

SWL
PROJECT ID: 5679-00-75/76
WITH:
COUNTY: IOWA

APR 13
ORDER OF SHEETS

- | | |
|---------------|---|
| Section No. 1 | Title |
| Section No. 2 | Typical Sections and Details (Includes Erosion Control) |
| 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 = 120



DESIGN DESIGNATION

- | | | |
|---------------|---|---------|
| A.A.D.T. 2013 | = | 710 |
| A.A.D.T. 2033 | = | 950 |
| D.H.V. | = | 138 |
| D.D. | = | 62/38 |
| T. | = | 7.4% |
| DESIGN SPEED | = | 50 MPH |
| ESALS | = | 116,800 |

CONVENTIONAL SYMBOLS

- | | |
|--------------------------------|-----------|
| PLAN | |
| CORPORATE LIMITS | //// |
| PROPERTY LINE | --- |
| LOT LINE | - - - - |
| LIMITED HIGHWAY EASEMENT | L - - - - |
| EXISTING RIGHT OF WAY | ===== |
| PROPOSED OR NEW R/W LINE | ===== |
| SLOPE INTERCEPT | - - - - |
| REFERENCE LINE | ===== |
| EXISTING CULVERT | - - - - |
| PROPOSED CULVERT (Box or Pipe) | ===== |
| COMBUSTIBLE FLUIDS | CAUTION |
| MARSH AREA | ~~~~~ |
| WOODED OR SHRUB AREA | ~~~~~ |

- | | |
|---|-------|
| PROFILE | |
| GRADE LINE | ===== |
| ORIGINAL GROUND | ----- |
| MARSH OR ROCK PROFILE (To be noted as such) | ----- |
| SPECIAL DITCH | ----- |
| GRADE ELEVATION | 95.36 |
| CULVERT (Profile View) | o |
| UTILITIES | |
| ELECTRIC | E |
| FIBER OPTIC | FO |
| GAS | G |
| SANITARY SEWER | SAN |
| STORM SEWER | SS |
| TELEPHONE | T |
| WATER | W |
| UTILITY PEDESTAL | + |
| POWER POLE | + |
| TELEPHONE POLE | + |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
PLAN OF PROPOSED IMPROVEMENT
HOLLANDALE-BARNEVELD HOLLANDALE-BARNEVELD
(WILLIAMS CREEK BRIDGE AND APPROACHES) (CTH H - PRAIRIE GROVE ROAD)
CTH K CTH K
IOWA COUNTY IOWA COUNTY

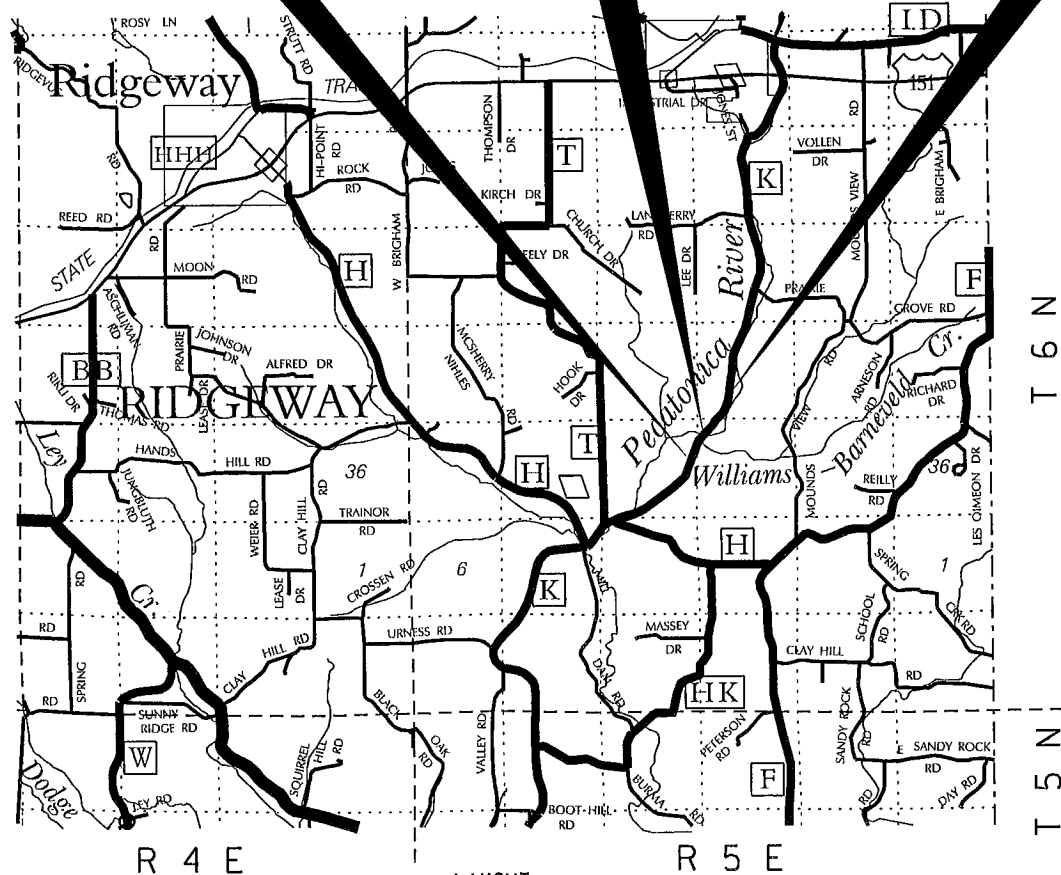
STATE PROJECT NUMBER
5679-00-75

STATE PROJECT NUMBER
5679-00-76

BEGIN PROJECT
STA. 101+00
Y = 151,761.16
X = 441,421.57

STRUCTURE
B-25-168

END PROJECT
STA. 130+18



LAYOUT
SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.553 MI.

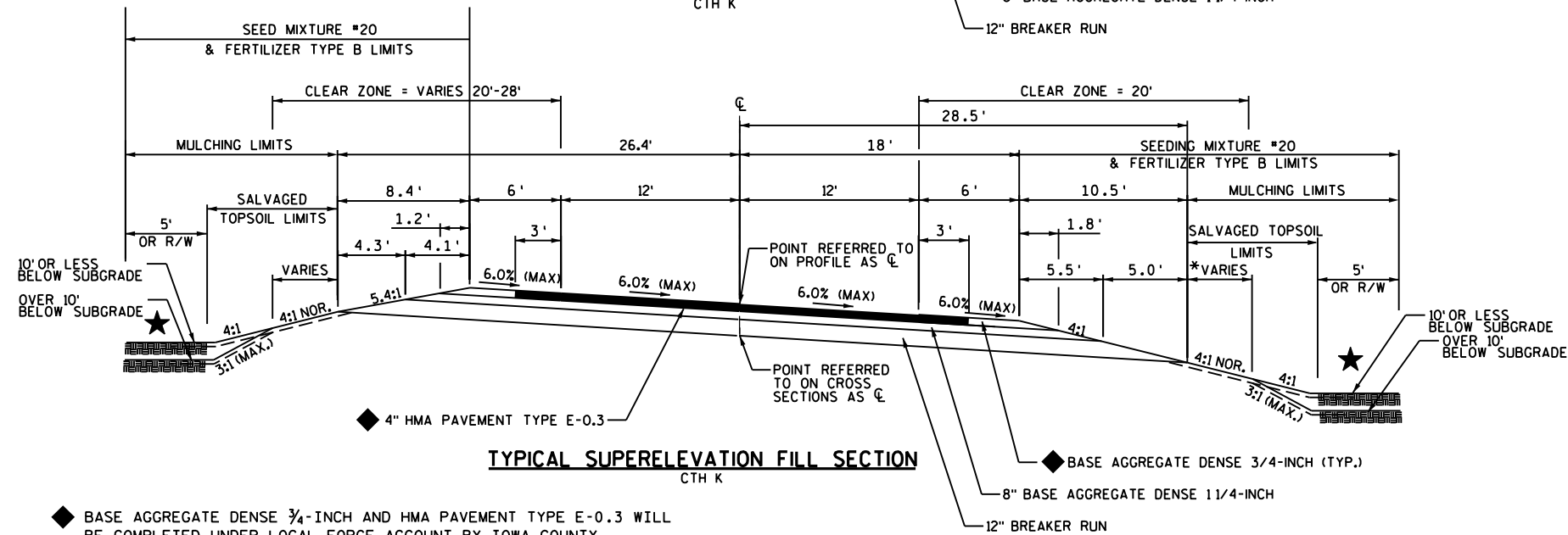
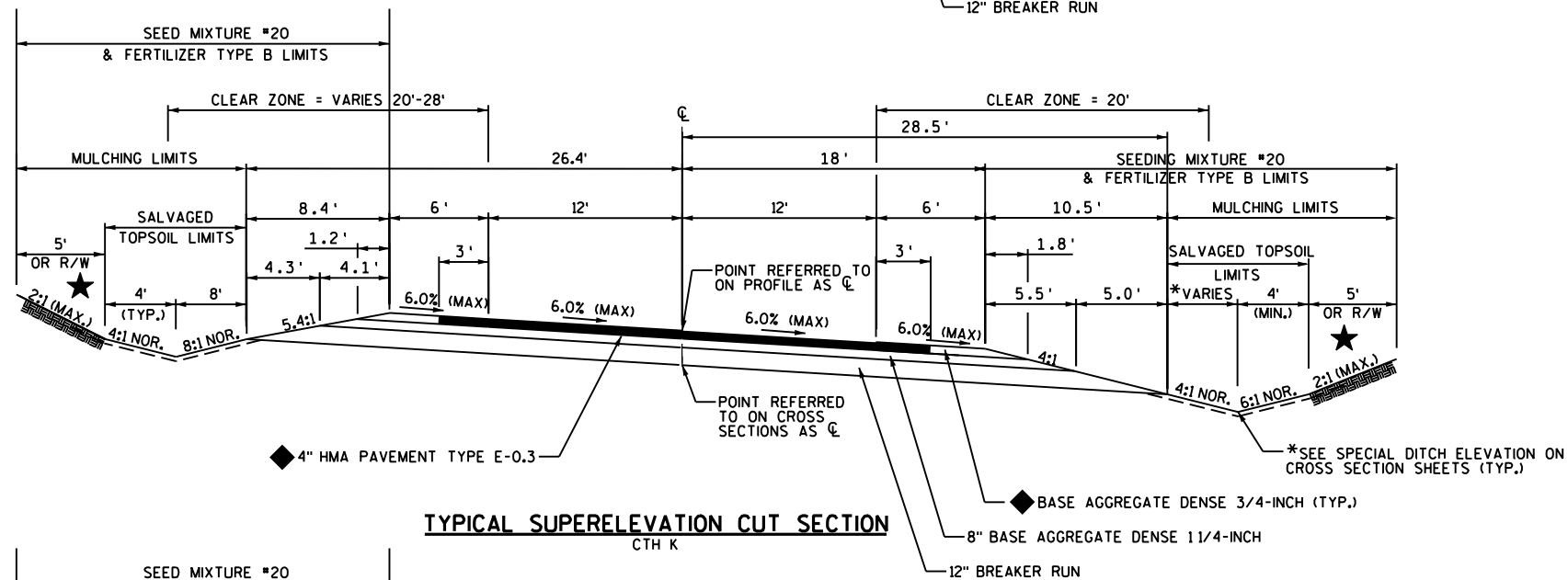
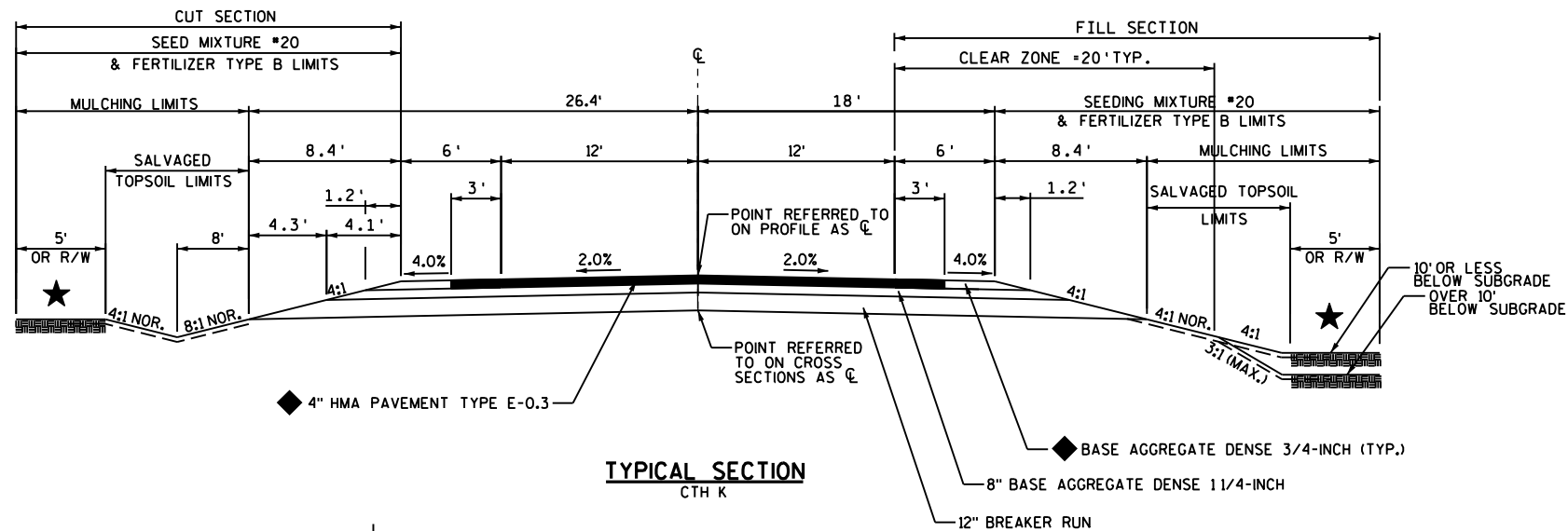
"COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), IOWA COUNTY."

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
5679-00-75		
5679-00-76	WISC 2013209	1

ACCEPTED FOR
COUNTY of IOWA
10/24/12
Date: Highway Commissioner

ORIGINAL PLANS PREPARED BY
MSA
PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL • REMEDIATION
DEVELOPMENT • ENVIRONMENTAL
2901 International Lane, Suite 200 Madison, WI 53704-3133
608-242-7779 800-470-0075 Fax 608-242-5664
WISCONSIN
MICHAEL J. STATZ
E-31249
MADISON WI
10-23-12
Date: Professional Engineer

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
PREPARED BY
Surveyor MSA PROFESSIONAL SERVICES
Designer MSA PROFESSIONAL SERVICES
Management KJOHNSON ENGINEERS, INC.
C.O. Examiner
APPROVED FOR DEPARTMENT
DATE: 10/30/12 Kimberly A. Johnson
Management Consultant Signature
E



- ◆ BASE AGGREGATE DENSE 3/4-INCH AND HMA PAVEMENT TYPE E-0.3 WILL BE COMPLETED UNDER LOCAL FORCE ACCOUNT BY IOWA COUNTY.
- ★ WETLANDS EXIST AT STA. 103+00 TO 104+50, RT, STA. 107+00 TO STA. 110+00, RT, AND STA. 125+00 TO STA. 128+50, RT. THE CONTRACTOR SHALL NOT DISTURB AREAS OUTSIDE THE SLOPE INTERCEPT IN THESE AREAS.

GENERAL NOTES

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS SHALL BE FERTILIZED, SEEDED AND MULCHED AS DIRECTED BY THE ENGINEER. OVERSOW PERMANENT SEEDED AREAS WITH TEMPORARY SEED AT 1.5 LBS. PER 1000 SQUARE FEET.

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

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

ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO NAVD88 BENCHMARK WITH ELEVATION OF 1133.10 LOCATED 1.5 MILES NORTHWEST OF THE EXISTING BRIDGE, THE STATION IS A BRONZE WISDOT GEODETIC SURVEY CONTROL STATION.

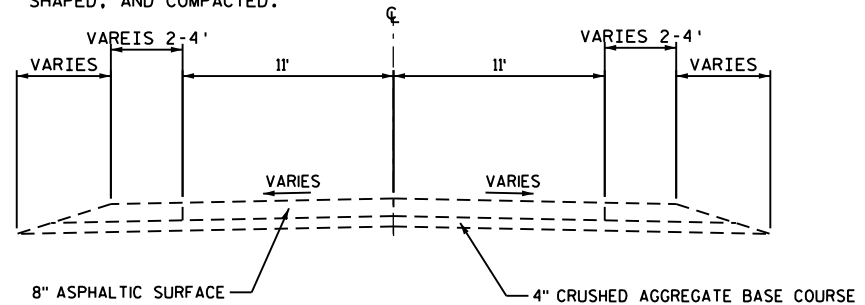
THE DEPARTMENT OF TRANSPORTATION WILL FURNISH A BENCHMARK MONUMENT TO BE INSTALLED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.

THE 4" HMA PAVEMENT TYPE E-0.3 SHALL BE CONSTRUCTED USING A 2" LOWER LAYER AND A 2" UPPER LAYER. THIS WORK WILL BE COMPLETED UNDER LOCAL FORCE ACCOUNT BY IOWA COUNTY.

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

TEMPORARY DITCH CHECKS, IF NEEDED, SHALL BE PLACED AS DIRECTED BY THE ENGINEER.

PRIOR TO THE PLACEMENT OF STEEL PLATE BEAM GUARD, THE SHOULDERS SHALL BE IN PLACE, SHAPED, AND COMPACTED.



EXISTING TYPICAL SECTION CTH K

UTILITIES

SANITARY SEWER (VILLAGE OF BARNEVELD):
ATTN.: MIKE PETERSON
VILLAGE PRESIDENT
310 DOUGLAS COURT
BARNEVELD, WI 53507
PHONE: (608) 795-2134
EMAIL: MICHAEL.PETERSON@LPL.COM

TELEPHONE:
FRONTIER
ATTN: LARRY FORESETH
301 DIVISION STREET
DODGEVILLE, WI 53533
PHONE: (608) 935-2387
EMAIL: larry.j.foreseth@ftr.com

ELECTRIC:
ALLIANT ENERGY
ATTN: DOUG MAGEE
935 W BR TOWNLINE ROAD
BELOIT, WI 53511-8823
PHONE: (608) 364-6566
EMAIL: DOUGMAGEE@ALLIANTENERGY.COM

** - DENOTES UTILITIES THAT ARE NOT DIGGERS HOTLINE MEMBERS



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

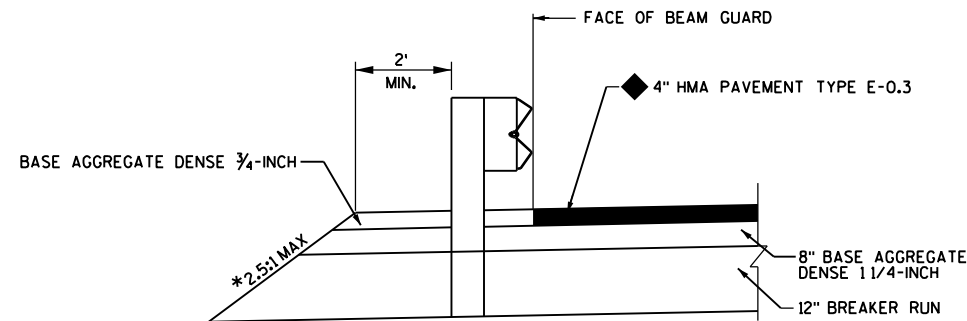
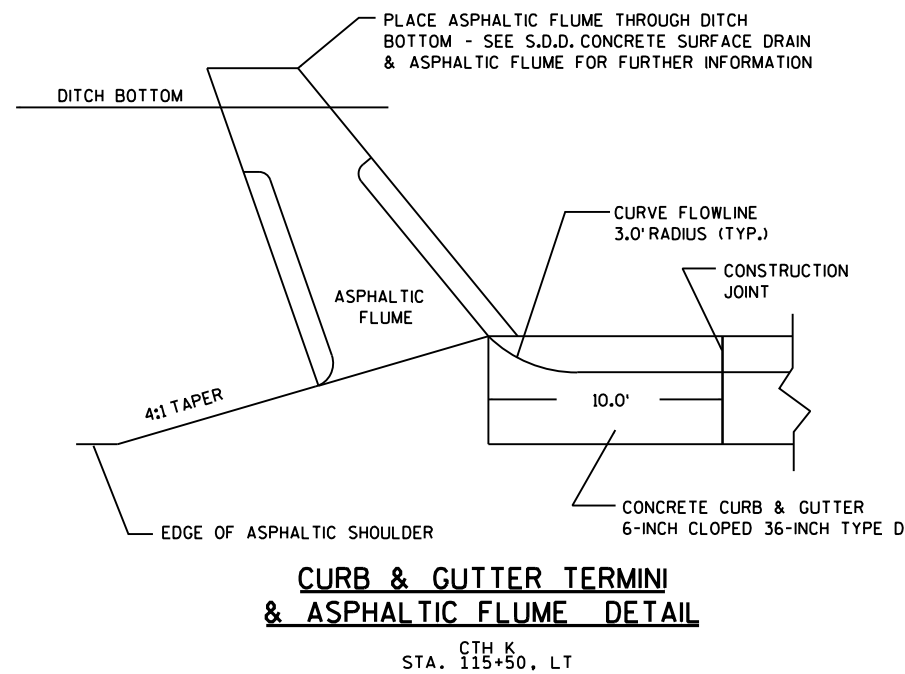
DESIGN CONTACT

MSA PROFESSIONAL SERVICES, INC.
ATTN: MICHAEL J. STATZ, P.E.
2901 INTERNATIONAL LANE, SUITE 300
MADISON, WI 53704-3133
PHONE: (608) 935-3381
EMAIL: MSTATZ@MSA-PS.COM

IOWA COUNTY
ATTN: CRAIG HARDY, COMMISSIONER
1215 NORTH BEQUETTE STREET
DODGEVILLE, WI 53533
PHONE: (608) 935-3381
EMAIL: CRAIG.HARDY@IOWACOUNTY.ORG

DNR LIAISON

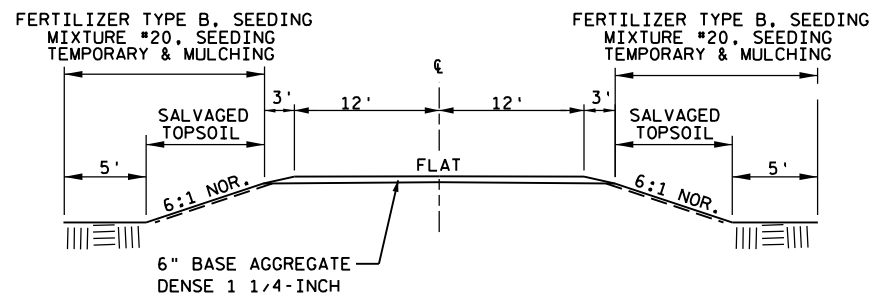
DEPARTMENT OF NATURAL RESOURCES
ATTN: AMANDA CUSHMAN
ENVIRONMENTAL REVIEW AND ANALYSIS SPECIALIST
3911 FISH HATCHERY ROAD
FITCHBURG, WI 53711-5397
PHONE: (608) 275-3485
EMAIL: AMANDA.CUSHMAN@WISCONSIN.GOV



SECTION A-A THRU BEAM GUARD

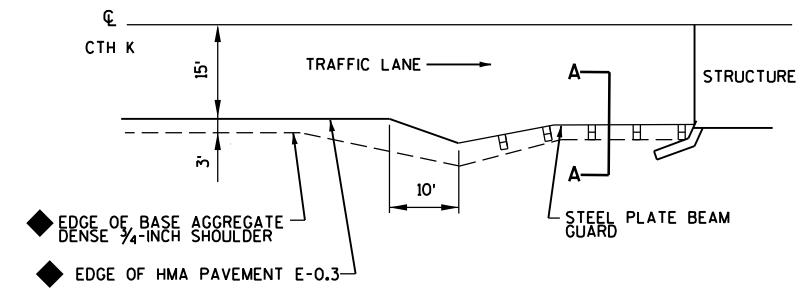
◆ BASE AGGREGATE DENSE 3/4-INCH AND HMA PAVEMENT TYPE E-0.3 WILL BE COMPLETED UNDER LOCAL FORCE ACCOUNT BY IOWA COUNTY.

*SLOPES REACH 1.7:1 IN AREAS THAT ARE RIPRAPPED



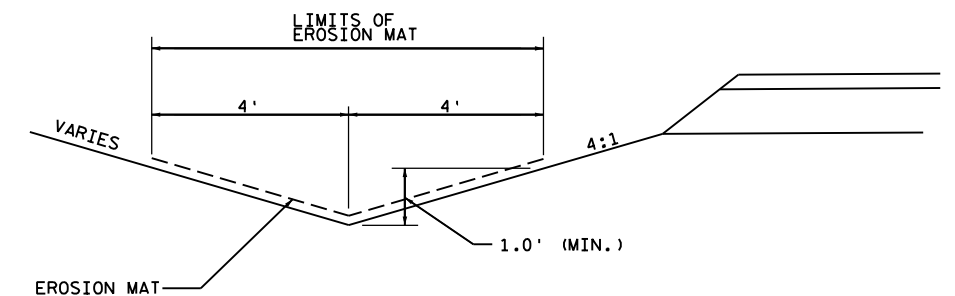
FIELD ENTRANCE - TYPICAL SECTION

FIELD ENTRANCE DETAILS



PLAN - ASPHALTIC PAVEMENT SHOULDER AT BEAM GUARD

◆ BASE AGGREGATE DENSE 3/4-INCH AND HMA PAVEMENT TYPE E-0.3 WILL BE COMPLETED UNDER LOCAL FORCE ACCOUNT BY IOWA COUNTY.



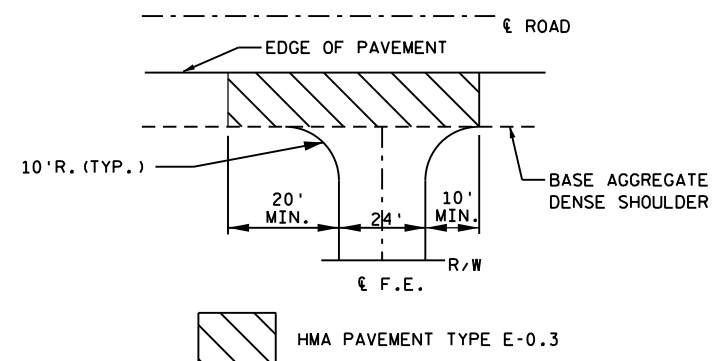
EROSION MAT DITCH DETAIL

RUNOFF COEFFICIENT TABLE

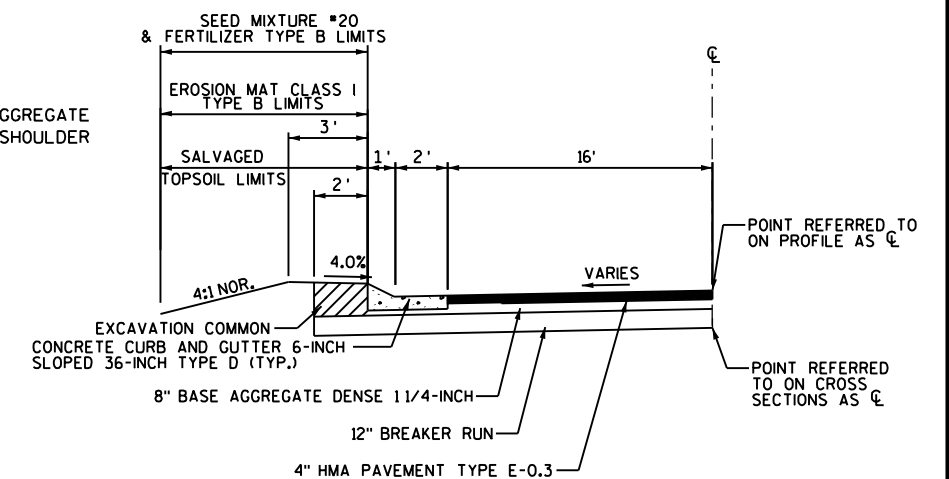
	HYDROLOGIC SOIL GROUP											
	A			B			C			D		
	SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)		
LAND USE:	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER
ROW CROPS	.08	.16	.22	.12	.20	.27	.15	.24	.33	.19	.28	.38
	.22	.30	.38	.26	.34	.44	.30	.37	.50	.34	.41	.56
MEDIAN STRIP-TURF	.19	.20	.24	.19	.22	.26	.20	.23	.30	.20	.25	.30
	.24	.26	.30	.25	.28	.33	.26	.30	.37	.27	.32	.40
SIDE SLOPE-TURF			.25			.27			.28			.30
			.32			.34			.36			.38
PAVEMENT:												
ASPHALT	.70 - .95											
CONCRETE	.80 - .95											
BRICK	.70 - .80											
DRIVES, WALKS	.75 - .85											
ROOFS	.75 - .95											
GRAVEL ROADS, SHOULDERS	.40 - .60											

TOTAL PROJECT AREA = 8.69 ACRES

TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 6.76 ACRES

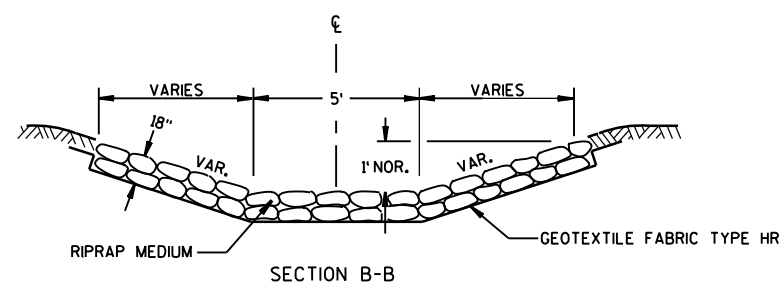
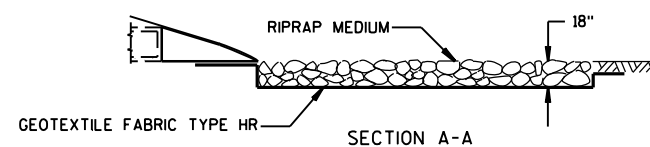
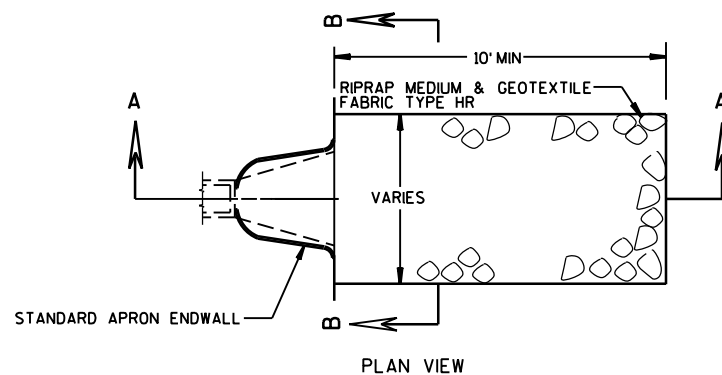


FIELD ENTRANCE PLAN

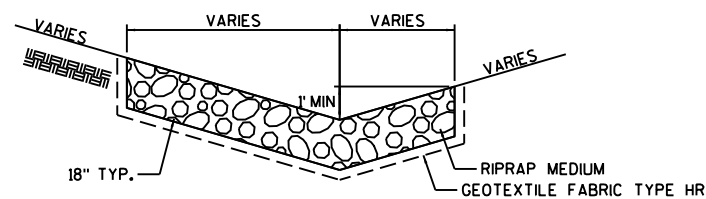


TYPICAL SECTION

CTH K
(STA. 115+50 - STA. 119+00)
(STA. 124+50 - STA. 130+00)

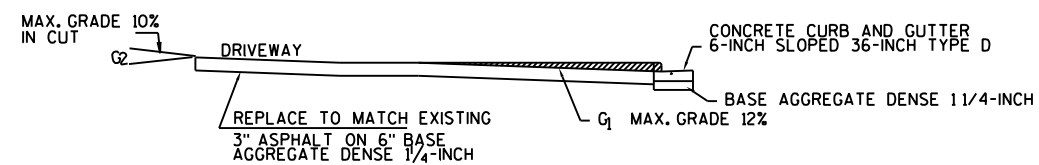
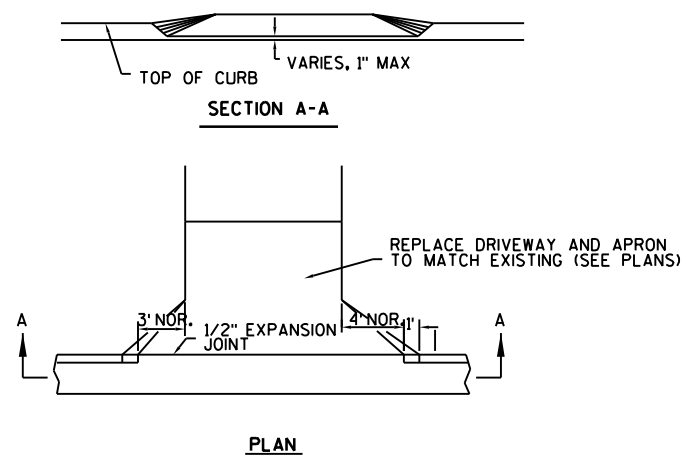


RIPRAP MEDIUM AND GEOTEXTILE FABRIC DETAIL AT APRON ENDWALLS



RIPRAP MEDIUM DITCH

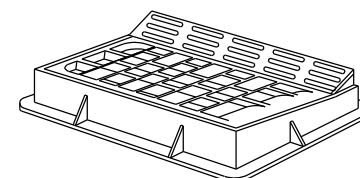
STA. 110+37 - STA. 110+87, LT.
STA. 115+15 - STA. 115+50, LT.



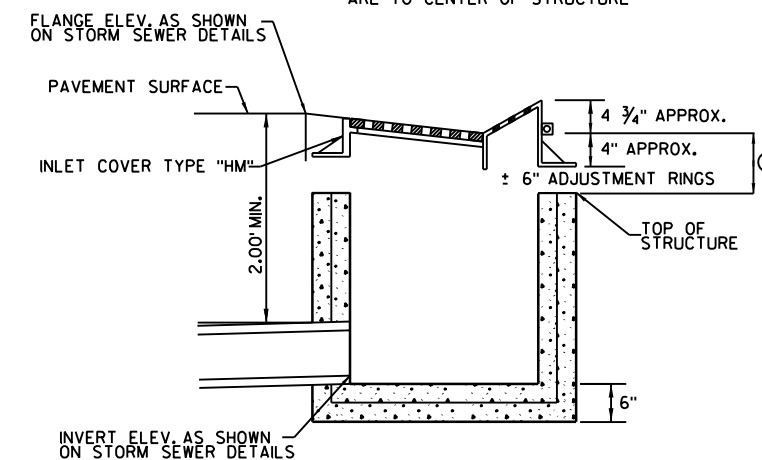
DRIVEWAY DETAIL

STA. 118+67, LT

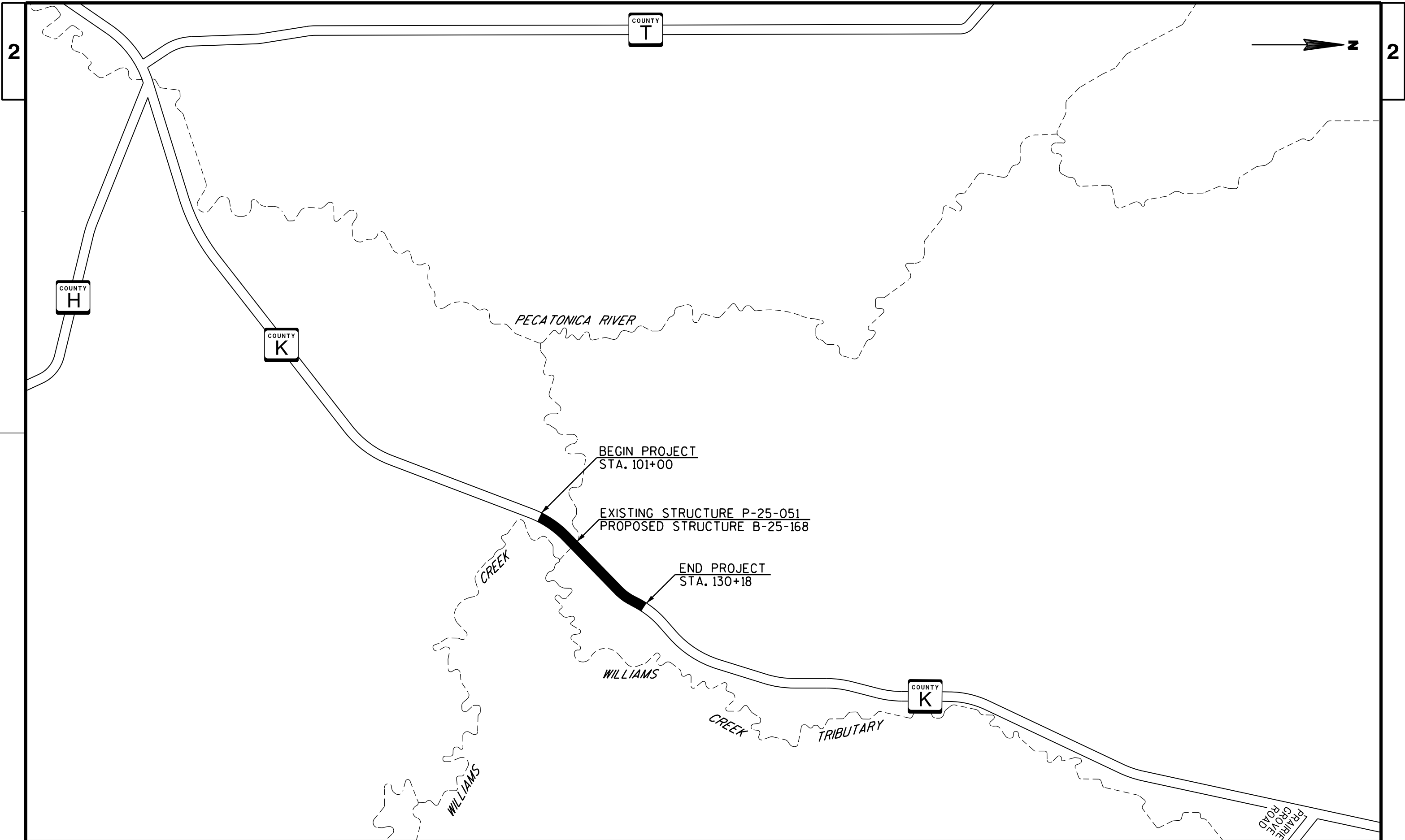
NOTE: ALGEBRAIC DIFFERENCE BETWEEN
TANGENT GRADES G_1 AND G_2 EXTENDED
IN FILLS, MAX. 15%



STATION, OFFSETS FOR INLETS
ARE TO CENTER OF STRUCTURE



① FOR INLETS 2X3-FT DISTANCE IS
10\"/>



PROJECT NO:5679-00-76

HWY:CTH K

COUNTY:IOWA

PROJECT OVERVIEW

SHEET

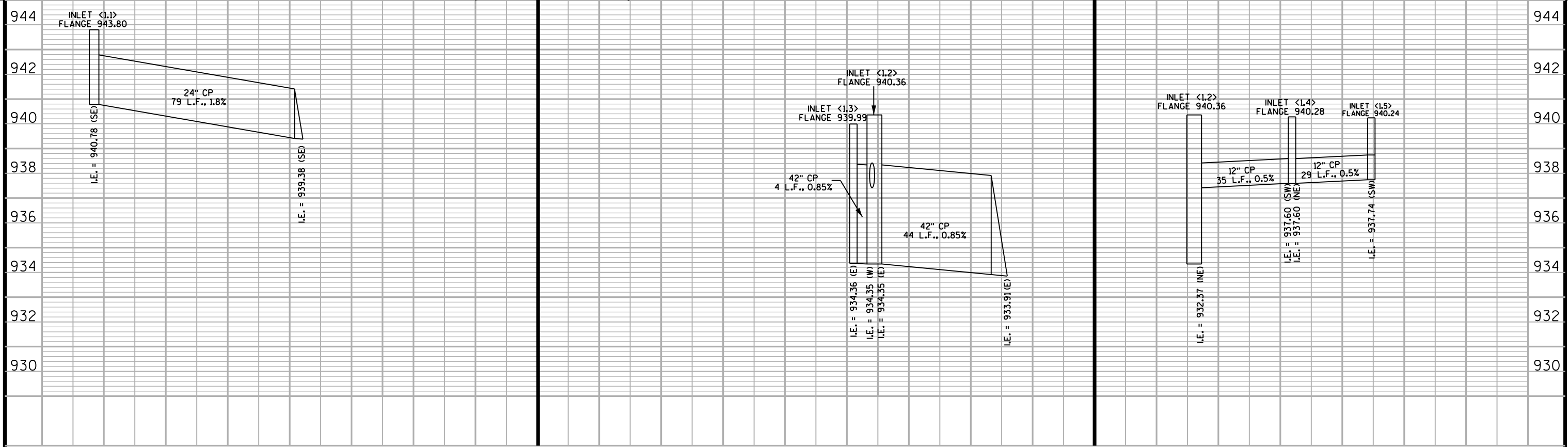
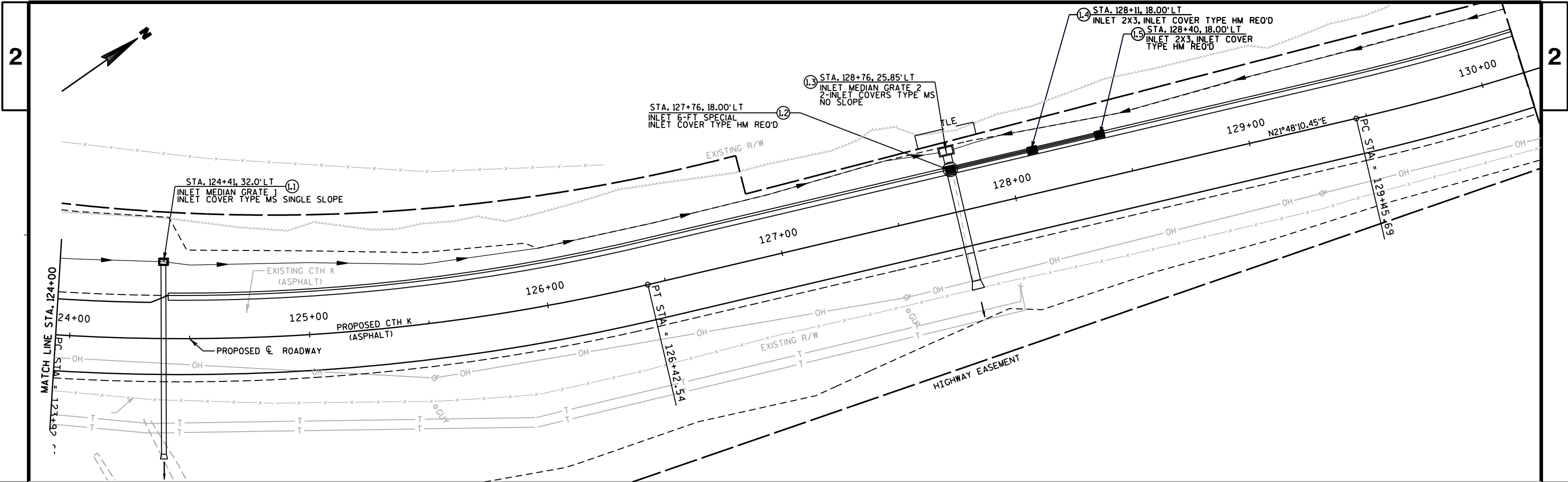
E

FILE NAME : \$\$....designfile....\$\$

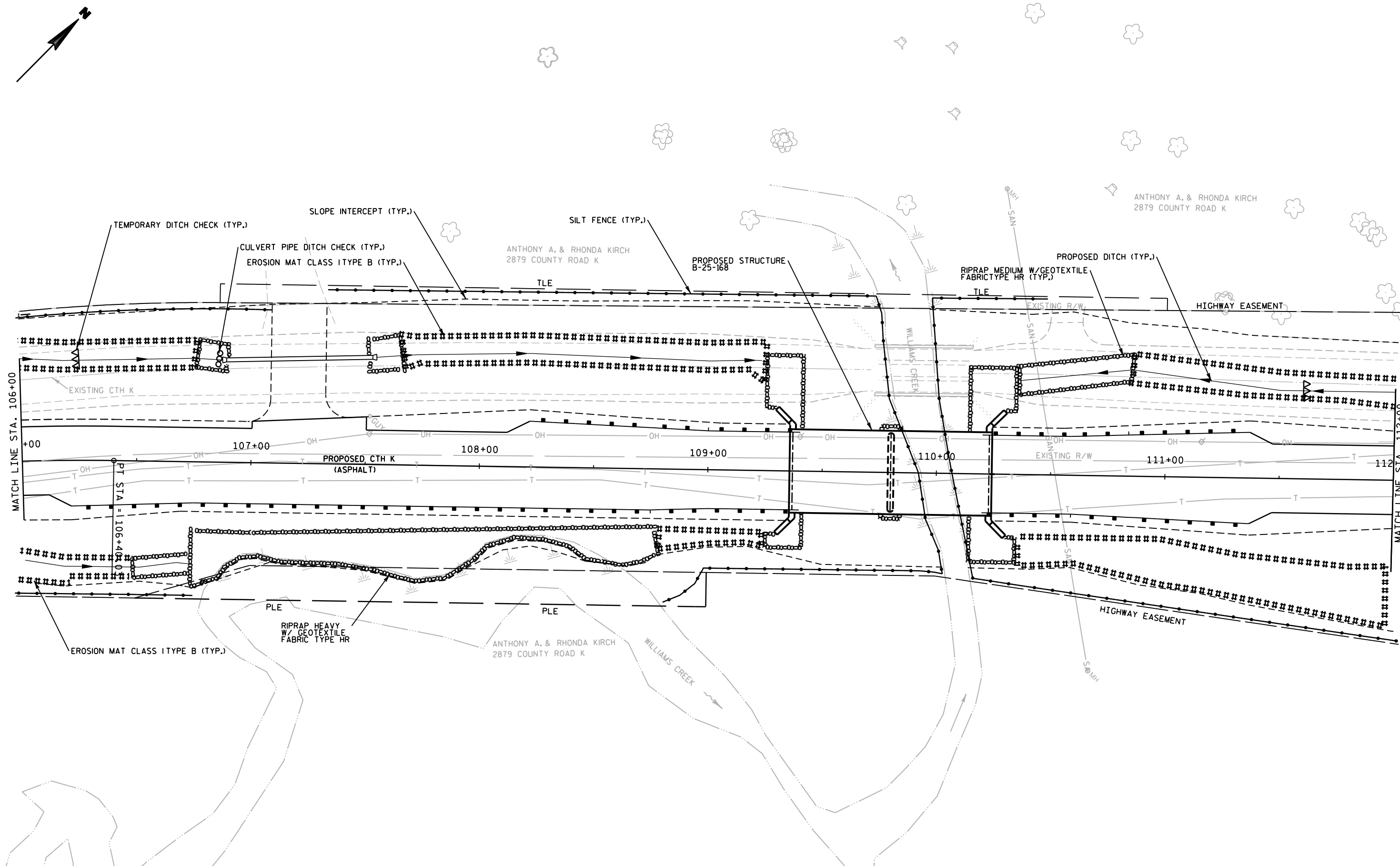
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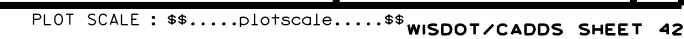
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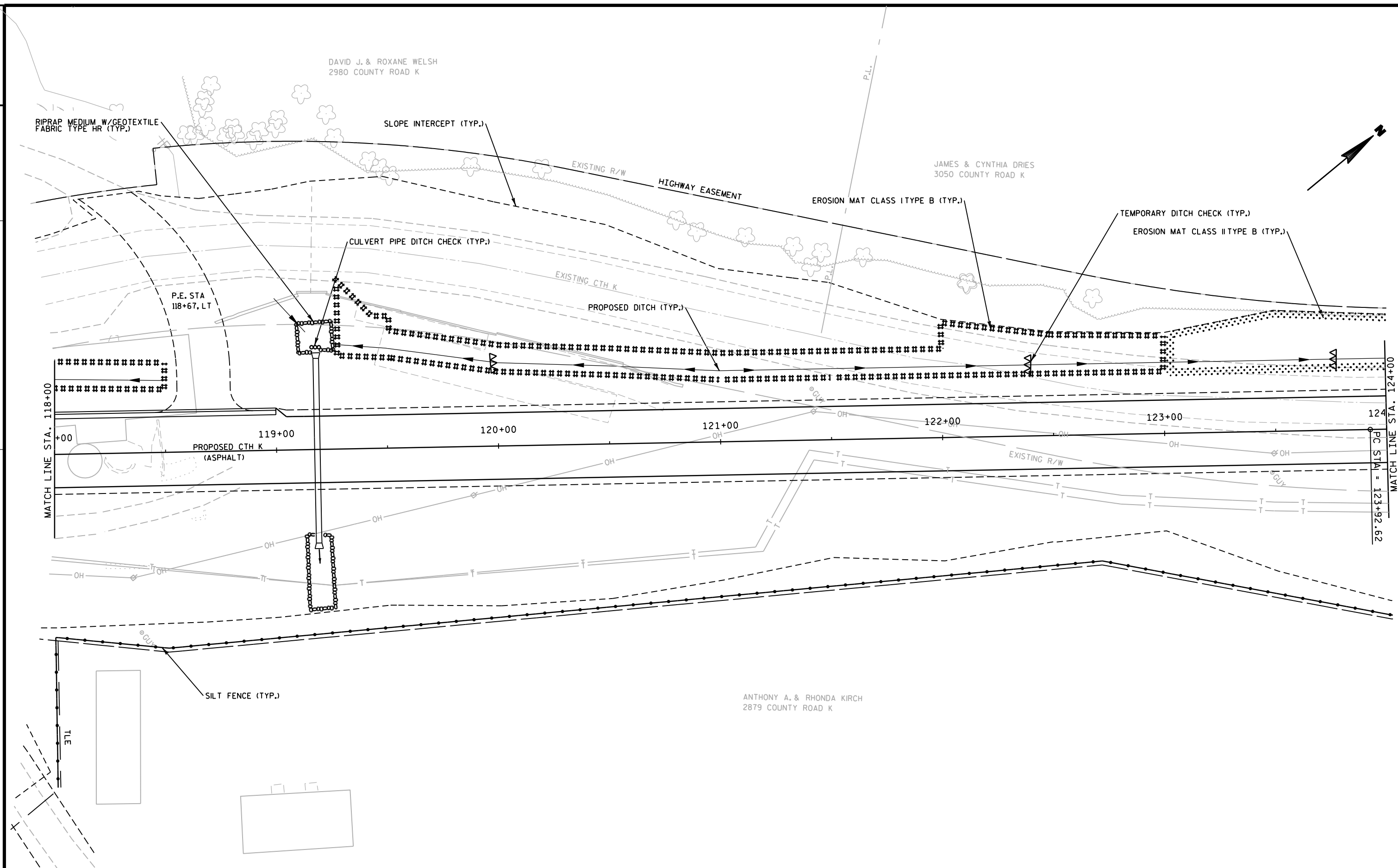
WISDOT/CADDs SHEET 42



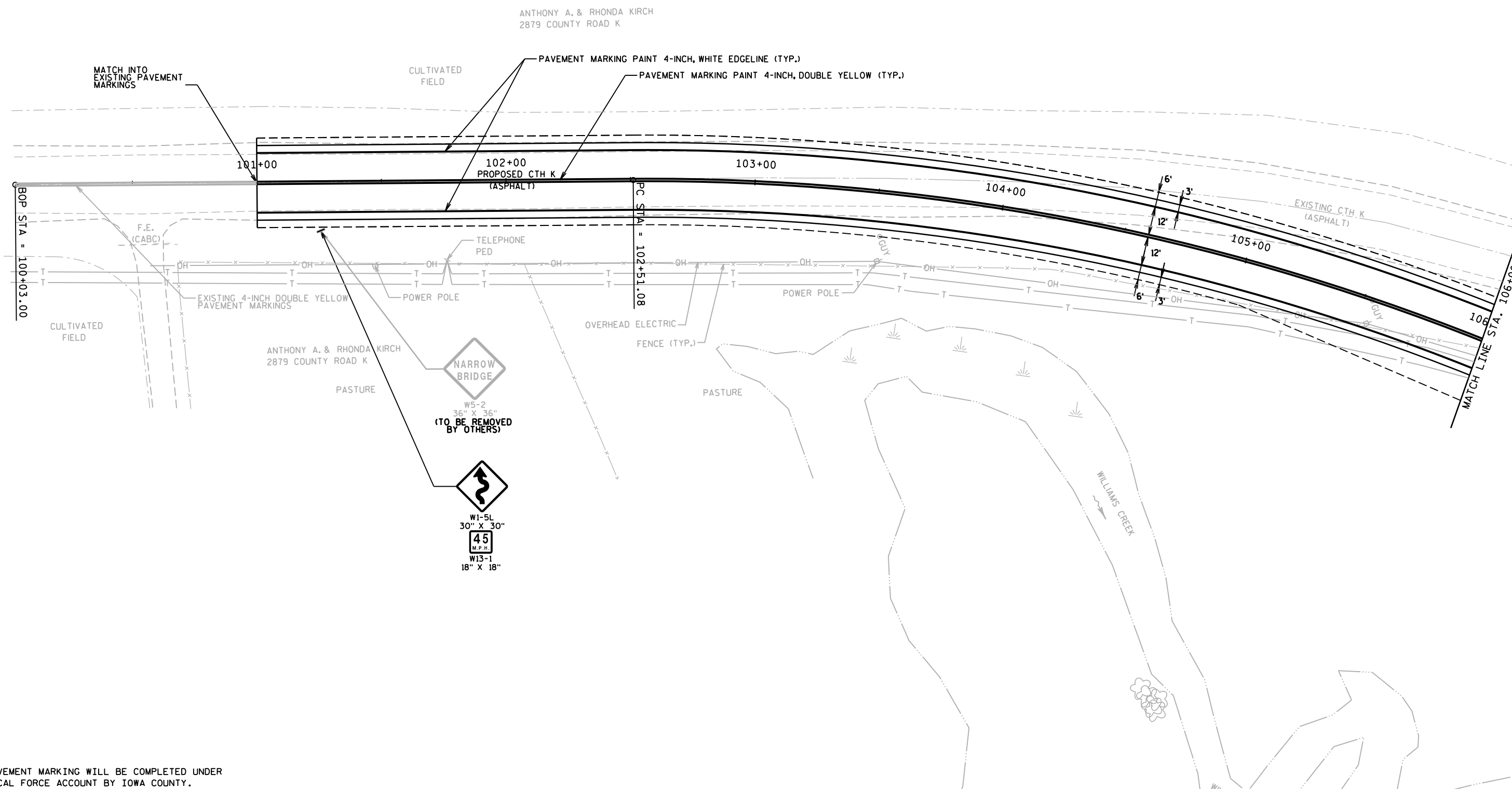


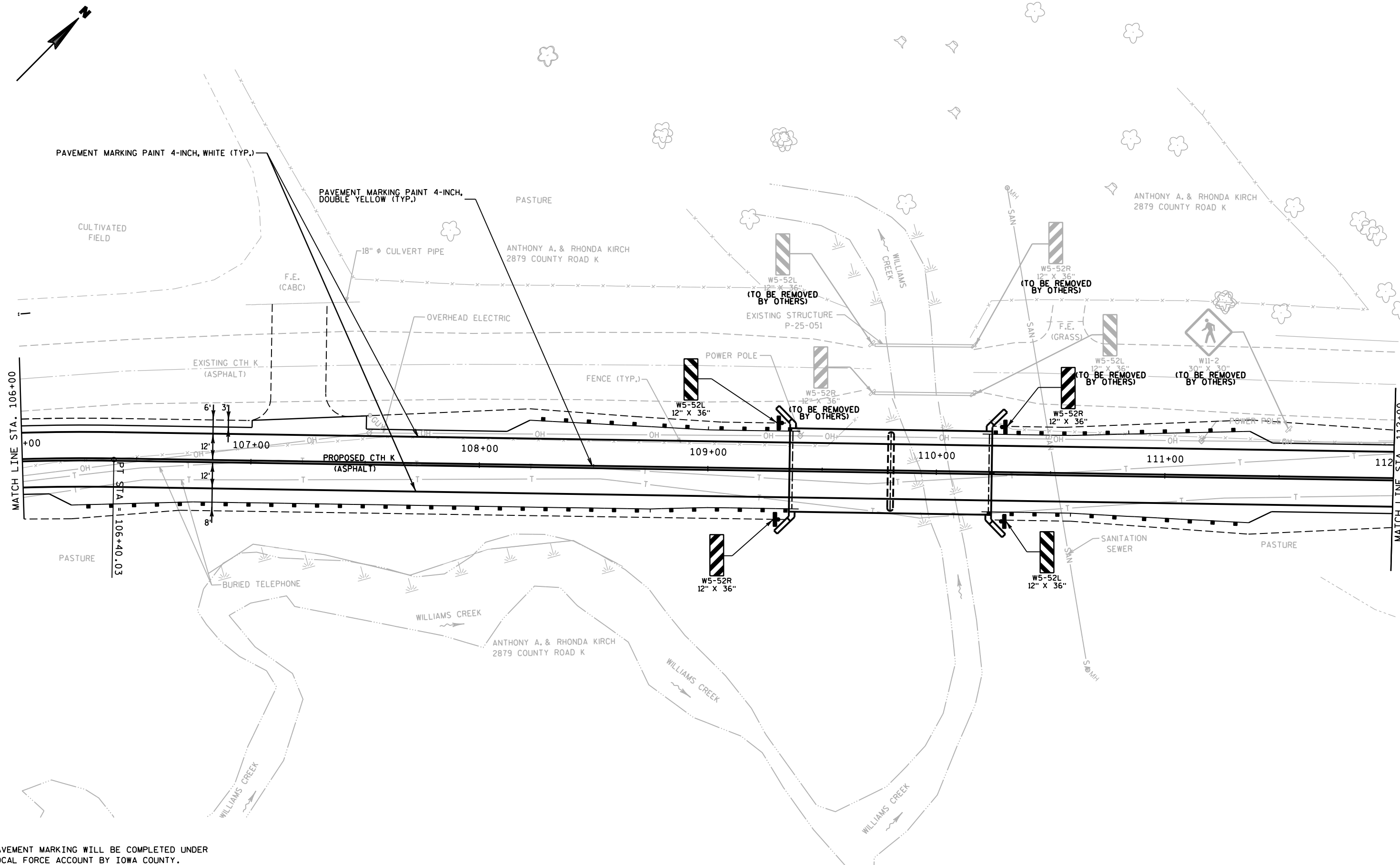












PAVEMENT MARKING WILL BE COMPLETED UNDER
LOCAL FORCE ACCOUNT BY IOWA COUNTY.

PROJECT NO: 5679-00-76

HWY: CTH K

COUNTY: IOWA

PERMANENT SIGNING & PAVEMENT MARKING

SHEET

E

FILE NAME : \$\$....designfile....\$\$

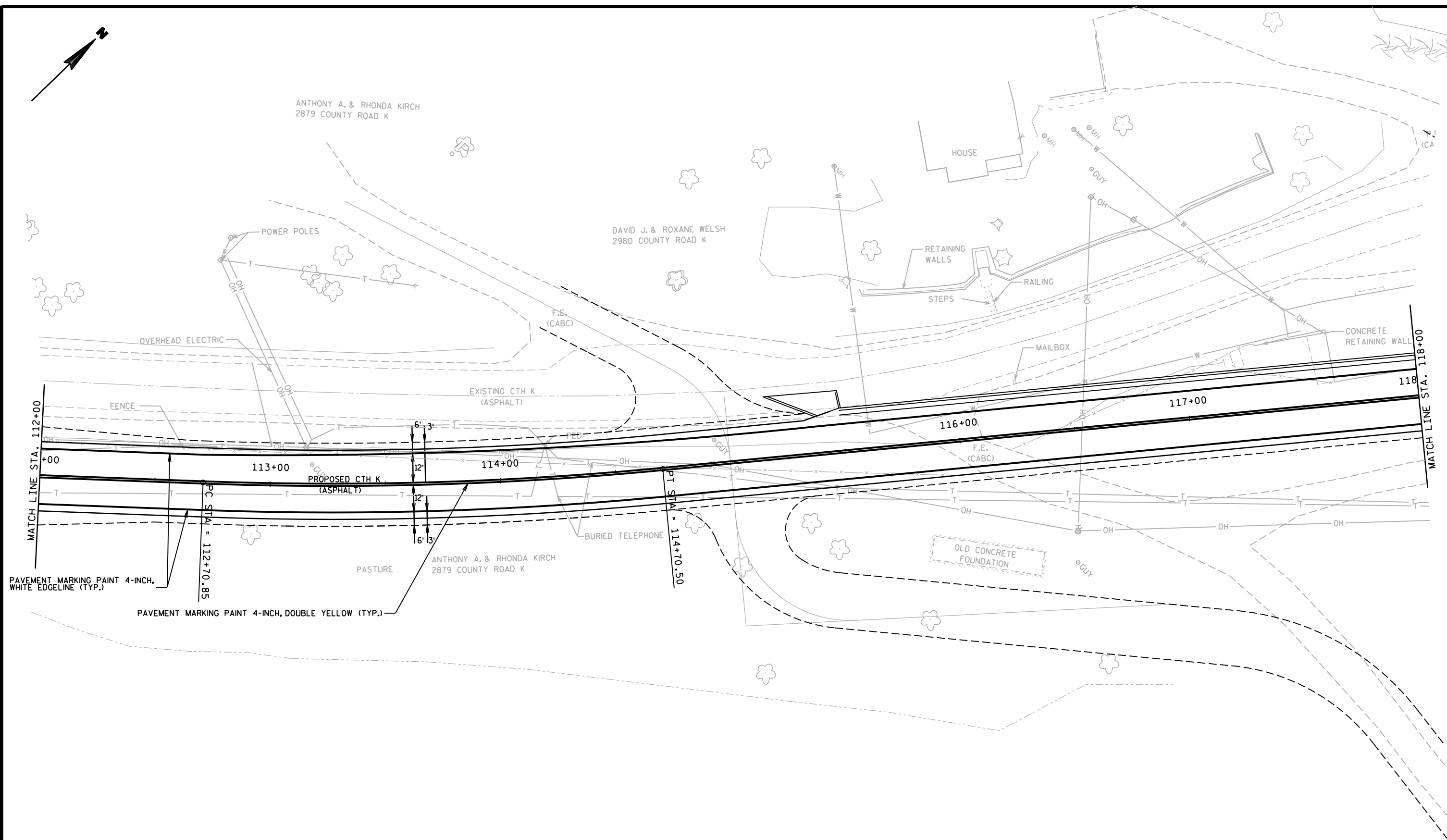
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PLOT NAME :

PLOT SCALE : \$\$.....plotscale.....\$\$

WISDOT/CADDs SHEET 42



PAVEMENT MARKING WILL BE COMPLETED UNDER
LOCAL FORCE ACCOUNT BY IOWA COUNTY.

PROJECT NO: 5679-00-76

HWY: CTH K

COUNTY: IOWA

PERMANENT SIGNING & PAVEMENT MARKING

SHEET

E

FILE NAME : \$\$....designfile....\$\$

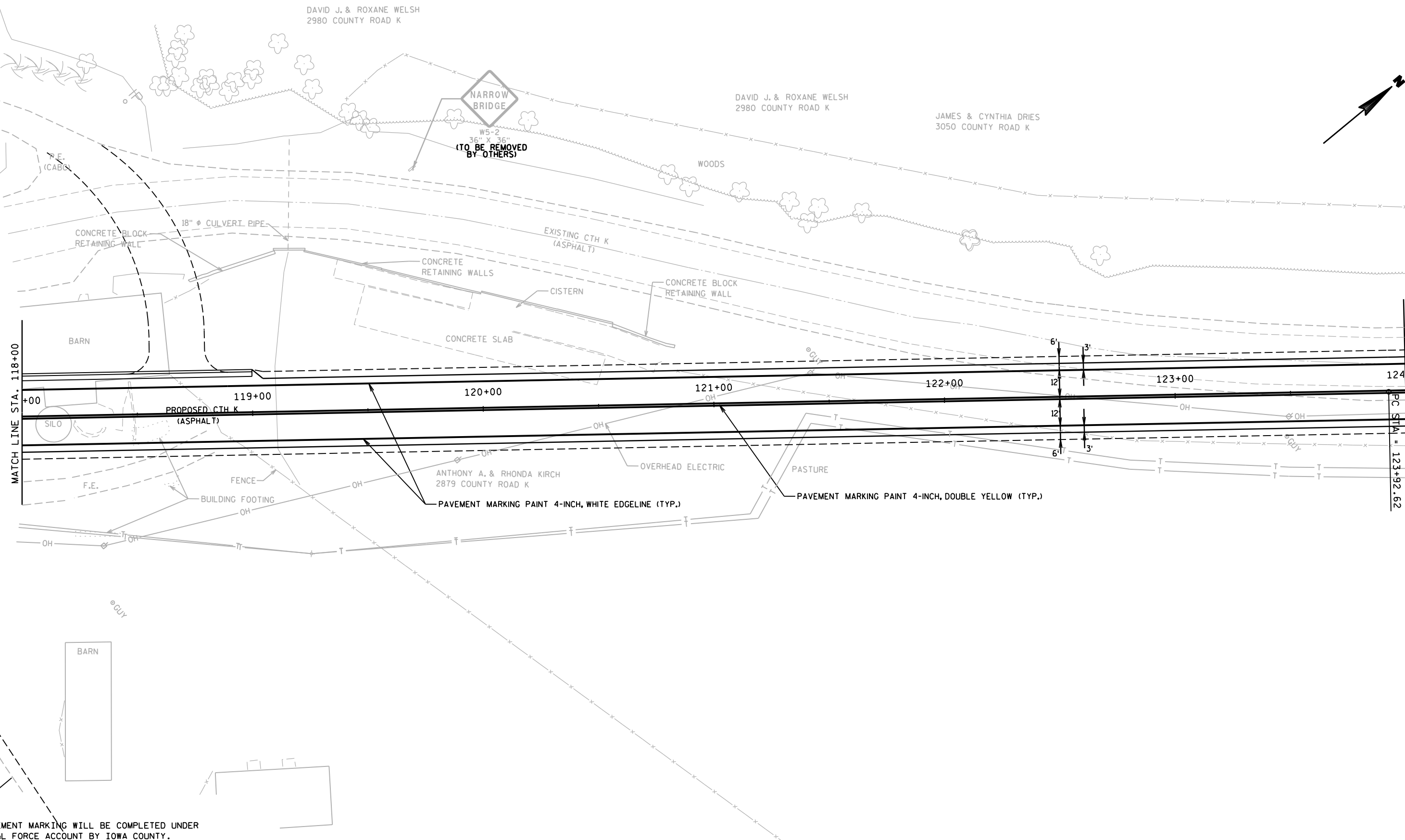
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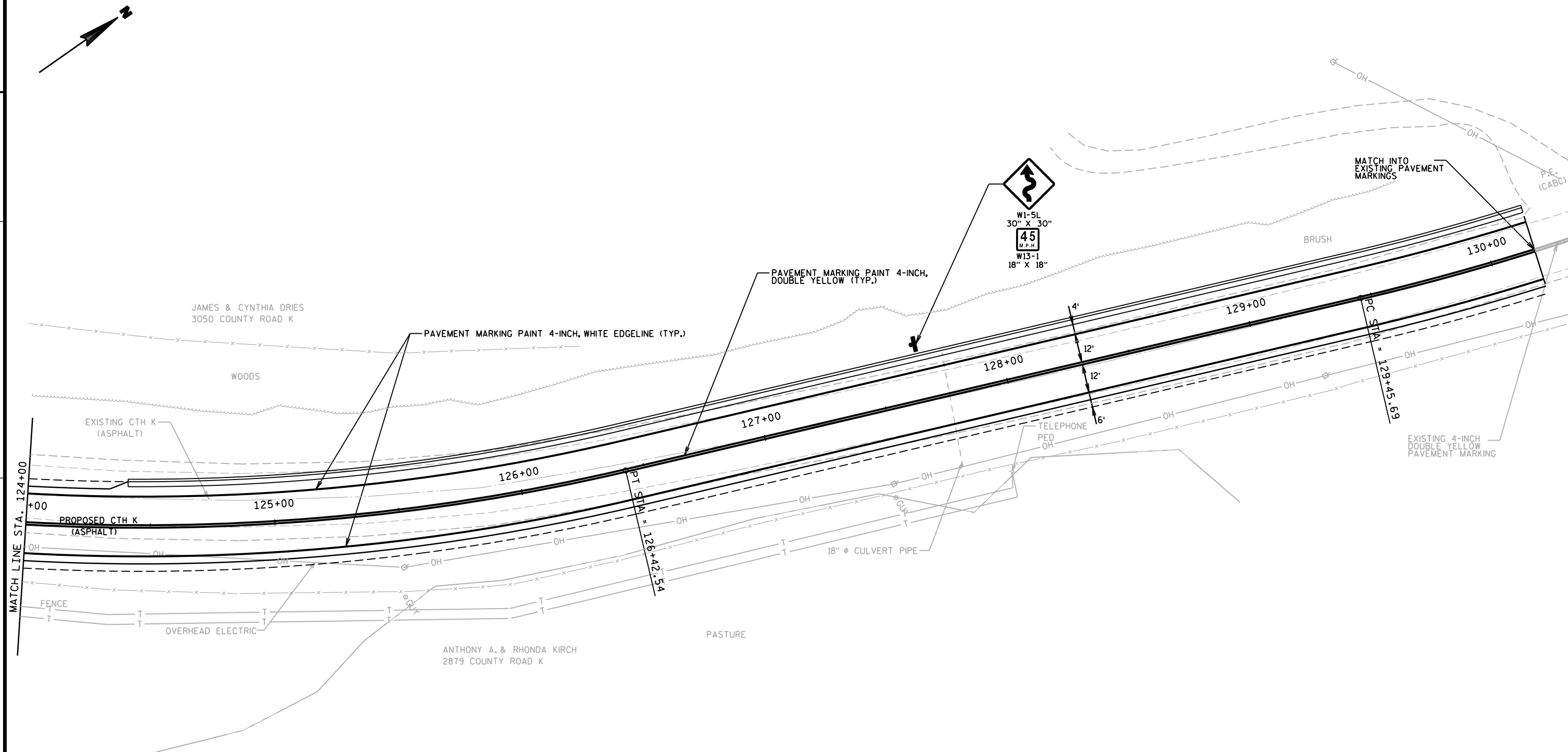
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PLOT NAME :

PLOT SCALE : \$\$.....plotscale.....\$\$

WISDOT/CADDs SHEET 42





PAVEMENT MARKING WILL BE COMPLETED UNDER
LOCAL FORCE ACCOUNT BY IOWA COUNTY.

©M/H

PROJECT NO:5679-00-76

HWY:CTH K

COUNTY:IOWA

PERMANENT SIGNING & PAVEMENT MARKING

SHEET

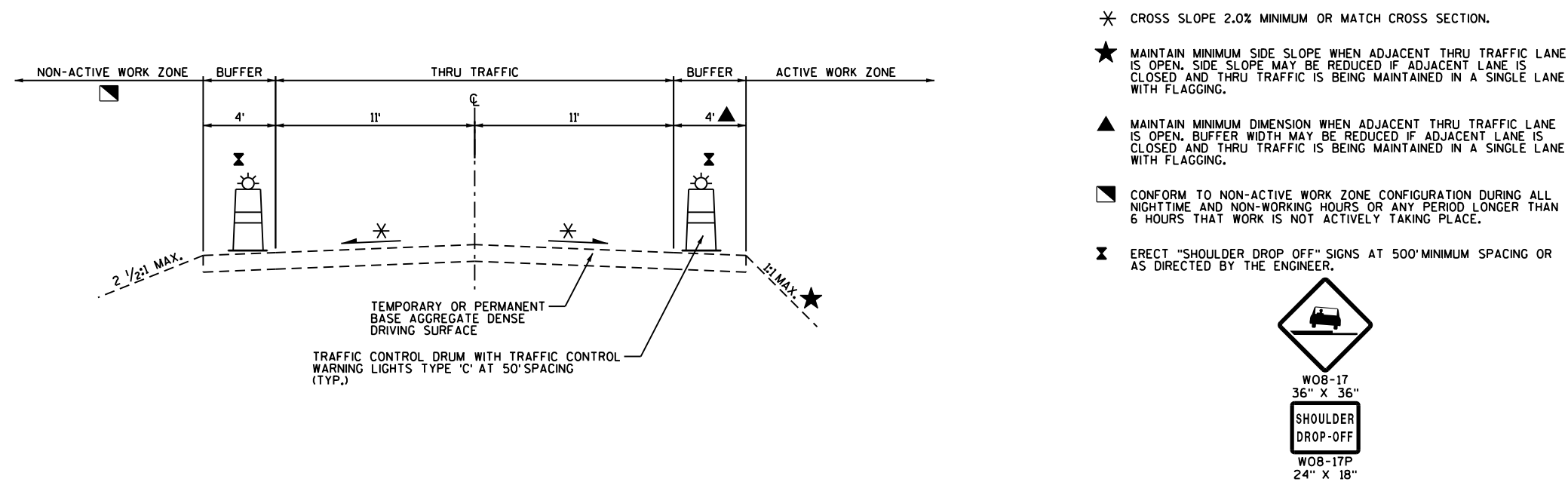
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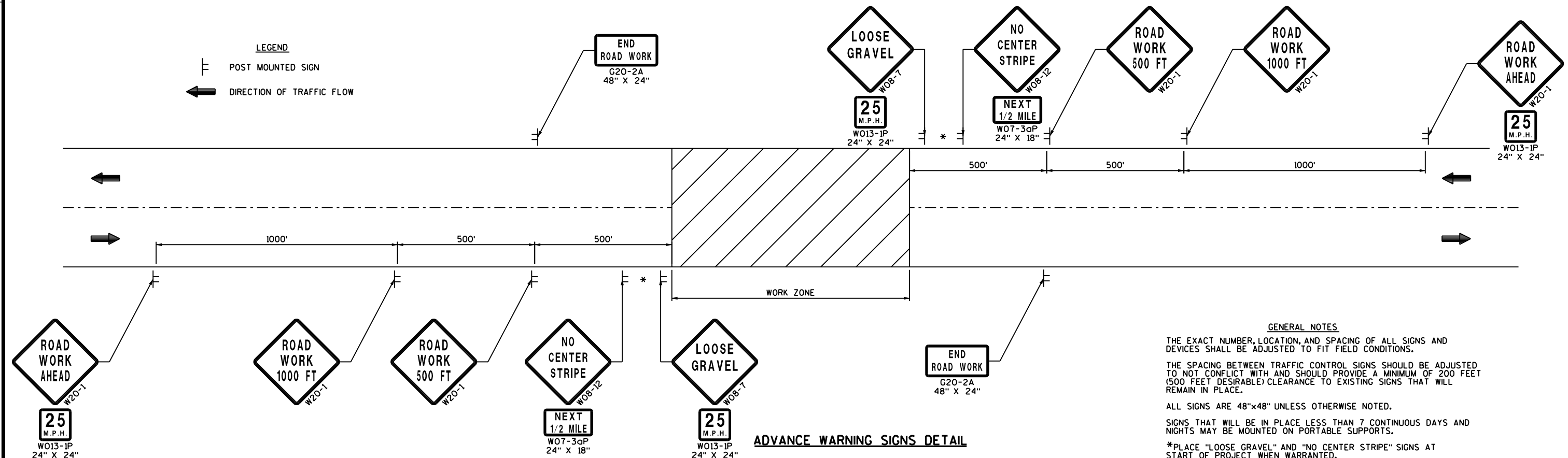
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PLOT SCALE : \$\$.....plotscale.....\$\$ WISDOT/CADDs SHEET 42

Sign05.dgn 8/30/2012 12:52:04 PM jkurten

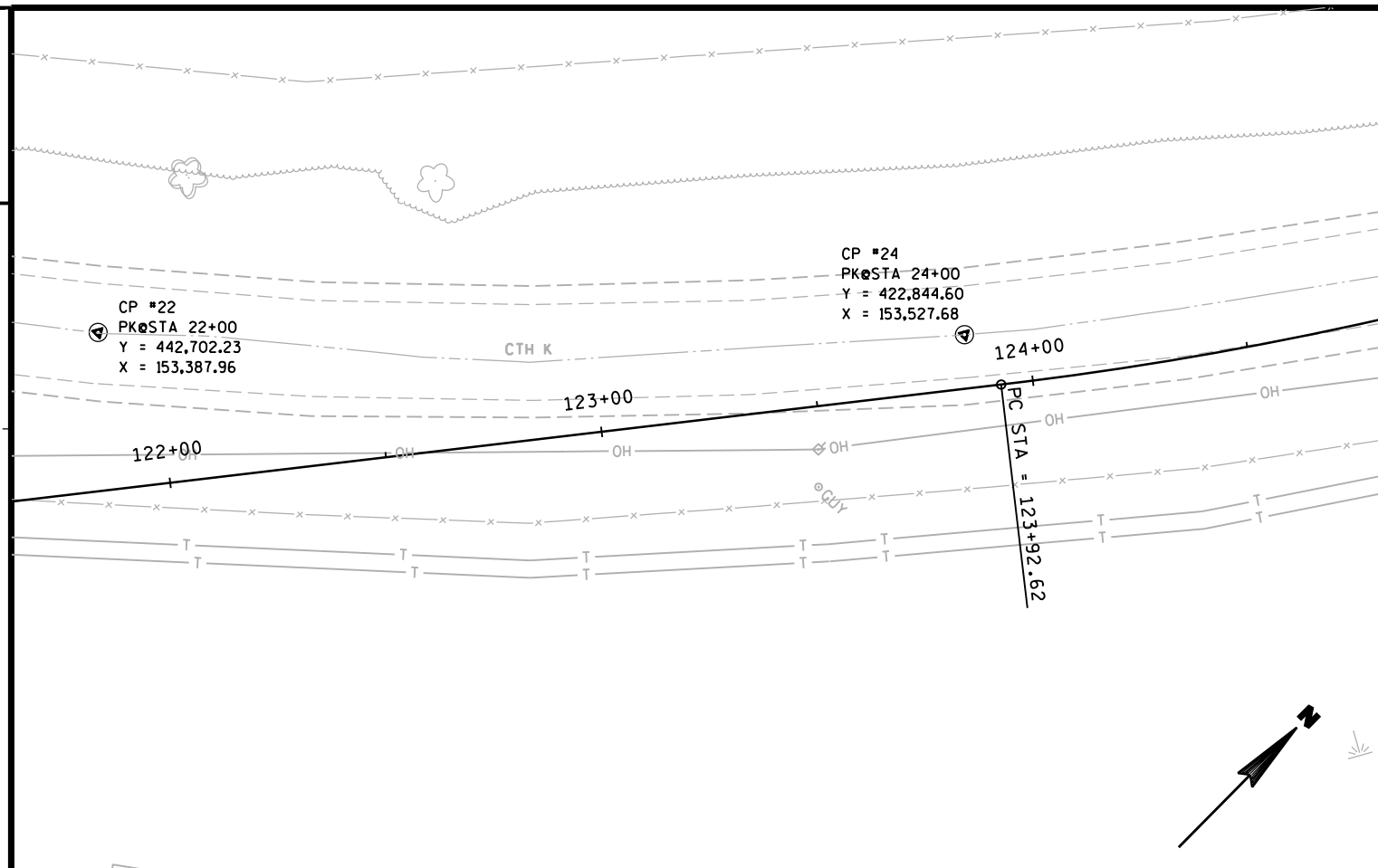


TYPICAL SECTION - TRAFFIC CONTROL FOR THRU TRAFFIC IN WORK ZONE

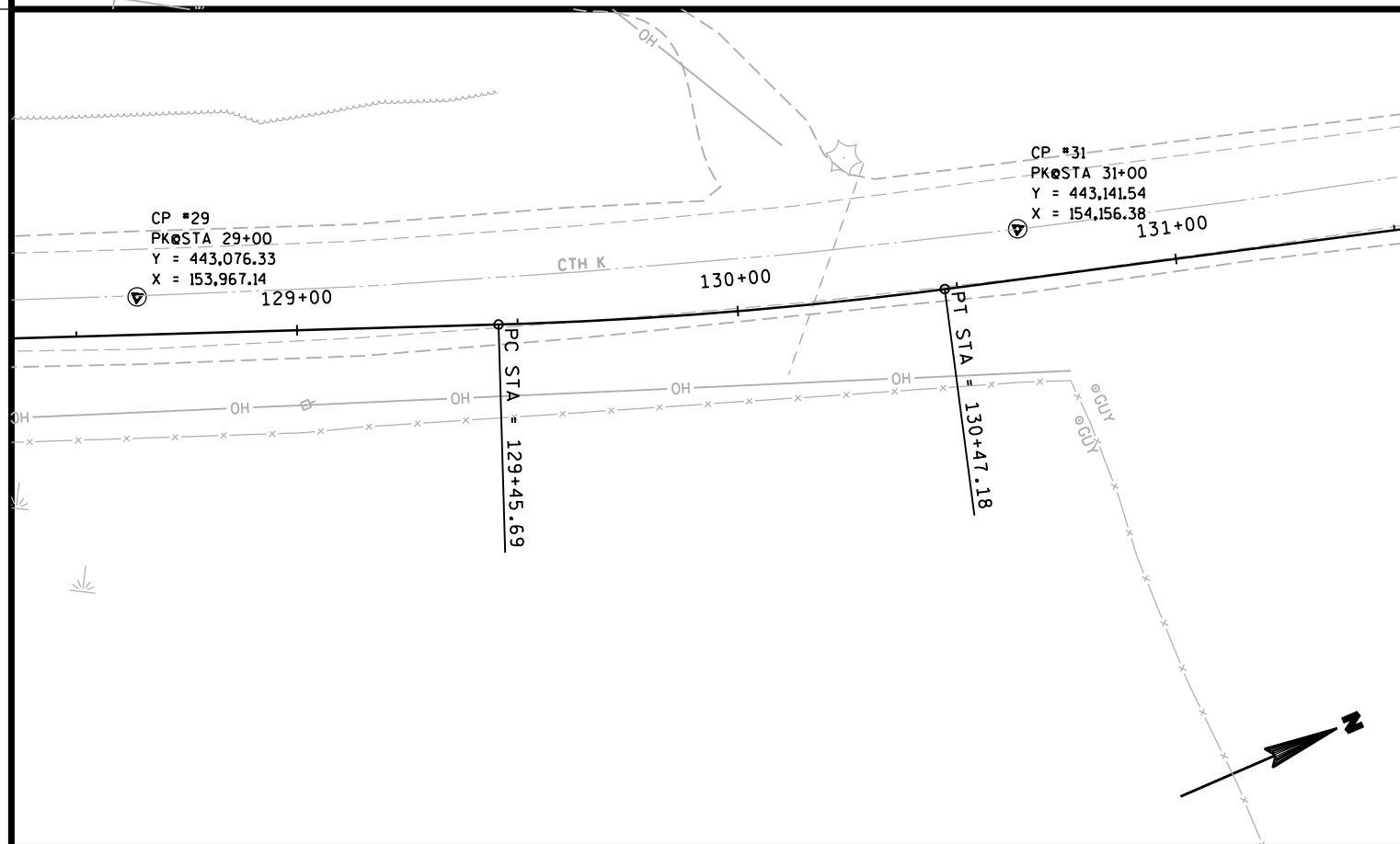
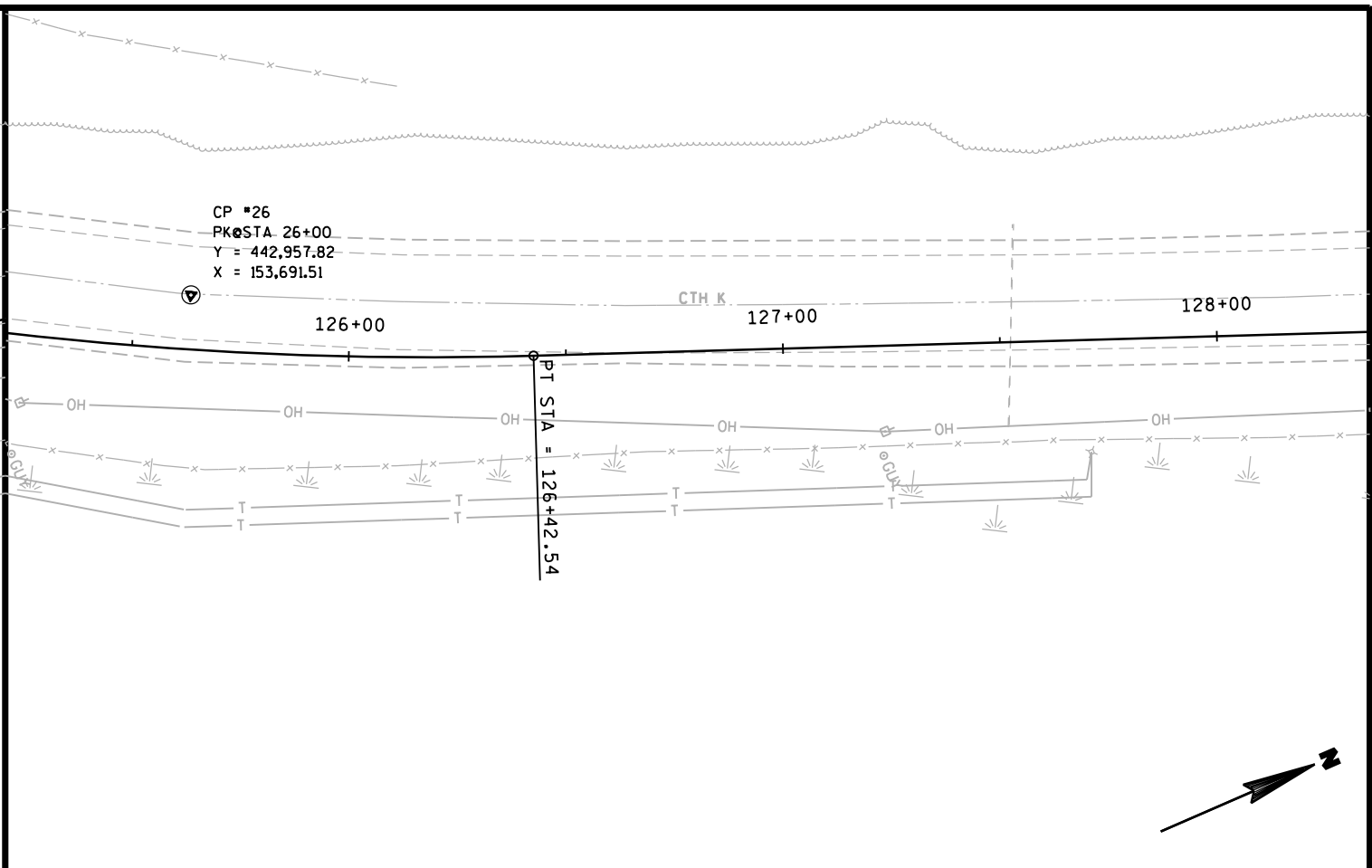


