GRE

DECEMBER 2018

PROJECT ID: 4409-12-71

WITH: N/A

COUNTY: KEWAUNEE

ORDER OF SHEETS

TOTAL SHEETS = 94

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
4409-12-71		

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

CTH S, NAVARINO ST - N WATER ST

AHNAPEE RIVER BRIDGE & APPROACHES

CTH S

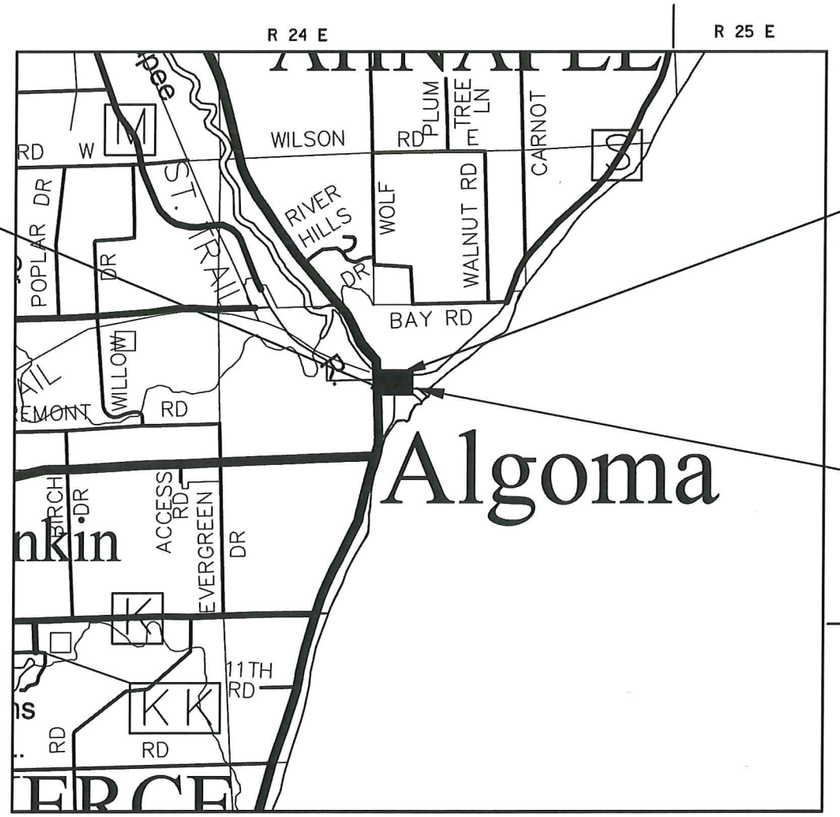
KEWAUNEE COUNTY

STATE PROJECT NUMBER
4409-12-71

PROJECT LOCATION

20

N



BEGIN PROJECT
STA. 8+20
Y=489654.836
X=291683.135

END PROJECT
STA. 12+25

STRUCTURE B-31-0101 REQ'D.

DESIGN DESIGNATION

A.A.D.T.	2019	=	3500
A.A.D.T.	2039	=	3900
D.H.V.		=	519
D.D.		=	59/41
T.		=	5.7%
DESIGN SPEED		=	25 MPH
ESALS		=	467,200

CONVENTIONAL SYMBOLS

PLAN		PROFILE	
CORPORATE LIMITS		GRADE LINE	
PROPERTY LINE		ORIGINAL GROUND	
LOT LINE		MARSH OR ROCK PROFILE (To be noted as such)	ROCK
LIMITED HIGHWAY EASEMENT		SPECIAL DITCH	LABEL
EXISTING RIGHT OF WAY		GRADE ELEVATION	95.36
PROPOSED OR NEW R/W LINE		CULVERT (Profile View)	
SLOPE INTERCEPT		UTILITIES	
REFERENCE LINE	300'EB'	ELECTRIC	E
EXISTING CULVERT		FIBER OPTIC	FO
PROPOSED CULVERT (Box or Pipe)		GAS	G
COMBUSTIBLE FLUIDS	CAUTION	SANITARY SEWER	SAN
		STORM SEWER	SS
MARSH AREA		TELEPHONE	T
		WATER	W
WOODED OR SHRUB AREA		UTILITY PEDESTAL	
		POWER POLE	
		TELEPHONE POLE	

LAYOUT
SCALE 0 1 MILE

TOTAL NET LENGTH OF CENTERLINE = 0.077 MI.

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, KEWAUNEE COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

ACCEPTED FOR
KEWAUNEE COUNTY

7-23-18 (DATE) (COUNTY HIGHWAY COMMISSIONER)

ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES

WISCONSIN
RYAN D. SCHAITEL
44367
GREEN BAY, WI
PROFESSIONAL ENGINEER

7-17-18 (Date) (Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	AYRES ASSOCIATES
Designer	AYRES ASSOCIATES
Management Consultant	SHORT, ELLIOTT, HENDRICKSON, INC.

APPROVED FOR THE DEPARTMENT

DATE: 7/24/18 (Management Consultant Signature)

PRE_1

E

2

GENERAL NOTES

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

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

THE EXACT LOCATION AND WIDTH OF PRIVATE ENTRANCES WILL BE DETERMINED IN THE FIELD BY THE ENGINEER. ALL DRIVEWAYS ARE TO TO REPLACED IN KIND UNLESS OTHERWISE DIRECTED BY THE ENGINEER OR AS SHOWN ON THE PLANS. BASE AGGREGATE DENSE 1 1/4-INCH WILL BE USED UNDER ALL DRIVEWAYS.

MAINTAIN DRIVING SURFACE TO ALL PROPERTY OWNERS WITH BASE AGGREGATE DENSE 1 1/4-INCH.

ALL DRIVEWAY APRONS TO BE REPLACED AS CONCRETE DRIVEWAYS.

PRIOR TO ORDERING DRAINAGE PIPES AND STRUCTURES, VERIFY RELATED DRAINAGE INFORMATION IN THE PLAN AND PROVIDE DOCUMENTATION TO THE ENGINEER.

INLET AND DISCHARGE ELEVATIONS FOR DRAINAGE STRUCTURES SHOWN ON THE PLAN MAY BE ADJUSTED BY THE ENGINEER TO FIT FIELD CONDITIONS.

FILL EXPANSION FACTOR IS 30%.

PROPERTY LINES AS SHOWN ARE APPROXIMATE.

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

BEARING SHOWN ON THIS PLAN ARE TRUE BEARINGS TO THE NEAREST SECOND.

ALL TIES ON THIS PLAN ARE HORIZONTAL UNLESS DESCRIBED OTHERWISE.

PLACE EROSION CONTROL MEASURES AS SHOWN ON THE EROSION CONTROL PLAN. THE EXACT LOCATIONS WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.

DISTURBED AREAS WITHIN THE RIGHT OF WAY ARE TO BE FERTILIZED, SEEDED, AND EROSION MAT AS DIRECTED BY THE ENGINEER.

ELEVATIONS SHOWN ON THE ROADWAY CROSS SECTIONS ARE SUBGRADE ELEVATIONS AT THE CENTERLINE OF THE ROADWAY.

ALL ELEVATIONS ON THIS PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF NAVD 88 (2012).

WISDOT WILL FURNISH A BENCHMARK MONUMENT TO BE SET BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER IN THE FIELD.

SAW CUT LOCATIONS SHOWN ON THE PLAN ARE SUBJECT TO ADJUSTMENT BY THE ENGINEER IN THE FIELD. THE LINE OF SUCH SAW CUTS WILL BE NEATLY DELINEATED THROUGH THE ASPHALT WITHOUT ANY DAMAGE TO THE REMAINING PORTION OF THE EXISTING PAVEMENT.

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 AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.50 ACRES
SOIL GROUP A

STANDARD ABBREVIATIONS

ADT	AVERAGE DAILY TRAFFIC	NC	NORMAL CROWN
AC	ASPHALT CEMENT	PT	POINT OF TANGENCY
AGG	AGGREGATE	PC	POINT OF CURVATURE
ASPH	ASPHALT	PI	POINT OF INTERSECTION
BM	BENCH MARK	PE	PRIVATE ENTRANCE
C/L	CENTERLINE	R	RADIUS
CONC	CONCRETE	REM	REMOVE
CMP	CORRUGATED METAL PIPE	R/L OR RL	REFERENCE LINE
CR.	CREEK	RCCP	REINFORCED CONCRETE CULVERT PIPE
D	DEGREE OF CURVE	RCPSS	REINFORCED CONCRETE PIPE STORM SEWER
DHV	DESIGN HOUR VOLUME	R.O.	RUNOUT
ESALS	EQUIVALENT SINGLE AXIS LOADS	R/W	RIGHT-OF-WAY
EXIST	EXISTING	STA	STATION
FE	FIELD ENTRANCE	SE	SUPER ELEVATION
HYD	HYDRANT	SS	STORM SEWER
IP	IRON PIPE OR PIN	T	TANGENT
L	LENGTH OF CURVE	TEL	TELEPHONE
LC	LONG CHORD OF CURVE	TLE	TEMPORARY LIMITED EASEMENT
LR	LENGTH OF RUNOFF	T	TRUCKS
MH	MANHOLE	VC	VERTICAL CURVE
		W	WELL

UTILITIES

*WISCONSIN PUBLIC SERVICE - GAS
2850 S ASHLAND AVE.
PO BOX 19001
GREEN BAY, WISCONSIN 54307
ATTENTION: DAVID CZARNECKI
E-MAIL:DFCZARNECKI@WISCONSINPUBLICSERVICE.COM
TELEPHONE 920-617-5132

*CHARTER COMMUNICATIONS
3315 LINCOLN AVE.
TWO RIVERS, WISCONSIN 54241
ATTENTION: NICK FRASE
E-MAIL:nick.frase@chartercom.com
TELEPHONE 920-793-2216
EXT. 30

*ALGOMA UTILITY COMMISSION
1407 FIORA AVENUE
ALGOMA, WISCONSIN 54201
ATTENTION: PETE HAACK
E-MAILphaack@wpplenergy.org
TELEPHONE 920-487-5556

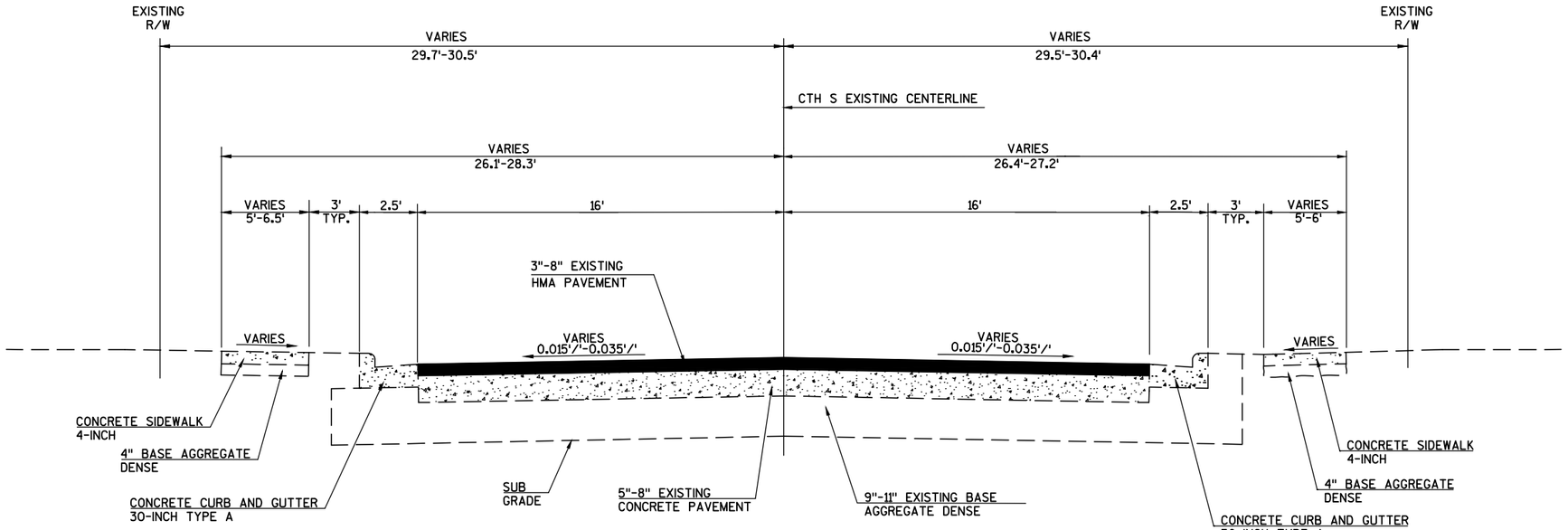
*CITY OF ALGOMA
416 FREMONT STREET
ALGOMA, WISCONSIN 54201
ATTENTION: JEFF WISWELL
E-MAIL: jeff.wiswell@algomacity.org
TELEPHONE 920-487-5203

*-MEMBER OF DIGGERS HOTLINE

DIGGERS HOTLINE
Dial 811 or (800)242-8511
www.DiggersHotline.com

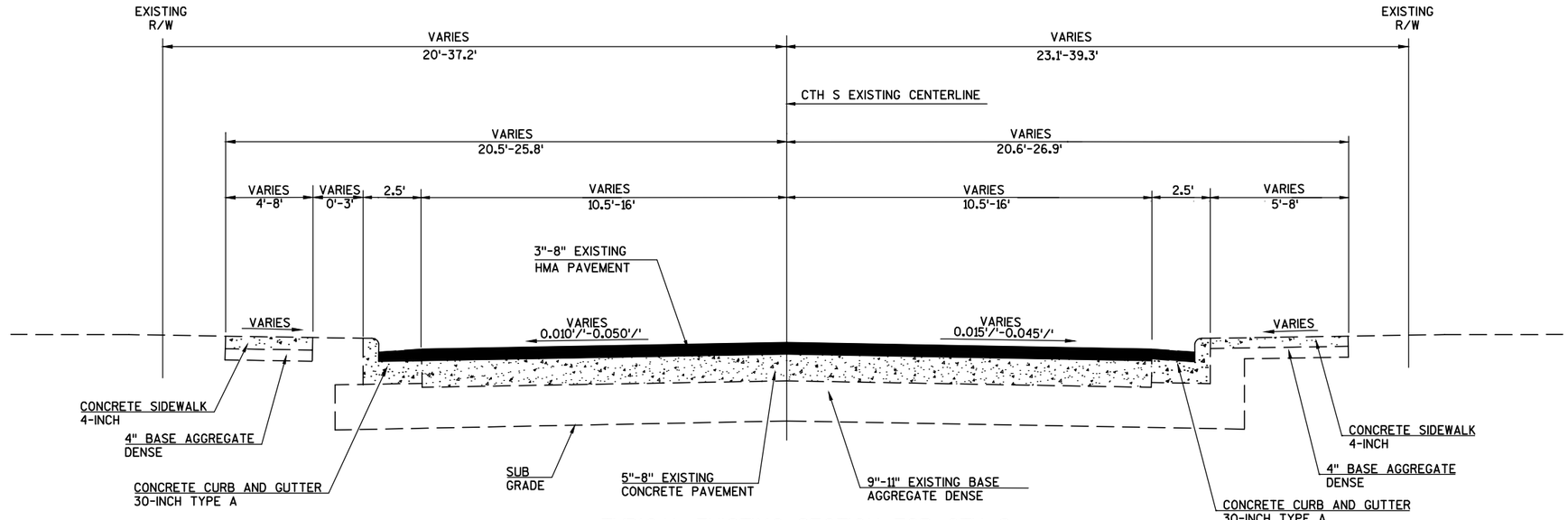
DEPARTMENT OF NATURAL RESOURCES

WDNR
P.O. BOX 10448
GREEN BAY, WISCONSIN 54307
ATTENTION: MATT SCHAEVE
E-MAIL: MATTHEW. SCHAEVE@WISCONSIN.GOV
TELEPHONE 920-366-1544



TYPICAL EXISTING SECTION FOR CTH S

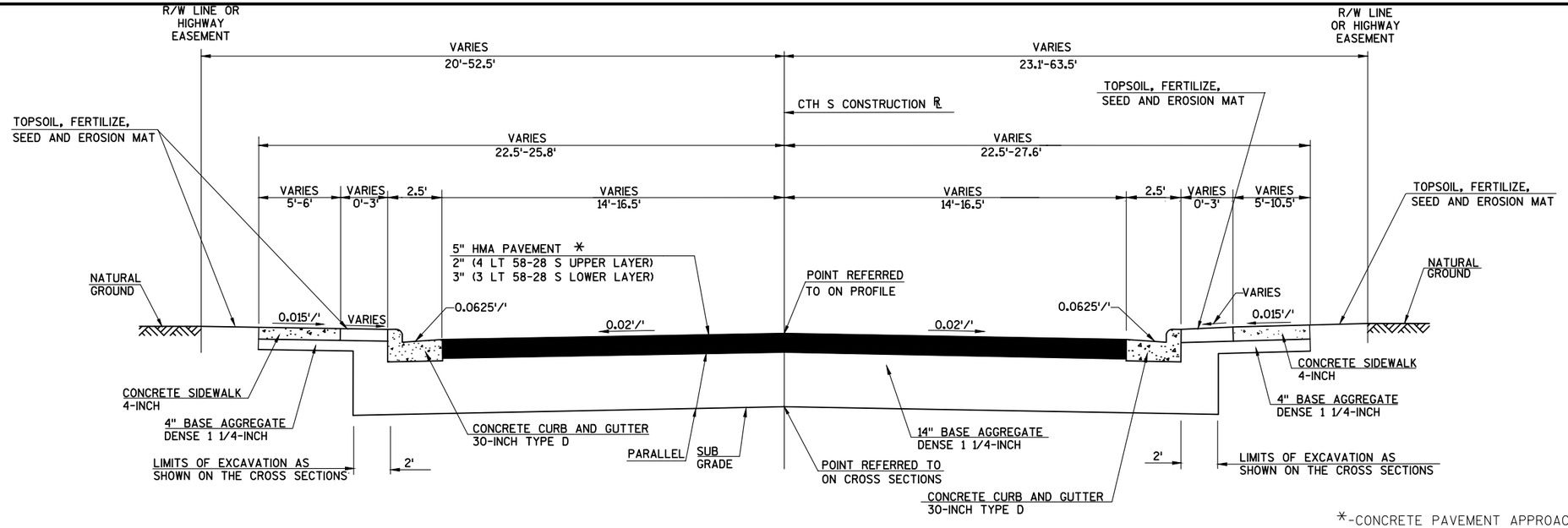
STA. 8+20 - STA. 8+69



TYPICAL EXISTING SECTION FOR CTH S

STA. 8+69 - STA. 9+45.25
STA. 10+54.44 - STA. 12+25

PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	TYPICAL SECTIONS	SHEET 3	E

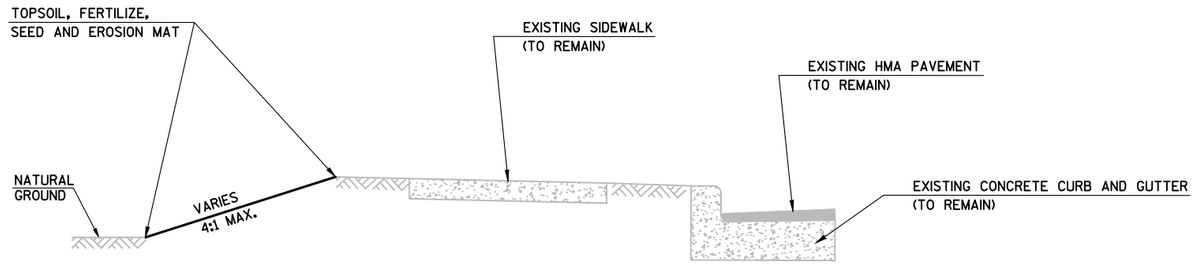


NOTE:
CONCRETE CURB AND GUTTER
CROSS SLOPE=6.25%

TYPICAL FINISHED SECTION FOR CTH S

STA. 8+20 - STA. 9+51.42
STA. 10+72.58 - STA. 12+25

*-CONCRETE PAVEMENT APPROACH SLAB
OVER 6" BASE AGGREGATE DENSE1 1/4-INCH
STA. 9+36.42 - STA. 9+51.42
STA. 10+72.58 - STA. 10+87.58

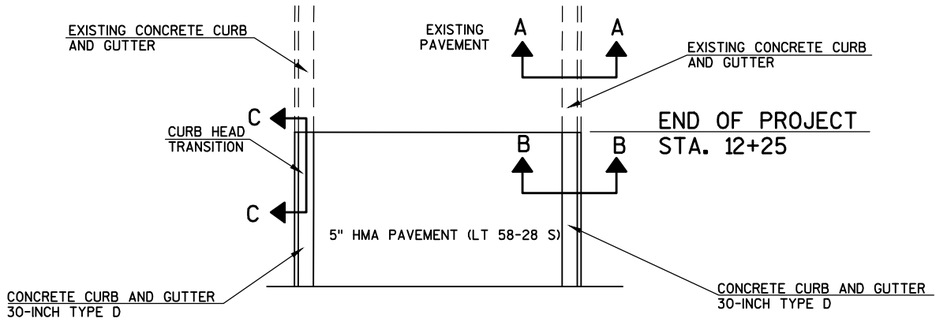


TYPICAL FINISHED SECTION FOR CTH S

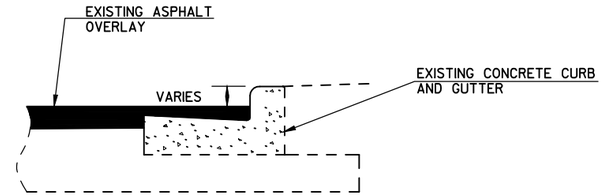
STA. 12+25 - STA. 12+55 LT.

PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	TYPICAL SECTIONS	SHEET 4	E

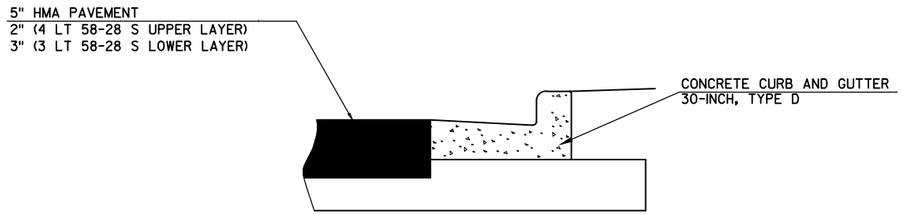
2



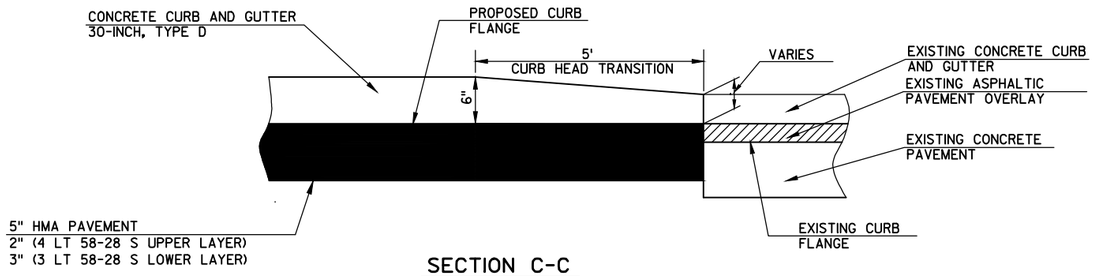
PLAN VIEW



SECTION A-A

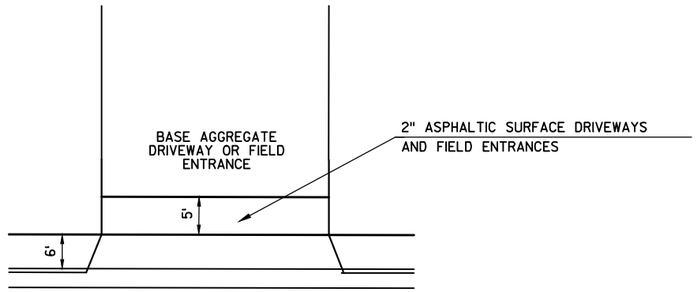


SECTION B-B



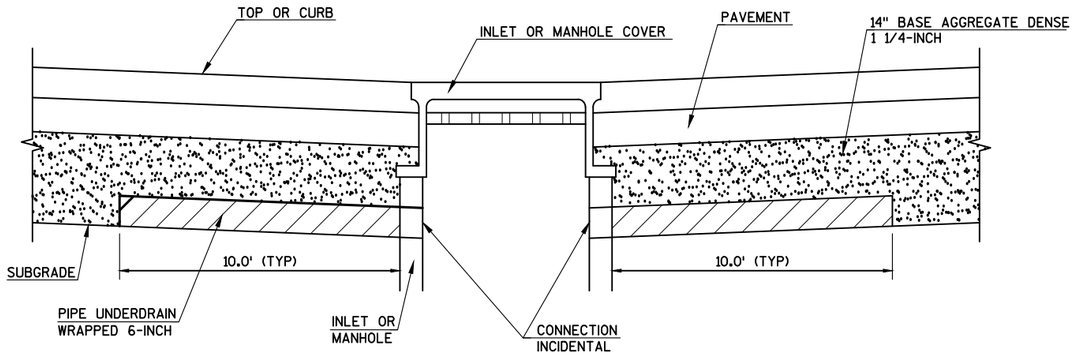
SECTION C-C

CURB HEAD TRANSITION FOR ASPHALT OVERLAID MAINLINE



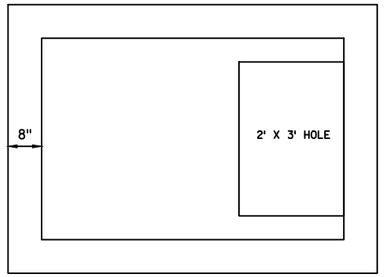
ADDITIONAL ASPHALTIC SURFACE FOR BASE AGGREGATE DENSE DRIVEWAYS

2

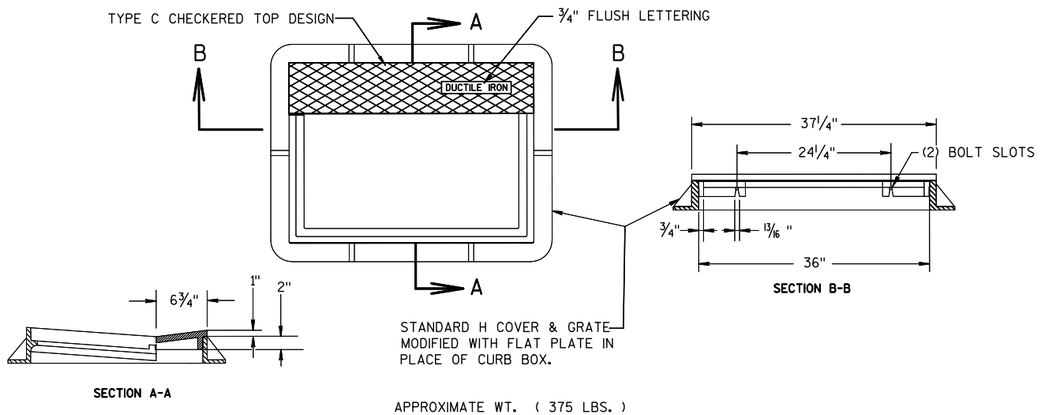


PIPE UNDERDRAIN DETAIL

(SEE MISCELLANEOUS QUANTITIES FOR LOCATIONS)



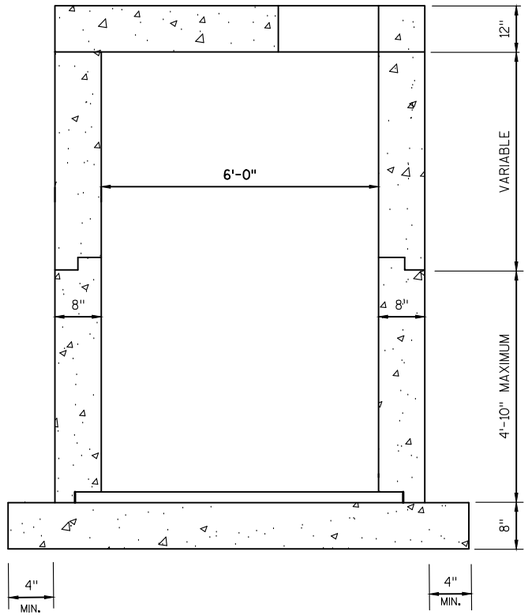
TOP PLAN VIEW

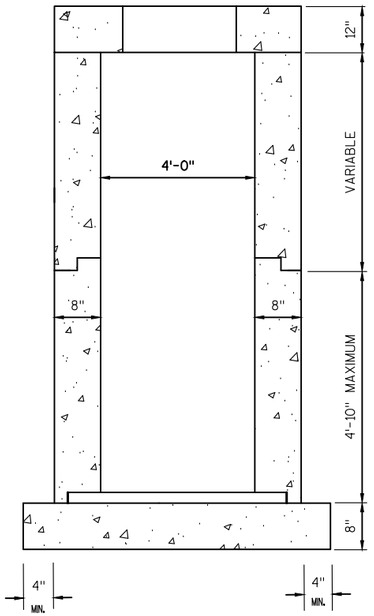


APPROXIMATE WT. (375 LBS.)

INLET COVERS TYPE H-D

(WITH MOUNTABLE CURB PLATE)



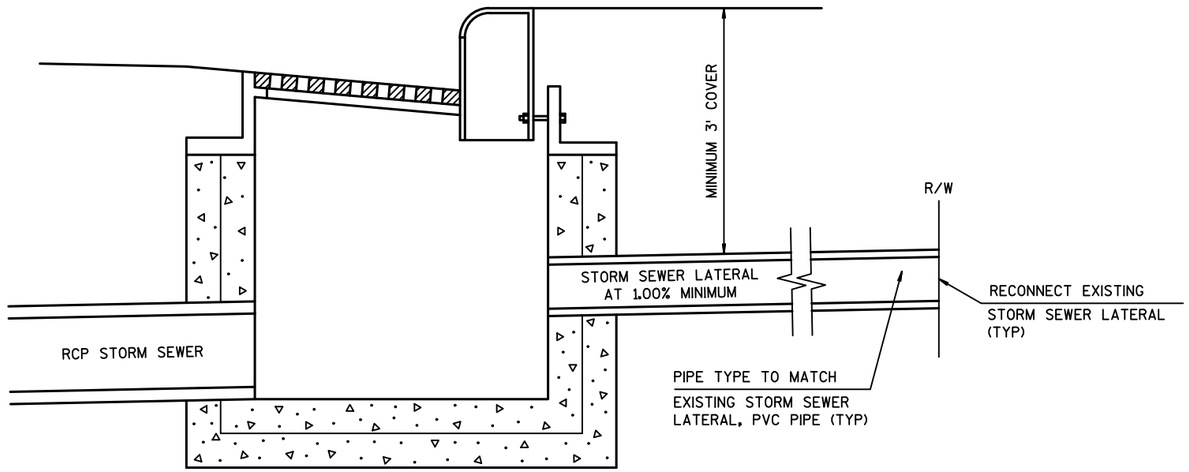


INLETS 4X6-FT SPECIAL

FOR ADDITIONAL DETAILS SEE S.D.D.

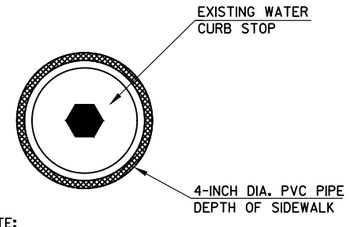
PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	CONSTRUCTION DETAILS	SHEET 6	E

2



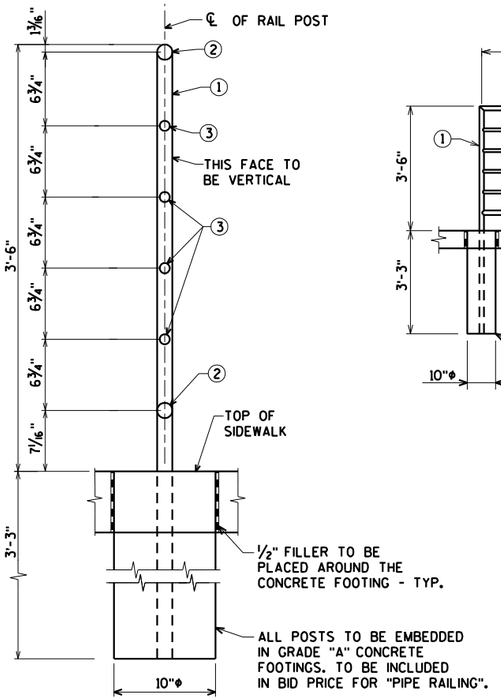
NOTE: ALL LABOR AND MATERIALS NECESSARY FOR CONNECTION TO STORM SEWER SHALL BE INCIDENTAL TO THE BID ITEM OF RECONNECT STORM SEWER LATERALS.

RECONNECT EXISTING STORM SEWER LATERAL DETAIL

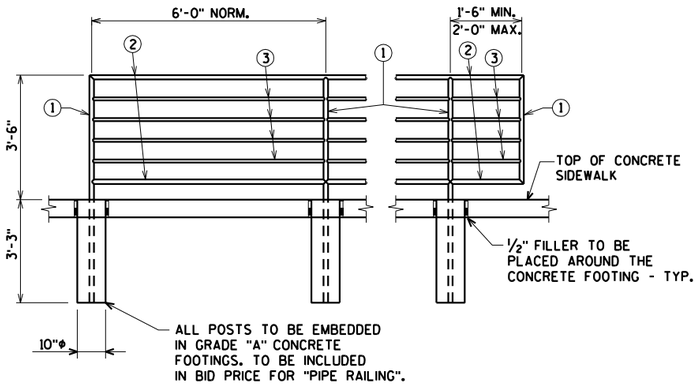


NOTE:
COST OF PVC PIPE IS INCIDENTAL TO ITEMS OF CONCRETE SIDEWALK

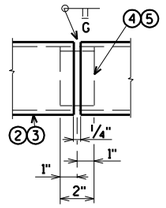
DETAIL FOR WATER CURB STOP IN SIDEWALK



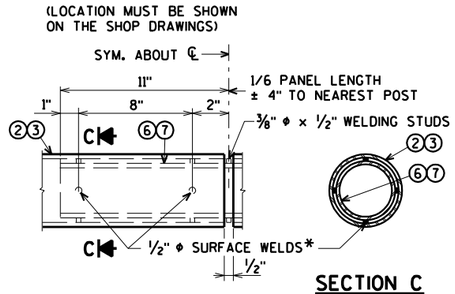
SECTION THRU RAILING



PART ELEVATION OF RAILING



SHOP RAIL SPLICE DETAIL



SECTION C

FIELD ERECTION JOINT DETAIL

*MIN. ⅝" FLAT SURFACE DIA. PUNCHINGS OR STUDS MAY BE USED AS AN ALTERNATE.

GENERAL NOTES

BID ITEM WILL BE "RAILING PIPE", WHICH INCLUDES ALL ITEMS SHOWN.

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

ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS AND STEEL TUBING WILL BE GIVEN A NO. 6 BLAST CLEANING BY S.S.P.C. SPECIFICATIONS. VENT HOLES SHALL BE DRILLED IN POST AND RAIL MEMBERS AS REQUIRED TO FACILITATE GALVANIZING AND DRAINAGE.

ALL MATERIALS USED IN FABRICATION WILL BE MADE FROM MATERIALS CONFORMING TO A.S.T.M. DESIGNATION A709 GRADE 36 UNLESS NOTED OTHERWISE.

ALL RAILS, POSTS AND SLEEVES ARE STANDARD WEIGHT PIPE, SCHEDULE 40.

VENT HOLES SHALL BE DRILLED IN POST AND RAIL MEMBERS AS REQ'D. TO FACILITATE GALVANIZING AND DRAINAGE.

LEGEND

① 2" ϕ STEEL PIPE FOR POST. PLACE POSTS VERTICAL.

② 2" ϕ STEEL PIPE FOR TOP & BOT. RAIL. WELD TO NO. 1.

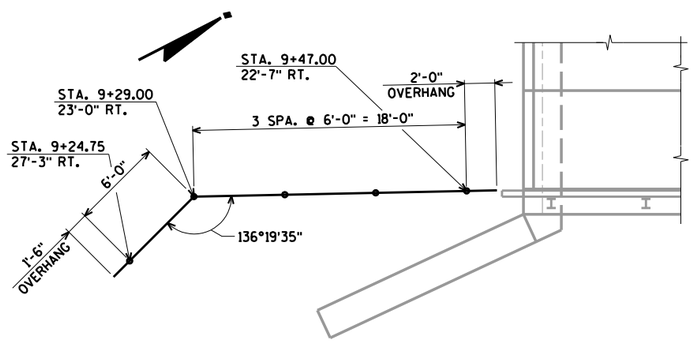
③ 1" ϕ STEEL PIPE FOR INTERMEDIATE RAILS. WELD TO NO. 1.

④ 1" ϕ PIPE SLEEVE FOR NO. 2. PROVIDE "SLIDING FIT" WITH A MINIMUM OUT TO OUT DIMENSION OF 1 ⅝".

⑤ ½" ϕ ROD SLEEVE FOR NO. 3. PROVIDE "SLIDING FIT" WITH A MINIMUM OUT TO OUT DIMENSION OF ⅝".

⑥ 1" ϕ PIPE SLEEVE x 1'-10" LONG FOR NO. 2. PROVIDE ½" ϕ SURFACE WELDS ON ALL SIDES AS SHOWN. GRIND WELDS TO FIT FREE INTO I.D. OF NO. 2. PROVIDE ⅜" ϕ x ½" WELDING STUDS ON TOP AND BOTTOM SURFACES AT CENTERLINE.

⑦ ½" ϕ ROD SLEEVE x 1'-10" LONG FOR NO. 3. PROVIDE ½" ϕ SURFACE WELDS ON ALL SIDES AS SHOWN. GRIND WELDS TO FIT FREE INTO I.D. OF NO. 3. PROVIDE ⅜" ϕ x ½" WELDING STUDS ON TOP AND BOTTOM SURFACES AT CENTERLINE.



PLAN OF PIPE RAILING
WING 1

PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	PIPE RAILING DETAILS	SHEET 8	E

PI STA = 8+74.46
Y = 489699.442
X = 291714.537
DELTA = 8°48'23"
D = 11°27'33"
T = 38.50'
L = 76.85'
R = 500.00'
PC STA = 8+35.96
Y = 489667.960
X = 291692.374
PT STA = 9+12.81
Y = 489733.947
X = 291731.619
BK = N35°08'43"E
AH = N26°20'20"E

PI STA = 12+69.59
Y = 490052.521
X = 291892.220
DELTA = 67°30'17"
D = 88°08'50"
T = 43.44'
L = 76.58'
R = 65.00'
PC STA = 12+26.15
Y = 490013.893
X = 291872.358
PT STA = 13+02.73
Y = 490048.949
X = 291935.508
BK = N27°12'42"E
AH = S85°17'01"E

HAEGELE AND ASSOCIATES, LLC

NAVARINO ST.

BP: 7+21.93
Y=489574.720
X=291626.733

CONCRETE CURB AND GUTTER
30-INCH TYPE D REQ'D.

STADIUM DINER AND
BLEACHERS BAR, INC.

CONCRETE SIDEWALK
4-INCH REQ'D.

EXISTING R/W

RT&B CAPITAL
INVESTMENTS LLC

RETAINING WALL
R-31-0011 REQ'D

SLOPE
INTERCEPTS

CONCRETE PAVEMENT
APPROACH SLAB REQ'D.

STRUCTURE B-31-0101 REQ'D.

HIGHWAY EASEMENT

TLE LINE

PI: 11+00.00
Y=489901.701
X=291814.670

REMOVE
GUARDRAIL

CONCRETE CURB AND GUTTER
30-INCH TYPE D REQ'D.

CONCRETE SIDEWALK
4-INCH REQ'D.

BRYAN C. AND
AMY J. NEUBAUER

REMOVE
RETAINING WALL

N. WATER STREET

END PROJECT
STA. 12+25
Y=490012.870
X=291871.832

N35°08'43"E

CTH S (2ND ST.)

N26°20'20"E

N27°12'42"E

BM 21

BM 22

SANDPIPER
SUITES LLC

CITY OF ALGOMA

WILLIAM A. AND
SANDRA L. SCHMILING

THOMAS J. DALLMAN TRUST
AND
CHERYL L. LONG TRUST

OSBORNE-PETERSON
PROPERTIES LLC

MICHAEL L. AND
TIMOTHY LEIST

GARETH E. AND
DONNA J. GRIDLEY

HARBOR BEACON
CONDOMINIUM ASSOC., INC.

BRYAN CRAIG
NEUBAUER AND
TONYA LEE MOORE

CONSTRUCTION LIMITS
STA. 12+55

SUBSTITUTE CTH S
(N. WATER ST.)

BEGIN PROJECT
STA. 8+20
Y=489654.836
X=291683.135

ANNAPEE RIVER

LEGEND
XXXX SAW CUT
X TREE TO BE REMOVED

PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	PLAN DETAIL	SHEET 9	E

FILE NAME : V:\TRANS-GB\450417 CTH S\ROADWAY\C3D\SHEETSPLAN\023001 PD.DWG
LAYOUT NAME - 023001 PD

PLOT DATE : 7/27/2018 11:30 AM PLOT BY : SOUFAL, KEVIN PLOT NAME : PLOT SCALE : 1 IN:40 FT

NOTES
A WATERWAY MARKER APPLICATION AND PERMIT HAS BEEN OBTAINED. COORDINATE WITH WDNR FOR ANY VARIANCE FROM THE PERMIT.

MAINTAIN NAVIGATIONAL CHANNEL EXCEPT DURING ALLOWABLE CLOSURE FOR CONSTRUCTING BRIDGE SLAB AS SPECIFIED IN CITY ORDINANCE.

REPLACE "HAZARD WARNING" BUOY WITH "INFORMATIONAL" BUOY DURING CLEARANCE REDUCTION

NAVIGATION CHANNEL

LEGEND
WORK AREA
BUOY

STRUCTURE B-31-0101

EXISTING STRUCTURE (B-31-001) TO BE REMOVED

CTH S CONSTRUCTION ℄

CTH S

ABUTMENT EDGE

10'

10'

MAINTAIN 25' CHANNEL

PROPOSED PIER

CENTER OF PIER

NAVIGATION CHANNEL

25' SPACING TYP.

AHNAPEE RIVER

FLASHING LIGHT

WHITE BUOY WITH ORANGE MARKING

REDUCED CLEARANCE

36" MIN. ABOVE WATER

11"

14"

2" BAND

TYPICAL INFORMATIONAL BUOY DETAIL

ALL BUOYS SHALL BE 7" DIAMETER WITH RED FLASHING LIGHTS AT 30 FLASHES/MIN. IF NECESSARY

REPLACE "HAZARD WARNING" BUOY WITH "INFORMATIONAL" BUOY DURING CLEARANCE REDUCTION

FLASHING LIGHT

WHITE BUOY WITH ORANGE MARKING

BRIDGE WORK

36" MIN. ABOVE WATER

11"

14"

2" BAND

TYPICAL HAZARD WARNING BUOY DETAIL

ALL BUOYS SHALL BE 7" DIAMETER WITH RED FLASHING LIGHTS AT 30 FLASHES/MIN. IF NECESSARY

PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	BOATING TRAFFIC CONTROL	SHEET 10	E

FILE NAME : V:\TRANS-GB\450417 CTH S\ROADWAY\C3D\SHEETSPLAN\023002 PD.DWG
LAYOUT NAME - 023002 PD

PLOT DATE : 7/27/2018 11:31 AM PLOT BY : SOUFAL, KEVIN PLOT NAME : PLOT SCALE : 1 IN:20 FT

NOTES
A WATERWAY MARKER APPLICATION AND PERMIT HAS BEEN OBTAINED. COORDINATE WITH WDNR FOR ANY VARIANCE FROM THE PERMIT.

MAINTAIN NAVIGATIONAL CHANNEL EXCEPT DURING ALLOWABLE CLOSURE FOR CONSTRUCTING BRIDGE SLAB AS SPECIFIED IN CITY ORDINANCE.

LEGEND
WORK AREA
BUOY

15' SPACING TYPICAL

STRUCTURE B-31-0101

EXISTING STRUCTURE (B-31-001) TO BE REMOVED

PROPOSED ℄

PROPOSED PIER

AHNAPEE RIVER

FLASHING LIGHT

WHITE BUOY WITH ORANGE MARKING

CLOSED AREA

36" MIN. ABOVE WATER

11"

14"

2" BAND

TYPICAL RESTRICTED AREA BUOY DETAIL

ALL BUOYS SHALL BE 7" DIAMETER WITH RED FLASHING LIGHTS AT 30 FLASHES/MIN. IF NECESSARY

PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	BOATING TRAFFIC CONTROL - DEMOLITION	SHEET 11	E

NOTES:
- OFFSET DISTANCE TO CENTER FOR MANHOLES, BACK OF CURB FOR INLETS
- GRATE ELEVATION IS FIGURED TO CENTER OF MANHOLE COVER FOR MANHOLES, TOP OF CURB FOR INLETS

STATE ST.

BP: 7+21.93

CONNECT TO EXISTING 18-INCH STORM SEWER STA 8+30 (CONCRETE COLLAR REQ'D)

PC: 8+35.96

PT: 9+12.81

2C STA 8+59, 18.3' LT INLETS 2x3-H

2D STA 8+78, 17.8' LT INLETS 2x3-HD

CTH S (2ND ST.)

2 STA 8+65, 10.5' RT MANHOLES 4-J-S

2B STA 8+78, 17.3' RT INLETS 2x3-HD

3 STA. 9+46, 28.5 RT.

2A STA 8+61, 17.7' RT INLETS 2x3-H

NAVARINO ST.

AHNAPEE RIVER

PT: 11+00.00

STA 12+05, 18.6' LT INLETS 4X6-FT SPECIAL H-S 5

6 STA 11+02, 7.1' RT MANHOLES 6-J-S

7 STA 11+02, 32.0' RT MANHOLES 6-J-S

8 STA 10+58, 32.0' RT APRON ENDWALLS FOR CPRC 30-INCH

PC: 12+26.15

CONNECT TO EXISTING 18-INCH STORM SEWER STA 12+25 (CONCRETE COLLAR REQ'D)

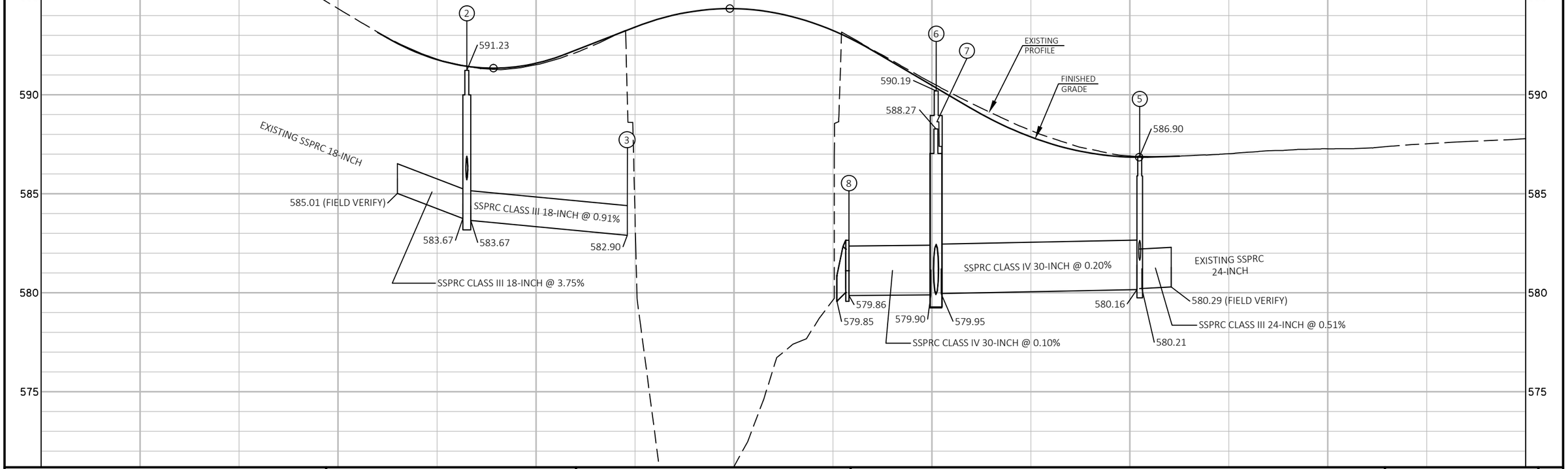
5A STA 12+05, 18.1' RT INLETS 2x3-H-S

PT: 13+02.73

CTH S (N. WATER ST.)

N. WATER STREET

N



PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	STORM SEWER	SHEET 12	E

NOTES:
- OFFSET DISTANCE TO CENTER FOR MANHOLES, BACK OF CURB FOR INLETS
- GRATE ELEVATION IS FIGURED TO CENTER OF MANHOLE COVER FOR MANHOLES, TOP OF CURB FOR INLETS

STATE ST.

CONNECT TO EXISTING 18-INCH STORM SEWER STA 8+30 (CONCRETE COLLAR REQ'D.)

BP: 7+21.93

PC: 8+35.96

PT: 9+12.81

PC: 11+00.00

PC: 12+26.15

CONNECT TO EXISTING 18-INCH STORM SEWER STA 12+25 (CONCRETE COLLAR REQ'D.)

N. WATER STREET

CTH S (2ND ST.)

NAVARINO ST.

AHNAPEE RIVER

PT: 13+02.73

CTH S (N. WATER ST.)

2C STA 8+59, 18.3' LT
INLETS 2x3-H

2D STA 8+78, 17.8' LT
INLETS 2x3-HD

STA 12+05, 18.6' LT
INLETS 4X6-FT SPECIAL H-S 5

6 STA 11+02, 7.1' RT
MANHOLES 6-J-S

2 STA 8+65, 10.5' RT
MANHOLES 4-J-S

3 STA. 9+46, 28.5 RT.

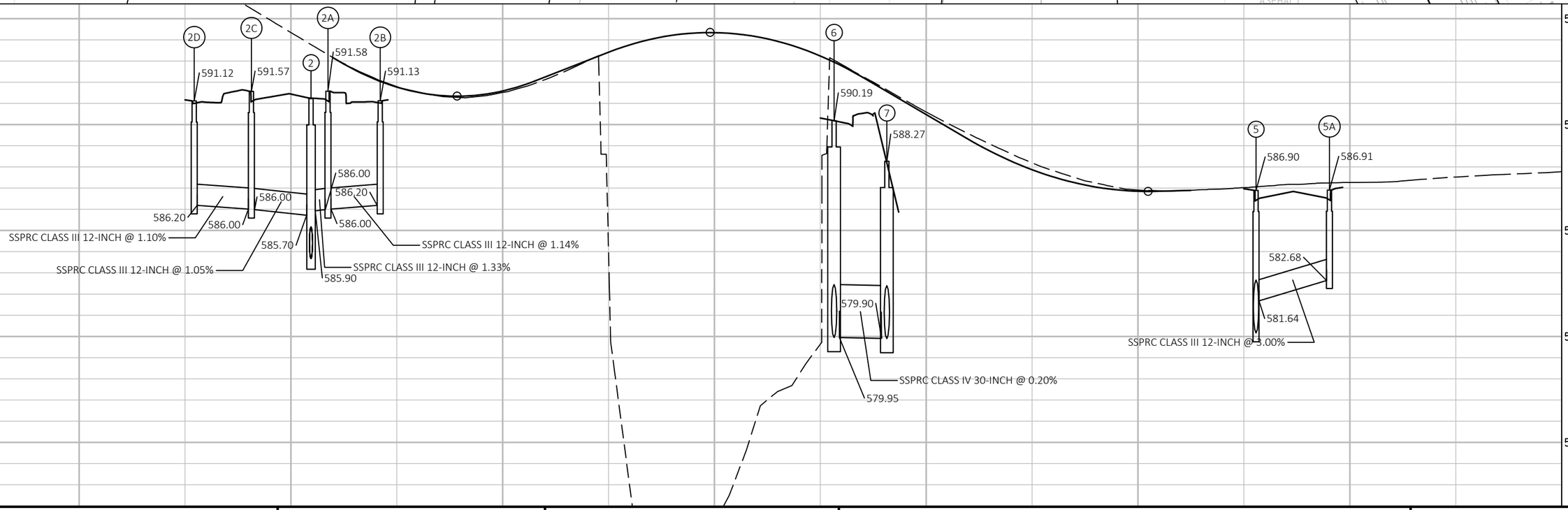
2B STA 8+78, 17.3' RT
INLETS 2x3-HD

2A STA 8+61, 17.7' RT
INLETS 2x3-H

7 STA 11+02, 32.0' RT
MANHOLES 6-J-S

5A STA 12+05, 18.1' RT
INLETS 2x3-H-S

8 STA 10+58, 32.0' RT
APRON ENDWALLS FOR CPRC 30-INCH



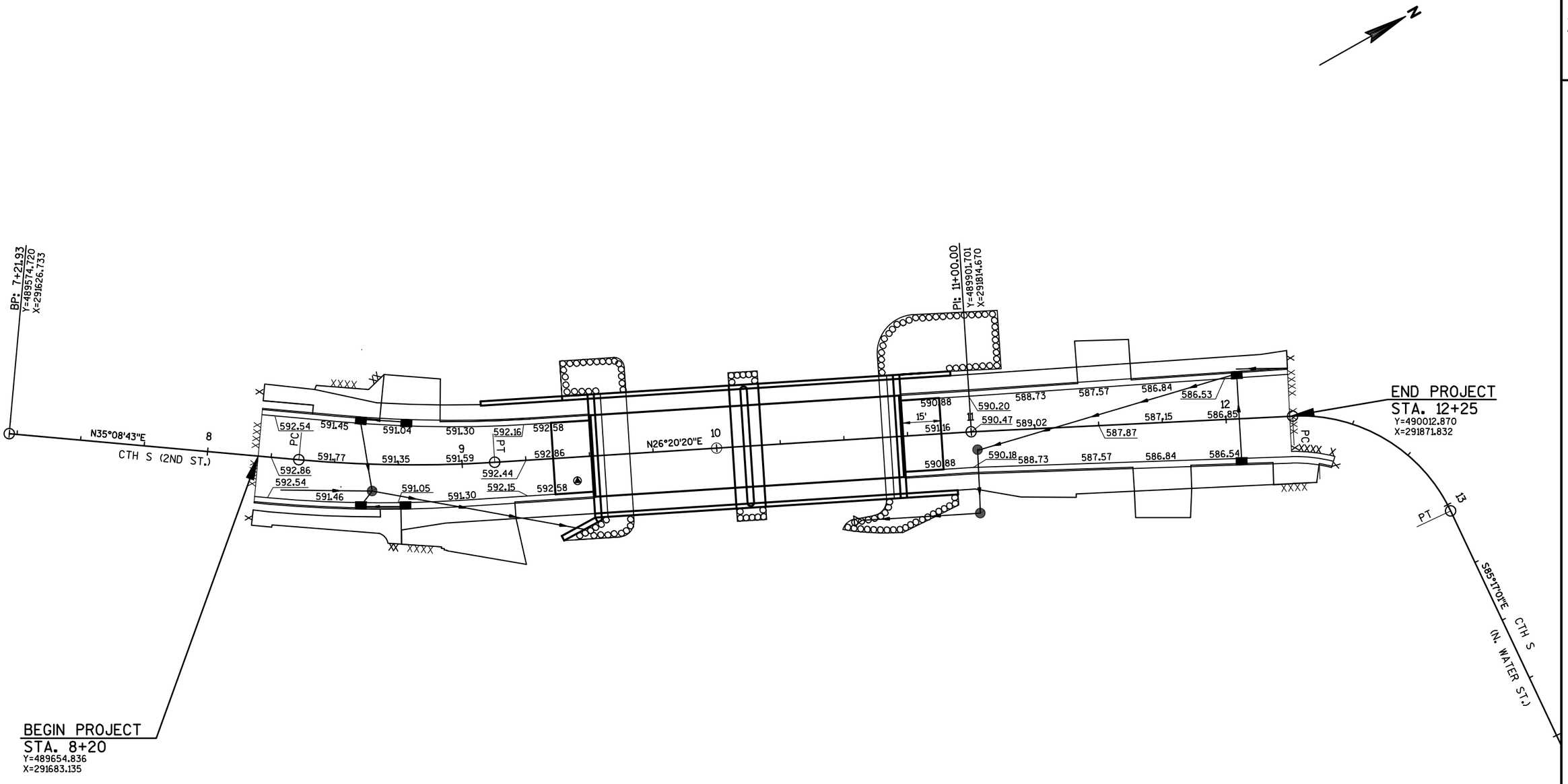
PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	STORM SEWER	SHEET 13	E

FILE NAME : V:\TRANS-GB\450417 CTH S\ROADWAY\C3D\SHEETSPLAN\022501 SS.DWG
LAYOUT NAME - 022502 SS

PLOT DATE : 7/27/2018 11:32 AM PLOT BY : SOUFAL, KEVIN PLOT NAME : PLOT SCALE : 1 IN:50 FT

WISDOT/CADDS SHEET 42

2



PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	PLAN GRADES	SHEET 14	E

2

LEGEND

- EROSION MAT CLASS 1, TYPE A URBAN
- TURBIDITY BARRIER
- SILT FENCE
- SLOPE INTERCEPT
- INLET PROTECTION

NOTE:

TYPE A INLET PROTECTION IS REQUIRED FOR ALL INLETS AFTER INSTALLATION AND BEFORE CURB PLACEMENT.
AFTER CURB PLACEMENT INSTALL TYPE C OR D INLET PROTECTION.
(SEE MISCELLANEOUS QUANTITIES)

N

NAVARINO ST.

EXISTING R/W

SLOPE INTERCEPTS

HIGHWAY EASEMENT

TLE LINE

EXISTING R/W

SLOPE INTERCEPTS

TLE LINE

TLE LINE

EXISTING R/W

N. WATER STREET

END PROJECT
STA. 12+25
Y=490012.870
X=291871.832

8

9

10

11

12

13

CTH S (2ND ST.)

EXISTING R/W

EXISTING R/W

SLOPE INTERCEPTS

HIGHWAY EASEMENT

TLE LINE

EXISTING R/W

SLOPE INTERCEPTS

CONSTRUCTION LIMITS
STA. 12+55

EXISTING R/W

EXISTING R/W

CTH S
(N. WATER ST.)

