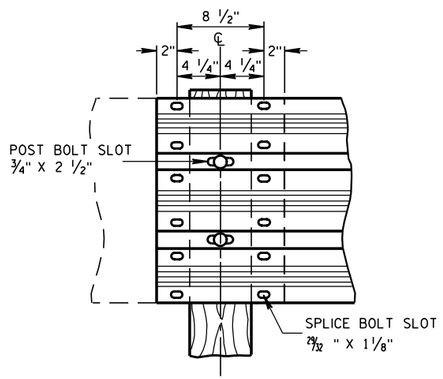
(W) W-BEAM CONNECTION WHEN REQUIRED

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

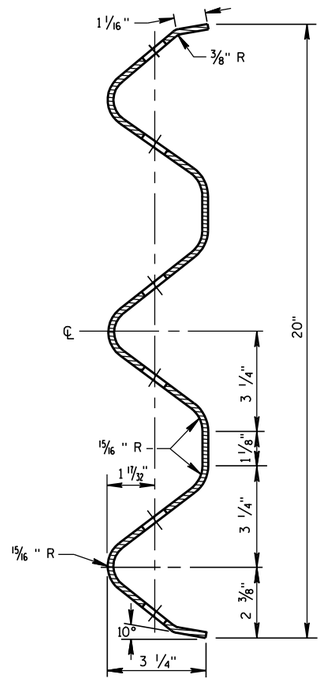




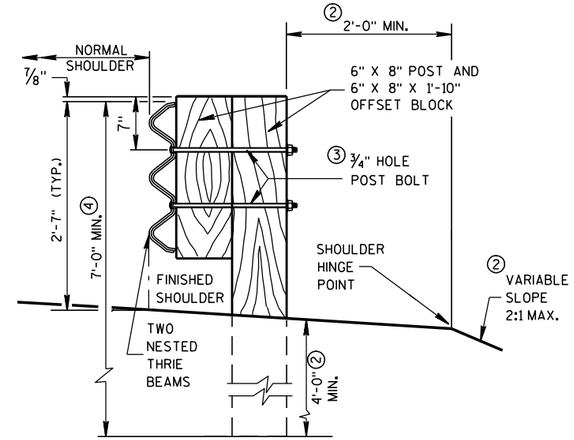
THRIE BEAM TERMINAL CONNECTOR



THRIE BEAM SPLICE



SECTION THRU THRIE BEAM RAIL ELEMENT



SECTION A-A

STEEL THRIE BEAM STRUCTURE APPROACH

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

2-8-2012
DATE

/S/ Jerry H. [illegible]
ROADWAY STANDARDS [illegible]42 [illegible]ENT
ENGINEER

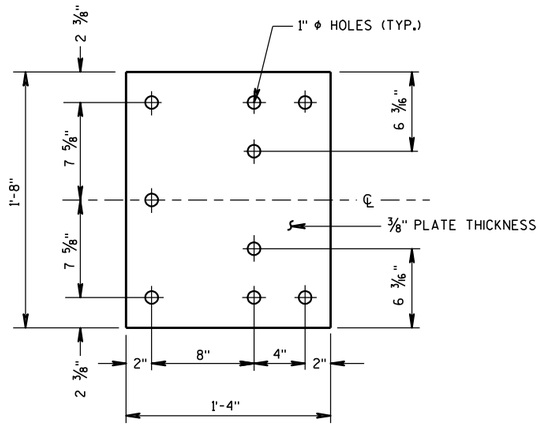
FHWA

6

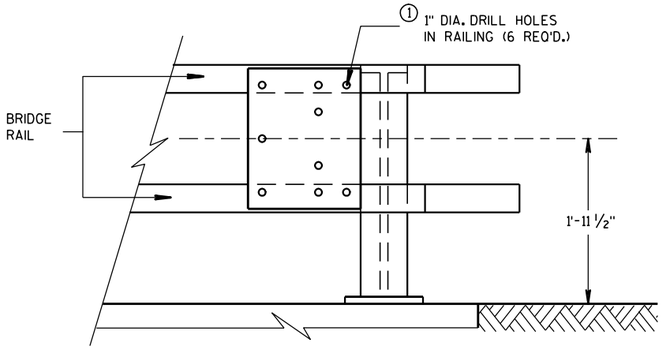
S.D.D. 14 B 20-10a

6

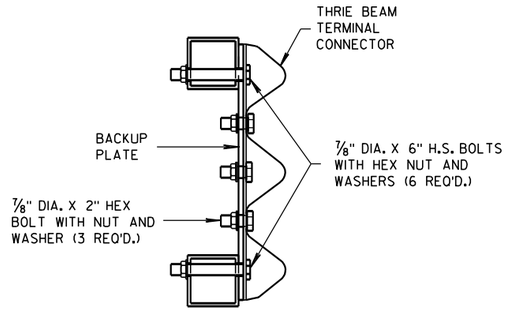
S.D.D. 14 B 20-10a



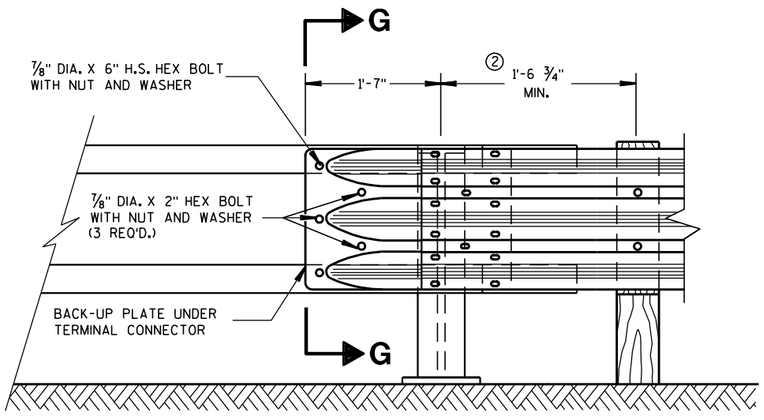
BACK-UP PLATE DETAIL



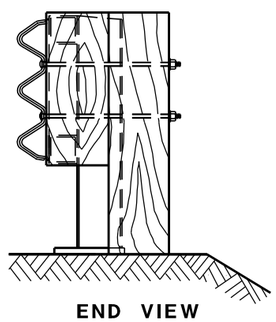
BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



SECTION G-G



FRONT VIEW



END VIEW

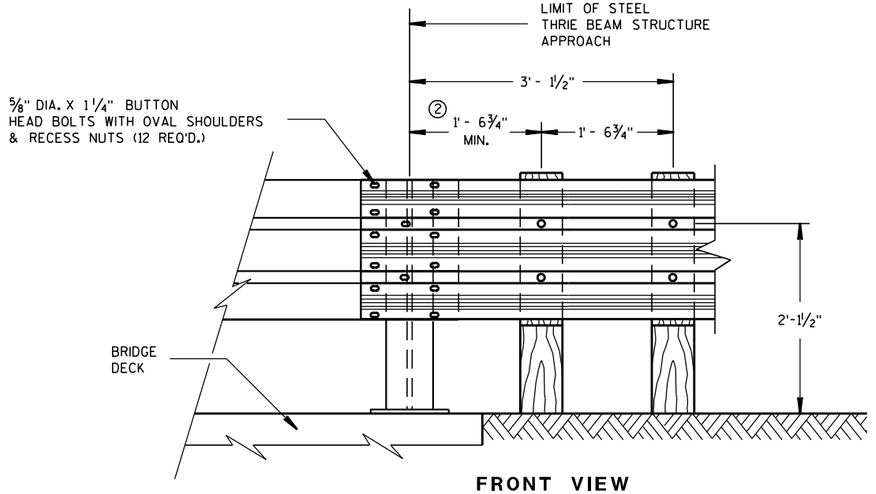
THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"

GENERAL NOTES

BOLTS, PLATES, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A 325 AND BE GALVANIZED IN ACCORDANCE WITH ASTM A 153.

① INCLUDE THE PAYMENT FOR DRILLING HOLES IN RAILING IN THE ITEM "STEEL THRIE BEAM STRUCTURE APPROACH".

② VARY THIS DIMENSION DEPENDING ON ABUTMENT TYPE, WINGWALL DETAILS, AND ANGLE OF SKEW. PLACE THE FIRST WOOD POST OFF THE BRIDGE SHALL AS CLOSE AS FEASIBLE TO THE STEEL END POST.



FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO BRIDGE RAILING TYPES "F" AND "W"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

2-8-2012 DATE — /S/ Jerry H. [illegible] ROADWAY STANDARDS ENGINEER — ENT

FHWA

6

S.D.D. 14 B 20-10e

6

S.D.D. 14 B 20-10e

BILL OF MATERIALS

NOTE NO.	QTY.	DESCRIPTION
(1)	4	WOOD BREAKAWAY TERMINAL POST: 5½" X 7½" X 3'-9"
(2)	**	STEEL TUBE: OPTION 1 - QUANITY OF 4 TS 8" X 6" X 0.188", 4'-6" LONG OR OPTION 2 - QUANITY OF 2 TS 8" X 6" X 0.188", 6'-0" AND 2 TS 8" X 6" X 0.188", 4'-6" LONG
(3)	2	SOIL PLATE: 2'-0" X 1'-6" X ¼" **
(4)	4	WOOD BREAKAWAY CRT POST: 6" X 8" X 6'-0"
(5)	6	WOOD OFFSET BLOCKS: 6' X 8" X 1'-2"
(6)	1	PIPE SLEEVE: 2" X 5 ½" STANDARD PIPE
(7)	1	BEARING PLATE
(8)	1	BCT CABLE ASSEMBLY
(9)	1	CABLE ANCHOR BOX
(10)	1	STRUT & YOKE
(11)	1	STEEL PLATE BEAM, END PANEL 12 GA. 13'-6½" LONG FOR SKT-350, ET-2000 AND ET-2000 PLUS
(12)	3	STEEL PLATE BEAM: 12 GA. 13'-6½"
(13)	1	ET-2000/ET-2000 PLUS GUARDRAIL EXTRUDER OR SKT-350 IMPACT HEAD: AS FURNISHED BY MANUFACTURER
(14)	1	REFLECTIVE SHEETING TYPE H: 18" X 18"
(15)	1	E.A.T. MARKER POST

GENERAL NOTES

FOLLOW MANUFACTURE'S BOLTING RECOMMENDATIONS. IF NONE ARE AVAILABLE, INSTALL ⅝" ϕ X 1'-6" BUTTON HEAD BOLTS AT ALL POSTS EXCEPT FOR POST 1.

(A) THE SLOPE IN THE AREA BOUNDED BY THE EXTENDED VEHICLE RUNOUT PATH (EVRP), THE HINGE POINT LINE (HPL),AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.

(B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED.

(C) THE 13 SLOT FIRST RAIL PANEL MAY BE USED IN LIEU OF THE 3 SLOT RAIL PANEL ON SKT-350 ONLY.

(D) THE TOP OF THE STEEL TUBE ON POSTS 1 THROUGH 4 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.

(E) THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST 5 THROUGH 8 SHALL BE ¾" ABOVE THE FINISHED GROUND LINE.

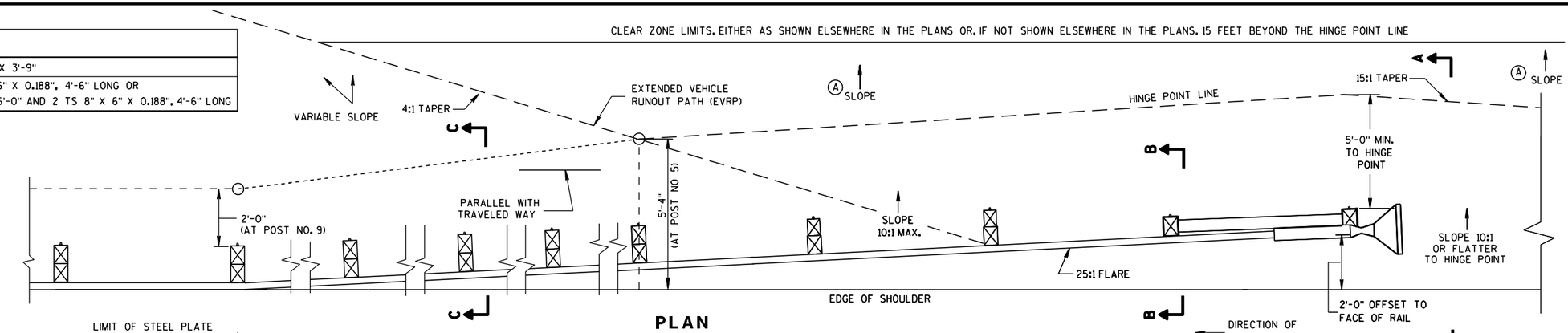
(F) SHEETING IS ATTACHED TO 0.040 ALUMINUM SHEET AND ATTACHED TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS. ONE SCREW PER CORNER OF E.A.T.

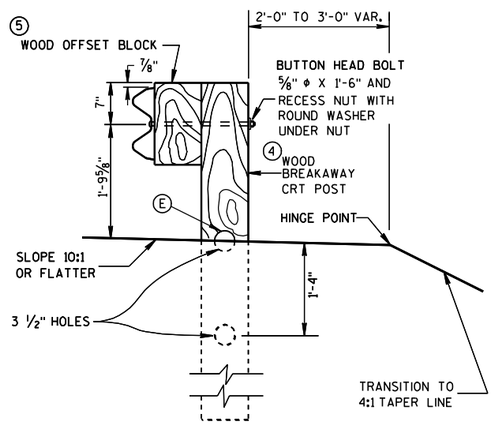
STEEL POSTS SHALL NOT BE ALLOWED FOR USE WITH ENERGY ABSORBING TERMINALS.

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

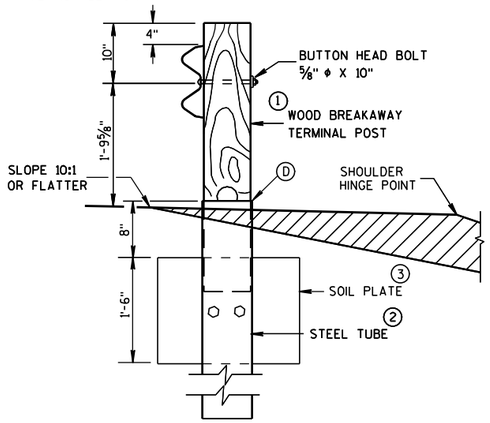
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

** SDD SHOWS 4 - 54 INCH STEEL TUBES WITH SOIL PLATES INSTALLED ON POST 1 AND POST 2. POST 3 AND 4 DO NOT NEED SOIL PLATES. AN ALTERNATIVE INSTALLATION WOULD CONSIST OF 2 - 72 INCH STEEL TUBES ON POST 1 AND POST 2 AND 54 INCH SOIL TUBES ON POSTS 3 AND 4. THE ALTERNATIVE INSTALLATION DOES NOT REQUIRE SOIL PLATES.

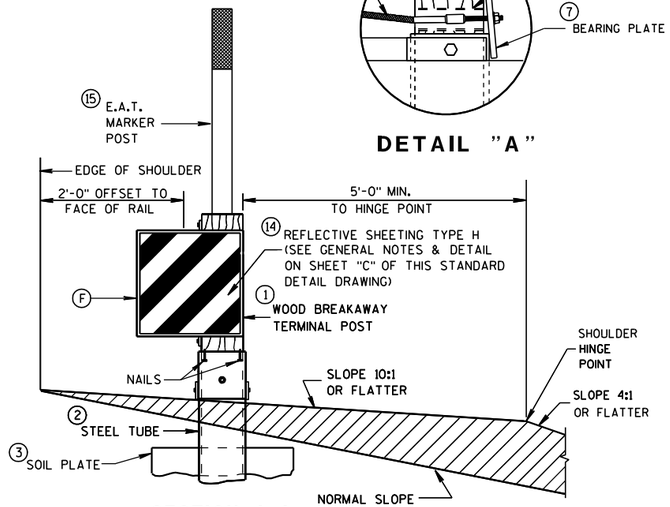




SECTION C-C
TYPICAL AT POST NOS. 6, 8

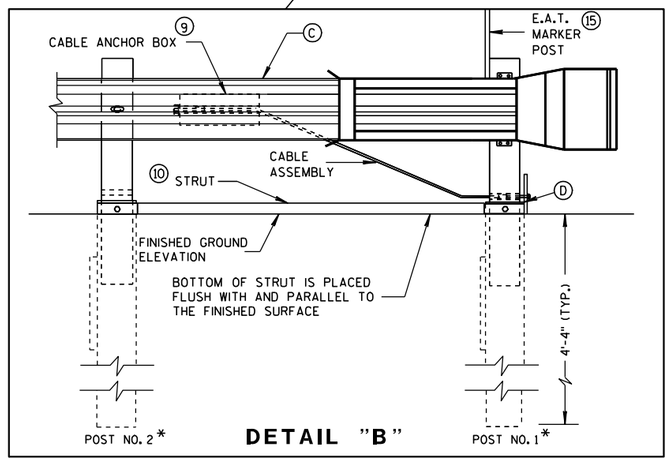


SECTION B-B
TYPICAL AT POST NO. 2*



DETAIL "A"

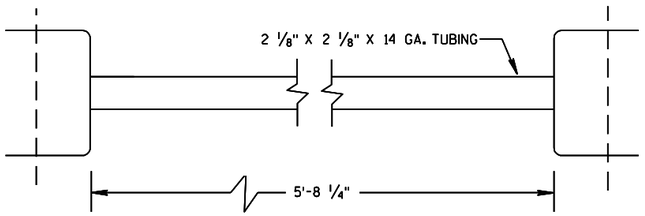
SECTION A-A
TYPICAL AT POST NO. 1*



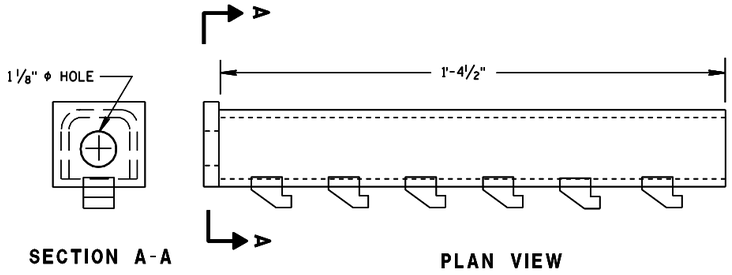
DETAIL "B"

STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL

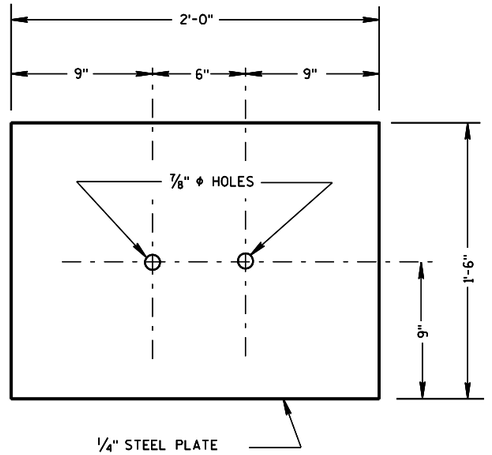
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



⑩ STRUT DETAIL (SKT-350)

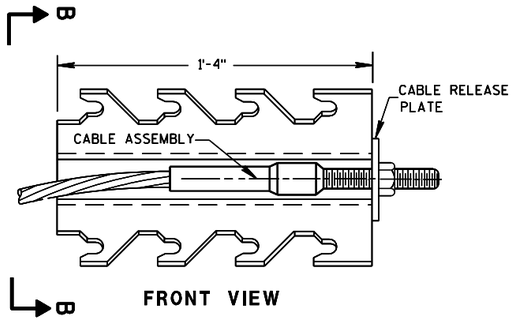


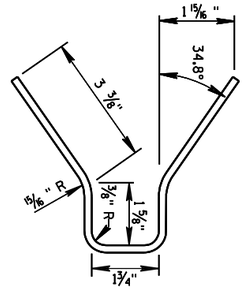
⑨ CABLE ANCHOR BOX (ET-2000/ET-2000 PLUS)



③ SOIL PLATE

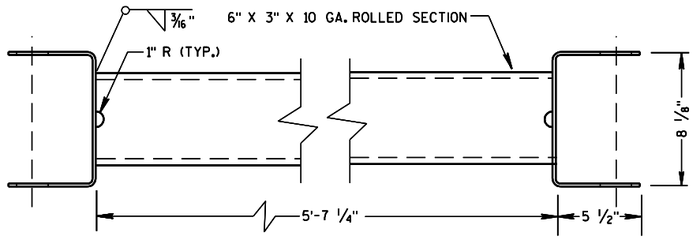
(SKT-350, ET-2000/ET-2000 PLUS)





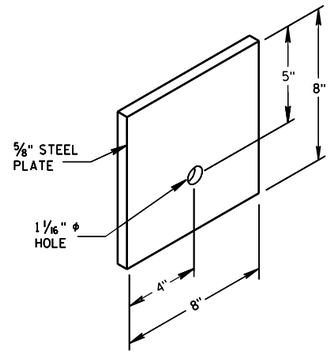
⑨ CABLE ANCHOR BOX (SKT-350)

(SKT-350)



⑩ STRUT DETAIL (ET-2000/ET-2000 PLUS)

(ET-2000/ET-2000 PLUS)



⑦ STEEL BEARING PLATE

(SKT-350, ET-2000/ET-2000 PLUS)

6

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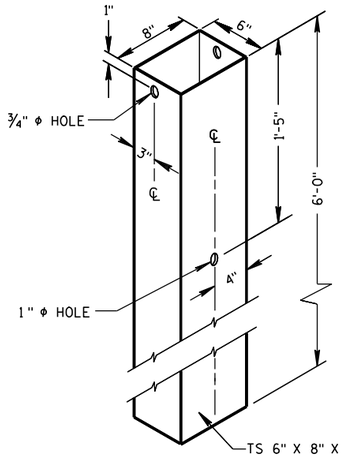
S.D.D. 14 B 24-7b

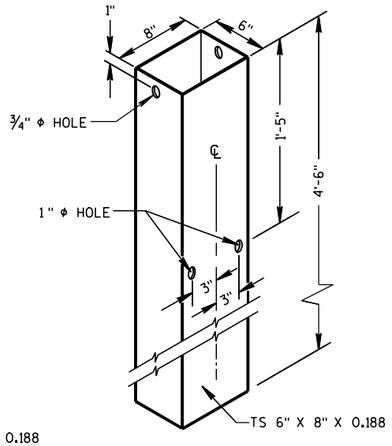
S.D.D. 14 B 24-7b

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

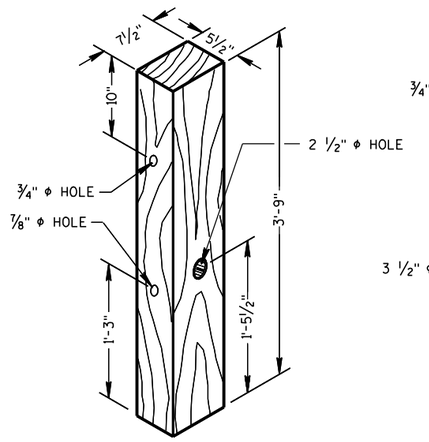
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



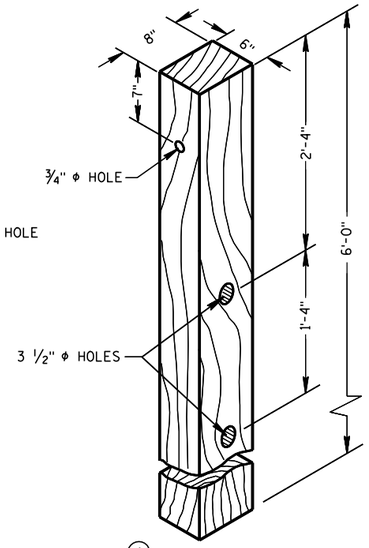
② 72" STEEL TUBE
(POSTS NO. 1-4



② 54" STEEL TUBE
(POSTS NO. 1-4



① TERMINAL POST
(POSTS NO. 1-4



④ CRT POST
(POSTS NO'S 5-8

WOOD BREAKAWAY POSTS

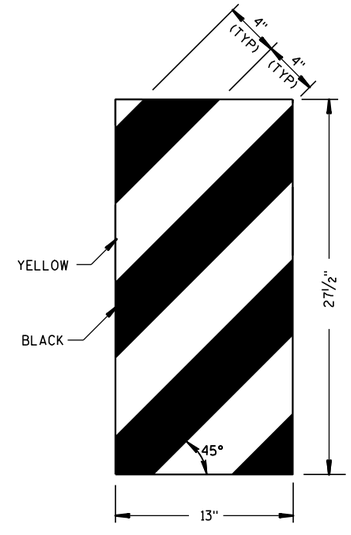
GENERAL NOTES

STEEL PLATE BEAM GUARD, ENERGY ABSORBING TERMINAL SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE EACH, WHICH SHALL INCLUDE HARDWARE, STEEL PLATE BEAM GUARD, POSTS, REFLECTIVE SHEETING AND INSTALLATION AS SHOWN.

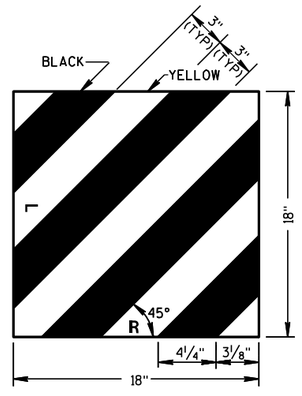
WHEN ROCK IS ENCOUNTERED DURING EXCAVATION, A 12 INCH DIA. POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK MAY BE USED IF APPROVED BY THE ENGINEER. GRANULAR MATERIAL SHALL BE PLACED IN THE BOTTOM OF THE HOLE APPROXIMATELY 2 ½" INCHES DEEP TO PROVIDE DRAINAGE. THE SOIL TUBES SHALL BE FIELD CUT TO LENGTH, PLACED IN THE HOLE AND BACKFILLED WITH ADEQUATELY COMPACTED MATERIAL EXCAVATED FROM THE HOLE.

SEE APPROVED PRODUCTS LIST FOR ACCEPTABLE E. A. T. MARKER POST.

(G) ½" DIA. X 3" LAG BOLT WITH WASHER.

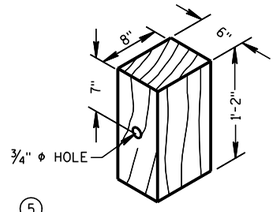


ET-2000 PLUS ONLY

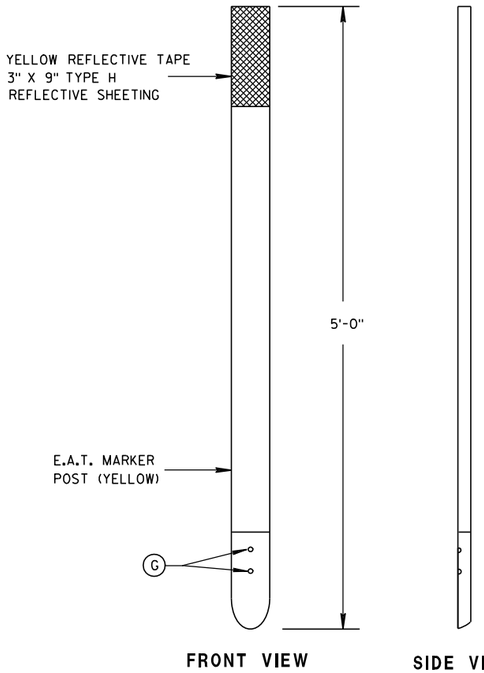


ET-2000 AND SKT-350

⑭ REFLECTIVE SHEETING DETAILS

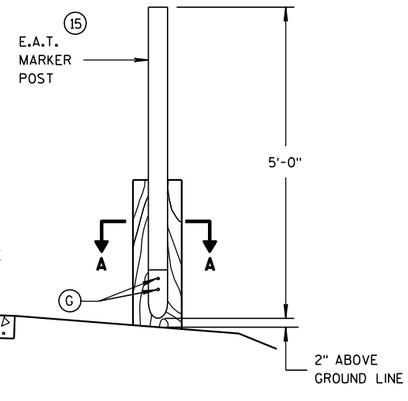


⑤ WOOD OFFSET BLOCK
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2

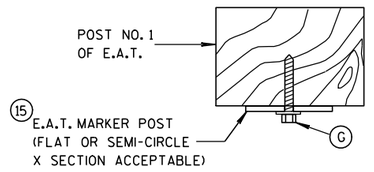


FRONT VIEW SIDE VIEW

⑮ E.A.T. MARKER POST



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



SECTION A-A

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-12-10 DATE
/S/ Jerry H. [illegible]
ROADWAY STANDARDS ENGINEER
FHWA

6

S.D.D. 14 B 24-7c

6

S.D.D. 14 B 24-7c

GENERAL NOTES

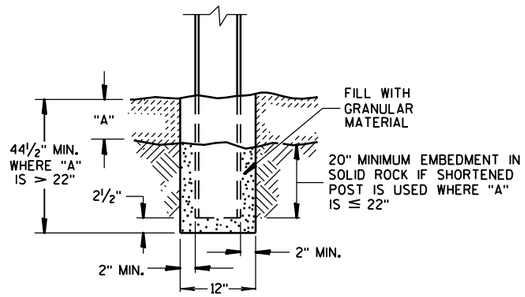
1. WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

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.

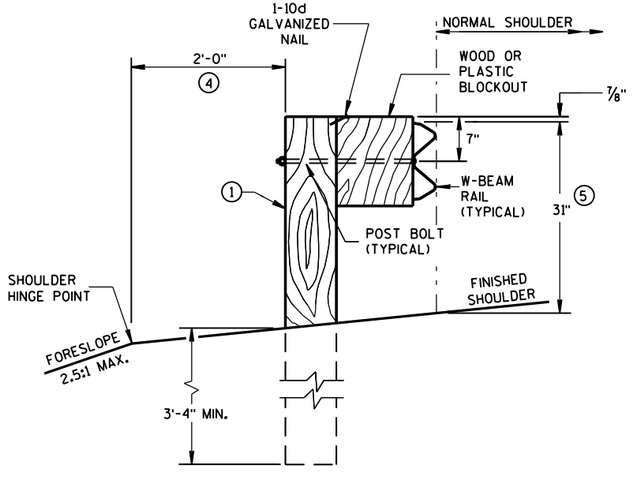
3. IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2½INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO 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 27¾" TO 32".

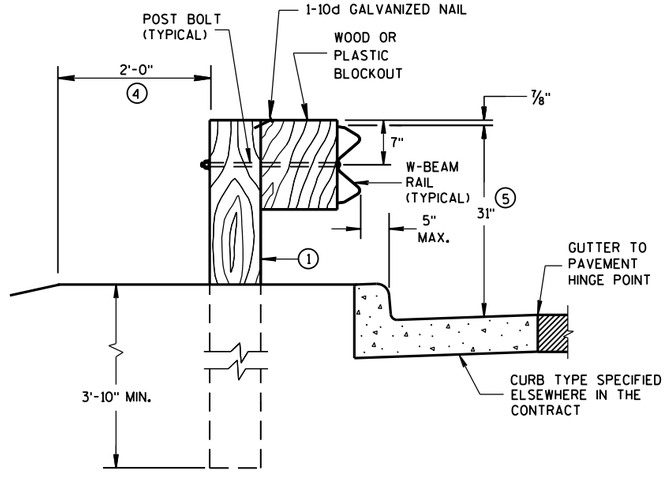


END VIEW
SETTING STEEL OR WOOD POST IN ROCK ③



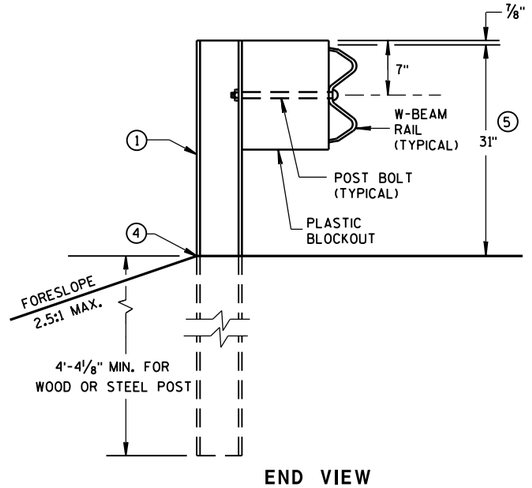
END VIEW

LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



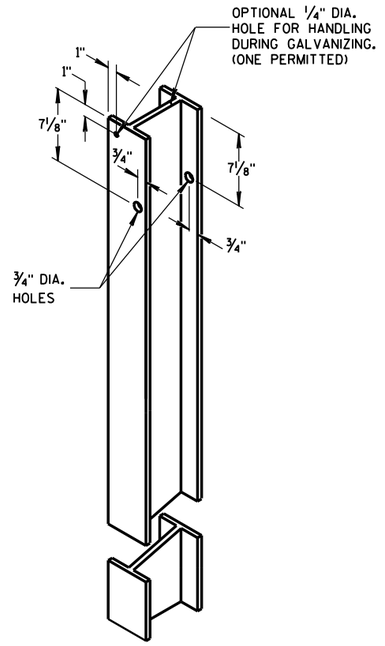
END VIEW

LOCATED ALONG A CURBED ROADWAY

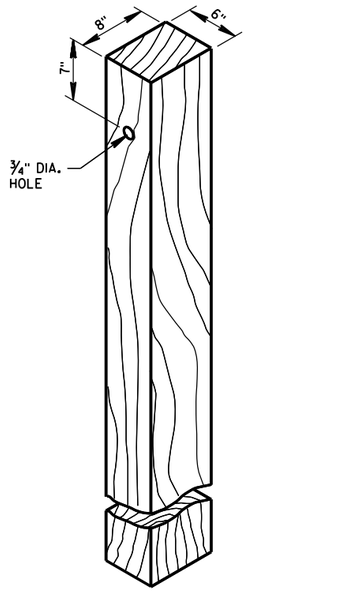


END VIEW

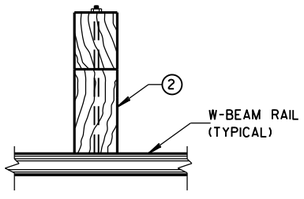
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



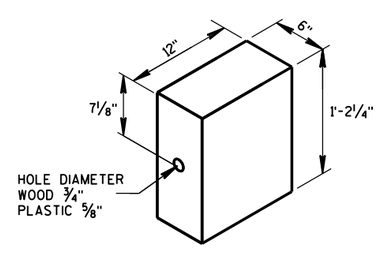
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) ①



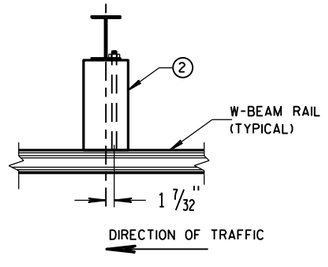
WOOD POST
(6" X 8") NOMINAL ①



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



WOOD OR
PLASTIC BLOCKOUT ②

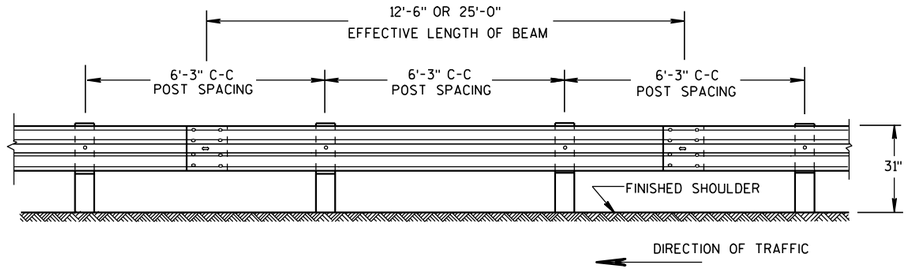


PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

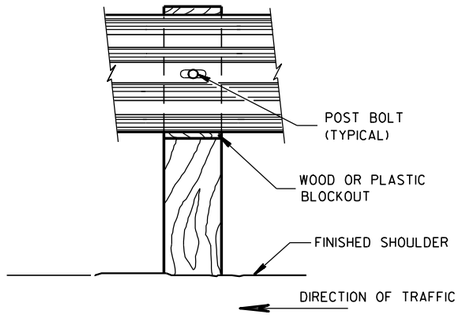
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6
S.D.D. 14 B 42-2a



FRONT VIEW

POST SPACING STANDARD INSTALLATION



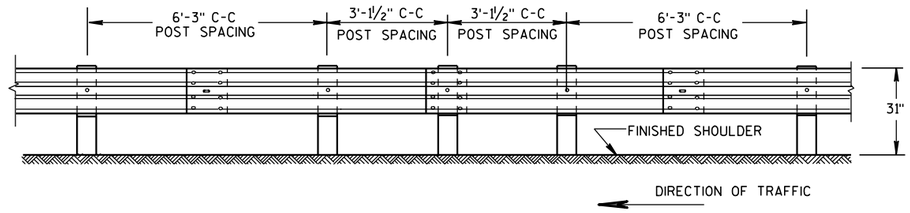
FRONT VIEW AT WOOD POST

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.

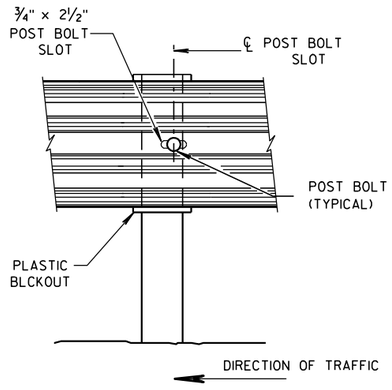
POST BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 5/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

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.

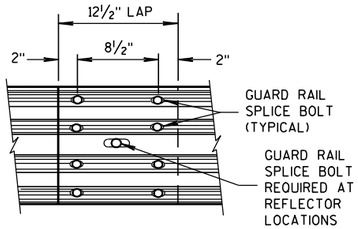


FRONT VIEW

HALF POST SPACING (HS) AND HALF POST SPACING WITH LONGER POSTS (K)

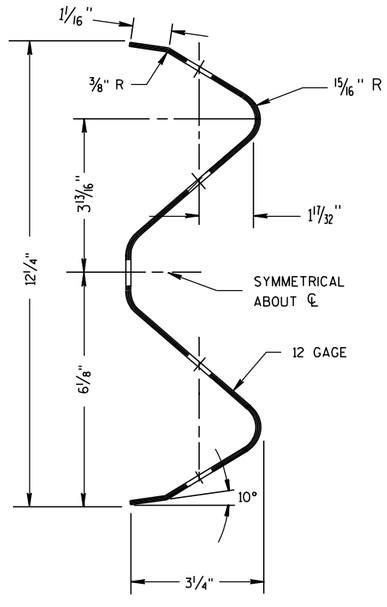


FRONT VIEW AT STEEL POST

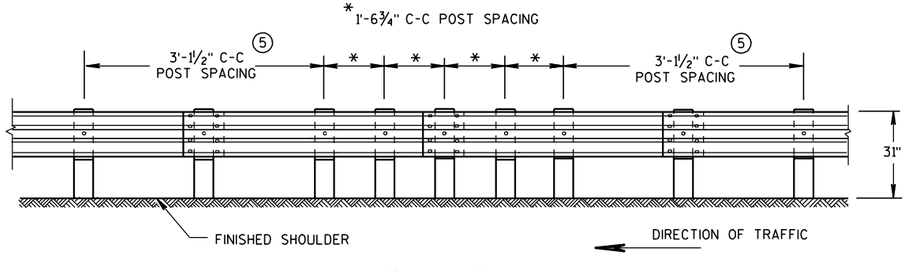


FRONT VIEW

MID-SPAN BEAM SPLICE

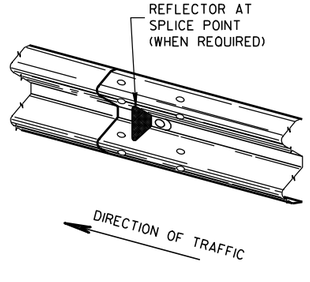


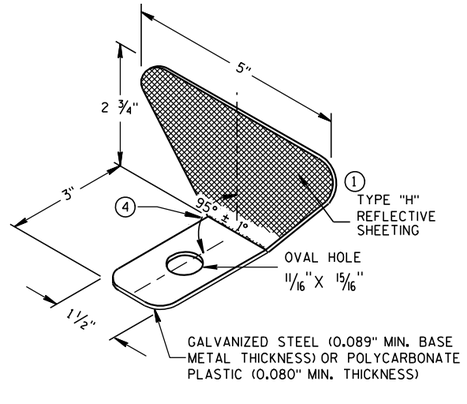
SECTION THRU W-BEAM RAIL



FRONT VIEW

QUARTER POST SPACING (QS)





ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION ①

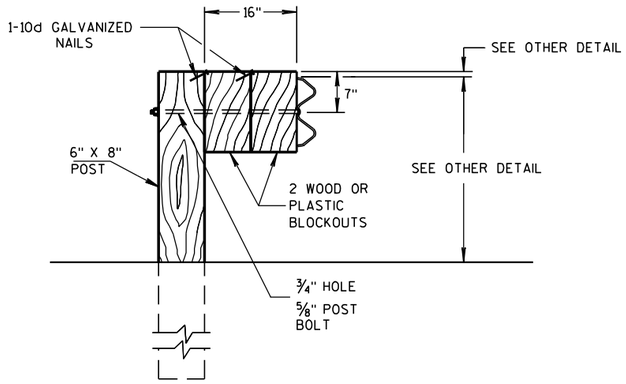
REFLECTOR SPACING ②

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

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

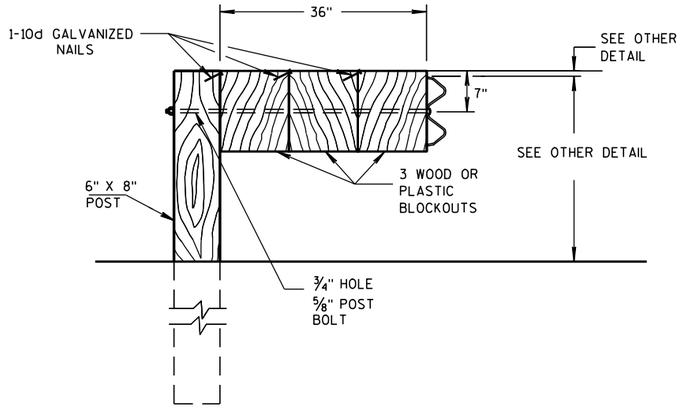
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6
S.D.D. 14 B 42-2b



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.

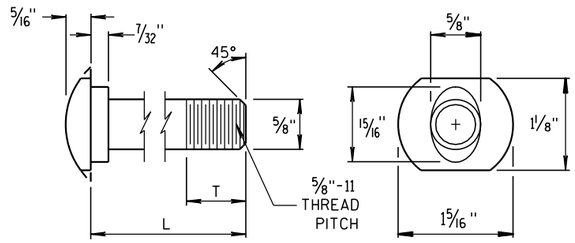


DETAIL FOR 36" BLOCKOUT DEPTH

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.

