GRE JULY 2021

PROJECT ID: 6187-05-71

WITH: N/A

COUNTY: FOND DU LAC

ORDER OF SHEETS

TOTAL SHEETS = 66

DESIGN DESIGNATION

A.A.D.T.	2021	=	160
A.A.D.T.	2041	=	180
D.H.V.		=	25
D.D.		=	60/40
T.		=	10
DESIGN SPEED		=	55
ESALS		=	40,000 (HMA)

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 (300'EB')
- 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

T ALTO, OAK GROVE ROAD

SOUTH BRANCH ROCK RIVER BRIDGE

LOCAL STREET

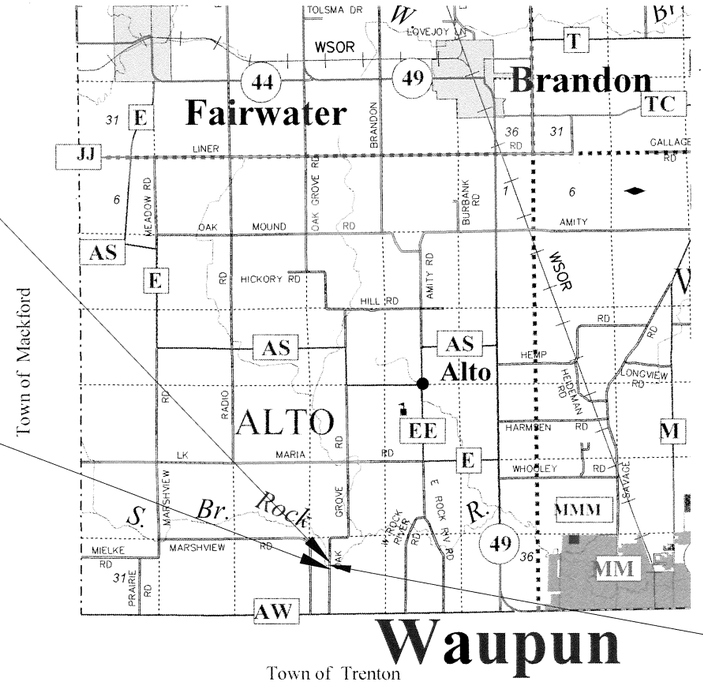
FOND DU LAC COUNTY

STATE PROJECT NUMBER
6187-05-71

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
6187-05-71		

END PROJECT
STATION 10+65.25
Y = 336564.502
X = 718196.567

BEGIN PROJECT
STATION 9+32.75
Y = 336432.030
X = 718193.852



STRUCTURE B-20-0243
STA 9+99.00

LAYOUT

SCALE 0 2 MI

TOTAL NET LENGTH OF CENTERLINE = 0.025 MI

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), FOND DU LAC COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. POSITIONS SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES ARE THE SAME AS GROUND DISTANCES. ELEVATIONS ARE REFERENCED TO NAVD 88 (2012). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 12A.

ACCEPTED FOR

TOWN OF ALTO

Date 11/21/21 Brian Tenpas

BRIAN TENPAS
TOWN CHAIRPERSON

ORIGINAL PLANS PREPARED BY

GREMMER & ASSOCIATES, INC.
CONSULTING ENGINEERS
Stevens Point • Fond du Lac
85 South Pioneer Road, Suite 300 • Fond du Lac, WI 54935
(920) 924-5720 • fax (920) 924-5725

WISCONSIN
ANDREW L. KLEMP
E-33645
FOND DU LAC, WI
PROFESSIONAL ENGINEER

DATE: 1/20/2021 Andrew L. Klemp

ANDREW L. KLEMP, PE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	GREMMER & ASSOCIATES, INC.
Designer	GREMMER & ASSOCIATES, INC.
Project Manager	BRIAN EDWARDS
Regional Examiner	NORTHEAST REGION
Regional Supervisor	JAMES THOMPSON

APPROVED FOR THE DEPARTMENT

DATE: 1/25/21 Brian A. Edwards

(Signature)

E

GENERAL NOTES

ALL DISTANCES AND STATIONING SHOWN ON THIS PLAN ARE GROUND VALUES.

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

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

A VERTICAL SAW CUT SHALL BE MADE THROUGH EXISTING DRIVEWAYS, SIDEWALKS AND PAVEMENTS AT THE REMOVAL LIMITS, AND WHERE NEW ASPHALT ABUTS EXISTING PAVEMENT TO CREATE A SMOOTH CONTINUOUS VERTICAL FACE. SAWCUT SLURRY SHALL BE ACTIVELY MANAGED TO PREVENT RELEASE OF SLURRY INTO WATERWAY AND WETLANDS.

SAWCUT LOCATIONS SHOWN ON THE PLANS ARE SUBJECT TO ADJUSTMENT BY THE ENGINEER IN THE FIELD.

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

TOPSOIL, SEED AND EROSION MAT AS SHOWN IN PLANS OR AS DIRECTED BY THE ENGINEER SHALL BE PLACED ON ALL DISTURBED AREAS, EXCLUSIVE OF THE AREA OCCUPIED BY THE NEW PAVEMENTS, SIDEWALKS, ENTRANCES, AND RELATED STRUCTURES.

NO FERTILIZER SHALL BE APPLIED WITHIN 20 FEET OF A BODY OF WATER OR WETLAND.

SECTIONS AS SHOWN ON THE CROSS-SECTIONS INCLUDE THE THICKNESS OF TOPSOIL WHERE REQUIRED.

EROSION CONTROL ITEMS SHOWN ARE APPROXIMATE, THE EXACT LOCATION SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD. EROSION CONTROL ITEMS TO BE INSTALLED PRIOR TO UPSLOPE WORK. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL SUCH TIME AS THE ENGINEER DETERMINES THAT THE MEASURE IS NO LONGER NECESSARY. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING EROSION CONTROL MEASURE AS DIRECTED BY THE ENGINEER.

INSTALL SAFETY EDGE ON ASPHALTIC SURFACE PAVEMENTS WITH ASPHALTIC SURFACE PAVED SHOULDER OF 3 FEET OR LESS.

PLACE 4.0" ASPHALTIC SURFACE IN TWO LAYERS OF THE FOLLOWING THICKNESSES:

UPPER LAYER THICKNESS = 1.75"	NOMINAL GRADATION SIZE = 12.5 MM
LOWER LAYER THICKNESS = 2.25"	NOMINAL GRADATION SIZE = 19.0 MM

ABBREVIATIONS

A.A.D.T.	ANNUAL AVERAGE DAILY TRAFFIC
A.D.T.	AVERAGE DAILY TRAFFIC
AE, AEW	APRON ENDWALL
AGG	AGGREGATE
ASPH	ASPHALT
BAD	BASE AGGREGATE DENSE
BM	BENCHMARK
CABC	CRUSHED AGGREGATE BASE COURSE
CC	CENTER OF CURVATURE
CE	COMMERCIAL ENTRANCE
C/L	CENTER LINE
CONC	CONCRETE
CMCP	CORRUGATED METAL CULVERT PIPE
CMP	CORRUGATED METAL PIPE
D	DEGREE OF CURVE
Δ	DELTA
D.H.V.	DESIGN HOURLY VOLUME
E	EXTERNAL DISTANCE FROM MIDPOINT OF CIRCULAR CURVE FROM ANGLE INTERSECTION
EL, ELEV	ELEVATION
ESALS	EQUIVALENT SINGLE AXLE LOADS
EXC	EXCAVATION
FE	FIELD ENTRANCE
F/L, FL	FLOW LINE
HT	HEIGHT
INTER	INTERSECTION
INV	INVERT
L	LENGTH OF CURVE
LHF	LEFT HAND FORWARD
MP	MARKER POST
NC	NORMAL CROWN
NOM	NOMINAL
NOR, NORM	NORMAL
PAVT	PAVEMENT
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVE
PE	PRIVATE ENTRANCE
PI	POINT OF INTERSECTION
P.L.	PROPERTY LINE
PLE	PERMANENT LIMITED EASEMENT
PT	POINT OF TANGENT
R	RADIUS OF CURVE
R/L	REFERENCE LINE
R/W	RIGHT OF WAY
RC	REVERSE CROWN
RCP	REINFORCED CONCRETE PIPE
REQ'D	REQUIRED
RO	RUN OFF LENGTH
SALV	SALVAGED
SDD	STANDARD DETAIL DRAWING(S)
SE	SUPERELEVATION
SEG	SEGMENT
SHLD	SHOULDER
S/L	SURVEY LINE
T.	PERCENT TRUCKS
T	TANGENT LENGTH
TEMP	TEMPORARY
TER	TERRACE
TLE	TEMPORARY LIMITED EASEMENT
TYP	TYPICAL
V	VELOCITY OR DESIGN SPEED
VAR	VARIABLE
VC	VERTICAL CURVE
VCL	VERTICAL CURVE LENGTH
VPC	VERTICAL POINT OF CURVATURE
VPI	VERTICAL POINT OF INTERSECTION
VPRC	VERTICAL POINT OF REVERSE CURVATURE
VPT	VERTICAL POINT OF TANGENCY

ORDER OF SECTION 2 SHEETS

DNR AREA LIAISON

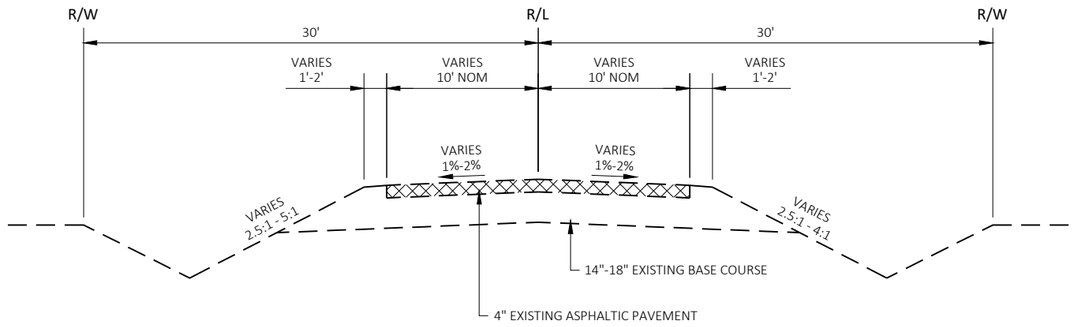
WISCONSIN DEPT. OF NATURAL RESOURCES
NORTHEAST REGION HQ
2984 SHAWANO AVENUE
GREEN BAY, WI 54313-6727
ATTN: JEREMIAH SCHIEFELBEIN
PHONE: (920)-360-3784
EMAIL: Jeremiah.Schiefelbein@wisconsin.gov

RUNOFF COEFFICIENT TABLE

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

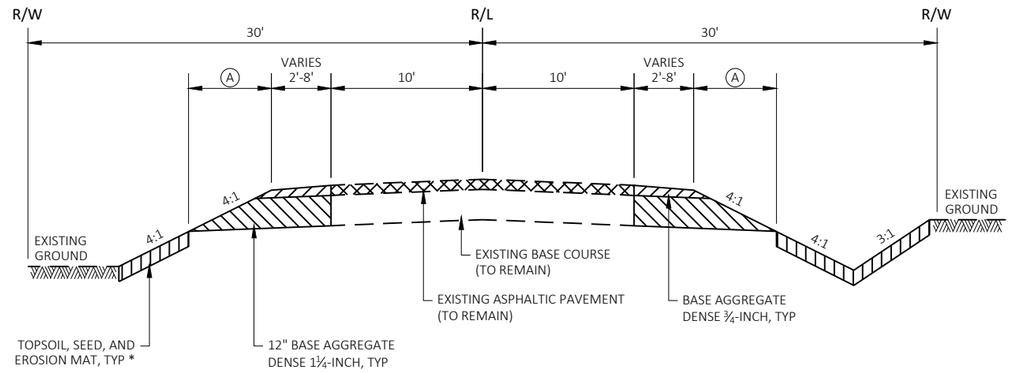
TOTAL PROJECT AREA = 0.744 ACRES

TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.619 ACRES



TYPICAL EXISTING SECTION

OAK GROVE ROAD
STA 7+51 - STA 9+90
STA 10+10 - STA 12+45



IN FILL

IN CUT

TYPICAL FINISHED SECTION

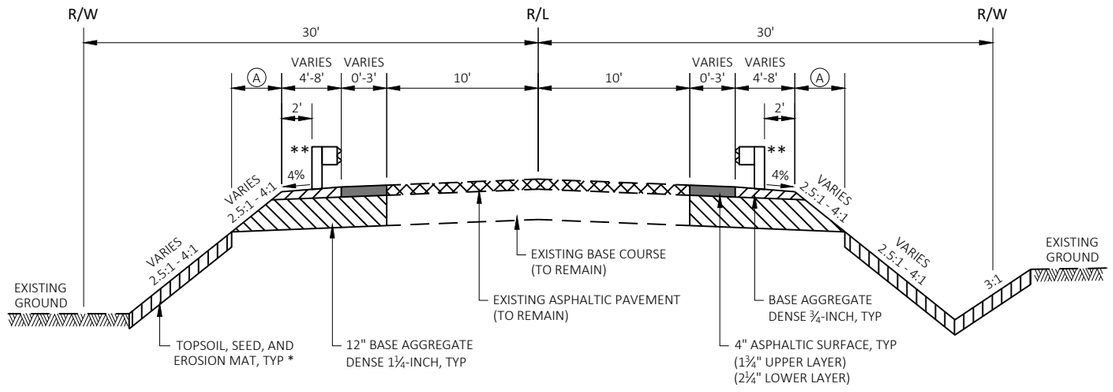
OAK GROVE ROAD
STA 7+51.00 - STA 8+35.40
STA 11+60.60 - STA 12+45.00

NOTES:

(A) SEEDING

* SEE MISCELLANEOUS QUANTITIES AND EROSION CONTROL PLANS FOR LOCATIONS AND TYPES.

** SEE CONSTRUCTION DETAILS FOR BEAM GUARD LOCATIONS.

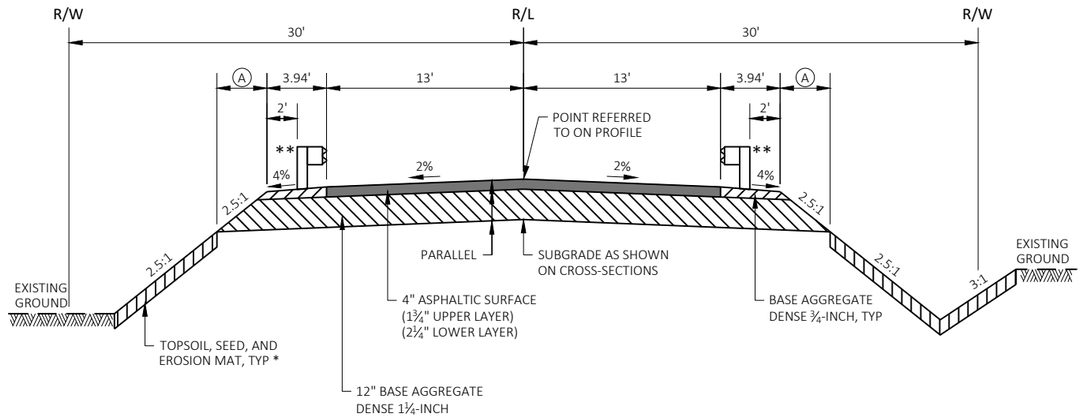


IN FILL

IN CUT

TYPICAL FINISHED SECTION

OAK GROVE ROAD
STA 8+35.40 - STA 9+32.75
STA 10+65.25 - STA 11+60.60



IN FILL

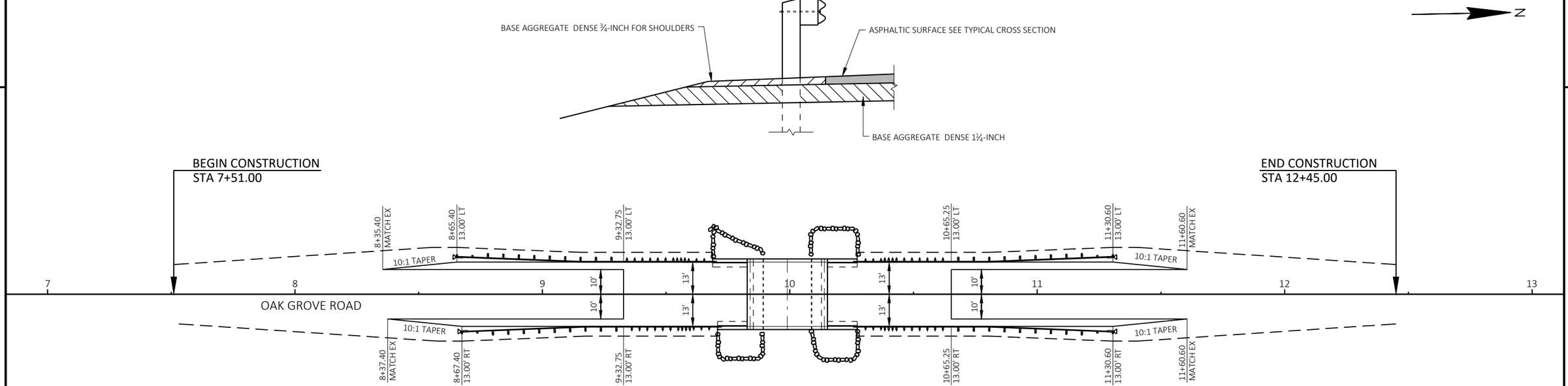
IN CUT

TYPICAL FINISHED SECTION

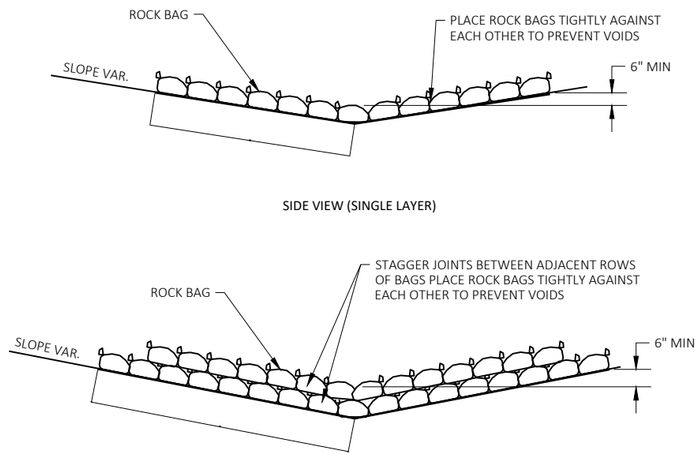
OAK GROVE ROAD
STA 9+32.75 - STA 9+82.75
STA 10+15.25 - STA 10+65.25

PROJECT NO: 6187-05-71	HWY: OAK GROVE ROAD	COUNTY: FOND DU LAC	TYPICAL SECTIONS	SHEET 3	E

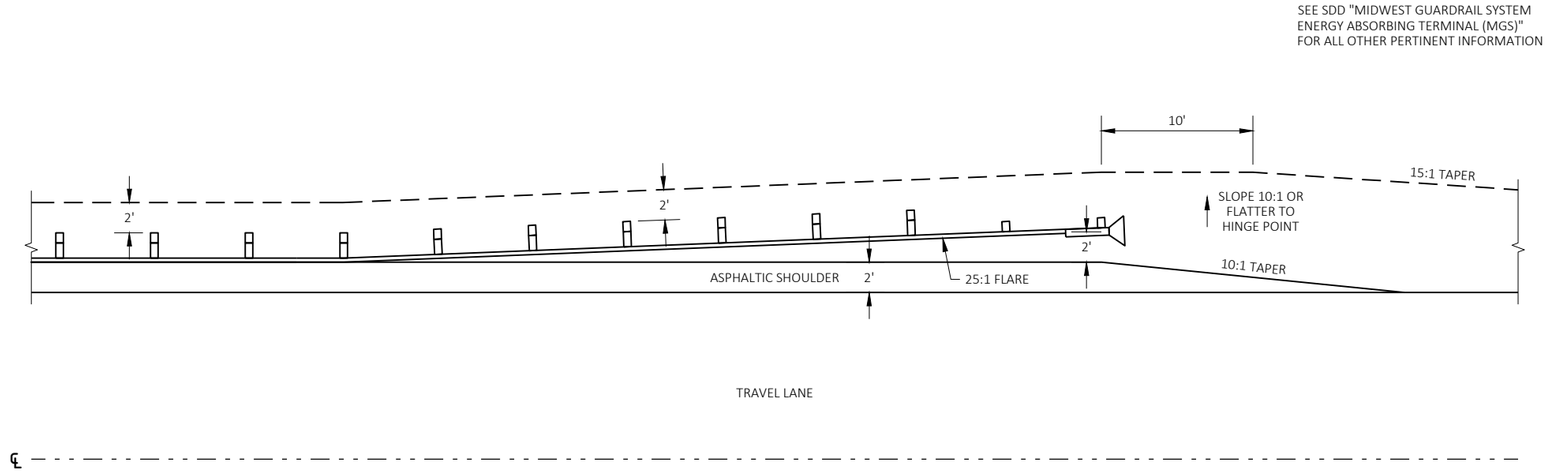
FILE NAME : S:\CURRPROJ\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-020301-TS.DWG
LAYOUT NAME - Sheet - 01
PLOT DATE : 1/29/2021 7:09 AM
PLOT BY : AARON SARAUER
PLOT NAME :
PLOT SCALE : 1 IN:10 FT
WISDOT/CADDS SHEET 42



DETAIL FOR ASPHALTIC SHOULDER AT GUARDRAIL

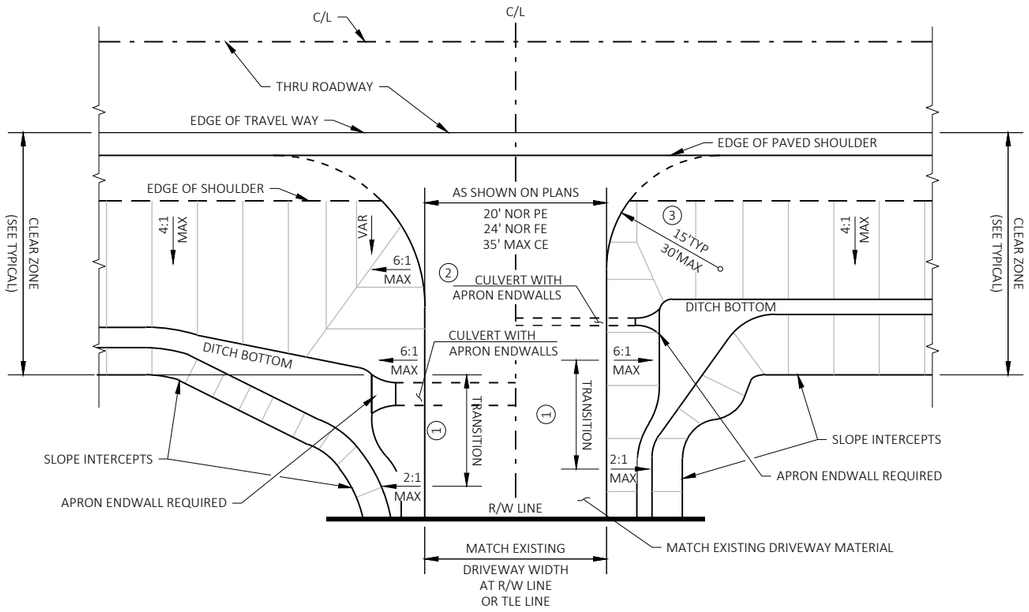


ROCK BAGS USED FOR DITCH CHECKS DETAIL



DETAIL FOR MGS ENERGY ABSORBING TERMINAL

PROJECT NO: 6187-05-71	HWY: OAK GROVE ROAD	COUNTY: FOND DU LAC	CONSTRUCTION DETAILS	SHEET 4	E

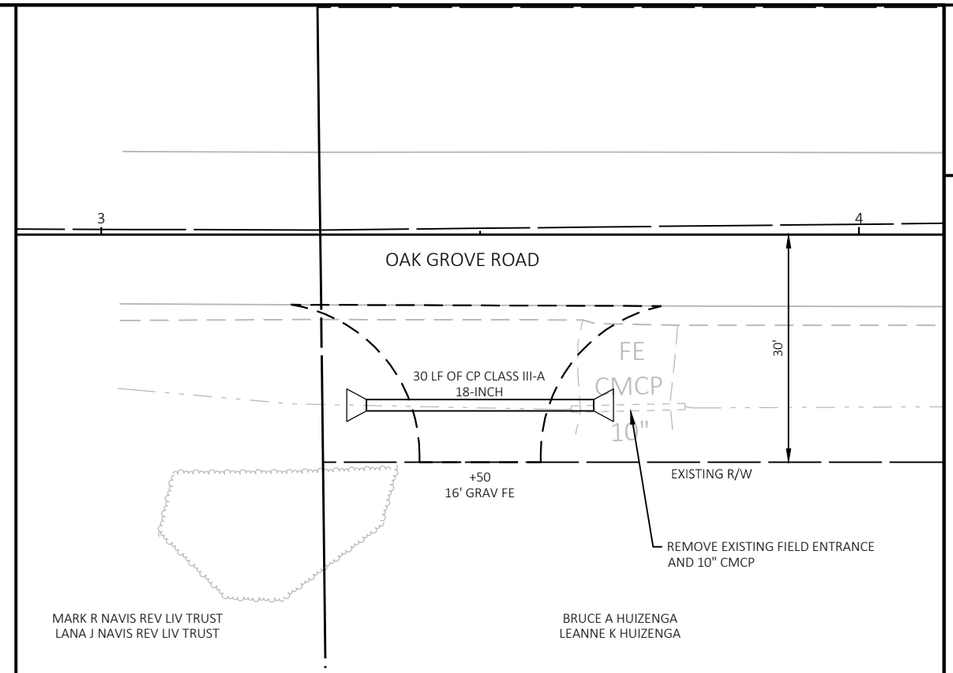


FOR CULVERTS OUTSIDE CLEARZONE

FOR CULVERTS WITHIN CLEARZONE

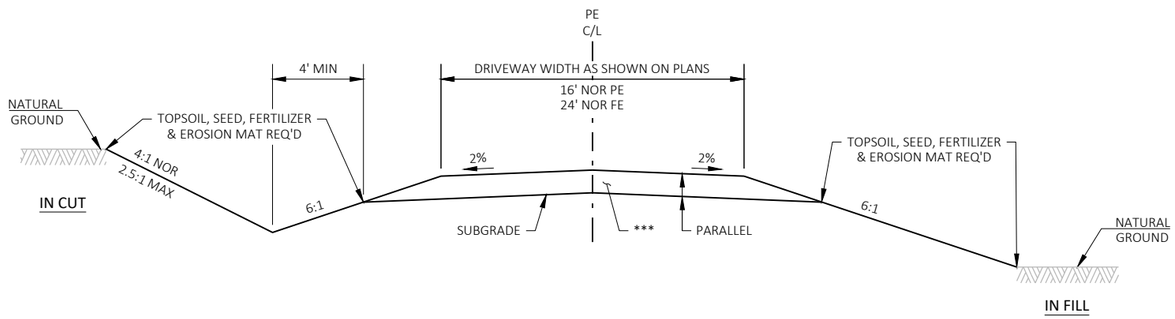
RURAL DRIVEWAY PLAN VIEW

1. TRANSITION TO BE ACCOMPLISHED WITHIN THE RIGHT OF WAY
2. BLEND 6 : 1 SLOPES TO MATCH APRON ENDWALLS
3. USE LARGER PAVING RADIUS FOR PAVING IN HIGHER SPEED ZONES (> 40 MPH)

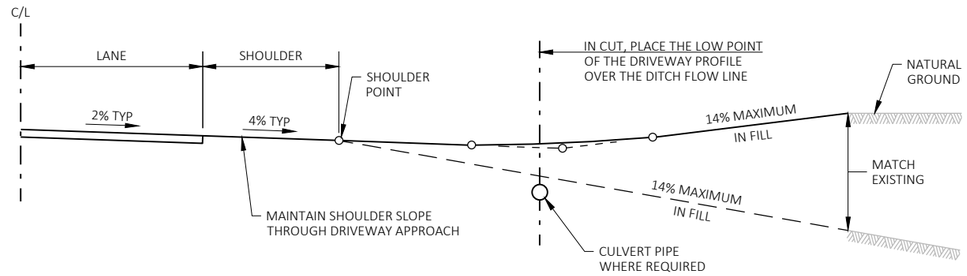


FIELD ENTRANCE DETAIL

*** (A) 6" BASE AGGREGATE DENSE ¾-INCH



TYPICAL DRIVEWAY CROSS SECTION



TYPICAL DRIVEWAY PROFILE

RURAL ENTRANCE DETAIL

PROJECT NO: 6187-05-71	HWY: OAK GROVE ROAD	COUNTY: FOND DU LAC	CONSTRUCTION DETAILS	SHEET 5	E

2

N

WETLAND LIMITS

S. BR. ROCK RIVER

WETLAND LIMITS

EROSION MAT URBAN
CLASS I TYPE B, TYP

SILT FENCE, TYP

EXISTING R/W

EXISTING R/W

SLOPE INTERCEPT, TYP

7 8 9 10 11 12 13

OAK GROVE ROAD

EXISTING R/W

PROPOSED R/W
TLE

TLE

EXISTING R/W

BEGIN CONSTRUCTION
STA 7+51.00

EROSION MAT URBAN CLASS I TYPE B
(8' WIDE IN DITCH BOTTOM), TYP

BEGIN PROJECT
STA 9+32.75

ROCK BAGS FOR
DITCH CHECKS, TYP

TURBIDITY BARRIER, TYP

RIPRAP HEAVY, TYP

END PROJECT
STA 10+65.25

END CONSTRUCTION
STA 12+45.00

WETLAND LIMITS

WETLAND LIMITS

BENCH MARKS

BM	STATION	DESCRIPTION	ELEVATION
A	10+09, 12.5' RT	CHISELED SQUARE ON TOP OF WINGWALL, NE CORNER OF STRUCTURE P-20-927	915.28
B	13+93, 29.5' RT	RR SPIKE IN 42" MAPLE TREE, N. SIDE OF DRIVEWAY, E. SIDE OF RD., 300' N OF STRUCTURE P-20-927	921.42

**VERTICAL DATUM REFERENCED TO NAVD88 (2012).

LEGEND

- SLOPE INTERCEPT
- SILT FENCE
- TURBIDITY BARRIER
- ROCK BAGS FOR DITCH CHECK
- EROSION MAT URBAN CLASS I TYPE B
- RIPRAP HEAVY
- SURFACE WATER FLOW EXISTING
- SURFACE WATER FLOW PROPOSED

FINISHING ITEMS FOR TOPSOIL, SEED MIX #30, FERTILIZER TYPE B AND EROSION MAT URBAN CLASS I TYPE B ARE SHOWN ON TYPICAL SECTIONS AND MISCELLANEOUS QUANTITIES.

PROJECT NO: 6187-05-71	HWY: OAK GROVE ROAD	COUNTY: FOND DU LAC	EROSION CONTROL PLANS	SHEET 6	E

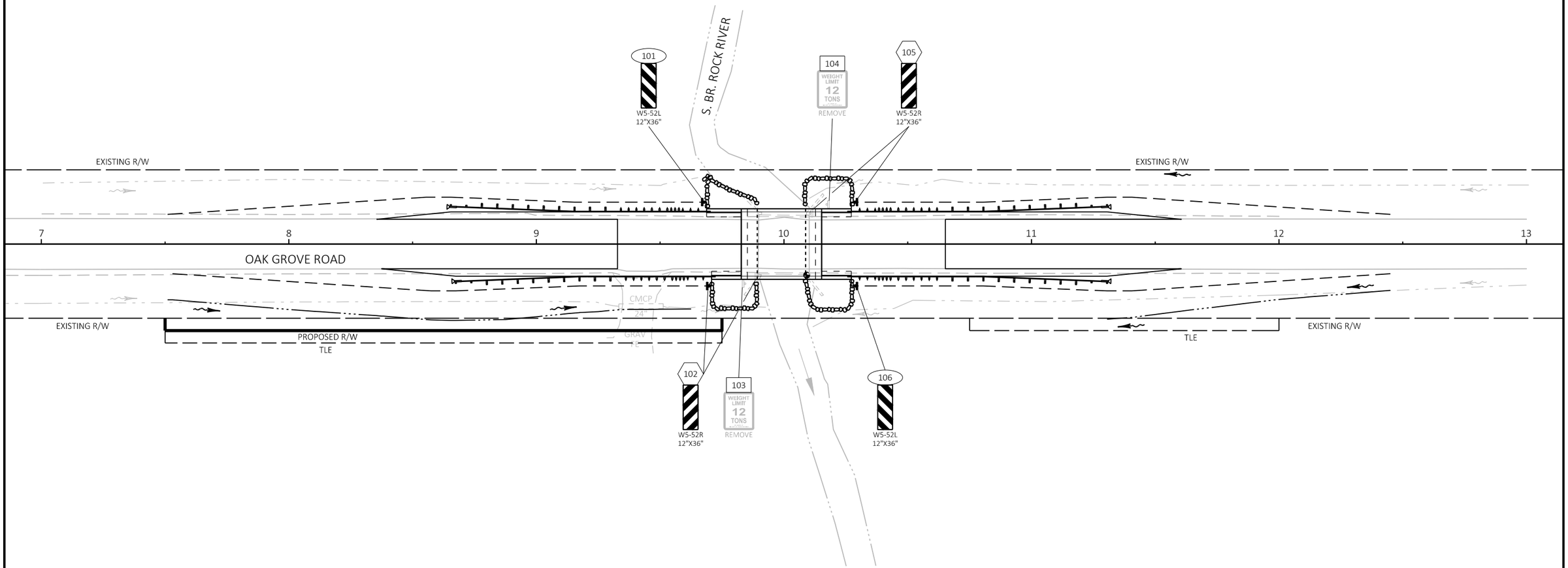
FILE NAME : S:\CURRPROJ\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-022001-EC.DWG
LAYOUT NAME - Sheet-01

PLOT DATE : 1/29/2021 11:05 AM PLOT BY : AARON SARAUER PLOT NAME : PLOT SCALE : 1 IN:40 FT

WISDOT/CADDS SHEET 42

2

N



LEGEND

- XXX — SIGN - REMOVE EXISTING
- XXX — SIGN - REMOVE EXISTING & PLACE NEW
- XXX — SIGN - PLACE NEW
- EXISTING SIGN
- PROPOSED SIGN MOUNTED ON POST(S)

PROJECT NO: 6187-05-71	HWY: OAK GROVE ROAD	COUNTY: FOND DU LAC	SIGNING PLAN	SHEET 7	E

FILE NAME : S:\CURRPROJ\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-023201-PS.DWG
LAYOUT NAME - Sheet-01

PLOT DATE : 1/29/2021 7:12 AM PLOT BY : AARON SARAUER PLOT NAME : PLOT SCALE : 1 IN:40 FT

Estimate Of Quantities

6187-05-71

Line	Item	Item Description	Unit	Total	Qty
0002	203.0100	Removing Small Pipe Culverts	EACH	2.000	2.000
0004	203.0210.S	Abatement of Asbestos Containing Material (structure) 01. P-20-927	LS	1.000	1.000
0006	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 01. 10+00	LS	1.000	1.000
0008	205.0100	Excavation Common	CY	290.000	290.000
0010	206.1000	Excavation for Structures Bridges (structure) 01. B-20-243	LS	1.000	1.000
0012	210.1500	Backfill Structure Type A	TON	200.000	200.000
0014	213.0100	Finishing Roadway (project) 01. 6187-05-71	EACH	1.000	1.000
0016	305.0110	Base Aggregate Dense 3/4-Inch	TON	170.000	170.000
0018	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	760.000	760.000
0020	455.0605	Tack Coat	GAL	21.000	21.000
0022	465.0105	Asphaltic Surface	TON	97.000	97.000
0024	502.0100	Concrete Masonry Bridges	CY	117.000	117.000
0026	502.3200	Protective Surface Treatment	SY	120.000	120.000
0028	505.0400	Bar Steel Reinforcement HS Structures	LB	3,510.000	3,510.000
0030	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	15,650.000	15,650.000
0032	513.4061	Railing Tubular Type M	LF	119.000	119.000
0034	516.0500	Rubberized Membrane Waterproofing	SY	17.000	17.000
0036	520.1018	Apron Endwalls for Culvert Pipe 18-Inch	EACH	2.000	2.000
0038	520.3318	Culvert Pipe Class III-A 18-Inch	LF	30.000	30.000
0040	550.0020	Pre-Boring Rock or Consolidated Materials	LF	108.000	108.000
0042	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	135.000	135.000
0044	606.0300	Riprap Heavy	CY	100.000	100.000
0046	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	125.000	125.000
0048	614.2300	MGS Guardrail 3	LF	50.000	50.000
0050	614.2500	MGS Thrie Beam Transition	LF	157.600	157.600
0052	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0054	619.1000	Mobilization	EACH	1.000	1.000
0056	624.0100	Water	MGAL	14.000	14.000
0058	625.0100	Topsoil	SY	865.000	865.000
0060	628.1504	Silt Fence	LF	645.000	645.000
0062	628.1520	Silt Fence Maintenance	LF	645.000	645.000
0064	628.1905	Mobilizations Erosion Control	EACH	5.000	5.000
0066	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000
0068	628.2008	Erosion Mat Urban Class I Type B	SY	865.000	865.000
0070	628.6005	Turbidity Barriers	SY	185.000	185.000
0072	628.7560	Tracking Pads	EACH	2.000	2.000
0074	628.7570	Rock Bags	EACH	75.000	75.000

6187-05-71

Line	Item	Item Description	Unit	Total	Qty
0076	629.0210	Fertilizer Type B	CWT	0.500	0.500
0078	630.0130	Seeding Mixture No. 30	LB	26.000	26.000
0080	630.0500	Seed Water	MGAL	33.000	33.000
0082	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	4.000	4.000
0084	637.2230	Signs Type II Reflective F	SF	12.000	12.000
0086	638.2602	Removing Signs Type II	EACH	4.000	4.000
0088	638.3000	Removing Small Sign Supports	EACH	4.000	4.000
0090	642.5001	Field Office Type B	EACH	1.000	1.000
0092	643.0420	Traffic Control Barricades Type III	DAY	938.000	938.000
0094	643.0705	Traffic Control Warning Lights Type A	DAY	1,608.000	1,608.000
0096	643.0900	Traffic Control Signs	DAY	938.000	938.000
0098	643.5000	Traffic Control	EACH	1.000	1.000
0100	645.0111	Geotextile Type DF Schedule A	SY	42.000	42.000
0102	645.0120	Geotextile Type HR	SY	125.000	125.000
0104	650.4500	Construction Staking Subgrade	LF	462.000	462.000
0106	650.5000	Construction Staking Base	LF	462.000	462.000
0108	650.6500	Construction Staking Structure Layout (structure) 01. B-20-243	LS	1.000	1.000
0110	650.9910	Construction Staking Supplemental Control (project) 01. 6187-05-71	LS	1.000	1.000
0112	650.9920	Construction Staking Slope Stakes	LF	462.000	462.000
0114	690.0150	Sawing Asphalt	LF	424.000	424.000
0116	715.0502	Incentive Strength Concrete Structures	DOL	702.000	702.000
0118	999.2005.S	Maintaining Bird Deterrent System	EACH	1.000	1.000

3

REMOVING SMALL PIPE CULVERTS

STATION	LOCATION	203.0100 EACH	COMMENTS
CATEGORY CODE 0010			
3+70	RT	1	REMOVE 15 LF OF CPCM 10-INCH
9+42	RT	1	REMOVE 18 LF OF CPCM 24-INCH
TOTAL		**2**	

BASE AGGREGATE DENSE AND WATER ITEMS

STATION - STATION	LOCATION	305.0110 BASE AGGREGATE DENSE 3/4-INCH TON	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON	624.0100 WATER MGAL
CATEGORY CODE 0010				
3+50	RT	20	--	--
7+51 - 9+83	LT & RT	75	380	7
10+15 - 12+45	LT & RT	75	380	7
TOTALS		**170**	**760**	**14**

BASE AGGREGATE DENSE 3/4-INCH WEIGHT CALCULATIONS BASED ON 2.1 TONS/CY.
BASE AGGREGATE DENSE 1 1/4-INCH WEIGHT CALCULATIONS BASED ON 2.0 TONS/CY.

ASPHALTIC ITEMS

STATION - STATION	LOCATION	455.0605 TACK COAT GAL	465.0105 ASPHALTIC SURFACE TON
CATEGORY CODE 0010			
8+35 - 9+83	LT & RT	11	49
10+15 - 11+61	LT & RT	10	48
TOTALS		**21**	**97**

TACK COAT CALCULATIONS BASED ON 0.050 GAL/SY
ASPHALTIC SURFACE WEIGHT CALCULATIONS BASED ON 112 LB/SY/IN.

3

EARTHWORK SUMMARY

DIVISION	FROM/TO STATION	LOCATION	EXCAVATION COMMON (1) ITEM #205.0100 CUT (2)	EXCAVATION COMMON (1) ITEM #205.0100 EBS EXCAVATION	SALVAGED/ UNUSABLE PAVEMENT MATERIAL (3)	AVAILABLE MATERIAL (4)	UNEXPANDED FILL	EXPANDED FILL (5) FACTOR 1.30	MASS ORDINATE +/- (6)	WASTE	COMMENT:
DIVISION 1											
	7+51 - 12+45	OAK GROVE	290	0	28	262	190	248	15	15	
	DIVISION 1 SUBTOTAL		290	0	28	262	190	248	15	15	
	GRAND TOTAL		290	0	28	262	190	248	15	15	
TOTAL EXCAVATION COMMON			**290**								

NOTES:
1 - COMMON EXCAVATION IS THE SUM OF THE CUT AND EBS EXCAVATION COLUMNS
2 - SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
3 - SALVAGED/UNUSABLE PAVEMENT MATERIAL = LENGH * TYPICAL WIDTH * TYPICAL DEPTH
4 - AVAILABLE MATERIAL = CUT - SALVAGED/UNUSABLE PAVEMENT MATERIAL
5 - EXPANDED FILL = UNEXPANDED FILL * FILL FACTOR
6 - THE MASS ORDINATE + OR - QTY CALCULATED FOR THE DIVISION. PLUS QUANTITY INDICATES AN EXCESS OF MATERIAL WITHIN THE DIVISION. MINUS INDICATES A SHORTAGE OF MATERIAL WITHIN THE DIVISION.

