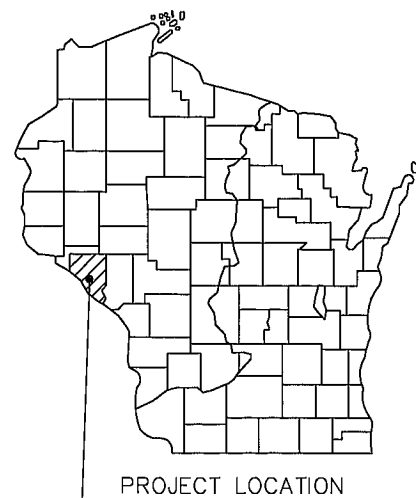


ORDER OF SHEETS

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

TOTAL SHEETS = 90



PROJECT LOCATION

DESIGN DESIGNATION

A.A.D.T. (2014)	=	425
A.A.D.T. (2034)	=	570
D.H.V. (2034)	=	71
D.D.	=	62/38
T.	=	4.3%
DESIGN SPEED	=	40 MPH
ESALS	=	43,800

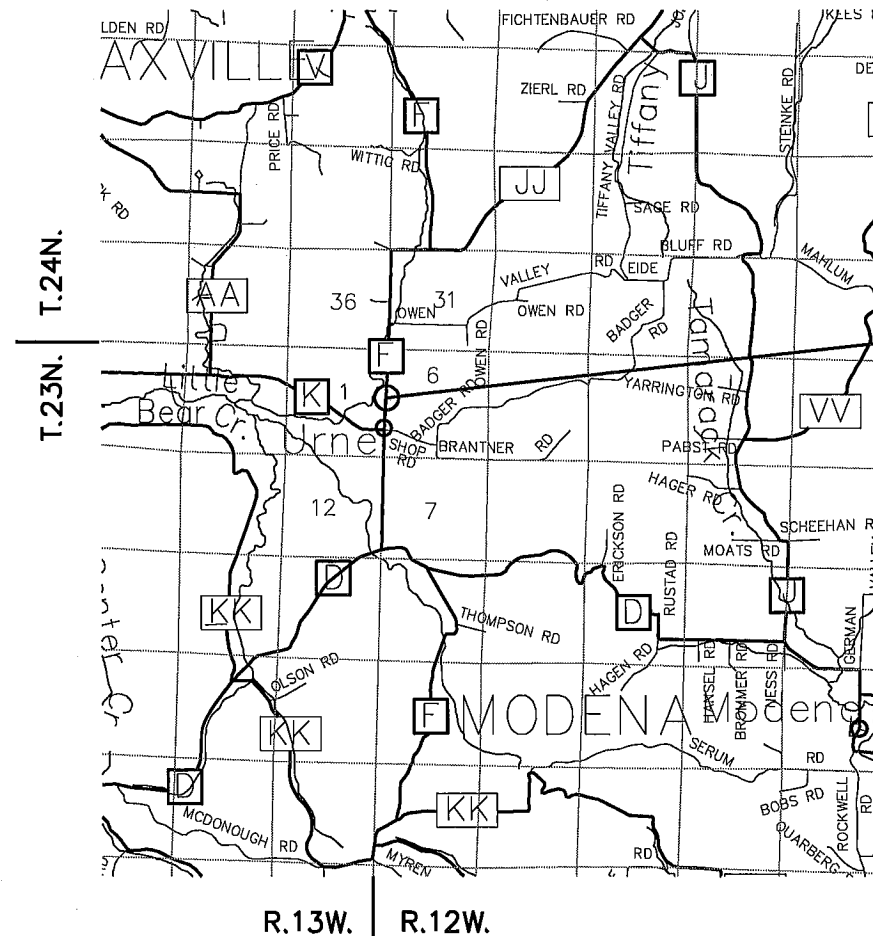
CONVENTIONAL SYMBOLS

PLAN

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

PROFILE

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



LAYOUT
SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.305 MI

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

CTH K - CTH JJ

(BRANCH LITTLE BEAR CREEK BRIDGE & APPROACHES)

CTH F

BUFFALO COUNTY

STATE PROJECT NUMBER

7160-01-71

END PROJECT
STA 107+00

Y - 372396.858
X - 550063.657

STRUCTURE B-06-0186

BEGIN PROJECT
STA 90+90

Y - 370787.002
X - 550043.218

ACCEPTED FOR
BUFFALO COUNTY

1/27/14
DATE

COUNTY COMMISSIONER

ORIGINAL PLANS PREPARED BY

Cedar
corporation

MENOMONIE - MADISON - GREEN BAY
www.cedarcorp.com
800-472-7372



1-27-14
DATE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor CEDAR CORPORATION

Designer CEDAR CORPORATION

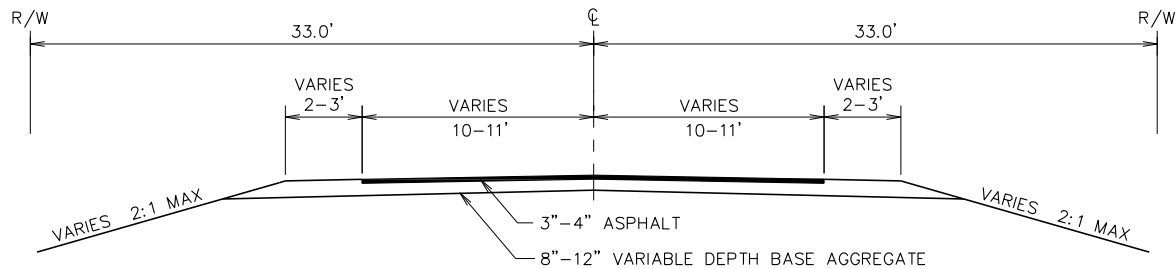
Management Consultant KJOHNSON ENGINEERS, INC.

APPROVED FOR THE DEPARTMENT

1/29/14
DATE

(Management Consultant Signature)

E



TYPICAL EXISTING SECTION CTH F
STA 90+90 – STA 107+00

DNR LIAISON

DEPARTMENT OF NATURAL RESOURCES
3550 MORMON COULEE RD
LA CROSSE, WI 54601
(608) 785-9115
KAREN KALVELAGE
karen.kalvelage@wisconsin.gov

DESIGN CONSULTANT

CEDAR CORPORATION
604 WILSON AVENUE
MENOMONIE, WI 54751
(715) 235-9081
GREGORY M. WOLFE, PE
greg.wolfe@cedarcorp.com

UTILITIES

NELSON TELEPHONE
318 3RD AVE. WEST
P.O. BOX 228
DURAND, WI 54736
(715) 672-4104
DALE GOSS
dale@nelson-tel.net

RIVERLAND ENERGY COOPERATIVE
P.O. BOX 277
ARCADIA, WI 54612
(608) 323-3381
TIM HOLTAN
tholtan@riverlandenergy.com



Toll Free (800) 242-8511
Hearing Impaired TDD (800) 542-2289
www.DiggersHotline.com

DENOTES UTILITIES THAT ARE **NOT**
**** DIGGERS HOTLINE MEMBERS**

BORING LOG

BORING	LOCATION	DESCRIPTION
B-1	N. ABUT	SEE SECTION 8, SHEET 3 OF 11
B-2	S. ABUT	SEE SECTION 8, SHEET 3 OF 11
B-3	103+50 RT	4" BIT/8" AGG/3' SM/2' SP
B-4	96+50 RT	3" BIT/8" AGG/3.2' SM/2' SP

GENERAL NOTES

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

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

NO TREES OR SHRUBS ARE TO BE REMOVED UNLESS SUCH TREES OR SHRUBS HAVE FIRST BEEN INDICATED FOR REMOVAL BY THE ENGINEER IN THE FIELD.

WisDOT STANDARD SPECS 107.8(6) AND 108.7.1 WILL APPLY FOR CONSTRUCTION NOISE.

EXCAVATION BELOW SUBGRADE (EBS) IS NOT USED TO BALANCE YARDAGE AND IS SHOWN ON THE CROSS SECTIONS, EBS IS MEASURED AND PAID FOR AS COMMON EXCAVATION. THE LOCATION OF EBS WILL BE DETERMINED BY THE ENGINEER.

DO NOT DISTURB ANY AREAS OUTSIDE OF THE SLOPE INTERCEPTS AS THERE ARE WETLANDS WITHIN THE PROJECT LIMITS.

COORDINATES AND BEARINGS ON THIS PLAN ARE ORIENTATED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS) BUFFALO COUNTY.

DISTURBED AREAS WITHIN THE RIGHT OF WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, ARE TO BE FERTILIZED, SEEDED AND MULCHED AS DIRECTED BY THE ENGINEER.

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

THE 3 ½" HMA PAVEMENT SHALL BE CONSTRUCTED WITH A 1 ¾" LOWER LAYER AND A 1 ¾" UPPER LAYER. 12.5mm NOMINAL AGGREGATE SIZE SHALL BE USED IN BOTH LAYERS.

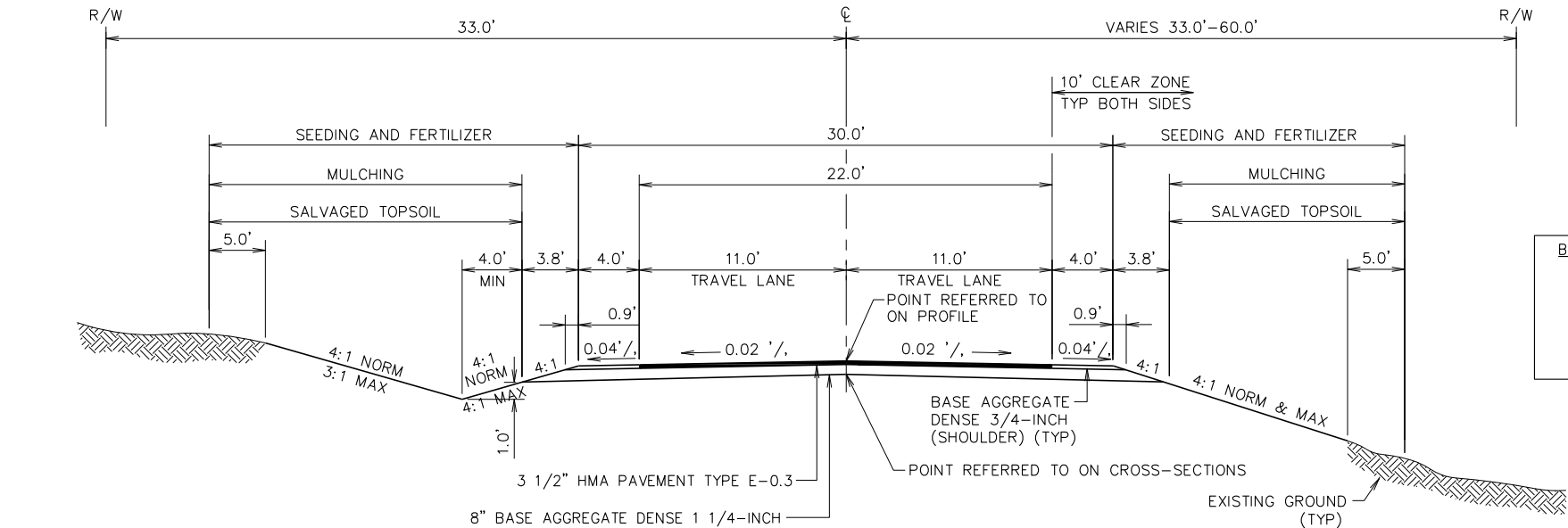
ASPHALTIC SURFACE SHALL USE 12.5MM NOMINAL AGGREGATE SIZE FOR BOTH LAYERS.

25 MPH ADVISORY SPEED SIGNS TO BE UTILIZED FOR THE TEMPORARY BYPASS TRAFFIC CONTROL.

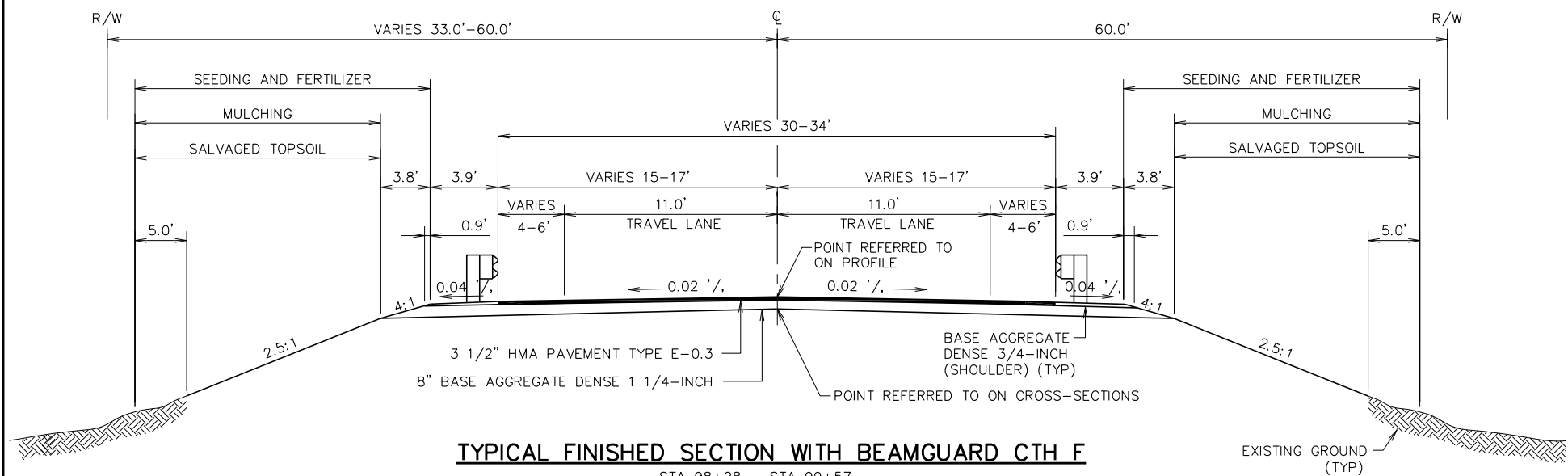
THE BENCHMARK IS REFERENCED TO NAVD 88.

LIST OF STANDARD ABBREVIATIONS

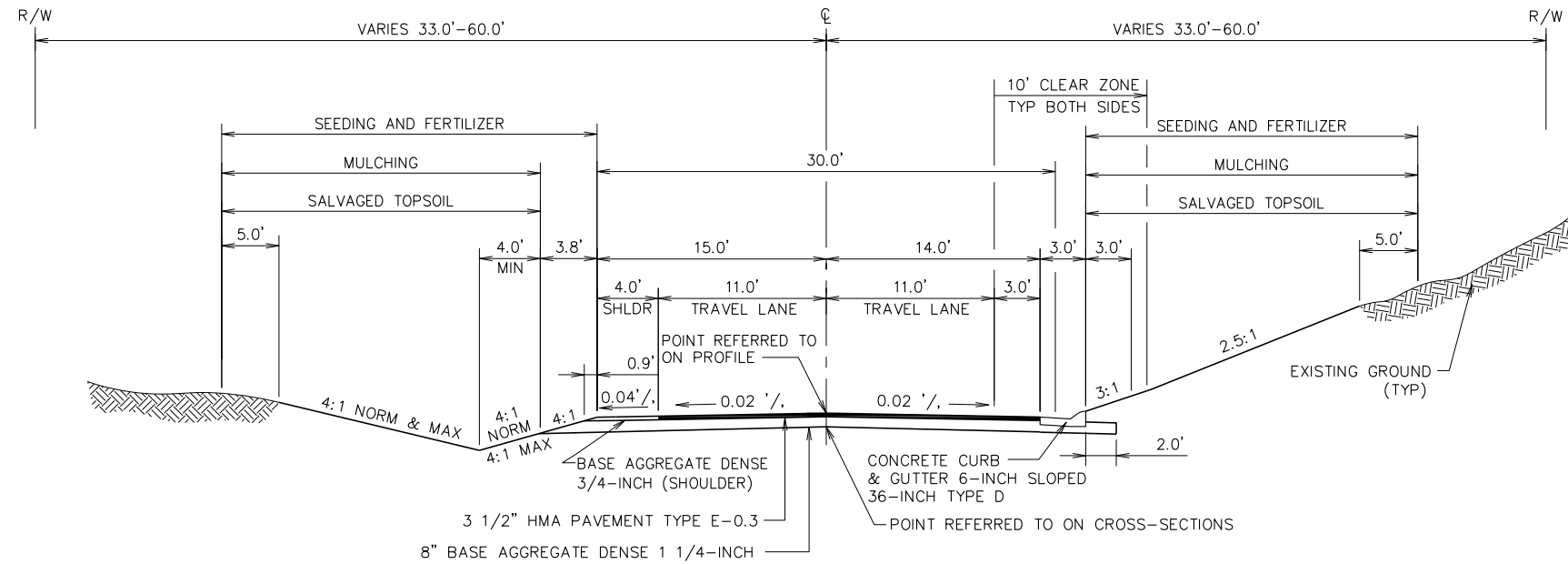
ABUT	ABUTMENT	PC	POINT OF CURVATURE
AGG	AGGREGATE	PI	POINT OF INTERSECTION
ET AL	AND OTHERS	PT	POINT OF TANGENCY
AADT	ANNUAL AVERAGE DAILY TRAFFIC	POL	POINT ON LINE
BF	BACK FACE	PE	PRIVATE ENTRANCE
BM	BENCHMARK	PL	PROPERTY LINE
C/L OR C	CENTERLINE	PSI	POUNDS/SQUARE INCH
Δ	CENTRAL ANGLE OR DELTA	PROP	PROPOSED
CLR	CLEAR	R	RADIUS
CONC	CONCRETE	RR	RAILROAD
CONST	CONSTRUCTION	REBAR	REINFORCEMENT BAR
COR	CORNER	REQD	REQUIRED
OMP	CORRUGATED METAL PIPE	RT	RIGHT
CTH	COUNTY TRUNK HIGHWAY	RHF	RIGHT-HAND FORWARD
CR	CREEK	R/W	RIGHT-OF-WAY
CFS	CUBIC FEET/SECOND	RD	ROAD
CULV	CULVERT	SEC	SECTION
D	DEGREE OF CURVE	S	SOUTH
DHV	DESIGN HOUR VOLUME	SE	SOUTHEAST
DIA	DIAMETER	SM	SILTY SAND
E	EAST	SP	POORLY-GRADED SAND
EL	ELEVATION	SW	SOUTHWEST
EST	ESTIMATED	STH	STATE TRUNK HIGHWAY
FPS	FEET PER SECOND	STA	STATION
FE	FIELD ENTRANCE	SE	SUPER ELEVATION
FT	FOOT (FEET)	T	TANGENT
FTG	FOOTING	TEL	TELEPHONE
FDN	FOUNDATION	TEMP	TEMPORARY
FF	FRONT FACE	TI	TEMPORARY INTEREST
IP	IRON PIN	TLE	TEMPORARY LIMITED EASEMENT
LT	LEFT	TL OR T/L	TRANSIT LINE
LHF	LEFT-HAND FORWARD	T	TRUCKS
L	LENGTH OF CURVE	TYP	TYPICAL
LF	LINEAR FOOT	U/G	UNDERGROUND
MAX	MAXIMUM	USH	UNITED STATES HIGHWAY
MB	MAILBOX	VAR	VARIABLE
MI	MILE	V	VELOCITY
MIN	MINIMUM	VPC	VERTICAL POINT OF CURVATURE
NC	NORMAL CROWN	VPI	VERTICAL POINT OF INTERSECTION
N	NORTH	VPT	VERTICAL POINT OF TANGENCY
NE	NORTHEAST	W	WEST
NW	NORTHWEST	YD	YARD
NO	NUMBER		



TYPICAL FINISHED SECTION CTH F
STA 90+90 – STA 95+50
STA 97+00 – STA 98+28
STA 104+00 – STA 107+00

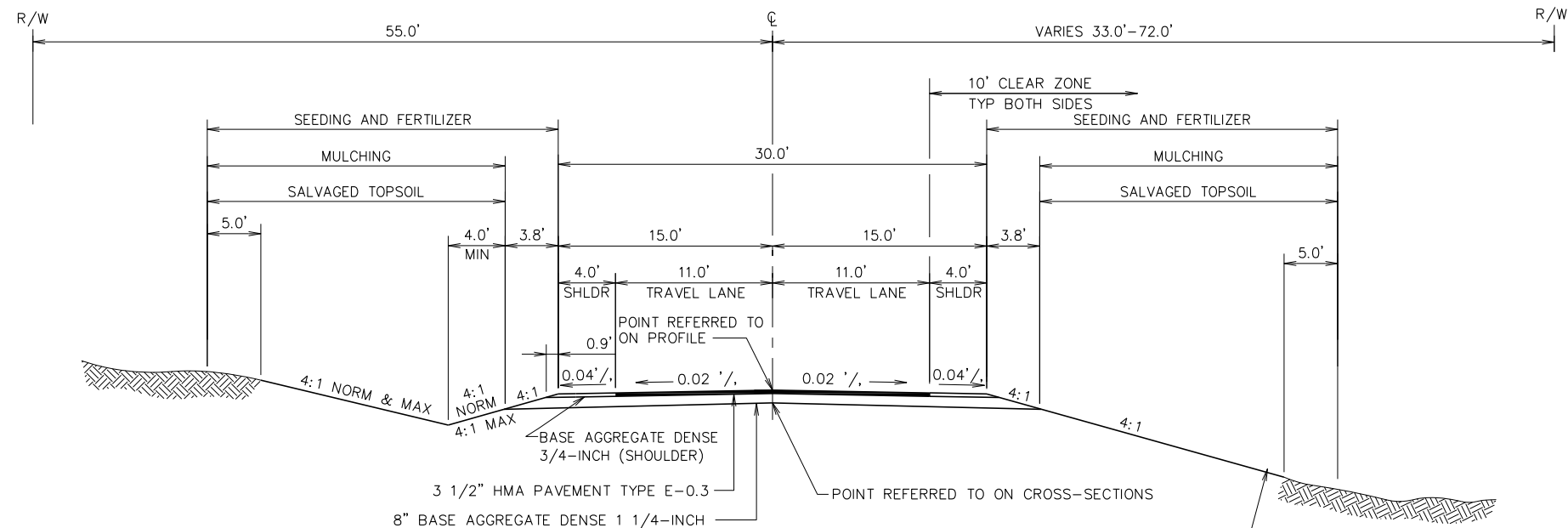


TYPICAL FINISHED SECTION WITH BEAMGUARD CTH F
STA 98+28 – STA 99+57
STA 100+41 – STA 101+70



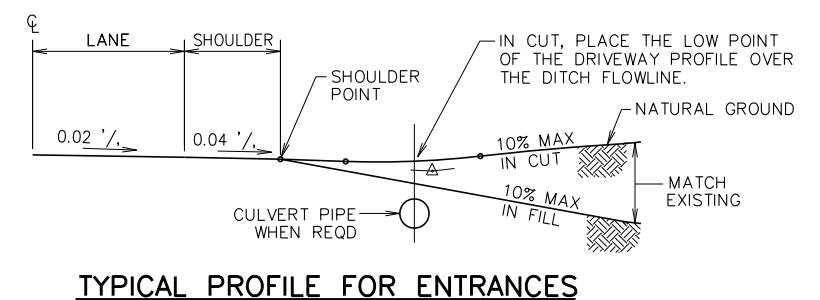
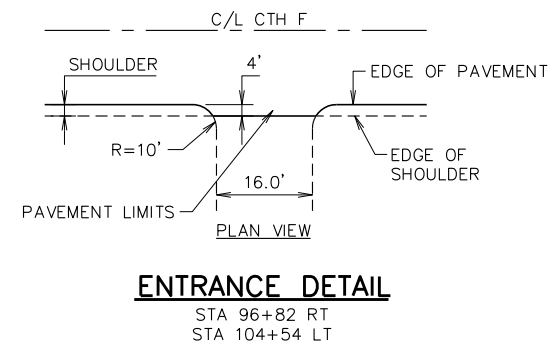
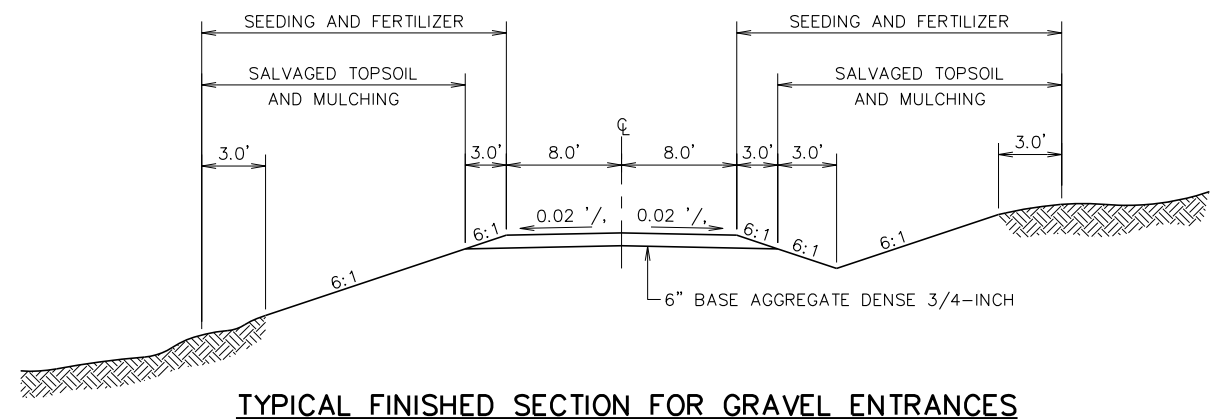
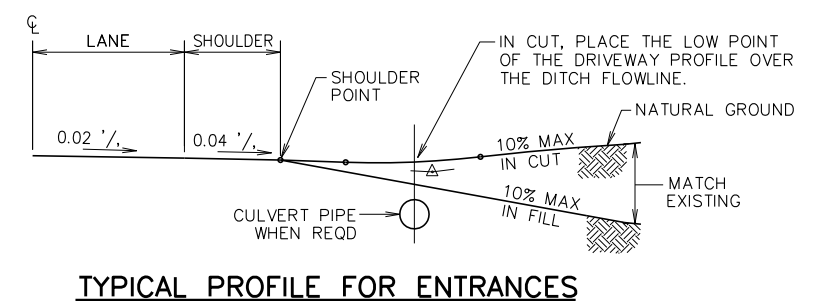
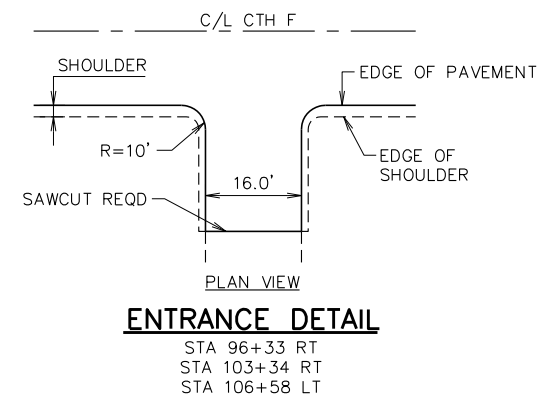
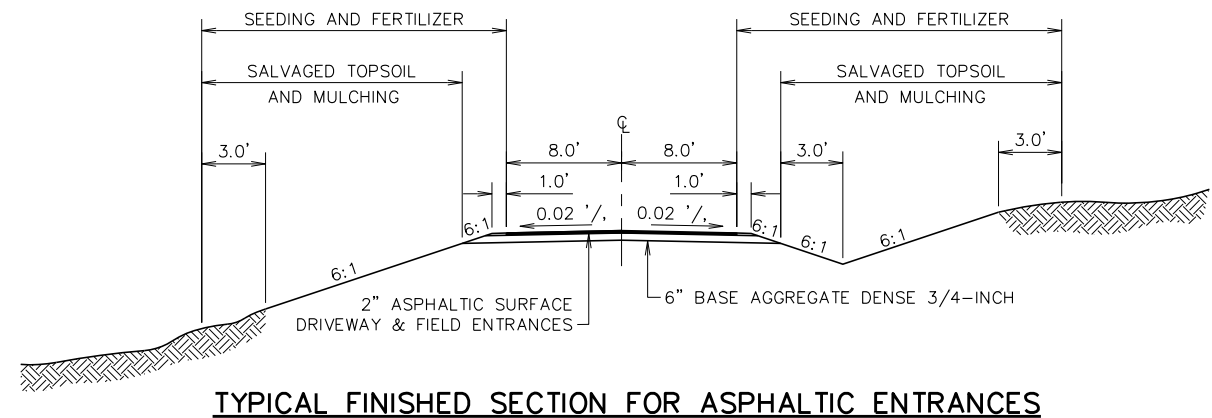
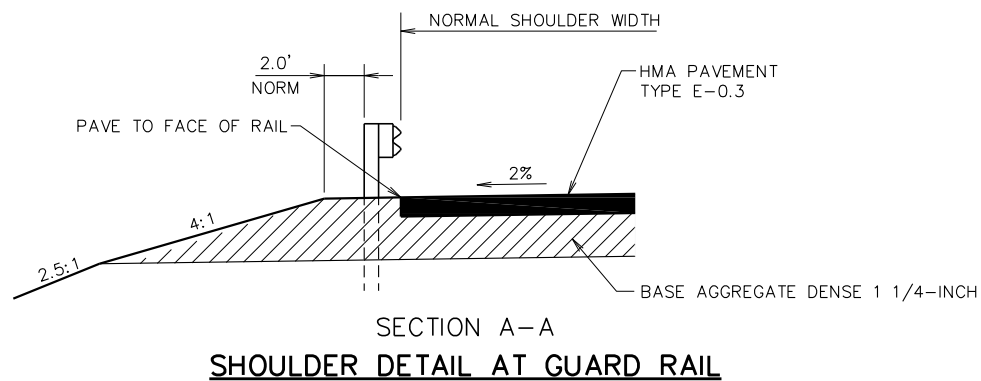
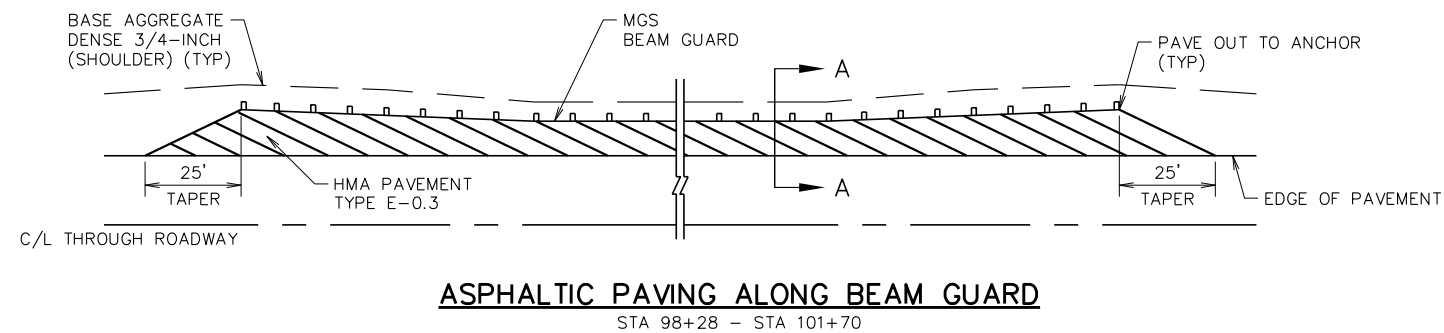
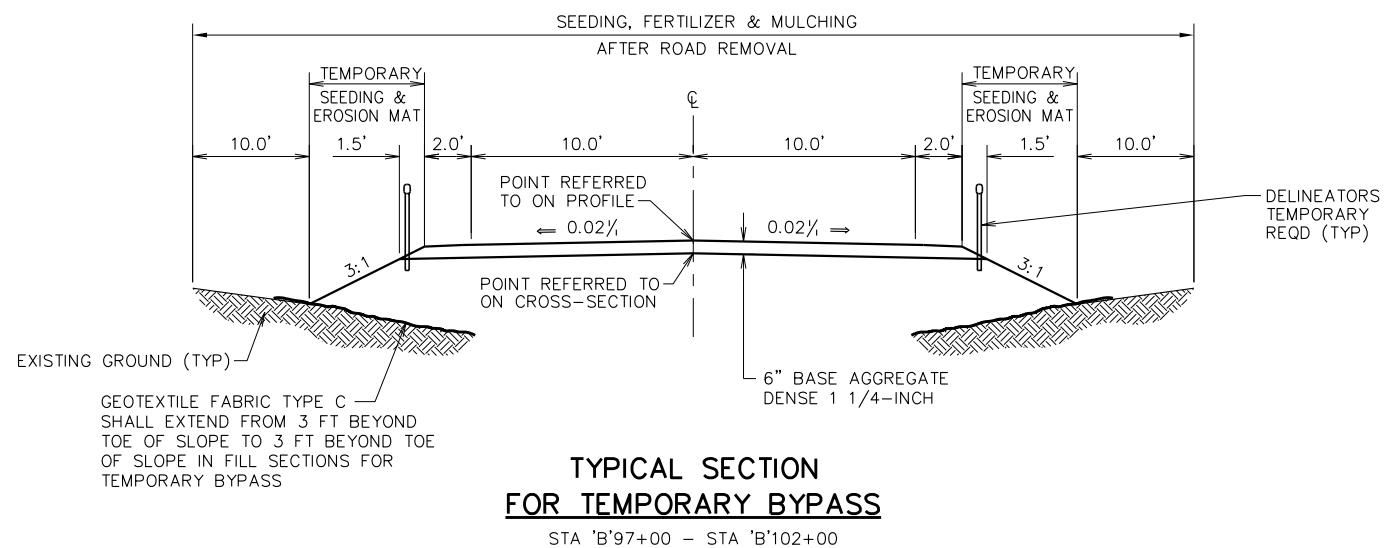
TYPICAL FINISHED SECTION WITH CURB & GUTTER

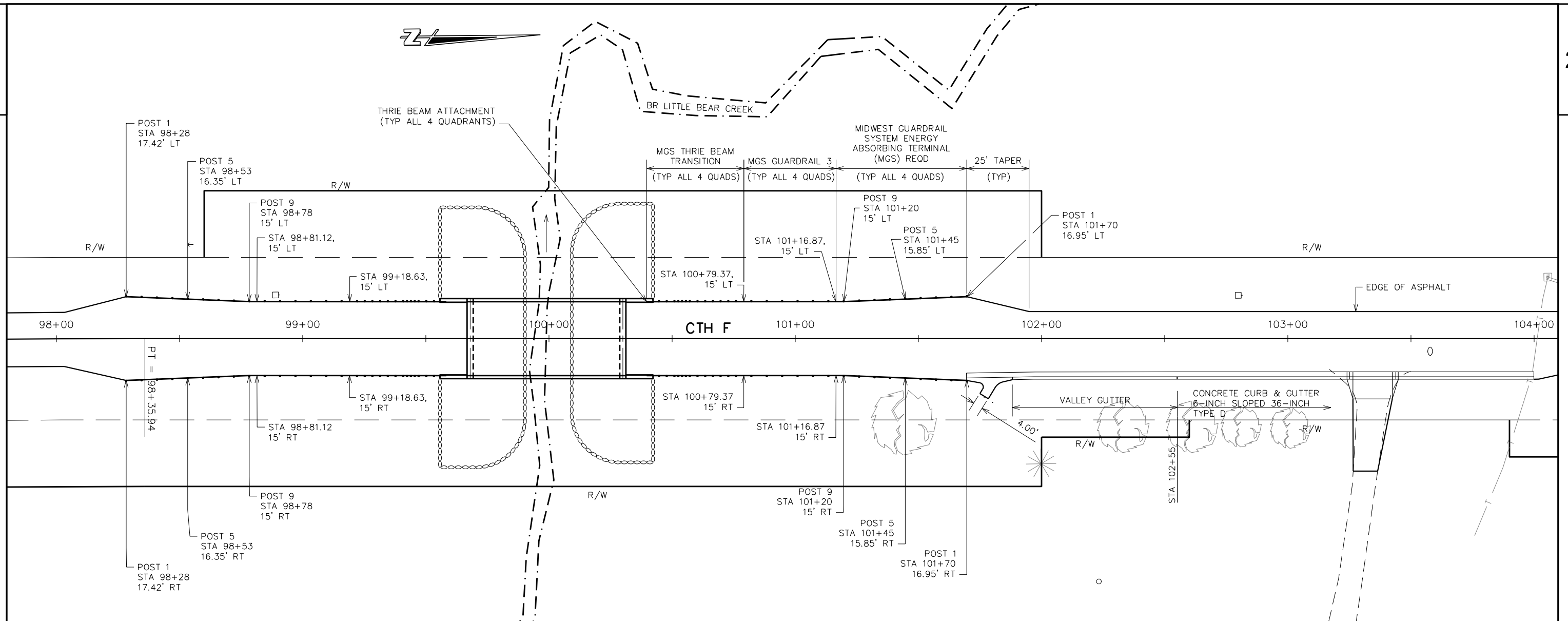
STATION 101+73 - STA 104+00
STATION 95+50 - STA 97+00

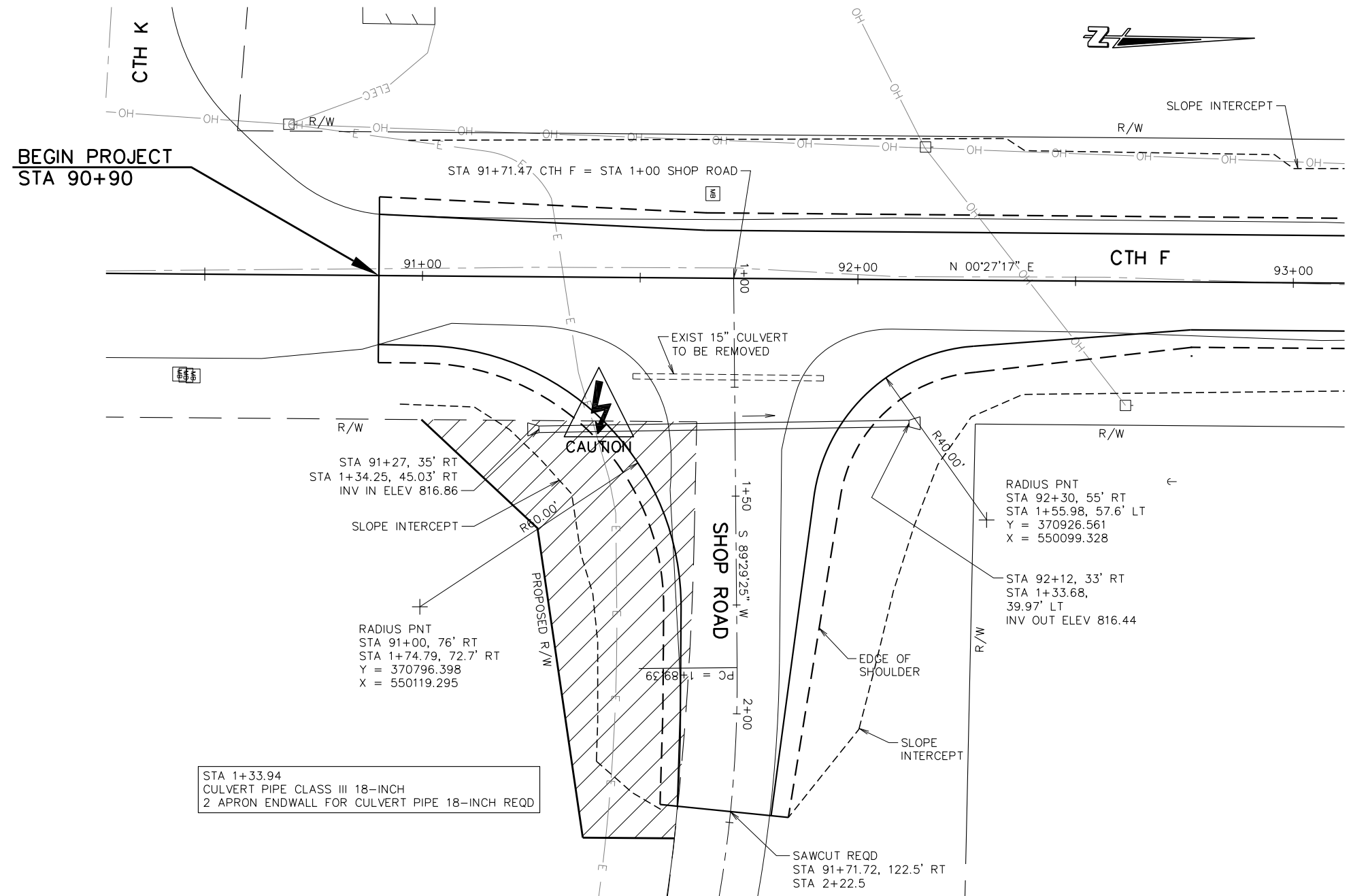


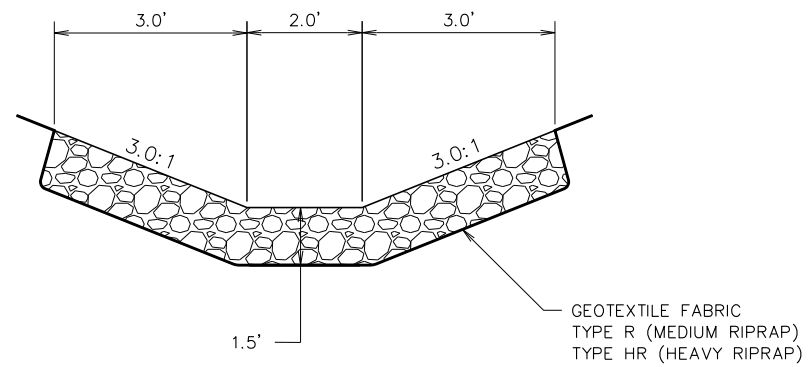
TYPICAL FINISHED SECTION SHOP ROAD

STATION 1+34 - STA 2+22



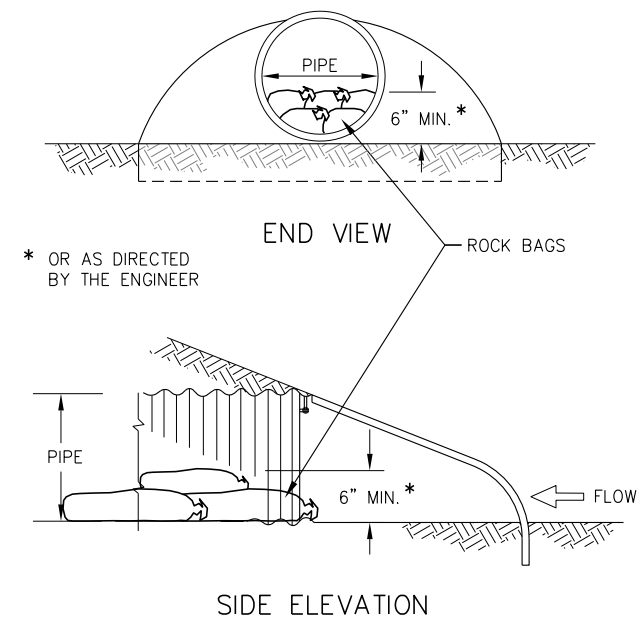






TYPICAL PLACEMENT OF MEDIUM & HEAVY RIPRAP

STA 97+50	29'	RT	MEDIUM RIPRAP
STA 98+00	30'	RT	MEDIUM RIPRAP
STA 98+50	37'	RT	MEDIUM RIPRAP
STA 98+78	37'	LT	MEDIUM RIPRAP
STA 99+00	47'	RT	MEDIUM RIPRAP
STA 101+75	25'	RT	HEAVY RIPRAP
STA 104+25	45'	LT	HEAVY RIPRAP

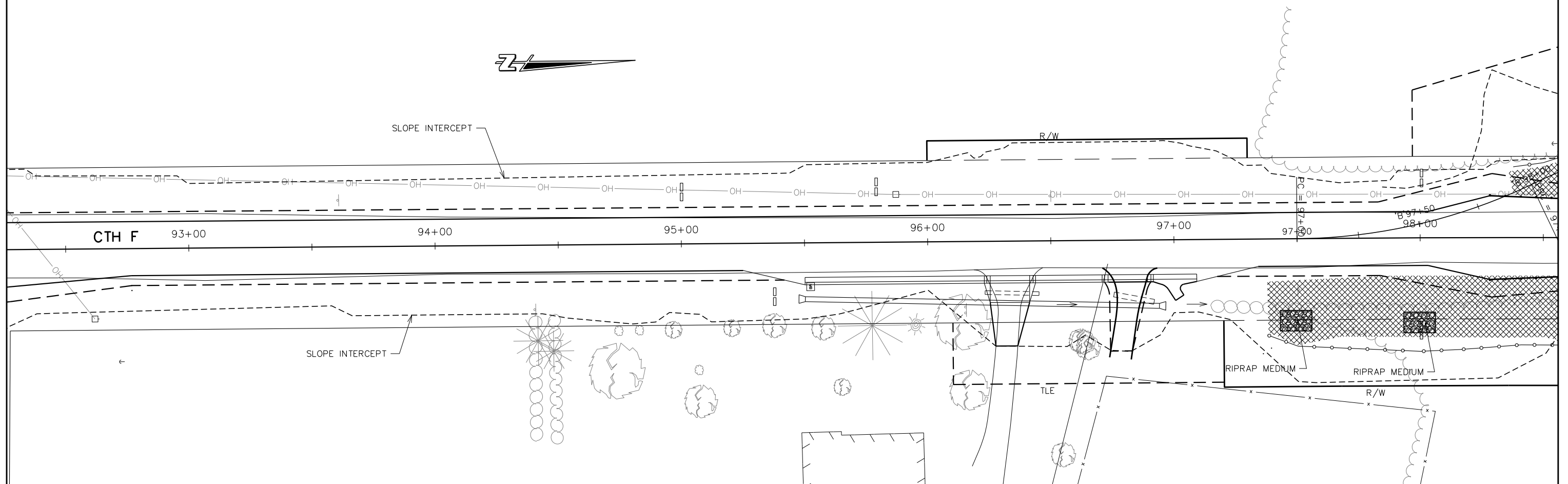
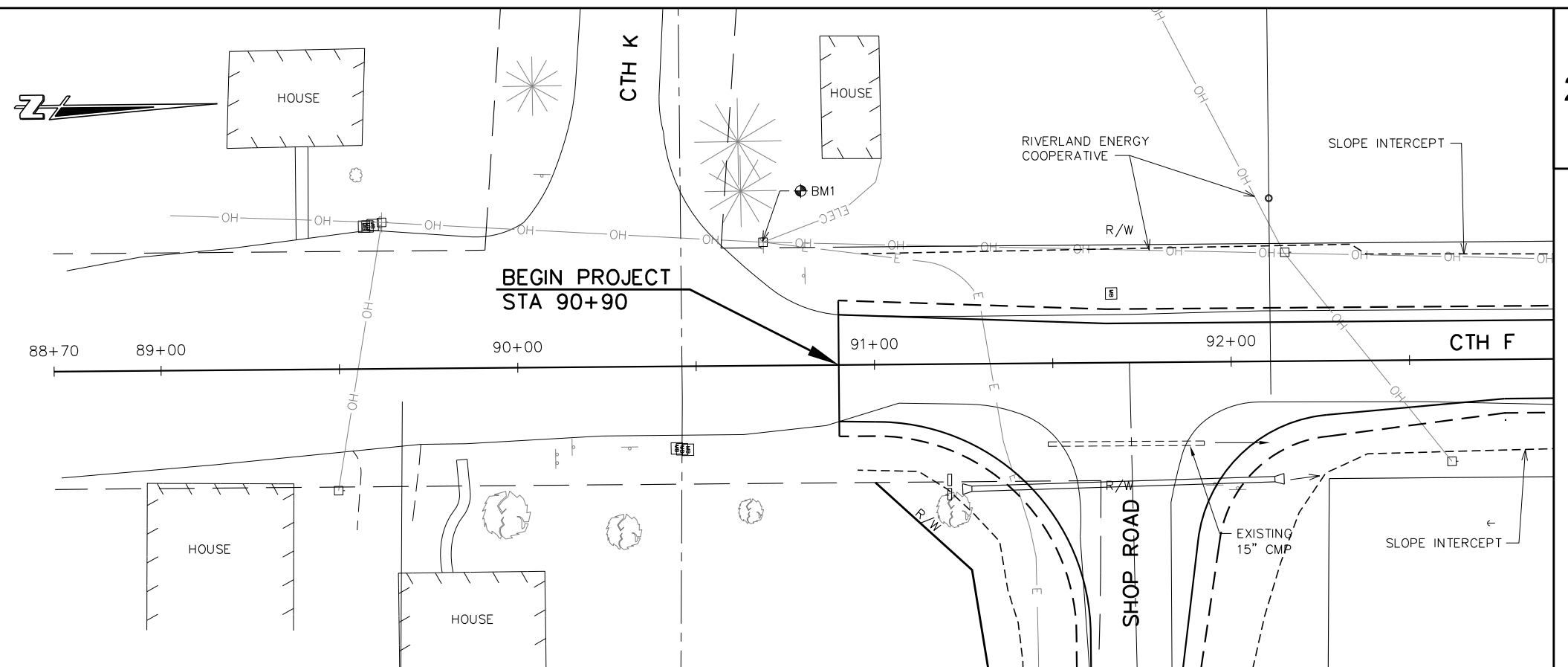


CULVERT PIPE CHECK

NOT TO SCALE

LEGEND

SILT FENCE	
TEMP DITCH CHECKS	
EROSION MAT CLASS I TYPE B	
RIPRAP	



PROJECT NO: 7160-01-70

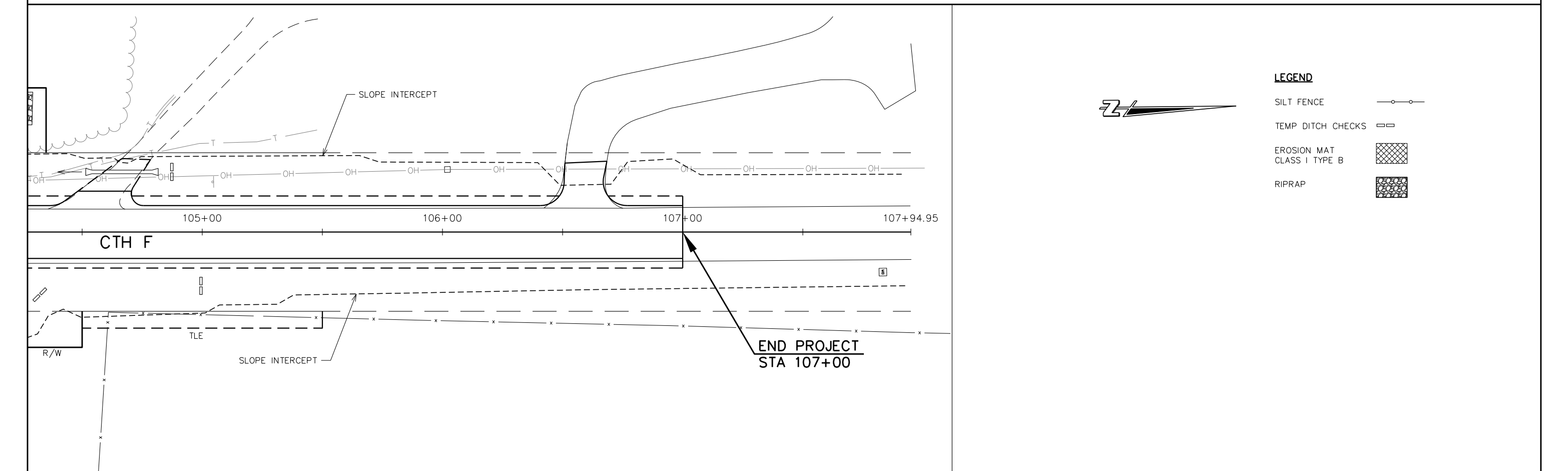
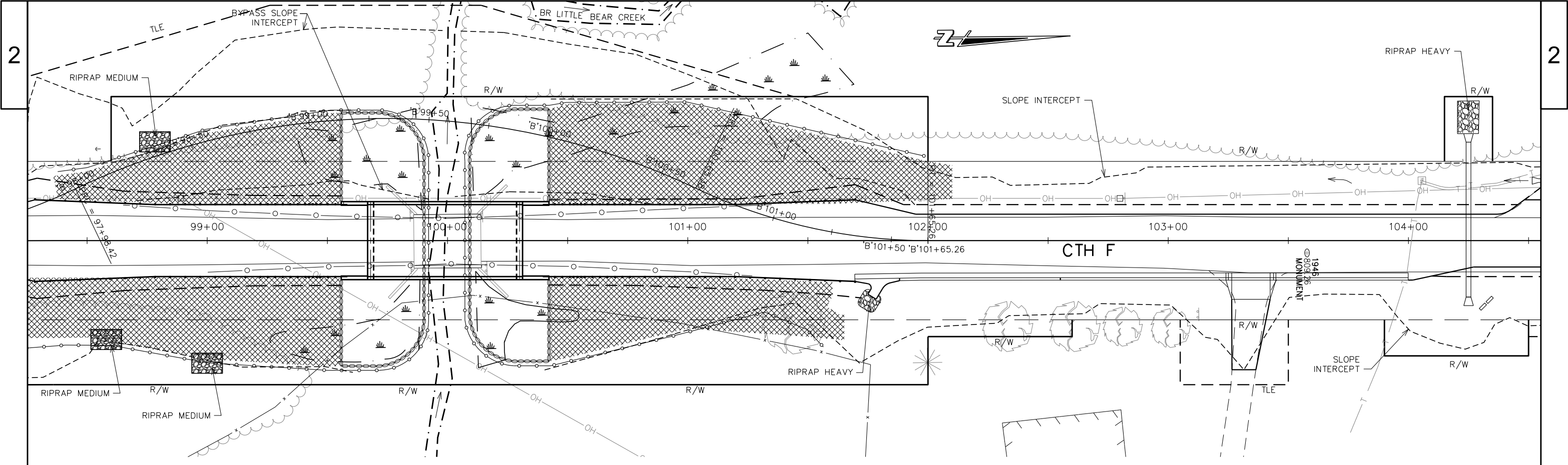
HWY: CTH F

COUNTY: BUFFALO

EROSION CONTROL

SHEET

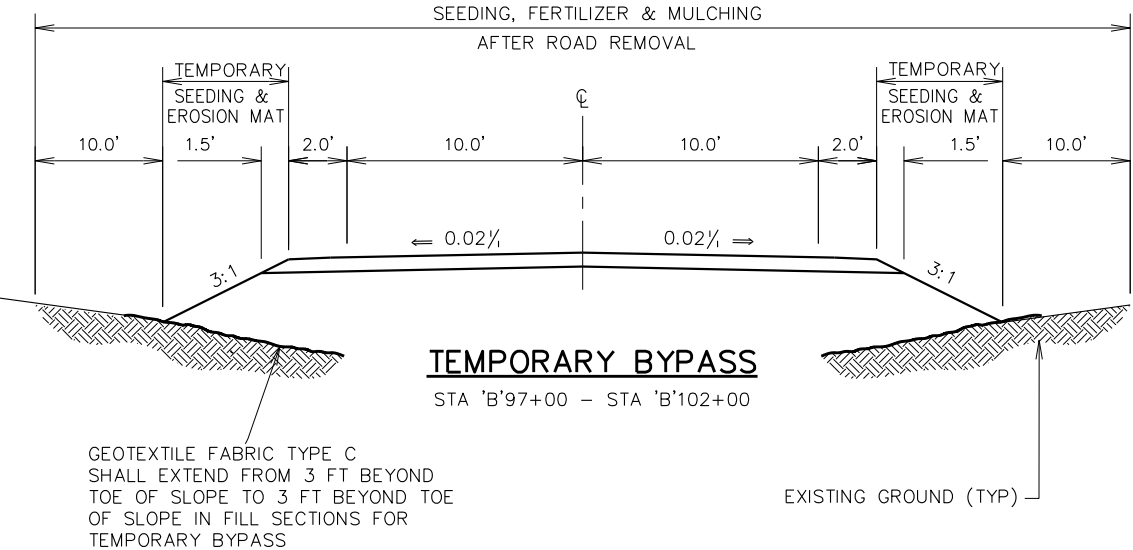
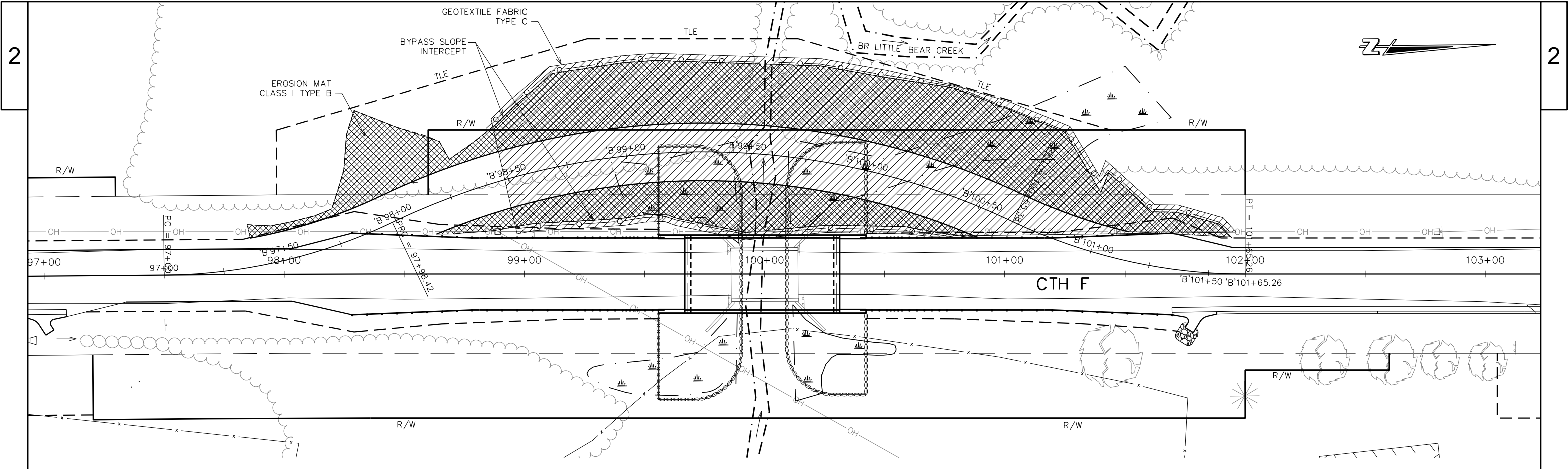
E



LEGEND

- SILT FENCE
- TEMP DITCH CHECKS
- EROSION MAT CLASS I TYPE B
- RIPRAP

PROJECT NO: 7160-01-70	HWY: CTH F	COUNTY: BUFFALO	EROSION CONTROL	SHEET	E
------------------------	------------	-----------------	-----------------	-------	---



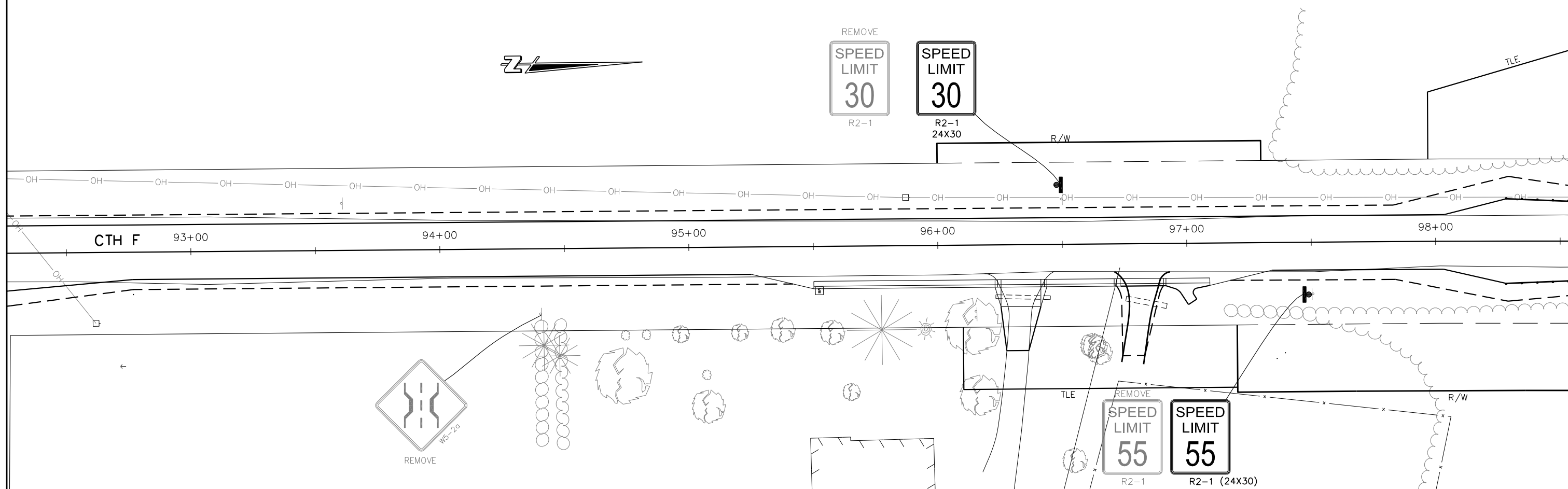
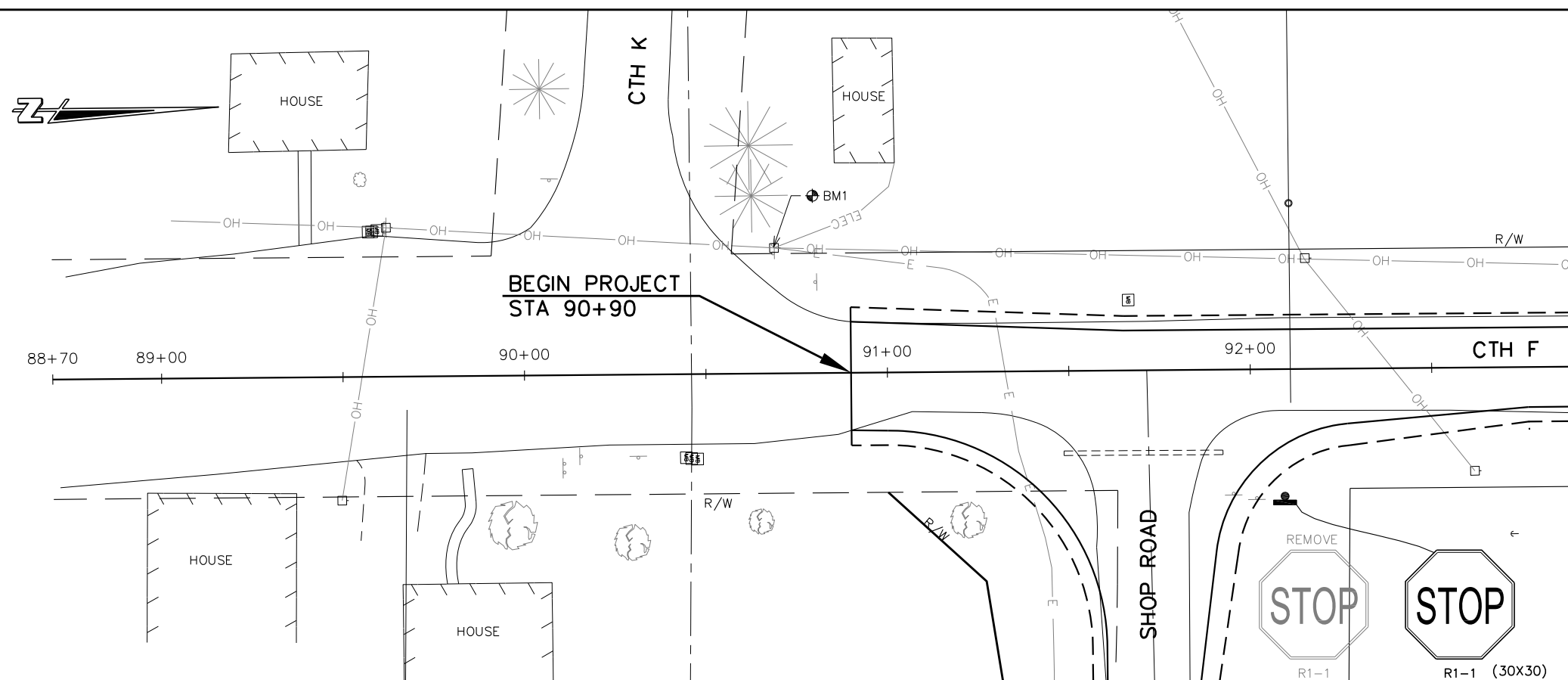
- LEGEND**
- GEOTEXTILE FABRIC TYPE C
 - EROSION MAT CLASS I TYPE B
 - SILT FENCE