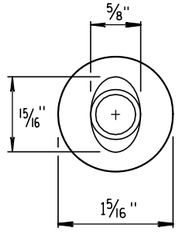
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

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

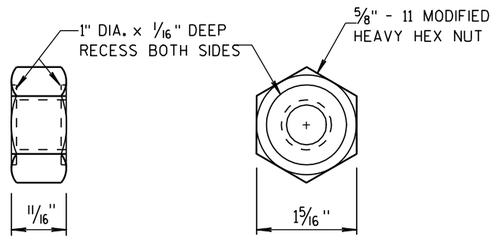


POST BOLT TABLE

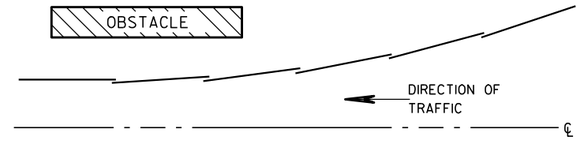
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

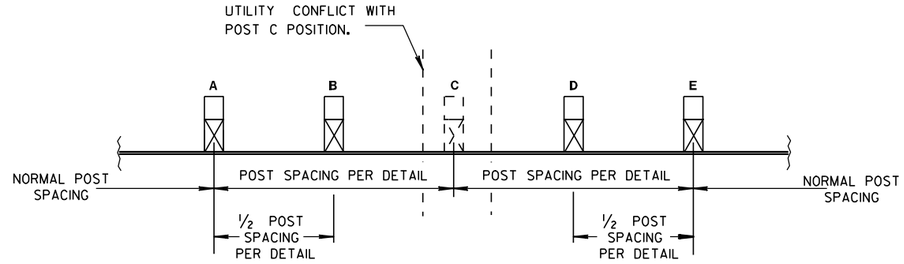


POST BOLT AND RECESS NUT

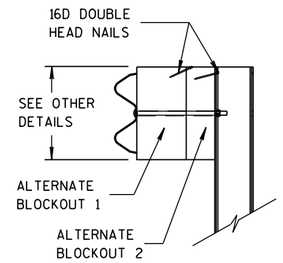


PLAN VIEW

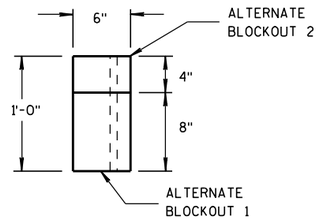
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

11/15/2011
DATE

/S/ Jerry H. [illegible]
ROADWAY STANDARDS ENGINEER

FHWA

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S.D.D. 14 B 42-2c

GENERAL NOTES

(A) THE SLOPE IN THE AREA BOUNDED BY THE EXTENDED VEHICLE RUNOUT PATH (EVRP), THE HINGE POINT LINE (HPL),AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.

(B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED.

(C) DIFFERENT MANUFACTURES REQUIRE DIFFERENT PERFORATED W-BEAM RAIL END PANELS. SEE MANUFACTURES INFORMATION.

(D) THE TOP OF THE STEEL TUBE ON POST 1 AND POST 2 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.

(F) SHEETING IS ATTACHED TO 0.040 ALUMINUM SHEET AND ATTACHED TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS. ONE SCREW PER CORNER OF E.A.T.

(G) ½" DIAMETER X 3" LONG LAG BOLT AND WASHER.

(H) HARDWARE VARIES BETWEEN DIFFERENT MANUFACTURES. SEE MANUFACTURE'S DRAWING FOR INFORMATION.

(I) DIMENSIONS MAY VARY. SEE MANUFACTURE'S INFORMATION.

SEE SDD 14B42 FOR MORE INFORMATION.

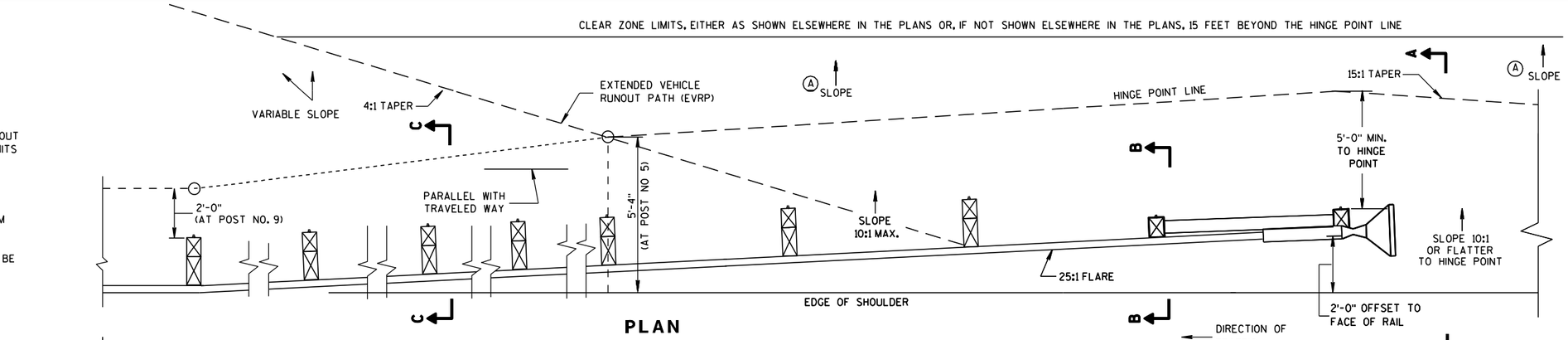
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

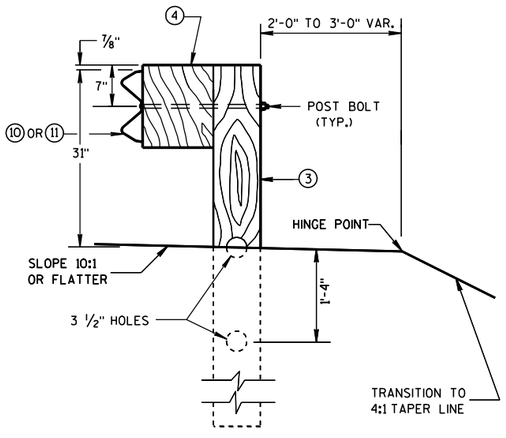
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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.

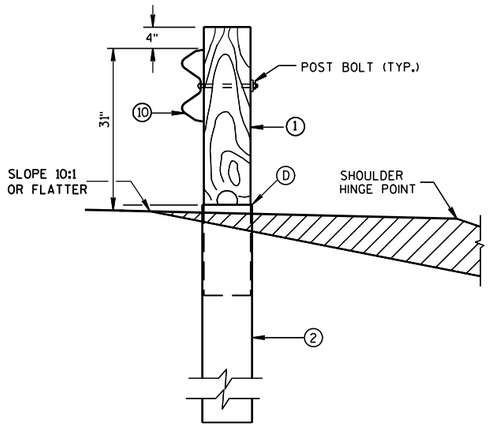
PATTERN AND COLORS ON REFLECTIVE SHEETING TYPE H ARE TO CONFORM TO OM3-L OR OM3-R OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE (± ¾")

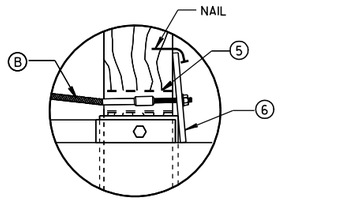


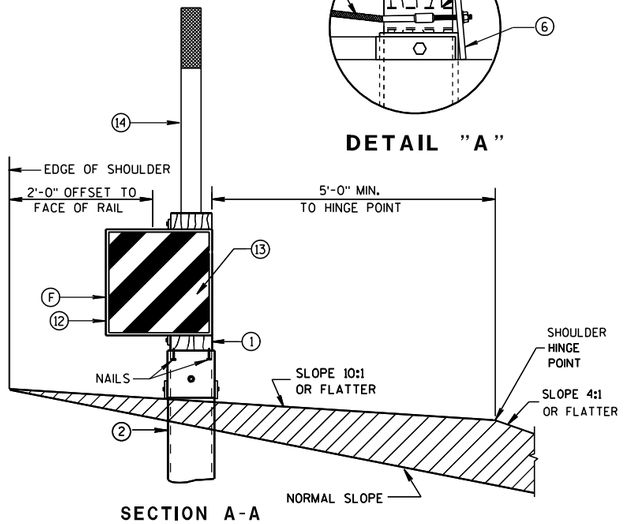


SECTION C-C
TYPICAL AT POST NOS. 3-9

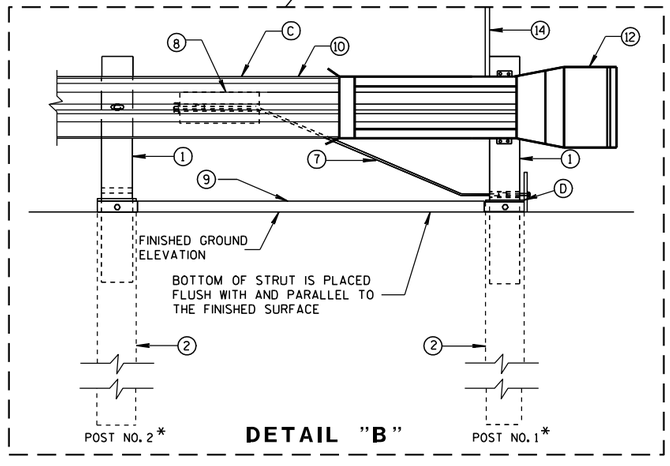


SECTION B-B
TYPICAL AT POST NO. 2*





SECTION A-A
TYPICAL AT POST NO. 1*



DETAIL "B"

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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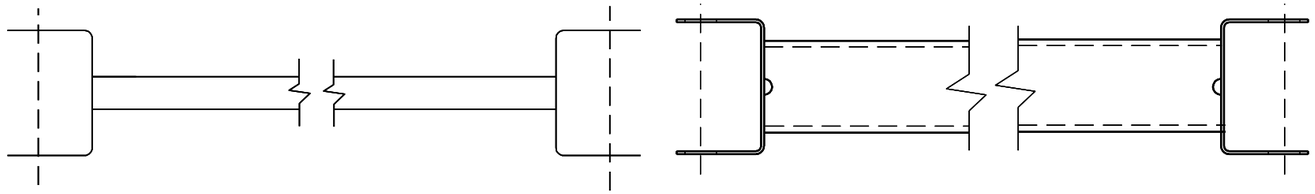
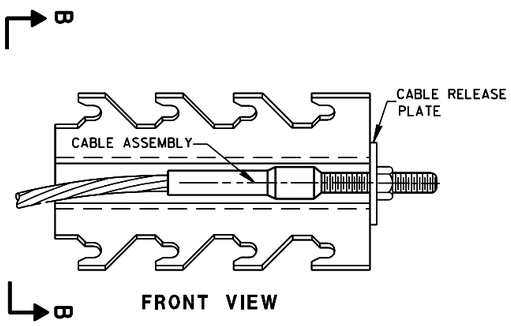


(9) (H)

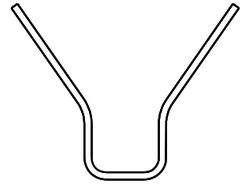
GENERIC GROUND STRUT

BILL OF MATERIALS

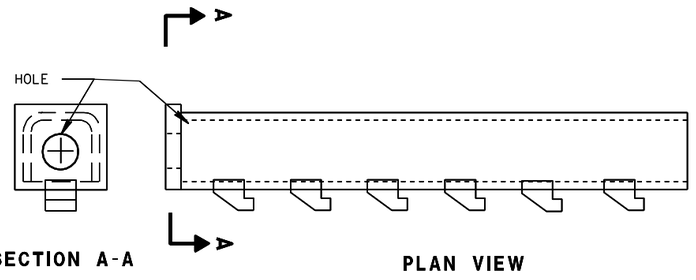
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
(1)	WOOD BREAKAWAY POST
(2)	6" X 8" X 0.188", 6'-0" LONG FOUNDATION TUBE AT POSTS 1 AND 2
(3)	WOOD CRT
(4)	WOOD BLOCKOUT
(5)	PIPE SLEEVE
(6)	BEARING PLATE
(7)	BCT CABLE ASSEMBLY
(8)	ANCHOR 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)



FRONT VIEW



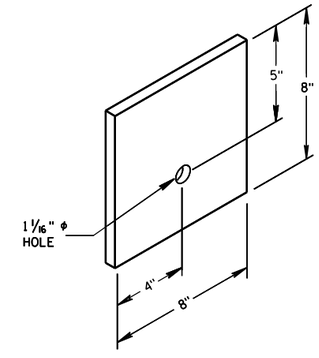
SECTION B-B



SECTION A-A

PLAN VIEW

GENERIC ANCHOR CABLE BOX (8) (H)



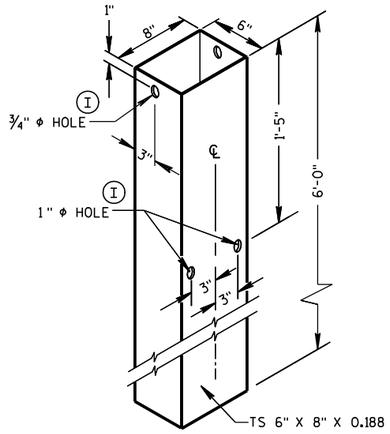
BEARING PLATE (6)

MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

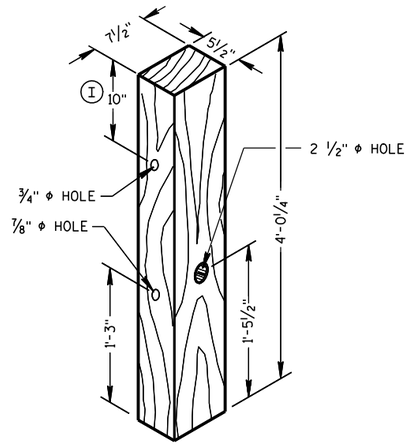
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

S.D.D. 14 B 44-1b

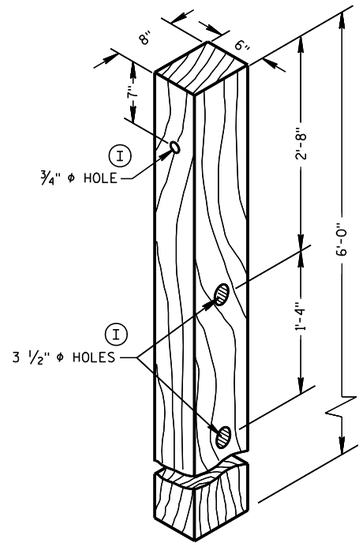


FOUNDATION TUBE (2)



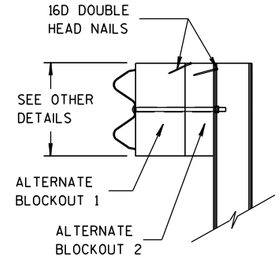
POSTS NUMBER 1 AND 2

WOOD BREAKAWAY POST (1)

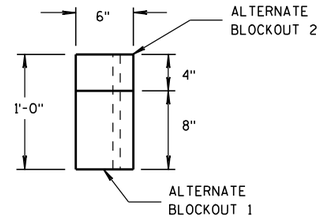


POSTS NUMBER 3-9

WOOD CRT POST (3)

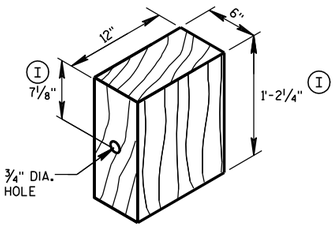


SIDE VIEW



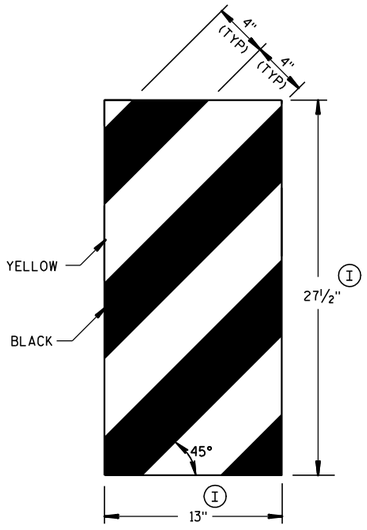
TOP VIEW

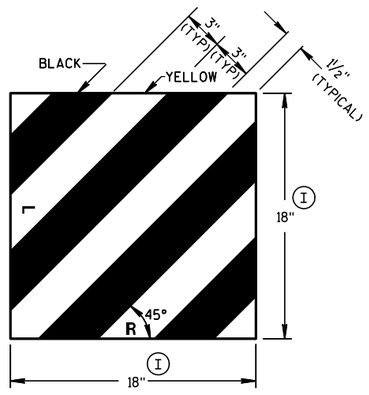
ALTERNATE WOOD BLOCKOUT DETAIL



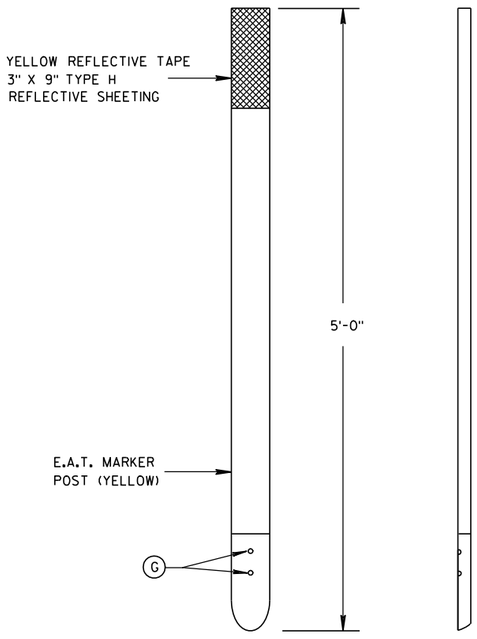
WOOD BLOCKOUT (4)

REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2





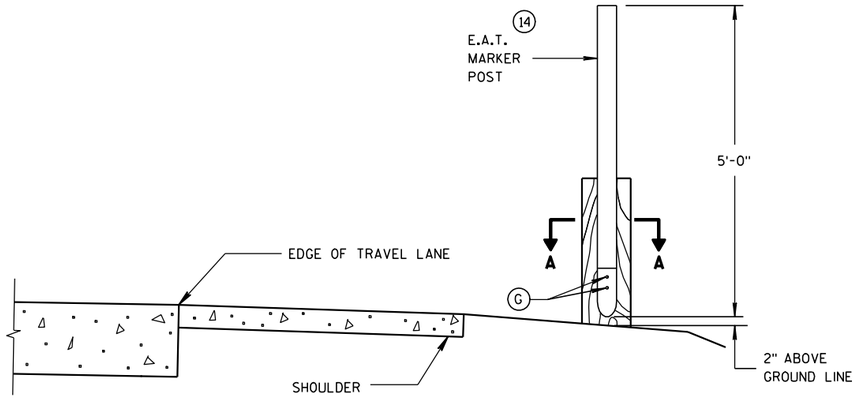
GENERIC REFLECTIVE SHEETING (13) (H)



FRONT VIEW

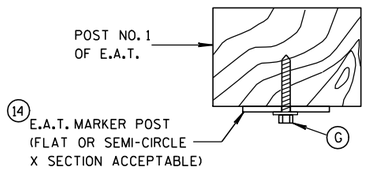
SIDE VIEW

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

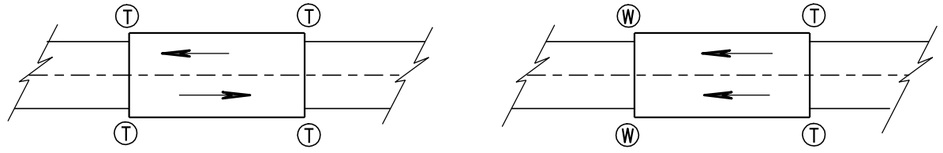
MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
5/23/2011 — DATE
/S/ Jerry H. [illegible] — ROADWAY STANDARDS 52 ENGINEER
FHWA

6

S.D.D. 14 B 44-1c



TWO WAY TRAFFIC

ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

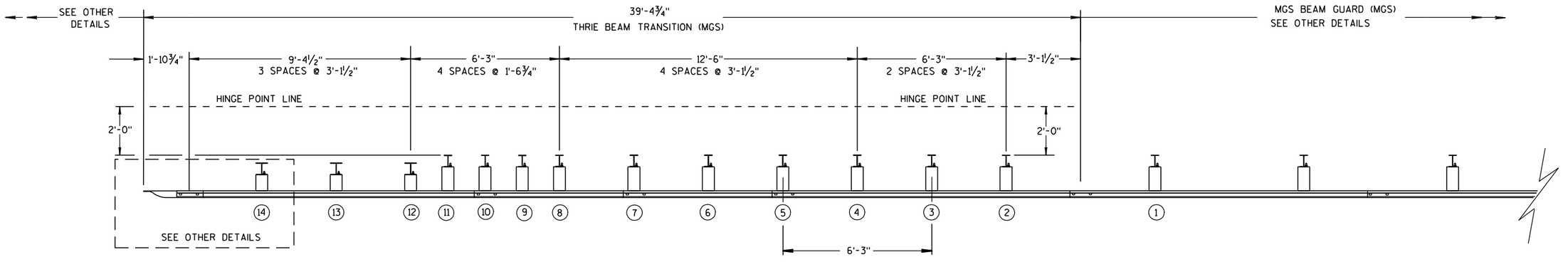
BOLT THE THRIE BEAM TO ALL POSTS AND BLOCKOUTS. DRILL OR PUNCH BOLT HOLES IN THE BEAM IF THE POST SPACING IS LESS THAN 6'-3.

IF ROCK IS ENCOUNTERED DURING EXCAVATION, SEE STANDARD DETAIL DRAWING 14 B 42.

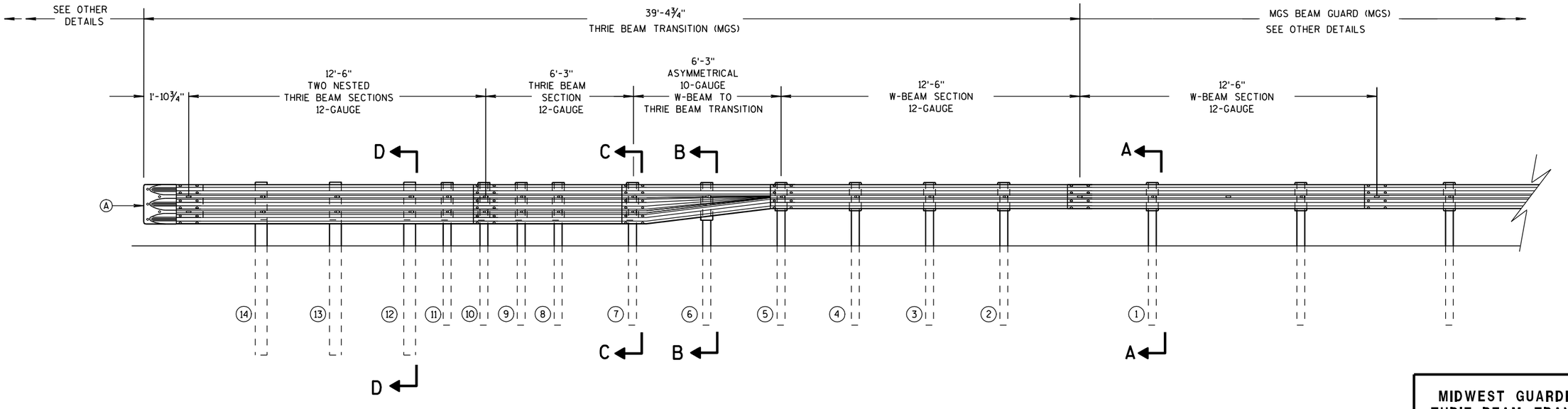
TRANSITION USES STEEL POSTS ONLY.

SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

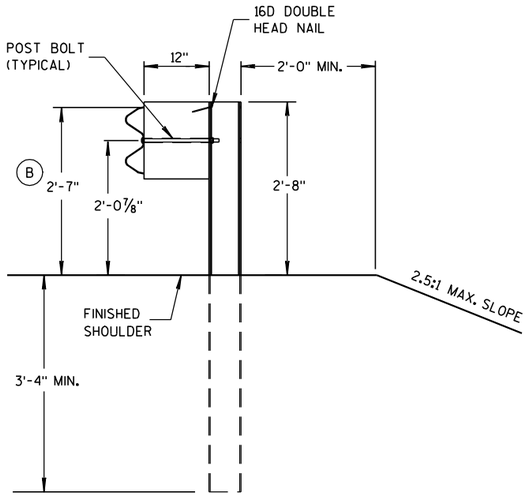
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

S.D.D. 14 B 45-2a

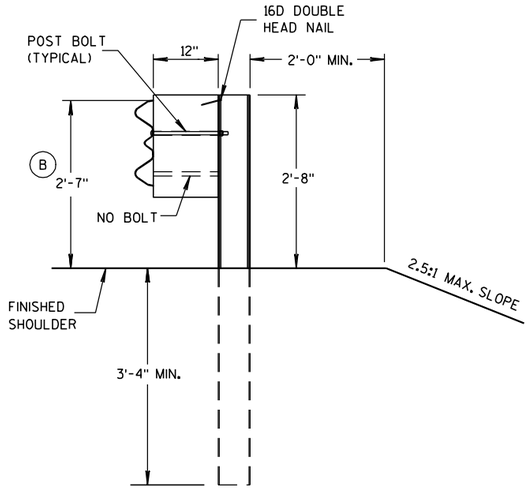
GENERAL NOTES

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



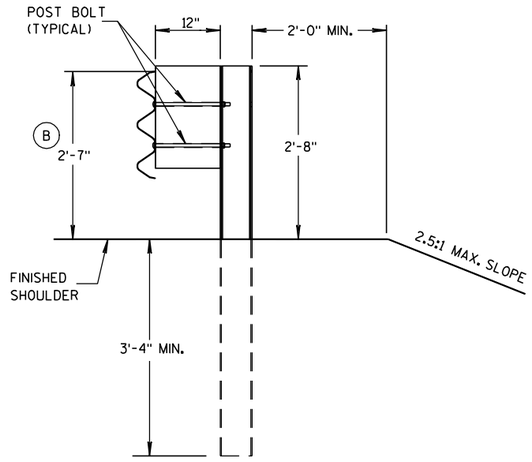
SECTION A-A

POSTS 1-5



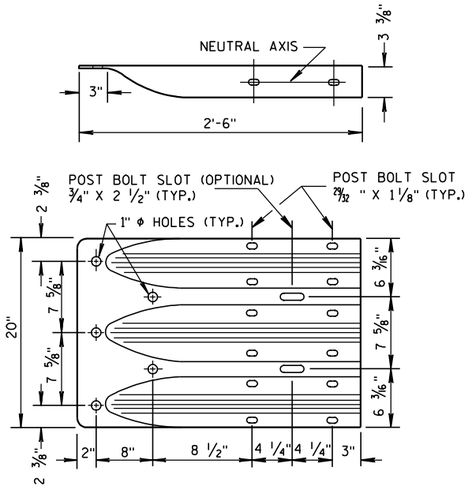
SECTION B-B

POST 6

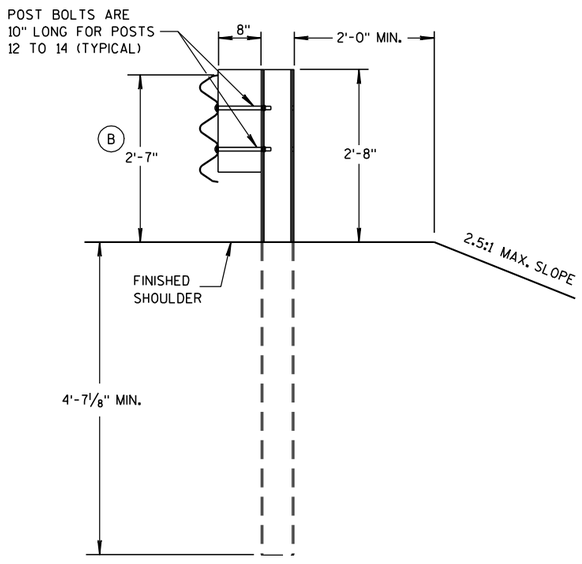


SECTION C-C

POSTS 7-11

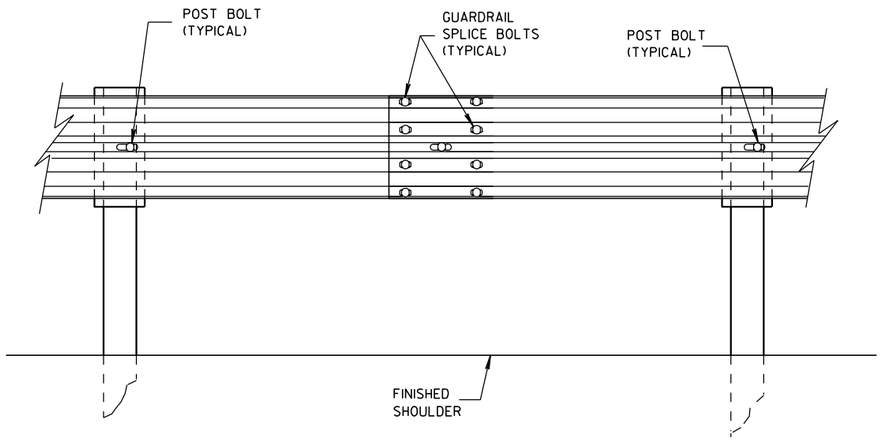


THRIE BEAM TERMINAL CONNECTOR



SECTION D-D

POSTS 12-14



SPLICE DETAIL

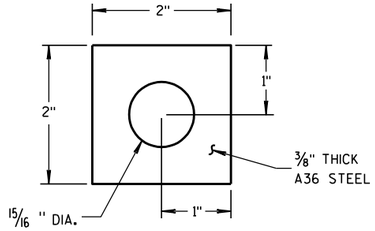
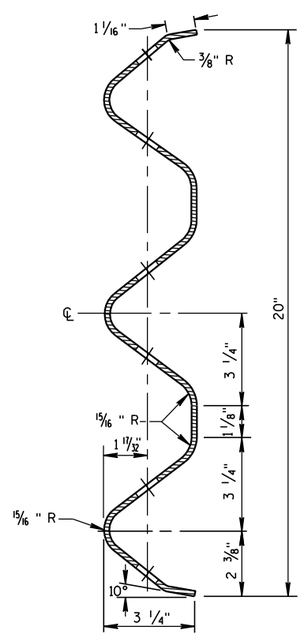


PLATE WASHER DETAIL



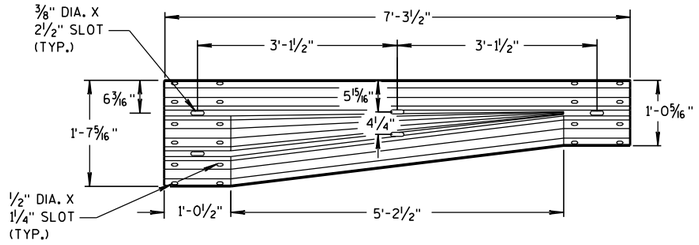
SECTION THRU THRIE BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

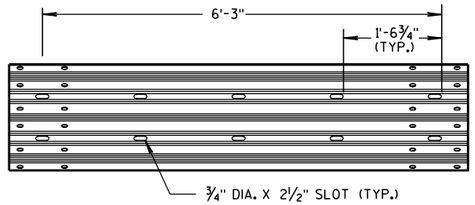
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

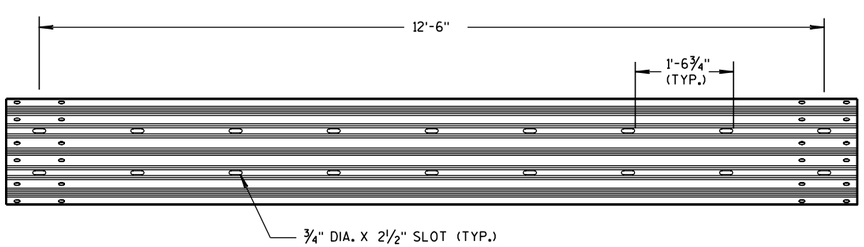
S.D.D. 14 B 45-2b



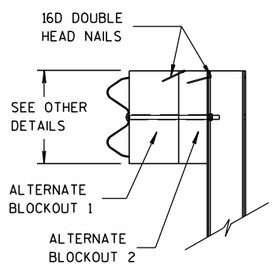
W-BEAM TO THRIE BEAM TRANSITION SECTION



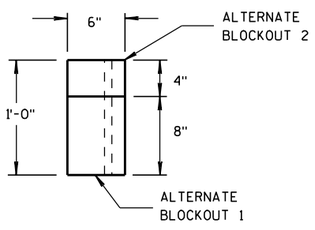
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

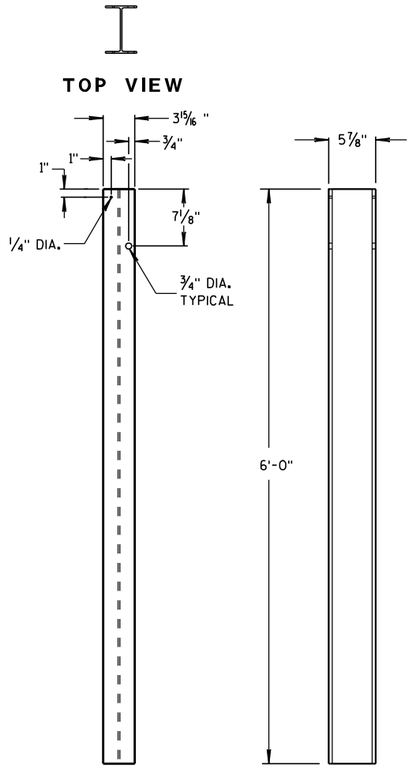


SIDE VIEW

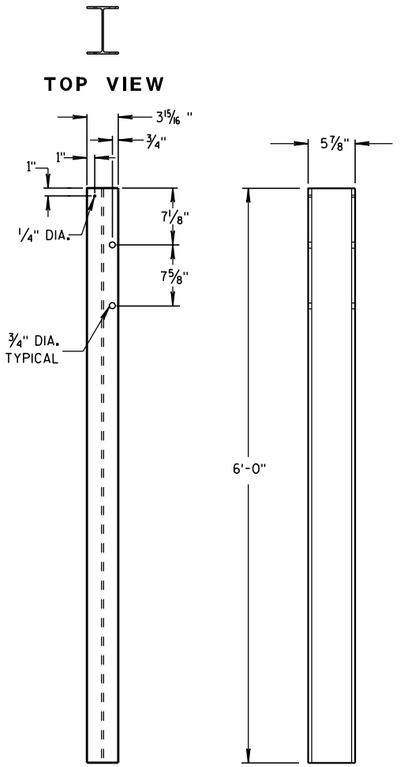


TOP VIEW

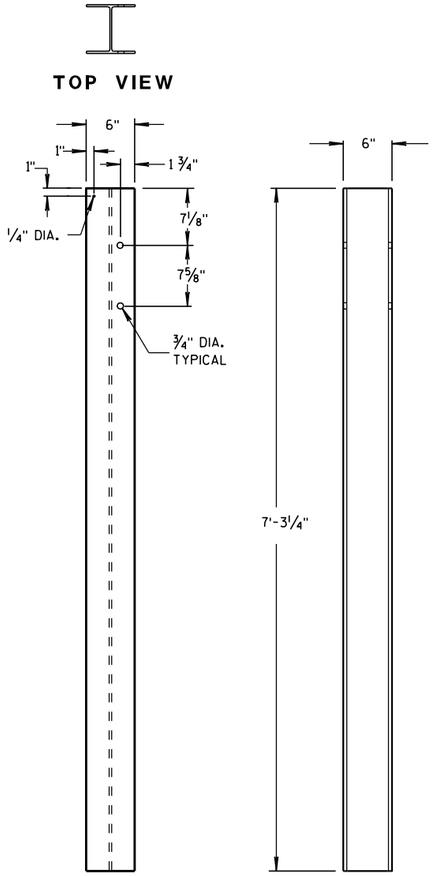
ALTERNATE WOOD BLOCKOUT DETAIL



STEEL POSTS 1-5

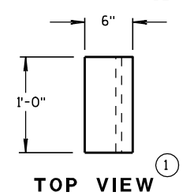


STEEL POSTS 6-11

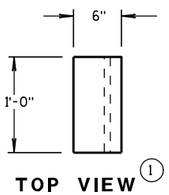


STEEL POSTS 12-14

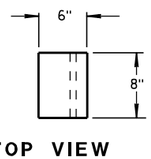
(1) WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.



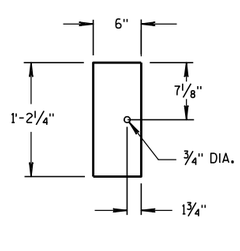
TOP VIEW (1)



TOP VIEW (1)

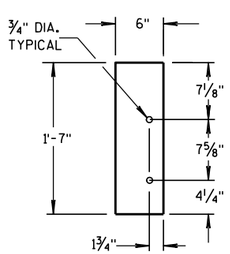


TOP VIEW



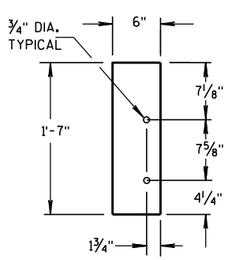
FRONT VIEW

BLOCKOUT POSTS 1-5



FRONT VIEW

BLOCKOUT POSTS 6-11



FRONT VIEW

BLOCKOUT 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)

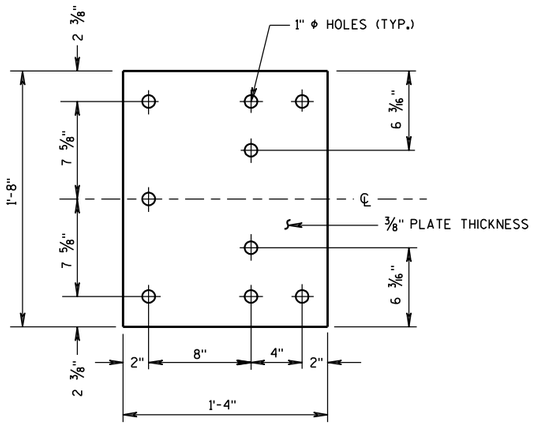
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

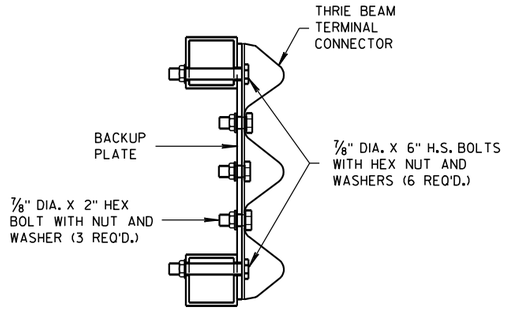
S.D.D. 14 B 45-2c

6

S.D.D. 14 B 45-2c



BACK-UP PLATE DETAIL

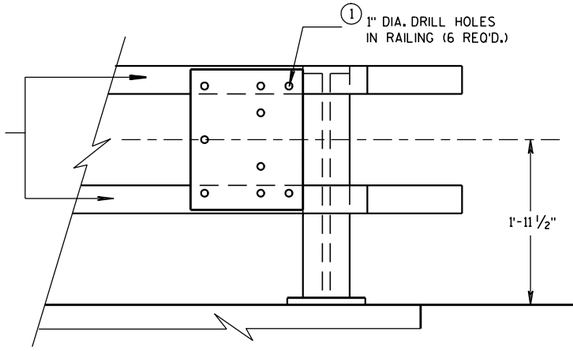


SECTION J-J

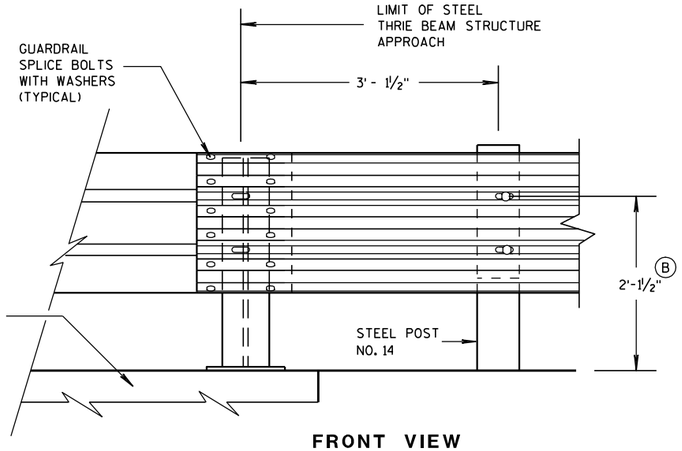
GENERAL NOTES

(1) INCLUDE THE PAYMENT FOR DRILLING HOLES IN RAILING IN THE ITEM "STEEL THRIE BEAM STRUCTURE APPROACH".

(B) TOLERANCE FOR TOP OF BEAM IS ± 1".