CULVERT PIPE ITEMS

STATION	LOCATION	STEEL PIPE THICKNESS INCHES	520.1018 APRON ENDWALLS FOR CULVERT PIPE 18-INCH EACH	520.3318 CULVERT PIPE CLASS III-A 18-INCH LF
CATEGORY CODE 0010				
3+50	RT	0.064	2	30
TOTALS			**2**	**30**

MGS GUARDRAIL ITEMS

STATION - STATION	LOCATION	614.2300 MGS GUARDRAIL 3 LF	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH
CATEGORY CODE 0010				
8+65 - 9+72	LT & RT	25.0	78.8	2.0
10+26 - 11+31	LT & RT	25.0	78.8	2.0
TOTALS		**50.0**	**157.6**	**4.0**

RESTORATION ITEMS

STATION - STATION	LOCATION	625.0100 TOPSOIL SY	628.2008 EROSION MAT URBAN CLASS I TYPE B SY	629.0210 FERTILIZER TYPE B CWT	630.0130 SEED MIX NO. 30 LB	630.0500 SEED WATER MGAL
CATEGORY CODE 0010						
3+50	RT	65	65	0.05	1	2
7+51 - 9+83	LT & RT	365	365	0.20	11	14
10+15 - 12+45	LT & RT	261	261	0.15	9	11
UNDISTRIBUTED		174	174	0.10	5	6
TOTALS		**865**	**865**	**0.50**	**26**	**33**

NOTES: DO NOT APPLY FERTILIZER WITHIN 20 FEET OF A BODY OF WATER OR WETLAND

ALL ITEMS ARE CATEGORY CODE 0010 UNLESS OTHERWISE NOTED

EROSION CONTROL ITEMS

STATION	LOCATION	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF	628.1905 MOBILIZATIONS EROSION CONTROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH	628.6005 TURBIDITY BARRIERS SY	628.7560 TRACKING PADS EACH	628.7570 ROCK BAGS EACH
CATEGORY CODE 0010								
PROJECT 6187-05-71		--	--	5	3	--	2	--
3+50	RT	--	--	--	--	--	--	15
7+51 - 9+70	LT	220	220	--	--	--	--	--
9+63 - 9+95	RT	32	32	--	--	--	--	15
9+67 - 9+91	LT & RT	--	--	--	--	74	--	--
9+67 - 9+91	LT & RT	--	--	--	--	74	--	--
10+05 - 11+41	LT	144	144	--	--	--	--	15
UNDISTRIBUTED		129	129	--	--	37	--	15
	TOTALS	**645**	**645**	**5**	**3**	**185**	**2**	**75**

SIGNING ITEMS

SIGN NUMBER	EXISTING STATION	EXISTING LOCATION	PROPOSED STATION	PROPOSED LOCATION	SIGN CODE	SIZE	634.0612 POSTS WOOD 4X6X12 EACH	637.2230 SIGNS TYPE II REFLECTIVE F SF	638.2602 REMOVING SIGNS TYPE II EACH	638.3000 REMOVING SMALL SIGN SUPPORTS EACH
CATEGORY CODE 0010										
101	--	--	9+69	LT	W5-52L	12X36	1	3	--	--
102	9+89	RT	9+71	RT	W5-52R	12X36	1	3	1	1
103	9+84	RT	--	--	--	--	--	--	1	1
104	10+17	LT	--	--	--	--	--	--	1	1
105	10+11	LT	10+27	LT	W5-52R	12X36	1	3	1	1
106	--	--	10+27	RT	W5-52L	12X36	1	3	--	--
					TOTALS		**4**	**12**	**4**	**4**

TRAFFIC CONTROL ITEMS

LOCATION	NUMBER OF DAYS IN SERVICE	643.0420 TRAFFIC CONTROL BARRICADES TYPE III NO. REQ'D	643.0420 TRAFFIC CONTROL BARRICADES TYPE III TOTAL DAY	643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A NO. REQ'D	643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A TOTAL DAY	643.0900 TRAFFIC CONTROL SIGNS NO. REQ'D	643.0900 TRAFFIC CONTROL SIGNS TOTAL DAY
CATEGORY CODE 0010							
OAK GROVE ROAD / CTH AW	67	*2*	134	*4*	268	*3*	201
SOUTH PROJECT LIMITS	67	*5*	335	*8*	536	*4*	268
NORTH PROJECT LIMITS	67	*5*	335	*8*	536	*4*	268
OAK GROVE ROAD / LAKE MARIA ROAD	67	*2*	134	*4*	268	*3*	201
	TOTALS		**938**		**1,608**		**938**

CONSTRUCTION STAKING ITEMS

STATION - STATION	LOCATION	650.4500 SUBGRADE LF	650.5000 BASE LF	650.6500 STRUCTURE LAYOUT LS	650.9910 SUPPLEMENTAL CONTROL LS	650.9920 SLOPE STAKES LF
CATEGORY CODE 0010						
PROJECT 6187-05-71		--	--	--	1	--
7+51 - 9+83	LT & RT	232	232	--	--	232
10+15 - 12+45	LT & RT	230	230	--	--	230
CATEGORY CODE 0010 SUBTOTALS		462	462	--	1	462
CATEGORY CODE 0020						
B-20-243		--	--	1	--	--
CATEGORY CODE 0020 SUBTOTALS		--	--	1	--	--
	TOTALS	**462**	**462**	**1**	**1**	**462**

SAWING ASPHALT

STATION	LOCATION	690.0150 LF
CATEGORY CODE 0010		
8+35 - 9+33	LT & RT	213
10+65 - 11+61	LT & RT	211
	TOTAL	**424**

ALL ITEMS ARE CATEGORY CODE 0010 UNLESS OTHERWISE NOTED

CONVENTIONAL SYMBOLS

SECTION LINE
QUARTER LINE
SIXTEENTH LINE
NEW REFERENCE LINE
NEW R/W LINE
EXISTING R/W LINE
PROPERTY LINE
LOT, TIE, AND OTHER MINOR LINES
SLOPE INTERCEPT
CORPORATE LIMITS
UNDERGROUND FACILITY (COMMUNICATIONS, ELECTRIC, ETC)
FEE ACQUISITION AREA (HATCHING VARIES BY OWNER)
TEMP. LIMITED EASEMENT AREA
EASEMENT AREA (HIGHWAY, PERMANENT LIMITED, OR RESTRICTED DEVELOPMENT)
TRANSMISSION STRUCTURES
BUILDING
BUILDING (TO BE REMOVED)
BRIDGE

PARCEL NUMBER
SECTION CORNER
NOTATION FOR COMBUSTABLE FLUIDS
NOTATION FOR HIGH VOLTAGE TRANSMISSION LINES
UTILITY NUMBER
R/W MONUMENT
NON-MONUMENTED R/W POINT
FOUND IRON PIN
VALVE (GAS, WATER, ETC.)
SIGN
OFF-PREMISE SIGN

ACCESS CONTROLLED BY ACQUISITION
NO ACCESS (BY STATUTORY AUTHORITY)
ACCESS RESTRICTED (BY PREVIOUS PROJECT OR CONTROL)
NO ACCESS (NEW HIGHWAY)
NATIONAL GEODETIC SURVEY MONUMENT
SIXTEENTH CORNER MONUMENT
PARALLEL OFFSETS

CONVENTIONAL UTILITY SYMBOLS

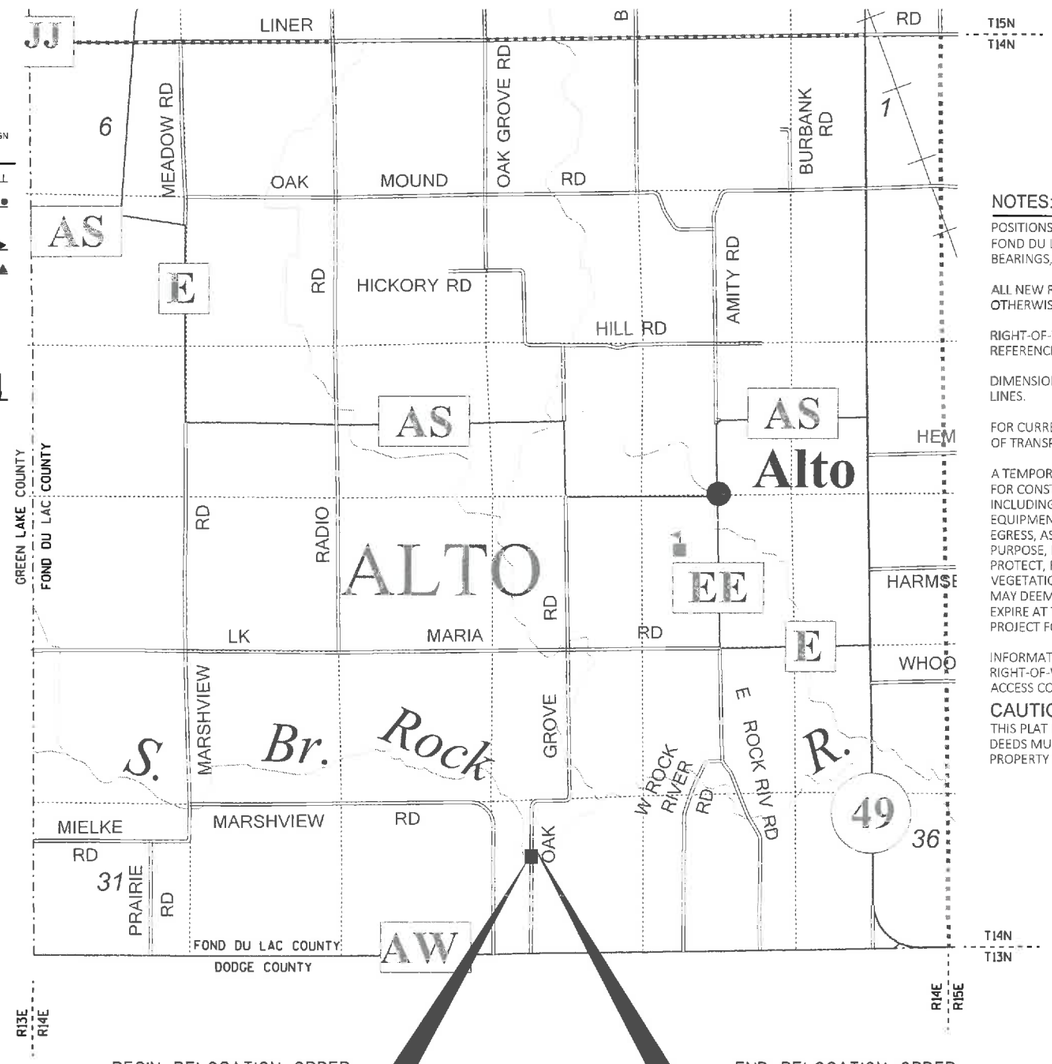
		NON-COMPENSABLE	COMPENSABLE
WATER	W		
GAS	G		
TELEPHONE	T		
OVERHEAD TRANSMISSION LINES	OH		
ELECTRIC	E		
CABLE TELEVISION	TV		
FIBER OPTIC	FO		
SANITARY SEWER	SAN		
STORM SEWER	SS		
ELECTRIC TOWER			
POWER POLE			
TELEPHONE POLE			
TELEPHONE PEDESTAL			

CURVE DATA ABBREVIATIONS

LONG CHORD	LCH
LONG CHORD BEARING	LCB
RADIUS	R
DEGREE OF CURVE	D
CENTRAL ANGLE	Δ/DELTA
LENGTH OF CURVE	L
TANGENT	T
DIRECTION AHEAD	DA
DIRECTION BACK	DB

CONVENTIONAL ABBREVIATIONS

ACCESS RIGHTS	AR	OUTLOT	OL
ACRES	AC	PAGE	P
AHEAD	AH	POINT OF TANGENCY	PT
ALUMINUM	ALUM	PROPERTY LINE	PL
AND OTHERS	ET AL	RECORDED AS	(100')
BACK	BK	REEL / IMAGE	R/I
BLOCK	BLK	REFERENCE LINE	R/L
CENTERLINE	C/L	PERMANENT LIMITED EASEMENT	PLE
CERTIFIED SURVEY MAP	CSM	POINT OF BEGINNING	POB
CONCRETE	CONC	POINT OF CURVATURE	PC
COUNTY	CO	POINT OF COMPOUND CURVE	PCC
COUNTY TRUNK HIGHWAY	CTH	POINT OF INTERSECTION	PI
DISTANCE	DIST	REMAINING	REM
CORNER	COR	RESTRICTIVE DEVELOPMENT EASEMENT	RDE
DOCUMENT NUMBER	DOC	RIGHT	RT
EASEMENT	EASE	RIGHT OF WAY	R/W
EXISTING	EX	SECTION	SEC
GAS VALVE	GV	SEPTIC VENT	SEPV
GRID NORTH	GN	SQUARE FEET	SF
HIGHWAY EASEMENT	HE	STATE TRUNK HIGHWAY	STH
IDENTIFICATION	ID	STATION	STA
LAND CONTRACT	LC	TELEPHONE PEDESTAL	TP
LEFT	LT	TEMPORARY LIMITED EASEMENT	TLE
MONUMENT	MON	TRANSPORTATION PROJECT PLAT	TPP
NATIONAL GEODETIC SURVEY	NGS	UNITED STATES HIGHWAY	USH
NUMBER	NO	VOLUME	V



BEGIN RELOCATION ORDER
7+50.00
Y 336249.32
X 718190.11
409.22' NORTH AND 1343.74' EAST OF THE WEST QUARTER CORNER OF SECTION 34, T14N, R14E

END RELOCATION ORDER
12+00.00
Y 336699.22
X 718199.33
859.13' NORTH AND 1352.97' EAST OF THE WEST QUARTER CORNER OF SECTION 34, T14N, R14E

N

LAYOUT
SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.085 MI.

R/W PROJECT NUMBER 6187-05-00	SHEET NUMBER	TOTAL SHEETS
R/W PROJECT NUMBER	4.01	4

PLAT OF RIGHT OF WAY REQUIRED FOR

T ALTO, OAK GROVE ROAD SOUTH BRANCH ROCK RIVER BRIDGE

LOCAL STREET	FOND DU LAC COUNTY

CONSTRUCTION PROJECT NUMBER
6187-05-71

NOTES:

POSITIONS SHOWN ON THIS PLAT ARE WISCONSIN COORDINATE REFERENCE SYSTEM COORDINATES (WISCRS), FOND DU LAC COUNTY, NAD83 (2011) IN US SURVEY FEET. VALUES SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

ALL NEW RIGHT-OF-WAY MONUMENTS WILL BE TYPE 2 MONUMENTS (TYPICALLY 1" I.D. X 24" IRON PIPES), UNLESS OTHERWISE NOTED, AND WILL BE PLACED PRIOR TO THE COMPLETION OF THE PROJECT.

RIGHT-OF-WAY BOUNDARIES ARE DEFINED WITH COURSES OF THE PERIMETER OF THE HIGHWAY LANDS REFERENCED TO THE U.S. PUBLIC LAND SURVEY SYSTEM OR OTHER "SURVEYS OF PUBLIC RECORD".

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

FOR CURRENT ACCESS/DRIVEWAY INFORMATION, CONTACT THE PLANNING UNIT OF THE WISCONSIN DEPARTMENT OF TRANSPORTATION OFFICE IN GREEN BAY.

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

INFORMATION FOR THE BASIS OF EXISTING HIGHWAY RIGHT-OF-WAY POINTS OF REFERENCE AND ACCESS CONTROL ARE LISTED ON DETAIL SHEETS.

CAUTION:
THIS PLAT IS FOR ILLUSTRATIVE PURPOSES ONLY. DEEDS MUST BE CHECKED TO DETERMINE PROPERTY BOUNDARIES.

ACCEPTED FOR
TOWN OF ALTO
Date 6/8/20 Brian Tenpas
BRIAN TENPAS
TOWN CHAIRPERSON

ORIGINAL PLAT PREPARED BY
GREMMER & ASSOCIATES, INC.
CONSULTING ENGINEERS
Stevens Point • Fond du Lac
85 South Pioneer Road, Suite 300 • Fond du Lac, WI 54935
(920) 924-5720 • fax (920) 924-5725
6/8/2020 Jay W. Panetti
DATE JAY W. PANETTI, PLS

WISCONSIN
JAY W. PANETTI
S-2747
WAUPUN,
WI
LAND SURVEYOR

REVISION DATE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED FOR THE DEPARTMENT

DATE: _____ _____
(Signature)

FILE NAME : S:\CURRPROJ\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\RW\040101-RP.DWG
PLOT DATE : 6/3/2020 12:29 PM
PLOT BY : JAY PANETTI
PLOT NAME :

SCHEDULE OF LANDS & INTERESTS REQUIRED

AREAS SHOWN IN THE TOTAL ACRES COLUMN MAY BE APPROXIMATE AND ARE DERIVED FROM TAX ROLLS OR OTHER AVAILABLE SOURCES AND MAY NOT INCLUDE LANDS OF THE OWNER WHICH ARE NOT CONTIGUOUS TO THE AREA TO BE ACQUIRED. OWNER'S NAMES ARE SHOWN FOR REFERENCE PURPOSES ONLY AND ARE SUBJECT TO CHANGE PRIOR TO THE TRANSFER OF LAND INTERESTS TO THE DEPARTMENT.

PARCEL NUMBER	SHEET NUMBER	OWNER(S)	INTEREST REQUIRED	R/W ACRES REQUIRED			T.L.E. ACRES TEMP.
				NEW	EXISTING	TOTAL	
1	4.04	BRUCE A. HUIZENGA AND LEANNE K. HUIZENGA	FEE, TLE	0.026	0.155	0.181	0.040

4

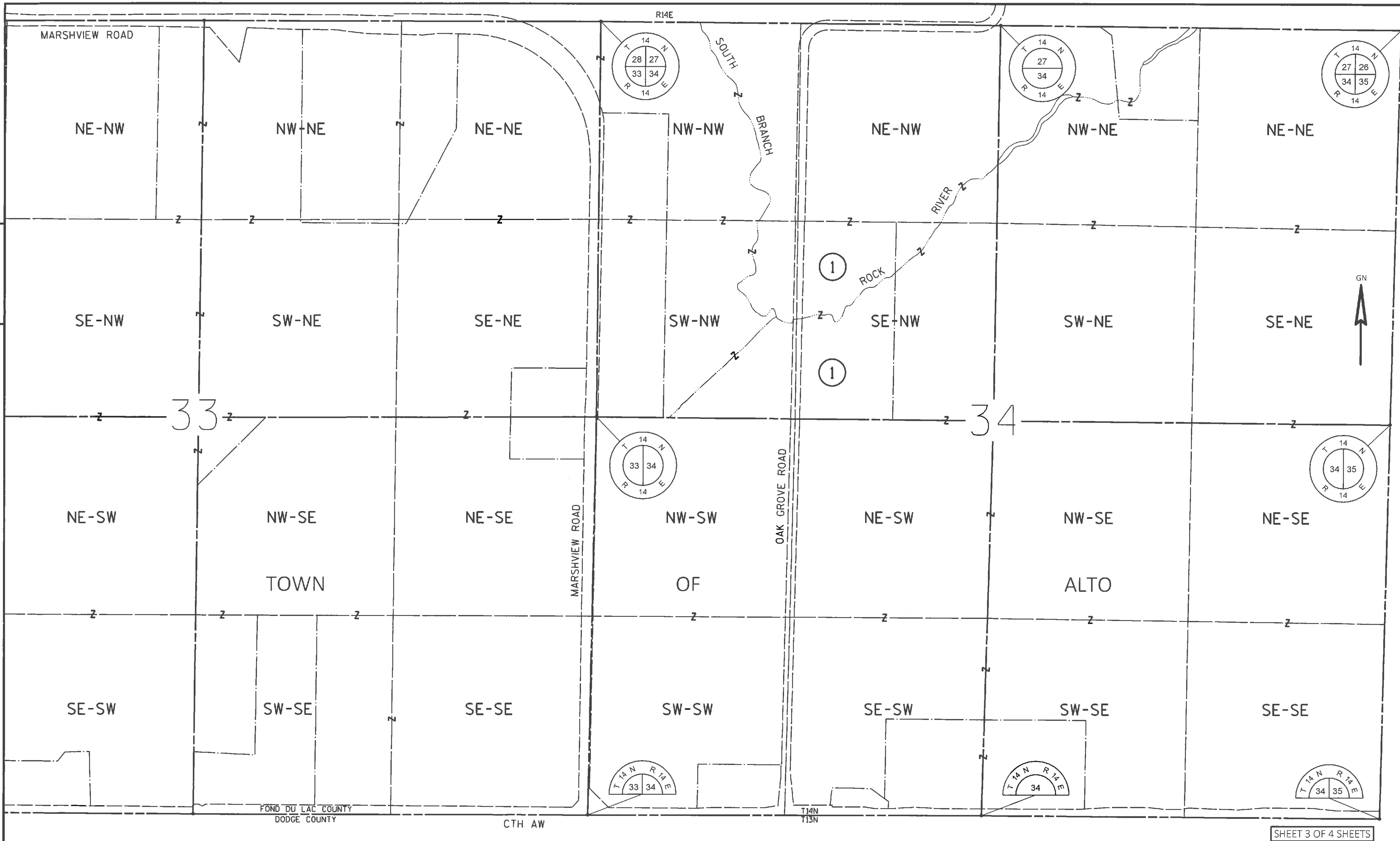
4

SHEET 2 OF 4 SHEETS

REVISION DATE	DATE 6/8/2020	SCALE, FEET 0	HWY: OAK GROVE ROAD	STATE R/W PROJECT NUMBER 6187-05-00	PLAT SHEET 4.02	
	GRID FACTOR		COUNTY: FOND DU LAC	CONSTRUCTION PROJECT NUMBER 6187-05-71	PS&E SHEET 13	E

FILE NAME : 040102-RP.DWG
LAYOUT NAME - RW 1 IN 100 FT

PLOT DATE : 6/4/2020 9:01 AM PLOT BY : BENJAMIN OITZINGER PLOT NAME : PLOT SCALE : 1 IN:100 FT



REVISION DATE	DATE 6/8/2020	SCALE, FEET 0 300 600	HWY: OAK GROVE ROAD	STATE R/W PROJECT NUMBER 6187-05-00	PLAT SHEET 4.03
	GRID FACTOR		COUNTY: FOND DU LAC	CONSTRUCTION PROJECT NUMBER 6187-05-71	PS&E SHEET 14 E

FILE NAME : 040103-RP.DWG
LAYOUT NAME - RW 1 IN 600 FT
PLOT DATE : 6/4/2020 10:12 AM PLOT BY : BENJAMIN OITZINGER PLOT NAME : PLOT SCALE : 1 IN:600 FT
WISDOT/CADDS SHEET 75

COORDINATE TABLE

POINT	Y	X
96	335816.5480	719515.3408
97	335793.0010	722184.3185
98	338443.1220	722244.2290
99	333142.8800	722124.4080
110	335840.0950	716846.3630
300	335828.3160	718181.4766
301	336249.3180	718190.1063
302	336474.2708	718194.7174
303	336473.6560	718224.7111
304	336473.5535	718229.7101
305	336248.6007	718225.0990
306	336248.7032	718220.1000
401	336473.4510	718234.7090
402	336248.4983	718230.0979
403	336699.2235	718199.3285
404	336698.6087	718229.3222
405	336698.5062	718234.3211
406	336573.5325	718231.7594
407	336573.6350	718226.7605

BASIS OF EXISTING R/W

ROUTE	BASIS	YEAR
OAK GROVE ROAD	ROAD ORDER	1850

110 ALUMINUM MONUMENT Y 335840.10 X 716846.36

S89°29'40"E 1335.17' TO R/L

QUARTER LINE S89°29'40"E 2669.08'

P.L. 3+28.91

TOWN OF ALTO

SW-NW

SE-NW

SOUTH

RIVER

BRANCH

ROCK

SIXTEENTH LINE

BEGIN RELOCATION ORDER
7+50.00
Y 336249.32
X 718190.11
409.22' NORTH AND 1343.74' EAST OF THE WEST QUARTER CORNER OF SECTION 34, T14N, R14E

END RELOCATION ORDER
12+00.00
Y 336699.22
X 718199.33
859.13' NORTH AND 1352.97' EAST OF THE WEST QUARTER CORNER OF SECTION 34, T14N, R14E

SLOPE INTERCEPT, TYP.

OAK GROVE ROAD

PROPOSED R/W

TLE

TLE SLOPES

30' FEE 7+50 306
35' FEE 7+50 305
40' TLE 7+50 402
40' 35' TLE 9+75 401
35' FEE 9+75 304
30' FEE 9+75 303
35'/30' TLE 10+75 407 406
35'/30' TLE 12+00 404 405
EP: 15+00.00

SIXTEENTH LINE R/L N01°10'27"E P.L.

PARCEL 1 - FEE

FROM POINT	TO POINT	BEARING	DISTANCE
110	300	S89°29'40"E	1335.17'
300	301	N01°10'27"E	421.09'
301	302	N01°10'27"E	225.00'
302	303	S88°49'33"E	30.00'
303	304	S88°49'33"E	5.00'
304	305	S01°10'27"W	225.00'
305	306	N88°49'33"W	5.00'
306	301	N88°49'33"W	30.00'

1

T01-14-14-34-08-002-00
BRUCE A. HUIZENGA AND
LEANNE K. HUIZENGA

PARCEL 1 - TLE'S

FROM POINT	TO POINT	BEARING	DISTANCE
110	300	S89°29'40"E	1335.17'
300	301	N01°10'27"E	421.09'
301	302	N01°10'27"E	225.00'
303	304	S88°49'33"E	5.00'
304	401	S88°49'33"E	5.00'
401	402	S01°10'27"W	225.00'
402	305	N88°49'33"W	5.00'
305	304	N01°10'27"E	225.00'
110	300	S89°29'40"E	1335.17'
300	403	N01°10'27"E	871.09'
403	404	S88°49'33"E	30.00'
404	405	S88°49'33"E	5.00'
405	406	S01°10'27"W	125.00'
406	407	N88°49'33"W	5.00'
407	404	N01°10'27"E	125.00'

96 COMPUTED POSITION Y 335840.10 X 716846.36

99 CHRISNIK SPIKE Y 333142.88 X 722124.41

97 COMPUTED POSITION Y 335793.00 X 722184.32

98 ALUMINUM MONUMENT Y 338443.12 X 722244.23

QUARTER LINE S89°29'40"E 2669.08'

SECTION LINE N01°17'42"E 2650.80'

SECTION LINE N01°17'42"E 2650.80'

SHEET 4 OF 4 SHEETS

REVISION DATE	DATE 6/8/2020	SCALE, FEET 0 50 100	HWY: OAK GROVE ROAD	STATE R/W PROJECT NUMBER 6187-05-00	PLAT SHEET 4.04
	GRID FACTOR		COUNTY: FOND DU LAC	CONSTRUCTION PROJECT NUMBER 6187-05-71	PS&E SHEET 15 E

FILE NAME : 040104-RP.DWG
LAYOUT NAME - RW 1 IN 100 FT

PLOT DATE : 6/4/2020 10:14 AM PLOT BY : BENJAMIN OITZINGER PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 75

BENCH MARKS

BM	STATION	DESCRIPTION	ELEVATION
A	10+09, 12.5' RT	CHISELED SQUARE ON TOP OF WINGWALL, NE CORNER OF STRUCTURE P-20-927	915.28
B	13+93, 29.5' RT	RR SPIKE IN 42" MAPLE TREE, N. SIDE OF DRIVEWAY, E. SIDE OF RD., 300' N OF STRUCTURE P-20-927	921.42

**VERTICAL DATUM REFERENCED TO NAVD88 (2012).

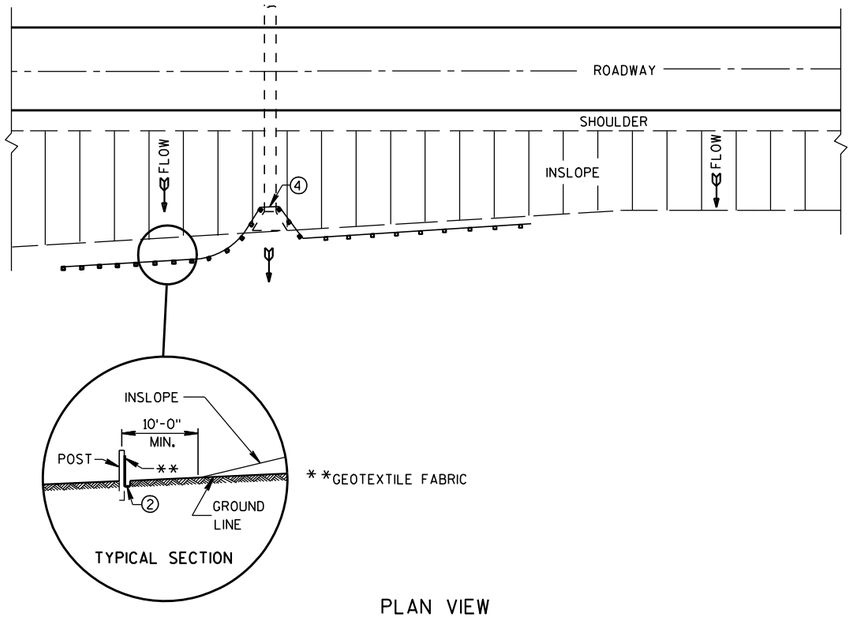
STATION 09+99
STRUCTURE B-20-0243, REQ'D
SINGLE SPAN FLAT CONCRETE SLAB
30.0' C-C LENGTH
32.5' OVERALL LENGTH
26.0' CLEAR ROADWAY WIDTH
0° SKEW

STATION 10+00
REMOVE STRUCTURE P-20-0927
SINGLE SPAN CONCRETE SLAB
22' APPROX OVERALL LENGTH
21' CLEAR ROADWAY WIDTH

PROJECT NO: 6187-05-71 | HWY: OAK GROVE ROAD | COUNTY: FOND DU LAC | PLAN AND PROFILE: OAK GROVE ROAD | SHEET 16 | E

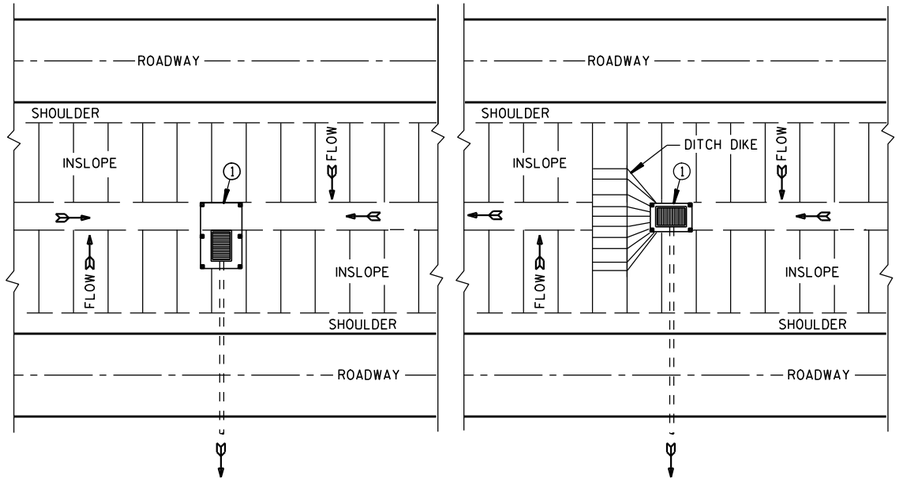
Standard Detail Drawing List

08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
08E14-01	TRACKING PAD
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
12A03-10	NAME PLATE (STRUCTURES)
14B29-01	SAFETY EDGE
14B42-06A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-08A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-08B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C06-09	SIGNING & MARKING FOR TWO LANE BRIDGES
15C11-07B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



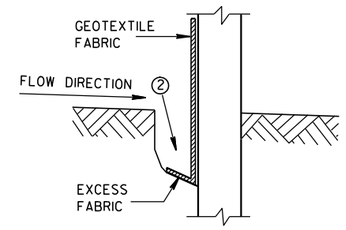
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

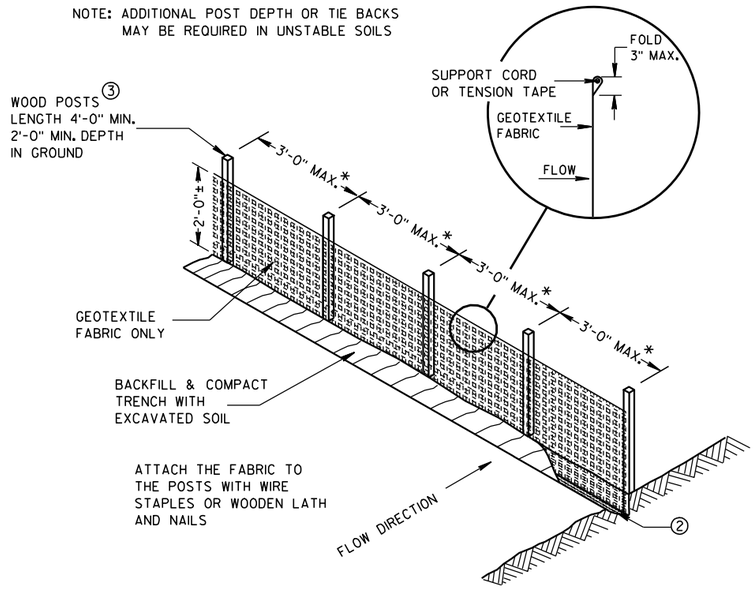
GENERAL NOTES

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

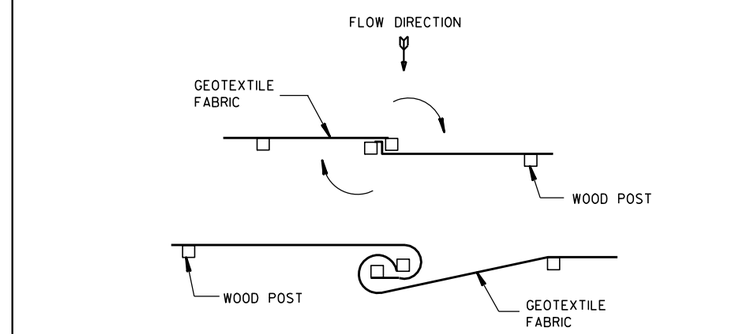
1. HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
2. FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL BE A MINIMUM SIZE OF 1⅛" X 1⅛" OF OAK OR HICKORY.
4. SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
5. CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.



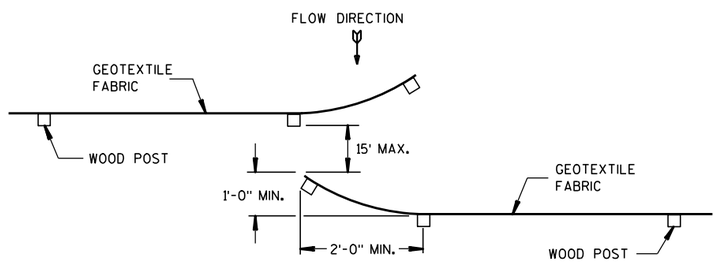
TRENCH DETAIL



SILT FENCE

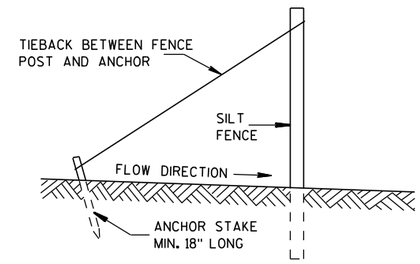


TWIST METHOD



HOOK METHOD

JOINING TWO LENGTHS OF SILT FENCE 5



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

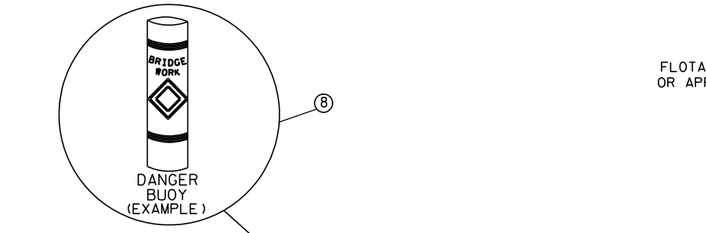
APPROVED
4-29-05 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

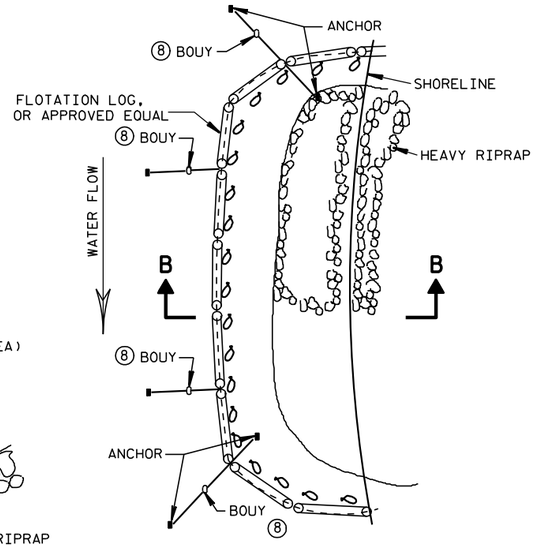
S.D.D. 8 E 9-6

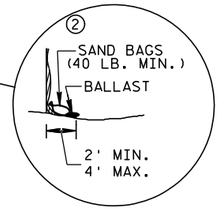
6

S.D.D. 8 E 9-6

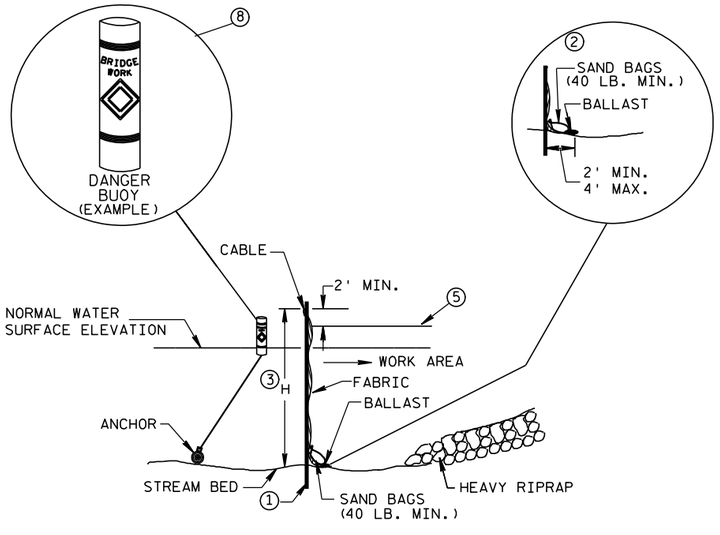


SECTION B-B

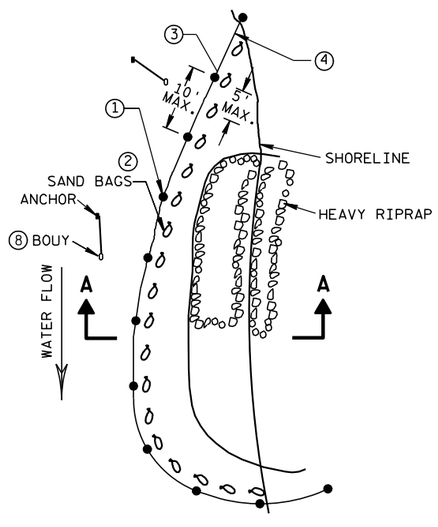




TURBIDITY BARRIER FLOAT ALTERNATIVE
CAUTION - SEE NOTE 6



SECTION A-A



PLAN VIEW

TURBIDITY BARRIER STANDARD POST INSTALLATION

TURBIDITY BARRIER PLACEMENT DETAILS

GENERAL NOTES

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

TURBIDITY BARRIER MAY BE REMOVED AT THE ENGINEERS DISCRETION, WHEN PERMANENT EROSION CONTROL MEASURES HAVE BEEN ESTABLISHED.

① DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.

② SANDBAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER TO MEET ADVERSE FIELD CONDITIONS. SPACE AS APPROPRIATE FOR SITE CONDITIONS.

③ WHEN BARRIER HEIGHT, H, EXCEEDS 8 FT., POST SPACING MAY NEED TO BE DECREASED.

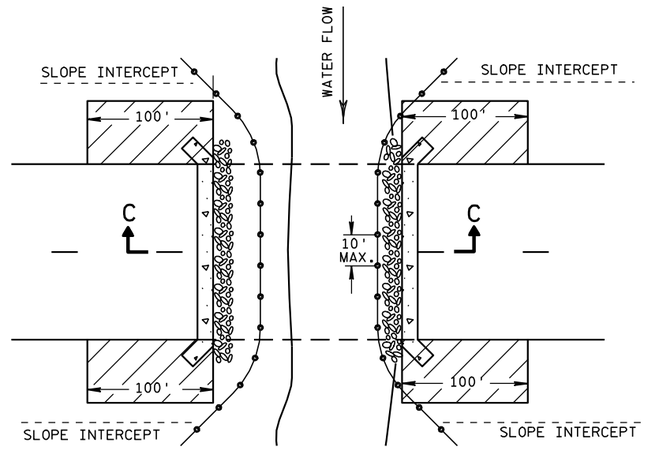
④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.

⑤ ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MIMIMUM BARRIER HEIGHT SHALL BE 2'GREATER THAN EITHER THE O2 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WICHEVER IS GREATER.

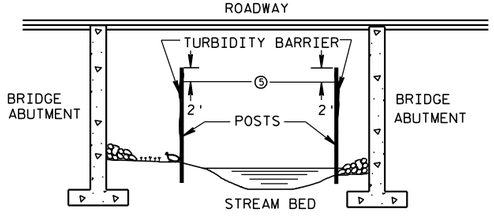
⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.

⑦ ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.

⑧ USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.



