LAX

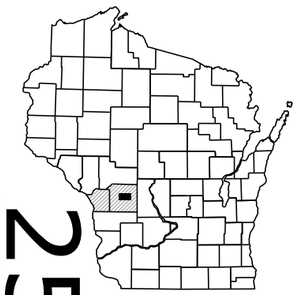
JUNE 2017

PROJECT ID: 5735-04-60

COUNTY: MONROE

ORDER OF SHEETS

TOTAL SHEETS = 52



25

N

DESIGN DESIGNATION

A.A.D.T.	2017	=	1800
A.A.D.T.	2037	=	2200
D.H.V.		=	10.3
D.D.		=	60/40
T.		=	11%
DESIGN SPEED		=	55
ESALS		=	1,000,000

CONVENTIONAL SYMBOLS

PLAN

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

PROFILE

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

UTILITIES

- 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

SPARTA - TOMAH

HAZEL WEST RD TO HOLLISTER AVE

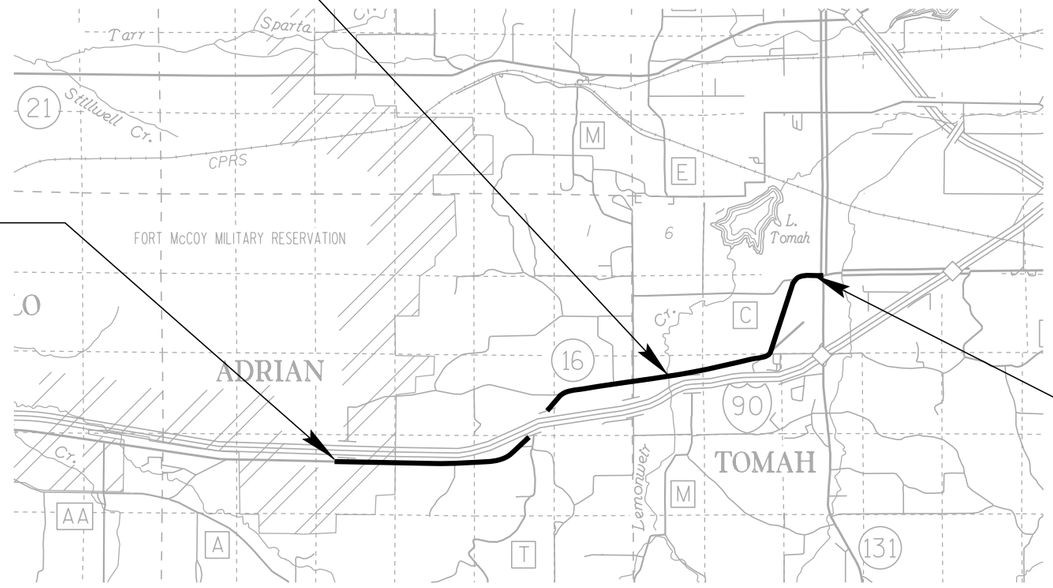
STH 16

MONROE COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
5735-04-60	—	—

STATE PROJECT NUMBER
5735-04-60

NET EXCEPTION B-41-0190
STATION 404+17.10 TO STATION 404+58.50



BEGIN PROJECT
STATION 169+50.00
X=675223
Y=377640
+/- 100'

END PROJECT
STATION 529+00.00

LAYOUT
SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 6.802 MI.

HORIZONTAL POSITIONS SHOWN ARE WISCONSIN COUNTY COORDINATES, MONROE COUNTY, NAD83 YEAR, IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	WISCONSIN DOT
Designer	TONY VANDER WIELEN
Project Manager	DAN KLEINERTZ
Regional Examiner	DAN KLEINERTZ
Regional Supervisor	JOSEPH GREGAS III
C.O. Examiner	

APPROVED FOR THE DEPARTMENT

DATE: 2/27/2017 (Signature)

E

UTILITY CONTACTS

Century Link
311 S. Court St
PO Box 256
La Crosse, WI 54602
Attn: Bret Clark
Phone: 608-269-0819
bret.clark@centurylink.com

ATC Management, Inc.
801 O'keefe Rd
PO Box 6113
DePere, Wi 54115-6113
Attn: Mike Olsen
Phone: 920-998-6582
molsen@atcllc.com

Dairyland Power
3200 East Ave S
P.O. Box 817
La Crosse, WI 54602
Attn: Jane Eggen
Phone:608-787-1248
jme@dairynet.com

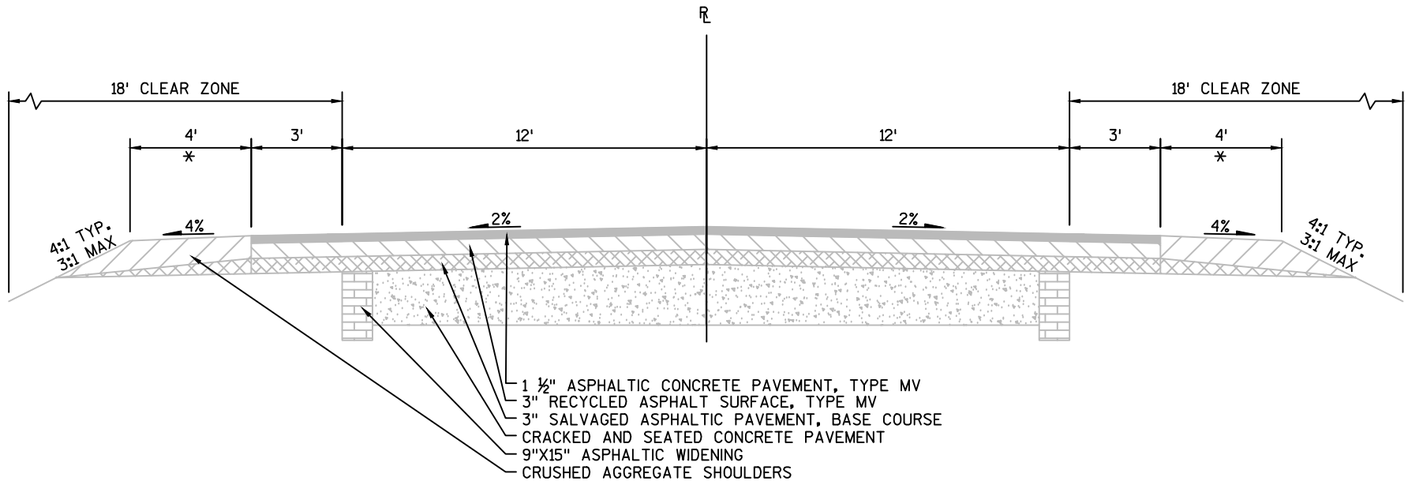
Oakdale Electric
489 N Oakwood St
PO Box 128
Oakdale, WI 54649
Attn: Scott Brookman
Phone:608-372-4131
sbrookma@oakdalerec.com

WI Independent Network
800 Wisconsin Ave
Suite 219
Eau Claire, WI 54703
Attn: John Louis
Phone: 715-838-4012
jlouis@wins.net

We Energies
333 West Everett St Room A299
Milwaukee, WI 53203
Attn: LaTroy Brumfield
Phone: 414-221-5617
LaTroy.Brumfield@we-energies.com

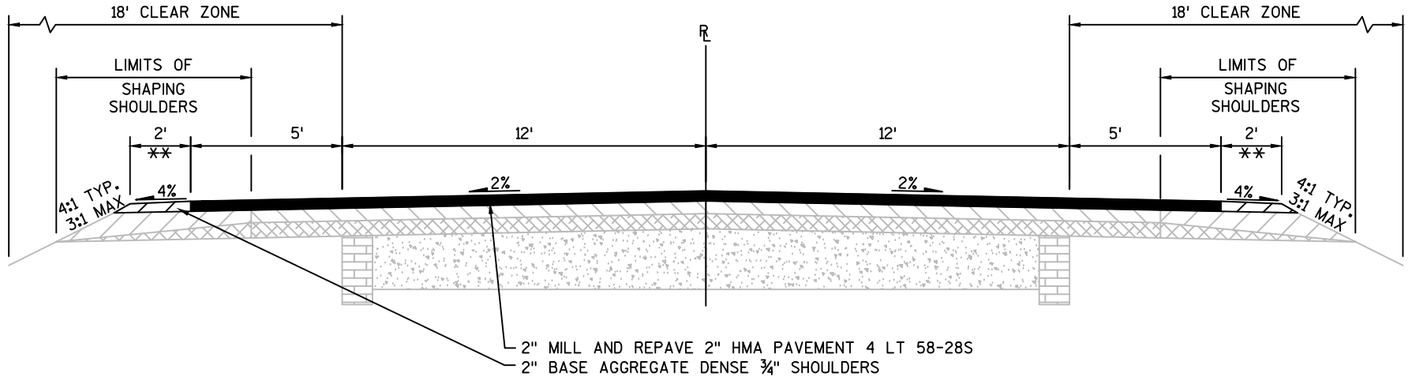
Tomah Water Utility- Sewer
819 Superior Ave
Tomah , WI 54660-2046
Attn: Kirk Arity
Phone: 608-374-7430

Alliant Energy
Suite 1000
4902 N Biltmore Lane
Madison, WI 53718
Phone: 608-458-4871
jasonhogan@alliantenergy.com



STH 16 EXISTING TYPICAL SECTION

STA. 169+50 - 404+17.1 LT & RT
STA. 404+58.5 - 520+60 LT & RT
*STA. 199+31 - 218+27 RT
*STA. 233+39 - 240+91 RT
*STA. 237+75 - 239+44 LT
*STA. 247+82 - 251+73 RT
*STA. 269+84 - 272+56 RT
*STA. 270+26 - 272+53 LT
*STA. 301+73 - 307+48 RT
*STA. 301+77 - 308+78 LT
*STA. 321+91 - 324+91 RT
*STA. 321+71 - 325+04 LT
*STA. 403+22 - 405+58 RT
*STA. 403+03 - 405+75 LT
*FULL PAVED SHOULDER LOCATIONS

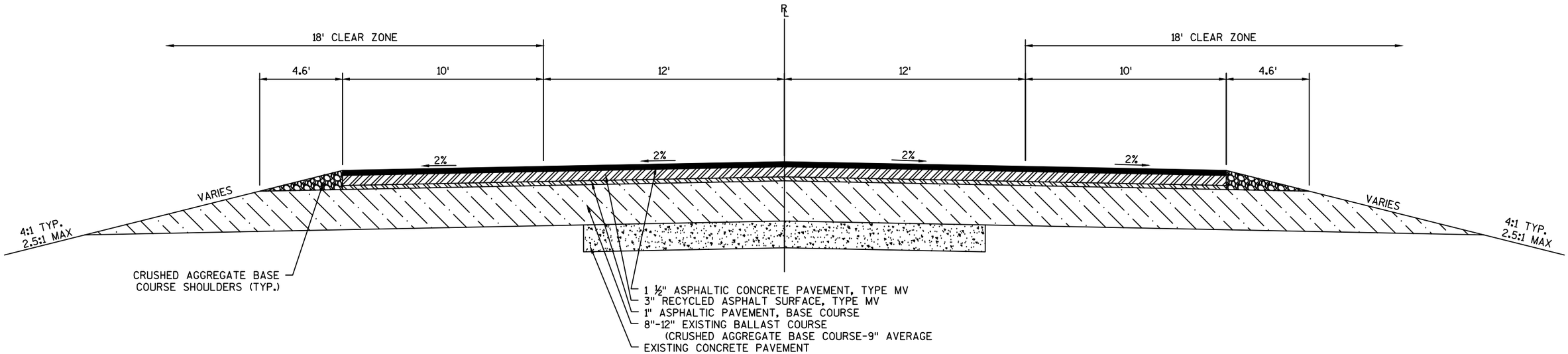


STH 16 PROPOSED TYPICAL SECTION

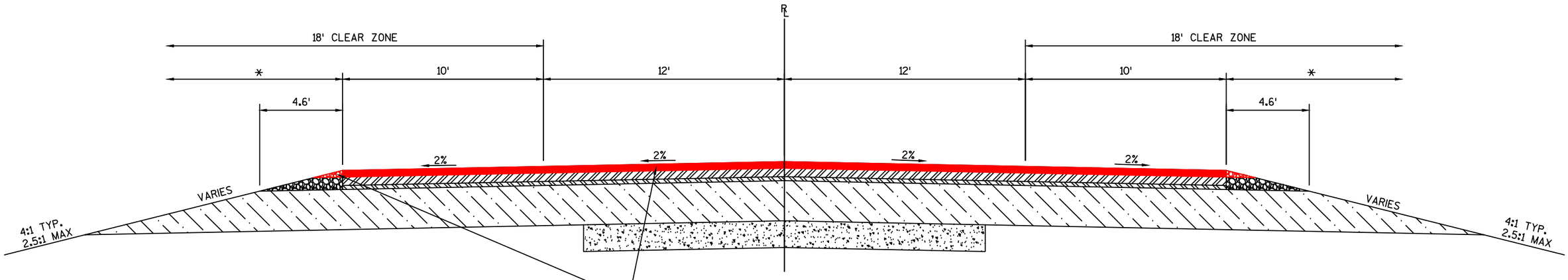
STA. 169+50 - 404+17.1 LT & RT
STA. 404+58.5 - 520+60 LT & RT
**STA. 198+96 - 218+27 RT
**STA. 233+39 - 240+91 RT
**STA. 237+75 - 239+44 LT
**STA. 247+82 - 251+73 RT
**STA. 269+84 - 272+81 RT
**STA. 270+26 - 272+82 LT
**STA. 301+73 - 309+83 RT
**STA. 301+77 - 309+33 LT
**STA. 321+91 - 324+91 RT
**STA. 321+71 - 325+04 LT
**STA. 403+05 - 405+74 RT
**STA. 403+03 - 405+75 LT
**FULL PAVED SHOULDER LOCATIONS

NOTE:
WHERE EXISTING FULL PAVED SHOULDERS ARE LOCATED, MILL THE ENTIRE SHOULDER

PROJECT NO: 5735-04-60	HWY: STH 16	COUNTY: MONROE	TYPICAL SECTIONS	SHEET 3	E



STH 16 EXISTING RURAL TYPICAL SECTION
STA. 520+60 - 529+00

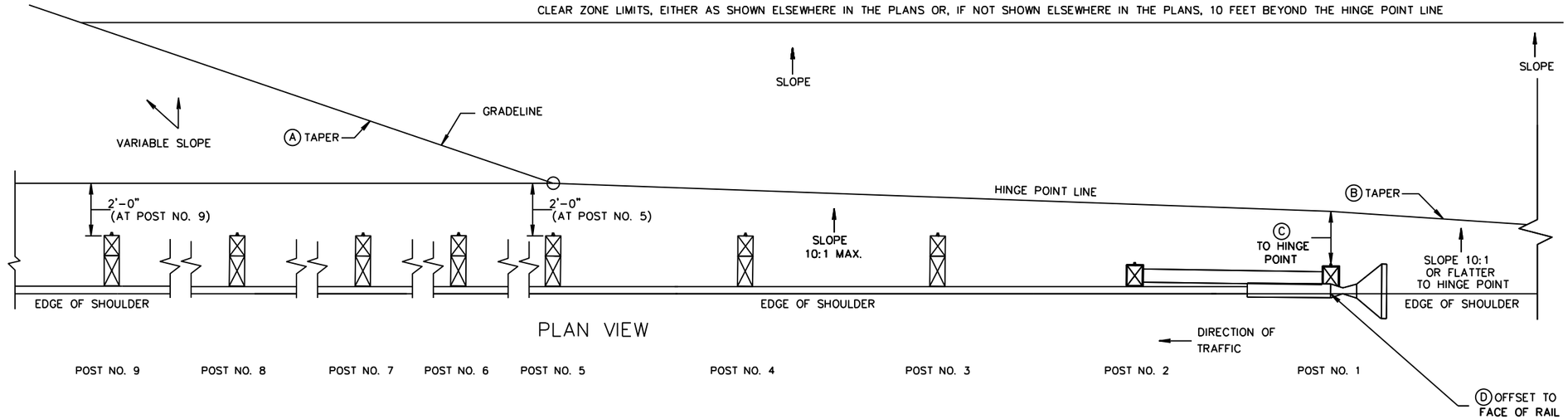


*LIMITS OF SHAPING SHOULDERS

STH 16 PROPOSED RURAL TYPICAL SECTION
STA. 520+60 - 529+00

NOTE:
WHERE EXISTING FULL PAVED SHOULDERS ARE LOCATED, MILL THE ENTIRE SHOULDER

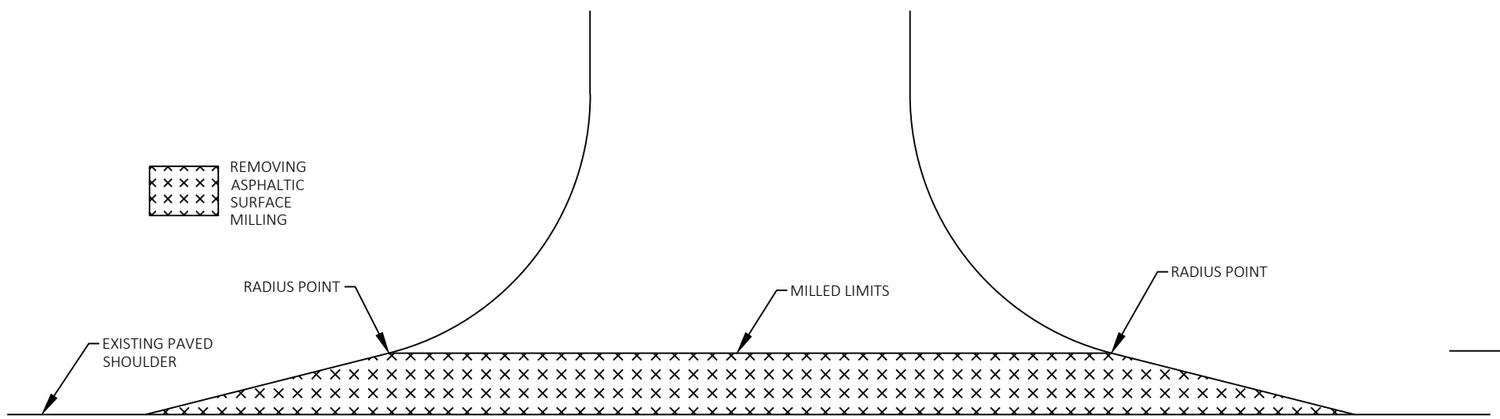
PROJECT NO: 5735-04-60	HWY: STH 16	COUNTY: MONROE	TYPICAL SECTIONS	SHEET 4	E



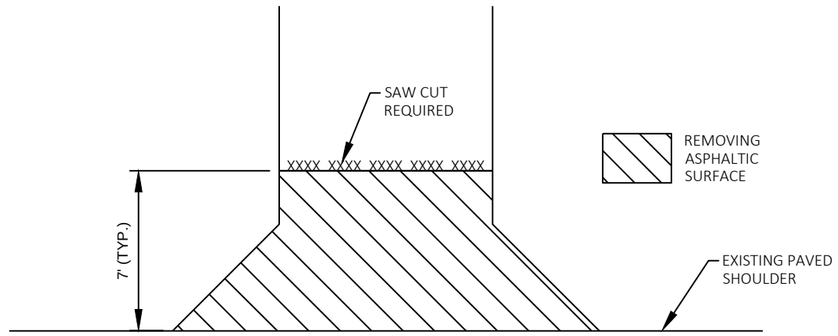
NONSTANDARD GUARDRAIL EAT LAYOUT & GRADING

STATION	TAPER (A)	TAPER (B)	OFFSET (C)	OFFSET (D)
269+87 RT	*	*	2'	0'
272+81 RT	*	*	2'	0'

*NO GRADING AT LOCATION, INSTALL WITH EXISTING CONDITIONS

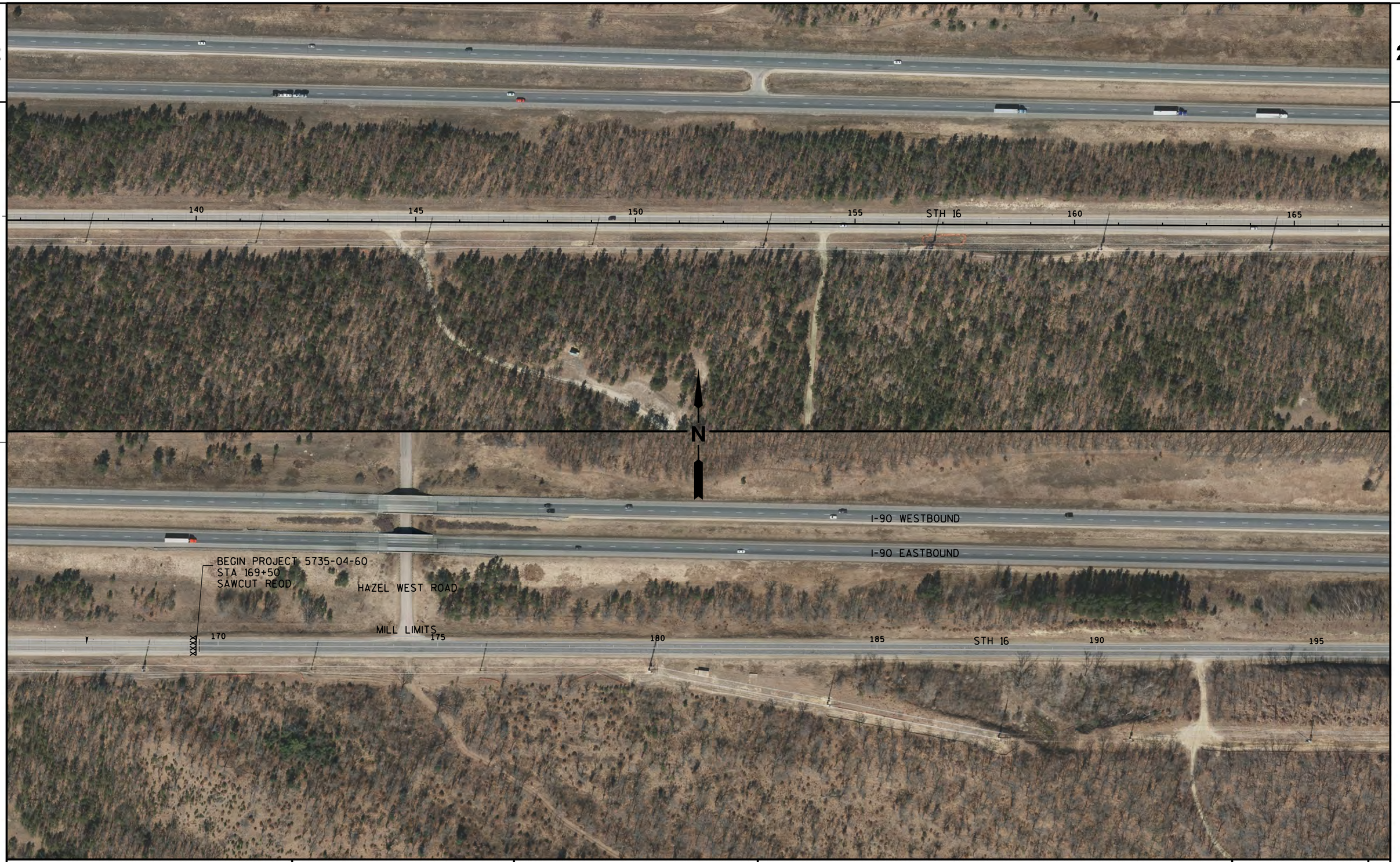


INTERSECTION DETAIL



ASPHALT DRIVEWAY DETAIL

PROJECT NO: 5735-04-60	HWY: STH 16	COUNTY: MONROE	CONSTRUCTION DETAIL	SHEET 5	E



PROJECT NO: 5735-04-60	HWY: STH 16	COUNTY: MONROE	PLAN DETAIL	SHEET	E

FILE NAME : P:\State\s16\57350430\Cad\021202_pd.dgn PLOT DATE : 22-FEB-2017 08:06 PLOT BY : dotszz PLOT NAME : PLOT SCALE : 200:1

WISDOT/CADDS SHEET 42

2

2

PROJECT NO: 5735-04-60	HWY: STH 16	COUNTY: MONROE	PLAN DETAIL	SHEET	E

FILE NAME : P:\State\s16\57350430\Cad\021203_pd.dgn PLOT DATE : 22-FEB-2017 08:06 PLOT BY : dotszz PLOT NAME : PLOT SCALE : 200:1

WISDOT/CADDS SHEET 42

2

PROJECT NO: 5735-04-60	HWY: STH 16	COUNTY: MONROE	PLAN DETAIL	SHEET	E

2

2

HAWTHORN ROAD

INSTALL MGS GUARDRAIL 3
STA 322+53 TO STA 323+28
OUT 19.0 FT LT

SALVAGED RAIL
STA 321+89 TO STA 323+66 LT

MGS EAT STA 323+81
OUT 21.0 FT LT

HAZEL EAST ROAD

R= 1909.86
L= 1249.58
SE= 5.1%

STH 16

MILL LIMITS

MILL LIMITS

MGS EAT STA 322+00
OUT 21.0 FT LT

SAW CUT
REOD
XXXX

MGS EAT STA 323+94
OUT 21.0 FT RT

PC 323+18.50

STH 16

SALVAGED RAIL
STA 322+36 TO STA 323+64 RT

MGS EAT STA 322+38
OUT 21.0 FT RT

INSTALL MGS GUARDRAIL 3
STA 322+91 TO STA 323+41
OUT 19.0 FT RT

PT 339+55.39

HAWTHORN ROAD

N

HEADQUARATER ROAD

R= 11000.00
L= 963.51
SE= NC

GOLDEN ROAD

SAW CUT
REOD
XXXX

STH 16

STH 16

MILL LIMITS

MILL LIMITS

PC 356+33.36

SAW CUT
REOD
XXX

PT 365+96.87

N

PROJECT NO: 5735-04-60	HWY: STH 16	COUNTY: MONROE	PLAN DETAIL	SHEET	E

FILE NAME : P:\State\s16\57350430\Cad\021205_pd.dgn PLOT DATE : 22-FEB-2017 08:06 PLOT BY : dotszz PLOT NAME : PLOT SCALE : 200:1

WISDOT/CADDS SHEET 42

2

SOUTH FORK
LEMONWEIR RIVER

INSTALL THRIE BEAM STRUCTURE APPROACH
STA 403+90 TO STA 404+10
OUT 19.0 FT LT

SALVAGED RAIL
STA 403+40 TO STA 404+10 LT

EAT STA 403+40
OUT 21.0 FT LT

PC 404+54.49

CTH M

N

MILL LIMITS

375 380 385 390 STH 16 395 400

XXXX
SAW CUT
REOD

MGS EAT STA 403+05
OUT 21FT RT

SALAVGED RAIL
STA 403+40 TO STA 404+10 RT

INSTALL MGS GUARDRAIL & THRIE BEAM
STA 403+58 TO STA 404+10
OUT 19.0 FT RT

NET EXCEPTION
B-41-0190
STA 404+17.1-404+58.5
SOUTH FORK
LEMONWEIR RIVER

INSTALL THRIE BEAM STRUCTURE APPROACH
STA 404+65 TO STA 404+86
OUT 19.0 FT LT

SALVAGED RAIL
STA 404+65 TO STA 405+37 LT

EAT STA 405+36
OUT 21.0 FT LT

PC 404+54.49

PT 412.63.79

405 410 415 STH 16 425 430

XXX
SAW CUT
REOD

XX
SAW CUT
REOD

XX
SAW CUT
REOD

XXX
SAW CUT
REOD

MILL LIMITS

CTH M

N

MGS EAT STA 405+70
OUT 21.0 FT RT

SALVAGED RAIL
STA 404+65 TO STA 405+36 RT

INSTALL MGS GUARDRAIL & THRIE BEAM
STA 404+65 TO STA 405+18
OUT 19.0 FT RT.

