

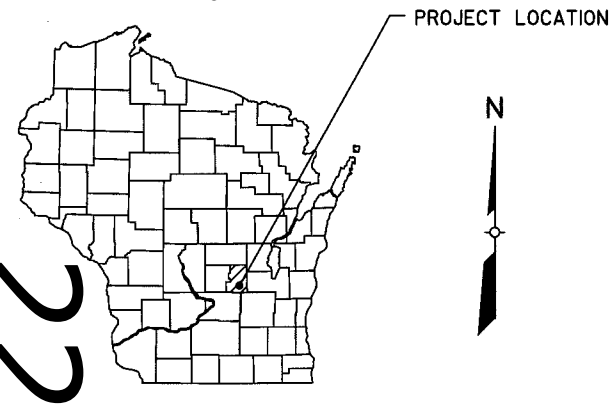
ORDER OF SHEETS

Section No. 1	Title
Section No. 2	Typical Sections and Details
Section No. 2	Erosion Control Plan
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 = 40

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
PLAN OF PROPOSED IMPROVEMENT
STH 44 - CTH U
GRAND RIVER BRIDGE B-24-0043
CTH I
GREEN LAKE COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
6598-00-70	WISC 2017111	1



DESIGN DESIGNATION

A.A.D.T. 2017	=	110
A.A.D.T. 2037	=	130
D.H.V.	=	40
D.D.	=	60-40
T.	=	6.6%
DESIGN SPEED	=	40 MPH
ESALS	=	14,600

CONVENTIONAL SYMBOLS

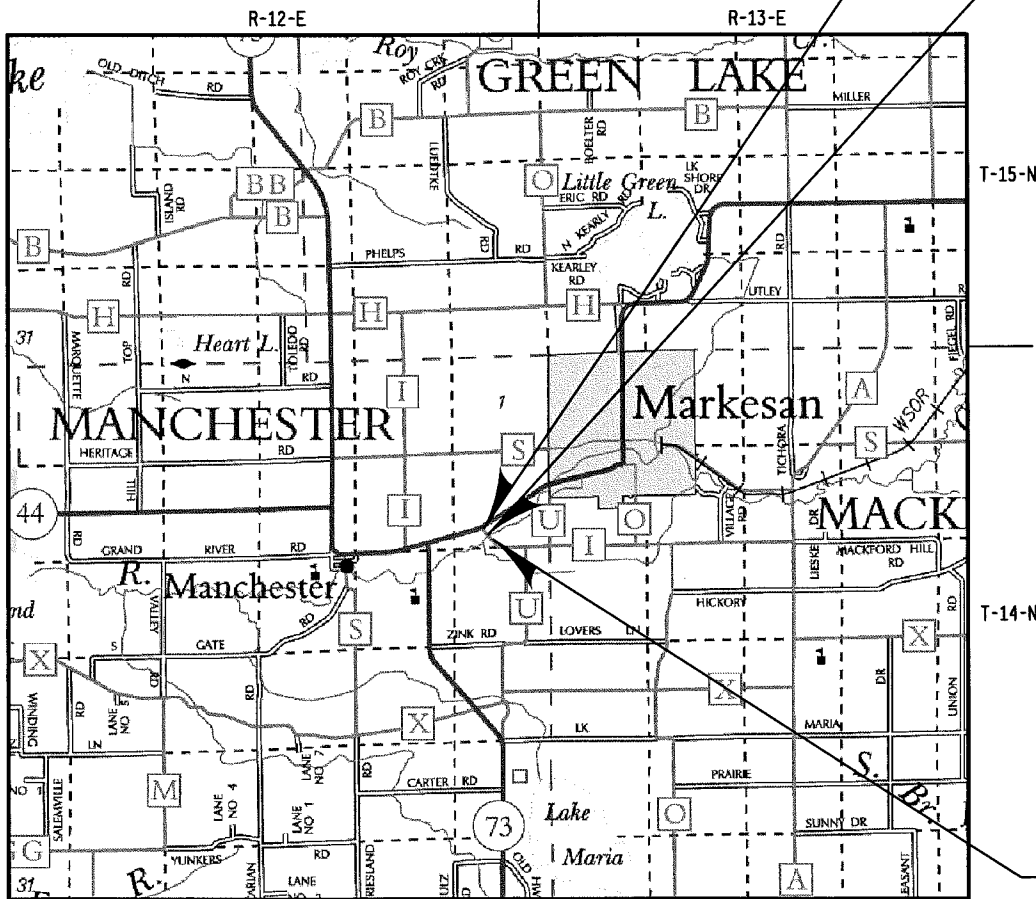
PLAN	
CORPORATE LIMITS	PL + 58.1
PROPERTY LINE	
LOT LINE	
LIMITED HIGHWAY EASEMENT	
EXISTING RIGHT OF WAY	
PROPOSED OR NEW R/W LINE	
SLOPE INTERCEPT	
REFERENCE LINE	
EXISTING CULVERT	
PROPOSED CULVERT (Box or Pipe)	
COMBUSTIBLE FLUIDS	CAUTION
MARSH AREA	
WOODED OR SHRUB AREA	
HIGH VOLTAGE	CAUTION

PROFILE

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

LAYOUT

SCALE 0 1 MI.	
TOTAL NET LENGTH OF CENTERLINE = 0.038 MI.	



BEGIN PROJECT 6598-00-70
STA. 9+00.00
Y=218388.766
X=553893.416
EXISTING STRUCTURE B-24-6 (TO BE REPLACED)
STRUCTURE B-24-43

END PROJECT 6598-00-70
STA. 11+00.00

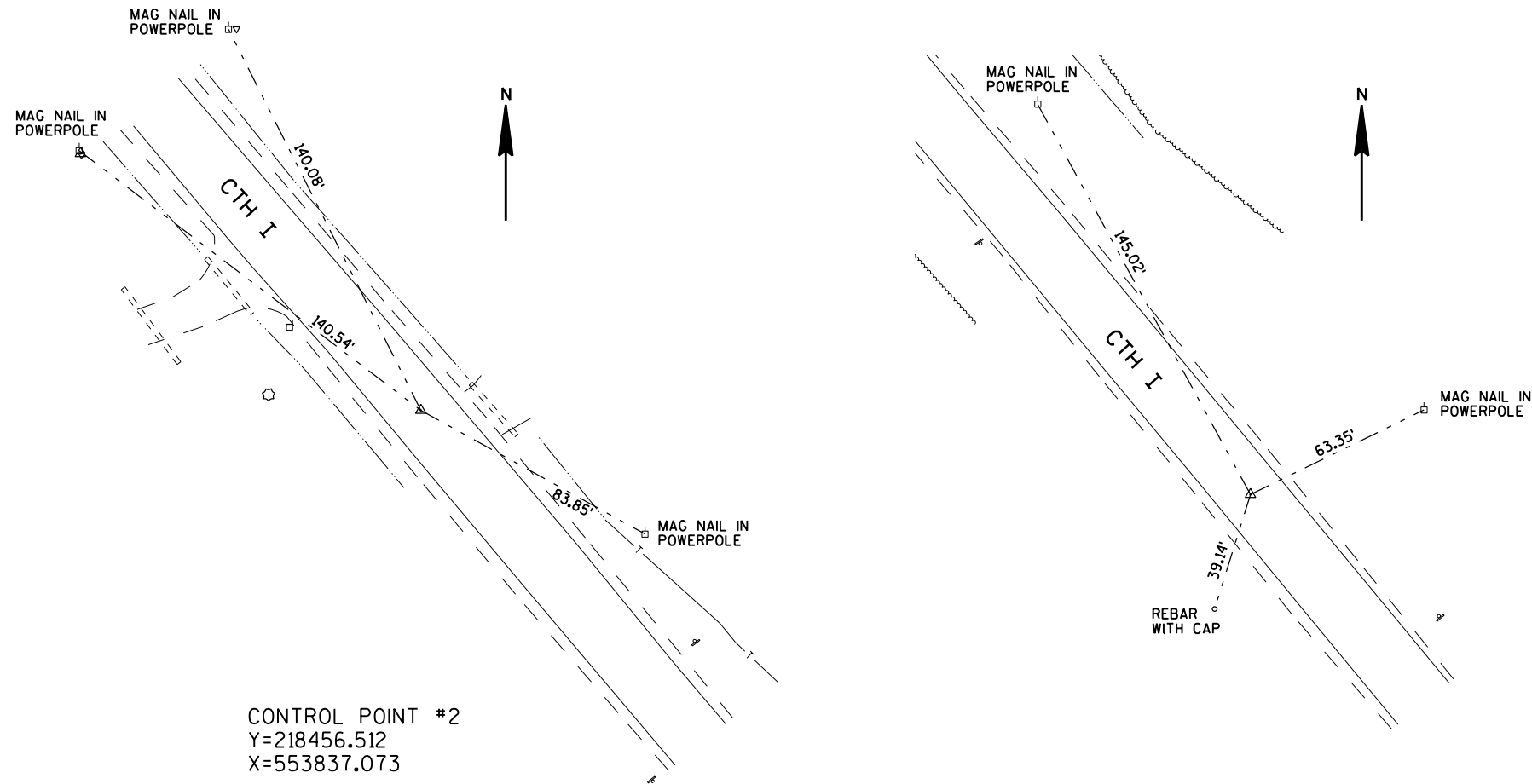
ACCEPTED FOR
COUNTY OF
GREEN LAKE
BY
10/19/16
DATE
Amy M. Brakes
HIGHWAY COMMISSIONER

ORIGINAL PLANS PREPARED BY
AECOM
WISCONSIN
ELIZABETH A. NEMEC
E-43409-6
STEVENS POINT, WI
10/18/16
(Date)
Elizabeth A. Nemece
(Signature)
PROFESSIONAL ENGINEER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
PREPARED BY
Surveyor AECOM
Designer AECOM
Management Consultant CEDAR CORPORATION

APPROVED FOR THE DEPARTMENT
DATE: 10-31-2016
(Management Consultant Signature)

COORDINATES ON THIS PLAN ARE REFERENCED TO THE
WISCONSIN COUNTY COORDINATE SYSTEM, GREEN LAKE COUNTY.
ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO NAV 88



Dial 811 or (800) 242-8511

www.DiggersHotline.com

** DENOTES UTILITIES THAT ARE NOT
DIGGER'S HOTLINE MEMBERS

UTILITY CONTACTS

CENTURY LINK (TELEPHONE)
ATTN: TIM KROEZE
201 STARK STREET
RANDOLPH, WI 53956
(920)-326-2224 (OFFICE)
(920)-219-0112 (CELL)
tim.kroeze@centurylink.com

WISCONSIN POWER AND LIGHT COMPANY (ALLIANT ENERGY)
ATTN: TOM WALTERS
506 FENTON STREET
RIPON, WI 54971-1537
(920)-748-4013 (OFFICE)
(920)-948-1406 (CELL)
tomwalters@alliantenergy.com

WDNR CONTACT

DEPARTMENT OF NATURAL RESOURCES
ATTN: BOBBI J. FISCHER
427 EAST TOWER DRIVE, SUITE 100
WAUTOMA, WI 54982
(920)-787-3015
bobbi.fischer@wisconsin.gov

DESIGNER CONTACT

AECOM
ATTN: BETH NEMEC
200 INDIANA AVENUE
STEVENS POINT, WI 54481
(715)-342-3069
elizabeth.nemec@aecom.com
AECOM PROJECT NO. 60341663

ORDER OF SECTION 2 SHEETS

GENERAL NOTES
TYPICAL SECTIONS
PROJECT OVERVIEW / EROSION CONTROL

GENERAL NOTES

THE LOCATION 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.

PROVIDE SEED MIXTURE AS SHOWN ON THE TYPICAL SECTIONS.

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

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

SECTIONS AS SHOWN ON THE CROSS SECTION SHEETS INCLUDE THE THICKNESS OF TOPSOIL.

DISTURBED AREAS WITHIN THE RIGHT OF WAY, EXCEPT THE AREA WITHIN THE FINISHED SHOULDER POINTS, SHALL BE FERTILIZED, SEEDED AND TEMPORARY SEEDED AS DIRECTED BY THE ENGINEER.

EROSION CONTROL FEATURES AS SHOWN ON THE PLANS ARE SUGGESTED LOCATIONS. EXACT LOCATIONS WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.

FIELD ADJUST SILT FENCE TO FIT EXISTING CONDITIONS AS SHOWN ON THE PLANS.

ELEVATIONS SHOWN ON THIS PLAN ARE BASED ON NAVD 88 DATUM.

DISTANCES SHOWN ON THIS PLAN ARE GROUND DISTANCES.

FILL AS SHOWN ON THE PLAN SHEETS PERTAINS TO EMBANKMENTS CONSTRUCTED FROM EXCAVATION COMMON OR BORROW. THE SHRINKAGE ALLOWANCE USED TO COMPUTE THE VOLUME OF MATERIAL NECESSARY TO COMPLETE THE FILL IS 25 PERCENT.

THE 4" ASPHALTIC SURFACE SHALL CONSIST OF A 1 1/4" -INCH UPPER LAYER & A 2 1/4" -INCH LOWER LAYER.

THE RUNOFF COEFFICIENTS OF SURFACE DRAINAGE AT THE PROJECT SITE WILL NOT BE CHANGED FROM BEFORE TO AFTER CONSTRUCTION. THE TOTAL AREA IS 0.679 ACRE AND THE TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES IS 0.521 ACRE.

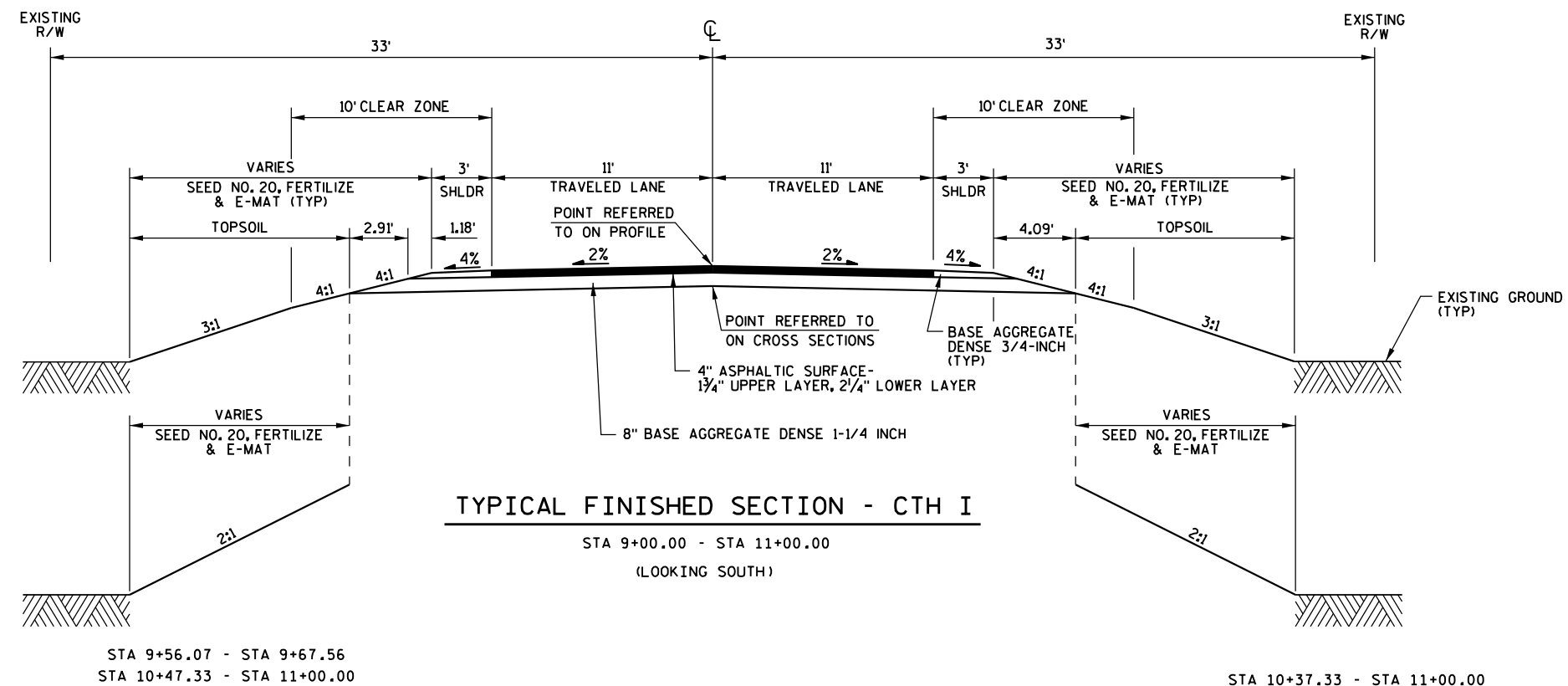
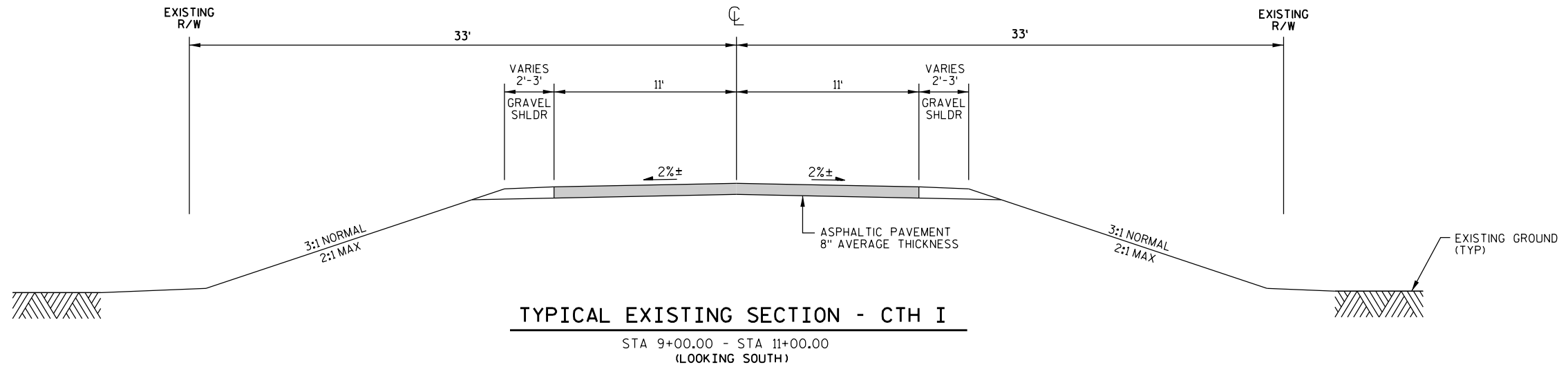
THE WISCONSIN DEPARTMENT OF TRANSPORTATION WILL FURNISH THE CONTRACTOR AN ALUMINUM MONUMENT TO SET IN THE STRUCTURE AS DESIGNATED BY THE ENGINEER.

RUNOFF COEFFICIENT TABLE

	HYDROLOGIC SOIL GROUP											
	A			B			C			D		
	SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)		
LAND USE:	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER
ROW CROPS	.08 .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											

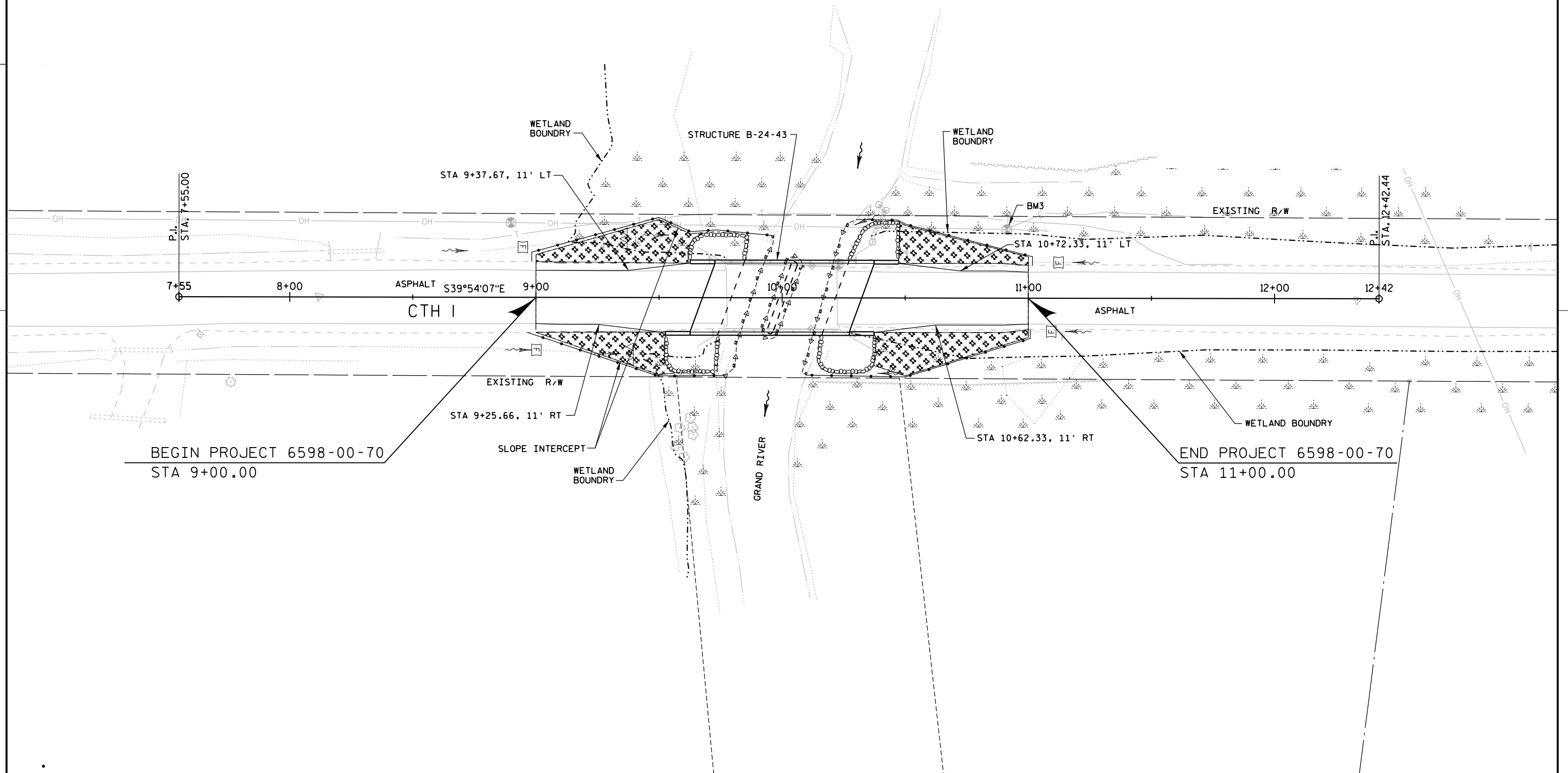
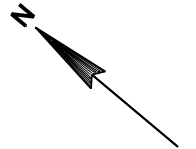
TOTAL PROJECT AREA = 0.679 ACRES

TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.521 ACRES



LEGEND: EROSION CONTROL

- ##### EROSION MAT CLASS I, TYPE A
- SILT FENCE
- ▲—▲—▲— TURBIDITY BARRIER
- △△△ DITCH CHECKS
- [F] ROCK BAGS
- FLOW ARROWS



PROJECT NUMBER: 6598-00-70

HWY: CTH I

COUNTY: GREEN LAKE

PROJECT OVERVIEW / EROSION CONTROL

SHEET

E

Estimate Of Quantities

6598-00-70					
Line	Item	Item Description	Unit	Total	Qty
0010	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 01. 10+00	LS	1.000	1.000
0020	205.0100	Excavation Common	CY	431.000	431.000
0030	206.1000	Excavation for Structures Bridges (structure) 01. B-24-43	LS	1.000	1.000
0040	210.1500	Backfill Structure Type A	TON	440.000	440.000
0050	213.0100	Finishing Roadway (project) 01. 6598-00-70	EACH	1.000	1.000
0060	305.0110	Base Aggregate Dense 3/4-Inch	TON	16.000	16.000
0070	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	240.000	240.000
0080	455.0605	Tack Coat	GAL	36.000	36.000
0090	465.0105	Asphaltic Surface	TON	84.000	84.000
0100	502.0100	Concrete Masonry Bridges **P**	CY	220.000	220.000
0110	502.3200	Protective Surface Treatment **P**	SY	275.000	275.000
0120	505.0400	Bar Steel Reinforcement HS Structures **P**	LB	6,160.000	6,160.000
0130	505.0600	Bar Steel Reinforcement HS Coated Structures **P**	LB	27,900.000	27,900.000
0140	513.4061	Railing Tubular Type M (structure) 01. B-24-43 **P**	LF	174.000	174.000
0150	516.0500	Rubberized Membrane Waterproofing	SY	18.000	18.000
0160	550.0500	Pile Points **P**	EACH	17.000	17.000
0170	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	460.000	460.000
0180	606.0300	Riprap Heavy	CY	160.000	160.000
0190	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	130.000	130.000
0200	619.1000	Mobilization	EACH	1.000	1.000
0210	625.0100	Topsoil **P**	SY	344.000	344.000
0220	628.1504	Silt Fence	LF	375.000	375.000
0230	628.1520	Silt Fence Maintenance	LF	375.000	375.000
0240	628.1905	Mobilizations Erosion Control	EACH	3.000	3.000
0250	628.1910	Mobilizations Emergency Erosion Control	EACH	2.000	2.000
0260	628.2002	Erosion Mat Class I Type A	SY	295.000	295.000
0270	628.6005	Turbidity Barriers	SY	243.000	243.000
0280	628.7504	Temporary Ditch Checks	LF	25.000	25.000
0290	628.7570	Rock Bags	EACH	45.000	45.000
0300	629.0210	Fertilizer Type B **P**	CWT	1.000	1.000
0310	630.0120	Seeding Mixture No. 20	LB	13.000	13.000
0320	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	4.000	4.000
0330	634.0616	Posts Wood 4x6-Inch X 16-FT	EACH	1.000	1.000
0340	637.2210	Signs Type II Reflective H	SF	6.200	6.200
0350	637.2230	Signs Type II Reflective F	SF	12.000	12.000
0360	638.2602	Removing Signs Type II	EACH	8.000	8.000
0370	638.3000	Removing Small Sign Supports	EACH	7.000	7.000

Estimate Of Quantities

6598-00-70					
Line	Item	Item Description	Unit	Total	Qty
0380	642.5001	Field Office Type B	EACH	1.000	1.000
0390	643.0100	Traffic Control (project) 01. 6598-00-70	EACH	1.000	1.000
0400	643.0420	Traffic Control Barricades Type III	DAY	1,224.000	1,224.000
0410	643.0705	Traffic Control Warning Lights Type A	DAY	1,904.000	1,904.000
0420	643.0900	Traffic Control Signs	DAY	544.000	544.000
0430	645.0120	Geotextile Type HR	SY	300.000	300.000
0440	646.0103	Pavement Marking Paint 4-Inch **P**	LF	800.000	800.000
0450	650.4500	Construction Staking Subgrade **P**	LF	136.000	136.000
0460	650.5000	Construction Staking Base **P**	LF	136.000	136.000
0470	650.6500	Construction Staking Structure Layout (structure) 01. B-24-43	LS	1.000	1.000
0480	650.9910	Construction Staking Supplemental Control (project) 01. 6598-00-70	LS	1.000	1.000
0490	650.9920	Construction Staking Slope Stakes **P**	LF	136.000	136.000
0500	690.0150	Sawing Asphalt	LF	44.000	44.000
0510	715.0502	Incentive Strength Concrete Structures	DOL	1,320.000	1,320.000
0520	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	150.000	150.000
0530	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	300.000	300.000
0540	SPV.0120	Special 01. Water for Seeded Areas	MGAL	8.000	8.000

PI 7+55.00
Y=218500.00
X=553800.40

DARWIN KELM &
JANICE KELM

WETLAND
BOUNDARY

STRUCTURE B-24-43

REMOVE AND REPLACE
SIGN W5-52L

DARWIN KELM &
JANICE KELM

REMOVE WEIGHT LIMIT SIGN

WISCONSIN POWER
AND LIGHT
ELECTRIC

● BENCH MARK TABLE

NO.	STATION	DESCRIPTION	ELEV.
1	8+90 LT	MAG NAIL IN PP #14-12-12 20/6 EAST SIDE CTH I 50'± S OF BRIDGE	835.24
2	10+23 LT	CUT SQUARE ON SE CORNER OF BRIDGE OVER GRAND RIVER	841.98
3	10+91 LT	MAG NAIL IN PP #14-12-12 18/7 EAST SIDE CTH I 75'± N OF BRIDGE	841.88

STA 9+37.67, 11' LT
REMOVE AND REPLACE
JCT STH 44 SIGN
(M2-1, M1-6)

