SEL

NOV 2015

ORDER OF SHEETS

TOTAL SHEETS = 98

PROJECT ID: 2714-04-70

COUNTY: WAUKESHA

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

SAWYER ROAD

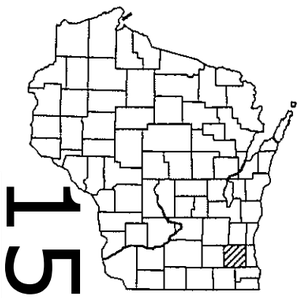
OVER BARK RIVER AND APPROACHES (B-67-319)

C.T.H. P

WAUKESHA COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
2714-04-70	WISC 2015576	1

STATE PROJECT NUMBER
2714-04-70



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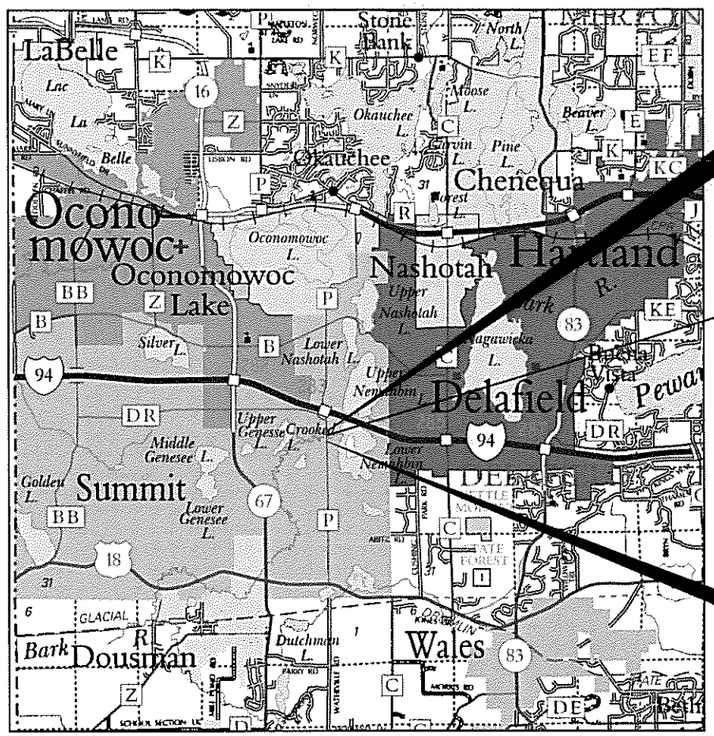


LAYOUT
SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.101 MI.

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN STATE PLANE COORDINATE SYSTEM (WSPCS), 'SOUTH' ZONE."
ALL ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO THE NGVD-29.

DESIGN DESIGNATION

A.A.D.T. (2015)	=	2,700
A.A.D.T. (2035)	=	6,100
D.H.V. ------	=	---
D.D.	=	59-41
T. -----	=	5.1%
DESIGN SPEED	=	40 MPH
ESALS	=	627,800

CONVENTIONAL SYMBOLS

PLAN		PROFILE	
CORPORATE LIMITS		GRADE LINE	
PROPERTY LINE	PL + SB	ORIGINAL GROUND	
LOT LINE		MARSH OR ROCK PROFILE (To be noted as such)	ROCK
LIMITED HIGHWAY EASEMENT		SPECIAL DITCH	LABEL
EXISTING RIGHT OF WAY		GRADE ELEVATION	965.36
PROPOSED OR NEW R/W LINE			
SLOPE INTERCEPT		CULVERT (Profile View)	
REFERENCE LINE		UTILITIES	
EXISTING CULVERT		ELECTRIC	E
PROPOSED CULVERT (Box or Pipe)		FIBER OPTIC	FO
		GAS	G
COMBUSTIBLE FLUIDS	CAUTION	SANITARY SEWER	SAN
		STORM SEWER	SS
		TELEPHONE	T
MARSH AREA		WATER	W
		UTILITY PEDESTAL	
		POWER POLE	
WOODED OR SHRUB AREA		TELEPHONE POLE	

ACCEPTED FOR
WAUKESHA COUNTY DEPARTMENT OF PUBLIC WORKS

4-16-15 DATE — DIRECTOR

4/16/15 DATE — ENGINEERING SERVICES MANAGER

APPROVED FOR THE VILLAGE OF SUMMIT

4/16/15 DATE — VILLAGE PRESIDENT

ORIGINAL PLANS PREPARED BY:

WISCONSIN
CRAIG T. DONZE
E-35380
BROOKFIELD, WI
PROFESSIONAL ENGINEER

4/16/15 DATE — PROFESSIONAL ENGINEER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

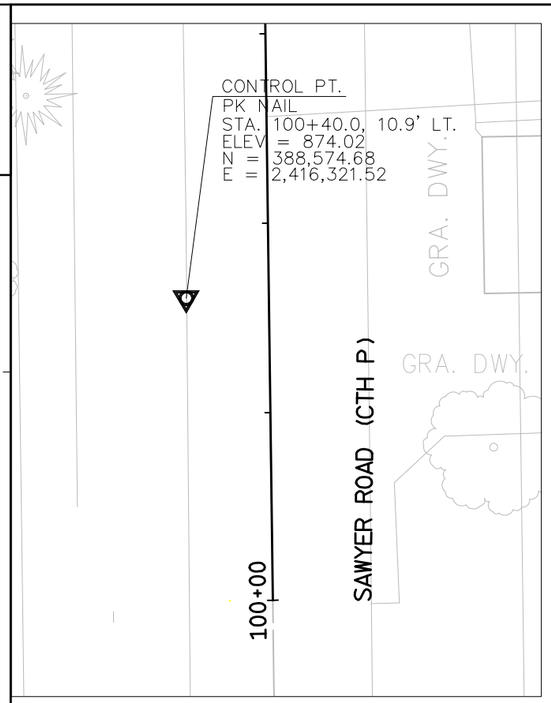
PREPARED BY

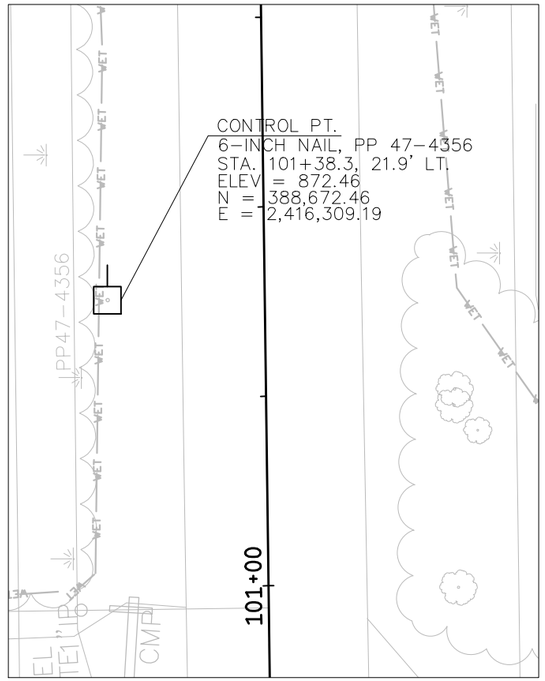
Surveyor	POINT OF BEGINNING, INC.
Designer	ONE SOURCE CONSULTING
Management Consultant	GAAR ENGINEERING
C.O. Examiner	

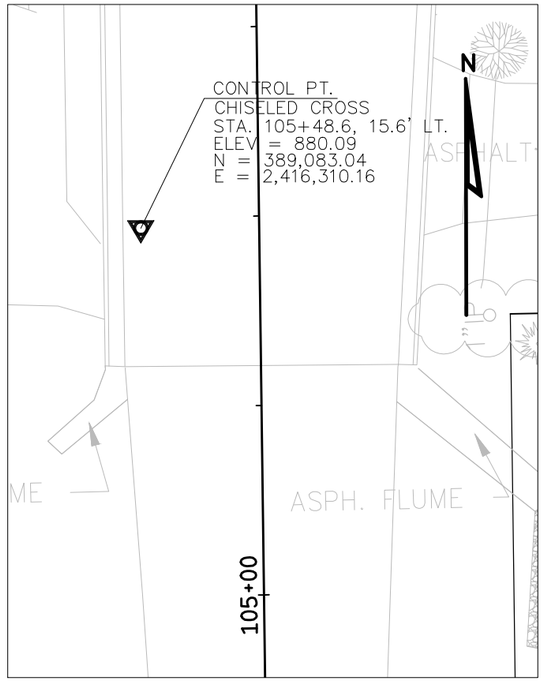
APPROVED FOR THE DEPARTMENT

DATE: 4/20/2015 (Management Consultant Signature)

E







CONTROL POINT TIES

NOTE: COORDINATES ON ROADWAY PLANS ARE SEWRPC GRID.

GENERAL NOTES

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

CONTRACTOR TO VERIFY ALL BENCHMARKS AND PROJECT CONTROL POINT COORDINATES PRIOR TO START OF ALL CONTRACTOR STAKING ACTIVITIES.

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

EROSION CONTROL DEVICES SHALL BE PLACED AS SHOWN ON THE PLANS AND IN SEQUENCE WITH CONSTRUCTION OPERATIONS OR AS DIRECTED BY THE ENGINEER.

DEWATERING SHALL BE PERFORMED IN ACCORDANCE WITH WDNR TECHNICAL STANDARD 1066 USING A GEOTEXTILE BAG PLACED INSIDE OF A TEMPORARY SETTLING / DEWATERING BAG STORAGE BASIN.

EBS IF DETERMINED NECESSARY BY THE ENGINEER SHALL BE PAID FOR AS ADDITIONAL COMMON EXCAVATION. THE LOCATION OF EBS WILL BE DETERMINED BY THE ENGINEER. SUCH EBS IS NOT USED TO BALANCE YARDAGE.

EARTHWORK SHRINKAGE IS VARIABLE AND HAS BEEN ESTIMATED AT 30%.

WHEN PORTIONS OF EXISTING PAVEMENT ARE TO BE REMOVED TO ACCOMMODATE NEW CONSTRUCTION, THE LINE OF SUCH REMOVAL SHALL BE NEATLY DELINEATED WITH A SAWCUT JOINT THROUGH THE ASPHALT SO THAT REMOVAL OF THE PAVEMENT SHALL BE ACCOMPLISHED WITHOUT DAMAGE TO REMAINING PORTIONS.

PRIOR TO CONSTRUCTING CURBS, INLETS SHALL BE COVERED AS NECESSARY TO PREVENT CONSTRUCTION MATERIALS FROM FALLING INTO THE INLETS.

CURB AND GUTTER PLAN GRADES ARE AT THE FLANGE LINE UNLESS OTHERWISE NOTED.

TACK COAT HAS BEEN ESTIMATED AT AN APPLICATION RATE OF 0.070 GALLONS PER SQUARE YARD AND SHALL BE PLACED BETWEEN LAYERS OF HMA PAVEMENT OR BETWEEN EXISTING ASPHALT AND NEW HMA PAVEMENT.

6-INCH HMA PAVEMENT, TYPE E-1 SHALL BE CONSTRUCTED WITH A 4-INCH LOWER LAYER (12.5MM AGGREGATE GRADATION) AND A 2-INCH UPPER LAYER (9.5MM AGGREGATE GRADATION). HMA PAVEMENT WEIGHT CALCULATIONS ARE BASED ON 110 LB/SY/IN. PG 58-28 APPLIES FOR BOTH THE UPPER AND LOWER PAVEMENT LAYERS.

THE EXACT LOCATION AND LIMITS OF ENTRANCES SHALL BE DETERMINED BY THE ENGINEER. ENTRANCES SHALL BE REPLACED IN KIND AS DIRECTED BY THE ENGINEER.

WDNR CONTACT

WISCONSIN DEPARTMENT
OF NATURAL RESOURCES
141 NW BARSTOW ST
WAUKESHA, WI 53188

ATTN: CRAIG WEBSTER
(262) 574-2141
Craig.Webster@wisconsin.gov

DAM - ATTN: MICHELLE HASE
(262) 574-2127
Michelle.Hase@wisconsin.gov

DESIGN CONTACTS

ONE SOURCE CONSULTING
19435 W. CAPITOL DRIVE, SUITE L05
BROOKFIELD, WI 53045

ATTN: CRAIG DONZE, PE
(262) 781-9005
cdonze@onesourceconsult.com

KAPUR & ASSOCIATES
7711 N. PORT WASHINGTON ROAD
MILWAUKEE, WI 53217

ATTN: MOHAMMED ZAGLOUL, PE
(414) 751-7200
mzagloul@kapur-assoc.com

SPONSOR CONTACTS

WAUKESHA COUNTY DEPARTMENT
OF PUBLIC WORKS
515 W. MORELAND BLVD.
WAUKESHA, WI 53188

ALLISON BUSSLER
DIRECTOR OF PUBLIC WORKS
(262) 548-7740

ATTN: KEVIN YANNY
PROJECT MANAGER
(262) 548-7745
kyanny@waukeshacounty.gov

UTILITIES

SANITARY SEWER:
DELAFIELD-HARTLAND
WATER POLLUTION CONTROL
416 BUTLER DRIVE
DELAFIELD, WI 53018

ATTN: SCOTT LUCZAK
(262) 646-4364
sldelhart@centurytel.net

SANITARY SEWER:
VILLAGE OF SUMMIT
UTILITY DISTRICT #2
SEH/YAGGY
501 MAPLE STREET
DELAFIELD, WI 53018

ATTN: MIKE COURT
(262) 646-6855
mikec@yaggy.com

ATTN: JERRY TAYLOR
(262) 646-6855
jerryt@yaggy.com

CATV:
TIME WARNER CABLE
1320 N. DR. MARTIN LUTHER KING JR. DR.
MILWAUKEE, WI 53212-3980

ATTN: STEVE STORM
UTILITY COORDINATOR
(414) 908-4785
steve.storm@twcable.com

TELEPHONE:
AT&T
2005 PEWAUKEE ROAD
WAUKESHA, WI 53188

ATTN: ALPER KULCO
(262) 970 8494
ak308x@att.com

TELEPHONE:
CENTURY LINK
224 INDUSTRIAL DRIVE
NORTH PRAIRIE, WI 53153

ATTN: MARK MURN
(262) 392-5210
mark.murn@centurylink.com

WE ENERGIES
LATROY BRUMFIELD
PROJECT MANAGER
(414) 221-5617

ELECTRIC:
WE ENERGIES
500 S. 116TH STREET
WEST ALLIS, WI 53214

ATTN: BRYAN STOEHR
(414) 944-5516
bryan.stoehr@we-energies.com

GAS:
WE ENERGIES
500 S 116TH ST.
WEST ALLIS, WI 53214

ATTN: DANIELLE FINK
(414) 944-5627
danielle.fink@we-energies.com

SIGNAL CONTACTS

STH 67
WISCONSIN DOT SE
500 S. 116TH STREET
WEST ALLIS, WI 53214

ATTN: DAVID PITTMAN
(262) 548-5902
david.pittman@dot.wi.gov

CTH DR
WAUKESHA COUNTY DPW
515 W. MORELAND BLVD.
WAUKESHA, WI 53188

ATTN: BRUCE BARNES
(262) 548-7748
bgbarnes@waukeshacounty.gov

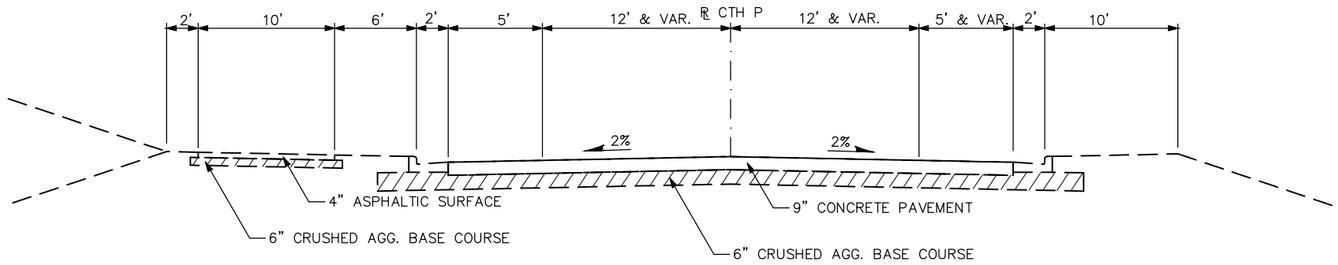
VILLAGE OF SUMMIT
2911 N DOUSMAN RD
OCONOMOWOC, WI 53066

ATTN: HENRY ELLING, ADMINISTRATOR
(262) 567-2757
ellingh@summitvillage.org

DIGGERS HOTLINE
Dial 811 or (800) 242-8511
www.DiggersHotline.com

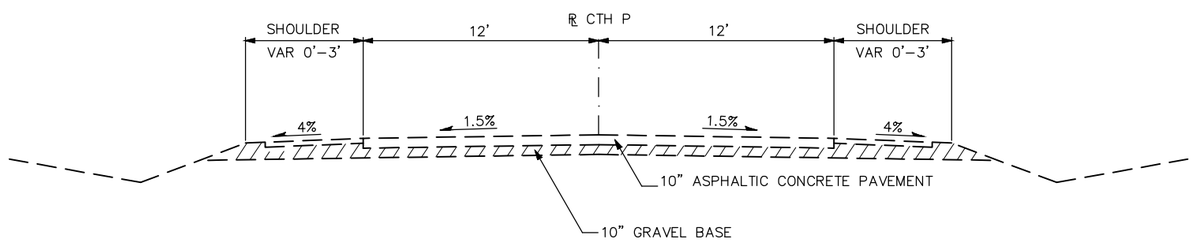
ORDER OF SECTION 2 SHEETS

2



EXISTING TYPICAL SECTION – CTH P

STA. 105+30.00 TO STA. 106+35

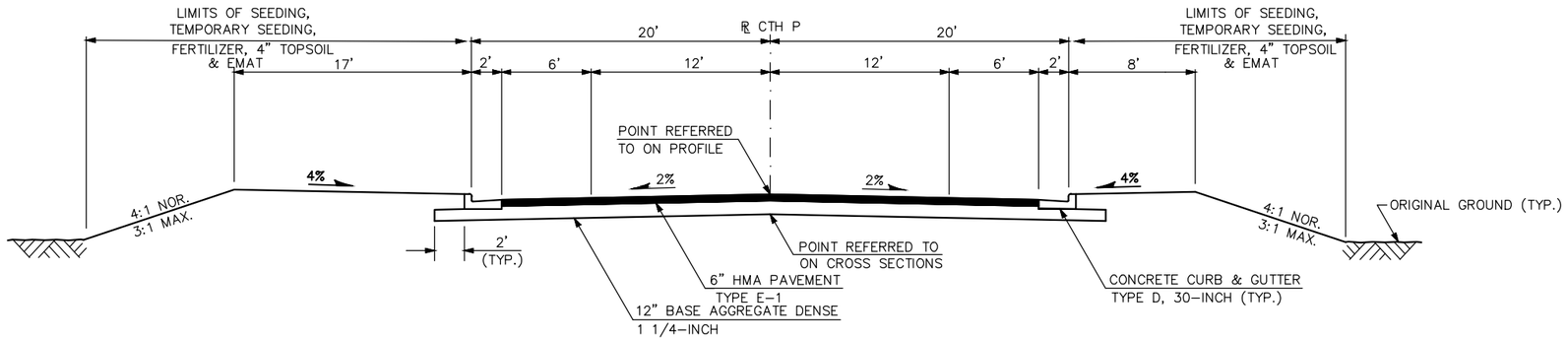


EXISTING TYPICAL SECTION – CTH P

STA. 101+00.00 TO STA. 105+30

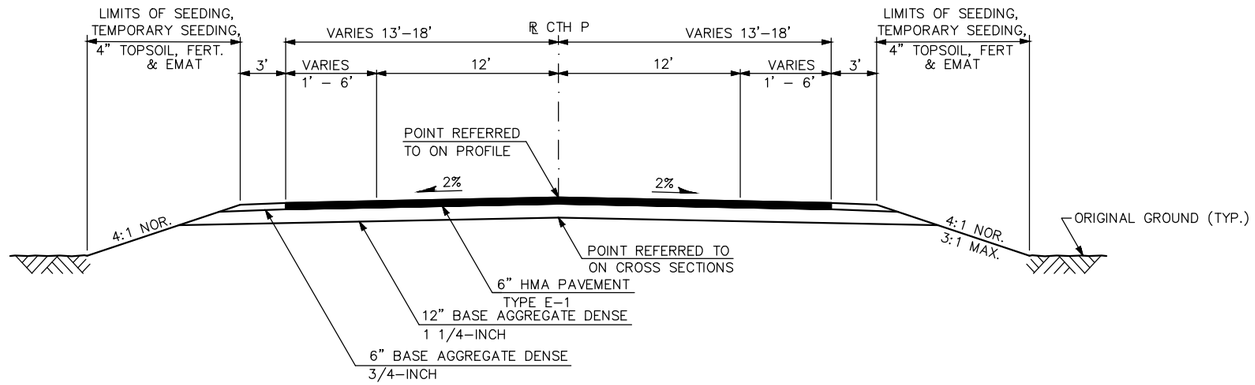
PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	EXISTING TYPICAL SECTIONS	SHEET -3 E

2



FINISHED TYPICAL SECTION – CTH P

STA. 101+54.00 TO STA. 101+92.00



FINISHED TYPICAL SECTION – CTH P

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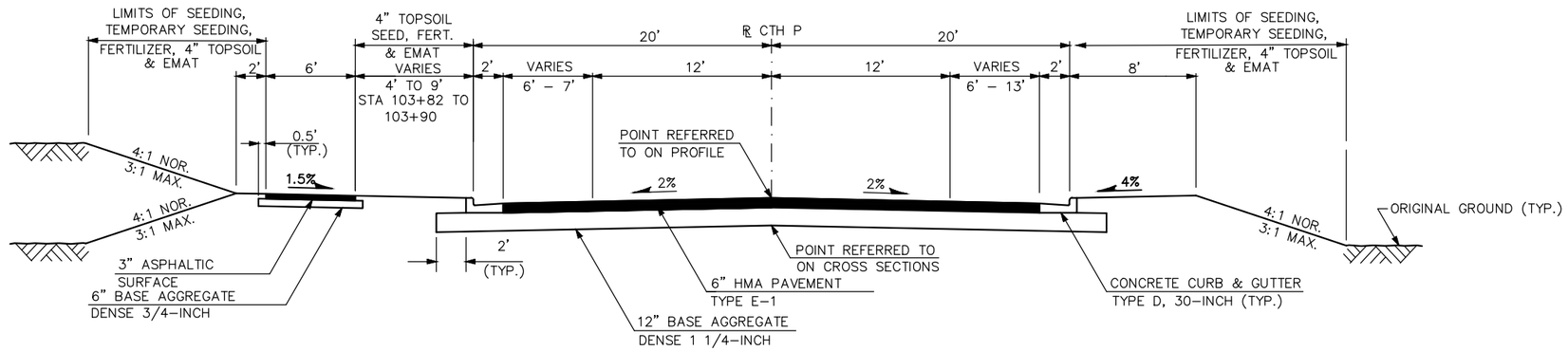
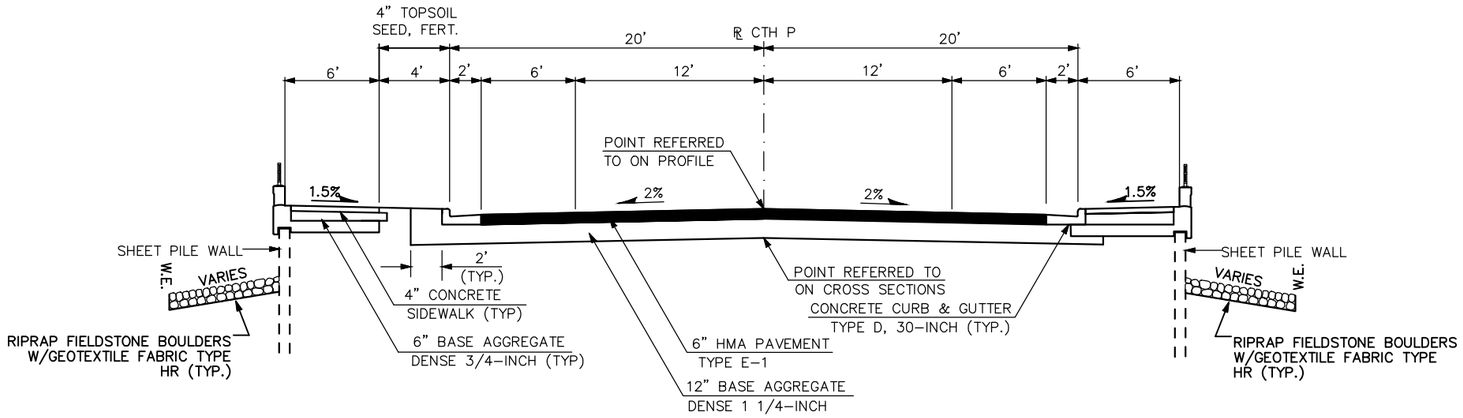


FINISHED TYPICAL SECTION – CTH P

STA. 103+82.00 TO STA. 106+35



FINISHED TYPICAL SECTION – CTH P

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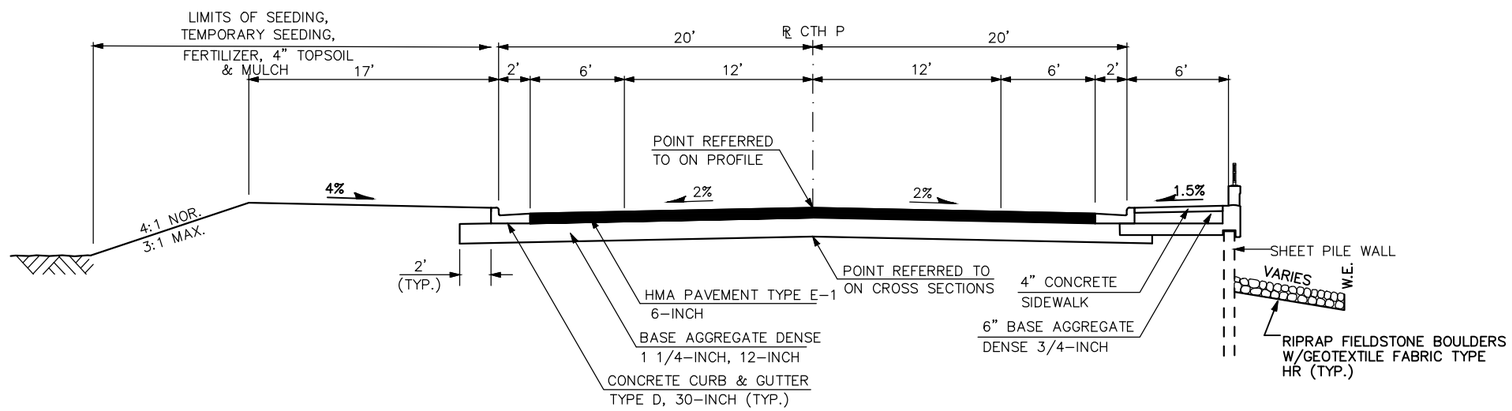
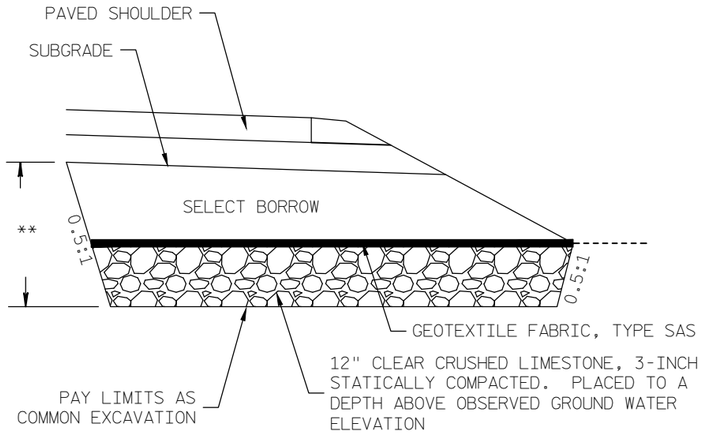
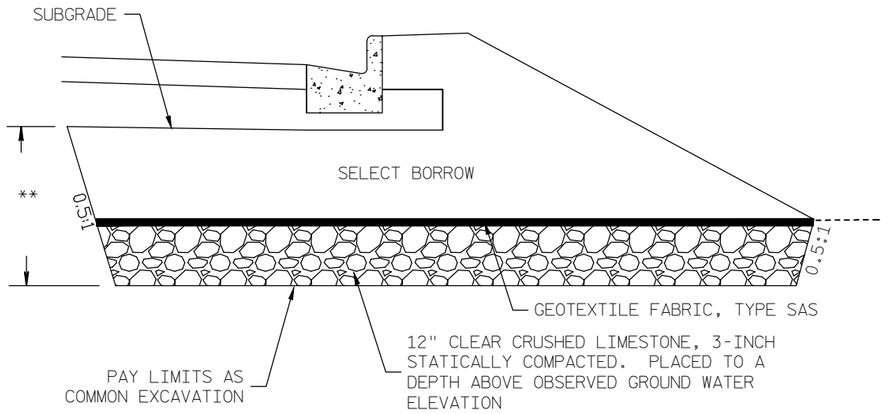


FINISHED TYPICAL SECTION – CTH P

STA. 101+92.00 TO STA. 102+95.00

PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	FINISHED TYPICAL SECTIONS	SHEET - 5	E

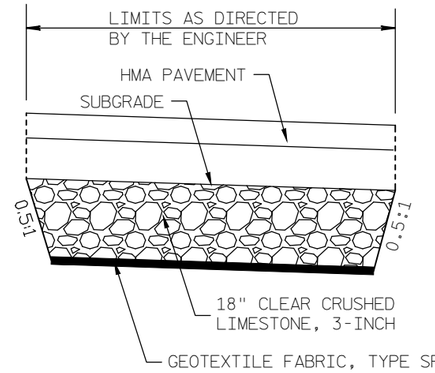




**REMOVE ORGANIC SOILS TO THE DEPTH SHOWN ON THE CROSS SECTIONS OR AS DIRECTED BY THE ENGINEER.

COMMON EXCAVATION

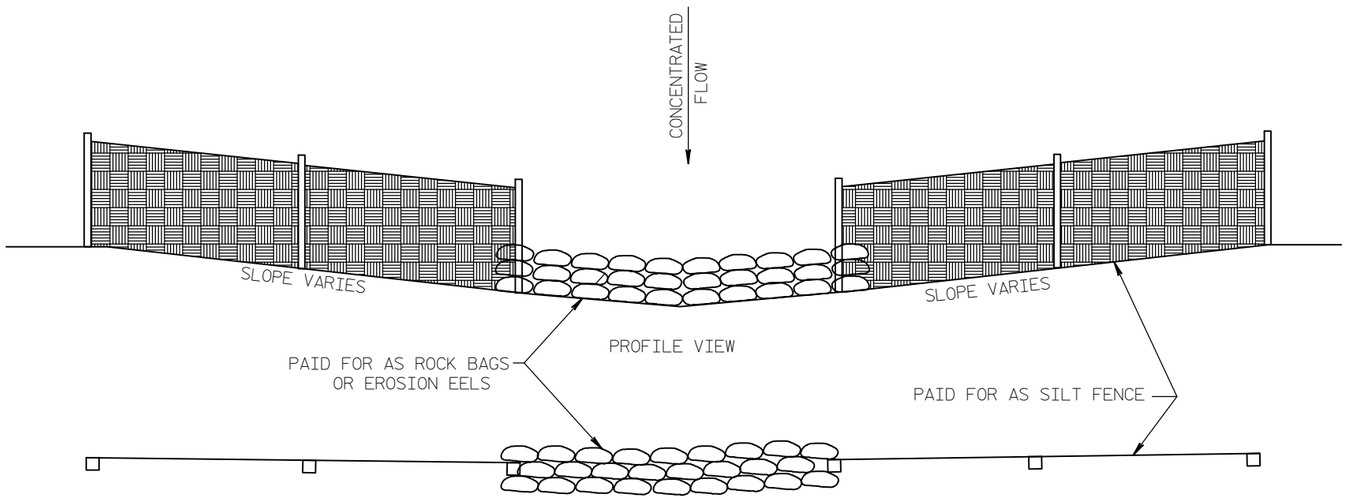
AS SHOWN ON THE CROSS SECTIONS



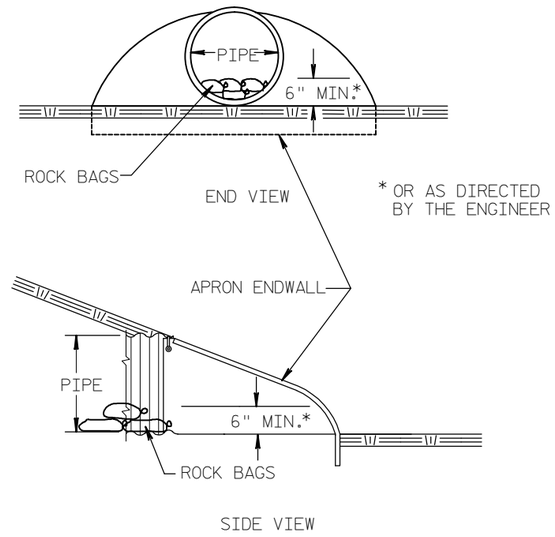
EXCAVATION BELOW SUBGRADE

AS DIRECTED BY THE ENGINEER

NOTES:
1. EXCAVATE AREA TO A DEPTH OF 18" BELOW SUBGRADE.
2. VIBRATORY CONSOLIDATE WITH SMOOTH DRUM ROLLER LOOSE BACKFILL AT BOTTOM OF EXCAVATION UNDER OBSERVATION OF ENGINEER.
3. IF FURTHER INSTABILITY IS OBSERVED, CEASE FURTHER VIBRATORY COMPACTION.
4. PLACE GEOTEXTILE FABRIC, TYPE SR.
5. PLACE FIRST 12-INCH LIFT AND STATICALLY ROLL GRANULAR BACKFILL MATERIAL. PLACE SECOND LIFT AND STATICALLY ROLL GRANULAR BACKFILL MATERIAL WITH SMOOTH DRUM ROLLER.
6. IF INSTABILITY IS OBSERVED CEASE COMPACTION EFFORTS AND CONSULT GEOTECHNICAL ENGINEER.

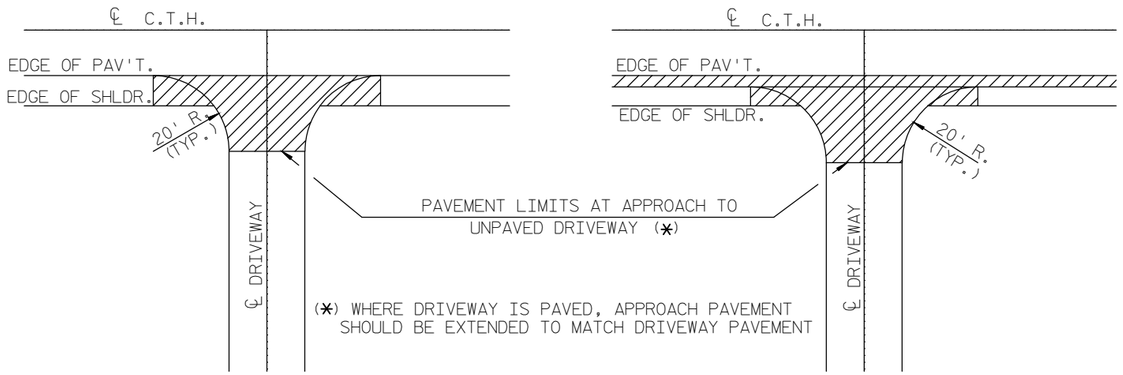


DITCH CHECK DETAIL



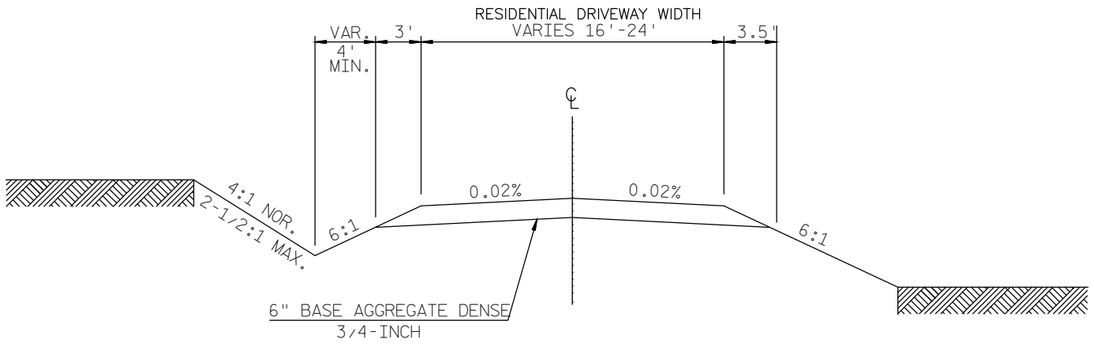
CULVERT PIPE CHECK

PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	PLAN: CONSTRUCTION DETAILS	SHEET 6	E

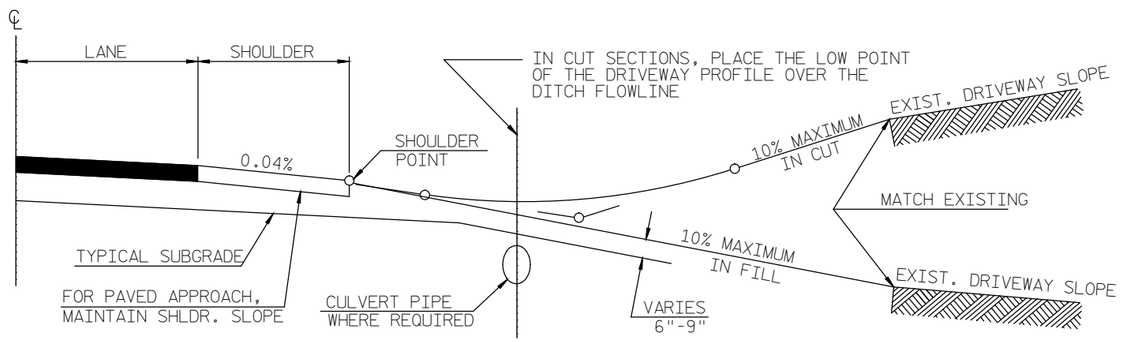


PLAN VIEW

PLAN VIEW
(PAVED SHOULDER ON HIGHWAY)

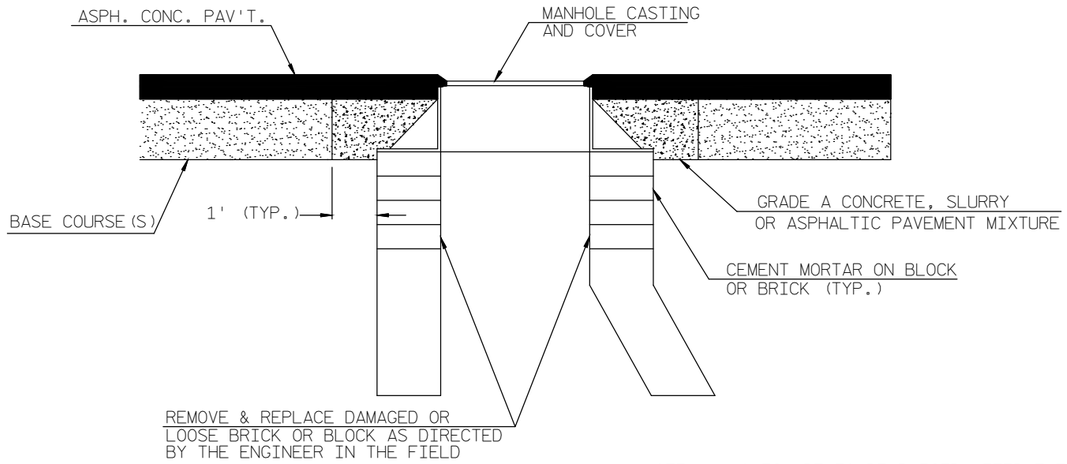


TYPICAL CROSS SECTION FOR PRIVATE DRIVE OR FIELD ENTRANCE



TYPICAL DRIVEWAY PROFILES

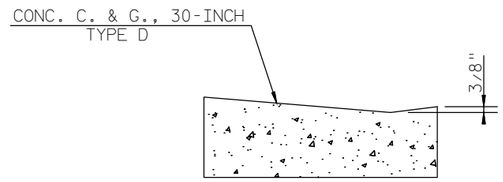
RURAL DRIVEWAY INTERSECTION DETAILS



NOTE: 12 INCHES OR LESS OF ADJUSTMENT SHALL BE PAID FOR AS "ADJUSTING MANHOLE COVERS". GREATER THAN 12 INCHES OF ADJUSTMENT SHALL BE PAID FOR AS "RECONSTRUCTING MANHOLE".

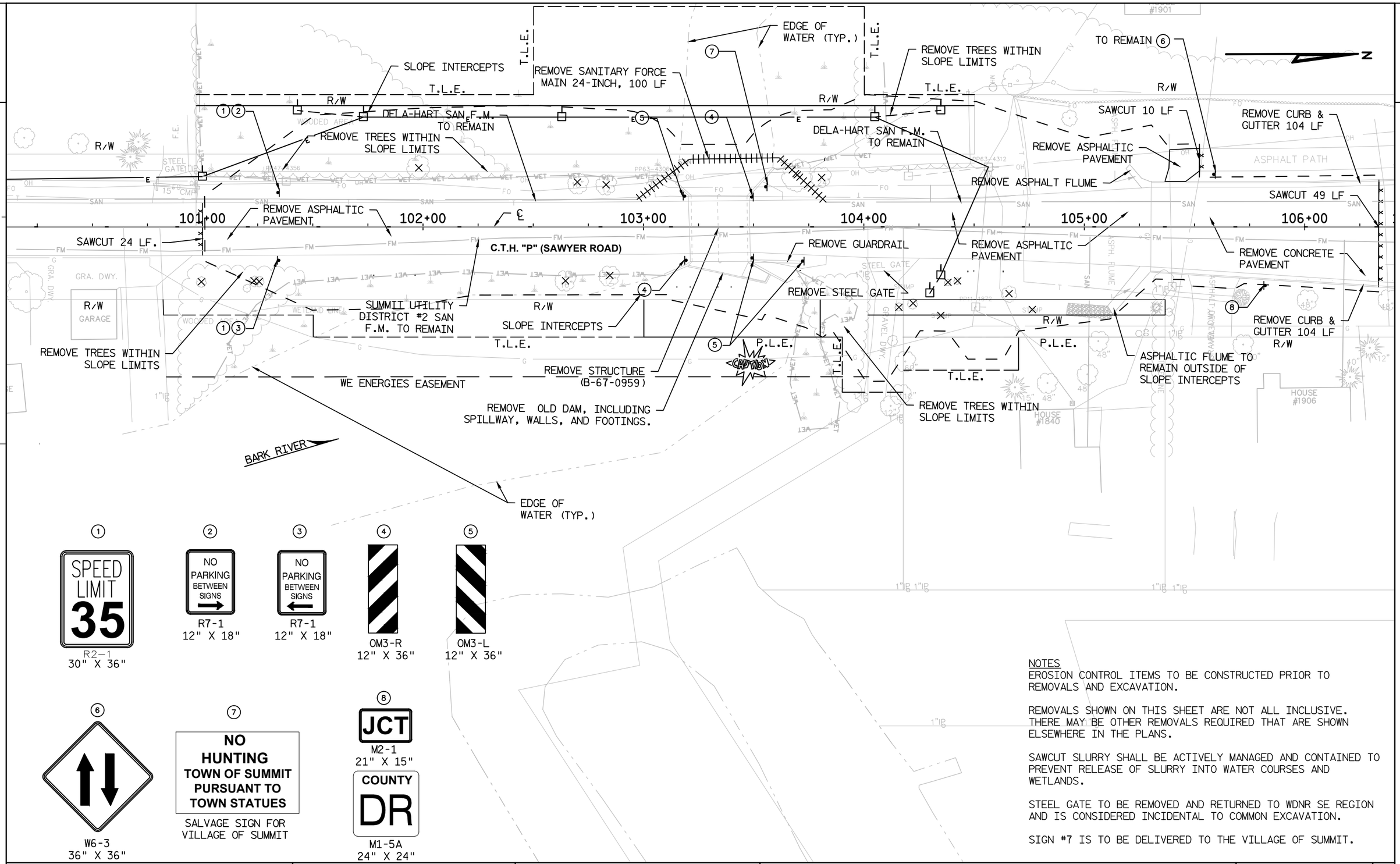
NOTE: MANHOLES ARE TO BE RAISED AFTER THE LOWER ASPHALTIC LAYERS ARE PLACED AND BEFORE THE FINISHED SURFACE LAYER. DISTURBED ASPHALTIC PAVEMENT SHALL BE REPLACED WITH GRADE A CONCRETE, SLURRY OR ASPHALTIC PAVEMENT MIXTURE SHALL BE INCIDENTAL TO BID ITEM OF ADJUSTING MANHOLE COVERS.

ADJUSTING MANHOLE COVERS



CURB AND GUTTER DETAIL AT DRIVEWAYS

PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	PLAN: CONSTRUCTION DETAILS	SHEET 7	E



① SPEED LIMIT 35
R2-1
30" X 36"

② NO PARKING BETWEEN SIGNS →
R7-1
12" X 18"

③ NO PARKING BETWEEN SIGNS ←
R7-1
12" X 18"

④
OM3-R
12" X 36"

⑤
OM3-L
12" X 36"

⑥
W6-3
36" X 36"

⑦ NO HUNTING TOWN OF SUMMIT PURSUANT TO TOWN STATUES
SALVAGE SIGN FOR VILLAGE OF SUMMIT

⑧ JCT
M2-1
21" X 15"

COUNTY DR
M1-5A
24" X 24"

NOTES

EROSION CONTROL ITEMS TO BE CONSTRUCTED PRIOR TO REMOVALS AND EXCAVATION.

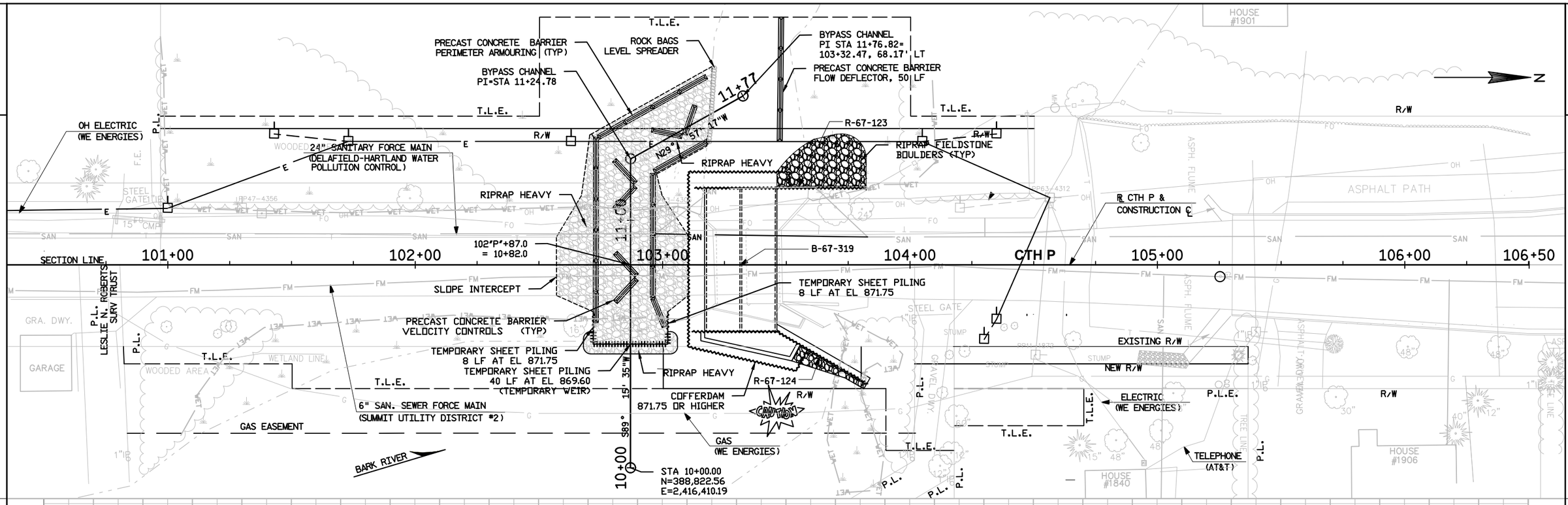
REMOVALS SHOWN ON THIS SHEET ARE NOT ALL INCLUSIVE. THERE MAY BE OTHER REMOVALS REQUIRED THAT ARE SHOWN ELSEWHERE IN THE PLANS.

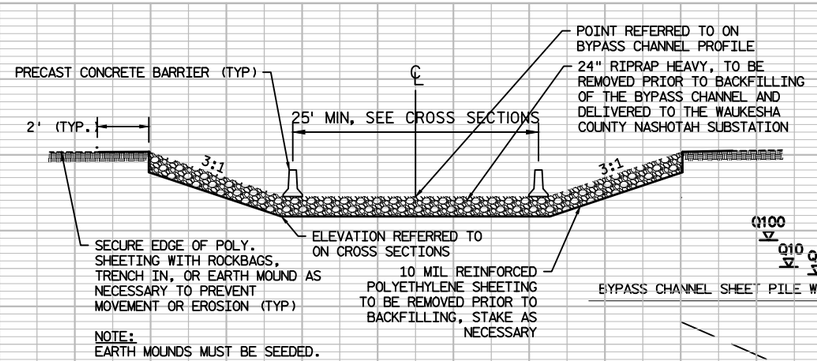
SAWCUT SLURRY SHALL BE ACTIVELY MANAGED AND CONTAINED TO PREVENT RELEASE OF SLURRY INTO WATER COURSES AND WETLANDS.

STEEL GATE TO BE REMOVED AND RETURNED TO WDNR SE REGION AND IS CONSIDERED INCIDENTAL TO COMMON EXCAVATION.

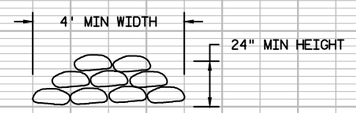
SIGN #7 IS TO BE DELIVERED TO THE VILLAGE OF SUMMIT.

PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	REMOVAL PLAN	SHEET 8	E

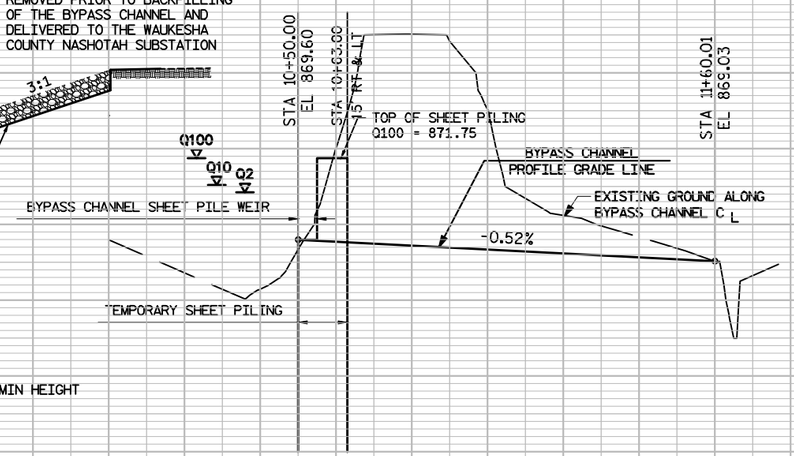




TYPICAL SECTION
BYPASS CHANNEL



CROSS SECTION
ROCK BAG LEVEL SPREADER DETAIL



CONSTRUCTION SEQUENCE WITH BYPASS CHANNEL

STAGE 1:
- PLACE SANDBAGS (INCIDENTAL) AT DOWNSTREAM END OF BYPASS CHANNEL WORK AREAS TO KEEP BACKWATER FROM FLOODING WORK AREA.
- INSTALL TEMPORARY SHEET PILING AT UPSTREAM END OF BYPASS CHANNEL
- EXCAVATE BYPASS CHANNEL.
- PLACE CHANNEL LINING AND CONCRETE BARRIER BLOCKS FOR SCOUR PROTECTION AND ENERGY DISSIPATION.
- PLACE BYPASS CHANNEL ROCK BAG LEVEL SPREADER AT DOWNSTREAM RIVER EDGE.
- SET TOP OF SHEET PILING FOR BYPASS WEIR (40 LF) TO 869.60. REMAINDER OF SHEET PILING AT 871.75 OR HIGHER.
- INSTALL SHEET PILING FOR BOX CULVERT COFFER DAM AND R-67-123 & R-67-124. TOP OF SHEETING AT 871.75 OR HIGHER.
- REMOVE OLD STRUCTURE AND SPILLWAY. DEWATER WORK AREA AS NECESSARY.
- CONSTRUCT B-67-319, R-67-123, R-67-124 AND DAM/SPILLWAY

STAGE 2:
- REMOVE COFFERDAM AND DIVERT FLOW THRU B-67-319. ADJUST TEMPORARY WEIR TO A HIGHER ELEVATION AS NECESSARY TO CUT OFF FLOW OF WATER THRU BYPASS CHANNEL.
- REMOVE RIPRAP HEAVY, CONCRETE BARRIER AND POLYETHYLENE SHEETING PRIOR TO BACKFILLING BYPASS CHANNEL.
- REMOVE, DRY ALL SATURATED SOILS, OR PLACE CRUSHED LIMESTONE 3-INCH IN ACCORDANCE WITH EXCAVATION BELOW SUBGRADE CONSTRUCTION DETAIL TO ALLOW FOR COMPACTION OF DAM EMBANKMENT.
- REMOVE TEMPORARY SHEET PILING
- SEE EROSION CONTROL PLANS FOR BYPASS CHANNEL RESTORATION REQUIREMENTS
- CONSTRUCT R-67-125, R-67-126
- PLACE RIPRAP FIELDSTONE BOULDERS ALONG FACE OF RETAINING WALLS.

STAGE 3:
- COMPLETE MARSH EXCAVATION, PLACE SELECT BORROW AND COMPLETE ROADWAY FILLS.
- REMOVE EXISTING PAVEMENT.
- CONSTRUCT STORM SEWER OUTFALLS.
- STABILIZE EMBANKMENT SLOPES.
- CONSTRUCT REMAINDER OF STORM SEWER.
- CONSTRUCT ROADWAY APPROACHES.

PROJECT NO: 2417-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	CONSTRUCTION DETAIL - BYPASS CHANNEL	SHEET 9	E

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	.15 .30	.28 .41	.38 .56
MEDIAN STRIP-	.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-			.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 = 1.58 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 1.004 ACRES

NOTES:

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

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

WETLANDS EXIST FROM STA 101+00 TO 104+00, LT AND 101+50 TO 104+00, RT. THE CONTRACTOR SHALL NOT DISTURB AREAS OUTSIDE THE SLOPE INTERCEPT IN THESE AREAS.

DISTURBED AREAS, EXCEPT THE DRIVING LANES AND THE SHOULDERS, ARE TO BE FERTILIZED, SEEDED AND COVERED WITH EROSION MAT. SEEDING SHALL CONSIST OF SEED MIXTURE NUMBER 10 WITH A NURSE CROP IN ACCORDANCE WITH SECTION 630 OF THE STANDARD SPECIFICATIONS. FERTILIZER SHALL BE TYPE B. EROSION MAT CLASS II TYPE C SHALL BE USED ON ALL SLOPES EXCEPT EROSION MAT CLASS I TYPE A SHALL BE USED WITH 8 FEET OF THE BACK OR CURB OR EDGE OF GRAVEL SHOULDER.

DUE TO THE SENSITIVE NATURE OF THE WETLAND AND WATERWAY, TEMPORARY SEED OR PERMANENT RESTORATION SHALL OCCUR NO LATER THAN 24 HOURS AFTER ANY SOIL GRADING ACTIVITY OR DISTURBANCE. ALL STOCK PILES SHALL BE SEEDED SAME DAY OR COVERED WITH PLASTIC.

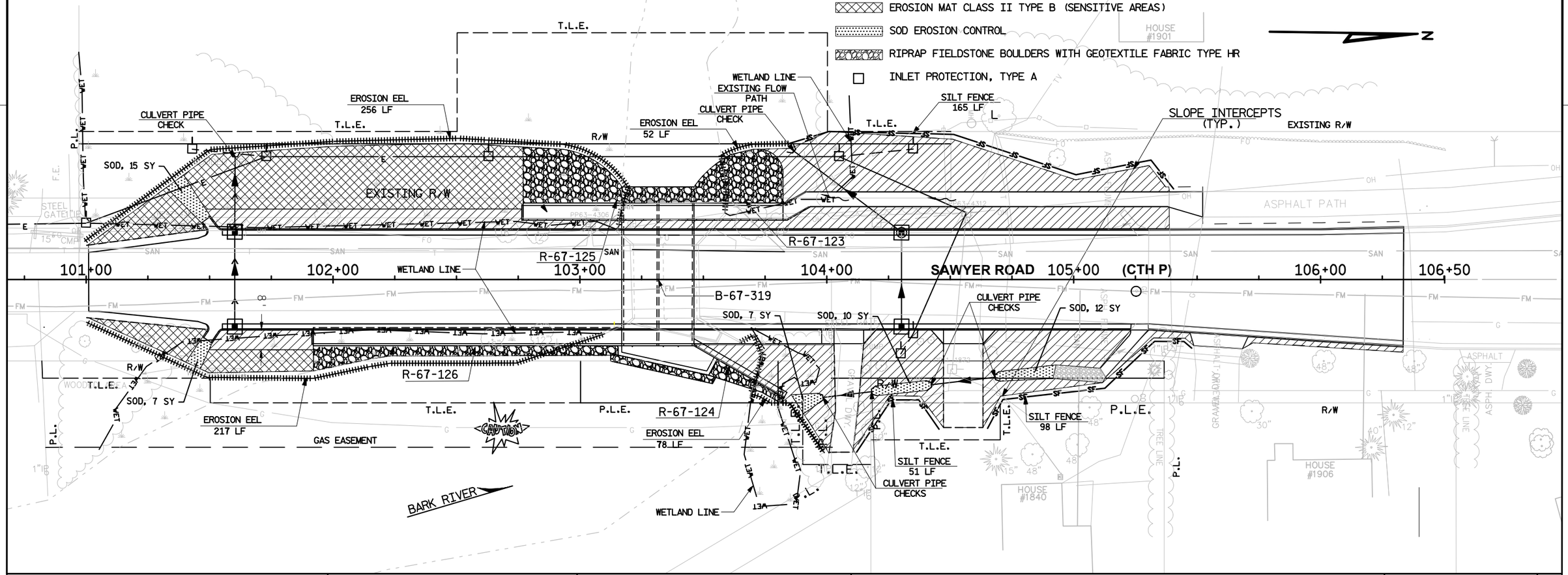
DISTURBANCE OF WETLAND AREAS OUTSIDE OF THE SLOPE INTERCEPTS IS NOT PERMITTED AS A CONDITION OF PERMIT COVERAGE.

EROSION EELS SHALL BE PLACED BY HAND.

THE RUNOFF COEFFICIENTS OF SURFACE DRAINAGE AT THE PROJECT SITE WILL NOT BE CHANGED FROM BEFORE TO AFTER CONSTRUCTION.

LEGEND:

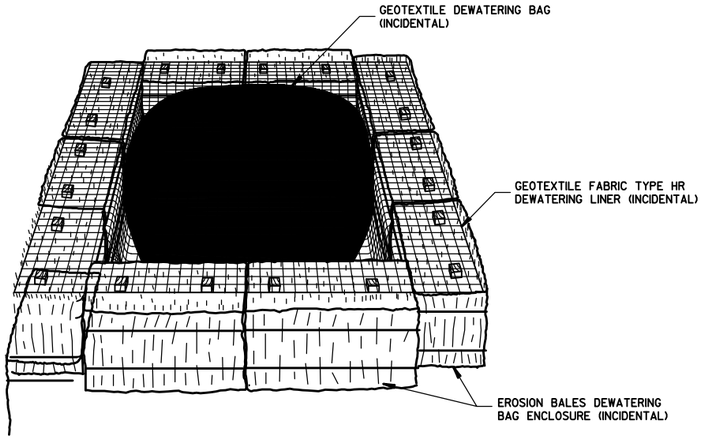
- EROSION EEL
- SILT FENCE
- EROSION MAT URBAN CLASS I TYPE A (TURF AREAS)
- EROSION MAT CLASS II TYPE B (SENSITIVE AREAS)
- SOD EROSION CONTROL
- RIPRAP FIELDSTONE BOULDERS WITH GEOTEXTILE FABRIC TYPE HR
- INLET PROTECTION, TYPE A



PROJECT NO: 2417-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	CONSTRUCTION DETAILS - EROSION CONTROL	SHEET 10	E

FILE NAME : S:\CAD PROJECTS\403-14 CTH P\PLAN SHEETS\27140470_EC.DWG PLOT DATE : 2/5/2014 2:01 PM PLOT BY : CRAIG DONZE PLOT NAME : ----------

WISDOT/CADDS SHEET 40



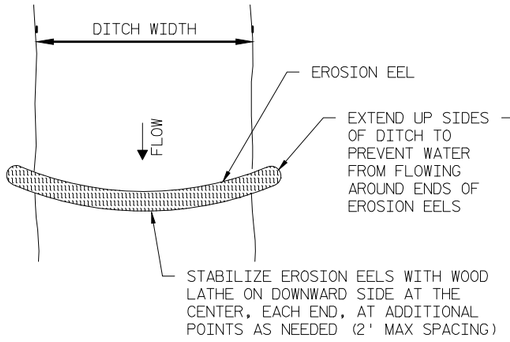
NOTES:
1. CONTRACTOR SHALL PUMP WATER FROM WORK AREA EXCAVATION TO BASIN PRIOR TO DISCHARGING.
2. BASIN SHALL BE KEPT LESS THAN 10% FULL OF SEDIMENT. GEOTEXTILE FABRIC AND SEDIMENTS SHALL BE DISPOSED OF BY THE CONTRACTOR OFF THE PROJECT SITE.
3. GEOTEXTILE SHALL BE REPLACED AS NEEDED.
4. GEOTEXTILE FABRIC, TYPE HR AND EROSION BALES TO BE PAID SEPERATELY.
5. REMOVAL AND REPLACEMENT OF THE SEDIMENT BAG SHALL BE CONSIDERED INCIDENTAL TO CONCRETE ITEMS AND DEWATERING.
6. LOCATION OF TEMPORARY SETTLING BASIN SHALL BE APPROVED BY ENGINEER IN THE FIELD.

STORAGE VOLUME (IN C.F.) = 16 X GPM (PUMP RATE)

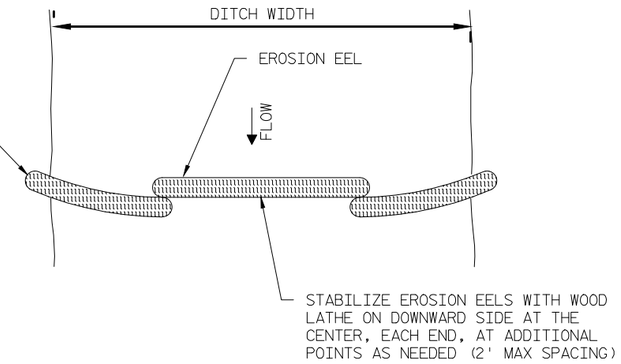
EXAMPLE:
CONTRACTOR INDICATES PUMP CAPABLE OF 50 GPM
HEIGHT OF BALES = 1.5 FT.

SOLUTION:
SV (IN C.F.) = 16 X 50
SV = 800 C.F.
800 C.F. / 1.5 FT. = 533 S.F.
USE A 20 FT. X 27 FT. BASIN

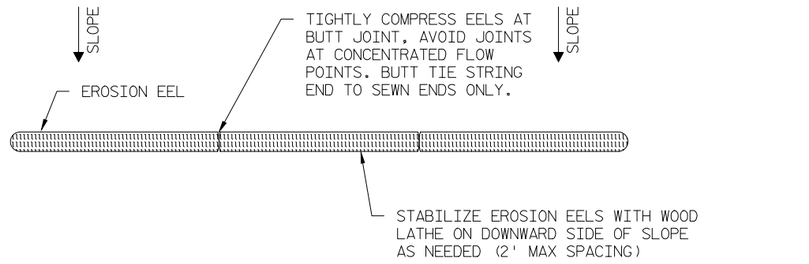
TEMPORARY SETTLING & DEWATERING BAG STORAGE BASIN



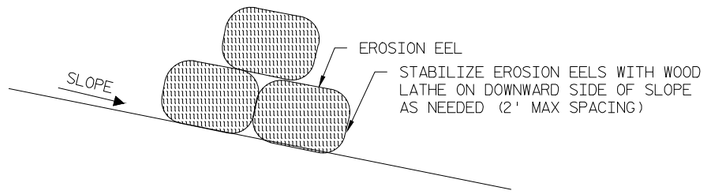
EROSION EEL
DITCH CHECK INSTALLATION



EROSION EEL
DITCH > 8' IN WIDTH



EROSION EEL
TOE OF SLOPE INSTALLATION



EROSION EEL
LENGTH > 20' @ 4:1 OR STEEPER

NOTES:

ALL DISTURBED AREAS ASSOCIATED WITH THE BYPASS CHANNEL SHALL BE RESTORED TO ORIGINAL ELEVATIONS AND CONTOURS, SEEDED AND COVERED WITH EROSION MAT. SEEDING SHALL CONSIST OF SEED MIXTURE NUMBER 10 WITH A NURSE CROP IN ACCORDANCE WITH SECTION 630 OF THE STANDARD SPECIFICATIONS. FERTILIZER SHALL NOT BE UTILIZED WITHIN WETLAND AREAS.

DUE TO THE SENSITIVE NATURE OF THE WETLAND AND WATERWAY, TEMPORARY SEED OR PERMANENT RESTORATION SHALL OCCUR NO LATER THAN 24 HOURS AFTER ANY SOIL GRADING ACTIVITY OR DISTURBANCE.

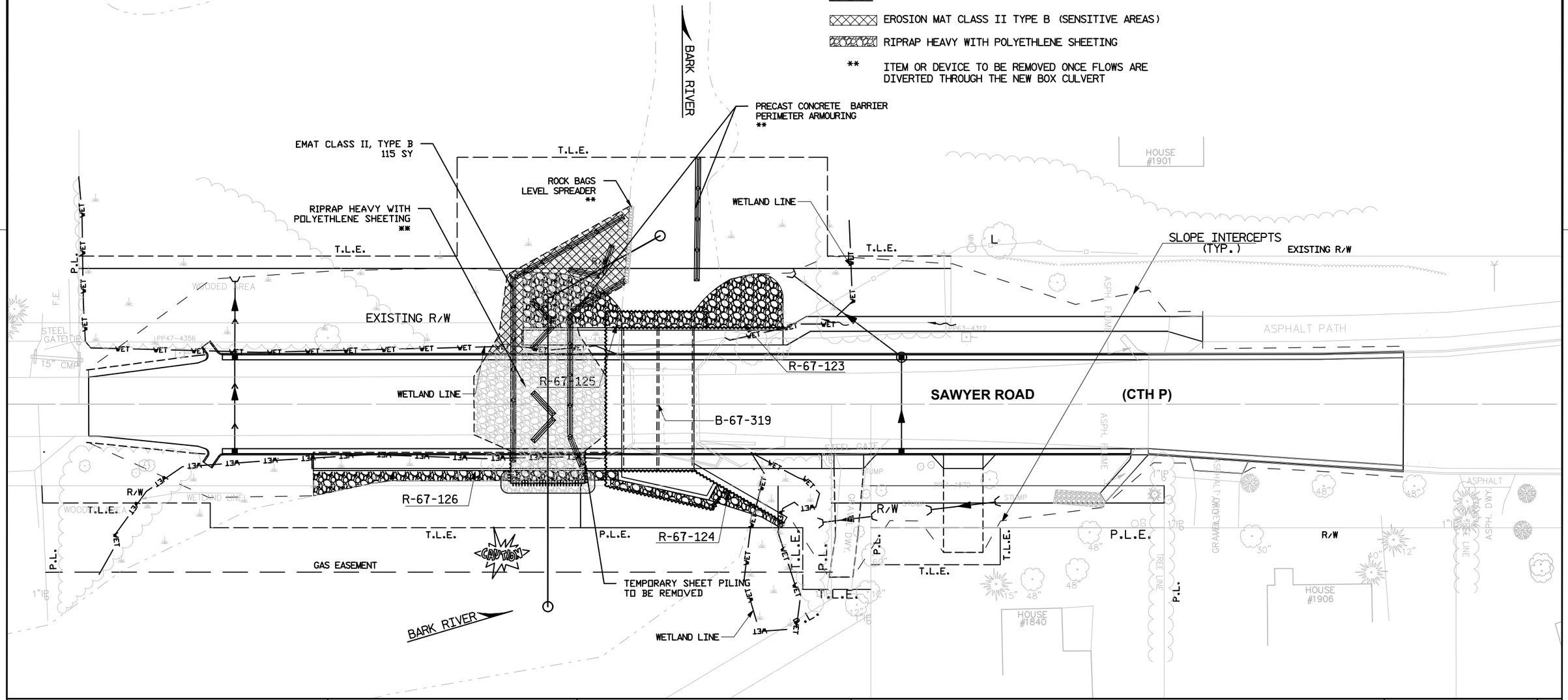
DISTURBANCE OF WETLAND AREAS OUTSIDE OF THE SLOPE INTERCEPTS IS NOT PERMITTED AS A CONDITION OF PERMIT COVERAGE.

LEGEND:

EROSION MAT CLASS II TYPE B (SENSITIVE AREAS)

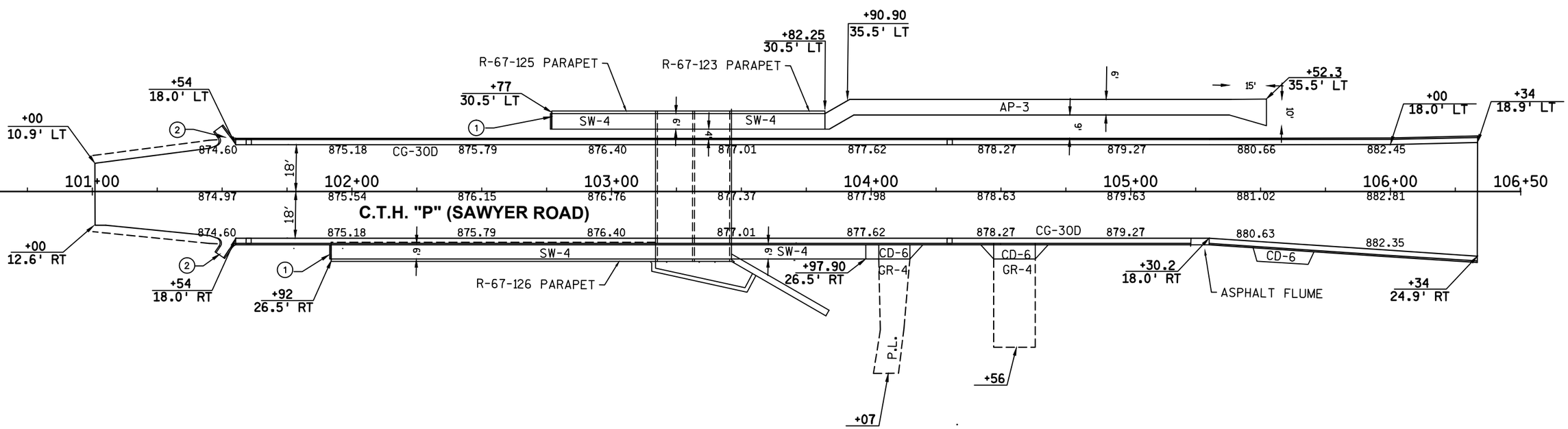
RIPRAP HEAVY WITH POLYETHLENE SHEETING

** ITEM OR DEVICE TO BE REMOVED ONCE FLOWS ARE DIVERTED THROUGH THE NEW BOX CULVERT



PROJECT NO: 2417-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	CONSTRUCTION DETAILS - DIVERSION CHANNEL RESTORATION	SHEET 12	E

2



LEGEND

CG-30D	CONCRETE CURB & GUTTER 30-INCH TYPE D
SW-4	CONCRETE SIDEWALK 4-INCH
CD-6	CONCRETE DRIVEWAY 6-INCH
AP-3	ASPHALT PATH 3-INCH
GR-4	GRAVEL DRIVEWAY 4-INCH
	LEVEL LANDING
(1)	PEDESTRIAN CURB
(2)	ASPHALT FLUME
	CURB INLET

PAVING DETAIL NOTES:

1. CURB ALIGNMENT AND ELEVATION INFORMATION IS TO THE FLANGE LINE.

PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	PAVING DETAIL	SHEET 13	E

2

① SPEED LIMIT 35
R2-1
30" X 36"

② NO STOPPING OR STANDING
R7-4-L
18"X24"

③ NO STOPPING OR STANDING
R7-4-R
18"X24"

④ OM3-R
12" X 36"

⑤ OM3-L
12" X 36"

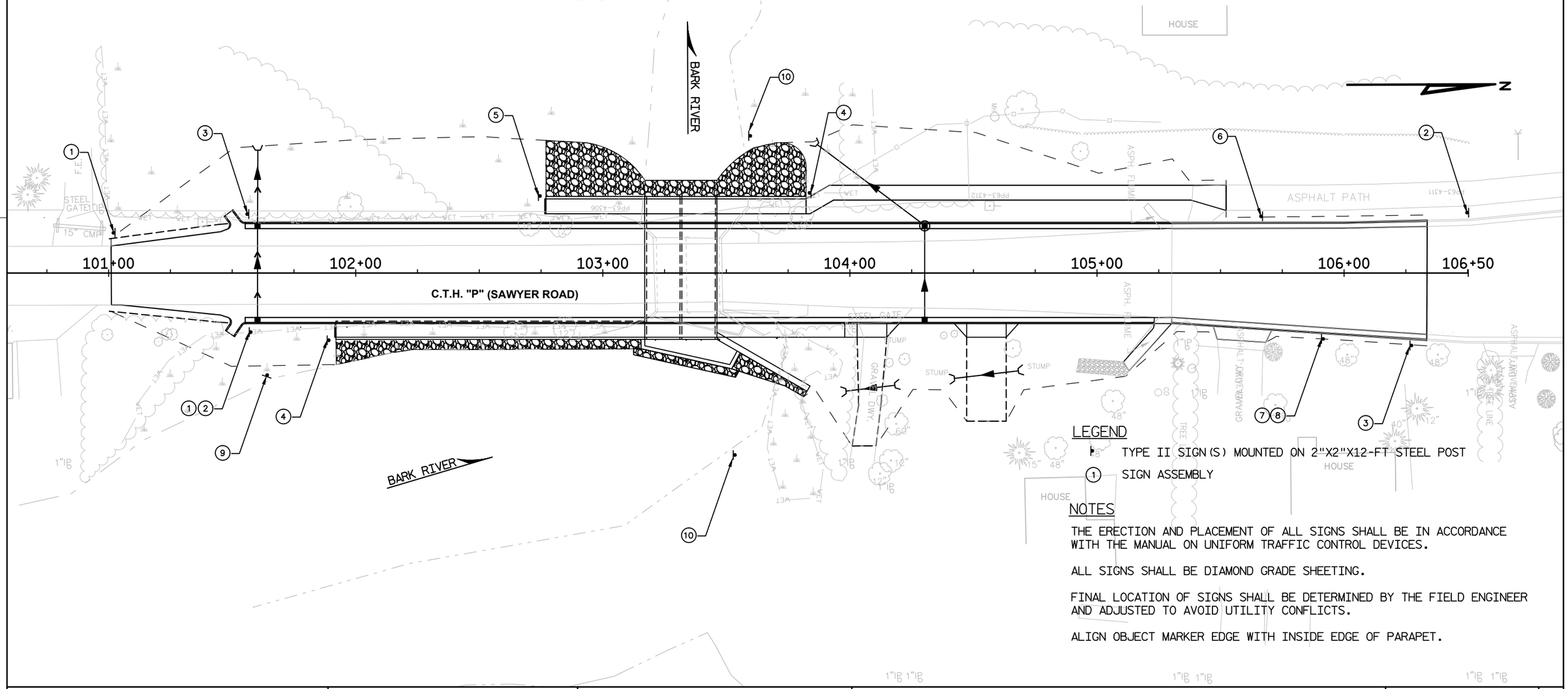
⑥ W6-3
36" X 36"
EXISTING SIGN TO REMAIN

⑦ JCT
M2-1
21" X 15"

⑧ COUNTY DR
M1-5A
24" X 24"

⑨ DAM
36" X 36"
11" BLACK LETTERS
3" INTERNATIONAL ORANGE BORDER ON WHITE BACKGROUND

⑩ TAKE OUT
24" X 30"
9" BLACK LETTERS
3" INTERNATIONAL ORANGE BORDER ON WHITE BACKGROUND



LEGEND

TYPE II SIGN(S) MOUNTED ON 2"X2"X12-FT STEEL POST

① SIGN ASSEMBLY

NOTES

THE ERECTION AND PLACEMENT OF ALL SIGNS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

ALL SIGNS SHALL BE DIAMOND GRADE SHEETING.

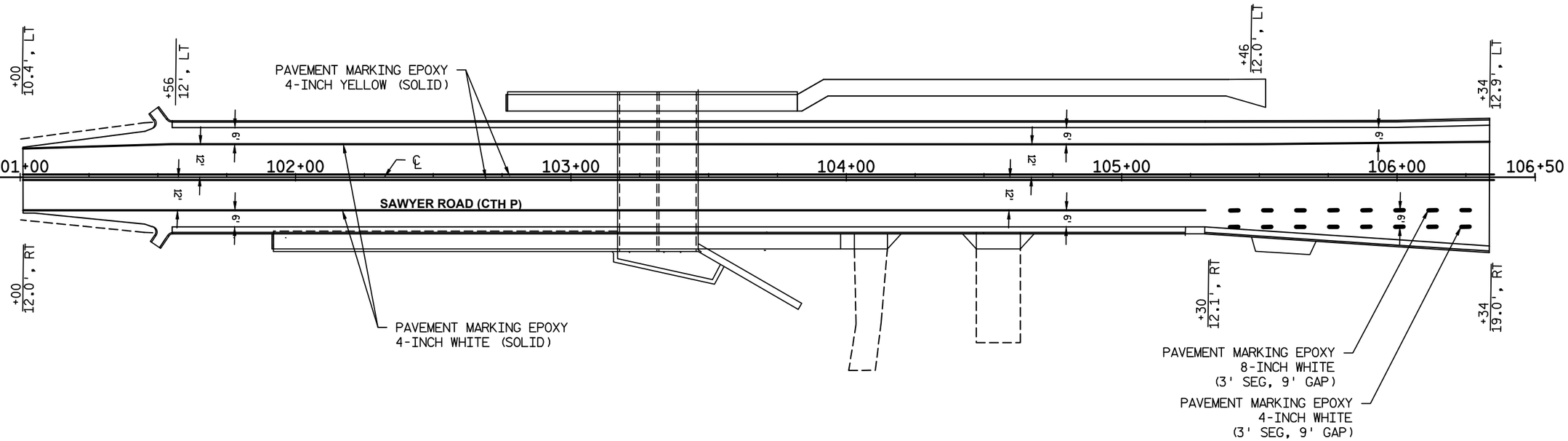
FINAL LOCATION OF SIGNS SHALL BE DETERMINED BY THE FIELD ENGINEER AND ADJUSTED TO AVOID UTILITY CONFLICTS.

ALIGN OBJECT MARKER EDGE WITH INSIDE EDGE OF PARAPET.

PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	PERMANENT SIGNING	SHEET 14	E

2

N



PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	PAVEMENT MARKING	SHEET 15	E

DETOUR PLAN NOTES:

ALL EXISTING SIGN MESSAGES THAT CONFLICT WITH TRAFFIC CONTROL DETOUR SIGNS SHALL BE COVERED OR REMOVED.

SEE SDD "DETOUR SIGNING FOR MAINLINE CLOSURES" FOR SIGN SPACING AND LOCATIONS.

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

PORTABLE CHANGEABLE MESSAGE SIGN SHALL BE INSTALLED NOT LESS THAN TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS COMMENCING AND MAY BE REMOVED ONCE THE DETOUR AND ROAD CLOSURE SIGNAGE IS IN PLACE.

PORTABLE CHANGEABLE MESSAGE COPY PRIOR TO CONSTRUCTION:

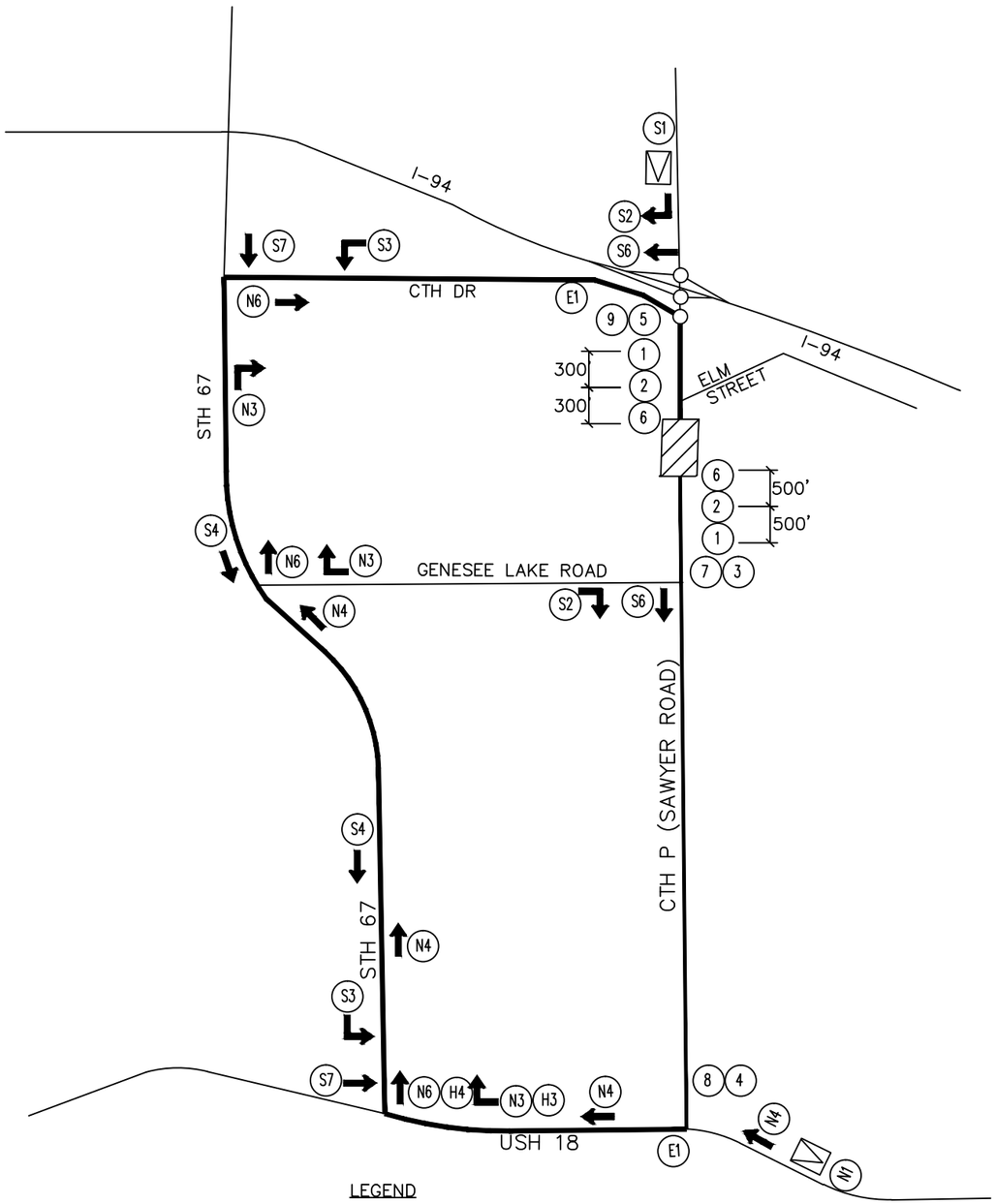
MESSAGE (N1) (S1)

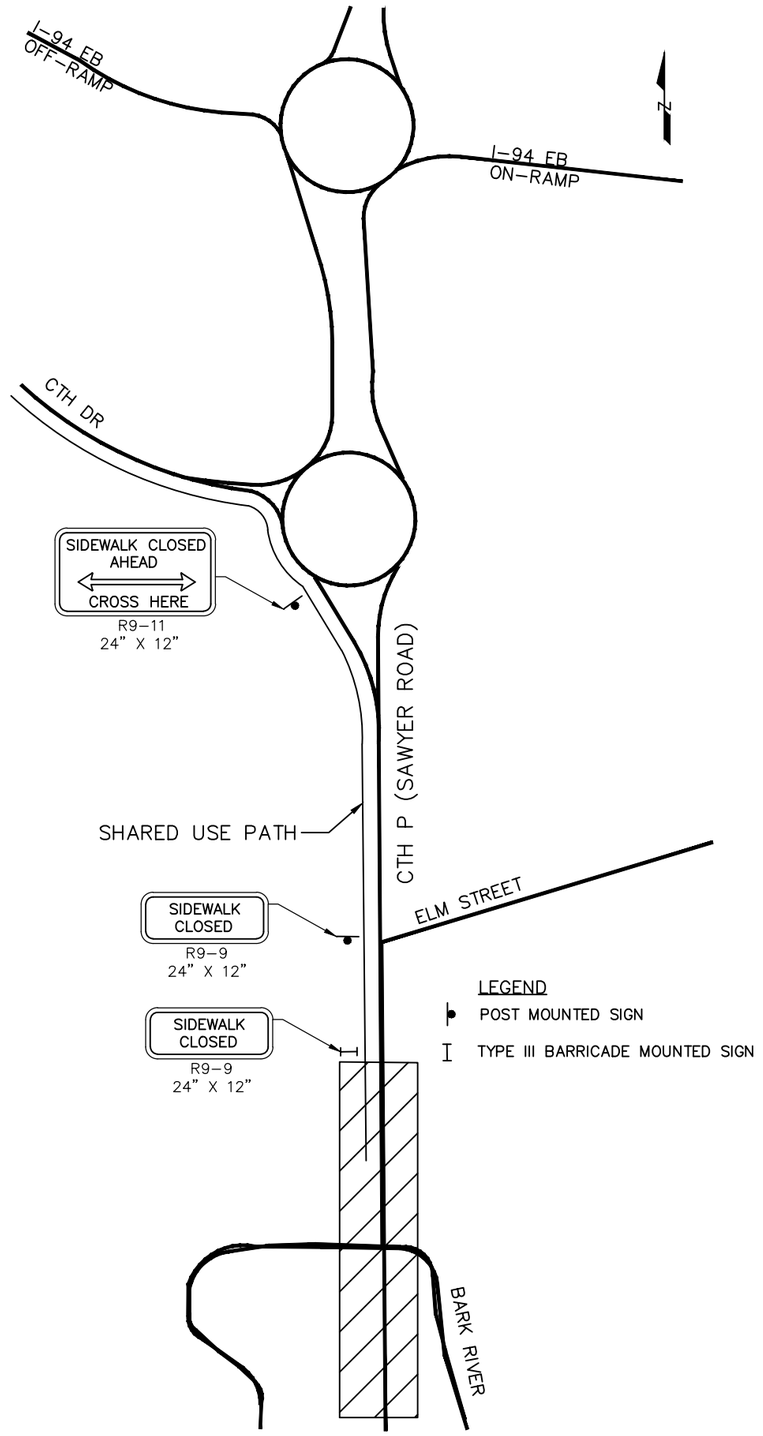
SAWYER RD
CLOSED AT
BARK RIVER
BEGINS
{DATE}
USE ALT ROUTE

PORTABLE CHANGEABLE MESSAGE COPY

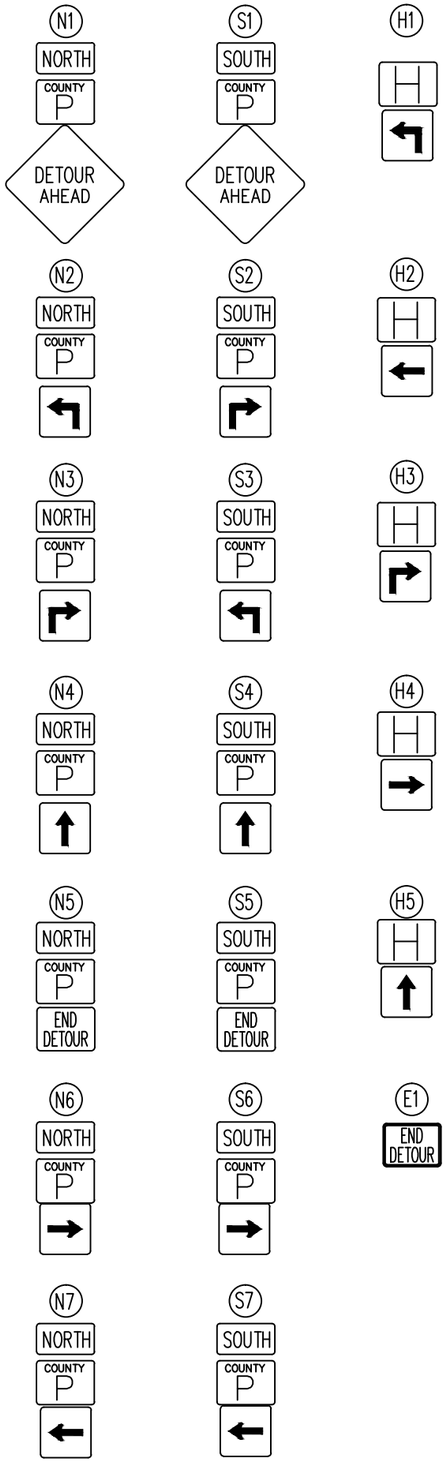
MESSAGE (N1) (S1)

SAWYER RD
CLOSED AT
BARK RIVER
BRIDGE
OUT
USE ALT ROUTE





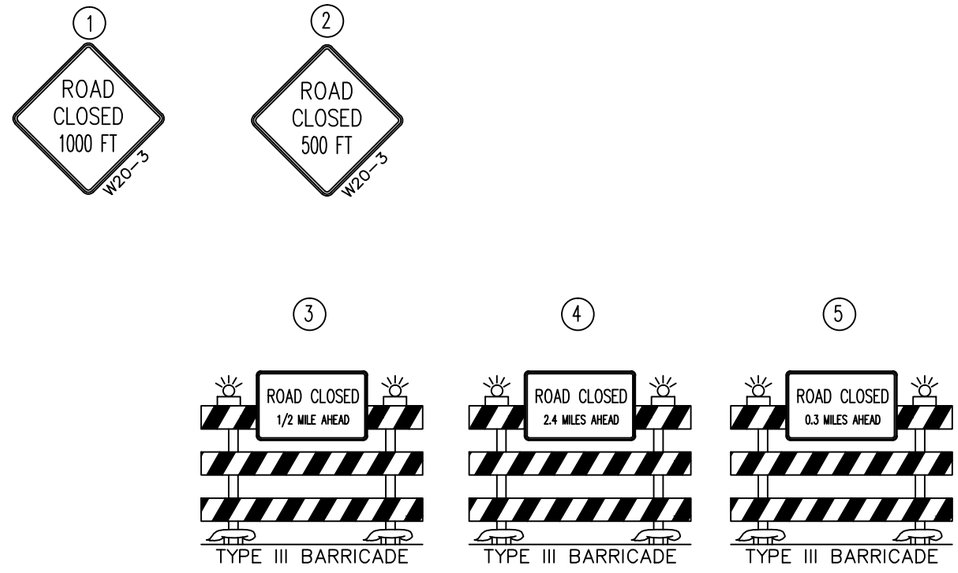
PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	DETOUR & SIDEWALK CLOSURE PLAN	SHEET 16 E

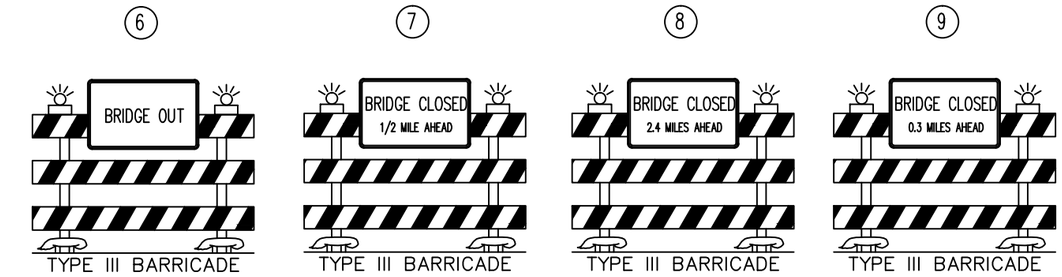


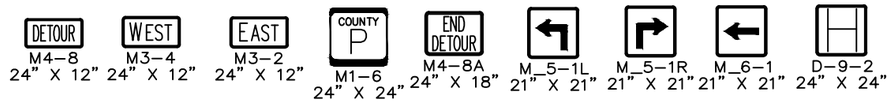
DETOUR SIGNAGE NOTES:

ALL M3 SERIES SIGNS WHICH ARE PART OF THE DETOUR ROUTE MARKER SIGNING ASSEMBLY OR ATTACHED TO ANY WARNING SIGN SHALL BE BLACK LETTERING ON A WHITE BACKGROUND.

ALL SIGN CLUSTERS TO INCLUDE M4-8 "DETOUR" SIGN AT THE TOP OF THE SIGN GROUP.







PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	DETOUR SIGNAGE	SHEET 17 E

DATE 30SEP15 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	2714-04-70 QUANTITY
0010	201.0105	Clearing **P**	STA	5.000	5.000
0020	201.0205	Grubbing **P**	STA	5.000	5.000
0030	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 01. 103+32 (B-67-959)	LS	1.000	1.000
0040	204.0150	Removing Curb & Gutter **P**	LF	208.000	208.000
0050	204.0165	Removing Guardrail **P**	LF	25.000	25.000
0060	204.9090.S	Removing (item description) 01. SANITARY FORCE MAIN 24-INCH	LF	100.000	100.000
0070	205.0100	Excavation Common	CY	3,973.000	3,973.000
0080	206.2000	Excavation for Structures Culverts (structure) 01. B-67-319	LS	1.000	1.000
0090	206.3000	Excavation for Structures Retaining Walls (structure) 02. R-67-123	LS	1.000	1.000
0100	206.3000	Excavation for Structures Retaining Walls (structure) 03. R-67-124	LS	1.000	1.000
0110	206.3000	Excavation for Structures Retaining Walls (structure) 04. R-67-125	LS	1.000	1.000
0120	206.3000	Excavation for Structures Retaining Walls (structure) 05. R-67-126	LS	1.000	1.000
0130	206.5000	Cofferdams (structure) 01. B-67-319	LS	1.000	1.000
0140	208.1100	Select Borrow	CY	4,615.000	4,615.000
0150	210.0100	Backfill Structure **P**	CY	367.000	367.000
0160	213.0100	Finishing Roadway (project) 01. 2714-04-70	EACH	1.000	1.000
0170	305.0110	Base Aggregate Dense 3/4-Inch	TON	185.000	185.000
0180	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,805.000	1,805.000
0190	416.0160	Concrete Driveway 6-Inch	SY	40.000	40.000
0200	455.0105	Asphaltic Material PG58-28	TON	43.000	43.000
0210	455.0605	Tack Coat	GAL	151.000	151.000
0220	460.1101	HMA Pavement Type E-1	TON	708.000	708.000
0230	465.0105	Asphaltic Surface	TON	32.000	32.000
0240	465.0315	Asphaltic Flumes	SY	25.000	25.000
0250	504.0100	Concrete Masonry Culverts **P**	CY	271.000	271.000
0260	504.0500	Concrete Masonry Retaining Walls **P**	CY	101.000	101.000
0270	505.0410	Bar Steel Reinforcement HS Culverts **P**	LB	1,435.000	1,435.000
0280	505.0610	Bar Steel Reinforcement HS Coated Culverts **P**	LB	22,507.000	22,507.000
0290	505.0615	Bar Steel Reinforcement HS Coated Retaining Walls **P**	LB	24,673.000	24,673.000
0300	512.0500	Piling Steel Sheet Permanent Delivered	SF	10,192.000	10,192.000
0310	512.0600	Piling Steel Sheet Permanent Driven	SF	10,192.000	10,192.000
0320	512.1000	Piling Steel Sheet Temporary	SF	2,850.000	2,850.000
0330	513.4080	Railing Tubular Special (structure) 03. R-67-124	LS	1.000	1.000
0340	513.7015	Railing Steel Type C3 (structure) 01. B-67-319	LS	1.000	1.000
0350	513.7015	Railing Steel Type C3 (structure) 02. R-67-123	LS	1.000	1.000
0360	513.7015	Railing Steel Type C3 (structure) 04. R-67-125	LS	1.000	1.000
0370	513.7015	Railing Steel Type C3 (structure) 05. R-67-126	LS	1.000	1.000
0380	516.0500	Rubberized Membrane Waterproofing	SY	32.000	32.000
0390	521.0112	Culvert Pipe Corrugated Steel 12-Inch **P**	LF	46.000	46.000

3

DATE 30SEP15 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	2714-04-70 QUANTITY
0400	521.1012	Apron Endwalls for Culvert Pipe Steel 12-Inch	EACH	4.000	4.000
0410	522.1018	Apron Endwalls for Culvert Pipe Reinforced Concrete 18-Inch	EACH	2.000	2.000
0420	601.0411	Concrete Curb & Gutter 30-Inch Type D **P**	LF	960.000	960.000
0430	601.0600	Concrete Curb Pedestrian **P**	LF	12.000	12.000
0440	602.0405	Concrete Sidewalk 4-Inch	SF	2,030.000	2,030.000
0450	603.8000	Concrete Barrier Temporary Precast Delivered	LF	216.000	216.000
0460	603.8125	Concrete Barrier Temporary Precast Installed	LF	216.000	216.000
0470	606.0300	Riprap Heavy	CY	370.000	370.000
0480	608.0318	Storm Sewer Pipe Reinforced Concrete Class III 18-Inch	LF	85.000	85.000
0490	608.0415	Storm Sewer Pipe Reinforced Concrete Class IV 15-Inch	LF	77.000	77.000
0500	611.0660	Inlet Covers Type WM	EACH	4.000	4.000
0510	611.2004	Manholes 4-FT Diameter	EACH	1.000	1.000
0520	611.3253	Inlets 2.5x3-FT	EACH	3.000	3.000
0530	611.8110	Adjusting Manhole Covers	EACH	1.000	1.000
0540	619.1000	Mobilization	EACH	1.000	1.000
0550	625.0100	Topsoil	SY	1,631.000	1,631.000
0560	628.1504	Silt Fence	LF	383.000	383.000
0570	628.1520	Silt Fence Maintenance	LF	35.000	35.000
0580	628.1905	Mobilizations Erosion Control	EACH	3.000	3.000
0590	628.1910	Mobilizations Emergency Erosion Control	EACH	4.000	4.000
0600	628.2006	Erosion Mat Urban Class I Type A **P**	SY	550.000	550.000
0610	628.2027	Erosion Mat Class II Type C **P**	SY	1,081.000	1,081.000
0620	628.5505	Polyethylene Sheeting **P**	SY	554.000	554.000
0630	628.7005	Inlet Protection Type A	EACH	4.000	4.000
0640	628.7555	Culvert Pipe Checks	EACH	6.000	6.000
0650	628.7570	Rock Bags	EACH	200.000	200.000
0660	629.0210	Fertilizer Type B **P**	CWT	1.000	1.000
0670	630.0110	Seeding Mixture No. 10 **P**	LB	22.000	22.000
0680	630.0160	Seeding Mixture No. 60 **P**	LB	1.000	1.000
0690	630.0200	Seeding Temporary **P**	LB	44.000	44.000
0700	630.0400	Seeding Nurse Crop **P**	LB	12.000	12.000
0710	631.1100	Sod Erosion Control	SY	60.000	60.000
0720	633.5200	Markers Culvert End	EACH	2.000	2.000
0730	634.0812	Posts Tubular Steel 2x2-Inch X 12-FT	EACH	13.000	13.000
0740	637.2210	Signs Type II Reflective H	SF	66.200	66.200
0750	638.2602	Removing Signs Type II	EACH	11.000	11.000
0760	638.3000	Removing Small Sign Supports	EACH	9.000	9.000
0770	642.5001	Field Office Type B	EACH	1.000	1.000
0780	643.0100	Traffic Control (project) 01. 2714-04-70	EACH	1.000	1.000
0790	643.1050	Traffic Control Signs PCMS	DAY	28.000	28.000
0800	643.2000	Traffic Control Detour (project) 01. 2714-04-70	EACH	1.000	1.000
0810	645.0120	Geotextile Fabric Type HR **P**	SY	324.000	324.000
0820	645.0135	Geotextile Fabric Type SR	SY	50.000	50.000
0830	645.0140	Geotextile Fabric Type SAS	SY	2,237.000	2,237.000
0840	646.0106	Pavement Marking Epoxy 4-Inch **P**	LF	2,144.000	2,144.000
0850	646.0126	Pavement Marking Epoxy 8-Inch	LF	104.000	104.000

3

DATE 30SEP15 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	2714-04-70 QUANTITY
0860	650.4000	Construction Staking Storm Sewer	EACH	6.000	6.000
0870	650.4500	Construction Staking Subgrade **P**	LF	536.000	536.000
0880	650.5000	Construction Staking Base **P**	LF	536.000	536.000
0890	650.5500	Construction Staking Curb Gutter and Curb & Gutter **P**	LF	960.000	960.000
0900	650.6000	Construction Staking Pipe Culverts	EACH	2.000	2.000
0910	650.6500	Construction Staking Structure Layout (structure) 01. B-67-319	LS	1.000	1.000
0920	650.6500	Construction Staking Structure Layout (structure) 02. R-67-123	LS	1.000	1.000
0930	650.6500	Construction Staking Structure Layout (structure) 03. R-67-124	LS	1.000	1.000
0940	650.6500	Construction Staking Structure Layout (structure) 04. R-67-125	LS	1.000	1.000
0950	650.6500	Construction Staking Structure Layout (structure) 05. R-67-126	LS	1.000	1.000
0960	650.9910	Construction Staking Supplemental Control (project) 01. 2714-04-70	LS	1.000	1.000
0970	650.9920	Construction Staking Slope Stakes **P**	LF	536.000	536.000
0980	690.0150	Sawing Asphalt	LF	34.000	34.000
0990	690.0250	Sawing Concrete	LF	49.000	49.000
1000	715.0502	Incentive Strength Concrete Structures	DOL	2,136.000	2,136.000
1010	ASP.1T0A	On-the-Job Training Apprentice at $5.00/HR	HRS	600.000	600.000
1020	ASP.1T0G	On-the-Job Training Graduate at $5.00/HR	HRS	1,300.000	1,300.000
1030	SPV.0035	Special 01. RIPRAP FIELDSTONE BOULDERS	CY	252.000	252.000
1040	SPV.0090	Special 01. EROSION EEL	LF	569.000	569.000
1050	SPV.0105	Special 01. REMOVING OLD DAM 2714-04-70	LS	1.000	1.000
1060	SPV.0105	Special 02. CONSTRUCTION STAKING DAM LAYOUT	LS	1.000	1.000
1070	SPV.0105	Special 03. CONSTRUCTION DEWATERING PROJECT 2714-04-70	LS	1.000	1.000
1080	SPV.0170	Special 01. PROOF ROLLING	STA	6.000	6.000
1090	SPV.0195	Special 01. CLEAR CRUSHED LIMESTONE 3-INCH	TON	1,287.000	1,287.000

3

CLEARING AND GRUBBING

LOCATION	CLEARING 201.0105 **P** STA	GRUBBING 201.0205 **P** STA
STA 101+00 TO 106+00	5	5
TOTAL	5	5

REMOVING CURB AND GUTTER

STATION TO STATION	LOCATION	204.1050 **P** LF
105+25 TO 106+36	LT	104
105+25 TO 106+36	RT	104
	TOTAL	208

REMOVING GUARDRAIL

STATION TO STATION	LOCATION	204.0165 **P** LF
103+50.0 TO 103+75.0	LT & RT	25
	TOTAL	25

BASE AGGREGATE DENSE 3/4-INCH

STATION TO STATION	LOCATION	305.011 TONS
101+92 TO 103+98	Concrete Sidewalk RT	53
102+77 TO 103+82	Concrete Sidewalk LT	27
103+82 TO 105+52	Asphalt Path	44
104+43 TO 104+67	Concrete Apron	5
103+99 TO 104+19	Concrete Apron	4
105+47 TO 105+70	Concrete Apron	5
104+47 TO 104+63	Gravel Driveway	26
103+03 TO 104+15	Gravel Driveway	21
	TOTAL	185

BASE AGGREGATE DENSE

LOCATION	305.0120 1-1/4 INCH TONS
101+00 TO 106+35	1805
TOTAL	1805

CONCRETE DRIVEWAY

LOCATION	416.0160 CONCRETE DRIVEWAY 6-INCH SY
STA 104+07 RT	13
STA 104+56 RT	14
STA 105+58 RT	13
TOTAL	40

EARTHWORK SUMMARY *

205.0100, 208.1100, SPV.0195.01

From/ To Station	Location	Common Excavation (1) Cut (2) (205.0100)	Common Excavation (1) EBS Excavation (3) (205.0100)	Salvaged/ Unusable Pavement Material (2)	Available Material	Waste	Select Borrow * (208.1100)	Clear Crushed Limestone 3-Inch * TON (SPV.0195.01)	Comment:
101+00 TO 106+30	C.T.H. "P"	3345		393	0	2952	3709	987	CATEGORY 0010
ROADWAY	Undistributed		50	0	0	50	0	100	CATEGORY 0010
BYPASS CHANNEL	C.T.H. "P"	578		0	0	578	578	0	CATEGORY 0020
Grand Total		3923	50	393	0	3580	4287	1087	

1) Common Excavation is the sum of the Cut and EBS Excavation columns. Item number 205.0100
2) Salvaged/ Unusable Pavement Material is included in Cut.
3) Excavation Below Subgrade is undistributed quantity only.

