SWL

FEB 2016

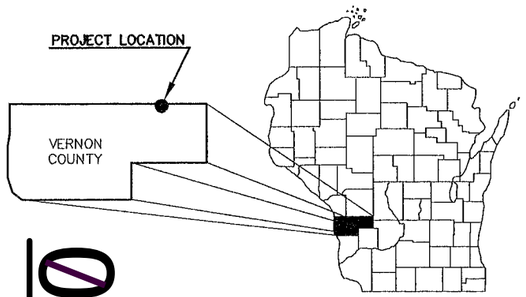
PROJECT ID: 5487-00-70

WITH: N/A

COUNTY: VERNON

ORDER OF SHEETS

TOTAL SHEETS = 28



STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

CTH ZZ - NORTH COUNTY LINE

(BILLINGS CREEK BRIDGE & APPROACHES)

CTH Z
VERNON COUNTY

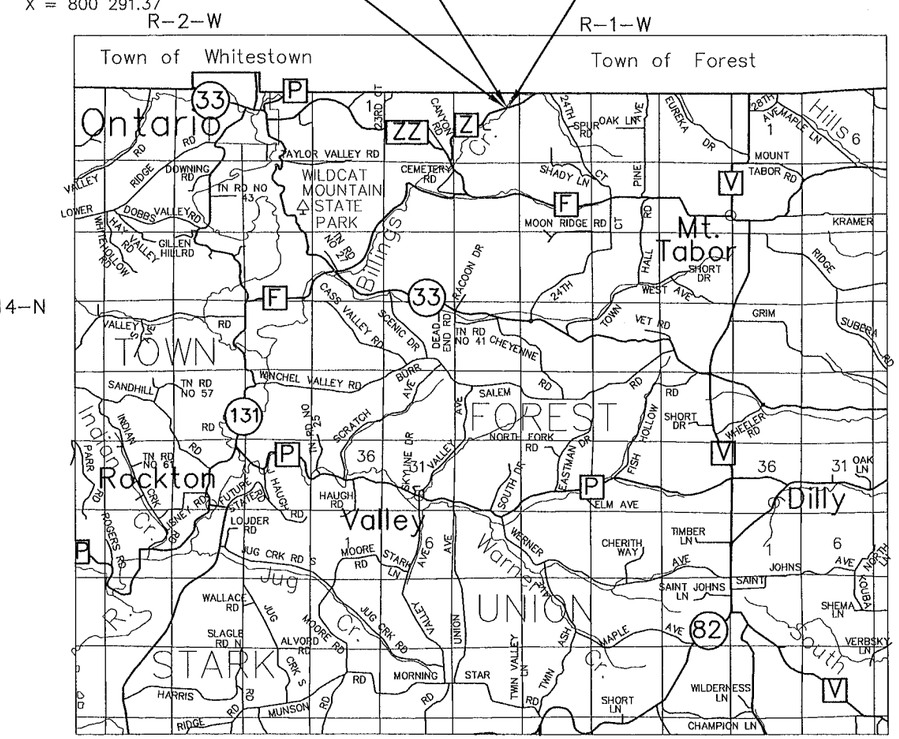
STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
5487-00-70	WISC 2016017	1

STATE PROJECT NUMBER
5487-00-70

STRUCTURE B-62-0243

BEGIN PROJECT
STA. 10+20
Y = 209 771.76
X = 800 291.37

END PROJECT
STA. 13+60
Y = 209 873.05
X = 800 615.93



DESIGN DESIGNATION

A.A.D.T.	(2015)	=	80
A.A.D.T.	(2035)	=	90
D.H.V.		=	15
D.D.		=	62/38
T.		=	8.7%
DESIGN SPEED		=	40 MPH
ESALS		=	14,600

CONVENTIONAL SYMBOLS

PLAN

- CORPORATE LIMITS
- PROPERTY LINE — PL + 58.1
- LOT LINE
- LIMITED HIGHWAY EASEMENT
- EXISTING RIGHT OF WAY
- PROPOSED OR NEW R/W LINE
- SLOPE INTERCEPT
- REFERENCE LINE
- EXISTING CULVERT
- PROPOSED CULVERT (Box or Pipe)
- COMBUSTIBLE FLUIDS — CAUTION
- MARSH AREA
- WOODED OR SHRUB AREA

PROFILE

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

UTILITIES

- ELECTRIC — E
- FIBER OPTIC — FO
- GAS — G
- SANITARY SEWER — SAN
- STORM SEWER — SS
- TELEPHONE — T
- WATER — W
- UTILITY PEDESTAL
- POWER POLE
- TELEPHONE POLE

TOTAL NET LENGTH OF CENTERLINE = 0.064 MILES

NOTE:
ALL COORDINATES SHOWN ON THIS PLAN ARE BASED ON THE WISCONSIN COUNTY COORDINATE SYSTEM, VERNON COUNTY.

ACCEPTED FOR

COUNTY of VERNON

7-21-15 (Date) Orin Hewitt (Highway Commissioner)

ORIGINAL PLANS PREPARED BY

WESTBROOK
Associated Engineers, Inc.
619 EAST HOXIE STREET
P.O. BOX 429
SPRING GREEN, WISCONSIN 53588
PHONE (608) 588-7866
FAX (608) 588--7954

WISCONSIN
AARON B. PALMER
E-35695
RICHLAND CENTER, WI
PROFESSIONAL ENGINEER

7-17-15 (Date) Aaron B. Palmer (Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	WESTBROOK
Designer	WESTBROOK
Management Consultant	KJOHNSON ENGINEERS, INC.

APPROVED FOR THE DEPARTMENT

DATE: 7/29/15 (Management Consultant Signature)

E

DIGGERS HOTLINE

Dial 811 or (800) 242-8511

www.DiggersHotline.com

** DENOTES UTILITY IS NOT MEMBER OF DIGGERS HOTLINE

UTILITIES

CENTURYLINK COMMUNICATIONS LINE
333 NORTH STREET
P.O. BOX 4800
LA CROSSE, WI 54602

ATTN: STEVE BLADO
PHONE: (608) 796–5543
EMAIL: steve.blado@centurylink.com

GENERAL NOTES

SILT FENCE TO BE PLACED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. SILT FENCE SHALL BE IN PLACE PRIOR TO CONSTRUCTION.

EROSION CONTROL FEATURES AS SHOWN ON THE PLANS ARE SUGGESTED LOCATIONS. EXACT LOCATIONS WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.

DISTURBED AREAS WITHIN THE RIGHT–OF–WAY, EXCEPT THE DRIVING LANES AND THE SHOULDERS, ARE TO BE FERTILIZED, SEEDED, TEMPORARY SEEDED AND MULCHED, OR AS DIRECTED BY THE ENGINEER.

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

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

D.O.T. MONUMENT IS TO BE FURNISHED BY THE STATE AND PLACED BY THE CONTRACTOR IN THE SAME WING THAT THE PROPOSED NAME PLATE WILL BE PLACED, AS DIRECTED BY THE ENGINEER.

EROSION MAT SHALL BE PLACED ON SLOPES STEEPER THAN 3:1 AND SHALL EXTEND 5.0' BEYOND THE SLOPE INTERCEPT WITH THE ORIGINAL GROUND AND AS DIRECTED BY THE ENGINEER.

THE 4" ASPHALTIC SURFACE SHALL BE PLACED IN TWO LIFTS CONSISTING OF A 2¼" LOWER LAYER AND A 1¾" UPPER LAYER.

TIED TO VERNON COUNTY GPS SURVEY STATIONS "FOREST W GPS" AND "FOREST N GPS", AND TO MONROE COUNTY GPS SURVEY STATIONS "27 152W GPS" AND "33 151W GPS" VIA RTK–GPS SURVEY FOR HORIZONTAL AND VERTICAL POSITIONS. HORIZONTAL LATITUDES AND LONGITUDES ARE CONVERTED TO VERNON COUNTY COORDINATES. ELEVATIONS ARE REFERENCED TO NAVD88 DATUM.

CONSULTANT LIAISON

WESTBROOK ASSOCIATED ENGINEERS, INC
619 EAST HOXIE STREET
SPRING GREEN, WI 53588

ATTN: AARON PALMER, P.E.
PH: (608) 588–7866
apalmer@westbrookeng.com

COUNTY LIAISON

VERNON COUNTY HIGHWAY DEPARTMENT
602 NORTH MAIN STREET
PO BOX 232
VIROQUA, WI 54665

ATTN: PHIL HEWITT – HIGHWAY COMMISSIONER
PH: (608) 637–5452
FAX: (608) 637–5461
phil.hewitt@vernoncounty.org

WisDNR LIAISON

DNR SERVICE CENTER
3550 MORMON COULEE ROAD
LA CROSSE, WI 54601

ATTN: KAREN KALVELAGE
(608) 785–9115
karen.kalvelage@wisconsin.gov

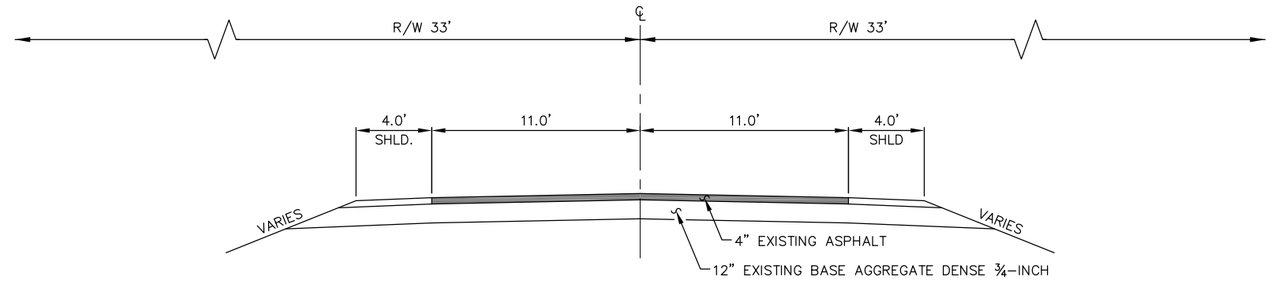
STANDARD ABBREVIATIONS

ADT	AVERAGE DAILY TRAFFIC	L.F.	LINEAR FEET	REQ'D.	REQUIRED
AGG.	AGGREGATE	L.H.F.	LEFT HAND FORWARD	RT.	RIGHT
B.M.	BENCH MARK	L.S.	LUMP SUM	R/W	RIGHT–OF–WAY
$\overset{\text{℄}}{\text{L}}$ OR CL	CENTERLINE	LT.	LEFT	RD.	ROAD
CR.	CRUSHED	MAX.	MAXIMUM	RDWY.	ROADWAY
C.T.H.	COUNTY TRUNK HIGHWAY	MIN.	MINIMUM	S.	SOUTH
CWT.	HUNDREDWEIGHT	N.	NORTH	SE	SOUTHEAST
C.Y.	CUBIC YARD	NOR.	NORMAL	SHRK.	SHRINKAGE
D.H.	DOUBLE HEADED	PAV'T.	PAVEMENT	S.R.	SIDE ROAD
D.H.V.	DESIGN HOURLY VOLUME	P.C.	POINT OF CURVE	STD.	STANDARD
DIR.	DIRECTED	P.I.	POINT OF INTERSECTION	S.T.H.	STATE TRUNK HIGHWAY
E.	EAST	P.E.	PRIVATE ENTRANCE	STA.	STATION
COR.	CORNER	P.K.	PARKER–KALON NAIL	S.Y.	SQUARE YARD
EL. OR ELEV.	ELEVATION	$\overset{\text{℄}}{\text{P}}$ OR PL	PROPERTY LINE	T	TANGENT LENGTH OF CURVE
F.E.	FIELD ENTRANCE	P.P.	POWER POLE	T_L	TRANSIT LINE
FT.	FOOT (FEET)	PROJ.	PROJECT	UNCL.	UNCLASSIFIED EXCAVATION
GAL.	GALLON	P.T.	POINT OF TANGENCY	V	DESIGN SPEED
H.W.	HIGH WATER	PVMT.	PAVEMENT	V.C.	VERTICAL CURVE
IN.	INCHES	R.	RADIUS	VAR.	VARIABLE
K	SIGHT DISTANCE	R.R.	RAILROAD	W.	WEST
L.	LENGTH OF CURVE	REINF.	REINFORCED		

RUNOFF COEFFICIENT TABLE

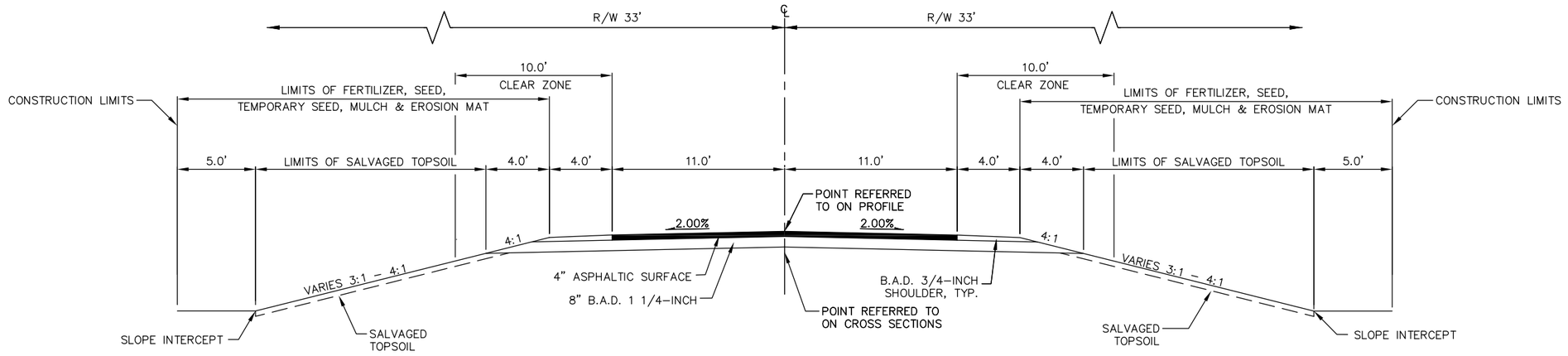
	HYDROLOGIC SOIL GROUP											
	A			B			C			D		
	SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)		
LAND USE	0–2	2–6	6 & OVER	0–2	2–6	6 & OVER	0–2	2–6	6 & OVER	0–2	2–6	6 & OVER
ROW CROPS	.08 .22	.16 .30	.22 .38	.12 .26	.20 .34	.27 .44	.15 .30	.24 .37	.33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

TOTAL PROJECT AREA = 0.45 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.33 ACRES



TYPICAL EXISTING SECTION

STA. 10+20.00 – STA. 13+60.00



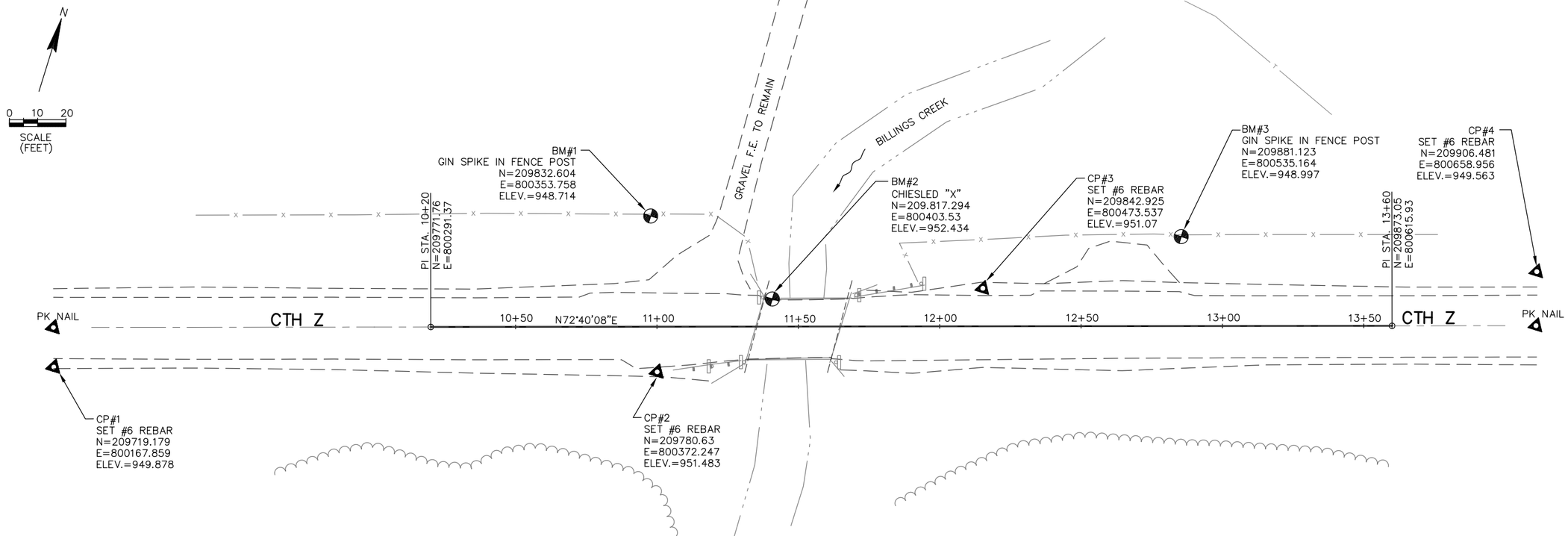
TYPICAL FINISHED SECTION

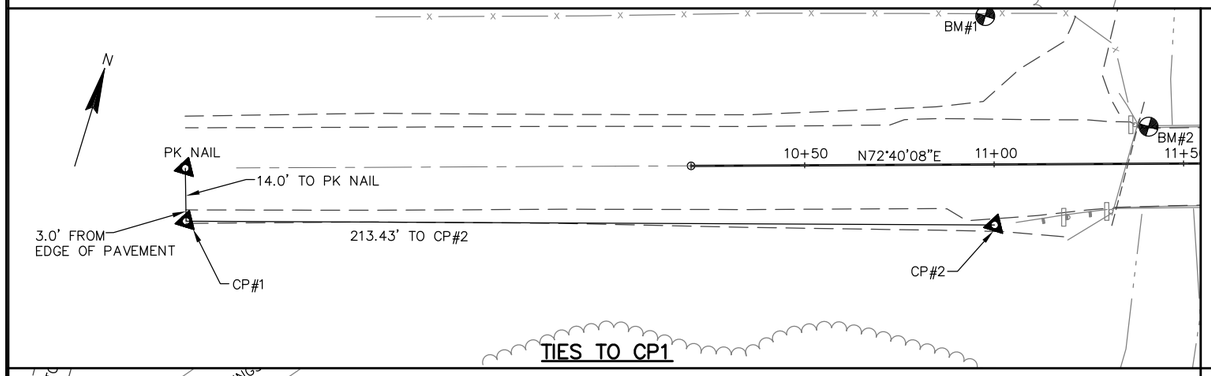
STA. 10+20.00 TO STA. 11+29.46
STA. 11+70.04 TO STA. 13+60.00