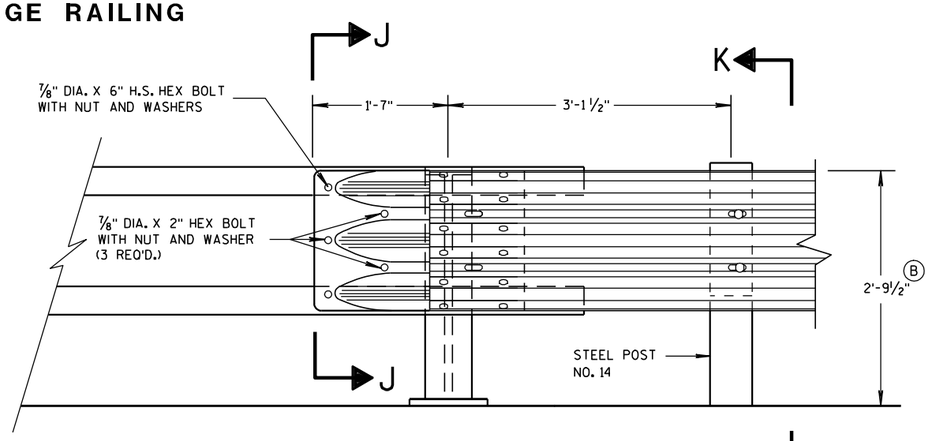


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING

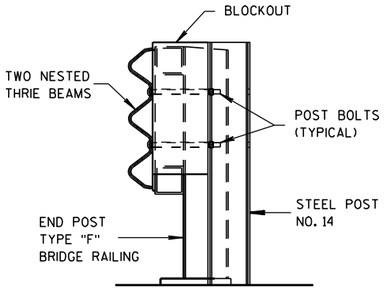


FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"



FRONT VIEW



SECTION K-K

THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

2-8-2012
DATE

/S/ Jerry H. [illegible]
ROADWAY STANDARDS [illegible] ENGINEER

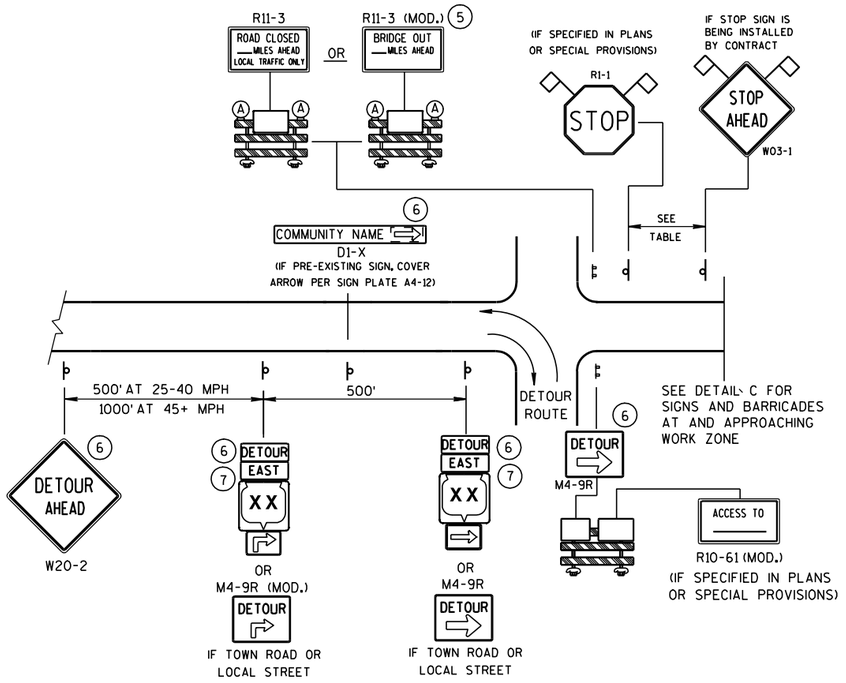
FHWA

6

S.D.D. 14 B 45-2g

6

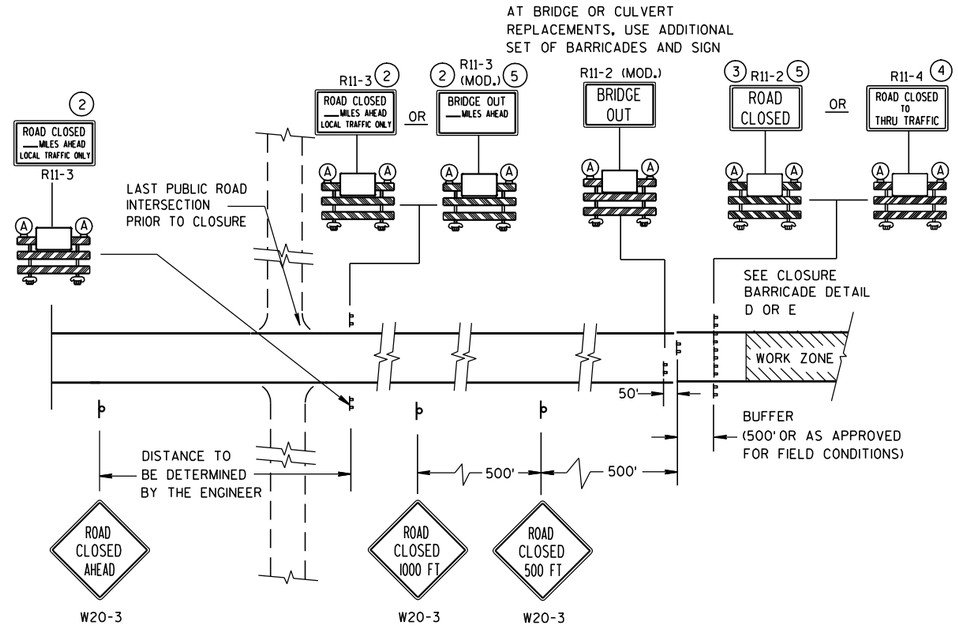
S.D.D. 14 B 45-2g



DETAIL A

MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE GREATER THAN ½ MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)

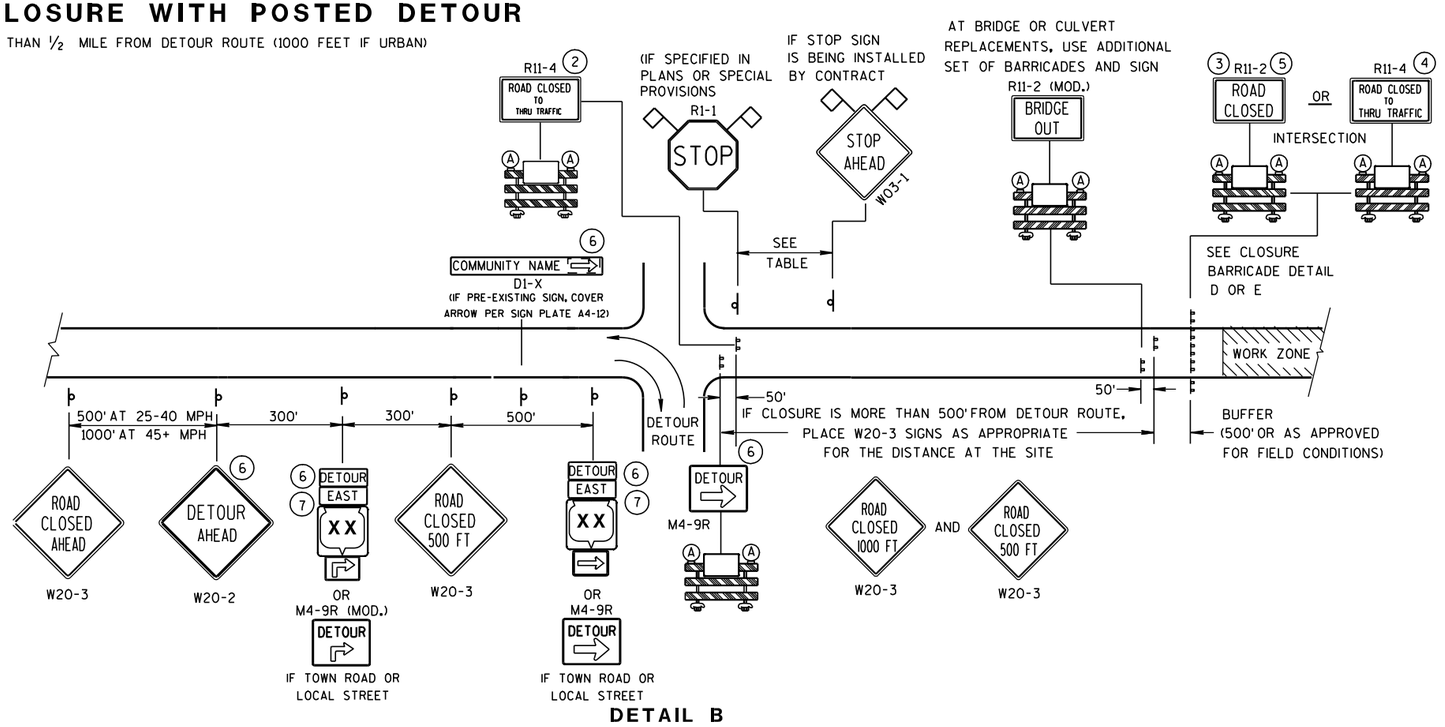


DETAIL C

MAINLINE CLOSURE, NO POSTED DETOUR

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

SEE SDD 15C2-4b
FOR GENERAL NOTES
AND FOOTNOTES ① THROUGH ⑦



DETAIL B

MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE LESS THAN ½ MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)

LEGEND

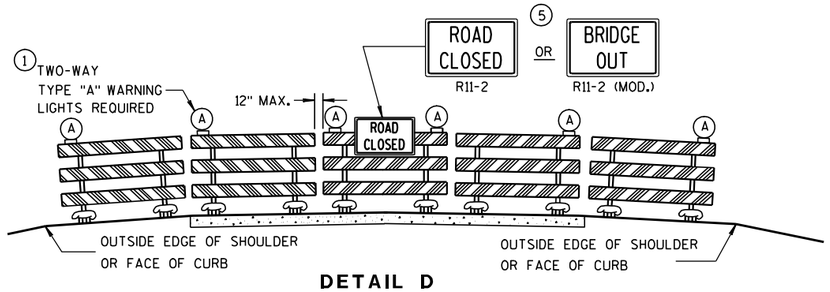
- POST MOUNTED SIGN
- TYPE III BARRICADES
- (A) TYPE "A" LOW INTENSITY FLASHING WARNING LIGHT (FOR NIGHT USE)
- WORK ZONE
- DETOUR / EAST — M4-8 / M3-X
- XX — M1-4; COUNTY XX — M1-5A; XX — M1-6
- M05-1; M06-1
- FLAGS, 16" X 16" MIN., (ORANGE)

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

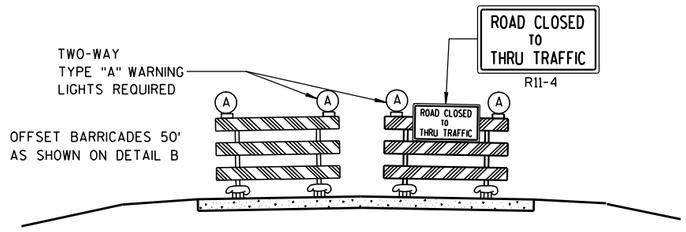
S.D.D. 15 C 2-4a



DETAIL D

ROAD CLOSURE BARRICADE DETAIL

APPROACH VIEW



DETAIL E

LANE CLOSURE BARRICADE DETAIL

APPROACH VIEW

SEE SDD 15C2-4a FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

THE REFLECTIVE SHEETING USED ON R11-2, R11-3, R11-4, R10-61 AND R1-1 SIGNS SHALL COMPLY WITH SUBSECTION 637.2.2.2 OF THE STANDARD SPECIFICATIONS.

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

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
- R11-2 SHALL BE 48" X 30".
- R11-3, R11-4 AND R10-61 SHALL BE 60" X 30".
- M4-9 SHALL BE 30" X 24".
- M3-X AND M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
- M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
- R1-1 SHALL BE 36" X 36".

(1) TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8-FOOT LIGHT SPACING).

(2) THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT INTERSECTION.

(3) FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL D.

(4) FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE LANE CLOSURE BARRICADE DETAIL E.

(5) FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11-2 AND R11-3 SIGNS.

(6) INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.

(7) "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

9/16/03 — DATE

/S/ Thomas N. N[illegible] — CHIEF SIGNS AND MAR[illegible]INEER

FHWA

6

S.D.D. 15 C 2-4b

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

GENERAL NOTES

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

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

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

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

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

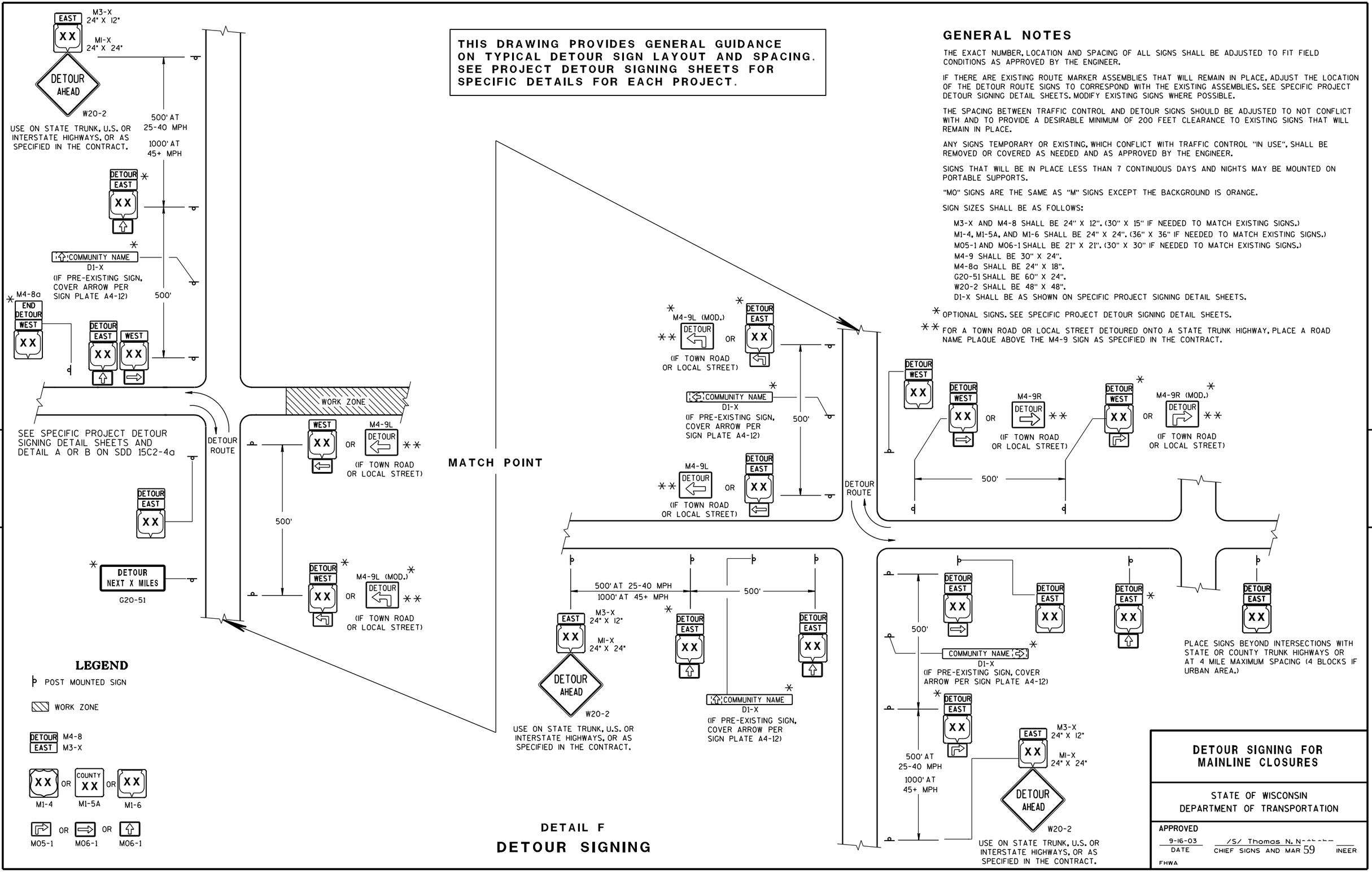
"MO" SIGNS ARE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGN SIZES SHALL BE AS FOLLOWS:

M3-X AND M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
M4-9 SHALL BE 30" X 24".
M4-8a SHALL BE 24" X 18".
G20-51 SHALL BE 60" X 24".
W20-2 SHALL BE 48" X 48".
D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

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

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



LEGEND

- POST MOUNTED SIGN
- WORK ZONE
- DETOUR EAST — M4-8 / M3-X
- XX OR COUNTY XX OR XX — M1-4 / M1-5A / M1-6
- M05-1 OR M06-1 OR M06-1

DETAIL F

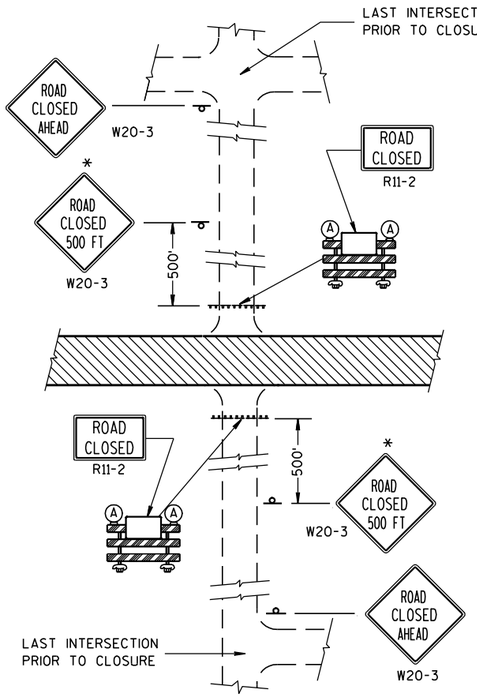
DETOUR SIGNING

DETOUR SIGNING FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

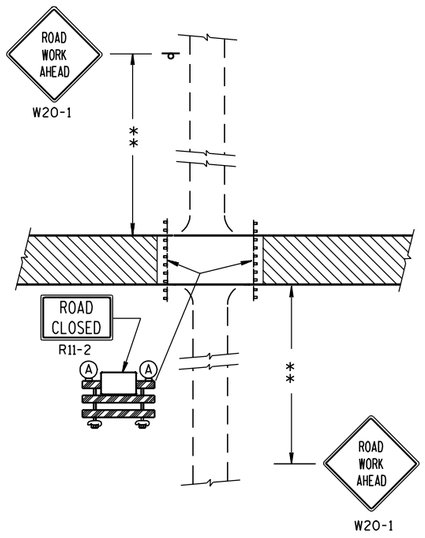
APPROVED
9-16-03 DATE
/S/ Thomas N. [illegible] CHIEF SIGNS AND MAR INEER
FHWA

6 S.D.D. 15 C 2-4c



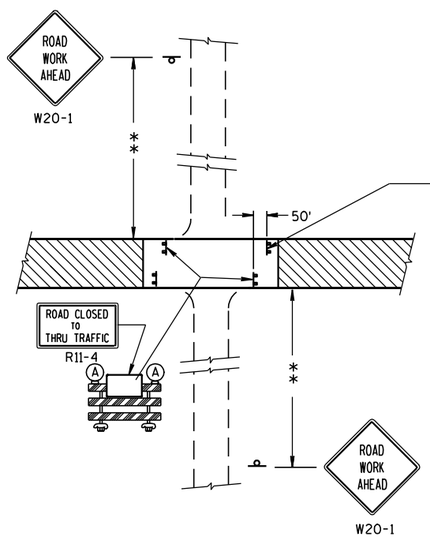
DETAIL 1

(NO ACCESS TO PROJECT)



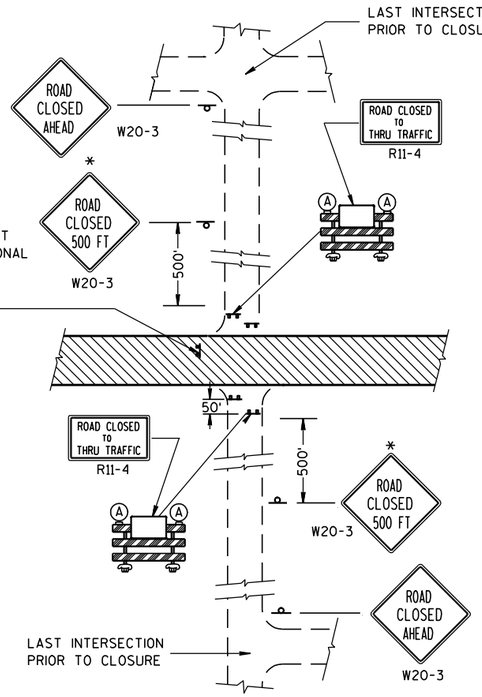
DETAIL 2

(PUBLIC CROSS-TRAFFIC MAINTAINED. NO ACCESS TO PROJECT).



DETAIL 3

(PUBLIC CROSS-TRAFFIC MAINTAINED. CONTRACTOR, LOCAL BUSINESS AND RESIDENT ACCESS).



DETAIL 4

(CONTRACTOR, LOCAL BUSINESS AND RESIDENT ACCESS TO PROJECT)

GENERAL NOTES

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

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

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

IF A "STOP" SIGN MUST BE REMOVED FOR A WORK OPERATION, A TEMPORARY "STOP" SIGN SHALL BE PLACED PRIOR TO THE SIGN REMOVAL, OR A FLAGGER SHALL BE PROVIDED UNTIL THE SIGN IS RE-ESTABLISHED.

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

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

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

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

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

THE REFLECTIVE SHEETING USED ON R11-2, R11-3 AND R11-4 SIGNS SHALL COMPLY WITH SUBSECTION 637.2.2.2 OF THE STANDARD SPECIFICATIONS.

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
R11-2 SHALL BE 48" X 30".
R11-4 AND R11-3 SHALL BE 60" X 30".

*OMIT THE "ROAD CLOSED 500 FT." SIGN IF THE LAST INTERSECTION IS 500 FT. OR LESS FROM THE WORK ZONE.

**500' MAX. OR AT LAST INTERSECTION WHICHEVER IS CLOSER.

LEGEND

- POST MOUNTED WARNING SIGN
- TYPE III BARRICADES
- (A) TYPE "A" LOW INTENSITY FLASHING WARNING LIGHT (FOR NIGHT USE)
- WORK AREA

BARRICADES AND SIGNS FOR SIDEROAD CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

9-16-03 DATE

/S/ Thomas N. N[illegible] CHIEF SIGNS AND MAR[illegible]60 INEER

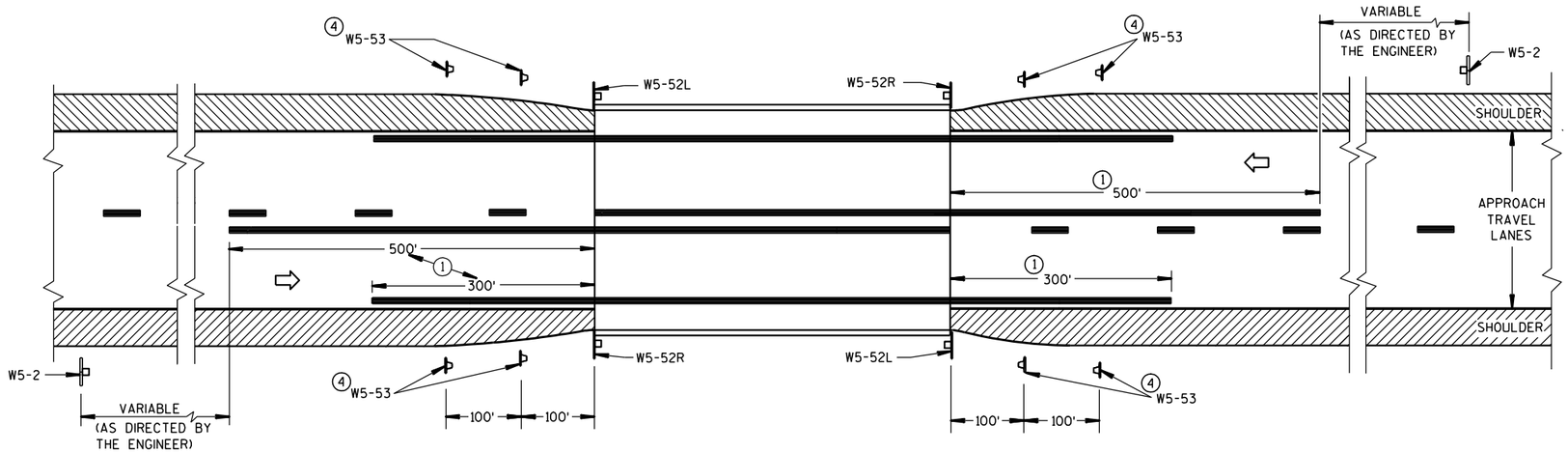
FHWA

6

S.D.D. 15 C 3-1

6

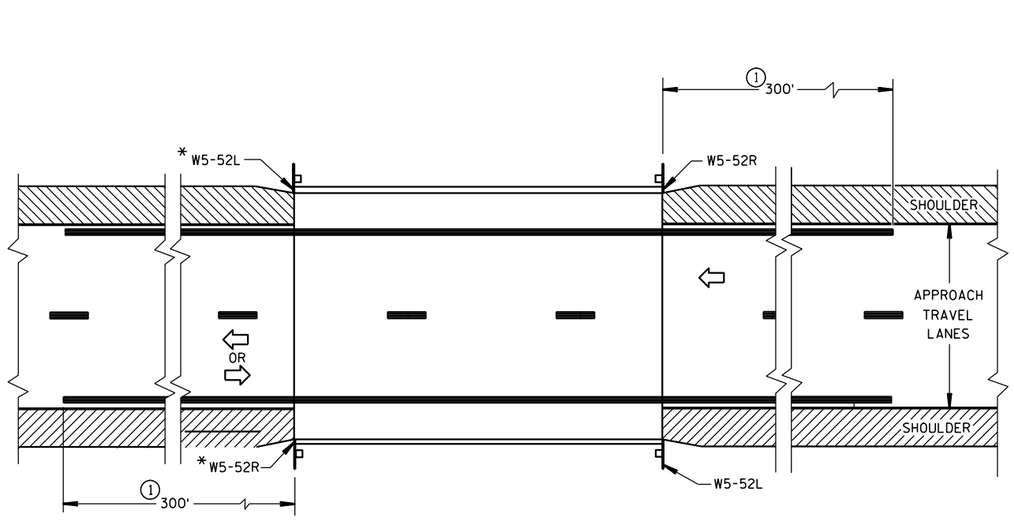
S.D.D. 15 C 3-1



SITUATION 1

WARRANTING CRITERION:

BRIDGE WIDTH IS AT LEAST 18 FEET BUT LESS THAN 24 FEET

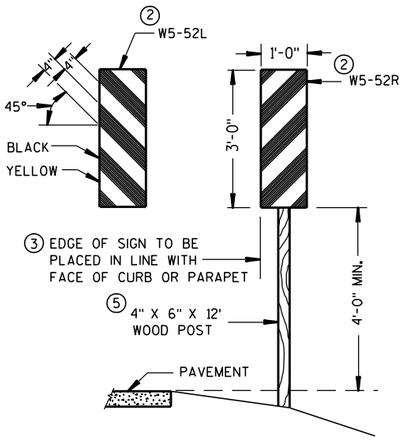


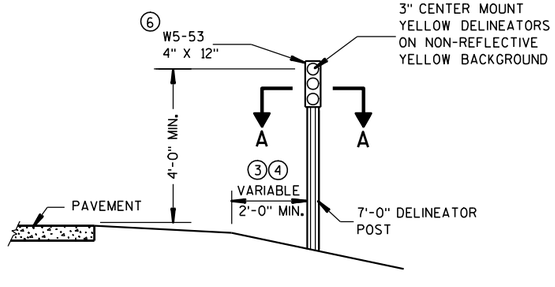
*OMIT ON ONE-WAY TRAVELLED WAYS

SITUATION 2

WARRANTING CRITERIA:

1. BRIDGE WIDTH IS AT LEAST 24 FEET AND
2. BRIDGE IS LESS THAN 6 FEET WIDER (ON EACH SIDE) THAN APPROACH TRAVEL LANES.





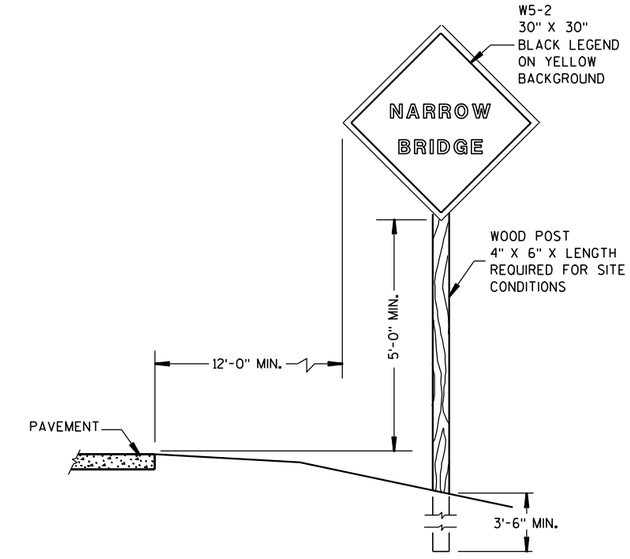
OBJECT MARKER PLACEMENT

GENERAL NOTES

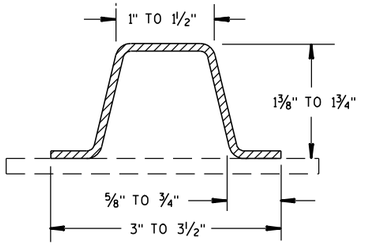
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

PAVEMENT MARKING SHOWN ON THIS DRAWING IS NOT REQUIRED UNLESS OTHERWISE SPECIFIED IN THE CONTRACT. WHEN SPECIFIED, PAVEMENT MARKING SHALL CONFORM TO THIS DRAWING AND OTHER CONTRACT REQUIREMENTS.

1. MINIMUM DISTANCE UNLESS OTHERWISE SHOWN ON THE PLAN.
2. FACE OF OBJECT MARKERS W5-52R AND W5-52L SHALL BE COVERED WITH TYPE H REFLECTIVE SHEETING.
3. LOCATE OBJECT MARKER POST(S) BEHIND GUARDRAIL WHEN PRESENT.
4. OBJECT MARKERS (W5-53) SHALL BE LOCATED ALONG A LINE FLARED AWAY FROM THE BRIDGE CORNER TO DELINEATE THE NARROWING OF THE SHOULDER OR BERM.
5. A 12 FOOT DELINEATOR POST MAY BE USED INSTEAD OF A WOOD POST.
6. NON-BID ITEM. INCIDENTAL TO OTHER ITEMS.



SIGN PLACEMENT



SECTION A-A

(MINIMUM WEIGHT 1.9 LBS. PER FT. AFTER GALVANIZING)

SIGNING & MARKING FOR TWO LANE BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

9/5/06 — DATE

/S/ Thomas N. [illegible] — STATE TRAFFIC ENGINEER

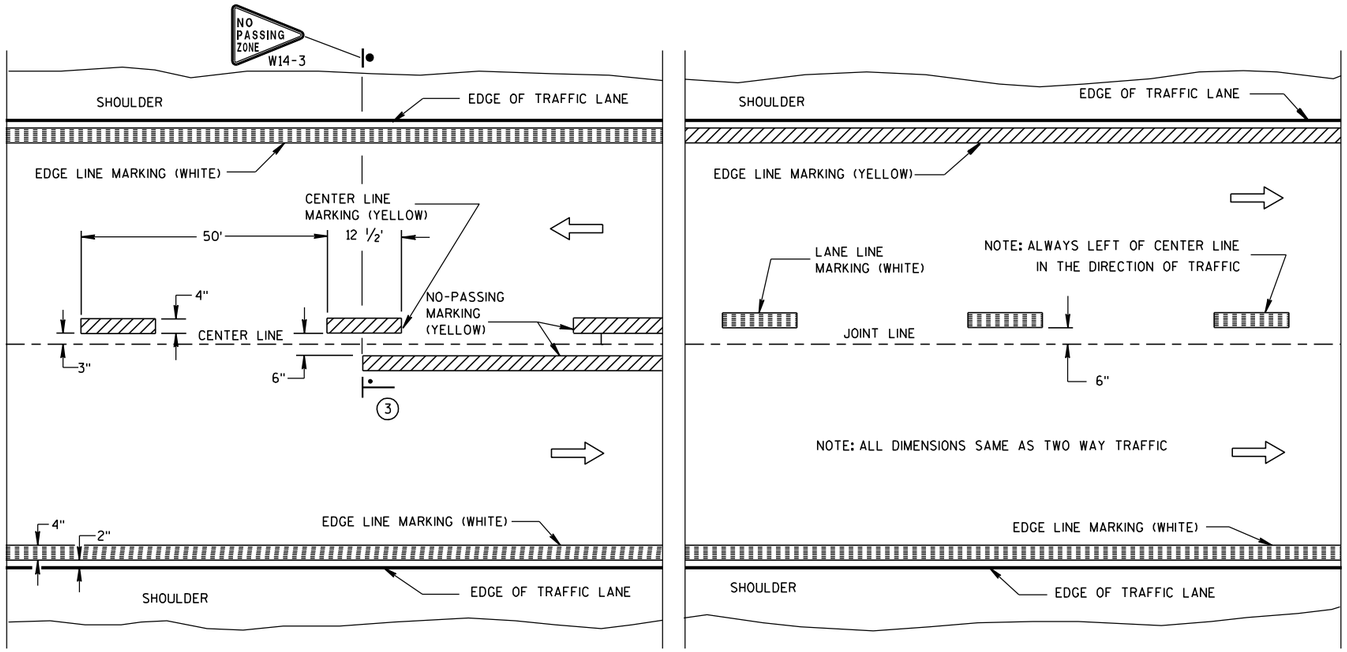
FHWA

6

S.D.D. 15 C 6-5

6

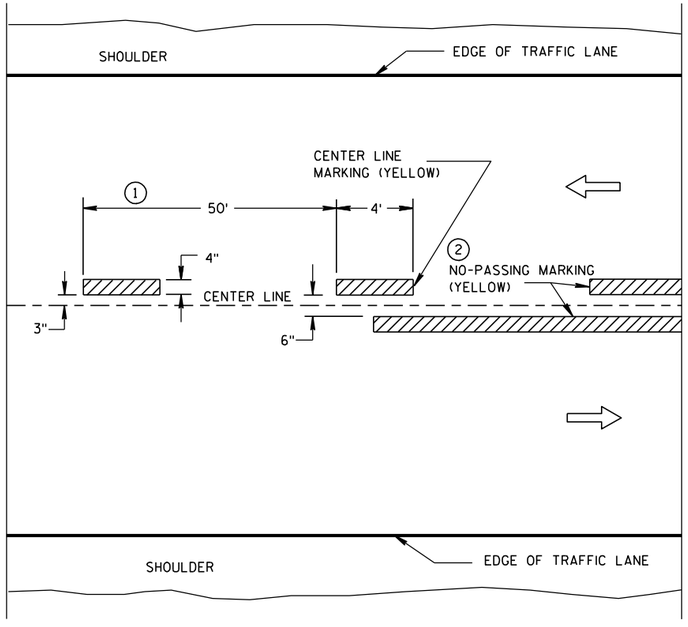
S.D.D. 15 C 6-5



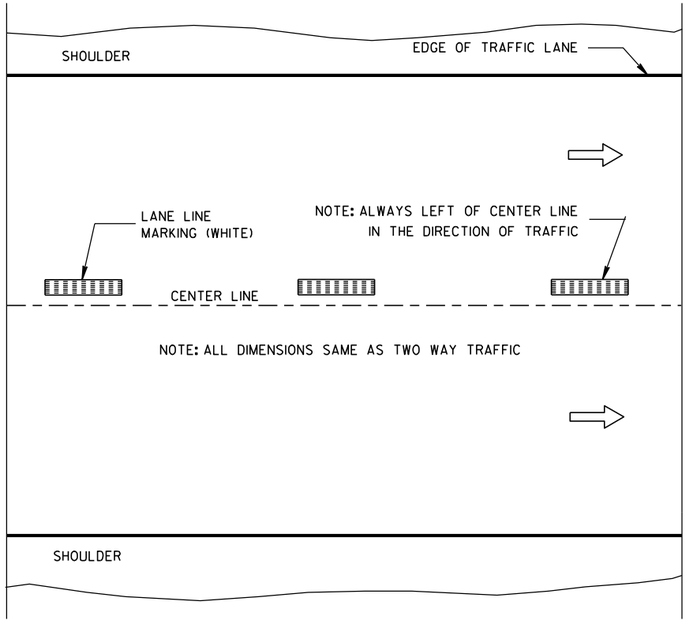
TWO WAY TRAFFIC

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)

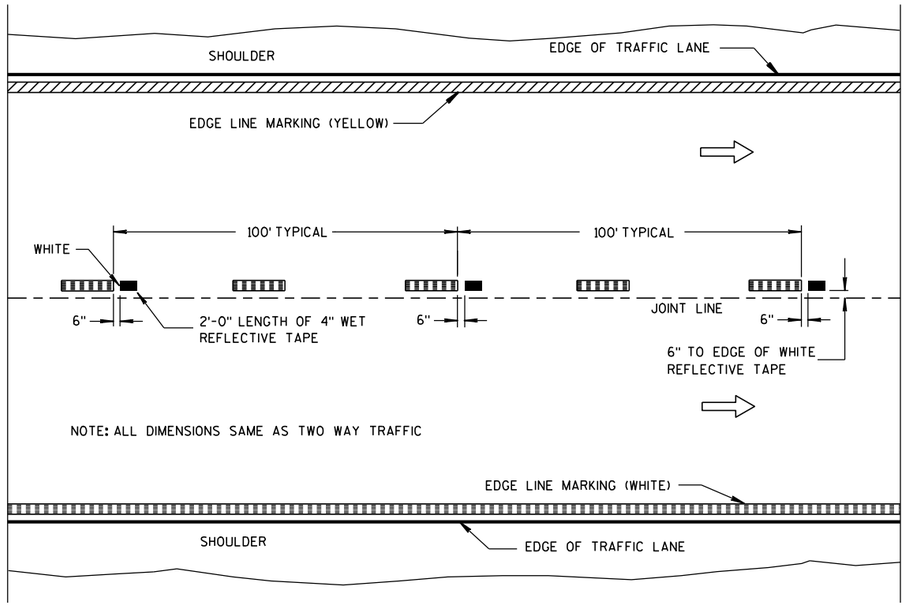
GENERAL NOTES

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.

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

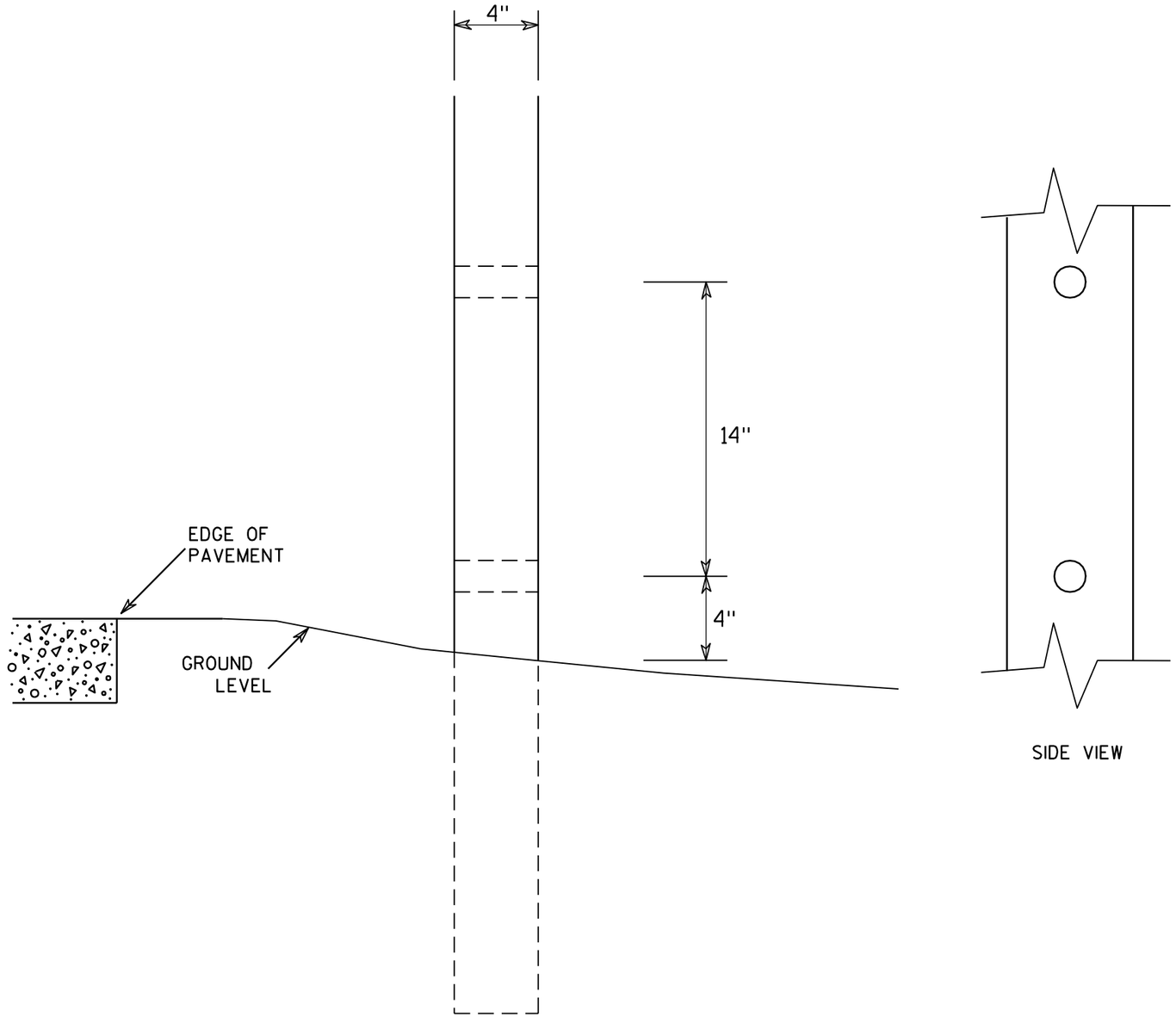
APPROVED
6-23-11 DATE
/S/ Thomas N. Notbohm
STATE TRAFFIC ENGINEER
FHWA

6

S.D.D. 15 C 8-14a

6

S.D.D. 15 C 8-14a



SIDE VIEW

GENERAL NOTES

1. All 4 x 6 Wood Posts shall be modified by having two 1½" diameter holes drilled perpendicular to the roadway centerline.

7

7

4 X 6 WOOD POST MODIFICATIONS

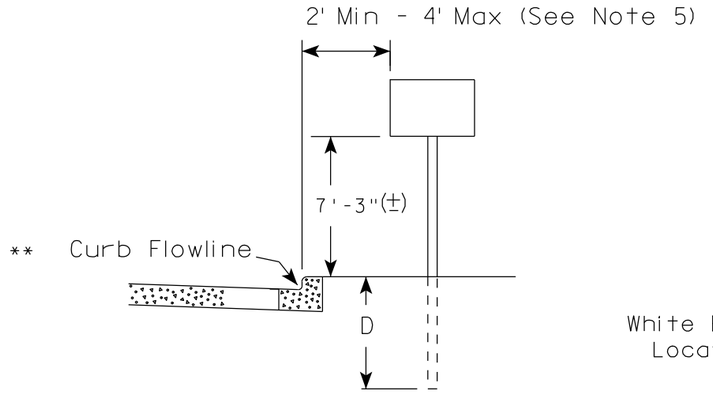
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Chester J Spang for State Traffic Engineer

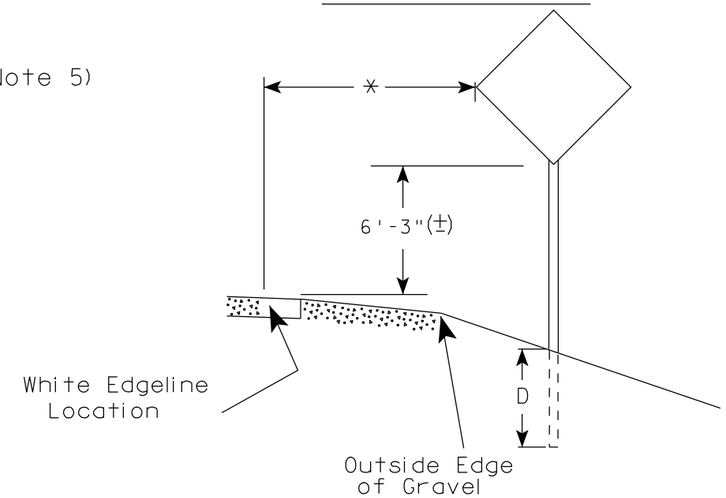
DATE 3/27/97 PLATE NO. A4-11.2

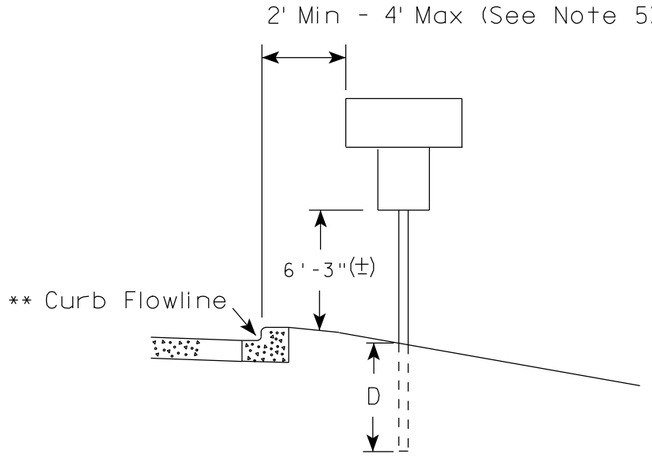
PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA		SHEET NO: 63	E

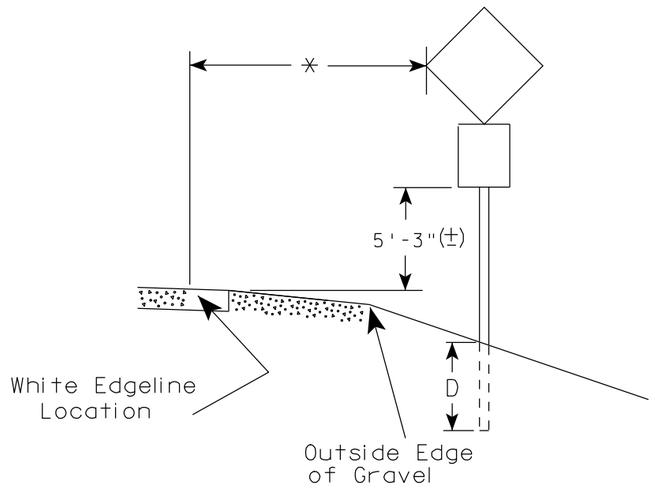
URBAN AREA



RURAL AREA (See Note 2)







** 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.

GENERAL NOTES

1. Signs wider than 4 feet or larger than 20 sq. ft. 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), 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" (±).