PAVEMENT MARKING PAINT
4-INCH SOLID YELLOW,
DOUBLE CENTERLINE

BM1

REMOVE AND
REPLACE
SIGN W5-52R

WETLAND
BOUNDARY

CENTURY LINK
TELEPHONE

EXISTING R/W

WISCONSIN POWER
AND LIGHT
ELECTRIC

P.I. STA. 7+55.00

7+55

8+00

ASPHALT

S39°54'07"E

9+00

10+00

11+00

12+00

12+42

P.I. STA. 12+42.44

CTH I

ASPHALT

CONTROL POINT 2
Y=218456.51
X=553837.07

EXISTING R/W

STA 9+25.66, 11' RT

SLOPE INTERCEPT

REMOVE WEIGHT LIMIT SIGN

REMOVE AND REPLACE
SIGN W5-52R

WETLAND
BOUNDARY

GRAND RIVER

REMOVE AND
REPLACE
SIGN W5-52L

STA 10+62.33, 11' RT
PAVEMENT MARKING PAINT
4-INCH SOLID WHITE

END PROJECT 6598-00-70
STA 11+00.00

(END ABRUPTLY)
Y=218235.338
X=554021.711

PI 12+42.44
Y=218132.48
X=554107.04

DARWIN KELM &
JANICE KELM

BEGIN PROJECT 6598-00-70
STA 9+00.00

(BEGIN ABRUPTLY)
Y=218388.766
X=553893.416

DEAN E. MALLOY &
NANCY K. MALLOY

855

850

845

840

835

830

825

820

855

850

845

840

835

830

825

820

STA 10+00.00
STRUCTURE B-24-43 REQUIRED
TWO SPAN CONTINUOUS FLAT CONCRETE SLAB
64'-8" OVERALL LENGTH
28'-0" CLEAR ROAD WIDTH
20° SKEW LHF

P.I. 9+00.00
EL. 843.14

OBSERVED WATER LEVEL
EL 831.31
(04-09-2015)

STRUCTURE
B-24-43

TOP OF BERM
EL 836.06

EL 833.56

HIGH WATER 100 YR
EL 840.17

TOP OF BERM
EL 835.15

EL 832.65

STREAM BED EL 828.48

STEEL RAILING -
SEE STRUCTURE PLANS

P.I. 11+00.00
EL. 840.19

EXISTING GROUND

FINISHED PROFILE ON C

STA 10+00.00
REMOVE STRUCTURE B-24-6
SINGLE SPAN STEEL DECK GIRDER
44'-6" OVERALL LENGTH
26'-0" CLEAR ROADWAY WIDTH
0° SKEW

EXISTING PROFILE ELEVATION
PROPOSED PROFILE ELEVATION

843.14
843.14

842.02
842.40

829.27
841.67

840.97
840.93

840.19
840.19

7+00

8+00

9+00

10+00

11+00

12+00

13+00

PROJECT NUMBER: 6598-00-70

HWY: CTH I

COUNTY: GREEN LAKE

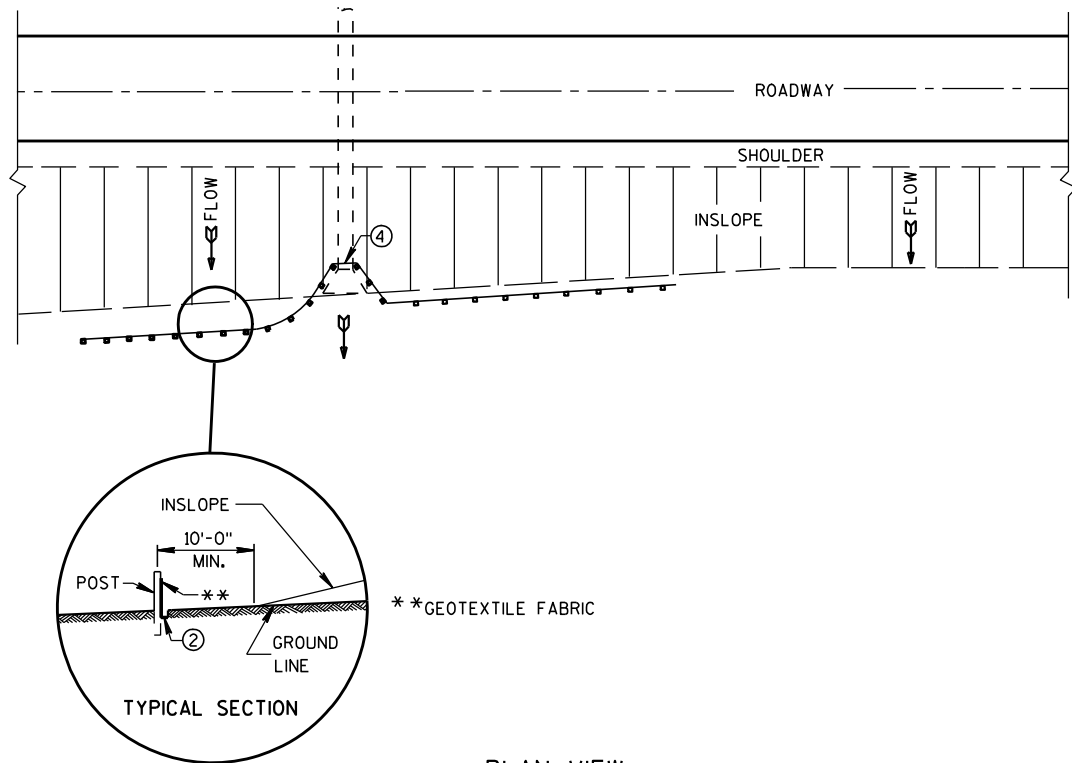
PLAN AND PROFILE

SHEET

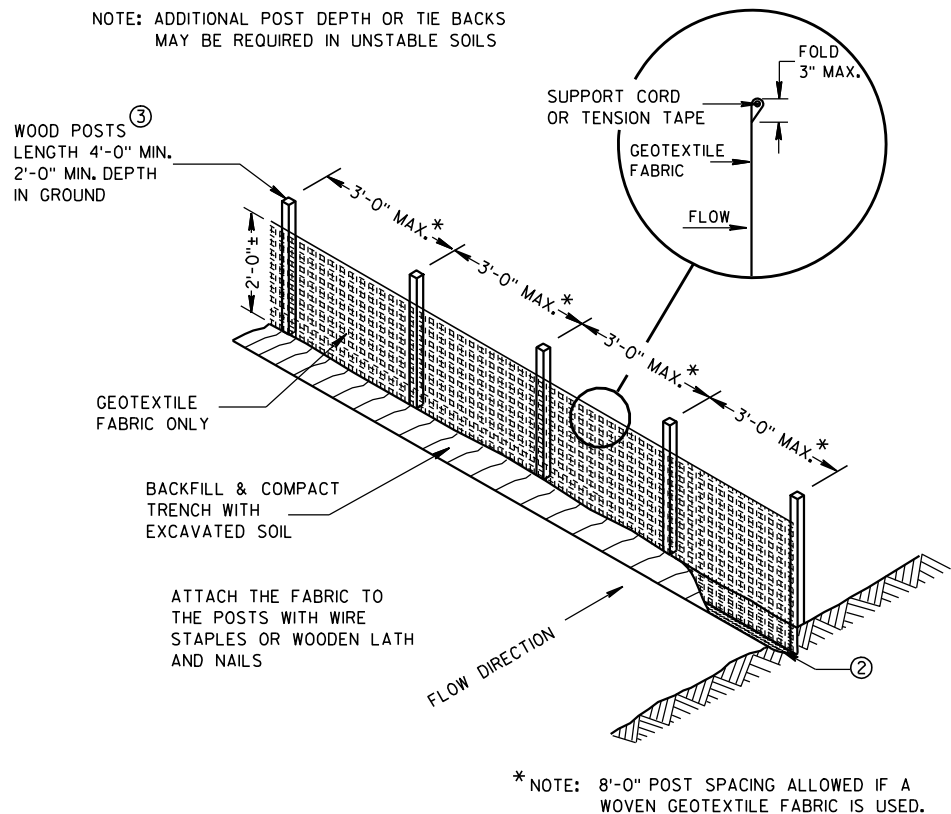
E

Standard Detail Drawing List

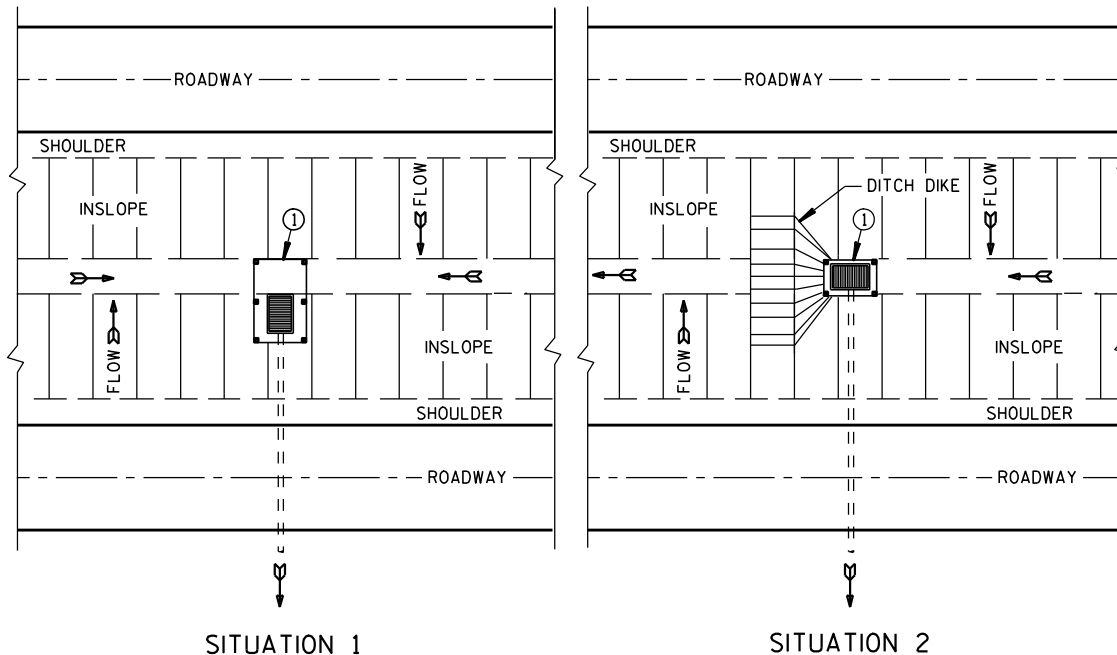
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
12A03-10	NAME PLATE (STRUCTURES)
15C02-06A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C06-08	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-16A	PAVEMENT MARKING (MAINLINE)



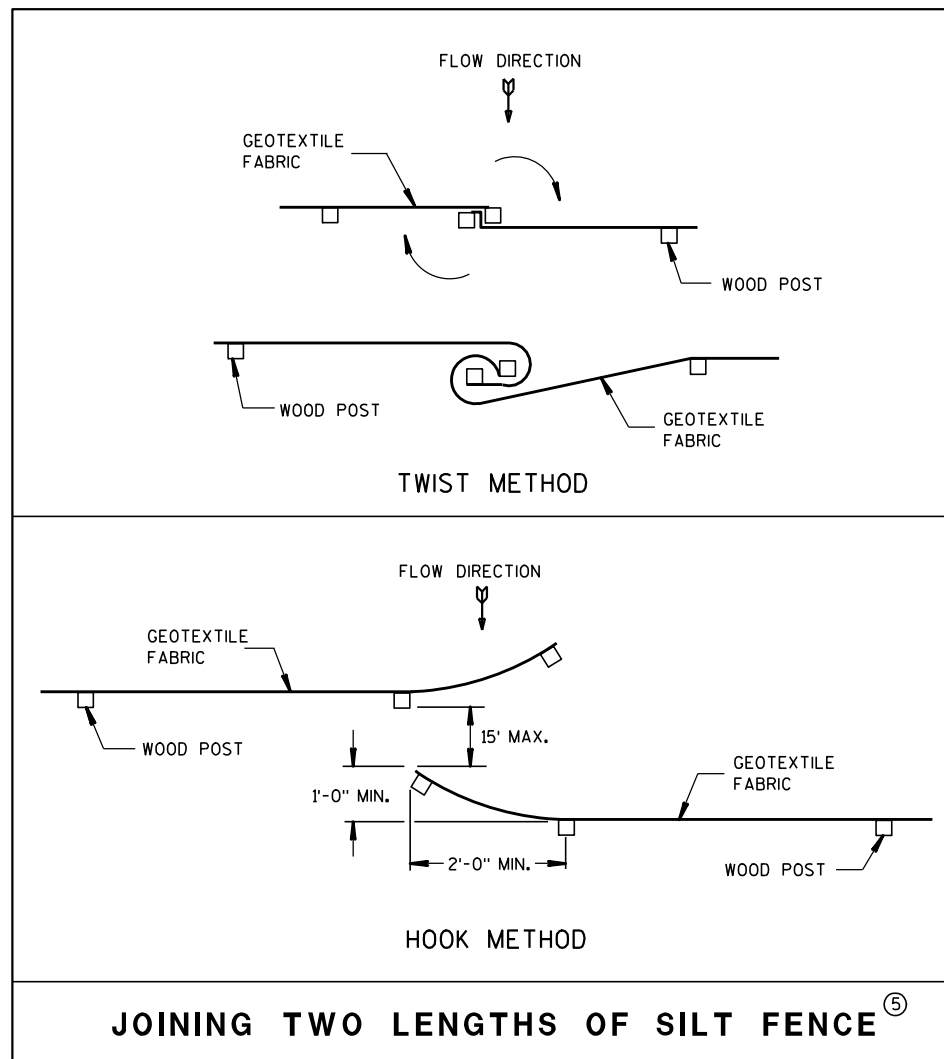
PLAN VIEW
TYPICAL APPLICATION OF SILT FENCE



SILT FENCE



PLAN VIEW
SILT FENCE AT MEDIAN SURFACE DRAINS

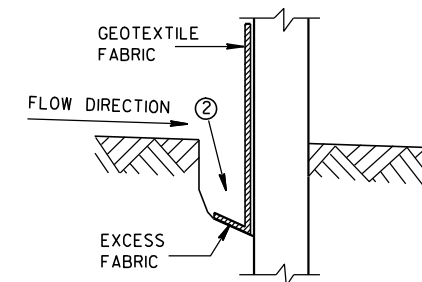


JOINING TWO LENGTHS OF SILT FENCE (5)

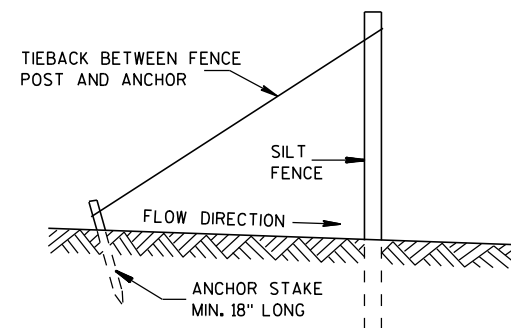
GENERAL NOTES

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

- ① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
- ② FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
- ③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1 1/8" X 1 1/8" OF OAK OR HICKORY.
- ④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
- ⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.

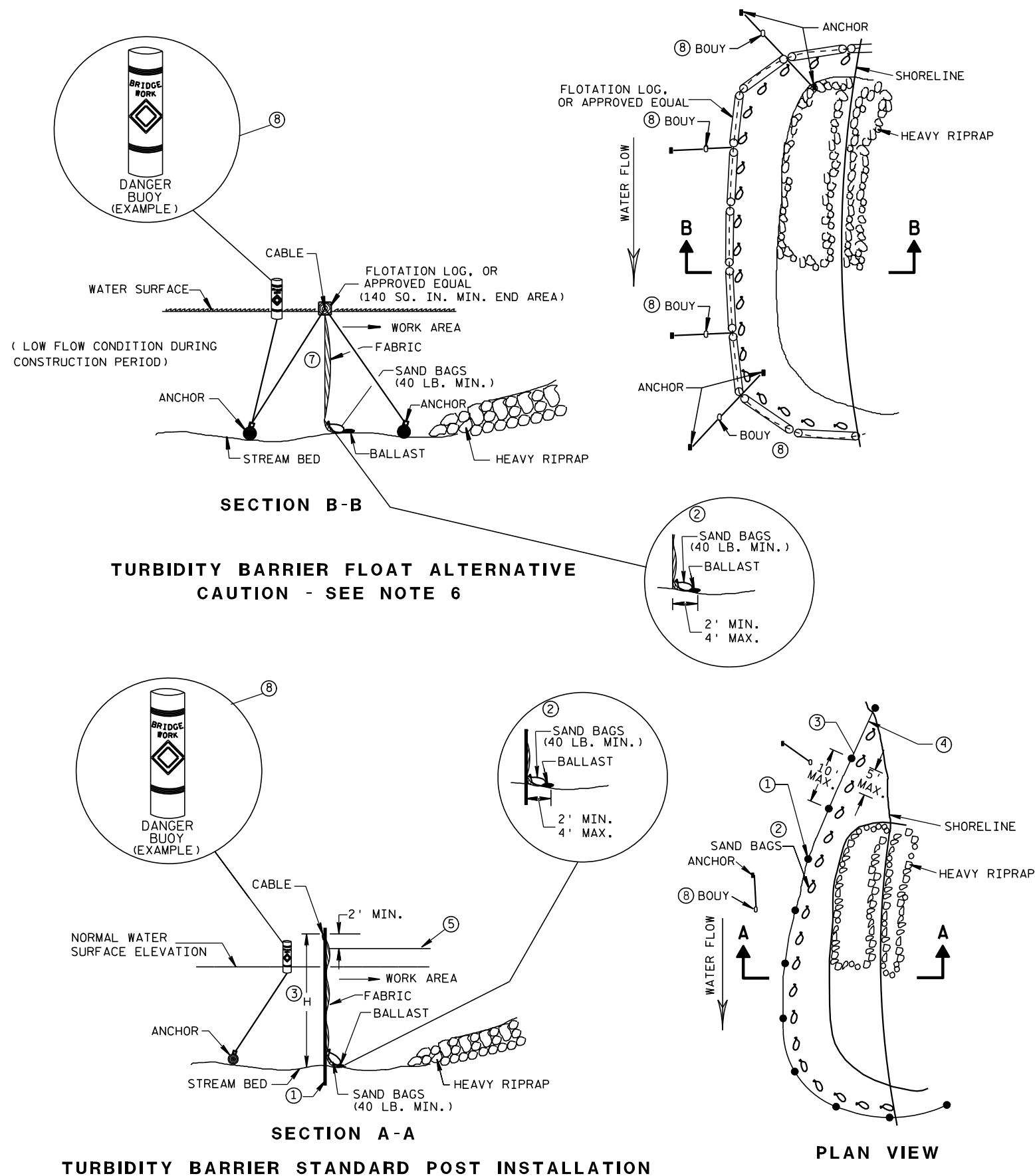


TRENCH DETAIL



SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

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

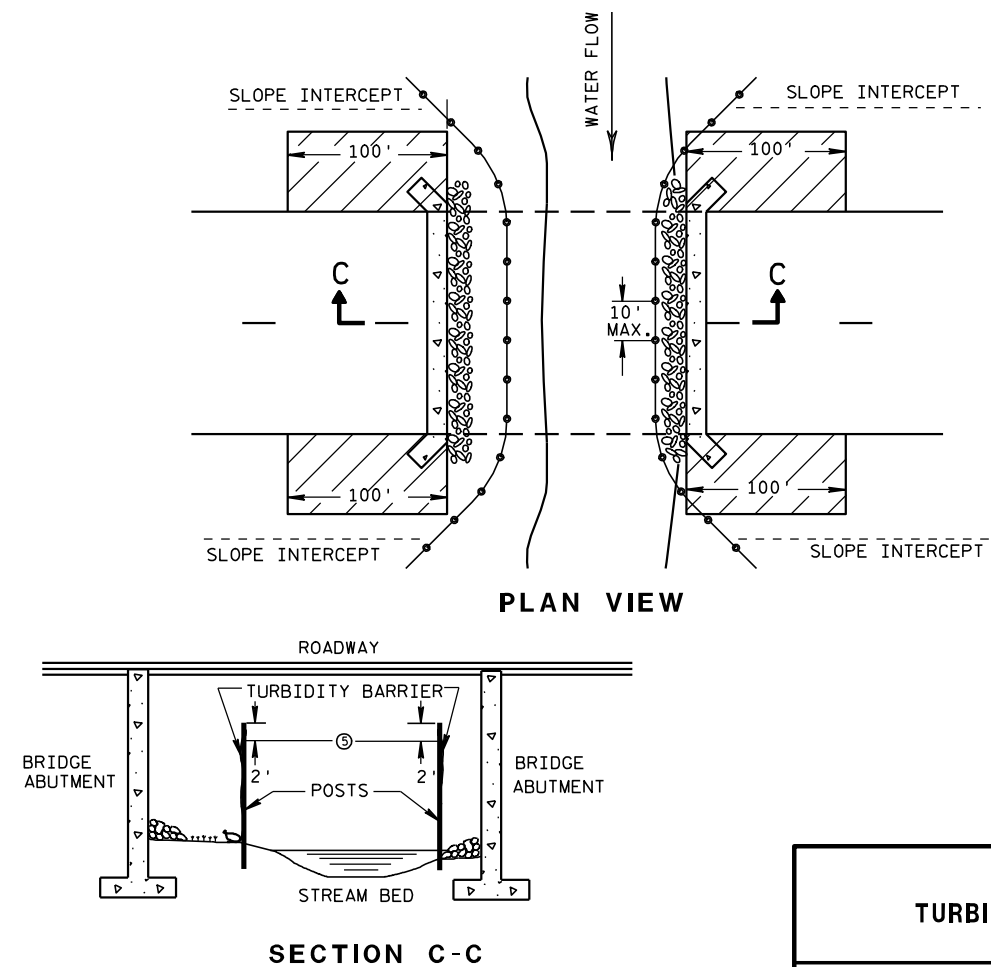


GENERAL NOTES

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

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. MINIMUM BARRIER HEIGHT SHALL BE 2' GREATER THAN EITHER THE 02 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WHICHEVER 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.



TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

TURBIDITY BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

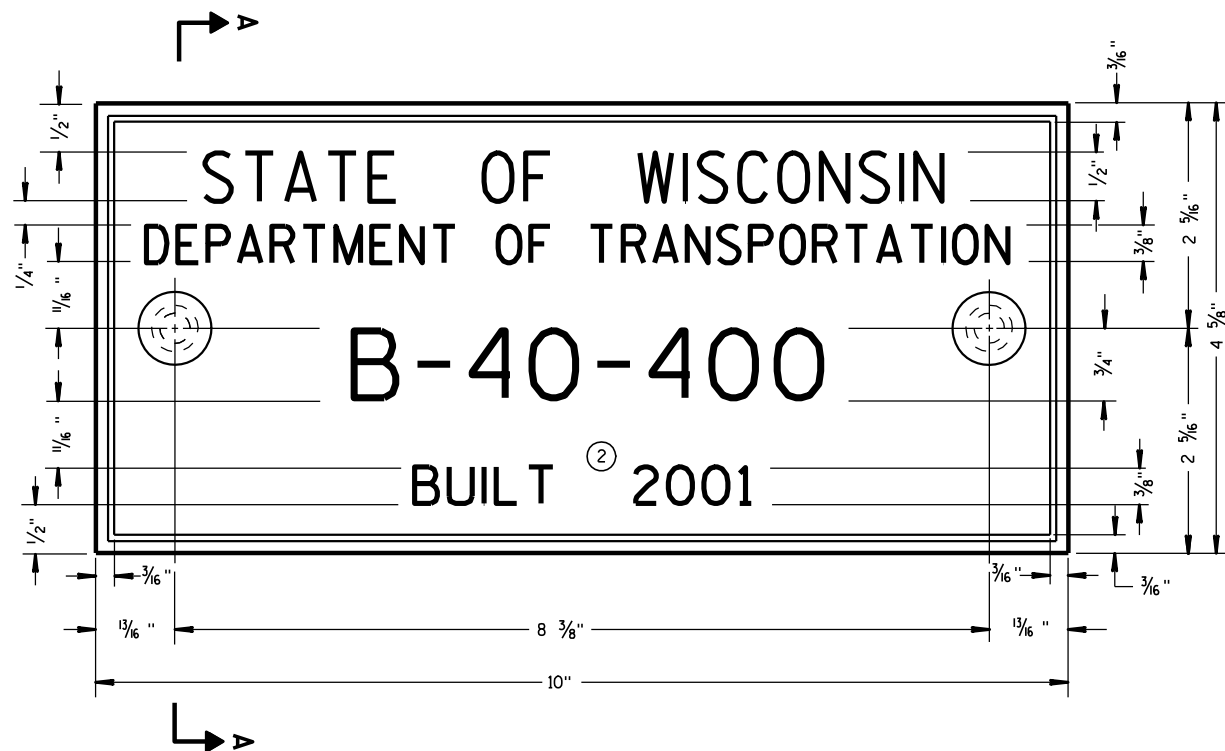
APPROVED

6/04/02

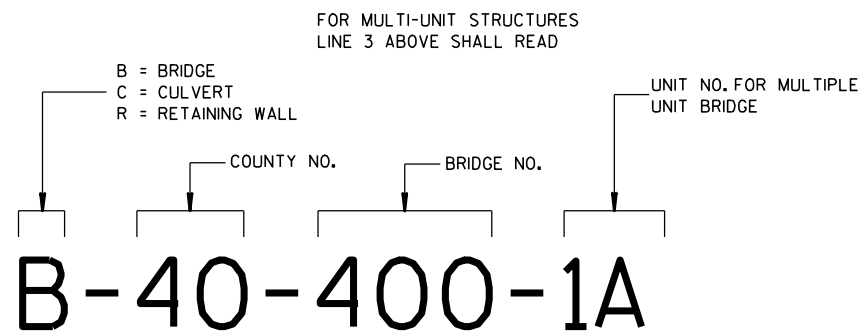
DATE

FHWA

/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT ENGINEER



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



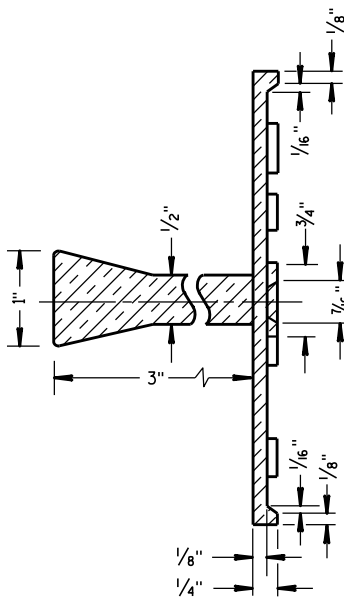
**NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES**

GENERAL NOTES

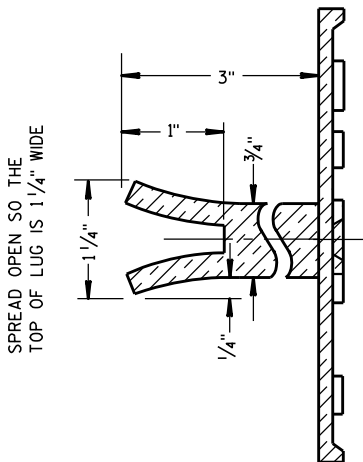
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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