ADVANCE WARNING SIGNS DETAIL

2



2



PROJECT NO:5679-00-75/76	HWY:CTH K	COUNTY:IOWA	CONTROL POINT TIES	SHEET	E
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2

BOP STA = 100+03.00
Y = 151,670.92
X = 441,386.00

BEGIN PROJECT
STA. 101+00
Y = 151,761.16
X = 441,421.57

N21°30'51.8"E

PC STA = 102+51.08

105+00

PT STA = 106+40.03

CTH K

N46°16'32.33"E

110+00

MATCH LINE
STA 112+00

CTH K CURVE & P.I. DATA

P.I. = STA. 104+48.64
Y = 152,085.51
X = 441,549.43
Δ = 24°45'41"
D = 6°21'58"
T = 197.56'
L = 388.95'
R = 900.00'
P.C. = STA. 102+51.08
Y = 151,901.72
X = 441,476.98
P.T. = STA. 106+40.03
Y = 152,222.07
X = 441,692.20
S.E. = 6.0% (MAX)

CTH K MAINLINE

2

CTH K MAINLINE

FIELD ENTRANCE
(SEE CTH K FIELD
ENTRANCE ALIGNMENT
OVERVIEW)

STA 115+00.00 = STA. 302+09.00
Y = 152,828.30
X = 442,301.19

120+00

N38°38'58.66"E

CTH K

MATCH LINE
STA 123+50

MATCH LINE
STA 112+00

PC STA = 112+70.85

PT STA = 114+70.50

CTH K CURVE & P.I. DATA

P.I. = STA. 113+70.82
Y = 152,727.18
X = 442,220.33
Δ = 7°37'33"
D = 3°49'11"
T = 99.97'
L = 199.65'
R = 1500.00'
P.C. = STA. 112+70.85
Y = 152,658.08
X = 442,148.08
P.T. = STA. 114+70.50
Y = 152,805.26
X = 442,282.76
S.E. = 6.0% (MAX)

FIELD ENTRANCE
(SEE CTH K FIELD
ENTRANCE ALIGNMENT
OVERVIEW)

PROJECT NO:5679-00-75/76

HWY:CTH K

COUNTY:IOWA

ALIGNMENT OVERVIEW (CTH K)

SHEET

E

FILE NAME : \$\$....designfile....\$\$

PLOT DATE : \$\$...plottingdate...\$\$

PLOT BY : \$\$...plotuser...\$\$

PLOT NAME :

PLOT SCALE : \$\$.....plotscale.....\$\$

WISDOT/CADDs SHEET 42

Alignment Diagram01.dgn 8/30/2012 12:52:11 PM jkurten

CTH K CURVE & P.I. DATA

P.I. = STA. 125+18.49
Y = 153,623.71
X = 442,937.29
Δ = 16°50'48"
D = 6°44'26"
T = 125.87'
L = 249.93'
R = 850.00'
P.C. = STA. 123+92.62
Y = 153,525.41
X = 442,858.68
P.T. = STA. 126+42.54
Y = 153,740.58
X = 442,937.29
S.E. = 6.0% (MAX)

MATCH LINE
STA 123+50

125+00

CTH K

N21°48'10.45"E

CTH K CURVE & P.I. DATA

P.I. = STA. 129+96.48
Y = 154,069.20
X = 443,115.50
Δ = 5°48'54"
D = 5°43'46"
T = 50.79'
L = 101.49'
R = 1000.00'
P.C. = STA. 129+45.69
Y = 154,022.04
X = 443,096.63
P.T. = STA. 130+47.18
Y = 154,118.02
X = 443,129.49
S.E. = 6.0% (MAX)

END PROJECT
STA. 130+18
Y = 154,090.24
X = 443,121.09

N15°59'16.14"E

EOP STA = 131+86.67
Y = 154,252.12
X = 443,167.91

CTH K MAINLINE

CTH K FIELD ENTRANCE

CTH K FIELD ENTRANCE
CURVE & P.I. DATA

P.I. = STA. 301+84.88
Y = 152,846.25
X = 442,278.74
Δ = 57°15'41"
D = 114°35'30"
T = 27.30'
L = 49.97'
R = 50.00'
P.C. = STA. 301+57.58
Y = 152,837.54
X = 442,252.87
P.T. = STA. 302+07.55
Y = 152,829.20
X = 442,300.05
S.E. = N/A

CTH K
(SEE MAINLINE
ALIGNMENT OVERVIEWS)

CTH K FIELD ENTRANCE
CURVE & P.I. DATA

P.I. = STA. 302+80.26
Y = 152,783.79
X = 442,356.84
Δ = 87°26'14"
D = 114°35'30"
T = 47.81'
L = 76.30'
R = 50.00'
P.C. = STA. 302+32.45
Y = 152,813.65
X = 442,319.50
P.T. = STA. 303+08.75
Y = 152,819.76
X = 442,388.34
S.E. = N/A

STA STA. 302+09.00 = 115+00.00
Y = 152,828.30
X = 442,301.19

CTH K
(SEE MAINLINE
ALIGNMENT OVERVIEWS)

CTH K FIELD ENTRANCE
CURVE & P.I. DATA

P.I. = STA. 305+07.22
Y = 152,969.06
X = 442,519.10
Δ = 60°41'49"
D = 57°17'45"
T = 58.55'
L = 105.94'
R = 100.00'
P.C. = STA. 304+48.67
Y = 152,925.02
X = 442,480.52
P.T. = STA. 305+54.60
Y = 152,956.98
X = 442,576.39
S.E. = N/A

CTH K FIELD ENTRANCE
CURVE & P.I. DATA

P.I. = STA. 306+39.91
Y = 152,939.37
X = 442,659.86
Δ = 31°30'06"
D = 18°56'37"
T = 85.31'
L = 166.29'
R = 302.45'
P.C. = STA. 305+54.60
Y = 152,956.98
X = 442,576.39
P.T. = STA. 307+20.90
Y = 152,967.98
X = 442,740.22
S.E. = N/A

303+00

304+00

305+00

N41°12'44.93"E

PRC STA = 305+54.60

306+00

EOP STA = 307+20.90
Y = 152,967.98
X = 442,740.22

DATE 04FEB13		E S T I M A T E O F Q U A N T I T I E S				
LINE				5679-00-75	5679-00-76	
NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	QUANTITY	
0010	201.0105	CLEARING	STA	7.000	7.000	
0020	201.0205	GRUBBING	STA	7.000	7.000	
0030	203.0100	REMOVING SMALL PIPE CULVERTS	EACH	4.000	4.000	
0040	203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS (STATION) 01. 109+94, 44.8' LT.	LS	1.000	1.000	
0050	204.0100	REMOVING PAVEMENT	SY	350.000	350.000	
0060	204.9090.S	REMOVING (ITEM DESCRIPTION) 01. CONCRETE RETAINING WALL	LF	235.000	235.000	
0070	204.9165.S	REMOVING (ITEM DESCRIPTION) 01. CONCRETE FOUNDATION	SF	600.000	600.000	
0080	204.9165.S	REMOVING (ITEM DESCRIPTION) 02. CONCRETE STEPS	SF	100.000	100.000	
0090	205.0100	EXCAVATION COMMON	CY	22,737.000	22,737.000	
0100	205.0200	EXCAVATION ROCK	CY	1,808.000	1,808.000	
0110	206.1000	EXCAVATION FOR STRUCTURES BRIDGES (STRUCTURE) 01. B-25-168	LS	1.000	1.000	
0120	206.6000.S	TEMPORARY SHORING	SF	175.000	175.000	
0130	208.0100	BORROW	CY	14,565.000	14,565.000	
0140	210.0100	BACKFILL STRUCTURE	CY	390.000	390.000	
0150	213.0100	FINISHING ROADWAY (PROJECT) 01. 5679-00-76	EACH	1.000	1.000	
0160	305.0120	BASE AGGREGATE DENSE 1 1/4-INCH	TON	6,835.000	6,835.000	
0170	311.0110	BREAKER RUN	TON	19,060.000	19,060.000	
0180	502.0100	CONCRETE MASONRY BRIDGES	CY	366.000	366.000	
0190	502.3200	PROTECTIVE SURFACE TREATMENT	SY	460.000	460.000	
0200	505.0405	BAR STEEL REINFORCEMENT HS BRIDGES	LB	7,760.000	7,760.000	
0210	505.0605	BAR STEEL REINFORCEMENT HS COATED BRIDGES	LB	40,160.000	40,160.000	
0220	513.4060	RAILING TUBULAR TYPE M (STRUCTURE) 01. B-25-168	LS	1.000	1.000	
0230	516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	22.000	22.000	
0240	520.0112	CULVERT PIPE CLASS III 12-INCH	LF	66.000	66.000	
0250	520.0121	CULVERT PIPE CLASS III 21-INCH	LF	146.000	146.000	
0260	520.0124	CULVERT PIPE CLASS III 24-INCH	LF	80.000	80.000	
0270	520.0130	CULVERT PIPE CLASS III 30-INCH	LF	84.000	84.000	
0280	520.0142	CULVERT PIPE CLASS III 42-INCH	LF	50.000	50.000	
0290	520.1021	APRON ENDWALLS FOR CULVERT PIPE 21-INCH	EACH	4.000	4.000	
0300	520.1024	APRON ENDWALLS FOR CULVERT PIPE 24-INCH	EACH	1.000	1.000	
0310	520.1030	APRON ENDWALLS FOR CULVERT PIPE 30-INCH	EACH	2.000	2.000	
0320	520.1042	APRON ENDWALLS FOR CULVERT PIPE 42-INCH	EACH	1.000	1.000	
0330	550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	486.000	486.000	
0340	601.0557	CONCRETE CURB AND GUTTER 6-INCH SLOPED 36-INCH TYPE D	LF	925.000	925.000	
0350	606.0200	RIPRAP MEDIUM	CY	184.000	184.000	
0360	606.0300	RIPRAP HEAVY	CY	449.000	210.000	
0370	611.0627	INLET COVERS TYPE HM	EACH	3.000	3.000	
0380	611.0642	INLET COVERS TYPE MS	EACH	3.000	3.000	
0390	611.3230	INLETS 2X3-FT	EACH	2.000	2.000	
0400	611.3901	INLETS MEDIAN 1 GRATE	EACH	1.000	1.000	
0410	611.3902	INLETS MEDIAN 2 GRATE	EACH	1.000	1.000	
0420	612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	140.000	140.000	
0430	614.2300	MGS GUARDRAIL 3	LF	300.000	300.000	
0440	614.2500	MGS THRIE BEAM TRANSITION	LF	160.000	160.000	
0450	614.2610	MGS GUARDRAIL TERMINAL EAT	EACH	4.000	4.000	

DATE 04FEB13			E S T I M A T E O F Q U A N T I T I E S		
LINE				5679-00-75	5679-00-76
NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	QUANTITY
0460	616.0700.S	FENCE SAFETY	LF	325.000	325.000
0470	619.1000	MOBILIZATION	EACH	1.000	0.670
0480	625.0500	SALVAGED TOPSOIL	SY	20,020.000	20,020.000
0490	627.0200	MULCHING	SY	17,960.000	17,960.000
0500	628.1104	EROSION BALES	EACH	25.000	25.000
0510	628.1504	SILT FENCE	LF	3,890.000	3,890.000
0520	628.1520	SILT FENCE MAINTENANCE	LF	7,770.000	7,770.000
0530	628.1905	MOBILIZATIONS EROSION CONTROL	EACH	5.000	5.000
0540	628.1910	MOBILIZATIONS EMERGENCY EROSION CONTROL	EACH	2.000	2.000
0550	628.2004	EROSION MAT CLASS I TYPE B	SY	3,950.000	3,950.000
0560	628.2023	EROSION MAT CLASS II TYPE B	SY	330.000	330.000
0570	628.2033	EROSION MAT CLASS III TYPE B	SY	80.000	80.000
0580	628.7005	INLET PROTECTION TYPE A	EACH	5.000	5.000
0590	628.7010	INLET PROTECTION TYPE B	EACH	3.000	3.000
0600	628.7015	INLET PROTECTION TYPE C	EACH	2.000	2.000
0610	628.7504	TEMPORARY DITCH CHECKS	LF	228.000	228.000
0620	628.7555	CULVERT PIPE CHECKS	EACH	18.000	18.000
0630	628.7560	TRACKING PADS	EACH	2.000	2.000
0640	629.0210	FERTILIZER TYPE B	CWT	16.000	16.000
0650	630.0120	SEEDING MIXTURE NO. 20	LB	750.000	750.000
0660	630.0200	SEEDING TEMPORARY	LB	50.000	50.000
0670	633.0200	DELINEATORS FLEXIBLE	EACH	4.000	4.000
0680	633.5100	MARKERS ROW	EACH	81.000	81.000
0690	633.5200	MARKERS CULVERT END	EACH	6.000	6.000
0700	634.0612	POSTS WOOD 4X6-INCH X 12-FT	EACH	4.000	4.000
0710	634.0616	POSTS WOOD 4X6-INCH X 16-FT	EACH	2.000	2.000
0720	637.0202	SIGNS REFLECTIVE TYPE II	SF	20.500	20.500
0730	642.5001	FIELD OFFICE TYPE B	EACH	1.000	1.000
0740	643.0100	TRAFFIC CONTROL (PROJECT) 01. 5679-00-76	EACH	1.000	1.000
0750	643.0300	TRAFFIC CONTROL DRUMS	DAY	3,422.000	3,422.000
0760	643.0420	TRAFFIC CONTROL BARRICADES TYPE III	DAY	153.000	153.000
0770	643.0705	TRAFFIC CONTROL WARNING LIGHTS TYPE A	DAY	238.000	238.000
0780	643.0715	TRAFFIC CONTROL WARNING LIGHTS TYPE C	DAY	3,422.000	3,422.000
0790	643.0900	TRAFFIC CONTROL SIGNS	DAY	1,701.000	1,701.000
0800	645.0120	GEOTEXTILE FABRIC TYPE HR	SY	1,450.000	1,000.000
0810	650.4000	CONSTRUCTION STAKING STORM SEWER	EACH	5.000	5.000
0820	650.4500	CONSTRUCTION STAKING SUBGRADE	LF	2,777.000	2,777.000
0830	650.5000	CONSTRUCTION STAKING BASE	LF	2,777.000	2,777.000
0840	650.5500	CONSTRUCTION STAKING CURB GUTTER AND CURB & GUTTER	LF	925.000	925.000
0850	650.6000	CONSTRUCTION STAKING PIPE CULVERTS	EACH	5.000	5.000
0860	650.6500	CONSTRUCTION STAKING STRUCTURE LAYOUT (STRUCTURE) 01. B-25-168	LS	1.000	1.000
0870	650.9910	CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT) 01. 5679-00-76	LS	1.000	1.000
0880	650.9920	CONSTRUCTION STAKING SLOPE STAKES	LF	2,777.000	2,777.000
0890	690.0150	SAWING ASPHALT	LF	44.000	44.000
0900	999.1500.S	CRACK AND DAMAGE SURVEY	LS	1.000	1.000
0910	ASP.1T0A	ON-THE-JOB TRAINING APPRENTICE AT \$5.00/HR	HRS	575.000	575.000
0920	ASP.1T0G	ON-THE-JOB TRAINING GRADUATE AT \$5.00/HR	HRS	300.000	300.000
0930	SPV.0060	SPECIAL 01. INLETS 6-FT SPECIAL	EACH	1.000	1.000

Division	From / To Station	Location	Common Excavation (1) (item # 205.0100)		Salvaged / Unusable Pavement Material (4)	Available Material (5)	Rock Excavation (7)	Expanded Rock (12)	Unexpanded Fill	Expanded Fill (13)	Mass Ordinate + / - (14)	Waste	Borrow	Comment:
			Cut (2)	EBS Excavation (3)			(item #205.0200)	Factor		Factor				
1	107+09 - 109+18	CTH K	3,889	-	0	3,889	0	0	1,724	2,155	1,734	1,734	(item #208.0100) -1,734	
	Structure B-25-168	STRUCTURE	-	-	0		0	0	-	-	-	-	-	
2	110+59 - 130+50	CTH K	13,601	-	0	15,370	1,608	1,769	25,335	31,668	-16,299	-16,299	16,299	
UNDISTRIBUTED			-	5,247	0		200	220		-	-	-	-	
Subtotal			17,490	5,247										
Grand Total			22,737		0	19,259	1,808	1,989	27,059	33,824	-14,565	-14,565	14,565	

- 1) Common Excavation is the sum of the Cut and EBS Excavation columns. Item number 205.0100
- 2) Salvaged/Unsuable Pavement Material is included in Cut.
- 3) EBS Excavation and Breaker Run Fill Found Elsewhere.
- 4) Salvaged/Unusable Pavement Material
- 5) Available Material = Cut - Salvaged/Unusuable Pavement Material
- 7) Rock Excavation item number 205.0200
- 12) Expanded Rock - Factor = 1.1.
- 13) Expanded Fill. Factor = 1.25
- 14) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material within the Division. Minus indicates a shortage of material within the Division.

CLEARING & GRUBBING

CATEGORY	STATION	TO STATION	(201.0105) (201.0205) CLEARING GRUBBING	
			STA	STA
010	112+00	116+00	4	4
	119+00	120+00	1	1
	123+00	125+00	2	2
PROJECT TOTALS			7	7

REMOVING SMALL PIPE CULVERTS

CATEGORY	STATION	LOCATION	TYPE	DIAMETER	LENGTH	(203.0100) EACH
010	107+22	LT	CMP	18"	50'	1
	110+56	LT	CMP	15"	18'	1
	119+17	LT	CMP	18"	18'	1
	127+76	CL	CMP	18"	46'	1
PROJECT TOTAL						4

REMOVING PAVEMENT

CATEGORY	STATION	STATION	LOCATION	(204.0100) SY
010	119+75	120+75	LT	350
PROJECT TOTAL				350

REMOVING RETAINING WALL

CATEGORY	STATION	TO STATION	LOCATION	(204.9090.S) LF
010	117+31	117+45	LT	15
	118+73	120+85	LT	220
PROJECT TOTAL				235

CONCRETE CURB AND GUTTER 6-INCH SLOPED 36-INCH TYPE D

CATEGORY	STATION	TO STATION	LOCATION	(601.0557) 6-INCH SLOPED 36-INCH TYPE D LF	(650.5500) CONSTRUCTION STAKING CURB GUTTER AND CURB & GUTTER LF
010	115+50	119+00	LT	350	350
	124+41	130+18	LT	575	575
PROJECT TOTAL				925	925

REMOVE CONCRETE FOUNDATION

CATEGORY	STATION	TO STATION	LOCATION	(204.9165.S.01) SF
010	115+85	116+30	RT	600
PROJECT TOTAL				600

REMOVE CONCRETE STEPS

CATEGORY	STATION	LOCATION	(204.9165.S.02) SF
010	116+30	LT	100
PROJECT TOTAL			100

BASE AGGREGATE DENSE

CATEGORY	STATION	TO STATION	LOCATION	(305.0120) 1 1/4-INCH BREAKER TON	(311.0110) TON
010	101+00	109+36	LT & RT	1,855	2,880
	110+24	130+18	LT & RT	4,480	6,990
DRIVEWAYS				500	-
UNDISTRIBUTED					9,190
PROJECT TOTAL				6,835	19,060

RIPRAP AND GEOTEXTILE FABRIC

CATEGORY	STATION	TO STATION	LOCATION	RIPRAP THICKNESS FT	(606.0200) RIPRAP MEDIUM CY	(606.0300) RIPRAP HEAVY CY	(645.0120) GEOTEXTILE FABRIC TYPE HR SY
010	103+35	104+50	RT	2	-	39	112
	106+75	106+93	LT	1.5	11	-	30
	106+75	108+75	RT	2	-	200	397
	107+53	107+67	LT	1.5	14	-	38
	110+35	110+90	LT	1.5	37	-	94
	114+37	114+50	LT	1.5	10	-	27
	115+11	115+52	LT	1.5	25	-	68
	118+75	119+20	LT	1.5	10	-	30
	119+10	119+25	RT	1.5	24	-	62
	124+35	124+45	LT	1.5	8	-	23
	124+35	124+45	RT	1.5	16	-	43
	127+70	127+85	LT	1.5	12	-	32
	127+70	127+85	RT	1.5	17	-	44
PROJECT TOTAL					184	239	1,000

3

3

CULVERT PIPE AND STORM SEWER STRUCTURES

				(520.0112)	(520.0124)	(520.0142)			(520.1042)	(520.1024)	(611.3230)	(611.3901)	(611.3902)	(611.0627)	(611.0642)	(650.4000)	(SPV.0060.01)	*					
				CULVERT PIPE	CULVERT PIPE	CULVERT PIPE			APRON ENDWALLS	APRON ENDWALLS	INLETS	INLETS	INLETS	INLET	INLET	CONSTRUCTION	INLETS	(650.6000)					
				CLASS III	CLASS III	CLASS III	THICKNESS		FOR CULVERT PIPE	FOR CULVERT PIPE	2X3-FT	INLETS	MEDIAN	COVERS	COVERS	STAKING	6-FT SPECIAL	CONSTRUCTION STAKING					
STRUCTURE				12-INCH	24-INCH	42-INCH	STEEL	ALUM	42-INCH	24-INCH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	PIPE CULVERTS	TOP OF STRUCTURE	DEPTH	FLANGE	
CATEGORY	NO.	TO	NO.	STATION	LOCATION	LF	LF	LF	IN	IN	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	ELEVATION	FEET	ELEVATION	INVERT
010	1.1	EW		124+41	31.00' LT	-	80	-	0.064	0.075	-	-	-	1	-	1	-	1	1	943.80	3.02	943.80	940.78
	1.2		1.3	127+76	18.00' LT	-	-	4	0.109	0.105	-	-	-	-	1	-	1	1	-	938.85	6.01	940.36	934.35
	1.2		1.4	127+76	18.00' LT	36	-	-	0.064	0.060	-	-	-	-	-	-	-	-	-	-	-	-	
	1.3		-	127+76	27.77' LT	-	-	-	-	-	-	-	-	1	-	2	1	-	-	939.99	5.63	939.99	934.36
	1.4		1.5	128+11	18.00' LT	30	-	-	-	0.064	0.060	-	-	1	-	-	1	-	-	939.45	2.68	940.28	937.60
	1.5		-	128+40	18.00' LT	-	-	-	-	-	-	-	-	1	-	-	1	-	-	939.41	2.50	940.24	937.74
	1.2		EW	127+76	33.71' RT	-	-	46	0.109	0.105	1	-	-	-	-	-	-	-	1	-	-	-	-
PROJECT TOTAL						66	80	50			1	1	2	1	1	3	3	5	1	2			
*ADDITIONAL QUANTITY FOUND ELSEWHERE																							

CULVERT PIPE AND APRON ENDWALLS FOR CULVERT PIPE

* (520.0121) (520.0130) (520.1021) (520.1030) (633.5200) (650.6000) CLASS III CLASS III THICKNESS APRON ENDWALLS FOR CULVERT PIPE CULVERT CONSTRUCTION STAKING 21-INCH 30-INCH STEEL ALUM 21-INCH 30-INCH MARKER END PIPE CULVERTS CATEGORY STATION LOCATION LF LF IN IN EACH EACH EACH EACH											
010	107+20	LT	64	-	0.064	0.075	2	-	2	1	
	301+77	CL	82	-	0.064	0.060	2	-	2	1	
	119+26	CL	-	84	0.079	0.075	-	2	2	1	
	PROJECT TOTAL		146	84			4	2	6	3	

*ADDITIONAL QUANTITY FOUND ELSEWHERE

Project ID : 5679-00-75

BEAM GUARD

STRUCTURE		NO. TO NO.		STATION LOCATION	(614.2500)	(614.2610)	(614.2300)
					MGS	MGS	MGS
					THRIE BEAM	GUARDRAIL	GUARDRAIL
CATEGORY	STATION	TO	STATION	LOCATION	LF	EACH	LF
010	108+21	108+75	LT	-	-	1	-
	108+75	109+00	LT	-	-	-	25
	109+00	109+40	LT	40	-	-	-
	106+21	106+75	RT	-	1	-	-
	106+75	109+00	RT	-	-	-	225
	109+00	109+40	RT	40	-	-	-
	110+20	110+59	LT	40	-	-	-
110+59	110+84	LT	-	-	-	25	-
	110+84	111+37	LT	-	1	-	-
	110+20	110+59	RT	40	-	-	-
	110+59	110+84	RT	-	-	25	-
118+84	111+37	RT	-	1	-	-	-
	PROJECT TOTAL				160	4	300

FENCE SAFETY

STRUCTURE		NO. TO NO.		STATION LOCATION	(616.0700.S)
					LF
					LF
010	103+00	106+00	LT	325	
PROJECT TOTAL					325

MOBILIZATION EROSION CONTROL

			(628.1905)	(628.1910)
			EMERGENCY	
CATEGORY	STATION	TO STATION	EACH	EACH
010	101+00	130+18	5	2
PROJECT TOTAL			5	2

INLET PROTECTION

STRUCTURE		NO. TO NO.		STATION LOCATION	(628.7005)	(628.7010)	(628.7015)
					TYPE A	TYPE B	TYPE C
					EACH	EACH	EACH
010	124+41	32' LT	1	1	-	-	-
	127+76	27.8'LT	2	2	-	-	-
	128+11	18'LT	1	-	1	-	-
	128+40	18'LT	1	-	1	-	-
	PROJECT TOTAL				5	3	2

EROSION BALES

STRUCTURE		NO. TO NO.		STATION LOCATION	(628.1104)
					EACH
					EACH
010	UNDISTRIBUTED			25	
PROJECT TOTAL					25

SILT FENCE

				(628.1504)	(628.1520)
CATEGORY	STATION	TO STATION	LOCATION	MAINTENANCE	
				LF	LF
010	101+00	103+30	RT	231	460
	101+00	107+08	LT	632	1,260
	104+65	106+80	RT	216	430
	107+30	109+75	LT	243	485
	108+80	109+93	RT	128	255
	109+90	-	LT&RT	125	250
	110+00	-	LT&RT	124	250
	110+00	110+50	LT	51	100
	110+35	117+70	RT	800	1,600
	117+96	130+18	RT	1,340	2,680
	PROJECT TOTAL				3,890

FINISHING ITEMS

STRUCTURE		NO. TO NO.		STATION LOCATION	(625.0500)	(627.0200)	(629.0210)	(630.0120)	(630.0200)
					SALVAGED	MULCHING	FERTILIZER	SEEDING MIXTURE	SEEDING
					TOPSOIL	SY	TYPE B	NO. 20	TEMPORARY
010	101+00	102+51	RT	290	180	0	15	-	-
	101+00	102+51	LT	110	160	0	10	-	-
	102+51	106+40	RT	1020	680	1	45	-	-
	102+51	106+40	LT	980	880	1	40	-	-
	106+40	107+25	RT	120	120	0	5	-	-
	106+40	107+25	LT	280	250	0	10	-	-
	107+25	109+18	RT	60	70	0	5	-	-
	107+25	109+18	LT	860	590	1	25	-	-
	109+18	110+59	RT	310	290	0	10	-	-
	109+18	110+59	LT	610	610	0	20	-	-
	110+59	112+71	RT	760	590	1	25	-	-
	110+59	112+71	LT	810	680	1	30	-	-
	112+71	114+71	RT	1250	1400	1	45	-	-
	112+71	114+71	LT	710	300	1	25	-	-
	114+71	118+75	RT	3100	2970	2	95	-	-
	114+71	118+75	LT	1650	1300	1	60	-	-
	118+75	123+92	RT	2050	2300	2	75	-	-
	118+75	123+92	LT	2800	2500	2	100	-	-
	123+92	126+43	RT	1250	760	1	45	-	-
	123+92	126+43	LT	190	160	0	15	-	-
	126+43	129+45	RT	730	880	1	30	-	-
	126+43	129+45	LT	10	150	0	10	-	-
	129+45	130+18	RT	70	110	0	5	-	-
	129+45	130+18	LT	0	30	0	5	-	-
	UNDISTRIBUTED				0	0	0	0	50
	PROJECT TOTAL				20,020	17,960	16.0	750	50

EROSION MAT

STRUCTURE		NO. TO NO.		STATION LOCATION	(628.2004)	(628.2023)	(628.2033)
					EROSION MAT	EROSION MAT	EROSION MAT
					CLASS I TYPE B	CLASS II TYPE B	CLASS III TYPE B
010	101+00	106+75	RT	720	-	-	-
	104+00	106+80	LT	320	-	-	-
	107+65	109+20	LT	220	-	-	-
	108+75	109+25	RT	30	-	-	-
	110+35	112+00	RT	330	-	-	-
	110+85	114+40	LT	780	-	-	-
	144+40	115+11	LT	-	-	80	-
	115+11	118+50	LT	570	-	-	-
	119+25	123+00	LT	600	-	-	-
	123+00	124+50	RT	-	330	-	-
	124+55	127+70	LT	150	-	-	-
	127+85	130+15	LT	60	-	-	-
	302+50	305+50	LT	170	-	-	-
	PROJECT TOTAL				3,950	330	80

PROJECT NO: 5679-00-76

HWY: CTH K

COUNTY: IOWA

MISCELLANEOUS QUANTITIES

SHEET

E

3

MARKERS ROW				
CATEGORY	R/W PT	STATION	LOCATION	(633.5100) EACH
010	100	107+50	35.15' LT	1
	101	107+50	45.00' LT	1
	102	109+50	45.00' LT	1
	103	111+00	58.00' LT	1
	104	111+98	56.31' LT	1
	105	113+90	67.73' LT	1
	106	113+97	66.98' LT	1
	107	114+06	66.77' LT	1
	108	114+83	51.64' LT	1
	109	115+50	53.00' LT	1
	111	117+13	36.60' LT	1
	112	118+40	56.72' LT	1
	113	119+50	50.00' LT	1
	114	119+80	36.10' LT	1
	122	126+05	35.30' LT	1
	123	128+00	47.61' LT	1
	124	129+29	74.08' LT	1
	125	132+00	72.00' LT	1
	126	133+74	54.97' LT	1
	127	134+37	72.91' LT	1
	128	134+81	88.15' LT	1
	129	135+74	90.50' LT	1
	130	136+50	65.00' LT	1
	131	137+00	65.00' LT	1
	132	137+50	134.00' LT	1
	133	138+50	81.20' LT	1
	134	146+00	77.00' LT	1
	135	147+50	90.00' LT	1
	136	149+16	118.08' LT	1
	137	151+03	122.87' LT	1
	138	152+10	58.88' LT	1
	139	155+24	64.85' LT	1
	140	155+50	71.39' LT	1
	141	156+00	65.26' LT	1
	142	157+90	74.32' LT	1
	143	160+80	38.60' LT	1
	144	160+80	48.00' LT	1
	145	162+10	42.13' LT	1
	146	163+05	33.06' RT	1
	147	163+05	52.00' RT	1
	148	161+91	52.40' RT	1
	149	160+00	38.00' RT	1
	150	158+50	70.00' RT	1
	151	157+00	55.00' RT	1
	152	154+50	85.00' RT	1
	153	153+50	74.44' RT	1
	154	153+33	79.11' RT	1
	155	152+90	102.76' RT	1
	156	152+41	114.04' RT	1
	157	151+52	176.62' RT	1
	158	151+58	286.32' RT	1
	159	151+54	325.73' RT	1
	160	151+11	346.04' RT	1
	161	150+42	124.08' RT	1
	162	147+74	54.07' RT	1
	163	145+50	85.00' RT	1
	164	144+00	75.00' RT	1
	165	143+50	50.00' RT	1
	166	142+50	50.00' RT	1
	167	142+49	43.62' RT	1

CONTINUED

MARKERS ROW CONT.				
CATEGORY	R/W PT	STATION	LOCATION	(633.5100) EACH
010	168	140+82	44.87' RT	1
	169	139+56	60.73' RT	1
	170	137+45	93.18' RT	1
	171	135+95	85.04' RT	1
	172	135+16	68.08' RT	1
	173	134+25	48.43' RT	1
	174	133+50	85.00' RT	1
	175	132+51	46.87' RT	1
	176	130+22	61.21' RT	1
	177	129+00	65.00' RT	1
	178	127+50	62.00' RT	1
	179	126+50	62.00' RT	1
	180	124+00	40.00' RT	1
	181	123+50	59.91' RT	1
	182	117+50	45.00' RT	1
	183	115+45	59.26' RT	1
	184	114+00	75.00' RT	1
	185	113+00	65.00' RT	1
	186	110+66	81.09 RT	1
	187	107+50	50.00' RT	1
	188	107+50	30.85' RT	1
PROJECT TOTAL				81

DITCH CHECKS				
CATEGORY	STATION	LOCATION	(628.7555) CULVERT PIPE EACH	(628.7504) TEMPORARY LF
010	105+50	RT	-	15
	106+25	LT	-	15
	106+85	LT	6	-
	111+60	LT	-	15
	112+50	LT	-	15
	113+75	LT	-	15
	115+25	LT	6	-
	116+50	LT	-	15
	119+17	LT	6	-
	120+00	LT	-	15
	122+40	LT	-	15
	123+75	LT	-	15
	125+50	LT	-	8
	126+50	LT	-	5
	129+50	LT	-	5
UNDISTRIBUTED			-	75
PROJECT TOTAL			18	228

TRACKING PADS		
CATEGORY	DESCRIPTION	(628.7560) EACH
010	BEGIN PROJECT - 101+00	1
	END PROJECT - 130+18	1
PROJECT TOTAL		2

				(643.0300) DRUMS			(643.0420) BARRICADES			(643.0705) WARNING LIGHTS			(643.0715) WARNING LIGHTS
				DRUMS			TYPE III			TYPE A			TYPE C
CATEGORY	STAGE	STATION	NO. DEVICES	DAYS	NO. DEVICES	DAYS	NO. DEVICES	DAYS	NO. DEVICES	DAYS	NO. DEVICES	DAYS	NO. DEVICES
010	1		59	2596	0	0	0	0	59	2596	22	968	44
	2		0	0	9	153	14	238	0	0	25	425	17
	3		59	826	0	0	0	0	59	826	22	308	14
PROJECT TOTAL			118	3,422	9	153	14	238	118	3,422	69	1,701	75

PERMANENT SIGNING						
			(637.0202) SIGNS REFLECTIVE TYPE II	(634.0612) POSTS WOOD 4 X 6-INCH 12-FT EACH	(634.0616) POSTS WOOD 4 X 6-INCH 16-FT EACH	
CATEGORY	CODE	STATION	LOCATION	SF	EACH	EACH
010	W1-5L	101+25	RT	6.25	-	1
	W13-1	101+25	RT	2.25	-	-
	W5-52R	109+30	RT	3.0	1	-
	W5-52L	109+30	LT	3.0	1	-
	W5-52L	110+30	RT	3.0	1	-
	W5-52R	110+30	LT	3.0	1	-
	W1-5L	127+65	LT	6.25	-	1
	W13-1	127+65	LT	2.25	-	-
PROJECT TOTAL				20.50	4	2

DELINEATORS FLEXIBLE			
(633.0200)			
CATEGORY	STATION	LOCATION	EACH
010	115+50	RT	1
	119+00	RT	1
	124+41	RT	1
	130+18	RT	1
PROJECT TOTAL			4

CONSTRUCTION STAKING							
				(650.4500) SUBGRADE	(650.5000) BASE	(650.9910) SUPPLEMENTAL CONTROL	(650.9920) SLOPE STAKING
CATEGORY	STATION	TO STATION	LOCATION	LF	LF	LS	LF
010	101+00	109+18	LT & RT	818	818	-	818
	110+59	130+18	LT & RT	1,959	1,959	-	1,959
	UNDISTRIBUTED			-	-	1	-
PROJECT TOTAL				2,777	2,777	1	2,777

SAWING ASPHALT			
(690.0150)			
CATEGORY	STATION	LOCATION	LF
010	8+50	LT & RT	22
	11+50	LT & RT	22
PROJECT TOTAL			44

PROJECT NO: 5679-00-75/76

HWY: CTH K

COUNTY: IOWA

MISCELLANEOUS QUANTITIES

SHEET

E

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

CONVENTIONAL SYMBOLS			
FOUND IRON PIPE/PIN	IF (UNLESS NOTED)	PROPOSED R/W LINE	---
R/W MONUMENT	o (4SET)	EXISTING H.E. LINE	---
R/W STANDARD	Δ (4SET)	PROPERTY LINE	---
SIGN	ISIGN	LOT & TIE LINES	---
SECTION CORNER MONUMENT	o	SLOPE INTERCEPTS	---
SECTION CORNER SYMBOL	o	CORPORATE LIMITS	---
HIGHWAY EASEMENT	o	NO ACCESS (BY PREVIOUS ACQUISITION/CONTROL)	---
TEMPORARY LIMITED EASEMENT	o	NO ACCESS (BY ACQUISITION)	---
PERMANENT LIMITED EASEMENT	o	NO ACCESS (BY STATUTORY AUTHORITY)	---
R/W BOUNDARY POINT	o	SECTION LINE	---
PARCEL NUMBER	o	QUARTER LINE	---
UTILITY PARCEL NUMBER	o	SIXTEENTH LINE	---
SIGN NUMBER (OFF PREMISE)	o	EXISTING CENTERLINE	---
BUILDING	o	PROPOSED REFERENCE LINE	---
BUILDING TO BE RAZED	o	PARALLEL OFFSET	---

CONVENTIONAL UTILITY SYMBOLS

WATER	---	NON COMPENSABLE	---
GAS	---	COMPENSABLE	---
TELEPHONE	---	COMPENSABLE	---
OVERHEAD	---	COMPENSABLE	---
TRANSMISSION LINES	---	COMPENSABLE	---
ELECTRIC	---	COMPENSABLE	---
CABLE TELEVISION	---	COMPENSABLE	---
FIBER OPTIC	---	COMPENSABLE	---
SANITARY SEWER	---	COMPENSABLE	---
STORM SEWER	---	COMPENSABLE	---
POWER POLE	---	COMPENSABLE	---
TELEPHONE POLE	---	COMPENSABLE	---
TELEPHONE PEDESTAL	---	COMPENSABLE	---
ELECTRIC TOWER	---	COMPENSABLE	---

NOTES:

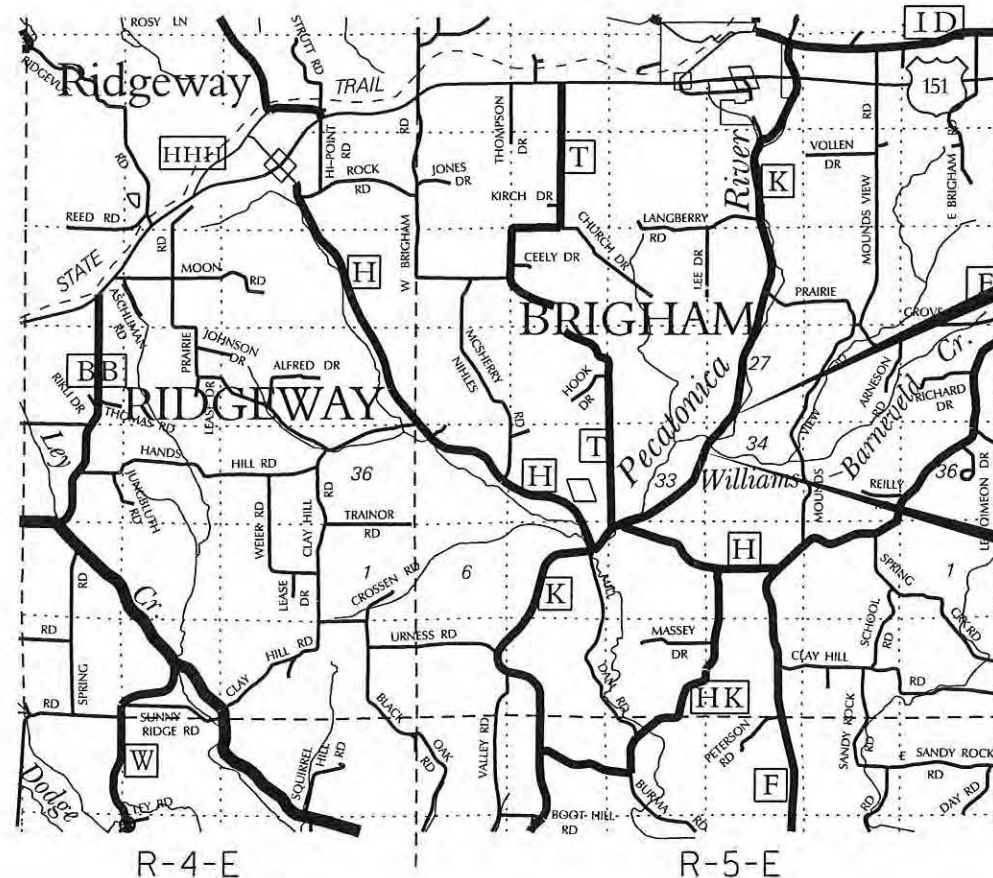
COORDINATES AND BEARINGS ON THIS PLAT ARE ORIENTED TO THE WISCONSIN COUNTY COORDINATE SYSTEM, IOWA COUNTY ZONE, NAD 83 (2007) ADJUSTMENT. THE COORDINATES SHOWN ARE GRID COORDINATES AND ARE TO BE USED AS GRID OR GROUND VALUES ON THIS PLAT.

RIGHT-OF-WAY MONUMENTS ARE TYPE 2 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.

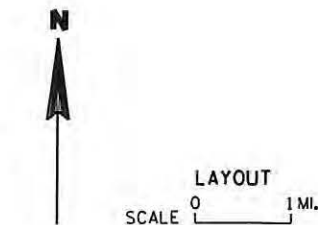
EXISTING RIGHT-OF-WAY IS BASED ON IOWA COUNTY HIGHWAY PROJECT S-0657(1) DATED 12/4/50, DEEDS AND SURVEYS OF RECORD, AIDED BY FIELD SURVEY OF EXISTING CTH K.

REVISION DATE
12-19-12 N/C



END RELOCATION
ORDER STA.130+18.00
Y = 154090.09
X = 443121.04
APPROXIMATELY 859 FEET NORTH OF
AND 1,030 FEET WEST OF THE SOUTH
QUARTER-CORNER OF SECTION 27,
T-6-N, R-5-E, TOWN OF BRIGHAM,
IOWA COUNTY, WI.

BEGIN RELOCATION
ORDER STA.101+00.00
Y = 151761.16
X = 441421.57
APPROXIMATELY 1,203 FEET NORTH OF
AND 103 FEET WEST OF THE WEST
QUARTER-CORNER OF SECTION 34,
T-6-N, R-5-E, TOWN OF BRIGHAM,
IOWA COUNTY, WI.



TOTAL NET LENGTH OF CENTERLINE = 0.553 MI.

R/W PROJECT NUMBER 5679-00-20	SHEET NUMBER 4.01	TOTAL SHEETS 4
FEDERAL PROJECT NUMBER		
PLAT OF RIGHT-OF-WAY REQUIRED FOR HOLLANDALE - BARNEVELD (CTH H - PRAIRIE GROVE ROAD)		
CTH K IOWA CO.		
CONSTRUCTION PROJECT NUMBER 5679-00-75/76		

ACCEPTED FOR

COUNTY of IOWA

[Signature]
(Date) (COUNTY HIGHWAY COMMISSIONER)

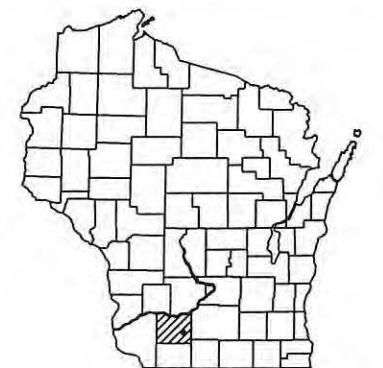
ORIGINAL PLAT PREPARED BY

MSA

PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL • REMEDIATION
DEVELOPMENT • ENVIRONMENTAL

2901 International Lane, Suite 300 Madison, WI 53704-3133
608-242-7779 1-800-446-0679 Fax: 608-242-5664

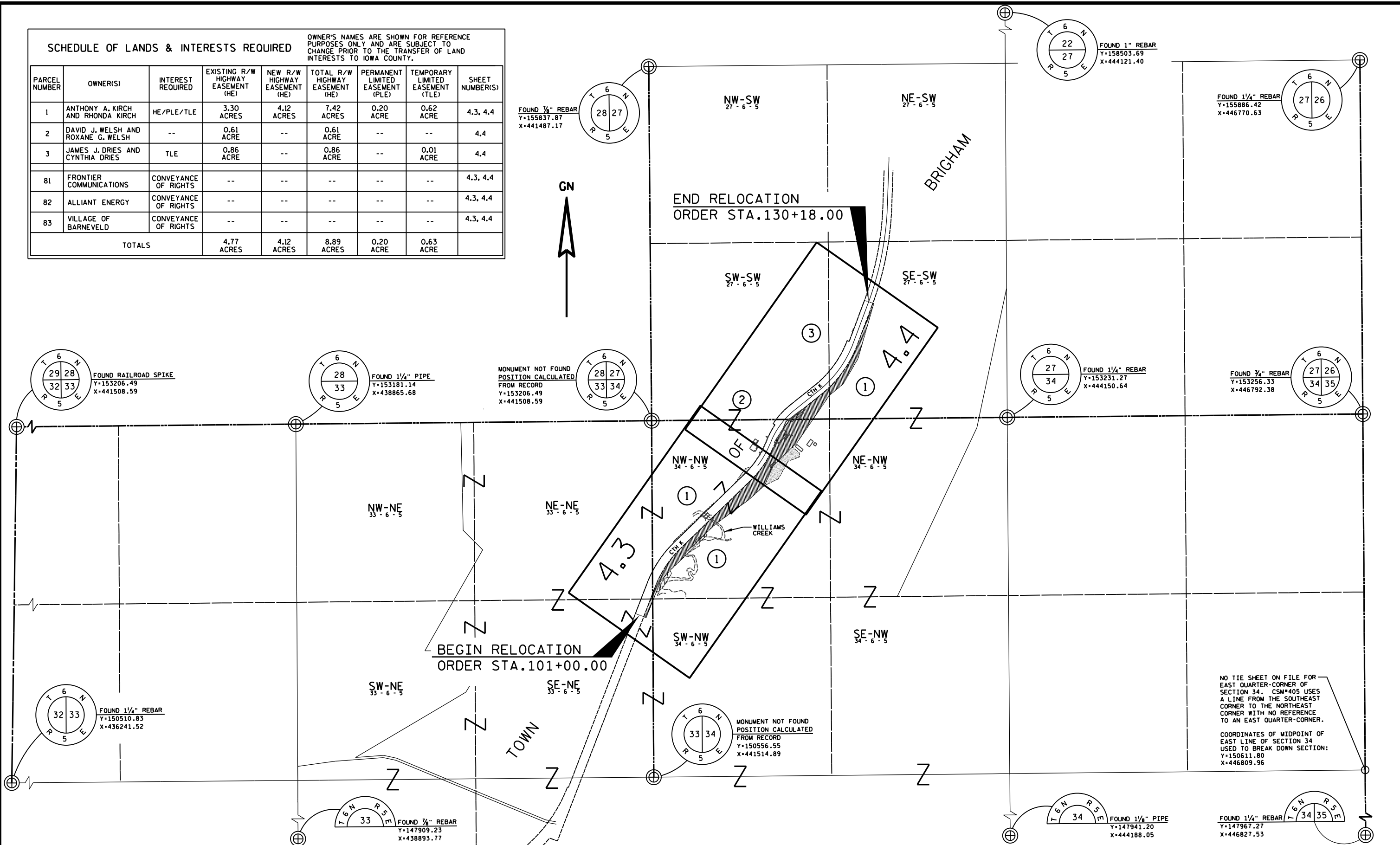
WISCONSIN
DANIEL R. HIGGS
S-2878
MADISON WI
7/19/12
(Date) (Registered Land Surveyor)



SCHEDULE OF LANDS & INTERESTS REQUIRED

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

PARCEL NUMBER	OWNER(S)	INTEREST REQUIRED	EXISTING R/W HIGHWAY EASEMENT (HE)	NEW R/W HIGHWAY EASEMENT (HE)	TOTAL R/W HIGHWAY EASEMENT (HE)	PERMANENT LIMITED EASEMENT (PLE)	TEMPORARY LIMITED EASEMENT (TLE)	SHEET NUMBER(S)
1	ANTHONY A. KIRCH AND RHONDA KIRCH	HE/PLE/TLE	3.30 ACRES	4.12 ACRES	7.42 ACRES	0.20 ACRE	0.62 ACRE	4.3, 4.4
2	DAVID J. WELSH AND ROXANE G. WELSH	--	0.61 ACRE	--	0.61 ACRE	--	--	4.4
3	JAMES J. DRIES AND CYNTHIA DRIES	TLE	0.86 ACRE	--	0.86 ACRE	--	0.01 ACRE	4.4
81	FRONTIER COMMUNICATIONS	CONVEYANCE OF RIGHTS	--	--	--	--	--	4.3, 4.4
82	ALLIANT ENERGY	CONVEYANCE OF RIGHTS	--	--	--	--	--	4.3, 4.4
83	VILLAGE OF BARNEVELD	CONVEYANCE OF RIGHTS	--	--	--	--	--	4.3, 4.4
TOTALS			4.77 ACRES	4.12 ACRES	8.89 ACRES	0.20 ACRE	0.63 ACRE	



REVISION DATE
12-19-12 N/C

DATE 7-19-12

GRID FACTOR

SCALE, FEET
NOT TO SCALE

HWY: CTH K

COUNTY: IOWA

STATE R/W PROJECT NUMBER 5679-00-20

CONSTRUCTION PROJECT NUMBER 5679-00-75/76

PLAT SHEET 4.02

PS&E SHEET

E

BOP = STA. 100+03.00
Y = 151670.92
X = 441386.00

P.I. = STA. 104+48.64
Y = 152085.51
X = 441549.43
Δ = 06°22'10" R
T = 197.56'
L = 388.95'
R = 900.00'
P.C. = STA. 102+51.08
Y = 151901.72
X = 441476.98
P.T. = STA. 106+40.03
Y = 152222.07
X = 441692.20

P.I. = STA. 113+70.82
Y = 152727.18
X = 442220.33
Δ = 03°49'14" L
T = 99.97'
L = 199.65'
R = 1,500.00'
P.C. = STA. 112+70.85
Y = 152658.08
X = 442148.08
P.T. = STA. 114+70.50
Y = 152805.26
X = 442282.76

TLE COURSE TABLE		
COURSE	BEARING	DISTANCE
104-500	N43°43'28"W	8.24'
500-501	N46°16'32"E	415.50'
501-502	S43°43'28"E	5.31'
502-104	S45°52'11"W	415.51'
503-504	N35°32'11"E	142.25'
504-106	N78°05'39"E	40.96'
106-105	L=70.92' R=683.30'	
	LC=S42°53'47"W, 70.88'	
105-503	S45°52'11"W	103.80'

PLE COURSE TABLE		
COURSE	BEARING	DISTANCE
200-201	S43°43'28"E	15.00'
201-132	S46°16'32"W	250.00'
132-131	N29°34'35"E	52.20'
131-200	N46°16'32"E	200.00'
133-202	S32°39'32"E	25.64'
202-203	S32°50'01"W	137.38'
203-204	S55°24'12"W	53.32'
204-134	N21°30'52"E	95.71'
134-133	N41°35'10"E	104.62'

R/W POINT	STATION	OFFSET	Y	X
100	101+00.00	35.43 L	151774.16	441388.61
101	102+14.94	36.35 L	151881.42	441429.90
102	103+36.69	41.62 L	151998.63	441475.02
103	104+29.51	51.14 L	152087.92	441515.44
104	106+85.50	69.81 L	152303.95	441676.81
105	114+18.41	68.04 L	152809.46	442197.90
106	114+91.46	63.65 L	152861.38	442246.15
128	114+50.00	100.15 R	152725.72	442347.20
129	113+00.00	85.00 R	152618.16	442228.88
130	110+00.00	45.00 R	152438.35	441983.44
131	107+00.00	45.00 R	152230.99	441766.64
132	106+50.00	60.00 R	152185.59	441740.88
133	105+09.29	51.06 R	152093.76	441644.86
134	104+00.00	38.08 R	152015.51	441575.42
135	102+49.85	49.85 R	151882.29	441522.90
136	102+33.17	49.85 R	151866.77	441516.79
137	101+00.00	49.85 R	151742.88	441467.95
138	101+00.00	30.58 R	151749.95	441450.02

PLE POINT	STATION	OFFSET	Y	X
200	109+00.00	45.00 R	152369.23	441911.18
201	109+00.00	60.00 R	152358.39	441921.55
202	105+00.00	75.20 R	152072.18	441658.70
203	103+49.97	74.60 R	151956.74	441584.21
204	103+00.00	48.59 R	151926.47	441540.32
TLE POINT	STATION	OFFSET	Y	X
500	106+85.50	78.06 L	152309.90	441671.11
501	111+00.00	78.06 L	152596.40	441970.66
502	111+00.00	72.75 L	152592.57	441974.32
503	113+09.59	73.75 L	152737.18	442123.39
504	114+59.16	89.63 L	152852.93	442206.07

REVISION DATE
12-19-12 N/C

DATE 7-19-12

GRID FACTOR N/A

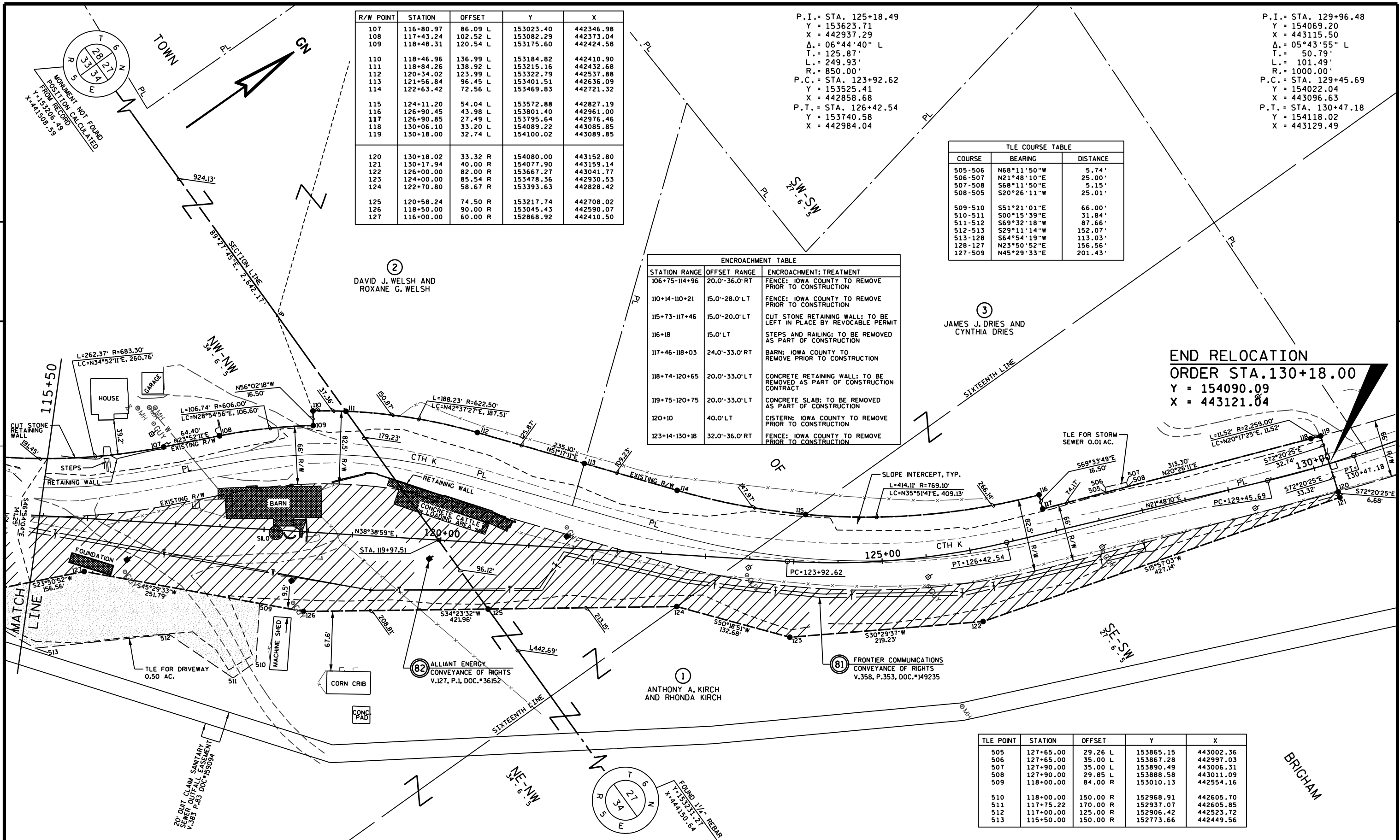
SCALE, FEET
0 50' 100'

HWY: CTH K
COUNTY: IOWA

STATE R/W PROJECT NUMBER : 5679-00-20
CONSTRUCTION PROJECT NUMBER : 5679-00-75/76

PLAT SHEET 4.03
PS&E SHEET

E



R/W POINT	STATION	OFFSET	Y	X
107	116+80.97	86.09 L	153023.40	442346.98
108	117+43.24	102.52 L	153082.29	442373.04
109	118+48.31	120.54 L	153175.60	442424.58
110	118+46.96	136.99 L	153184.82	442410.90
111	118+84.26	138.92 L	153215.16	442432.68
112	120+34.02	123.99 L	153322.79	442537.88
113	121+56.84	96.45 L	153401.51	442636.09
114	122+63.42	72.56 L	153469.83	442721.32
115	124+11.20	54.04 L	153572.88	442827.19
116	126+90.45	43.98 L	153801.40	442961.00
117	126+90.85	27.49 L	153795.64	442976.46
118	130+06.10	33.20 L	154089.22	443085.85
119	130+18.00	32.74 L	154100.02	443089.85
120	130+18.02	33.32 R	154080.00	443152.80
121	130+17.94	40.00 R	154077.90	443159.14
122	126+00.00	82.00 R	153667.27	443041.77
123	124+00.00	85.54 R	153478.36	442930.53
124	122+70.80	58.67 R	153393.63	442828.42
125	120+58.24	74.50 R	153217.74	442708.02
126	118+50.00	90.00 R	153045.43	442590.07
127	116+00.00	60.00 R	152868.92	442410.50

P.I. = STA. 125+18.49
Y = 153623.71
X = 442937.29
Δ = 06°44'40" L
T = 125.87'
L = 249.93'
R = 850.00'
P.C. = STA. 123+92.62
Y = 153525.41
X = 442858.68
P.T. = STA. 126+42.54
Y = 153740.58
X = 442984.04

P.I. = STA. 129+96.48
Y = 154069.20
X = 443115.50
Δ = 05°43'55" L
T = 50.79'
L = 101.49'
R = 1000.00'
P.C. = STA. 129+45.69
Y = 154022.04
X = 443096.63
P.T. = STA. 130+47.18
Y = 154118.02
X = 443129.49

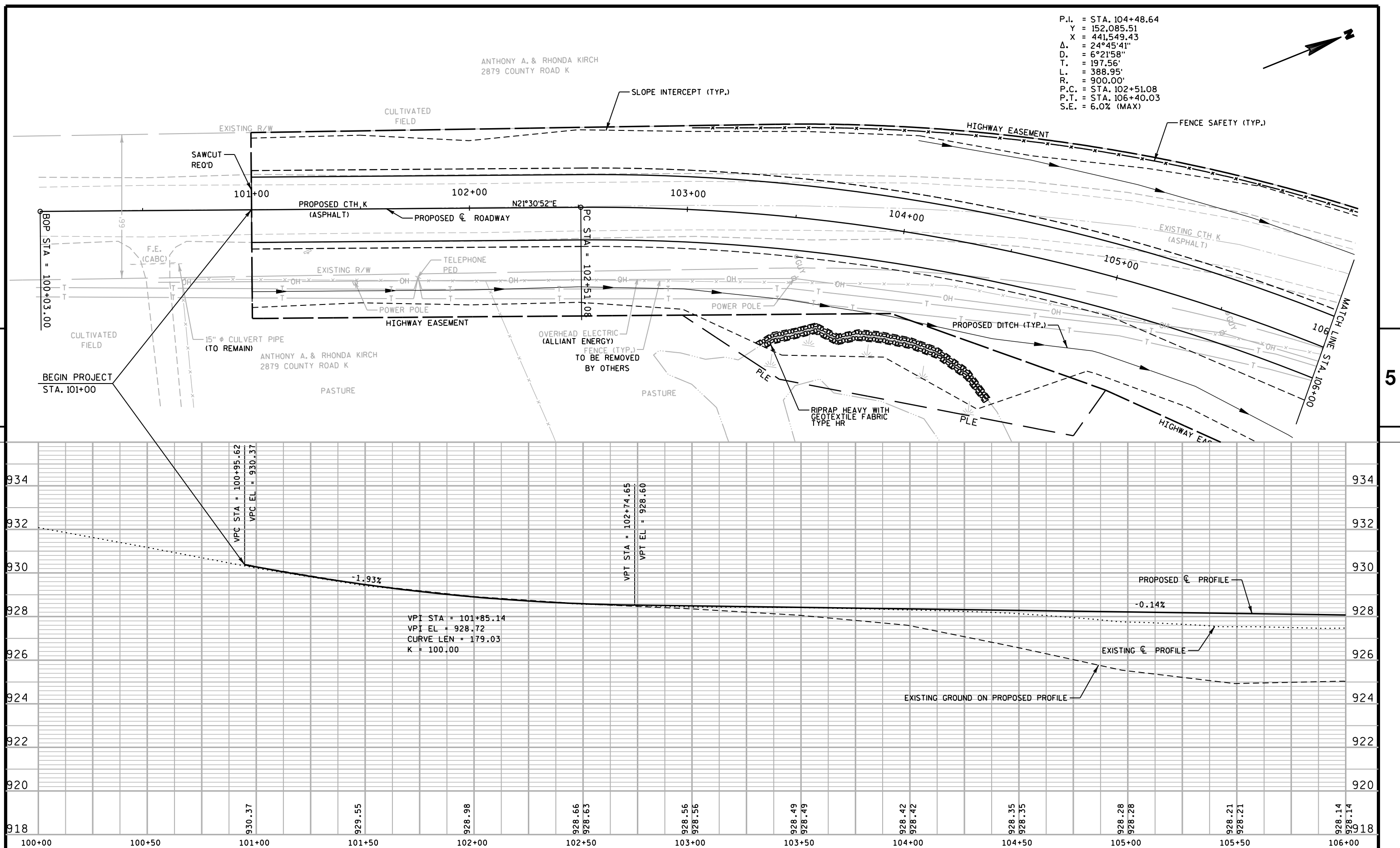
COURSE	BEARING	DISTANCE
505-506	N68°11'50"W	5.74'
506-507	N21°48'10"E	25.00'
507-508	S68°11'50"E	5.15'
508-505	S20°26'11"W	25.01'
509-510	S51°21'01"E	66.00'
510-511	S00°15'39"E	31.84'
511-512	S69°32'18"W	87.66'
512-513	S29°11'14"W	152.07'
513-127	S64°54'19"W	113.03'
128-127	N23°50'52"E	156.56'
127-509	N45°29'33"E	201.43'

STATION RANGE	OFFSET RANGE	ENCROACHMENT: TREATMENT
106+75-114+96	20.0'-36.0' RT	FENCE: IOWA COUNTY TO REMOVE PRIOR TO CONSTRUCTION
110+14-110+21	15.0'-28.0' LT	FENCE: IOWA COUNTY TO REMOVE PRIOR TO CONSTRUCTION
115+73-117+46	15.0'-20.0' LT	CUT STONE RETAINING WALL: TO BE LEFT IN PLACE BY REVOCABLE PERMIT
116+18	15.0' LT	STEPS AND RAILING: TO BE REMOVED AS PART OF CONSTRUCTION
117+46-118+03	24.0'-33.0' RT	BARN: IOWA COUNTY TO REMOVE PRIOR TO CONSTRUCTION
118+74-120+65	20.0'-33.0' LT	CONCRETE RETAINING WALL: TO BE REMOVED AS PART OF CONSTRUCTION CONTRACT
119+75-120+75	20.0'-33.0' LT	CONCRETE SLAB: TO BE REMOVED AS PART OF CONSTRUCTION
120+10	40.0' LT	CISTERN: IOWA COUNTY TO REMOVE PRIOR TO CONSTRUCTION
123+14-130+18	32.0'-36.0' RT	FENCE: IOWA COUNTY TO REMOVE PRIOR TO CONSTRUCTION

END RELOCATION
ORDER STA. 130+18.00
Y = 154090.09
X = 443121.04

TLE POINT	STATION	OFFSET	Y	X
505	127+65.00	29.26 L	153865.15	443002.36
506	127+65.00	35.00 L	153867.28	442997.03
507	127+90.00	35.00 L	153890.49	443006.31
508	127+90.00	29.85 L	153888.58	443011.09
509	118+00.00	84.00 R	153010.13	442554.16
510	118+00.00	150.00 R	152968.91	442605.70
511	117+75.22	170.00 R	152937.07	442605.85
512	117+00.00	125.00 R	152906.42	442523.72
513	115+50.00	150.00 R	152773.66	442449.56

REVISION DATE 12-19-12	DATE 7-19-12	SCALE, FEET 0 50' 100'	HWY: CTH K	STATE R/W PROJECT NUMBER : 5679-00-20	PLAT SHEET 4.04
	GRID FACTOR N/A		COUNTY: IOWA	CONSTRUCTION PROJECT NUMBER : 5679-00-75/76	PS&E SHEET E

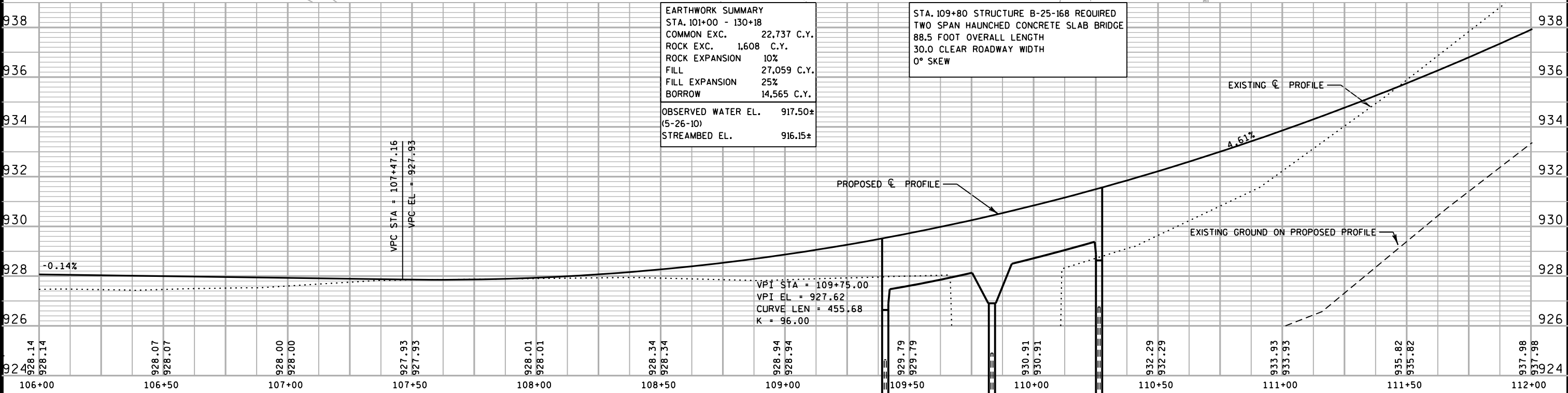
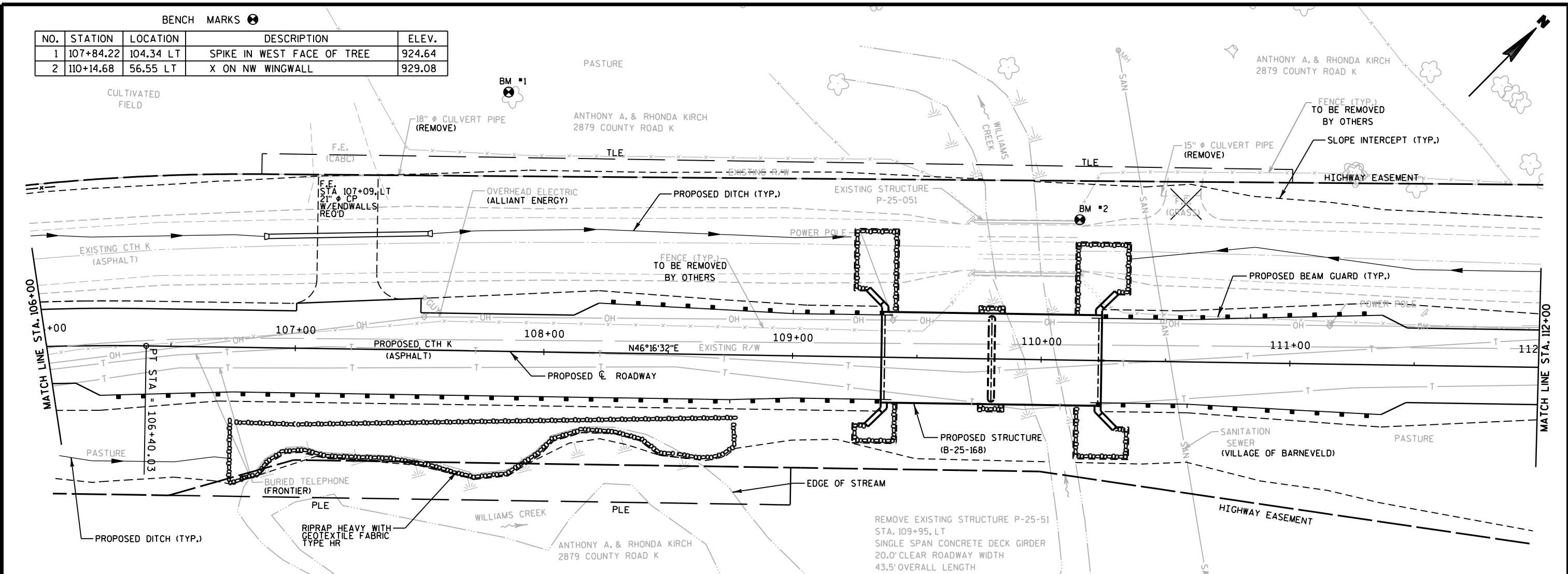


NO.	STATION	LOCATION	DESCRIPTION	ELEV.
1	107+84.22	104.34 LT	SPIKE IN WEST FACE OF TREE	924.64
2	110+14.68	56.55 LT	X ON NW WINGWALL	929.08

BENCH MARKS

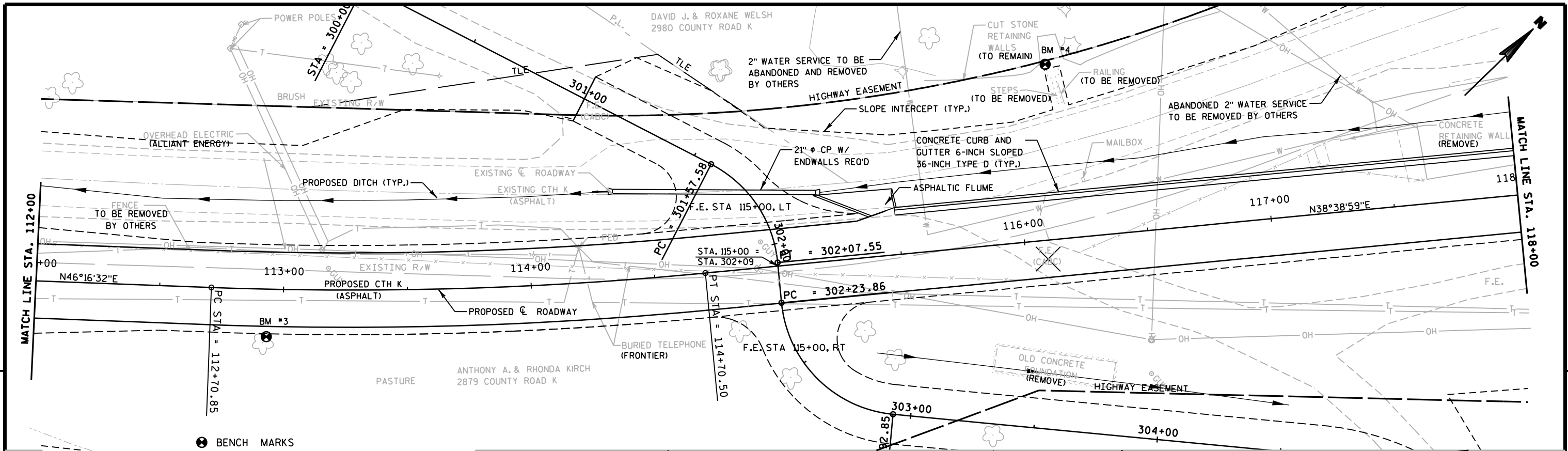
BM #1

BM #2



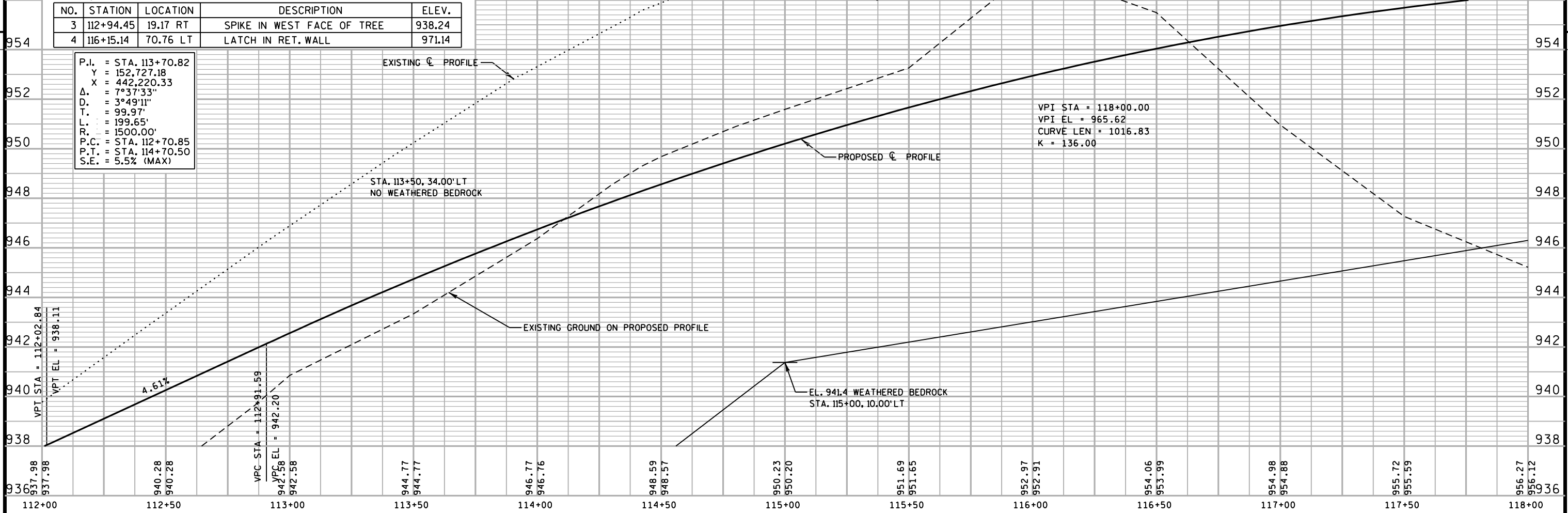
EARTHWORK SUMMARY	
STA. 101+00 - 130+18	
COMMON EXC.	22,737 C.Y.
ROCK EXC.	1,608 C.Y.
ROCK EXPANSION	10%
FILL	27,059 C.Y.
FILL EXPANSION	25%
BORROW	14,565 C.Y.
OBSERVED WATER EL.	917.50±
(5-26-10)	
STREAMBED EL.	916.15±

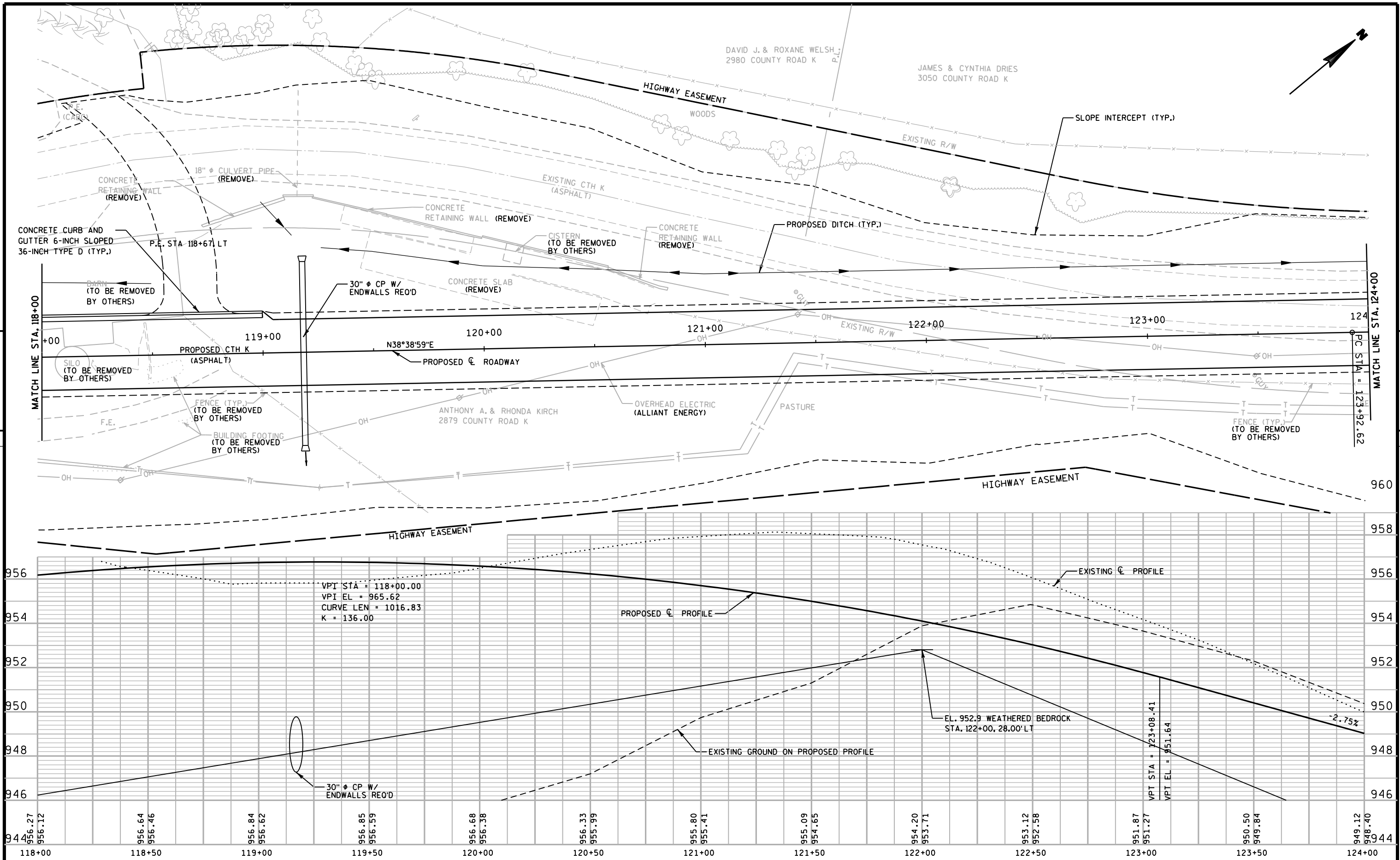
STA. 109+80 STRUCTURE B-25-168 REQUIRED
TWO SPAN HAUNCHED CONCRETE SLAB BRIDGE
88.5 FOOT OVERALL LENGTH
30.0 CLEAR ROADWAY WIDTH
0° SKEW

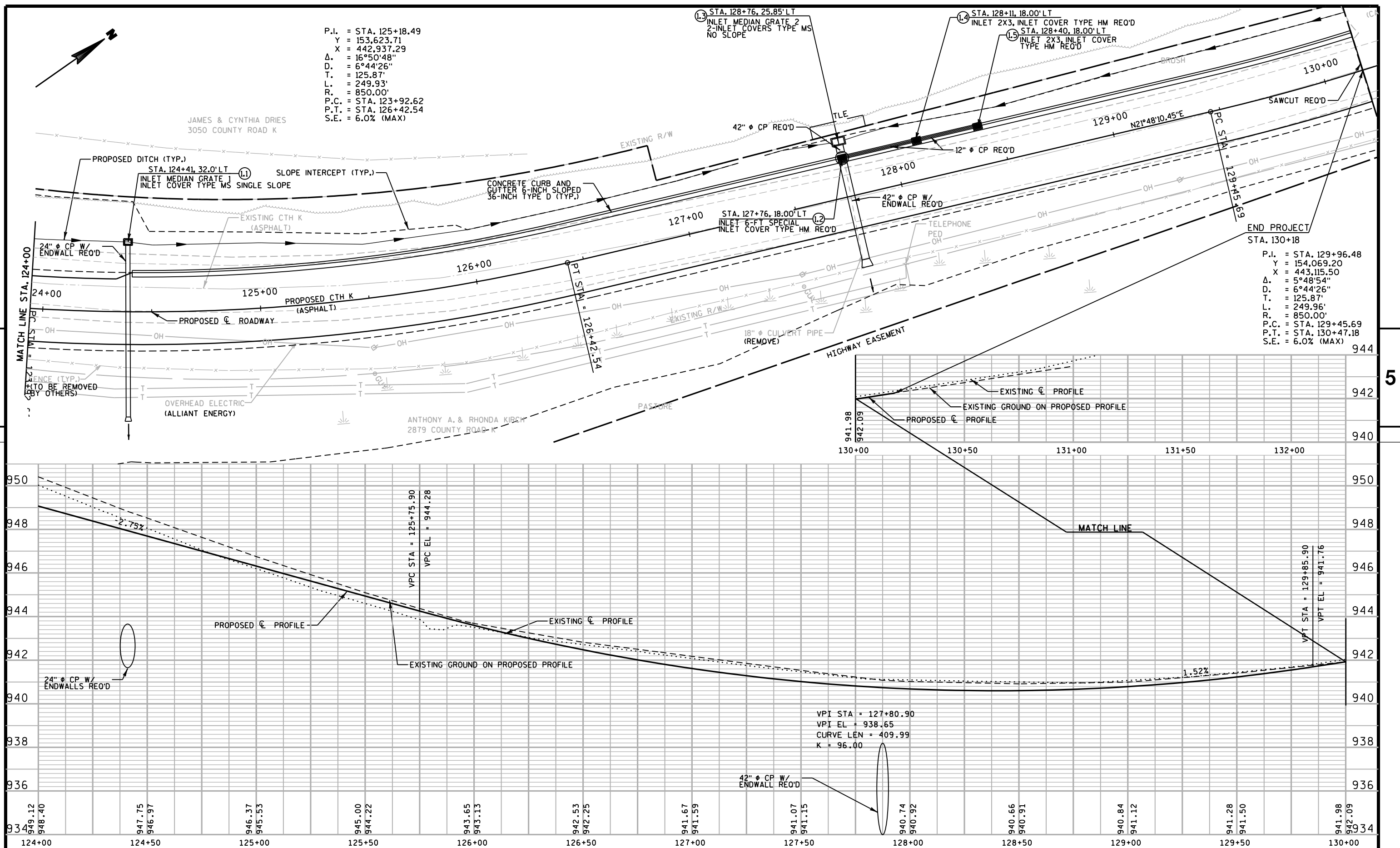


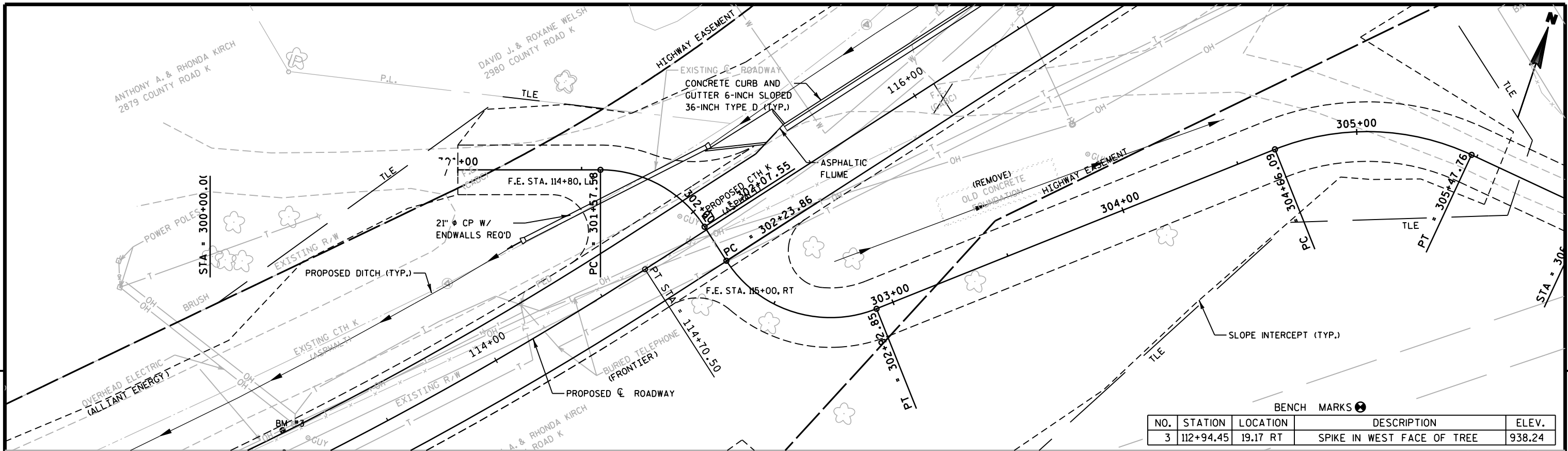
NO.	STATION	LOCATION	DESCRIPTION	ELEV.
3	112+94.45	19.17 RT	SPIKE IN WEST FACE OF TREE	938.24
4	116+15.14	70.76 LT	LATCH IN RET. WALL	971.14

P.I. = STA. 113+70.82
Y = 152,727.18
X = 442,220.33
Δ = 7°37'33"
D = 3°49'11"
T = 99.97'
L = 199.65'
R = 1500.00'
P.C. = STA. 112+70.85
P.T. = STA. 114+70.50
S.E. = 5.5% (MAX)

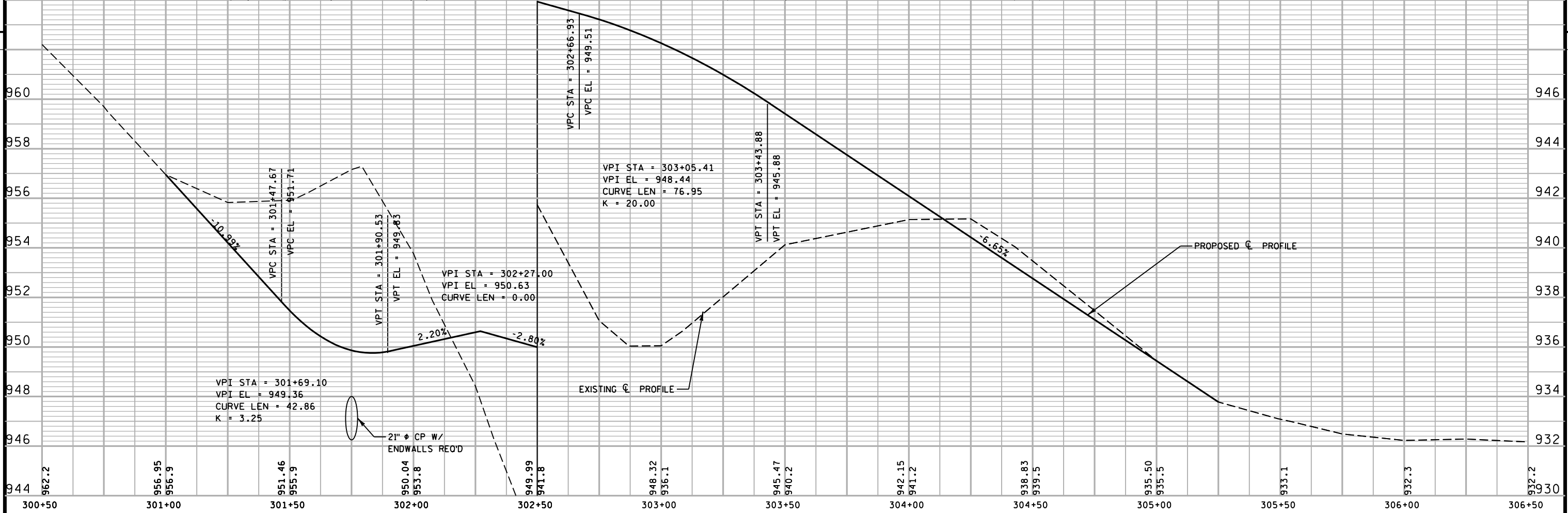






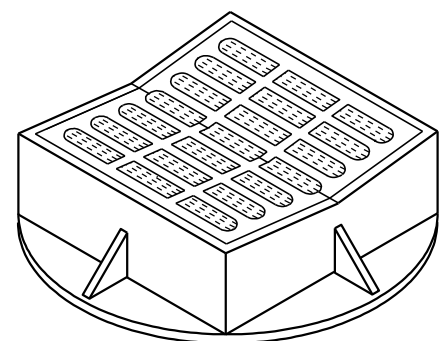
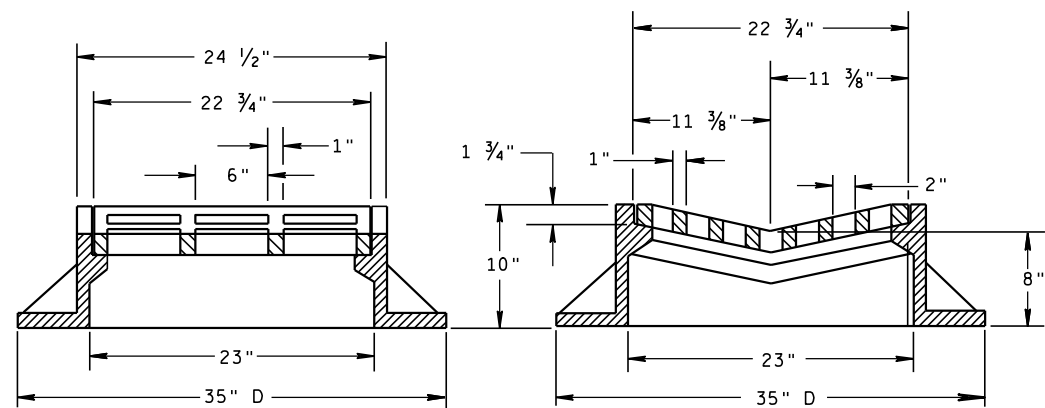


BENCH MARKS				
NO.	STATION	LOCATION	DESCRIPTION	ELEV.
3	112+94.45	19.17 RT	SPIKE IN WEST FACE OF TREE	938.24

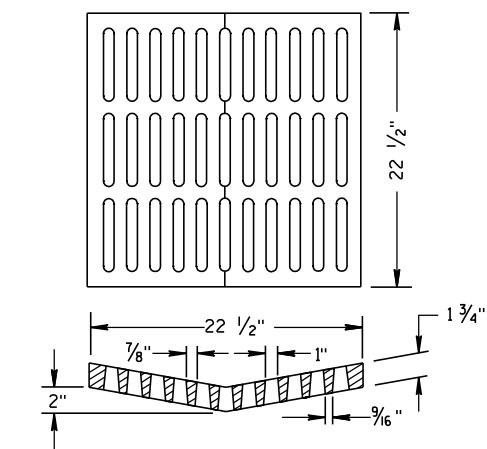


Standard Detail Drawing List

08A05-18B	INLET COVERS TYPE B, B-A, C, MS, MS-A, & WM
08A05-18C	INLET COVERS TYPE F, HM, HM-S, S, T, V, HM-GJ, & HM-GJ-S
08A08-01	CATCH BASINS 3-FT, 4-FT, 5-FT AND 6-FT DIAMETER
08C07-01	INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT
08C08-01	INLETS MEDIAN 1 AND 2 GRATE
08D01-17	CONCRETE CURB, CONCRETE CURB AND GUTTER AND TIES
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
08E14-01	TRACKING PAD
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
12A03-10	NAME PLATE (STRUCTURES)
14B15-07A	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-07B	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B18-06A	STEEL PLATE BEAM GUARD, CLASS "A" (AT BRIDGES, OBSTACLES AND SIDERoads/DRIVEWAYS)
14B42-02A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-02B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-02C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-01A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-01B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-01C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-02A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-02B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-02C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-02D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-02E	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-02F	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-02G	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-02H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-02I	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-02J	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15A01-11	MARKER POST FOR RIGHT-OF-WAY
15A03-01	MARKER POSTS, FLEXIBLE, FOR CULVERT END
15A04-01	FLEXIBLE DELINEATOR POST
15C02-04A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-04B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C04-01	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C12-03	TRAFFIC CONTROL FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)



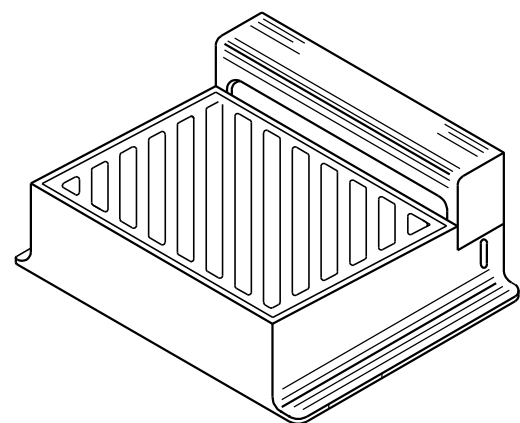
TYPE "B"
(APPROXIMATE WEIGHT 405 LBS.)
FRAME..... 294 LBS.
GRATE..... 111 LBS.