BEGIN PROJECT
STA. 8+20
Y=489654.836
X=291683.135

AHNAPEE RIVER

PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	EROSION CONTROL	SHEET	E

FILE NAME : V:\TRANS-GB\450417 CTH S\ROADWAY\C3D\SHEETSPLAN\022001 EC.DWG
LAYOUT NAME - 022001 EC

PLOT DATE : 7/27/2018 11:31 AM PLOT BY : SOUFAL, KEVIN PLOT NAME : PLOT SCALE : 1 IN:40 FT

Estimate Of Quantities

4409-12-71

Line	Item	Item Description	Unit	Total	Qty
0002	201.0120	Clearing	ID	30.000	30.000
0004	201.0220	Grubbing	ID	30.000	30.000
0006	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 01. STA 10+00	LS	1.000	1.000
0008	204.0100	Removing Pavement	SY	1,210.000	1,210.000
0010	204.0155	Removing Concrete Sidewalk	SY	365.000	365.000
0012	204.0165	Removing Guardrail	LF	100.000	100.000
0014	204.0210	Removing Manholes	EACH	2.000	2.000
0016	204.0220	Removing Inlets	EACH	6.000	6.000
0018	204.0245	Removing Storm Sewer (size) 01. 12-Inch or Less	LF	126.000	126.000
0020	204.0245	Removing Storm Sewer (size) 02. 18-Inch	LF	125.000	125.000
0022	204.0245	Removing Storm Sewer (size) 03. 24-Inch	LF	177.000	177.000
0024	204.9060.S	Removing (item description) 01. Wood Post	EACH	3.000	3.000
0026	204.9090.S	Removing (item description) 01. Retaining Wall	LF	90.000	90.000
0028	204.9090.S	Removing (item description) 02. Steel Railing	LF	195.000	195.000
0030	204.9090.S	Removing (item description) 03. Wood Landscaping Walls	LF	28.000	28.000
0032	205.0100	Excavation Common	CY	770.000	770.000
0034	206.1000	Excavation for Structures Bridges (structure) 01. B-31-101	LS	1.000	1.000
0036	206.1050.S	Underwater Foundation Inspection (location) Pier Foundation Structure B-31-101	EACH	1.000	1.000
0038	206.3000	Excavation for Structures Retaining Walls (structure) 01. R-31-11	LS	1.000	1.000
0040	206.5000	Cofferdams (structure) 01. B-31-101	LS	1.000	1.000
0042	210.1500	Backfill Structure Type A	TON	1,690.000	1,690.000
0044	213.0100	Finishing Roadway (project) 01. 4409-12-71	EACH	1.000	1.000
0046	305.0110	Base Aggregate Dense 3/4-Inch	TON	15.000	15.000
0048	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,100.000	1,100.000
0050	415.0410	Concrete Pavement Approach Slab	SY	100.000	100.000
0052	416.0160	Concrete Driveway 6-Inch	SY	29.000	29.000
0054	416.0260	Concrete Driveway HES 6-Inch	SY	22.000	22.000
0056	450.4000	HMA Cold Weather Paving	TON	122.000	122.000
0058	455.0605	Tack Coat	GAL	50.000	50.000
0060	460.2000	Incentive Density HMA Pavement	DOL	160.000	160.000
0062	460.5223	HMA Pavement 3 LT 58-28 S	TON	146.000	146.000
0064	460.5224	HMA Pavement 4 LT 58-28 S	TON	97.000	97.000
0066	465.0120	Asphaltic Surface Driveways and Field Entrances	TON	20.000	20.000
0068	502.0100	Concrete Masonry Bridges	CY	1,025.000	1,025.000
0070	502.3200	Protective Surface Treatment	SY	790.000	790.000
0072	504.0500	Concrete Masonry Retaining Walls	CY	53.000	53.000

4409-12-71

Line	Item	Item Description	Unit	Total	Qty
0074	505.0400	Bar Steel Reinforcement HS Structures	LB	55,660.000	55,660.000
0076	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	98,660.000	98,660.000
0078	511.1200	Temporary Shoring (structure) 01. B-31-101	SF	950.000	950.000
0080	511.1200	Temporary Shoring (structure) 01. R-31-11	SF	1,075.000	1,075.000
0082	513.2001	Railing Pipe	LF	27.500	27.500
0084	513.7084	Railing Steel Type NY4 01. B-31-101	LF	300.000	300.000
0086	513.7084	Railing Steel Type NY4 01. R-31-11	LF	33.000	33.000
0088	516.0500	Rubberized Membrane Waterproofing	SY	23.000	23.000
0090	520.8000	Concrete Collars for Pipe	EACH	2.000	2.000
0092	522.1030	Apron Endwalls for Culvert Pipe Reinforced Concrete 30-Inch	EACH	1.000	1.000
0094	550.0500	Pile Points	EACH	9.000	9.000
0096	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	170.000	170.000
0098	601.0411	Concrete Curb & Gutter 30-Inch Type D	LF	488.000	488.000
0100	602.0405	Concrete Sidewalk 4-Inch	SF	2,990.000	2,990.000
0102	606.0300	Riprap Heavy	CY	290.000	290.000
0104	608.0312	Storm Sewer Pipe Reinforced Concrete Class III 12-Inch	LF	106.000	106.000
0106	608.0318	Storm Sewer Pipe Reinforced Concrete Class III 18-Inch	LF	121.000	121.000
0108	608.0324	Storm Sewer Pipe Reinforced Concrete Class III 24-Inch	LF	16.000	16.000
0110	608.0430	Storm Sewer Pipe Reinforced Concrete Class IV 30-Inch	LF	175.000	175.000
0112	611.0535	Manhole Covers Type J-Special	EACH	3.000	3.000
0114	611.0624	Inlet Covers Type H	EACH	2.000	2.000
0116	611.0639	Inlet Covers Type H-S	EACH	1.000	1.000
0118	611.2004	Manholes 4-FT Diameter	EACH	1.000	1.000
0120	611.2006	Manholes 6-FT Diameter	EACH	2.000	2.000
0122	611.3230	Inlets 2x3-FT	EACH	5.000	5.000
0124	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	295.000	295.000
0126	619.1000	Mobilization	EACH	1.000	1.000
0128	624.0100	Water	MGAL	13.000	13.000
0130	625.0100	Topsoil	SY	420.000	420.000
0132	627.0200	Mulching	SY	125.000	125.000
0134	628.1504	Silt Fence	LF	410.000	410.000
0136	628.1520	Silt Fence Maintenance	LF	820.000	820.000
0138	628.1905	Mobilizations Erosion Control	EACH	5.000	5.000
0140	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000
0142	628.2006	Erosion Mat Urban Class I Type A	SY	415.000	415.000
0144	628.6005	Turbidity Barriers	SY	340.000	340.000

4409-12-71

Line	Item	Item Description	Unit	Total	Qty
0146	628.7005	Inlet Protection Type A	EACH	6.000	6.000
0148	628.7015	Inlet Protection Type C	EACH	2.000	2.000
0150	628.7020	Inlet Protection Type D	EACH	4.000	4.000
0152	628.7560	Tracking Pads	EACH	2.000	2.000
0154	629.0210	Fertilizer Type B	CWT	0.400	0.400
0156	630.0140	Seeding Mixture No. 40	LB	8.000	8.000
0158	630.0200	Seeding Temporary	LB	12.000	12.000
0160	642.5001	Field Office Type B	EACH	1.000	1.000
0162	643.0300	Traffic Control Drums	DAY	3,510.000	3,510.000
0164	643.0410	Traffic Control Barricades Type II	DAY	936.000	936.000
0166	643.0420	Traffic Control Barricades Type III	DAY	2,808.000	2,808.000
0168	643.0705	Traffic Control Warning Lights Type A	DAY	4,680.000	4,680.000
0170	643.0900	Traffic Control Signs	DAY	3,393.000	3,393.000
0172	643.1050	Traffic Control Signs PCMS	DAY	14.000	14.000
0174	643.5000	Traffic Control	EACH	1.000	1.000
0176	645.0111	Geotextile Type DF Schedule A	SY	50.000	50.000
0178	645.0120	Geotextile Type HR	SY	570.000	570.000
0180	646.1020	Marking Line Epoxy 4-Inch	LF	810.000	810.000
0182	646.8120	Marking Curb Epoxy	LF	810.000	810.000
0184	650.4000	Construction Staking Storm Sewer	EACH	11.000	11.000
0186	650.4500	Construction Staking Subgrade	LF	283.000	283.000
0188	650.5000	Construction Staking Base	LF	283.000	283.000
0190	650.5500	Construction Staking Curb Gutter and Curb & Gutter	LF	585.000	585.000
0192	650.6500	Construction Staking Structure Layout (structure) 01. B-31-101	LS	1.000	1.000
0194	650.6500	Construction Staking Structure Layout (structure) 02. R-31-11	LS	1.000	1.000
0196	650.9910	Construction Staking Supplemental Control (project) 01. 4409-12-71	LS	1.000	1.000
0198	650.9920	Construction Staking Slope Stakes	LF	283.000	283.000
0200	690.0150	Sawing Asphalt	LF	90.000	90.000
0202	690.0250	Sawing Concrete	LF	125.000	125.000
0204	715.0415	Incentive Strength Concrete Pavement	DOL	500.000	500.000
0206	715.0502	Incentive Strength Concrete Structures	DOL	6,468.000	6,468.000
0208	999.1500.S	Crack and Damage Survey	LS	1.000	1.000
0210	ASP.1T0A	On-the-Job Training Apprentice at $5.00/HR	HRS	600.000	600.000
0212	ASP.1T0G	On-the-Job Training Graduate at $5.00/HR	HRS	1,200.000	1,200.000
0214	SPV.0060	Special 01. Inlet Covers Type H-D	EACH	3.000	3.000
0216	SPV.0060	Special 02. Inlets 4x6-Ft Special	EACH	1.000	1.000
0218	SPV.0060	Special 03. Reconnect Existing Storm Sewer Lateral	EACH	1.000	1.000

4409-12-71

Line	Item	Item Description	Unit	Total	Qty
0220	SPV.0060	Special 04. Adjusting Water Service Curb Stops	EACH	5.000	5.000
0222	SPV.0060	Special 05. Utility Line Opening	EACH	5.000	5.000
0224	SPV.0060	Special 06. Adjusting Sanitary Manhole Cover	EACH	1.000	1.000
0226	SPV.0090	Special 01. Concrete Curb and Gutter HES 30-Inch Type D	LF	23.000	23.000
0228	SPV.0090	Special 02. Concrete Curb and Gutter SHES 30-Inch Type D	LF	76.000	76.000
0230	SPV.0180	Special 01. Driveway SHES 6-Inch	SY	48.000	48.000
0232	SPV.0180	Special 02. Shredded Hardwood Bark Mulch	SY	19.000	19.000

3

CLEARING AND GRUBBING

STATION	LOCATION	201.0120 CLEARING ID	201.0220 GRUBBING ID
10+69	CTH S, RT	24	24
10+85	CTH S, LT	6	6
TOTALS		30	30

REMOVING PAVEMENT

STATION	TO	STATION	LOCATION	204.0100 SY	REMARKS
8+20	-	9+45	CTH S	510	INCLUDES CONCRETE DRIVEWAYS
10+53	-	12+46	CTH S	700	INCLUDES CONCRETE DRIVEWAYS
TOTAL				1,210	

REMOVING CONCRETE SIDEWALK

STATION	TO	STATION	LOCATION	204.0155 SY
8+20	-	9+51	CTH S, LT	62
8+20	-	9+51	CTH S, RT	58
10+53	-	12+25	CTH S, LT	131
10+53	-	12+25	CTH S, RT	114
TOTAL				365

REMOVING GUARDRAIL

STATION	TO	STATION	LOCATION	204.0165 LF
11+69	-	12+53	CTH S, LT	100
TOTAL				100

REMOVING STORM SEWER

STATION	TO	STATION	LOCATION	204.0245.01 12-INCH OR LESS LF	204.0245.02 18-INCH LF	204.0245.03 24-INCH LF
8+20	-	9+41	CTH S	-	125	-
	8+62		CTH S	35	-	-
	8+90		CTH S	26	-	-
8+62	-	8+90	CTH S	29	-	-
10+50	-	12+25	CTH S	-	-	177
	11+97		CTH S	36	-	-
TOTALS				126	125	177

REMOVING WOOD POST

STATION	TO	STATION	LOCATION	204.9060.S.01 EACH
11+37	-	11+67	CTH S, LT	3
TOTAL				3

REMOVING MANHOLES

STATION	LOCATION	204.0210 EACH
8+66	CTH S, RT	1
11+22	CTH S, LT	1
TOTALS		2

REMOVING INLETS

STATION	LOCATION	204.0220 EACH
8+62	CTH S, LT & RT	2
8+90	CTH S, LT & RT	2
11+97	CTH S, LT & RT	2
TOTALS		6

REMOVING RETAINING WALL

STATION	TO	STATION	LOCATION	204.9090.S.01 LF
11+96	-	12+55	CTH S, LT	90
TOTAL				90

REMOVING STEEL RAILING

STATION	TO	STATION	LOCATION	204.9090.S.02 LF
9+07	-	9+45	CTH S, LT	38
9+27	-	9+44	CTH S, RT	17
10+53	-	11+33	CTH S, LT	80
10+53	-	11+13	CTH S, RT	60
TOTAL				195

REMOVING WOOD LANDSCAPING WALLS

STATION	TO	STATION	LOCATION	204.9090.S.03 LF
9+25	-	9+27	CTH S, RT	10
9+32	-	9+45	CTH S, RT	18
TOTAL				28

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

EARTHWORK SUMMARY

Division	From/To Station	Location	Excavation Common (1) (Item 205.0100) Cut	Unusable Pavement Material (4)	Available Material (5)	Unexpanded Fill	Expanded Fill (13) Factor 1.30	Mass Ordinate +/- (14)	Waste	Comment:
1	8+20 - 12+25	CTH S	770	446	324	43	56	267	267	
Division 1 Total			770	446	324	43	56	267	267	
			Total Common Exc							

3

1) Common Excavation includes existing asphalt and concrete. Item number 205.0100

4) Unusable Pavmeent Material = Existing Asphaltic & Concrete Pavement. Material is to be wasted offsite

5) Available Material = Cut - Unusable Pavement Material

13) Expanded Fill Factor = 1.30, Expanded Fill = Unexpanded Fill * Fill Factor

14) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material within the Division. Minus indicates a shortage of material within the Division.

BASE AGGREGATE DENSE AND WATER

STATION	TO	STATION	LOCATION	305.0110 3/4-INCH TON	305.0120 1 1/4-INCH TON	624.0100 WATER MGAL
8+20	-	9+51	CTH S	-	470	5
10+73	-	12+25	CTH S	-	555	6
DRIVEWAYS				15	35	2
UNDISTRIBUTED			MAINTAINING ACCESS	-	40	-
TOTALS				15	1,100	13

CONCRETE PAVEMENT

STATION	TO	STATION	LOCATION	415.0410 APPROACH SLAB SY
9+36	-	9+51	CTH S	50
10+73	-	10+88	CTH S	50
TOTALS				100

CONCRETE SIDEWALK AND DRIVEWAY

STATION	TO	STATION	LOCATION	416.0160 DRIVEWAY 6-INCH SY	416.0260 DRIVEWAY HES 6-INCH SY	SPV.0180.01 DRIVEWAY SHES 6-INCH SY	602.0405 SIDEWALK 4-INCH SF
8+20	-	9+50	CTH S, LT & RT	-	-	-	1,210
10+73	-	12+25	CTH S, LT & RT	-	-	-	1,780
		8+79	CTH S, LT	-	-	15	-
		8+97	CTH S, RT	-	-	33	-
		11+53	CTH S, LT	14	-	-	-
		11+73	CTH S, RT	-	22	-	-
		12+25	CTH S, RT	15	-	-	-
TOTALS				29	22	48	2,990

RAILING PIPE

STATION	TO	STATION	LOCATION	513.2001 LF
9+24	-	9+49	CTH S	27.5
TOTAL				27.5

ASPHALTIC PAVEMENT

STATION	TO	STATION	LOCATION	450.4000 HMA COLD WEATHER PAVING TON	455.0605 TACK COAT GAL	460.5223 HMA PAVEMENT 3 LT 58-28 S TON	460.5224 HMA PAVEMENT 4 LT 58-28 S TON	465.0120 ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES TON
8+20	-	9+51	CTH S	56	23	67	45	15
10+73	-	12+25	CTH S	66	27	79	52	5
TOTALS				122	50	146	97	20

CONCRETE CURB AND GUTTER

STATION	TO	STATION	LOCATION	601.0411 30-INCH TYPE D LF	SPV.0090.01 HES 30-INCH TYPE D LF	SPV.0090.02 SHES 30-INCH TYPE D LF	REMARKS
8+20	-	8+68	CTH S, RT	48	-	-	
8+20	-	8+67	CTH S, LT	47	-	-	
8+67	-	8+92	CTH S, LT	-	-	25	C.E.
8+68	-	9+19	CTH S, RT	-	-	51	C.E.
8+92	-	9+51	CTH S, LT	59	-	-	
9+19	-	9+51	CTH S, RT	32	-	-	
10+73	-	12+25	CTH S, LT	152	-	-	
10+73	-	11+62	CTH S, RT	89	-	-	
11+62	-	11+85	CTH S, RT	-	23	-	C.E.
11+85	-	12+46	CTH S, RT	61	-	-	
TOTALS				488	23	76	

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

3

3

INLET PROTECTION

STRUCTURE NO.	STATION	LOCATION	628.7005 TYPE A EACH	628.7015 TYPE C EACH	628.7020 TYPE D EACH
2A	8+61	CTH S, RT	1	1	-
2B	8+78	CTH S, RT	1	-	1
2C	8+59	CTH S, LT	1	1	-
2D	8+78	CTH S, LT	1	-	1
5	12+05	CTH S, LT	1	-	1
5A	12+05	CTH S, RT	1	-	1
	TOTALS		6	2	4

TRACKING PADS

LOCATION	628.7560 EACH
UNDISTRIBUTED	2
TOTAL	2

SIGNS REFLECTIVE TYPE II AND WOOD POSTS

STATION	LOCATION	SIGN CODE	W X H	634.0616 POSTS WOOD 4X6-INCH X 16-FT EACH	637.2210 SIGNS TYPE II REFLECTIVE H SF	637.2230 SIGNS TYPE II REFLECTIVE F SF	REMARKS
10+85	CTH S, LT	J2-2	48" X 57"	1	19	-	SOUTH, CTH "S", STRAIGHT / WEST, CTH "S", RIGHT
12+15	CTH S, LT	R7-1	18" X 24"	1	3	-	NO PARKING
12+50	CTH S, LT	M1-5A	24" X 24"	1	2	-	CTH "S"
		W1-6L	48" X 24"	-	-	8	MOUNT BELOW
TOTALS				3	24	8	

REMOVING SIGNS & SUPPORTS

STATION	LOCATION	638.2602 SIGNS TYPE II EACH	638.3000 SMALL SIGN SUPPORTS EACH	REMARKS
7+95	CTH S, RT	1	-	PED X-ING
9+47	CTH S, LT & RT	2	2	BRIDGE
10+54	CTH S, LT & RT	2	2	BRIDGE
10+85	CTH S, LT	6	1	CTH S
11+69	CTH S, LT	2	1	PED X-ING AHEAD
12+15	CTH S, LT	1	1	NO PARKING
12+50	CTH S, LT	3	1	STH 42 / CTH S / ARROW
TOTALS		17	8	

TRAFFIC CONTROL SUMMARY

LOCATION	APPROX. SERVICE DAYS	643.0300 DRUMS NO. IN SERVICE	643.0300 DRUMS DAYS	643.0410 BARRICADES TYPE II NO. IN SERVICE	643.0410 BARRICADES TYPE II DAYS	643.0420 BARRICADES TYPE III NO. IN SERVICE	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A NO. IN SERVICE	643.0705 WARNING LIGHTS TYPE A DAYS	643.0900 SIGNS NO. IN SERVICE	643.0900 SIGNS DAYS	643.1050 SIGNS PMCS NO. IN SERVICE	643.1050 SIGNS PMCS DAYS	COMMENTS
CTH S AT NAVARINO ST	7	-	-	-	-	-	-	-	-	-	-	1	7	BEFORE CLOSURE OF ROADWAY
CTH S AT N WATER ST	7	-	-	-	-	-	-	-	-	-	-	1	7	BEFORE CLOSURE OF ROADWAY
2ND ST AT LAKE ST	117	-	-	-	-	2	234	4	468	5	585	-	-	SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" - DETAIL C
NAVARINO ST AT STH 42 (N 4TH ST)	117	-	-	-	-	2	234	4	468	3	351	-	-	SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" - DETAIL A
2ND ST AT NAVARINO ST	117	-	-	-	-	2	234	4	468	3	351	-	-	SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" - DETAIL C
SOUTH PROJECT LIMITS	117	-	-	-	-	2	234	4	468	1	117	-	-	SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" - DETAIL E
STATION 9+25	117	-	-	-	-	5	585	6	702	1	117	-	-	SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" - DETAIL D
STATION 11+00	117	-	-	-	-	5	585	6	702	1	117	-	-	SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" - DETAIL D
NORTH PROJECT LIMITS	117	-	-	-	-	2	234	4	468	1	117	-	-	SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" - DETAIL E
CTH S AT N WATER ST	117	-	-	-	-	2	234	4	468	3	351	-	-	SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" - DETAIL C
CTH S AT CTH J	117	-	-	-	-	2	234	4	468	3	351	-	-	SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" - DETAIL A
SIDEWALK CLOSURE CTH S AT NAVARINO ST	117	-	-	2	234	-	-	-	-	2	234	-	-	SDD "TRAFFIC CONTROL, PEDESTRIAN ACCOMADATION" (SIDEWALK CLOSED)
SIDEWALK CLOSURE CTH S AT N WATER ST	117	-	-	2	234	-	-	-	-	2	234	-	-	SDD "TRAFFIC CONTROL, PEDESTRIAN ACCOMADATION" (SIDEWALK CLOSED)
NAVARINO ST AT STH 42 (N 4TH ST)	117	-	-	2	234	-	-	-	-	2	234	-	-	SDD "TRAFFIC CONTROL, PEDESTRIAN ACCOMADATION" (SIDEWALK DETOUR)
N WATER ST AT STH 42 (N 4TH ST)	117	-	-	2	234	-	-	-	-	2	234	-	-	SDD "TRAFFIC CONTROL, PEDESTRIAN ACCOMADATION" (SIDEWALK DETOUR)
AHNAPEE RIVER	117	-	-	-	-	-	-	-	-	-	-	-	-	
UNDISTRIBUTED	117	30	3,510	-	-	-	-	-	-	-	-	-	-	
TOTALS			3,510		936		2,808		4,680		3,393		14	

NOTE: COORDINATE BARRICADES & SIGNS WITH COUNTY DETOUR

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

3

STORM SEWER PIPE REINFORCED CONCRETE

FROM	TO	LOCATION	608.0312 CLASS III 12-INCH LF	608.0318 CLASS III 18-INCH LF	608.0324 CLASS III 24-INCH LF	608.0430 CLASS IV 30-INCH LF	520.8000 CONCRETE COLLARS FOR PIPE EACH	* JOINT TIES
EXIST	2	CTH S	-	36	-	-	1	-
2B	2A	CTH S	18	-	-	-	-	-
2A	2	CTH S	9	-	-	-	-	-
2D	2C	CTH S	18	-	-	-	-	-
2C	2	CTH S	26	-	-	-	-	-
2	3	CTH S	-	85	-	-	-	-
EXIST	5	CTH S	-	-	16	-	1	-
5A	5	CTH S	35	-	-	-	-	-
5	6	CTH S	-	-	-	106	-	-
6	7	CTH S	-	-	-	25	-	-
7	8	CTH S	-	-	-	44	-	6
TOTALS			106	121	16	175	2	6

NOTES:
* -FOR INFORMATION ONLY: JOINT TIES ARE REQUIRED FOR ENDWALLS.
TIE LAST THREE PIPE JOINTS (TWO TIES PER JOINT 6 TIES MINIMUM PER ENDWALL).

STORM SEWER STRUCTURES AND COVERS

STR. NO.	LOCATION	611.0535 MANHOLE COVERS TYPE J-SPECIAL EACH	611.0624 INLET COVERS TYPE H EACH	611.0639 INLET COVERS TYPE H-S EACH	SPV.0060.01 INLET COVERS TYPE H-D EACH	611.3230 INLETS 2X3-FT EACH	611.2004 MANHOLES 4-FT DIAMETER EACH	611.2006 MANHOLES 6-FT DIAMETER EACH	SPV.0060.02 INLETS 4X6-FT SPECIAL EACH	SPV.0060.03 RECONNECT EXISTING STORM SEWER LATERAL EACH	522.1030 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 30-INCH EACH
2	CTH S	1	-	-	-	-	1	-	-	-	-
2A	CTH S	-	1	-	-	1	-	-	-	-	-
2B	CTH S	-	-	-	1	1	-	-	-	1	-
2C	CTH S	-	1	-	-	1	-	-	-	-	-
2D	CTH S	-	-	-	1	1	-	-	-	-	-
5	CTH S	-	-	1	-	-	-	-	1	-	-
5A	CTH S	-	-	-	1	1	-	-	-	-	-
6	CTH S	1	-	-	-	-	-	1	-	-	-
7	CTH S	1	-	-	-	-	-	1	-	-	-
8	CTH S	-	-	-	-	-	-	-	-	-	1
TOTALS		3	2	1	3	5	1	2	1	1	1

3

PIPE UNDERDRAIN

STATION	LOCATION	612.0406 WRAPPED 6-INCH LF
8+78	CTH S, LT & RT	40
12+05	CTH S, LT & RT	40
TOTALS		80

TOPSOIL, FERTILIZER, SEED AND MULCH

STATION	TO	STATION	LOCATION	625.0100 TOPSOIL SY	627.0200 MULCHING SY	629.0210 FERTILIZER, TYPE B CWT	630.0140 SEEDING MIXTURE NO. 40 LB	630.0200 SEEDING TEMPORARY LB
8+20	-	9+51	CTH S, LT & RT	95	-	0.1	2	3
10+73	-	12+50	CTH S, LT & RT	255	-	0.2	5	7
UNDISTRIBUTED				70	125	0.1	1	2
TOTALS				420	125	0.4	8	12

MOBILIZATIONS EROSION CONTROL

LOCATION	628.1905 MOBILIZATIONS EROSION CONROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH
CTH S	5	3
	5	3

SILT FENCE

STATION	TO	STATION	LOCATION	628.1504 SILT FENCE LF	628.1520 MAINTENANCE LF
8+75	-	9+40	CTH S, LT	45	90
10+60	-	12+50	CTH S, LT & RT	295	590
UNDISTRIBUTED				70	140
TOTALS				410	820

EROSION MAT

STATION	TO	STATION	LOCATION	628.2006 URBAN CLASS I TYPE A SY
8+20	-	9+51	CTH S, LT & RT	95
10+73	-	12+50	CTH S, LT & RT	250
UNDISTRIBUTED				70
TOTAL				415

TURBIDITY BARRIERS

STATION	LOCATION	628.6005 SY	REMARKS
SOUTH ABUTMENT	CTH S	270	ABUTMENT CONSTRUCTION
NORTH ABUTMENT	CTH S	70	ABUTMENT CONSTRUCTION
TOTAL		340	

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

3

MARKING

CATEGORY	STATION	TO	STATION	LOCATION	646.1020 LINE EPOXY 4-INCH YELLOW LF	646.8120 CURB EPOXY LF	REMARKS
0010	8+20	-	12+25	CTH S	810	-	DOUBLE YELLOW
0040	8+20	-	12+25	CTH S, LT & RT	-	810	
TOTALS					810	810	

CONSTRUCTION STAKING

CATEGORY	STATION	TO	STATION	LOCATION	650.4000 STORM SEWER EACH	650.4500 SUBGRADE LF	650.5000 BASE LF	650.5500 CURB GUTTER AND CURB AND GUTTER LF	650.6500 STRUCTURE LAYOUT LS	650.9910 SUPPLEMENTAL CONTROL 4409-12-71 LS	650.9920 SLOPE STAKES LF
0010	8+20	-	9+51	CTH S	6	131	131	265	-	1	131
0010	10+73	-	12+25	CTH S	5	152	152	320	-	-	152
SUBTOTAL					11	283	283	585	0	1	283
0020	9+51	-	10+73	B-31-101	-	-	-	-	1	-	-
SUBTOTAL					0	0	0	0	1	0	0
0030	9+08	-	9+41	R-31-11	-	-	-	-	1	-	-
SUBTOTAL					0	0	0	0	1	0	0
TOTALS					11	283	283	585	2	1	283

3

SAWING PAVEMENT

STATION	TO	STATION	LOCATION	690.0150 SAWING ASPHALT LF	690.0250 SAWING CONCRETE LF	REMARKS
	8+20		CTH S	-	50	BOP
8+20	-	12+25	CTH S	90	5	SIDEWALK & DRIVEWAYS
	12+25		CTH S	-	70	EOP
	TOTALS			90	125	

ADJUSTING WATER SERVICE CURB STOPS

CATEGORY	STATION	LOCATION	SPV.0060.04 EACH
0040			
	11+18	CTH S, RT	1
	11+40	CTH S, LT	1
	11+68	CTH S, LT	1
	11+95	CTH S, LT	1
	11+95	CTH S, RT	1
	TOTAL		5

UTILITY LINE OPENING

STATION	LOCATION	SPV.0060.05 EACH	REMARKS
8+30	CTH S, RT	1	EXIST STORM SEWER
12+25	CTH S, LT	1	EXIST STORM SEWER
UNDISTRIBUTED	CTH S	3	3
TOTAL		3	3

ADJUSTING SANITARY MANHOLE COVER

CATEGORY	STATION	LOCATION	SPV.0060.06 EACH
0040			
	11+12	CTH S, RT	1
	TOTAL		1

SHREDDED HARDWOOD BARK MULCH

STATION	TO	STATION	LOCATION	SPV.0180.02 SY
9+25	-	9+45	CTH S, RT	19
TOTAL				19

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

SCHEDULE OF LANDS AND INTERESTS REQUIRED

PARCEL NO.	OWNERSHIP	INTEREST REQUIRED	TLE SQFT
1	VENDOR: BONNIE J. HUDSON VENDEE: STADIUM DINER & BLEACHERS BAR INC	TLE	221
2	R T & B CAPITAL INVESTMENTS LLC.	TLE	444
3	CITY OF ALGOMA	TLE	49
4	THOMAS J. DALLMAN AND CHERYL L. LONG REVOCABLE TRUST OF 2004	TLE	115
5	HAEGELE & ASSOCIATES, LLC	TLE	474
6	BRYAN C. AND AMY J. NEUBAUER	TLE	1,862
7	GARETH AND DONNA GRIDLEY	TLE	372
8	HARBOR BEACH CONDOMINIUM ASSOCIATION	TLE	128
9	BRYAN CRAIG NEUBAUER AND TONYA LEE MOORE	TLE	376
50	WISCONSIN PUBLIC SERVICE CORPORATION	RELEASE OF RIGHT	

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

CONVENTIONAL UTILITY SYMBOLS

WATER	—W—	SANITARY SEWER	—SAN—
GAS	—G—	STORM SEWER	—SS—
TELEPHONE	—T—		NON COMPENSABLE / COMPENSABLE
OVERHEAD TRANSMISSION LINES	—OH—	POWER POLE	● / ●
ELECTRIC	—E—	TELEPHONE POLE	✖ / ●
CABLE TELEVISION	—TV—	TELEPHONE PEDESTAL	✖ / ✖
FIBER OPTIC	—FO—	ELECTRIC TOWER	⊠

CONVENTIONAL ABBREVIATIONS

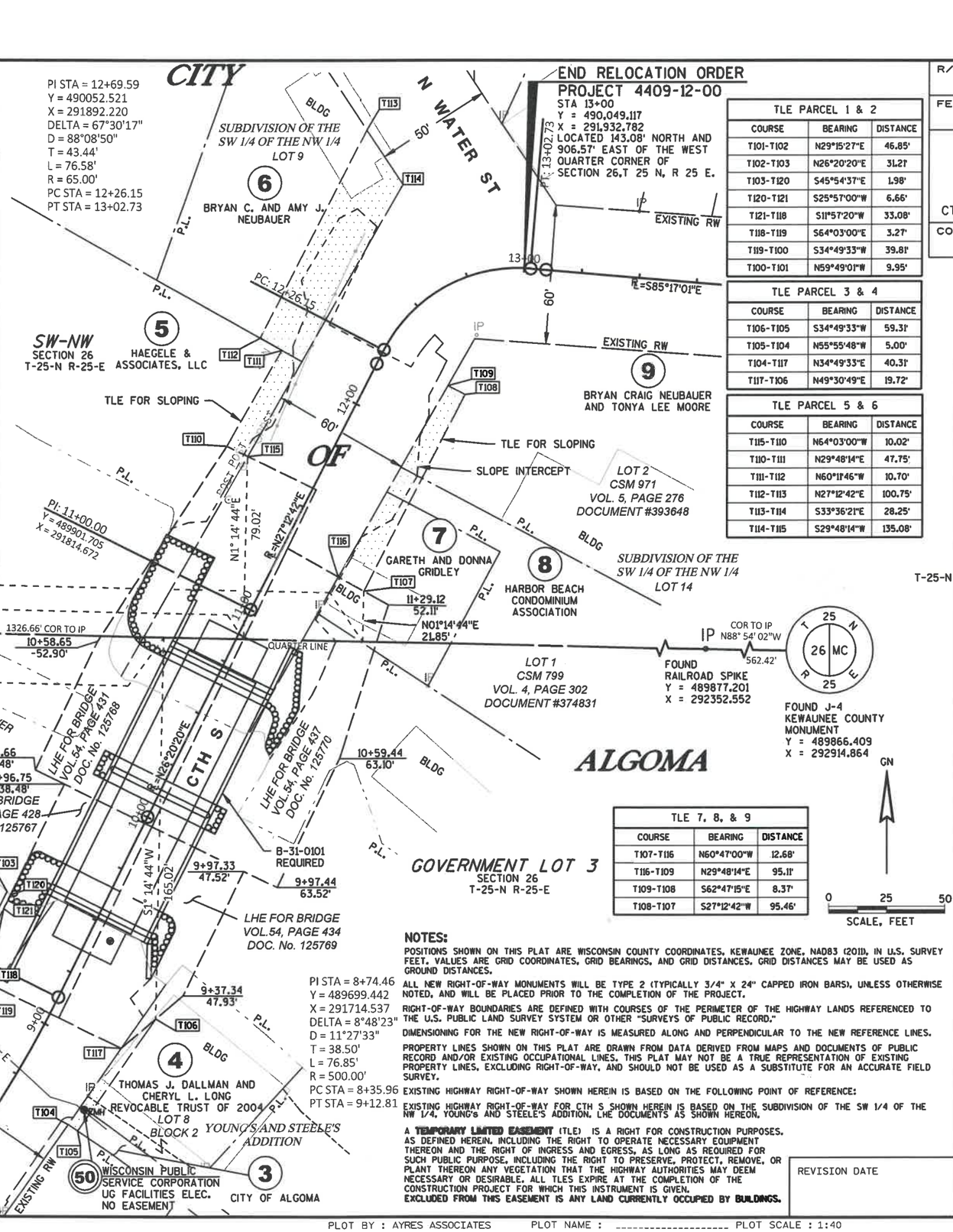
ACCESS POINT/ DRIVEWAY CONNECTION	AP	BUILDING	BLDG
ACCESS RIGHTS	AR	REFERENCE LINE	R/L
ACRES	AC.	RELEASE OF RIGHTS	ROR
AND OTHERS	ET.AL.	REMAINING	REM.
CENTERLINE	C/L	RIGHT-OF-WAY	R/W
CERTIFIED SURVEY MAP	CSM	SECTION	SEC.
CORNER	COR.	STATION	STA.
DOCUMENT	DOC.	TEMPORARY LIMITED EASEMENT	TLE
EASEMENT	EASE.	VOLUME	V.
FIELD ENTRANCE	F.E.	**CURVE DATA**	
LAND CONTRACT	LC	LONG CHORD	LCH
MONUMENT	MON.	LONG CHORD BEARING	LCB
PAGE	P.	RADIUS	R
PERMANENT LIMITED EASEMENT	PLE	DEGREE OF CURVE	D
PROPERTY LINE	PL	CENTRAL ANGLE OR DELTA	DELTA
RECORDED AS	(100')	LENGTH OF CURVE	L
		TANGENT	TAN

CONVENTIONAL SYMBOLS

FOUND IRON PIPE/PIN (1" UNLESS NOTED)	I.P.	TEMPORARY LIMITED EASEMENT	
R/W MONUMENT	○ =(SET)	PERMANENT LIMITED EASEMENT	
R/W STANDARD	▲ =(SET)	R/W BOUNDARY POINT	R9820
SIGN	ISIGN	PARCEL NUMBER	102
SECTION CORNER MONUMENT	⊡	UTILITY PARCEL NUMBER	32
SECTION CORNER SYMBOL	⊕	SIGN NUMBER (OFF PREMISE)	21-1
FEE (HATCH VARIES)		BUILDING	
SECTION LINE		NEW REFERENCE LINE	10
QUARTER LINE		NEW R/W LINE	
SIXTEENTH LINE		EXISTING R/W LINE	
		PROPERTY LINE	P.L.
		LOT & TIE	
		CORPORATE LIMITS	
		TEMPORARY LIMITED EASEMENT	
		FENCE	
		SLOPE INTERCEPTS	
		PERMANENT LIMITED EASEMENT	L
		NO ACCESS (BY STATUTORY AUTHORITY)	
		NO ACCESS (BY PREVIOUS ACQUISITION/CONTROL)	
		ACCESS CONTROL BY ACQUISITION	
		ACCESS RESTRICTED (BY PREVIOUS PROJECT/CONTROL)	

50 WISCONSIN PUBLIC SERVICE CORPORATION
NO EASEMENT
-PARCELS 1&2

R/W POINT STATION & OFFSET TABLE		
POINT	STATION	OFFSET
100	8+62.23	30.05'
101	8+61.87	40.00'
102	9+12.81	40.00'
103	9+44.02	40.00'
104	8+67.94	30.33'
105	8+67.72	35.33'
106	9+23.27	41.91'
107	11+29.54	40.00'
108	12+25.00	40.00'
109	12+25.00	31.63'
110	11+58.11	41.47'
111	12+05.82	39.31'
112	12+06.30	50.00'
113	12+66.00	75.61'
114	12+67.69	47.55'
115	11+58.34	31.45'
116	11+29.99	27.33'
117	9+05.63	34.20'
118	9+04.19	29.78'
119	9+04.28	26.51'



TLE PARCEL 1 & 2		
COURSE	BEARING	DISTANCE
T101-T102	N29°15'27"E	46.85'
T102-T103	N26°20'20"E	31.21'
T103-T120	S45°54'37"E	1.98'
T120-T121	S25°57'00"W	6.66'
T121-T118	S11°57'20"W	33.08'
T118-T119	S64°03'00"E	3.27'
T119-T100	S34°49'33"W	39.81'
T100-T101	N59°49'01"W	9.95'

TLE PARCEL 3 & 4		
COURSE	BEARING	DISTANCE
T106-T105	S34°49'33"W	59.31'
T105-T104	N55°55'48"W	5.00'
T104-T117	N34°49'33"E	40.31'
T117-T106	N49°30'49"E	19.72'

TLE PARCEL 5 & 6		
COURSE	BEARING	DISTANCE
T115-T110	N64°03'00"W	10.02'
T110-T111	N29°48'14"E	47.75'
T111-T112	N60°11'46"W	10.70'
T112-T113	N27°12'42"E	100.75'
T113-T114	S33°36'21"E	28.25'
T114-T115	S29°48'14"W	135.08'

TLE 7, 8, & 9		
COURSE	BEARING	DISTANCE
T107-T116	N60°47'00"W	12.68'
T116-T109	N29°48'14"E	95.11'
T109-T108	S62°47'15"E	8.37'
T108-T107	S27°12'42"W	95.46'

0 25 50
SCALE, FEET

NOTES:

POSITIONS SHOWN ON THIS PLAT ARE WISCONSIN COUNTY COORDINATES, KEWAUNEE ZONE, NAD83 (2011), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

ALL NEW RIGHT-OF-WAY MONUMENTS WILL BE TYPE 2 (TYPICALLY 3/4" X 24" CAPPED IRON BARS), UNLESS OTHERWISE NOTED, 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."

DIMENSIONING FOR THE NEW RIGHT-OF-WAY IS MEASURED ALONG AND PERPENDICULAR TO THE NEW REFERENCE LINES.

PROPERTY LINES SHOWN ON THIS PLAT ARE DRAWN FROM DATA DERIVED FROM MAPS AND DOCUMENTS OF PUBLIC RECORD AND/OR EXISTING OCCUPATIONAL LINES. THIS PLAT MAY NOT BE A TRUE REPRESENTATION OF EXISTING PROPERTY LINES, EXCLUDING RIGHT-OF-WAY, AND SHOULD NOT BE USED AS A SUBSTITUTE FOR AN ACCURATE FIELD SURVEY.

EXISTING HIGHWAY RIGHT-OF-WAY SHOWN HEREIN IS BASED ON THE FOLLOWING POINT OF REFERENCE:

EXISTING HIGHWAY RIGHT-OF-WAY FOR CTH S SHOWN HEREIN IS BASED ON THE SUBDIVISION OF THE SW 1/4 OF THE NW 1/4, YOUNG'S AND STEELE'S ADDITION, LHE DOCUMENTS AS SHOWN HEREON.

A **TEMPORARY LIMITED EASEMENT** (TLE) IS A RIGHT FOR CONSTRUCTION PURPOSES, AS DEFINED HEREIN, INCLUDING THE RIGHT TO OPERATE NECESSARY EQUIPMENT THEREON AND THE RIGHT OF INGRESS AND EGRESS, AS LONG AS REQUIRED FOR SUCH PUBLIC PURPOSE, INCLUDING THE RIGHT TO PRESERVE, PROTECT, REMOVE, OR PLANT THEREON ANY VEGETATION THAT THE HIGHWAY AUTHORITIES MAY DEEM NECESSARY OR DESIRABLE. ALL TLES EXPIRE AT THE COMPLETION OF THE CONSTRUCTION PROJECT FOR WHICH THIS INSTRUMENT IS GIVEN. **EXCLUDED FROM THIS EASEMENT IS ANY LAND CURRENTLY OCCUPIED BY BUILDINGS.**

REVISION DATE

R/W PROJECT NUMBER	SHEET NUMBER	TOTAL SHEETS
4409-12-00	4.01	1
FEDERAL PROJECT NUMBER ----------		

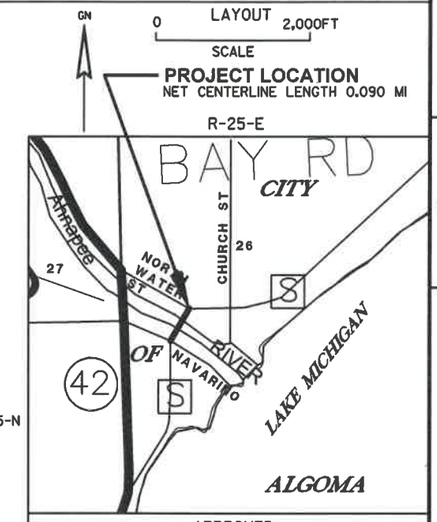
PLAT OF RIGHT-OF-WAY REQUIRED FOR

CTH S, NAVARINO ST - N WATER ST

AHNAPEE RIVER BRIDGE & APPROACHES

CTH S — KEWAUNEE COUNTY

CONSTRUCTION PROJECT NUMBER
4409-12-71



APPROVED FOR KEWAUNEE COUNTY

2-12-18 DATE

(Signature)

PLAT PREPARED BY

AYRES ASSOCIATES

THE SURVEY IS PREPARED AT THE REQUEST OF KEWAUNEE COUNTY. THE TOPOGRAPHY AND UTILITY SURVEY WAS PERFORMED IN MARCH 2016. THIS SURVEY IS ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

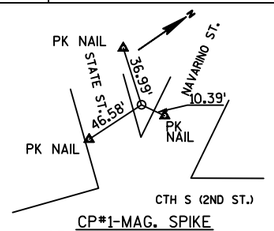
WISCONSIN
James R. Cappeart
S-3044
Green Bay
Wis.
LAND SURVEYOR

JAMES CAPPEART
REGISTRATION NUMBER S-3044

02/08/2018 DATE

BENCH MARKS

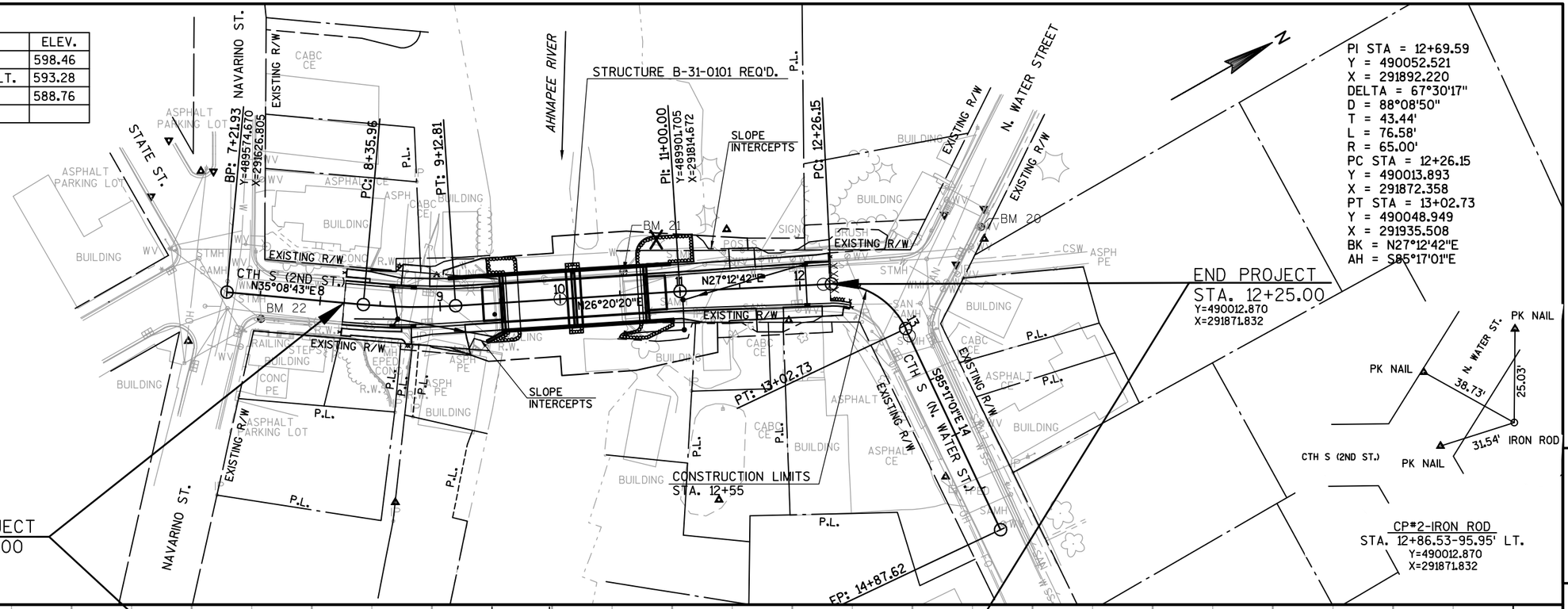
NO.	STATION	DESCRIPTION	ELEV.
1	7+52	BURY BOLT ON HYD.-19.5' RT.	598.46
2	10+54	CHIS. SQ. NW WINGWALL-19.4' LT.	593.28
3	12+83	RR SPK. IN PP-100' LT.	588.76

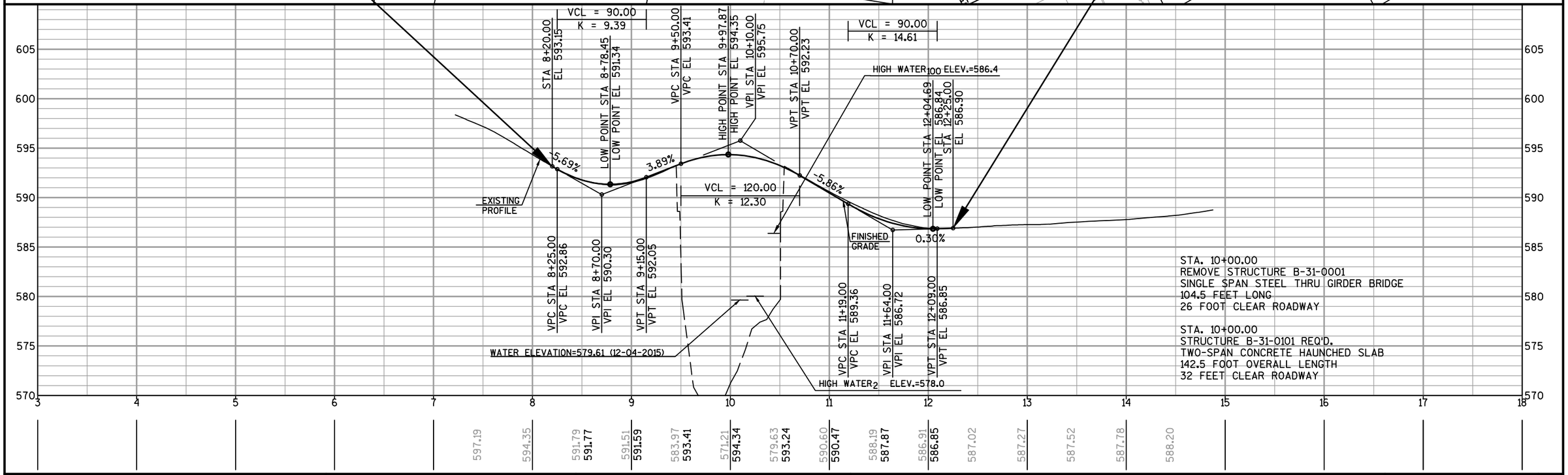


CP*1-MAG. SPICE
STA. 6+91.44-98.48' LT.
Y=489606.479
X=291528.658

PI STA = 8+74.46
Y = 489699.442
X = 291714.537
DELTA = 8°48'23"
D = 11°27'33"
T = 38.50'
L = 76.85'
R = 500.00'
PC STA = 8+35.96
Y = 489667.960
X = 291692.374
PT STA = 9+12.81
Y = 489733.947
X = 291731.619
BK = N35°08'43"E
AH = N26°20'20"E

BEGIN PROJECT
STA. 8+20.00
Y=489654.836
X=291683.135





STA. 10+00.00
REMOVE STRUCTURE B-31-0001
SINGLE SPAN STEEL THRU GIRDER BRIDGE
104.5 FEET LONG
26 FOOT CLEAR ROADWAY

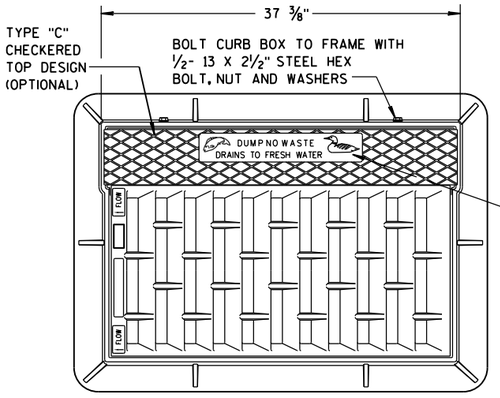
STA. 10+00.00
STRUCTURE B-31-0101 REQ'D.
TWO-SPAN CONCRETE HAUNCHED SLAB
142.5 FOOT OVERALL LENGTH
32 FEET CLEAR ROADWAY

PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	PLAN AND PROFILE: CTH S	SHEET	E

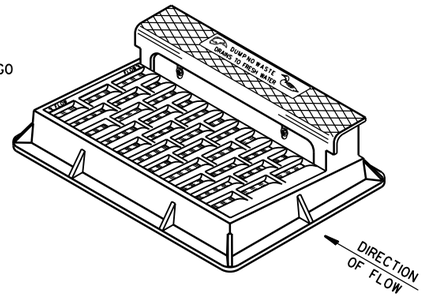
FILE NAME : V:\TRANS-GB\450417 CTH S\ROADWAY\C3D\SHEETSPLAN\050101 PP.DWG
LAYOUT NAME - 050101 PP
PLOT DATE : 7/27/2018 11:34 AM PLOT BY : SOUFAL, KEVIN PLOT NAME : PLOT SCALE : 1 IN:100 FT

Standard Detail Drawing List

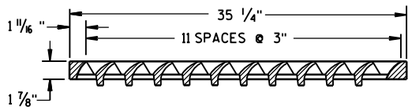
08A05-19A	INLET COVERS TYPE A, H, A-S, H-S & Z
08A05-19D	INLET COVER TYPE BW, MANHOLE COVERS, TYPE K, J, J-S, L & M
08B09-02	MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER
08C07-02	INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT
08D01-20A	CONCRETE CURB & GUTTER
08D01-20B	CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS
08D18-02	DRIVEWAY AND SIDEWALK RAMPS TYPES X & Y
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
08E11-02	TURBIDITY BARRIER
08E14-01	TRACKING PAD
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
12A03-10	NAME PLATE (STRUCTURES)
13B02-08A	CONCRETE PAVEMENT APPROACH SLAB
13C01-19	CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES
13C18-06C	CONCRETE PAVEMENT JOINT TYPES
15C02-06A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C06-09	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-18A	LONGITUDINAL MARKING (MAINLINE)
15C11-07B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS

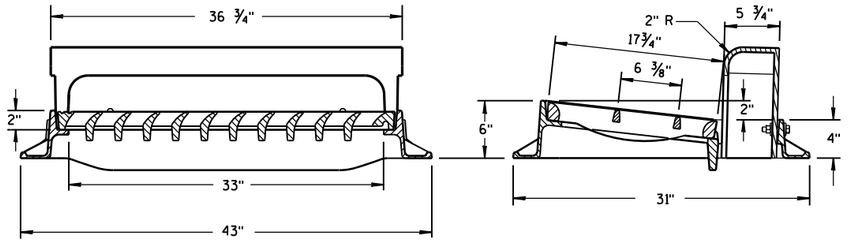


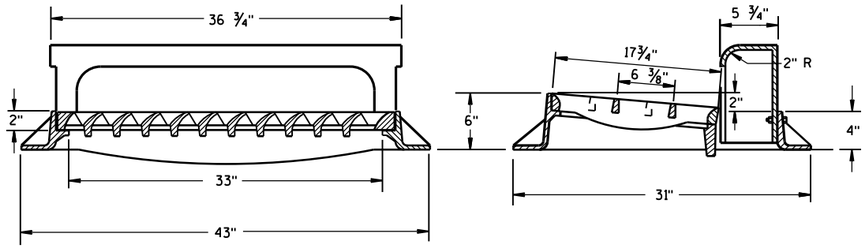
NOTE:
GRATE IS REVERSIBLE.



NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"

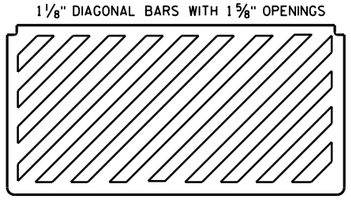






TYPE "H"

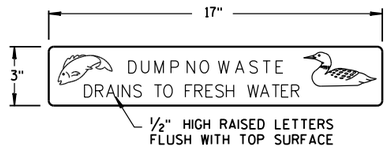
NOTE: EITHER CASTING IS ACCEPTABLE



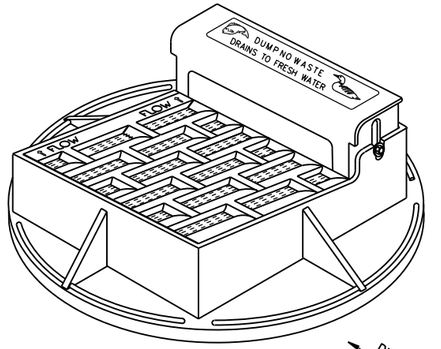
SPECIAL GRATE FOR TYPE "H" COVER

(MEASURES 35 1/4" X 17 3/4" X 2")

(NOTED AS TYPE H-S ON DRAINAGE TABLE)



LOGO DETAIL



NOTE: CURB BOX ADJUSTABLE 4" TO 9"

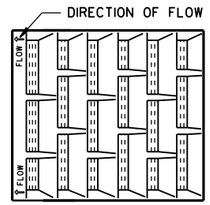
NOTE:
GRATE IS REVERSIBLE.

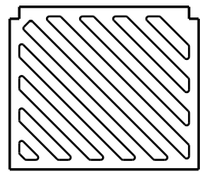
GENERAL NOTES

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.

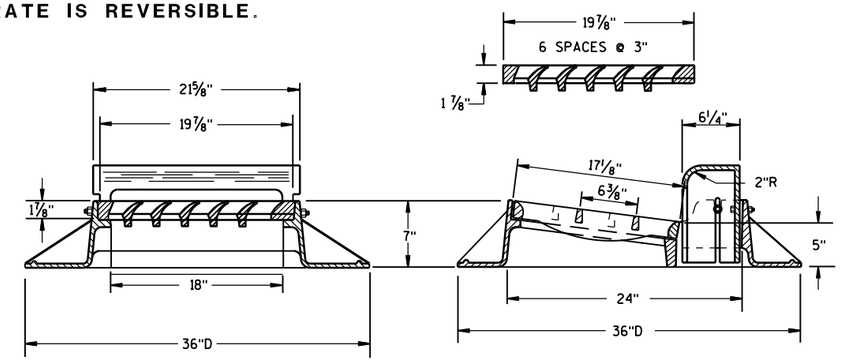




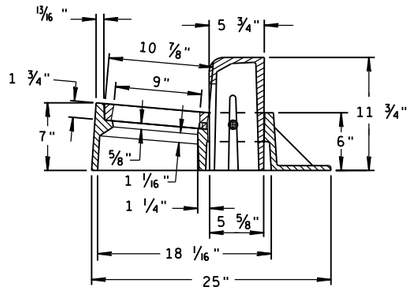
SPECIAL GRATE FOR TYPE "A" COVER

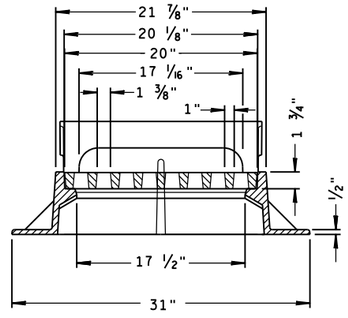
(MEASURES 19 3/4" X 17" X 1 7/8")

(NOTED AS TYPE A-S ON DRAINAGE TABLE)

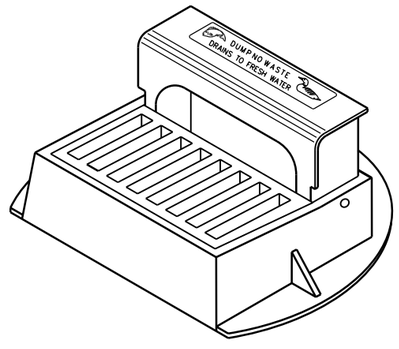


TYPE "A"





TYPE "Z"



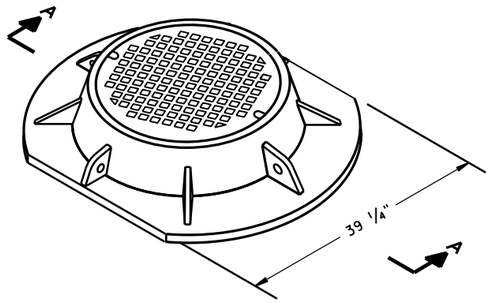
INLET COVERS
TYPE A, H, A-S, H-S & Z

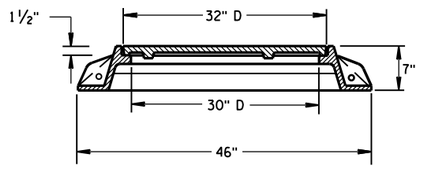
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11-27-13 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
FHWA

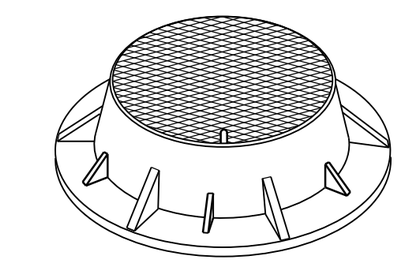
6

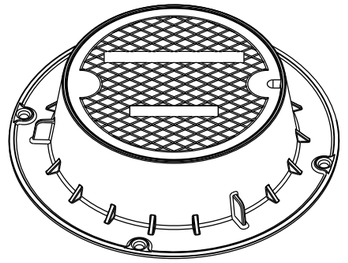
S.D.D. 8 A 5-19a

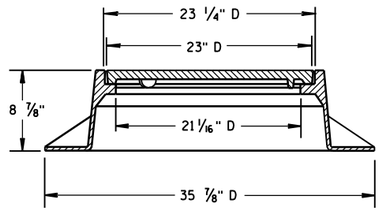


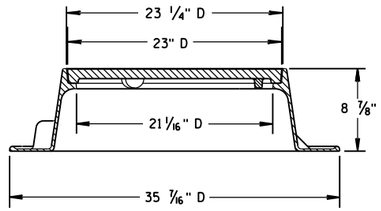


SECTION A-A
TYPE "K"









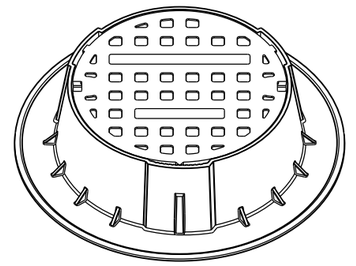
TYPE "J"
NOTE: EITHER CASTING IS ACCEPTABLE

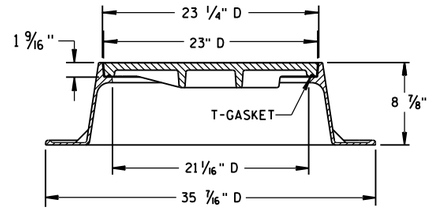
GENERAL NOTES

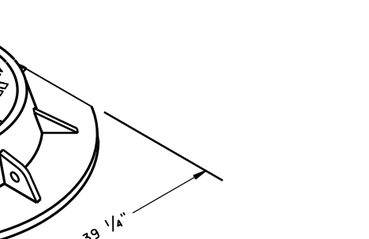
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

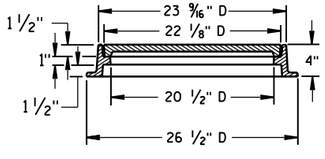
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR MANHOLE COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

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

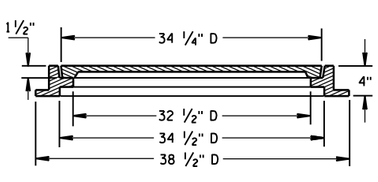




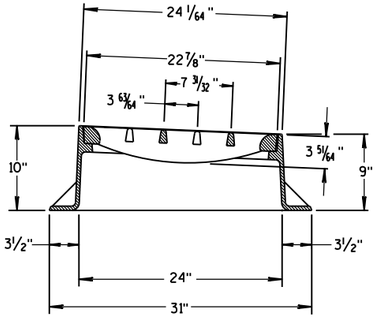


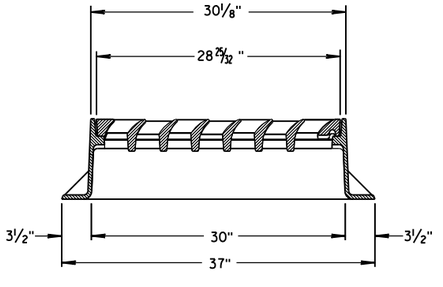


TYPE "L"

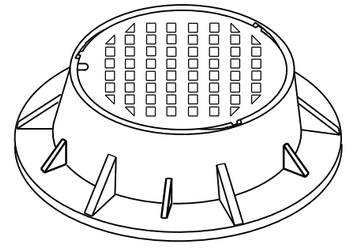


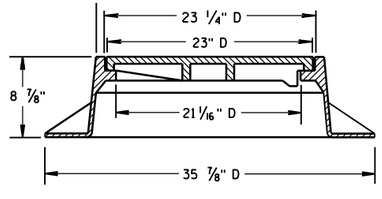
TYPE "M"





INLET COVER TYPE "BW"





TYPE "J" SPECIAL
TYPE "B" NON-ROCKING SELF-SEAL LID
(NOTED AS TYPE J-S ON THE DRAINAGE TABLE)
NOTE: EITHER CASTING IS ACCEPTABLE

INLET COVER TYPE BW
MANHOLE COVERS, TYPE K, J, J-S, L & M

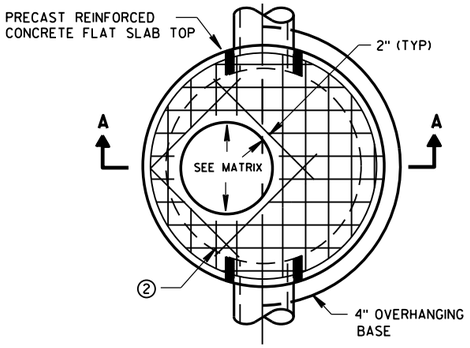
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/27/2013
DATE
FHWA

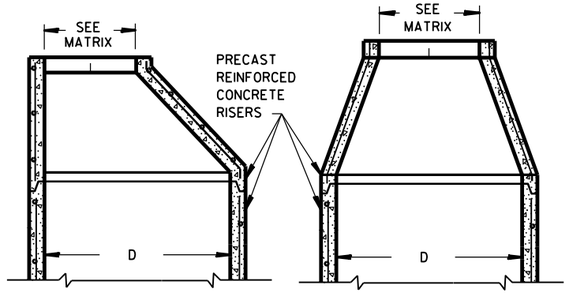
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT ENGINEER

6

S.D.D. 8 A 5-19d

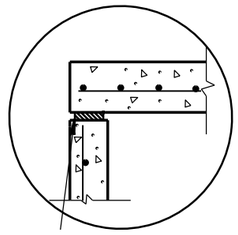


PLAN VIEW CIRCULAR OPENING

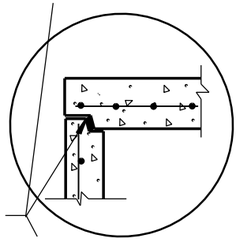


OPTIONAL PRECAST REINFORCED CONCRETE ECCENTRIC TOP

OPTIONAL PRECAST REINFORCED CONCRETE CONCENTRIC TOP

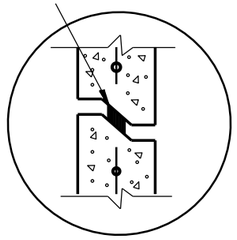


TOP WITH PLAIN END JOINT



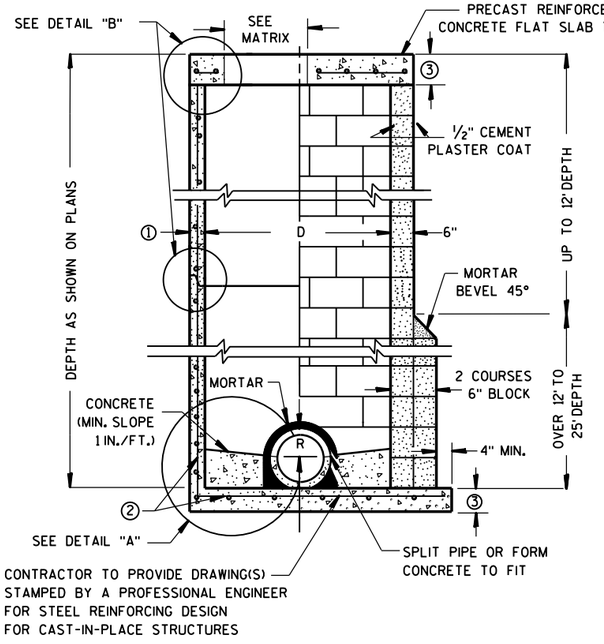
JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C990 (TYP)

TOP WITH TONGUE AND GROOVE JOINT



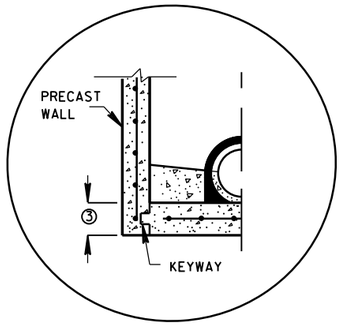
RISER WITH TONGUE AND GROOVE JOINT

DETAIL "B"

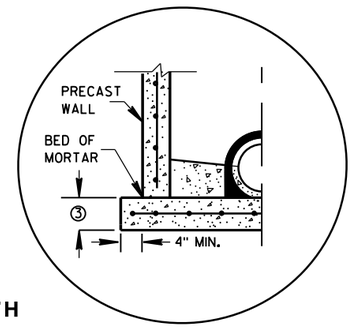


PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE

CONCRETE BLOCK WITH CAST-IN-PLACE OR PRECAST REINFORCED CONCRETE BASE ②

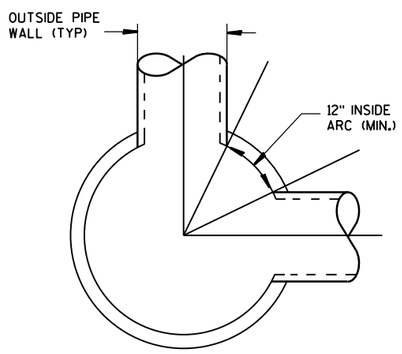


PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION



SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

DETAIL "A"



DETAIL "C"

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 MANHOLE 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 DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 3X3-L", "CATCH BASINS 4-B", "INLETS 2X3-H", ETC. THE FIRST NUMBERS DESIGNATE 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 FOUNDATION BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

PRECAST REINFORCED CONE TOPS (ECCENTRIC OR CONCENTRIC) OR PRECAST REINFORCED FLAT SLAB TOPS MAY BE USED ON CONCRETE BLOCK STRUCTURES.