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

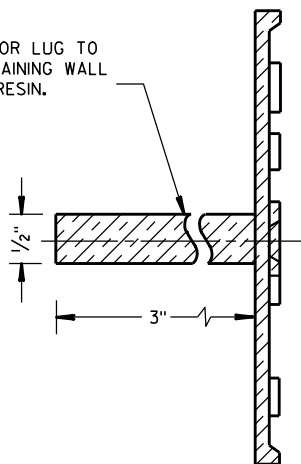


SECTION A-A



ALTERNATE LUG

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

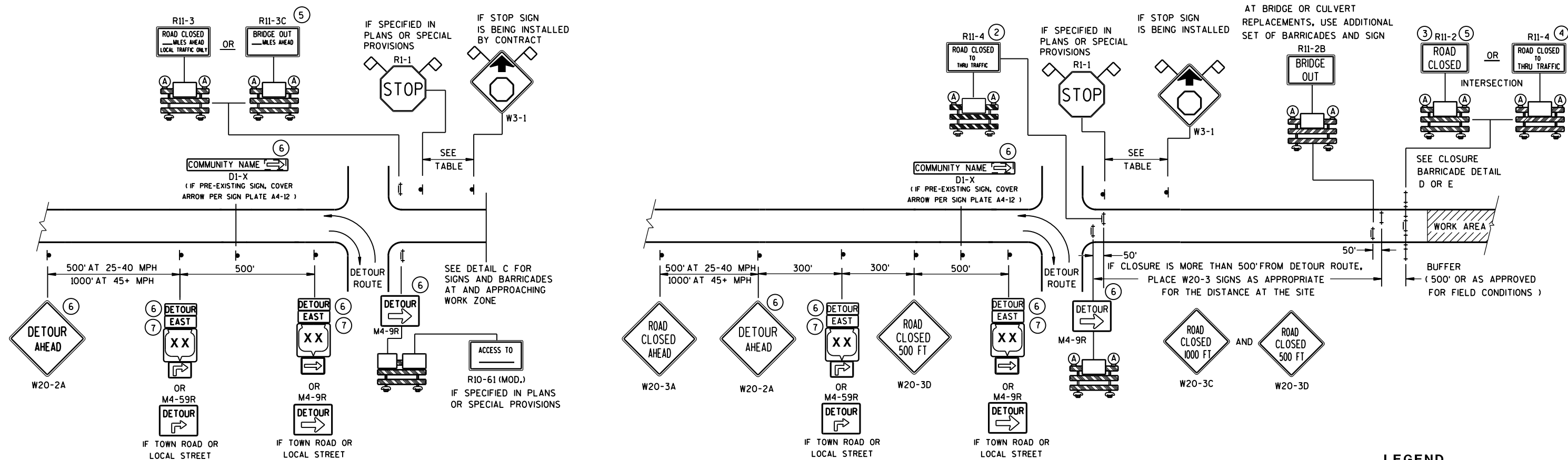


ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

**NAME PLATE
(STRUCTURES)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

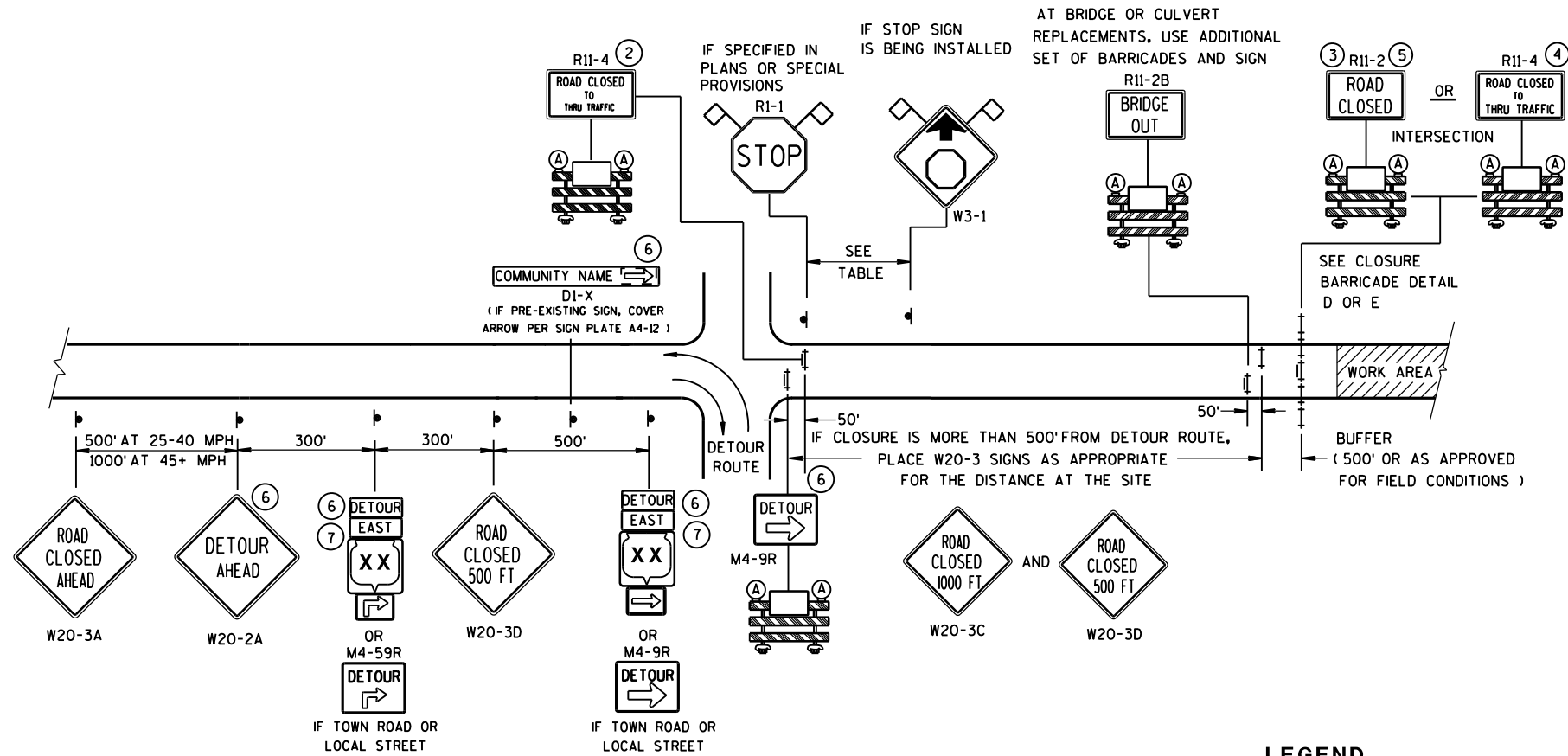
APPROVED
3/26/10
DATE
/S/ Scot Becker
CHIEF STRUCTURAL DEVELOPMENT ENGINEER
FHWA



DETAIL A

MAINLINE CLOSURE WITH POSTED DETOUR

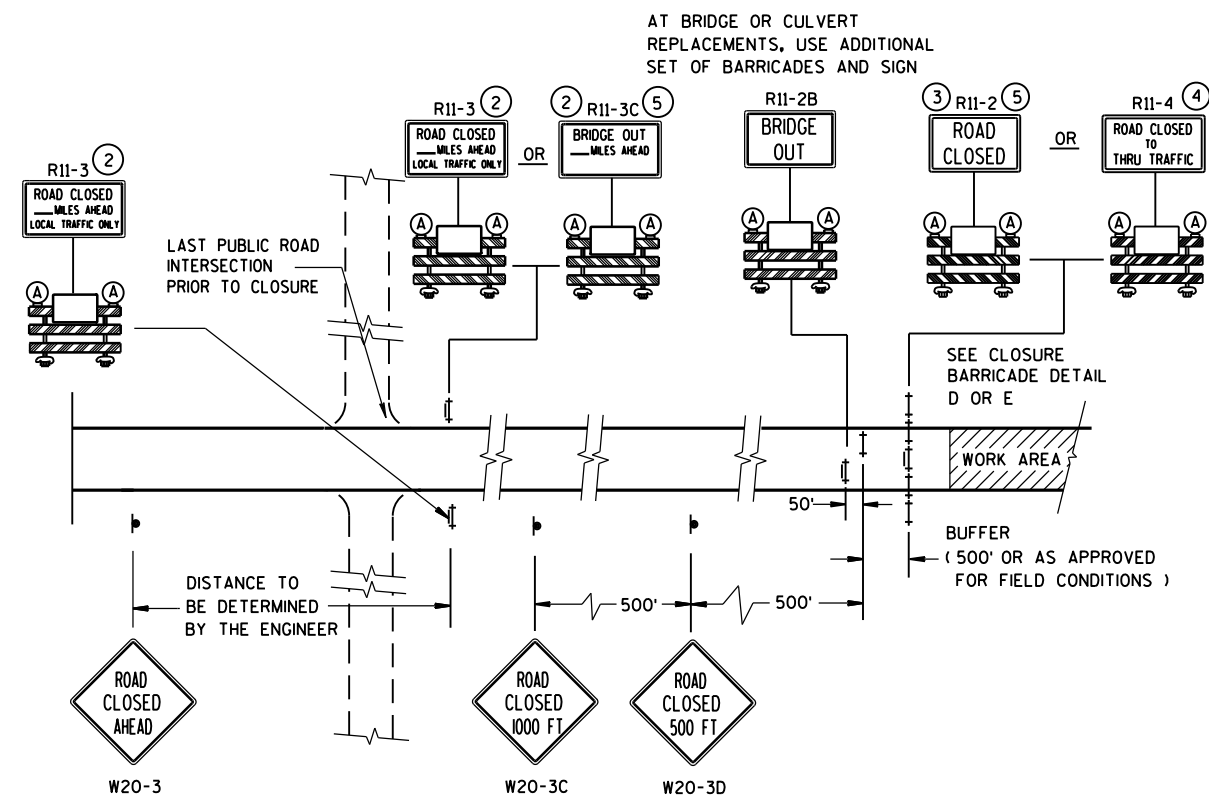
WORK ZONE GREATER THAN 1/2 MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



DETAIL B

MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE LESS THAN 1/2 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

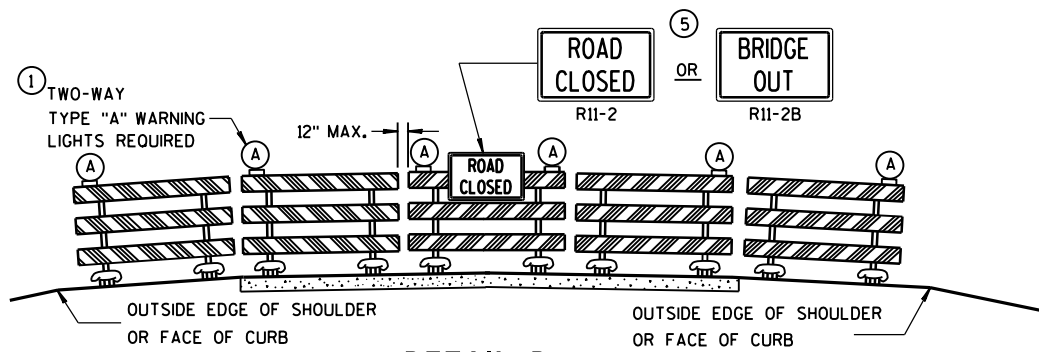
- # LEGEND
-  SIGN ON PERMANENT SUPPORT
-  TYPE III BARRICADE
-  TYPE III BARRICADE WITH ATTACHED SIGN
-  TYPE "A" WARNING LIGHT (FLASHING)
-  WORK AREA
-  M4-8
 M3-X
-  M1-4 OR  M1-5A OR  M1-6
-  M05-1 OR  M06-1
-  FLAGS, 16" X 16" MIN., (ORANGE)

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

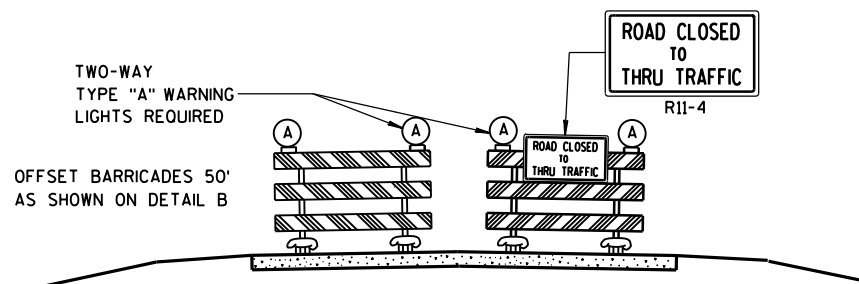
BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

Sept. 2015	/S/ Peter Amakobe Atepe
DATE	STATEWIDE WORK ZONE TRAFFIC
FHWA	SAFETY ENGINEER



DETAIL D
ROAD CLOSURE BARRICADE DETAIL
APPROACH VIEW



DETAIL E
LANE CLOSURE BARRICADE DETAIL
APPROACH VIEW

SEE SDD 15C2-SHEET "a" FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

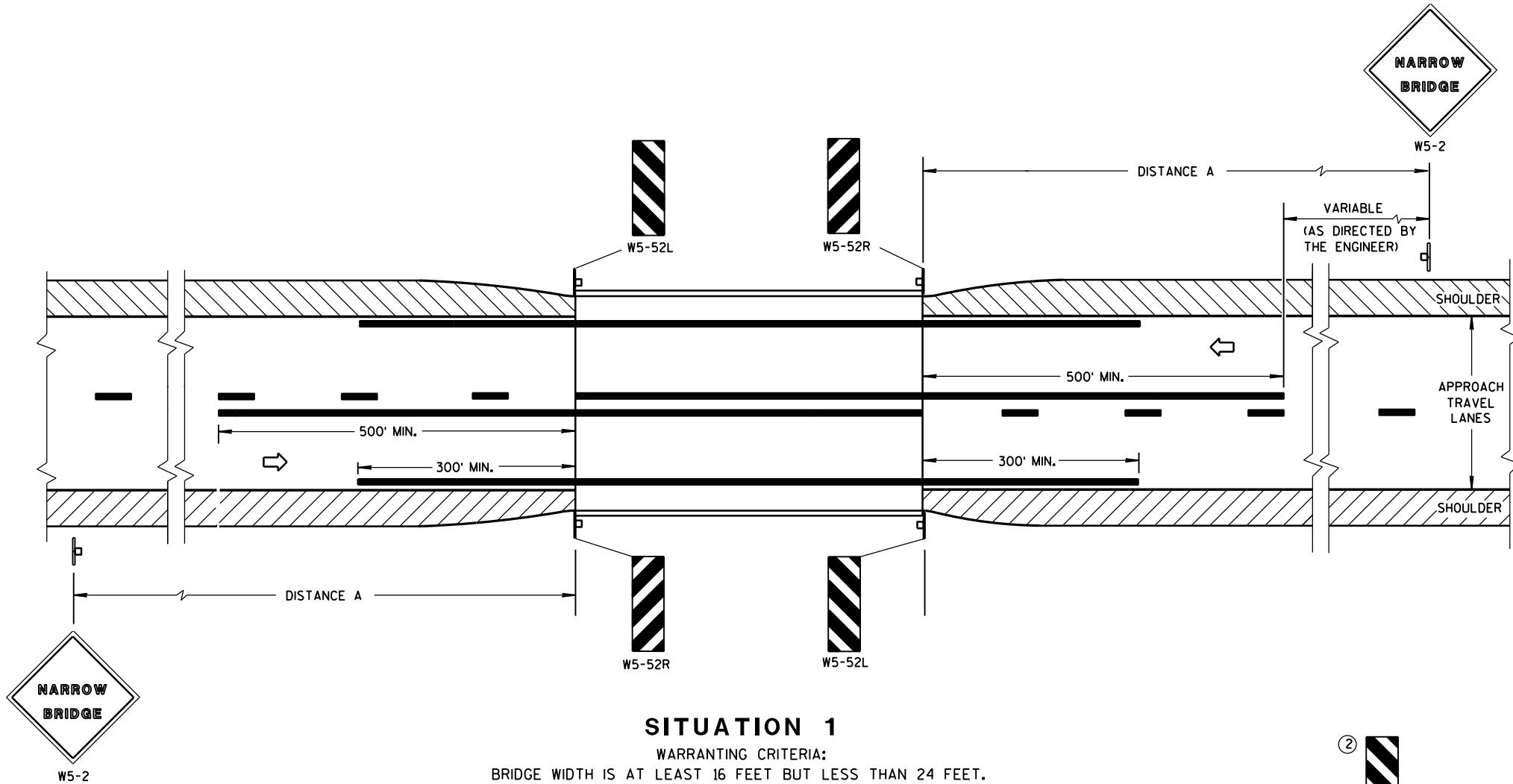
- R11-2 SHALL BE 48" X 30".
- R11-3, R11-4 AND R10-61 SHALL BE 60" X 30".
- M4-9 SHALL BE 30" X 24".
- M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" 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

Sept. 2015 /S/ Peter Amokobe Atepe
DATE STATEWIDE WORK ZONE TRAFFIC
FHWA SAFETY ENGINEER



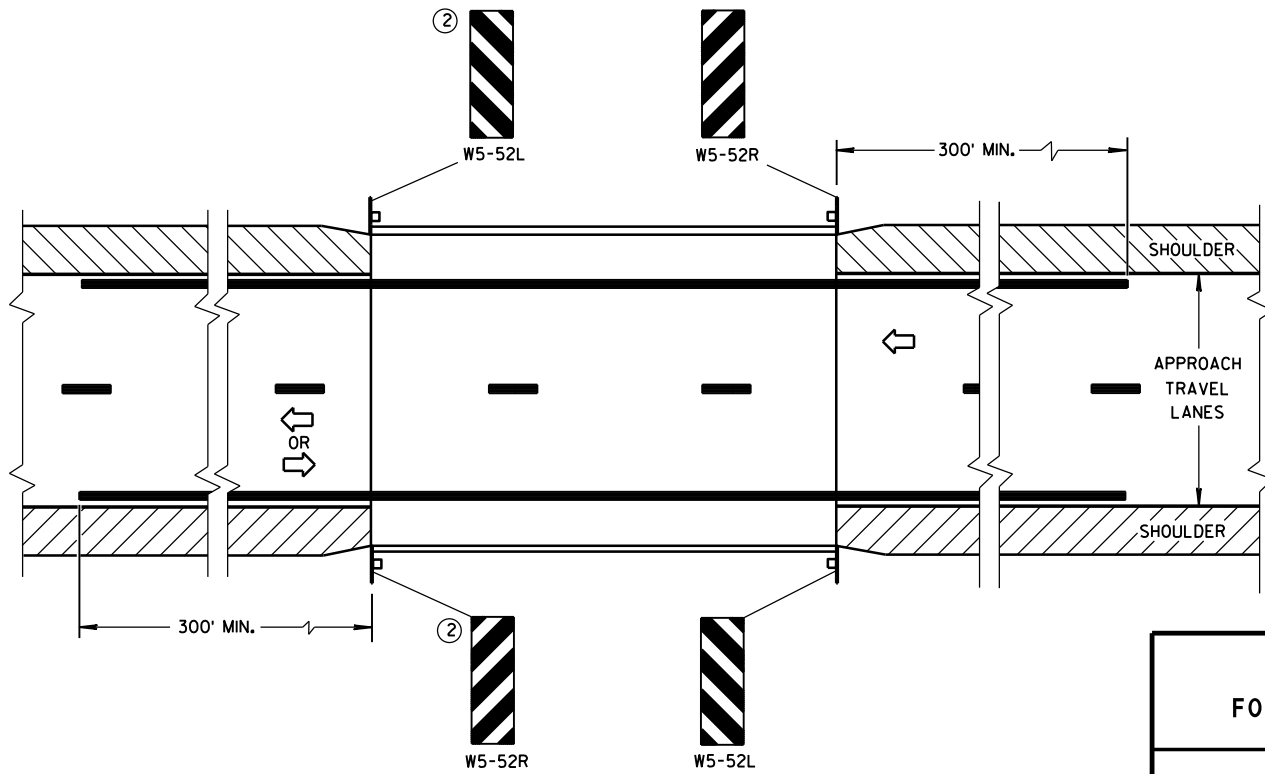
DISTANCE TABLE

POSTED OR 85th PERCENTILE SPEED	DISTANCE "A"
25	150'
30	200'
35	250'
40	300'
45	400'
50	550'
55	750'

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.

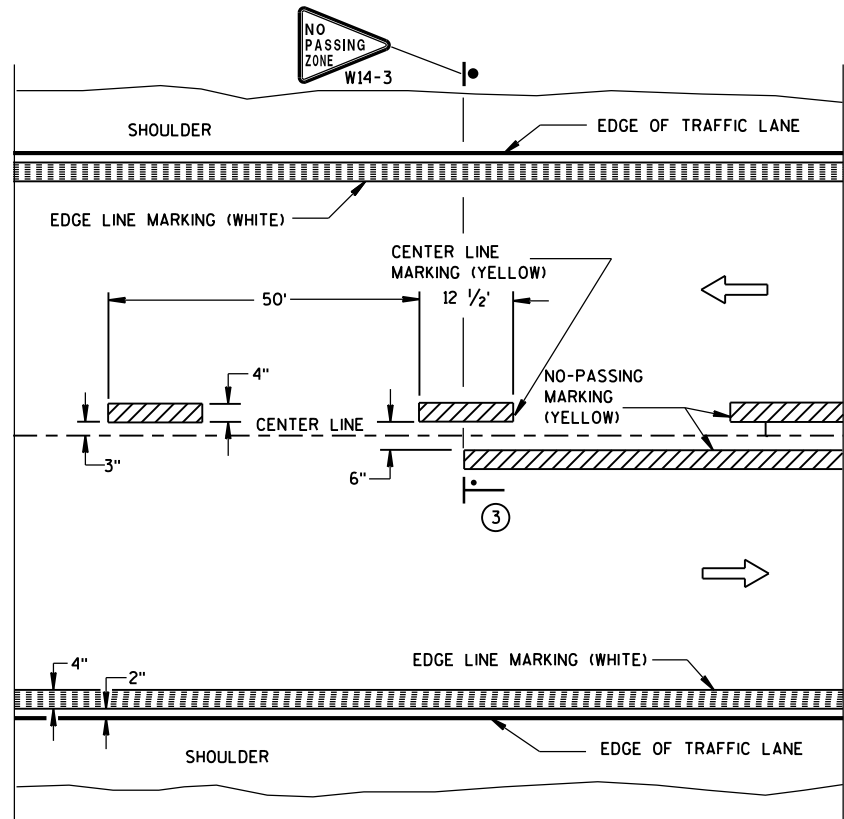
- ① LOCATE W5-52 SIGN POST(S) BEHIND GUARDRAIL WHEN PRESENT.
- ② OMIT ON ONE-WAY TRAVELLED WAYS.
- ③ EDGE OF W5-52 SIGN SHALL BE PLACED IN LINE WITH FACE OF CURB OR PARAPET.



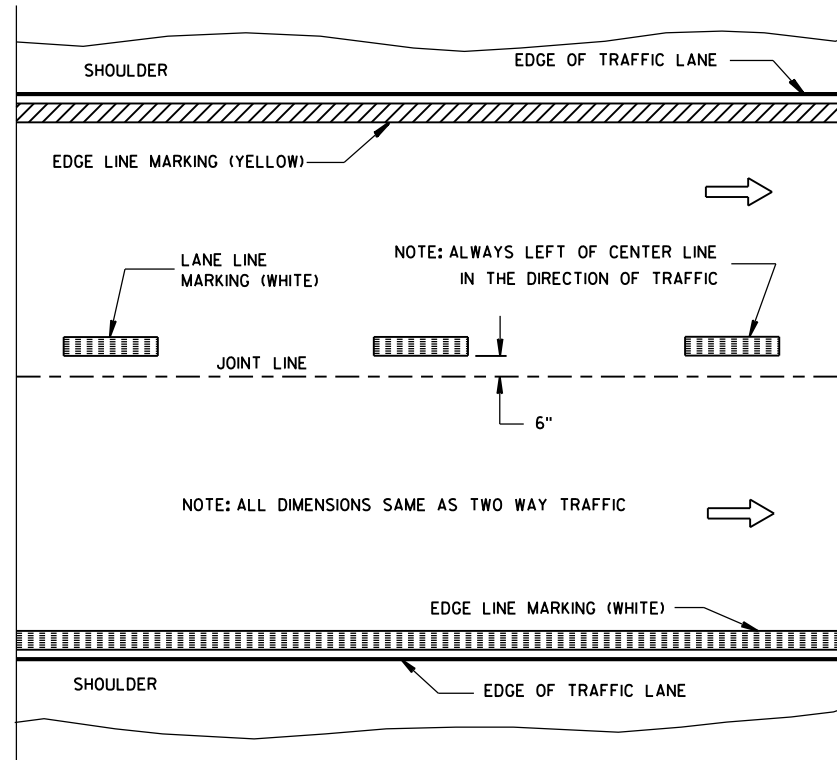
SIGNING & MARKING
FOR TWO LANE BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-18-16 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MARKING ENGINEER
FHWA

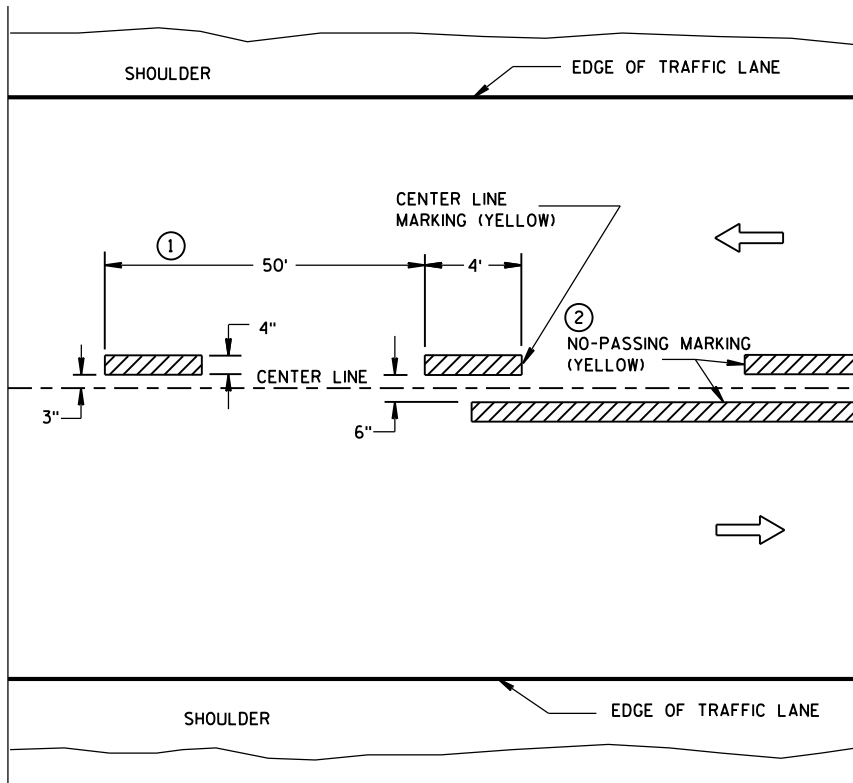


TWO WAY TRAFFIC

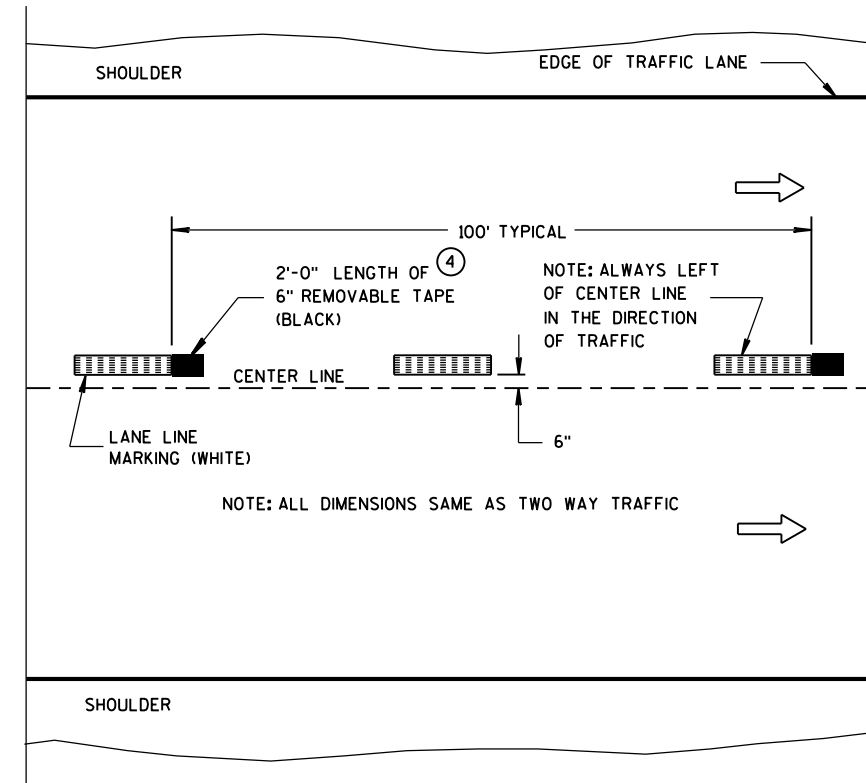


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

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

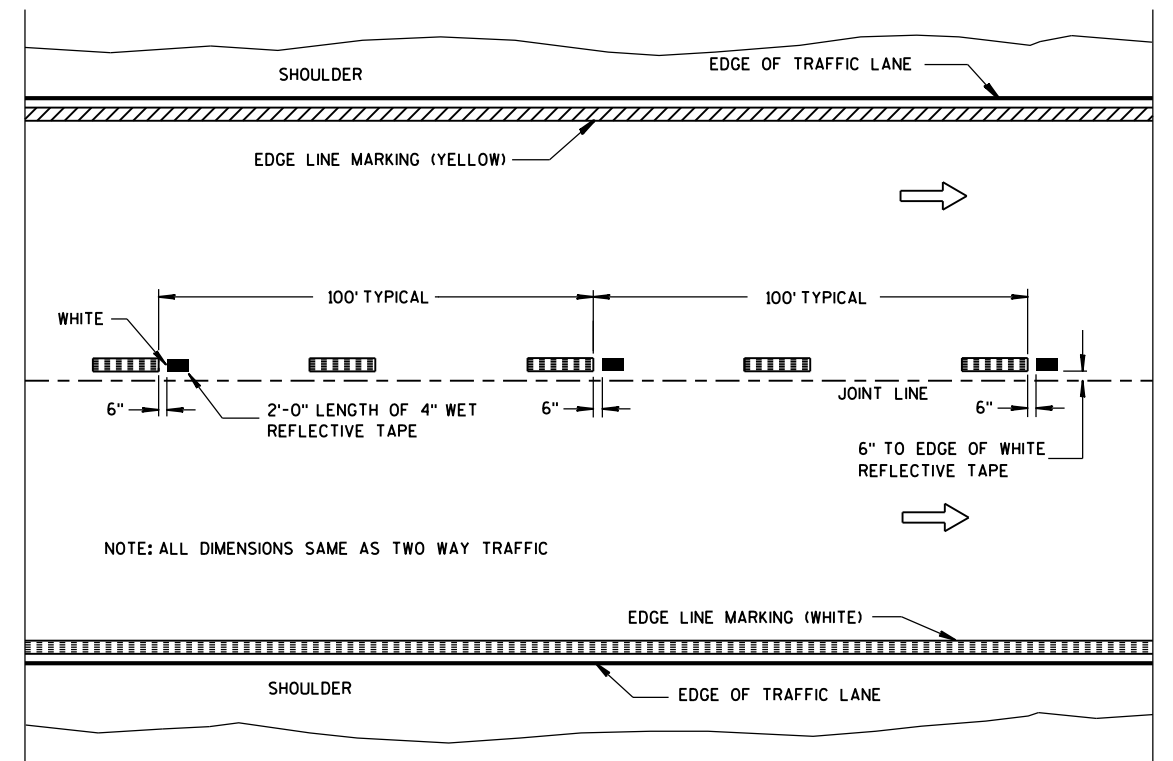
GENERAL NOTES

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

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

NOTE

ARROW SYMBOL (→) SHOWS DIRECTION OF TRAVEL



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

LEGEND

- "T" MARKING
- POST MOUNTED SIGN

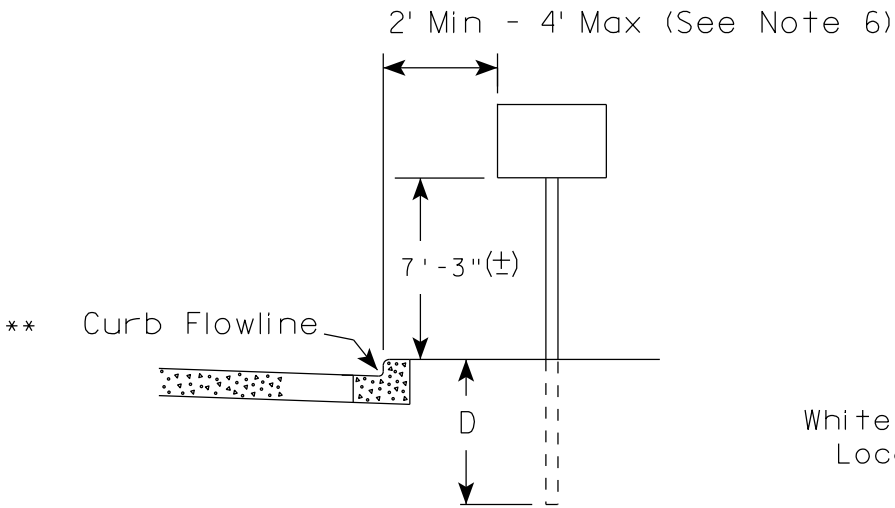
PAVEMENT MARKING
(MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