PLAN VIEW



SECTION C-C

TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

TURBIDITY BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

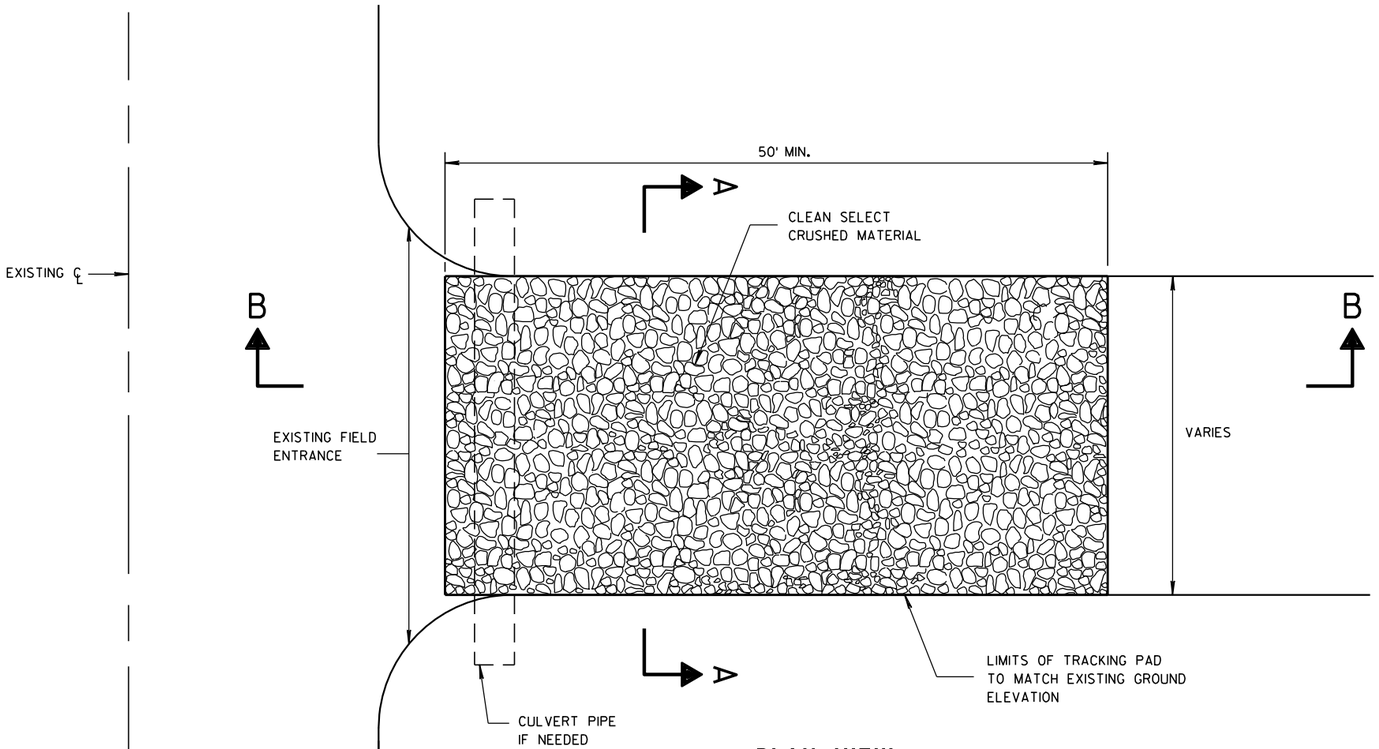
APPROVED
6/04/02 — DATE
/S/ Beth Cannestra — CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

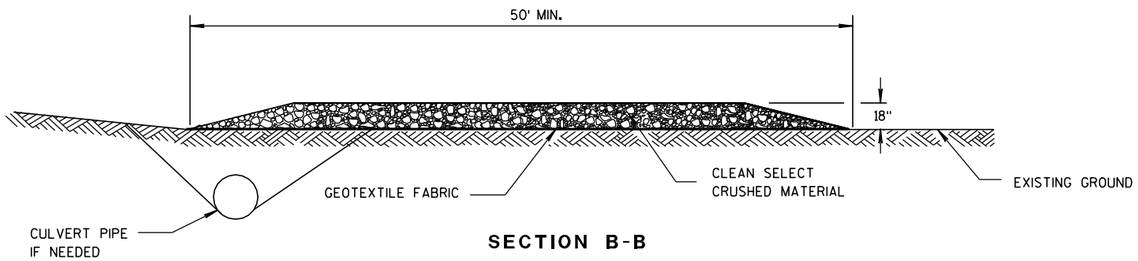
S.D.D. 8 E 11-2

6

S.D.D. 8 E 11-2



PLAN VIEW



SECTION B-B

GENERAL NOTES

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

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

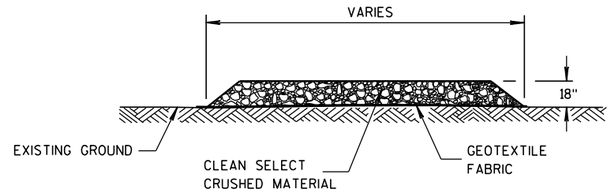
TRACKING PAD TO BE REMOVED AFTER CONSTRUCTION IS COMPLETED.

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

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

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

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



SECTION A-A

TRACKING PAD

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

S.D.D. 8 E 14-1
6

METAL APRON ENDWALLS

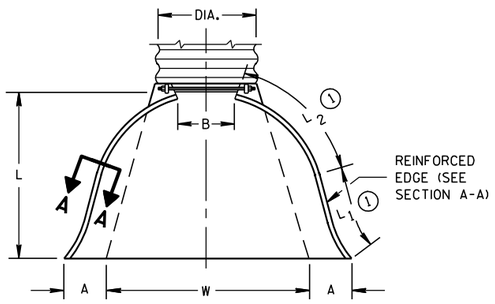
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")		
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to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

× EXCEPT CENTER PANEL SEE GENERAL NOTES

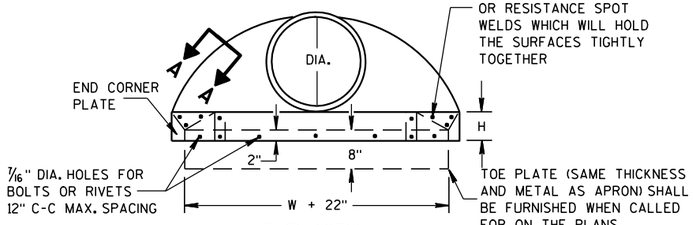
REINFORCED CONCRETE APRON ENDWALLS

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

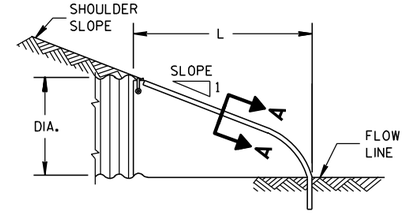
* MINIMUM
** MAXIMUM



PLAN VIEW

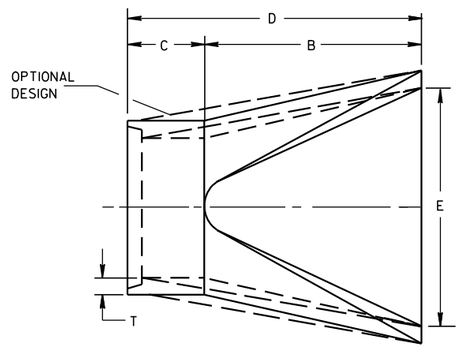


END VIEW

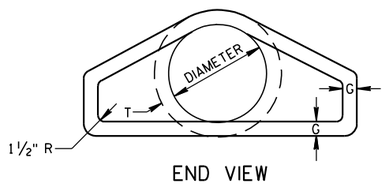


SIDE ELEVATION

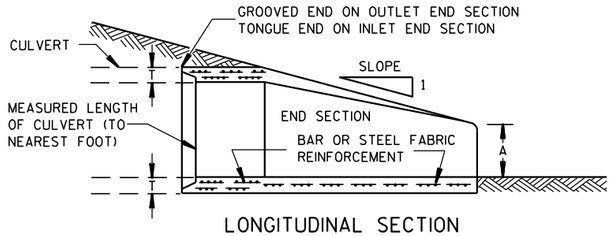
METAL ENDWALLS



PLAN

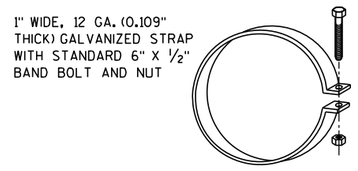


END VIEW



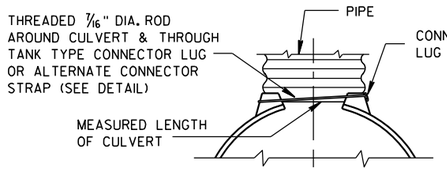
LONGITUDINAL SECTION

CONCRETE ENDWALLS

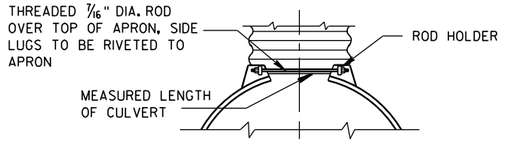


ALTERNATE FOR TYPE 1 CONNECTION

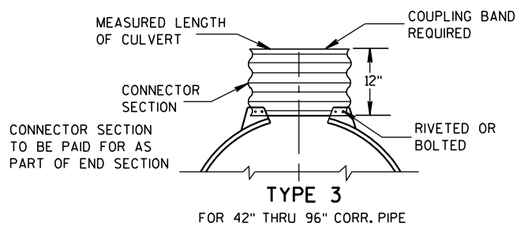
END SECTION CONNECTOR STRAP



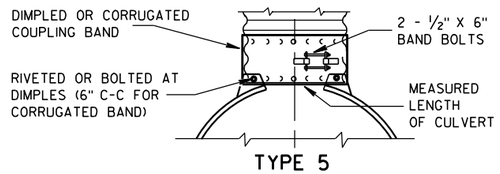
TYPE 1
FOR 12" THRU 24" CORR. PIPE



TYPE 2
FOR 30" THRU 96" CORR. PIPE



TYPE 3
FOR 42" THRU 96" CORR. PIPE



TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

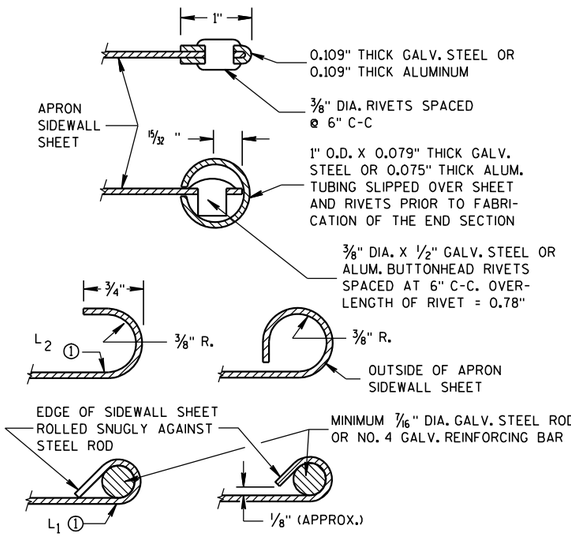
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

FOR CIRCUMFERENTIALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2, 3 OR 5 AS APPLICABLE.

FOR HELICALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2 OR 5.

FOR HELICALLY CORRUGATED PIPES WITH TWO CIRCUMFERENTIAL CORRUGATIONS AT EACH END USE ENDWALL CONNECTION DETAILS 1, 2 OR 3.

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

CONCRETE CULVERT ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL OR ALUMINUM CULVERT PIPE OR VISE VERSA. GALVANIZED STEEL OR ALUMINUM ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE OF THE SAME METAL.

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

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

WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

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

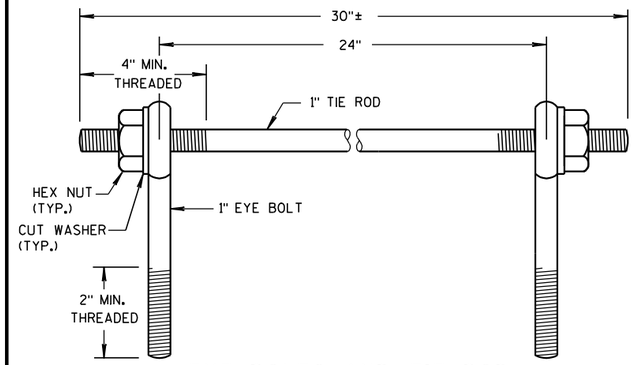
APRON ENDWALLS FOR CULVERT PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

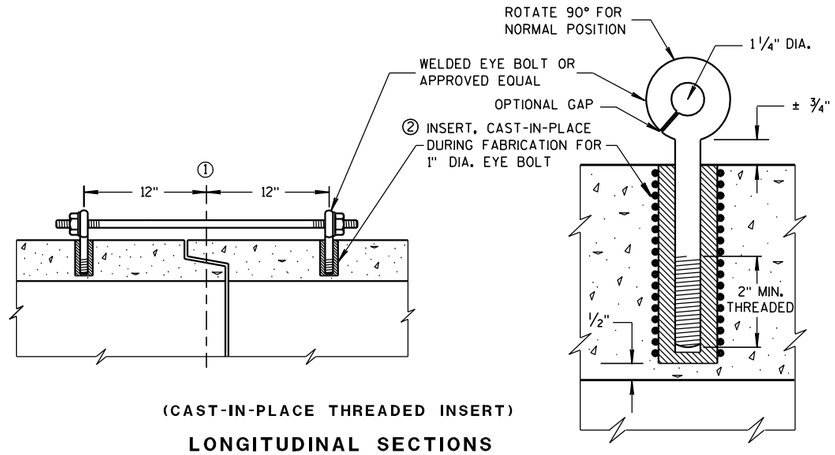
APPROVED
11/30/94 — DATE
/S/ Rory L. Rhinesmith — CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 8 F 1-11



EYE BOLTS AND TIE ROD



(CAST-IN-PLACE THREADED INSERT)

LONGITUDINAL SECTIONS

EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 1)

GENERAL NOTES

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

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

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

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

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

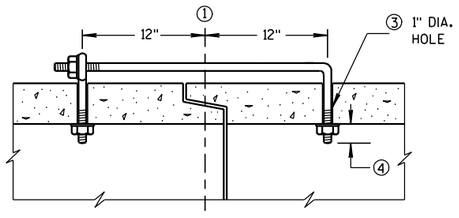
② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.

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

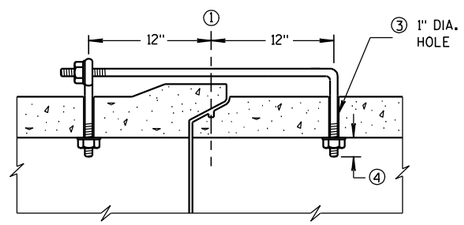
④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.

⑤ OPENING TO BE ROD DIAMETER PLUS 1 INCH.

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



(TONGUE & GROOVE PIPE)

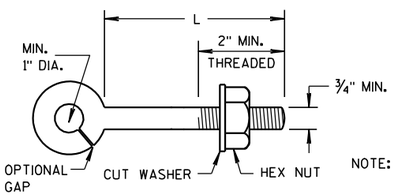


(MODIFIED BELL PIPE)

LONGITUDINAL SECTION

EYE BOLT DIMENSION TABLE

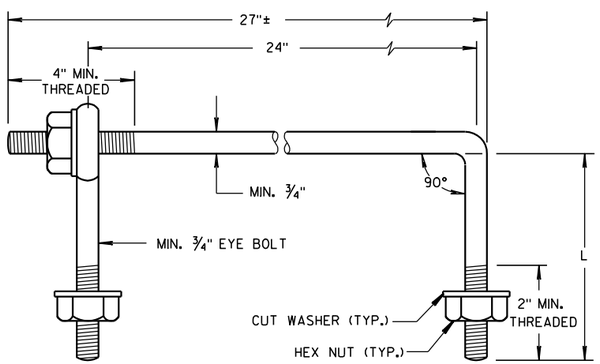
PIPE SIZE	L = LENGTH	
	TONGUE & GROOVE PIPE	MODIFIED BELL PIPE
18" TO 24"	4 1/2"	6 1/4"
30"	5"	7"
36"	5 1/2"	7"
42"	6"	
48"	6 1/2"	
60"	7 1/2"	
66"	8"	



NOTE:

EYE BOLT

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



EYE BOLT AND TIE ROD

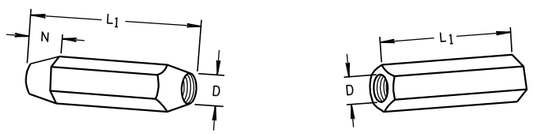
(JOINT TIES FOR 18" TO 66" DIA. CONCRETE PIPE)

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

ADJUSTABLE TIE ROD TABLE

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

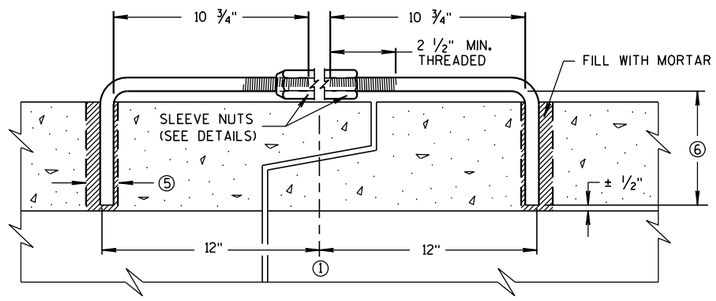
DIMENSIONS SHOWN ARE IN INCHES



TAPERED PLAIN

RIGHT AND LEFT THREADS

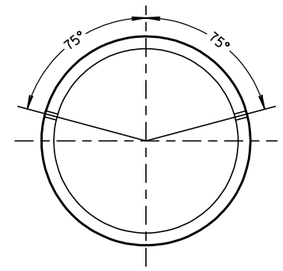
SLEEVE NUTS



LONGITUDINAL SECTION

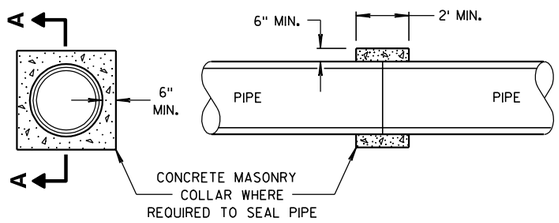
(JOINT TIES FOR 12" TO 108" DIA. CONCRETE PIPE)

ADJUSTABLE TIE ROD (ALTERNATE NO. 3)



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

TRANSVERSE SECTION



SECTION A-A

CONCRETE COLLAR DETAIL

JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6

S.D.D. 8 F 4-7

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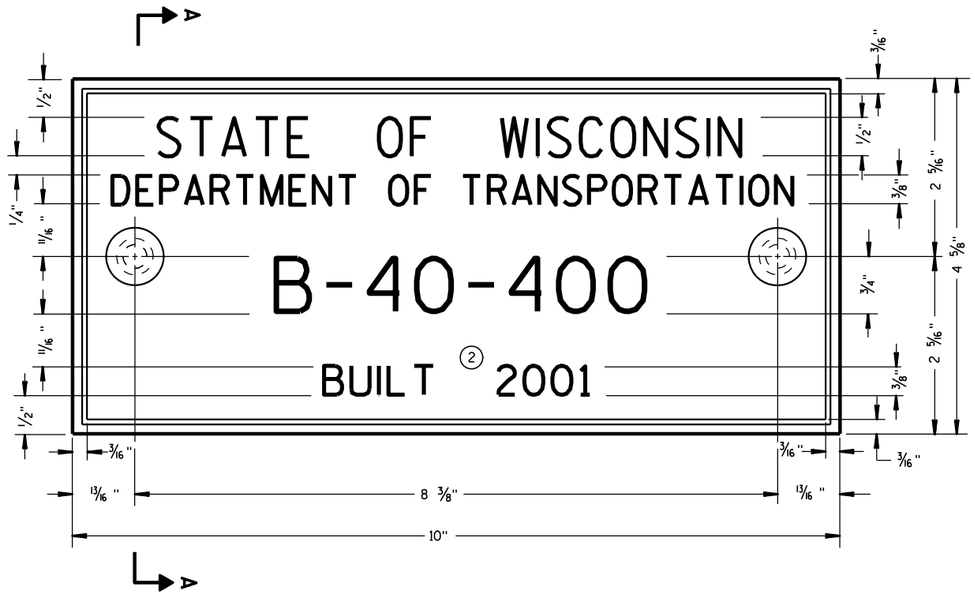
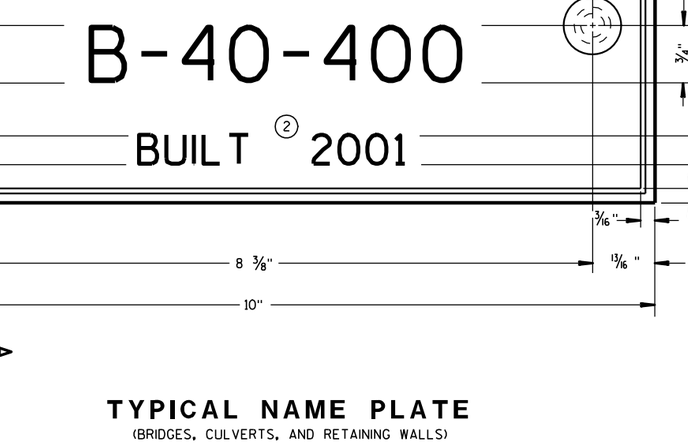
S.D.D. 8 F 4-7



TYPICAL NAME PLATE

(BRIDGES, CULVERTS, AND RETAINING WALLS)



NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

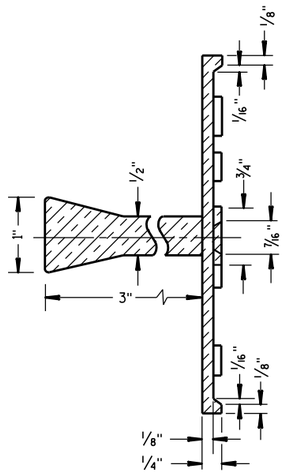
GENERAL NOTES

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

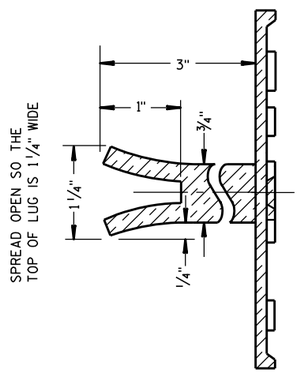
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

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

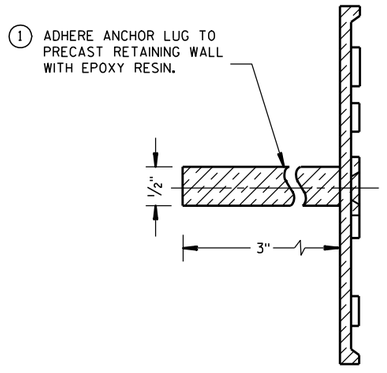
(2) REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



SECTION A-A



ALTERNATE LUG



ALTERNATE LUG

(FOR ATTACHMENT TO PRECAST STRUCTURES)

NAME PLATE (STRUCTURES)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	
3/26/10 DATE	/S/ Scot Beck -- CHIEF STRUCTURAL DEVELOP ENGINEER
FHWA	

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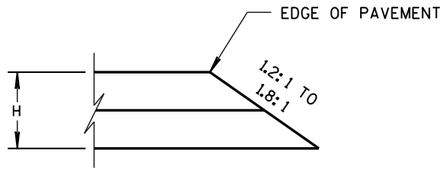
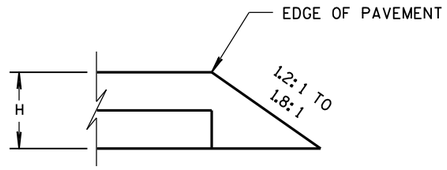
S.D.D. 12 A 3-10



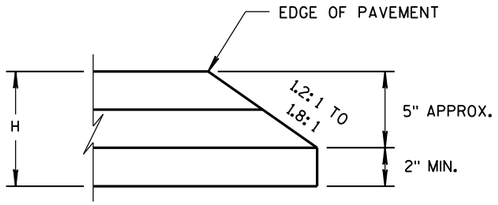
CONSTRUCTED WITH FINAL TWO LAYERS

FOR H 5" OR LESS



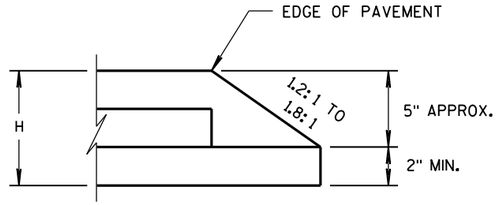
CONSTRUCTED WITH FINAL LAYER

FOR H 5" OR LESS



CONSTRUCTED WITH FINAL TWO LAYERS

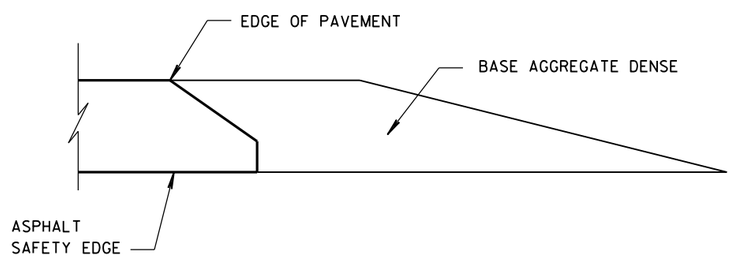
FOR H GREATER THAN 5"



CONSTRUCTED WITH FINAL LAYER

FOR H GREATER THAN 5"

HMA PAVEMENT AND HMA OVERLAYS



FINISHED SHOULDER AGGREGATE PLACEMENT

6

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S.D.D. 14 B 29-1

S.D.D. 14 B 29-1

SAFETY EDGE SM

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

11/30/2012
DATE

/S/ Jerry H. Zoda
ROADWAY STANDARDS DEVELOPMENT ENGINEER

FHWA

(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.

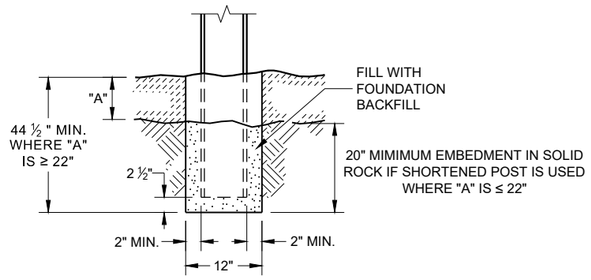
(3) IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL 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).

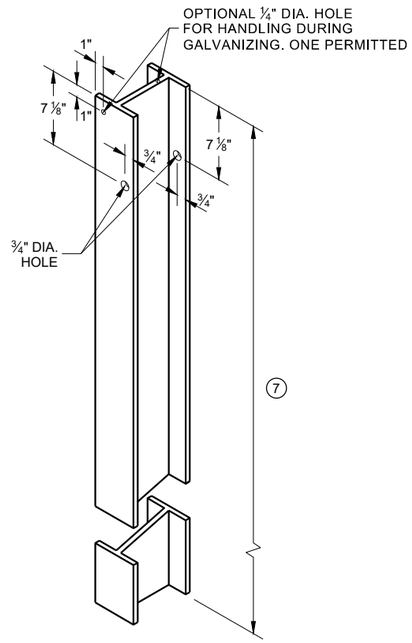
(5) FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS +1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 ¾" TO 32".

(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.

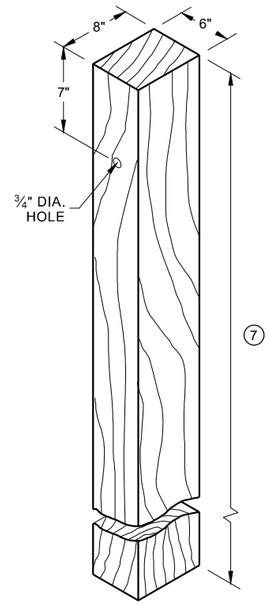
(7) TOTAL POST LENGTH FOR TYPE K IS 7' - 0".
TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".



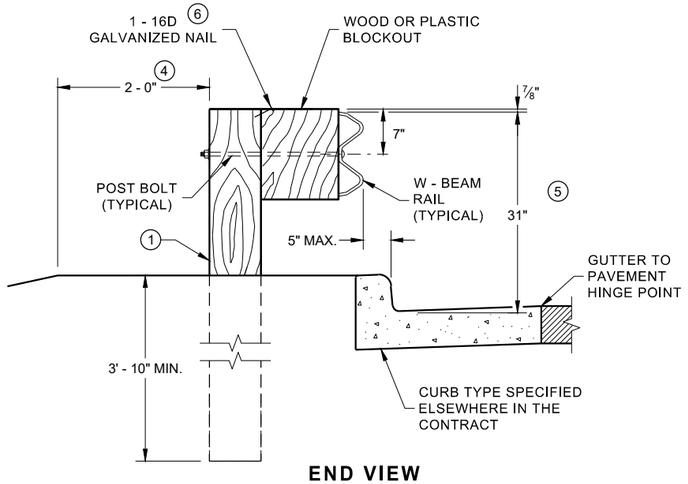
END VIEW
SETTING STEEL OR WOOD POST IN ROCK (3)



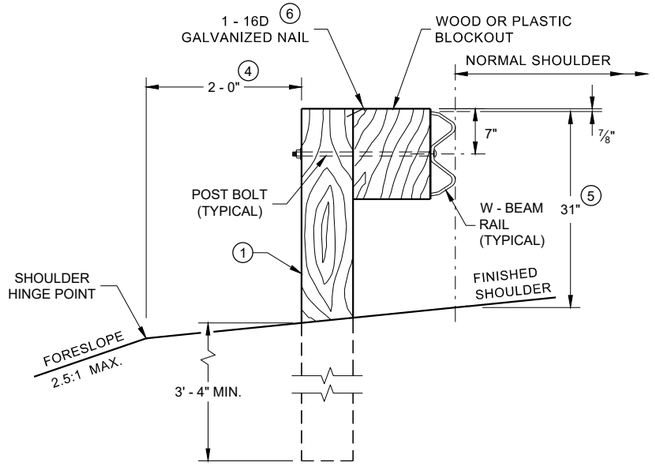
STEEL POST & HOLE PUNCHING DETAIL (W 6 X 9) (1)



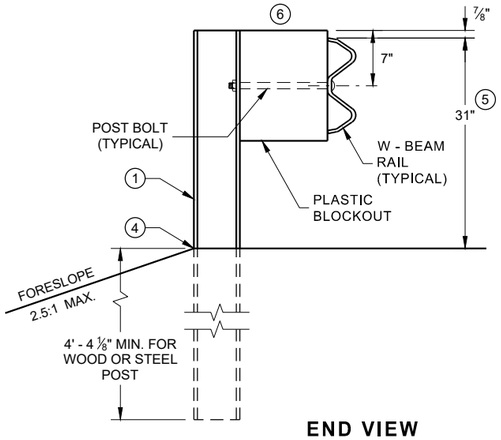
WOOD POST (6" X 8") NOMINAL (1)



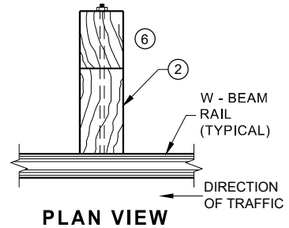
END VIEW
LOCATED ALONG A CURBED ROADWAY



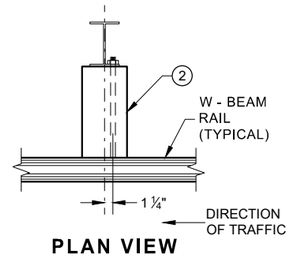
END VIEW
LOCATED ALONG A ROADWAY SHOULDER STANDARD INSTALLATION



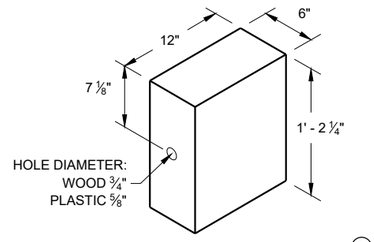
END VIEW
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



PLAN VIEW
WOOD POST, BLOCKOUT & BEAM



PLAN VIEW
STEEL POST, PLASTIC BLOCKOUT & BEAM



WOOD OR PLASTIC BLOCKOUT (2)

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

SDD 14B42 - 06a

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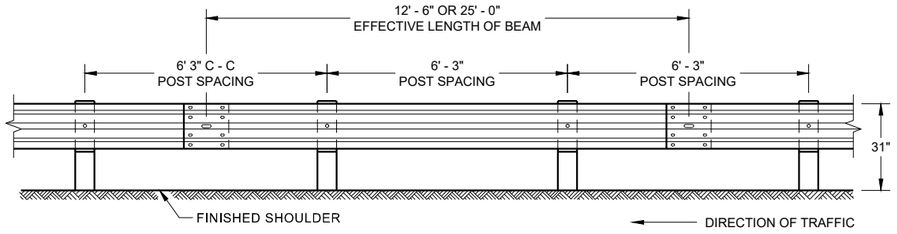
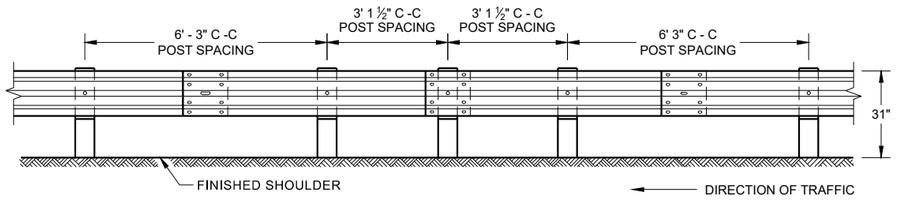
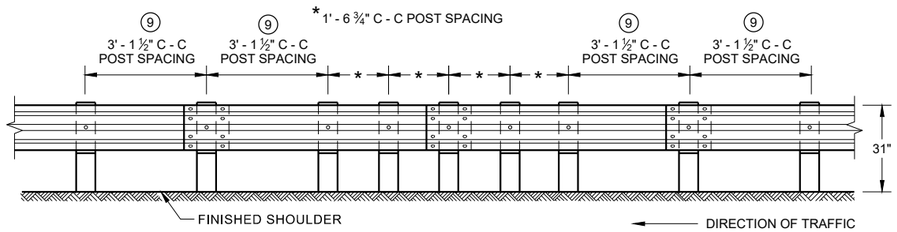
SDD 14B42 - 06a



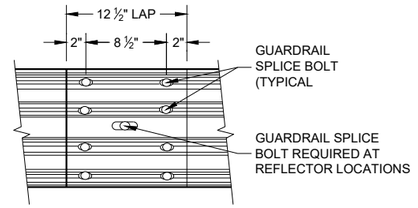
FRONT VIEW
POST SPACING STANDARD INSTALLATION



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



FRONT VIEW
QUARTER POST SPACING (QS)



FRONT VIEW
MID-SPAN BEAM SPLICE

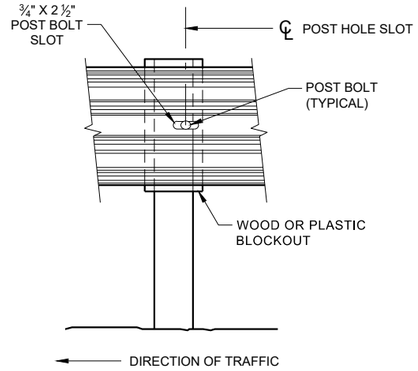
GENERAL NOTES

⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

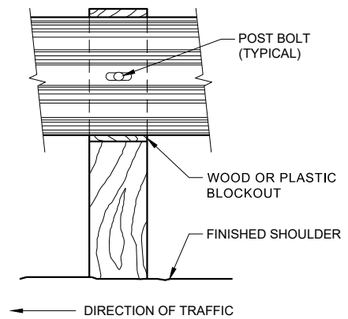
⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

POST BOLTS ARE A ⅝" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES ⅝" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND ⅝" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

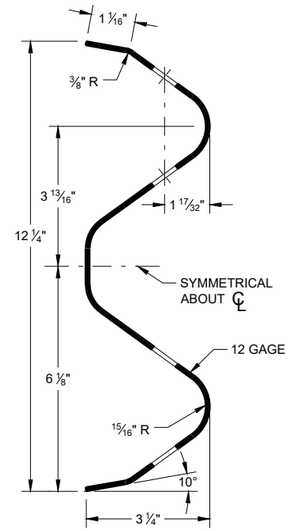
GUARD RAIL SPLICE BOLTS ARE A ⅝" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES ⅝" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



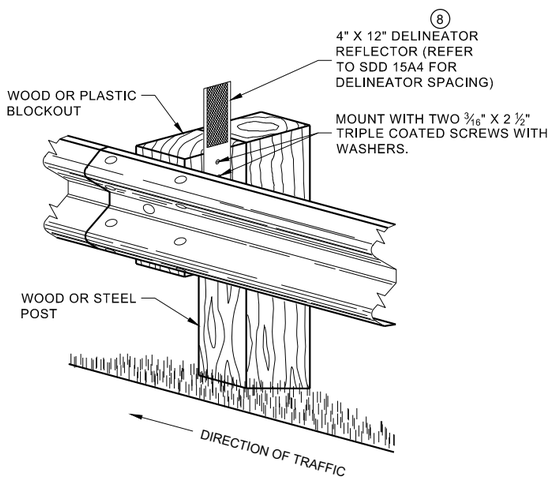
FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



SECTION THRU W-BEAM RAIL

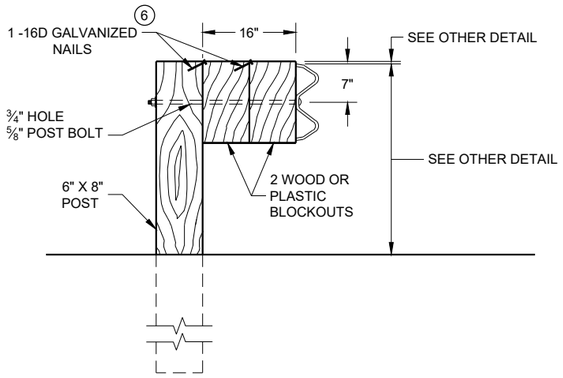


ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6
SDD 14B42 - 06b

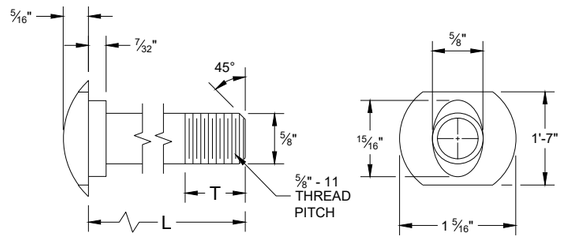


DETAIL FOR 16" BLOCKOUT DEPTH

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.

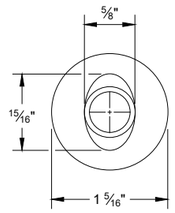
NOTE:

1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF 3/16".
2. IF THE BOLT EXTENDS MORE THAN ¼" FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.

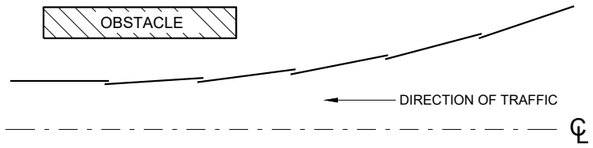


POST BOLT TABLE

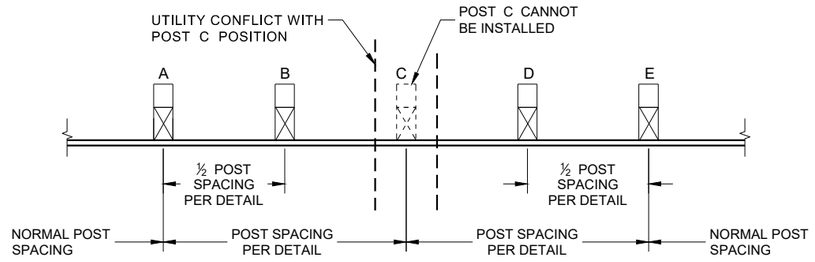
L	T (MIN.)
1 ¼"	1 ⅛"
2"	1 ¾"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



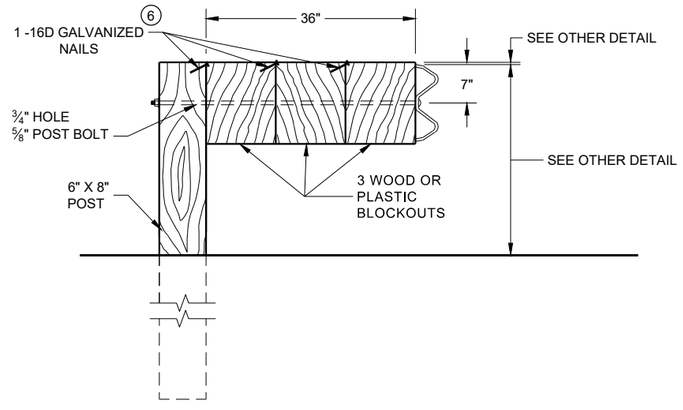
ALTERNATE BOLT HEAD



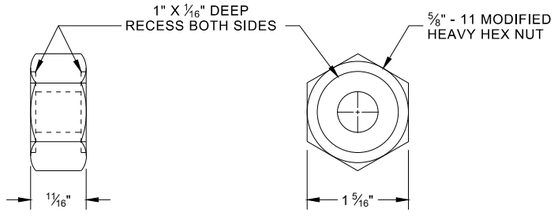
PLAN VIEW
BEAM LAPPING DETAIL



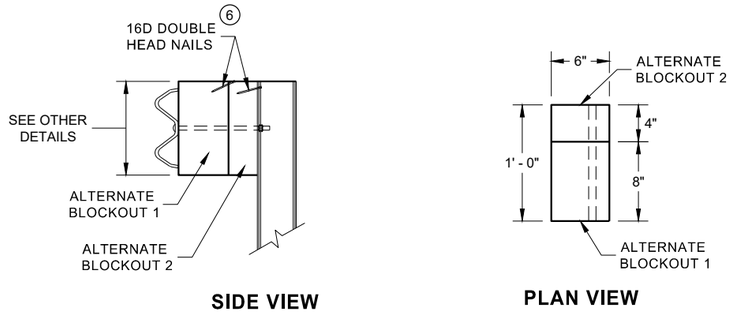
POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



DETAIL FOR 36" BLOCKOUT DEPTH



POST BOLT, SPLICE BOLT AND RECESS NUT



SIDE VIEW

PLAN VIEW

ALTERNATE WOOD BLOCKOUT DETAIL

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.

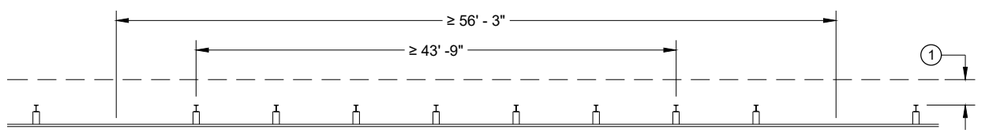
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

(6) WHEN USING STEEL POST AD 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.