FINISHING ROADWAY

LOCATION	213.0100 EACH
PROJECT (2714-04-70)	1
TOTAL	1

CONCRETE SIDEWALK

LOCATION	602.0405 CONCRETE SIDEWALK 4-INCH SF
STA 101+92 - 103+98 RT	1158
STA 102+77 - 103+82 LT	872
TOTAL	2030

ASPHALTIC ITEMS

STATION TO STATION	LOCATION	455.0605 TACK COAT GAL	455.0105 ASPHALTIC MATERIAL PG58-28 TON	460.1101 HMA PAVEMENT TYPE E-1 TON	465.0105 ASPHALTIC SURFACE TON
101+01 TO 106+36	PROJECT	151	43	708	
ASPHALT PATH 103+82 TO 105+52	LT				32
TOTAL		151	43	708	32

CONCRETE CURB & GUTTER

STA TO STA	LOCATION	601.0411 CURB & GUTTER 30-INCH, TYPE D **P** LF
101+54 TO 106+34	RT	480
101+54 TO 106+34	LT	480
TOTAL		960

CONCRETE CURB PEDESTRIAN

STA TO STA	LOCATION	601.0600 CURB PEDESTRIAN **P** LF
101+92	26.5' RT	6
102+77	30.5' LT	6
TOTAL		12

ASPHALTIC FLUMES

STATION	LOCATION	465.0315 SY
101+54	LT	7
101+54	RT	7
105+25	RT	11
	TOTAL	25

DRIVEWAY CULVERTS

PIPE NUMBER	LOCATION	ELEVATION	SLOPE
P5	103+98.5, 42.7 RT	872.7	2.00%
	104+18.2, 39.7 RT	873.1	
P6	104+42.3, 45.5 RT	872.6	1.15%
	104+68.2, 47.8 RT	872.9	

LOCATION IS TO END OF PIPE RUN; DOES NOT INCLUDE ENDWALL

APRON ENDWALL AND CULVERT PIPE STEEL

STA	521.0112 CULVERT PIPE CORRUGATED STEEL 12-INCH **P** LF	521.1012 APRON ENDWALLS FOR CULVERT PIPE STEEL 12-INCH **P** EACH
104+08 RT	20	2
104+56 RT	26	2
TOTAL	46	4

* COMBINED QUANTITY, ADDITIONAL QUANTITIES FOUND ELSEWHERE IN PLANS.

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE NOTED.

STORM SEWER QUANTITIES

FROM STRUCTURE NO.	TO STRUCTURE NO.	% SLOPE	STORM SEWER PIPE REINFORCED CONCRETE 608.0415 CLASS IV 15-INCH LF	STORM SEWER PIPE REINFORCED CONCRETE 608.0318 CLASS III 18-INCH LF	APRON ENDWALL CONCRETE 522.1018 18-INCH EACH
EW	—	—	—	—	1
101	EW	0.50%	—	30.5	—
100	101	0.50%	38.5	—	—
EW	—	—	—	—	1
103	EW	1.00%	—	54.5	—
102	103.0	0.50%	38.5	—	—
		TOTAL	77	85	2

STORM SEWER QUANTITIES

STRUCTURE NO.	LOCATION	RIM/ FLOW ELEVATION	BOTTOM OF STRUCTURE ELEVATION	STRUCTURE DEPTH	INLET COVERS 611.0660 TYPE WM EACH	ROUND MANHOLE WITH SUMP 611.2004 4-FT DIA. EACH	INLET WITH SUMP 611.3253 2.5X3-FT EACH
EW	101+60.24, 49.70' LT	870.10	—	—	—	—	—
101	101+60.24, 19.25' LT	874.72	870.25	4.47	1	—	1
100	101+60.24, 19.25' RT	874.72	870.44	4.28	1	—	1
EW	103+86.76, 52.0' LT	869.90	—	—	—	—	—
103	104+30.24, 19.25' LT	876.41	870.45	5.96	1	1	—
102	104+30.24, 19.25' RT	876.41	872.41	4.00	1	—	1
				TOTAL	4	1	3

STRUCTURE DEPTH = RIM/ FLOW ELEV-BOTTOM OF STR ELEV
LOCATION IS TO CENTER OF STRUCTURE OF END OF PIPE RUN.
ALL MANHOLE AND INLET STRUCTURES REQUIRE 2' SUMP

EROSION CONTROL

LOCATION	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF	628.1905 MOBILIZATION EROSION CONTROL EA	628.1910 MOBILZATION EMERGENCY EROSION CONTROL EA	628.2006 EROSION MAT URBAN CLASS I A SY	628.2027 EROSION MAT CLASS II C SY	628.7005 INLET PROTECTION TYPE A EA	628.7555 CULVERT PIPE CHECK EA	628.7570 ROCK BAGS EA	SPV.0090.01 EROSION EEL LF
101+00 - 106+35	348	35	3	4	500	983	4	6	20	569
UNDISTRIBUTED	35	0	0	0	50	98	0	0	0	0
	383	35	3	4	550	1081	4	6	20	569

LANDSCAPING

CATEGORY	LOCATION	625.0100 TOPSOIL SY	629.0210 FERTILIZER TYPE B CWT	630.0110 SEEDING MIXTURE NO. 10 LB	630.0160 SEEDING MIXTURE NO. 60 LB	630.0200 SEEDING TEMPORARY LB	630.0400 SEEDING NURSE CROP LB	631.1100 SOD EROSION CONTROL SY
0010	101+00 - 106+35	1483	0.9	20	1	40	11	51
	SUB TOTAL	1483	0.9	20	1	40	11	51
	UNDISTRIBUTED	148	0.1	2	0	4	1	9
	PROJECT TOTAL	1631	1.0	22	1	44	12	60

PERMANENT SIGNING

CATEGORY	LOCATION	SIGN CODE	SIZE WXH	634.0812 POSTS TUBULAR STEEL 2X2-INCH 12-FOOT EACH	637.2210 SIGNS REFLECTIVE TYPE II SF
0010	101+05 LT	R2-1	30 X 36	1	7.50
0010	101+57 LT	R7-4R	12 X 18	1	1.50
0010	101+57 RT	R2-1	30 X 36	1	7.50
0010	101+57 RT	R7-RL	12 X 18	–	1.50
0010	101+92 RT	OM3-R	12 X36	1	3.00
0010	102+82 LT	OM3-L	12 X 36	1	3.00
0010	103+83 LT	OM3-R	12 X 36	1	3.00
0010	105+67 LT	W6-3	36 X 36	1	9.00
0010	105+91 RT	M2-1	21 X 15	1	2.20
0010	105+91 RT	M1-5A	24 X 24	–	4.00
0010	106+25 RT	R7-4R	12 X 18	1	1.50
0010	106+57 LT	R7-4L	12 X 18	1	1.50
0040	101+65 RT	SPECIAL	36 X 36	1	9.00
0040	103+50 RT	SPECIAL	24 X 30	1	6.00
0040	103+60 LT	SPECIAL	24 X 30	1	6.00
	TOTALS			13	66.20

SIGN REMOVALS

LOCATION	SIGN CODE	638.2602 REMOVING SIGNS TYPE II EACH	638.3000 REMOVING SMALL SIGN SUPPORTS EACH	REMARKS
101+35 LT	R2-1	1	1	SPEED LIMIT
101+35 LT	R7-1	1	—	NO PARKING
101+35 RT	R2-1	1	1	SPEED LIMIT
101+35 RT	R7-1	1	—	NO PARKING
103+18 LT	OM3-L	1	1	OBJECT MARKER
103+18 RT	OM3-R	1	1	OBJECT MARKER
103+50 LT	OM3-R	1	1	OBJECT MARKER
103+50 RT	OM3-L	1	1	OBJECT MARKER
103+56 LT	SPECIAL	—	1	RETURN TO VILLAGE
103+73 RT	OM3-L	1	1	OBJECT MARKER
105+80 RT	M2-1 & M1-5A	2	1	JCT CTH D
	TOTALS	11	9	

MOBILIZATION

LOCATION	619.1000 EACH
PROJECT (2714-04-70)	1
TOTAL	1

FIELD OFFICE TYPE B

LOCATION	642.5001 EACH
PROJECT (2714-04-70)	1
TOTAL	1

MARKERS CULVERT END

STA	633.5200 EACH
	1
	1
TOTAL	2

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE NOTED.

3

TRAFFIC CONTROL

LOCATION	643.0100 PROJECT EACH	643.1060 SIGNS PCMS DAYS	643.2000 DETOUR EACH
PROJECT (2714-04-70)	1	28	1
TOTAL	1	28	1

GEOTEXTILE FABRIC *

STATION	645.0135 TYPE SR SY	645.014 TYPE SAS* SY
101+00 TO 103+00		1188
103+31 TO 106+36		617
UNDISTRIBUTED	50	150
TOTAL	50	1955

PAVEMENT MARKING, EPOXY

STATION	646.0106 4-INCH YELLOW **P** LF	646.0106 4-INCH WHITE **P** LF	646.0126 8-INCH WHITE **P** LF
101+00 TO 106+36	1072		
101+00 TO 106+36		1072	
105+30 TO 106+36			104
SUBTOTAL	1072	1072	104
TOTAL	2144		104

CONSTRUCTION STAKING

CATEGORY	650.4000 CONSTRUCTION STAKING STORM SEWER EACH	650.4500 CONSTRUCTION STAKING SUBGRADE **P** LF	650.5000 CONSTRUCTION STAKING BASE **P** LF	650.5500 CONSTRUCTION STAKING CURB & GUTTER **P** LF	650.6000 CONSTRUCTION STAKING PIPE CULVERTS **P** EA	650.9910 CONSTRUCTION STAKING SUPPLEMENTAL CONTROL LS	650.9920 CONSTRUCTION STAKING SLOPE STAKES **P** LF
0010	6	536	536	960	2	1	536
TOTAL	6	536	536	960	2	1	536

SAWING ITEMS

STATION	690.0150 ASPHALT LF	690.0250 CONCRETE LF
101+00	24	
105+50 LT	10	
106+36		49
	34	49

PROOF ROLLING

LOCATION	SPV.0170.01 STA
PROJECT (2714-04-70)	6
	6

* COMBINED QUANTITY, ADDITIONAL QUANTITIES FOUND ELSEWHERE IN PLANS.

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE NOTED.

BYPASS CHANNEL ITEMS

LOCATION	205.0100 COMMON EXCAVATION CY	208.1100 SELECT BORROW CY	512.1000 PILING STEEL SHEET TEMPORARY SF	603.8000 CONCRETE BARRIER TEMPORARY DELIVERED LF	603.8125 CONCRETE BARRIER TEMPORARY INSTALLED LF	606.0300 RIPRAP HEAVY CY	628.5505 POLYETHELENE SHEETING SY	628.7570 ROCK BAGS EA
102+87	578	578	2850	216	216	370	554	180
TOTAL	578	578	2850	216	216	370	554	180

CONSTRUCTION STAKING

CATEGORY	650.6500 CONSTRUCTION STAKING STR LAYOUT B-67-319 LS	650.6500 CONSTRUCTION STAKING STR LAYOUT R-67-123 LS	650.6500 CONSTRUCTION STAKING STR LAYOUT R-67-124 LS	650.6500 CONSTRUCTION STAKING STR LAYOUT R-67-125 LS	650.6500 CONSTRUCTION STAKING STR LAYOUT R-67-126 LS
0020	1				
0030		1	1	1	1
TOTAL	0	1	1	1	1

REMOVING SANITARY FORCE MAIN 24-INCH, CATEGORY 0020

STATION TO STATION	LOCATION	203.9090.S LF
103+00.0 TO 103+80.0	LT	100
	TOTAL	100

ADJUSTING MANHOLE COVERS, CATEGORY 0040

LOCATION	611.8110 ADJUSTING MANHOLE COVERS EA
105+25 RT	1
TOTAL	1

DAM ITEMS, CATEGORY 0040

LOCATION	SPV.0105.01 REMOVING OLD DAM LS	SPV.0105.02 CONSTRUCTION STAKING DAM LAYOUT LS
103+31	1	1
TOTAL	1	1

ALL ITEMS ARE CATEGORY 0020 UNLESS OTHERWISE NOTED.

FILE NAME : S:\FinalDesign\MIL\10302080_C\Roads\cds\030201.ppt PLOT DATE : 9/30/2015 9:48:38 AM PLOT BY : MSCCEJ PLOT NAME : 030201_mq3 PLOT SCALE : 1:1

CONVENTIONAL SIGNS AND ABBREVIATIONS

COUNTY LINE
TOWNSHIP AND RANGE LINES
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
NEW REFERENCE LINE
NEW R/W LINE
EXISTING R/W LINE
PROPERTY LINE
CORPORATE LIMITS — NAME
EASEMENT LINE
TLE AND OTHER MINOR LINES
SLOPE INTERCEPTS
UNDERGROUND FACILITY (GAS, TELEPHONE, ELECTRIC, ETC.) — G — (TYPE)
FENCE
HAZARDOUS UTILITY SITE — CAUTION — (TYPE)
CULVERT (BOX, PIPE OR CATTLE PASS)
RAIL LINE
FOUNDATION OR RUIN — FDN.
BUILDING — TYPE
CEMETERY — CEMETERY
TELEPHONE PEDESTAL
IRON PIN — IP
VALVE — VLV (TYPE)
SILO, MANHOLE, VENT SEPTIC VENT, WELL, ETC. — MH (TYPE)

	NON-COMPENSABLE	COMPENSABLE
SERVICE PEDESTAL		
POWER POLE		
TELEPHONE POLE		
SIGN		

NO ACCESS (BY ACQUISITION)
NO ACCESS (BY STATUTORY AUTHORITY)
NO ACCESS (BY PREVIOUS PROJECT)

PERMANENT LIMITED EASEMENT
TEMPORARY LIMITED EASEMENT
FEE

NON-MONUMENTED SURVEY POINT
SECTION CORNER — T 5 N, R 7 E, sections 5 4 8 9
BUSHES (DECIDUOUS)
TREES (CONIFEROUS)
WOODS

AC.	ACRE	LT.	LEFT
AH.	AHEAD	MI.	MILE
ALUM. MON.	ALUMINUM MONUMENT	PG	PAGE
ANT.	ANTENNA	P.C.	POINT OF CURVATURE
A.P.	ACCESS POINT	P.E.	PRIVATE ENTRANCE
B	BARN	PERM.	PERMANENT
BK.	BACK	P.I.	POINT OF INTERSECTION
B.M.	BENCH MARK	P.T.	POINT OF TANGENCY
C	CHURCH	P.L.E.	PERMANENT LIMITED EASEMENT
C.E.	COMMERCIAL ENTRANCE	R.	RADIUS
C/L	CENTERLINE	R.D.E.	RESTRICTED DEVELOPMENT EASEMENT
CONC. MON.	CONCRETE MONUMENT	REM.	REMAINING
CONST.	CONSTRUCTION	REST.	RESTAURANT
C.P.	CULVERT PIPE	RT.	RIGHT
C.S.M.	CERTIFIED SURVEY MAP	R/W	RIGHT OF WAY
D.	DEGREE OF CURVE	S.	SHED
ETAL	AND OTHERS	S.D.	STORM DRAINAGE
F.E.	FIELD ENTRANCE	S.F.	SQUARE FEET
FRL.	FRACTIONAL	STA.	STATION
FT.	FEET	T	TANK
G	GARAGE	TAV.	TAVERN
H	HOUSE	TEMP.	TEMPORARY
L.	LENGTH OF CURVE	T.L.E.	TEMPORARY LIMITED EASEMENT
L.C.	LONG CHORD OF CURVE	VOL.	VOLUME
L.C.B.	LONG CHORD BEARING	W	WALL

R/W PROJECT NUMBER	SHEET NUMBER	TOTAL SHEETS
2714-04-00	4.1	2
FEDERAL PROJECT NUMBER		

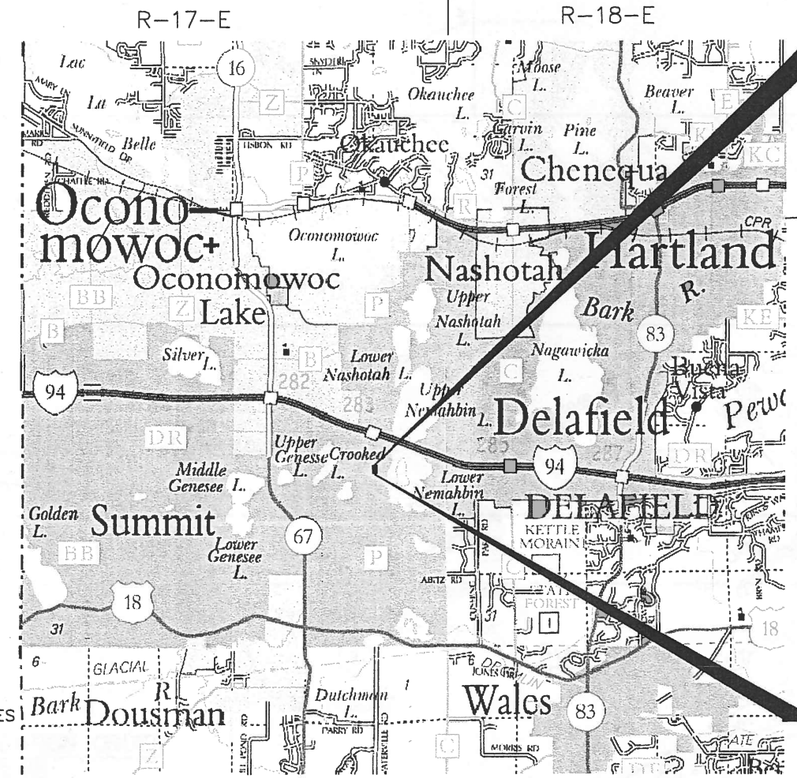
PLAT OF RIGHT-OF-WAY REQUIRED FOR

BARK RIVER BRIDGE & APPROACHES

VILLAGE OF SUMMIT

C.T.H. P (SAWYER ROAD) WAUKESHA COUNTY

CONSTRUCTION PROJECT NUMBER
2714-04-70



NOTES:

BEARINGS ON THIS PLAT ARE ORIENTED TO GRID NORTH OF THE WISCONSIN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, WITHIN WHICH THE WEST LINE OF THE NW 1/4 OF SECTION 24, T7N, R17E IS ASSUMED TO BEAR N00°44'59"W (PER SEWRPC CSSD REVISED OCT. 2012). THE WEST LINE OF THE NW 1/4 OF SECTION 24-7-17 WAS MEASURED AS 2638.25'.

COORDINATES SHOWN ARE GROUND COORDINATES BASED ON GRID TO GROUND SCALE FACTOR OF 1.000092489 WITH POINT OF ORIGIN BEING THE SW CORNER OF THE NW 1/4 OF SECTION 24, T7N, R17E, WHOSE ASSUMED GRID COORDINATES ARE PER SEWRPC CSSD REVISED OCT. 2012.

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

PROPERTY LINES SHOWN ON THIS PLAT ARE DRAWN FROM DATA DERIVED FROM MAPS AND DOCUMENTS OF PUBLIC RECORD AND/OR EXISTING OCCUPATIONAL/MONUMENTED LINES. THIS PLAT MAY NOT BE A TRUE REPRESENTATION OF EXISTING OWNERSHIP LINE, EXCLUDING RIGHT OF WAY LINES, AND SHOULD NOT BE USED AS A SUBSTITUTE FOR AN ACCURATE FIELD SURVEY.

TOTAL NET LENGTH OF CENTERLINE = 0.086 MI. (URBAN)

END RELOCATION ORDER
PROJECT ID: 2714-04-00 STA. 105+36.42
901.89 FEET NORTH OF THE WEST
CORNER OF SECTION 24, T.7N., R.17E.
N= 389107.02
E= 2416548.31

BEGIN RELOCATION ORDER
PROJECT ID: 2714-04-00 STA. 100+80.35
447.16 FEET NORTH OF THE WEST
CORNER OF SECTION 24, T.7N., R.17E.,
N= 388650.98
E= 2416554.37

REVISION DATE

ACCEPTED FOR
WAUKESHA COUNTY DEPARTMENT OF PUBLIC WORKS

11-20-14 DATE — DIRECTOR

11/20/14 DATE — ENGINEERING SERVICE MANAGER

ORIGINAL PLAT PREPARED BY:

WISCONSIN JAMES R. BEATY S-1834 WALES, WI LAND SURVEYOR

11/03/2014 DATE — PROFESSIONAL LAND SURVEYOR

E

AREAS SHOWN IN THE TOTAL AREA TABLE 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.

SCHEDULE OF LANDS & INTERESTS REQUIRED

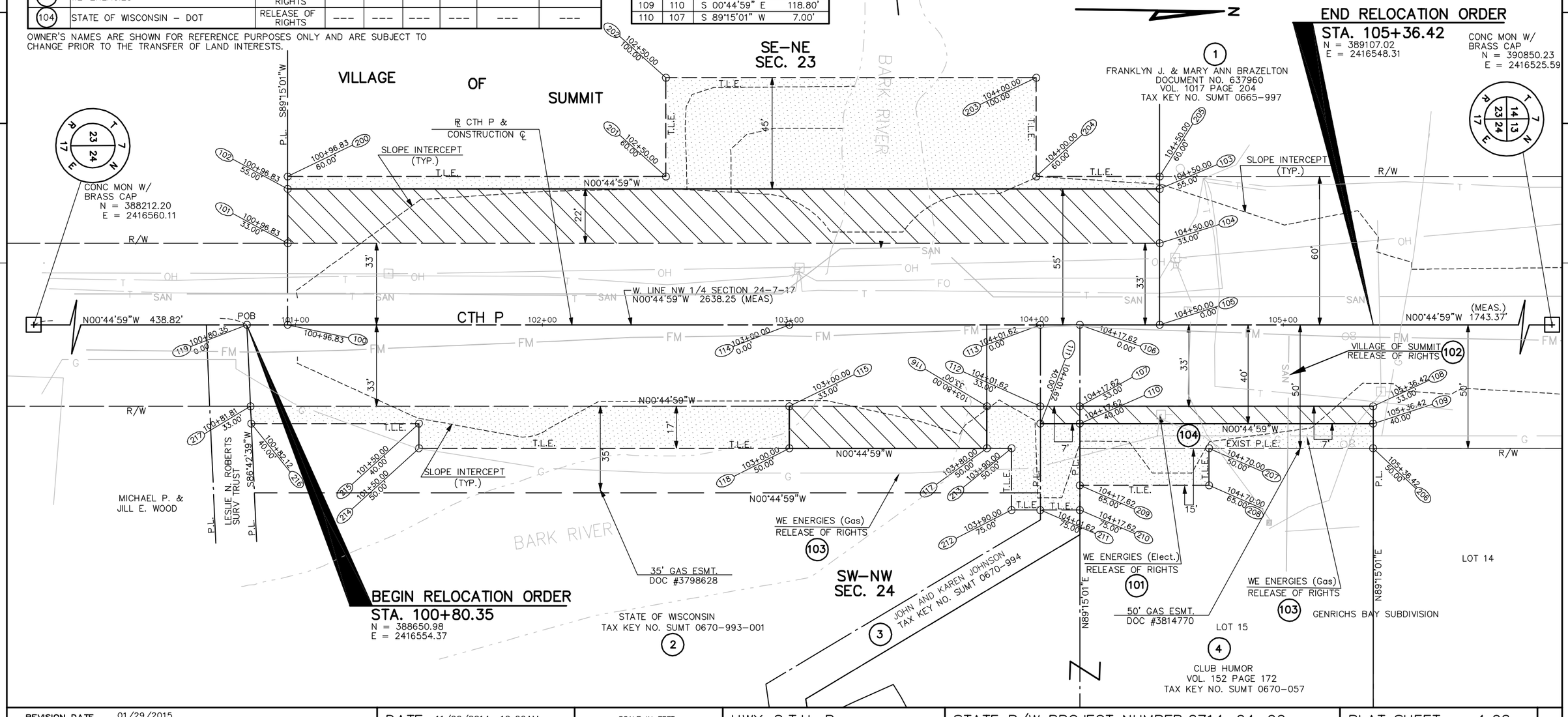
PARCEL NUMBER	OWNER	INTEREST REQUIRED	TOTAL (ACRES)	R/W ACRES REQUIRED NEW	EXIST	TOTAL	T.L.E. REQ'D. (ACRES)	TOTAL (ACRES) REM.
1	FRANKLYN J. & MARY ANN BRAZELTON	FEE & T.L.E.	8.223	0.18	0.27	0.45	0.18	7.773
2	STATE OF WISCONSIN	FEE & T.L.E.	17	0.03	0.24	0.27	0.08	16.73
3	JOHN & KAREN JOHNSON	FEE & T.L.E.	1.63	0.003	0.01	0.013	0.01	1.62
4	CLUB HUMOR	FEE & T.L.E.	0.46	0.02	0.00	0.02	.04	0.44
101	WE ENERGIES	RELEASE OF RIGHTS	---	---	---	---	---	---
102	VILLAGE OF SUMMIT	RELEASE OF RIGHTS	---	---	---	---	---	---
103	WE-ENERGIES	RELEASE OF RIGHTS	---	---	---	---	---	---
104	STATE OF WISCONSIN - DOT	RELEASE OF RIGHTS	---	---	---	---	---	---

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

COURSE TABLE – FEE PARCELS			
FROM	TO	BEARING	DIST.
100	101	S 89°15'01" W	33.00'
101	102	S 89°15'01" W	22.00'
102	103	N 00°44'59" W	353.17'
103	104	N 89°15'01" E	22.00'
104	101	S 00°44'59" E	353.17'
105	106	S 00°44'59" E	33.47'
107	110	N 89°15'01" E	7.00'
110	111	S 00°44'59" E	16.00'
111	112	S 89°15'01" W	7.00'
112	107	N 00°44'59" W	16.00'
115	116	N 00°44'59" W	80.00'
116	117	N 89°15'01" E	17.00'
117	118	S 00°44'59" E	80.00'
118	115	S 89°15'01" W	17.00'
107	108	N 00°44'59" W	118.80'
108	109	N 89°15'01" E	7.00'
109	110	S 00°44'59" E	118.80'
110	107	S 89°15'01" W	7.00'

COURSE TABLE – T.L.E.			
FROM	TO	BEARING	DIST.
102	200	S 89°15'01" W	5.00'
200	201	N 00°44'59" W	153.17'
201	202	S 89°15'01" W	40.00'
202	203	N 00°44'59" W	150.00'
203	204	N 89°15'01" E	40.00'
204	205	N 00°44'59" W	50.00'
205	103	N 89°15'01" E	5.00
103	102	S 00°44'59" E	353.17'
217	115	N 00°44'59" W	218.19'
115	118	N 89°15'01" E	17.00'
118	214	S 00°44'59" E	150.00'
214	215	S 89°15'01" W	10.00'
215	216	S 00°44'59" E	67.88'
216	217	S 86°42'39" W	7.01'

COURSE TABLE – T.L.E.			
FROM	TO	BEARING	DIST.
112	211	N 89°15'01" E	42.00'
211	212	S 00°44'59" E	11.62'
212	213	S 89°15'01" W	25.00'
213	117	S 00°44'59" E	10.00'
117	116	S 89°15'01" W	17.00'
116	112	N 00°44'59" W	21.62'
111	110	N 00°44'59" W	16.00'
110	210	N 89°15'01" E	35.00'
210	211	S 00°44'59" E	16.00'
211	111	S 89°15'01" W	35.00'
109	206	N 89°15'01" E	10.00'
206	207	S 00°44'59" E	66.42'
207	208	N 89°15'01" E	15.00'
208	209	S 00°44'59" E	52.38'
209	110	S 89°15'01" W	25.00'



REVISION DATE 01/29/2015	DATE 11/06/2014 10:00AM	SCALE IN FEET 0 20 40	HWY: C.T.H. P	STATE R/W PROJECT NUMBER 2714-04-00	PLAT SHEET 4.02
	SCALE FACTOR: 1.000092489		COUNTY: WAUKESHA	CONSTRUCTION PROJECT NUMBER2714-04-70	PS&E SHEET 25 E

FILE NAME : C:\27140470_RW_SHT.DWG PLOT DATE : 11/06/2014 10:00AM PLOT BY : HMERSON PLOT NAME : _____

WISDOT/CADDS SHEET 70

STORM SEWER LEGEND

(1xx) STORM SEWER INLET NO.

Px STORM SEWER PIPE NO.

SEE "MISCELLANEOUS QUANTITIES" SHEET FOR STORM SEWER DETAILS.

NO.	STATION	DESCRIPTION	OFFSET	ELEV.
1	100+20	RR SPIKE IN 42" TREE	29' R	876.34
2	100+40	PK NAIL	10' L	874.02
3	105+49	CHISELED CROSS	16' L	880.09
4	106+70	RR SPIKE IN PP#11-01859	46' L	888.61

SECTION LINE

101+00 SAWYER ROAD 102+00 103+00 104+00 (CTH P) 105+00 106+00 106+50

BEGIN PROJECT 2417-04-70
STA. 101+00
N = 388634.73
E = 2416330.62

END PROJECT 2714-04-70
STA. 106+36

NOTE:
SANITARY SEWER AND FORCE MAIN LOCATIONS PROVIDED BY YAGGY COLBY ASSOCIATES JANUARY 5, 2010.

NET LENGTH OF CENTER LINE = 535 LF

VCL = 50.00
K = 69.60
VPC STA 101+25.00
VPC EL 874.80
VPT STA 101+75.00
VPT EL 875.23
VPI STA 101+50.00
VPI EL 874.930
0.50%
1.22%
4.50%
VCL = 210.02
K = 64.00
VPC STA 104+24.99
VPC EL 878.28
VPT STA 106+35.01
VPT EL 884.29
VPI STA 105+30.00
VPI EL 879.560

PROPOSED PROFILE
EXISTING PROFILE
EXISTING-ELEVATION
FINISHED ELEV. ON PROFILE GRADE LINE

100 YR WSEL
EL. 871.75
LOWER NEMAHBIN LAKE DAM
SPILLWAY EL. 869.60
B-67-319
UPSTREAM INVERT
EL. 866.35
OBSERVED WATER IN BOX
(12/06/2007)
EL. 869.0

STA. 103+34
STRUCTURE B-67-959
A TWO CELL BOX CULVERT
28' LONG X 29' WIDE
TO BE REMOVED

STA. 103+31.63
STRUCTURE B-67-319 REQ'D.
A TWO CELL BOX CULVERT
58'-0" LONG X 29'-3" WIDE

100 "P" +00	101 "P" +00	102 "P" +00	103 "P" +00	104 "P" +00	105 "P" +00	106 "P" +00	106 "P" +00
874.68	874.68	874.90 874.97	875.20 875.54	875.40 876.15	875.50 876.76	875.70 877.37	876.10 877.98	877.30 878.63	878.80 879.63	880.50 881.02	882.80 882.81	884.96

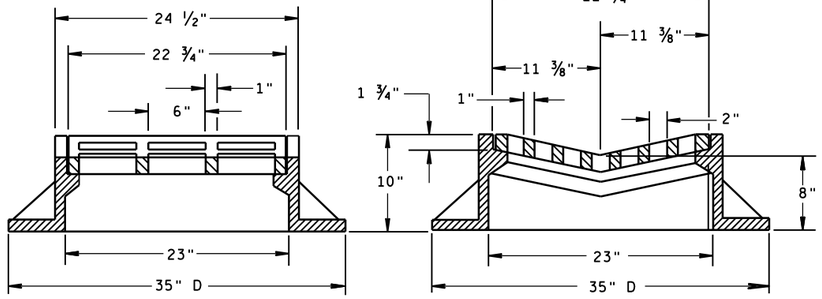
PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	PLAN AND PROFILE	SHEET 26	E

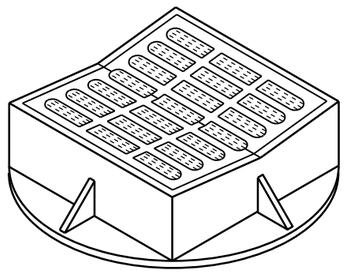
FILE NAME : S:\CAD PROJECTS\403-14 CTH P\PLAN SHEETS\27140470_PP.DWG PLOT DATE : 9/3/2008 9:28 AM PLOT BY : CRAIG DONZE PLOT NAME : ----------PLOT SCALE : $$.....plotscale.....$$

WISDOT/CADDS SHEET 40

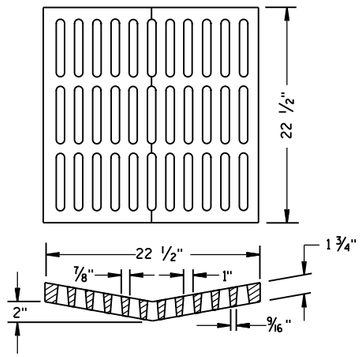
Standard Detail Drawing List

08A05-19B	INLET COVERS TYPE B, B-A, C, MS, MS-A, & WM
08B09-01	MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER
08C07-01	INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT
08D01-17	CONCRETE CURB, CONCRETE CURB AND GUTTER AND TIES
08D02-06	CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES
08D05-15A	CURB RAMPS TYPES 1 AND 1-A
08D05-15B	CURB RAMPS TYPES 2 AND 3
08D05-15C	CURB RAMPS TYPES 4A AND 4A1
08D05-15D	CURB RAMPS TYPE 4B AND 4B1
08D05-15E	CURB RAMPS TYPES 5, 6, 7A, 7B & 8
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F05-01	CLASS "B" BEDDING FOR CULVERT PIPE OR STORM SEWER
08F07-05	STEEL APRON ENDWALLS FOR CULVERT PIPE AND PIPE ARCH SLOPED SIDE FRAINS
12A03-10	NAME PLATE (STRUCTURES)
14B07-14A	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14B	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14C	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C02-05A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-05B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-05C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C08-16A	PAVEMENT MARKING (MAINLINE)
16A01-06	LANDMARK REFERENCE MONUMENTS AND COVERS



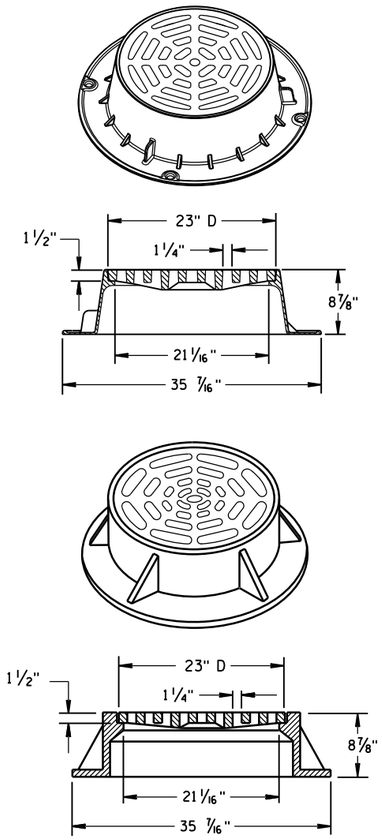


TYPE "B"



ALTERNATIVE GRATE FOR TYPE "B" COVER

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



TYPE "C"

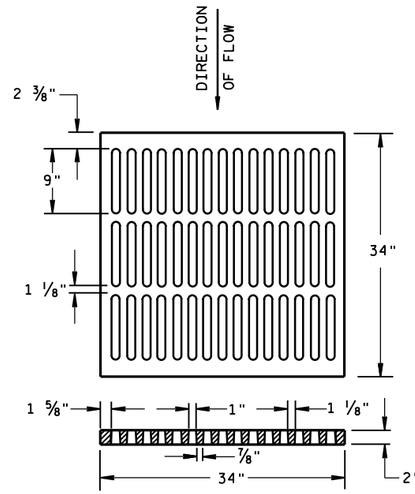
NOTE: EITHER CASTING IS ACCEPTABLE

GENERAL NOTES

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

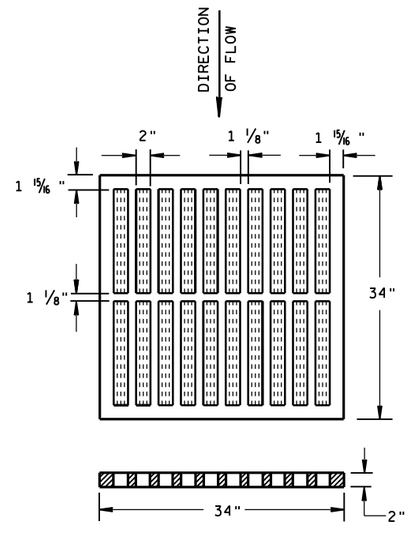
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

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



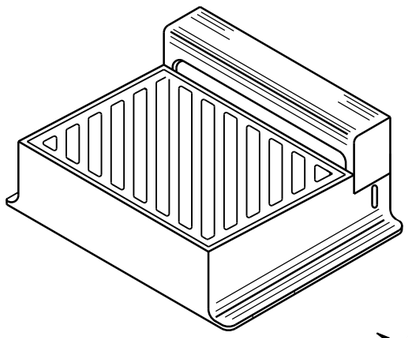
ALTERNATIVE TYPE "MS"

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

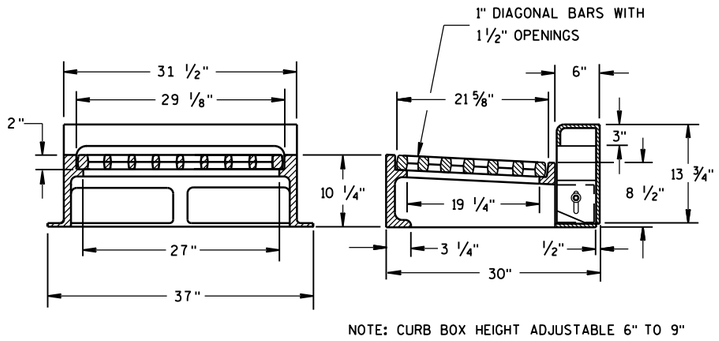


TYPE "MS"

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



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



NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"

TYPE "WM"

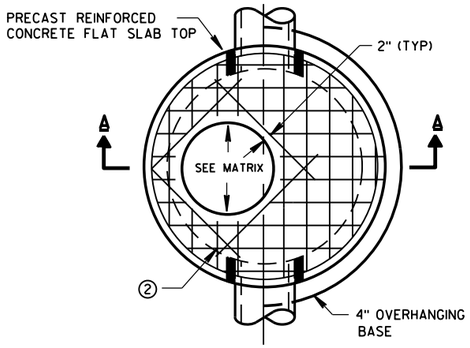
INLET COVERS
TYPE B, B-A, C, MS, MS-A, & WM

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

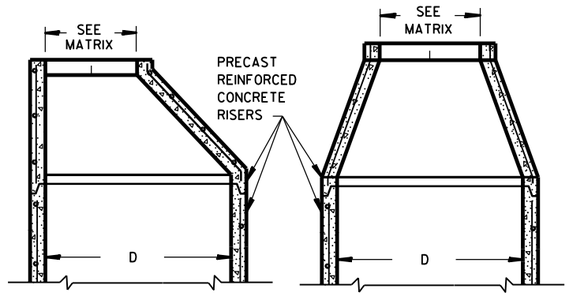
APPROVED
11/27/2013 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 8 A 5-19b

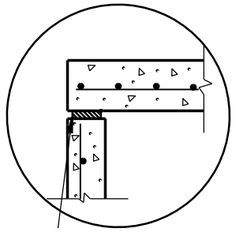


PLAN VIEW CIRCULAR OPENING

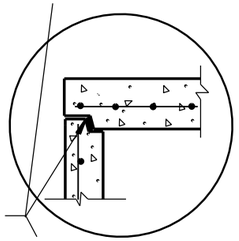


OPTIONAL PRECAST REINFORCED CONCRETE ECCENTRIC TOP

OPTIONAL PRECAST REINFORCED CONCRETE CONCENTRIC TOP

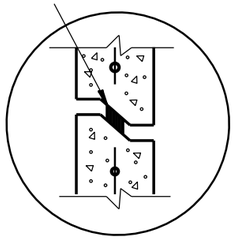


TOP WITH PLAIN END JOINT



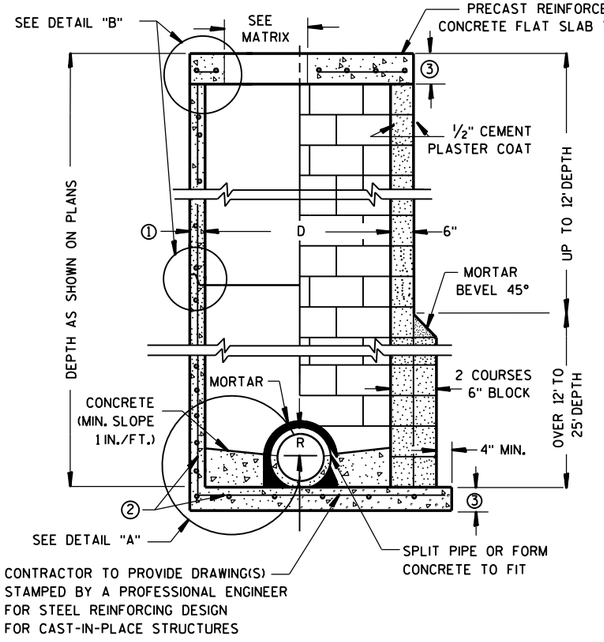
JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C990 (TYP)

TOP WITH TONGUE AND GROOVE JOINT



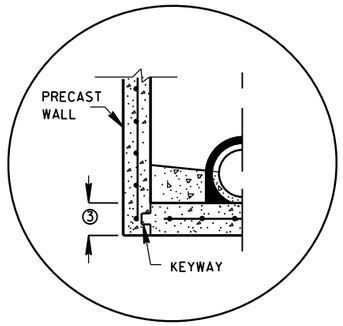
RISER WITH TONGUE AND GROOVE JOINT

DETAIL "B"

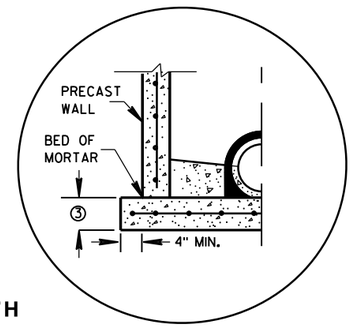


PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE

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

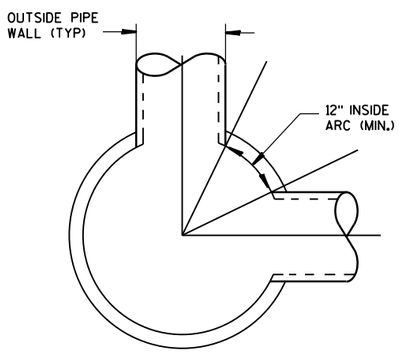


PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION



SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

DETAIL "A"



DETAIL "C"

GENERAL NOTES

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

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

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

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

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

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

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

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

STEPS OF APPROVED POLYPROPYLENE PLASTIC COATED REINFORCEMENT BAR ARE ACCEPTABLE. REINFORCING BAR MUST BE A MINIMUM OF ½" AND MEET THE REQUIREMENTS OF ASTM A615.

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

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

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

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

ALL PRECAST MANHOLE UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M 199.

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

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

① MINIMUM WALL THICKNESS SHALL BE 4 INCHES FOR 3-FT, 5 INCHES FOR 4-FT, 6 INCHES FOR 5-FT, 7 INCHES FOR 6-FT, 8 INCHES FOR 7-FT AND 9 INCHES FOR 8-FT DIAMETER PRECAST MANHOLES.

② FOR PRECAST MANHOLES PROVIDE REINFORCING STEEL IN ACCORDANCE TO AASHTO M199.

③ PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER OF 48" AND LESS SHALL HAVE A MINIMUM THICKNESS OF 6". PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER LARGER THAN 48" SHALL HAVE A MINIMUM THICKNESS OF 8".

MANHOLE COVER OPENING MATRIX

MANHOLE COVER TYPE	C	ALL J'S	K	L	M
OPENING SIZE (FT)					
2 DIA.	X	X		X	
3 DIA.			X		X

PIPE MATRIX

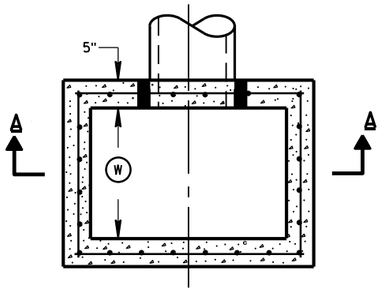
MANHOLE SIZE	MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES	
	180° SEPARATION (IN)	90° SEPARATION (IN)
3-FT	15	12
4-FT	24	18
5-FT	36	24
6-FT	42	36
7-FT	48	36
8-FT	60	42

MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER

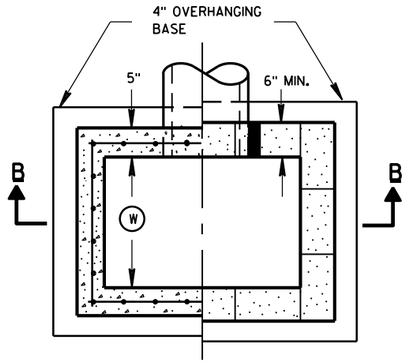
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

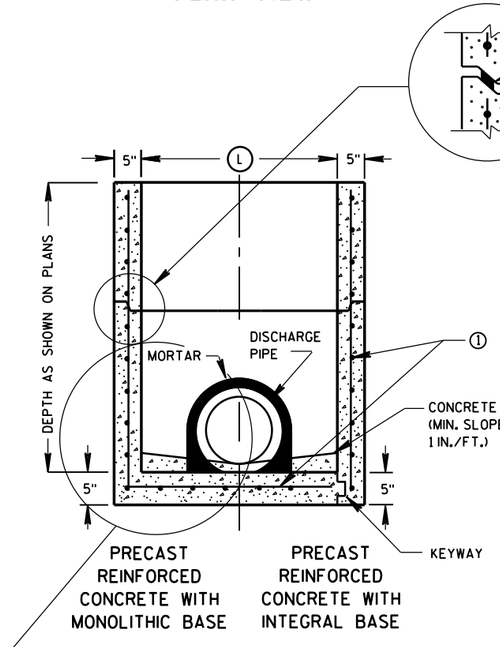
6
S.D.D. 8 B 9-1



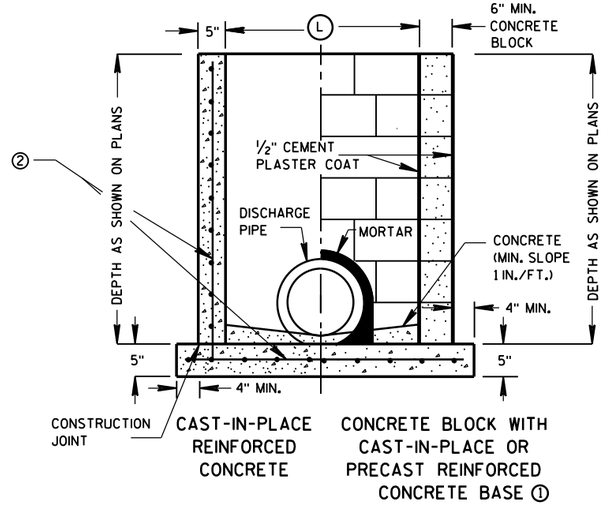
PLAN VIEW



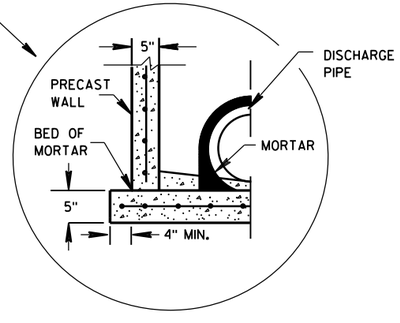
PLAN VIEW



SECTION A-A



SECTION B-B



SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

GENERAL NOTES

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

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

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

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

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

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

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

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

4" OVERHANGING BASES ARE REQUIRED FOR CAST-IN-PLACE REINFORCED CONCRETE AND CONCRETE BLOCK INSTALLATIONS.
4" OVERHANG IS REQUIRED WHEN SEPARATE PRECAST BASE IS PROVIDED.
OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

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

① FOR PRECAST INLETS PROVIDE REINFORCING STEEL IN ACCORDANCE TO ASTM C 913.