R= 14204.00
L= 809.30
SE= NC

2

PROJECT NO: 5735-04-60	HWY: STH 16	COUNTY: MONROE	PLAN DETAIL	SHEET 10	E

FILE NAME : P:\State\s16\57350430\Cad\021206_pd.dgn PLOT DATE : 11-APR-2017 14:48 PLOT BY : dotwow PLOT NAME : PLOT SCALE : 200.000000:1.000000

2

PROJECT NO: 5735-04-60	HWY: STH 16	COUNTY: MONROE	PLAN DETAIL	SHEET	E

2

2

SAW CUT
REQD

SAW CUT
REQD

SAW CUT
REQD

SAW CUT
REQD

505

510

515

520

525

MILL LIMITS

PC 518+04.76

R= 1145.92
L= 1500.07
SE = 4.5%

N

END PROJECT
STA 529+00
SAW CUT
REQD

530

535

STH 16

540

PT 533+04.83

PI 543+00.00

N

PROJECT NO: 5735-04-60	HWY: STH 16	COUNTY: MONROE	PLAN DETAIL	SHEET	E

FILE NAME : P:\State\s16\57350430\Cad\021208_pd.dgn PLOT DATE : 22-FEB-2017 08:07 PLOT BY : dotszz PLOT NAME : PLOT SCALE : 200:1

WISDOT/CADDS SHEET 42

5735-04-60

Line	Item	Item Description	Unit	Total	Qty
0010	204.0110	Removing Asphaltic Surface	SY	1,919.000	1,919.000
0020	204.0120	Removing Asphaltic Surface Milling	SY	125,371.000	125,371.000
0030	213.0100	Finishing Roadway (project) 01. 5735-04-60	EACH	1.000	1.000
0040	305.0110	Base Aggregate Dense 3/4-Inch	TON	8,681.000	8,681.000
0050	305.0500	Shaping Shoulders	STA	720.000	720.000
0060	440.4410	Incentive IRI Ride	DOL	27,240.000	27,240.000
0070	450.4000	HMA Cold Weather Paving	TON	4,000.000	4,000.000
0080	455.0605	Tack Coat	GAL	8,772.000	8,772.000
0090	460.2000	Incentive Density HMA Pavement	DOL	10,140.000	10,140.000
0100	460.4110.S	Reheating HMA Pavement Longitudinal Joints	LF	35,909.000	35,909.000
0110	460.5224	HMA Pavement 4 LT 58-28 S	TON	16,126.000	16,126.000
0120	465.0120	Asphaltic Surface Driveways and Field Entrances	TON	100.000	100.000
0130	465.0425	Asphaltic Shoulder Rumble Strips 2-Lane Rural	LF	60,105.000	60,105.000
0140	465.0475	Asphalt Center Line Rumble Strips 2-Lane Rural	LF	29,565.000	29,565.000
0150	614.0200	Steel Thrie Beam Structure Approach	LF	41.200	41.200
0160	614.0370	Steel Plate Beam Guard Energy Absorbing Terminal	EACH	2.000	2.000
0170	614.0920	Salvaged Rail	LF	4,966.000	4,966.000
0180	614.2300	MGS Guardrail 3	LF	3,525.000	3,525.000
0190	614.2500	MGS Thrie Beam Transition	LF	236.400	236.400
0200	614.2610	MGS Guardrail Terminal EAT	EACH	26.000	26.000
0210	618.0100	Maintenance And Repair of Haul Roads (project) 01. 5735-04-60	EACH	1.000	1.000
0220	619.1000	Mobilization	EACH	1.000	1.000
0230	624.0100	Water	MGAL	17.000	17.000
0240	642.5201	Field Office Type C	EACH	1.000	1.000
0250	643.0100	Traffic Control (project) 01. 5735-04-60	EACH	1.000	1.000
0260	643.0300	Traffic Control Drums	DAY	9,000.000	9,000.000
0270	643.0900	Traffic Control Signs	DAY	1,125.000	1,125.000
0280	643.1050	Traffic Control Signs PCMS	DAY	14.000	14.000
0290	646.0106	Pavement Marking Epoxy 4-Inch	LF	113,700.000	113,700.000
0300	646.0126	Pavement Marking Epoxy 8-Inch	LF	368.000	368.000
0310	649.0402	Temporary Pavement Marking Paint 4-Inch	LF	73,428.000	73,428.000
0320	650.8000	Construction Staking Resurfacing Reference	LF	35,950.000	35,950.000
0330	690.0150	Sawing Asphalt	LF	751.000	751.000
0340	SPV.0180	Special 01. Removing Distressed Pavement Milling	SY	2,400.000	2,400.000

REMOVING ASPHALTIC SURFACE

204.0110

STATION	LOCATION	SY	REMARKS
192+30	RT	29	FE
218+94	RT	43	FE
219+82	RT	38	FE
255+60	LT	19	FE
256+32	LT	20	PE
273+40	RT	26	FE
278+25	LT	34	PE
278+68	LT	19	FE
281+08	RT	15	FE
291+40	LT	18	FE
300+33	LT	31	CE
321+05	LT	29	FE
325+60	RT	28	FE
333+54	RT	20	FE
340+43	RT	17	FE
340+77	LT	40	PE
348+57	RT	16	PE
350+14	RT	18	FE
351+71	LT	38	PE
353+44	RT	22	FE
354+22	RT	21	FE
358+53	RT	44	PE
366+87	RT	22	PE
370+83	RT	16	FE
372+47	LT	62	PE
374+47	LT	37	FE
376+19	RT	19	PE
380+75	RT	31	FE
388+32	RT	34	PE
388+32	LT	38	FE
411+25	LT	27	PE
412+60	RT	23	FE
412+65	LT	31	FE
420+09	LT	39	PE
425+91	LT	22	PE
427+42	RT	14	CE
428+07	LT	21	PE
431+68	RT	26	PE
434+40	RT	26	CE
434+70	LT	20	FE
435+44	RT	34	CE
437+20	LT	13	PE
440+07	LT	17	PE
442+14	RT	30	PE
443+74	LT	18	PE

CONTINUED IN NEXT COLUMN

REMOVING ASPHALTIC SURFACE

204.0110

STATION	LOCATION	SY	REMARKS
444+27	RT	20	PE
444+68	LT	24	PE
446+45	RT	18	PE
447+35	RT	19	PE
447+71	LT	20	PE
452+00	RT	22	PE
452+68	LT	19	PE
453+14	RT	23	PE
453+55	LT	22	PE
456+36	RT	20	PE
456+43	LT	15	FE
461+78	LT	21	PE
462+81	LT	16	PE
463+64	LT	22	PE
463+90	LT	23	PE
464+53	LT	20	PE
466+08	LT	36	PE
467+95	LT	39	PE
469+67	RT	34	PE
472+00	LT	28	fe
472+86	LT	35	PE
476+00	LT	24	PE
476+69	LT	19	PE
492+12	LT	17	FE
493+30	RT	14	FE
497+38	LT	20	PE
498+70	RT	29	PE
500+05	LT	24	PE
500+85	RT	21	PE
507+22	RT	50	CE
	TOTAL 0010	1919	

BASE AGGREGATE DENSE 3/4-INCH

305.0110

STATION	TO	STATION	LOCATION	TON	REMARKS
169+50	-	404+17	Lt & RT	4693	Mainline
404+59	-	520+60	Lt & RT	2320	Mainline
520+60	-	529+00	Lt & RT	168	Mainline
				500	PE's and FE's
				500	EAT locations
				500	undistrubuted
			TOTAL 0010	8681	

3

REMOVING ASPHALTIC SURFACE MILLING

STATION	TO	STATION	LOCATION	204.0120 SY	REMARKS
169+50	-	404+17	Mainline	78224	30' wide
404+59	-	520+60	Mainline	38672	30' wide
520+60	-	529+00	Mainline	2800	44' wide
199+31	-	218+27	RT	843	Full width shoulder
233+39	-	240+91	RT	334	Full width shoulder
237+75	-	239+44	LT	75	Full width shoulder
247+82	-	251+73	RT	174	Full width shoulder
269+84	-	272+56	RT	121	Full width shoulder
270+26	-	272+53	LT	101	Full width shoulder
301+73	-	309+48	RT	344	Full width shoulder
301+73	-	308+78	LT	313	Full width shoulder
321+91	-	324+91	RT	133	Full width shoulder
321+71	-	325+04	LT	148	Full width shoulder
403+22	-	405+58	RT	105	Full width shoulder
403+03	-	405+75	LT	121	Full width shoulder
Hazel West			LT	141	Intersection and tapers
Hedge Rd			RT	86	Intersection and tapers
Heirloom Ave			RT	430	Intersection and tapers
Heilmsman Ave			RT	128	Intersection and tapers
CTH T			RT	223	Intersection and tapers
Hawthorne Rd			LT	42	Intersection and tapers
Hazel East			LT	133	Intersection and tapers
Headquaters Rd			LT	77	Intersection and tapers
Golden Rd			LT	133	Intersection and tapers
CTH M			LT	281	Intersection and tapers
CTH M			RT	161	Intersection and tapers
Hennipin Rd			RT	114	Intersection and tapers
Gopher Ave			RT	278	Intersection and tapers
Goose Ave			RT	191	Intersection and tapers
CTH CM			LT	445	Intersection and tapers
			TOTAL 0010	125371	

SHAPING SHOULDERS

STATION	TO	STATION	LOCATION	305.0500 STA
169+50	-	529+00	LT & RT	720
			TOTAL 0010	720

SALVAGED RAIL

STATION	TO	STATION	LOCATION	614.0920 LF
199+41	-	218+28	RT	1886
233+65	-	240+65	RT	700
237+81	-	239+45	LT	164
247+85	-	251+75	RT	390
269+84	-	272+46	RT	263
270+26	-	272+53	LT	227
289+37	-	291+86	RT	249
288+76	-	290+78	LT	202
303+34	-	304+17	RT	83
302+11	-	302+82	LT	71
308+78	-	309+48	RT	70
308+28	-	309+00	LT	72
322+36	-	323+64	RT	128
321+89	-	323+66	LT	177
403+40	-	404+10	RT	71
404+65	-	405+36	RT	71
403+40	-	404+10	LT	71
404+65	-	405+37	LT	71
			TOTAL 0010	4966

REHEATING HMA PAVEMENT LONGITUDINAL JOINTS

STATION	TO	STATION	LOCATION	460.4110.S LF
169+50	-	404+17	C/L	23467
404+59	-	529+00	C/L	12442
			TOTAL 0010	35909

WATER

STATION	TO	STATION	LOCATION	624.0100 MGAL	REMARKS
169+50	-	529+00	LT & RT	17	B.A.D. COMPACTION
			TOTAL 0010	17	

3

TACK COAT

STATION	TO	STATION	LOCATION	455.0605 GAL	REMARKS
169+50	-	404+17	Mainline	5476	30' wide
404+59	-	520+60	Mainline	2707	30' wide
520+60	-	529+00	Mainline	196	44' wide
199+31	-	218+27	RT	59	Full width shoulder
233+39	-	240+91	RT	23	Full width shoulder
237+75	-	239+44	LT	5	Full width shoulder
247+82	-	251+73	RT	12	Full width shoulder
269+84	-	272+56	RT	8	Full width shoulder
270+26	-	272+53	LT	7	Full width shoulder
301+73	-	309+48	RT	24	Full width shoulder
301+73	-	308+78	LT	22	Full width shoulder
321+91	-	324+91	RT	9	Full width shoulder
321+71	-	325+04	LT	10	Full width shoulder
403+22	-	405+58	RT	7	Full width shoulder
403+03	-	405+75	LT	8	Full width shoulder
Hazel West			LT	10	Intersection and tapers
Hedge Rd			RT	6	Intersection and tapers
Heirloom Ave			RT	30	Intersection and tapers
Heilmsman Ave			RT	9	Intersection and tapers
CTH T			RT	16	Intersection and tapers
Hawthorne Rd			LT	3	Intersection and tapers
Hazel East			LT	9	Intersection and tapers
Headquaters Rd			LT	5	Intersection and tapers
Golden Rd			LT	9	Intersection and tapers
CTH M			LT	20	Intersection and tapers
CTH M			RT	11	Intersection and tapers
Hennipin Rd			RT	8	Intersection and tapers
Gopher Ave			RT	19	Intersection and tapers
Goose Ave			RT	13	Intersection and tapers
CTH CM			LT	31	Intersection and tapers
		TOTAL 0010		8772	

HMA PAVEMENT 4 LT 58-28 S

STATION	TO	STATION	LOCATION	460.5224 TON	REMARKS
169+50	-	404+17	Mainline	9929	30' wide
404+59	-	520+60	Mainline	4909	30' wide
520+60	-	529+00	Mainline	460	44' wide
199+31	-	218+27	RT	71	Full width shoulder
233+39	-	240+91	RT		Full width shoulder
237+75	-	239+44	LT	6	Full width shoulder
247+82	-	251+73	RT	15	Full width shoulder
269+84	-	272+56	RT	10	Full width shoulder
270+26	-	272+53	LT	8	Full width shoulder
301+73	-	309+48	RT	29	Full width shoulder
301+73	-	308+78	LT	26	Full width shoulder
321+91	-	324+91	RT	11	Full width shoulder
321+71	-	325+04	LT	12	Full width shoulder
403+22	-	405+58	RT	9	Full width shoulder
403+03	-	405+75	LT	10	Full width shoulder
Hazel West			LT	16	Intersection and tapers
Hedge Rd			RT	10	Intersection and tapers
Heirloom Ave			RT	48	Intersection and tapers
Heilmsman Ave			RT	14	Intersection and tapers
CTH T			RT	25	Intersection and tapers
Hawthorne Rd			LT	5	Intersection and tapers
Hazel East			LT	15	Intersection and tapers
Headquaters Rd			LT	9	Intersection and tapers
Golden Rd			LT	15	Intersection and tapers
CTH M			LT	31	Intersection and tapers
CTH M			RT	18	Intersection and tapers
Hennipin Rd			RT	13	Intersection and tapers
Gopher Ave			RT	31	Intersection and tapers
Goose Ave			RT	21	Intersection and tapers
CTH CM			LT	50	Intersection and tapers
Undistrubuted/ Distressed Milled Areas				300	
			TOTAL 0010	16126	

CONSTRUCTION STAKING RESURFACING REFERENCE

STATION	TO	STATION	LOCATION	650.8000 LF
169+50	-	529+00	MAINLINE	35950
			TOTAL 0010	35950

SPECIAL (01 REMOVING DISTRESSED PAVEMENT MILLING)

LOCATION	SPV.0180.01 SY	REMARKS
	2400	Undistrubuted
TOTAL 0010	2400	

3

ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES

STATION	TO	STATION	LOCATION	465.0120 TON	REMARKS
278+25			LT	3	PE
300+33			LT	2	CE
340+77			LT	3	PE
351+71			LT	3	PE
366+87			RT	2	PE
372+48			LT	6	PE
376+19			RT	2	PE
420+09			LT	3	PE
428+07			LT	2	PE
431+68			RT	2	PE
434+40			RT	2	CE
435+44			RT	3	CE
437+20			LT	1	PE
442+14			RT	2	PE
443+74			LT	1	PE
444+27			RT	2	PE
444+68			LT	2	PE
446+45			RT	1	PE
447+35			RT	2	PE
447+71			LT	2	PE
453+14			RT	2	PE
463+64			LT	2	PE
463+90			LT	2	PE
464+53			LT	2	PE
466+08			LT	3	PE
467+95			LT	3	PE
469+67			RT	3	PE
476+00			LT	2	PE
476+69			LT	2	PE
497+38			LT	2	PE
498+70			RT	2	PE
500+05			LT	2	PE
500+85			RT	2	PE
507+22			RT	4	CE
UNDISTRUBUTED				21	
			TOTAL 0010	100	

ASPHALT CENTER LINE RUMBLE STRIPS 2-LANE RURAL

STATION	TO	STATION	LOCATION	465.0475 LF
169+50	-	172+27	C/L	277
176+27	-	260+17	C/L	8390
264+17	-	285+00	C/L	2083
289+00	-	299+21	C/L	1021
303+21	-	322+68	C/L	1947
			C/L	
326+68	-	331+38	C/L	470
335+38	-	345+48	C/L	1010
349+48	-	365+60	C/L	1612
369+60	-	378+84	C/L	924
382+84	-	403+92	C/L	2108
			C/L	
404+84	-	417+28	C/L	1244
421+28	-	426+33	C/L	505
428+33	-	433+42	C/L	509
436+35	-	463+00	C/L	2665
467+00	-	469+26	C/L	226
			C/L	
473+26	-	475+37	C/L	211
479+37	-	506+17	C/L	2680
508+17	-	515+08	C/L	691
519+08	-	529+00	C/L	992
			TOTAL 0010	29565

TRAFFIC CONTROL DRUMS

STATION	TO	STATION	LOCATION	643.0300 DAY	REMARKS
169+50	-	529+00	Guard Rail locations	9000	25' spacing
			TOTAL 0010	9000	

TRAFFIC CONTROL SIGNS

STATION	TO	STATION	LOCATION	643.0900 DAY	REMARKS
				450	Advanced Warning
				675	Intersections
			TOTAL 0010	1125	

3

ASPHALTIC SHOULDER RUMBLE STRIPS 2-LANE RURAL

STATION	TO	STATION	LOCATION	465.0425 LF
169+50	-	217+49	RT	4799
220+43	-	240+07	RT	1964
243+02		259+17	RT	1615
264+17	-	285+68	RT	2151
288+09	-	299+00	RT	1091
309+70	-	324+32	RT	1462
325+15	-	348+17	RT	2302
348+66	-	358+26	RT	960
359+07	-	366+71	RT	764
366+98	-	367+93	RT	95
368+15	-	375+15	RT	700
376+55	-	387+90	RT	1135
388+70	-	403+92	RT	1522
404+84	-	416+86	RT	1202
420+97	-	426+24	RT	527
428+00	-	431+27	RT	327
431+94	-	434+04	RT	210
436+06	-	441+67	RT	561
442+49	-	443+85	RT	136
444+85	-	446+10	RT	125
447+73	-	449+25	RT	152
450+30	-	452+76	RT	246
453+48	-	455+95	RT	247
456+67	-	460+00	RT	333
460+74	-	463+29	RT	255
466+47	-	469+33	RT	286
473+37	-	475+43	RT	206
479+38	-	498+26	RT	1888
499+00	-	500+40	RT	140
501+40	-	506+00	RT	460
507+89	-	529+00	RT	2111
169+50	-	172+77	LT	327
176+00	-	255+94	LT	7994
256+68	-	277+82	LT	2114
278+64	-	301+86	LT	2322
309+22	-	323+10	LT	1388
325+19	-	331+35	LT	556
335+55	-	340+38	LT	483
341+16	-	346+47	LT	531
348+41	-	351+33	LT	292
352+13	-	365+56	LT	1343

CONTINUED IN NEXT COLUMN

3

ASPHALTIC SHOULDER RUMBLE STRIPS 2-LANE RURAL

STATION	TO	STATION	LOCATION	465.0425 LF
370+00	-	372+07	LT	207
372+88	-	379+00	LT	612
383+88	-	403+92	LT	2004
404+84	-	410+84	LT	600
411+59	-	419+68	LT	809
420+38	-	424+18	LT	380
424+83	-	425+54	LT	71
426+24	-	427+68	LT	144
428+43	-	436+80	LT	837
437+56	-	439+75	LT	219
440+47	-	443+34	LT	287
445+06	-	447+31	LT	225
448+03	-	452+29	LT	426
453+86	-	461+41	LT	755
464+96	-	465+81	LT	85
466+56	-	467+56	LT	100
468+43	-	472+46	LT	403
473+30	-	476+55	LT	325
478+00	-	497+00	LT	1900
497+78	-	499+63	LT	185
500+41	-	514+50	LT	1409
521+00	-	529+00	LT	800
			TOTAL 0010	60105

TRAFFIC CONTROL SIGNS PCMS

LOCATION	643.1050 DAY	REMARKS
BEGIN PROJECT	7	COORDINATE LOCATION
END PROJECT	7	WITH ENGINEER
TOTAL 0010	14	

3

MGS GUARDRAIL TERMINAL EAT

STATION	TO	STATION	LOCATION	614.2610 EACH	REMARKS
198+96			RT	1	POST 1
218+27			RT	1	POST 1
233+65			RT	1	POST 1
240+59			RT	1	POST 1
237+75			LT	1	POST 1
239+44			LT	1	POST 1
247+87			RT	1	POST 1
251+68			RT	1	POST 1
269+87			RT	1	POST 1
272+81			RT	1	POST 1
270+26			LT	1	POST 1
272+82			LT	1	POST 1
289+37			RT	1	POST 1
291+80			RT	1	POST 1
288+73			LT	1	POST 1
290+79			LT	1	POST 1
303+12			RT	1	POST 1
301+77			LT	1	POST 1
309+83			RT	1	POST 1
309+33			LT	1	POST 1
322+38			RT	1	POST 1
323+94			RT	1	POST 1
322+00			LT	1	POST 1
323+81			LT	1	POST 1
403+05			RT	1	POST 1
405+20			RT	1	POST 1
			TOTAL 0010	26	

MGS THRIE BEAM TRANSITION

STATION	TO	STATION	LOCATION	614.2500 LF
303+78	-	304+17	RT	39.4
302+43	-	302+82	LT	39.4
308+78	-	309+18	RT	39.4
308+28	-	308+68	LT	39.4
403+71	-	404+10		39.4
404+65	-	405+05	RT	39.4
			TOTAL 0010	236.4

MGS GUARDRAIL 3

STATION	TO	STATION	LOCATION	614.2300 LF
199+49	-	217+74	RT	1825.0
234+18	-	240+06	RT	587.5
238+28	-	238+91	LT	62.5
248+40	-	251+15	RT	275.0
270+41	-	272+28	RT	187.5
270+79	-	272+29	LT	150.0
289+90	-	291+27	RT	137.5
289+26	-	290+26	LT	100.0
303+65	-	303+78	RT	12.5
302+30	-	302+43	LT	12.5
309+18		309+30	RT	12.5
308+68		308+81	LT	12.5
322+91		323+41	RT	50.0
322+53		323+28	LT	75.0
403+59		403+71	RT	12.5
405+05		405+18	RT	12.5
			TOTAL 0010	3525

STEEL THRIE BEAM STRUCTURE APPROACH

STATION	TO	STATION	LOCATION	614.0200 LF
403+90	-	404+10	LT	20.6
404+65	-	404+86	LT	20.6
			TOTAL 0010	41.2

STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL

STATION	LOCATION	614.0370 EACH	REMARKS
403+40	LT	1	Post 1
405+36	LT	1	Post 1
	TOTAL 0010	2	

3

PAVEMENT MARKING EPOXY 4-INCH

STATION	TO	STATION	LOCATION	646.0106 SOLID YL LF	DASH YL LF	WHITE LF
169+50	-	183+50	C/L		350	
183+50	-	193+00	C/L	950	237.5	
193+00	-	194+00	C/L		25	
194+00	-	206+00	C/L	1200	300	
206+00	-	207+00	C/L		25	
207+00	-	243+50	C/L	4550	687.5	
243+50	-	253+00	C/L		237.5	
253+00	-	302+50	C/L	7350	637.5	
302+50	-	317+00	C/L		362.5	
317+00	-	362+00	C/L	5850	1037.5	
362+00	-	363+50	C/L		37.5	
363+50	-	375+00	C/L	1150	287.5	
375+00	-	406+50	C/L		787.5	
406+50	-	490+00	C/L	10200	1625.0	
490+00	-	507+00	C/L		425.0	
507+00	-	529+00	C/L	3100	325.0	
169+50		529+00	EDGE LINE			71900
515+51		517+64	LANE LINE			62.5
			SUBTOTAL	34350	7388	71963
			TOTAL 0010	113700		

PAVEMENT MARKING EPOXY 8-INCH

STATION	TO	STATION	LOCATION	646.0126 LF	REMARKS
261+33	-	262+42	RT	109	Heiloom
517+45	-	519+74	LT	229	CTH CM
519+74	-	520+92	LT	30	3' SKIPS
			TOTAL 0010	368	

TEMPORARY PAVEMENT MARKING PAINT 4-INCH

STATION	TO	STATION	LOCATION	649.0402 SOLID YL LF	649.0402 DASH YL LF
169+50	-	183+50	C/L		112
183+50	-	193+00	C/L	950	76
193+00	-	194+00	C/L		8
194+00	-	206+00	C/L	1200	96
206+00	-	207+00	C/L		8
207+00	-	243+50	C/L	4550	220
243+50	-	253+00	C/L		76
253+00	-	302+50	C/L	7350	204
302+50	-	317+00	C/L		116
317+00	-	362+00	C/L	5850	332
362+00	-	363+50	C/L		12
363+50	-	375+00	C/L	1150	92
375+00	-	406+50	C/L		252
406+50	-	490+00	C/L	10200	520
490+00	-	507+00	C/L		136
507+00	-	529+00	C/L	3100	104
			SUB TOTAL	34350	2364
			2 APPLICATIONS	X2	X2
			TOTAL 0010	73428	