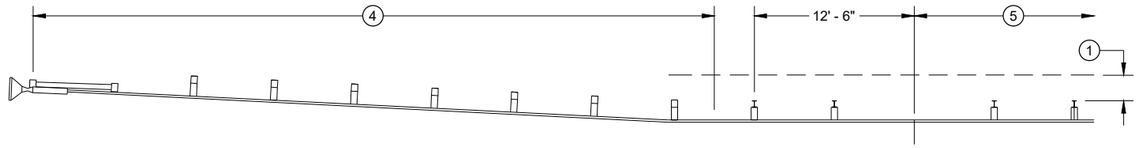
MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

6

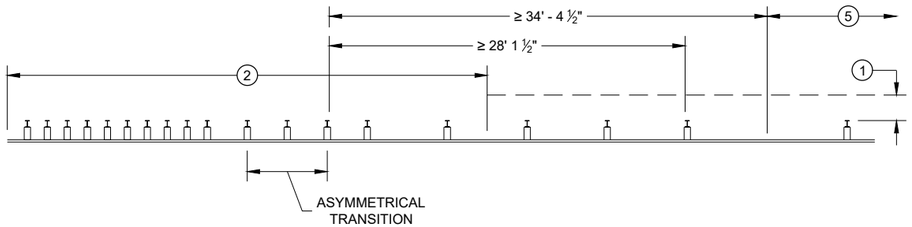
SDD 14B42 - 06c



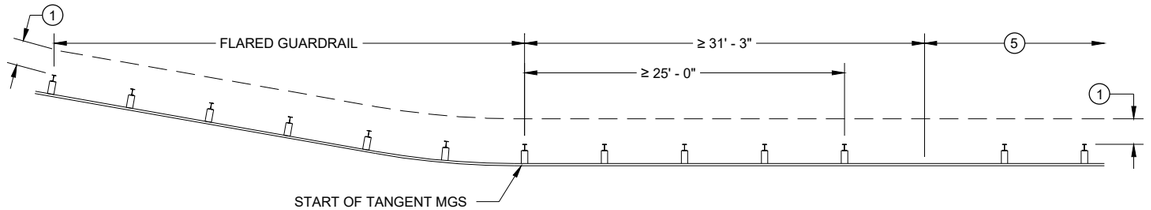
MISSING POST IN NORMAL BEAM GUARD RUN



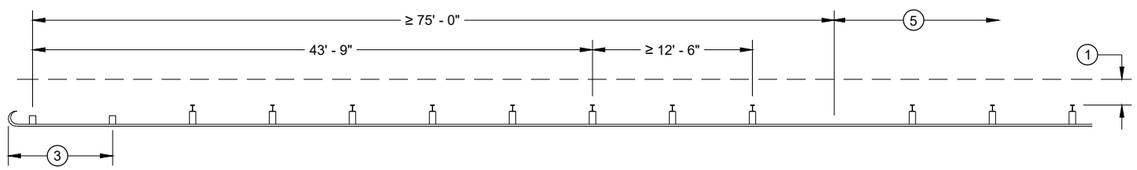
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



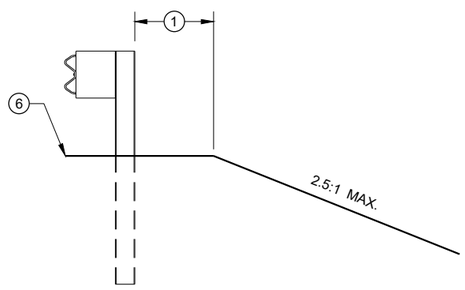
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



MISSING POST IN NORMAL BEAM GUARD RUN NEAR FLARED BEAM GUARD



MISSING POST IN NORMAL BEAM GUARD RUN NEAR TYPE 2 TERMINAL



CROSS SECTION VIEW

1. MINIMUM OF 2 FEET OF GRADING BEHIND POST.
2. SEE SDD 14B45 FOR MORE DETAILS.
3. SEE SDD 14B47 FOR MORE DETAILS.
4. SEE SDD 14B44 FOR MORE DETAILS.
5. SEE MISSING POST IN NORMAL BEAM GUARD RUN FOR DISTANCE TO NEXT MISSING POST AND AREA FOR WELL DRAINED, COMPACTED SOILS.
6. SEE PLAN FOR SHOULDER DESIGN.

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 — DATE
/S/ Rodney Taylor — ROADWAY STANDARDS DEVE UNIT SUPERVISOR
FHWA

6

SDD 14B42 - 06d

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 MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS. SEE MANUFACTURER'S INFORMATION.

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

(E) HARDWARE MAY VARY BETWEEN MANUFACTURER. SEE MANUFACTURER'S DRAWING FOR INFORMATION.

DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

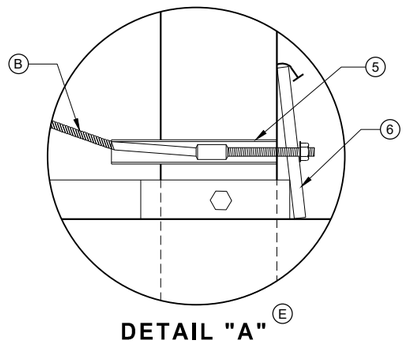
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

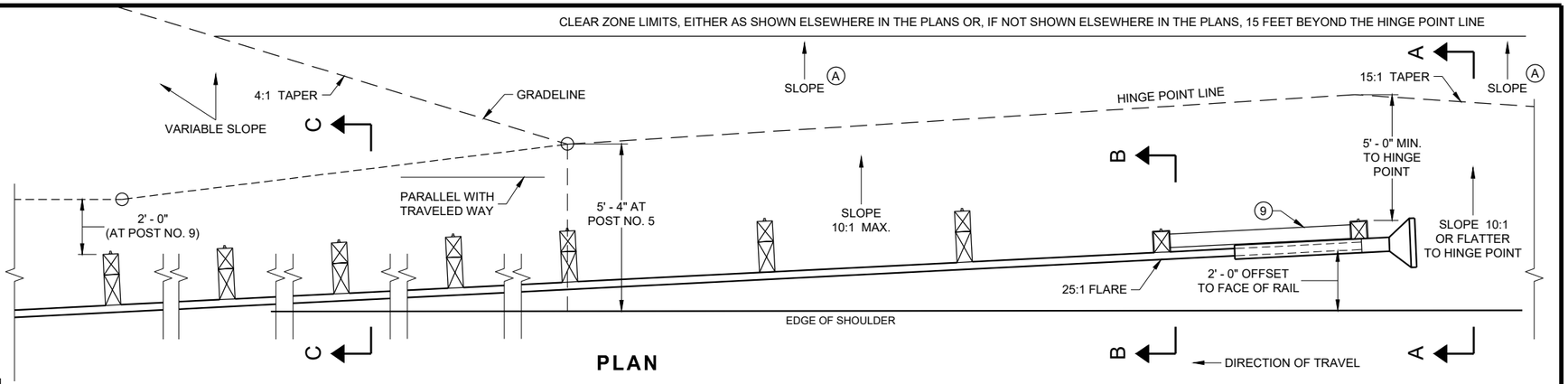
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

SEE MANUFACTURER'S DRAWING FOR SPLICE LOCATION, HARDWARE DIMENSIONS AND INSTALLATION INSTRUCTIONS.

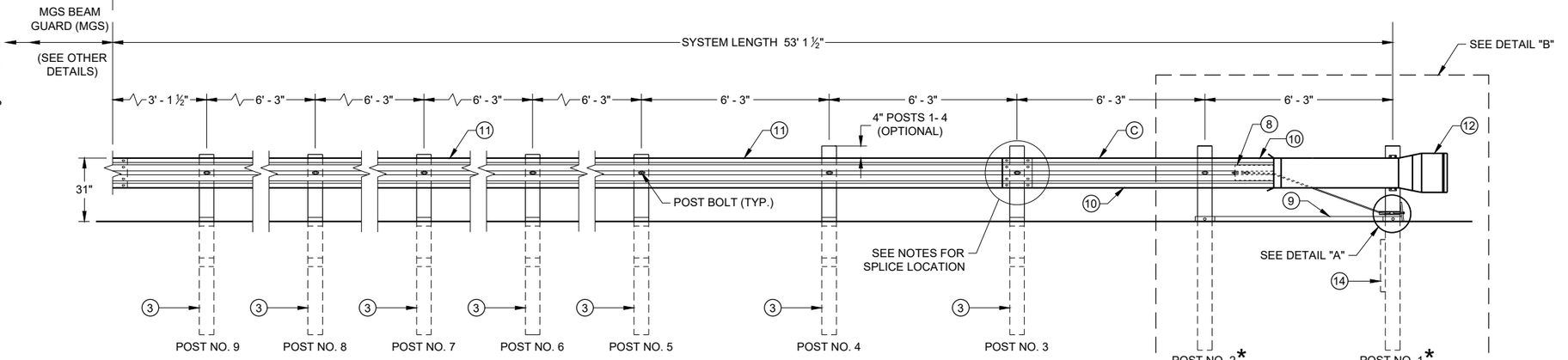
THE CENTER OF THE UPPER 3 ½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.



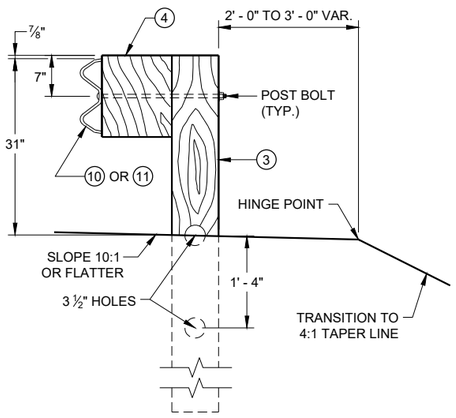
DETAIL "A" (E)



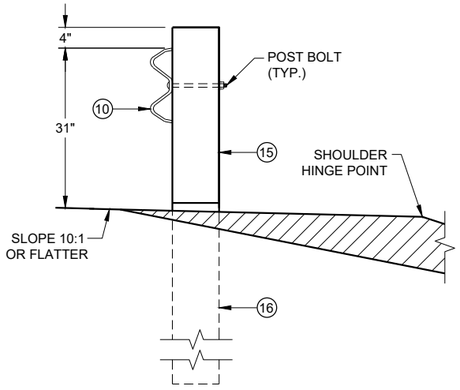
PLAN



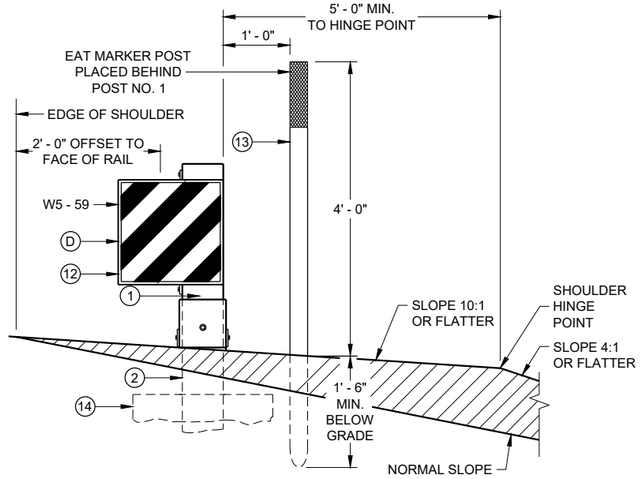
ELEVATION



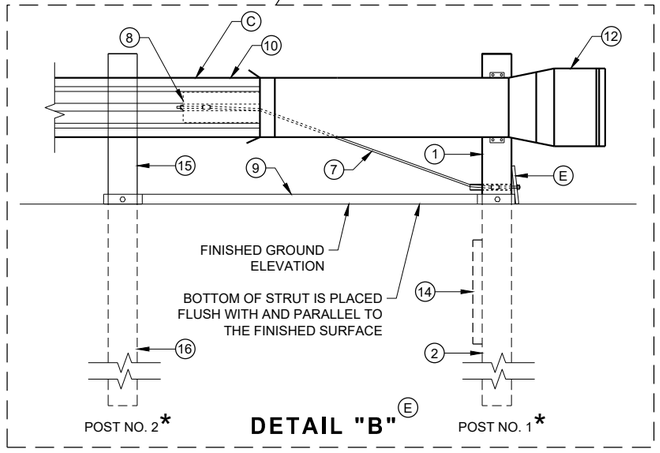
SECTION C - C
TYPICAL AT POST NOS. 3 - 9



SECTION B - B
TYPICAL AT POST NO. 2*



SECTION A - A
TYPICAL AT POST NO. 1*



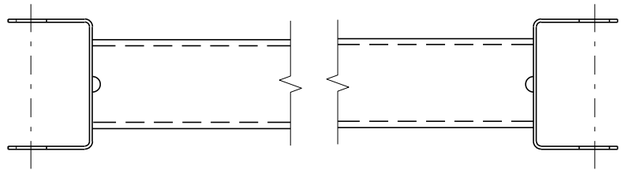
DETAIL "B" (E)

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

SDD 14B44 - 04a

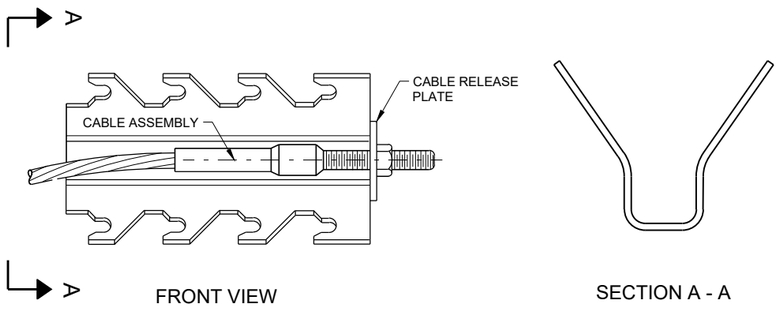
SDD 14B44 - 04a



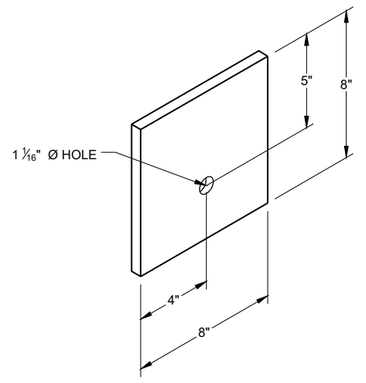
GENERIC GROUND STRUT ⑨ Ⓔ

BILL OF MATERIALS

PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUGACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
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	IMPACT HEAD
⑬	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)
⑭	SOIL PLATE
⑮	UPPER POST NO. 2
⑯	LOWER POST NO. 2



GENERIC ANCHOR CABLE BOX ⑨ Ⓔ



BEARING PLATE ⑥ Ⓔ

6

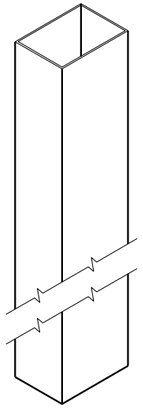
6

SDD 14B44 - 04b

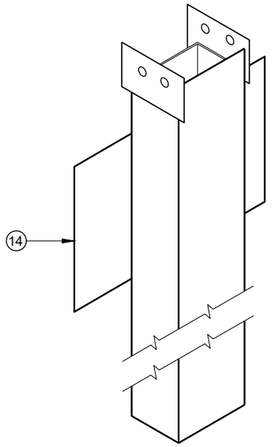
SDD 14B44 - 04b

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

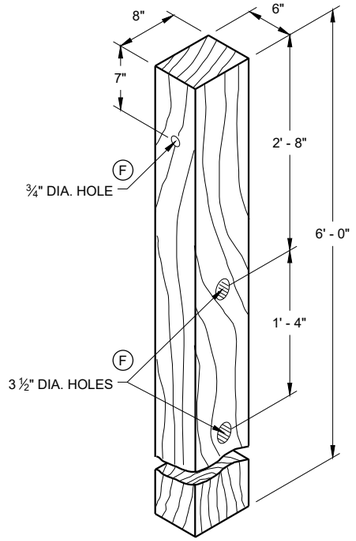
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



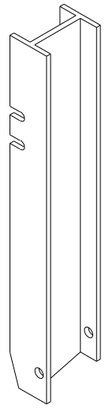
UPPER POST NO. 1 (1) (E)



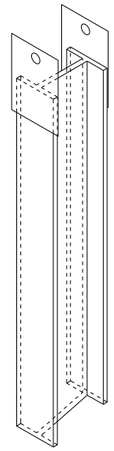
LOWER POST NO. 1 (2) (E)



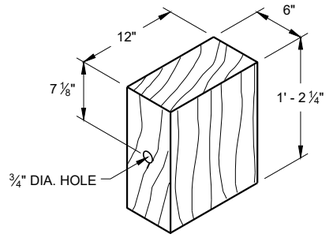
WOOD CRT POST (3) (E)
POSTS NUMBER 3-9



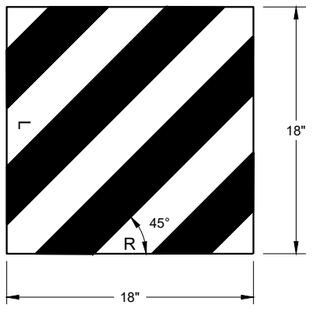
UPPER POST NO. 2 (15) (E)



LOWER POST NO. 2 (16) (E)

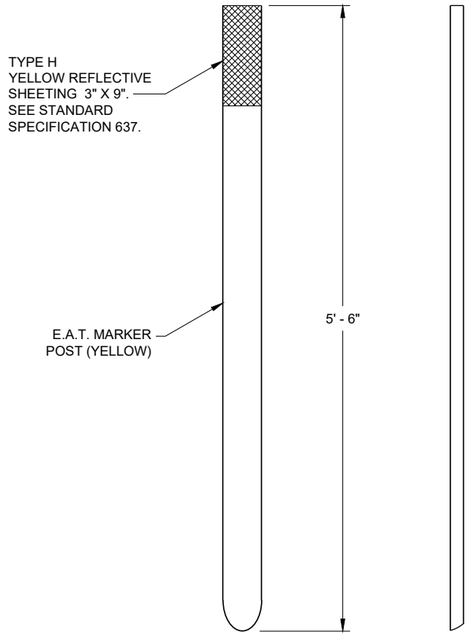


WOOD BLOCKOUT (4)
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



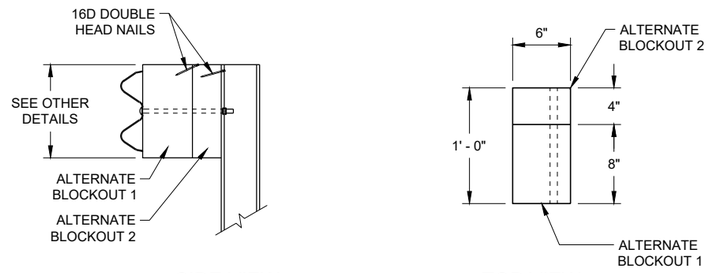
W5 - 59

REFLECTIVE SHEETING DETAIL (E)



FRONT VIEW SIDE VIEW

E.A.T. MARKER POST (13)



SIDE VIEW TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

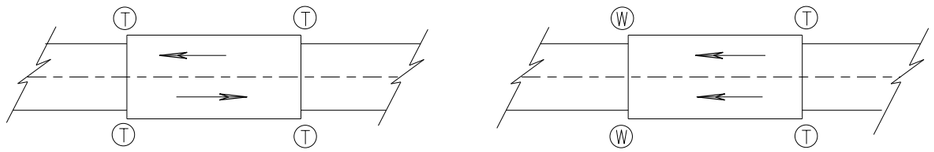
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 — DATE
/S/ Rodney Taylor — ROADWAY STANDARDS DEVE UNIT SUPERVISOR

FHWA

6

SDD 14B44 - 04c



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

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.

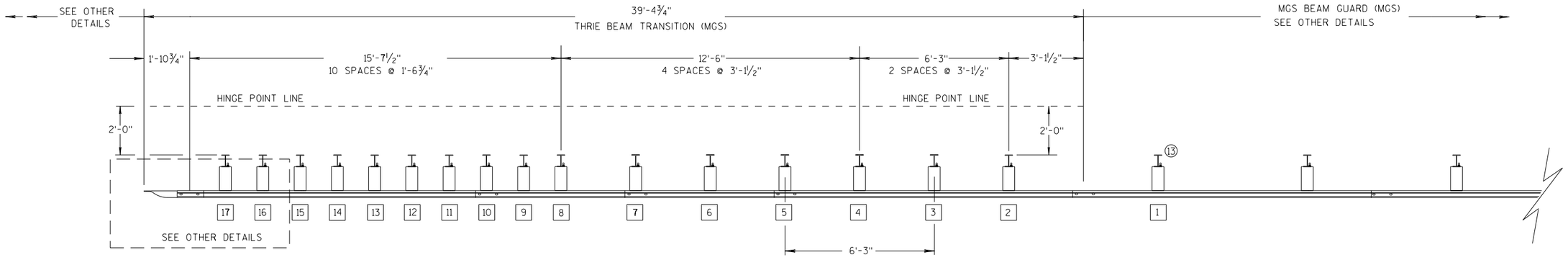
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

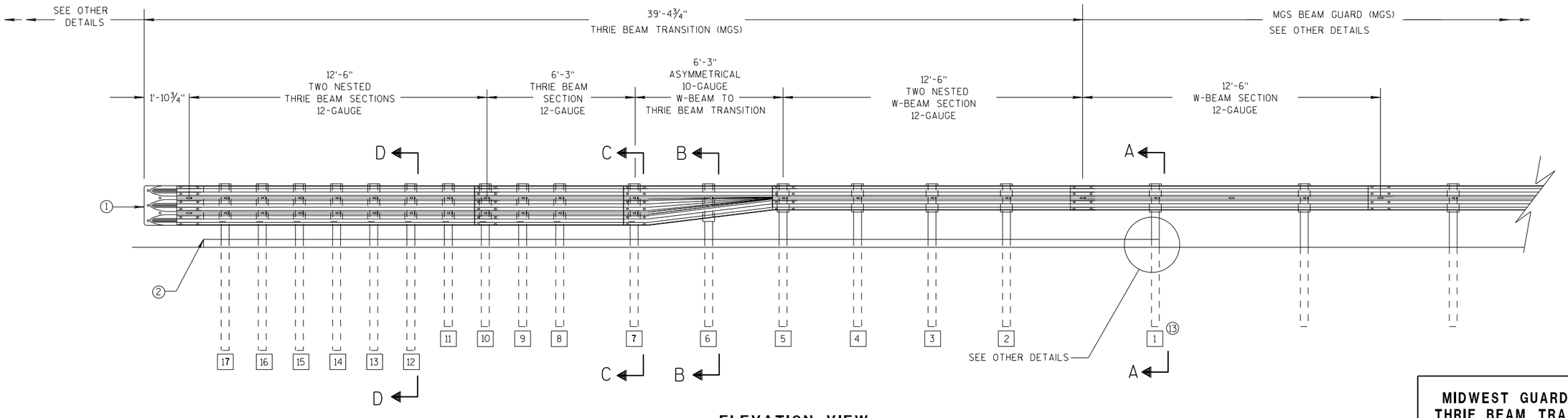
(1) BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

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

(13) STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD14B42



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 45-5a

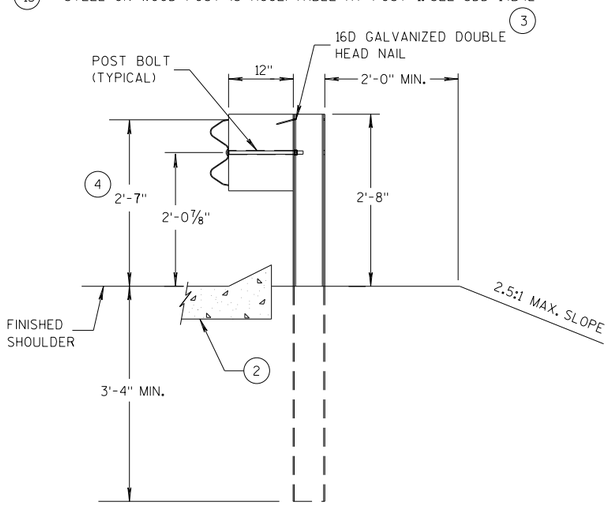
GENERAL NOTES

(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.

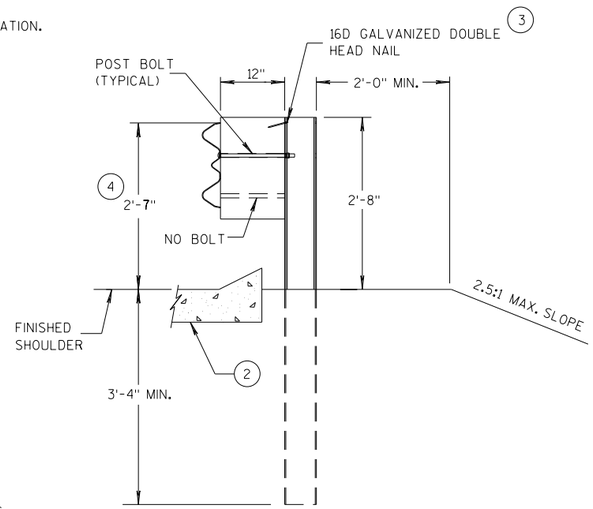
(4) TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".

(13) STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42



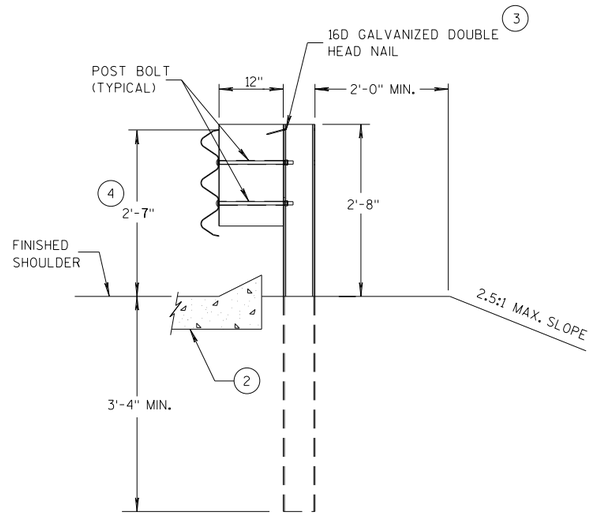
SECTION A-A (13)

POSTS 1-5



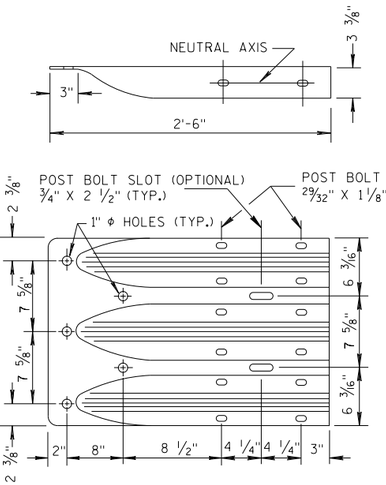
SECTION B-B

POST 6

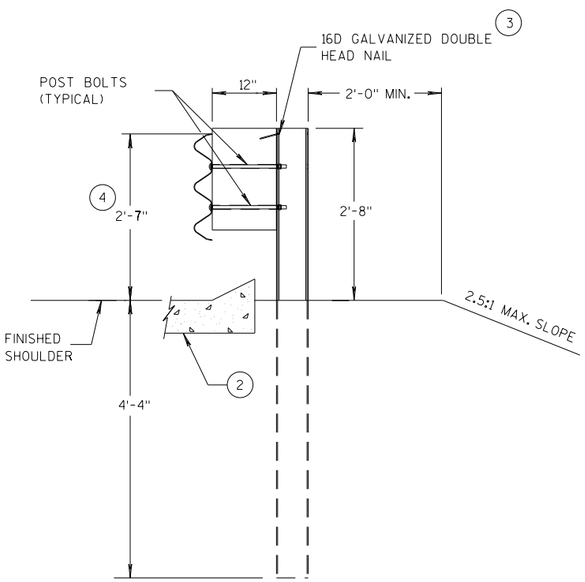


SECTION C-C

POSTS 7-11

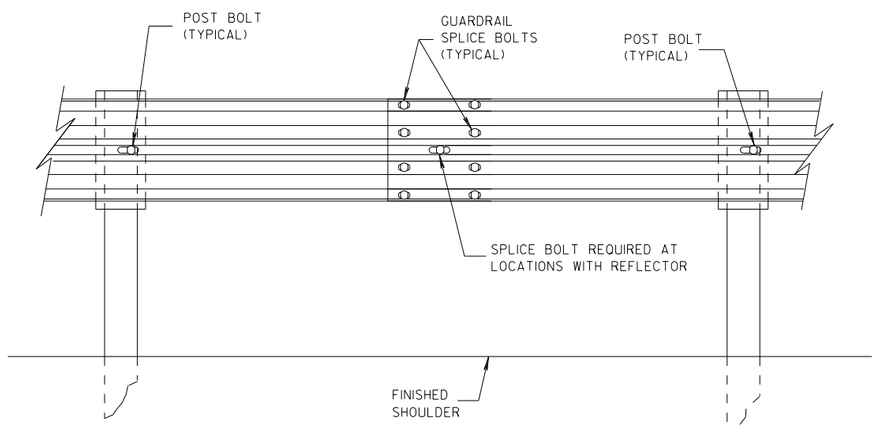


THRIE BEAM TERMINAL CONNECTOR



SECTION D-D

POSTS 12-17



SPLICE DETAIL

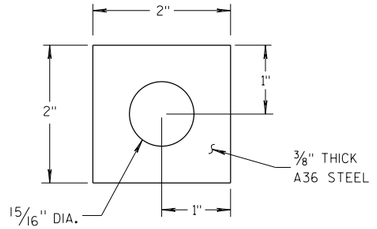
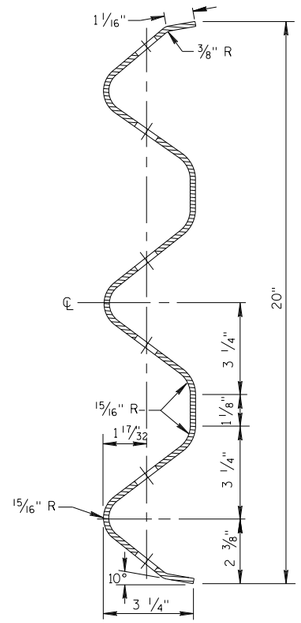


PLATE WASHER DETAIL



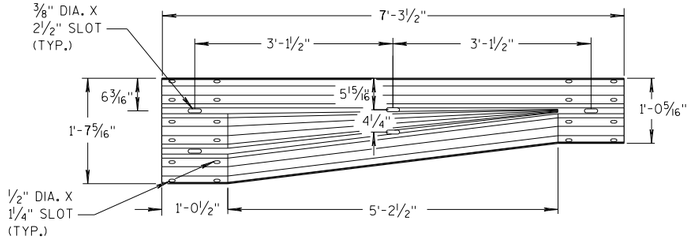
SECTION THRU THRIE BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

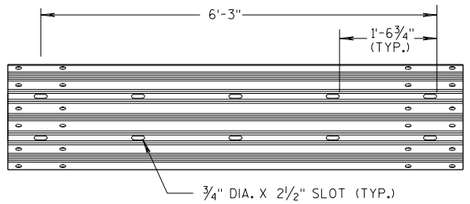
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOF

6

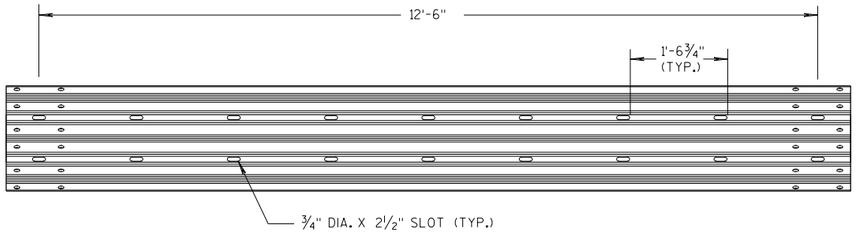
S.D.D. 14 B 45-5b



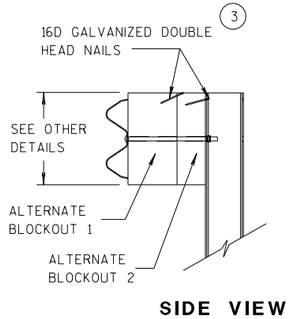
W-BEAM TO THRIE BEAM TRANSITION SECTION



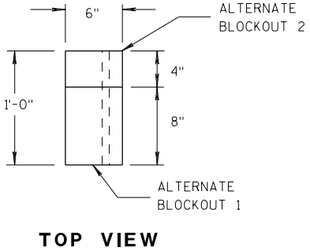
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

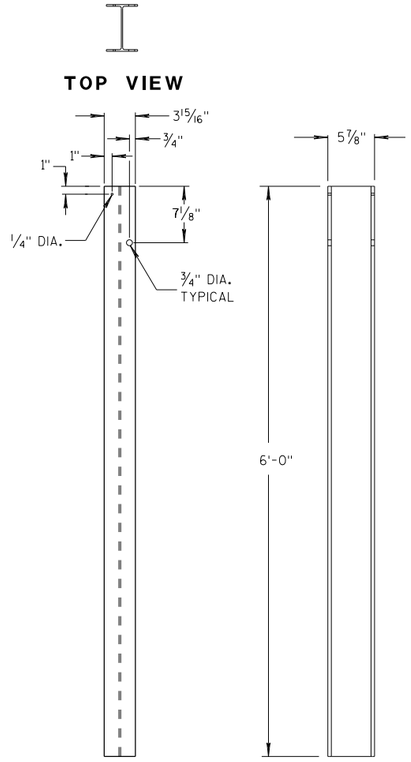


SIDE VIEW



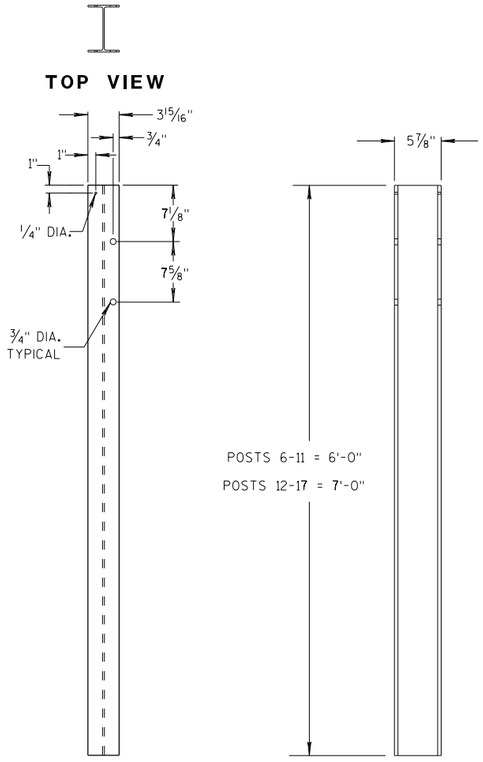
TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL



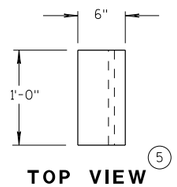
FRONT VIEW SIDE VIEW

STEEL POSTS 1-5 (13)

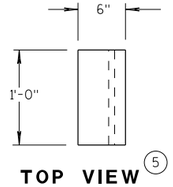


FRONT VIEW SIDE VIEW

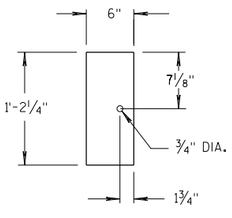
STEEL POSTS 6-17



TOP VIEW (5)

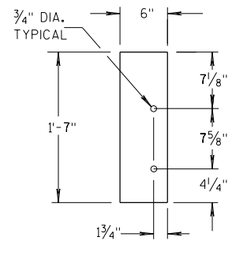


TOP VIEW (5)



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.

(13) STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

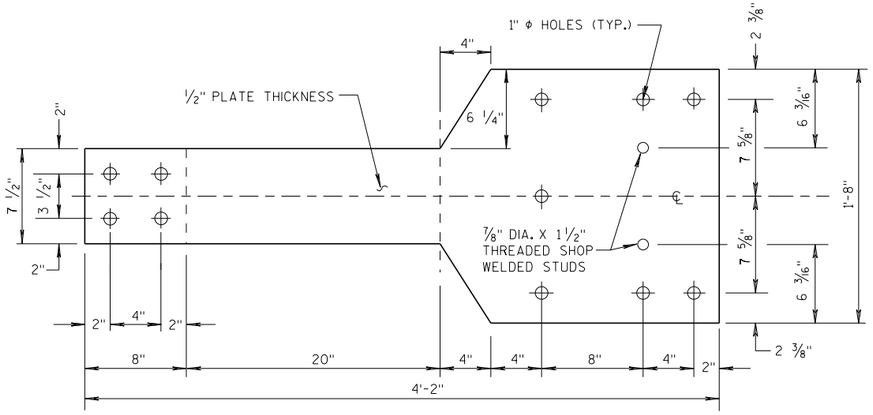
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

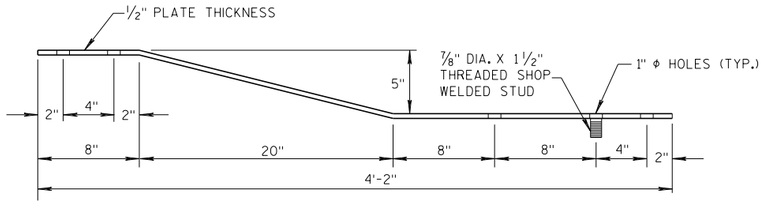
6
S.D.D. 14 B 45-5c

GENERAL NOTES

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

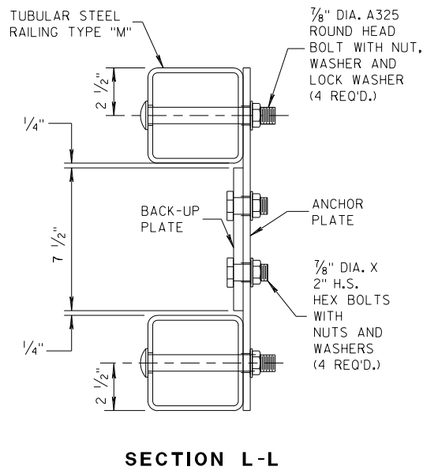


FRONT VIEW

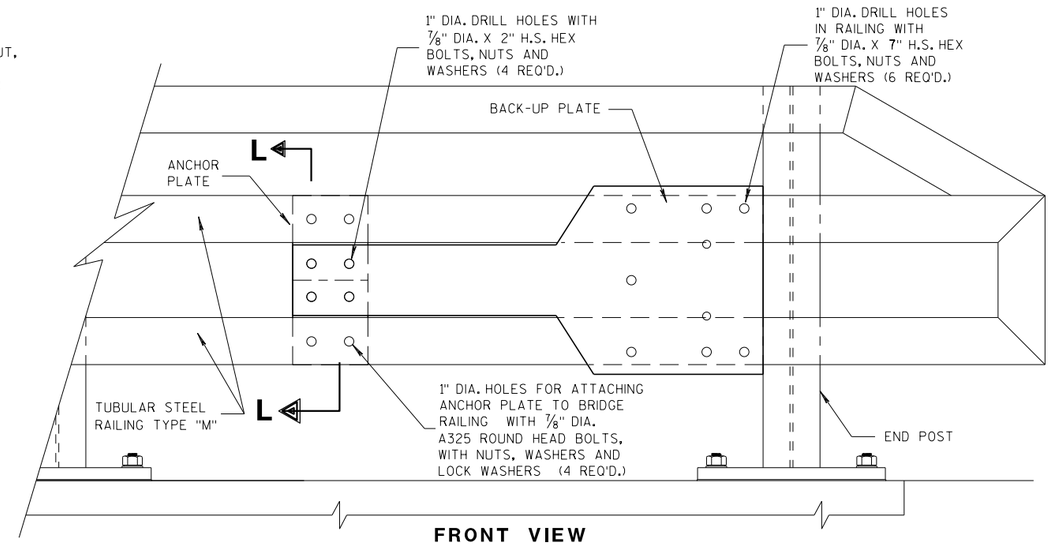


PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

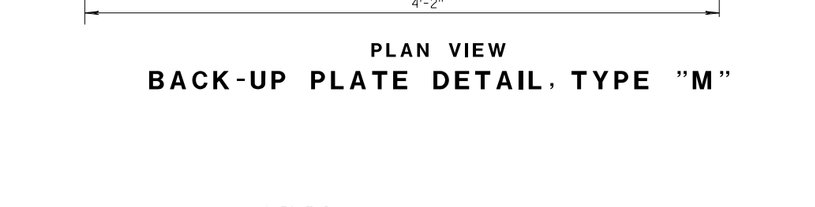


SECTION L-L

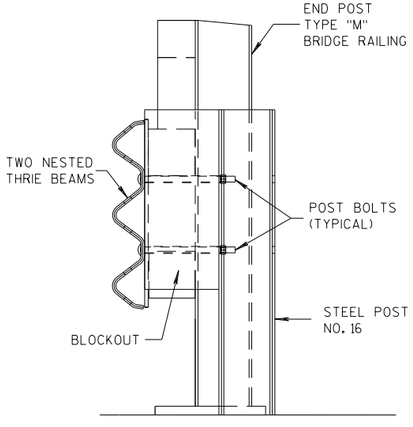


FRONT VIEW

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

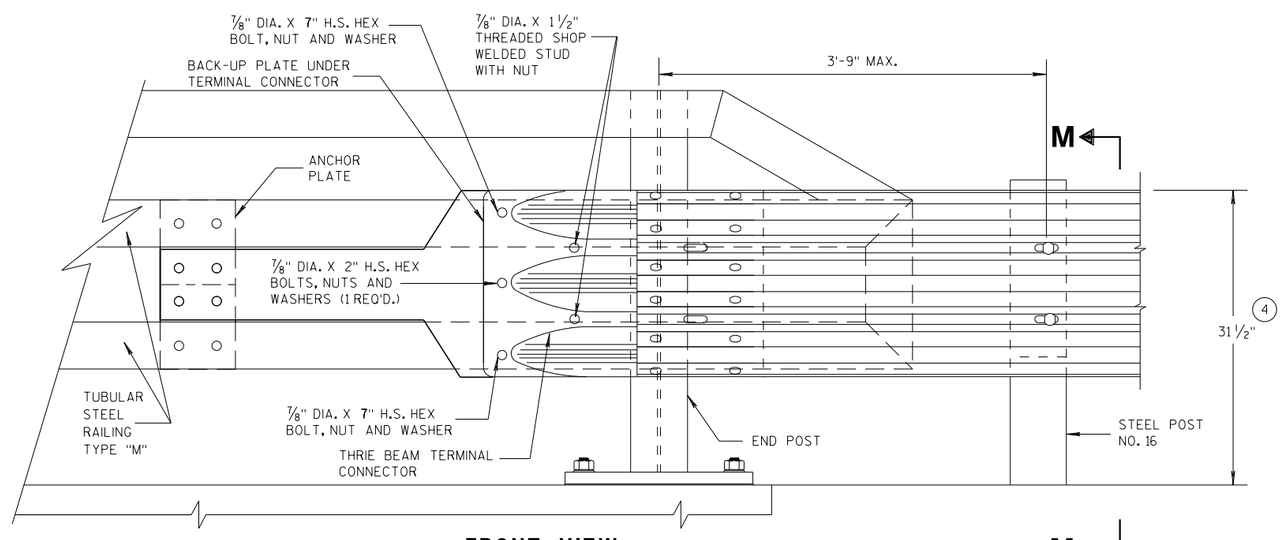


FRONT VIEW

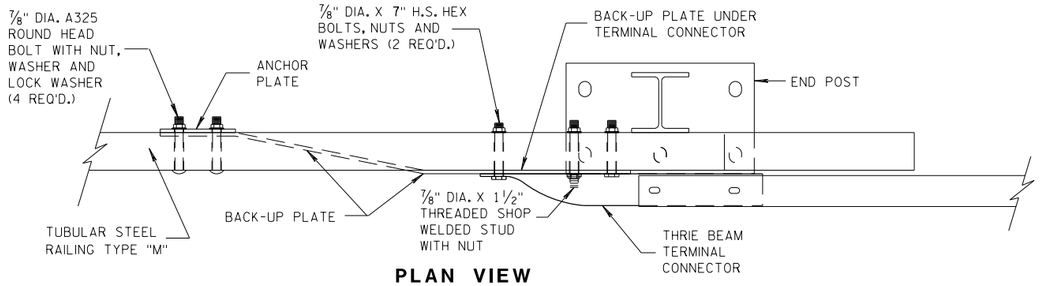


SECTION M-M

ANCHOR PLATE DETAIL, TYPE "M"