POST EMBEDMENT DEPTH

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

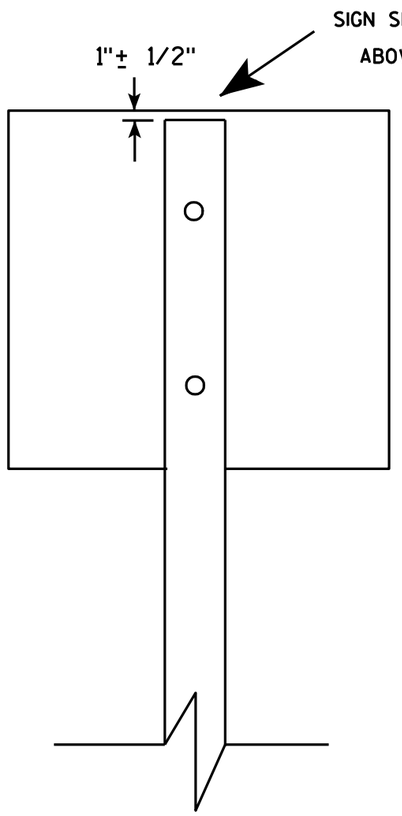
TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

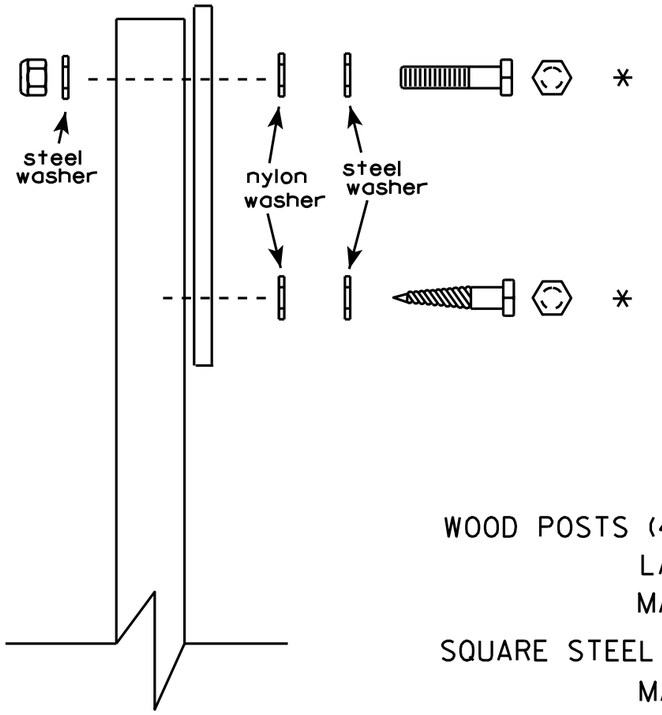
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch for State Traffic Engineer

DATE 9/21/2011 PLATE NO. A4-3.16

PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA		SHEET NO: 64	E





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

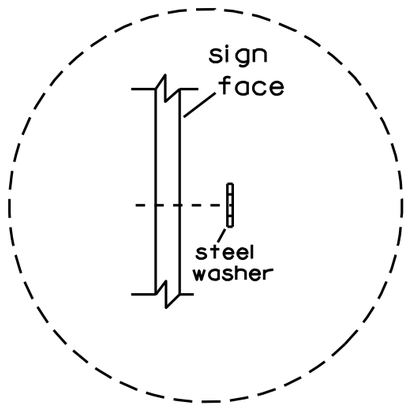
a. Hot dip galvanized in accordance with ASTM Designation: A 153, Class D, or SC 3
b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

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 - 3/8" X 3"
MACHINE BOLTS - 5/16" X 6-1/2" or 7" Length w/ nuts

SQUARE STEEL POSTS (2" x 2")
MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts
RIVETS - 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 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 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.

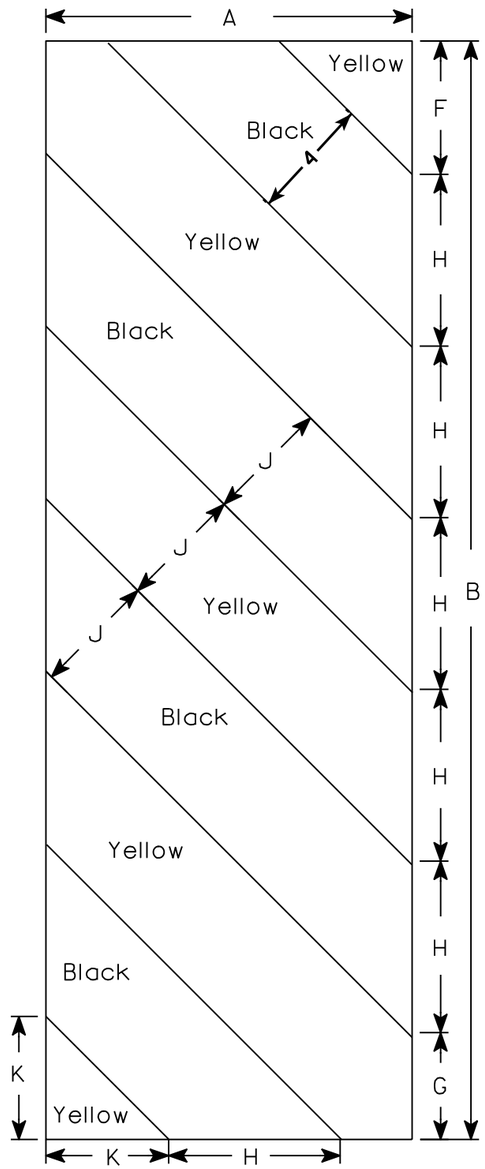
ATTACHMENT OF SIGNS TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

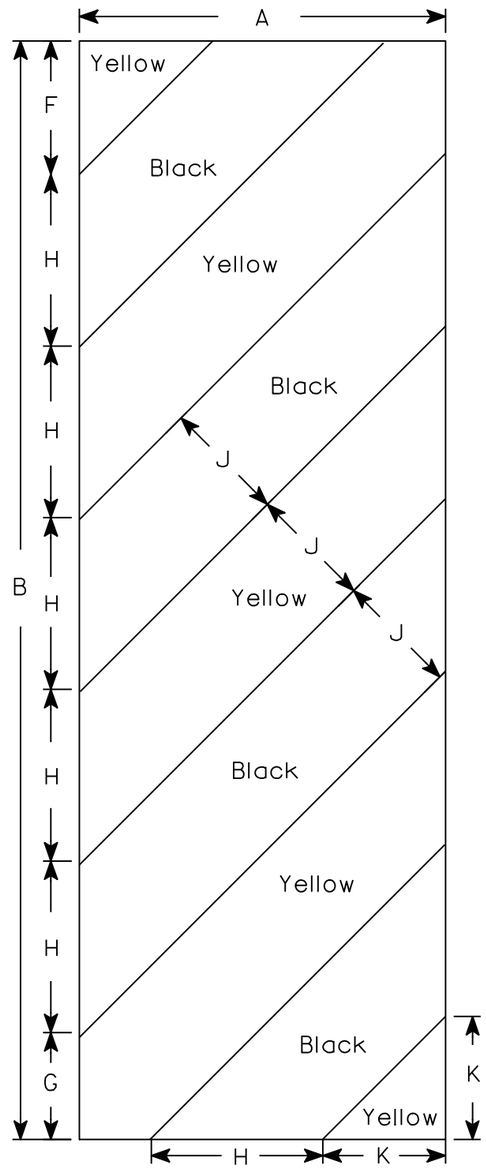
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/23/10 PLATE NO. A4-8.7

PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA		SHEET NO: 65	E



W5-52L



W5-52R

NOTES

1. Sign is Type II - Type H 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.

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	12	36				4 3/8	3 1/2	5 5/8	45°	4	4																3.0
2M	12	36				4 3/8	3 1/2	5 5/8	45°	4	4																3.0
3	18	54				6	5 1/2	8 1/2	45°	6	6 9/16																6.75
4																											
5																											

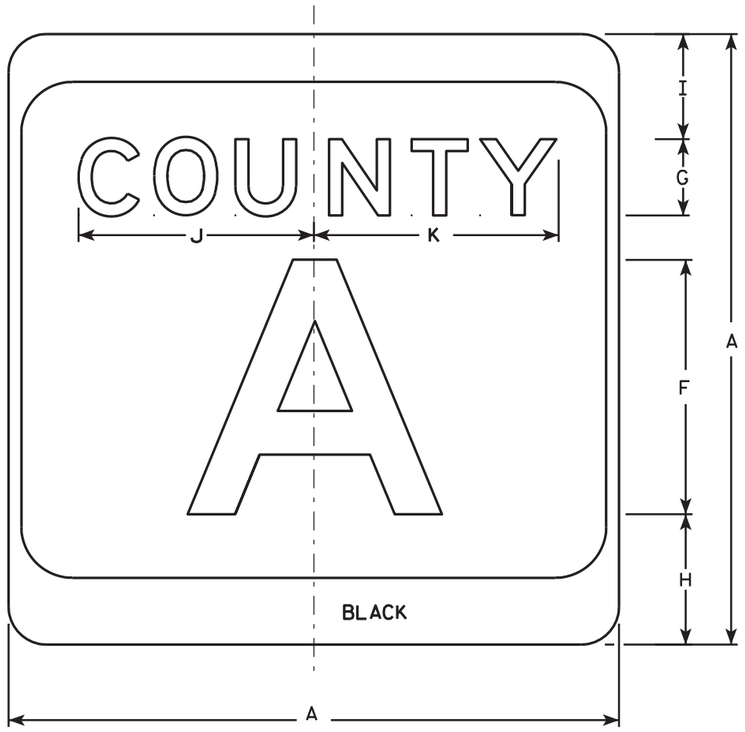
STANDARD SIGN
W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

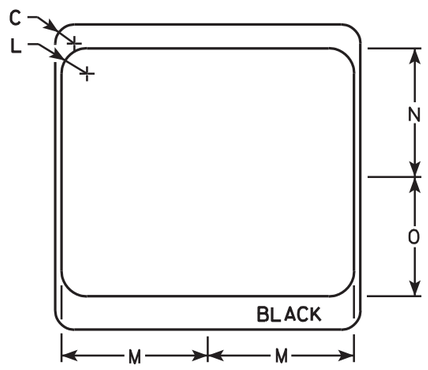
APPROVED Matthew R Rauch
for State Traffic Engineer

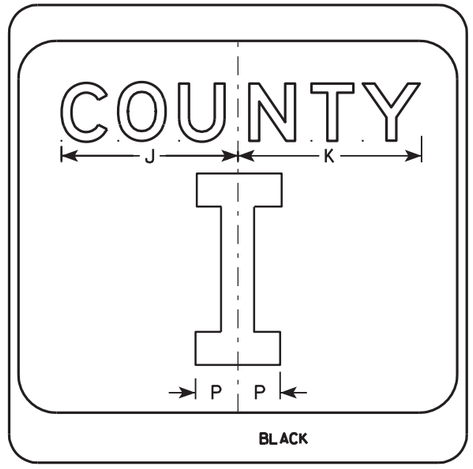
DATE 3/22/11 PLATE NO. W5-52.8

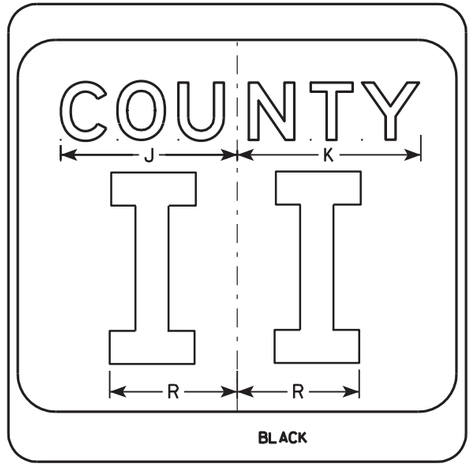
PROJECT NO: 6987-01-70 | HWY: CTH E | COUNTY: WAUSHARA | SHEET NO: 66 | E



M1-5A







NOTES

1. Sign is Type II - see Note 7 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - White & Black - See Note 7
   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. Message Series E for 1 letter.
   Message Series D for 2 letters unless message is too big then Series C.
   Message Series C for 3 letters unless message is too big then Series B.
6. Substitute appropriate letters & optically center to achieve proper balance.
7. Permanent Signs
   Background - Type H Reflective
   Detour or temporary Signs
   Background - 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	24		1 1/2			10	3	5 1/8	4 1/8	9 1/4	9 5/8	2	11 1/2	10 1/8	9 3/8	2 1/4		6 5/8									4.0
3	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0
4	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0
5	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0

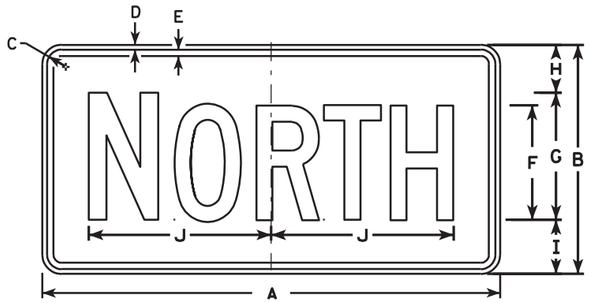
CTH MARKER
M1-5A FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

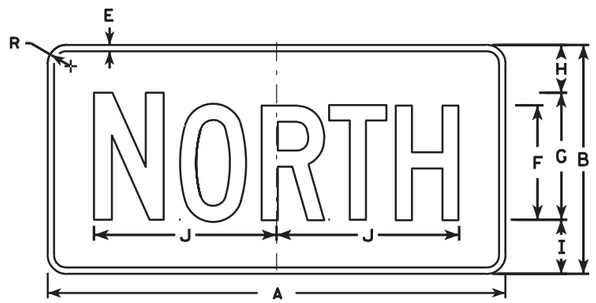
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 9/27/11 PLATE NO. M1-5A.8

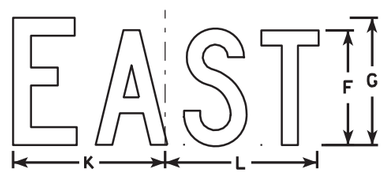
PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA		SHEET NO: 67	E



M3-1
MK3-1
MO3-1

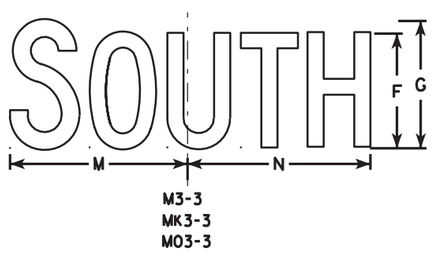


MB3-1
MG3-1
MM3-1
MN3-1

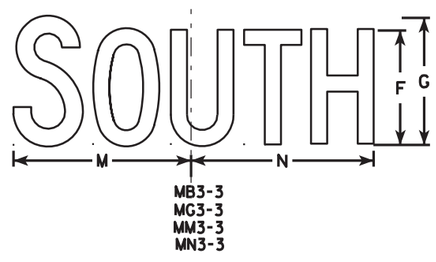


M3-2
MK3-2
MO3-2

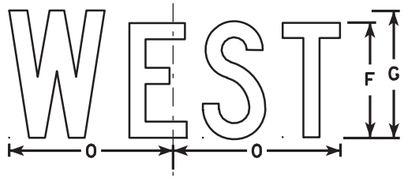
MB3-2
MG3-2
MM3-2
MN3-2



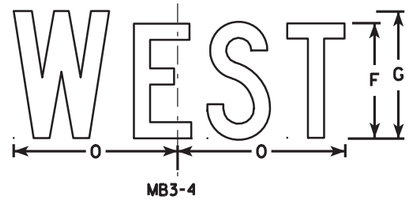
M3-3
MK3-3
MO3-3



MB3-3
MG3-3
MM3-3
MN3-3



M3-4
MK3-4
MO3-4



MB3-4
MG3-4
MM3-4
MN3-4

NOTES

1. All Signs 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 - 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. M3-1 thru M3-4 Background - White - Type H Reflective (Detour or temporary signs - Reflective) Message - Black
   MB3-1 thru MB3-4 Background - Blue Message - White - Type H Reflective (Detour or temporary signs - Reflective)
   MG3-1 thru MG3-4 Background - Green Message - White - Type H Reflective
   MK3-1 thru MK3-4 Background - Green Message - White - Type H Reflective
   MM3-1 thru MM3-4 Background - White - Type H Reflective Message - Green
   MN3-1 thru MN3-4 Background - Brown Message - White - Type H Reflective
   M03-1 thru M03-4 Background - Orange - Reflective Message - Black
6. Note the first letter of each direction is larger than the remainder of the message.

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 1/8	3/8	3/8	6	7	2 1/4	2 3/4	10 1/4	7 7/8	8 3/8	10 1/4	9 3/4	8 3/4			1 1/2									2.00
3	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
4	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
5	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5

STANDARD SIGNS
M3-1 thur M3-4
SERIES

WISCONSIN DEPT OF TRANSPORTATION

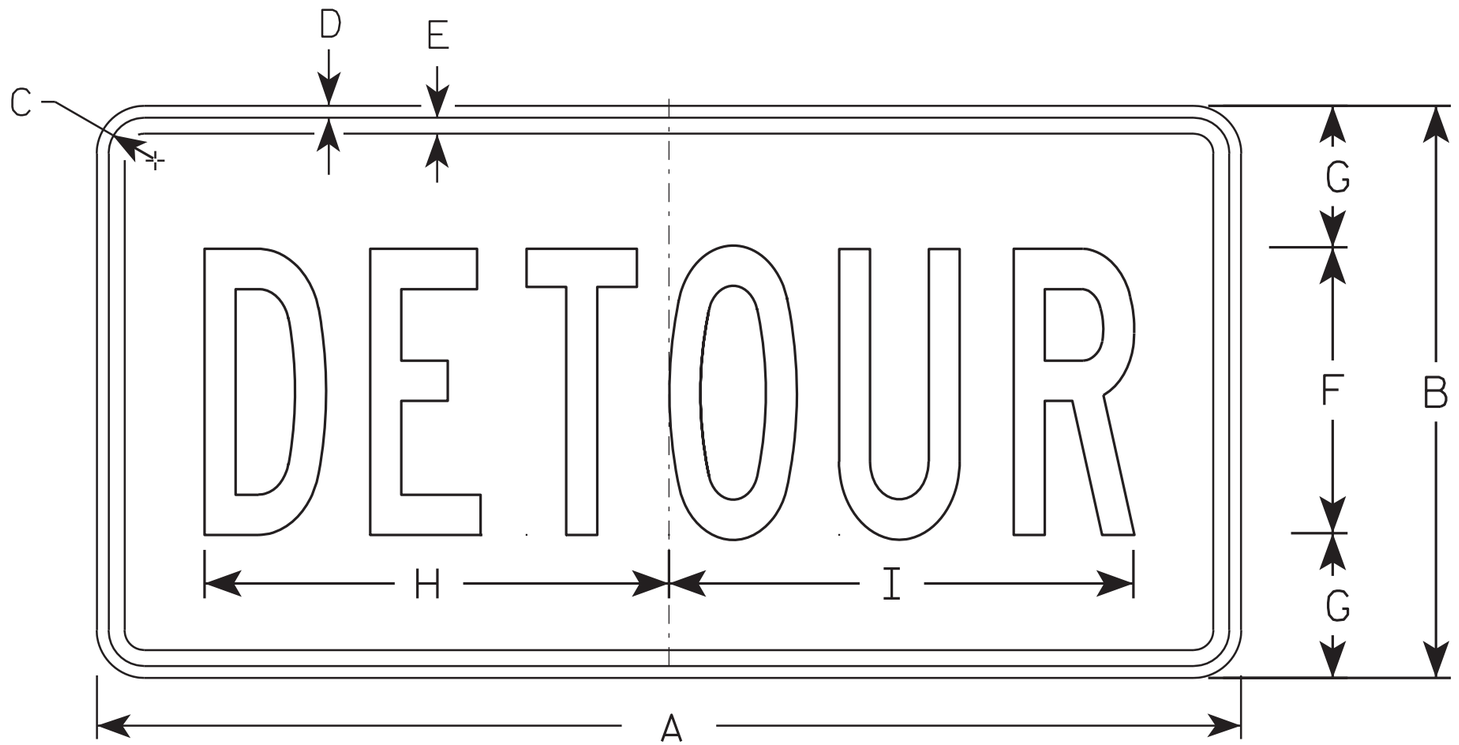
APPROVED Matthew R Rauch for State Traffic Engineer

DATE 11/10/10 PLATE NO. M3-1.12

PROJECT NO: 6987-01-70 | HWY: CTH E | COUNTY: WAUSHARA | SHEET NO: 68 | E

7

FILE NAME : C:\Users\PROJECTS\tr_stdplate\M31.DGN PLOT DATE : 10-NOV-2010 09:34 PLOT BY : ditjph PLOT NAME : PLOT SCALE : 11.918087:1.000000 WISDOT/CADDS SHEET 42



M4-8

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 - 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.

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 1/8	3/8	3/8	6	3	10	10 1/4																		2.0
3	36	18	1 1/8	3/8	1/2	9	4 1/2	14 5/8	14 1/2																		4.5
4																											
5																											

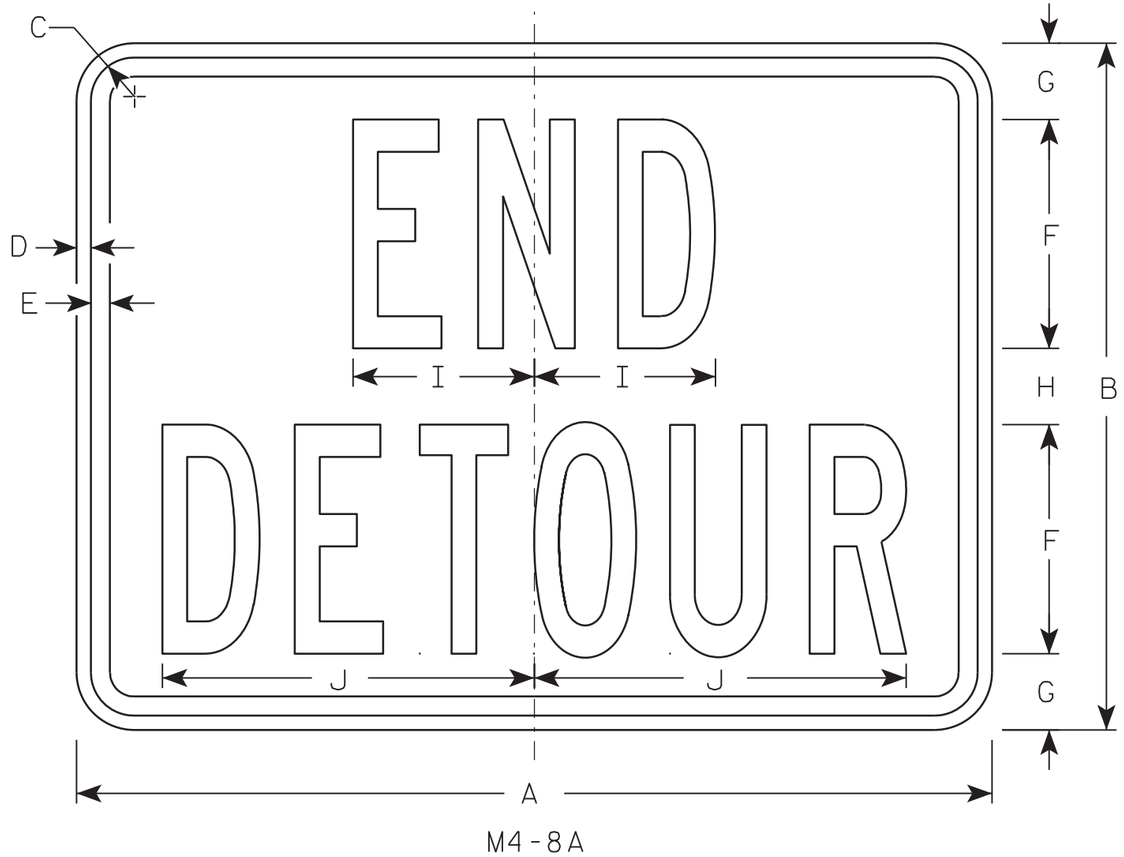
STANDARD SIGN
M4-8

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 11/10/10 PLATE NO. M4-8.2

PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA		SHEET NO: 69	E



M4-8A

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 - 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.

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	18	1 1/8	3/8	1/2	6	2	2	4 3/4	9 3/4																	3.0
3	30	24	1 1/8	3/8	1/2	8	2 1/2	3	6 3/4	13																	5.0
4																											
5																											

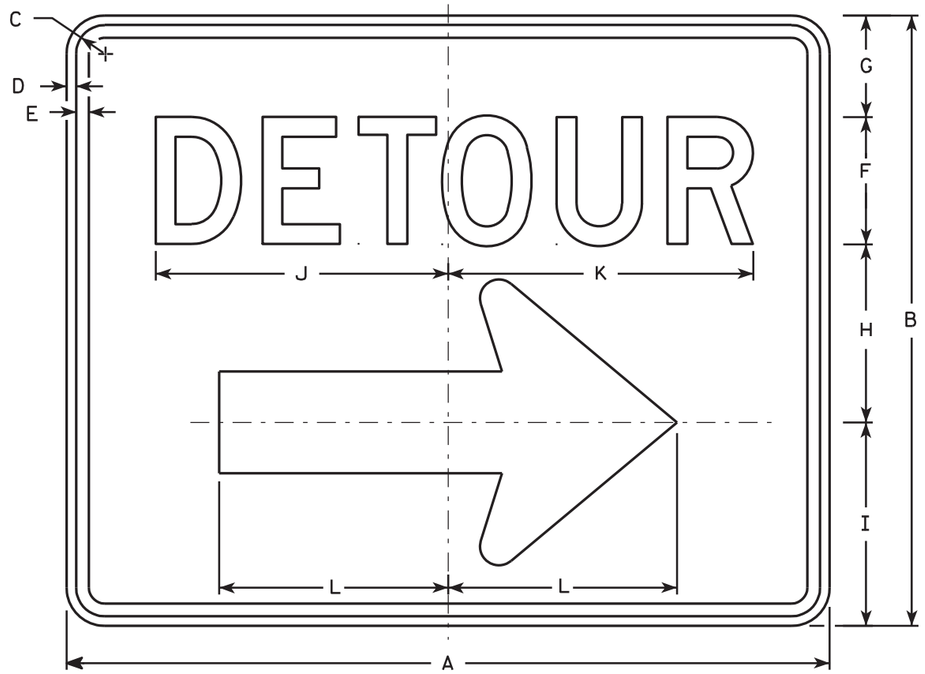
STANDARD SIGN
M4-8A

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/9/11 PLATE NO. M4-8A.2

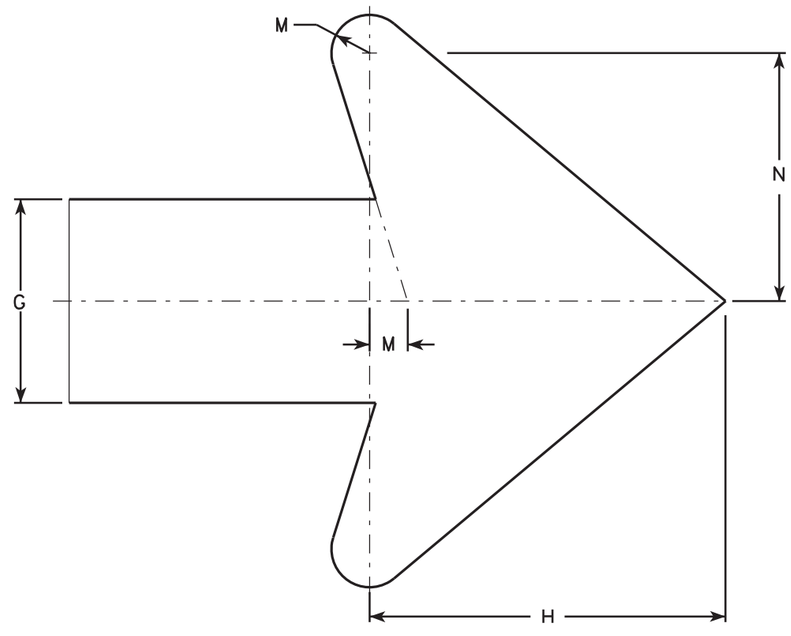
PROJECT NO: 6987-01-70 | HWY: CTH E | COUNTY: WAUSHARA | SHEET NO: 70 | E



M4-9R

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 - 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.
5. M4-9L is the same as M4-9R except the arrow is reversed.



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																											
2	30	24	1 1/8	3/8	1/2	5	4	7	8	11 1/2	12	9	3/4	4 7/8													5.00
3	30	24	1 1/8	3/8	1/2	5	4	7	8	11 1/2	12	9	3/4	4 7/8													5.00
4	48	36	1 3/8	1/2	5/8	8	6	10 1/2	11 5/8	20 5/8	20 1/2	13 1/4	1 1/8	6 7/8													12.0
5	48	36	1 3/8	1/2	5/8	8	6	10 1/2	11 5/8	20 5/8	20 1/2	13 1/4	1 1/8	6 7/8													12.0

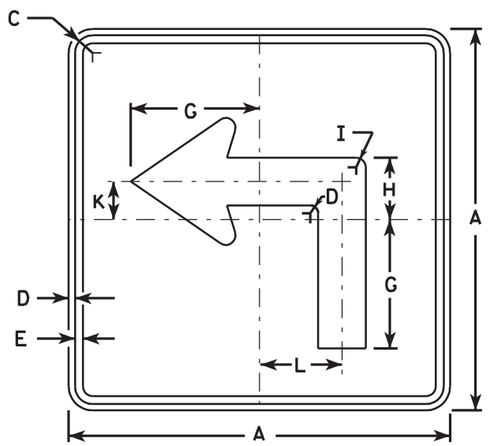
STANDARD SIGN
M4-9 R & L

WISCONSIN DEPT OF TRANSPORTATION

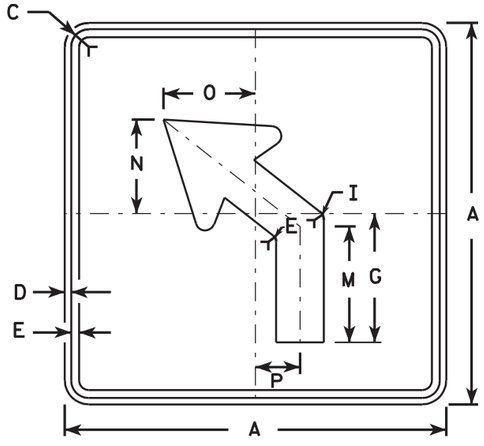
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/9/11 PLATE NO. M4-9R.4

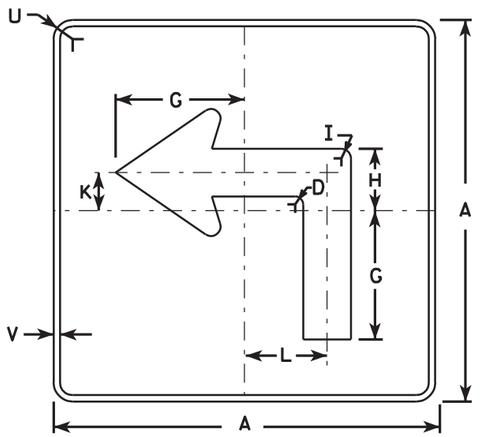
PROJECT NO: 6987-01-70 | HWY: CTH E | COUNTY: WAUSHARA | SHEET NO: 71 | E



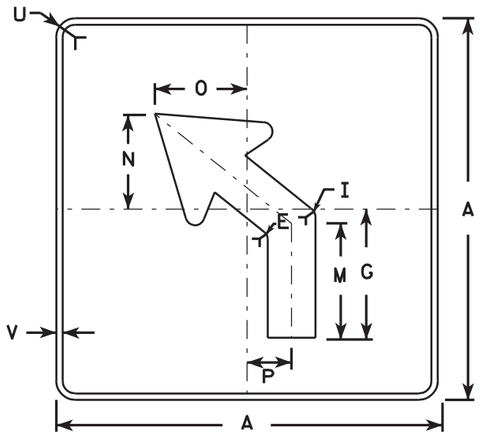
M5-1L
MK5-1L
MM5-1L
MO5-1L
MR5-1L



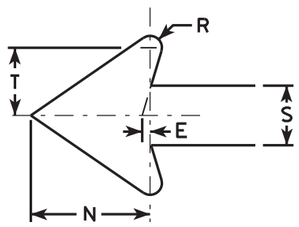
M5-2L
MK5-2L
MM5-2L
MO5-2L
MR5-2L



MB5-1L
MG5-1L
MN5-1L



MB5-2L
MG5-2L
MN5-2L



NOTES

1. Signs are Type II - See Note 4 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - See note 4
   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. M5-1 and M5-2 Background - White - Type H Reflective (Detour or temporary Signs - Reflective) Message - Black
   MB5-1 and MB5-2 Background - Blue Message - White - Type H Reflective (Detour or temporary Signs - Reflective)
   MG5-1 and MG5-2 Background - Green Message - White - Type H Reflective
   MK5-1 and MK5-2 Background - Green Message - White Type H Reflective
   MM5-1 and MM5-2 Background - White - Type H Reflective Message - Green
   MN5-1 and MN5-2 Background - Brown Message - White - Type H Reflective
   MO5-1 and MO5-2 Background - Orange - Reflective Message - Black
   MR5-1 and MR5-2 Background - Brown Message - Yellow - Type H Reflective
5. M5-1R same as M5-1L except arrow points right.
6. M5-2R same as M5-2L except arrow tilts right.

Metric equivalent for this sign is:

SIZE	
1	
2	525 mm X 525 mm
3	750 mm X 750 mm
4	750 mm X 750 mm
5	750 mm X 750 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 m2
1																												
2	21		1 1/8	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3	1 1/2	1/2					3.06	0.28
3	30		1 3/8	1/2	5/8		10 1/8	4 1/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25	0.56
4	30		1 3/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25	0.56
5	30		1 3/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25	0.56

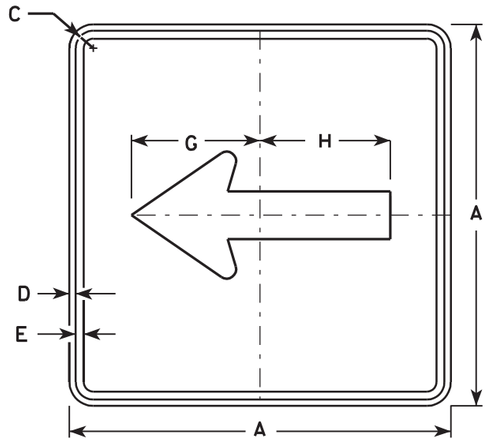
STANDARD SIGN
M5-1 & M5-2

WISCONSIN DEPT OF TRANSPORTATION

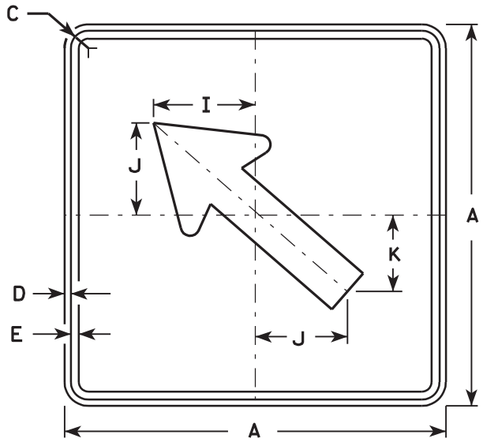
APPROVED Matthew R Rauch
For State Traffic Engineer

DATE 3/16/10 PLATE NO. M5-1.11

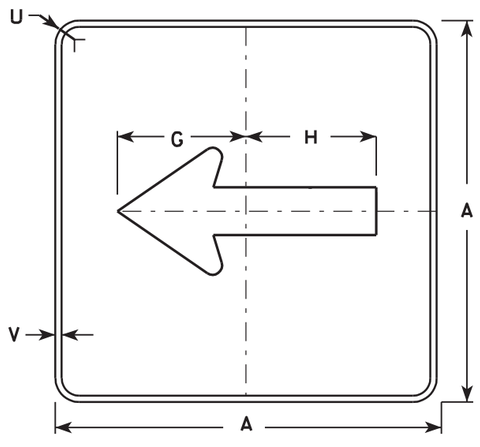
PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA		SHEET NO: 72	E



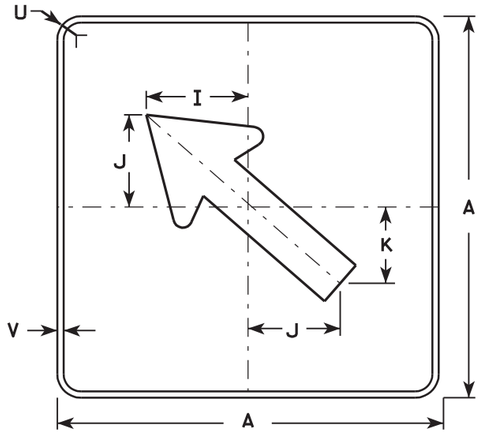
M6-1
MK6-1
MM6-1
MO6-1
MR6-1



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



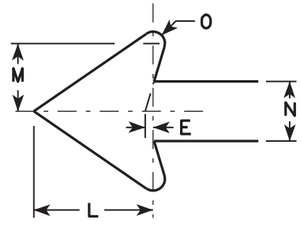
MB6-1
MG6-1
MN6-1



MB6-2
MG6-2
MN6-2

NOTES

1. Signs are Type II - See Note 4 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - See note 4
   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. M6-1 and M6-2 Background - White - Type H Reflective (Detour or temporary Signs - Reflective) Message - Black
   MB6-1 and MB6-2 Background - Blue Message - White - Type H Reflective (Detour or temporary Signs - 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 - Reflective Message - Black
   MR6-1 and MR6-2 Background - Brown Message - Yellow - Type H Reflective



Metric equivalent for this sign is:

SIZE	
1	
2	525 mm X 525 mm
3	750 mm X 750 mm
4	750 mm X 750 mm
5	750 mm X 750 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 m2
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	0.28
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	0.56
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	0.56
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	0.56

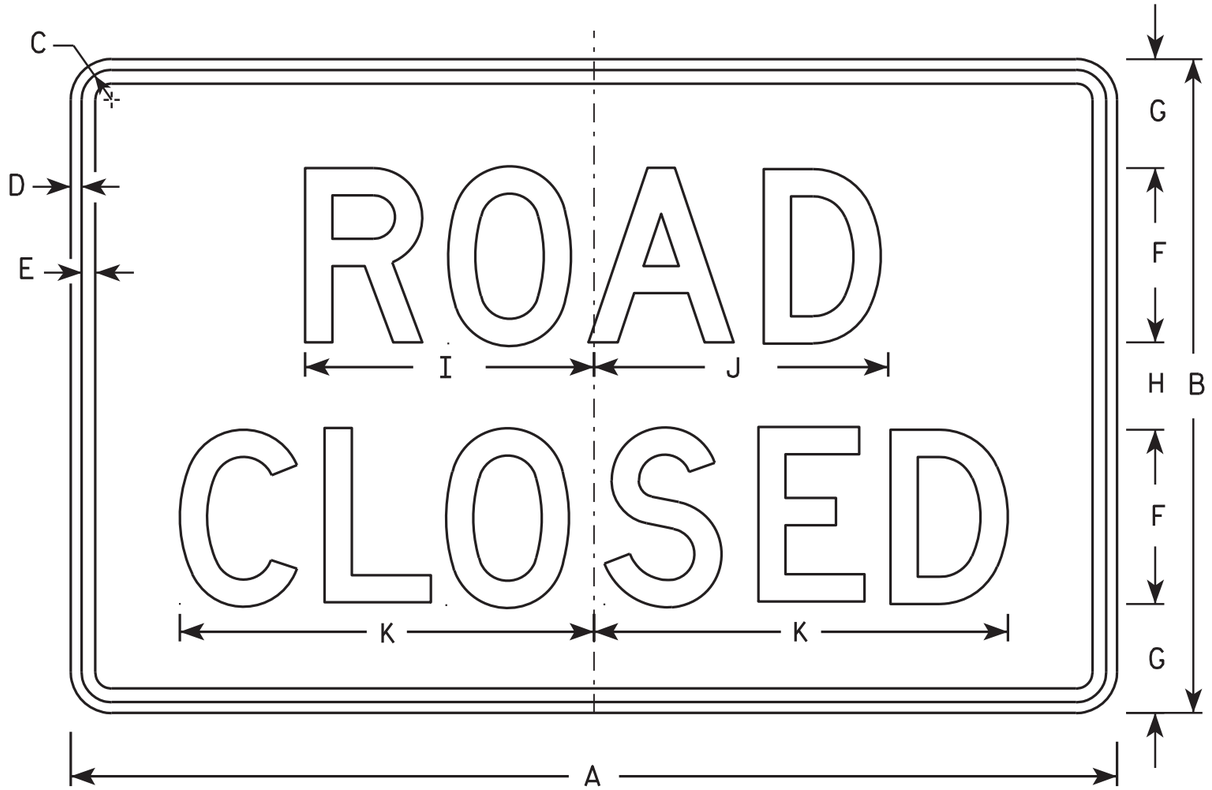
STANDARD SIGN M6-1 & M6-2 SERIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/16/10 PLATE NO. M6-1.12

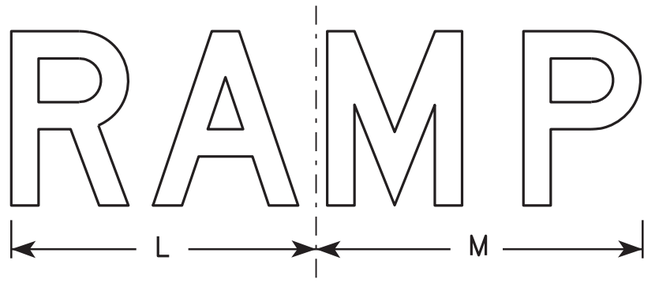
PROJECT NO: 6987-01-70 | HWY: CTH E | COUNTY: WAUSHARA | SHEET NO: 73 | E



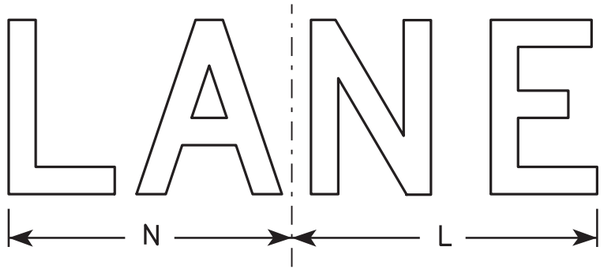
R11-2

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.
5. Modify the message as required.