**ALTERNATIVE GRATE FOR
TYPE "B" COVER**

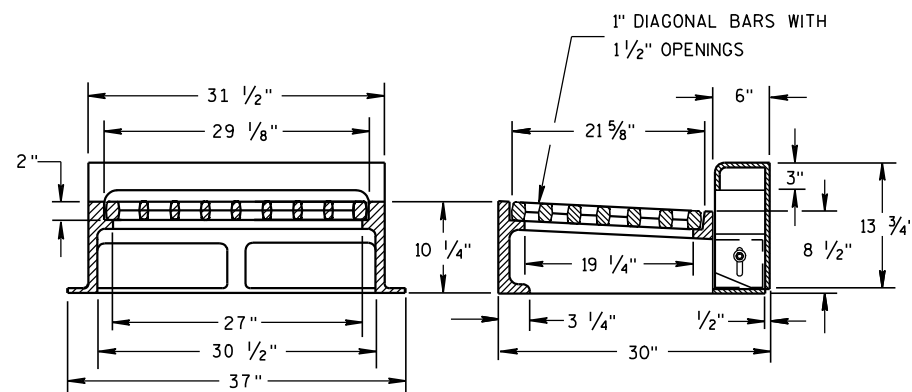
(APPROXIMATE GRATE WEIGHT 134 LBS.)

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



DIRECTION
OF FLOW

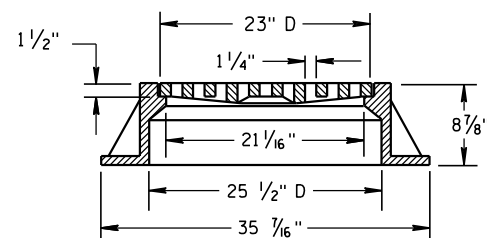
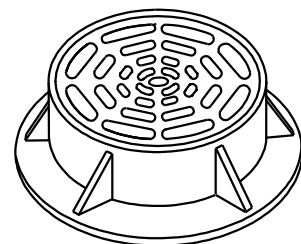
DIAGONAL SLOTS, SHALL BE ORIENTED
TO THE DIRECTION OF FLOW AS ILLUSTRATED.
GRATES ARE MANUFACTURED TO BE REVERSIBLE.



NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"

TYPE "WM"
(APPROXIMATE WEIGHT 648 LBS.)

FRAME..... 355 LBS.
GRATE..... 156 LBS.
CURB BOX..... 137 LBS.



TYPE "C"
(APPROXIMATE WEIGHT 259 LBS.)

FRAME..... 152 LBS.
GRATE..... 107 LBS.

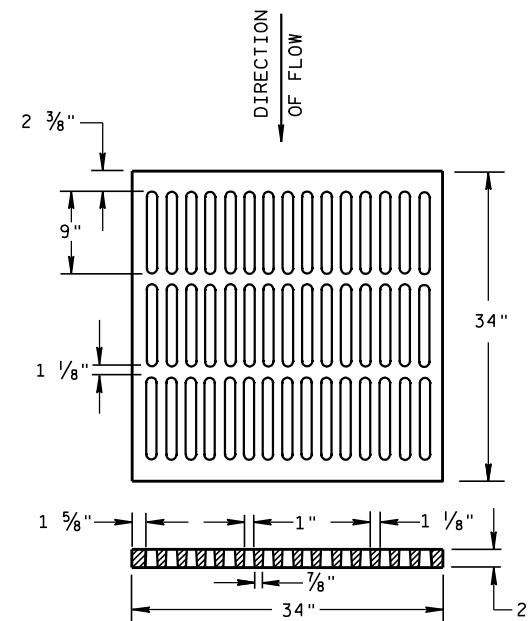
GENERAL NOTES

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

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

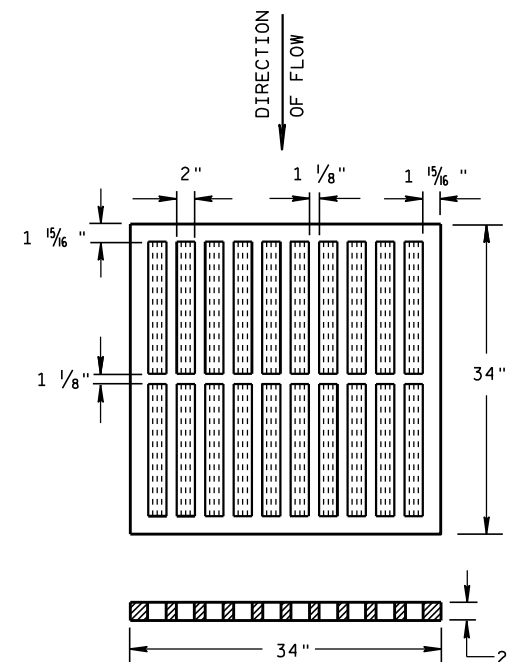
ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.

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



ALTERNATIVE TYPE "MS"
(APPROXIMATE GRATE WEIGHT 329 LBS.)

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



TYPE "MS"
(APPROXIMATE GRATE WEIGHT 268 LBS.)

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

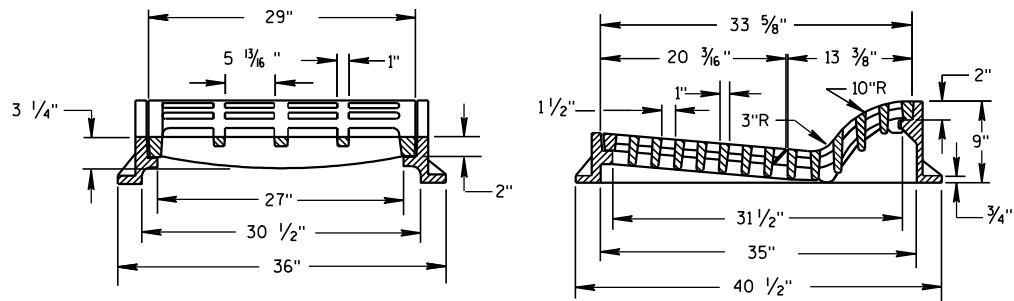
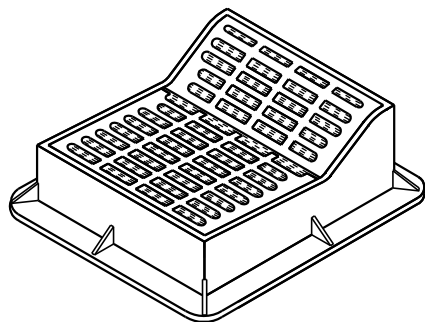
APPROVED

6/5/2012

DATE

FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

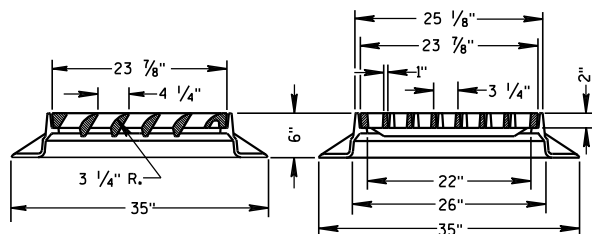
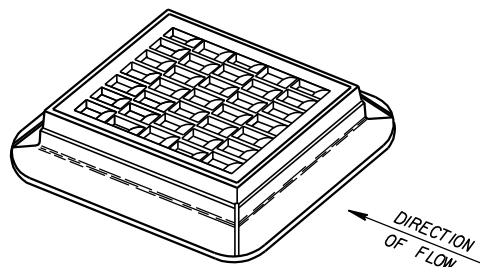


TYPE "F"

(APPROXIMATE WEIGHT 644 LBS.)

FRAME.....302 LBS.
GRATE.....160 LBS.
GRATE.....182 LBS.

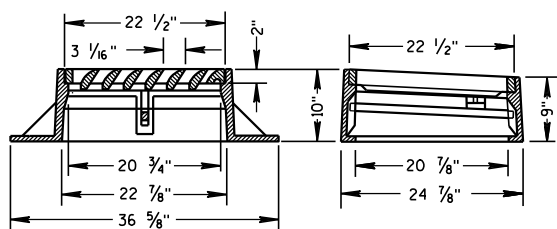
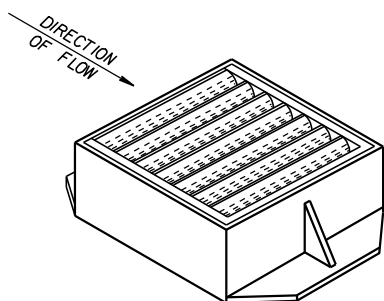
USE WITH TYPES A & D CONCRETE CURB & GUTTER, 36 INCH.



TYPE "S"

(APPROXIMATE WEIGHT 333 LBS.)

FRAME.....164 LBS.
GRATE.....169 LBS.



TYPE "V"

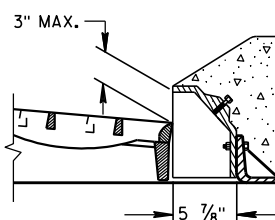
(APPROXIMATE WEIGHT 410 LBS.)

FRAME.....269 LBS.
GRATE.....136 LBS.
SAFETY BAR.....5 LBS.

**ALTERNATIVE CURB BOX
FOR TYPE "HM" COVER**

(APPROXIMATE WEIGHT CURB BOX 68 LBS.)

USE WITH TYPES G & J CONCRETE CURB & GUTTER, 30 INCH
NOTED AS TYPE HM-GJ ON DRAINAGE TABLE



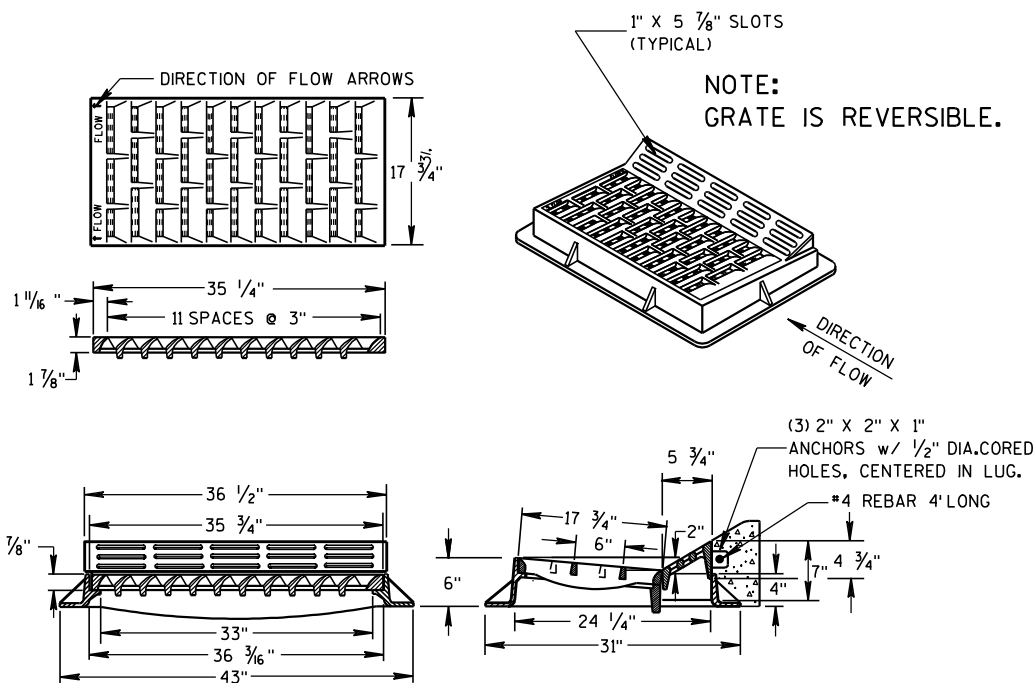
NOTE:
SPECIAL GRATE FOR THE
TYPE "H" COVER MAY ALSO BE
USED FOR THE TYPE "HM-GJ" COVER
NOTED AS TYPE HM-GJ-S ON DRAINAGE TABLE

GENERAL NOTES

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

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

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



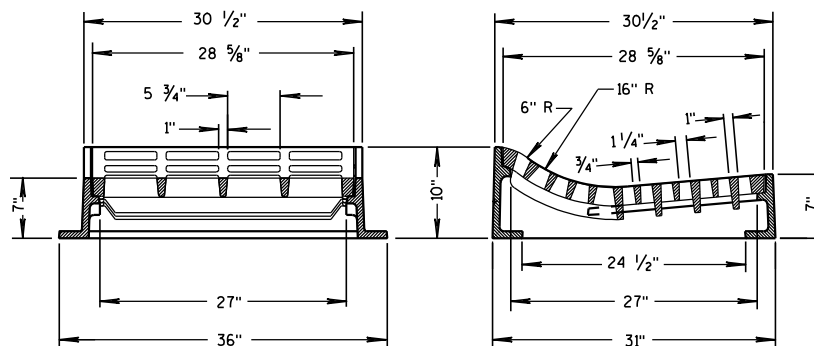
TYPE "HM"

(APPROXIMATE WEIGHT 414 LBS.)

FRAME.....181 LBS.
GRATE.....159 LBS.
CURB BOX.....74 LBS.

USE WITH TYPES A & D CONCRETE CURB & GUTTER, 36 INCH.

NOTE:
SPECIAL GRATE FOR THE
TYPE "H" COVER MAY ALSO BE
USED FOR THE TYPE "HM" COVER
NOTED AS TYPE HM-S ON DRAINAGE TABLE

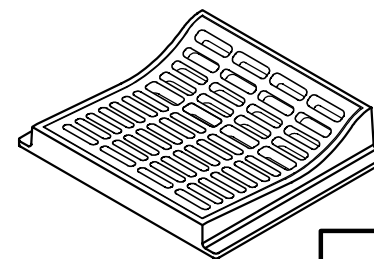


TYPE "T"

(APPROXIMATE WEIGHT 530 LBS.)

FRAME.....270 LBS.
GRATE.....260 LBS.

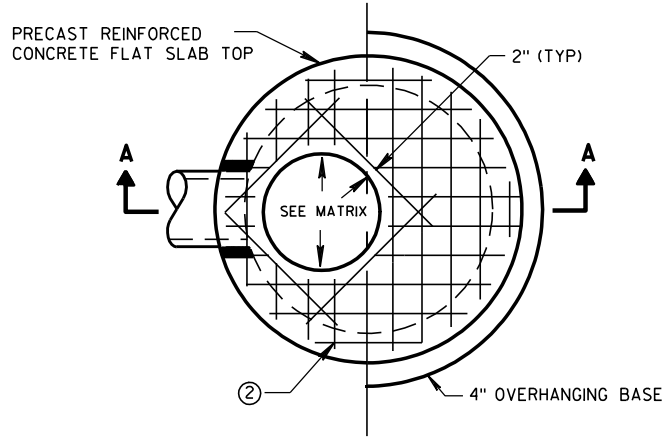
USE WITH TYPES R & T CONCRETE CURB & GUTTER, 36 INCH.



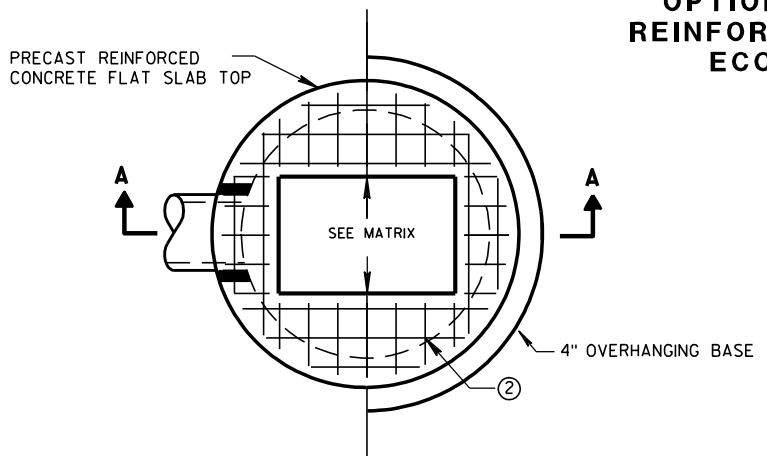
INLET COVERS
TYPE F, HM, HM-S, S, T, V,
HM-GJ, & HM-GJ-S

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

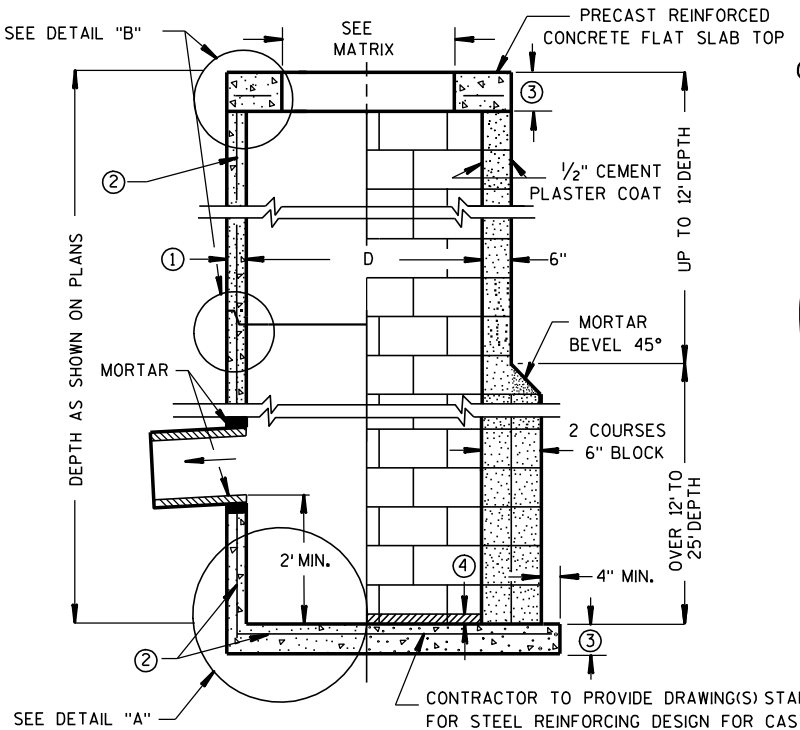
APPROVED
6/5/2012 /S/ Jerry H. Zogg
DATE ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA



PLAN VIEW CIRCULAR OPENING

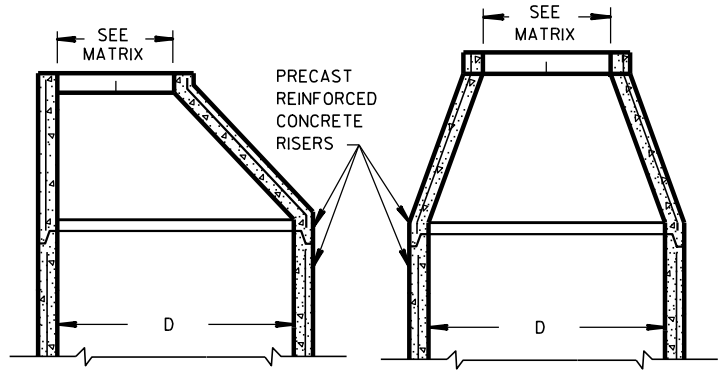


PLAN VIEW RECTANGULAR OPENING



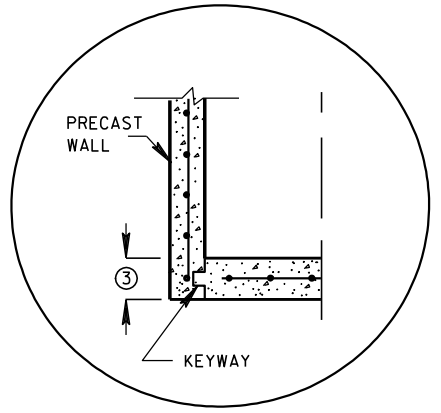
SECTION A-A

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

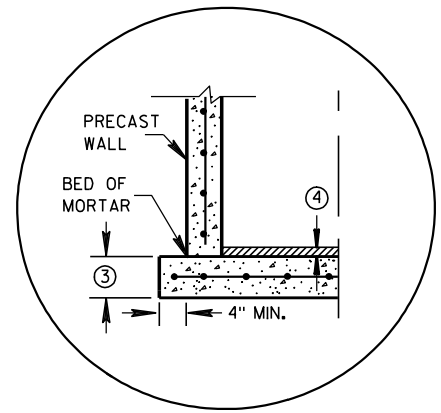


OPTIONAL PRECAST REINFORCED CONCRETE ECCENTRIC TOP

OPTIONAL PRECAST REINFORCED CONCRETE CONCENTRIC TOP

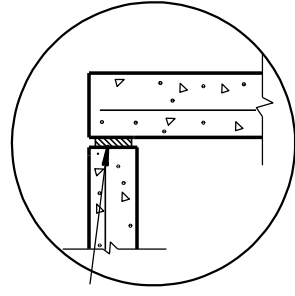


PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION

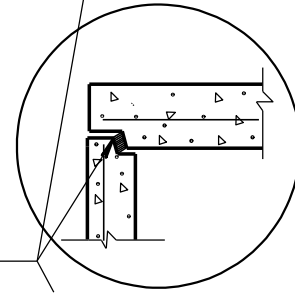


SEPERATE PRECAST REINFORCED CONCRETE BASE OPTION

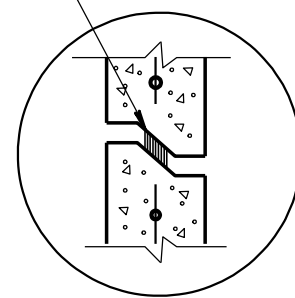
DETAIL "A"



TOP WITH PLAIN END JOINT

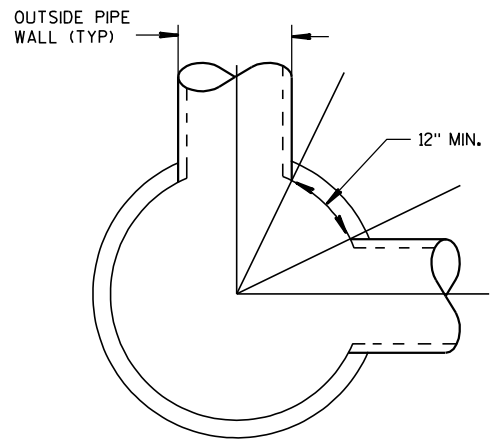


TOP WITH TONGUE AND GROOVE JOINT



RISER WITH TONGUE AND GROOVE JOINT

DETAIL "B"



DETAIL "C"

CATCH BASINS 3-FT, 4-FT, 5-FT AND 6-FT DIAMETER

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS. UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST CATCH BASIN UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

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

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

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

PRECAST REINFORCED CONCRETE CONE TOPS (ECCENTRIC OR CONCENTRIC) OR PRECAST REINFORCED CONCRETE FLAT SLAB TOPS MAY BE USED ON CONCRETE BLOCK STRUCTURES. THE TOPS SHALL BE INSTALLED ON A BED OF MORTAR.

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

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

STEPS OF APPROVED POLYPROPYLENE PLASTIC COATED REINFORCEMENT BAR ARE ACCEPTABLE. REINFORCING BAR MUST BE A MINIMUM OF 1/2 INCH AND MEET THE REQUIREMENTS OF ASTM A615.

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

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

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M199.

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

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

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

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

- ① MINIMUM WALL THICKNESS SHALL BE 4 INCHES FOR 3-FT, 5 INCHES FOR 4-FT, 6 INCHES FOR 5-FT AND 7 INCHES FOR 6-FT DIAMETER PRECAST CATCH BASINS.
- ② FOR PRECAST CATCH BASINS PROVIDE REINFORCING STEEL IN ACCORDANCE TO AASHTO M199.
- ③ PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER OF 48" AND LESS SHALL HAVE A MINIMUM THICKNESS OF 6". PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER LARGER THAN 48" SHALL HAVE A MINIMUM THICKNESS OF 8".
- ④ 1" CONCRETE KEY POURED AFTER INSTALLATION. 2" SUMP MEASURED FROM TOP OF KEY.

CATCH BASIN COVER OPENING MATRIX

CATCH BASIN SIZE	INLET COVER TYPE	ALL A'S	ALL B'S	BW	C	F	ALL H'S	S	T	V	WM	Z
3-FT	2X2	X	X					X		X		
	2 DIA.				X							X
	2X2	X	X					X		X		
4-FT-6-FT	2X2.5			X				X	X	X	X	
	2 DIA.				X							X
	2X3						X					
	2.5X3					X						

PIPE MATRIX

CATCH BASIN SIZE	MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES	
	180° SEPARATION (IN)	90° SEPARATION (IN)
3-FT	15	12
4-FT	24	18
5-FT	36	24
6-FT	42	30

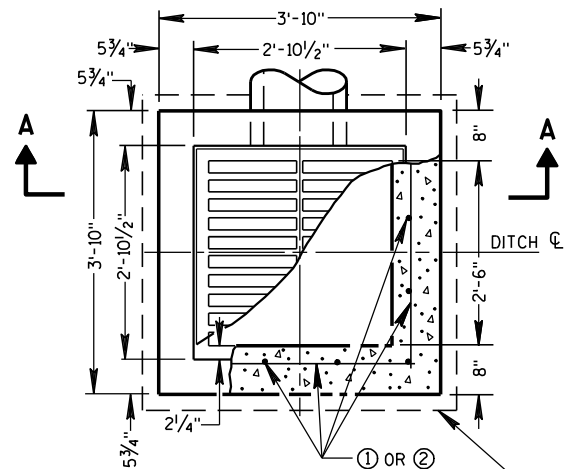
CATCH BASINS 3-FT, 4-FT, 5-FT AND 6-FT DIAMETER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

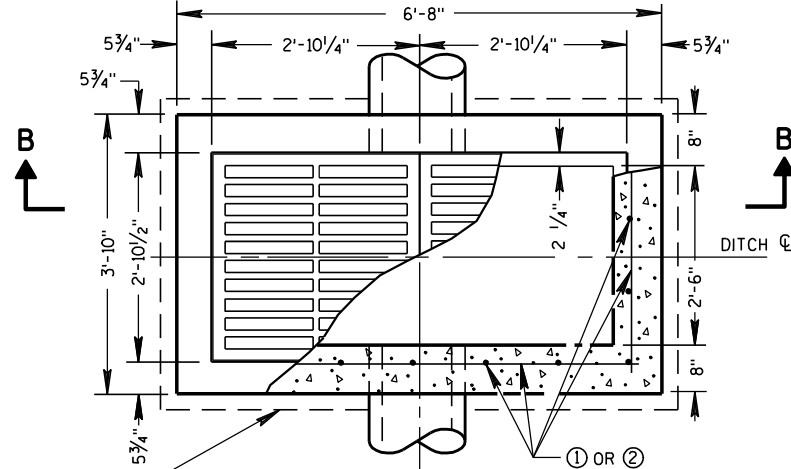


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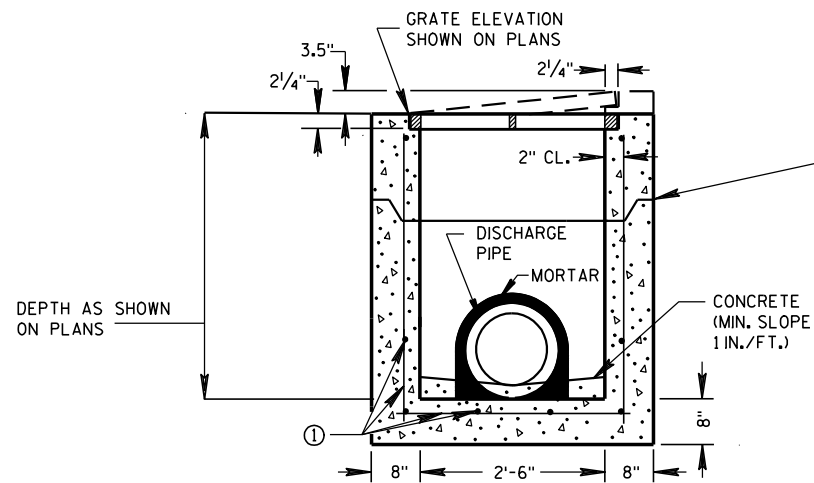


PLAN VIEW

4" OVERHANGING BASE ON REINFORCED CAST-IN-PLACE CONCRETE INLETS



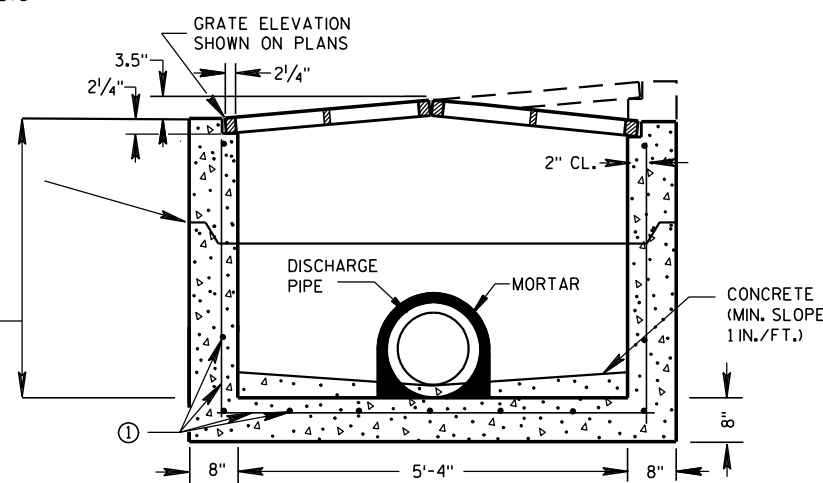
PLAN VIEW



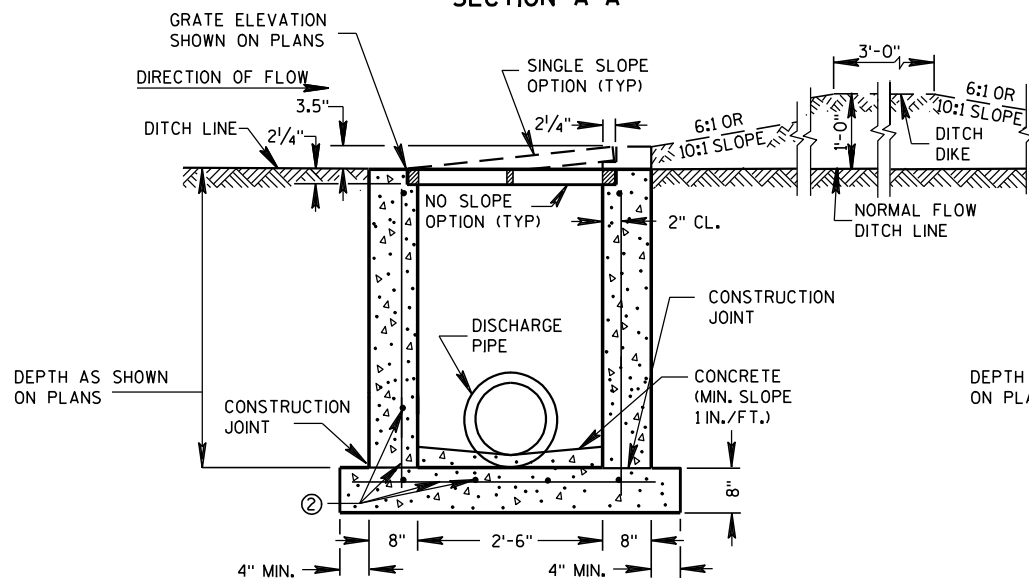
PRECAST REINFORCED CONCRETE SECTION A-A

DEPTH AS SHOWN ON PLANS

SEE DETAIL "B"

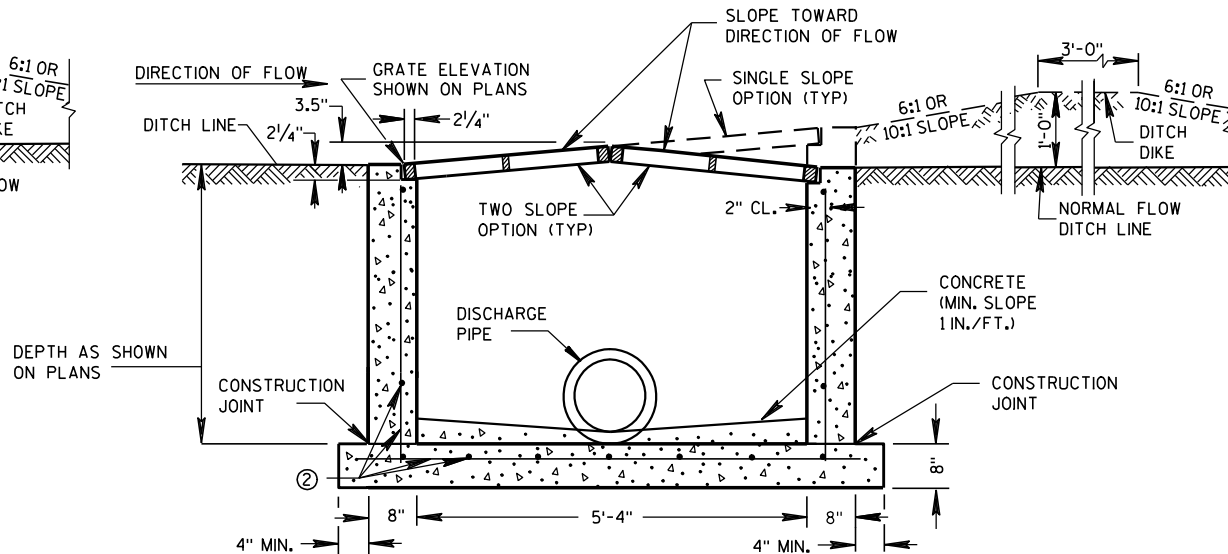


PRECAST REINFORCED CONCRETE SECTION B-B



REINFORCED CAST-IN-PLACE CONCRETE SECTION A-A

INLETS MEDIAN 1 GRATE



REINFORCED CAST-IN-PLACE CONCRETE SECTION B-B

INLETS MEDIAN 2 GRATE

GENERAL NOTES

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

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

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR INLETS WHICH MAY INCLUDE PRECAST REINFORCED CONCRETE INLETS, SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL MEDIAN INLETS ARE DESIGNATED ON THE PLANS AS "INLETS, IG-MS", ETC. THE FIRST NUMBER AND LETTER DESIGNATE THE TYPE OF STRUCTURE, AND THE FOLLOWING LETTERS DESIGNATE THE TYPE OF COVER TO BE USED TO COMPRISE THE COMPLETE UNIT.

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

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

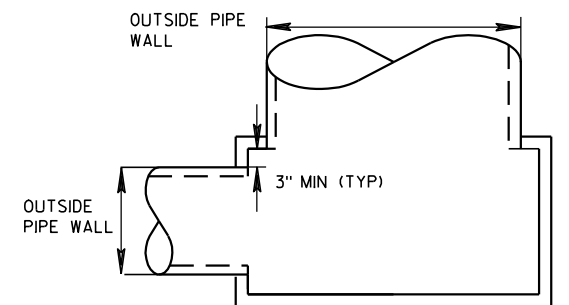
ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF ASTM C 913.

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

- ① FOR PRECAST INLETS PROVIDE REINFORCING STEEL IN ACCORDANCE TO ASTM C 913.
- ② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

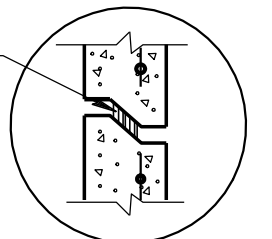
PIPE MATRIX

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



DETAIL "A"

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



DETAIL "B"

INLETS MEDIAN 1 AND 2 GRATE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6/5/2012

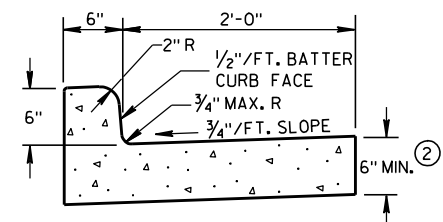
DATE

FHWA

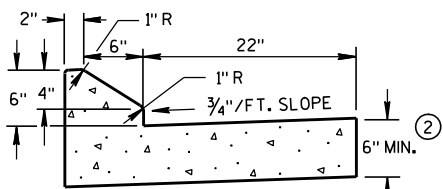
/s/ Jerry H. Zogg

ROADWAY STANDARDS DEVELOPMENT

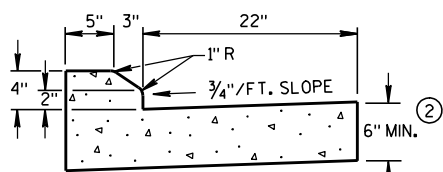
ENGINEER



TYPES A & D ①

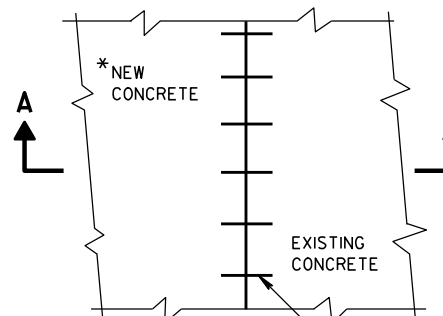


6" SLOPED CURB TYPES G & J ①



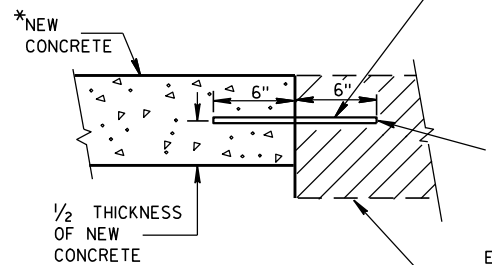
4" SLOPED CURB TYPES G & J ①

CONCRETE CURB & GUTTER 30"



PLAN VIEW

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

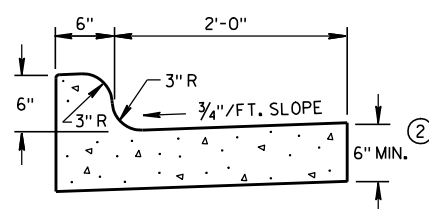


SECTION A-A
TIE BARS DRILLED
INTO EXISTING PAVEMENT

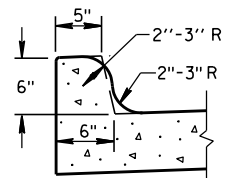
NO. 6 TIE BARS SPACED 2'-6" C-C,
INSTALLED PERPENDICULAR
TO THE LONGITUDINAL JOINT.

MAXIMUM DRILL HOLE
SIZE IS 1/8" GREATER
THAN TIE BAR DIAMETER

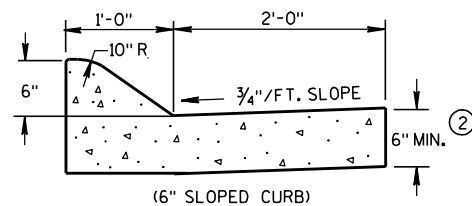
EXISTING
CONCRETE



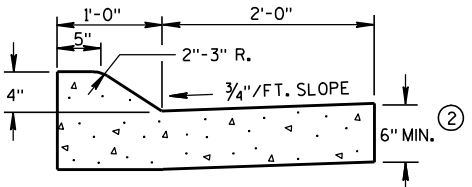
TYPES K & L ①



OPTIONAL CURB SHAPE
FOR TYPES K & L ①

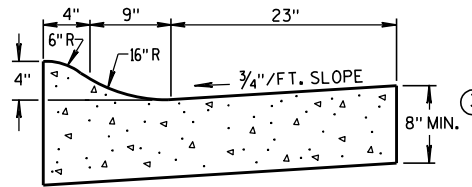


(6" SLOPED CURB)

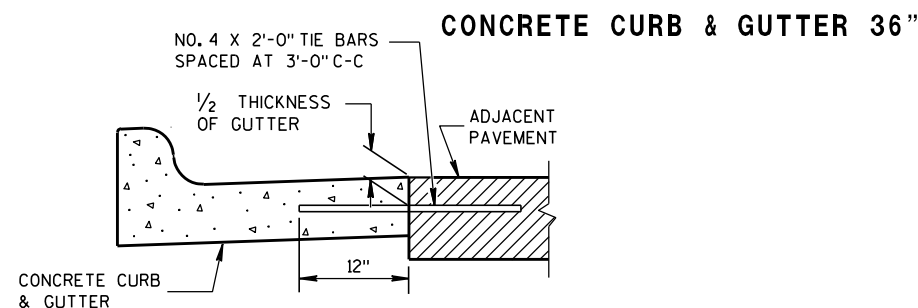


(4" SLOPED CURB)

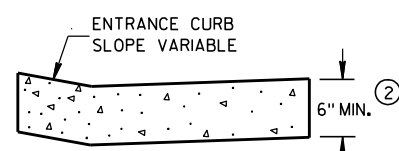
TYPES A & D ①



4" SLOPED CURB TYPES R & T ① ④

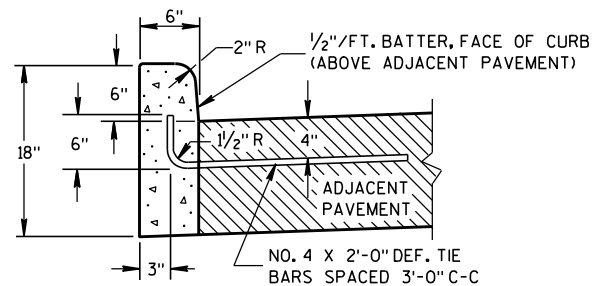


TYPICAL TIE BAR LOCATION ①



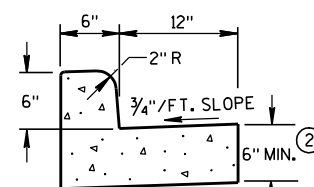
DRIVEWAY ENTRANCE CURB

(WHEN DIRECTED BY THE ENGINEER)

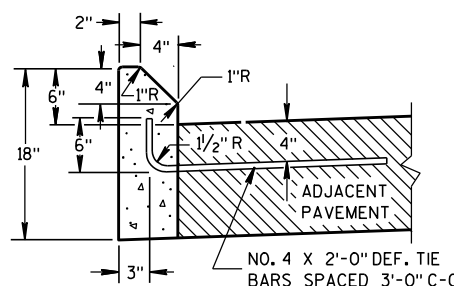


TYPES A & D ①

CONCRETE CURB



TYPES A & D
CONCRETE CURB & GUTTER 18"



TYPES G & J ①

GENERAL NOTES

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

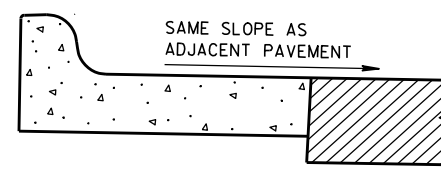
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

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

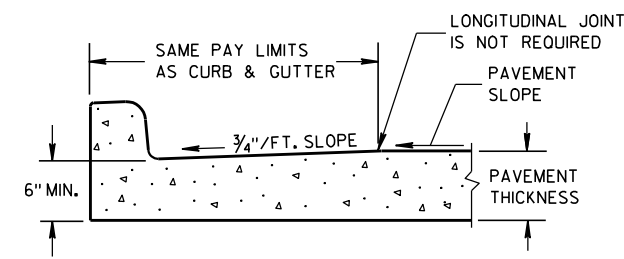
WHERE THE TRANSVERSE JOINTS IN THE PAVEMENT ARE REQUIRED TO BE SEALED, THE JOINTS IN THE INTEGRAL CURB AND GUTTER SHALL BE SEALED TO THE FACE OF CURB WITH THE SAME TYPE OF SEALANT. THE COST OF FURNISHING AND INSTALLING THIS SEALANT SHALL BE INCIDENTAL TO THE ITEM CONCRETE CURB AND GUTTER.

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

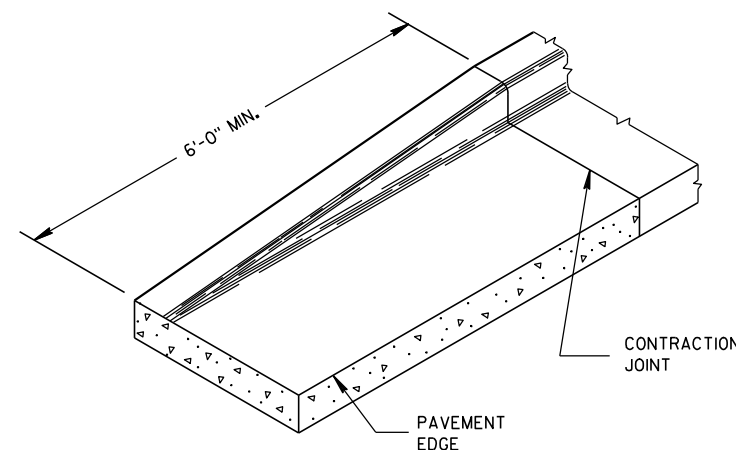
- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, G, K AND R.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ③ THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ④ THE FACE OF CURB IS 6" FROM THE BACK OF CURB.
- ⑤ WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.



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



PARTIAL SECTION OF PAVEMENT
WITH INTEGRAL CURB & GUTTER



END SECTION CURB & GUTTER

CONCRETE CURB, CONCRETE
CURB & GUTTER AND TIES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

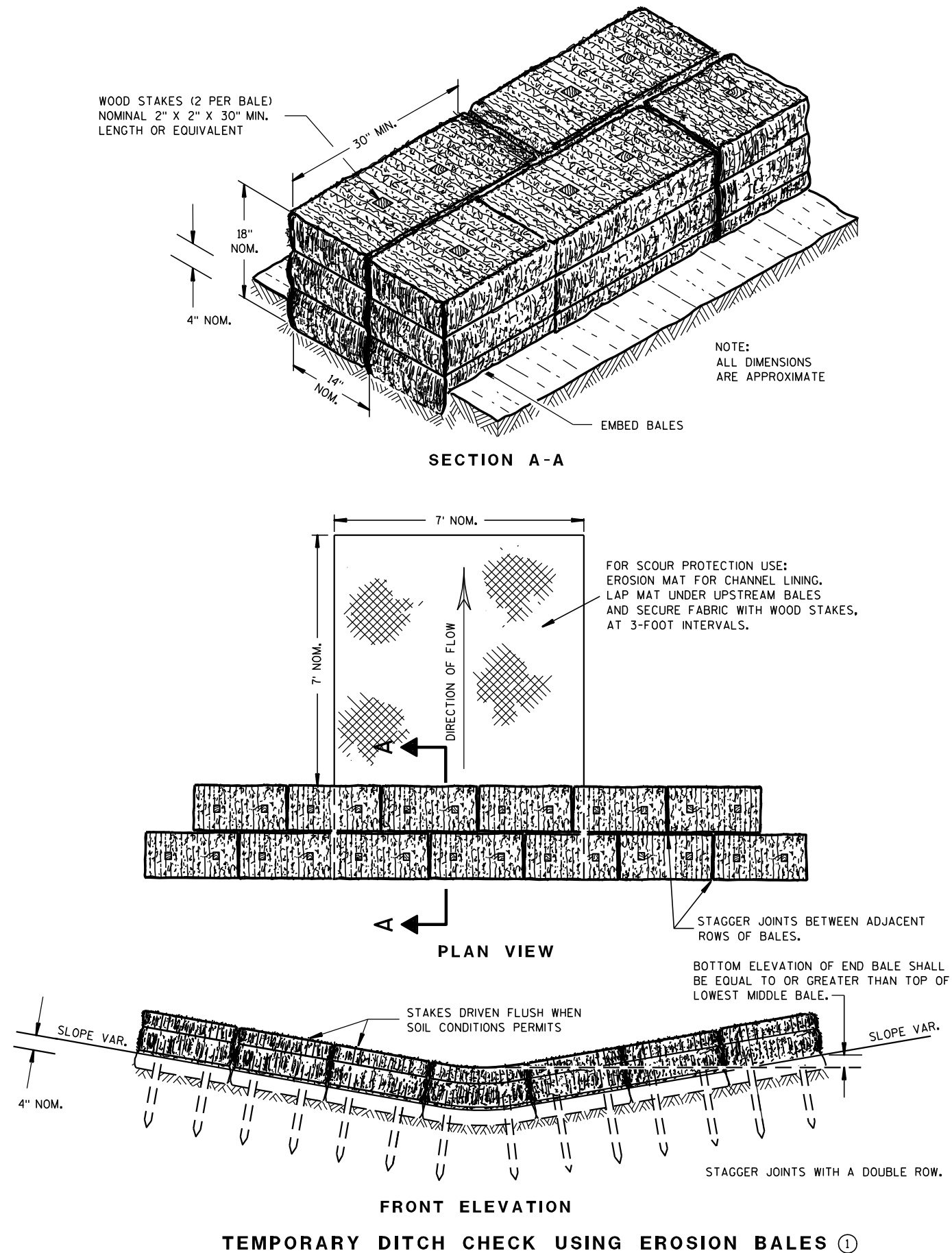
APPROVED

9/4/08

DATE

FHWA

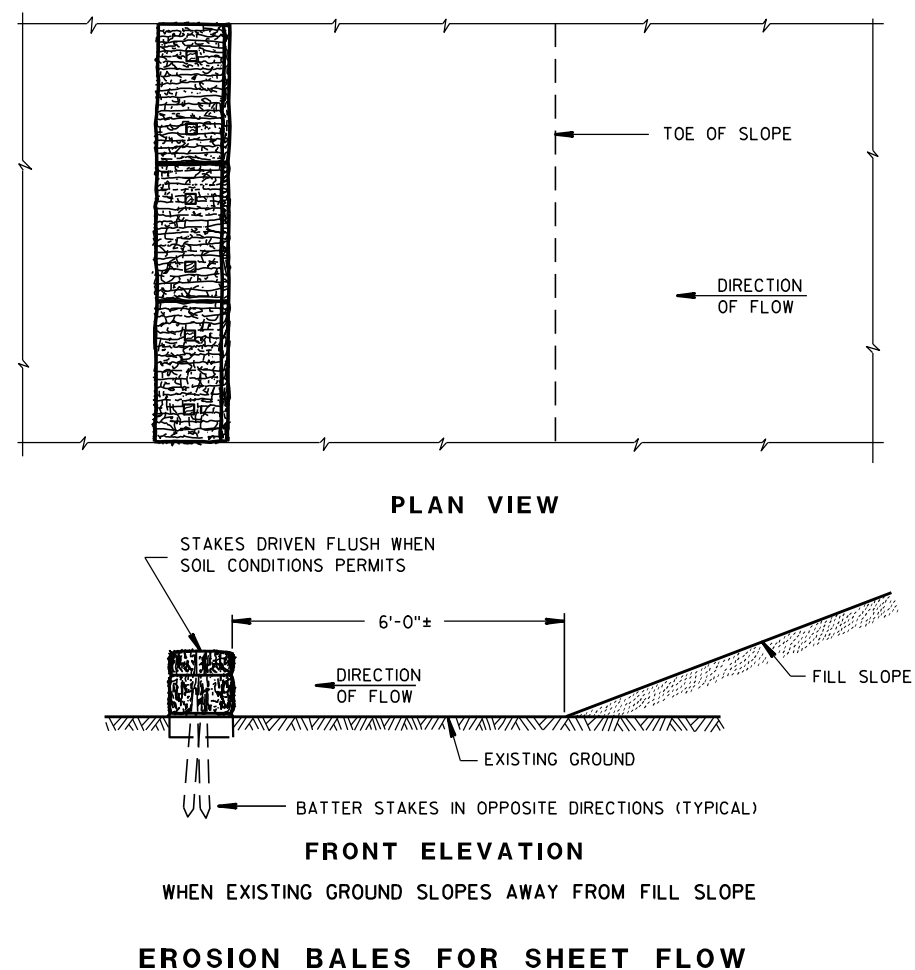
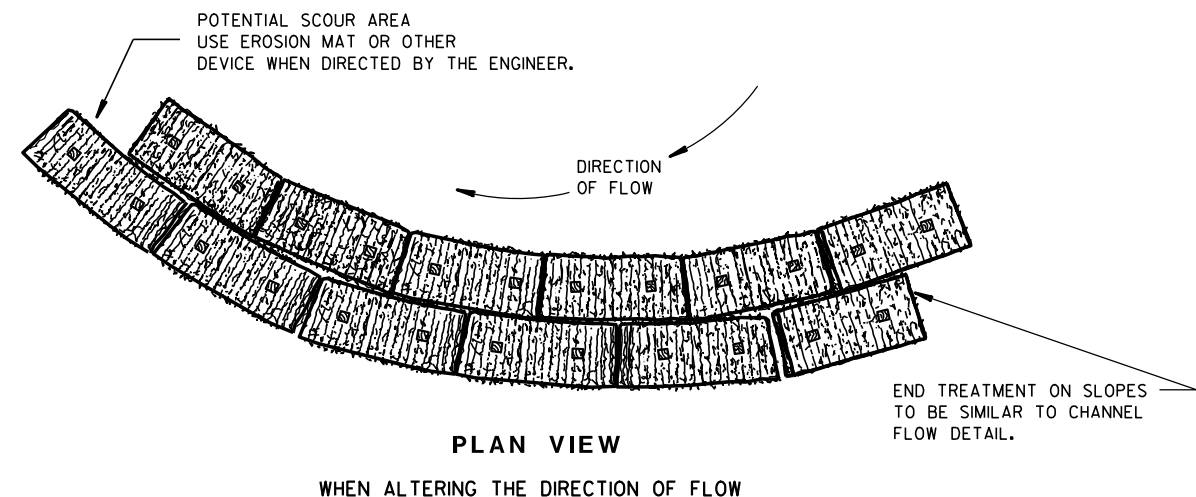
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER



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

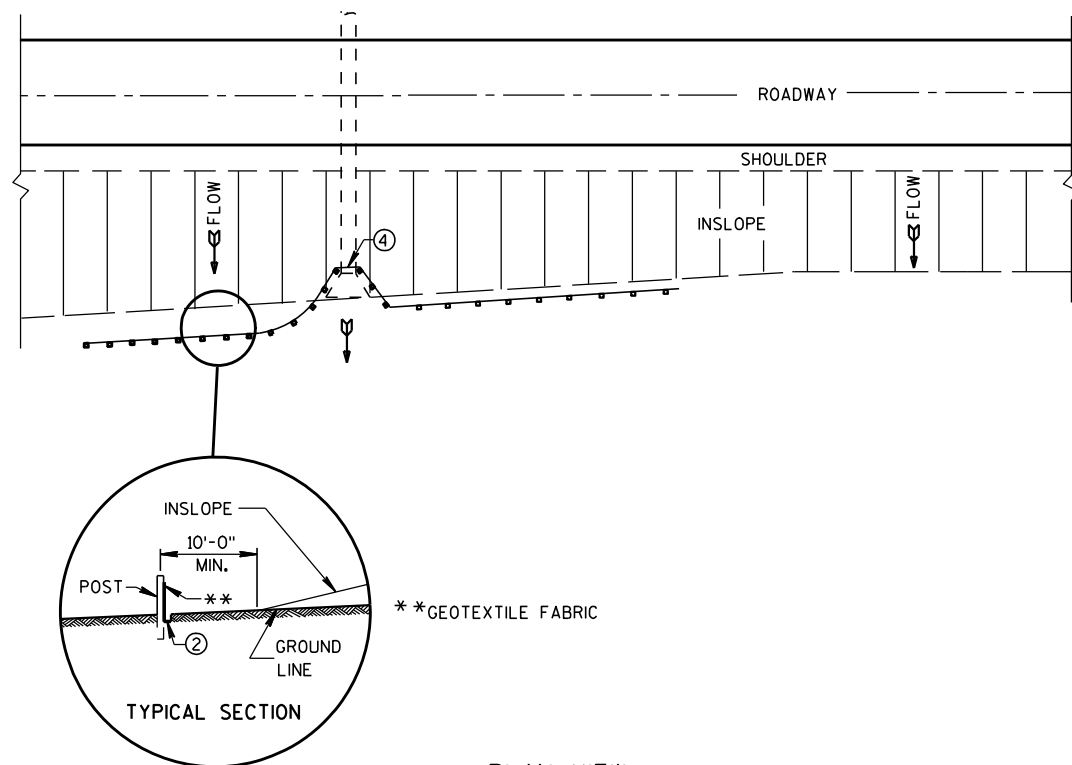
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02
DATE

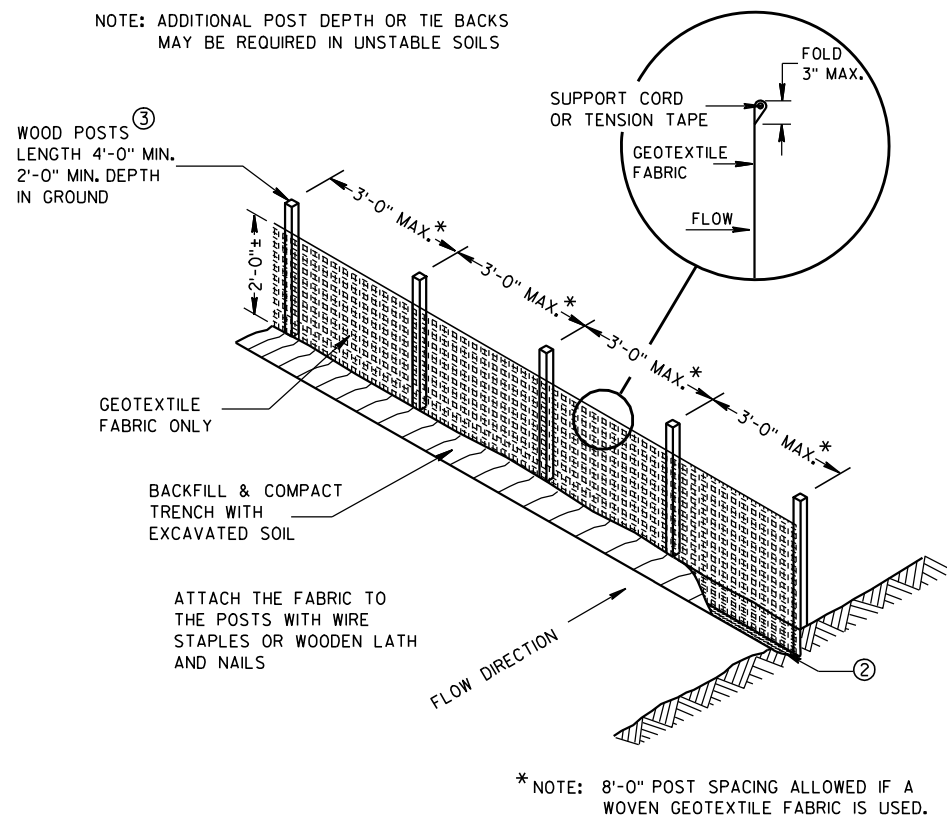
FHWA

/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT ENGINEER

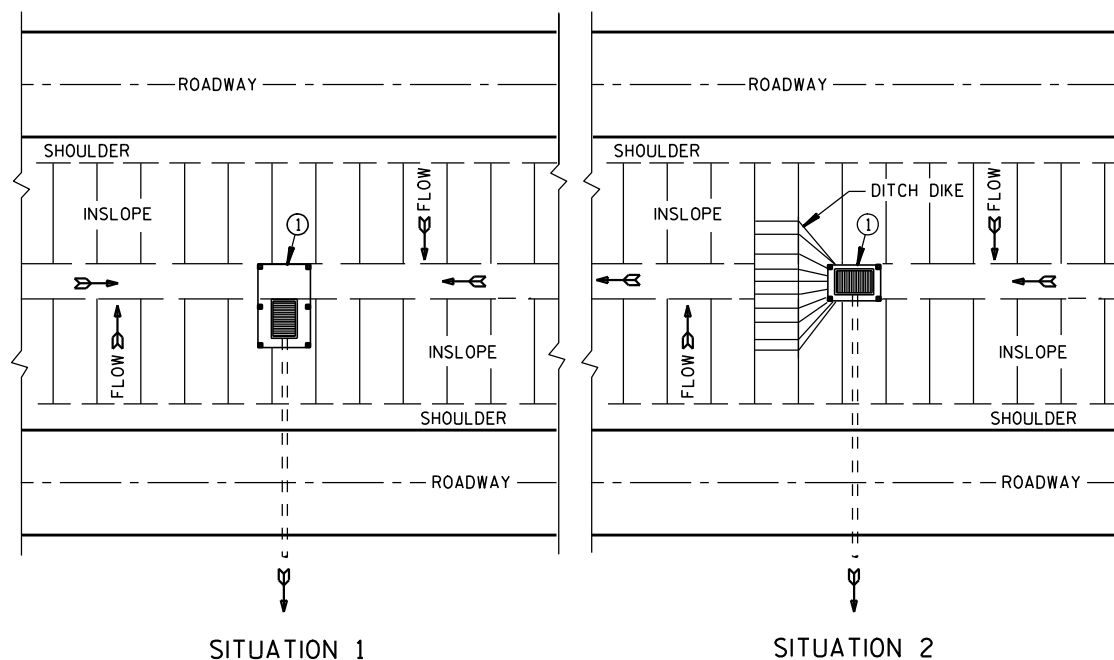


TYPICAL APPLICATION OF SILT FENCE

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

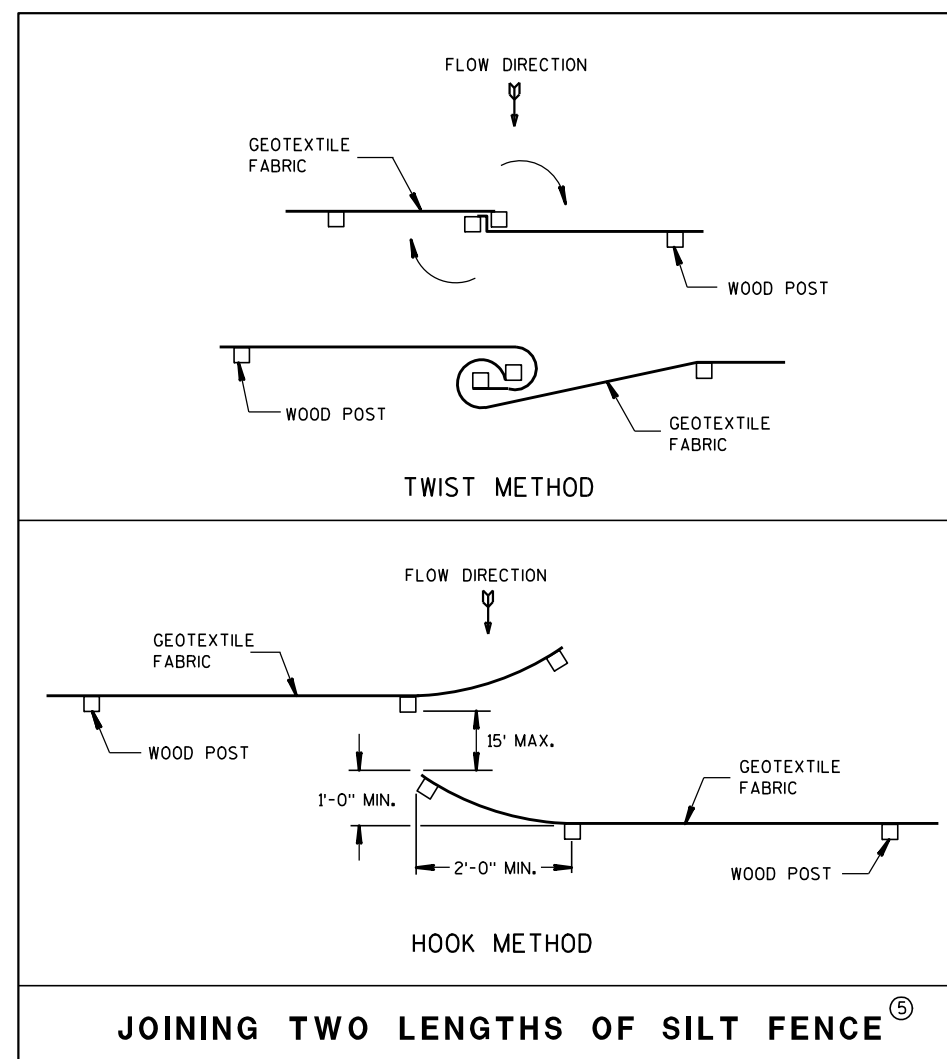


SILT FENCE



PLAN VIEW

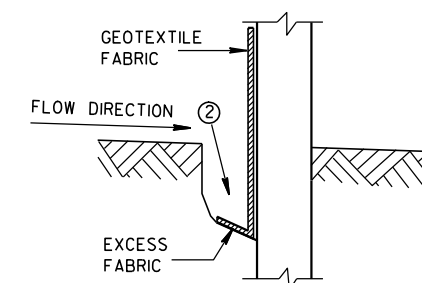
SILT FENCE AT MEDIAN SURFACE DRAINS



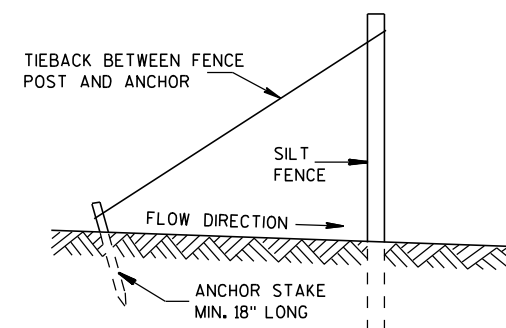
GENERAL NOTES

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

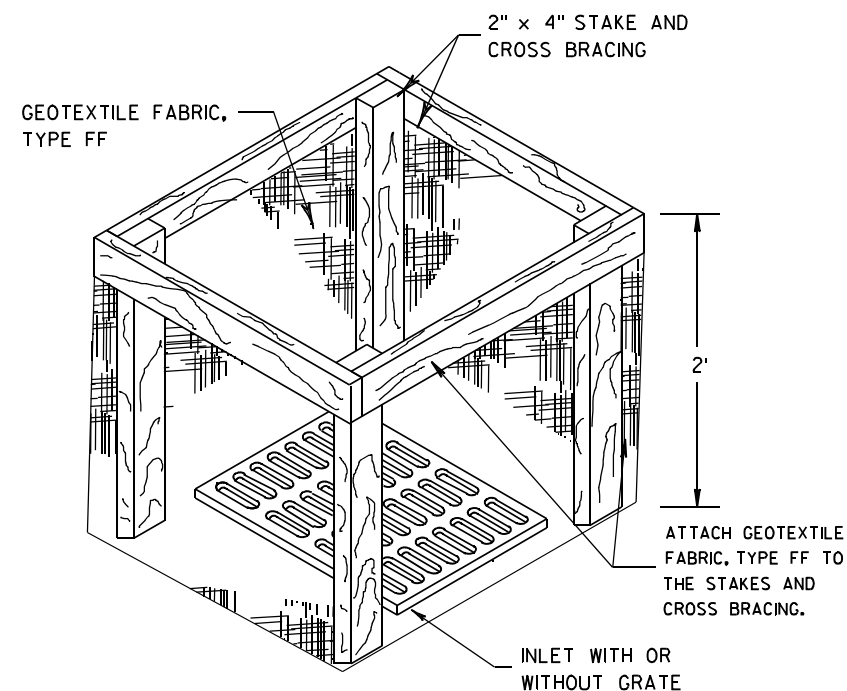
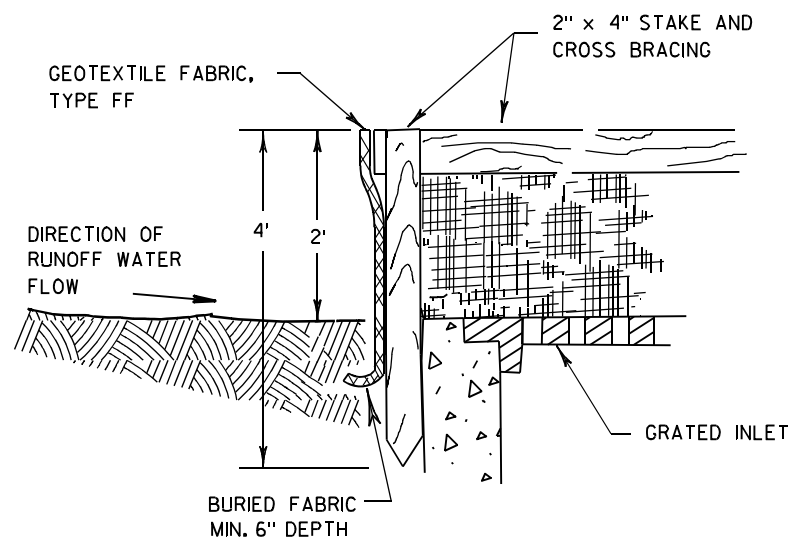
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

4-29-05
DATE

FHWA

/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER



INLET PROTECTION, TYPE A

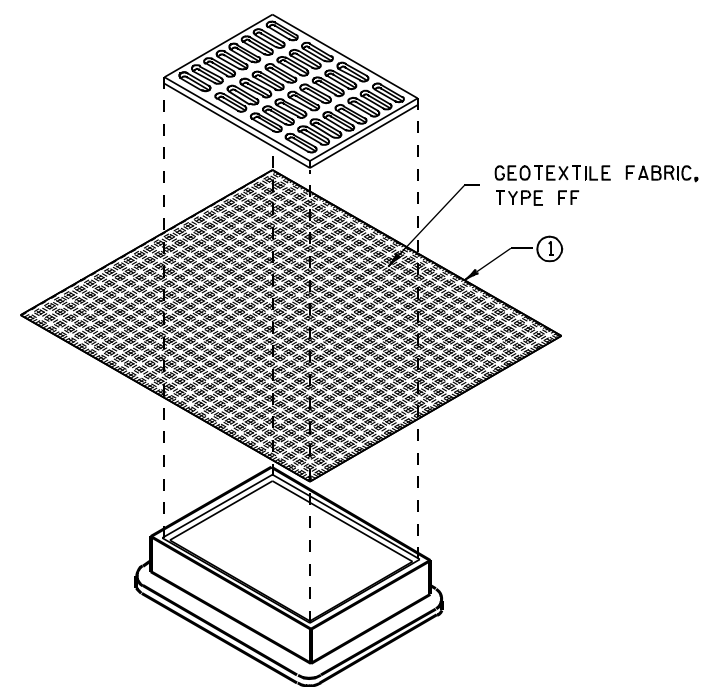
GENERAL NOTES

INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER.

MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENT'S EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.

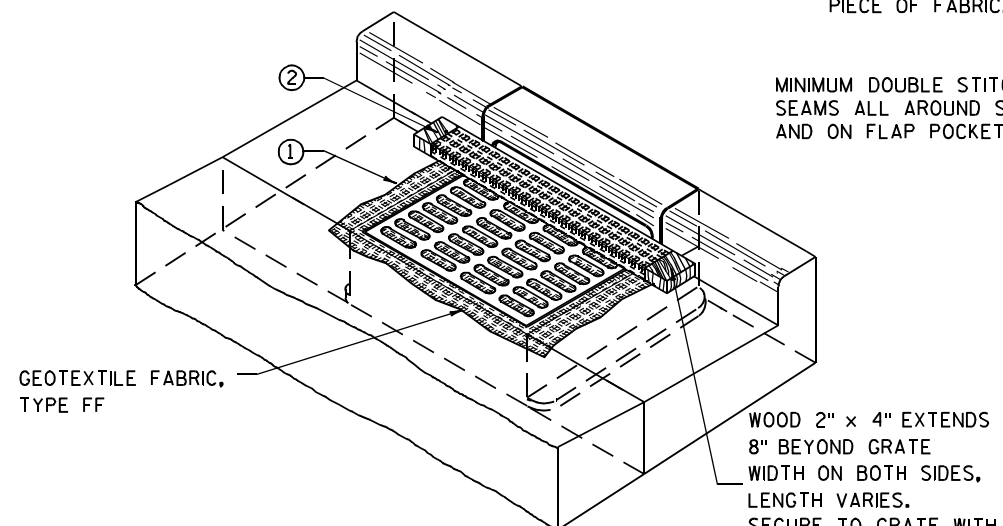
WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

- ① FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
- ② FOR INLET PROTECTION, TYPE C (WITH CURB BOX), AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.
- ③ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2X4.



**INLET PROTECTION, TYPE B
(WITHOUT CURB BOX)**

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



INLET PROTECTION, TYPE C (WITH CURB BOX)

INSTALLATION NOTES

TYPE B & C

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

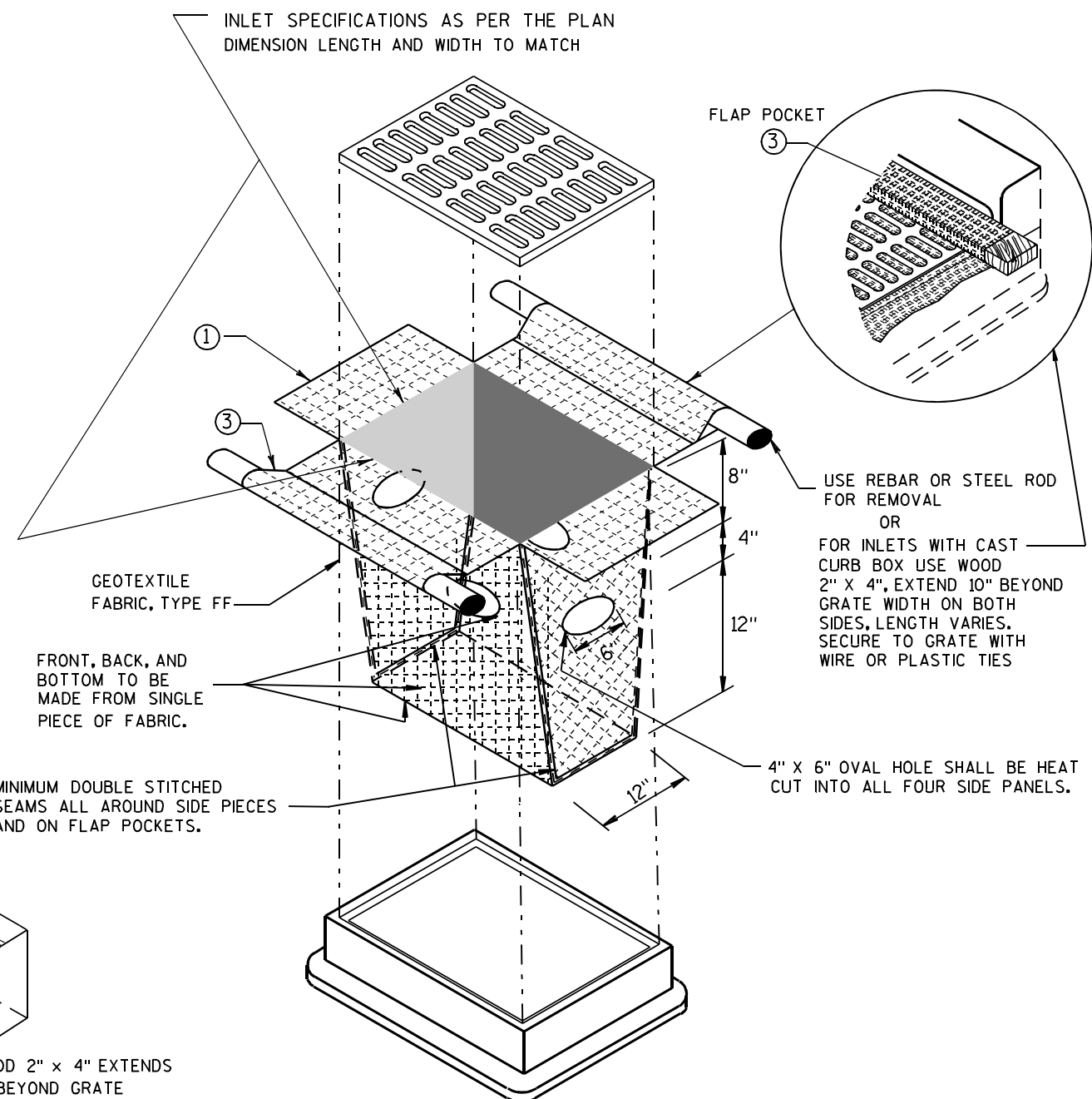
THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

TYPE D

DO NOT INSTALL INLET PROTECTION TYPE D IN INLETS SHALLower THAN 30", MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.