3

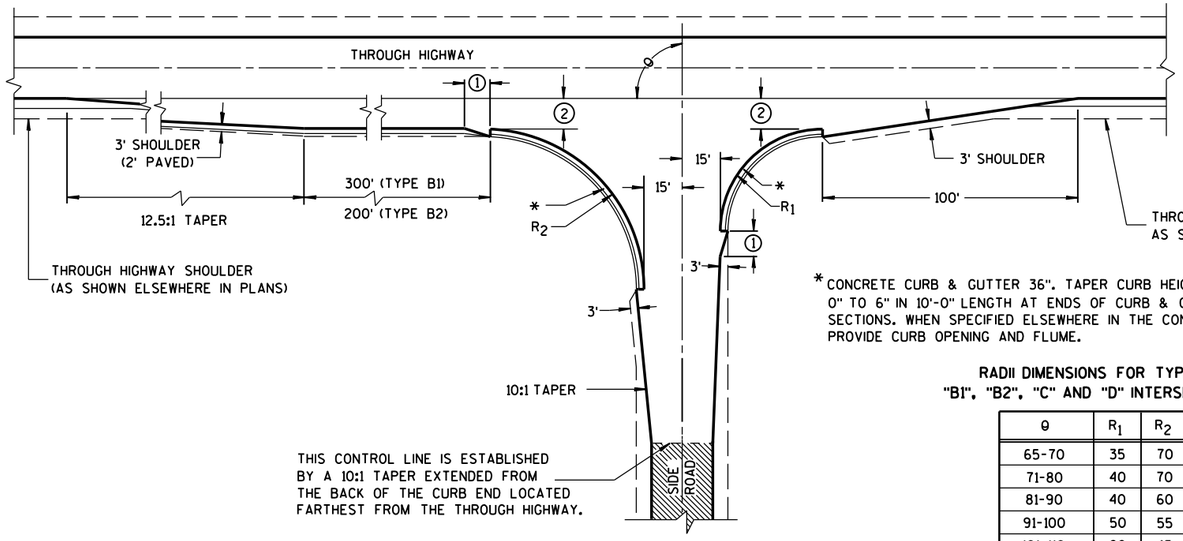
3

SAWING ASPHALT

STATION	LOCATION	690.0150 LF	REMARKS
169+50	CL	30	BEGIN PROJECT
278+25	LT	25	PE
300+33	LT	22	CE
340+77	LT	29	PE
351+71	LT	31	PE
366+87	RT	15	PE
376+19	RT	18	PE
420+09	LT	31	PE
428+07	LT	19	PE
431+68	RT	19	PE
434+40	RT	22	CE
435+44	RT	29	CE
437+20	LT	9	PE
442+14	RT	26	PE
443+74	LT	13	PE
444+27	RT	15	PE
444+68	LT	20	PE
446+45	RT	12	PE
447+35	RT	16	PE
447+71	LT	14	PE
453+14	RT	19	PE
463+64	LT	18	PE
463+90	LT	17	PE
464+53	LT	15	PE
466+08	LT	28	PE
467+95	LT	28	PE
469+67	RT	25	PE
476+00	LT	20	PE
476+69	LT	14	PE
497+38	LT	15	PE
498+70	RT	21	PE
500+05	LT	17	PE
500+85	RT	13	PE
507+22	RT	40	CE
529+00	CL	46	END PROJECT
TOTAL 0010		751	

Standard Detail Drawing List

09A01-13A	AT-GRADE SIDE ROAD INTERSECTION, TYPES "B1", "B2", "C" AND D AND TEE INTERSECTION BYPASS LANE
13A10-01A	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A10-01C	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A10-01D	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A11-02A	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13A11-02B	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
14B20-11A	STEEL THRIE BEAM STRUCTURE APPROACH
14B20-11E	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO BRIDGE RAILING TYPES "F" AND "W"
14B24-08A	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B24-08B	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B24-08C	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B42-04A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-04B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-04C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-02A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-04A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C04-03	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C08-17A	LONGITUDINAL MARKING (MAINLINE)
15C08-17B	PAVEMENT MARKING (TURN LANES)
15C12-04	TRAFFIC CONTROL FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)
15C19-04A	MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY
15C35-01A	PAVEMENT MARKING (INTERSECTIONS)
15D28-03	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY

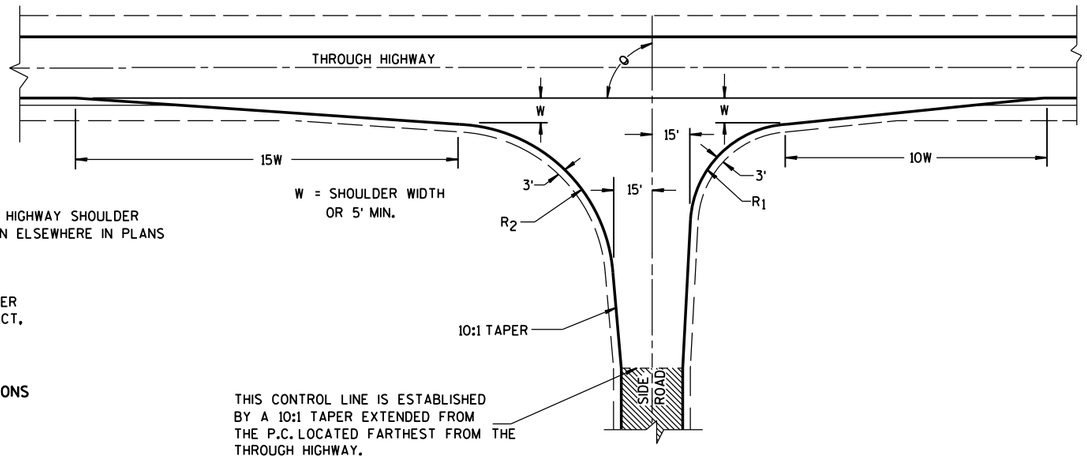


TYPE "B1" AND "B2"

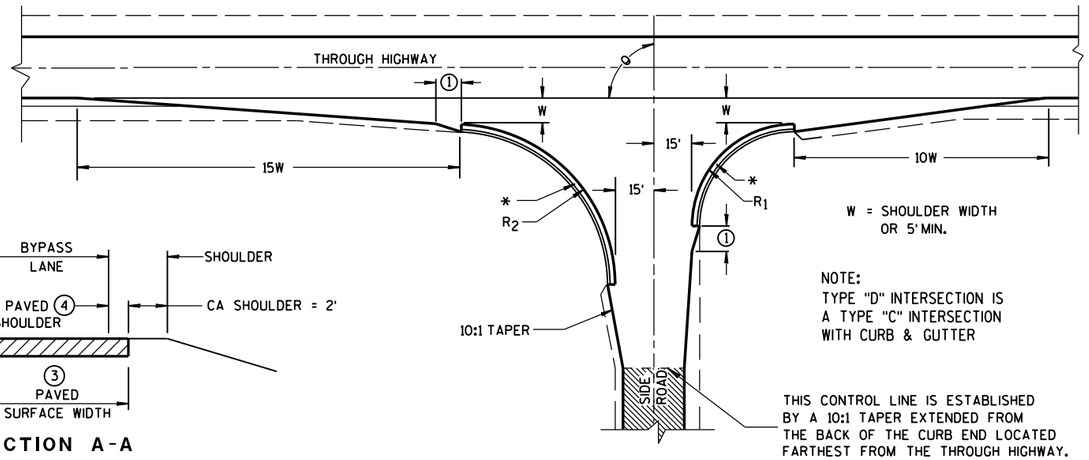
*CONCRETE CURB & GUTTER 36". TAPER CURB HEIGHT 0" TO 6" IN 10'-0" LENGTH AT ENDS OF CURB & GUTTER SECTIONS. WHEN SPECIFIED ELSEWHERE IN THE CONTRACT, PROVIDE CURB OPENING AND FLUME.

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

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



TYPE "C"



TYPE "D"

GENERAL NOTES

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

SIDE ROAD SURFACING NOTE

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

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

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

EXISTING PAVED SURFACE

BYPASS LANE

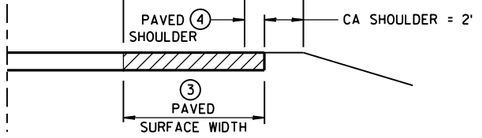
(1) 10-FT TYPICAL.

(2) 12-FT** PLUS ADDITIONAL WIDTH FOR BIKE LANE IF SHOWN ELSEWHERE IN THE PLAN.

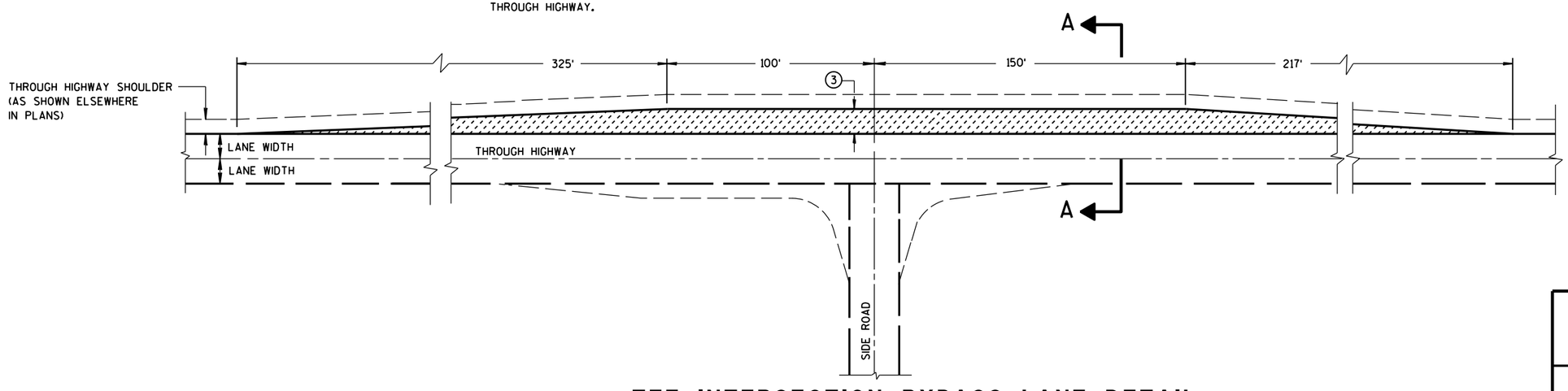
**10-FT MAY BE USED ON TYPE B2 ON RESURFACING PROJECTS IF SPECIFIED IN THE CONTRACT.

(3) BYPASS LANE PAVED SURFACE WIDTH OUTSIDE OF TRAVEL LANE
-ASPHALT = 12-FT PLUS PAVED SHOULDER WIDTH.
-PC CPNCRETE = 13-FT PLUS PAVED SHOULDER WIDTH.

(4) BYPASS LANE PAVED SHOULDER WIDTH = THE GREATER OF 1-FT OR THE PAVED SHOULDER WIDTH OF THE THROUGH HIGHWAY.



SECTION A-A
(SHOWING BYPASS LANE AND SHOULDER)



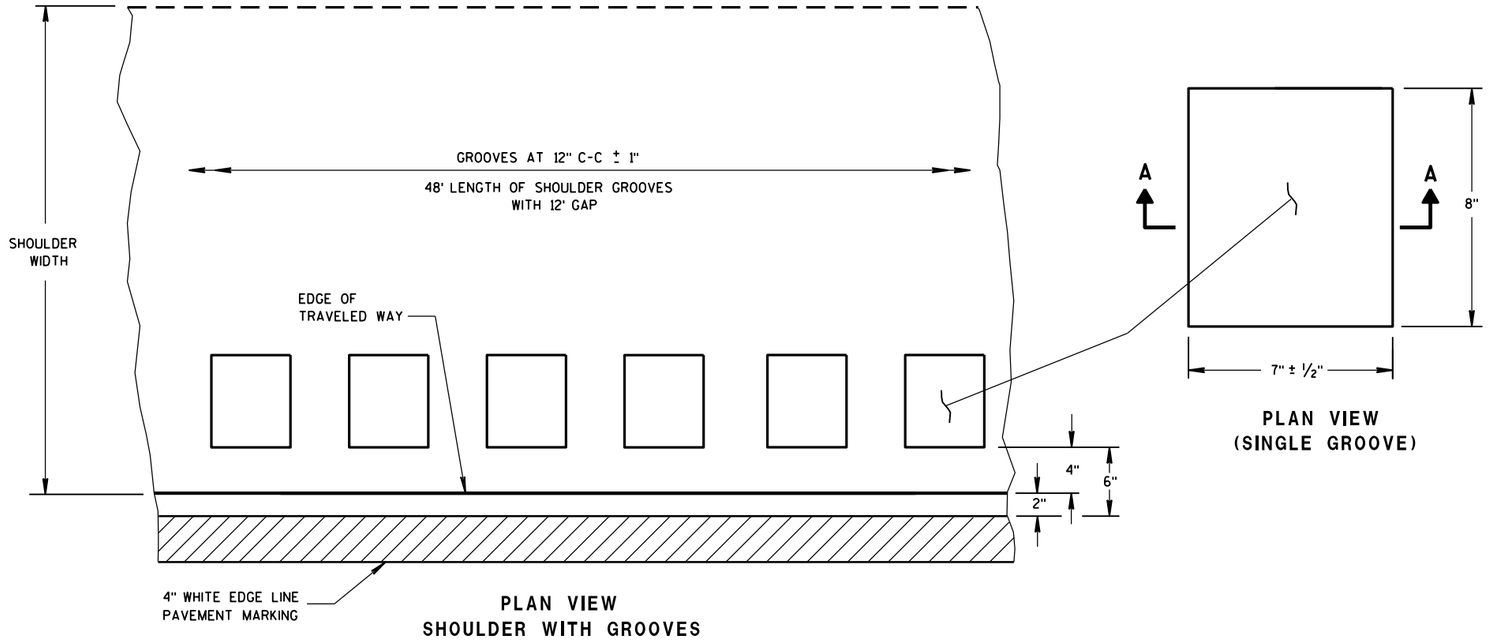
TEE INTERSECTION BYPASS LANE DETAIL

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

6

S.D.D. 9 A 1-13a



PLAN VIEW
SHOULDER WITH GROOVES

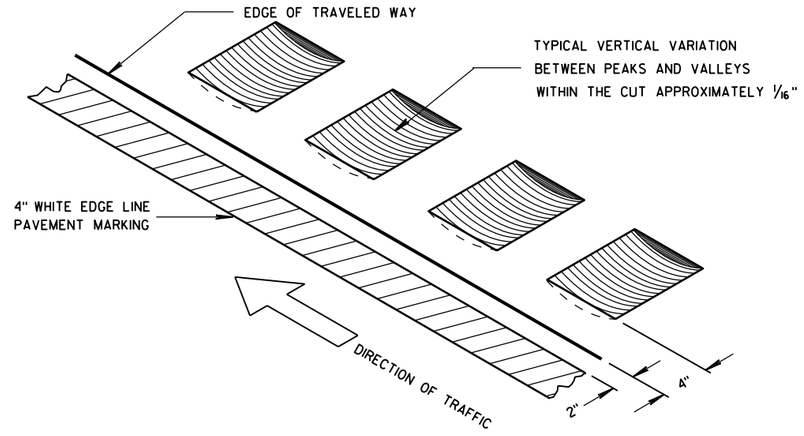
PLAN VIEW
(SINGLE GROOVE)

GENERAL NOTES

DETAILS OF CONSTRUCTION SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

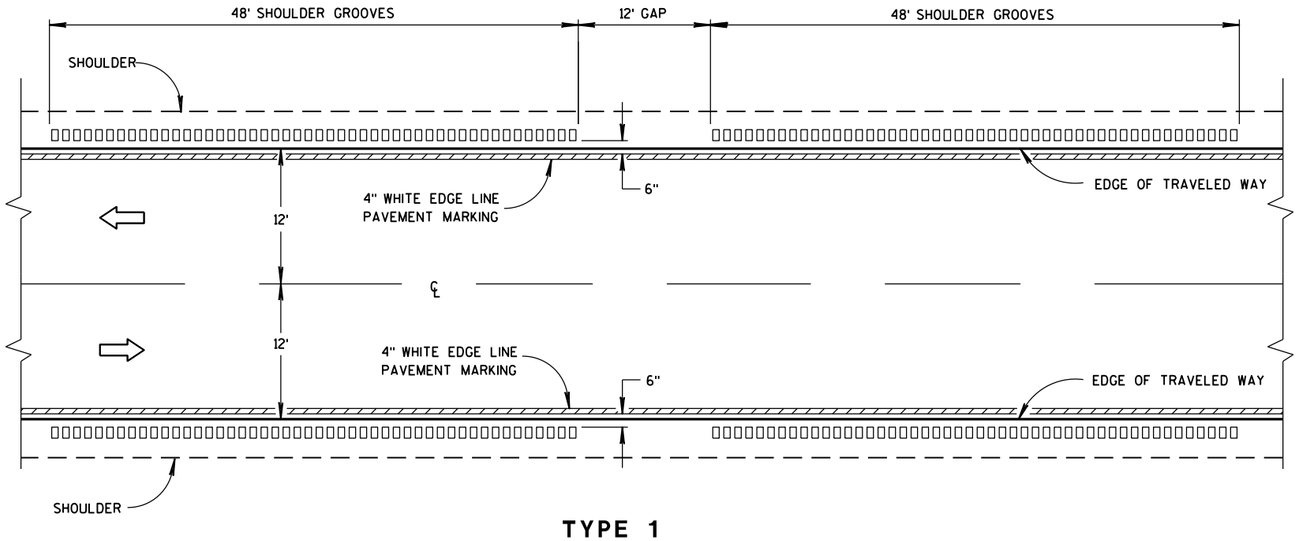
DO NOT MILL SHOULDER GROOVES THROUGH ANY INTERSECTION, MARKED CROSSWALK, NON-MOTORIZED PATH CROSSING, OR SNOWMOBILE CROSSING.

(1) SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS, WHEN DIRECTED BY THE ENGINEER.

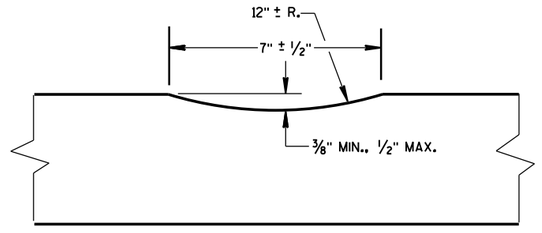


ISOMETRIC

PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP



TYPE 1
2-LANE SHOULDER RUMBLE STRIP



SECTION A-A

2-LANE RURAL
SHOULDER RUMBLE STRIP, MILLING

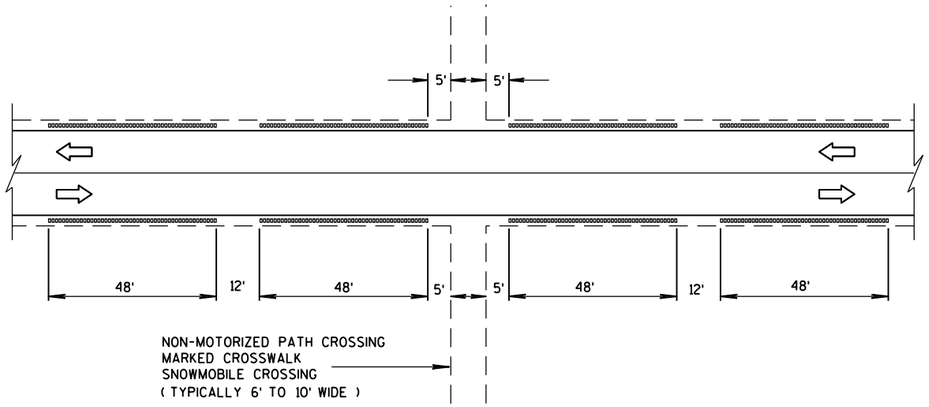
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

6

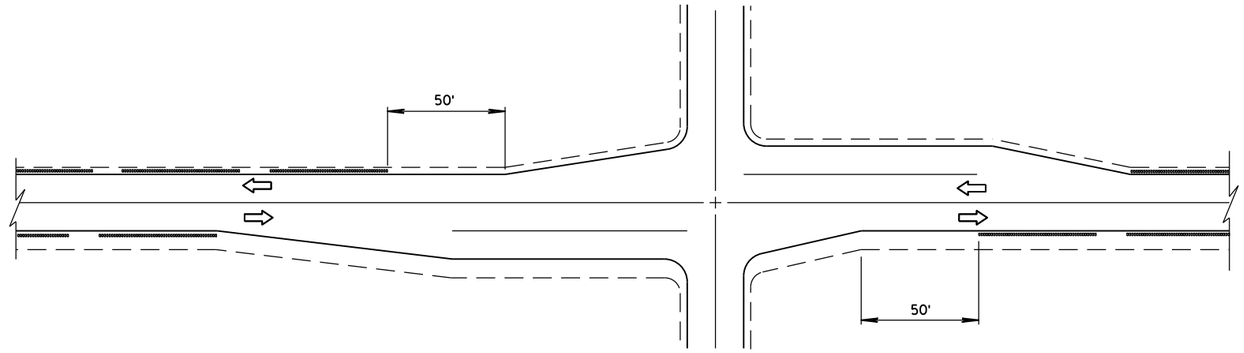
S.D.D. 13 A 10-1a

6

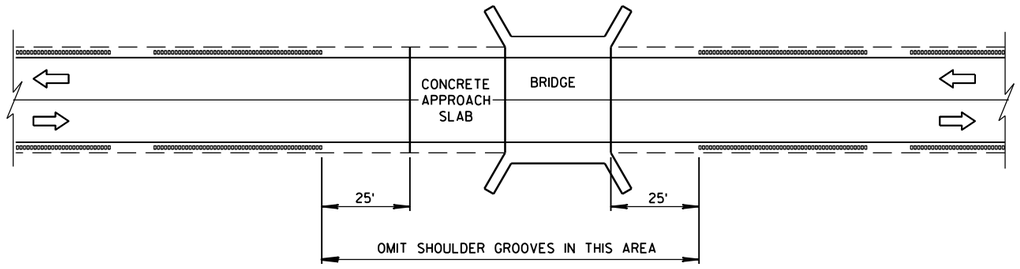
S.D.D. 13 A 10-1a



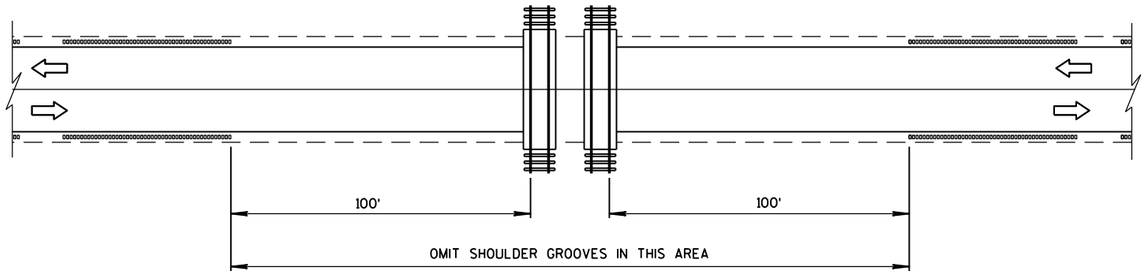
SHOULDER GROOVES AT MISCELLANEOUS CROSSINGS



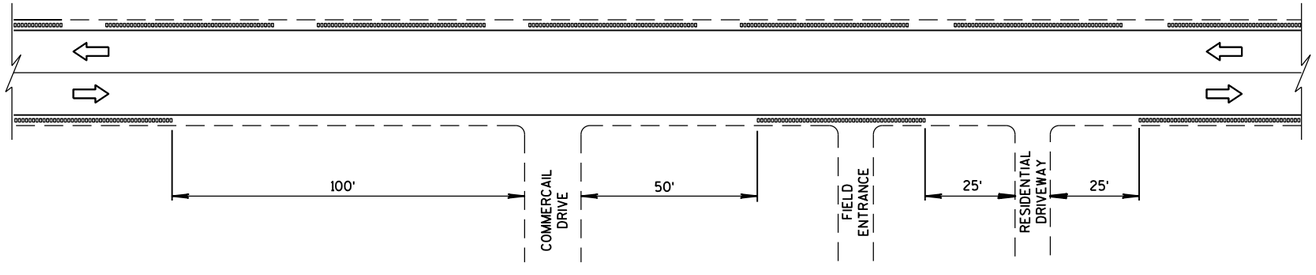
SHOULDER GROOVES AT INTERSECTIONS



SHOULDER GROOVES AT BRIDGES



SHOULDER GROOVES AT RAILROADS



SHOULDER GROOVES AT DRIVEWAYS (1)

2-LANE RURAL
SHOULDER RUMBLE STRIP, MILLING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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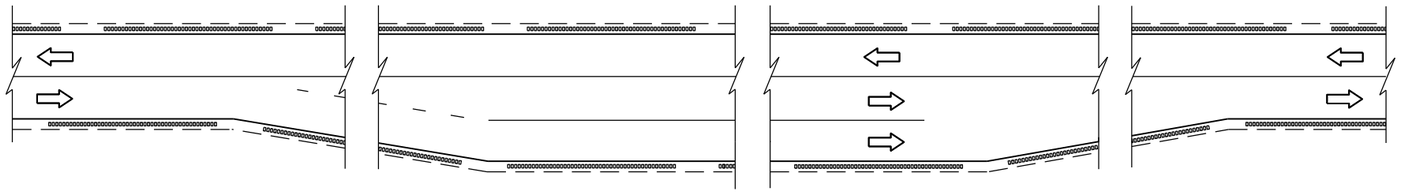
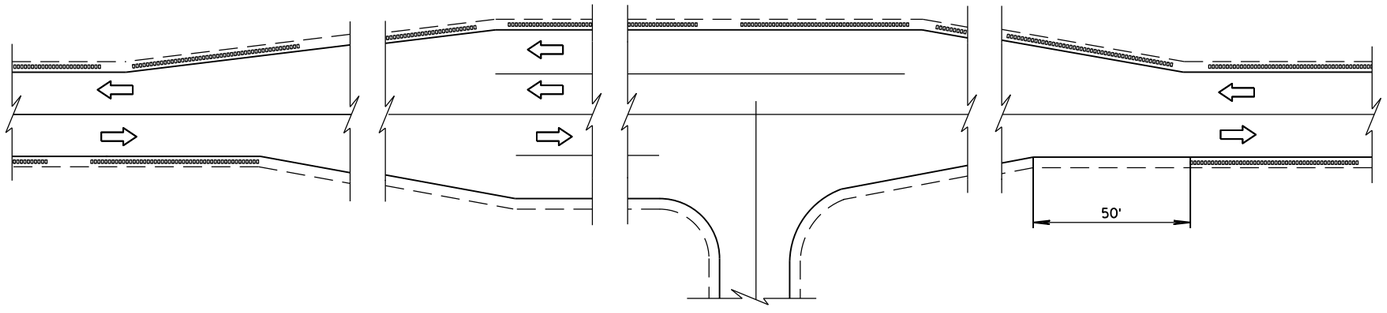
S.D.D. 13 A 10-1c

6

S.D.D. 13 A 10-1c



SHOULDER GROOVES AT PASSING AND CLIMBING LANES



SHOULDER GROOVES AT BYPASS LANES

6

6

S.D.D. 13 A 10-1d

S.D.D. 13 A 10-1d

2-LANE RURAL
SHOULDER RUMBLE STRIP, MILLING

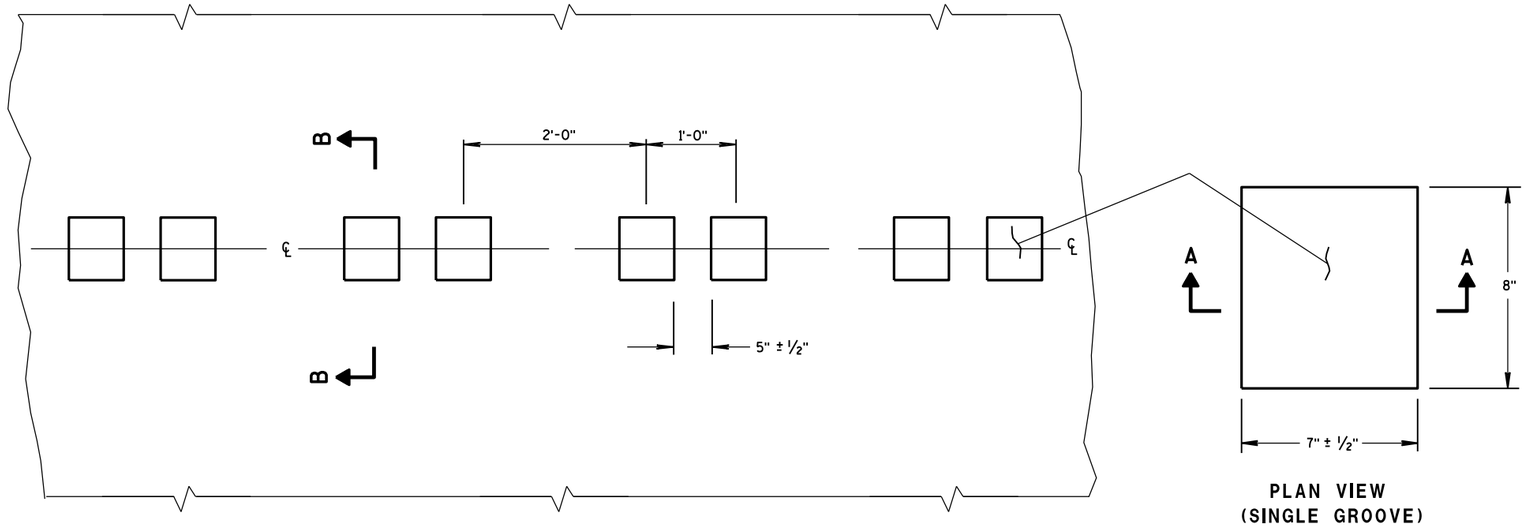
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

12/17/2012
DATE

/S/ Jerry H. Zoga
ROADWAY STANDARDS ENGINEER

FHWA



PLAN VIEW
CENTER LINE WITH GROOVES

PLAN VIEW
(SINGLE GROOVE)

PLACEMENT DETAIL FOR MILLED RUMBLE STRIP

GENERAL NOTES

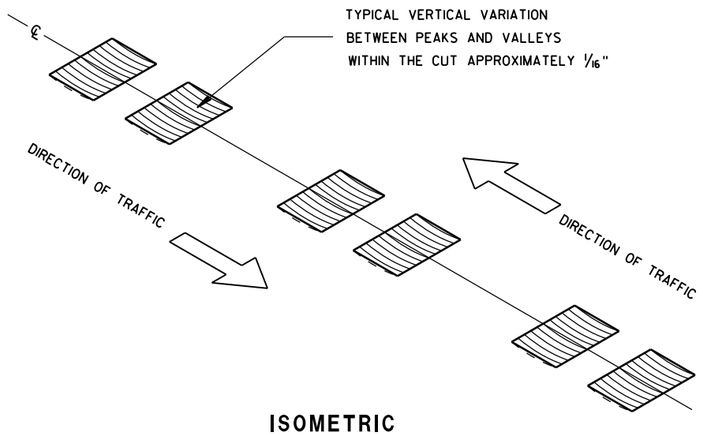
DETAILS OF CONSTRUCTION SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

DO NOT MILL CENTER LINE GROOVES THROUGH ANY INTERSECTION, MARKED CROSSWALK, NON-MOTORIZED PATH CROSSING, OR SNOWMOBILE CROSSING.