R11-2R



R11-2L

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	48	30	1 3/8	1/2	5/8	8	5	4	13 1/4	13 1/2	19	14	15	13													10.0
2M	48	30	1 3/8	1/2	5/8	8	5	4	13 1/4	13 1/2	19	14	15	13													10.0
3	48	30	1 3/8	1/2	5/8	8	5	4	13 1/4	13 1/2	19	14	15	13													10.0
4	48	30	1 3/8	1/2	5/8	8	5	4	13 1/4	13 1/2	19	14	15	13													10.0
5	48	30	1 3/8	1/2	5/8	8	5	4	13 1/4	13 1/2	19	14	15	13													10.0

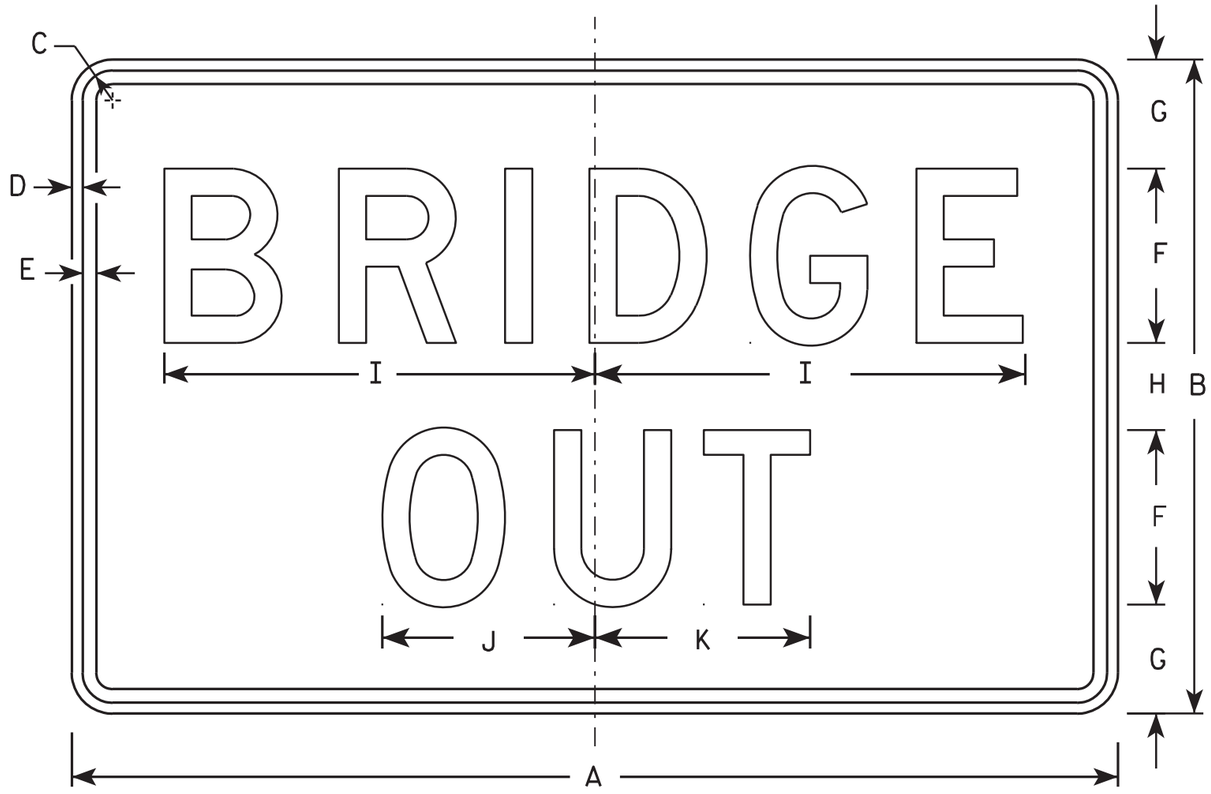
STANDARD SIGN
R11-2

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 4/1/11 PLATE NO. R11-2.10

PROJECT NO: 6987-01-70 | HWY: CTH E | COUNTY: WAUSHARA | SHEET NO: 74 | E



R11-2B

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	48	30	1 3/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0
2M	48	30	1 3/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0
3	48	30	1 3/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0
4	48	30	1 3/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0
5	48	30	1 3/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0

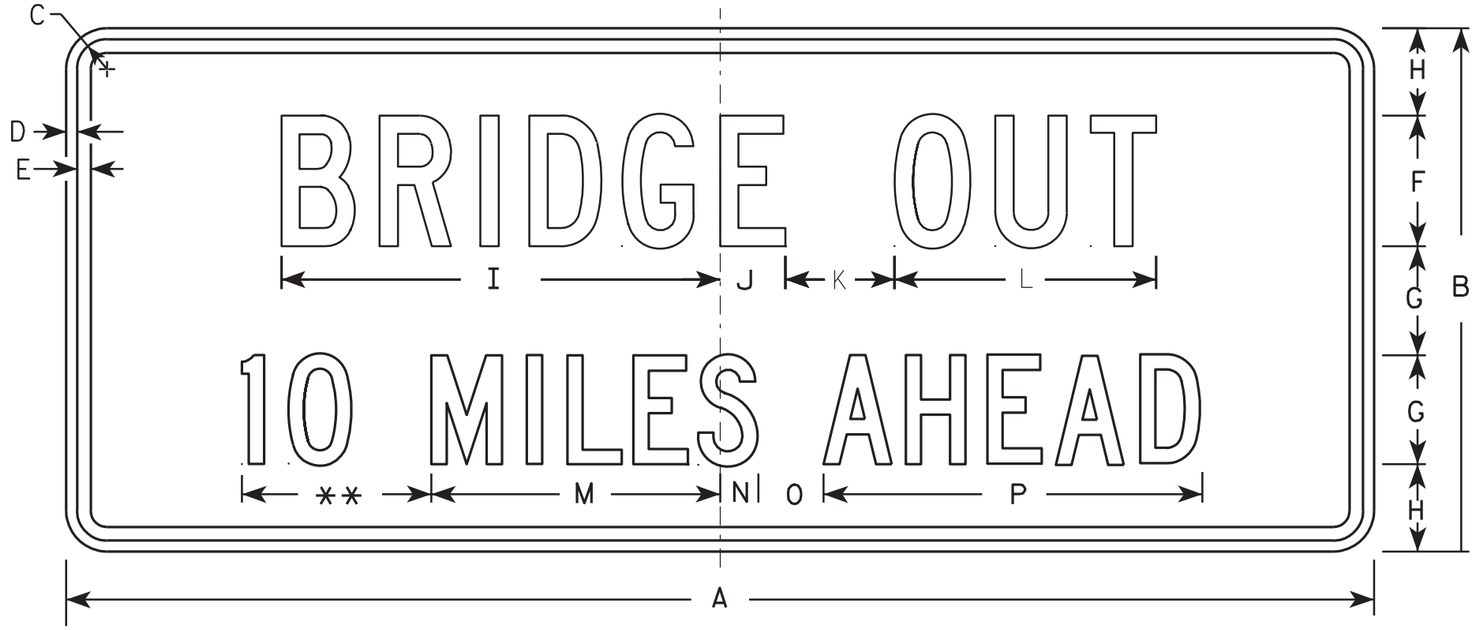
STANDARD SIGN
R11-2B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
For State Traffic Engineer

DATE 4/1/11 PLATE NO. R11-2B.2

PROJECT NO: 6987-01-70	CTH E	WAUSHARA		SHEET NO: 75	E



R11-3C

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 - 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.

** See Note 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.
1	36	15	1 3/8	1/2	5/8	4	3	2 1/2	13 1/4	2 1/4	3	8	8	1 1/2	2	10 3/4											3.75
2S	60	24	1 3/8	1/2	5/8	6	5	4	20 1/8	3	5	12	13 1/4	1 3/4	3	17 3/8											10.0
2M	60	24	1 3/8	1/2	5/8	6	5	4	20 1/8	3	5	12	13 1/4	1 3/4	3	17 3/8											10.0
3																											
4																											
5																											

STANDARD SIGN
R11-3C

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 4/1/11 PLATE NO. R11-3C.2

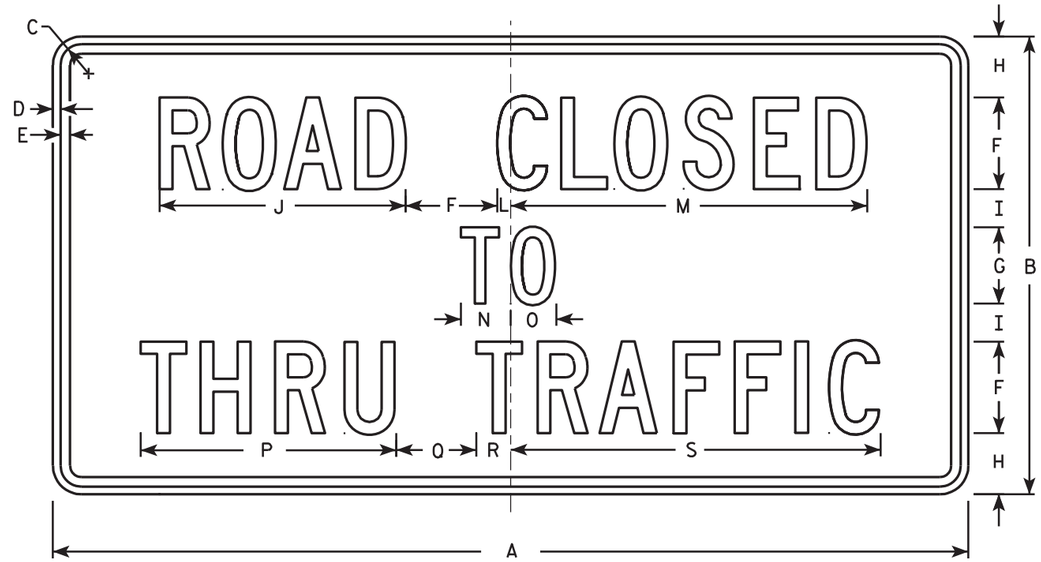
PROJECT NO: 6987-01-70 | CTH E | WAUSHARA | SHEET NO: 76 | E

FILE NAME : C:\Users\PROJECTS\tr_stdplate\R113C.DGN PLOT DATE : 01-APR-2011 14:15 PLOT BY : mscj9h

WISDOT/CADDS SHEET 42

7

7



R11-4

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 - 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																											
2S	60	30	1 3/8	1/2	5/8	6	5	4	2 1/2	16 1/8		7/8	23 3/8	3 1/4	3	16 3/4	5 1/4	2 1/4	24 1/4								12.5
2M	60	30	1 3/8	1/2	5/8	6	5	4	2 1/2	16 1/8		7/8	23 3/8	3 1/4	3	16 3/4	5 1/4	2 1/4	24 1/4								12.5
3																											
4																											
5																											

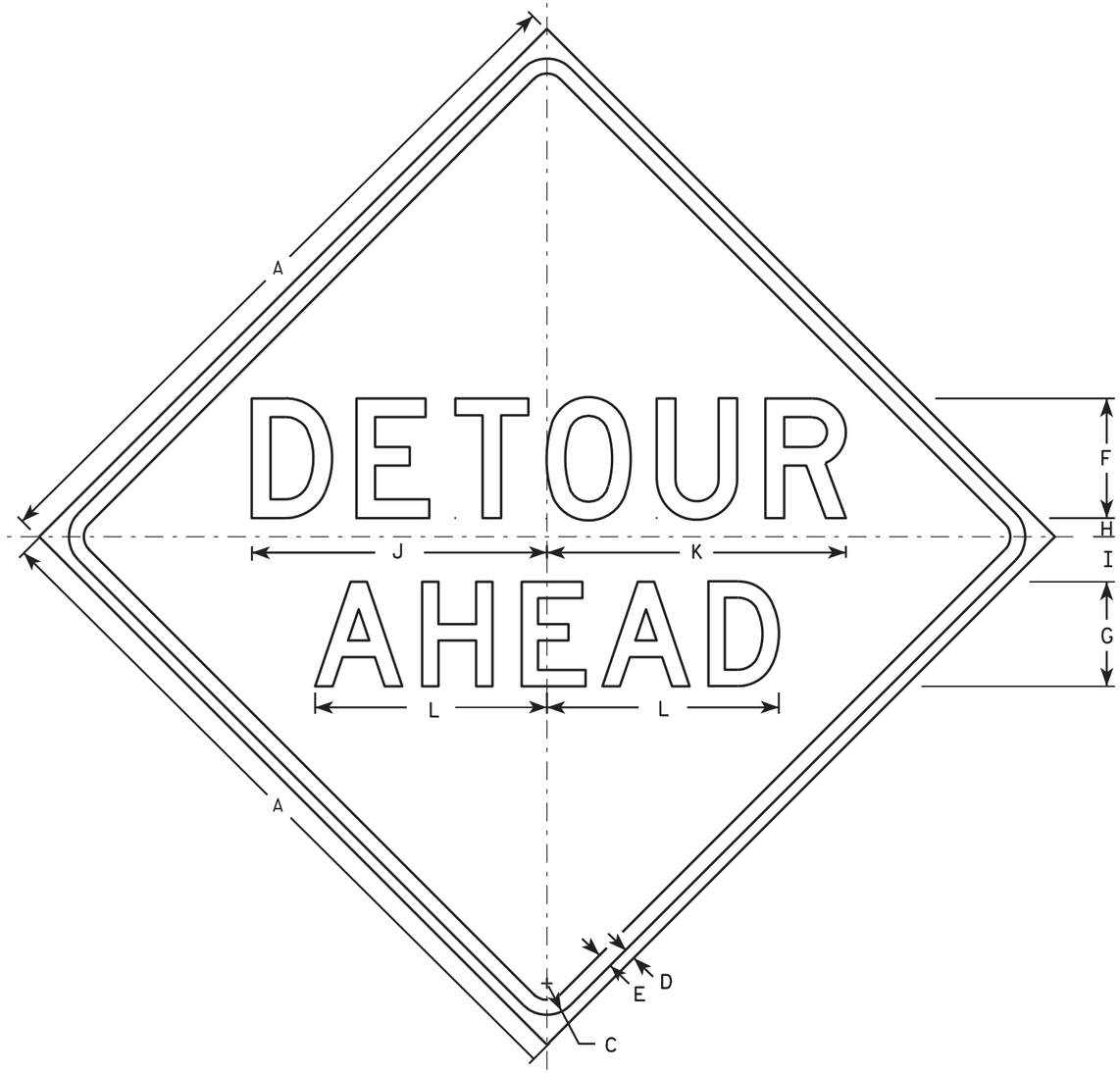
STANDARD SIGN
R11 - 4

WISCONSIN DEPT OF TRANSPORTATION

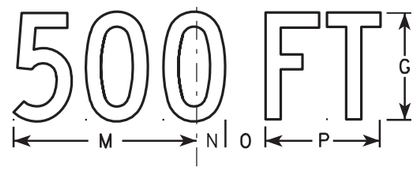
APPROVED Matthew R Rauch for State Traffic Engineer

DATE 4/1/11 PLATE NO. R11-4.3

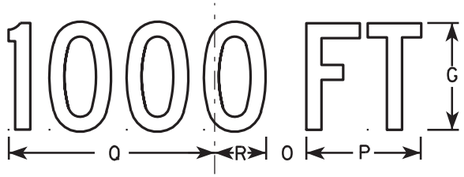
PROJECT NO: 6987-01-70 | HWY: CTH E | COUNTY: WAUSHARA | SHEET NO: 77 | E



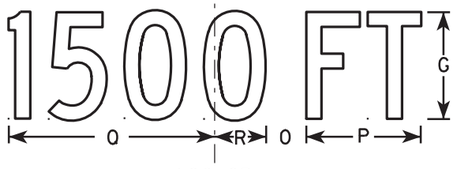
W20-2A



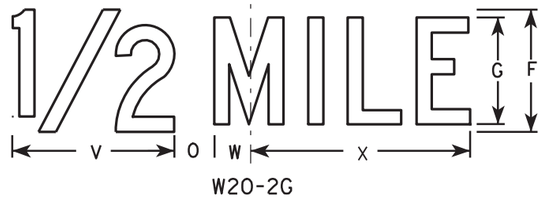
W20-2D



W20-2C



W20-2B



W20-2G

W20-2F

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. Line 1 is Series D.
   Line 2 is Series D for AHEAD and Series C for all other distances.

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	6	5	1	2 1/4	14 3/4	15	11 5/8	9	1 3/8	1 7/8	5 5/8	10 1/8	2 1/2	1 1/8	4 1/2	3 1/2	8	1 3/4	10 3/4			9.0
2S	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
2M	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
3	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
4	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
5	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0

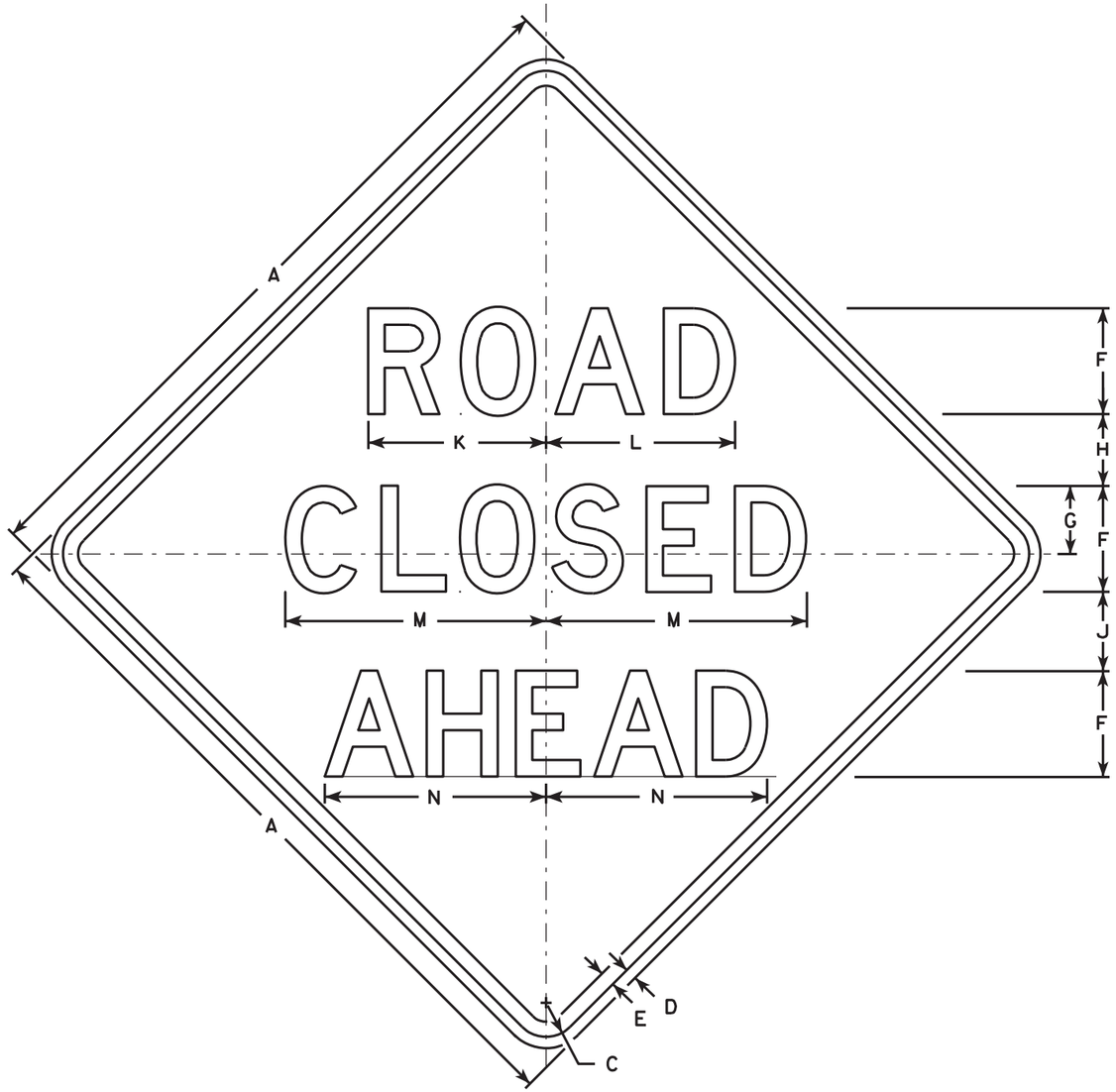
STANDARD SIGN
W20-2A,B,C,D,F & G

WISCONSIN DEPT OF TRANSPORTATION

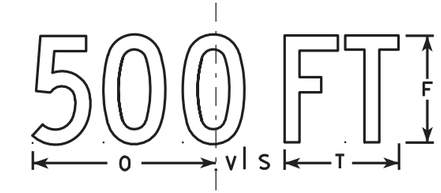
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/18/11 PLATE NO. W20-2.6

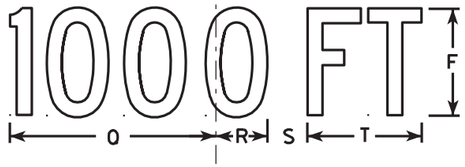
PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA		SHEET NO: 78	E



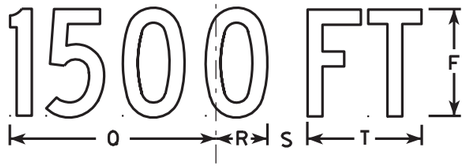
W20-3A



W20-3D



W20-3C



W20-3B

W20-3G

W20-3F

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. Lines 1 and 2 are Series D.
   Line 3 is Series D for AHEAD and Series C for all other distances.

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	5	3 3/8	3 1/2	1 1/8	4	8 3/8	8 7/8	12 1/2	11	9	6	10 1/8	2 1/2	1 7/8	5 5/8	8	1 3/8	4 1/2	3 1/2	10 3/4	1 3/4	9.0
2S	48		2 1/4	3/4	1	7	4 1/2	4 3/4	1 1/2	5 1/4	11 3/4	12 1/2	17 1/4	14 5/8	12	8	13 1/2	3 3/8	2 5/8	7 1/2	10 5/8	1 7/8	6	4 5/8	14 3/8	2 3/8	16.0
2M	48		2 1/4	3/4	1	7	4 1/2	4 3/4	1 1/2	5 1/4	11 3/4	12 1/2	17 1/4	14 5/8	12	8	13 1/2	3 3/8	2 5/8	7 1/2	10 5/8	1 7/8	6	4 5/8	14 3/8	2 3/8	16.0
3	48		2 1/4	3/4	1	7	4 1/2	4 3/4	1 1/2	5 1/4	11 3/4	12 1/2	17 1/4	14 5/8	12	8	13 1/2	3 3/8	2 5/8	7 1/2	10 5/8	1 7/8	6	4 5/8	14 3/8	2 3/8	16.0
4	48		2 1/4	3/4	1	7	4 1/2	4 3/4	1 1/2	5 1/4	11 3/4	12 1/2	17 1/4	14 5/8	12	8	13 1/2	3 3/8	2 5/8	7 1/2	10 5/8	1 7/8	6	4 5/8	14 3/8	2 3/8	16.0
5	48		2 1/4	3/4	1	7	4 1/2	4 3/4	1 1/2	5 1/4	11 3/4	12 1/2	17 1/4	14 5/8	12	8	13 1/2	3 3/8	2 5/8	7 1/2	10 5/8	1 7/8	6	4 5/8	14 3/8	2 3/8	16.0

STANDARD SIGN
W20-3A, B, C, D, F & G

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer
DATE 3/18/11 PLATE NO. W20-3.7

PROJECT NO: 6987-01-70 | HWY: CTH E | COUNTY: WAUSHARA | SHEET NO: 79 | E

7

FILE NAME : C:\Users\PROJECTS\tr_stdplate\W203.DGN PLOT DATE : 18-MAR-2011 12:08 PLOT BY : mscj9h PLOT NAME : PLOT SCALE : 9.931739:1.000000
WISDOT/CADDS SHEET 42

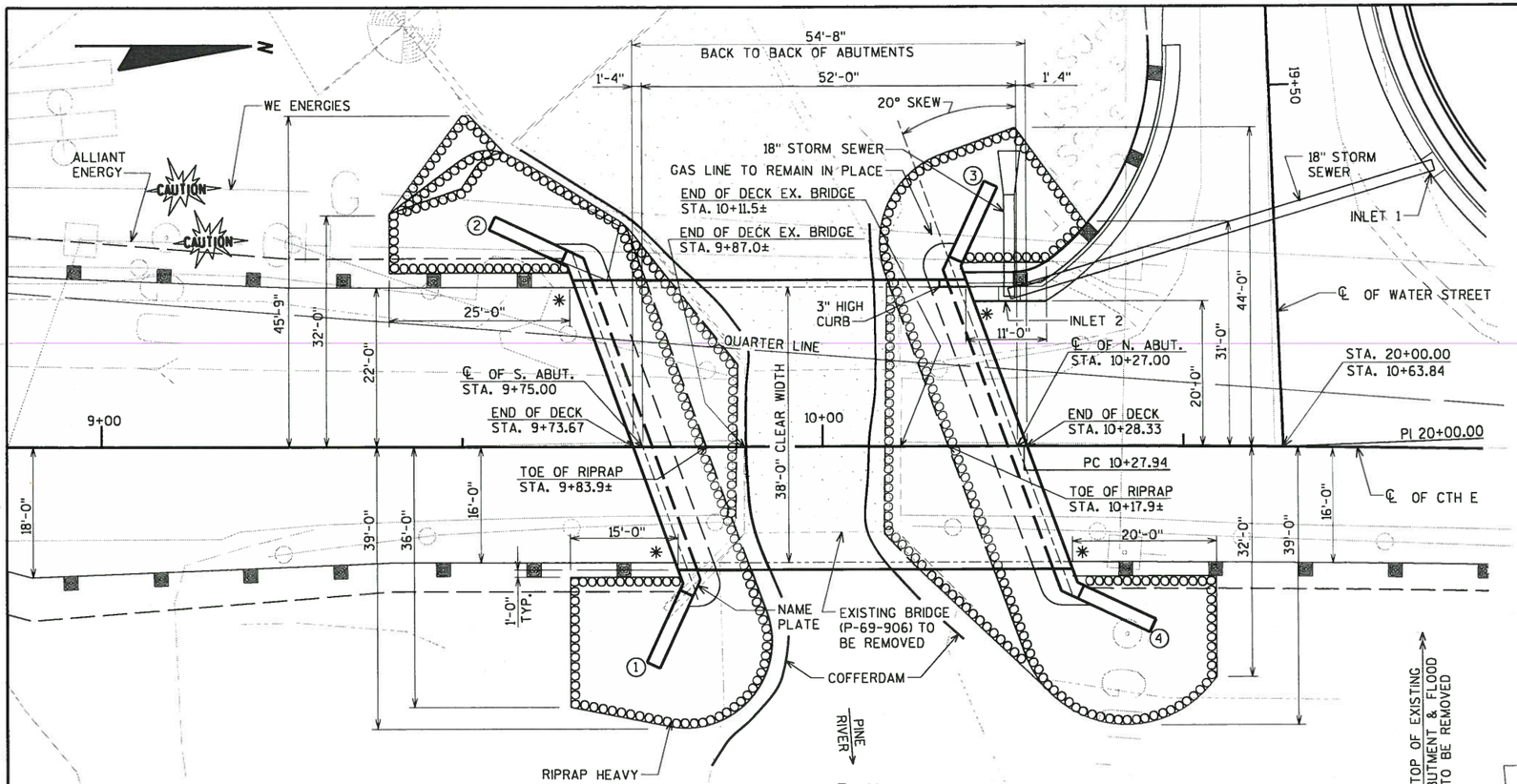
STATE PROJECT NUMBER

6987-01-70

NOTES:
IF ANY SEEPAGE IS NOTED IN THE EXCAVATED AREAS, CONTACT CHRIS McMAHON, AYRES ASSOCIATES & LINDA HYATT, WISCONSIN DEPARTMENT OF NATURAL RESOURCES IMMEDIATELY.

IMPOUNDMENT LEVELS MAY NOT BE ADJUSTED.

ABUTMENT CONSTRUCTION AND PLACEMENT OF RIPRAP HEAVY WILL NEED TO BE ISOLATED FROM THE ACTIVE STREAM. THE CONTRACTOR WILL NEED TO CONSTRUCT A COFFERDAM AROUND THE AREA ON THE CONCRETE SLAB.



FOR TYPICAL SECTION, DESIGN DATA, & PROFILE GRADE, SEE SHEET 2

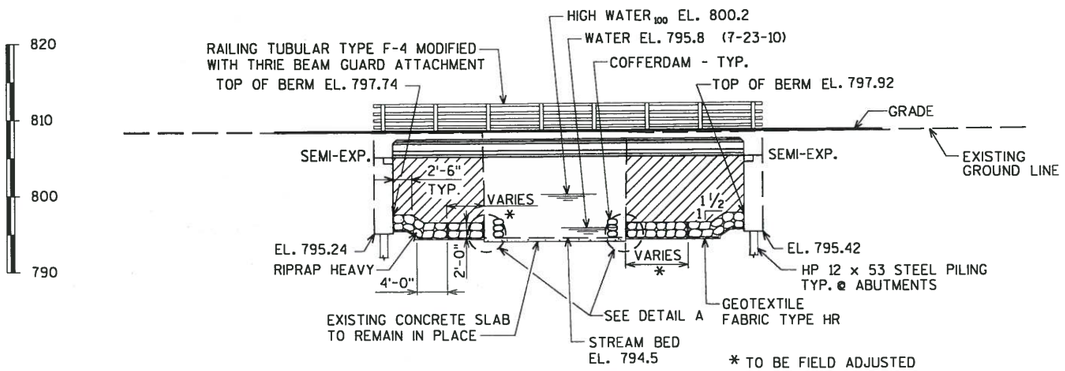
✳ DENOTES ANCHOR ASSEMBLY FOR THRIE BEAM TYPE GUARDRAIL.

○ DENOTES WING NUMBER

PLAN

SINGLE SPAN, 28" PRESTRESSED GIRDER BRIDGE

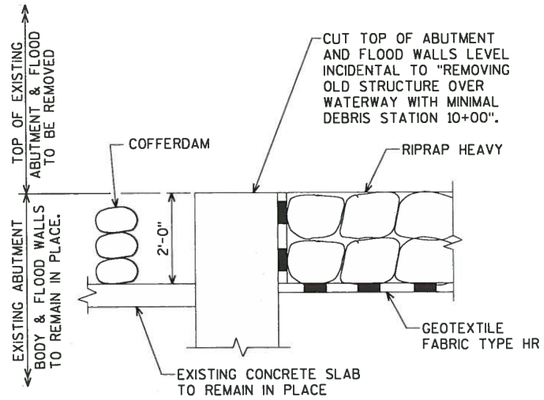
COST OF EXCAVATION AND FILL IN THE HATCHED AREAS SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR "EXCAVATION FOR STRUCTURES BRIDGES B-69-47".



ELEVATION

(NORMAL TO ℄ OF RIVER)

✳ TO BE FIELD ADJUSTED TO FIT SITE CONDITIONS



DETAIL A

LIST OF DRAWINGS

1. GENERAL PLAN
2. TYPICAL SECTION AND NOTES
3. QUANTITIES AND NOTES
4. SUBSURFACE EXPLORATION
5. SOUTH ABUTMENT
6. SOUTH ABUTMENT WING DETAILS
7. NORTH ABUTMENT
8. NORTH ABUTMENT WING DETAILS
9. ABUTMENT BILL OF BARS
10. INTERM. STEEL DIAPHS. DETAILS
11. 28" PRESTRESSED GIRDER DETAILS
12. SUPERSTRUCTURE
13. SUPERSTRUCTURE PLAN
14. RAILING TUBULAR TYPE F-4 MODIFIED

WISCONSIN
CHRISTOPHER B. McMAHON
E-29454
EAU CLAIRE
WI
PROFESSIONAL ENGINEER
8/31/12

BRIDGE OFFICE CONTACT:
WILLIAM DREHER
(608)-266-8489

WDNR DAM CONTACT:
LINDA HYATT
(920)-787-7604

CONSULTANT CONTACT:
CHRIS MCMAHON
(715)-834-3161

NO.	DATE	REVISION	BY

ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher KAR 09/04/12
CHIEF STRUCTURES DESIGN ENGINEER — DATE

STRUCTURE B-69-47

CTH E OVER PINE RIVER

COUNTY	TOWN ~~CITY/VILLAGE~~
WAUSHARA	LEON

DESIGN SPEC. AASHTO LRFD DESIGN SPEC. 5TH EDITION

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
KAZ	KLW	KAZ/CLS	

GENERAL PLAN

SHEET 1 OF 14
80

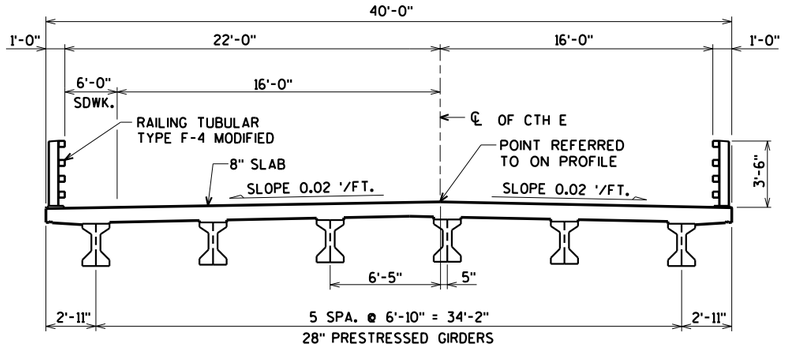
8

$PRFNAME$
U:±42-0800.00 - Waushara County - CTH E - Pine River±BRIDGE±420800gp.dgn

DATE: DATE: DATE:
CHECKED BY: BACK CHECKED BY: CORRECTED BY:

STATE PROJECT NUMBER

6987-01-70



CROSS SECTION THRU ROADWAY
(LOOKING NORTH)

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93
INVENTORY RATING FACTOR: 1.13
OPERATING RATING FACTOR: 1.46
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 250 KIPS

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 #/S.F.

ULTIMATE DESIGN STRESSES:

CONCRETE MASONRY { SLAB f'_c = 4,000 p.s.i.
CONCRETE MASONRY { ALL OTHER f'_c = 3,500 p.s.i.
HIGH STRENGTH BAR STEEL REINFORCEMENT (GRADE 60) f_y = 60,000 p.s.i.

28" PRESTRESSED GIRDER
CONCRETE MASONRY f'_c = 8,000 p.s.i.
STRANDS - 0.5" DIA. WITH ULTIMATE TENSILE STRENGTH OF = 270,000 p.s.i.

HYDRAULIC DATA:

100 YEAR FLOOD

DRAINAGE AREA = 59.2 sq. mi.
WATERWAY AREA = 230 sq. ft.
V = 3.7 f.p.s.
Q_{100} = 854 c.f.s.
HIGH $WATER_{100}$ EL. 800.2
HIGH $WATER_{2}$ EL. 798.3
RDWY. OVERFLOW = N/A
SCOUR CRITICAL CODE = 8
NAVD 88

REGULATORY HIGH $WATER_{100}$ EL. 800.2
REGULATORY Q_{100} = 854.0 c.f.s.

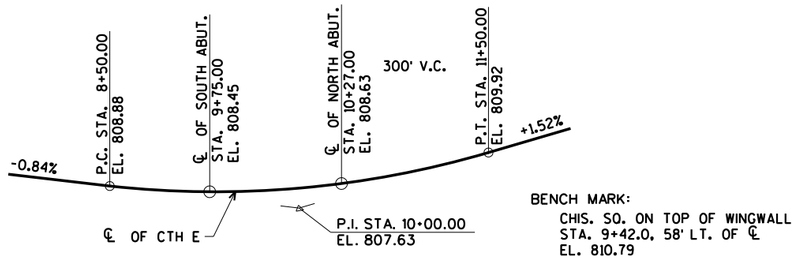
FOUNDATION DATA:

ABUTMENTS TO BE SUPPORTED ON HP 12 x 53 STEEL PILING (WITH PILE POINTS) WITH A REQUIRED DRIVING RESISTANCE OF 115 TONS ‡PER PILE. ESTIMATED LENGTH 25'-0" AT BOTH ABUTMENTS.

‡THE FACTORED AXIAL RESISTANCE OF PILES IN COMPRESSION USED FOR DESIGN IS THE REQUIRED DRIVING RESISTANCE MULTIPLIED BY A RESISTANCE FACTOR OF 0.5 USING MODIFIED GATES TO DETERMINE DRIVEN PILE CAPACITY.

TRAFFIC DATA:

A.D.T. = 970 (2013)
A.D.T. = 1070 (2033)
R.D.S. = 25 M.P.H.



PROFILE GRADE LINE
(CTH E)

BENCH MARK:
CHIS. SQ. ON TOP OF WINGWALL
STA. 9+42.0, 58' LT. OF ℄
EL. 810.79

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-69-47

DRAWN BY KAZ/CLS | PLANS CK'D. KLW

TYPICAL SECTION AND NOTES

SHEET 2 OF 14
81

ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

8

8

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	S. ABUT.	N. ABUT.	SUPER.	TOTAL
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STATION 10+00	LS	-----	-----	-----	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-69-47	LS	-----	-----	-----	1
206.5000	COFFERDAMS B-69-47	LS	-----	-----	-----	1
210.0100	BACKFILL STRUCTURE	CY	370	370	-----	740
502.0100	CONCRETE MASONRY BRIDGES	CY	65	65	83	213
502.3200	PROTECTIVE SURFACE TREATMENT	SY	-----	-----	265	265
503.0128	PRESTRESSED GIRDER TYPE I 28-INCH	LF	-----	-----	318	318
505.0405	BAR STEEL REINFORCEMENT HS BRIDGES	LB	3,420	3,420	-----	6,840
505.0605	BAR STEEL REINFORCEMENT HS COATED BRIDGES	LB	1,880	1,910	13,740	17,530
506.2605	BEARING PADS ELASTOMERIC NON-LAMINATED	EACH	6	6	-----	12
506.4000	STEEL DIAPHRAGMS B-69-47	EACH	-----	-----	5	5
513.4052	RAILING TUBULAR TYPE F-4 MODIFIED B-69-47	LS	-----	-----	-----	1
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	12	13	-----	25
550.0500	PILE POINTS	EACH	10	10	-----	20
550.1120	PILING STEEL HP 12-INCH x 53 LB	LF	250	250	-----	500
606.0300	RIPRAP HEAVY	CY	115	125	-----	240
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	100	100	-----	200
645.0120	GEOTEXTILE FABRIC TYPE HR	SY	220	230	-----	450
	NON-BID ITEMS					
	FILLER	SIZE	-----	-----	-----	1/2" & 3/4"

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS SHOWN OR NOTED OTHERWISE.

THE FIRST DIGIT OF A THREE DIGIT BAR NO. AND THE FIRST TWO DIGITS OF A FOUR DIGIT BAR NO. SIGNIFIES THE BAR SIZE.

JOINT FILLER SHALL CONFORM TO THE REQUIREMENTS OF A.A.S.H.T.O. DESIGNATION M 153, TYPE I, II OR III OR A.A.S.H.T.O. DESIGNATION M 213.

THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH RIPRAP HEAVY TO THE EXTENT SHOWN ON THE GENERAL PLAN SHEET AND IN THE ABUTMENT DETAILS.

SLAB FALSEWORK SHALL BE SUPPORTED ON PILES UNLESS OTHERWISE APPROVED BY THE ENGINEER.

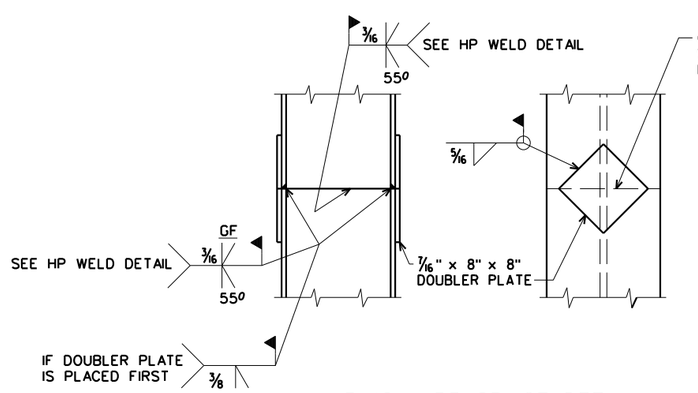
THE EXISTING GROUND LINE SHALL BE THE UPPER LIMIT FOR EXCAVATION FOR STRUCTURES.

THE EXISTING STRUCTURE, P-69-906, TO BE REMOVED, IS A SINGLE SPAN CONCRETE DECK GIRDER BRIDGE, 24.5 FT. LONG WITH A 19.6 FT. CLEAR ROADWAY WIDTH.

ELASTOMERIC BEARING PADS NEED NOT BE INDIVIDUALLY MOLDED PROVIDED THE CUT EDGES ARE SMOOTH AND TIME.

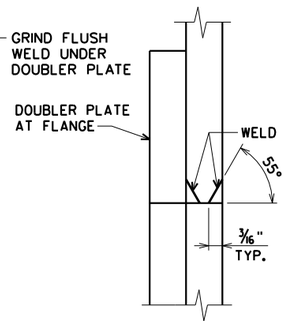
AT BACKFACE OF ABUTMENTS ALL EXCAVATED VOLUME NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH BACKFILL STRUCTURE.

PROTECTIVE SURFACE TREATMENT IS TO BE APPLIED AS SHOWN IN DETAIL ON THIS SHEET.