ECCENTRIC CONE TOPS MAY BE USED ON ALL STRUCTURES, AND CONCENTRIC CONE TOPS SHALL BE USED ONLY ON STRUCTURES 5 FEET OR LESS IN DEPTH, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

STEPS MEETING AASHTO M199 AND THE FOLLOWING REQUIREMENTS SHALL BE INSTALLED IN ALL STRUCTURES OVER 5 FEET IN DEPTH: 16 INCH C-C MAXIMUM SPACING; PROJECT A MINIMUM CLEAR DISTANCE OF 4 INCHES FROM THE WALL AT THE POINT OF EMBEDMENT; MINIMUM LENGTH OF 10 INCHES; MINIMUM WALL EMBEDMENT OF 3 INCHES. FERROUS METAL STEPS NOT PAINTED OR TREATED TO RESIST CORROSION SHALL HAVE A MINIMUM CROSS SECTIONAL DIMENSION OF 1 INCH.

STEPS OF APPROVED POLYPROPYLENE PLASTIC COATED REINFORCEMENT BAR ARE ACCEPTABLE. REINFORCING BAR MUST BE A MINIMUM OF ½" AND MEET THE REQUIREMENTS OF ASTM A615.

CERTIFICATION SHALL BE PROVIDED THAT INSTALLED STEPS WHEN TESTED IN ACCORDANCE WITH SECTION 10 OF AASHTO T280 CAN WITHSTAND A VERTICAL LOAD OF 800 LBS. AND A HORIZONTAL LOAD OF 400 LBS.

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

CONCRETE BLOCK WILL NOT BE PERMITED FOR STRUCTURES GREATER THAN 4 FEET IN DIAMETER.

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

ALL PRECAST MANHOLE UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M 199.

4" OVERHANGING BASES ARE REQUIRED FOR ALL CONCRETE BLOCK INSTALLATIONS. 4" OVERHANG IS REQUIRED WHEN SEPARATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

FOR ADDITIONAL CONFIGURATIONS, MAINTAIN A MINIMUM OF 12 INCHES AS MEASURED FROM THE INSIDE OF THE STRUCTURE WALL BETWEEN THE OUTSIDE PIPE WALLS OF ADJACENT PIPES. SEE DETAIL "C".

① MINIMUM WALL THICKNESS SHALL BE 4 INCHES FOR 3-FT, 5 INCHES FOR 4-FT, 6 INCHES FOR 5-FT, 7 INCHES FOR 6-FT, 8 INCHES FOR 7-FT AND 9 INCHES FOR 8-FT DIAMETER PRECAST MANHOLES.

② FOR PRECAST MANHOLES PROVIDE REINFORCING STEEL IN ACCORDANCE TO AASHTO M199.

③ PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER OF 48" AND LESS SHALL HAVE A MINIMUM THICKNESS OF 6". PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER LARGER THAN 48" SHALL HAVE A MINIMUM THICKNESS OF 8".

MANHOLE COVER OPENING MATRIX

MANHOLE COVER TYPE	C	ALL J'S	K	L	M
OPENING SIZE (FT)					
2 DIA.	X	X		X	
3 DIA.			X		X

PIPE MATRIX

MANHOLE SIZE	MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES	
	180° SEPARATION (IN)	90° SEPARATION (IN)
3-FT	15	12
4-FT	24	18
5-FT	36	24
6-FT	42	36
7-FT	48	36
8-FT	60	42

MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

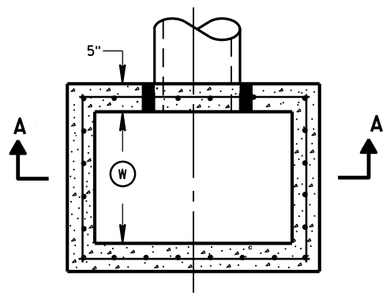
APPROVED

Sept., 2016
DATE

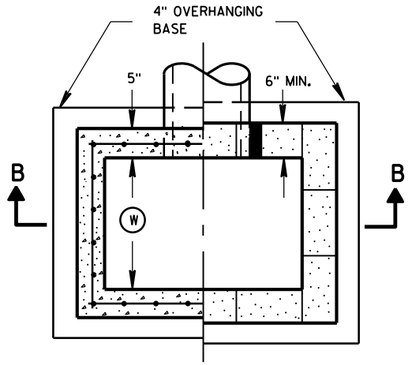
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERV

FHWA

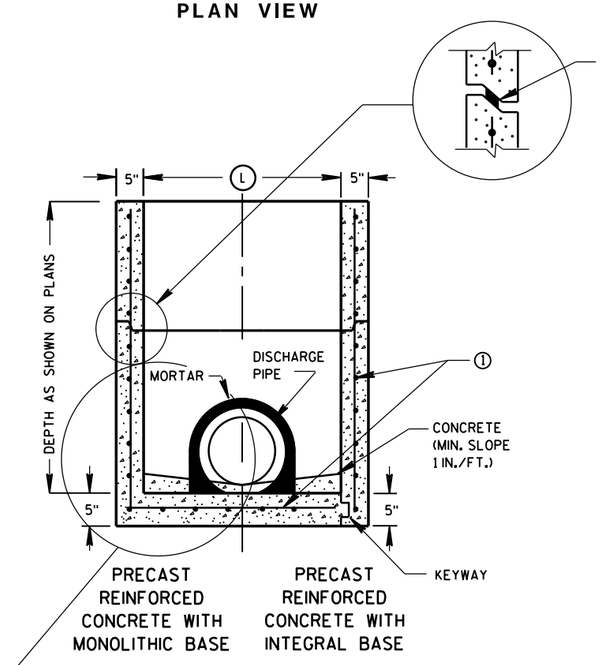
6
S.D.D. 8 B 9-2



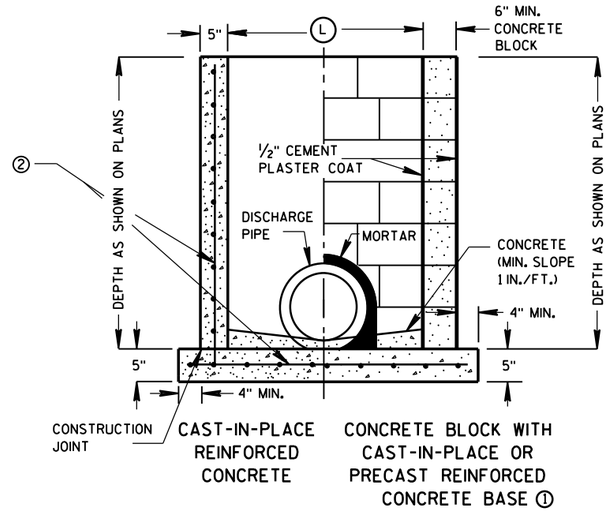
PLAN VIEW



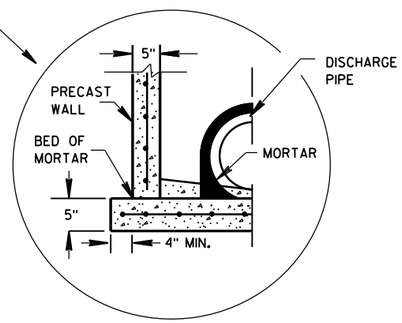
PLAN VIEW



SECTION A-A



SECTION B-B



SEPARATE 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 FOUNDATION 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 SEPARATE 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.

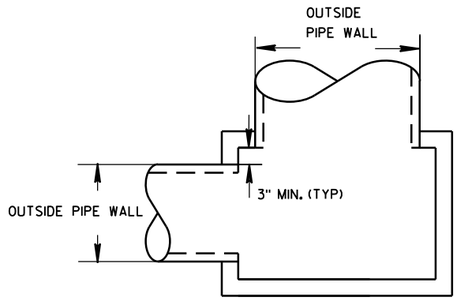
② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

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"

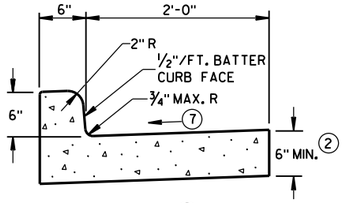
INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

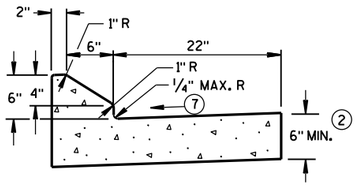
APPROVED
Sept., 2016 — DATE
/S/ Rodney Taylor
ROADWAY STANDARDS D IT UNIT SUPERVIS
FHWA

6

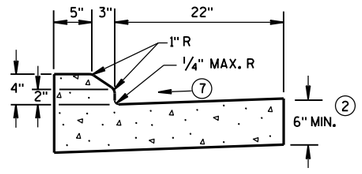
S.D.D. 8 C 7-2



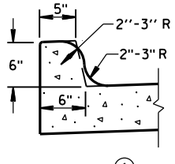
TYPES A (1) & D



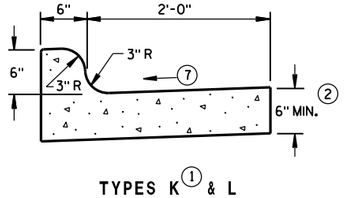
6" SLOPED CURB TYPES G (1) & J



4" SLOPED CURB TYPES G (1) & J

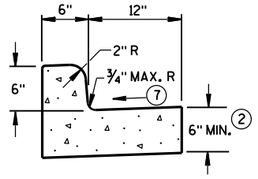


TYPES K (1) & L
(OPTIONAL CURB SHAPE)



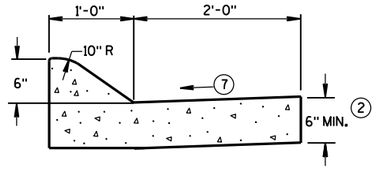
TYPES K (1) & L

CONCRETE CURB & GUTTER 30"

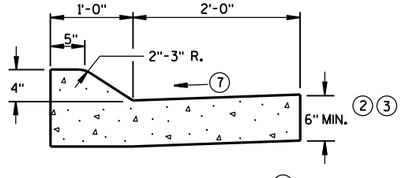


TYPES A (1) & D

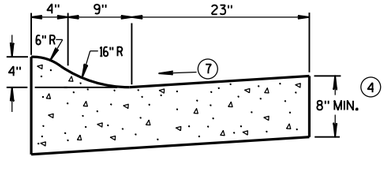
CONCRETE CURB & GUTTER 18"



6" SLOPED CURB TYPES A (1) & D

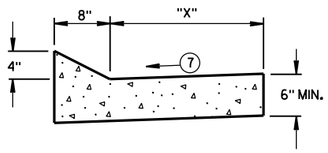


4" SLOPED CURB TYPES A (1) & D



4" SLOPED CURB TYPES R (1) & T (5)

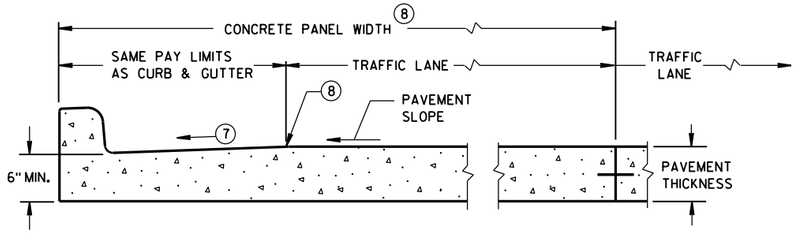
CONCRETE CURB & GUTTER 36"



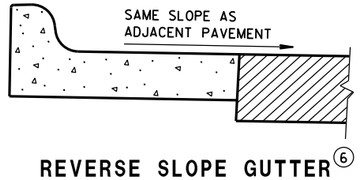
TYPES TBT & TBTT (1)

CONCRETE CURB & GUTTER

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



PARTIAL SECTION OF PAVEMENT *
WITH INTEGRAL CURB & GUTTER



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

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.

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, R AND TBTT.

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

(3) USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.

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

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

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

(7) USE 4% GUTTER CROSS SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.

(8) INCLUDE LONGITUDINAL JOINT AND TIE BARS ALONG LANE EDGE WHEN CONCRETE PANEL WIDTH EXCEEDS THE MAXIMUM WIDTH PER TABLE BELOW. LONGITUDINAL JOINT(S) ARE NOT ALLOWED WITHIN TRAFFIC LANES AND BIKE LANES. LONGITUDINAL JOINT MAY BE SAWED.

PAVEMENT THICKNESS AND MAXIMUM CONCRETE PANEL WIDTH TABLE

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

* BIKE LANE IS NOT SHOWN.

CONCRETE CURB & GUTTER

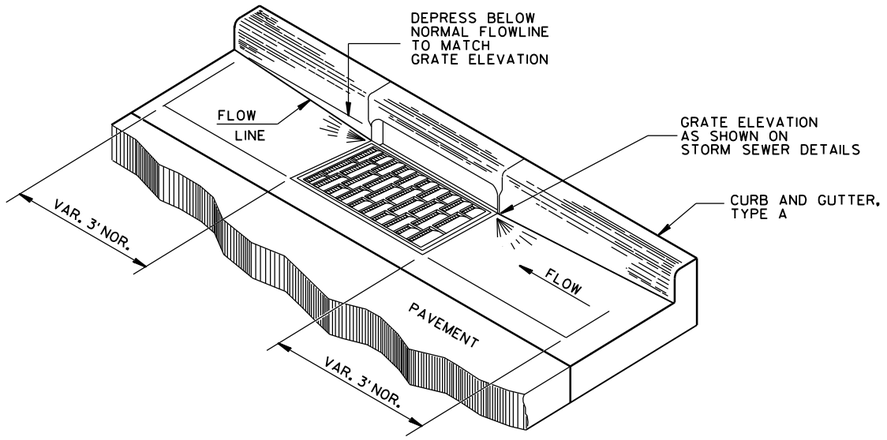
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO...

6

S.D.D. 8 D 1-20a

6

S.D.D. 8 D 1-20a



DETAIL OF CURB AND GUTTER AT INLETS

(TYPE H INLET COVER SHOWN)

GENERAL NOTES

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

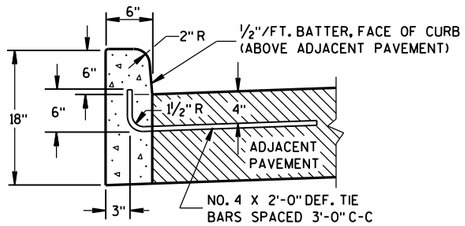
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

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

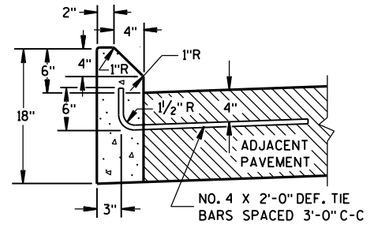
(1) TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, G, K, R AND TBTT.

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

(9) REFER TO SDD 8D18 AND SDD 8D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.

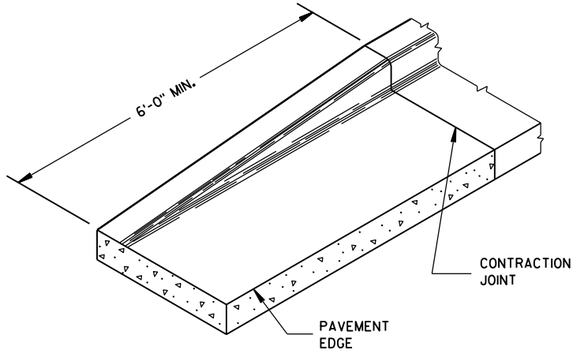


TYPES A (1) & D

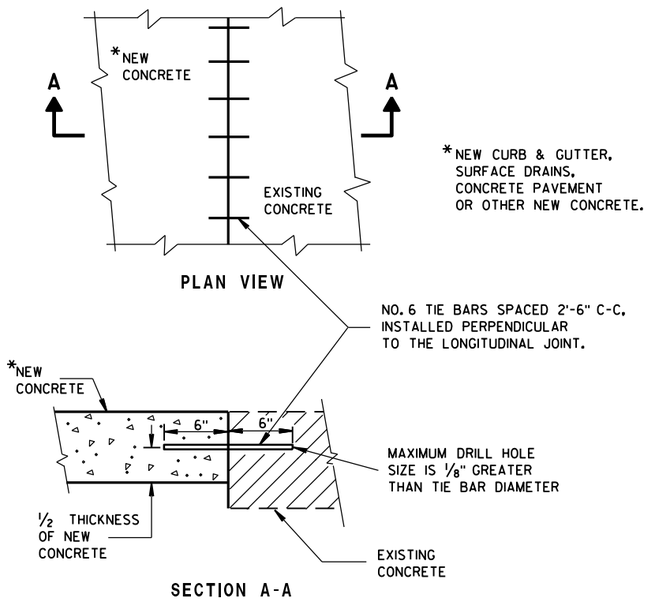


TYPES G (1) & J

CONCRETE CURB



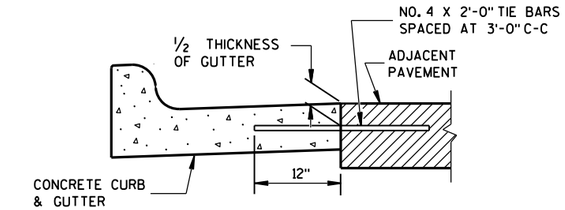
END SECTION CURB & GUTTER



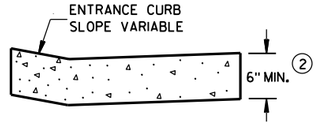
PLAN VIEW

SECTION A-A

TIE BARS DRILLED INTO EXISTING PAVEMENT



TYPICAL TIE BAR LOCATION (1)



DRIVEWAY ENTRANCE CURB (9)

(WHEN DIRECTED BY THE ENGINEER)

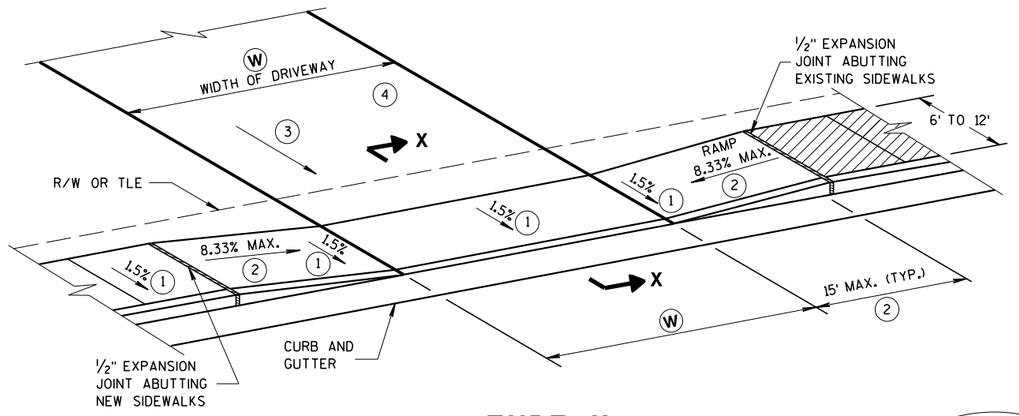
CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

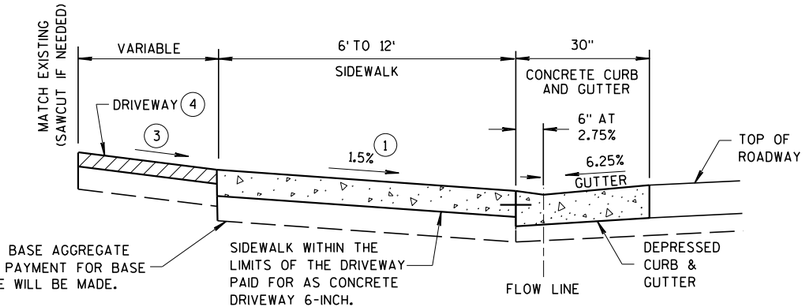
APPROVED
June, 2017 — DATE
/S/ Rodney Taylor — ROADWAY STANDARDS 33 UNIT SUPERVISOR — ENT
FHWA

6

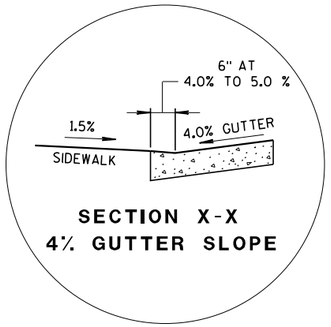
S.D.D. 8 D 1-20b



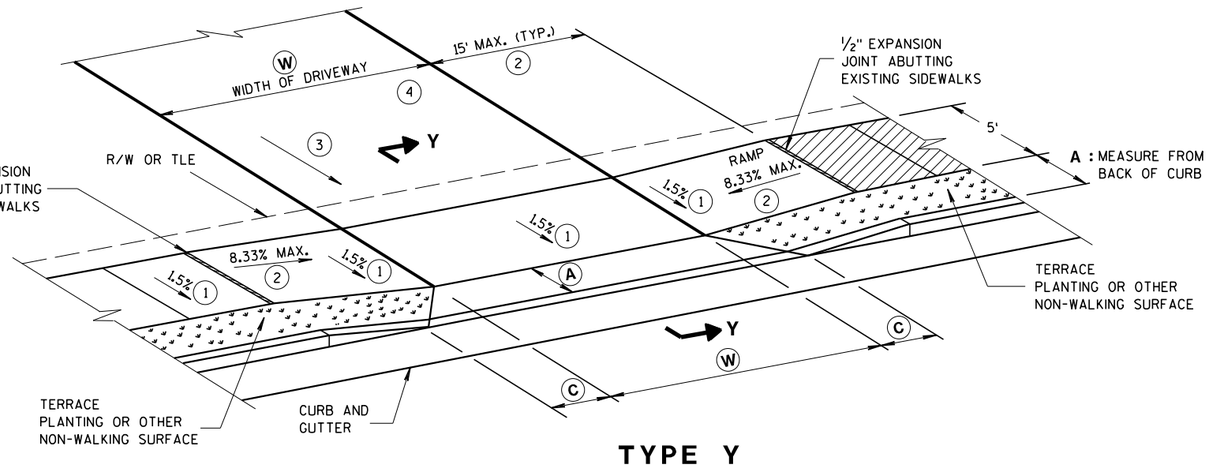
TYPE X
SIDEWALK ABUTS CURB & GUTTER
TERRACE VARIES 0 TO 3 FEET



SECTION X-X



SECTION X-X
4% GUTTER SLOPE



TYPE Y
SIDEWALK WITH NARROWER TERRACE
TERRACE VARIES 4 TO 6 FEET

W: 12' MIN. - 24' MAX. RESIDENTIAL AND NON-COMMERCIAL (PE & FE)
16' MIN. - 35' MAX. COMMERCIAL (CE)

GENERAL NOTES

PROVIDE CONSTRUCTION JOINTS ALONG THE CENTER OF THE CONCRETE FOR DRIVEWAYS UNDER 20 FEET IN WIDTH AND AT THE THIRD POINTS OVER 20 FEET IN WIDTH.

(W) IS SHOWN ON PLAN AND PROFILE SHEETS.

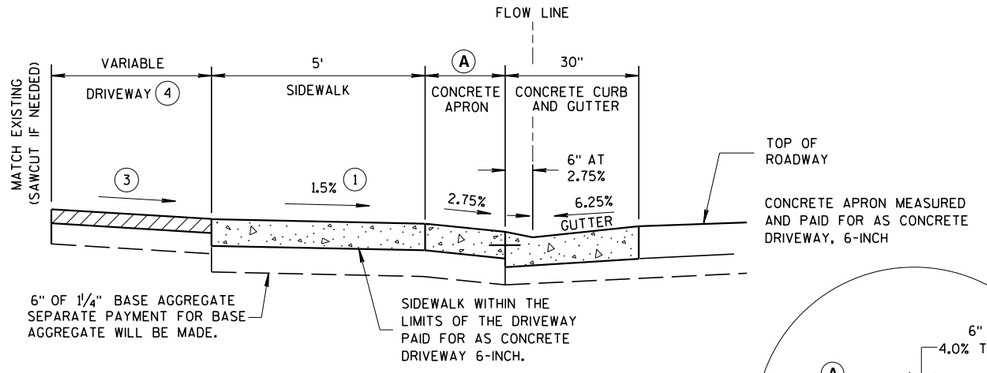
OFFSETS, ELEVATIONS, AND PERCENT GRADE ARE SHOWN ON THE CROSS SECTIONS.

(1) CONSTRUCTION TOLERANCE OF 0.5% ± FOR SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.

(2) THE SIDEWALK RAMP MAXIMUM RUNNING SLOPE SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15 FEET TO AVOID CHASING THE SLOPE INDEFINITELY WHEN CONNECTING TO STEEP GRADES. WHEN APPLYING THE 15 FOOT MAXIMUM LENGTH, THE RUNNING SLOPE OF THE SIDEWALK SHALL BE AS FLAT AS FEASIBLE AND NOT EXCEED THE LONGITUDINAL GRADE OF THE ROADWAY. SLOPE SIDEWALK RAMP TOWARD APRON AS SHOWN WHERE THERE IS NO TERRACE OR WHERE THE TERRACE WIDTH IS LESS THAN 6 FEET WIDE.

(3) DRIVEWAY SLOPES: DESIRABLE MAXIMUM
- 10.5% UP AWAY FROM SIDEWALK (SAG)
- 8.5% DOWN AWAY FROM SIDEWALK (CREST)
- ABSOLUTE MAXIMUM 15% FOR BOTH CREST AND SAG

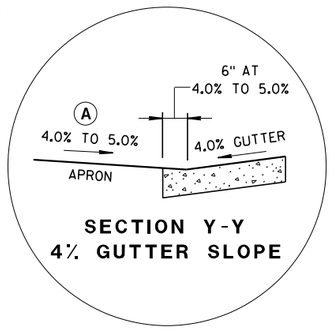
(4) DRIVEWAY TYPES
- 6-INCH CONCRETE DRIVEWAY PAVEMENT OVER 6-INCH BASE AGGREGATE
- 2-INCH TO 3-INCH ASPHALTIC SURFACE OVER 6-INCH BASE AGGREGATE
- 6-INCH BASE AGGREGATE (MAY BE INCREASED FOR CLAY SUBGRADES)



NOTE: SIDEWALK MAY BE DEPRESSED IN DRIVEWAY AREAS

SECTION Y-Y

DRIVEWAY DETAIL
WITH CONCRETE CURB & GUTTER
(URBAN AND SUBURBAN)



SECTION Y-Y
4% GUTTER SLOPE

TABLE Y

(A) FEET	(C) FEET
3.5'	2.0'
4.5'	3.0'
5.5'	3.5'

NOT TO SCALE

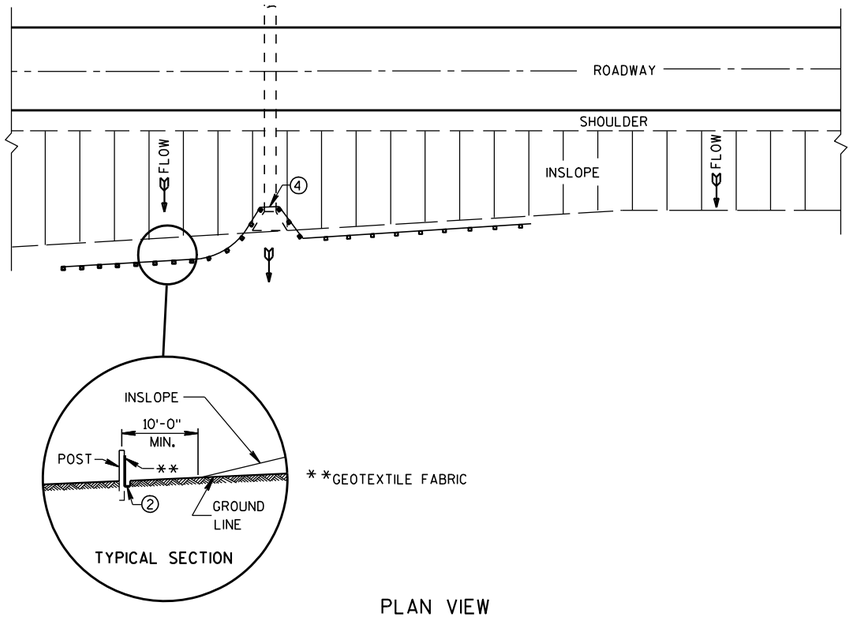
DRIVEWAY AND SIDEWALK RAMPS
TYPES X & Y

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2018 — DATE
/S/ Rodney Taylor
ROADWAY STANDARDS UNIT SUPERVISOR
FHWA

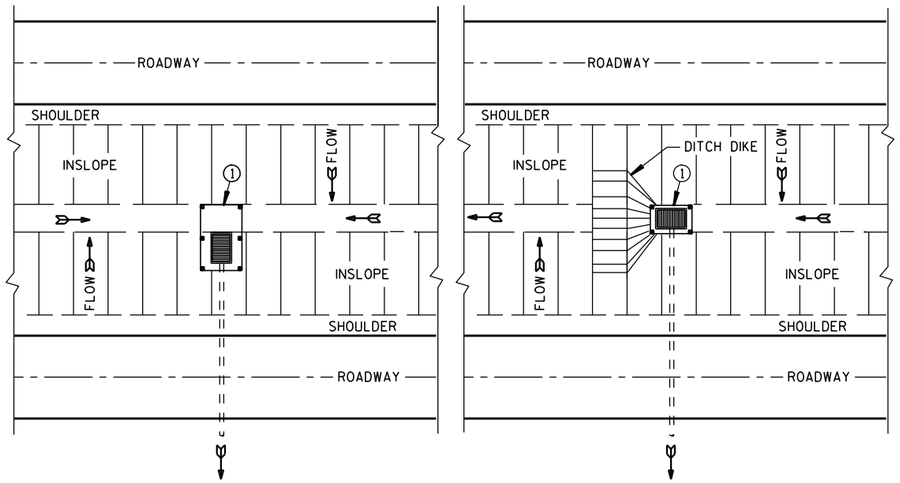
S.D.D. 8 D 18-2

6



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



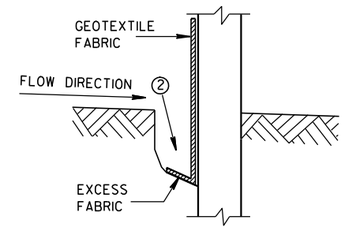
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

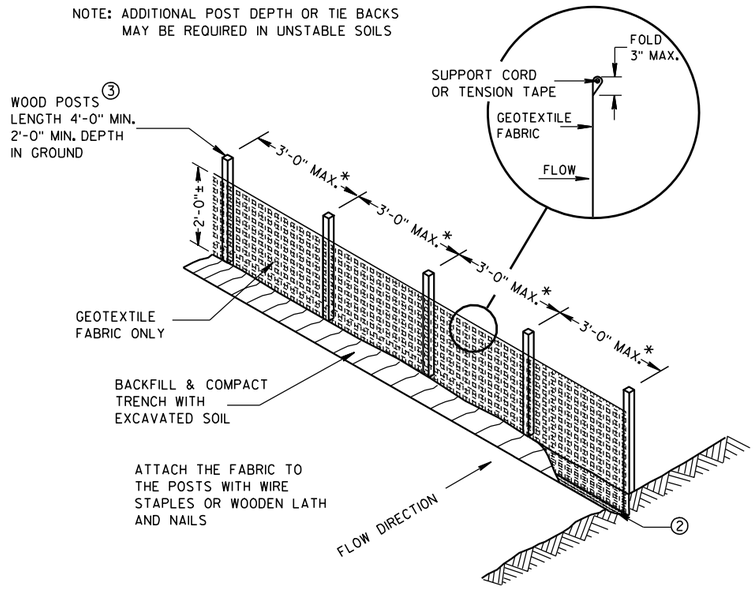
GENERAL NOTES

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.

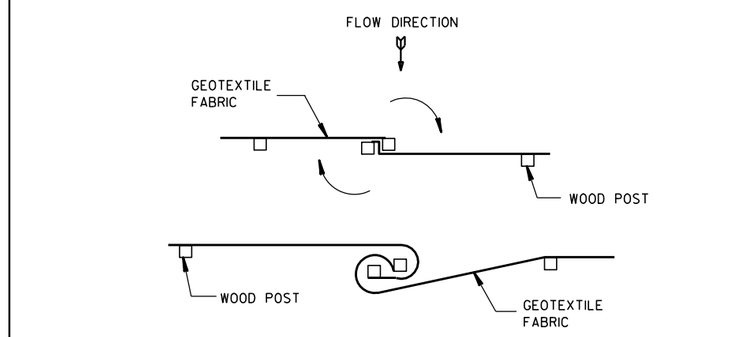


TRENCH DETAIL

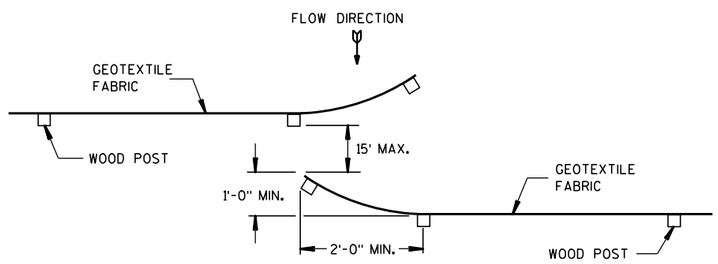


*NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.

SILT FENCE

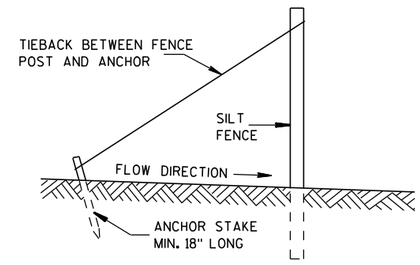


TWIST METHOD



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

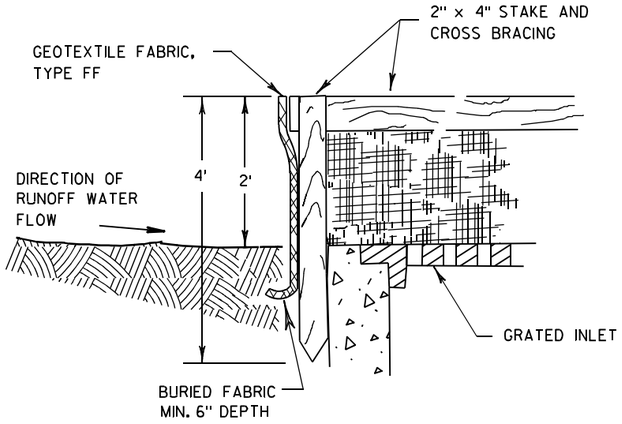
APPROVED
4-29-05 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

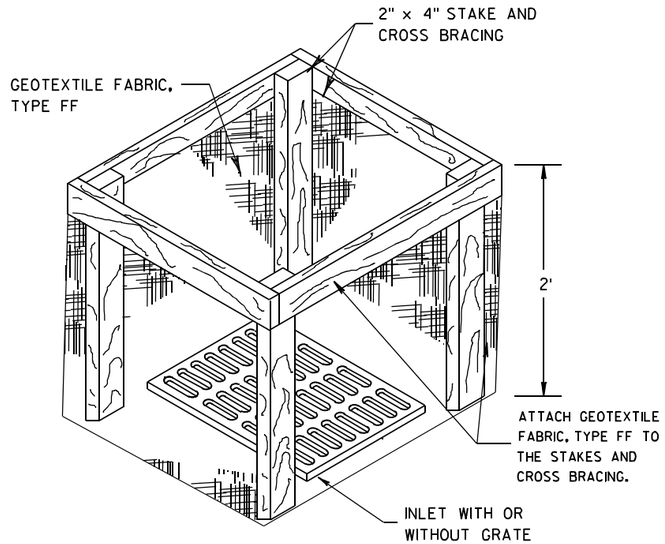
6

S.D.D. 8 E 9-6

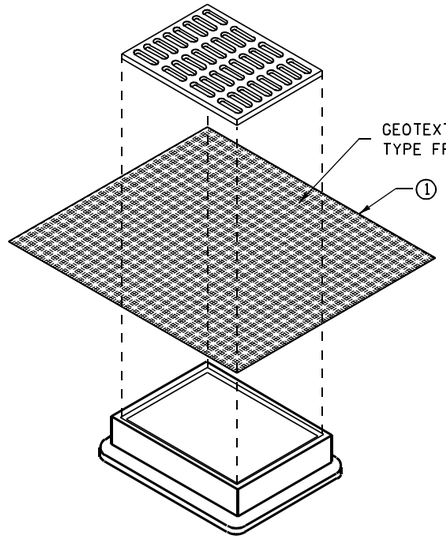
6

S.D.D. 8 E 9-6



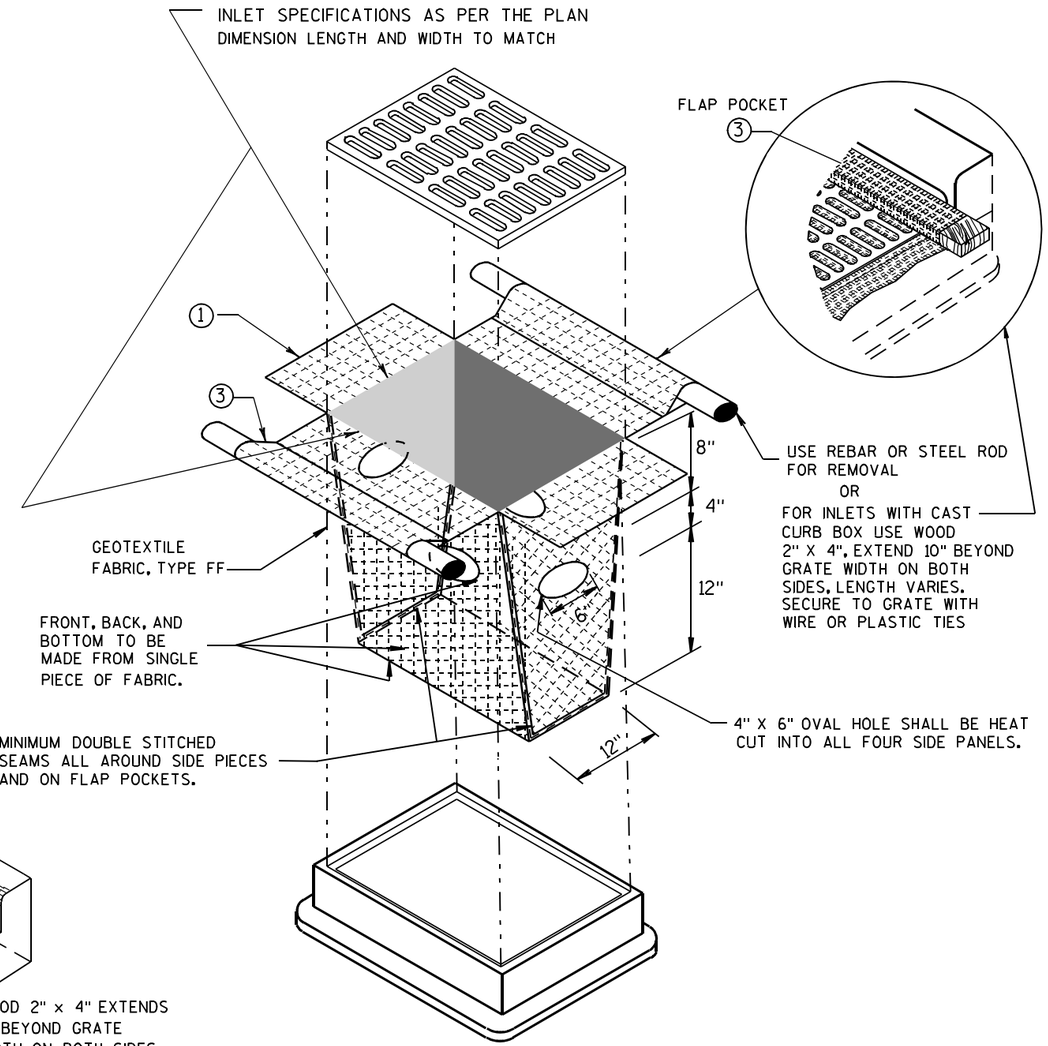


INLET PROTECTION, TYPE A



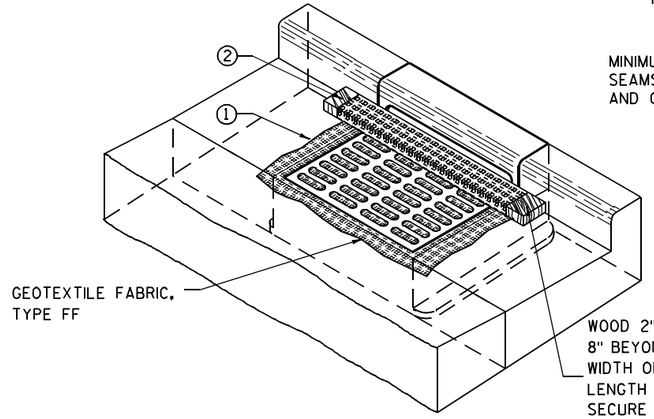
INLET PROTECTION, TYPE B
(WITHOUT CURB BOX)

(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

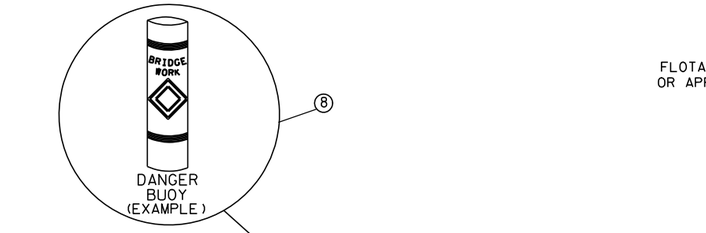
APPROVED

10/16/02
DATE

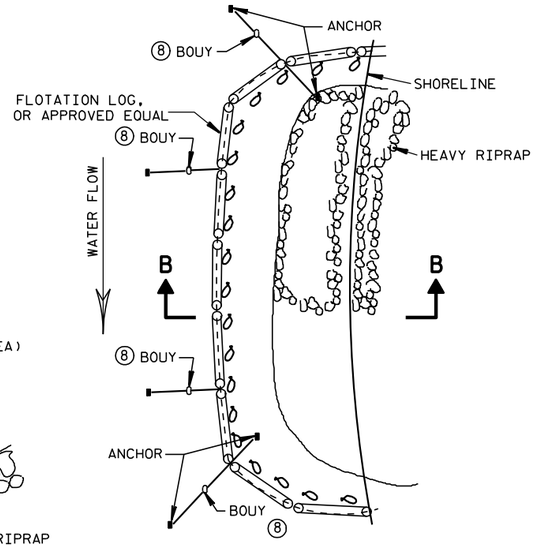
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER

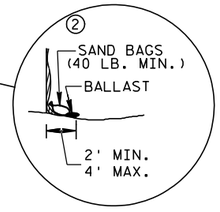
FHWA

6
S.D.D. 8 E 10-2

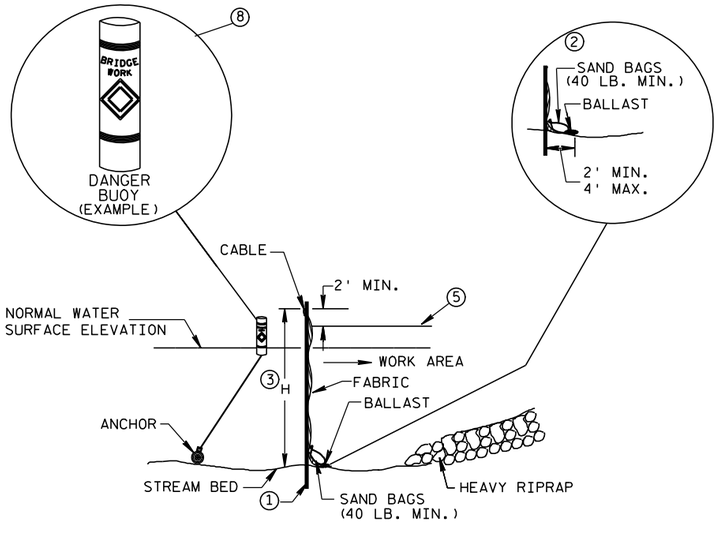


SECTION B-B

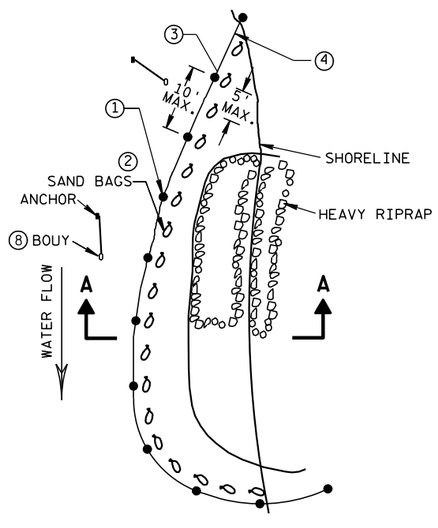




TURBIDITY BARRIER FLOAT ALTERNATIVE
CAUTION - SEE NOTE 6



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.

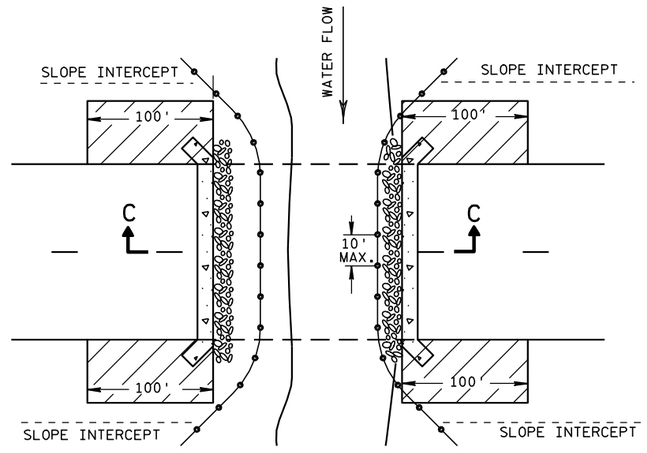
④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.

⑤ ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MIMIMUM BARRIER HEIGHT SHALL BE 2'GREATER THAN EITHER THE 02 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WICHEVER IS GREATER.

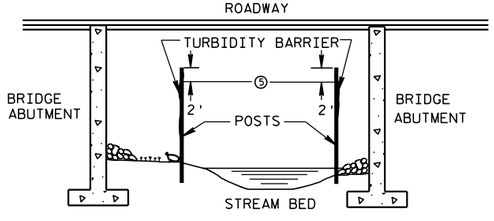
⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.

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

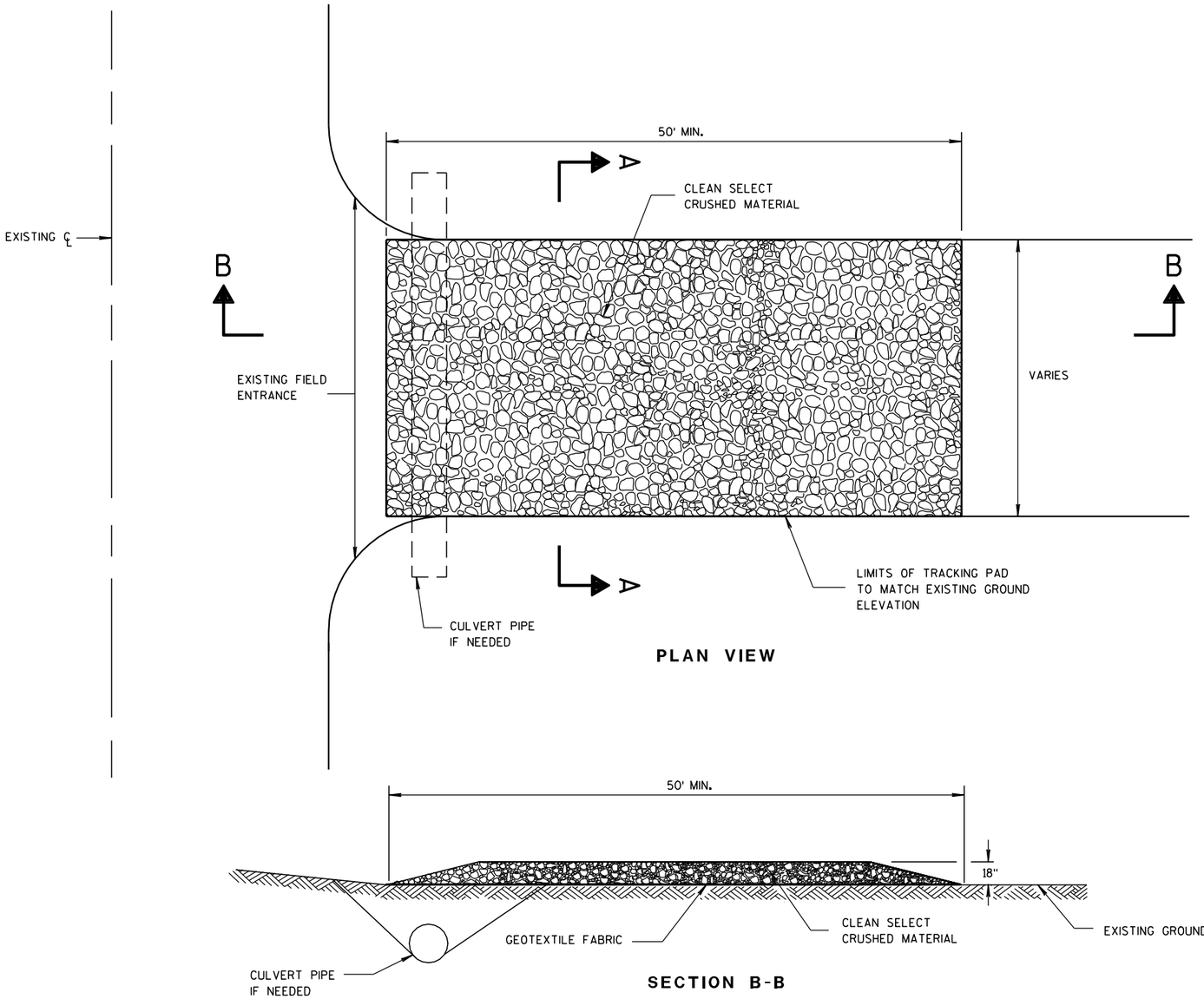
TURBIDITY BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6

S.D.D. 8 E 11-2



PLAN VIEW

SECTION B-B

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.

TRACKING PAD SHALL BE INSPECTED DAILY. DEFICIENT AREAS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.

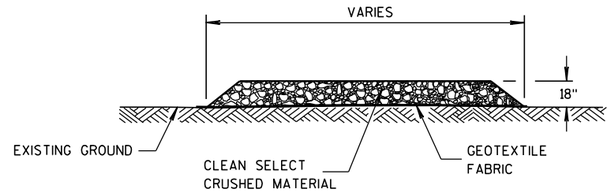
TRACKING PAD TO BE REMOVED AFTER CONSTRUCTION IS COMPLETED.

TRACKING PAD SHALL BE THE FULL WIDTH OF THE EGRESS POINT.

SURFACE WATER MUST BE PREVENTED FROM PASSING THROUGH THE TRACKING PAD. FLOWS SHALL BE DIVERTED AWAY, AROUND OR CONVEYED UNDER THE TRACKING PAD.

CULVERT PIPE OR OTHER BMP USED TO DIVERT WATER AWAY, AROUND OR UNDER THE TRACKING PAD SHALL BE DESIGNED TO CONVEY THE 2 YEAR - 24 HOUR EVENT.

THE COST OF ADDITIONAL BMP TO DIVERT WATER ARE INCIDENTAL TO THE TRACKING PAD BID ITEM.



SECTION A-A

TRACKING PAD

TRACKING PAD	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 3/24/2011 DATE FHWA	/S/ Jerry H. Zoda ROADWAY STANDARDS ENGINEER
	38
	ENT

6

S.D.D. 8 E 14-1

6

S.D.D. 8 E 14-1

METAL APRON ENDWALLS

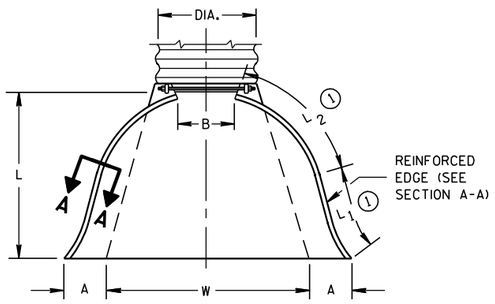
PIPE DIA. (IN.)	MIN. THICK. (Inches) STEEL	MIN. THICK. (Inches) ALUM.	DIMENSIONS (Inches) A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")	APPROX. SLOPE	BODY
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	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

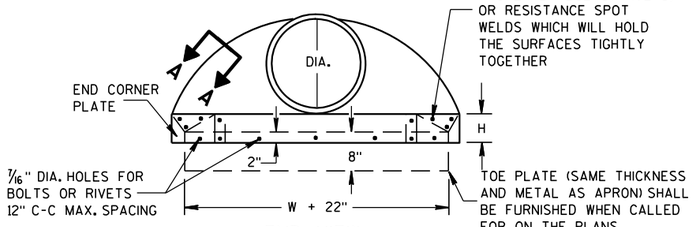
REINFORCED CONCRETE APRON ENDWALLS

PIPE DIA. (IN.)	DIMENSIONS (Inches) T	A	B	C	D	E	G	APPROX. SLOPE
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

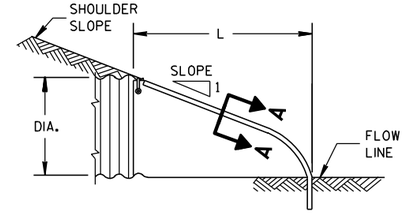
*MINIMUM
**MAXIMUM



PLAN VIEW

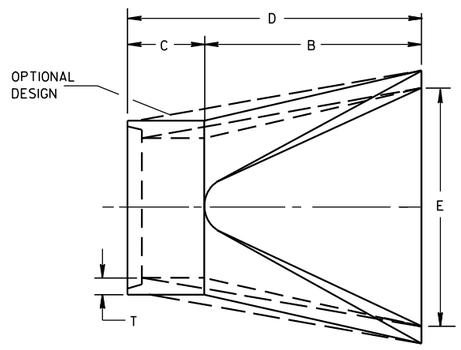


END VIEW

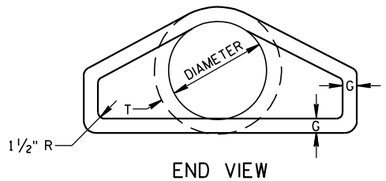


SIDE ELEVATION

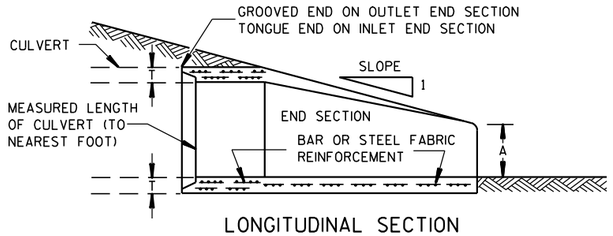
METAL ENDWALLS



PLAN

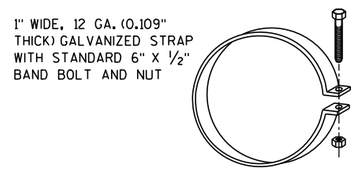


END VIEW



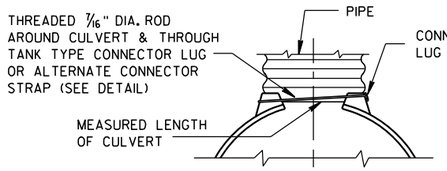
LONGITUDINAL SECTION

CONCRETE ENDWALLS

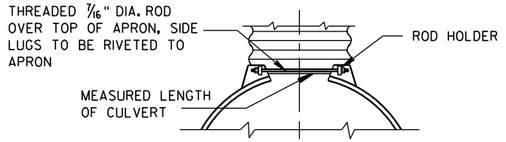


ALTERNATE FOR TYPE 1 CONNECTION

END SECTION CONNECTOR STRAP

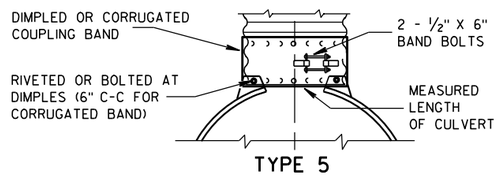


TYPE 1
FOR 12" THRU 24" CORR. PIPE



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

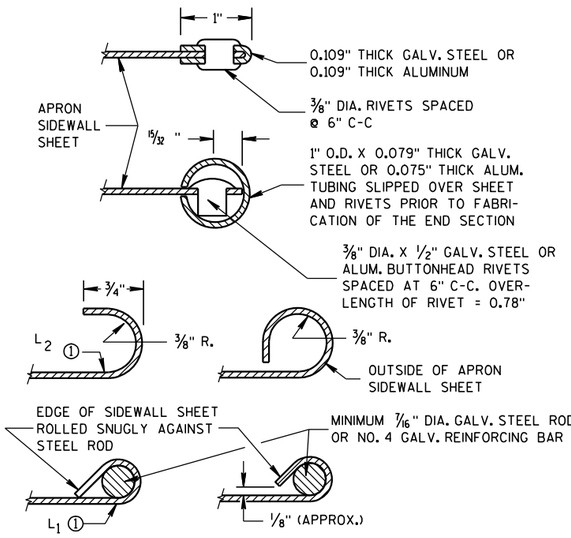
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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.