PROJECT NO: 5487–00–70	HWY: CTH Z	COUNTY: VERNON	TYPICAL SECTIONS	SHEET 3	E

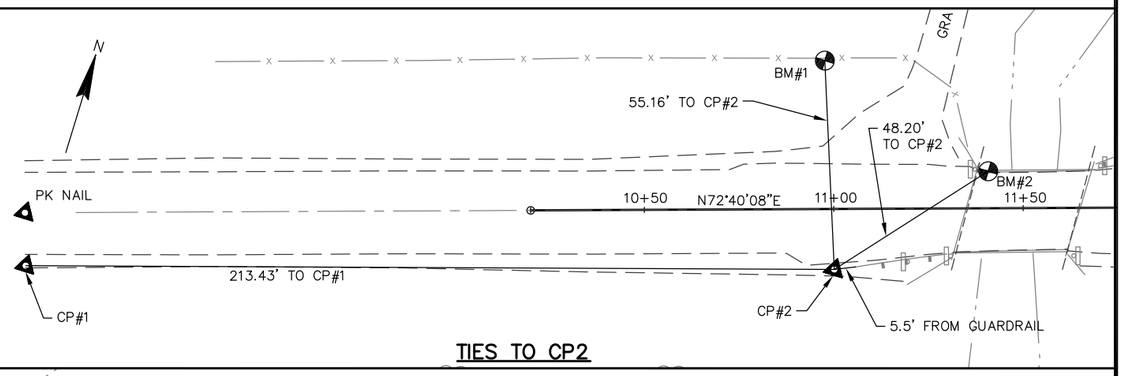
FILE NAME: G:\00–PROJECT FILES\2013\13099 CTH Z, Vernon County\01–CAD\Road, CTH Z\13099–201.dwg PLOT DATE: May 15, 2015 PLOT BY: luke0 PLOT SCALE: ROTATION:

2

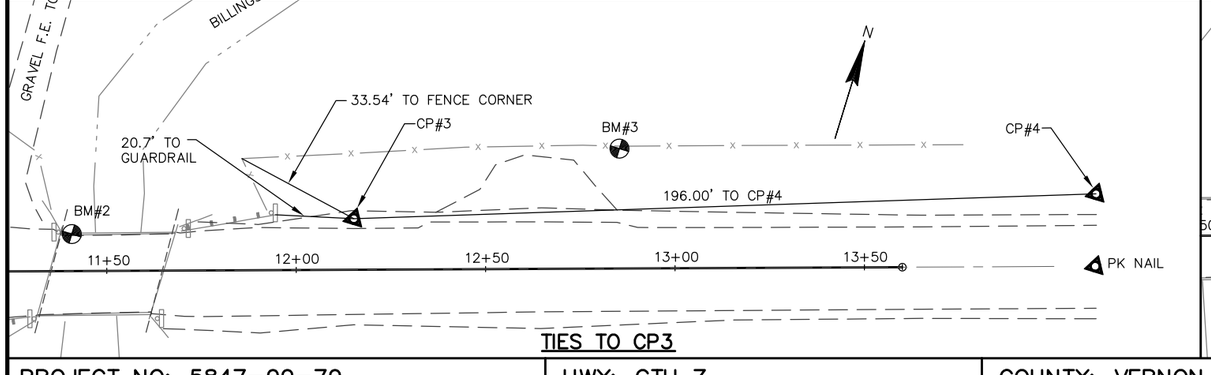




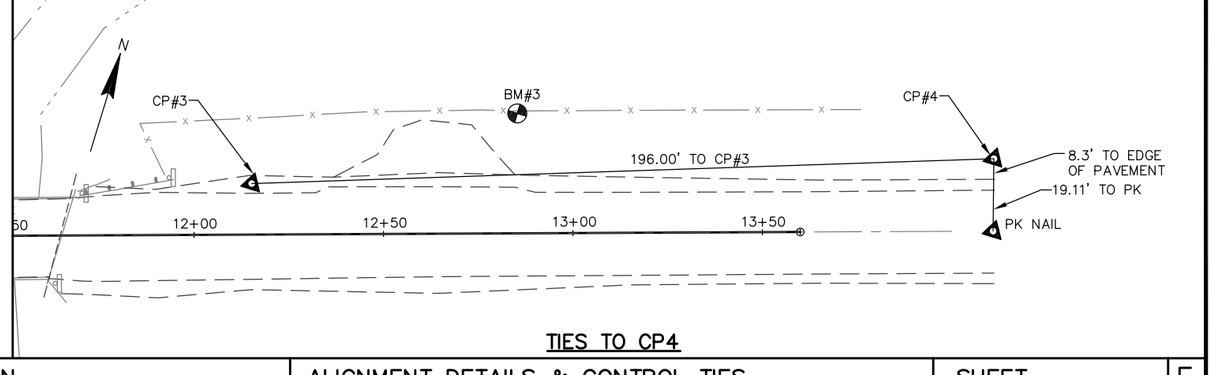
TIES TO CP1



TIES TO CP2



TIES TO CP3



TIES TO CP4

PROJECT NO: 5847-00-70	HWY: CTH Z	COUNTY: VERNON	ALIGNMENT DETAILS & CONTROL TIES	SHEET	E

FILE NAME: G:\00-PROJECT FILES\2013\13099 CTH Z, Vernon County\01-CAD\Road, CTH Z\13099-230.dwg PLOT DATE: May 15, 2015 PLOT BY: luke0 PLOT SCALE: ROTATION:

DATE 10DEC15 E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	5487-00-70 QUANTITY
0010	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 01. Sta. 11+50	LS	1.000	1.000
0020	204.0165	Removing Guardrail	LF	50.000	50.000
0030	205.0100	Excavation Common **P**	CY	313.000	313.000
0040	206.1000	Excavation for Structures Bridges (structure) 01. B-62-0243	LS	1.000	1.000
0050	210.0100	Backfill Structure	CY	290.000	290.000
0060	213.0100	Finishing Roadway (project) 01. 5487-00-70	EACH	1.000	1.000
0070	305.0110	Base Aggregate Dense 3/4-Inch	TON	87.000	87.000
0080	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	620.000	620.000
0090	455.0605	Tack Coat	GAL	40.000	40.000
0100	465.0105	Asphaltic Surface	TON	164.000	164.000
0110	502.0100	Concrete Masonry Bridges	CY	165.000	165.000
0120	502.3200	Protective Surface Treatment	SY	164.000	164.000
0130	505.0400	Bar Steel Reinforcement HS Structures	LB	4,830.000	4,830.000
0140	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	18,450.000	18,450.000
0150	513.4061	Railing Tubular Type M (structure) 01. B-62-0243	LF	86.000	86.000
0160	516.0500	Rubberized Membrane Waterproofing	SY	14.000	14.000
0170	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	420.000	420.000
0180	606.0300	Riprap Heavy	CY	105.000	105.000
0190	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	142.000	142.000
0200	619.1000	Mobilization	EACH	1.000	1.000
0210	624.0100	Water	MGAL	42.000	42.000
0220	625.0500	Salvaged Topsoil **P**	SY	380.000	380.000
0230	627.0200	Mulching **P**	SY	460.000	460.000
0240	628.1504	Silt Fence	LF	791.000	791.000
0250	628.1520	Silt Fence Maintenance	LF	1,582.000	1,582.000
0260	628.1905	Mobilizations Erosion Control	EACH	1.000	1.000
0270	628.1910	Mobilizations Emergency Erosion Control	EACH	1.000	1.000
0280	628.2008	Erosion Mat Urban Class I Type B	SY	25.000	25.000
0290	628.6005	Turbidity Barriers	SY	48.000	48.000
0300	628.7504	Temporary Ditch Checks	LF	25.000	25.000
0310	629.0210	Fertilizer Type B	CWT	1.000	1.000
0320	630.0110	Seeding Mixture No. 10 **P**	LB	20.000	20.000
0330	630.0200	Seeding Temporary **P**	LB	35.000	35.000
0340	634.0412	Posts Wood 4x4-Inch X 12-FT	EACH	4.000	4.000
0350	637.2230	Signs Type II Reflective F	SF	12.000	12.000
0360	638.2602	Removing Signs Type II	EACH	6.000	6.000
0370	642.5001	Field Office Type B	EACH	1.000	1.000
0380	643.0100	Traffic Control (project) 01. 5487-00-70	EACH	1.000	1.000
0390	643.0420	Traffic Control Barricades Type III	DAY	900.000	900.000
0400	643.0705	Traffic Control Warning Lights Type A	DAY	1,400.000	1,400.000
0410	643.0900	Traffic Control Signs	DAY	700.000	700.000
0420	645.0120	Geotextile Fabric Type HR	SY	392.000	392.000
0430	646.0106	Pavement Marking Epoxy 4-Inch	LF	1,360.000	1,360.000
0440	650.4500	Construction Staking Subgrade	LF	300.000	300.000
0450	650.5000	Construction Staking Base	LF	300.000	300.000
0460	650.6500	Construction Staking Structure Layout (structure) 01. B-62-0243	LS	1.000	1.000
0470	650.9910	Construction Staking Supplemental Control (project) 01. 5487-00-70	LS	1.000	1.000

3

DATE 10DEC15 E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	5487-00-70 QUANTITY
0480	650.9920	Construction Staking Slope Stakes	LF	300.000	300.000
0490	690.0150	Sawing Asphalt	LF	44.000	44.000
0500	715.0502	Incentive Strength Concrete Structures	DOL	1,038.000	1,038.000

3

REMOVING GUARDRAIL

STATION	- STATION	LOCATION	204.0165 REMOVING GUARDRAIL (LF)
11+05.49	- 11+29.55	Mainline, RT.	24.3
11+65.53	- 13+60.00	Mainline, LT.	25.3
		TOTALS	50.0

EARTHWORK SUMMARY

SHRINKAGE FACTOR = 30%

STATION	- STATION	LOCATION	205.0100 COMMON EXCAVATION (CY)	FILL (CY)	208.0100 BORROW EXCAVATION (CY)	WASTE (CY)
10+20.00	- 11+29.46	MAINLINE	121	39	0	52
11+70.07	- 13+60.00	MAINLINE	192	75	0	65
		TOTALS	313		0	117

BASE AGGREGATE DENSE

STATION	- STATION	LOCATION	305.0120 1 1/4-INCH BASE (TON)	305.0110 3/4-INCH SHLD. (TON)
10+20.00	- 11+29.46	MAINLINE	228	27
11+70.07	- 13+60.00	MAINLINE	392	48
11+17		FE, LT	---	6
12+63		FE, LT	---	6
		TOTALS	620	87

ASPHALTIC ITEMS

STATION	- STATION	LOCATION	465.0105 ASPHALTIC SURFACE (TON)	455.0600 TACK COAT (GAL)
10+20.00	- 11+29.46	MAINLINE	60	15
11+70.07	- 13+60.00	MAINLINE	104	25
		TOTALS	164	40

WATER

STATION	- STATION	LOCATION	624.0100 WATER (MGAL)
10+20.00	- 11+29.46	MAINLINE	21
11+70.07	- 13+60.00	MAINLINE	21
		TOTALS	42

EROSION CONTROL ITEMS

STATION	- STATION	LOCATION	628.7504 TEMPORARY DITCH CHECKS (LF)	628.2004 EROSION MAT CLASS I TYPE B (SY)	628.1504 SILT FENCE (LF)	628.1520 SILT FENCE MAINTENANCE (LF)	628.6005 TURBIDITY BARRIERS (SY)
10+20.00	- 11+29.46	MAINLINE	---	---	249	498	25
11+29.46	- 11+70.07	MAINLINE	---	---	---	---	0
11+70.07	- 13+60.00	MAINLINE	---	---	542	1084	23
		UNDISTRIBUTED	25	25	---	---	---
		TOTALS	25	25	791	1582	48

FINISHING ITEMS

STATION	- STATION	LOCATION	625.0500 SALVAGED TOPSOIL (SY)	627.0200 MULCHING (SY)	629.0210 FERTILIZER TYPE B (CWT)	630.0200 SEEDING TEMPORARY (LB)	630.0110 SEEDING, MIXTURE NO. 10 (LB)
10+20.00	- 11+29.46	MAINLINE	177	177	0.2	10	5
11+70.07	- 13+60.00	MAINLINE	203	203	0.4	16	8
		UNDISTRIBUTED	---	80	0.4	9.0	7
		TOTALS	380	460	1	35	20

POSTS WOOD 4x4-INCH X 12 FT

LOCATION	634.0412 EACH
4 CORNERS OF BRIDGE	4
TOTAL	4

SIGNS TYPE II REFLECTIVE F

LOCATION	TYPE	637.2230 (SF)
4 CORNERS OF BRIDGE	W5-52, LT. & RT.	12
	TOTAL	12

REMOVING SIGNS TYPE II

DESCRIPTION	LOCATION	638.2602 (EACH)
W5-52L	11+37.02 LT	1
W5-52L	11+63.08 RT	1
W5-52R	11+30.54 RT	1
W5-52R	11+70.28 LT	1
WEIGHT	11+19.18, 13.7 FT RT	1
WEIGHT	11+93.29, 15.2 FT LT	1
	TOTAL	6

TRAFFIC CONTROL

STATION	- STATION	643.0420 TRAFFIC CONTROL BARRICADES, TYPE III (NO.)	(DAYS)	643.0705 TRAFFIC CONTROL WARNING LIGHTS, TYPE A (NO.)	(DAYS)	643.0900 TRAFFIC CONTROL SIGNS (NO.)	(DAYS)
10+20.00	- 11+29.46	9	450	14	700	7	350
11+70.07	13+60.00	9	450	14	700	7	350
	TOTALS	18	900	28	1400	14	700

GEOTEXTILE FABRIC

STATION	LOCATION	645.0120 GEOTEXTILE FABRIC TYPE HR (SY)
11+29.46	WEST ABUTMENT	90.0
11+70.07	EAST ABUTMENT	90.0
	TOTALS	180.0

PAVEMENT MARKING EPOXY 4-INCH

STATION	- STATION	LOCATION	646.0106 (LF)
10+20.00	- 13+60.00	CENTERLINE	680
-		PAVEMENT EDGE	680
		TOTAL	1360

LAYOUT ITEMS

STATION	- STATION	LOCATION	650.4500 CONSTRUCTION STAKING SUBGRADE (LF)	650.5000 CONSTRUCTION STAKING BASE (LF)	650.9920 CONSTRUCTION STAKING SLOPE STAKES (LF)
10+20.00	- 11+29.46	MAINLINE	110	110	110
11+70.07	- 13+60.00	MAINLINE	190	190	190
		TOTALS	300	300	300

SAWING EXISTING PAVEMENT

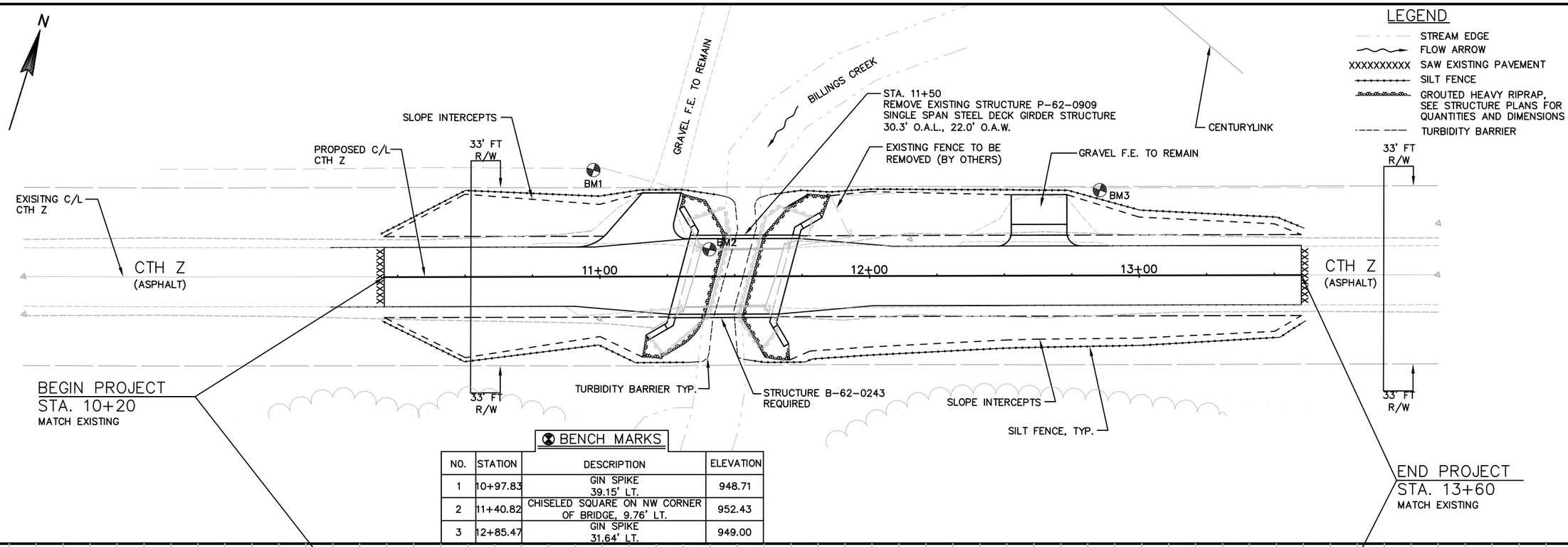
STATION	LOCATION	690.0150 (L.F.)
10+20.00	MAINLINE	22
13+60.00	MAINLINE	22
	TOTAL	44

NOTE: UNLESS NOTED, ALL ITEMS ARE IN CATEGORY 0010.