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

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



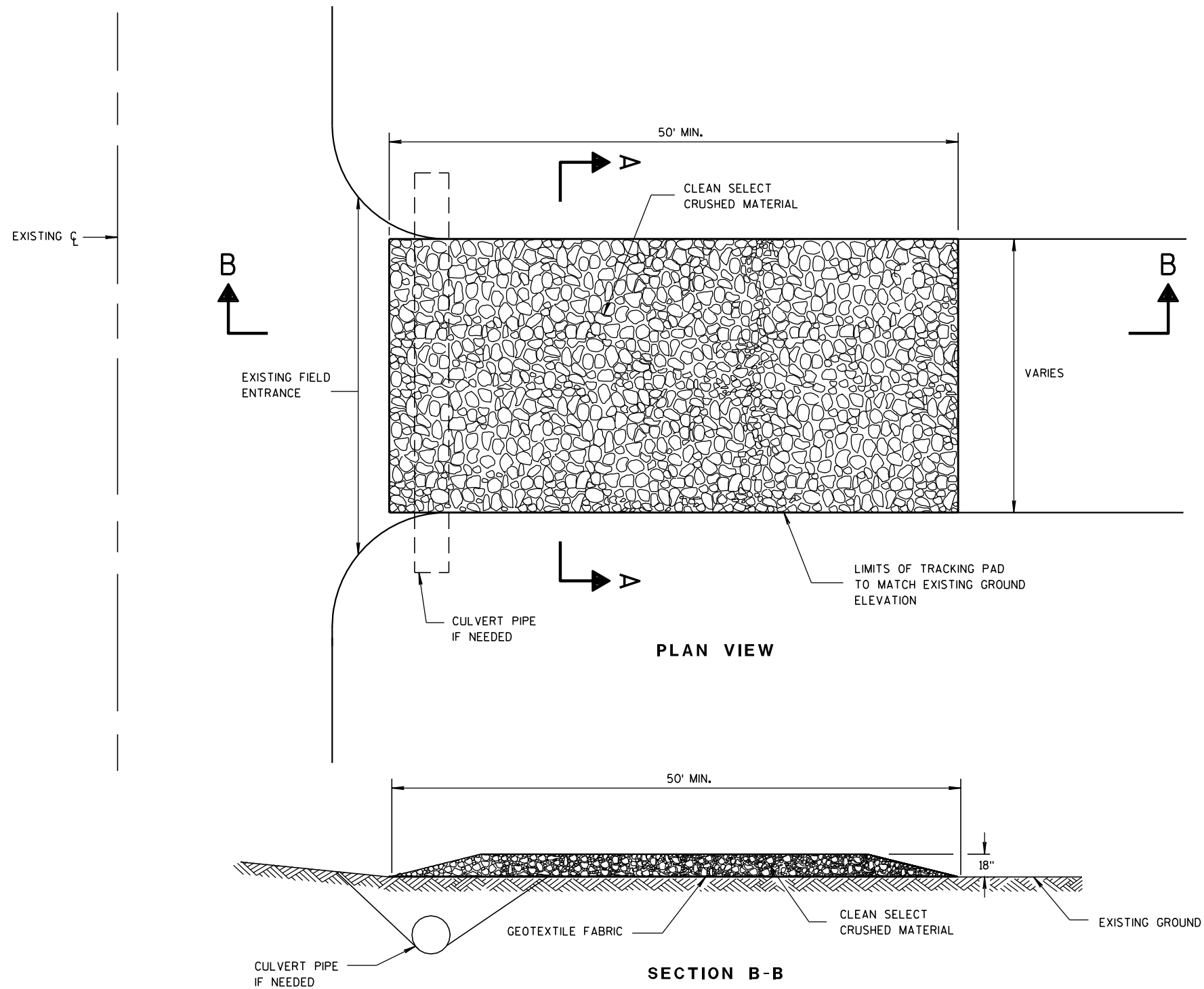
INLET PROTECTION, TYPE D

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

**INLET PROTECTION
TYPE A, B, C, AND D**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



TRACKING PAD

GENERAL NOTES

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

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

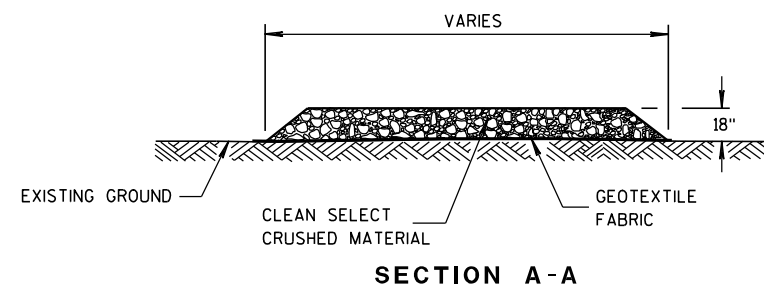
TRACKING PAD TO BE REMOVED AFTER CONSTRUCTION IS COMPLETED.

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

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

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

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



TRACKING PAD

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

3/24/2011

DATE

FHWA

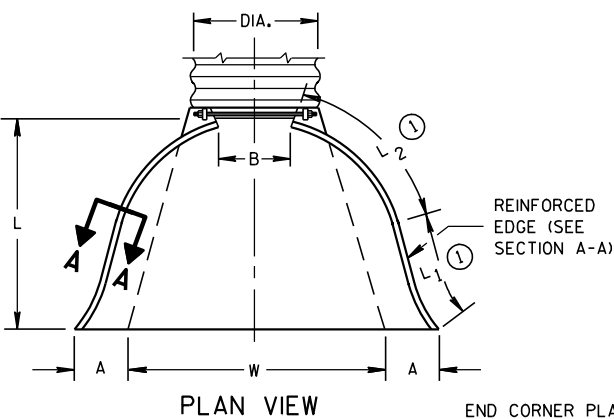
/S/ Jerry H. Zogg

ROADWAY STANDARDS DEVELOPMENT

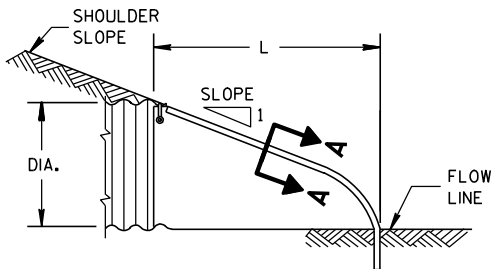
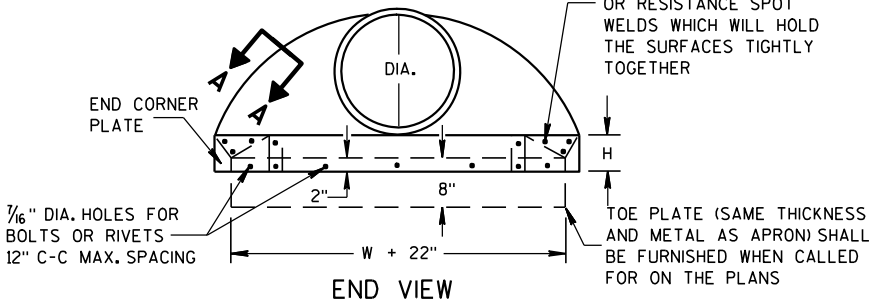
ENGINEER

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



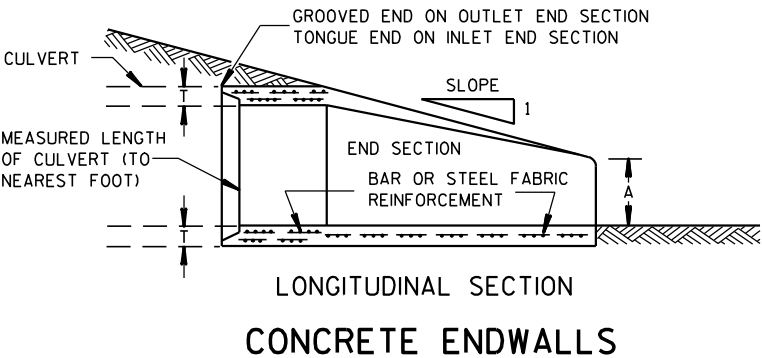
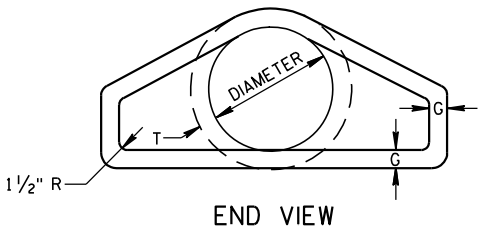
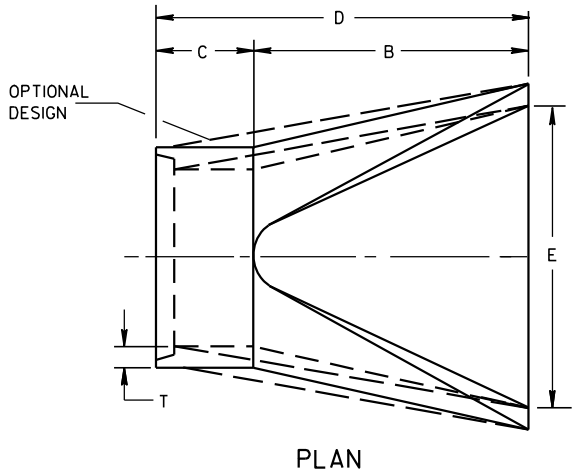
END CORNER PLATES MAY
BE FASTENED TO APRON
PROPER BY BOLTS, RIVETS,
OR RESISTANCE SPOT
WELDS WHICH WILL HOLD
THE SURFACES TIGHTLY
TOGETHER



SIDE ELEVATION
METAL ENDWALLS

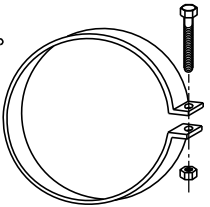
REINFORCED CONCRETE APRON ENDWALLS												
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE				
	T	A	B	C	D	E	G					
12	2	4	24	48 7/8	72 1/8	24	2	3 to 1				
15	2 1/4	6	27	46	73	30	2 1/4	3 to 1				
18	2 1/2	9	27	46	73	36	2 1/2	3 to 1				
21	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	3 to 1				
24	3	9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

* MINIMUM
** MAXIMUM

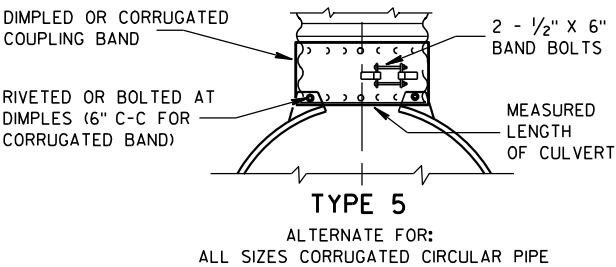
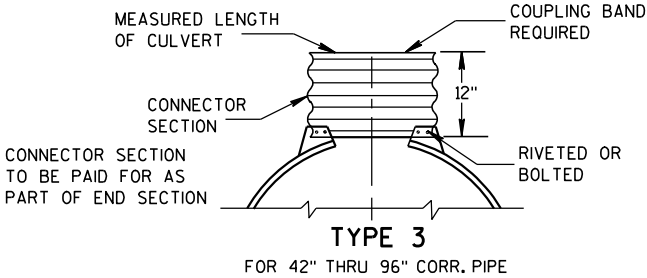
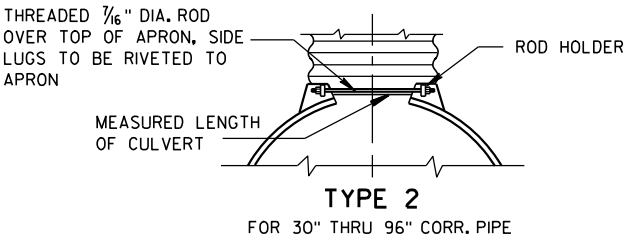
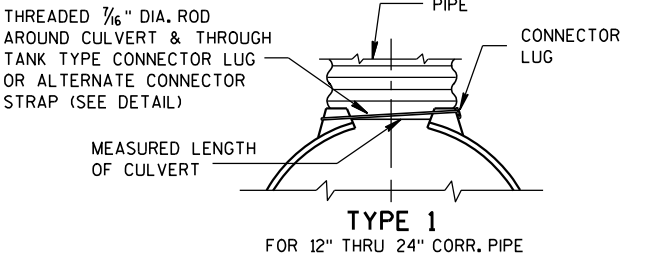


LONGITUDINAL SECTION
CONCRETE ENDWALLS

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



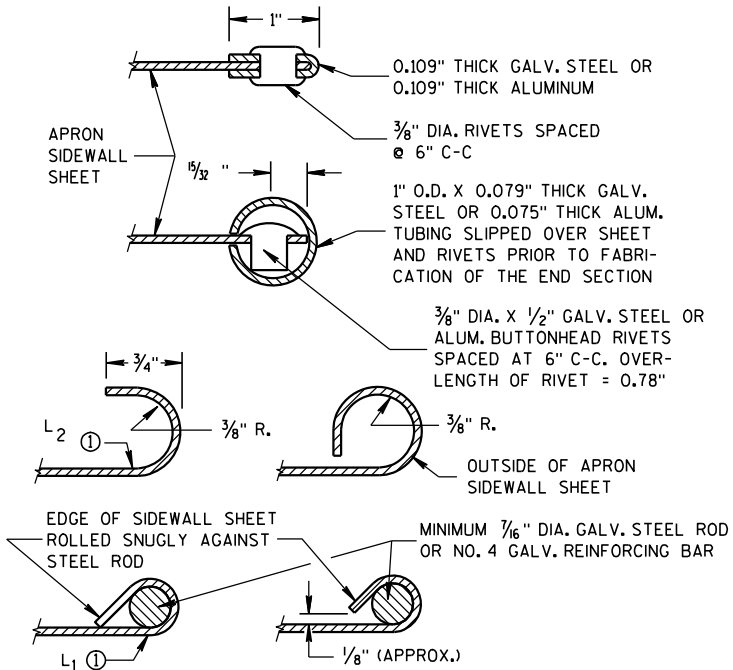
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL,
AND CORRUGATED BAND FITS INSIDE ENDWALL.
DIMPLED BAND MAY BE USED WITH HELICALLY
CORRUGATED PIPE.

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.

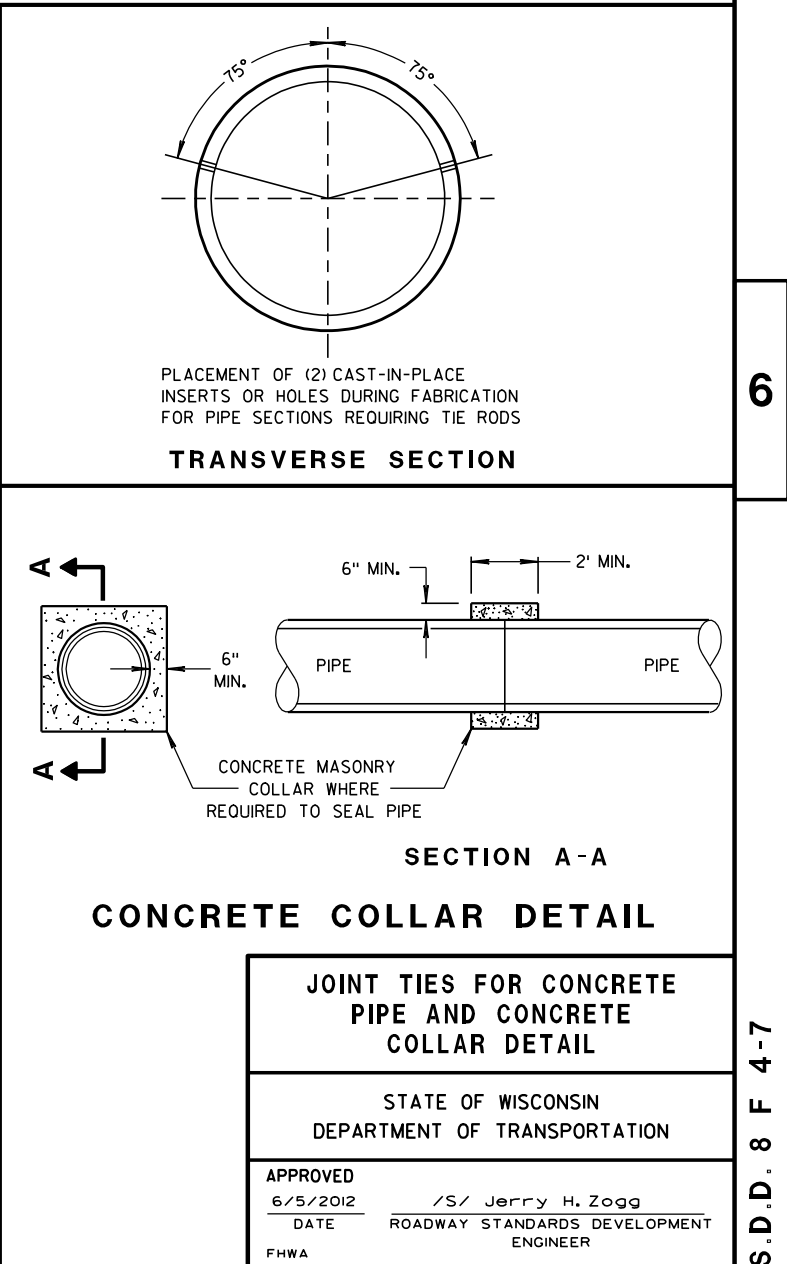
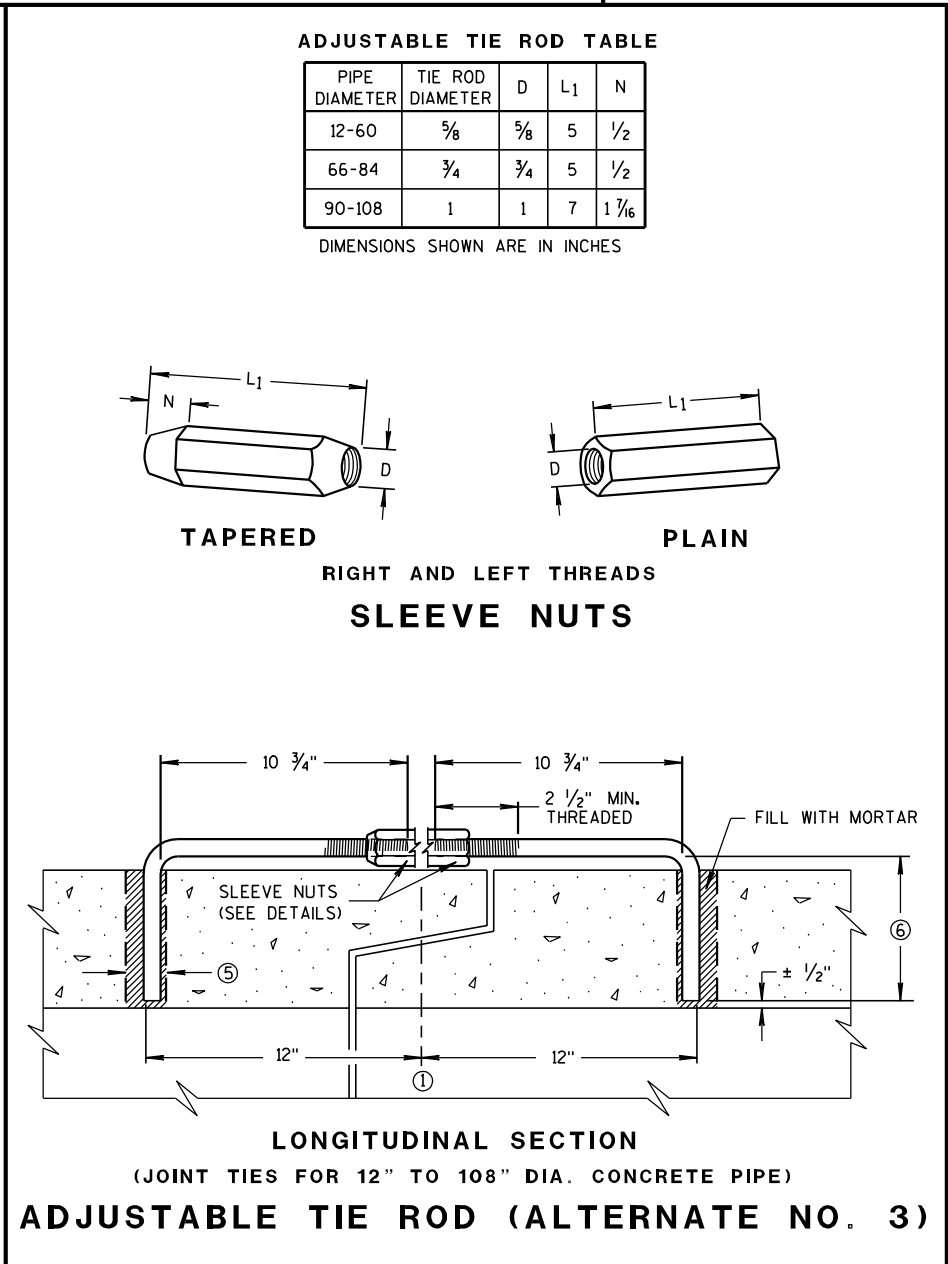
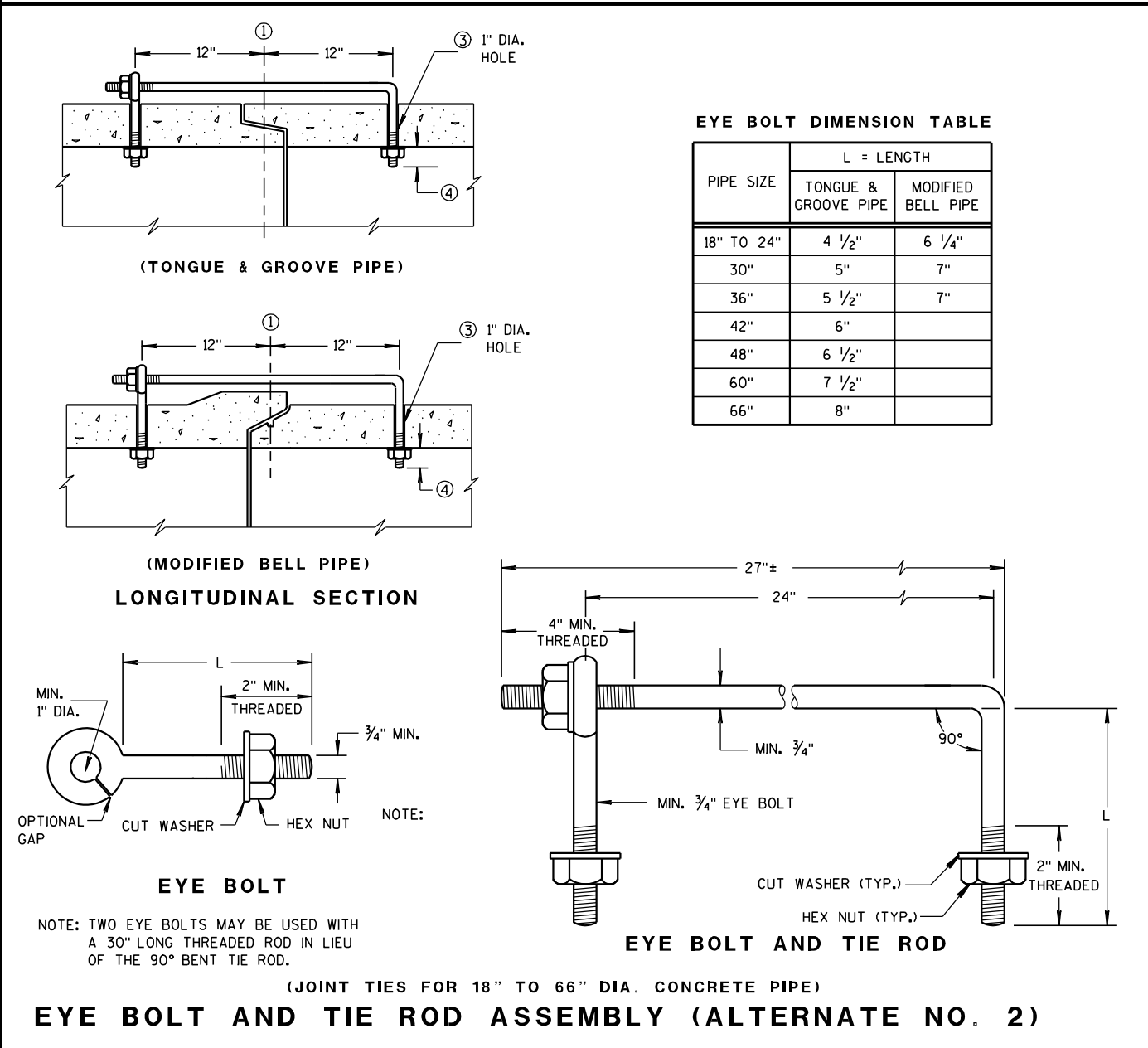
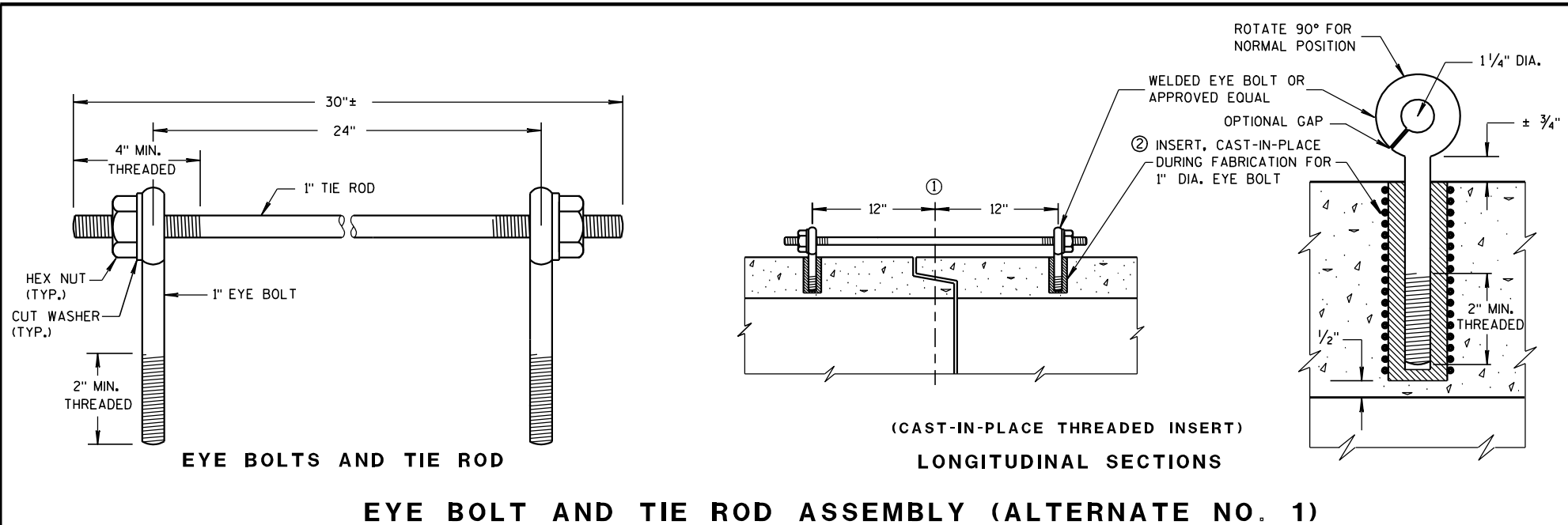
ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND
LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL
THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND
LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH
OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT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

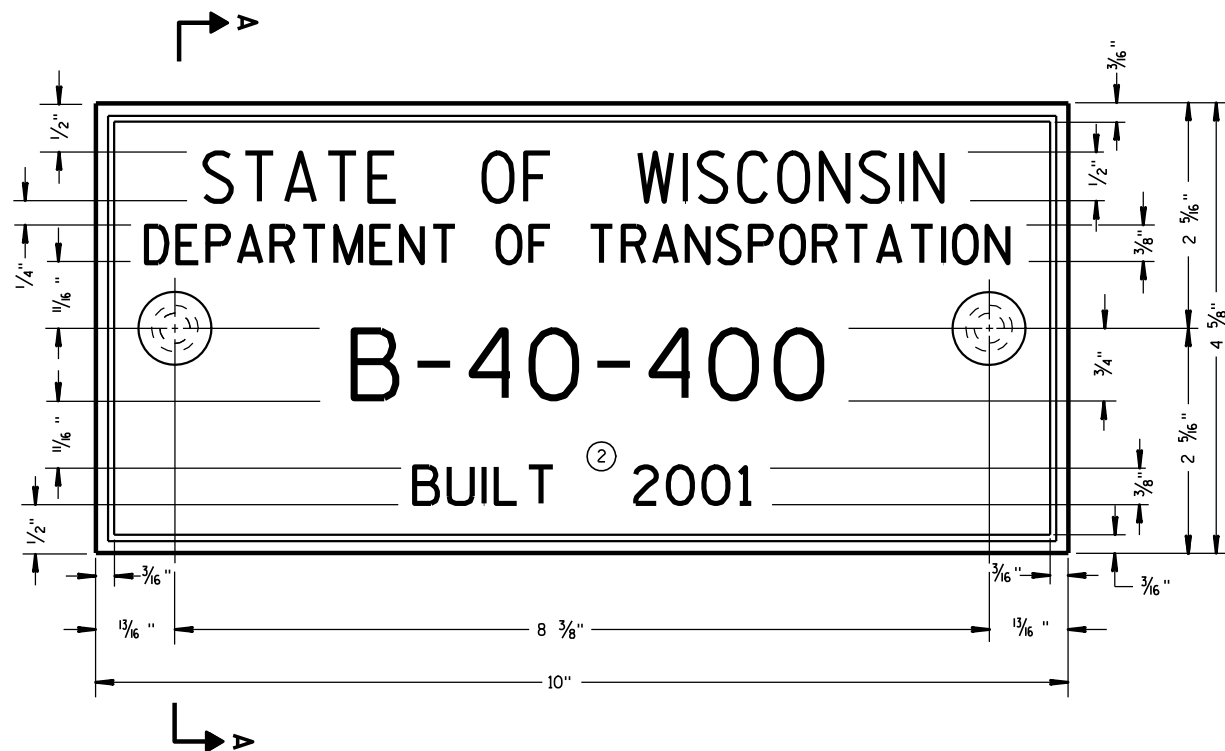
LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS
FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS.
FOR THE 60" THROUGH 96" DIAMETER APRON ENDWALL SIZES, THE REINFORCED
EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH
GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES.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

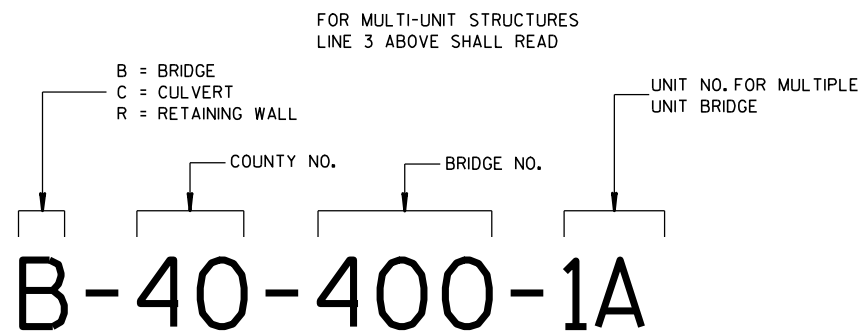
① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED
INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

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	





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



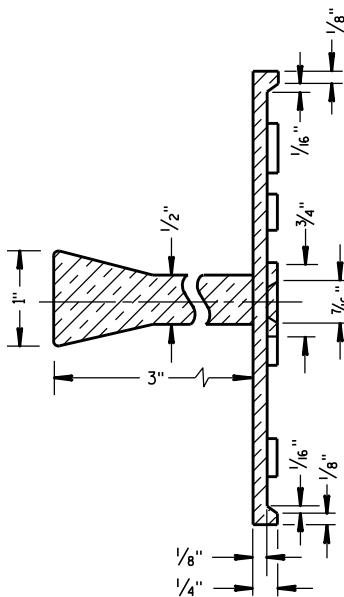
**NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES**

GENERAL NOTES

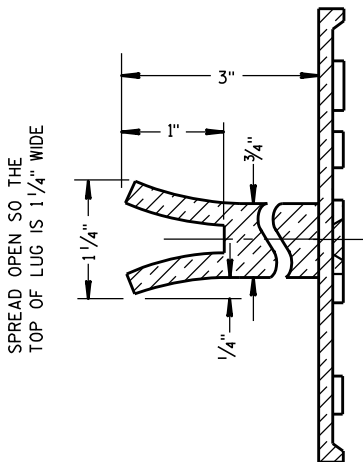
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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

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

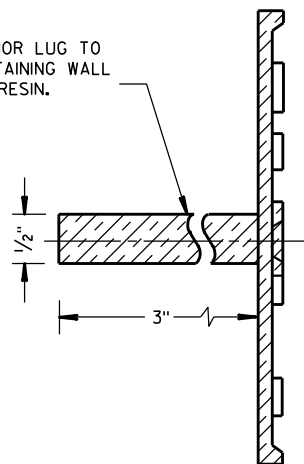


SECTION A-A



ALTERNATE LUG

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



ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

**NAME PLATE
(STRUCTURES)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

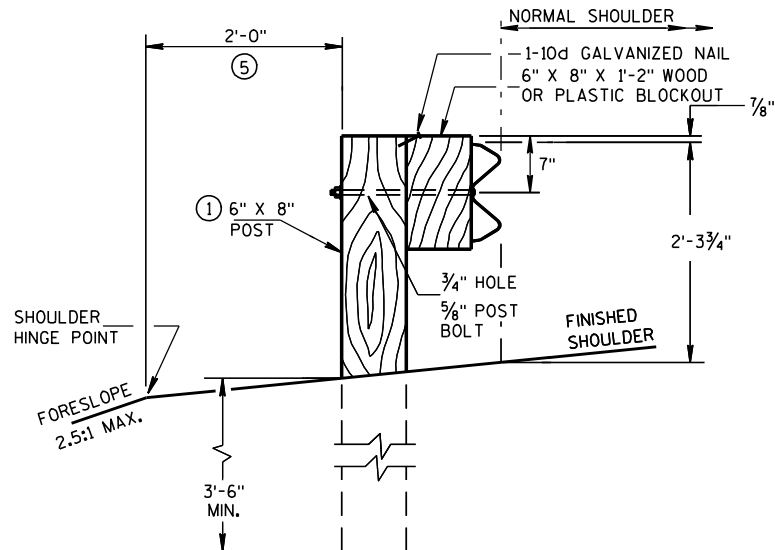
APPROVED
3/26/10
DATE
/S/ Scot Becker
CHIEF STRUCTURAL DEVELOPMENT ENGINEER
FHWA

GENERAL NOTES

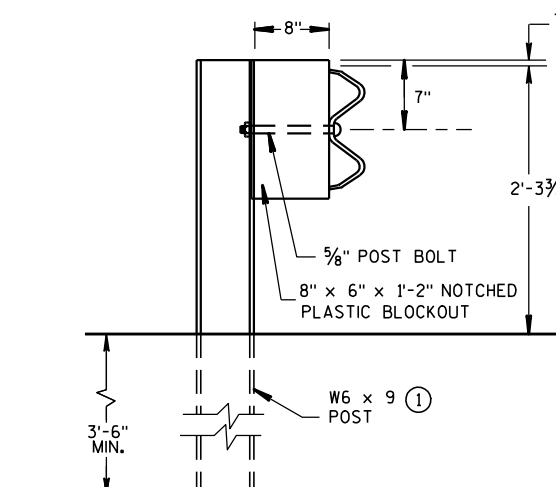
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, AND THE APPLICABLE SPECIAL PROVISIONS.

- ① W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS. APPROVED PLASTIC BLOCKOUT DESIGNS MAY VARY FROM THIS TYPICAL DETAIL WHEN USED IN CONJUNCTION WITH STEEL POSTS.
- DO NOT MIX STEEL POSTS AND WOOD POSTS IN A SINGLE INSTALLATION.
- ② USE STRUCTURAL STEEL POSTS CONFORMING TO ASTM A 36. GALVANIZED POSTS ACCORDING TO AASHTO M 111 EITHER SET THE POSTS IN DRILLED HOLES OR DRIVE TO GRADE. REMOVE MUSHROOMING CAUSED BY DRIVING AND REPAIR DAMAGED SPELTER COATING ON GALVANIZED POSTS.
- ③ INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ④ USE EITHER WOOD OR APPROVED PLASTIC BLOCKOUTS ON WOOD POSTS.
- ⑤ IF THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING, W BEAM (LHW).
- ⑥ IF ROCK IS ENCOUNTERED DURING EXCAVATION, THE ENGINEER MAY APPROVE USING A 12 INCH DIAMETER POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE APPROXIMATELY 2 1/2 INCHES DEEP. CUT THE POSTS TO LENGTH AND PLACE IN THE HOLE. BACKFILL WITH MATERIAL EXCAVATED FROM THE HOLE AND COMPACT ADEQUATELY.

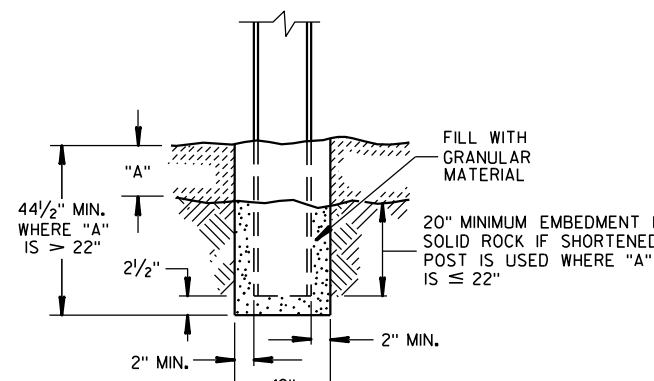
INSTALL BEAM GUARD SECTIONS AND ALL NECESSARY HARDWARE ACCORDING TO THE APPLICABLE PLAN AND CURRENT STANDARD AND SUPPLEMENTAL SPECIFICATIONS. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURER'S TOLERANCES EXCEPT WHERE ALLOWABLE TOLERANCES ARE SHOWN.



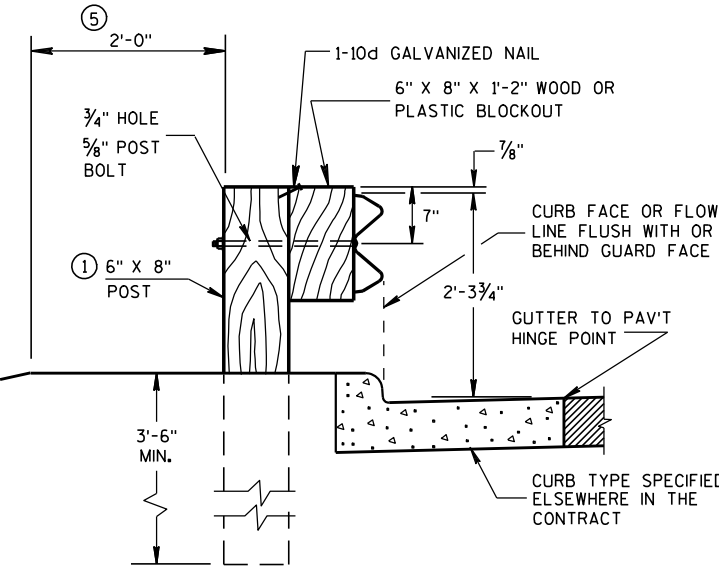
END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



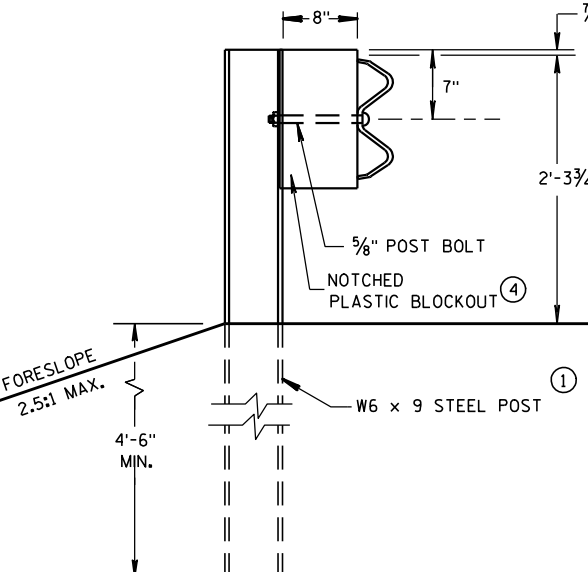
END VIEW
STEEL POST & NOTCHED
PLASTIC BLOCKOUT ALTERNATIVE
STANDARD INSTALLATION



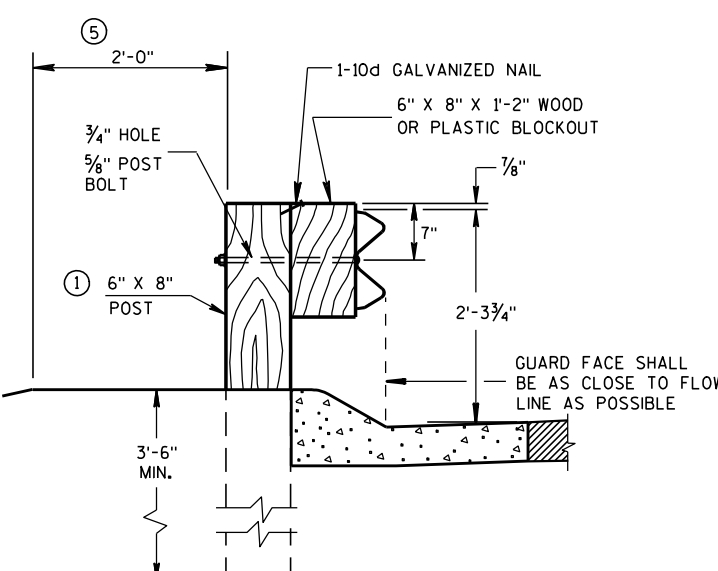
END VIEW
SETTING STEEL OR WOOD POST IN ROCK ⑥



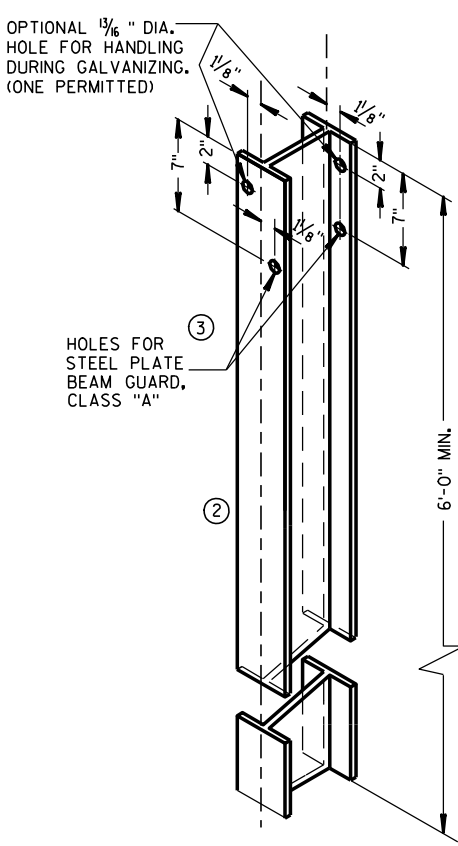
END VIEW
LOCATED ALONG A CURBED ROADWAY



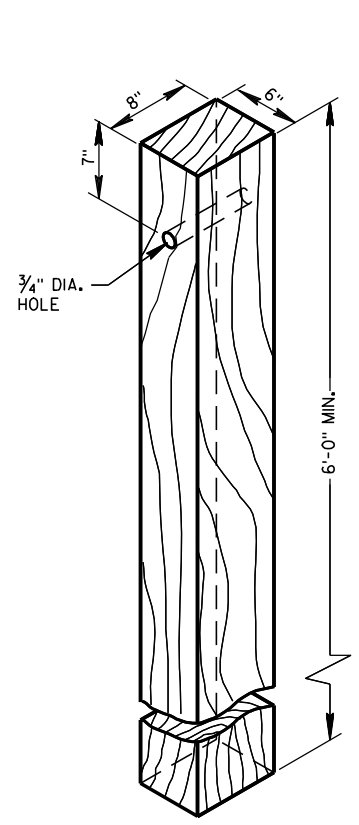
END VIEW
LONGER POST AT HALF
POST SPACING W BEAM
(LHW)



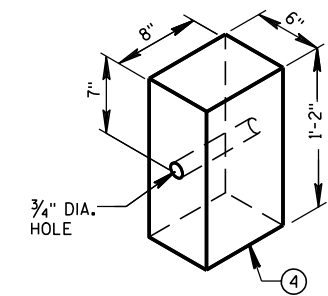
END VIEW
LOCATED ALONG A
MOUNTABLE CURBED ROADWAY



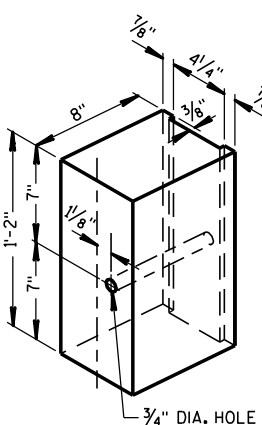
STEEL POST &
HOLE PUNCHING DETAIL
(W6 X 9) ①
ALL HOLES 1 3/8" DIAMETER EXCEPT AS NOTED



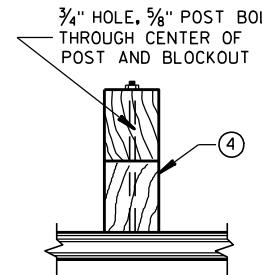
WOOD POST
(6" X 8") NOMINAL



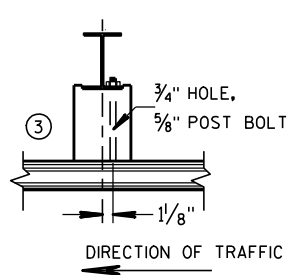
WOOD OR PLASTIC
BLOCKOUT FOR
WOOD POSTS



TYPICAL NOTCHED
PLASTIC BLOCKOUT
FOR STEEL POSTS ①



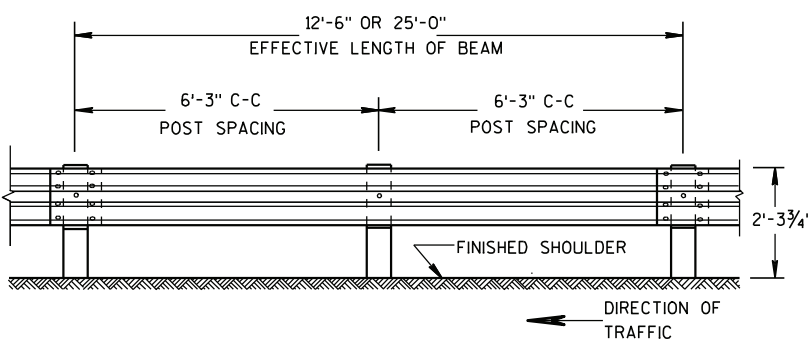
PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



PLAN VIEW
STEEL POST, NOTCHED
PLASTIC BLOCKOUT & BEAM

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

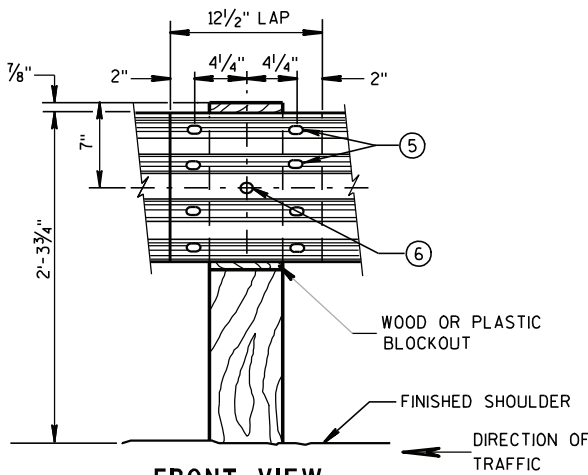
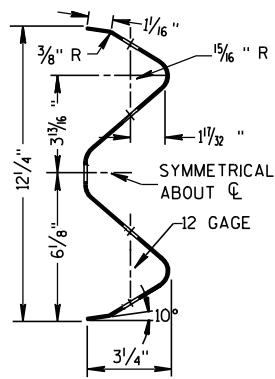
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



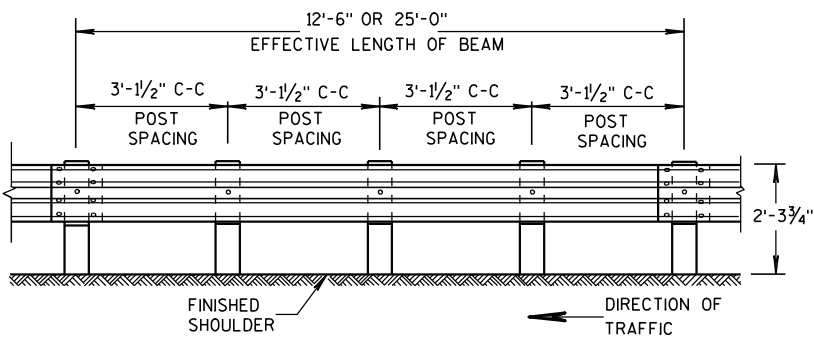
FRONT VIEW

POST SPACING STANDARD INSTALLATION

SECTION THRU W BEAM

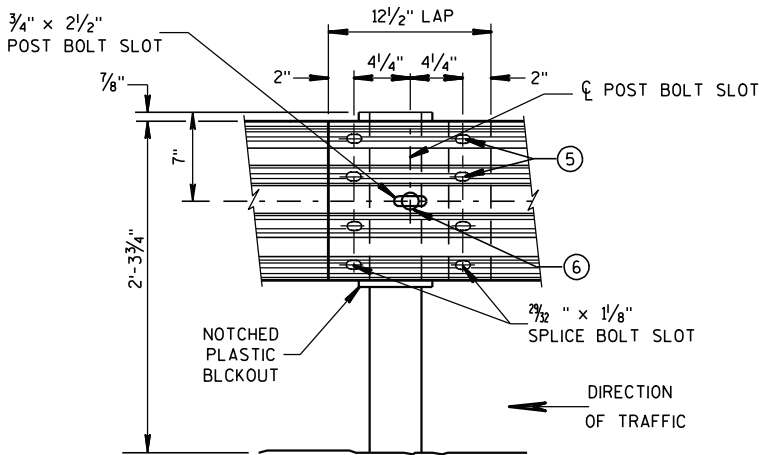


FRONT VIEW
BEAM SPLICE AT WOOD POST
AND POST MOUNTING DETAIL



FRONT VIEW

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

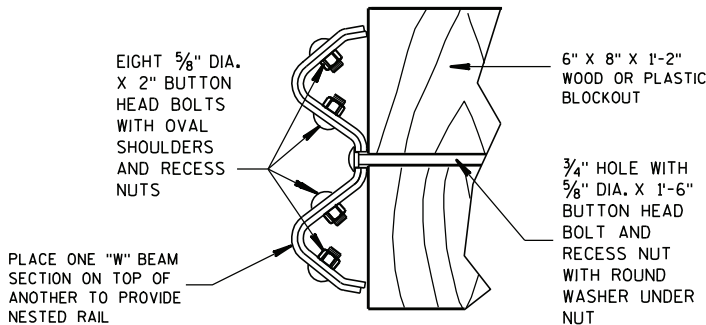


FRONT VIEW
BEAM SPLICE AT STEEL POST

TYPICAL SPLICING DETAILS
OF STEEL PLATE BEAM GUARD

GENERAL NOTES

- ① PROVIDE TYPE "H" SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH TYPE "H" YELLOW REFLECTIVE SHEETING.
- ② DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
- ③ REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.
- ④ PROVIDE AN ANGLE OF BEND OF $90^\circ \pm 1^\circ$ FOR TWO-SIDED REFLECTORS.
- ⑤ 8 - 5/8" ϕ X 2 " BUTTON HEAD BOLTS WITH OVAL SHOULDERS & RECESS NUTS.
- ⑥ 5/8" ϕ X 1'-6" BUTTON HEAD BOLT AND AND RECESS NUT WITH ROUND WASHER UNDER NUT.

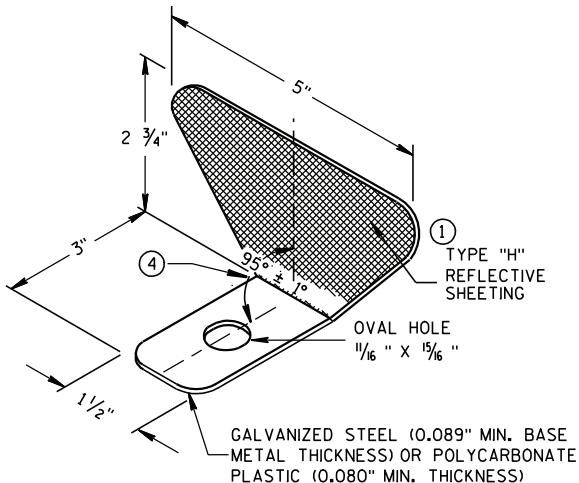
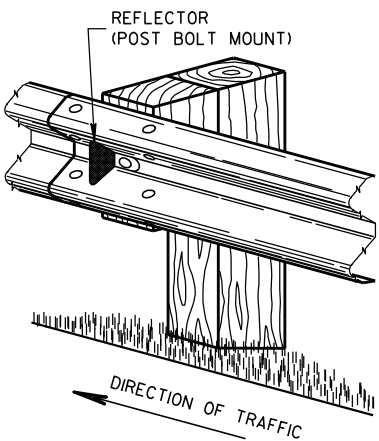


NESTED W BEAM (NW)

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

REFLECTOR SPACING^②

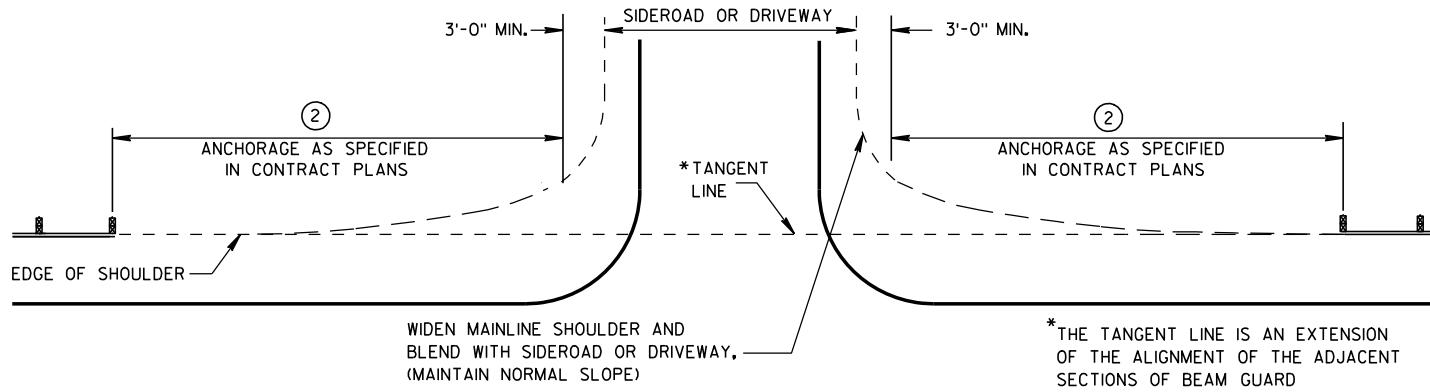
	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200' > 200'	50' C-C 100' C-C	1 1	3
TWO WAY TRAFFIC	< 200' > 200'	25' C-C 50' C-C	1 ③ 1	6
TWO WAY TRAFFIC	< 200' > 200'	50' C-C 100' C-C	2 ④ 2	3



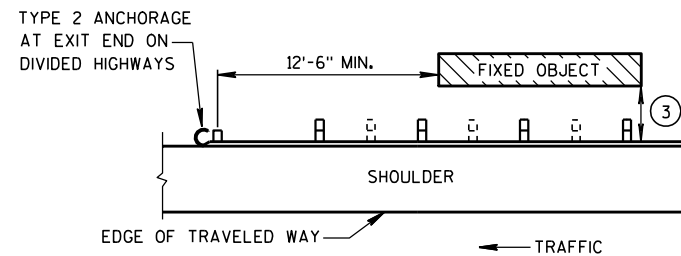
ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

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

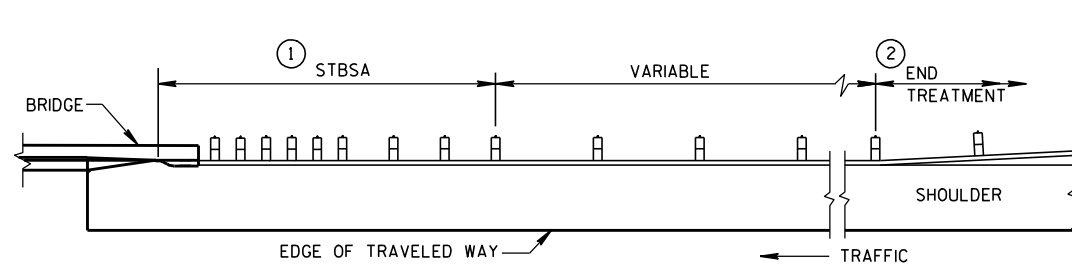
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



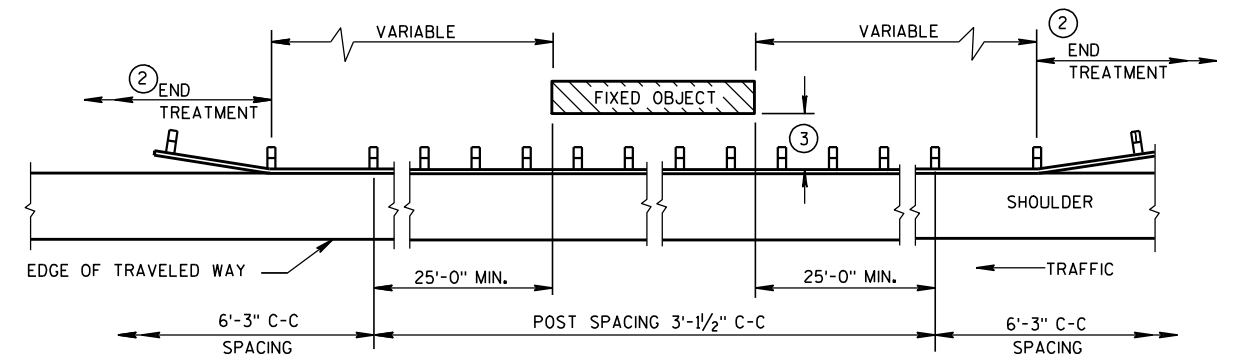
BEAM GUARD AT SIDEROADS OR DRIVEWAYS



BEAM GUARD AT OBSTACLES EXIT END - ONE WAY TRAFFIC



BEAM GUARD AT FULL WIDTH BRIDGES

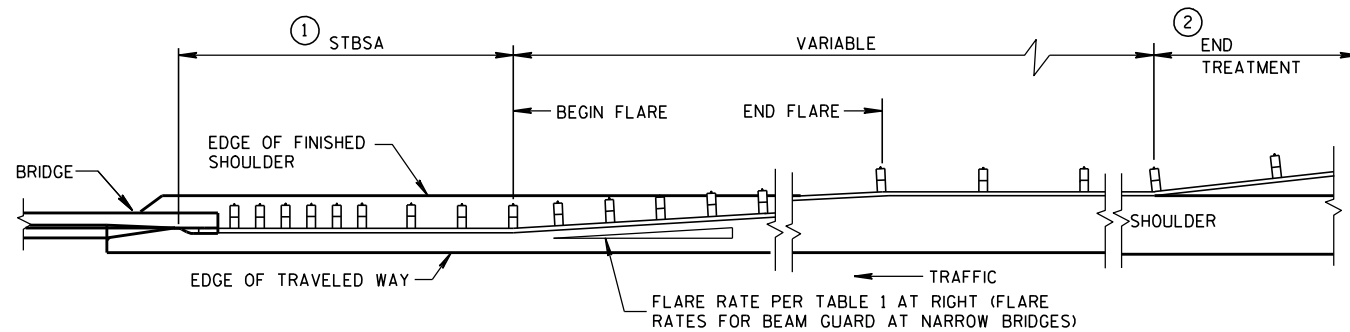


BEAM GUARD AT OBSTACLES - TWO WAY TRAFFIC

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

TABLE 1
FLARE RATES FOR BEAM
GUARD AT NARROW BRIDGES

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



BEAM GUARD AT NARROW BRIDGES (FLARED TO SHOULDER EDGE, THEN PARALLEL TO ROADWAY)

GENERAL NOTES

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

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

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

- STEEL THRIE BEAM STRUCTURAL APPROACH (STBSA) - SEE CURRENT SDD 14B20.
- USE AN APPROVED END TREATMENT FOR THE TRAFFIC APPROACH SIDE OF BRIDGE/OBSTACLES. USE TYPE 2 ANCHORAGE ONLY AT THE DOWNSTREAM ENDS OF BEAM GUARD LOCATED ALONG ROADWAYS WITH ONE WAY TRAFFIC.

MINIMUM LATERAL DISTANCE FROM FACE OF BEAM GUARD TO FIXED OBJECT	POST SPACING
3'-6"	3' - 1 1/2"
4'-6"	6' - 3"

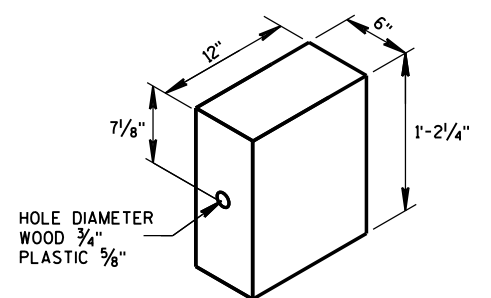
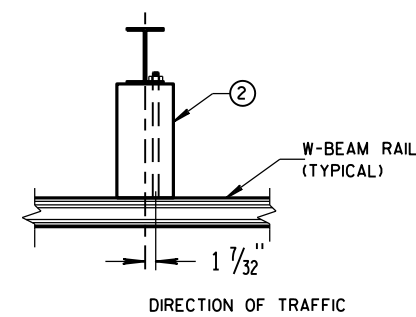
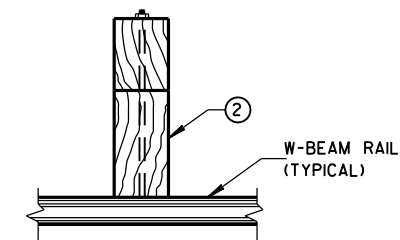
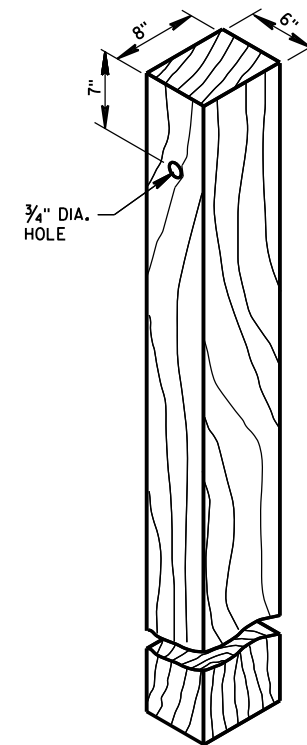
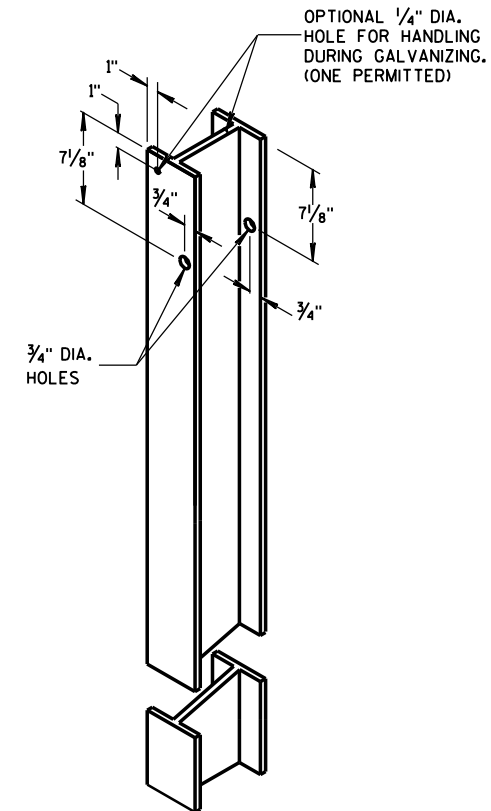
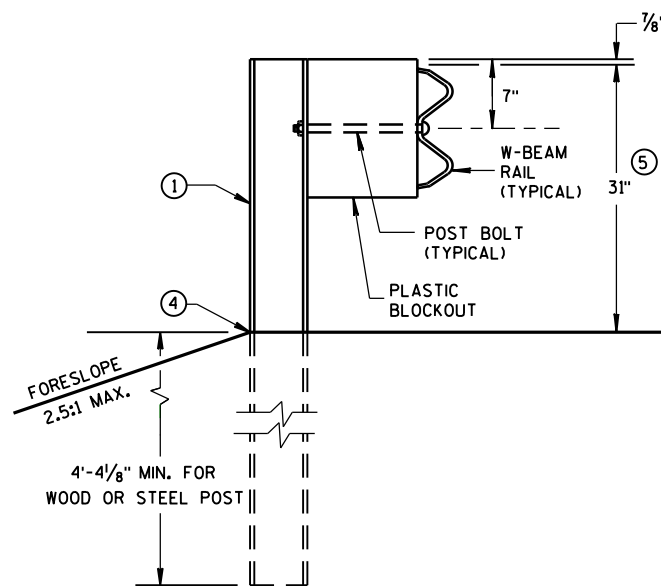
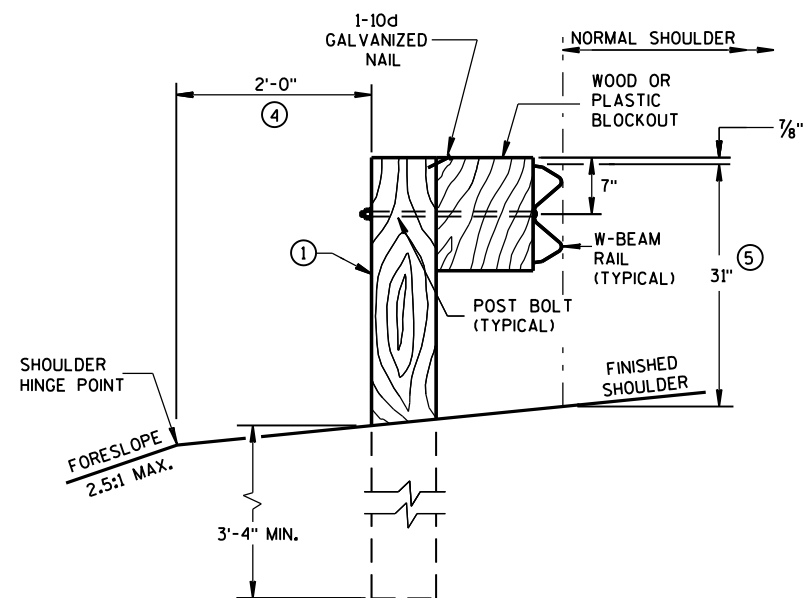
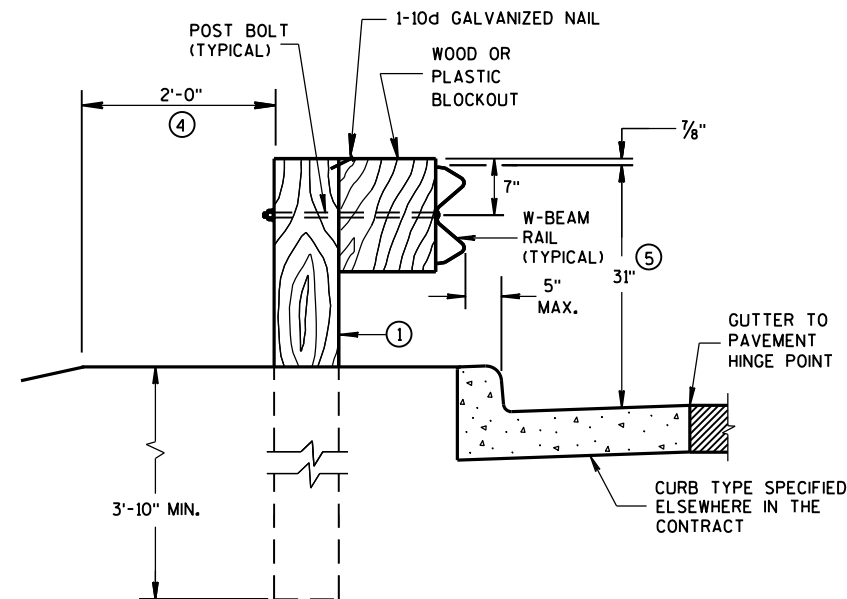
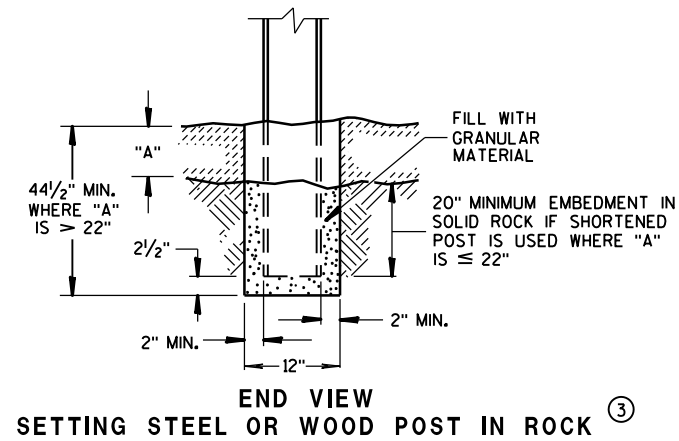
STEEL PLATE BEAM GUARD
CLASS "A"
AT BRIDGES, OBSTACLES
AND SIDEROADS/DRIVEWAYS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8-21-07
DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA

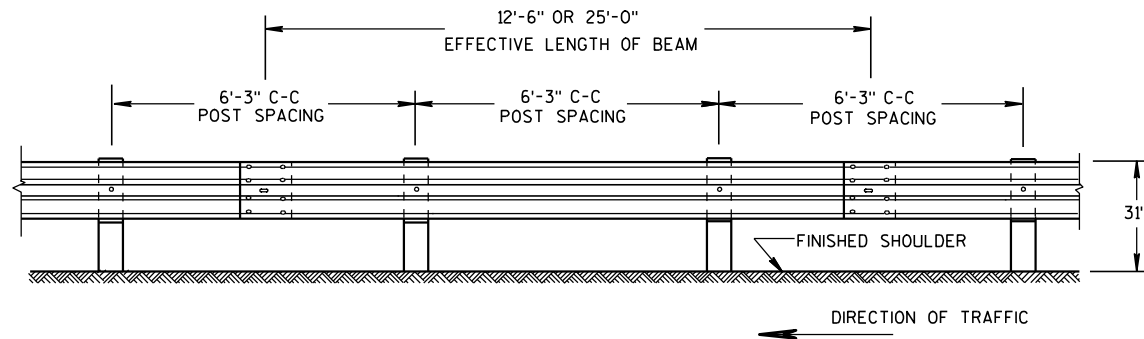
S.D.D. 14 B 42-2a

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



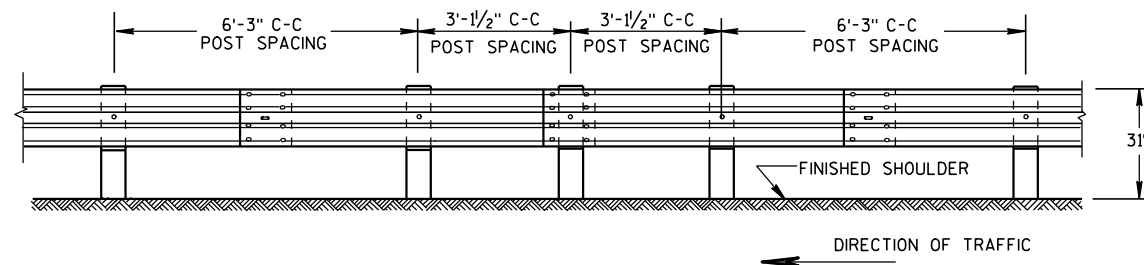
**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



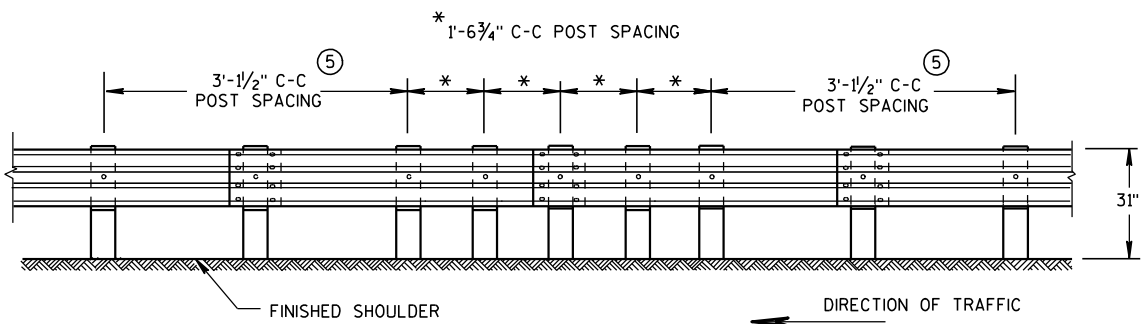
FRONT VIEW

POST SPACING STANDARD INSTALLATION



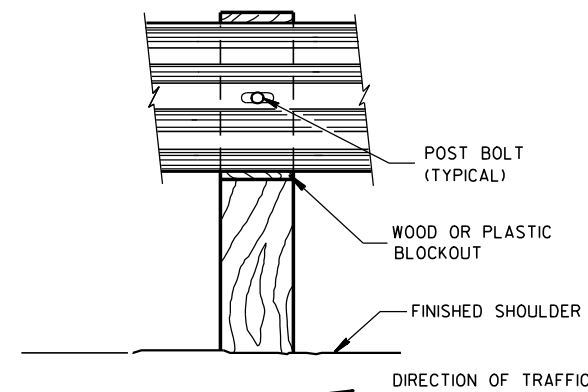
FRONT VIEW

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

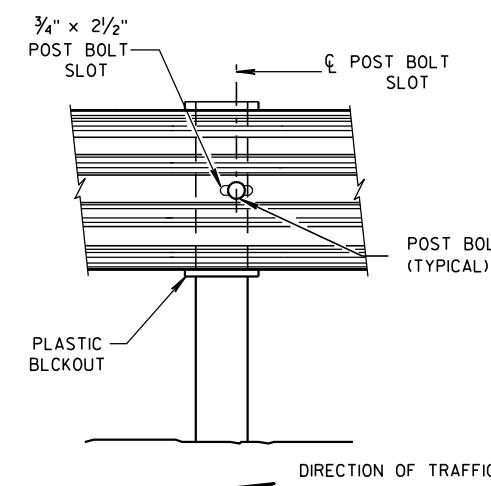


FRONT VIEW

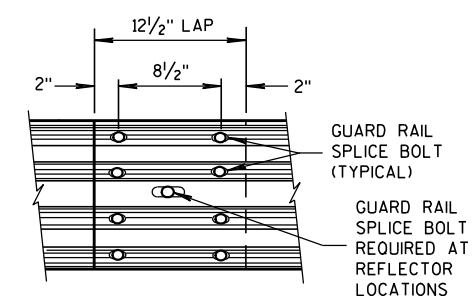
QUARTER POST SPACING (QS)



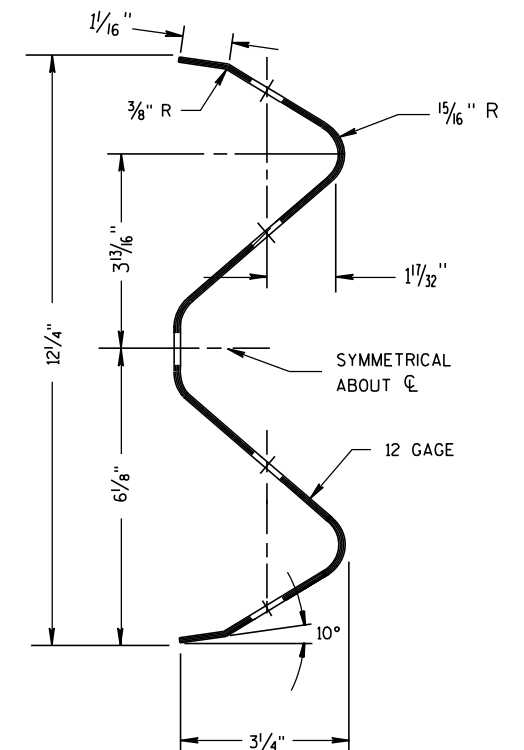
FRONT VIEW AT WOOD POST



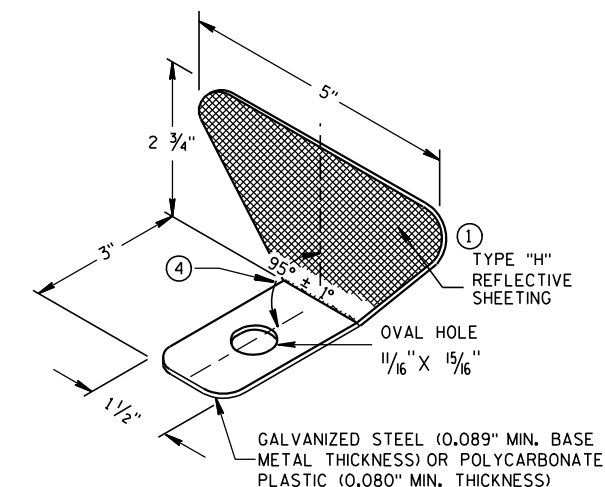
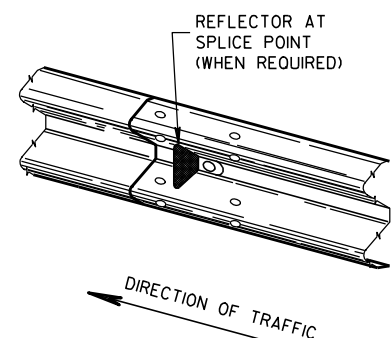
FRONT VIEW AT STEEL POST



FRONT VIEW
MID-SPAN BEAM SPLICE



SECTION THRU W-BEAM RAIL



ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

GENERAL NOTES

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

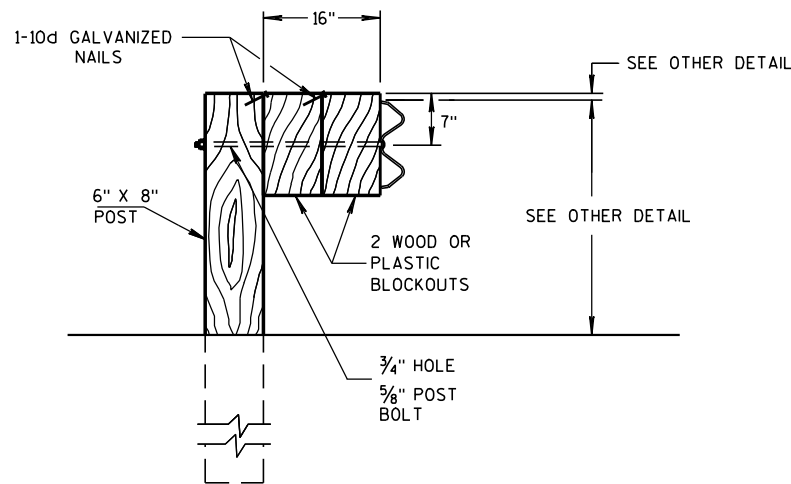
GUARD RAIL SPLICE BOLTS ARE A $\frac{5}{8}$ " DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES $\frac{5}{8}$ " DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.

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 ③	6
	> 200'	50' C-C	1	
TWO WAY TRAFFIC	< 200'	50' C-C	2 ④	3
	> 200'	100' C-C	2	

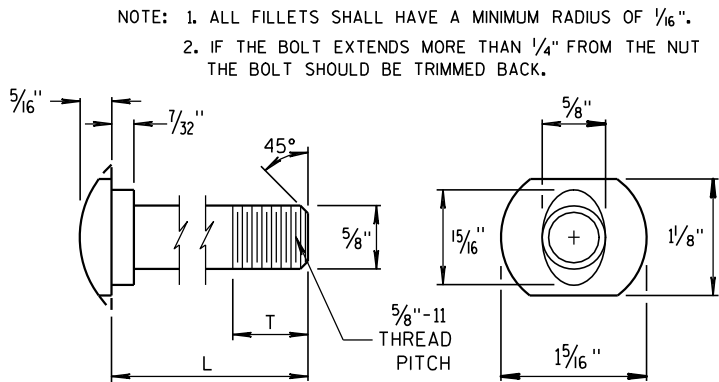
MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

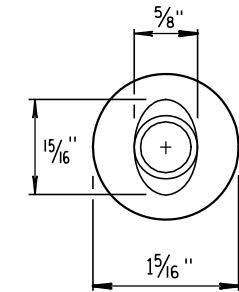


DETAIL FOR 16" BLOCKOUT DEPTH

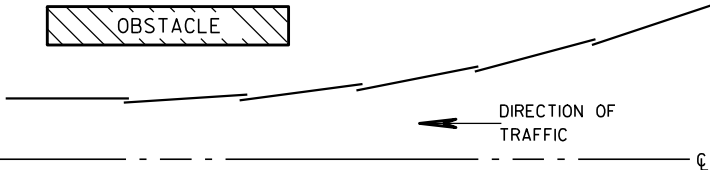
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



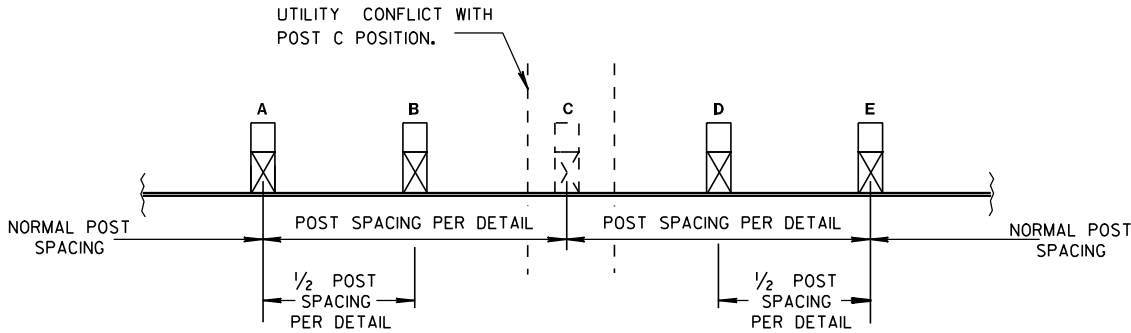
POST BOLT TABLE



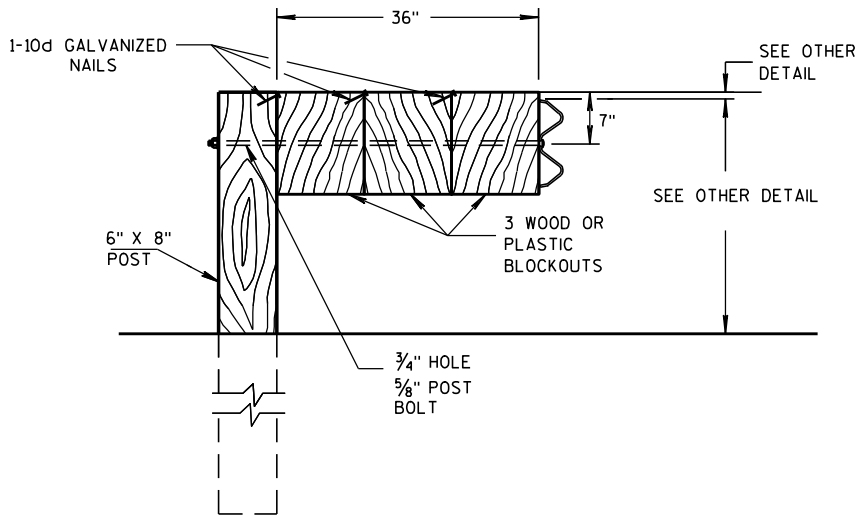
ALTERNATE BOLT HEAD



PLAN VIEW
BEAM LAPPING DETAIL



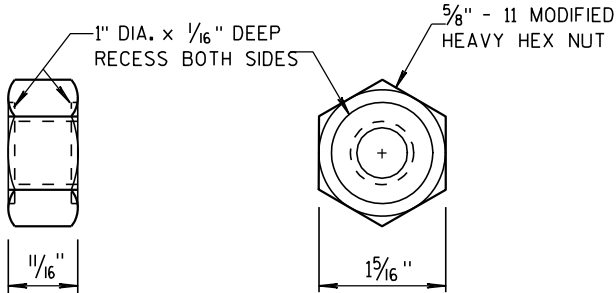
POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



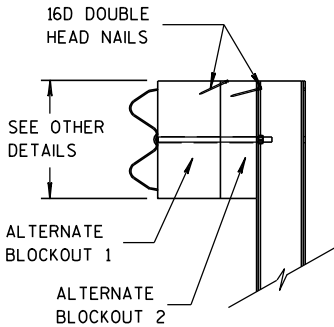
DETAIL FOR 36" BLOCKOUT DEPTH

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

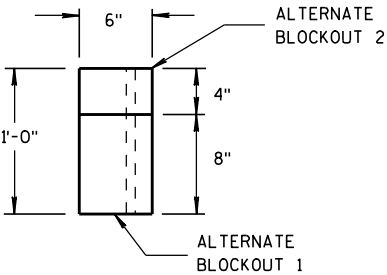
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.