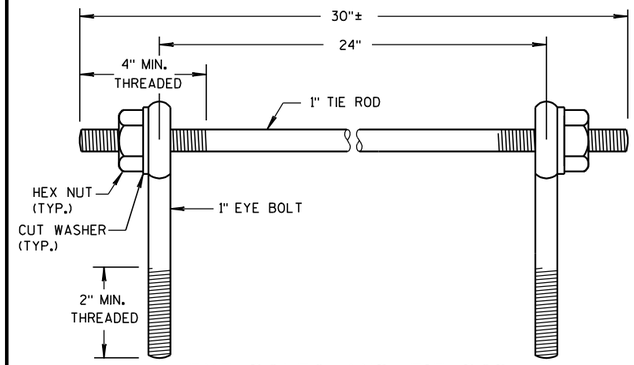
① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR CULVERT PIPE

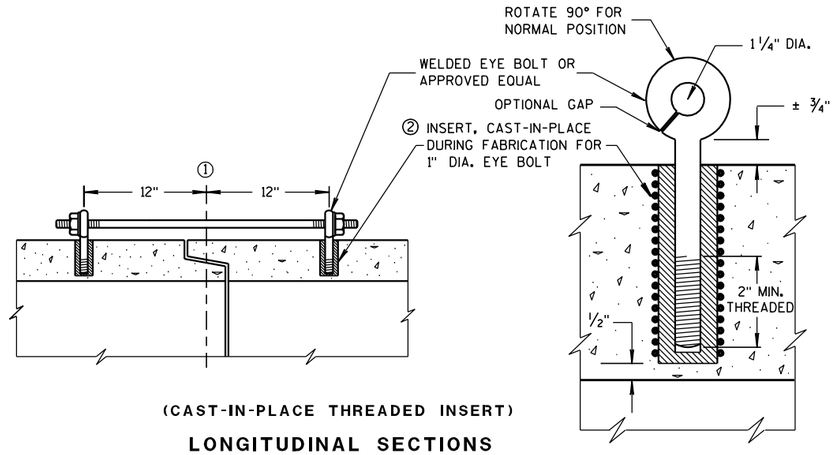
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6
S.D.D. 8 F 1-11



EYE BOLTS AND TIE ROD



(CAST-IN-PLACE THREADED INSERT)

LONGITUDINAL SECTIONS

EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 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 APPLICABLE SPECIAL PROVISIONS.

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

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

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

① ℄ OF TONGUE AND GROOVE OR BELL AND SPIGOT JOINTS.

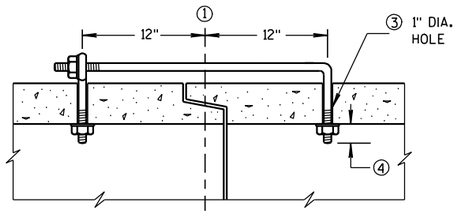
② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.

③ HOLES SHALL BE CAST-IN-PLACE OR DRILLED 12 INCHES FROM ℄ OF TONGUE AND GROOVE.

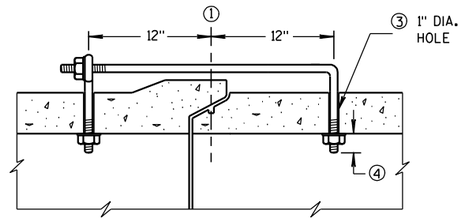
④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.

⑤ OPENING TO BE ROD DIAMETER PLUS 1 INCH.

⑥ LENGTH ADEQUATE TO EXTEND TO WITHIN 1/2 INCH OF THE INNER SURFACE OF THE PIPE.



(TONGUE & GROOVE PIPE)

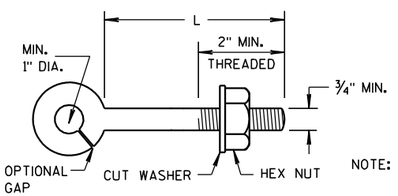


(MODIFIED BELL PIPE)

LONGITUDINAL SECTION

EYE BOLT DIMENSION TABLE

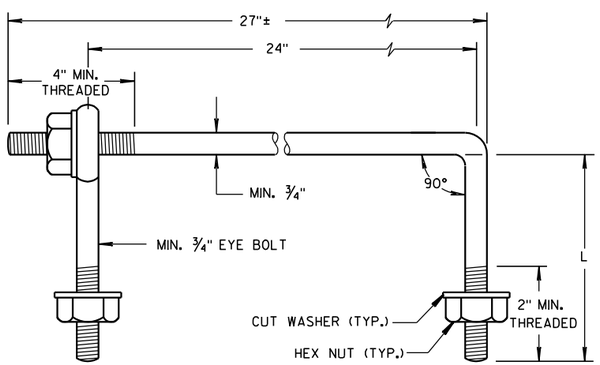
PIPE SIZE	L = LENGTH	
	TONGUE & GROOVE PIPE	MODIFIED BELL PIPE
18" TO 24"	4 1/2"	6 1/4"
30"	5"	7"
36"	5 1/2"	7"
42"	6"	
48"	6 1/2"	
60"	7 1/2"	
66"	8"	



NOTE:

EYE BOLT

NOTE: TWO EYE BOLTS MAY BE USED WITH A 30" LONG THREADED ROD IN LIEU OF THE 90° BENT TIE ROD.



EYE BOLT AND TIE ROD

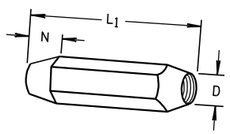
(JOINT TIES FOR 18" TO 66" DIA. CONCRETE PIPE)

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

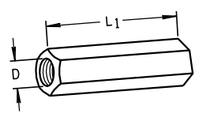
ADJUSTABLE TIE ROD TABLE

PIPE DIAMETER	TIE ROD DIAMETER	D	L_1	N
12-60	5/8	5/8	5	1/2
66-84	3/4	3/4	5	1/2
90-108	1	1	7	1 7/16

DIMENSIONS SHOWN ARE IN INCHES



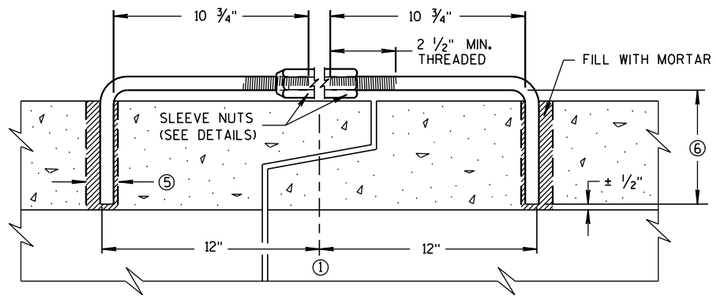
TAPERED



PLAIN

RIGHT AND LEFT THREADS

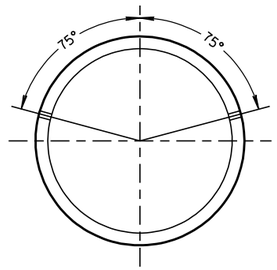
SLEEVE NUTS



LONGITUDINAL SECTION

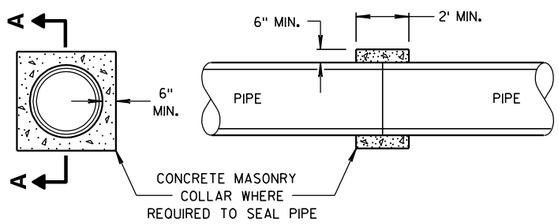
(JOINT TIES FOR 12" TO 108" DIA. CONCRETE PIPE)

ADJUSTABLE TIE ROD (ALTERNATE NO. 3)



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

TRANSVERSE SECTION



SECTION A-A

CONCRETE COLLAR DETAIL

JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

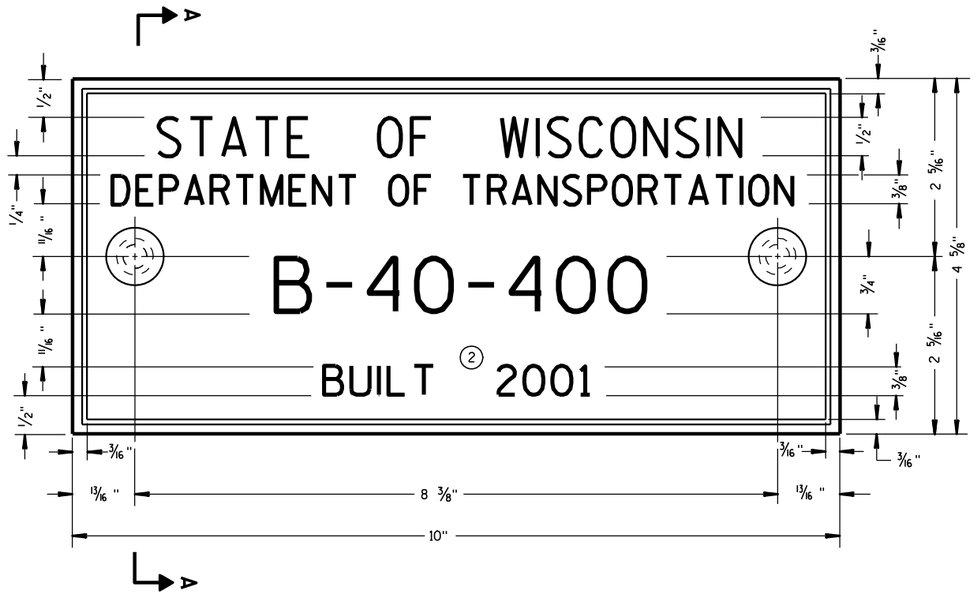
APPROVED
6/5/2012 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
40
FHWA

6

S.D.D. 8 F 4-7

6

S.D.D. 8 F 4-7



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

FOR MULTI-UNIT STRUCTURES
LINE 3 ABOVE SHALL READ

B = BRIDGE
C = CULVERT
R = RETAINING WALL

COUNTY NO.

BRIDGE NO.

UNIT NO. FOR MULTIPLE UNIT BRIDGE

B-40-400-1A

NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

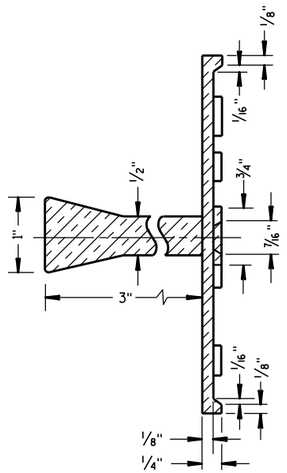
GENERAL NOTES

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.

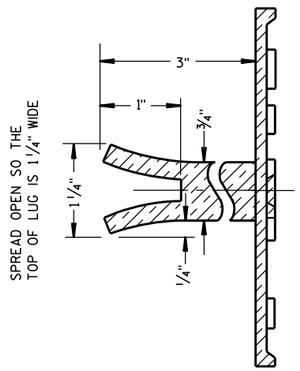
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

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

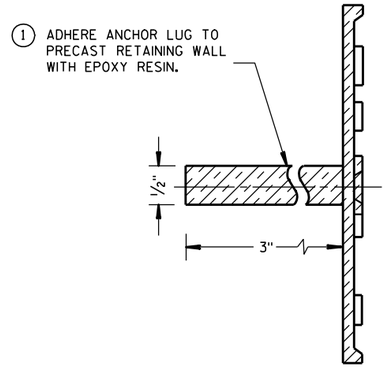
(2) REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



SECTION A-A



ALTERNATE LUG



ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

NAME PLATE (STRUCTURES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

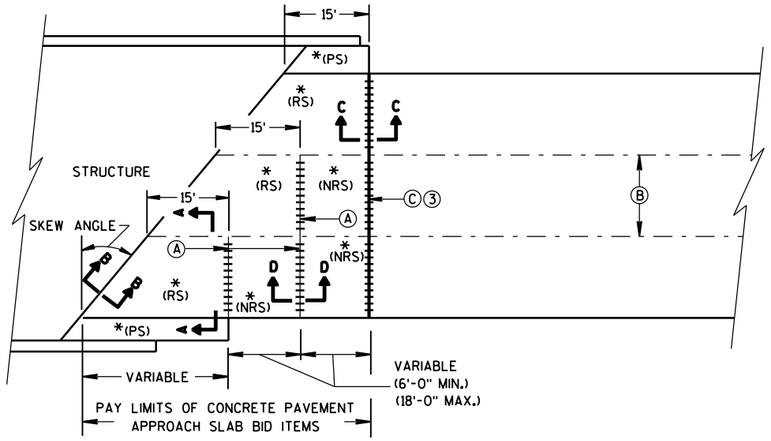
3/26/10 DATE

/S/ Scot Beck CHIEF STRUCTURAL DEVELOPMENT ENGINEER

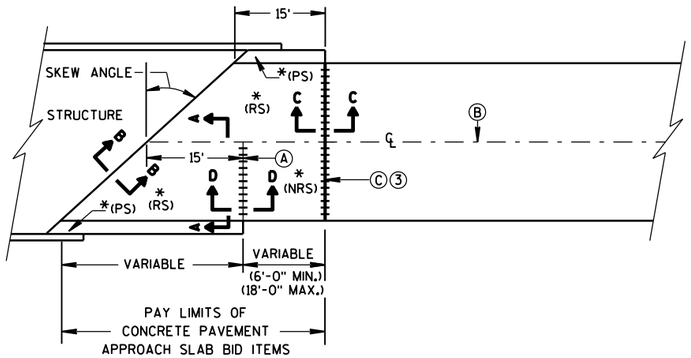
FHWA

6

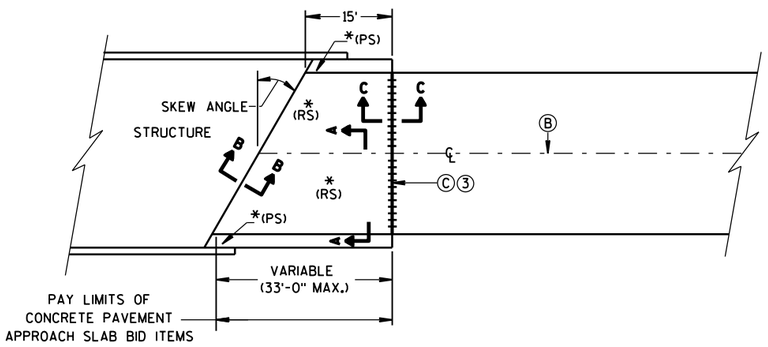
S.D.D. 12 A 3-10



SKEWED APPROACH
(PAVEMENT MORE THAN 2 LANES)



SKEWS >20°
(PAVEMENT WIDTH ≤30')



SKEWS ≤20°
(PAVEMENT WIDTH ≤30')

APPROACH SLAB AND ADJACENT PAVEMENT

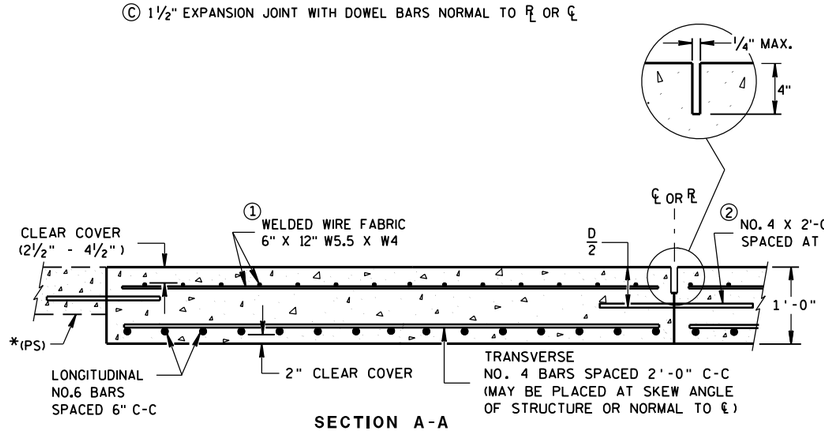
*(RS) = REINFORCED CONCRETE SLAB
*(PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
(SEE DETAILS ELSEWHERE IN THE PLAN)
*(NRS) = NON-REINFORCED CONCRETE SLAB

***STANDARD DOWEL BAR DIAMETER
(SEE SDD 13C11, & SDD 13C13)

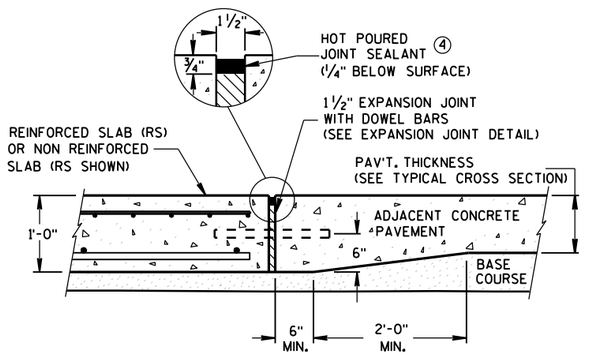
Ⓐ STANDARD CONTRACTION JOINT NORMAL TO ℄ OR ℄

Ⓑ STANDARD LONGITUDINAL JOINT WITH TIE BARS.

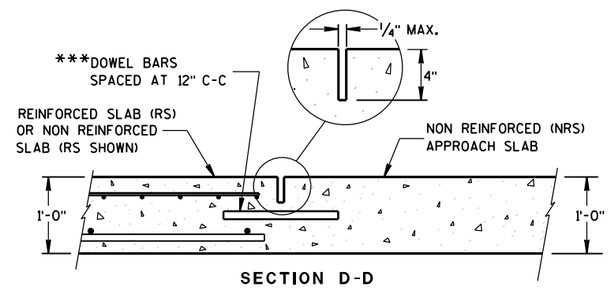
Ⓒ 1½" EXPANSION JOINT WITH DOWEL BARS NORMAL TO ℄ OR ℄



SECTION A-A
REINFORCEMENT POSITIONING DETAIL



SECTION C-C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT



SECTION D-D
CONTRACTION JOINT

GENERAL NOTES

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

TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.

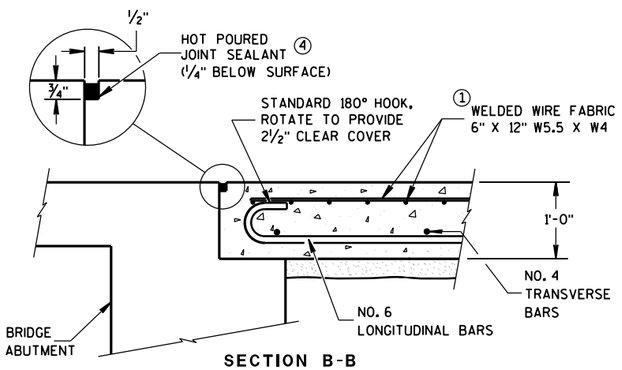
① THE CONTRACTOR MAY USE NO. 4 BARS SPACED AT 2'-0" C-C IN BOTH THE LONGITUDINAL AND TRANSVERSE DIRECTIONS FOR TOP REINFORCEMENT AS AN ALTERNATIVE TO THE WELDED WIRE FABRIC.

② THE CONTRACTOR MAY OMIT TIE BARS BETWEEN REINFORCED SLABS WHERE SLAB REINFORCEMENT BARS EXTEND ACROSS THE CENTERLINE OR REFERENCE LINE.

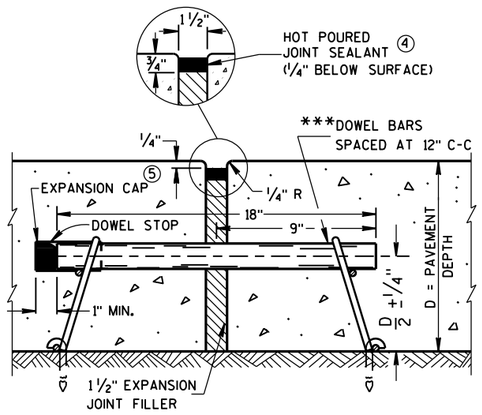
③ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.

④ USE A JOINT SEALANT MEETING THE REQUIREMENTS OF ASTM D6690.

⑤ PLACE EXPANSION CAP ON THE END OF THE DOWEL THAT IS NOT TACK WELDED TO THE BASKET. DO NOT FORCE DOWEL BAR PAST THE DOWEL STOP.



SECTION B-B
BEND DETAIL
BOTTOM REINFORCEMENT



EXPANSION JOINT DETAIL

CONCRETE PAVEMENT APPROACH SLAB

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

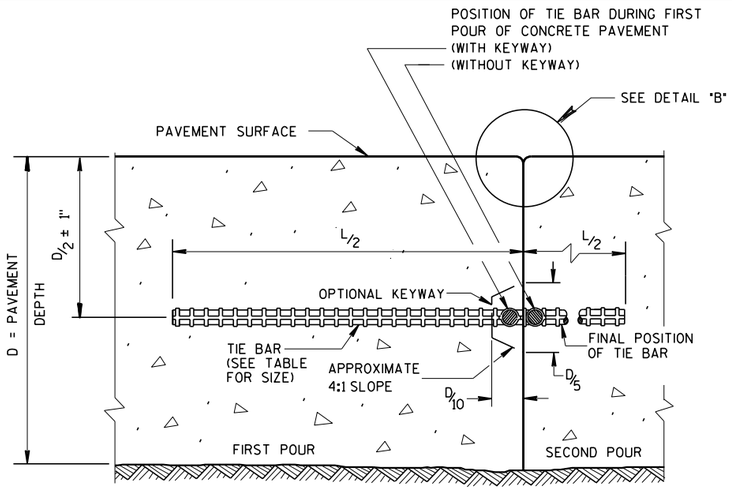
APPROVED
June, 2015
DATE
/S/ Peter Kemp, P.E.
PAVEMENT SUPER
FHWA

6

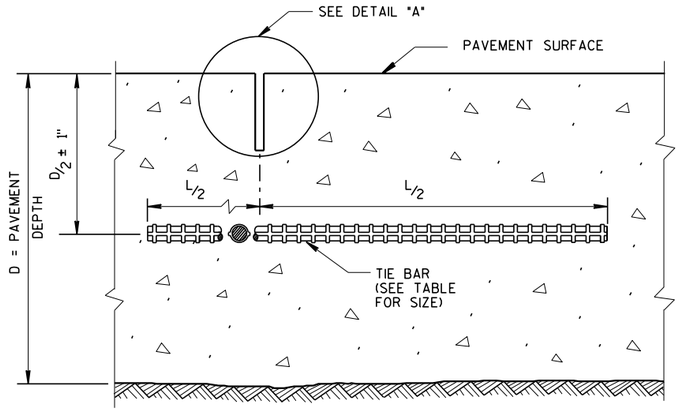
S.D.D. 13 B 2-8a

6

S.D.D. 13 B 2-8a



CONSTRUCTION JOINT



SAWED JOINT

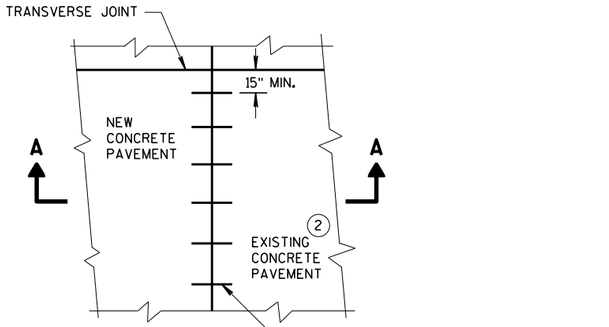
GENERAL NOTES

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

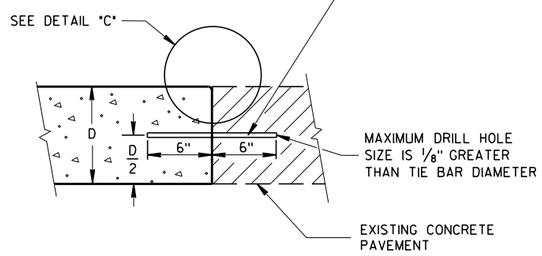
CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

(1) ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.

(2) PAVEMENT THAT WAS IN PLACE PRIOR TO THE CONTRACT.

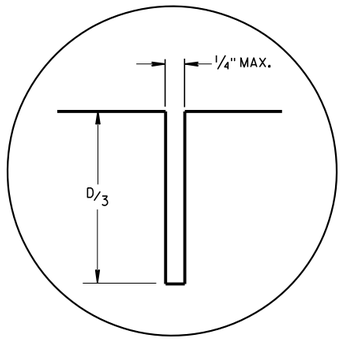


PLAN VIEW

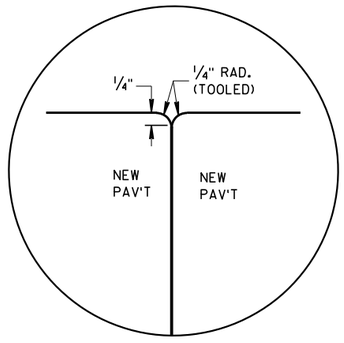


SECTION A-A

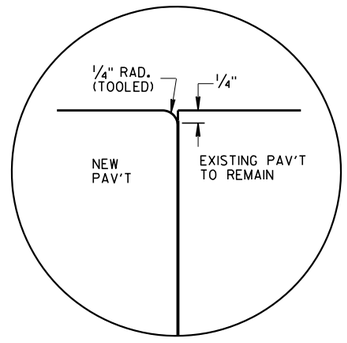
LONGITUDINAL CONSTRUCTION JOINT TIE BARS ANCHORED INTO EXISTING PAVEMENT



DETAIL "A"



DETAIL "B"



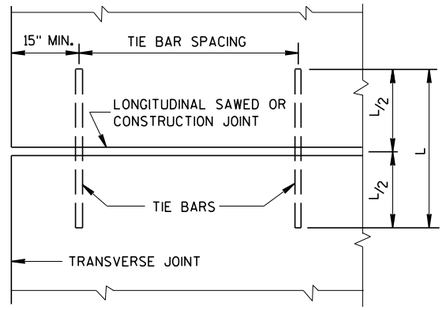
DETAIL "C"

TIE BAR TABLE

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

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

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



PLAN VIEW
SHOWING LOCATION OF TIE BARS

CONCRETE PAVEMENT
LONGITUDINAL JOINTS AND TIES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

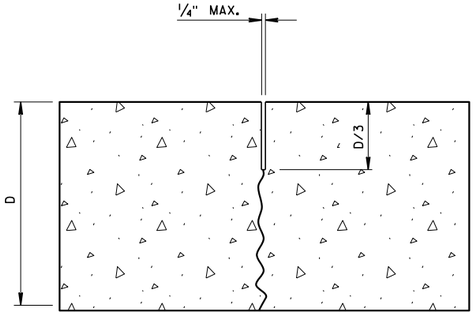
APPROVED
March 2018 — DATE
/S/ Peter Kerr, P.E. — PAVEMENT SUPE
FHWA

6

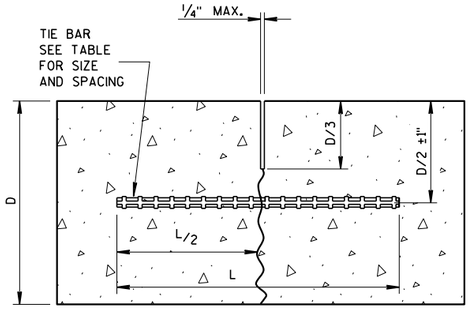
S.D.D. 13 C 1-19

6

S.D.D. 13 C 1-19



UNDOWELED-TRANSVERSE



TIED LONGITUDINAL

TIE BAR TABLE

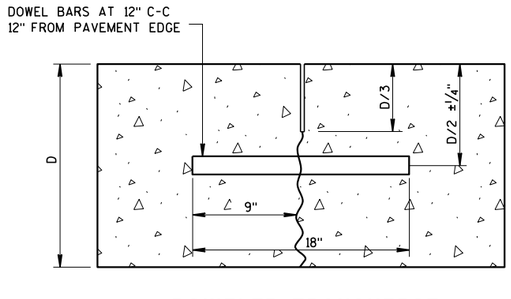
PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 1/2"	NO. 4	30"	36"
≥ 10 1/2"	NO. 5	36"	36"
	NO. 4 *	30"	24" **

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

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

GENERAL NOTES

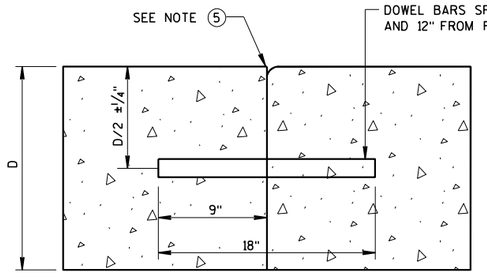
1. USE DOWELED EXPANSION JOINTS ON SIDE ROADS AT INTERSECTIONS (TO ISOLATE THE SIDE ROAD FROM THE THROUGH STREET) IF THE SIDE ROAD IS CONCRETE PAVEMENT AND GREATER THAN 300 FEET IN LENGTH.
2. SPACE CONTRACTION JOINTS IN ACCORDANCE WITH 13C4, 13C11 OR 13C13.
3. LOCATE CONSTRUCTION JOINTS A MINIMUM OF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



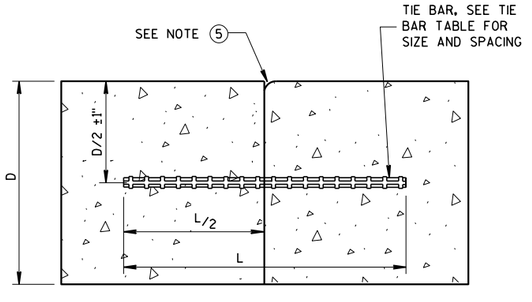
DOWELED-TRANSVERSE

CONTRACTION JOINTS

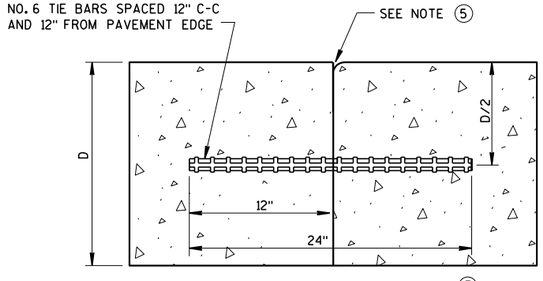
SEE NOTE (2)



DOWELED TRANSVERSE (3)

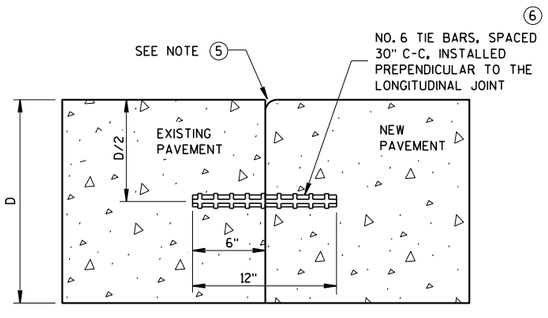


TIED LONGITUDINAL



TIED TRANSVERSE (3)

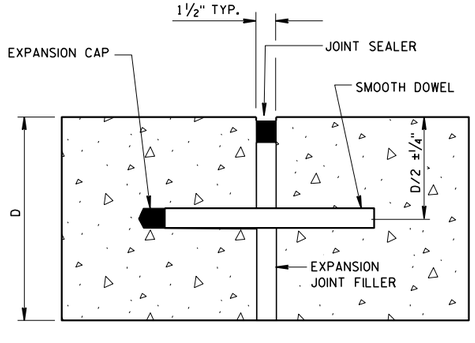
(FOR USE ON NON-DOWELED PAVEMENTS ONLY)



TIED LONGITUDINAL TO EXISTING

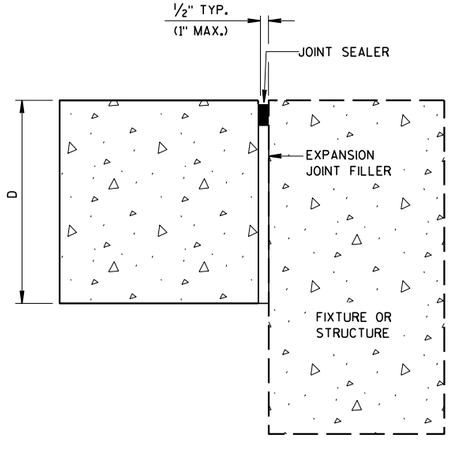
CONSTRUCTION JOINTS

SEE NOTE (4)



DOWELED-TRANSVERSE

SEE NOTE (1)



UNTIED-LONGITUDINAL

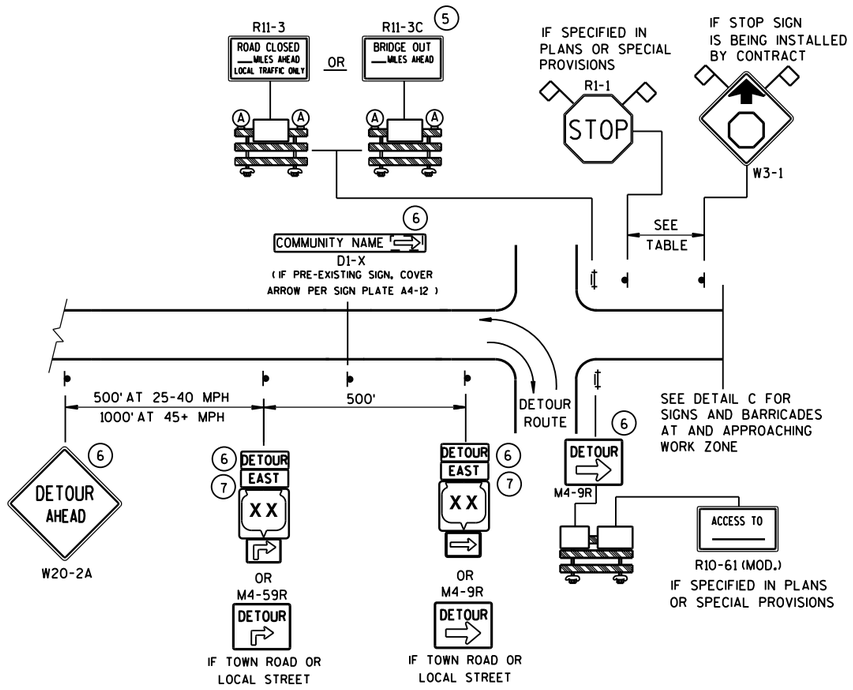
EXPANSION JOINTS

CONCRETE PAVEMENT
JOINT TYPES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

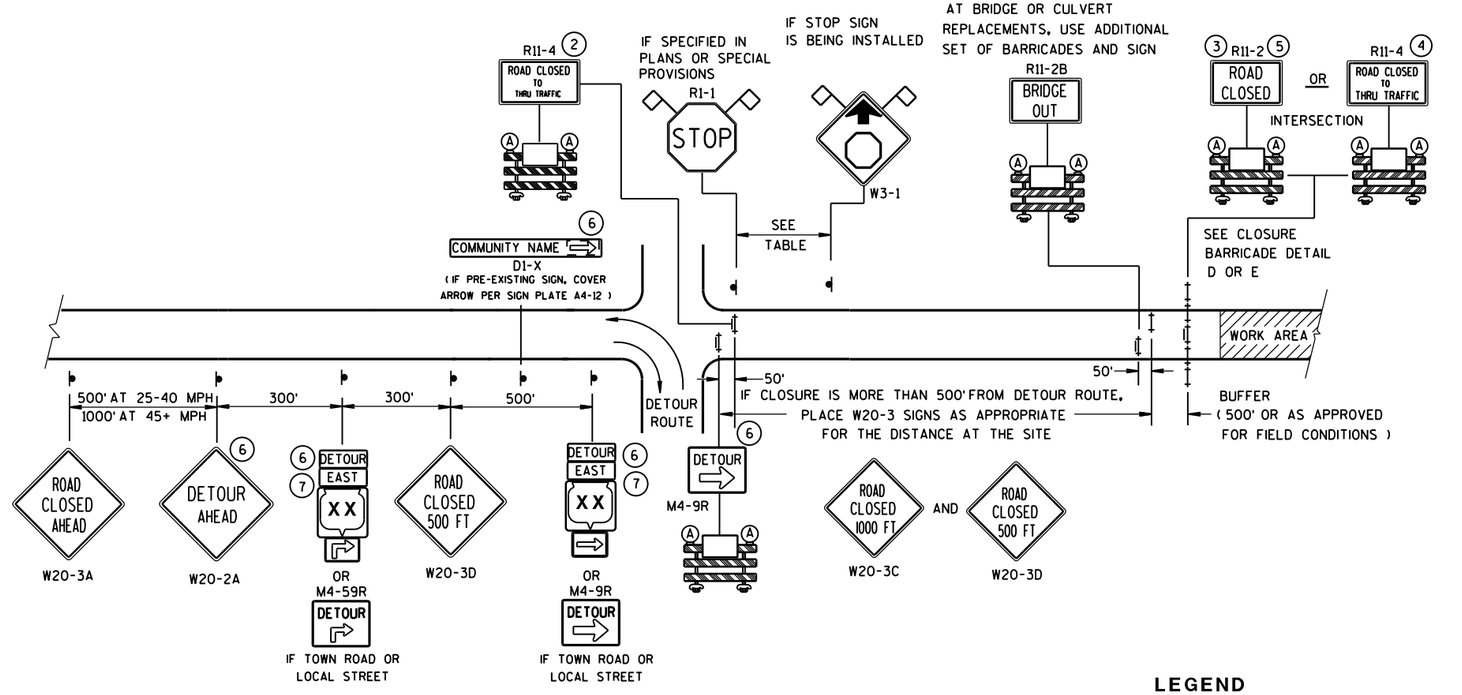
6

S.D.D. 13 C 18-6c



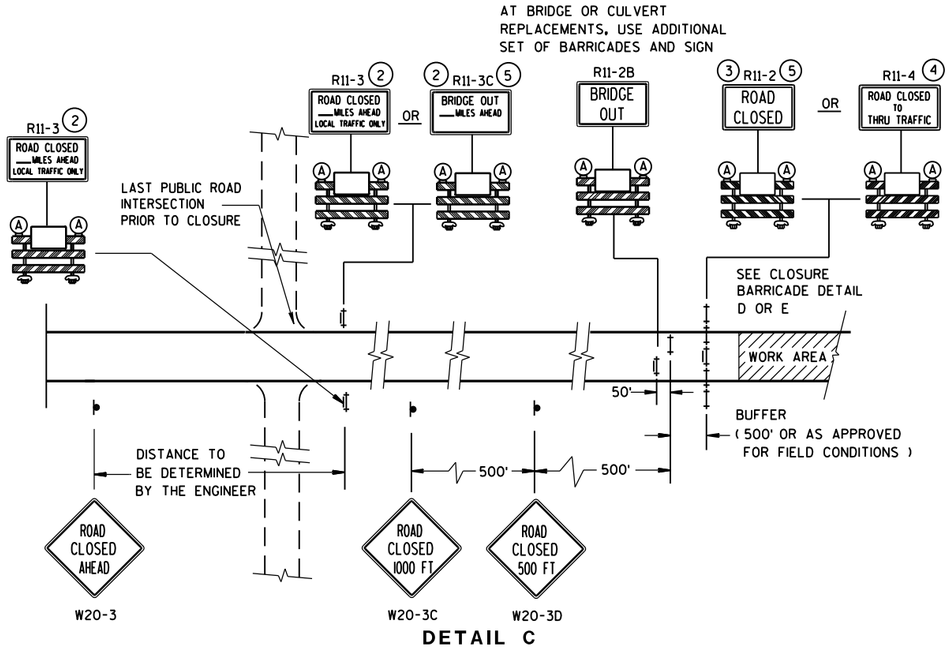
DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

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



DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE LESS 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-SHEET "**b**"
FOR GENERAL NOTES
AND FOOTNOTES (1) THROUGH (7)

LEGEND

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

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

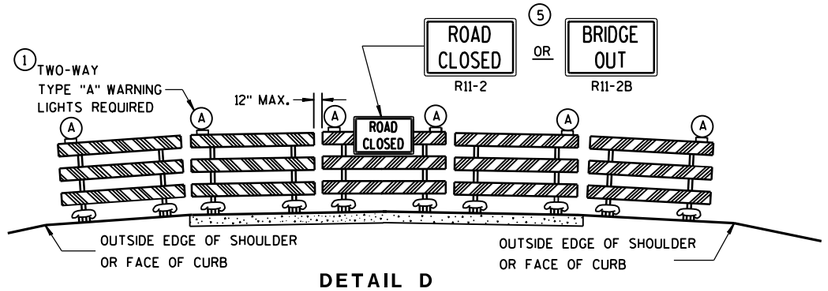
Sept. 2015 — DATE
/S/ Peter Amakobe Atepe
STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER
FHWA

6

S.D.D. 15 C 2-6a

6

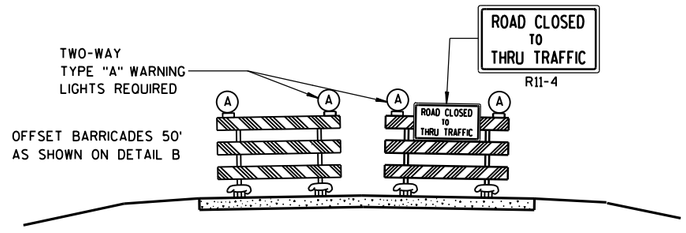
S.D.D. 15 C 2-6a



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

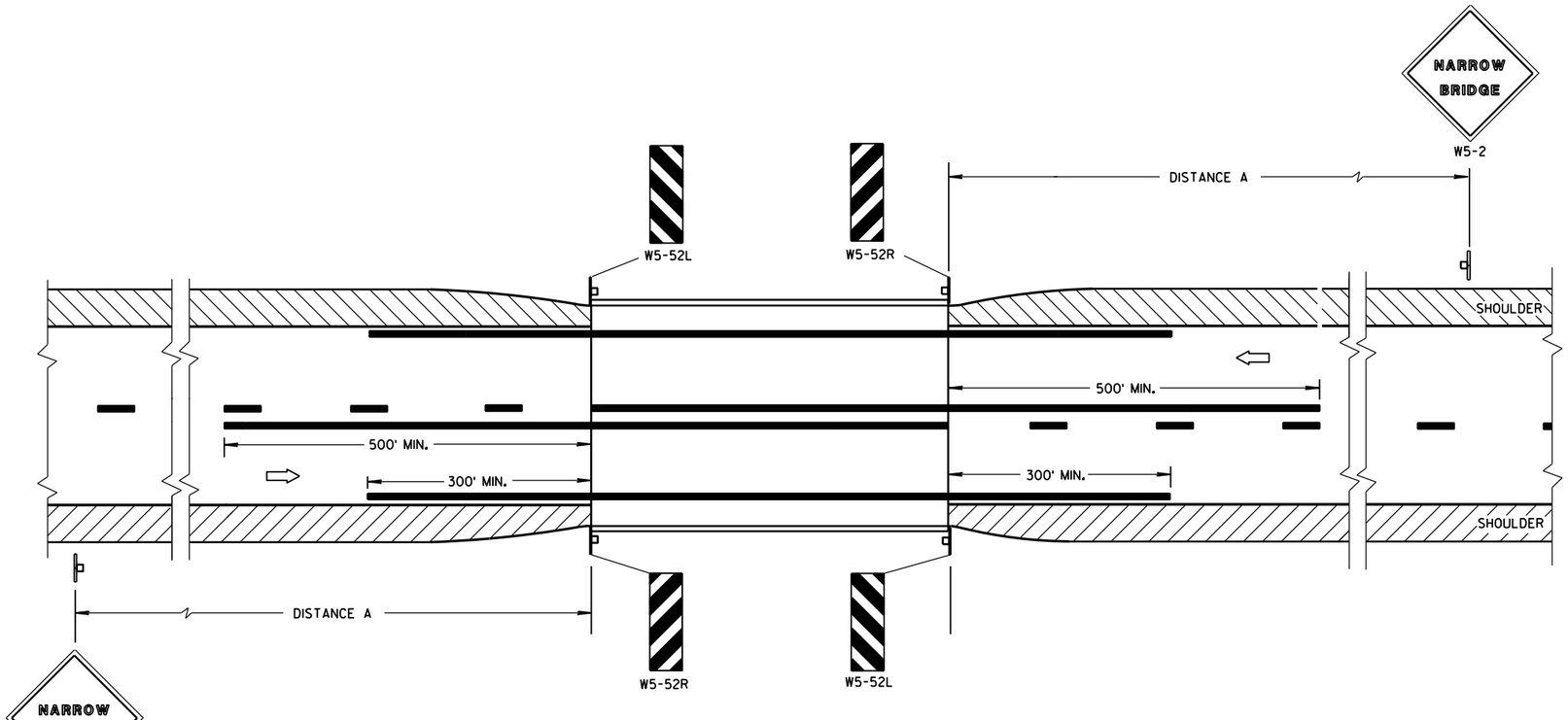
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

Sept. 2015 — DATE

/S/ Peter Amakobe Atepe
STATEWIDE WORK ZO SAFETY ENGI FIC
FHWA

6

S.D.D. 15 C 2-6b



SITUATION 1

WARRANTING CRITERIA:
BRIDGE WIDTH IS AT LEAST 16 FEET BUT LESS THAN 24 FEET.

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

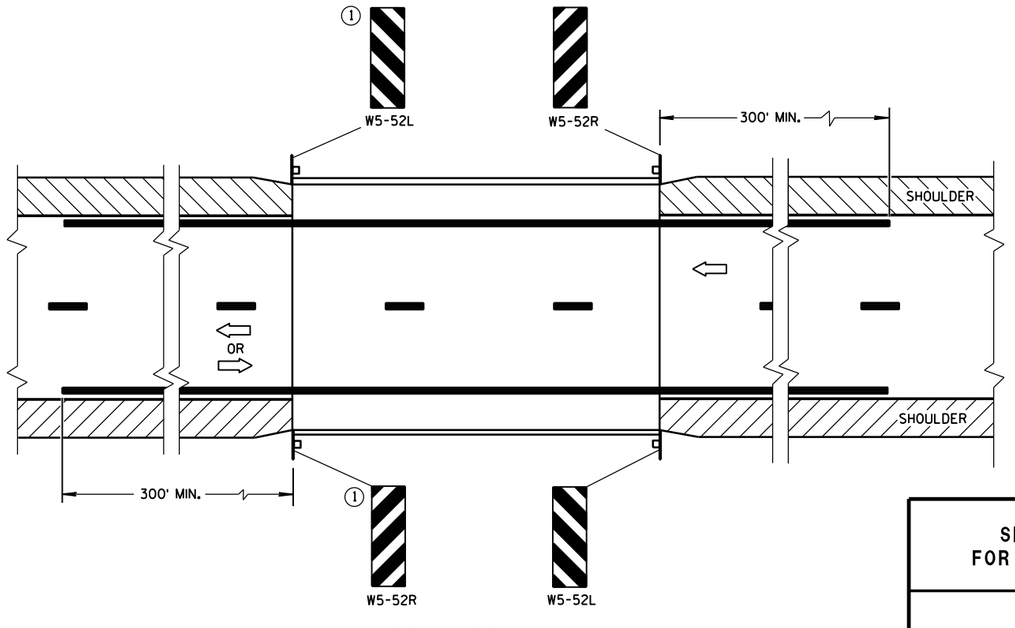
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

LOCATE W5-52 SIGN POST(S) BEHIND GUARDRAIL WHEN PRESENT.

PLACE THE EDGE OF THE W5-52 SIGN IN LINE WITH FACE OF CURB OR PARAPET.

(1) OMIT ON ONE-WAY TRAVELLED WAYS.

⇨ DIRECTION OF TRAFFIC



SITUATION 2

WARRANTING CRITERIA:

1. BRIDGE WIDTH IS AT LEAST 24 FEET AND
2. BRIDGE SHOULDER WIDTH IS LESS THAN 6 FEET.

SIGNING & MARKING FOR TWO LANE BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

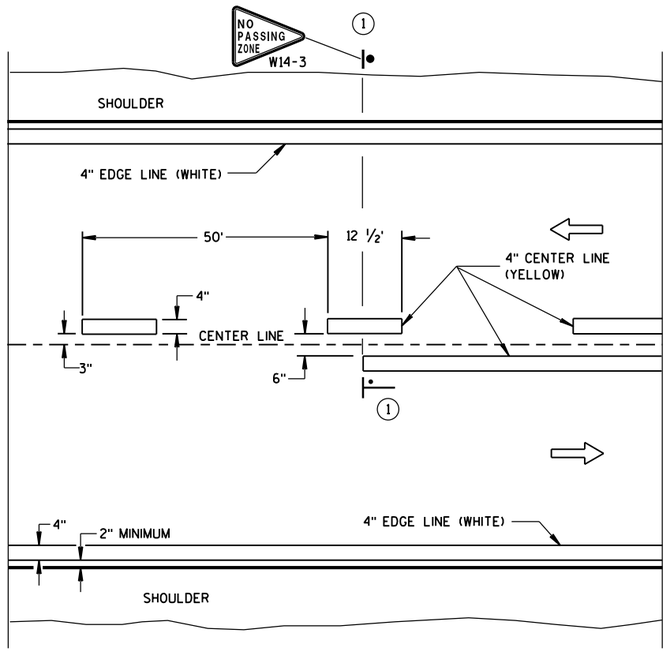
APPROVED
June 2017 — DATE
/S/ Matthew R. Rauch — STATE SIGNING AND MARKING ENGINEER
FHWA

6

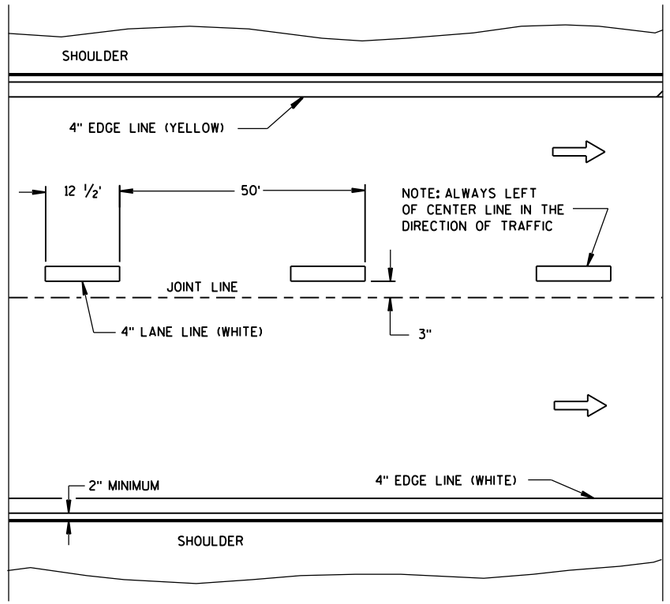
S.D.D. 15 C 6-9

6

S.D.D. 15 C 6-9



TWO WAY TRAFFIC



ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING

GENERAL NOTES

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

(1) LOCATE THE NO PASSING ZONE W14-3 SIGN WITHIN 50 FEET OF THE "T" MARKING.

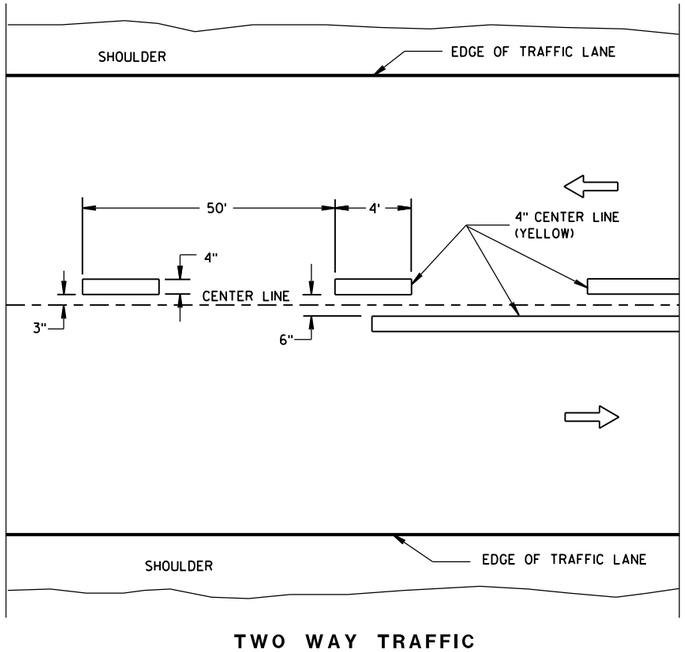
NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL

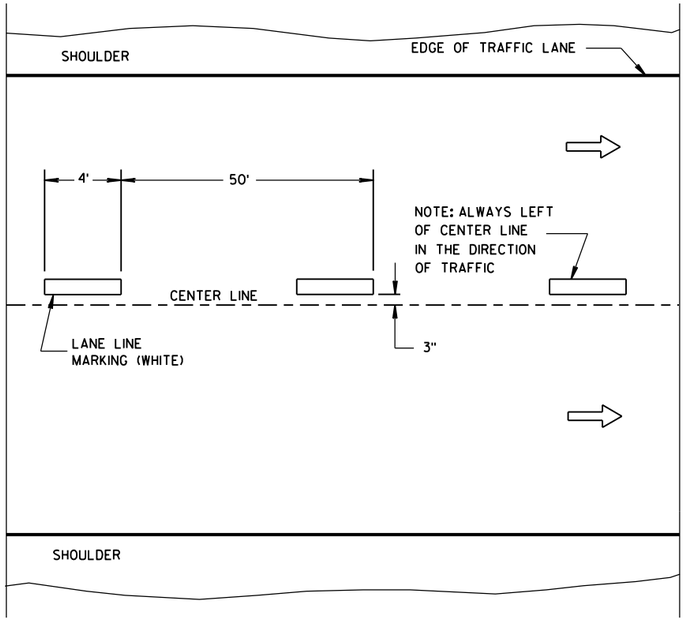
LEGEND

"T" MARKING

POST MOUNTED SIGN



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

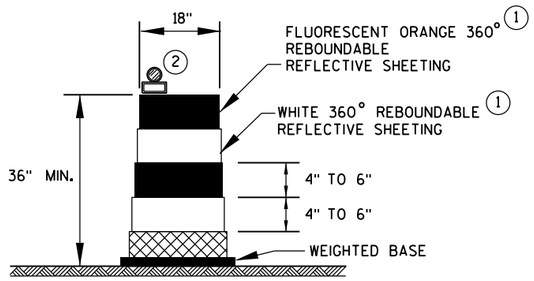
APPROVED
June 2017 — DATE
/S/ Matthew R. Rauch — STATE SIGNING AND MAR[illegible]INEER
FHWA

6

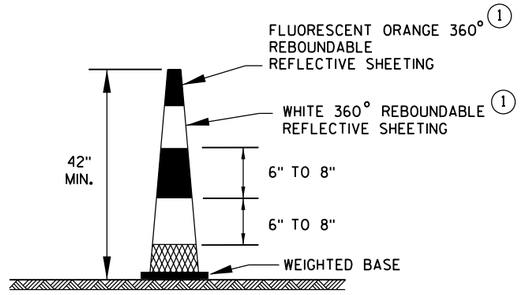
S.D.D. 15 C 8-18a

6

S.D.D. 15 C 8-18a



DRUM

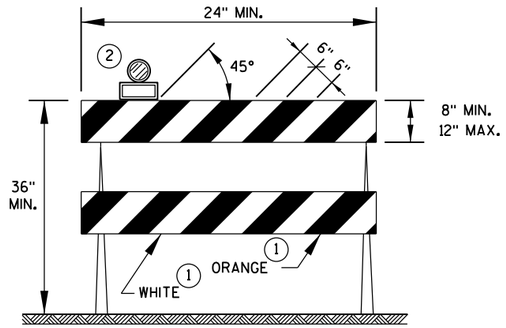


42" CONE

DO NOT USE IN TAPERS
1/2 SPACING OF DRUMS

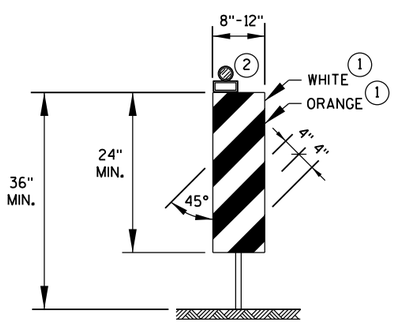
GENERAL NOTES

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



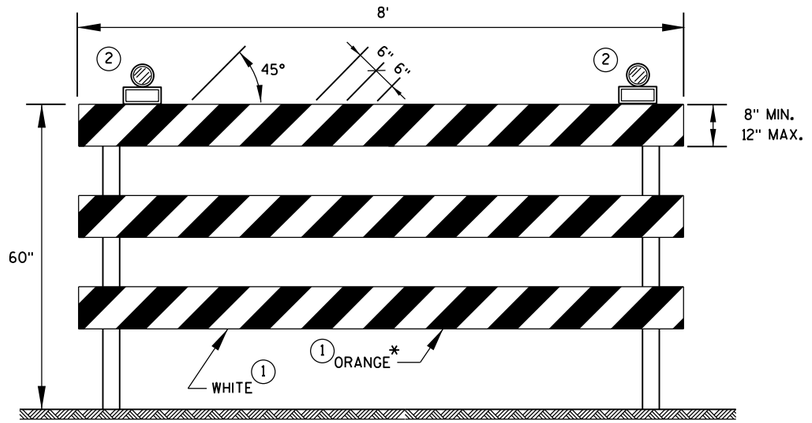
TYPE 2 BARRICADE

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



VERTICAL PANEL

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



TYPE 3 BARRICADE

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

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

CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

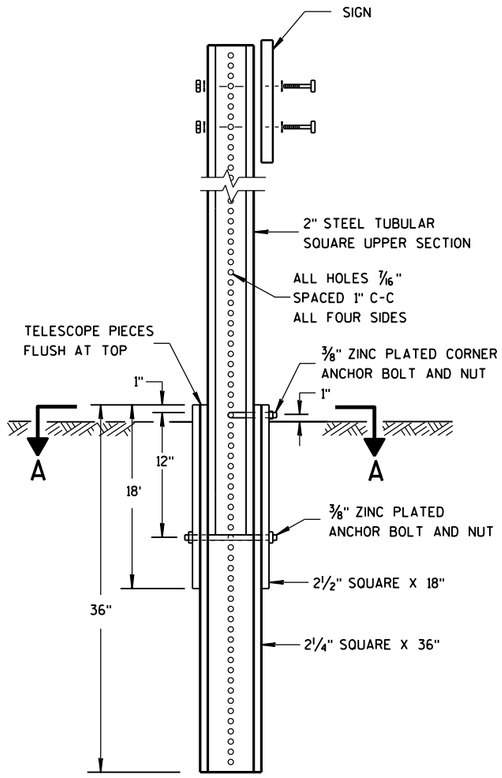
APPROVED
June 2017 — DATE
/S/ Andrew Heidtke — WORK ZONE ENG
FHWA

6

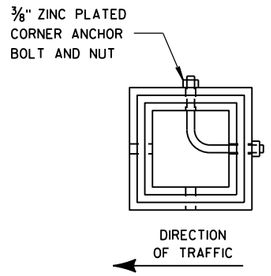
S.D.D. 15 C 11-7b

6

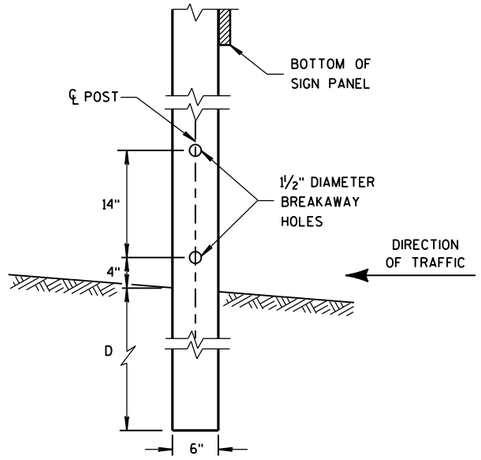
S.D.D. 15 C 11-7b



DETAIL OF TUBULAR STEEL SIGN POST



SECTION A-A



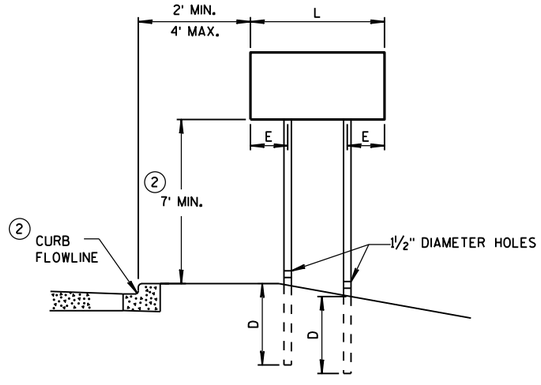
4"x6" WOOD POST MODIFICATION

GENERAL NOTES

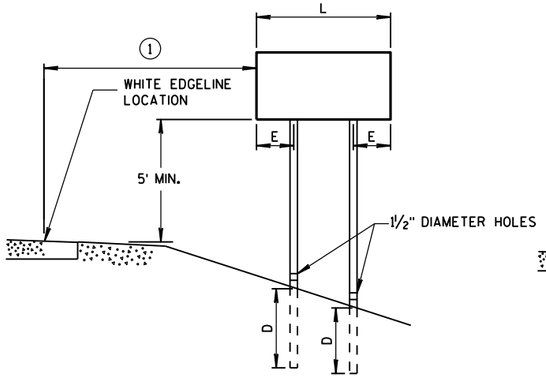
(1) 6 FEET FROM THE EDGE OF PAVEMENT (EDGE LINE LOCATION) UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER. LATERAL OFFSET SHOULD BE ADJUSTED TO AVOID THE DITCH FLOWLINE.

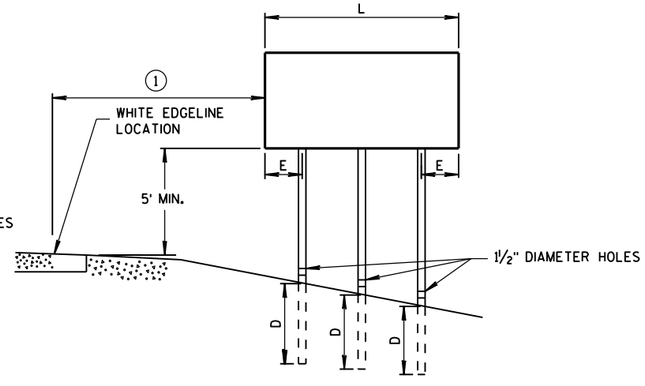
(2) THE EXISTENCE OF CURB AND GUTTER DOES NOT IN ITSELF MANDATE THE VERTICAL CLEARANCE ILLUSTRATED. THAT HEIGHT IS TYPICALLY MEASURED WHERE THERE IS SIDEWALK ADJACENT TO THE ROADWAY OR PARKING IS PERMITTED. IN THE ABSENCE OF SIDEWALK, VERTICAL CLEARANCE IS MEASURED FROM THE TOP OF THE CURB. IF NO SIDEWALK AND NO PARKING, VERTICAL CLEARANCE MAY BE REDUCED TO 5 FOOT MINIMUM. OFFSET OF SIGNS IS MEASURED FROM THE CURB FLOWLINE.

(3) FOR SIGNS REQUIRING 4 POSTS, SPACE INTERMEDIATE POSTS EVENLY.



URBAN AREA





RURAL AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

TUBULAR STEEL POSTS

AREA OF SIGN INSTALLATION (SQ. FT.)	NUMBER OF REQUIRED TUBULAR STEEL POSTS
9 OR LESS	1
GREATER THAN 9 LESS THAN OR EQUAL TO 18	2
GREATER THAN 18 LESS THAN OR EQUAL TO 27	3

SIGNS WIDER THAN 3 FEET OR LARGER THAN 9 SQ. FT. SHALL BE MOUNTED ON MULTIPLE POSTS (SEE ABOVE TABLE).