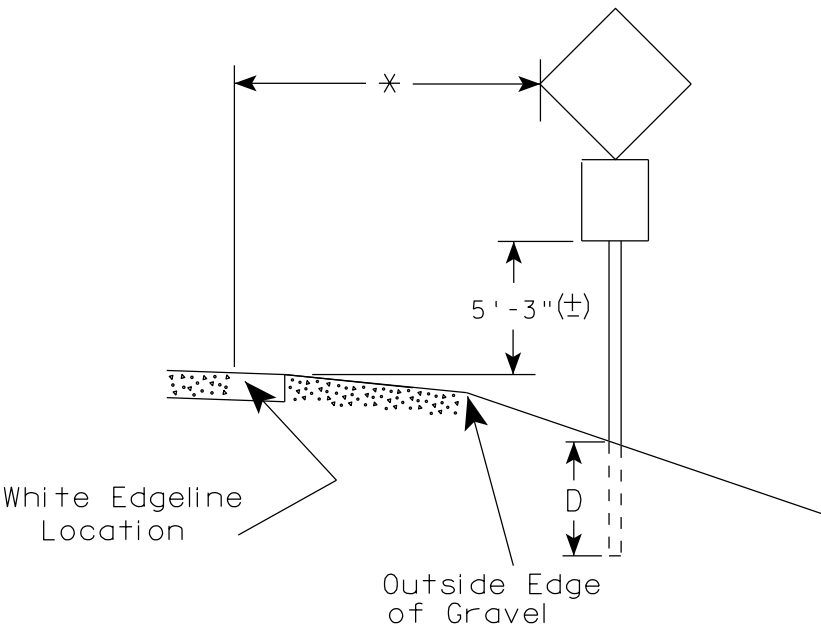
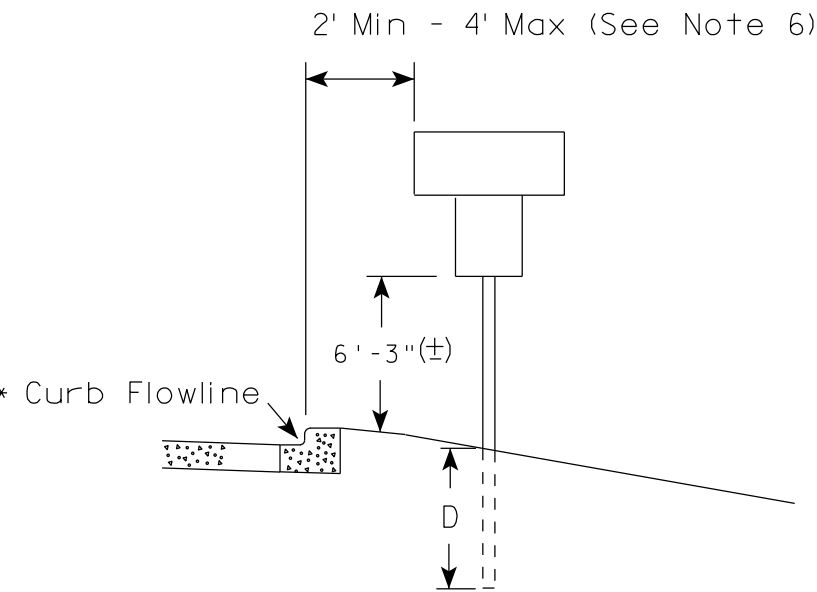
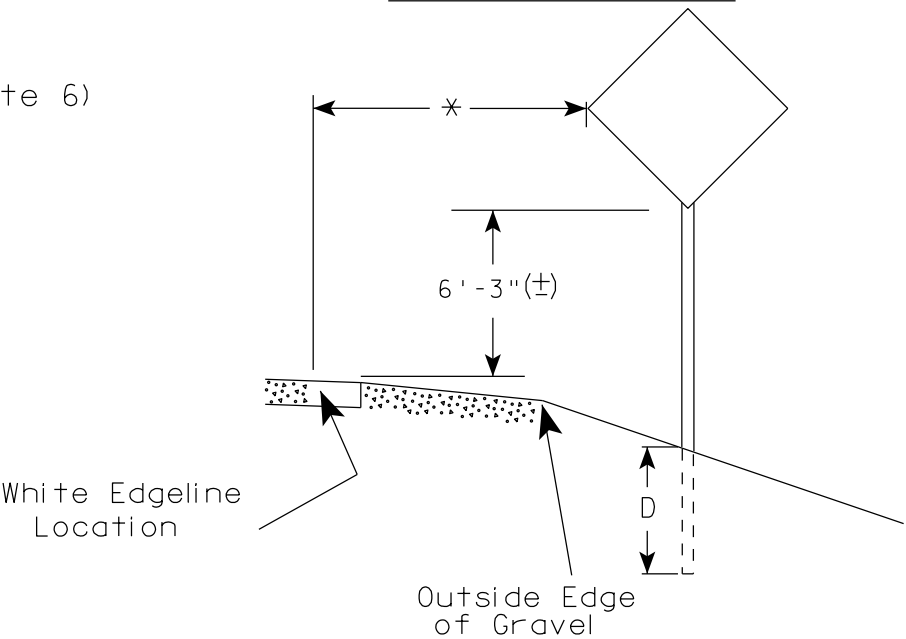
APPROVED
5-13-2013
DATE
FHWA

/S/ Travis Feltes
STATE TRAFFIC ENGINEER

URBAN AREA



RURAL AREA (See Note 2)



GENERAL NOTES

1. Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on barrier wall, see A4-10 sign plate.
3. For expressways and freeways, mounting height is 7'- 3" (±) or 6'-3" (±) depending upon existence of a sub-sign.
4. Minimum mounting height for J assemblies (A2-1S) 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 signs shall be mounted at a height of 5'-3" (±) or as directed by the Engineer.
9. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Enhanced Reference Markers, Clearance Markers (W5-52), Mile Markers (D10 series), In Road Object Markers (W5-54) & End of Road Markers (W5-56) shall be mounted at a height of 4'-3" (±).

POST EMBEDMENT DEPTH

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

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

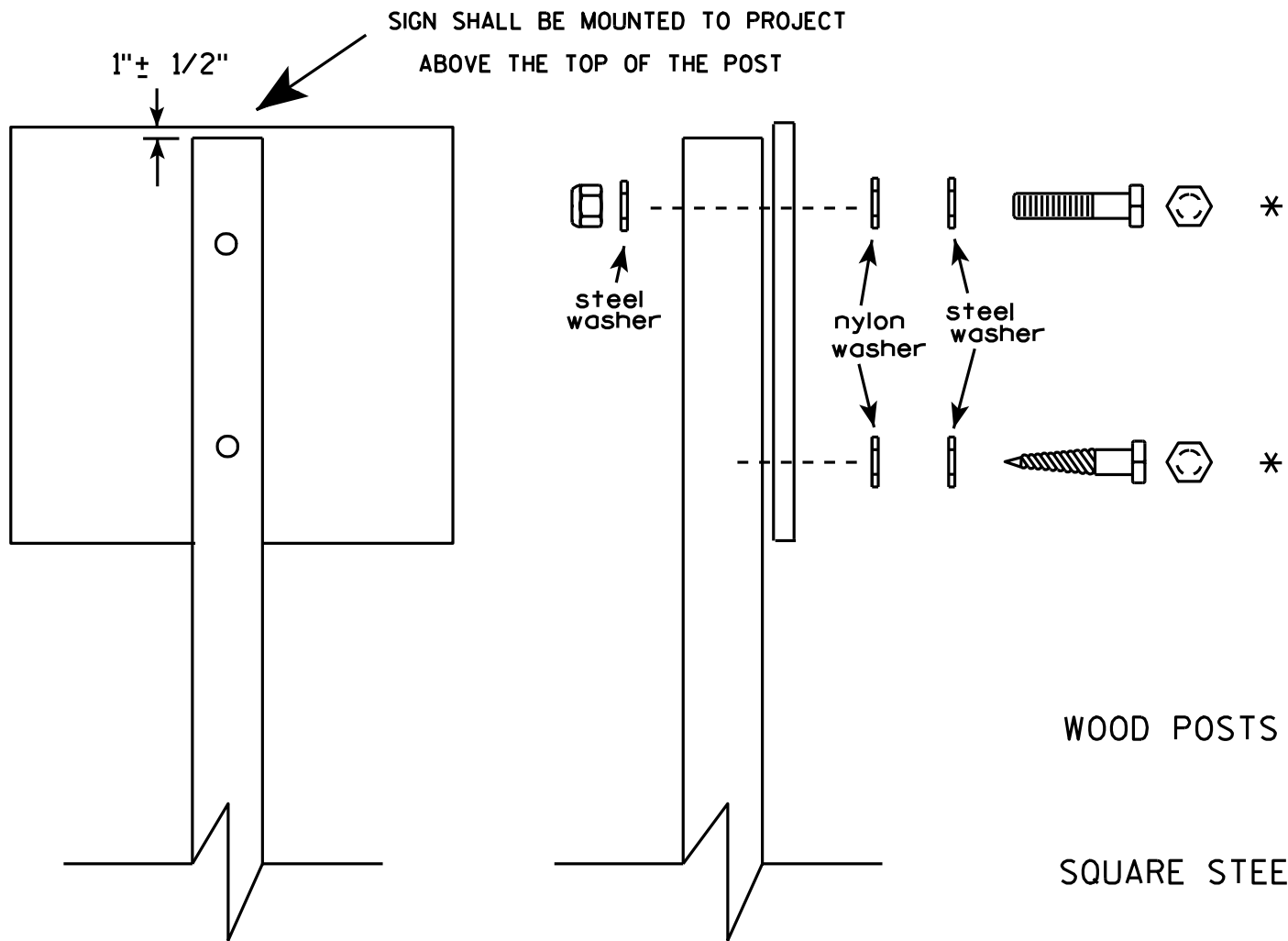
* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 7/23/15 PLATE NO. A4-3.20

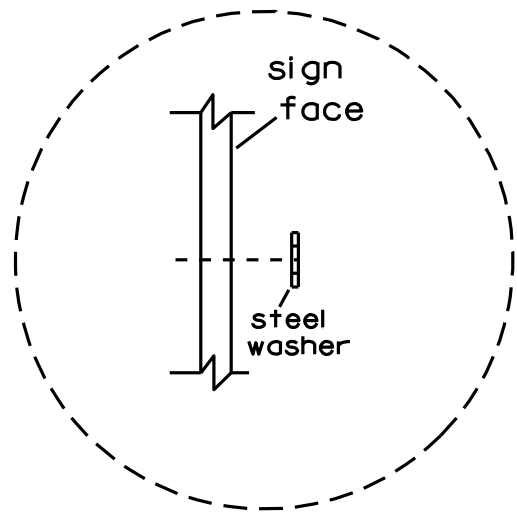


Nuts, bolts and lags used for mounting signs shall have hexagonal heads and shall be either :

- 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.

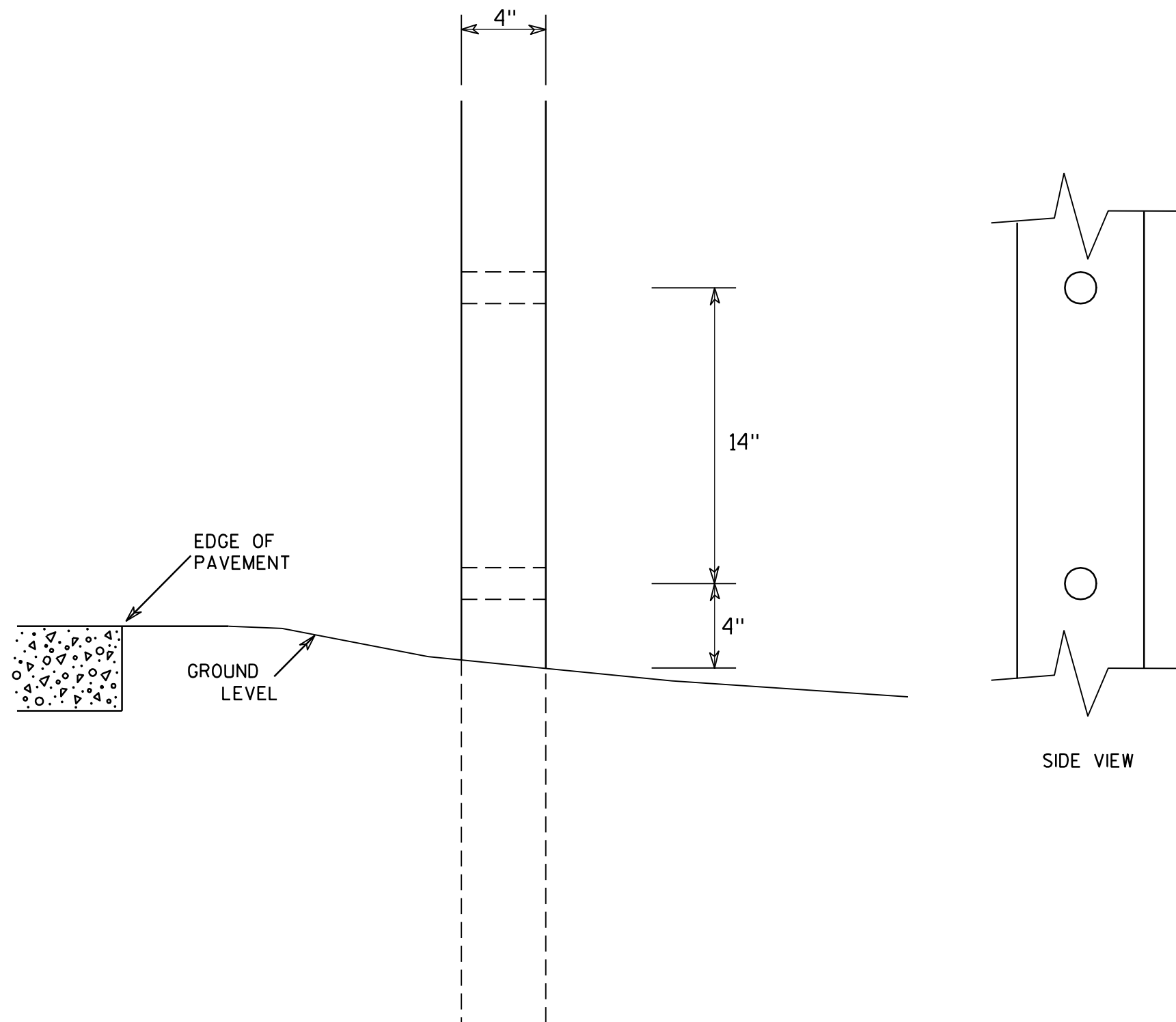


Washer Placement when Sign Has Other Than Type H or Type F Face

* 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	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 3/23/10	PLATE NO. A4-8.7

7

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

**4 X 6 WOOD POST
MODIFICATIONS**

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Chester J. Spang
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

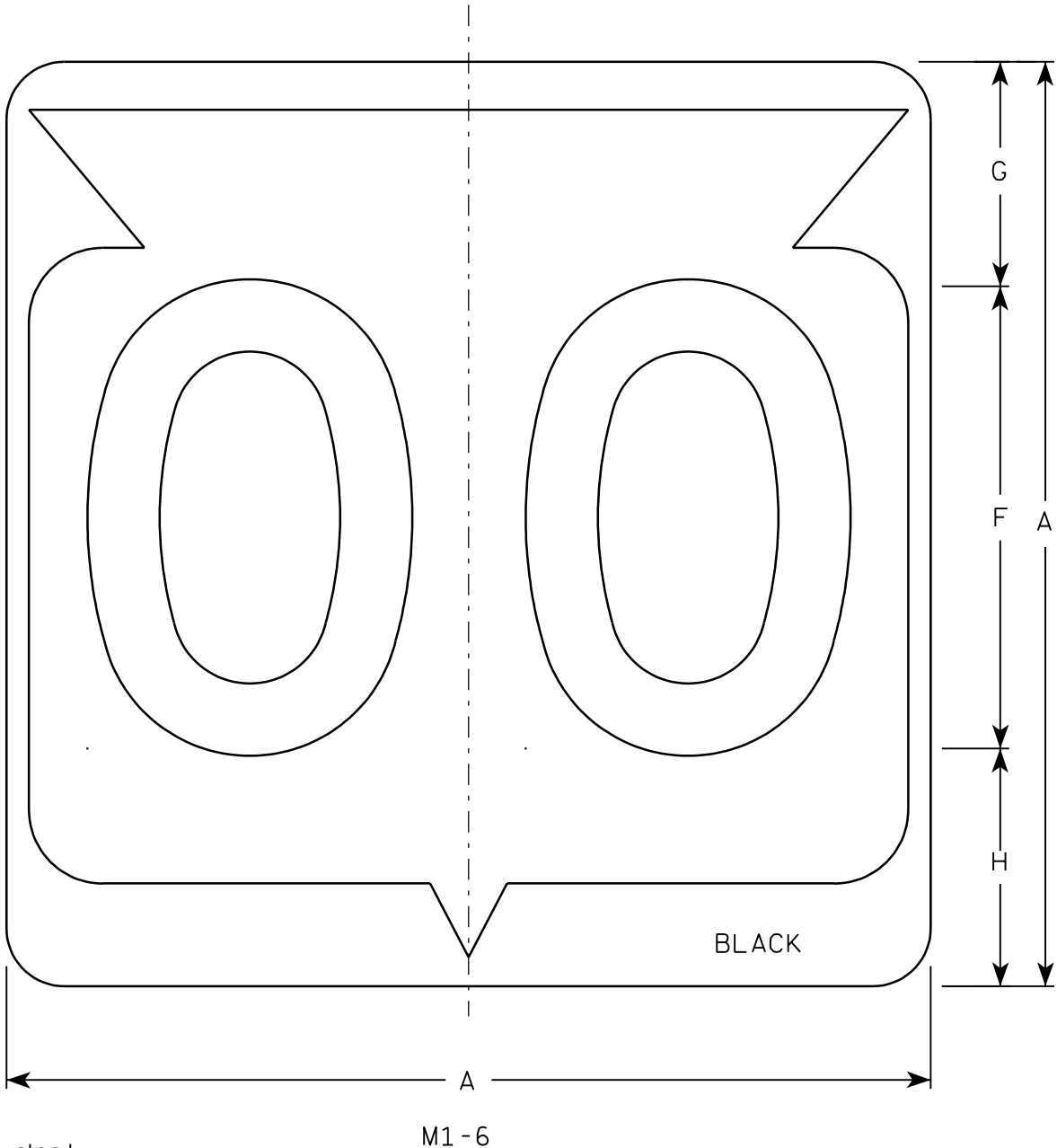
HWY:

COUNTY:

SHEET NO:

E

7



Metric equivalent
for this sign is:

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

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m ²
1																												
2	24		1 1/2			12	5 1/2	6 1/2	10 1/4	2 1/2	8 7/8	11 1/2	1	1 7/8	11 1/4	21 7/8											4.0	.36
3	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0	.81
4	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0	.81
5	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0	.81

PROJECT NO:

HWY:

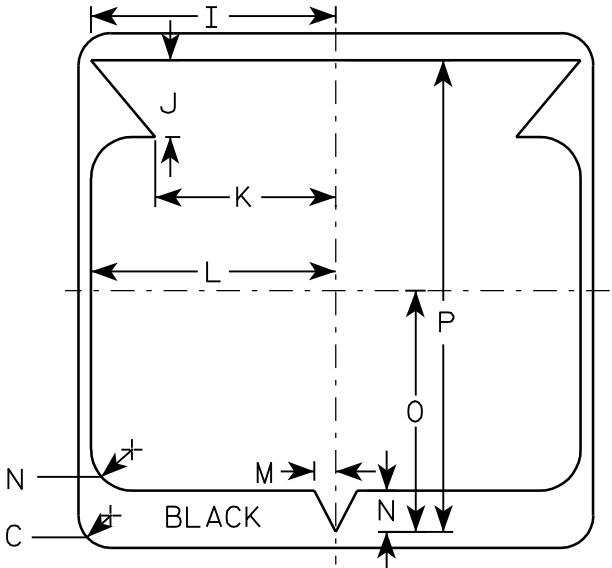
COUNTY:

SHEET NO:

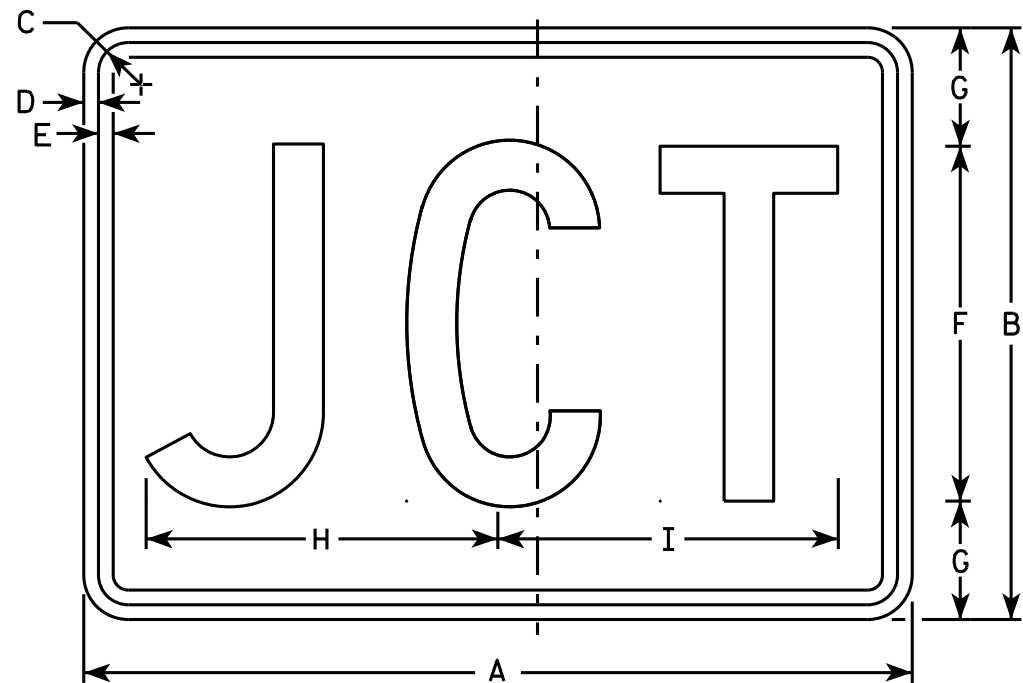
E

NOTES

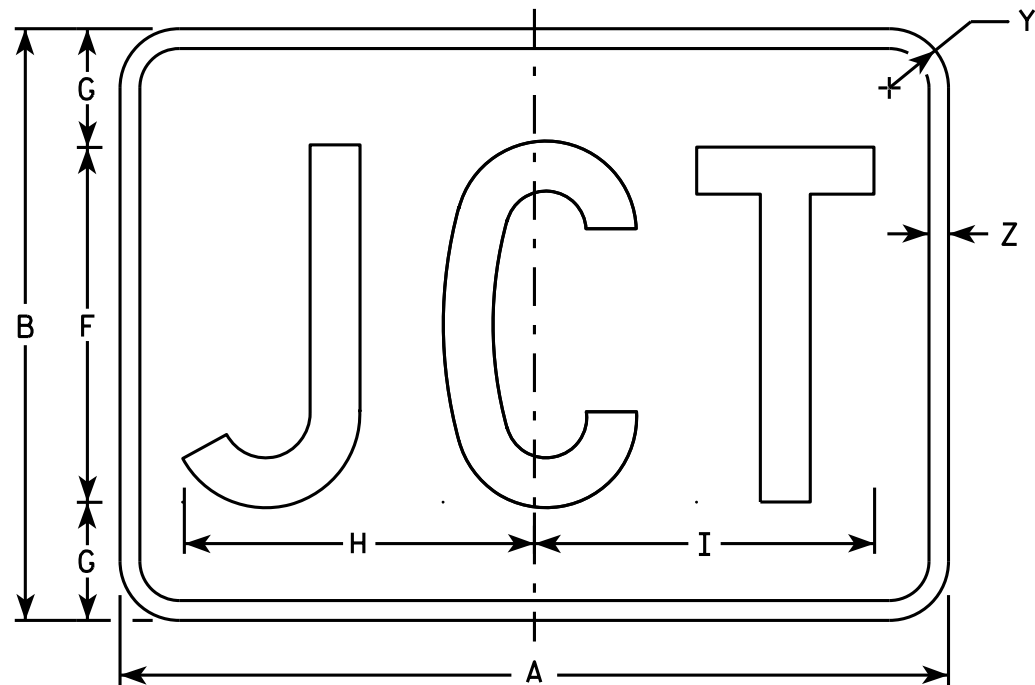
- Sign is Type II - See Note 6 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- Color:
Background - White & Black - See Note 6
Message - Black
- Message Series - See note 5
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- Substitute appropriate Series numerals and adjust spacing as per plate A10-1.
- Permanent Signs
Background - Type H Reflective
Detour or temporary Signs
Background - Reflective



7



M2-1
MM2-1
MP2-1



MB2-1
MK2-1
MN2-1
MR2-1

NOTES

1. Sign is Type II - Type H
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. M2-1 Background - White
Message - Black
MB2-1 Background - Blue
Message - White
MK2-1 Background - Green
Message - White
MM2-1 Background - White
Message - Green
MN2-1 Background - Brown
Message - White
MP2-1 Background - White
Message - Blue
MR2-1 Background - Brown
Message - Yellow

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	O	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	21	15	1 1/8	3/8	3/8	9	3	8 7/8	8 5/8																1 1/2	1/2	2.20
3	30	21	1 1/8	3/8	3/8	13	4	12 7/8	12 3/8																1 1/2	1/2	4.40
4	30	21	1 1/8	3/8	3/8	13	4	12 7/8	12 3/8																1 1/2	1/2	4.40
5	30	21	1 1/8	3/8	3/8	13	4	12 7/8	12 3/8																1 1/2	1/2	4.40