INSTALL PAVEMENT MARKING AFTER THE GROOVES ARE INSTALLED.

SEE SIGNING PLAN FOR SIGN REQUIREMENTS THAT MAY BE NEEDED.

(1) CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS, WHEN DIRECTED BY THE ENGINEER.



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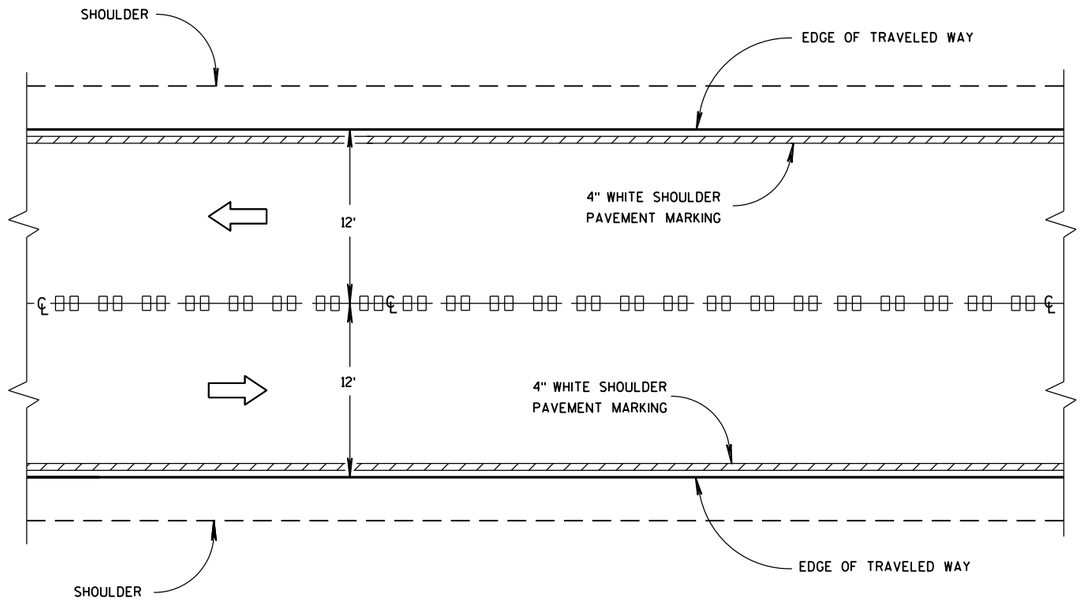
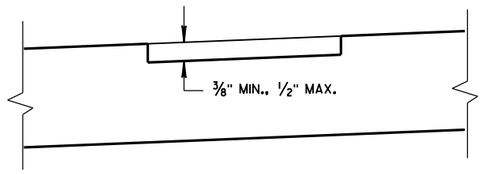
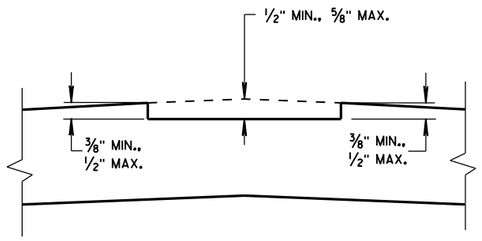


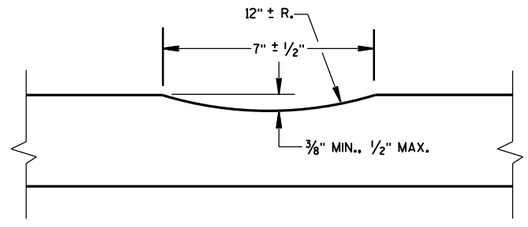
CENTER LINE GROOVES ON TWO-WAY ROADWAYS



SECTION B-B
SUPERELEVATED ROADWAY



SECTION B-B
CROWNED ROADWAY



SECTION A-A

2-LANE RURAL
CENTER LINE RUMBLE STRIP,
MILLING

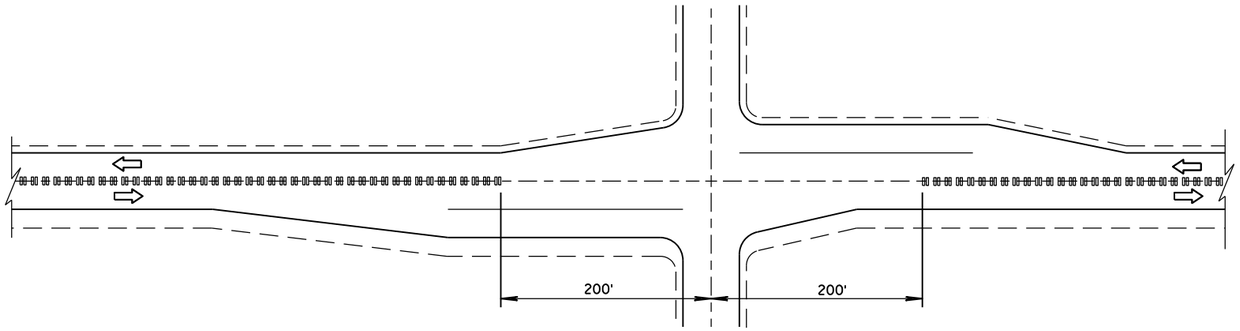
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

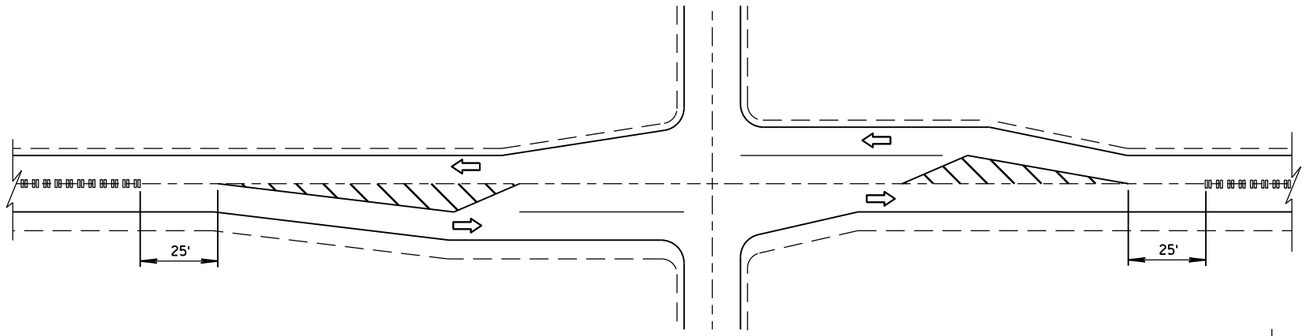
S.D.D. 13 A 11-2a

6

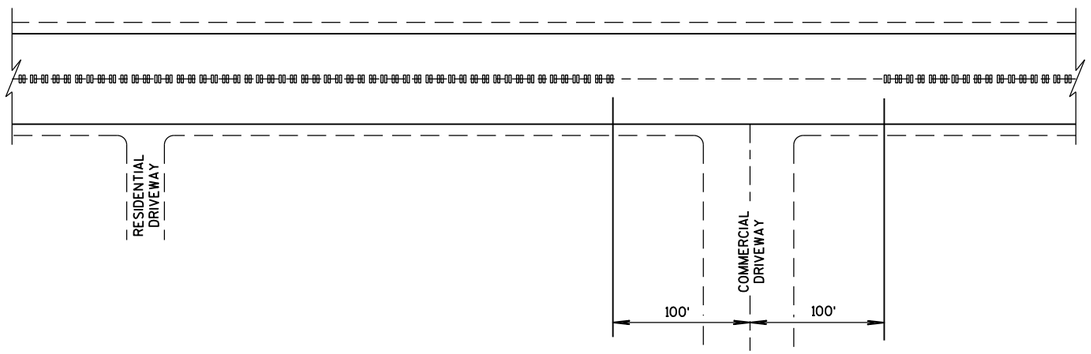
S.D.D. 13 A 11-2a



CENTER LINE GROOVES AT INTERSECTIONS

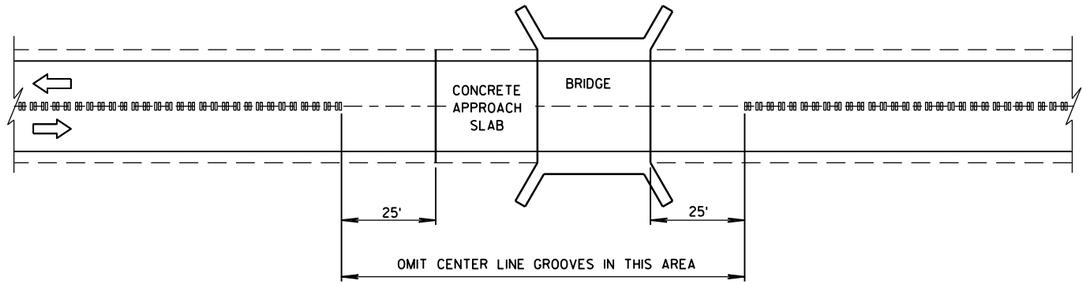


CENTER LINE GROOVES AT INTERSECTIONS
(WITH LEFT TURN LANES)

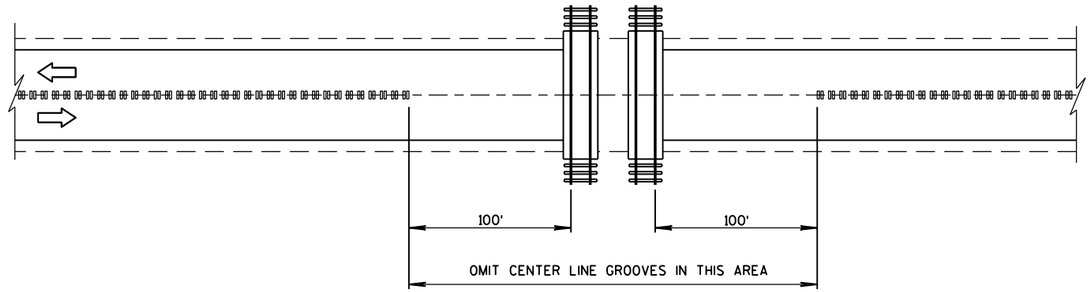


CENTER LINE GROOVES AT DRIVEWAYS (1)

(1) CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS, WHEN DIRECTED BY THE ENGINEER.



CENTER LINE GROOVES AT BRIDGES



CENTER LINE GROOVES AT RAILROADS

6

S.D.D. 13 A 11-2b

6

S.D.D. 13 A 11-2b

2-LANE RURAL
CENTER LINE RUMBLE STRIP, MILLING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

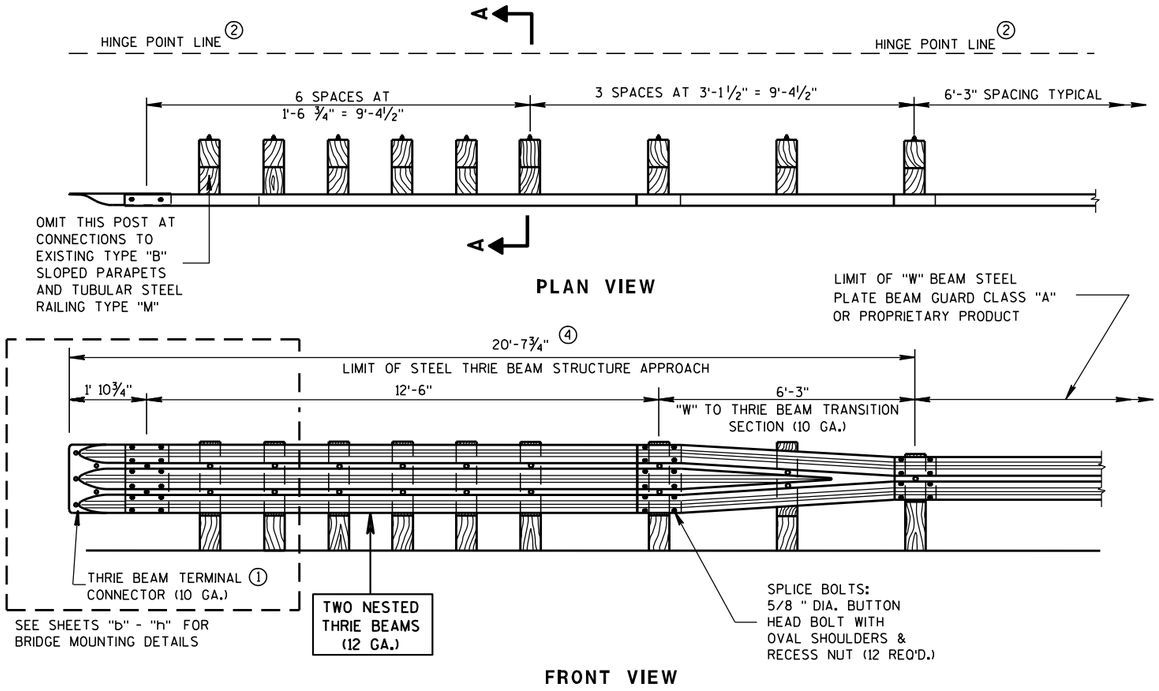
APPROVED

5/15/2013
DATE

/S/ Jerry H. Zoda
ROADWAY STANDARDS DEVELOPMENT ENGINEER

NT

FHWA



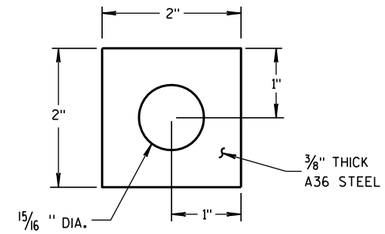


PLATE WASHER DETAIL

GENERAL NOTES

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

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

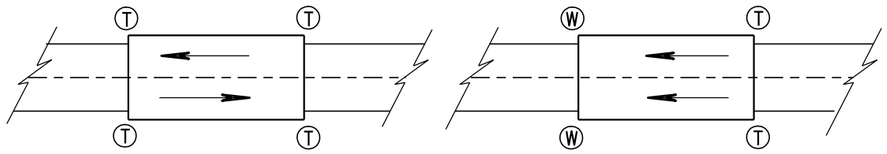
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2" , AND 12" DIAMETER AROUND POST. SEE 14B15 FOR MORE DETAILS.

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

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

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

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



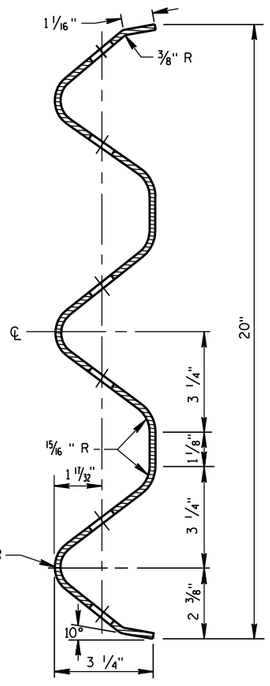
TWO WAY TRAFFIC

ONE WAY TRAFFIC

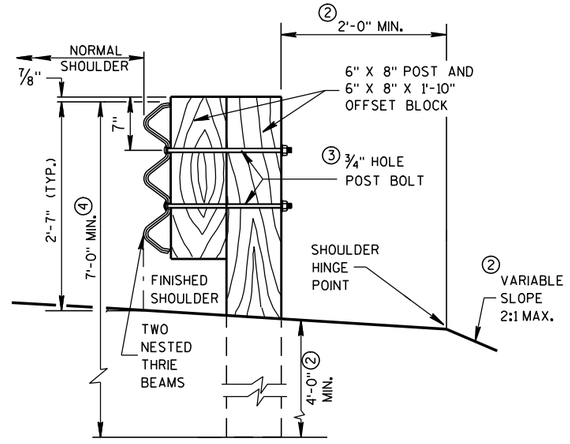
(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

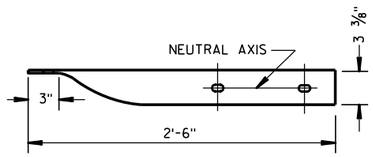
TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE

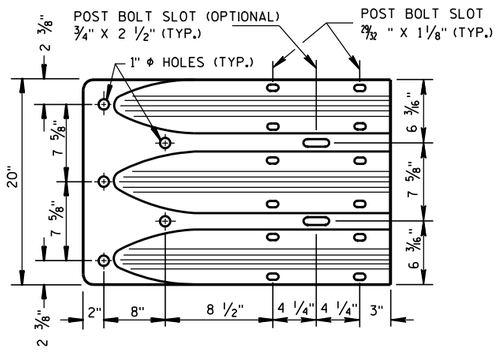


SECTION THRU THRIE BEAM RAIL ELEMENT

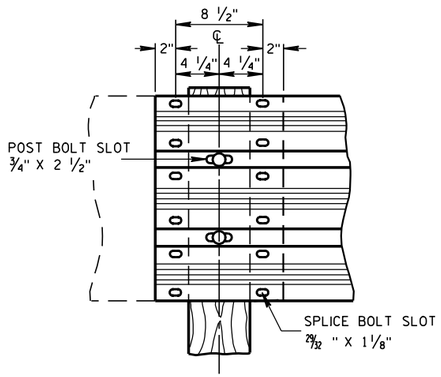


SECTION A-A





THRIE BEAM TERMINAL CONNECTOR



THRIE BEAM SPLICE

STEEL THRIE BEAM STRUCTURE APPROACH

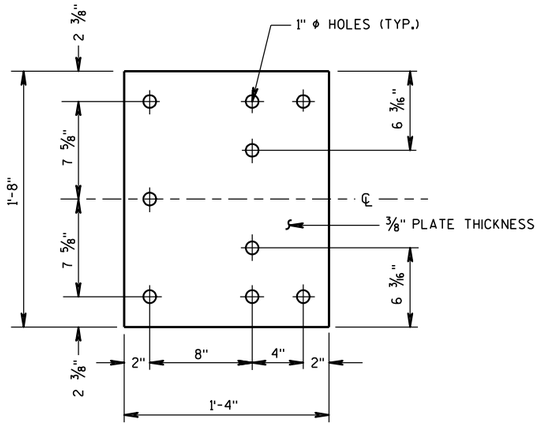
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

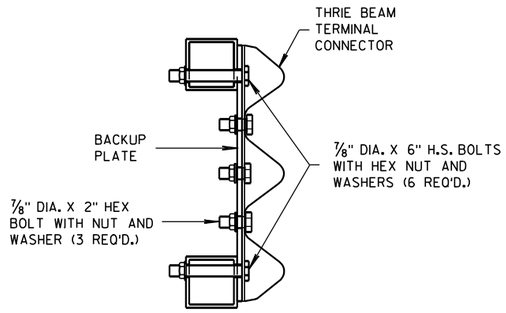
8/31/2012
DATE

/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER

FHWA



BACK-UP PLATE DETAIL



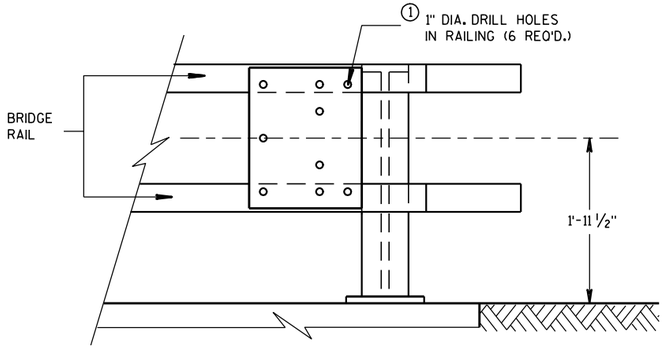
SECTION G-G

GENERAL NOTES

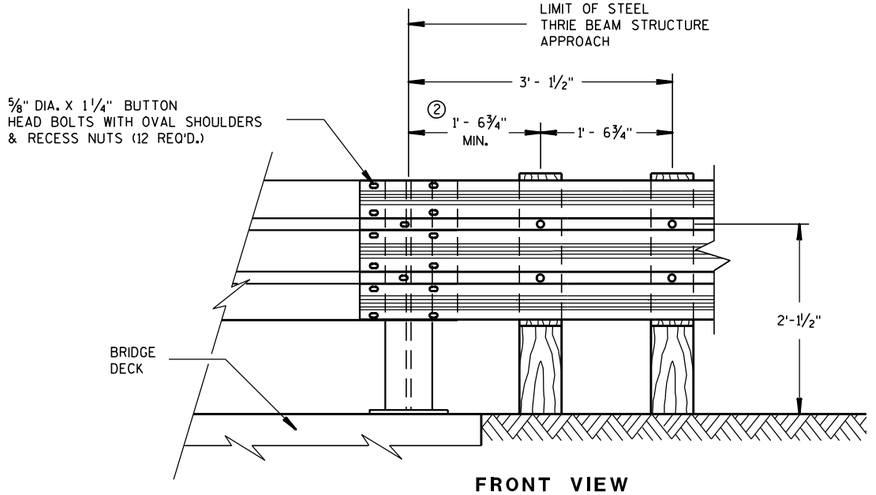
BOLTS, PLATES, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A 325 AND BE GALVANIZED IN ACCORDANCE WITH ASTM A 153.

① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

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

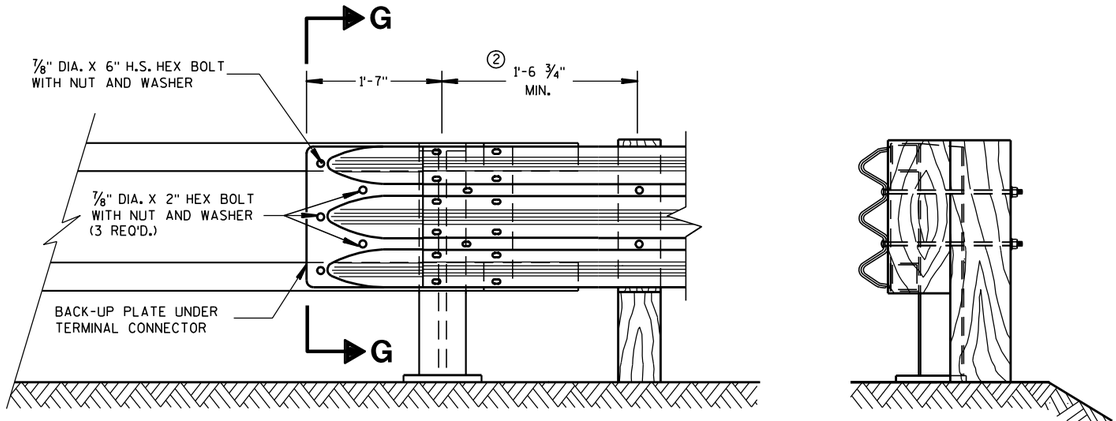


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"



FRONT VIEW

END VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012
DATE

/S/ Jerry H ...
ROADWAY STANDARDS ENGINEER

ENT

FHWA

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S.D.D. 14 B 20-11e

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S.D.D. 14 B 20-11e

BILL OF MATERIALS

NOTE NO.	QTY.	DESCRIPTION
(1)	4	WOOD BREAKAWAY TERMINAL POST: 5½" X 7½" X 3'-9"
(2)	**	STEEL TUBE: OPTION 1 - QUANITY OF 4 TS 8" X 6" X 0.188", 4'-6" LONG OR OPTION 2 - QUANITY OF 2 TS 8" X 6" X 0.188", 6'-0" AND 2 TS 8" X 6" X 0.188", 4'-6" LONG
(3)	2	SOIL PLATE: 2'-0" X 1'-6" X ¼" **
(4)	4	WOOD BREAKAWAY CRT POST: 6" X 8" X 6'-0"
(5)	6	WOOD OFFSET BLOCKS: 6' X 8" X 1'-2"
(6)	1	PIPE SLEEVE: 2" X 5 ½" STANDARD PIPE
(7)	1	BEARING PLATE
(8)	1	BCT CABLE ASSEMBLY
(9)	1	CABLE ANCHOR BOX
(10)	1	STRUT & YOKE
(11)	1	STEEL PLATE BEAM, END PANEL 12 GA. 13'-6½" LONG FOR SKT-350, ET-2000 AND ET-2000 PLUS
(12)	3	STEEL PLATE BEAM: 12 GA. 13'-6½"
(13)	1	ET-2000/ET-2000 PLUS GUARDRAIL EXTRUDER OR SKT-350 IMPACT HEAD: AS FURNISHED BY MANUFACTURER
(14)	1	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE F PER SECTION 637 OF THE STANDARD SPECIFICATIONS
(15)	1	E.A.T. MARKER POST

GENERAL NOTES

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

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

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

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

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

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

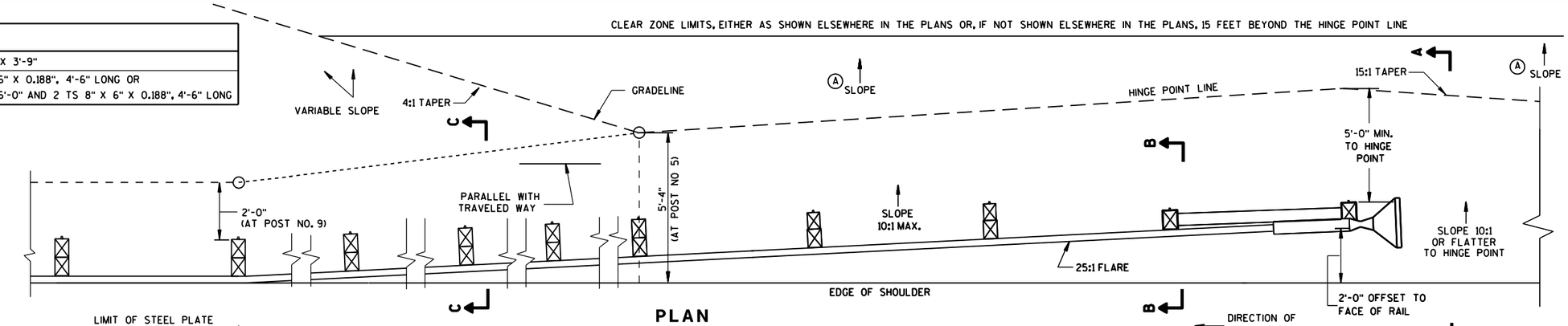
(F) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS. ONE SCREW PER CORNER.