POST BOLT
AND RECESS NUT



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

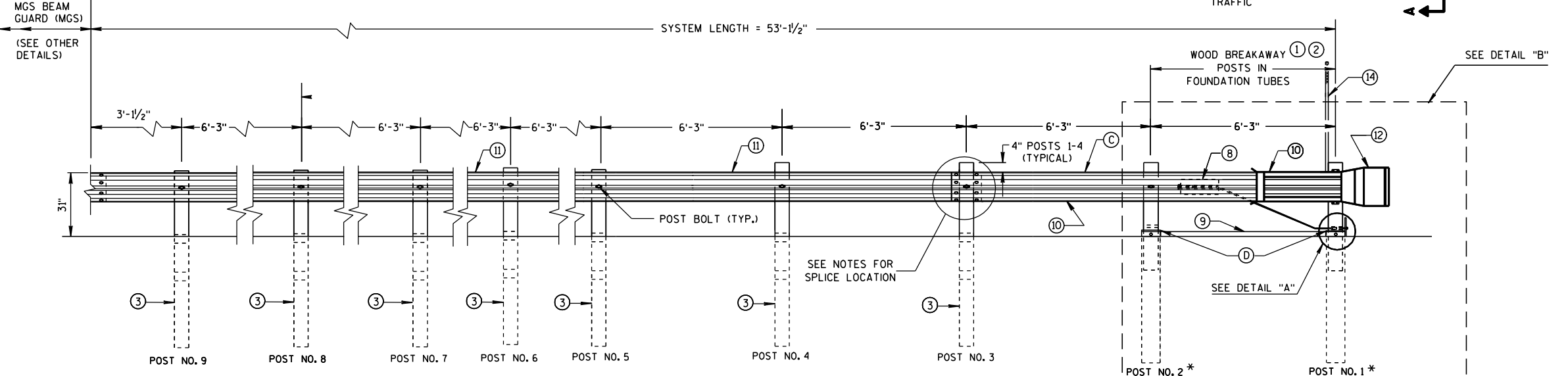
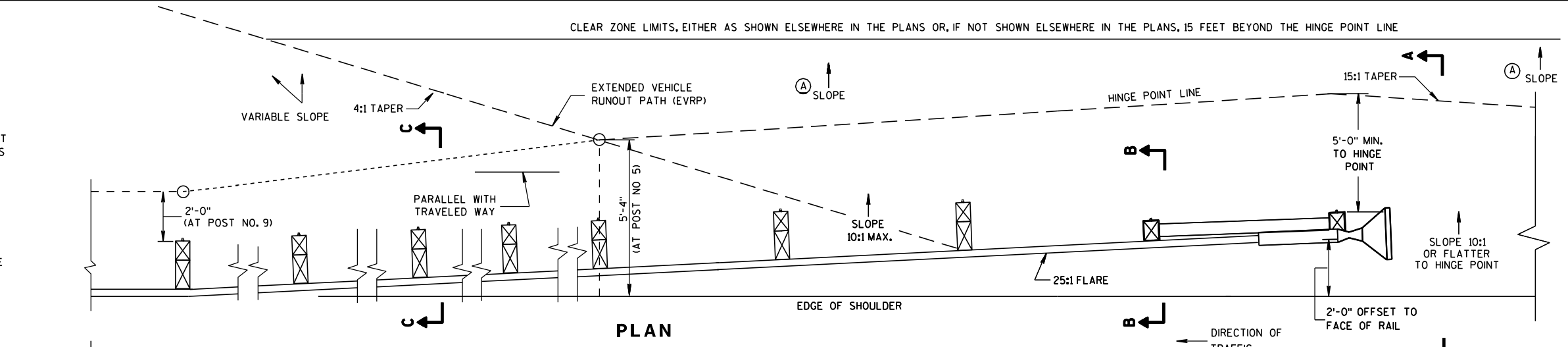
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

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

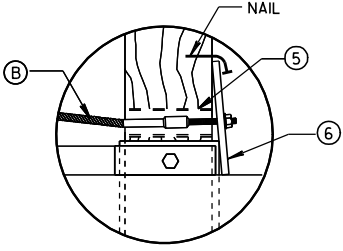
W-BEAM RAIL SPLICES ARE LOCATED AT POST NUMBER 3, AND BETWEEN POST 5 AND 6, BETWEEN POSTS 7 AND 8, AND MIDDLE OF THE SPAN AFTER POST 9.

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.

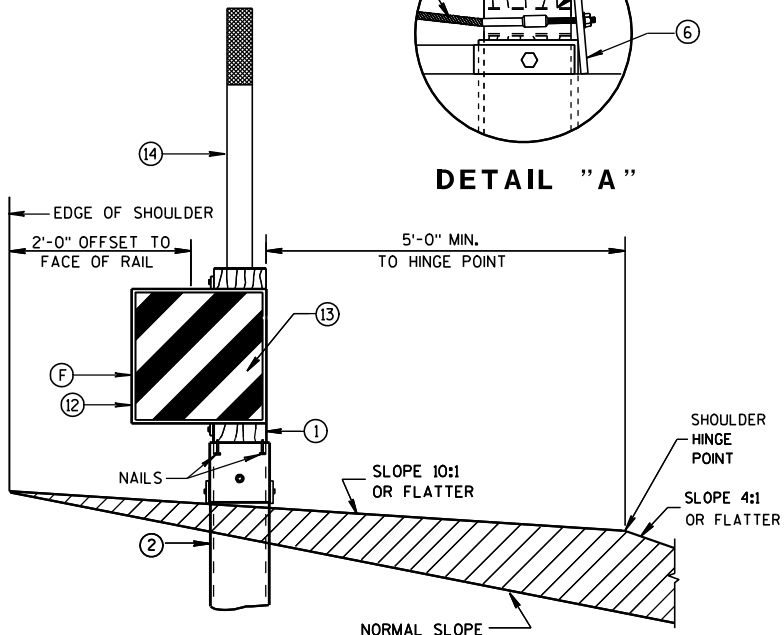
THE CENTER OF THE UPPER 3/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE ($\pm \frac{3}{4}$ ")



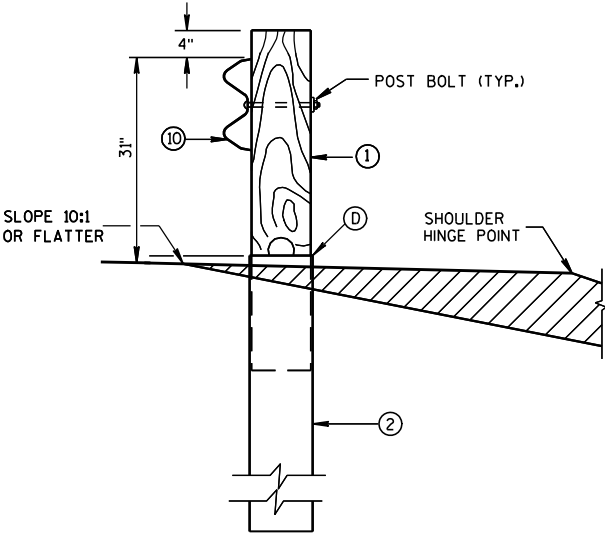
ELEVATION



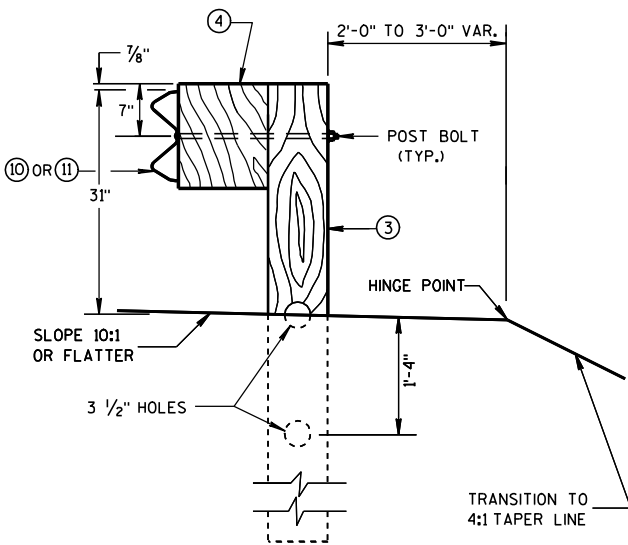
DETAIL "A"



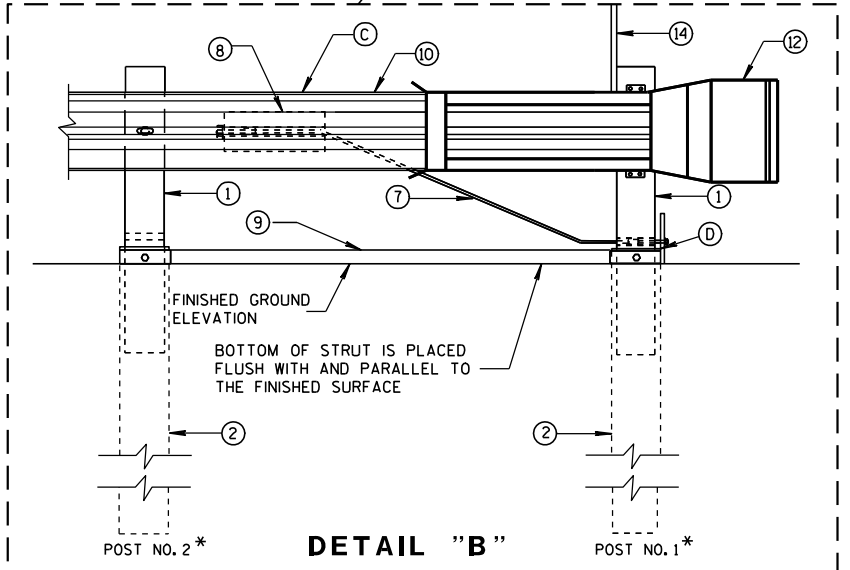
SECTION A-A
TYPICAL AT POST NO. 1*



SECTION B-B
TYPICAL AT POST NO. 2*



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

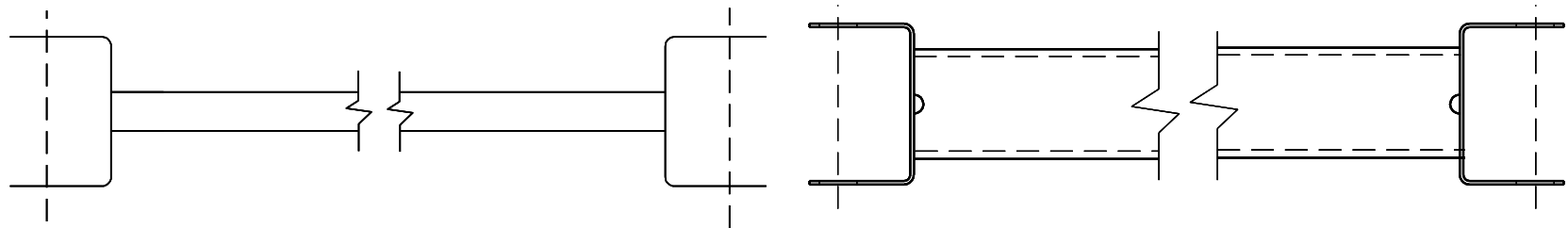


DETAIL "B"

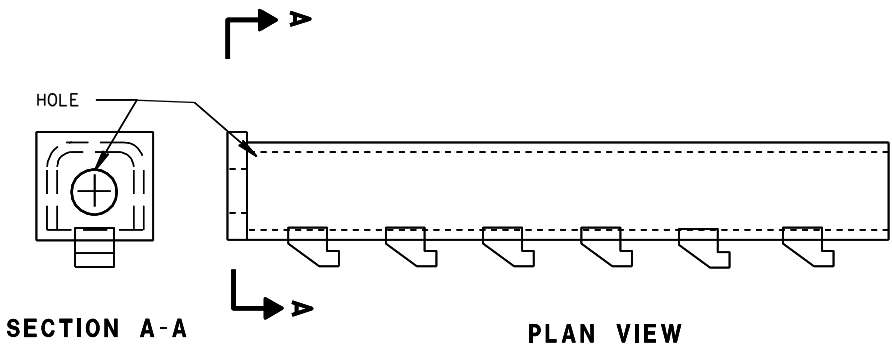
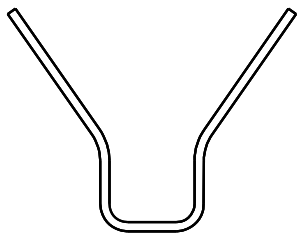
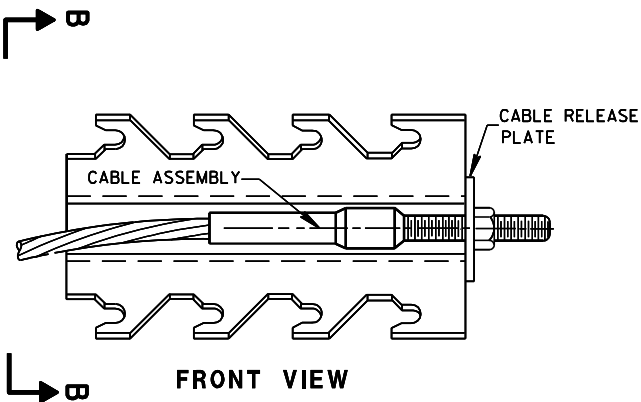
MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

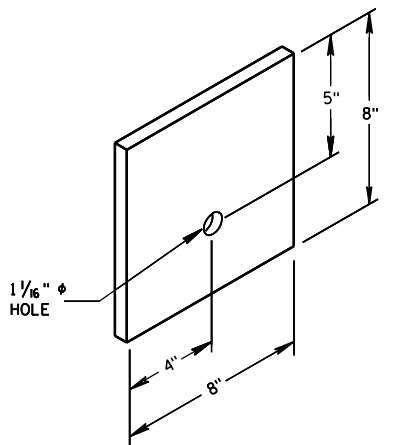
BILL OF MATERIALS	
PART NO.	DESCRIPTION
MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.	
①	WOOD BREAKAWAY POST
②	6" X 8" X 0.188", 6'-0" LONG FOUNDATION TUBE AT POSTS 1 AND 2
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR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



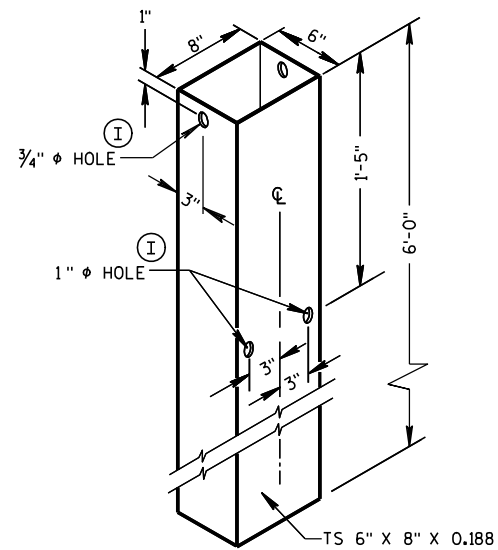
⑨ ⑨
GENERIC GROUND STRUT



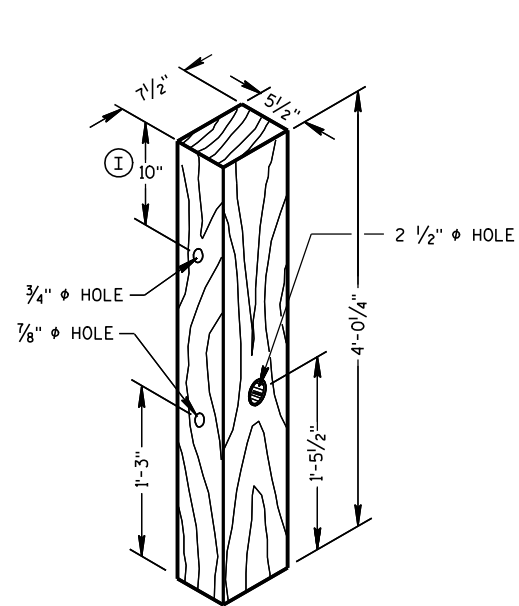
⑧ ⑧
GENERIC ANCHOR CABLE BOX



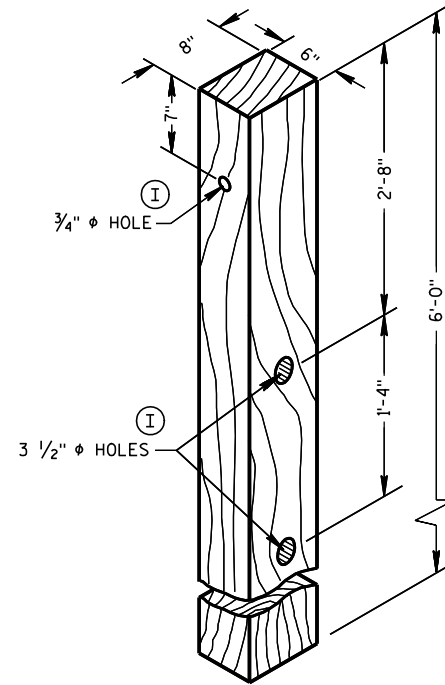
⑥
BEARING PLATE



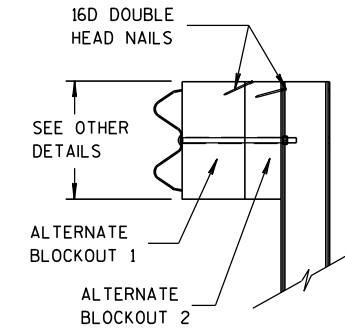
FOUNDATION TUBE ②



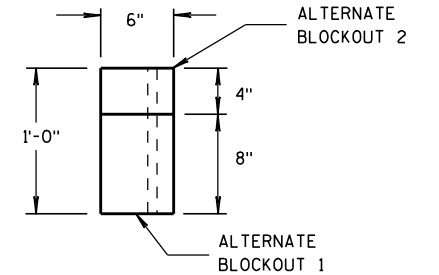
WOOD BREAKAWAY POST ①



WOOD CRT POST ③

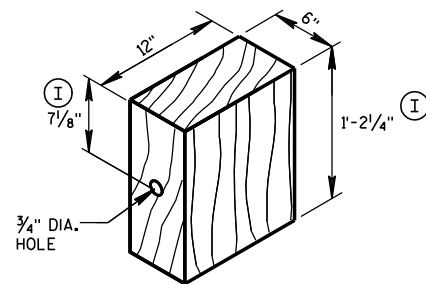


SIDE VIEW



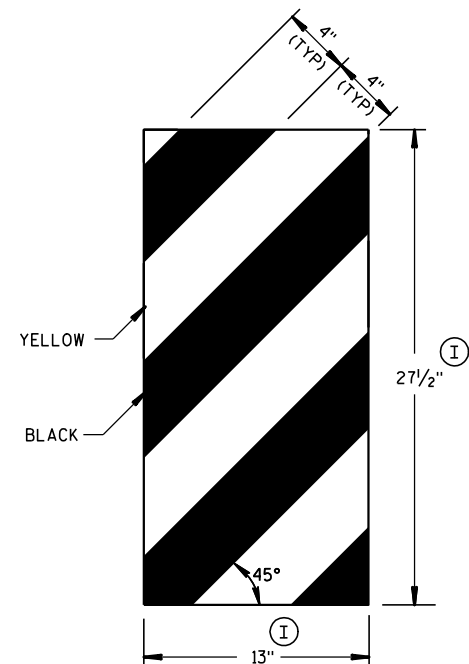
TOP VIEW

**ALTERNATE WOOD
BLOCKOUT DETAIL**

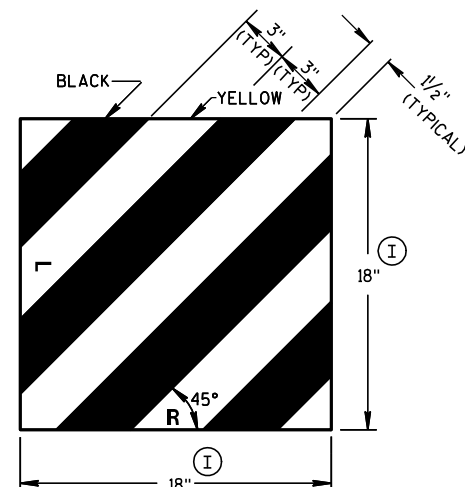


WOOD BLOCKOUT ④
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2

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

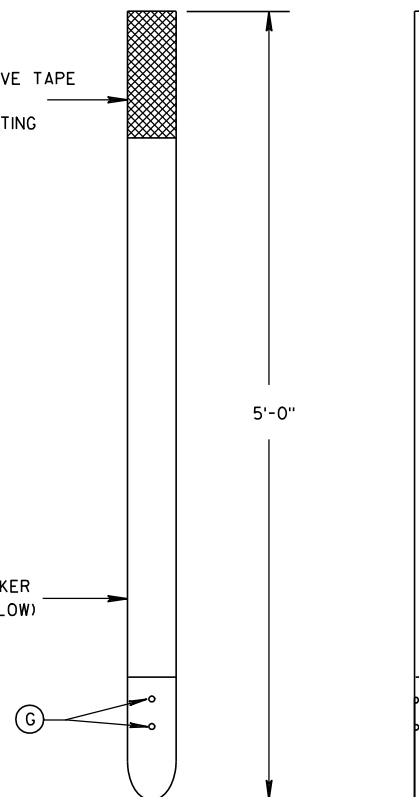


GENERIC REFLECTIVE SHEETING ⑬ ④

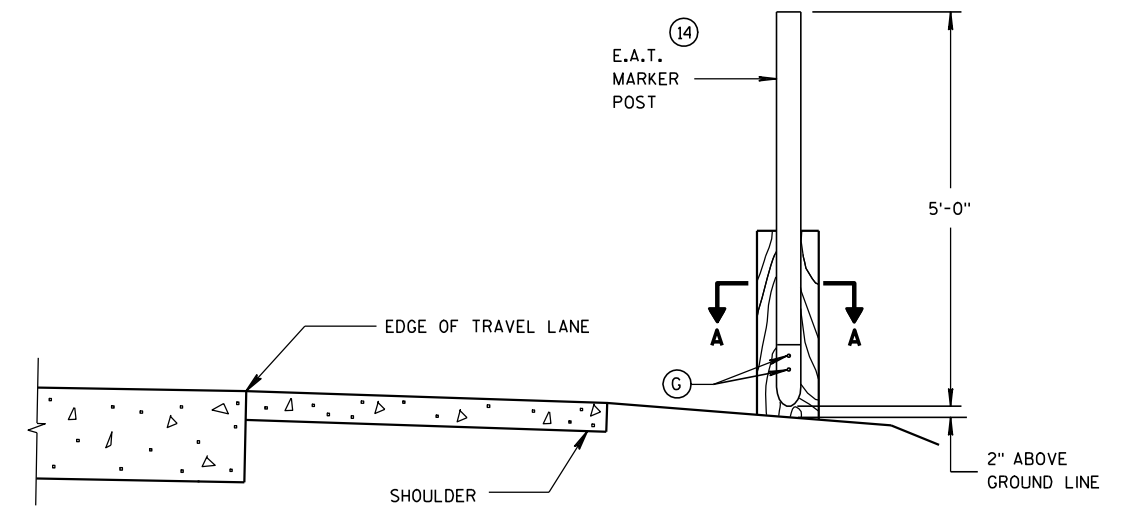


FRONT VIEW

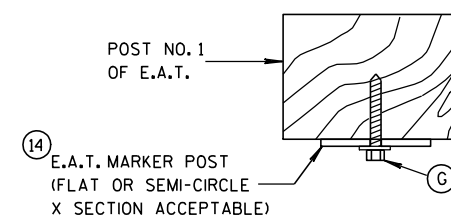
E.A.T. MARKER POST ⑭



SIDE VIEW



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



SECTION A-A

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

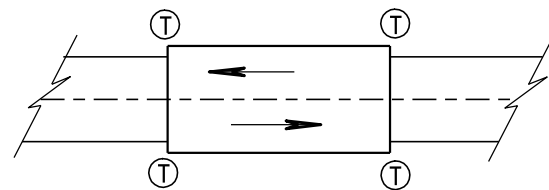
APPROVED

5/23/2011

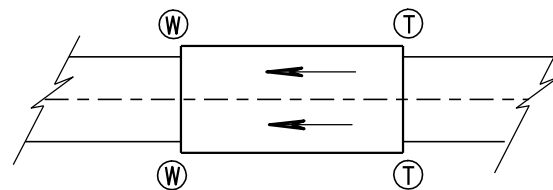
DATE

FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER



TWO WAY TRAFFIC



ONE WAY TRAFFIC

Ⓣ THRIE BEAM CONNECTION

Ⓦ W-BEAM CONNECTION WHEN REQUIRED

GENERAL NOTES

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

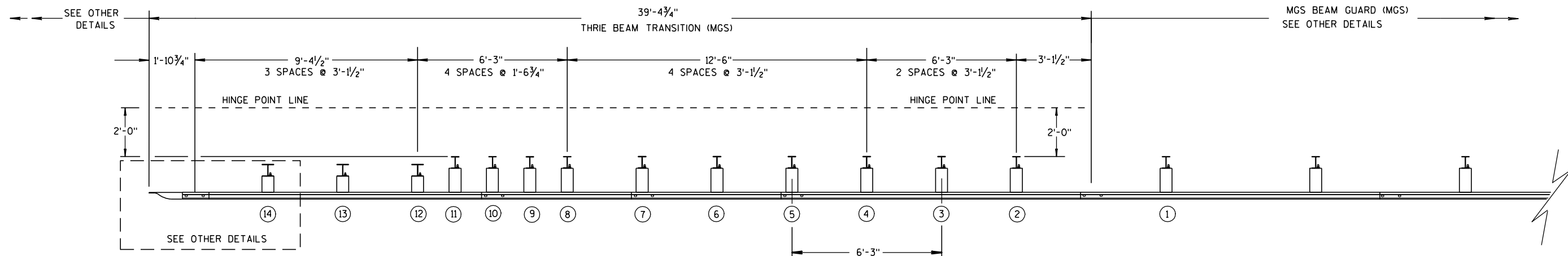
IF ROCK IS ENCOUNTERED DURING EXCAVATION, SEE STANDARD DETAIL DRAWING 14 B 42.

TRANSITION USES STEEL POSTS ONLY.

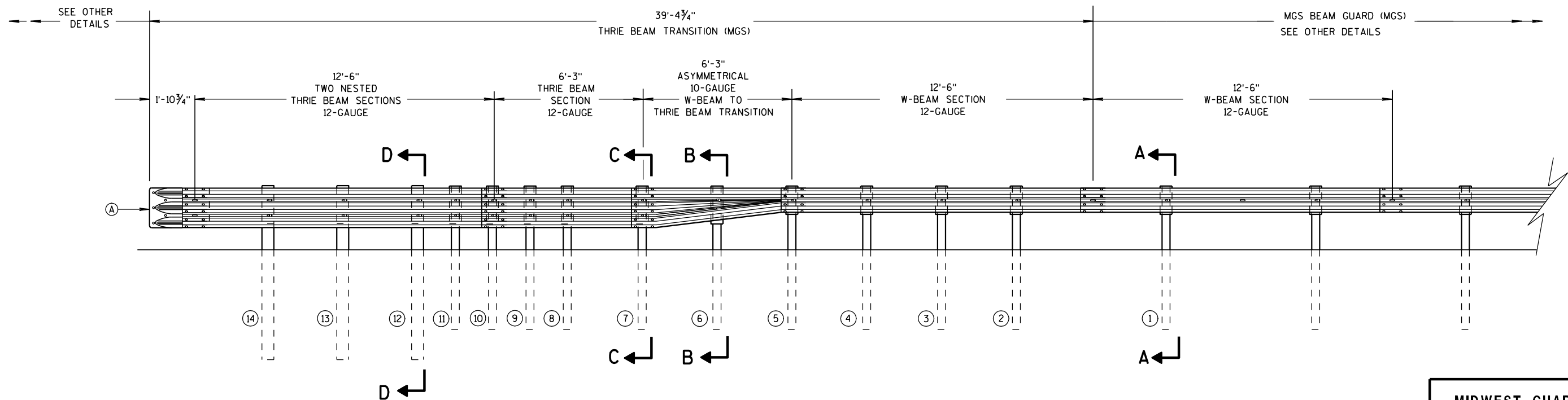
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

Ⓐ 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

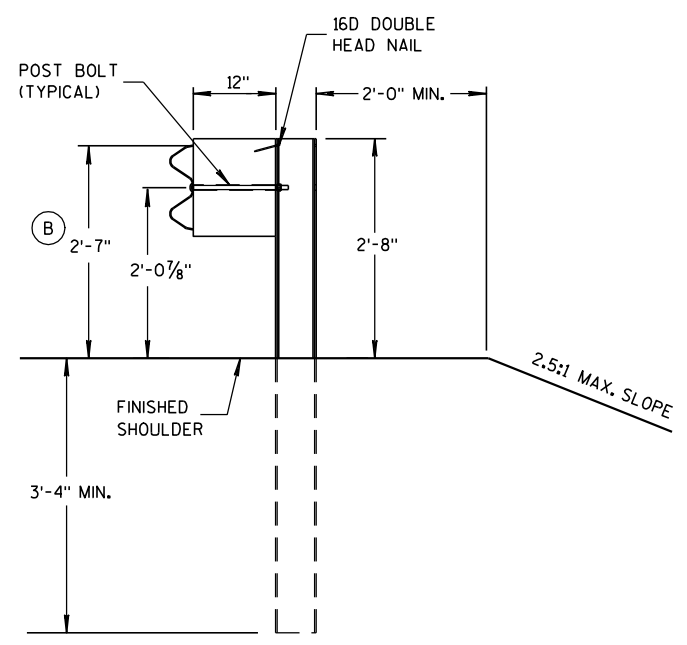
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

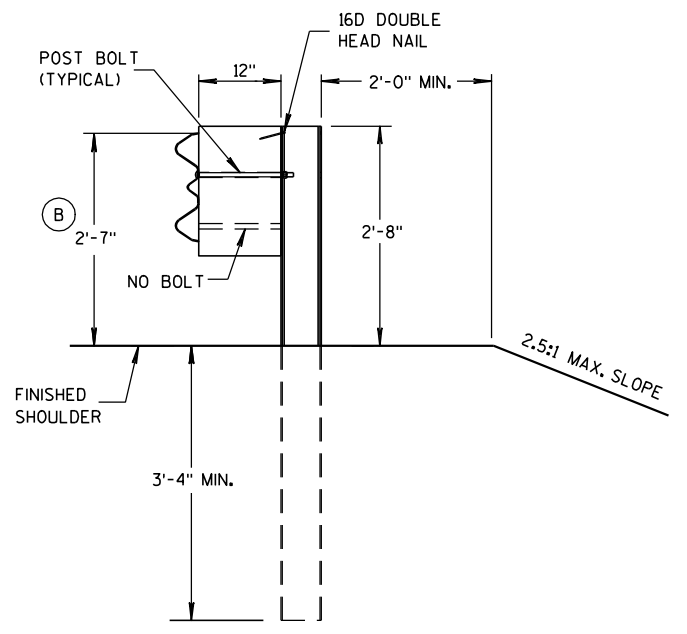
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

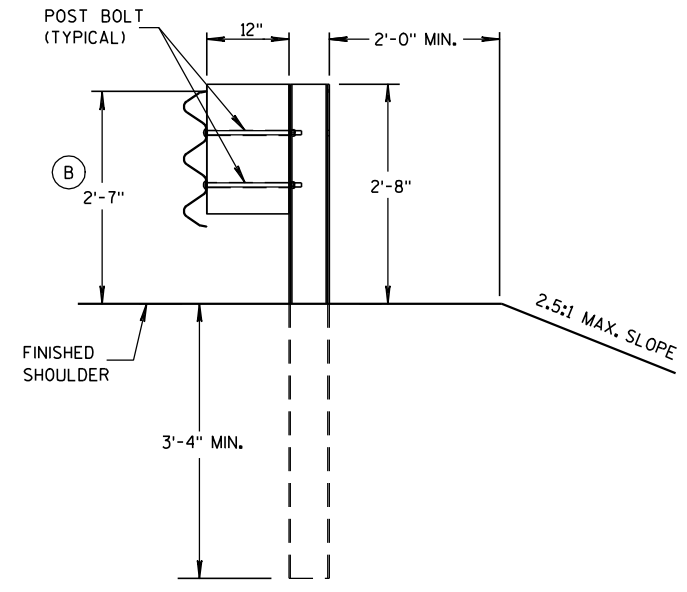
(B) TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm 1"$.



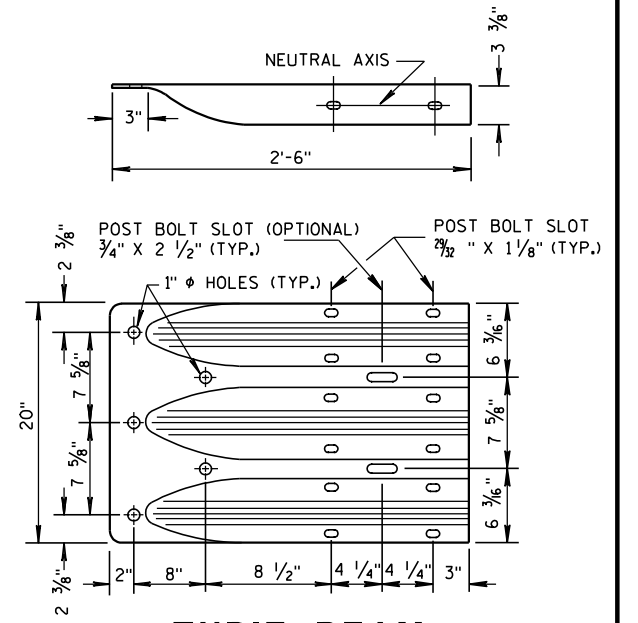
SECTION A-A
POSTS 1-5



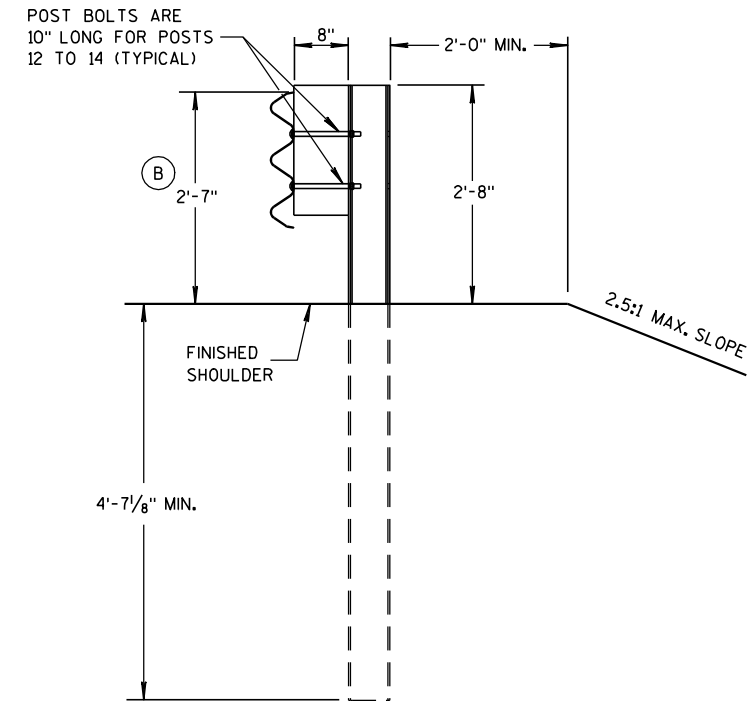
SECTION B-B
POST 6



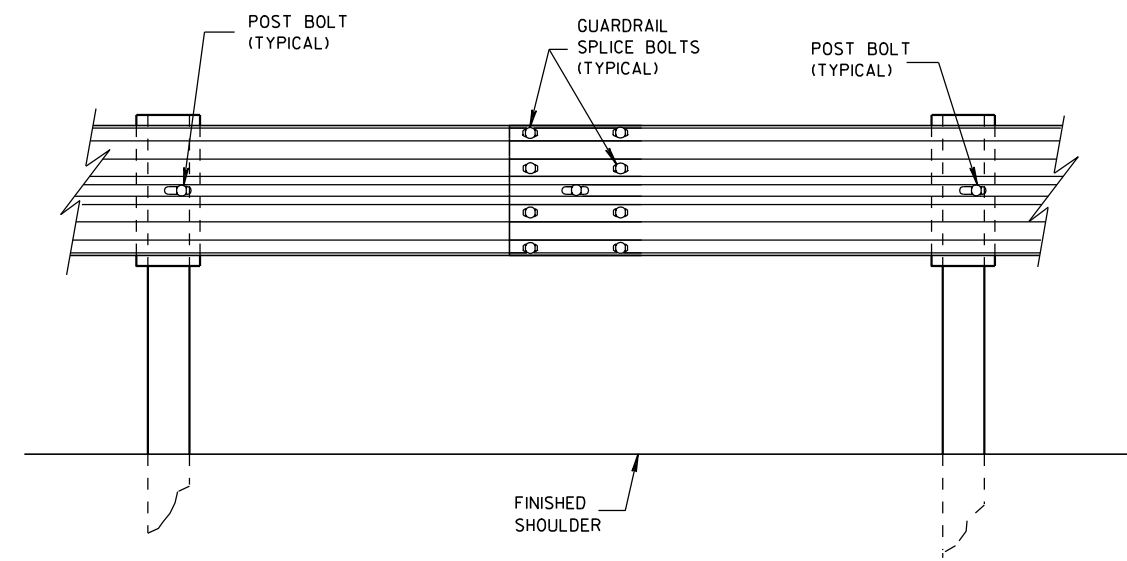
SECTION C-C
POSTS 7-11



THRIE BEAM
TERMINAL CONNECTOR



SECTION D-D
POSTS 12-14



SPLICE DETAIL

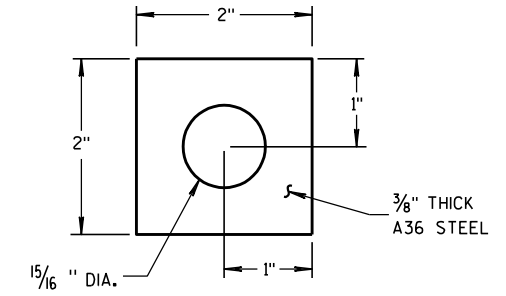
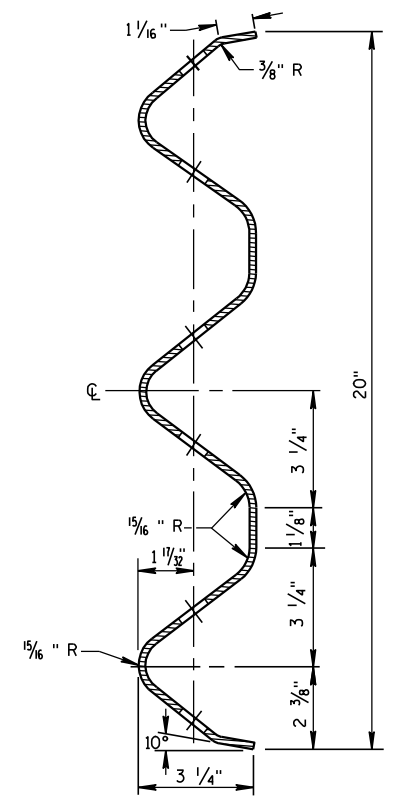


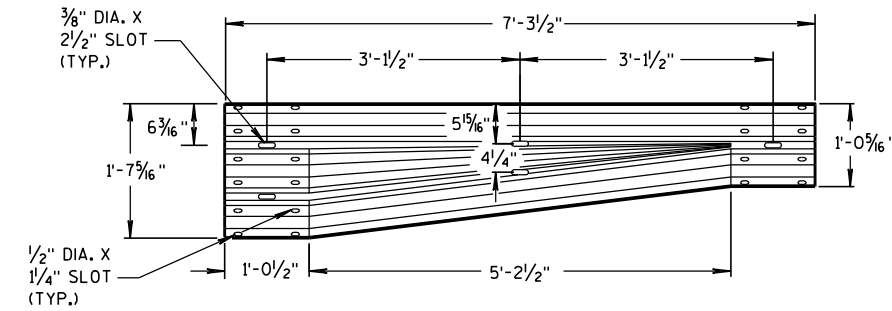
PLATE WASHER DETAIL



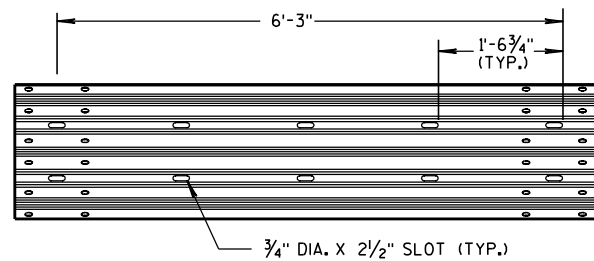
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

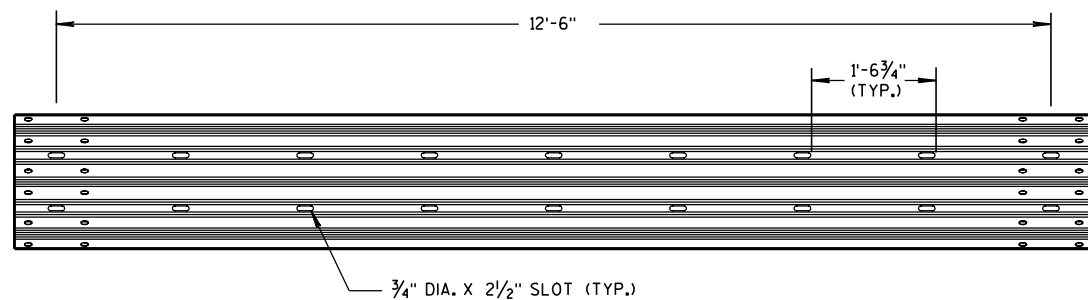
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



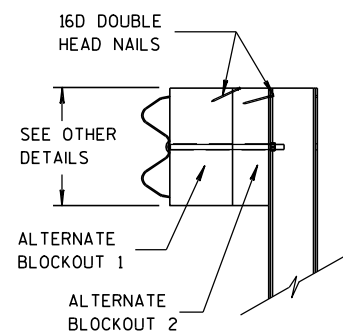
W-BEAM TO THRIE BEAM TRANSITION SECTION



6'-3" THRIE BEAM SECTION

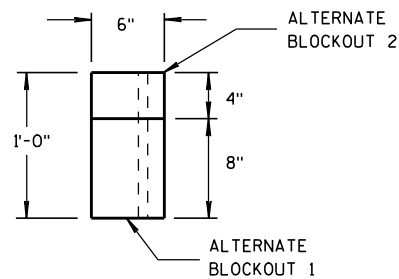


12'-6" THRIE BEAM SECTION

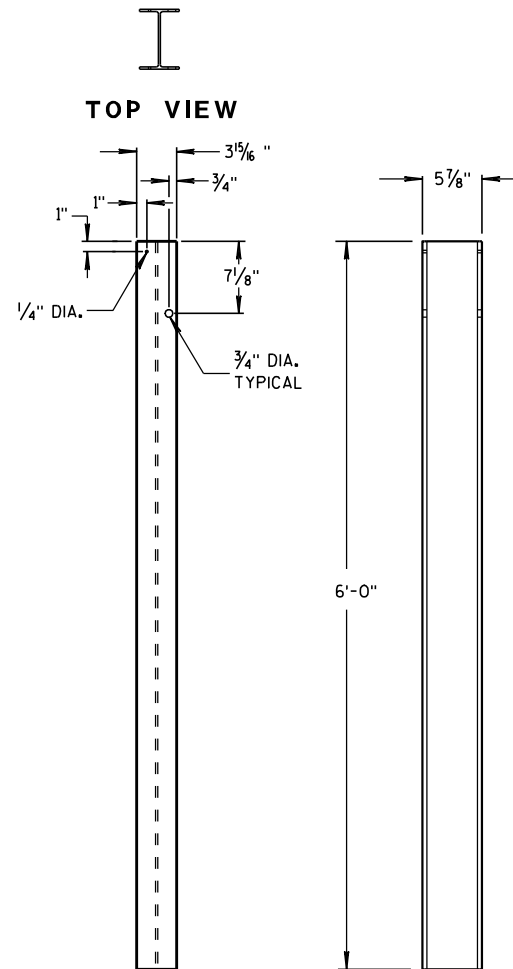


SIDE VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL



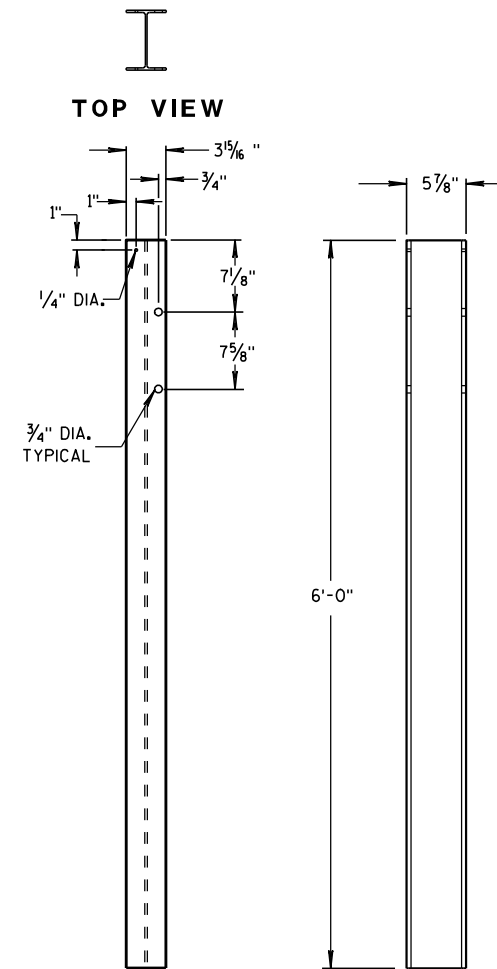
TOP VIEW



FRONT VIEW

SIDE VIEW

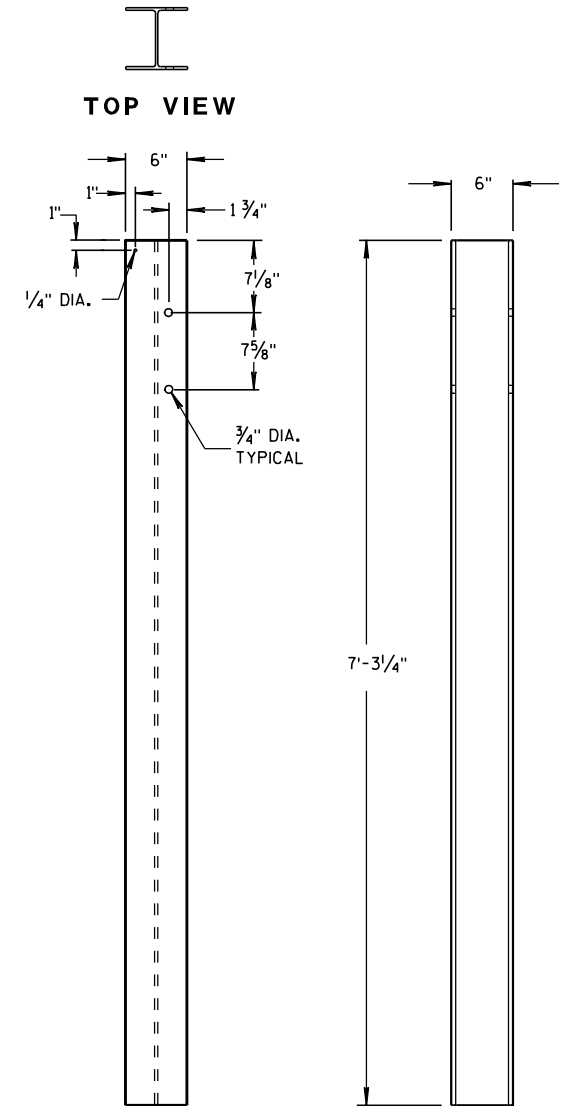
STEEL POSTS 1-5



FRONT VIEW

SIDE VIEW

STEEL POSTS 6-11

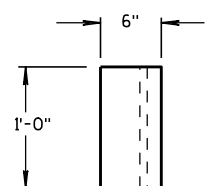


FRONT VIEW

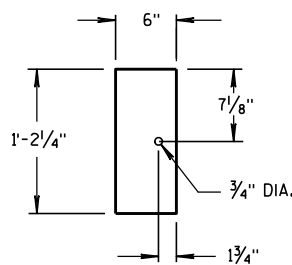
SIDE VIEW

STEEL POSTS 12-14

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

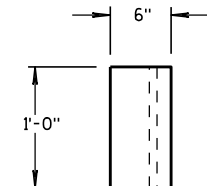


TOP VIEW

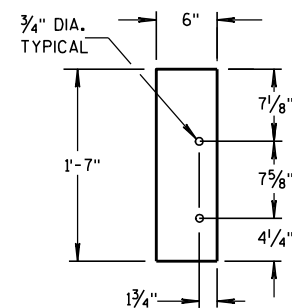


FRONT VIEW

BLOCKOUT
POSTS 1-5

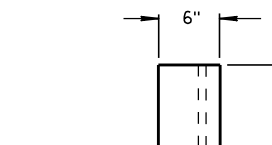


TOP VIEW

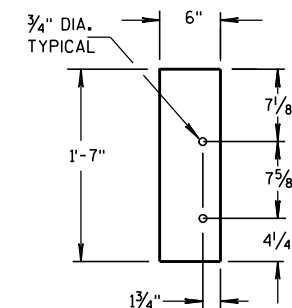


FRONT VIEW

BLOCKOUT
POSTS 6-11



TOP VIEW



FRONT VIEW

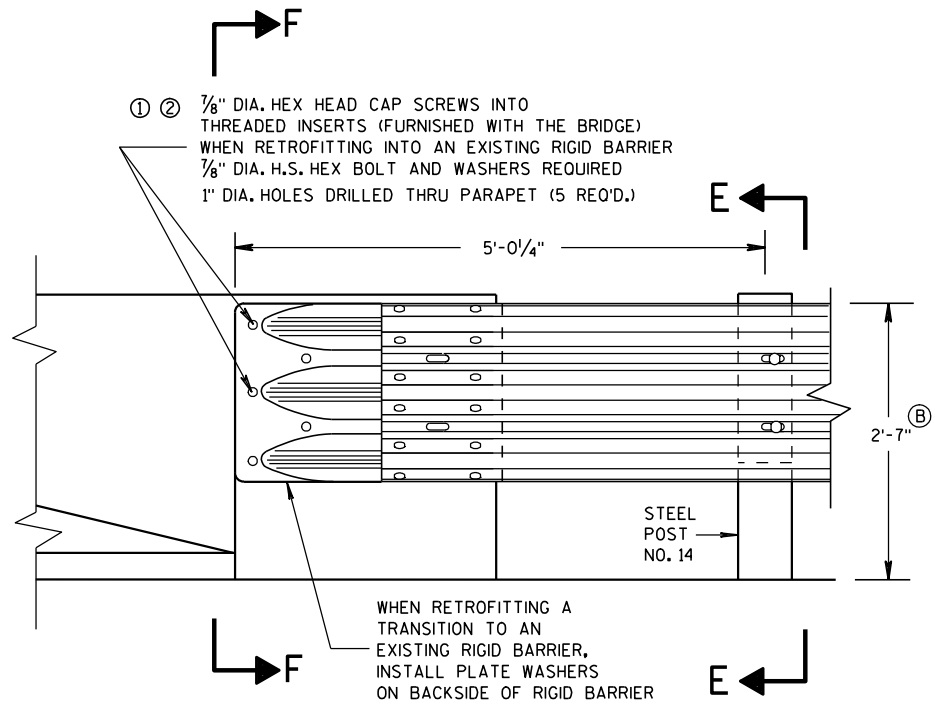
BLOCKOUT
POSTS 12-14

STEEL POST SIZES

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

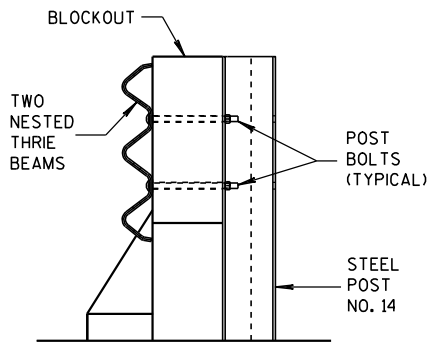
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



FRONT VIEW

THRIE BEAM CONNECTION TO BRIDGE
PARAPET WITH SQUARE ENDS

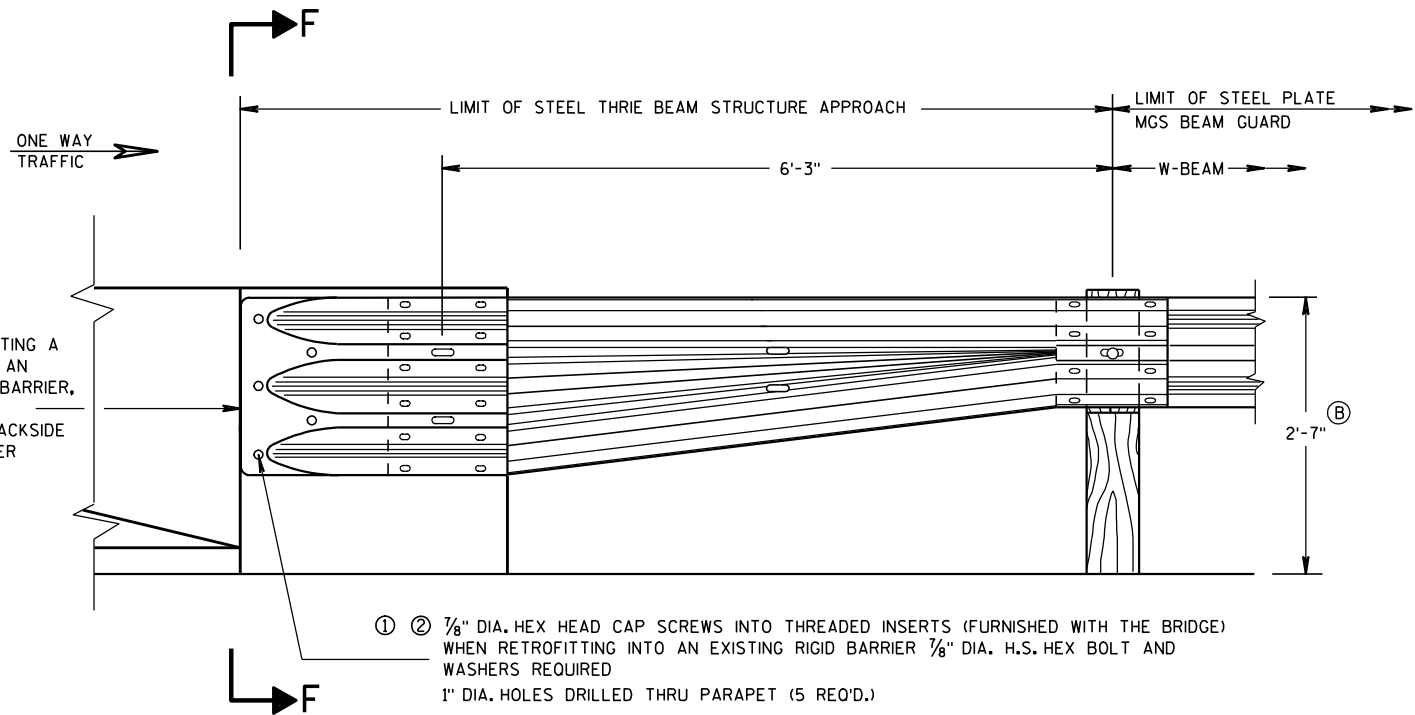


SECTION E-E

GENERAL NOTES

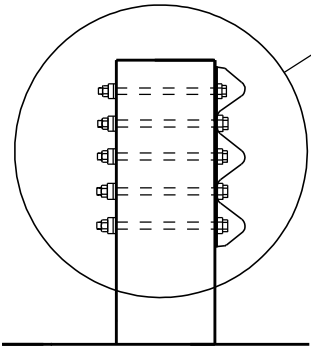
THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

- ① INCLUDE THE PAYMENT FOR DRILLING BOLT HOLES THROUGH THE PARAPET, AND ALL BOLTS, NUTS AND WASHERS IN THE ITEM "STEEL THRIE BEAMSTRUCTURAL APPROACH".
- ② BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM. CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ③ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".
- (B) TOLERANCE FOR TOP OF BEAM IS ± 1".

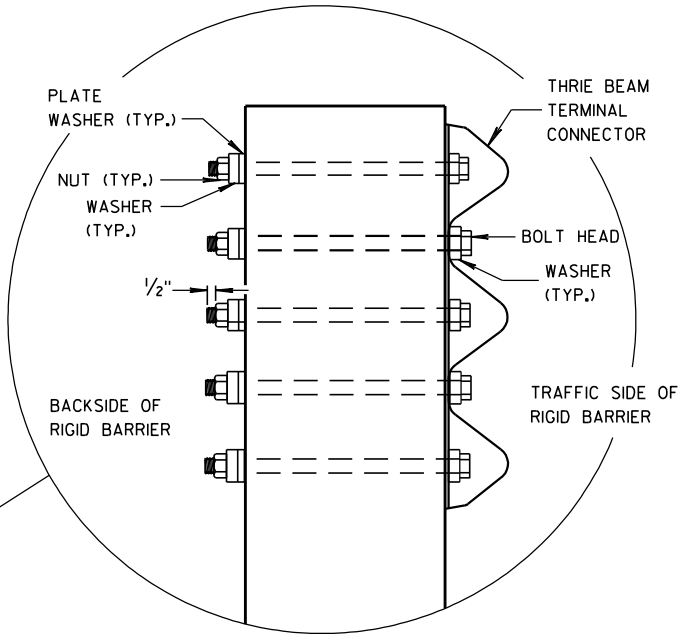


FRONT VIEW

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



SECTION F-F



MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
2/8/2012 DATE /S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA

6

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

- 6



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



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

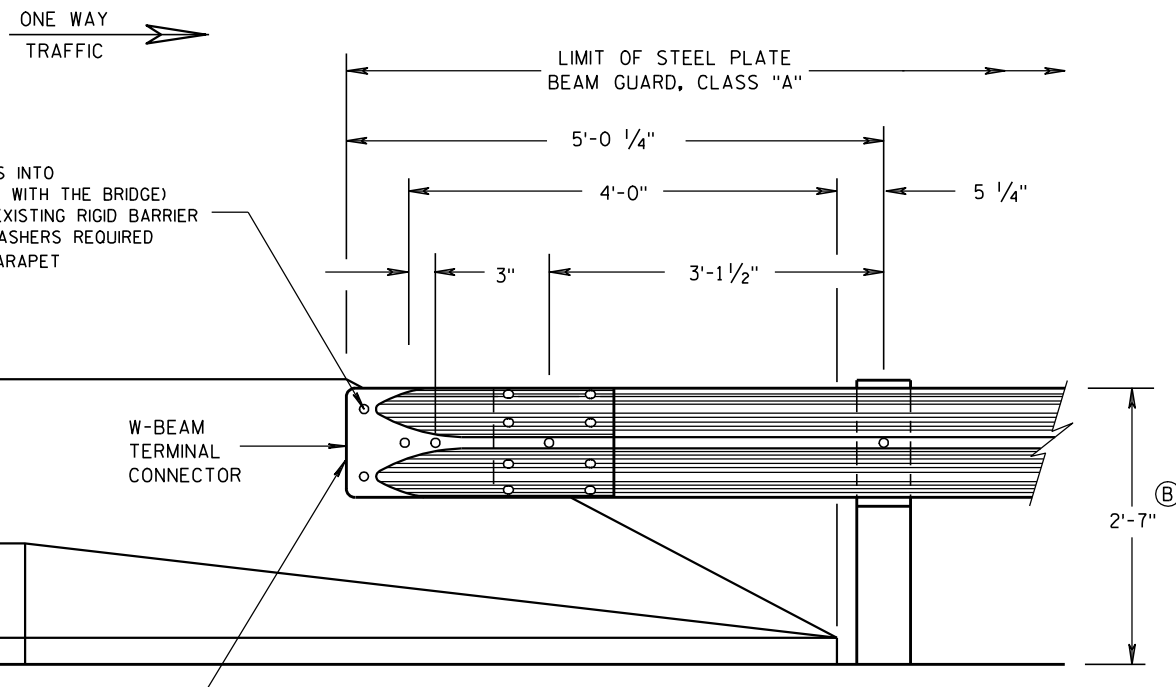


S.D.D. 14 B 45-2e



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

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



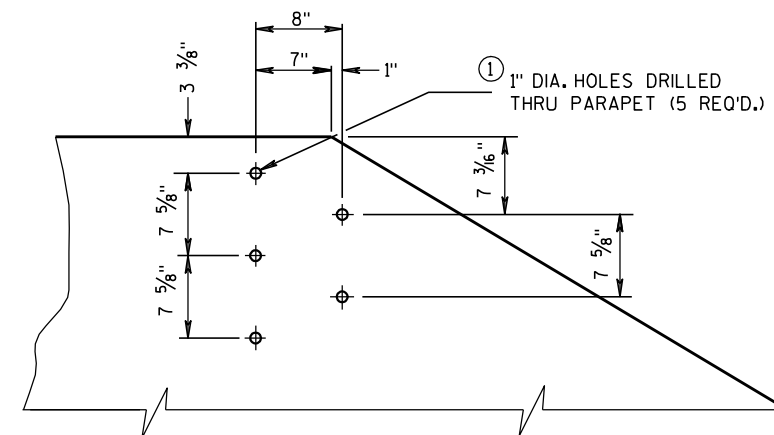
FRONT VIEW

W BEAM CONNECTION TO PARAPETS WITH SLOPED ENDS

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

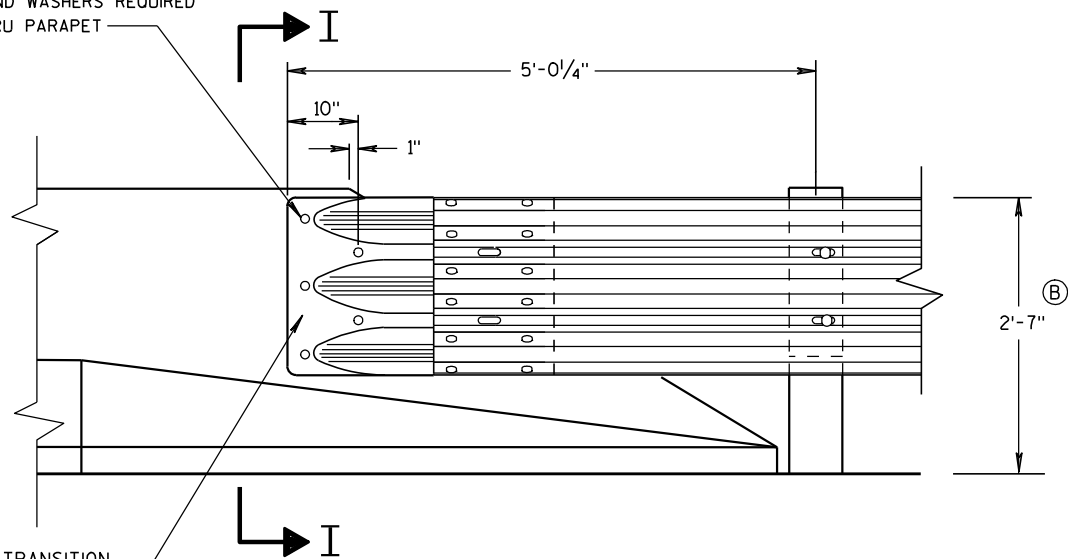
GENERAL NOTES

- ① INCLUDE THE PAYMENT FOR DRILLING BOLT HOLES THROUGH THE PARAPET, AND ALL BOLTS, NUTS AND WASHERS IN THE ITEM "STEEL THRIE BEAM STRUCTURAL APPROACH".
- ② BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ③ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.



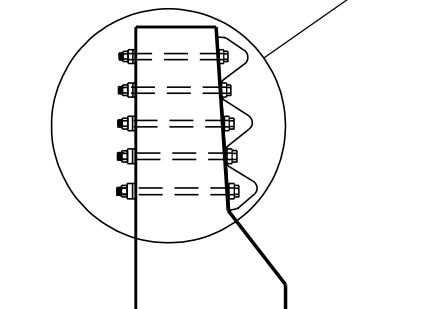
DRILL HOLE LOCATION AND PATTERN FOR THRIE BEAM CONNECTION

- ① ② 1/8" DIA. HEX HEAD CAP SCREWS INTO THREADED INSERTS (FURNISHED WITH THE BRIDGE) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER 7/8" DIA. H.S. HEX BOLT AND WASHERS REQUIRED 1" DIA. HOLES DRILLED THRU PARAPET (5 REQ'D.).

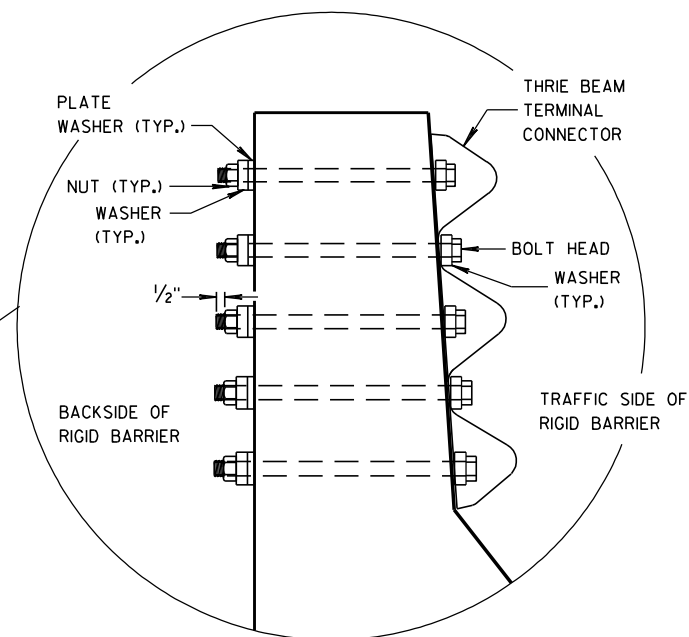


FRONT VIEW

THRIE BEAM CONNECTION TO BRIDGE PARAPETS WITH SLOPED ENDS



SECTION I-I



MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

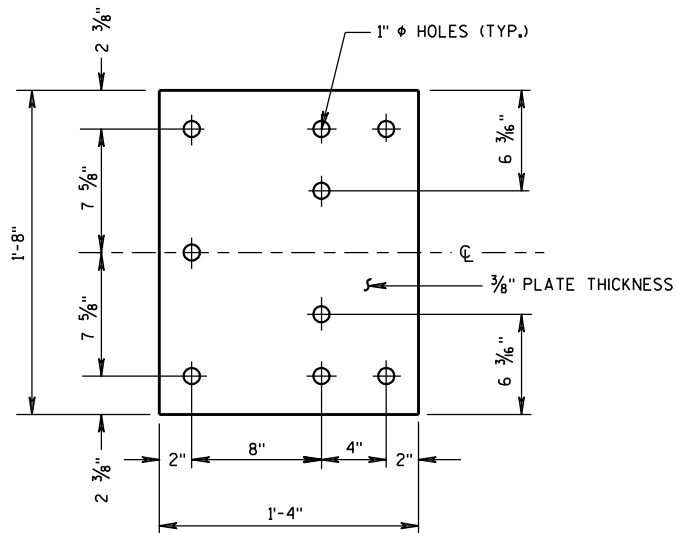
APPROVED

2-8-2012

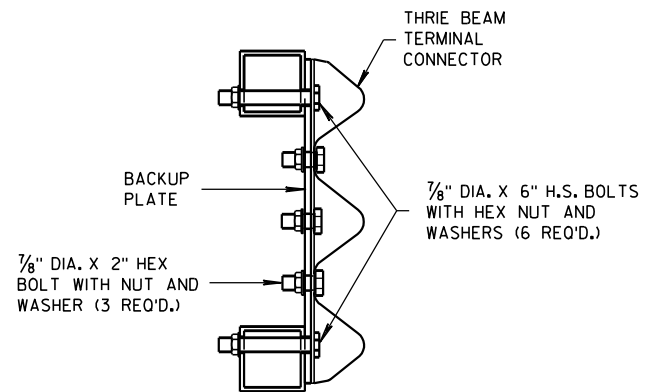
DATE

FHWA

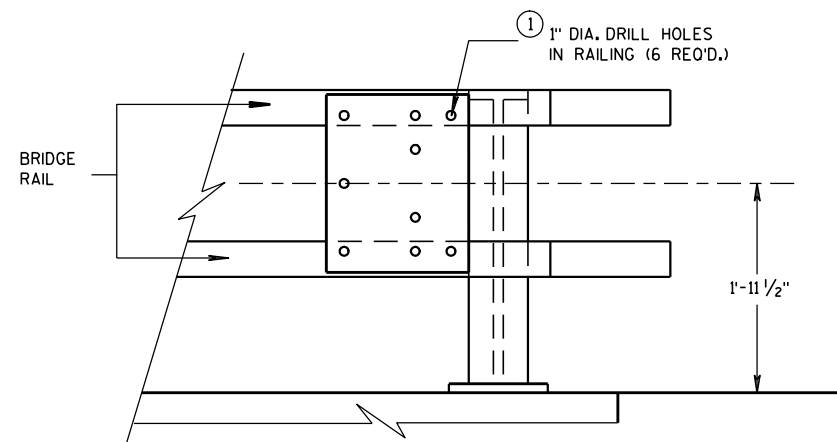
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER



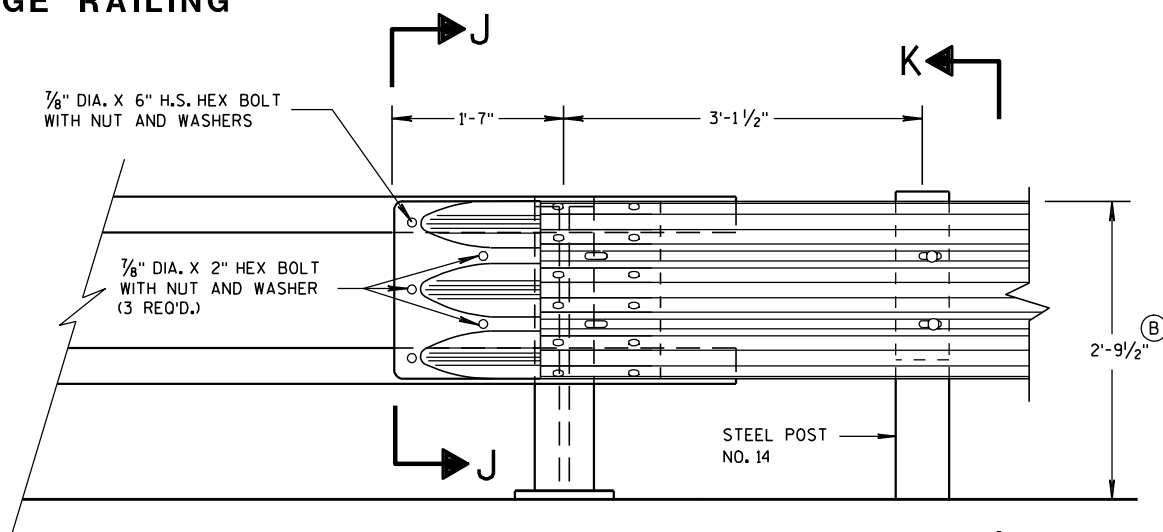
BACK-UP PLATE DETAIL



SECTION J-J

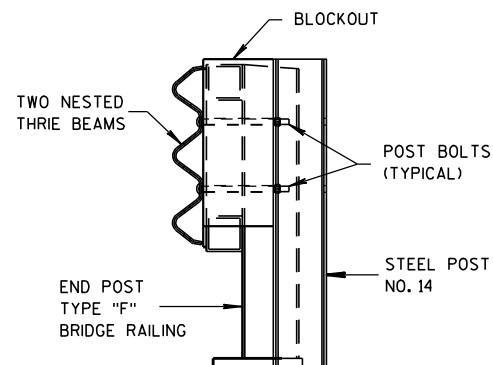


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



FRONT VIEW

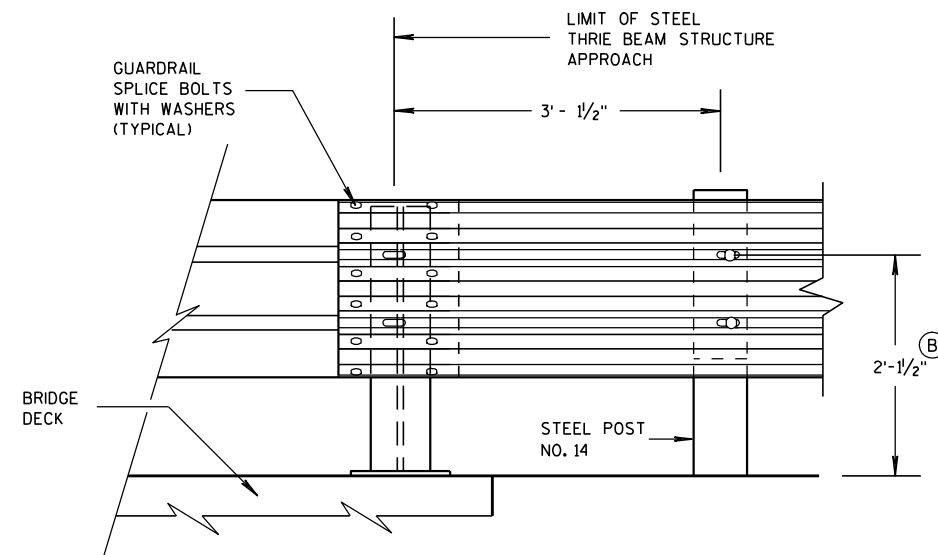
THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"



SECTION K-K

GENERAL NOTES

- ① INCLUDE THE PAYMENT FOR DRILLING HOLES IN RAILING IN THE ITEM "STEEL THRIE BEAM STRUCTURE APPROACH".
- ② TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.



FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

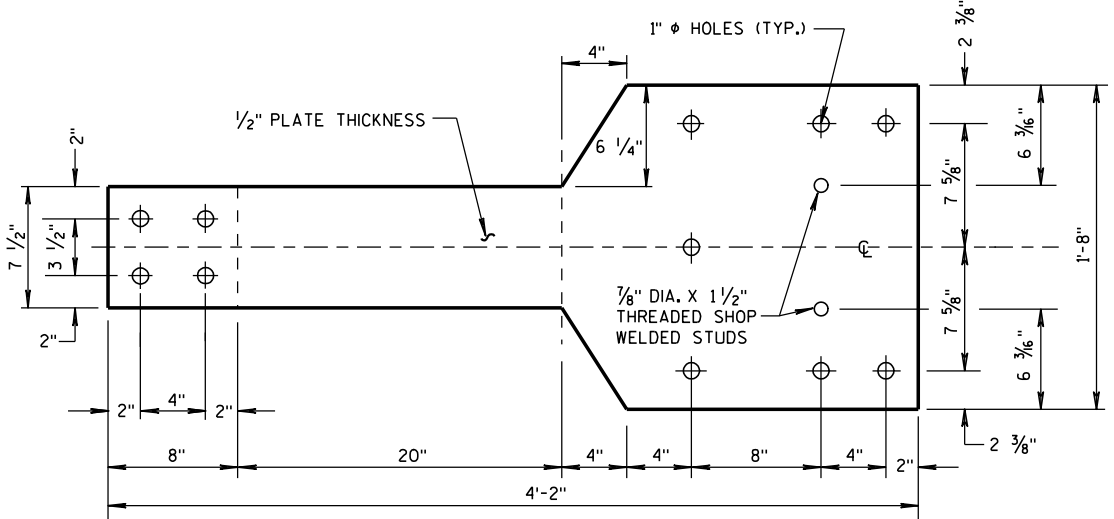
2-8-2012
DATE

FHWA

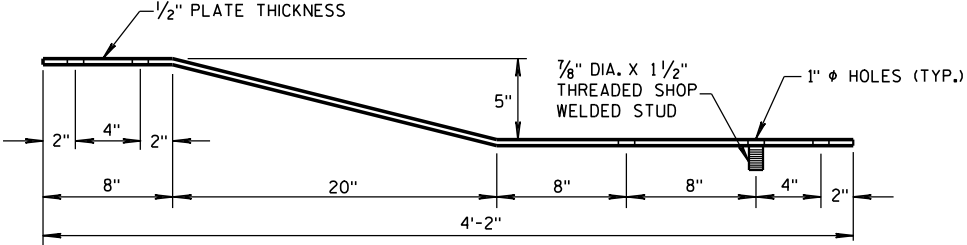
/s/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

GENERAL NOTES

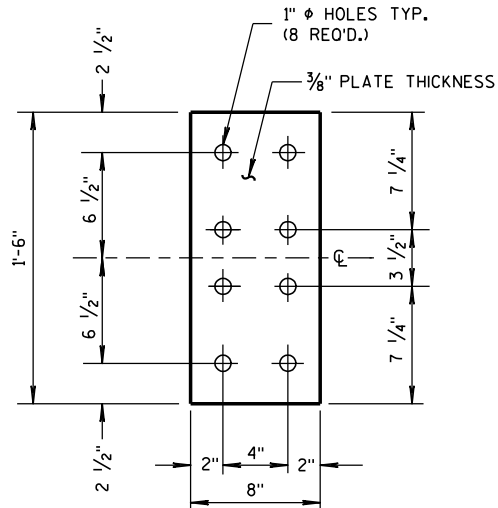
(B) TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm 1"$.



FRONT VIEW

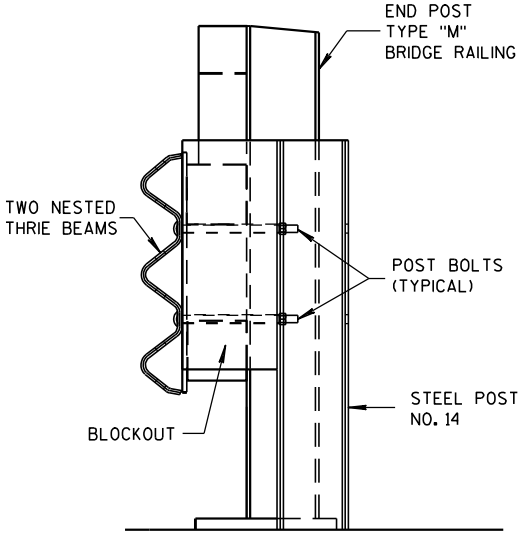


PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"

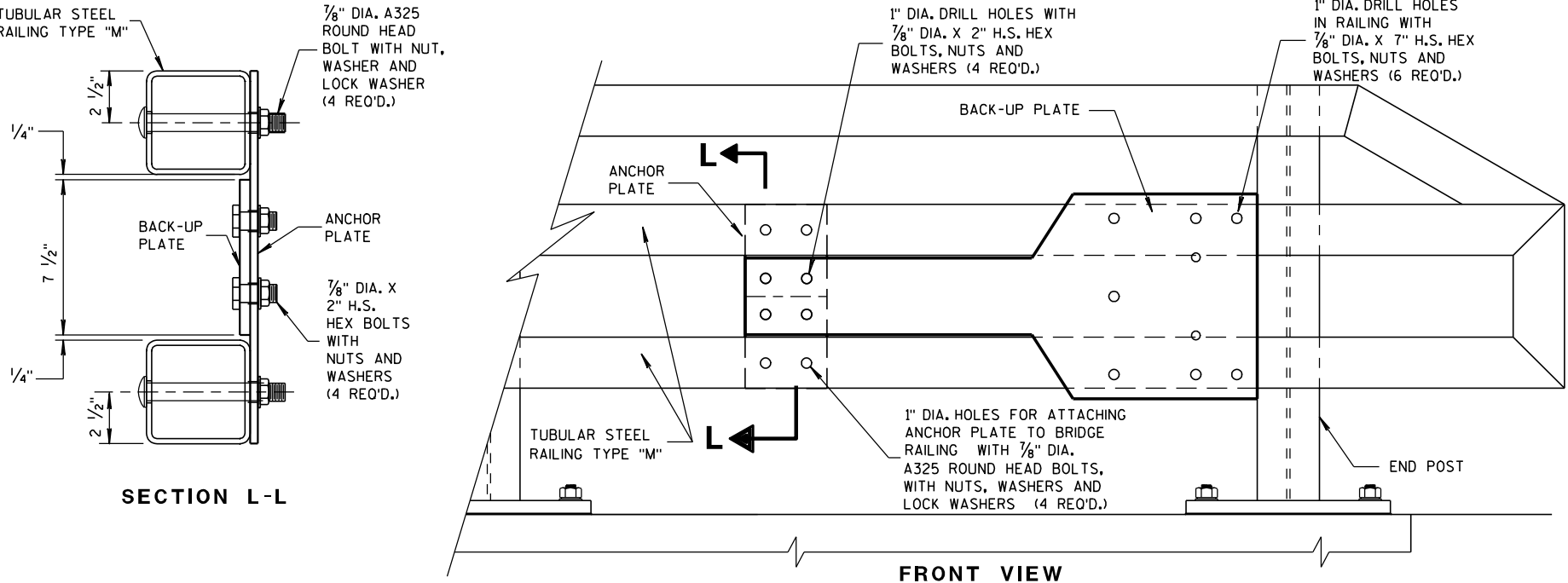


FRONT VIEW

ANCHOR
PLATE DETAIL,
TYPE "M"



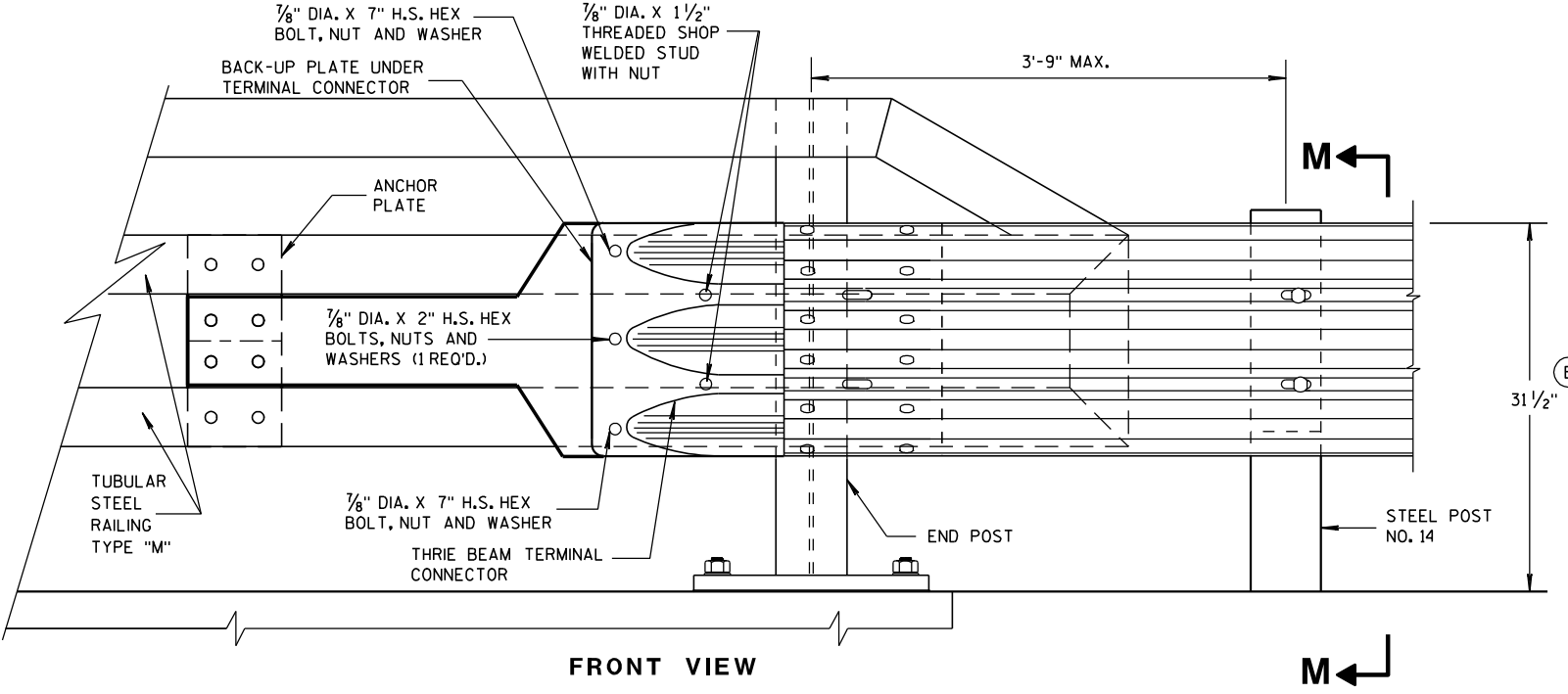
SECTION M-M



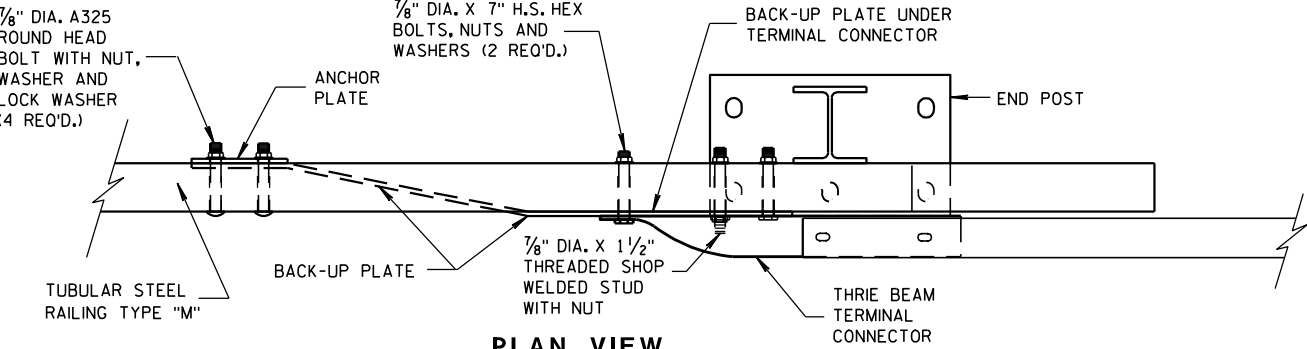
SECTION L-L

FRONT VIEW

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



FRONT VIEW



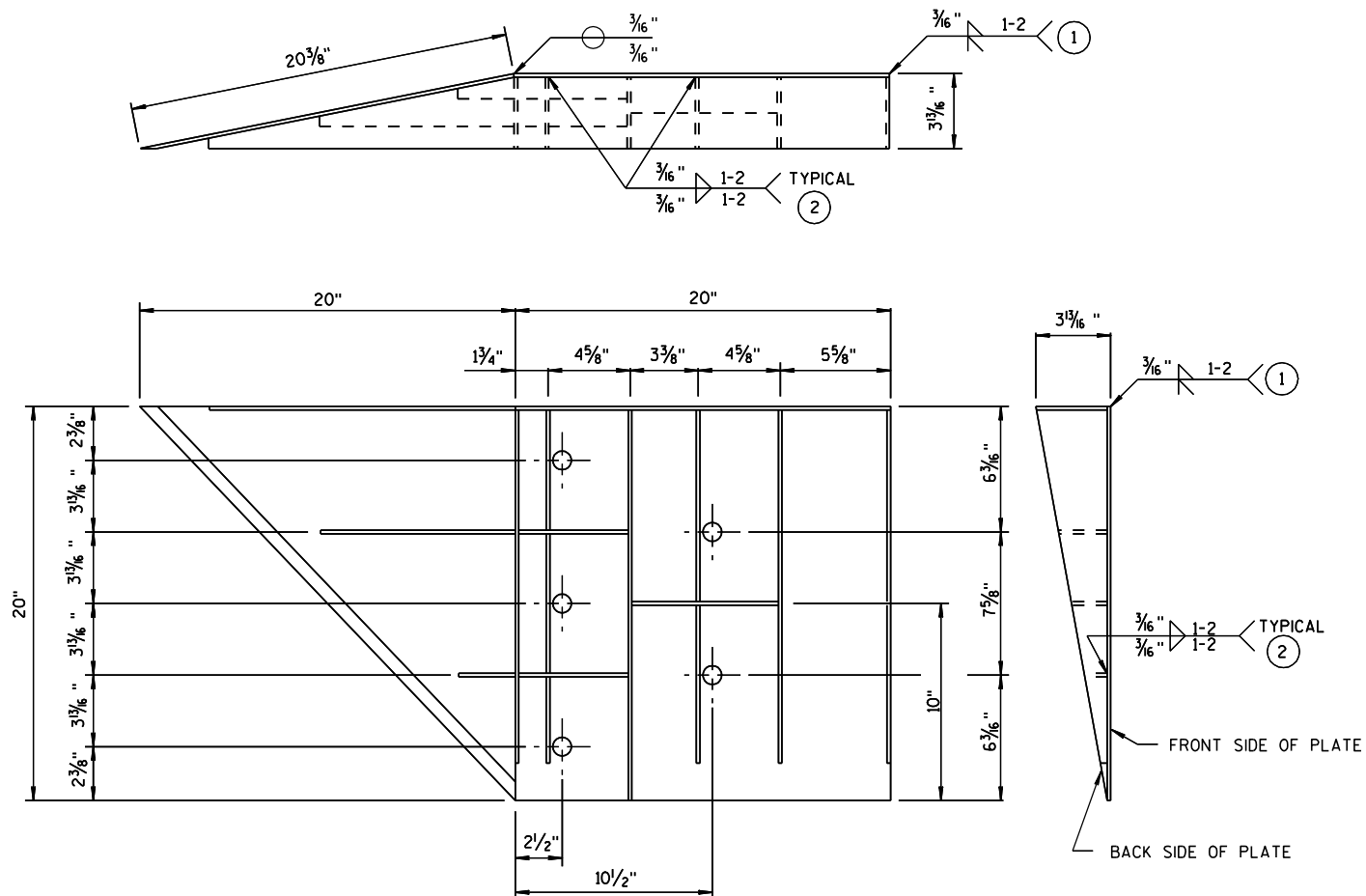
PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
2-8-2012 DATE /S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA



WELDING INSTRUCTION

(VIEWED FROM BACK SIDE OF PLATE)

CONNECTOR PLATE DIMENSION (PER ASSEMBLY)				
PLATE	QUANTITY	SHAPE	SIZE (A x B x C x D)	THICKNESS
P1	1		20" x 20"	3/16"
P2	1		20" x 20" x 28 3/16"	3/16"
P3	1		39" x 3 5/8" x 20" x 19 3/16"	3/16"
S1	4		18 1/16" x 3 5/8" x 18 3/4"	1/4"
S2	1		10 1/4" x 2 7/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 1/8" x 1/2"	1/4"
S4	1		6 1/8" x 2 7/16"	1/4"
S5	1		6 1/8" x 1 1/16"	1/4"
S6	1		7 3/4" x 1 3/4"	1/4"
S7	1		2 9/16" x 6" x 3 5/8" x 5 7/8"	1/4"
S8	1		1 9/32" x 7 1/2" x 2 1/2" x 7 3/8"	1/4"
S9	1		6 1/16" x 6 3/16" x 1 3/32"	1/4"
S10	1		1 7/8" x 9 7/8" x 3 5/8" x 9 1/16"	1/4"
S11	1		8 1/2" x 8 3/4" x 1 3/16"	1/4"

SINGLE SLOPE CONNECTION PLATE

GENERAL NOTES

COVER PLATE PANELS ARE 3/16" THICK.