PROJECT NO:	HWY:	COUNTY:	SHEET NO: E	
-------------	------	---------	-------------	--

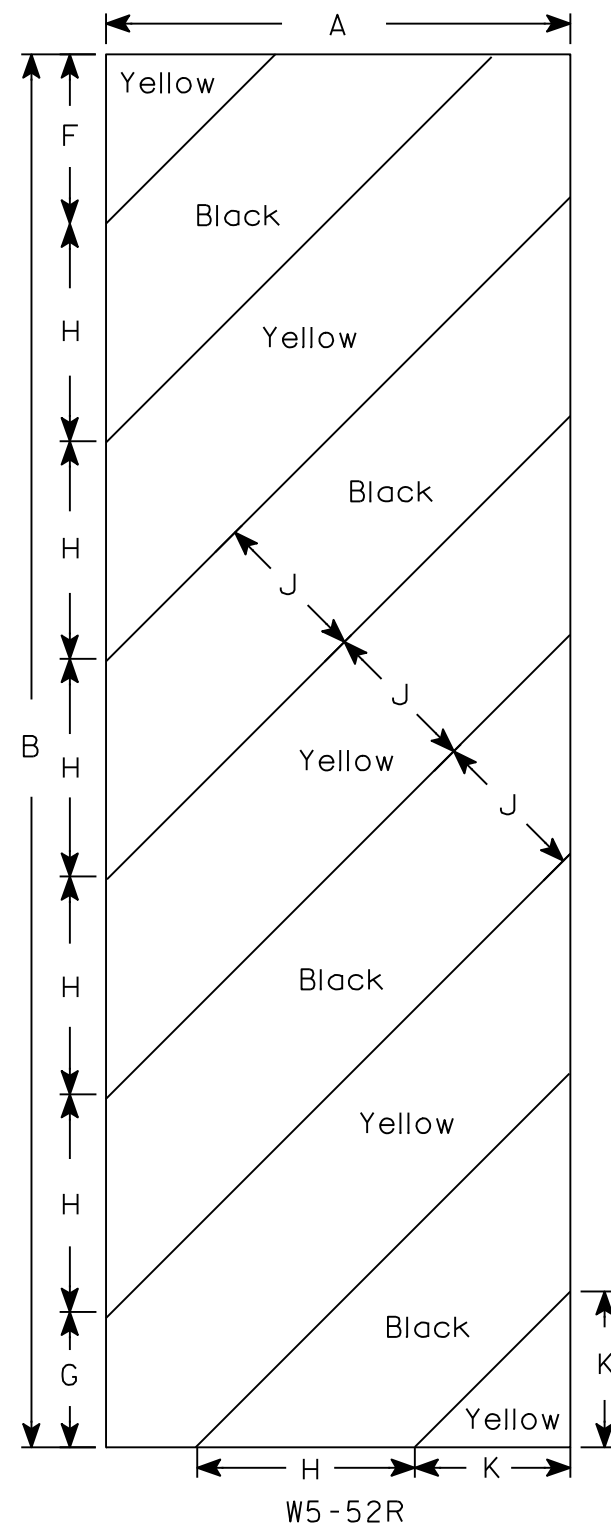
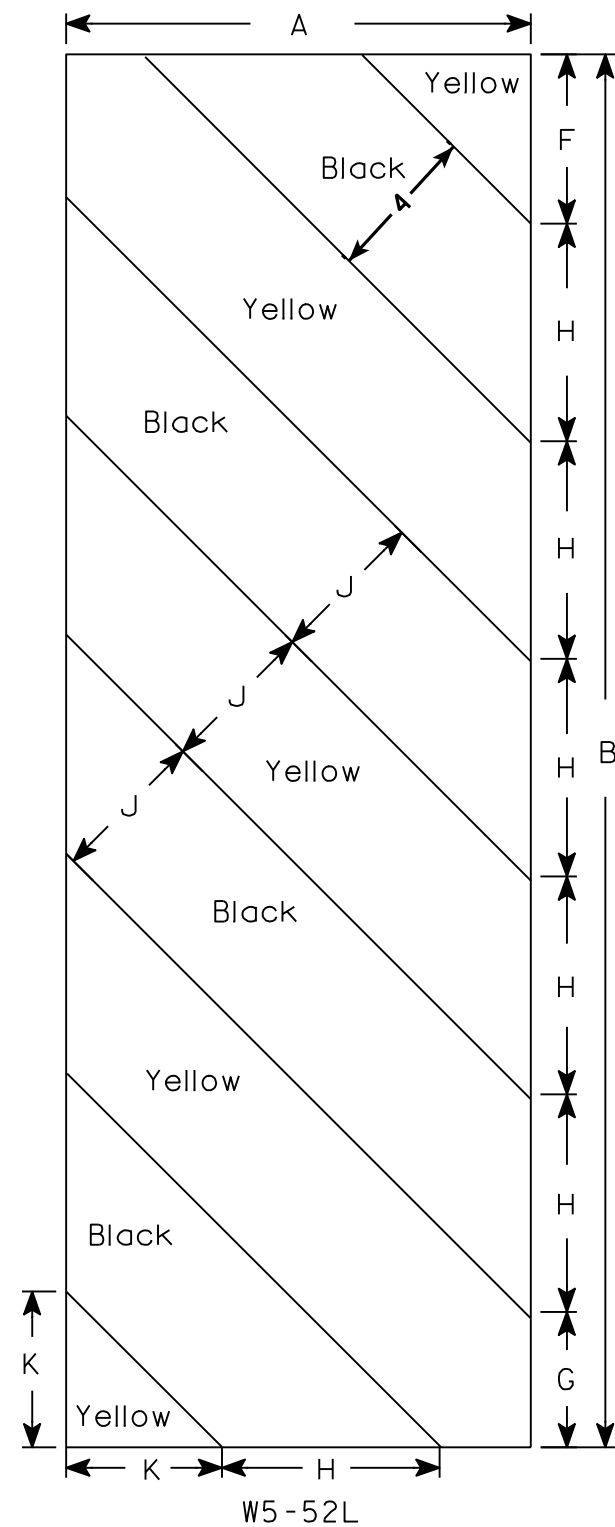
STANDARD SIGN

M2 - 1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Raush*
for State Traffic Engineer

DATE 10/15/15 PLATE NO. M2-1.12



NOTES

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

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 5/29/12 PLATE NO. W5-52.9

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E

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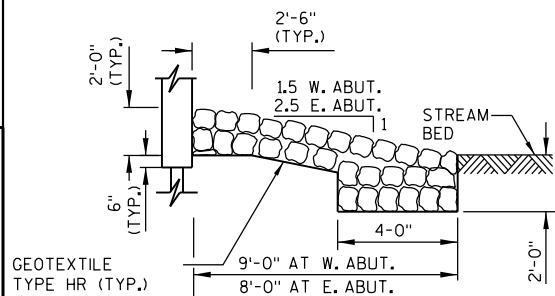
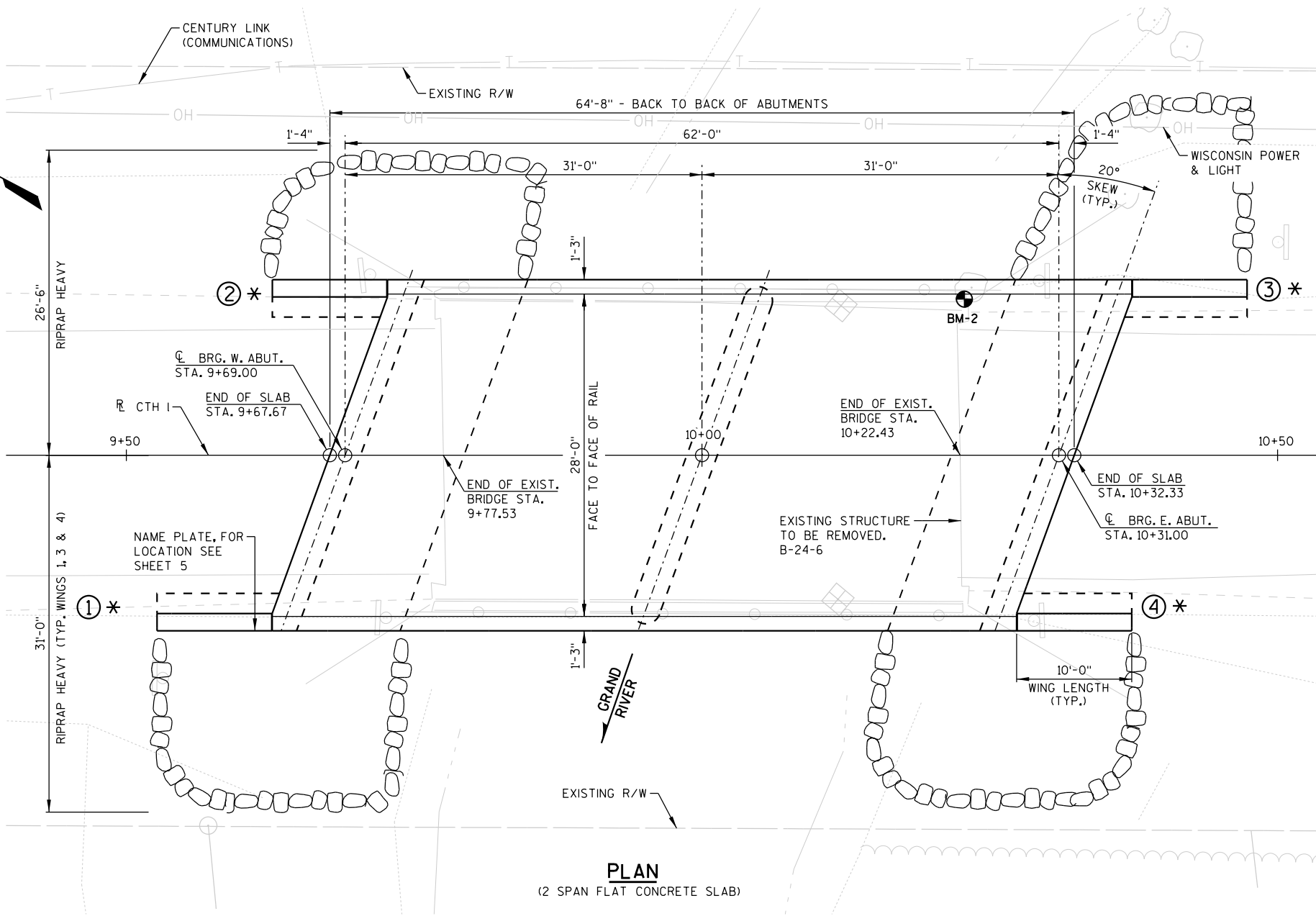
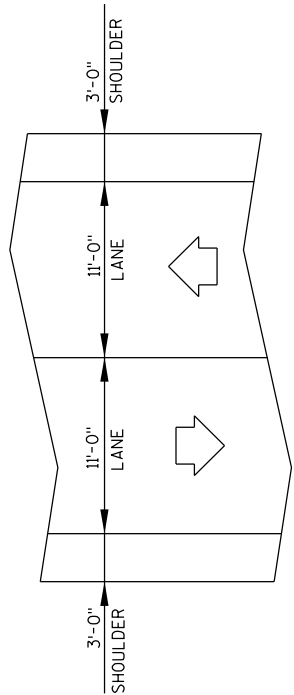
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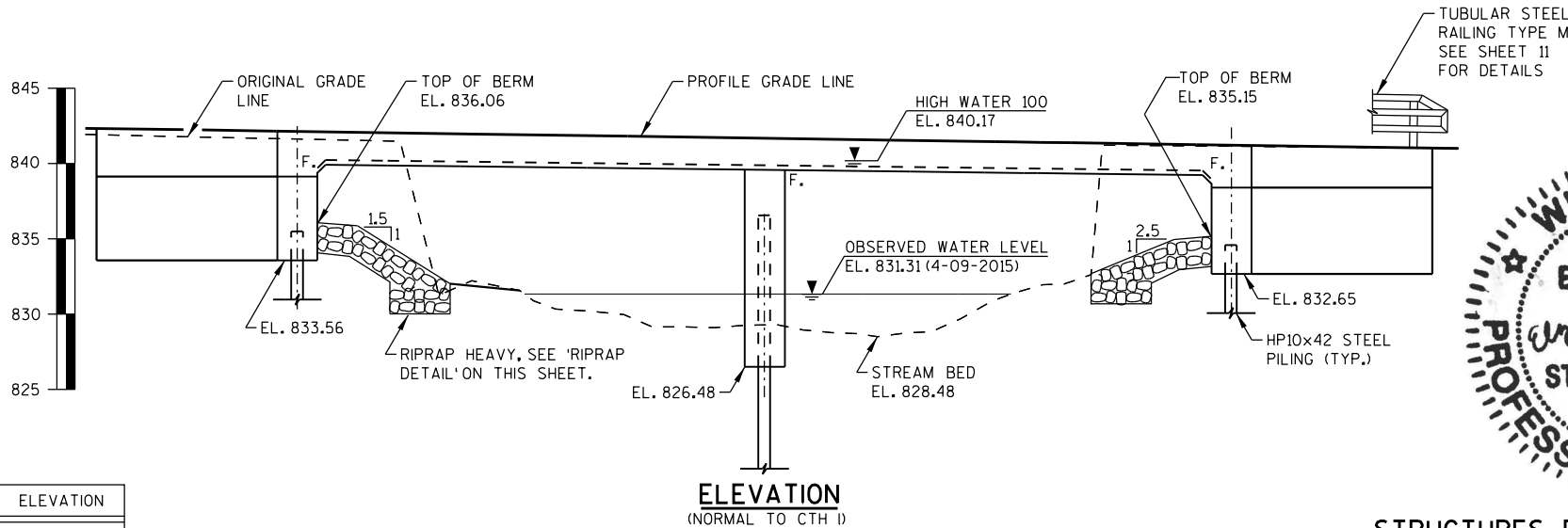
BATCH PRINT SHEET 1 OF 1

* PROVIDE FOR THREE BEAM GUARDRAIL ATTACHMENT.

① INDICATES WING NUMBER



RIPRAP DETAIL



BENCH MARK TABLE

NO.	STATION	DESCRIPTION	ELEVATION
1	10+91.56	MAGNAIL IN PP 14-12-12 20/6 EAST SIDE CTH 1 50'± SOUTH OF BRIDGE	835.24
2	10.24+32	CHISELED SQUARE ON SE ABUTMENT CORNER OF BRIDGE OVER GRAND RIVER	841.98
3	8+89.72	MAGNAIL IN PP 14-12-12 18/7 EAST SIDE CTH 1, 75'± N. OF BRIDGE	841.88

COORDINATES TIED TO GREEN LAKE COUNTY COORDINATES SYS.
NAD 2011 CHECKED TO GREEN LAKE WEST GPS VERT. NAVD 88.

STATE PROJECT NUMBER

6598-00-70

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93
INVENTORY RATING FACTOR = 1.08
OPERATIONAL RATING FACTOR = 1.40
MAXIMUM STANDARD PERMIT VEHICLE LOAD = 250 KIPS

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 PSF.

MATERIAL PROPERTIES

CONCRETE MASONRY - SLAB $f'c = 4,000$ P.S.I.
- ALL OTHER $f'c = 3,500$ P.S.I.

BAR STEEL REINFORCEMENT, GRADE 60 $f_y = 60,000$ P.S.I.

FOUNDATION DATA

ABUTMENTS TO BE SUPPORTED ON HP10x42 STEEL PILING. PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 180 TONS** PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED 25'-0" LONG FOR THE WEST ABUTMENT, 30'-0" LONG FOR THE PIER AND 25'-0" LONG FOR THE EAST ABUTMENT. PILE POINTS ARE REQUIRED.

** 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 THE MODIFIED GATE DYNAMIC FORMULA TO DETERMINE DRIVEN PILE CAPACITY.

TRAFFIC VOLUME

CTH 1
A.D.T. (2017) = 110
A.D.T. (2037) = 130
DESIGN SPEED = 40 MPH

HYDRAULIC DATA

100 YEAR FREQUENCY

Q100 $\frac{cfs}{ft}$ 3100 CFS
VELOCITY $\frac{ft}{sec}$ 4.7 FPS
HIGH WATER ELEVATION 840.17±
WATERWAY AREA 461.5 SQ. FT.
DRAINAGE AREA 59.1 SQ. MI.
SCOUR CRITICAL CODE 5

OVERTOPPING FLOOD

OVERTOPPING FREQUENCY 13 YRS.
OVERTOPPING ELEV. 838.7'
OVERTOPPING DISCHARGE 1975 CFS

2 YEAR FREQUENCY

Q2 $\frac{cfs}{ft}$ 940 CFS
HIGH WATER 2 ELEVATION 836.75±

LIST OF DRAWINGS

- GENERAL PLAN
- TYPICAL SECTION & QUANTITIES
- SUBSURFACE EXPLORATION
- ABUTMENTS
- WINGS 1 & 2
- WINGS 3 & 4
- ABUTMENT DETAILS
- PIER
- SUPERSTRUCTURE
- SUPERSTRUCTURE DETAILS
- TUBULAR STEEL RAILING TYPE M

UTILITIES

CENTURY LINK (TELEPHONE & FIBER OPTIC)
ATTN: TIM KROEZE
tim.kroeze@centurylink.com
(OFFICE) 920-326-2224

WISCONSIN POWER & LIGHT (ELECTRIC)
ATTN: TOM WALTERS
(OFFICE) 920-748-4013
(MOBILE) 920-948-1406
TomWalters@alliantenergy.com



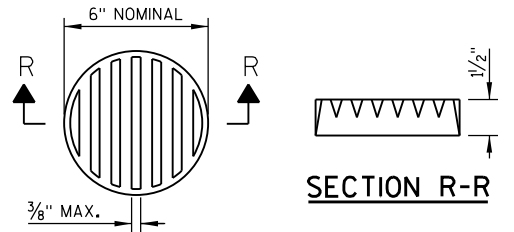
STRUCTURES DESIGN CONTACTS

BRIDGE OFFICE:
BILL DREHER (608) 266-8489

CONSULTANT:
BETH NEMEC (715) 342-3069

AECOM PROJECT No. 60341663

NO.	DATE	REVISION	BY
AECOM			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
ACCEPTED	<i>William C. Dreher</i>	SDR	11/17/16
CHIEF STRUCTURES DESIGN ENGINEER DATE			
STRUCTURE B-24-43			
CTH 1 OVER GRAND RIVER			
COUNTY	GREEN LAKE	TOWN/CITY/VILLAGE	MANCHESTER
DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS			
DESIGNED BY	EAN	DESIGN CK'D.	KRH
DRAWN BY	KAM	PLANS CK'D.	EAN
GENERAL PLAN			SHEET 1 OF 11



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 INCLUDED IN THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

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

DRAWINGS SHALL NOT BE SCALED.

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

FILLER SHALL CONFORM TO THE REQUIREMENTS OF A.A.S.H.T.O. DESIGNATION M153, TYPES I, II OR III, OR M213.

THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH RIPRAP HEAVY AND GEOTEXTILE FABRIC TYPE 'HR' WITHIN THE LIMITS SHOWN ON SHEET 1, ON THE ABUTMENT SHEETS OR AS DIRECTED BY THE ENGINEER.

THE FIRST DIGIT OF A THREE DIGIT BAR MARK AND THE FIRST TWO DIGITS OF A FOUR DIGIT BAR MARK SIGNIFIES THE BAR SIZE.

THE EXISTING STRUCTURE (B-24-6) IS A SINGLE SPAN STEEL GIRDER BRIDGE, 44.5' LONG X 28.5' WIDE, TO BE REMOVED.

AT THE BACKFACE OF ABUTMENTS ALL VOLUME WHICH CANNOT BE PLACED BEFORE ABUTMENT CONSTRUCTION AND IS NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL.

ALL REQUIRED REMOVAL OF THE EXISTING SUBSTRUCTURES IS INCLUDED IN THE BID ITEM "REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS, STATION 10+00."

SLAB FALSEWORK SHALL BE SUPPORTED ON PILES OR THE SUBSTRUCTURE UNLESS AN ALTERNATIVE METHOD IS APPROVED BY THE ENGINEER.

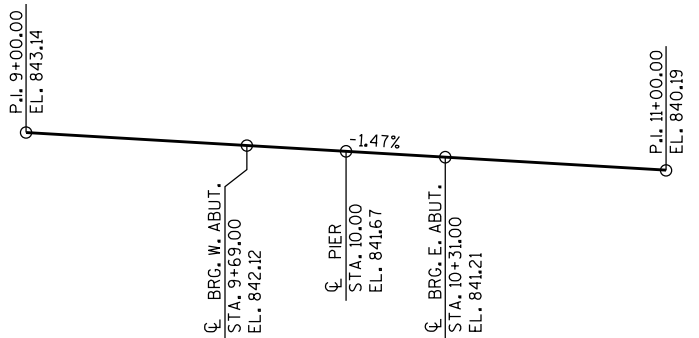
THE EXISTING GROUNDLINE SHALL BE THE UPPER LIMITS OF EXCAVATION FOR STRUCTURES.

EXCAVATION REQUIRED UNDER THE BID ITEM "EXCAVATION FOR STRUCTURES
BRIDGES B-24-43" IS NOT USED TO BALANCE THE EARTHWORK.

THE EXISTING STREAM BED SHALL BE USED AS THE UPPER LIMITS OF EXCAVATION AT THE PIERS.

THE QUANTITY FOR BACKFILL STRUCTURE, BID ITEM 210.1500, IS CALCULATED IN ACCORDANCE WITH SECTION 12.6.2 OF THE WISCONSIN DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL.

LOOKING EAST



TOTAL ESTIMATED QUANTITIES

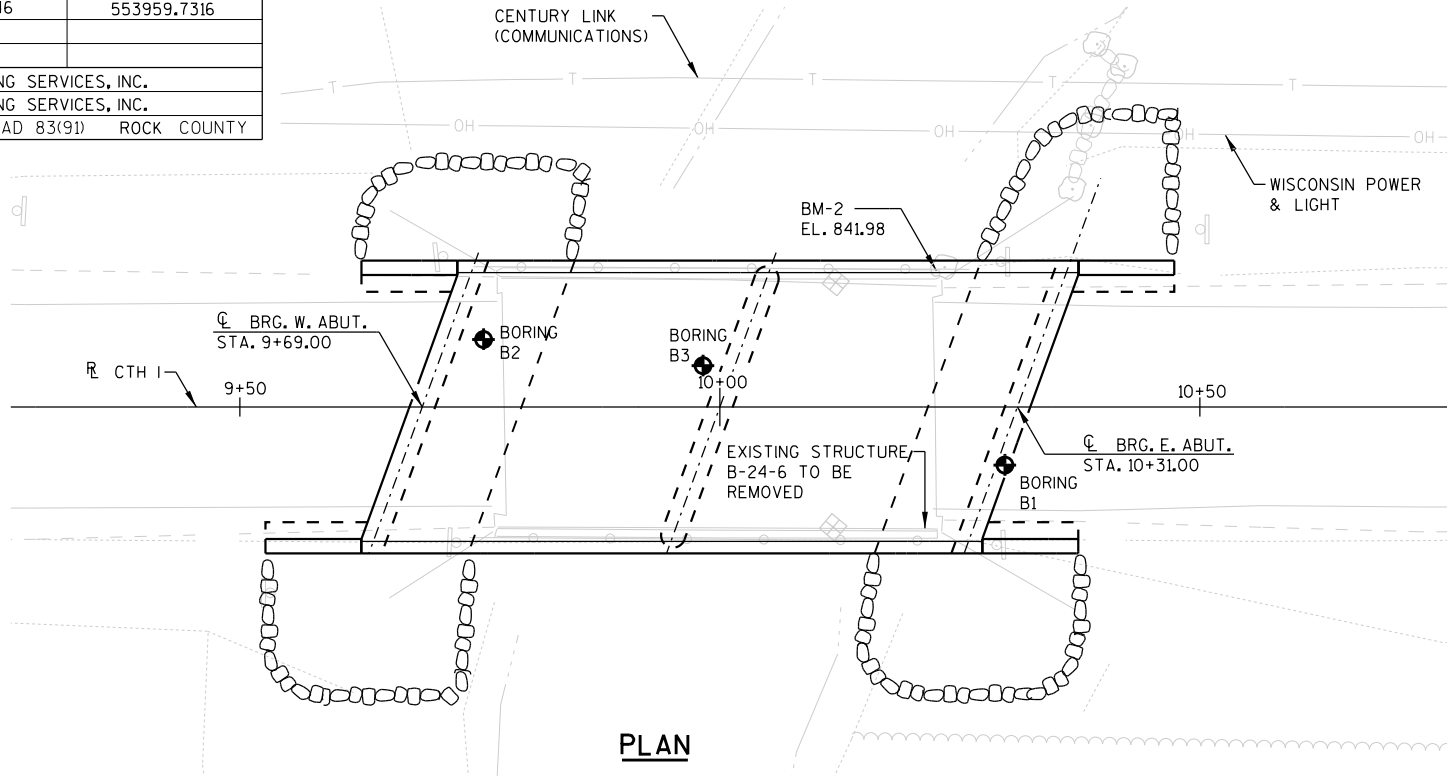
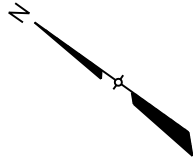
BID ITEM NUMBER	BID ITEM	UNIT	WEST ABUTMENT	PIER	EAST ABUTMENT	SUPER.	TOTALS
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MIN. DEBRIS STA. 10+00	LS					1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-24-43	LS					1
210.1500	BACKFILL STRUCTURE TYPE A	TON	220		220		440
502.0100	CONCRETE MASONRY BRIDGES	CY	36	39	36	109	220
502.3200	PROTECTIVE SURFACE TREATMENT	SY	10		10	255	275
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	2,080	2,000	2,080		6,160
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1,435	70	1,435	24,960	27,900
513.4061	RAILING TUBULAR TYPE M B-24-43	LF				174	174
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	9		9		18
550.0500	PILE POINTS	EACH	5	7	5		17
550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	125	210	125		460
606.0300	RIPRAP HEAVY	CY	80		80		160
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	65		65		130
645.0120	GEOTEXTILE TYPE HR	SY	150		150		300
	NON-BID ITEMS						
	FILLER	SIZE					1/2" & 3/4"

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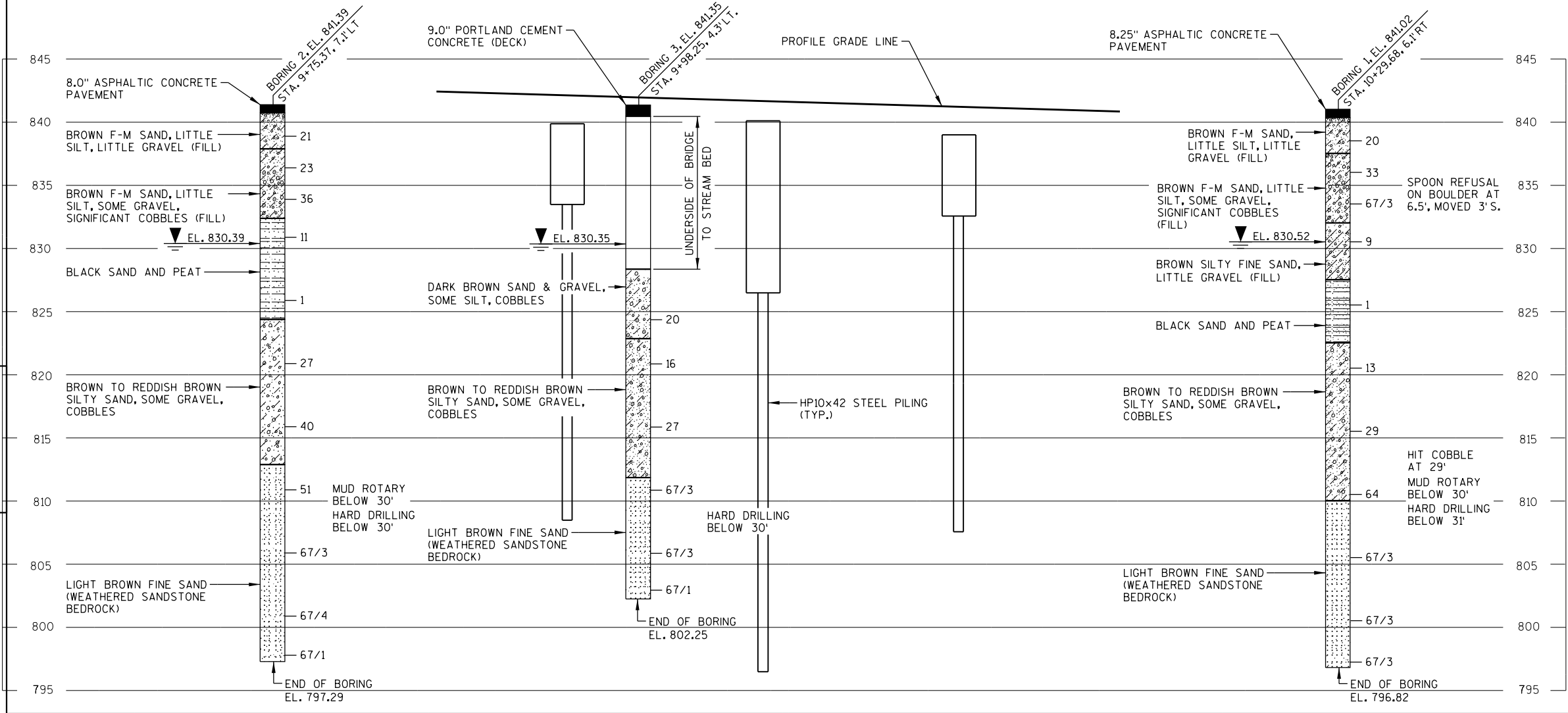
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BATCH PRINT SHEET 3 OF 11

BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
B1	MAR. 16, 2015	218285.4054	553971.9635
B2	MAR. 16, 2015	218335.4634	553947.1715
B3	MAR. 17, 2015	218316.1646	553959.7316
BORINGS COMPLETED BY: NUMMELIN TESTING SERVICES, INC.			
REPORT COMPLETED BY: NUMMELIN TESTING SERVICES, INC.			
ALL COORDINATES REFERENCED TO WCCS NAD 83(91) ROCK COUNTY			



PLAN



STATE PROJECT NUMBER					
6598-00-70					
MATERIAL SYMBOLS					
	ASPHALT		TOPSOIL		PEAT
	CONCRETE		FILL		GRAVEL
	SAND		CLAY		SILT
	BOULDERS OR COBBLES		LIMESTONE		BEDROCK (UNKNOWN)
	SHALE		SANDSTONE		IGNEOUS/ META

LEGEND OF BORING	
	BORING #/EL. STA./OFF-SET
	ST
	0.25
	17
	F-C
	COBBLE OR BOULDER
	WEATHERED LIMESTONE
	CORE RUN #1 - 24'-29'
	REC=80%, ROD=72%
(1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)	
(2) UNLESS OTHERWISE, SPECIFIED THE SPT 'N' VALUE IS BASED ON AASHTO T-206, STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.	
GROUND WATER ELEVATION	
	AT TIME OF DRILLING
	END OF DRILLING
	AFTER DRILLING
ABBREVIATIONS	
F-FINE	M-MEDIUM
C-COARSE	ST-SHELBY TUBE

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

BORINGS WERE COMPLETED AT POINTS APPROXIMATELY AS INDICATED ON THIS DRAWING TO OBTAIN INFORMATION CONCERNING THE CHARACTER OF SUBSURFACE MATERIALS FOUND AT THE SITE. BECAUSE THE INVESTIGATED DEPTHS ARE LIMITED AND THE AREA OF THE BORINGS IS VERY SMALL IN RELATION TO THE ENTIRE SITE, THE WISCONSIN DEPARTMENT OF TRANSPORTATION DOES NOT WARRANT SIMILAR SUBSURFACE CONDITIONS BELOW, BETWEEN, OR BEYOND THESE BORINGS. VARIATIONS IN SOIL CONDITIONS SHOULD BE EXPECTED AND FLUCTUATIONS IN GROUNDWATER LEVELS MAY OCCUR.