Division	From / To Station	Location	Common Excavation (1) Cut (2)	(item # 205.0100) EBS Excavation (3)	Salvaged / Unusable Pavement Material (4)	Available Material (5)	Marsh Excavation (6) (item #205.0500)	Rock Excavation (7) (item #205.0200)	Reduced Marsh in Fill (8) Factor 0.60	Reduced EBS in Fill (9) Factor 0.80	Expanded Marsh Backfill (10) Factor 1.50	Expanded EBS Backfill (11) Factor 1.30	Expanded Rock (12) Factor 1.10	Unexpanded Fill	Expanded Fill (13) Factor 1.30	Mass Ordinate + / - (14)	Waste	Borrow (item #208.0100)	Comment:
1	10+20 to 11+29.46	Mainline CTH Z	121	0	30	91	0	0	0	0	0	0	0	30	39	52			
						0									0	0			
						0									0	0			
						0									0	0			
Division 1 Subtotal			121	0	30	91	0	0	0	0	0	0	0	30	39	52			
2	11+70.07 to 13+60	Mainline CTH Z	192	0	52	140	0	0	0	0	0	0	0	58	75	65			
						0									0	0			
						0									0	0			
						0									0	0			
						0									0	0			
Division 2 Subtotal			192	0	52	140	0	0	0	0	0	0	0	58	75	65	117		See Note 15
Grand Total			313	0	81	231	0	0	0	0	0	0	0	88	114	117	117	0	
			Total Common Exc	313															

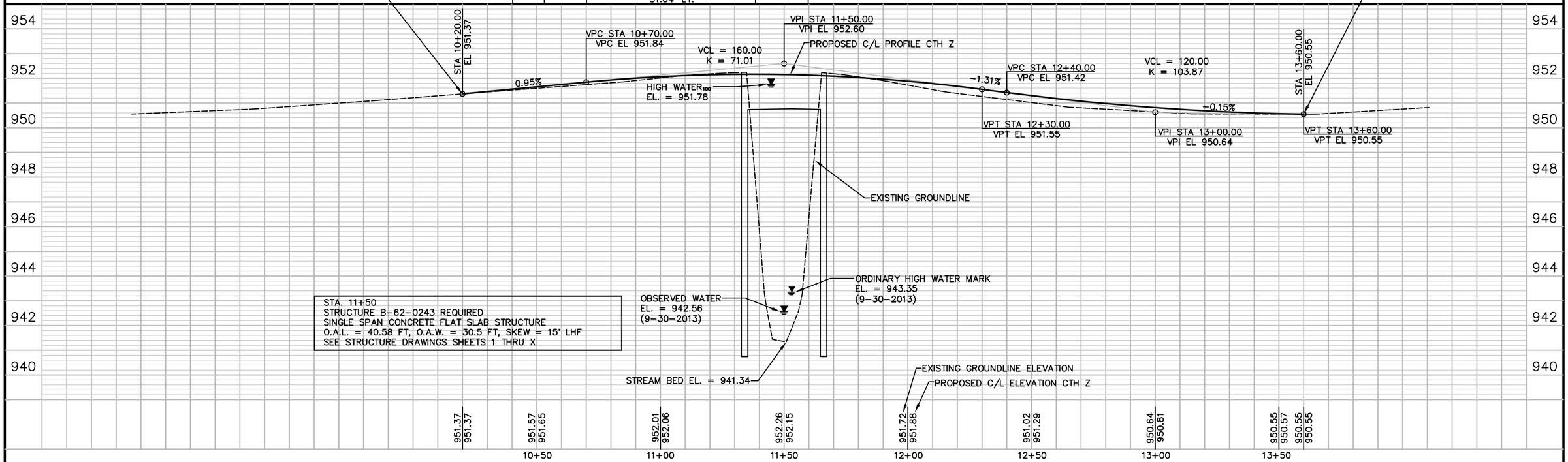
1) Common Excavation is the sum of the Cut and EBS Excavation columns. Item number 205.0100
2) Salvaged/Unsuable Pavement Material is included in Cut.
3) EBS Excavation to be backfilled with Select Borrow material. Note: this is designers choice, can be backfilled with Borrow, or Cut as well.
4) Salvaged/Unusable Pavement Material
5) Available Material = Cut - Salvaged/Unusuable Pavement Material
6) Marsh Excavation - to be backfilled with Select Borrow Material. Note: this is designers choice, can be backfilled with Borrow, or Cut as well. Item number 205.0500
7) Rock Excavation item number 205.0200
8) Reduced Marsh in Fill - Excavated Marsh material is usuable in Fills outside the 1:1 slope. Marsh in Fill Reduction factor = 0.6
9) Reduced EBS in Fill - Excavated EBS material is usuable in Fills outside the 1:1 slope. EBS in Fill Reduction factor = 0.8
10) Expanded Marsh Backfill - This is to be filled with Select Borrow material. Marsh Backfill Factor = 1.5. Item number 208.11
11) Expanded EBS Backfill - This is to be filled with Select Borrow material. EBS Backfill Factor = 1.3. Item number 208.11
12) Expanded Rock - Factor = 1.1.
13) Expanded Fill. Factor = 1.25
Depending on selections:
Expanded Fill = (Unexpanded Fill - Rock* Rock Factor - Reduced Marsh - Reduced EBS) * Fill Factor
Or Expanded Fill = (Unexpanded Fill - Rock* Rock Factor - Reduced EBS) * Fill Factor
Or Expanded Fill = (Unexpanded Fill - Rock* Rock Factor - Reduced Marsh) * Fill Factor
Or Expanded Fill = (Unexpanded Fill - Rock* Rock Factor) * Fill Factor
14) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material within the Division. Minus indicates a shortage of material within the Division.

NOTE: UNLESS NOTED, ALL ITEMS ARE IN CATEGORY 0010.



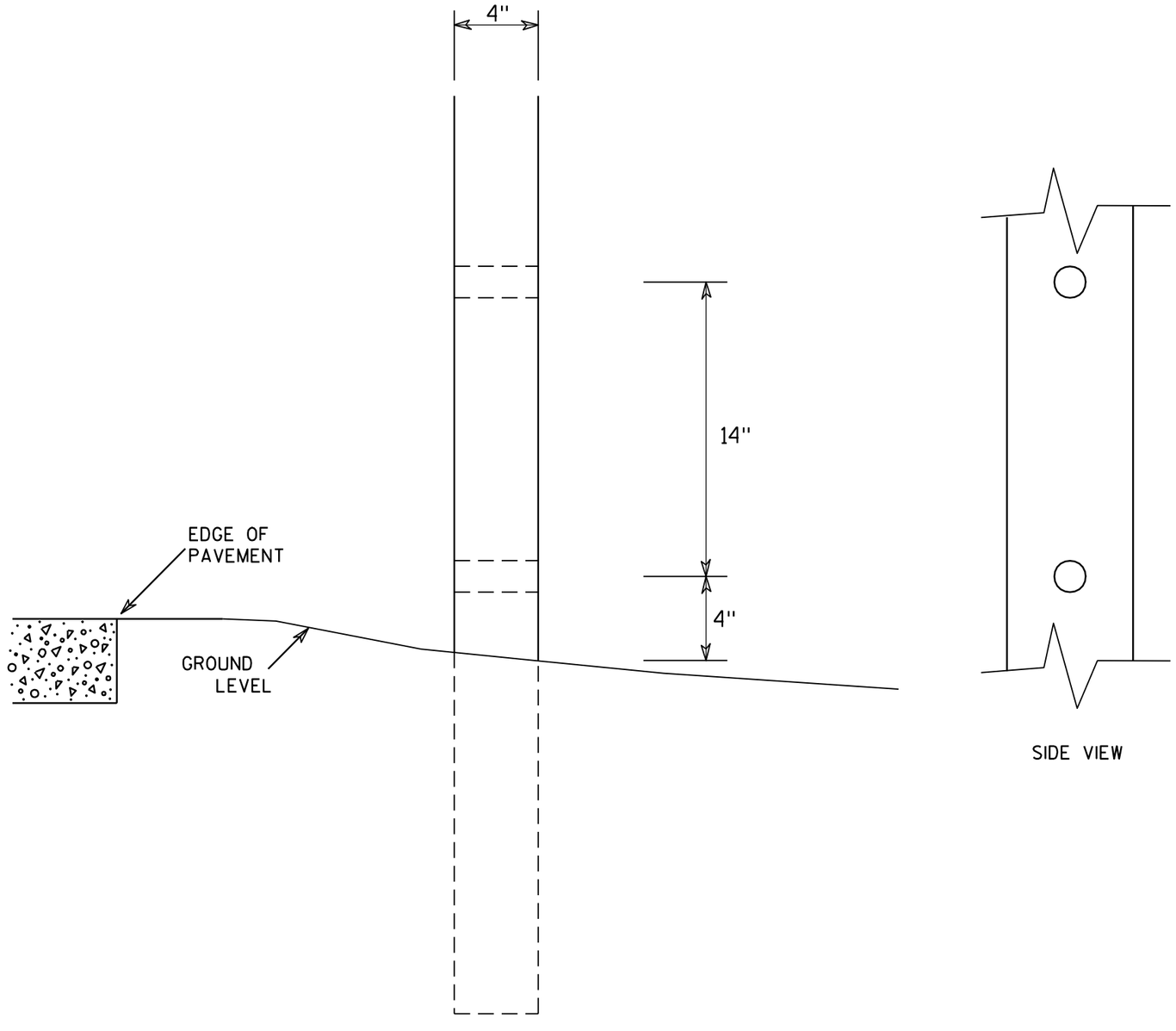
BENCH MARKS

NO.	STATION	DESCRIPTION	ELEVATION
1	10+97.83	GIN SPIKE 39.15' LT.	948.71
2	11+40.82	CHISELED SQUARE ON NW CORNER OF BRIDGE, 9.76' LT.	952.43
3	12+85.47	GIN SPIKE 31.64' LT.	949.00



STATE PROJECT NUMBER: 5487-00-70	HWY: CTH Z	COUNTY: VERNON	PLAN & PROFILE (MAINLINE)	SHEET NO: E

FILE NAME: G:\00-PROJECT FILES\2013\13099 CTH Z, Vernon County\01-CAD\Road, CTH Z\13099-500.dwg PLOT DATE: Jun 12, 2015 PLOT BY: luke0 PLOT SCALE: ROTATION:



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

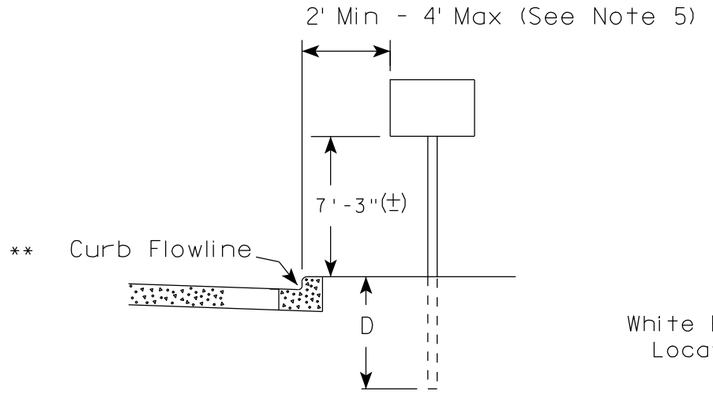
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Chester J Spang for State Traffic Engineer

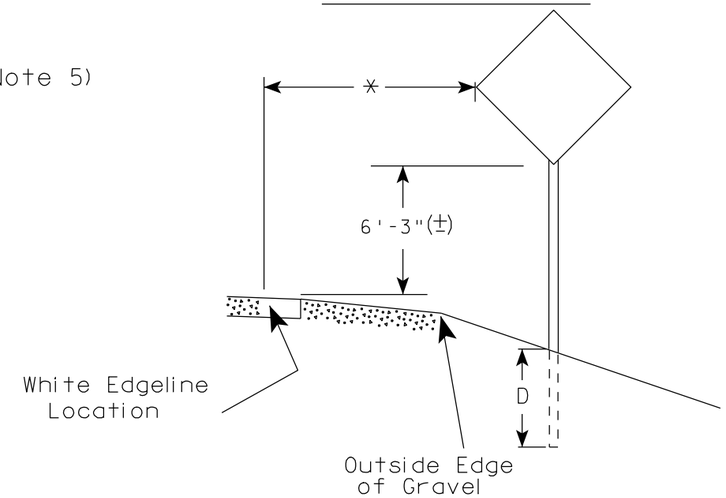
DATE 3/27/97 PLATE NO. A4-11.2

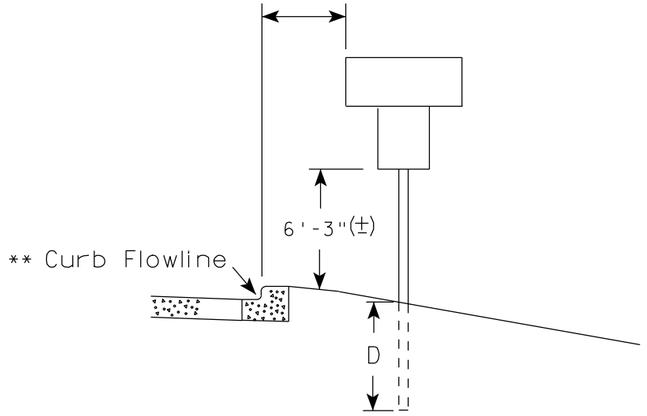
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 10	E

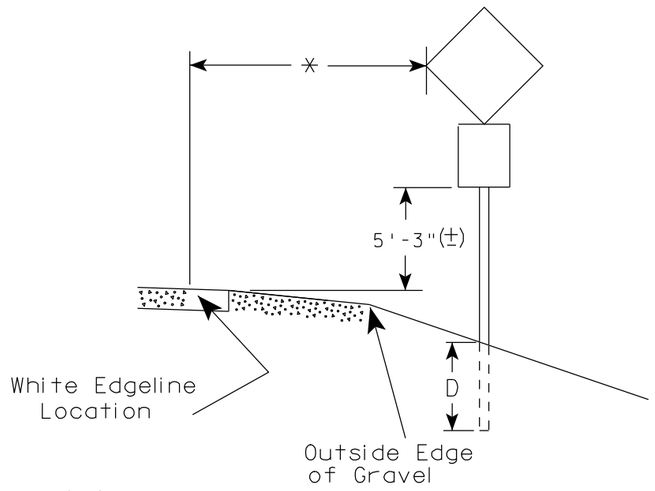
URBAN AREA



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.

GENERAL NOTES

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

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

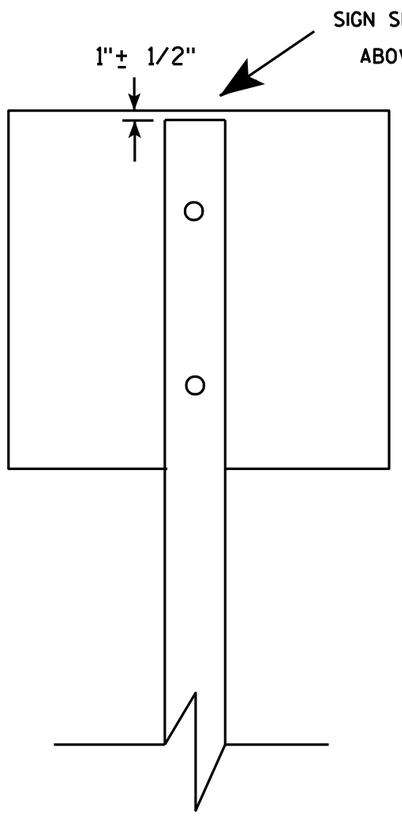
APPROVED Matthew R Rauch for State Traffic Engineer

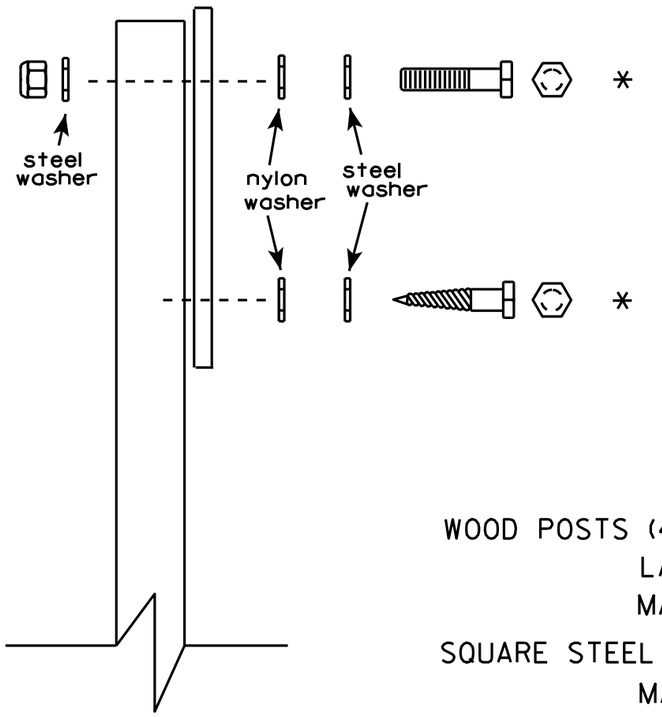
DATE 9/21/2011 PLATE NO. A4-3.16

7

7

PROJECT NO: | HWY: | COUNTY: | | SHEET NO: 11 | E





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

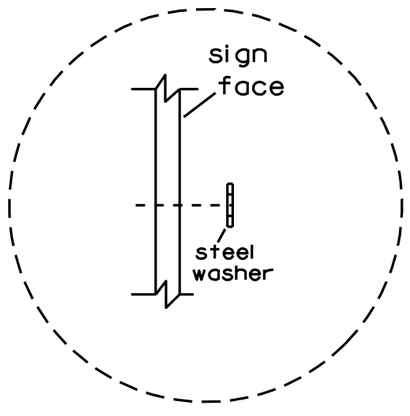
a. Hot dip galvanized in accordance with ASTM Designation: A 153, Class D, or SC 3
b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

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.