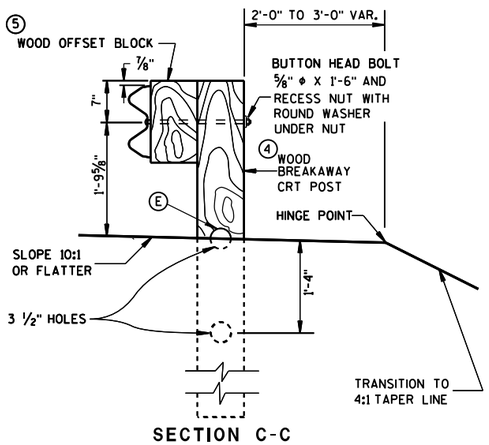
STEEL POSTS SHALL NOT BE ALLOWED FOR USE WITH ENERGY ABSORBING TERMINALS.

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

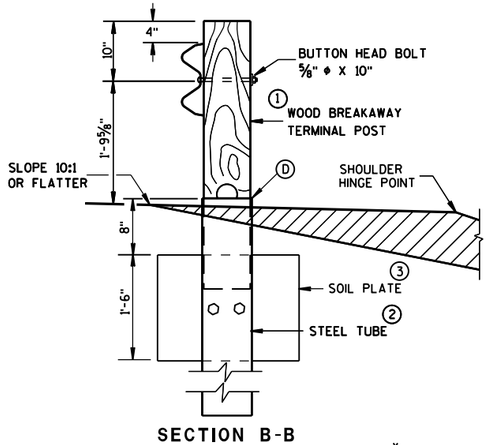
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

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

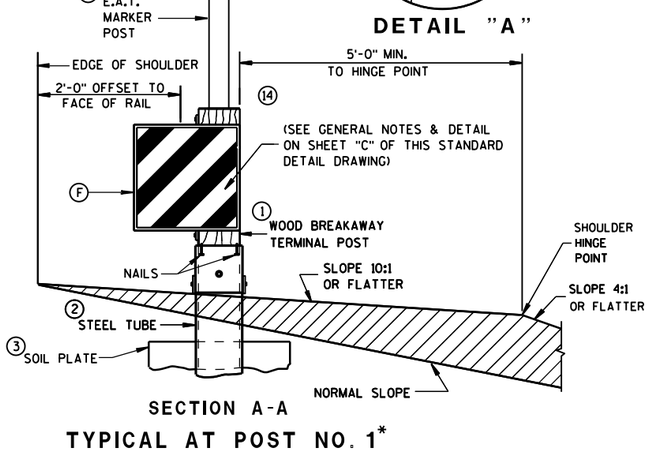




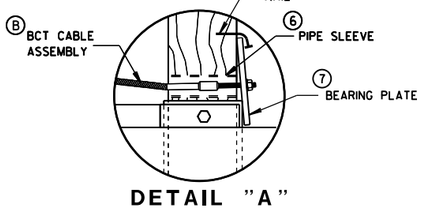
SECTION C-C
TYPICAL AT POST NOS. 6, 8



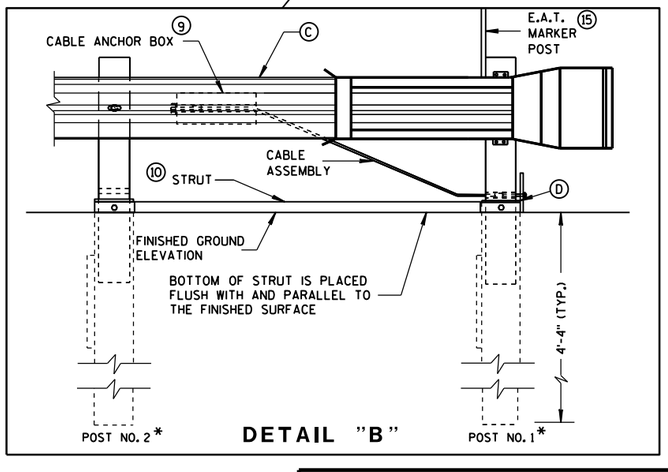
SECTION B-B
TYPICAL AT POST NO. 2*



SECTION A-A
TYPICAL AT POST NO. 1*



DETAIL "A"



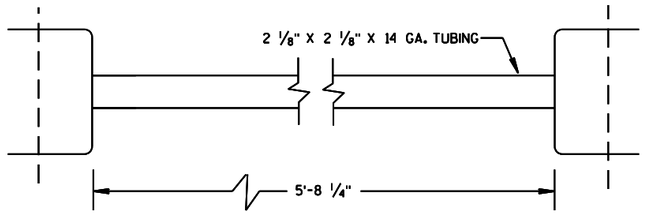
DETAIL "B"

STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL

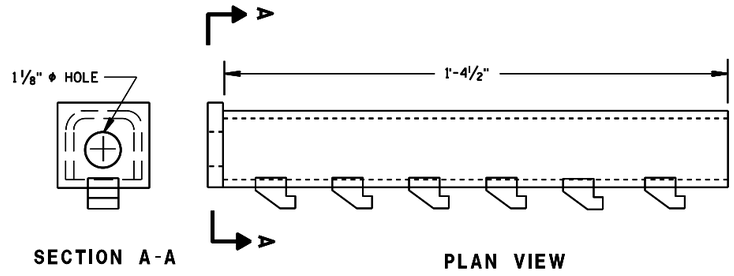
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

S.D.D. 14 B 24-8a

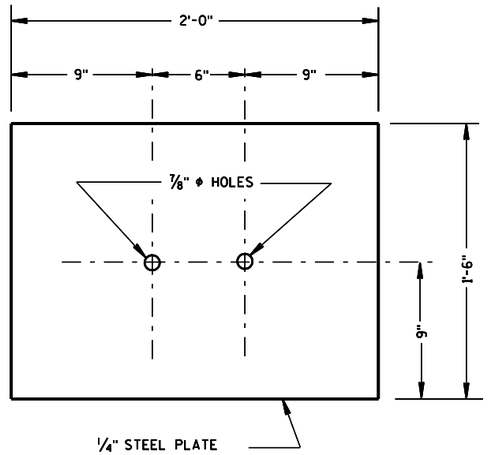
6



⑩ STRUT DETAIL (SKT-350)

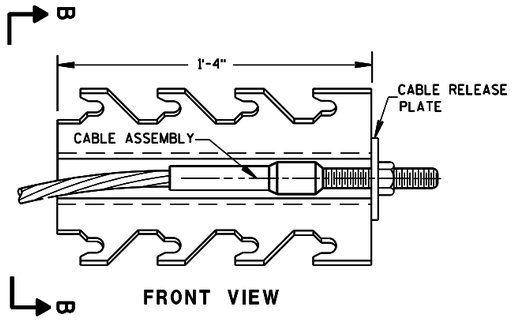


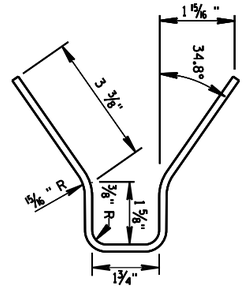
⑨ CABLE ANCHOR BOX (ET-2000/ET-2000 PLUS)



③ SOIL PLATE

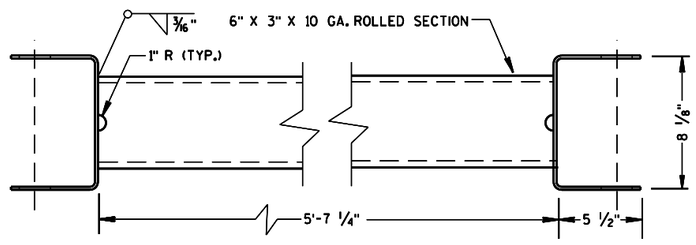
(SKT-350, ET-2000/ET-2000 PLUS)





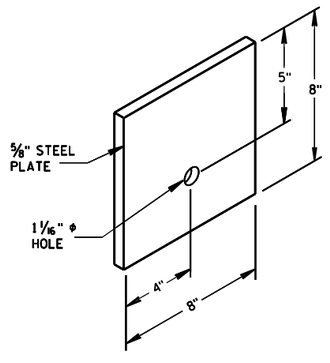
⑨ CABLE ANCHOR BOX (SKT-350)

(SKT-350)



⑩ STRUT DETAIL (ET-2000/ET-2000 PLUS)

(ET-2000/ET-2000 PLUS)



⑦ STEEL BEARING PLATE

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

6

6

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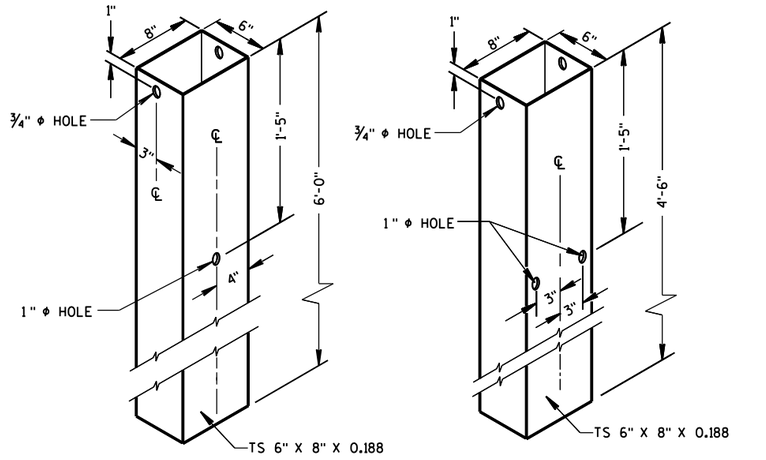
S.D.D. 14 B 24-8b

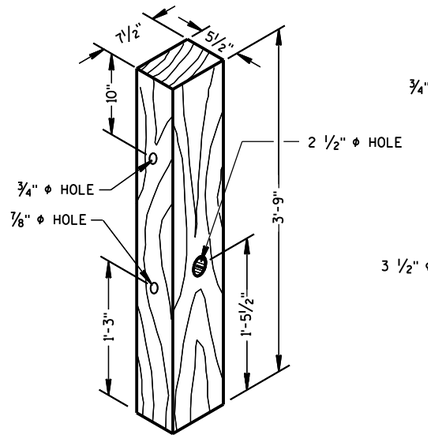
STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

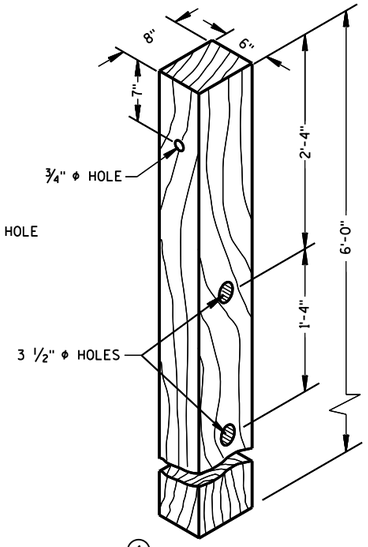


② 72" STEEL TUBE
(POSTS NO. 1-4

② 54" STEEL TUBE
(POSTS NO. 1-4



① TERMINAL POST
(POSTS NO. 1-4



④ CRT POST
(POSTS NO'S 5-8

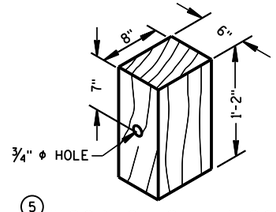
WOOD BREAKAWAY POSTS

GENERAL NOTES

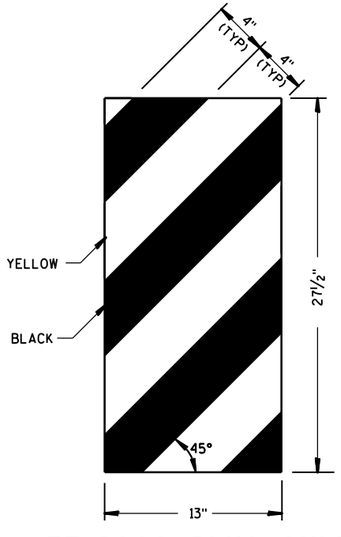
WHEN ROCK IS ENCOUNTERED DURING EXCAVATION, A 12 INCH DIA. POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK MAY BE USED IF APPROVED BY THE ENGINEER. GRANULAR MATERIAL SHALL BE PLACED IN THE BOTTOM OF THE HOLE APPROXIMATELY 2 ½" INCHES DEEP TO PROVIDE DRAINAGE. THE SOIL TUBES SHALL BE FIELD CUT TO LENGTH,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

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

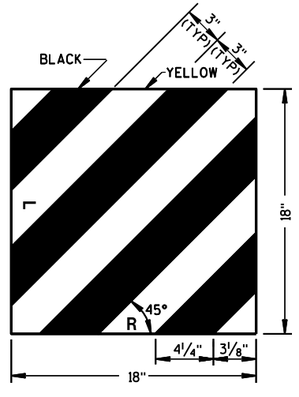
(G) ½" DIA. X 3" LAG BOLT WITH WASHER.



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

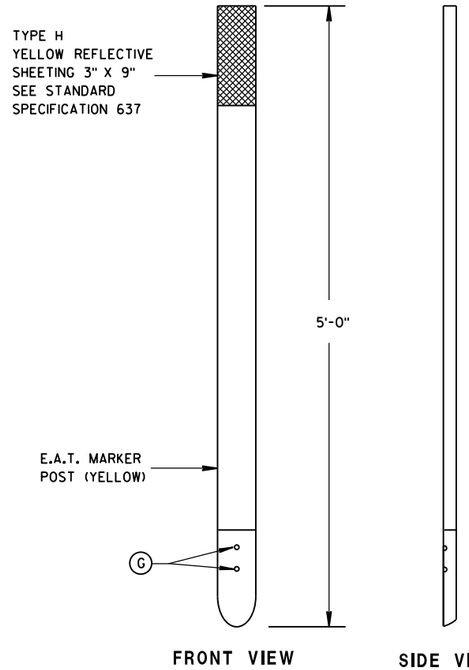


ET-2000 PLUS ONLY



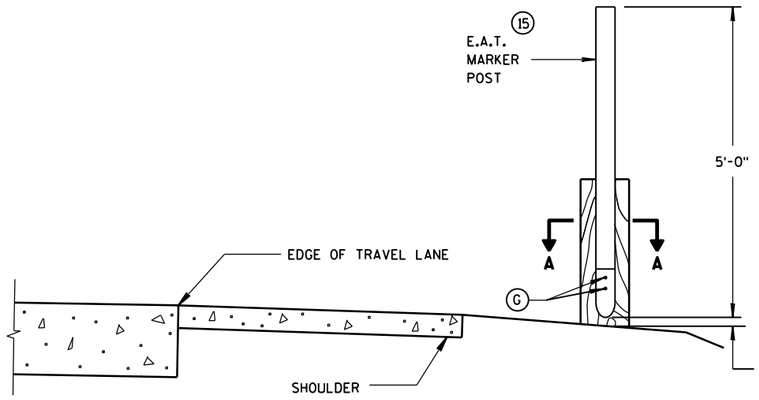
ET-2000 AND SKT-350

⑭ REFLECTIVE SHEETING DETAILS

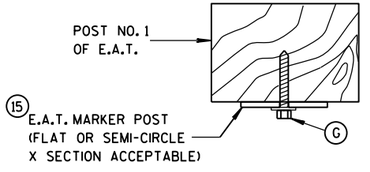


FRONT VIEW SIDE VIEW

⑮ E.A.T. MARKER POST



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



SECTION A-A

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2014 — DATE
/S/ Jerry H. Zoda — ROADWAY STANDARDS ENGINEER
FHWA

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S.D.D. 14 B 24-8c

6

S.D.D. 14 B 24-8c

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

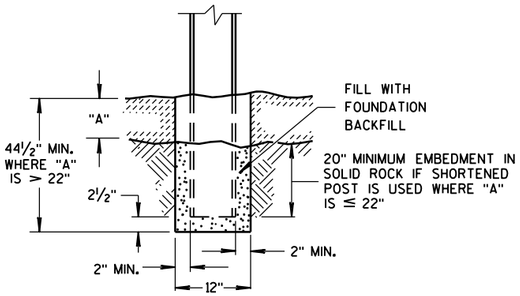
② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.

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

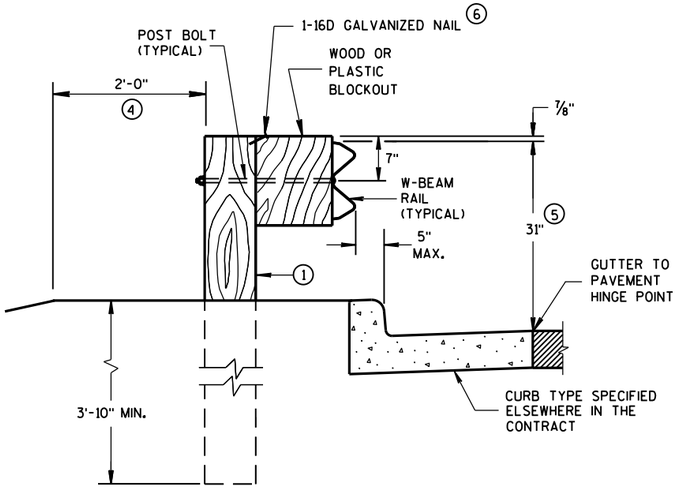
④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).

⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ± 1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27¾" TO 32".

⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



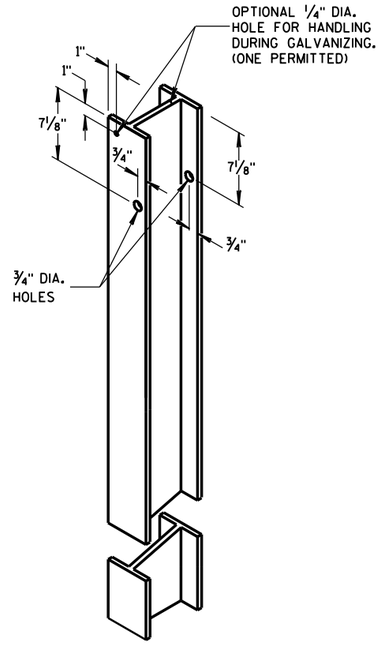
END VIEW
SETTING STEEL OR WOOD POST IN ROCK ③



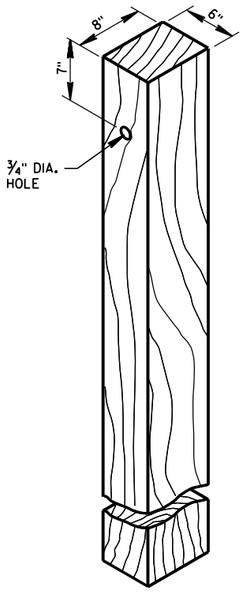
END VIEW
LOCATED ALONG A CURBED ROADWAY

END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION

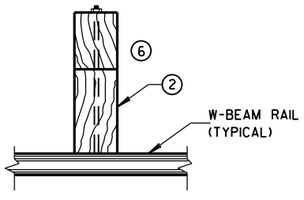
END VIEW
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



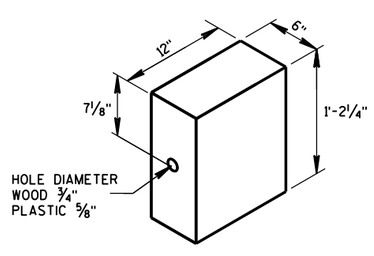
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) ①



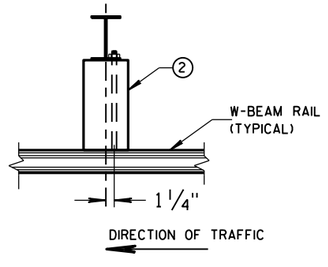
WOOD POST
(6" X 8") NOMINAL ①



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



WOOD OR
PLASTIC BLOCKOUT ②

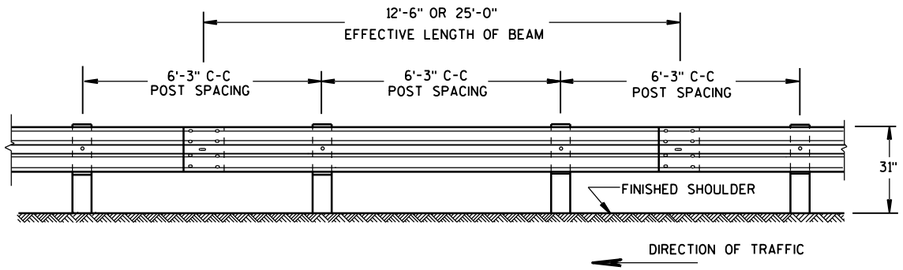


PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

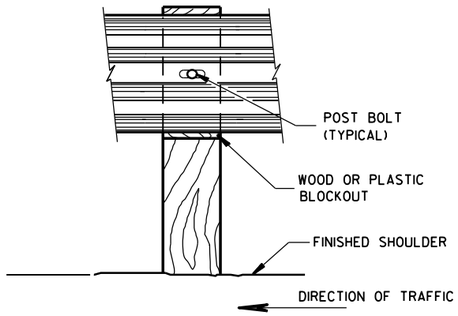
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6
S.D.D. 14 B 42-4a



FRONT VIEW

POST SPACING STANDARD INSTALLATION



FRONT VIEW AT WOOD POST

7. PROVIDE SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH YELLOW REFLECTIVE SHEETING. SHEETING IS TYPE H. SEE STANDARD SPECIFICATION 637.

8. 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.

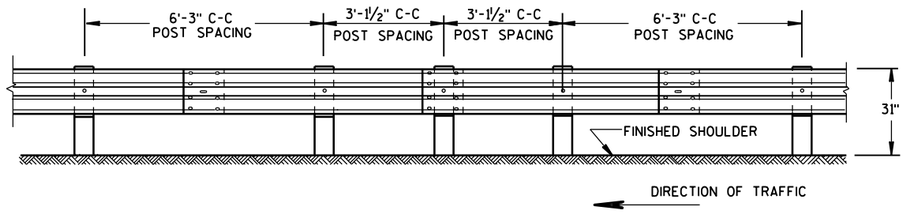
9. REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.