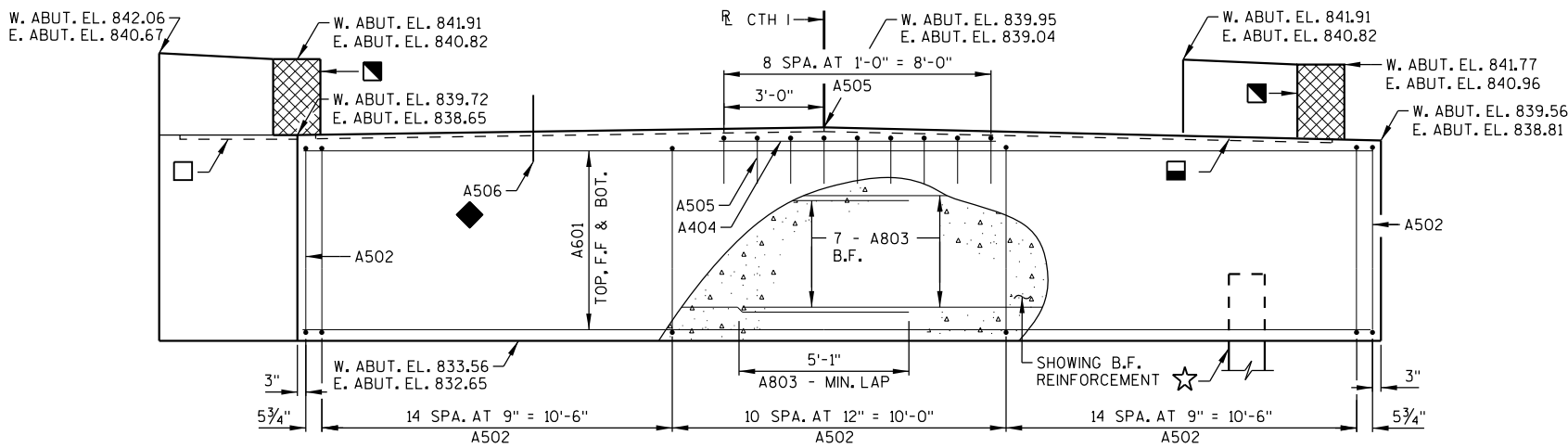
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STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-24-43			
DRAWN BY		KAM	PLANS CK'D. EAN
SUBSURFACE EXPLORATION		SHEET 3 OF 11	

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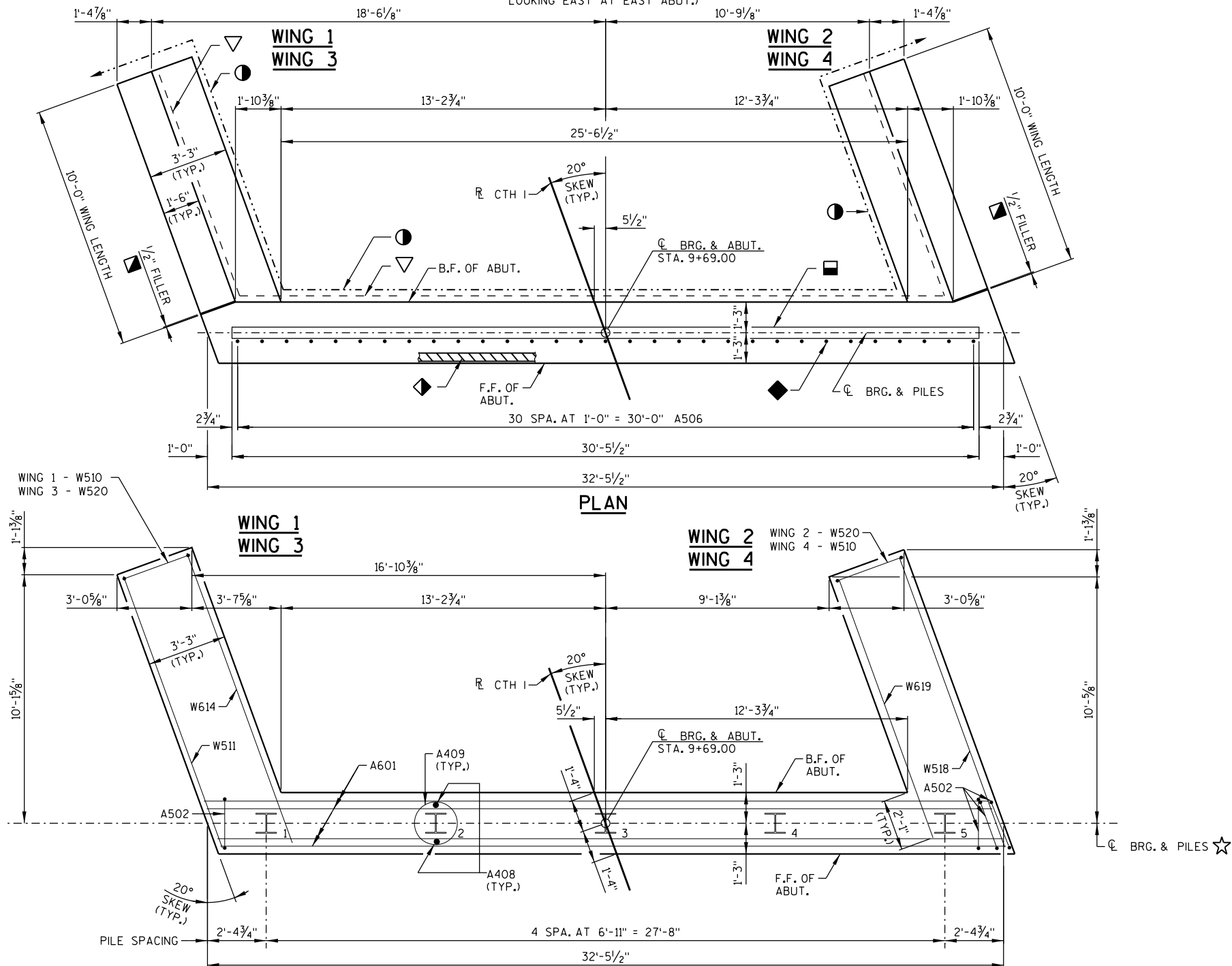
BATCH PRINT SHEET 4 OF 11

8



ELEVATION

(LOOKING WEST AT WEST ABUT.
LOOKING EAST AT EAST ABUT.)



PILE PLAN

NOTES

ELEVATIONS AND DIMENSIONS ARE GIVEN AT THE ϕ OF ABUTMENT. FOR WING DETAILS AND ELEVATIONS SEE SHEETS 5 & 6.

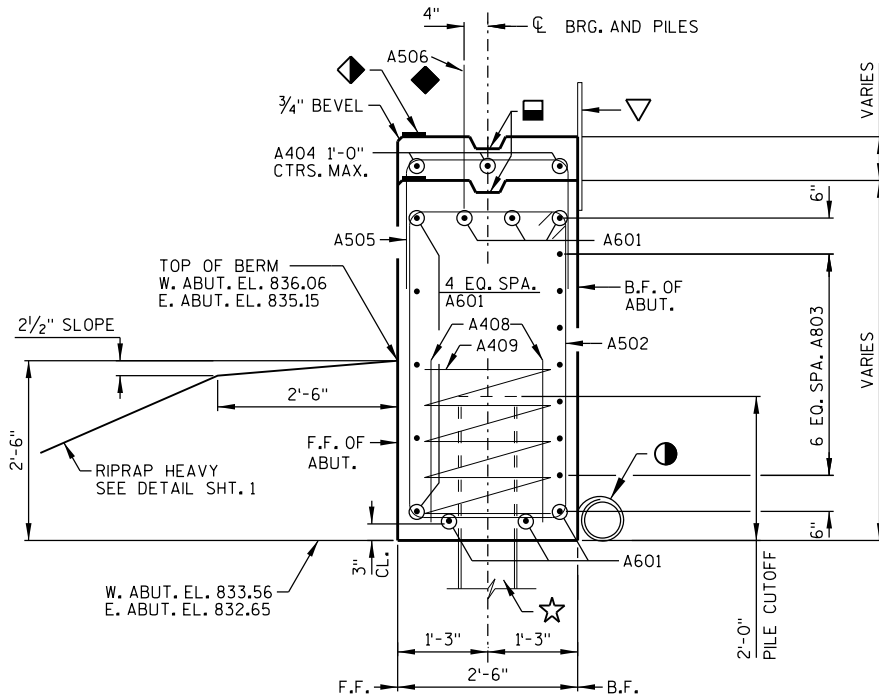
WING LENGTH INCLUDES $\frac{1}{2}$ " FILLER.

PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE TOP AND EXTERIOR EXPOSED FACE OF WINGS, AND THE END 1'-0" OF THE FRONT FACE OF ABUTMENTS.

SPACE A502 BARS TO MISS PILING.

LEGEND

- ☆ SUPPORT ABUTMENTS ON PILING STEEL HP 10-INCH x 42 LB. SEE FOUNDATION DATA ON SHEET 1 AND PILE SPLICE DETAIL ON SHEET 7.
- PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. DRAIN BOTH ABUTMENTS TO DOWNSTREAM SIDE OF BRIDGE. ATTACH RODENT SHIELD AT ENDS OF PIPE. SEE SHT. 2.
- $\frac{1}{2}$ " FILLER TO EXTEND AS SHOWN. SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF $\frac{1}{2}$ " FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD $\frac{1}{8}$ " BELOW SURFACE OF CONCRETE.)
- ◆ A506 OR P508 AT 1'-0". COATED BARS MAY BE PLACED AFTER CONCRETE HAS BEEN POURED BUT PRIOR TO ITS INITIAL SET. EMBED 1'-0".
- ▽ 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACK FACE.
- ◆ 4"x $\frac{3}{4}$ " FILLER - TO EXTEND FULL LENGTH OF ABUTMENT BODY.
- KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2"x6".
- OPTIONAL CONSTRUCTION JOINT KEYWAY FORMED BY A BEVELED 2"x6", WITH RUBBERIZED MEMBRANE WATERPROOFING ON BACKFACE.
- △ PLACE BOTTOM HALF OF RUBBERIZED MEMBRANE WATERPROOFING, HORIZONTAL IN THIS AREA.



TYPICAL SECTION THRU BODY

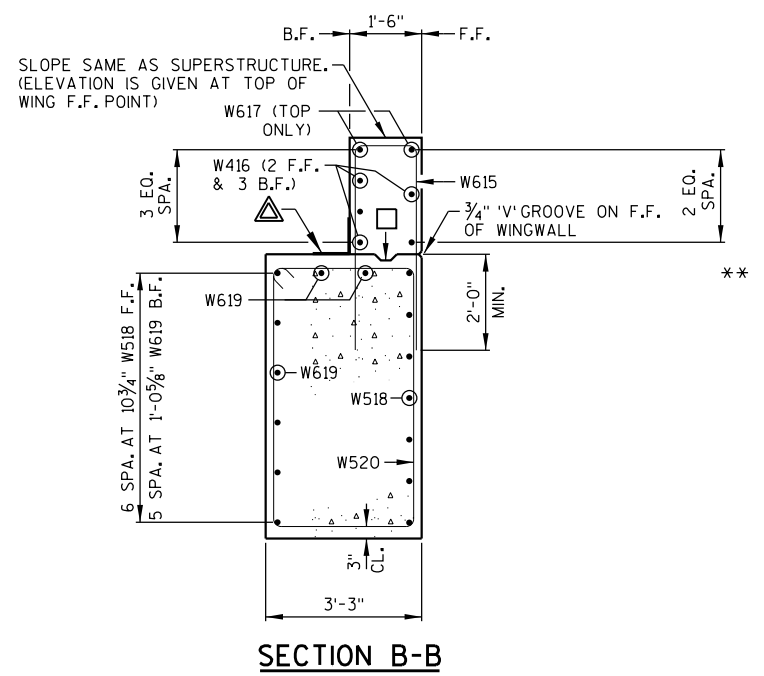
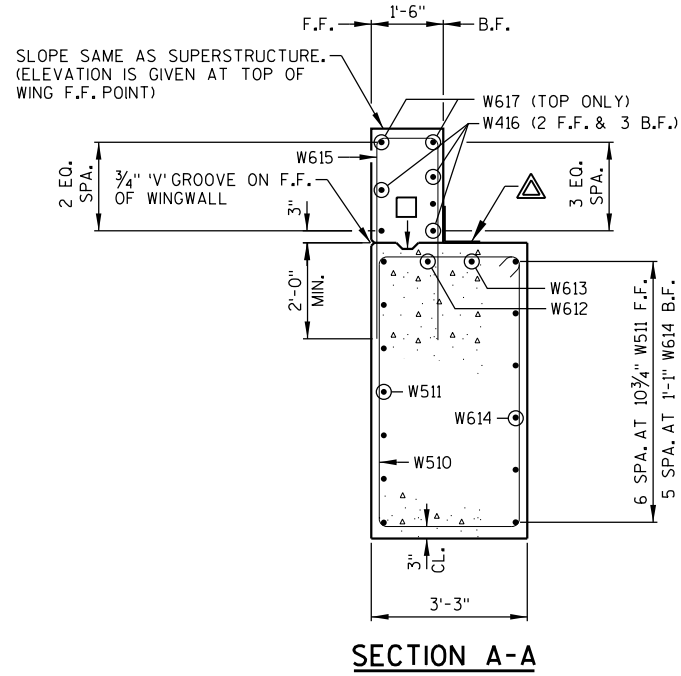
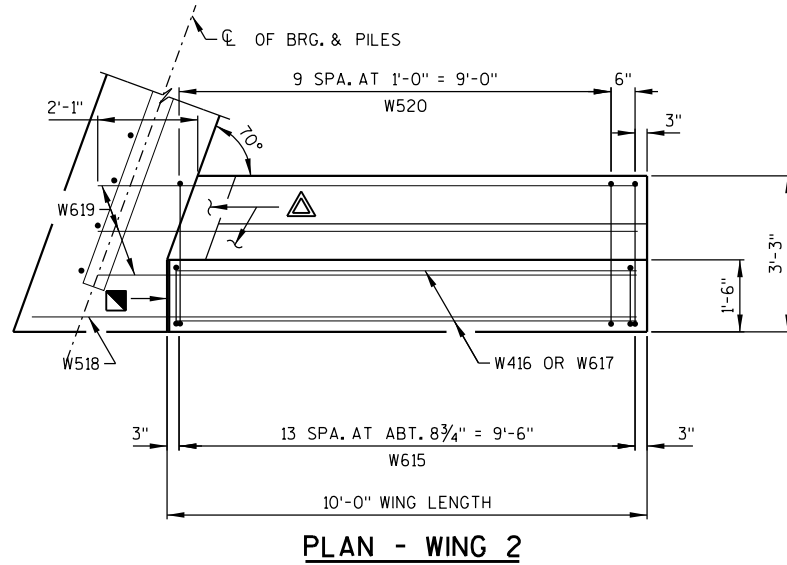
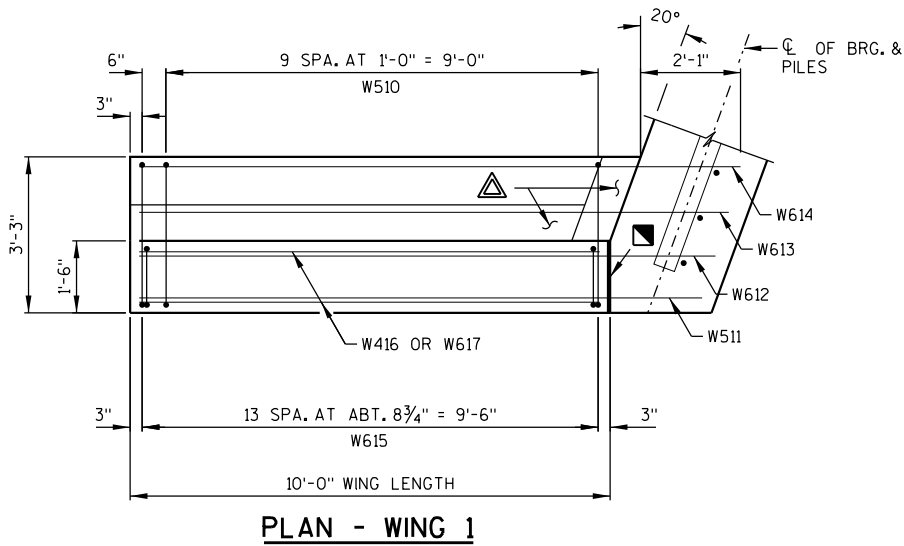
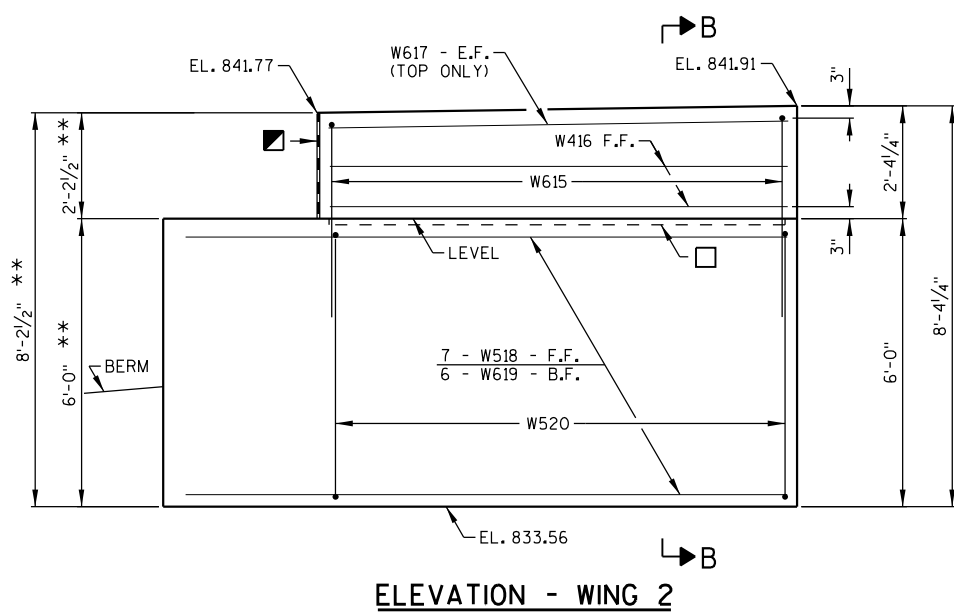
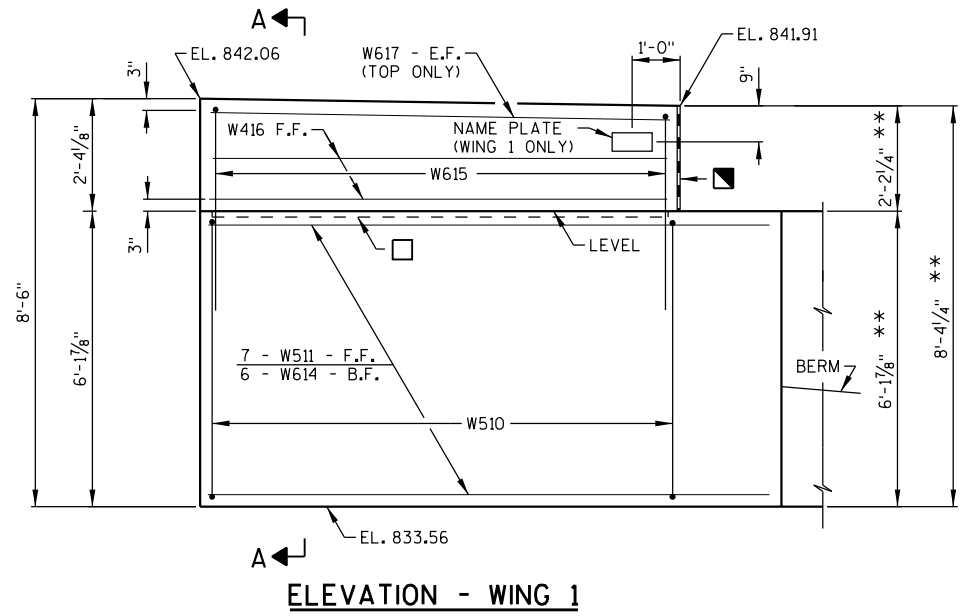
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-24-43			
DRAWN BY KAM		PLANS CK'D. EAN	
ABUTMENTS		SHEET 4 OF 11	

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BATCH PRINT SHEET 5 OF 11

8



LEGEND

** DIMENSIONS ARE GIVEN AT THE B.F. OF ABUTMENT.
FOR ADDITIONAL SYMBOL DESCRIPTIONS SEE SH. 4.

STATE PROJECT NUMBER

6598-00-70

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-24-43			
DRAWN BY		KAM	PLANS CK'D. EAN
WINGS 1 & 2		SHEET 5 OF 11	

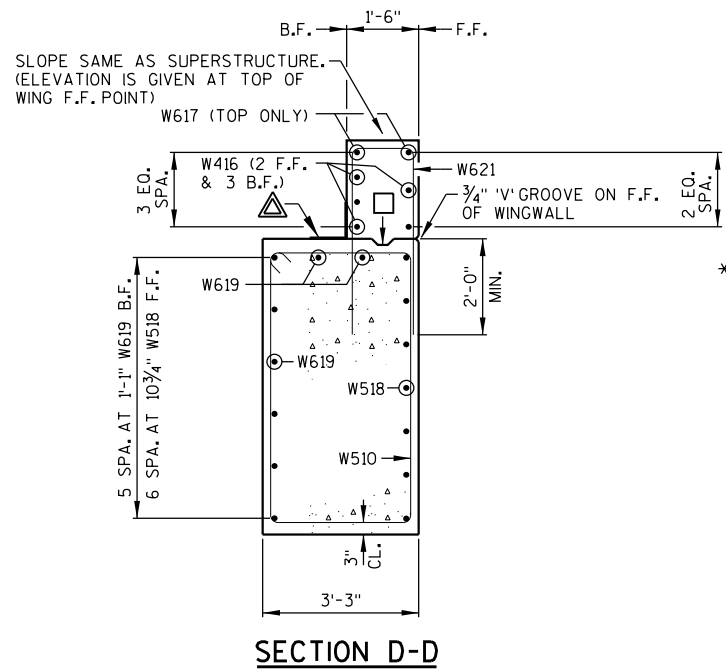
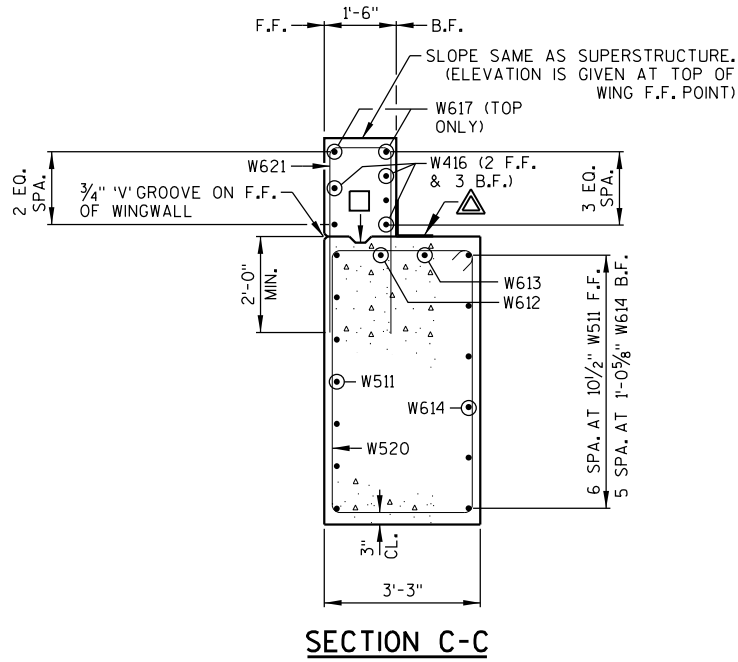
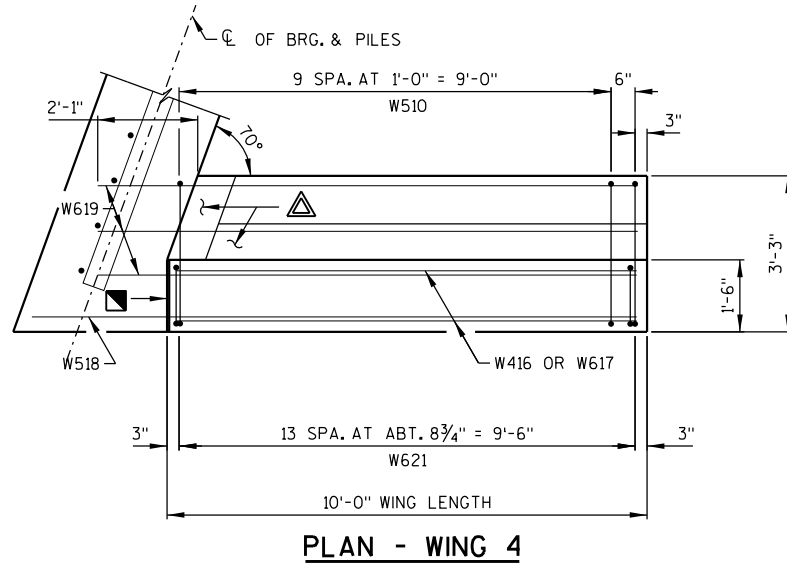
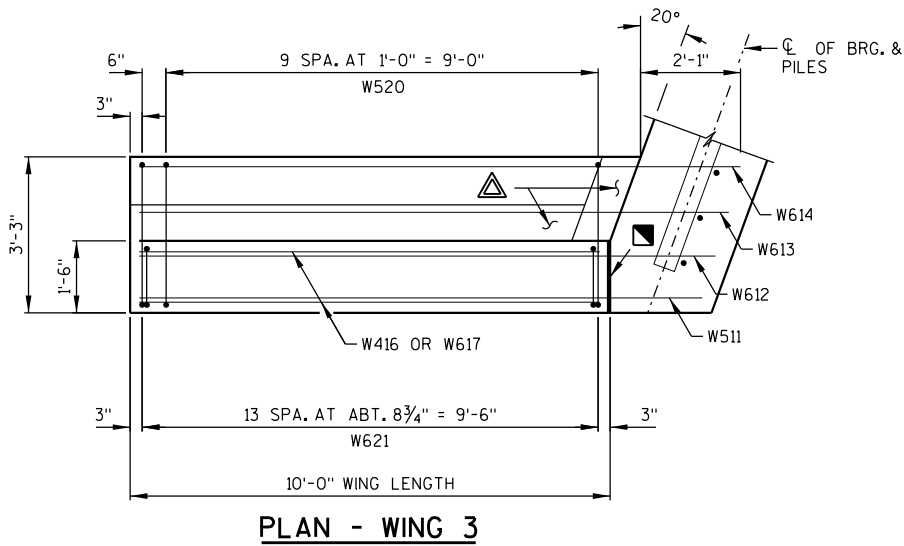
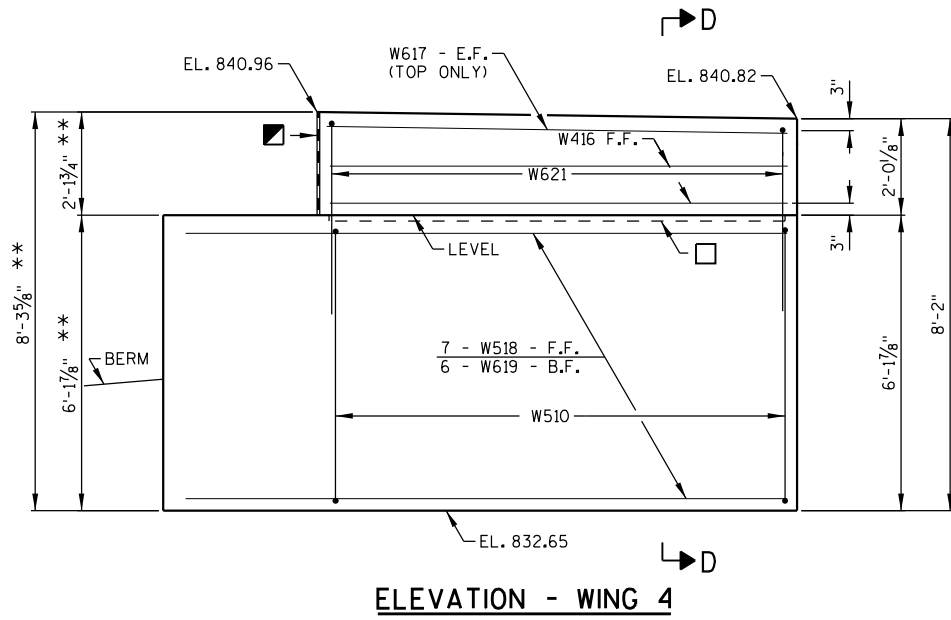
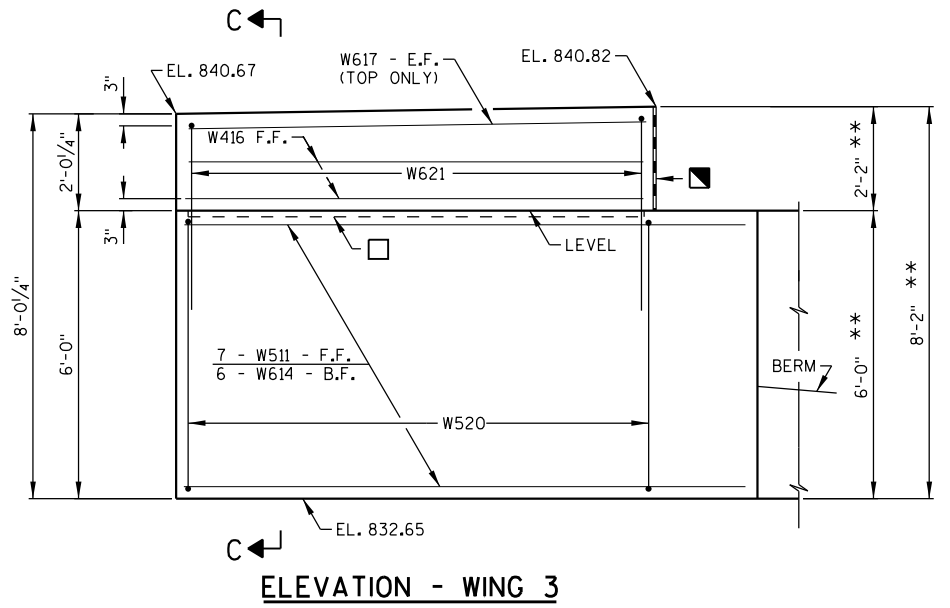
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BATCH PRINT SHEET 6 OF 11