LEGEND

EXISTING SIGN ON WOOD POST



PROPOSED SIGN ON WOOD POST



PROJECT NO: 7160-01-70

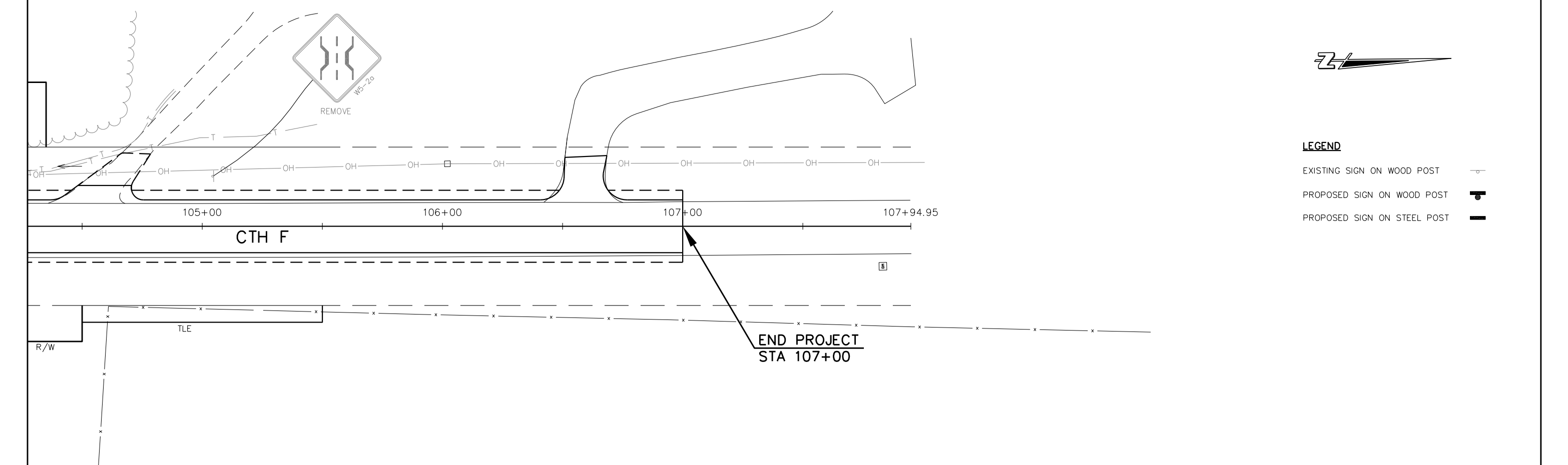
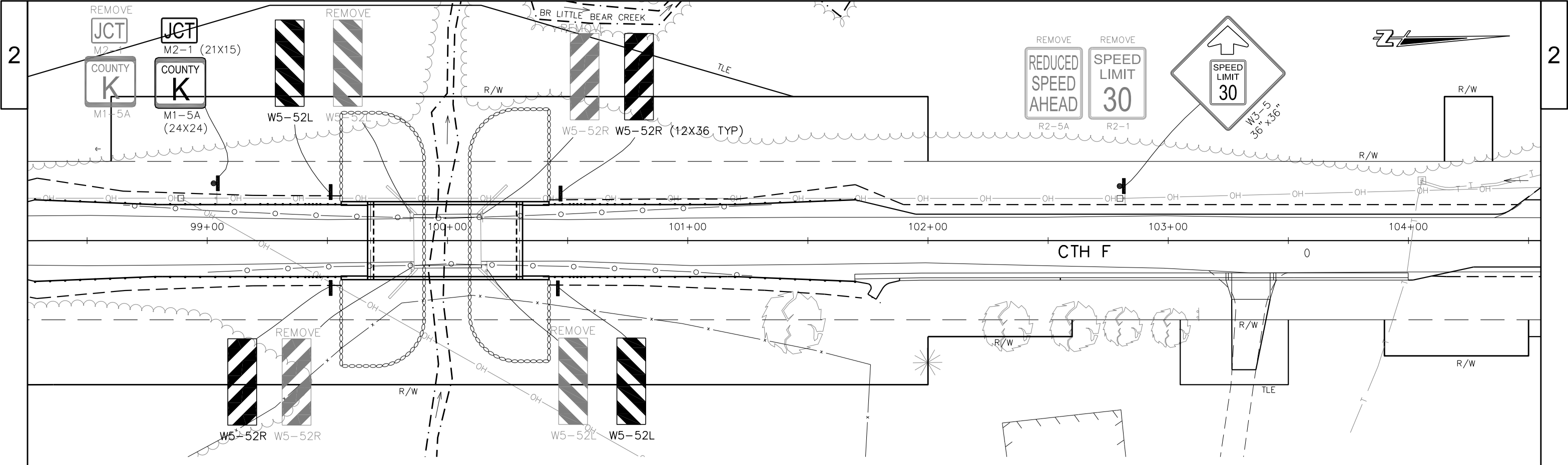
HWY: CTH F

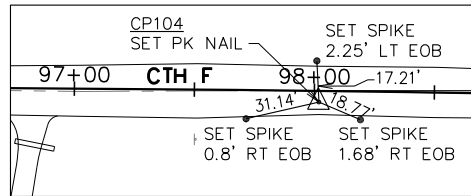
COUNTY: BUFFALO

PERMANENT SIGNING

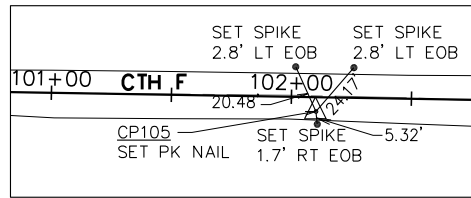
SHEET

E





CP104



CP105

COORDINATES

DESCRIPTION	STATION	LOCATION	NORTHING	EASTING
CP 102	90+30.41	10.512' RT OF C/L	370727.334	550053.257
BEGIN PROJECT	90+90	C/L	370787.002	550043.218
CP 163	92+09.99	34.371' RT OF C/L	370906.714	550078.541
CP 108	96+25.74	8.049' LT OF C/L	371322.784	550039.422
PC	97+67.73	C/L	371464.711	550048.598
PI	98+01.84	34.106' ALONG T/L	371498.816	550048.869
CP 104	98+01.96	4.716' RT OF C/L	371498.880	550053.659
PT	98+35.94	C/L	371532.918	550049.431
CP 107	100+73.46	8.328' LT OF C/L	371770.537	550045.014
CP 105	102+10.32	5.967' RT OF C/L	371907.148	550061.561
CP 106	103+76.61	8.940' LT OF C/L	372073.663	550049.394
END PROJECT	107+00.00	C/L	372396.858	550063.657

NOTE: COORDINATES AND BEARINGS ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), BUFFALO COUNTY.

BENCHMARK

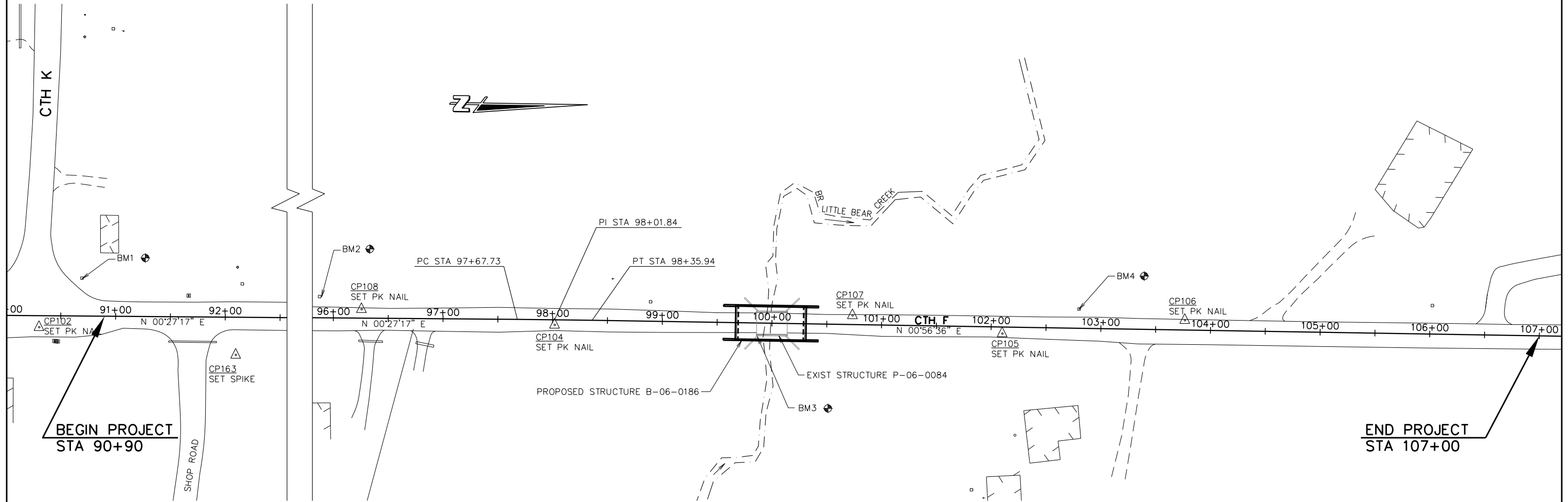
NO.	STATION	DESCRIPTION	ELEV
1	90+69±	34.8' LT, MAG NAIL IN PP	822.37
2	95+89±	19.0' LT, MAG NAIL IN PP	816.89
3	99+87±	SE CORNER BRIDGE, 12.0' RT	795.48
4	102+80±	17.2' LT, MAG NAIL IN PP	805.54

ORIGIN OF LEVEL

GPS BASE STATION: URNE
LATITUDE: N44°29'55.58888"
LONGITUDE: W91°53'33.82504"
ELLIPSOID HEIGHT: 719.136
DATUM: NAVD 88

C/L CURVE DATA

PC = 97+67.73
PI = 98+01.84
PT = 98+35.94
D = 00°42'58"
Δ = 00°29'19"
R = 8000.00'
T = 34.11'
L = 68.21'
C = 68.21'
SE = NC



DATE 04MAR14		E S T I M A T E O F Q U A N T I T I E S			
LINE				7160-01-71	
NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	QUANTITY
0010	201.0105	CLEARING	STA	5.000	5.000
0020	201.0205	GRUBBING	STA	5.000	5.000
0030	203.0100	REMOVING SMALL PIPE CULVERTS	EACH	3.000	3.000
0040	203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS (STATION) 01. 100+00	LS	1.000	1.000
0050	205.0100	EXCAVATION COMMON	CY	6,093.000	6,093.000
0060	206.1000	EXCAVATION FOR STRUCTURES BRIDGES (STRUCTURE) 01. B-06-0186	LS	1.000	1.000
0070	208.0100	BORROW	CY	5,591.000	5,591.000
0080	210.0100	BACKFILL STRUCTURE	CY	220.000	220.000
0090	213.0100	FINISHING ROADWAY (PROJECT) 01. 7160-01-71	EACH	1.000	1.000
0100	305.0110	BASE AGGREGATE DENSE 3/4-INCH	TON	325.000	325.000
0110	305.0120	BASE AGGREGATE DENSE 1 1/4-INCH	TON	3,420.000	3,420.000
0120	455.0105	ASPHALTIC MATERIAL PG58-28	TON	53.000	53.000
0130	455.0605	TACK COAT	GAL	115.000	115.000
0140	460.1100	HMA PAVEMENT TYPE E-0.3	TON	890.000	890.000
0150	460.2000	INCENTIVE DENSITY HMA PAVEMENT	DOL	580.000	580.000
0160	465.0120	ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES	TON	15.000	15.000
0170	465.0315	ASPHALTIC FLUMES	SY	22.000	22.000
0180	502.0100	CONCRETE MASONRY BRIDGES	CY	146.000	146.000
0190	502.3200	PROTECTIVE SURFACE TREATMENT	SY	260.000	260.000
0200	503.0136	PRESTRESSED GIRDER TYPE I 36-INCH	LF	252.000	252.000
0210	505.0405	BAR STEEL REINFORCEMENT HS BRIDGES	LB	3,780.000	3,780.000
0220	505.0605	BAR STEEL REINFORCEMENT HS COATED BRIDGES	LB	18,590.000	18,590.000
0230	506.2605	BEARING PADS ELASTOMERIC NON-LAMINATED	EACH	8.000	8.000
0240	506.4000	STEEL DIAPHRAGMS (STRUCTURE) 01. B-06-0186	EACH	3.000	3.000
0250	513.4060	RAILING TUBULAR TYPE M (STRUCTURE) 01. B-06-0186	LS	1.000	1.000
0260	516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	20.000	20.000
0270	520.0118	CULVERT PIPE CLASS III 18-INCH	LF	175.000	175.000
0280	520.1018	APRON ENDWALLS FOR CULVERT PIPE 18-INCH	EACH	6.000	6.000
0290	522.0124	CULVERT PIPE REINFORCED CONCRETE CLASS III 24-INCH	LF	145.000	145.000
0300	522.1024	APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 24-INCH	EACH	2.000	2.000
0310	526.0100	TEMPORARY STRUCTURE (STATION) 01. 99'B'+56	LS	1.000	1.000
0320	550.2106	PILING CIP CONCRETE 10 3/4 X 0.365-INCH	LF	625.000	625.000
0330	601.0553	CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE D	LF	375.000	375.000
0340	606.0200	RIPRAP MEDIUM	CY	5.000	5.000
0350	606.0300	RIPRAP HEAVY	CY	559.000	559.000
0360	612.0106	PIPE UNDERDRAIN 6-INCH	LF	20.000	20.000
0370	612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	110.000	110.000
0380	614.0920	SALVAGED RAIL	LF	439.000	439.000
0390	614.2300	MGS GUARDRAIL 3	LF	150.000	150.000
0400	614.2500	MGS THRIE BEAM TRANSITION	LF	156.000	156.000
0410	614.2610	MGS GUARDRAIL TERMINAL EAT	EACH	4.000	4.000
0420	619.1000	MOBILIZATION	EACH	1.000	1.000
0430	625.0500	SALVAGED TOPSOIL	SY	7,847.000	7,847.000
0440	627.0200	MULCHING	SY	7,300.000	7,300.000
0450	628.1504	SILT FENCE	LF	2,010.000	2,010.000

DATE 04MAR14		E S T I M A T E O F Q U A N T I T I E S			
LINE				7160-01-71	
NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	QUANTITY
0460	628.1520	SILT FENCE MAINTENANCE	LF	3,510.000	3,510.000
0470	628.1905	MOBILIZATIONS EROSION CONTROL	EACH	4.000	4.000
0480	628.1910	MOBILIZATIONS EMERGENCY EROSION CONTROL	EACH	2.000	2.000
0490	628.2004	EROSION MAT CLASS I TYPE B	SY	3,473.000	3,473.000
0500	628.7504	TEMPORARY DITCH CHECKS	LF	120.000	120.000
0510	628.7555	CULVERT PIPE CHECKS	EACH	16.000	16.000
0520	629.0210	FERTILIZER TYPE B	CWT	7.000	7.000
0530	630.0120	SEEDING MIXTURE NO. 20	LB	286.000	286.000
0540	630.0200	SEEDING TEMPORARY	LB	241.000	241.000
0550	633.1100	DELINEATORS TEMPORARY	EACH	24.000	24.000
0560	634.0612	POSTS WOOD 4X6-INCH X 12-FT	EACH	5.000	5.000
0570	634.0808	POSTS TUBULAR STEEL 2X2-INCH X 8-FT	EACH	4.000	4.000
0580	637.2230	SIGNS TYPE II REFLECTIVE F	SF	43.440	43.440
0590	638.2602	REMOVING SIGNS TYPE II	EACH	11.000	11.000
0600	642.5001	FIELD OFFICE TYPE B	EACH	1.000	1.000
0610	643.0100	TRAFFIC CONTROL (PROJECT) 01. 7160-01-71	EACH	1.000	1.000
0620	643.0300	TRAFFIC CONTROL DRUMS	DAY	780.000	780.000
0630	643.0420	TRAFFIC CONTROL BARRICADES TYPE III	DAY	520.000	520.000
0640	643.0705	TRAFFIC CONTROL WARNING LIGHTS TYPE A	DAY	208.000	208.000
0650	643.0715	TRAFFIC CONTROL WARNING LIGHTS TYPE C	DAY	468.000	468.000
0660	643.0900	TRAFFIC CONTROL SIGNS	DAY	1,040.000	1,040.000
0670	645.0105	GEOTEXTILE FABRIC TYPE C	SY	1,880.000	1,880.000
0680	645.0120	GEOTEXTILE FABRIC TYPE HR	SY	965.000	965.000
0690	645.0130	GEOTEXTILE FABRIC TYPE R	SY	50.000	50.000
0700	650.4500	CONSTRUCTION STAKING SUBGRADE	LF	1,990.000	1,990.000
0710	650.5000	CONSTRUCTION STAKING BASE	LF	1,990.000	1,990.000
0720	650.6000	CONSTRUCTION STAKING PIPE CULVERTS	EACH	5.000	5.000
0730	650.6500	CONSTRUCTION STAKING STRUCTURE LAYOUT (STRUCTURE) 01. B-06-0186	LS	1.000	1.000
0740	650.9910	CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT) 01. 7160-01-71	LS	1.000	1.000
0750	650.9920	CONSTRUCTION STAKING SLOPE STAKES	LF	1,990.000	1,990.000
0760	690.0150	SAWING ASPHALT	LF	75.000	75.000
0770	715.0502	INCENTIVE STRENGTH CONCRETE STRUCTURES	DOL	876.000	876.000
0780	ASP.1T0A	ON-THE-JOB TRAINING APPRENTICE AT \$5.00/HR	HRS	1,200.000	1,200.000
0790	ASP.1T0G	ON-THE-JOB TRAINING GRADUATE AT \$5.00/HR	HRS	300.000	300.000
0800	SPV.0060	SPECIAL 01. UTILITY LINE OPENING	EACH	1.000	1.000

CLEARING AND GRUBBING

STATION TO STATION	LOCATION	201.0105	201.0205
		CLEARING STA	GRUBBING STA
97+00 - 102+00	MAINLINE	5	5
TOTAL		5	5

FINISHING ROADWAY

LOCATION	213.0100 EACH
PROJECT 7160-01-71	1

CULVERT PIPE AND ENDWALLS

STATION	LOCATION	520.0118	THICKNESS	520.1018	522.0124	522.1024
		CULVERT PIPE CLASS III, 18-INCH	STEEL INCHES	AEW FOR CULVERT PIPE, 18-INCH EACH	CULVERT PIPE REINFORCED CONC. CLASS III 24-INCH LF	AEW FOR CULVERT PIPE REINF. CONC. 24-INCH EACH
91+70, RT	SHOP RD.	85	0.064	2	--	--
95+50 - 96-95 RT	PE	--	--	--	145	2
104+25	MAINLINE	65	0.064	2	--	--
104+54, LT	PE	25	0.064	2	--	--
TOTAL		175		6	145	2

REMOVING SMALL PIPE CULVERTS

STATION TO STATION	LOCATION	203.0100 EACH	DESCRIPTION
91+72	RT	1	15" CMP
96+34	RT	1	18" CMP
96+82	RT	1	24" CMP
TOTALS		3	

BASE AGGREGATE DENSE

STATION TO STATION	LOCATION	305.0110	305.0120
		3/4-INCH SHLD TON	1 1/4-INCH BASE TON
97B+50 - 101B+50	BYPASS	--	270
90+90 - 99+67	MAINLINE	162	1570
100+31 - 107+00	MAINLINE	132	1230
1+15 - 2+22.5	SHOP RD.	19	350
103+40	P.E. RT	6	--
104+50	P.E. LT	6	--
TOTALS		325	3420

CONCRETE C&G, 4-INCH SLOPED, 36-INCH TYPE D

STATION TO STATION	LOCATION	601.0553 LF
95+50 - 97+00	RT	150
101+75 - 104+00	RT	225
TOTALS		375

SALVAGED RAIL

STATION TO STATION	LOCATION	614.0920 LF
98+65 - 99+85	LT	120
99+00 - 99+85	RT	85
100+14 - 101+35	LT	121
100+14 - 101+27	RT	113
TOTAL		439

ASPHALTIC SURFACE
DRIVEWAYS AND FIELD ENTERANCES

STATION	LOCATION	465.0120 TON
96+34	RT. PE	6
103+35	RT. PE	4
106+58	LT. PE	5
TOTAL		15

ASPHALT ITEMS

STATION TO STATION	LOCATION	455.0105	455.0605	460.1100	460.2000
		ASPH. MAT'L PG58-28 TON	TACK COAT GAL	HMA PAVEMENT TYPE E-0.3 TON	INCENTIVE DENSITY HMA PAVEMENT DOL
90+90 - 99+67	ROADWAY	27	58	452	290
100+31 - 107+00	ROADWAY	20	45	343	220
1+15 - 2+22.5	SHOP RD.	6	12	95	70
TOTALS		53	115	890	580

RIPRAP

STATION	LOCATION	606.0200	606.0300
		RIPRAP MEDIUM CY	RIPRAP HEAVY CY
97+50	29' RT	1	--
98+00	30' RT	1	--
98+50	37' RT	1	--
98+78	37' LT	1	--
99+00	47' RT	1	--
101+75	25' RT	--	4
104+25	45' LT	--	10
TOTAL		5	14

MGS THRIE BEAM TRANSITION

		614.2500
STATION TO STATION	LOCATION	LF
99+19 - 99+57	LT	39
99+19 - 99+57	RT	39
100+31 - 100+79	LT	39
100+31 - 100+79	RT	39
TOTALS		156

MGS GUARDRAIL 3

		614.2300
STATION TO STATION	LOCATION	LF
98+81 - 99+19	LT	37.5
98+81 - 99+19	RT	37.5
100+79 - 101+17	LT	37.5
100+79 - 101+17	RT	37.5
TOTALS		150

MGS GUARDRAIL TERMINAL EAT

		614.2610
STATION TO STATION	LOCATION	EACH
98+28 - 98+81	LT	1
98+28 - 98+81	RT	1
101+17 - 101+70	LT	1
101+17 - 101+70	RT	1
TOTALS		4

ASPHALTIC FLUMES

		465.0315
STATION	LOCATION	SY
97+00	RT	11
101+78	RT	11
TOTALS		22

REMOVING SIGNS TYPE II

		638.2602
LOCATION	EACH	
SHOP ROAD	1	
94+40 RT	1	
96+50 LT	1	
97+50 RT	1	
99+00 LT	1	
102+80 LT	1	
105+05 LT	1	
NE BRIDGE CORNER	1	
NW BRIDGE CORNER	1	
SE BRIDGE CORNER	1	
SW BRIDGE CORNER	1	
TOTALS		11

MOBILIZATION

LOCATION	619.1000 EACH
PROJECT 7160-01-71	1

RESTORATION

STATION TO STATION	LOCATION	625.0500 SALV. TOPSOIL	627.0200 MULCHING	628.2004 EROSION MAT CLASS I TYPE B	629.0210 FERTILIZER TYPE B	630.0120 SEEDING NO. 20	630.0200 SEEDING TEMPORARY
		SY	SY	SY	CWT	LB	LB
97B+50 - 101B+50	BYPASS	1270	2925	1270	2	79	34
90+90 - 99+55	LT	1587	1233	355	1.1	50	50
100+43 - 107+00	LT	1350	732	618	1.0	42	42
92+50 - 99+50	RT	1649	949	700	1.2	51	51
100+50 - 107+00	RT	1291	961	330	1.0	41	41
SHOP RD.	-	100	100	---	0.1	3	3
UNDISTRIBUTED	PROJECT	600	400	200	0.6	20	20
TOTAL		7847	7300	3473	7	286	241

EROSION CONTROL ITEMS

STATION TO STATION	LOCATION	628.1504 SILT FENCE	628.1520 SILT FENCE MAINTENANCE	628.7504 TEMPORARY DITCH CHECKS	628.7555 CULVERT PIPE CHECKS
		LF	LF	LF	EACH
97B+50 - 101B+50	BYPASS	510	510	---	---
97+40 - 99+95	MAINLINE	500	1000	---	---
100+10 - 102+10	MAINLINE	500	1000	---	---
91+25	RT	---	---	12	---
95+00	LT & RT	---	---	24	---
96+00	LT	---	---	12	---
95+50	RT	---	---	---	4
98+00	LT	---	---	12	---
98+50	RT	---	---	12	---
103+00	LT	---	---	12	---
103+75	LT	---	---	12	---
104+25	RT	---	---	---	4
105+00	LT	---	---	---	4
UNDISTRIBUTED		500	1000	24	4
TOTAL		2010	3510	120	16

MOBILIZATIONS EROSION CONTROL
MOBILIZATIONS EMERGENCY EROSION CONTROL

		628.1905 EACH	628.1910 EMERGENCY EACH
PROJECT ID 7160-01-71		4	2
TOTAL		4	2

FIELD OFFICE TYPE B

LOCATION	642.5001 EACH
PROJECT 7160-01-71	1

SPECIAL ITEMS

LOCATION	SPV.0060.01 UTILITY LINE OPENING EACH
104+25 41' LT	1

GEOTEXTILE FABRIC

STATION	LOCATION	645.0120 GEOTEXTILE FABRIC TYPE HR	645.0130 GEOTEXTILE FABRIC TYPE R	645.0105 GEOTEXTILE FABRIC TYPE C
		SY	SY	SY
101+75	25' RT	20	--	--
104+25	45' LT	20	--	--
97+50	29' RT	--	10	--
98+00	30' RT	--	10	--
98+50	37' RT	--	10	--
98+75	37' LT	--	10	--
99+00	47' RT	--	10	--
B'98+50 - 'B'100+75	BYPASS	--	--	1880
TOTAL		40	50	1880

TRAFFIC CONTROL

LOCATION	CALENDAR DAYS	633.1100 DELINEATORS TEMPORARY	643.0100 TRAFFIC CONTROL	643.0300 DRUMS	643.0420 BARRICADES TYPE III	643.0705 WARNING LIGHTS TYPE A	643.0715 WARNING LIGHTS TYPE C	643.0900 SIGNS
		EACH	EACH	DAYS	DAYS	DAYS	DAYS	DAYS
BYPASS	26	24	--	780	520	208	468	1040
PROJECT 7160-01-71	90	--	1	--	--	--	--	--
TOTALS		24	1	780	520	208	468	1040

SIGNS REFLECTIVE & POSTS

LOCATION	637.2230 SIGNS TYPE II REFLECTIVE F	634.0612 WOOD POSTS 4 x 6-INCH x 12-FT	634.0808 POSTS TUBULAR STEEL 2X2-INCH X 8-FT	DESCRIPTION
	SF	EACH	EACH	
SE BRIDGE CORNER	3	--	1	W5-52R CHEVRON
SW BRIDGE CORNER	3	--	1	W5-52L CHEVRON
NE BRIDGE CORNER	3	--	1	W5-52R CHEVRON
NW BRIDGE CORNER	3	--	1	W5-52L CHEVRON
SW BRIDGE QUADRANT	2.19	1	--	JUNCTION M2-1
SW BRDG QUAD BY JCT	4	--	--	COUNTY K M1-5A
SOUTH OF BRIDGE	5	1	--	SPEED LIMIT R-2
SOUTH OF BRIDGE	5	1	--	SPEED LIMIT R-2
NORTH OF BRIDGE	9	1	--	REDUCED SPEED AHEAD 30 MPH W3-5
SHOP ROAD	6.25	1	--	STOP SIGN R-1
TOTALS	43.44	5	4	

CONSTRUCTION STAKING

LOCATION	650.4500 SUBGRADE	650.5000 BASE	650.6000 PIPE CULVERTS	650.9910 SUPPLEMENTAL CONTROL (7160-01-71)	650.9920 SLOPE STAKES
	LF	LF	EACH	LS	LF
97B+50 - 101B+50	325	325	--	--	325
90+90 - 107+00	1545	1545	--	--	1545
1+00 - 2+20	120	120	--	--	120
91+70	--	--	1	--	--
96+33	--	--	1	--	--
96+82	--	--	1	--	--
104+00	--	--	1	--	--
104+54	--	--	1	--	--
TOTALS	1990	1990	5	1	1990

SAWING ASPHALT

STATION TO STATION	LOCATION	690.0150 LF
90+90	BEGIN PROJECT	30
107+00	END PROJECT	23
2+22	SHOP RD.	22
TOTAL		75

TEMPORARY STRUCTURE

LOCATION	526.0100 LS
B'99+56	1

Division	From / To Station	Location	Common Excavation (CY) (item # 205.0100)		Salvaged / Unusable Pavement Material (1)	Available Material (2,3)	Unexpanded Fill	Expanded Fill	Mass Ordinate + / - (4)	Waste	Borrow (CY) (item #208.0100)	Comment:
			Cut	EBS Excavation				Factor 1.25				
1	B97+75 - B101+00	Temp. Bypass Construction	171	0	0	171	2977	3721	-3550	0	3550	
Division 1 Subtotal			171	0	0	171	2977	3721	-3550	0	3550	
2	B97+75 -B01+00	Temp. Bypass Removal	2977	0	0	0	0	0	0	0	0	
Division 2 Subtotal			2977	0	0	0	0	0	0	0	0	
3	91+00 - 107+00	CTH F Mainline Construction	2946	0	0	5922	6371	7964	-2041	0	2041	See Note #3
Division 3 Subtotal			2946	0	0	5922	6371	7964	-2041	0	2041	
Grand Total			6093	0	0	6093	9347	11684	-5591	0	5591	
			Total Common Exc		6093	Total Borrow = 5591						

1) Salvaged/Unsuable Pavement Material is included in Cut.
2) Available Material = Cut - Salvaged/Unusuable Pavement Material
3) Available Material for CTH F Mainline = Common Ex. CTH F Mainline + Common Excavation Temp. Bypass Removal
4) 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.

CONVENTIONAL SYMBOLS

SECTION LINE	---
1/4 LINE	---
COUNTY LINE	---
CORPORATE LIMITS	////
PROPERTY LINE	---
SIXTEENTH LINE	---
TOWN OR RANGE LINE	---
LIMITED HIGHWAY EASEMENT	---
EXISTING RIGHT OF WAY	---
EXISTING EASEMENT	---
NEW RIGHT OF WAY	---
EXISTING FENCE	---
REFERENCE LINE	---
SLOPE INTERCEPT	---
TREE	☼
TREELINE	~~~~
MARSH	
SECTION MONUMENT	⊕
IRON PIPE	•
REBAR	•
SIGN	+

COMBUSTIBLE FLUIDS
(UNDER PRESSURE)

UTILITIES
SANITARY SEWER
GAS
UNDERGROUND ELECTRIC
TELEPHONE
FIBER OPTIC
TELEPHONE PEDESTAL
POWER POLE
SANITARY MANHOLE

RIGHT-OF-WAY
MARKERS

FEE
TLE

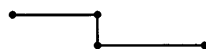
SECTION CORNER



SAN
GAS
E
T
FO

(COMPENSABLE)
(COMPENSABLE)

(SAN)



CONVENTIONAL ABBREVIATIONS

AC	ACRES	PI	POINT OF INTERSECTION
CL	CENTERLINE	PT	POINT OF TANGENCY
CTH	COUNTY TRUNK HIGHWAY	PL	PROPERTY LINE
D	DEGREE OF CURVATURE	MI	MILE
DOC	DOCUMENT	R	RADIUS / RANGE
E	EAST	R/L	REFERENCE LINE
H	HOUSE	R/W	RIGHT OF WAY
IP	IRON PIPE	SEC	SECTION
L	LENGTH OF CURVE	S	SOUTH
LC	LONG CHORD	SE	SOUTHEAST
LCB	LONG CORD BEARING	SW	SOUTHWEST
MON	MONUMENT	STH	STATE TRUNK HIGHWAY
N	NORTH	STA	STATION
NE	NORTHEAST	T	TANGENT / TOWNSHIP
NO.	NUMBER	USH	UNITED STATES HIGHWAY
NW	NORTHWEST	V	VOLUME
P	PAGE	PLE	PERMANENT LIMITED EASEMENT
PC	POINT OF CURVATURE	TLE	TEMPORARY LIMITED EASEMENT
		W	WEST

R/W PROJECT NUMBER
7160-01-00

FEDERAL PROJECT NUMBER

SHEET
NUMBER

4.01

TOTAL
SHEETS

4

PLAT OF RIGHT OF WAY REQUIRED FOR

CTH K - CTH JJ
(BRANCH LITTLE BEAR CREEK BRIDGE & APPROACHES)

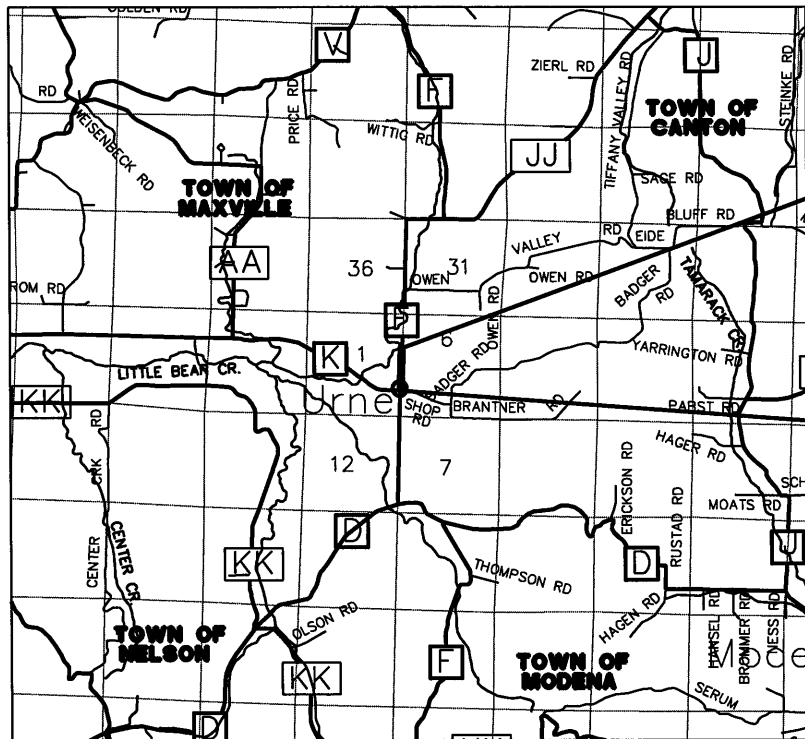
CTH F

BUFFALO COUNTY

CONSTRUCTION PROJECT NUMBER

7160-01-71

T.24N.
T.23N.



END RELOCATION ORDER

STA 105+50.00, 0.00' RT

192.32' NORTH AND 1.99' WEST OF THE
EAST 1/4 CORNER, SEC. 1-T23N-R13W

BEGIN RELOCATION ORDER

STA 91+00.00, 0.00' RT

1365.57' NORTH AND 2.31' EAST OF THE
SOUTHEAST CORNER, SEC. 1-T23N-R13W

R.13W. R.12W.

SCALE, MILES:



TOTAL NET LENGTH OF CENTERLINE = 0.275 MI

NOTES:

POSITIONS SHOWN ON THIS PLAT ARE WISCONSIN COUNTY
COORDINATES, BUFFALO COUNTY, NAD 83 (1991) IN US SURVEY FEET.
VALUES SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID
DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

RIGHT-OF-WAY MONUMENTS ARE TYPE 2 MONUMENTS (TYPICALLY 3/4"
x 24" REBAR) 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.

APPROVED FOR
BUFFALO COUNTY

12/31/13
DATE
HIGHWAY COMMISSIONER

ORIGINAL PLAT PREPARED BY

Cedar
corporation

604 Wilson Avenue
Menomonie, Wisconsin 54751

715-235-9081
800-472-7372
engineers • architects • planners • environmental specialists
land surveyors • landscape architects • interior designers
FAX 715-235-2727
www.cedarcorp.com



12/30/13
DATE
Bryon J. Motszko
(Signature)

REVISION DATE:

SCHEDULE OF LANDS & INTERESTS REQUIRED

AREAS SHOWN IN THE TOTAL ACRES COLUMN MAY BE APPROXIMATE AND ARE FROM TAX ROLLS OR OTHER AVAILABLE SOURCES AND MAY NOT INCLUDE LANDS OF THE OWNER WHICH ARE NOT CONTIGUOUS TO THE AREA TO BE ACQUIRED.

PARCEL NUMBER	SHEET NUMBER	OWNER	INTEREST REQUIRED	TOTAL AREA (AC.)	R/W AREA REQUIRED			TOTAL AREA REMAINING (AC.)	TLE AREA (AC.)
					NEW (AC.)	EXIST. (AC.)	TOTAL (AC.)		
1	4.3	JAMES L. & KIMBERLY A. BIGNELL	FEE	1.11	0.08	0.03	0.11	1.00	–
2	4.3	MELVIN K. & GLADYS L. LARSON	FEE / TLE	9.71	–	0.24	0.24	9.47	0.03
3	4.3, 4.4	HOMESTEAD RESOURCES, LLC	FEE / TLE	66.52	0.23	1.09	1.32	65.20	0.23
4	4.3, 4.4	DALE M. & MYRNA E. JOHNSON	FEE / TLE	249.60	0.33	0.52	0.85	248.75	0.08
5	4.4	DALE M. JOHNSON	FEE	80.00	0.01	0.17	0.18	79.82	–
10	4.3, 4.4	NELSON TELEPHONE COOPERATIVE	RELEASE OF RIGHTS						
11	4.3	RIVERLAND ENERGY COOPERATIVE	RELEASE OF RIGHTS						

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

REVISION DATE	DATE 12/30/2013	SCALE, FEET NOT TO SCALE	HWY: CTH F	STATE R/W PROJECT NUMBER: 7160–01–00	PLAT SHEET 4.02	
	GRID FACTOR N/A		COUNTY: BUFFALO	CONSTRUCTION PROJECT NUMBER: 7160–01–71	PS&E SHEET	E

NOTE:
EXISTING CTH K R/W CENTERED ON EXISTING
HIGHWAY CENTERLINE AND DEFINED AS 66 FEET
IN WIDTH PER WISCONSIN STATUTE 82.31. SHOP
RD. R/W ESTABLISHED FROM V122, P180 WHICH
CONVEYS FEE R/W TO THE TOWN OF MODENA.

R/W COURSES		
COURSE	BEARING	LENGTH
1-2	N 43° 03' 51" E	36.53'
2-3	N 81° 40' 44" E	71.81'
3-4	N 00° 27' 17" E	21.03'
4-5	N 00° 27' 17" E	67.02'
5-6	N 88° 44' 36" W	95.71'
6-7	N 00° 27' 17" E	492.77'
7-8	S 89° 32' 43" E	27.00'
8-9	N 00° 27' 17" E	47.73'
10-11	N 89° 32' 43" W	8.00'
11-12	S 00° 27' 17" W	130.00'
12-13	S 89° 32' 43" E	8.00'
13-14	S 00° 27' 17" W	500.00'
14-1	S 89° 32' 43" E	66.00'



TOWN
OF
NELSON

NE/SE
SEC 1-23-13

③
HOMESTEAD RESOURCES, LLC

BEGIN RELOCATION ORDER
STA 91+00.00
Y = 370797.00
X = 550043.30

⑩ NELSON TELEPHONE COOPERATIVE
DOC. # 216604

SLOPE INTERCEPT

CTH F

SECTION LINE = N00°29'05"E 2623.22'

②
MELVIN K. & GLADYS L. LARSON

⑩
NELSON TELEPHONE COOPERATIVE
DOC. # 127290

NW/SW
SEC 6-23-12

TOWN
OF
MODENA

R/W COORDINATES		
POINT	Y	X
1	370796.74	550076.30
2	370823.43	550101.24
3	370833.82	550172.30
4	370854.85	550172.46
5	370921.87	550172.99
6	370923.97	550077.31
7	371416.72	550081.22
8	371416.51	550108.22
9	371464.23	550108.60
10	371427.24	550015.30
11	371427.31	550007.30
12	371297.31	550006.27
13	371297.25	550014.27
14	370797.26	550010.30

④
DALE M. & MYRNA E. JOHNSON

⑩
NELSON TELEPHONE COOPERATIVE
DOC. # 127322

CURVE DATA
PI STA 98+01.84
Y = 371498.82 X = 5500478.87
DELTA = 0° 29' 19"
D = 0° 42' 58"
T = 34.11'
L = 68.21'
R = 8000.00'

BUFFALO COUNTY MONUMENT
Y = 372054.56
X = 550063.18

SE/SE
CTH K

4

4

SW/SW

REVISION DATE	DATE 12/30/2013	SCALE, FEET 0' 25' 50'	HWY: CTH F	STATE R/W PROJECT NUMBER: 7160-01-00	PLAT SHEET 4.03
	GRID FACTOR N/A		COUNTY: BUFFALO	CONSTRUCTION PROJECT NUMBER: 7160-01-71	PS&E SHEET E

R/W COURSES		
COURSE	BEARING	LENGTH
9-15	N 00° 41' 57" E	67.70'
15-16	N 00° 56' 36" E	364.06'
16-17	N 89° 03' 24" W	20.00'
17-18	N 00° 56' 36" E	60.00'
18-19	N 89° 03' 24" W	7.00'
19-20	N 00° 56' 36" E	130.00'
20-21	S 89° 03' 24" E	15.00'
21-22	N 00° 56' 36" E	60.00'
22-23	N 89° 03' 24" W	15.00'
23-24	N 00° 56' 36" E	100.00'
24-25	N 89° 03' 24" W	66.00'
25-26	S 00° 56' 36" W	115.00'

R/W COURSES		
COURSE	BEARING	LENGTH
26-27	N 89° 03' 24" W	27.00'
27-28	S 00° 56' 36" W	20.00'
28-29	S 89° 03' 24" E	27.00'
29-30	S 00° 56' 36" W	215.00'
30-31	N 89° 03' 24" W	27.00'
31-32	S 00° 56' 36" W	340.00'
32-33	S 89° 03' 24" E	27.00'
33-34	S 00° 56' 36" W	58.30'
34-10	S 00° 27' 17" W	71.98'

R/W COORDINATES		
POINT	Y	X
15	371531.93	550109.42
16	371895.94	550115.42
17	371896.27	550095.42
18	371956.26	550096.41
19	371956.37	550089.41
20	372086.36	550091.55
21	372086.11	550106.55
22	372146.10	550107.53
23	372146.35	550092.54
24	372246.34	550094.18
25	372247.42	550028.19
26	372132.44	550026.30
27	372132.88	549999.30
28	372112.88	549998.97
29	372112.44	550025.97
30	371897.47	550022.43
31	371897.91	549995.43
32	371557.96	549989.83
33	371557.52	550016.83
34	371499.22	550015.87

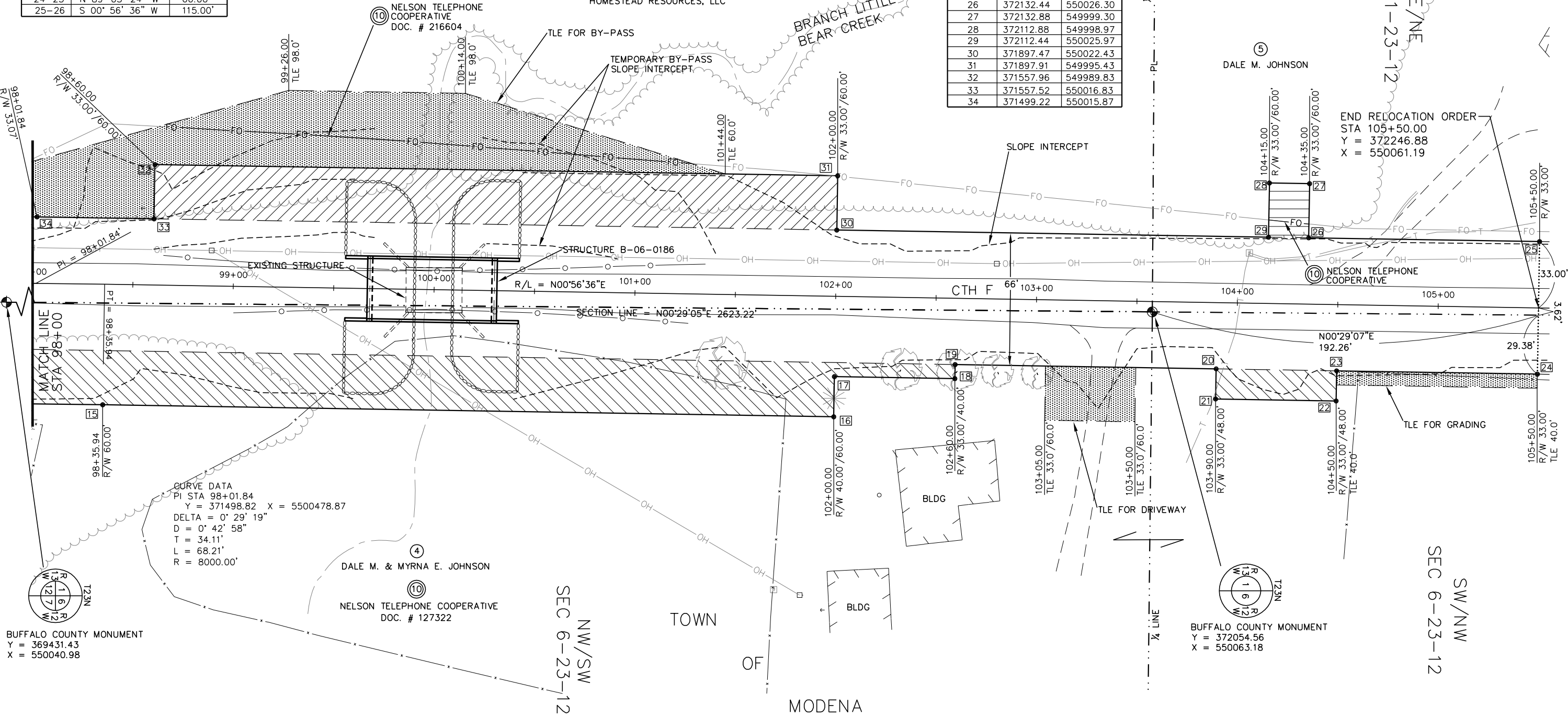


NOTE:
EXISTING CTH K R/W CENTERED ON EXISTING
HIGHWAY CENTERLINE AND DEFINED AS 66 FEET
IN WIDTH PER WISCONSIN STATUTE 82.31.

TOWN
OF
NELSON
NE/SE
SEC 1-23-13

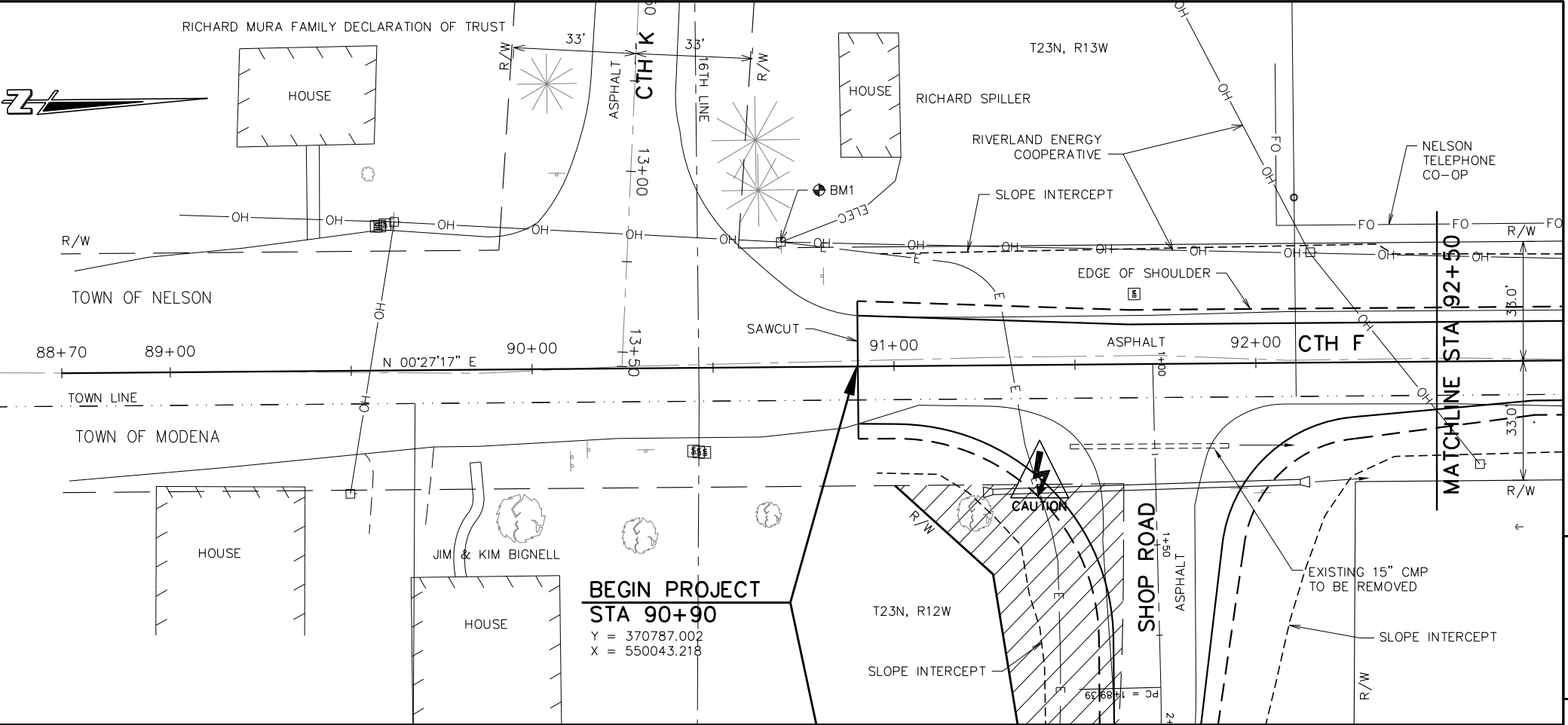
SE/NE
SEC 1-23-12

END RELOCATION ORDER
STA 105+50.00
Y = 372246.88
X = 550061.19



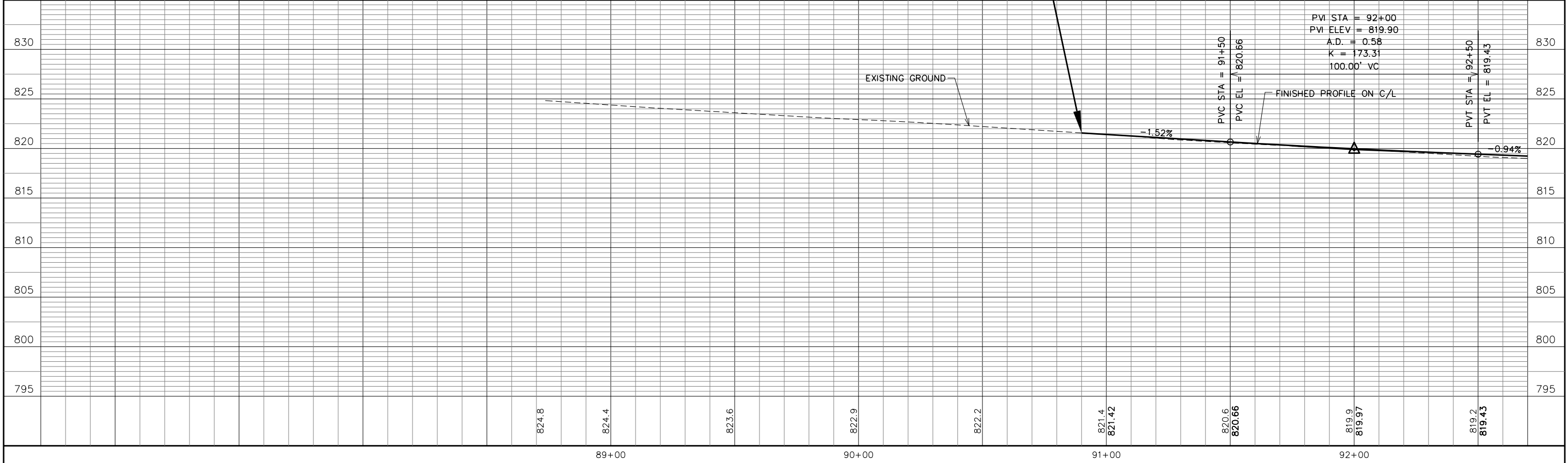
REVISION DATE	DATE	SCALE, FEET 0' 25' 50'	HWY: CTH F COUNTY: BUFFALO	STATE R/W PROJECT NUMBER: 7160-01-00 CONSTRUCTION PROJECT NUMBER: 7160-01-71	PLAT SHEET 4.04	E
	GRID FACTOR				PS&E SHEET	

BENCHMARK			
NO.	STATION	DESCRIPTION	ELEV
1	90+69±	34.8' LT, MAG NAIL IN PP	822.37

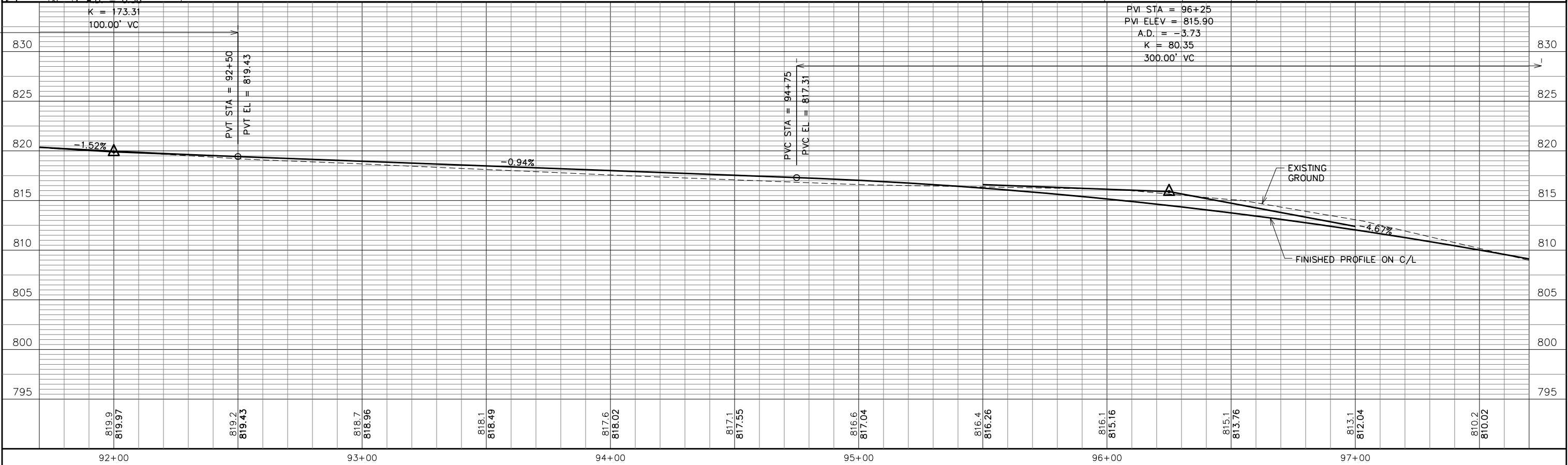
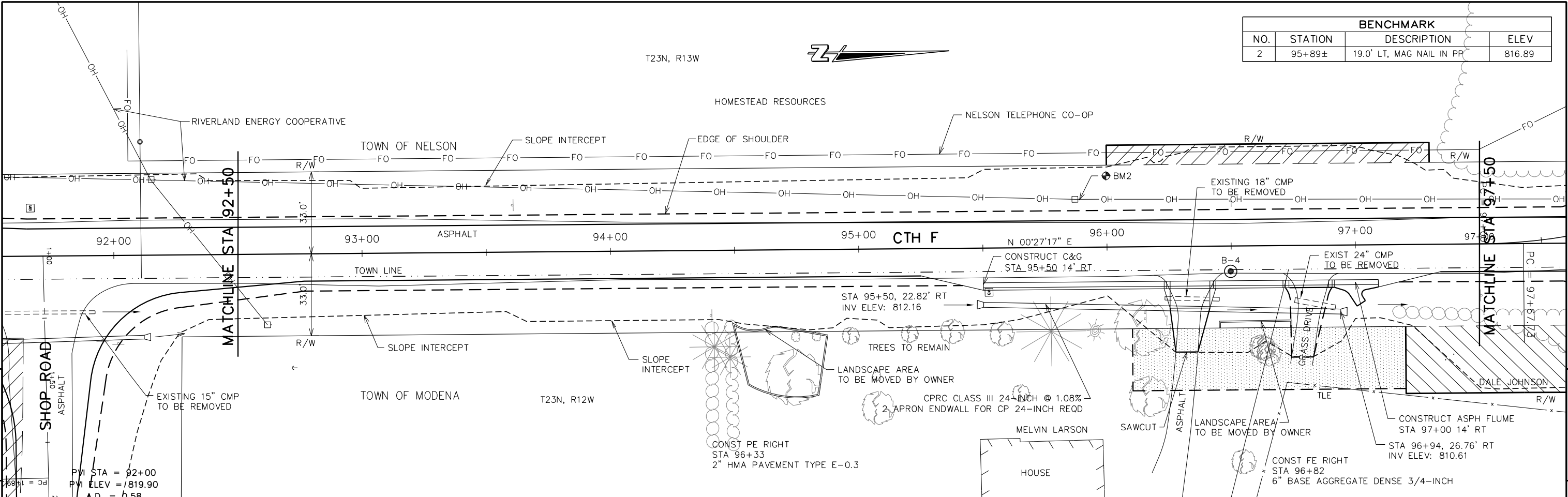


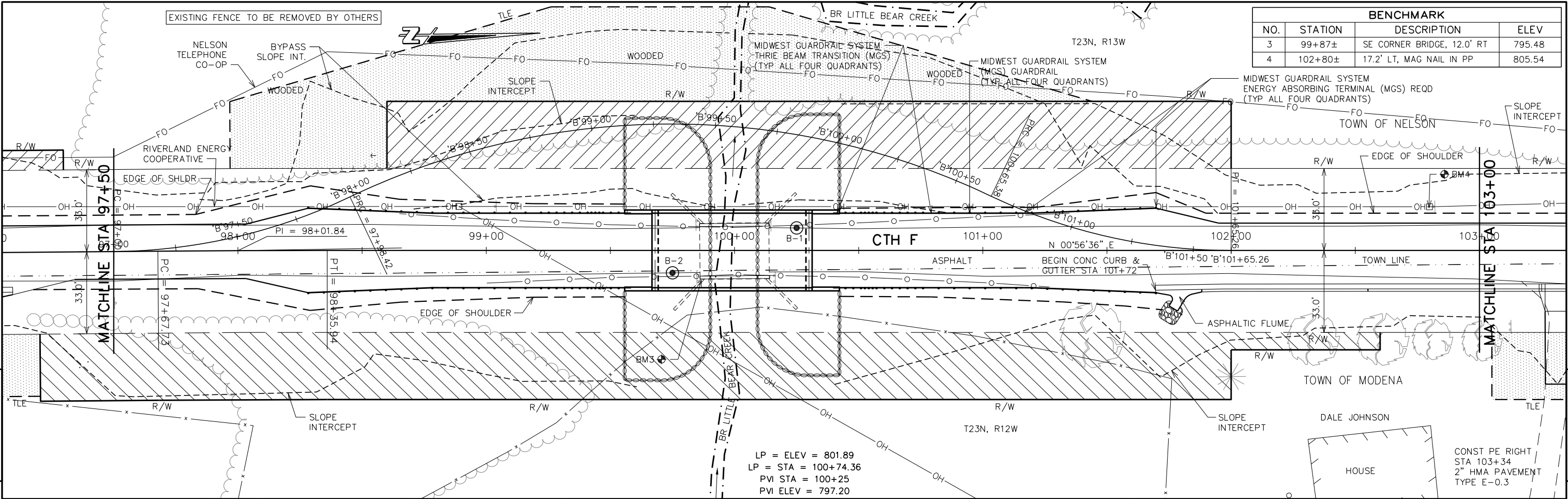
CONST TYPE "C" INTERSECTION
STA 91+70 RT
HMA PAVEMENT TYPE E-0.3
CULVERT PIPE CLASS III 18-INCH
2 APRON ENDWALL FOR CULVERT PIPE 18-INCH REQD