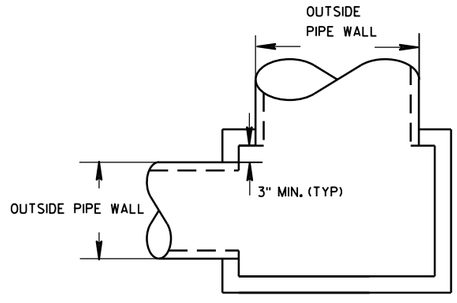
② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

INLET COVER MATRIX

INLET SIZE		INLET COVER TYPE	ALL A'S	ALL B'S	BW	F	ALL H'S	S	T	V	WM
	WIDTH (W) (FT)	LENGTH (L) (FT)									
2X2-FT	2	2	X	X				X		X	
2X2.5-FT	2	2.5			X			X	X	X	X
2X3-FT	2	3					X				
2.5X3-FT	2.5	3				X					

PIPE MATRIX

INLET SIZE	MAXIMUM INSIDE PIPE DIAMETER	
	WIDTH (IN)	LENGTH (IN)
2X2-FT	12	12
2X2.5-FT	12	18
2X3-FT	12	24
2.5X3-FT	18	24



DETAIL "A"

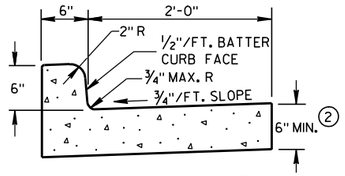
INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

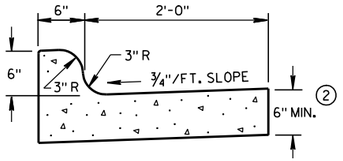
APPROVED
6/5/2012
DATE
FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS DE
ENGINEER

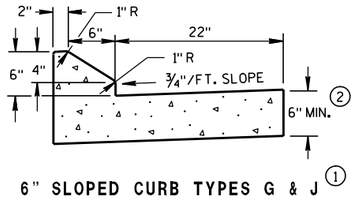
6
S.D.D. 8 C 7-1



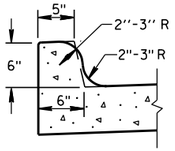
TYPES A & D (1)



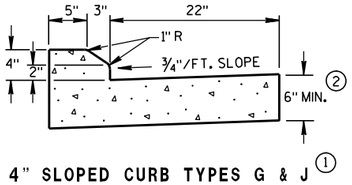
TYPES K & L (1)



6" SLOPED CURB TYPES G & J (1)

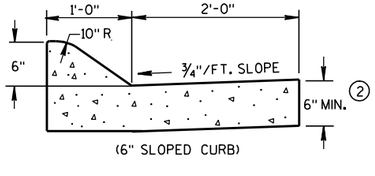


OPTIONAL CURB SHAPE FOR TYPES K & L (1)

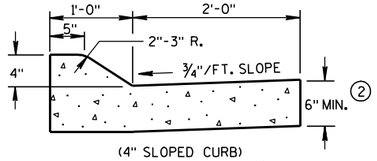


4" SLOPED CURB TYPES G & J (1)

CONCRETE CURB & GUTTER 30"

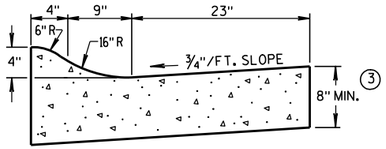


(6" SLOPED CURB)



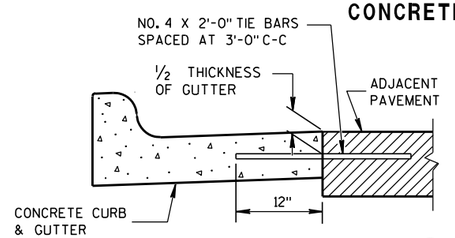
(4" SLOPED CURB)

TYPES A & D (1)

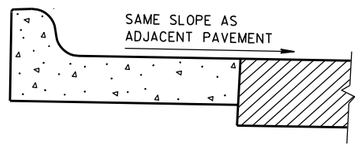


4" SLOPED CURB TYPES R & T (1) (4)

CONCRETE CURB & GUTTER 36"



TYPICAL TIE BAR LOCATION (1)



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

GENERAL NOTES

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

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

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

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

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

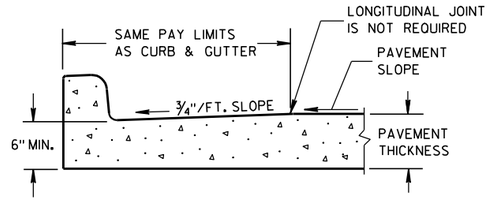
(1) TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, G, K AND R.

(2) THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.

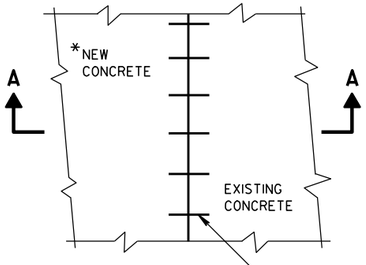
(3) THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.

(4) THE FACE OF CURB IS 6" FROM THE BACK OF CURB.

(5) WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.

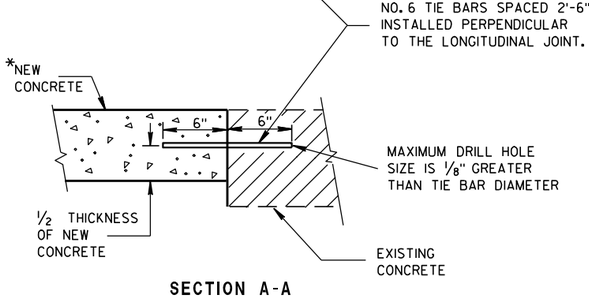


PARTIAL SECTION OF PAVEMENT WITH INTEGRAL CURB & GUTTER



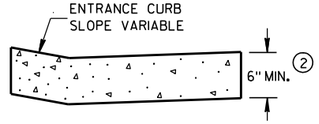
PLAN VIEW

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

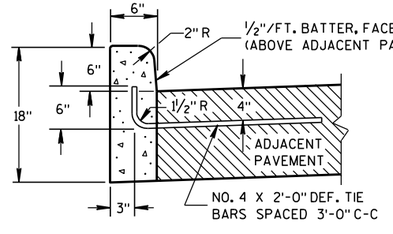


SECTION A-A

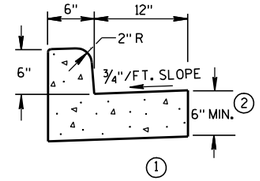
TIE BARS DRILLED INTO EXISTING PAVEMENT



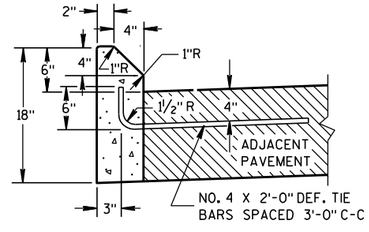
DRIVEWAY ENTRANCE CURB
(WHEN DIRECTED BY THE ENGINEER)



(1)
TYPES A & D

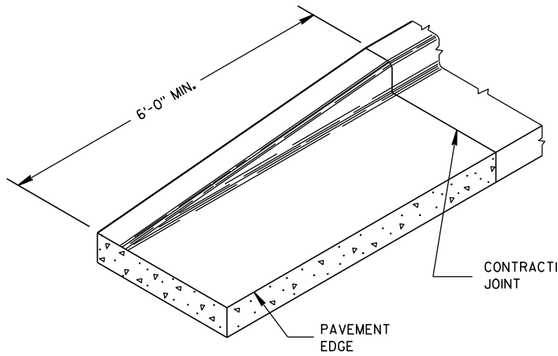


(1)
TYPES A & D
CONCRETE CURB & GUTTER 18"



(1)
TYPES G & J

CONCRETE CURB



END SECTION CURB & GUTTER

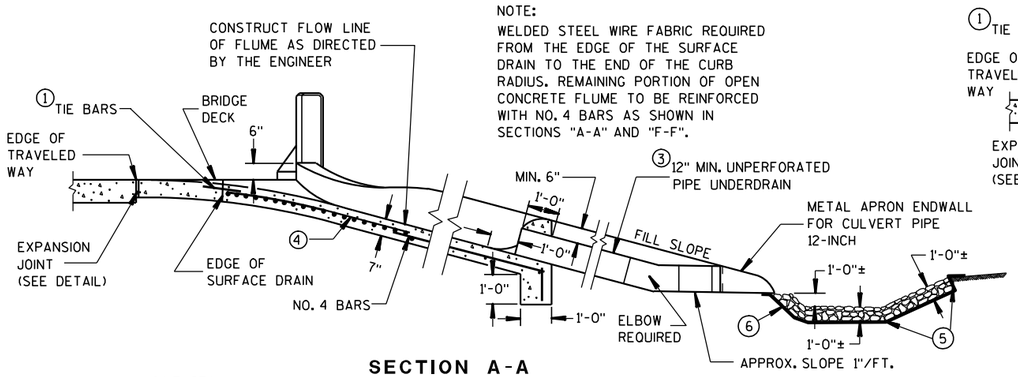
CONCRETE CURB, CONCRETE CURB & GUTTER AND TIES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

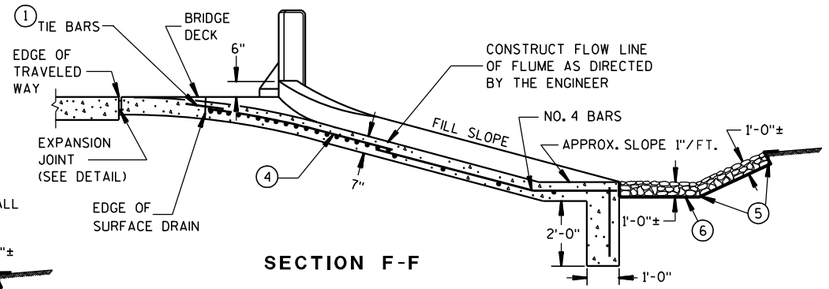
APPROVED
9/4/08 DATE
/S/ Jerry H. [illegible] ROADWAY STANDARDS ENGINEER
FHWA

6

S.D.D. 8 D 1-17



SECTION A-A



SECTION F-F

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.

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

(1) NO. 4 X 2'-0" TIE BARS SPACED AT 3'-0" CENTERS TO BE USED ONLY WHEN ADJACENT TO P.C. CONCRETE.

(2) NO. 4 X 2'-0" TIE BARS SPACED AT 12" CENTERS TO BE PLACED BY BRIDGE CONTRACTOR, OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.

(3) PIPE UNDERDRAIN MAY BE ANY OF THE MATERIALS LISTED IN SECTION 612.2 OF THE STANDARD SPECIFICATIONS EXCEPT DRAIN TILE.

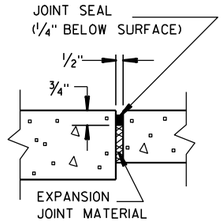
(4) MINIMUM REINFORCEMENT SHALL BE 6" X 6" - W4.0 X W4.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C-C.

(5) LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH IS REQUIRED.

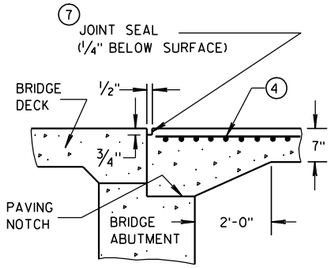
(6) GEOTEXTILE FABRIC, TYPE 'R"

(7) HOT POURED SEALANT UNLESS OTHERWISE SPECIFIED.

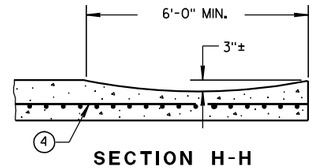
(8) THIS DIMENSION MAY VARY DEPENDING ON THE SPACING OF POSTS FOR THE STEEL PLATE BEAM GUARD. THE TYPICAL LOCATION FOR THE SURFACE DRAIN IS WHERE THE POST SPACING WIDENS TO 3'-1½".



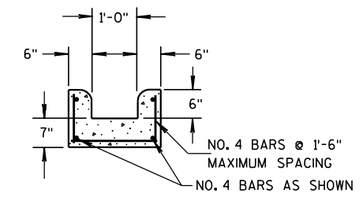
EXPANSION JOINT DETAIL



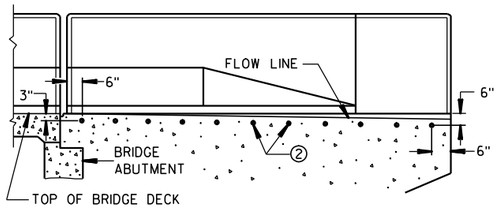
SECTION D-D



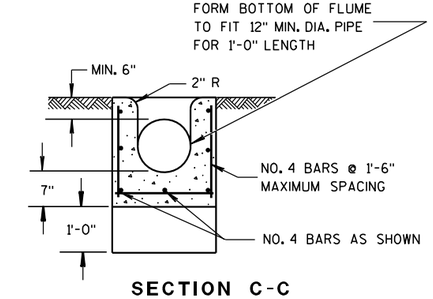
SECTION H-H



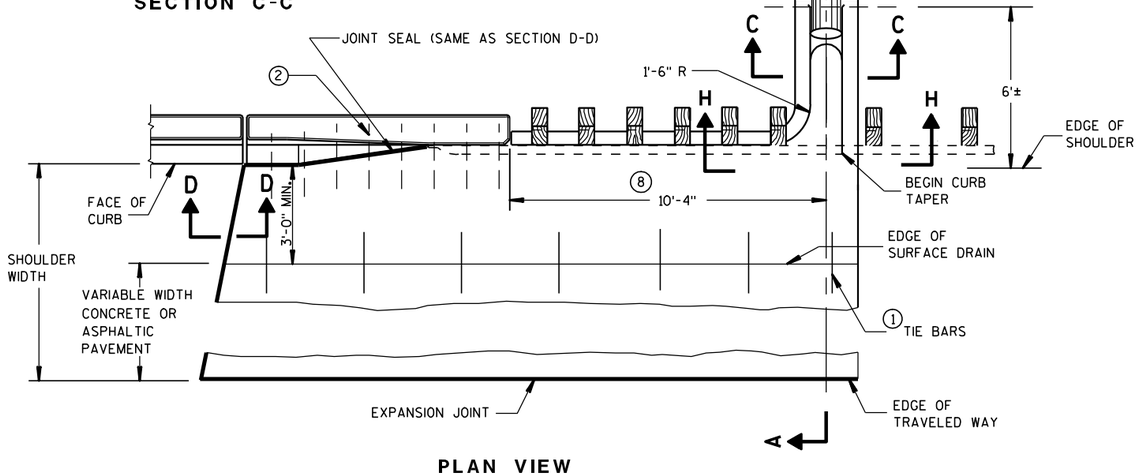
SECTION E-E



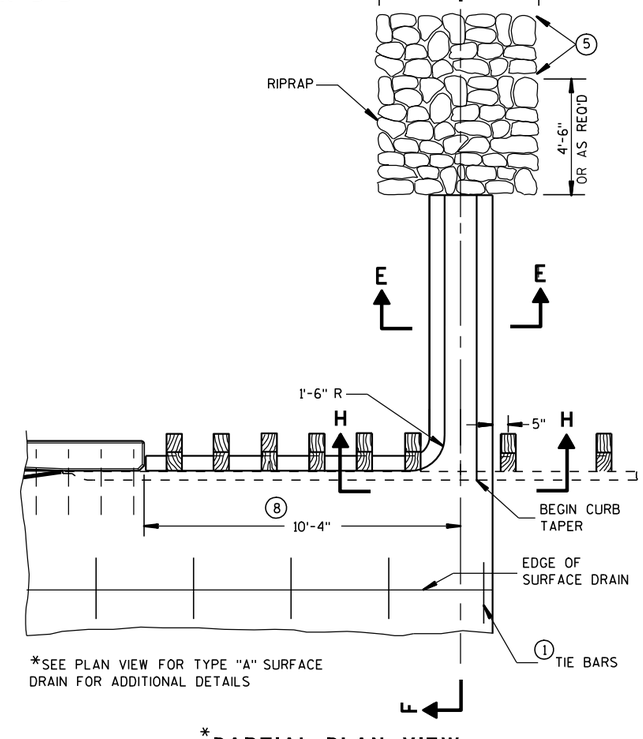
LOCATION OF TIE BARS IN WINGWALL



SECTION C-C



PLAN VIEW
SURFACE DRAIN WITH PIPE
TYPE "A"



*SEE PLAN VIEW FOR TYPE "A" SURFACE DRAIN FOR ADDITIONAL DETAILS

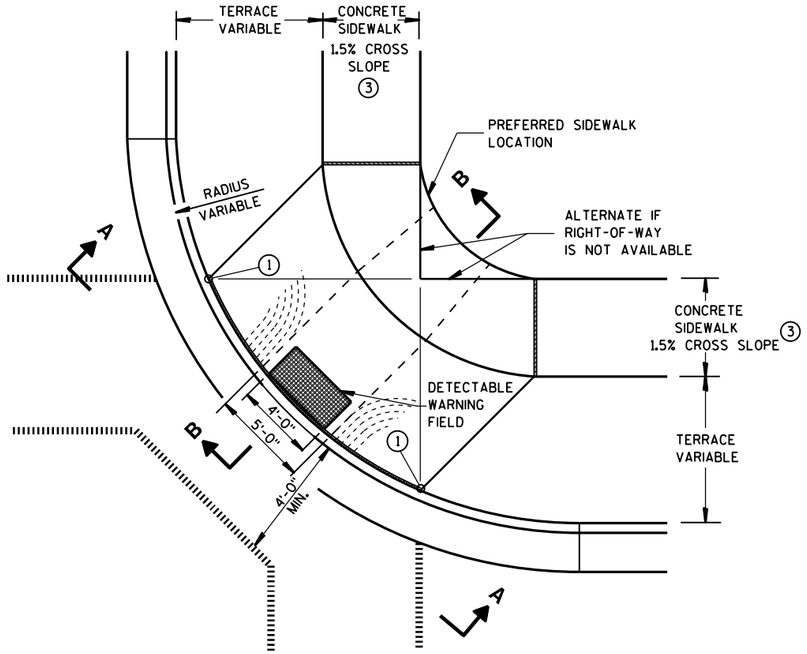
*PARTIAL PLAN VIEW
SURFACE DRAIN WITHOUT PIPE
TYPE "B"

CONCRETE SURFACE DRAINS
FLUME TYPE
AT STRUCTURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
9/4/08
DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER
FHWA

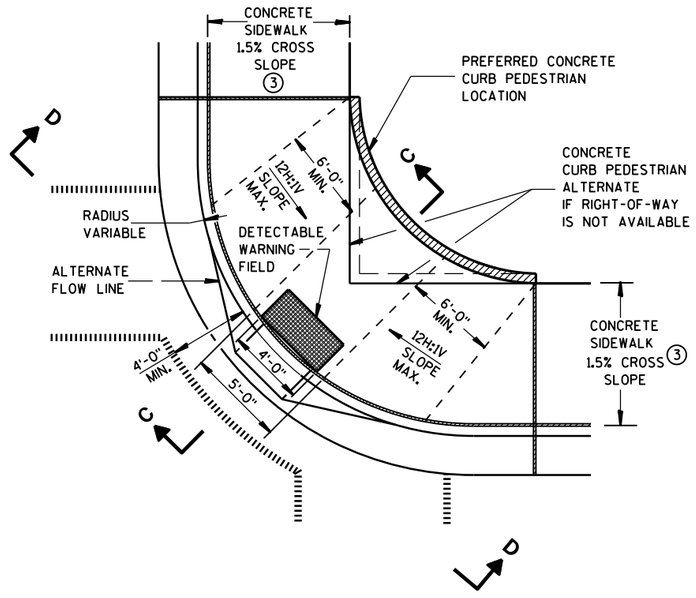
6
S.D.D. 8 D 2-6



PLAN VIEW

TYPE 1 RAMP

(CENTER OF CORNER RADIUS)



PLAN VIEW

TYPE 1-A RAMP

(NO TERRACE)

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.

RAMPS SHALL BE BUILT AT 12H:1V OR FLATTER. WHEN NECESSARY, THE SIDEWALK ELEVATION MAY BE LOWERED TO MEET THE HIGH POINT ON THE RAMP.

TYPE 1 RAMPS SHALL HAVE A NORMAL SIDEWALK APRON AND CURB ON BOTH SIDES OF RAMP.

DETECTABLE WARNING FIELD SHALL BE MEASURED AND PAID BY THE SQUARE FOOT AS "CURB RAMP DETECTABLE WARNING FIELD". THE CONCRETE PEDESTRIAN CURB, IF NEEDED, SHALL BE MEASURED AND PAID BY THE LINEAL FOOT AS "CONCRETE CURB PEDESTRIAN". CONCRETE SIDEWALK IN THE CURB RAMP AREA SHALL BE MEASURED AND PAID BY THE SQUARE FOOT AS CONCRETE SIDEWALK, INCLUDING THE AREA UNDER THE DETECTABLE WARNING FIELD.

SELECT CURB RAMP DETECTABLE WARNING FIELD MATERIALS AND DEVICES FROM THE DEPARTMENT'S APPROVED MATERIALS LIST. THE COLOR OF THE DETECTABLE WARNING FIELD IS SPECIFIED ELSEWHERE AND IS INCIDENTAL TO THE BID ITEM OF "CURB RAMP DETECTABLE WARNING FIELD".

DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE, SHALL BE FROM THE SAME MANUFACTURER.

SURFACE TEXTURE OF THE RAMP SHALL BE OBTAINED BY COARSE BROOMING TRANSVERSE TO THE SLOPE OF THE RAMP.

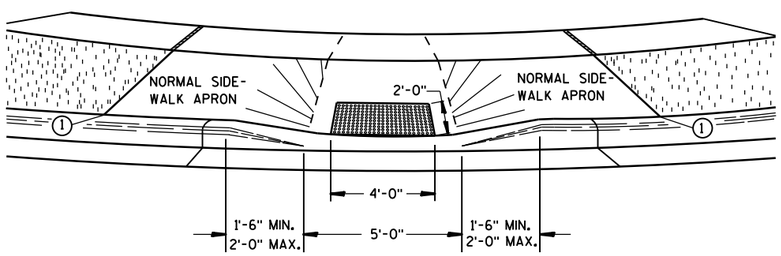
① THIS POINT IS AN EXTENSION OF OUTSIDE EDGE OF APPROACHING SIDEWALK WHERE IT MEETS THE BACK OF CONCRETE CURB.

② GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. PROVIDE DRAINAGE AWAY FROM CURB RAMP AT GUTTER FLAG INTERFACE.

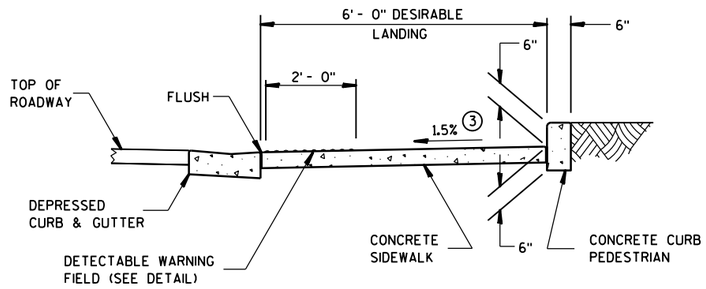
③ ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

LEGEND

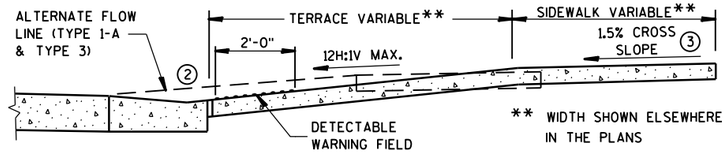
- ½" EXPANSION JOINT-SIDEWALK
- CONTRACTION JOINT FIELD LOCATED
- PAVEMENT MARKING CROSSWALK (WHITE)
- ALTERNATIVE LAYOUT



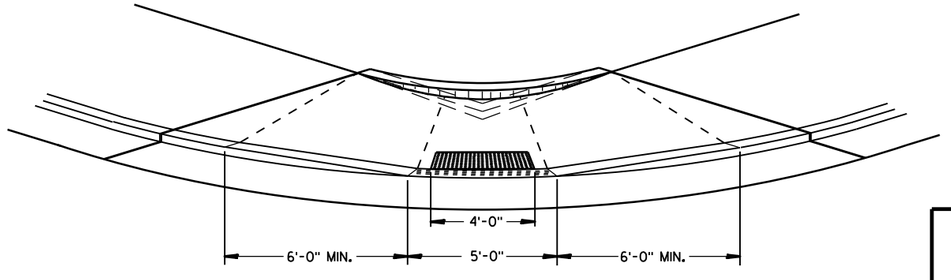
VIEW A-A



SECTION C-C



SECTION B-B



VIEW D-D

CURB RAMPS TYPES 1 AND 1-A

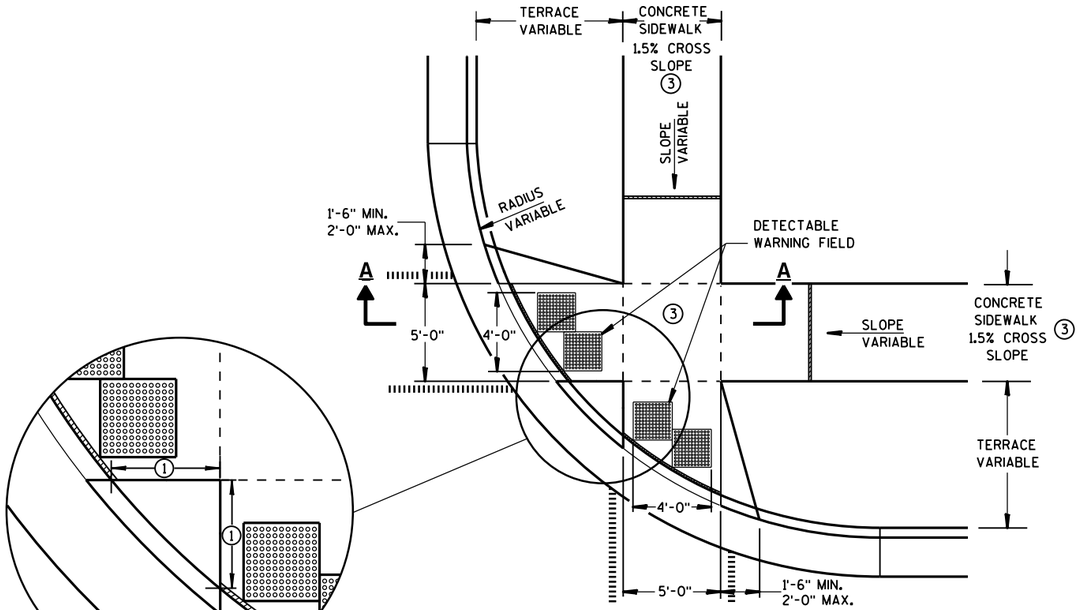
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

S.D.D. 8 D 5-15a

6

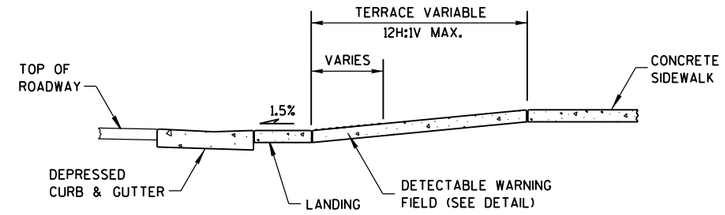
S.D.D. 8 D 5-15a



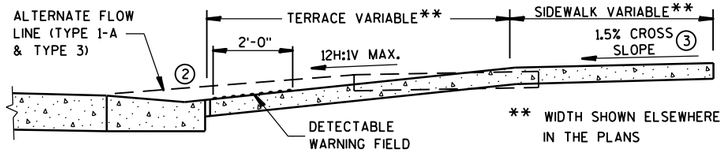
PLAN VIEW

TYPE 2 RAMP

(ON LINE WITH SIDEWALK)



SECTION A-A



SECTION B-B

GENERAL NOTES

USE THE TYPE 3 RAMP ONLY WHEN A TYPE 1 OR TYPE 2 CANNOT BE ACHIEVED BECAUSE OF FIELD CONDITIONS.

DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE, SHALL BE FROM THE SAME MANUFACTURER.

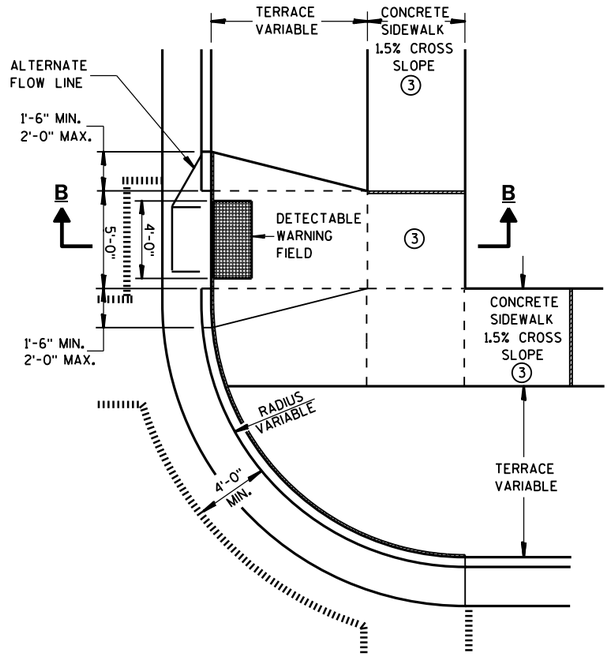
① WHEN THIS DISTANCE IS LESS THAN 6'-0" IT MAY BE DIFFICULT TO ACHIEVE A 12H:1V SLOPE, OR FLATTER, ON THE RAMP. REDUCE CURB HEIGHT IN TRIANGLE AREA TO ACHIEVE 12H:1V SLOPE, OR FLATTER, ON RAMP. 2" MINIMUM CURB HEIGHT.

② GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. PROVIDE DRAINAGE AWAY FROM CURB RAMP AT GUTTER FLAG INTERFACE.

③ ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

LEGEND

- ½" EXPANSION JOINT-SIDEWALK
- CONTRACTION JOINT FIELD LOCATED
- PAVEMENT MARKING CROSSWALK (WHITE)
- ALTERNATIVE LAYOUT



PLAN VIEW

TYPE 3 RAMP

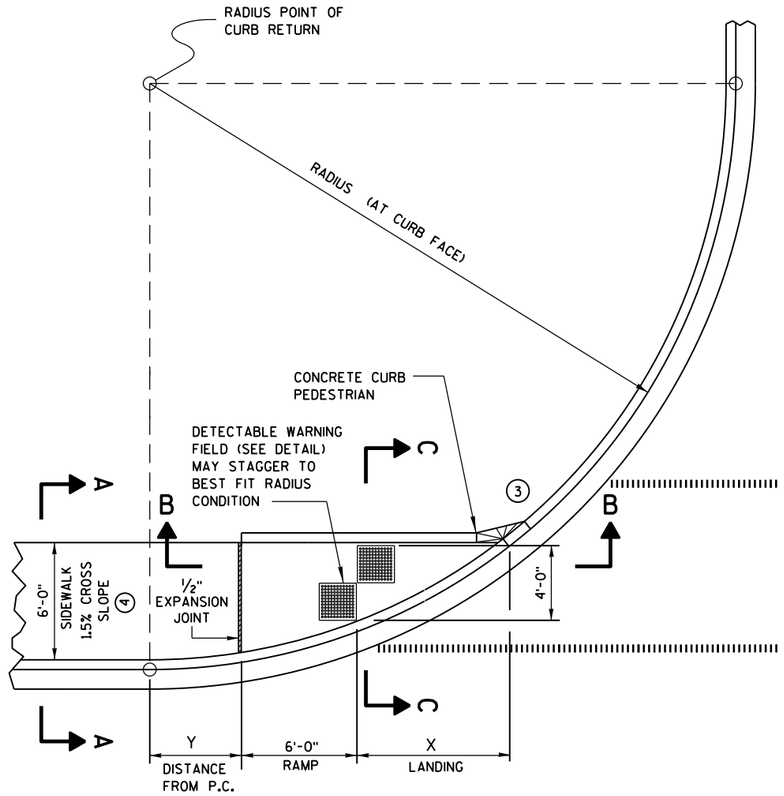
(OUTSIDE OF CROSSWALK AREA)

CURB RAMPS
TYPES 2 AND 3

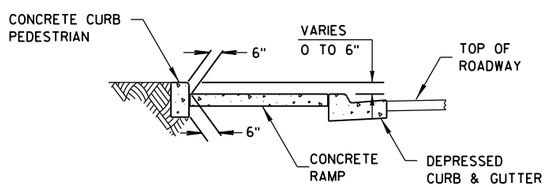
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

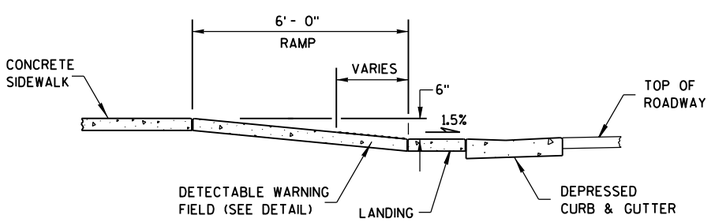
S.D.D. 8 D 5-15b



CURB RAMP TYPE 4A
PLAN VIEW



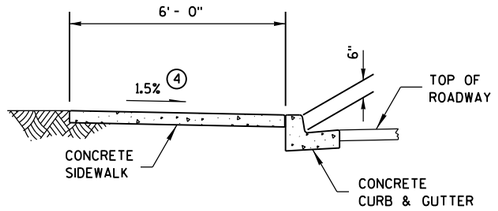
SECTION C-C FOR TYPE 4A



SECTION B-B FOR TYPE 4A

RADIUS (AT CURB FACE)	X	Y
20 FEET	6'-1¾"	2'-7¼"
30 FEET	7'-11¾"	4'-8¼"
40 FEET	9'-5¼"	6'-5"
50 FEET	10'-8¾"	7'-11¼"
60 FEET	11'-10¼"	9'-3½"

INTERMEDIATE RADII CAN BE INTERPOLATED



SECTION A-A FOR TYPE 4A

GENERAL NOTES

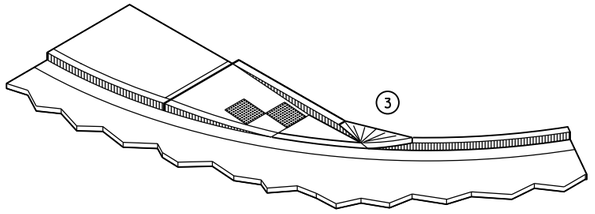
AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS.

RAMP SLOPES SHALL NOT BE STEEPER THAN 12:1.

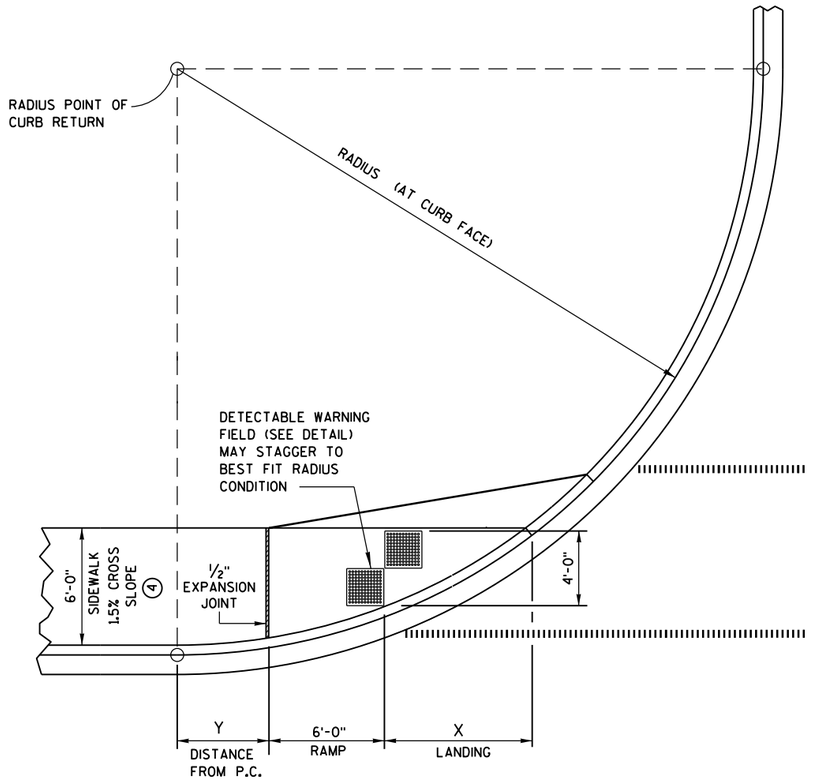
DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE, SHALL BE FROM THE SAME MANUFACTURER.

(3) INSTALL TRANSITION NOSE. (INCIDENTAL TO OTHER PAY ITEMS.) DO NOT MARK TRANSITION NOSE.

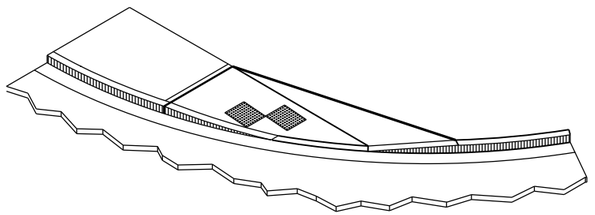
(4) ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.



ISOMETRIC VIEW FOR TYPE 4A



CURB RAMP TYPE 4A1
PLAN VIEW



ISOMETRIC VIEW FOR TYPE 4A1

LEGEND

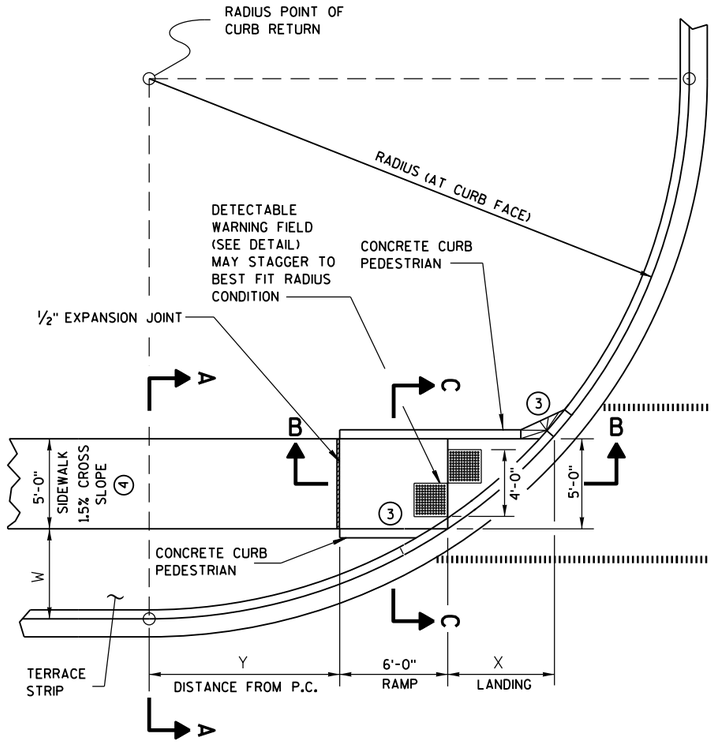
- ½" EXPANSION JOINT-SIDEWALK
- CONTRACTION JOINT FIELD LOCATED
- PAVEMENT MARKING CROSSWALK (WHITE)

CURB RAMPS
TYPES 4A AND 4A1

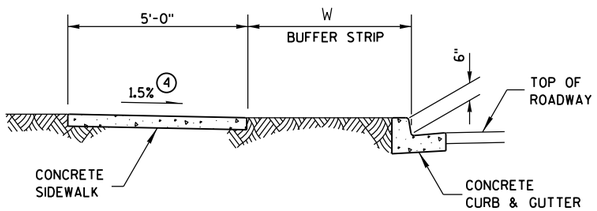
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

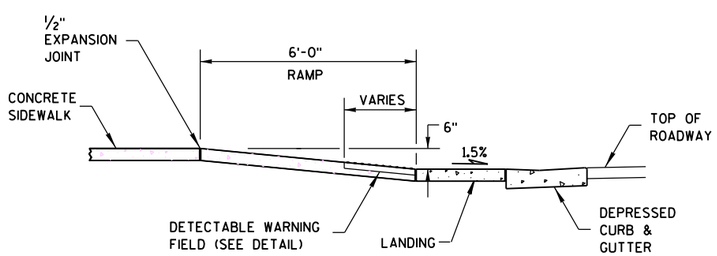
S.D.D. 8 D 5-15c



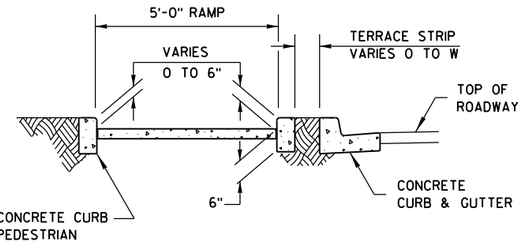
CURB RAMP TYPE 4B
PLAN VIEW



SECTION A-A FOR TYPE 4B



SECTION B-B FOR TYPE 4B



SECTION C-C FOR TYPE 4B

LEGEND

½" EXPANSION JOINT-SIDEWALK

CONTRACTION JOINT FIELD LOCATED

PAVEMENT MARKING CROSSWALK (WHITE)

RADIUS (AT CURB FACE)	W = 3'-0"		W = 4'-0"		W = 5'-0"		W = 6'-0"		W = 7'-0"	
	X	Y	X	Y	X	Y	X	Y	X	Y
20 FEET	5'-5½"	4'-6½"	4'-8½"	6'-0"	4'-1"	7'-2¾"	3'-7"	8'-3½"	3'-1½"	9'-2½"
30 FEET	7'-3¾"	7'-1"	6'-5½"	8'-11½"	5'-9¼"	10'-7"	5'-2½"	12'-0"	4'-8¾"	13'-3¼"
40 FEET	8'-9½"	9'-2½"	7'-10"	11'-5¼"	7'-1"	13'-4½"	6'-5¾"	15'-¾"	5'-11½"	16'-7¼"
50 FEET	10'-¾"	11'-¾"	9'-¼"	13'-7¼"	8'-2½"	15'-9½"	7'-6½"	17'-9"	6'-11¾"	19'-6¼"
60 FEET	11'-2½"	12'-8¾"	10'-¾"	15'-6½"	9'-2¼"	17'-11¾"	8'-5¾"	20'-1¾"	7'-10½"	22'-1½"

INTERMEDIATE RADII CAN BE INTERPOLATED

GENERAL NOTES

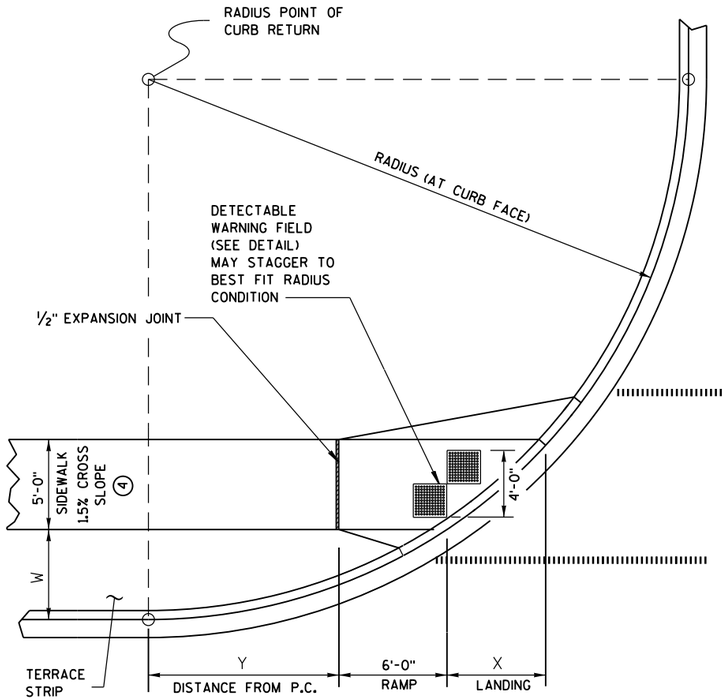
AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS.

RAMP SLOPES SHALL NOT BE STEEPER THAN 12:1.

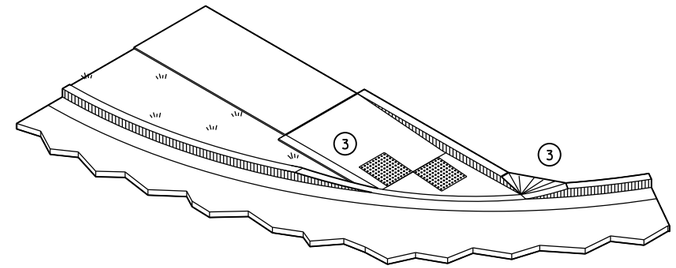
DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE, SHALL BE FROM THE SAME MANUFACTURER.

(3) INSTALL TRANSITION NOSE. (INCIDENTAL TO OTHER PAY ITEMS.) DO NOT MARK TRANSITION NOSE.

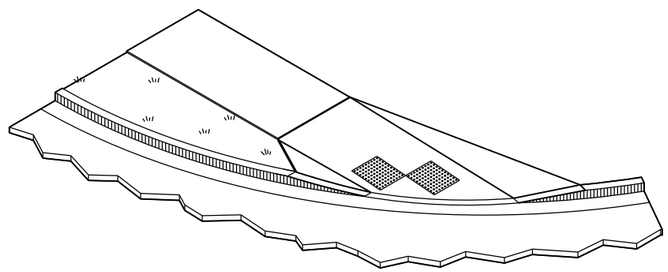
(4) ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.



CURB RAMP TYPE 4B1
PLAN VIEW



ISOMETRIC VIEW FOR TYPE 4B



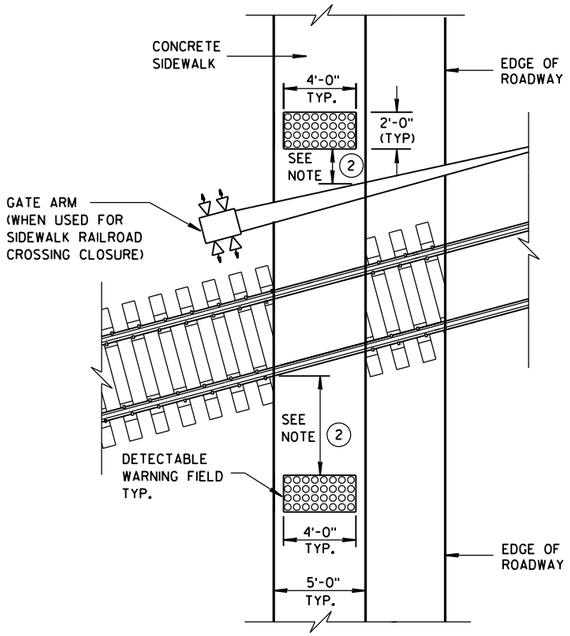
ISOMETRIC VIEW FOR TYPE 4B1

CURB RAMPS TYPE 4B AND 4B1

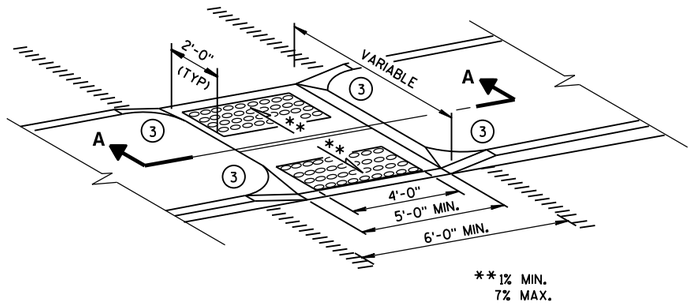
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

S.D.D. 8 D 5-15d



TYPE 8
DETECTABLE WARNINGS AT RAILROAD CROSSING



MEDIAN ISLAND
NON-ELEVATED CROSSING
TYPE 5

GENERAL NOTES

SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.

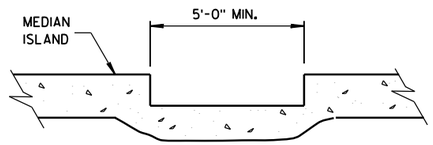
DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE, SHALL BE FROM THE SAME MANUFACTURER.

(1) SLOPE SIDEWALK TOWARD LANDING AS SHOWN WHERE THERE IS NO TERRACE OR WHERE THE TERRACE WIDTH IS LESS THAN 6 FEET WIDE.

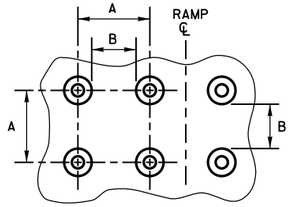
(2) THE EDGE OF THE DETECTABLE WARNING FIELD NEAREST TO A RAILROAD CROSSING SHALL BE 1.5 FEET ± 0.1' FROM THE FACE OF THE GATE ARM IF THE GATE ARM EXTENDS ACROSS THE SIDEWALK. WHERE THERE IS NO PEDESTRIAN GATE, THE EDGE OF THE DETECTABLE WARNING FIELD NEAREST TO THE RAILROAD CROSSING SHALL BE 15 FEET FROM THE NEAREST RAIL.

(3) INSTALL TRANSITION NOSE. (INCIDENTAL TO OTHER PAY ITEMS.) DO NOT MARK TRANSITION NOSE.

(4) ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.



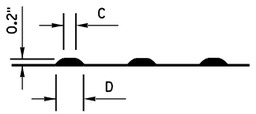
SECTION A-A



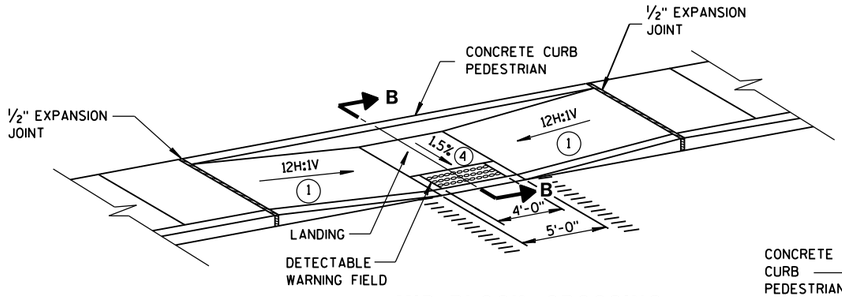
PLAN VIEW

	MIN.	MAX.
A	1.6"	2.4"
B	0.65"	1.5"
C	*	*
D	0.9"	1.4"

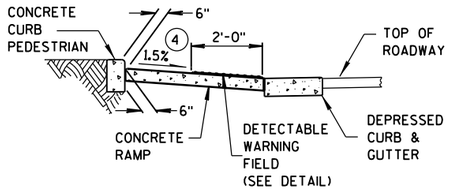
* THE C DIMENSION IS 50% TO 65% OF THE D DIMENSION.



ELEVATION VIEW

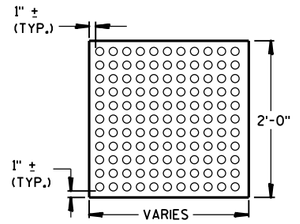


MID-BLOCK CROSSING
TYPE 7A



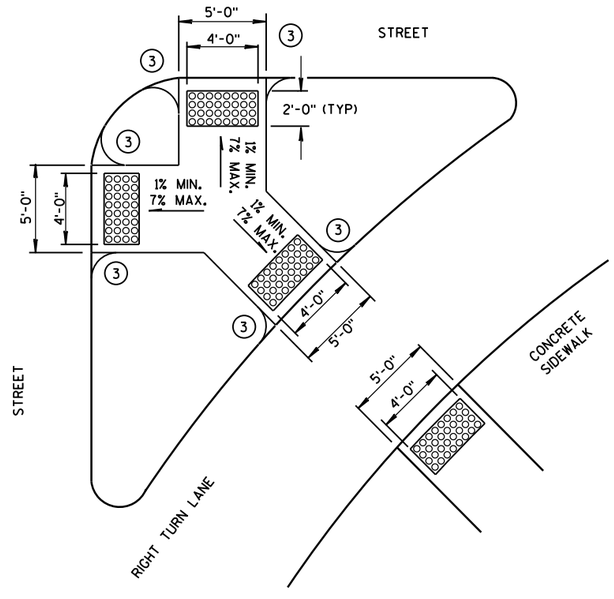
SECTION B-B

TRUNCATED DOMES
DETECTABLE WARNING PATTERN DETAIL

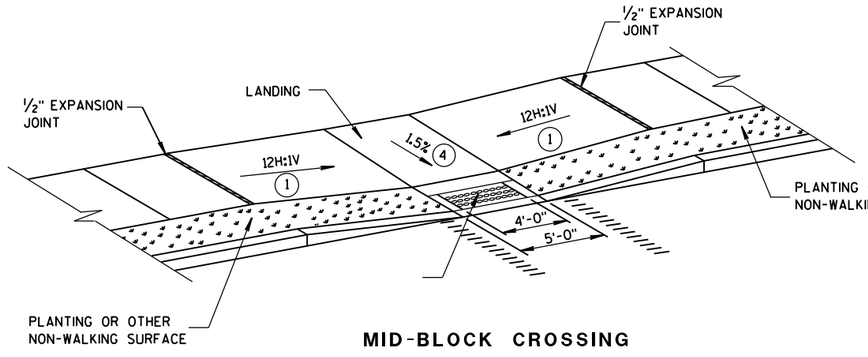


PLAN VIEW

DETECTABLE WARNING FIELD (TYPICAL)



TYPE 6
DETECTABLE WARNING AT ISLANDS



MID-BLOCK CROSSING
TYPE 7B

NOTE: THESE PARALLEL AND PARALLEL/PERPENDICULAR CURB RAMPS MAY BE USED AT INTERSECTIONS AND MID BLOCK LOCATIONS.