8



LEGEND

** DIMENSIONS ARE GIVEN AT THE B.F. OF ABUTMENT.
FOR ADDITIONAL SYMBOL DESCRIPTIONS SEE SHT. 4.

STATE PROJECT NUMBER

6598-00-70

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-24-43			
DRAWN BY		KAM	PLANS CK'D. EAN
WINGS 3 & 4			SHEET 6 OF 11

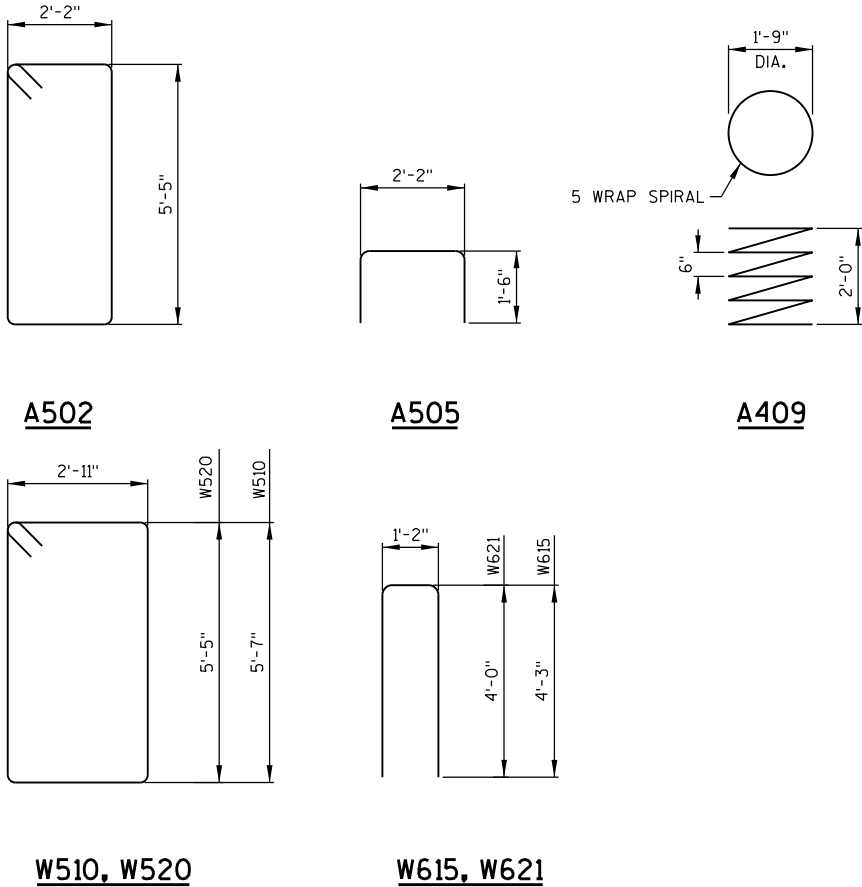
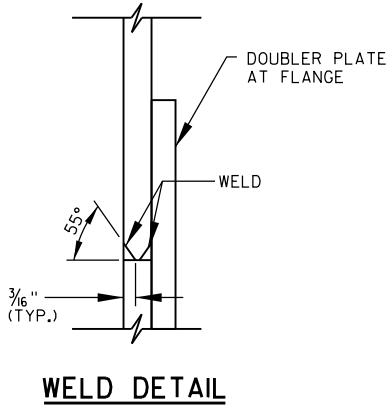
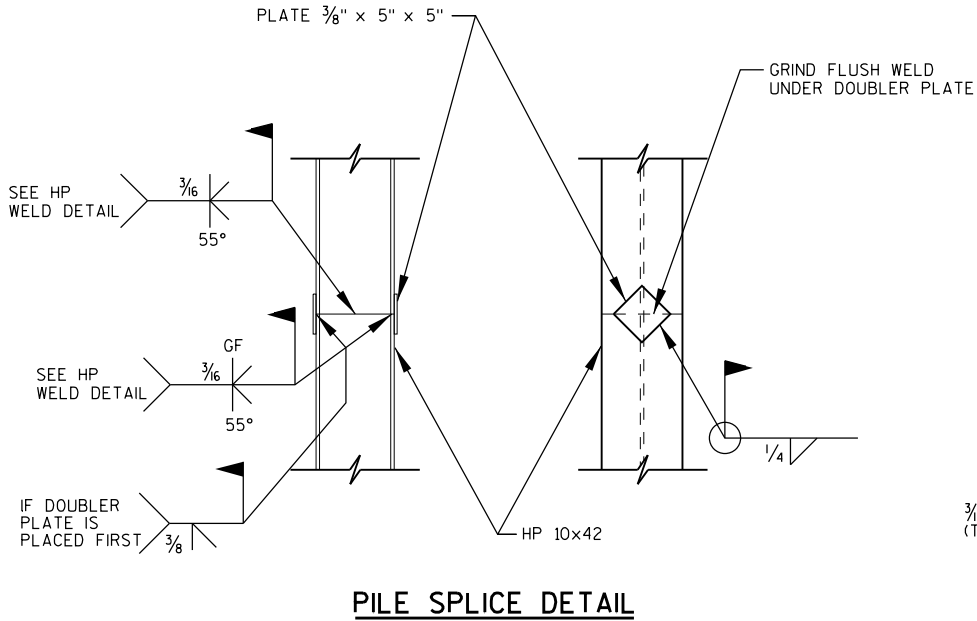
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BATCH PRINT SHEET 7 OF 11

8



BILL OF BARS

DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.
BOTH ABUTMENTS INCLUDED IN THIS BILL OF BARS.

MARK	NO. REQ'D.	LENGTH	BENT	LOCATION
NON-COATED BARS				TOTAL WEIGHT = 4,160 LBS
A601	22	32 - 1		ABUT. F.F. TOP & BOTTOM HORIZ.
A502	82	15 - 10	X	ABUT. STIRRUP VERT.
A803	28	18 - 8		ABUT. B.F. HORIZ.
A404	6	8 - 0		ABUT. TOP HORIZ.
A505	18	4 - 11	X	ABUT. TOP VERT.
A408	20	2 - 3		ABUT. DOWELS AT PILES VERT.
A409	10	28 - 0	X	ABUT. AT PILES VERT.
COATED BARS				TOTAL WEIGHT = 2,870 LBS
A506	62	2 - 0		ABUT. DOWELS VERT.
W510	22	17 - 8	X	WING 1 & 4 STIRRUP VERT.
W511	14	11 - 8		WING 1 & 3 F.F. HORIZ.
W612	2	11 - 11		WING 1 & 3 TOP HORIZ.
W613	2	12 - 2		WING 1 & 3 TOP HORIZ.
W614	12	12 - 6		WING 1 & 3 B.F. HORIZ.
W615	28	9 - 4	X	WINGS 1 & 2 VERT.
W416	20	9 - 6		WINGS 1 - 4 HORIZ.
W617	8	9 - 6		WINGS 1 - 4 TOP HORIZ.
W518	14	12 - 9		WINGS 2 & 4 F.F. HORIZ.
W619	16	11 - 3		WINGS 2 & 4 B.F., TOP HORIZ.
W520	22	17 - 4	X	WINGS 2 & 3 STIRRUP VERT.
W621	28	8 - 10	X	WINGS 3 & 4 VERT.

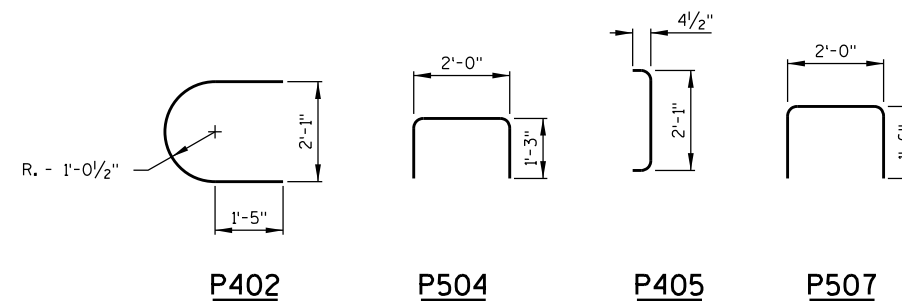
A_.07 NOT USED.

STATE PROJECT NUMBER

6598-00-70

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-24-43			
DRAWN BY KAM		PLANS CK'D. EAN	
ABUTMENT DETAILS		SHEET 7 OF 11	

8



DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.

MARK	NO. REQ'D.	LENGTH	BENT	LOCATION
NON-COATED BARS				TOTAL WEIGHT = 2,000 LBS
P401	28	28 - 6		PIER BODY
P402	28	6 - 2	X	PIER BODY AT ENDS
P503	136	7 - 4		PIER BODY
P504	15	4 - 3	X	PIER BODY AT TOP
P405	98	2 - 8	X	PIER BODY AT PILES
P406	4	8 - 0		PIER BODY AT TOP
P507	9	4 - 9	X	PIER BODY AT TOP
COATED BARS				TOTAL WEIGHT = 70 LBS
P508	30	2 - 0		PIER BODY - DOWELS

FOR SYMBOL DESCRIPTIONS SEE SHT. 4

EXCAVATE TO EL. 826.48 BEFORE DRIVING
PILING. EXCAVATION IS INCIDENTAL TO BID ITEM
"EXCAVATION FOR STRUCTURES B-24-43"

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-24-43			
		DRAWN BY	KAM
		PLANS C'D.	EAN
PIER		SHEET 8 OF 11	

NOTES

ALL SLAB THICKNESS DIMENSIONS ARE MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).

CAMBER SPAN AS SHOWN TO PROVIDE FOR DEADLOAD DEFLECTION AND FUTURE CREEP. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT.

TOP TRANSVERSE BARS IN SLAB SHALL BE SUPPORTED BY INDIVIDUAL BAR CHAIRS AT APPROXIMATELY 3'-0" CENTERS EACH WAY. BOTTOM LONGITUDINAL BARS SHALL BE SUPPORTED BY CONTINUOUS BAR CHAIRS AT APPROXIMATELY 4'-0" CENTERS.

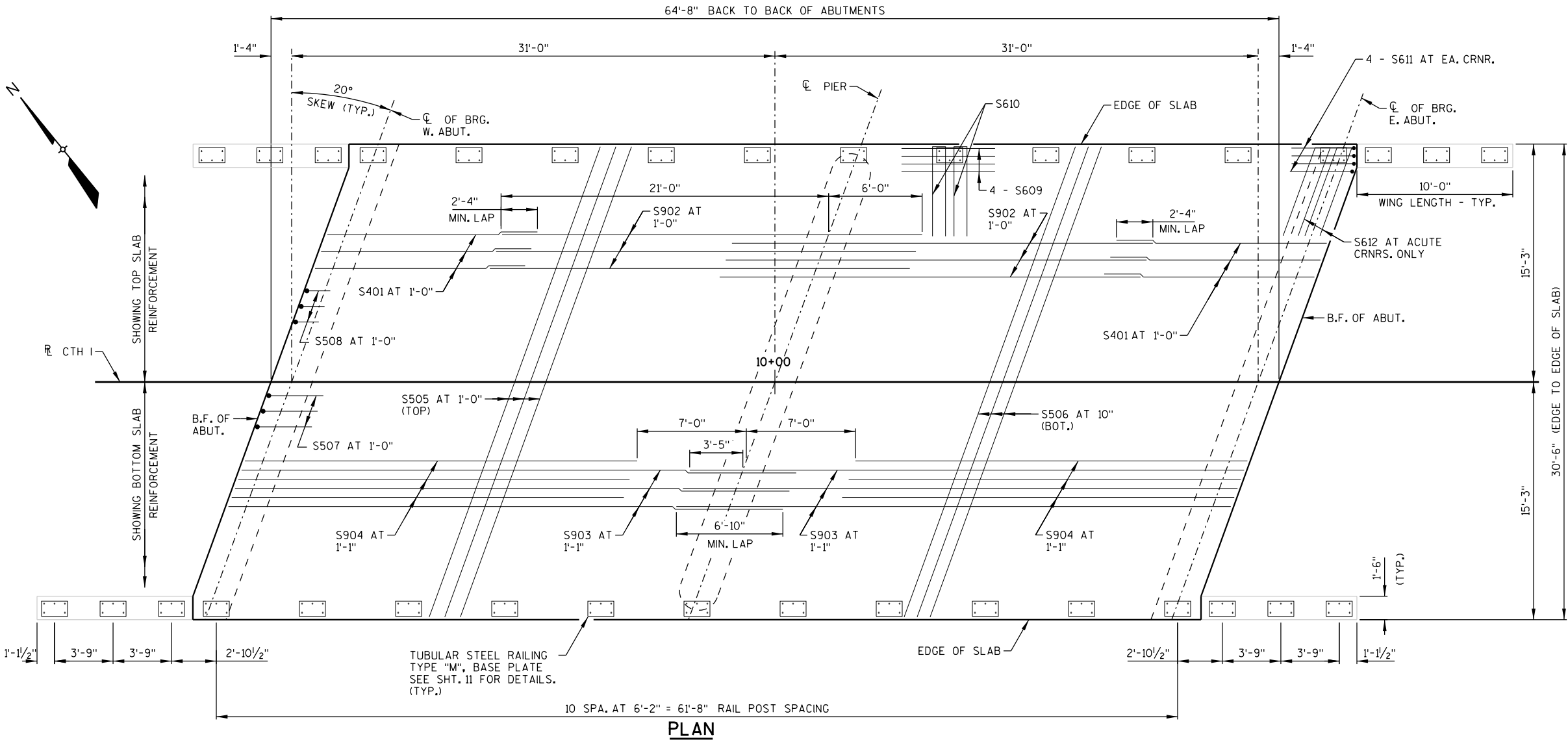
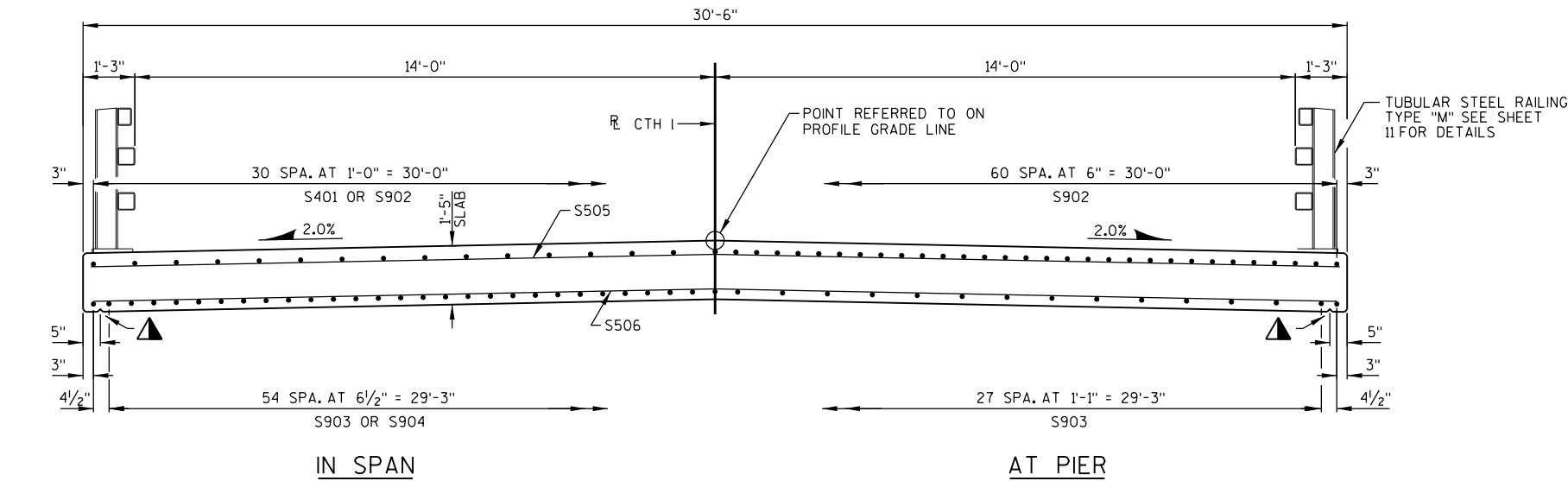
PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF SLAB ELEVATIONS AT THE C. OF ABUTMENTS, C. OF PIER AND AT 5/10 PT. TO VERIFY CAMBER. TAKE ELEVATIONS ALONG EDGE OF DECK AND CROWN OR C.

PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE ENTIRE TOP OF DECK SURFACE, SIDE OF DECK AND UNDERSIDE OF OVERHANG.

LEGEND

▲ 3/4" CONTINUOUS V-GROOVE, TERMINATE 6" FROM FRONT FACE OF ABUTMENTS.

CROSS SECTION THRU ROADWAY



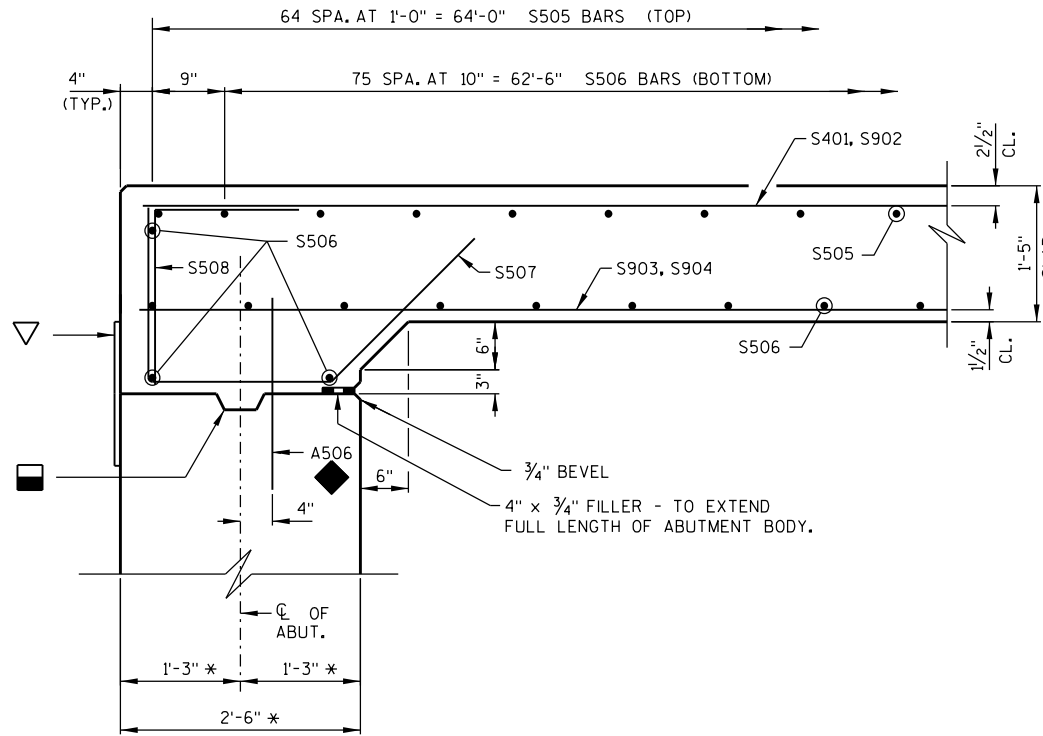
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-24-43			
DRAWN BY		KAM	PLANS CK'D. EAN
SUPERSTRUCTURE		SHEET 9 OF 11	

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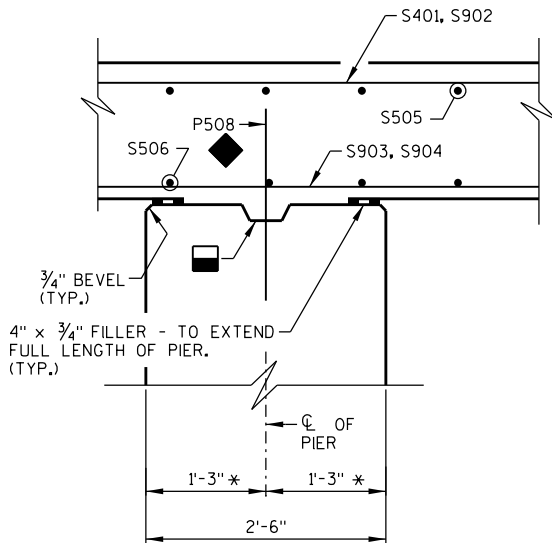
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BATCH PRINT SHEET 1 OF 1

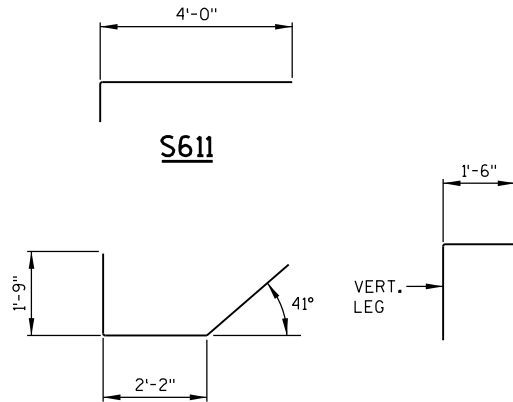
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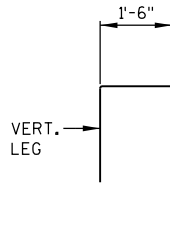
ABUTMENT DETAIL



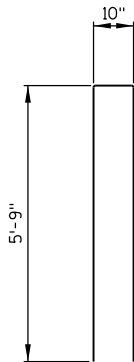
PIER DETAIL



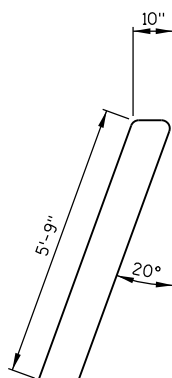
S507



S508



S610



S612

LEGEND

* DIMENSION TAKEN NORMAL TO SUBSTRUCTURE UNIT.

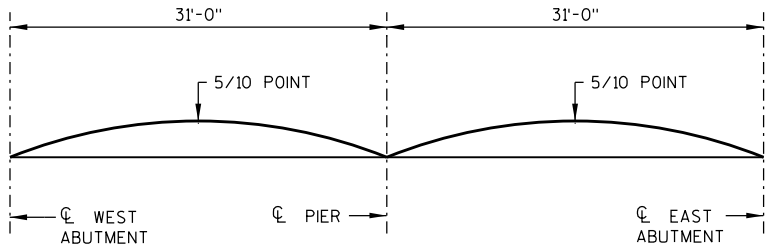
☐ COAT WITH "PROTECTIVE SURFACE TREATMENT" AS PER THE STANDARD SPECIFICATIONS.

▲ 3/4" V-GROOVE, TERMINATE 6" FROM FRONT FACE OF ABUTMENTS.

■ KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2"x6".

▽ 18" RUBBERIZED MEMBRANE WATERPROOFING, SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACK FACE.

◆ A506 OR P508 SPACED 1'-0", COATED. BARS MAY BE PLACED AFTER CONCRETE HAS BEEN POURED BUT PRIOR TO ITS INITIAL SET EMBED 1'-0".



CAMBER DIAGRAM

SPAN 1	CL BRG. W. ABUT.	1/10 PT.	2/10 PT.	3/10 PT.	4/10 PT.	5/10 PT.	6/10 PT.	7/10 PT.	8/10 PT.	9/10 PT.	CL BRG. PIER
CAMBER (IN.)	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.2	0.1	0.0	0.0
SPAN 2	CL BRG. PIER	1/10 PT.	2/10 PT.	3/10 PT.	4/10 PT.	5/10 PT.	6/10 PT.	7/10 PT.	8/10 PT.	9/10 PT.	CL BRG. E. ABUT.
CAMBER (IN.)	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.2	0.1	0.0

PROTECTIVE SURFACE TREATMENT DETAIL AT SUPERSTRUCTURE

(RAILING AND REINFORCEMENT NOT SHOWN FOR CLARITY)

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-24-43			
DRAWN BY KAM		PLANS CKD. EAN	
SUPERSTRUCTURE DETAILS		SHEET 10 OF 11	

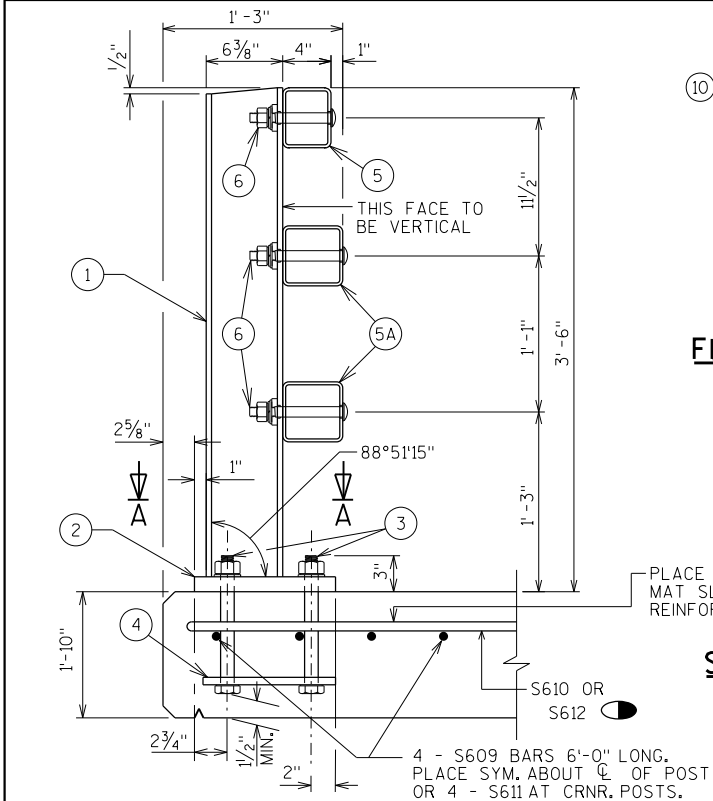
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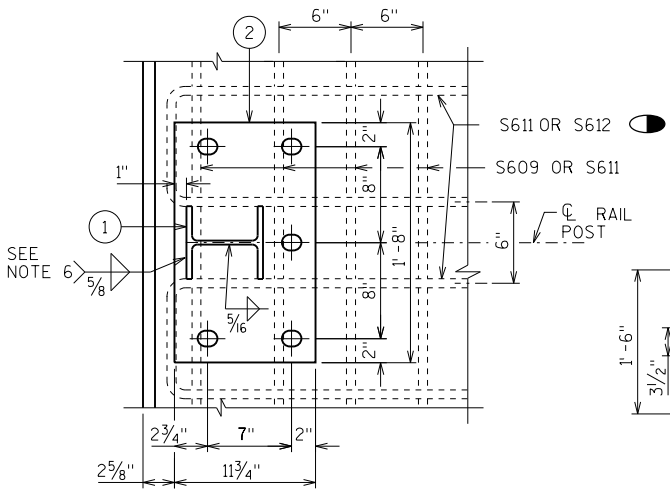
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BATCH PRINT SHEET 11 OF 11

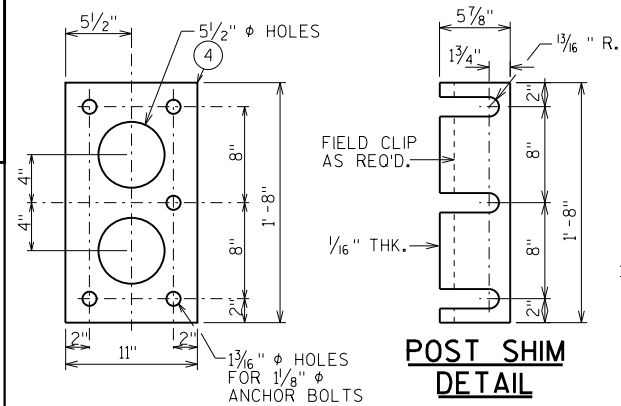
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SECTION THRU RAILING ON DECK

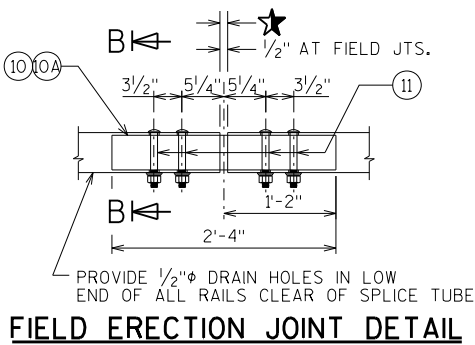


SECTION A-A

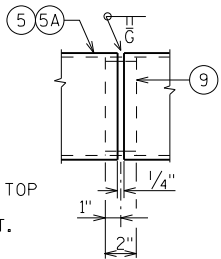


ANCHOR PLATE

AT RAIL TO DECK CONNECTION



FIELD ERECTION JOINT DETAIL



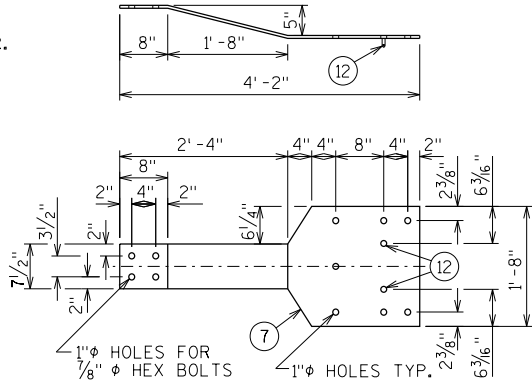
SHOP RAIL SPLICE DETAIL

LOCATION MUST BE SHOWN ON SHOP DRAWINGS

PLACE BELOW TOP MAT SLAB REINFORCEMENT.