BEGIN PROJECT
STA 90+90
Y = 370787.002
X = 550043.218



PROJECT NO:	7160-01-71	HWY:	CTH F	COUNTY:	BUFFALO	PLAN AND PROFILE	SHEET	E
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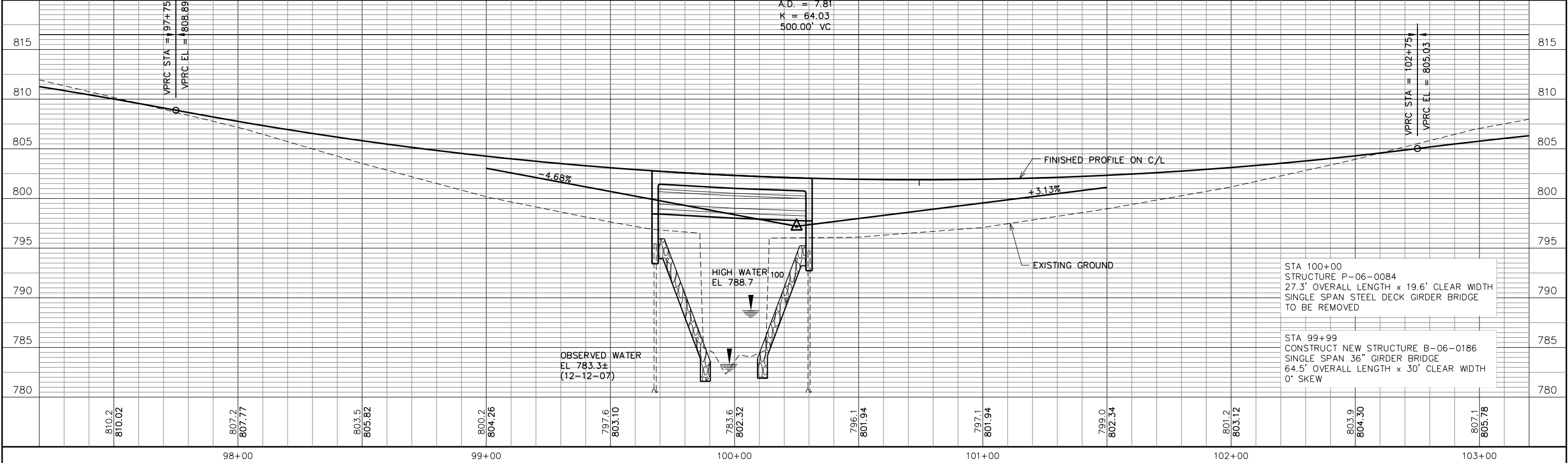




BENCHMARK			
NO.	STATION	DESCRIPTION	ELEV
3	99+87±	SE CORNER BRIDGE, 12.0' RT	795.48
4	102+80±	17.2' LT, MAG NAIL IN PP	805.54

LP = ELEV = 801.89
LP = STA = 100+74.36
PVI STA = 100+25
PVI ELEV = 797.20

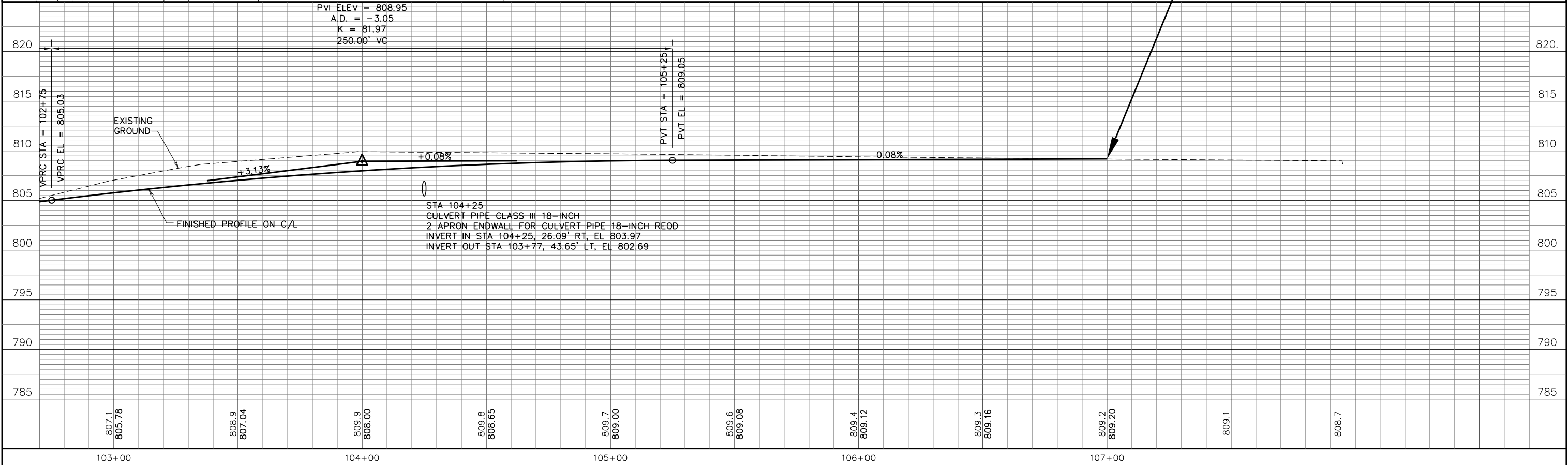
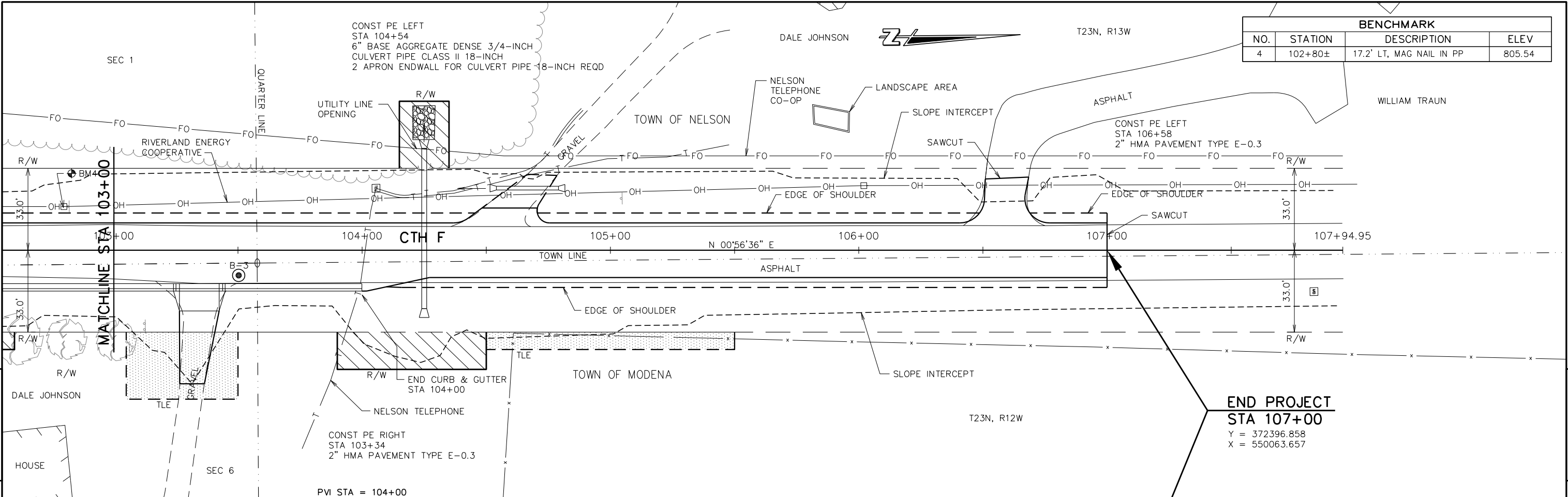
A.D. = 7.81
K = 64.03
500.00' VC

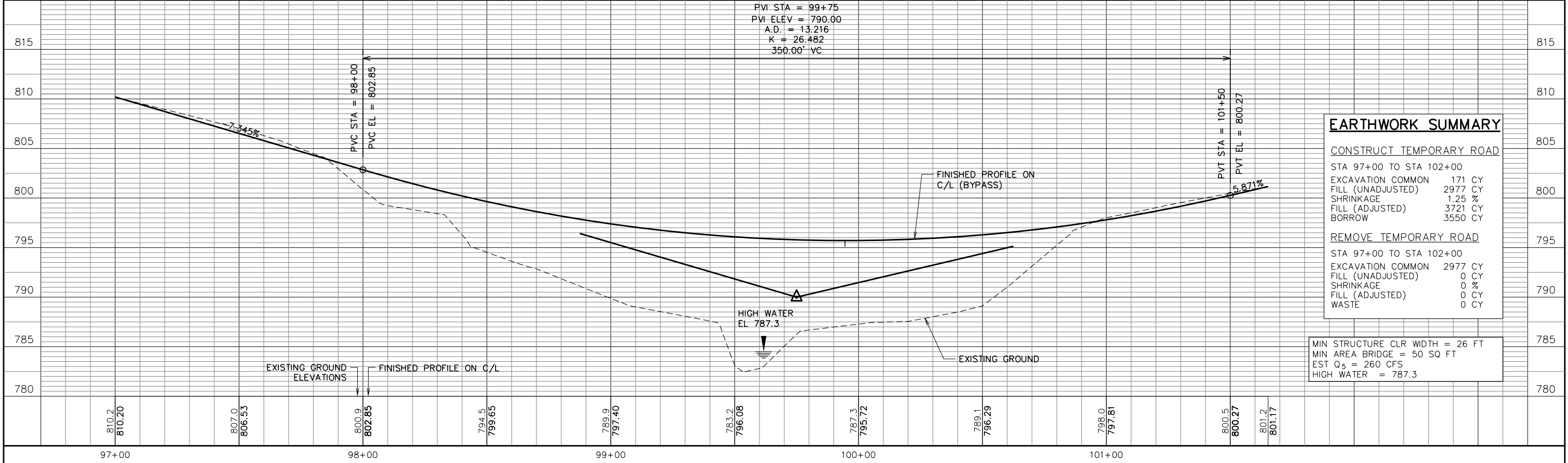
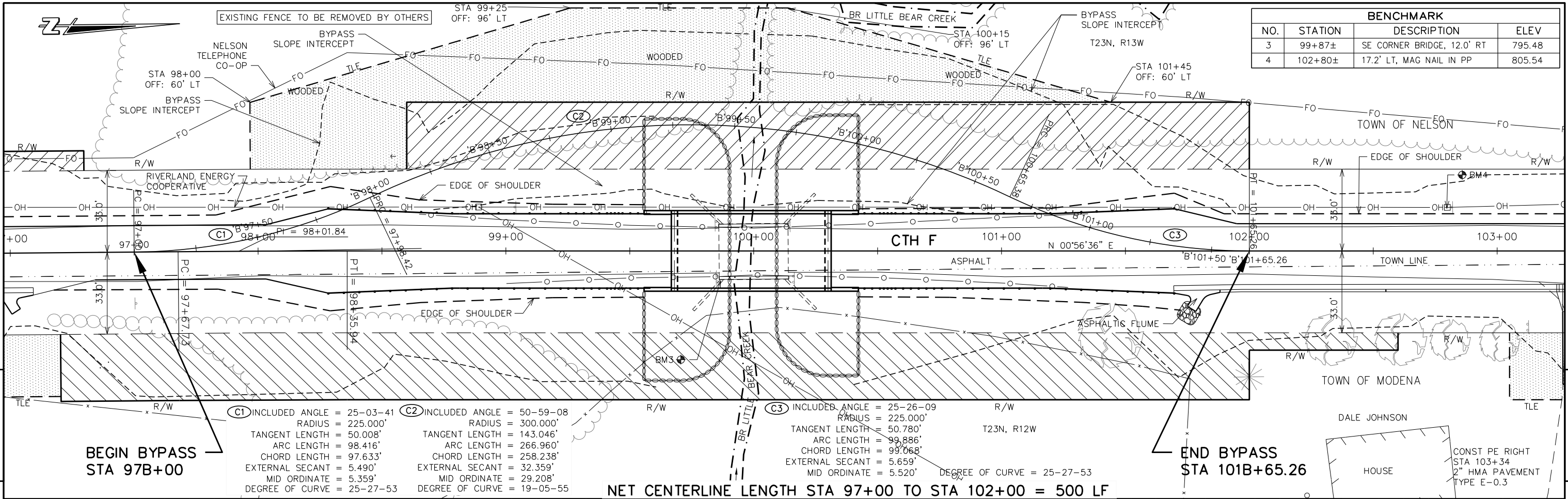


STA 100+00
STRUCTURE P-06-0084
27.3' OVERALL LENGTH x 19.6' CLEAR WIDTH
SINGLE SPAN STEEL DECK GIRDER BRIDGE
TO BE REMOVED

STA 99+99
CONSTRUCT NEW STRUCTURE B-06-0186
64.5' OVERALL LENGTH x 30' CLEAR WIDTH
0° SKEW

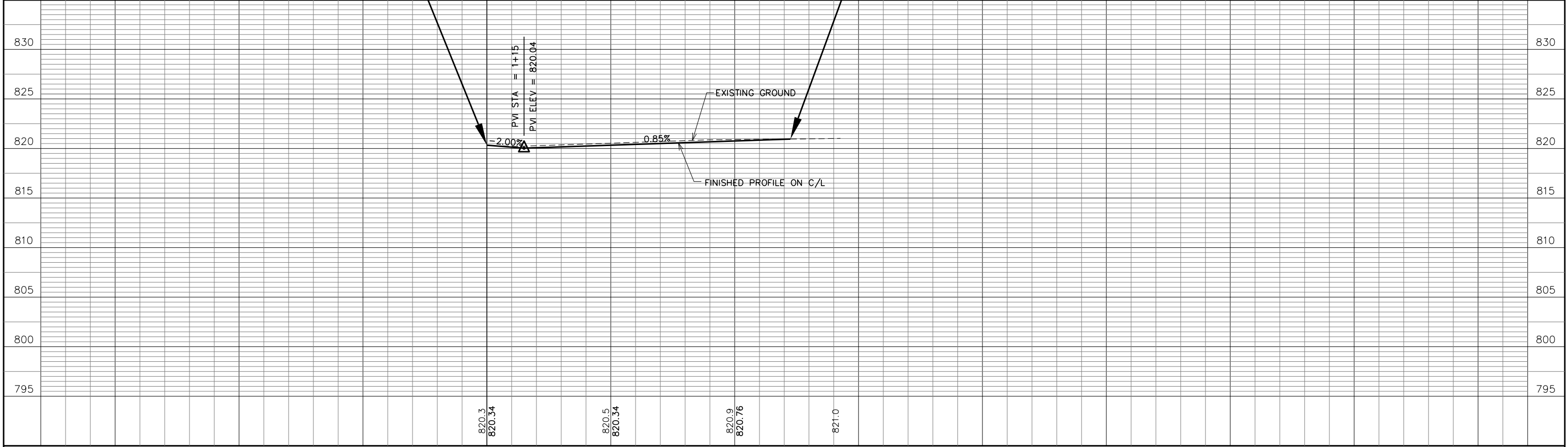
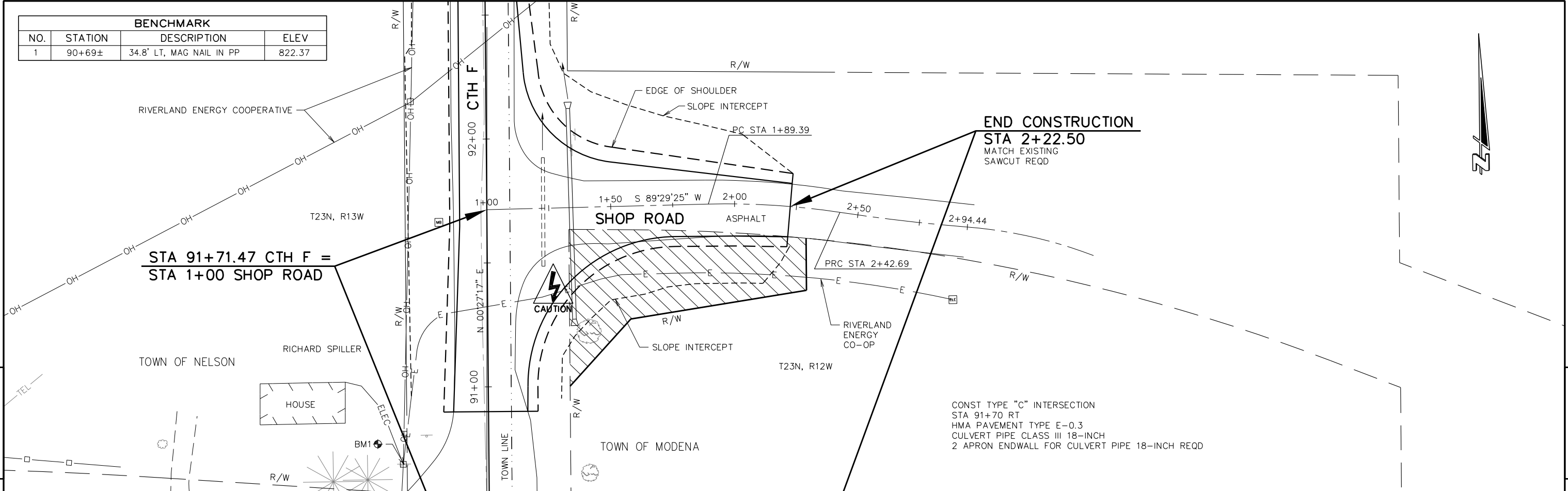
PROJECT NO:	7160-01-71	HWY:	CTH F	COUNTY:	BUFFALO	PLAN AND PROFILE	SHEET	E
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EARTHWORK SUMMARY	
CONSTRUCT TEMPORARY ROAD	
STA 97+00 TO STA 102+00	
EXCAVATION COMMON	171 CY
FILL (UNADJUSTED)	2977 CY
SHRINKAGE	1.25 %
FILL (ADJUSTED)	3721 CY
BORROW	3550 CY
REMOVE TEMPORARY ROAD	
STA 97+00 TO STA 102+00	
EXCAVATION COMMON	2977 CY
FILL (UNADJUSTED)	0 CY
SHRINKAGE	0 %
FILL (ADJUSTED)	0 CY
WASTE	0 CY
MIN STRUCTURE CLR WIDTH = 26 FT	
MIN AREA BRIDGE = 50 SQ FT	
EST Q ₅ = 260 CFS	
HIGH WATER = 787.3	

BENCHMARK			
NO.	STATION	DESCRIPTION	ELEV
1	90+69±	34.8' LT, MAG NAIL IN PP	822.37



PROJECT NO:	7160-01-71	HWY:	CTH F	COUNTY:	BUFFALO	PLAN AND PROFILE - SHOP ROAD	SHEET	E
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Standard Detail Drawing List

08D01-17	CONCRETE CURB, CONCRETE CURB AND GUTTER AND TIES
08D04-05	CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
09A01-13A	AT-GRADE SIDE ROAD INTERSECTION, TYPES "B1", "B2", "C" AND D AND TEE INTERSECTION BYPASS LANE
12A03-10	NAME PLATE (STRUCTURES)
14B42-02A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-02B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-02C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-01A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-01B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-01C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-03A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15A02-08	DELINEATOR POST, DELINEATOR, AND DELINEATOR BRACKET WITH REFLECTIVE SHEETING
15C02-05A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-05B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C12-04	TRAFFIC CONTROL FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)
15D31-02	TRAFFIC CONTROL, TEMPORARY BYPASS ROADWAY

6



PLAN VIEW
FLUME AT CURB END

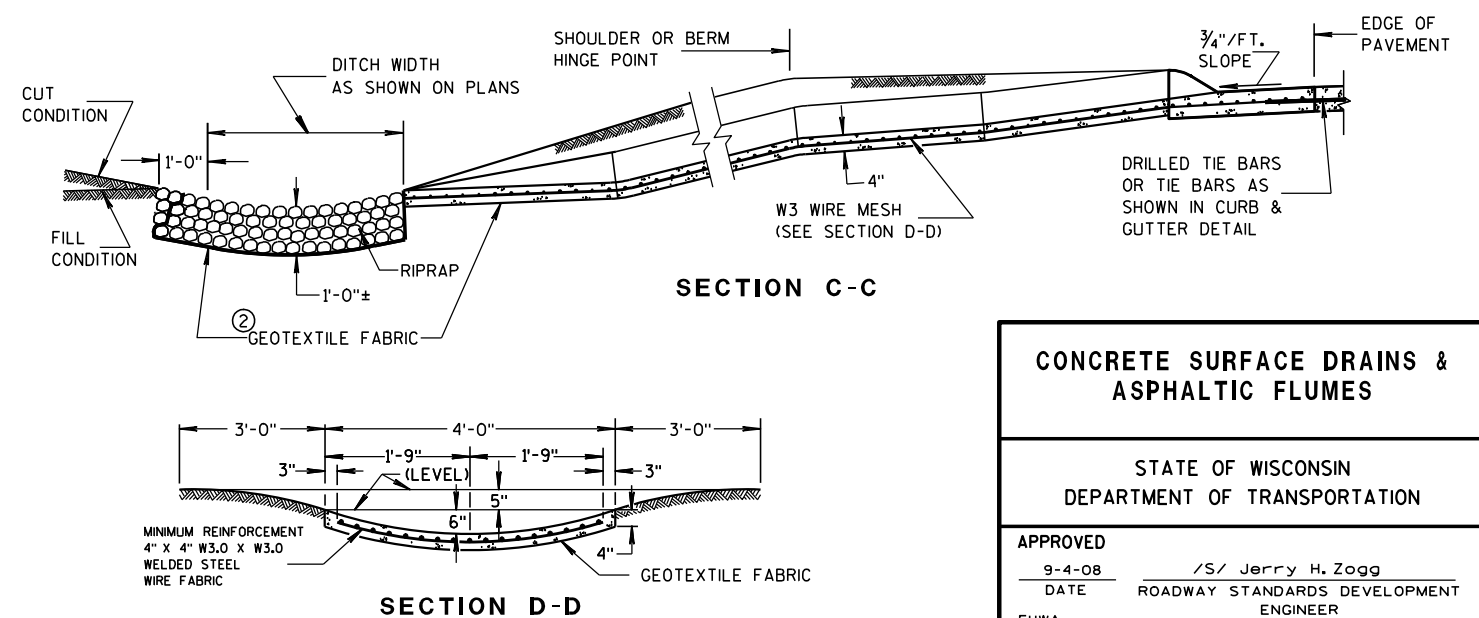


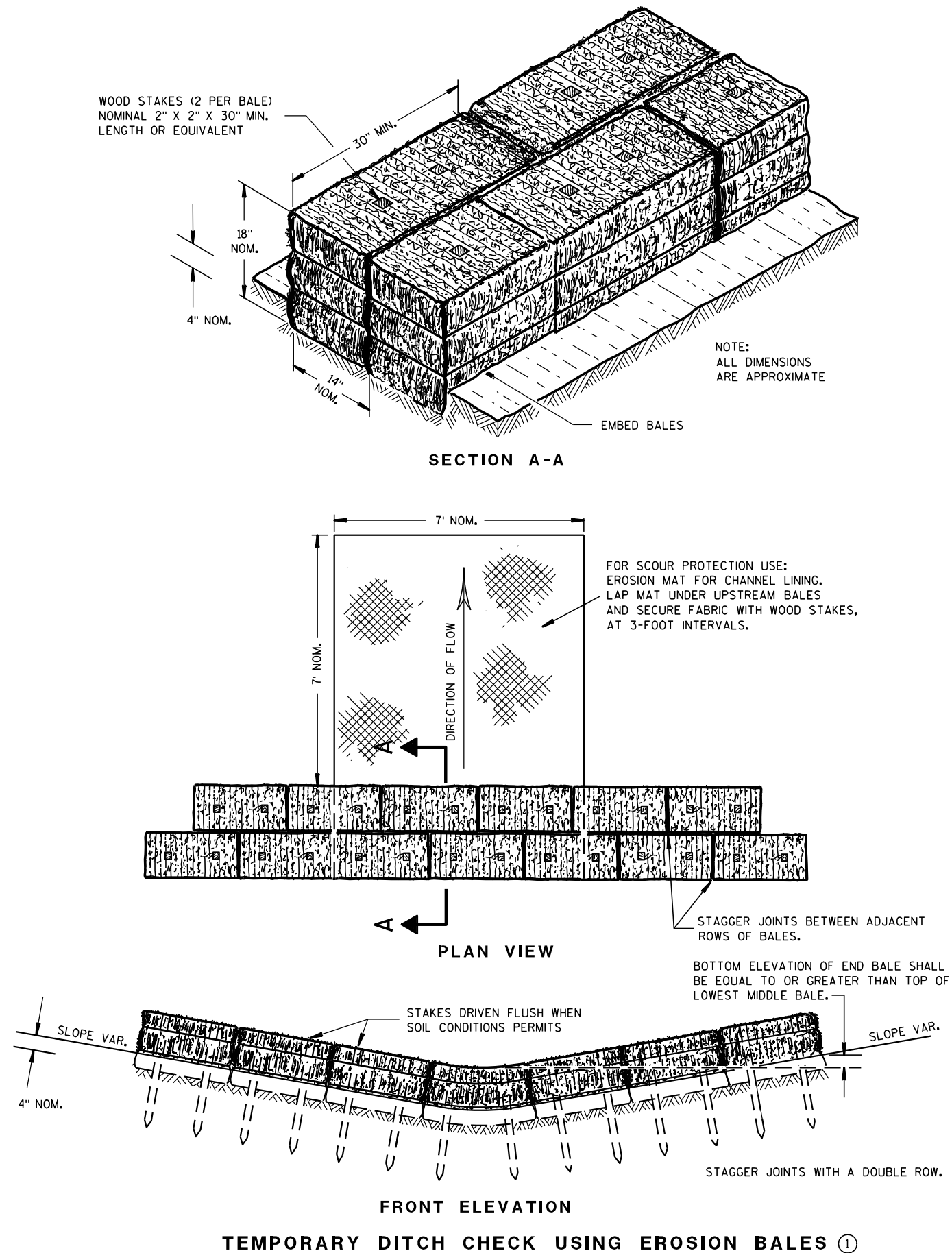
6

S.D.D. 8 D 4-5

③ CONCRETE SURFACE DRAIN WITHOUT CURB AND GUTTER MAY BE USED ON BACKSLOPES WHEN SPECIFIED

SECTION C-C

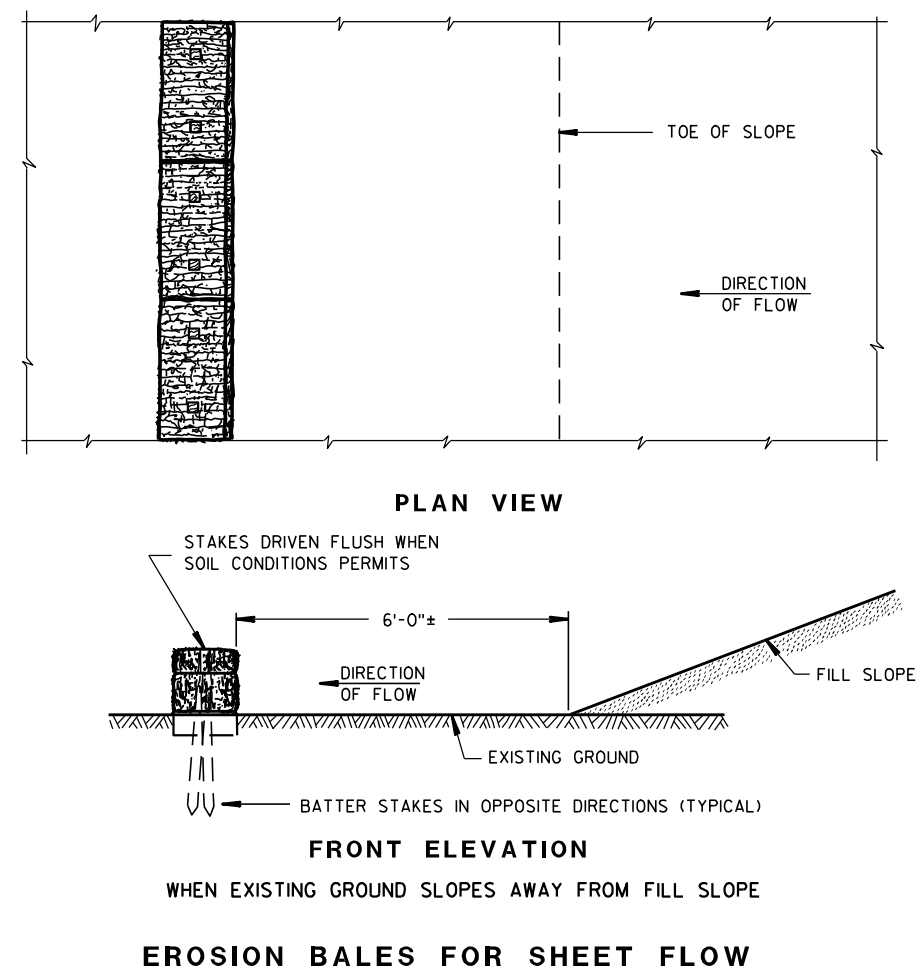
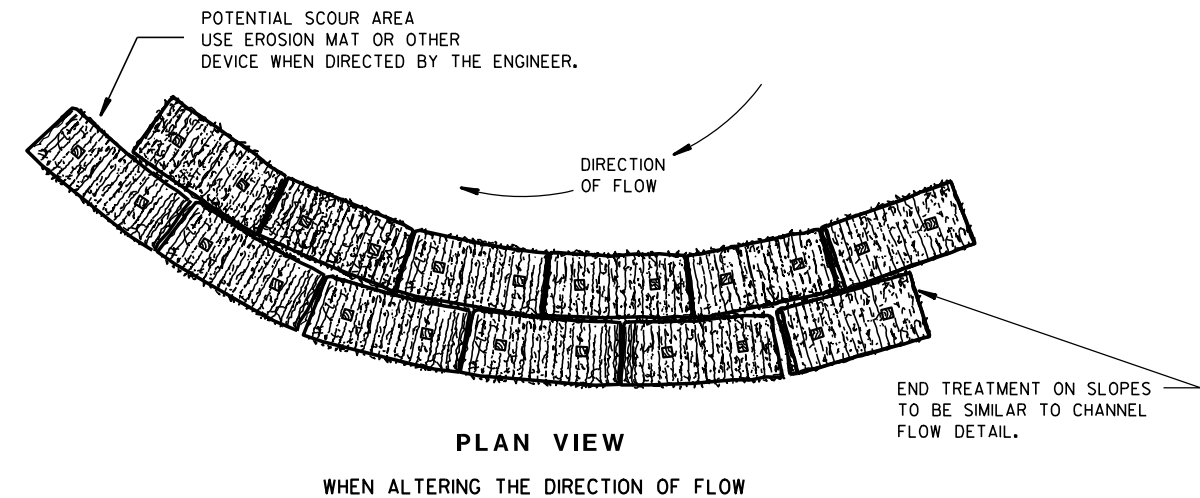




GENERAL NOTES

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.

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

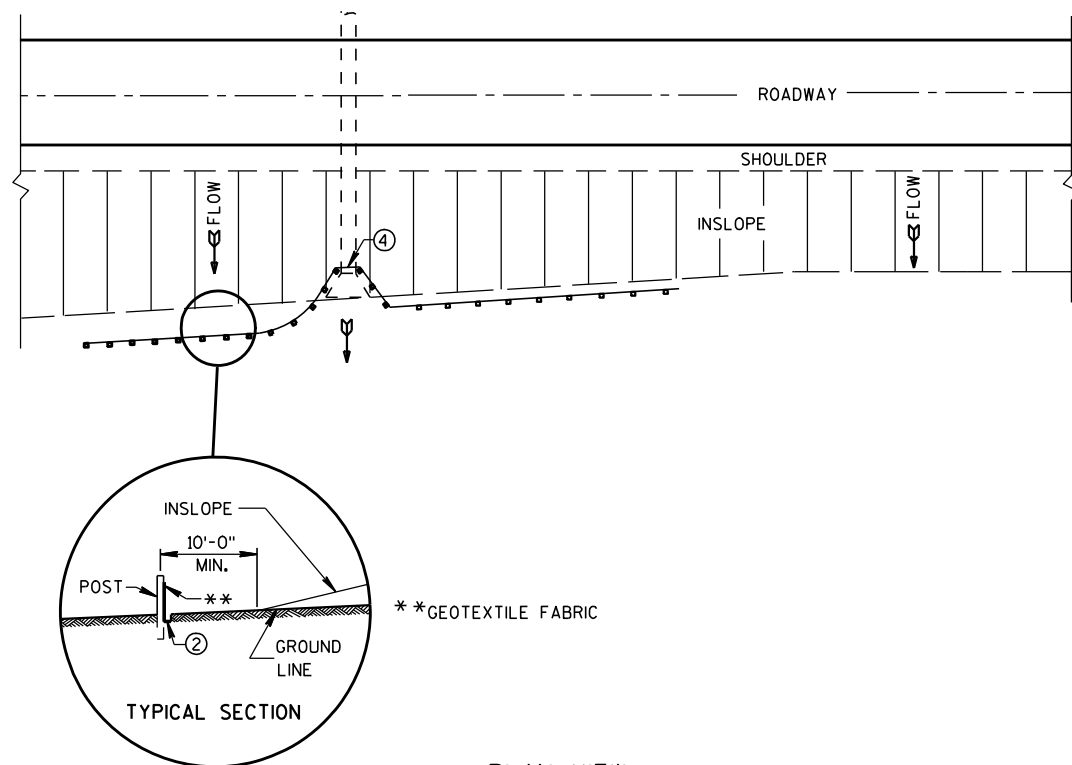
TYPICAL INSTALLATIONS OF
EROSION BALES / TEMPORARY
DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

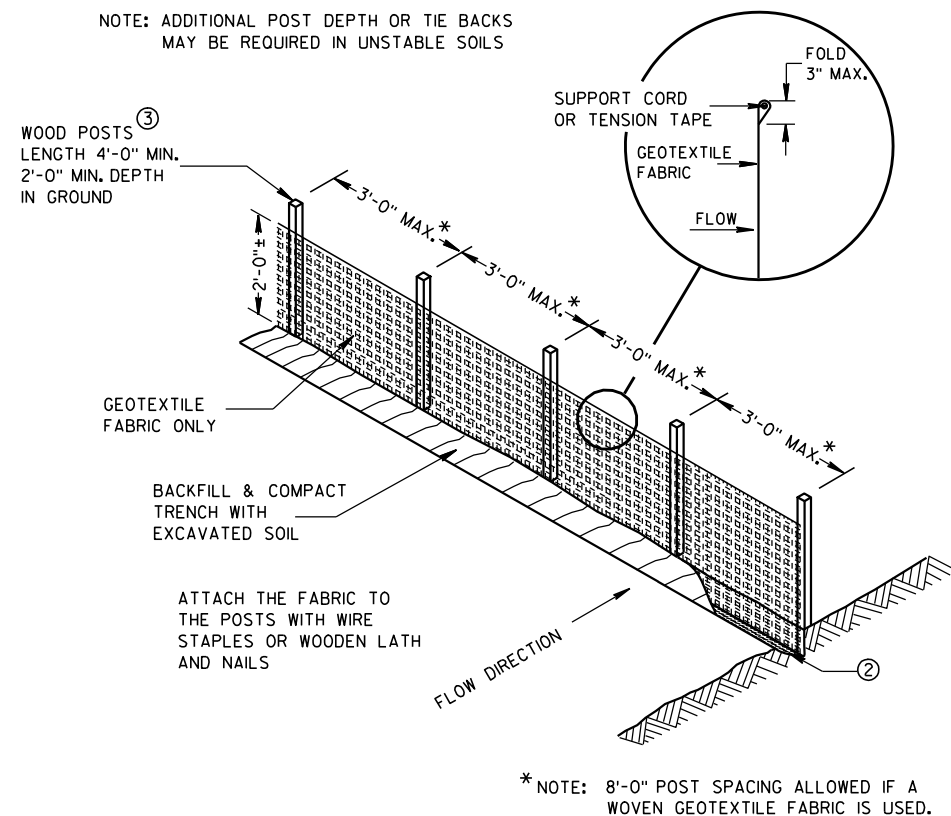
6/04/02
DATE/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

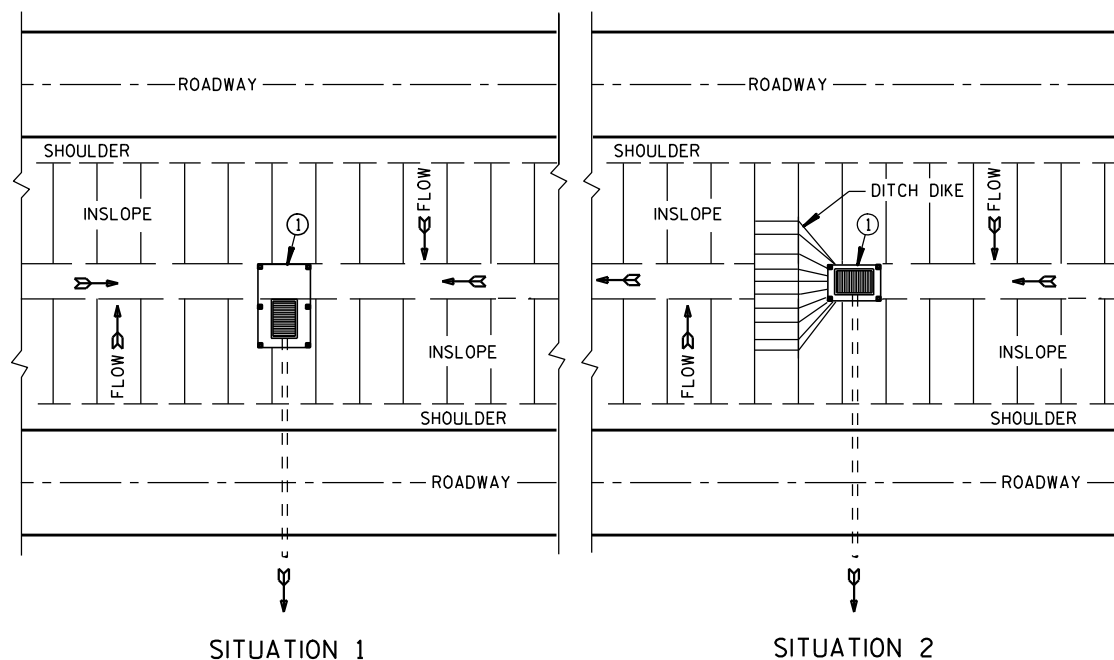


TYPICAL APPLICATION OF SILT FENCE

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

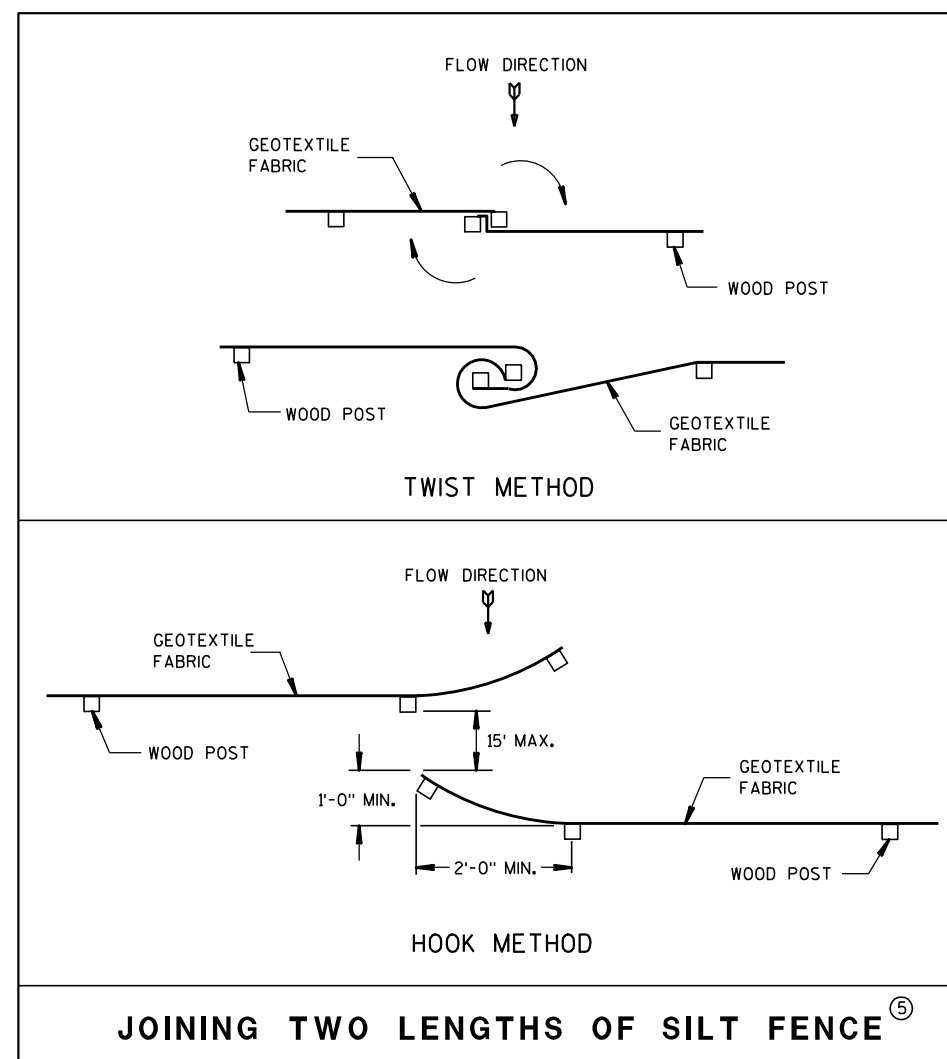


SILT FENCE



PLAN VIEW

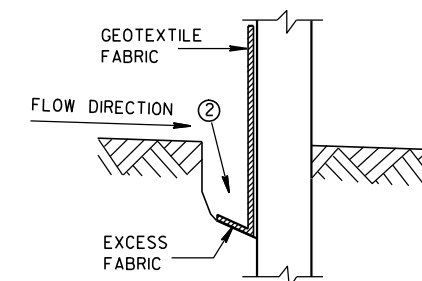
SILT FENCE AT MEDIAN SURFACE DRAINS



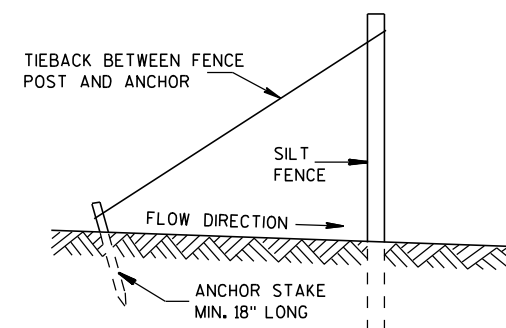
GENERAL NOTES

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 1 1/8" X 1 1/8" OF OAK OR HICKORY.
- ④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
- ⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.



TRENCH DETAIL



SILT FENCE TIE BACK (WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

4-29-05

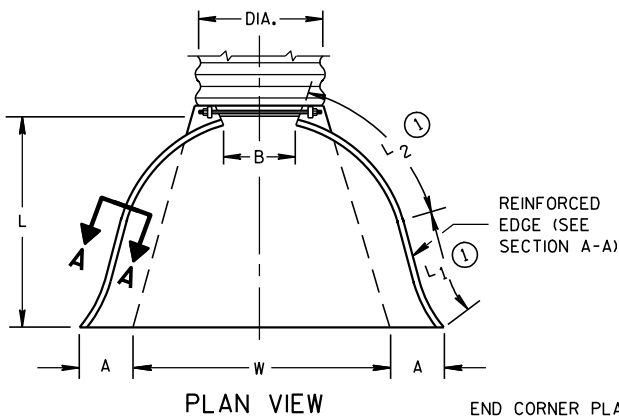
DATE

FHWA

/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT ENGINEER

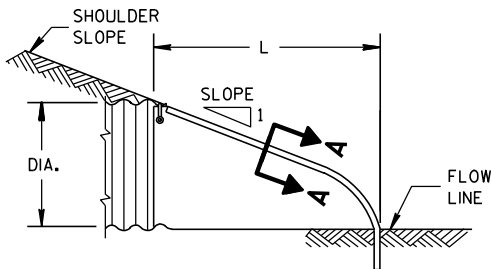
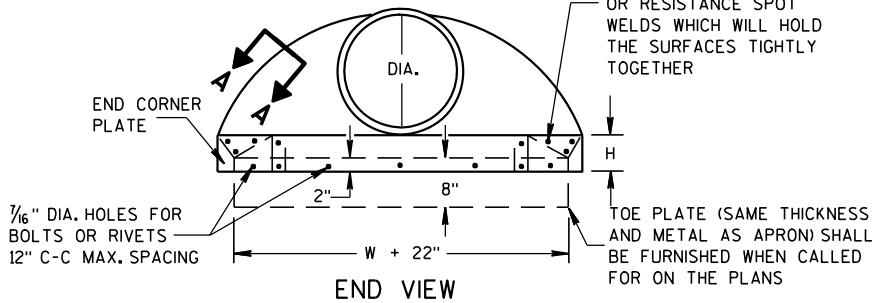
METAL APRON ENDWALLS											
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")		
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060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

* EXCEPT CENTER PANEL
SEE GENERAL NOTES



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

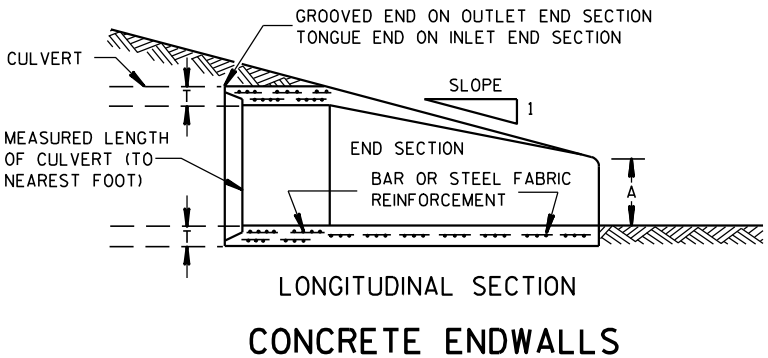
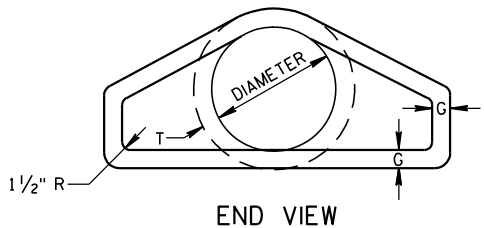
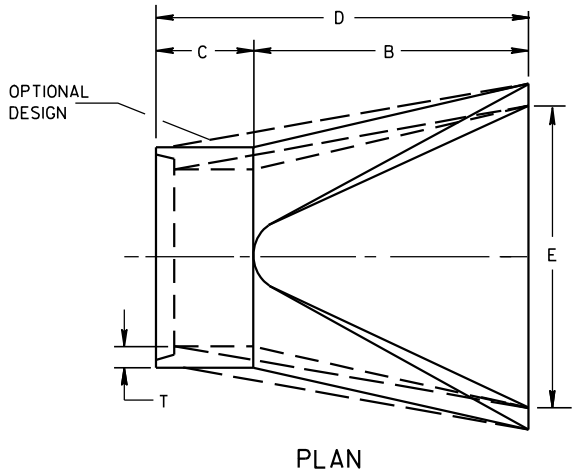
TOE PLATE (SAME THICKNESS AND METAL AS APRON) SHALL BE FURNISHED WHEN CALLED FOR ON THE PLANS



SIDE ELEVATION
METAL ENDWALLS

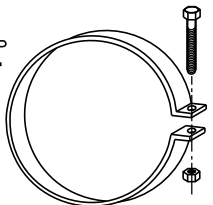
REINFORCED CONCRETE APRON ENDWALLS											
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE			
	T	A	B	C	D	E	G				
12	2	4	24	48 7/8	72 7/8	24	2	3 to 1			
15	2 1/4	6	27	46	73	30	2 1/4	3 to 1			
18	2 1/2	9	27	46	73	36	2 1/2	3 to 1			
21	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	3 to 1			
24	3	9 1/2	43 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

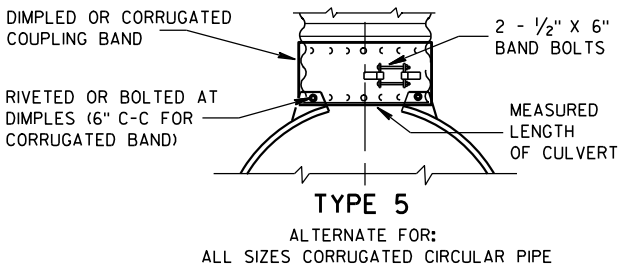
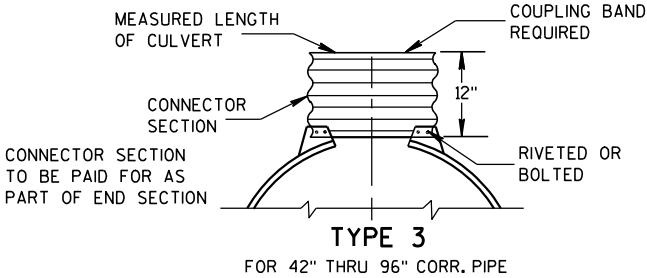
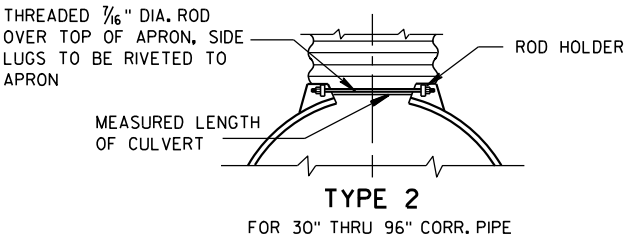
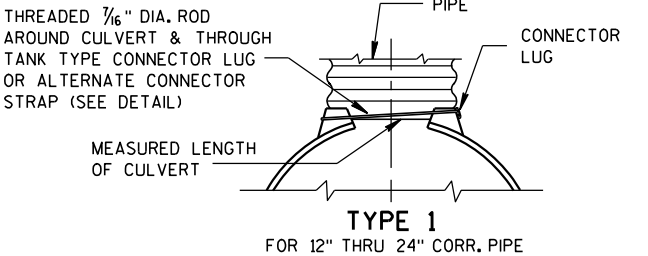


LONGITUDINAL SECTION
CONCRETE ENDWALLS

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



ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP



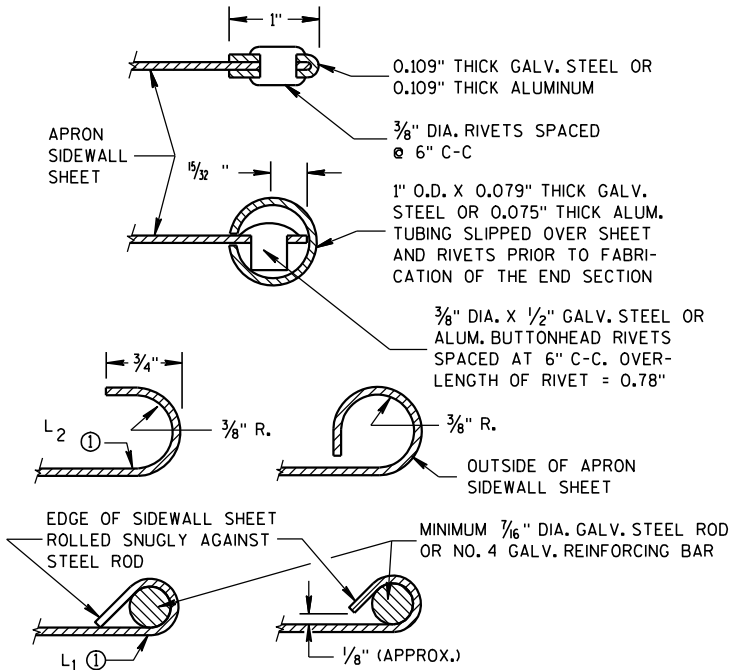
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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.

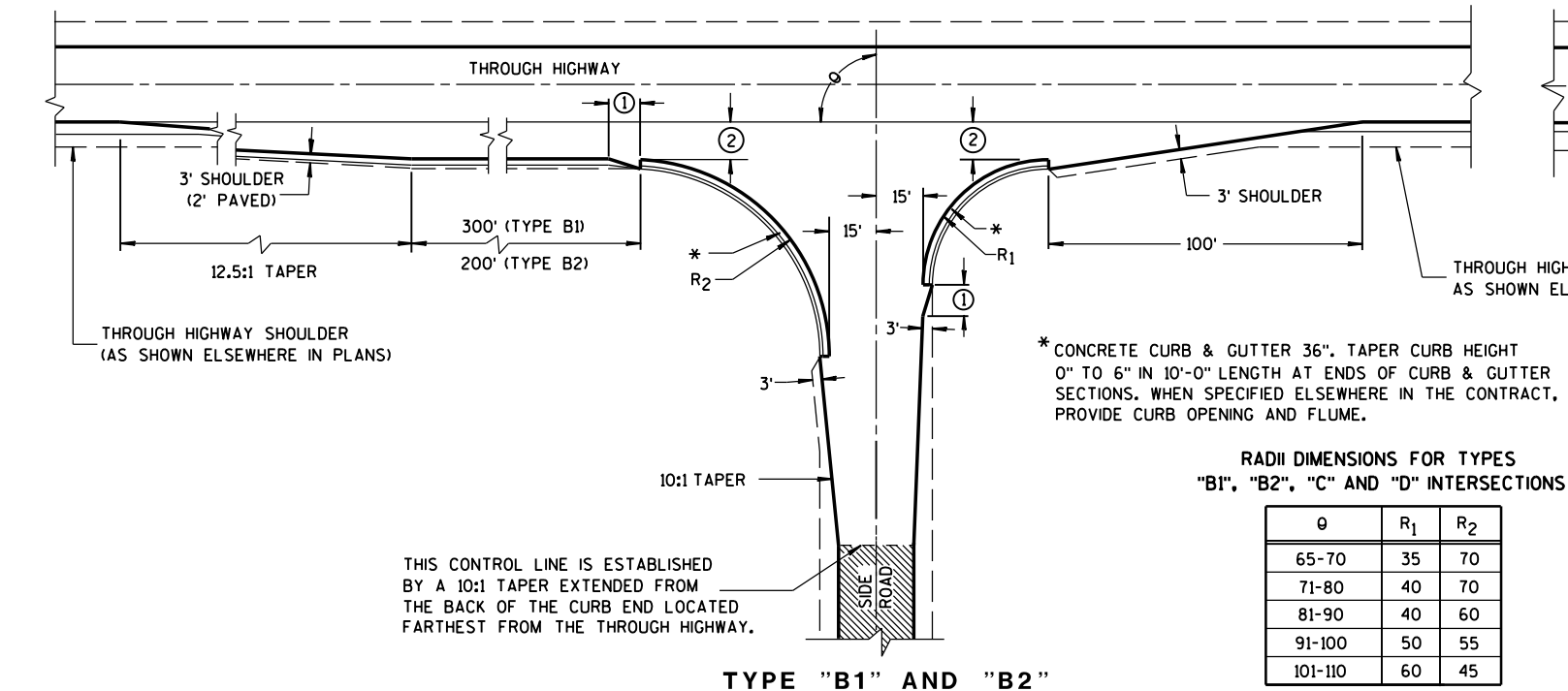
ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT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



GENERAL NOTES

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

SIDE ROAD SURFACING NOTE

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

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

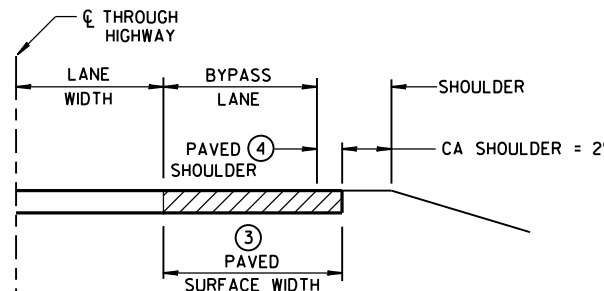
WHEN THE SIDE ROAD IS THE CONSTRUCTION PROJECT, THE INTERSECTION SURFACING SHALL BE THE SAME AS FOR THE PROJECT.

EXISTING PAVED SURFACE

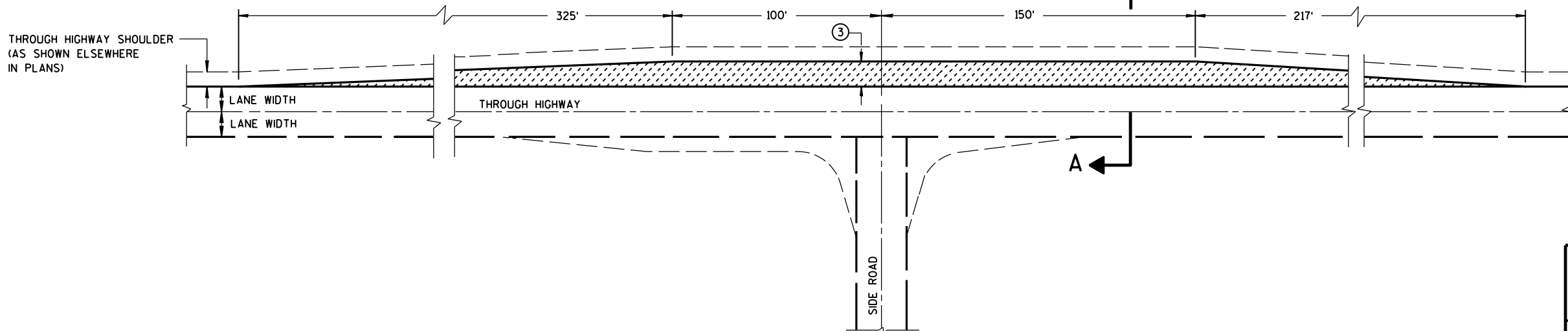
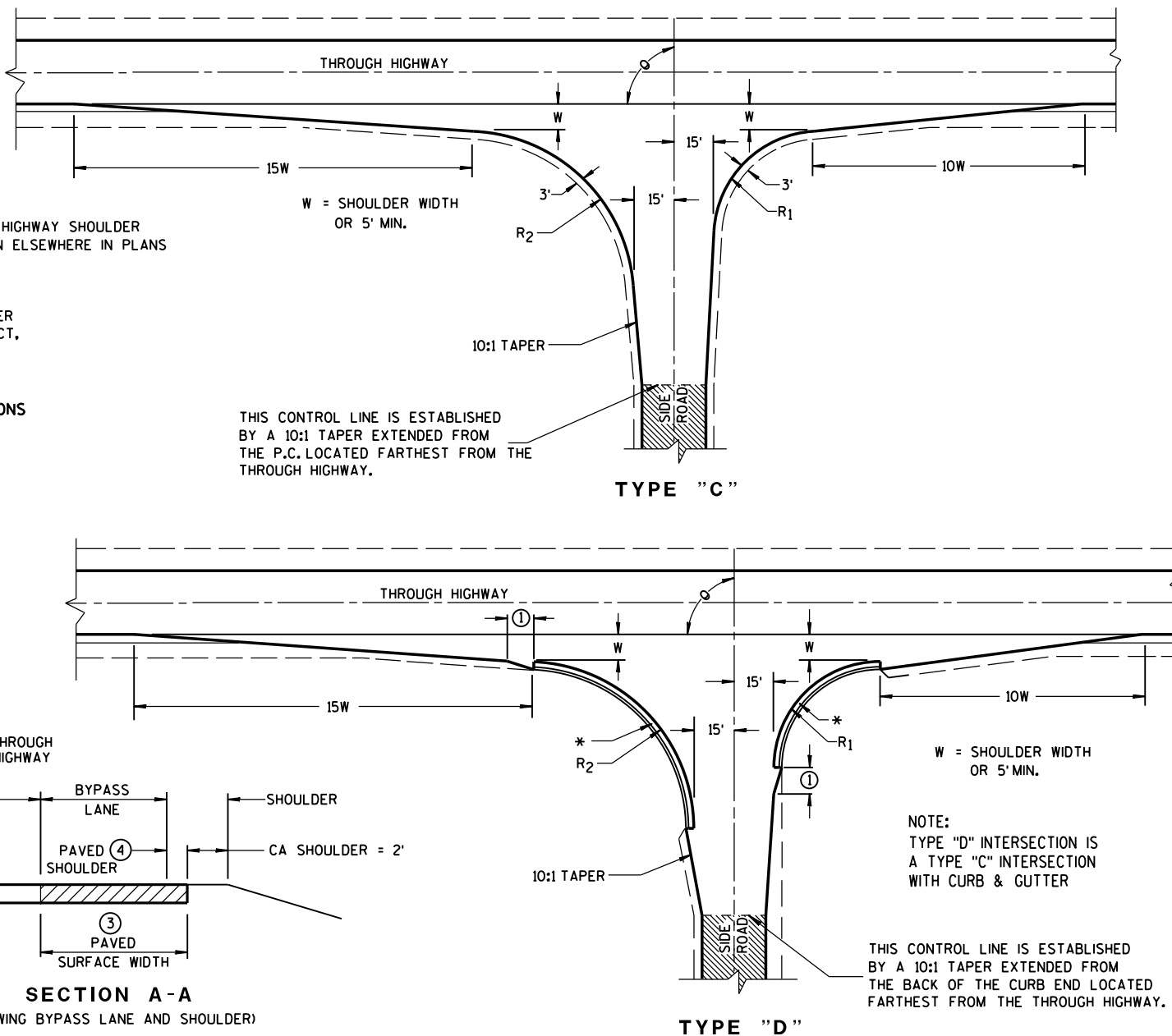
BYPASS LANE

- 10-FT TYPICAL.
- 12-FT** PLUS ADDITIONAL WIDTH FOR BIKE LANE IF SHOWN ELSEWHERE IN THE PLAN.