SIGNS LARGER THAN 27 SQ. FT. SHALL NOT BE MOUNTED ON TUBULAR STEEL POSTS.

WOOD POST EMBEDMENT DEPTH

AREA OF SIGN INSTALLATION (SQ. FT.)	D (MIN)
20 OR LESS	4'
GREATER THAN 20	5'

4" X 6" WOOD POST

POST SPACING REQUIREMENTS		NUMBER OF WOOD POSTS REQUIRED
L	E	
48" OR LESS AND LESS THAN 20 SQ. FT.	-	1
LESS THAN 60"	12"	2
60" TO 120"	L/5	2
GREATER THAN 120" LESS THAN 168"	12"	3
168" AND GREATER	12"	4

SEE NOTE (3)

TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

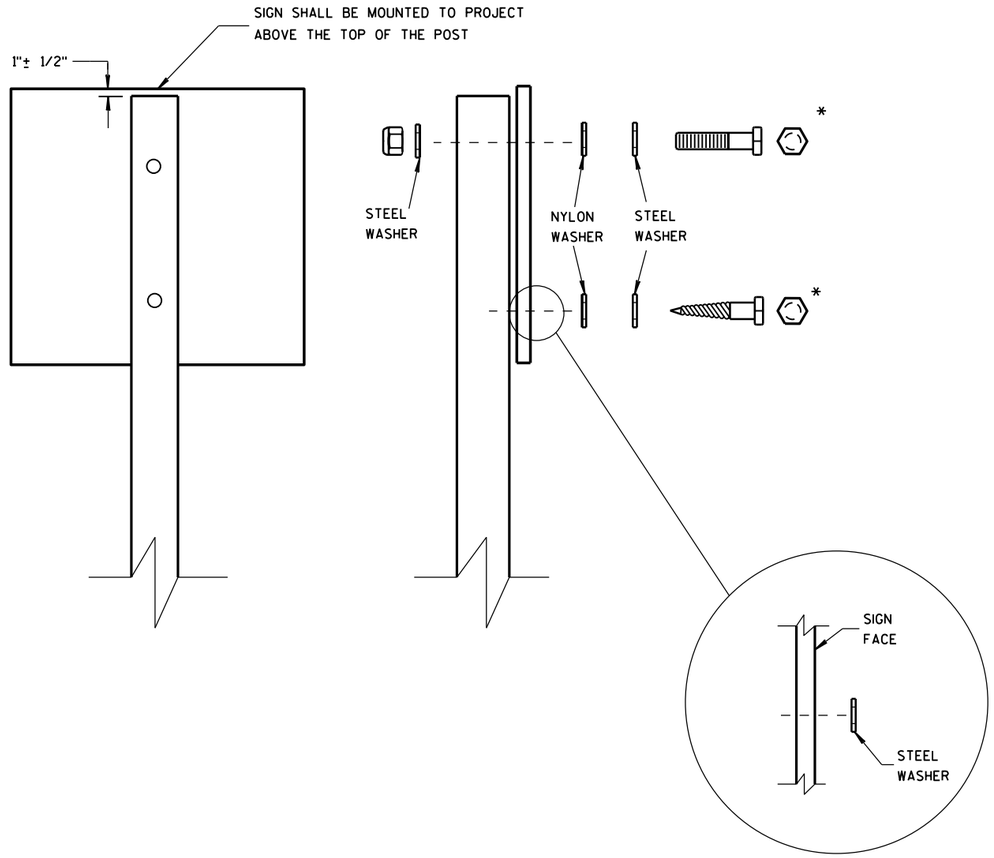
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

S.D.D. 15 D 38-2a

6

S.D.D. 15 D 38-2a



WASHER PLACEMENT WHEN SIGN HAS OTHER THAN TYPE H OR TYPE F FACE

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

* 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. FOR A SINGLE POST INSTALLATION, ALL SIGNS GREATER THAN 9 SQ. FT. REQUIRE THE USE OF 3 FASTENERS.

6

6

S.D.D. 15 D 38-2b

S.D.D. 15 D 38-2b

ATTACHMENT OF SIGNS TO POSTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

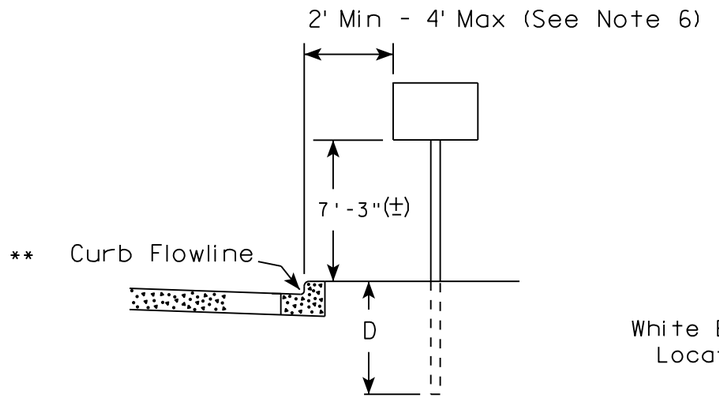
APPROVED

June 2017
DATE

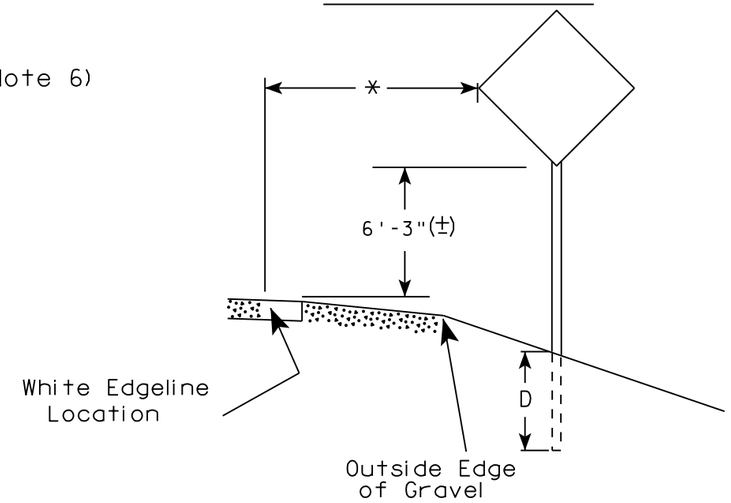
/S/ Andrew Heldtke
WORK ZONE ENG

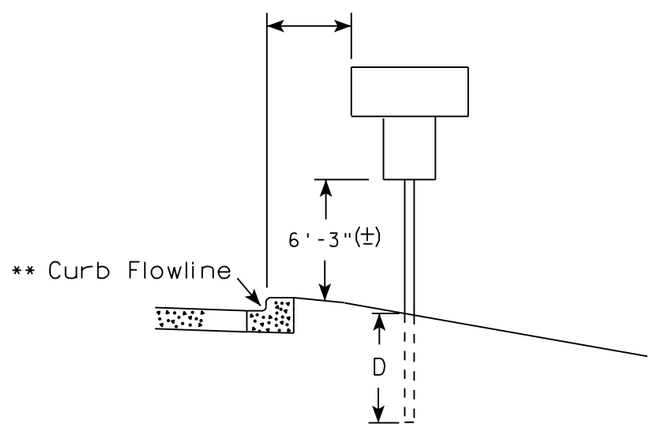
FHWA

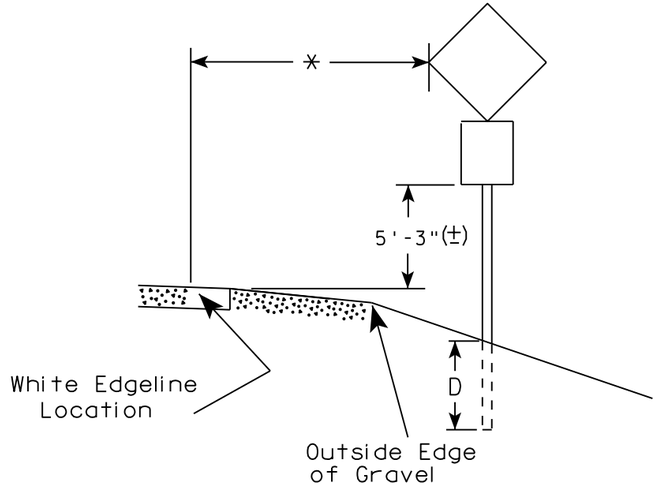
URBAN AREA



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.

POST EMBEDMENT DEPTH

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

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. J-Assemblies are considered to be one sign for mounting height.
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 directd 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" (±).

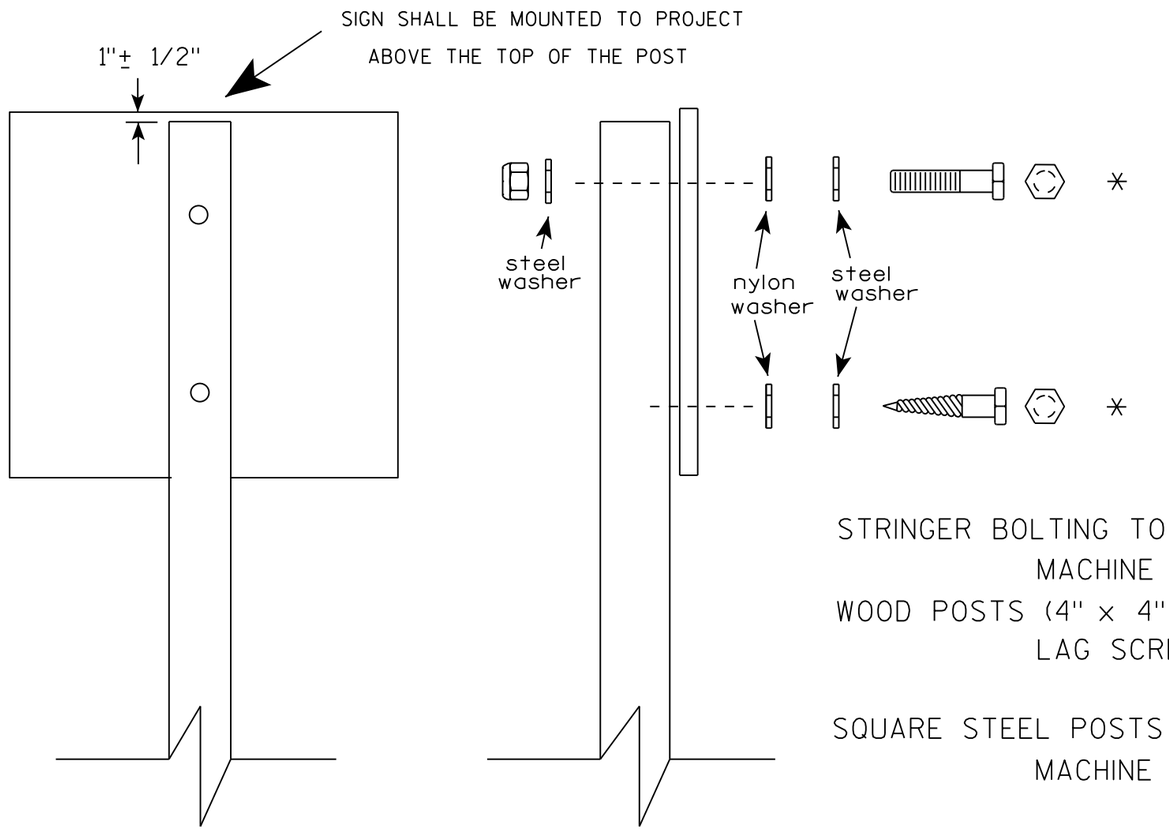
TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 8/21/17 PLATE NO. A4-3.21

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 52	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.

STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)
MACHINE BOLTS - 5/16" X 1-3/4" Length w/ lock nuts
WOOD POSTS (4" x 4" or 4" x 6")
LAG SCREWS - 3/8" X 3" (NO STRINGERS ON BACK OF SIGN)
3/8" X 4" (STRINGERS ON BACK OF SIGN)
SQUARE STEEL POSTS (2" x 2")
MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
3/8" X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)
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

* 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

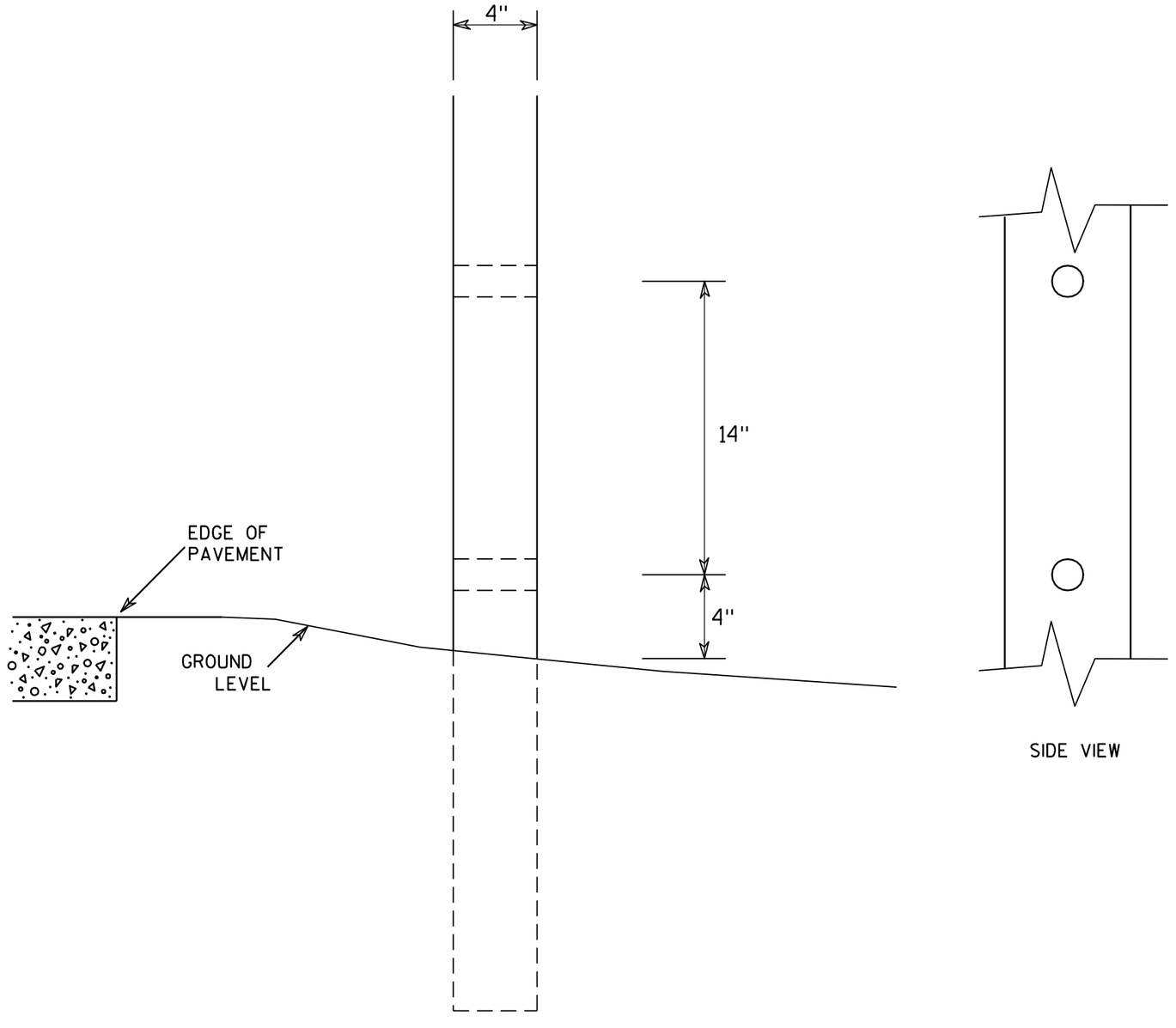
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
For State Traffic Engineer

DATE 8/11/16 PLATE NO. A4-8.8

PROJECT NO: SHEET NO: E

FILE NAME : C:\CAEfiles\Projects\tr_stdplate\A48.DGN PLOT DATE : 11-AUG-2016 11:35 PLOT BY : $$ plotuser $$



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.

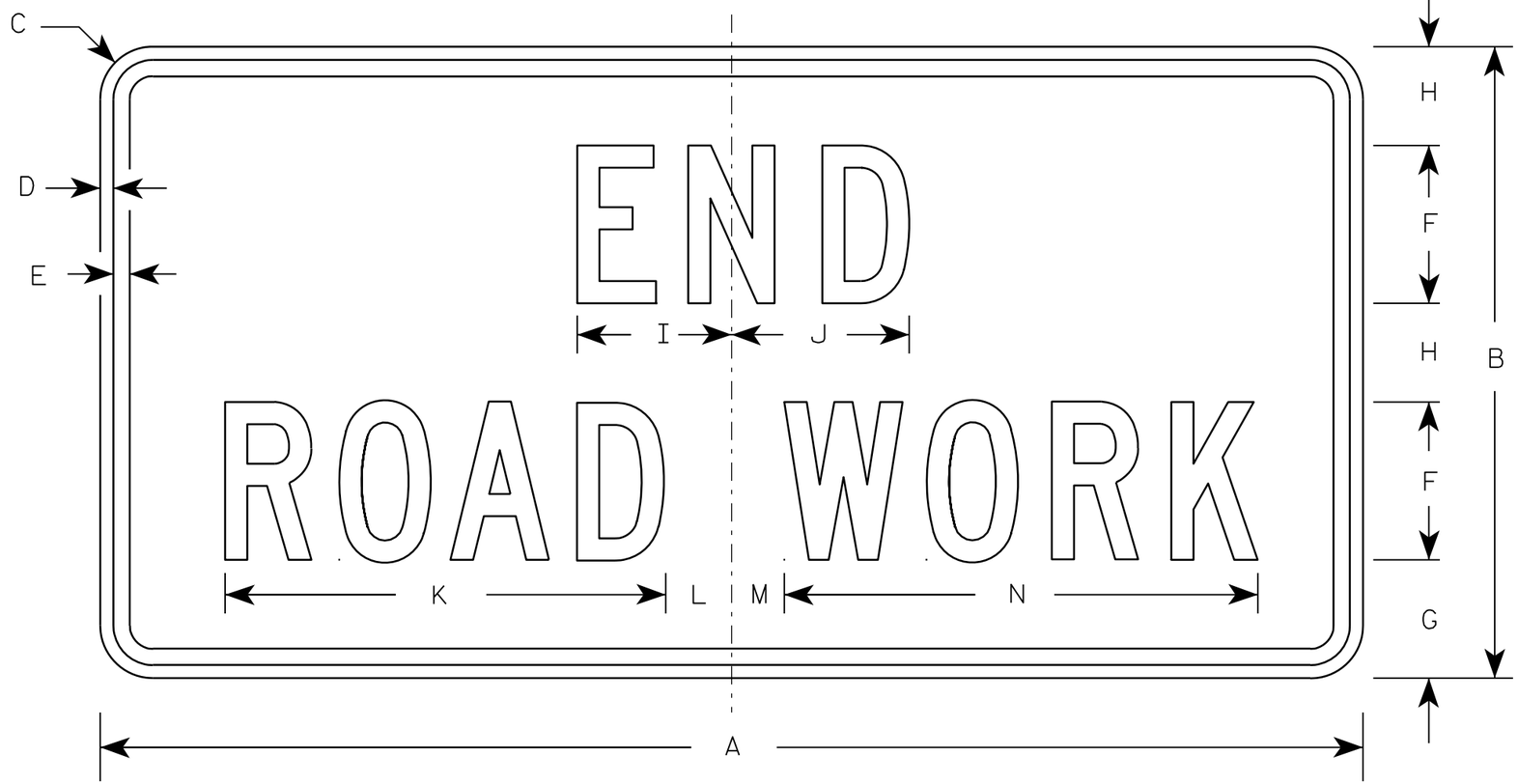
4 X 6 WOOD POST MODIFICATIONS

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: 54	E



G20-2A

NOTES

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

Metric equivalent for this sign is:

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

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m2
1	36	18	1 1/8	3/8	1/2	4	3 3/4	2 1/2	4 1/8	4 1/8	11 1/8	2	1	12 1/8													4.5	0.41
2	48	24	1 1/2	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0	0.72
3	48	24	1 1/2	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0	0.72
4	48	24	1 1/2	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0	0.72
5	48	24	1 1/2	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0	0.72

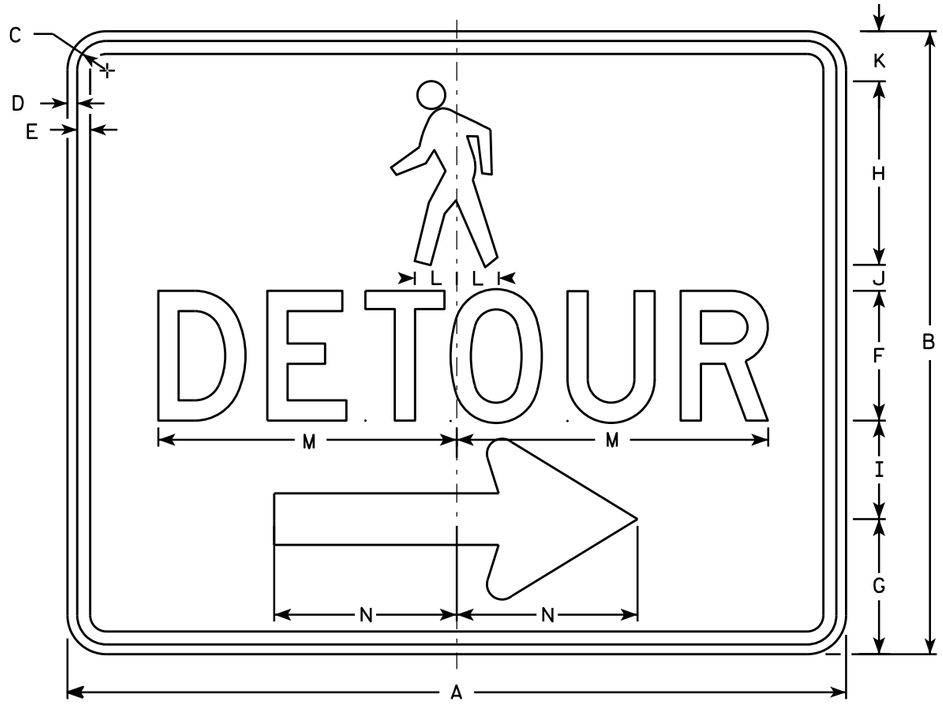
STANDARD SIGN
G20-2A

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

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

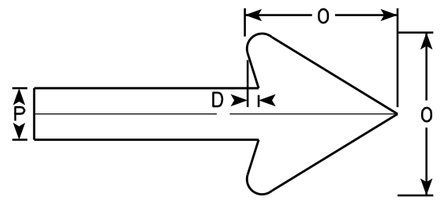
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 55	E



M4-9BR

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. M4-9BL is the same as M4-9BR 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	5 1/4	7 1/8	3 3/4	1	1 1/8	1 5/8	11 3/4	7	6	2											5.00
3																											
4																											
5																											

STANDARD SIGN
M4-9B L&R

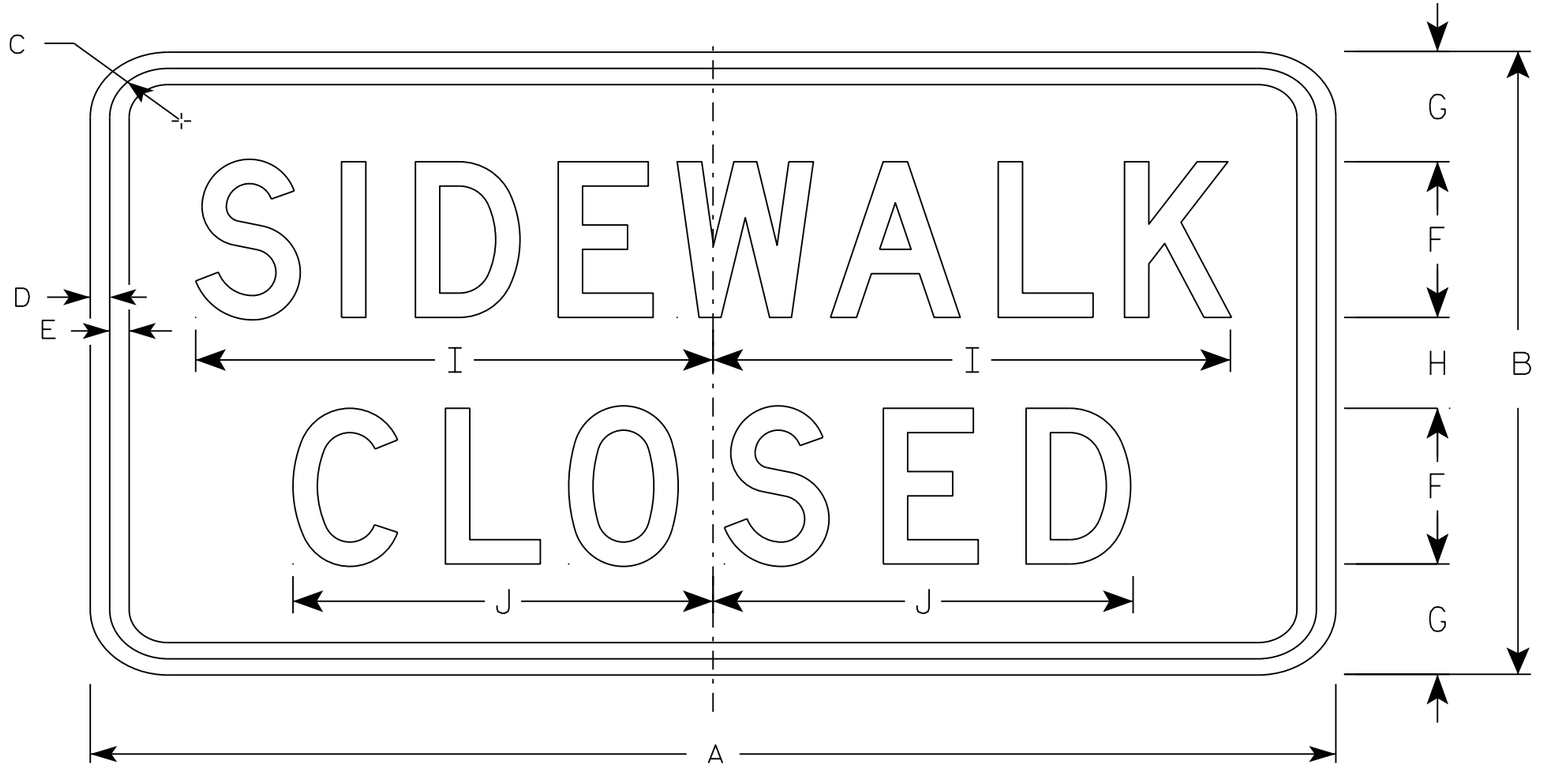
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 9/30/13 PLATE NO. M4-9B.1

PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E

FILE NAME : C:\CAEfiles\Projects\tr_stdplate\M49B.DGN PLOT DATE : 01-OCT-2013 13:44 PLOT BY : mscj9h PLOT NAME : PLOT SCALE : 5.837526:1.000000 WISDOT/CADDS SHEET 42



R9-9

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. Use Size 2 for Sidewalks. Use Size 3 for Paths and Trails.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	24	12	1 3/4	1/2	1/2	3	2 1/8	1 3/4	10	8 1/8																	2.0
2M	24	12	1 3/4	1/2	1/2	3	2 1/8	1 3/4	10	8 1/8																	2.0
3	30	18	1 3/4	1/2	1/2	4	3 1/2	3	12 1/2	10 1/4																	3.75
4																											
5																											

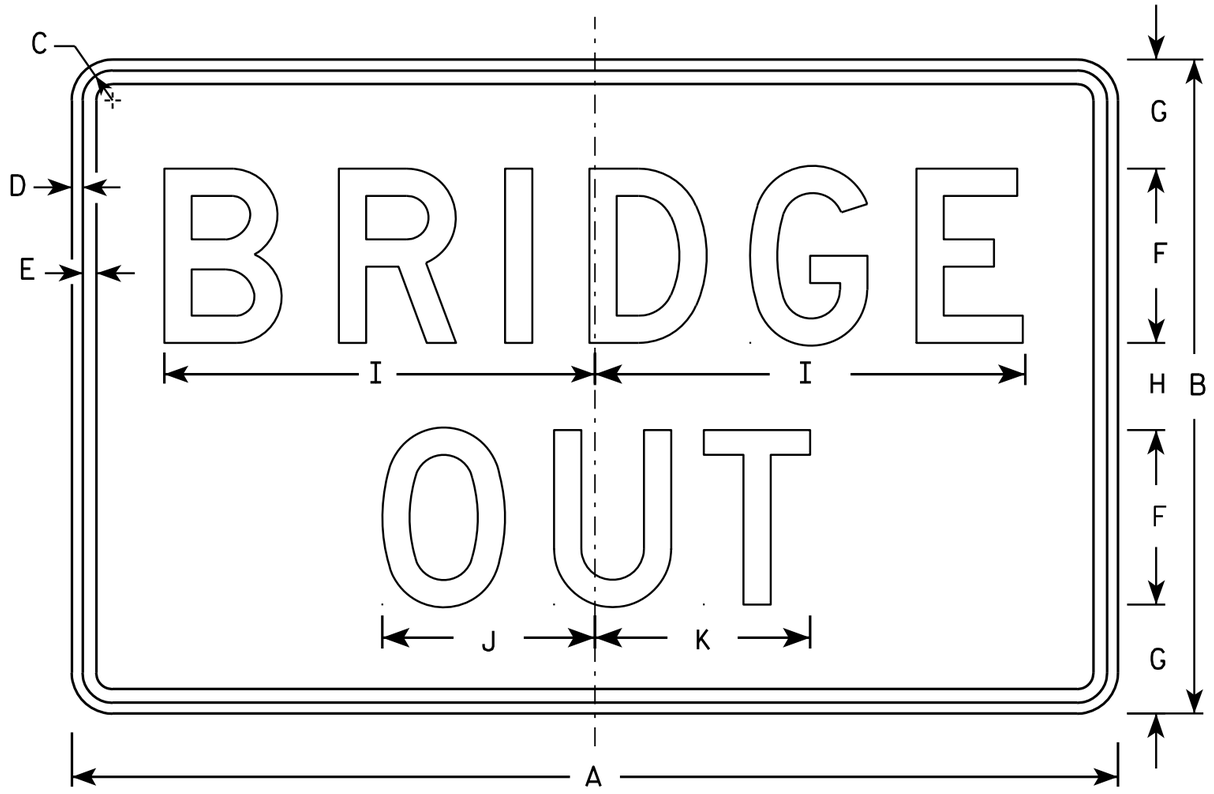
STANDARD SIGN
R9-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 8/11/16 PLATE 57 R9-9.6

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 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

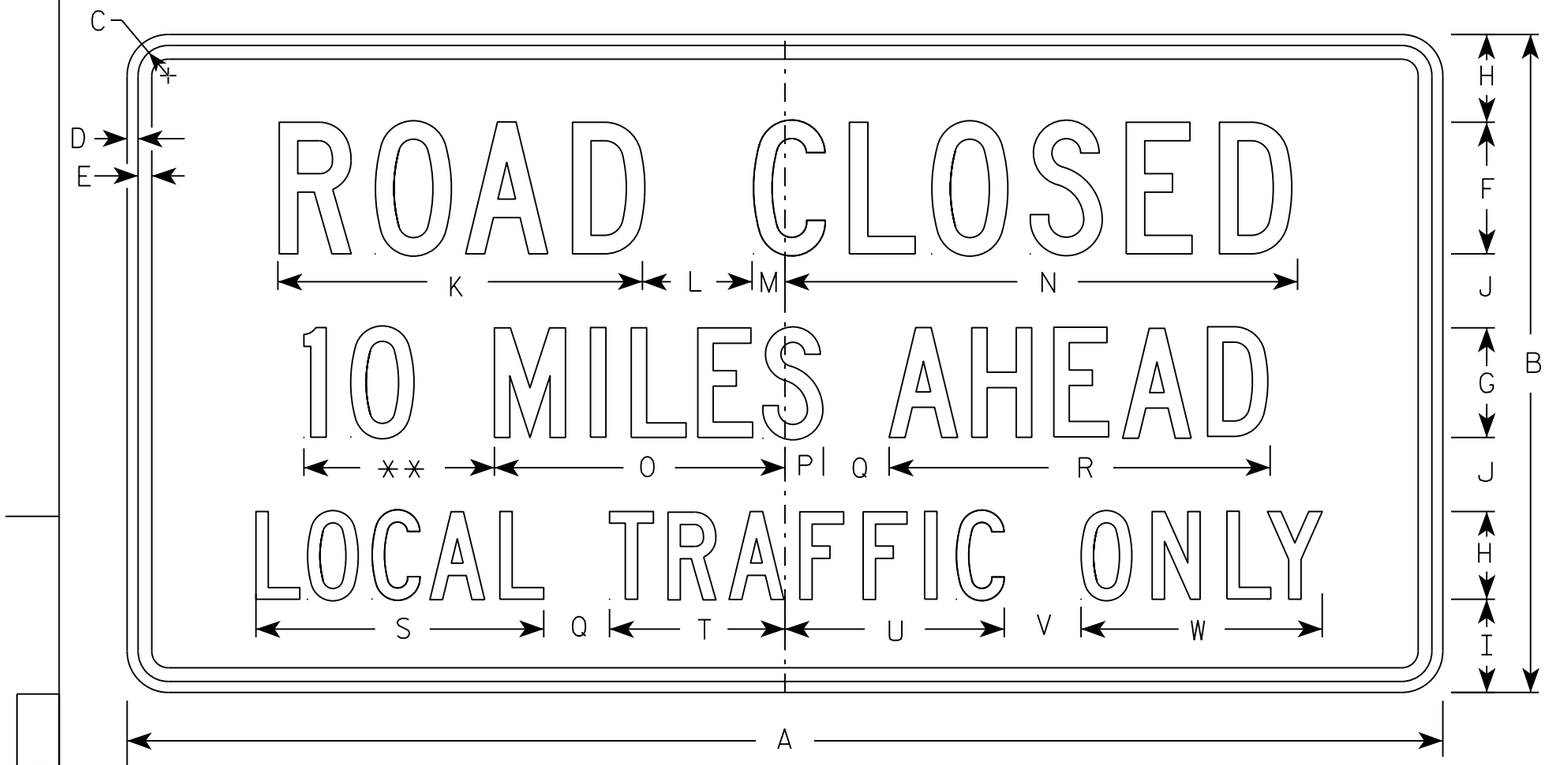
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
For State Traffic Engineer

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

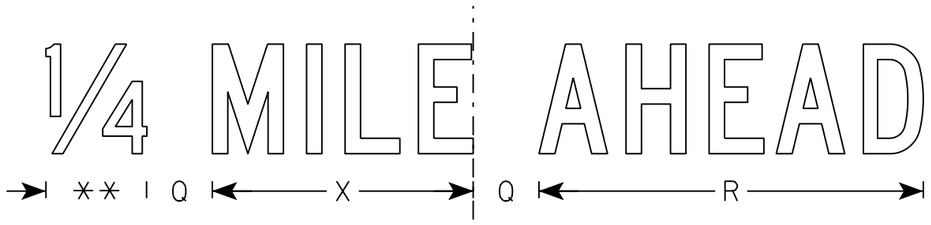
PROJECT NO:

SHEET NO: 58 E



R11-3

** See Note 5



NOTES

1. Sign is Type II - Type H Reflective
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 to nearest quarter mile and optically adjust spacing to achieve proper balance.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	18	1 3/8	1/2	5/8	4	3	2 1/2	2	2	11 1/8	3	1 1/8	15 1/4	8	1 1/2	2	10 3/4	8 3/8	4 3/4	6 1/2	2	6 3/4	7 1/8			4.5
2S	60	30	1 3/8	1/2	5/8	6	5	4	4 1/4	3 3/8	16 5/8	5	1 1/2	23	13 1/4	1 3/4	3	17 3/8	13 1/8	8	10	3 1/2	11	11 7/8			12.5
2M	60	30	1 3/8	1/2	5/8	6	5	4	4 1/4	3 3/8	16 5/8	5	1 1/2	23	13 1/4	1 3/4	3	17 3/8	13 1/8	8	10	3 1/2	11	11 7/8			12.5
3																											
4																											
5																											

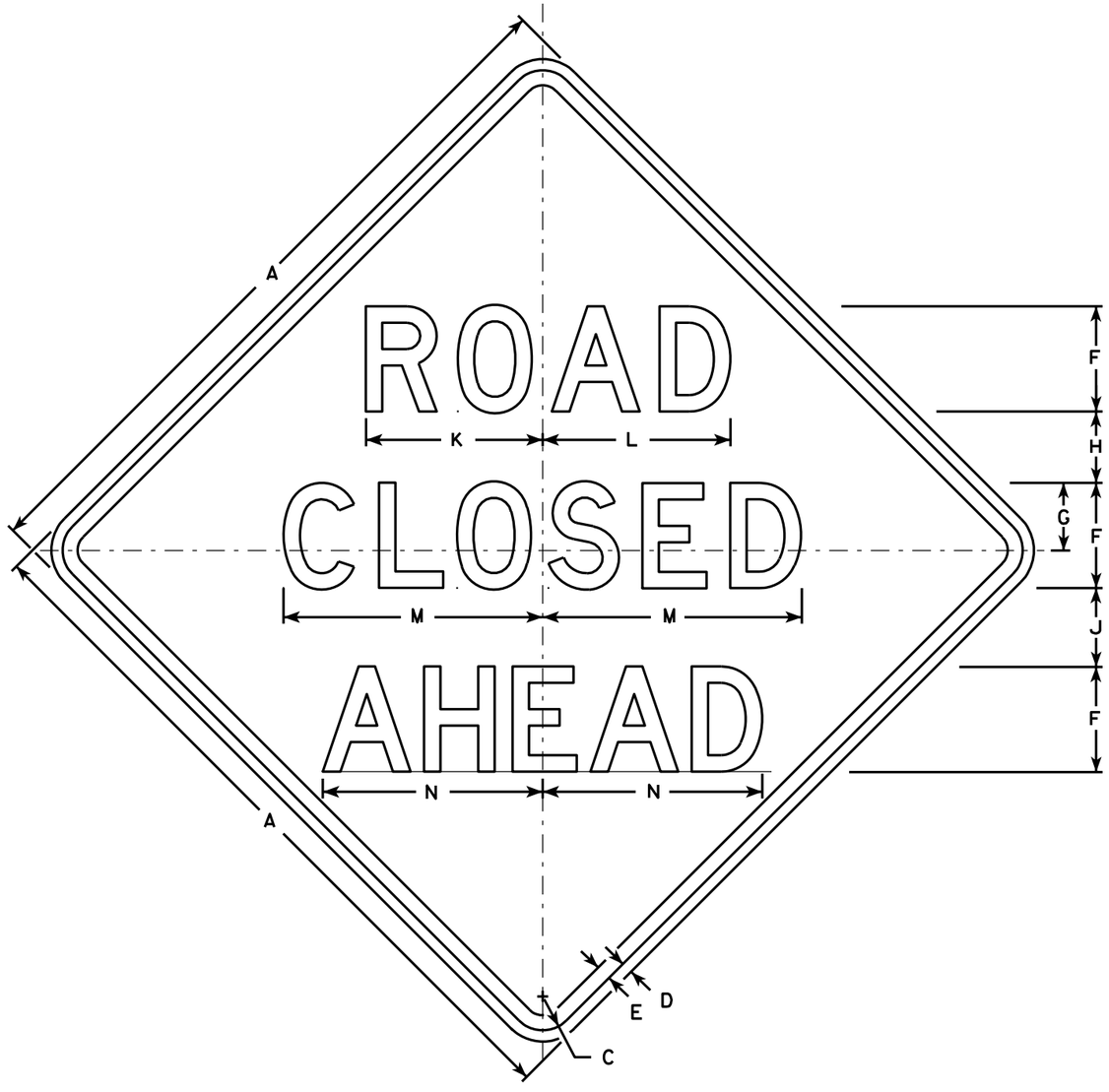
STANDARD SIGN
R11-3

WISCONSIN DEPT OF TRANSPORTATION

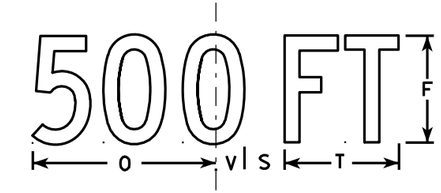
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/15/17 PLATE NO. R11-3.8

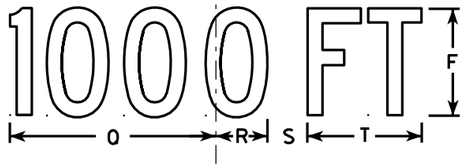
PROJECT NO: | HWY: | COUNTY: | SHEET NO: 59 | E



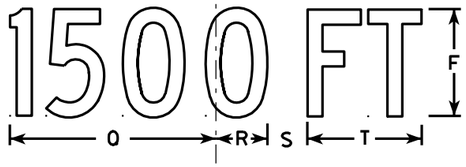
W20-3A



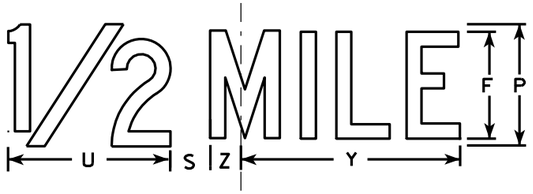
W20-3D



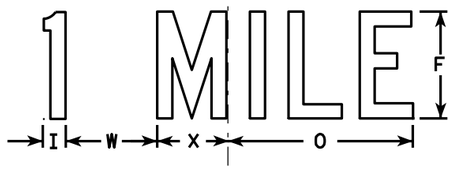
W20-3C



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

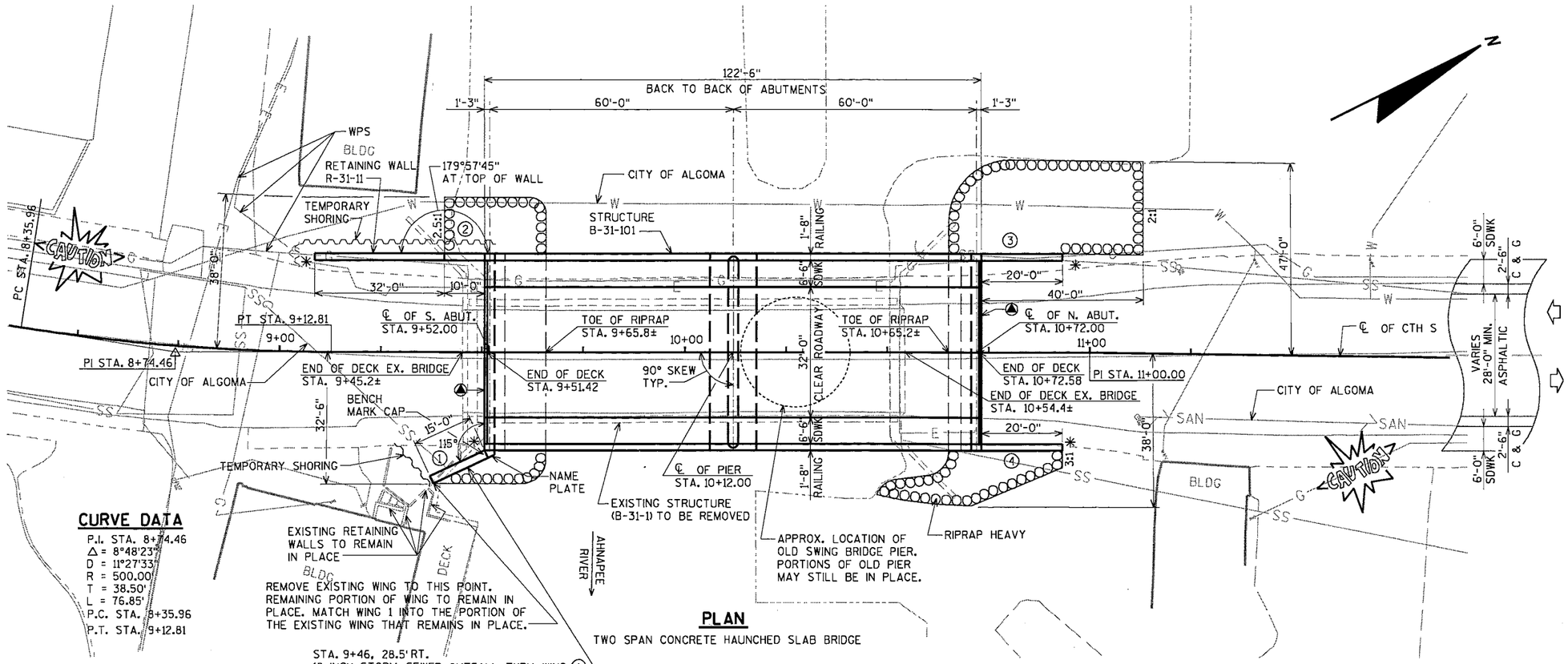
PROJECT NO: | HWY: | COUNTY: | SHEET NO: 60 | E

$PRFNAME$
U:\45-0451.00 - Kewaunee Co. CTH S (Formally 45-0417.00)\Structures\450451gp.dgn

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

STATE PROJECT NUMBER

4409-12-71



CURVE DATA

P.I. STA. 8+74.46
Δ = 8°48'23"
D = 11°27'33"
R = 500.00'
T = 38.50'
L = 76.85'
P.C. STA. 8+35.96
P.T. STA. 9+12.81

PLAN

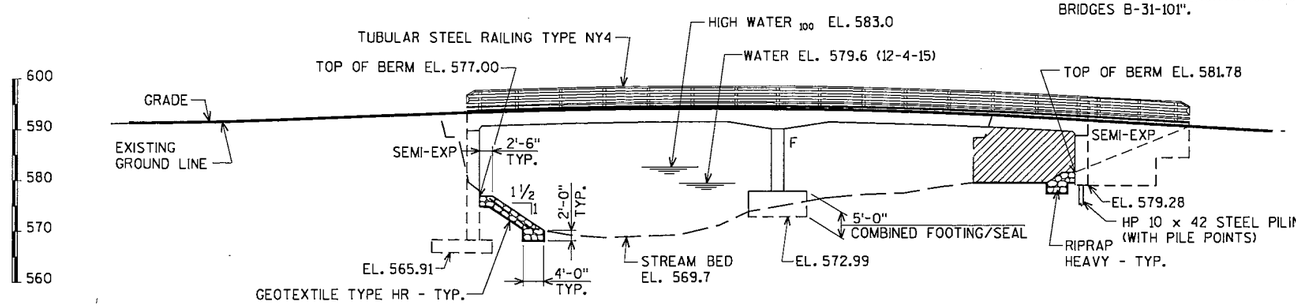
TWO SPAN CONCRETE HAUNCHED SLAB BRIDGE

COST OF EXCAVATION AND FILL IN THE HATCHED AREAS SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR "EXCAVATION FOR STRUCTURES BRIDGES B-31-101".

✳ ANCHOR ASSEMBLY FOR THRIE BEAM TYPE GUARDRAIL.

◯ DENOTES WING NUMBER.

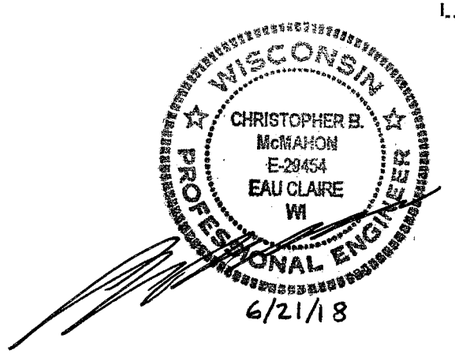
▲ PAVING NOTCH AT END OF DECK - TYP.



ELEVATION

FOR TYPICAL SECTION AND DESIGN DATA SEE SHEET 2
FOR GENERAL NOTES SEE SHEET 3

LIST OF DRAWINGS



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

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 SDR 08/02/18
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE B-31-101

CTH S OVER AHNAPEE RIVER

COUNTY	KEWAUNEE	~~TOWN~~/CITY/~~VILLAGE~~	ALGOMA

DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

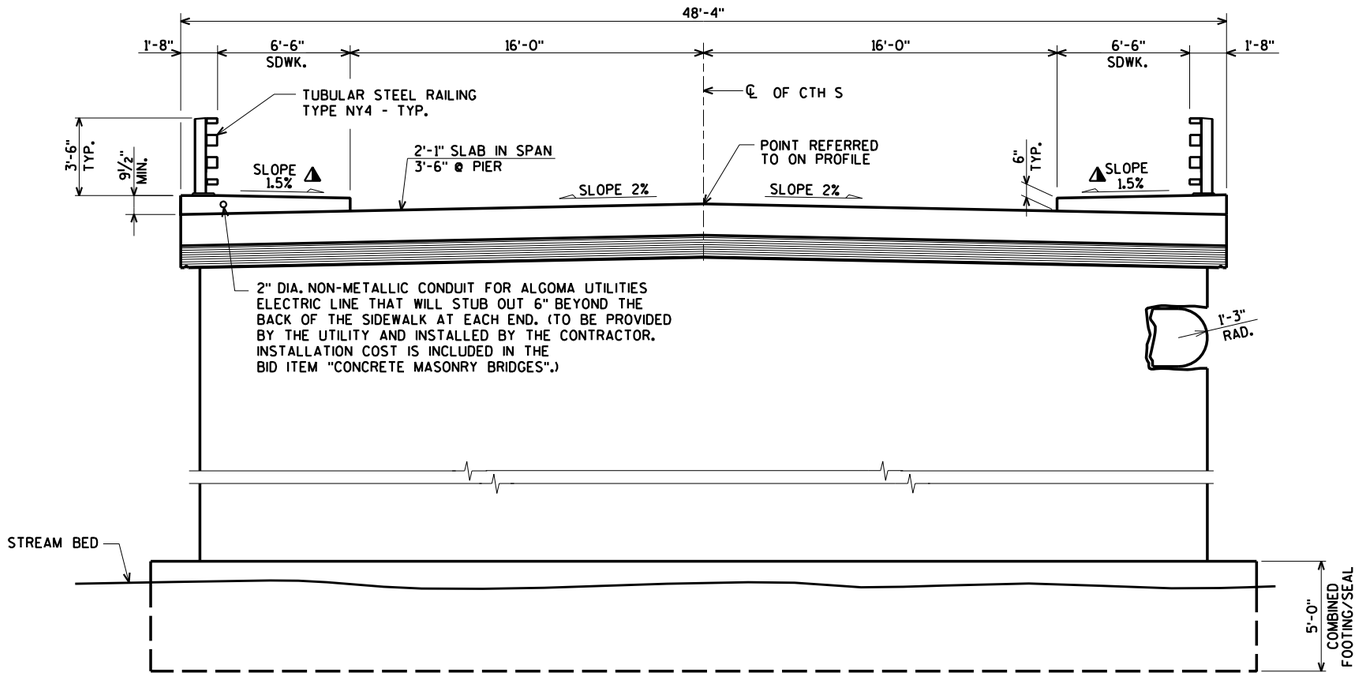
DESIGNED BY	JWZ	DESIGN CK'D.	AEB	DRAWN BY	CLS	PLANS CK'D.	CBM

GENERAL PLAN

SHE 61 F 21

8

8



⚠ ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

TYPICAL SECTION THRU BRIDGE
(LOOKING NORTH)

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93
INVENTORY RATING FACTOR: 1.06
OPERATING RATING FACTOR: 1.37
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 250 KIPS

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

MATERIAL PROPERTIES:

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

HYDRAULIC DATA:

100 YEAR FREQUENCY	2 YEAR FREQUENCY
Q_{100} = 4,350 c.f.s.	Q_2 = 1,106 c.f.s.
VEL.= 6.0 f.p.s.	VEL.= 2.0 f.p.s.
HW_{100} = EL. 583.0	HW_2 = EL. 579.7

WATERWAY AREA = 732 sq. ft.
DRAINAGE AREA = 121 sq. mi.
ROADWAY OVERTOPPING = N/A
SCOUR CRITICAL CODE = 5
DATUM = NAVD88 (2012)

FOUNDATION DATA:

SOUTH ABUTMENT WITH SPREAD FOOTING TO BE SUPPORTED ON SOUND MATERIAL WITH A REQUIRED FACTORED BEARING RESISTANCE OF 6.5 TONS PER SQ. FT. A GEOTECHNICAL ENGINEER WILL DETERMINE THE FACTORED BEARING RESISTANCE BY VISUAL INSPECTION PRIOR TO CONSTRUCTION OF THE ABUTMENT FOOTING.

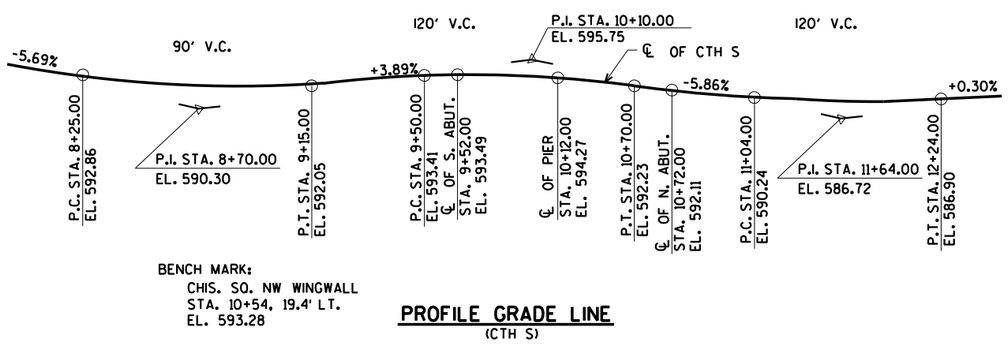
NORTH ABUTMENT TO BE SUPPORTED ON HP 10 x 42 STEEL PILING (WITH PILE POINTS) DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 160 TONS ǂ PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED LENGTH 20'-0".

PIER WITH SPREAD FOOTING/SEAL TO BE SUPPORTED ON SOUND MATERIAL WITH A REQUIRED FACTORED BEARING RESISTANCE OF 6.0 TONS PER SQ. FT. A GEOTECHNICAL ENGINEER WILL DETERMINE THE FACTORED BEARING RESISTANCE BY VISUAL INSPECTION PRIOR TO CONSTRUCTION OF THE PIER FOOTING.

ǂ 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.

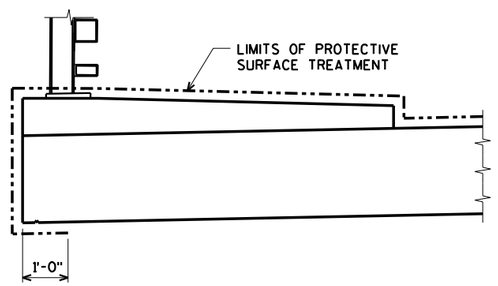
TRAFFIC DATA:

A.A.D.T. = 3,500 (2019)
A.A.D.T. = 3,900 (2039)
R.D.S. = 25 M.P.H.



BENCH MARK:
CHIS. SO. NW WINGWALL
STA. 10+54, 19.4' LT.
EL. 593.28

PROFILE GRADE LINE
(CTH S)



PROTECTIVE SURFACE TREATMENT DETAIL

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

TYPICAL SECTION AND DESIGN DATA

SHEET 2 OF 21
62

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

STATE PROJECT NUMBER

4409-12-71

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	S. ABUT.	PIER	N. ABUT.	SUPER.	TOTAL
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STATION 10+00.00	LS	-----	-----	-----	-----	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-31-101	LS	-----	-----	-----	-----	1
206.1050.S	UNDERWATER FOUNDATION INSPECTION PIER FOUNDATION STRUCTURE B-31-101	EACH	-----	1	-----	-----	1
206.5000	COFFERDAMS B-31-101	LS	-----	-----	-----	-----	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	975	-----	445	-----	1,420
502.0100	CONCRETE MASONRY BRIDGES	CY	272	128	85	540	1,025
502.3200	PROTECTIVE SURFACE TREATMENT	SY	-----	-----	-----	780	780
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	29,490	17,950	6,510	-----	53,950
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	660	100	1,780	92,940	95,480
511.1200	TEMPORARY SHORING B-13-101	SF	950	-----	-----	-----	950
513.7084	RAILING STEEL TYPE NY4 B-31-101	LF	10	-----	43	247	300
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	9	-----	9	-----	18
550.0500	PILE POINTS	EACH	-----	-----	9	-----	9
550.1100	PILING STEEL HP 10-INCH x 42 LB	LF	-----	-----	170	-----	170
606.0300	RIPRAP HEAVY	CY	120	-----	170	-----	290
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	70	-----	100	-----	170
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	-----	-----	50	-----	50
645.0120	GEOTEXTILE TYPE HR	SY	230	-----	340	-----	570
	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 AND GEOTEXTILE TYPE HR TO THE EXTENT SHOWN ON THE GENERAL PLAN SHEET AND IN THE ABUTMENT DETAILS.

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

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-31-101" SHALL BE THE EXISTING GROUNDLINE.

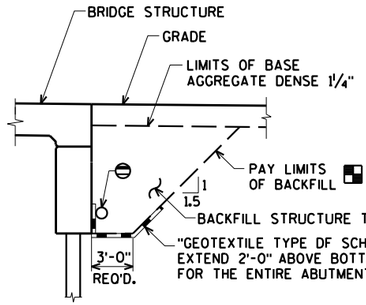
THE EXISTING STRUCTURE, B-31-1, TO BE REMOVED, IS A SINGLE SPAN STEEL THRU GIRDER BRIDGE, 104.5 FT. LONG WITH A 26 FT. CLEAR ROADWAY WIDTH AND 5 FT. WIDE SIDEWALKS EACH SIDE.

THE BACKFILL QUANTITIES ARE BASED ON THE PAY LIMITS SHOWN ON THE PLANS AND MAY NOT REFLECT ACTUAL PLACED QUANTITIES. "BACKFILL STRUCTURE TYPE A" REQUIRED DIRECTLY BEHIND ABUTMENTS AND ABUTMENT WINGS FOR 3 FEET. BACKFILL PLACED BEYOND PAY LIMITS OR EXCEEDING PLAN QUANTITIES SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES.

PROTECTIVE SURFACE TREATMENT IS TO BE APPLIED AS SHOWN IN DETAIL ON SHEET 2.

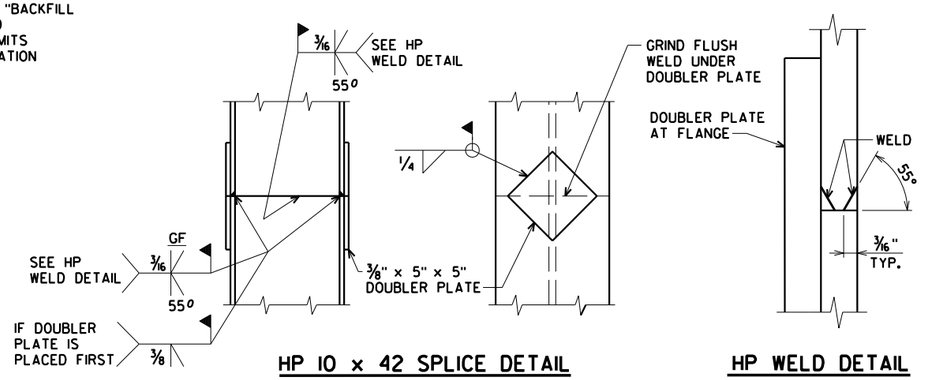
EXCAVATION BELOW THE ABUTMENT OR PIER FOOTING REQUIRES ENGINEER APPROVAL.

BEVEL EXPOSED EDGES OF CONCRETE 3/4" UNLESS NOTED OTHERWISE.