WOOD POSTS (4" x 4" or 4" x 6")
LAG SCREWS - 3/8" X 3"
MACHINE BOLTS - 5/16" X 6-1/2" or 7" Length w/ nuts

SQUARE STEEL POSTS (2" x 2")
MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts
RIVETS - 9/32 " (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL
O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

WASHERS (ALL POSTS) -
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON for all Type H signs.



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

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

ATTACHMENT OF SIGNS TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

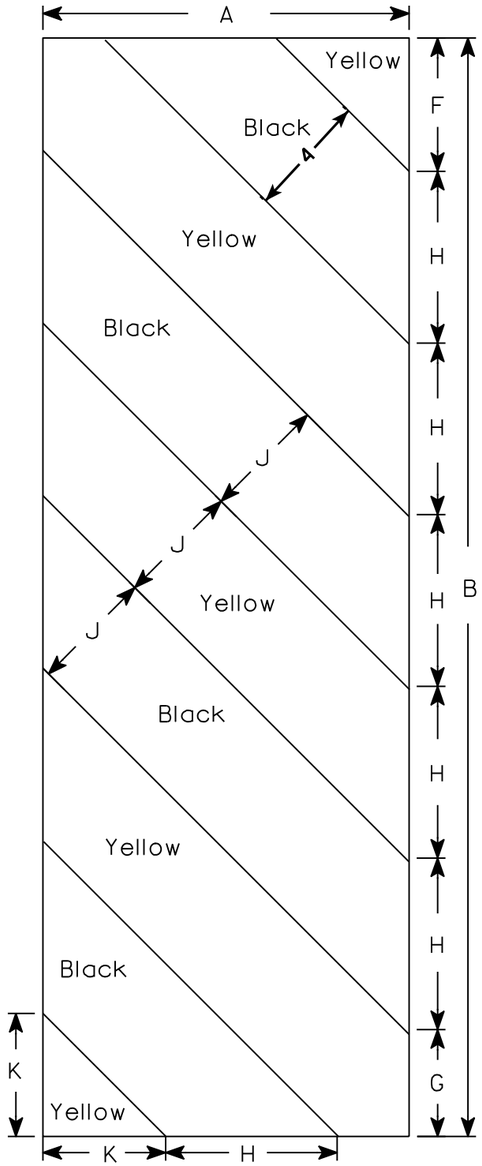
DATE 3/23/10 PLATE NO. A4-8.7

7

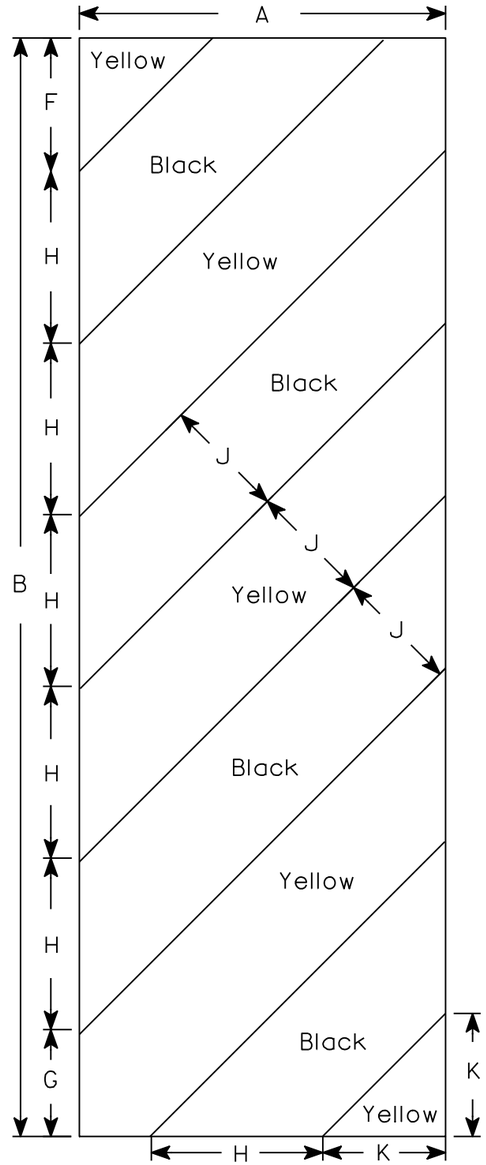
7

PROJECT NO:

SHEET NO: 12 E



W5-52L



W5-52R

NOTES

1. Sign is Type II - Type H 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

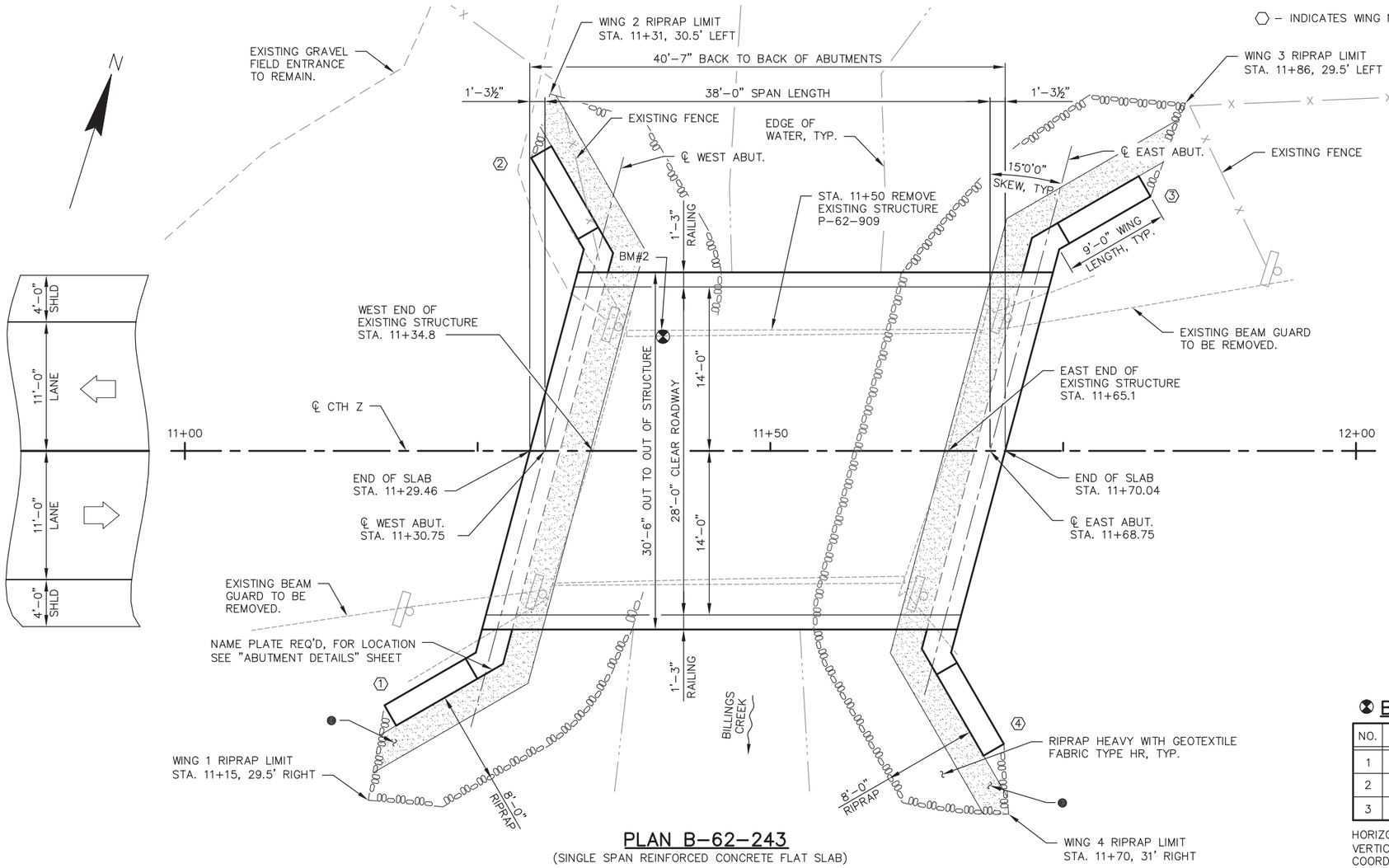
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/22/11 PLATE NO. W5-52.8

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 13 | E

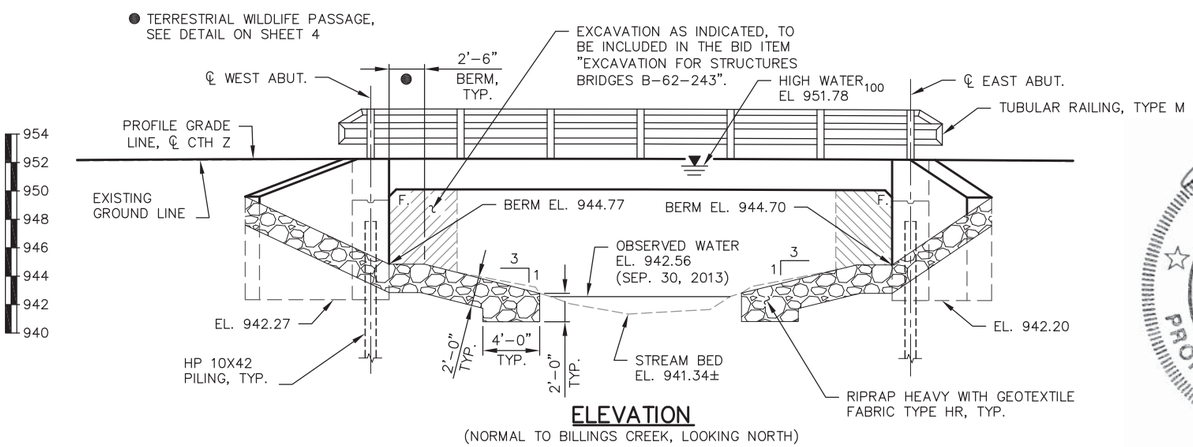
STATE PROJECT NUMBER

5487-00-70



PLAN B-62-243

(SINGLE SPAN REINFORCED CONCRETE FLAT SLAB)



ELEVATION

(NORMAL TO BILLINGS CREEK, LOOKING NORTH)

DESIGN DATA

LIVE LOAD:

DESIGN LOADING	HL-93
INVENTORY RATING FACTOR	RF=1.20
OPERATING RATING FACTOR	RF=1.56
WISCONSIN STANDARD PERMIT VEHICLE RATING (WIS.-SPV):	220 KIPS

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

MATERIAL PROPERTIES:

CONCRETE MASONRY, SLAB	$f'c$ = 4,000 P.S.I.
ALL OTHER	$f'c$ = 3,500 P.S.I.
HIGH-STRENGTH BAR STEEL REINFORCEMENT	fy = 60,000 P.S.I.

FOUNDATION DATA:

ABUTMENTS TO BE SUPPORTED ON STEEL HP 10X42 PILES DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 180 TONS PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED 30 FT PILE LENGTHS AT WEST ABUTMENT AND 30 FT PILE LENGTHS AT EAST ABUTMENT.

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

HYDRAULIC DATA:

Q_{100}	3480 C.F.S.
Q_{100} (THRU BRIDGE)	2260 C.F.S.
Q_{100} (ROAD)	1220 C.F.S.
DRAINAGE AREA	15.8 SQ. MI.
BRIDGE WATER AREA	254 SQ. FT.
BRIDGE VELOCITY	8.88 F.P.S.
OVERTOPPING RDWY	12 YR
HIGH WATER100 EL.	951.78 FT
SCOUR CRITICAL CODE	8
Q_2	540 C.F.S
Q_2 ELEVATION	946.35 FT

TRAFFIC DATA:

A.A.D.T. (2016)	80
A.A.D.T. (2036)	90
DESIGN SPEED	40 M.P.H.

⊗ BENCH MARKS

NO.	STATION	DESCRIPTION	ELEVATION
1	10+97.83	GIN SPIKE, 39.15' LT.	948.71
2	11+40.82	CHISELED SQUARE ON NW CORNER OF BRIDGE, 9.76' LT.	952.43
3	12+85.47	GIN SPIKE, 31.64' LT.	949.00

HORIZONTAL DATUM AND ADJUSTMENT: NAD 83 (2011)
VERTICAL DATUM AND ADJUSTMENT: NAVD 88 (2011)
COORDINATE REFERENCE SYSTEM: VERNON COUNTY

LIST OF DRAWINGS

WISCONSIN
ANDREW C. KNUTSON
E-34662
SPRING GREEN, WI
7-17-15
PROFESSIONAL ENGINEER

BRIDGE OFFICE CONTACT
WILLIAM DREHER, P.E.
(608) 266-8489

CONSULTANT CONTACT
ANDY KNUTSON, P.E., S.E.
(608) 588-7866

NO.	DATE	REVISION	BY

WESTBROOK Associated Engineers, Inc.
619 EAST HOXIE STREET
P.O. BOX 429
SPRING GREEN, WI 53588
PHONE (608) 588-7866
FAX (608) 588-7954

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED _____ _____
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE B-62-243

CTH Z OVER BILLINGS CREEK

COUNTY	TOWN ~~/CITY/VILLAGE~~
VERNON	FOREST

DESIGN SPEC: AASHTO LRFD DESIGN SPEC.

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
JAP	CDS	KCS	ABP

GENERAL PLAN

SHEET 1 OF 8

14

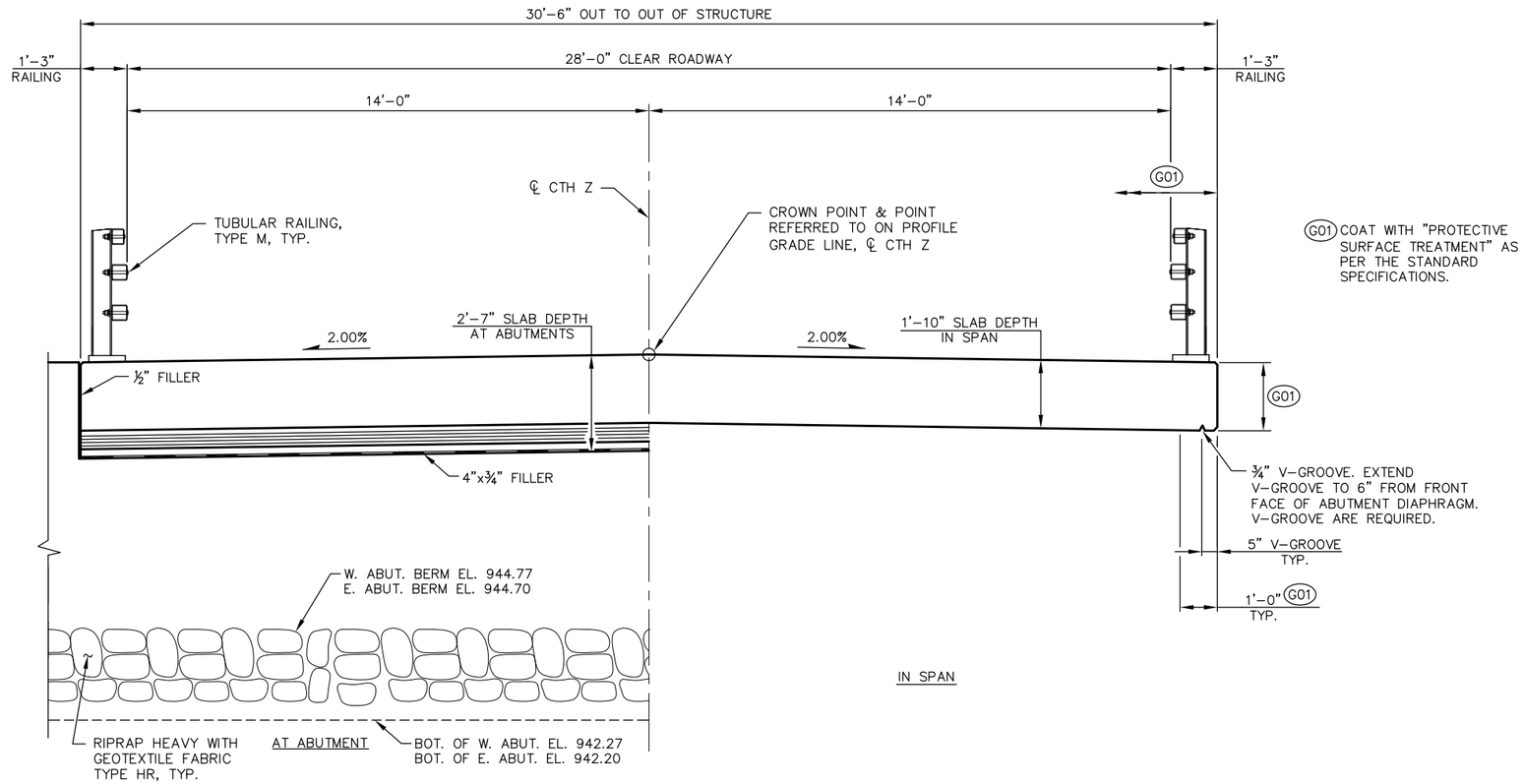
8

8

FILE: 13099-801_fsh.dwg
PLOT SCALE:

I.D. 5487-00-70

PLOT DATE: JUL 17, 2015



G01 COAT WITH "PROTECTIVE SURFACE TREATMENT" AS PER THE STANDARD SPECIFICATIONS.