**10-FT MAY BE USED ON TYPE B2 ON RESURFACING PROJECTS IF SPECIFIED IN THE CONTRACT.
- BYPASS LANE PAVED SURFACE WIDTH OUTSIDE OF TRAVEL LANE
-ASPHALT = 12-FT PLUS PAVED SHOULDER WIDTH.
-PC CPNCRETE = 13-FT PLUS PAVED SHOULDER WIDTH.
- BYPASS LANE PAVED SHOULDER WIDTH = THE GREATER OF 1-FT OR THE PAVED SHOULDER WIDTH OF THE THROUGH HIGHWAY.



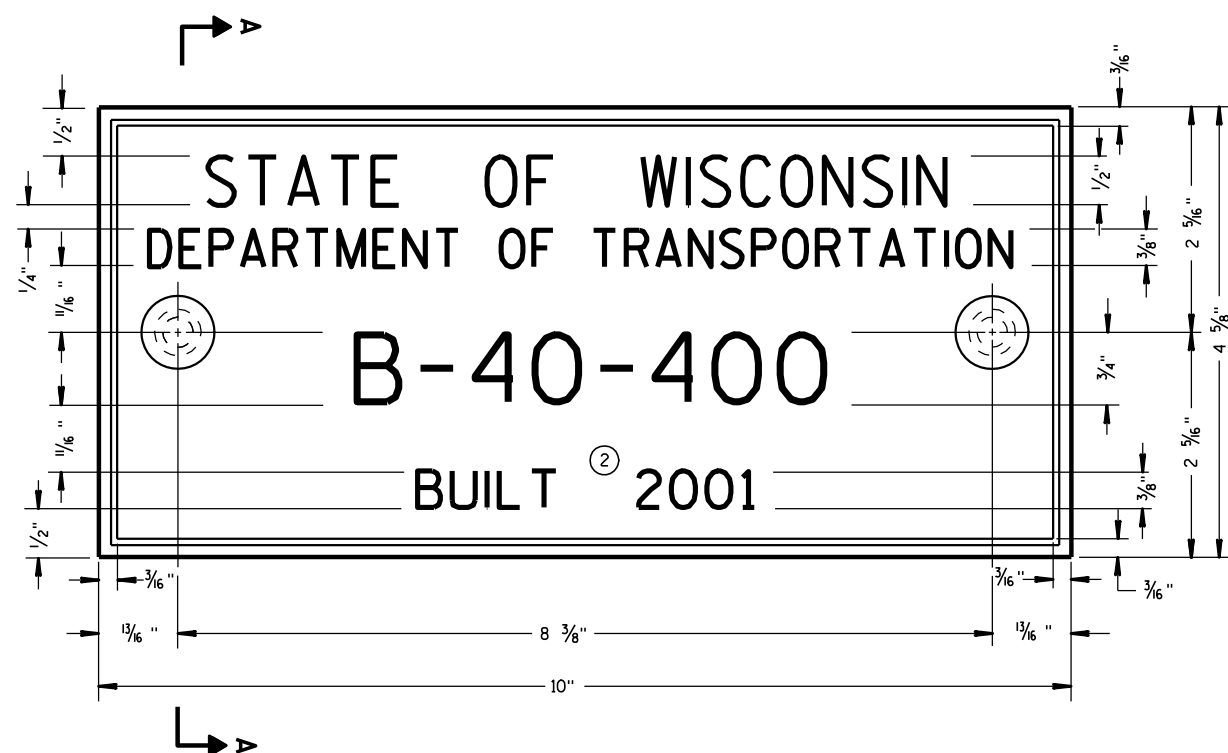
SECTION A-A
(SHOWING BYPASS LANE AND SHOULDER)



TEE INTERSECTION BYPASS LANE DETAIL

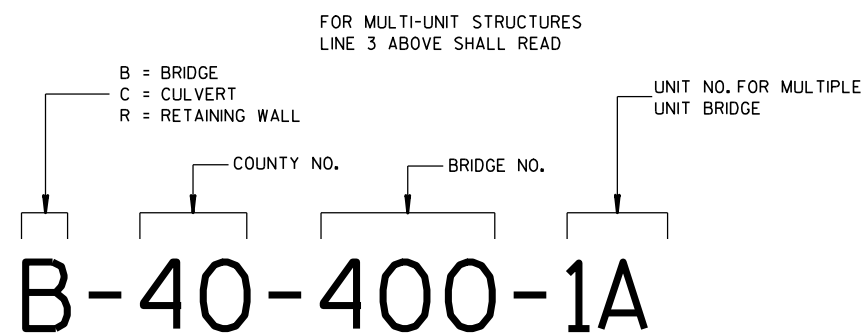
AT-GRADE SIDE ROAD
INTERSECTION, TYPES "B1", "B2",
"C" AND "D" AND TEE
INTERSECTION BYPASS LANE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



TYPICAL NAME PLATE

(BRIDGES, CULVERTS, AND RETAINING WALLS)



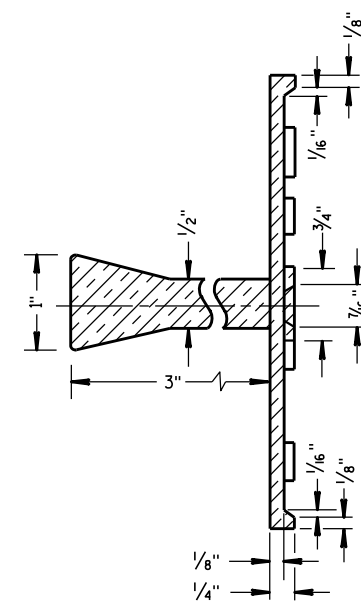
NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

GENERAL NOTES

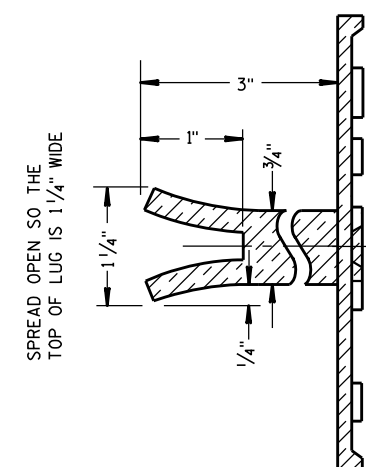
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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

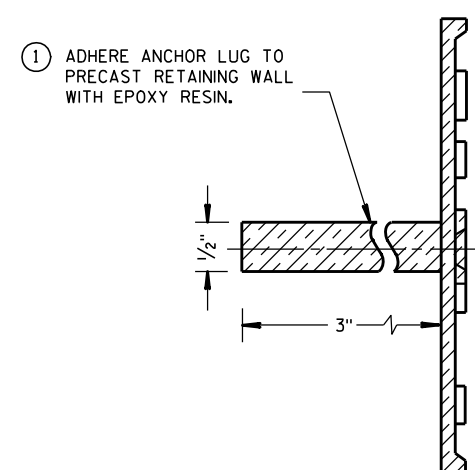
- ① EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ② REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



SECTION A-A



ALTERNATE LUG



ALTERNATE LUG

(FOR ATTACHMENT TO PRECAST STRUCTURES)

NAME PLATE
(STRUCTURES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

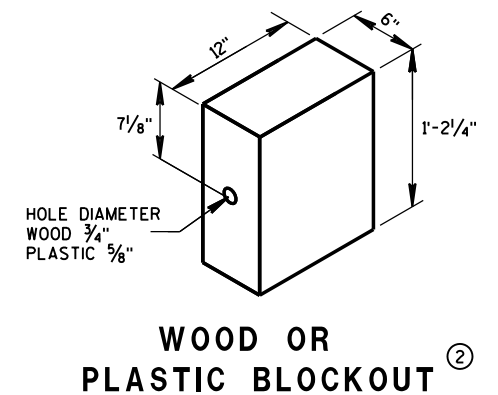
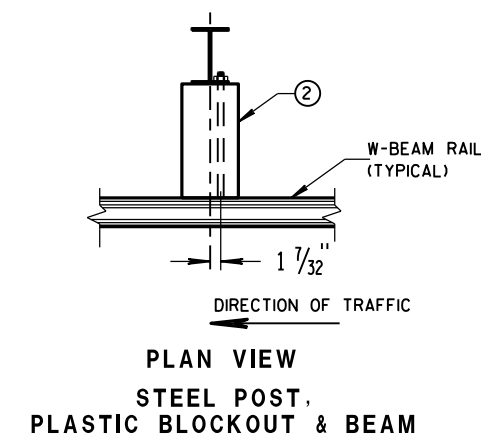
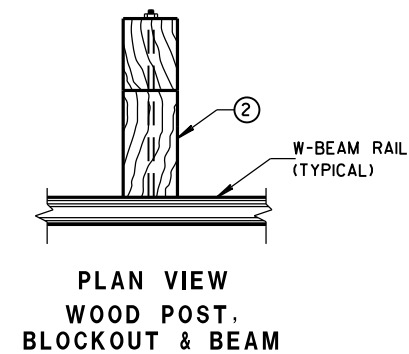
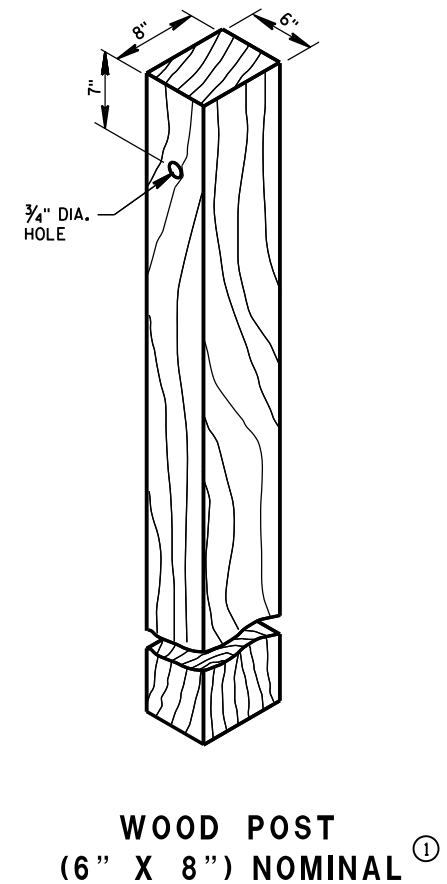
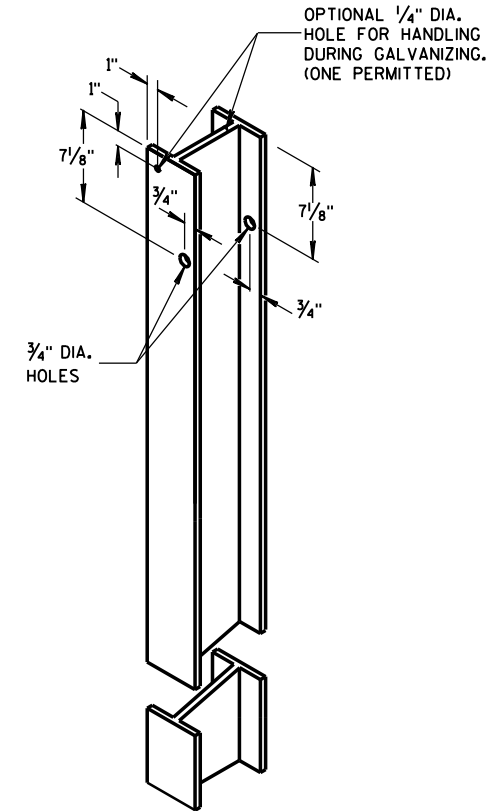
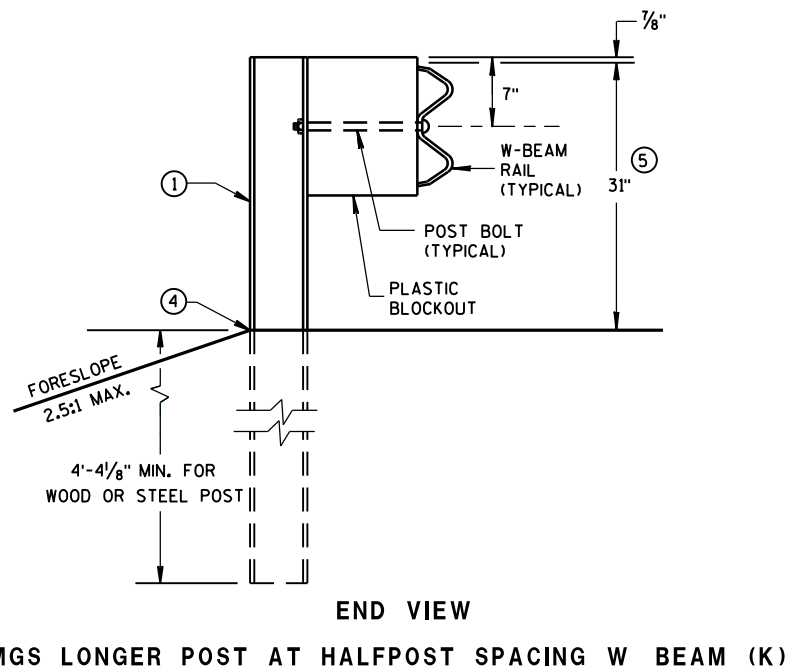
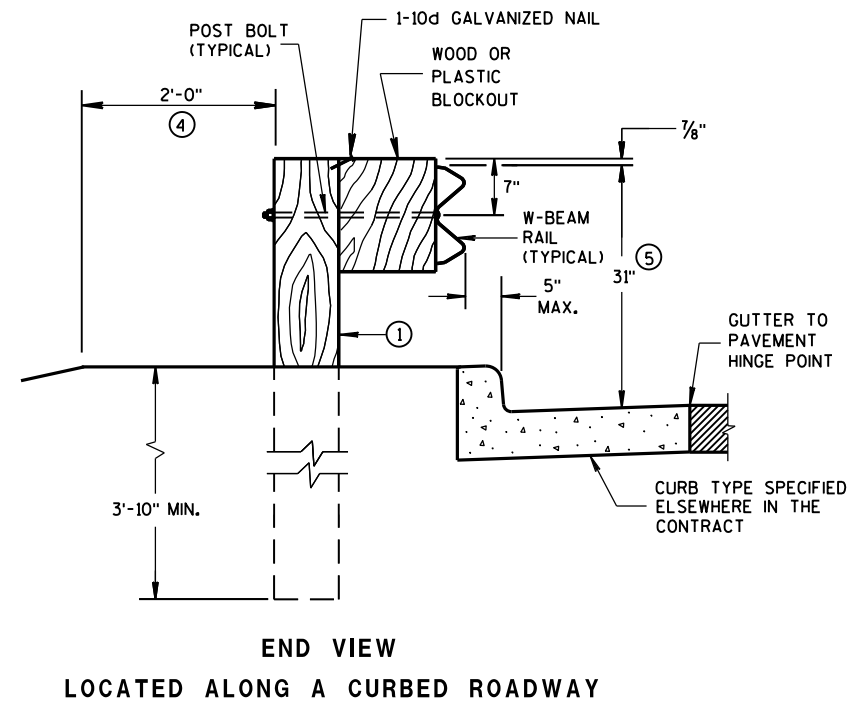
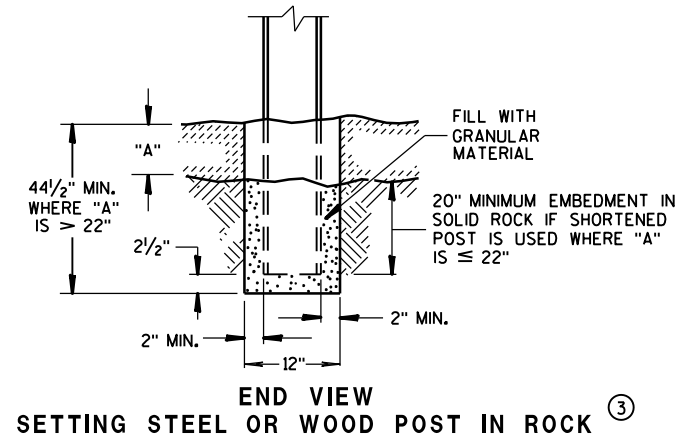
3/26/10
DATE

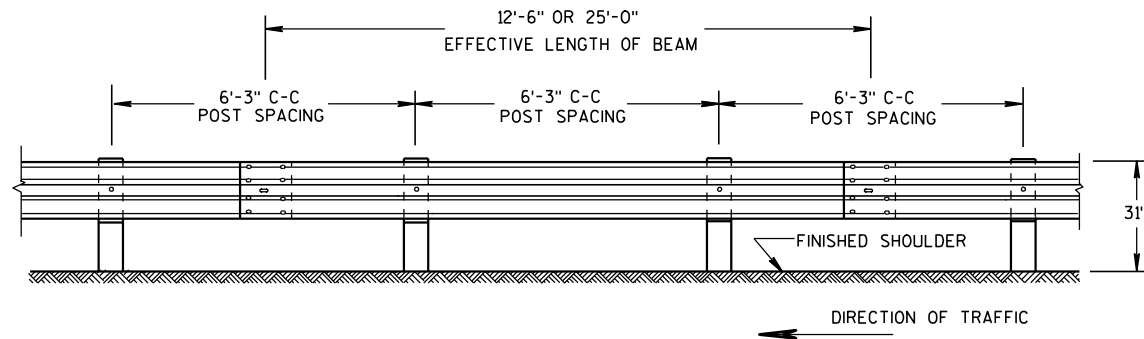
FHWA

/S/ Scot Becker
CHIEF STRUCTURAL DEVELOPMENT ENGINEER

6

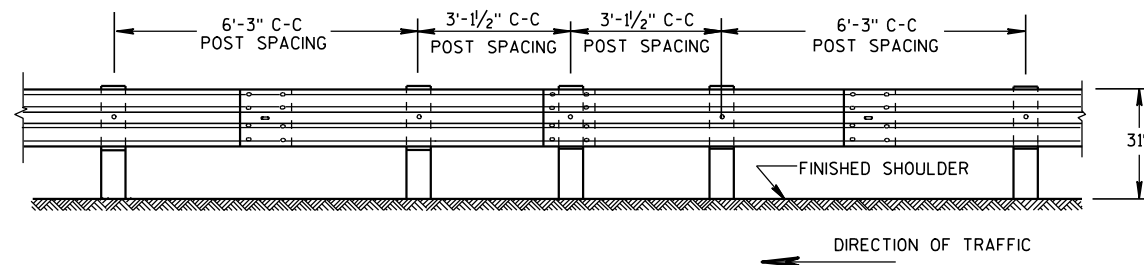
- S.D.D. 14 B 42-2a**





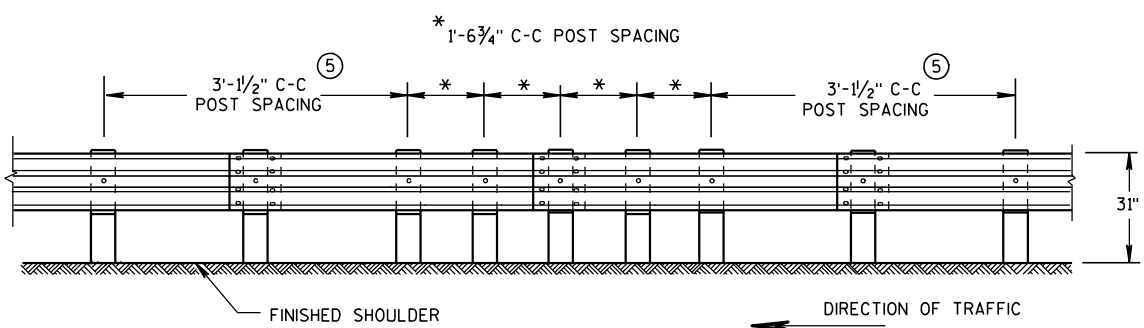
FRONT VIEW

POST SPACING STANDARD INSTALLATION



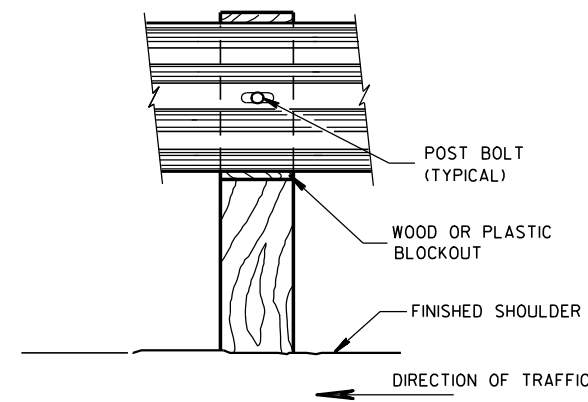
FRONT VIEW

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

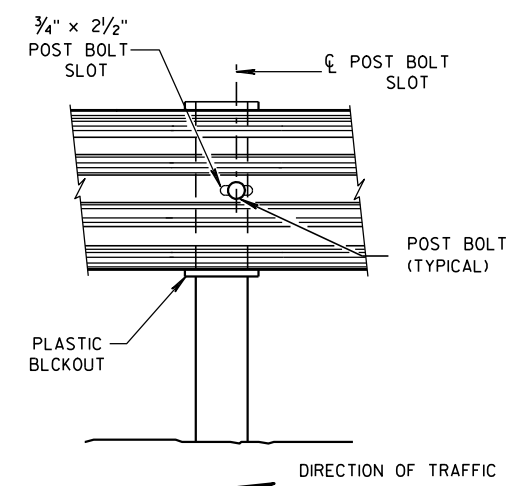


FRONT VIEW

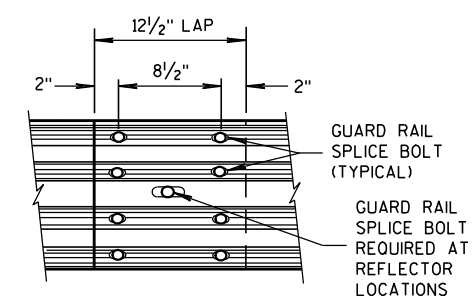
QUARTER POST SPACING (QS)



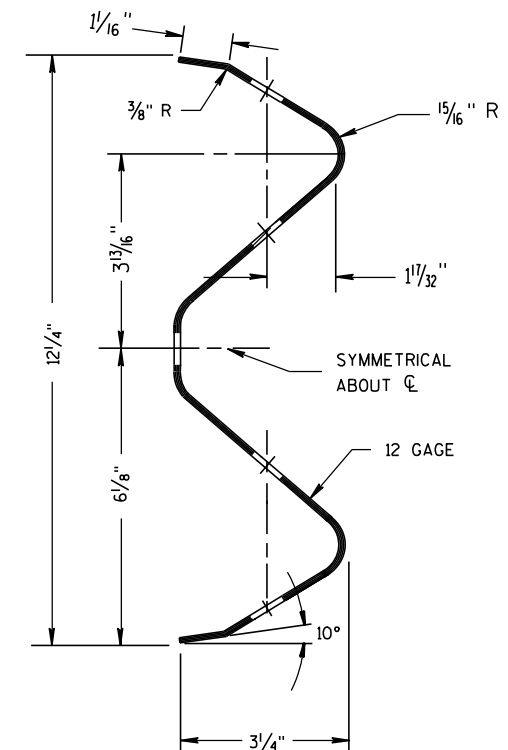
FRONT VIEW AT WOOD POST



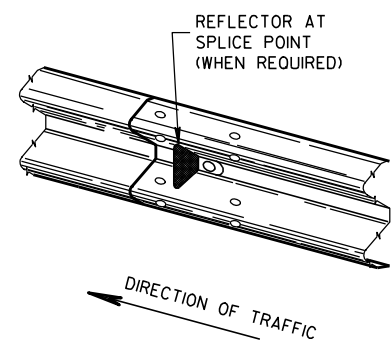
FRONT VIEW AT STEEL POST



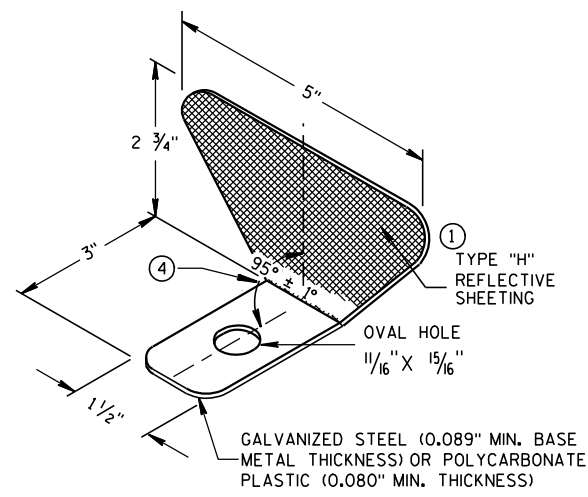
FRONT VIEW
MID-SPAN BEAM SPLICE



SECTION THRU W-BEAM RAIL



ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION



GENERAL NOTES

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

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

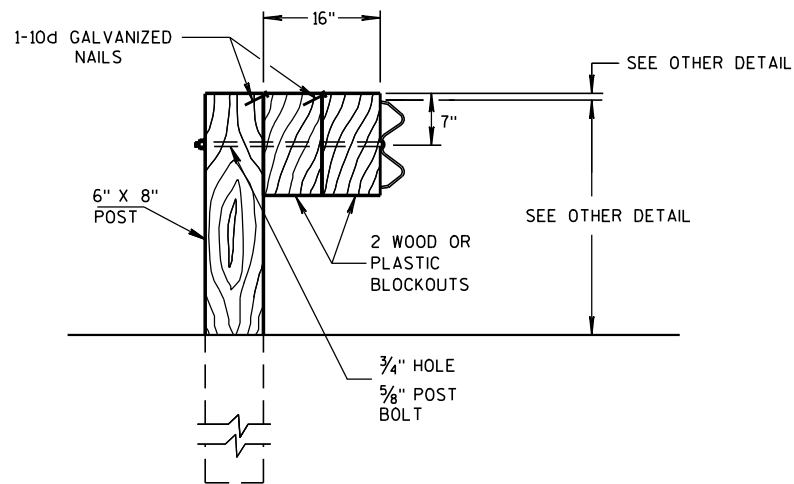
GUARD RAIL SPLICE BOLTS ARE A $\frac{5}{8}$ " DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES $\frac{5}{8}$ " DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.

REFLECTOR SPACING

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

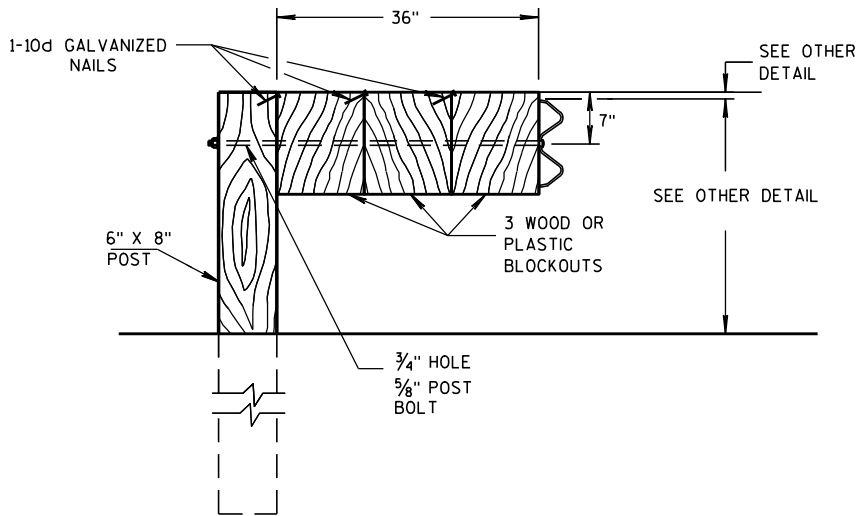
MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

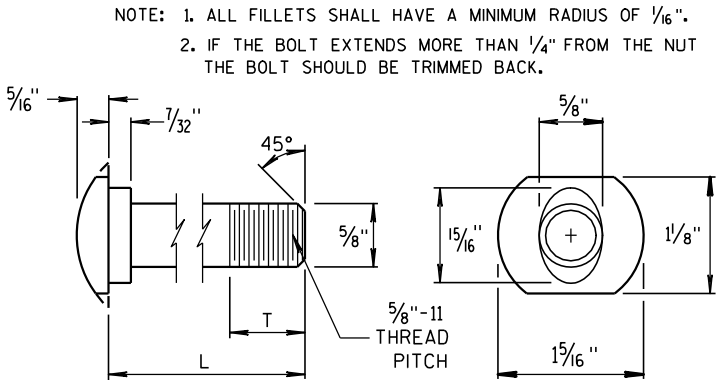
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



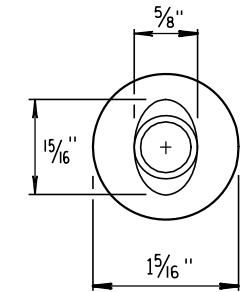
DETAIL FOR 36" BLOCKOUT DEPTH

NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.

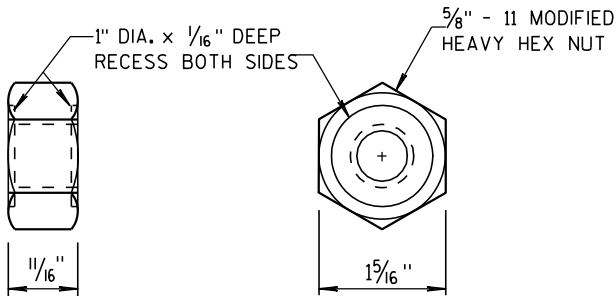
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.



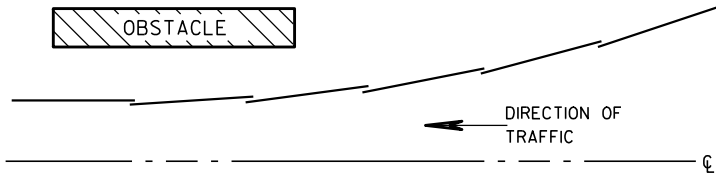
POST BOLT TABLE



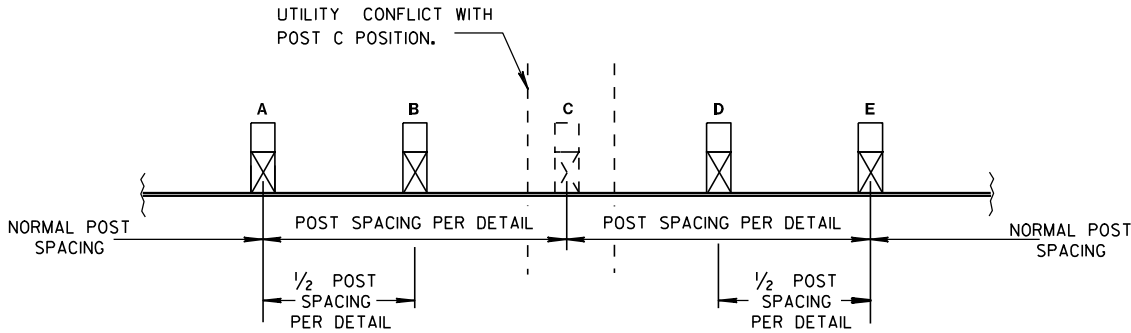
ALTERNATE BOLT HEAD



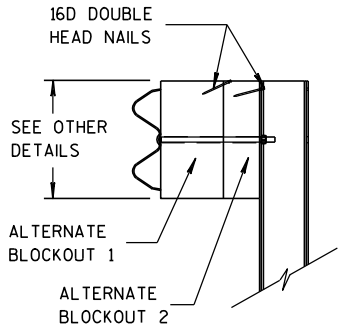
POST BOLT AND RECESS NUT



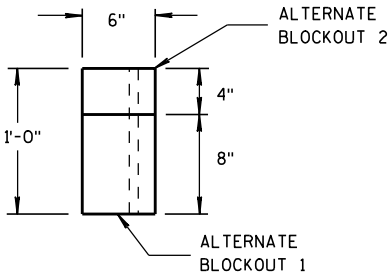
PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/15/2011
DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA

GENERAL NOTES

- (A) THE SLOPE IN THE AREA BOUNDED BY THE EXTENDED VEHICLE RUNOUT PATH (EVRP), THE HINGE POINT LINE (HPL), AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED.
- (C) DIFFERENT MANUFACTURES REQUIRE DIFFERENT PERFORATED W-BEAM RAIL END PANELS. SEE MANUFACTURES INFORMATION.
- (D) THE TOP OF THE STEEL TUBE ON POST 1 AND POST 2 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.
- (E) SHEETING IS ATTACHED TO 0.040 ALUMINUM SHEET AND ATTACHED TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS. ONE SCREW PER CORNER OF E.A.T.
- (F) 1/2" DIAMETER X 3" LONG LAG BOLT AND WASHER.
- (H) HARDWARE VARIES BETWEEN DIFFERENT MANUFACTURES. SEE MANUFACTURE'S DRAWING FOR INFORMATION.
- (I) DIMENSIONS MAY VARY. SEE MANUFACTURE'S INFORMATION.

SEE SDD 14B42 FOR MORE INFORMATION.

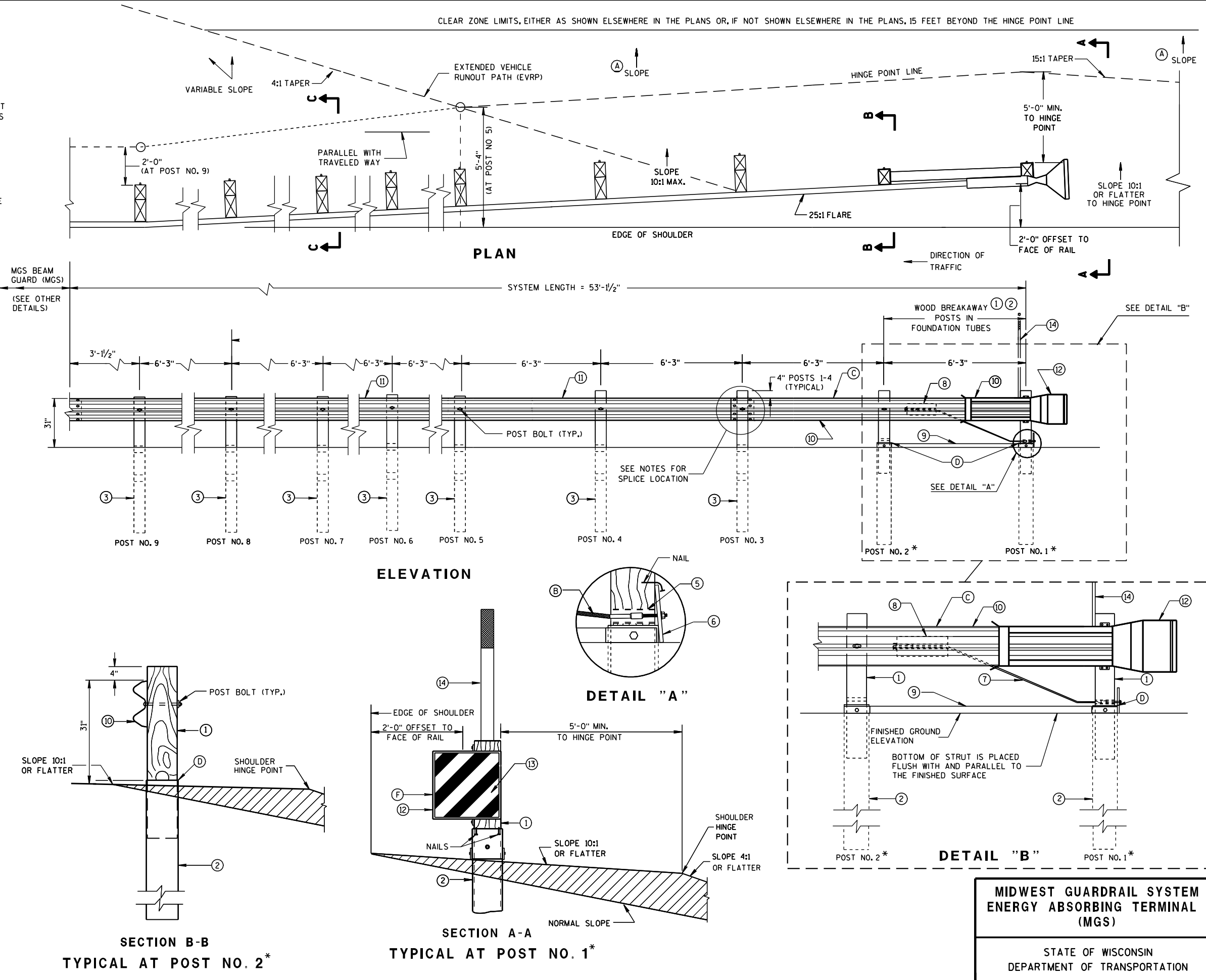
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

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

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

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

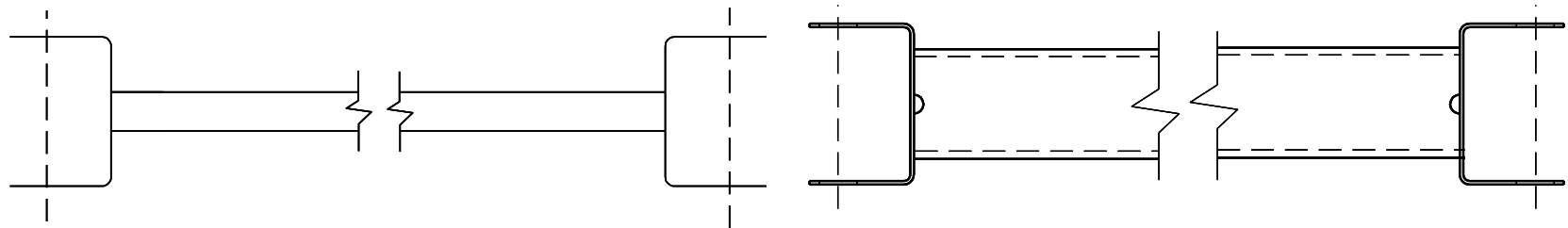
THE CENTER OF THE UPPER 3/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE ($\pm \frac{3}{4}$ ")



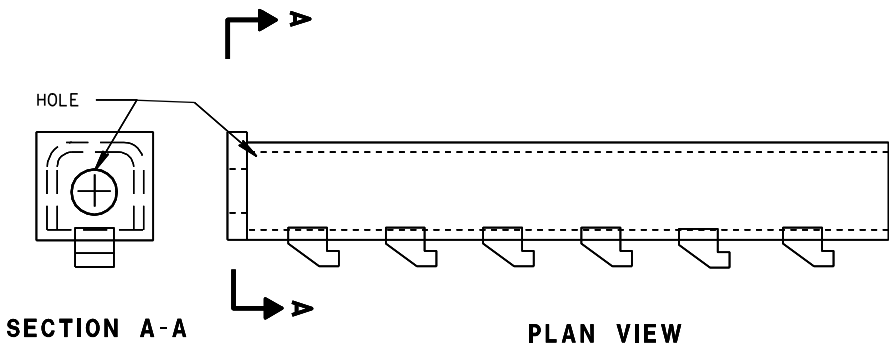
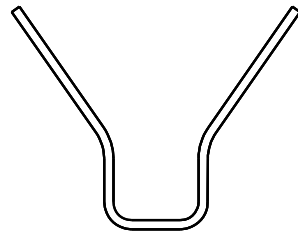
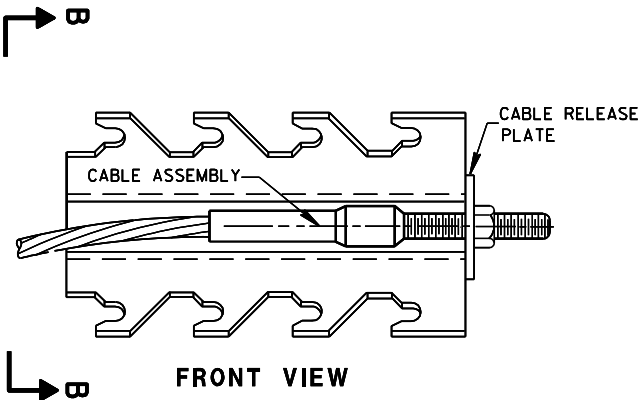
MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

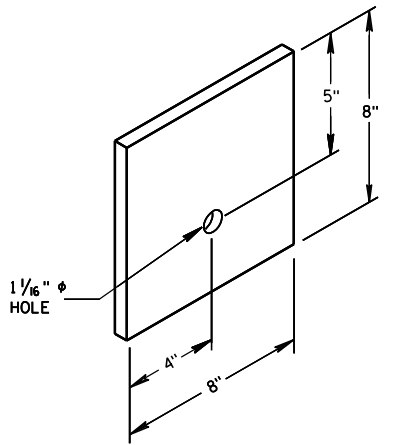
BILL OF MATERIALS	
PART NO.	DESCRIPTION
MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.	
①	WOOD BREAKAWAY POST
②	6" X 8" X 0.188", 6'-0" LONG FOUNDATION TUBE AT POSTS 1 AND 2
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED W-BEAM RAIL END PANEL, 12'-6" LONG.
⑪	STANDARD W-BEAM RAIL, MULTIPLE SECTIONS REQUIRED. SECTIONS VARY IN LENGTH.
⑫	END SECTION EAT
⑬	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE H (ONLY THE SHEETING IS SUPPLIED BY THE MANUFACTURER)
⑭	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)



⑨ ⑨
GENERIC GROUND STRUT



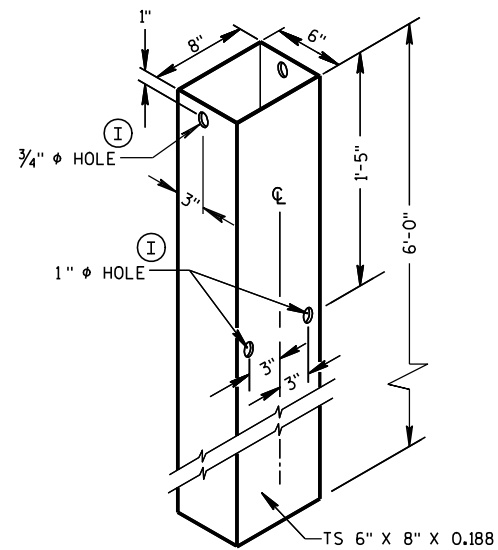
⑧ ⑧
GENERIC ANCHOR CABLE BOX



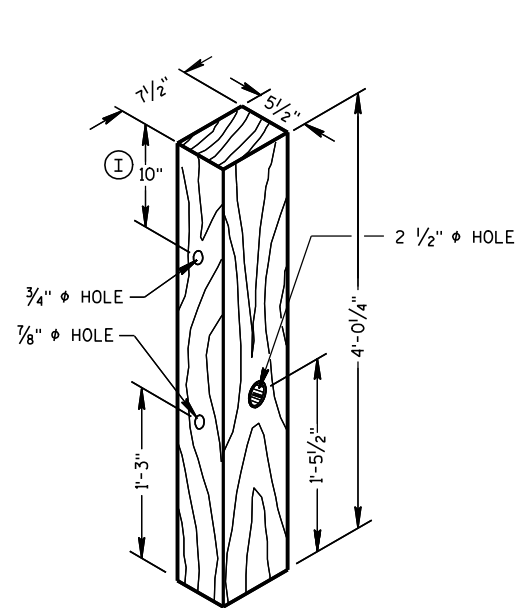
⑥
BEARING PLATE

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

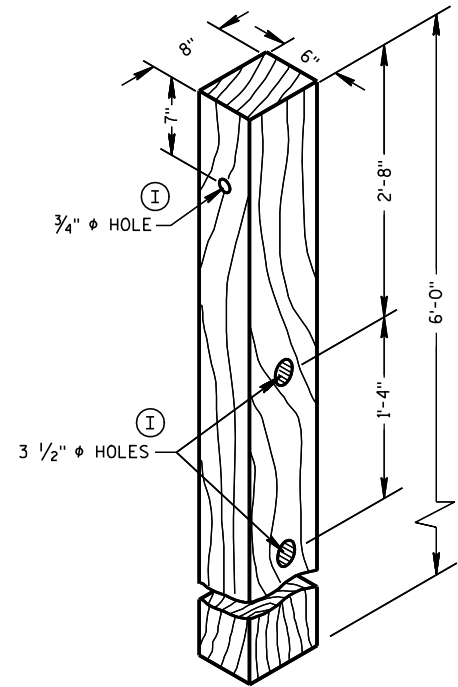
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



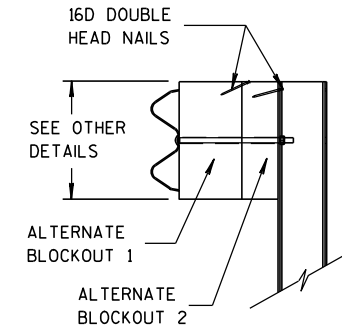
FOUNDATION TUBE ②



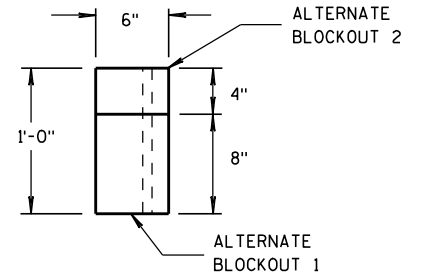
WOOD BREAKAWAY POST ①



WOOD CRT POST ③

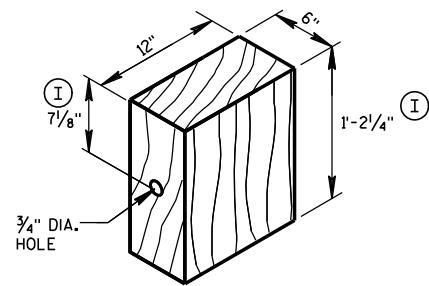


SIDE VIEW



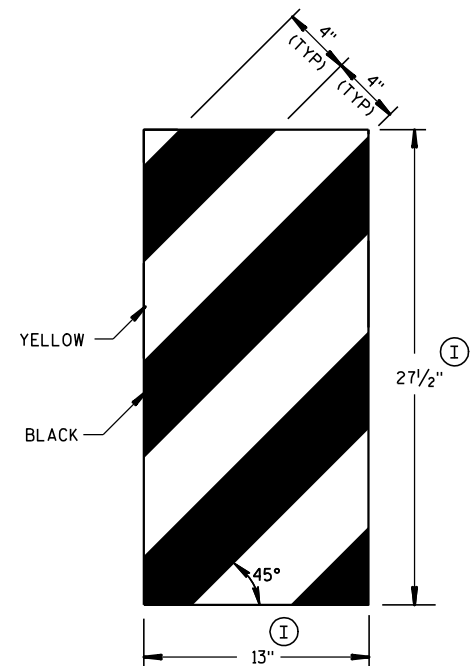
TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

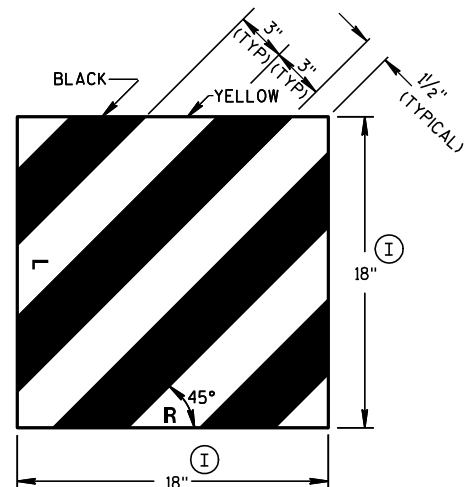


WOOD BLOCKOUT ④

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



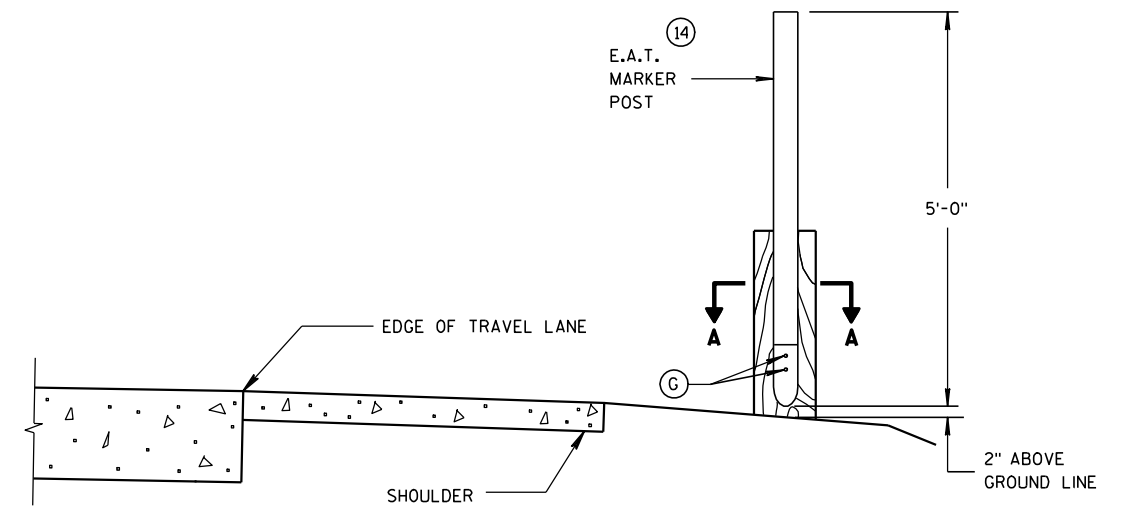
GENERIC REFLECTIVE SHEETING ⑬ ④



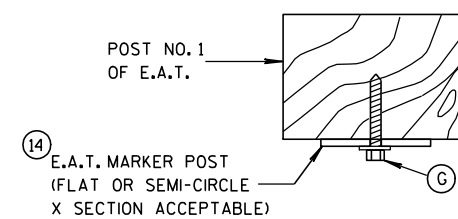
FRONT VIEW

SIDE VIEW

E.A.T. MARKER POST ⑭



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

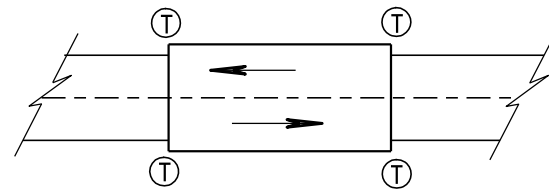


SECTION A-A

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

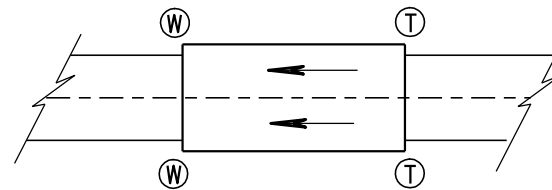
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
5/23/2011 /S/ Jerry H. Zogg
DATE ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA



TWO WAY TRAFFIC

Ⓣ THRIE BEAM CONNECTION



ONE WAY TRAFFIC

Ⓦ W-BEAM CONNECTION WHEN REQUIRED

GENERAL NOTES

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

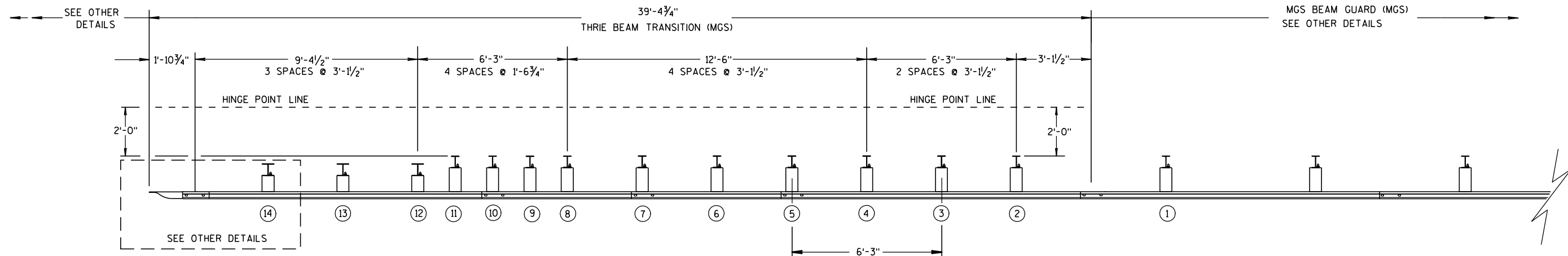
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2½", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

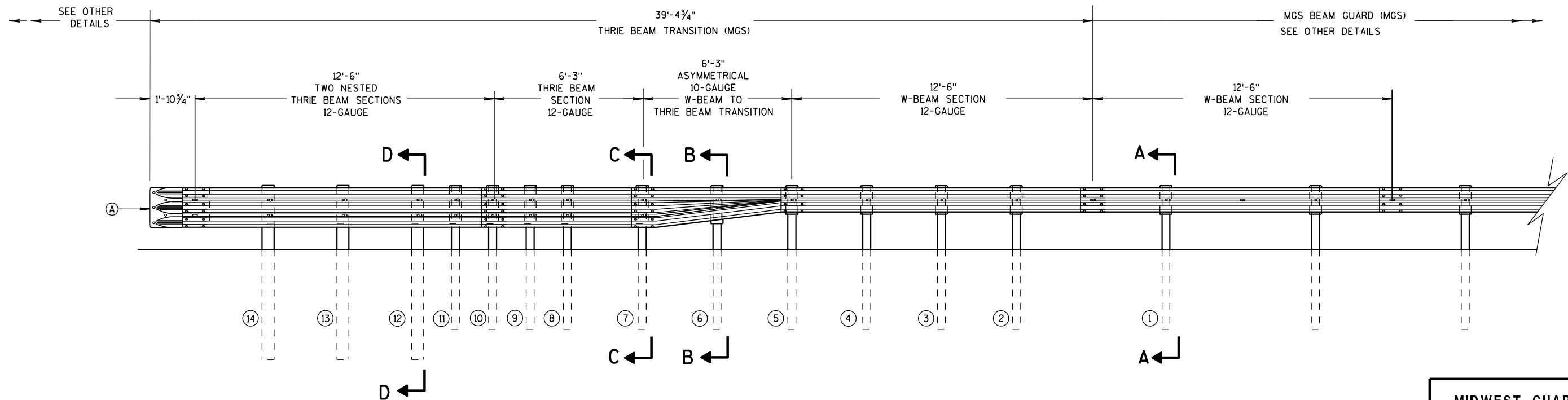
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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

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



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

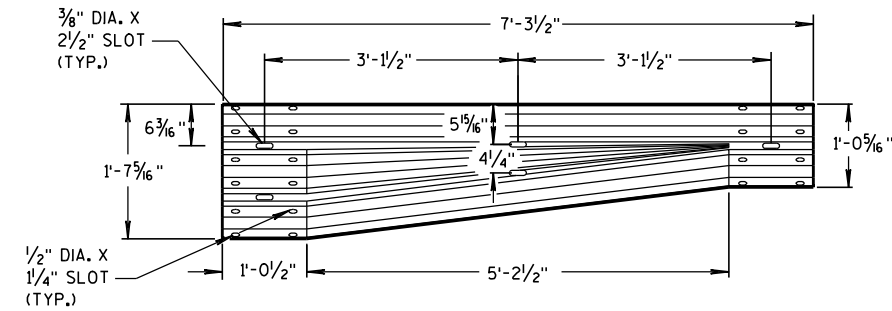
6

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

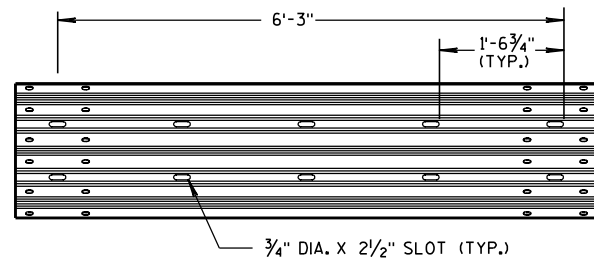


STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

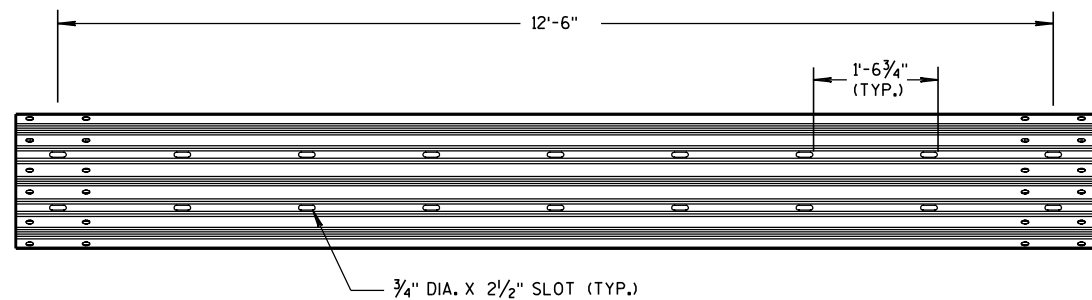
S.D.D. 14 B 45-3b



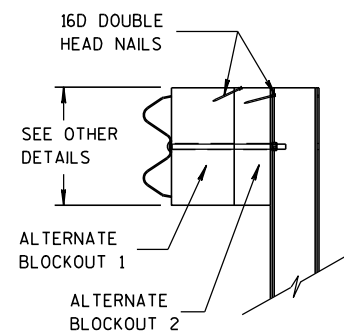
W-BEAM TO THRIE BEAM TRANSITION SECTION



6'-3" THRIE BEAM SECTION

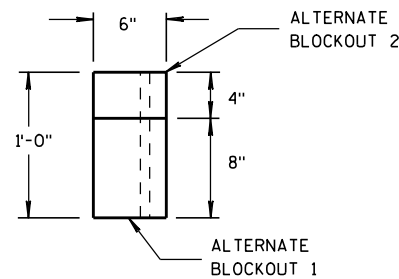


12'-6" THRIE BEAM SECTION

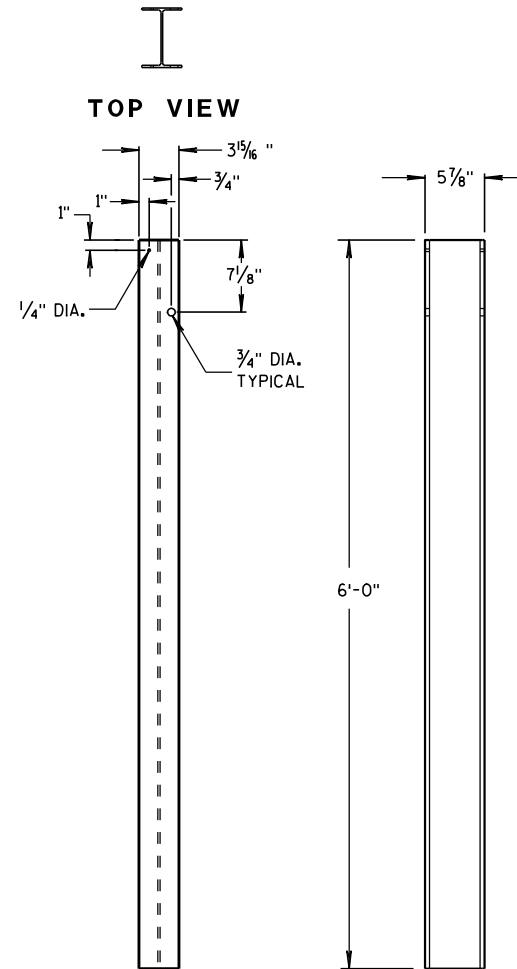


SIDE VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL



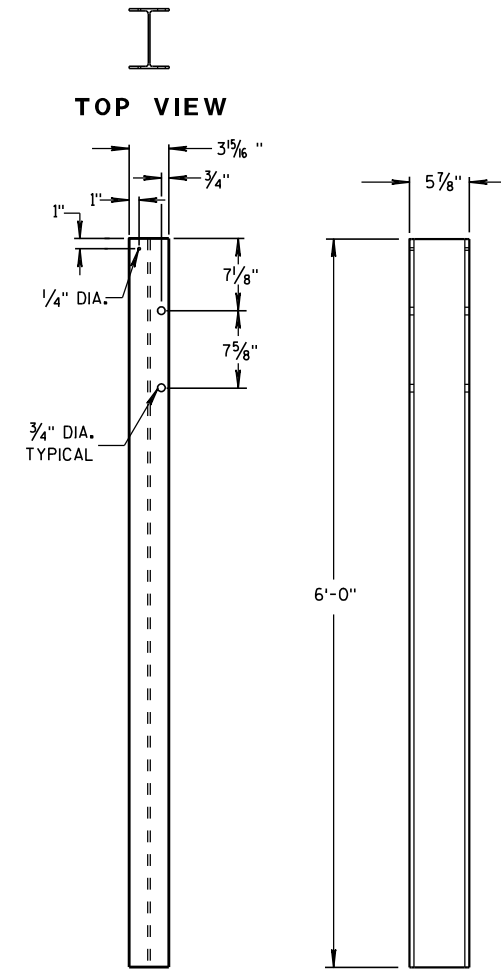
TOP VIEW



FRONT VIEW

SIDE VIEW

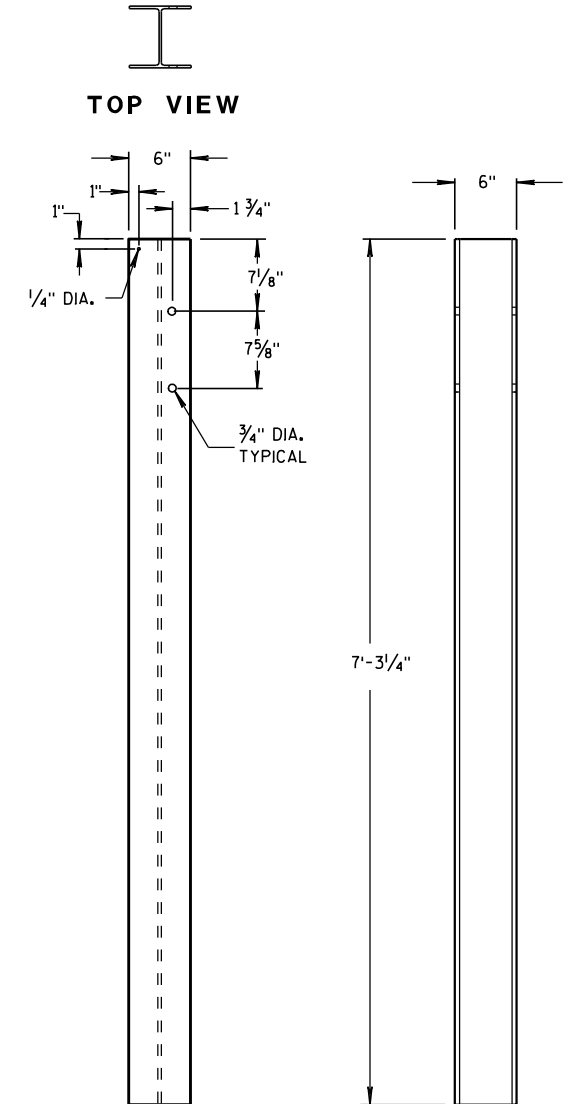
STEEL POSTS 1-5



FRONT VIEW

SIDE VIEW

STEEL POSTS 6-11



FRONT VIEW

SIDE VIEW

STEEL POSTS 12-14

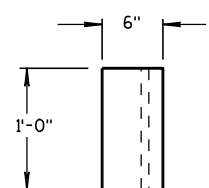
STEEL POST SIZES

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

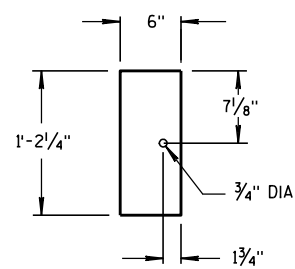
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

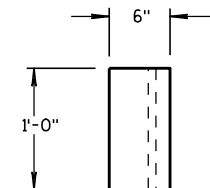


TOP VIEW

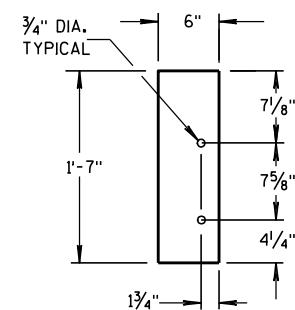


FRONT VIEW

BLOCKOUT
POSTS 1-5

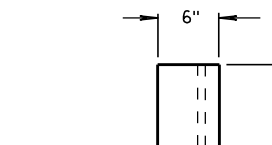


TOP VIEW

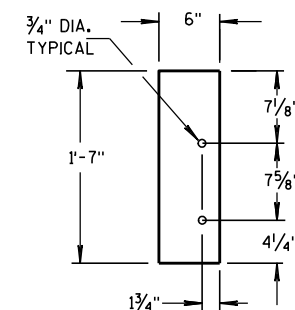


FRONT VIEW

BLOCKOUT
POSTS 6-11



TOP VIEW

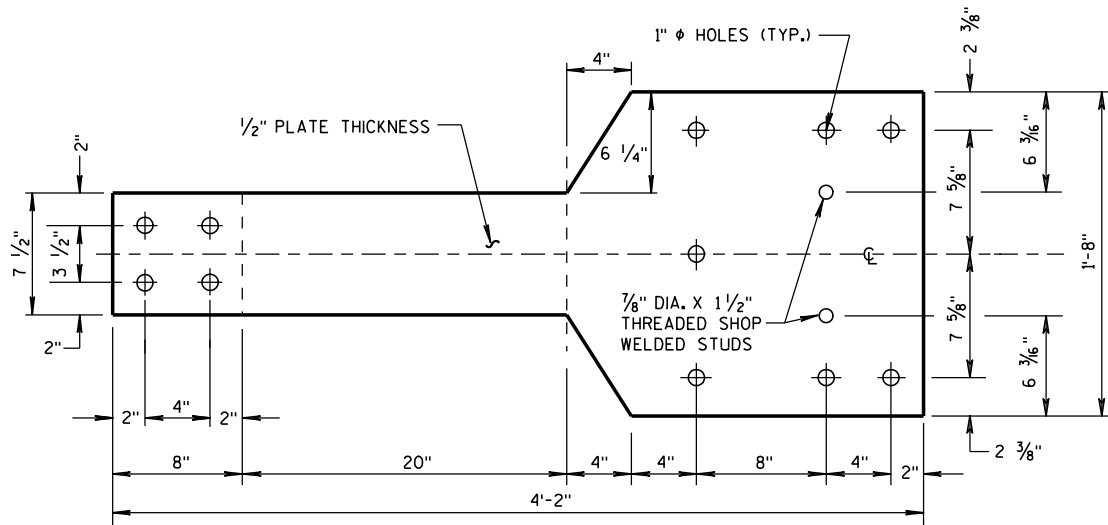


FRONT VIEW

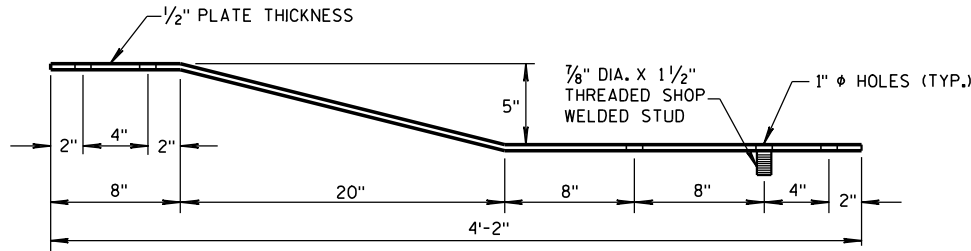
BLOCKOUT
POSTS 12-14

GENERAL NOTES

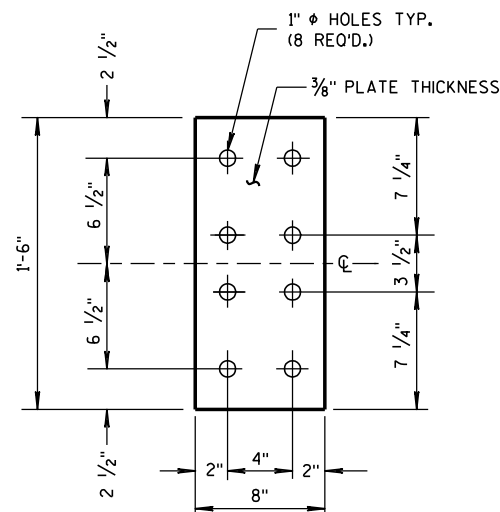
(B) TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm 1"$.