BACKFILL STRUCTURE LIMITS

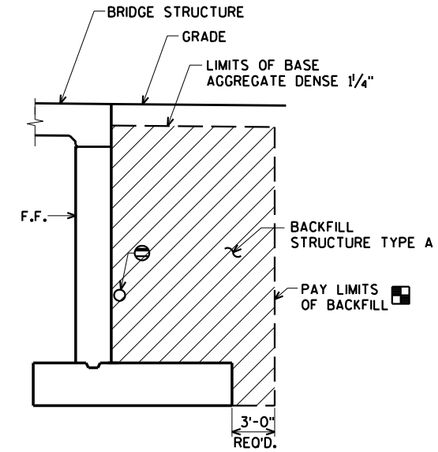
AT NORTH ABUTMENT



HP 10 x 42 SPLICE DETAIL

HP WELD DETAIL

FLANGE SHOWN, WEB SIMILAR



BACKFILL STRUCTURE LIMITS

AT SOUTH ABUTMENT

BACKFILL PAY LIMITS. BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN AT NORTH ABUTMENT AS DETAILED ON SHEET 12.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

QUANTITIES AND DETAILS

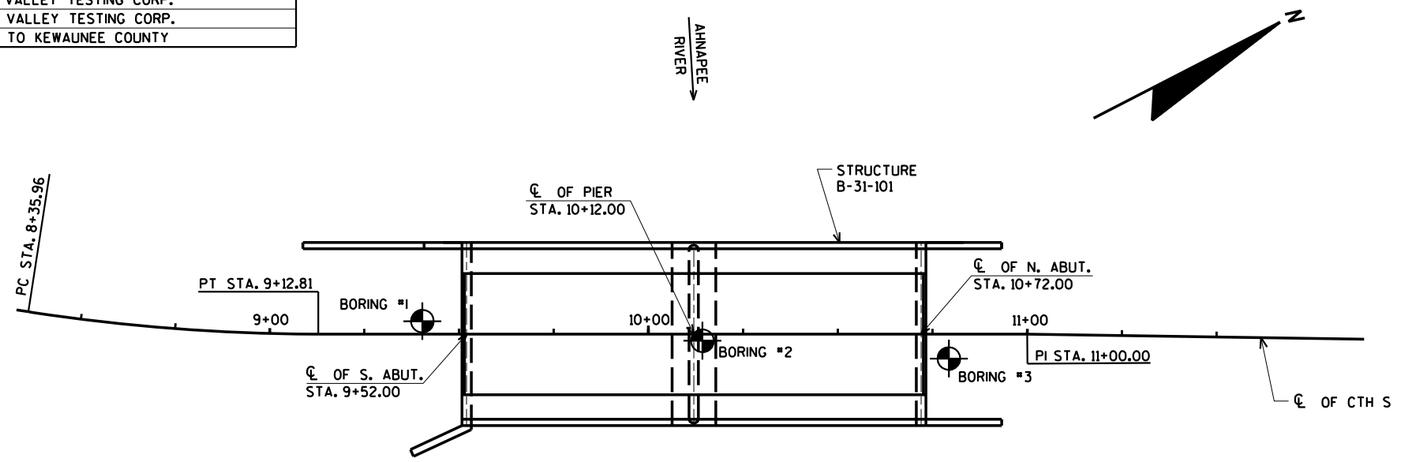
SHEET 3 OF 21
63

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

8

8

BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
1	MAY 23, 2016	489760.11	291740.77
2	MAY 24, 2016	489824.07	291778.22
3	MAY 24, 2016	489880.29	291811.28
BORINGS COMPLETED BY: RIVER VALLEY TESTING CORP.			
REPORT COMPLETED BY: RIVER VALLEY TESTING CORP.			
ALL COORDINATES REFERENCED TO KEWAUNEE COUNTY			



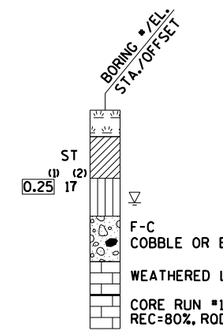
STATE PROJECT NUMBER

4409-12-71

MATERIAL SYMBOLS

ASPHALT	TOPSOIL	PEAT
CONCRETE	FILL	GRAVEL
SAND	CLAY	SILT
BOULDERS OR COBBLES	LIMESTONE	BEDROCK (UNKNOWN)
SHALE	SANDSTONE	IGNEOUS/ META

LEGEND OF BORING



(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.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

DRAWN BY	CLS	PLANS CK'D.	CBM

SUBSURFACE EXPLORATION

SHEET 4 OF 21
64

8

8

$PRFNAME$
U:\45-0451.00 - Kewaunee Co. CTH S (Formally 45-0417.00)\Structures\450451 soils.dgn

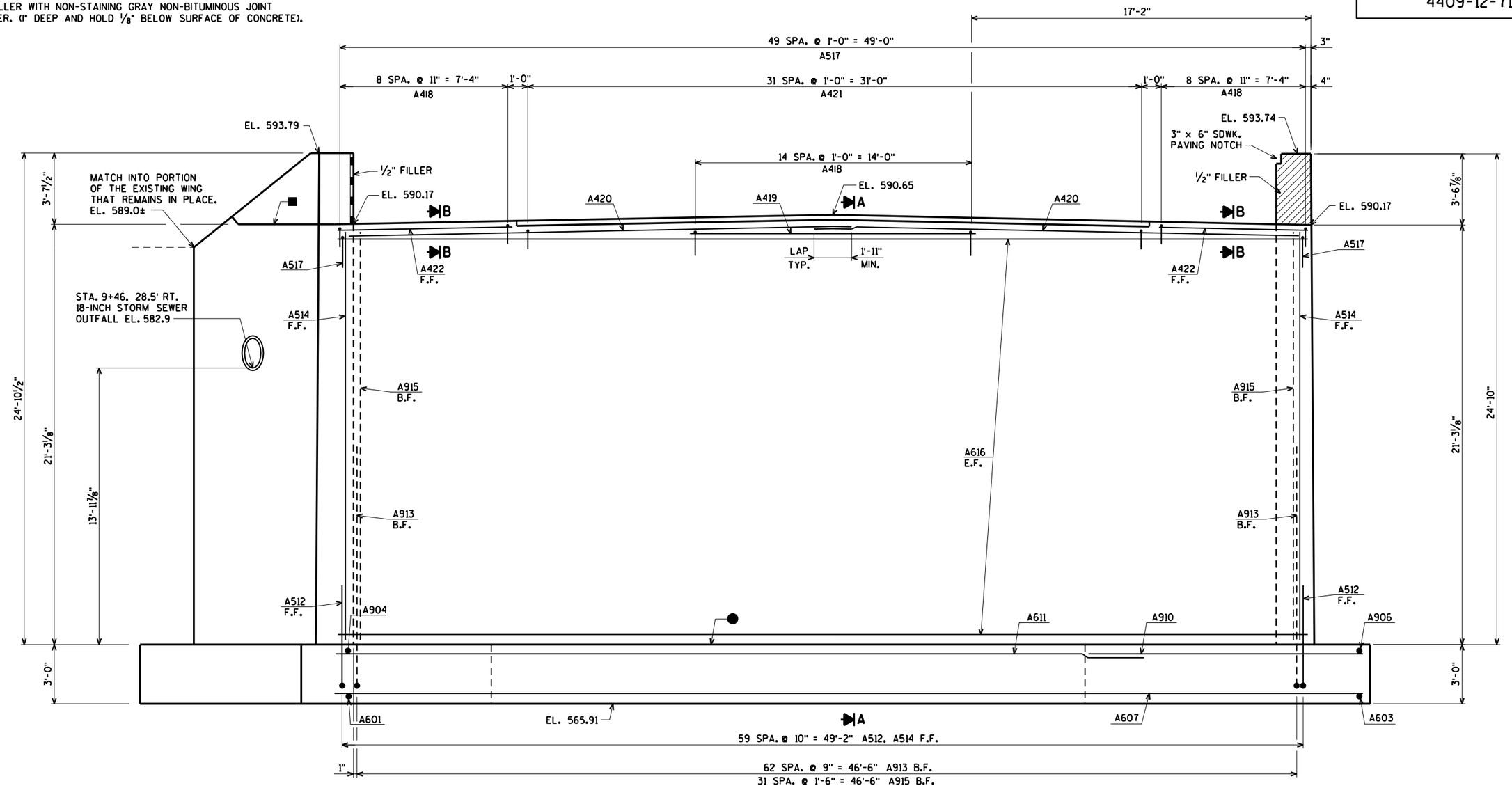
6/20/2018

PENTABLE:BReau_shd_util.tbl

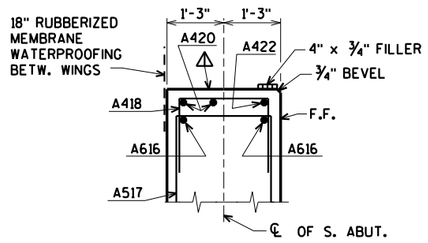
STATE PROJECT NUMBER

4409-12-71

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).



ELEVATION
(LOOKING SOUTH)



SECTION B

■ OPT. KEYED CONST. JOINT - FORMED BY A SURFACED BEVELED 2" x 6" WITH RUBBERIZED MEMBRANE WATERPROOFING ON B.F. (COST OF RUBBERIZED MEMBRANE WATERPROOFING IS INCIDENTAL TO BID ITEM "CONCRETE MANSONRY BRIDGES" IF OPT. CONST. JOINT USED).

⚠ STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHELENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING FILLER AND SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".

FOOTING TO BE PLACED ON SOUND MATERIAL WITH A REQUIRED FACTORED BEARING RESISTANCE OF 6.5 TONS PER SQ. FT.

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

FOR WING DETAILS, SEE SHEETS 8 & 9

FOR SECTION A, SEE SHEET 10

B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

F.F. DENOTES FRONT FACE

NOTE:
ABUTMENT BODY AND WING HEIGHTS CAN BE INCREASED 2'-0" WITHOUT REDESIGNING THE ABUTMENT.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

SOUTH ABUTMENT ELEVATION

SHEET 5 OF 21
65

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

$PRFNAME$
U:\45-0451.00 - Kewaunee Co. CTH S (Formally 45-0417.00)\Structures\450451sa.dgn

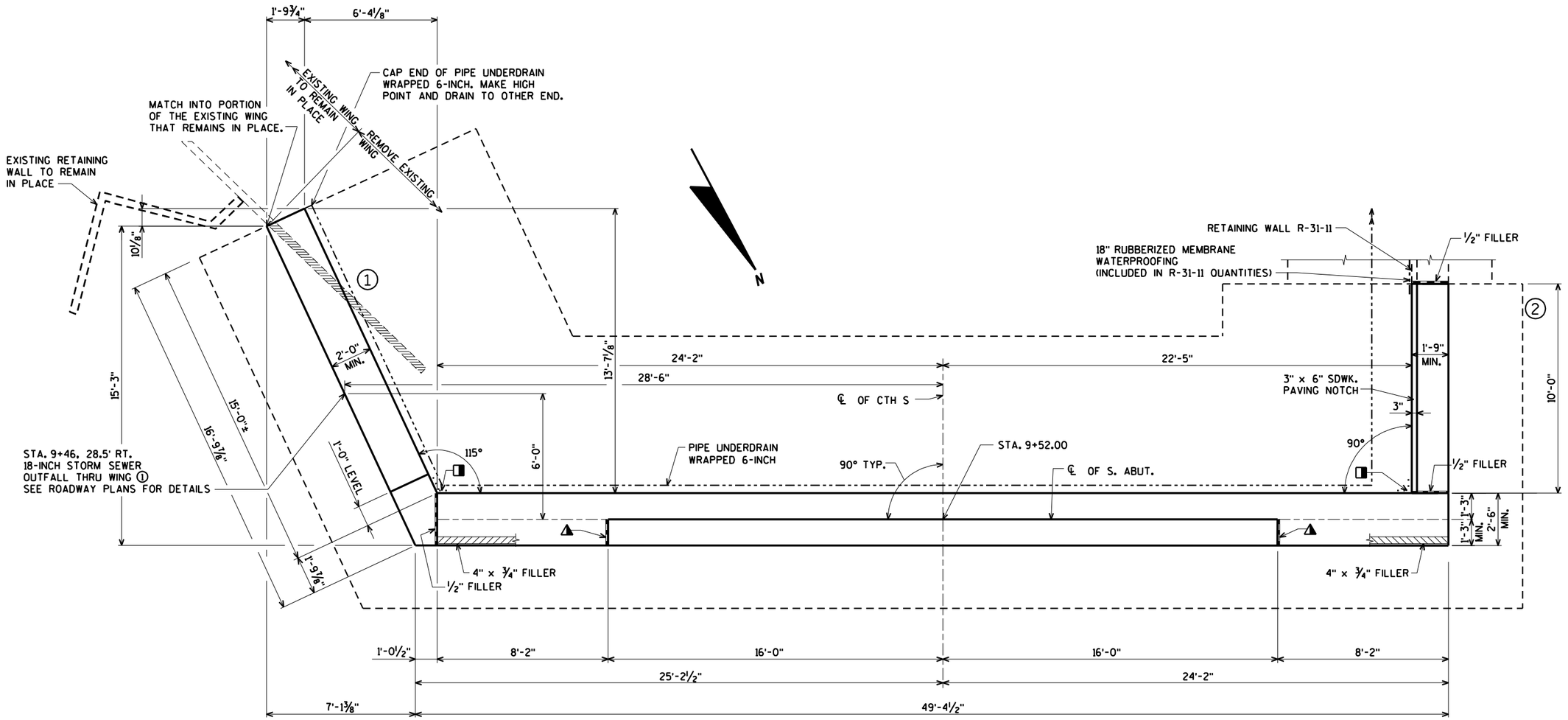
8

8

5/16/2018

PENTABLE:BReau_shd_util.tbl

STATE PROJECT NUMBER
4409-12-71



PLAN

◨ VERTICAL 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING WALL.

◭ ¾" CORK FILLER ON VERTICAL FACE ONLY.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

SOUTH ABUTMENT PLAN

SHEET 6 OF 21
66

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

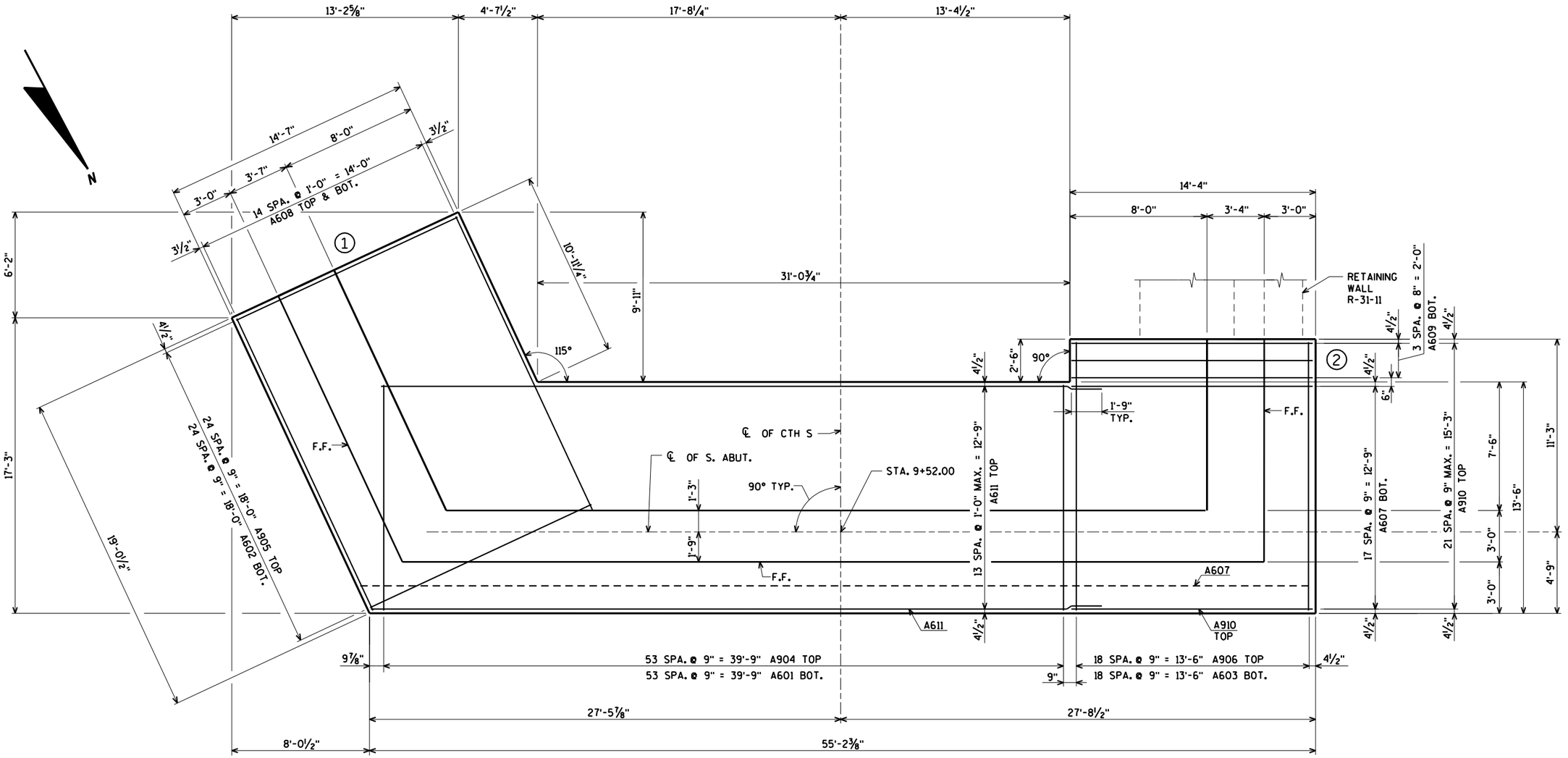
$PRFNAME$
U:\45-0451.00 - Kewaunee Co. CTH S (Formally 45-0417.00)\Structures\450451sa.dgn

8

8

5/16/2018

PENTABLE:BReau_shd_util.tbl



FOOTING PLAN

FOOTING TO BE PLACED ON SOUND MATERIAL WITH A REQUIRED FACTORED BEARING RESISTANCE OF 6.5 TONS PER SQ. FT.

FOR WING DETAILS, SEE SHEETS 8 & 9

F.F. DENOTES FRONT FACE

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

SOUTH ABUTMENT FOOTING PLAN

SHEET 7 OF 21
67

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

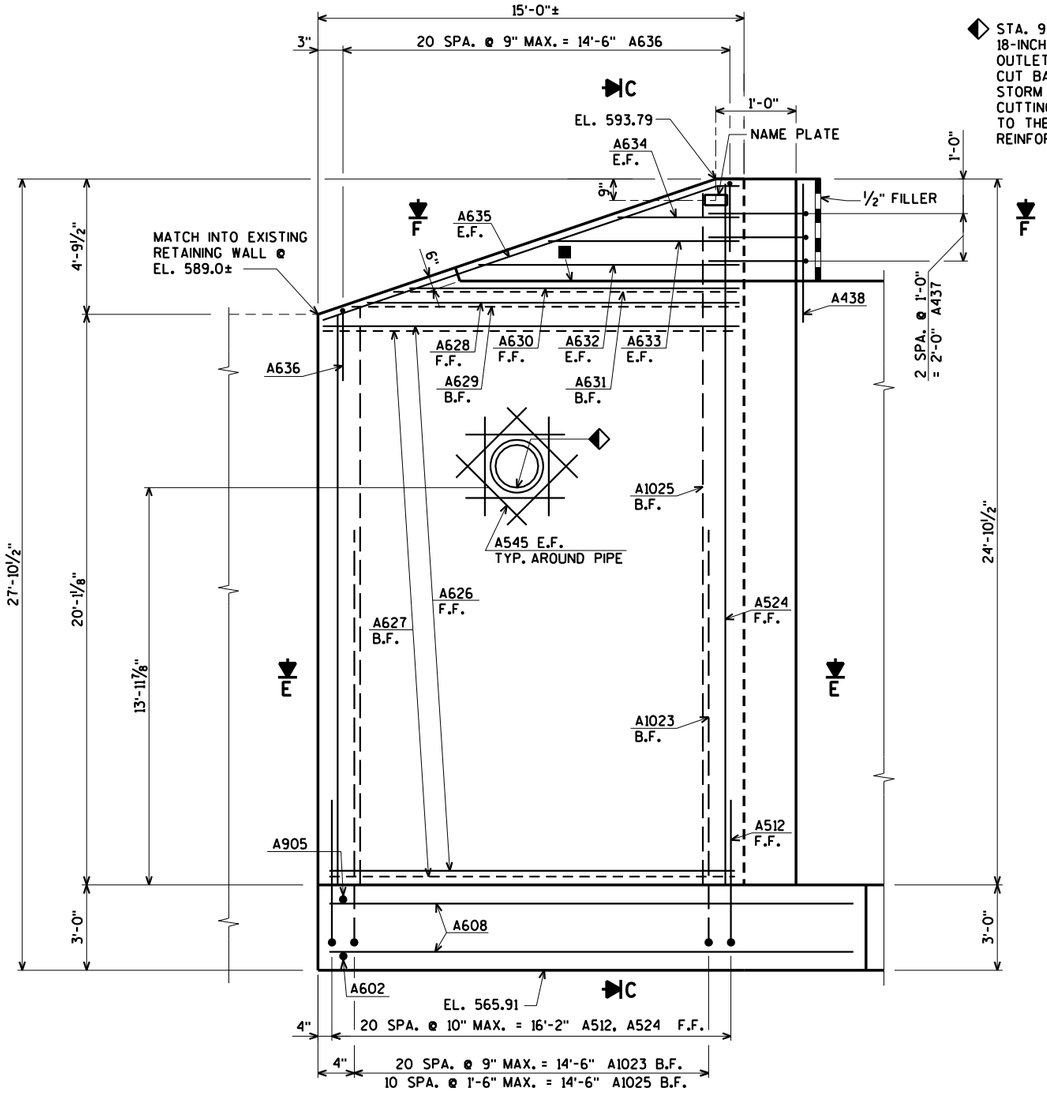
8

8

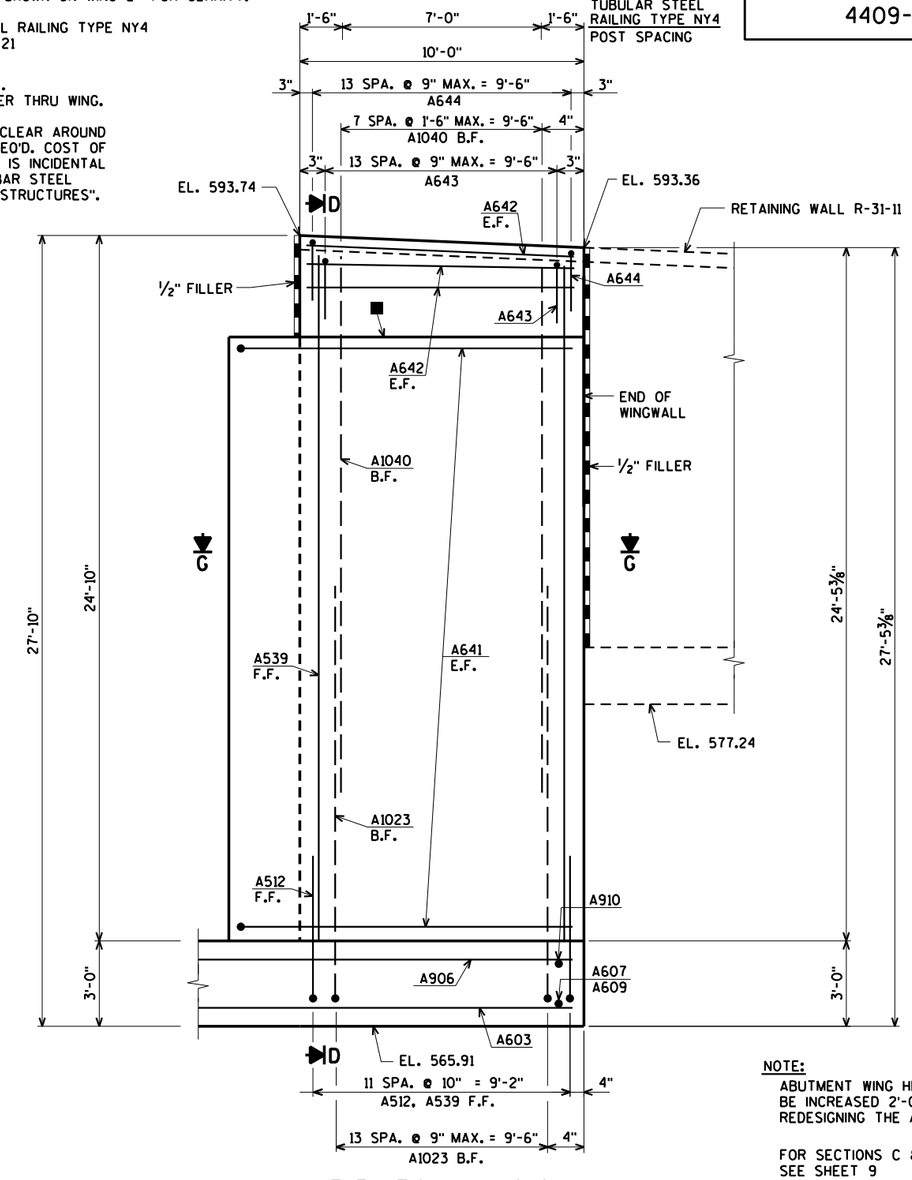
NOTE: RAILING NOT SHOWN ON WING 2 FOR CLARITY.

FOR TUBULAR STEEL RAILING TYPE NY4 SEE SHEETS 20 & 21

◆ STA. 9+46, 28.5' RT.
18-INCH STORM SEWER THRU WING.
OUTLET EL. 582.9
CUT BAR STEEL 2" CLEAR AROUND STORM SEWER AS REQ'D. COST OF CUTTING BAR STEEL IS INCIDENTAL TO THE BID ITEM "BAR STEEL REINFORCEMENT HS STRUCTURES".



ELEVATION - WING 1



ELEVATION - WING 2

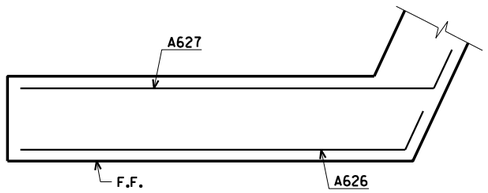
NOTE:
ABUTMENT WING HEIGHTS CAN BE INCREASED 2'-0" WITHOUT REDESIGNING THE ABUTMENT.

FOR SECTIONS C & D, SEE SHEET 9

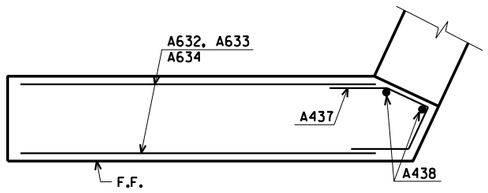
B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

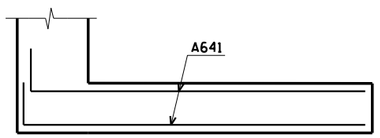
F.F. DENOTES FRONT FACE



SECTION E



SECTION F



SECTION G

■ OPT. KEYED CONST. JOINT - FORMED BY A SURFACED BEVELED 2" x 6" WITH RUBBERIZED MEMBRANE WATERPROOFING ON B.F. (COST OF RUBBERIZED MEMBRANE WATERPROOFING IS INCIDENTAL TO BID ITEM "CONCRETE MANSONRY BRIDGES" IF OPT. CONST. JOINT USED).

FOOTING TO BE PLACED ON SOUND MATERIAL WITH A REQUIRED FACTORED BEARING RESISTANCE OF 6.5 TONS PER SQ. FT.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

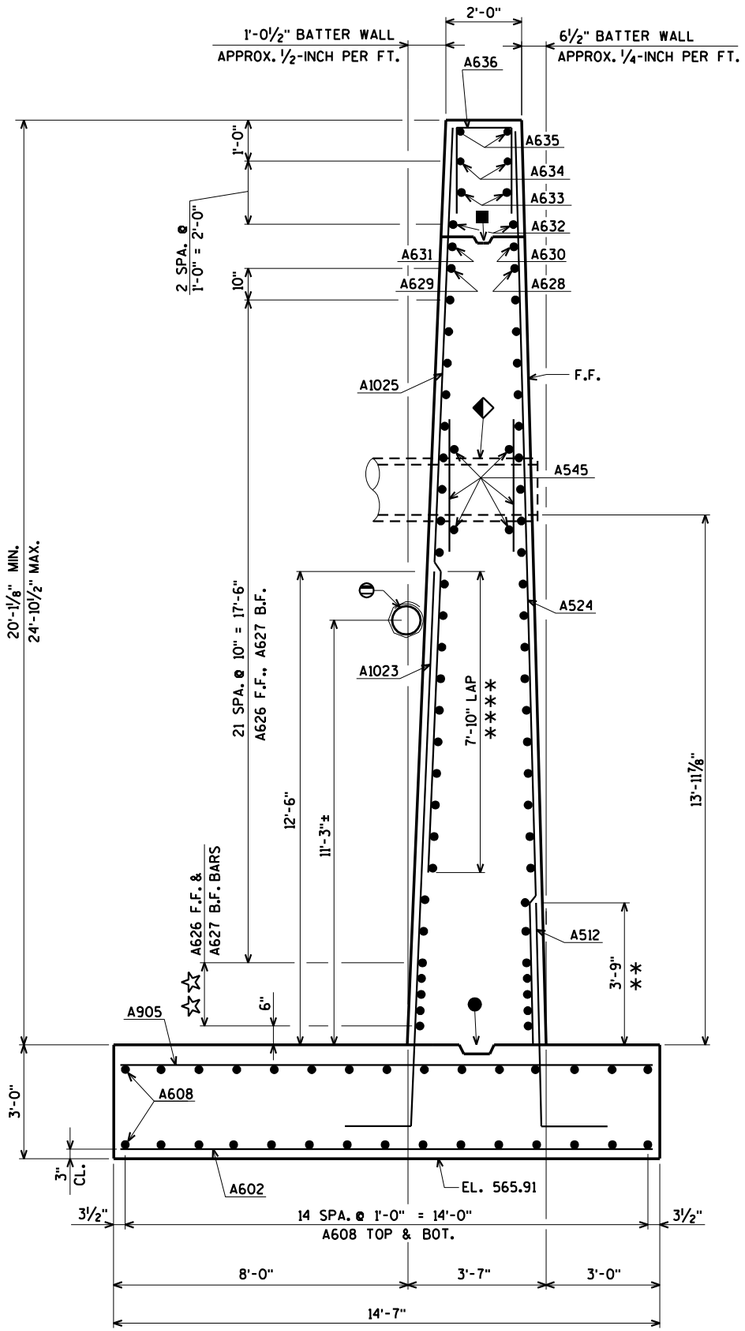
SOUTH ABUTMENT WING ELEVATIONS

SHEET 8 OF 21
68

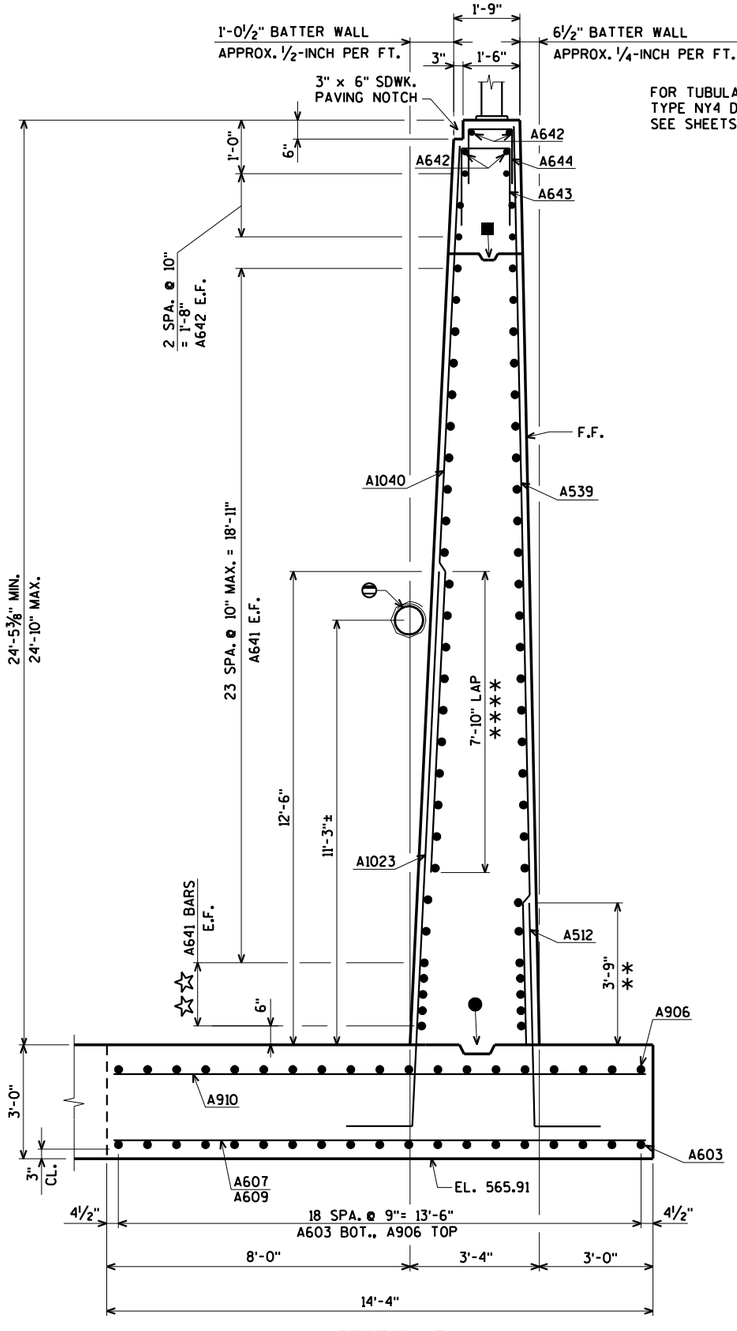
ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

STATE PROJECT NUMBER

4409-12-71



SECTION C
(WING 1)



SECTION D
(WING 2)

FOR TUBULAR STEEL RAILING TYPE NY4 DETAILS, SEE SHEETS 20 & 21

◆ STA. 9+46, 28.5' RT.
18-INCH STORM SEWER THRU WING.
OUTLET EL. 582.9
CUT BAR STEEL 2" CLEAR AROUND STORM SEWER AS REQ'D. COST OF CUTTING BAR STEEL IS INCIDENTAL TO THE BID ITEM "BAR STEEL REINFORCEMENT HS STRUCTURES".

** 1'-9" MIN. LAP IF ABUTMENT HEIGHT IS INCREASED.

**** 5'-10" MIN. LAP IF ABUTMENT HEIGHT IS INCREASED.

☆☆ 4 SPA. @ 5". (MAY BE INCREASED TO 10" MAX. SPACING IF ABUTMENT HEIGHT IS INCREASED.

■ OPT. KEYED CONST. JOINT - FORMED BY A SURFACED BEVELED 2" x 6" WITH RUBBERIZED MEMBRANE WATERPROOFING ON B.F. (COST OF RUBBERIZED MEMBRANE WATERPROOFING IS INCIDENTAL TO BID ITEM "CONCRETE MANSONRY BRIDGES" IF OPT. CONST. JOINT USED).

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

⊖ PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE.

FOOTING TO BE PLACED ON SOUND MATERIAL WITH A REQUIRED FACTORED BEARING RESISTANCE OF 6.5 TONS PER SQ. FT.

NOTE:
ABUTMENT WING HEIGHTS CAN BE INCREASED 2'-0" WITHOUT REDESIGNING THE ABUTMENT.

FOR LOCATION OF SECTIONS C & D, SEE SHEET 8

B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

F.F. DENOTES FRONT FACE

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

SOUTH ABUTMENT WING DETAILS

SHEET 9 OF 21
69

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

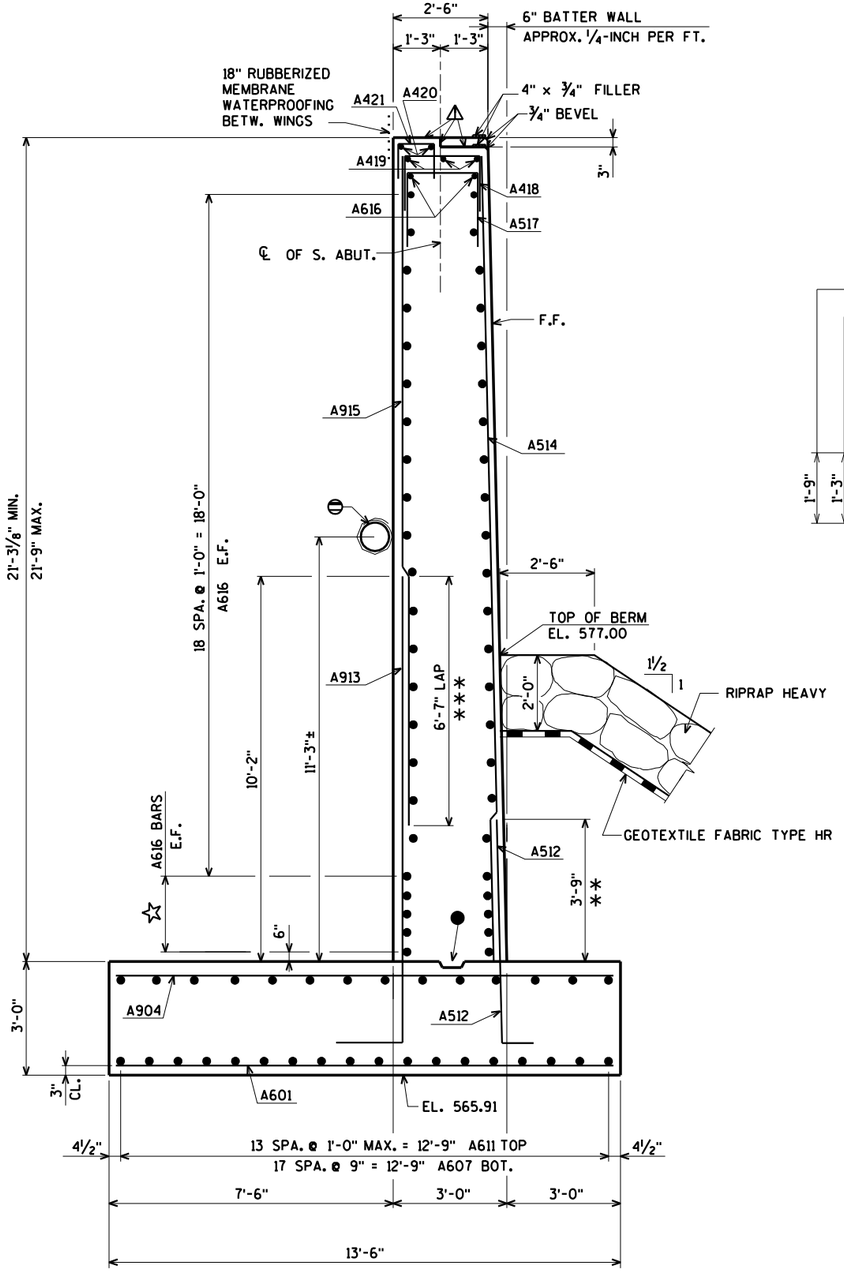
$PRFNAME$
U:\45-0451.00 - Kewaunee Co. CTH S (Formally 45-0417.00)\Structures\450451sa.dgn

8

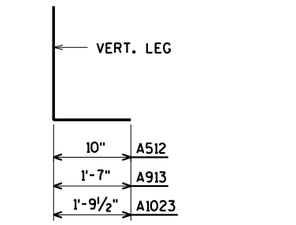
8

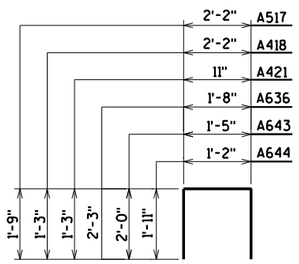
5/16/2018

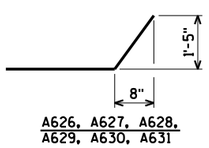
PENTABLE:BReau_shd_util.tbl



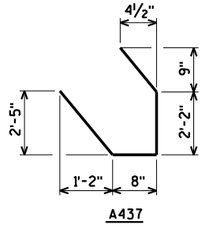
SECTION A
(ABUTMENT BODY)



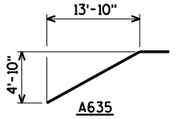




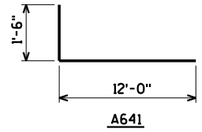
A626, A627, A628, A629, A630, A631



A437



A635



A641

BAR SERIES TABLE

BAR MARK	NO REQ'D.	LENGTH
A524	1 SERIES OF 21	19'-9" TO 24'-5"
A1025	1 SERIES OF 11	15'-3" TO 19'-11"
A539	1 SERIES OF 12	24'-0" TO 24'-4"
A1040	1 SERIES OF 8	19'-0" TO 19'-6"

BUNDLE AND TAG EACH SERIES SEPARATELY.

⚠ STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHELENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING FILLER AND SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".

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

⊖ PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE.

FOOTING TO BE PLACED ON SOUND MATERIAL WITH A REQUIRED FACTORED BEARING RESISTANCE OF 6.5 TONS PER SQ. FT.

NOTE:

ABUTMENT BODY HEIGHT CAN BE INCREASED 2'-0" WITHOUT REDESIGNING THE ABUTMENT.

FOR LOCATION OF SECTION A SEE SHEET 5

B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

F.F. DENOTES FRONT FACE

** 1'-9" MIN. LAP IF ABUTMENT HEIGHT IS INCREASED.

*** 4'-7" MIN. LAP IF ABUTMENT HEIGHT IS INCREASED.

☆ 4 SPA. @ 6". (MAY BE INCREASED TO 1'-0" MAX. SPACING IF ABUTMENT HEIGHT IS INCREASED.

BILL OF BARS

BAR. NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED BAR SERIES	660* COATED 29,490* UNCOATED LOCATION
A601		54	13-0			FOOTING BOT. @ BODY
A602		25	14-1			FOOTING BOT. @ WING 1
A603		19	15-6			FOOTING BOT. @ BODY & WING 2
A904		54	13-0			FOOTING TOP @ BODY
A905		25	14-1			FOOTING TOP @ WING 1
A906		19	15-6			FOOTING TOP @ BODY & WING 2
A607		18	54-9			FOOTING BOT. @ BODY & WING 2
A608		30	18-8			FOOTING TOP & BOT. @ WING 1
A609		4	13-10			FOOTING BOT. @ WING 2
A910		22	13-10			FOOTING TOP @ BODY & WING 2
A611		14	42-5			FOOTING TOP @ BODY
A512		93	7-2	X		FOOTING DOWEL F.F. @ BODY & WINGS
A913		63	14-3	X		FOOTING DOWEL B.F. @ BODY
A514		60	20-10			BODY VERT. F.F.
A915		32	17-6			BODY VERT. B.F.
A616		48	49-0			BODY HORIZ. E.F.
A517		50	5-6	X		BODY VERT. TOP
A418		33	4-6	X		BODY VERT. TOP
A419		3	14-4			BODY HORIZ. TOP
A420		4	25-0			BODY HORIZ. TOP
A421		32	3-3	X		BODY VERT. TOP
A422		2	7-8			BODY HORIZ. TOP F.F. @ WINGS 1 & 2
A1023		35	16-9	X		WING 1 & 2 DOWEL B.F.
A524		21	22-1		⊗	WING 1 VERT. F.F.
A1025		11	17-7		⊗	WING 1 VERT. B.F.
A626		26	17-9	X		WING 1 HORIZ. F.F.
A627		26	18-5	X		WING 1 HORIZ. B.F.
A628		1	16-0	X		WING 1 HORIZ. F.F.
A629		1	16-8	X		WING 1 HORIZ. B.F.
A630		1	14-6	X		WING 1 HORIZ. F.F.
A631		1	15-2	X		WING 1 HORIZ. B.F.
A632	X	2	9-1			WING 1 HORIZ. E.F.
A633	X	2	6-2			WING 1 HORIZ. E.F.
A634	X	2	3-3			WING 1 HORIZ. E.F.
A635	X	2	15-5	X		WING 1 DIAG. E.F.
A636	X	21	5-10	X		WING 1 VERT. TOP
A437	X	3	6-0	X		WING 1 HORIZ. TOP @ CORNER
A438	X	2	4-11			WING 1 VERT. TOP @ CORNER
A539		12	24-2		⊗	WING 2 VERT. F.F.
A1040		8	19-3		⊗	WING 2 VERT. B.F.
A641		56	13-5	X		WING 2 HORIZ. E.F.
A642	X	10	9-8			WING 2 HORIZ. TOP E.F.
A643	X	14	5-1	X		WING 2 VERT. TOP
A644	X	14	4-9	X		WING 2 VERT. TOP
A545		16	3-6			WING 1 @ STORM SEWER OUTLET E.F.

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.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

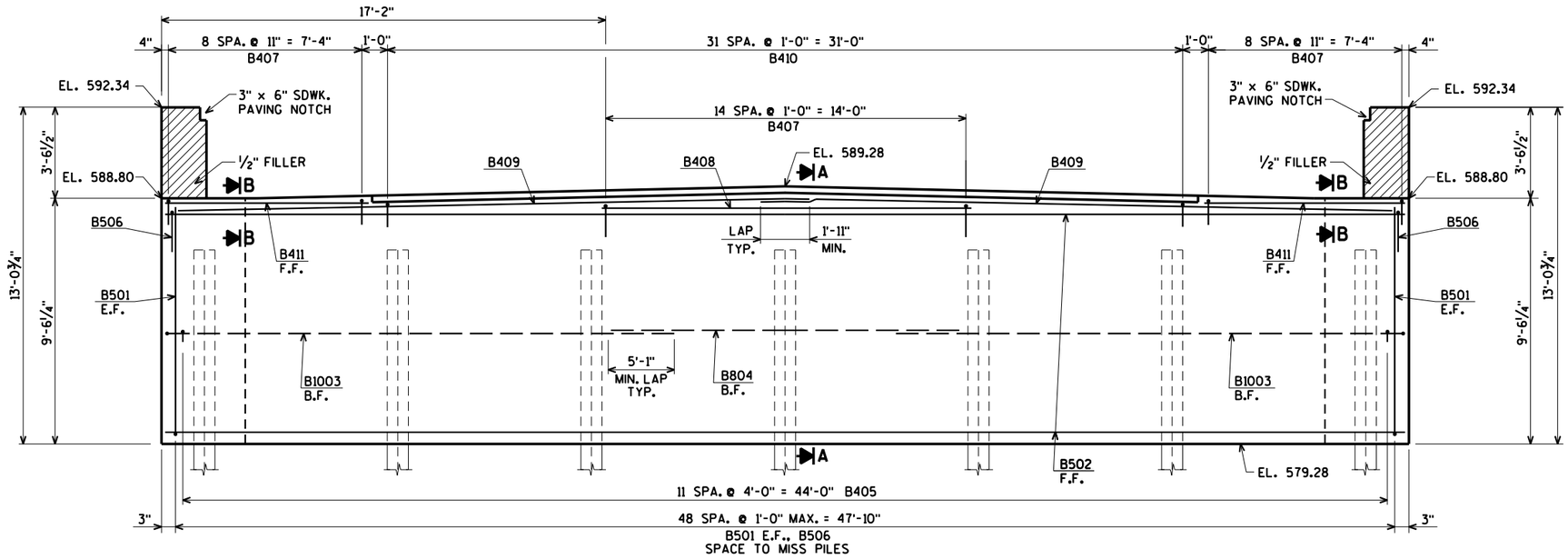
STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

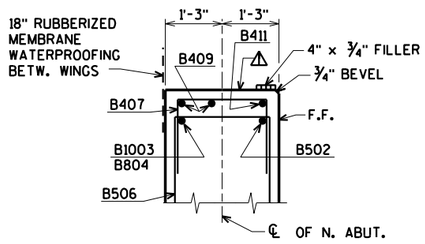
SOUTH ABUTMENT DETAILS AND BILL OF BARS

SHEET 10 OF 21
70

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



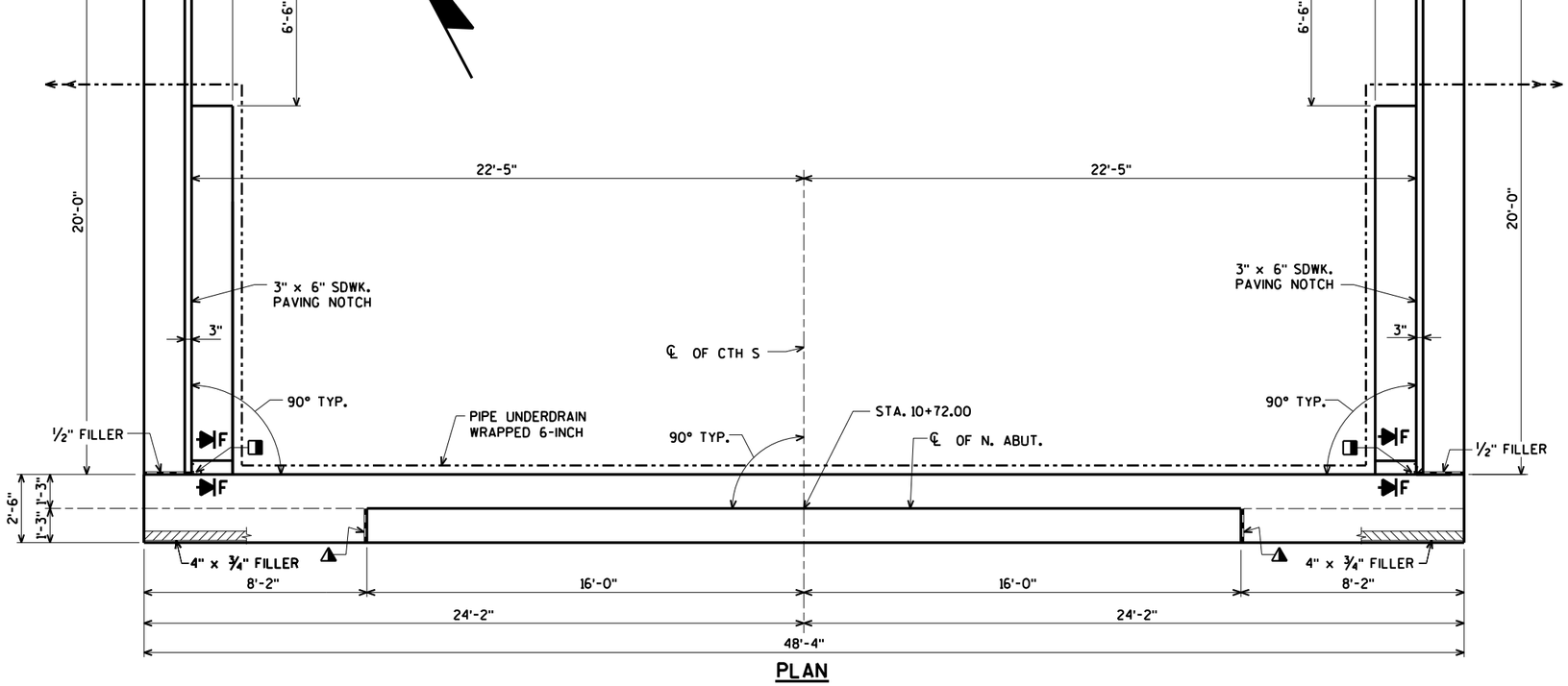
ELEVATION
(LOOKING NORTH)



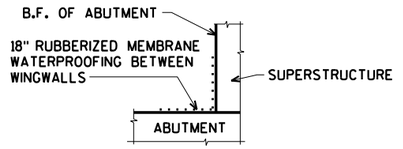
SECTION B

⚠ STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHELENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING FILLER AND SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".

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).



PLAN



SECTION F

◨ VERTICAL 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING WALL.

⚠ ¾" CORK FILLER ON VERTICAL FACE ONLY.

FOR SECTION A SEE SHEET 14

FOR PILE SPLICE DETAIL SEE SHEET 3.

B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

F.F. DENOTES FRONT FACE

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

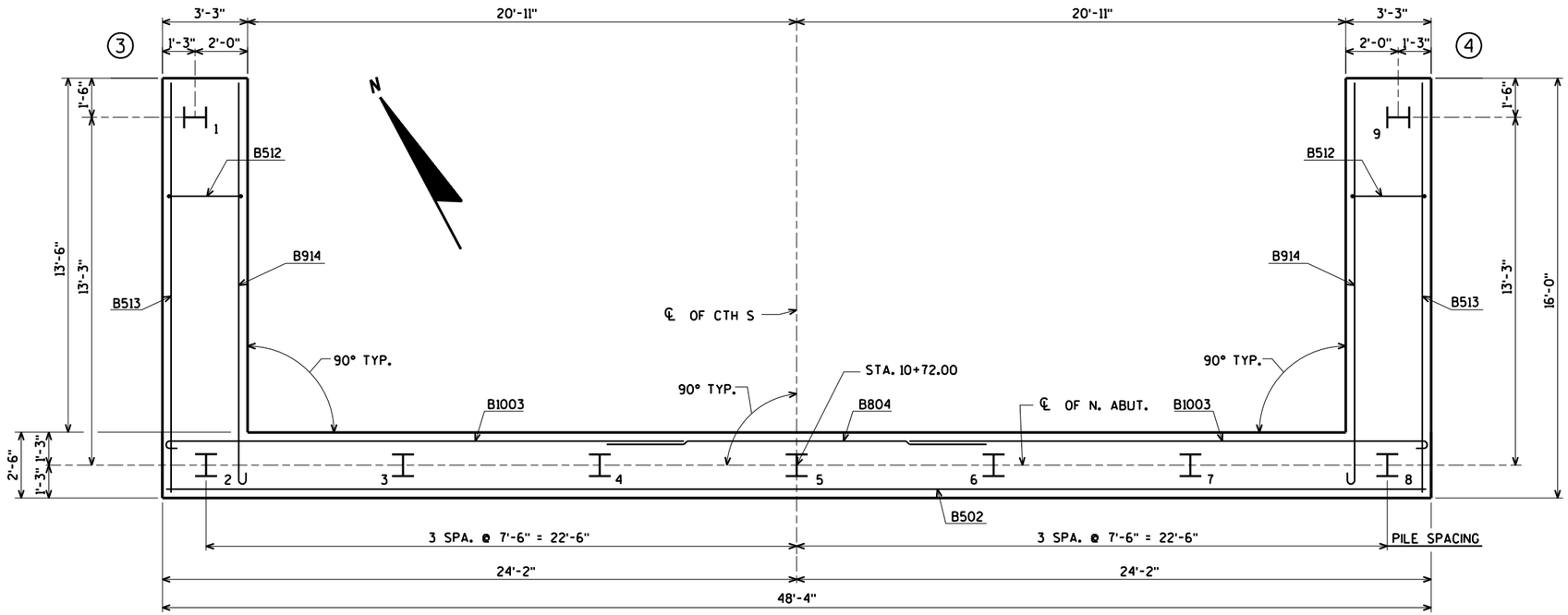
NORTH ABUTMENT

SHEET 11 OF 21
71

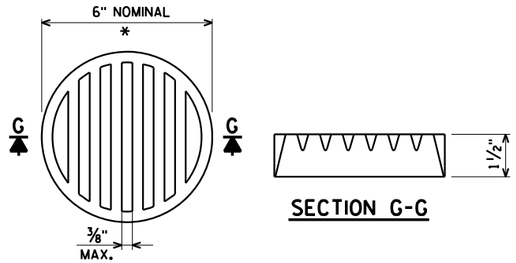
ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

STATE PROJECT NUMBER

4409-12-71



PILE LAYOUT



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 A 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 SHIELD TO THE EXPOSED END OF THE PIPE UNDERDRAIN. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 x 1-INCH STAINLESS STEEL SHEET METAL SCREWS.

RODENT SHIELD DETAIL

FOR PILE SPLICE DETAIL SEE SHEET 3.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

NORTH ABUTMENT
PILE LAYOUT

SHEET 12 OF 21
72

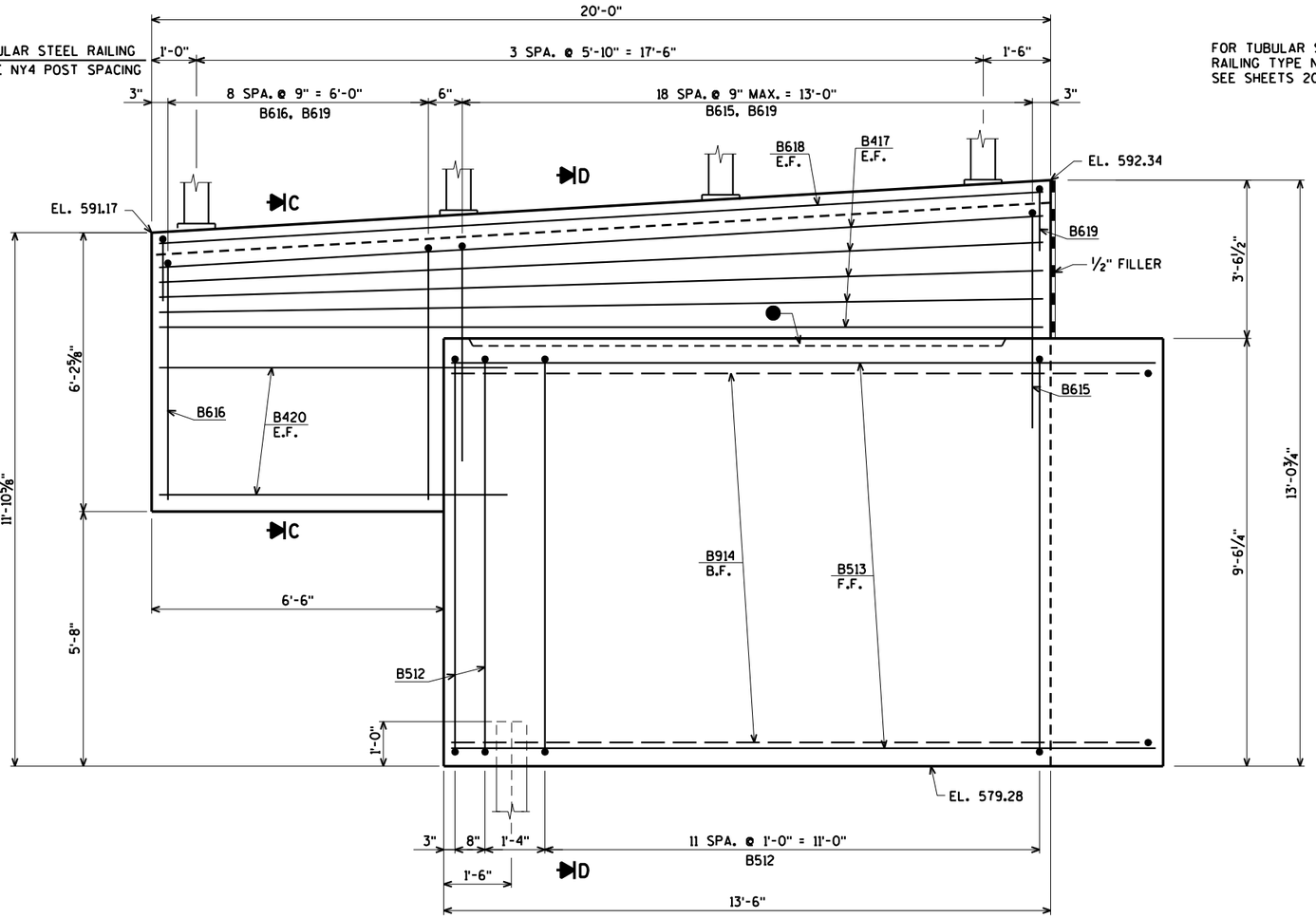
ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

8

8

STATE PROJECT NUMBER

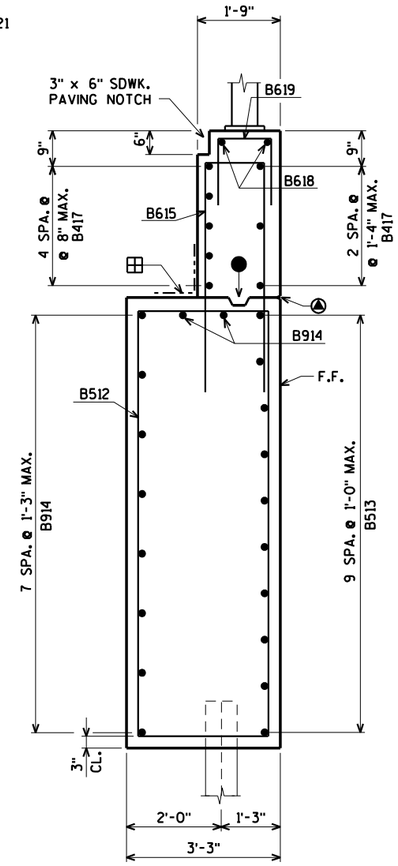
4409-12-71



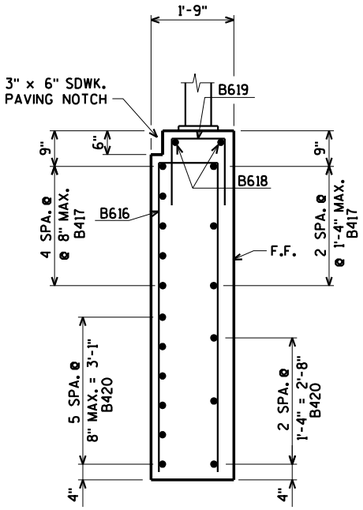
ELEVATION - WING 3

WING 4 SIMILAR

FOR TUBULAR STEEL RAILING TYPE NY4 SEE SHEETS 20 & 21



SECTION D



SECTION C

▲ ¾" "V" GROOVE ON FRONT FACE OF WINGWALL.

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

⊞ 18" RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE OF ABUTMENT (COST IS INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES" IF OPT. CONST. JOINT USED).

FOR PILE SPLICE DETAIL SEE SHEET 3.

F.F. DENOTES FRONT FACE

E.F. DENOTES EACH FACE

B.F. DENOTES BACK FACE

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

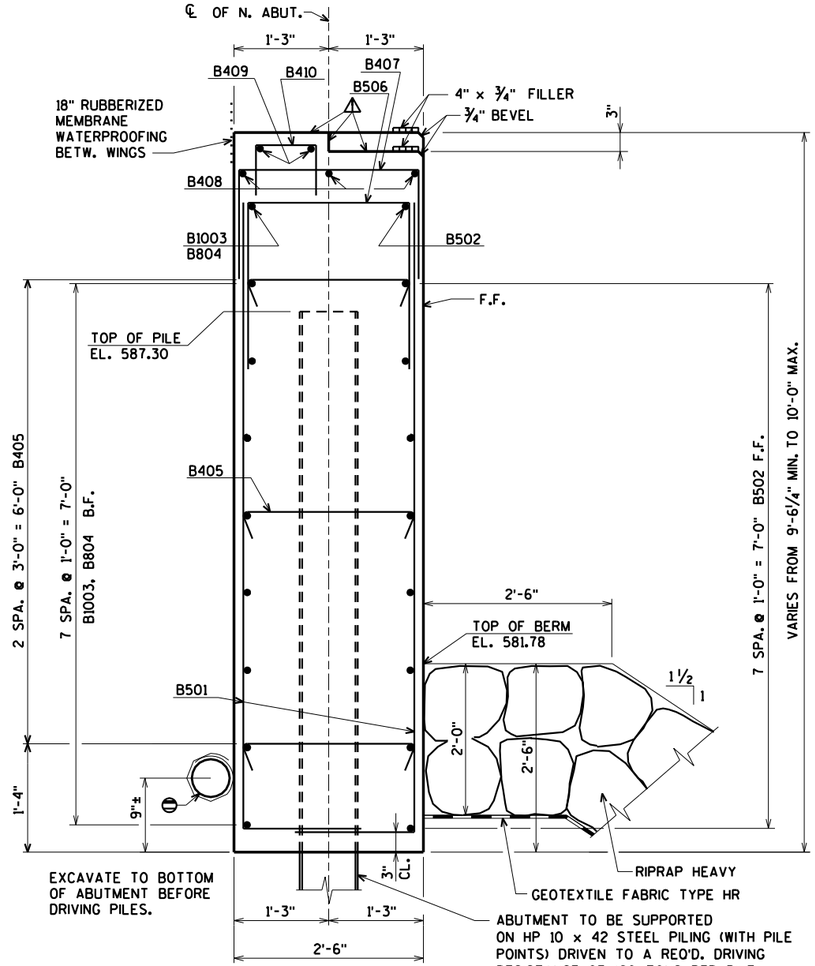
DRAWN BY CLS | PLANS CK'D. CBM

NORTH ABUTMENT WING DETAILS

SHEET 13 OF 21
73

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

8



SECTION A
(ABUTMENT BODY)

FOR LOCATION OF SECTION A
SEE SHEET 11

⚠ STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHELENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING FILLER AND SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".