ALL STIFFENERS ARE 1/4" THICK.

CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.

FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.

ALL HOLE DIAMETERS SHALL BE 1".

FOR OPPOSITE SIDE INSTALLATION MIRROR DRAWINGS.

- ① STIFFENERS LOCATED AT THE OUTSIDE EDGES OF THE COVER PLATES SHALL BE WELDED AS FOLLOWS:
SINGLE BEVEL GROOVE WELD ON EXTERNAL SIDES AND 3/16" FILLET WELD BY 1" LONG SPACED AT 2" ON INTERNAL SIDES.
- ② STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
3/16" FILLET WELD BY 1" LONG SPACED AT 2".

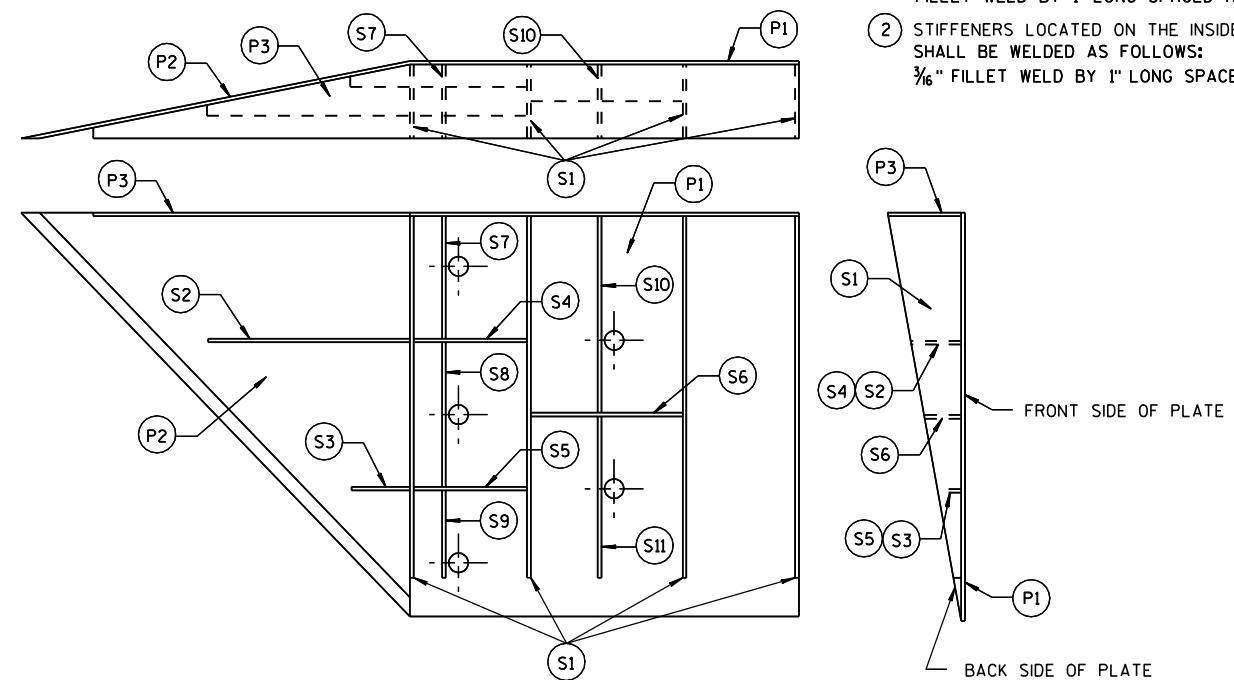


PLATE AND STIFFENER IDENTIFICATION

(VIEWED FROM BACK SIDE OF PLATE)

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

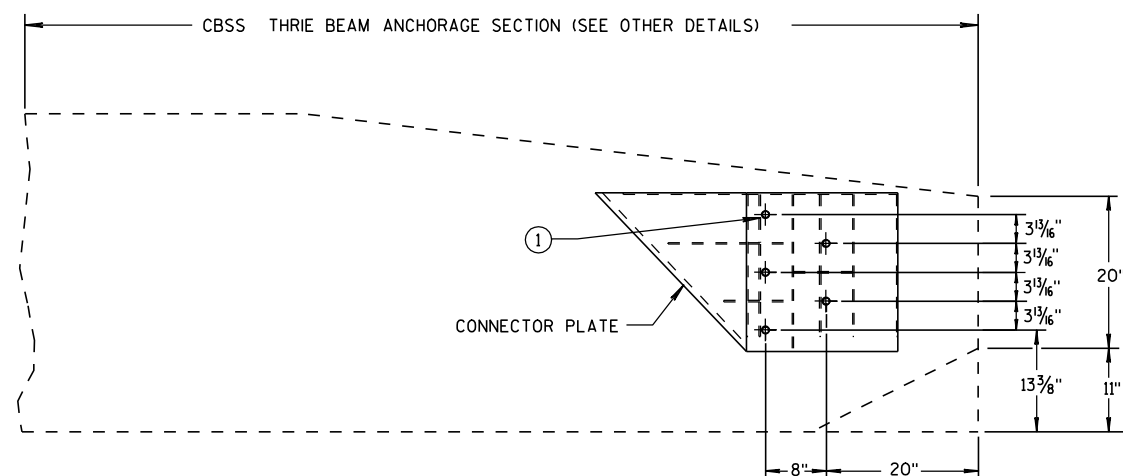
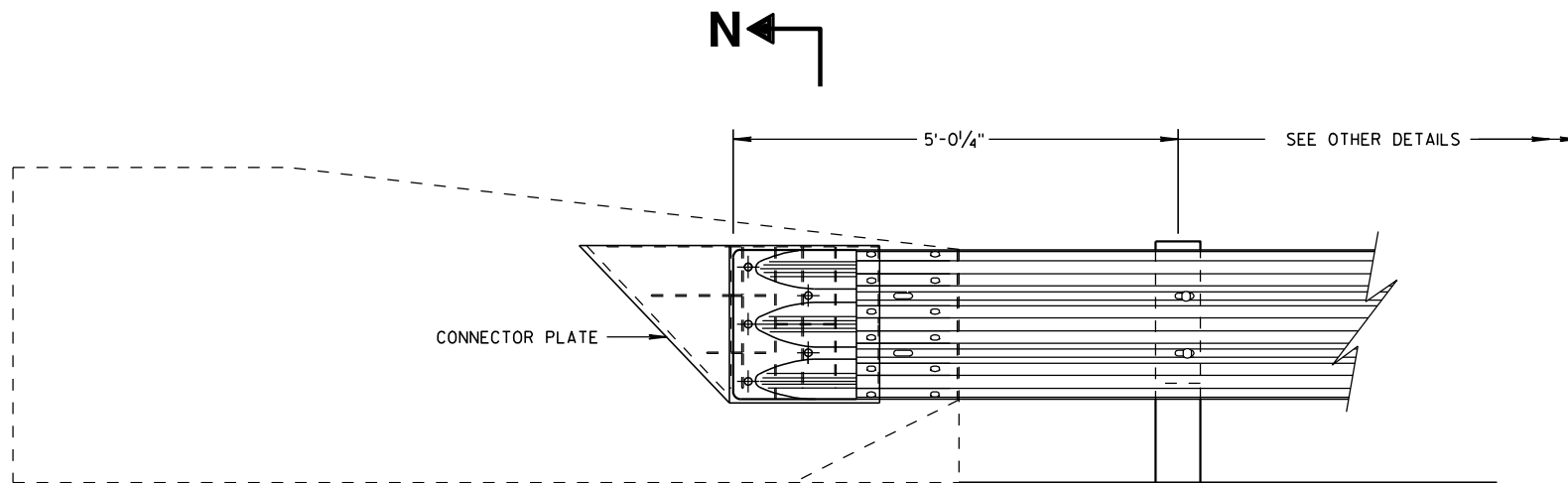
2-8-2012

DATE

FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER

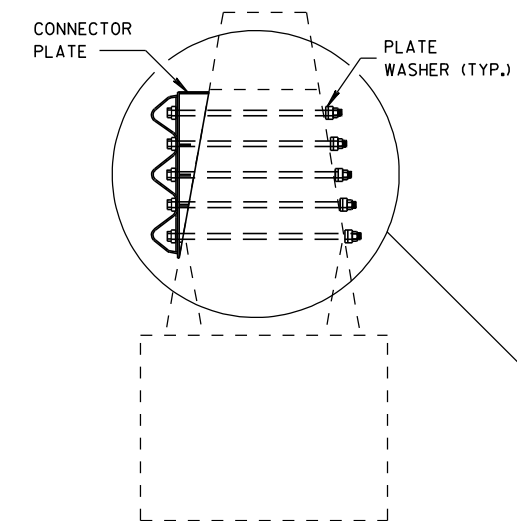


SINGLE SLOPE CONNECTION PLATE PLACEMENT

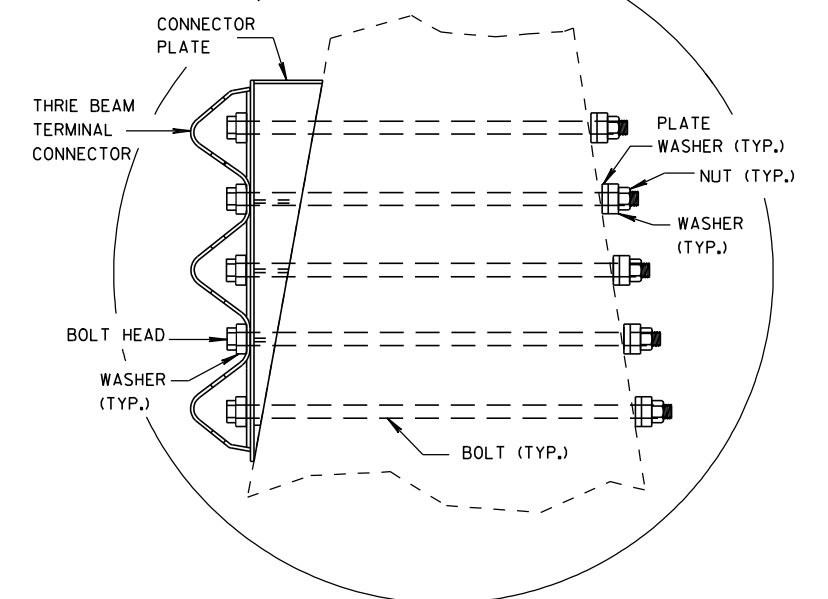
GENERAL NOTES

CONNECTION PLATE INCIDENTAL TO STEEL THRIE BEAM TRANSITION.

- ① BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



SECTION N-N



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

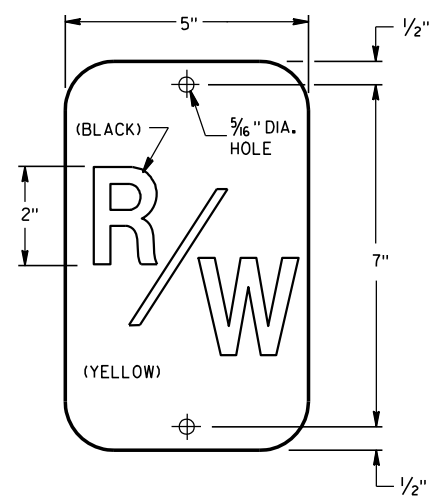
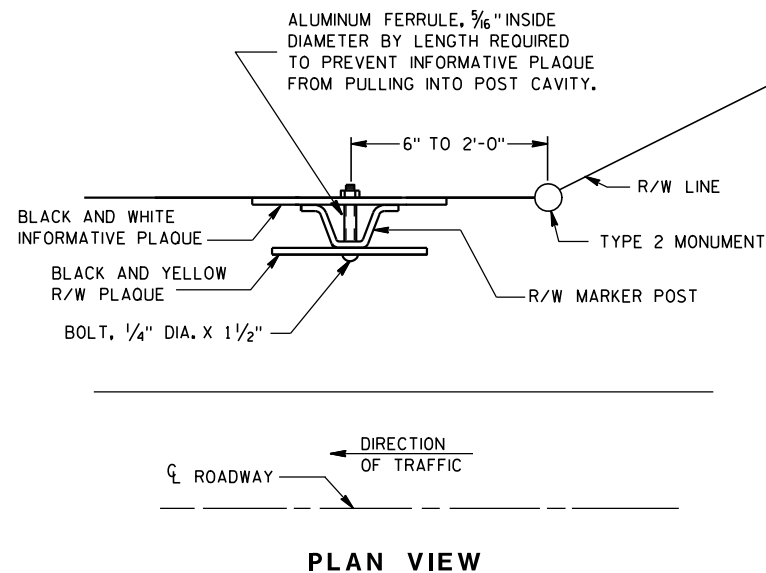
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

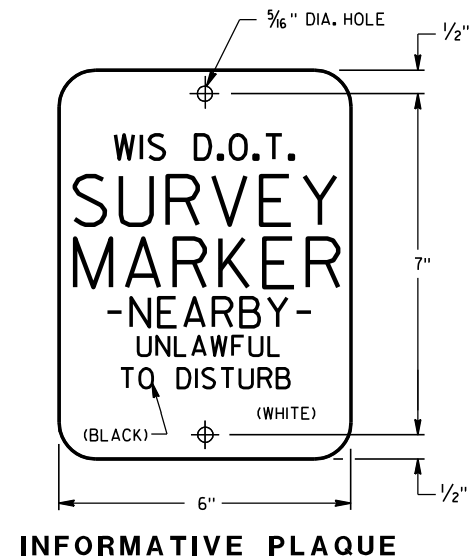
2-8-2012
DATE

FHWA

/s/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER



THE RIGHT-OF-WAY PLAQUE AND INFORMATIVE PLAQUE WILL BE FURNISHED BY THE WISCONSIN DEPARTMENT OF TRANSPORTATION.



GENERAL NOTES

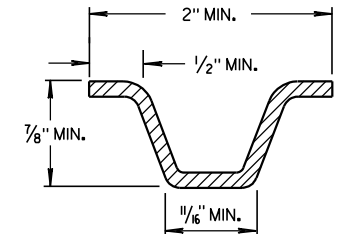
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

A STEEL MARKER POST FOR RIGHT-OF-WAY SHALL BE PLACED IN THE RIGHT-OF-WAY, WITH THE BACK OF THE POST ON THE LONGER RIGHT-OF-WAY TANGENT, 6 INCHES TO 24 INCHES FROM EACH TYPE 2 MONUMENT TO SERVE AS A GUARD POST, AND AT OTHER LOCATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

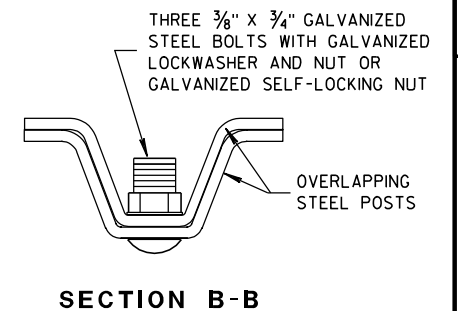
THE "R/W" PLAQUE SHALL FACE THE ROADWAY AND THE INFORMATIVE PLAQUE SHALL FACE AWAY FROM THE ROADWAY. R/W AND INFORMATIVE PLAQUES WILL BE FURNISHED BY THE DEPARTMENT OF TRANSPORTATION.

STEEL MARKER POSTS SHALL MEET THE MINIMUM MATERIAL REQUIREMENTS FOR STEEL DELINEATOR POSTS; EXCEPT POSTS PAINTED WITH FEDERAL YELLOW ENAMEL NEED NOT BE ZINC COATED.

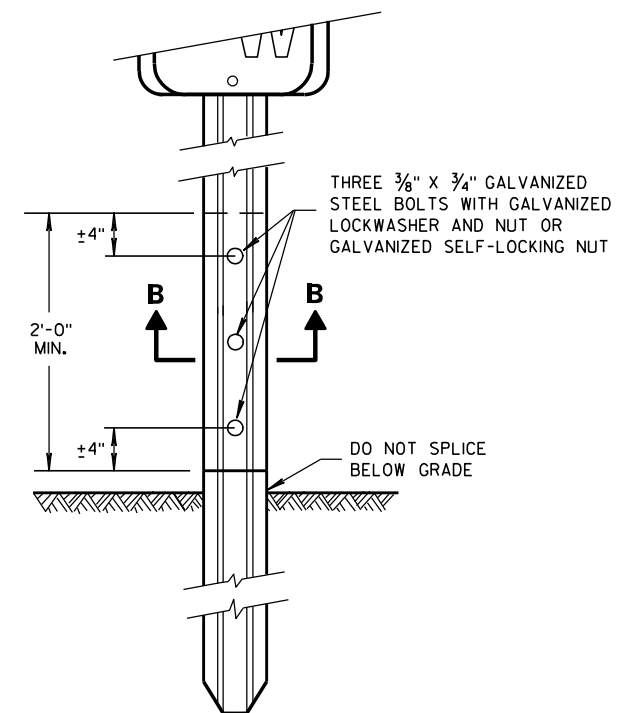
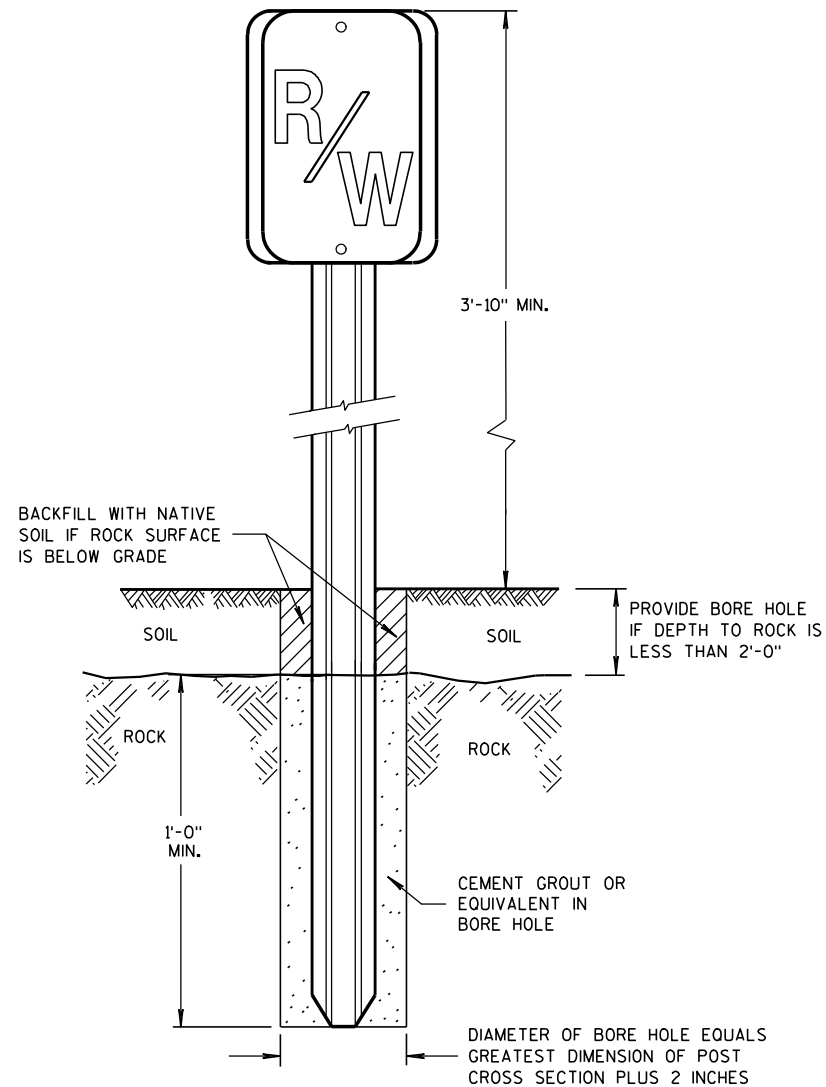
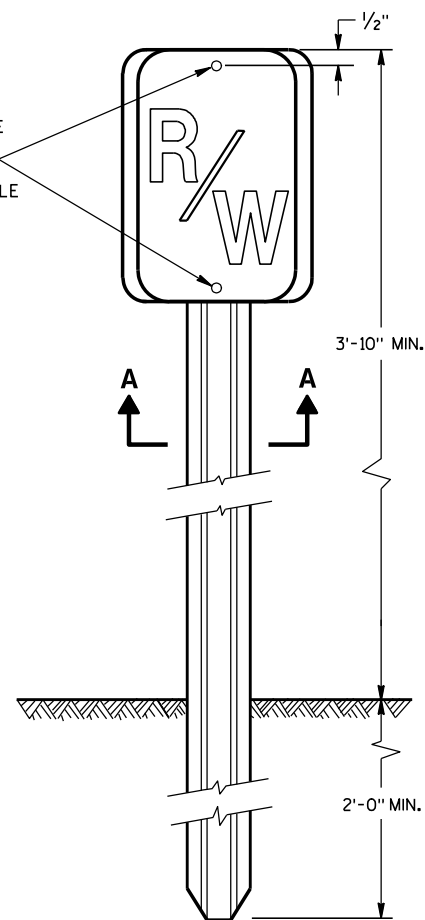
- ① IN AREAS OF SOLID ROCK, DRILL A BORE HOLE 2" GREATER THAN THE WIDEST DIMENSION OF THE POST CROSS SECTION INTO THE ROCK TO A MINIMUM DEPTH OF 12 INCHES. CUT OR SPLICE THE POST SO THAT A MINIMUM LENGTH OF 3'10" PROTRUDES ABOVE THE GROUND. BLOW OUT THE BORE HOLE IN THE ROCK USING COMPRESSED AIR. FILL THE BORE HOLE WITH CEMENT GROUT, OR EQUIVALENT, DEPENDING ON THE STABILITY OF THE ROCK.



MIN. WEIGHT 1.12 LB./FT.



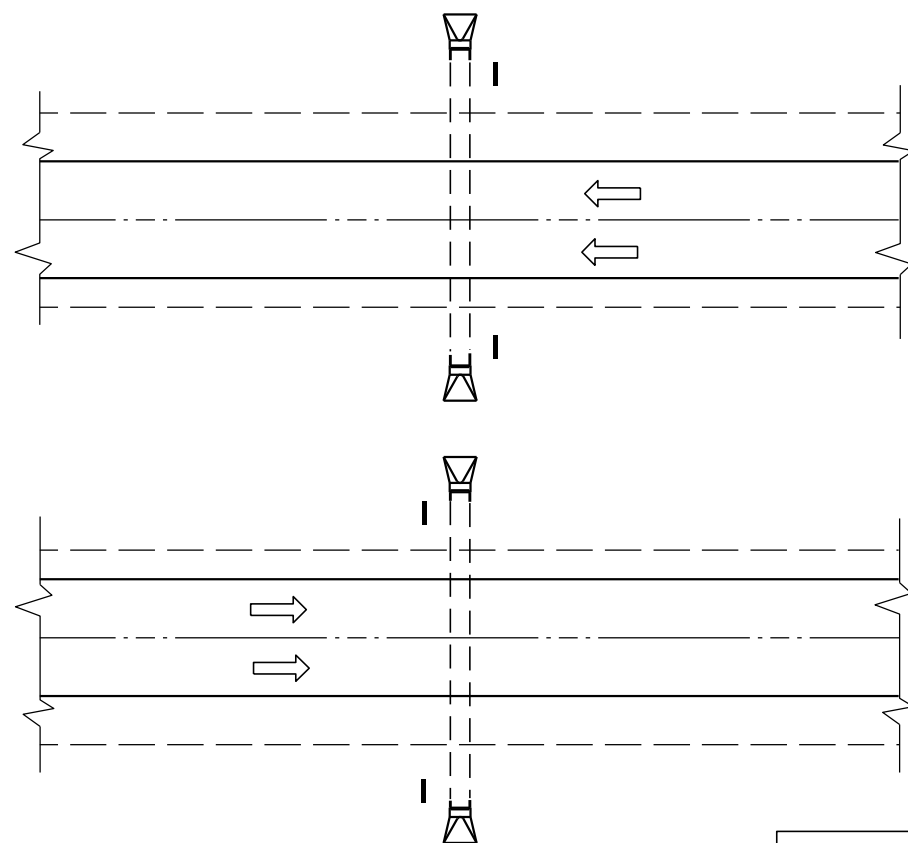
STEEL POSTS SHALL HAVE 2 - 3/8" HOLES 7" APART. POST WITH ADDITIONAL HOLES WILL BE ACCEPTABLE



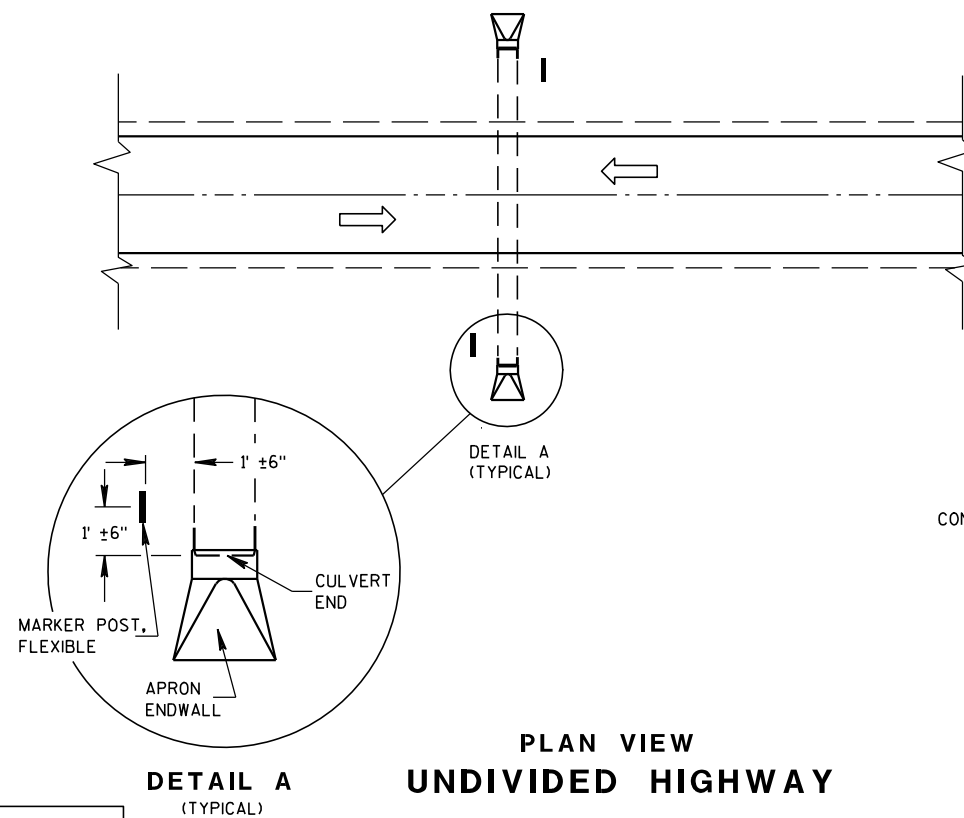
MARKER POST
FOR RIGHT-OF-WAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4/27/09 /S/ Ray Kumapayi
DATE CHIEF SURVEYING AND MAPPING ENGINEER
FHWA

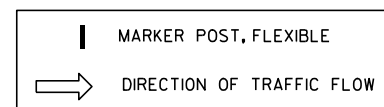


PLAN VIEW
DIVIDED HIGHWAY

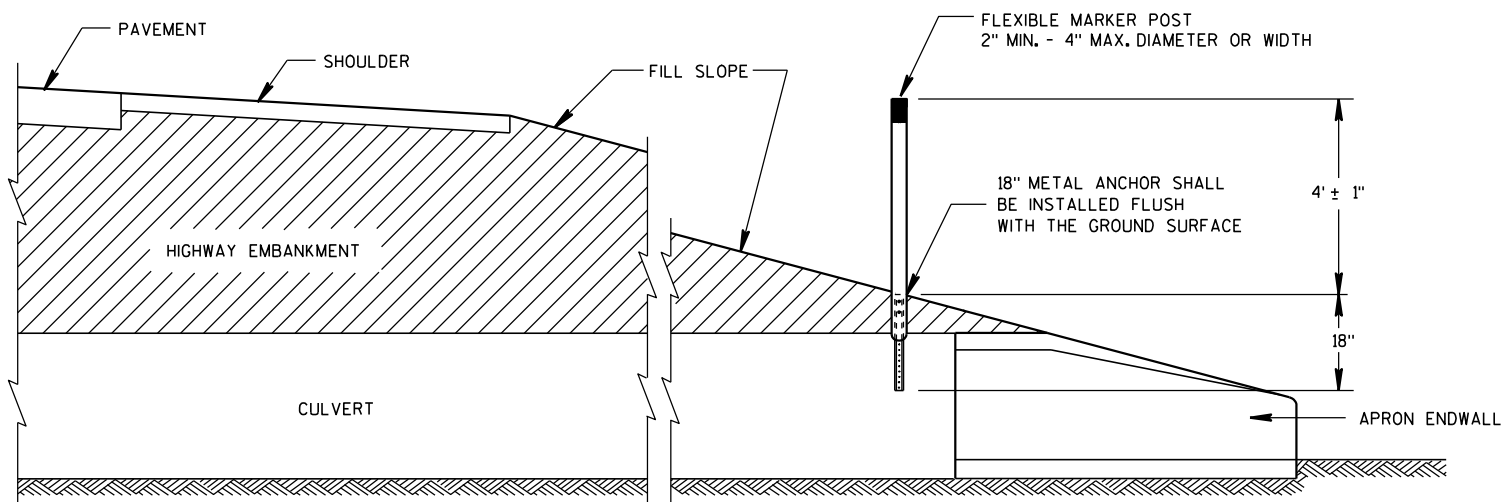


PLAN VIEW
UNDIVIDED HIGHWAY

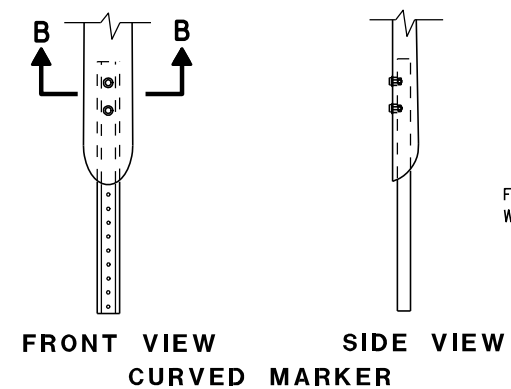
DETAIL A
(TYPICAL)



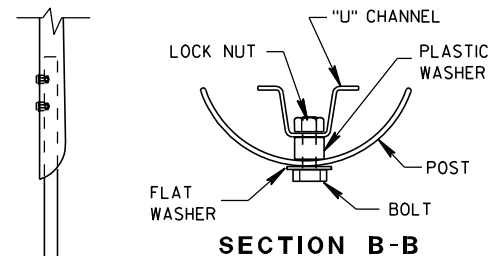
FLEXIBLE MARKER POST LOCATION



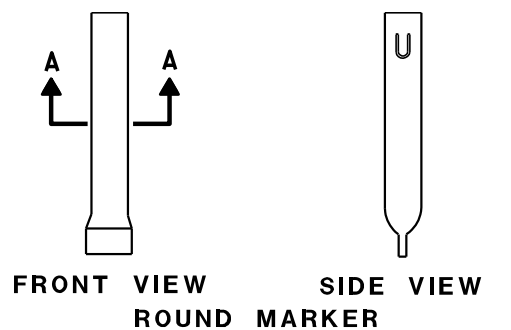
CROSS SECTION
FLEXIBLE MARKER POST



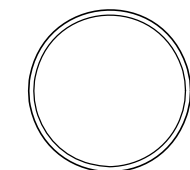
FRONT VIEW
CURVED MARKER



SECTION B-B



FRONT VIEW
ROUND MARKER

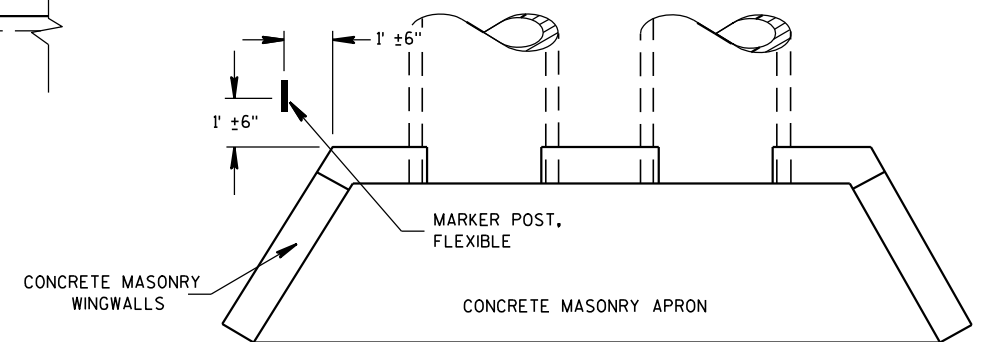


SECTION A-A

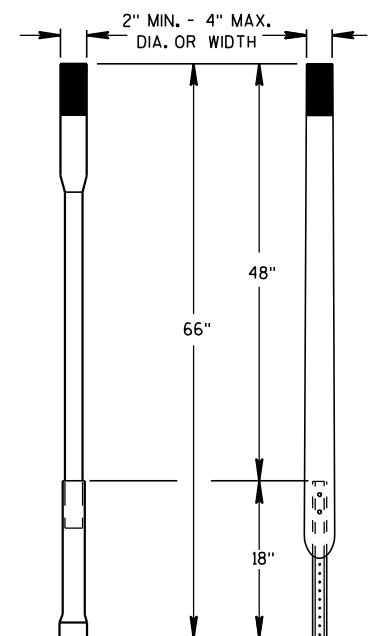
FLEXIBLE MARKER POST ANCHORS

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.



PLAN VIEW
CONCRETE MASONRY ENDWALLS FOR
CULVERT PIPE AND PIPE ARCH



ALTERNATE 1 ALTERNATE 2
FLEXIBLE MARKER POST

MARKER POST, FLEXIBLE,
FOR CULVERT END

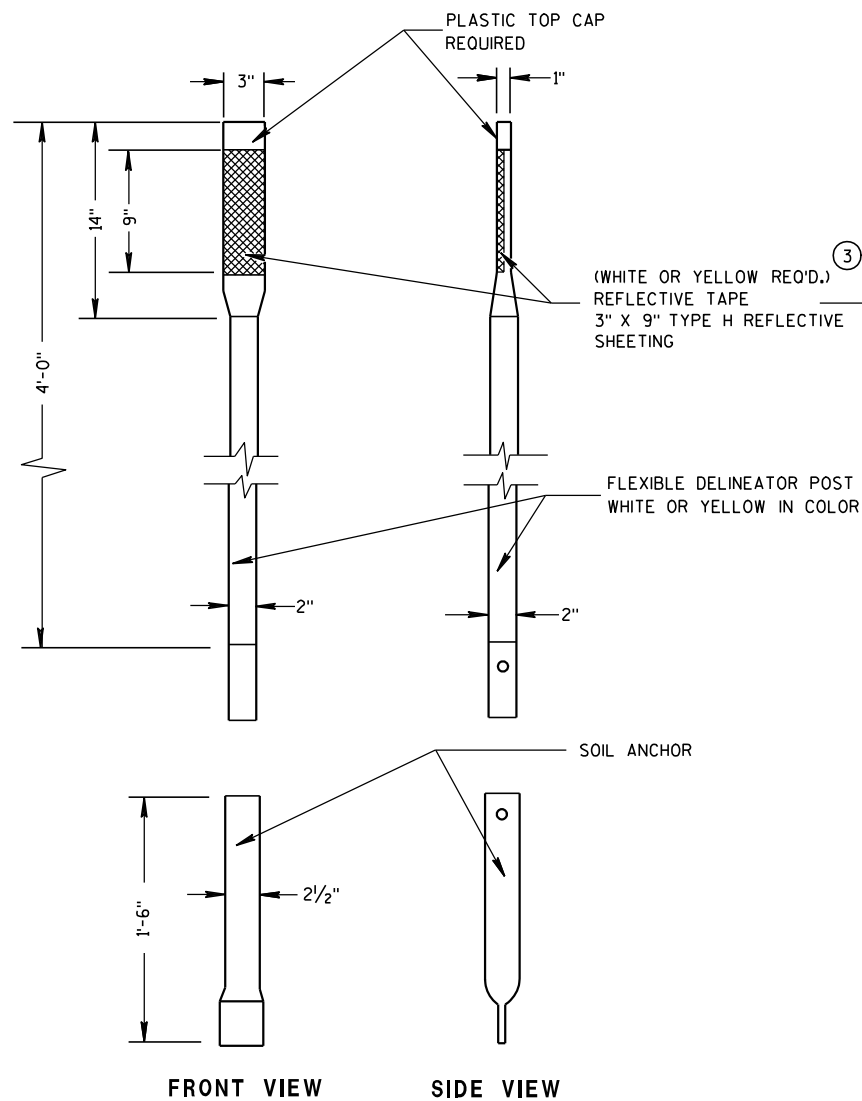
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

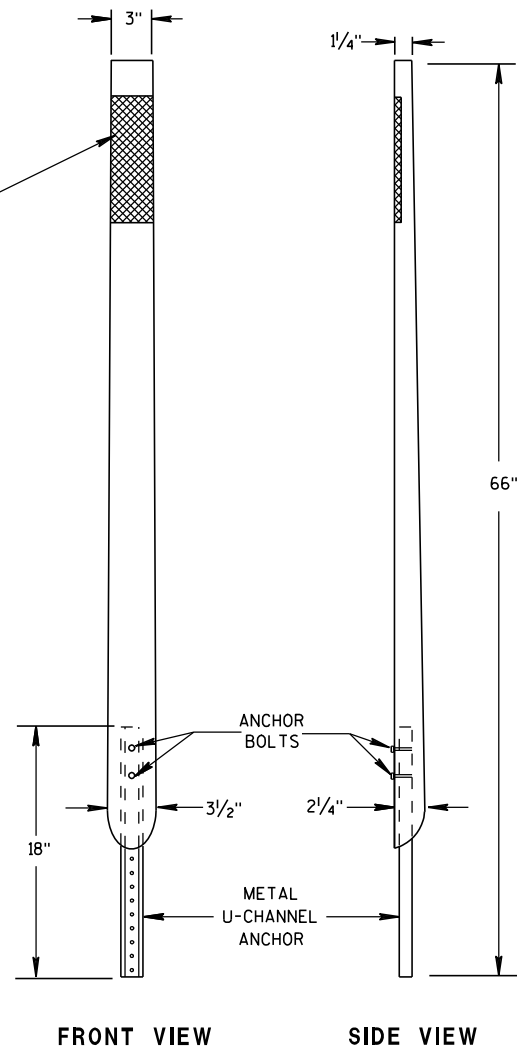
10/1/98
DATE

FHWA

/S/ Rory L. Rhinesmith
CHIEF ROADWAY DEVELOPMENT ENGINEER

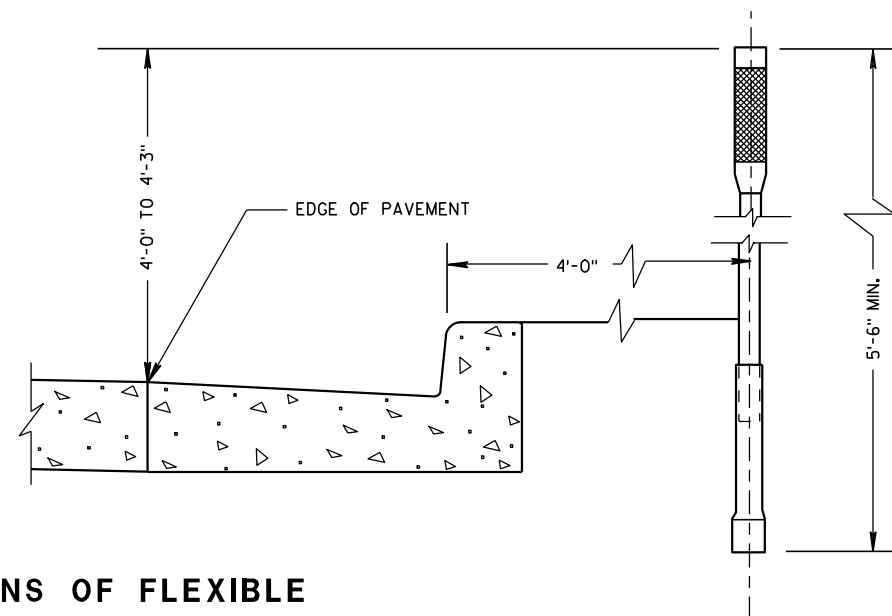
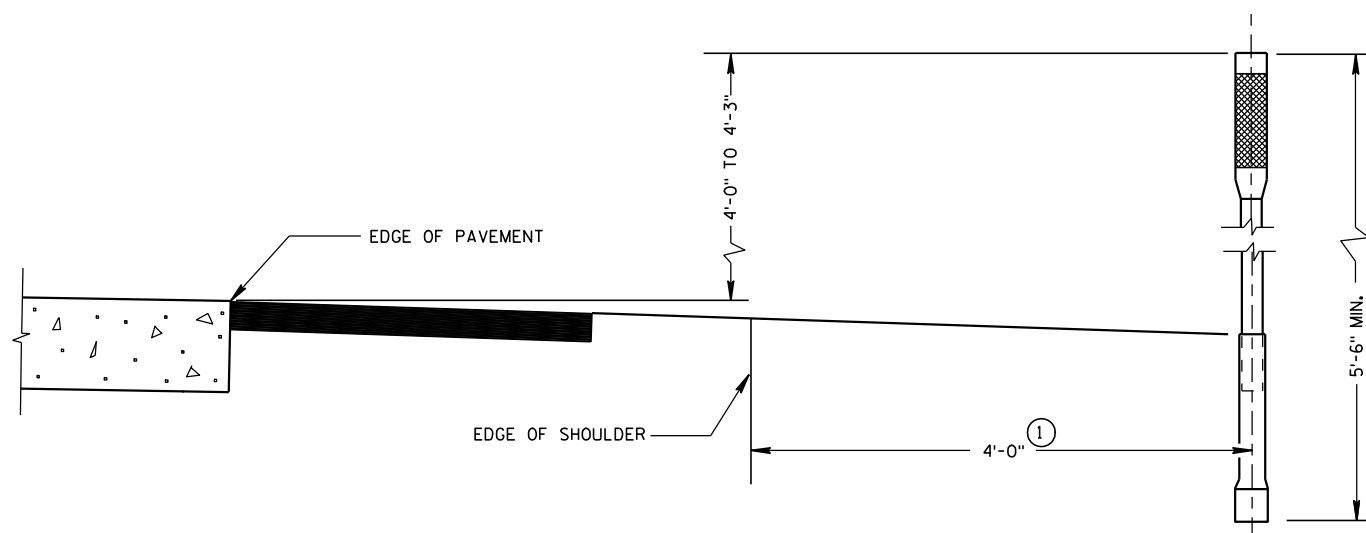


ALTERNATE 1



ALTERNATE 2

FLEXIBLE DELINEATOR POST

TYPICAL INSTALLATIONS OF FLEXIBLE
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.
- ② EITHER ALTERNATE NO. 1 OR NO. 2 MAY BE FURNISHED.
- ③ AS PER SECTION 637.2.2.2. OF THE STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION.

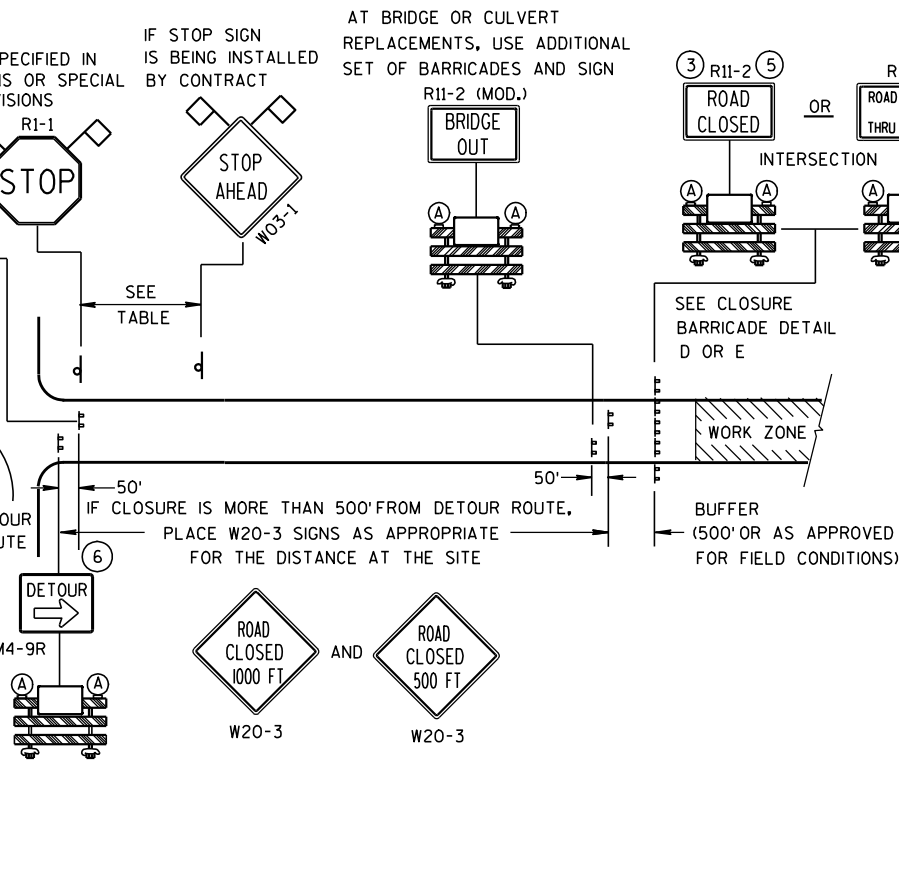
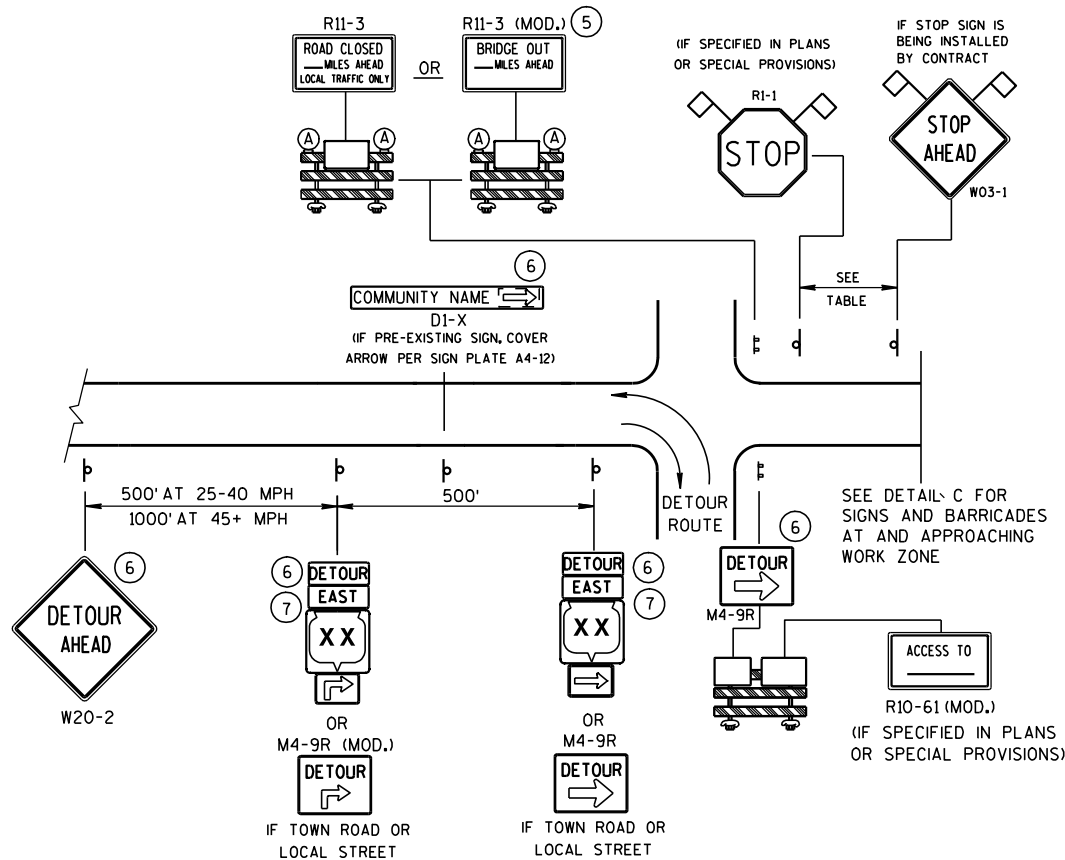
FLEXIBLE DELINEATOR POST

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

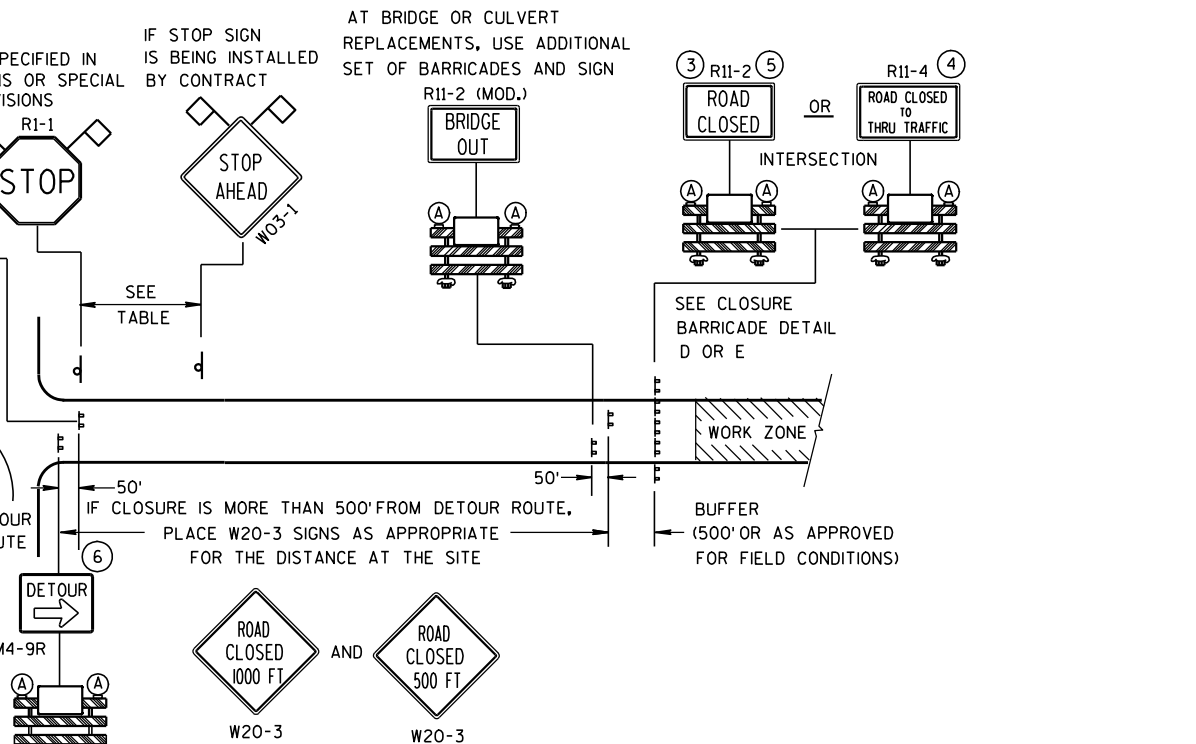
APPROVED

11-6-01
DATE/S/ Chester J. Spang
CHIEF SIGNS AND MARKING ENGINEER

FHWA



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR



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

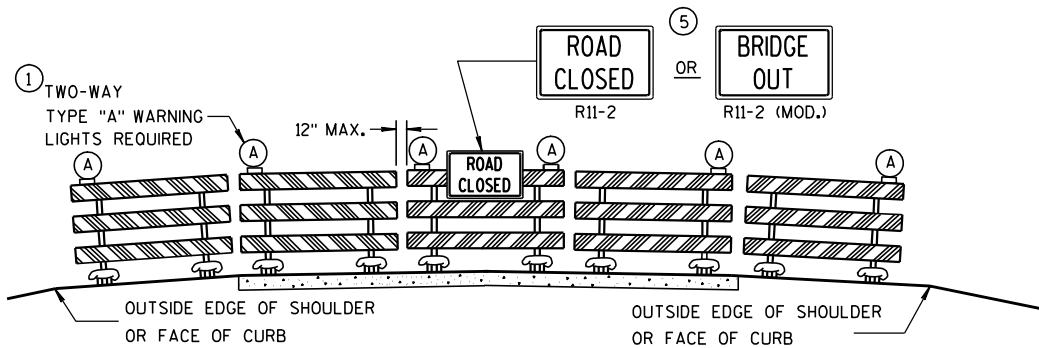
SEE SDD 15C2-4b
FOR GENERAL NOTES
AND FOOTNOTES ① THROUGH ⑦

LEGEND

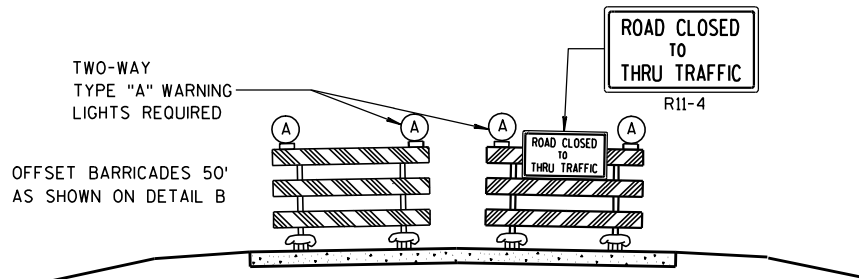
- POST MOUNTED SIGN
- TYPE III BARRICADES
- TYPE "A" LOW INTENSITY FLASHING WARNING LIGHT (FOR NIGHT USE)
- WORK ZONE
- DETOUR EAST M4-8 M3-X
- MI-4 OR MI-5A OR MI-6
- MO5-1 OR MO6-1
- FLAGS, 16" X 16" MIN., (ORANGE)

**BARRICADES AND SIGNS
FOR
MAINLINE CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL D
ROAD CLOSURE BARRICADE DETAIL
APPROACH VIEW



DETAIL E
LANE CLOSURE BARRICADE DETAIL
APPROACH VIEW

SEE SDD 15C2-4a FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

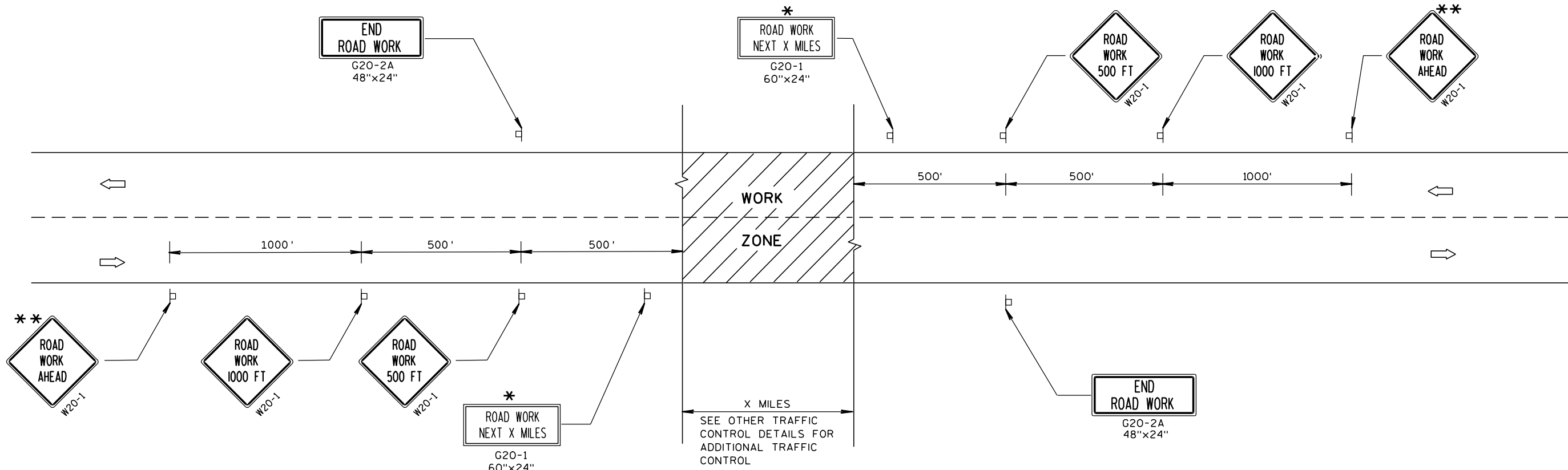
"WO AND "MO" SIGNS ARE THE SAME AS "W" AND "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

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

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

- 1 TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8-FOOT LIGHT SPACING).
- 2 THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT INTERSECTION.
- 3 FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL D.
- 4 FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE LANE CLOSURE BARRICADE DETAIL E.
- 5 FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11-2 AND R11-3 SIGNS.
- 6 INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.
- 7 "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

BARRICADES AND SIGNS FOR MAINLINE CLOSURES	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	
9/16/03 DATE	/S/ Thomas N. Notbohm CHIEF SIGNS AND MARKING ENGINEER
FHWA	



TYPICAL SIDEROAD APPROACH WARNING SIGN DETAIL

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.

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

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

* OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS.

** PLACE ADDITIONAL W20-1 "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA OR SIGNING.

LEGEND

POST MOUNTED SIGN

DIRECTION OF TRAFFIC FLOW

TRAFFIC CONTROL, ADVANCE
WARNING SIGNS 45 M.P.H.
OR GREATER TWO-WAY
UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
5/23/00 /S/ Chester J. Spang
DATE CHIEF SIGNS AND MARKING ENGINEER
FHWA

TWO-LANE ROADWAY

SYMBOLS

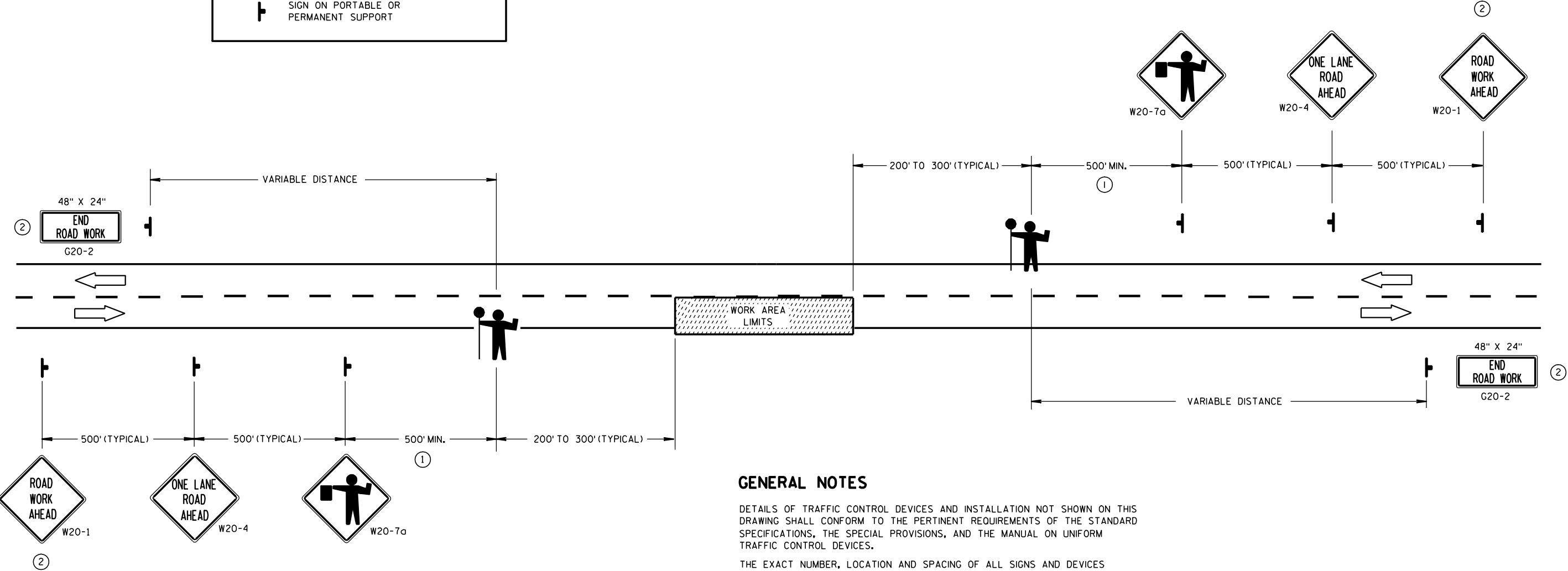
WORK AREA

FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

SIGN ON PORTABLE OR PERMANENT SUPPORT



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.



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, THE "FLAGGER AHEAD", THE "ROAD WORK AHEAD" AND THE ONE LANE ROAD AHEAD" SIGNS SHALL BE COVERED OR REMOVED AND THE HIGHWAY RESTORED TO NORMAL OPERATION.

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

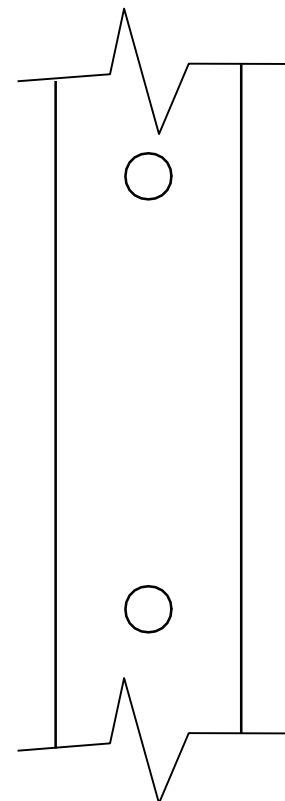
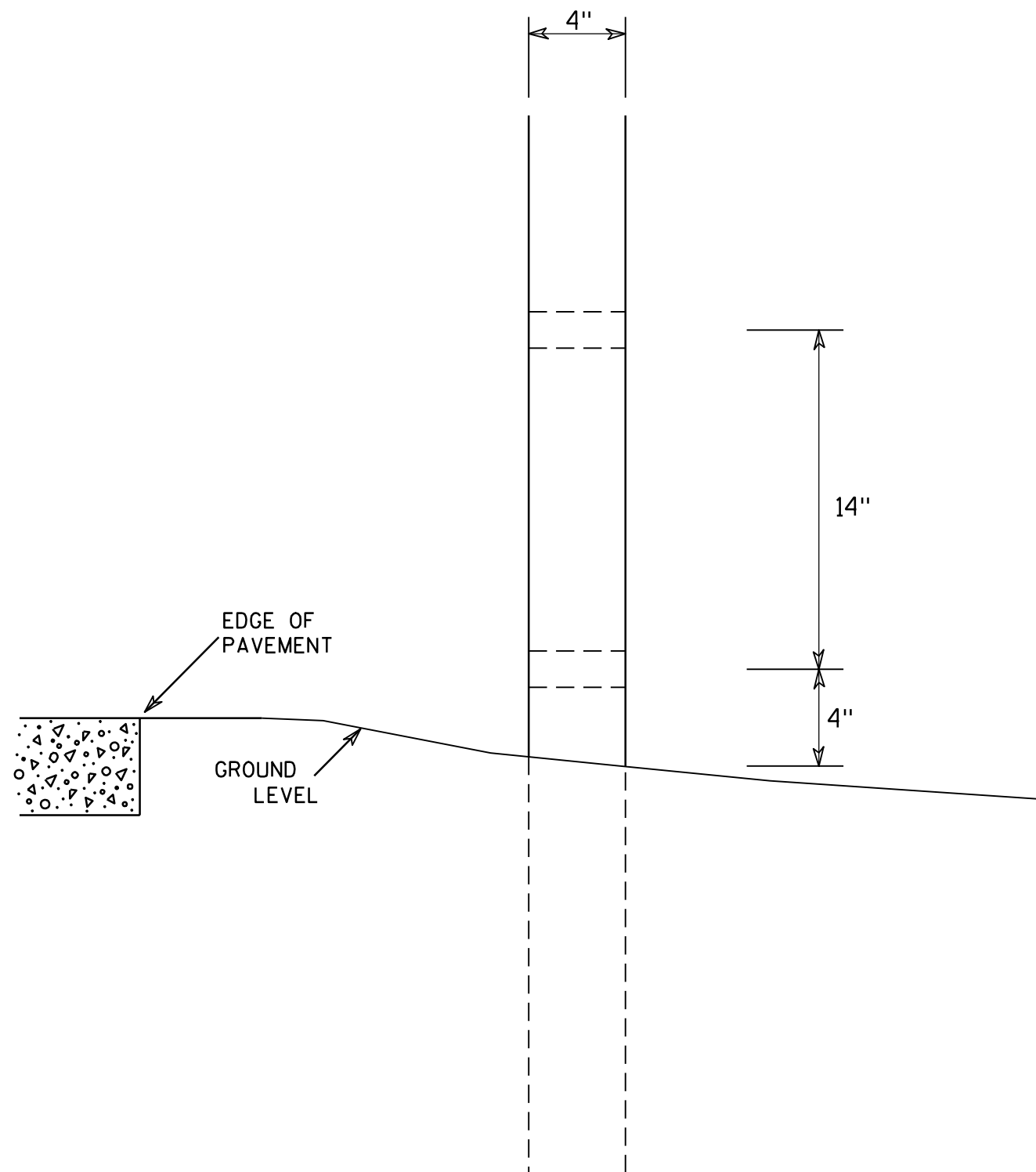
- ① FOR A MOVING WORK OPERATION, SIGNING FOR BOTH DIRECTIONS SHALL BE REESTABLISHED (AS SIMULTANEOUSLY AS PRACTICAL) AT APPROXIMATELY 3500 FOOT INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.
- ② SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.

TRAFFIC CONTROL FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
9/5/06 /S/ Thomas N. Notbohm
DATE STATE TRAFFIC ENGINEER OF DESIGN
FHWA

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.

7

4 X 6 WOOD POST
MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Chester J. Spang
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO: 5679-00-76

HWY: CTH K

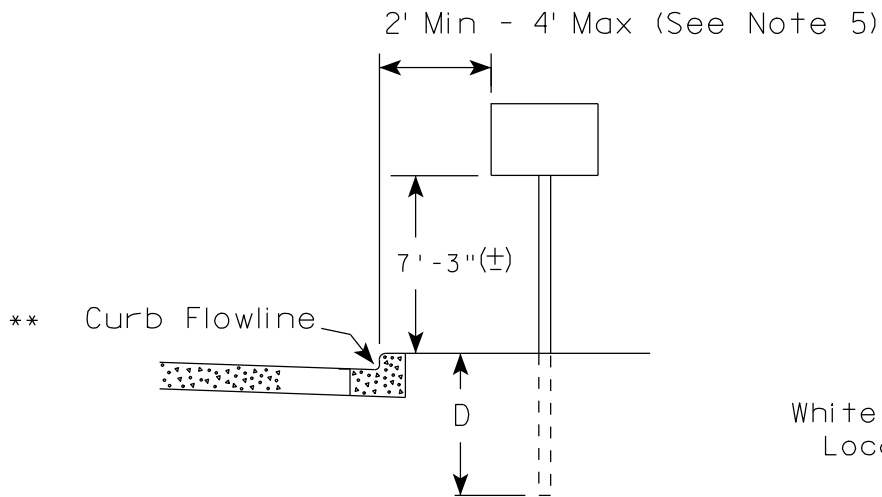
COUNTY: Iowa

SIGN PLATE DETAILS

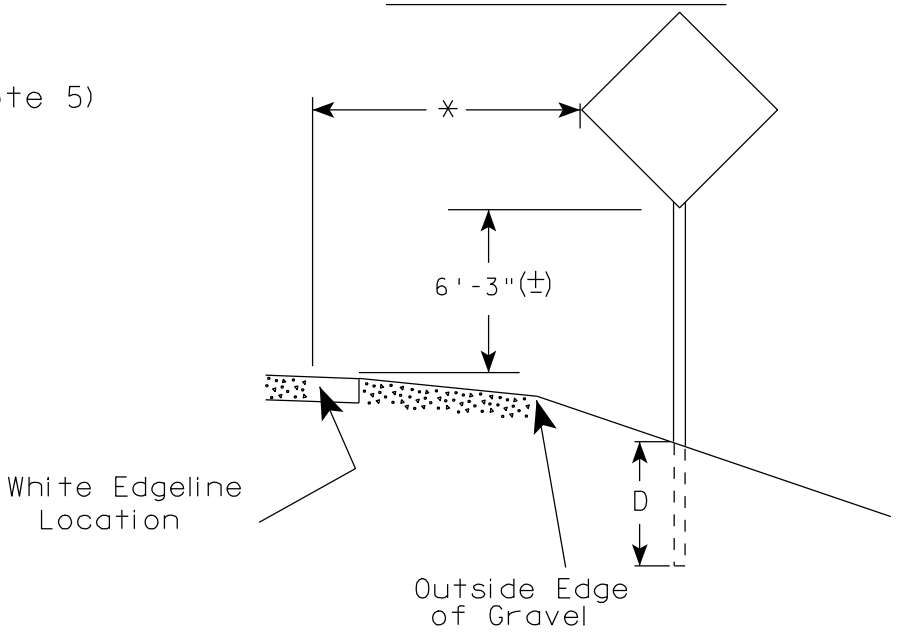
SHEET NO:

E

URBAN AREA



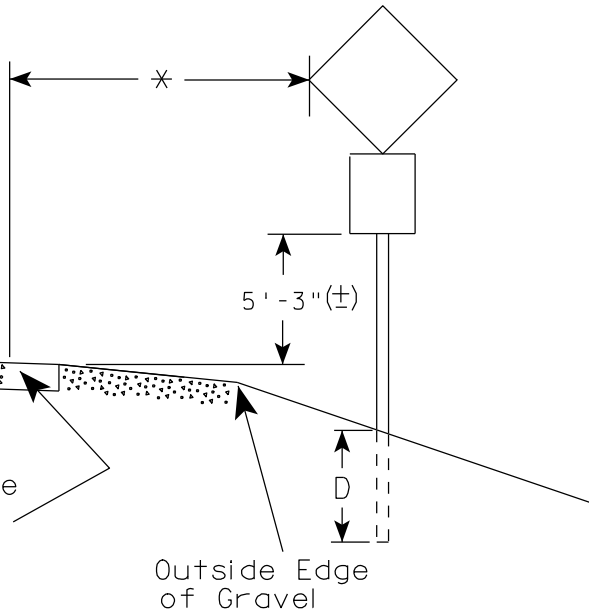
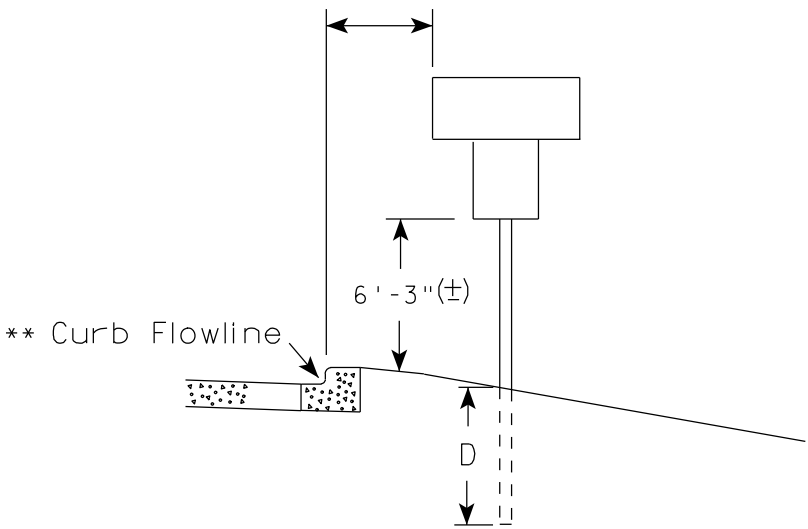
RURAL AREA (See Note 2)



GENERAL NOTES

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

2' Min - 4' Max (See Note 5)



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.

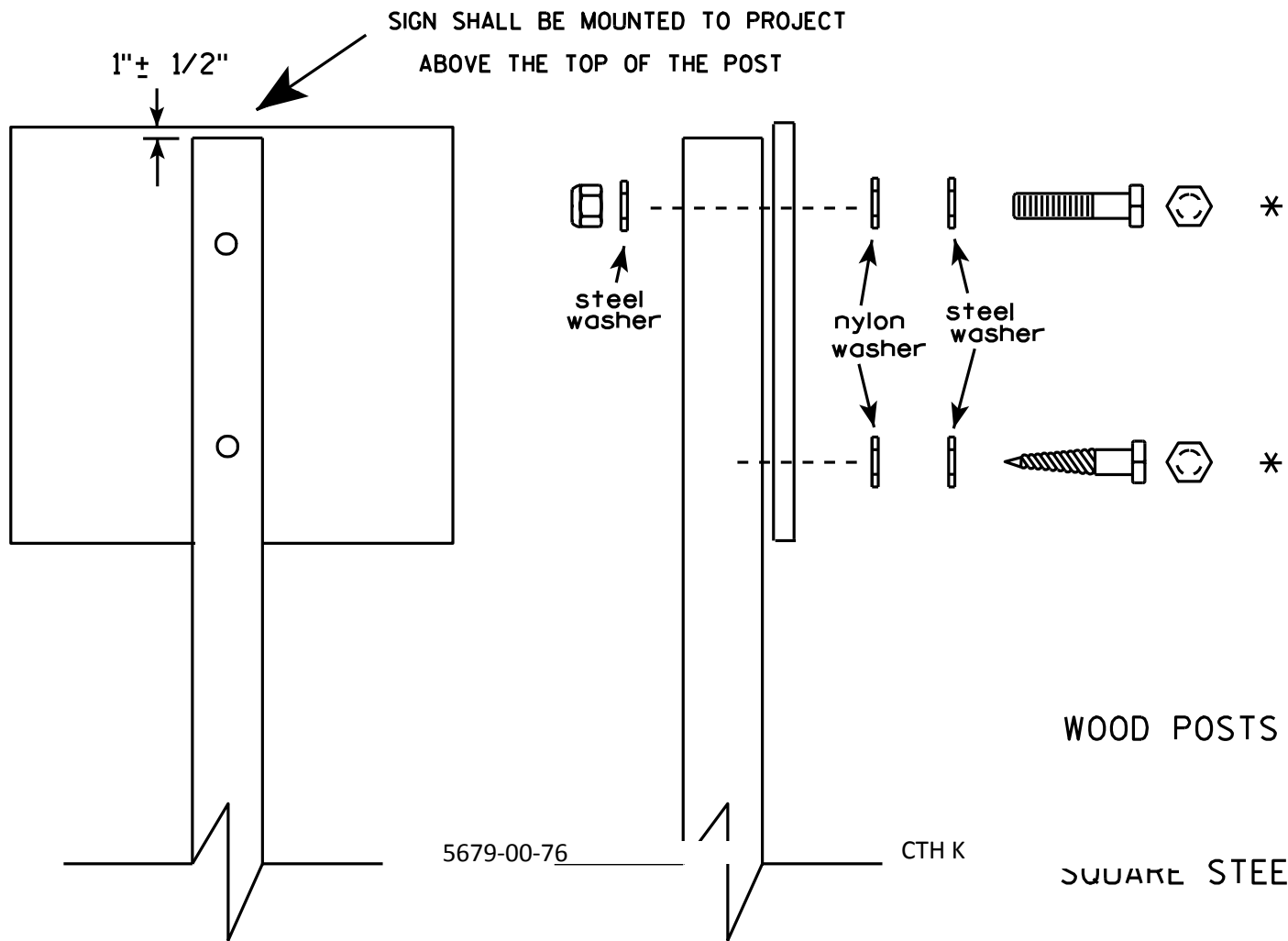
* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

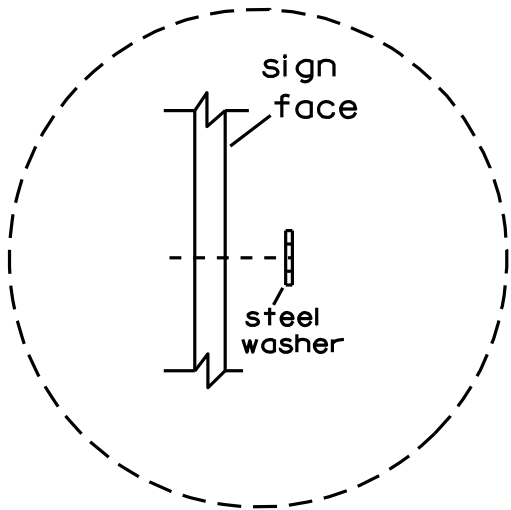


Nuts, bolts and lags used for mounting signs shall have hexagonal heads and shall be either :

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

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

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



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

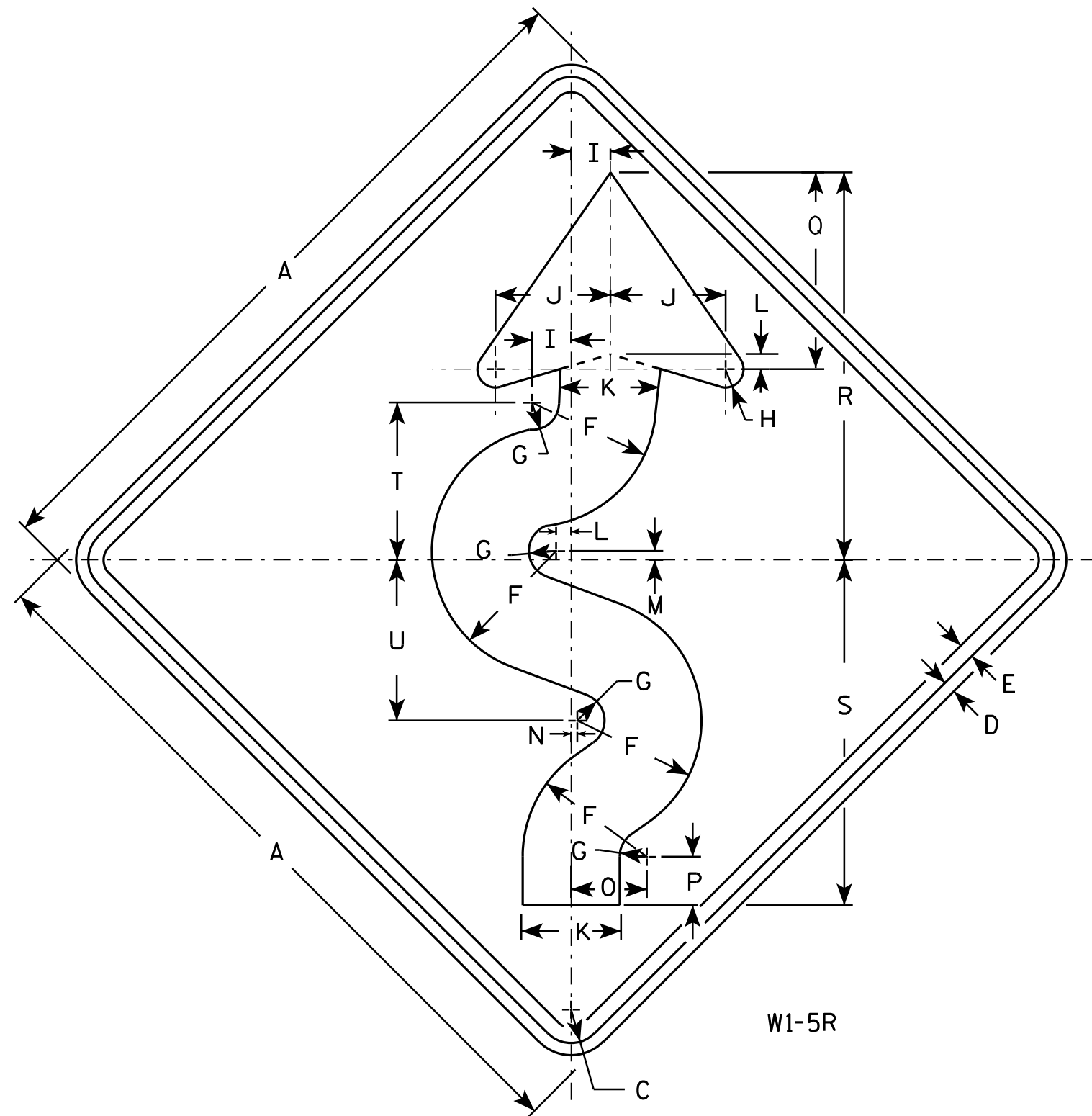
* Two different fastening systems are shown for illustration purposes. On any individual sign, either one or the other system shall be used. Actual number of fasteners per sign varies with the sign area, but normally there are two. For a single post installation, all signs greater than 9 sq. ft. require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

ATTACHMENT OF SIGNS
TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

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



W1-5R

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. W1-5L is the same as W1-5R except the arrow is reversed along the vertical centerline.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	24		1 1/8	3/8	1/2	4 1/8	7/8	5/8	1 1/4	3 3/4	3 1/4	1/2	1/4	1/8	2 1/2	1 5/8	6 1/2	12 3/4	11 3/8	5 1/4	5 1/4						4.0
2S	30		1 3/8	1/2	5/8	5 1/8	1 1/8	3/4	1 5/8	4 3/4	4 1/8	5/8	3/8	1/4	3 1/8	2	8 1/8	16	14 1/4	6 1/2	6 5/8						6.25
2M	36		1 5/8	5/8	3/4	6 1/4	1 3/8	1	1 7/8	5 5/8	4 7/8	3/4	3/8	1/4	3 3/4	2 7/8	9 3/4	19 1/8	17 1/8	7 3/4	7 7/8						9.0
3	36		1 5/8	5/8	3/4	6 1/4	1 3/8	1	1 7/8	5 5/8	4 7/8	3/4	3/8	1/4	3 3/4	2 7/8	9 3/4	19 1/8	17 1/8	7 3/4	7 7/8						9.0
4	36		1 5/8	5/8	3/4	6 1/4	1 3/8	1	1 7/8	5 5/8	4 7/8	3/4	3/8	1/4	3 3/4	2 7/8	9 3/4	19 1/8	17 1/8	7 3/4	7 7/8						9.0
5	48		2 1/4	3/4	1	8 1/4	1 3/4	1 1/4	2 1/2	7 1/2	6 1/2	1	1/2	3/8	5	3 1/4	13	25 1/2	22 3/4	10 3/8	10 1/2						16.0

STANDARD SIGN W1-5

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Matthew R. Rauch
for State Traffic Engineer

DATE 5/18/12

PLATE NO. W1-5.8

PROJECT NO: 5679-00-76

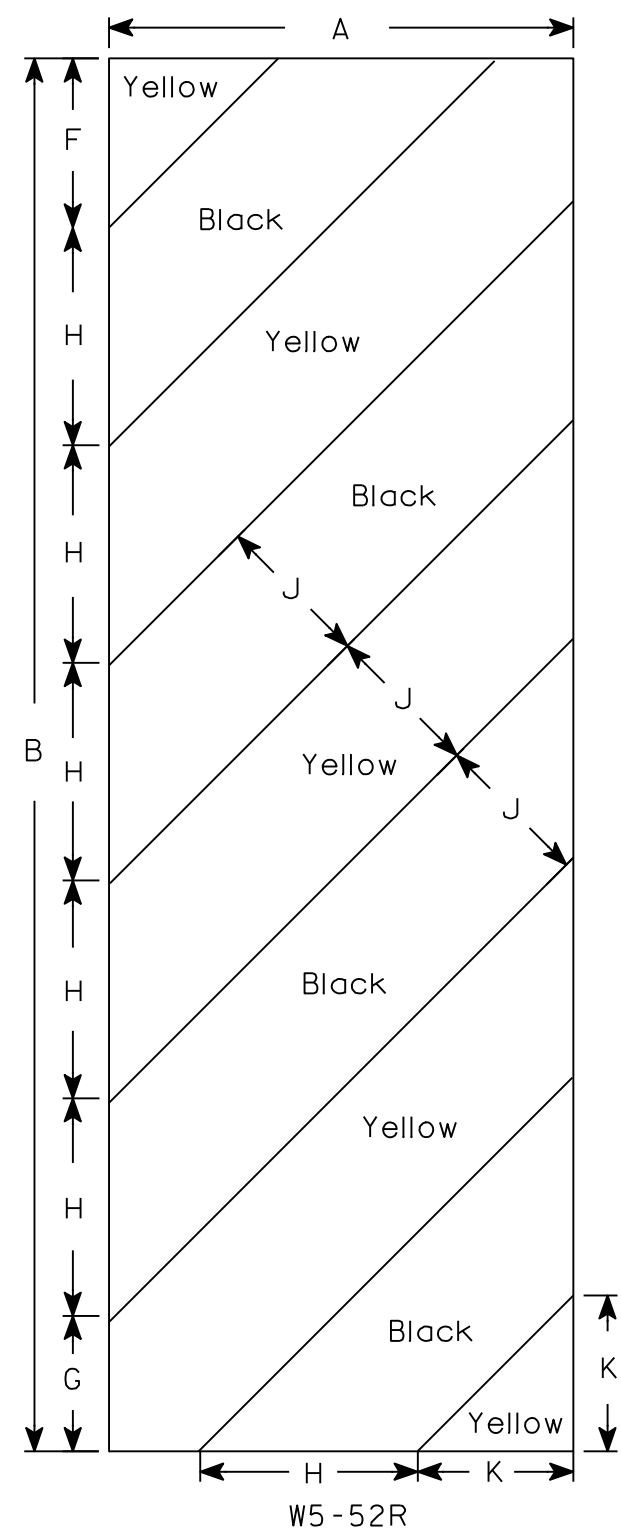
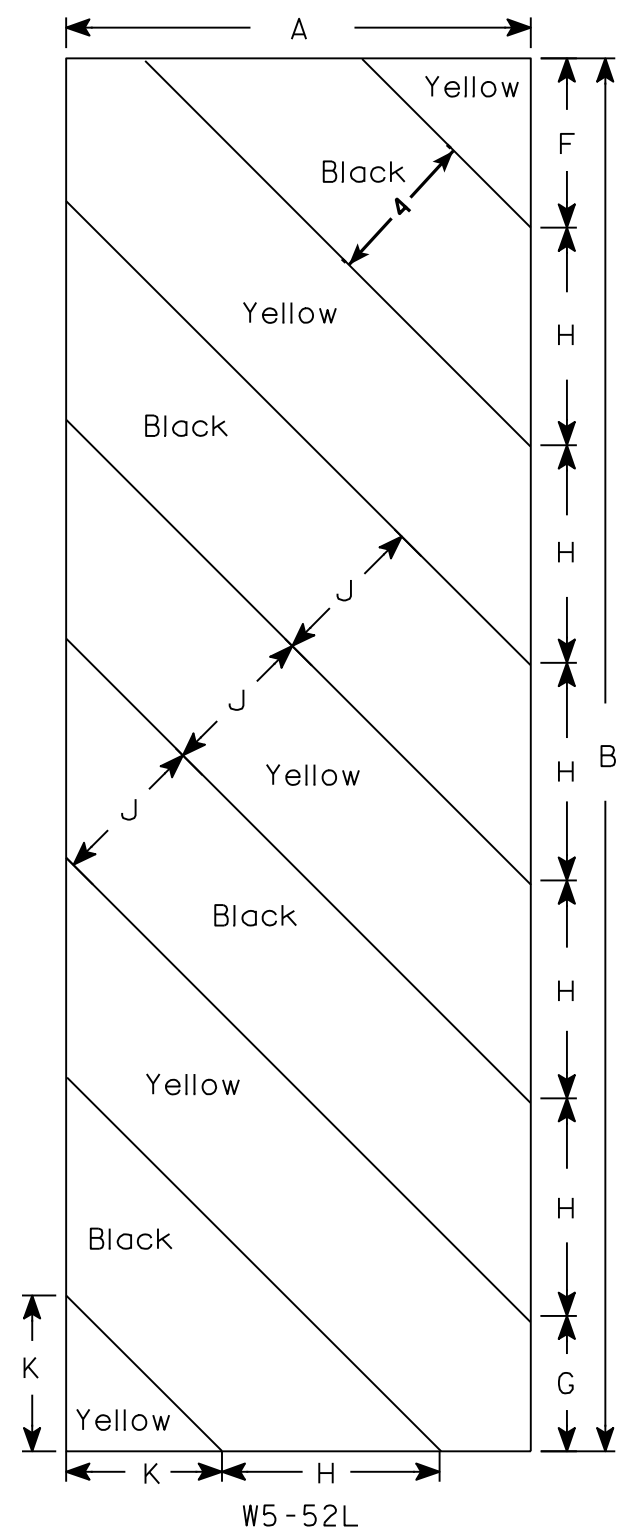
HWY: CTH K

COUNTY: IOWA

SIGN PLATE DETAILS

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.