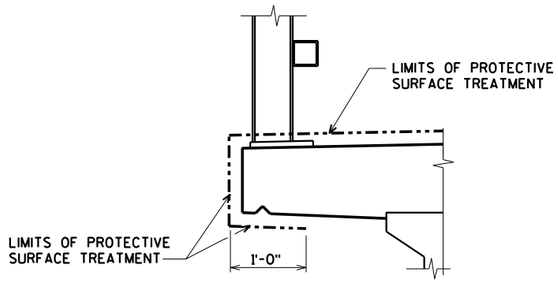
HP 12 x 53 SPLICE DETAIL

GRINDING MAY BE USED IN LIEU OF BACKGOUGING



HP WELD DETAIL

FLANGE SHOWN, WEB SIMILAR



PROTECTIVE SURFACE TREATMENT DETAIL

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-69-47

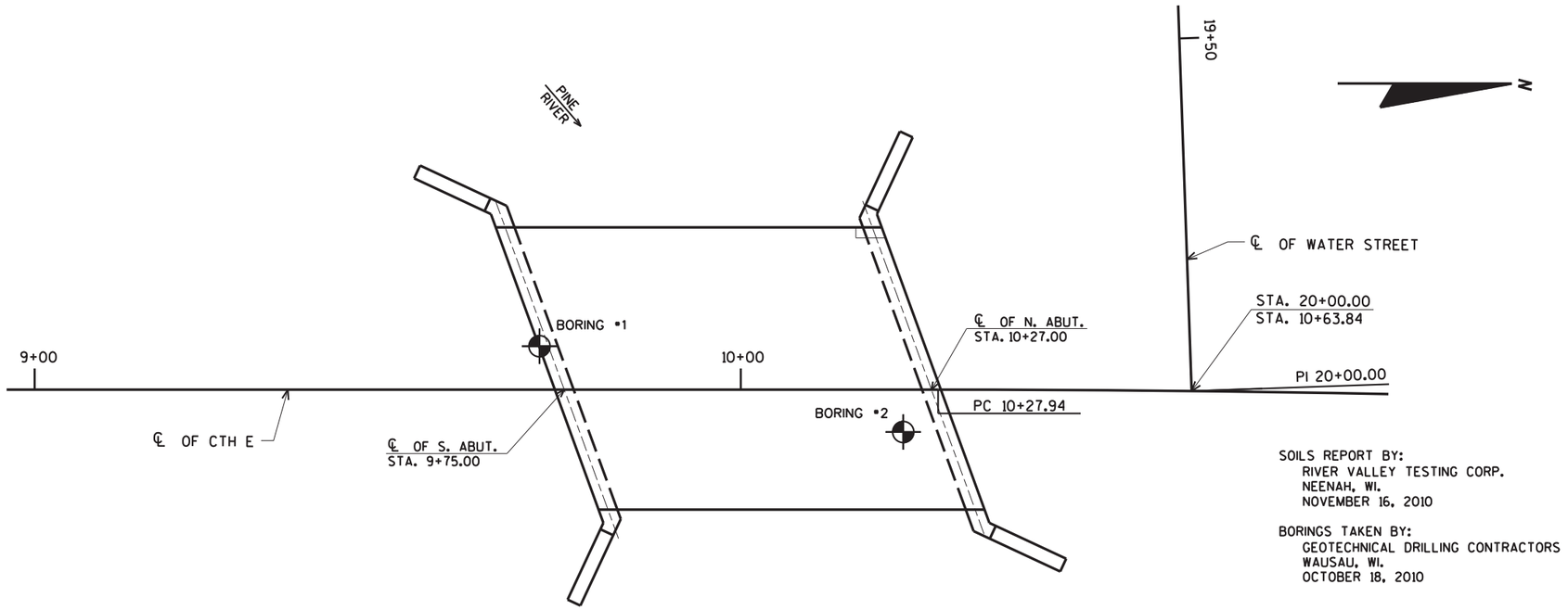
DRAWN BY KAZ | PLANS CK'D. KLW

QUANTITIES AND NOTES

SHEET 3 OF 14
82

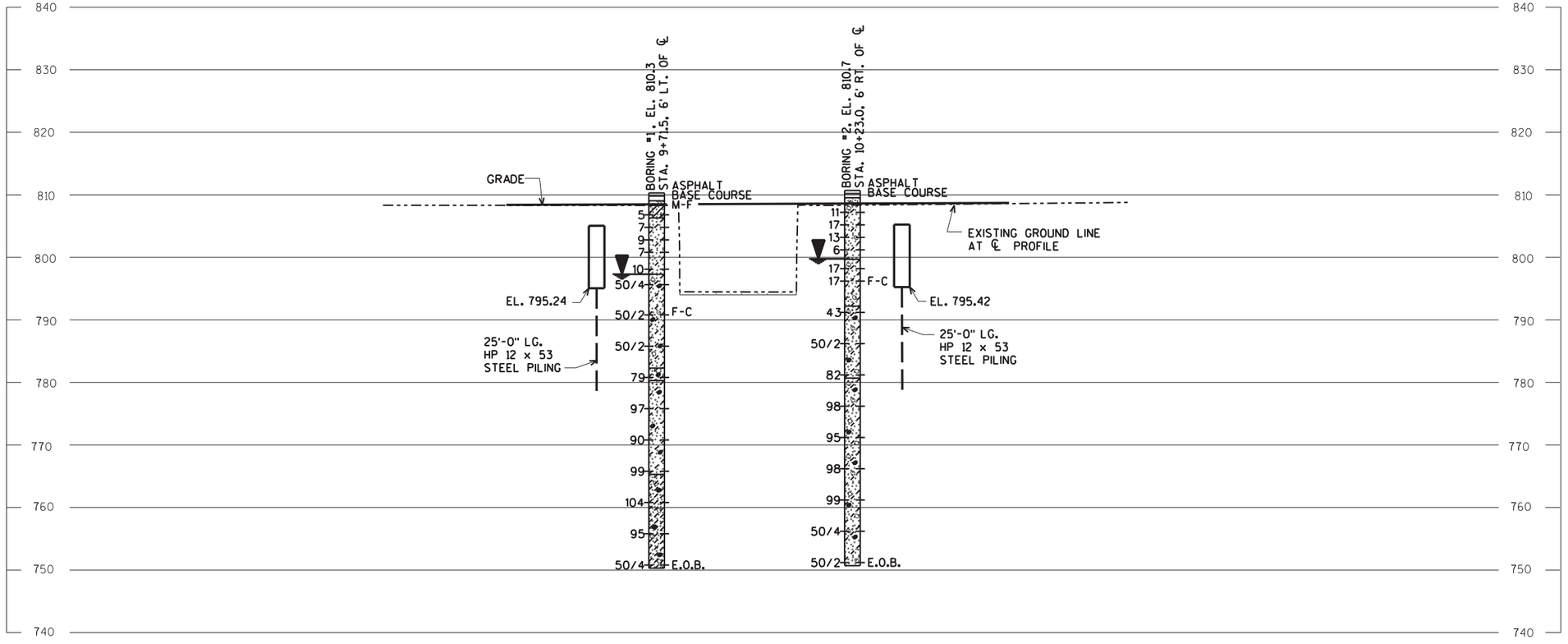
ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

$PRFNAME$
U:±42-0800.00 - Waushara County - CTH E - Pine River±BRIDGE±420800SL.DGN



SOILS REPORT BY:
RIVER VALLEY TESTING CORP.
NEENAH, WI.
NOVEMBER 16, 2010

BORINGS TAKEN BY:
GEOTECHNICAL DRILLING CONTRACTORS
WAUSAU, WI.
OCTOBER 18, 2010



STATE PROJECT NUMBER

6987-01-70

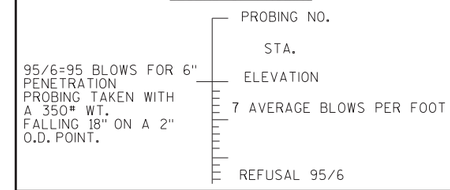
ABBREVIATIONS

F — FINE M — MEDIUM C — COARSE
WS — WEATHERED SO — SOUND

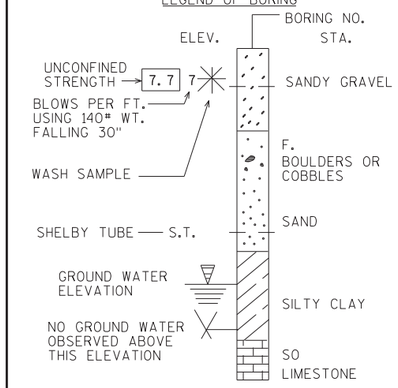
MATERIAL SYMBOLS

TOPSOIL SILT SANDSTONE
SAND PEAT LIMESTONE
GRAVEL CLAY IGNEOUS ROCK

LEGEND OF PROBING



LEGEND OF BORING



UNLESS OTHERWISE SPECIFIED, THE BLOWS PER FOOT AT THE LOCATIONS INDICATED ARE BASED ON DRIVING A 2" O.D. X 1.4" I.D. SPLIT SPOON SAMPLER WITH A 140# HAMMER HAVING A FREE FALL OF 30". THE BLOW COUNT IS TAKEN IN UNDISTURBED SOIL IMMEDIATELY BELOW A CASED OR OPEN HOLE ELIMINATING SIDE FRICTION ON THE DRIVE PIPE.

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

TO OBTAIN RELATIVE DATA CONCERNING THE CHARACTER OF MATERIAL IN AND UPON WHICH THE FOUNDATION MIGHT BE BUILT, BORINGS AND/OR SOUNDINGS WERE MADE AT POINTS APPROXIMATELY AS INDICATED ON THIS DRAWING. THE DATA PRESENTED HEREIN REPRESENTS THE FINDINGS OF THE SUBSURFACE EXPLORATIONS MADE. HOWEVER, BECAUSE THE DEPTHS INVESTIGATED ARE LIMITED AND THE AREA OF THE BORINGS AND/OR SOUNDINGS IS VERY SMALL IN RELATION TO THE ENTIRE AREA, THE WISCONSIN DEPARTMENT OF TRANSPORTATION DOES NOT WARRANT CONDITIONS BELOW THE DEPTHS INVESTIGATED OR THAT THE CLASSIFICATION OF MATERIAL ENCOUNTERED IN THESE INVESTIGATIONS IS NECESSARILY TYPICAL OF THE ENTIRE SITE.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-69-47

DRAWN BY CLS | PLANS CK'D. KLW

SUBSURFACE EXPLORATION

SHEET 4 OF 14
83

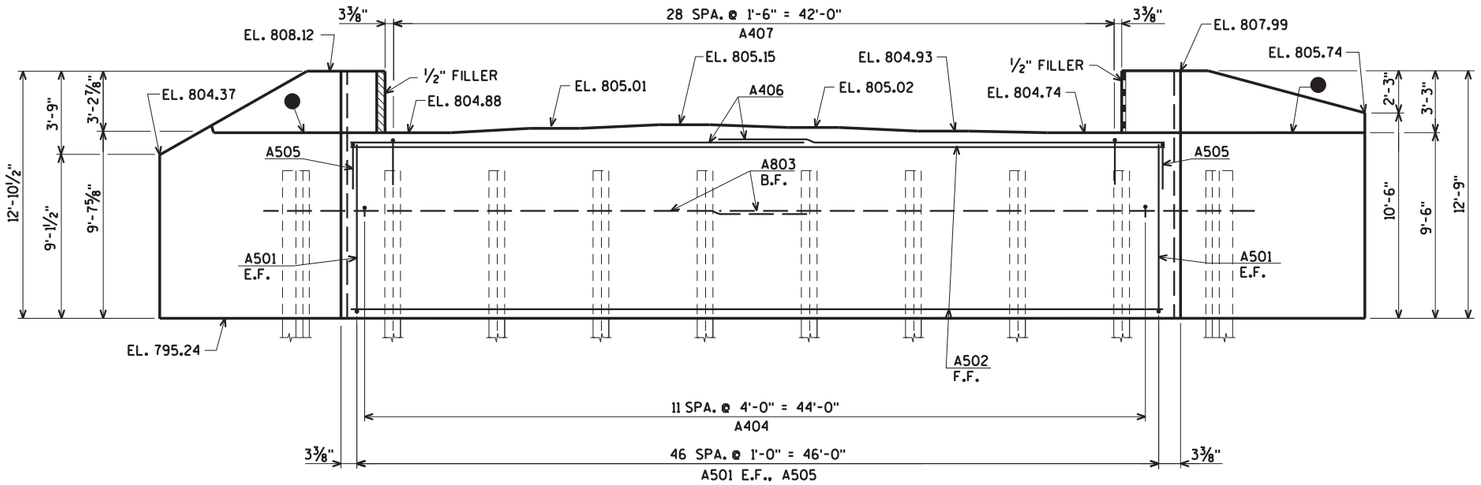
8

8

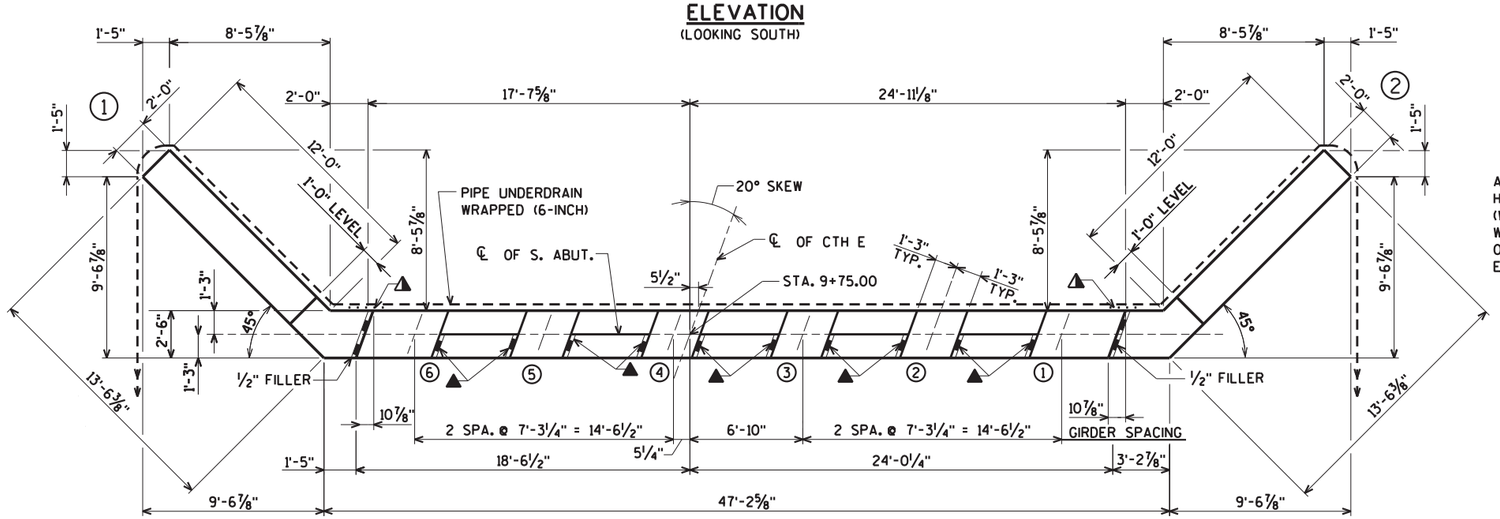
NOTE: SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE.)

STATE PROJECT NUMBER

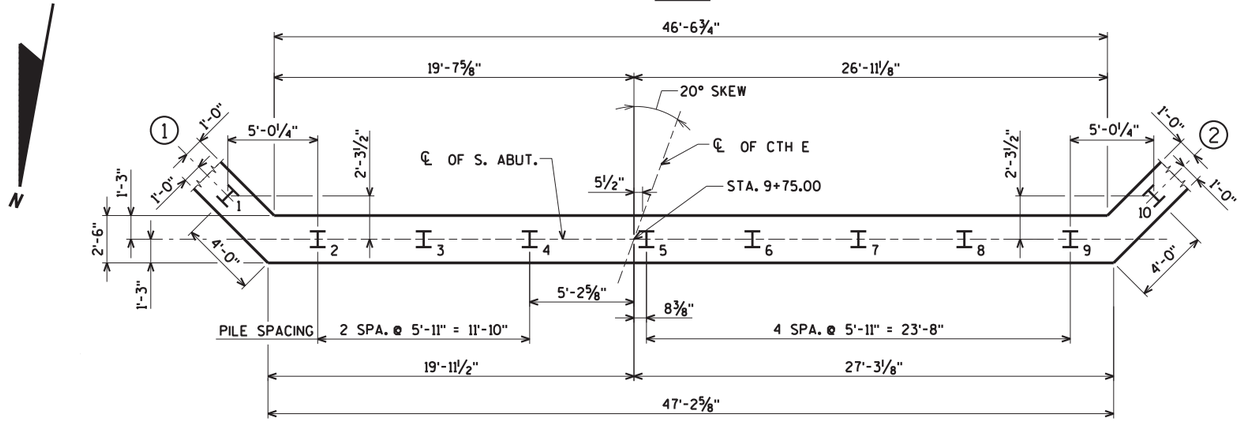
6987-01-70



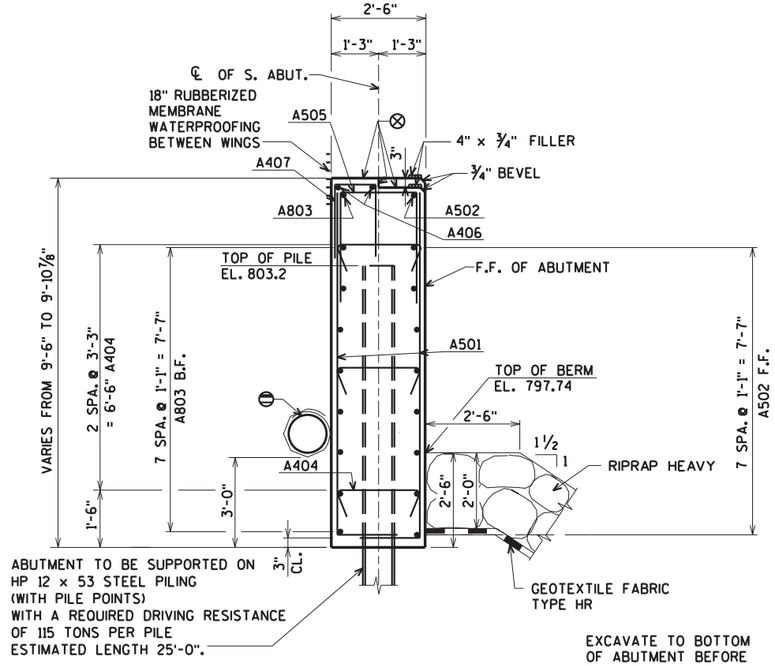
ELEVATION
(LOOKING SOUTH)



PLAN



PILE LAYOUT



TYPICAL SECTION THRU BODY

NOTE: DO NOT PLACE FILL ABOVE THREE FEET FROM BOTTOM OF ABUTMENT UNTIL SUPERSTRUCTURE IS IN PLACE.

▲ ¾" CORK FILLER ON VERTICAL FACE ONLY.

⊗ STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING BEARING PADS AND/OR SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".

⊖ PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN AS DETAILED ON SDD REINFORCED CONCRETE APRON ENDWALL FOR PIPE UNDERDRAIN. RODENT SHIELD TO BE INCLUDED IN BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH". SEE SHEET 9 FOR RODENT SHIELD DETAIL.

● OPT. KEYED CONST. JOINT - FORMED BY A BEVELED 2" x 6".

⚠ 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING.

FOR PILE SPLICE DETAIL SEE SHEET 3.

B.F. DENOTES BACK FACE.
F.F. DENOTES FRONT FACE.
E.F. DENOTES EACH FACE.

WORK THIS SHEET WITH SHEETS 6 & 9.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-69-47

DRAWN BY KAZ | PLANS CK'D. KLW

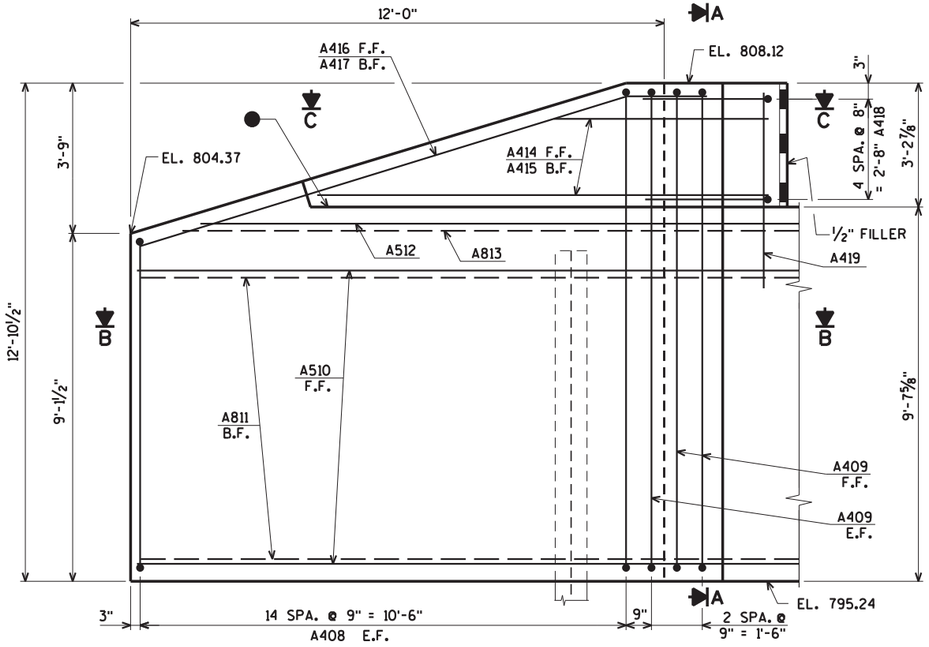
SOUTH ABUTMENT

SHEET 5 OF 14
84

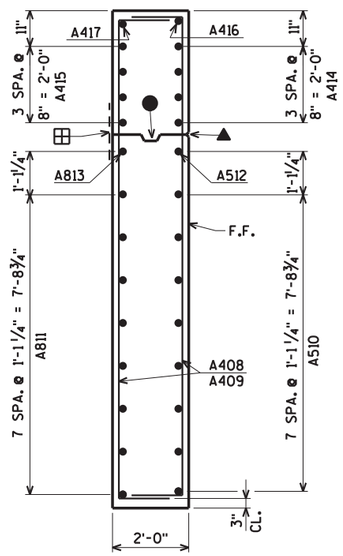
ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

STATE PROJECT NUMBER

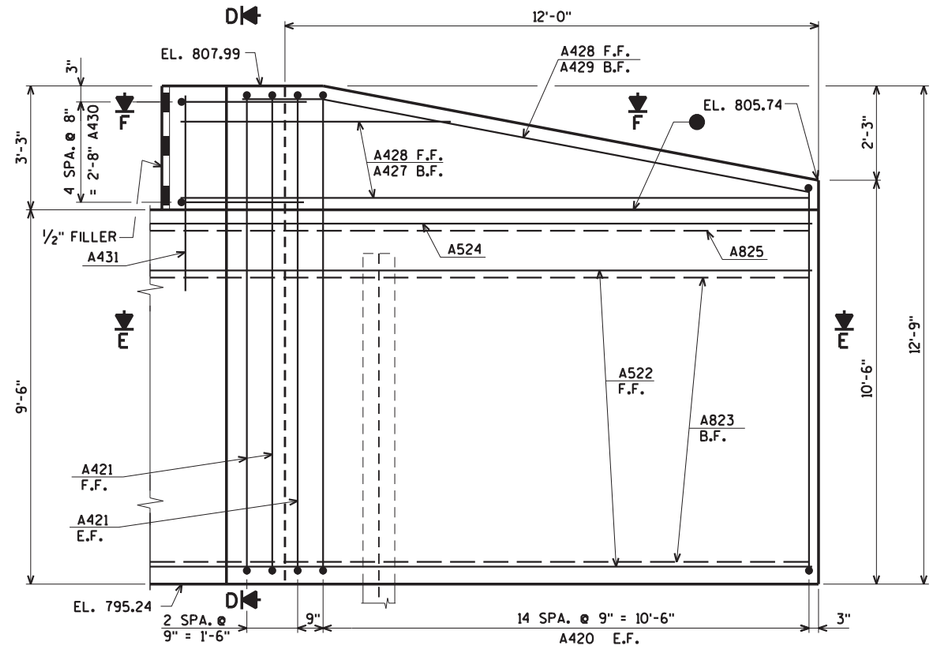
6987-01-70



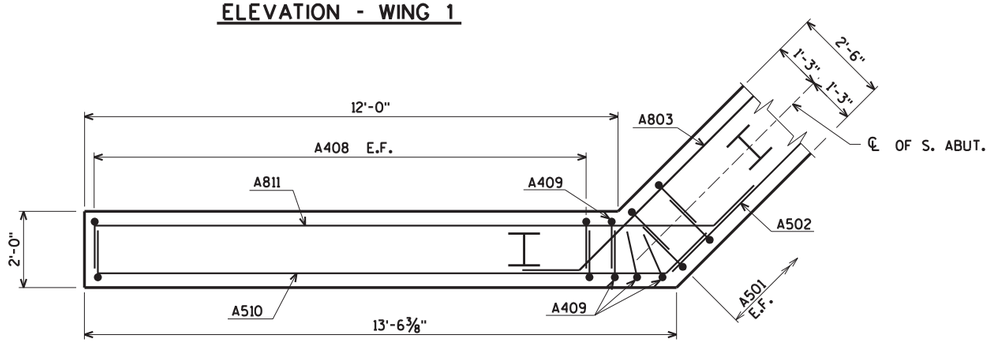
ELEVATION - WING 1



SECTION A



ELEVATION - WING 2



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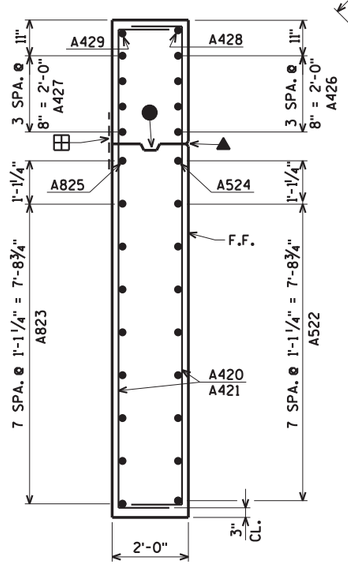
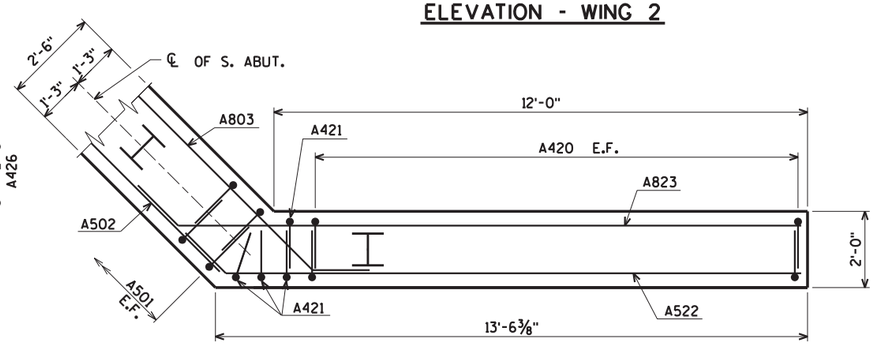


SECTION D



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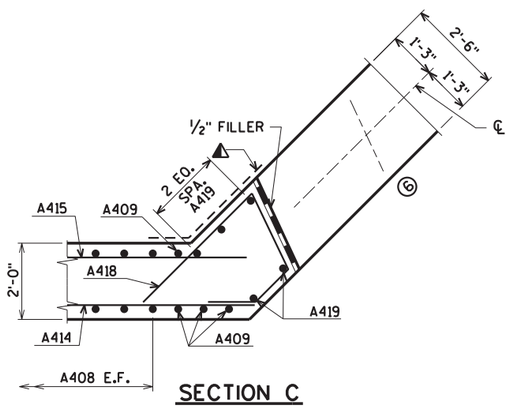

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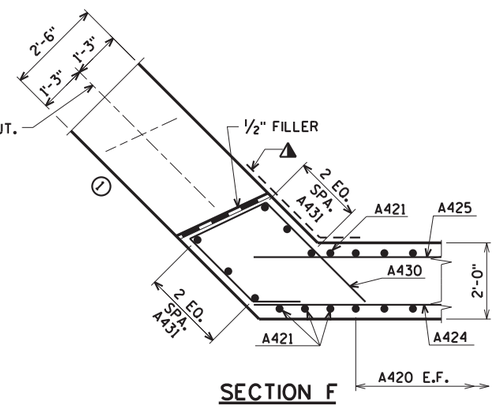

SECTION F

▲ ¾" 'V' GROOVE ON F.F. OF WING WALL - NOT REQUIRED IF CONST. JT. IS NOT USED.

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◭ 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BEAM SEAT TO TOP OF WINGWALL.

⊞ 18" RUBBERIZED MEMBRANE WATERPROOFING ON BACK FACE. NOT REQUIRED IF CONST. JT. IS NOT USED.

B.F. DENOTES BACK FACE.
F.F. DENOTES FRONT FACE.
E.F. DENOTES EACH FACE.

WORK THIS SHEET WITH SHEETS 5 & 9.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-69-47

DRAWN BY KAZ | PLANS CK'D. KLW

SOUTH ABUTMENT WING DETAILS

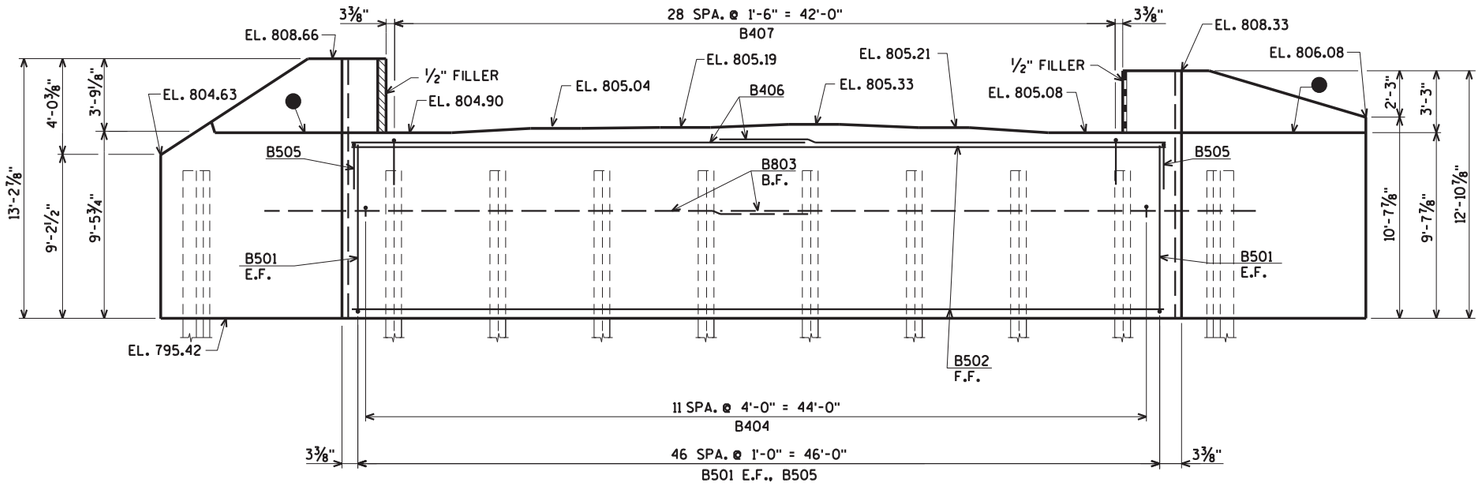
SHEET 6 OF 14
85

ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

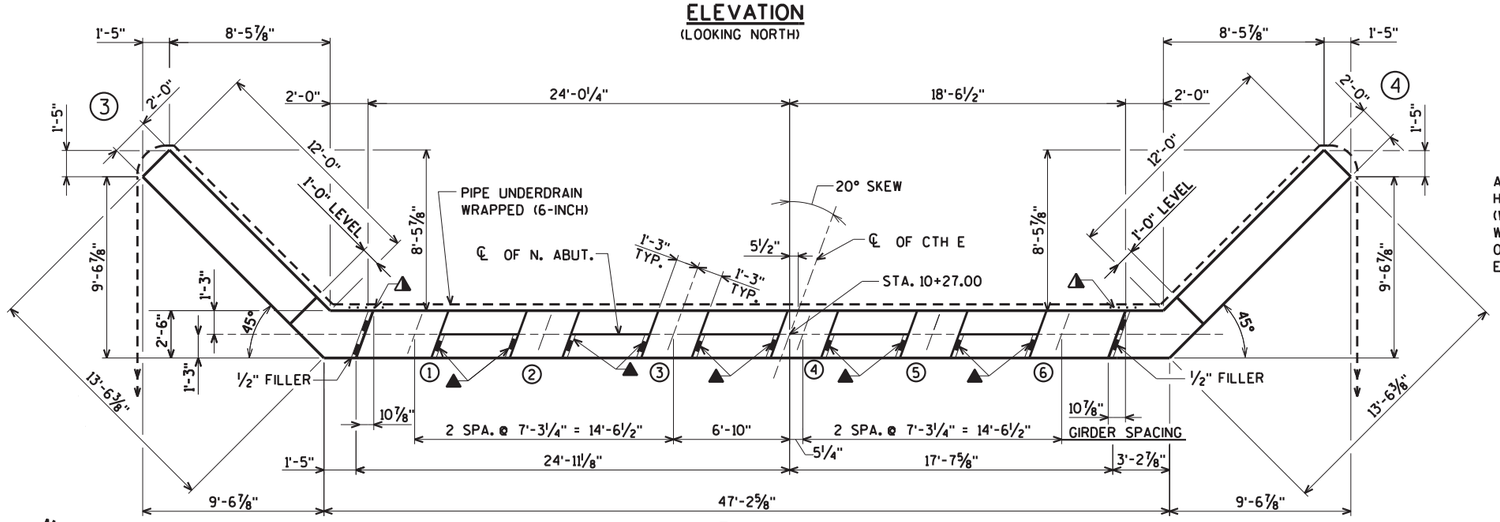
NOTE: SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE.)

STATE PROJECT NUMBER

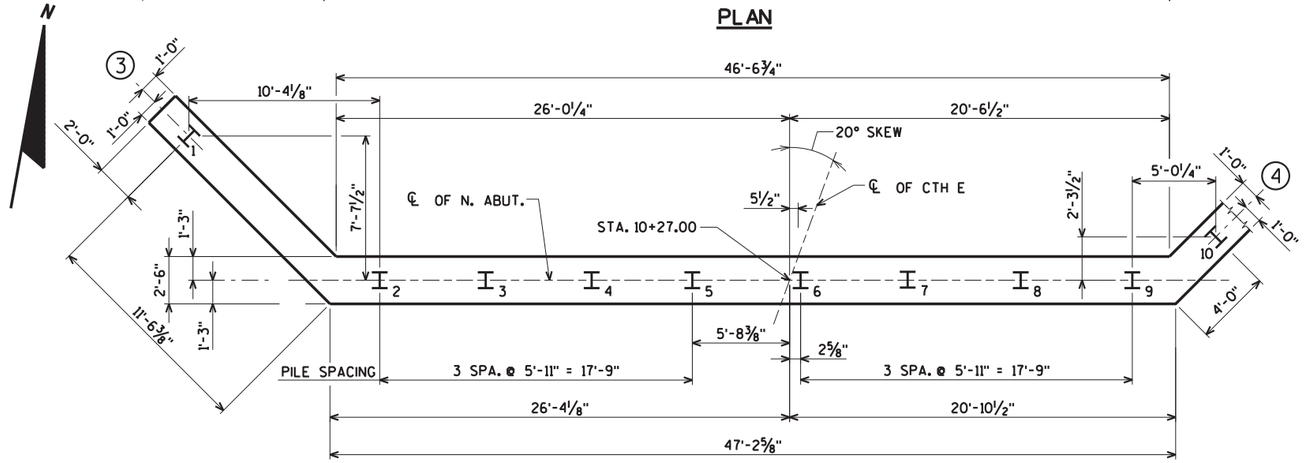
6987-01-70



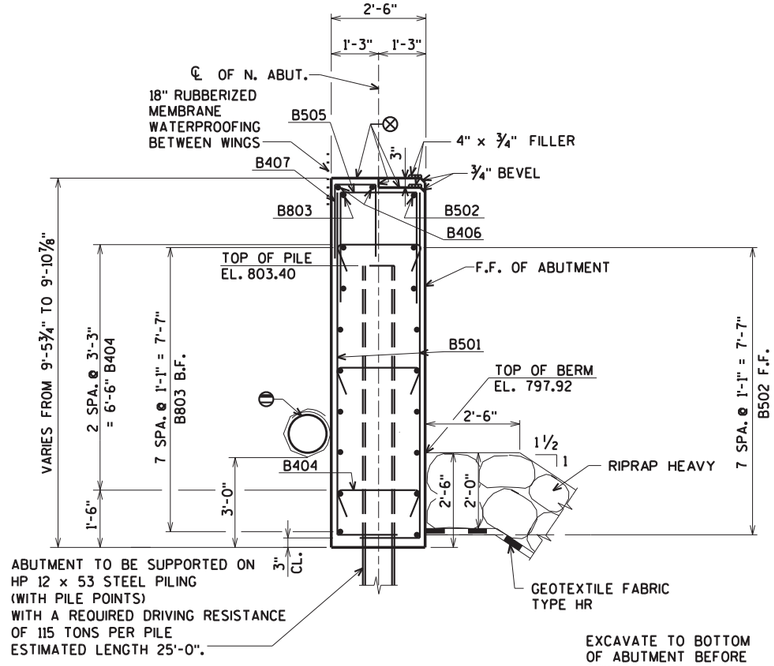
ELEVATION
(LOOKING NORTH)



PLAN



PILE LAYOUT



TYPICAL SECTION THRU BODY

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FOR PILE SPLICE DETAIL SEE SHEET 3.

B.F. DENOTES BACK FACE.
F.F. DENOTES FRONT FACE.
E.F. DENOTES EACH FACE.

WORK THIS SHEET WITH SHEETS 8 & 9.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-69-47

DRAWN BY KAZ | PLANS CK'D. KLW

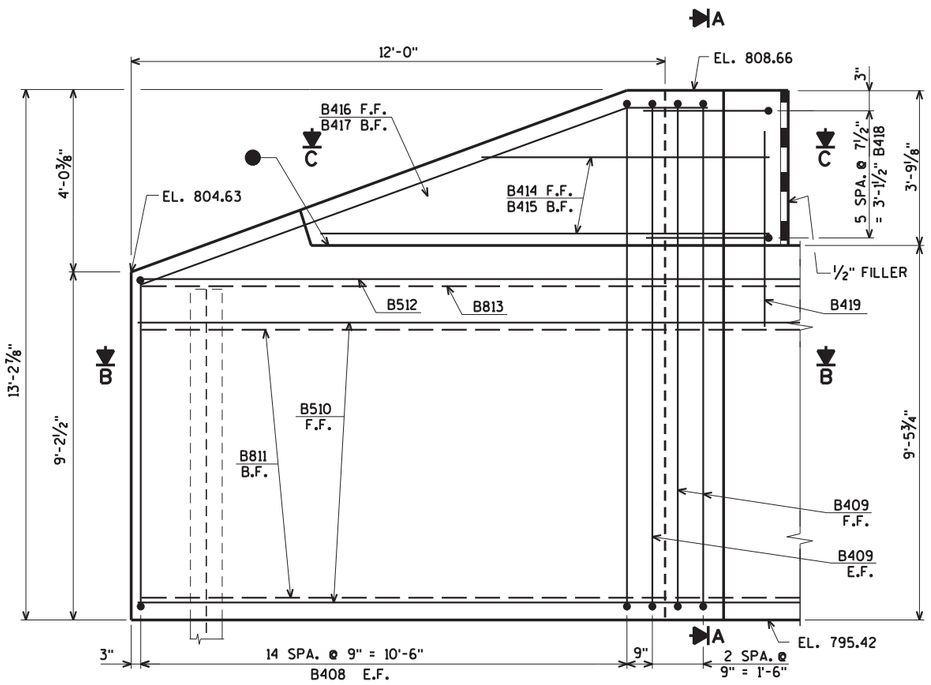
NORTH ABUTMENT

SHEET 7 OF 14
86

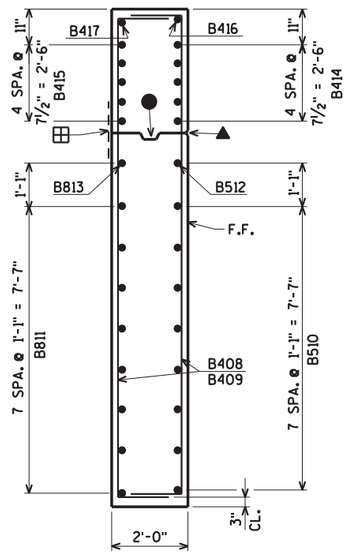
ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

8

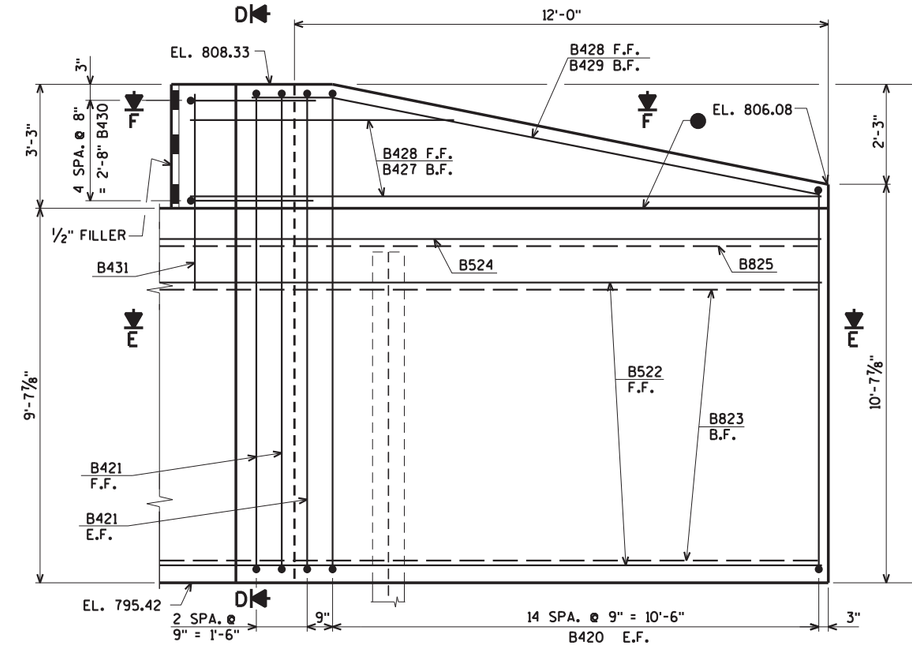
8



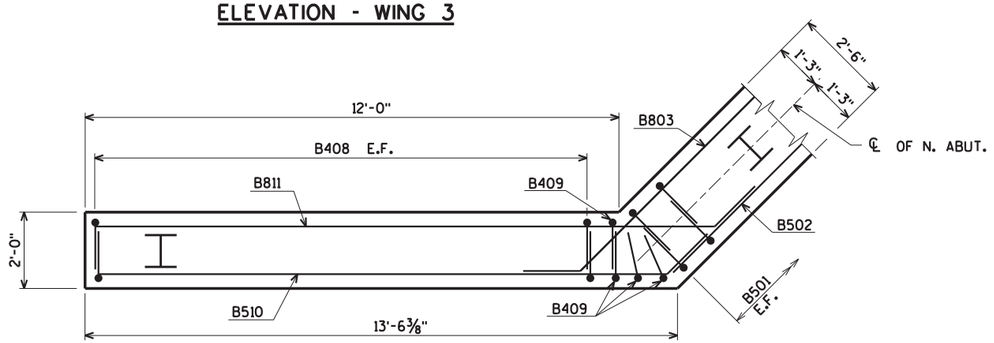
ELEVATION - WING 3



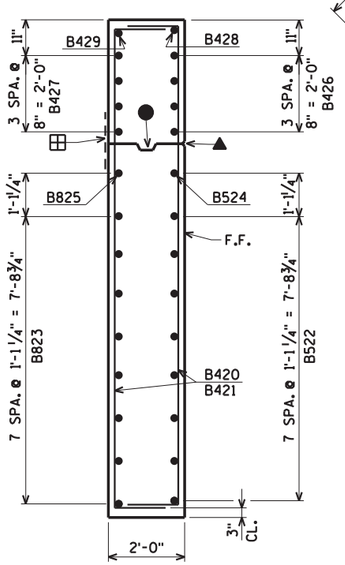
SECTION A



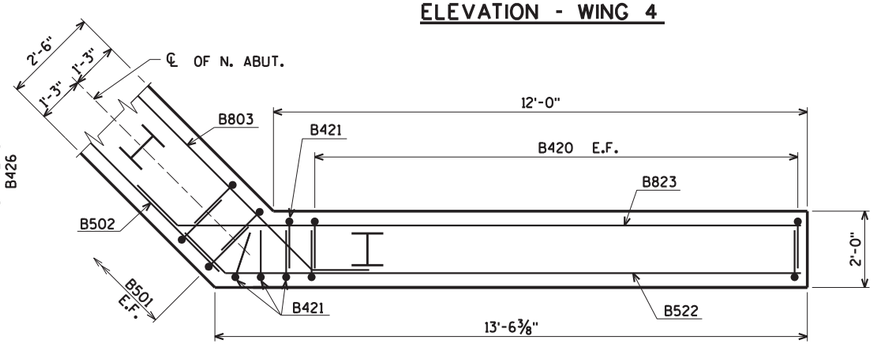
ELEVATION - WING 4



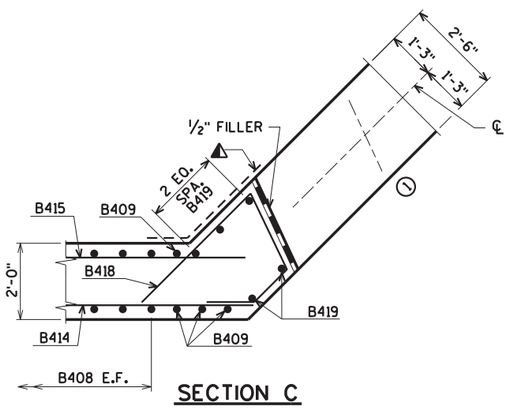
SECTION B



SECTION D



SECTION E



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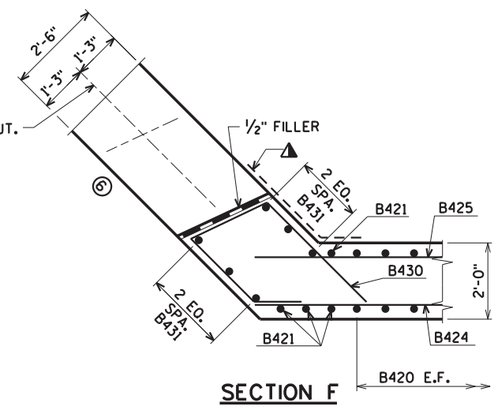

SECTION F

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⊞ 18" RUBBERIZED MEMBRANE WATERPROOFING ON BACK FACE. NOT REQUIRED IF CONST. JT. IS NOT USED.