CROSS SECTION THRU ROADWAY
(LOOKING EAST)

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

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

THE FIRST OR FIRST TWO DIGITS OF A FOUR DIGIT BAR MARK SIGNIFIES THE BAR SIZE.

THE SLOPE IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH RIPRAP HEAVY AND GEOTEXTILE FABRIC, TYPE HR TO THE EXTENT SHOWN ON "GENERAL PLAN" AND "ABUTMENTS" SHEETS.

THE FINISHED GRADED SECTION SHALL BE THE UPPER LIMITS OF EXCAVATION FOR STRUCTURES.

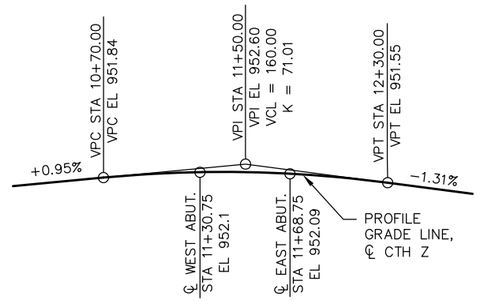
AT ABUTMENTS, CONCRETE POURED UNDER WATER WILL BE ALLOWED AND SHALL BE DONE IN ACCORDANCE WITH SECTION 502.3.5.3 OF THE STANDARD SPECIFICATIONS.

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

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

THE GRADATION OF THE STRUCTURE BACKFILL SHALL MEET THE REQUIREMENTS OF SECTION 209.2.2 OF THE STANDARD SPECIFICATIONS FOR GRADE 1 MATERIAL.

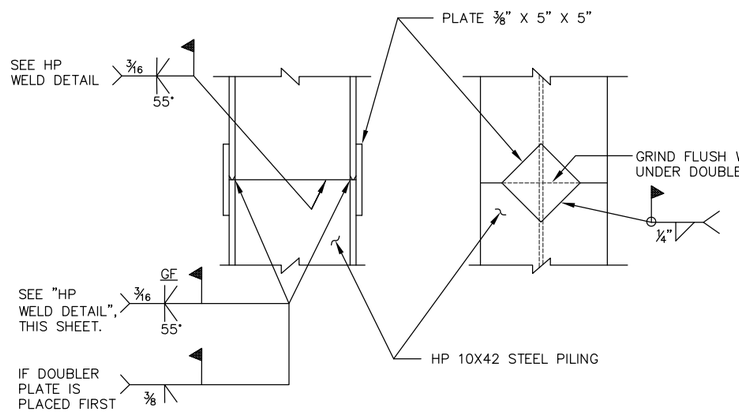
THE EXISTING STRUCTURE (P-62-909) IS A SINGLE SPAN STEEL DECK GIRDER STRUCTURE WITH AN OVERALL LENGTH OF 30.3-FT AND A CLEAR ROADWAY WIDTH OF 20.7-FT TO BE REMOVED.



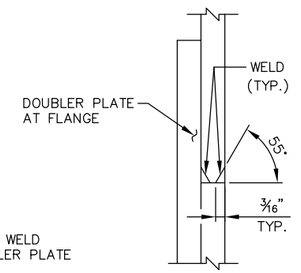
PROFILE GRADE LINE, ℄ CTH Z

TOTAL ESTIMATED QUANTITIES

ITEM NO.	BID ITEMS	UNIT	W. ABUT.	E. ABUT.	SUPER.	TOTALS
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STA. 11+50	LS	---	---	---	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-62-243	LS	---	---	---	1
210.0100	BACKFILL STRUCTURE	CY	145	145	---	290
502.0100	CONCRETE MASONRY BRIDGES	CY	38	38	89	165
502.3200	PROTECTIVE SURFACE TREATMENT	SY	---	---	164	164
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	2415	2415	---	4830
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1455	1455	15540	18450
513.4061	RAILING TUBULAR TYPE M B-62-243	LF	---	---	---	86
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	7	7	---	14
550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	210	210	---	420
606.0300	RIPRAP HEAVY	CY	52	53	---	105
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	71	71	---	142
645.0120	GEOTEXTILE FABRIC TYPE HR	SY	105	107	---	212
(NON-BID ITEM)	FILLER	SIZE	---	---	---	½" & ¾"



PILE SPLICE DETAILS



HP WELD DETAIL
(FLANGE SHOWN, WEB SIMILAR)

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-62-243

DRAWN BY KCS | PLANS CK'D ABP

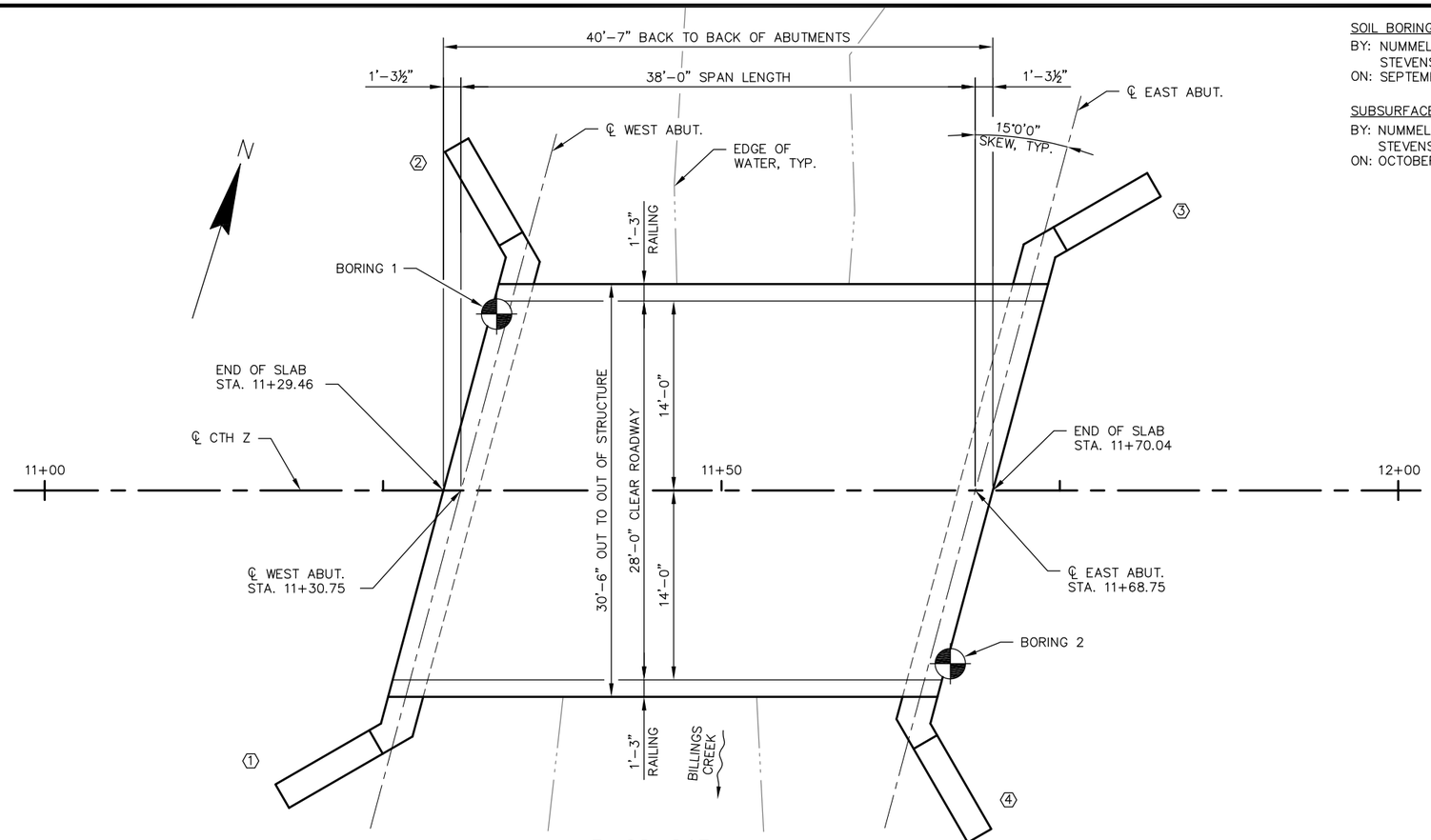
CROSS SECTION AND QUANTITIES

SHEET 2 OF 8

15

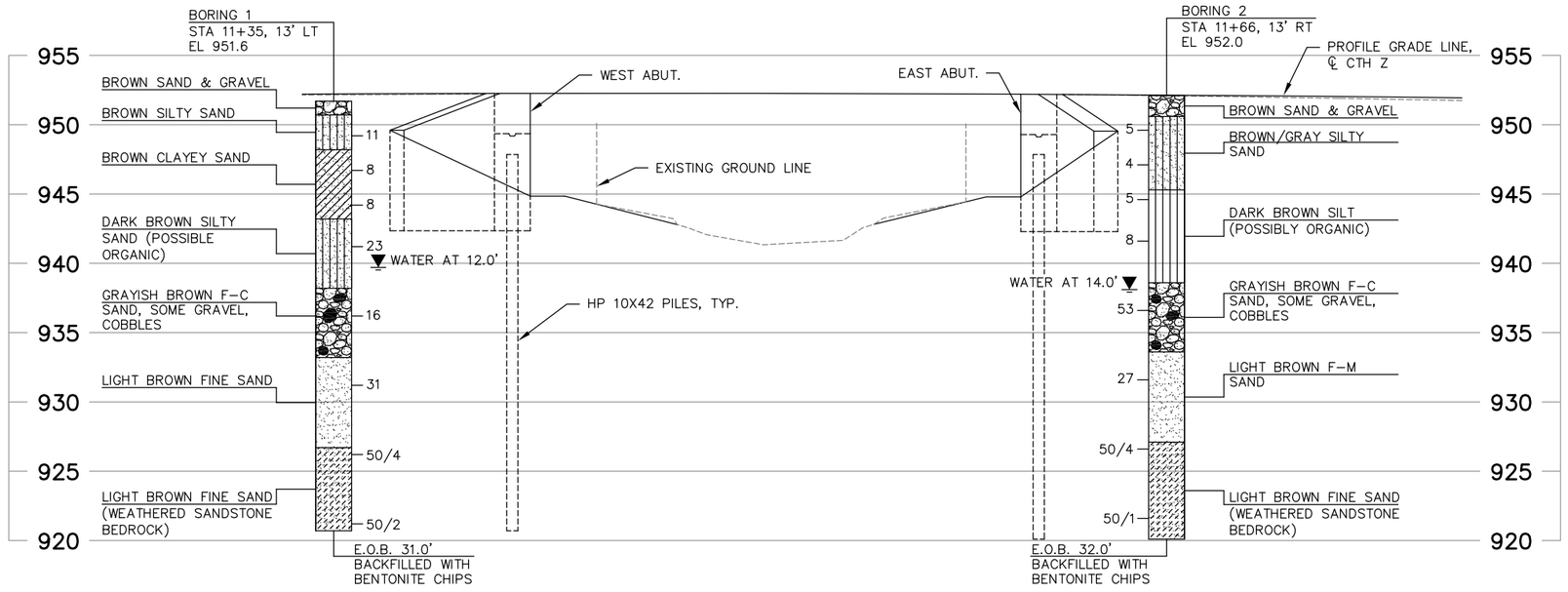
8

8



B-62-243

⬡ – INDICATES WING NUMBER



SOIL BORINGS
BY: NUMMELIN TESTING SERVICES, INC.
STEVENS POINT/WAUNAKEE, WI
ON: SEPTEMBER 26, 2013

SUBSURFACE INVESTIGATION REPORT
BY: NUMMELIN TESTING SERVICES, INC.
STEVENS POINT/WAUNAKEE, WI
ON: OCTOBER 7, 2013

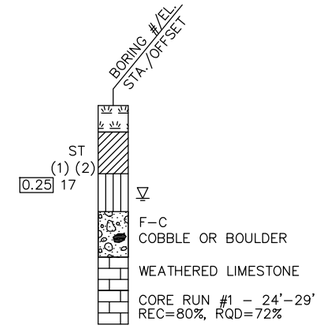
STATE PROJECT NUMBER

5487-00-70

MATERIAL SYMBOLS

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

LEGEND OF BORING



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

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

GROUND WATER ELEVATION

▽ AT TIME OF DRILLING
▼ END OF DRILLING
▼ AFTER DRILLING

ABBREVIATIONS

F-FINE M-MEDIUM C-COARSE ST-SHELBY TUBE

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-62-243

DRAWN BY KCS | PLANS CK'D ABP

SUBSURFACE EXPLORATION

SHEET 3 OF 8

16

8

8

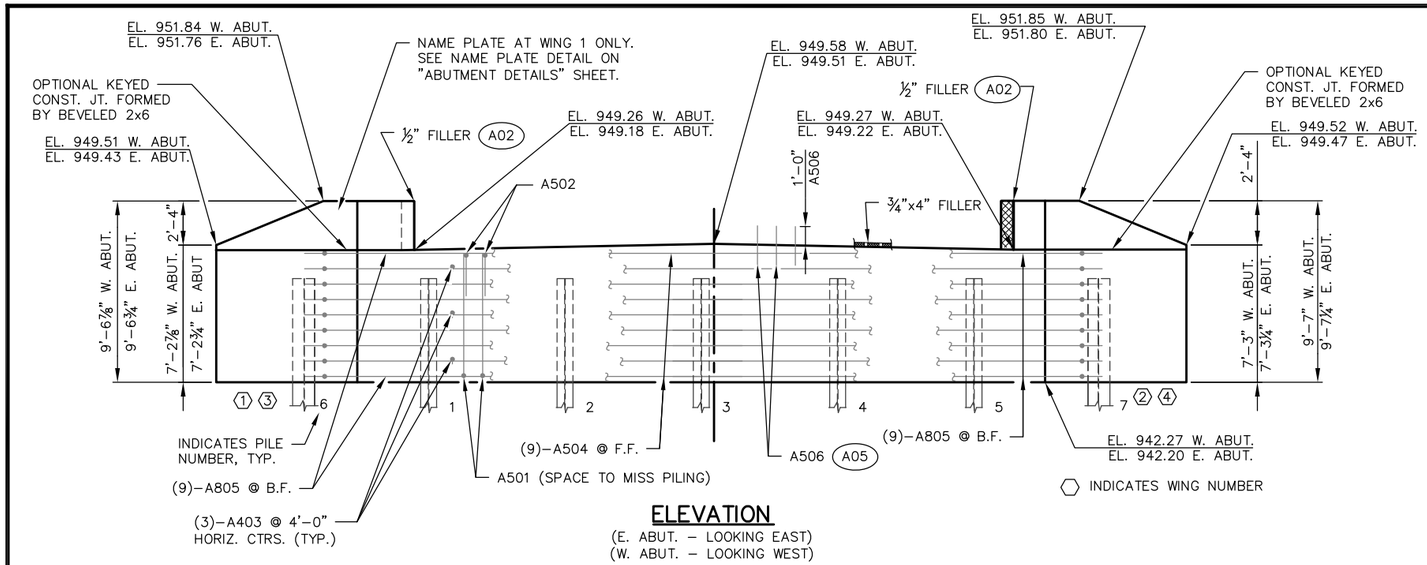
I.D. 5487-00-70

PLOT DATE: Jul 13, 2015

FILE: 13099-803_bor.dwg
PLOT SCALE:

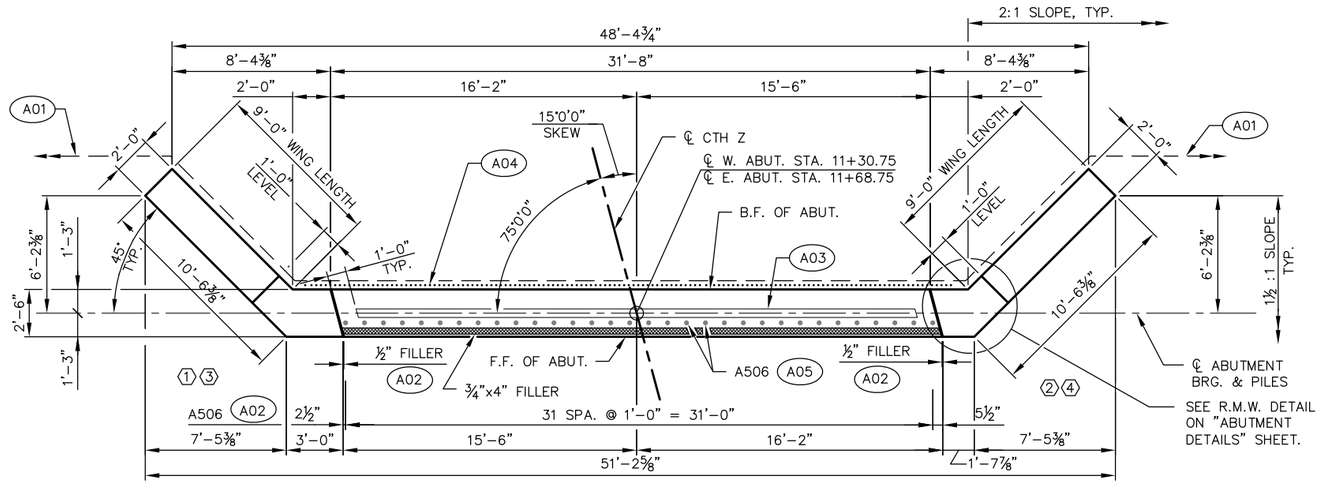
STATE PROJECT NUMBER

5487-00-70

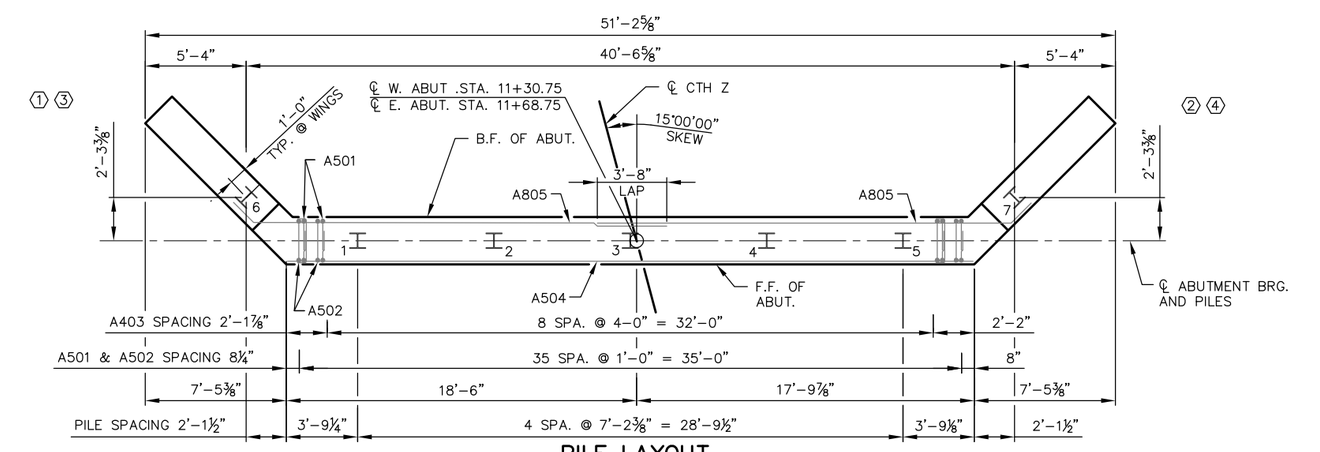


ELEVATION

(E. ABUT. – LOOKING EAST)
(W. ABUT. – LOOKING WEST)

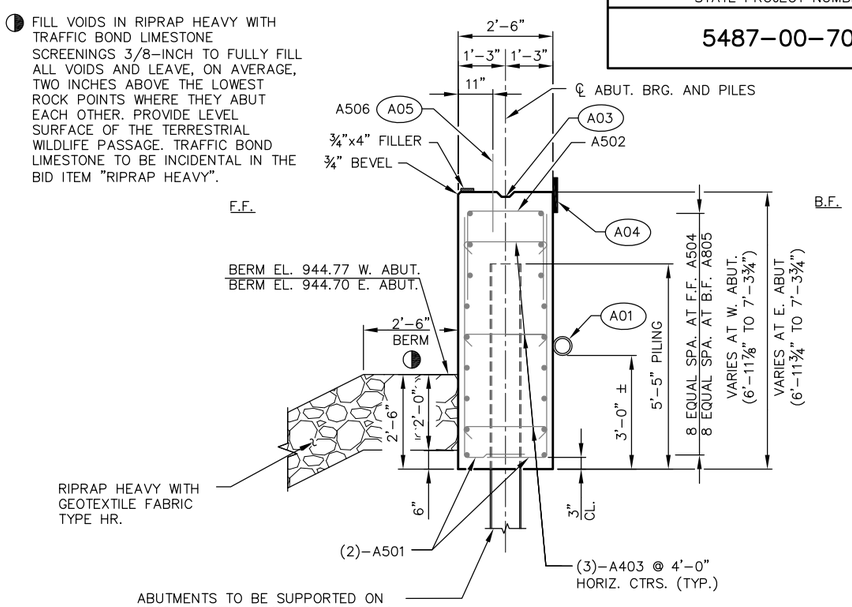


PLAN



PILE LAYOUT

◑ FILL VOIDS IN RIPRAP HEAVY WITH TRAFFIC BOND LIMESTONE SCREENINGS 3/8-INCH TO FULLY FILL ALL VOIDS AND LEAVE, ON AVERAGE, TWO INCHES ABOVE THE LOWEST ROCK POINTS WHERE THEY ABUT EACH OTHER. PROVIDE LEVEL SURFACE OF THE TERRESTRIAL WILDLIFE PASSAGE. TRAFFIC BOND LIMESTONE TO BE INCIDENTAL IN THE BID ITEM "RIPRAP HEAVY".



ABUTMENTS TO BE SUPPORTED ON HP10x42 STEEL PILING DRIVEN TO A REQUIRED RESISTANCE OF 180 TONS PER PILE. ESTIMATE 30 FT. PILE LENGTHS AT ABUTMENTS.

FOR PILE SPLICE DETAIL SEE "CROSS SECTION AND QUANTITIES".

F.F. – FRONT FACE
B.F. – BACK FACE

TYPICAL SECTION THRU ABUTMENT

NOTES

DO NOT PLACE FILL ABOVE 3'-0" FROM THE BOTTOM OF THE ABUTMENT UNTIL SUPERSTRUCTURE IS IN PLACE.

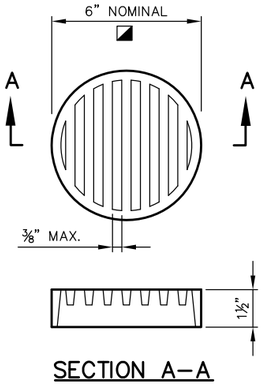
(A01) PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE, ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. RODENT SHIELD IS INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

(A02) SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE)

(A03) KEYED CONSTRUCTION JOINT FORMED BY A SURFACED, BEVELED 2"x6".

(A04) 18" RUBBERIZED MEMBRANE WATERPROOFING (R.M.W.), SEAL ALL VERTICAL AND HORIZONTAL JOINTS ON BACK FACE.

(A05) A506 BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE IT HAS TAKEN ITS INITIAL SET. EMBED BAR 1'-0".



SECTION A-A

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

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

THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE INCLUDED WITH THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

RODENT SHIELD

No.	Date	Revision	By

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-62-243

Drawn By KCS | Plans Checked ABP

ABUTMENTS

SHEET 4 OF 8

17

8

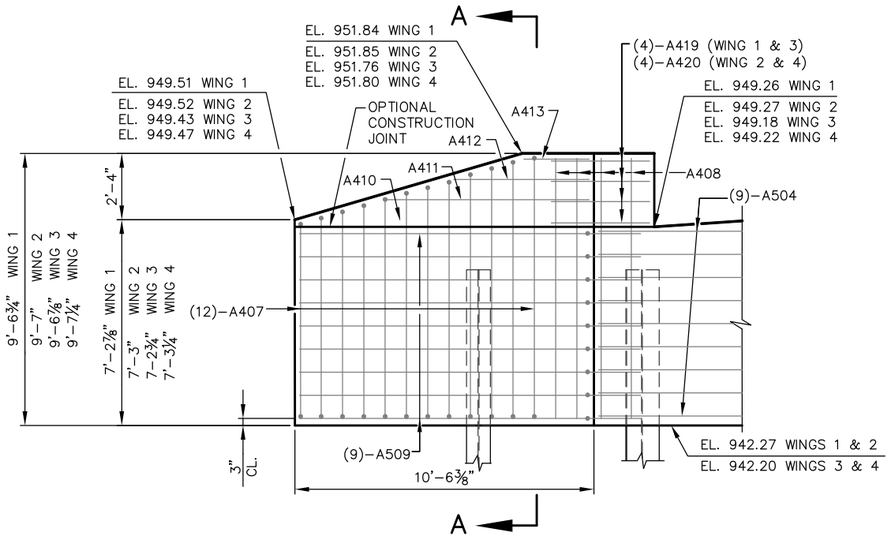
8

I.D. 5487-00-70

PLOT DATE: Jul 13, 2015

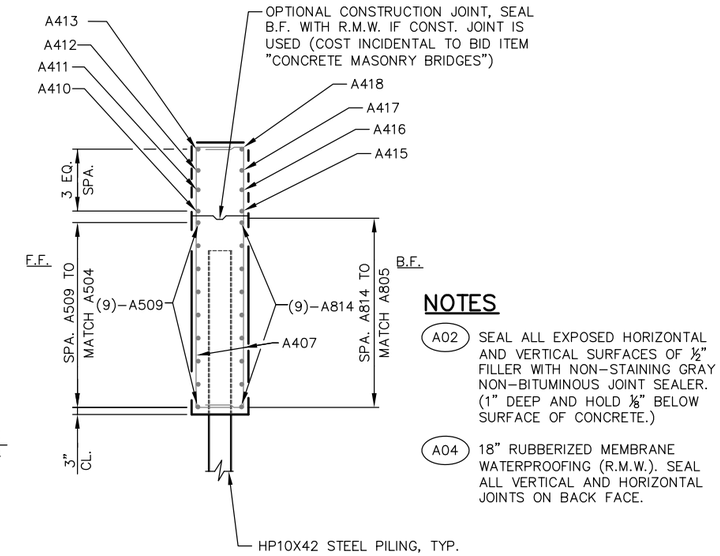
FILE: 13099-804_abut.dwg
PLOT SCALE: 1/8" = 1'-0"

STATE PROJECT NUMBER
5487-00-70



F.F. ELEVATION – WINGS 1 & 3

(WING 2 & 4 SIMILAR)



SECTION A–A

NOTES

(A02) SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE.)

(A04) 18" RUBBERIZED MEMBRANE WATERPROOFING (R.M.W.). SEAL ALL VERTICAL AND HORIZONTAL JOINTS ON BACK FACE.

F.F. – FRONT FACE
B.F. – BACK FACE

BILL OF BARS
BOTH ABUTMENTS

COATED = 2910 LBS.
UNCOATED = 4800 LBS.

MARK	NUMBER COATED	NUMBER UNCOATED	LENGTH	BENT	BAR SERIES	LOCATION	
A501		144	8-0	X		BODY – STIRRUP – F.F. & B.F.	VERT.
A502		72	7-7	X		BODY – TOP	VERT.
A403		54	2-11	X		BODY – TIES.	HORIZ.
A504		18	36-2			BODY – F.F.	HORIZ.
A805		36	23-7	X		BODY – B.F.	HORIZ.
A506	64		2-0			BODY – DOWELS	VERT.
A407	96		10-7	X	▲	WINGS 1 THRU 4 – STIRRUP–F.F. & B.F.	VERT.
A408	24		9-1			WINGS 1 THRU 4 – F.F. & B.F.	VERT.
A509	36		11-7	X		WINGS 1 THRU 4 – F.F.	HORIZ.
A410	4		9-11			WINGS 1 THRU 4 – F.F.	HORIZ.
A411	4		7-4			WINGS 1 THRU 4 – F.F.	HORIZ.
A412	4		4-10			WINGS 1 THRU 4 – F.F.	HORIZ.
A413	4		10-6	X		WINGS 1 THRU 4 – F.F. – TOP	HORIZ.
A814	36		13-5			WINGS 1 THRU 4 – B.F.	HORIZ.
A415	4		8-8			WINGS 1 THRU 4 – B.F.	HORIZ.
A416	4		6-1	X		WINGS 1 THRU 4 – B.F.	HORIZ.
A417	4		3-6			WINGS 1 THRU 4 – B.F.	HORIZ.
A418	4		8-11	X		WINGS 1 THRU 4 – B.F. – TOP	HORIZ.
A419	8		4-1	X		WINGS 1 & 3 – F.F. CORNER	HORIZ.
A420	8		2-10	X		WINGS 2 & 4 – F.F. CORNER	HORIZ.
A421	16		2-9	X		WINGS 1 THRU 4 – B.F. CORNER	HORIZ.

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

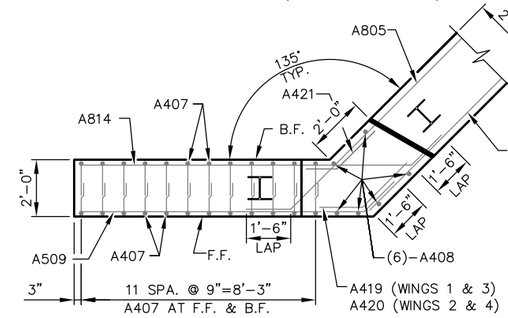
THE FIRST DIGIT OF A BAR MARK SIGNIFIES THE BAR SIZE.

ALL BAR BEND DIMENSIONS ARE OUT TO OUT OF BAR.

BAR SERIES TABLE

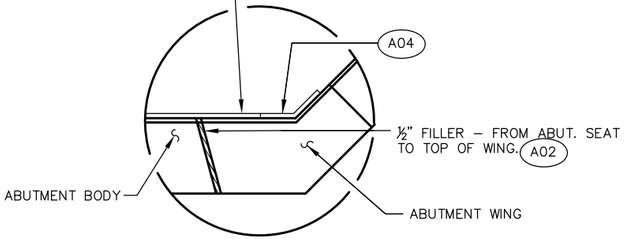
MARK	NO. REQ'D.	LENGTH
A407	8 SERIES OF 12	9-4 TO 11-7

BUNDLE AND TAG EACH SERIES SEPARATELY

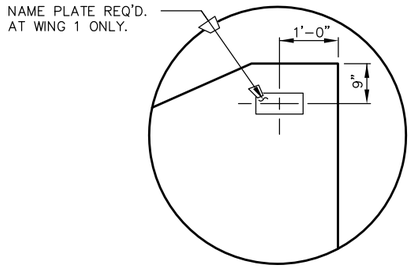


PLAN – WINGS 1 & 3

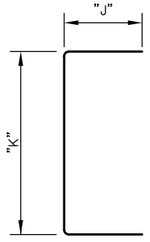
(WING 2 & 4 SIMILAR)



R.M.W. DETAIL

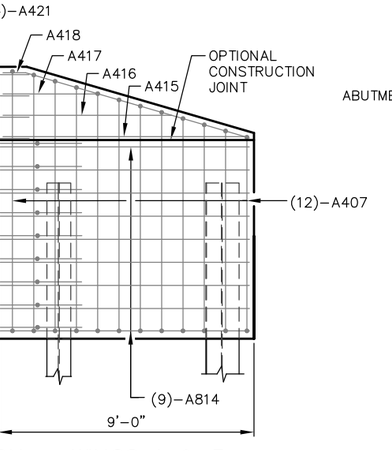


NAME PLATE DETAIL



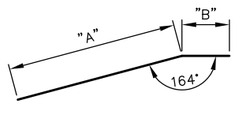
A407

MARK	"J"	"K"
A407	1-4	6-10
		7-1
		7-3
		7-6
		7-9
		7-11
		8-2
		8-5
		8-7
		8-10
		9-0
		9-1



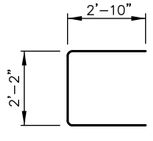
B.F. ELEVATION – WINGS 1 & 3

(WING 2 & 4 SIMILAR)

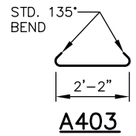


MARK	"A"	"B"
A413	8-2	2-4
A418	8-2	0-9

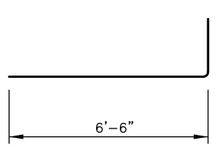
A413 & A418



A502



A403



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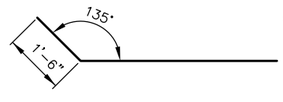
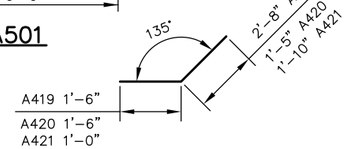


A805, A509, & A814



A419, A420 & A421

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-62-243

DRAWN BY KCS | PLANS CK'D ABP

ABUTMENT DETAILS

SHEET 5 OF 8

18

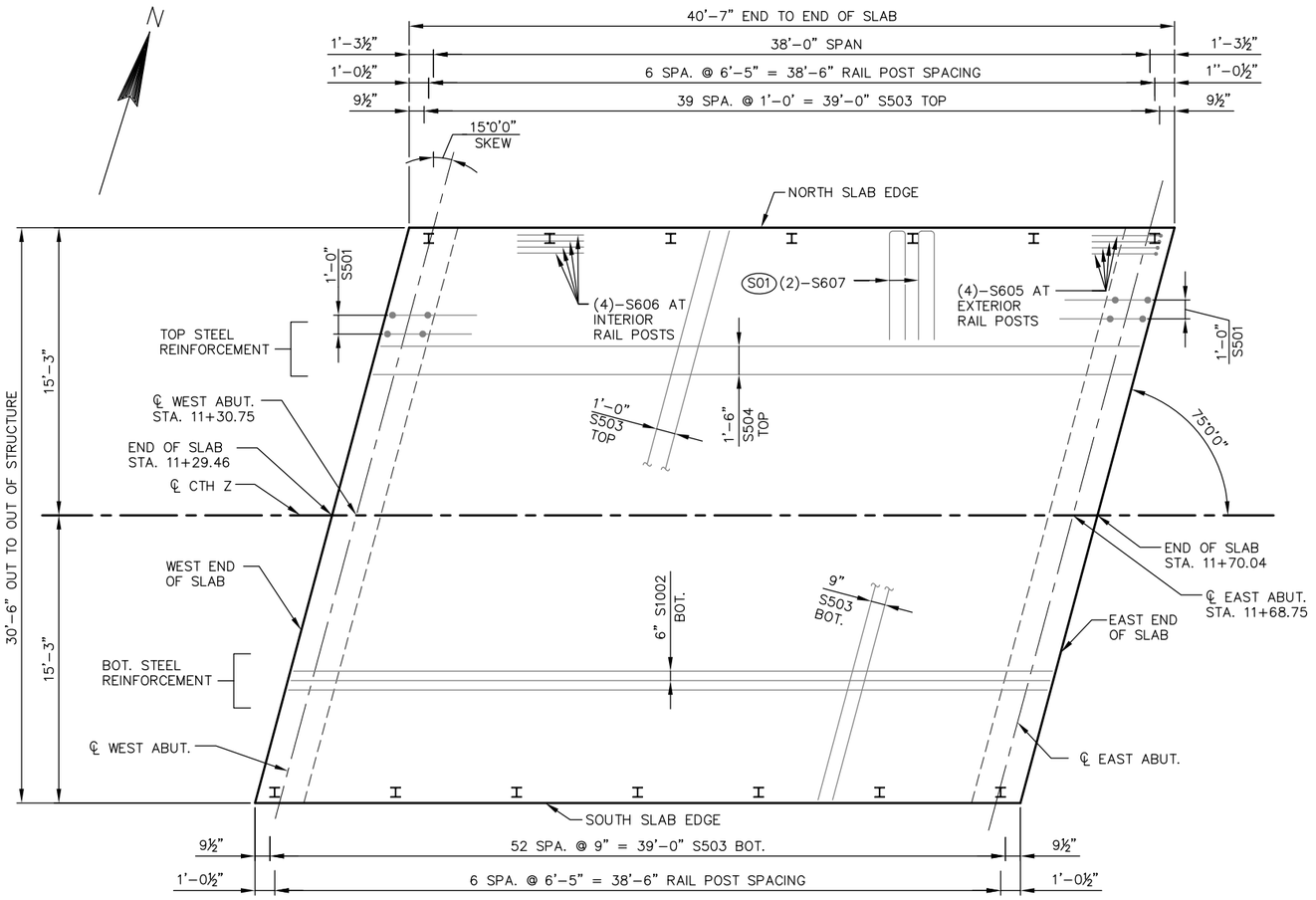
8

8

I.D. 5487-00-70

PLOT DATE: Jul 13, 2015

FILE: 13099-805_abutdet.dwg
PLOT SCALE: 1/8" = 1'-0"



PLAN

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 (+).