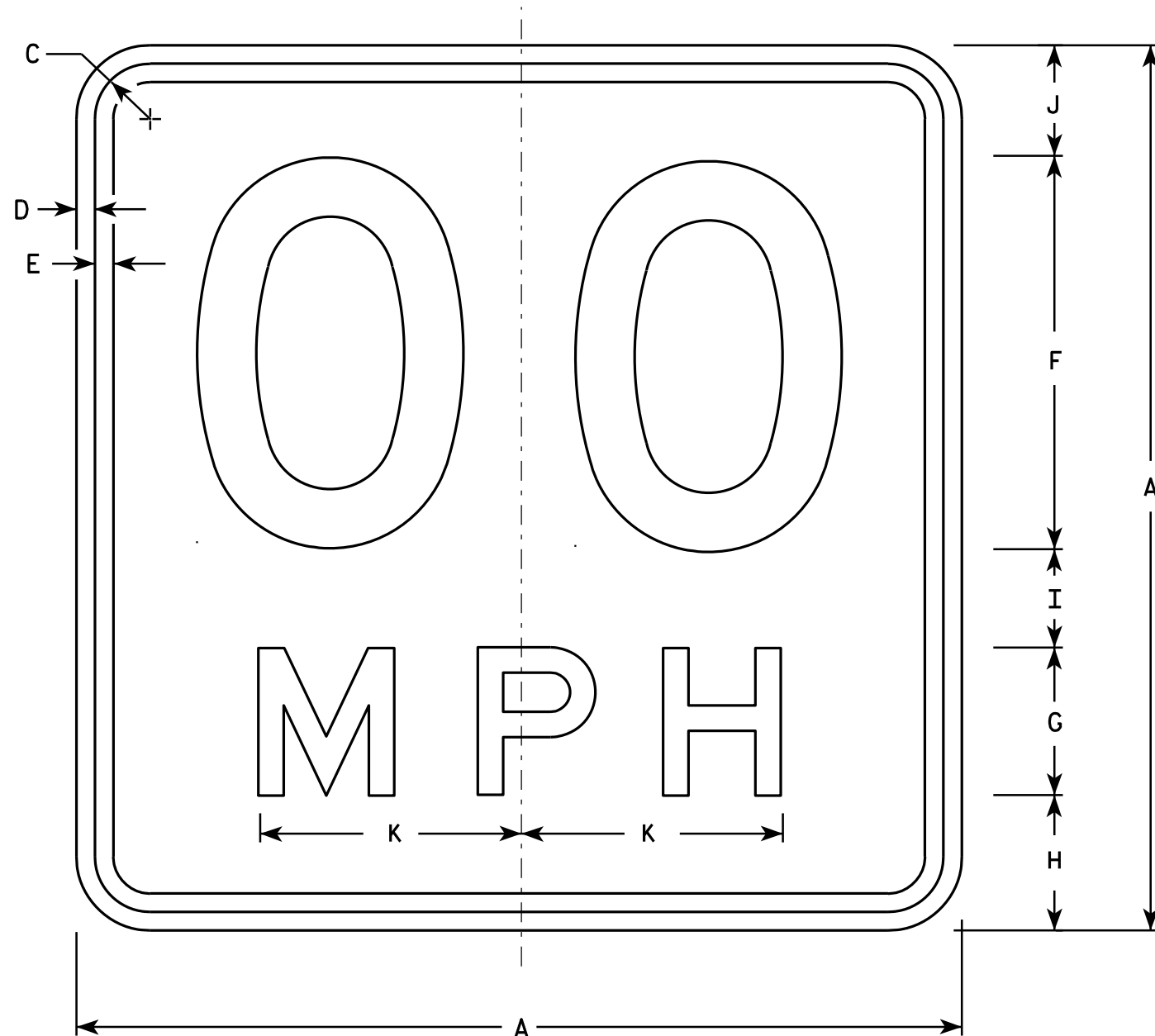
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	12	36				4 3⁄8	3 1⁄2	5 5⁄8	45°	4	4																3.0
2M	12	36				4 3⁄8	3 1⁄2	5 5⁄8	45°	4	4																3.0
3	18	54				6	5 1⁄2	8 1⁄2	45°	6	6 9⁄16																6.75
4																											
5																											

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



NOTES

- Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- Color:
Background - Yellow
Message - Black
- Message Series - See Note 6
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- Substitute appropriate numerals and optically space about centerline to achieve proper balance.
- Line 1 is Series D
Line 2 is Series E

W13-1

- * For 30" x 30" Warning Signs, use 18" x 18" W13-1 signs.
For 36" x 36" Warning Signs, use 24" x 24" W13-1 signs.

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		1 1/8	3/8	3/8	8	3	2 3/4	2	2 1/4	5 3/8																2.25
* 2S	18		1 1/8	3/8	3/8	8	3	2 3/4	2	2 1/4	5 3/8																2.25
* 2M	18		1 1/8	3/8	3/8	8	3	2 3/4	2	2 1/4	5 3/8																2.25
3	24		1 1/8	3/8	1/2	10	4	4	2 3/4	3 1/4	6 5/8																4.00
4	36		1 5/8	5/8	3/4	16	6	5 1/2	4	4 1/2	10 5/8																9.00
5	36		1 5/8	5/8	3/4	16	6	5 1/2	4	4 1/2	10 5/8																9.00

STANDARD SIGN

W13-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 5/31/12 PLATE NO. W13-1.16

PROJECT NO: 5679-00-76

HWY: CTH K

COUNTY: IOWA

SIGN PLATE DETAILS

SHEET NO:

E

BENCH MARK  NAVD 88				
NO.	STATION	LOCATION	DESCRIPTION	ELEV.
1	107+84.22	104.34' LT.	SPIKE IN WEST FACE OF TREE	924.6
2	110+14.68	56.55' LT.	X ON NW WING WALL	929.0

LIVE LOAD:

DESIGN RATING : HL-93

TRAFFIC DATA:

A.A.D.T. (2013) = 710
A.A.D.T. (2033) = 950

OPERATIONAL RATING FACTOR : 1.50

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

MAX. STD. PERMIT VEHICLE LOAD = 220 KIPS

ULTIMATE DESIGN STRESSES:

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

BAR STEEL REINFORCEMENT HS BRIDGES AND
BAR STEEL REINFORCEMENT HS COATED BRIDGES — $f_y = 60,000$ P.S.I.
HP PILING — $f_y = 50,000$ P.S.I.

FOUNDATION DATA:

ABUTMENTS AND PIER TO BE SUPPORTED ON PILING STEEL HP 10-INCH X 42 LB. PILES TO BE DRIVEN TO A REQUIRED DRIVING RESISTANCE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. THE FACTORED AXIAL RESISTANCE OF PILES IN COMPRESSION USED FOR DESIGN IS THE REQUIRED DRIVING RESISTANCE MULTIPLIED BY A RESISTANCE FACTOR OF 0.5. REQUIRED DRIVING RESISTANCE IS 120 TONS PER ABUT. PILE, 50 TONS PER WING PILE AND 180 TONS PER PIER PILE. ESTIMATED PILE LENGTHS ARE 18'-0" AT THE SOUTH ABUT. BODY AND 13'-0" AT THE WINGS, 30'-0" AT THE PIER, 20'-0" AT THE NORTH ABUT. BODY AND 15'-0" AT THE WINGS. ALL PILING SHALL BE DRIVEN TO A MINIMUM TIP ELEVATION OF 906.15.

HYDRAULIC DATA:

100 YEAR FREQUENCY

DRAINAGE AREA	17.6	SO. MI.
Q ₁₀₀	5200	C.F.S.
VELOCITY	8.84	FT./SEC.
WATERWAY AREA	588	SO. FT.
SCOUR CRITICAL CODE	5	
HIGH WATER ₁₀₀ ELEVATION	928.17	±
O ₂ ELEVATION (610 C.F.S.)	922.04	±

ROADWAY OVERFLOW DESIGN FREQUENCY

OVERTOPPING FREQUENCY _____ > 100 YEARS

LIST OF DRAWINGS

1. GENERAL PLAN
2. CROSS SECTION, QUANTITIES & DETAILS
3. SUBSURFACE EXPLORATION
4. ABUTMENTS
5. ABUTMENT DETAILS
6. PIER
7. SUPERSTRUCTURE
8. SUPERSTRUCTURE DETAILS
9. RAILING TUBULAR TYPE M

DESIGN CONTACT:
LEAH RHODES
(608) 355-8945

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

NO.	DATE	REVISION	BY
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MSA
TRANSPORTATION • MUNICIPAL
DEVELOPMENT • ENVIRONMENTAL
1230 South Boulevard Baraboo, WI 53913
608-356-2771 1-800-362-4505 Fax: 608-356-2777

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
ACCEPTED William C. Dreher KAR [01]
CHIEF STRUCTURES DESIGN ENGINEER

STRUCTURE	B-25-168
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CTH K OVER WILLIAMS CREEK

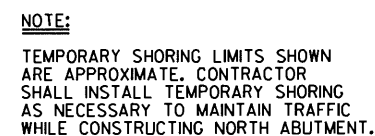
COUNTY	IOWA	TOWN/CITY/VILLAGE	BRIGHAM
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DESIGN SPEC.	
AASHTO LRBG BRIDGE DESIGN SPECIFICATIONS	

DESIGNED BY	DESIGN CHK'D	DRAWN BY	PLANS CHK'D
LJR	DHW	BJR	LJR

GENERAL PLAN

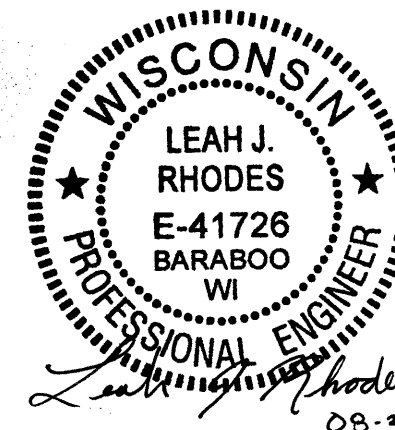
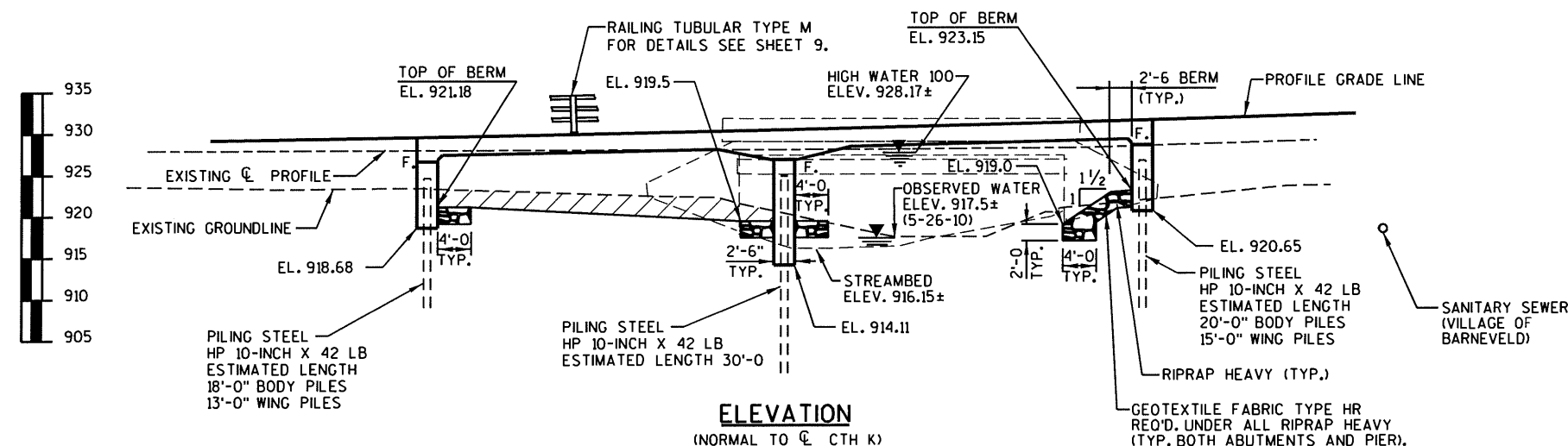
SHEET 1 OF 9



○ - INDICATES WING NUMBER

* - INDICATES LOCATION OF PROVISION
FOR THRIE BEAM GUARD ATTACHMENT.

 - REMOVAL OF THIS MATERIAL IS INCLUDED IN THE BID ITEM "EXCAVATION FOR STRUCTURES BRIDGES (B-25-168)".



08-30-12

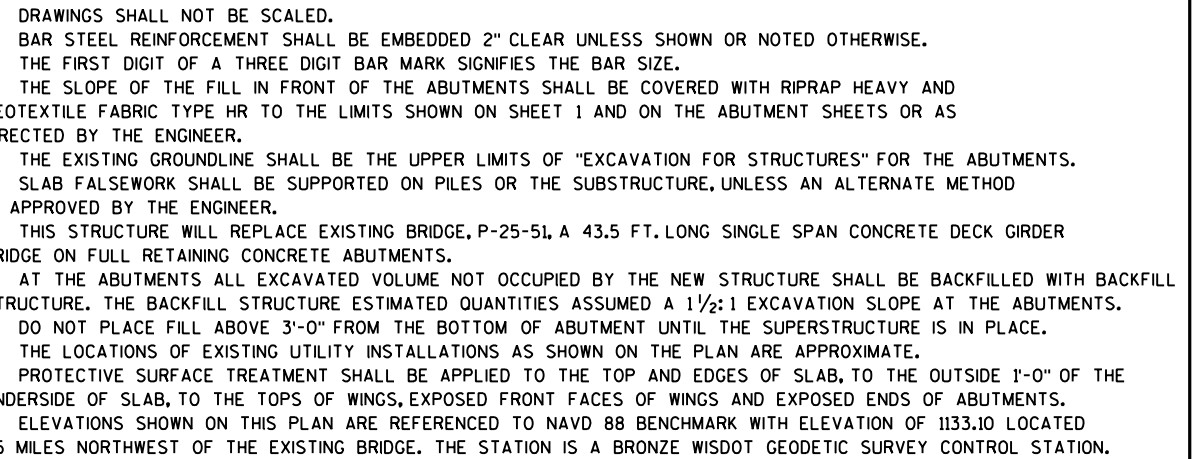
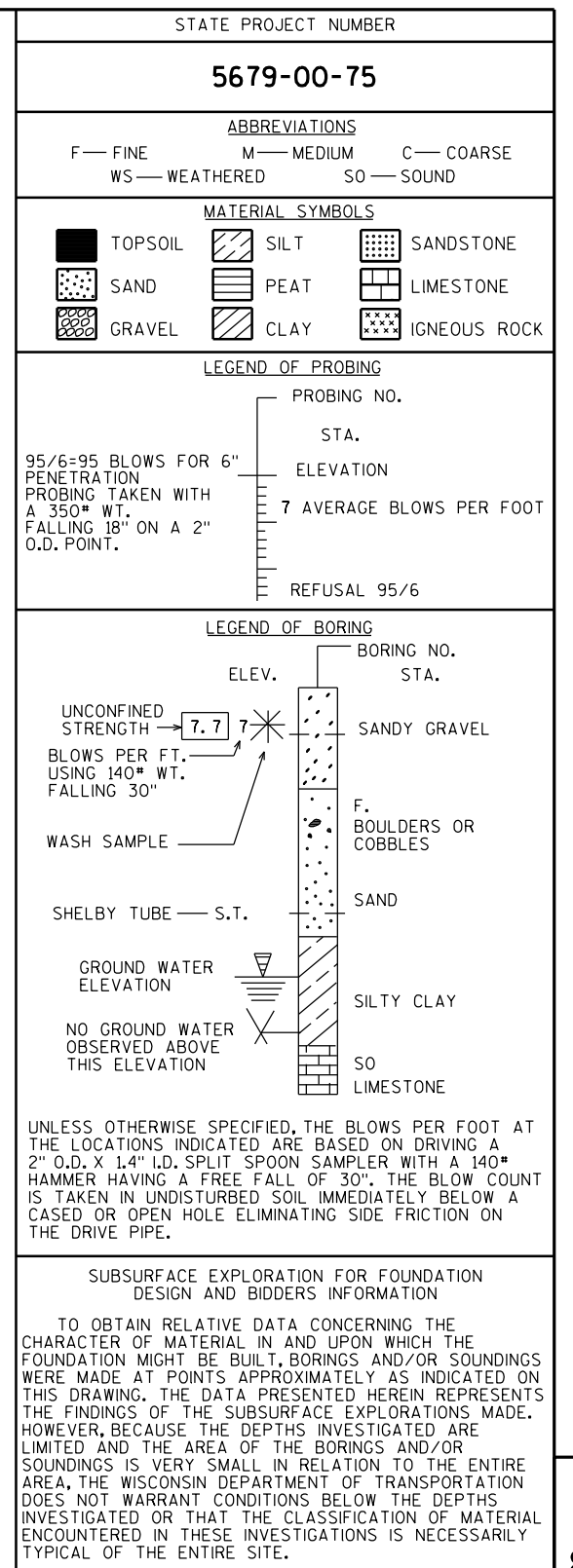
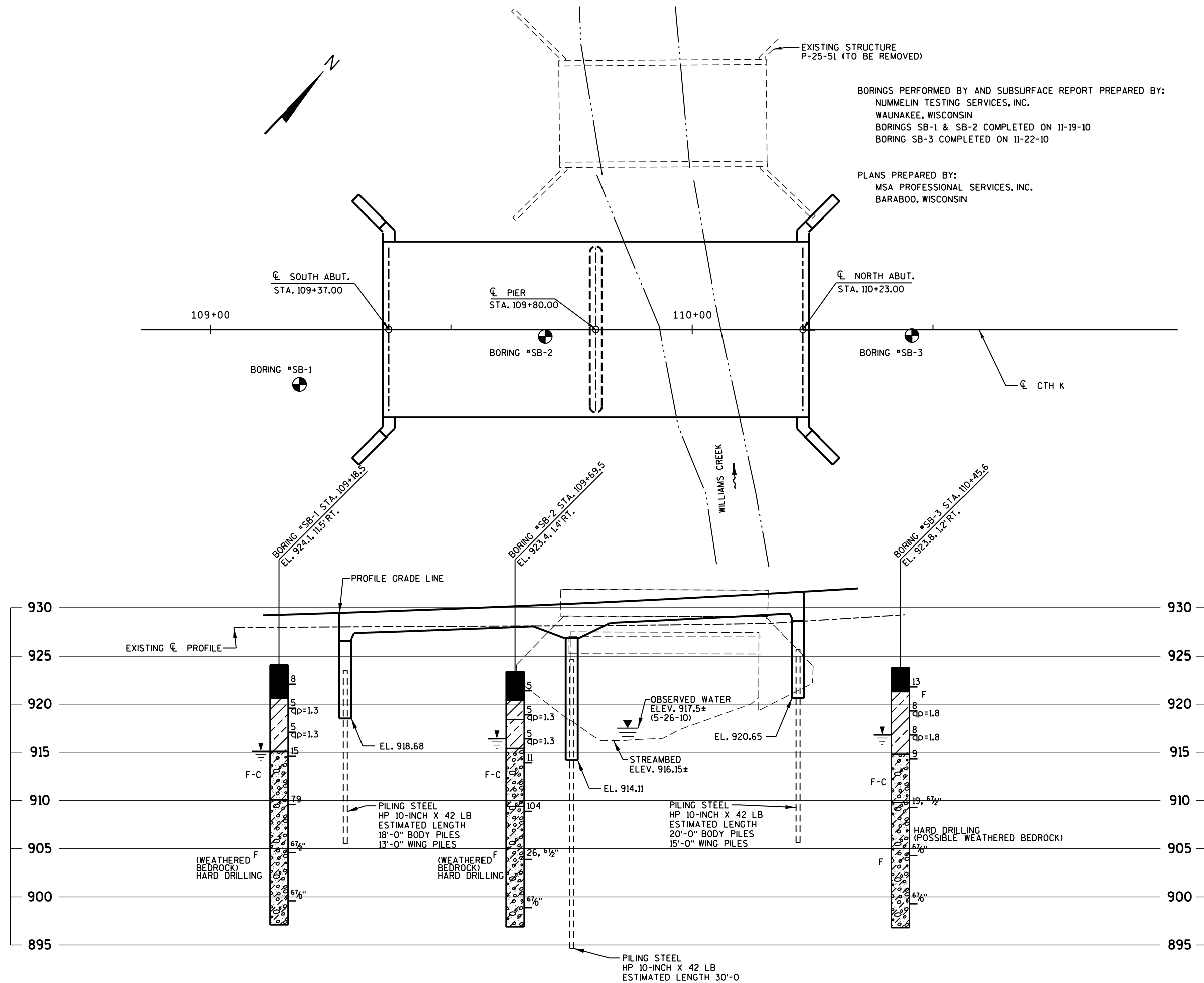


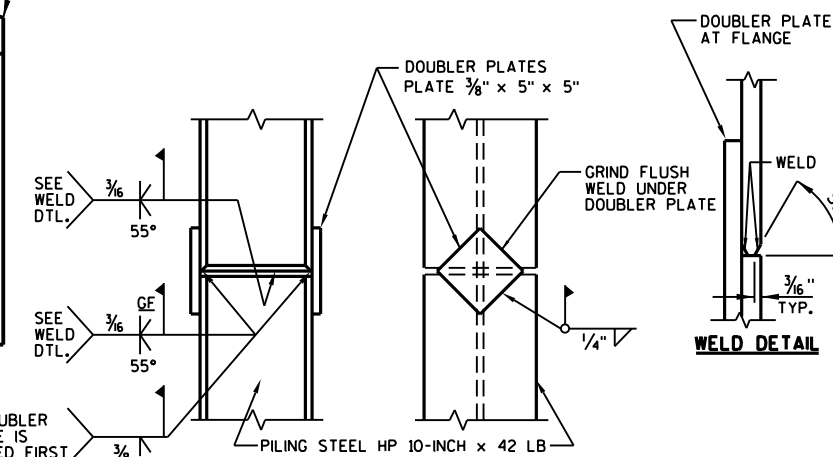
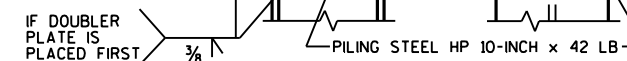
Diagram illustrating a vertical curve with the following data:

- Curve Length:** CURVE LEN = 455.68
- Grade 1:** -0.14%
- Grade 2:** +6.61%
- Key Points and Stationing:**
 - VPC STA = 107+47.16
 - VPI STA = 109+75.00
 - VPT STA = 112+02.84
- Elevations:**
 - VPC EL = 927.93
 - VPI EL = 927.62
 - VPT EL = 938.11
- Other Points:**
 - CL SOUTH ABUT. STA. 109+37.00, EL. 929.55
 - CL PIER STA. 109+80.00, EL. 930.43
 - CL NORTH ABUT. STA. 110+23.00, EL. 931.51

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-25-168			
CONST. SPEC. WI "13"		DRAWN BY RLR	PLANS CK'D. LJR
CROSS SECTION, QUANTITIES & DETAILS		SHEET 2 OF 9	



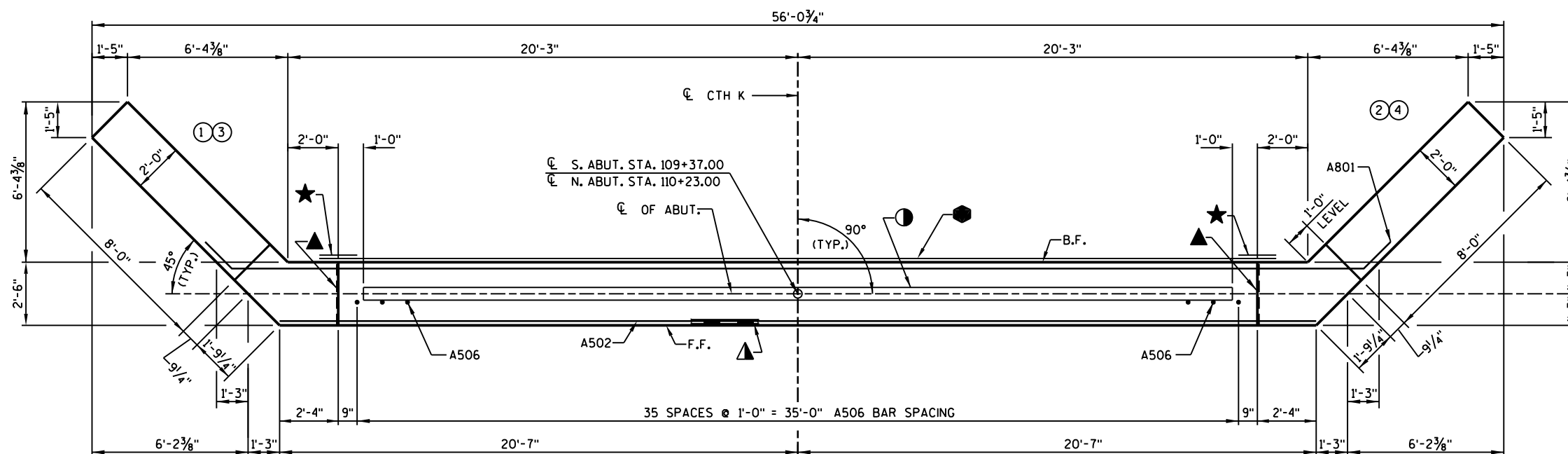
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-25-168			
CONST. SPEC.	WI "13"	DRAWN BY	PLANS CK'D.
		RLR	LJR
SUBSURFACE EXPLORATION		SHEET 3 OF 9	



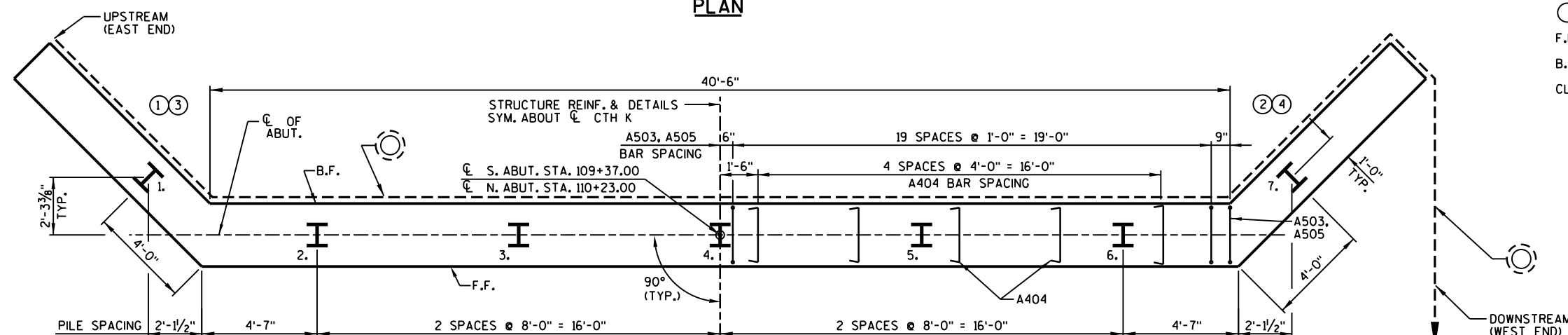
PILE SPLICE DETAILS

ABUTMENTS TO BE SUPPORTED ON PILING STEEL HP 10-INCH X 42 LB. ¹/₂ REQUIRED DIVING RESISTANCE AS DETERMINED BY THE MODIFIED WATERS DYNAMIC FORMULA. REQUIRED DIVING RESISTANCE IS 120 TONS PER ABUT. PILES 2-6 AND 56 TONS PER WING PILES 1 & 7. PILES 2-6 HAVE ESTIMATED LENGTHS OF 18'-0" AT THE SOUTH ABUT. BODY AND 20'-0" AT THE NORTH ABUT. BODY. PILES 1 & 7 HAVE ESTIMATED LENGTHS OF 13'-0" AT WINGS 1 & 2 AND 15'-0" AT WINGS 3 & 4. ALL PILING SHALL BE DRIVEN TO A MINIMUM TIP ELEVATION OF 906.15.

ELEVATION
(SOUTH ABUTMENT LOOKING SOUTH)
(NORTH ABUTMENT LOOKING NORTH)



PLAN



PILE PLAN

LEGEND

- — KEYPED CONSTRUCTION JOINT FORMED BY BEVELED 2x6.
 - ▲ — 1/2" FILLER EXTEND AS SHOWN. SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF FILLER WITH NON-STAINING GRAY, NON-BITUMINOUS JOINT SEALER. (1" DEEP & HOLD 1/8" BELOW SURFACE OF CONCRETE).
 - ▲ — 4"x 3/4" FILLER, EXTEND FULL LENGTH OF ABUTMENT BETWEEN EDGES OF SLAB.
 - ★ — VERTICAL 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. EXTEND FROM 9" BELOW BRIDGE SEAT TO TOP OF WINGS.
 - — HORIZONTAL 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. EXTEND BETWEEN WINGS.
 - — OPTIONAL KEYED CONST. JOINT ON WING FORMED BY BEVELED 2 X 6. IF JOINT IS USED, POUR CONCRETE ABOVE JOINT AFTER DECK IS IN PLACE AND PLACE ● ON B.F. OF WING.
 - — 3/4" "V" GROOVE ON FRONT FACE OF WING WALL. REQUIRED ONLY WHERE CONST. JOINT IS USED.
 - — PIPE UNDERDRAIN WRAPPED 6-INCH. EXTEND THRU GEOTEXTILE FABRIC AT FACE OF RIPRAP HEAVY. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. PROVIDE RODENT PROTECTION AT ENDS OF PIPE.
 - — INDICATES WING NUMBER
- F.F. — FRONT FACE
- B.F. — BACK FACE
- CL. — CLEAR

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE		B-25-168	
CONST. SPEC.	WI "13"	DRAWN BY	PLANS CK'D.
ABUTMENTS		RLR	LJR
		SHEET 4 OF 9	



MARK	NUMBER	REQUIRED	LENGTH	BENT	LOCATION
	COATED	UNCOATED			
A801	-	9	47-8	X	ABUTMENT BODY - B.F. - HORIZ.
A502	-	9	41-1		ABUTMENT BODY - F.F. - HORIZ.
A503	-	84	9-0	X	ABUTMENT BODY - F.F. & B.F. - VERT.
A404	-	30	2-8	X	ABUTMENT BODY - TIES - HORIZ.
A505	-	42	10-5	X	ABUTMENT BODY - TOP - VERT.
A506	36	-	2-0		ABUTMENT BODY - TOP DOWELS - VERT.
A807	18	-	13-3	X	WINGS - B.F. - HORIZ.
A408	4	-	10-9	X	WINGS - B.F. - HORIZ.
A409	2	-	7-1	X	WINGS - B.F. - HORIZ.
A410	2	-	3-0	X	WINGS - B.F. - TOP - HORIZ.
A411	4	-	10-4	X	WINGS - F.F. & B.F. - TOP - HORIZ.
A412	56	-	13-4	X	WINGS - F.F. & B.F. - VERT.
A413	6	-	10-4	X	WINGS - F.F. & B.F. - VERT.
A514	18	-	11-9	X	WINGS - F.F. - HORIZ.
A415	4	-	12-3	X	WINGS - F.F. - HORIZ.
A416	2	-	8-7	X	WINGS - F.F. - HORIZ.
A417	2	-	4-6	X	WINGS - F.F. - TOP - HORIZ.

BAR MARKS FOR SOUTH ABUTMENT ARE SHOWN.
 LABEL AND BUNDLE NORTH ABUTMENT BARS WITH B MARK (B801 THRU B417).



A diagram of a rectangular block. The vertical dimension is labeled 'C' and the horizontal dimension is labeled 'D'.

MARK	C	D
A404	4 1/2"	2'-
A505	4'-3	2'-
A412	5'-11	1'-8
A413	4'-2	2'-

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE		B-25-168	
CONST. SPEC.	WI "13"	DRAWN BY	RLR
		PLANS CK'D.	LJR
ABUTMENT DETAILS		SHEET 5 OF	

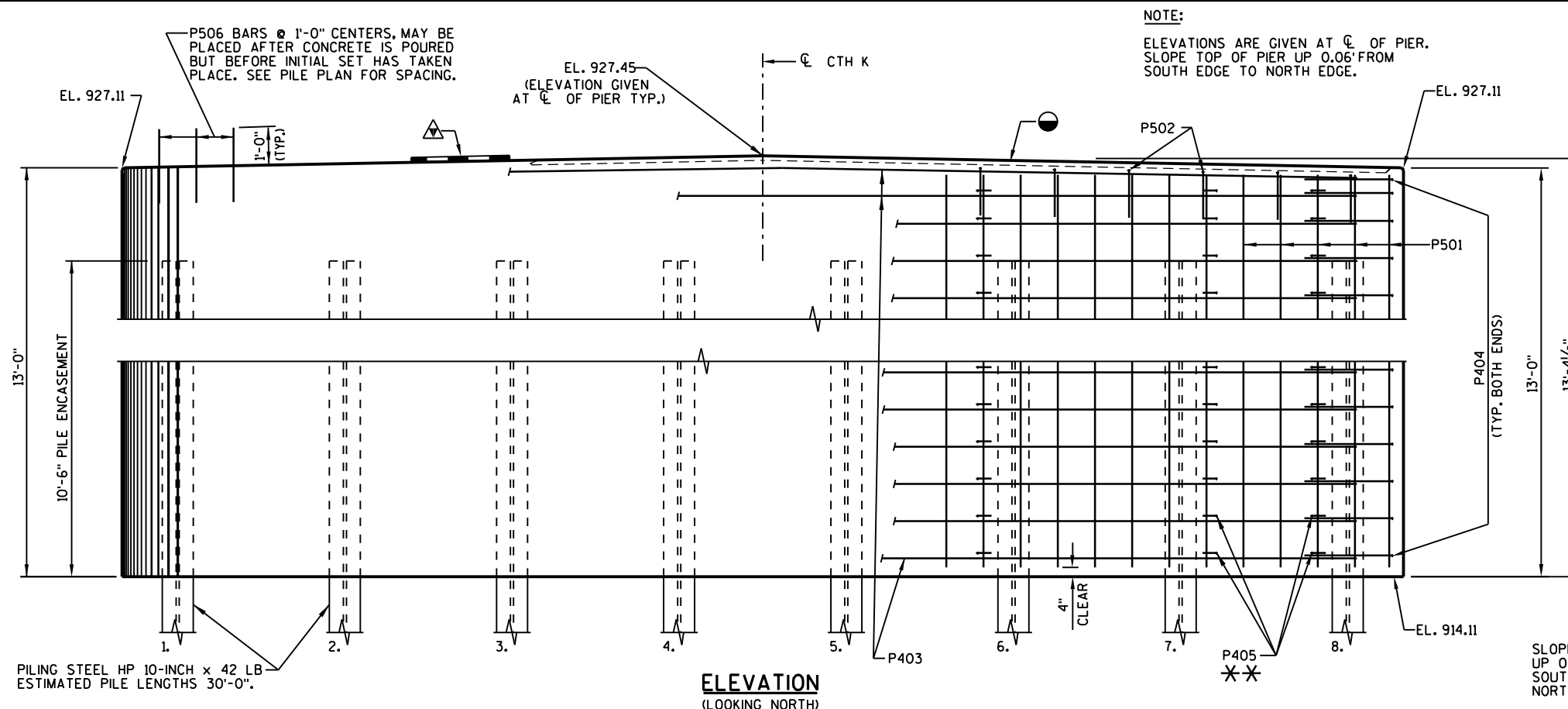
UNCOATED 2000 LBS.
COATED 70 LBS.

BILL OF BARS

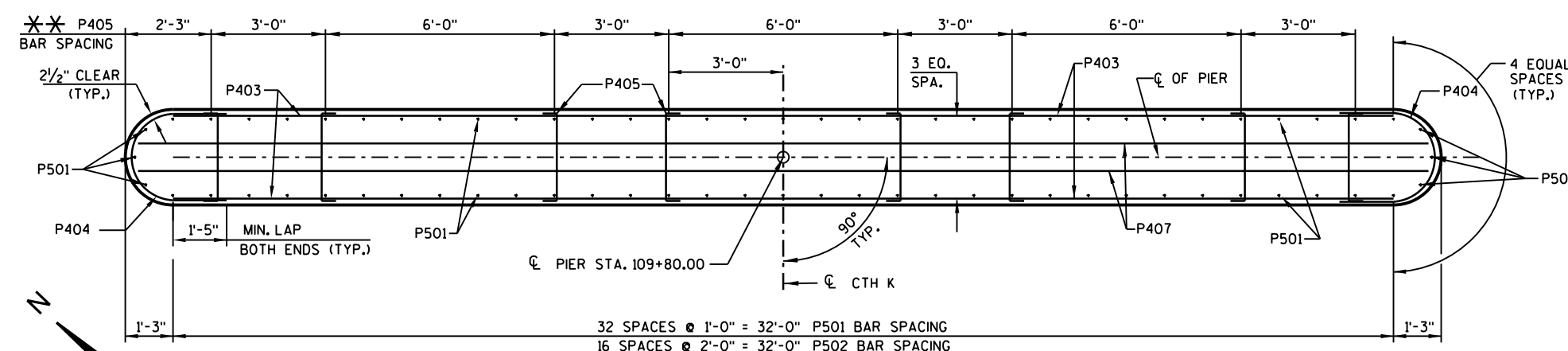
MARK	NO. REQ'D.	LENGTH	BENT	LOCATION	
P501	72	12-6		PIER SHAFT	- VERT.
P502	17	4-5	X	" STIRRUPS TOP	"
P403	30	32-0		" TOP & SIDES	- HORIZ.
P404	28	6-1	X	" AT ENDS	"
P405	104	2-8	X	" TIES	"
P506	33	2-0		" DOWELS @ TOP	- VERT.
P407	2	33-10		" SHAFT TOP	- HORIZ.

DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.

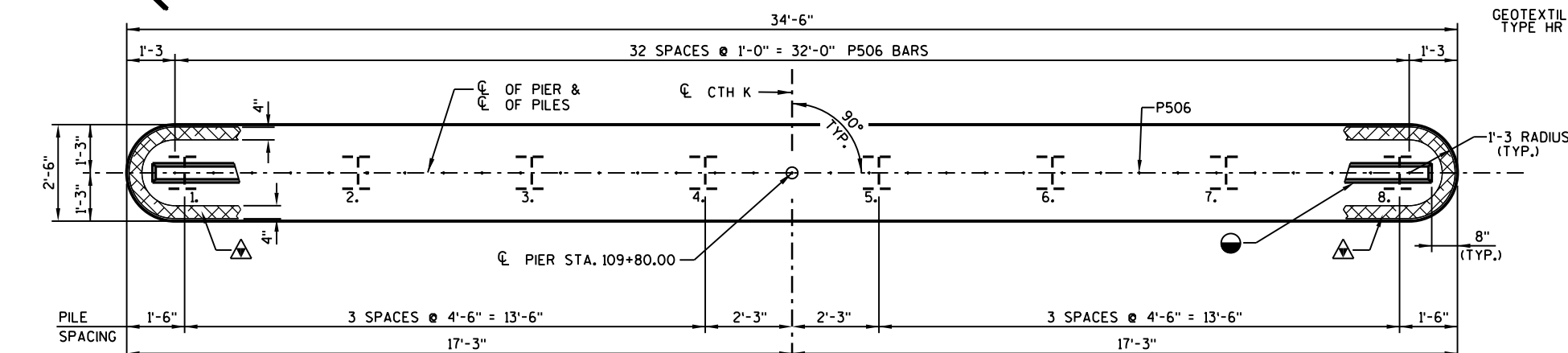
(C) - THESE BARS SHALL BE EPOXY COATED.



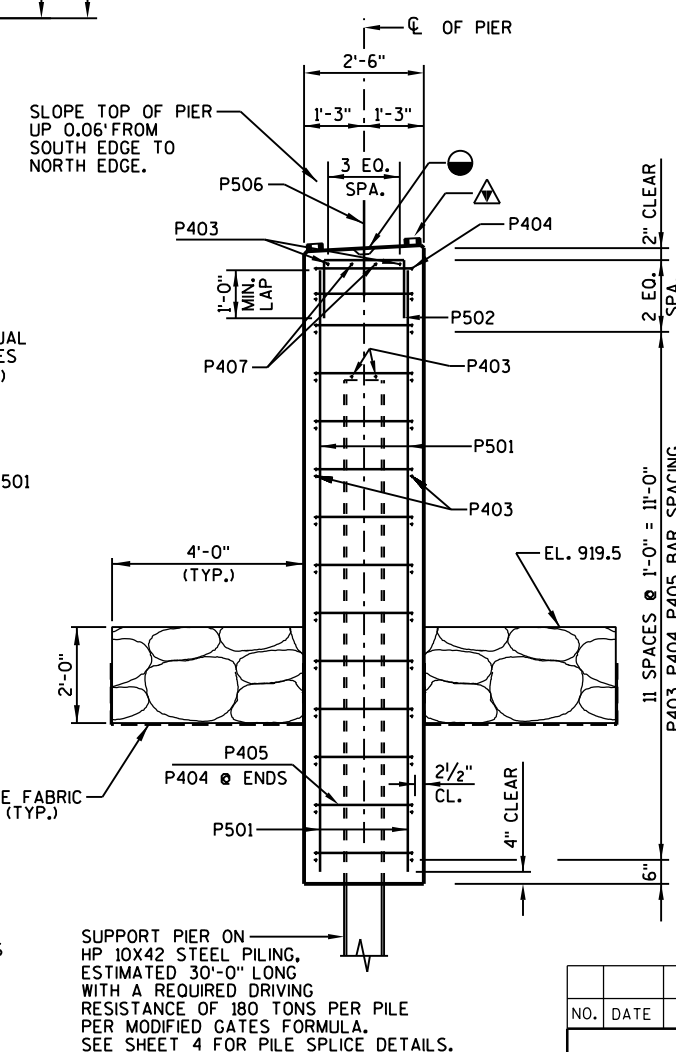
ELEVATION
(LOOKING NORTH)



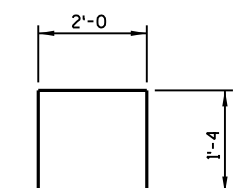
PLAN



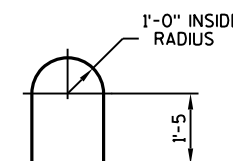
PILE PLAN



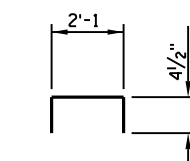
TYPICAL SECTION
THRU PIER



P502



P404

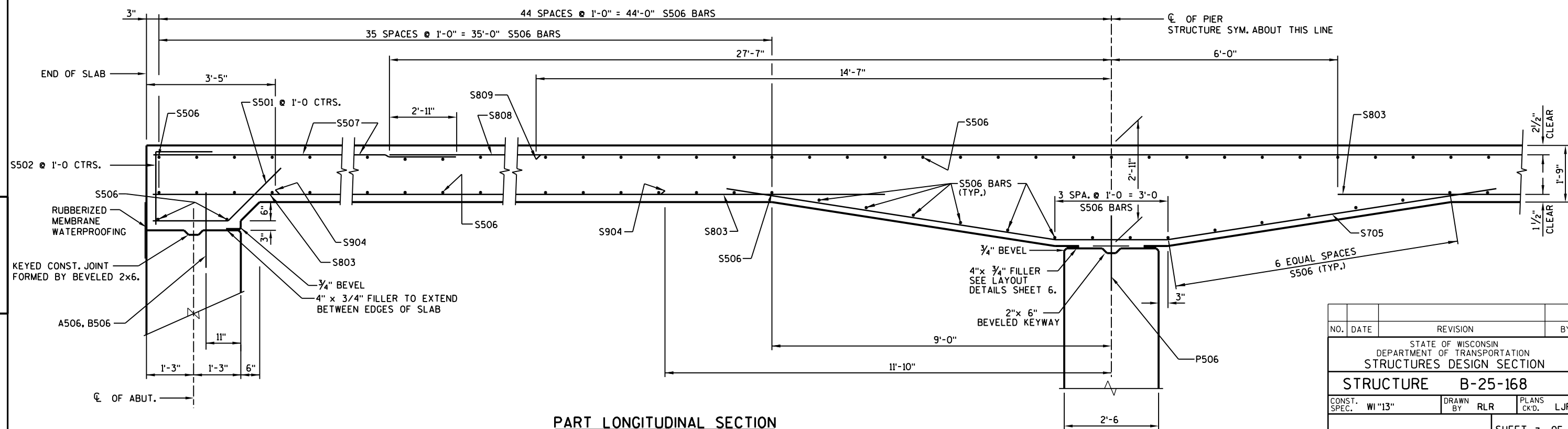
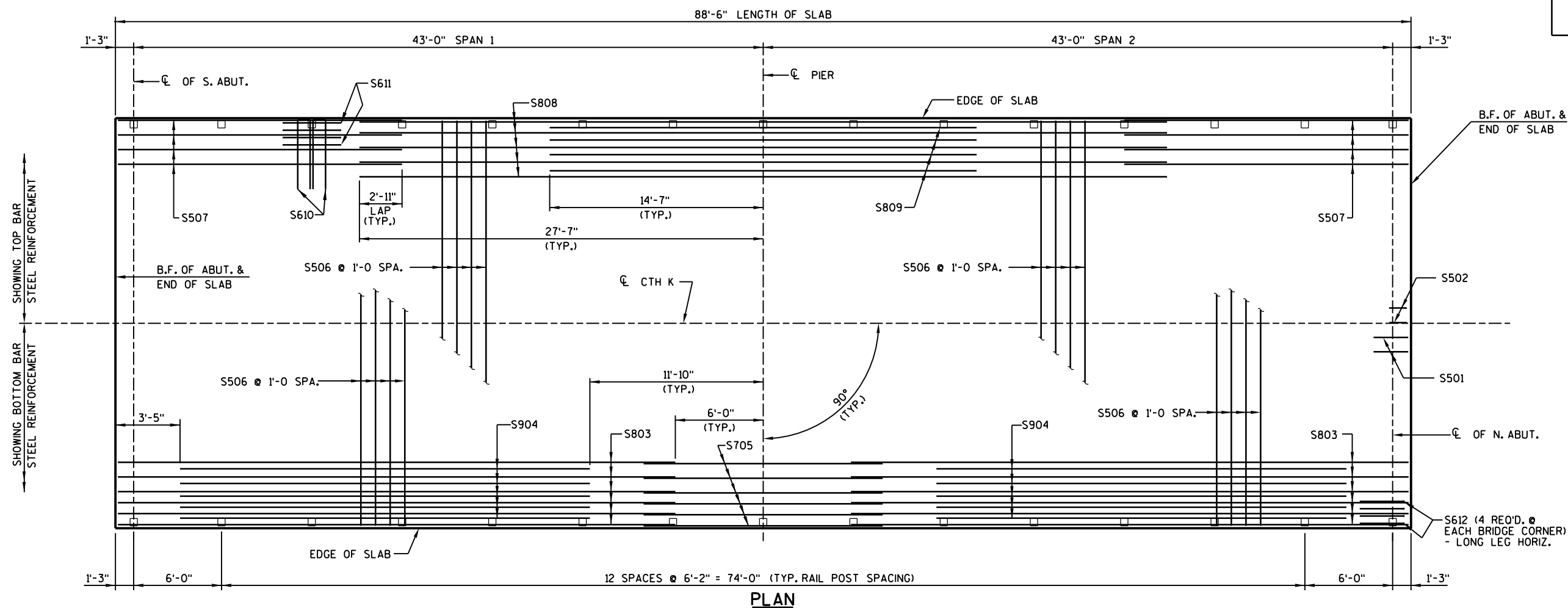


P405

LEGEND

-  - 4"x 3/4" FILLER, TYPICAL
ALL AROUND TOP EDGES
OF PIER.
-  - 2"x 6" BEVELED KEYWAY.
-  - ADJACENT TO EACH
PILE ONE SIDE ONLY.

NO.	DATE	REVISION		BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION				
STRUCTURE		B-25-168		
CONST. SPEC.	WI "13"	DRAWN BY	RLR	PLANS CK'D. LJR
PIER			SHEET 6 OF 9	



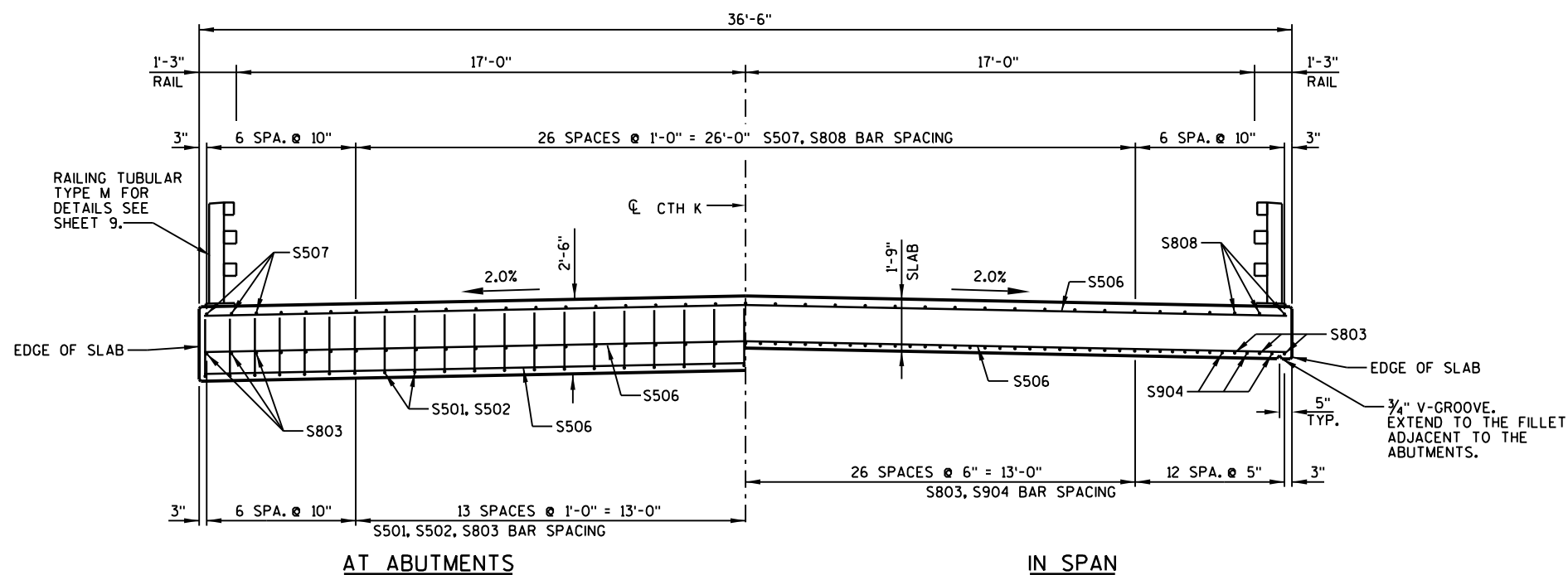
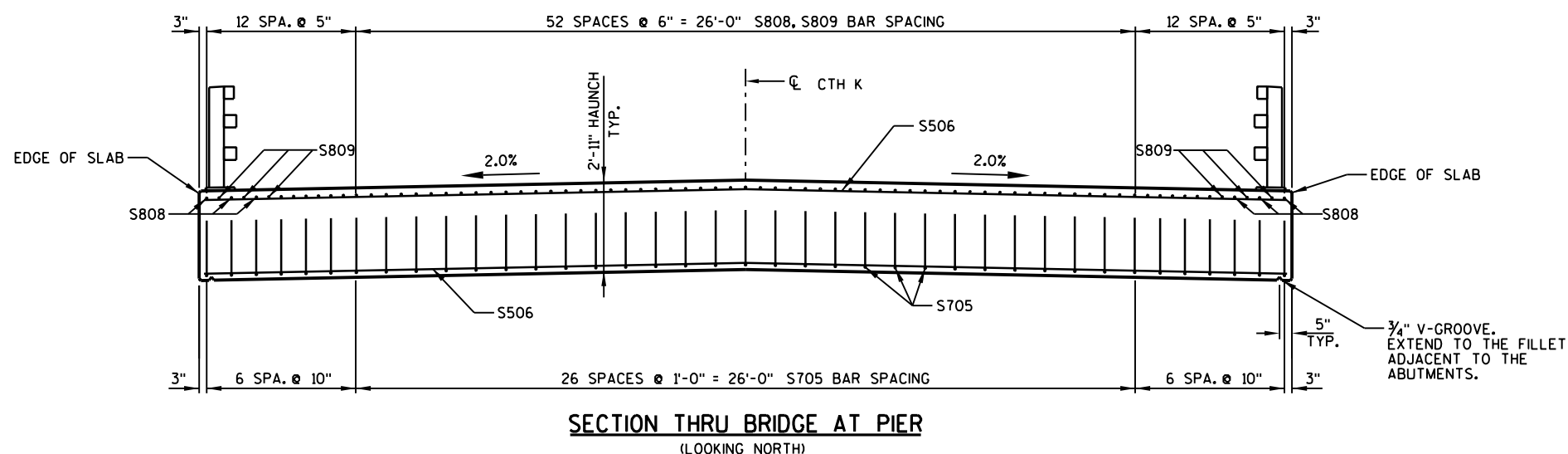
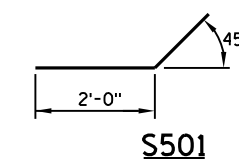
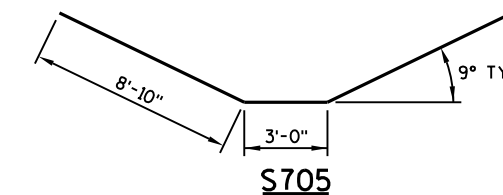
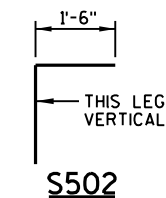
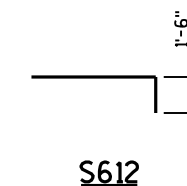
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-25-168			
CONST. SPEC. WI "13"	DRAWN BY RLR	PLANS CK'D. LJR	
SUPERSTRUCTURE			SHEET 7 OF 9

BILL OF BARS (COATED) 36,900 LBS.

MARK	NO. REQ'D.	LENGTH	BENT	LOCATION
S501	78	4-3	X	HAUNCH @ ABUTS. - LONGIT.
S502	78	3-6	X	HAUNCH @ ABUTS. - VERT.
S803	78	38-1		SLAB - BOTTOM - @ ABUTS. & IN SPAN - LONGIT.
S904	76	29-0		SLAB - BOTTOM - IN SPAN - LONGIT.
S705	39	20-8	X	HAUNCH OVER PIER - LONGIT.
S506	179	36-2		SLAB - TOP & BOTTOM - TRANS.
S507	78	19-5		SLAB - TOP - @ ABUTS. - LONGIT.
S808	39	55-2		SLAB - TOP - IN SPAN & OVER PIER - LONGIT.
S809	38	29-2		SLAB - TOP - OVER PIER - LONGIT.
S610	60	12-0	X	SLAB @ RAIL POST, TWO PER POST
S611	104	6-0		SLAB @ RAIL POST, FOUR PER POST
S612	16	6-0	X	SLAB @ RAIL POST, FOUR PER CORNER POST

EPOXY COAT ALL SUPERSTRUCTURE BAR STEEL.

DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.

**CROSS SECTION THRU BRIDGE**
(LOOKING NORTH)**SECTION THRU BRIDGE AT PIER**
(LOOKING NORTH)**S501****S705****S502****S610****S612****TOP OF SLAB ELEVATIONS AND CAMBER VALUES**

LOCATION	EAST EDGE OF SLAB ELEV.	CL ELEV.	WEST EDGE OF SLAB ELEV.	CAMBER VALUE (INCHES)
S. ABUT.	929.18	929.55	929.18	0.0
1/10	929.26	929.63	929.26	0.2
2/10	929.34	929.71	929.34	0.4
3/10	929.43	929.79	929.43	0.5
4/10	929.51	929.88	929.51	0.5
5/10	929.60	929.97	929.60	0.5
6/10	929.69	930.05	929.69	0.4
7/10	929.78	930.15	929.78	0.2
8/10	929.87	930.24	929.87	0.1
9/10	929.97	930.34	929.97	0.0
PIER	930.07	930.43	930.07	0.0
1/10	930.17	930.53	930.17	0.0
2/10	930.27	930.63	930.27	0.1
3/10	930.37	930.74	930.37	0.2
4/10	930.48	930.84	930.48	0.4
5/10	930.58	930.95	930.58	0.5
6/10	930.69	931.06	930.69	0.5
7/10	930.80	931.17	930.80	0.5
8/10	930.92	931.28	930.92	0.4
9/10	931.03	931.39	931.03	0.2
N. ABUT.	931.15	931.51	931.15	0.0

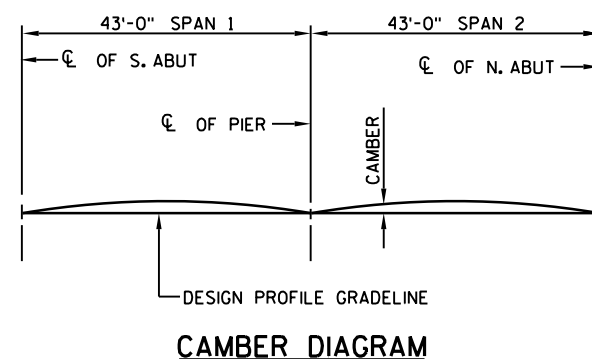
GENERAL NOTES

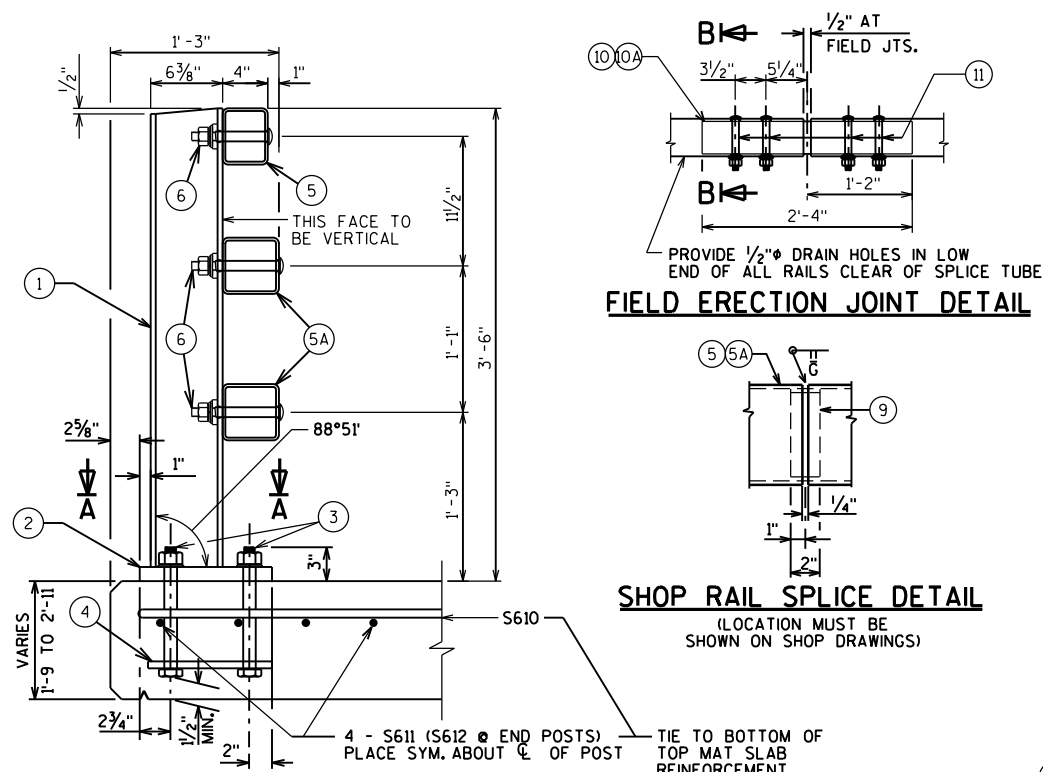
ALL SLAB THICKNESS DIMENSIONS ARE MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).

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

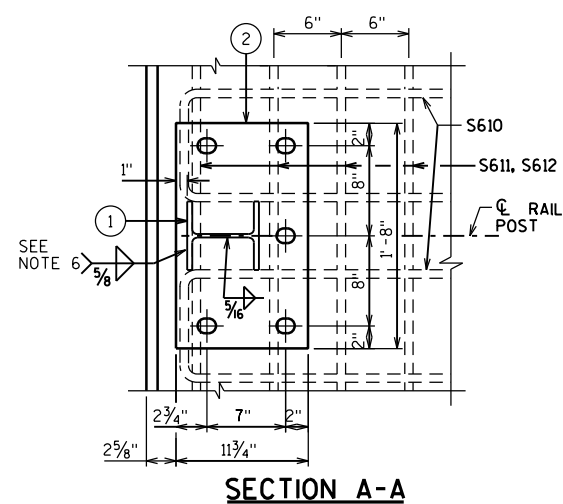
CAMBER SPANS AS SHOWN TO PROVIDE FOR DEAD LOAD DEFLECTION AND FUTURE CREEP. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT. DEAD LOAD DEFLECTION APPROXIMATES 1/3 OF CAMBER VALUES SHOWN.

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

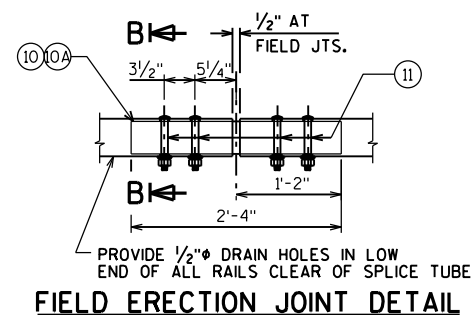
**CAMBER DIAGRAM**



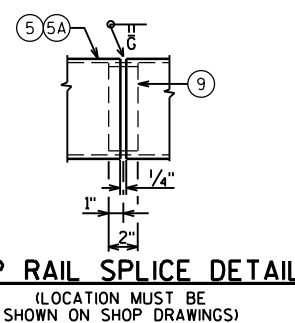
SECTION THRU RAILING ON DECK



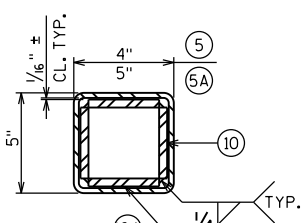
SECTION A-A



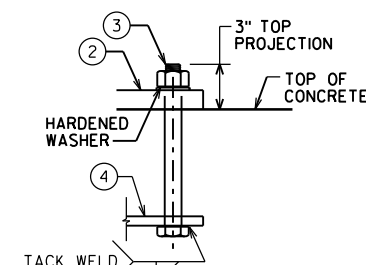
FIELD ERECTION JOINT DETAIL



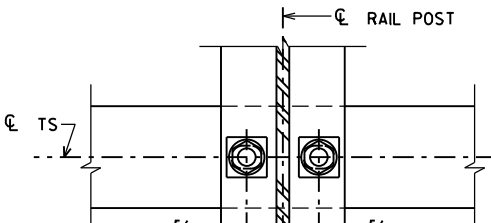
SHOP RAIL SPICE DETAIL



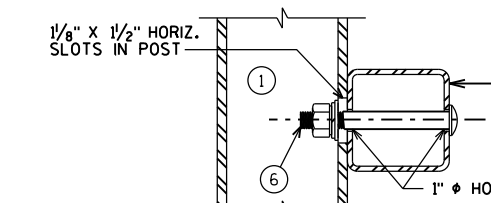
SECTION B-B



ANCHOR BOLTS



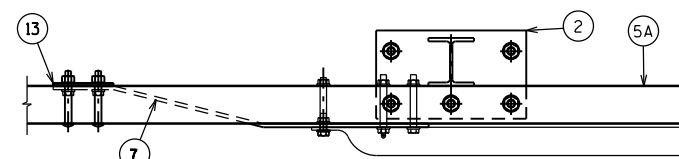
SECTION THRU POST WEB



SECTION THRU RAIL

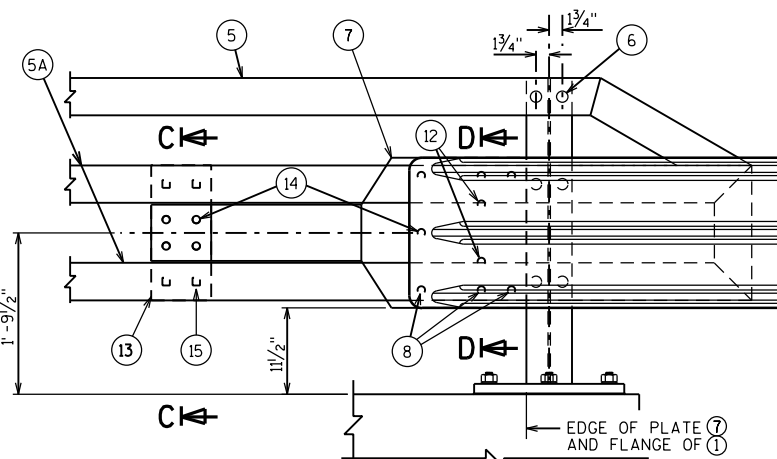
NOTE: CONNECTIONS AT LOWER RAILS SHOWN. CONNECTIONS AT TOP RAIL SIMILAR.

TYPICAL RAIL TO POST CONNECTIONS



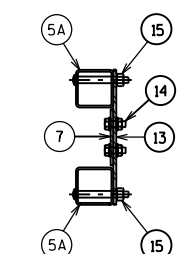
TOP VIEW AT END POST

(THREE BEAM RAIL ATTACHMENT)

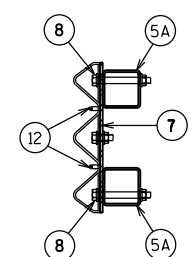


DETAIL AT END POST

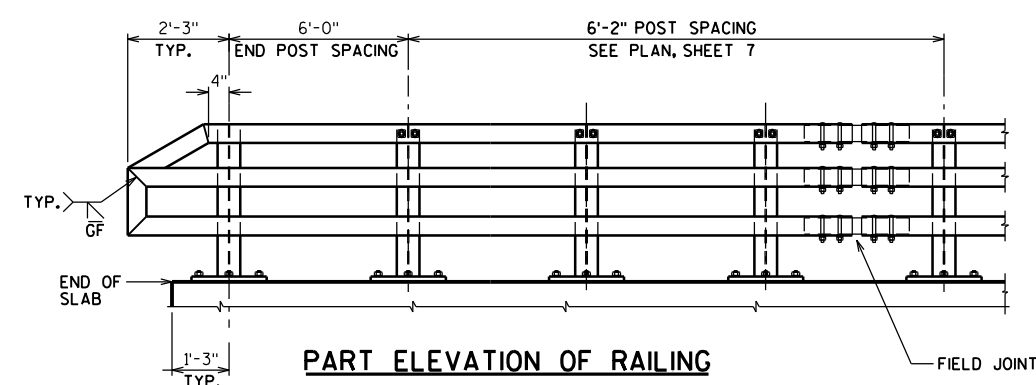
(THREE BEAM RAIL ATTACHMENT)



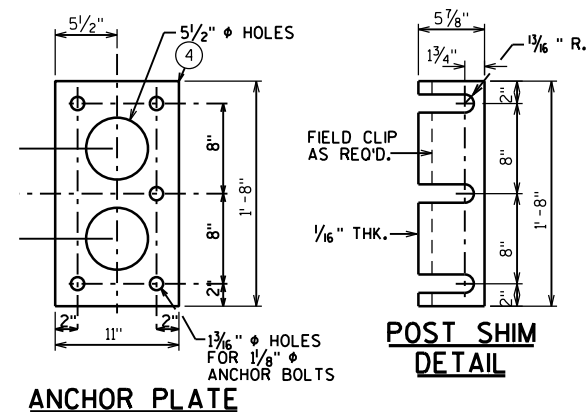
SECTION C-C



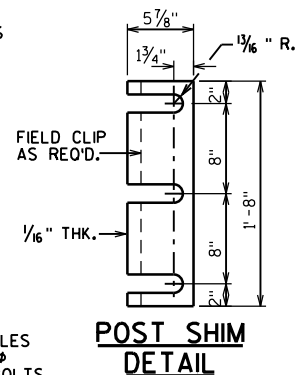
SECTION D-D



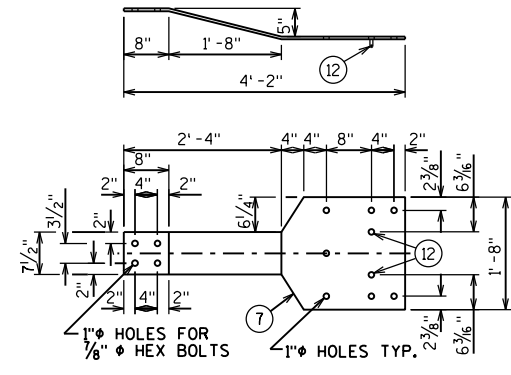
PART ELEVATION OF RAILING



ANCHOR PLATE



POST SHIM DETAIL



BACK-UP PLATE DETAIL

AT BEAM GUARD ATTACHMENT

LEGEND

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

GENERAL NOTES

- BID ITEM SHALL BE "RAILING TUBULAR TYPE M B-25-168" WHICH INCLUDES ALL ITEMS SHOWN.
- RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY = 50 KSI. ANCHOR PLATES, AND SPLICE TUBE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 36.
- THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN.
- RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE.
- 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 S.S.P.C. SPECIFICATIONS.
- PAINTING IS NOT REQUIRED.
- THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 4 (TL-4).