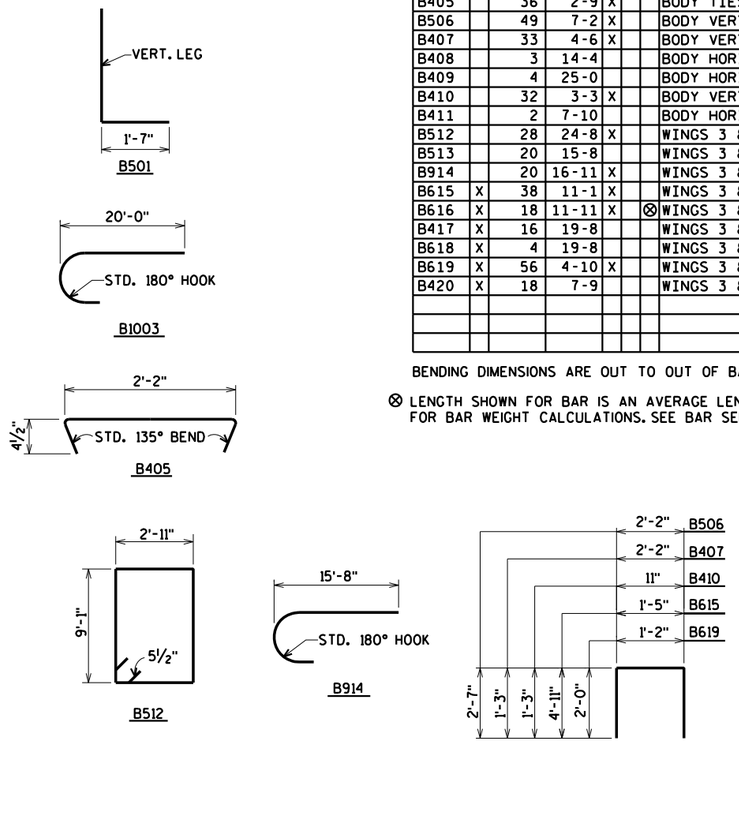
⊖ PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN AS DETAILED ON SHEET 12. RODENT SHIELD TO BE INCIDENTAL TO BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH".

FOR PILE SPLICE DETAIL SEE SHEET 3.

F.F. DENOTES FRONT FACE

E.F. DENOTES EACH FACE

B.F. DENOTES BACK FACE



BILL OF BARS

BAR. NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED BAR SERIES	1,780# COATED 6,510# UNCOATED LOCATION
B501		98	10-4	X		BODY VERT. E.F.
B502		9	48-0			BODY HORIZ. F.F.
B1003		18	21-6	x		BODY HORIZ. B.F. @ WINGS 3 & 4
B804		9	18-2			BODY HORIZ. B.F. BETW. WINGS
B405		36	2-9	X		BODY TIES
B506		49	7-2	X		BODY VERT. TOP
B407		33	4-6	X		BODY VERT. TOP
B408		3	14-4			BODY HORIZ. TOP
B409		4	25-0			BODY HORIZ. TOP
B410		32	3-3	X		BODY VERT. TOP
B411		2	7-10			BODY HORIZ. TOP F.F. @ WINGS 3 & 4
B512		28	24-8	X		WINGS 3 & 4 VERT.
B513		20	15-8			WINGS 3 & 4 HORIZ. F.F.
B914		20	16-11	X		WINGS 3 & 4 HORIZ.
B615	X	38	11-1	X		WINGS 3 & 4 VERT.
B616	X	18	11-11	X	⊗	WINGS 3 & 4 VERT.
B417	X	16	19-8			WINGS 3 & 4 HORIZ. E.F.
B618	X	4	19-8			WINGS 3 & 4 HORIZ. TOP
B619	X	56	4-10	X		WINGS 3 & 4 VERT. TOP
B420	X	18	7-9			WINGS 3 & 4 HORIZ. E.F.

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.

BAR SERIES TABLE

BAR MARK	NO REQ'D.	LENGTH
B616	2 SERIES OF 9	11'-7" TO 12'-3"

BUNDLE AND TAG EACH SERIES SEPARATELY.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

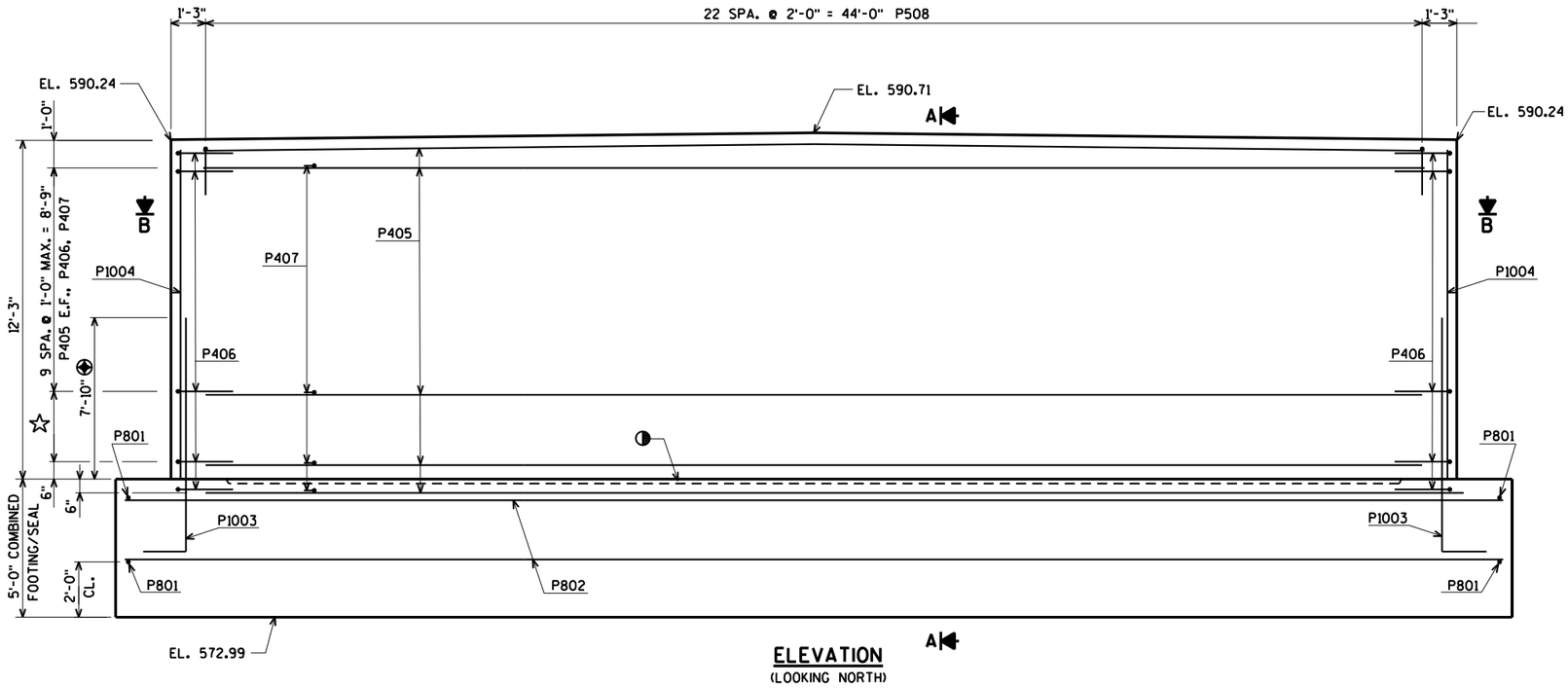
STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

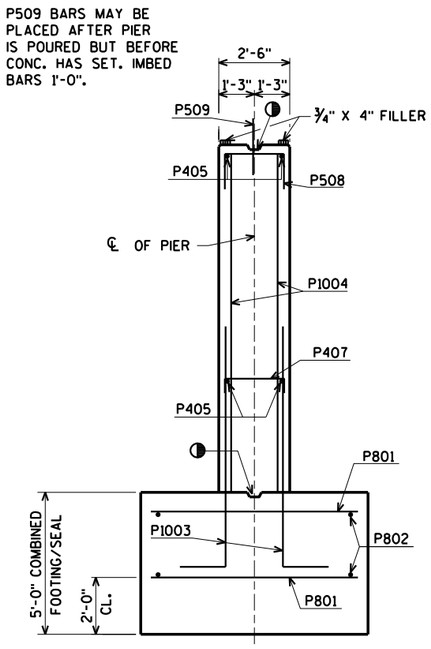
NORTH ABUTMENT DETAILS AND BILL OF BARS

SHEET 14 OF 21
74

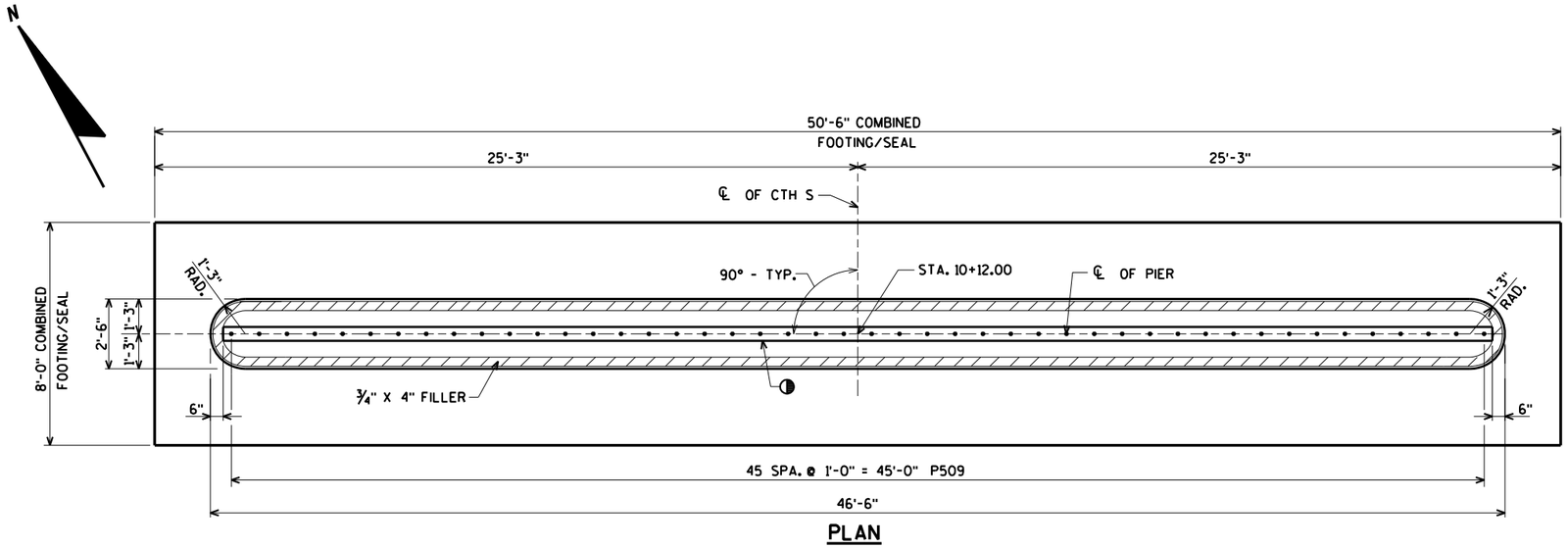
ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com



ELEVATION
(LOOKING NORTH)



SECTION A



PLAN

NOTE:
PIER SHAFT HEIGHT CAN BE INCREASED 2'-0" WITHOUT REDESIGNING THE PIER.

FOOTING TO BE PLACED ON SOUND MATERIAL WITH A REQUIRED FACTORED BEARING RESISTANCE OF 6.0 TONS PER SQUARE FOOT.

FOR SECTION "B" SEE SHEET 16

◑ KEYED CONST. JOINT - FORMED BY A SURFACED BEVELED 2" x 6".

⊕ 5'-10" MIN. LAP IF PIER HEIGHT IS INCREASED.

☆ 4 SPA. @ 6" (MAY BE INCREASED TO 1'-0" MAX. SPACING IF PIER HEIGHT IS INCREASED).

E.F. DENOTES EACH FACE

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

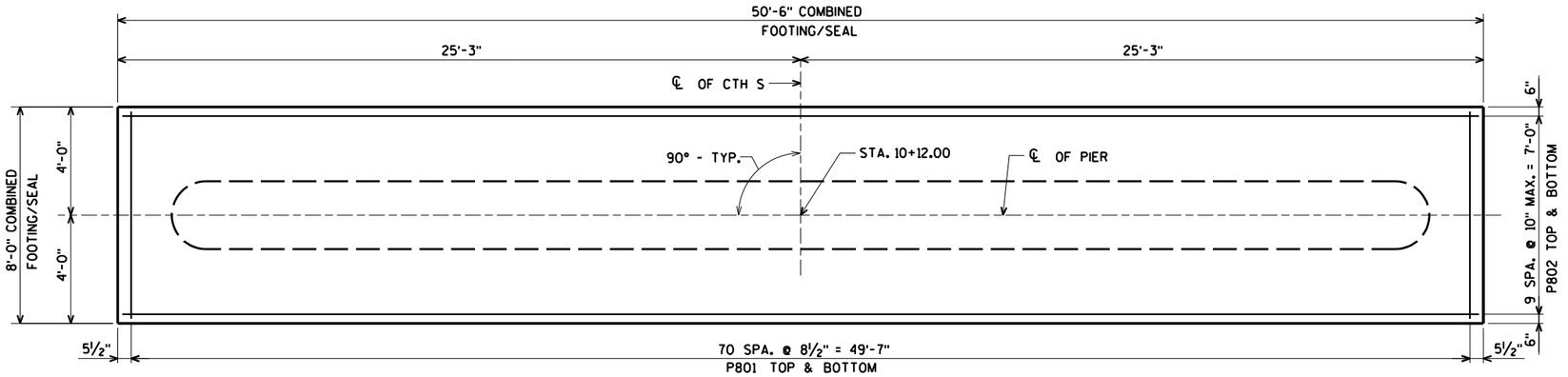
DRAWN BY CLS | PLANS CK'D. CBM

PIER

SHEET 15 OF 21
75

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

STATE PROJECT NUMBER
4409-12-71

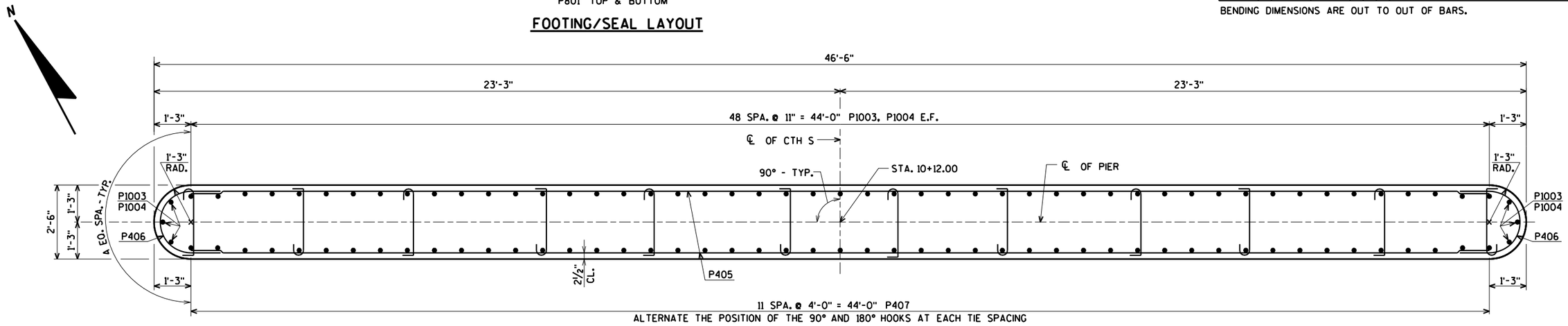


FOOTING/SEAL LAYOUT

BILL OF BARS

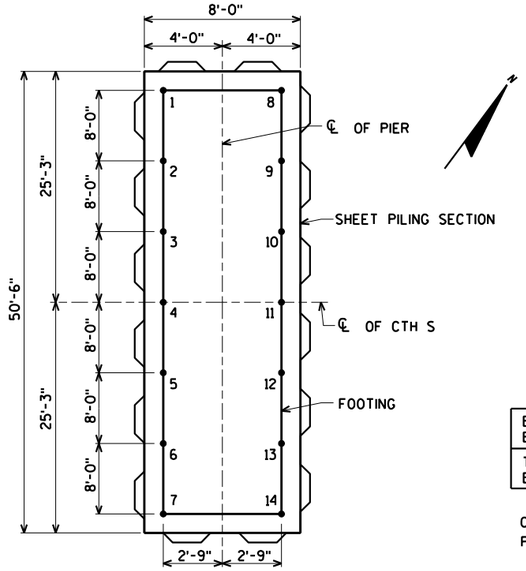
BAR. NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED BAR SERIES	100* COATED 17,950* UNCOATED LOCATION
P801		142	7-6			FOOTING TOP & BOTTOM
P802		20	50-0			FOOTING TOP & BOTTOM
P1003		104	12-5	X		FOOTING DOWELS
P1004		104	11-11			COLUMN VERT.
P405		32	44-0			FOOTING & COLUMN HORIZ.
P406		32	6-1	X		FOOTING & COLUMN HORIZ.
P407		180	2-11	X		FOOTING & COLUMN HORIZ.
P508		23	5-3	X		COLUMN TOP
P509	X	46	2-0			COLUMN DOWELS

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

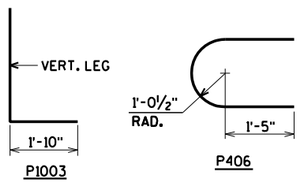


SECTION B

RECORD FOLLOWING AS-BUILT INFORMATION

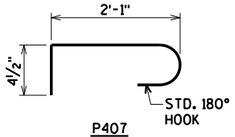


PLAN

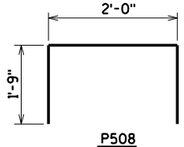


P1003

P406



P407



P508

FOR LOCATION OF SECTION "B"
SEE SHEET 15

E.F. DENOTES EACH FACE

INFORMATION IN TABLE TO BE FILLED OUT FOR AS-BUILT PLANS

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14
BOTTOM OF EXCAVATION ELEVATION BEFORE PLACING FOOTING REINFORCEMENT														
TOP OF FOOTING ELEVATION BEFORE PLACING WALL FORMS														

CALCULATED QUANTITY OF COMBINED SEAL/FOOTING CONCRETE = 74.8 CY
PLACED QUANTITY OF COMBINED SEAL/FOOTING CONCRETE = CY

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

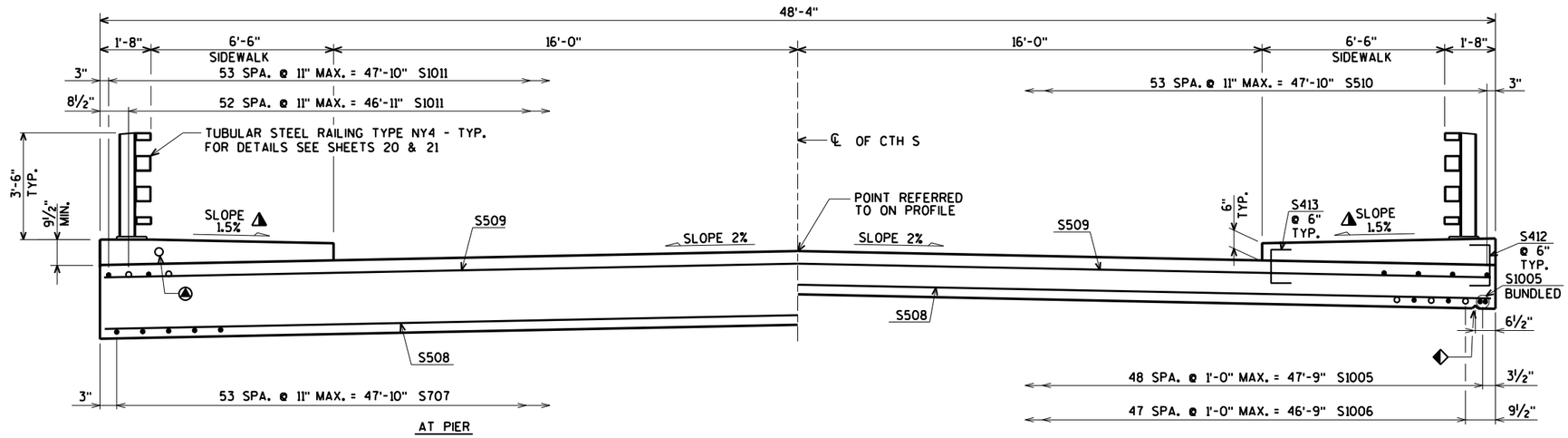
PIER DETAILS AND BILL OF BARS

SHEET 16 OF 21
76

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

STATE PROJECT NUMBER

4409-12-71



TYPICAL SECTION THRU BRIDGE

(LOOKING NORTH)

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.

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

(A) 2" DIA. NON-METALLIC CONDUIT FOR WPS ELECTRIC LINE. (TO BE PROVIDED BY THE UTILITY AND INSTALLED BY THE CONTRACTOR. INSTALLATION COST IS INCLUDED IN THE BID ITEM "CONCRETE MASOONRY BRIDGES".)

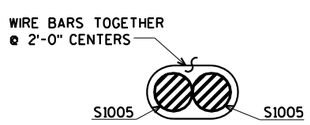
(B) ¾" V-GROOVE. EXTEND V-GROOVE TO 6" FROM FRONT FACE OF ABUTMENS - TYP.

(C) ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

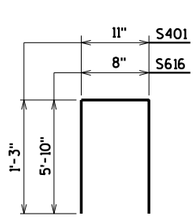
BILL OF BARS

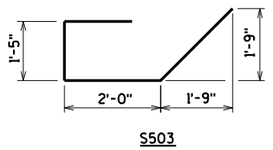
BAR. NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED BAR SERIES	92,940# COATED LOCATION
S401	X	64	3-3	X		SLAB @ ABUT. NOTCH
S402	X	4	31-6			SLAB @ ABUT. NOTCH
S503	X	98	7-3	X		SLAB @ ABUT.
S504	X	98	3-10	X		SLAB @ ABUT.
S1005	X	102	56-3		X	SLAB LONG. BOT.
S1006	X	96	37-10			SLAB LONG. BOT.
S707	X	54	21-11	X		SLAB LONG. BOT. @ PIER
S508	X	130	48-0			SLAB TRANS. BOT.
S509	X	123	48-0			SLAB TRANS. TOP
S510	X	108	33-9			SLAB LONG. TOP
S1011	X	107	46-10			SLAB LONG. TOP @ PIER
S412	X	484	4-0	X		SLAB @ SDWK. @ EDGE OF SLAB
S413	X	484	3-8	X		SLAB @ SDWK. @ CURB
S414	X	66	41-5			SDWK. LONG. TOP
S515	X	484	8-4	X		SDWK. TRANS. TOP
S616	X	64	12-0	X		SDWK. @ RAIL POSTS
S617	X	112	6-0			SDWK. @ INT. RAIL POSTS
S618	X	16	6-0	X		SDWK. @ END RAIL POSTS

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

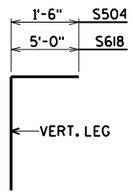


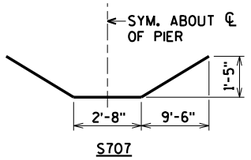
BUNDLING DETAIL



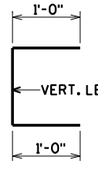


S503

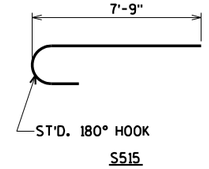




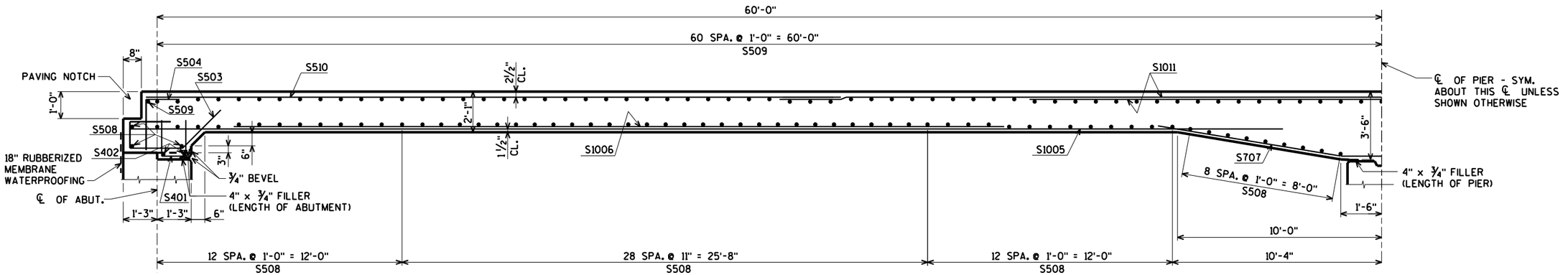
S707



S412, S413



S515



PART LONGITUDINAL SECTION

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

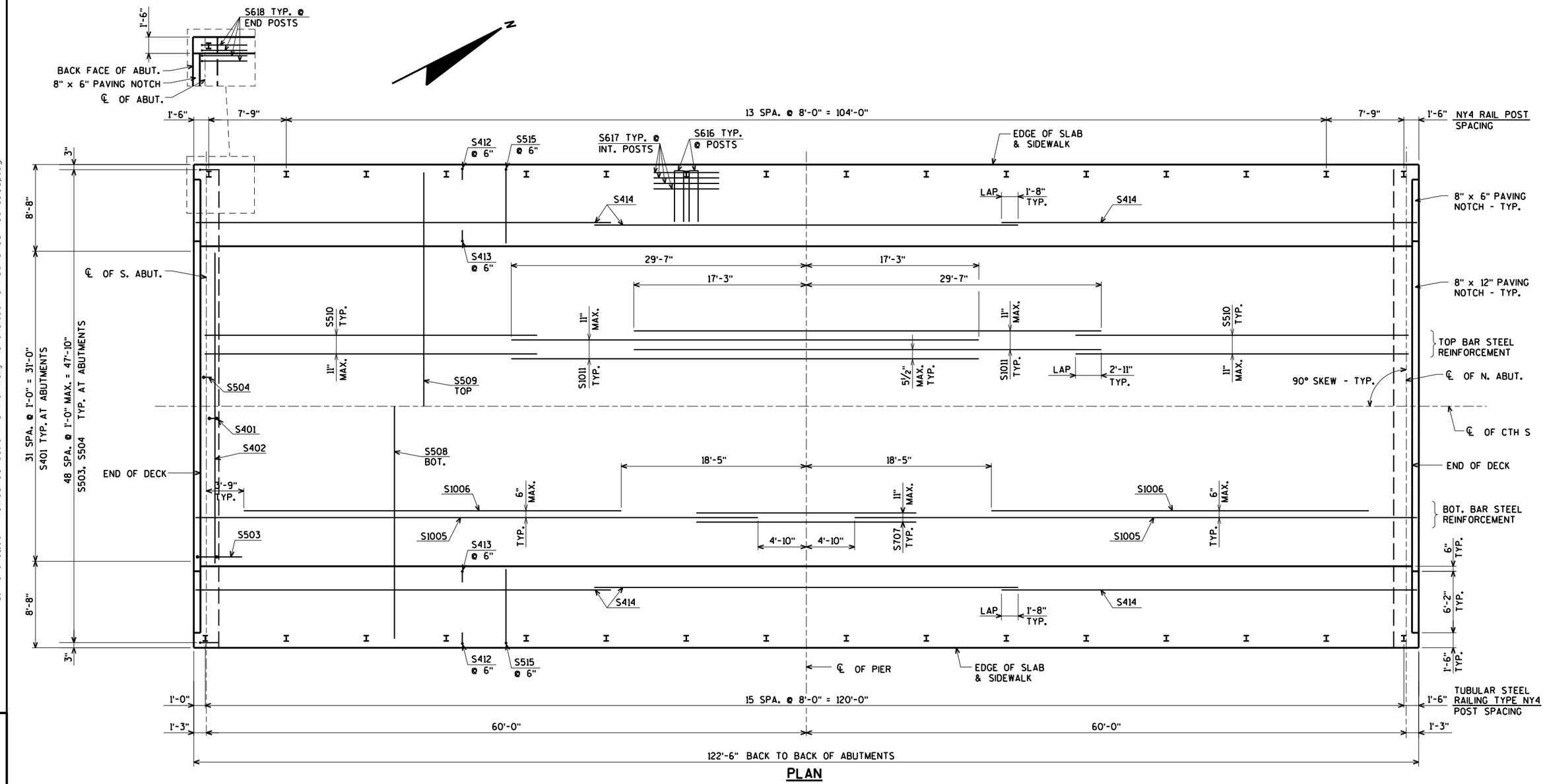
SUPERSTRUCTURE

SHEET 17 OF 21
77

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

STATE PROJECT NUMBER

4409-12-71



PLAN

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

DRAWN BY	CLS	PLANS CK'D.	CBM

SUPERSTRUCTURE PLAN

SHEET 18 OF 21
78

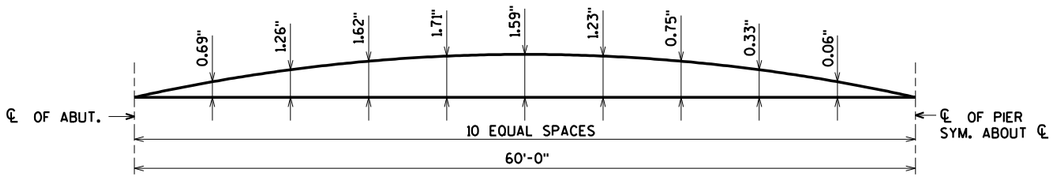
ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

STATE PROJECT NUMBER
4409-12-71

TOP OF DECK ELEVATIONS

ELEVATIONS SHOWN ARE FINISHED DECK AND DO NOT INCLUDE ALLOWANCES OF DEAD LOAD DEFLECTION AND FUTURE CREEP.

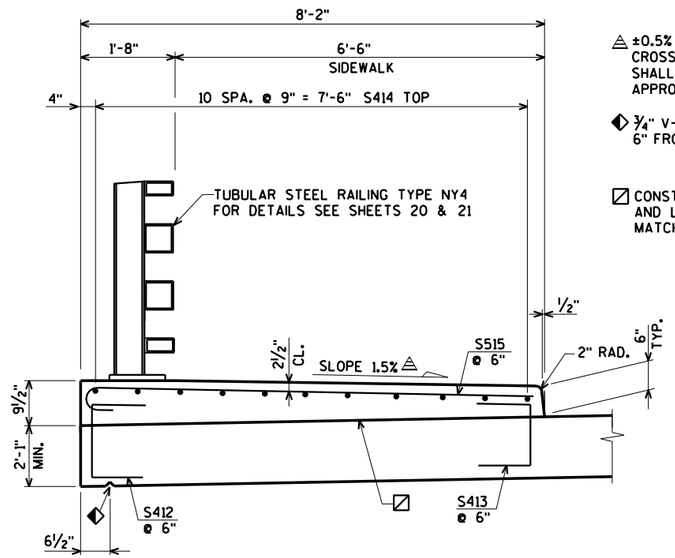
LOCATION	℄ OF S. ABUT.	0.1 PT	0.2 PT	0.3 PT	0.4 PT	0.5 PT	0.6 PT	0.7 PT	0.8 PT	0.9 PT	℄ OF PIER	0.1 PT	0.2 PT	0.3 PT	0.4 PT	0.5 PT	0.6 PT	0.7 PT	0.8 PT	0.9 PT	℄ OF N. ABUT.
W. EDGE OF SLAB	593.00	593.21	593.39	593.54	593.67	593.76	593.82	593.85	593.86	593.83	593.78	593.70	593.58	593.44	593.27	593.07	592.84	592.58	592.29	591.97	591.63
W. EDGE OF SIDEWALK	593.17	593.38	593.56	593.71	593.83	593.92	593.99	594.02	594.02	594.00	593.95	593.86	593.75	593.61	593.44	593.23	593.01	592.75	592.46	592.14	591.79
℄ OF CTH S	593.49	593.70	593.88	594.03	594.15	594.24	594.30	594.34	594.34	594.32	594.27	594.18	594.07	593.93	593.75	593.55	593.32	593.06	592.78	592.46	592.11
E. EDGE OF SIDEWALK	593.17	593.38	593.56	593.71	593.83	593.92	593.99	594.02	594.02	594.00	593.95	593.86	593.75	593.61	593.44	593.23	593.01	592.75	592.46	592.14	591.79
E. EDGE OF SLAB	593.00	593.21	593.39	593.54	593.67	593.76	593.82	593.85	593.86	593.83	593.78	593.70	593.58	593.44	593.27	593.07	592.84	592.58	592.29	591.97	591.63



CAMBER DIAGRAM

CAMBER SPANS AS SHOWN TO PROVIDE FOR DEAD LOAD DEFLECTION & FUTURE CREEP. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT.

PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF SLAB ELEVATIONS AT THE ℄ OF ABUTMENTS, THE ℄ OF PIER, AND AT 5/10 POINTS TO VERIFY CAMBER. TAKE ELEVATIONS ALONG EDGE OF SLAB, GUTTER LINES, AND ℄.



TYPICAL SECTION THRU SIDEWALK

△ ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

◆ ¾" V-GROOVE. EXTEND V-GROOVE TO 6" FROM FRONT FACE OF ABUTMENTS - TYP.

☒ CONST. JOINT - STRIKE OFF AS SHOWN AND LEAVE ROUGH. FOR DECK POUR, MATCH BRIDGE X-SLOPE.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

SUPERSTRUCTURE DETAILS

SHEET 19 OF 21
79

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

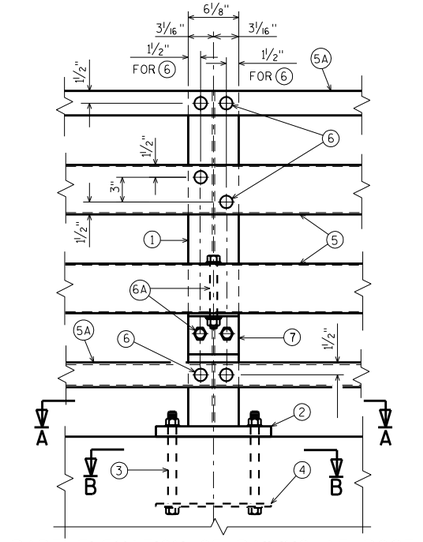
8

8

$PRFNAME$
U:\45-0451.00 - Kewaunee Co. CTH S (Formally 45-0417.00)\Structures\450451sup.dgn

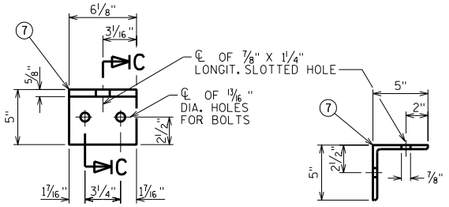
5/16/2018

PENTABLE:BReau_shd_util.tbl



PART ELEVATION OF RAILING AT POST

INTERIOR ELEVATION

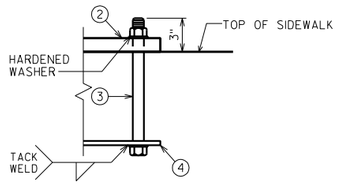


RAILING ANGLE DETAIL

INTERIOR ELEVATION

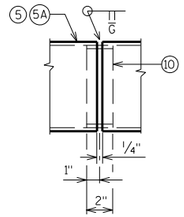
SECTION C-C

ANGLE SECTION



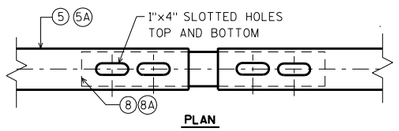
ANCHOR BOLTS

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

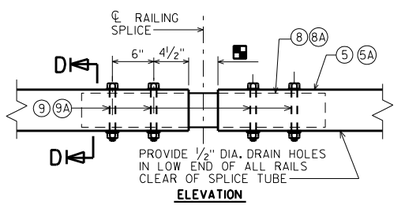


SHOP RAIL SPLICE DETAIL

(LOCATION MUST BE SHOWN ON SHOP DRAWINGS)

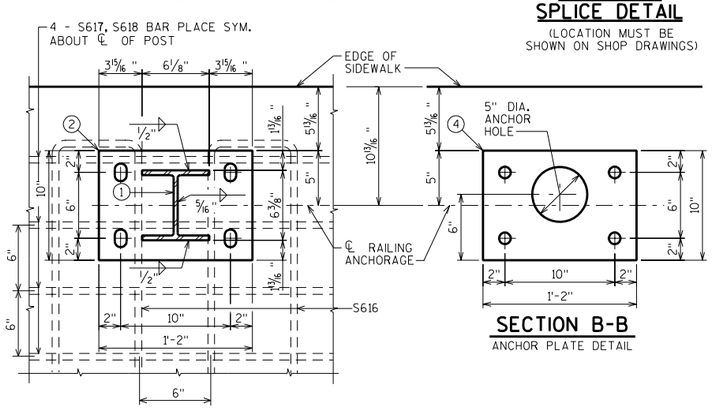


PLAN



ELEVATION

FIELD ERECTION JOINT DETAIL

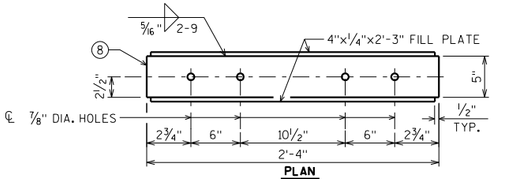


SECTION A-A

BASE PLATE DETAIL

SECTION B-B

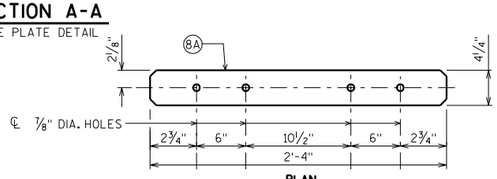
ANCHOR PLATE DETAIL



PLAN

ELEVATION

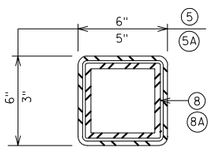
SPLICE TUBE



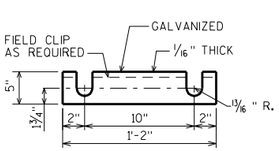
PLAN

ELEVATION

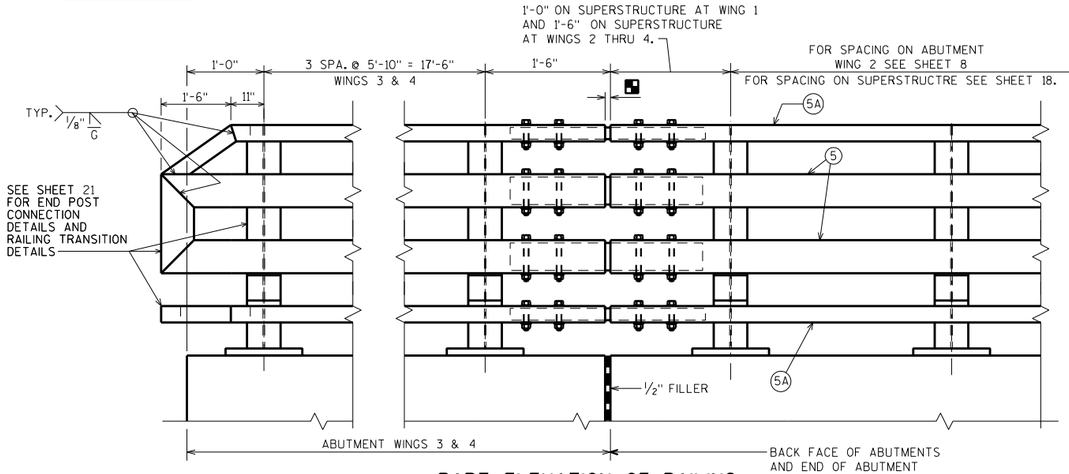
SPLICE BAR



SECTION D-D



POST SHIM DETAIL



PART ELEVATION OF RAILING

INTERIOR ELEVATION

PART ELEVATION OF RAILING AT WING 1

INTERIOR ELEVATION

LEGEND

(1) W6 X 25 WITH 1 1/8" X 1 3/8" HORIZONTAL SLOTTED HOLES ON EACH SIDE OF POST FOR BOLT NO. 6 AT TOP TWO RAILS. USE 1" DIA. HOLES FOR BOLT NO. 6 AT BOTTOM NO. 5A & FOR BOLT NO. 6A AT NO. 7. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF SIDEWALK. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.

(2) PLATE 1 1/4" X 10" X 1'-2" WITH 1 1/8" X 1 7/16" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.

(3) ASTM A449 - 1" DIA. ANCHOR BOLTS WITH HEAVY HEX NUT AND 2" O.D. HARDENED WASHER (ALL GALVANIZED). 4 REQUIRED PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. ~~USE 1 1/2" LONG BOLT FOR CONCRETE DECKS, ON CONCRETE SLAB SUPERSTRUCTURES, USE 1'-3" LONG BOLT FOR SLAB THICKNESS > 16" AND 1 1/2" LONG FOR THICKNESS ≤ 16".~~ USE 17 1/4" LONG BOLT FOR CONCRETE SIDEWALKS. USE 1'-9" LONG IN ABUTMENT WINGS. (AN EQUIVALENT THREADED ROD WITH HEAVY HEX NUTS AND HARDENED WASHERS MAY BE SUBSTITUTED FOR ANCHOR BOLTS IN WINGS IF REQUIRED FOR CONSTRUCTABILITY.)

(4) 3/8" X 10" X 1'-2" ANCHOR PLATE (GALVANIZED) WITH 1/16" DIA. HOLES FOR ANCHOR BOLTS NO. 3.

(5) TS 6 X 6 X 3/16" STRUCTURAL TUBING. USE 1" DIA. HOLES FOR BOLT NO. 6 (FRONT & BACK) & 7/8" DIA. HOLES FOR BOLT NO. 6A (TOP & BOTTOM).

(5A) TS 5 X 3 X 1/4" STRUCTURAL TUBING. USE 1" DIA. HOLES FOR BOLT NO. 6. IN TOP RAIL (FRONT & BACK). USE 1 1/8" X 1 3/16" HORIZONTAL SLOTTED HOLES FOR BOLT NO. 6 IN BOTTOM RAIL (FRONT & BACK) AND A 2" O.D. WASHER UNDER BOLT HEAD.

(6) 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH HEX NUT, 3/16" X 1 3/4" X 1 3/4" WASHER, AND SPRING LOCK WASHER (2 REQUIRED AT RAIL TO POST LOCATIONS SHOWN).

(6A) 3/4" DIA. A325 BOLT WITH HEX NUT AND SPRING LOCK WASHER (1 REQUIRED AT RAIL TO ANGLE AND 2 REQUIRED AT ANGLE TO POST LOCATIONS SHOWN WITH 3/16" X 1 3/4" X 1 3/4" WASHER).

(7) L 5 X 5 X 5/8" STRUCTURAL ANGLE. ATTACH TO NO. 1 AND NO. 5 AS SHOWN.

(8) TS 5 X 5 X 5/16" X 2'-4" LONG SPLICE TUBE. 1 PER RAIL. USED IN NO. 5.

(8A) 4 1/4" X 2 1/8" X 2'-4" LONG SPLICE BAR. 1 PER RAIL. USED IN NO. 5A.

(9) 3/4" DIA. A325 FULLY THREADED BOLTS, 7 1/2" LONG, WITH 2 WASHERS AND HEAVY HEX NUT ON EACH BOLT. NUT TO BE FINGER TIGHT. (4 REQUIRED PER SPLICE). USE 1" X 4" SLOTTED HOLES IN TOP AND BOTTOM OF NO. 5.

(9A) 3/4" DIA. A325 FULLY THREADED BOLTS, 4 1/2" LONG, WITH 2 WASHERS AND HEAVY HEX NUT ON EACH BOLT. NUT TO BE FINGER TIGHT. (4 REQUIRED PER SPLICE). USE 1" X 4" SLOTTED HOLES IN TOP AND BOTTOM OF NO. 5A.

(10) SPLICE SLEEVE FABRICATED FROM 1/4" PLATE. PROVIDE "SLIDING FIT".

■ ~~ROADWAY OPENING OR 2 1/2" MIN. FOR STRIP SEAL EXP. JOINT & 1/2" OPENING FOR AT ABUTMENT.~~ 1/2" AT FIXED JOINTS. ~~SPLICES ARE REQUIRED IN ANY RAILING SPAN BETWEEN POSTS THAT CONTAINS A SUPERSTRUCTURE EXPANSION JOINT.~~

▲ PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE RAILS, SPLICE TUBES AND FILL PLATES.

NOTES

BID ITEM SHALL BE "RAILING STEEL TYPE NY4 B-31-101", WHICH INCLUDES ALL ITEMS SHOWN.

RAILING SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE.

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, ANGLES, SPLICE TUBES, SPLICE BARS AND STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING PER SSPC SPECIFICATIONS.

RAIL POST, BASE PLATES, SPLICE BAR, ANGLES AND SPLICE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED f_y =50 KSI. ANCHOR PLATES & SHIMS 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.

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

STEEL SHIMS SHALL BE PROVIDED & USED UNDER PLATE NO. 2 WHERE REQUIRED FOR ALIGNMENT, AND SHALL BE GALVANIZED.

WORK THIS SHEET WITH "END POST DETAILS FOR TUBULAR STEEL RAILING TYPE NY4" SHEET.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

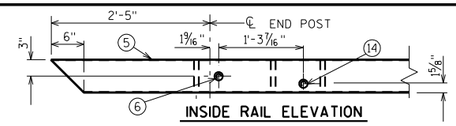
STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

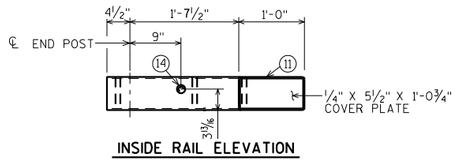
TUBULAR STEEL RAILING TYPE NY4

SHEET 20 OF 21
80

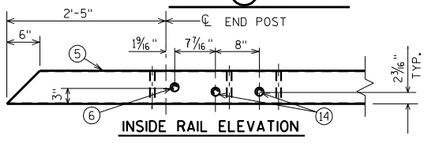
ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

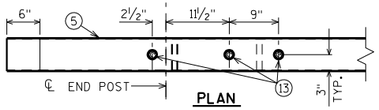


TOP RAIL ⑤ DETAILS

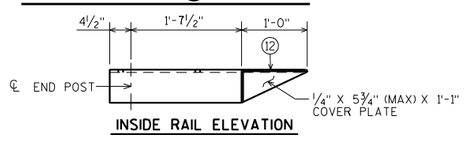


TUBE ⑪ DETAILS

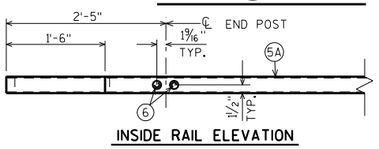




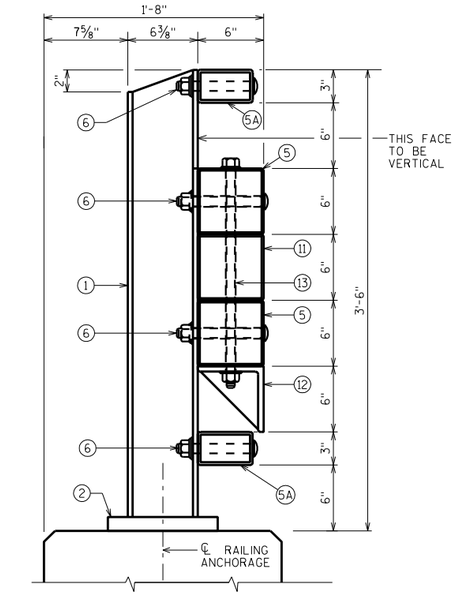
BOTTOM RAIL ⑤ DETAILS



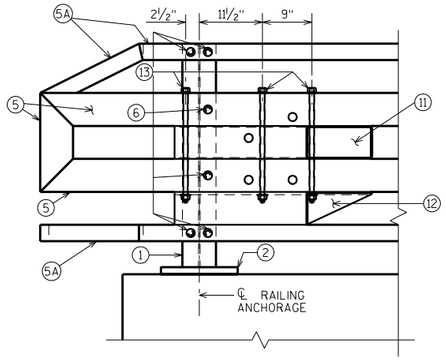
ANGLE ⑫ DETAILS



BOTTOM RAIL ⑤A DETAILS

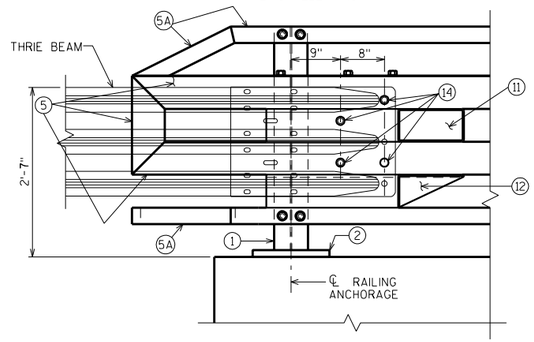


SECTION THRU RAILING END POST



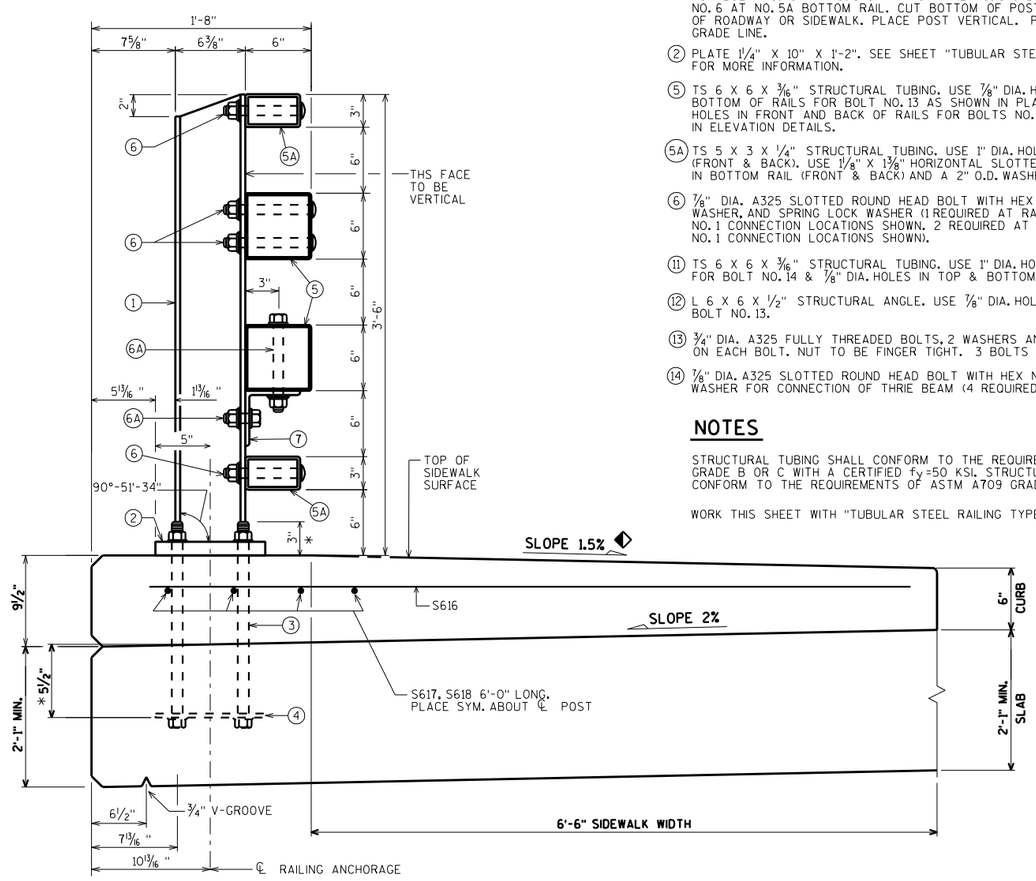
ELEVATION DETAIL AT END POST

INTERIOR ELEVATION



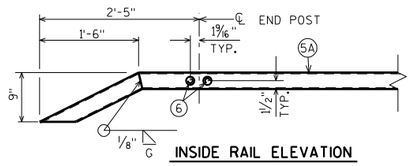
ELEVATION OF DETAIL AT END POST

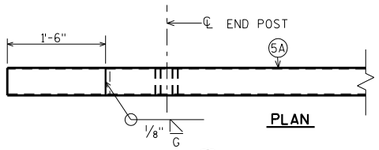
THRIE BEAM RAIL ATTACHMENT



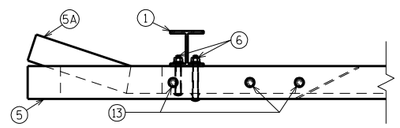
SECTION THRU RAILING ON SIDEWALK

* NORMAL TO BASE PLATE

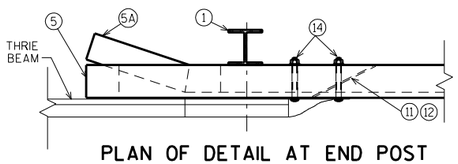




TOP RAIL ⑤A DETAILS



PLAN OF DETAIL AT END POST



PLAN OF DETAIL AT END POST

THRIE BEAM RAIL ATTACHMENT

◆ ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

LEGEND

① W6 X 25 WITH 1 1/8" X 1 3/8" HORIZONTAL SLOTTED HOLES ON SIDE OF POST FOR BOLT NO. 6 AT NO. 5 & AT TOP RAIL NO. 5A. USE 1" DIA. HOLE FOR BOLT NO. 6 AT NO. 5A BOTTOM RAIL. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY OR SIDEWALK. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.

② PLATE 1 1/4" X 10" X 1'-2". SEE SHEET "TUBULAR STEEL RAILING NY4" FOR MORE INFORMATION.

⑤ TS 6 X 6 X 3/16" STRUCTURAL TUBING. USE 7/8" DIA. HOLES IN TOP AND BOTTOM OF RAILS FOR BOLT NO. 13 AS SHOWN IN PLAN DETAILS. USE 1" DIA. HOLES IN FRONT AND BACK OF RAILS FOR BOLTS NO. 6 & NO. 14 AS SHOWN IN ELEVATION DETAILS.

⑤A TS 5 X 3 X 1/4" STRUCTURAL TUBING. USE 1" DIA. HOLES FOR BOLT NO. 6 IN TOP RAIL (FRONT & BACK). USE 1 1/8" X 1 3/8" HORIZONTAL SLOTTED HOLES FOR BOLT NO. 6 IN BOTTOM RAIL (FRONT & BACK) AND A 2" O.D. WASHER UNDER BOLT HEAD.

⑥ 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH HEX NUT, 3/16" X 1 3/4" X 1 3/4" WASHER, AND SPRING LOCK WASHER (1 REQUIRED AT RAIL NO. 5 TO POST NO. 1 CONNECTION LOCATIONS SHOWN. 2 REQUIRED AT RAIL NO. 5A TO POST NO. 1 CONNECTION LOCATIONS SHOWN).

⑪ TS 6 X 6 X 3/16" STRUCTURAL TUBING. USE 1" DIA. HOLES IN FRONT AND BACK FOR BOLT NO. 14 & 7/8" DIA. HOLES IN TOP & BOTTOM FOR BOLT NO. 13.

⑫ L 6 X 6 X 1/2" STRUCTURAL ANGLE. USE 7/8" DIA. HOLES IN TOP FLANGE FOR BOLT NO. 13.

⑬ 3/4" DIA. A325 FULLY THREADED BOLTS, 2 WASHERS AND A HEAVY HEX NUT, ON EACH BOLT. NUT TO BE FINGER TIGHT. 3 BOLTS AT EACH END POST.

⑭ 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH HEX NUT AND 3/16" X 2" X 2" WASHER FOR CONNECTION OF THRIE BEAM (4 REQUIRED)

NOTES

STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED F_y=50 KSI. STRUCTURAL ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50.

WORK THIS SHEET WITH "TUBULAR STEEL RAILING TYPE NY4" SHEET.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-31-101

DRAWN BY CLS | PLANS CK'D. CBM

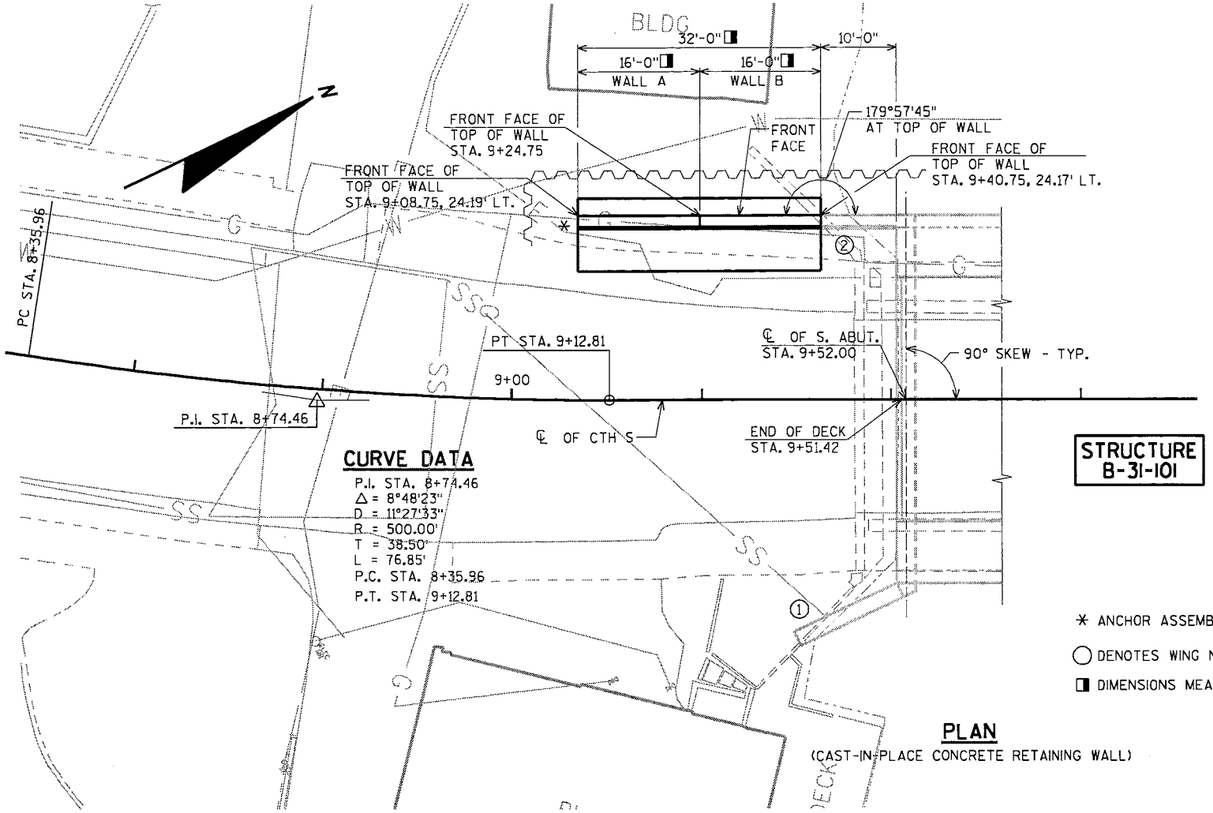
END POST DETAILS FOR TUBULAR STEEL RAILING TYPE NY4

SHEET 21 OF 21
81

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

STATE PROJECT NUMBER

4409-12-71



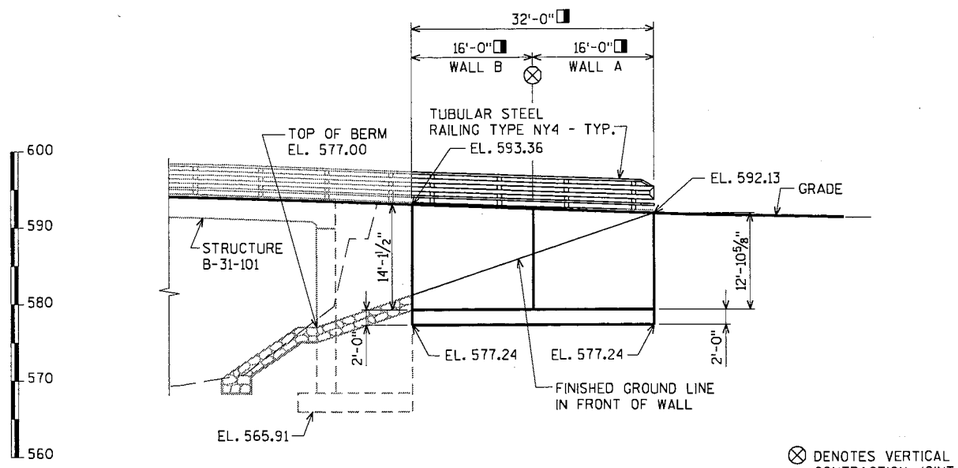
PLAN

(CAST-IN-PLACE CONCRETE RETAINING WALL)

✳ ANCHOR ASSEMBLY FOR THRIE BEAM TYPE GUARDRAIL.

◯ DENOTES WING NUMBER.

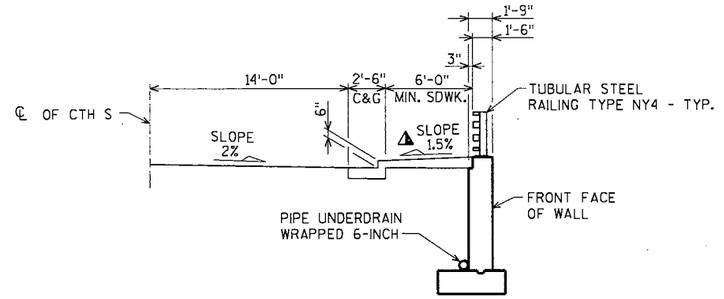
◨ DIMENSIONS MEASURED ALONG FRONT FACE OF WALL.