B.F. DENOTES BACK FACE.
F.F. DENOTES FRONT FACE.
E.F. DENOTES EACH FACE.

WORK THIS SHEET WITH SHEETS 7 & 9.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-69-47

DRAWN BY KAZ | PLANS CK'D. KLW

NORTH ABUTMENT WING DETAILS

SHEET 8 OF 14
87

ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
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www.AyresAssociates.com

STATE PROJECT NUMBER

6987-01-70

BILL OF BARS - SOUTH ABUTMENT

BAR. NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED BAR SERIES	3.420" UNCOATED 1.880" COATED LOCATION
A501		94	10-3	X		BODY VERT. E.F.
A502		9	47-2			BODY HORIZ. F.F.
A803		18	29-4	X		BODY HORIZ. B.F.
A404		36	2-11	X		BODY TIES
A505		47	7-0	X		BODY VERT. TOP
A406		4	24-0			BODY HORIZ.
A407		29	4-5	X		BODY VERT.
A408	X	30	13-0	X	⊗	WING 1 VERT. E.F.
A409	X	4	14-11	X		WING 1 VERT. E.F.
A510	X	8	14-10	X		WING 1 HORIZ. F.F.
A811	X	8	16-1	X		WING 1 HORIZ. B.F.
A512	X	1	14-4	X		WING 1 HORIZ. F.F.
A813	X	1	15-7	X		WING 1 HORIZ. B.F.
A414	X	4	7-6		⊗	WING 1 HORIZ. F.F.
A415	X	4	7-6		⊗	WING 1 HORIZ. B.F.
A416	X	1	13-11	X		WING 1 DIAG. F.F.
A417	X	1	13-11	X		WING 1 DIAG. B.F.
A418	X	5	8-0	X		WING 1 HORIZ.
A419	X	5	4-4			WING 1 VERT.
A420	X	30	13-8	X	⊗	WING 2 VERT. E.F.
A421	X	4	14-10	X		WING 2 VERT. E.F.
A522	X	8	14-10	X		WING 2 HORIZ. F.F.
A823	X	8	16-1	X		WING 2 HORIZ. B.F.
A524	X	1	14-10	X		WING 2 HORIZ. F.F.
A825	X	1	16-1	X		WING 2 HORIZ. B.F.
A426	X	4	9-9		⊗	WING 2 HORIZ. F.F.
A427	X	4	9-9		⊗	WING 2 HORIZ. B.F.
A428	X	1	13-6	X		WING 2 DIAG. F.F.
A429	X	1	13-6	X		WING 2 DIAG. B.F.
A430	X	5	9-10	X		WING 2 HORIZ.
A431	X	6	4-4			WING 2 VERT.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

⊗ LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.

B.F. DENOTES BACK FACE.

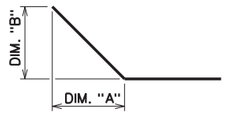
F.F. DENOTES FRONT FACE.

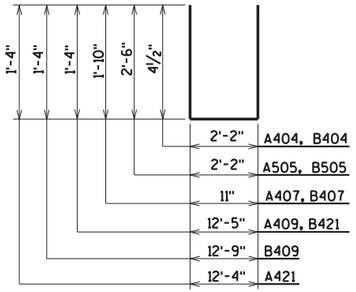
E.F. DENOTES EACH FACE.

BILL OF BARS - NORTH ABUTMENT

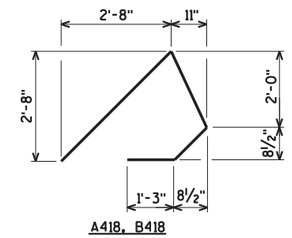
BAR. NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED BAR SERIES	3.420" UNCOATED 1.910" COATED LOCATION
B501		94	10-3	X		BODY VERT. E.F.
B502		9	47-2			BODY HORIZ. F.F.
B803		18	29-4	X		BODY HORIZ. B.F.
B404		36	2-11	X		BODY TIES
B505		47	7-0	X		BODY VERT. TOP
B406		4	24-0			BODY HORIZ.
B407		29	4-5	X		BODY VERT.
B408	X	30	13-3	X	⊗	WING 3 VERT. E.F.
B409	X	4	15-3	X		WING 3 VERT. E.F.
B510	X	8	14-10	X		WING 3 HORIZ. F.F.
B811	X	8	16-1	X		WING 3 HORIZ. B.F.
B512	X	1	14-10	X		WING 3 HORIZ. F.F.
B813	X	1	16-1	X		WING 3 HORIZ. B.F.
B414	X	5	7-11		⊗	WING 3 HORIZ. F.F.
B415	X	5	7-11		⊗	WING 3 HORIZ. B.F.
B416	X	1	14-0	X		WING 3 DIAG. F.F.
B417	X	1	14-0	X		WING 3 DIAG. B.F.
B418	X	6	8-0	X		WING 3 HORIZ.
B419	X	5	4-10			WING 3 VERT.
B420	X	30	13-10	X	⊗	WING 4 VERT. E.F.
B421	X	4	14-11	X		WING 4 VERT. E.F.
B522	X	8	14-10	X		WING 4 HORIZ. F.F.
B823	X	8	16-1	X		WING 4 HORIZ. B.F.
B524	X	1	14-10	X		WING 4 HORIZ. F.F.
B825	X	1	16-1	X		WING 4 HORIZ. B.F.
B426	X	4	9-9		⊗	WING 4 HORIZ. F.F.
B427	X	4	9-9		⊗	WING 4 HORIZ. B.F.
B428	X	1	13-6	X		WING 4 DIAG. F.F.
B429	X	1	13-6	X		WING 4 DIAG. B.F.
B430	X	5	9-10	X		WING 4 HORIZ.
B431	X	6	4-4			WING 4 VERT.

A501, B501

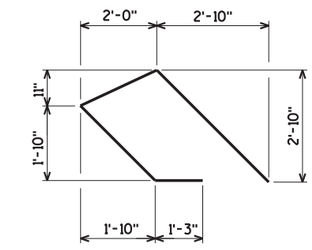




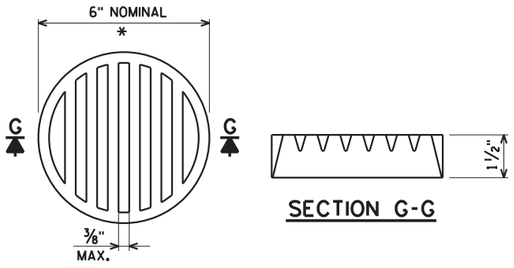
BAR NO.	DIM. "A"	DIM. "B"
A803	1'-0¾"	1'-0¾"
A510	1'-0¾"	1'-0¾"
A811	1'-0¾"	1'-0¾"
A512	1'-0¾"	1'-0¾"
A813	1'-0¾"	1'-0¾"
A416	10'-10"	3'-8"
A417	10'-10"	3'-8"
A522	1'-0¾"	1'-0¾"
A823	1'-0¾"	1'-0¾"
A524	1'-0¾"	1'-0¾"
A825	1'-0¾"	1'-0¾"
A428	10'-10"	2'-2"
A429	10'-10"	2'-2"
B803	1'-0¾"	1'-0¾"
B510	1'-0¾"	1'-0¾"
B811	1'-0¾"	1'-0¾"
B512	1'-0¾"	1'-0¾"
B813	1'-0¾"	1'-0¾"
B416	10'-10"	3'-11"
B417	10'-10"	3'-11"
B522	1'-0¾"	1'-0¾"
B823	1'-0¾"	1'-0¾"
B524	1'-0¾"	1'-0¾"
B825	1'-0¾"	1'-0¾"
B428	10'-10"	2'-2"
B429	10'-10"	2'-2"



A418, B418



A430, B430



SECTION G-G

* DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

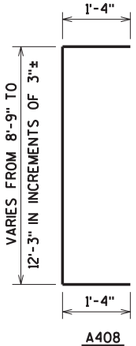
THE RODENT SHIELD SHALL BE PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALLY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SCREEN TO THE EXPOSED END OF THE PIPE UNDERDRAIN. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 x 1-INCH SHEET METAL SCREWS.

RODENT SHIELD DETAIL

BAR SERIES TABLE

BAR MARK	NO REQ'D.	LENGTH
A408	2 SERIES OF 15	11'-3" TO 14'-9"
A414	1 SERIES OF 4	4'-8" TO 10'-4"
A415	1 SERIES OF 4	4'-8" TO 10'-4"
A420	2 SERIES OF 15	12'-7" TO 14'-9"
A426	1 SERIES OF 4	6'-2" TO 13'-4"
A427	1 SERIES OF 4	6'-2" TO 13'-4"
B408	2 SERIES OF 15	11'-4" TO 15'-2"
B414	1 SERIES OF 5	4'-8" TO 11'-2"
B415	1 SERIES OF 5	4'-8" TO 11'-2"
B420	2 SERIES OF 15	12'-9" TO 14'-11"
B426	1 SERIES OF 4	4'-10" TO 10'-10"
B427	1 SERIES OF 4	4'-10" TO 10'-10"

BUNDLE AND TAG EACH SERIES SEPARATELY.



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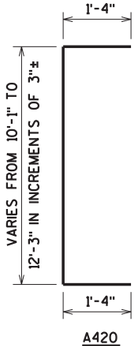
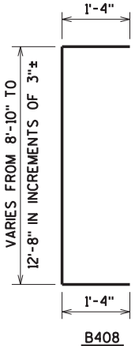


A420



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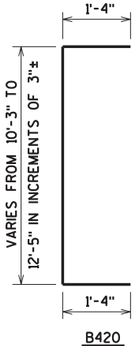

B420

WORK THIS SHEET WITH SHEETS 5 THRU 8.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-69-47

DRAWN BY KAZ | PLANS CK'D. KLW

ABUTMENT BILL OF BARS

SHEET 9 OF 14
88

ORIGINAL PLANS PREPARED BY
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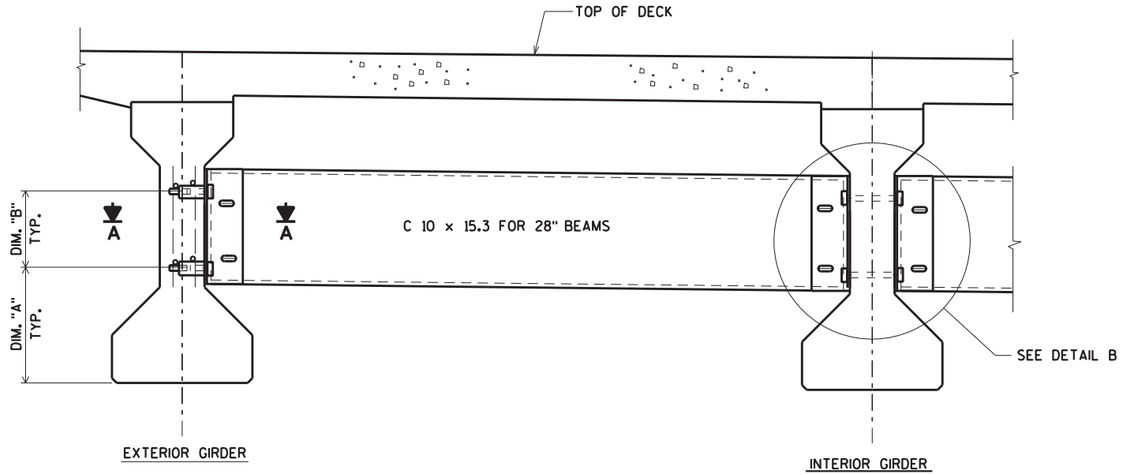
8

TABLE

GIRDER HEIGHT	DIM. "A"	DIM. "B"	DIM. "L"	*DIM. "X"
28"	1'-0⅞"	5⅞"	9½"	2¼"



PART TRANSVERSE SECTION AT DIAPHRAGM

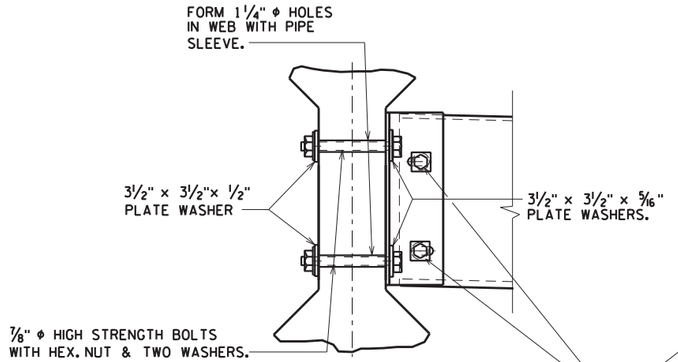
NOTES

ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-69-47", EACH.

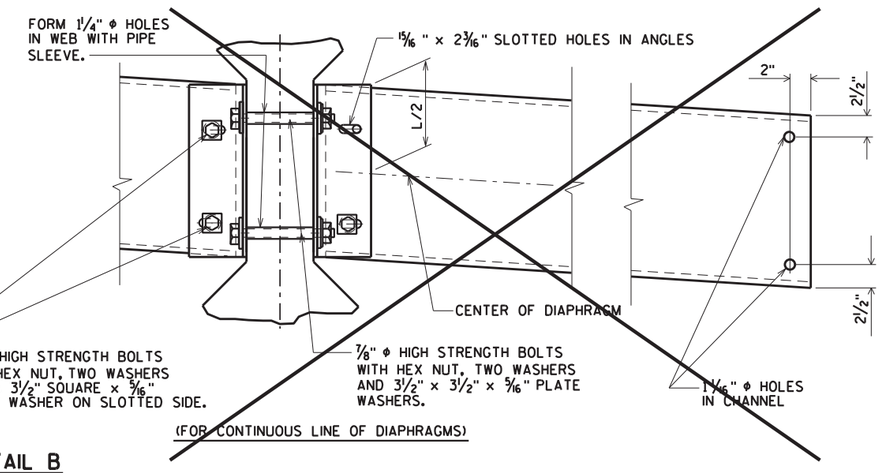
EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36. ALL BOLTS, NUTS AND WASHERS SHALL BE ASTM A325 TYPE 1.

ALL DIAPHRAGM STRUCTURAL STEEL SHOWN SHALL BE HOT-DIPPED GALVANIZED. ALL BOLTS, NUTS AND WASHERS SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153 CLASS C. GALVANIZED NUTS SHALL BE TAPPED OVERSIZE IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A563 AND SHALL MEET THE REQUIREMENTS OF SUPPLEMENTARY REQUIREMENT S1 OF ASTM A563, LUBRICANT AND TEST FOR COATED NUTS.

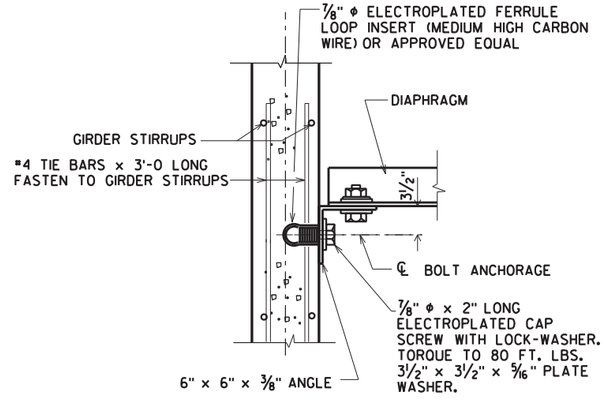


(FOR STAGGERED DIAPHRAGM)



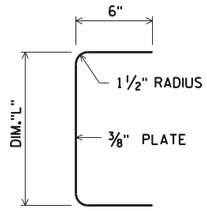
(FOR CONTINUOUS LINE OF DIAPHRAGMS)

DETAIL B



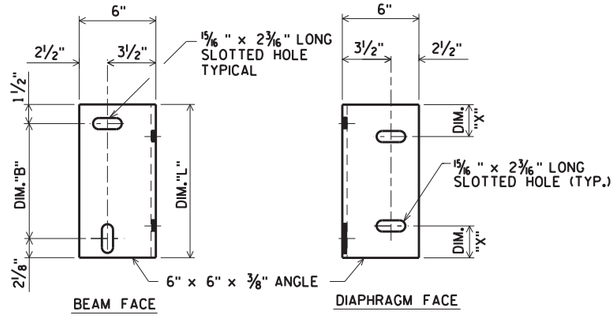
SECT. A-A

(FOR EXTERIOR ATTACHMENT)



SECTION THRU ALTERNATE DIAPHRAGM

*DIM. "X" = 2½" FOR ALTERNATE PLATE DIAPHRAGM



DIAPHRAGM SUPPORT

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DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-69-47

DRAWN BY KAZ | PLANS CK'D. KLW

INTERM. STEEL DIAPHS. DETAILS

SHEET 10 OF 14
89

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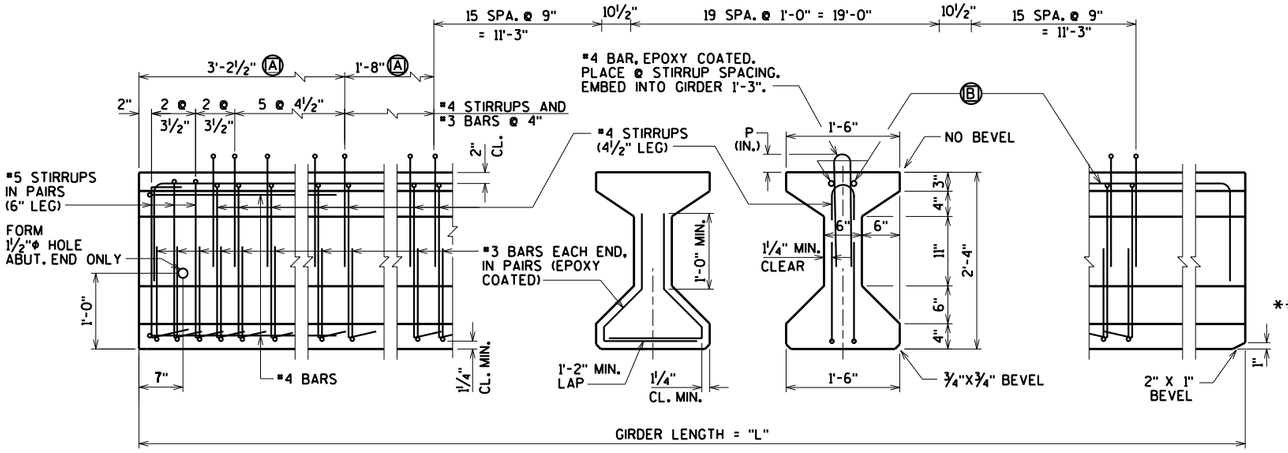
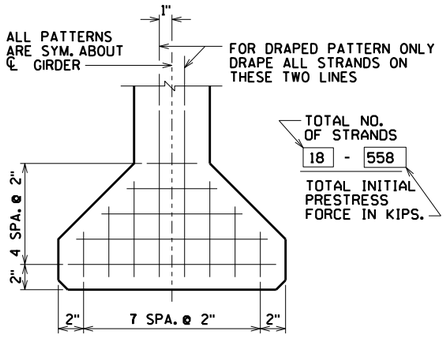
6987-01-70



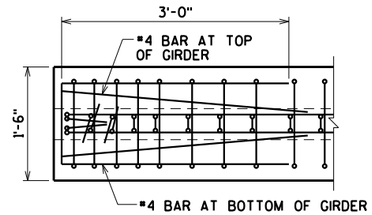
SIDE VIEW & TYP. SECTION IN SPAN

(A) DETAIL TYP. AT EACH END

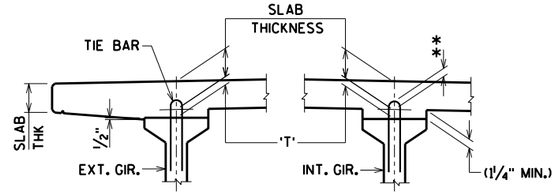
(B) 2-BARS BEND DOWN 16 BA DIA. AT ENDS



TYP. STRAND PATTERN



TOP VIEW OF GIRDER ENDS



SLAB HAUNCH DETAIL

IF 1¼" MINIMUM HAUNCH HEIGHT AT EDGE OF GIRDER CANNOT BE MAINTAINED, THE GRADE LINE MAY BE REVISED BY THE ENGINEER AT THE OPTION OF THE CONTRACTOR. THE PLAN SLAB THICKNESS SHALL BE HELD. NOTIFY THE STRUCTURES SECTION IF THE GRADE LINE IS RAISED FROM THE PLAN PROFILE BY MORE THAN ½" OR,

** IF 3" MINIMUM DECK EMBEDMENT OF TIE BAR CANNOT BE OBTAINED.

TO DETERMINE 'T', ELEV. OF TOP OF GIR'S. AT ℄ OF SUBSTRUCTURE UNITS & AT 1/10 POINTS OF EACH SPAN SHALL BE TAKEN. THEN FOLLOW THIS PROCESS:

TOP OF DECK ELEV. AT FINAL GRADE
- TOP OF GIRDER ELEVATION
+ DEAD LOAD DEFLECTION
- SLAB THICKNESS
= HAUNCH HEIGHT 'T'

NOTE: AN AVERAGE HAUNCH ('T') OF 2½" WAS USED IN THE QUANTITY "CONCRETE MASONRY BRIDGES".

GIRDER NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 2" OF GIRDER, WHICH SHALL BE TROWEL FINISHED.

DO NOT APPLY CONCRETE SEALER TO SURFACES RECIEVING APPLICATION OF CONCRETE STAINING.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS.

STRANDS SHALL BE FLUSH WITH THE END OF GIRDER. FOR GIRDER ENDS EMBEDDED COMPLETELY IN CONCRETE, ENDS OF STRANDS SHALL BE COATED WITH NON-BITUMINUOUS JOINT SEALER. FOR GIRDER ENDS THAT ARE FINALLY EXPOSED, COAT THE GIRDER ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE GIRDER ENDS WITH A NON-PIGMENTED EPOXY CONFORMING TO AASHTO M-235 TYPE III, GRADE 2, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT. IF THE FABRICATOR WANTS TO BUILD A BAR STEEL CAGE BY WELDING LONGITUDINAL REINFORCEMENT TO THE #4 STIRRUPS, ONE OPTION IS AVAILABLE:

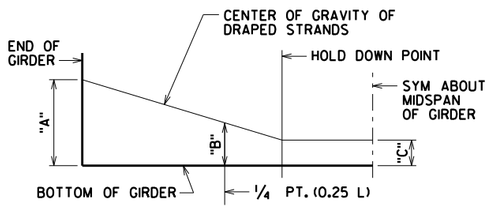
USE ASTM A706, GRADE 60 REINFORCEMENT AND THE STIRRUP SPACING AS SHOWN ON THE PLANS.

AN ALTERNATE EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A497 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON APPROVAL OF THE STRUCTURES DEVELOPMENT CHIEF, (608)266-5161.

PRESTRESSING STRANDS SHALL BE 0.5" DIA.-7 WIRE LOW-RELAXATION STRANDS WITH AN ULTIMATE STRENGTH OF 270,000 psi.

BEND EACH END OF #4 STIRRUPS 4½" AND #5 STIRRUPS 6".

FOR DIAPHRAGM INSERT & CONNECTION DETAILS SEE "STEEL DIAPHRAGM" SHEET.

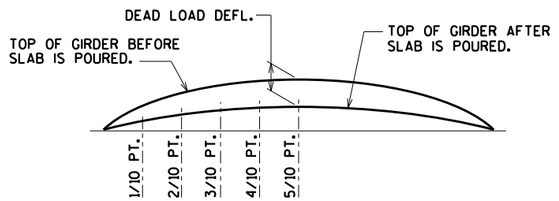


DRAPED STRAND PROFILE

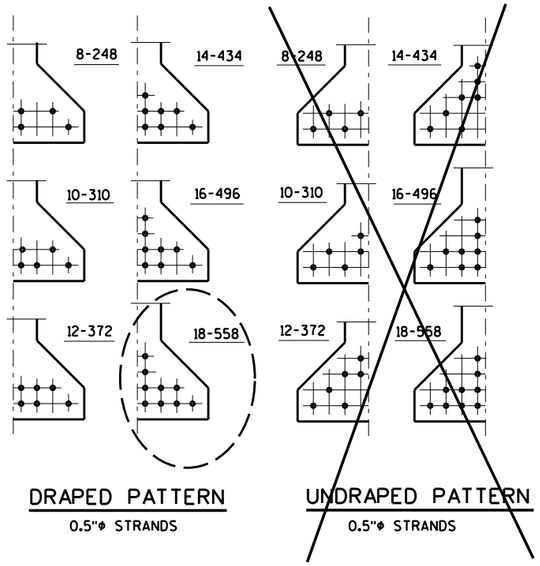
* THE THEORETICAL INITIAL CAMBER VALUE AT THE TIME OF STRAND RELEASE AT MIDSPAN MULTIPLIED BY A FACTOR OF 1.4 TO ACCOUNT FOR CAMBER GROWTH FROM THE TIME OF STRAND RELEASE TO JOBSITE PLACEMENT.

SPAN	CAMBER (IN.) *
1	1.5

THESE VALUES ARE NOT TO BE USED IN DETERMINING 'T'. USE ACTUAL GIRDER SHOTS. THESE VALUES ARE FOR INFORMATIONAL PURPOSES ONLY.



DEAD LOAD DEFLECTION DIAGRAM



DRAPED PATTERN
0.5"ϕ STRANDS

UNDRAPED PATTERN
0.5"ϕ STRANDS

* MINIMUM CYLINDER STRENGTH OF CONCRETE @ TIME OF TRANSFER OF PRESTRESS FORCE.

GIRDER DATA

SPAN	GIRDER	GIRDER LENGTH "L"	DEAD LOAD DEFL. (IN.) 1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	CONC. STRGTH. f'c (p.s.i.)	"P" IST 1/3 OF GIRDER	"P" MID 1/3 OF GIRDER	"P" END 1/3 OF GIRDER	DIA. OF STRAND (IN.)	DRAPED PATTERN TOTAL NO. OF STRANDS	f'ci (P.S.I.) *	(IN.) "A"	"B" MIN.	"B" MAX.	"C"	UNDRAPED PATTERN TOTAL NO. OF STRANDS	f'ci (P.S.I.) *
1	1 - 6	53	0.2	0.4	0.6	0.7	0.7	0.7	0.6	0.4	0.2	8000	6	6	6	0.5	18	6400	23	9.5	12.5	5		

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-69-47

DRAWN BY KAZ | PLANS CK'D. KLW

28" PRESTRESSED GIRDER DETAILS

SHEET 11 OF 14
90

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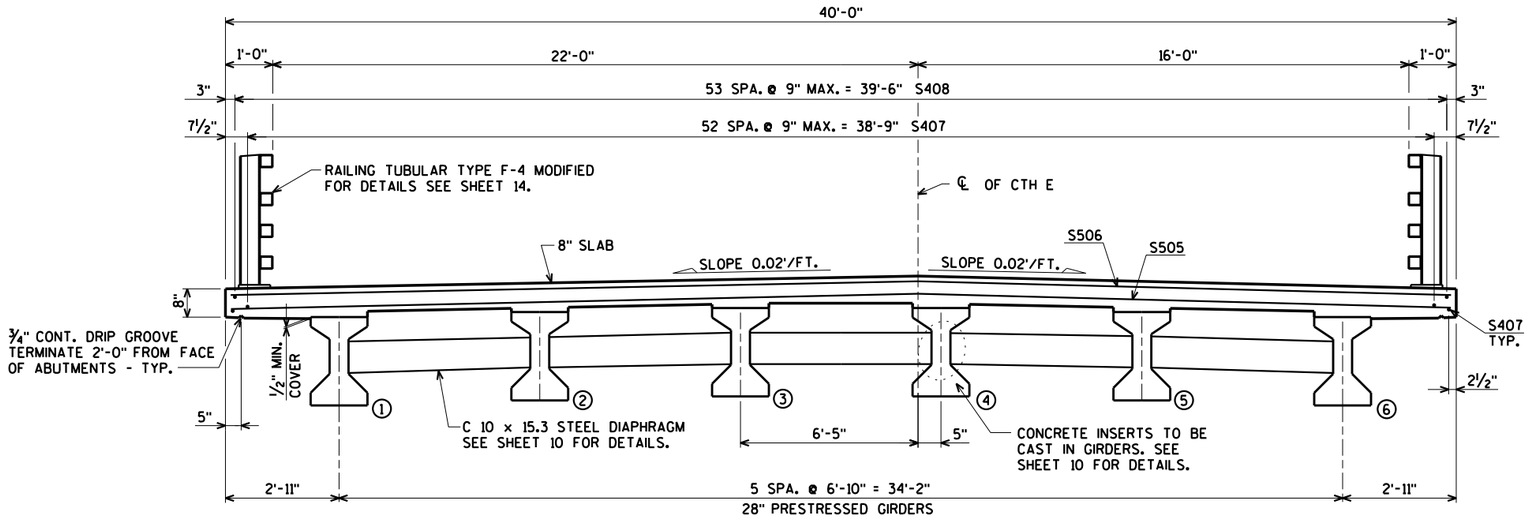


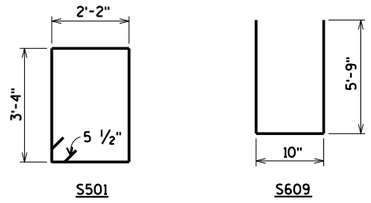
CROSS SECTION THRU DECK

(LOOKING NORTH)

BILL OF BARS

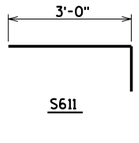
BAR. NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED BAR SERIES	13,740# COATED LOCATION
S501	X	92	11-6	X		DIAPH. @ ABUT. VERT.
S602	X	12	1-11			DIAPH. @ ABUT. HORIZ. @ EXT. GDRS.
S603	X	30	5-3			DIAPH. @ ABUT. HORIZ. BETW. GDRS.
S604	X	10	42-2			DIAPH. @ ABUT. HORIZ.
S505	X	77	42-2			SLAB TRANS. BOT.
S506	X	78	42-2			SLAB TRANS. TOP
S407	X	110	28-0			SLAB LONG BOT.
S408	X	108	28-4			SLAB LONG. TOP
S609	X	14	12-0	X		SLAB @ RAIL POSTS
S610	X	24	4-0			SLAB @ INT. RAIL POSTS
S611	X	8	4-0	X		SLAB @ END RAIL POSTS
S612	X	2	12-0	X		SLAB @ END RAIL POSTS
S413	X	20	4-3			DIAPH. @ ABUT. HORIZ. @ NOTCH
S414	X	50	3-3	X		DIAPH. @ ABUT. VERT. @ NOTCH
S515	X	24	6-0			DIAPH. @ ABUT. HORIZ. THRU GDR.
S416	X	4	3-0	X		SLAB @ CURB VERT.
S417	X	1	3-7			SLAB @ CURB HORIZ.
S418	X	1	3-4			SLAB @ CURB HORIZ.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

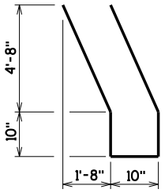


S501

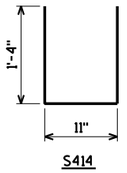
S609



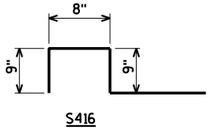
S611



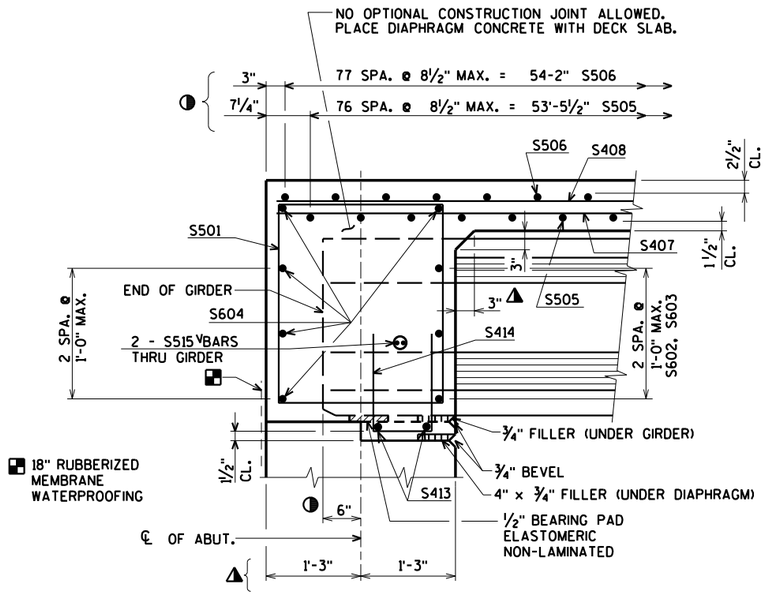
S612



S414



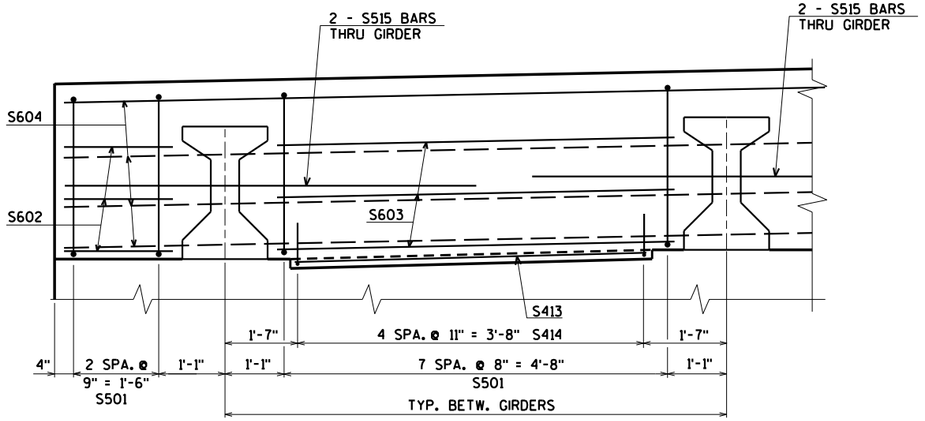
S416



PART LONGITUDINAL SECTION

◑ DIMENSIONS MEASURED ALONG ℄ OF GIRDER.

◭ DIMENSIONS MEASURED NORMAL TO ℄ OF SUBSTRUCTURE UNIT.



PART ELEVATION AT ABUTMENT

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-69-47

DRAWN BY KAZ | PLANS CK'D. KLW

SUPERSTRUCTURE

SHEET 12 OF 14

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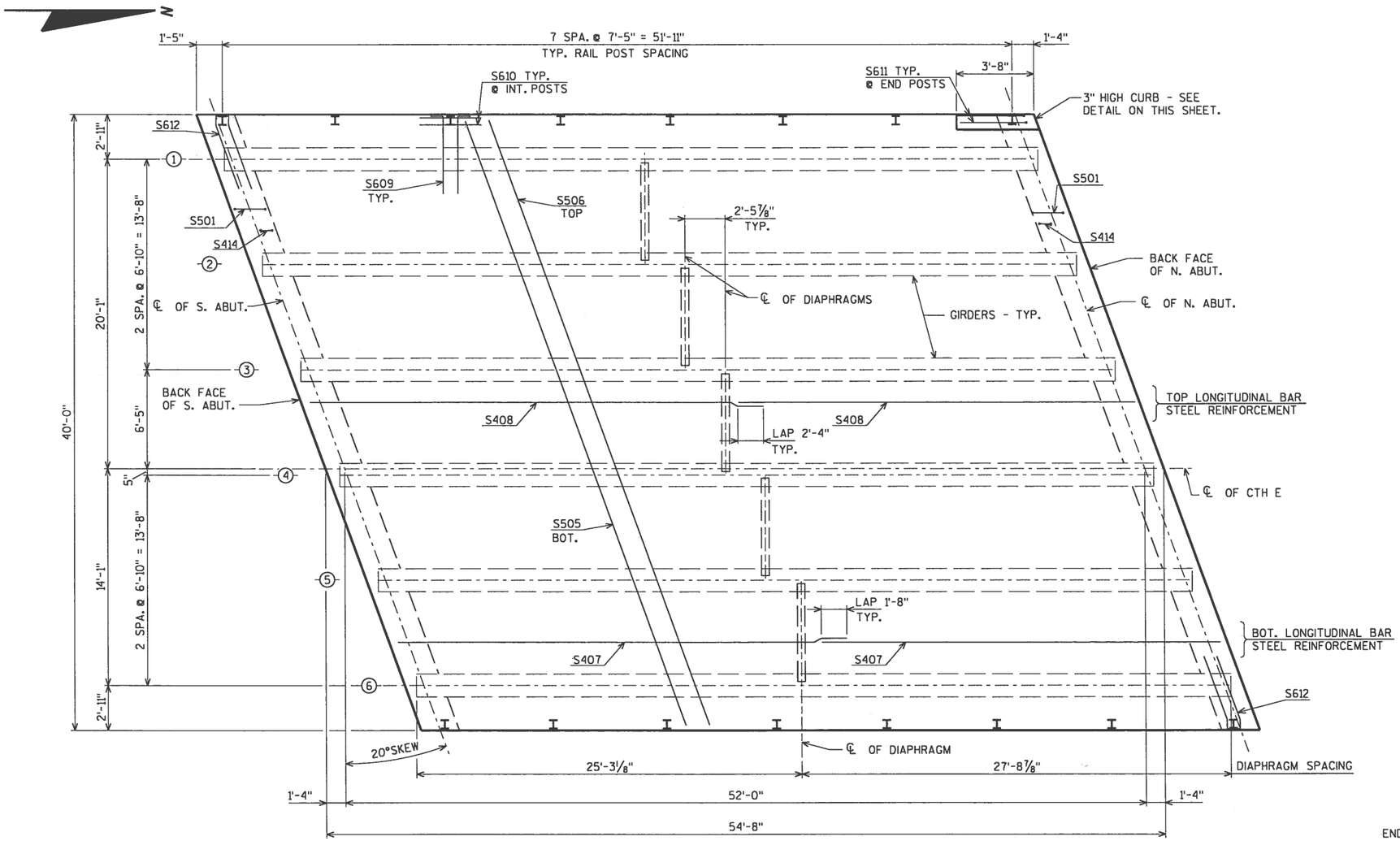
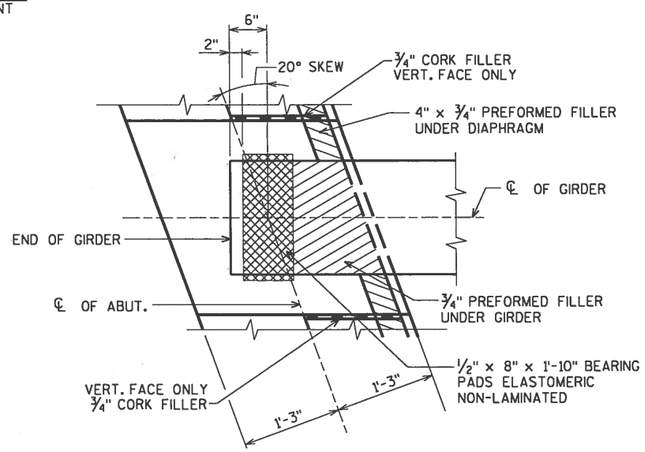
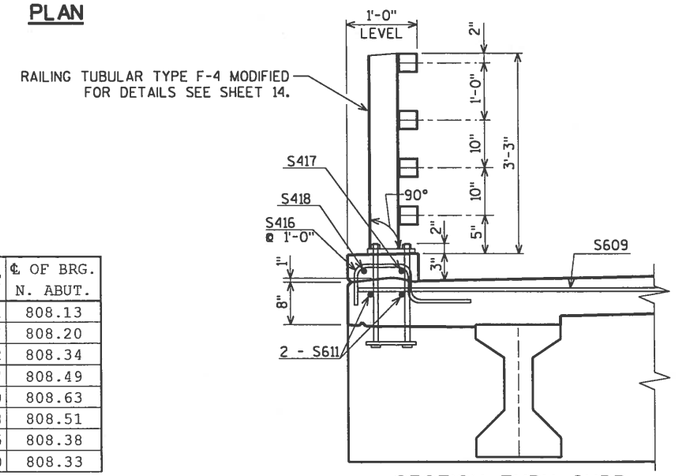


PLAN

NOTE: PER SPECIFICATIONS, THE CONTRACTOR IS RESPONSIBLE TO PROVIDE EXTERIOR GIRDER BRACING FOR SLAB OVERHANGS.



BEARING PLAN



SECTION THRU CURB

FOR LOCATION OF CURB SEE PLAN VIEW.