FRONT VIEW

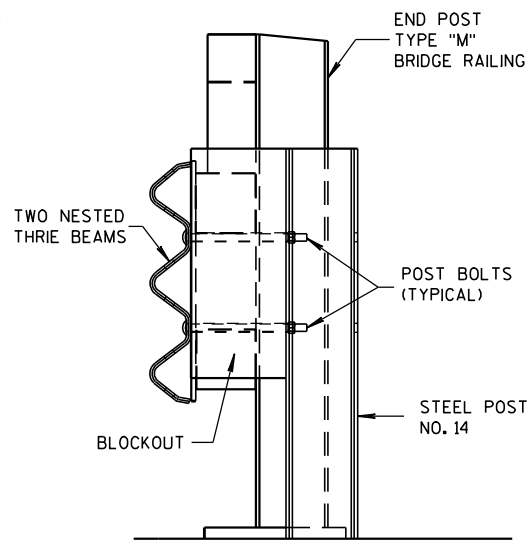


PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"

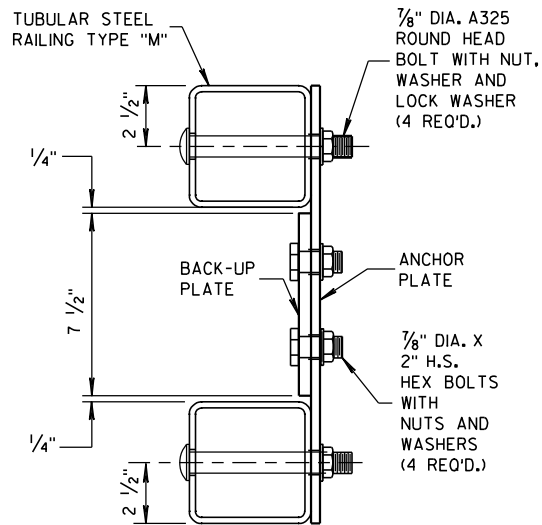


FRONT VIEW

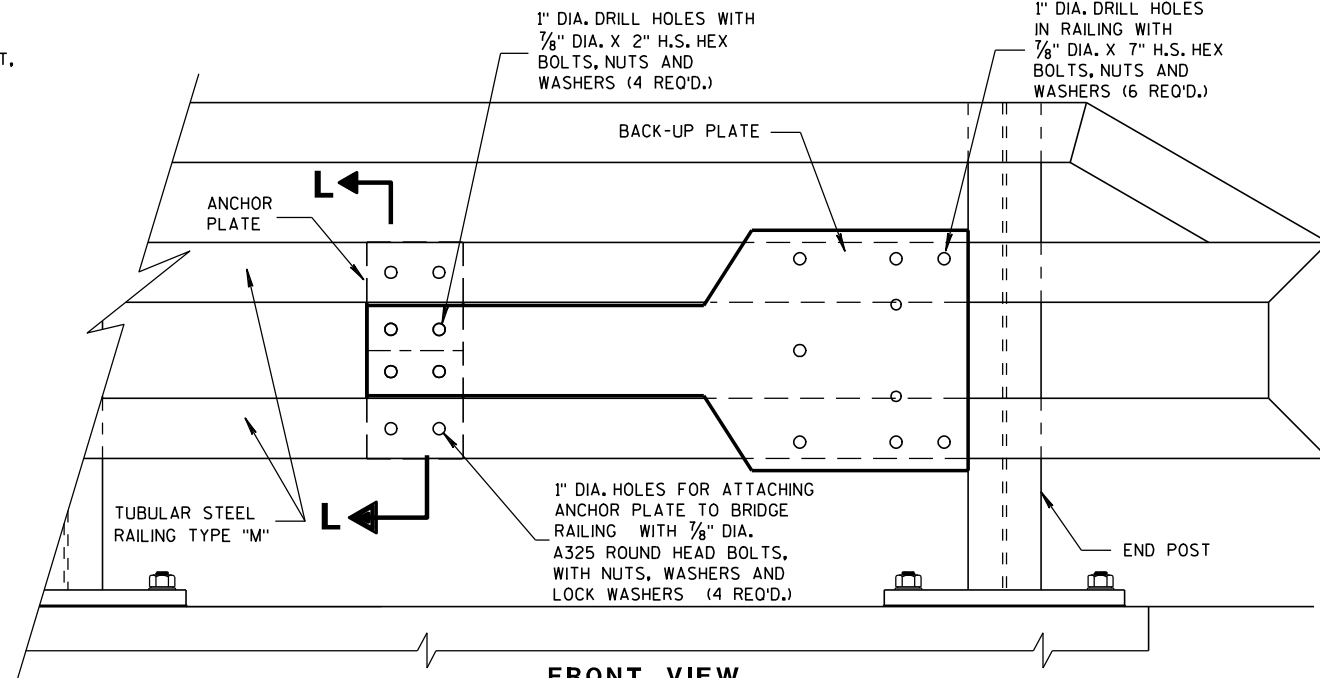
ANCHOR
PLATE DETAIL,
TYPE "M"



SECTION M-M

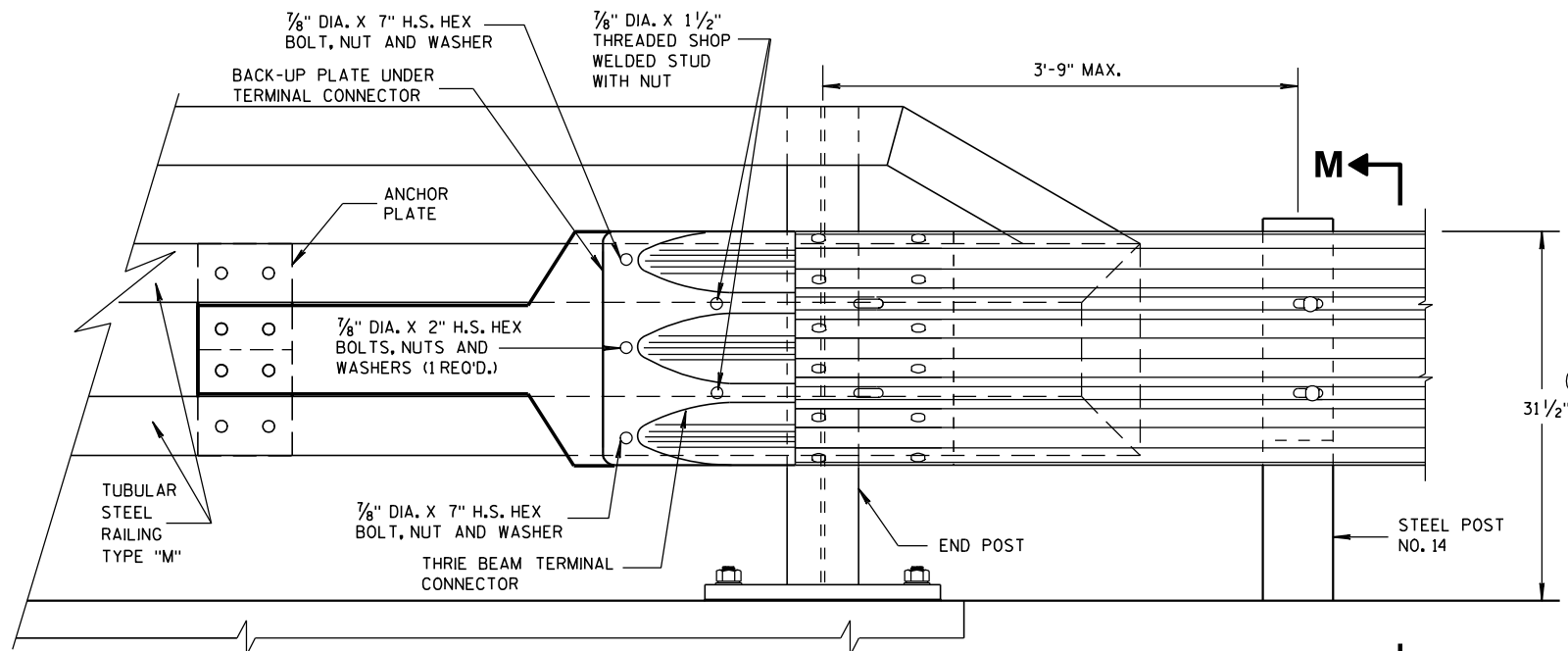


SECTION L-L

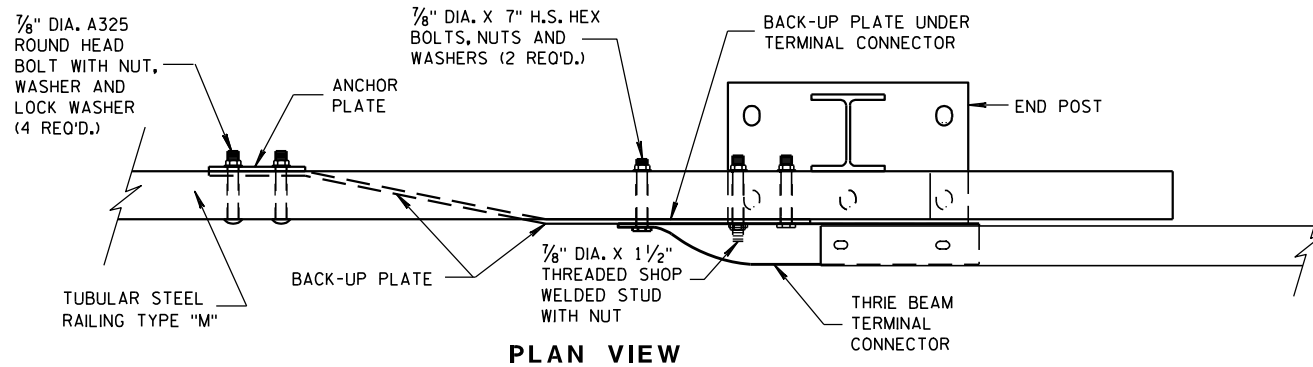


FRONT VIEW

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



FRONT VIEW



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

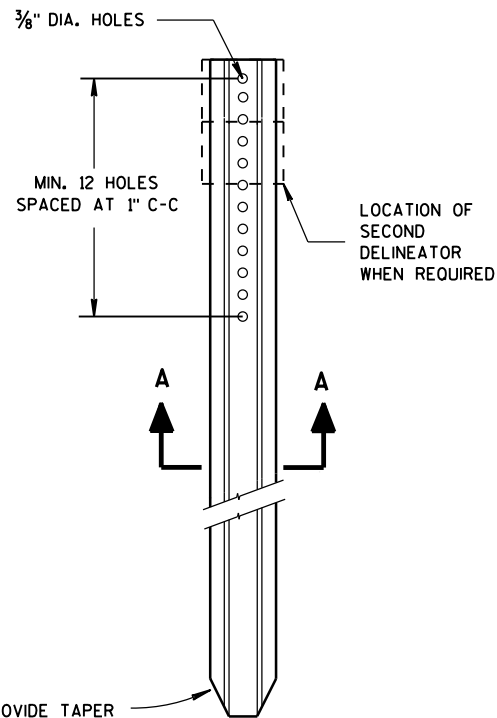
APPROVED

8-31-2012

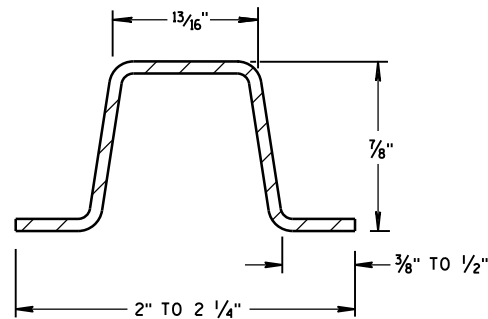
DATE

FHWA

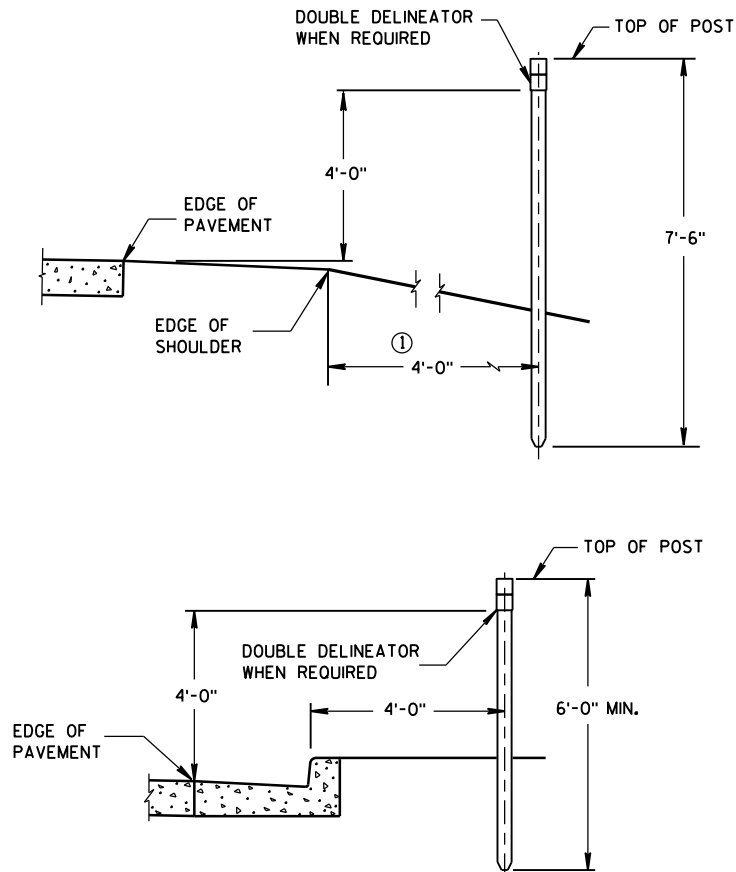
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER



DELINEATOR POST



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

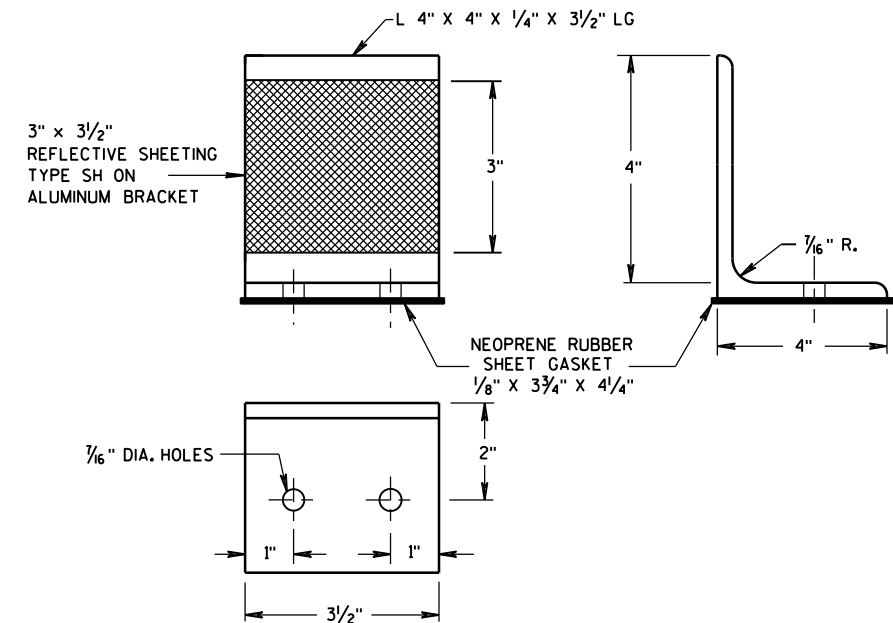


TYPICAL INSTALLATIONS OF DELINEATOR POSTS

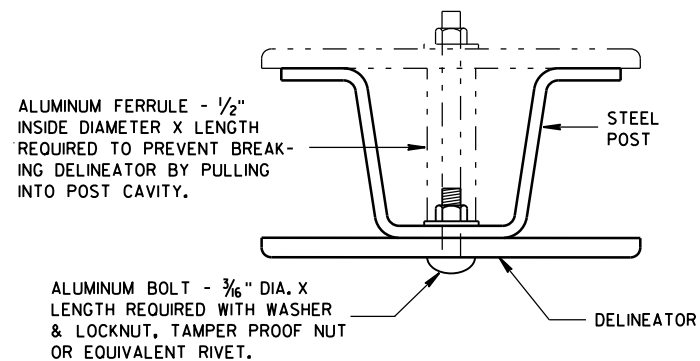
GENERAL NOTES

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

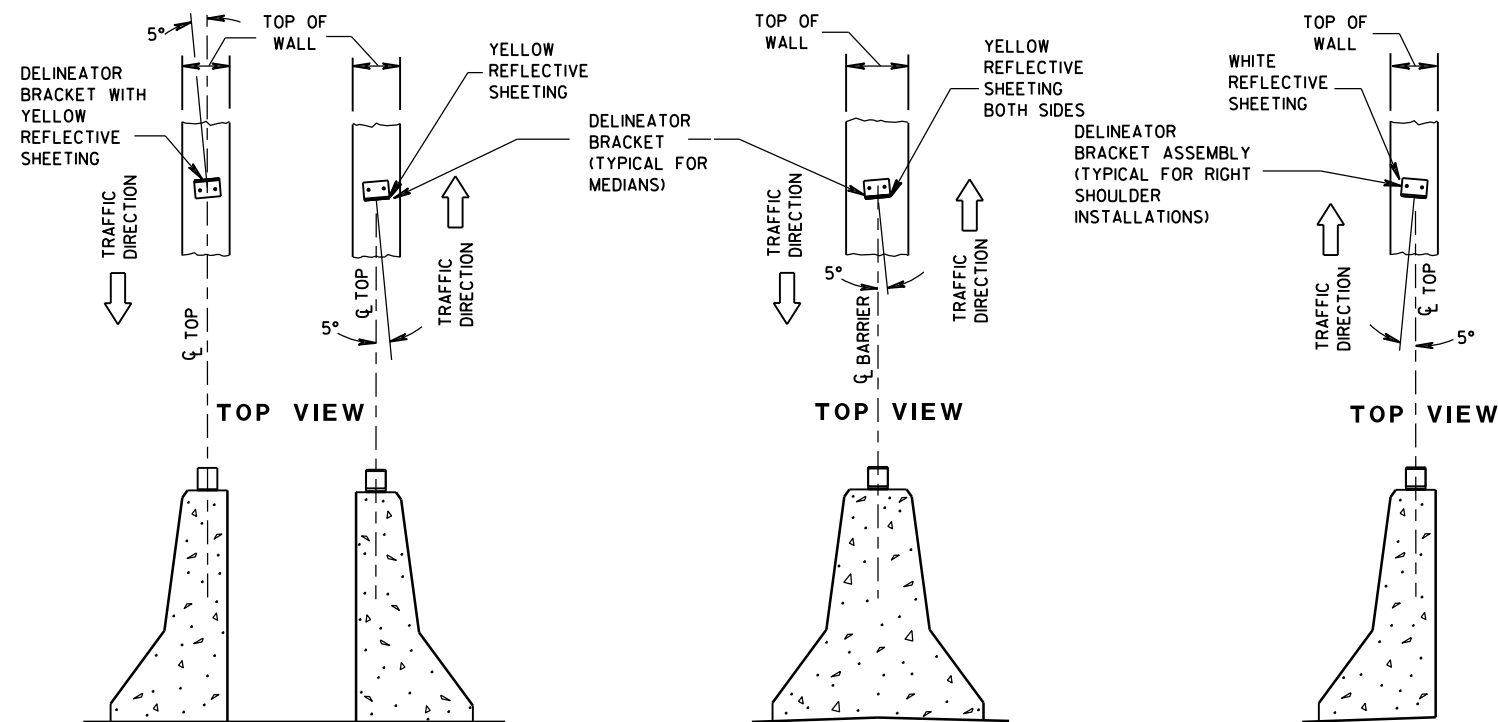
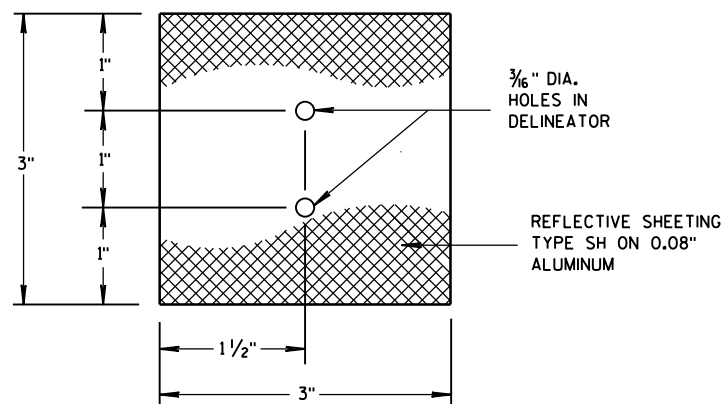
- ① DELINEATORS SHALL BE PLACED AT A CONSTANT DISTANCE FROM THE EDGE OF THE SHOULDER FOR THE LENGTH OF THE INSTALLATION.



DELINEATOR BRACKET



MOUNTING DETAIL FOR DELINEATOR

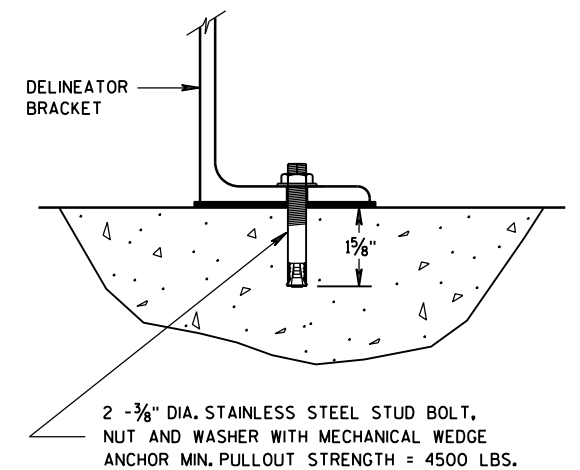


DOUBLE BARRIERS IN MEDIAN

MEDIAN BARRIER

BARRIER LOCATED TO RT. OF TRAFFIC FLOW

LOCATION AND AIMING DETAILS FOR DELINEATOR BRACKETS MOUNTED ON CONCRETE BARRIERS

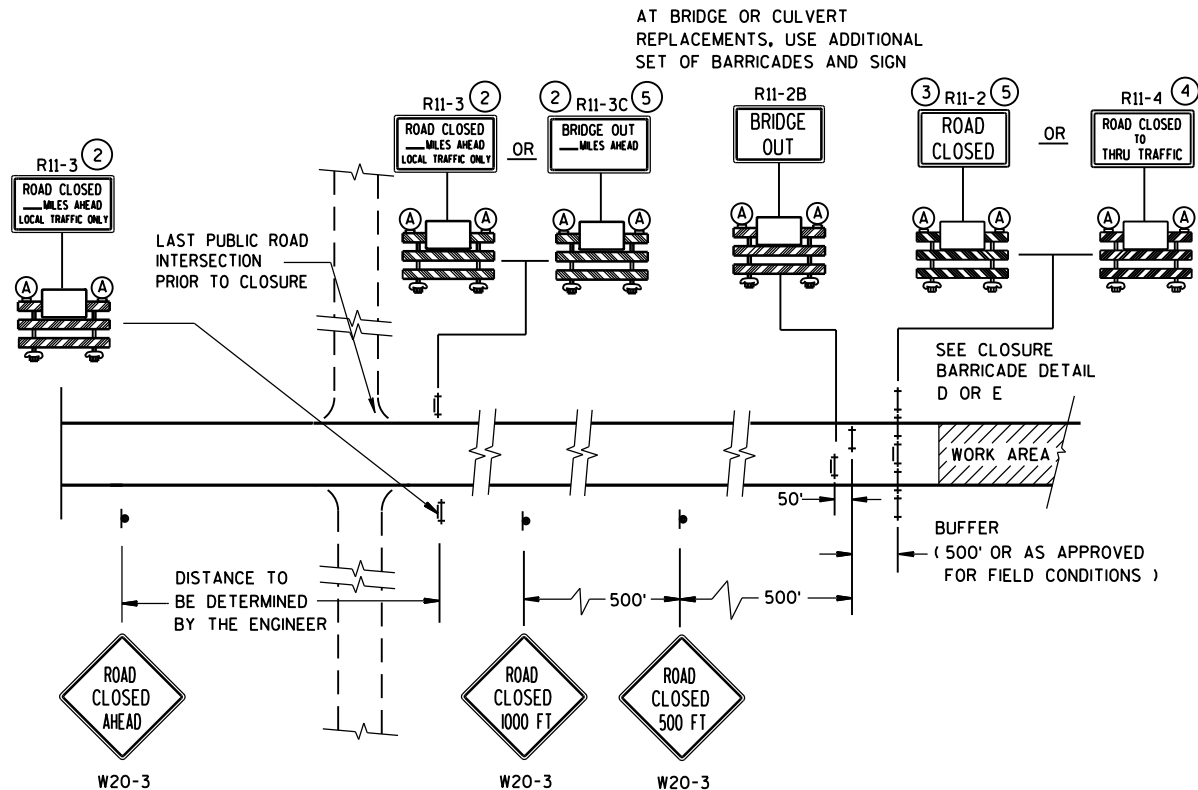
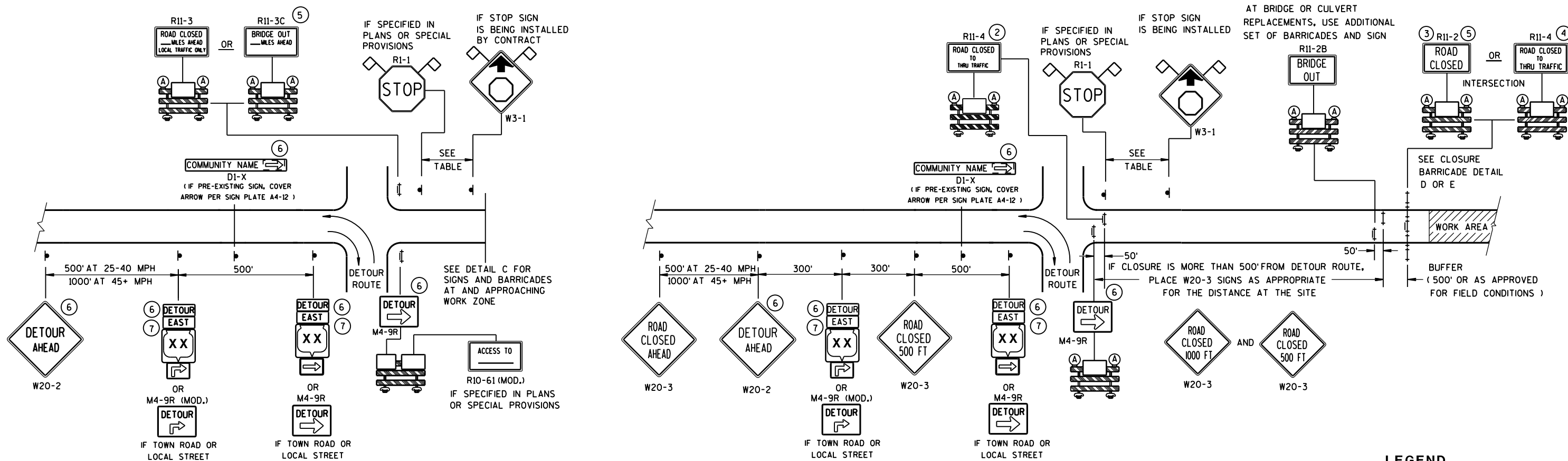


DELINEATOR BRACKET MOUNTING DETAIL

DELINEATOR POST, DELINEATOR, AND DELINEATOR BRACKET WITH REFLECTIVE SHEETING

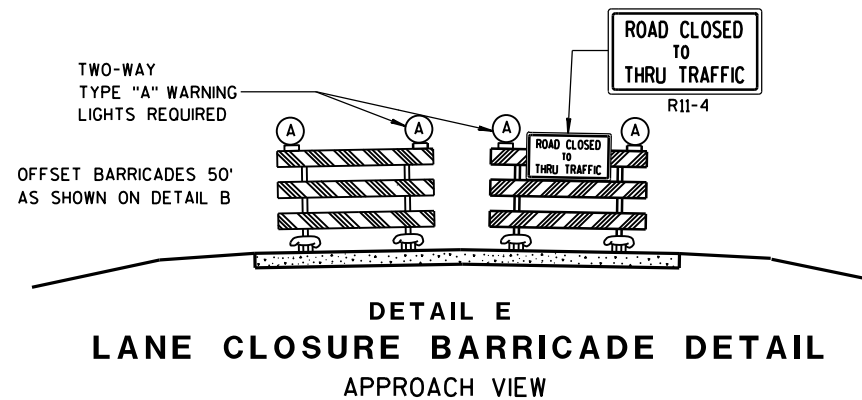
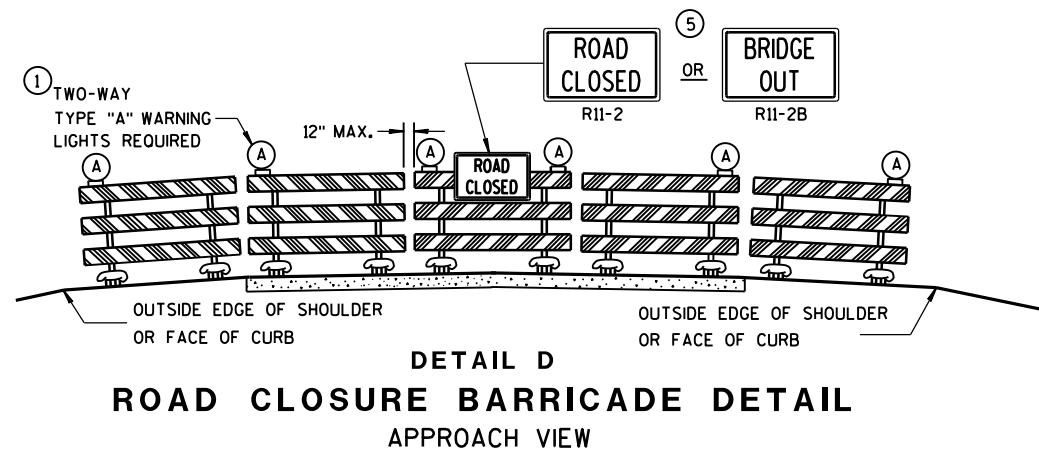
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2013 DATE /S/ Travis Feltes
STATE TRAFFIC ENGINEER
FHWA



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

BARRICADES AND SIGNS FOR MAINLINE CLOSURES	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
8/2013 DATE	/S/ Travis Feltes STATE TRAFFIC ENGINEER OF DESIGN
FHWA	



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

8/2013 /S/ Travis Feltes
DATE STATE TRAFFIC ENGINEER OF DESIGN
FHWA

LEGEND

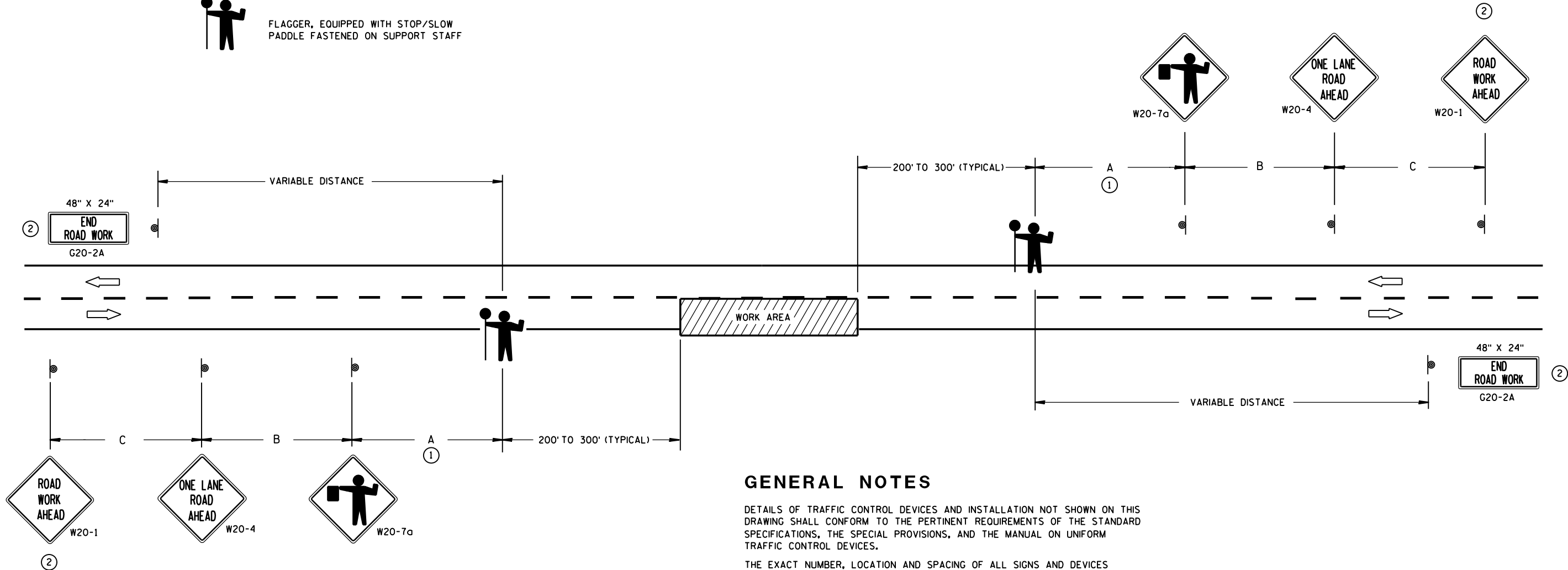
-  SIGN ON PORTABLE OR PERMANENT SUPPORT
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

SIGN SPACING TABLE

SPEED LIMIT	SIGN SPACING A,B,C
25-35 MPH	200'
35-40 MPH	350'
45-55 MPH	500'



USE OF THE "BE PREPARED TO STOP" SIGN IS OPTIONAL. WHEN USED, THIS SIGN SHALL BE LOCATED BETWEEN THE W20-7a AND W20-4 SIGNS. A 500' TYPICAL SPACING SHALL BE PROVIDED BETWEEN THE SIGNS.



- ① FOR A MOVING WORK OPERATION, SIGNING FOR BOTH DIRECTIONS SHALL BE REESTABLISHED (AS SIMULTANEOUSLY AS PRACTICAL) AT APPROXIMATELY 3500 FOOT INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.
- ② SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.

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.

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

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

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

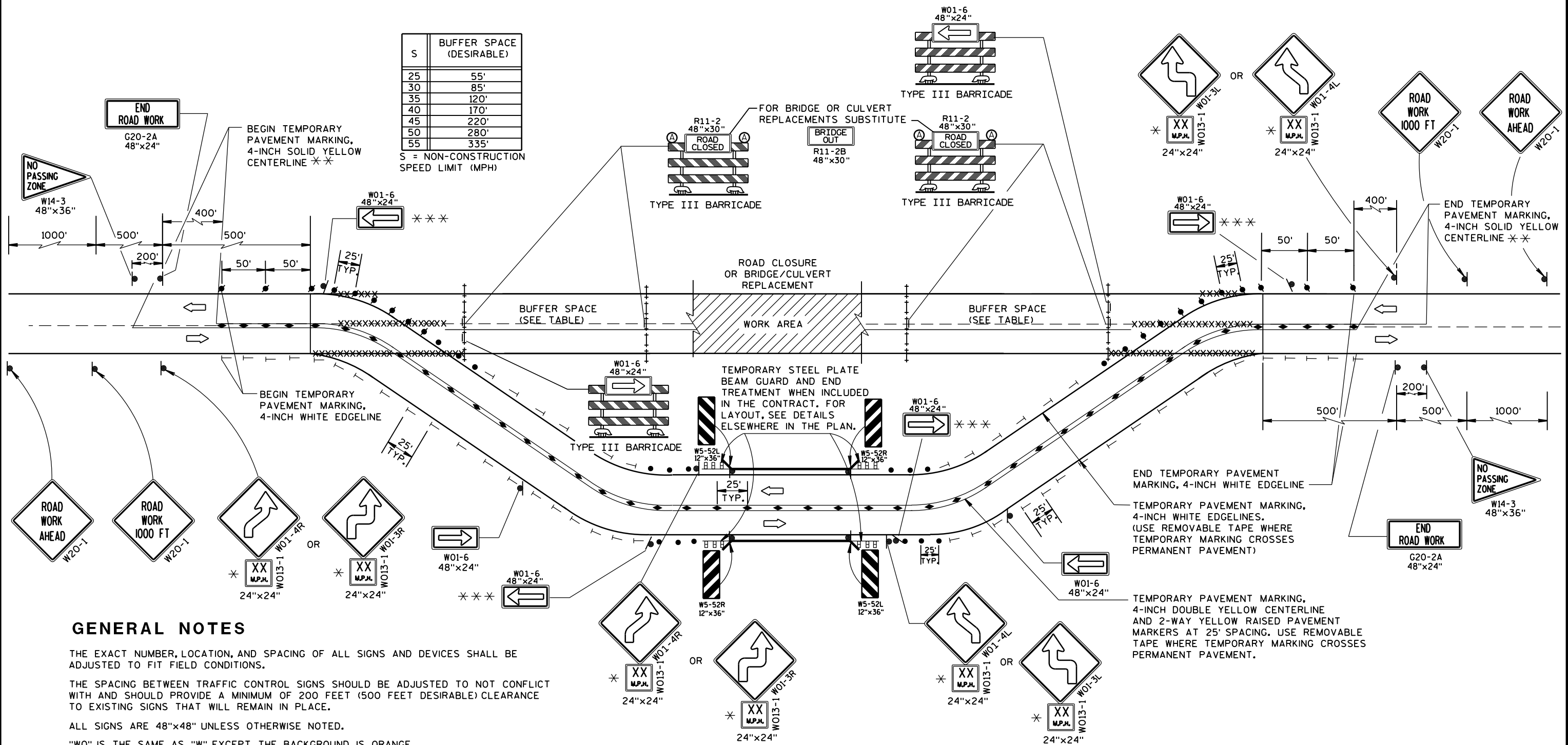
FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT, COVER OR REMOVE ALL TEMPORARY TRAFFIC CONTROL SIGNS.

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

TRAFFIC CONTROL FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 8/2013 DATE	/S/ Travis Feltes STATE TRAFFIC ENGINEER OF DESIGN
FHWA	

S	BUFFER SPACE (DESIRABLE)
25	55'
30	85'
35	120'
40	170'
45	220'
50	280'
55	335'

S = NON-CONSTRUCTION
SPEED LIMIT (MPH)



GENERAL NOTES

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

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

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.

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

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

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

EQUIPMENT, VEHICLES, OR MATERIAL SHOULD NOT BE STORED IN BUFFER SPACE.

* IF ADVISORY SPEED IS GREATER THAN 30 MPH, USE THE W01-4 SIGN. IF ADVISORY SPEED IS 30 MPH OR LESS, USE THE W01-3 SIGN.

** WHEN THE DISTANCE TO/FROM THE NEXT CLOSEST NO-PASSING ZONE IS LESS THAN THE MINIMUM DISTANCE BETWEEN ZONES AS INDICATED IN THE SPECIFICATIONS, THE TWO ZONES SHALL BE CONNECTED.

*** OMIT THESE W01-6 SIGNS IF THE ADVISORY SPEED OF THE CURVE IS GREATER THAN 30 MPH.

LEGEND

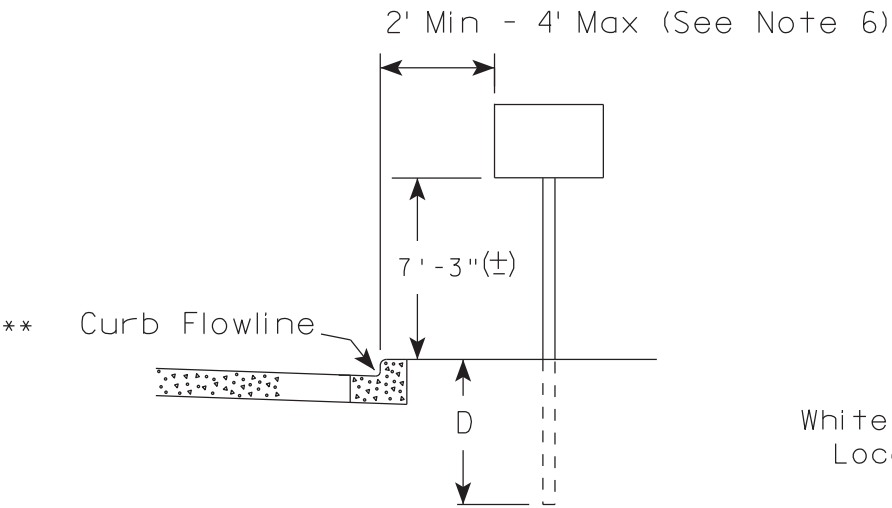
- SIGN ON PERMANENT SUPPORT
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY-BURN LIGHT
- TRAFFIC CONTROL DRUM
- ⊥ TYPE III BARRICADE
- ⊥ TYPE III BARRICADE WITH ATTACHED SIGN
- Ⓐ TYPE "A" WARNING LIGHT (FLASHING)
- TEMPORARY DELINEATOR, (WHITE) (SINGLE DELINEATOR)
- ◆ TEMPORARY RAISED PAVEMENT MARKERS (TWO-WAY YELLOW)
- XXX REMOVE PAVEMENT MARKING
- ➡ DIRECTION OF TRAFFIC
- ▤ TEMPORARY STEEL PLATE BEAM GUARD AND END TREATMENT
- ▨ WORK AREA

TRAFFIC CONTROL, TEMPORARY BYPASS ROADWAY

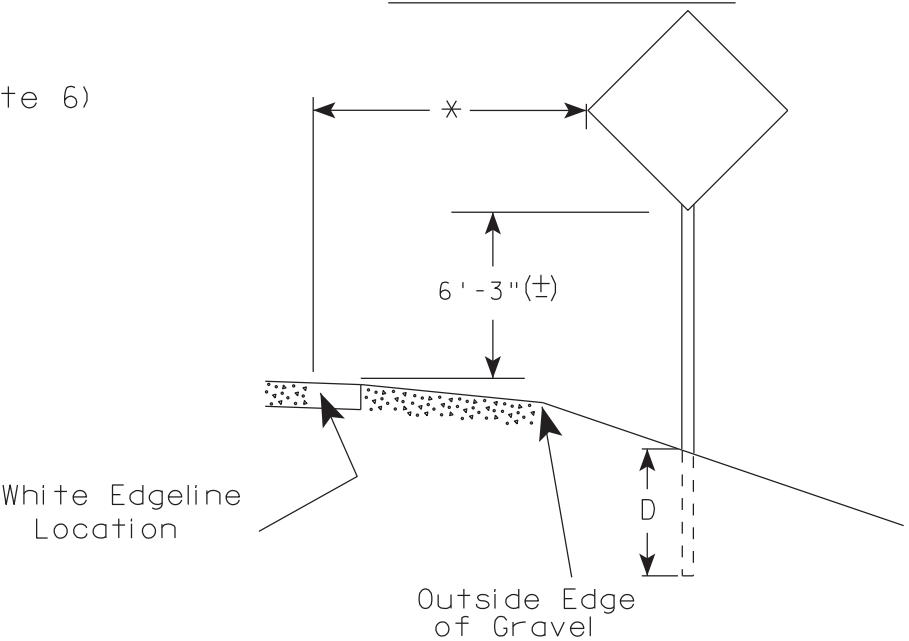
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/2013 /S/ Travis Feltes
DATE STATE TRAFFIC ENGINEER OF DESIGN
FHWA

URBAN AREA



RURAL AREA (See Note 2)



GENERAL NOTES

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

POST EMBEDMENT DEPTH

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

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

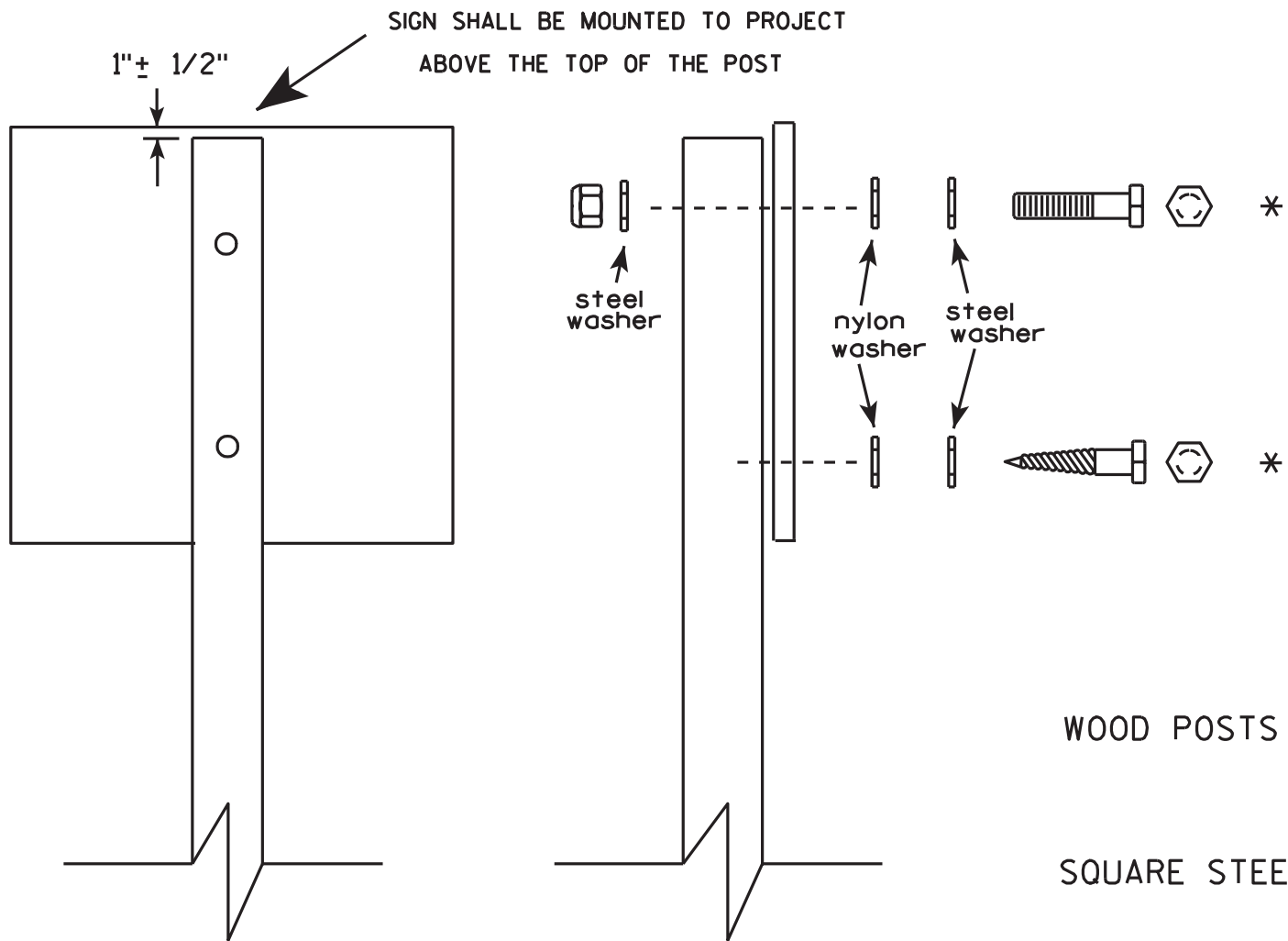
* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

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

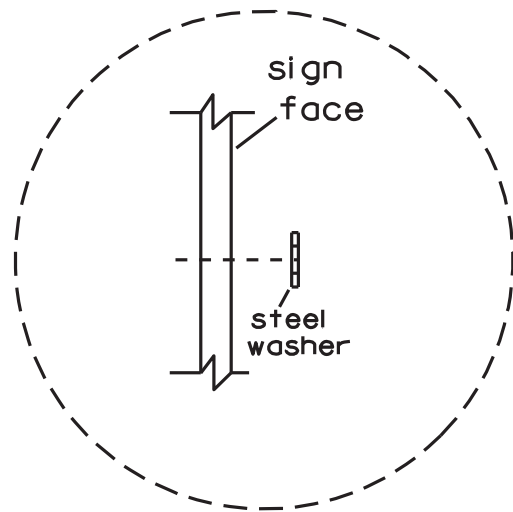


Nuts, bolts and lags used for mounting signs shall have hexagonal heads and shall be either :

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

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

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



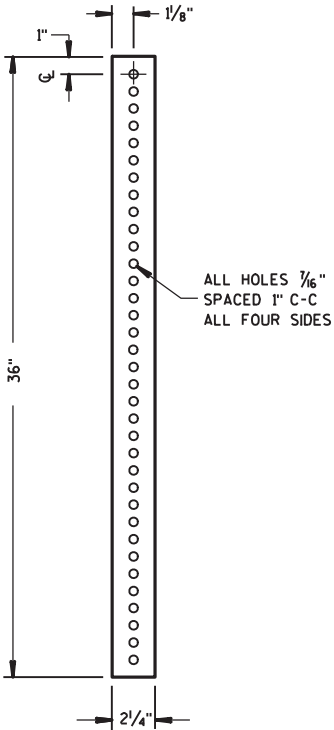
Washer Placement when Sign Has Other Than Type H or Type F Face

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

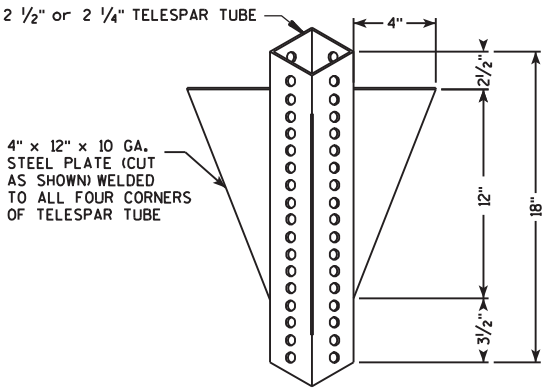
ATTACHMENT OF SIGNS TO POSTS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 3/23/10	PLATE NO. A4-8.7

TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM

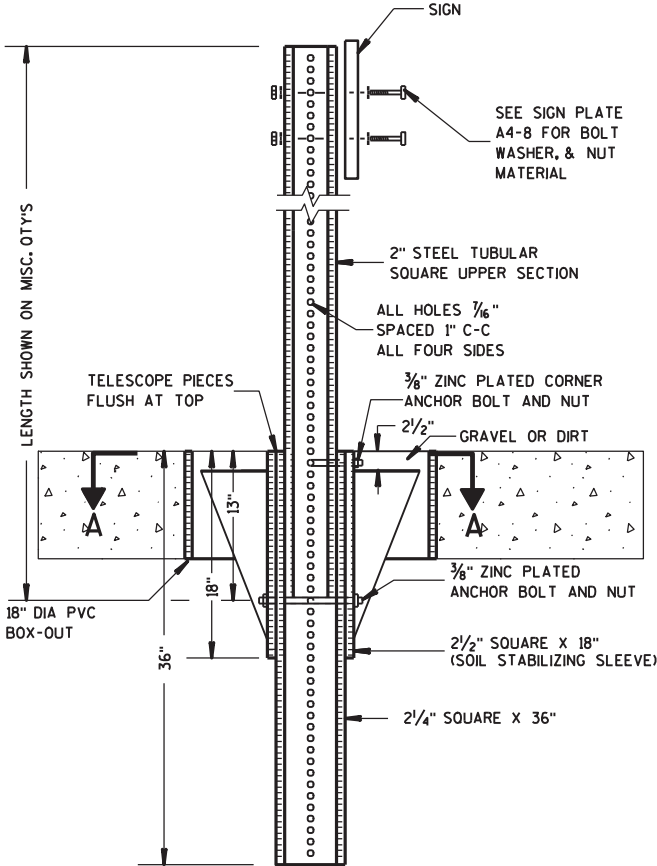
2 1/4 " SQUARE
12 GAUGE
PERFORATED
GALVANIZED FINISH



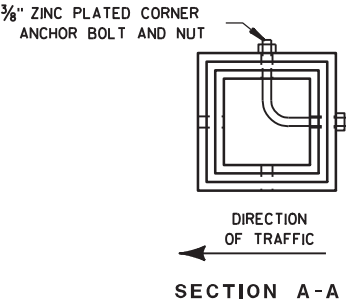
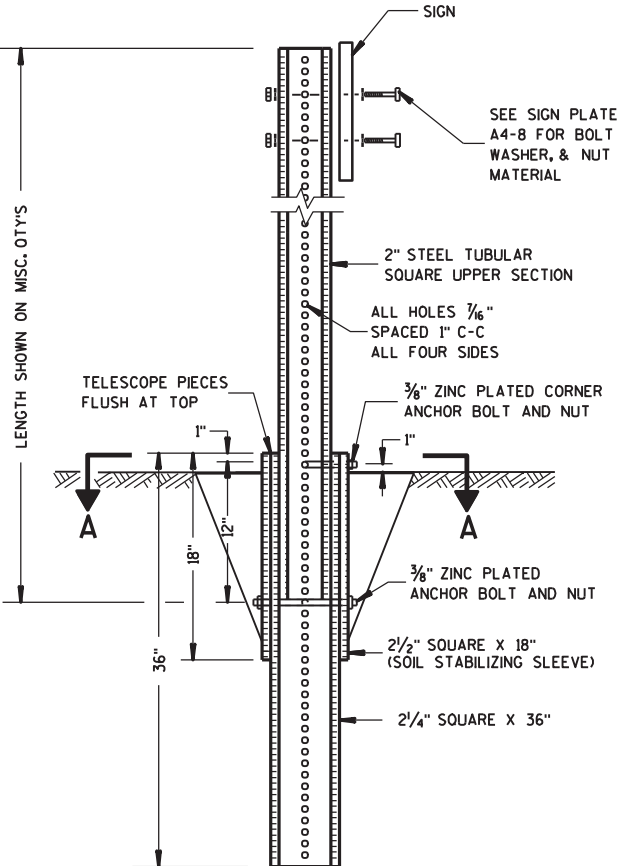
2 1/2 " SQUARE
12 GAUGE
OMNI-DIRECTIONAL
PERFORATED
SOIL STABILIZING SLEEVE
GALVANIZED FINISH



DETAIL OF TUBULAR STEEL SIGN POST
(IN POURED CONCRETE OR ASPHALT)



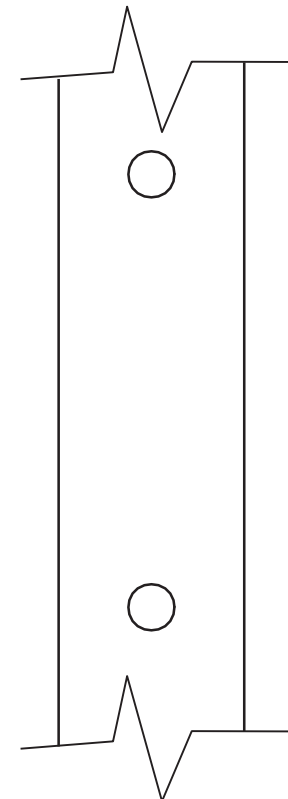
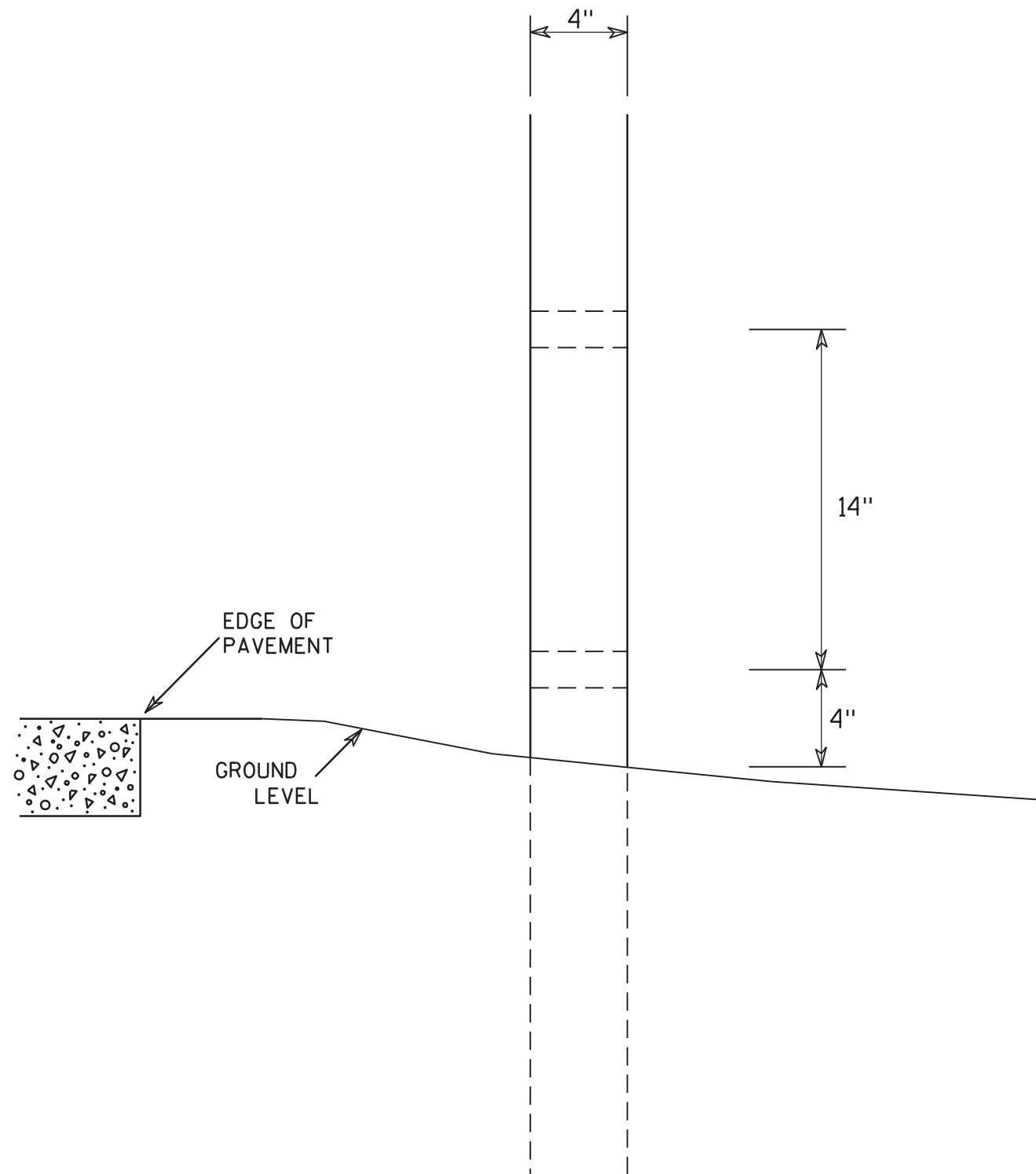
DETAIL OF TUBULAR STEEL SIGN POST
(IN LOCATIONS OTHER THAN POURED CONCRETE OR ASPHALT)



Area of Sign Installation (Sq. Ft.)	Number of Required 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).