10. PROVIDE AN ANGLE OF BEND OF 90° ± 1° FOR TWO-SIDED REFLECTORS.

11. 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

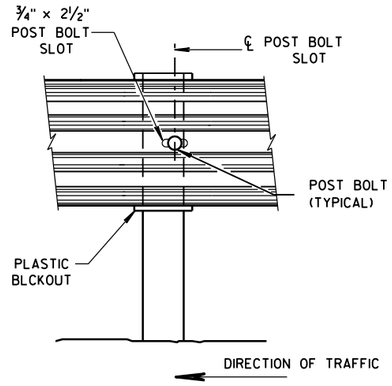
POST BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 5/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

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

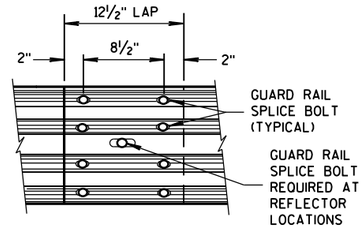


FRONT VIEW

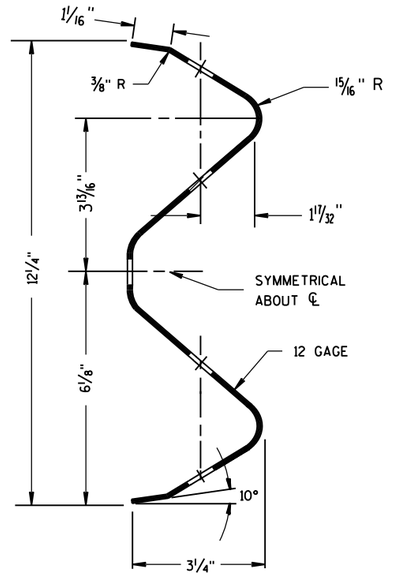
HALF POST SPACING (HS) AND HALF POST SPACING WITH LONGER POSTS (K)



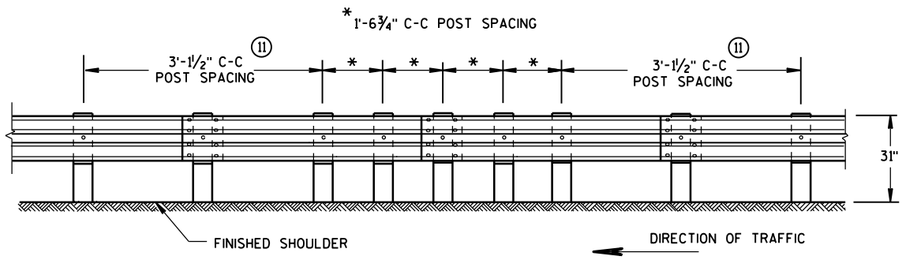
FRONT VIEW AT STEEL POST



FRONT VIEW
MID-SPAN BEAM SPLICE

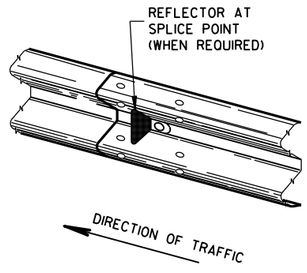


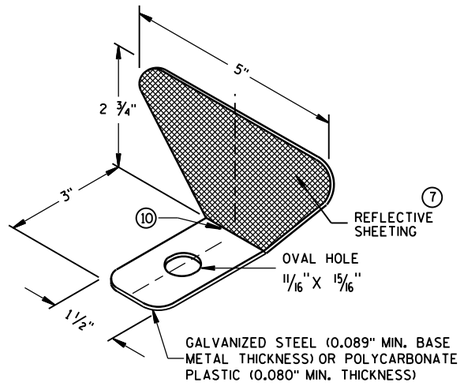
SECTION THRU W-BEAM RAIL



FRONT VIEW

QUARTER POST SPACING (QS)





ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION (7)

REFLECTOR SPACING (8)

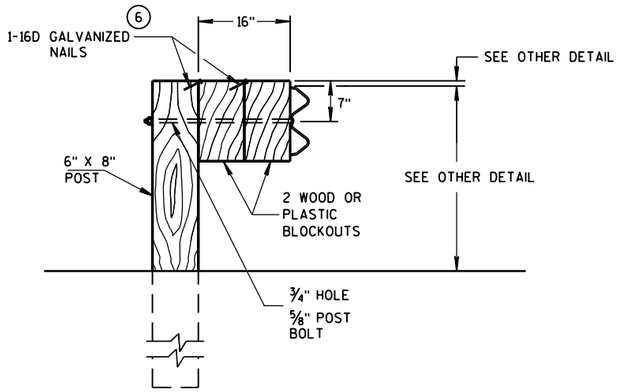
	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200'	50' C-C	1	3
	> 200'	100' C-C	1	
TWO WAY TRAFFIC	< 200'	25' C-C	1 (9)	6
	> 200'	50' C-C	1	
TWO WAY TRAFFIC	< 200'	50' C-C	2	3
	> 200'	100' C-C	2 (10)	

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

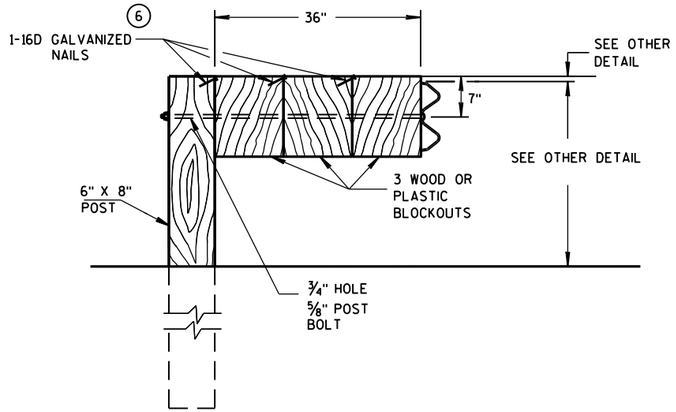
6

S.D.D. 14 B 42-4b



DETAIL FOR 16" BLOCKOUT DEPTH

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

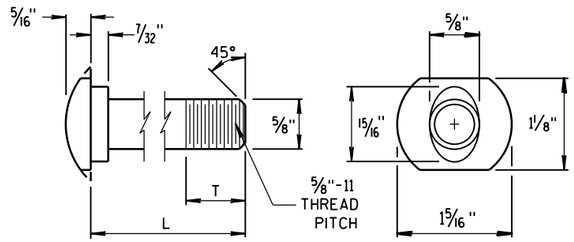


DETAIL FOR 36" BLOCKOUT DEPTH

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

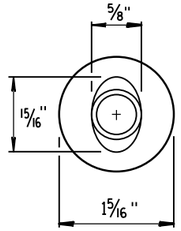
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

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

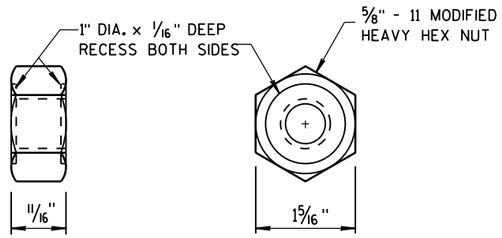


POST BOLT TABLE

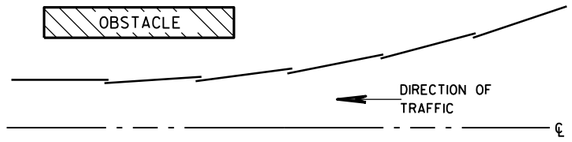
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

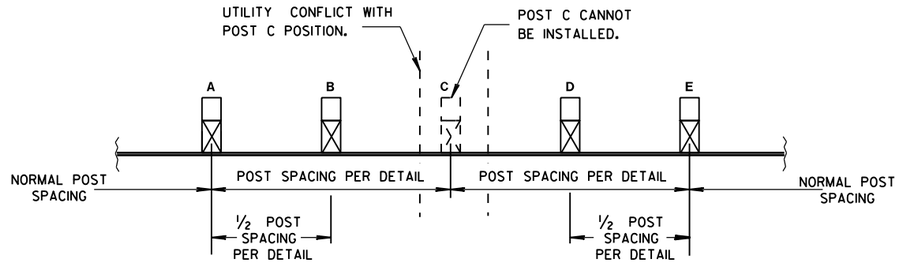


POST BOLT, SPLICE BOLT AND RECESS NUT

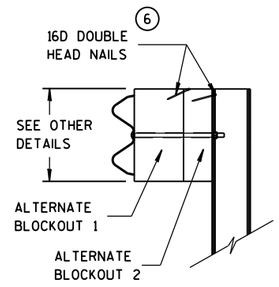


PLAN VIEW

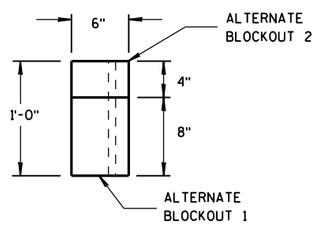
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2016 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
FHWA

6
S.D.D. 14 B 42-4c

GENERAL NOTES

(A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, 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) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS. ONE SCREW PER CORNER.

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

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

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

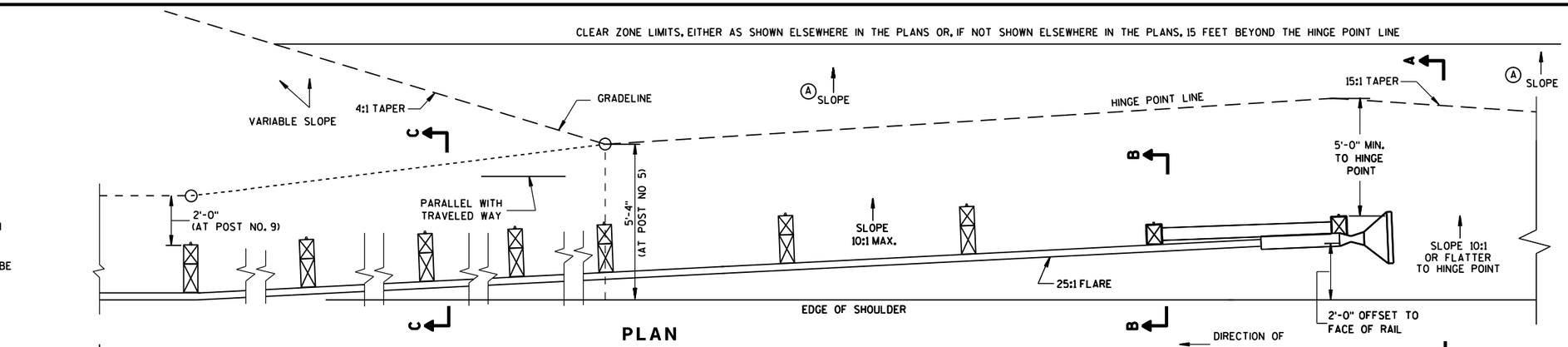
SEE SDD 14B42 FOR MORE INFORMATION.

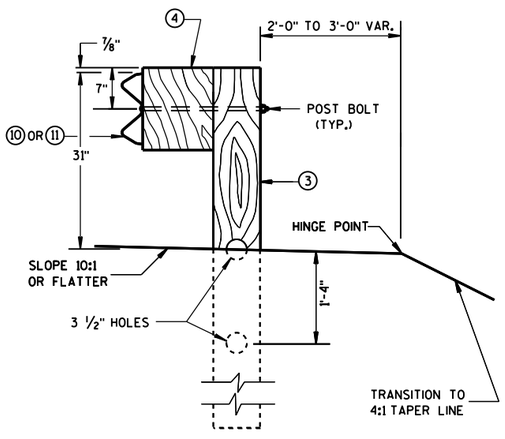
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

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

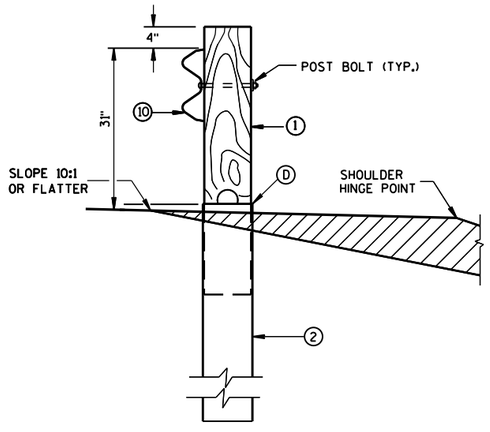
W-BEAM RAIL SPLICES ARE LOCATED AT POST NUMBER 3, AND BETWEEN POST 5 AND 6, BETWEEN POSTS 7 AND 8, AND MIDDLE OF THE SPAN AFTER POST 9.

THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE.

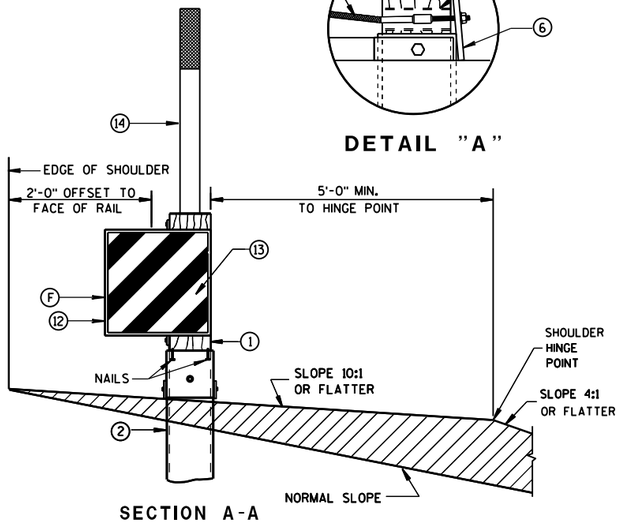




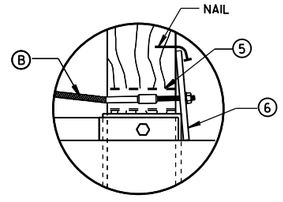
SECTION C-C
TYPICAL AT POST NOS. 3-9



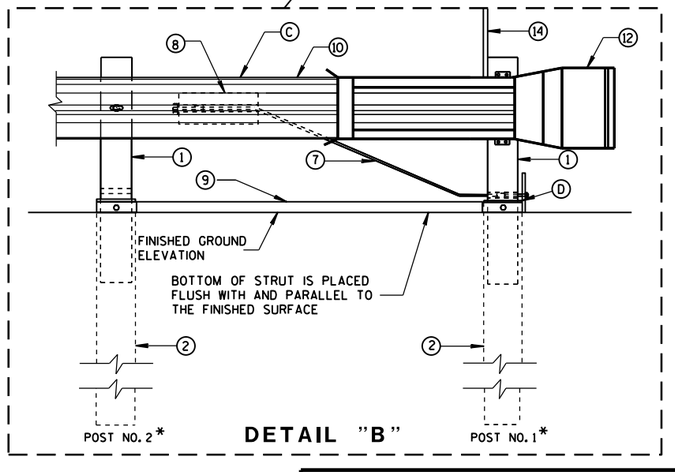
SECTION B-B
TYPICAL AT POST NO. 2*



SECTION A-A
TYPICAL AT POST NO. 1*



DETAIL "A"



DETAIL "B"

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

S.D.D. 14 B 44-2a

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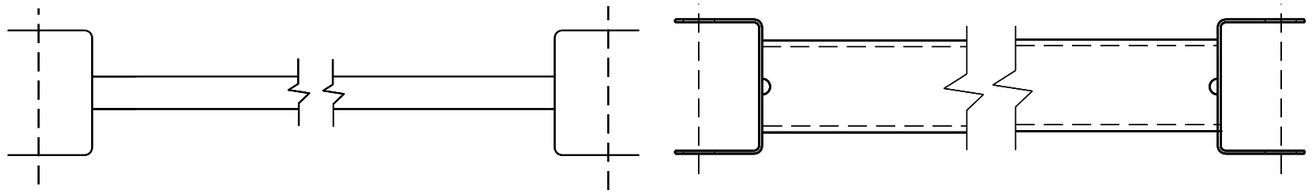
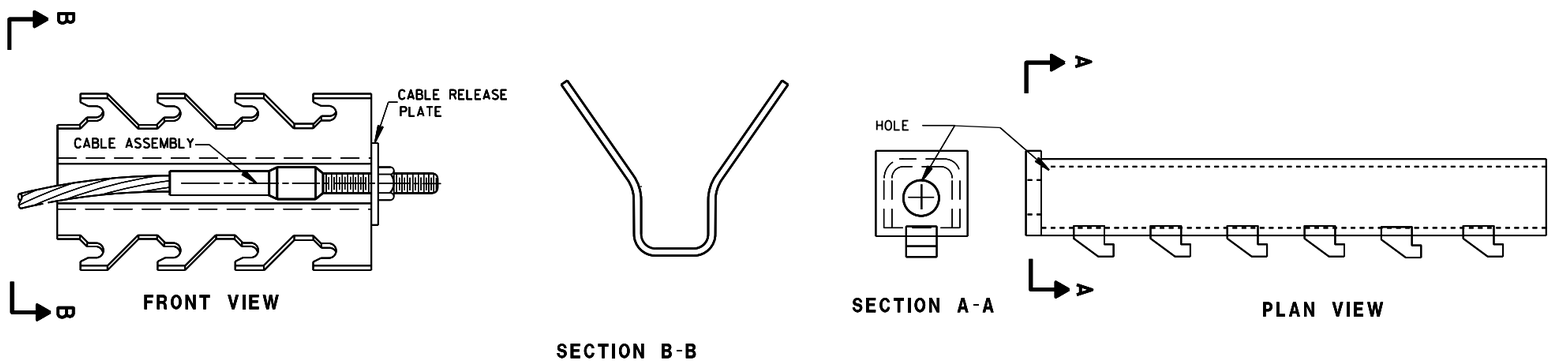


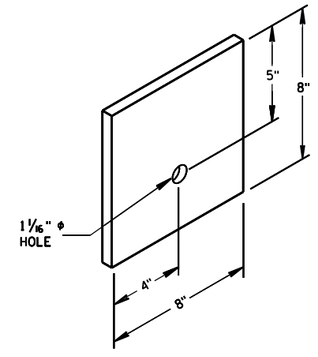
GENERIC GROUND STRUT (9) (H)

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 F PER SECTION 637 OF THE STANDARD SPECIFICATIONS
(14)	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)



GENERIC ANCHOR CABLE BOX (8) (H)



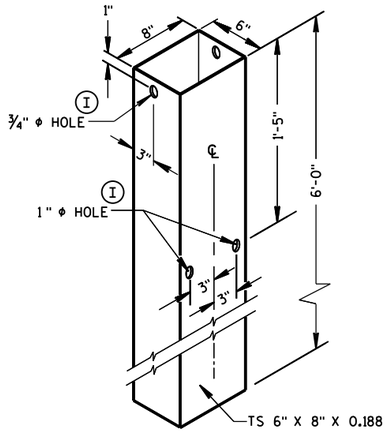
BEARING PLATE (6)

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

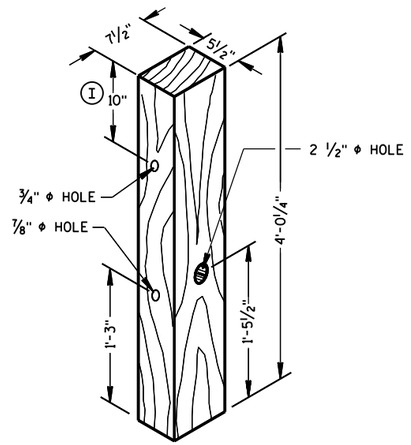
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

6

S.D.D. 14 B 44-2b

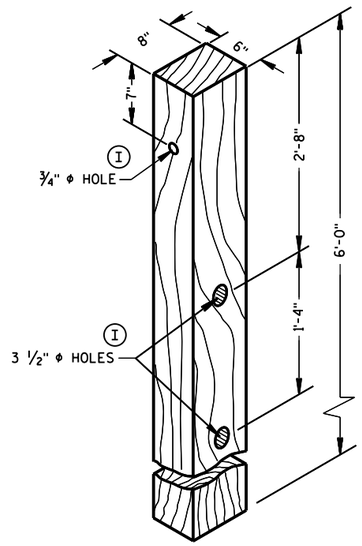


FOUNDATION TUBE (2)



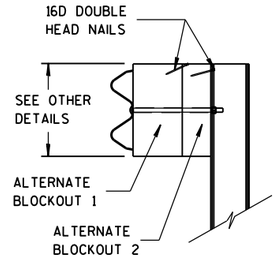
POSTS NUMBER 1 AND 2

WOOD BREAKAWAY POST (1)

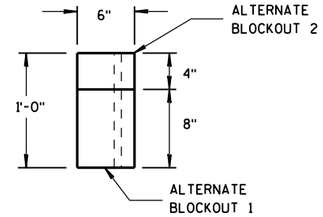


POSTS NUMBER 3-9

WOOD CRT POST (3)

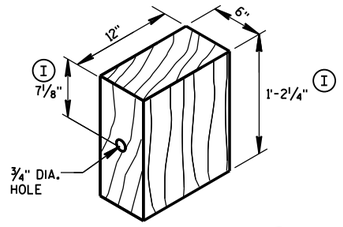


SIDE VIEW



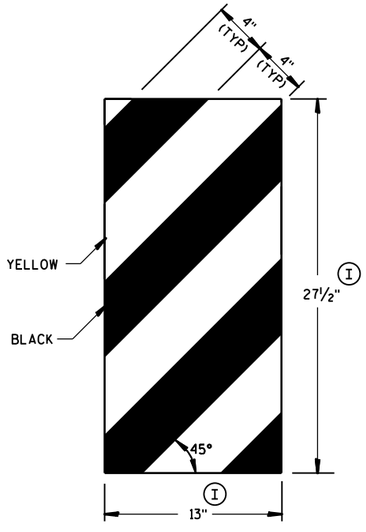
TOP VIEW

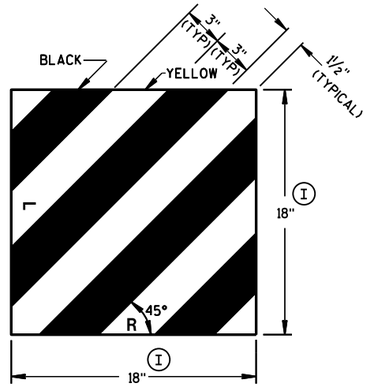
ALTERNATE WOOD BLOCKOUT DETAIL



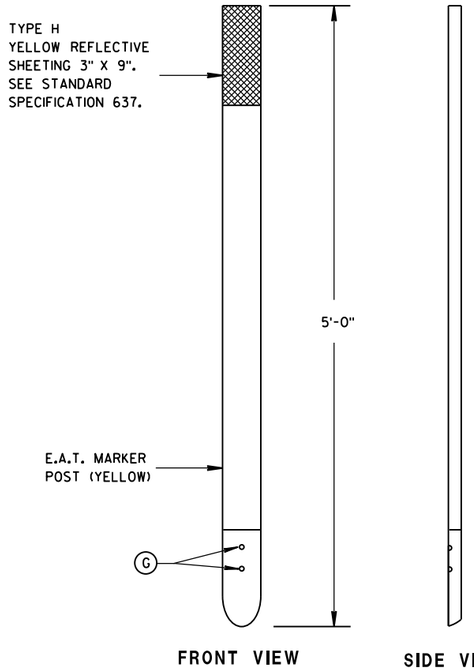
WOOD BLOCKOUT (4)

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





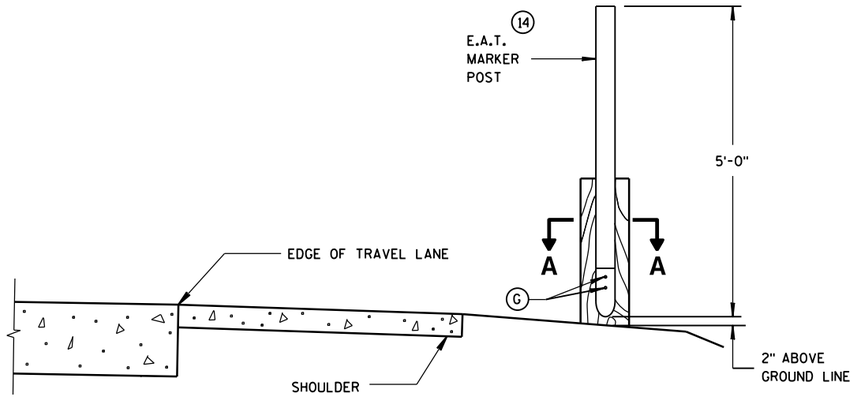
GENERIC REFLECTIVE SHEETING (13) (H)



FRONT VIEW

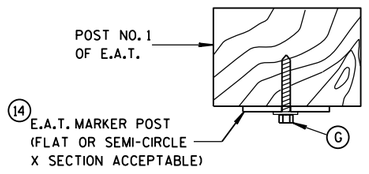
SIDE VIEW

E.A.T. MARKER POST (14)



TYPICAL INSTALLATION OF E.A.T. MARKER POST BACKSIDE OF POST NO. 1

(E.A.T. AND RAIL REMOVED FOR CLARITY)



SECTION A-A

MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

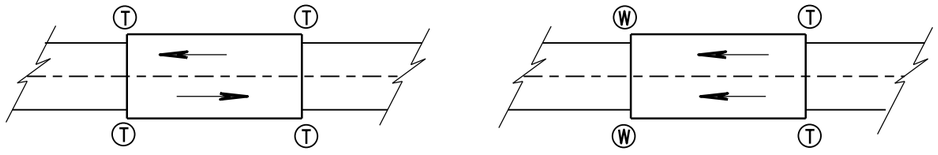
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2014
DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER

FHWA

6

S.D.D. 14 B 44-2c



TWO WAY TRAFFIC

ONE WAY TRAFFIC

Ⓣ THRIE BEAM CONNECTION

Ⓦ W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

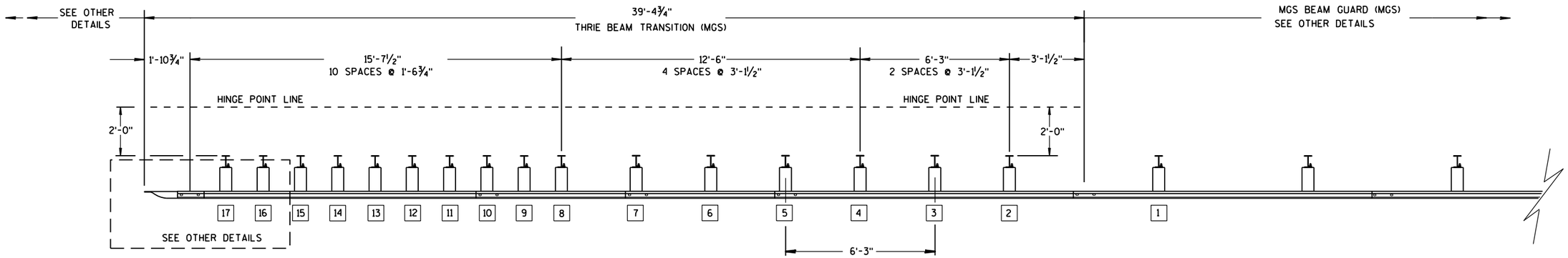
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2½", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

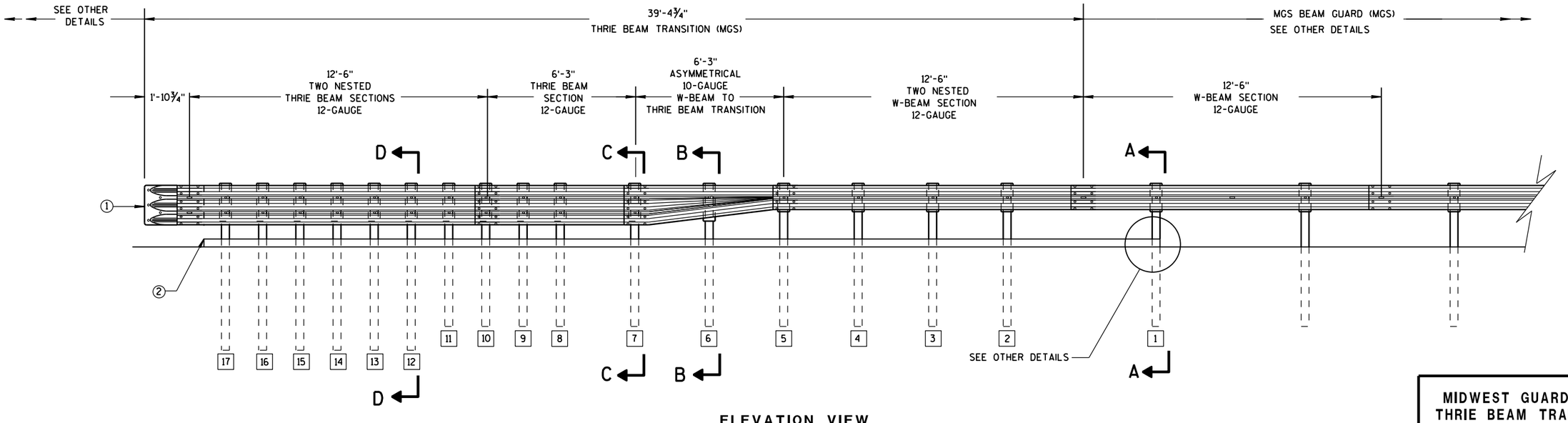
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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

② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

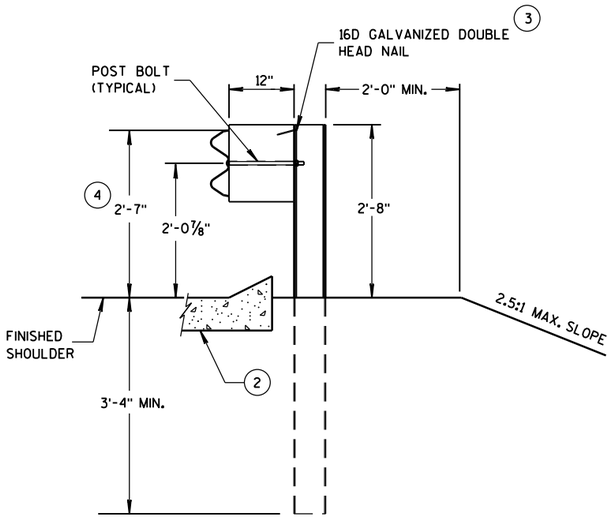
S.D.D. 14 B 45-4a

GENERAL NOTES

(2) OPTIONAL CURB AND GUTTER OR DRAINAGE_FEATURE SEE PLAN FOR INFORMATION.