FRONT VIEW



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

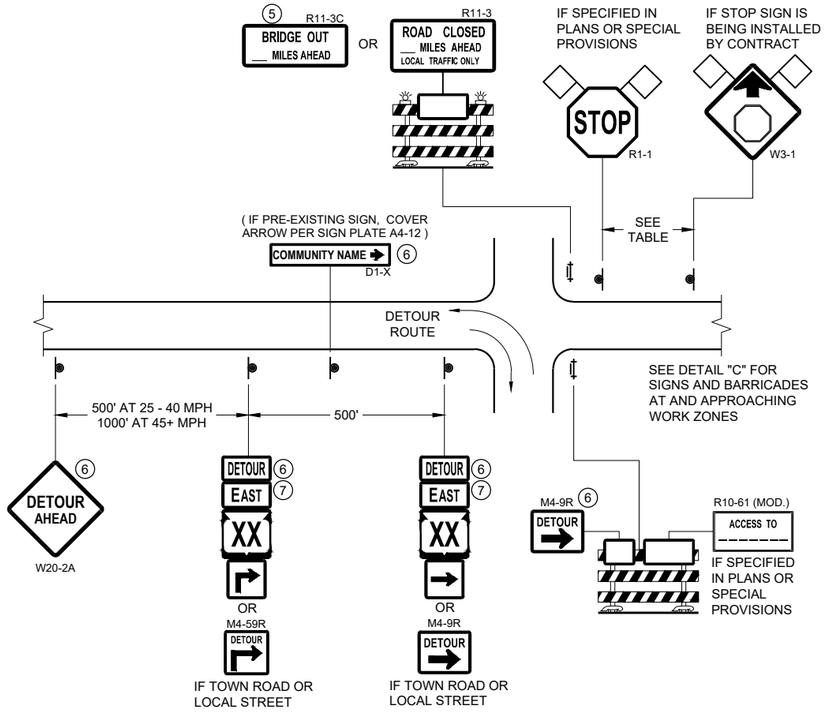
APPROVED
07/2018 — DATE
/S/ Rodney Taylor — ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA

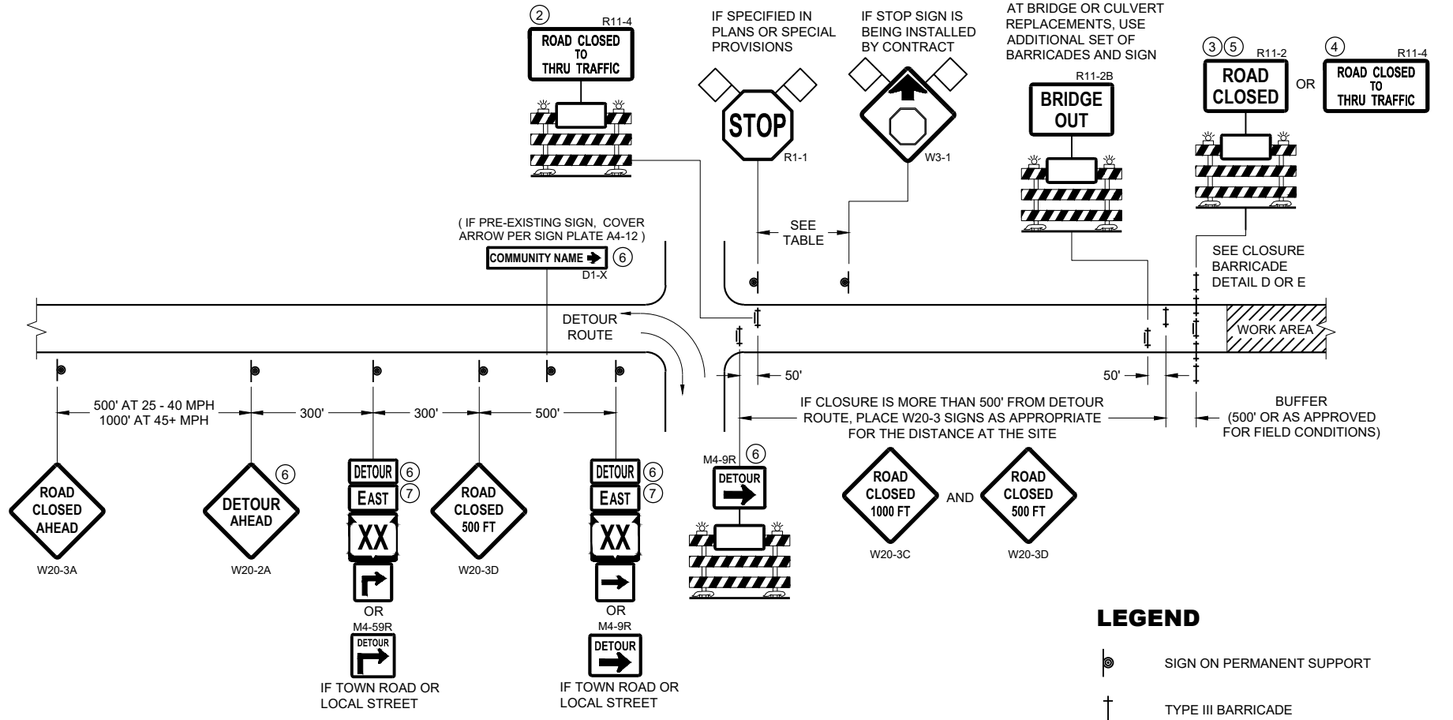
6

S.D.D. 14 B 45-5h

6

S.D.D. 14 B 45-5h



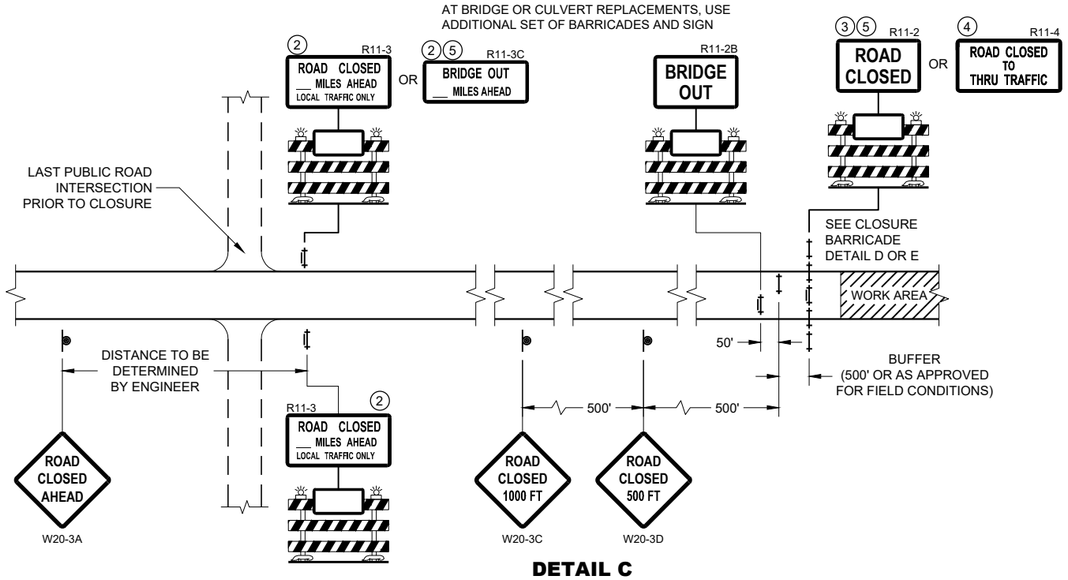


DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

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

DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR

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



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

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

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

LEGEND

- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA
- FLAGS, 16" X 16" MIN. (ORANGE)

DETOUR M4 - 8
EAST M3 - X
XX M1 - 4 OR XX M1 - 6 OR COUNTY X M1 - 5A
M05 - 1 OR M06 - 1

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

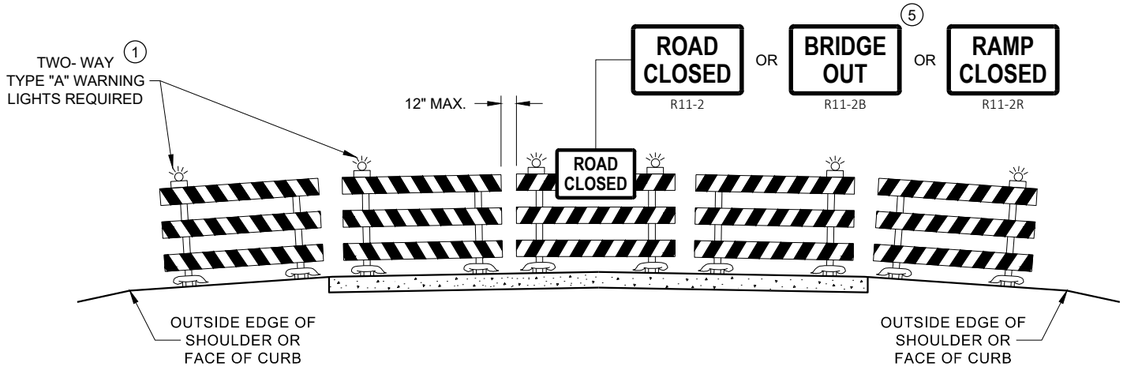
APPROVED
February 2020
DATE
/S/ Andrew Heidtke
WORK ZONE ENGINEER

FHWA

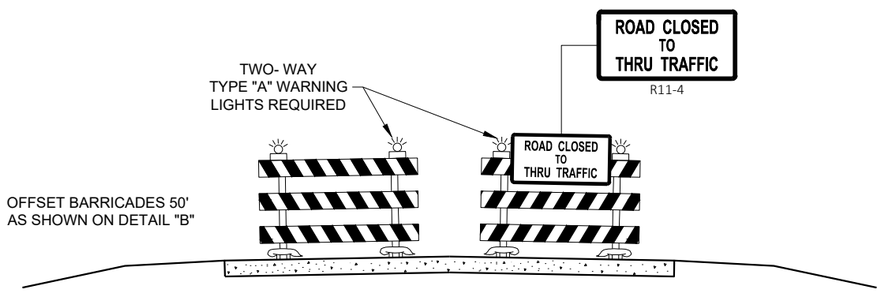
6

SDD 15C02 - 08a

SDD 15C02 - 08a



DETAIL D
ROAD CLOSURE BARRICADE DETAIL
APPROACH VIEW



DETAIL E
LANE CLOSURE BARRICADE DETAIL
APPROACH VIEW

SEE SDD 15C2 - SHEET "a" FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
- R11 - 2 SHALL BE 48" X 30"
- R11 - 3 SHALL, R11 - 4 AND R10 - 61 SHALL BE 60 " X 30"
- M4 - 9 SHALL BE 30" X 24"
- M3 - X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4 - 8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1 - 4, M1 - 5A AND M1 - 6 SHALL BE 24" X 24" (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS)
- MO5 - 1 AND MO6 - 1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- D1 - X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
- R1 - 1 SHALL BE 36" X 36"

(1) TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8 FOOT LIGHT SPACING.

(2) THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT AN INTERSECTION.

(3) FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL "D".

(4) FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL "E".

(5) FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11 - 2 AND R11 - 3 SIGNS.

(6) INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.

(7) "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

BARRICADES AND SIGNS FOR VARIOUS CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020
DATE
/S/ Andrew Heidtke
WORK ZONE ENGINEE

FHWA

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SDD 15C02 - 08b

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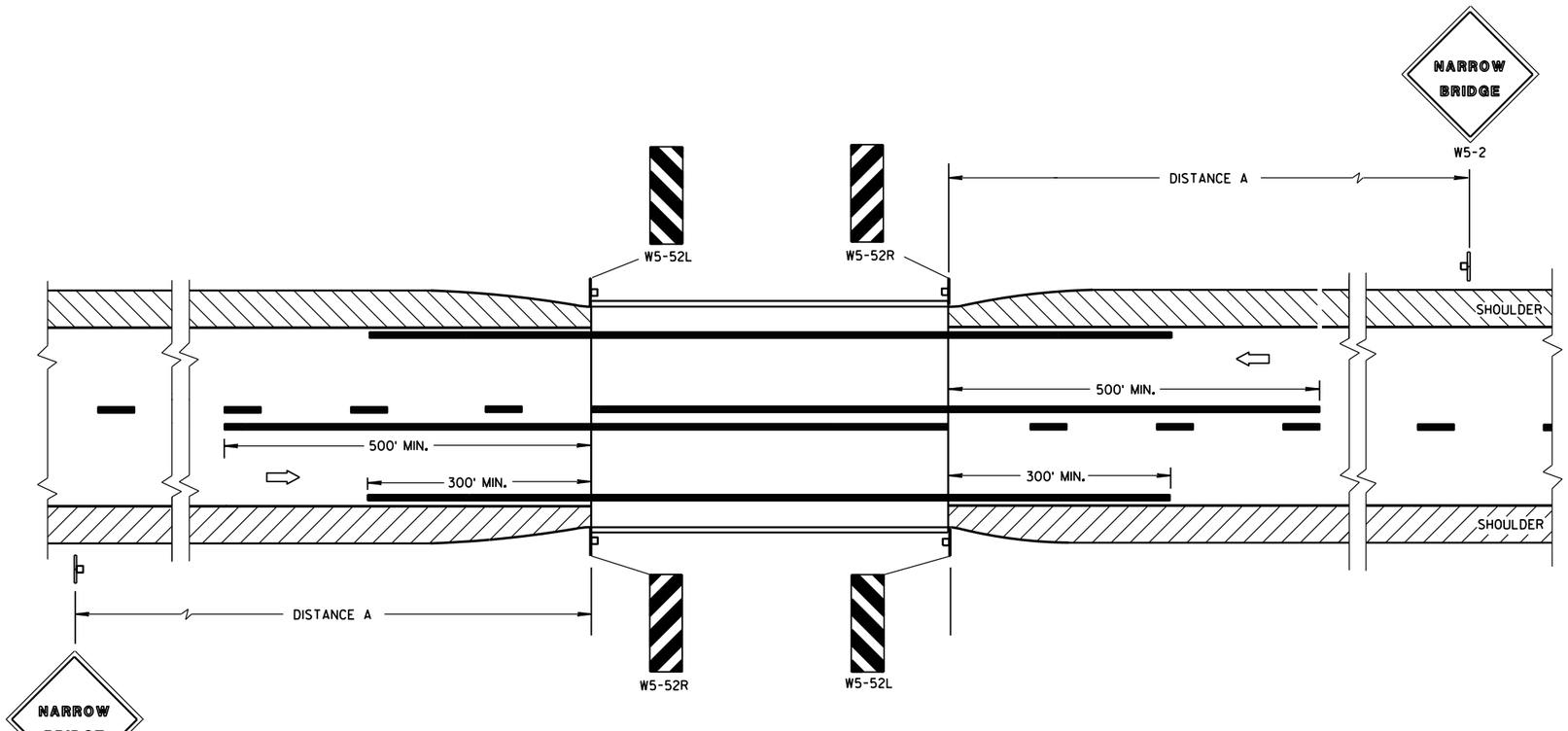
SDD 15C02 - 08b



SITUATION 1

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

DISTANCE TABLE

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

GENERAL NOTES

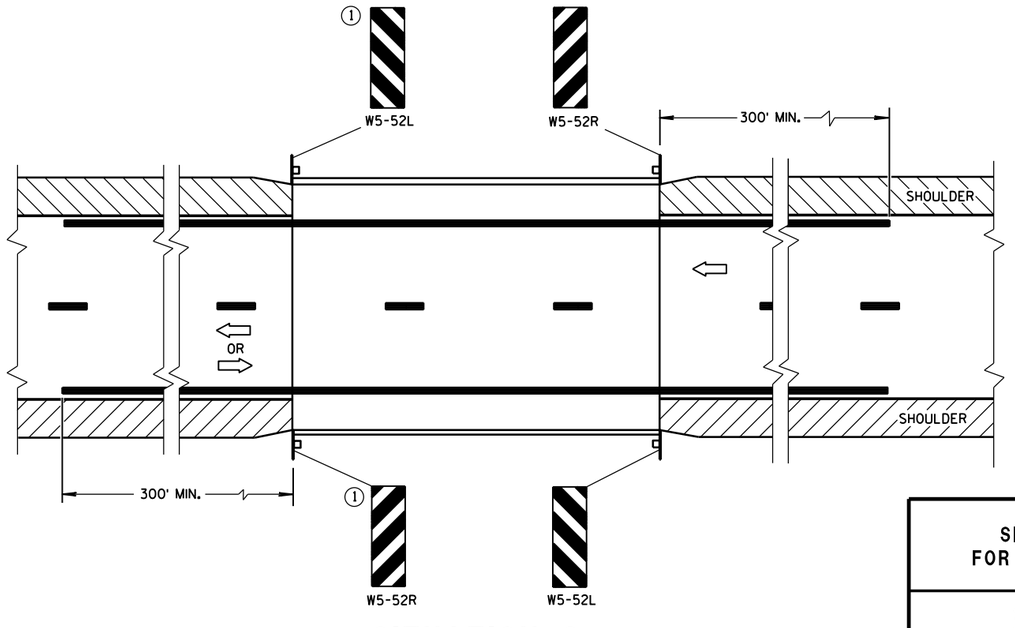
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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

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

(1) OMIT ON ONE-WAY TRAVELLED WAYS.

⇨ DIRECTION OF TRAFFIC



SITUATION 2

WARRANTING CRITERIA:

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

SIGNING & MARKING FOR TWO LANE BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

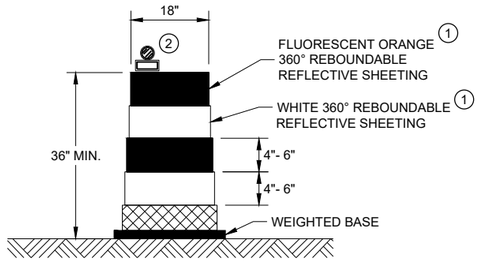
APPROVED
June 2017 — DATE
/S/ Matthew R. Rauch — STATE SIGNING AND MAR ...IEER
FHWA

6

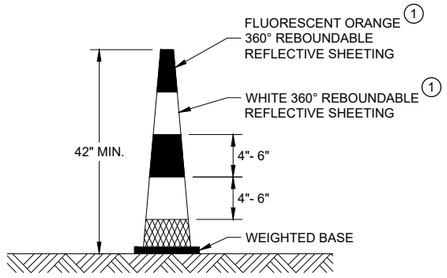
S.D.D. 15 C 6-9

GENERAL NOTES

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

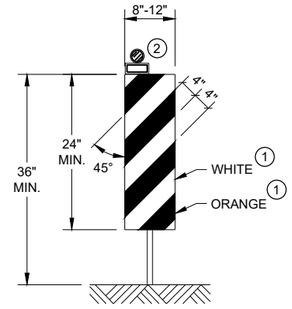


DRUM



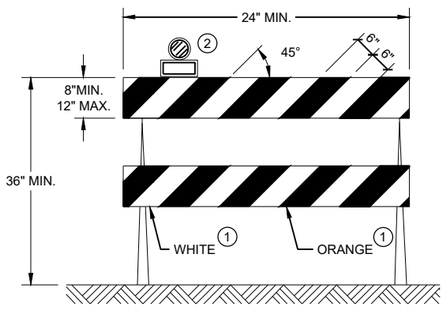
42" CONE

DO NOT USE IN TAPERS
½ SPACING OF DRUMS



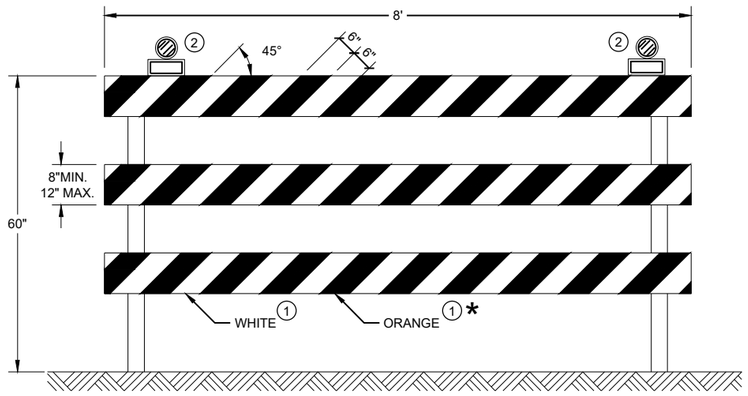
VERTICAL PANEL

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



TYPE II BARRICADE

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



TYPE III BARRICADE

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

CHANNELIZING DEVICES
DRUMS, CONES, BARRICADES
AND VERTICAL PANELS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

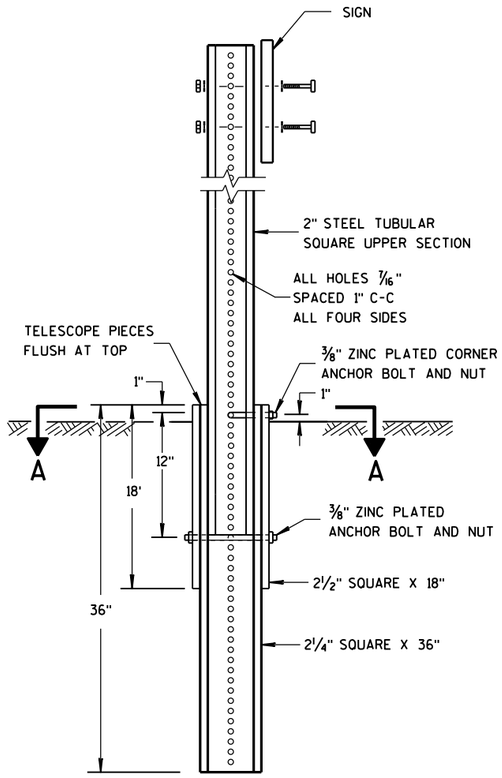
APPROVED
June 2017 — DATE
/S/ Andrew Heidtke — WORK ZONE ENGINEER
FHWA

6

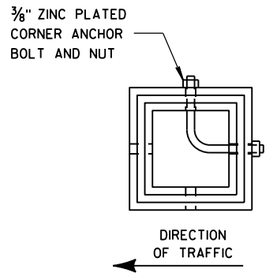
SDD 15C11 - 07b

6

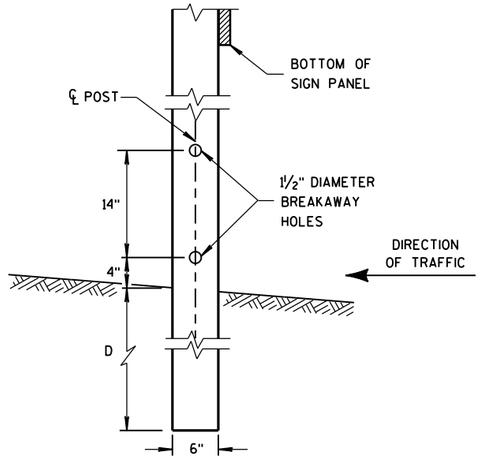
SDD 15C11 - 07b



DETAIL OF TUBULAR STEEL SIGN POST



SECTION A-A



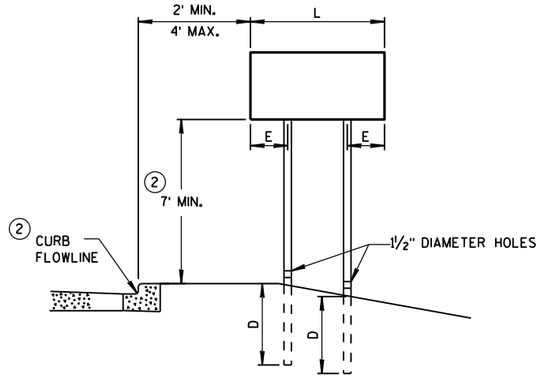
4"x6" WOOD POST MODIFICATION

GENERAL NOTES

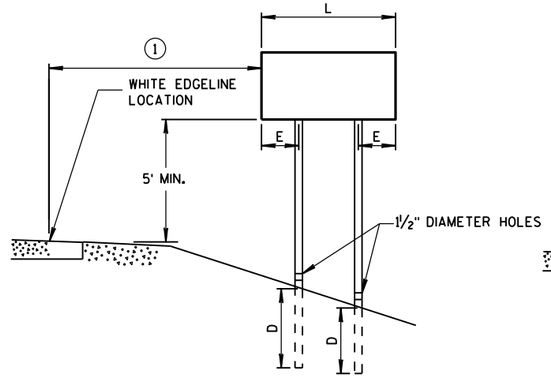
(1) 6 FEET FROM THE EDGE OF PAVEMENT (EDGE LINE LOCATION) UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER. LATERAL OFFSET SHOULD BE ADJUSTED TO AVOID THE DITCH FLOWLINE.

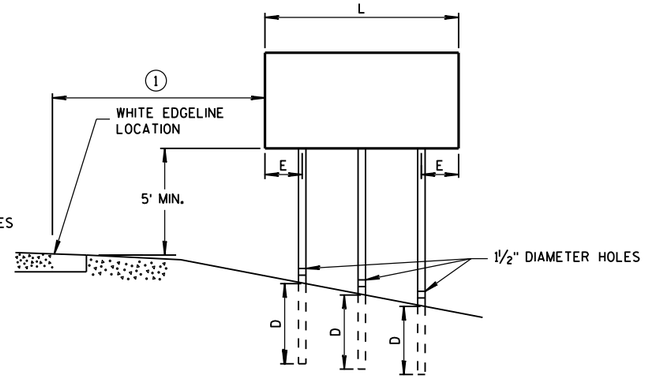
(2) THE EXISTENCE OF CURB AND GUTTER DOES NOT IN ITSELF MANDATE THE VERTICAL CLEARANCE ILLUSTRATED. THAT HEIGHT IS TYPICALLY MEASURED WHERE THERE IS SIDEWALK ADJACENT TO THE ROADWAY OR PARKING IS PERMITTED. IN THE ABSENCE OF SIDEWALK, VERTICAL CLEARANCE IS MEASURED FROM THE TOP OF THE CURB. IF NO SIDEWALK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

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



URBAN AREA





RURAL AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

TUBULAR STEEL POSTS

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

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

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

WOOD POST EMBEDMENT DEPTH

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

4" X 6" WOOD POST

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

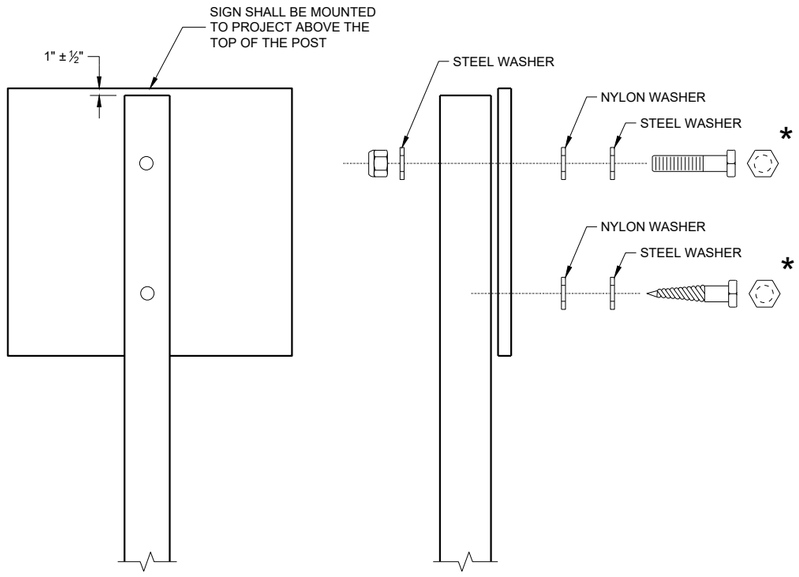
SEE NOTE (3)

TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

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



NUTS, BOLTS AND LAGS USED FOR MOUNTING SIGNS SHALL HAVE HEXAGONAL HEADS AND SHALL BE EITHER:

A. HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM
   DESIGNATION: A 153, CLASS D, OR SC 3
B. ELECTRO-GALVANIZED IN ACCORDANCE WITH ASTM
   DESIGNATION: B 633, TYPE III, SC 3

THREADS ON BOLTS AND NUTS SHALL BE MANUFACTURED WITH SUFFICIENT ALLOWANCE FOR THE CADMIUM PLATE OR GALVANIZED COATING TO PERMIT THE NUTS TO RUN FREELY ON THE BOLTS.

WOOD POST (4" x 6")
- LAG SCREWS - ⅜" x 3"
- MACHINE BOLTS - 5/16" x 6 ½" OR 7" LENGTH W/NUTS

SQUARE STEEL POST (2" x 2")
- MACHINE BOLTS - ⅜" x 3 ¼" LENGTH W/NUTS
- RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL O.D. FLANGE 0.720 - 0.765 INCH, GRIP RANGE 0.042 - 0.375 INCH

WASHERS (ALL POSTS) -
- 1 ¼" O.D. x ⅜" I.D. x 1/16" STEEL
- 1 ¼" O.D. x ⅜" I.D. x 0.080 NYLON

* TWO DIFFERENT FASTENING SYSTEMS ARE SHOWN FOR ILLUSTRATION PURPOSES. ON ANY INDIVIDUAL SIGN, EITHER ONE OR THE OTHER SYSTEM SHALL BE USED. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA. FOR A SINGLE POST INSTALLATION, ALL SIGNS GREATER THAN 9 SQ. FT. REQUIRE THE USE OF 3 FASTENERS.

6

6

SDD 15D38 - 02b

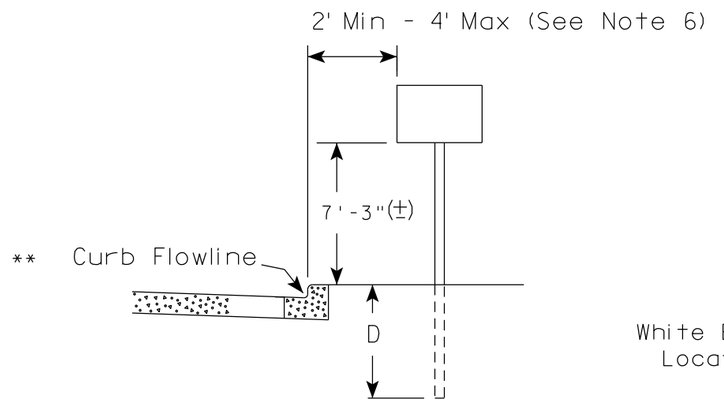
SDD15D38 - 02b

ATTACHMENT OF SIGNS TO POSTS

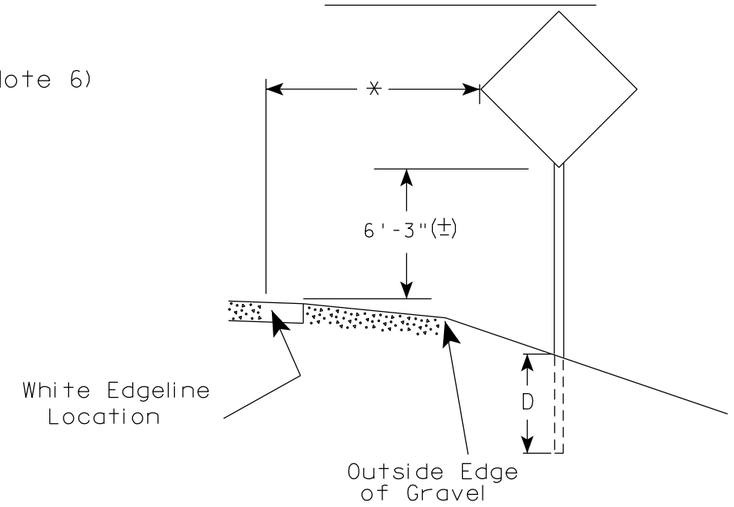
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

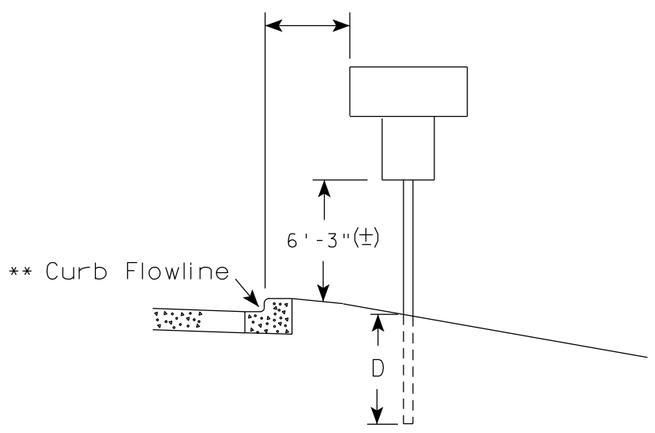
APPROVED
June 2017
DATE
/S/ Andrew Heidtke
WORK ZONE ENGINEE
FHWA

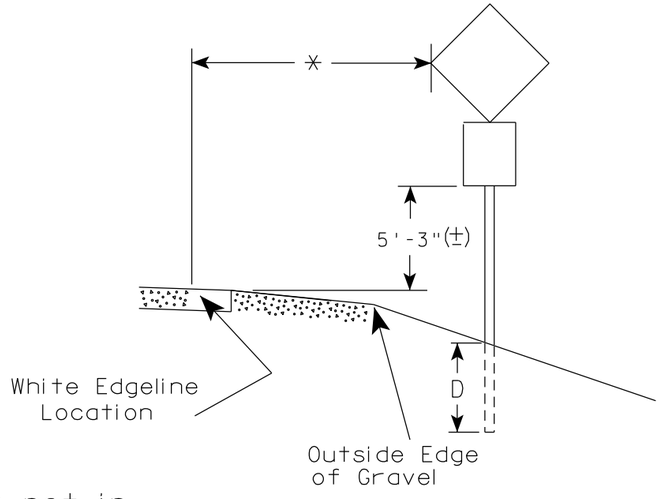
URBAN AREA



RURAL AREA (See Note 2)







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

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

POST EMBEDMENT DEPTH

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

GENERAL NOTES

1. Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on or behind barrier wall, see A4-10 sign plate.
   The Double Arrow sign (W12-1D) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Enhanced Reference Markers, Clearance Markers (W5-52), Mile Markers (D10 series), In Road Object Markers (W5-54) & End of Road Markers (W5-56) shall be mounted at a height of 4'-3" (±).
3. For expressways and freeways, mounting height is 7'- 3" (±) or 6'-3" (±) depending upon existence of a sub-sign.
4. Minimum mounting height for signs mounted on traffic signal poles is 5'- 3" (±).
5. Offset distance shall be consistent with existing signs or consistent throughout length of project.
6. The (±) tolerance for mounting height is 3 inches.
7. Folding signs shall be mounted at a height of 5'-3" (±) or as directd by the Engineer.

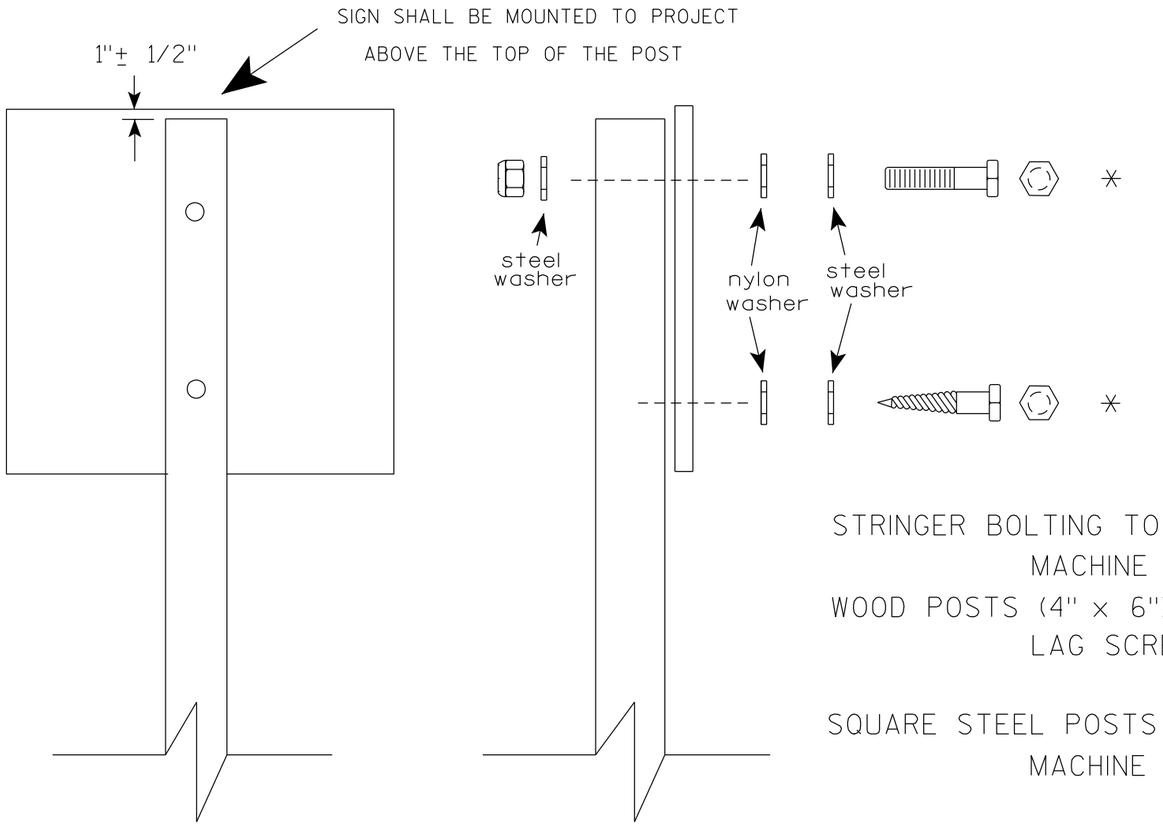
TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 5/13/2020 PLATE NO. A4-3.22

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 42	E



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

a. Hot dip galvanized in accordance with ASTM Designation: A 153, Class D, or SC 3

b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

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

STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)

MACHINE BOLTS - 5/16" X 1-3/4" Length w/ lock nuts

WOOD POSTS (4" x 6")

LAG SCREWS - 3/8" X 3" (NO STRINGERS ON BACK OF SIGN)
3/8" X 4" (STRINGERS ON BACK OF SIGN)

SQUARE STEEL POSTS (2" x 2")

MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
3/8" X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)

RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL
O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

WASHERS (ALL POSTS) -

1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON

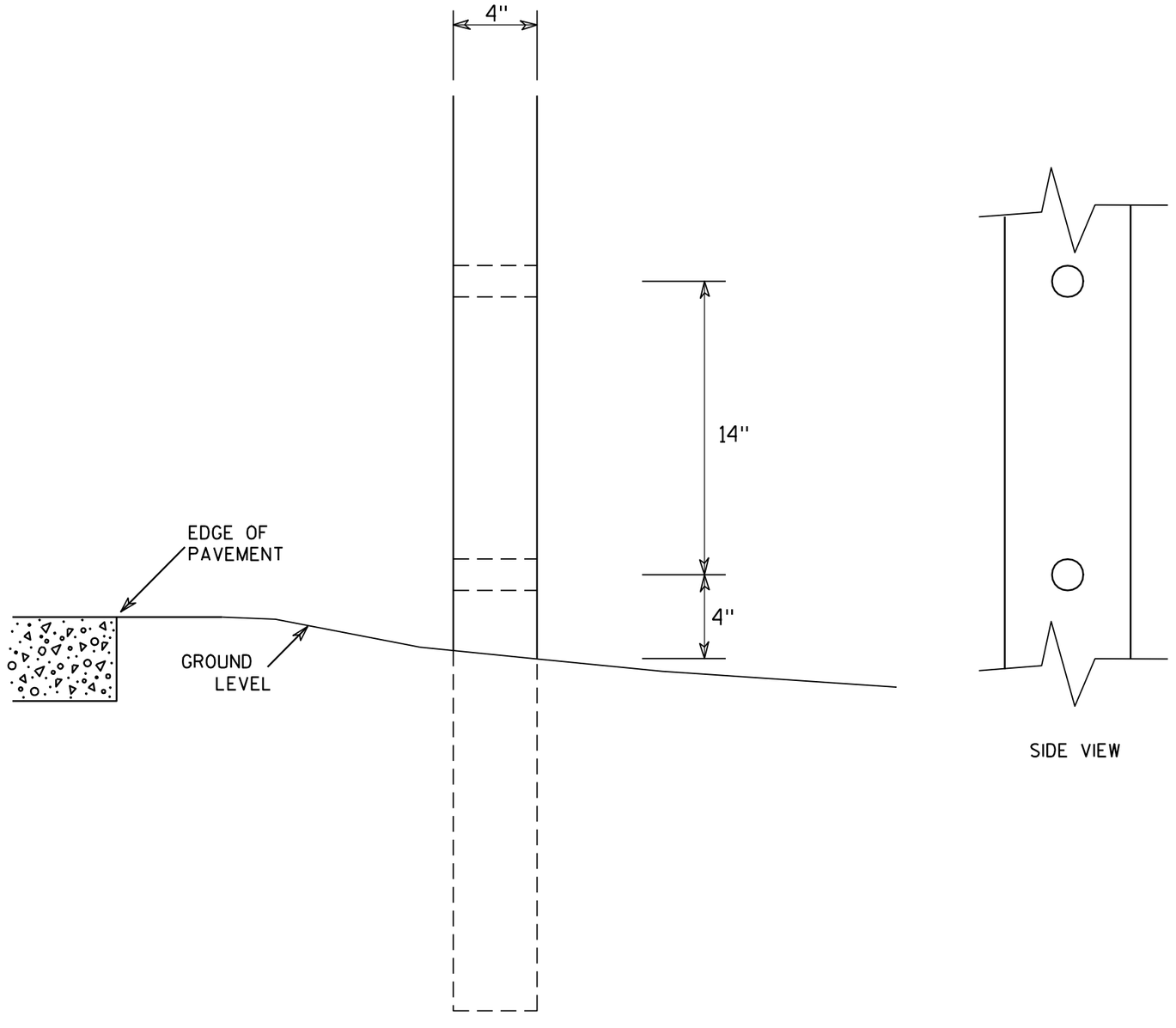
* Two different fastening systems are shown for illustration purposes. On any individual sign, either one or the other system shall be used. Actual number of fasteners per sign varies with the sign area, but normally there are two. For a single post installation, all signs greater than 9 sq. ft. require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

ATTACHMENT OF SIGNS TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
For State Traffic Engineer

DATE 4/1/2020 PLATE NO. A4-8.9



SIDE VIEW

GENERAL NOTES

1. All 4 x 6 Wood Posts shall be modified by having two 1½" diameter holes drilled perpendicular to the roadway centerline.