TOP OF DECK ELEVATIONS

	℄ OF BRG. S. ABUT.	0.1 PT	0.2 PT	0.3 PT	0.4 PT	0.5 PT	0.6 PT	0.7 PT	0.8 PT	0.9 PT	℄ OF BRG. N. ABUT.
W. SLAB EDGE	807.99	807.99	808.00	808.01	808.02	808.03	808.05	808.07	808.09	808.11	808.13
GIRDER 1	808.04	808.05	808.06	808.07	808.08	808.09	808.11	808.13	808.15	808.17	808.20
GIRDER 2	808.18	808.19	808.20	808.21	808.22	808.24	808.25	808.27	808.30	808.32	808.34
GIRDER 3	808.32	808.33	808.34	808.35	808.37	808.38	808.40	808.42	808.44	808.47	808.49
GIRDER 4	808.45	808.46	808.47	808.48	808.49	808.51	808.53	808.55	808.57	808.60	808.63
GIRDER 5	808.31	808.32	808.33	808.35	808.36	808.38	808.40	808.43	808.45	808.48	808.51
GIRDER 6	808.18	808.19	808.20	808.22	808.24	808.26	808.28	808.30	808.33	808.35	808.38
E. SLAB EDGE	808.12	808.14	808.15	808.16	808.18	808.20	808.22	808.25	808.27	808.30	808.33

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-69-47

DRAWN BY KAZ | PLANS CK'D. KLW

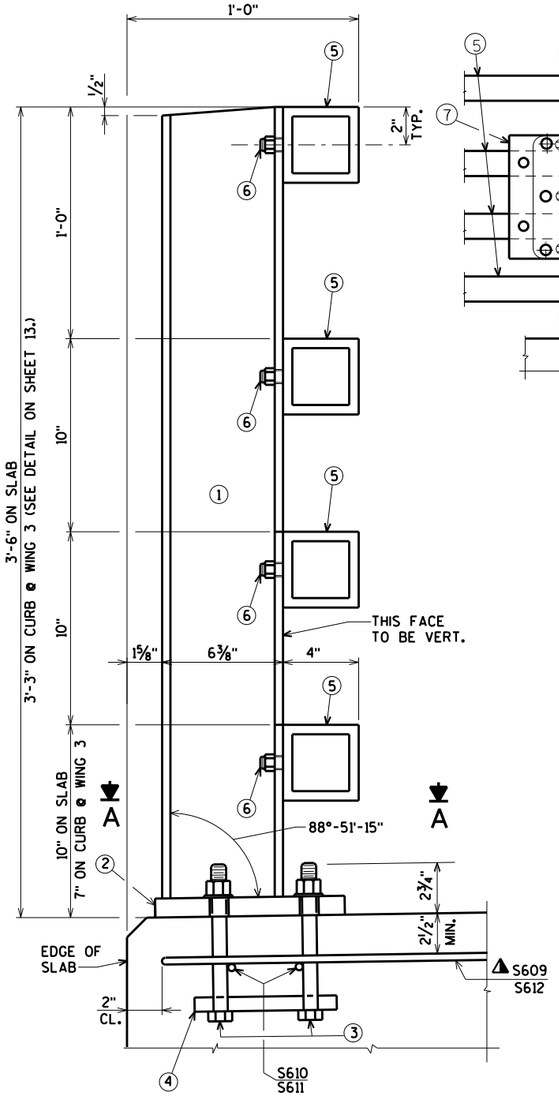
SUPERSTRUCTURE PLAN

SHEET 13 OF 14
92

ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

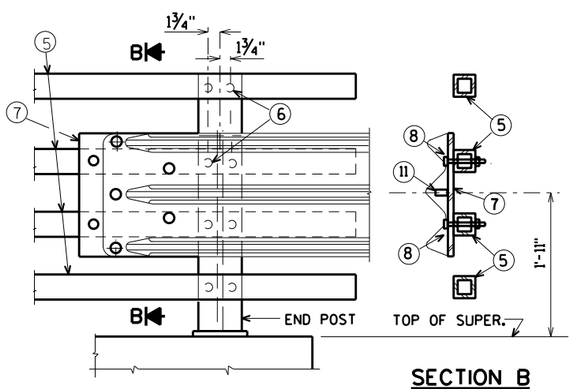
8

8



SECTION THRU RAILING ON DECK

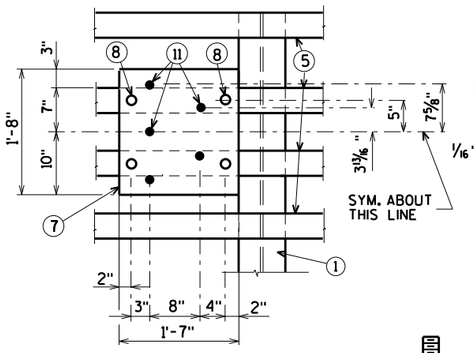
RAILING ON DECK SHOWN. FOR DETAIL OF RAILING ON CURB SEE SHEET 13.

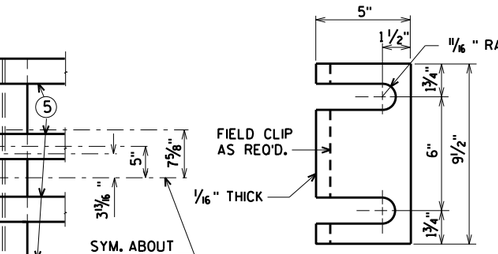


SECTION B

DETAIL AT END POST

(THRIE BEAM RAIL ATTACHMENT)





POST SHIM DETAIL

(4 PER POST)

LEGEND

① W6 x 25 WITH 1 1/4" ϕ HOLES ON EACH SIDE OF POST FOR STUD NO. 6. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.

② PLATE 1" x 9 1/2" x 10", WITH 1 1/16" x 1 1/2" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN.

③ A325 - 7/8" ϕ HEX BOLTS (GALVANIZED) WITH A325 NUT AND WASHER. 14" LONG AT END POSTS AND AT POSTS ON CONCRETE SLAB SUPERSTRUCTURES WHERE THE SLAB THICKNESS IS > 15". AT POST ON CURB USE 17" LONG, USE 8" LONG AT ALL OTHER LOCATIONS. 4 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING.

④ 1/4" x 8" x 8" FLAT BAR WITH 15/16" ϕ HOLES FOR ANCHOR BOLTS NO. 3.

⑤ TS 4 x 4 x 0.25 STRUCTURAL TUBING, CONFORMING TO A.S.T.M. DESIGNATION A501 OR A500 GRADE B. ATTACH TO NO. 1 WITH 2 STUDS NO. 6.

⑥ 5/8" ϕ x 1 1/2" LONG SHOP WELDED STUDS WITH HEX NUT AND 2" WASHERS. (TWO REQ'D. AT EACH RAIL TO POST LOCATION).

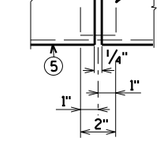
⑦ PLATE 3/8" x 1'-7" x 1'-8". BOLT TO RAIL AS SHOWN IN DETAIL. REQ'D. AT THRIE BEAM ATTACHMENTS ONLY. PLACE SYMMETRICALLY ABOUT TUBES NO. 5.

⑧ 1" ϕ HOLES IN PLATE NO. 7 & TUBES NO. 5 FOR 7/8" ϕ A325 BOLTS WITH HEX NUTS AND WASHERS.

⑨ SQUARE SLEEVE FABRICATED FROM 1/4" PLATE. PROVIDE "SLIDING FIT" WITH A MINIMUM OUT TO OUT DIMENSION OF 3 13/32 ".

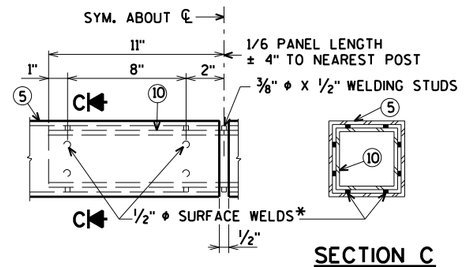
⑩ TS 3 x 3 x 0.25 x 1'-10" LONG. PROVIDE 1/2" ϕ SURFACE WELDS ON ALL SIDES AS SHOWN. GRIND WELDS TO FIT FREE INTO I.D. OF NO. 5. PROVIDE 3/8" ϕ x 1/2" WELDING STUDS ON TOP AND BOTTOM SURFACES AT CENTERLINE.

⑪ 7/8" ϕ x 1 1/2" LONG THREADED SHOP WELDED STUDS.



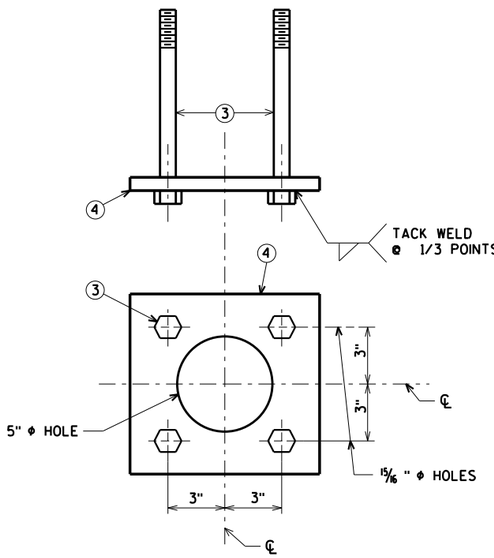
SHOP RAIL SPLICE DETAIL

(LOCATION MUST BE SHOWN ON THE SHOP DRAWINGS)

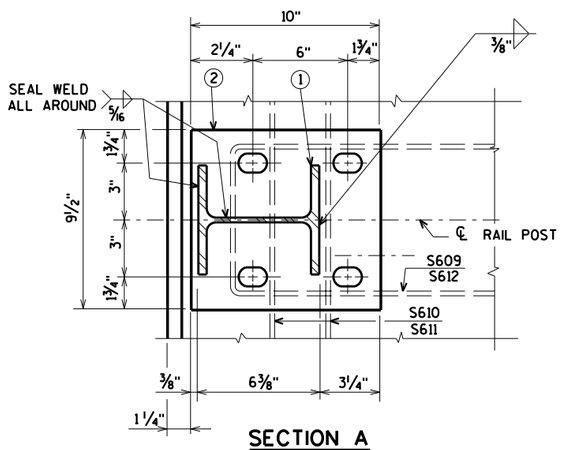


FIELD ERECTION JOINT DETAIL

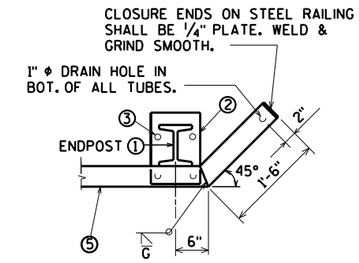
*MIN. 5/8" FLAT SURFACE DIA. PUNCHINGS OR STUDS MAY BE USED AS AN ALTERNATE.



ANCHORAGE DETAIL



SECTION A



DETAIL FOR END POSTS

WITH OR WITHOUT THRIE BEAM RAIL ATTACHMENT (END POST MAY BE LOCATED ON SUPERSTRUCTURE OR WINGWALLS)

GENERAL NOTES

BID ITEM SHALL BE "RAILING TUBULAR TYPE F-4 MODIFIED", WHICH INCLUDES ALL ITEMS SHOWN.

RAILING SHALL BE FABRICATED IN LENGTHS THAT INCLUDE 3 OR 4 POSTS.

POSTS BASE PLATES, NO. 2, SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.

FILL BOLT SLOT OPENINGS IN POST SHIMS AND PLATE NO. 2 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.

ALL MATERIALS USED IN FABRICATION SHALL BE MADE FROM MATERIALS CONFORMING TO A.S.T.M. DESIGNATION A709 GRADE A36 UNLESS NOTED OTHERWISE.

STEEL POST SHIMS MAY BE USED UNDER POSTS WHERE REQ'D. FOR ALIGNMENT.

ALL MATERIAL EXCEPT ANCHORAGE DETAIL (NO. 4) SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS AND STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING BY S.S.P.C. SPECIFICATIONS.

⚠ TIE TO BOTTOM OF TOP MAT OF STEEL.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-69-47

DRAWN BY KAZ | PLANS CK'D. KLW

RAILING TUBULAR TYPE F-4 MODIFIED

SHEET 14 OF 14
93

ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

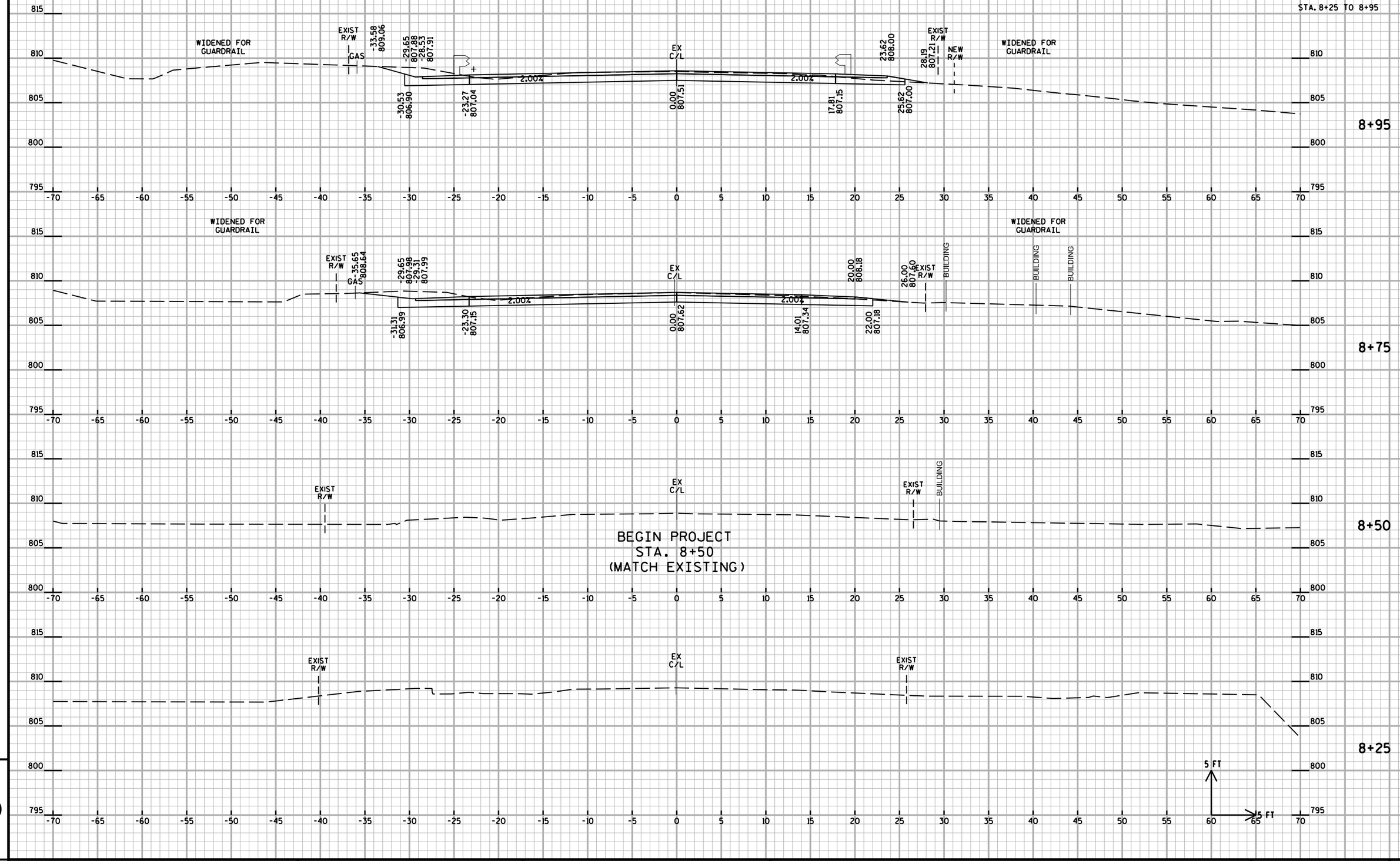
*EARTHWORK SUMMARY

LOCATION	STATION	205.0100 **P** EXCAVATION COMMON CY	FILL CY	WASTE CY
CTH E	8+50			
	8+75	45	0	
	8+95	41	0	
	9+00	10	0	
	9+10	20	0	147
	9+25	27	1	
	9+50	36	11	
	9+74	26	33	
	B-69-47			
	10+28			
	10+50	20	15	
	10+64	14	12	
	10+75	12	14	
	11+00	39	20	96
	11+25	43	10	
	11+50	35	5	
	11+75	34	2	
WATER STREET	18+70			
	19+00	47	0	
	19+02	4	0	
	19+25	42	0	217
	19+50	44	3	
	19+75	57	4	
	19+86	33	1	
TOTAL		**629**	**131**	**460**

SAY 630

* NOTE:
FOR SHRINKAGE FACTOR, SEE PLAN SHEET BALANCE POINTS.

STA. 8+25 TO 8+95



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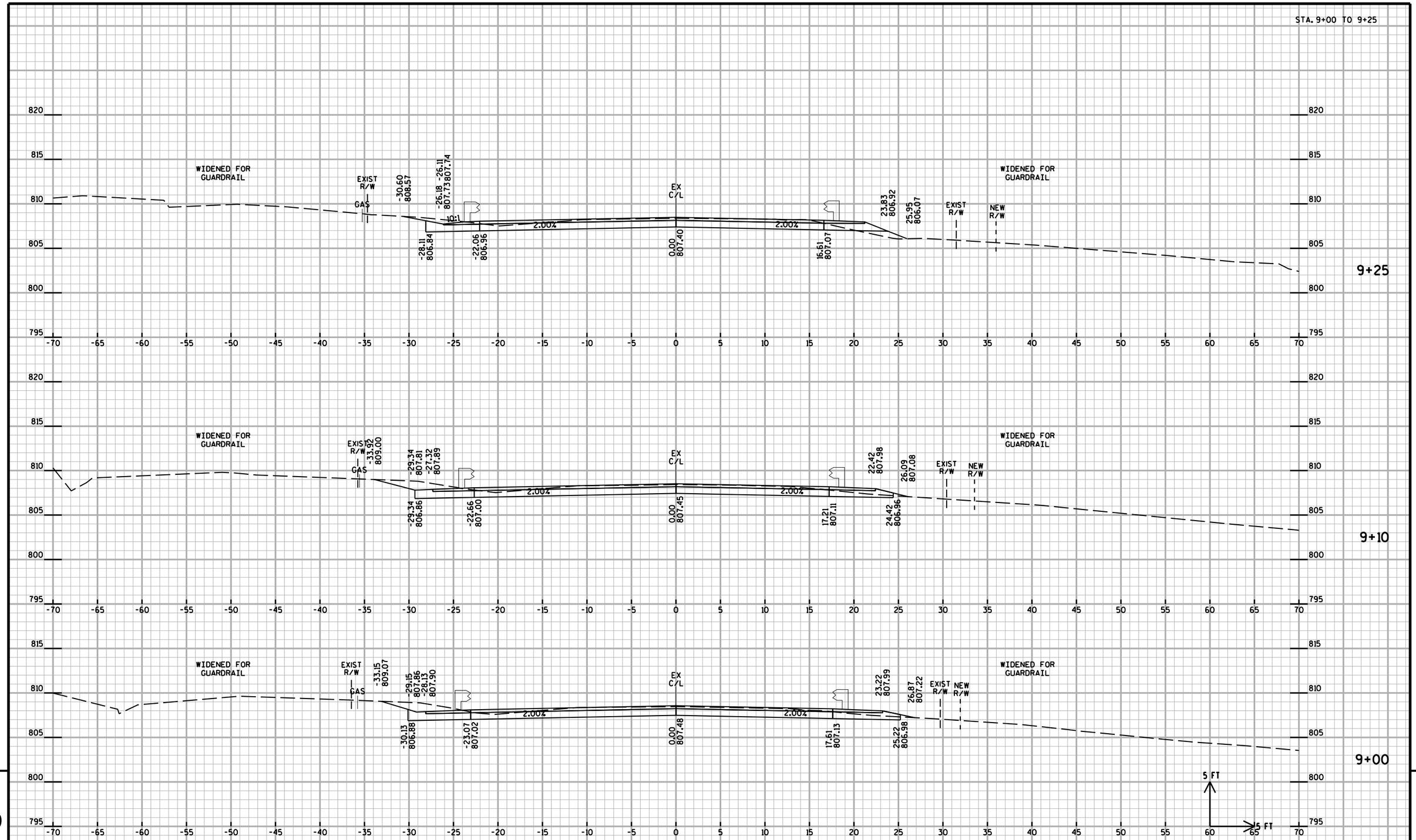
9

PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	CROSS SECTIONS - CTH E	SHEET	E

FILE NAME : U:\42-0800.00 - Waushara County - CTH E - Pine River\Inroads\420800_xs_ML_new1.dgn PLOT DATE : 7/30/2012 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 9+00 TO 9+25



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PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	CROSS SECTIONS - CTH E	SHEET	E

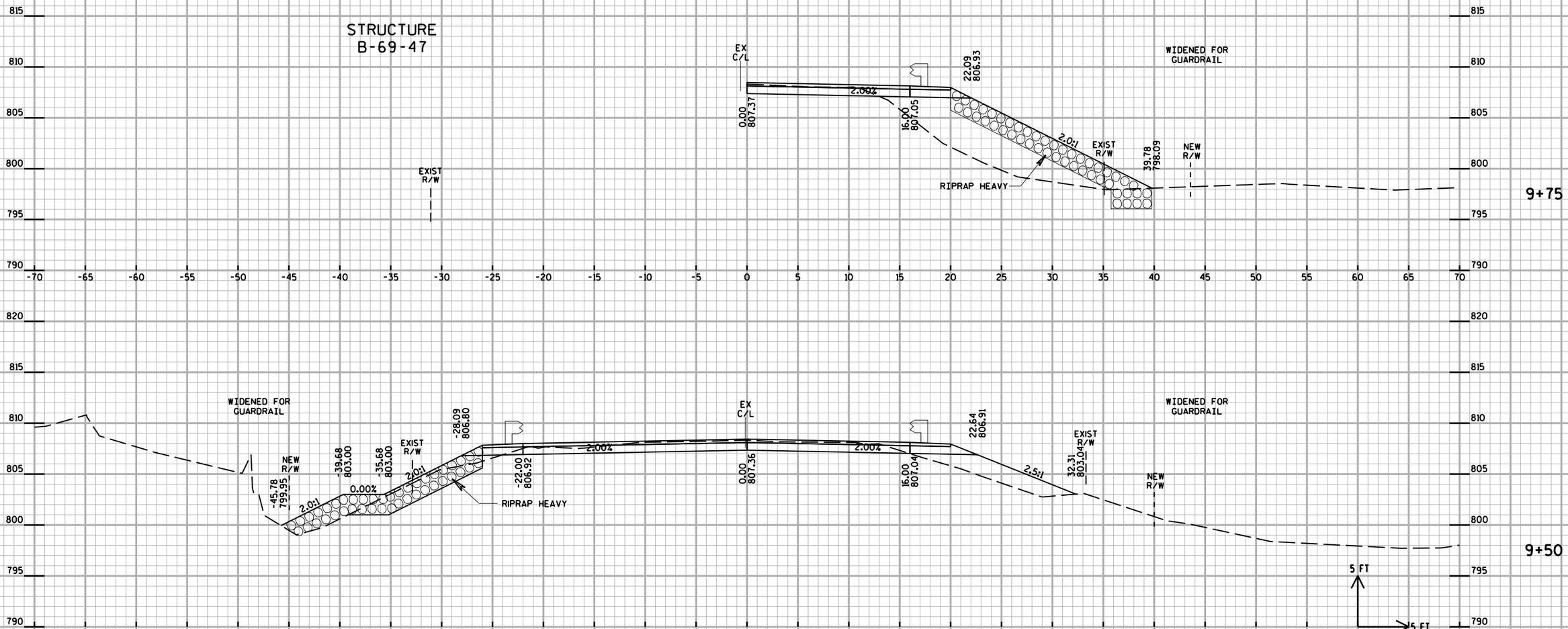
FILE NAME : U:\42-0800.00 - Waushara County - CTH E - Pine River\Inroads\420800_xs_ML_new1.dgn PLOT DATE : 7/30/2012 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 9+50 TO 10+00

STRUCTURE
B-69-47

STRUCTURE
B-69-47



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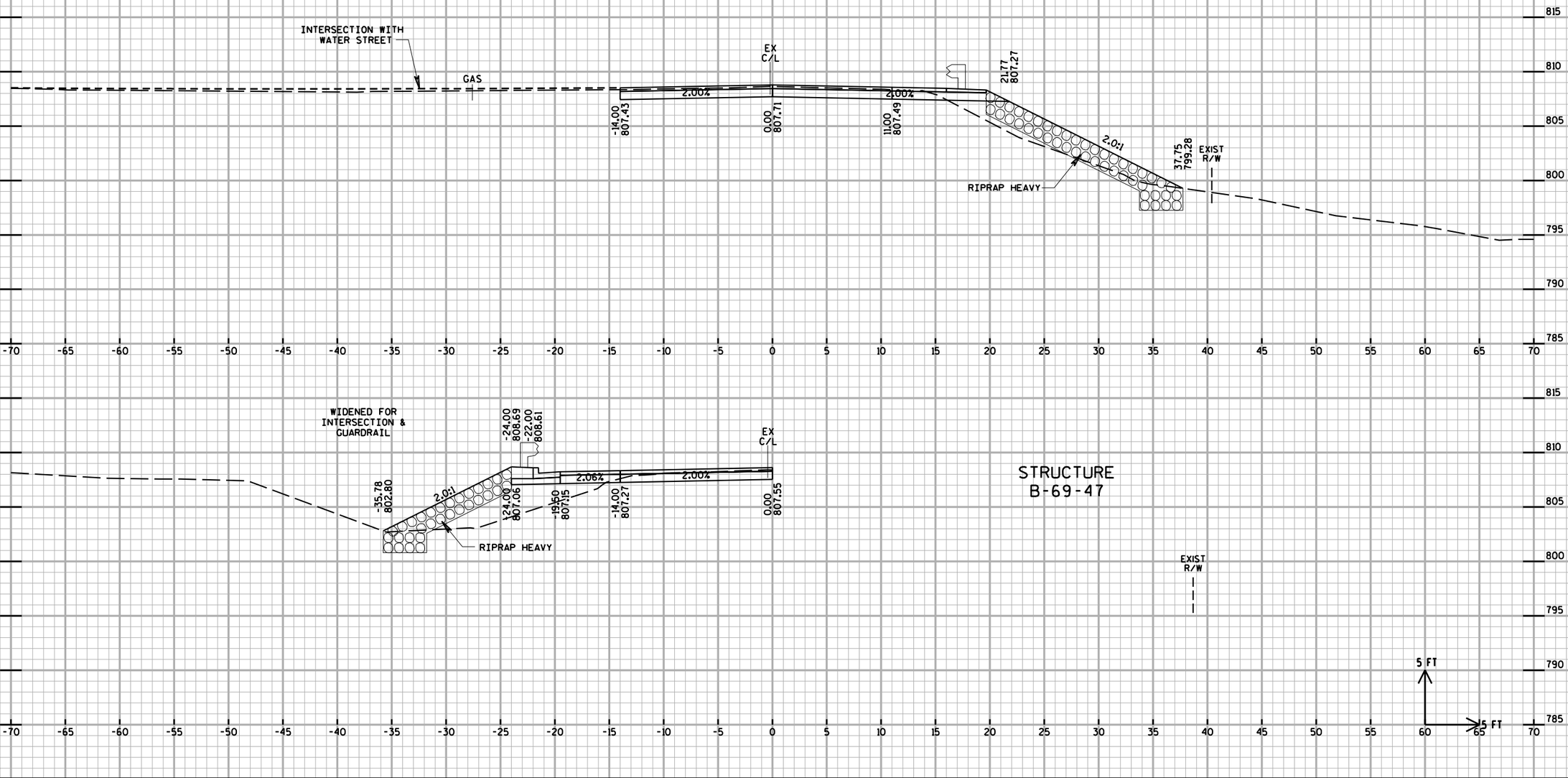
PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	CROSS SECTIONS - CTH E	SHEET	E

FILE NAME : U:\42-0800.00 - Waushara County - CTH E - Pine River\Inroads\420800_xs_ML_new.dgn PLOT DATE : 6/26/2012 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 10+25 TO 10+50



9 9

PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	CROSS SECTIONS - CTH E	SHEET	E

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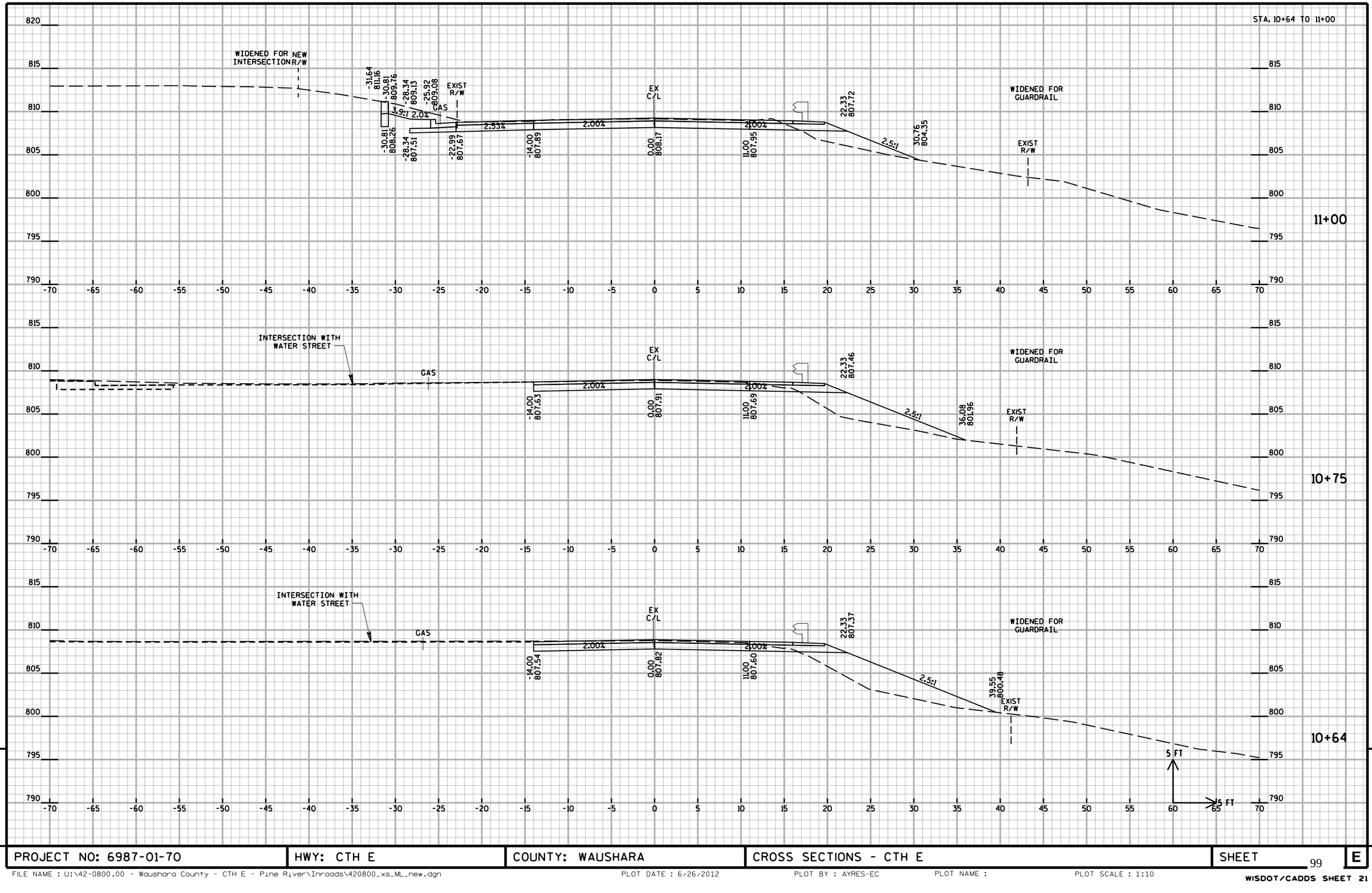
WISDOT/CADDS SHEET 21

STA. 10+64 TO 11+00



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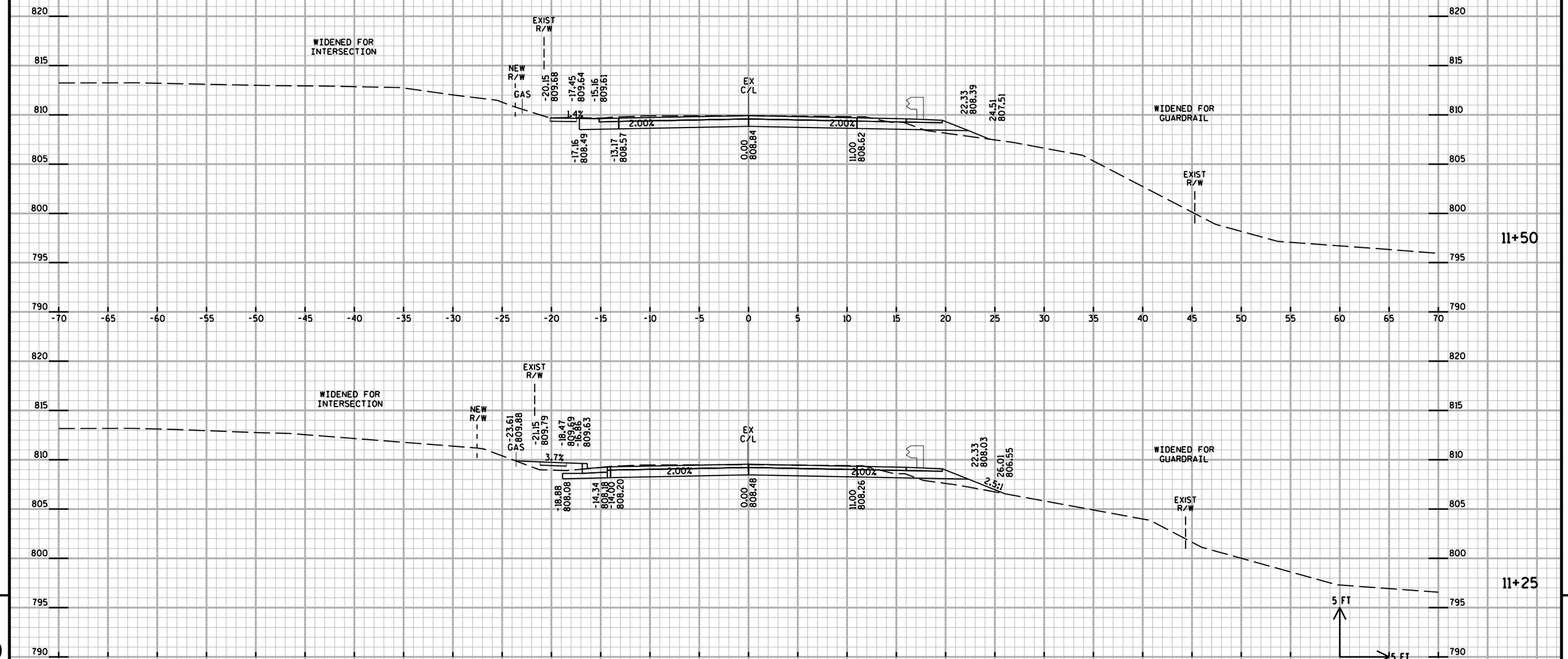
PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	CROSS SECTIONS - CTH E	SHEET	E

FILE NAME : U:\42-0800.00 - Waushara County - CTH E - Pine River\Inroads\420800_xs_ML_new.dgn PLOT DATE : 6/26/2012 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 11+25 TO 11+50



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PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	CROSS SECTIONS - CTH E	SHEET 100	E

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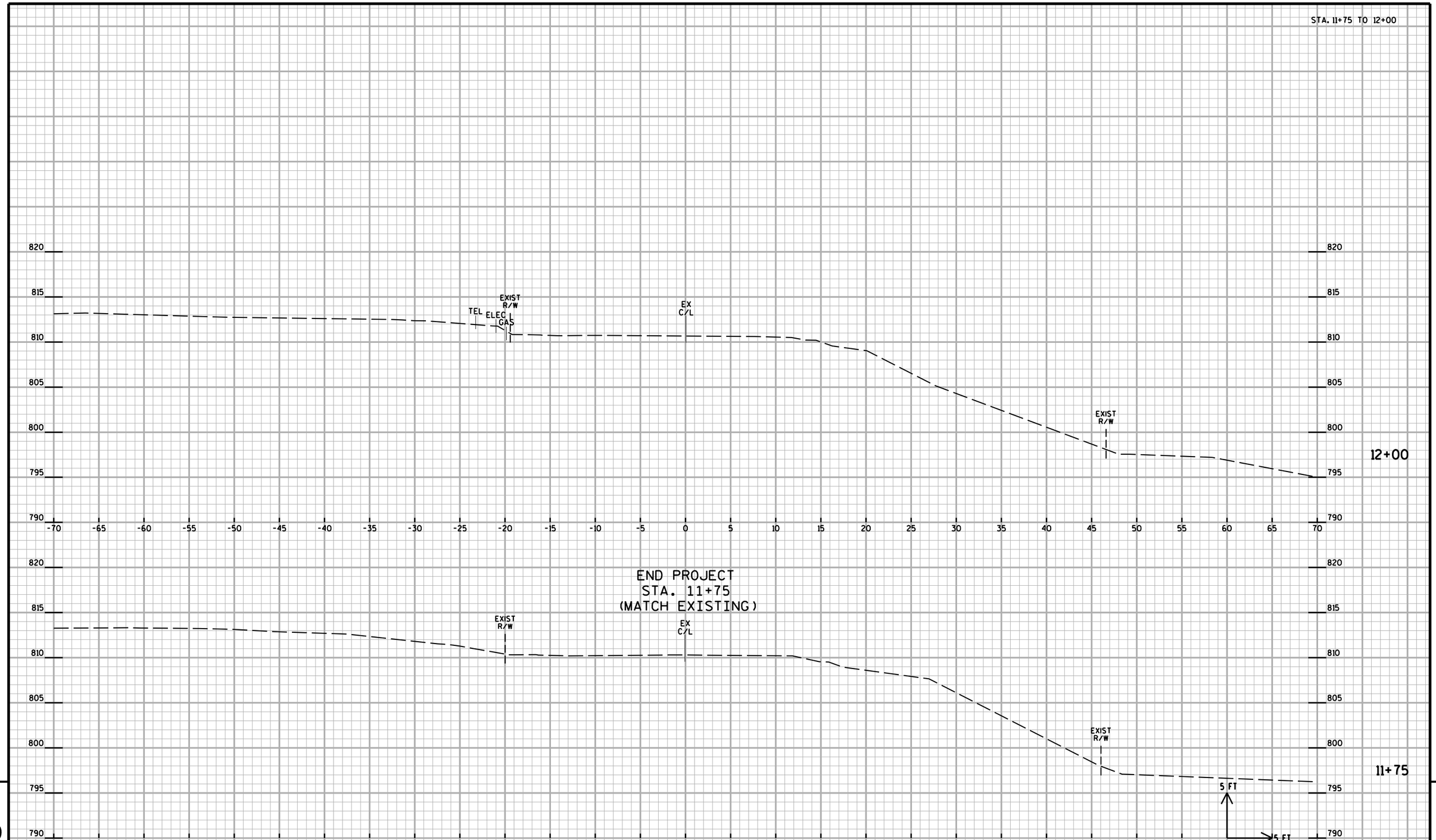
WISDOT/CADDS SHEET 21

STA. 11+75 TO 12+00



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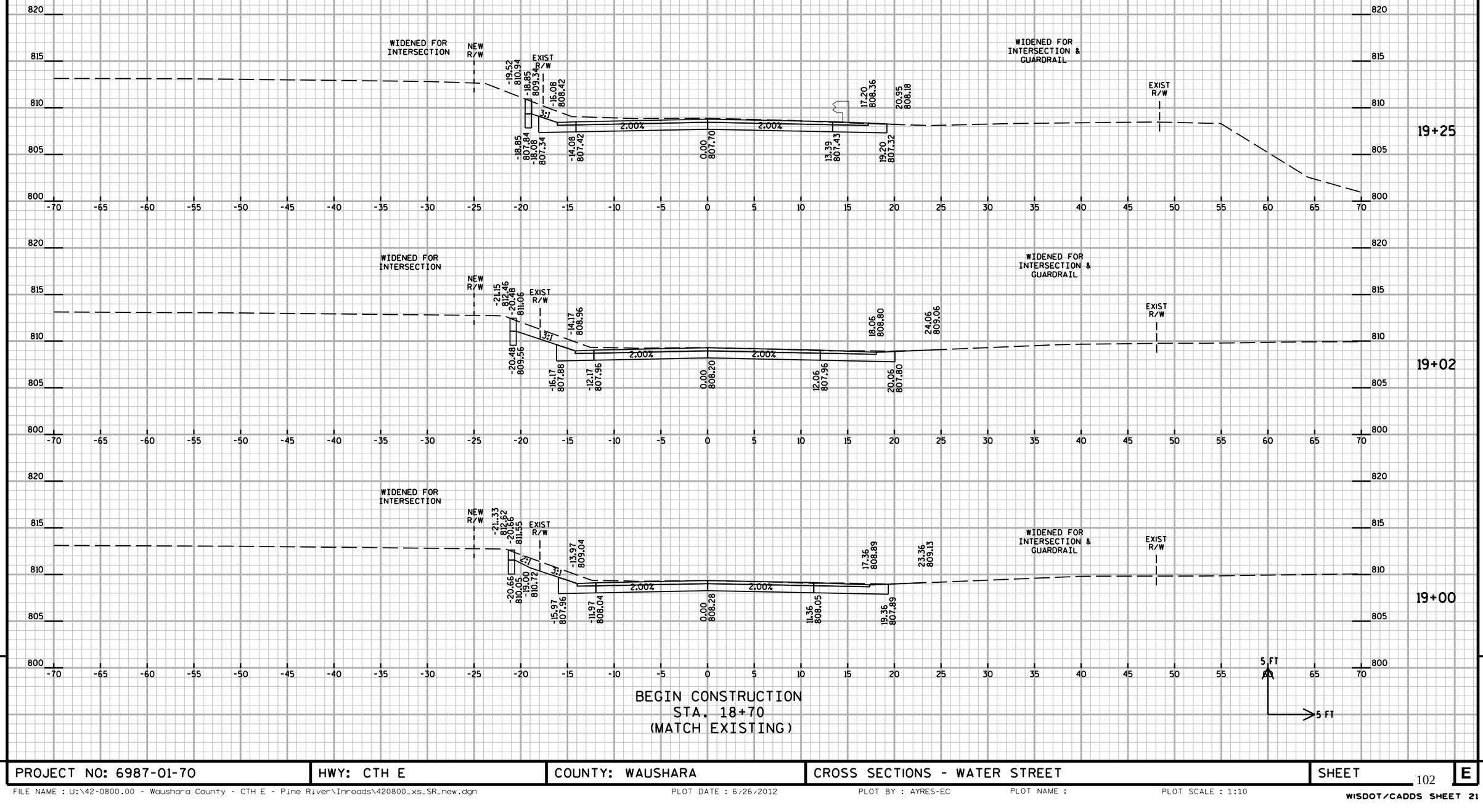
PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	CROSS SECTIONS - CTH E	SHEET	E

FILE NAME : U:\42-0800.00 - Waushara County - CTH E - Pine River\Inroads\420800_xs_ML_new.dgn PLOT DATE : 6/26/2012 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 19+00 TO 19+25



BEGIN CONSTRUCTION
STA. 18+70
(MATCH EXISTING)

PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	CROSS SECTIONS - WATER STREET	SHEET	E

FILE NAME : U:\42-0800.00 - Waushara County - CTH E - Pine River\Inroads\420800_xs_SR_new.dgn PLOT DATE : 6/26/2012 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 19+50 TO 19+86

19+86

INTERSECTION WITH CTH E
(MATCH PROPOSED)

19+75

NEW R/W
WIDENED FOR INTERSECTION
-43.81 810.36
-39.67 809.19
-36.32 809.05
3.5:1
4.3%
EXIST R/W
0.10%
1.28%
-39.67 807.57
-32.38 807.52
0.00 807.55
26.72 807.20
INTERSECTION WITH CTH E
WIDENED FOR INTERSECTION

19+50

WIDENED FOR INTERSECTION
NEW R/W
-23.17 810.84
-22.45 809.43
-20.30 808.77
-18.15 809.69
EXIST R/W
3.3:1
3.7%
2.17%
2.06%
15.02 808.78
17.06 808.85
20.02 807.69
2.5:1
WIDENED FOR INTERSECTION & GUARDRAIL
-22.45 807.93
-20.30 807.14
-15.47 807.24
0.00 807.58
12.47 807.32
17.06 807.23
EXIST R/W
5 FT
5 FT

9

9

PROJECT NO: 6987-01-70	HWY: CTH E	COUNTY: WAUSHARA	CROSS SECTIONS - WATER STREET	SHEET	E

FILE NAME : U:\42-0800.00 - Waushara County - CTH E - Pine River\Inroads\420800_xs_SR_new.dgn PLOT DATE : 6/26/2012 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

Wisconsin Department of Transportation

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