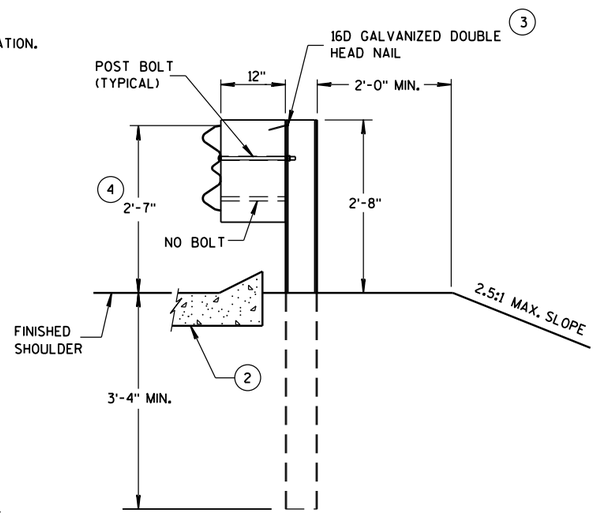
(3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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



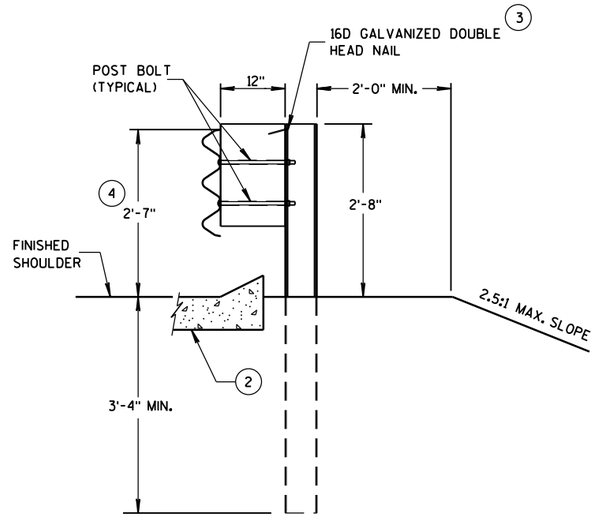
SECTION A-A

POSTS 1-5



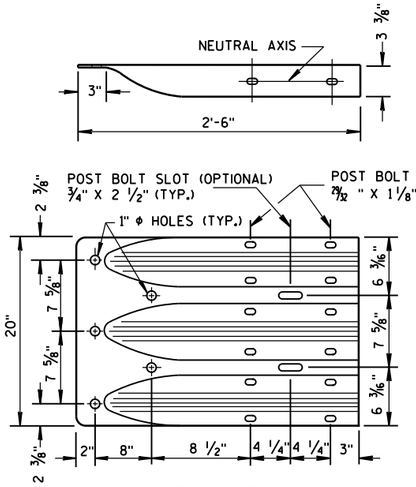
SECTION B-B

POST 6

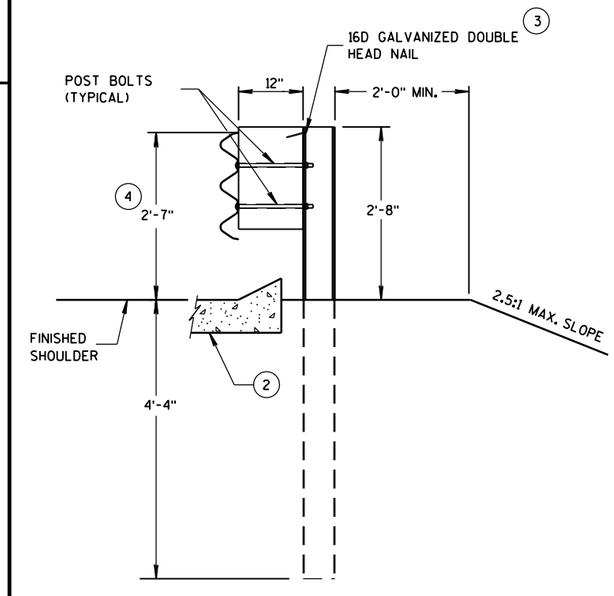


SECTION C-C

POSTS 7-11

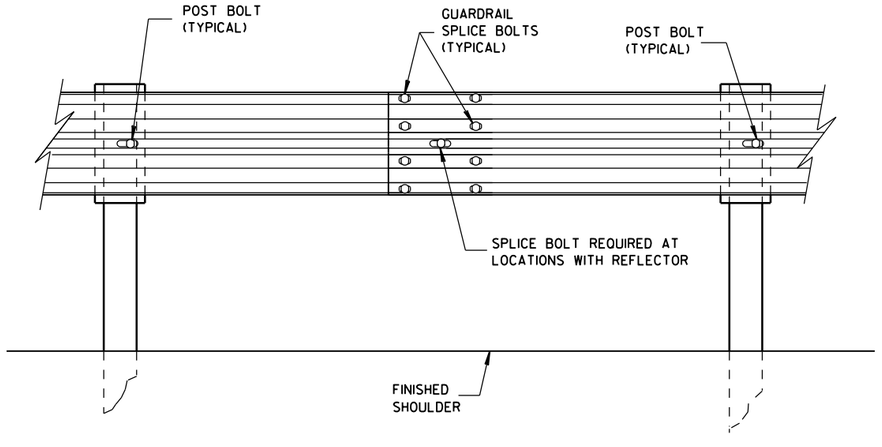


THRIE BEAM TERMINAL CONNECTOR



SECTION D-D

POSTS 12-17



SPLICE DETAIL

PLATE WASHER DETAIL

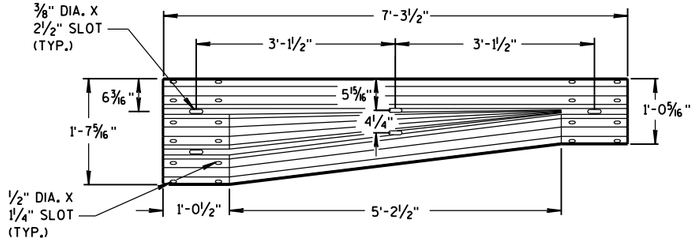
SECTION THRU THRIE BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

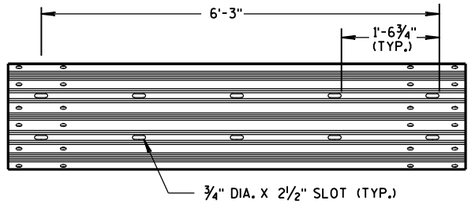
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

6

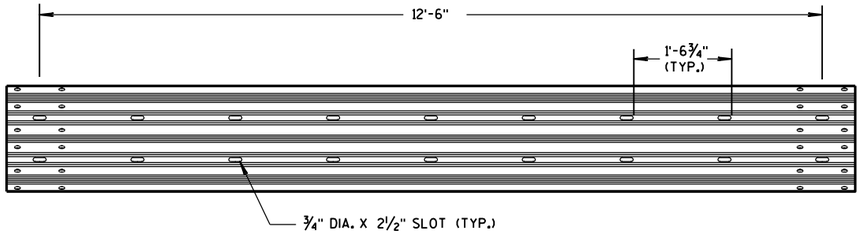
S.D.D. 14 B 45-4b



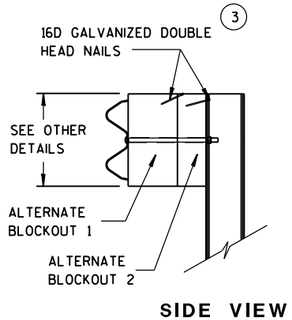
W-BEAM TO THRIE BEAM TRANSITION SECTION



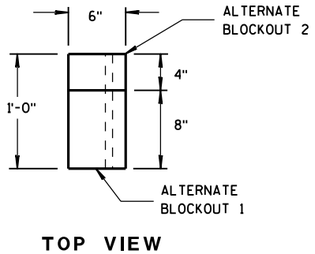
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

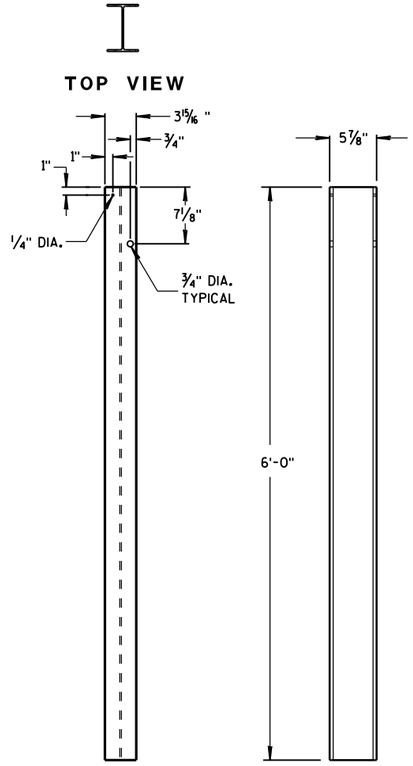


SIDE VIEW



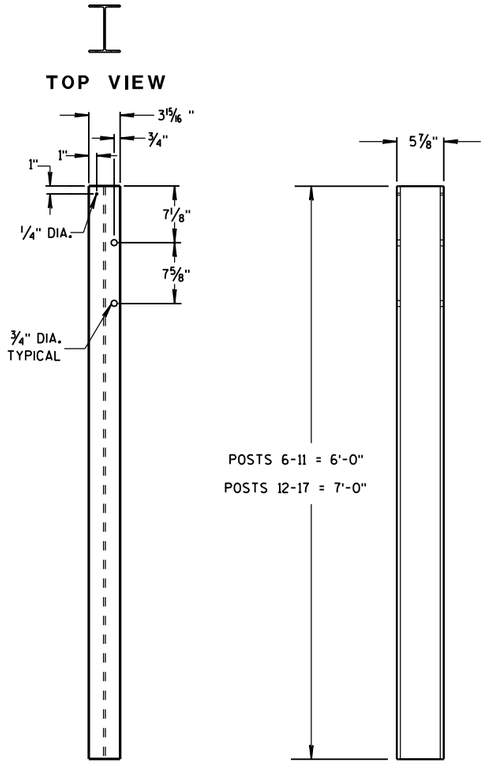
TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL



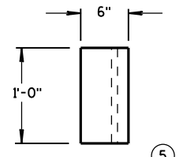
FRONT VIEW SIDE VIEW

STEEL POSTS 1-5

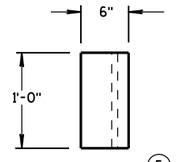


FRONT VIEW SIDE VIEW

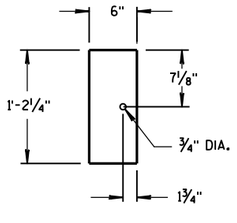
STEEL POSTS 6-17



TOP VIEW (5)

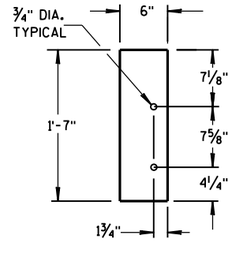


TOP VIEW (5)



FRONT VIEW

BLOCKOUT POSTS 1-5



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

BOLT HOLES FOR POST ARE ON FRONT AND OF SIDE OF POST.

(3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

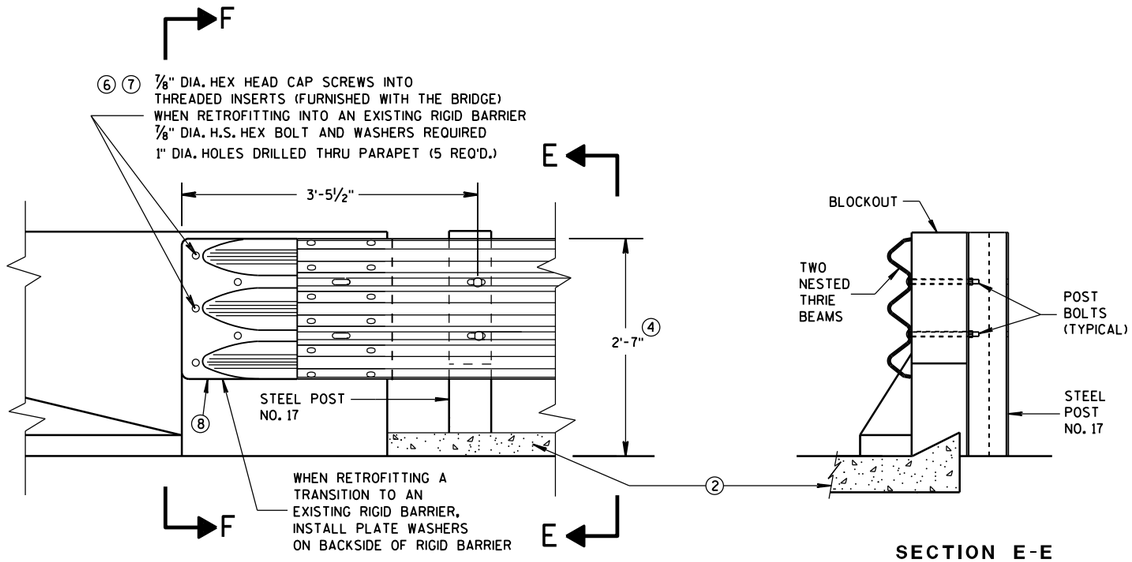
(5) WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

S.D.D. 14 B 45-4c



FRONT VIEW

SECTION E-E

THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS

GENERAL NOTES

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

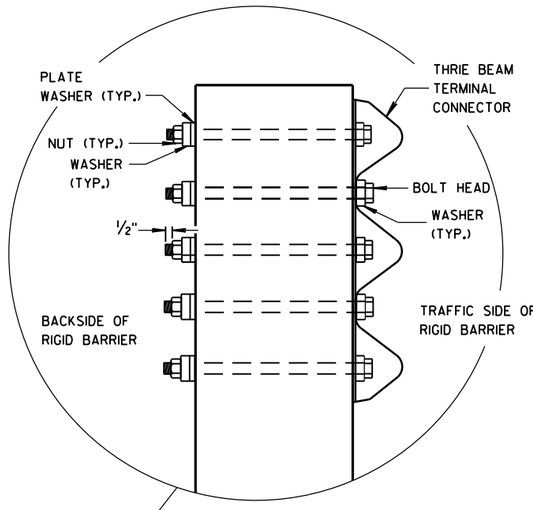
② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

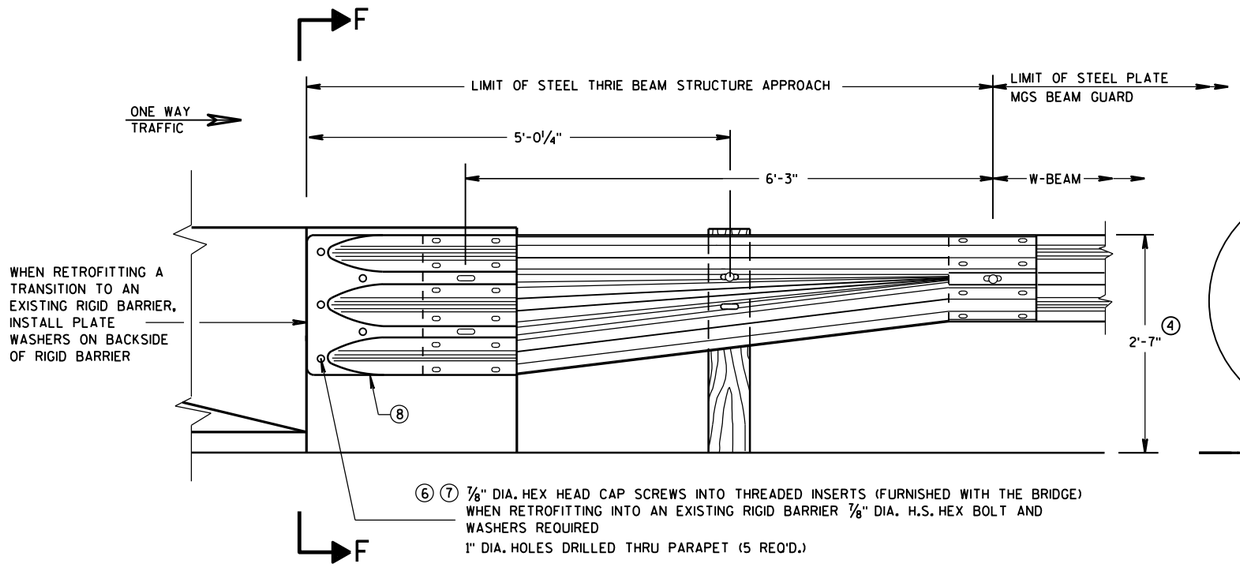
④ TOLERANCE FOR TOP OF BEAM IS ± 1".

⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

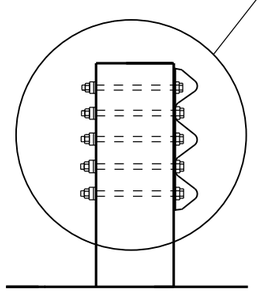
⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. 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.

⑧ 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".

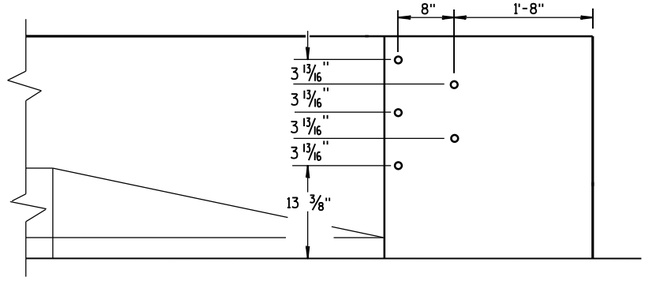




FRONT VIEW



SECTION F-F



DRILL HOLE LOCATION

W BEAM TRANSITION AND CONNECTION TO BRIDGE PARAPETS WITH SQUARE ENDS

(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

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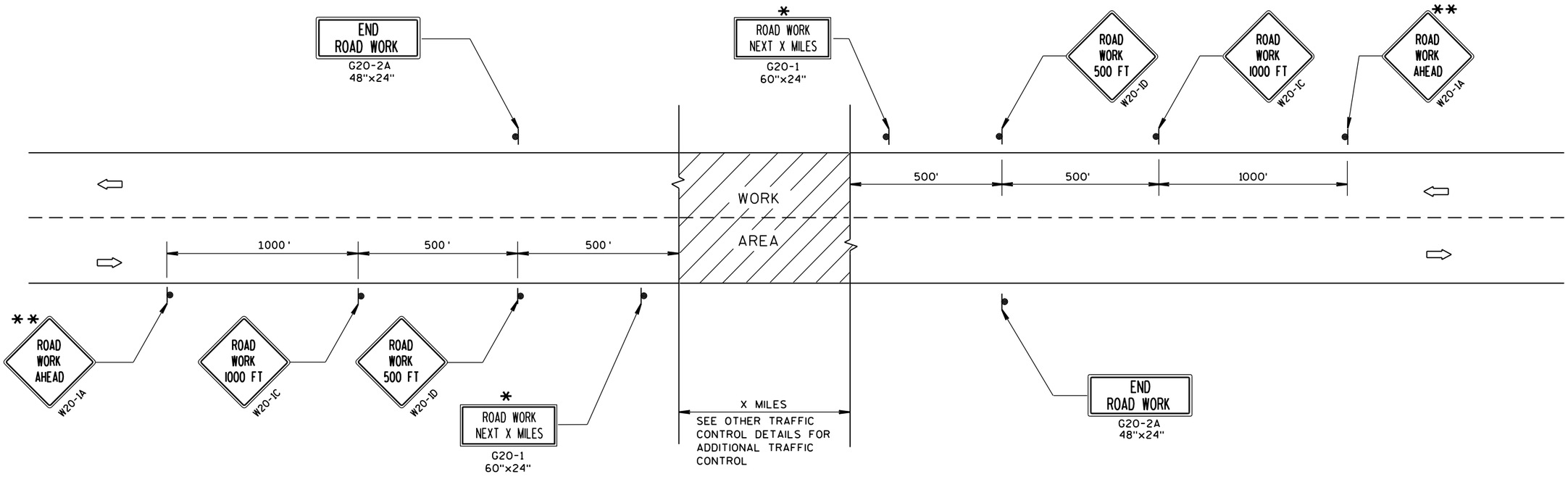
S.D.D. 14 B 45-4d



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.

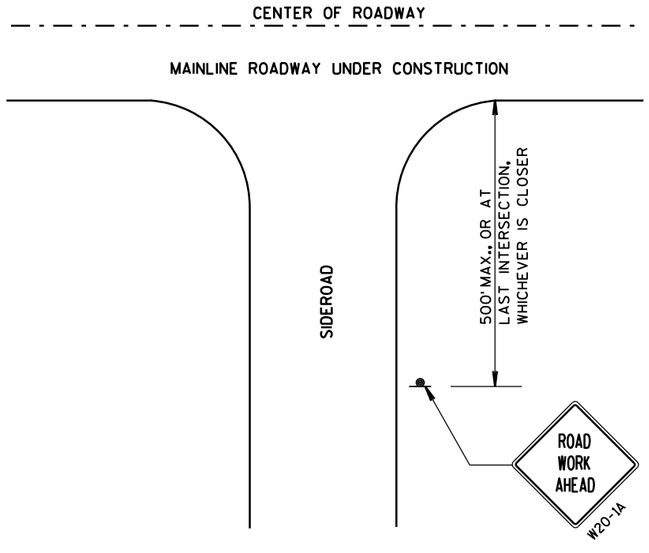
ALL SIGNS ARE 48"×48" UNLESS OTHERWISE NOTED.

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 W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.



LEGEND

- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA

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

6

S.D.D. 15 C 4-3

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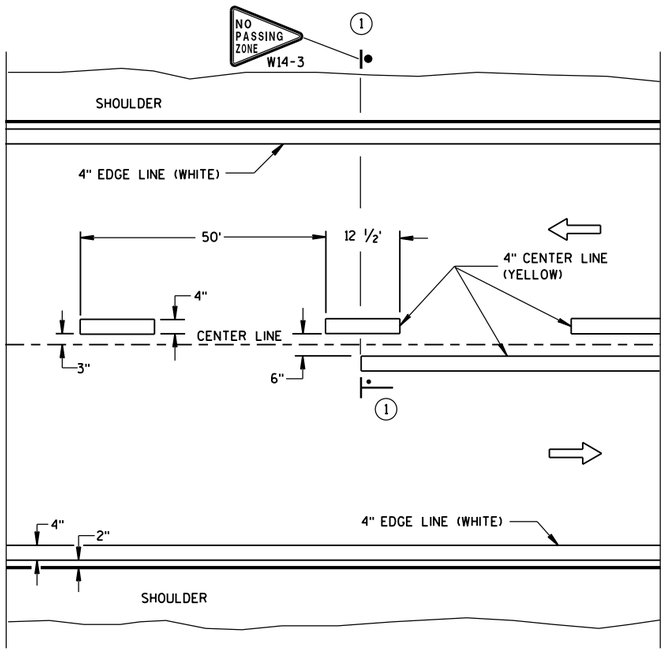
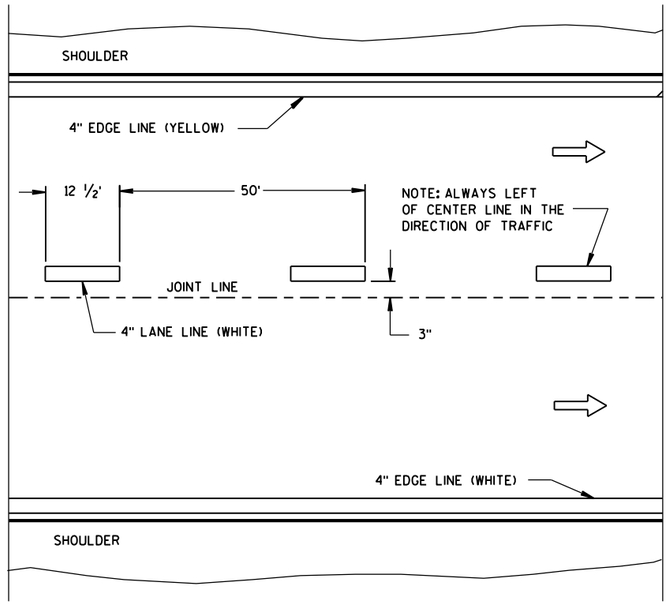
S.D.D. 15 C 4-3



TWO WAY TRAFFIC



ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING

GENERAL NOTES

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

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

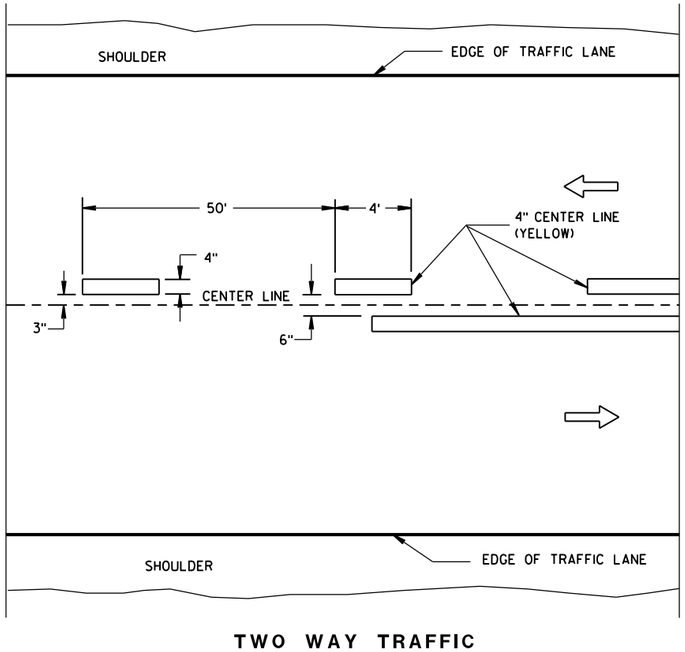
NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL