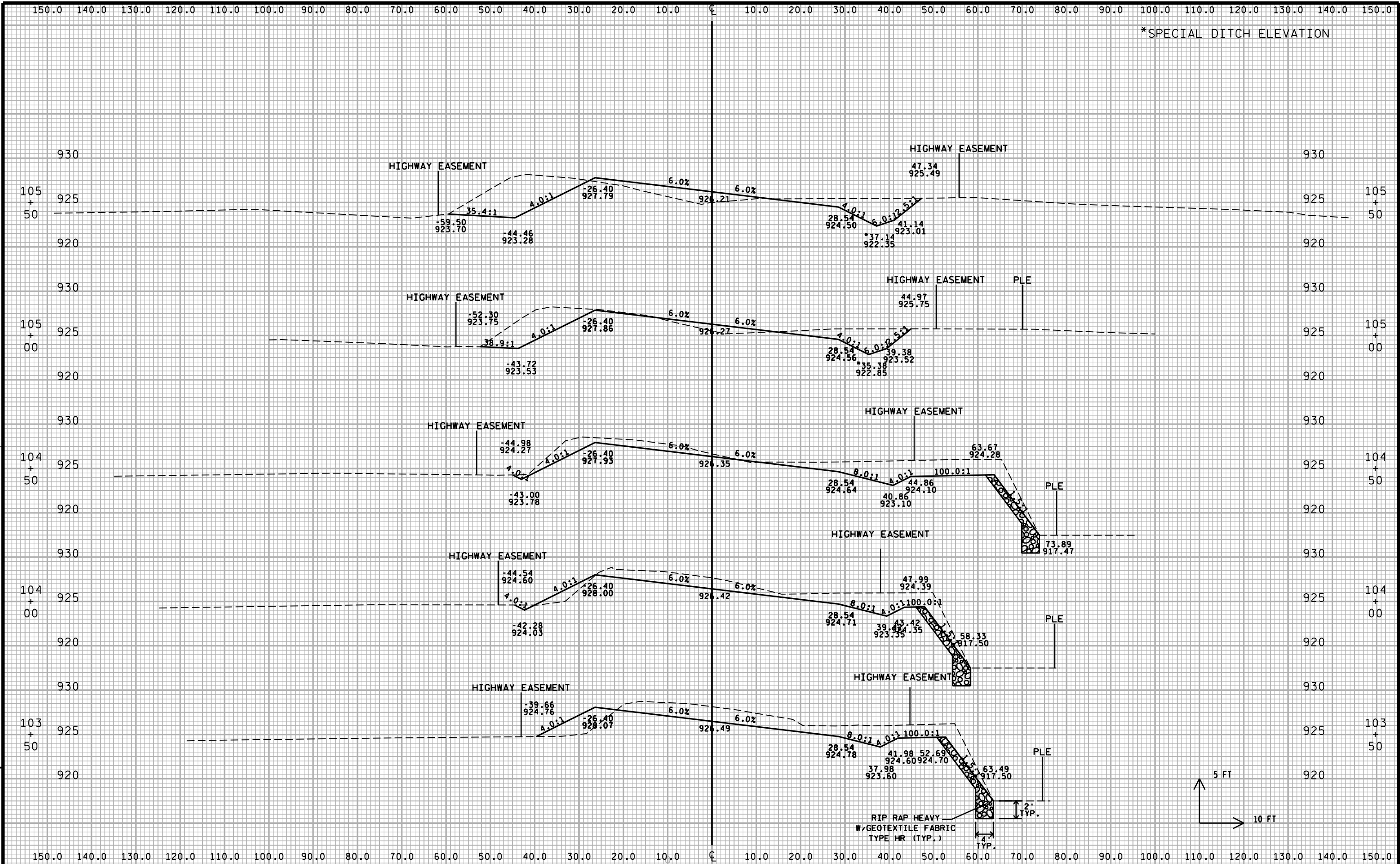
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE		B-25-168	
CONST. SPEC.	WI "13"	DRAWN BY	RLR
RAILING TUBULAR TYPE M		PLANS CK'D.	LJR
		SHEET 9 OF 9	

EARTHWORK PROJECT I.D. 5679-00-76

STATION	Real Station	Distance	AREA (SF)			Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)			Mass Ordinate
			Cut	Salvaged / Unusable Pavement Material	Fill	Cut	Salvaged / Unusable Pavement Material	Fill	Rock Exc	Cut 1.00	Expanded Fill 1.25	Expanded Rock 1.10	
101+00	10100		91	0	4	0	0	0	0	0	0	0	0
101+50	10150	50	80	0	13	158	0	16	0	158	20	0	138
102+00	10200	50	93	0	6	160	0	18	0	318	43	0	276
102+50	10250	50	90	0	20	169	0	24	0	487	73	0	414
103+00	10300	50	94	0	21	170	0	38	0	658	120	0	537
103+50	10350	50	124	0	25	203	0	42	0	860	173	0	687
104+00	10400	50	106	0	9	214	0	32	0	1074	213	0	861
104+50	10450	50	130	0	11	219	0	19	0	1292	237	0	1056
105+00	10500	100	92	0	0	405	0	26	0	1698	269	0	1429
105+50	10550	50	122	0	33	199	0	30	0	1896	307	0	1589
106+00	10600	50	131	0	45	235	0	71	0	2131	396	0	1735
106+22	10622	22	127	0	82	105	0	52	0	2236	461	0	1776
106+75	10675	53	140	0	132	275	0	260	0	2511	785	0	1726
107+09	10709	34	146	0	76	180	0	131	0	2691	949	0	1742
107+50	10750	41	192	0	79	257	0	117	0	2948	1096	0	1852
108+22	10822	72	130	0	148	347	0	395	0	3294	1590	0	1704
108+75	10875	53	166	0	110	326	0	217	0	3621	1861	0	1760
109+00	10900	25	181	0	157	147	0	128	0	3768	2021	0	1747
109+18	10918	18	183	0	166	121	0	107	0	3889	2155	0	1734
Structure B-25-168						3889	0	1724	0				

EARTHWORK PROJECT I.D. 5679-00-76

STATION Real Station Distance			AREA (SF)				Incremental Vol (CY) (Unadjusted)	Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)			Mass Ordinate
			Cut	Salvaged / Unusable Pavement Material	Fill	Rock Exc	Cut (Including Rock) Note 1	Cut Note 1	Salvaged / Unusable Pavement Material Note 2	Fill Note 3	Rock Exc	Cut 1.00 Note 1	Expanded Fill 1.25	Expanded Rock 1.10	
Structure B-25-168															
110+59	11059	0	102	0	368	0	0	0	0	0	0	0	0	0	0
111+37	11137	78	66	0	390	0	243	243	0	1095	0	243	1369	0	-1126
112+00	11200	63	134	0	332	0	312	312	0	776	0	555	2339	0	-1784
112+50	11250	50	176	0	259	0	286	286	0	547	0	841	3023	0	-2182
113+00	11300	50	257	0	210	0	401	401	0	434	0	1242	3566	0	-2324
113+50	11350	50	322	0	283	0	597	597	0	523	0	1838	4220	0	-2381
114+00	11400	50	380	0	261	0	650	650	0	503	0	2488	4848	0	-2360
114+30	11430	30	426	0	236	0	448	448	0	276	0	2936	5194	0	-2258
114+50	11450	20	491	0	214	0	364	364	0	158	0	3299	5392	0	-2092
114+80	11480	30	488	0	173	0	544	544	0	215	0	3843	5660	0	-1817
115+00	11500	20	415	0	1048	0	334	334	0	452	0	4178	6226	0	-2048
115+50	11550	50	351	0	888	0	709	709	0	1792	0	4887	8466	0	-3579
116+00	11600	50	559	0	466	0	842	842	0	1253	0	5729	10032	0	-4303
116+50	11650	50	500	0	214	0	980	980	0	630	0	6710	10819	0	-4110
117+00	11700	50	209	0	287	0	657	657	0	464	0	7366	11399	0	-4033
117+50	11750	50	92	0	661	0	278	278	0	878	0	7645	12496	0	-4852
118+00	11800	50	98	0	745	0	175	175	0	1302	0	7820	14124	0	-6304
118+50	11850	50	22	0	936	0	111	111	0	1557	0	7931	16071	0	-8140
118+67	11867	17	28	0	1123	0	16	16	0	648	0	7946	16881	0	-8935
119+00	11900	33	158	0	1135	0	114	114	0	1380	0	8060	18606	0	-10546
119+17	11917	17	230	0	1129	0	122	122	0	713	0	8182	19497	0	-11315
119+50	11950	33	148	0	938	0	231	231	0	1263	0	8413	21076	0	-12663
120+00	12000	50	115	0	774	0	243	243	0	1585	0	8656	23058	0	-14401
120+50	12050	50	112	0	567	71	210	210	0	1242	65	8867	24611	72	-15672
121+00	12100	50	123	0	339	74	218	218	0	840	134	9085	25660	219	-16356
121+50	12150	50	209	0	177	133	308	308	0	479	192	9393	26258	431	-16435
122+00	12200	50	250	0	71	138	425	425	0	230	251	9818	26546	707	-16021
122+50	12250	50	271	0	33	124	501	501	0	61	230	10319	26622	960	-15343
123+00	12300	50	233	0	33	82	466	466	0	61	191	10785	26698	1171	-14743
123+50	12350	50	205	0	105	88	405	405	0	127	157	11190	26857	1344	-14324
124+00	12400	50	170	0	216	56	347	347	0	297	133	11536	27229	1491	-14203
124+41	12441	41	400	0	253	218	432	432	0	357	208	11969	27675	1720	-13987
124+50	12450	9	93	0	267	8	82	82	0	87	38	12051	27783	1761	-13972
125+00	12500	50	70	0	302	0	151	151	0	527	7	12202	28442	1769	-14471
125+50	12550	50	63	0	338	0	123	123	0	592	0	12325	29182	1769	-15088
126+00	12600	50	64	0	297	0	118	118	0	550	0	12443	29870	1769	-15658
126+50	12650	50	71	0	213	0	125	125	0	472	0	12568	30460	1769	-16124
127+00	12700	50	78	0	147	0	138	138	0	333	0	12706	30876	1769	-16402
127+50	12750	50	78	0	84	0	144	144	0	213	0	12850	31143	1769	-16524
127+87	12787	37	73	0	60	0	103	103	0	98	0	12953	31266	1769	-16544
128+00	12800	13	73	0	61	0	35	35	0	29	0	12989	31302	1769	-16545
128+50	12850	50	74	0	35	0	137	137	0	89	0	13125	31414	1769	-16520
129+00	12900	50	73	0	34	0	136	136	0	64	0	13261	31494	1769	-16463
129+50	12950	50	67	0	37	0	129	129	0	65	0	13390	31575	1769	-16416
130+00	13000	50	66	0	24	0	123	123	0	57	0	13513	31646	1769	-16364
130+18	13018	18	70	0	11	0	46	46	0	12	0	13559	31661	1769	-16333
130+50	13050	32	0	0	0	0	42	42	0	6	0	13601	31668	1769	-16299
							13601	13601	0	25335	1608				



PROJECT NO:5679-00-76

HWY:CTH K

COUNTY:

IOWA

CROSS SECTIONS: CTH K

SHEET

E

FILE NAME : \$\$....designfile....\$\$

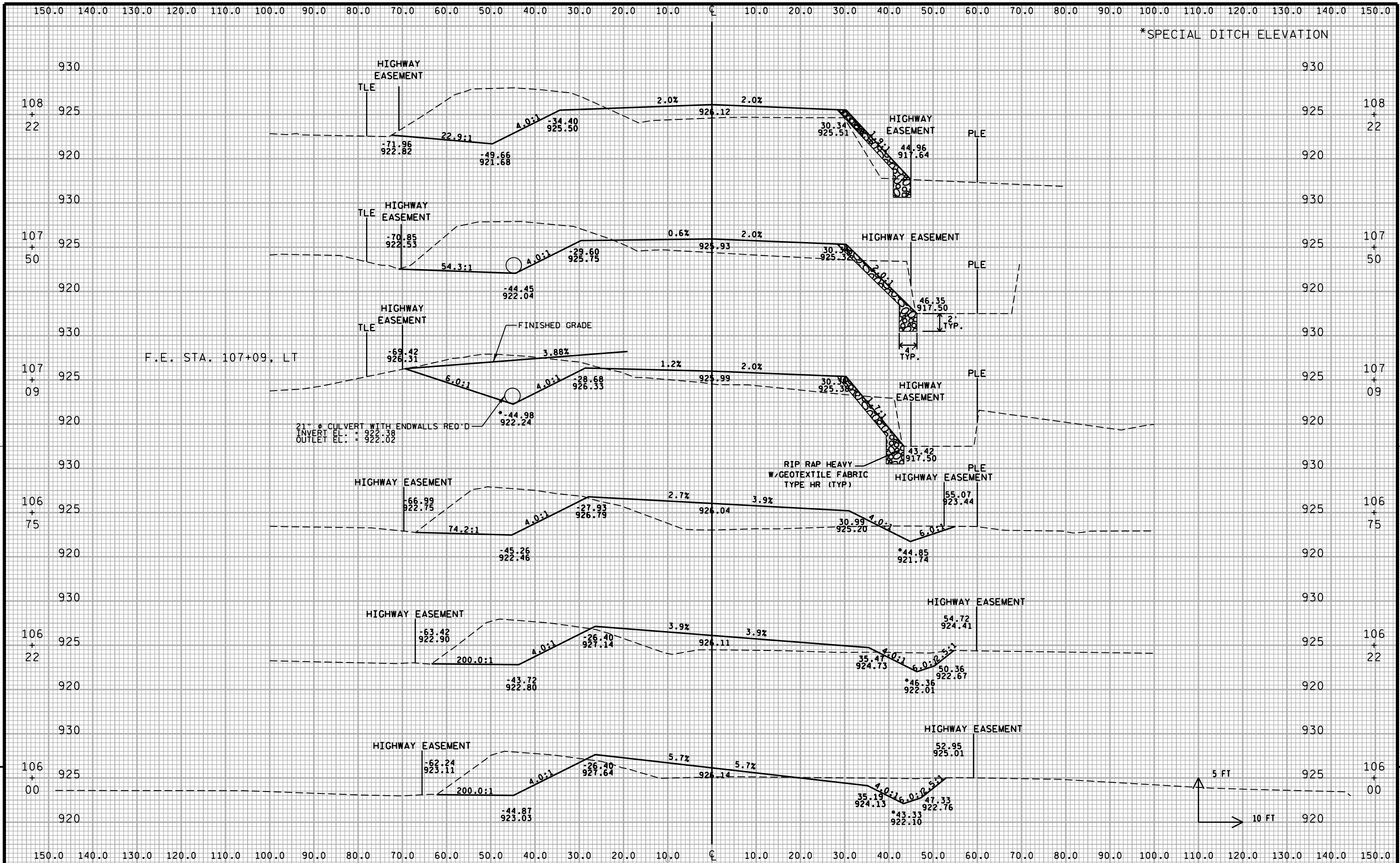
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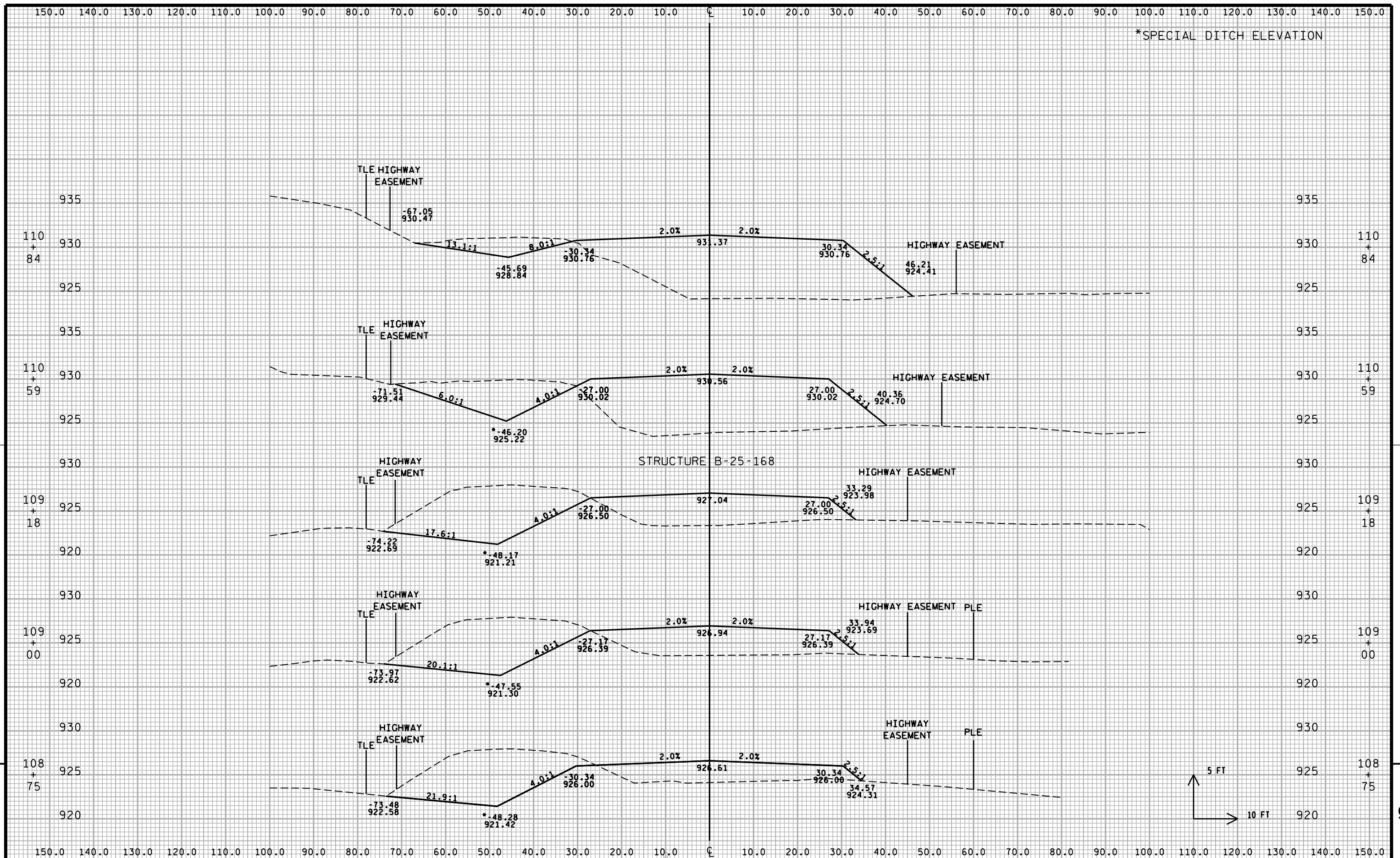
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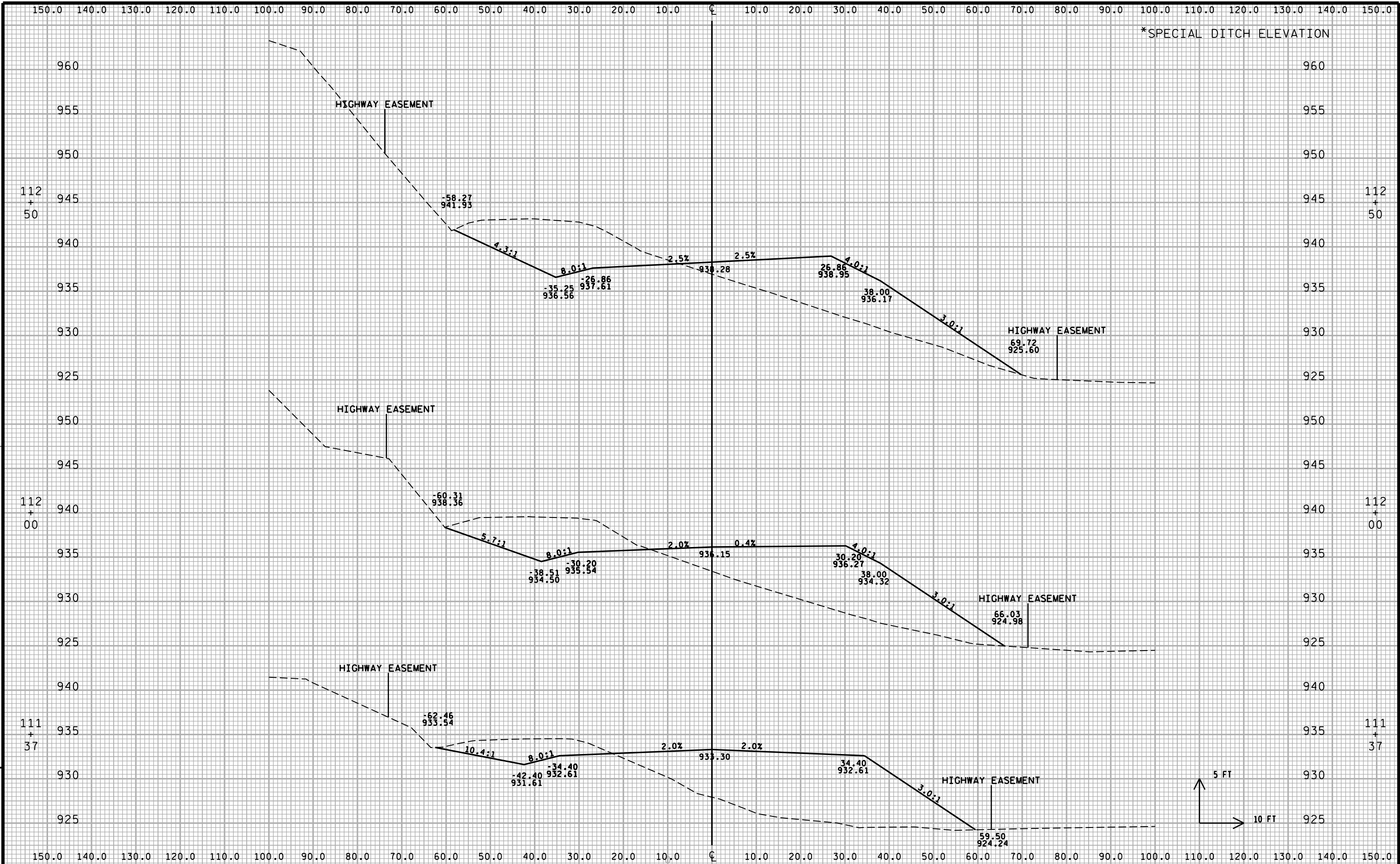
PLOT NAME :

PLOT SCALE : \$\$.....plotscale.....\$\$

WISDOT/CADDS SHEET 21







PROJECT NO:5679-00-76

HWY:CTH K

COUNTY:

IOWA

CROSS SECTIONS: CTH K

SHEET

E

FILE NAME : \$\$....designfile....\$\$

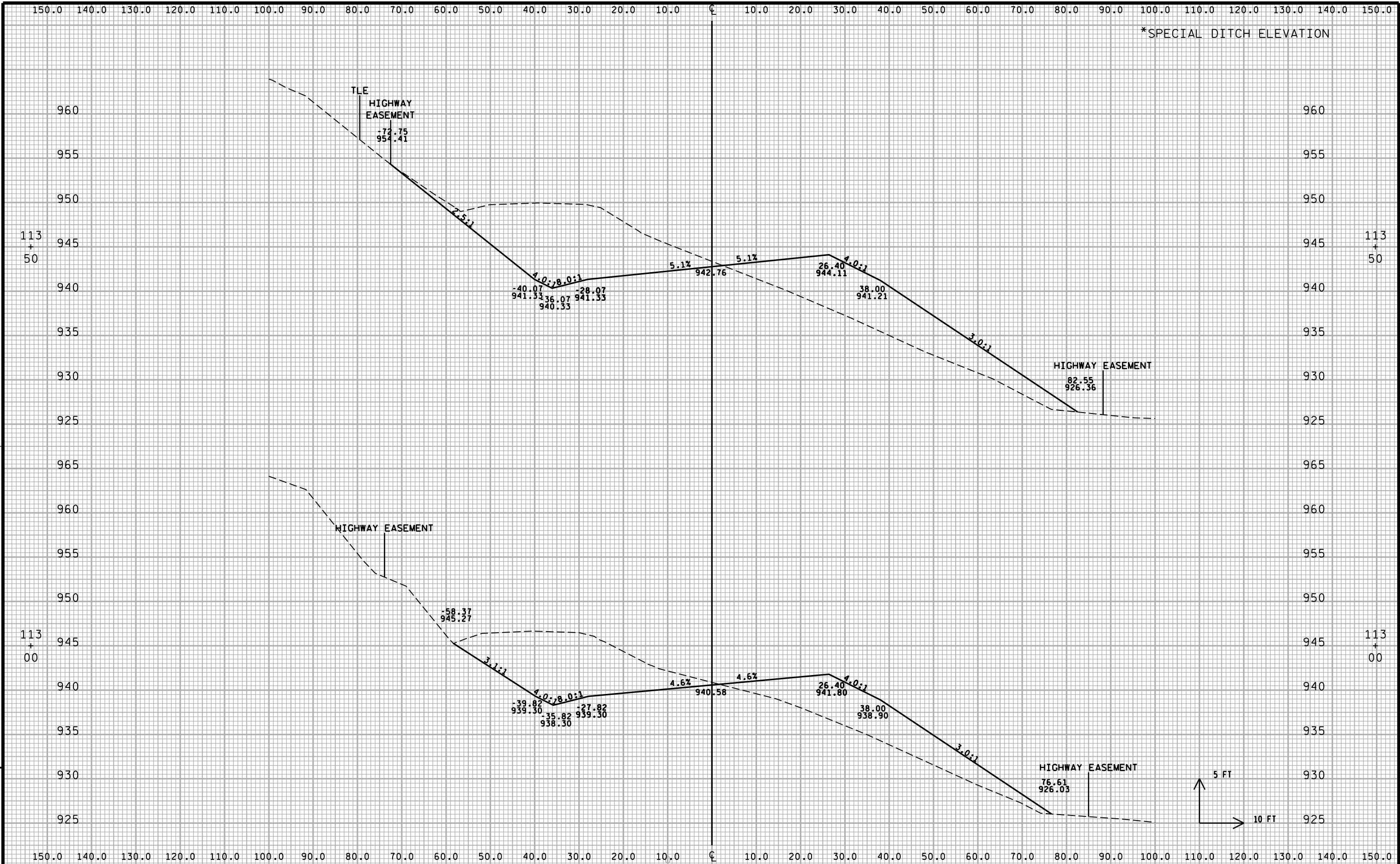
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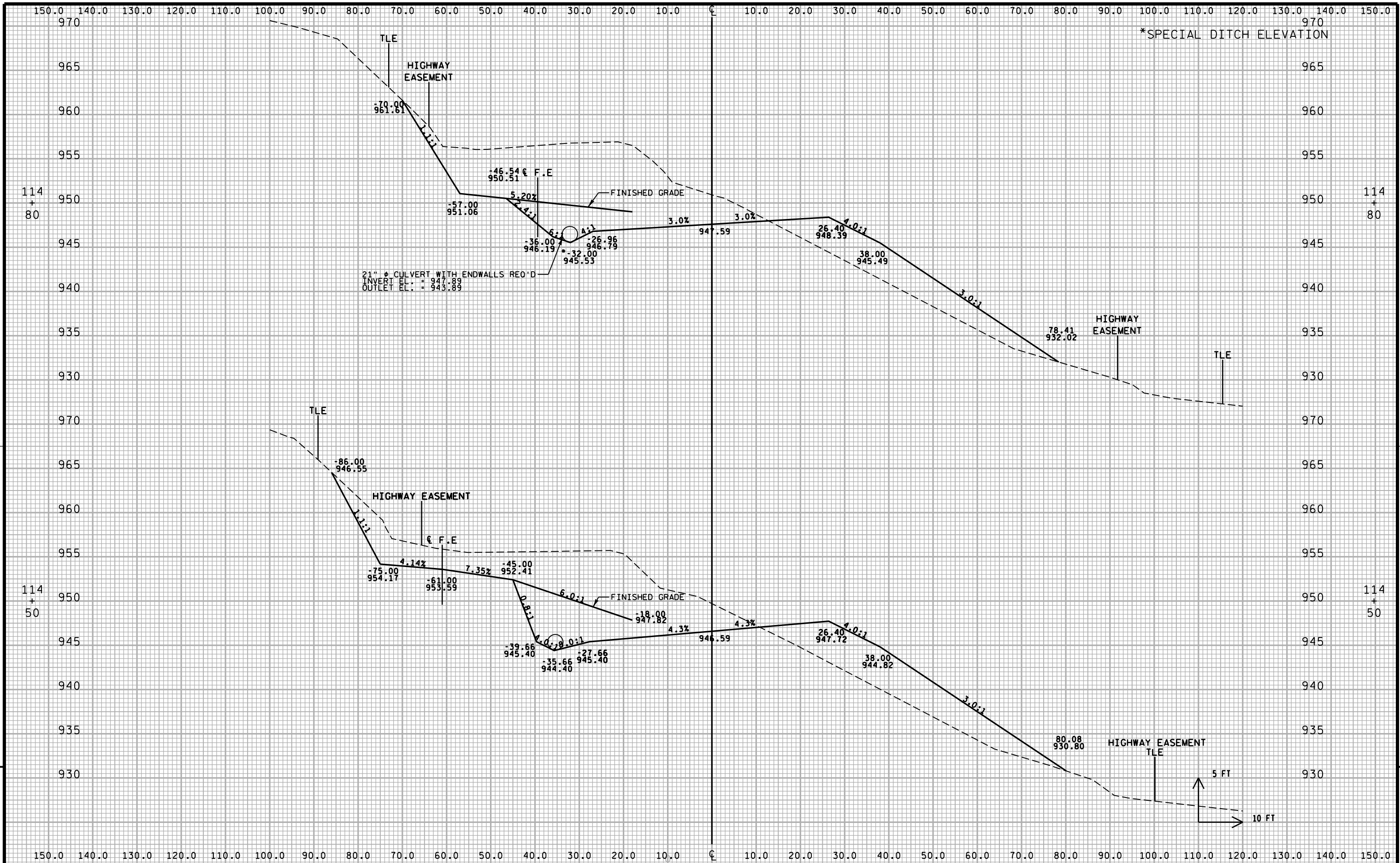
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PLOT NAME :

PLOT SCALE : \$\$.....plotscale.....\$\$

WISDOT/CADDS SHEET 21

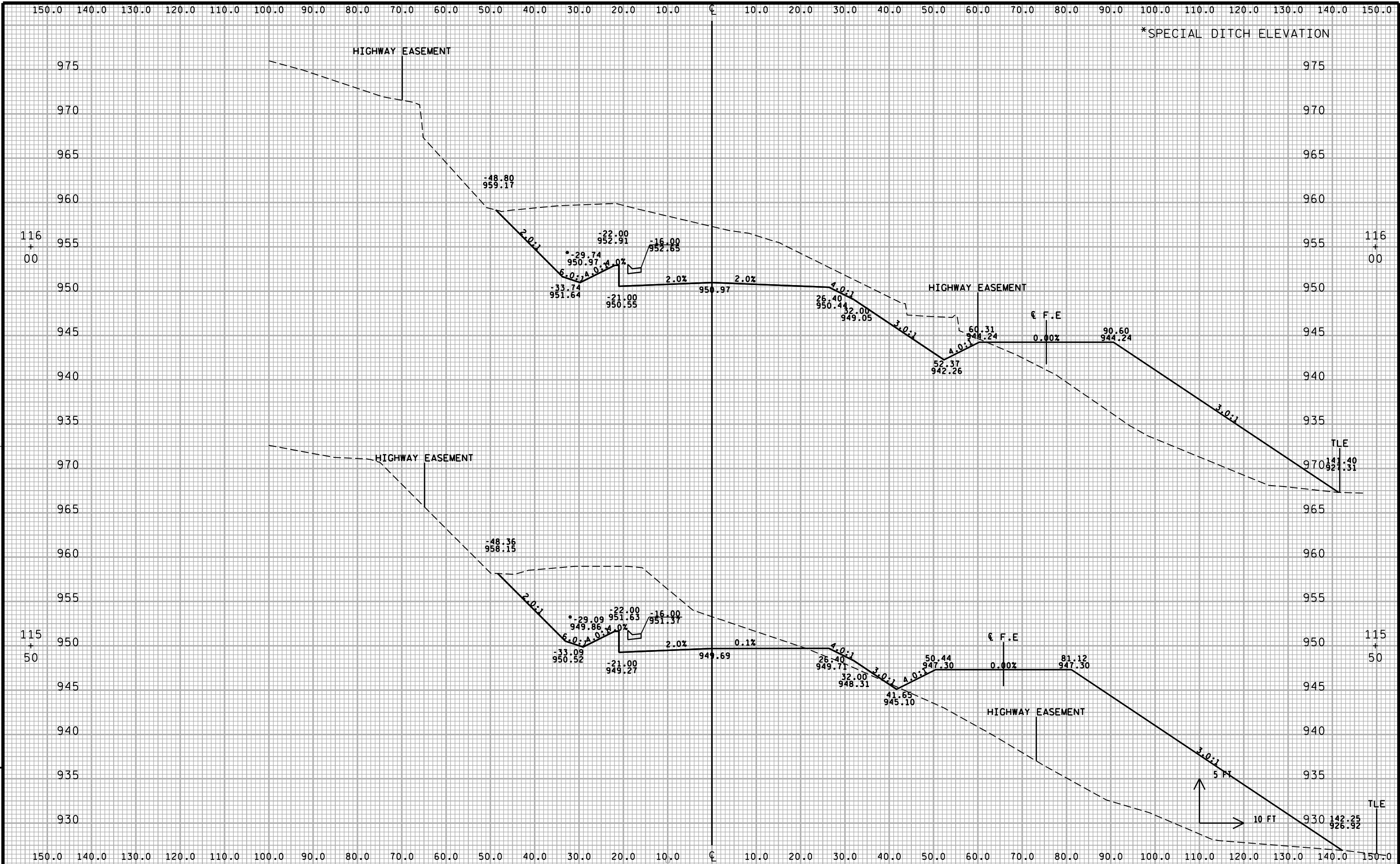






PROJECT NO: 5679-00-76	HWY: CTH K	COUNTY: IOWA	CROSS SECTIONS: CTH K	SHEET E
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FILE NAME : P:\5900s\5908\05908000\CADD\Align\rc009015.dgn PLOT DATE : 8/31/2012 PLOT BY : jkurten PLOT NAME : PLOT SCALE : 1:2 WISDOT/CADDS SHEET 21



PROJECT NO:5679-00-76

HWY:CTH K

COUNTY:

IOWA

CROSS SECTIONS: CTH K

SHEET

E

FILE NAME : \$\$....designfile....\$\$

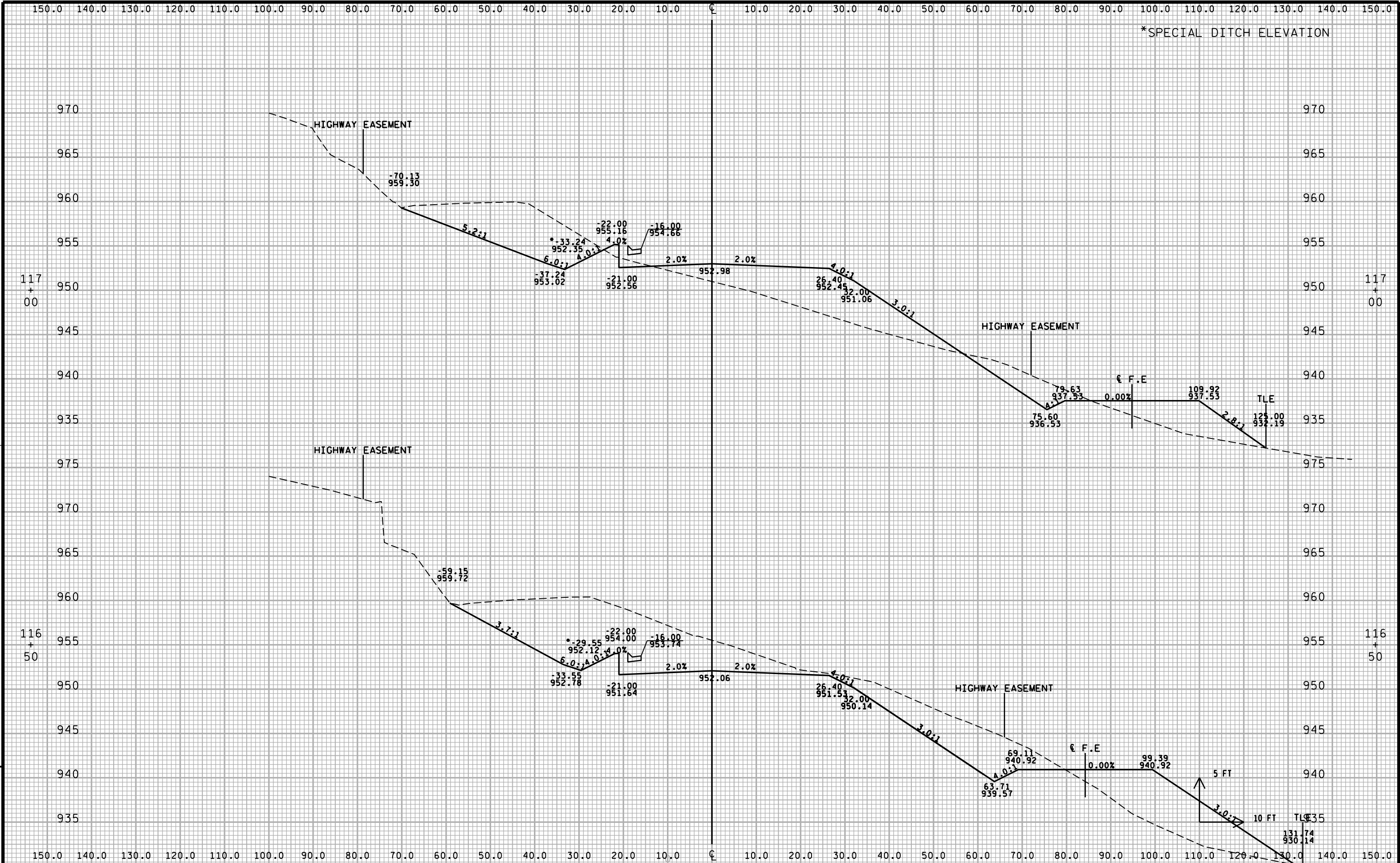
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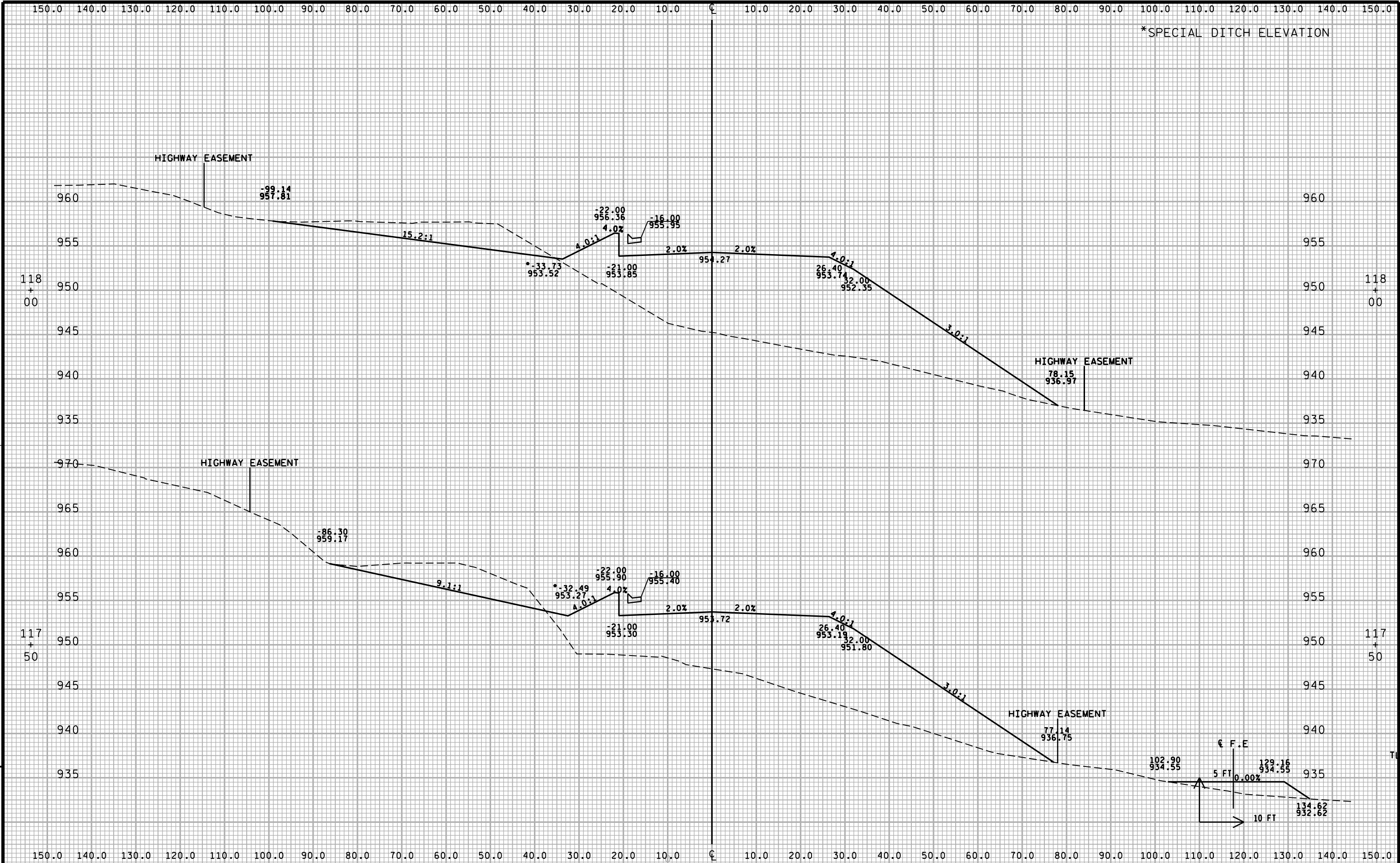
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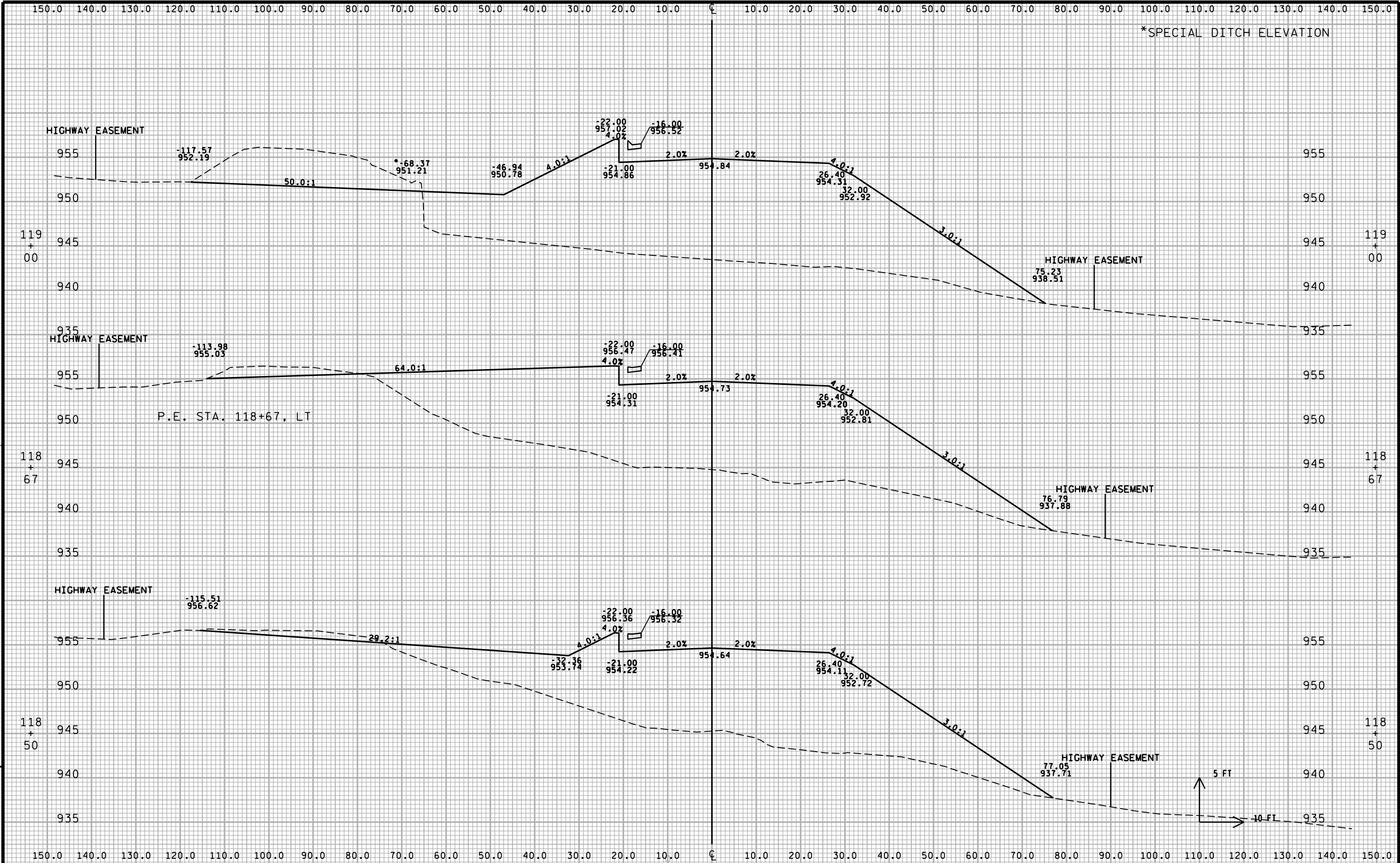
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WISDOT/CADDS SHEET 21







PROJECT NO:5679-00-76

HWY:CTH K

COUNTY:

IOWA

CROSS SECTIONS: CTH K

SHEET

E

FILE NAME : \$\$....designfile....\$\$

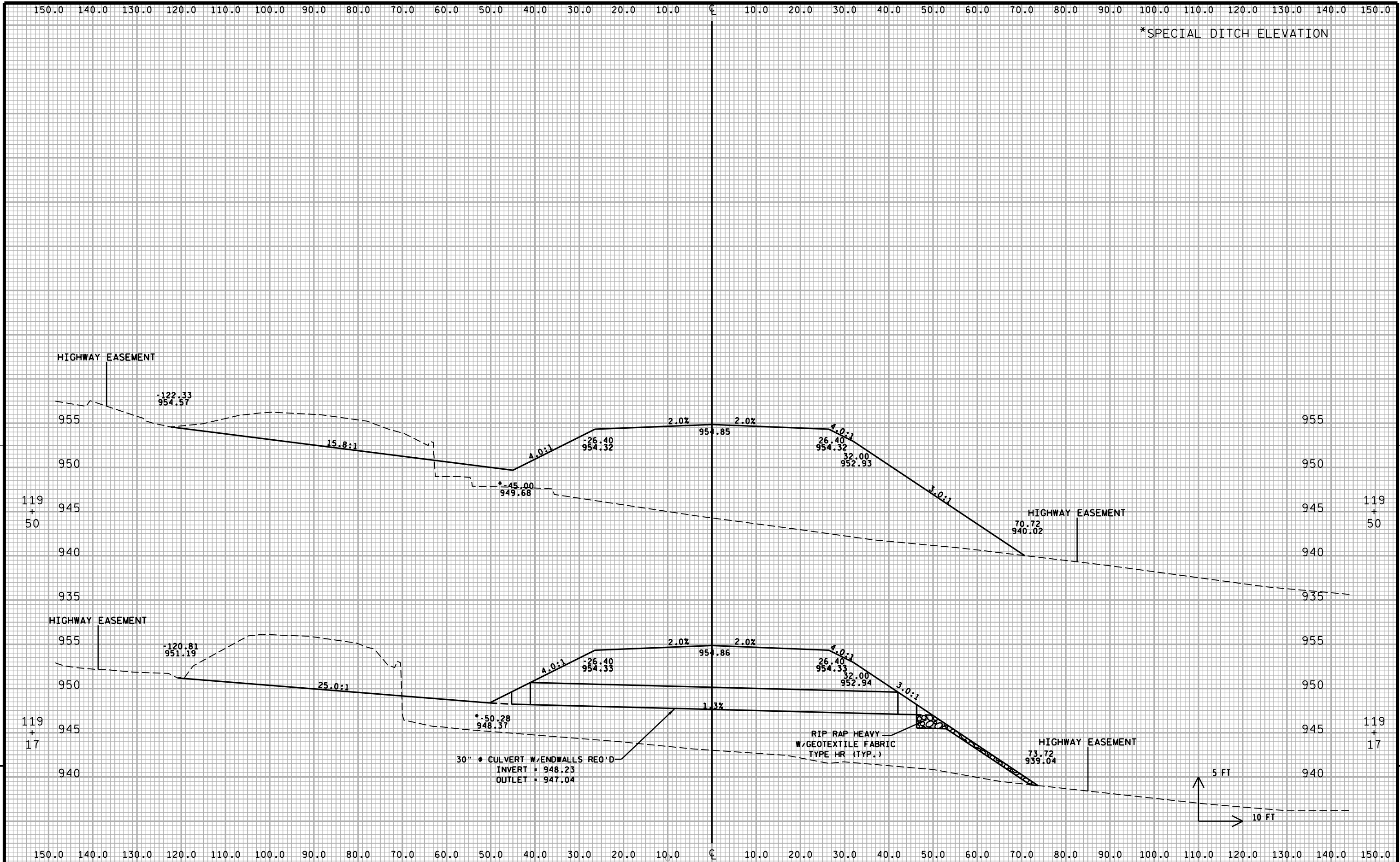
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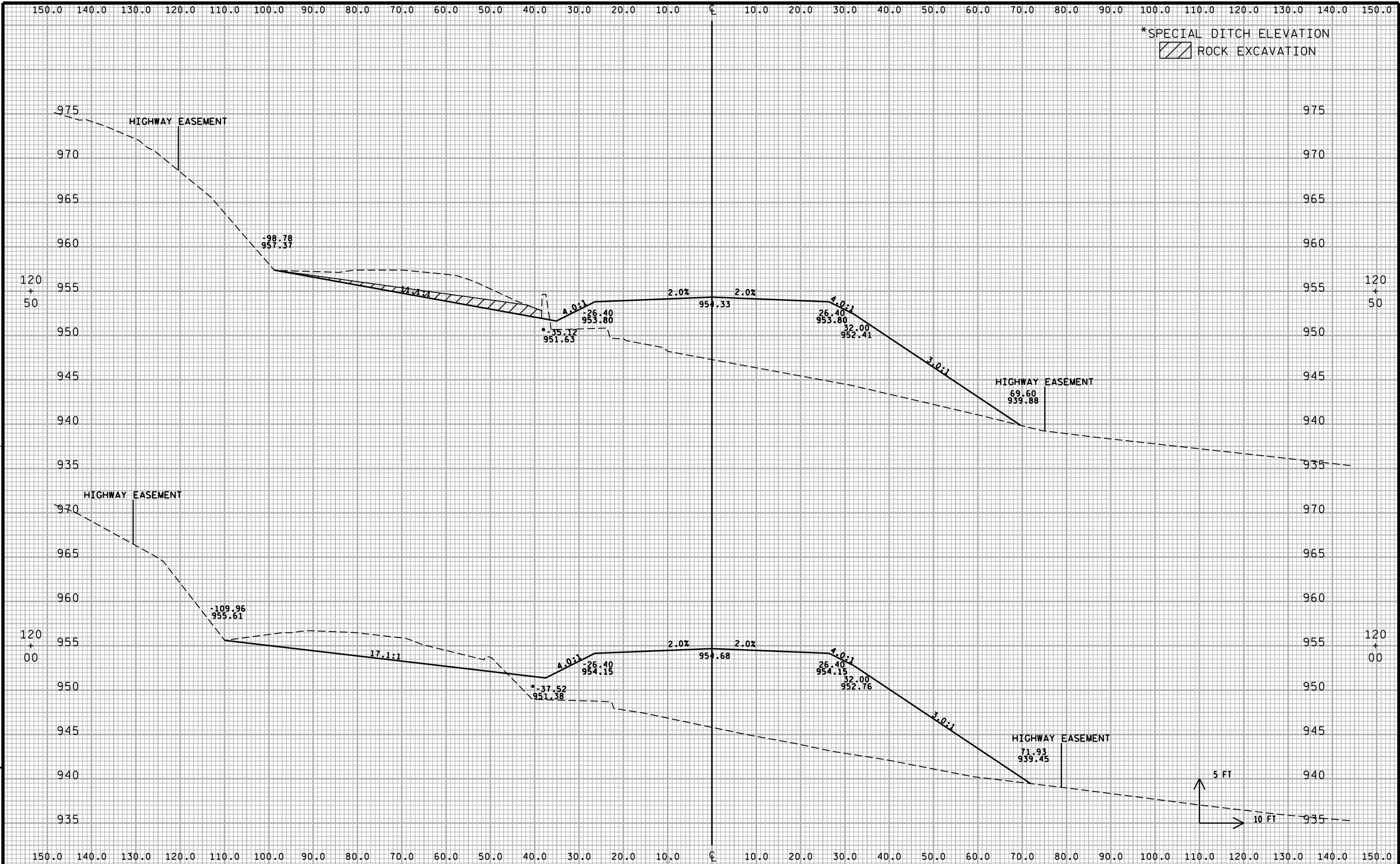
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PLOT NAME :

PLOT SCALE : \$\$.....plotscale.....\$\$

WISDOT/CADDS SHEET 21





PROJECT NO:5679-00-76

HWY:CTH K

COUNTY:

IOWA

CROSS SECTIONS: CTH K

SHEET

E

FILE NAME : \$\$....designfile....\$\$

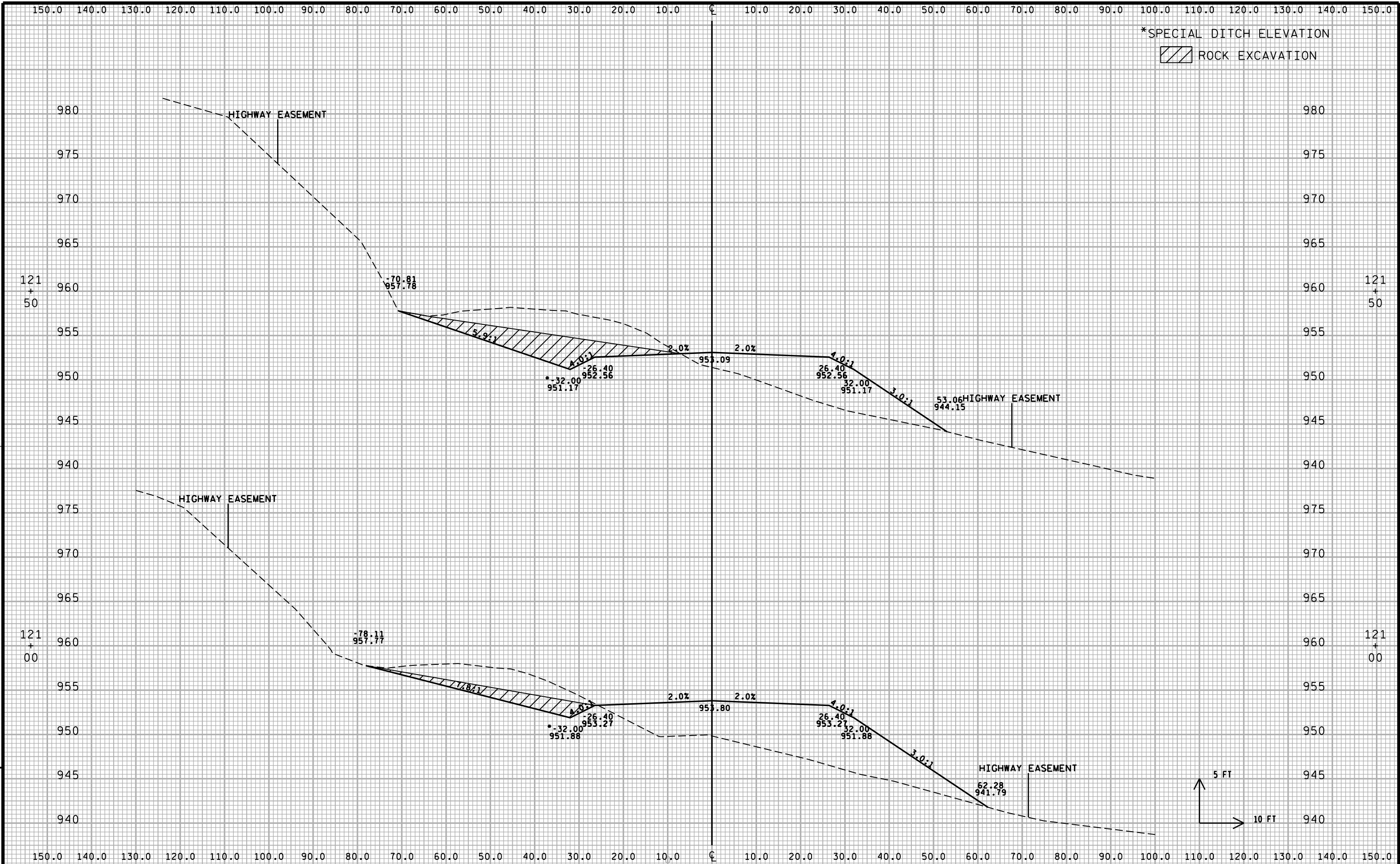
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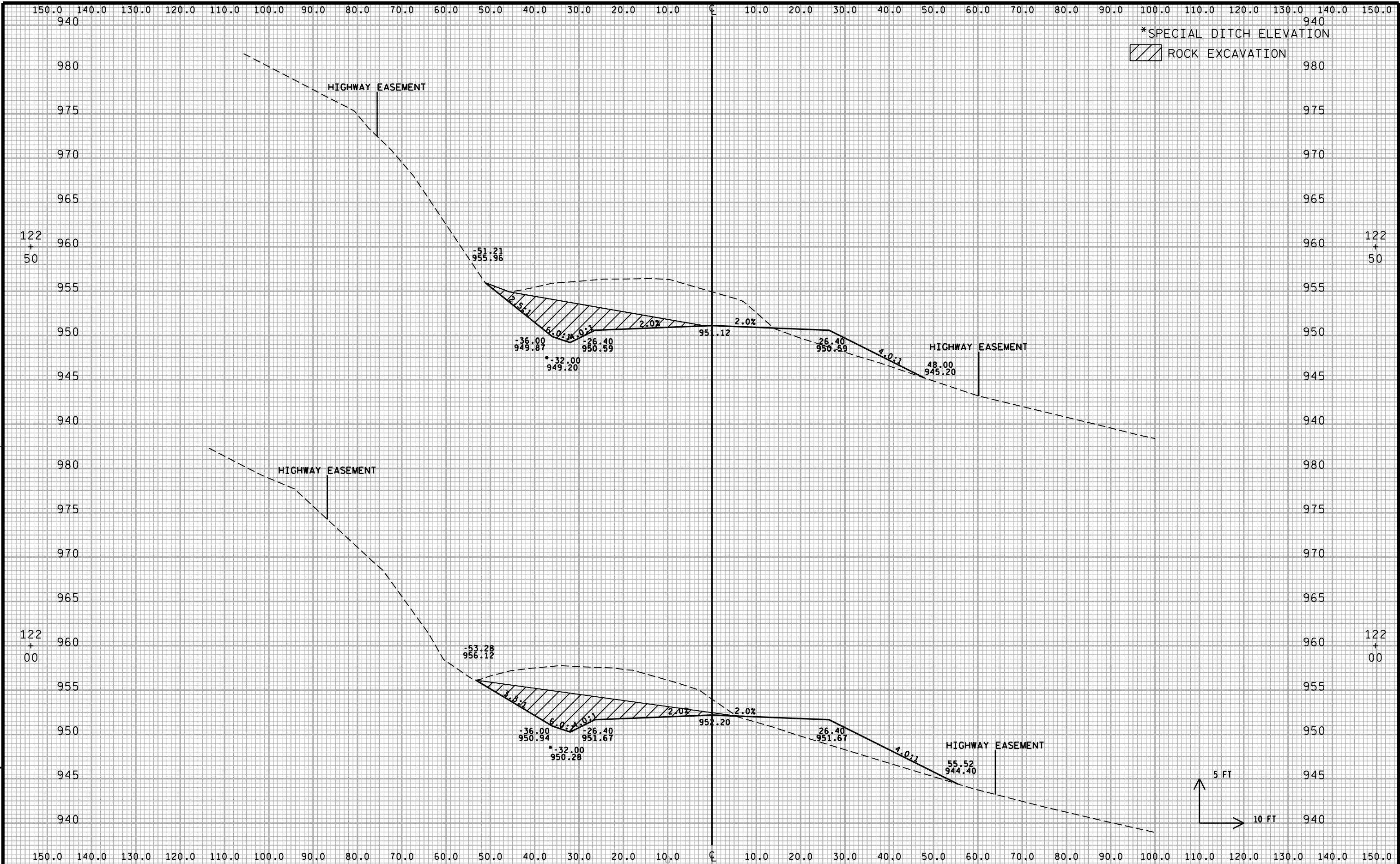
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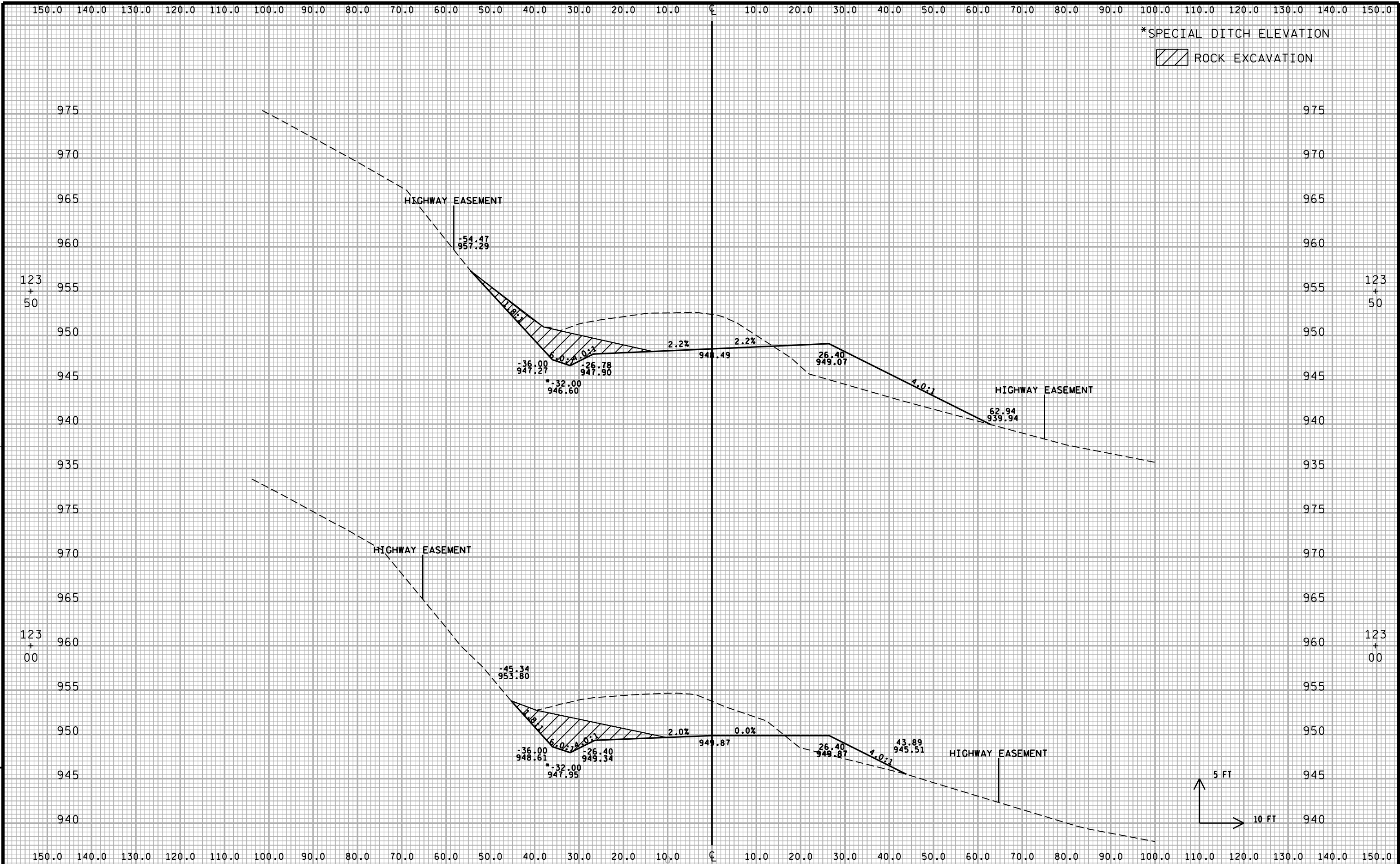
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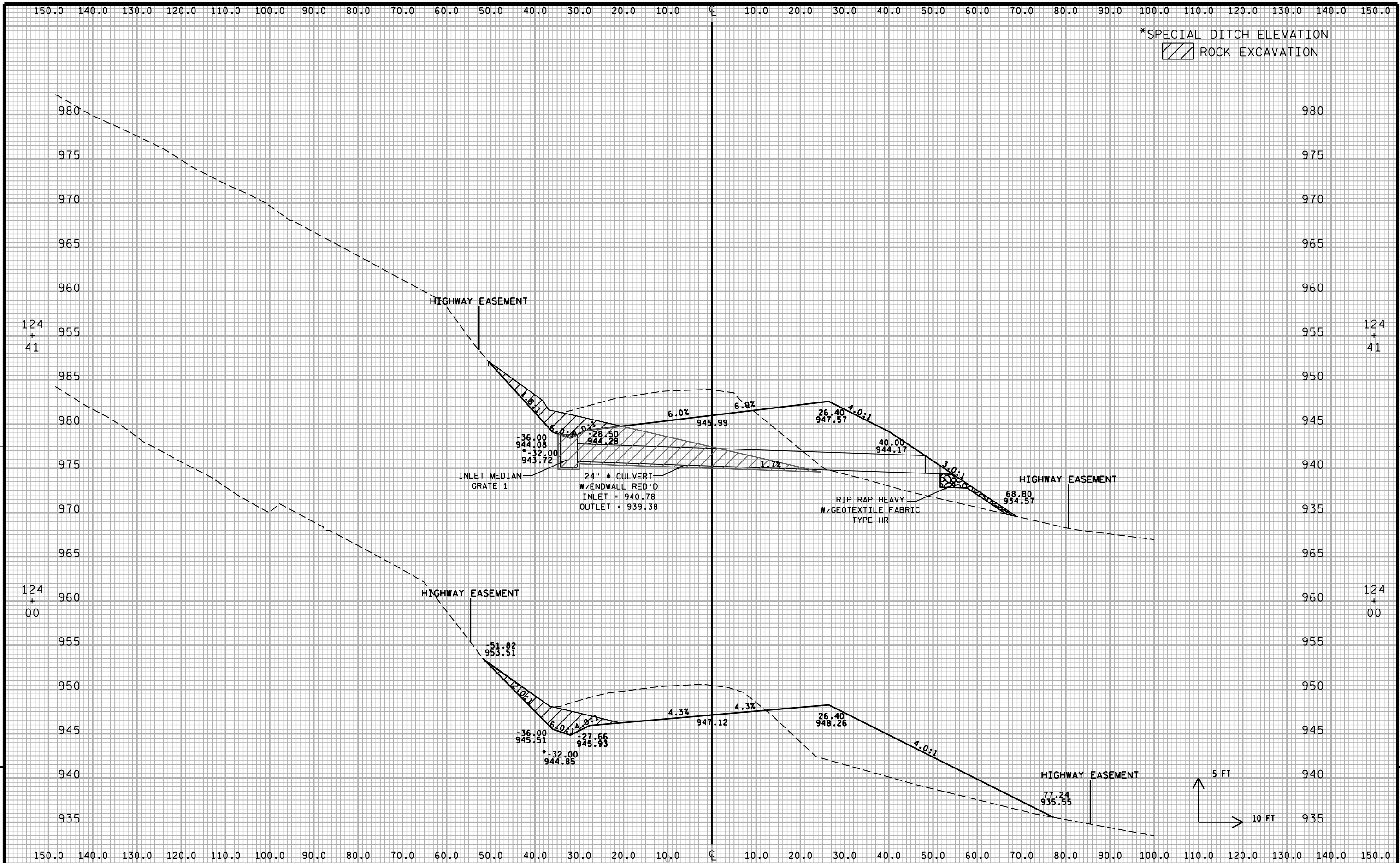
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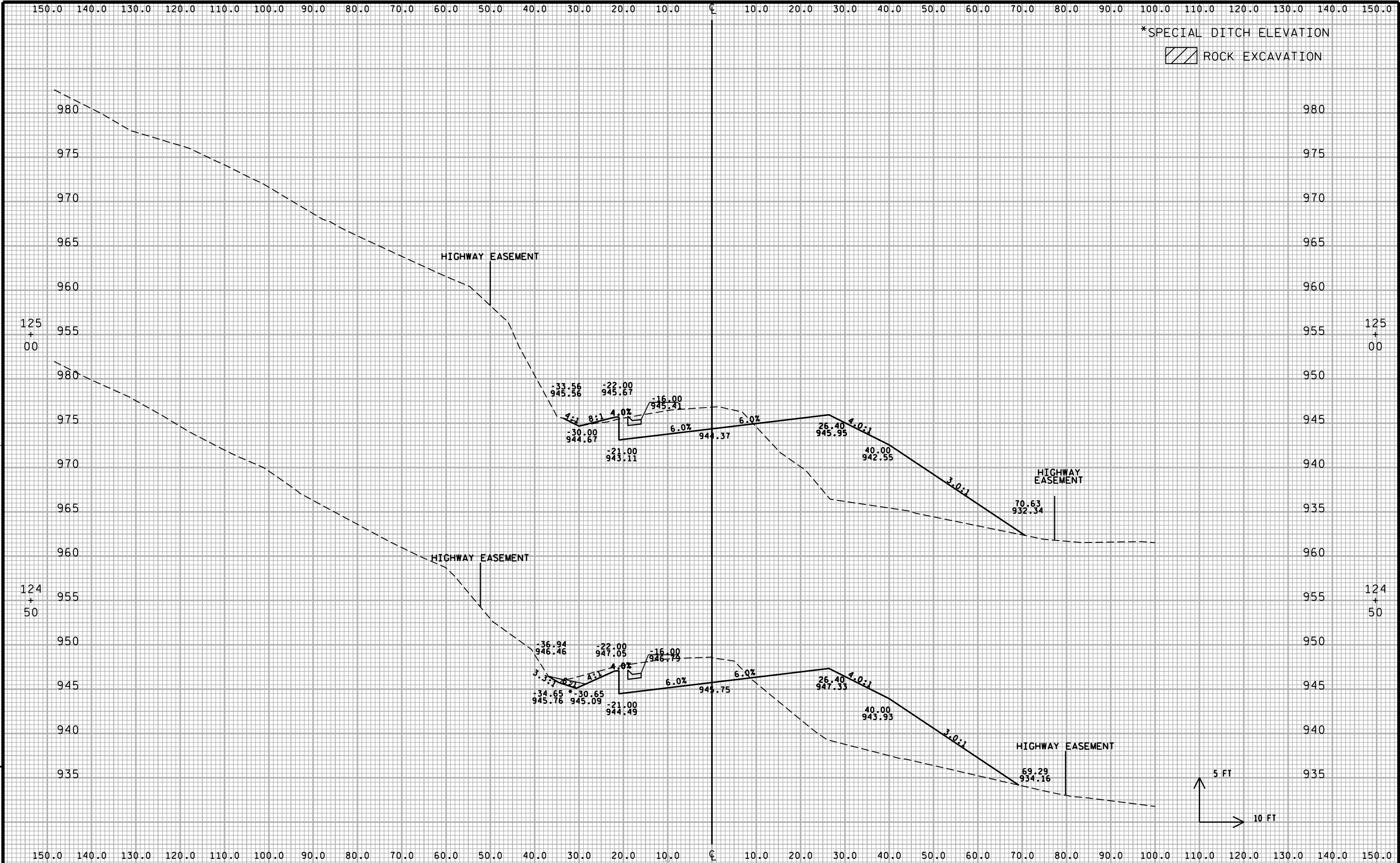
WISDOT/CADDS SHEET 21

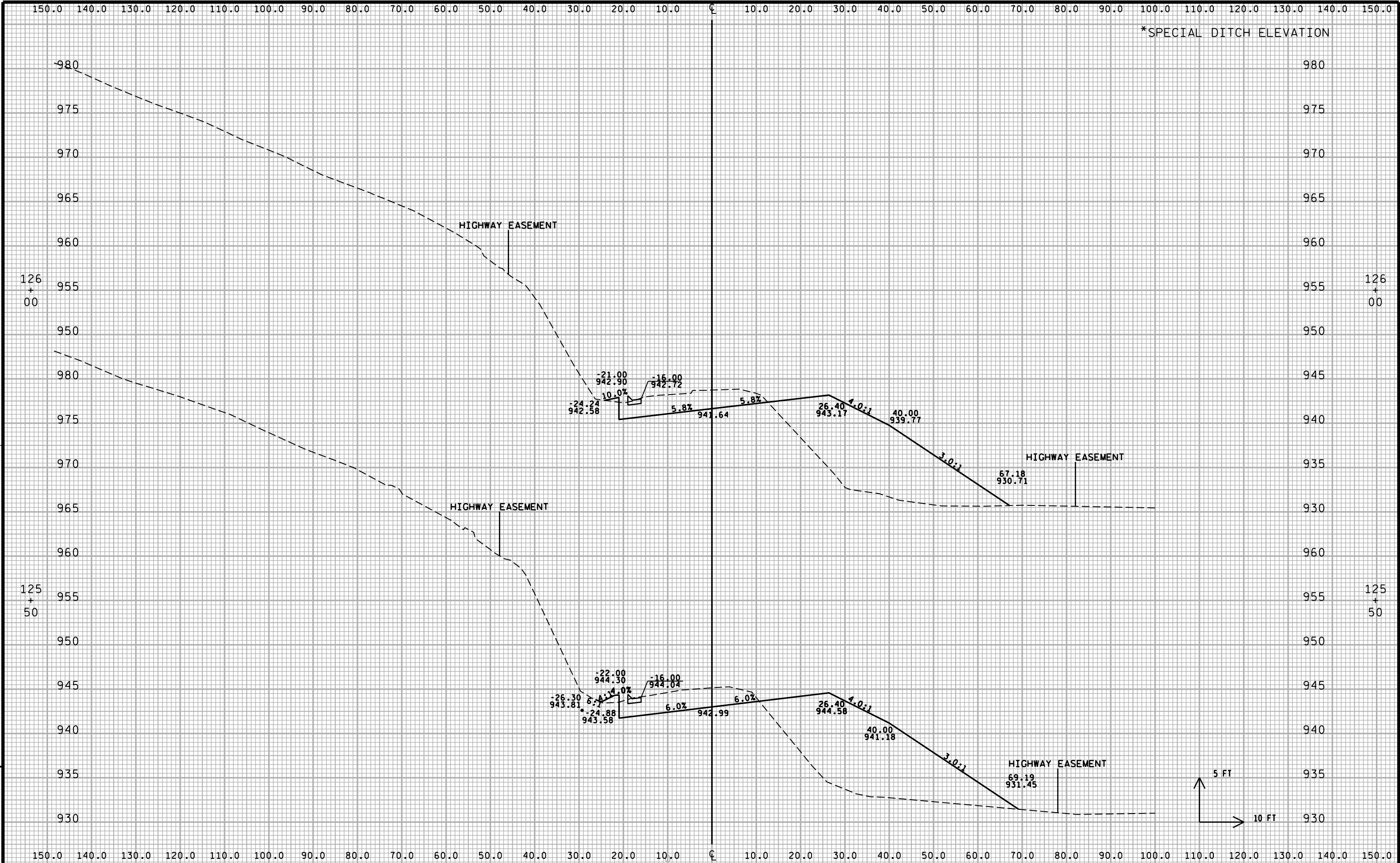


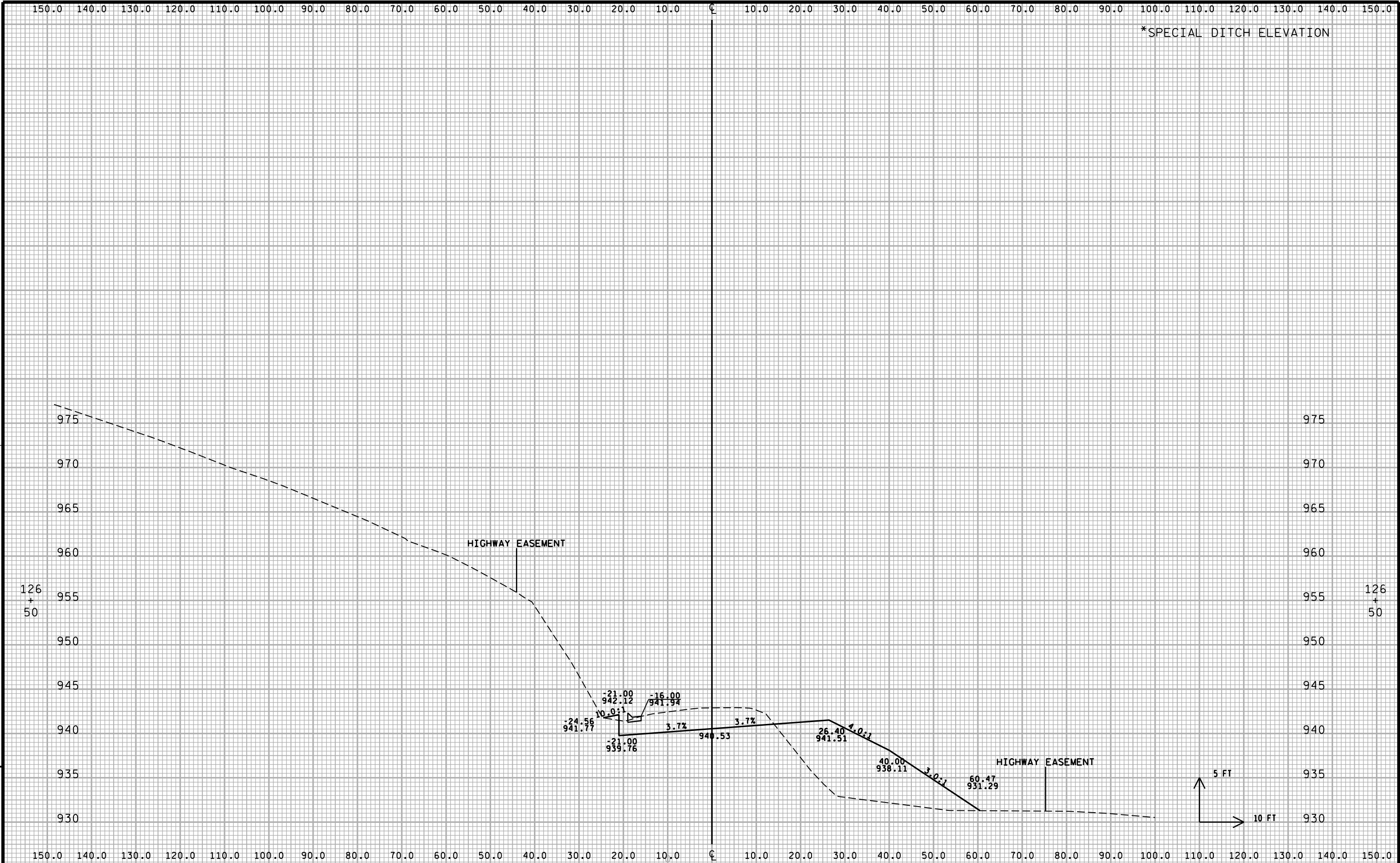


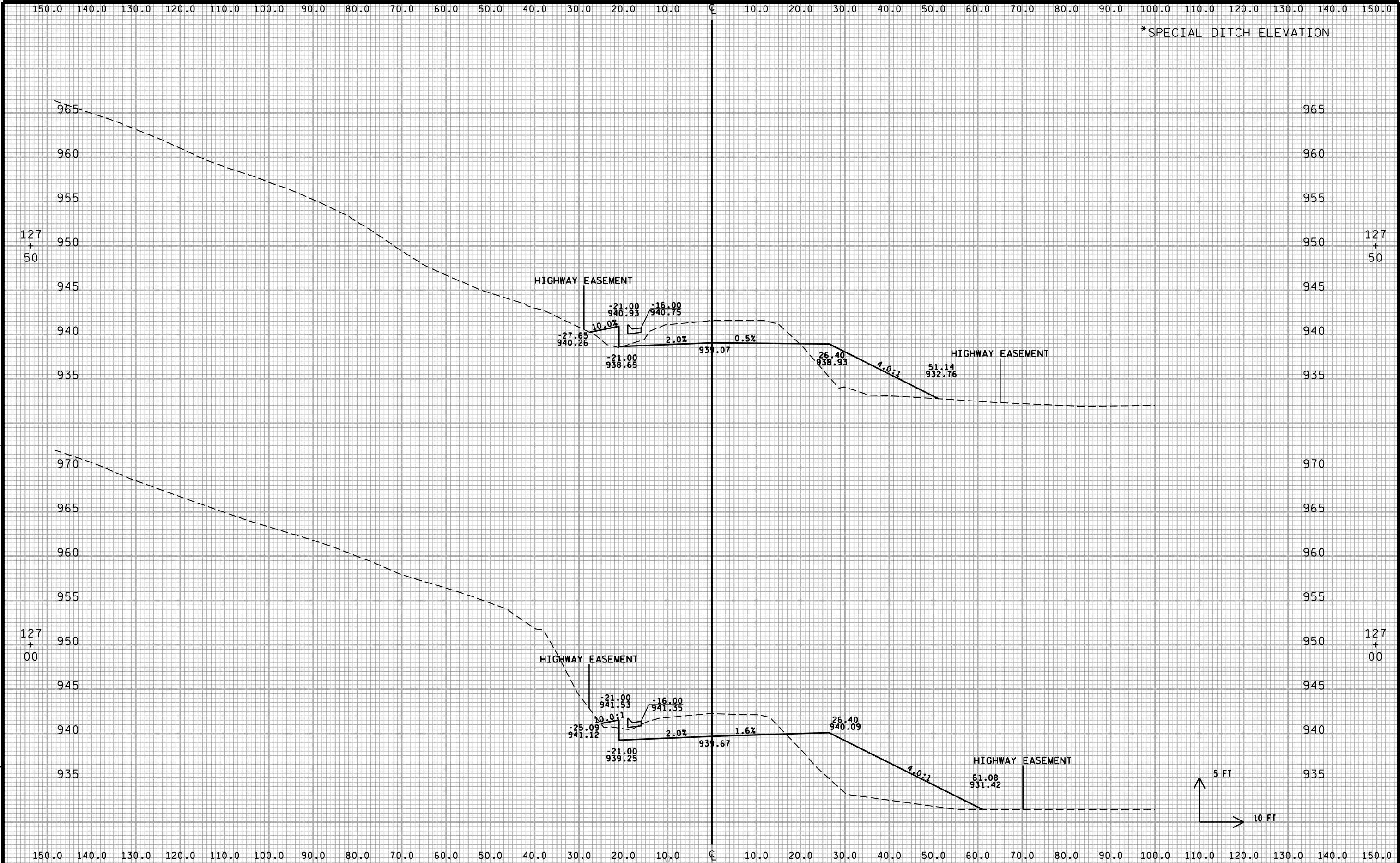


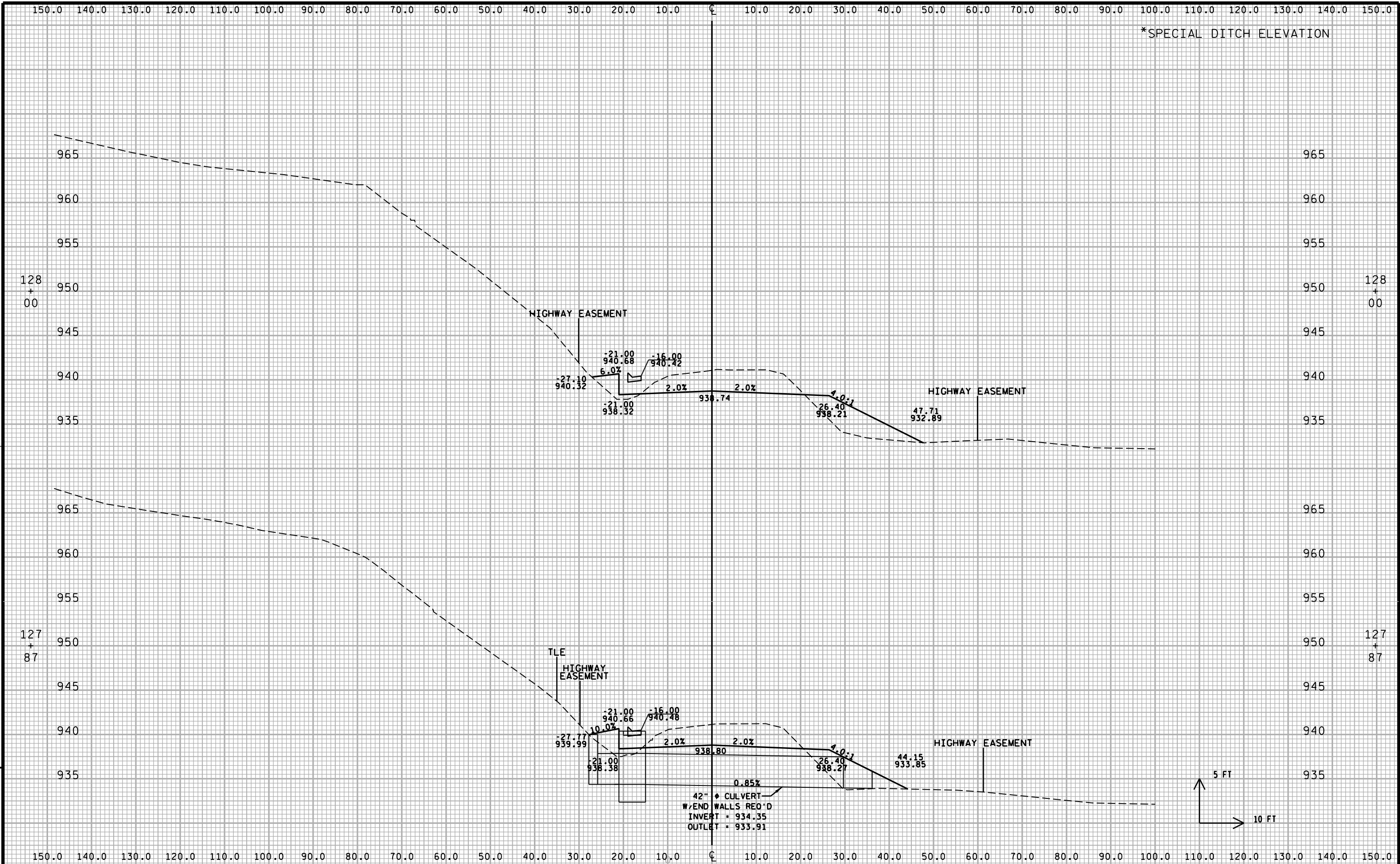


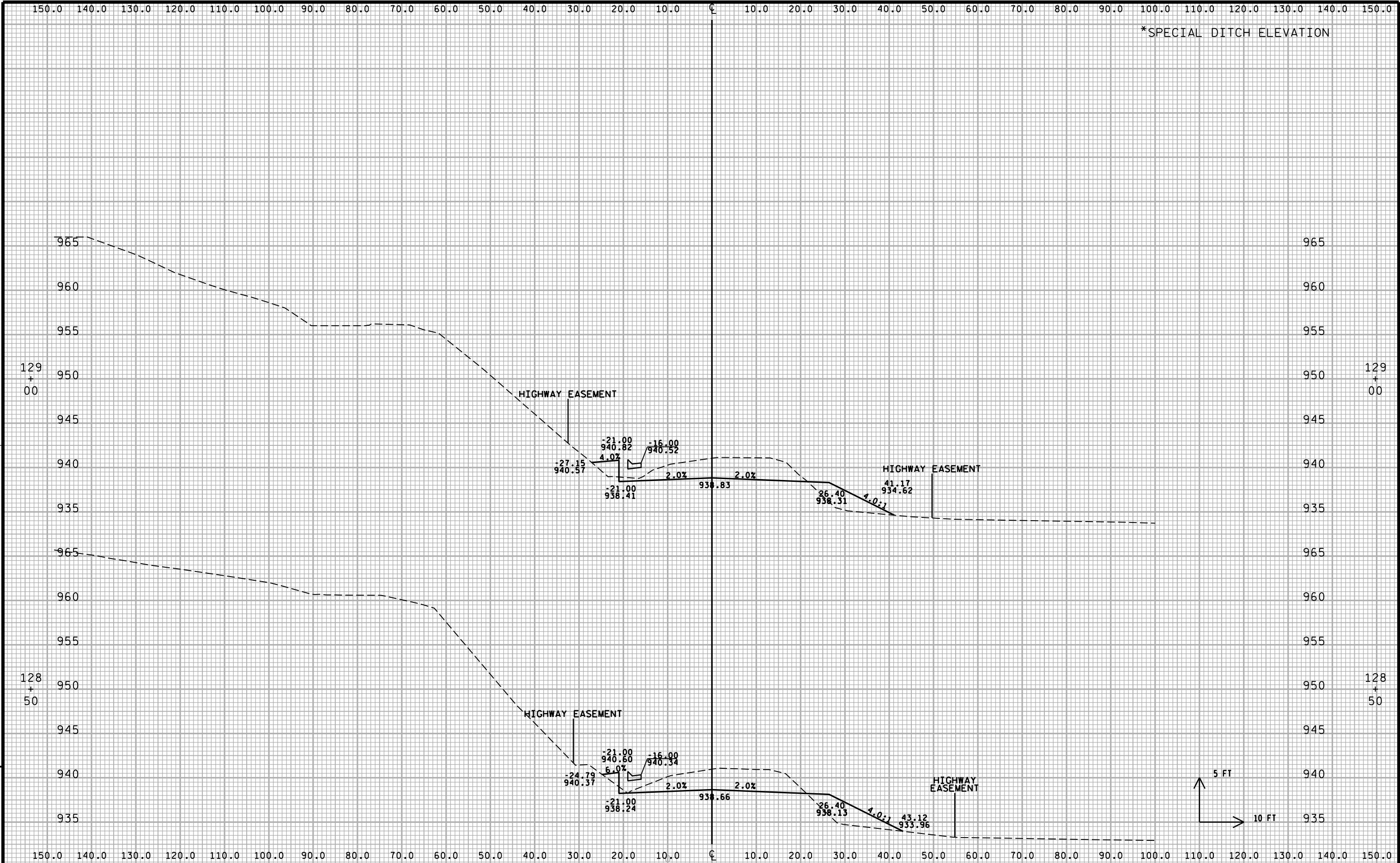












PROJECT NO:5679-00-76

HWY:CTH K

COUNTY:

IOWA

CROSS SECTIONS: CTH K

SHEET

E

FILE NAME : \$\$....designfile....\$\$

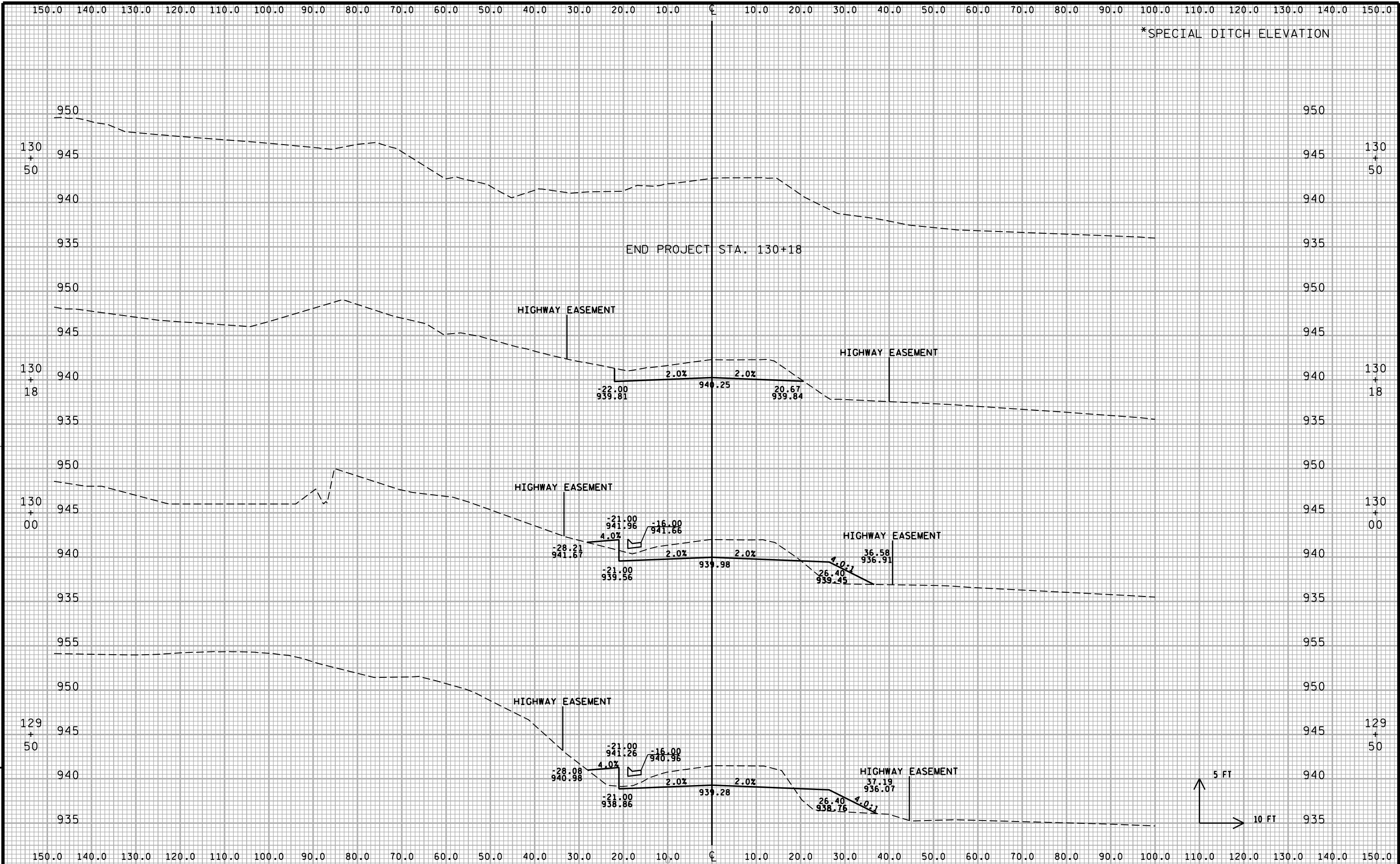
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PLOT NAME :

PLOT SCALE : \$\$.....plotscale.....\$\$

WISDOT/CADDS SHEET 21



PROJECT NO:5679-00-76

HWY:CTH K

COUNTY:

IOWA

CROSS SECTIONS: CTH K

SHEET

E

FILE NAME : \$\$....designfile....\$\$

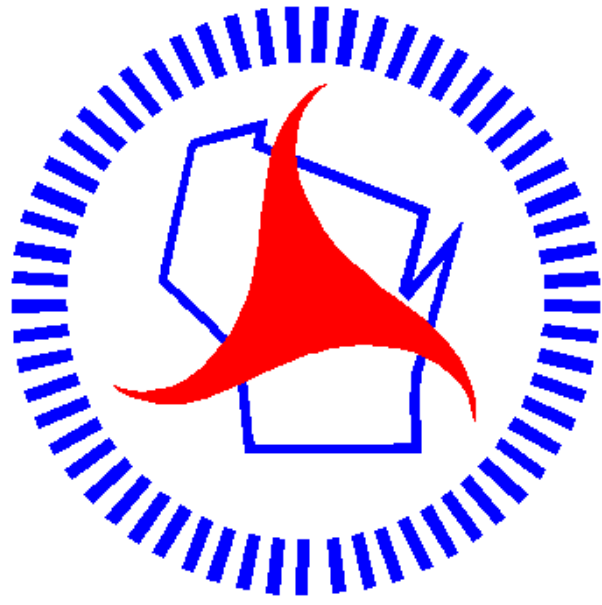
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PLOT NAME :

PLOT SCALE : \$\$.....plotscale.....\$\$

WISDOT/CADDs SHEET 21



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