LEGEND

- ½" EXPANSION JOINT-SIDEWALK
- CONTRACTION JOINT FIELD LOCATED
- PAVEMENT MARKING CROSSWALK (WHITE)

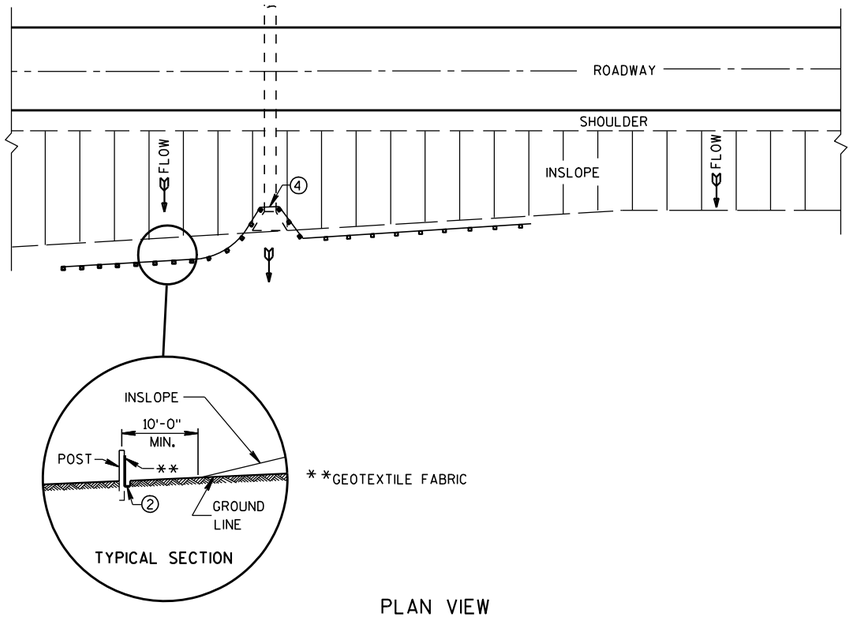
CURB RAMPS
TYPES 5, 6, 7A, 7B & 8

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
2-6-2013 DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS [illegible] ENGINEER
FHWA

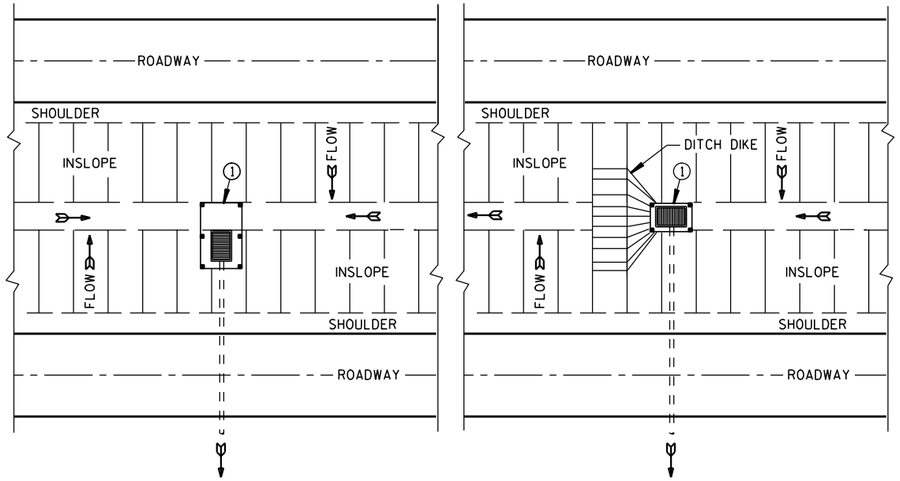
6

S.D.D. 8 D 5-15e



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



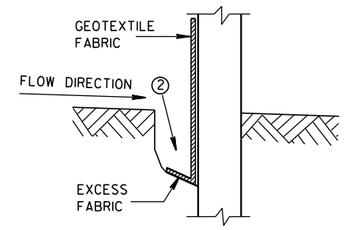
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

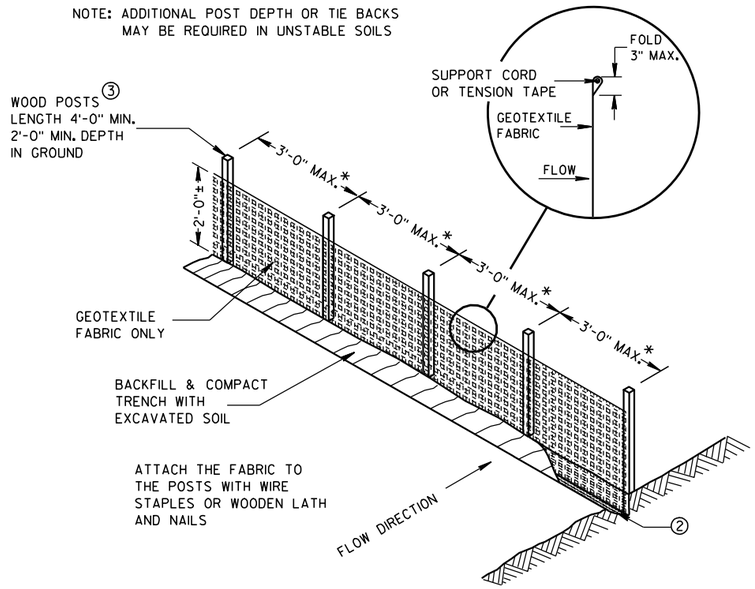
GENERAL NOTES

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.

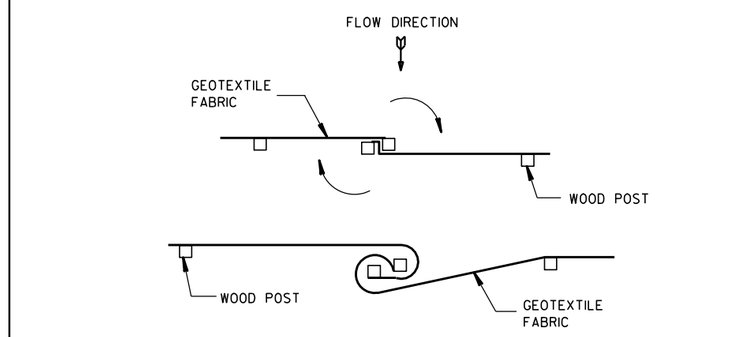


TRENCH DETAIL

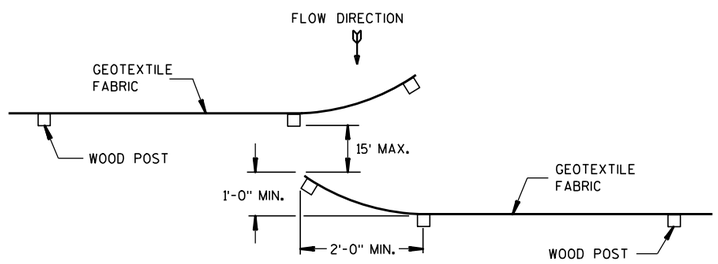


*NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.

SILT FENCE

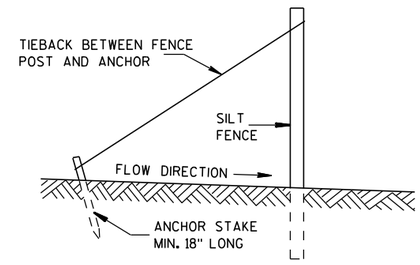


TWIST METHOD



HOOK METHOD

JOINING TWO LENGTHS OF SILT FENCE 5



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

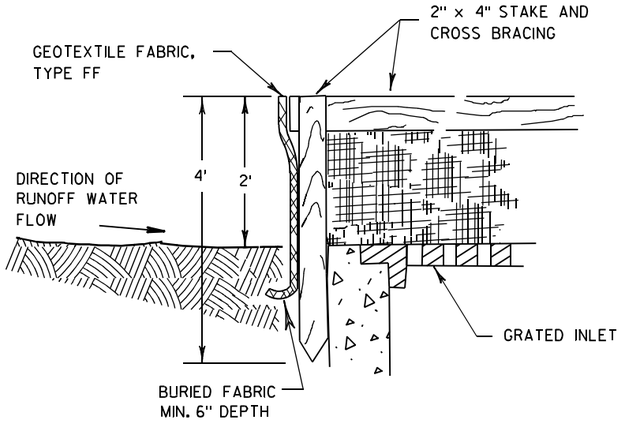
SILT FENCE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	
4-29-05 DATE	/S/ Beth Cannestra CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA	

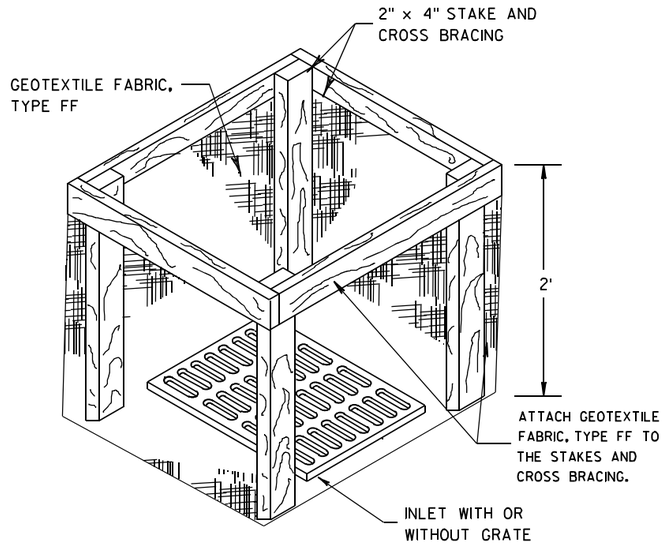
6

S.D.D. 8 E 9-6

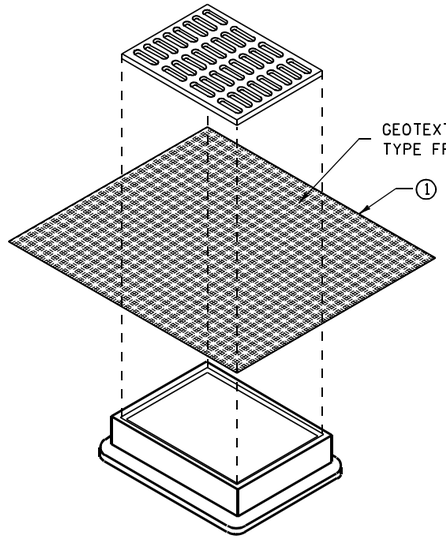
6

S.D.D. 8 E 9-6



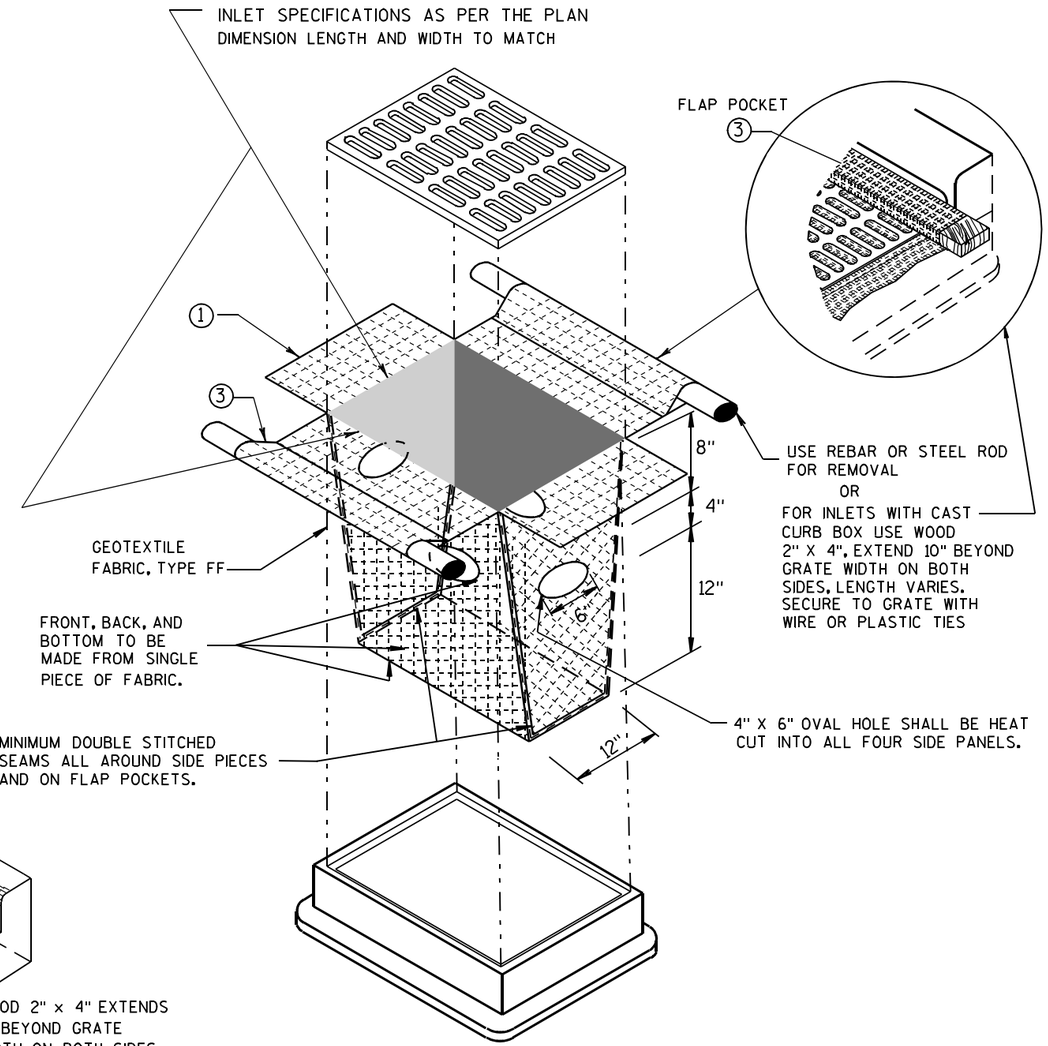


INLET PROTECTION, TYPE A



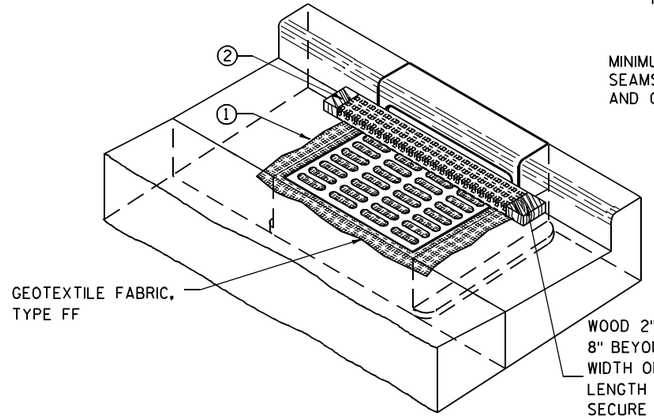
INLET PROTECTION, TYPE B
(WITHOUT CURB BOX)

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



INLET PROTECTION, TYPE D

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



INLET PROTECTION, TYPE C (WITH CURB BOX)

GENERAL NOTES

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

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

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

① FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

② FOR INLET PROTECTION, TYPE C (WITH CURB BOX), AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.

③ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2X4.

INSTALLATION NOTES

TYPE B & C

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

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

TYPE D

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

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

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

INLET PROTECTION
TYPE A, B, C, AND D

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

10/16/02
DATE

/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

6
S.D.D. 8 E 10-2

METAL APRON ENDWALLS

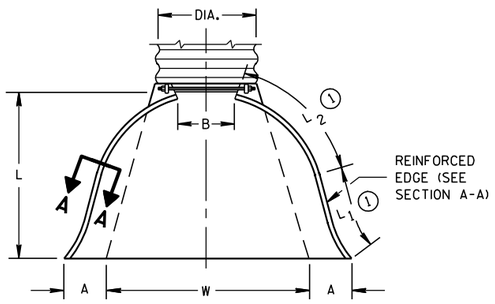
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")		
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to 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

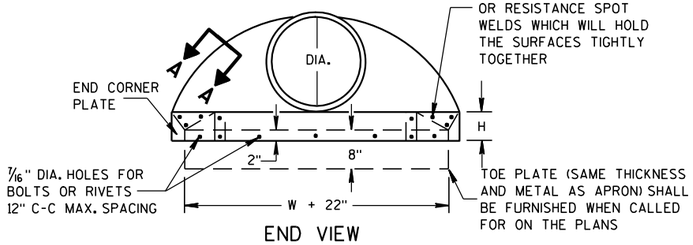
REINFORCED CONCRETE APRON ENDWALLS

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

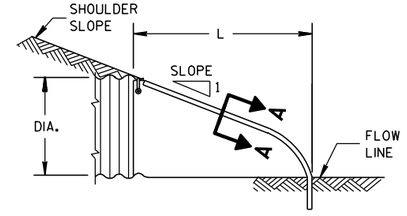
*MINIMUM
**MAXIMUM



PLAN VIEW

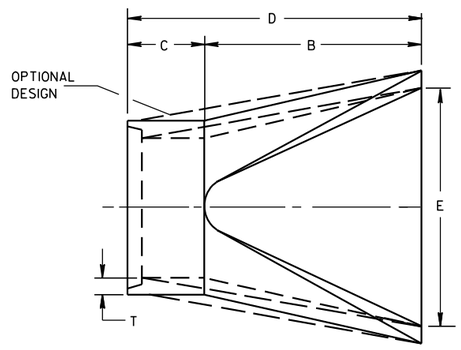


END VIEW

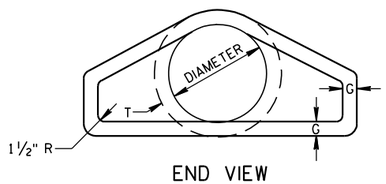


SIDE ELEVATION

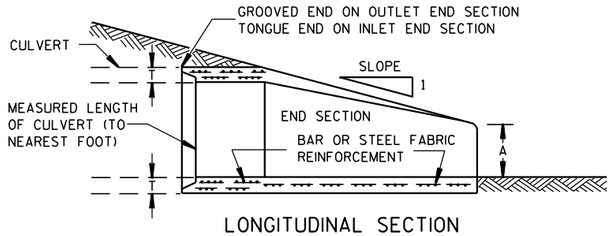
METAL ENDWALLS



PLAN

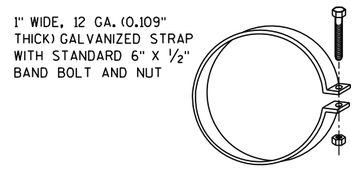


END VIEW



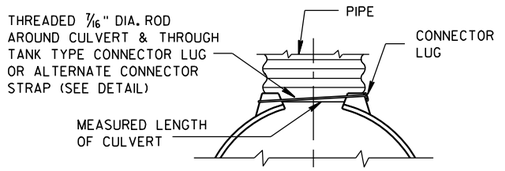
LONGITUDINAL SECTION

CONCRETE ENDWALLS

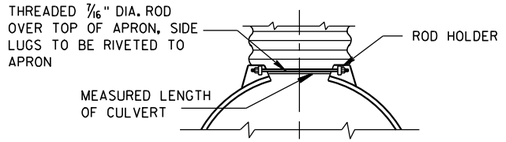


ALTERNATE FOR TYPE 1 CONNECTION

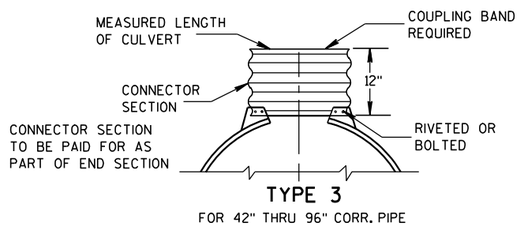
END SECTION CONNECTOR STRAP



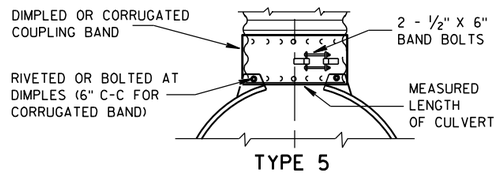
TYPE 1
FOR 12" THRU 24" CORR. PIPE



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

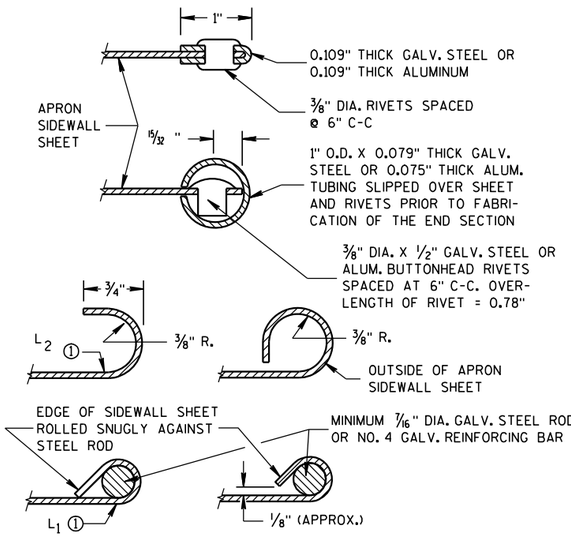
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

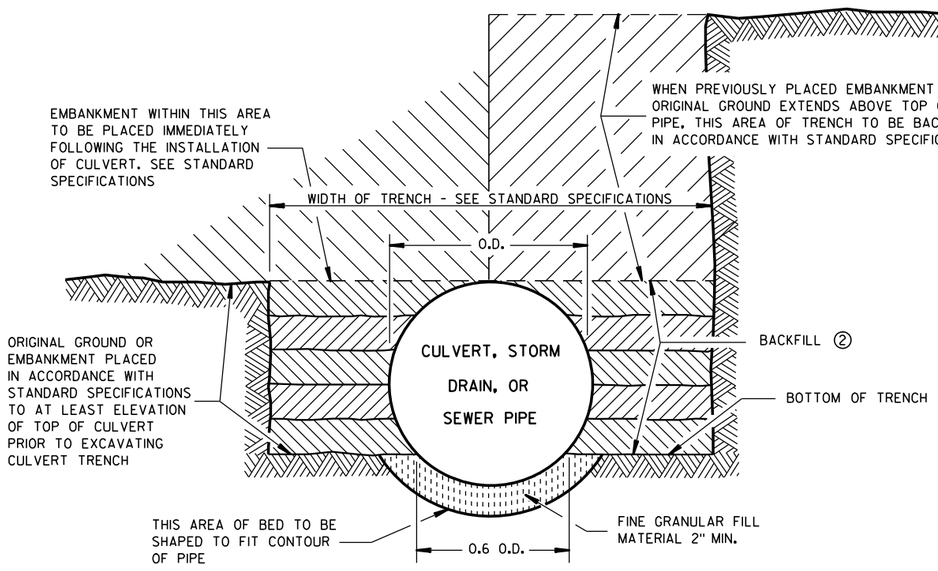
GENERAL NOTES

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

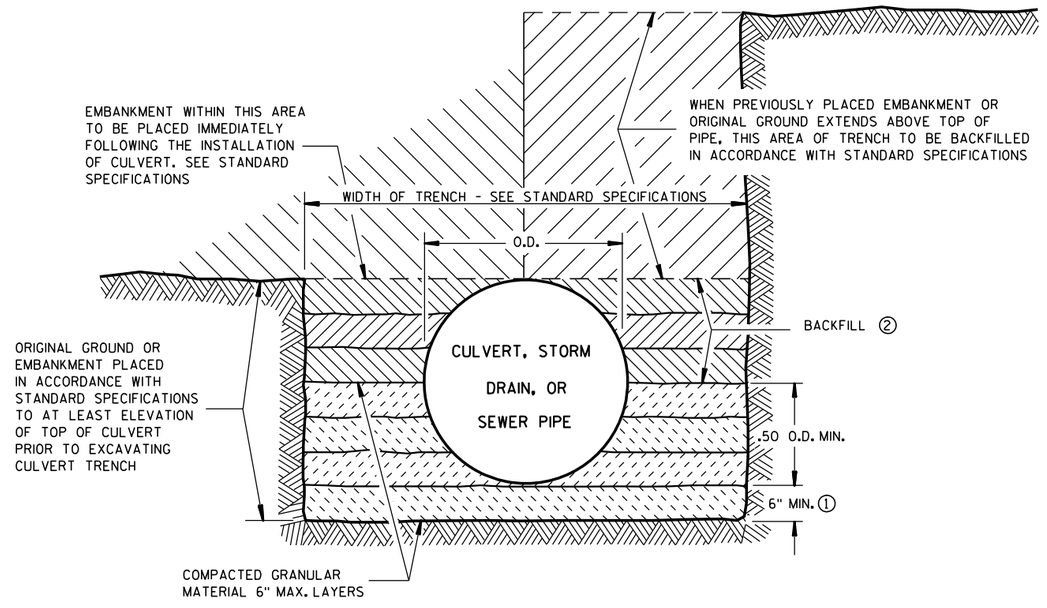
THE SHAPED SUBGRADE WITH GRANULAR FOUNDATION IS AN EQUAL ALTERNATE TO THE GRANULAR FOUNDATION EXCEPT WHERE ROCK IS ENCOUNTERED.

① WHERE ROCK, HARD PAN OR FRAGMENTED MATERIAL IS ENCOUNTERED, THE TRENCH SHALL BE EXCAVATED BELOW THE BOTTOM OF THE PIPE AN AMOUNT EQUAL TO ½ INCH PER FOOT OF PROPOSED EMBANKMENT ABOVE THE TOP OF THE PIPE, BUT NOT LESS THAN 6 INCHES.

② TRENCH SHALL BE BACKFILLED AS REQUIRED BY STANDARD SPECIFICATIONS; SECTION 520 FOR PIPE CULVERTS AND SECTION 607 FOR STORM SEWERS.



SHAPED SUBGRADE WITH GRANULAR FOUNDATION



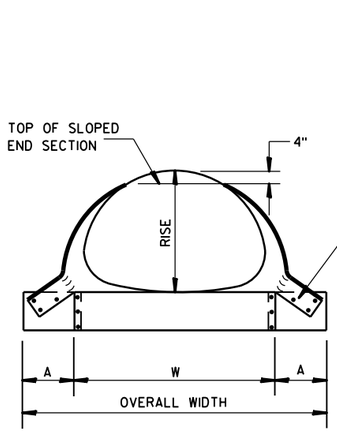
GRANULAR FOUNDATION

CLASS "B" BEDDING

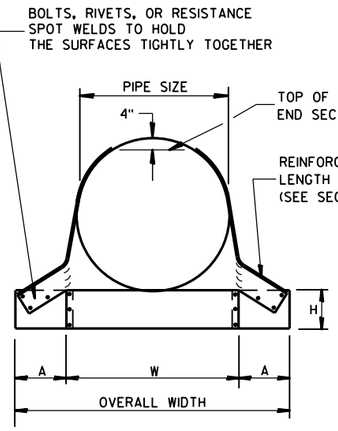
CLASS "B" BEDDING FOR CULVERT PIPE OR STORM SEWER	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	
4/7/83 DATE	/S/ D. L. Strand STATE DESIGN ENGINEER
FHWA	HWYS

6

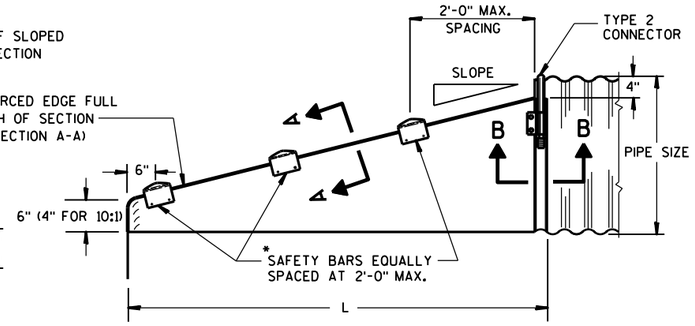
S.D.D. 8 F 5-1



FRONT VIEW



FRONT VIEW



SIDE VIEW

GENERAL NOTES

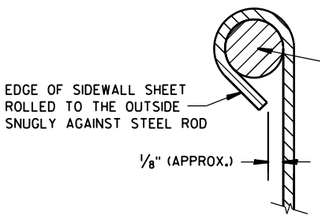
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

SLOPED END SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS, SECTION 521 FOR STEEL APRON ENDWALLS.

SAFETY BARS SHALL BE FABRICATED FROM GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A-53, GRADE B, SCHEDULE 40 OR APPROVED EQUAL.

STEEL APRON ENDWALLS FOR CULVERT PIPE
SLOPED SIDE DRAINS

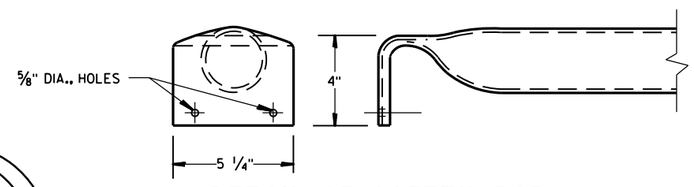
PIPE DIA. (IN.)	MIN. THICK. (Inches)	DIMENSIONS (Inches)				L DIMENSIONS					
		A	H	W	OVERALL WIDTH	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
15	.064	8	6	21	37	4:1	20	6:1	30	10:1	70
18	.064	8	6	24	40	4:1	32	6:1	48	10:1	100
21	.064	8	6	27	43	4:1	44	6:1	66	10:1	130
24	.064	8	6	30	46	4:1	56	6:1	84	10:1	160
30	.109	12	9	36	60	4:1	80	6:1	120	10:1	220
36	.109	12	9	42	66	4:1	104	6:1	156	10:1	280
42	.109	16	12	48	80	4:1	128	6:1	192	——	——
48	.109	16	12	54	86	4:1	152	6:1	228	——	——
54	.109	16	12	60	92	4:1	176	6:1	264	——	——
60	.109	16	12	66	98	4:1	200	6:1	300	——	——



SECTION A-A

*NOTE:
THREE SAFETY BARS ARE SHOWN. ACTUAL NUMBER OF BARS REQUIRED AT A 2'-0" C-C MAX. SPACING WILL VARY DEPENDING ON THE LENGTH OF THE END SECTION.

3" GALVANIZED PIPE. FLATTEN ENDS, THEN BEND OUTSIDE 4" TO MATCH END SECTION SIDES.

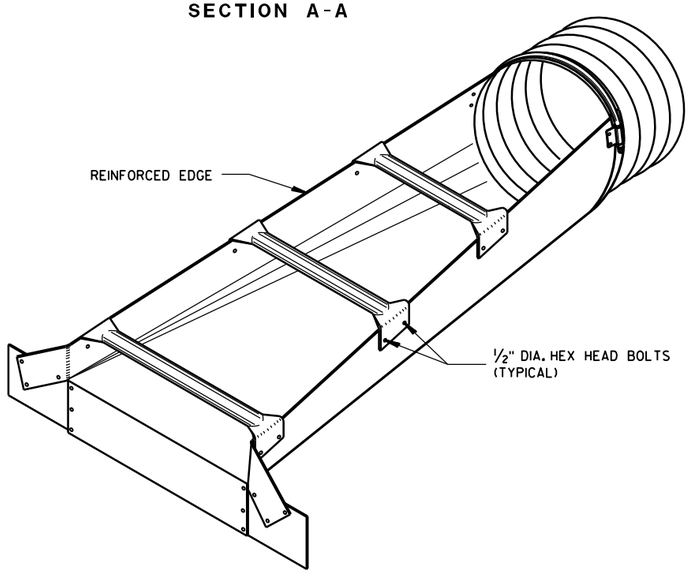


DETAIL OF SAFETY BAR

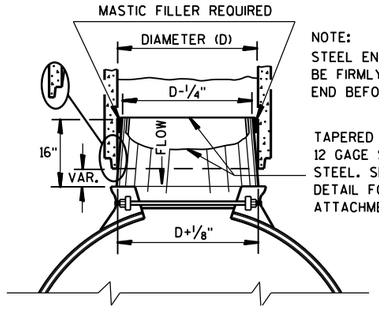
STEEL APRON ENDWALLS FOR PIPE ARCH
SLOPED SIDE DRAINS

EQUIV. DIA. (Inches)	(Inches) SPAN	(Inches) RISE	MIN. THICK. (Inches) ①	DIMENSIONS (Inches) A	H	W	OVERALL WIDTH	L DIMENSIONS SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
15	17	13	.064 *	7	6	30	44	4:1	19	6:1	30	10:1 ②	70
18	21	15	.064 *	8	6	27	43	4:1	20	6:1	30	10:1	70
21	24	18	.064 *	8	6	30	46	4:1	32	6:1	48	10:1	100
24	28	20	.064 *	8	6	34	50	4:1	40	6:1	60	10:1	120
30	35	24	.079 *	12	9	41	65	4:1	56	6:1	84	10:1	160
36	42	29	.109 *	12	9	48	72	4:1	76	6:1	114	10:1	210
42	49	33	.109	16	12	55	87	4:1	92	6:1	138	——	——
48	57	38	.109	16	12	63	95	4:1	112	6:1	168	——	——
54	64	43	.109	16	12	70	102	4:1	132	6:1	198	——	——

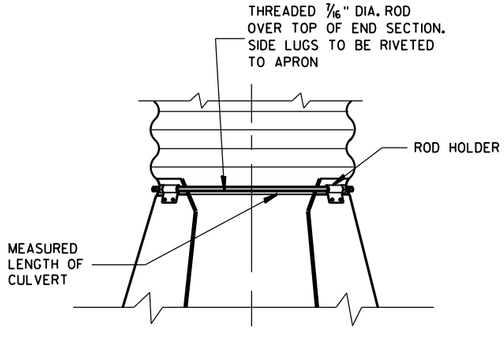
① * MINIMUM THICKNESS OF ALL 10:1 SLOPED SIDE DRAINS IS 0.109".
② ACTUAL SLOPE GREATER THAN 10:1.



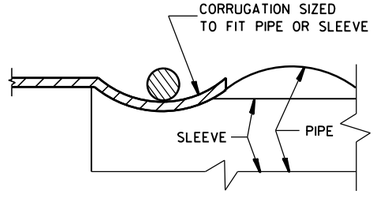
ISOMETRIC VIEW



STEEL ADAPTER SLEEVE FOR CONCRETE PIPE



TYPE 2
CONNECTION DETAIL



SECTION B-B

STEEL APRON ENDWALLS FOR CULVERT PIPE AND PIPE ARCH SLOPED SIDE DRAINS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
9/14/2012 — DATE
/S/ Jerry H. Zoda — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

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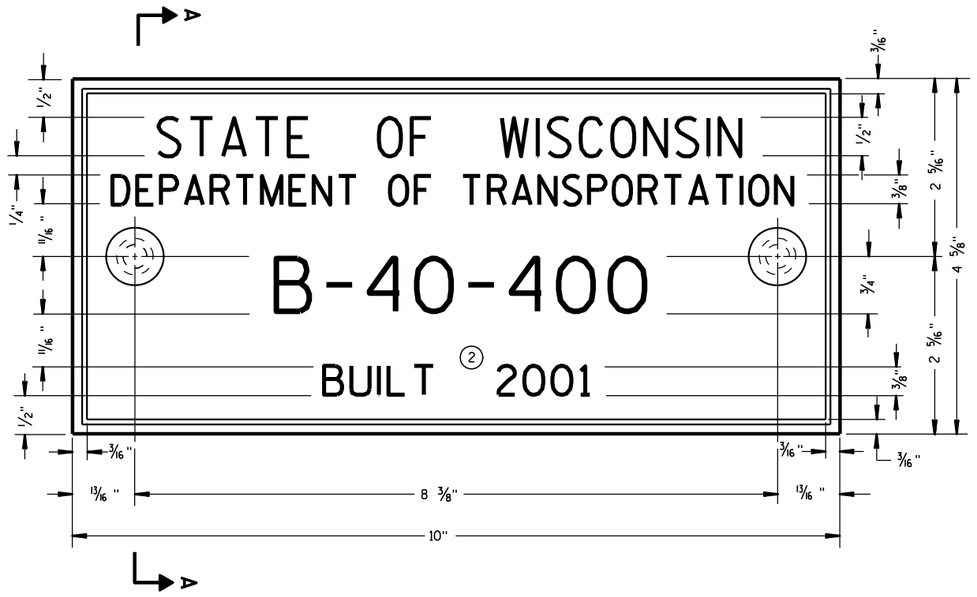
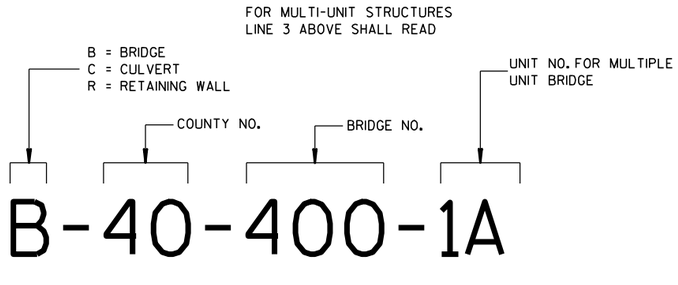
S.D.D. 8 F 7-5

6

S.D.D. 8 F 7-5



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



NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

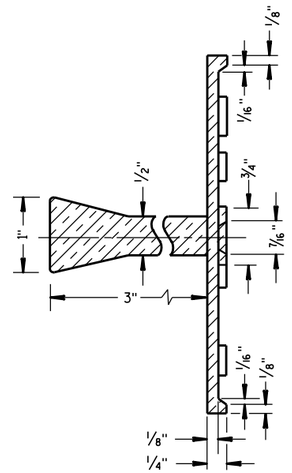
GENERAL NOTES

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.

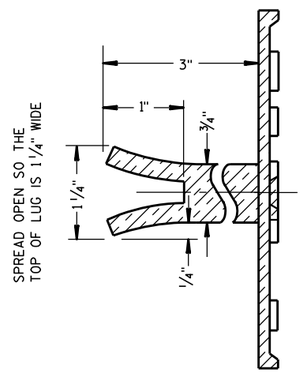
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

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

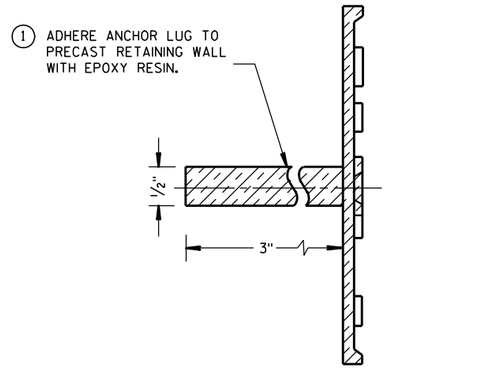
(2) REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



SECTION A-A



ALTERNATE LUG



ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

NAME PLATE (STRUCTURES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

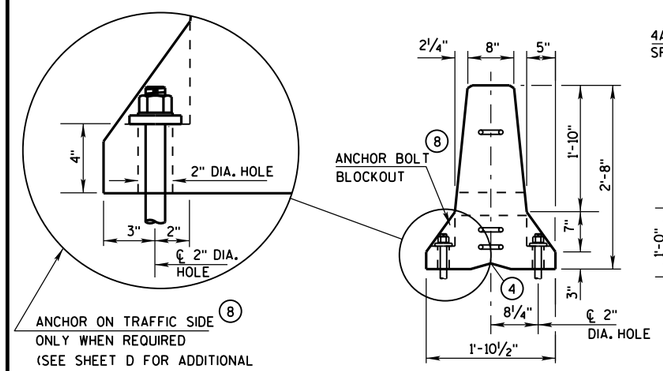
APPROVED

3/26/10 DATE — /S/ Scot Beck — CHIEF STRUCTURAL DEVELOPMENT ENGINEER

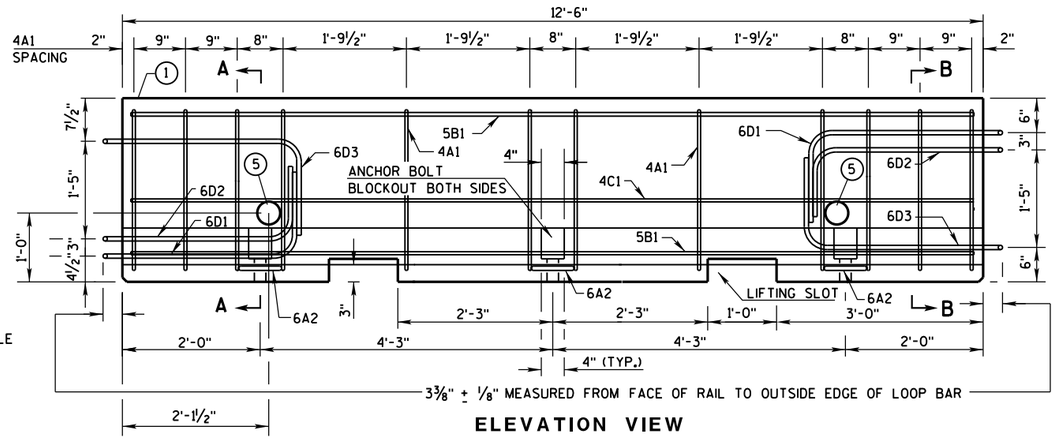
FHWA

6

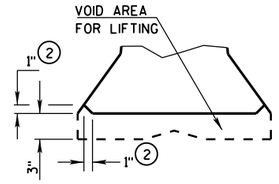
S.D.D. 12 A 3-10



END VIEW



ELEVATION VIEW



DETAIL "B"
LIFTING SLOT DETAIL

GENERAL NOTES

THESE GENERAL NOTES APPLY TO SHEETS 14B7-14(a) THRU 14B7-14(h).

DO NOT INTERMIX CONCRETE BARRIER TEMPORARY PRCAST, 12'-6" (CBTP12.5) WITH OTHER TEMPORARY CONCRETE BARRIERS.

USE ASTM A-615, GRADE 60, DEFORMED STEEL BARS FOR BARS 4A1, 6A2, 5B1 AND 4C1 IN THE BARRIER SECTION AND FOR 4V1, 4V2, 4V3, 4V4, 4V5, 4V6, 4F1, 4F2 AND 5F3 IN THE BARRIER TAPER SECTION.

LOOP BARS 6D1, 6D2 AND 6D3 SHALL BE ¾" SMOOTH STEEL BARS WITH A MINIMUM YIELD STRENGTH OF 60 KSI, A TENSILE STRENGTH OF NOT LESS THAN 1.25 TIMES THE YIELD STRENGTH BUT A MINIMUM OF 80 KSI, A MINIMUM 14% ELONGATION IN 8 INCHES AND PASSING A 180 DEGREE BEND TEST USING A 3-½" PIN BEND DIAMETER FOR BEND TESTS. THE LOOPS SHALL BE INSTALLED WITHIN ⅛" OF THE PLAN DIMENSION.

CONSTRUCT LIFTING SLOTS AS SPECIFIED ON THE PLANS TO FACILITATE THE DRAINAGE OF WATER AFTER INSTALLATION.

PLACE BARRIER ON A PAVED SURFACE. REMOVE ALL LOOSE DIRT AND SAND FROM THE ROADWAY SURFACE PRIOR TO PLACEMENT OF THE BARRIER.

INSTALL MECHANICAL OR ADHESIVE ANCHORS PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE MANUFACTURER'S INFORMATION TO PROJECT ENGINEER.

(1) MARK ONE END OF EACH BARRIER PERMANENTLY BY FORMING INTO THE BARRIER THE FOLLOWING INFORMATION:
- a. TYPE: WI CBTP
- b. MANUFACTURER
- c. DATE MANUFACTURED (MONTH AND YEAR)

(2) 1" CHAMFER TO PREVENT SPALLING.

(3) A ⅜" HOLE IN THE CONNECTION PIN, AT THE LOCATION SHOWN, IS ACCEPTABLE, BUT NOT REQUIRED..

(4) "V" NOTCH IS OPTIONAL.

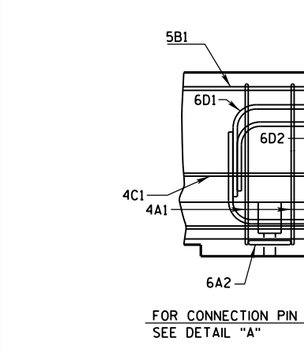
(5) THE 4" DIAMETER, 11 GAUGE STEEL, ROUND MECHANICAL TUBING SLEEVE FOR LIFTING (OPTIONAL).

(6) NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.

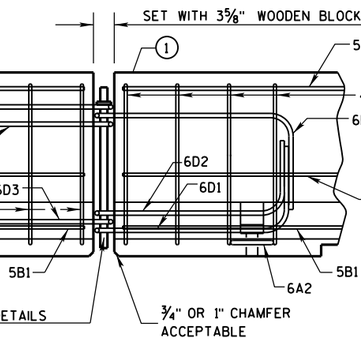
(7) USE DELINEATORS CONFORMING TO SECTION 633 OF THE STANDARD SPECIFICATIONS. CONTRACTOR MAY USE ALTERNATE SHAPES AND HOUSING. INSTALL DELINEATORS ACCORDING TO MANUFACTURES INSTRUCTION. INSTALL YELLOW REFLECTORS WHEN BARRIER IS LOCATED TO THE LEFT OF TRAFFIC AND WHITE REFLECTORS WHEN BARRIER IS LOCATED TO THE RIGHT OF TRAFFIC. SPACE DELINEATORS A MAXIMUM OF 25 FEET APART. PROVIDE TOP MOUNTED DELINEATORS IN ADDITION TO THE SIDE MOUNTED DELINEATORS ON ALL BARRIER INSTALLATIONS LOCATED ON A CURVED ALIGNMENT LONGER THAN 200 FEET AND ON BARRIERS USED TO SEPARATE OPPOSING TRAFFIC.

(8) SEE SHEET D FOR ANCHORING CRITERIA.

(9) 1" CHAMFER OPTIONAL.



SECTION A-A
(STIRRUP PLACEMENT)

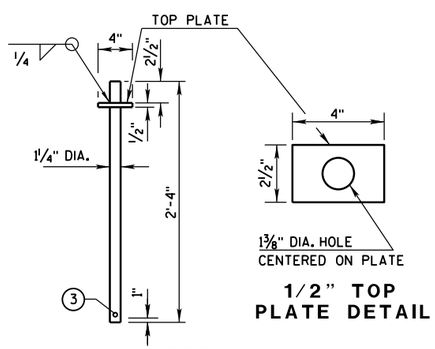


SECTION B-B
(STIRRUP PLACEMENT)

PLAN VIEW

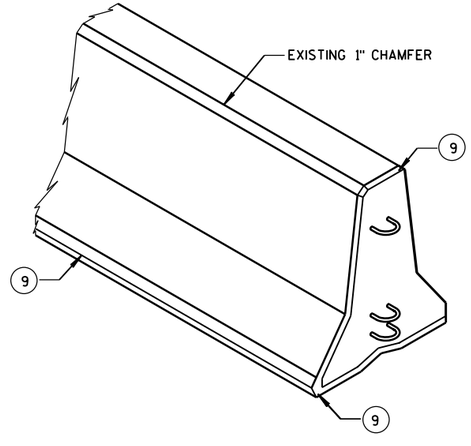
DETAILS OF BARRIER SECTION

DETAILS OF BARRIER CONNECTION



1/2" TOP
PLATE DETAIL

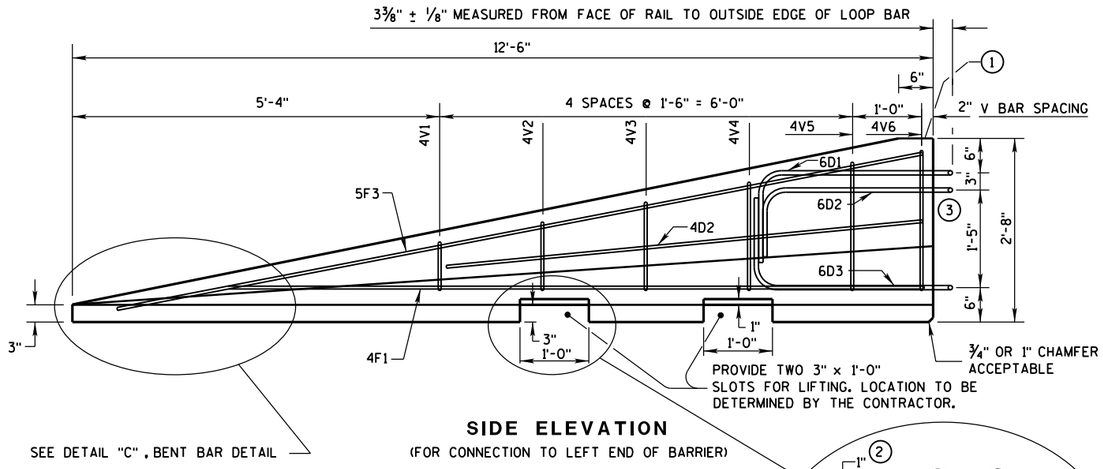
DETAIL "A"
CONNECTION PIN
(A36 STEEL (10.9 LB EACH))



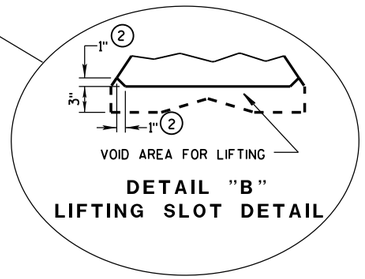
CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

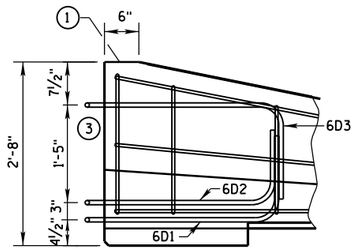
6
S.D.D. 14 B 7-14a



SIDE ELEVATION
(FOR CONNECTION TO LEFT END OF BARRIER)



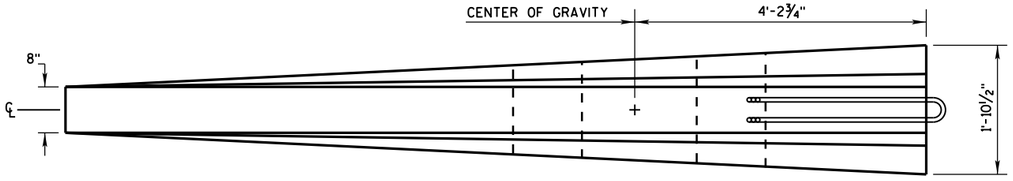
DETAIL "B"
LIFTING SLOT DETAIL



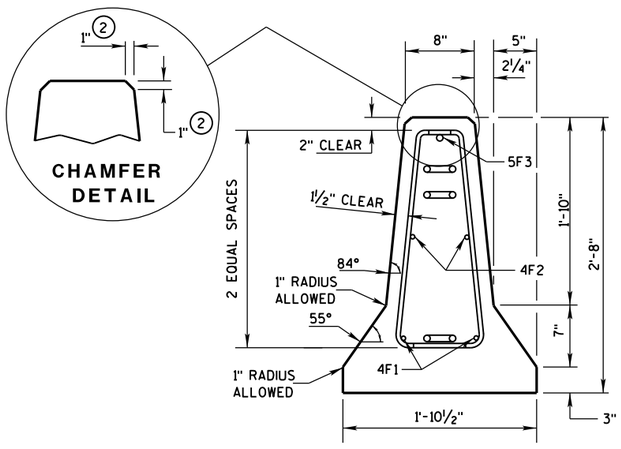
SIDE ELEVATION
LOOP BAR ASSEMBLY INVERTED
FOR OPPOSITE END.
(FOR CONNECTION TO RIGHT END OF BARRIER)

GENERAL NOTES

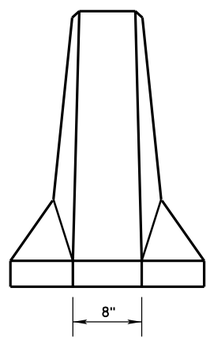
1. MARK ONE END OF EACH BARRIER PERMANENTLY BY FORMING INTO THE BARRIER THE FOLLOWING INFORMATION:
   a. TYPE WICBTP
   b. MANUFACTURER
   c. DATE MANUFACTURED (MONTH AND YEAR)
2. 1" CHAMFER TO PREVENT SPALLING.
3. NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.