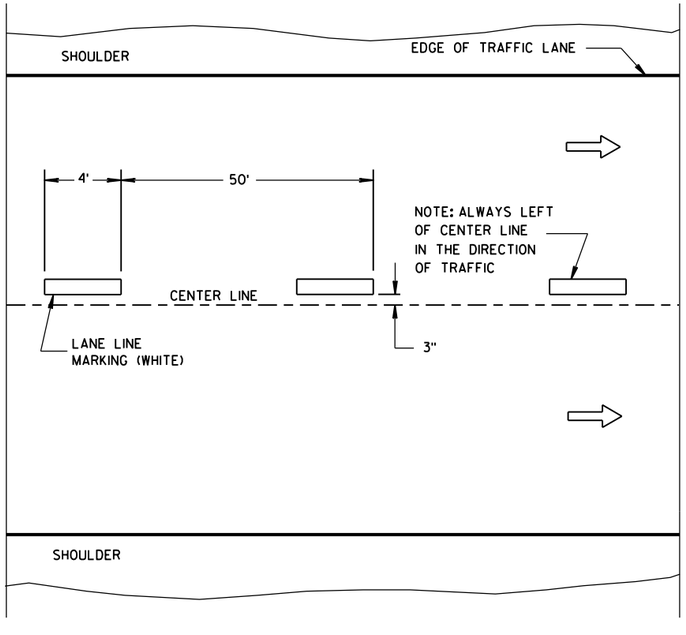
LEGEND

"T" MARKING

POST MOUNTED SIGN



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

LONGITUDINAL MARKING (MAINLINE)
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION
APPROVED Sept., 2016 /S/ Matthew R. Rauch DATE STATE SIGNING AND MAR ENGINEER FHWA

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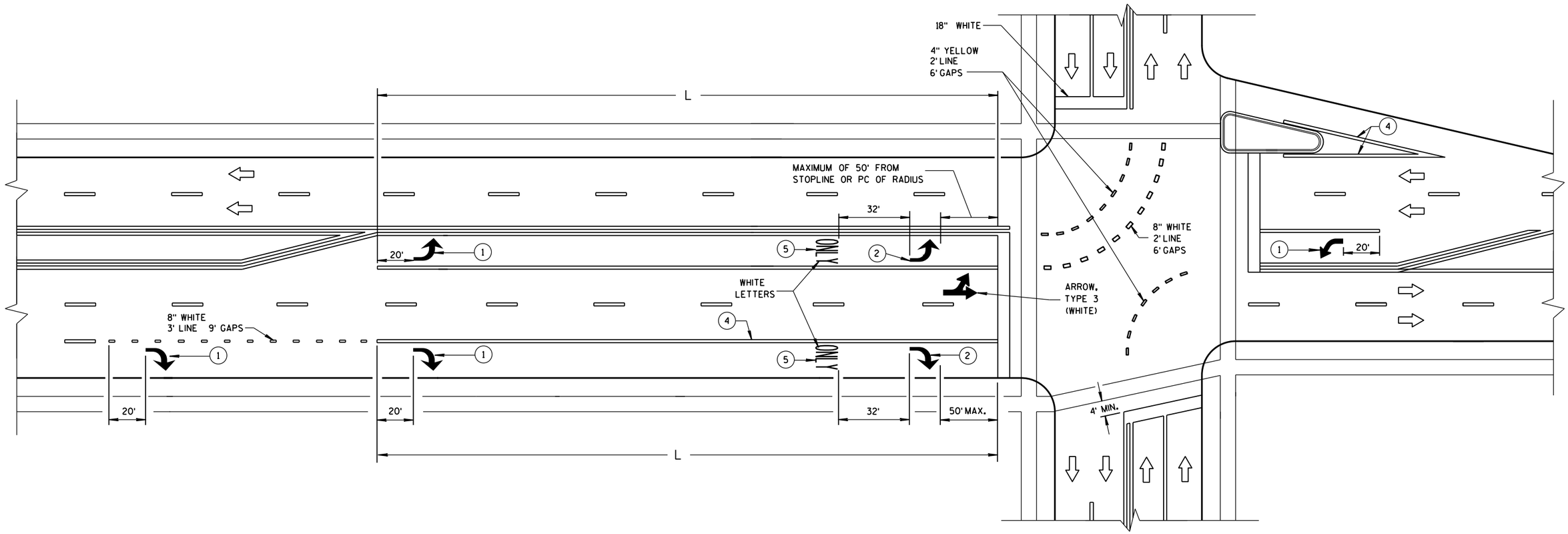
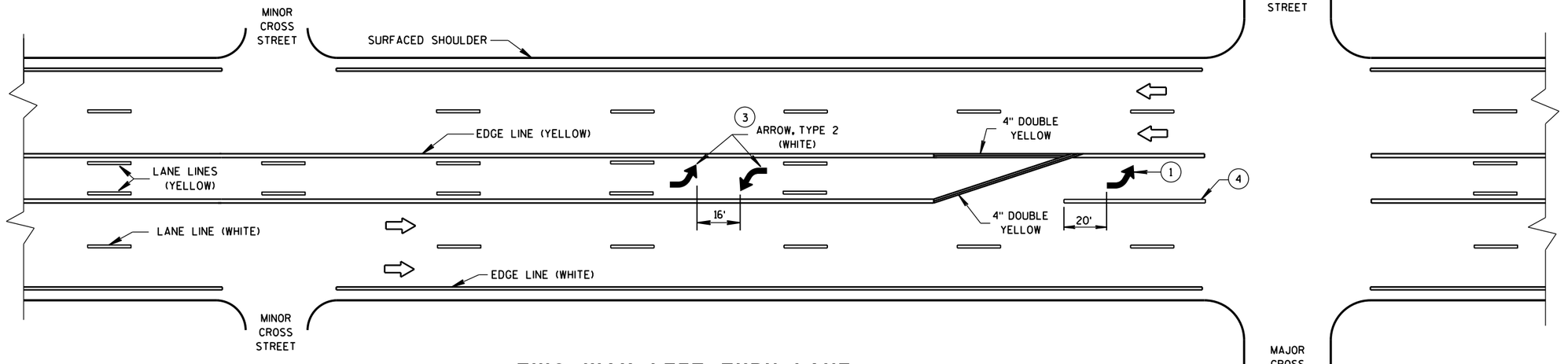
S.D.D. 15 C 8-17a





TWO WAY LEFT TURN LANE

GENERAL NOTES

(1) REQUIRED ARROW, TYPE 2 (WHITE).

(2) REQUIRED ARROW, TYPE 2 (WHITE) WHEN L IS GREATER THAN 78 FEET AND LESS THAN OR EQUAL TO 166 FEET.

(3) A SET OF ARROWS IS REQUIRED EVERY 400 FEET OR NEAR INTERSECTIONS OR DRIVEWAYS WITH TURNING TRAFFIC.

(4) 8" WHITE

(5) REQUIRED WORD ONLY WHEN L IS GREATER THAN 166 FEET.

NOTE:
ARROW SYMBOL (⇨)
SHOWS DIRECTION OF TRAVEL

L = LENGTH OF TURN BAY

PAVEMENT MARKING (TURN LANES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

S.D.D. 15 C 8-17b

LEGEND

SIGN ON PORTABLE OR PERMANENT SUPPORT

DIRECTION OF TRAFFIC

WORK AREA

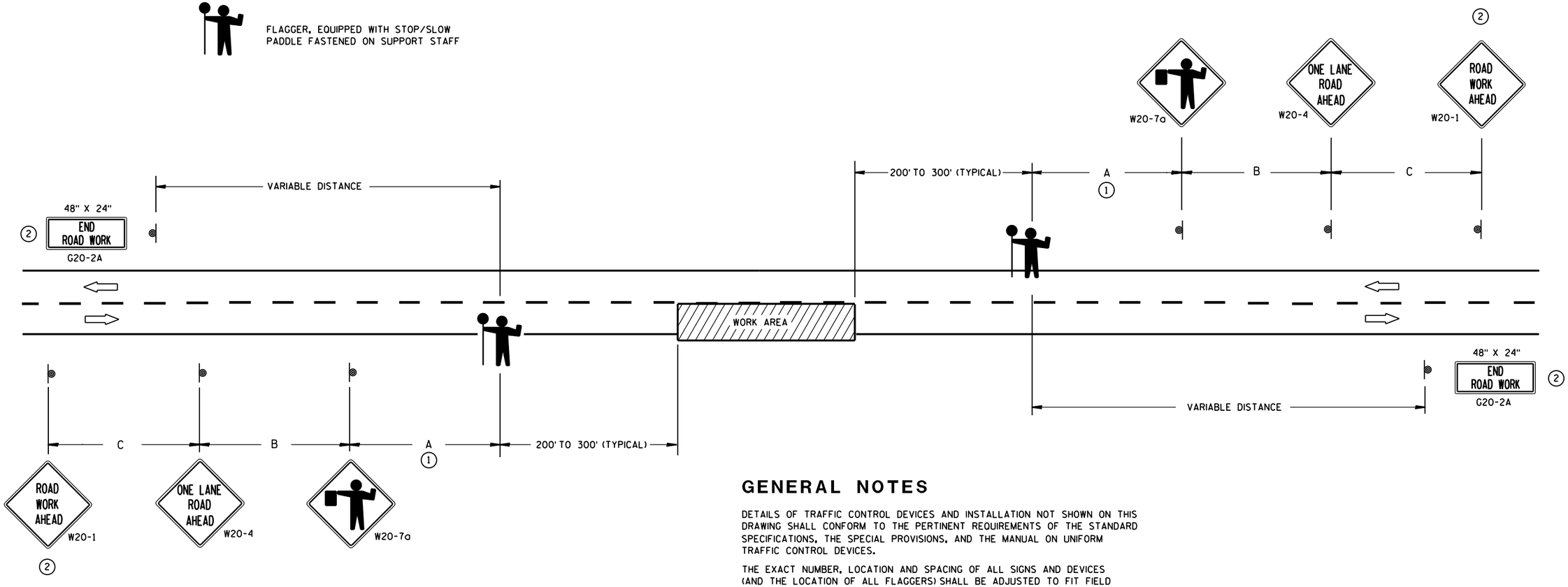
FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

SIGN SPACING TABLE

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

BE PREPARED TO STOP
W3-4

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



(1) FOR A MOVING WORK OPERATION,
SIGNING FOR BOTH DIRECTIONS SHALL BE REESTABLISHED (AS SIMULTANEOUSLY AS PRACTICAL) AT APPROXIMATELY 3500 FOOT INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.

(2) SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.

GENERAL NOTES

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

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

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

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

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

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

TRAFFIC CONTROL FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6

S.D.D. 15 C 12-4

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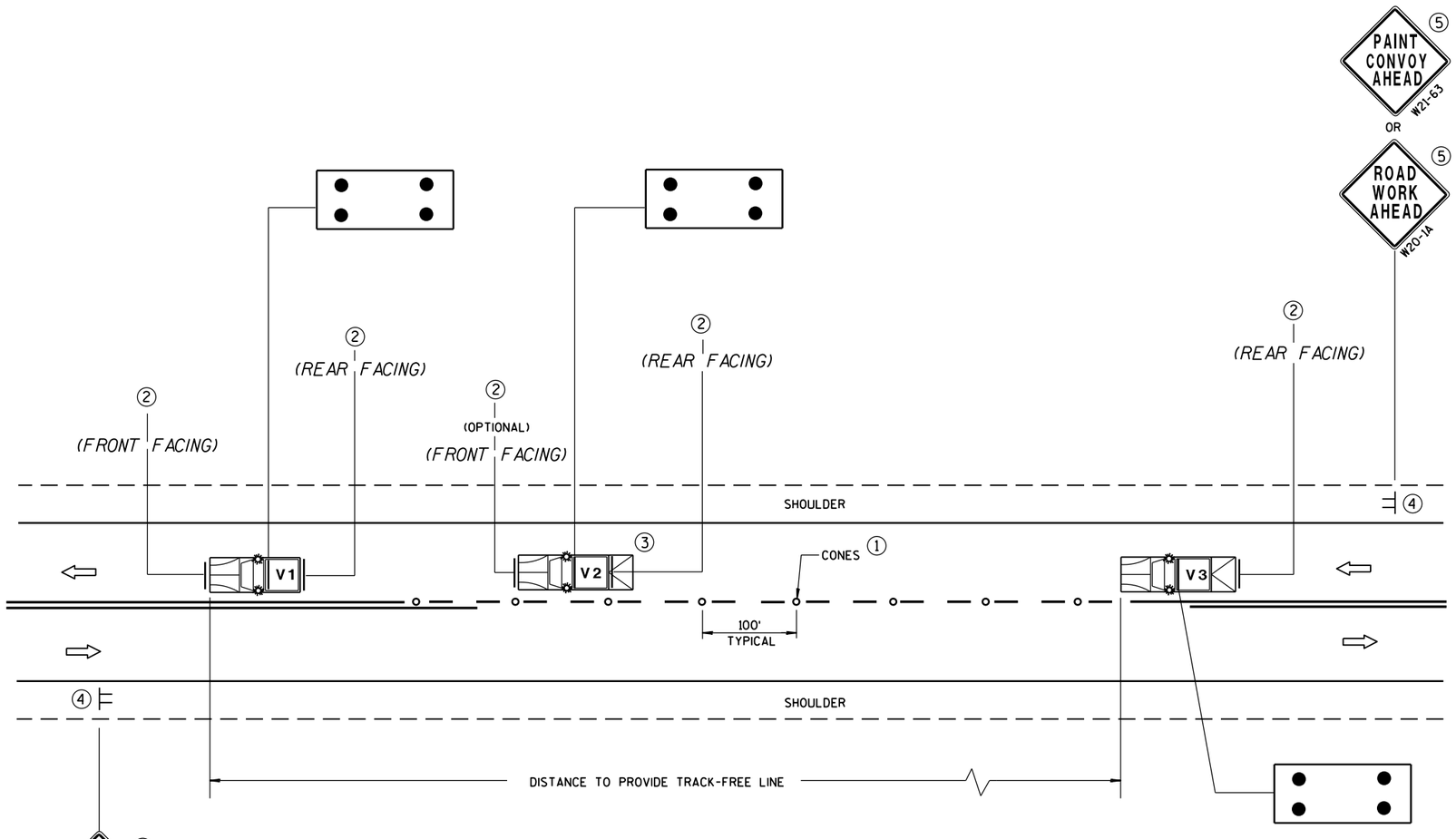
S.D.D. 15 C 12-4



MOVING PAVEMENT MARKING OPERATIONS
TWO-LANE TWO-WAY ROADWAY

GENERAL NOTES

ALL VEHICLES SHALL BE EQUIPPED WITH TWO 360 DEGREE HIGH INTENSITY YELLOW FLASHING LIGHTS OR STROBE LIGHTS AND OPERATED WITH HEADLIGHTS TURNED ON.

VEHICLES SHALL BE EQUIPPED WITH REAR FACING TYPE B OR C FLASHING ARROW PANEL OPERATING IN CAUTION MODE. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.

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

IF SPEED LIMIT IS 40 MPH OR LESS STATIONARY SIGNS MAY BE OMITTED IF CONES ARE USED.

ALTERNATE SIGN MESSAGES, SUCH AS "PAINT CREW AHEAD" OR "ROAD PAINTING AHEAD" MAY BE USED.

DISTANCE BETWEEN VEHICLES MAY VARY ACCORDING TO TERRAIN, SIGHT DISTANCE, PAINT DRYING TIME, AND OTHER FACTORS. WHENEVER ADEQUATE STOPPING SIGHT DISTANCE EXISTS TO THE REAR, SHADOW VEHICLES SHOULD MAINTAIN THE MINIMUM DISTANCE FROM THE WORK VEHICLE AND PROCEED AT THE SAME SPEED AS THE WORK VEHICLE. SHADOW VEHICLES SHOULD SLOW DOWN IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.

THE WORK AND SHADOW VEHICLES SHOULD PULL OVER PERIODICALLY TO ALLOW TRAFFIC TO PASS.

THIS DRAWING SHALL BE USED FOR CENTERLINE OR EDGELINE MARKING.

WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR TURN THE STATIONARY WARNING SIGNS AWAY FROM TRAFFIC.

(1) CONES MAY BE OMITTED ON PAINTED LINE IF APPROVED BY THE ENGINEER. CONSIDER PAVEMENT MARKING DRY OR CURE TIMES AND TRAFFIC VOLUME.

(2) USE STANDARD SIGN W21-64 WITH APPROPRIATE ARROW.

WET PAINT W21-64 OR WET PAINT W21-64

(3) OPTIONAL TRUCK-MOUNTED ATTENUATOR.

(4) SIGNS SHALL BE REPEATED APPROXIMATELY EVERY THREE MILES.

(5) IF CONSTRUCTION WORK ZONE SIGNS ARE IN PLACE, W20-1 OR W21-63 ARE NOT REQUIRED.

LEGEND

V1	LEAD VEHICLE
V2	SHADOW VEHICLE
V3	TRAIL VEHICLE WITH TMA
TMA	TRUCK-MOUNTED ATTENUATOR
	SIGN ON TEMPORARY SUPPORT
	DIRECTION OF TRAFFIC
	CONES
	FLASHING ARROW PANEL (CAUTION)

MOVING PAVEMENT MARKING OPERATION
TWO-LANE TWO-WAY ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2016 — DATE
/S/ Peter Amakobe Atepe — STATEWIDE WORK ZON SAFETY ENGINE
FHWA

6

S.D.D. 15 C 19-4a

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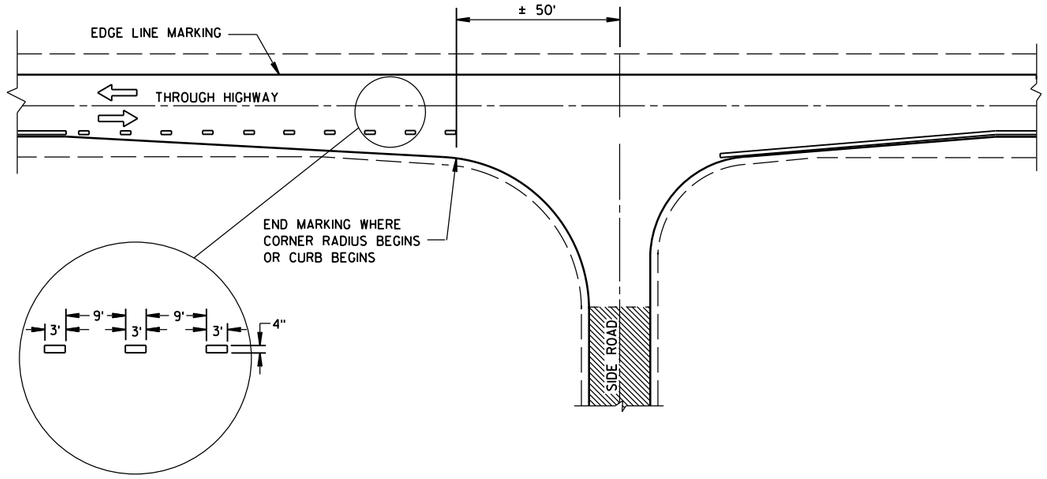
S.D.D. 15 C 19-4a



MINOR INTERSECTION WITHOUT CURBS

GENERAL NOTES

EDGE LINES SHALL BE OMITTED THROUGH INTERSECTIONS. EDGE LINES SHALL BE CONTINUED THROUGH DRIVEWAYS.

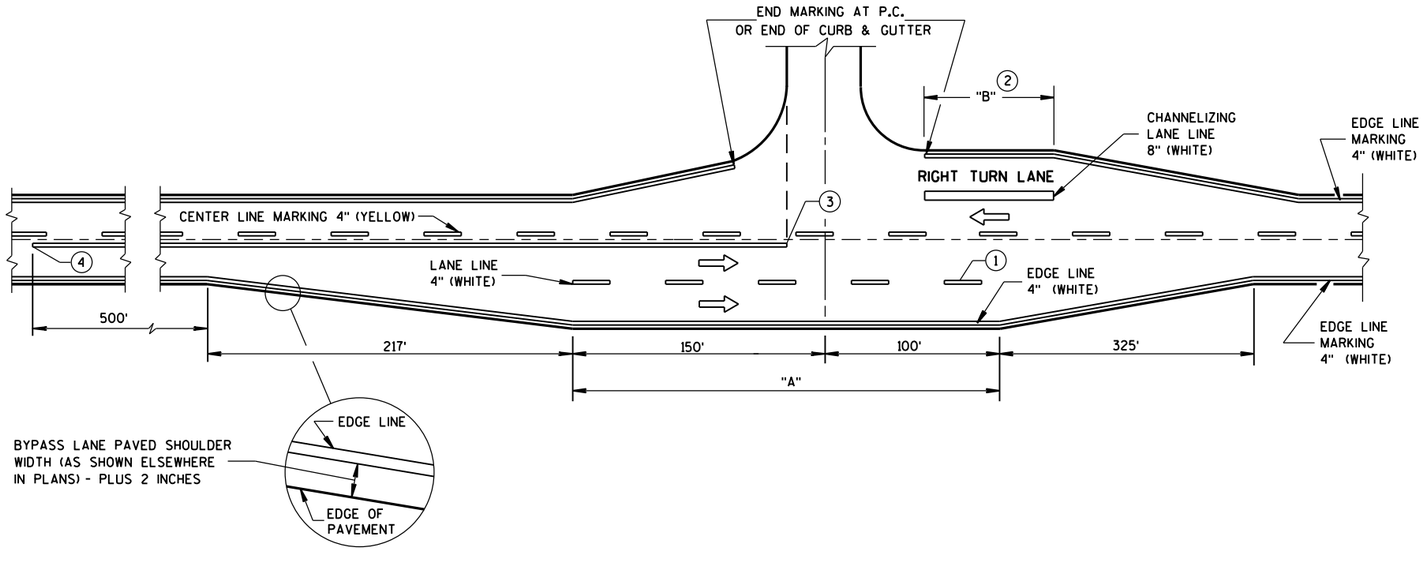
(1) WHEN DISTANCE "A" IS LESS THAN 250 FEET, OMIT LANE LINE.

(2) WHEN DISTANCE "B" IS LESS THAN 100 FEET, OMIT CHANNELIZING LANE LINE.

(3) BARRIER LINE ENDS AT SIDE ROAD PAVEMENT/SURFACE EDGE EXTENSION.

(4) BARRIER LINE STARTS 500 FEET PRIOR TO THE BYPASS TAPER.

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL



MAJOR INTERSECTIONS

(INTERSECTION WITH FULL RIGHT TURN LANE OR BYPASS LANES)

PAVEMENT MARKING
(INTERSECTIONS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

S.D.D. 15 C 35-1a

GENERAL NOTES

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

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" SIGNS MAY BE USED IF APPROVED BY DISTRICT TRAFFIC UNIT.

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

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

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.

W20-1A AND G20-2A SIGNS ARE NOT REQUIRED IF THE WORK AREA IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT. G20-2A SIGNS MAY ALSO BE OMITTED IF DURATION OF WORK IS LESS THAN 7 CONTINUOUS DAYS AND NIGHTS.

CHANNELIZING DEVICES PLACED ADJACENT TO THE WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

TABLE A

S \ W	SHOULDER TAPER LENGTH (FEET) 4	6	8	10	BUFFER SPACE (FEET)
30	20	30	40	50	200
35	30	45	55	70	250
40	40	55	75	90	305
45	60	90	120	150	360
50	70	100	135	170	425
55	75	110	150	185	495

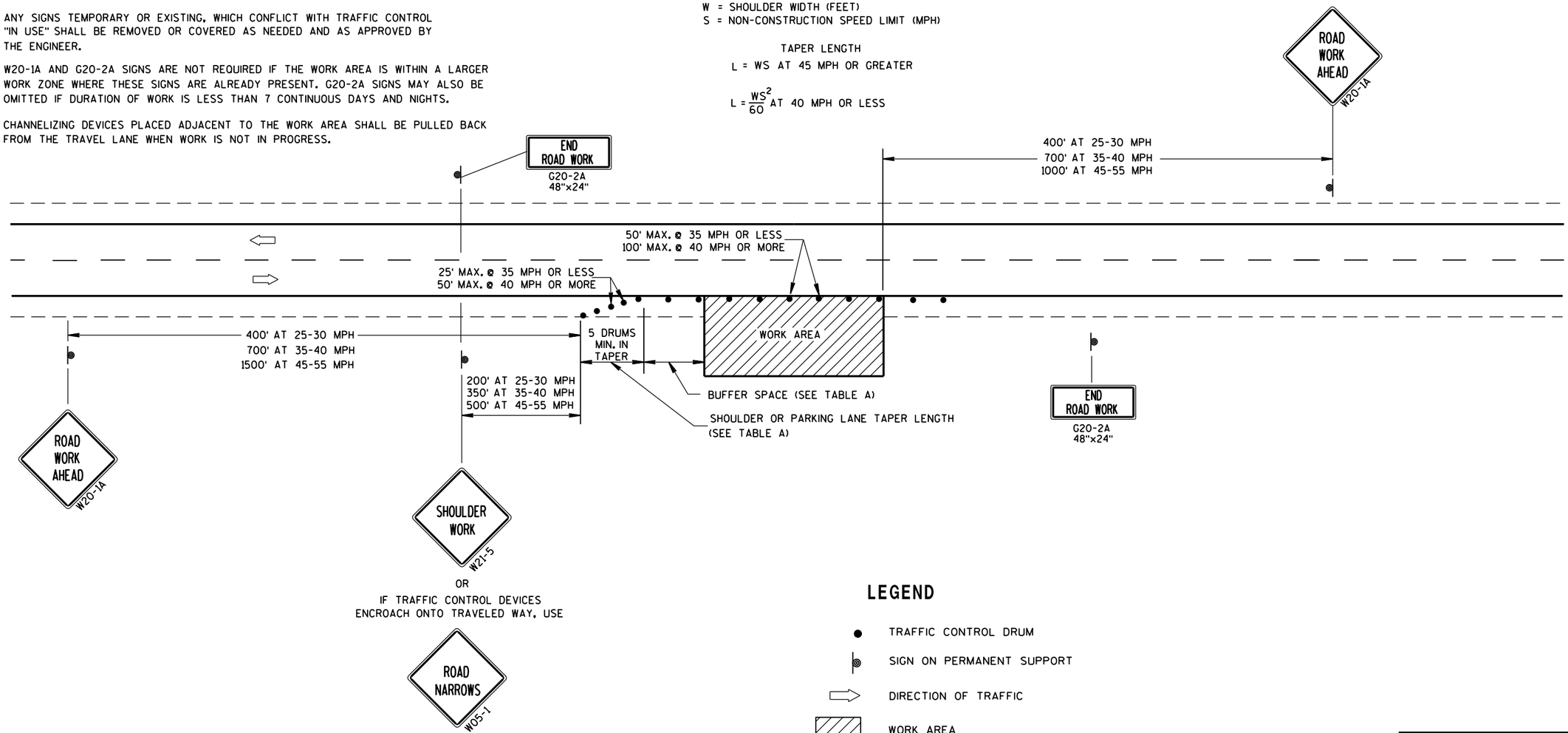
W = SHOULDER WIDTH (FEET)
S = NON-CONSTRUCTION SPEED LIMIT (MPH)

TAPER LENGTH

L = WS AT 45 MPH OR GREATER

$L = \frac{WS^2}{60}$ AT 40 MPH OR LESS

SHOULDER TAPER LENGTH = $\frac{1}{3}L$



LEGEND

- TRAFFIC CONTROL DRUM
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA

TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

July 14, 2015 — DATE

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

FHWA

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S.D.D. 15 D 28-3

Notes

Wisconsin Department of Transportation

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through innovation and exceptional service.

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