TUBULAR STEEL SIGN POST A4-9	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i>
For State Traffic Engineer	
DATE 5/30/12	PLATE NO. A4-9.7



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:

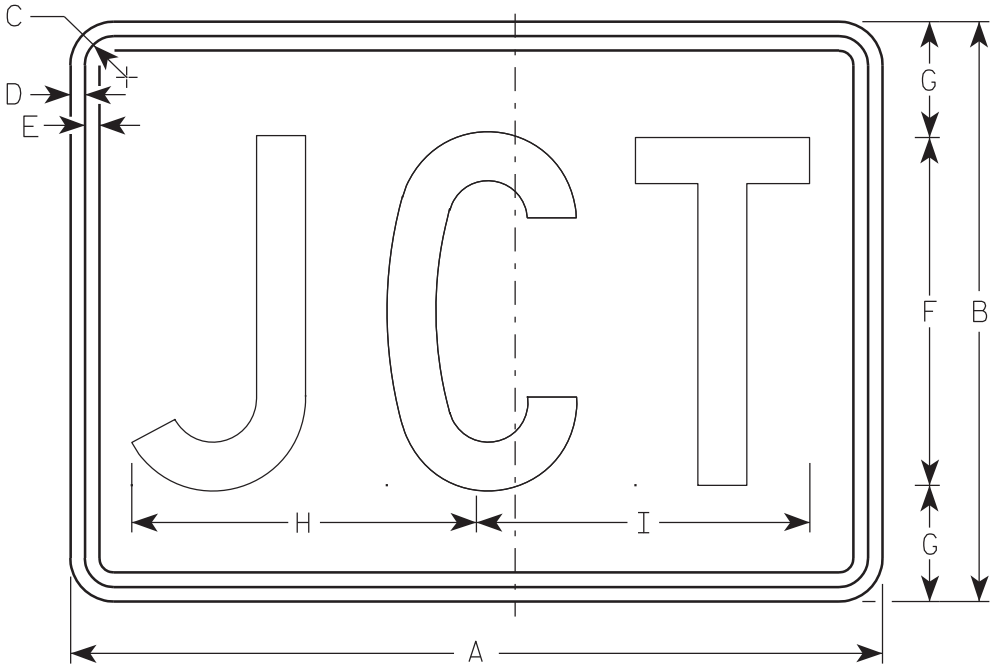
COUNTY:

SHEET NO:

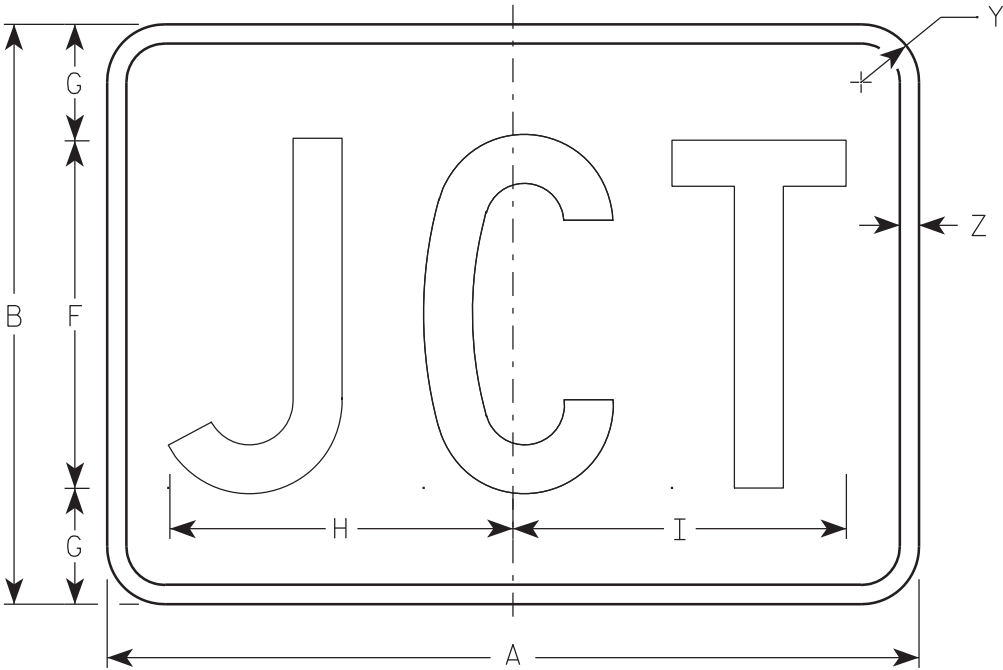
E

NOTES

1. Sign is Type II - See Note 5 - reference
WIS DOT Standard Specification for HIGHWAY
and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - See note 5
Message - See note 5
3. Message Series - C
4. Corners may be square or rounded when base
material is plywood but borders shall be rounded
as shown. When base material is metal, the
corners and borders shall be rounded.
5. M2-1 Background - White - Type H Reflective
(Detour or temporary Signs - Reflective)
Message - Black
MB2-1 Background - Blue
Message - White - Type H Reflective
(Detour or temporary Signs - Reflective)
MG2-1 Background - Green
Message - White - Type H Reflective
MK2-1 Background - Green
Message - White - Type H Reflective
MM2-1 Background - White - Type H Reflective
Message - Green
MN2-1 Background - Brown
Message - White - Type H Reflective
MR2-1 Background - Brown
Message - Yellow - Type H Reflective



M2-1
MK2-1
MM2-1
MR2-1



MB2-1
MG2-1
MN2-1

Metric equivalent
for this sign is:

SIZE	
1	
2	525 mm X 375 mm
3	750 mm X 525 mm
4	750 mm X 525 mm
5	750 mm X 525 mm

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m ²
1																												
2	21	15	1 1/8	3/8	3/8	9	3	8 7/8	8 5/8																1 1/2	1/2	2.20	0.20
3	30	21	1 1/8	3/8	3/8	13	4	12 7/8	12 3/8																1 1/2	1/2	4.40	0.20
4	30	21	1 1/8	3/8	3/8	13	4	12 7/8	12 3/8																1 1/2	1/2	4.40	0.20
5	30	21	1 1/8	3/8	3/8	13	4	12 7/8	12 3/8																1 1/2	1/2	4.40	0.20

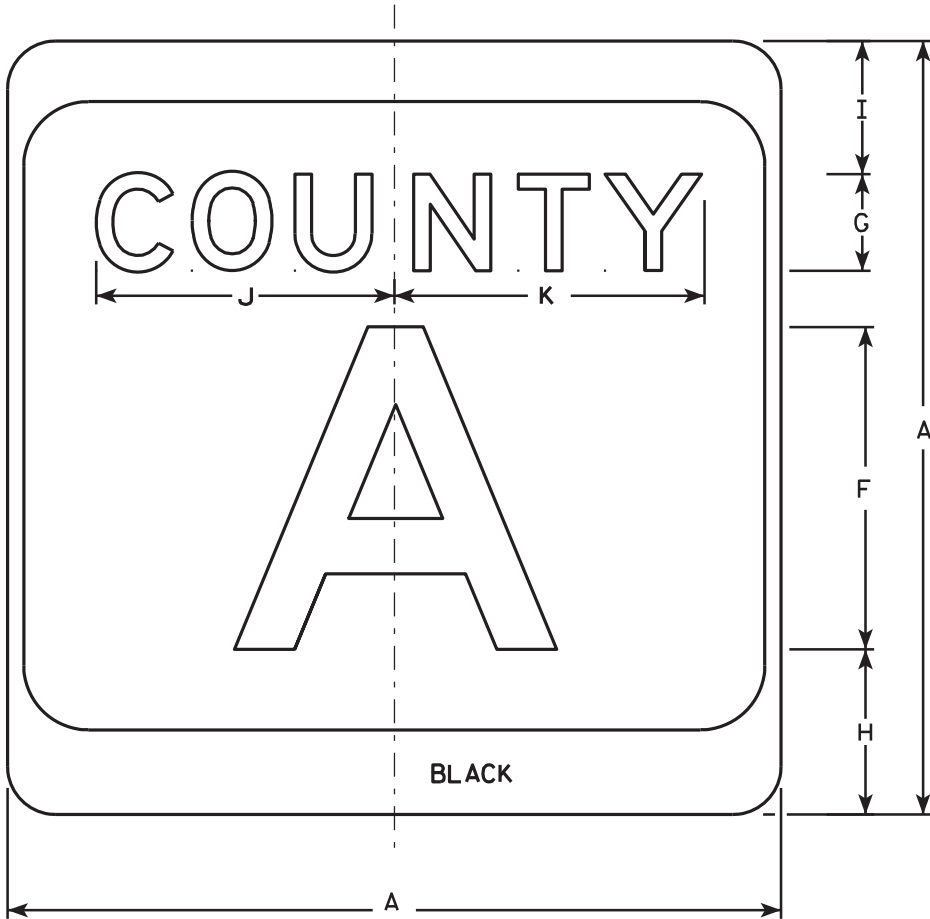
STANDARD SIGN
M2 - 1

WISCONSIN DEPT OF TRANSPORTATION

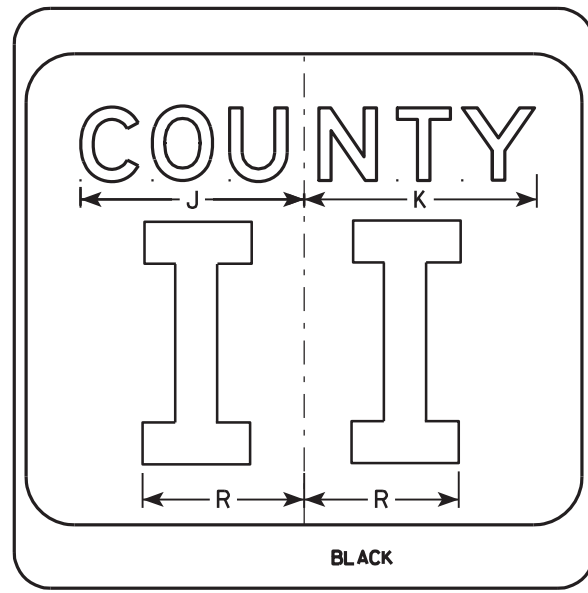
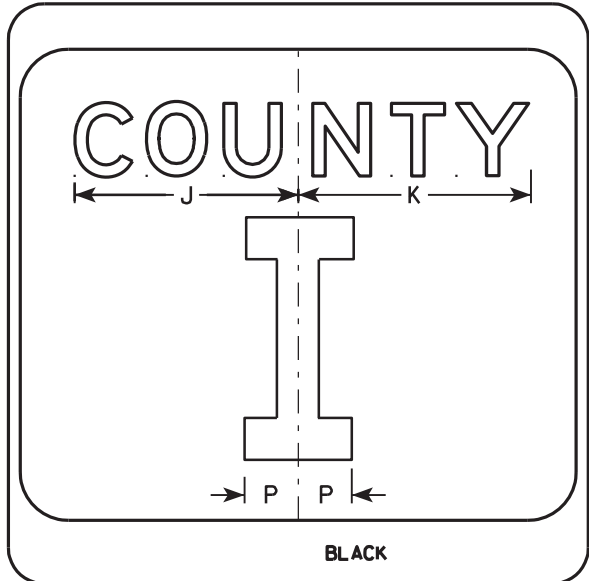
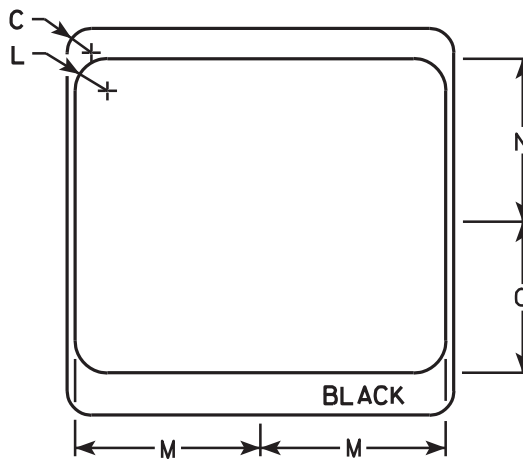
APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 3/16/10 PLATE NO. M2-1.10

7



M1-5A



NOTES

1. Sign is Type II - see Note 7 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White & Black - See Note 7
Message - Black
3. Message Series - see Note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Message Series E for 1 letter.
Message Series D for 2 letters unless message is too big then Series C.
Message Series C for 3 letters unless message is too big then Series B.
6. Substitute appropriate letters & optically center to achieve proper balance.
7. Permanent Signs
Background - Type H Reflective
Detour or temporary Signs
Background - Reflective

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24		1 1/2			10	3	5 1/8	4 1/8	9 1/4	9 5/8	2	11 1/2	10 1/8	9 3/8	2 1/4		6 5/8									4.0
3	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0
4	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0
5	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0

CTH MARKER

M1-5A FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

PROJECT NO:

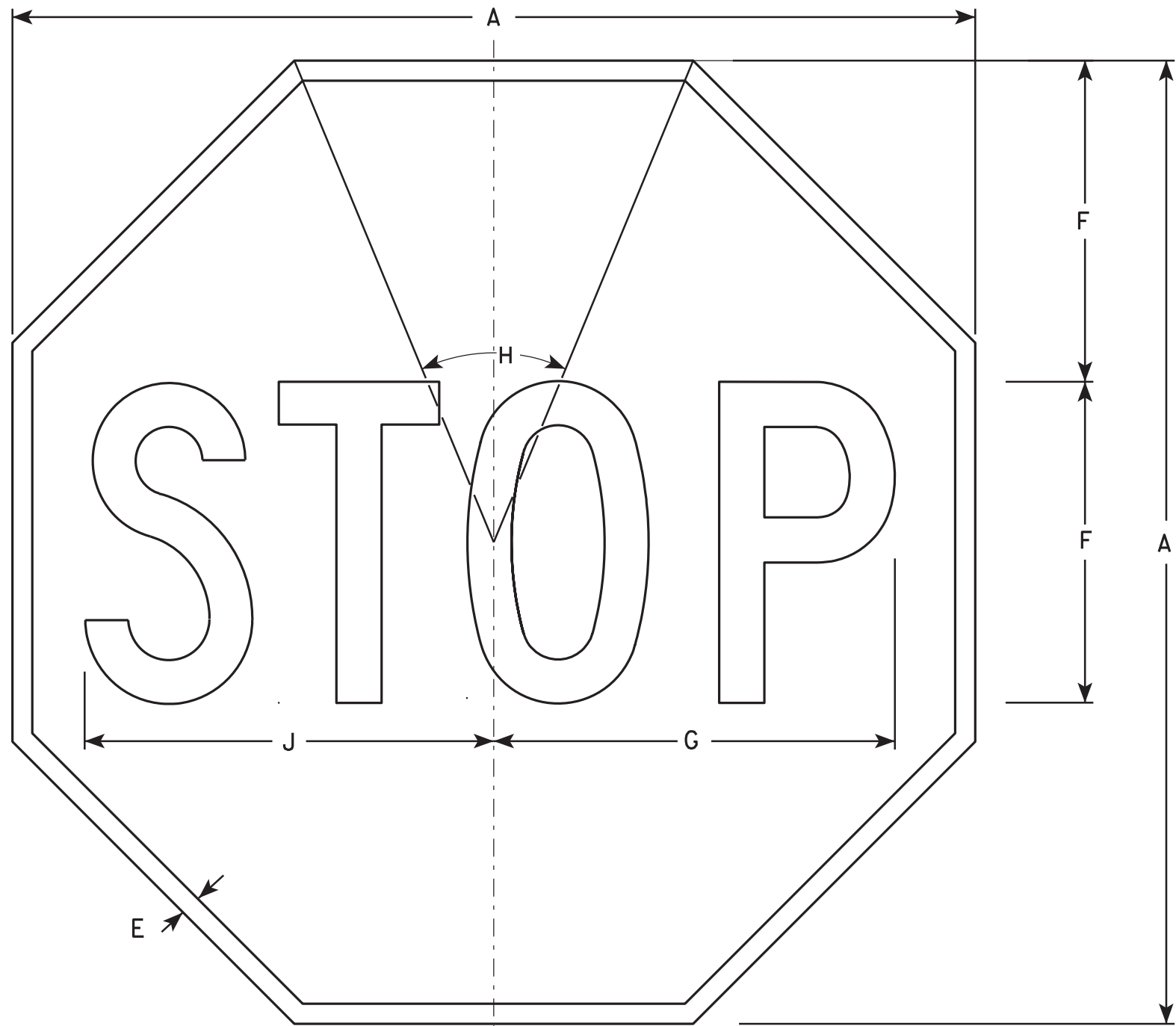
HWY:

COUNTY:

SHEET NO:

E

7



NOTES

- 1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- 2. Color:
Background - Red
Message - White
- 3. Message Series - C

R1-1

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	24				3/8	8	10	45°		10 1/4																	3.31
2S	30				5/8	10	12 1/2	45°		12 3/4																	5.18
2M	36				3/4	12	15	45°		15 3/8																	7.46
3	36				3/4	12	15	45°		15 3/8																	7.46
4	48				1	16	20	45°		20 1/2																	13.25
5	48				1	16	20	45°		20 1/2																	13.25
6	18				3/8	6	7 3/4	45°		7 3/4																	1.86
7	12				1/4	4	5	45°		5 1/8																	0.78

STANDARD SIGN
R1-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 12/03/10 PLATE NO. R1-1.12

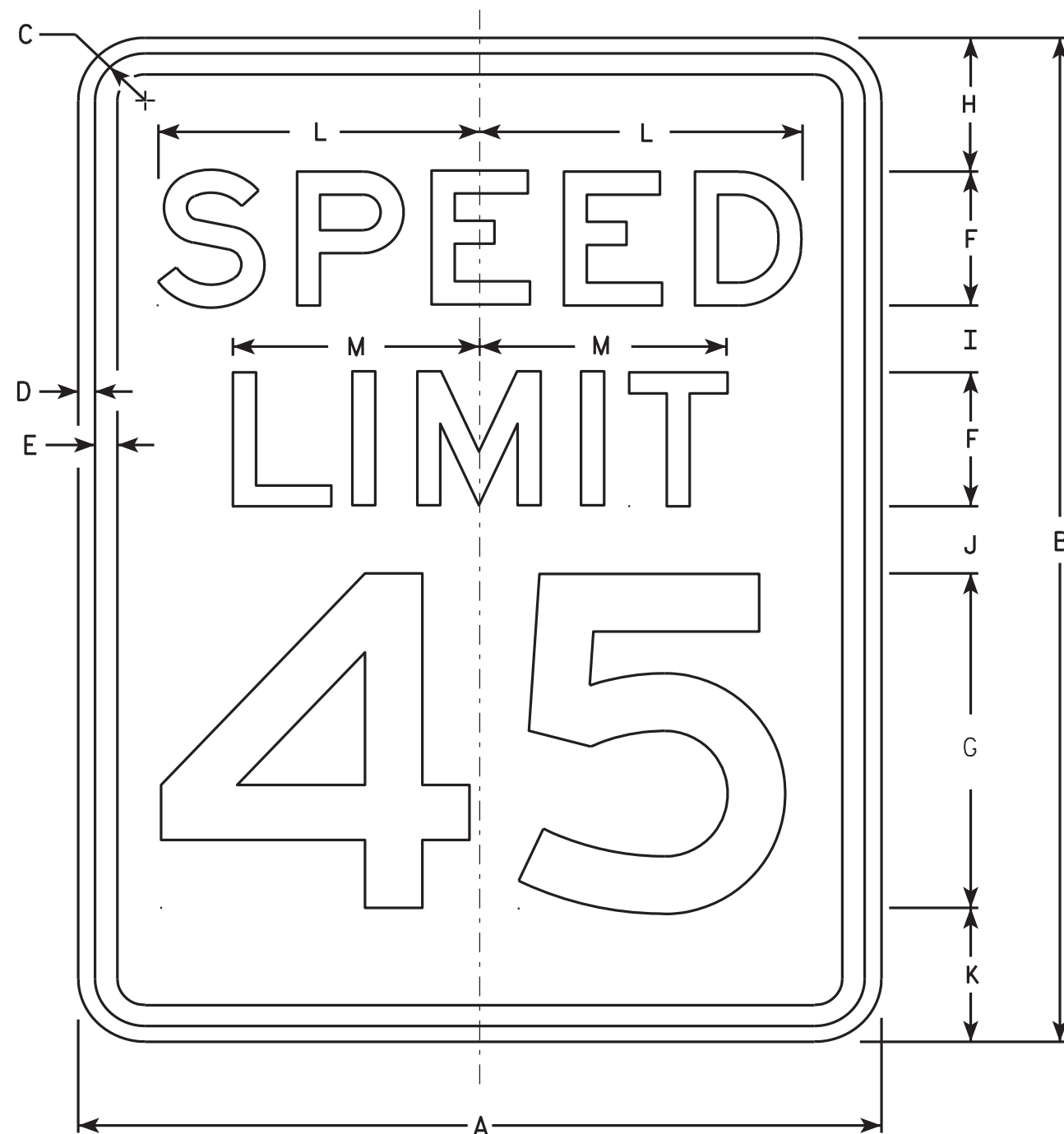
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



R2-1

NOTES

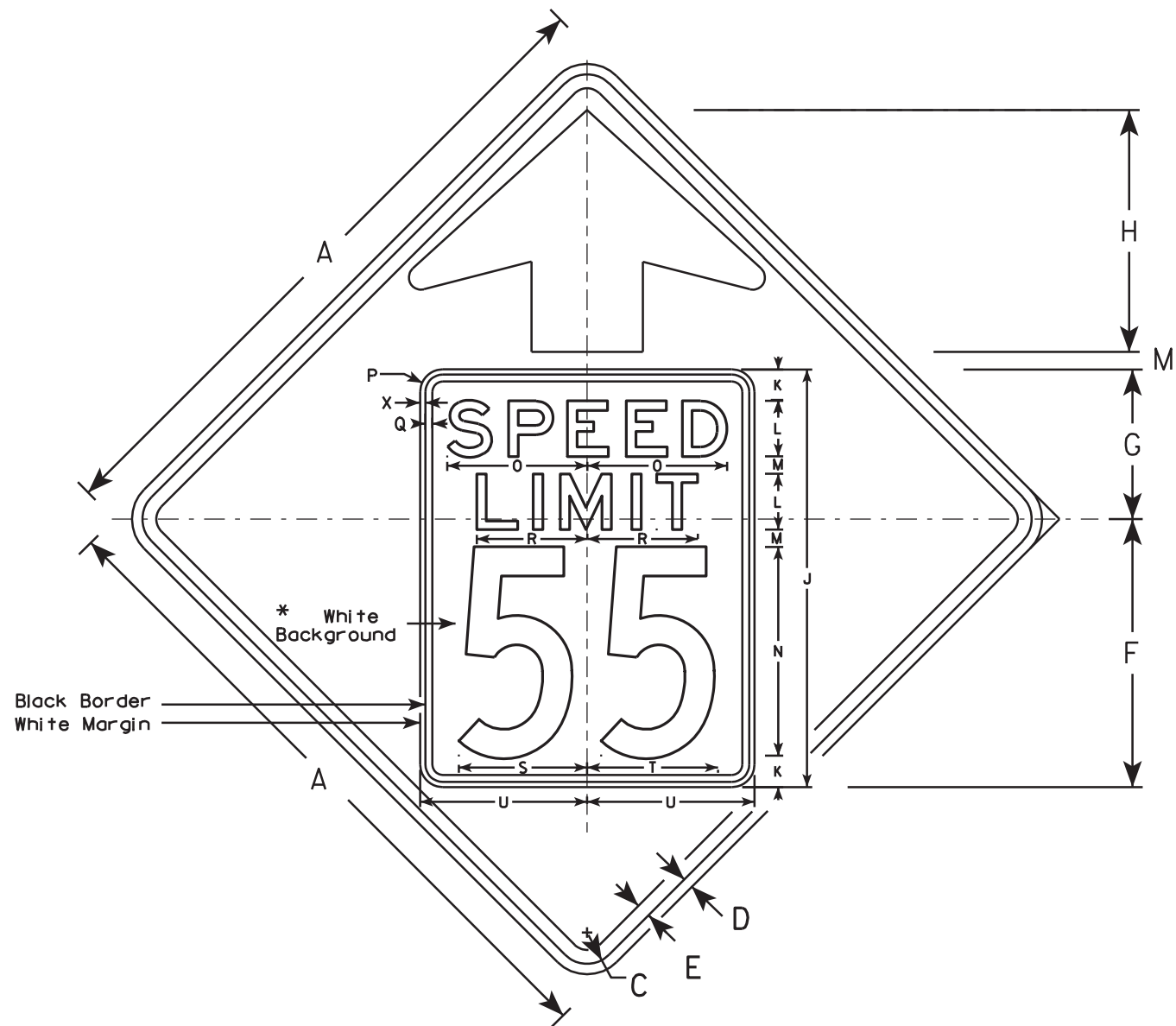
1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White
Message - Black
3. Message Series - E
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as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

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

STANDARD SIGN R2-1

WISCONSIN DEPT OF TRANSPORTATION
APPROVED *Matthew R. Rauch*
For State Traffic Engineer
DATE 5/26/10 PLATE NO. R2-1.13

PROJECT NO: HWY: COUNTY: SHEET NO: E

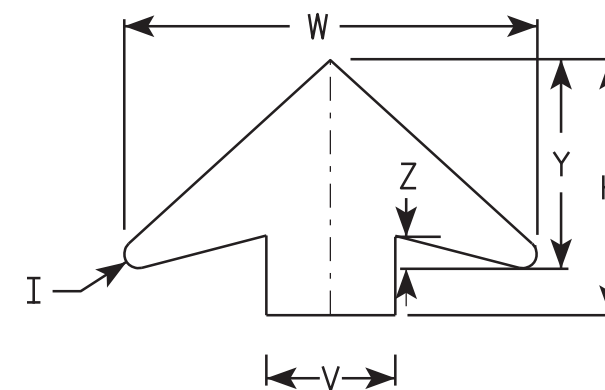


W3-5

NOTES

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

*Speed Limit Sign shall have a White Background



ARROW DETAIL

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

STANDARD SIGN

W3-5

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Matthew R. Rauch
for State Traffic Engineer

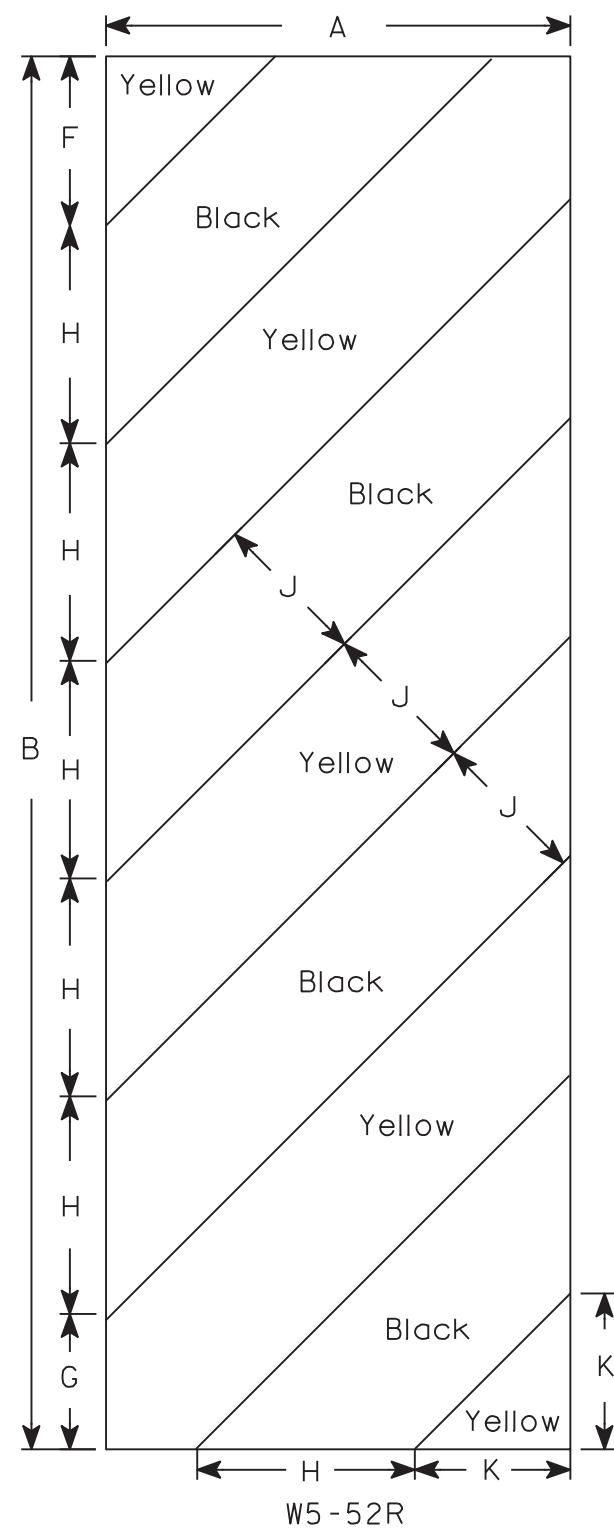
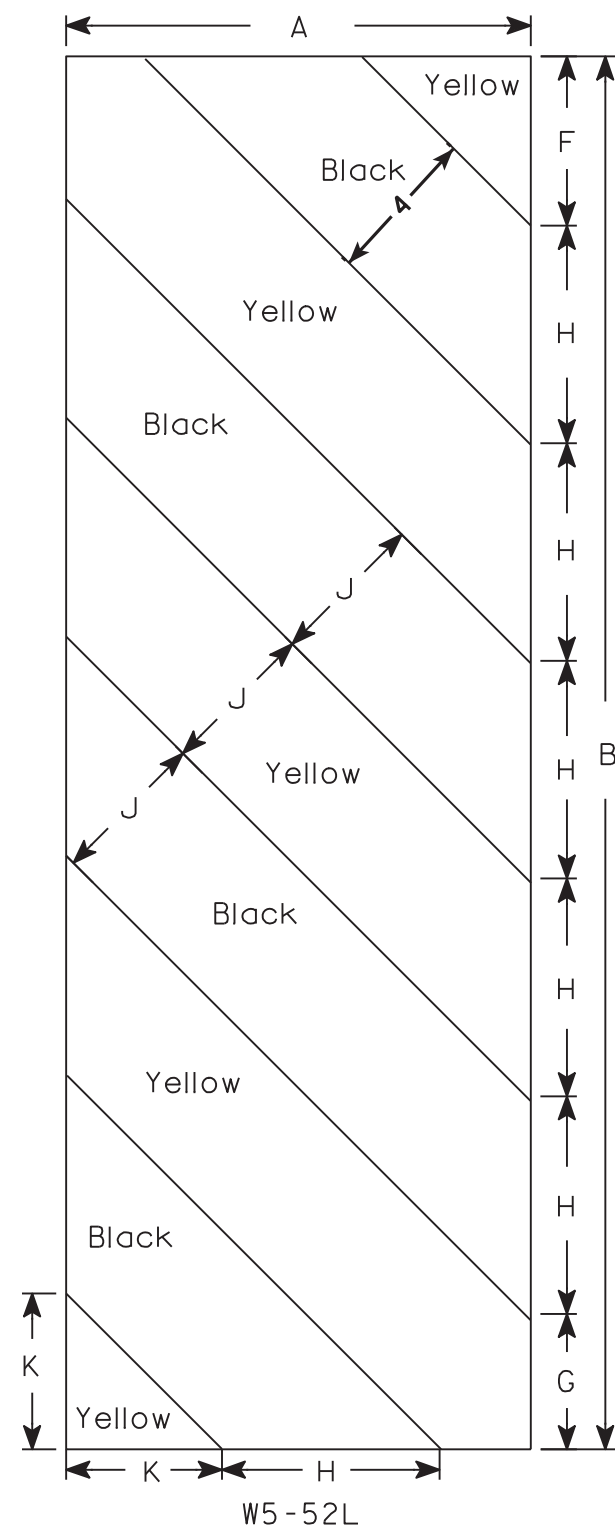
DATE 5/29/12

PLATE NO. W3-5.5

PROJECT NO:

SHEET NO:

E



NOTES

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

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	12	36				4 3⁄8	3 1⁄2	5 5⁄8	45°	4	4																3.0
2M	12	36				4 3⁄8	3 1⁄2	5 5⁄8	45°	4	4																3.0
3	18	54				6	5 1⁄2	8 1⁄2	45°	6	6 9⁄16																6.75
4																											
5																											

STANDARD SIGN
W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 5/29/12 PLATE NO. W5-52.9

DESIGN DATA

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 POUNDS PER SQUARE FOOT.

LIVE LOAD:

DESIGN LOADING _____ HL-93
INVENTORY RATING FACTOR _____ RF = 1.26
OPERATING RATING FACTOR _____ RF = 1.62
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) — 250 KIPS

ULTIMATE DESIGN STRESSES:

CONCRETE MASONRY
SLAB _____ $f'_c = 4,000$ PSI
ALL OTHER _____ $f'_c = 3,500$ PSI
BAR STEEL REINFORCEMENT, GRADE 60 _____ $f_y = 60,000$ PSI
PRESTRESSED GIRDER
CONCRETE MASONRY _____ $f'_c = 8,000$ PSI
STRANDS - 0.5" DIA WITH
ULTIMATE TENSILE STRENGTH OF = 270,000 PSI

HYDRAULIC DATA

100 YEAR FREQUENCY
DRAINAGE AREA _____ 2.9 SQ MILES
 Q_{100} TOTAL _____ 740 CFS
THRU STRUCTURE _____ 740 CFS
OVERFLOW _____ 0 CFS
VELOCITY - THRU STRUCTURE _____ 5.9 FPS
WATERWAY AREA THRU STRUCTURE _____ 126 SQ FT
HIGH WATER $_{100}$ ELEVATION _____ 788.7 FT
ROADWAY OVERTOPPING _____ N/A
SCOUR CRITICAL CODE = 8
2 YEAR FREQUENCY
 Q_2 TOTAL _____ 130 CFS
HIGH WATER $_2$ ELEVATION _____ 786.1 FT

TEMPORARY STRUCTURE

$Q_3 = 260$ CFS
HIGH WATER = 787.3
MINIMUM BRIDGE AREA = 50 SQ FT

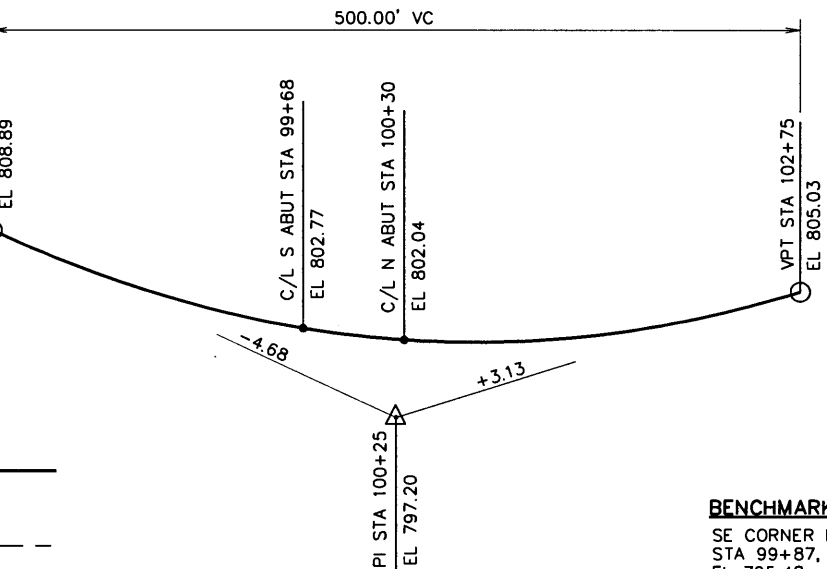
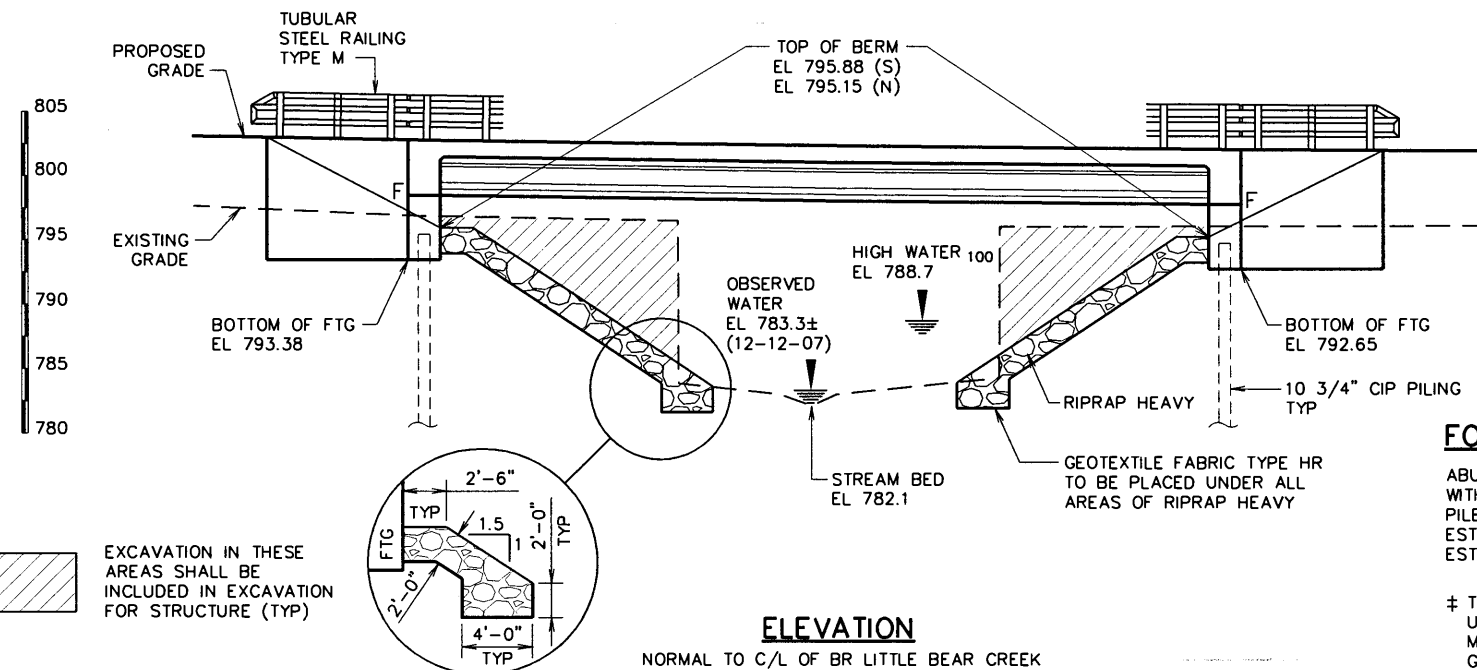
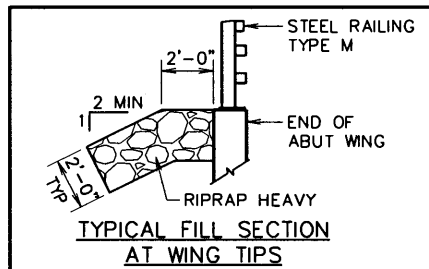
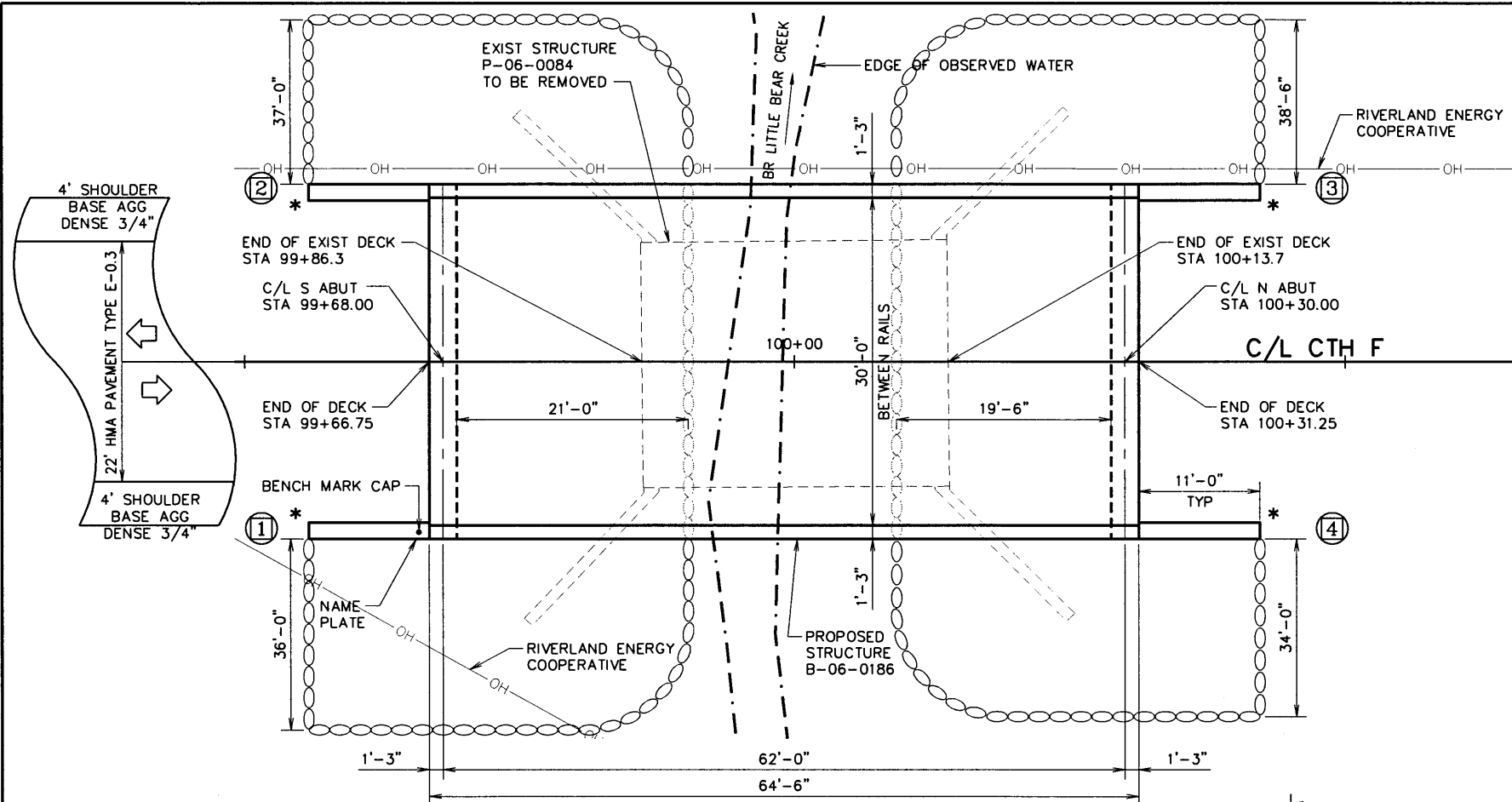
TRAFFIC DATA

AADT (2014) _____ 425
AADT (2034) _____ 570
DESIGN SPEED _____ 40 MPH

CONSULTANT CONTACT:
TROY PETERSON, P.E.
(715) 235-9081

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

NO.	DATE	REVISION	BY
			
604 Wilson Avenue Menomonie, Wisconsin 54751 715-235-9081 800-472-7372 FAX 715-235-2727 www.cedarcorp.com			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION ACCEPTED <i>William C. Dreher</i> KAR 01/31/14 CHIEF STRUCTURES DESIGN ENGINEER DATE			
STRUCTURE B-06-0186			
CTH F OVER BR LITTLE BEAR CREEK			
COUNTY	BUFFALO	TOWN	NELSON/MODENA
DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS			
DESIGNED BY	TLP	DESIGN CK'D	GMW
DRAWN BY	PKF	PLANS CK'D	TLP
GENERAL PLAN			SHEET 1 OF 11



BENCHMARK

SE CORNER BRIDGE
STA 99+87, 12' RT
EL 795.48

LIST OF DRAWINGS

1. GENERAL PLAN
2. QUANTITIES & NOTES
3. SUBSURFACE EXPLORATION
4. SOUTH ABUTMENT
5. NORTH ABUTMENT
6. ABUTMENT DETAILS
7. STEEL DIAPHRAGM DETAILS
8. 36" PRESTRESSED GIRDER
9. SUPERSTRUCTURE
10. SUPERSTRUCTURE PLAN
11. TUBULAR STEEL RAILING TYPE M

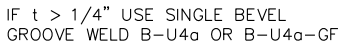
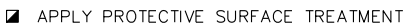
FOUNDATION DATA

ABUTMENTS TO BE SUPPORTED ON 10 3/4" CIP CONCRETE PILING, WITH A REQUIRED DRIVING RESISTANCE OF 150 TONS ± PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC EQUATION. ESTIMATED LENGTH 60' SOUTH ABUTMENT ESTIMATED LENGTH 65' NORTH ABUTMENT

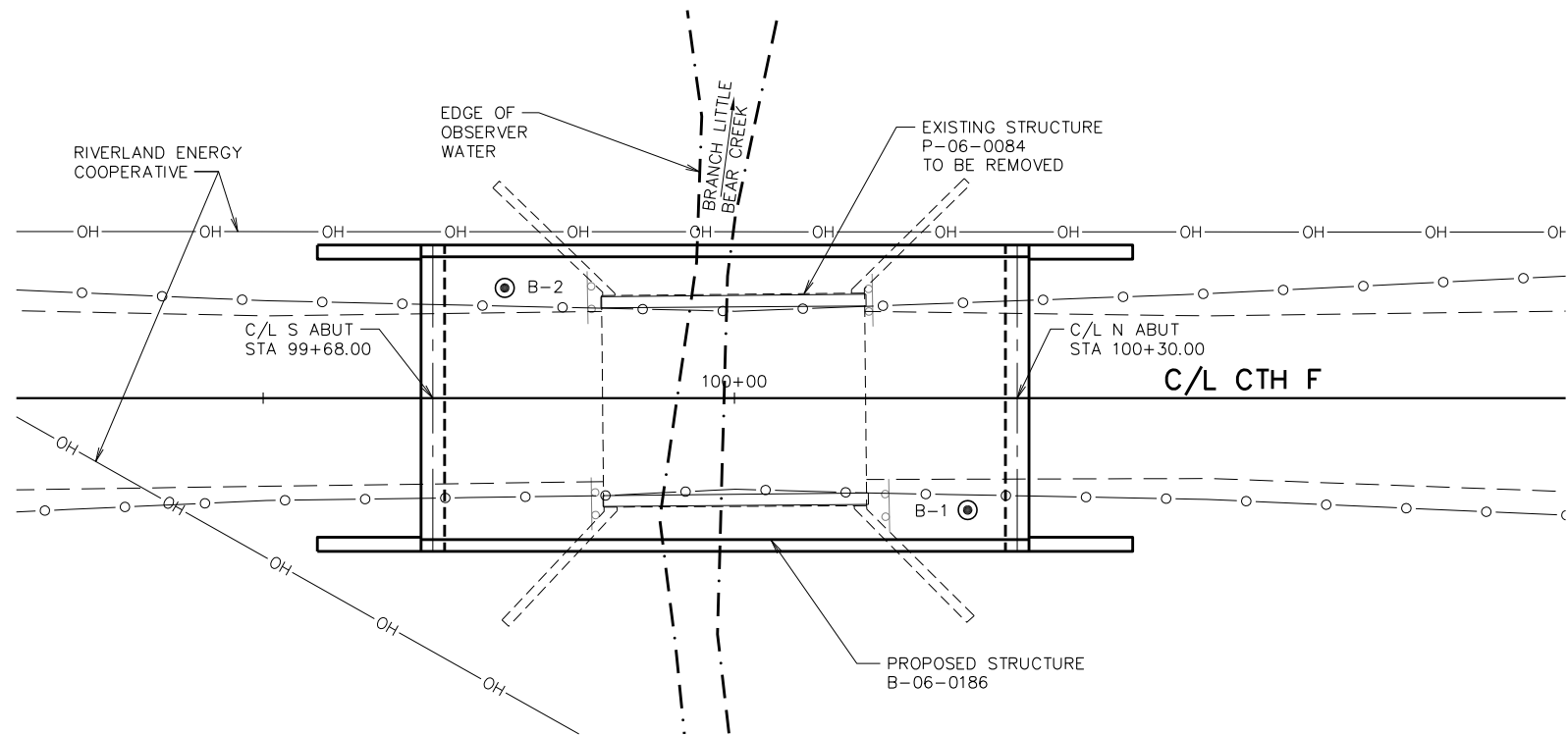
± THE FACTORED AXIAL RESISTANCE OF PILES IN COMPRESSION USED FOR DESIGN IS THE REQUIRED DRIVING RESISTANCE MULTIPLIED BY A RESISTANCE FACTOR OF 0.5 USING MODIFIED GATES TO DETERMINE DRIVEN PILE CAPACITY.

ITEM NUMBER	BID ITEMS	UNIT	S ABUT	N ABUT	SUPER	TOTALS
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STA 100+00	LS	—	—	—	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES (B-06-0186)	LS	—	—	—	1
210.0100	BACKFILL STRUCTURE	CY	110	110	—	220
502.0100	CONCRETE MASONRY BRIDGES	CY	33.8	33.8	78.4	146
502.3200	PROTECTIVE SURFACE TREATMENT	SY	—	—	260	260
503.0136	PRESTRESSED GIRDER TYPE I 36-INCH	LF	—	—	252	252
505.0405	BAR STEEL REINFORCEMENT HS BRIDGES	LB	1890	1890	—	3780
505.0605	BAR STEEL REINFORCEMENT HS COATED BRIDGES	LB	1750	1750	15090	18590
506.2605	BEARING PADS ELASTOMERIC NON-LAMINATED	EACH	—	—	8	8
506.4000	STEEL DIAPHRAGMS (B-06-0186)	EACH	—	—	3	3
513.4060	RAILING TUBULAR TYPE M (B-06-0186)	LS	—	—	—	1
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	10	10	—	20
550.2106	PIILING CIP CONCRETE 10 3/4 x 0.365-INCH	LF	300	325	—	625
606.0300	RIPRAP HEAVY	CY	280	265	—	545
612.0106	PIPE UNDERDRAIN 6-INCH	LF	10	10	—	20
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	55	55	—	110
645.0120	GEOTEXTILE FABRIC TYPE HR	SY	475	450	—	925
	NON-BID ITEMS					
	FILLER	SIZE	—	—	—	1/2 & 3/4

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



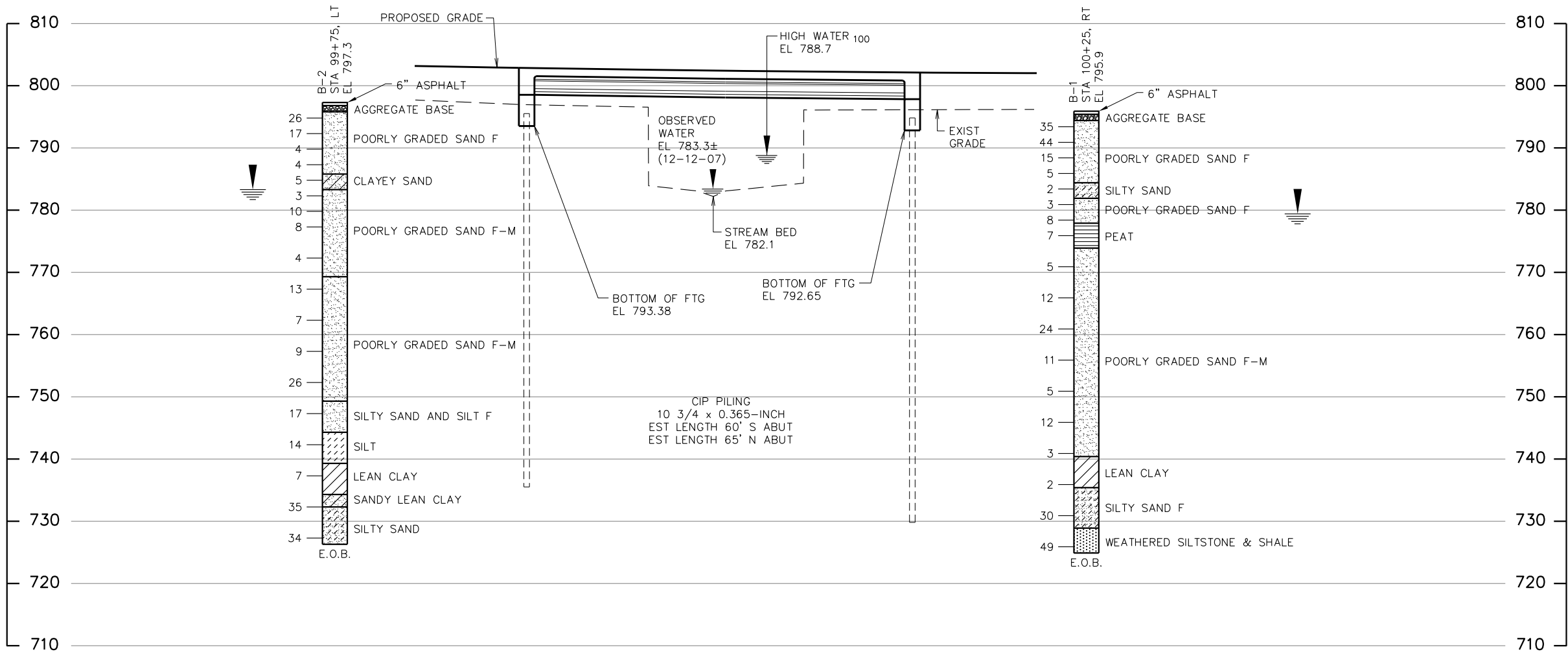
NO.	DATE	REVISION		BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION				
STRUCTURE B-06-0186				
		DRAWN BY	PKF	PLANS CK'D TLP
QUANTITIES & NOTES			SHEET 2 OF 11	



BORINGS TAKEN BY:
CHOSEN VALLEY TESTING, INC

WISCONSIN OFFICE
135 BUCKNER PLACE
LA CROSSE, WI 54603
(608) 782-5505

MINNESOTA OFFICE
1410 7TH STREET NW
ROCHESTER, MN 55901
(507) 281-0968
APRIL 9, 2009



STATE PROJECT NO.
7160-01-71

ABBREVIATIONS
F---FINE
C---COARSE
VF---VERY FINE
WS---WEATHERED
M---MEDIUM
SO---SOUND

MATERIAL SYMBOLS
TOPSOIL
SAND
GRAVEL
SILT
PEAT
CLAY
SILTSTONE & SHALE
LIMESTONE
IGNEOUS ROCK

LEGEND OF BORING
95/6=95 BLOWS FOR 6" PENETRATION
PROBING TAKEN WITH A 350# WT. FALLING 18" ON A 2" O.D. POINT.
7 AVERAGE BLOWS PER FOOT
REFUSAL 95/6

PROBING NO. STATION ELEVATION

LEGEND OF BORING
BORING NO. STA. & OFFSET
ELEV.
UNCONFINED STRENGTH 7.7
BLOWS PER FT. USING 140# WT. FALLING 30"
WASH SAMPLE
SHELBY TUBE S.T.
GROUND WATER ELEVATION
NO GROUND WATER OBSERVED ABOVE THIS ELEVATION
SANDY GRAVEL
F. BOULDERS OR COBBLES
SAND
SILTY CLAY
SO
LIMESTONE

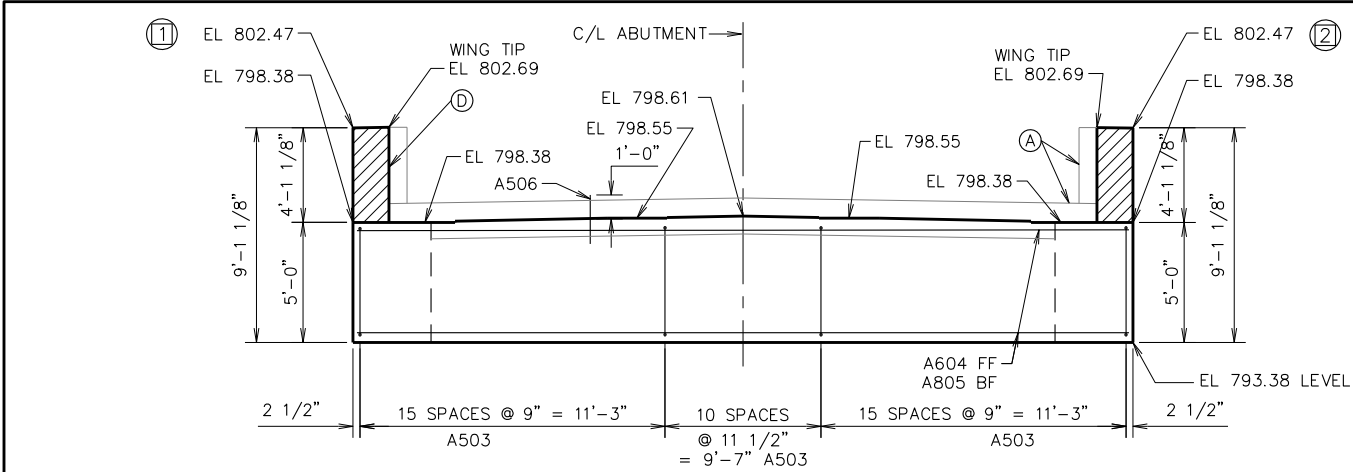
UNLESS OTHERWISE SPECIFIED, THE BLOWS PER FOOT AT THE LOCATIONS INDICATED ARE BASED ON DRIVING A 2" O.D. X 1.4" I.D. SPLIT SPOON SAMPLER WITH A 140# HAMMER HAVING A FREE FALL OF 30". THE BLOW COUNT IS TAKEN IN UNDISTURBED SOIL IMMEDIATELY BELOW A CASED OR OPEN HOLE ELIMINATING SIDE FRICTION ON THE DRIVE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

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

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-06-0186			
DRAWN BY PKF		PLANS CHECKED TLP	
SUBSURFACE EXPLORATION		SHEET 3 OF 11	

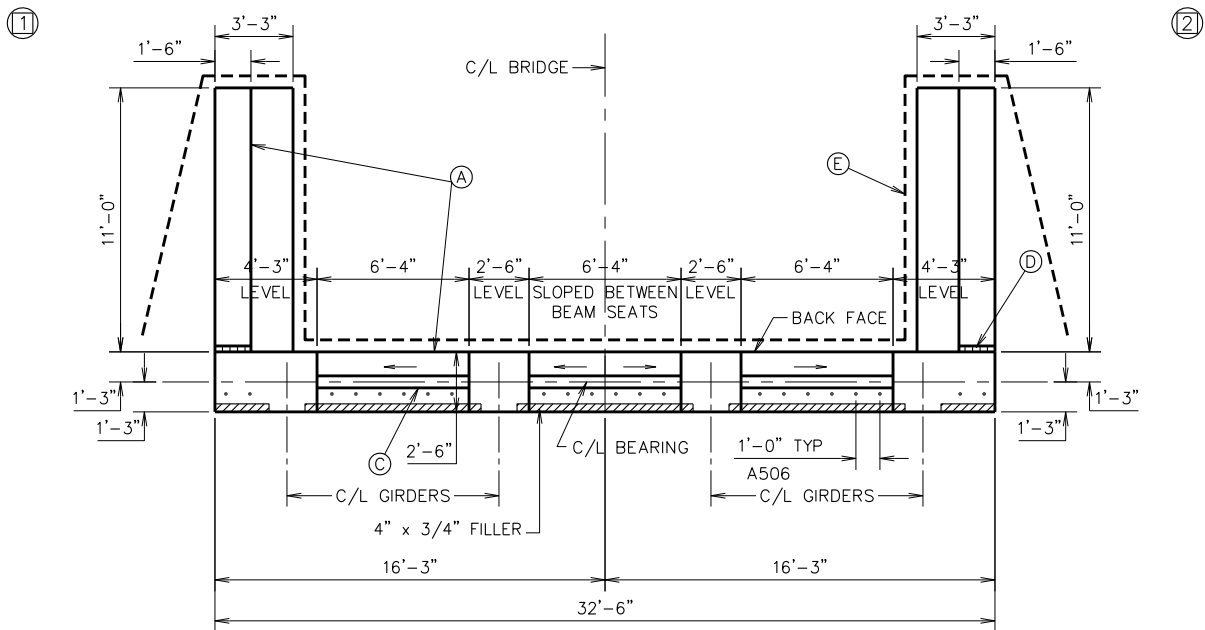
8

I:\Clients\W3903 WDOT NW Region LPM\002 CTH F Br Little Bear Cr\dwg\080301_sx_cth f.dwg 1/16/2014 3:43:37 PM CST

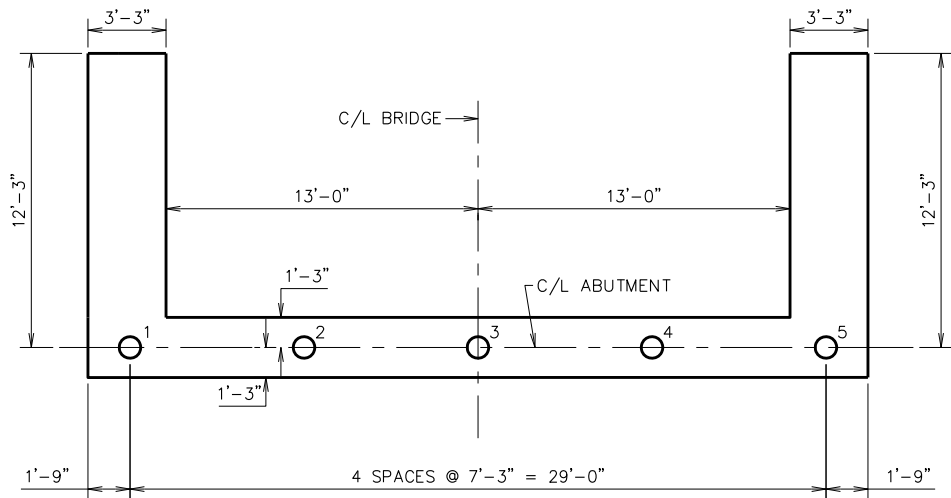


NOTE: DISPLACE A503 BARS
INTERFERING WITH PILING

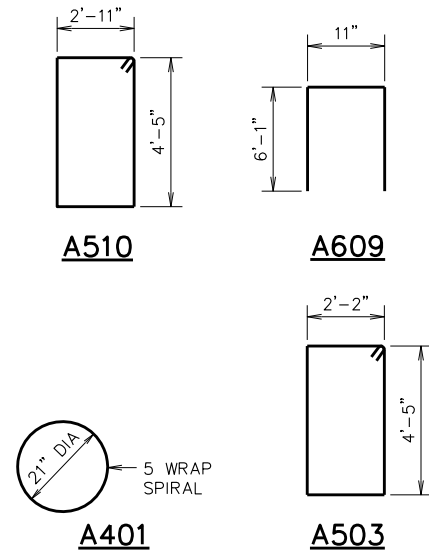
ELEVATION
(LOOKING SOUTH)



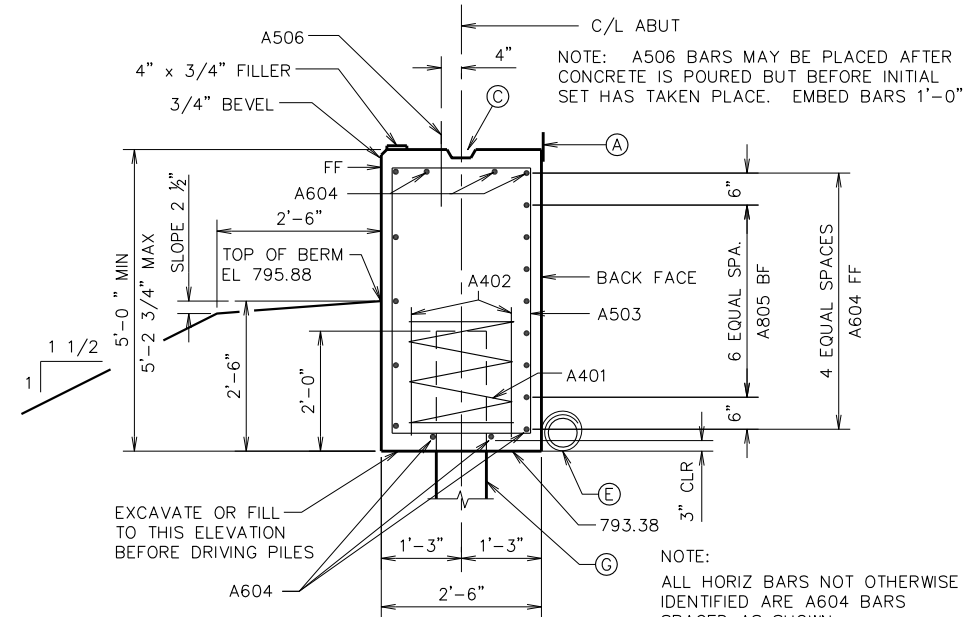
PLAN



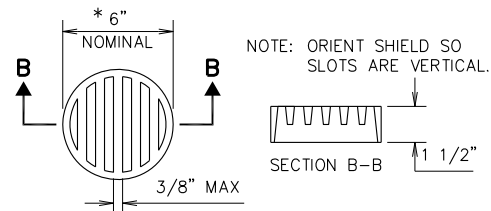
PILE PLAN



- ① INDICATES WING NUMBER
- Ⓐ 18" RUBBERIZED MEMBRANE WATERPROOFING (RMW) SEAL ALL HORIZ & VERT JOINTS ON BACKFACE
- Ⓑ OPTIONAL KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2" x 6". (18" RMW @ BF & 3/4" 'V' GROOVE @ FF OF WING WALL IF JOINT IS USED)
- Ⓒ KEYED CONST JOINT FORMED BY BEVELED 2" x 6"
- Ⓓ 1/2" FILLER (INCLUDED IN WING LENGTH): SEAL EXPOSED HORIZ & VERT SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.)
- Ⓔ PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN (SEE DETAIL). RODENT SHIELD TO BE INCLUDED IN BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH".
- Ⓖ SUPPORT ABUTMENT ON 10 3/4 x 0.365-INCH CIP PILING. ESTIMATED 65' LONG & DRIVEN TO A REQD DRIVING RESISTANCE OF 150 TONS PER PILE.