7

7

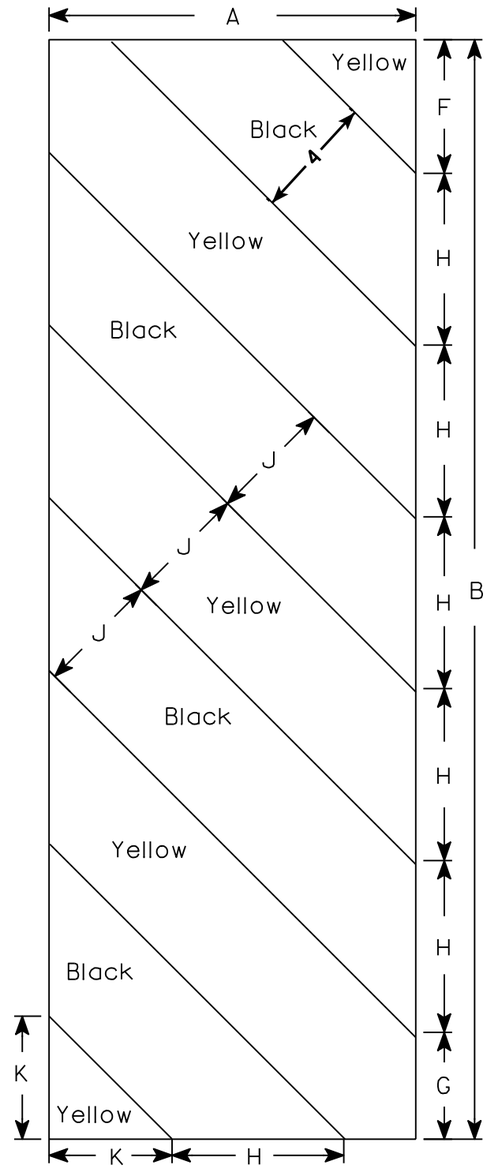
4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

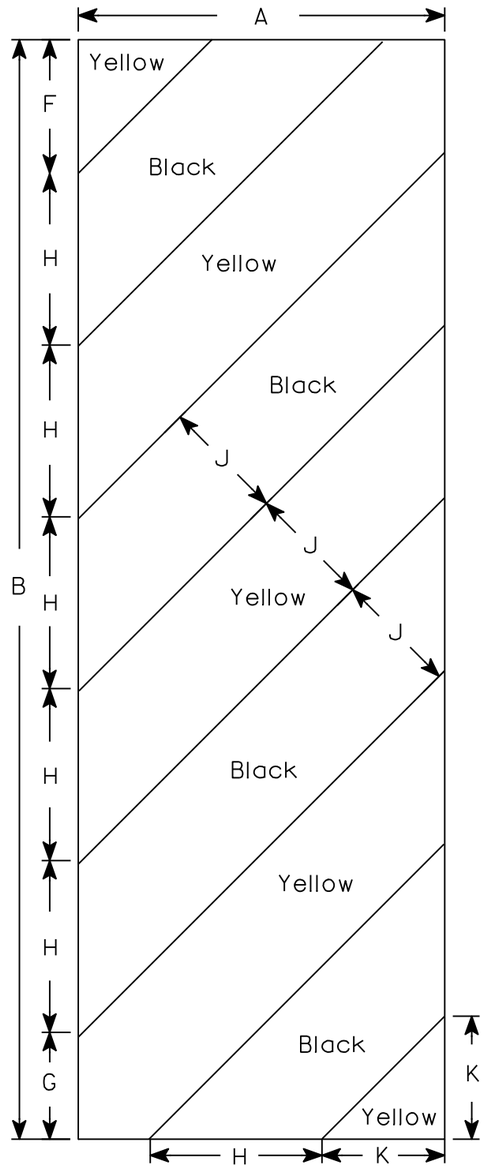
APPROVED Chester J Spang for State Traffic Engineer

DATE 3/27/97 PLATE NO. A4-11.2

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 44	E



W5-52L



W5-52R

NOTES

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

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

STANDARD SIGN

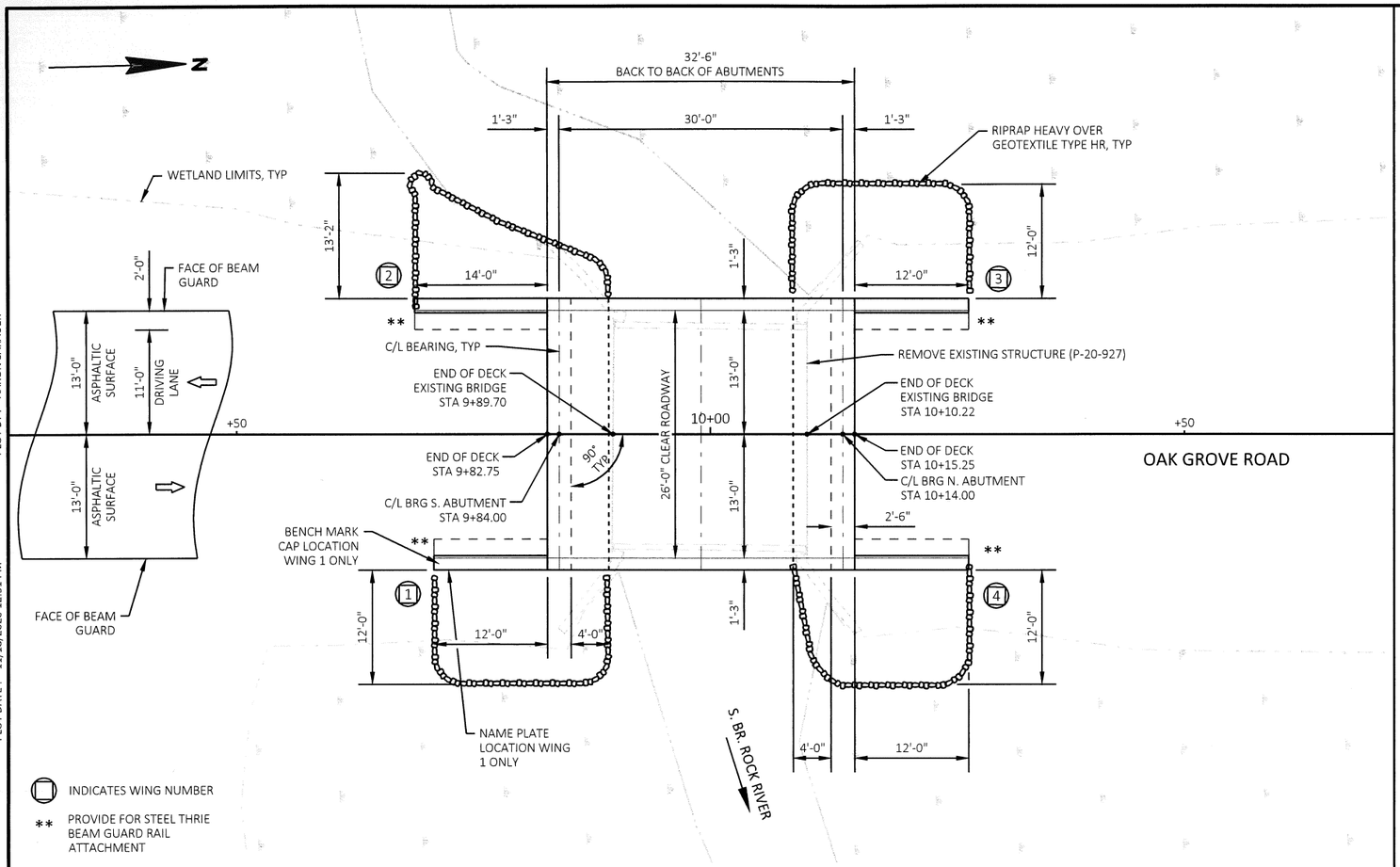
W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

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

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 45 | E



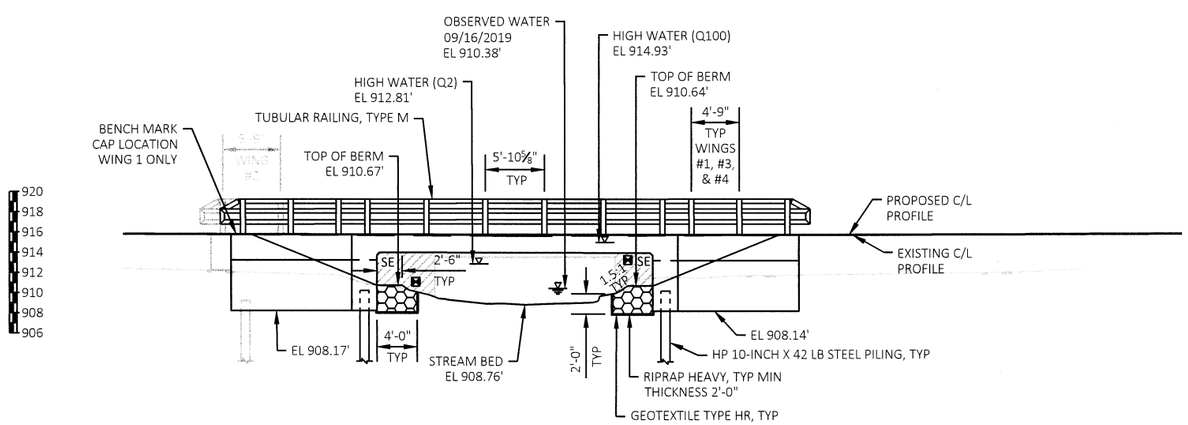
INDICATES WING NUMBER

** PROVIDE FOR STEEL THRIE BEAM GUARD RAIL ATTACHMENT

BM	STATION	DESCRIPTION	ELEVATION
A	10+09, 12.5' RT	CHISELED SQUARE ON TOP OF WINGWALL, NE CORNER OF STRUCTURE P-20-927	915.28
B	13+93, 29.5' RT	RR SPIKE IN 42" MAPLE TREE, N. SIDE OF DRIVEWAY, E. SIDE OF RD., 300' N OF STRUCTURE P-20-927	921.42

PLAN

SINGLE SPAN FLAT CONCRETE SLAB



ELEVATION

NORMAL TO SUBSTRUCTURE UNITS

THE COST OF EXCAVATION SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR "EXCAVATION FOR STRUCTURES BRIDGES B-20-243"

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

ALL DIMENSIONS ARE IN INCHES (IN) EXCEPT AS NOTED.

ALL STATIONS AND ALL ELEVATIONS ARE IN FEET (FT).

ELEVATIONS SHOWN ON THE PLAN ARE REFERENCED TO NAVD88 (2012).

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

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

THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH RIPRAP HEAVY AND GEOTEXTILE TYPE HR TO THE EXTENT SHOWN ON THIS SHEET AND ABUTMENT SHEETS.

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

THE EXISTING GROUND LINE AT THE ABUTMENTS SHALL BE THE UPPER LIMIT OF EXCAVATION FOR STRUCTURE.

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

AT ABUTMENTS, CONCRETE POURED UNDER WATER WILL BE ALLOWED AND SHALL BE DONE IN ACCORDANCE WITH SECTION 502.3.5.3 OF THE STANDARD SPECIFICATIONS.

THIS STRUCTURE WILL REPLACE A SINGLE SPAN STEEL DECK GIRDER BRIDGE (P-20-927).

ALL REINFORCING BARS ARE ENGLISH AND THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFY THE BAR SIZE.

DESIGN DATA

DESIGN LOAD	HL-93
INVENTORY RATING FACTOR	RF=1.11
OPERATING RATING FACTOR	RF=1.44
MAX STD PERMIT VEHICLE (WIS SPV)	250 KIPS

STRUCTURE WILL BE DESIGNED FOR A FUTURE WEARING SURFACE OF 20 LBS PER SQ FT

MATERIAL PROPERTIES

CONCRETE:	SLAB	f'c = 4,000 psi
	ALL OTHER	f'c = 3,500 psi
REINFORCING STEEL GRADE 60		fy = 60,000 psi
STRUCTURAL STEEL GRADE 36		fy = 36,000 psi

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

FOUNDATION DATA

ABUTMENTS TO BE SUPPORTED ON HP 10-INCH X 42 LB STEEL PILING WITH A REQUIRED DRIVING RESISTANCE OF 130 TONS* PER PILE. AS DETERMINED BY THE MODIFIED GATES DYNAMIC EQUATION. PRE-BORED PILES SHALL ACHIEVE A TIP ELEVATION OF 896 OR LOWER. ESTIMATED PILE LENGTH FOR SOUTH ABUTMENT IS 15 FT. ESTIMATED PILE LENGTH FOR NORTH ABUTMENT IS 15 FT.

HYDRAULIC DATA

100 YEAR FREQUENCY

Q100	= 700 cfs
VELOCITY-THRU BRIDGE	= 6.3 fps
HIGH WATER (Q100)	= 914.93 ft
WATERWAY AREA-THRU BRIDGE	= 111 ft²
DRAINAGE AREA	= 15.1 mi²
OVERTOPPING FREQUENCY	= N/A
SCOUR CRITICAL CODE	= 5

2 YEAR FREQUENCY

Q2	= 230 cfs
VELOCITY-THRU BRIDGE	= 3.0 fps
HIGH WATER (Q2)	= 912.81 ft

TRAFFIC DATA

(OAK GROVE ROAD)

ADT	(2021)	160 vpd
ADT	(2041)	180 vpd
V		55 MPH

STATE PROJECT NUMBER

6187-05-71

WISCONSIN PROFESSIONAL ENGINEER
RYAN T. ARNDT
E-41765
FOND DU LAC, WI
11-20-20

LIST OF DRAWINGS

BRIDGE OFFICE CONTACT:
AARON BONK 608-261-0261

CONSULTANT CONTACT:
THOMAS LANSER 920-924-5720

NO.	DATE	REVISION	BY

GREMMER & ASSOCIATES, INC.
CONSULTING ENGINEERS
Stevens Point • Fond du Lac

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED SDR 02/16/21
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE B-20-243

OAK GROVE ROAD OVER SOUTH BRANCH ROCK RIVER

COUNTY	TOWN/~~CITY/VILLAGE~~
FOND DU LAC	ALTO

DESIGN SPEC
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGN CK'D	DRAWN BY	PLANS CK'D
RTA	ALK	MJK	ALK

GENERAL PLAN

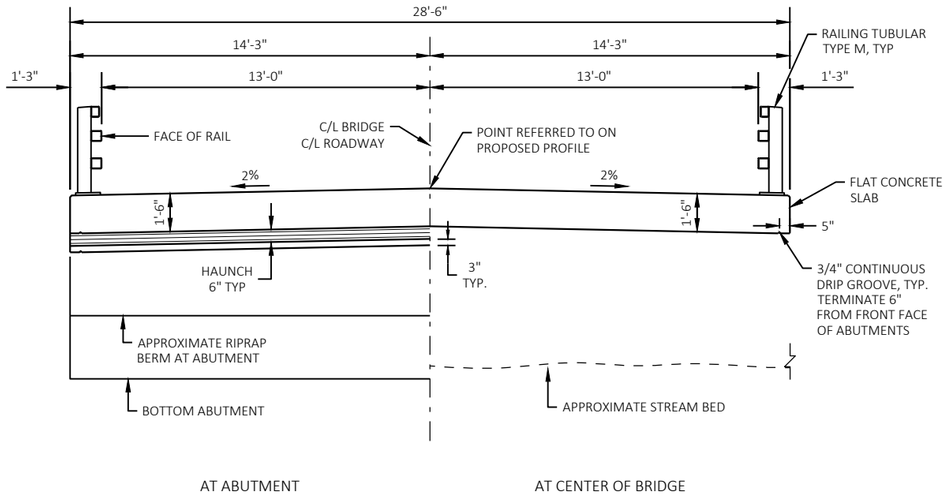
46

SHEET 1 OF 10

FILE NAME : S:\CURRPROJ\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-080101-BR.DWG
PLOT BY : AARON SARAUER
PLOT DATE : 11/18/2020 12:31 PM
LAYOUT NAME - SHEET-01

STATE PROJECT NUMBER

6187-05-71

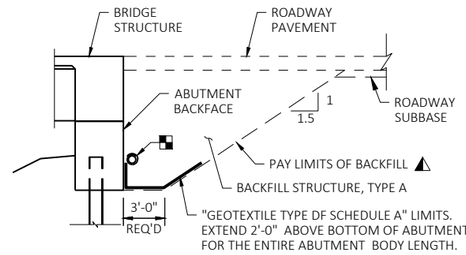


CROSS-SECTION THROUGH STRUCTURE

LOOKING NORTH

TOTAL ESTIMATED QUANTITIES

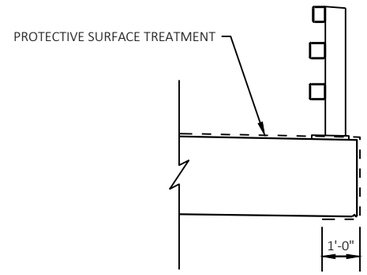
ITEM NO.	BID ITEMS	UNIT	S ABUT	N ABUT	SUPER	TOTAL
203.0210.S	ABATEMENT OF ASBESTOS CONTAINING MATERIAL P-20-927	LS	---	---	---	1
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STA 10+00	LS	---	---	---	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-20-243	LS	---	---	---	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	100	100	---	200
502.0100	CONCRETE MASONRY BRIDGES	CY	30	31	56	117
502.3200	PROTECTIVE SURFACE TREATMENT	SY	---	---	120	120
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	1765	1745	---	3,510
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1525	1565	12560	15,650
513.4061	RAILING TUBULAR TYPE M	LF	---	---	119	119
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	8	9	---	17
550.0020	PRE-BORING ROCK OR CONSOLIDATED MATERIALS	LF	60	48	---	108
550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	75	60	---	135
606.0300	RIPRAP HEAVY	CY	48	52	---	100
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	60	65	---	125
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	21	21	---	42
645.0120	GEOTEXTILE FABRIC TYPE HR	SY	60	65	---	125
	NON-BID ITEMS					
-----	JOINT FILLER	SIZE				1/2" & 3/4"



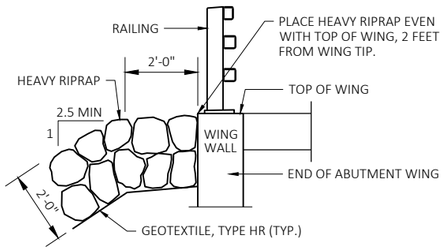
TYPICAL SECTION THRU ABUTMENT

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

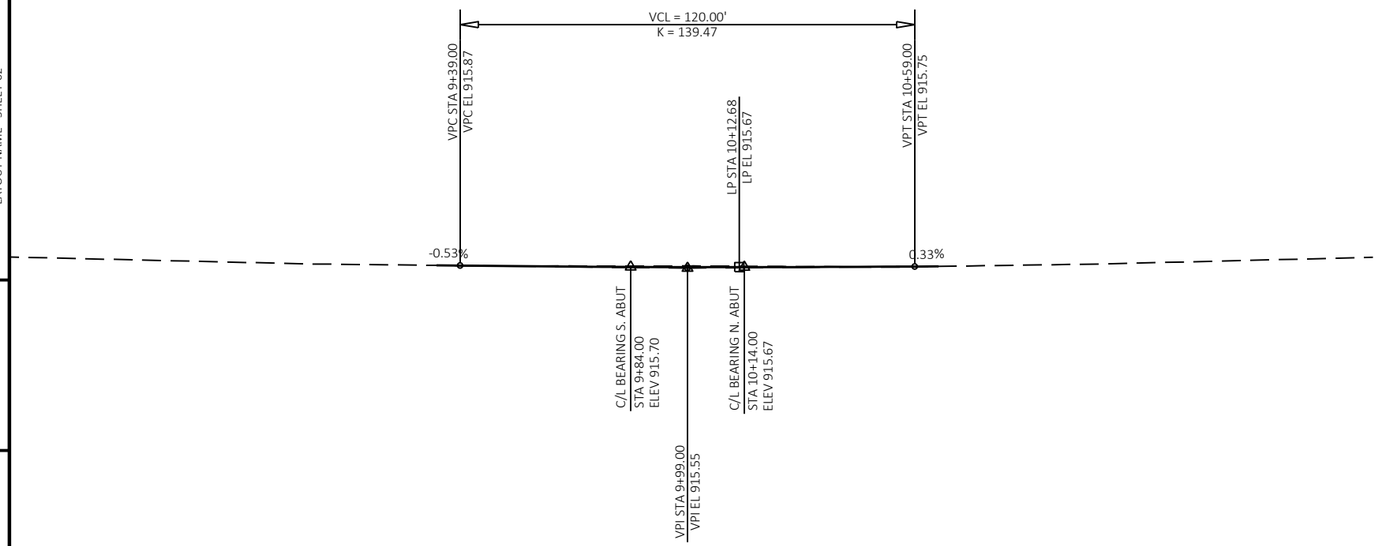
▪ PIPE UNDERDRAIN WRAPPED (6 INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN.



PROTECTIVE SURFACE TREATMENT DETAIL

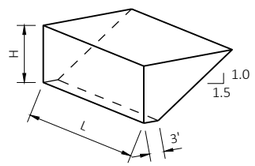


TYPICAL FILL SECTION AT WING TIPS



FINISHED REFERENCE LINE PROFILE

OAK GROVE ROAD



ABUTMENT BACKFILL DIAGRAM

FOR WINGS PARALLEL TO ROADWAY

L = OUT TO OUT OF ABUTMENT, INCLUDING WINGS (FT)
H = AVERAGE ABUTMENT FILL HEIGHT (FT)
EF = EXPANSION FACTOR (1.20 FOR CY BID ITEMS AND 1.00 FOR TON BID ITEMS)
V_{CF} = (L)(3.0')(H) + (L)(0.5)(1.5H)(H)
V_{CY} = V_{CF} (EF)/27
V_{TON} = V_{CY} (2.0)

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STRUCTURE B-20-243

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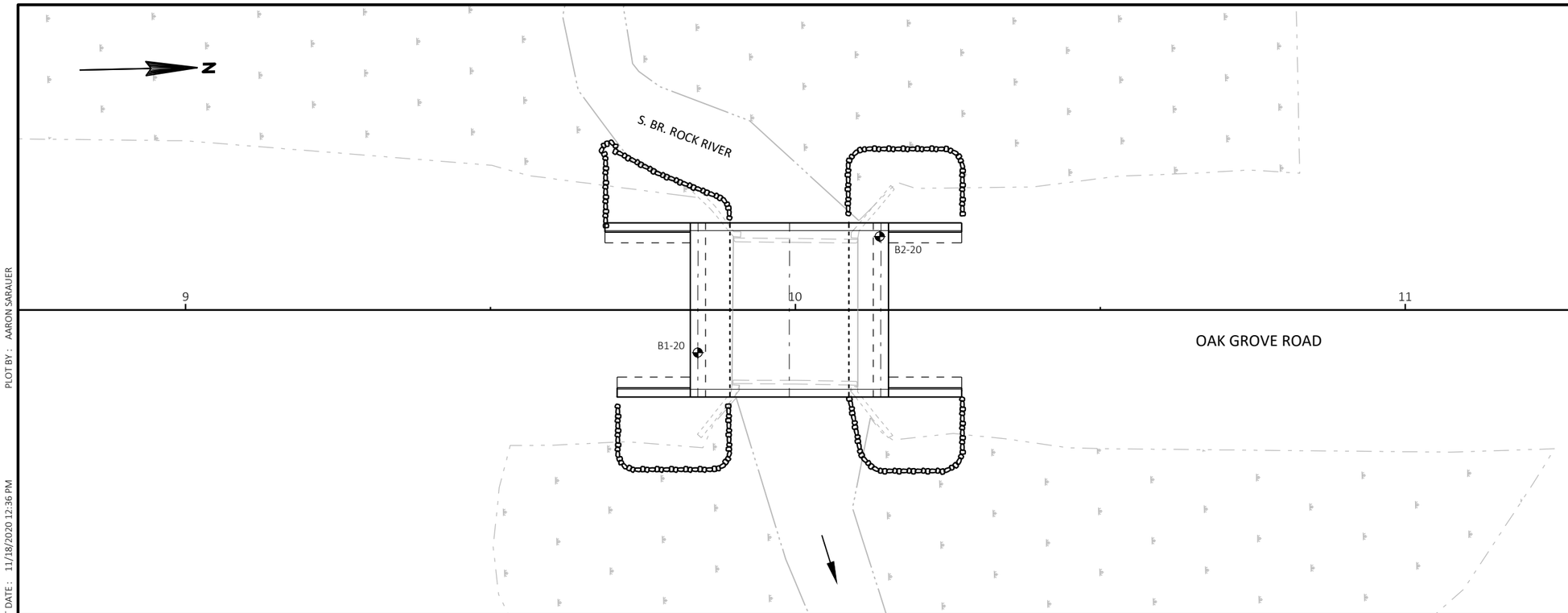
QUANTITIES AND CROSS SECTION

47

SHEET 2

8

8



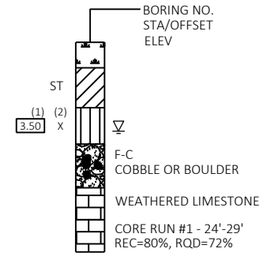
STATE PROJECT NUMBER

6187-05-71

MATERIAL SYMBOLS

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

LEGEND OF BORING



(1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)

(2) UNLESS OTHERWISE, SPECIFIED THE SPT 'N' VALUE IS BASED ON AASHTO T-206, STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.

GROUND WATER ELEVATION

- AT TIME OF DRILLING
- END OF DRILLING
- AFTER DRILLING

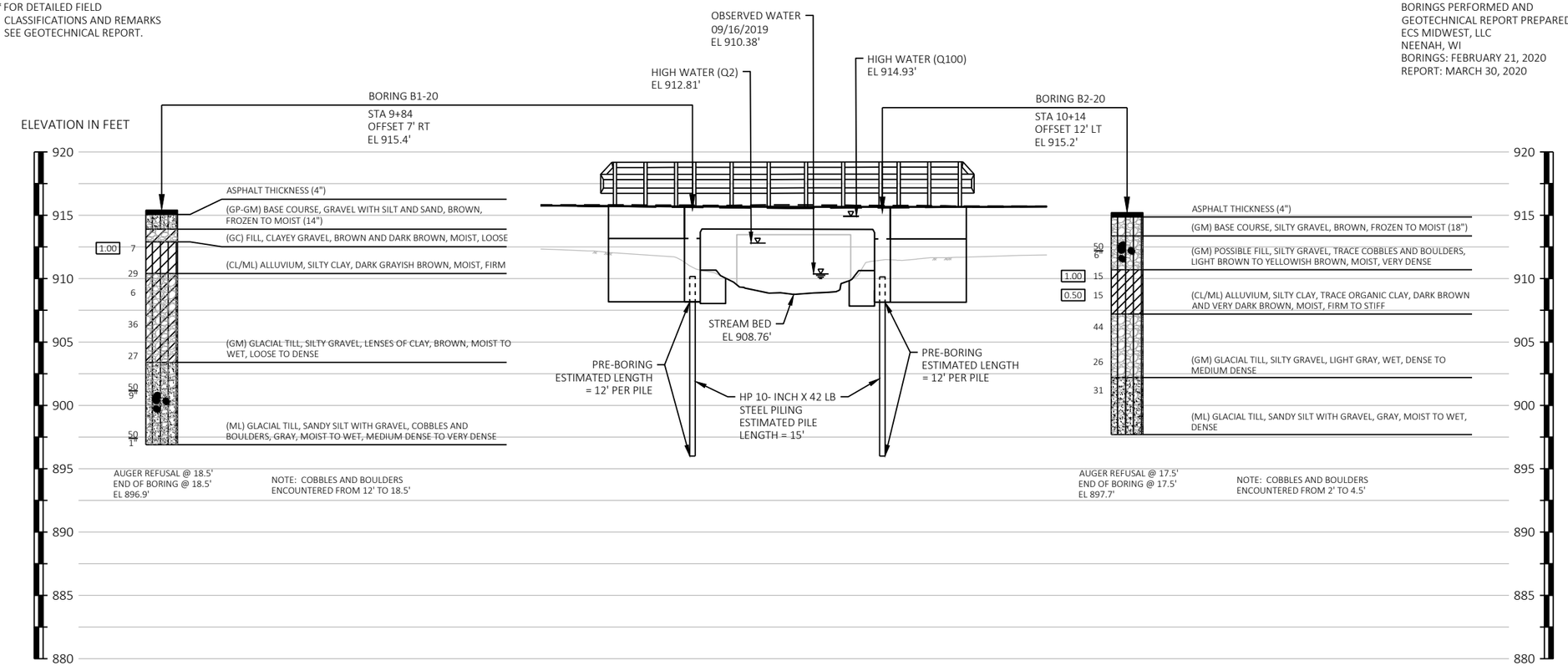
ABBREVIATIONS

F-Fine M-Medium C-Coarse ST-Shelby Tube

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

* FOR DETAILED FIELD CLASSIFICATIONS AND REMARKS SEE GEOTECHNICAL REPORT.



BORINGS PERFORMED AND GEOTECHNICAL REPORT PREPARED BY:
ECS MIDWEST, LLC
NEENAH, WI
BORINGS: FEBRUARY 21, 2020
REPORT: MARCH 30, 2020

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-20-243

DRAWN BY MJK | PLANS CK'D ALK

SUBSURFACE EXPLORATION

48
SHEET 3

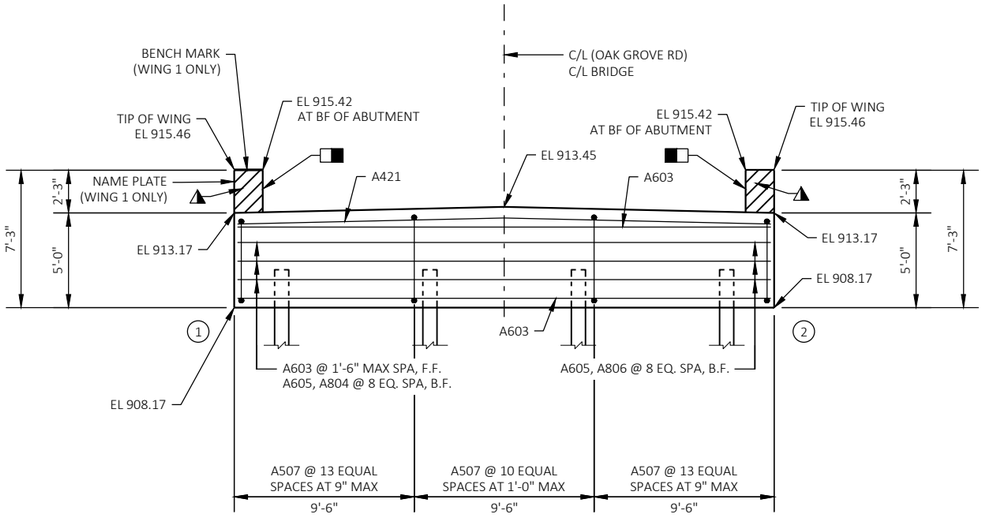
8

8

FILE NAME : S:\CURRPROJ\FONDDUCOVALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-080103-BR.DWG
LAYOUT NAME - SHEET-03
PLOT DATE : 11/18/2020 12:36 PM
PLOT BY : AARON SARAUER

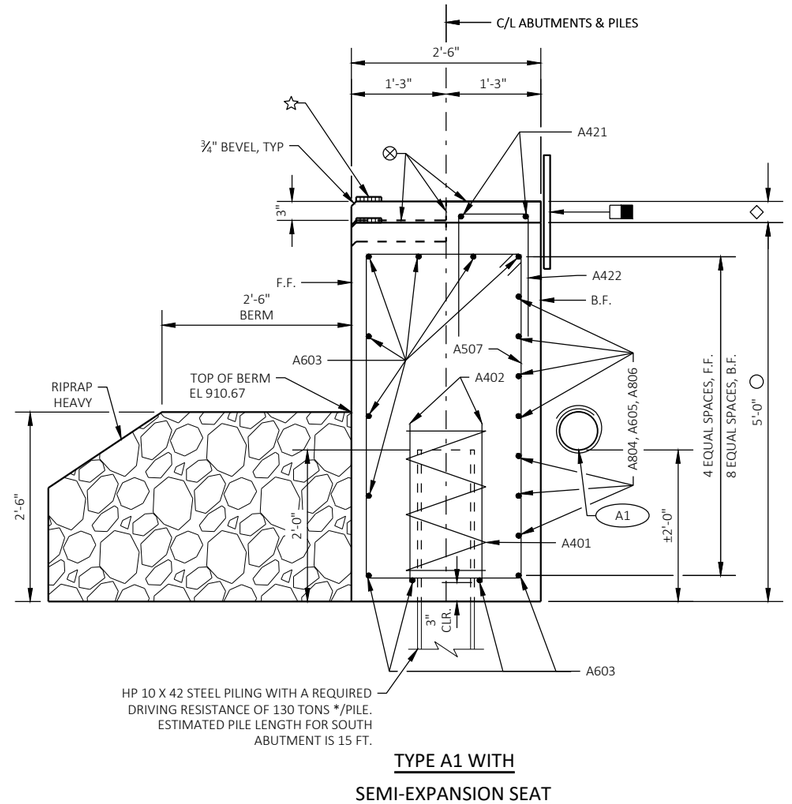
STATE PROJECT NUMBER

6187-05-71



ELEVATION

(LOOKING SOUTH)



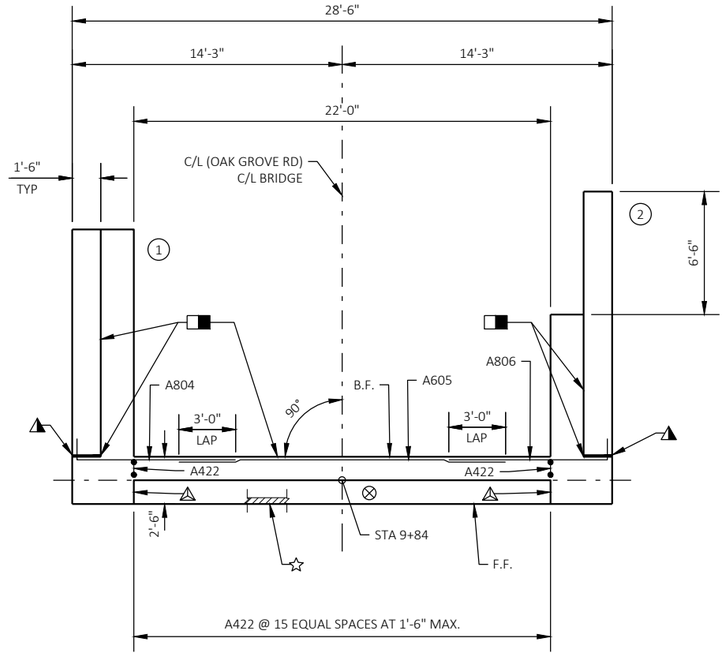
TYPE A1 WITH

SEMI-EXPANSION SEAT

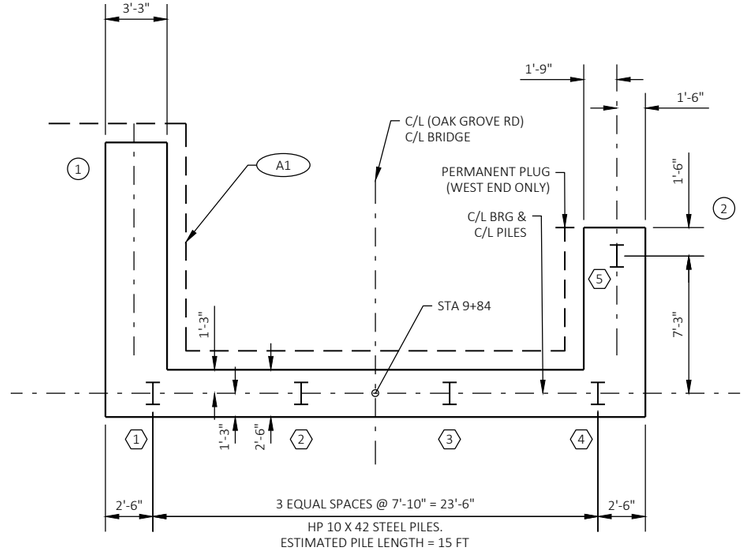
LEGEND

- (1) INDICATES WING NUMBER
- ⟨1⟩ INDICATES PILE NUMBER
- F.F. FRONT FACE
- B.F. BACK FACE
- 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND CONTINUOUS BETWEEN CORNERS AND FROM SEAT TO TOP OF WINGS, TO BE PLACED FLUSH WITH SURFACE OF CONCRETE.
- ½" FILLER TO EXTEND FROM TOP OF ABUTMENT BODY TO TOP OF WINGS, SEAL ALL EXPOSED SURFACES OF FILLER WITH NON-STAINING, GRAY, NON-BITUMINOUS JOINT SEALER (1" DEEP & HOLD ⅛" BELOW SURFACE OF CONC.).
- 4" X ¾" PREFORMED FILLER EXTENDS LENGTH OF ABUTMENT.
- ¾" PREFORMED FILLER ON VERTICAL FACE OF STEP.
- 3" SEMI-EXPANSION STEP. CONSTRUCT 3" DEEPER THAN ABUTMENT BACKWALL. STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03 INCHES.
- DIMENSION IS FROM BOTTOM OF ABUTMENT TO LOW SIDE OF SLAB TYPE SUPERSTRUCTURE.
- VARIES 0" - 3 ⅜" ADJUST HEIGHT OF A421 AND A422 BARS TO MATCH ABUTMENT SLOPE.
- (A1) PIPE UNDERDRAIN WRAPPED, 6 INCH, SLOPED 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH PERMANENT PLUG ON UPSTREAM END. ATTACH RODENT SHIELD AT OUTLET END AS DETAILED ON SHEET 6. RODENT SHIELD AND PERMANENT PLUG TO BE INCLUDED IN BID PRICE FOR "PIPE UNDERDRAIN WRAPPED 6-INCH"

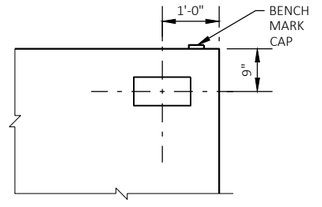
FOR RODENT SHIELD DETAIL SEE SHEET 6. FOR PILE SPLICE DETAIL SEE SHEET 7.