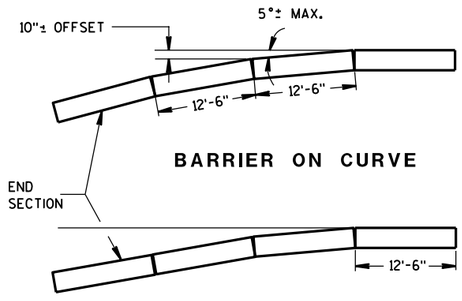
PLAN VIEW



END SECTION



FRONT ELEVATION



BARRIER ON CURVE

FLARE AT BARRIER END

POSTED SPEED, (MPH)	FLARE RATE
40 OR LESS	6:1
45 OR GREATER	8:1

DETAILS OF BARRIER TAPER SECTION

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

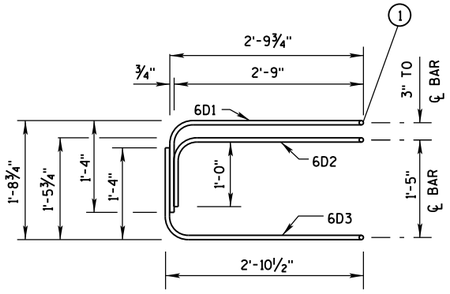
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6
S.D.D. 14 B 7-14b

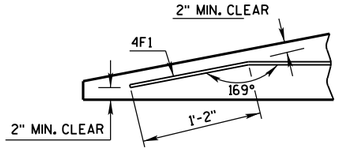
BARRIER TAPER SECTION BILL OF MATERIALS

(PER 12'-6" BARRIER TAPER SECTION)

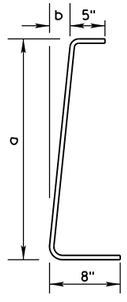
BAR	BAR SIZE	NO. OF BARS	LENGTH FT.
4V1	4	2	1'-11"
4V2	4	2	2'-2"
4V3	4	2	2'-6"
4V4	4	2	2'-9"
4V5	4	2	3'-2"
4V6	4	2	3'-4"
4F1	4	2	12'-0"
4F2	4	2	7'-6"
5F3	5	1	11'-9"
LOOP ASSEMBLY			
6D1	6	1	8'-5"
6D2	6	1	7'-7"
6D3	6	1	8'-6"



ELEVATION
LOOP BAR ASSEMBLY



DETAIL "C"
BENT BAR DETAIL



BAR	a	b
V1	10"	1"
V2	1'-1"	1¼"
V3	1'-5"	1⅝"
V4	1'-8"	1⅞"
V5	2'-0½"	2⅜"
V6	2'-3"	2¾"

4V BARS
2 AT EACH SIZE REQUIRED
FOR STIRRUP ASSEMBLY

TAPER BARRIER SECTION

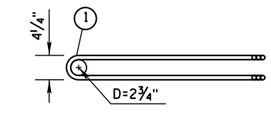
GENERAL NOTES

(1) NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.

BARRIER SECTION BILL OF MATERIALS

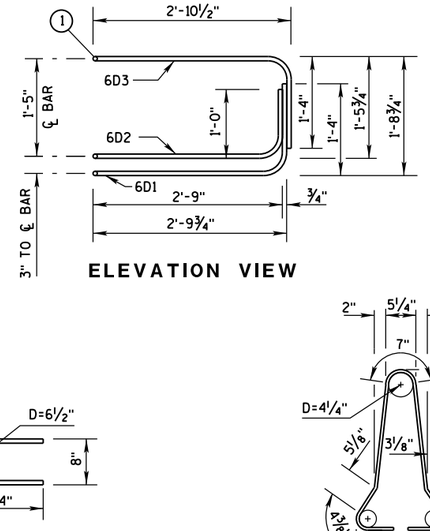
(PER 12'-6" BARRIER SECTION)

BAR	BAR SIZE	NO. OF BARS	LENGTH FT.
4A1	4	12	6'-0"
6A2	6	6	2'-11"
5B1	5	3	12'-2"
4C1	4	2	12'-2"
LOOP ASSEMBLY			
6D1	6	2	8'-5"
6D2	6	2	7'-7"
6D3	6	2	8'-6"

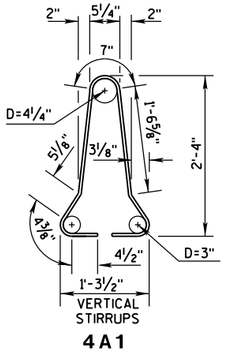


PLAN VIEW
LOOP BAR ASSEMBLY
(MARKED END SHOWN, INVERT FOR OTHER END)

6A2



ELEVATION VIEW



4A1

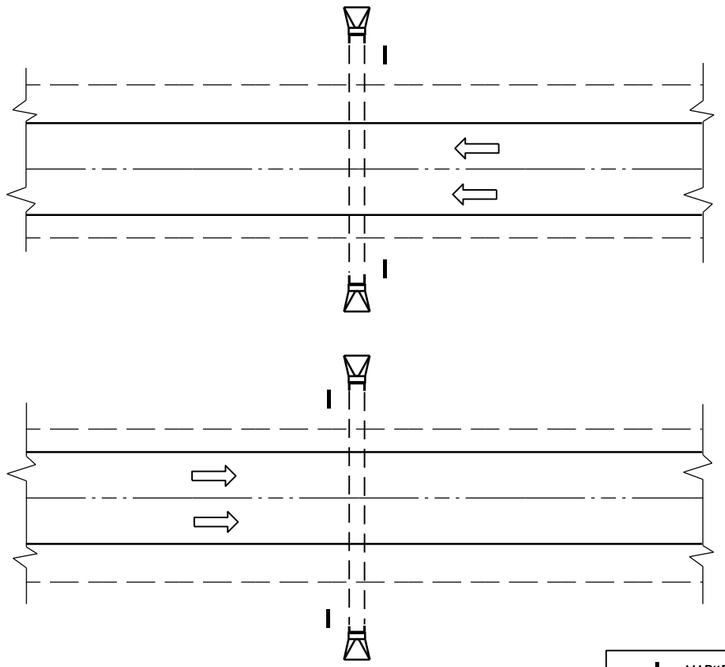
BARRIER SECTION

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

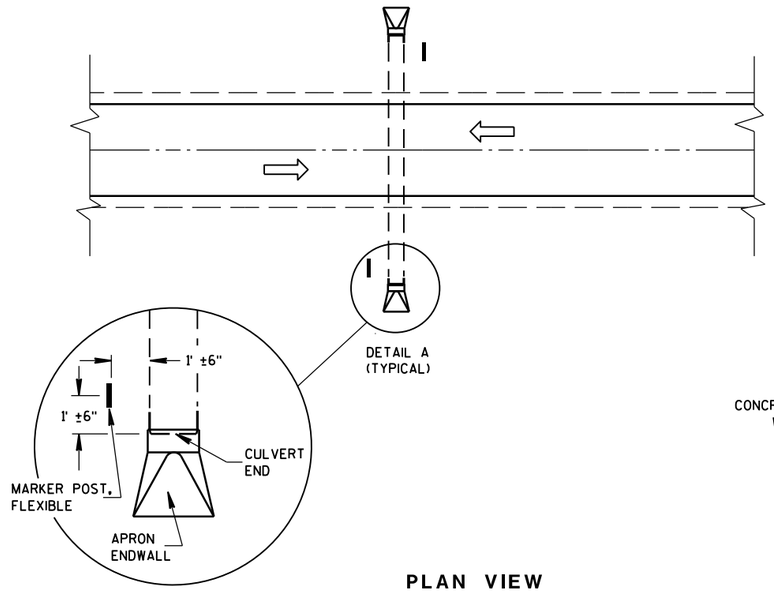
6

S.D.D. 14 B 7-14c



PLAN VIEW

DIVIDED HIGHWAY



DETAIL A
(TYPICAL)

PLAN VIEW

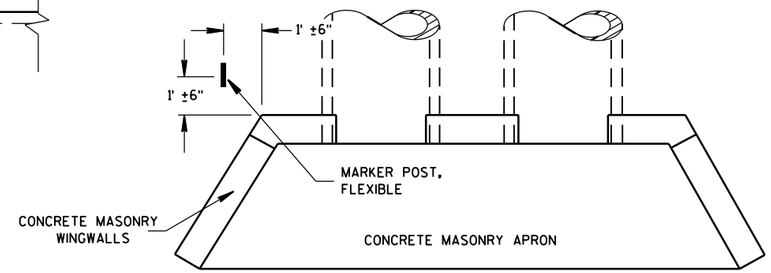
UNDIVIDED HIGHWAY

MARKER POST, FLEXIBLE

DIRECTION OF TRAFFIC FLOW

GENERAL NOTES

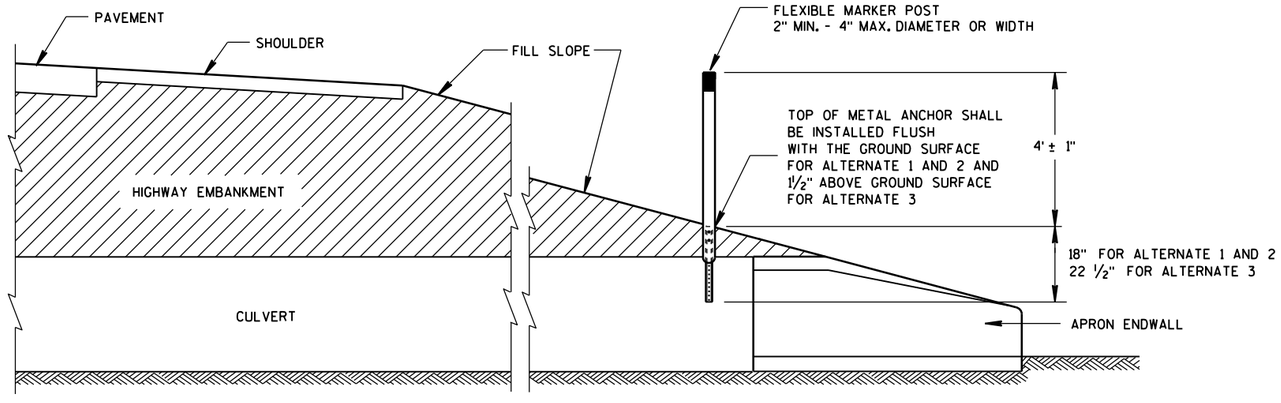
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.



PLAN VIEW

CONCRETE MASONRY ENDWALLS FOR CULVERT PIPE AND PIPE ARCH

FLEXIBLE MARKER POST LOCATION



CROSS SECTION

FLEXIBLE MARKER POST

FLEXIBLE MARKER POST FOR CULVERT END

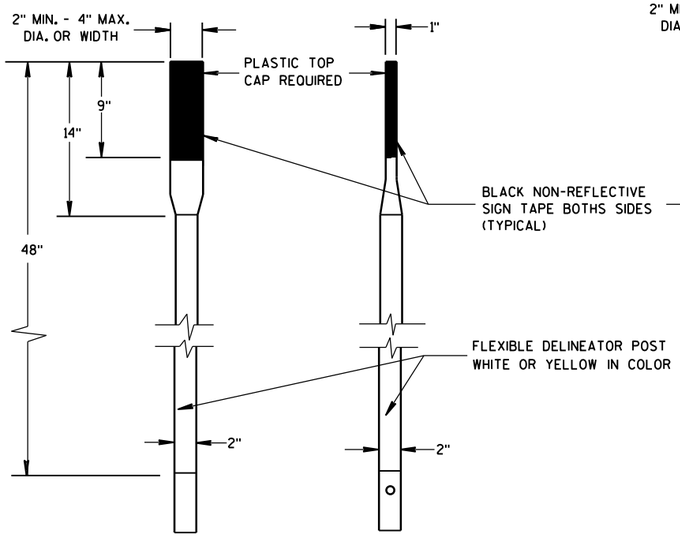
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

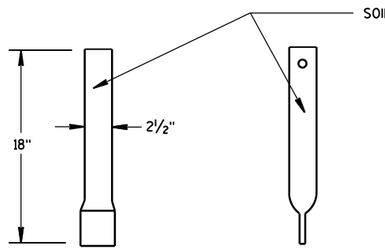
6

S.D.D. 15 A 3-2a

6

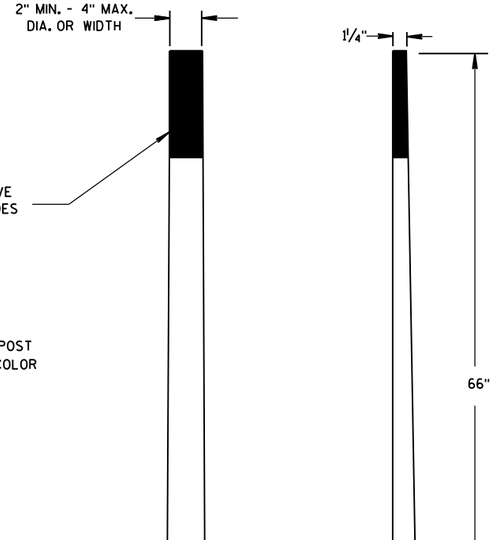
S.D.D. 15 A 3-2a





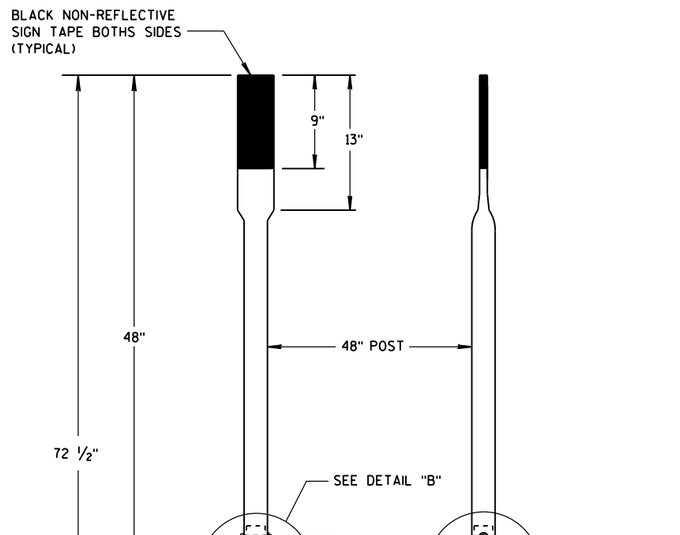
FRONT VIEW SIDE VIEW

ALTERNATE 1



FRONT VIEW SIDE VIEW

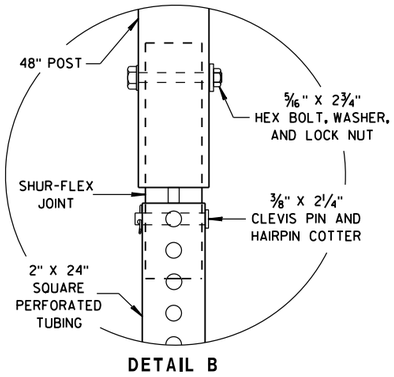
ALTERNATE 2



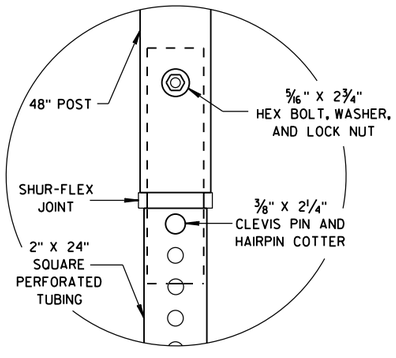
FRONT VIEW SIDE VIEW

ALTERNATE 3

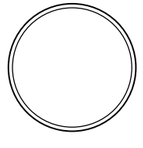
FLEXIBLE MARKER POSTS



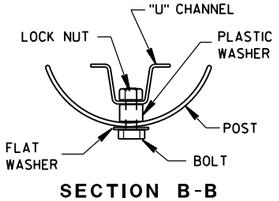
DETAIL B



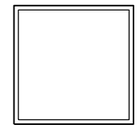
DETAIL C



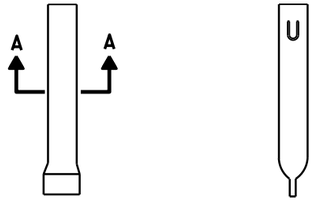
SECTION A-A



SECTION B-B

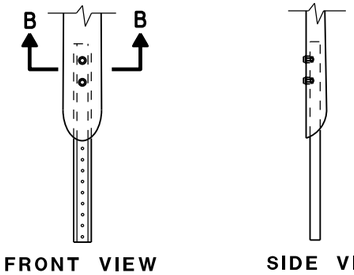


SECTION C-C



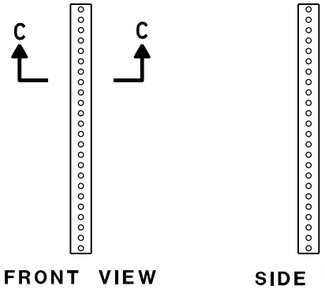
FRONT VIEW SIDE VIEW

ALTERNATE 1



FRONT VIEW SIDE VIEW

ALTERNATE 2



FRONT VIEW SIDE VIEW

ALTERNATE 3

FLEXIBLE MARKER POST ANCHORS

FLEXIBLE MARKER POST
FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

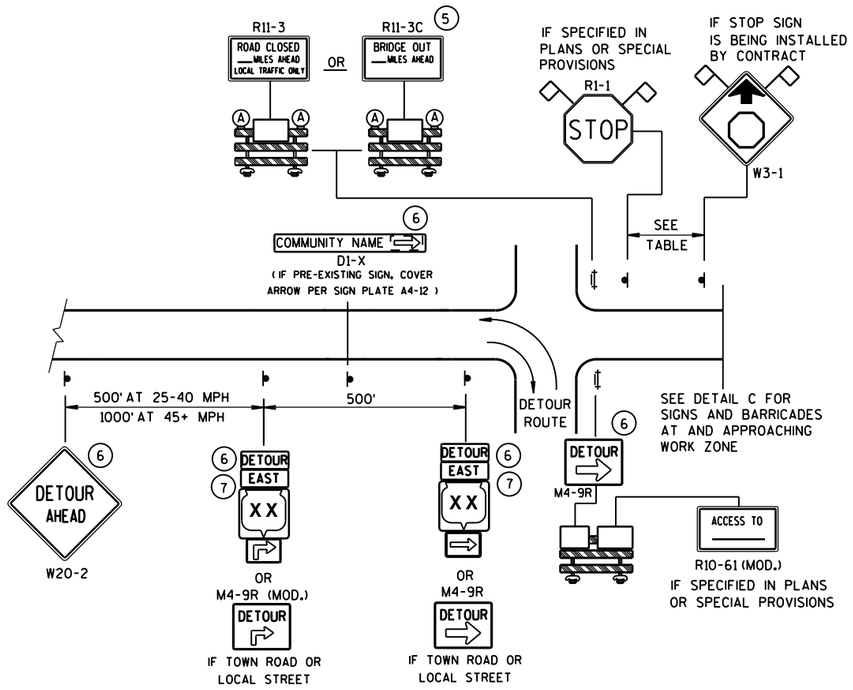
APPROVED
10/1/2012 — DATE
/S/ Travis Feltes — STATE TRAFFIC ENGINEER
FHWA

6

S.D.D. 15 A 3-2b

6

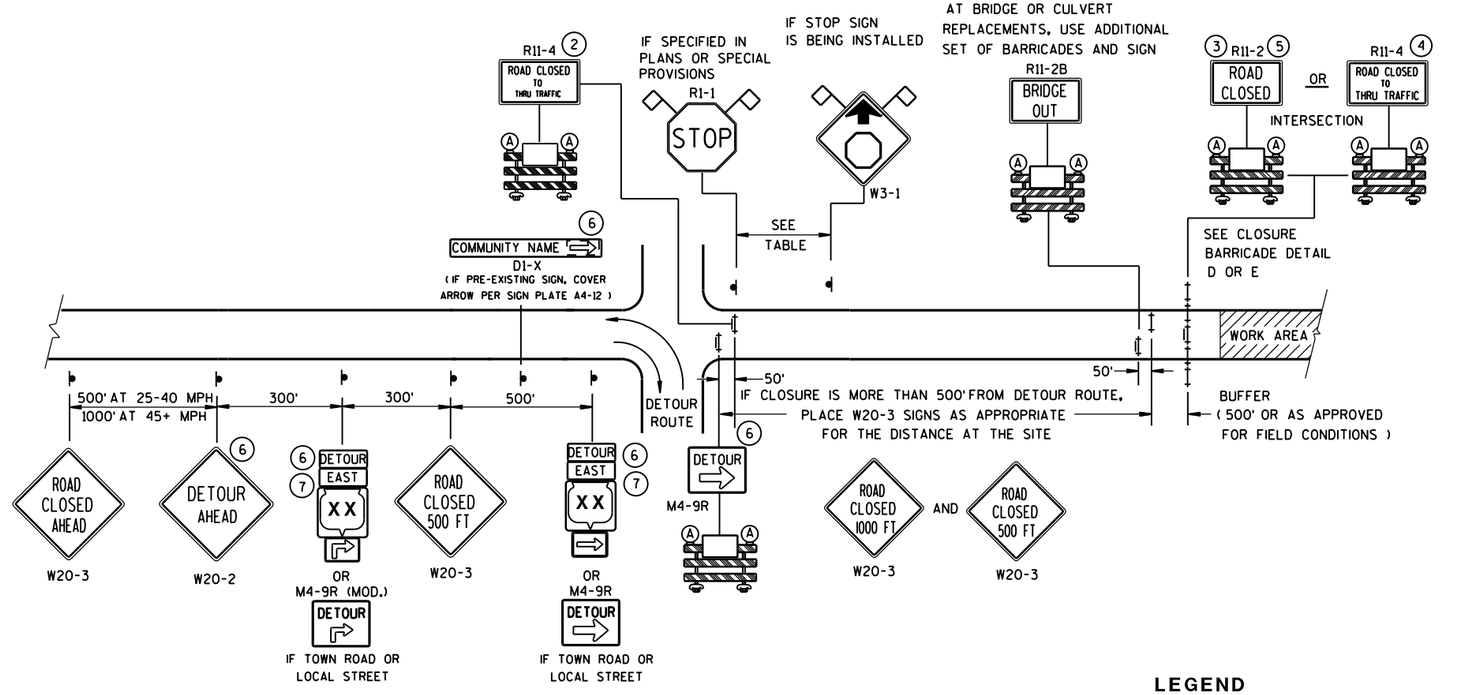
S.D.D. 15 A 3-2b



DETAIL A

MAINLINE CLOSURE WITH POSTED DETOUR

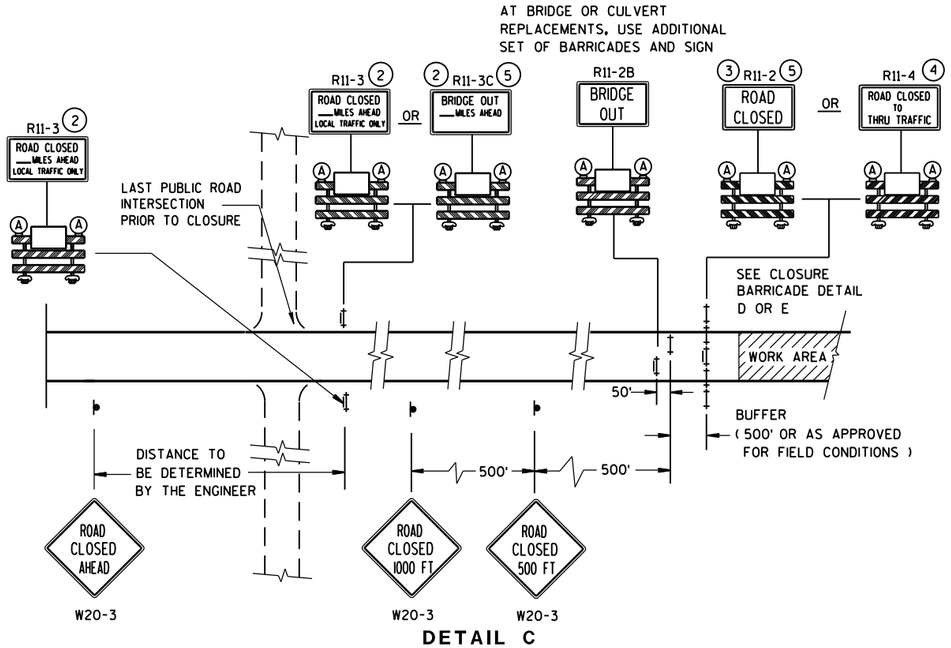
WORK ZONE GREATER THAN ½ MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



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
- (A) TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA
- DETOUR / EAST — M4-8 / M3-X
- XX — M1-4; COUNTY XX — M1-5A; XX — M1-6
- M05-1 OR M06-1
- FLAGS, 16" X 16" MIN., (ORANGE)

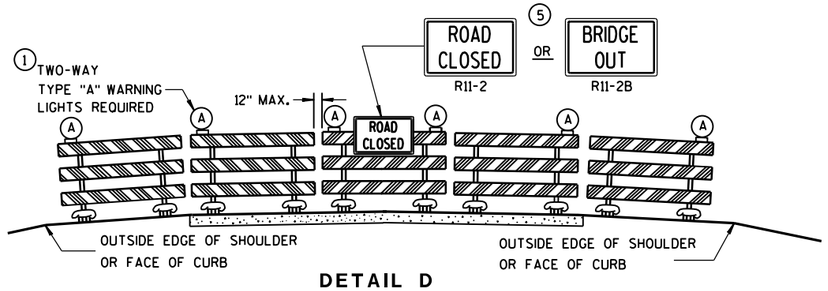
BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

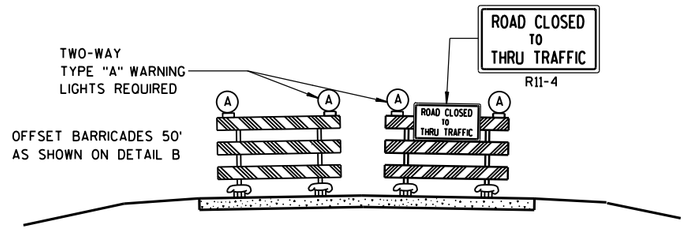
6
S.D.D. 15 C 2-5a



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 BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE OR BOTTOM RAILS.

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

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
- R11-2 SHALL BE 48" X 30".
- R11-3, R11-4 AND R10-61 SHALL BE 60" X 30".
- M4-9 SHALL BE 30" X 24".
- M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
- M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
- R1-1 SHALL BE 36" X 36".

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

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

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

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

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

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

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

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

8/2013 DATE

/S/ Travis Feltes
STATE TRAFFIC ENGINEER

DESIGN

FHWA

6

S.D.D. 15 C 2-5b

THIS DRAWING PROVIDES GENERAL GUIDANCE ON TYPICAL DETOUR SIGN LAYOUT AND SPACING. SEE PROJECT DETOUR SIGNING SHEETS FOR SPECIFIC DETAILS FOR EACH PROJECT.

GENERAL NOTES

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

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. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. MODIFY EXISTING SIGNS WHERE POSSIBLE.

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

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.

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

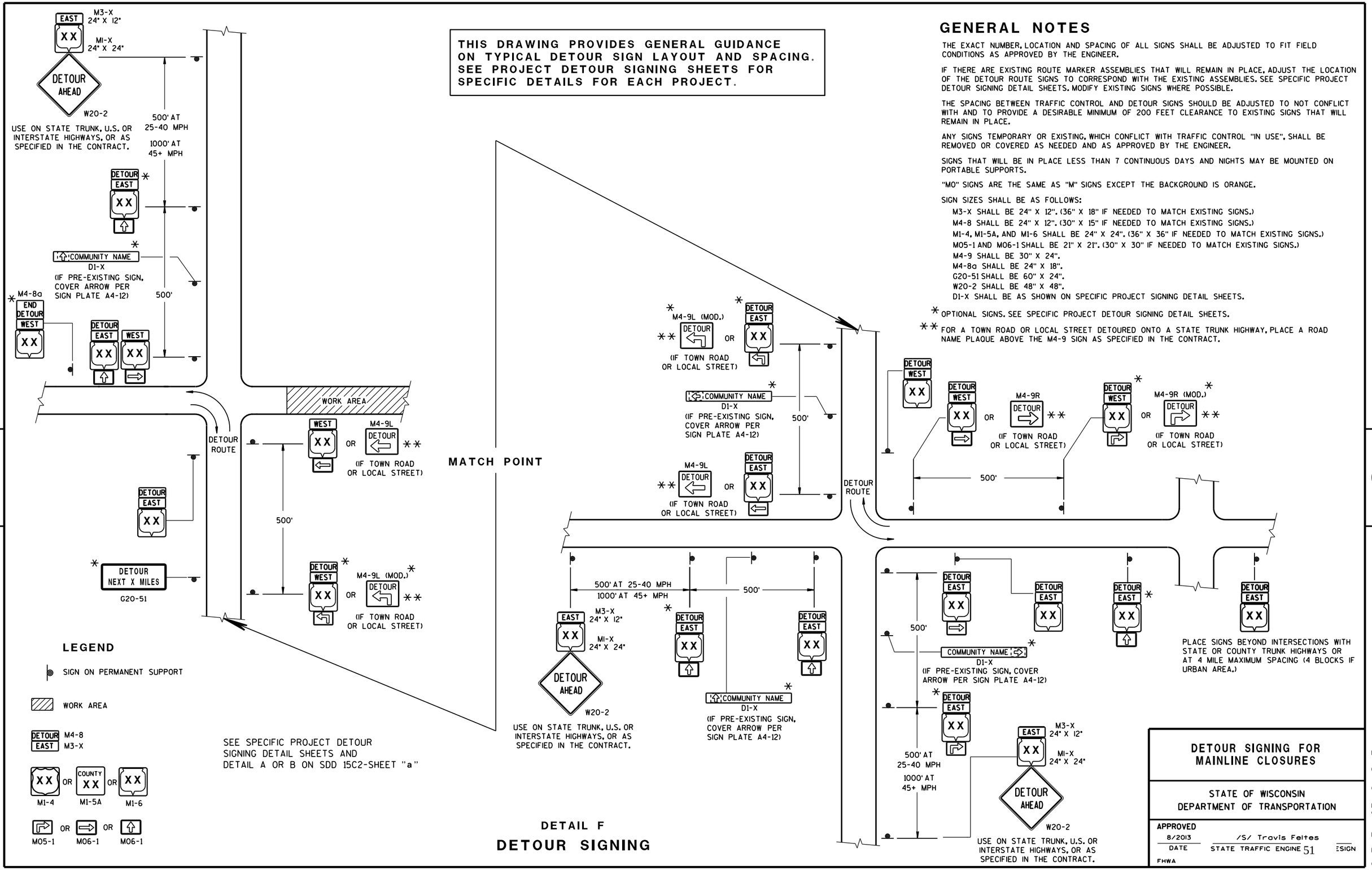
"MO" SIGNS ARE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGN SIZES SHALL BE AS FOLLOWS:

- M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
- M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-9 SHALL BE 30" X 24".
- M4-8a SHALL BE 24" X 18".
- G20-51 SHALL BE 60" X 24".
- W20-2 SHALL BE 48" X 48".
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

* OPTIONAL SIGNS. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS.

** FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.



DETAIL F

DETOUR SIGNING

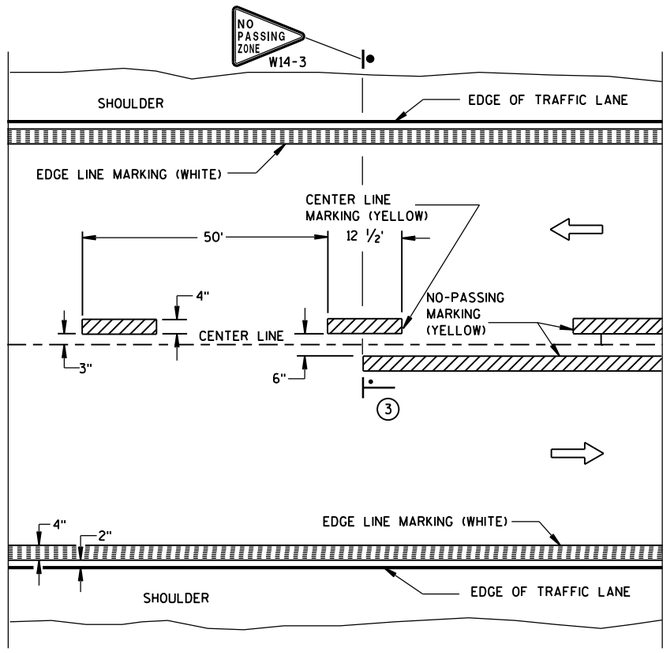
DETOUR SIGNING FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

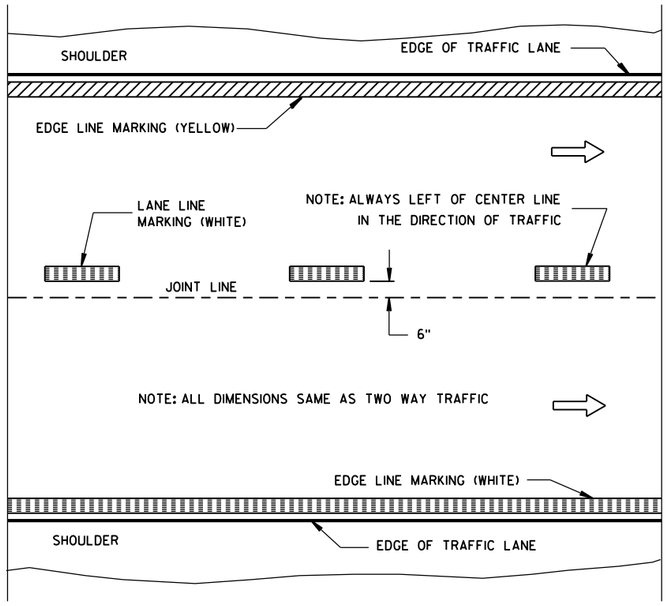
APPROVED
8/2013 DATE
/S/ Travis Feltes
STATE TRAFFIC ENGINE ESIGN
FHWA

6

S.D.D. 15 C 2-5c

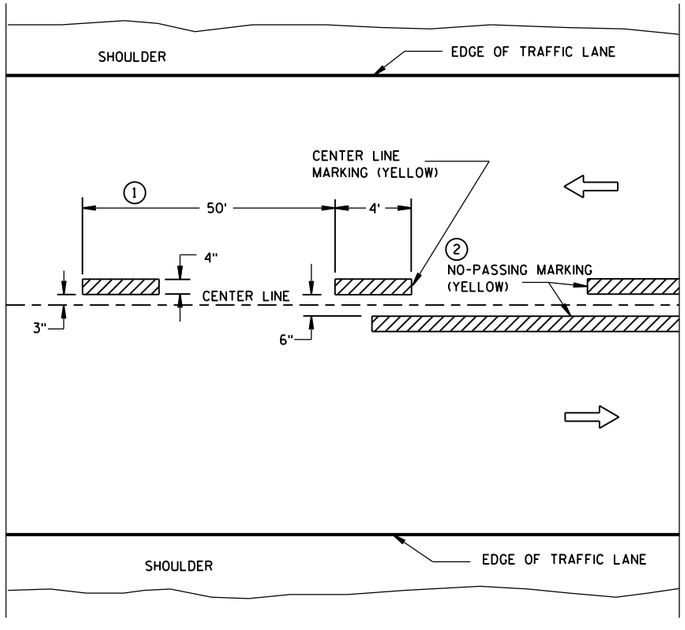


TWO WAY TRAFFIC

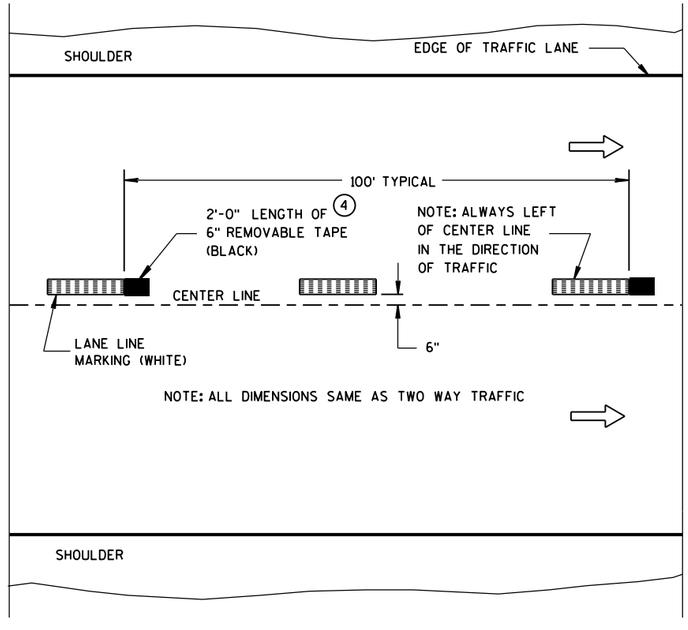


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY (INTERMEDIATE) PAVEMENT MARKING

(SHOWS CYCLE FOR TEMPORARY CENTER LINE OR TEMPORARY LANE LINE MARKING)

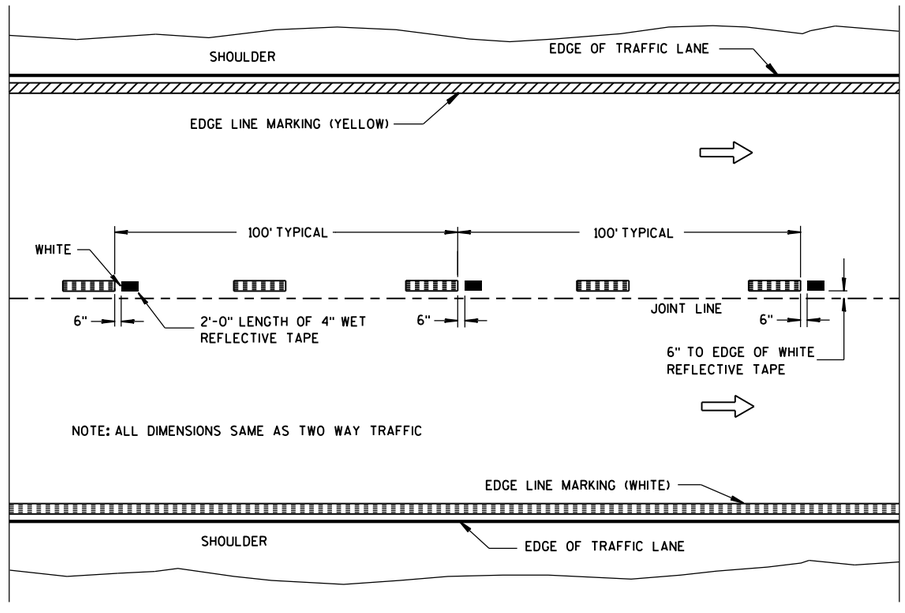
GENERAL NOTES

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

1. HALF CYCLE LENGTHS (25'±) WITH 2' MINIMUM STRIPE LENGTHS SHALL BE PROVIDED ON ROADWAYS (INCLUDING TEMPORARY TRAVELED WAYS) WITH REVERSE CURVATURE, CURVATURE OF OVER 5 DEGREES OR WHEN DIRECTED BY THE ENGINEER TO MARK UNUSUAL ALIGNMENT OF THE TRAVELED WAY.
2. NO PASSING ZONE TEMPORARY PAVEMENT MARKING IS REQUIRED TO BE PLACED, WHERE APPROPRIATE, ALONG WITH CENTERLINE TEMPORARY PAVEMENT MARKING WHEN A SAME DAY PERMANENT PAVEMENT MARKING ITEM IS INCLUDED IN THE CONTRACT.
3. NO PASSING ZONE MARKINGS ARE PLACED ACCORDING TO "T" MARKINGS. IF EXISTING NO PASSING ZONE W14-3 SIGNS ARE BEYOND 50 FEET IN EITHER DIRECTION, THE SIGNS SHALL BE MOVED TO THE "T" MARKINGS.
4. CONCRETE ONLY.

NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL



WET REFLECTIVE TAPE SUPPLEMENT TO
SPRAYED OR NON WET REFLECTIVE TAPE LANE LINE

LEGEND

"T" MARKING

POST MOUNTED SIGN

PAVEMENT MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

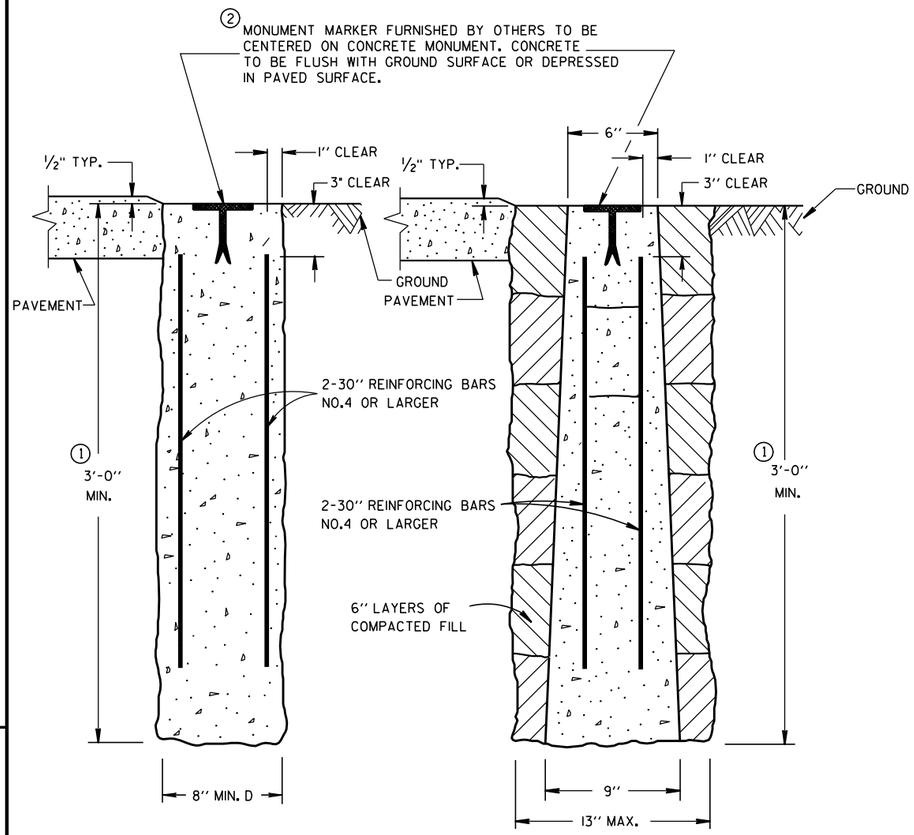
APPROVED
5-13-2013 DATE
/S/ Travis Feltes STATE TRAFFIC E
FHWA

6

S.D.D. 15 C 8-16a

6

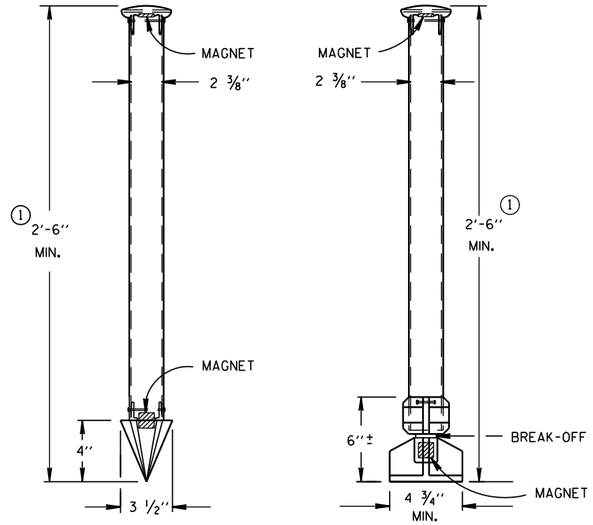
S.D.D. 15 C 8-16a



CAST-IN-PLACE PRECAST

CONCRETE MONUMENTS

TYPE A



TYPE C TYPE D

DRIVE-IN MONUMENT BREAK-OFF MONUMENT

ALUMINUM MONUMENTS

(INCLUDES MARKER)

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.

DETAILED DRAWINGS OF PROPOSED ALTERNATE DESIGNS FOR METAL MONUMENTS OR MONUMENT COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

INSTALLED METAL MONUMENTS MUST BE EASILY DETECTED WITH A DIP NEEDLE. INSERT PERMANENT MAGNETS SHALL BE ATTACHED NEAR THE TOP AND BOTTOM OF THOSE MONUMENTS CONSTRUCTED OF A METAL ALLOY WHICH IS NOT ATTRACTIVE TO A DIP NEEDLE.

THE CAST IRON MONUMENT COVER SHALL BE A "NON-ROCKING" TYPE. ADJUSTMENT OF THE COVER TO GRADE MAY BE ACCOMPLISHED BY THE USE OF MORTAR AND BRICK, OR BY EITHER PRECAST OR CAST-IN-PLACE REINFORCED CONCRETE GRADE RINGS.

MONUMENTS SHALL BE LOCATED AND PLACED AT THE DIRECTION OF THE ENGINEER.

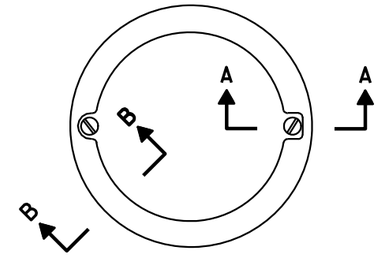
ALUMINUM MONUMENTS AND MONUMENT COVERS SHALL BE MADE FROM AN ALUMINUM AND MAGNESIUM ALLOY AS DETERMINED BY THE MANUFACTURER.

THE MONUMENT COVERS DETAILED ON THIS DRAWING ARE NOT EQUAL ALTERNATES. MONUMENT COVERS SHALL BE CAST IRON UNLESS ALUMINUM IS SPECIFIED ELSEWHERE IN THE CONTRACT.

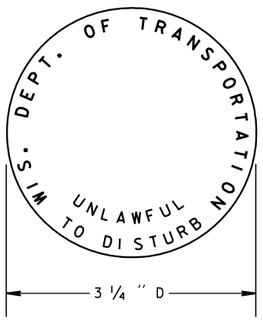
MONUMENT SHALL BE CAST-IN-PLACE CONCRETE UNLESS PRECAST CONCRETE OR ALUMINUM MONUMENTS ARE SPECIFIED IN THE CONTRACT OR PERMITTED BY THE ENGINEER.

① MINIMUM LENGTH SHALL BE 4'-0" FOR MONUMENTS INSTALLED IN PAVED AREAS.

② AN OFFICIAL COUNTY MONUMENT MARKER SUPPLIED BY A COUNTY MAY BE REQUIRED FOR SOME SECTION CORNERS AND WITNESS MONUMENTS INSTEAD OF THIS WIS DOT MARKER.

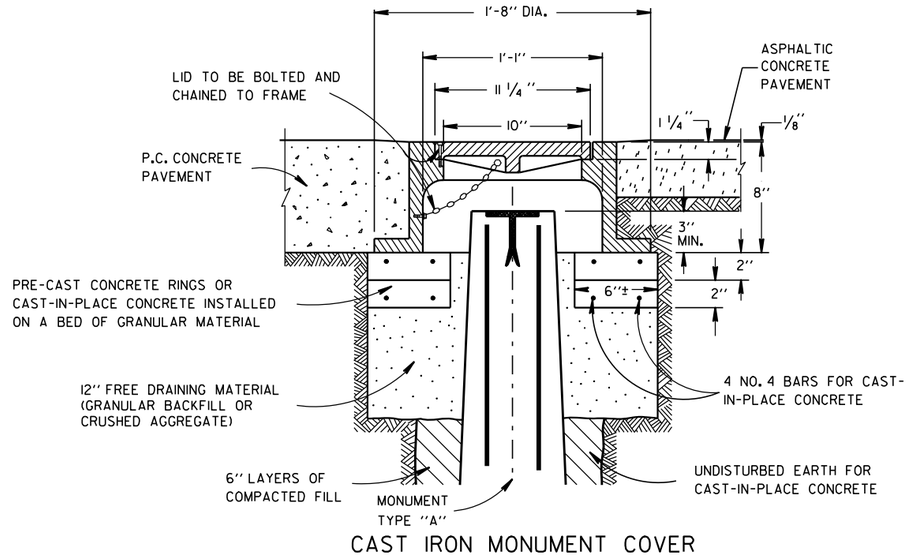


TOP VIEW



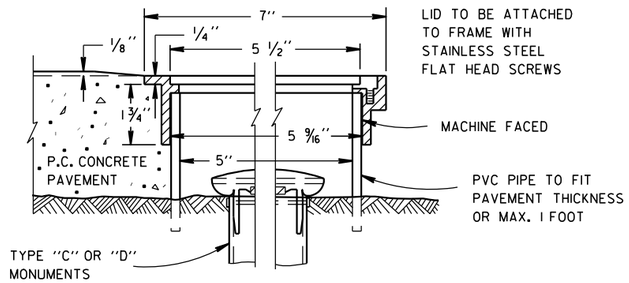
② WIS DOT MONUMENT MARKER LOGO

FOR TYPES "A", "C" & "D"



CAST IRON MONUMENT COVER

(APPROXIMATE WEIGHT - 95 LBS.)