SECTION THRU BODY



* DIMENSION IS APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING.

RODENT SHIELD

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

STATE PROJECT NUMBER

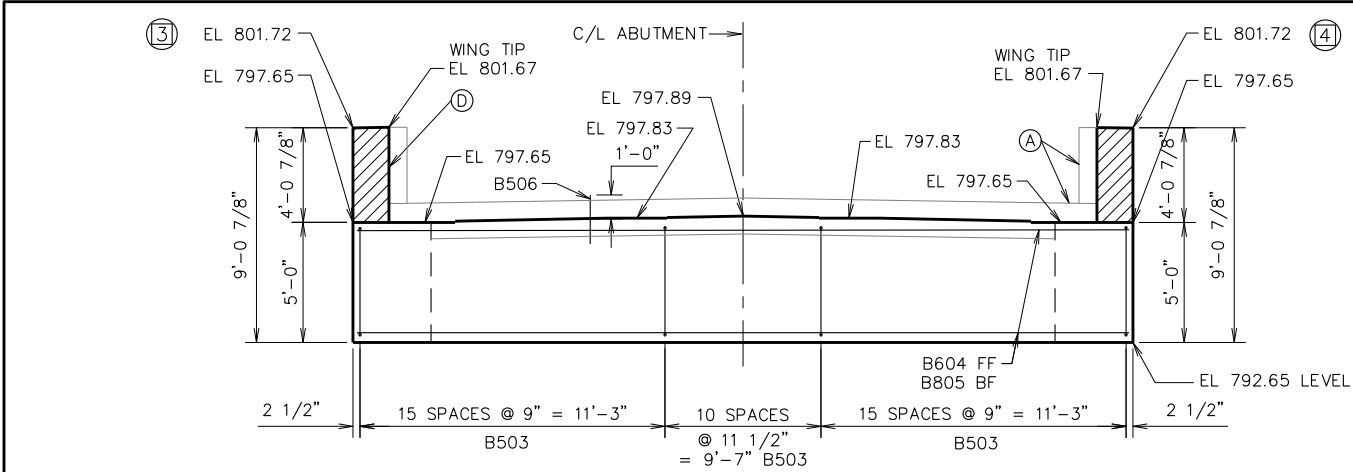
7160-01-71

NOTE: BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST DIGIT OF A THREE-DIGIT BAR MARK OR THE FIRST TWO DIGITS OF A FOUR-DIGIT BAR MARK SIGNIFIES THE BAR SIZE.

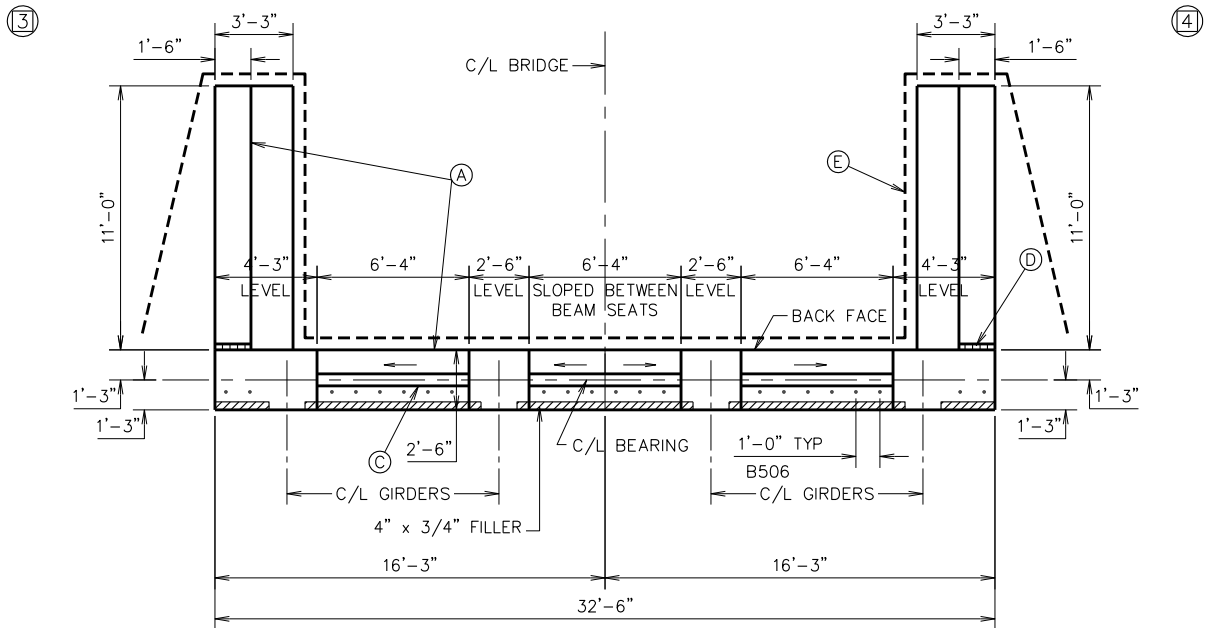
BILL OF BARS

1890 # UNCOATED 1750 # COATED

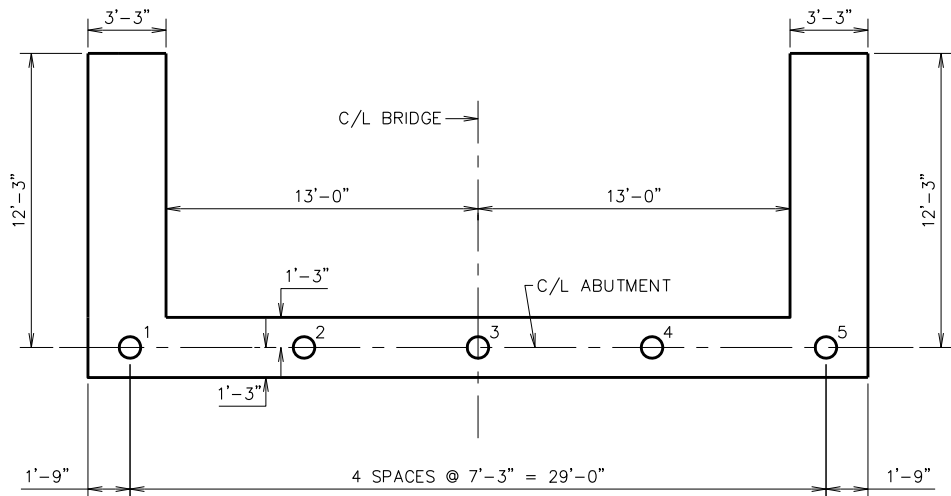
BAR MARK	COAT	NO REQUIRED	LENGTH	BENT	LOCATION
A401		5	28-0	X	BODY - ONE PER PILE
A402		10	2-3		BODY - TWO PER PILE
A503		41	13-8	X	BODY - STIRRUPS
A604		11	32-2		BODY - HORIZ FF
A805		7	32-2		BODY - HORIZ BF
A506	X	22	2-0		BODY - VERT DOWELS
A607	X	4	10-8		WING 1 & 2 - HORIZ TOP
A408	X	18	10-8		WING 1 & 2 - HORIZ
A609	X	32	12-9	X	WING 1 & 2 - VERT TOP
A510	X	24	15-4	X	WING 1 & 2 - VERT BASE
A511	X	12	13-1		WING 1 & 2 BASE HORIZ FF
A612	X	18	13-1		WING 1 & 2 BASE HORIZ BF & TOP



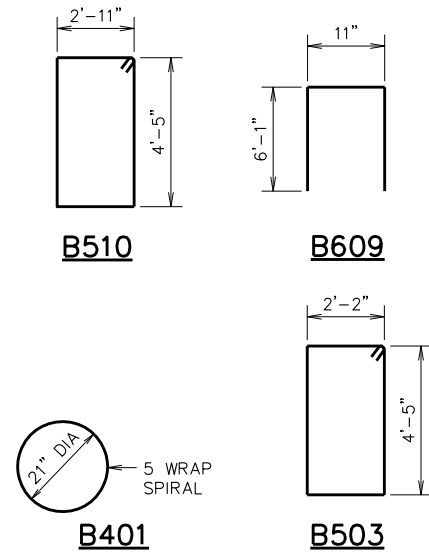
ELEVATION
(LOOKING NORTH)



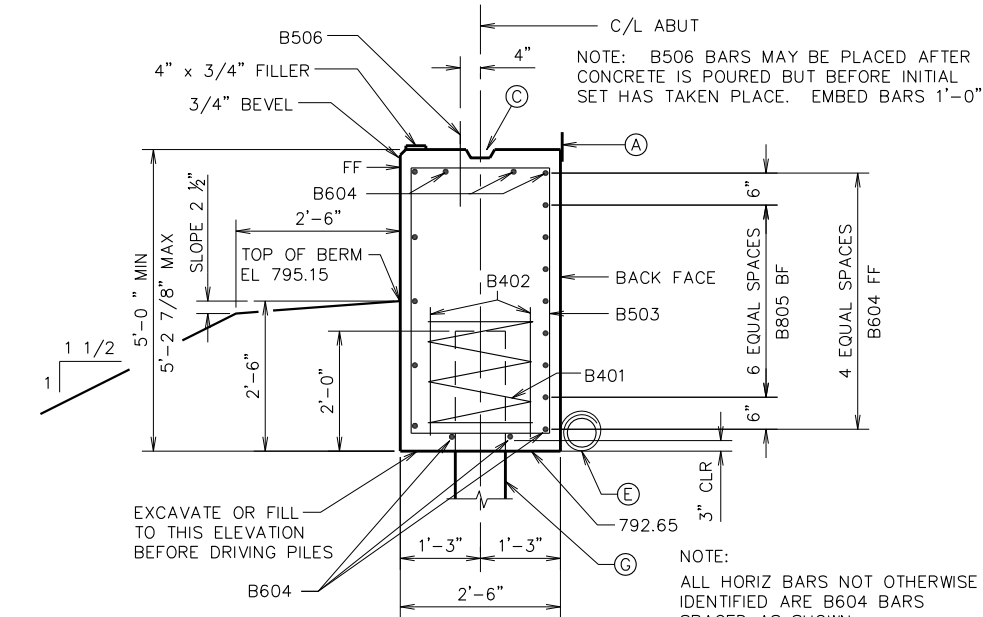
PLAN



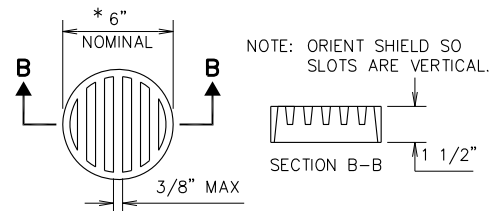
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- (E) PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN (SEE DETAIL). RODENT SHIELD TO BE INCLUDED IN BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH".
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STATE PROJECT NUMBER

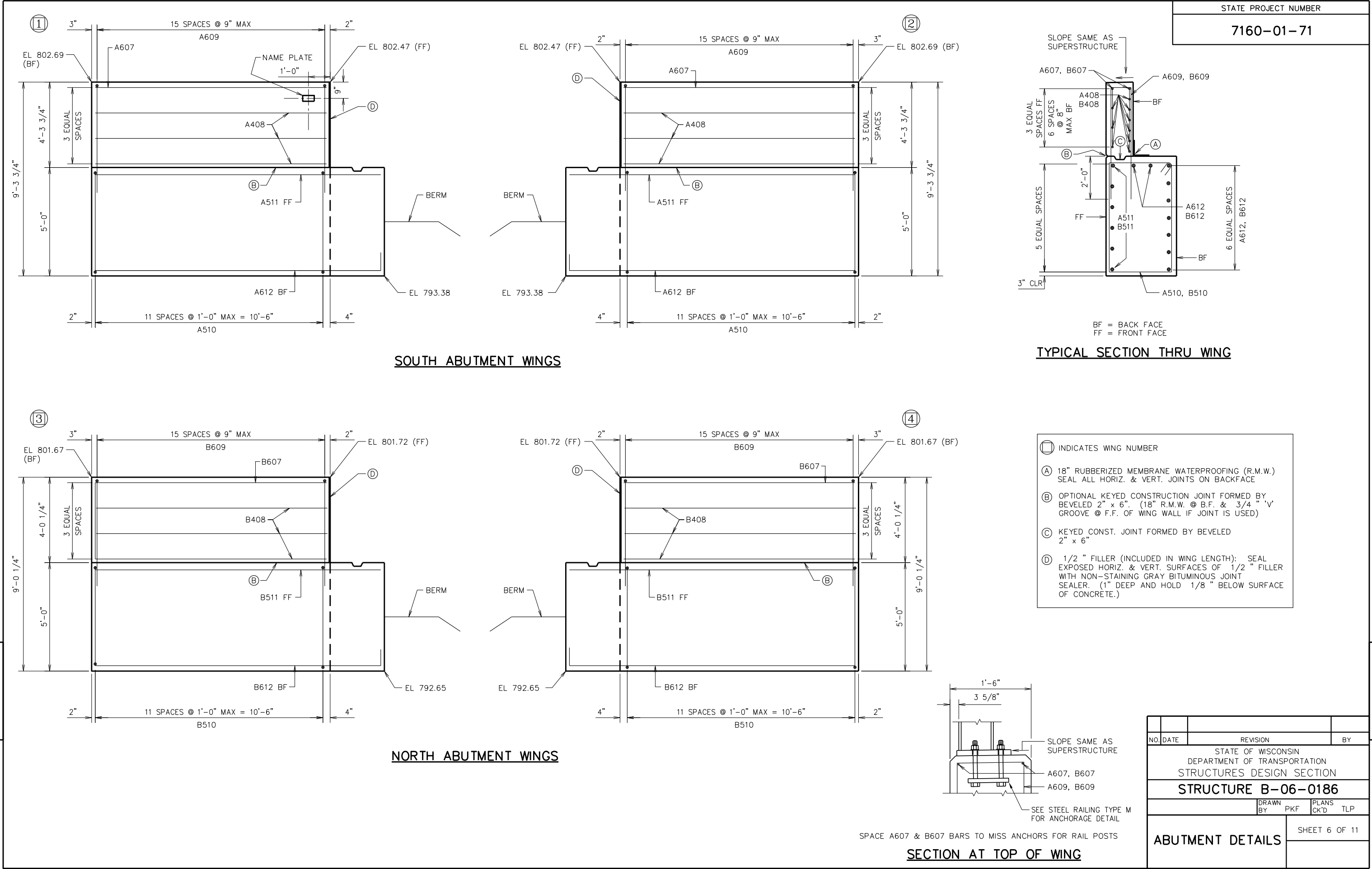
7160-01-71

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B607	X	4	10-8		WING 3 & 4 - HORIZ TOP
B408	X	18	10-8		WING 3 & 4 - HORIZ
B609	X	32	12-9	X	WING 3 & 4 - VERT TOP
B510	X	24	15-4	X	WING 3 & 4 - VERT BASE
B511	X	12	13-1		WING 3 & 4 BASE HORIZ FF
B612	X	18	13-1		WING 3 & 4 BASE HORIZ BF & TOP



NOTES

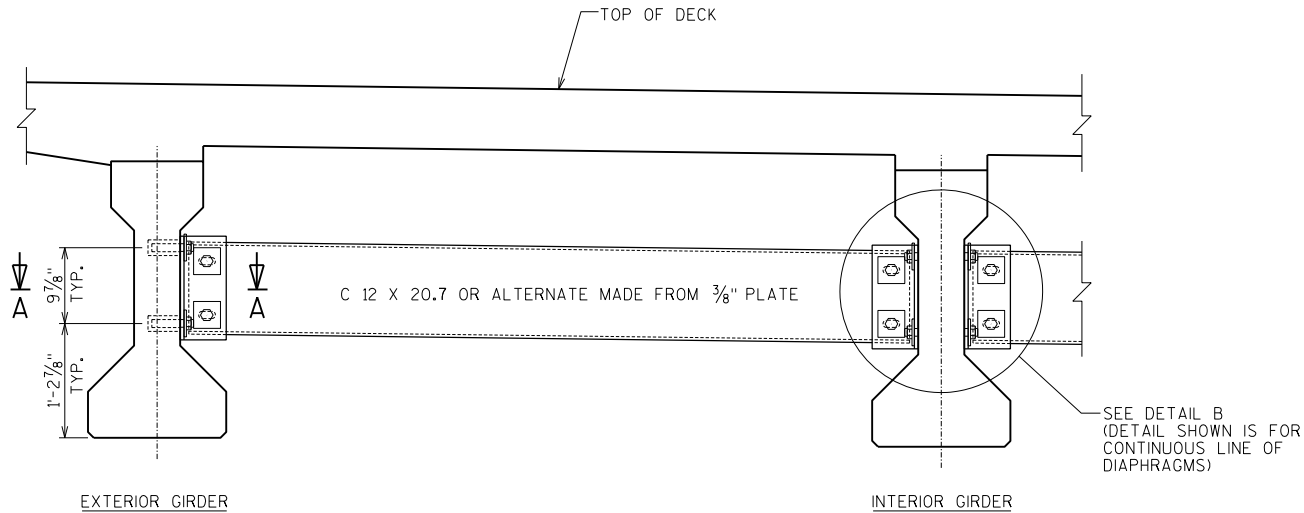
ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-06-0186", EACH.

EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

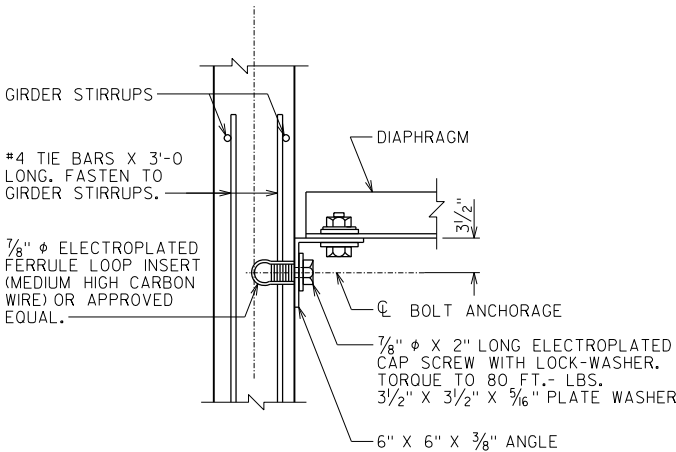
ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36. ALL BOLTS, NUTS AND WASHERS SHALL BE ASTM A325 TYPE 1.

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

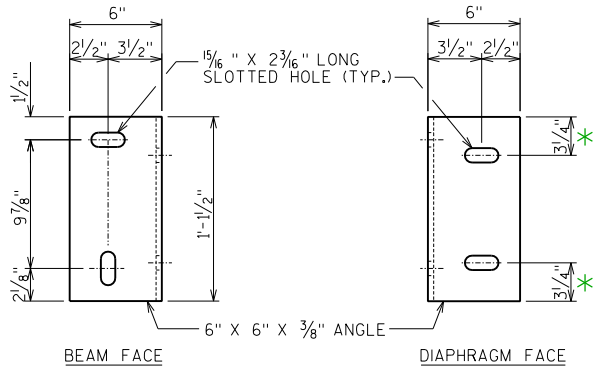
FOR SPANS EQUAL TO OR LESS THAN 80'-0", PLACE ONE DIAPHRAGM AT MID LENGTH OF GIRDER. FOR SPANS GREATER THAN 80'-0", PLACE AT 1/3 AND 2/3 POINTS.



PART TRANSVERSE SECTION AT DIAPHRAGM

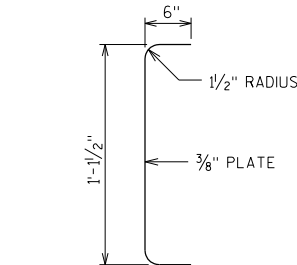


SECTION A-A
(FOR EXTERIOR ATTACHMENT)

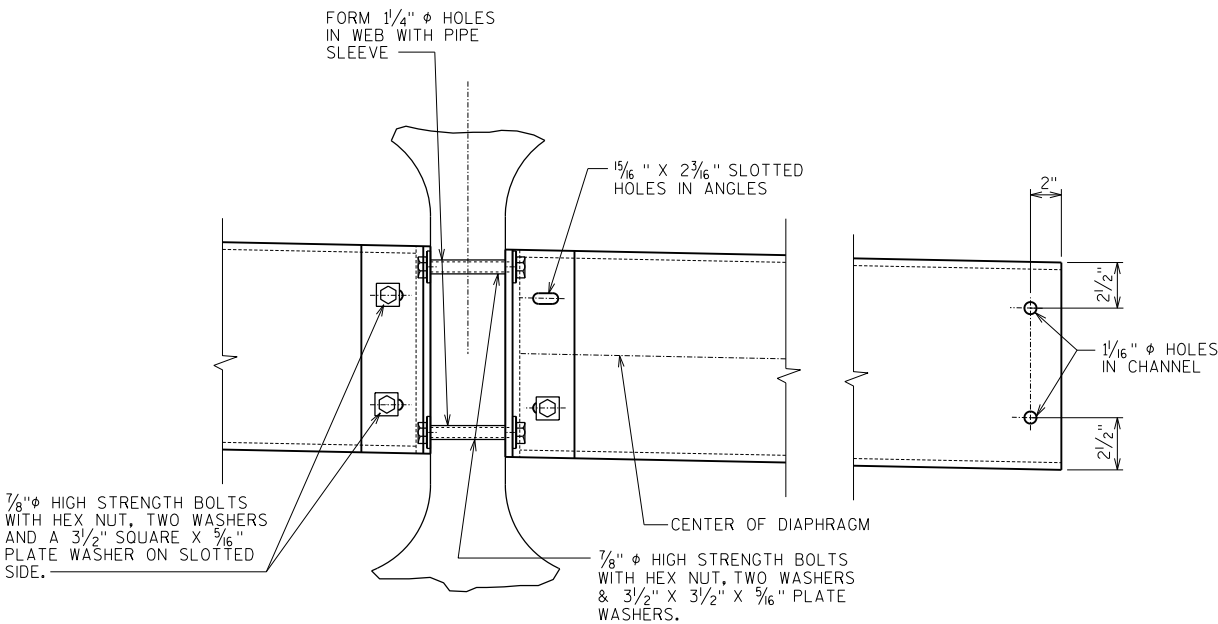


DIAPHRAGM SUPPORT

* 2 1/2" FOR ALTERNATE PLATE DIAPHRAGM



SECTION THRU
ALTERNATE DIAPHRAGM



DETAIL B

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-06-0186			
	DRAWN BY	PKF	PLANS CK'D. TLP
STEEL DIAPHRAGM		SHEET 7 OF 11	

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 2" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH. AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 2" OF THE TOP FLANGE,

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

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

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

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

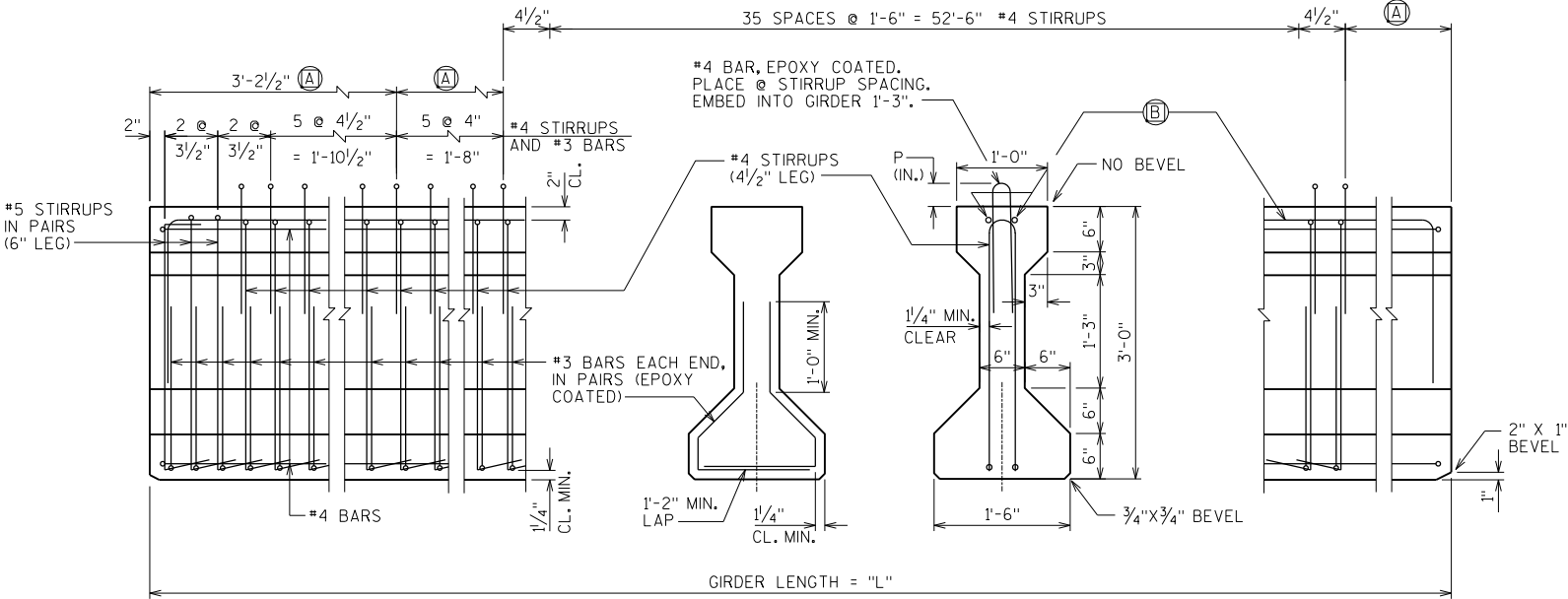
SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.

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

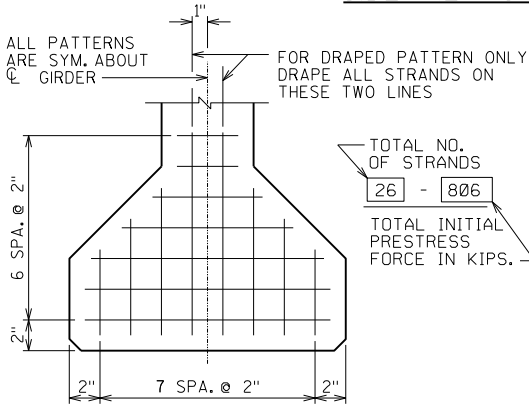
PRESTRESSING STRANDS SHALL BE (0.5" DIA.)-7 WIRE LOW-RELAXATION STRANDS WITH AN ULTIMATE STRENGTH OF 270,000 PSI.

BEND EACH END OF #4 STIRRUPS 4 1/2" AND #5 STIRRUPS 6".

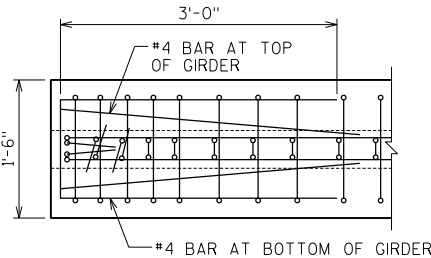
FOR DIAPHRAGM INSERT & CONNECTION DETAILS SEE "STEEL DIAPHRAGM" SHEET.



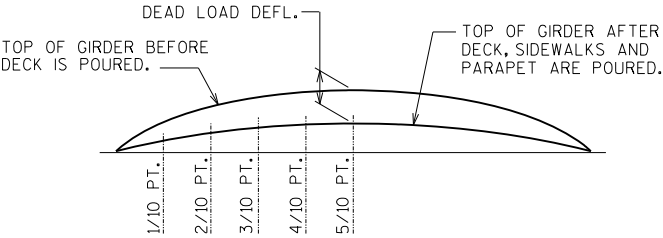
SIDE VIEW & TYPICAL SECTION IN SPAN (A) DETAIL TYP. AT EACH END (B) 2-#4 BARS BEND DOWN 16 BAR DIA. AT ENDS



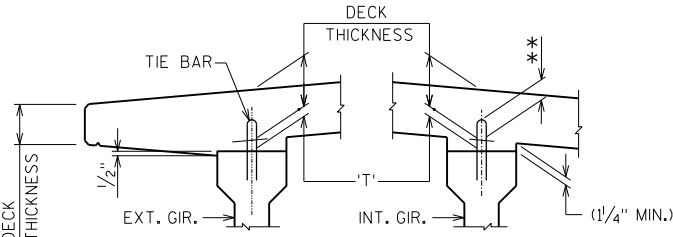
TYP. STRAND PATTERN



TOP VIEW OF GIRDER ENDS



DEAD LOAD DEFLECTION DIAGRAM



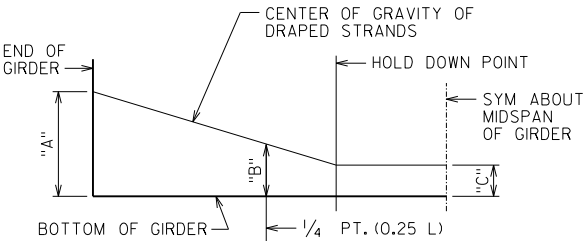
DECK HAUNCH DETAIL

IF 1/4" MINIMUM HAUNCH HEIGHT AT EDGE OF GIRDER CANNOT BE MAINTAINED, THE GRADE LINE MAY BE REVISED BY THE ENGINEER AT THE OPTION OF THE CONTRACTOR. THE PLAN DECK THICKNESS SHALL BE HELD. NOTIFY THE STRUCTURES SECTION IF THE GRADE LINE IS RAISED FROM THE PLAN PROFILE BY MORE THAN 1/2" OR, ** IF 3" MINIMUM DECK EMBEDMENT OF TIE BAR CANNOT BE OBTAINED.

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

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

NOTE: AN AVERAGE HAUNCH ('T') OF 3" WAS USED IN THE QUANTITY "CONCRETE MASONRY BRIDGES".



DRAPED STRAND PROFILE

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

SPAN	CAMBER (IN.) *
1	2.76

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

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

GIRDER DATA																									
SPAN	GIRDER	GIRDER LENGTH "L"	DEAD LOAD DEFL. (IN.)									CONC. STRGTH. f'c (p.s.i.)	"P" 1/3 OF GIRDER	"P" MID 1/3 OF GIRDER	"P" END 1/3 OF GIRDER	DIA. OF STRAND (IN.)	DRAPED PATTERN							UNDRAPED PATTERN	
			1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10						10/10	TOTAL NO. OF STRANDS	f'ci (P.S.I.) *	(IN.)				TOTAL NO. OF STRANDS	f'ci (P.S.I.) *
																				"A"	"B" MIN.	"B" MAX.	"C"		
1	ALL	63	0.30	0.59	0.82	0.96	1.01	0.96	0.82	0.59	0.30	8000	8"	6	8"	0.5	26	6800	31	11½	14½	5	————	————	

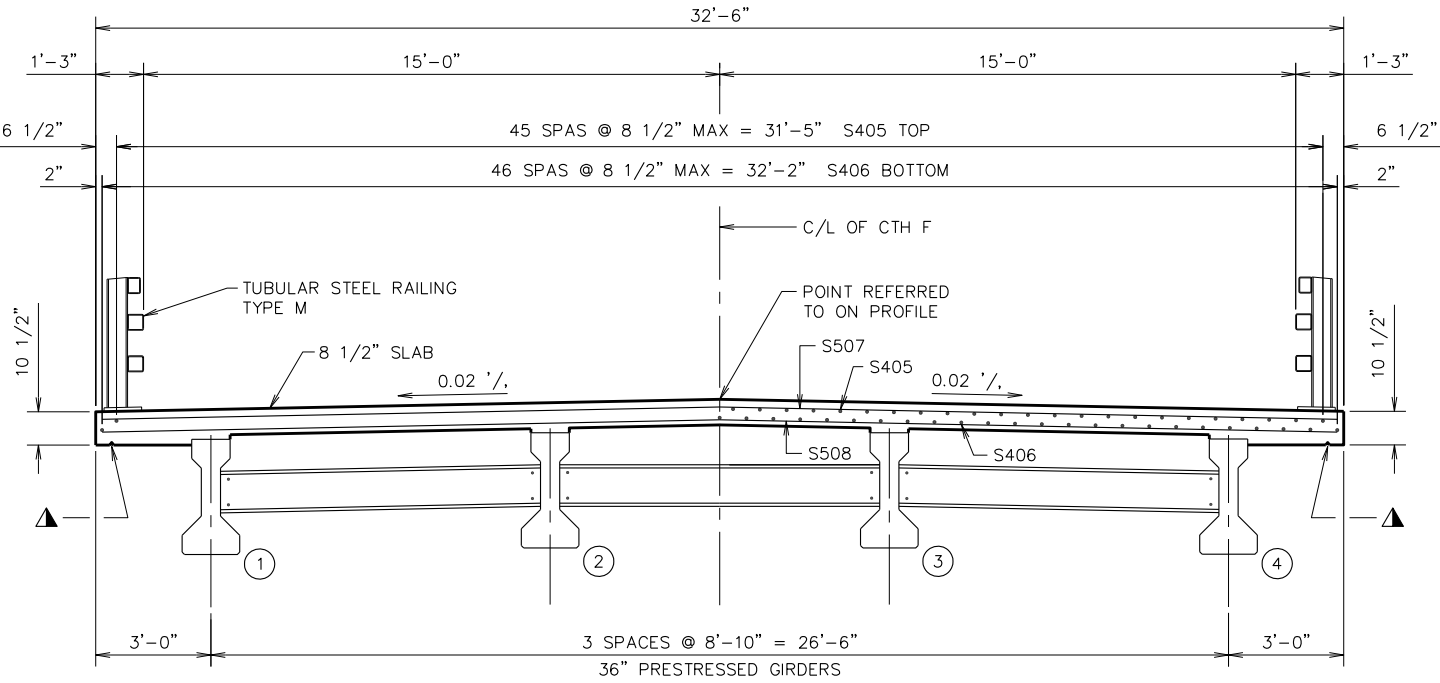
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-06-0186			
DRAWN BY		PKF	PLANS CKD. TLP
36" PRESTRESSED GIRDER DETAILS		SHEET 8 OF 11	

BILL OF BARS

15090 # COATED

NOTE: BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

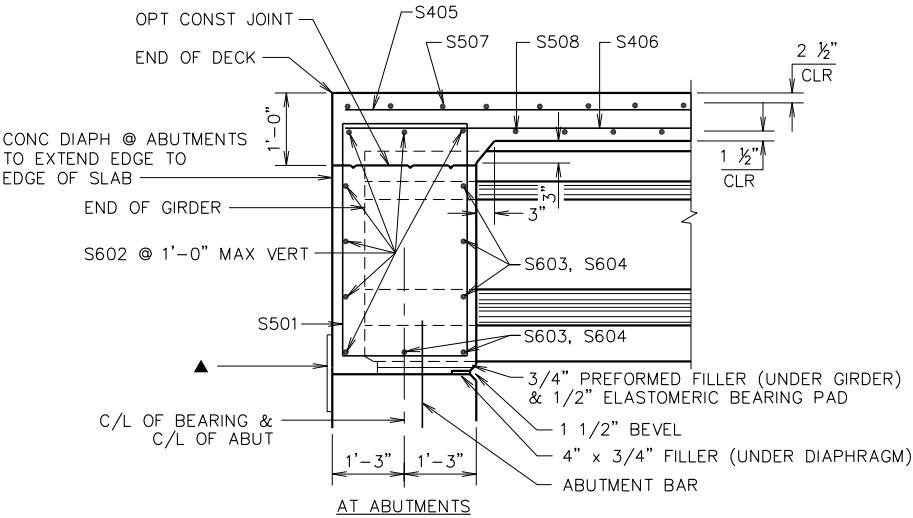
BAR MARK	COAT	NUMBER REQD	LENGTH	BENT	BAR SERIES	LOCATION
S501	X	76	11-11	X		DIAPHRAGM @ ABUTMENTS
S602	X	14	32-2			DIAPHRAGM @ ABUTMENTS
S603	X	30	7-0			DIAPHRAGM @ ABUTMENTS
S604	X	20	1-11			DIAPHRAGM @ ABUTMENTS
S405	X	92	32-11			SLAB - TOP - LONGITUDINAL
S406	X	94	32-11			SLAB - BOTTOM - LONGITUDINAL
S507	X	111	32-2			SLAB - TOP - TRANSVERSE
S508	X	110	32-2			SLAB - BOTTOM - TRANSVERSE
S609	X	72	6-0			AT INTERIOR RAIL POSTS
S610	X	16	6-0	X		AT END RAIL POSTS
S611	X	44	12-0	X		AT RAIL POSTS



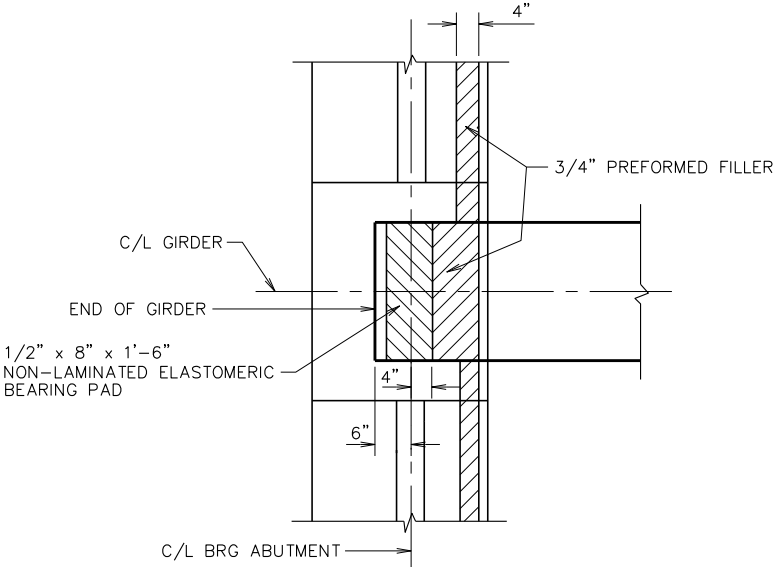
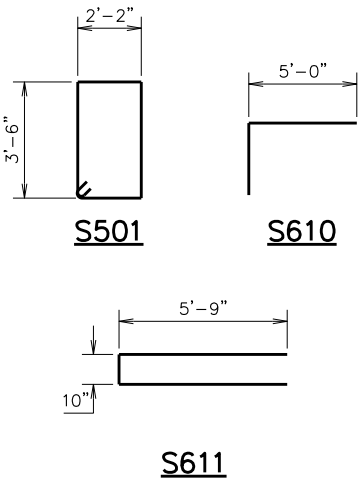
CROSS SECTION THRU ROADWAY
(LOOKING NORTH)

▲ 3/4" V-GROOVE
LOCATED 5" FROM EDGE OF DECK
EXTEND V-GROOVE TO 3" FROM
FRONT FACE OF ABUTMENT DIAPHRAGM

▲ 18" RUBBERIZED MEMBRANE
WATERPROOFING

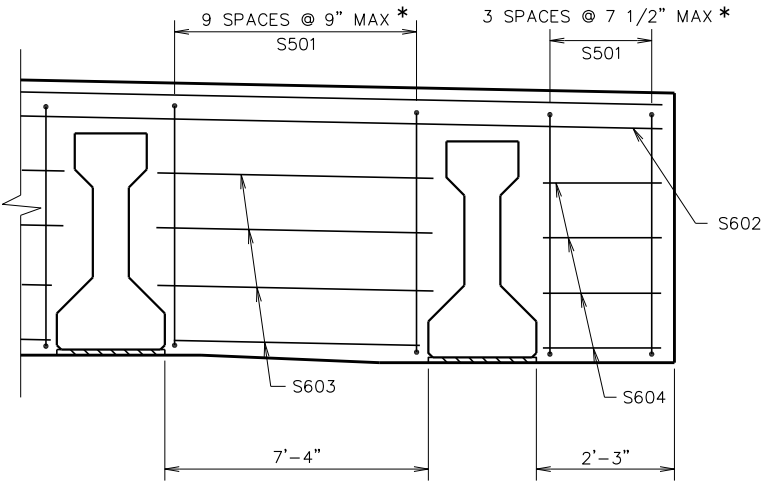


LONGITUDINAL SECTION THRU ROADWAY



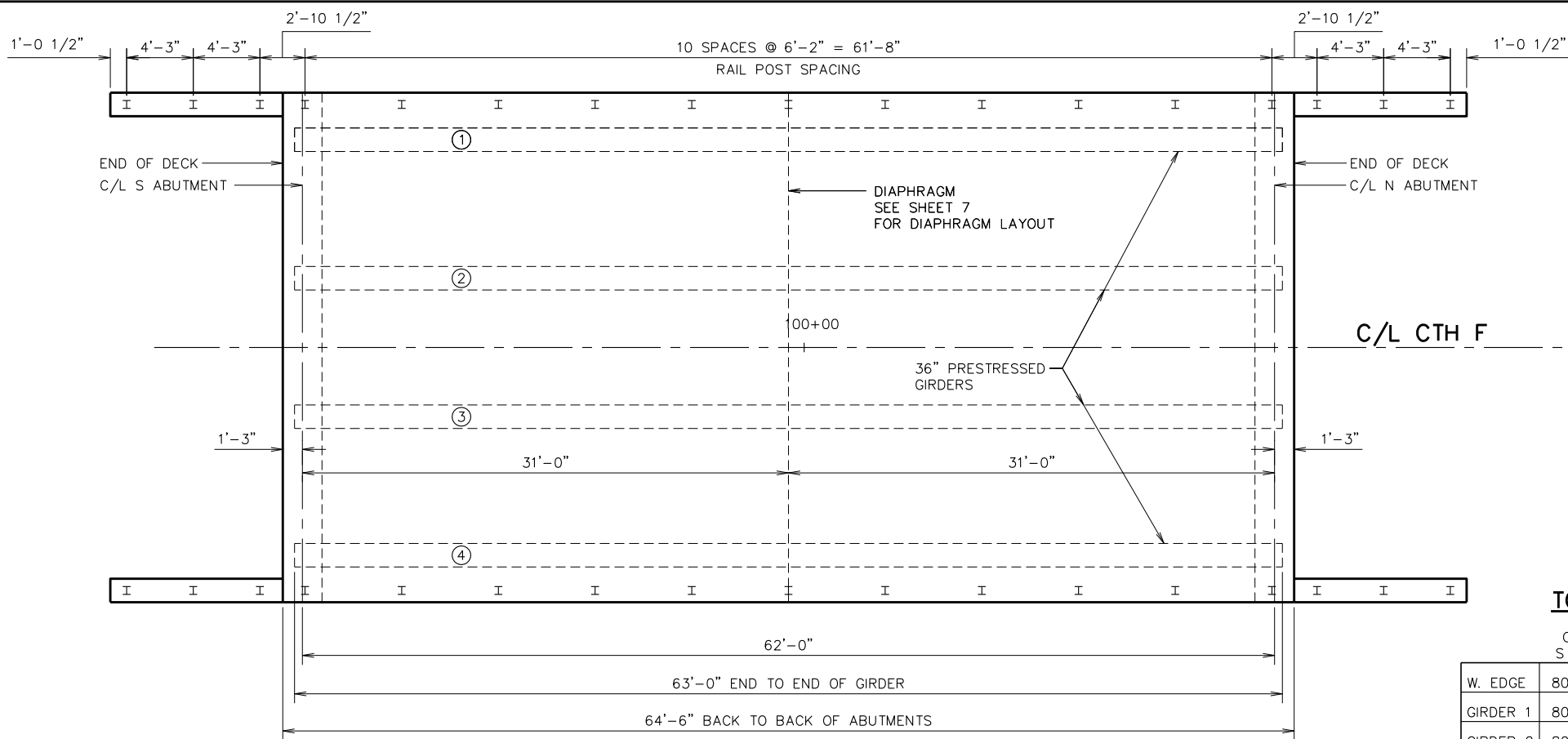
BEARING PAD DETAIL

* DIMENSIONS ARE PARALLEL TO GIRDER C/L



PART SECTION @ ABUTMENTS
(NORMAL TO ABUTMENT)

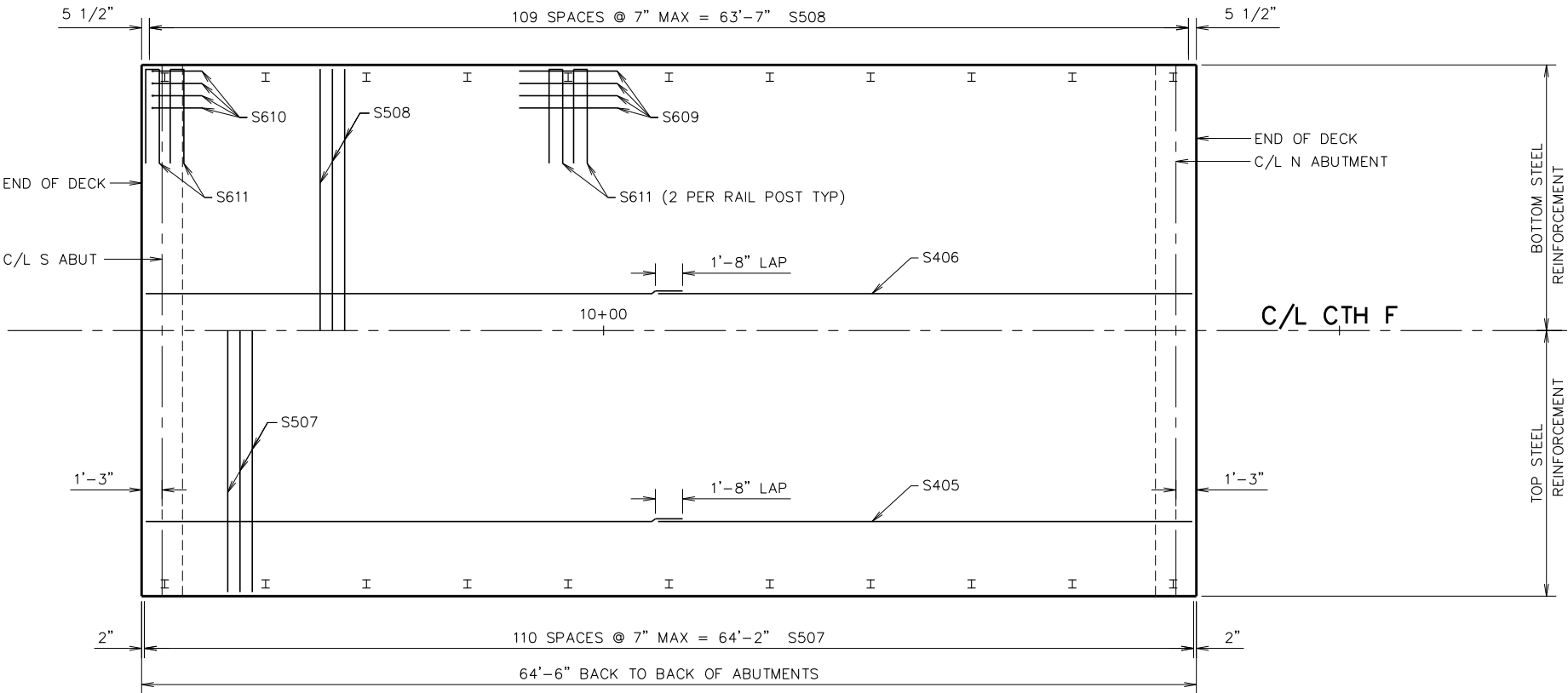
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-06-0186			
DRAWN BY		PKF	PLANS CK'D TLP
SUPERSTRUCTURE		SHEET 9 OF 11	



PLAN

TOP OF DECK ELEVATIONS

	C/L S ABUT	1/10 PT	2/10 PT	3/10 PT	4/10 PT	5/10 PT	6/10 PT	7/10 PT	8/10 PT	9/10 PT	C/L N ABUT
W. EDGE	802.45	802.35	802.26	802.17	802.09	802.01	801.94	801.88	801.82	801.77	801.72
GIRDER 1	802.51	802.41	802.32	802.23	802.15	802.07	802.00	801.94	801.88	801.83	801.78
GIRDER 2	802.68	802.58	802.49	802.40	802.32	802.24	802.17	802.11	802.05	802.00	801.95
GIRDER 3	802.68	802.58	802.49	802.40	802.32	802.24	802.17	802.11	802.05	802.00	801.95
GIRDER 4	802.51	802.41	802.32	802.23	802.15	802.07	802.00	801.94	801.88	801.83	801.78
E. EDGE	802.45	802.35	802.26	802.17	802.09	802.01	801.94	801.88	801.82	801.77	801.72



STEEL LAYOUT PLAN

STATE PROJECT NUMBER
7160-01-71

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-06-0186			
DRAWN BY		PKF	PLANS CK'D TLP
SUPERSTRUCTURE PLAN		SHEET 10 OF 11	

LEGEND

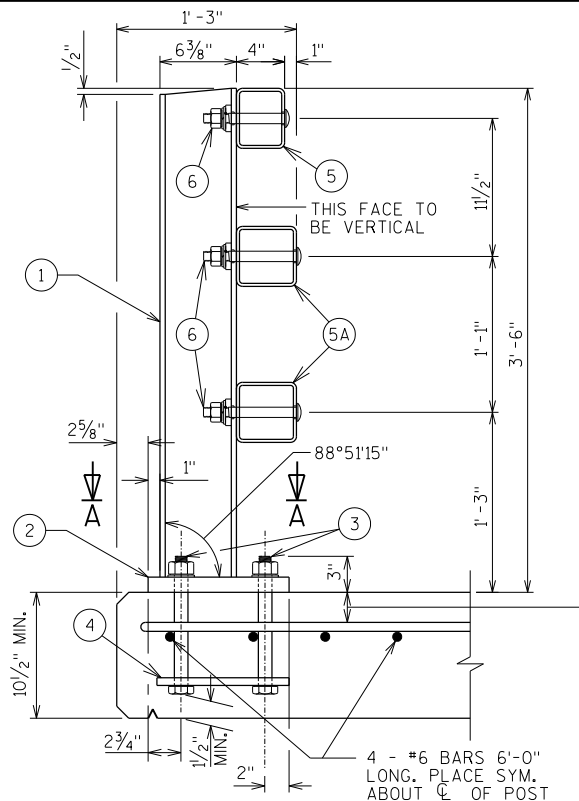
- W6 X 25 WITH $1\frac{1}{8}$ " X $1\frac{1}{2}$ " HORIZ. SLOTS ON EACH SIDE OF POST FOR BOLT NO. 6. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
- PLATE $1\frac{1}{4}$ " X $11\frac{3}{4}$ " X 1'-8" WITH $1\frac{5}{16}$ " X $1\frac{5}{8}$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

GENERAL NOTES

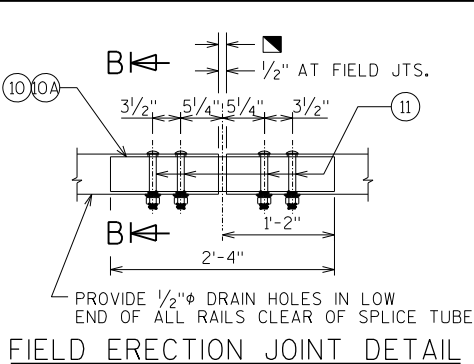
- BID ITEM SHALL BE "RAILING TUBULAR TYPE M B-06-0186" WHICH INCLUDES ALL ITEMS SHOWN.
- RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY = 50 KSI. ANCHOR PLATES, AND SPLICE TUBE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 36.
- THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL $\frac{1}{8}$ TURN.
- RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE. RAILS SHALL BE SPLICED IN A PANEL OVER EXPANSION JOINTS.
- ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
- WELD IS THE SAME ON BOTH FLANGES. FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING.
- FILL BOLT SLOT OPENINGS IN POST SHIMS AND PLATE NO. 2 AND CAULK AROUND PERIMETER OF PLATE NO. 2 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. STEEL POST SHIMS MAY BE USED UNDER POSTS WHERE REQ'D. FOR ALIGNMENT.
- POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.
- ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS & STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING BY SSPC SPECIFICATIONS.
- WHEN PAINTING IS REQUIRED, ALL MATERIAL EXCEPT ANCHORAGE DETAIL (NO. 3 & 4) SHALL BE PAINTED OVER GALVANIZING WITH APPROVED TIE COAT AND TOP COAT.
- THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 4 (TL-4).
- PLACE FIRST BOTTOM LONGITUDINAL BAR CLEAR OF DRIP GROOVE.

▲ TIE TO TOP MAT OF STEEL.

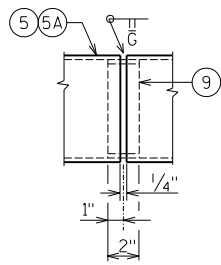
* FOR ANCHOR BOLTS IN WINGS, TACK WELD MAY BE USED IN FIELD AFTER ANCHOR PLATE IS IN POSITION IF REQ'D. FOR CONSTRUCTIBILITY.

■ RDWY. OPENING OR $2\frac{1}{2}$ " MIN. FOR STRIP SEAL EXP. JOINT & $\frac{1}{2}$ " OPENING FOR A1 ABUTMENT.