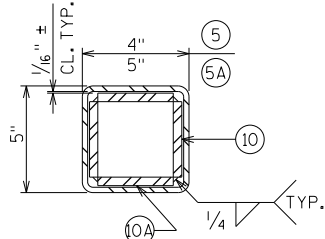
4 - S609 BARS 6'-0" LONG. PLACE SYM. ABOUT CL OF POST OR 4 - S611 AT CRNR. POSTS.

ANCHOR PLATE AT BEAM GUARD ATTACHMENT

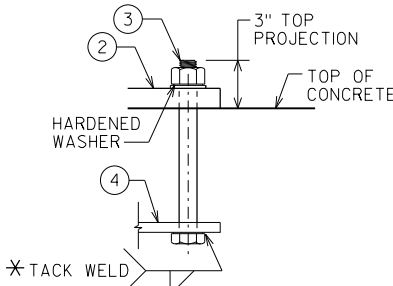


BACK-UP PLATE DETAIL

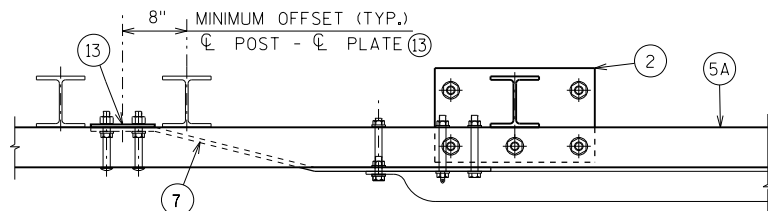
AT BEAM GUARD ATTACHMENT



SECTION B-B

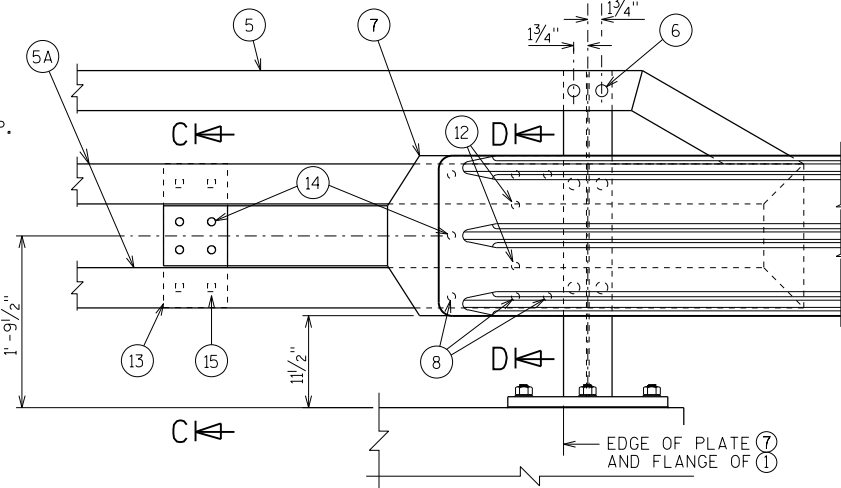


ANCHOR BOLTS



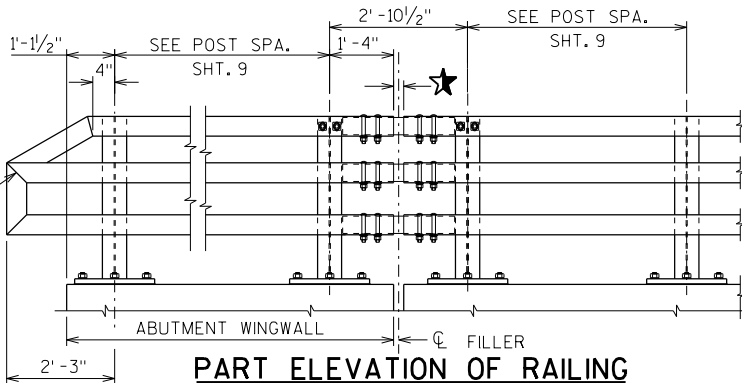
TOP VIEW AT END POST

THRIE BEAM RAIL ATTACHMENT

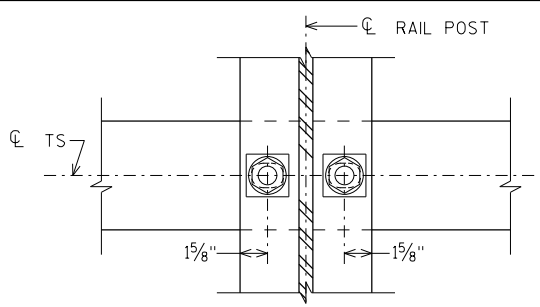


DETAIL AT END POST

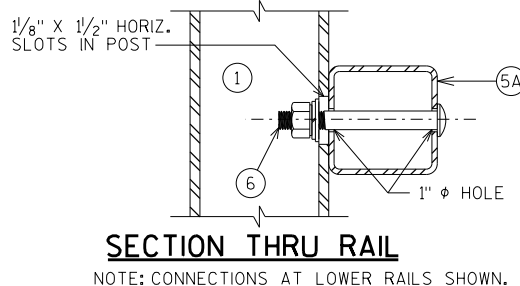
THRIE BEAM RAIL ATTACHMENT



PART ELEVATION OF RAILING



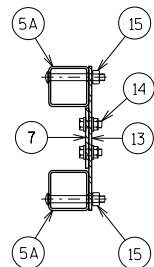
SECTION THRU POST WEB



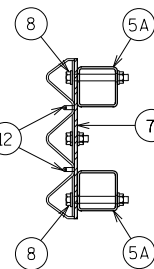
SECTION THRU RAIL

NOTE: CONNECTIONS AT LOWER RAILS SHOWN. CONNECTIONS AT TOP RAIL SIMILAR.

TYPICAL RAIL TO POST CONNECTIONS



SECTION C-C



SECTION D-D

LEGEND

- W6 x 25 with 1/8" x 1/2" HORIZ. SLOTS ON EACH SIDE OF POST FOR BOLT NO. 6. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
- PLATE 1/4" x 11 3/4" x 1'-8" WITH 1 5/8" x 1 5/8" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.
- ASTM A449 - 1/8" DIA. ANCHOR BOLTS WITH NUT AND HARDENED WASHER (ALL GALVANIZED). 5 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. USE 1'-9" LONG IN ABUTMENT WINGS. AT POSTS ON CONCRETE SLAB SUPERSTRUCTURES WHERE THE SLAB THICKNESS IS > 16" USE 1'-3" LONG. USE 10 3/4" LONG AT ALL OTHER LOCATIONS. (AN EQUIVALENT THREADED ROD WITH NUTS AND HARDENED WASHERS MAY BE SUBSTITUTED FOR ANCHOR BOLTS IN WINGS IF REQ'D. FOR CONSTRUCTIBILITY.)
- 5/8" x 11" x 1'-8" ANCHOR PLATE (GALVANIZED) WITH 1 3/8" DIA. HOLES FOR ANCHOR BOLTS NO. 3
- TS 5 x 4 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- TS 5 x 5 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, 3/8" x 1 5/8" x 1 5/8" WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION.)
- 1/2" THK. BACK-UP PLATE WITH 2 - 7/8" x 1/2" THREADED SHOP WELDED STUDS (NO. 12). BOLT TO RAIL AS SHOWN IN DETAIL. REQUIRED AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYMMETRICALLY ABOUT TUBES NO. 5A.
- 1" DIA. HOLES IN PLATE NO. 7 & TUBES NO. 5A FOR 7/8" DIA. A325 BOLTS WITH HEX NUTS AND WASHERS. 6 HOLES IN TUBES AND PLATE NO. 7.
- SPLICE SLEEVE FABRICATED FROM 1/4" PLATE. PROVIDE "SLIDING FIT".
- 3/8" x 3 5/8" x 2'-4" PLATE. 2 PER RAIL. USED IN NO. 5 & 5A.
- 3/8" x 2 5/8" x 2'-4" PLATE USED IN NO. 5, 3/8" x 3 5/8" x 2'-4" PLATE USED IN NO. 5A. 2 PER RAIL.
- 7/8" phi A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE 1 5/8" x 1 1/4" LONGIT. SLOTTED HOLES AT FIELD JOINTS AND 1 5/8" x 2 1/4" MIN. LONGIT. SLOTTED HOLES AT EXP. JOINTS IN PLATE NO. 10A.
- 7/8" DIA. x 1/2" LONG THREADED SHOP WELDED STUDS (2 REQ'D).
- 3/8" x 8" x 1'-6" PLATE. BOLT TO RAIL AS SHOWN IN DETAIL. REQ'D. AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYM. ABOUT TUBES NO. 5A.
- 7/8" DIA. x 2" LONG A325 HEX BOLT WITH NUT AND WASHER (5 REQ'D).
- 1" phi HOLES IN TUBES NO. 5A FOR 7/8" DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER AND LOCK WASHER (4 REQ'D.). 4 HOLES IN TUBES.

NOTES

- BID ITEM SHALL BE "RAILING TUBULAR TYPE M B-24-43" WHICH INCLUDES ALL ITEMS SHOWN.
- RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY = 50 KSI. ANCHOR PLATES, AND SPLICE TUBE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 36.
- THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN.
- RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE. RAILS SHALL BE SPLICED IN A PANEL OVER EXPANSION JOINTS.
- ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
- WELD IS THE SAME ON BOTH FLANGES. FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING.
- FILL BOLT SLOT OPENINGS IN POST SHIMS AND PLATE NO. 2 AND CAULK AROUND PERIMETER OF PLATE NO. 2 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. STEEL POST SHIMS MAY BE USED UNDER POSTS WHERE REQ'D. FOR ALIGNMENT.
- POST BASE PLATES 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.
- ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS & STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING BY SSPC SPECIFICATIONS.
- THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 4 (TL-4).

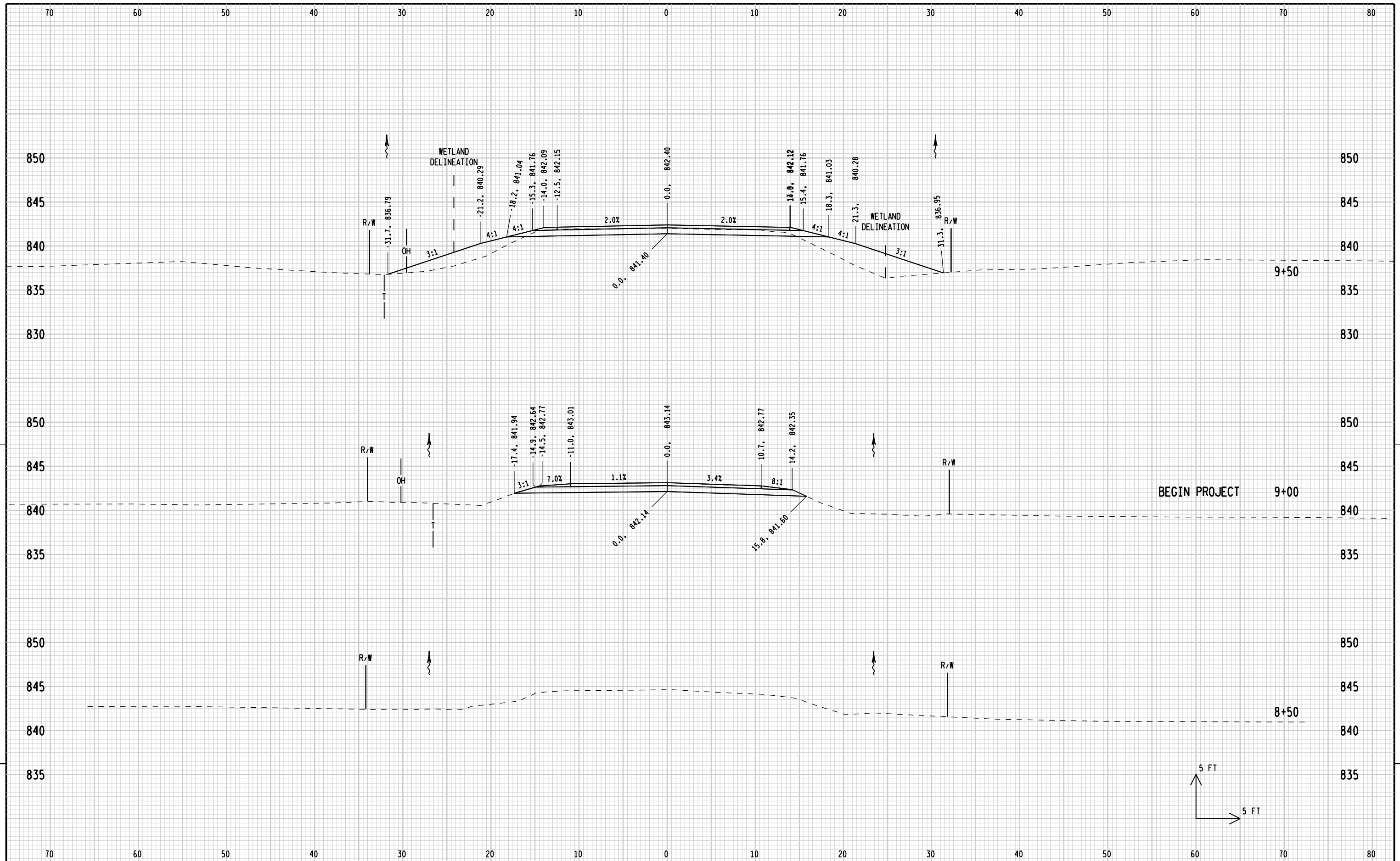
TIE TO TOP MAT OF STEEL.

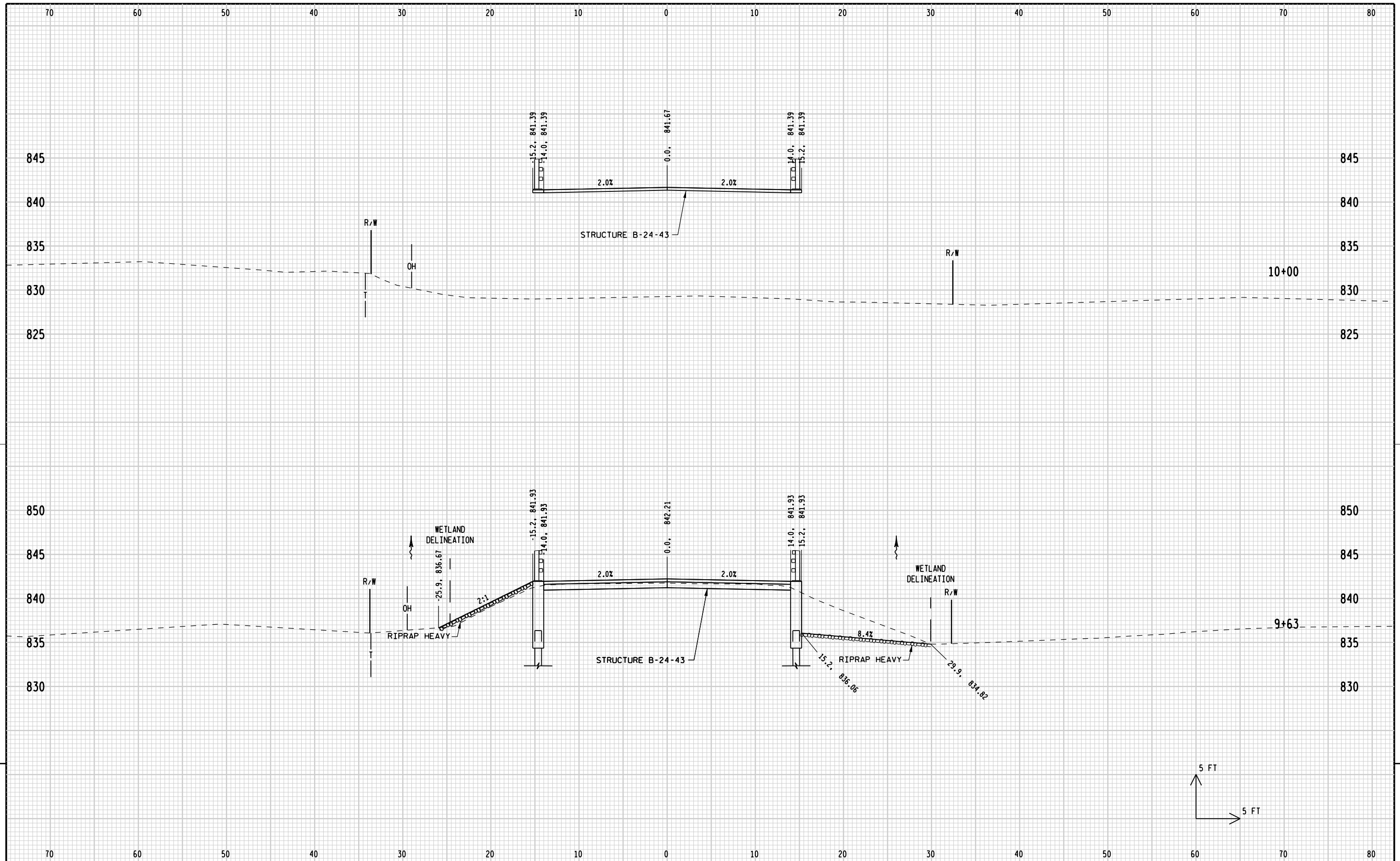
* FOR ANCHOR BOLTS IN WINGS, TACK WELD MAY BE USED IN FIELD AFTER ANCHOR PLATE IS IN POSITION IF REQ'D. FOR CONSTRUCTIBILITY.

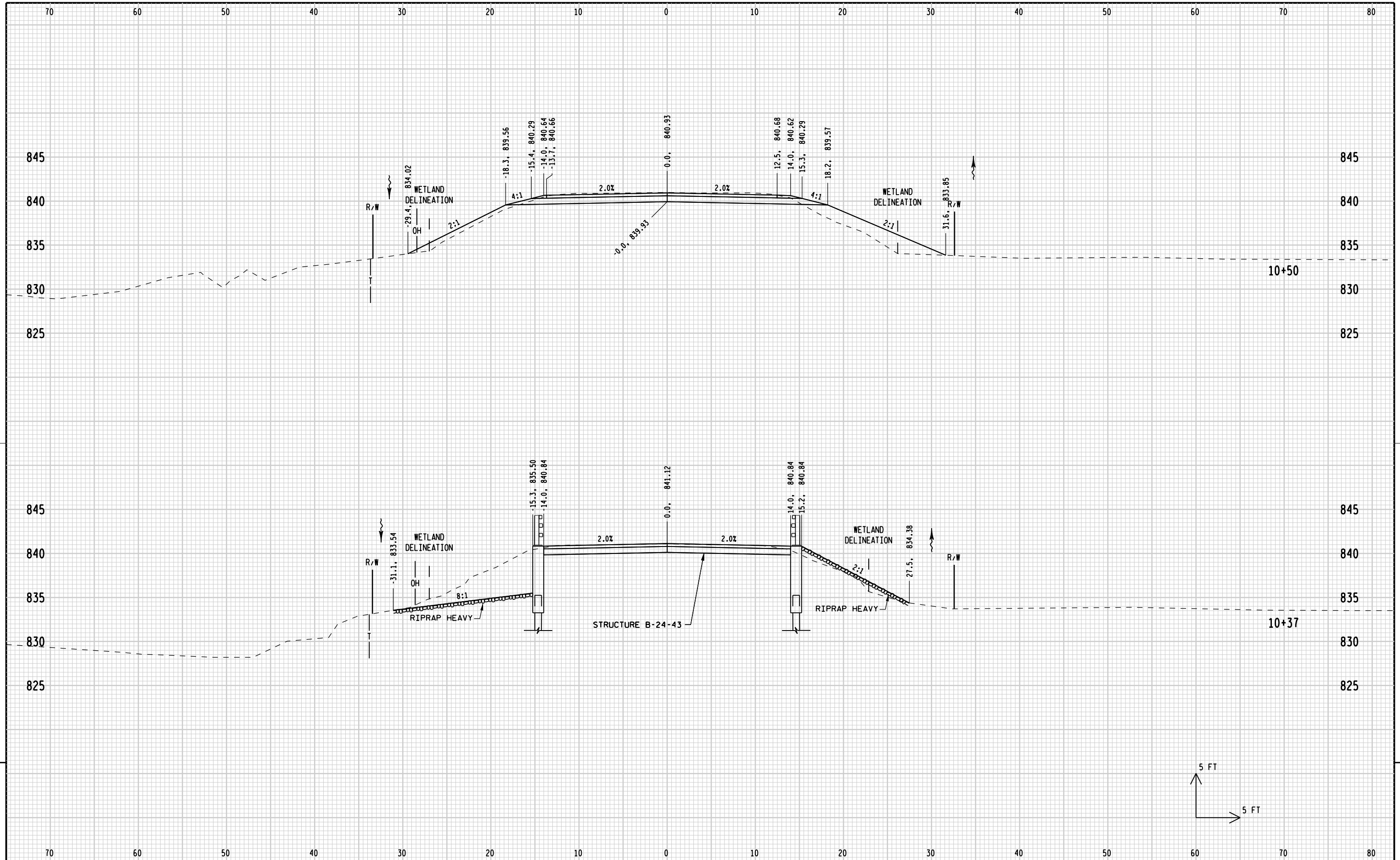
★ 1/2" OPENING FOR A1 ABUTMENT.

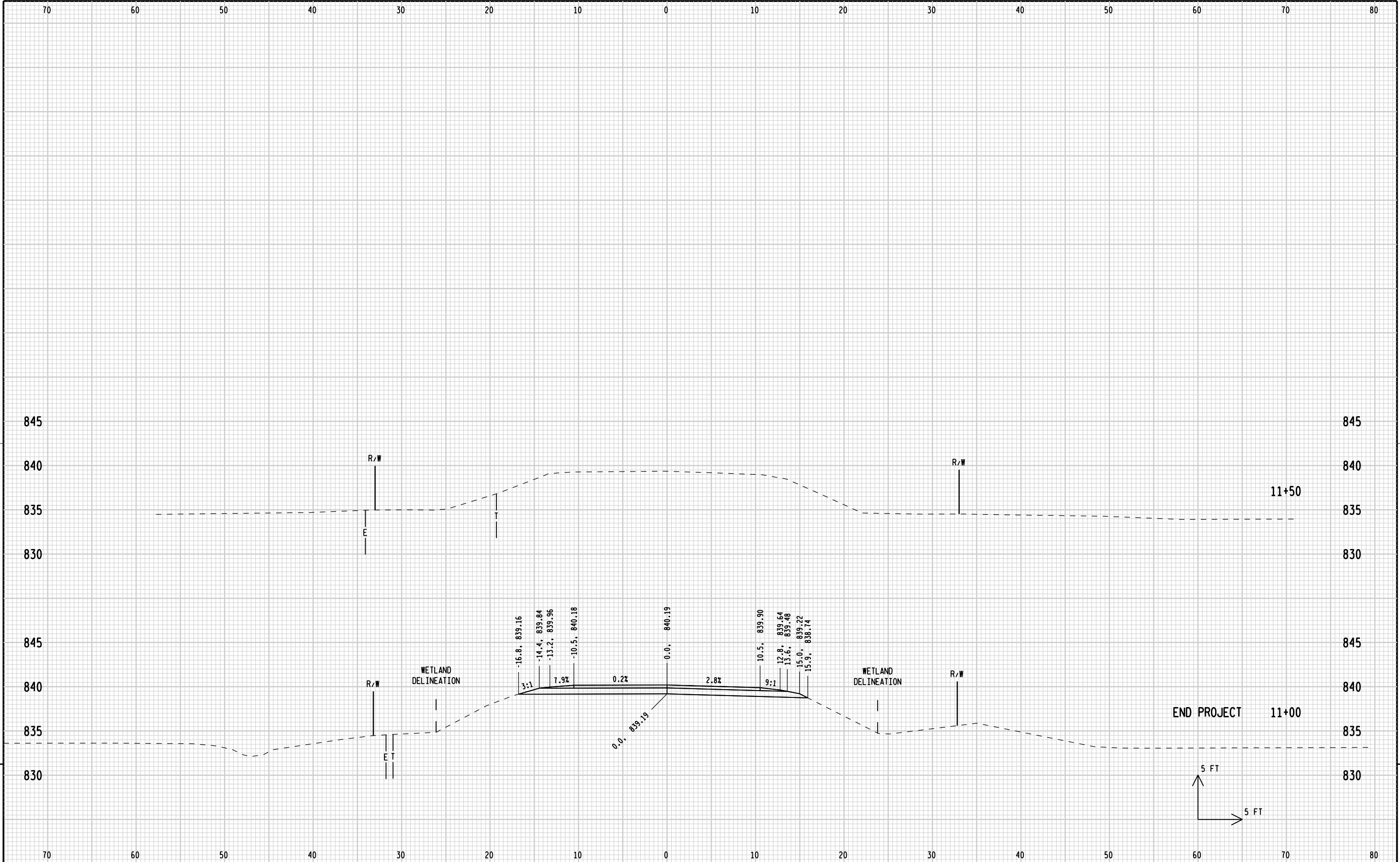
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-24-43			
DRAWN BY		KAM	PLANS CKD. EAN
TUBULAR STEEL RAILING TYPE M			SHEET 11 OF 11

STATION	Real Station	Distance	AREA (SF)		Incremental Vol (CY) (Unadjusted)		Cumulative Vol (CY)		Mass Ordinate
			Cut	Fill	Cut	Fill	Cut 1.00	Expanded Fill 1.25	
					Note 1	Note 3			
8+50	850		0	0	0	0	0	0	0
9+00	900	50	29	0	27	0	27	0	27
9+50	950	50	19	44	45	41	72	51	21
9+63	963	13	257	0	66	11	138	64	74
9+73	973	10	35	0	54	0	192	64	128
10+00	1000	27	0	0	17	0	209	64	145
10+27	1027	27	25	0	12	0	222	64	158
10+37	1037	10	267	5	54	1	276	65	211
10+50	1050	13	32	27	72	8	348	75	273
11+00	1100	50	29	0	56	25	404	106	298
11+50	1150	50	0	0	27	0	431	106	324
Column totals					431	85			

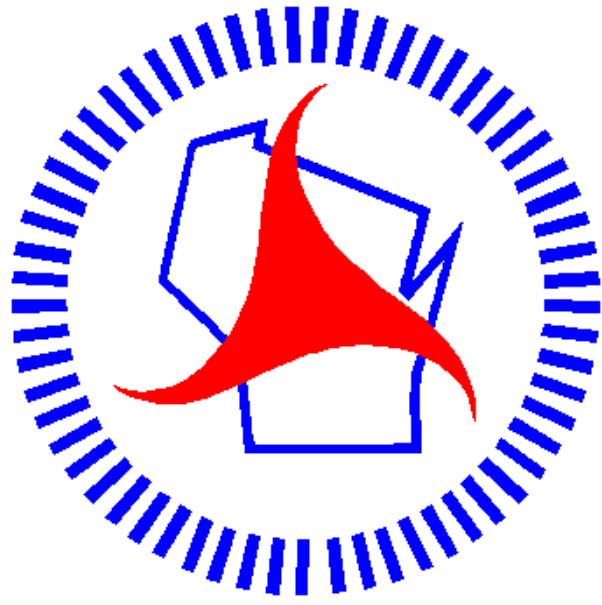








Notes



Wisconsin Department of Transportation

Dedicated people creating transportation solutions
through innovation and exceptional service.

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