⊗ DENOTES VERTICAL CONTRACTION JOINT

ELEVATION

(LOOKING AT FRONT FACE OF WALL)



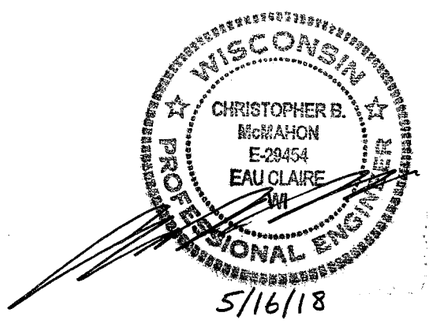
TYPICAL SECTION THRU RETAINING WALL

(LOOKING SOUTH)

▲ ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

LIST OF DRAWINGS

FOR DESIGN DATA, GENERAL NOTES, AND PROFILE GRADE LINE SEE SHEET 2



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

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 SDR 09/24/18
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE R-31-11

CTH S OVER AHNAPEE RIVER

COUNTY	~~TOWN~~/CITY/~~VILLAGE~~
KEWAUNEE	ALGOMA

DESIGN SPEC.
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
JWZ	AEB	CLS	CBM

GENERAL PLAN

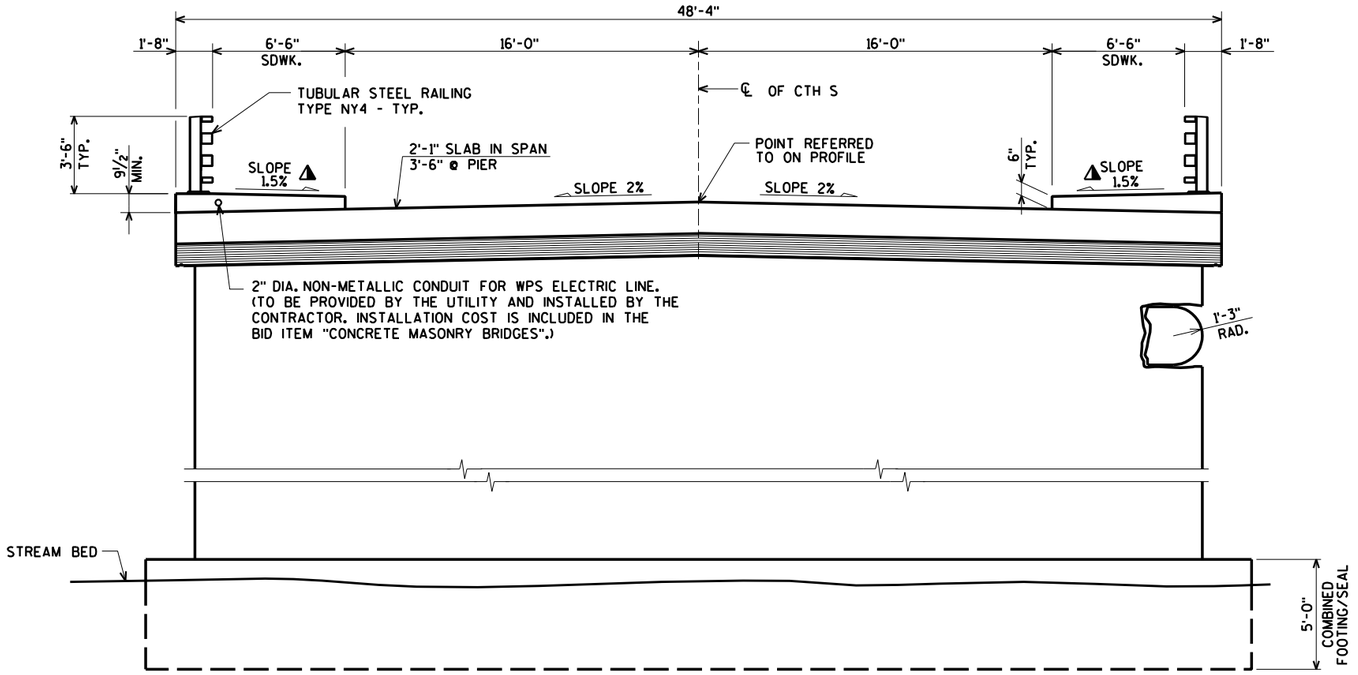
SHEET 82 F 6

I.D.

DATE:

8

8

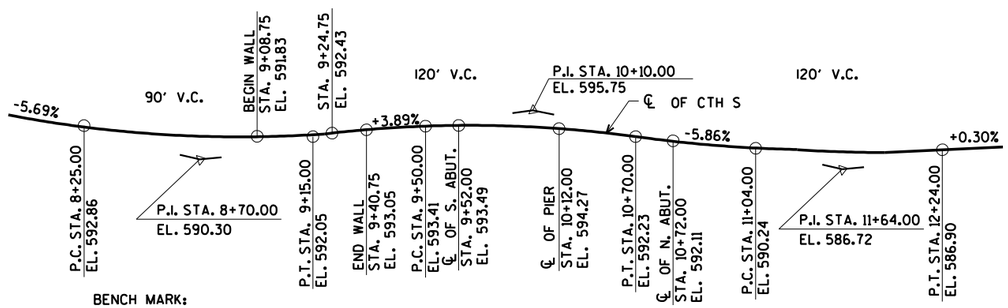


⚠ ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

TYPICAL SECTION THRU BRIDGE
(LOOKING NORTH)

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	TOTAL
206.3000.01	EXCAVATION FOR STRUCTURES RETAINING WALLS R-31-11	LS	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	270
502.3200	PROTECTIVE SURFACE TREATMENT	SY	10
504.0500	CONCRETE MASONRY RETAINING WALLS	CY	53
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	1,710
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	3,180
511.1200	TEMPORARY SHORING R-31-11	SF	1,075
513.7084	RAILING STEEL TYPE NY4 R-31-11	LF	33
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	5
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	45
	NON-BID ITEMS		
	FILLER	SIZE	½"



BENCH MARK:
CHIS. SO. NW WINGWALL
STA. 10+54, 19.4' LT.
EL. 593.28

PROFILE GRADE LINE
(CTH S)

DESIGN DATA

MATERIAL PROPERTIES:

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

FOUNDATION DATA:

RETAINING WALL WITH SPREAD FOOTING TO BE SUPPORTED ON SOUND MATERIAL WITH A MINIMUM FACTORED BEARING RESISTANCE OF 3 TONS PER SQ. FT. A GEOTECHNICAL ENGINEER WILL DETERMINE THE FACTORED BEARING RESISTANCE BY VISUAL INSPECTION PRIOR TO CONSTRUCTION OF THE RETAINING WALL FOOTING.

TRAFFIC DATA:

A.A.D.T. = 3,500 (2019)
A.A.D.T. = 3,900 (2039)
R.D.S. = 25 M.P.H.

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

BAR STEEL SHALL BE EMBEDDED 2 INCHES 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.

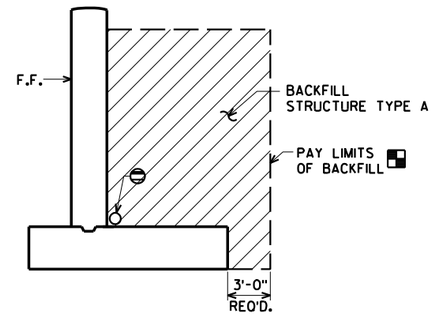
AT THE BACK FACE OF THE RETAINING WALL, ALL VOLUME WHICH CANNOT BE PLACED BEFORE RETAINIG WALL CONSTRUCTION AND IS NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH BACKFILL STRUCTURE TYPE A.

PROTECTIVE SURFACE TREATMENT IS TO BE APPLIED TO THE TOP OF THE WALL AS SHOWN IN DETAIL ON THIS SHEET.

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES RETAINING WALL R-31-11" SHALL BE THE EXISTING GROUNDLINE.

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.

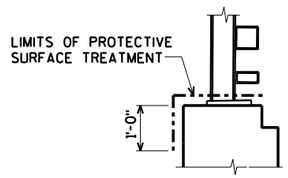
BEVEL EXPOSED EDGES OF CONCRETE ¾" UNLESS NOTED OTHERWISE.



BACKFILL STRUCTURE LIMITS
AT RETAINING WALL

■ BACKFILL PAY LIMITS. BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

⊖ PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT SOUTH END OF PIPE UNDERDRAIN AS DETAILED ON SHEET 4.



PROTECTIVE SURFACE TREATMENT DETAIL

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-31-11

DRAWN BY CLS | PLANS CK'D. CBM

TYPICAL SECTION, DESIGN DATA, AND QUANTITIES

SHEET 2 OF 6
83

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

8

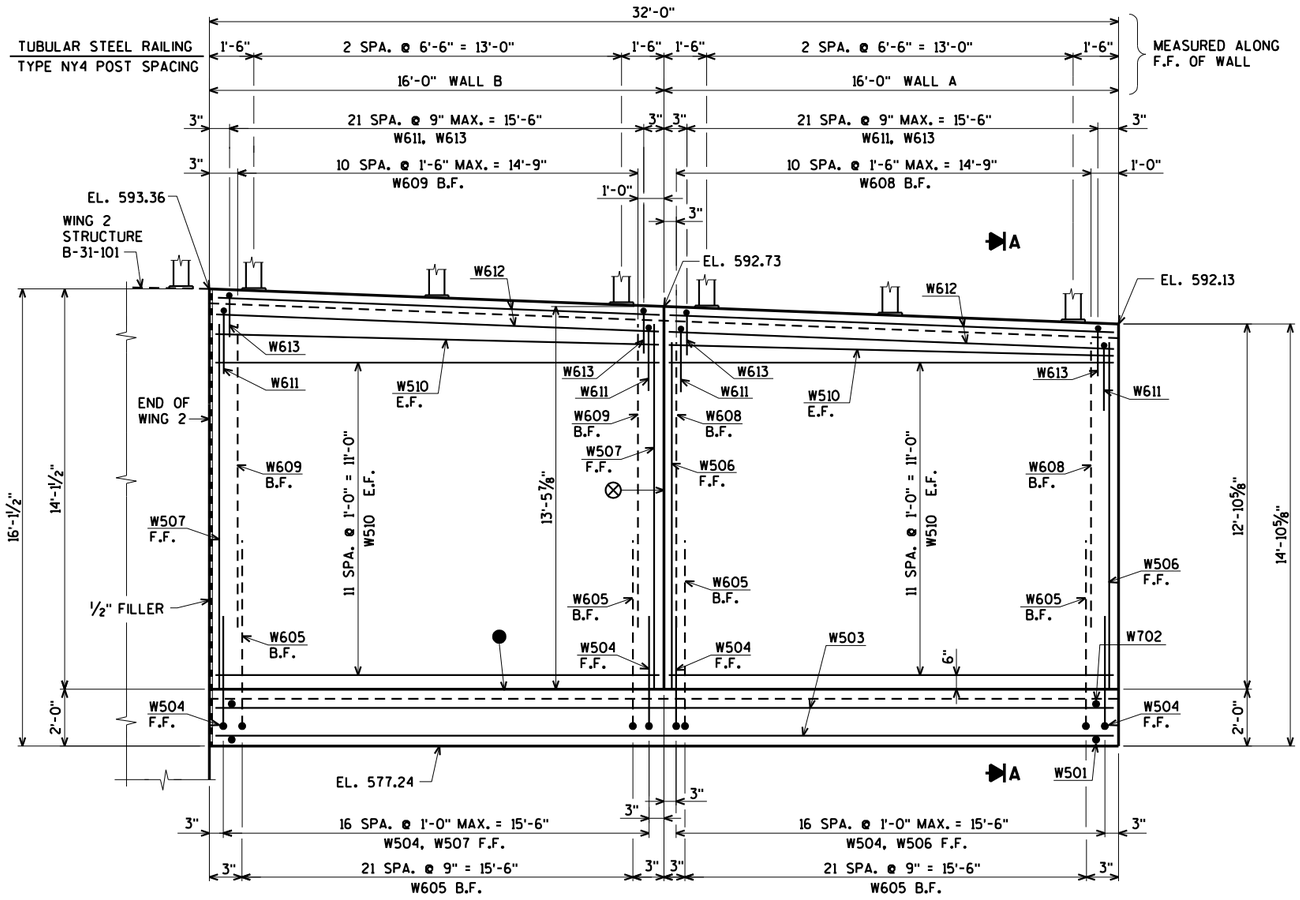
8

5/16/2018

PENTABLE:BReau_shd_util.tbl

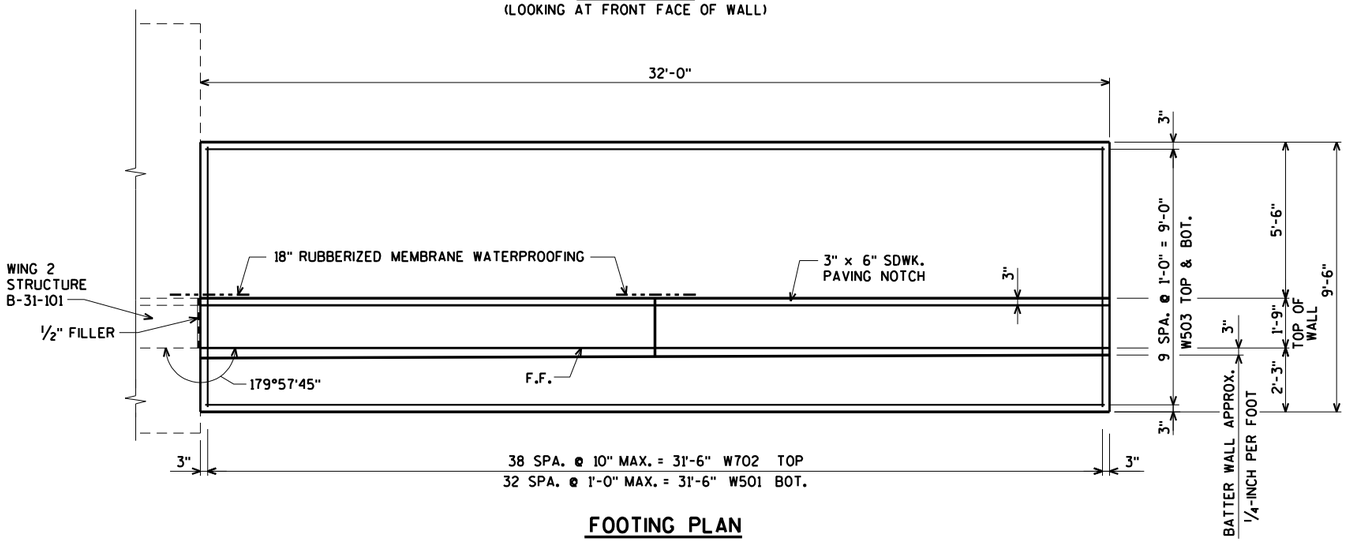
STATE PROJECT NUMBER

4409-12-71

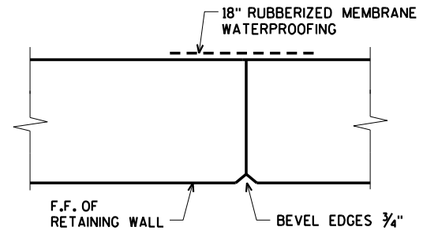


ELEVATION

(LOOKING AT FRONT FACE OF WALL)



FOOTING PLAN



VERTICAL CONTRACTION JOINT DETAIL

DO NOT RUN ANY BAR STEEL THRU JOINT

⊗ VERTICAL CONTRACTION JONT REQUIRED. SEE DETAIL.

● CONST. JOINT FORMED BY A SURFACED BEVELED 2" x 6"

FOR SECTION A SEE SHEET 4.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

E.F. DENOTES EACH FACE.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-31-11

DRAWN BY CLS | PLANS CK'D. CBM

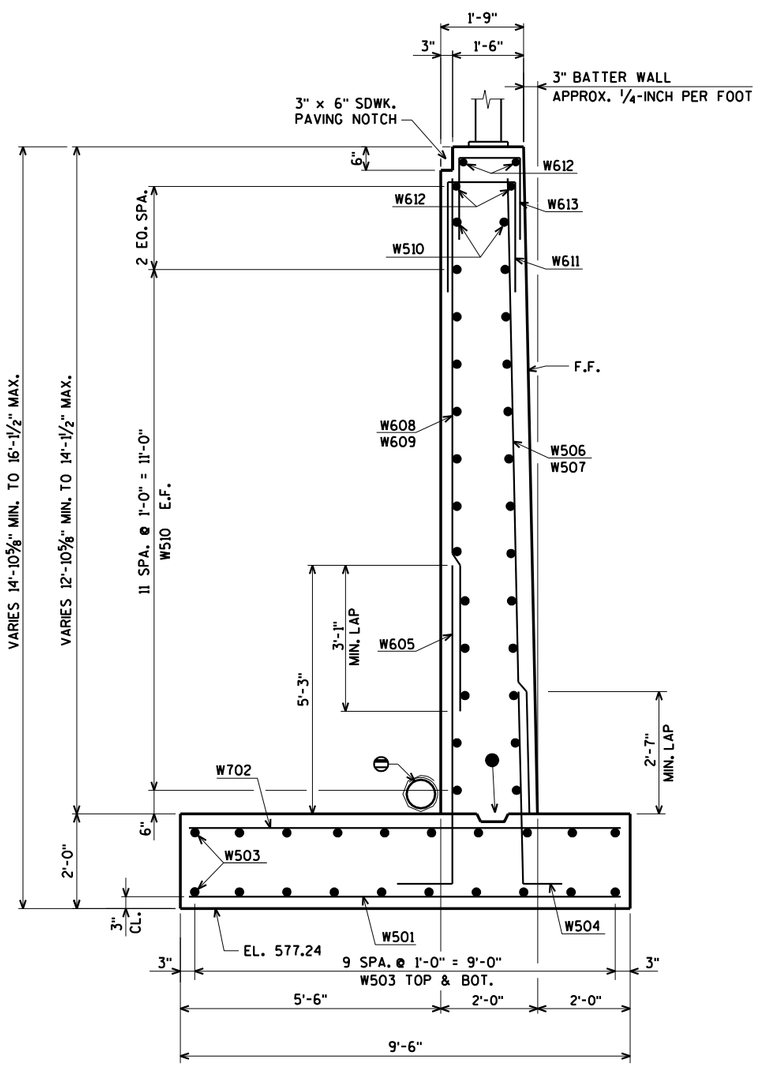
RETAINING WALL

SHEET 3 OF 6
84

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

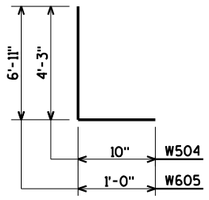
8

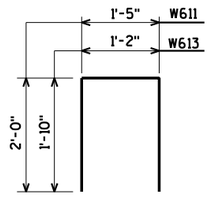
8



SECTION A

FOOTING TO BE PLACED ON SOUND MATERIAL WITH A REQUIRED FACTORED BEARING RESISTANCE OF 3 TONS PER SQUARE FT.





BAR SERIES TABLE

BAR MARK	NO REQ'D.	LENGTH
W506	1 SERIES OF 17	12'-6" TO 13'-0"
W507	1 SERIES OF 17	13'-1" TO 13'-9"
W608	1 SERIES OF 11	10'-0" TO 10'-6"
W609	1 SERIES OF 11	10'-7" TO 11'-3"

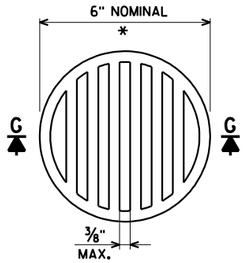
BUNDLE AND TAG EACH SERIES SEPARATELY.

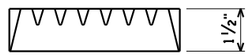
BILL OF BARS

BAR. NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED BAR SERIES	3,180# COATED 1,710# UNCOATED LOCATION
W501		33	9-2			RETAINING WALL FOOTING BOT.
W702		39	9-2			RETAINING WALL FOOTING TOP
W503		20	31-8			RETAINING WALL FOOTING TOP & BOT.
W504	X	34	5-0	X		RETAINING WALL DOWELS F.F.
W605	X	44	7-10	X		RETAINING WALL DOWELS B.F.
W506	X	17	12-9		⊗	RETAINING WALL VERT. WALL A F.F.
W507	X	17	13-5		⊗	RETAINING WALL VERT. WALL B F.F.
W608	X	11	10-3		⊗	RETAINING WALL VERT. WALL A B.F.
W609	X	11	10-11		⊗	RETAINING WALL VERT. WALL B B.F.
W510	X	52	15-8			RETAINING WALL HORIZ. E.F.
W611	X	44	5-1	X		RETAINING WALL VERT. TOP
W612	X	8	15-8			RETAINING WALL HORIZ. TOP
W613	X	44	4-6	X		RETAINING WALL VERT. TOP

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

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.





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 A 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 SHIELD TO THE EXPOSED END OF THE PIPE UNDERDRAIN. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 x 1-INCH STAINLESS STEEL SHEET METAL SCREWS.

RODENT SHIELD DETAIL

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

⊖ PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT SOUTH END OF PIPE UNDERDRAIN AS DETAILED ON THIS SHEET.

FOR LOCATION OF SECTION A SEE SHEET 3.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

E.F. DENOTES EACH FACE.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-31-11

DRAWN BY CLS | PLANS CK'D. CBM

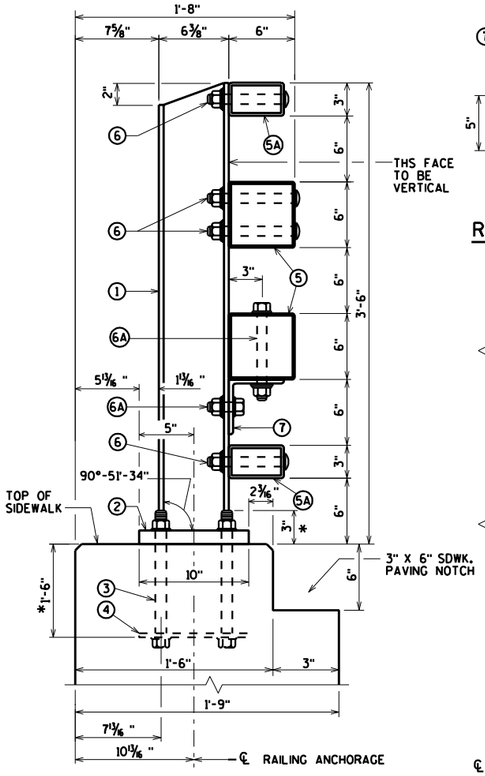
RETAIINING WALL DETAILS AND BILL OF BARS

SHEET 4 OF 6
85

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

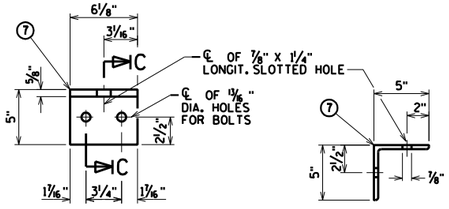
8

8



SECTION THRU RAILING ON WALL

* NORMAL TO BASE PLATE

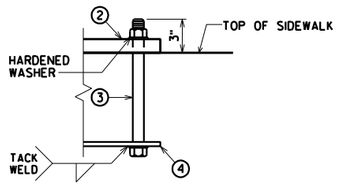


RAILING ANGLE DETAIL

INTERIOR ELEVATION

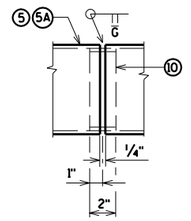
SECTION C-C

ANGLE SECTION



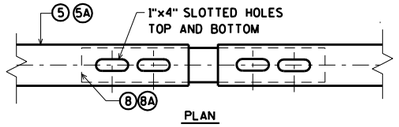
ANCHOR BOLTS

FOR ANCHOR BOLTS IN RETAINING WALLS, TACK WELD MAY BE USED IN FIELD AFTER ANCHOR PLATE IS IN POSITION IF REQ'D. FOR CONSTRUCTABILITY

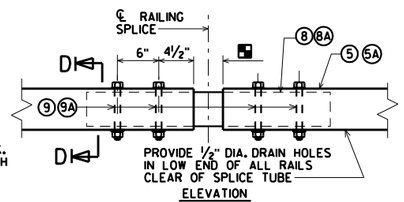


SHOP RAIL SPLICE DETAIL

(LOCATION MUST BE SHOWN ON SHOP DRAWINGS)

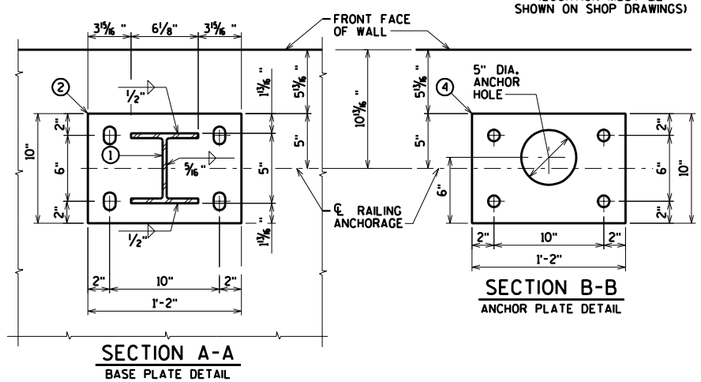


PLAN



ELEVATION

FIELD ERECTION JOINT DETAIL

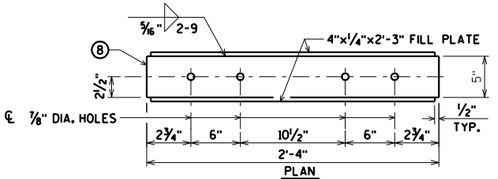


SECTION A-A

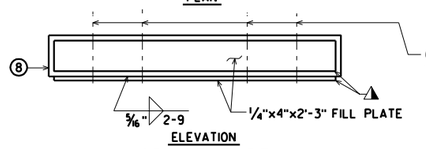
BASE PLATE DETAIL

SECTION B-B

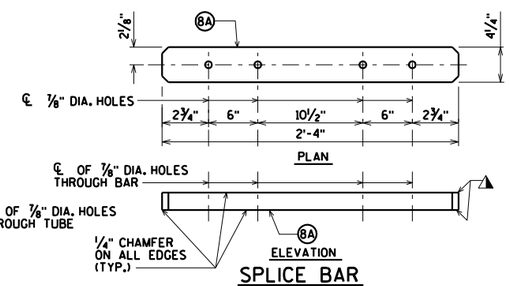
ANCHOR PLATE DETAIL



PLAN



POST SHIM DETAIL



PLAN

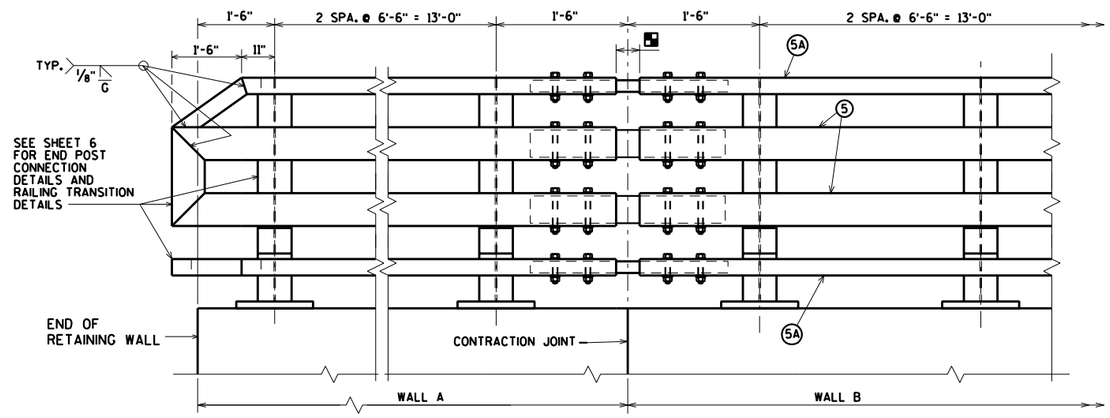
ELEVATION

SPLICE BAR

SECTION D-D

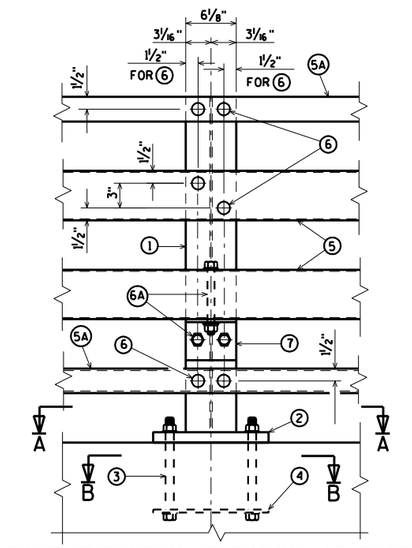
ELEVATION

SPLICE TUBE



PART ELEVATION OF RAILING

INTERIOR ELEVATION



PART ELEVATION OF RAILING AT POST

INTERIOR ELEVATION

LEGEND

① W6 X 25 WITH 1⅛" X 1⅜" HORIZONTAL SLOTTED HOLES ON EACH SIDE OF POST FOR BOLT NO. 6 AT TOP TWO RAILS. USE 1" DIA. HOLES FOR BOLT NO. 6 AT BOTTOM NO. 5A & FOR BOLT NO. 6A AT NO. 7. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF SIDEWALK. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.

② PLATE 1¼" X 10" X 1'-2" WITH 1⅛" X 1 1/16" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.

③ ASTM A449 - 1" DIA. ANCHOR BOLTS WITH HEAVY HEX NUT AND 2" O.D. HARDENED WASHER (ALL GALVANIZED). 4 REQUIRED PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. ~~USE 11½" LONG BOLT FOR CONCRETE DECKS, ON CONCRETE SLAB SUPERSTRUCTURES, USE 1' 3" LONG BOLT FOR SLAB THICKNESS > 16" AND 11½" LONG FOR THICKNESS ≤ 16".~~ USE 1'-9" LONG ~~IN ABUTMENT WINGS.~~ (AN EQUIVALENT THREADED ROD WITH HEAVY HEX NUTS AND HARDENED WASHERS MAY BE SUBSTITUTED FOR ANCHOR BOLTS IN WINGS IF REQUIRED FOR CONSTRUCTABILITY.)

④ ⅜" X 10" X 1'-2" ANCHOR PLATE (GALVANIZED) WITH 1 1/16" DIA. HOLES FOR ANCHOR BOLTS NO. 3.

⑤ TS 6 X 6 X ⅜" STRUCTURAL TUBING. USE 1" DIA. HOLES FOR BOLT NO. 6 (FRONT & BACK) & ⅞" DIA. HOLES FOR BOLT NO. 6A (TOP & BOTTOM).

⑤A TS 5 X 3 X ¼" STRUCTURAL TUBING. USE 1" DIA. HOLES FOR BOLT NO. 6. IN TOP RAIL (FRONT & BACK). USE 1⅛" X 1⅜" HORIZONTAL SLOTTED HOLES FOR BOLT NO. 6 IN BOTTOM RAIL (FRONT & BACK) AND A 2" O.D. WASHER UNDER BOLT HEAD.

⑥ ⅞" DIA. A325 SLOTTED ROUND HEAD BOLT WITH HEX NUT, 3/16" X 1¾" X 1¾" WASHER, AND SPRING LOCK WASHER (2 REQUIRED AT RAIL TO POST LOCATIONS SHOWN).

⑥A ¾" DIA. A325 BOLT WITH HEX NUT AND SPRING LOCK WASHER (1 REQUIRED AT RAIL TO ANGLE AND 2 REQUIRED AT ANGLE TO POST LOCATIONS SHOWN WITH 7/16" X 1¾" X 1¾" WASHER).

⑦ L 5 X 5 X ⅝" STRUCTURAL ANGLE. ATTACH TO NO. 1 AND NO. 5 AS SHOWN.

⑧ TS 5 X 5 X 5/16" X 2'-4" LONG SPLICE TUBE. 1 PER RAIL. USED IN NO. 5.

⑧A 4¼" X 2⅛" X 2'-4" LONG SPLICE BAR. 1 PER RAIL. USED IN NO. 5A.

⑨ ¾" DIA. A325 FULLY THREADED BOLTS, 7½" LONG, WITH 2 WASHERS AND HEAVY HEX NUT ON EACH BOLT. NUT TO BE FINGER TIGHT. (4 REQUIRED PER SPLICE). USE 1" X 4" SLOTTED HOLES IN TOP AND BOTTOM OF NO. 5.

⑨A ¾" DIA. A325 FULLY THREADED BOLTS, 4½" LONG, WITH 2 WASHERS AND HEAVY HEX NUT ON EACH BOLT. NUT TO BE FINGER TIGHT. (4 REQUIRED PER SPLICE). USE 1" X 4" SLOTTED HOLES IN TOP AND BOTTOM OF NO. 5A.

⑩ SPLICE SLEEVE FABRICATED FROM ¼" PLATE. PROVIDE "SLIDING FIT".

■ ~~ROADWAY OPENING OR 2½" MIN. FOR STRIP SEAL EXP. JOINT & ½" OPENING FOR A1 ABUTMENT.~~ ½" AT FIXED JOINTS. ~~SPLICES ARE REQUIRED IN ANY RAILING SPAN BETWEEN POSTS THAT CONTAINS A SUPERSTRUCTURE EXPANSION JOINT.~~

⚠ PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE RAILS, SPLICE TUBES AND FILL PLATES.

NOTES

BID ITEM SHALL BE "RAILING STEEL TYPE NY4 R-31-11", WHICH INCLUDES ALL ITEMS SHOWN.

RAILING SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE.

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, ANGLES, SPLICE TUBES, SPLICE BARS AND STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING PER SSPC SPECIFICATIONS.

RAIL POST, BASE PLATES, SPLICE BAR, ANGLES AND SPLICE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED f_y =50 KSI. ANCHOR PLATES & SHIMS 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 ⅛ TURN.

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

STEEL SHIMS SHALL BE PROVIDED & USED UNDER PLATE NO. 2 WHERE REQUIRED FOR ALIGNMENT, AND SHALL BE GALVANIZED.

WORK THIS SHEET WITH "END POST DETAILS FOR TUBULAR STEEL RAILING TYPE NY4" SHEET.

NO.	DATE	REVISION	BY

STRUCTURE R-31-11

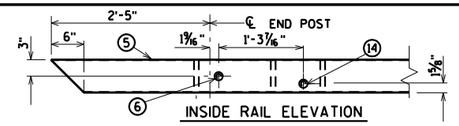
DRAWN BY CLS | PLANS CK'D. CBM

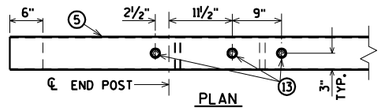
TUBULAR STEEL RAILING TYPE NY4

SHEET 5 OF 6

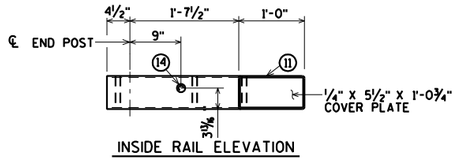
86

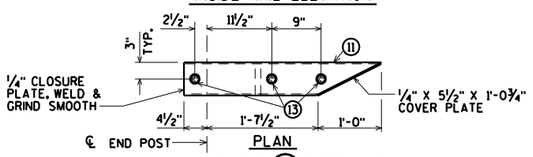
ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com



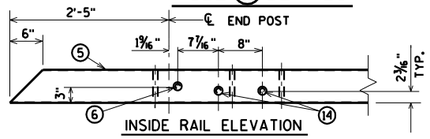


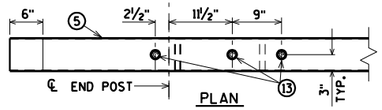
TOP RAIL ⑤ DETAILS



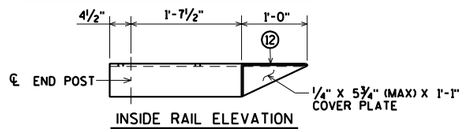


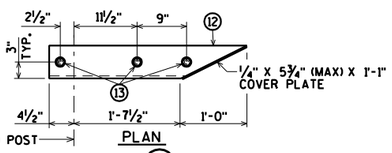
TUBE ⑪ DETAILS



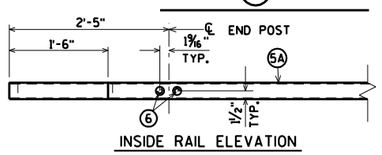


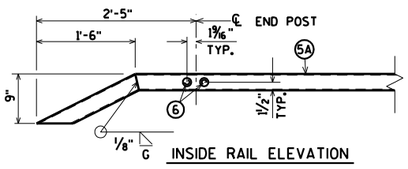
BOTTOM RAIL ⑤ DETAILS

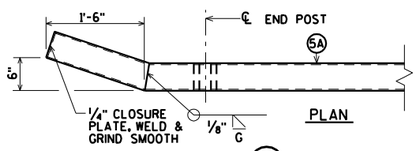




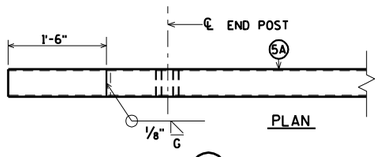
ANGLE ⑫ DETAILS



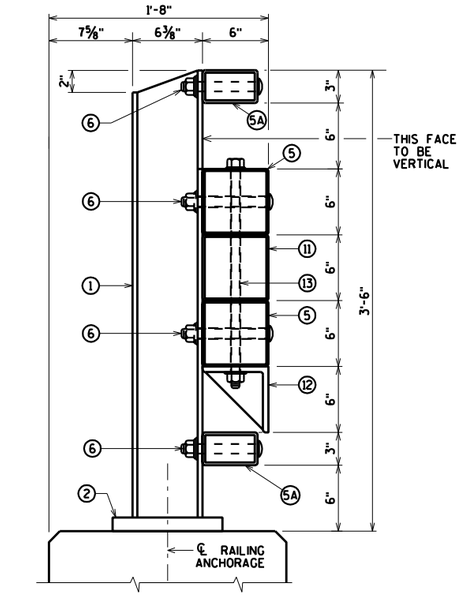




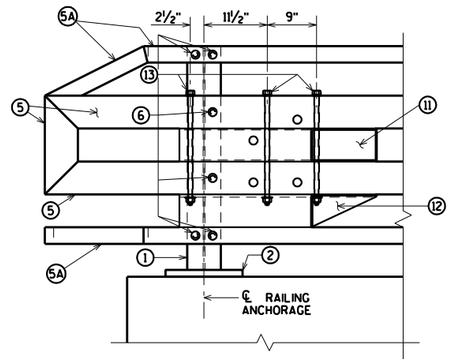
BOTTOM RAIL 5A DETAILS



TOP RAIL 5A DETAILS

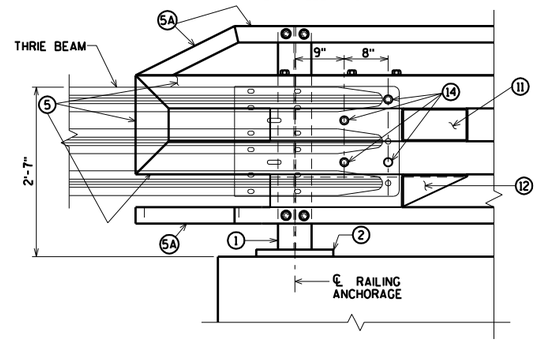


SECTION THRU RAILING END POST



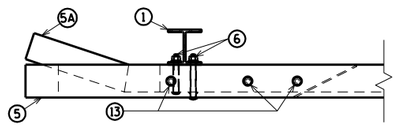
ELEVATION DETAIL AT END POST

INTERIOR ELEVATION

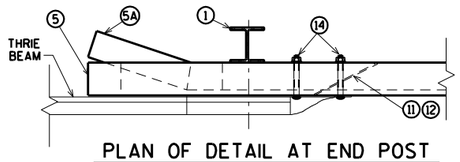


ELEVATION OF DETAIL AT END POST

THRIE BEAM RAIL ATTACHMENT



PLAN OF DETAIL AT END POST



PLAN OF DETAIL AT END POST

THRIE BEAM RAIL ATTACHMENT

LEGEND

① W6 X 25 WITH 1 1/8" X 1 3/8" HORIZONTAL SLOTTED HOLES ON SIDE OF POST FOR BOLT NO. 6 AT NO. 5 & AT TOP RAIL NO. 5A. USE 1" DIA. HOLE FOR BOLT NO. 6 AT NO. 5A BOTTOM RAIL. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF SIDEWALK. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.

② PLATE 1 1/4" X 10" X 1'-2". SEE SHEET "TUBULAR STEEL RAILING NY4" FOR MORE INFORMATION.

⑤ TS 6 X 6 X 3/16" STRUCTURAL TUBING. USE 7/8" DIA. HOLES IN TOP AND BOTTOM OF RAILS FOR BOLT NO. 13 AS SHOWN IN PLAN DETAILS. USE 1" DIA. HOLES IN FRONT AND BACK OF RAILS FOR BOLTS NO. 6 & NO. 14 AS SHOWN IN ELEVATION DETAILS.

⑤A TS 5 X 3 X 1/4" STRUCTURAL TUBING. USE 1" DIA. HOLES FOR BOLT NO. 6 IN TOP RAIL (FRONT & BACK). USE 1 1/8" X 1 3/8" HORIZONTAL SLOTTED HOLES FOR BOLT NO. 6 IN BOTTOM RAIL (FRONT & BACK) AND A 2" O.D. WASHER UNDER BOLT HEAD.

⑥ 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH HEX NUT, 3/16" X 1 3/4" WASHER, AND SPRING LOCK WASHER (1 REQUIRED AT RAIL NO. 5 TO POST NO. 1 CONNECTION LOCATIONS SHOWN. 2 REQUIRED AT RAIL NO. 5A TO POST NO. 1 CONNECTION LOCATIONS SHOWN).

⑪ TS 6 X 6 X 3/16" STRUCTURAL TUBING. USE 1" DIA. HOLES IN FRONT AND BACK FOR BOLT NO. 14 & 7/8" DIA. HOLES IN TOP & BOTTOM FOR BOLT NO. 13.

⑫ L 6 X 6 X 1/2" STRUCTURAL ANGLE. USE 7/8" DIA. HOLES IN TOP FLANGE FOR BOLT NO. 13.

⑬ 3/4" DIA. A325 FULLY THREADED BOLTS, 2 WASHERS AND A HEAVY HEX NUT, ON EACH BOLT. NUT TO BE FINGER TIGHT. 3 BOLTS AT EACH END POST.

⑭ 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH HEX NUT AND 3/16" X 2" X 2" WASHER FOR CONNECTION OF THRIE BEAM (4 REQUIRED)

NOTES

STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED f_y=50 KSI. STRUCTURAL ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50.

WORK THIS SHEET WITH "TUBULAR STEEL RAILING TYPE NY4" SHEET.

NO.	DATE	REVISION	BY

STRUCTURE R-31-11

DRAWN BY CLS | PLANS CK'D. CBM

END POST DETAILS FOR TUBULAR STEEL RAILING TYPE NY4

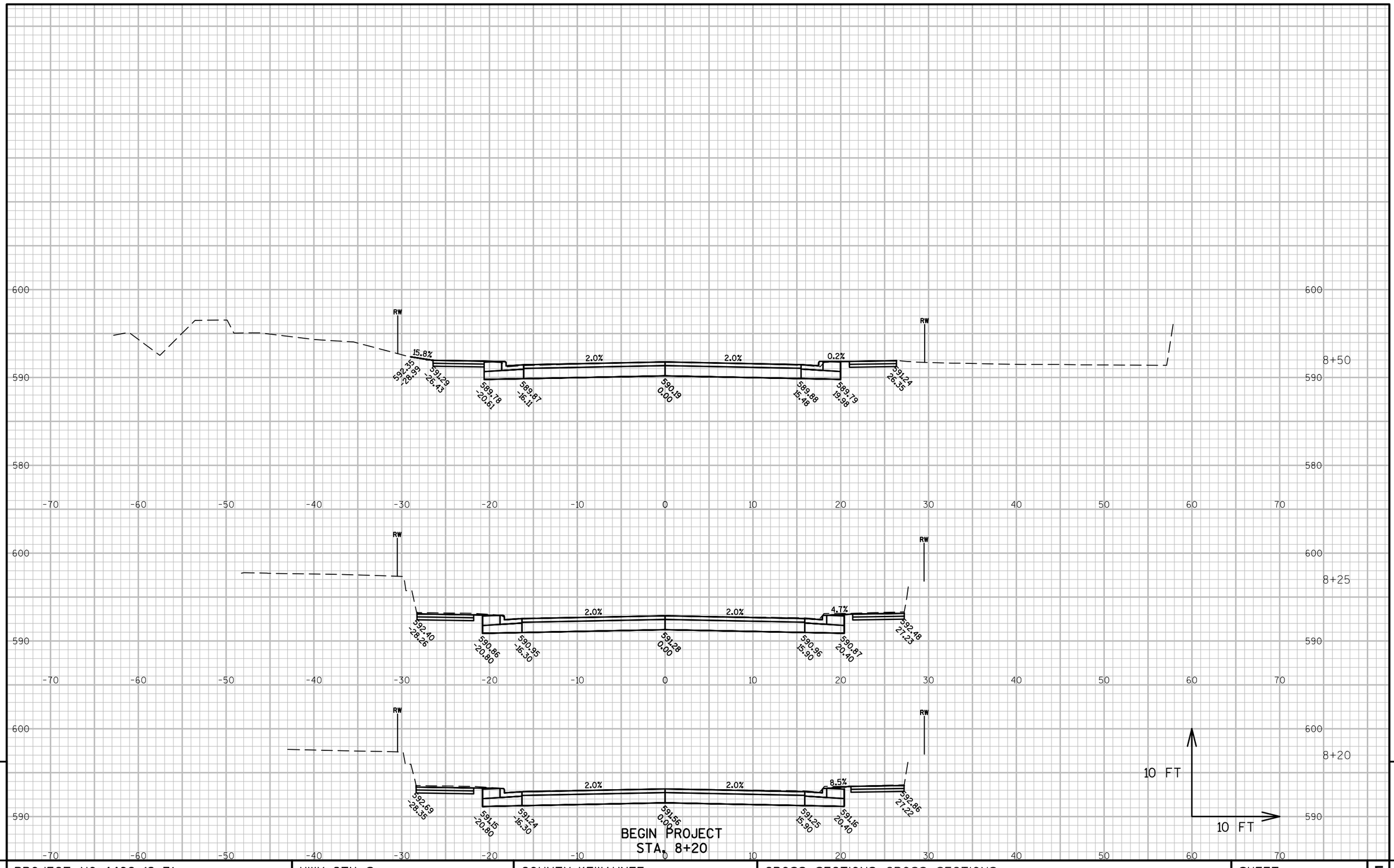
SHEET 6 OF 6
87

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

EARTHWORK - CTH S

STATION	AREA (SF)			Incremental Vol (CY) (Unadjusted)			Cumulative Vol (CY)		Mass Ordinate
	Cut	Salvaged/Unusable Pavement Material	Fill	Cut	Salvaged/Unusable Pavement Material	Fill	Cut 1.00	Expanded Fill 1.30	
				Note 1	Note 2	Note 3	Note 1		Note 8
8+20	80	43	0	0	0	0	0	0	0
8+25	80	43	0	15	8	0	15	0	7
8+50	72	42	0	70	39	0	85	0	38
8+75	65	42	3	63	39	1	149	2	61
9+00	55	36	3	56	36	3	204	5	76
9+25	76	34	6	61	32	4	265	11	99
9+42	67	32	14	45	21	6	310	19	115
B-31-0101									115
10+73	68	21	24	0	102	0	310	19	13
11+00	74	25	2	71	23	13	381	36	45
11+25	77	29	0	70	25	1	451	37	88
11+50	82	29	0	74	27	0	524	37	135
11+75	82	29	0	76	27	0	600	37	184
12+00	69	29	1	70	27	0	670	38	227
12+25	73	29	3	66	27	2	736	40	263
12+50	0	0	18	34	13	10	770	53	271
12+55	2	0	3	0	0	2	770	55	268
				770	446	43			

Notes:	
1 - Cut	Cut includes existing pavement and base material
2 - Salvaged/Unusable Pavement Material	This does not show up in cross sections
3 - Fill	Unadjusted Fill (Does not include Unusable Pavement Material)
8 - Mass Ordinate	Cut - Unusable Pavment Material - (Fill * Fill Factor)



9

9

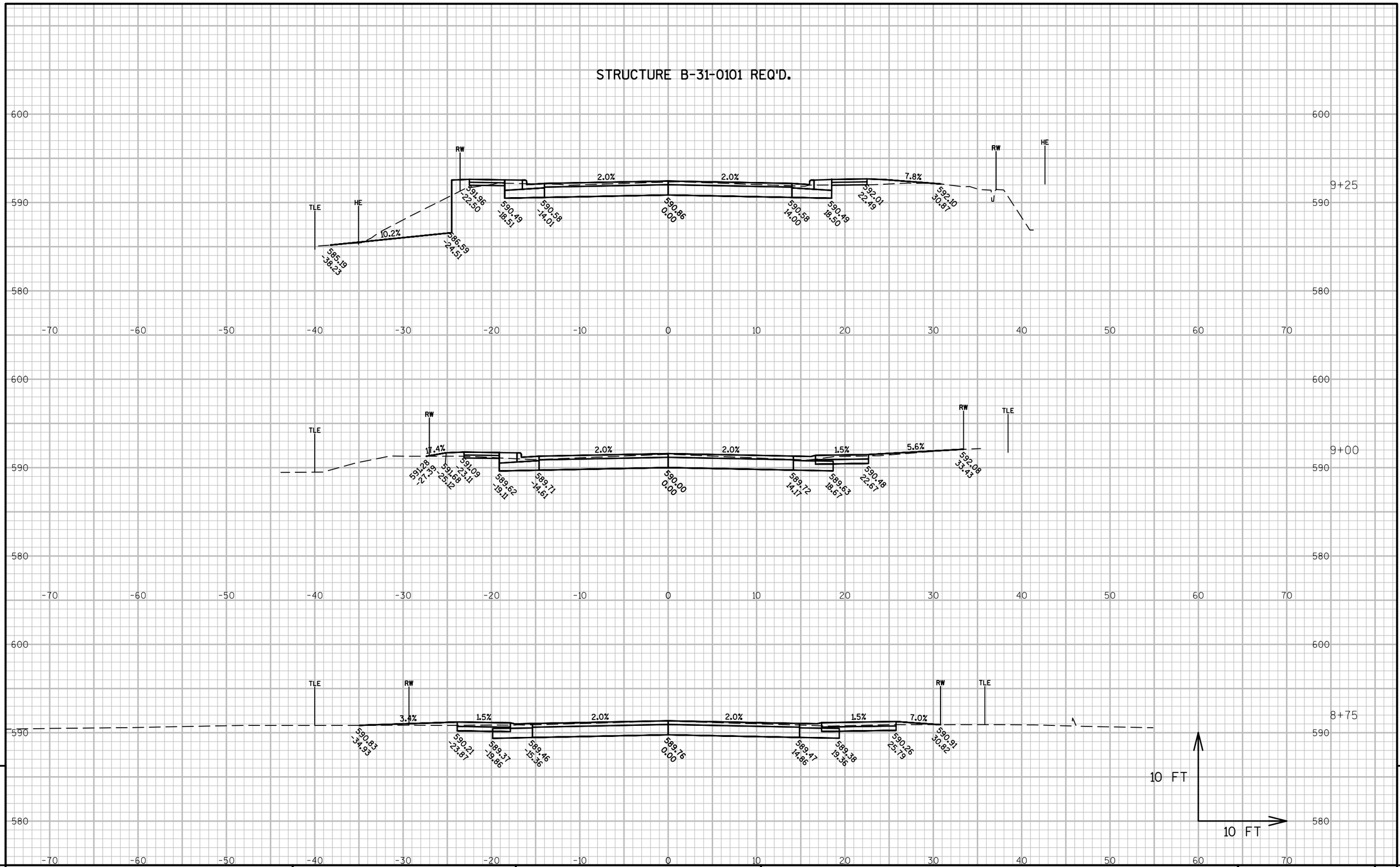
PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	CROSS SECTIONS: CROSS SECTIONS	SHEET 89	E

FILE NAME : V:\TRANS-GB\450417 CTH S\ROADWAY\C3D\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - SECTION SHEET - (1)

PLOT DATE : 7/31/2018 1:22 PM PLOT BY : SCHAITEL, RYAN PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

STRUCTURE B-31-0101 REQ'D.

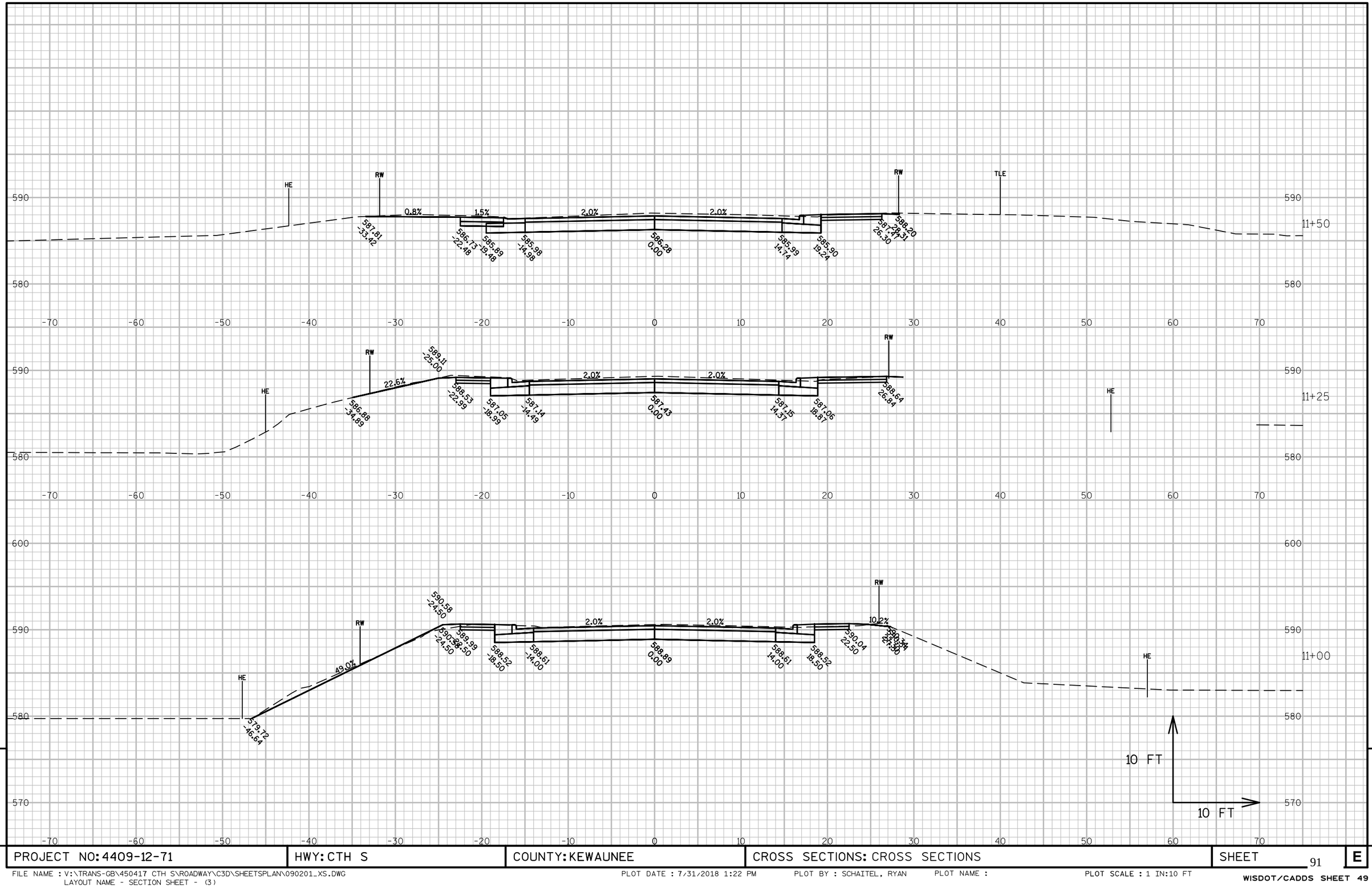


PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	CROSS SECTIONS: CROSS SECTIONS	SHEET 90	E

FILE NAME : V:\TRANS-GB\450417 CTH S\ROADWAY\C3D\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - SECTION SHEET - (2)

PLOT DATE : 7/31/2018 1:22 PM PLOT BY : SCHAITEL, RYAN PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49



9

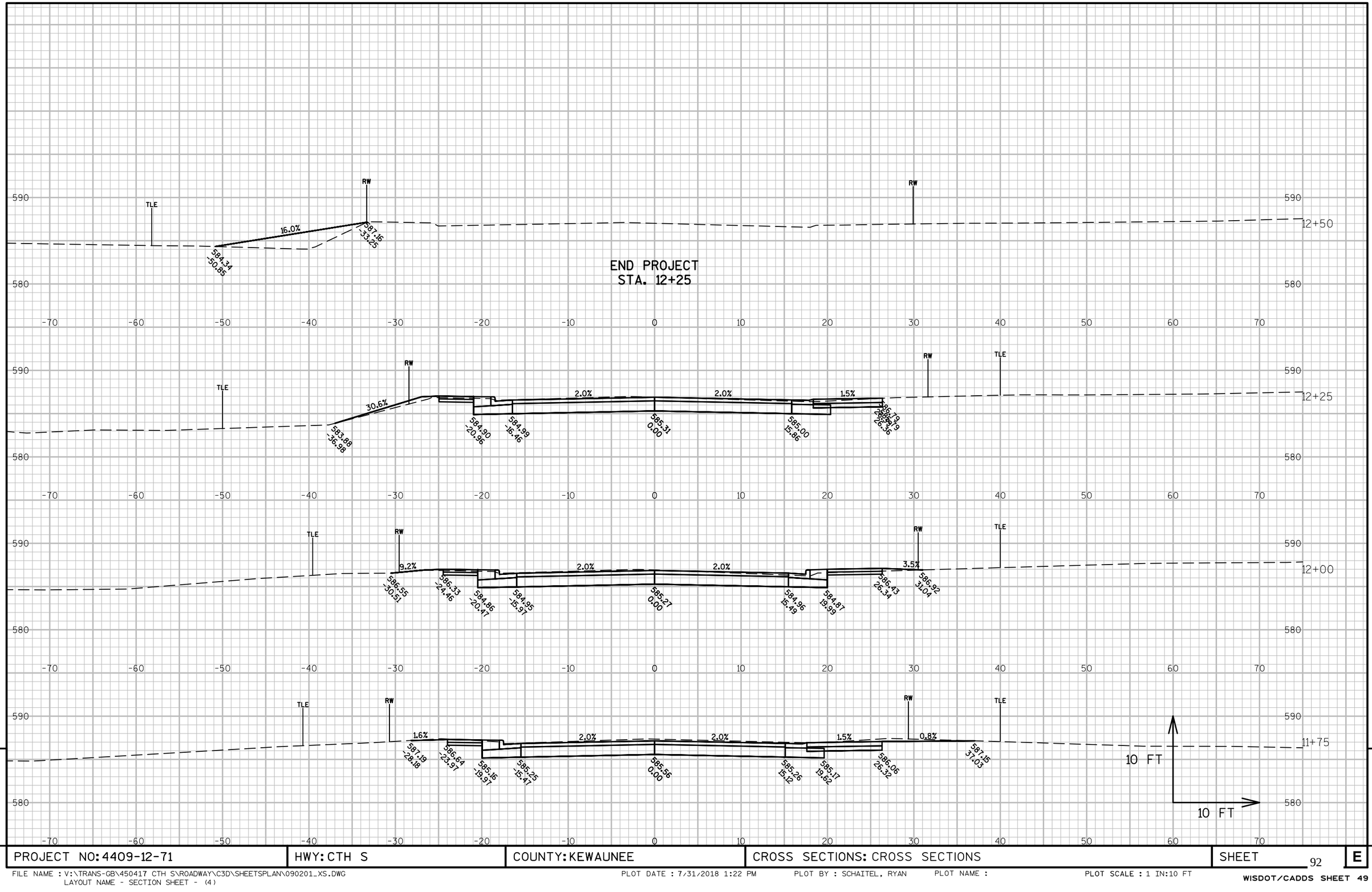
PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	CROSS SECTIONS: CROSS SECTIONS	SHEET	E

FILE NAME : V:\TRANS-GB\450417 CTH S\ROADWAY\C3D\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - SECTION SHEET - (3)

PLOT DATE : 7/31/2018 1:22 PM PLOT BY : SCHAITEL, RYAN PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

9



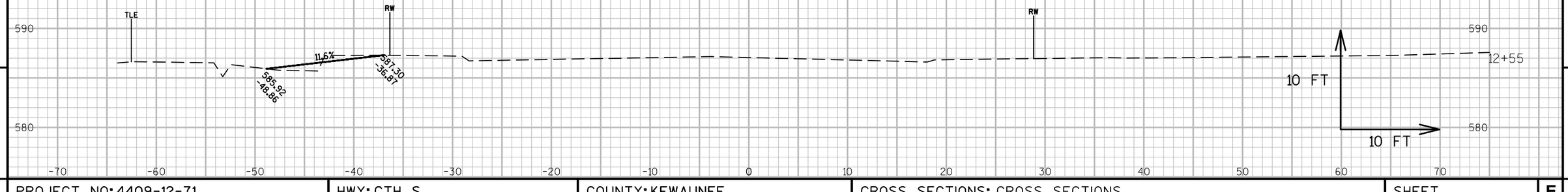
PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	CROSS SECTIONS: CROSS SECTIONS	SHEET 92	E

FILE NAME : V:\TRANS-GB\450417 CTH S\ROADWAY\C3D\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - SECTION SHEET - (4)

PLOT DATE : 7/31/2018 1:22 PM PLOT BY : SCHAITEL, RYAN PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

CONSTRUCTION LIMITS
STA. 12+55



9

9

PROJECT NO: 4409-12-71	HWY: CTH S	COUNTY: KEWAUNEE	CROSS SECTIONS: CROSS SECTIONS	SHEET 93	E

Wisconsin Department of Transportation

Dedicated people creating transportation solutions
through innovation and exceptional service.

http://www.dot.wisconsin.gov