SECTION THRU RAILING ON DECK



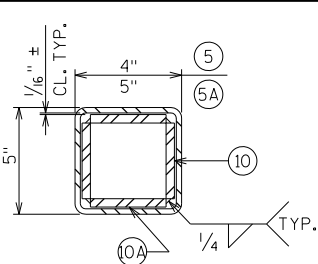
FIELD ERECTION JOINT DETAIL



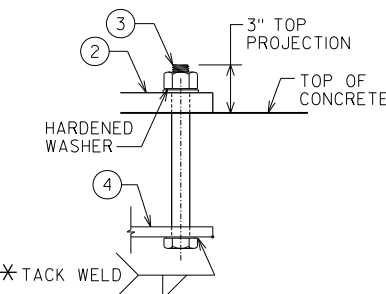
SHOP RAIL SPLICE DETAIL

LOCATION MUST BE SHOWN ON SHOP DRAWINGS

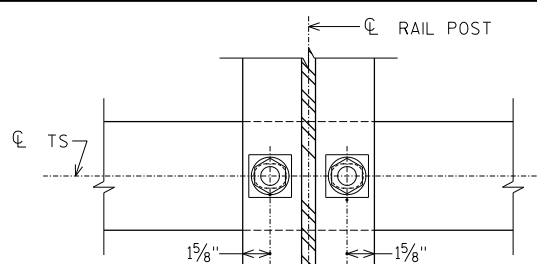
2 1/2" FOR SLABS ON GIRDERS; FOR OTHER STRUCTURES, PLACE BELOW TOP MAT SLAB REINFORCEMENT.



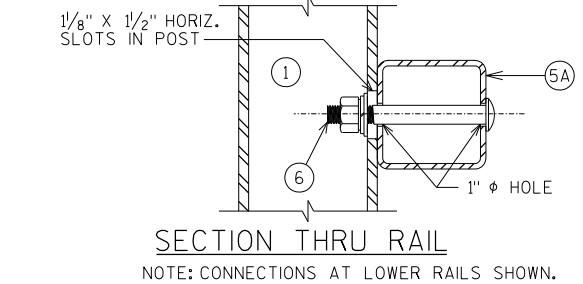
SECTION B-B



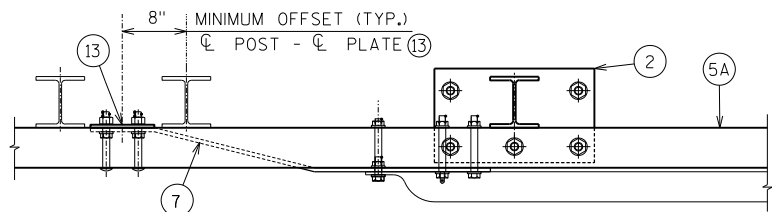
ANCHOR BOLTS



SECTION THRU POST WEB

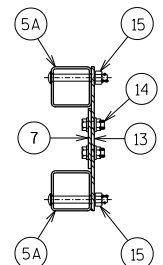


TYPICAL RAIL TO POST CONNECTIONS

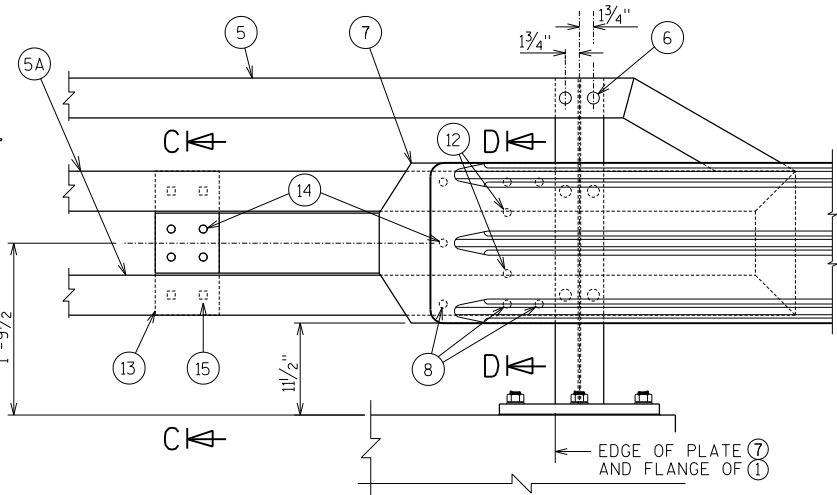


TOP VIEW AT END POST

THRIE BEAM RAIL ATTACHMENT

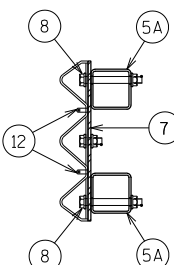


SECTION C-C

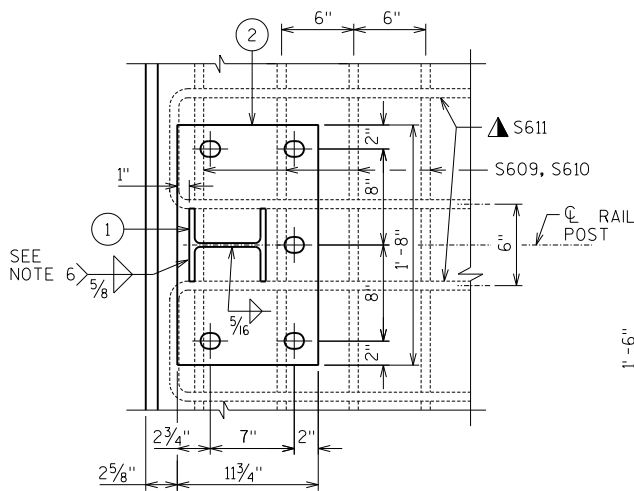


DETAIL AT END POST

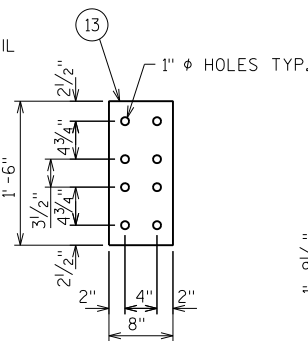
THRIE BEAM RAIL ATTACHMENT



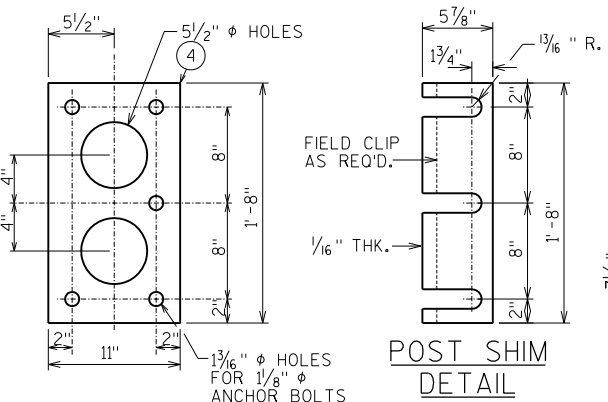
SECTION D-D



SECTION A-A

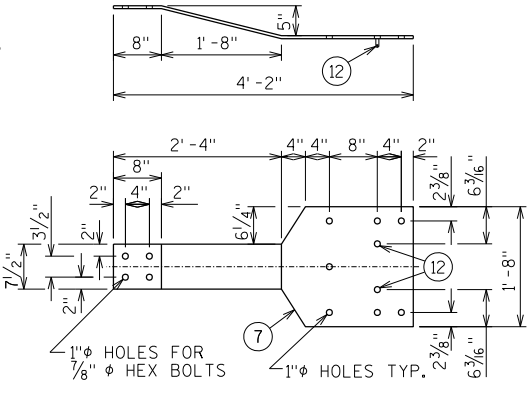


ANCHOR PLATE AT BEAM GUARD ATTACHMENT

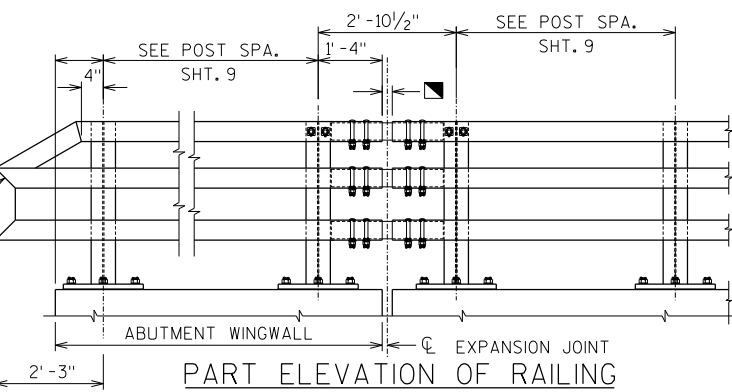


ANCHOR PLATE AT RAIL TO DECK CONNECTION

POST SHIM DETAIL



BACK-UP PLATE DETAIL AT BEAM GUARD ATTACHMENT

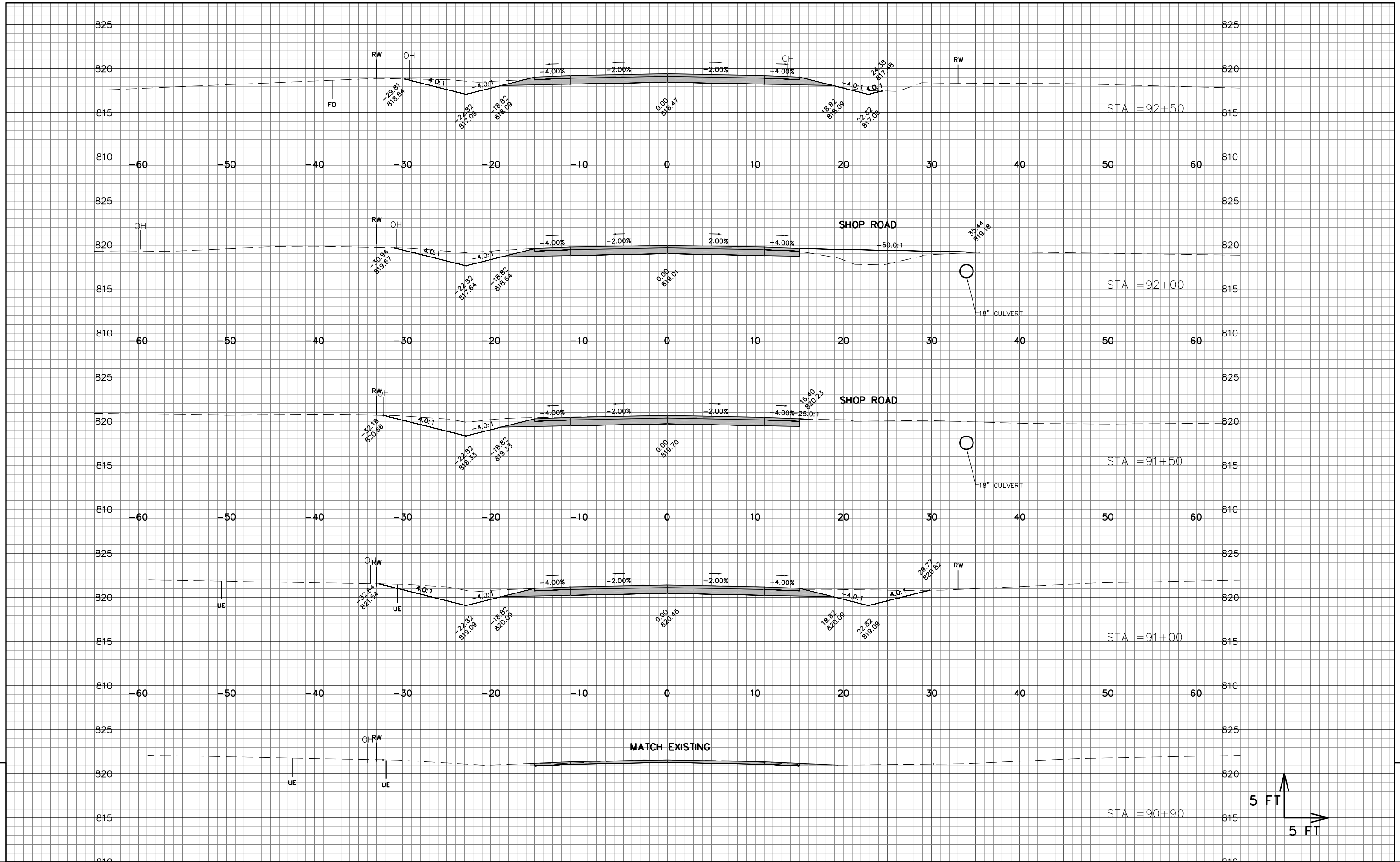


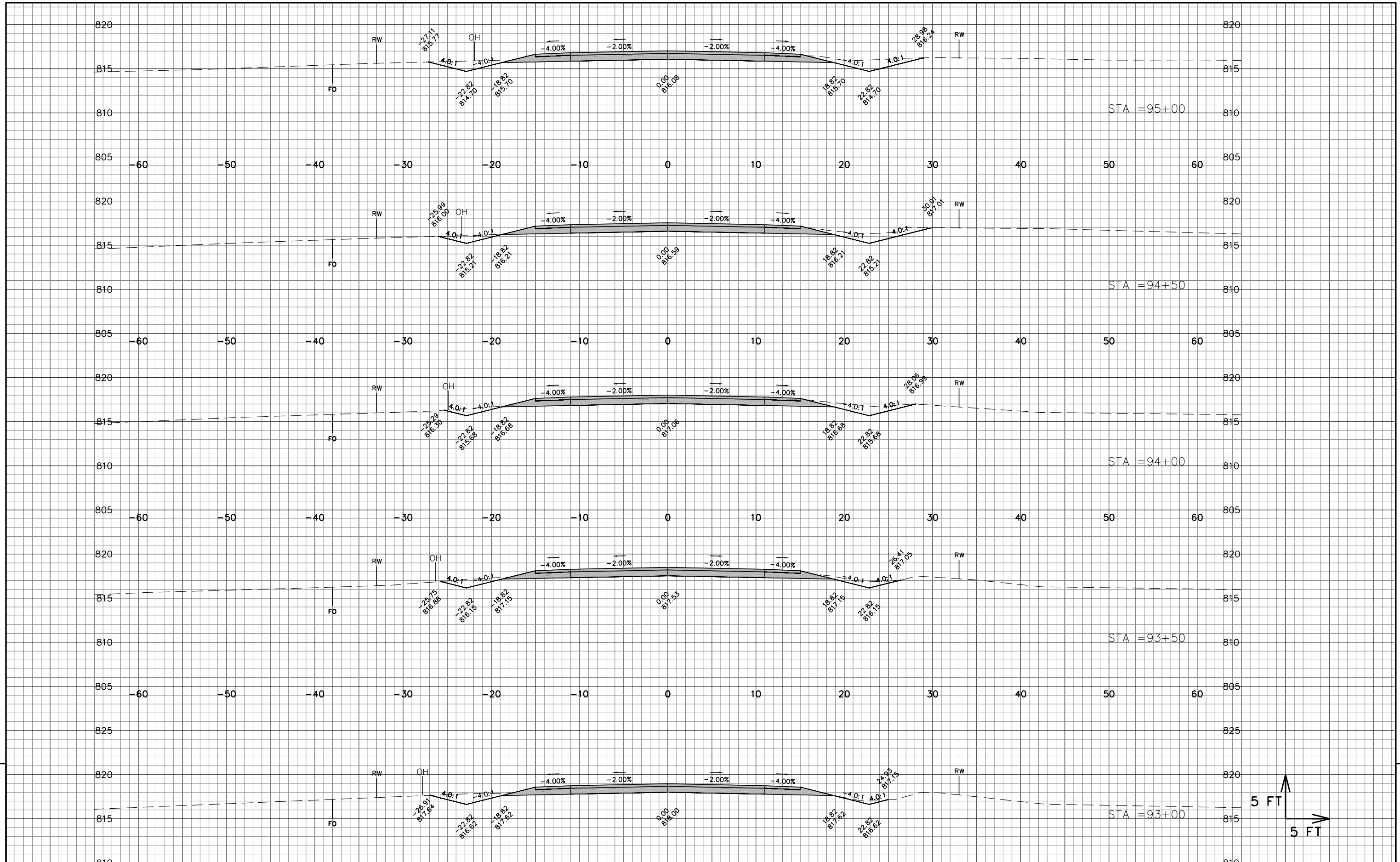
PART ELEVATION OF RAILING

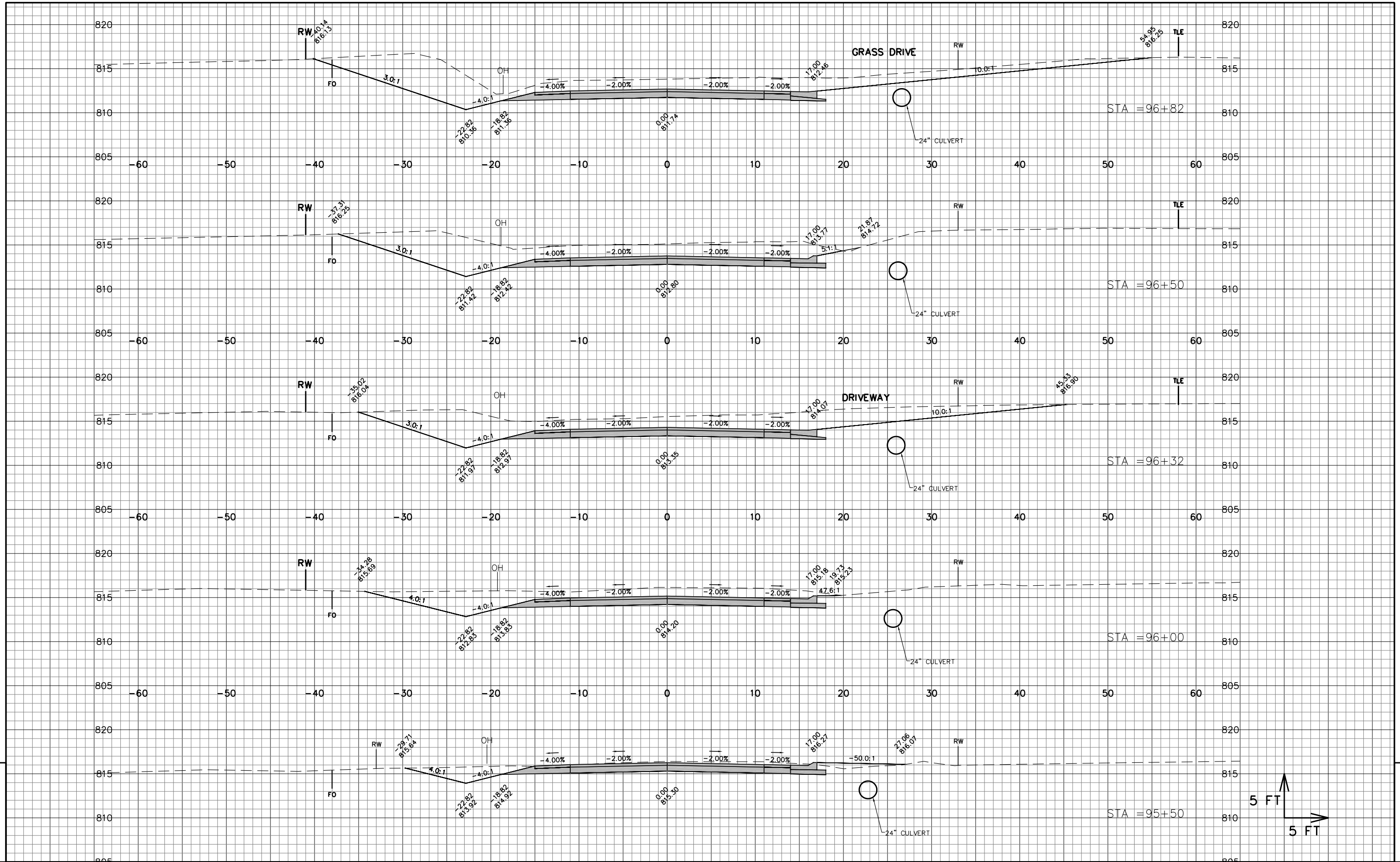
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-06-0186			
DRAWN BY PKF		PLANS CK'D.	
TUBULAR STEEL RAILING TYPE M		SHEET 11 OF 11	

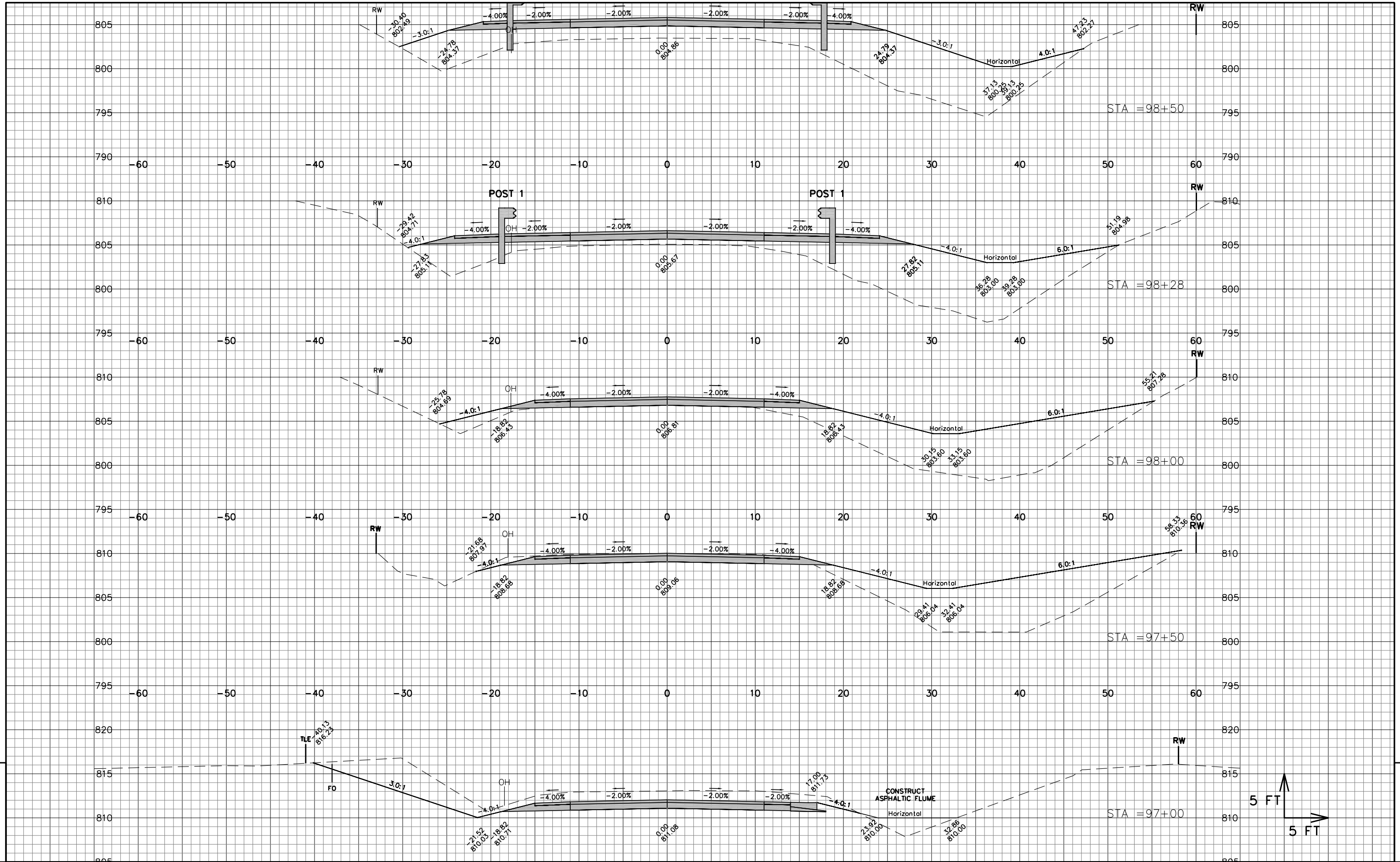
STATION	Real Station	Distance	AREA (SF)						Incremental Vol (CY) (Unadjusted)						Cumulative Vol (CY)								Mass Ordinate
			Cut	Salvaged / Unusable Pavement Material	Fill	Marsh Exc	Rock Exc	EBS	Cut	Salvaged / Unusable Pavement Material	Fill	Marsh Exc	Rock Exc	EBS	Cut 1.00 Note 1	Expanded Fill 1.25	Expanded Marsh		Expanded EBS Backfill 1.30 Note 5	Reduced Marsh		Reduced EBS In Fill 0.80 Note 7	
																	Backfill 1.50 Note 4	Expanded Rock 1.10		in Fill 0.60 Note 6	In Fill 0.80 Note 7		
91+00	9100		60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
91+50	9150	50	42	0	0	0	0	0	95	0	0	0	0	0	95	0	0	0	0	0	0	0	95
92+00	9200	50	38	0	17	0	0	0	75	0	16	0	0	0	170	20	0	0	0	0	0	0	149
92+50	9250	50	33	0	0	0	0	0	66	0	16	0	0	0	235	40	0	0	0	0	0	0	195
93+00	9300	50	25	0	1	0	0	0	54	0	1	0	0	0	289	41	0	0	0	0	0	0	248
93+50	9350	50	26	0	1	0	0	0	47	0	1	0	0	0	336	43	0	0	0	0	0	0	294
94+00	9400	50	28	0	0	0	0	0	50	0	1	0	0	0	386	43	0	0	0	0	0	0	343
94+50	9450	50	29	0	0	0	0	0	53	0	0	0	0	0	439	43	0	0	0	0	0	0	395
95+00	9500	50	34	0	0	0	0	0	59	0	0	0	0	0	498	43	0	0	0	0	0	0	454
95+50	9550	50	59	0	0	0	0	0	86	0	0	0	0	0	584	43	0	0	0	0	0	0	541
96+00	9600	50	94	0	0	0	0	0	142	0	0	0	0	0	726	43	0	0	0	0	0	0	683
96+50	9650	50	141	0	0	0	0	0	218	0	0	0	0	0	944	43	0	0	0	0	0	0	901
97+00	9700	50	133	0	3	0	0	0	254	0	3	0	0	0	1198	47	0	0	0	0	0	0	1151
97+50	9750	50	35	0	148	0	0	0	156	0	140	0	0	0	1354	222	0	0	0	0	0	0	1132
98+00	9800	50	5	0	163	0	0	0	38	0	288	0	0	0	1391	582	0	0	0	0	0	0	810
98+50	9850	50	0	0	219	0	0	0	5	0	354	0	0	0	1397	1025	0	0	0	0	0	0	372
99+00	9900	50	0	0	378	0	0	0	0	0	553	0	0	0	1397	1716	0	0	0	0	0	0	-319
99+50	9950	50	0	0	627	0	0	0	0	0	931	0	0	0	1397	2879	0	0	0	0	0	0	-1482
100+50	10050	100	0	0	588	0	0	0	0	0	2250	0	0	0	1397	5692	0	0	0	0	0	0	-4295
101+00	10100	50	0	0	440	0	0	0	0	0	952	0	0	0	1397	6882	0	0	0	0	0	0	-5486
101+50	10150	50	1	0	209	0	0	0	1	0	601	0	0	0	1398	7634	0	0	0	0	0	0	-6236
102+00	10200	50	28	0	37	0	0	0	27	0	228	0	0	0	1425	7919	0	0	0	0	0	0	-6494
102+50	10250	50	41	0	0	0	0	0	64	0	35	0	0	0	1490	7963	0	0	0	0	0	0	-6473
103+00	10300	50	97	0	0	0	0	0	128	0	0	0	0	0	1617	7963	0	0	0	0	0	0	-6346
103+50	10350	50	151	0	0	0	0	0	230	0	0	0	0	0	1847	7963	0	0	0	0	0	0	-6116
104+00	10400	50	162	0	0	0	0	0	290	0	0	0	0	0	2137	7963	0	0	0	0	0	0	-5826
104+50	10450	50	106	0	0	0	0	0	248	0	0	0	0	0	2385	7963	0	0	0	0	0	0	-5578
105+00	10500	50	79	0	0	0	0	0	171	0	0	0	0	0	2556	7963	0	0	0	0	0	0	-5408
105+50	10550	50	62	0	0	0	0	0	131	0	0	0	0	0	2686	7963	0	0	0	0	0	0	-5277
106+00	10600	50	53	0	0	0	0	0	107	0	0	0	0	0	2793	7963	0	0	0	0	0	0	-5170
106+50	10650	50	39	0	0	0	0	0	85	0	0	0	0	0	2878	7963	0	0	0	0	0	0	-5085
107+00	10700	50	34	0	0	0	0	0	67	0	0	0	0	0	2946	7963	0	0	0	0	0	0	-5018
			Column totals						2946	0	6371	0	0	0									

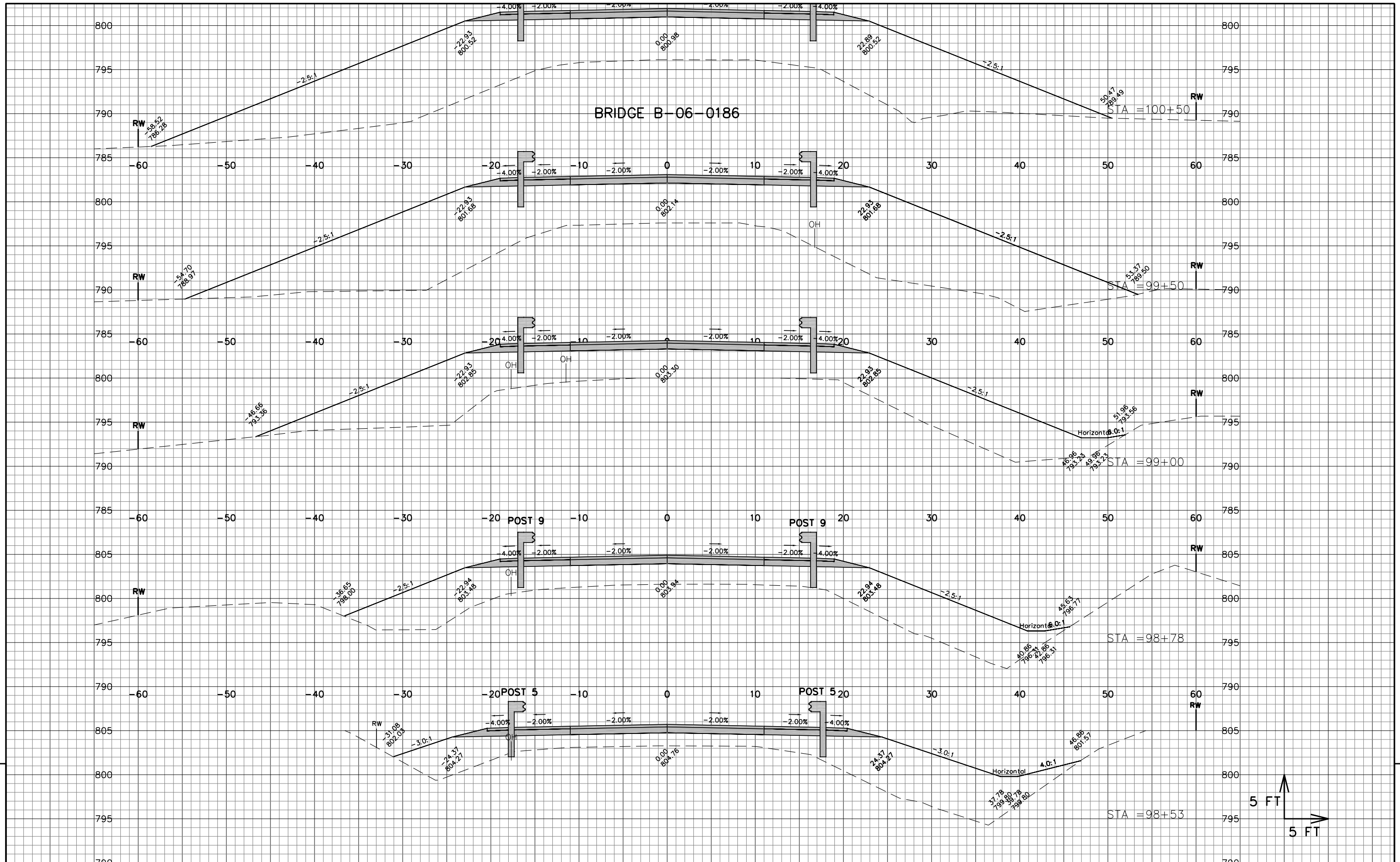
STATION	Real Station	Distance	AREA (SF)						Incremental Vol (CY) (Unadjusted)						Cumulative Vol (CY)								Mass Ordinate
			Cut	Salvaged / Unusable Pavement Material	Fill	Marsh Exc	Rock Exc	EBS	Cut	Salvaged / Unusable Pavement Material	Fill	Marsh Exc	Rock Exc	EBS	Cut 1.00 Note 1	Expanded Fill 1.25	Expanded Marsh Backfill		Expanded EBS Backfill		Reduced Marsh in Fill 0.60	Reduced EBS In Fill 0.80	
																	1.50 Note 4	1.10	1.30 Note 5	Note 6	Note 7	Note 8	
97+75	9775		24.1	0.0	7.1	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98+00	9800	25	129.7	0.0	12.2	0.0	0.0	0.0	71	0	9	0	0	0	71	11	0	0	0	0	0	0	60
98+25	9825	25	33.7	0.0	40.5	0.0	0.0	0.0	76	0	24	0	0	0	147	42	0	0	0	0	0	0	105
98+50	9850	25	0.0	0.0	176.8	0.0	0.0	0.0	16	0	101	0	0	0	162	167	0	0	0	0	0	0	-5
98+75	9875	25	0.0	0.0	270.7	0.0	0.0	0.0	0	0	207	0	0	0	162	426	0	0	0	0	0	0	-264
99+00	9900	25	0.0	0.0	327.5	0.0	0.0	0.0	0	0	277	0	0	0	162	773	0	0	0	0	0	0	-610
99+25	9925	25	0.0	0.0	377.4	0.0	0.0	0.0	0	0	326	0	0	0	162	1180	0	0	0	0	0	0	-1018
99+36	9936	11	0.0	0.0	380.4	0.0	0.0	0.0	0	0	154	0	0	0	162	1373	0	0	0	0	0	0	-1211
99+75	9975	39	0.0	0.0	462.5	0.0	0.0	0.0	0	0	609	0	0	0	162	2134	0	0	0	0	0	0	-1972
100+00	10000	25	0.0	0.0	347.9	0.0	0.0	0.0	0	0	375	0	0	0	162	2603	0	0	0	0	0	0	-2441
100+25	10025	25	0.0	0.0	332.8	0.0	0.0	0.0	0	0	315	0	0	0	162	2997	0	0	0	0	0	0	-2835
100+50	10050	25	0.0	0.0	273.6	0.0	0.0	0.0	0	0	281	0	0	0	162	3348	0	0	0	0	0	0	-3186
100+75	10075	25	1.9	0.0	182.3	0.0	0.0	0.0	1	0	211	0	0	0	163	3612	0	0	0	0	0	0	-3449
101+00	10100	25	14.3	0.0	5.7	0.0	0.0	0.0	8	0	87	0	0	0	171	3721	0	0	0	0	0	0	-3550
			Column totals						171	0	2977	0	0	0									-3550

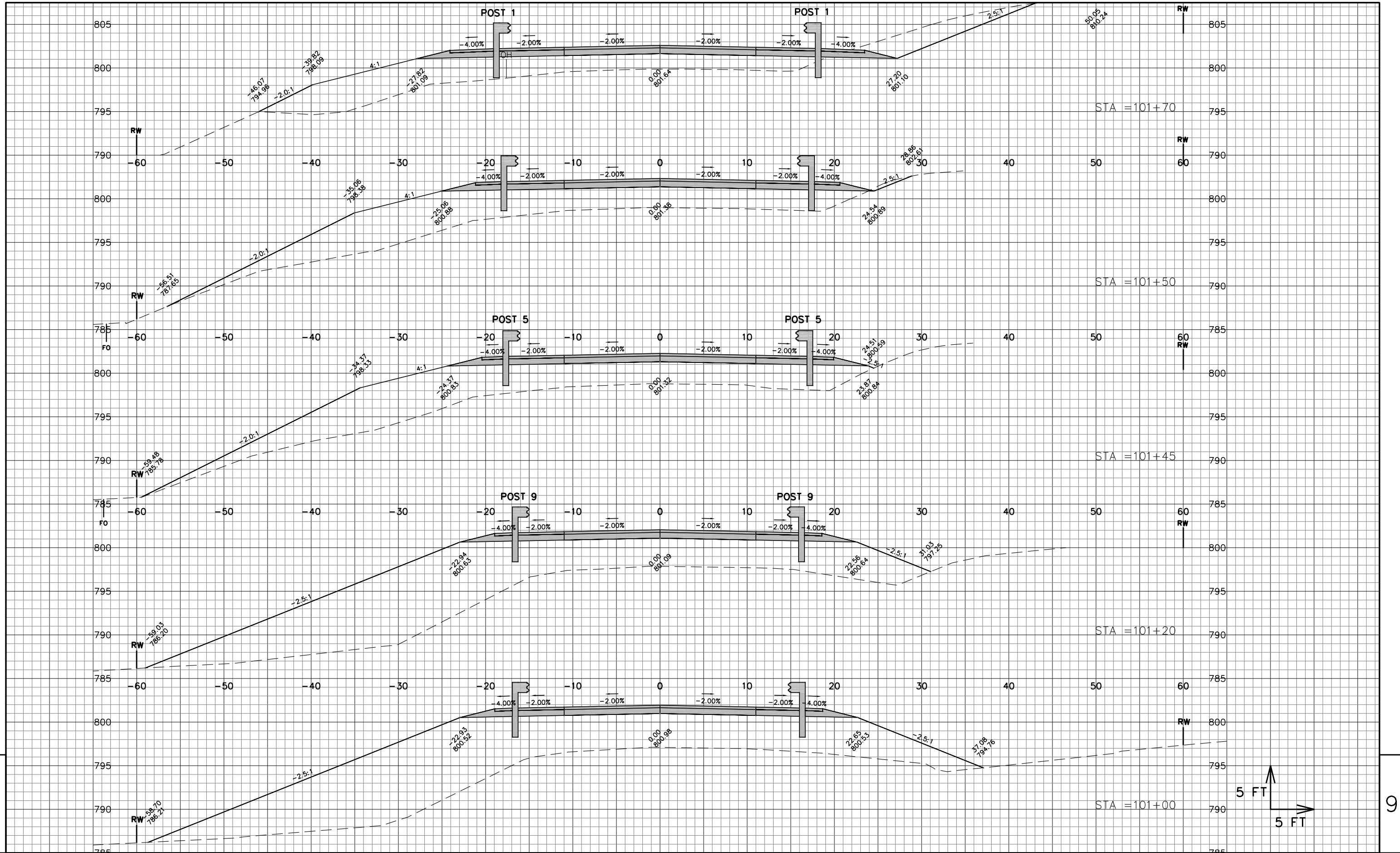


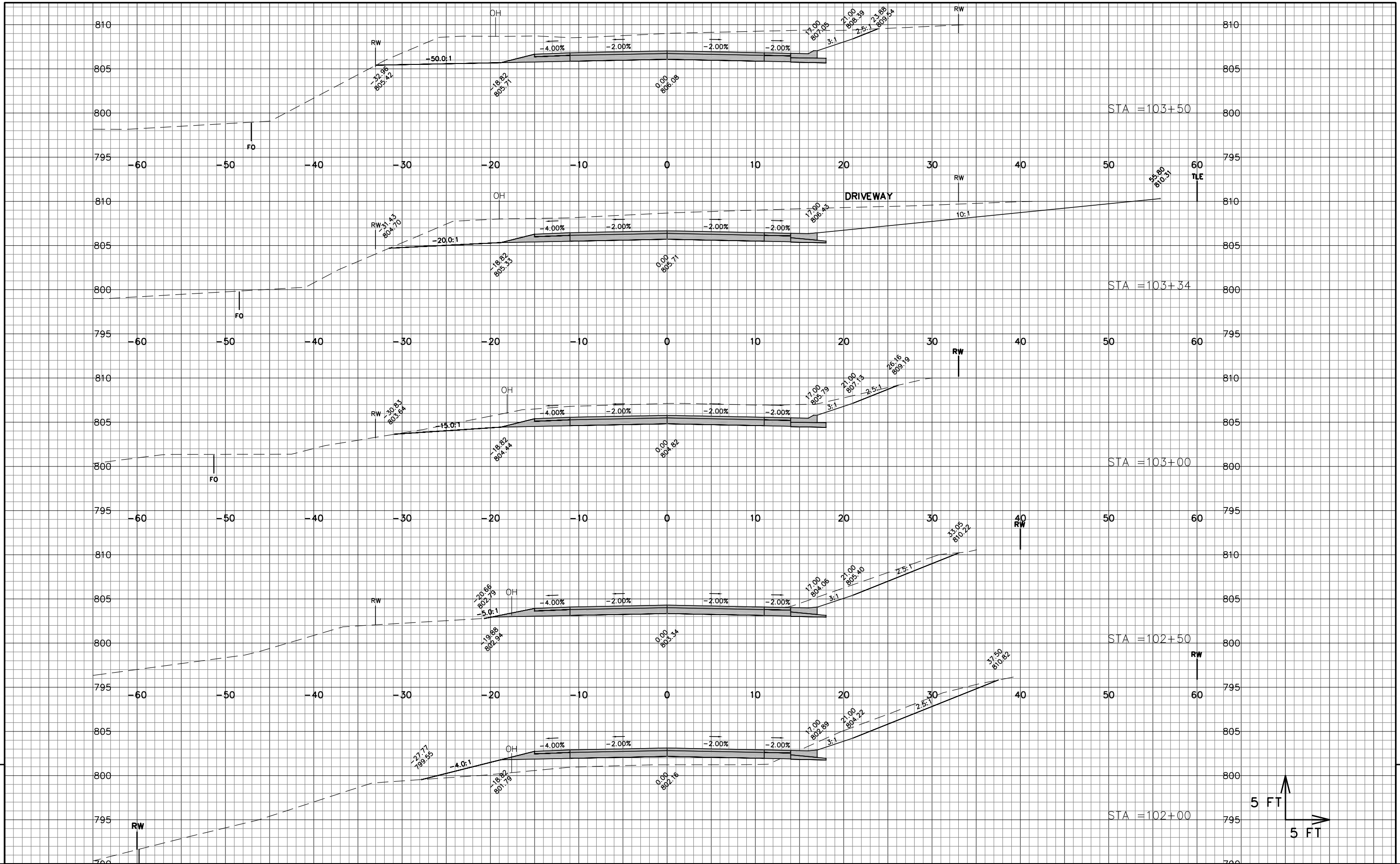


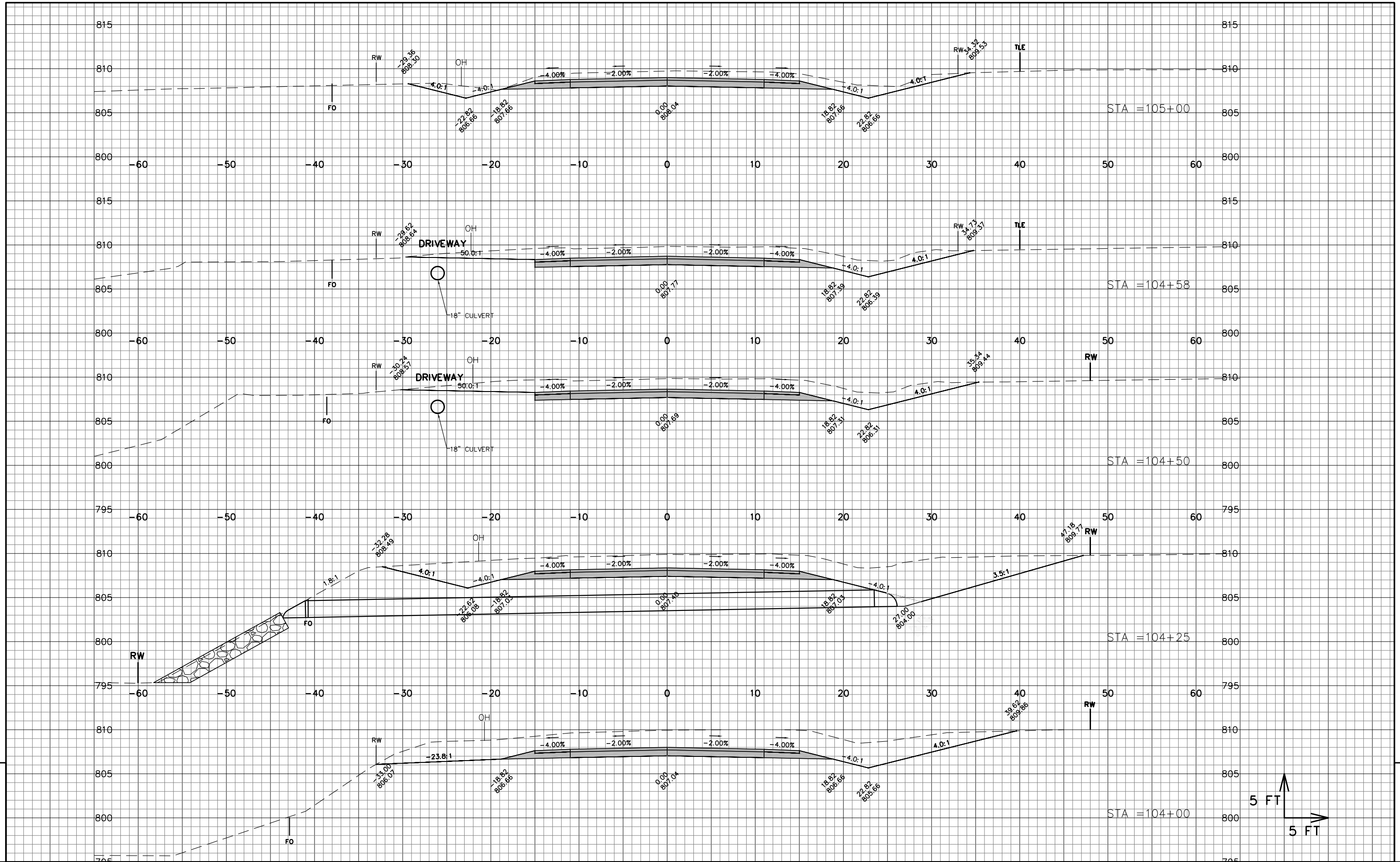


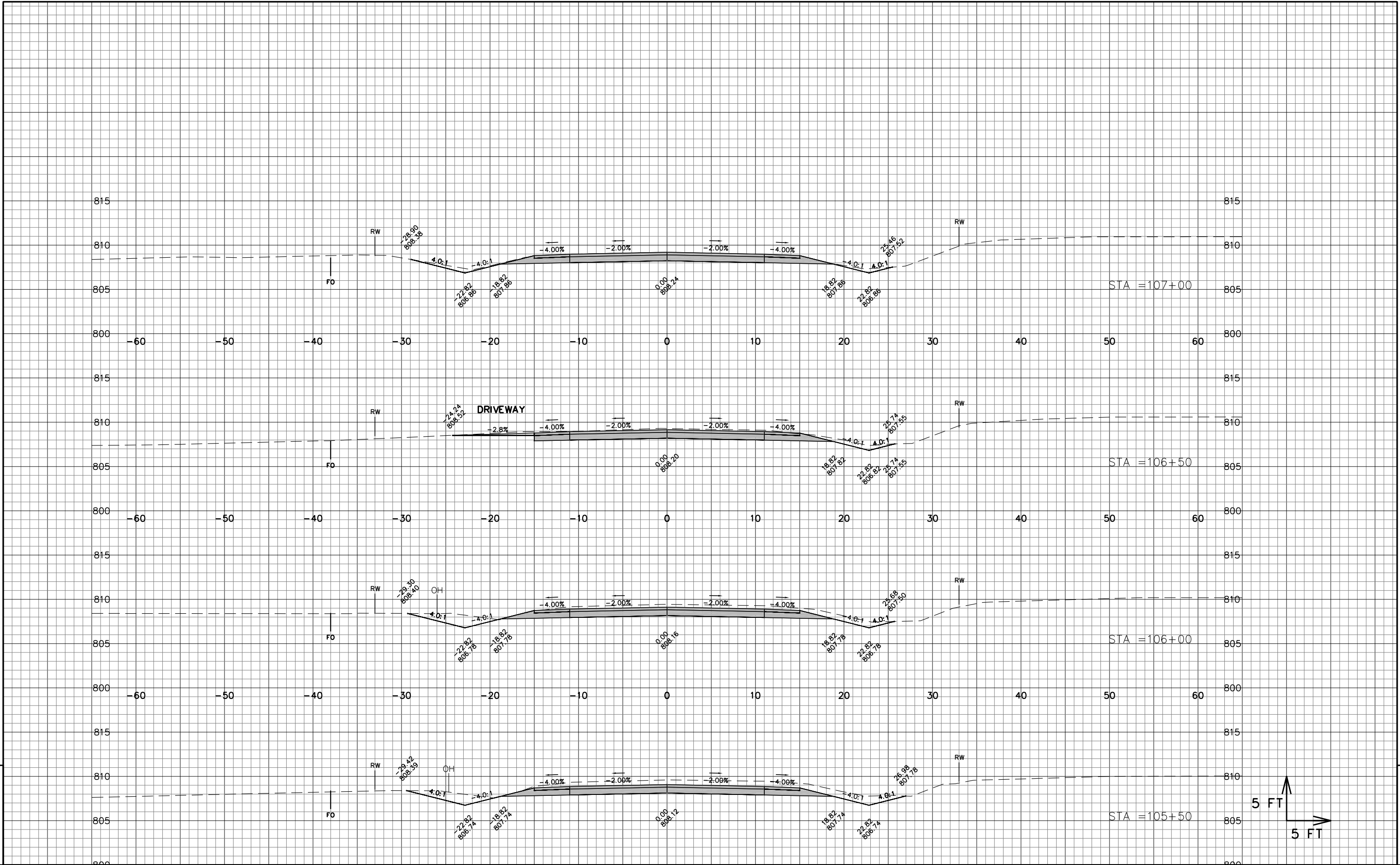


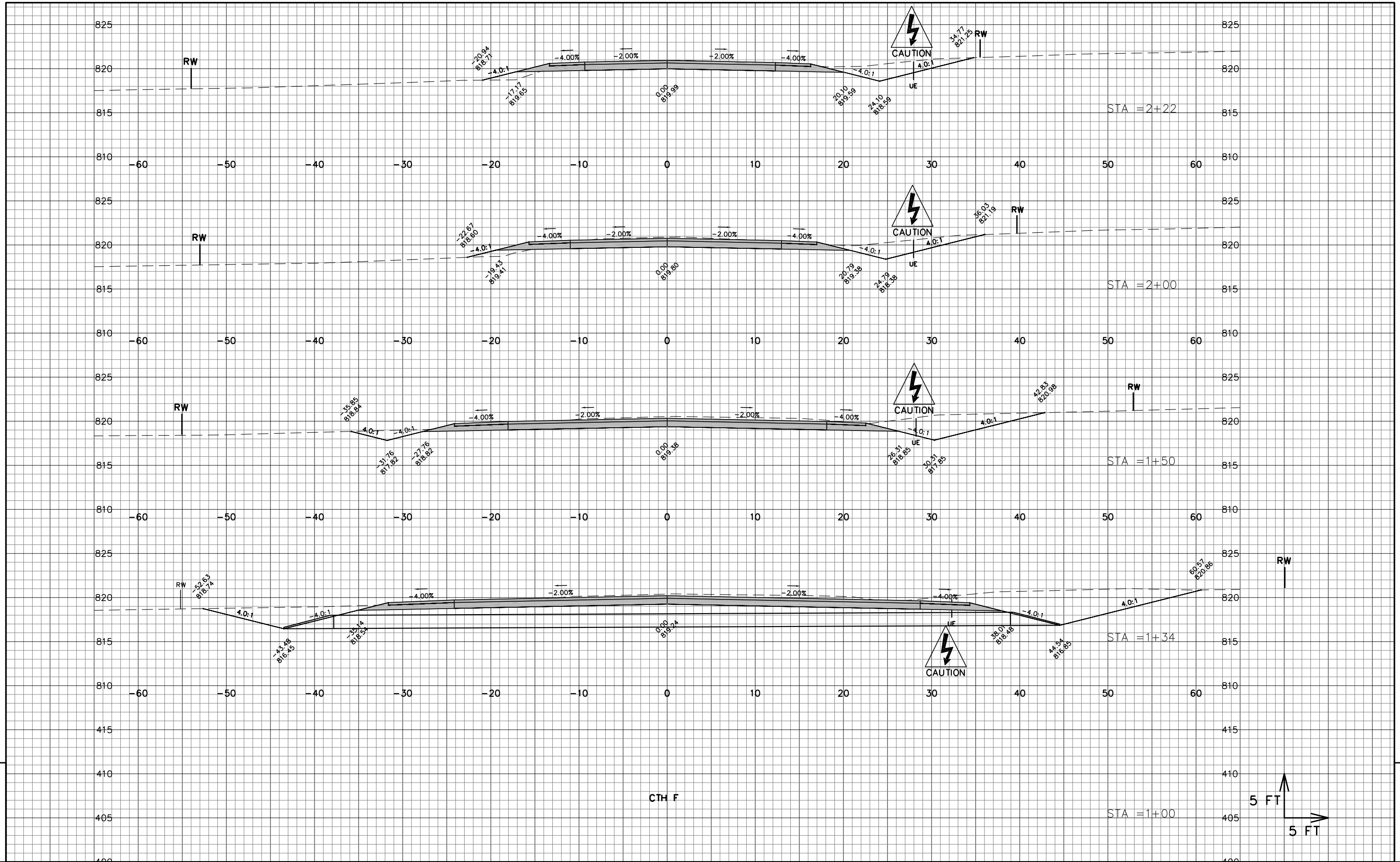


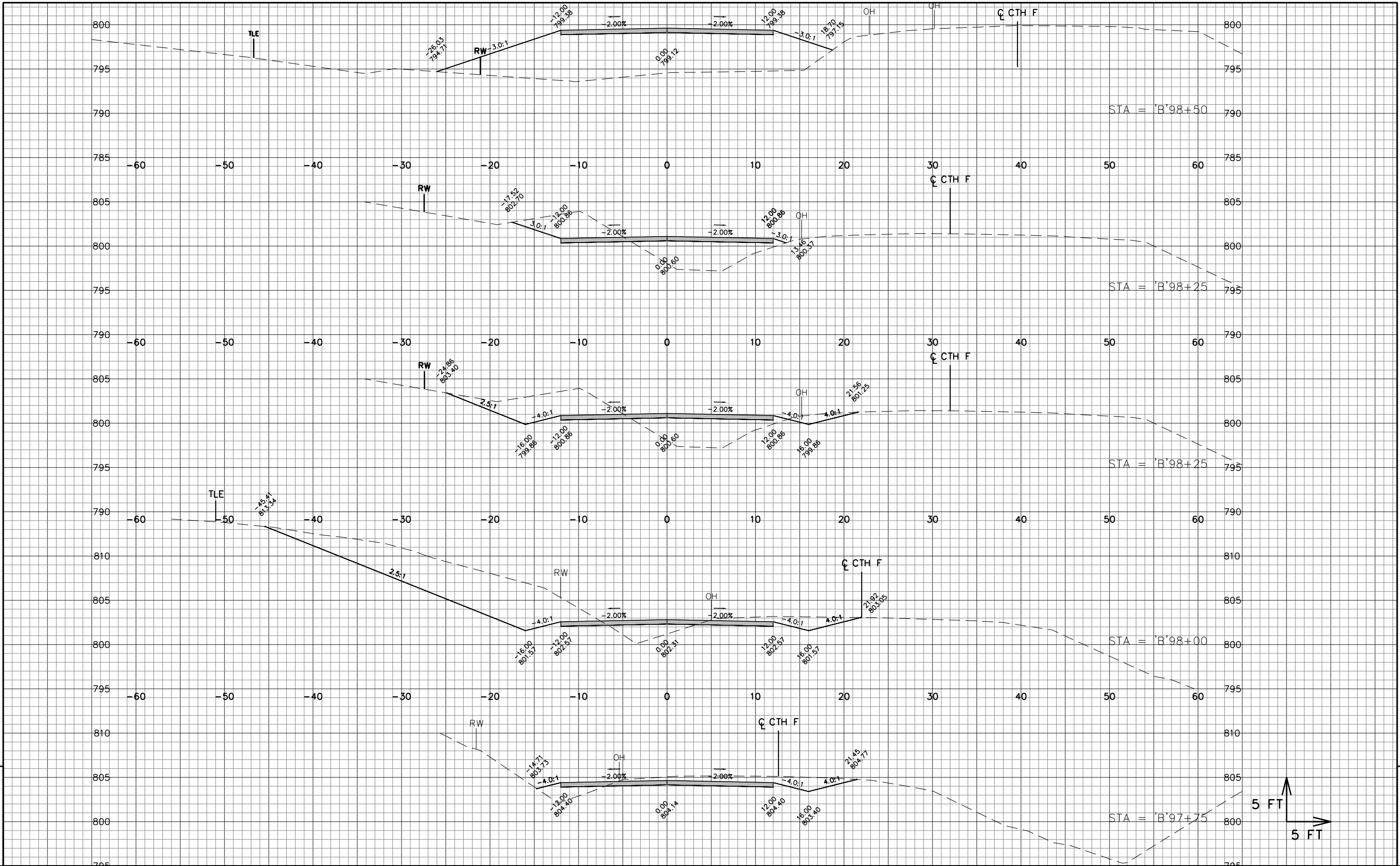


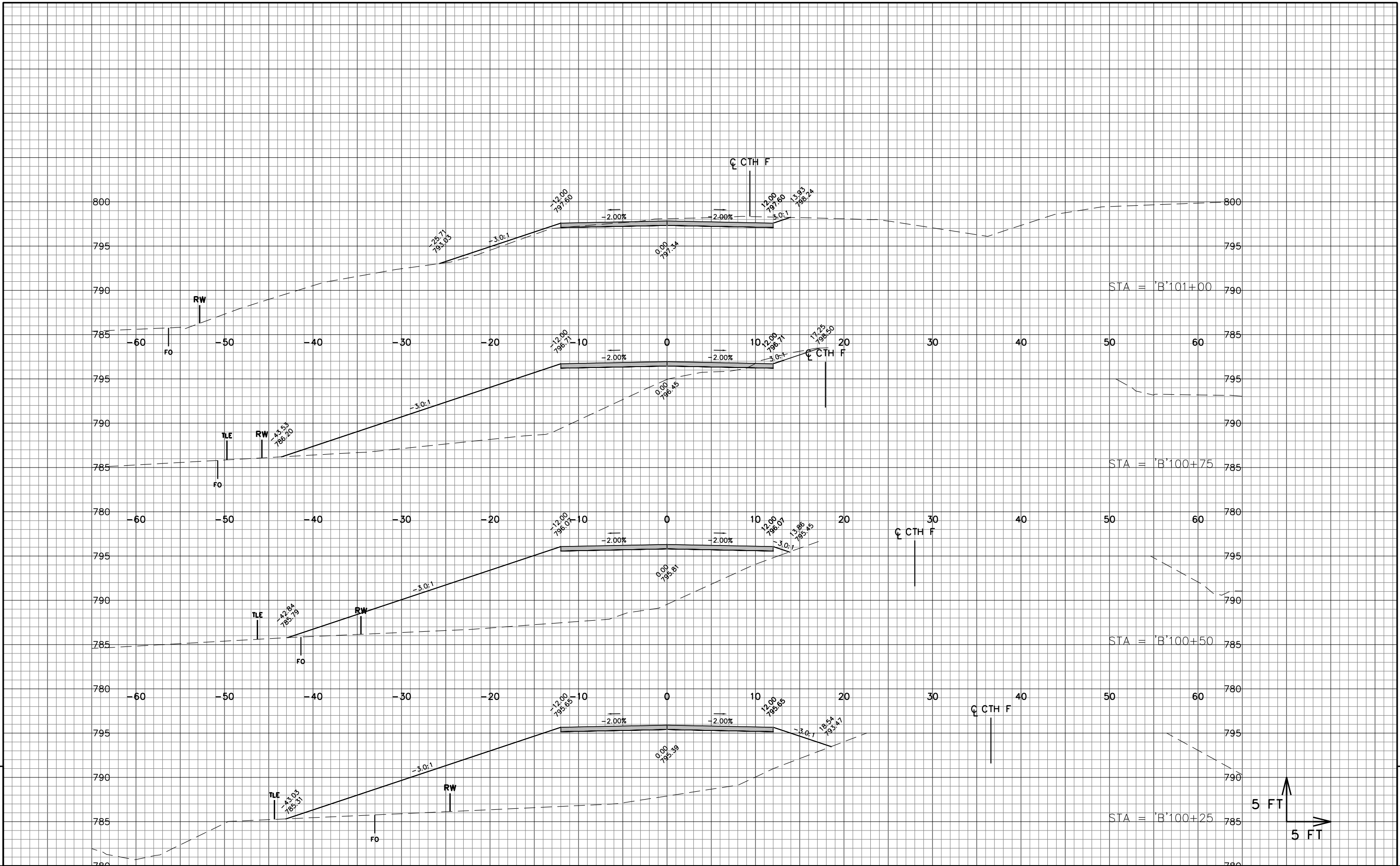




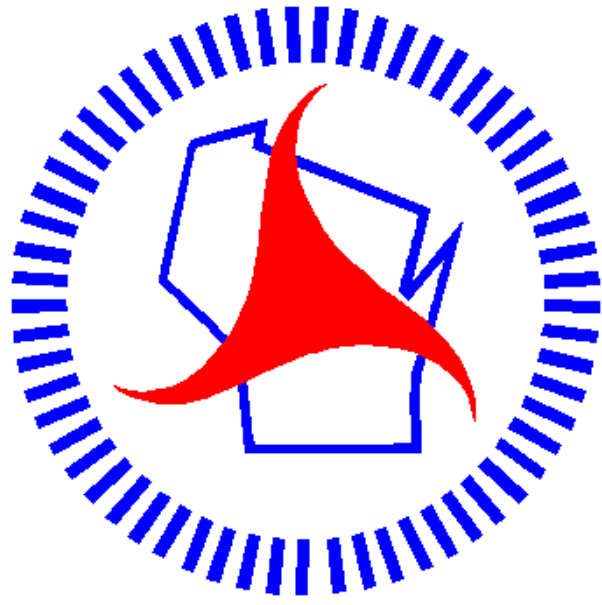








Notes



Wisconsin Department of Transportation

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