PLAN



PILE PLAN



NAME PLATE DETAIL

(WING 1 ONLY)

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-20-243

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SOUTH ABUTMENT

49

SHEET 4

8

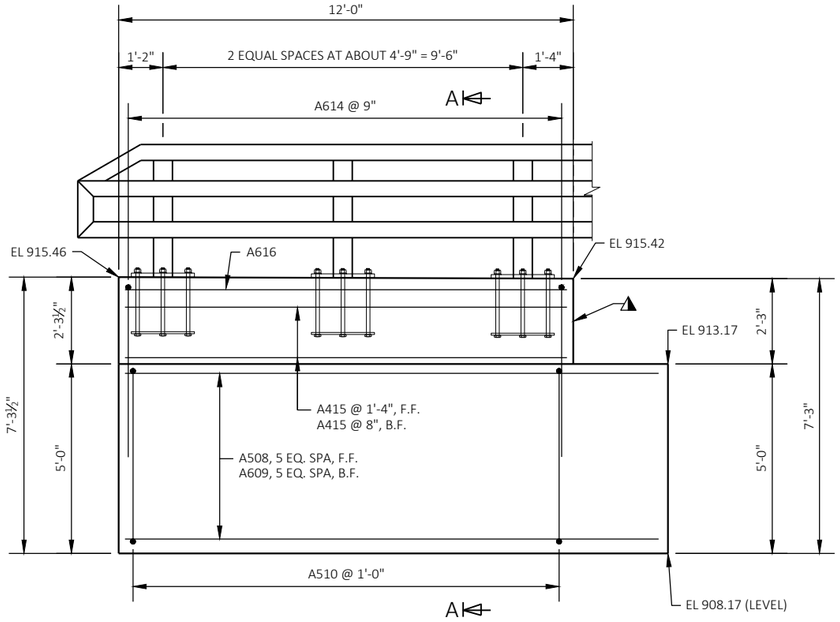
8

FILE NAME : S:\CURRPROJ\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-080104-BR.DWG
PLOT DATE : 11/18/2020 12:52 PM
PLOT BY : AARON SARAUER
LAYOUT NAME - SHEET-04

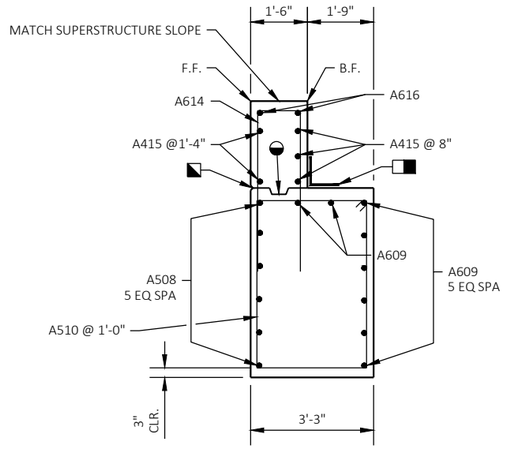
FILE NAME : S:\CURRPROJ\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-080104-BR.DWG
PLOT DATE : 11/18/2020 12:52 PM
LAYOUT NAME - SHEET-05
PLOT BY : AARON SARAUER

STATE PROJECT NUMBER

6187-05-71

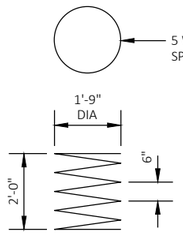


WING 1 ELEVATION



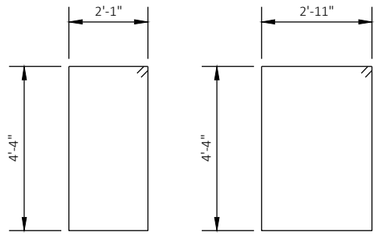
SECTION A-A

BILL OF BARS - SOUTH ABUTMENT						
BAR MARK	COAT	NUMBER REQUIRED	LENGTH	BENT	BAR SERIES	LOCATION
A401		4	28'-0"	X		BODY - PILES
A402		8	2'-3"			BODY - PILES
A603		11	28'-2"			BODY - HORIZONTAL F.F., TOP, BOTTOM
A804		7	12'-7"	X		BODY - HORIZONTAL B.F.
A605		7	9'-10"			BODY - HORIZONTAL B.F.
A806		7	14'-7"	X		BODY - HORIZONTAL B.F.
A507		37	13'-6"	X		BODY - TIES
A508	X	6	14'-2"			WING 1 - HORIZONTAL F.F.
A609	X	8	14'-2"			WING 1 - HORIZONTAL B.F., TOP
A510	X	21	15'-4"	X		WING 1 AND 2 VERTICAL STIRRUPS
A511	X	6	9'-8"			WING 2 - HORIZONTAL F.F.
A612	X	6	10'-10"	X		WING 2 - HORIZONTAL B.F.
A613	X	2	9'-8"			WING 2 - HORIZONTAL TOP
A614	X	17	9'-6"	X		UPPER WING 1 - STIRRUP
A415	X	5	11'-7"			UPPER WING 1 - HORIZONTAL F.F. / B.F.
A616	X	2	11'-7"			UPPER WING 1 - HORIZONTAL
A417	X	8	7'-9"			UPPER WING 2 - HORIZONTAL F.F. / B.F.
A418	X	5	13'-7"			UPPER WING 2 - HORIZONTAL F.F. / B.F.
A619	X	2	13'-7"			UPPER WING 2 - HORIZONTAL
A620	X	20	10'-0"	X		UPPER WING 2 - STIRRUP
A421		2	28'-2"			BODY SEAT HORIZONTAL
A422		16	3'-9"	X		BODY SEAT TIE



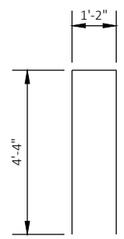
A401

A804, A806, A612

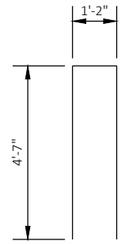


A507

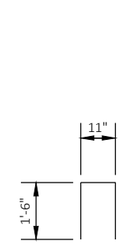
A510



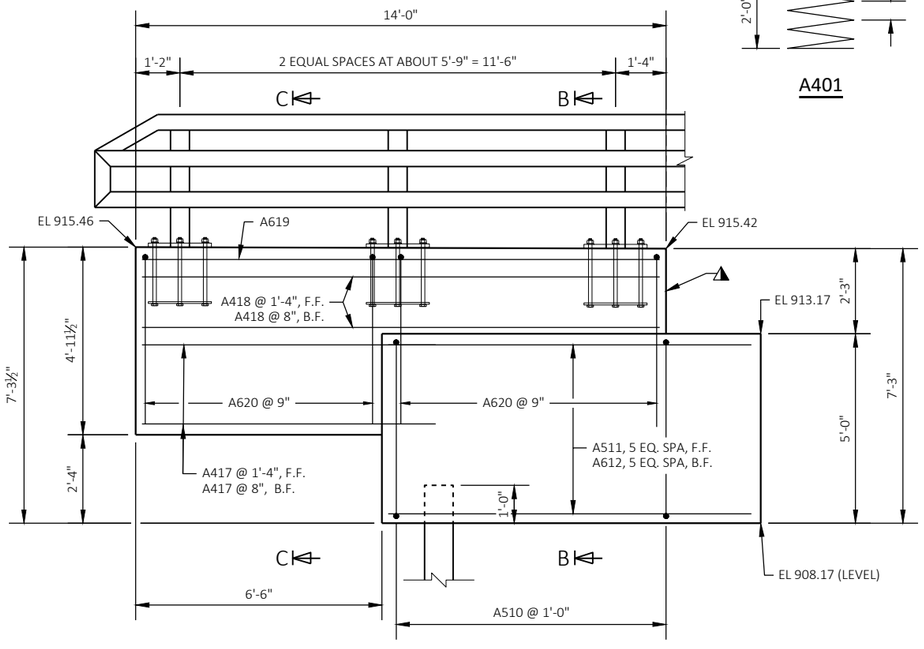
A614



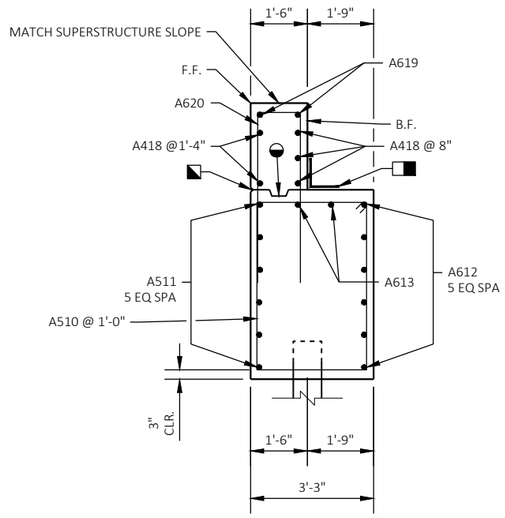
A620



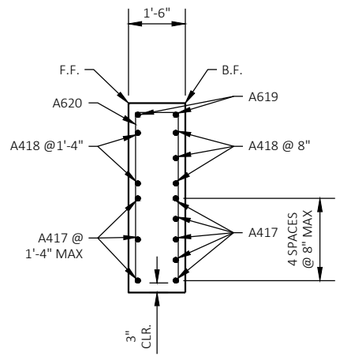
A422



WING 2 ELEVATION



SECTION B-B



SECTION C-C

LEGEND

F.F. FRONT FACE

B.F. BACK FACE

18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND CONTINUOUS BETWEEN CORNERS AND FROM SEAT TO TOP OF WINGS, TO BE PLACED FLUSH WITH SURFACE OF CONCRETE.

½" FILLER TO EXTEND FROM TOP OF ABUTMENT BODY TO TOP OF WINGS, SEAL ALL EXPOSED SURFACES OF FILLER WITH NON-STAINING, GRAY, NON-BITUMINOUS JOINT SEALER (1" DEEP & HOLD ⅛" BELOW SURFACE OF CONC.).

CONSTRUCTION JOINT KEYWAY FORMED WITH A SURFACED BEVELED 2"X6".

¾" 'V' GROOVE ON F.F. OF WING WALL.

NOTES:

1. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE.
2. BAR DIMENSIONS ARE OUT TO OUT OF BAR.
3. FILL/EXCAVATE TO BOTTOM OF FOOTING ELEVATION BEFORE DRIVING PILING.

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STRUCTURE B-20-243

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SOUTH ABUTMENT DETAILS

50

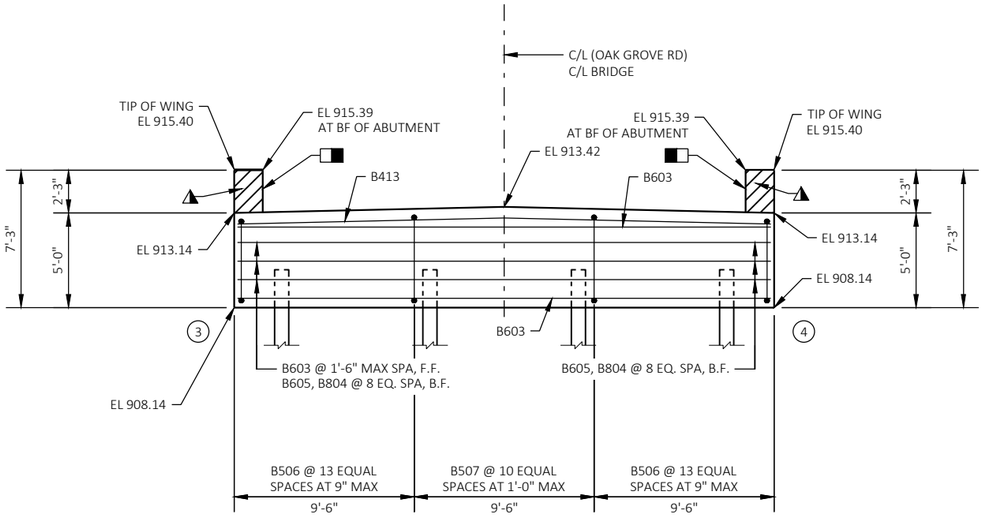
SHEET 5

8

8

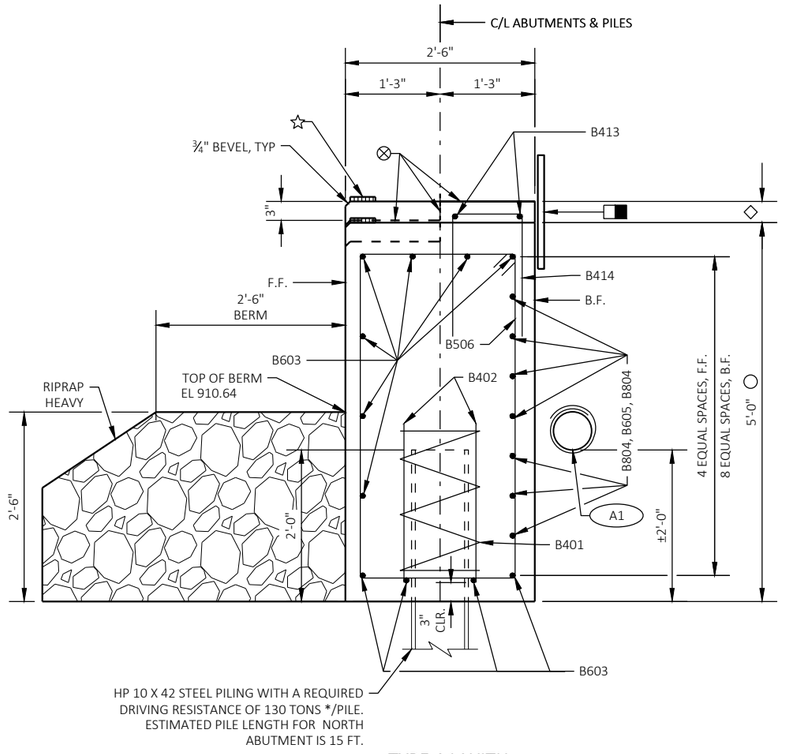
STATE PROJECT NUMBER

6187-05-71



ELEVATION

(LOOKING NORTH)



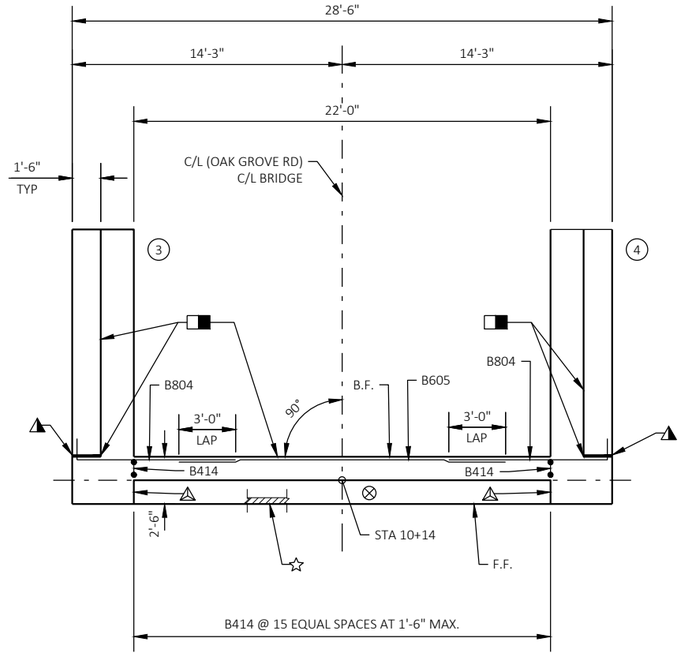
TYPE A1 WITH

SEMI-EXPANSION SEAT

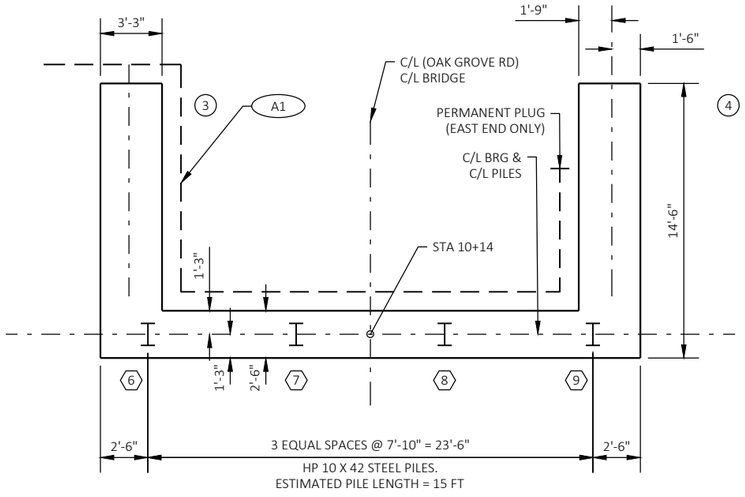
LEGEND

- (1) INDICATES WING NUMBER
- ⟨1⟩ INDICATES PILE NUMBER
- F.F. FRONT FACE
- B.F. BACK FACE
- 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND CONTINUOUS BETWEEN CORNERS AND FROM SEAT TO TOP OF WINGS, TO BE PLACED FLUSH WITH SURFACE OF CONCRETE.
- ½" FILLER TO EXTEND FROM TOP OF ABUTMENT BODY TO TOP OF WINGS, SEAL ALL EXPOSED SURFACES OF FILLER WITH NON-STAINING, GRAY, NON-BITUMINOUS JOINT SEALER (1" DEEP & HOLD ⅛" BELOW SURFACE OF CONC.).
- 4" X ¾" PREFORMED FILLER EXTENDS LENGTH OF ABUTMENT.
- ¾" PREFORMED FILLER ON VERTICAL FACE OF STEP.
- 3" SEMI-EXPANSION STEP. CONSTRUCT 3" DEEPER THAN ABUTMENT BACKWALL. STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03 INCHES.
- ○ DIMENSION IS FROM BOTTOM OF ABUTMENT TO LOW BEAM SEAT OR LOW SIDE OF SLAB TYPE SUPERSTRUCTURE.
- ◇ VARIES 0" - 3 ⅜" ADJUST HEIGHT OF B413 AND B414 BARS TO MATCH ABUTMENT SLOPE.
- (A1) PIPE UNDERDRAIN WRAPPED, 6 INCH, SLOPED 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH PERMANENT PLUG ON UPSTREAM END. ATTACH RODENT SHIELD AT OUTLET END AS DETAILED ON THIS SHEET. RODENT SHIELD AND PERMANENT PLUG TO BE INCLUDED IN BID PRICE FOR "PIPE UNDERDRAIN WRAPPED 6-INCH"

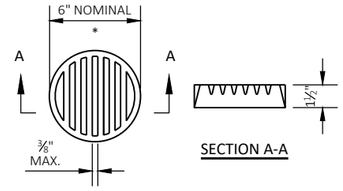
FOR PILE SPLICE DETAIL SEE SHEET 7



PLAN



PILE PLAN



SECTION A-A

* DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN UNPERFORATED".

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

RODENT SHIELD DETAIL

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DEPARTMENT OF TRANSPORTATION

STRUCTURE B-20-243

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NORTH ABUTMENT

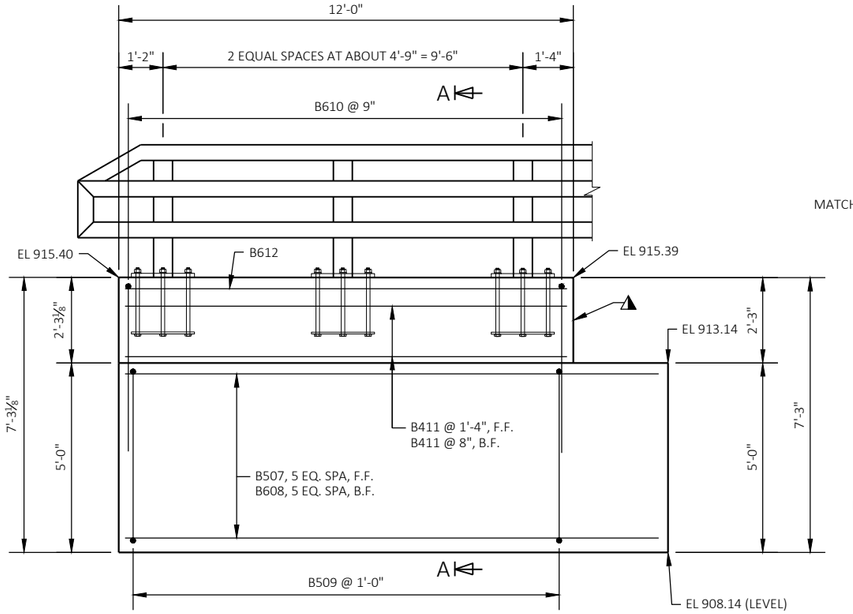
51

SHEET 6

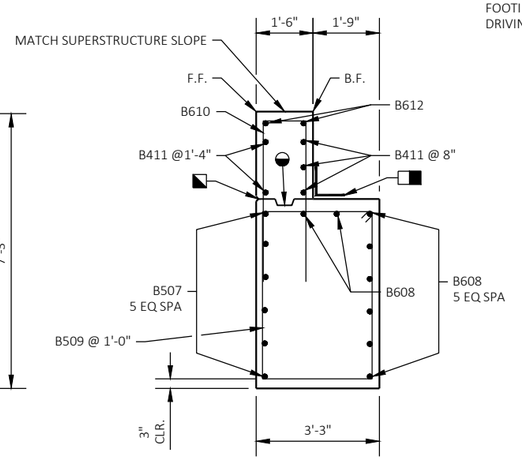
8

8

STATE PROJECT NUMBER
6187-05-71



WING 3 ELEVATION



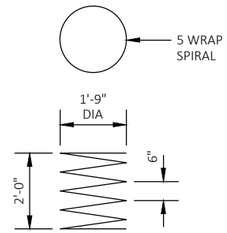
SECTION A-A

NOTES:

1. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE.
2. BAR DIMENSIONS ARE OUT TO OUT OF BAR.
3. FILL/EXCAVATE TO BOTTOM OF FOOTING ELEVATION BEFORE DRIVING PILING.

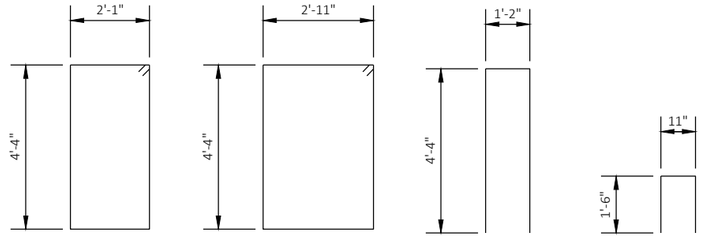
BILL OF BARS - NORTH ABUTMENT

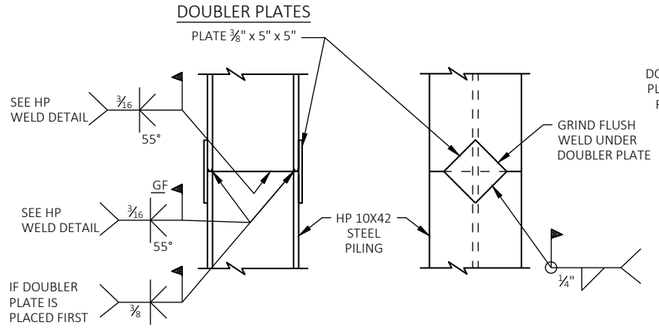
BAR MARK	COAT	NUMBER REQUIRED	LENGTH	BENT	BAR SERIES	LOCATION
B401		4	28'-0"	X		BODY - PILES
B402		8	2'-3"			BODY - PILES
B603		11	28'-2"			BODY - HORIZONTAL F.F., TOP, BOTTOM
B804		14	12'-7"	X		BODY - HORIZONTAL B.F.
B605		7	11'-10"			BODY - HORIZONTAL B.F.
B506		37	13'-6"	X		BODY - TIES
B507	X	12	14'-2"			WING 3 AND 4 - HORIZONTAL F.F.
B608	X	16	14'-2"			WING 3 AND 4 - HORIZONTAL B.F.
B509	X	26	15'-4"	X		WING 3 AND 4 VERTICAL STIRRUPS
B610	X	34	9'-6"	X		UPPER WING 3 AND 4 - STIRRUP
B411	X	10	11'-7"			UPPER WING 3 AND 4 - HORIZONTAL F.F. / B.F.
B612	X	4	11'-7"			UPPER WING 3 AND 4 - HORIZONTAL
B413		2	28'-2"			BODY SEAT HORIZONTAL
B414		16	3'-9"	X		BODY SEAT TIE



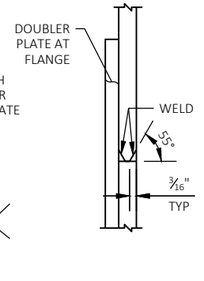
B401

B804, B806

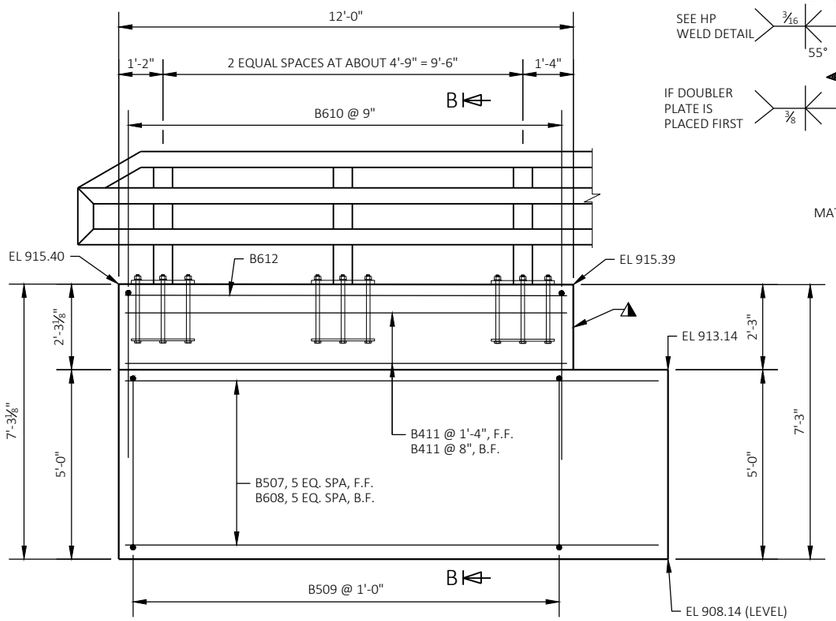




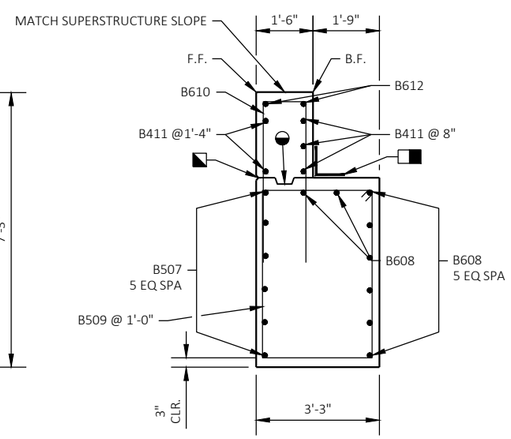
STEEL 'HP' SHAPES



HP WELD DETAIL
FLANGE SHOWN, WEB SIMILAR



WING 4 ELEVATION



SECTION B-B

LEGEND

F.F. FRONT FACE

B.F. BACK FACE

18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND CONTINUOUS BETWEEN CORNERS AND FROM SEAT TO TOP OF WINGS, TO BE PLACED FLUSH WITH SURFACE OF CONCRETE.

½" FILLER TO EXTEND FROM TOP OF ABUTMENT BODY TO TOP OF WINGS, SEAL ALL EXPOSED SURFACES OF FILLER WITH NON-STAINING, GRAY, NON-BITUMINOUS JOINT SEALER (1" DEEP & HOLD ⅛" BELOW SURFACE OF CONC.).

CONSTRUCTION JOINT KEYWAY FORMED WITH A SURFACED BEVELED 2"X6".

¾" 'V' GROOVE ON F.F. OF WING WALL.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-20-243

DRAWN BY MJK | PLANS CK'D ALK

NORTH ABUTMENT DETAILS

52
SHEET 7

FILE NAME : S:\CURRPROJ\FONDDUCOVALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-080104-BR.DWG
LAYOUT NAME - SHEET-07
PLOT DATE : 11/18/2020 12:53 PM
PLOT BY : AARON SARAUER

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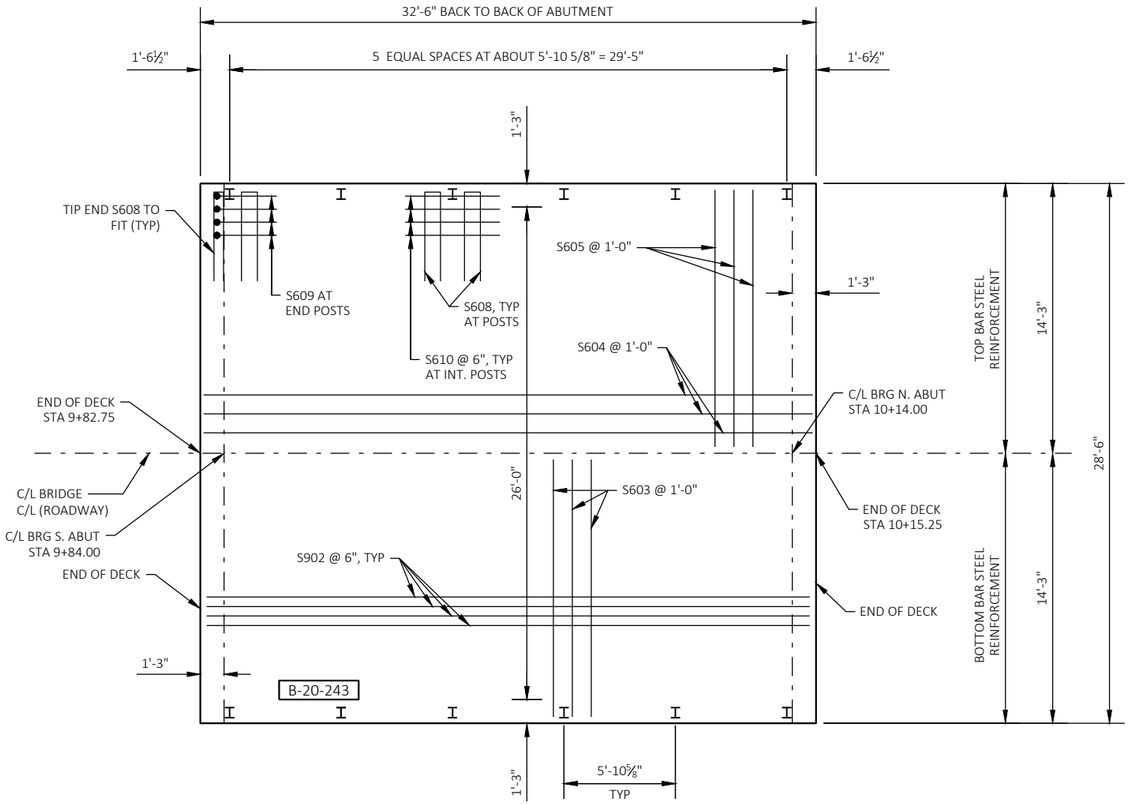
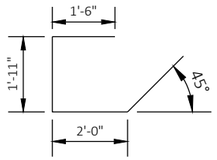
8

FILE NAME : S:\CURRPRO\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-080104-BR.DWG
PLOT DATE : 11/18/2020 12:53 PM
PLOT BY : AARON SARAUER
LAYOUT NAME - SHEET-08

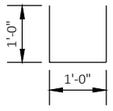
STATE PROJECT NUMBER
6187-05-71



PLAN



S501



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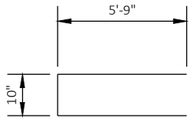

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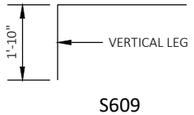


S609

GENERAL NOTES:

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

TRANSVERSE BARS SHALL BE PLACED PARALLEL TO THE C/L OF THE SUBSTRUCTURE UNITS.

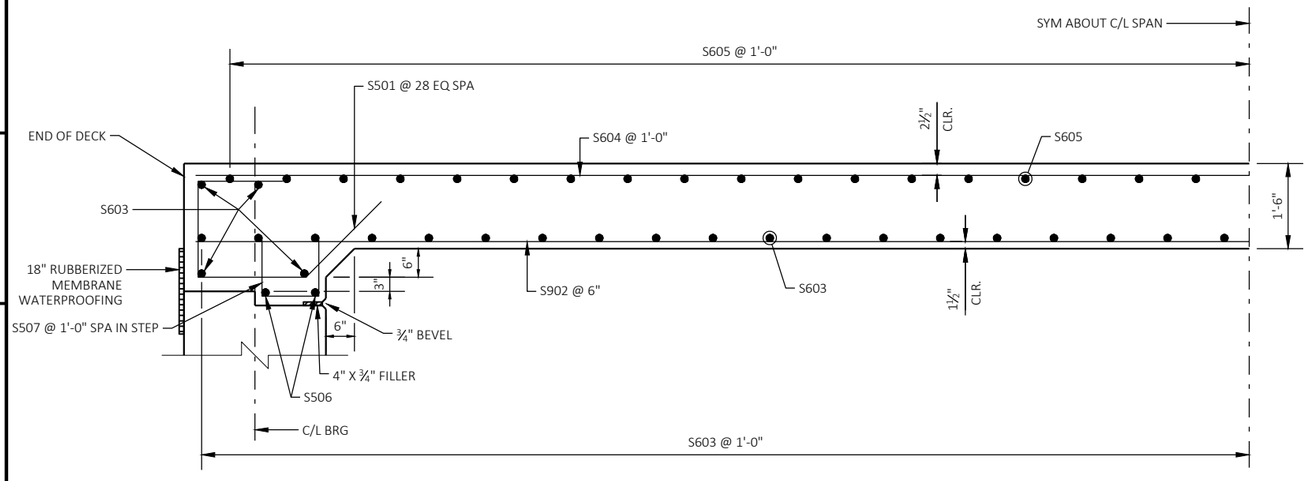
ALL SLAB THICKNESS DIMENSIONS ARE MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).

BILL OF BARS - SUPERSTRUCTURE

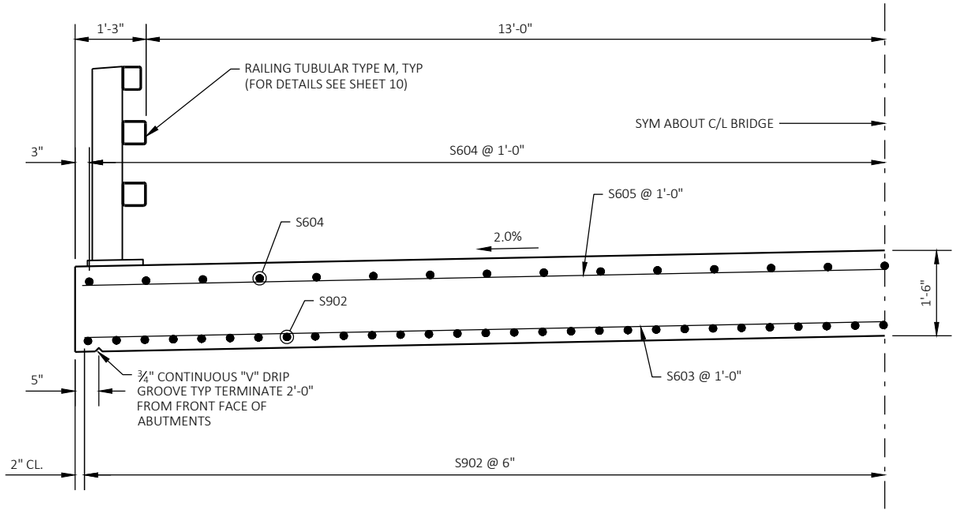
BAR MARK	COAT	NUMBER REQUIRED	LENGTH	BENT	BAR SERIES	LOCATION
S501	X	58	7'-4"	X		END OF DECK - VERTICAL
S902	X	58	32'-2"			DECK - BOTTOM - LONGITUDINAL
S603	X	42	28'-2"			DECK - BOTTOM - TRANSVERSE
S604	X	30	32'-2"			DECK - TOP - LONGITUDINAL
S605	X	33	28'-2"			DECK - TOP - TRANSVERSE
S506	X	4	28'-2"			DECK - DIAPHRAGM - STEP
S507	X	58	2'-9"	X		DECK - DIAPHRAGM - STEP
S608	X	24	12'-0"	X		DECK - AT RAIL POSTS - TRANSVERSE - 2 PER POST
S609	X	16	6'-0"	X		DECK - AT END RAIL POSTS - LONGITUDINAL
S610	X	32	6'-0"			DECK - AT INTERMEDIATE RAIL POSTS - LONGITUDINAL

NOTES:

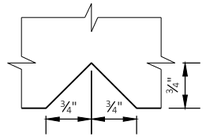
1. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE.
2. BAR DIMENSIONS ARE OUT TO OUT OF BAR.



LONGITUDINAL SECTION



CROSS SECTION THROUGH ROADWAY



DRIP GROOVE DETAIL

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-20-243

DRAWN BY MJK | PLANS CK'D ALK

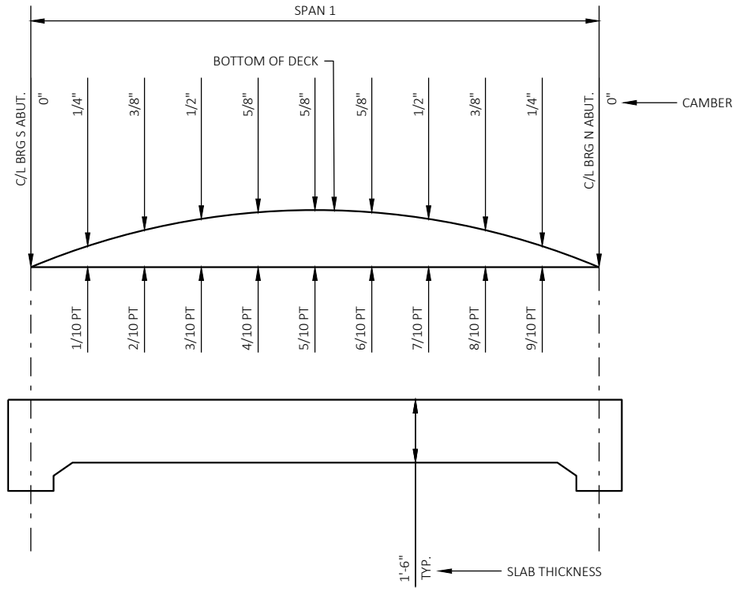
SUPERSTRUCTURE

53
SHEET 8

8

8

FILE NAME : S:\CURRPRO\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-080104-BR.DWG
LAYOUT NAME - SHEET-09
PLOT DATE : 11/18/2020 12:53 PM
PLOT BY : AARON SARAUER



CAMBER AND SLAB THICKNESS DIAGRAM

CAMBER SHOWN IS BASED ON 3 TIMES DEAD LOAD DEFLECTIONS.
CAMBER SPANS AS SHOWN TO PROVIDE FOR DEAD LOAD DEFLECTION AND FUTURE CREEP. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT.
PARAPETS, SIDEWALKS AND MEDIANS PLACED ON TOP OF THE SLAB SHALL BE POURED AFTER FALSEWORK HAS BEEN RELEASED.

TO DETERMINE FALSEWORK ELEVATION AT EDGE OF SLAB, CROWN OR REFERENCE LINE FOLLOW THIS PROCEDURE:

	TOP OF SLAB ELEVATION AT FINAL GRADE
LESS	SLAB THICKNESS
PLUS	CAMBER
PLUS	FORM SETTLEMENT/DEFLECTION DUE TO PLACEMENT OF SLAB CONCRETE (TO BE COMPUTED BY THE CONTRACTOR)
EQUALS	TOP OF SLAB FALSEWORK ELEVATION.

SURVEY TOP OF SLAB ELEVATIONS

	C/L BRG. S ABUTMENT	5/10	C/L BRG. N. ABUTMENT
W. EDGE			
CROWN OR R/L			
E. EDGE			

PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF DECK ELEVATIONS AT THE C/L OF ABUTMENTS AND AT 5/10 PTS. TO VERIFY CAMBER. TAKE ELEVATIONS ALONG GUTTER LINES AND CROWN OR C/L. RECORD THE ELEVATIONS IN THE ABOVE TABLE FOR THE "AS BUILT" PLANS.

TOP OF DECK ELEVATIONS AT FINAL GRADE

	C/L BRG. S. ABUT.	1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	C/L BRG. N. ABUT.
STATION	9+84.0	9+87.0	9+90.0	9+93.0	9+96.0	9+99.0	10+02.0	10+05.0	10+08.0	10+11.0	10+14.0
W. EDGE OF DECK	915.42	915.42	915.41	915.41	915.40	915.40	915.40	915.40	915.39	915.39	915.39
CROWN OR R/L	915.70	915.70	915.69	915.69	915.68	915.68	915.68	915.68	915.67	915.67	915.67
E. EDGE OF DECK	915.42	915.42	915.41	915.41	915.40	915.40	915.40	915.40	915.39	915.39	915.39

NOTES:

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

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-20-243

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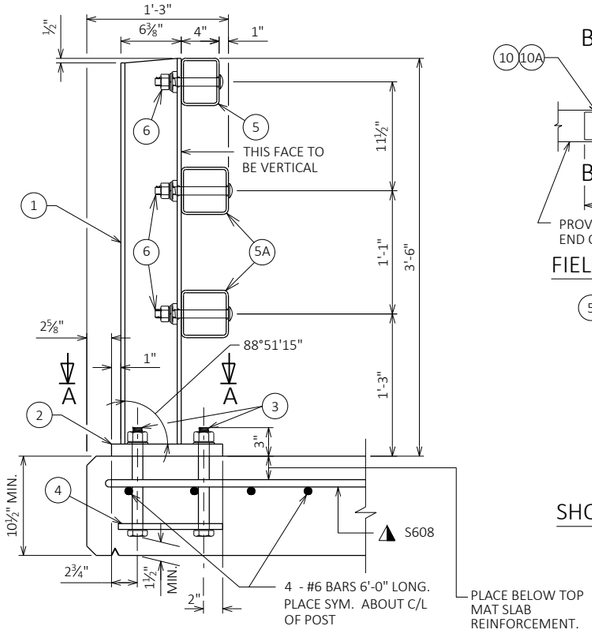
SUPERSTRUCTURE DETAILS

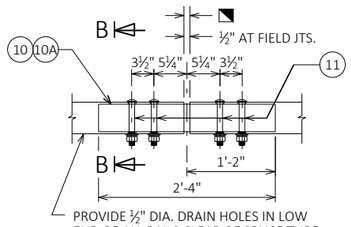
8

8

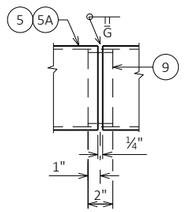
STATE PROJECT NUMBER
6187-05-71



SECTION THRU RAILING ON DECK

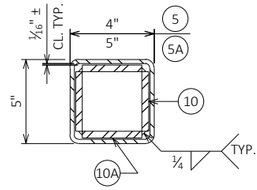


FIELD ERECTION JOINT DETAIL

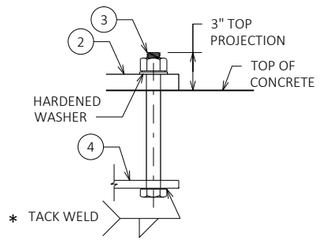


SHOP RAIL SPLICE DETAIL

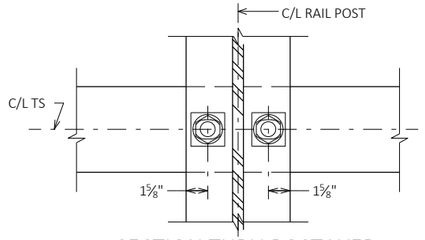
LOCATION MUST BE SHOWN ON SHOP DRAWINGS



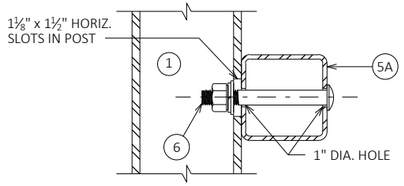
SECTION B-B



ANCHOR BOLTS



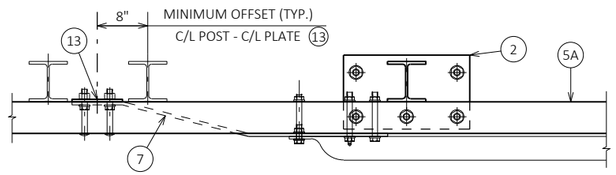
SECTION THRU POST WEB



SECTION THRU RAIL

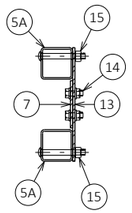
NOTE: CONNECTIONS AT LOWER RAILS SHOWN. CONNECTIONS AT TOP RAIL SIMILAR.