SECTION B-B SECTION A-A

ALUMINUM MONUMENT COVER

(APPROXIMATE WEIGHT 2 LBS)

(FOR CONCRETE PAVEMENT ONLY)

LANDMARK REFERENCE MOUNMENTS AND COVERS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

9/22/1999 DATE

/S/ Rory L. Rhinesmith
CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

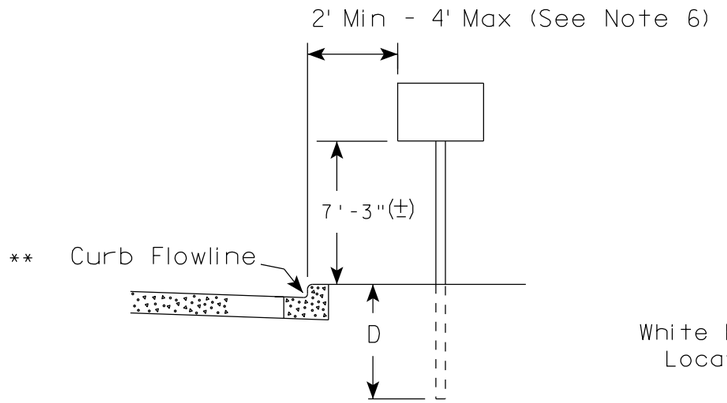
6

S.D.D. 16 A 1-6

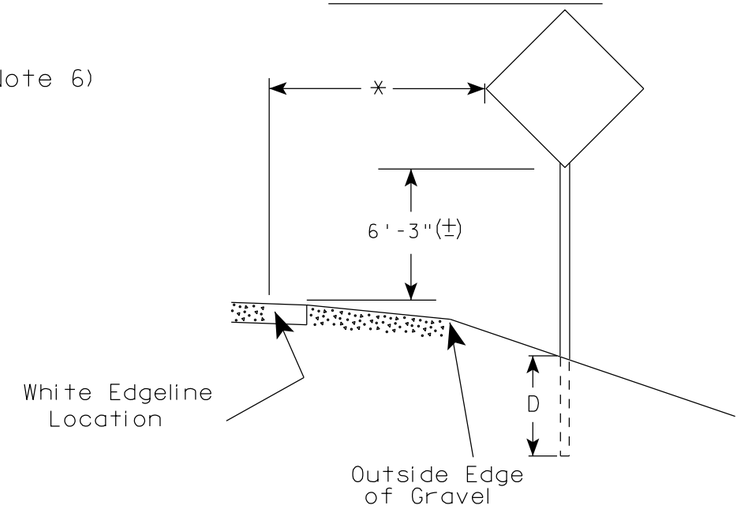
6

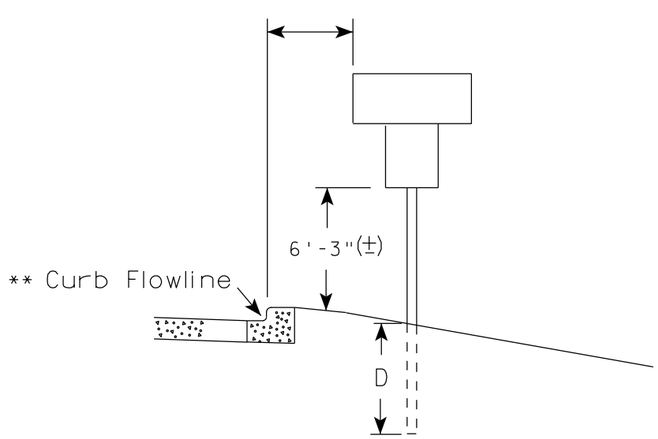
S.D.D. 16 A 1-6

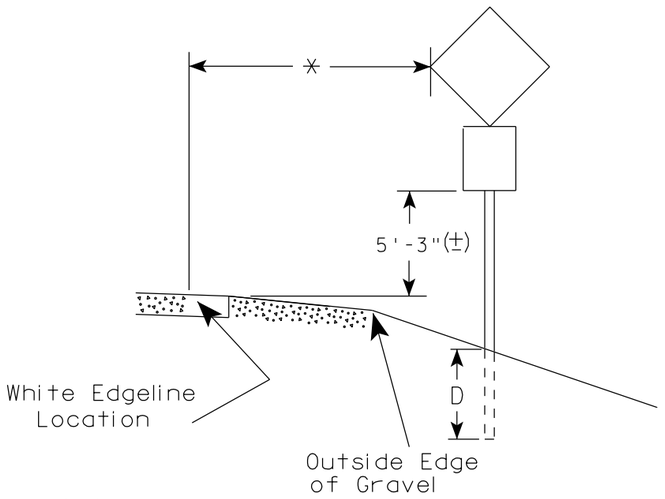
URBAN AREA



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

POST EMBEDMENT DEPTH

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

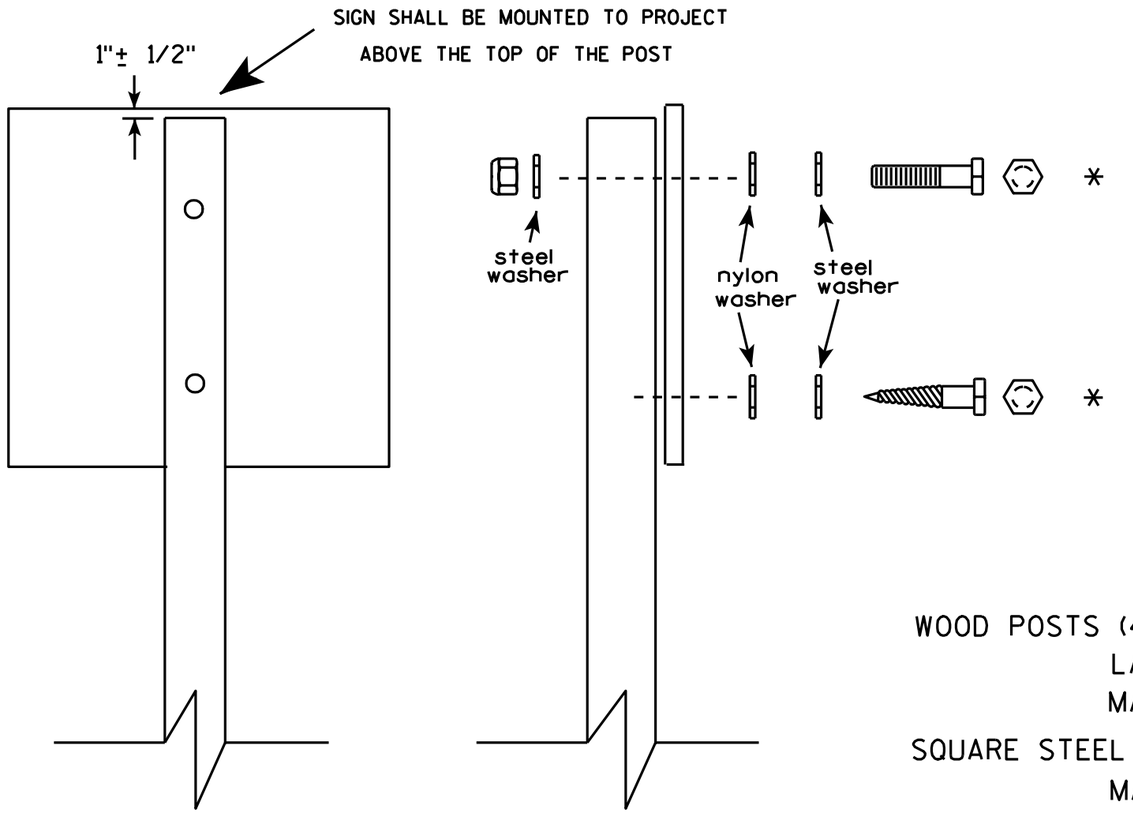
TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch for State Traffic Engineer

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

PROJECT NO:	HWY:	COUNTY:		SHEET NO:	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

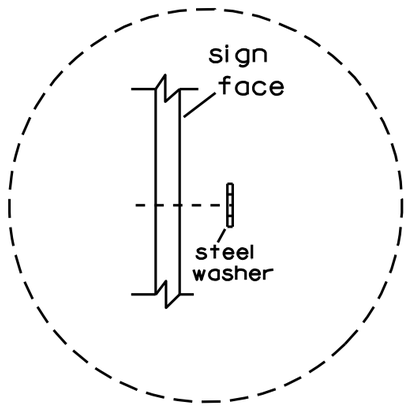
b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

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

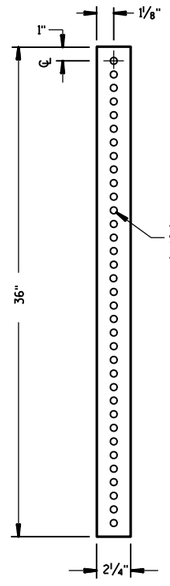
7

PROJECT NO:

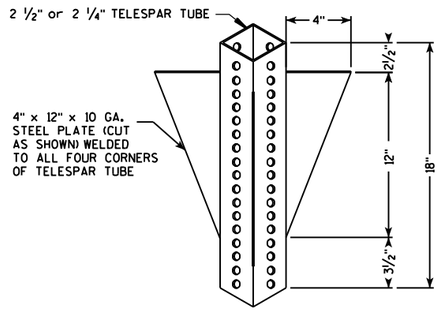
SHEET NO: 55 E

TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM

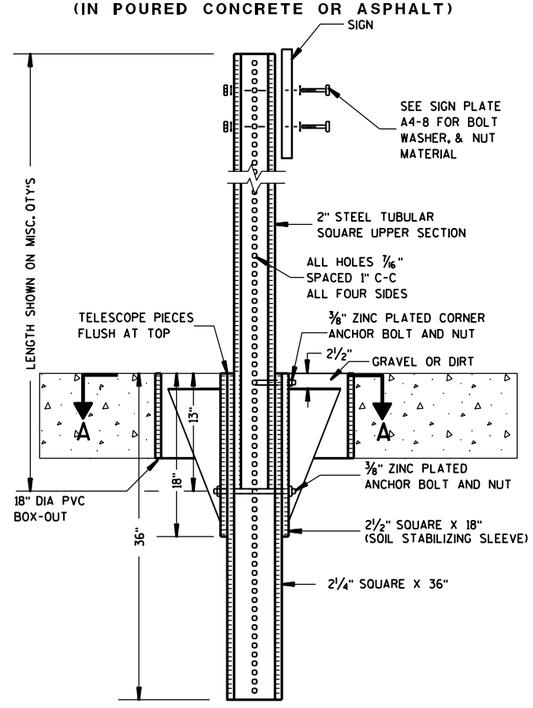
2 1/4 " SQUARE
12 GAUGE
PERFORATED
GALVANIZED FINISH



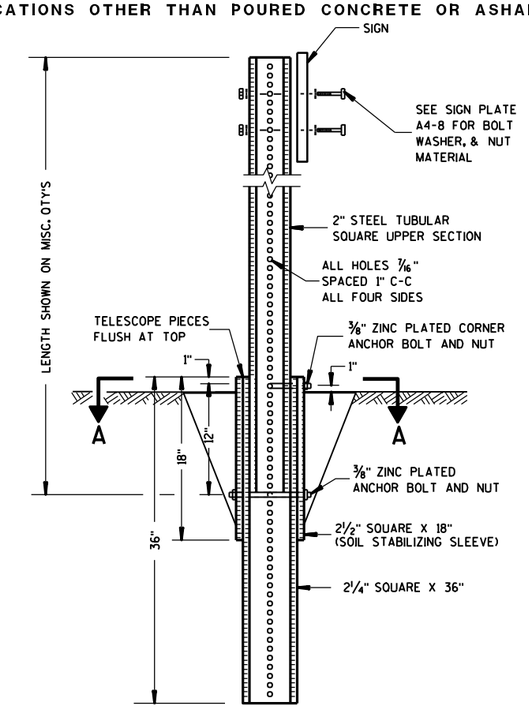
2 1/2 " SQUARE
12 GAUGE
OMNI-DIRECTIONAL
PERFORATED
SOIL STABILIZING SLEEVE
GALVANIZED FINISH

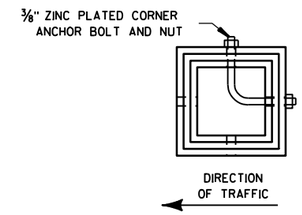


DETAIL OF TUBULAR STEEL SIGN POST
(IN POURED CONCRETE OR ASPHALT)



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





SECTION A-A

Area of Sign Installation (Sq. Ft.)	Number of Required Posts
9 or less	1
Greater than 9 less than or equal to 18	2
Greater than 18 less than or equal to 27	3

Signs wider than 3 feet or larger than 9 sq. ft shall be mounted on multiple posts (see above table).

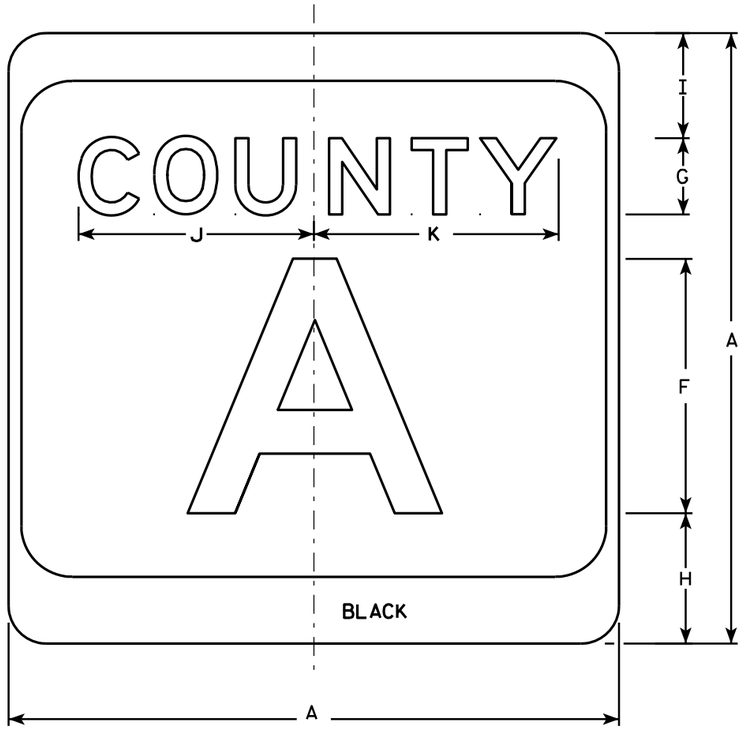
TUBULAR STEEL SIGN POST A4-9

WISCONSIN DEPT OF TRANSPORTATION

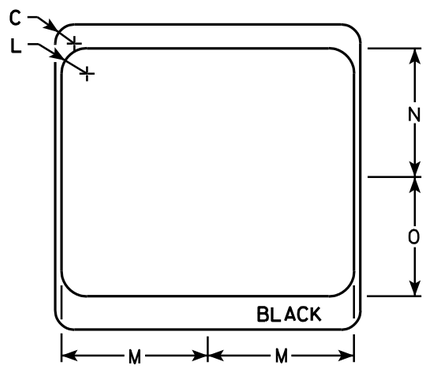
APPROVED Matthew R Rauch
for State Traffic Engineer

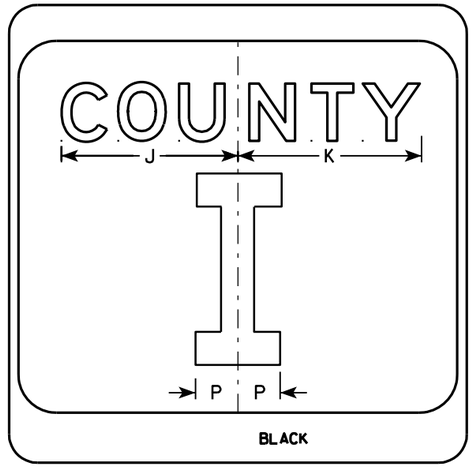
DATE 5/30/12 PLATE NO. A4-9.7

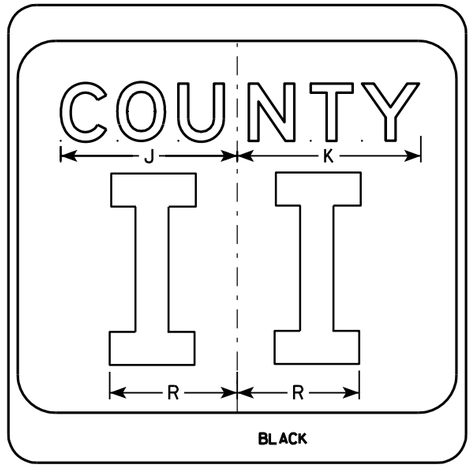
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 56	E



M1-5A







NOTES

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

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

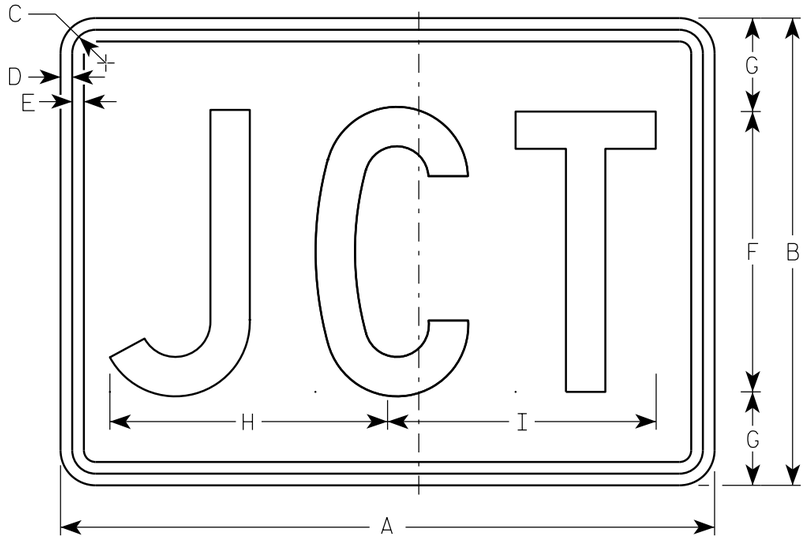
CTH MARKER
M1-5A FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

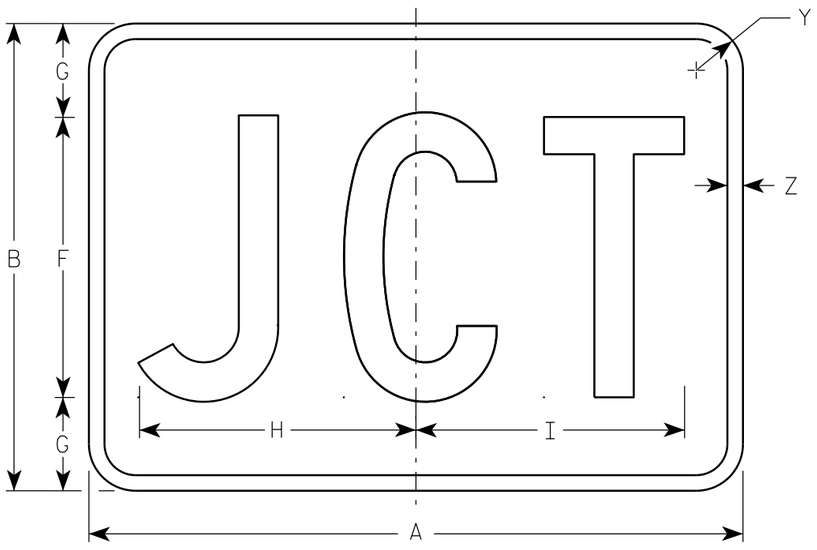
APPROVED Matthew R Rauch
for State Traffic Engineer

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

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 57	E



M2-1
MK2-1
MM2-1
MN2-1
MR2-1



MB2-1

NOTES

1. Sign is Type II - Type H
2. Color:
   Background - See note 5
   Message - See note 5
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. M2-1 Background - White
   Message - Black
   MB2-1 Background - Blue
   Message - White
   MK2-1 Background - Green
   Message - White
   MM2-1 Background - White
   Message - Green
   MN2-1 Background - Brown
   Message - White
   MR2-1 Background - Brown
   Message - Yellow

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

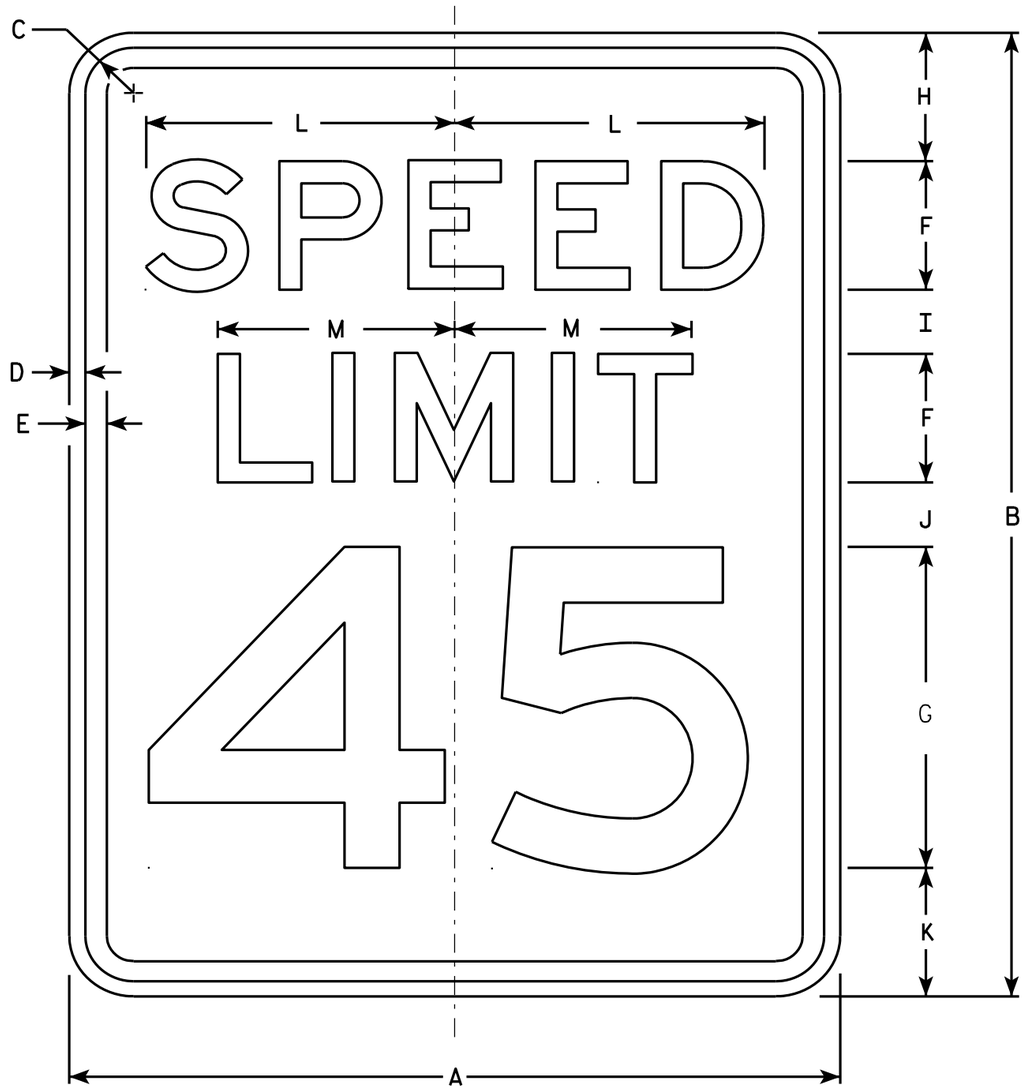
STANDARD SIGN
M2-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
For State Traffic Engineer

DATE 6/30/14 PLATE 58 12-1.11

PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E



R2-1

NOTES

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

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

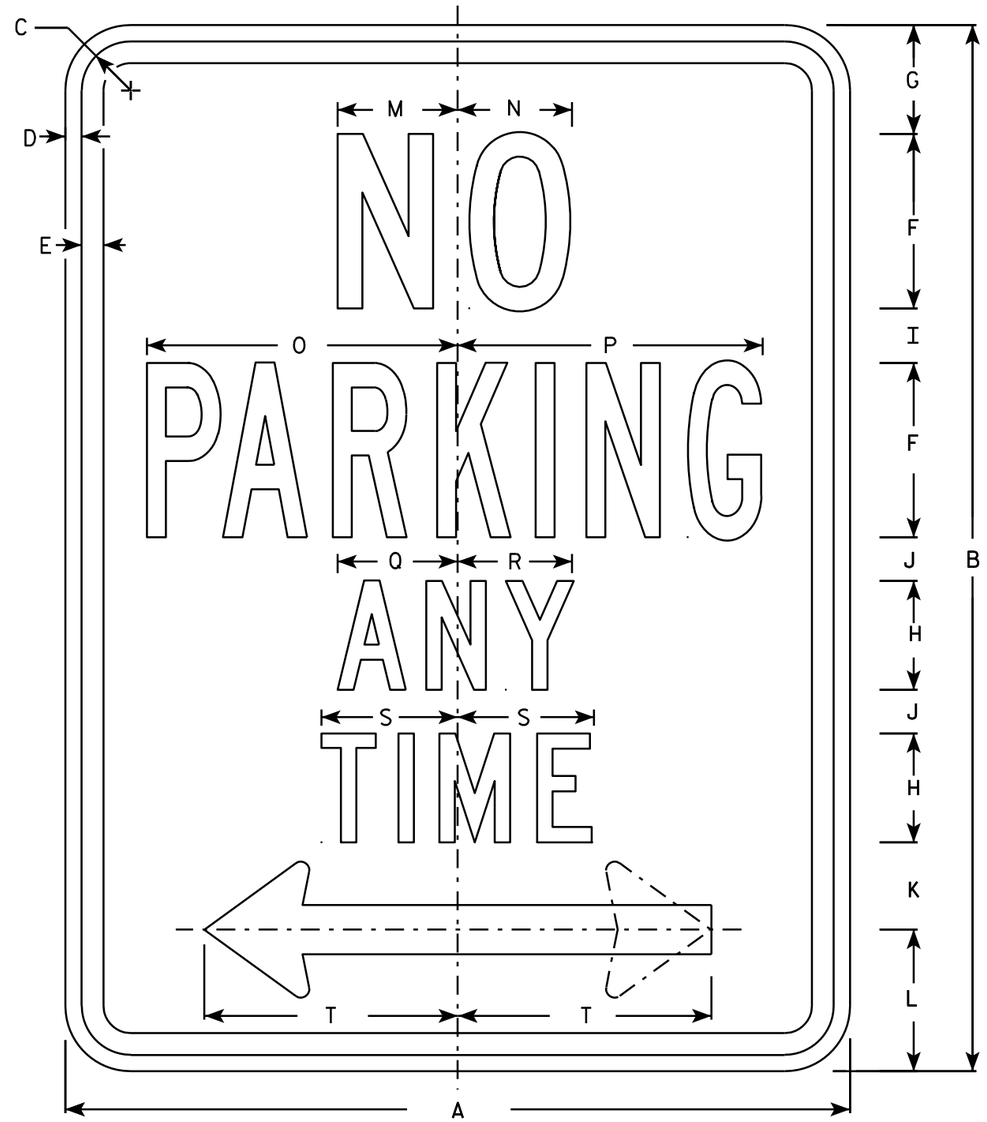
STANDARD SIGN
R2-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 5/26/10 PLATE NO. R2-1.13

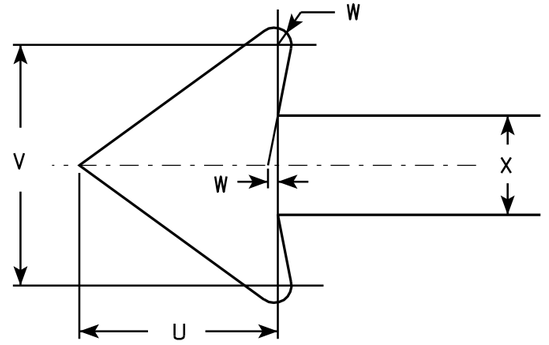
PROJECT NO: | HWY: | COUNTY: | SHEET NO: 59 | E



R7-1

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - White
   Message - Red
3. Message Series - See Note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Lines 1, 3 and 4 are series C, line 2 is series B.
6. R7-1D (double arrow)
   R7-1L (left arrow)
   R7-1R (right arrow)



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	12	18	1 1/8	3/8	3/8	3	1 7/8	2	7/8	5/8	1 1/2	2 1/2	2	2	4 7/8	4 7/8	2 1/4	2 1/8	2 1/2	3 7/8	1 1/2	1 3/4	1/8	3/4			1.5
2S	18	24	1 1/8	3/8	1/2	4	2 1/2	2 1/2	1 1/4	1	2	3 1/4	2 3/4	2 5/8	7 1/8	7	2 3/4	2 5/8	3 1/8	5 7/8	2 1/4	2 5/8	1/4	1 1/8			3.0
2M	24	30	1 1/8	3/8	1/2	5	3	3	2	1 1/4	2 1/2	4	3 1/4	3 3/8	9 1/4	9 1/4	3 1/4	3 1/4	3 3/4	7 3/4	3	3 1/2	1/4	1 1/2			5.0
3	24	30	1 1/8	3/8	1/2	5	3	3	2	1 1/4	2 1/2	4	3 1/4	3 3/8	9 1/4	9 1/4	3 1/4	3 1/4	3 3/4	7 3/4	3	3 1/2	1/4	1 1/2			5.0
4																											
5																											

STANDARD SIGN
R7-1

WISCONSIN DEPT OF TRANSPORTATION

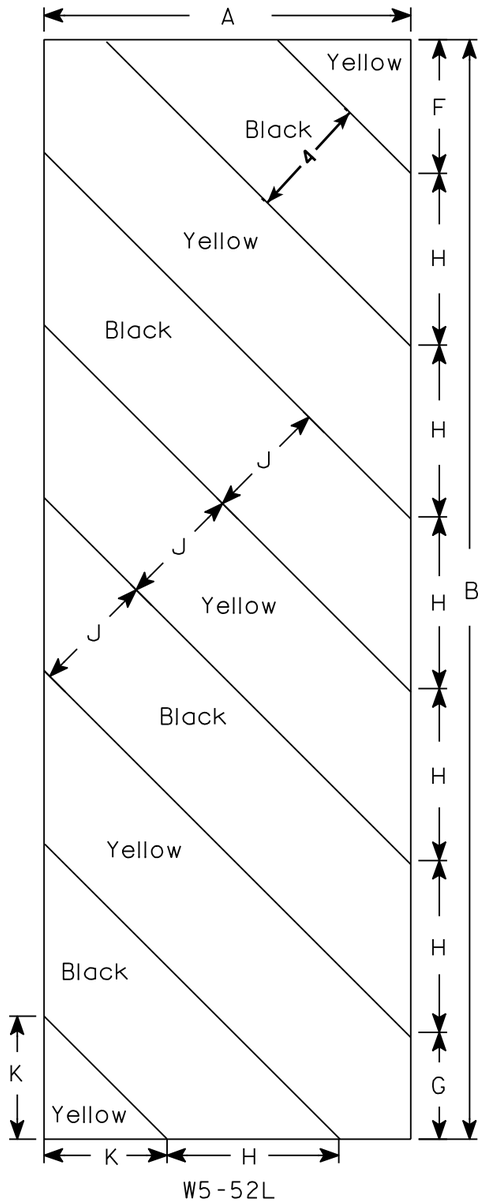
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/31/2011 PLATE NO. R7-1.9

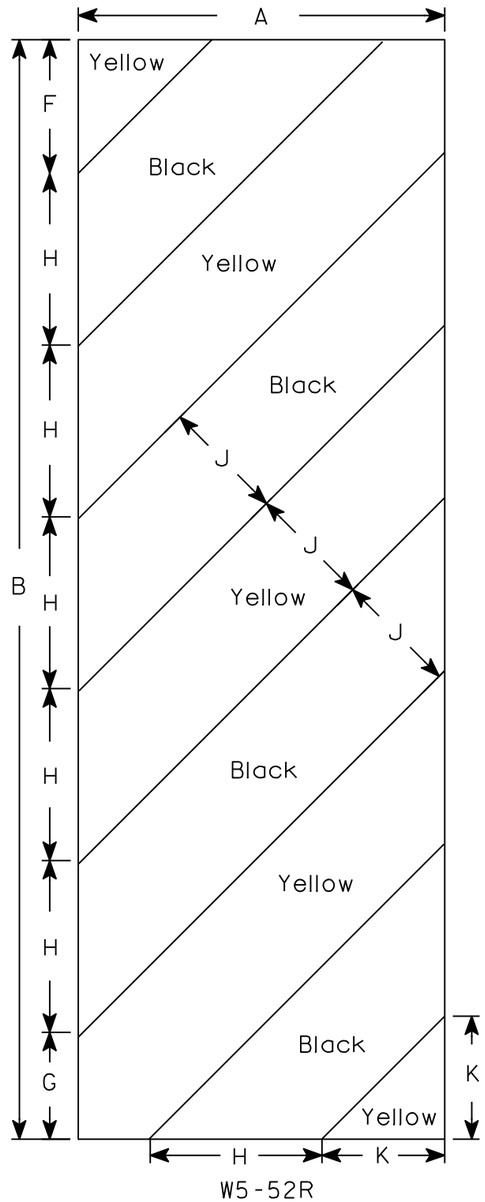
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 60	E

FILE NAME : C:\Users\PROJECTS\tr_stdplate\R71.DGN PLOT DATE : 31-MAR-2011 09:20 PLOT BY : mscsja PLOT NAME : PLOT SCALE : 3.476110:1.000000

WISDOT/CADDS SHEET 42



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

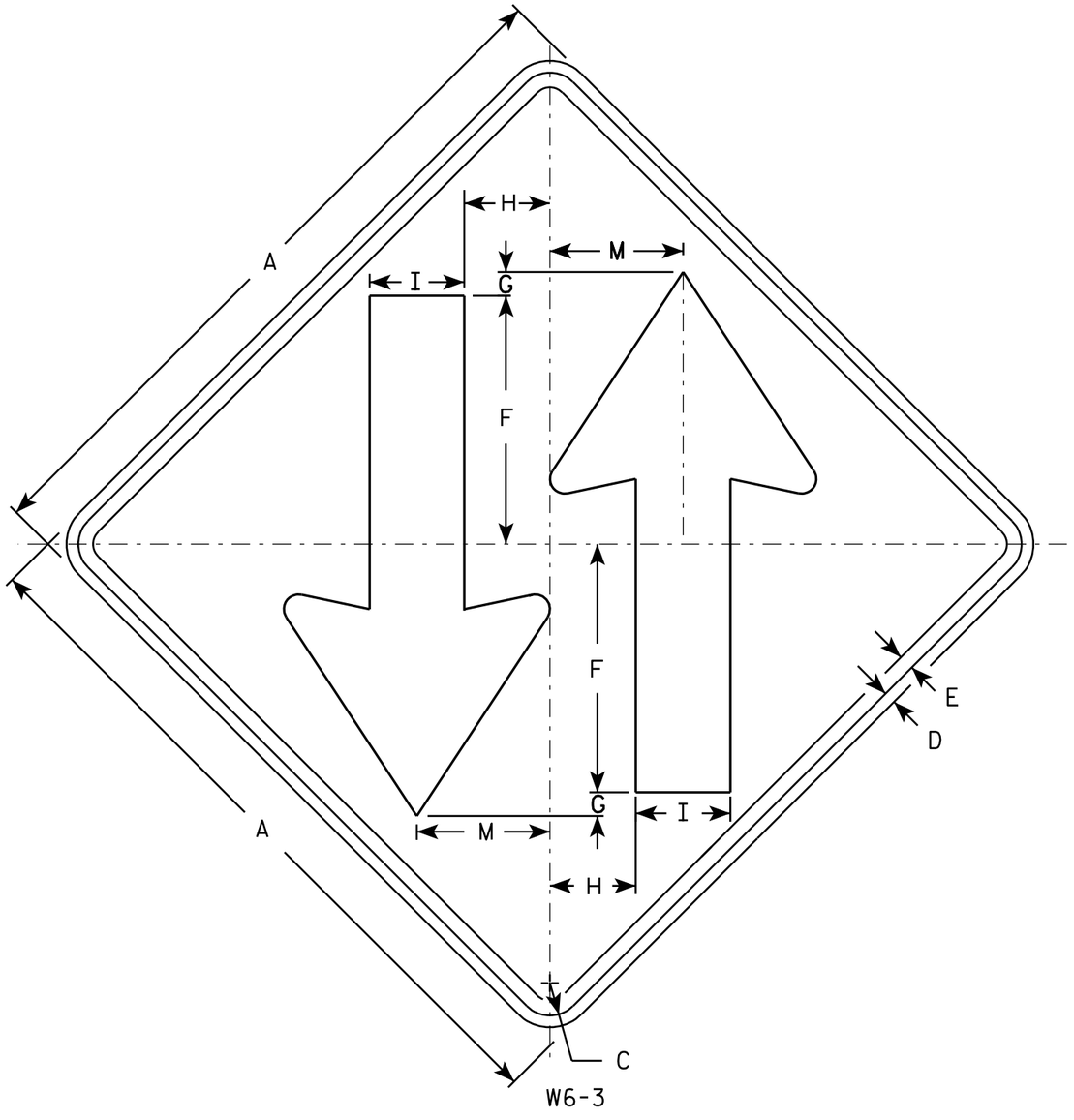
W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

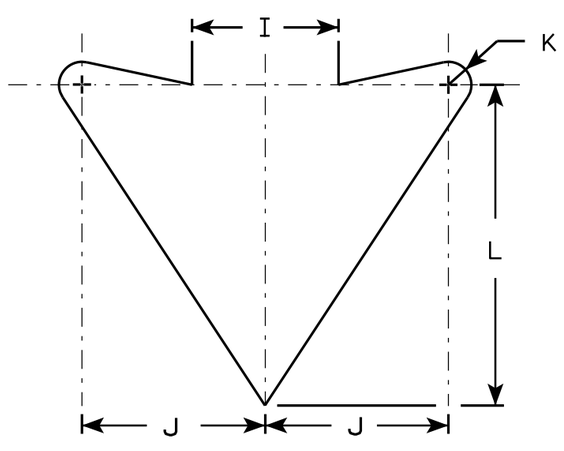
DATE 5/29/12 PLATE NO. W5-52.9

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 61	E



NOTES

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



ARROW DETAIL

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	30		1 3/8	1/2	5/8	10 1/2	1	3 5/8	4	5	5/8	8 3/4	5 5/8														6.25
2S	36		1 5/8	5/8	3/4	12	1	4 1/4	5	6	3/4	10 1/2	6 3/4														9.0
2M	36		1 5/8	5/8	3/4	12	1	4 1/4	5	6	3/4	10 1/2	6 3/4														9.0
3																											
4	48		2 1/4	3/4	1	15 1/2	1	6	6	8	1	14	9														16.0
5	48		2 1/4	3/4	1	15 1/2	1	6	6	8	1	14	9														16.0

STANDARD SIGN
W6-3

WISCONSIN DEPT OF TRANSPORTATION

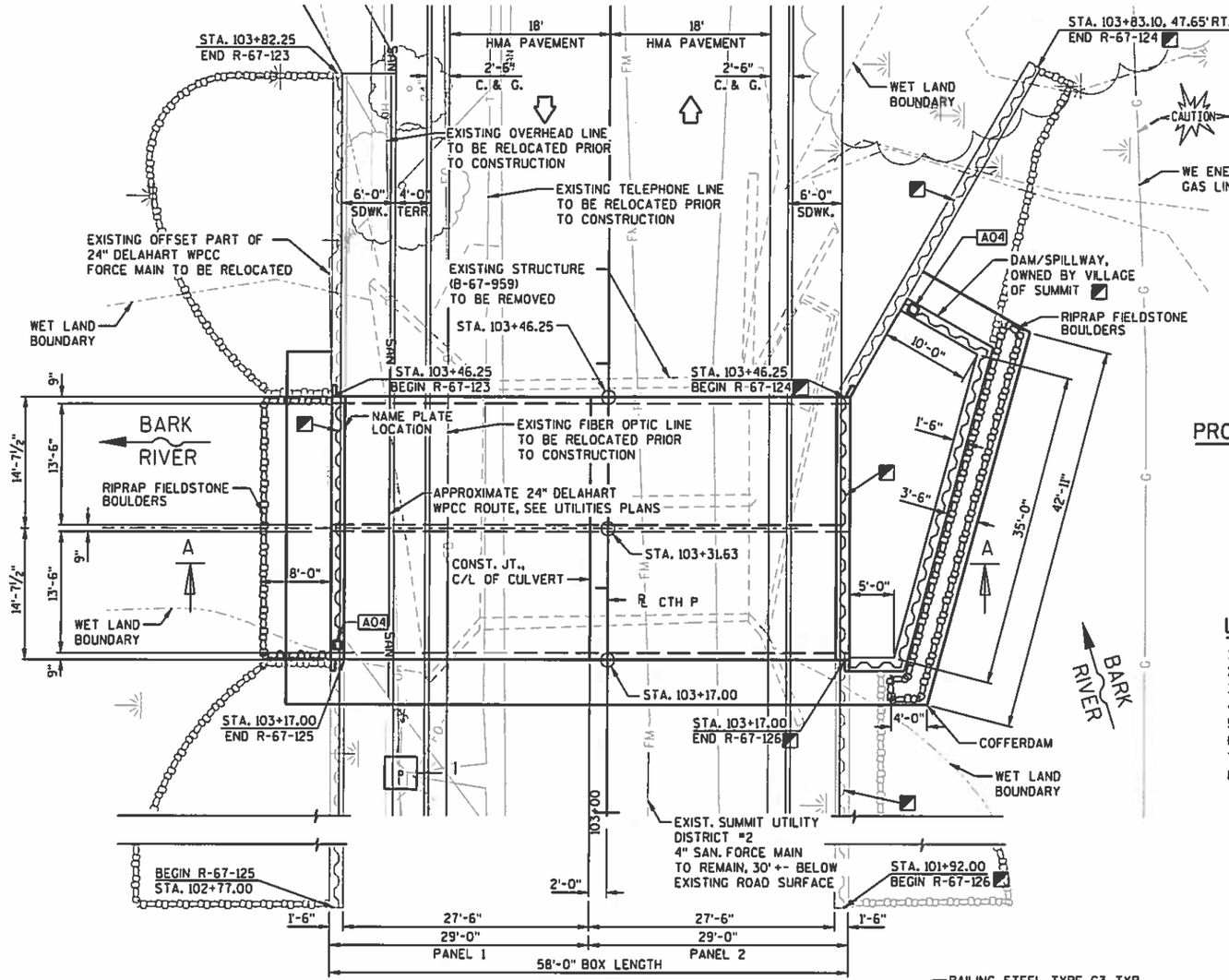
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 03/12/13 PLATE NO. W6-3.10

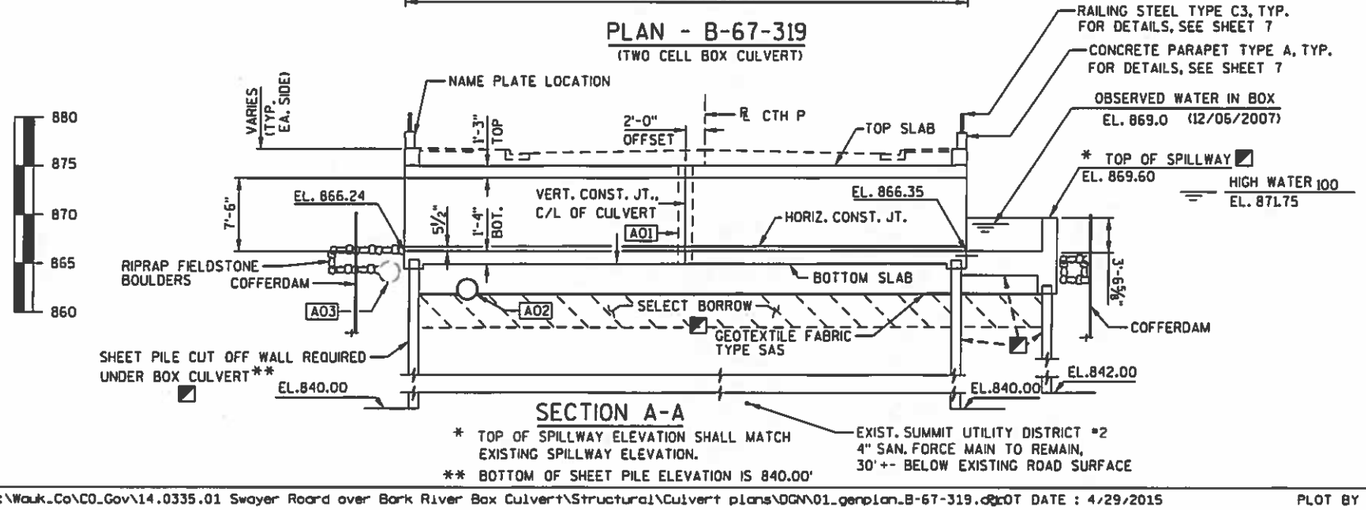
PROJECT NO: | HWY: | COUNTY: | SHEET NO: 62 | E

FILE NAME : C:\CAEFiles\Projects\tr_stdplate\W63.DGN PLOT DATE : 12-MAR-2013 14:11 PLOT BY : mscsja PLOT NAME : PLOT SCALE : 6.202372:1.000000
WISDOT/CADDS SHEET 42

STATE PROJECT NUMBER
2714-04-70



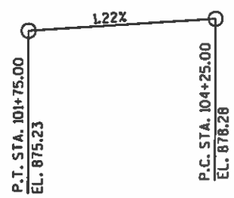
PLAN - B-67-319
(TWO CELL BOX CULVERT)



SECTION A-A

* TOP OF SPILLWAY ELEVATION SHALL MATCH EXISTING SPILLWAY ELEVATION.

** BOTTOM OF SHEET PILE ELEVATION IS 840.00'



PROFILE GRADE LINE, CTH P

LIST OF DRAWINGS

1. GENERAL PLAN AND ELEVATION
2. GENERAL NOTES AND QUANTITIES
3. TOP AND BOTTOM SLAB
4. SECTIONS AND DETAILS 1 OF 2
5. SECTIONS AND DETAILS 2 OF 2
6. SPILLWAY STRUCTURE AND BILL OF BARS
7. PARAPET AND RAILING
8. SUBSURFACE EXPLORATION

DESIGN DATA

LIVE LOAD:

LIVE LOAD: HL-93
INVENTORY RATING FACTOR: (RF) = 1.05
OPERATIONAL RATING FACTOR: (RF) = 1.35
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 255 KIPS
EARTH LOAD: DESIGNED FOR 2'-0" FEET OF FILL.

MATERIAL PROPERTIES:

CONCRETE MASONRY	f'_c = 3,500 P.S.I.
HIGH-STRENGTH BAR STEEL REINFORCEMENT, GRADE 60	f_y = 60,000 P.S.I.
PERMANENT STEEL SHEET PILING (ASTM A328)	F_y = 50,000 P.S.I.
SHEET PILE MINIMUM WEB THICKNESS	t_s = 3/8 IN

HYDRAULIC DATA:

100 YEAR FREQUENCY

DRAINAGE AREA	52.7 SQ.MI.
VELOCITY	3.94 F.P.S.
WATERWAY AREA	123 SQ.FT.
Q_{100}	489 C.F.S.
HIGH WATER$_{100}$ ELEVATION	871.75
REGULATORY HIGH WATER$_{100}$ ELEVATION	871.02

10 YEAR FREQUENCY

Q_{10}	258.3 C.F.S.
HIGH WATER ELEVATION	871.04

2 YEAR FREQUENCY

Q_2	175 C.F.
HIGH WATER$_2$ ELEVATION	870.85

ROADWAY OVERTOPPING NOT APPLICABLE

TEN YEAR EVENT WAS CALCULATED FOR CONSTRUCTION PURPOSES. A DIVERSION CHANNEL AND A 40' WEIR ARE ASSUMED OPERATIONAL TO PASS THE FLOW. SEE ROADWAY PLANS FOR DIVERSION CHANNEL DETAILS.

TRAFFIC DATA:

A.D.T. (2015) = 2,700
A.D.T. (2035) = 6,100
DESIGN SPEED = 40 M.P.H.

NOTES

A01 18" RUBBERIZED MEMBRANE WATERPROOFING TO BE PLACED ON WALLS AT VERT. CONST. JOINTS AND ACROSS TOP SLAB CONST. JOINT..

A02 PROPOSED 24" DIA. EL.858.00 SANITARY SEWER.

A03 24" DIA. SAN. SEWER (TO BE RELOCATED)

A04 MONUMENT LOCATION

◪ STRUCTURAL COMPONENTS OF LOWER NEMAHBIN LAKE DAM

STRUCTURES DESIGN CONTACTS

BRIDGE OFFICE:
WILLIAM DREHER (608) 266-8489
CONSULTANT:
MOHAMMED ZAGLOUL (414) 751-7200

NO.	DATE	REVISION	BY

KAPUR & ASSOCIATES
CONSULTING ENGINEERS
414.751.7200

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher NK — CHIEF STRUCTURES DESIGN ENGINEER — 07/01/15 DATE

STRUCTURE B-67-319

CTH P OVER BARK RIVER

COUNTY	WAUKESHA
~~TOWN/CITY/~~VILLAGE	SUMMIT

DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	MR	DESIGN CK'D.	MHZ	DRAWN BY	MM	PLANS CK'D.	MHZ

GENERAL PLAN AND ELEVATION

SHEET 1 OF 8
63

WISCONSIN
MOHAMMED H. ZAGLOUL
E-26970
MILWAUKEE
WISCONSIN
PROFESSIONAL ENGINEER
Mohammed Zagloul 5/1/2015

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Road over Bark River Box Culvert\Structural\Culvert plans\DGN\01_genplan_B-67-319.dgn PLOT DATE : 4/29/2015 PLOT BY : mmyaskovsky PLOT NAME : *FILE* PLOT SCALE : 1:15.5764

STATE PROJECT NUMBER

2714-04-70

TOTAL ESTIMATED QUANTITIES

ITEM NO.	BID ITEM	UNIT	CULVERT	DAM/ SPILLWAY	TOTAL
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STA. 103+32.00	LS	1	-	1
206.2000	EXCAVATION FOR STRUCTURES CULVERTS B-67-319	LS	0.84	0.16	1
206.5000	COFFERDAMS B-67-319	LS	0.84	0.16	1
208.1100	SELECT BORROW	CY	273	55	328
210.0100	BACKFILL STRUCTURE	CY	343	24	367
504.0100	CONCRETE MASONRY CULVERTS	CY	215	56	271
505.0410	BAR STEEL REINFORCEMENT HS CULVERTS	LB	-	1,435	1,435
505.0610	BAR STEEL REINFORCEMENT HS COATED CULVERTS	LB	22,507	-	22,507
512.0500	PILING STEEL SHEET PERMANENT DELIVERED	SF	1,433	1050	2,483
512.0600	PILING STEEL SHEET PERMANENT DRIVEN	SF	1,433	1050	2,483
513.7015	RAILING STEEL TYPE C3 B-67-319	LS	1	-	1
516.0500	RUBBERIZED MEMBRAINE WATERPROOFING	SY	9	-	9
645.0120	GEOTEXTILE FABRIC TYPE HR	SY	26	-	26
645.0140	GEOTEXTILE FABRIC TYPE SAS	SY	234	48	234
SPV.0035.01	RIPRAP FIELDSTONE BOULDERS	CY	18	33	51
SPV.0105.01	REMOVING OLD DAM	LS	-	1	1
SPV.0105.03	CONSTRUCTION DEWATERING PROJECT 2714-04-70	LS	0.84	0.16	1
	NON-BID ITEMS				
	NAME PLATE	EACH	1	-	1
	PREFORMED JOINT FILLER	SIZE	1"	-	1"
	PREFORMED JOINT FILLER	SIZE	3/4"	-	3/4"
	PREFORMED JOINT FILLER	SIZE	1/2"	-	1/2"
	NON-BITUMINOUS JOINT SEALER	SIZE	1"	-	1"
	NON-BITUMINOUS JOINT SEALER	SIZE	3/4"	-	3/4"
	NON-BITUMINOUS JOINT SEALER	SIZE	1/2"	-	1/2"
	EXPANSION FILLER	SIZE	1 1/2"	-	1 1/2"

CULVERT ITEMS CATEGORY 0020

DAM/SPILLWAY ITEMS CATEGORY 0040

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

ALL STATIONS AND ELEVATIONS ARE IN FEET. ELEVATIONS ARE REFERENCED TO THE NGVD DATUM.

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

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

CHAMFER ALL EXPOSED CORNERS ¾"

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES CULVERTS B-67-319" SHALL BE THE EXISTING GROUND LINE.

FOR CONSTRUCTION SEQUENCE SEE ROADWAY PLANS.

ALL SPACES EXCAVATED WITHIN THE LENGTH OF THE BOX AND NOT OCCUPIED BY THE NEW BOX SHALL BE BACKFILLED WITH STRUCTURE BACKFILL TO THE ROADWAY SUBGRADE ELEVATION.

THE EXISTING STRUCTURE, B-67-959, A TWO CELL CONCRETE BOX CULVERT 28' LONG x 29' WIDE TO BE REMOVED.

SEE ROADWAY PLANS FOR EXISTING & PROPOSED UTILITY LOCATIONS.

THE CUT OFF WALLS USED SHALL BE PILING STEEL SHEET, AS DETAILED IN THE PLANS.

CONTRACTOR TO LOCATE ALL EXISTING UNDERGROUND UTILITIES BEFORE COFFERDAM CONSTRUCTION, ACCORDING TO UTILITIES PLAN.

SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1" FILLER WITH NON-STAINING GRAY NON-ASPHALTIC JOINT SEALER.

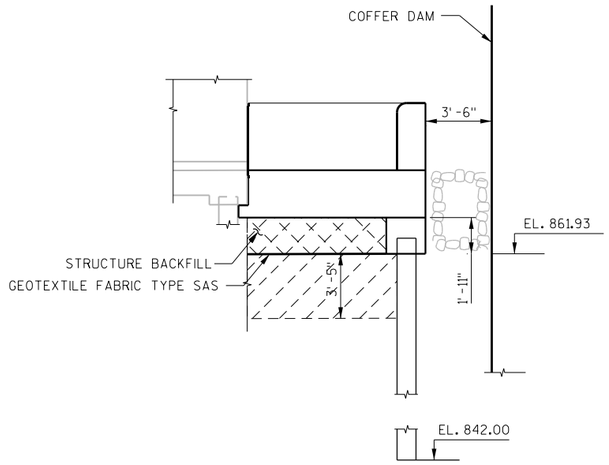
THE CONTRACTOR MAY NOT FURNISH A PRECAST CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE BOX CULVERT.

SHEET PILE CUT OFF WALL IS PAID UNDER BID ITEM "PILING STEEL SHEET PERMANENT DELIVERED" AND "PILING STEEL SHEET PERMANENT DRIVEN".