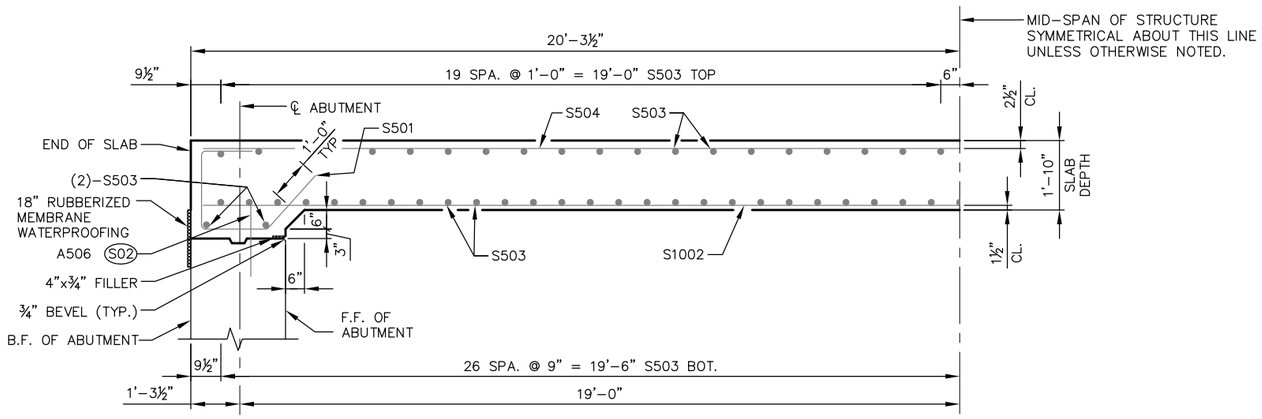
(S01) ADJUST ORIENTATION OF S607 BAR AT END POST TO ENSURE CLEAR COVER AT END OF DECK

(S02) SEE "ABUTMENTS" SHEET FOR PLACEMENT OF A506 BARS.

F.F. – FRONT FACE
B.F. – BACK FACE

TOP OF DECK ELEVATIONS

SPAN PT	N. SLAB EDGE	℄ CTH Z	S. SLAB EDGE
℄ W. ABUT	951.86	952.16	951.85
0.1	951.86	952.16	951.86
0.2	951.86	952.16	951.86
0.3	951.85	952.16	951.86
0.4	951.85	952.15	951.86
0.5	951.84	952.15	951.85
0.6	951.83	952.14	951.85
0.7	951.82	952.13	951.84
0.8	951.80	952.12	951.83
0.9	951.79	952.10	951.82
℄ E. ABUT	951.77	952.09	951.81



PARTIAL LONGITUDINAL SECTION
(LOOKING NORTH)

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-62-243

DRAWN BY KCS | PLANS CK'D ABP

SUPERSTRUCTURE

SHEET 6 OF 8

19

I.D. 5487-00-70

PLOT DATE: Jul 13, 2015

FILE: 13099-806_ss.dwg
PLOT SCALE: 1/8" = 1'-0"

STATE PROJECT NUMBER

5487–00–70

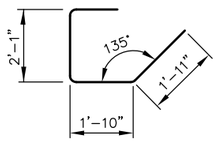
BILL OF BARS
SUPERSTRUCTURE — COATED = 15540 LBS.

MARK	NUMBER COATED	NUMBER UNCOATED	LENGTH	BENT	BAR SERIES	LOCATION	
S501	31		7–0	X		SLAB AT ABUTMENT – TIES	LONGIT.
S1002	60		40–3			SLAB – BOTTOM	LONGIT.
S503	93		31–2			SLAB – TOP & BOTTOM	TRANS.
S504	21		40–3			SLAB – TOP	LONGIT.
◑ S605	16		6–0	X		SLAB AT EXTERIOR RAIL POSTS	LONGIT.
◑ S606	40		6–0			SLAB AT INTERIOR RAIL POSTS	LONGIT.
◑ S607	28		12–0	X		SLAB AT ALL RAIL POSTS	TRANS.

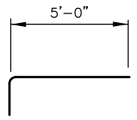
◑ SEE "SUPERSTRUCTURE" & "TUBULAR STEEL RAILING, TYPE M" SHEETS FOR PLACEMENT.

THE FIRST OR FIRST TWO DIGITS OF A FOUR DIGIT BAR MARK SIGNIFIES THE BAR SIZE.

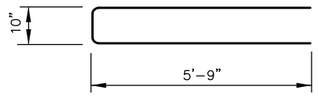
ALL BAR BEND DIMENSIONS ARE OUT TO OUT OF BAR.



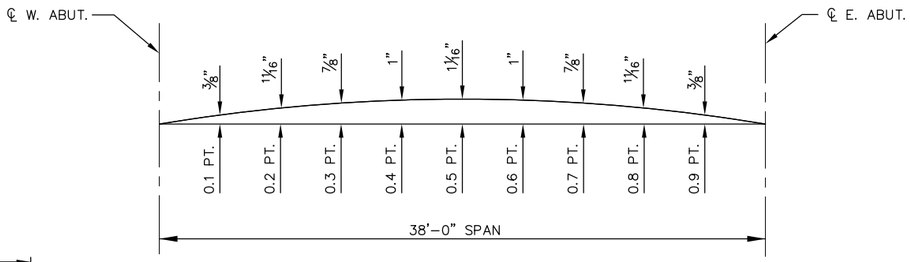
S501



S605

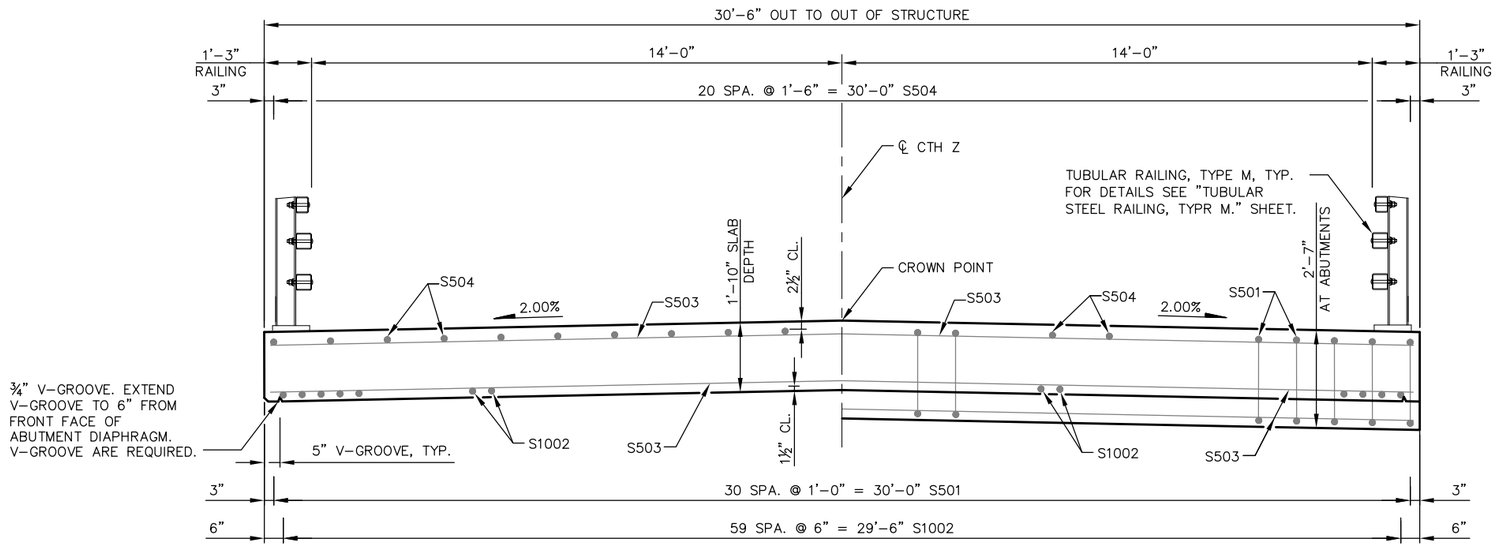


S607



SLAB CAMBER 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.



IN SPAN — AT ABUTMENT

SECTION THRU DECK

SURVEY TOP OF SLAB ELEVATIONS

	℄ WEST ABUTMENT	5/10 PT.	℄ EAST ABUTMENT
NORTH SLAB EDGE			
℄ CTH Z			
SOUTH SLAB EDGE			

PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF DECK ELEVATIONS AT THE ℄ OF ABUTMENTS AND AT 5/10 POINTS TO VERIFY CAMBER. TAKE ELEVATIONS ALONG EDGE OF SLAB AND CROWN LINE. RECORD THE ELEVATIONS IN THE ABOVE TABLE FOR THE "AS BUILT" PLANS.

TO DETERMINE FALSWORK 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.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B–62–243

DRAWN BY KCS | PLANS CK'D ABP

SUPERSTRUCTURE DETAILS

SHEET 7 OF 8

20

8

8

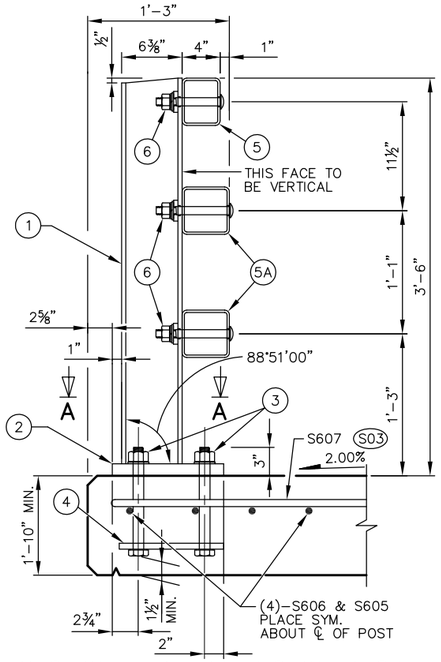
I.D. 5487–00–70

PLOT DATE: Jul 13, 2015

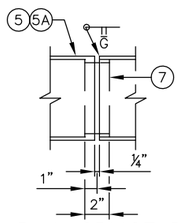
FILE: 13099–807_ssdet.dwg
PLOT SCALE: 1/8" = 1'–0"

STATE PROJECT NUMBER

5487-00-70

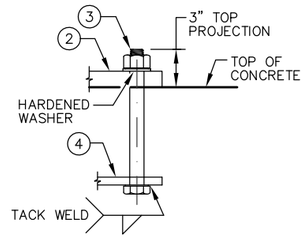


SECTION THRU RAILING ON DECK

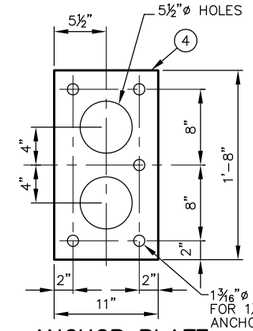


SHOP RAIL SPLICE DETAIL

(LOCATION MUST BE SHOWN ON SHOP DRAWINGS)

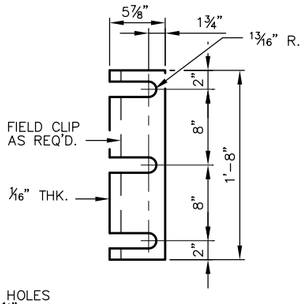


ANCHOR BOLTS

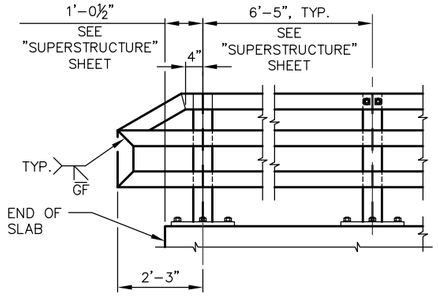


ANCHOR PLATE

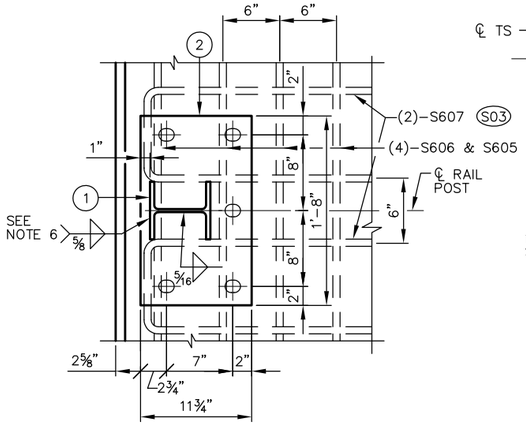
AT RAIL TO DECK CONNECTION



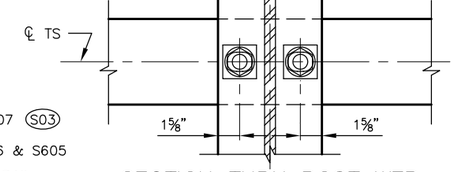
POST SHIM DETAIL



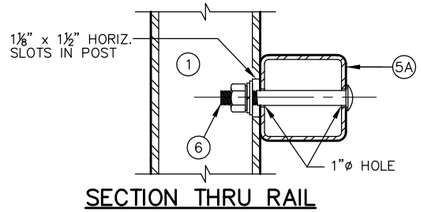
PART ELEVATION OF RAILING



SECTION A–A



SECTION THRU POST WEB



SECTION THRU RAIL

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

TYPICAL RAIL TO POST CONNECTIONS

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 CONSTRUCTABILITY.)
4. ⅝" x 11" x 1'-8" ANCHOR PLATE (GALVANIZED) WITH 1³⁄₁₆" 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, ³⁄₁₆" X 1⅝" X 1⅝" WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION.)
7. SPLICE SLEEVE FABRICATED FROM ¼" PLATE. PROVIDE "SLIDING FIT".

NOTES

1. BID ITEM SHALL BE "RAILING TUBULAR TYPE M B-62-243" 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 1/8 TURN.
4. RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE.
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 S.S.P.C. SPECIFICATIONS.
10. THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 4 (TL-4).
11. PLACE FIRST BOTTOM LONGITUDINAL BAR CLEAR OF DRIP GROOVE.

S03 TIE TO TOP MAT OF STEEL.