TYPICAL RAIL TO POST CONNECTIONS

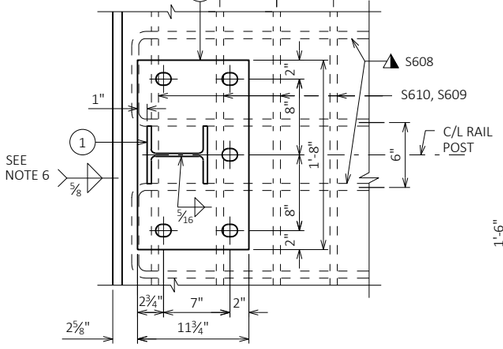


TOP VIEW AT END POST

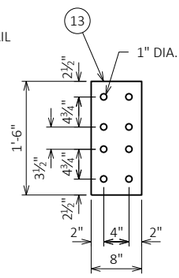
THRIE BEAM RAIL ATTACHMENT



SECTION C-C

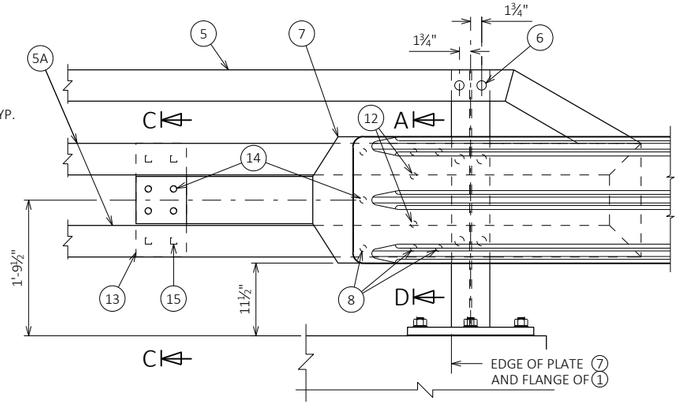


SECTION A-A



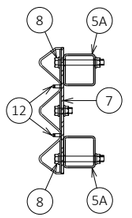
ANCHOR PLATE

AT BEAM GUARD ATTACHMENT

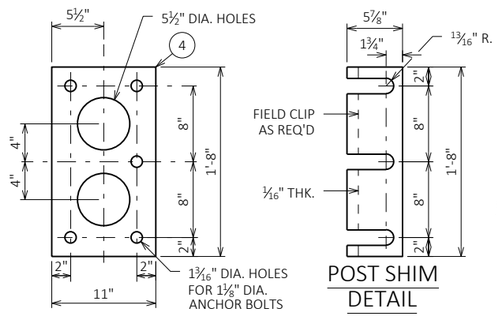


DETAIL AT END POST

THRIE BEAM RAIL ATTACHMENT



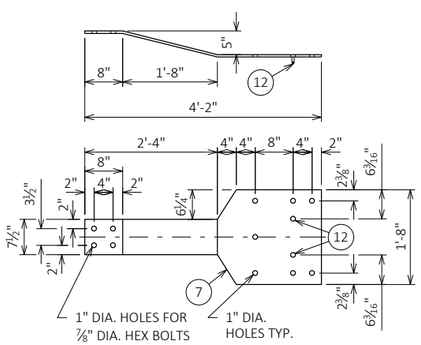
SECTION D-D



ANCHOR PLATE

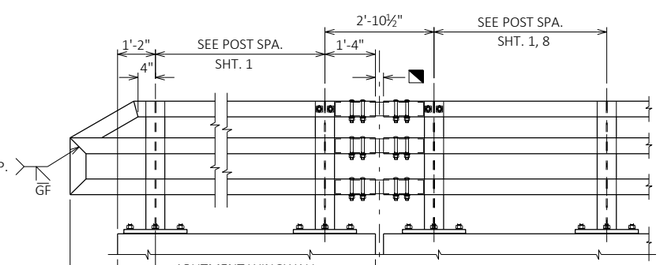
AT RAIL TO DECK CONNECTION

POST SHIM DETAIL



BACK-UP PLATE DETAIL

AT BEAM GUARD ATTACHMENT



PART ELEVATION OF RAILING

LEGEND

1. W6 x 25 WITH 1⅛" X 1½" HORIZ. SLOTS ON EACH SIDE OF POST FOR BOLT NO. 6. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
2. PLATE 1¼" x 11¾" x 1'-8" WITH 1⁵⁄₁₆" X 1⅝" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.
3. ASTM A449 - 1⅛" DIA. ANCHOR BOLTS WITH NUT AND HARDENED WASHER (ALL GALVANIZED). 5 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. USE 1'-9" LONG IN ABUTMENT WINGS. AT POSTS ON CONCRETE SLAB SUPERSTRUCTURES WHERE THE SLAB THICKNESS IS > 16" USE 1'-3" LONG. USE 10¾" LONG AT ALL OTHER LOCATIONS. (AN EQUIVALENT THREADED ROD WITH NUTS AND HARDENED WASHERS MAY BE SUBSTITUTED FOR ANCHOR BOLTS IN WINGS IF REQ'D. FOR CONSTRUCTIBILITY.)
4. ⅝" x 11" x 1'-8" ANCHOR PLATE (GALVANIZED) WITH 1¾" DIA. HOLES FOR ANCHOR BOLTS NO. 3
5. TS 5 x 4 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
5A. TS 5 x 5 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
6. ⅞" DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, ¾" X 1⅝" X 1⅝" WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION.)
7. ½" THK. BACK-UP PLATE WITH 2 -⅞" X 1½" THREADED SHOP WELDED STUDS (NO. 12). BOLT TO RAIL AS SHOWN IN DETAIL. REQUIRED AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYMMETRICALLY ABOUT TUBES NO. 5A.
8. 1" DIA. HOLES IN PLATE NO. 7 & TUBES NO. 5A FOR ⅞" DIA. A325 BOLTS WITH HEX NUTS AND WASHERS. 6 HOLES IN TUBES AND PLATE NO. 7.
9. SPLICE SLEEVE FABRICATED FROM ¼" PLATE. PROVIDE "SLIDING FIT".
10. ⅜" X 3½" X 2'-4" PLATE. 2 PER RAIL. USED IN NO. 5 & 5A.
10A. ⅜" X 2½" X 2'-4" PLATE USED IN NO. 5, ⅜" X 3½" X 2'-4" PLATE USED IN NO. 5A. 2 PER RAIL.
11. ⅞" DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE 1⁵⁄₁₆" X 1¼" LONGIT. SLOTTED HOLES AT FIELD JOINTS AND 1⁵⁄₁₆" X 2¼" MIN. LONGIT. SLOTTED HOLES AT EXP. JOINTS IN PLATE NO. 10A.
12. ⅞" DIA. X 1½" LONG THREADED SHOP WELDED STUDS (2 REQ'D).
13. ⅜" X 8" X 1'-6" PLATE. BOLT TO RAIL AS SHOWN IN DETAIL. REQ'D. AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYM. ABOUT TUBES NO. 5A.
14. ⅞" DIA. X 2" LONG A325 HEX BOLT WITH NUT AND WASHER (5 REQ'D.).
15. 1" DIA. HOLES IN TUBES NO. 5A FOR ⅞" DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER AND LOCK WASHER (4 REQ'D.). 4 HOLES IN TUBES.

GENERAL NOTES

1. BID ITEM SHALL BE "RAILING TUBULAR TYPE M" WHICH INCLUDES ALL ITEMS SHOWN.
2. RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY = 50 ksi. ANCHOR PLATES, AND SPLICE TUBE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 36.
3. THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ⅛ TURN.
4. RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE. RAILS SHALL BE SPLICED IN A PANEL OVER EXPANSION JOINTS.
5. ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
6. WELD IS THE SAME ON BOTH FLANGES. FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING.
7. FILL BOLT SLOT OPENINGS IN POST SHIMS AND PLATE NO. 2 AND CAULK AROUND PERIMETER OF PLATE NO. 2 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. STEEL POST SHIMS MAY BE USED UNDER POSTS WHERE REQ'D. FOR ALIGNMENT.
8. POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.
9. ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS & STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING BY SSPC SPECIFICATIONS.

△ TIE TO TOP MAT OF STEEL.

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

◥ RDWY. OPENING OR 2½" MIN. FOR STRIP SEAL EXP. JOINT & ½" OPENING FOR A1 ABUTMENT.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-20-243

DRAWN BY MJK | PLANS CK'D ALK

TUBULAR STEEL RAILING TYPE M

55
SHEET 10

FILE NAME : S:\CURRPRO\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\6187050S-080104-BR.DWG
LAYOUT NAME - SHEET-10
PLOT DATE : 11/18/2020 12:53 PM
PLOT BY : AARON SARAUER

STATION	REAL STATION	DISTANCE	AREA (SF)		INCREMENTAL VOL (CY) (UNADJUSTED)		CUMULATIVE VOL (CY)		
			CUT	FILL	CUT NOTE 1	FILL NOTE 2	CUT 1.00 NOTE 1	EXPANDED FILL 1.30	MASS ORDINATE NOTE 3
07+51	751.00	0.00	12.14	0.51	0	0	0	0	0
08+00	800.00	49.00	13.57	5.05	23	5	23	7	17
08+35.401	835.40	35.40	15.82	11.47	19	11	43	21	22
08+50	850.00	14.60	17.14	14.61	9	7	52	30	22
08+55.401	855.40	5.40	17.63	15.77	3	3	55	34	21
08+57.401	857.40	2.00	17.81	16.07	1	1	56	35	21
08+65.401	865.40	8.00	18.24	16.87	5	5	62	42	20
08+67.401	867.40	2.00	18.35	16.97	1	1	63	43	20
09+00	900.00	32.60	17.83	16.03	22	20	85	69	16
09+15.396	915.40	15.40	15.85	14.12	10	9	94	80	14
09+17.396	917.40	2.00	15.45	14.10	1	1	96	82	14
09+50	950.00	32.60	59.11	7.35	45	13	141	99	42
09+70.75	970.75	20.75	39.53	18.78	38	10	179	112	67
09+70.85	970.85	0.10	0.00	0.00	0	0	179	112	67
10+27.15	1027.15	56.30	0.00	0.00	0	0	179	112	67
10+27.25	1027.25	0.10	2.81	0.00	0	0	179	112	67
10+50	1050.00	22.75	36.29	20.03	16	8	195	123	72
10+80.604	1080.60	30.60	10.19	19.35	26	22	221	152	70
11+00	1100.00	19.40	10.53	24.18	7	16	229	172	57
11+30.599	1130.60	30.60	11.13	19.26	12	25	241	204	37
11+40.599	1140.60	10.00	11.27	17.29	4	7	245	213	33
11+50	1150.00	9.40	11.27	14.78	4	6	249	220	29
11+60.599	1160.60	10.60	11.17	12.10	4	5	254	227	27
12+00	1200.00	39.40	11.23	4.38	16	12	270	242	27
12+45	1245.00	45.00	12.67	0.33	20	4	290	248	42
COLUMN TOTALS					**290**	**190**			

Notes:	
1 - Cut	Cut includes Salvaged/Unusable Pavement material
2 - Fill	Does not include Unusable Pavement Excavation volume
3 - Mass Ordinate	Mass Ordinate = Cut - Expanded Fill

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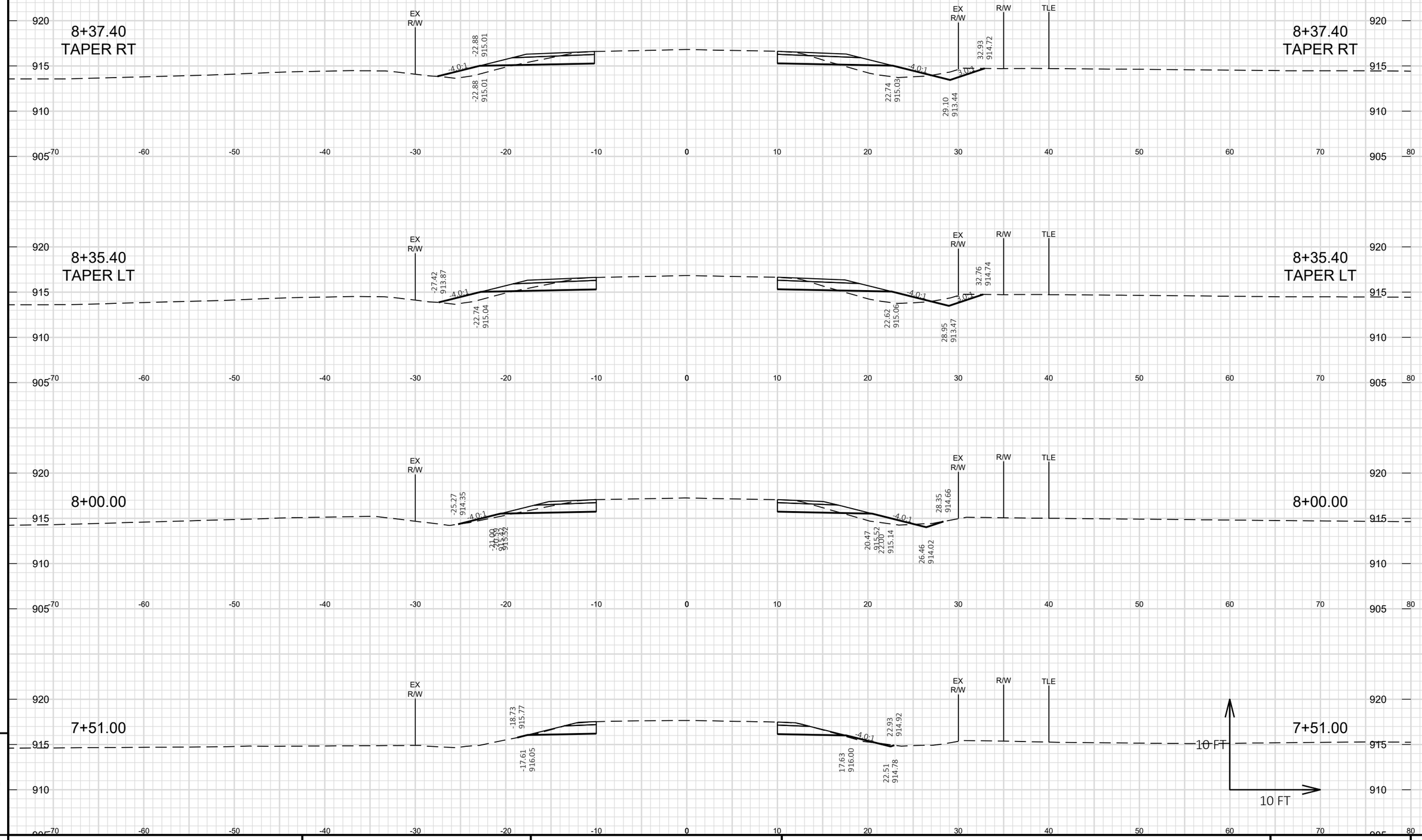
PROJECT NO: 6187-05-71	HWY: OAK GROVE ROAD	COUNTY: FOND DU LAC	COMPUTER EARTHWORK DATA	SHEET 56	E



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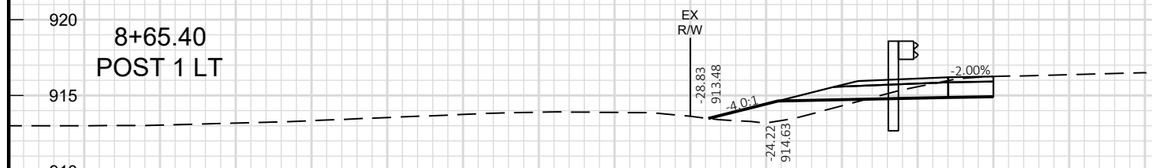
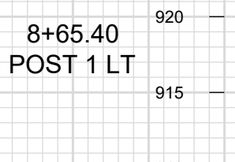
PROJECT NO: 6187-05-71	HWY: OAK GROVE ROAD	COUNTY: FOND DU LAC	CROSS SECTIONS: OAK GROVE ROAD	SHEET 57	E

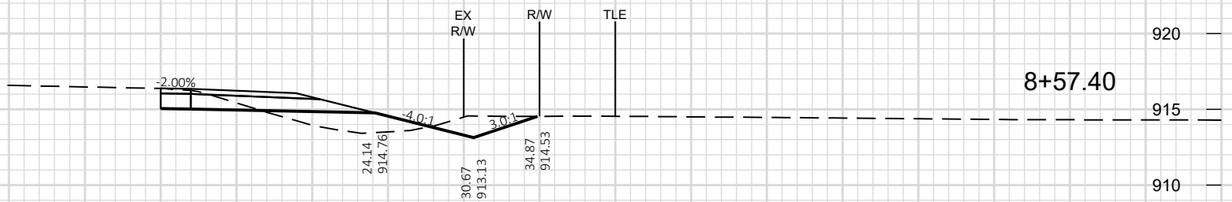
FILE NAME : S:\CURRPROJ\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-090201-XS.DWG
LAYOUT NAME - 001

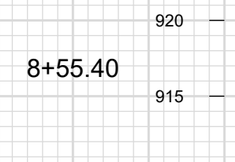
PLOT DATE : 5/4/2021 11:24 AM PLOT BY : AARON SARAUER PLOT NAME : **PLOT SCALE :** 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

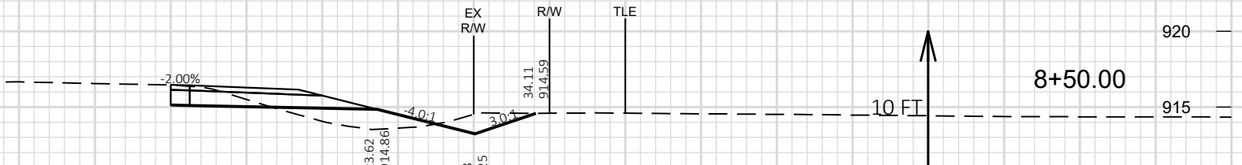
WISDOT/CADDS SHEET 49











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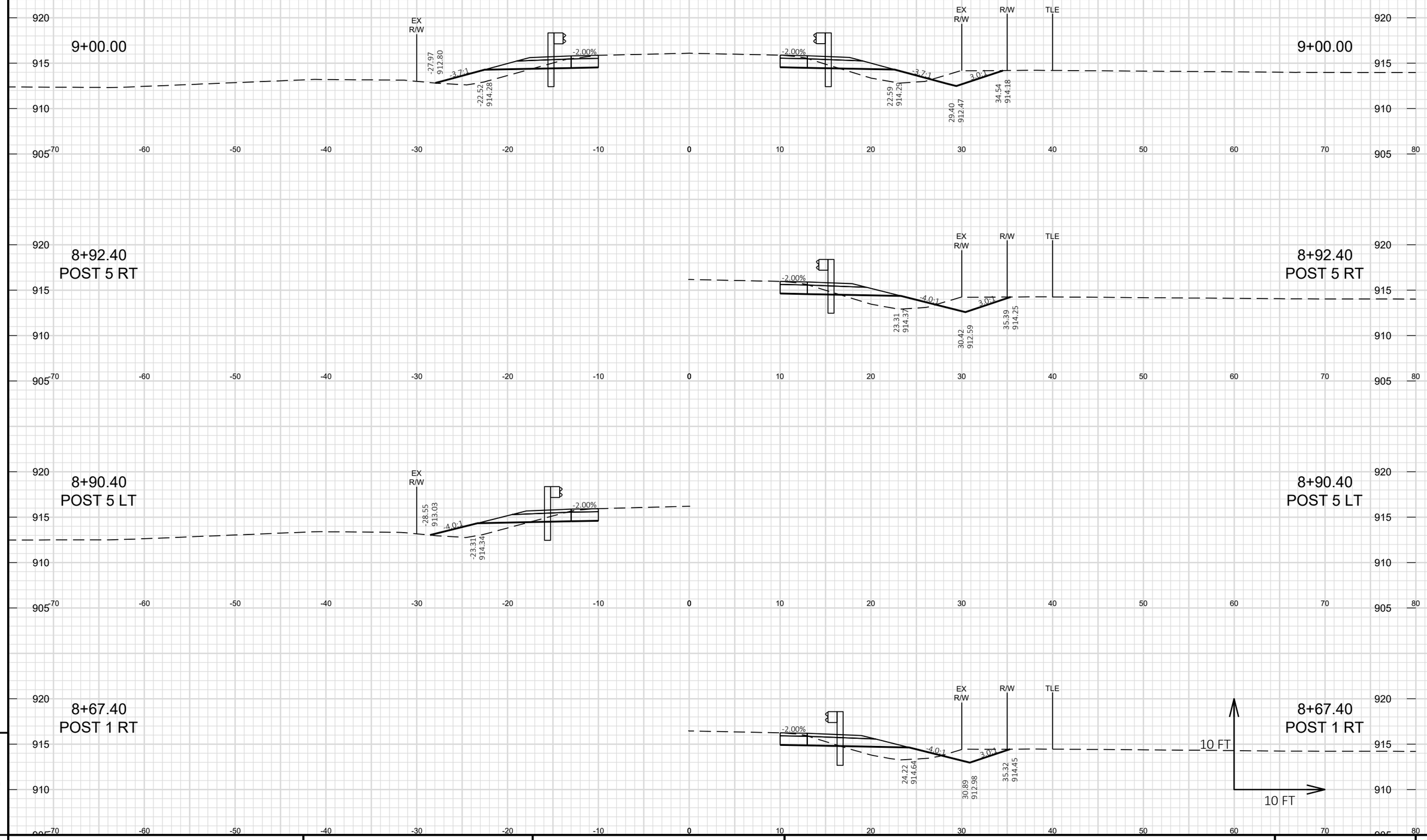
PROJECT NO: 6187-05-71	HWY: OAK GROVE ROAD	COUNTY: FOND DU LAC	CROSS SECTIONS: OAK GROVE ROAD	SHEET 58	E

FILE NAME : S:\CURRPROJ\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-090201-XS.DWG
LAYOUT NAME - 002

PLOT DATE : 5/4/2021 11:24 AM PLOT BY : AARON SARAUER PLOT NAME : **PLOT SCALE :** 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



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PROJECT NO: 6187-05-71	HWY: OAK GROVE ROAD	COUNTY: FOND DU LAC	CROSS SECTIONS: OAK GROVE ROAD	SHEET 59	E

FILE NAME : S:\CURRPROJ\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-090201-XS.DWG
LAYOUT NAME - 003

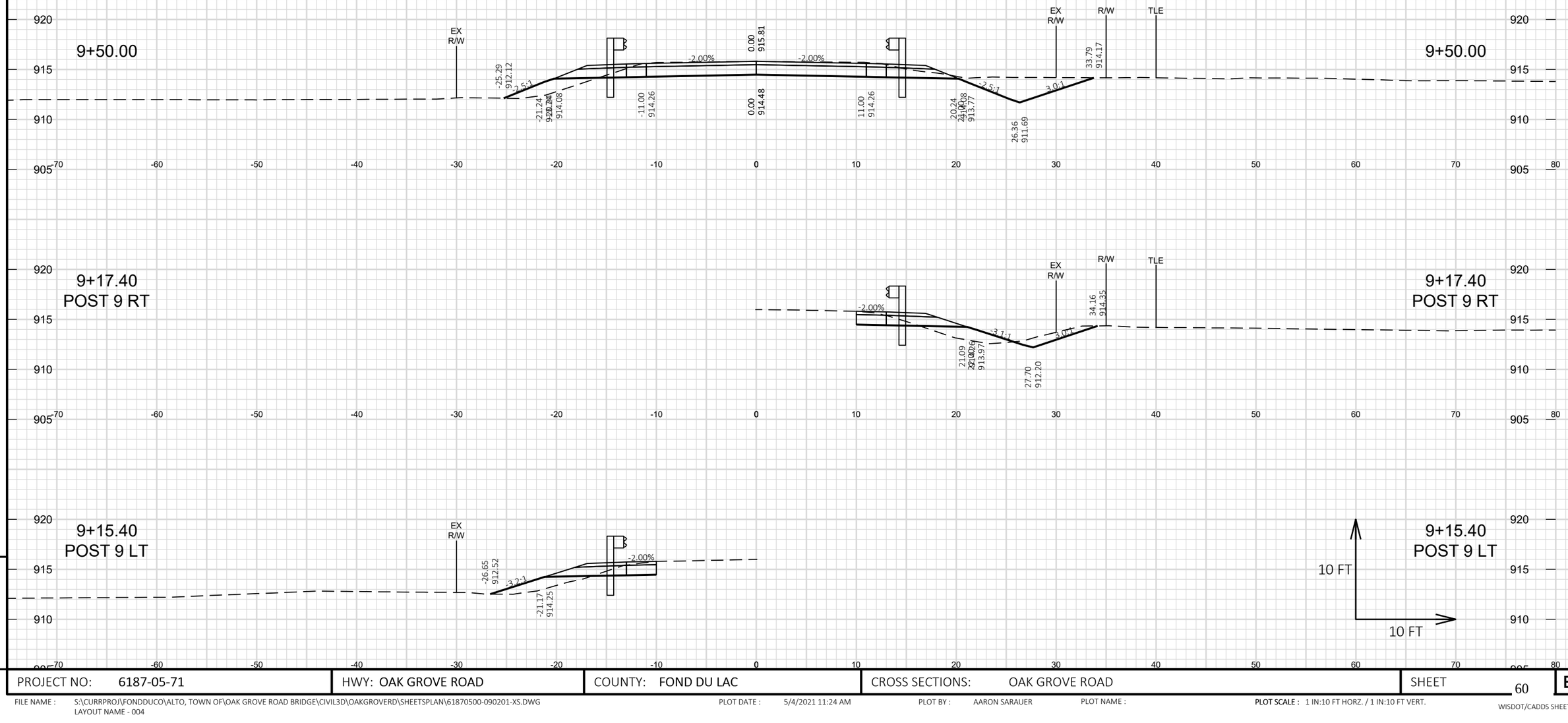
PLOT DATE : 5/4/2021 11:24 AM

PLOT BY : AARON SARAUER

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



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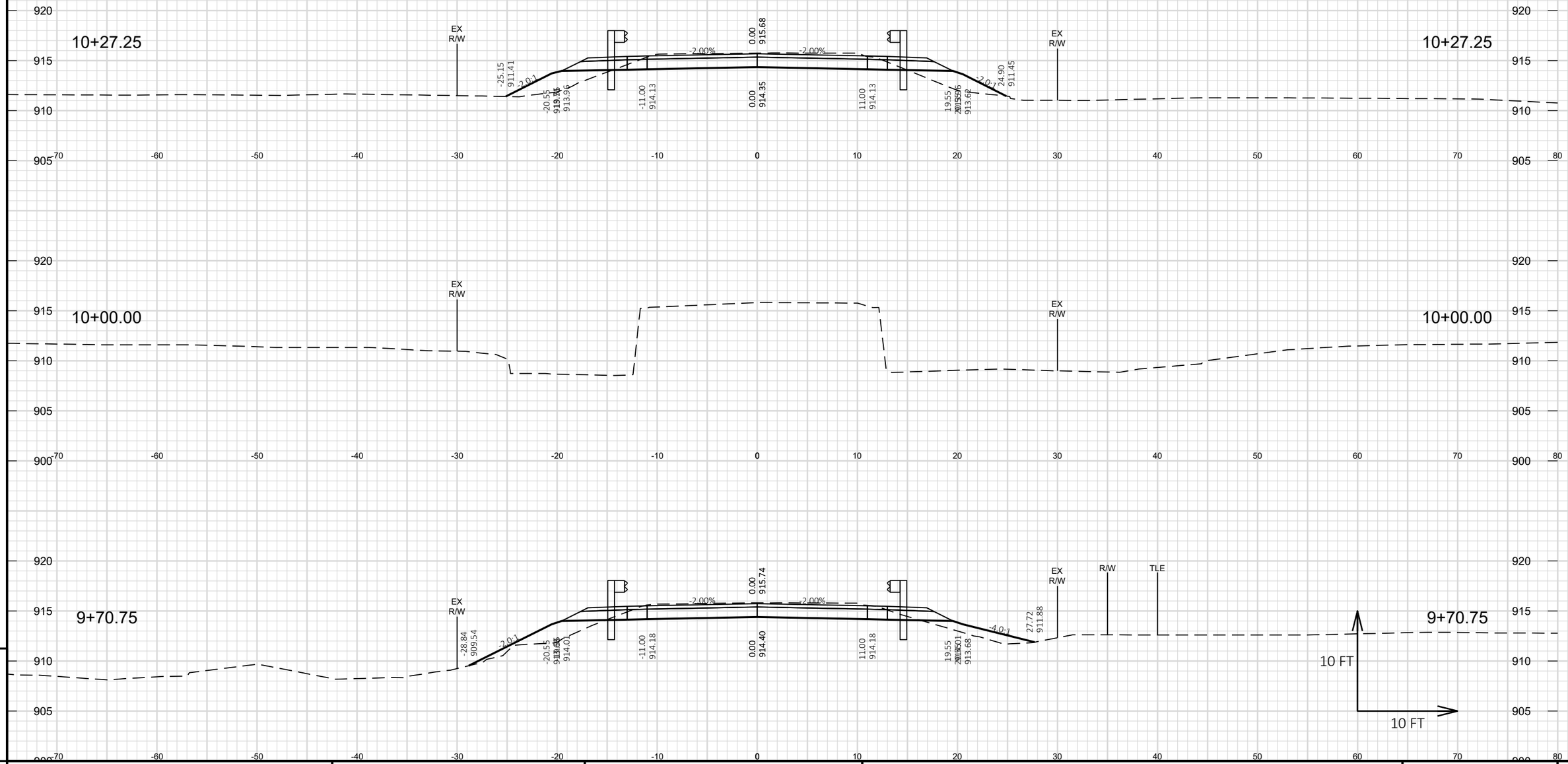
PROJECT NO: 6187-05-71	HWY: OAK GROVE ROAD	COUNTY: FOND DU LAC	CROSS SECTIONS: OAK GROVE ROAD	SHEET 60	E

FILE NAME : S:\CURRPROJ\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-090201-XS.DWG
LAYOUT NAME - 004

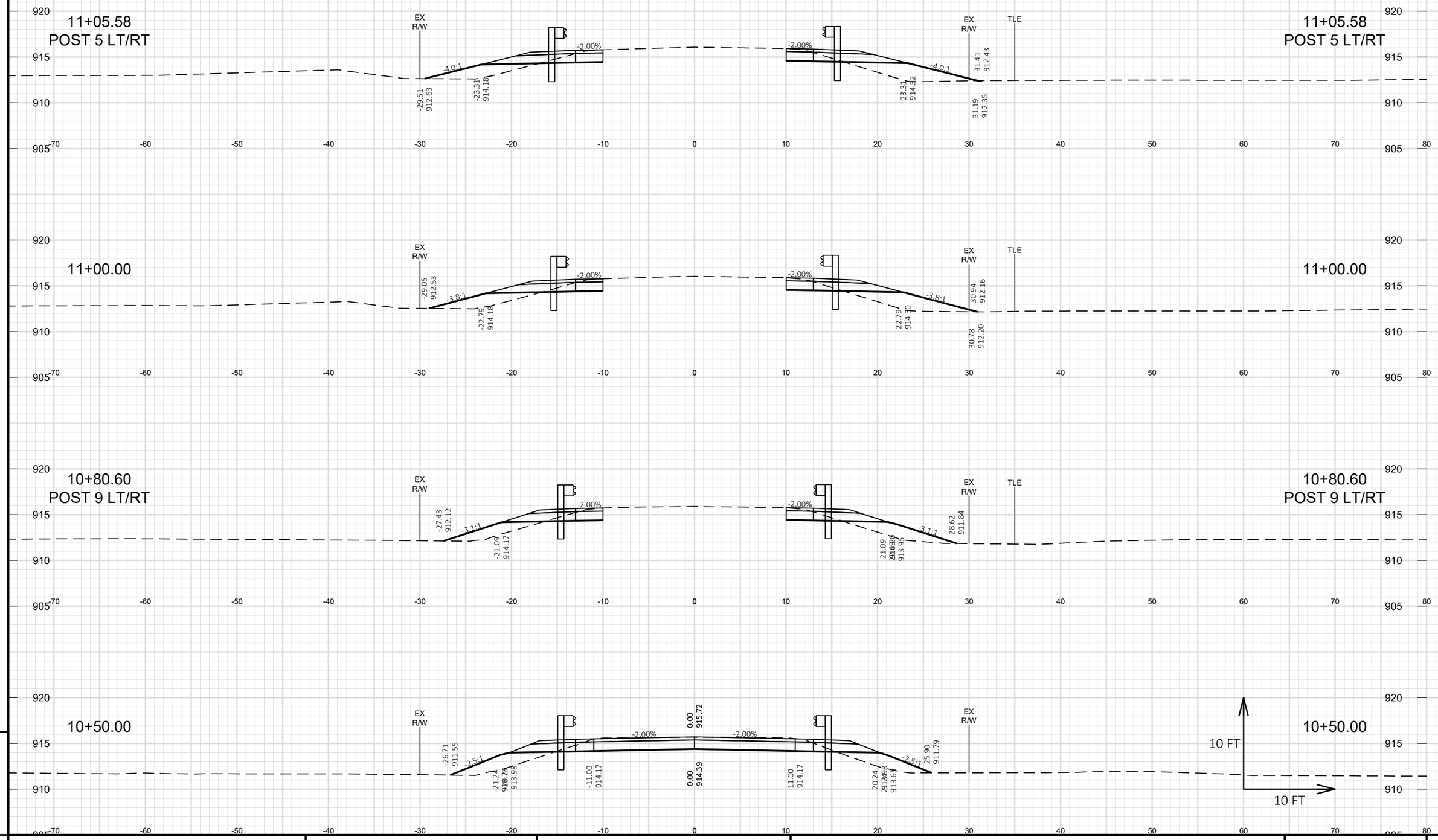
PLOT DATE : 5/4/2021 11:24 AM PLOT BY : AARON SARAUER PLOT NAME : **PLOT SCALE :** 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.



PROJECT NO: 6187-05-71	HWY: OAK GROVE ROAD	COUNTY: FOND DU LAC	CROSS SECTIONS: OAK GROVE ROAD	SHEET 61	E

FILE NAME : S:\CURRPROJ\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-090201-XS.DWG
LAYOUT NAME - 005

PLOT DATE : 5/4/2021 11:24 AM PLOT BY : AARON SARAUER PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.



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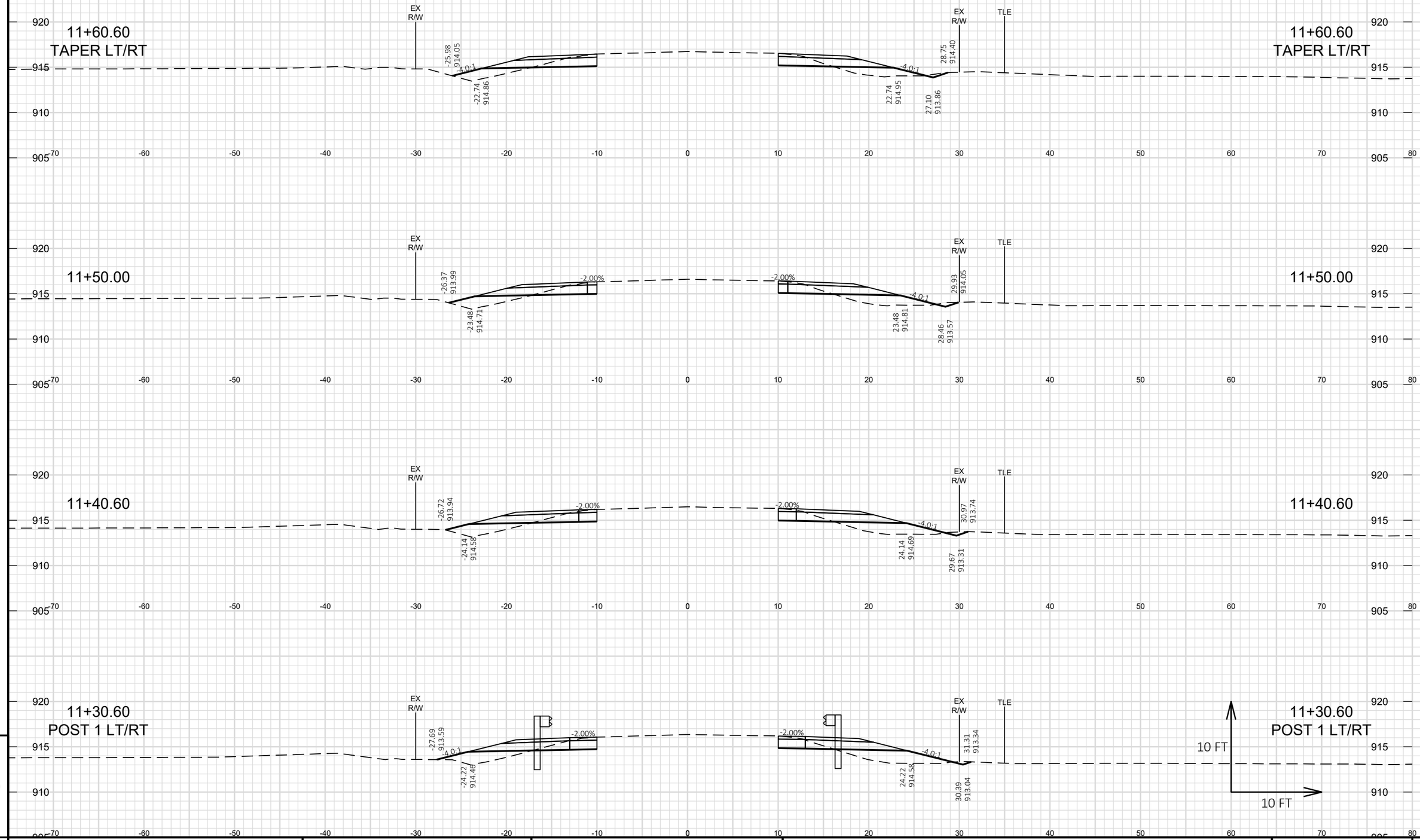
PROJECT NO: 6187-05-71	HWY: OAK GROVE ROAD	COUNTY: FOND DU LAC	CROSS SECTIONS: OAK GROVE ROAD	SHEET 62	E

FILE NAME : S:\CURRPROJ\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-090201-XS.DWG
LAYOUT NAME - 006

PLOT DATE : 5/4/2021 11:24 AM PLOT BY : AARON SARAUER PLOT NAME : **PLOT SCALE :** 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



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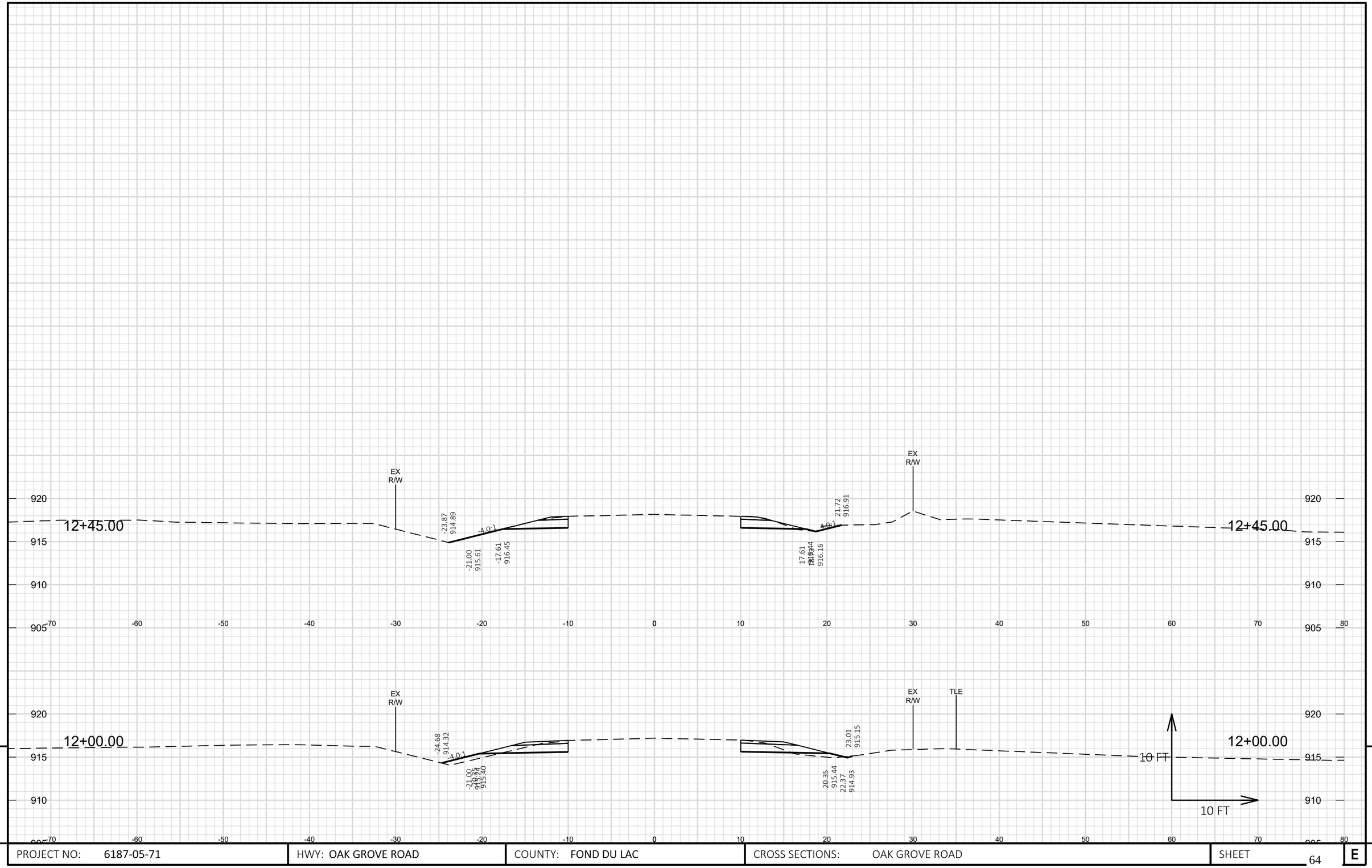
PROJECT NO: 6187-05-71	HWY: OAK GROVE ROAD	COUNTY: FOND DU LAC	CROSS SECTIONS: OAK GROVE ROAD	SHEET 63	E

FILE NAME : S:\CURRPROJ\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-090201-XS.DWG
LAYOUT NAME - 007

PLOT DATE : 5/4/2021 11:24 AM PLOT BY : AARON SARAUER PLOT NAME : **PLOT SCALE :** 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



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PROJECT NO: 6187-05-71	HWY: OAK GROVE ROAD	COUNTY: FOND DU LAC	CROSS SECTIONS: OAK GROVE ROAD	SHEET 64	E

FILE NAME : S:\CURRPROJ\FONDDUCO\ALTO, TOWN OF\OAK GROVE ROAD BRIDGE\CIVIL3D\OAKGROVERD\SHEETSPLAN\61870500-090201-XS.DWG
LAYOUT NAME - 008

PLOT DATE : 5/4/2021 11:24 AM PLOT BY : AARON SARAUER PLOT NAME : **PLOT SCALE :** 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

Notes

Wisconsin Department of Transportation

Dedicated people creating transportation solutions
through innovation and exceptional service.

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