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-62-243

DRAWN BY KCS | PLANS CK'D ABP

TUBULAR STEEL RAILING, TYPE M

SHEET 8 OF 8

21

I.D. 5487-00-70

PLOT DATE: Jul 13, 2015

FILE: 13099-808_mrail.dwg
PLOT SCALE:

DIVISION 1 MAINLINE WEST APPROACH

		AREA (SF)						Incremental Vol (CY) (Unadjusted)						Cumulative Vol (CY)							
STATION	Distance	Cut	Salvaged / Unusable Pavement Material	Fill	Marsh Exc	Rock Exc	EBS	Cut	Salvaged / Unusable Pavement Material	Fill	Marsh Exc	Rock Exc	EBS	Cut	Expanded Fill	Expanded Marsh Backfill	Expanded Rock	Expanded EBS Backfill	Reduced Marsh in Fill	Reduced EBS In Fill	Mass Ordinate
								Note 1	Note 2	Note 3				1 Note 1	1.3	1.50 Note 4	1.10	1.30 Note 5	0.60 Note 6	0.80 Note 7	Note 8
10+20		21.2	7.3	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10+50	30	27.9	7.3	13.2	0	0	0	27	8	7	0	0	0	27	10	0	0	0	0	0	10
11+00	50	34.6	7.3	0.0	0	0	0	58	14	12	0	0	0	85	25	0	0	0	0	0	38
11+29.46	29	30.4	7.3	18.9	0	0	0	35	8	10	0	0	0	121	39	0	0	0	0	0	52
							Column totals	121	30	30	0	0	0								

DIVISION 2 MAINLINE EAST APPROACH

		AREA (SF)						Incremental Vol (CY) (Unadjusted)						Cumulative Vol (CY)							
STATION	Distance	Cut	Salvaged / Unusable Pavement Material	Fill	Marsh Exc	Rock Exc	EBS	Cut	Salvaged / Unusable Pavement Material	Fill	Marsh Exc	Rock Exc	EBS	Cut	Expanded Fill	Expanded Marsh Backfill	Expanded Rock	Expanded EBS Backfill	Reduced Marsh in Fill	Reduced EBS In Fill	Mass Ordinate
								Note 1	Note 2	Note 3				1.00 Note 1	1.3	1.50 Note 4	1.10	1.30 Note 5	0.60 Note 6	0.80 Note 7	Note 8
11+70.07		33.4	7.3	13.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12+00	30	25.1	7.3	25.6	0	0	0	32	8	21	0	0	0	32	28	0	0	0	0	0	-4
12+50	50	24.4	7.3	2.9	0	0	0	46	14	26	0	0	0	78	62	0	0	0	0	0	-6
12+63	13	24.6	7.3	4.2	0	0	0	12	4	2	0	0	0	90	64	0	0	0	0	0	0
13+00	37	28.0	7.3	2.7	0	0	0	36	10	5	0	0	0	126	70	0	0	0	0	0	20
13+50	50	31.8	7.3	0.9	0	0	0	55	14	3	0	0	0	181	75	0	0	0	0	0	58
13+60	10	22.7	7.3	0.0	0	0	0	10	3	0	0	0	0	192	75	0	0	0	0	0	65
							Column totals	192	52	58	0	0	0								

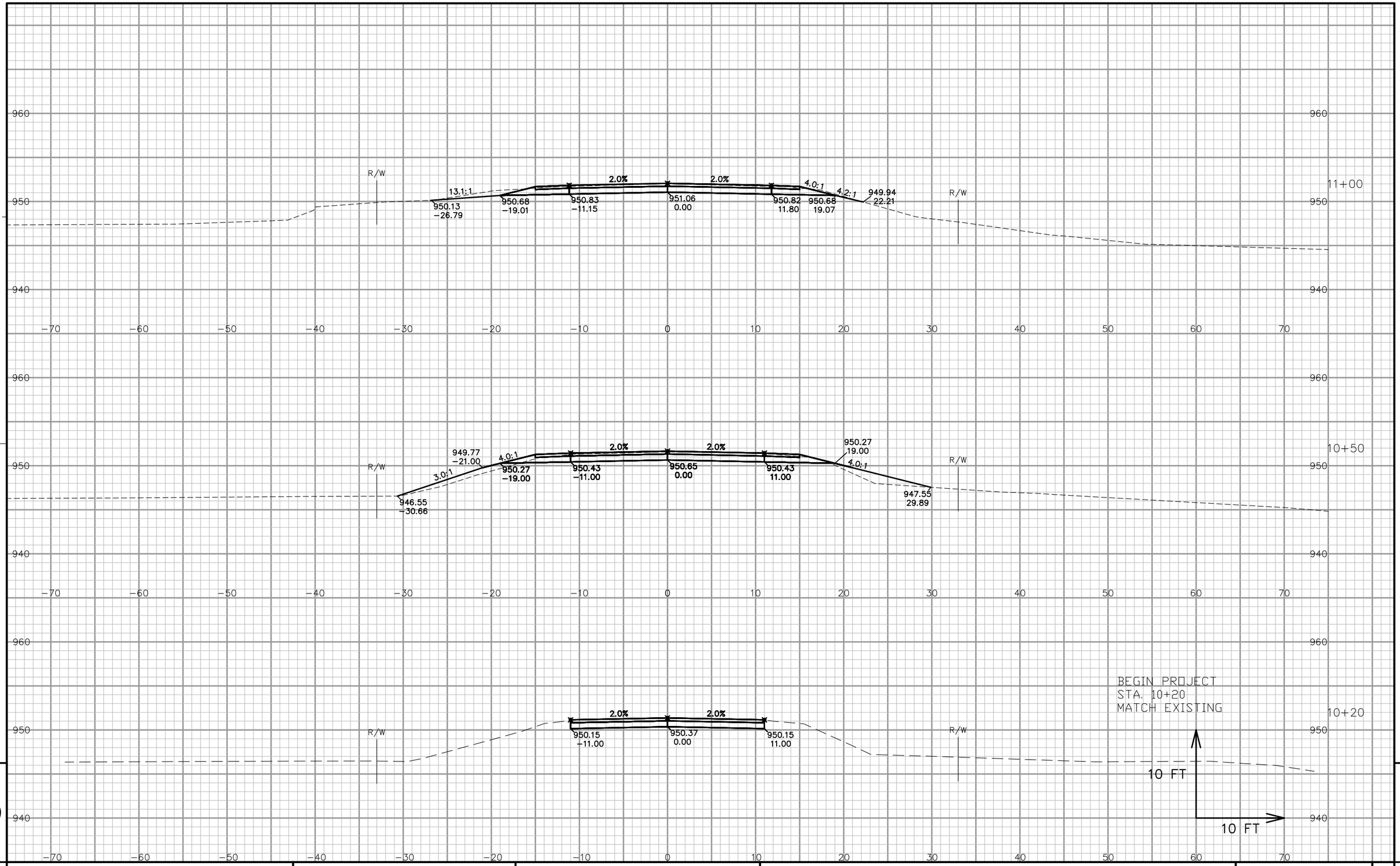
Notes:	
1 - Cut	Cut includes Salvaged/Unusable Pavement material
2 - Salvaged/Unusable Pavement Material	This does not show up in cross sections
3 - Fill	Does not include Unusable Pavement Exc volume
4 - Expanded Marsh Backfill	Will be backfilled with Granular Backfill (or Cut, or Borrow)
5 - Expanded EBS	Will be backfilled with Granular Backfill (or Cut, or Borrow)
6 - Reduced Marsh in Fill	Reduced Marsh Excavation that can be used in Fill
7 - Reduced EBS in Fill	Reduced EBS Excavation that can be used in Fill
8 - Mass Ordinate	If Marsh or EBS to be backfilled with Cut or Borrow: [(Cut + Marsh Exc + EBS) - ((Fill - Reduced Marsh in Fill) - (Reduced EBS in Fill) - Expanded Rock) * Fill Factor)]
8 - Mass Ordinate	If Marsh and EBS to be backfilled with Granular: [(Cut + EBS + Marsh Exc) - ((Fill - (Reduced Marsh in Fill) - (Reduced EBS in Fill) - (Expanded Rock)) * Fill Factor))]
8 - Mass Ordinate	If Marsh and EBS to be backfilled with Granular: [(Cut) - ((Fill - Expanded Rock) * Fill Factor))]
8 - Mass Ordinate	If Marsh and EBS to be backfilled with Cut or Borrow: [(Cut) - ((Fill - Expanded Rock) * Fill Factor))]

9

9

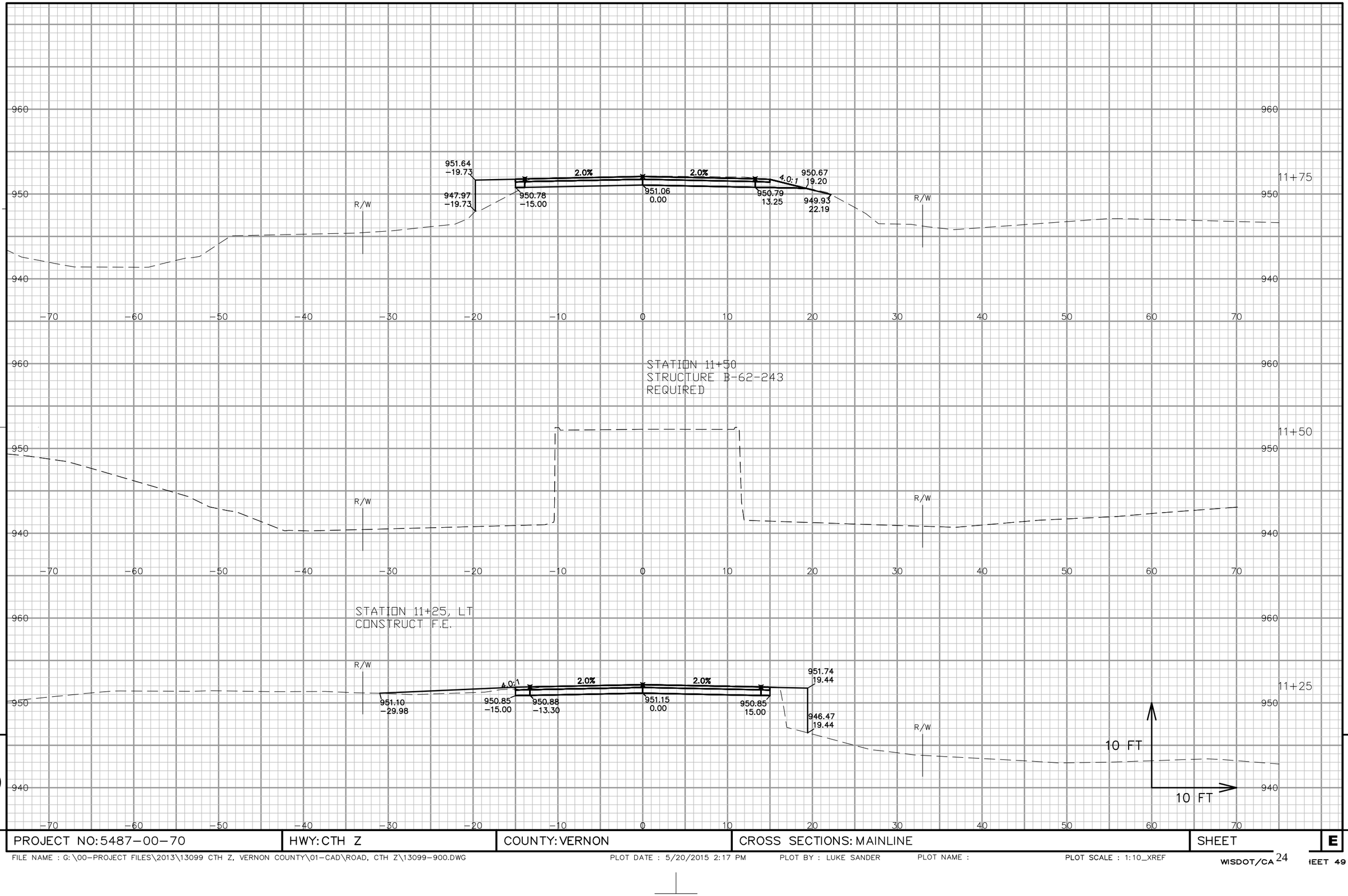
PROJECT NO: 5487-00-70	HWY: CTH Z	COUNTY: VERNON	EARTHWORK	SHEET 22	E

FILE NAME: G:\00-PROJECT FILES\2013\13099 CTH Z, Vernon County\01-CAD\Road, CTH Z\13099-900_ew.dwg PLOT DATE: May 20, 2015 PLOT BY: luke0 PLOT SCALE: 1:2 ROTATION:



PROJECT NO: 5487−00−70	HWY: CTH Z	COUNTY: VERNON	CROSS SECTIONS: MAINLINE	SHEET	E

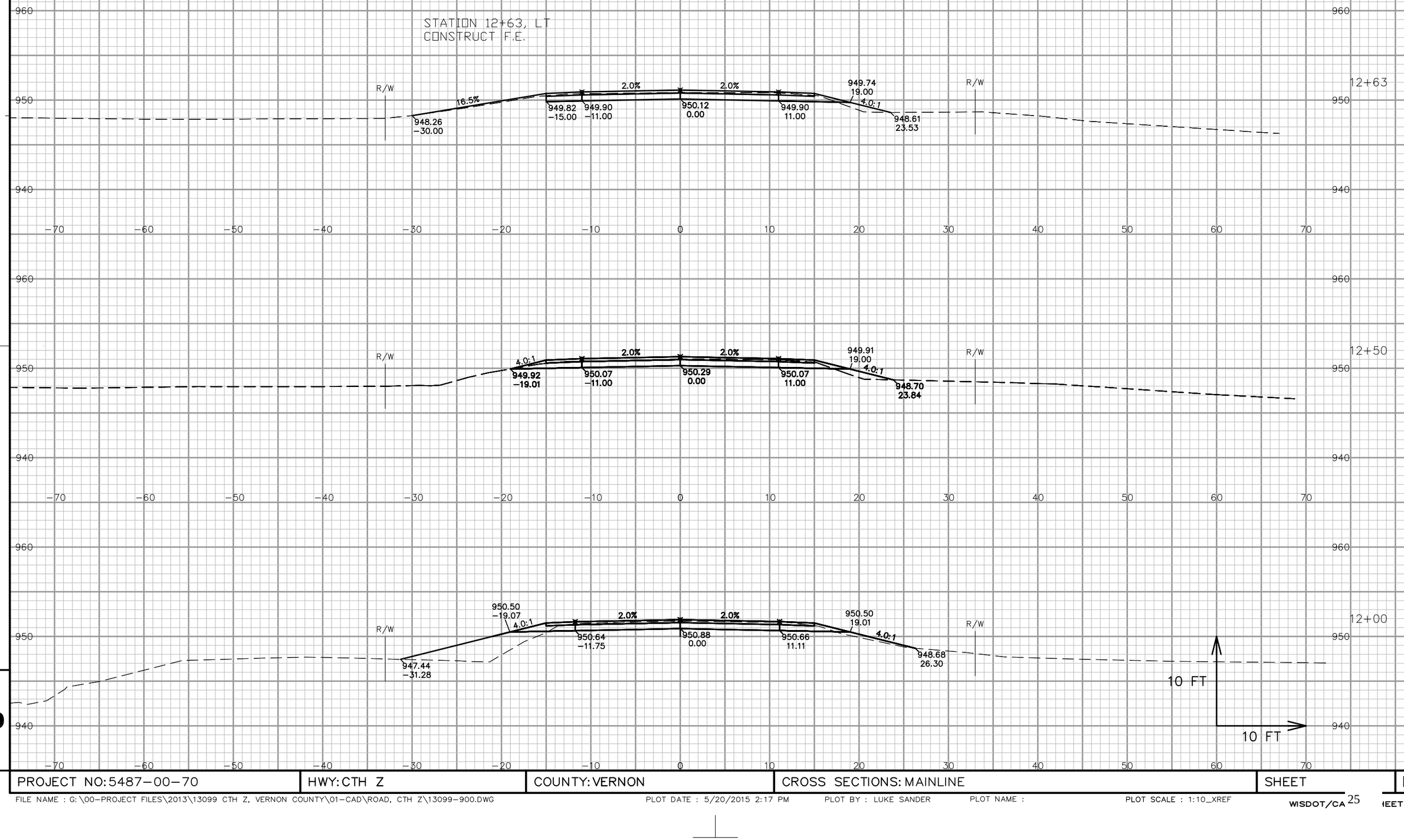
FILE NAME : G:\00−PROJECT FILES\2013\13099 CTH Z, VERNON COUNTY\01−CAD\ROAD, CTH Z\13099−900.DWG PLOT DATE : 5/20/2015 2:16 PM PLOT BY : LUKE SANDER PLOT NAME : PLOT SCALE : 1:10_XREF



PROJECT NO: 5487-00-70	HWY: CTH Z	COUNTY: VERNON	CROSS SECTIONS: MAINLINE	SHEET	E

FILE NAME : G:\00-PROJECT FILES\2013\13099 CTH Z, VERNON COUNTY\01-CAD\ROAD, CTH Z\13099-900.DWG PLOT DATE : 5/20/2015 2:17 PM PLOT BY : LUKE SANDER PLOT NAME : PLOT SCALE : 1:10_XREF

STATION 12+63, LT
CONSTRUCT F.E.



9

9

PROJECT NO: 5487−00−70	HWY: CTH Z	COUNTY: VERNON	CROSS SECTIONS: MAINLINE	SHEET	E

FILE NAME : G:\00−PROJECT FILES\2013\13099 CTH Z, VERNON COUNTY\01−CAD\ROAD, CTH Z\13099−900.DWG
PLOT DATE : 5/20/2015 2:17 PM
PLOT BY : LUKE SANDER
PLOT NAME :
PLOT SCALE : 1:10_XREF
WISDOT/CA

END PROJECT
STA. 13+60
MATCH EXISTING

13+60

R/W
2.0%
2.0%
949.33
-11.00
949.55
0.00
949.33
-11.00
R/W

13+50

R/W
949.19
-19.00
4.0:1
2.0%
2.0%
4.0:1
949.19
19.00
949.35
-11.00
949.57
0.00
949.35
-11.00
948.72
20.86
R/W

13+00

R/W
949.43
-19.00
13.1:1
4.0:1
2.0%
2.0%
4.0:1
949.43
19.00
949.24
-21.63
949.59
-11.00
949.81
0.00
949.59
-11.00
948.37
23.24
R/W

10 FT
10 FT

960
950
940
-70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70

9

PROJECT NO: 5487-00-70	HWY: CTH Z	COUNTY: VERNON	CROSS SECTIONS: MAINLINE	SHEET	E

FILE NAME : G:\00-PROJECT FILES\2013\13099 CTH Z, VERNON COUNTY\01-CAD\ROAD, CTH Z\13099-900.DWG
PLOT DATE : 5/20/2015 2:17 PM
PLOT BY : LUKE SANDER
PLOT NAME :
PLOT SCALE : 1:10_XREF

Notes

Wisconsin Department of Transportation

Dedicated people creating transportation solutions
through innovation and exceptional service.

http://www.dot.wisconsin.gov