SHEET PILE CUT OFF WALL JOINTS SHALL MATCH AND INTERLOCK WITH ADJACENT RETAINING WALL SHEET PILE

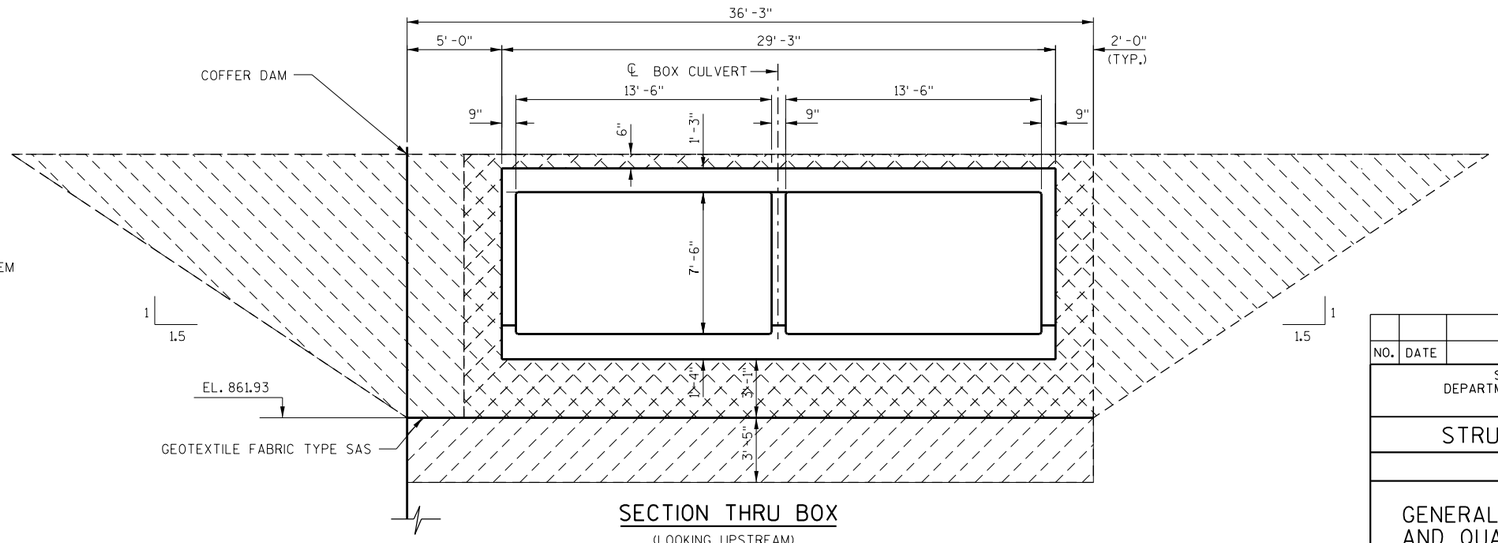
THE UTILITY INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL-INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATIONS AS TO TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE. UTILITIES LABELED AS PROPOSED MAY BE INSTALLED BY OTHERS PRIOR TO THIS CONTRACT.

MONUMENTS WILL BE PROVIDED BY THE WISCONSIN DEPARTMENT OF TRANSPORTATION AND PLACED BY THE CONTRACTOR AT LOCATIONS SHOWN ON THE PLAN.



SECTION THRU DAM/SPILLWAY

(LOOKING NORTH)



SECTION THRU BOX

(LOOKING UPSTREAM)

LEGEND

STRUCTURE BACKFILL - STRUCTURE ITEM

SELECT BORROW - ROADWAY ITEM

SELECT BORROW - STRUCTURE ITEM

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-319

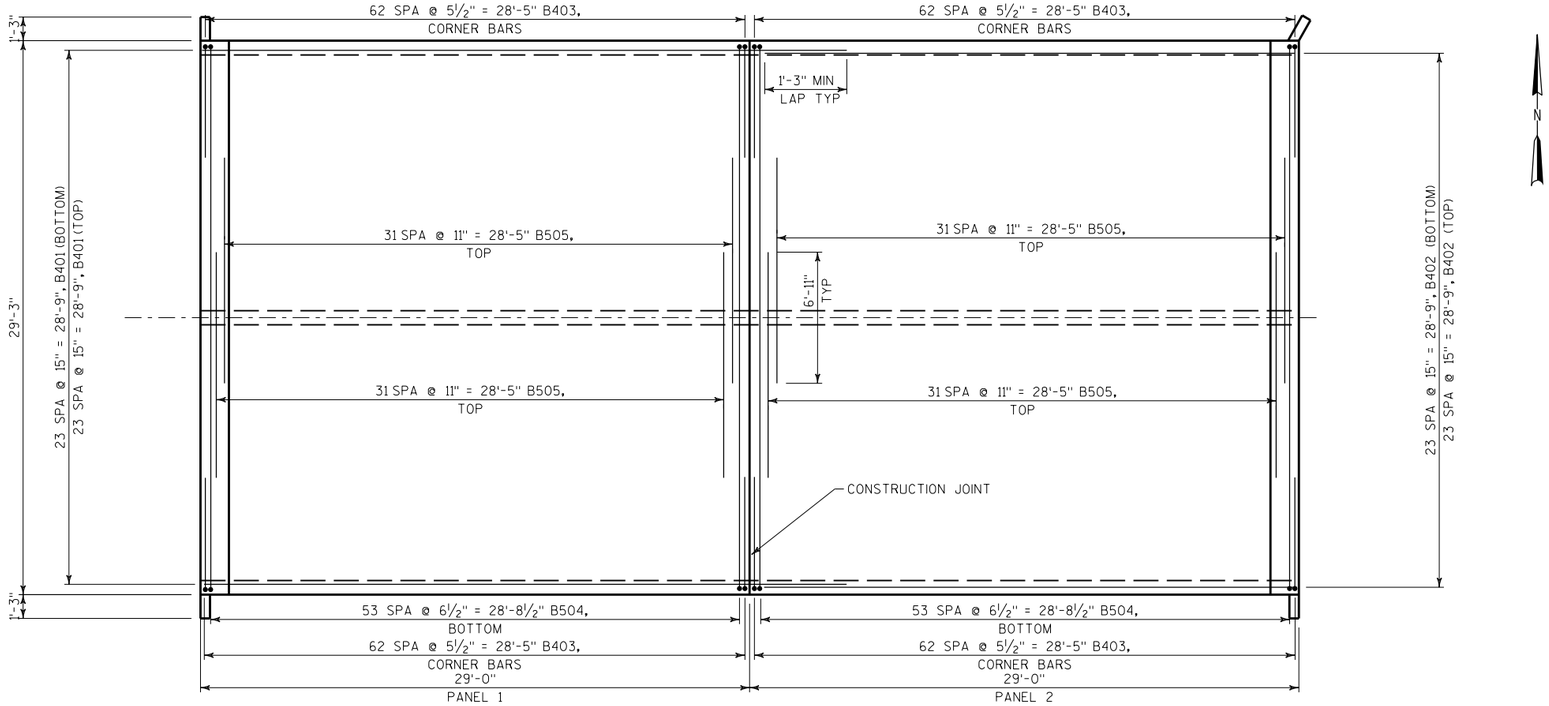
DRAWN BY MR | PLANS CK'D. MHZ

GENERAL NOTES AND QUANTITIES

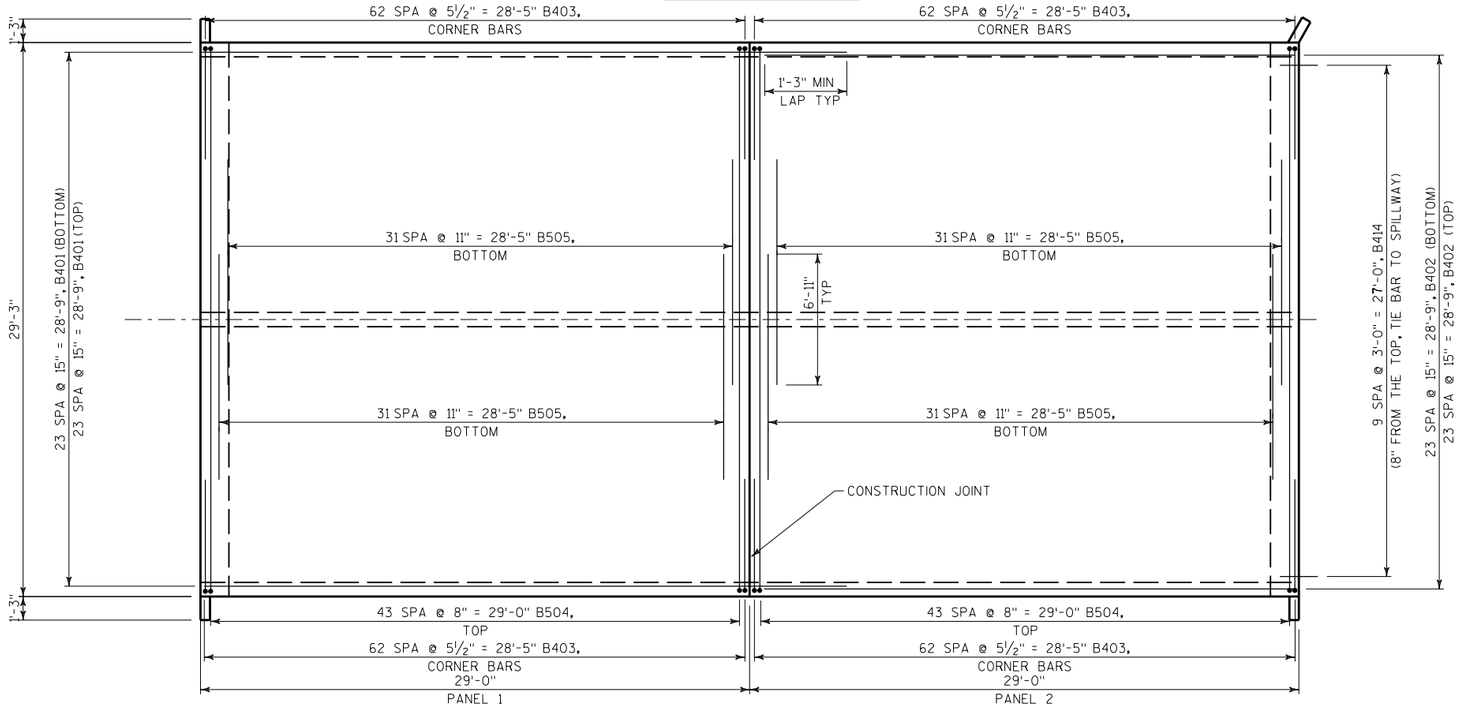
SHEET 2 OF 8

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Culvert plans\DGN\02_notes_quant_B-67-319.dgn DATE : 4/29/2015 PLOT BY : mmyaskovsky PLOT NAME : $FILE$ PLOT SCALE : 1:8

STATE PROJECT NUMBER
2714-04-70



TOP SLAB PLAN



BOTTOM SLAB PLAN

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-319

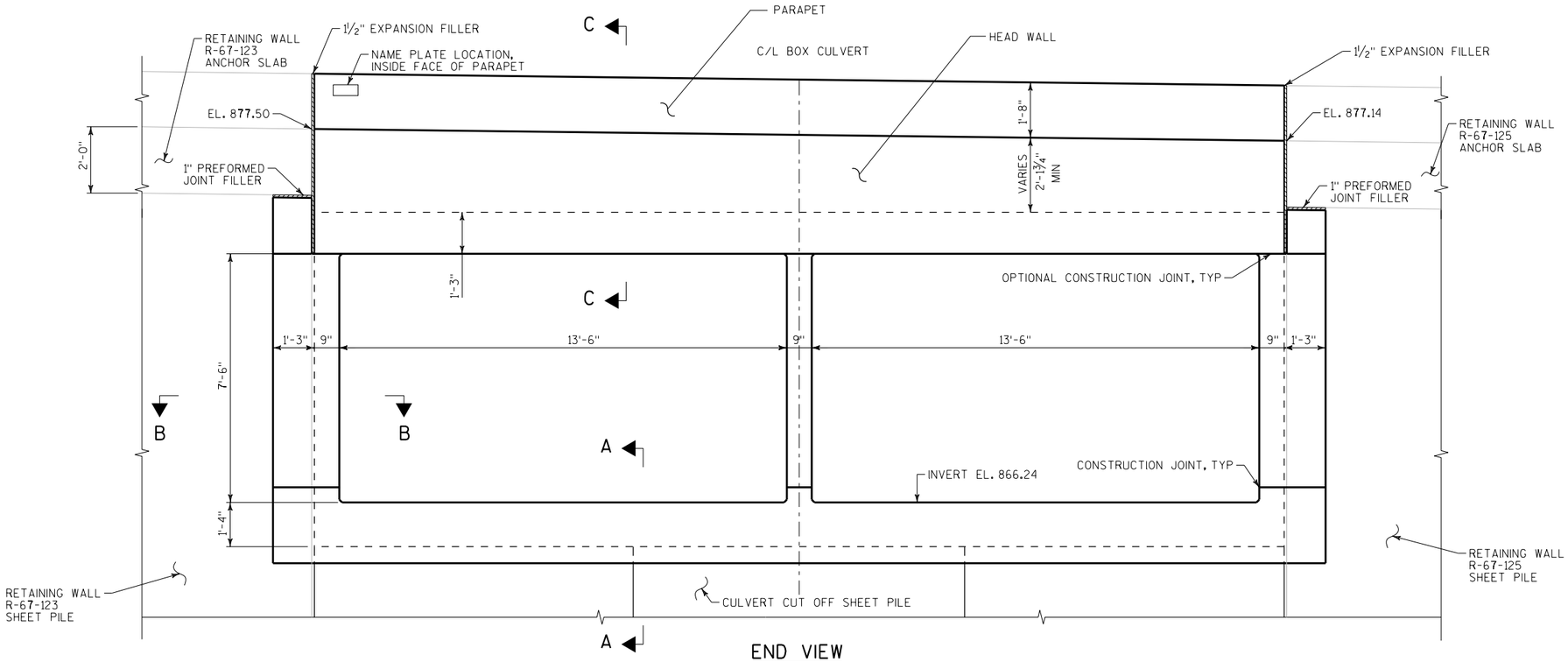
DRAWN BY MR | PLANS CK'D. MHZ

TOP AND BOTTOM SLAB

SHEET 3 OF 8

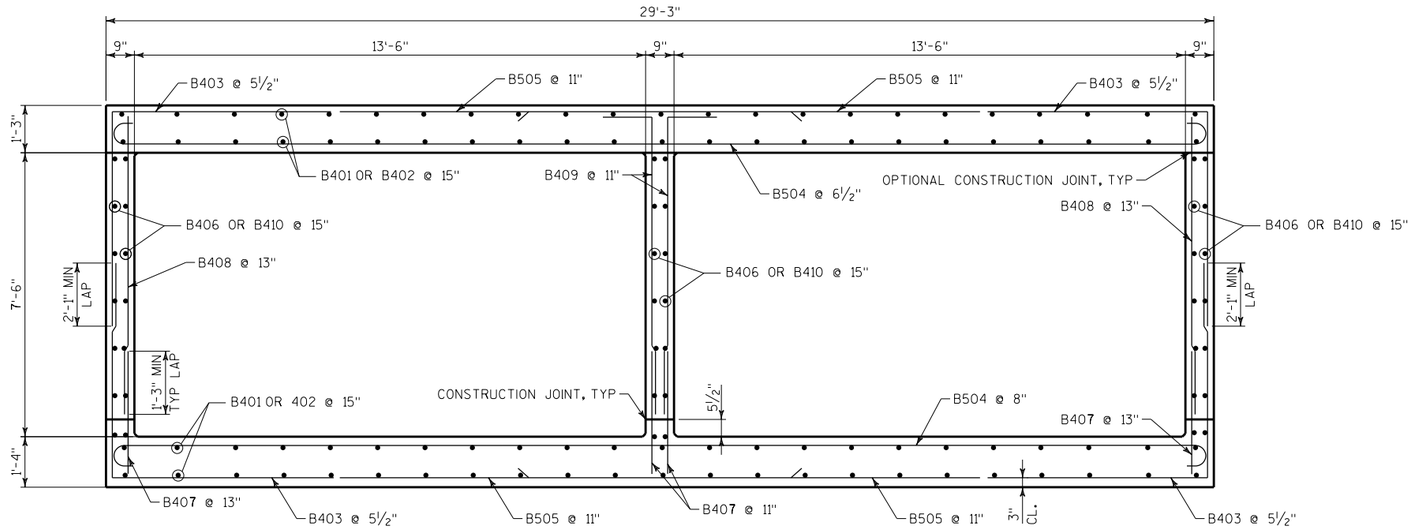
FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Culvert plans\DGN\03_top and bottom slab B67A319.dgn
PLOTTED : 4/29/2015
PLOT BY : mmyaskovsky
PLOT NAME : $FILE$
PLOT SCALE : 1:8

STATE PROJECT NUMBER
2714-04-70

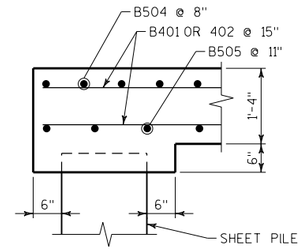


END VIEW

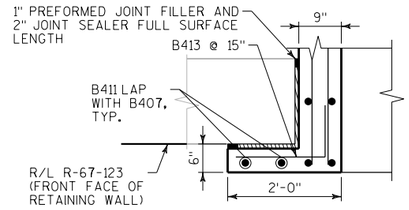
(LOOKING UPSTREAM)



SECTION THRU BOX

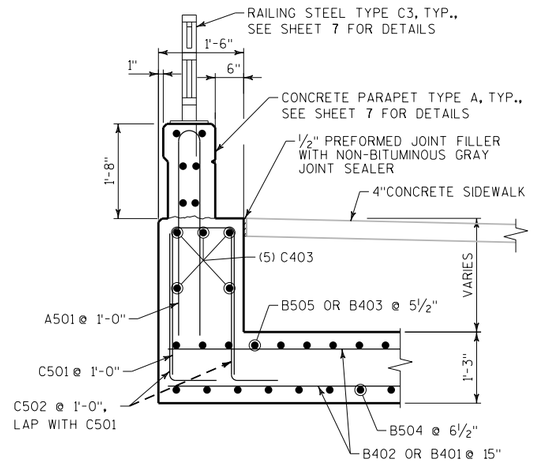


SECTION A-A



SECTION B-B

NW, SW, SE CORNERS.
SEE SHEET 5 FOR NE CORNER DETAIL



SECTION C-C

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-319

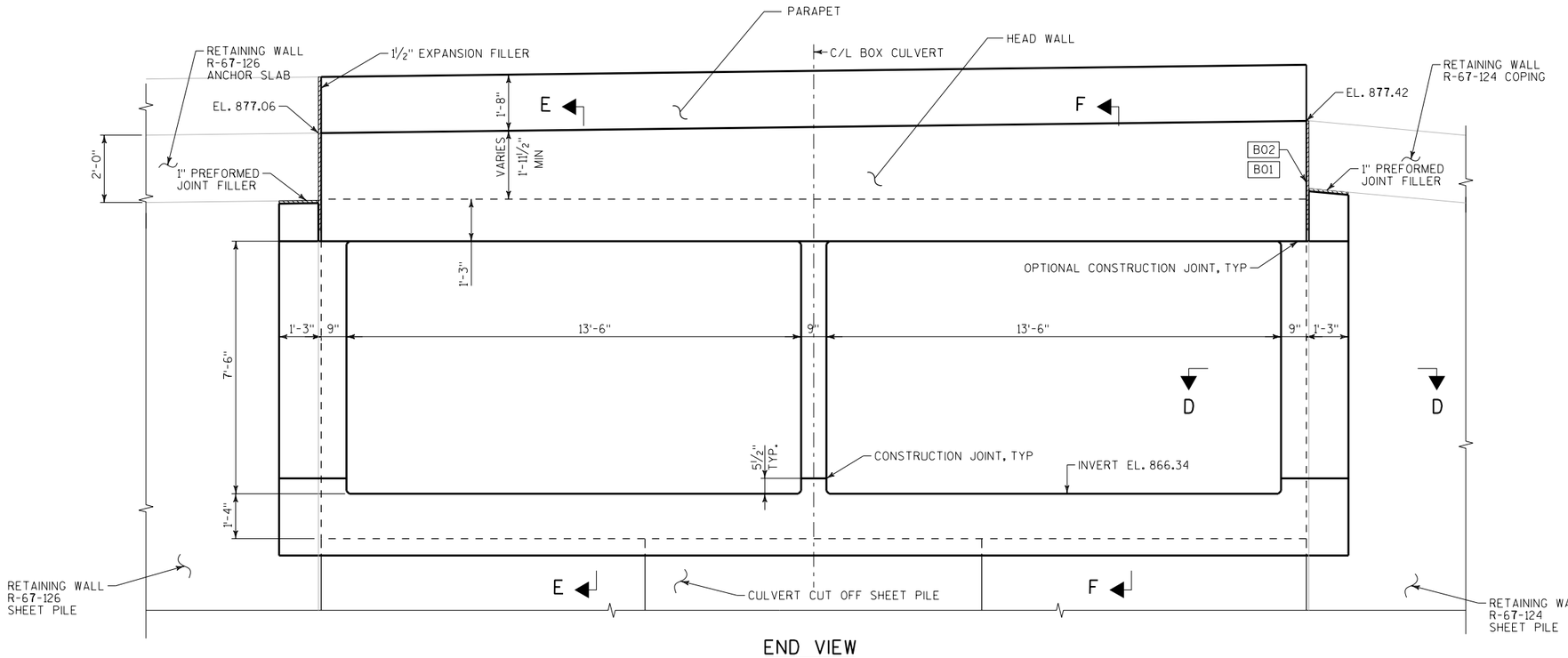
DRAWN BY	MR	PLANS CK'D.	MHZ

SECTIONS AND DETAILS 1 OF 2

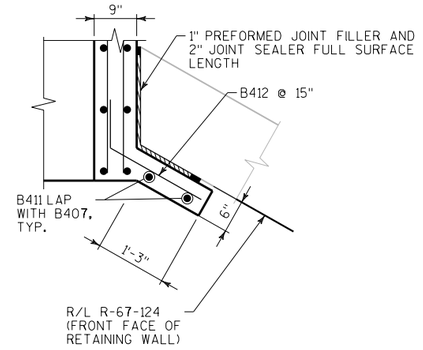
SHEET 4 OF 8

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Culvert plans\DGN\04_sections and details.dgn
PLOTDATE : 4/29/2015
PLOT BY : mmyaskovsky
PLOT NAME : $FILE$
PLOT SCALE : 1:4.00001

STATE PROJECT NUMBER
2714-04-70



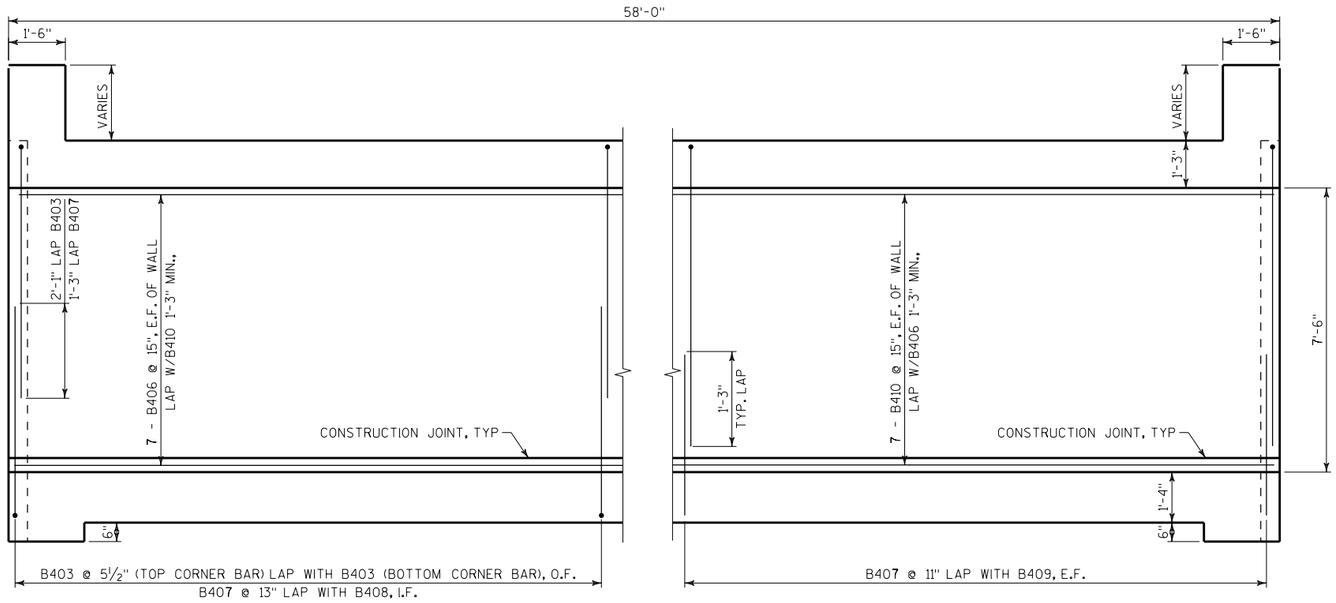
END VIEW
(LOOKING DOWNSTREAM)



SECTION D-D
NE CORNER DETAIL

LEGEND

E.F. EACH FACE
I.F. INNER FACE
O.F. OUTER FACE



E-E
EXTERIOR WALL

F-F
INTERIOR WALL

LONGITUDINAL SECTION THRU BOX

NOTES

B01 NON-BITUMINOUS JOINT SEALER, COLOR TO MATCH CONCRETE STAIN. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE)

B02 ¾" PREFORMED JOINT FILLER

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-319

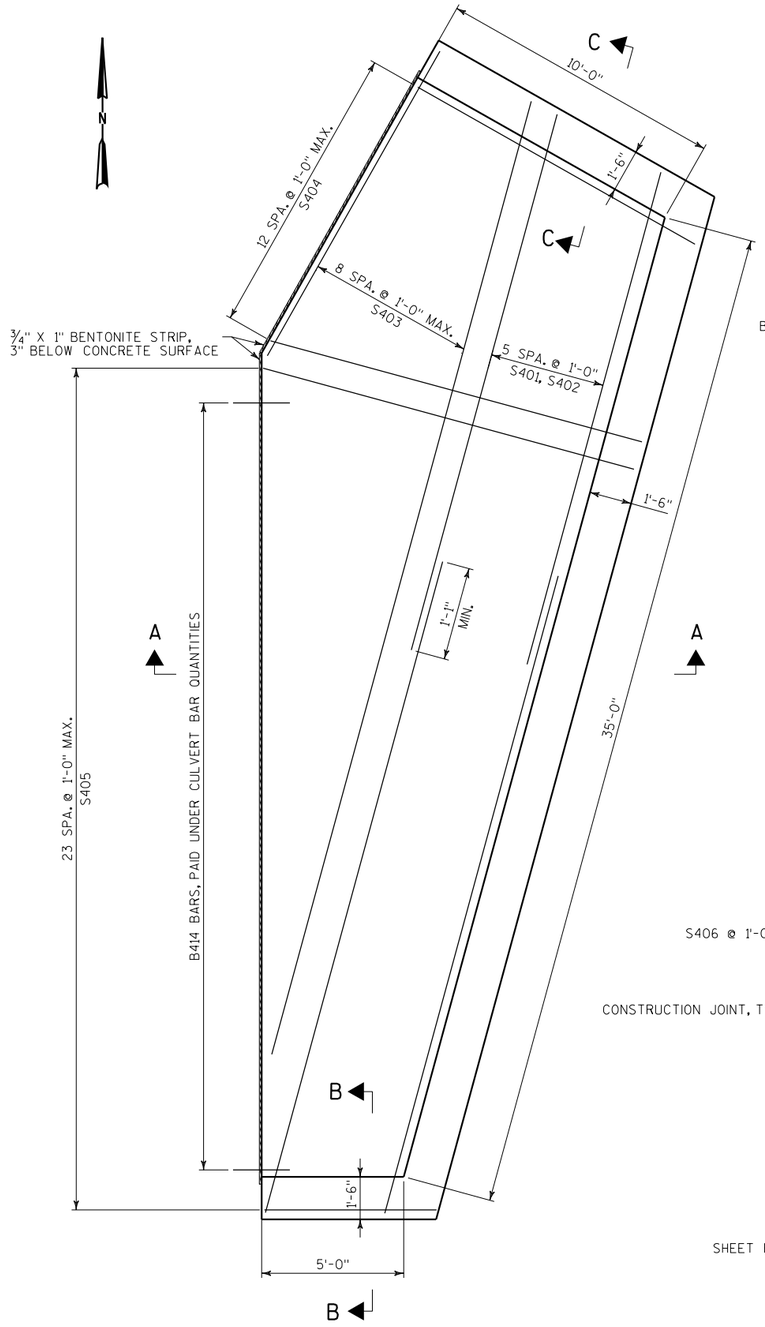
DRAWN BY	MR	PLANS CK'D.	MHZ

SECTIONS AND DETAILS 2 OF 2

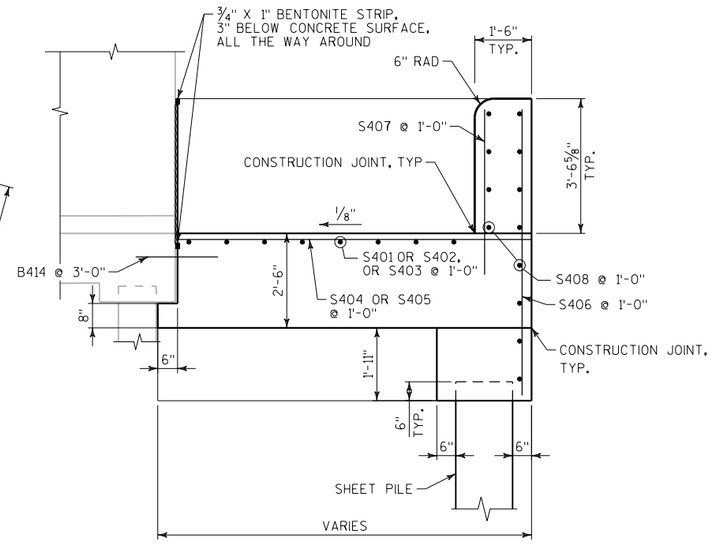
SHEET 5 OF 8

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Culvert plans\DGN\05_sections and details B-67-319.dgn
PLOT DATE : 4/29/2015
PLOT BY : mmyaskovsky
PLOT NAME : $FILE$
PLOT SCALE : 1:4.00001

STATE PROJECT NUMBER
2714-04-70



PLAN



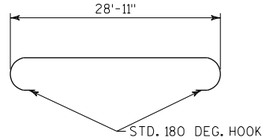
SECTION A-A

BILL OF BARS

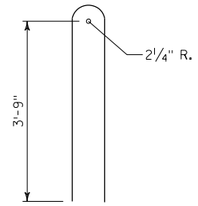
BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
A501	X	60	8'-1"	X	-	VERTICAL PARAPET
A402	X	12	28'-11"	-	-	LONGITUDINAL PARAPET
B401	X	96	30'-2"	-	-	LONGITUDINAL
B402	X	96	28'-9"	-	-	LONGITUDINAL
B403	X	504	11'-10"	X	-	TRANSVERS CORNER
B504	X	196	30'-1"	X	-	TRANSVERS
B505	X	256	11'-11"	-	-	TRANSVERS
B406	X	42	30'-2"	-	-	LONGITUDINAL WALLS
B407	X	246	2'-10"	-	-	VERTICAL WALLS
B408	X	110	8'-7"	-	-	VERTICAL WALLS
B409	X	128	9'-1"	X	-	VERTICAL WALLS
B410	X	42	28'-9"	-	-	LONGITUDINAL WALLS
B411	X	8	9'-3"	-	-	VERTICAL
B412	X	9	2'-3"	X	-	HORIZONTAL
B413	X	27	2'-3"	X	-	HORIZONTAL
B414	X	10	2'-0"	-	-	HORIZONTAL TIE BAR
C501	X	60	6'-9"	X	-	VERTICAL HEADER
C502	X	120	3'-4"	X	-	VERTICAL HEADER
C403	X	10	28'-11"	-	-	LONGITUDINAL HEADER
S401	-	6	20'-0"	-	-	LONGITUDINAL SPILLWAY
S402	-	6	21'-1"	-	-	LONGITUDINAL SPILLWAY
S403	-	9	19'-2"	-	X	LONGITUDINAL SPILLWAY
S404	-	13	12'-4"	-	X	TRANSVERS SPILLWAY
S405	-	24	9'-7"	-	X	TRANSVERS SPILLWAY
S406	-	56	8'-6"	-	-	VERTICAL SPILLWAY
S407	-	51	4'-4"	-	-	VERTICAL SPILLWAY
S408	-	12	36'-11"	-	-	HORIZONTAL SPILLWAY
S409	-	12	5'-9"	-	-	HORIZONTAL SPILLWAY
S410	-	12	10'-10"	-	-	HORIZONTAL SPILLWAY

BAR SERIES TABLE

BAR MARK	NO. REQ'D	LENGTH
S403	1 SERIES OF 9	12'-3" TO 26'-0"
S404	1 SERIES OF 13	11'-2" TO 13'-5"
S405	1 SERIES OF 24	5'-9" TO 13'-5"

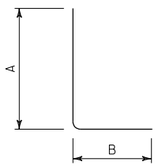


B504

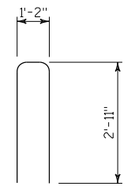


A501

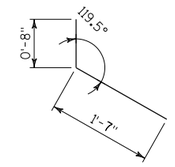
BAR MARK	DIM 'A'	DIM 'B'
B403	5'-11"	6'-0"
B409	8'-7"	0'-8"
B413	1'-7"	0'-8"
C502	2'-7"	0'-10"



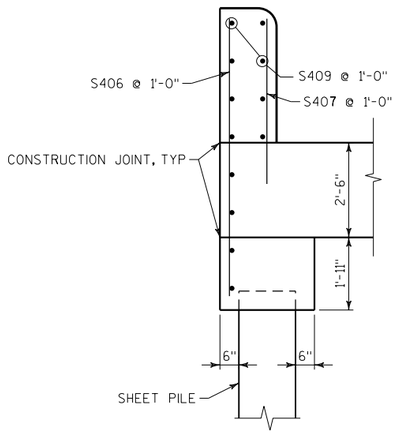
B403
B409
B413
C502



C501

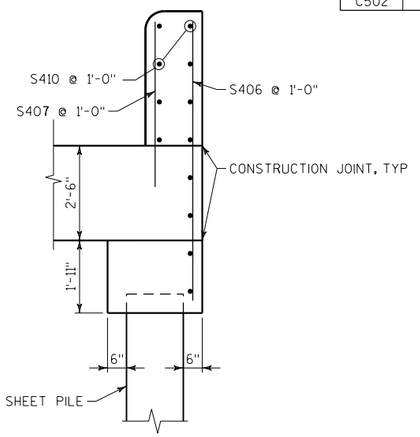


B412



SECTION B-B

SLAB REINFORCEMENT NOT SHOWN FOR CLARITY



SECTION C-C

SLAB REINFORCEMENT NOT SHOWN FOR CLARITY

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-319

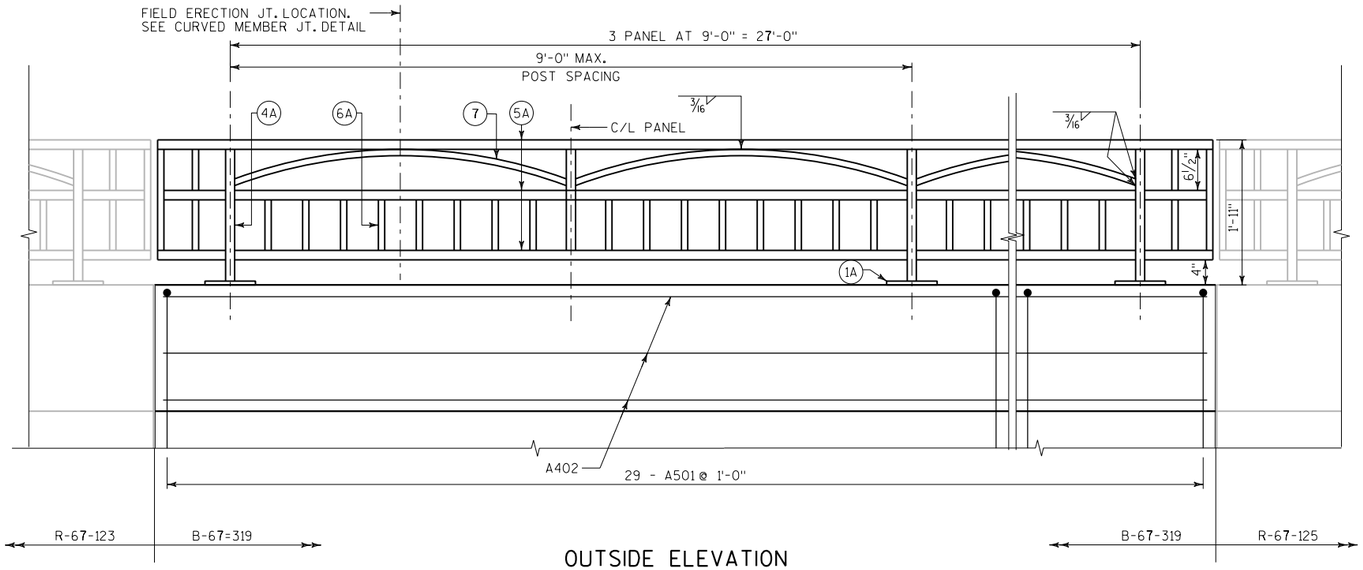
DRAWN BY	MR	PLANS CK'D.	MHZ

SPILLWAY STRUCTURE AND BILL OF BARS

SHEET 6 OF 8

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Culvert plans\DGN\06_spillway structure B67319.dgn
PLOT DATE : 4/29/2015
PLOT BY : mmyaskovsky
PLOT NAME : $FILE$
PLOT SCALE : 1:4.00001

STATE PROJECT NUMBER
2714-04-70



OUTSIDE ELEVATION

(WEST PARAPET SHOWN, EAST PARAPET SIMILAR)

RAILING NOTES

BID ITEM SHALL BE "RAILING STEEL TYPE C3 GALVANIZED B-67-319", WHICH SHALL INCLUDE ALL STEEL ITEMS SHOWN.

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 CUTS.

ALL PLATES, BARS, AND RECTANGULAR SLEEVES SHALL CONFORM TO ASTM A709 GRADE 36. ALL STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 GRADE B.

ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING. SET NORMAL TO GRADE.

CUT BOTTOM OF POST TO MAKE POST VERTICAL IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTION.

STEEL SHIMS SHALL BE PROVIDED & USED UNDER BASE PLATES WHERE REQUIRED FOR ALIGNMENT, AND SHALL BE GALVANIZED.

■ CAULK AROUND PERIMETER OF BASE PLATES, NO. 1, AND FILL BOLT SLOT OPENINGS IN SHIMS AND BASE PLATES WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.

ALL JOINTS AND RECESSES IN CONCRETE PARAPET ARE TO BE VERTICAL.

ALL MATERIAL (EXCEPT NO. 3 & 12) SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, THE STEEL RAILING SHALL BE GIVEN A NO. 6 BLAST CLEANING PER SSPC SPECIFICATIONS.

VENT HOLES SHALL BE DRILLED IN POST AND RAIL MEMBERS AS REQUIRED TO FACILITATE GALVANIZING AND DRAINAGE.

RAILING SHALL BE FABRICATED IN LENGTHS THAT INCLUDE 3 OR 4 POSTS.

LEGEND

(1A) PLATE 5/8" X 6" X 8" WITH 3/4" X 1 1/2" SLOTTED HOLES.

(2A) 1/4" X 5" X 7" ANCHOR PLATE WITH 11/16" Φ HOLES FOR THR'D. RODS NO. 3.

(3) 5/8" DIA. X 9" LONG, TYPE 316 STAINLESS STEEL THREADED RODS (MIN. TENSILE STRENGTH = 70 KSI) WITH NUT AND WASHERS OF SAME ALLOY GROUP. (ALTERNATE RAIL POST ANCHORAGE: 4 EQUIVALENT STAINLESS STEEL CONCRETE MASONRY ANCHORS TYPE S 5/8-INCH. EMBED 7" IN CONCRETE FOR RAIL POSTS. EMBED 5" IN CONCRETE FOR END RAILS.)

(4A) STRUCTURAL TUBING 3" X 1 1/2" X 3/16". PLACE VERTICAL. WELD TO NO. 1 & 5.

(5A) STRUCTURAL TUBING 3" X 1 1/2" X 3/16" RAILS. WELD TO NO. 1 & NO. 4. INSIDE OF TUBE TO BE PAINTED AT ALL FIELD ERECTION & EXPANSION JOINTS.

(6A) BAR 1" X 1" PICKETS. WELD TO NO. 5. PLACE VERTICAL.

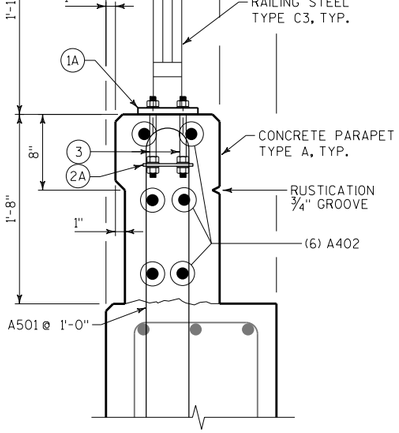
(6C) BAR 1" X 1 1/2" PICKETS. WELD TO NO. 11. PLACE VERTICAL.

(7) BAR 1" X 1". BEND TO REQUIRED RADIUS. WELD TO NO. 4 & 5.

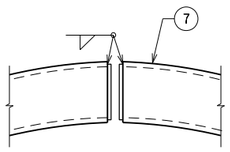
(9A) RECTANGULAR SLEEVE FABRICATED FROM 3/16" PLATES. PROVIDE "SLIDING FIT".

(10A) RECTANGULAR SLEEVE FABRICATED FROM 3/16" PLATES. (1'-4" @ FIELD ERECTION JTS.) (1'-4" @ STRIP SEAL EXP. JTS.)

(12) 1/2" DIA. STAINLESS STEEL BOLT WITH NUT AND LOCKWASHER.

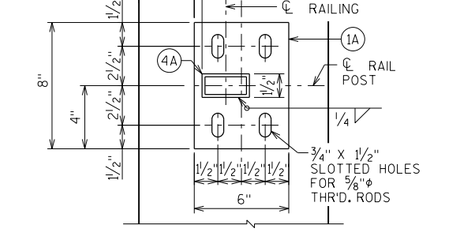


SECTION A-A

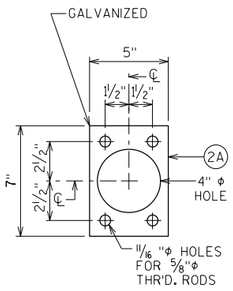


CURVED MEMBER JOINT DETAIL

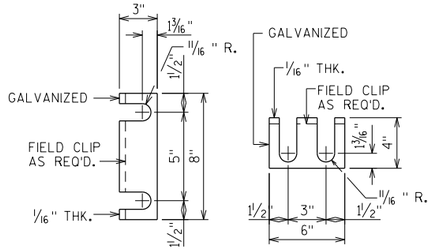
SEAL ENDS ON CURVED STRUCTURAL TUBING WITH 1/4" PLATE. WELD AND GRIND SMOOTH.



TYPICAL RAIL POST BASE PLATE

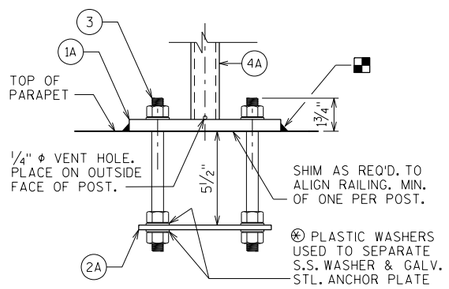


ANCHOR PLATE



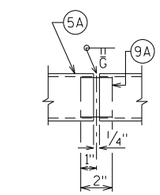
RAIL POST SHIM DETAIL

(2 SETS PER POST)



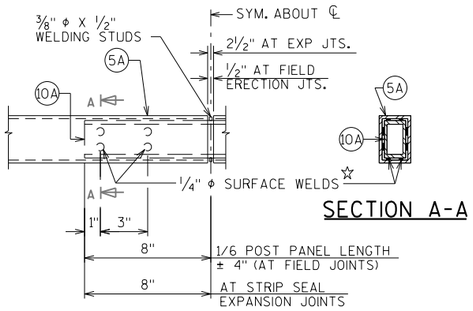
ANCHORAGE FOR RAIL POSTS

NOTE: ANCHOR PLATE NOT REQUIRED WHEN TYPE S ANCHORS ARE USED.



SHOP RAIL SPLICE DETAIL

(LOCATION MUST BE SHOWN ON SHOP DRAWINGS)



SECTION A-A

FIELD ERECTION JOINT DETAIL

☆ MIN. 5/8" FLAT SURFACE DIA. PUNCHINGS OR STUDS MAY BE USED AS AN ALTERNATE.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-319

DRAWN BY MM | PLANS CK'D. MR

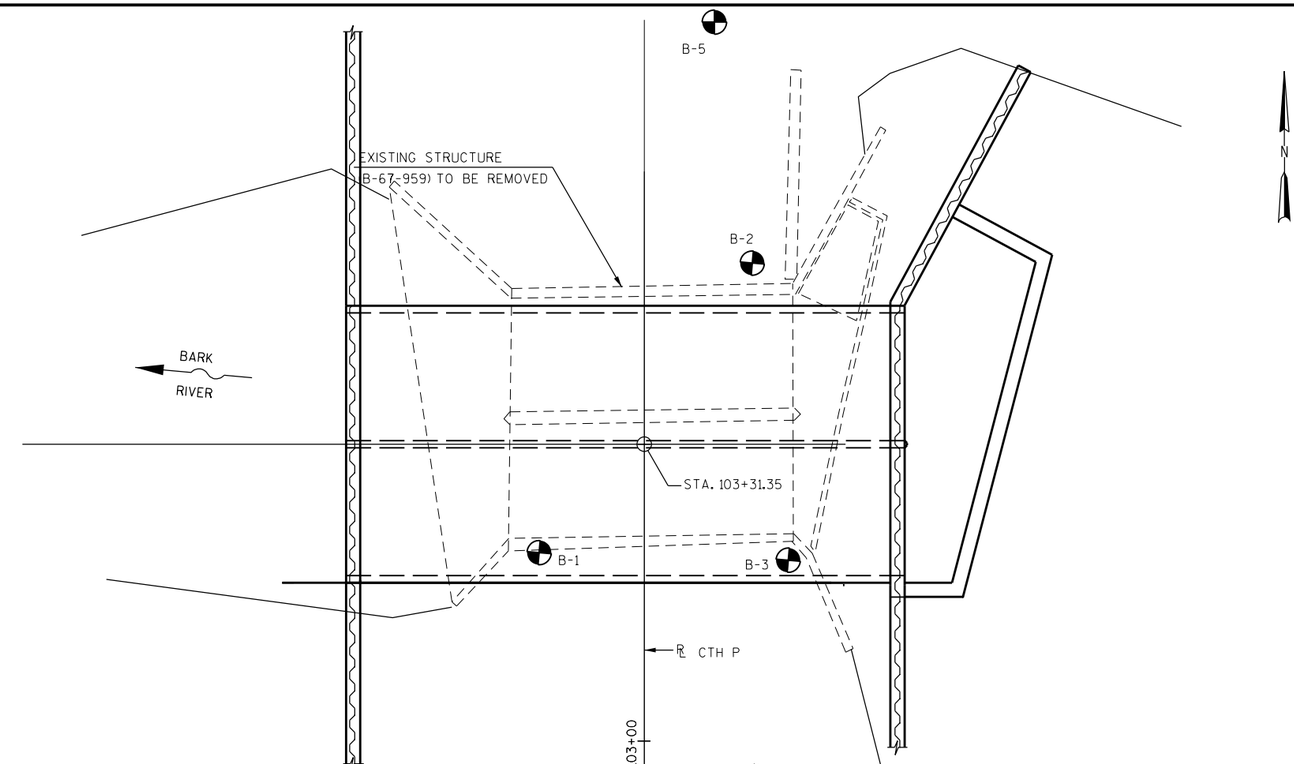
PARAPET AND RAILING

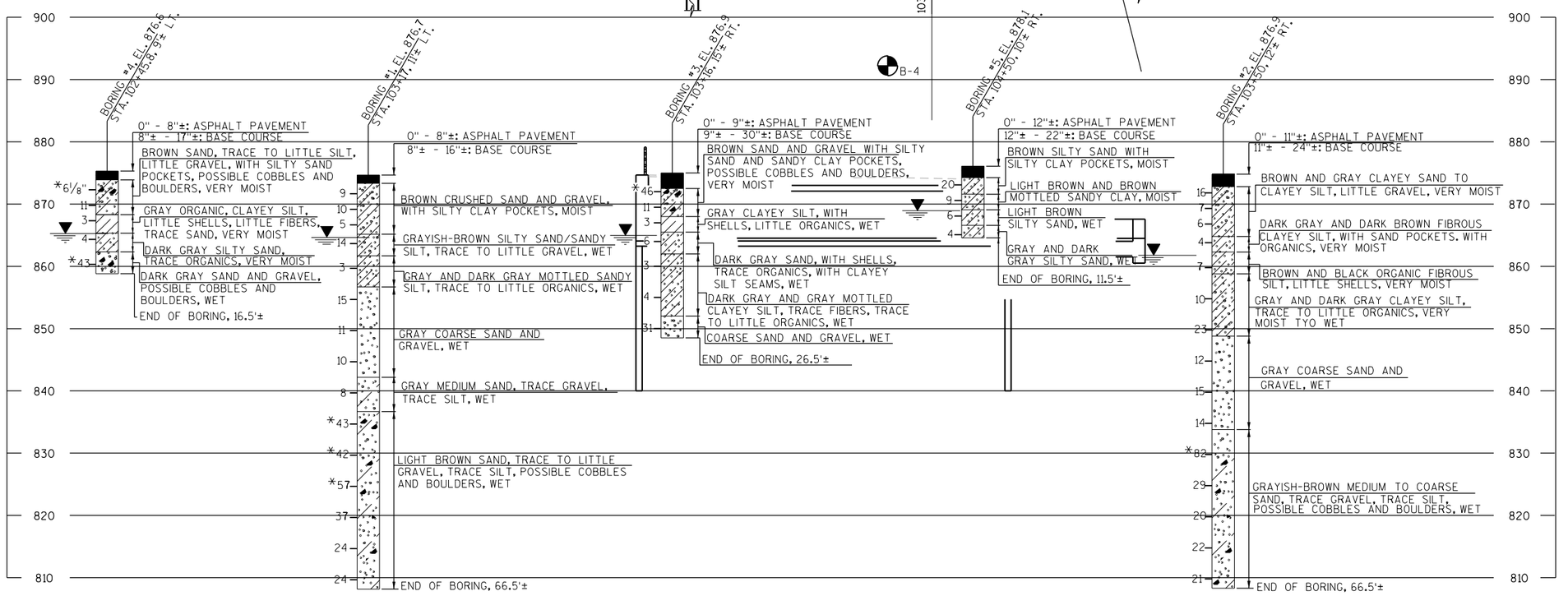
SHEET 7 OF 8

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Culvert plans\DGN\07_parapet and railing_B67B319.dgn
PLOT DATE : 4/29/2015
PLOT BY : mmyaskovsky
PLOT NAME : $FILE$
PLOT SCALE : 1:4.00001

MIDWEST ENGINEERING SERVICES, INC.
821 CORPORATE COURT, SUITE 102
WAUKESHA, WI 53189

BORING B-1 WAS PERFORMED ON FABRUARY 13, 2008
BORING B-2 WAS PERFORMED ON FABRUARY 13, 2008
BORING B-3 WAS PERFORMED ON FABRUARY 14, 2008
BORING B-4 WAS PERFORMED ON FABRUARY 13, 2008
BORING B-5 WAS PERFORMED ON FABRUARY 14, 2008





* = VALUE MAY BE ELEVATED DUE TO COBBLES AND BOULDERS

STATE PROJECT NUMBER

2714-04-70

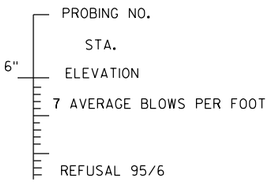
ABBREVIATIONS

F — FINE M — MEDIUM C — COARSE
WS — WEATHERED SO — SOUND

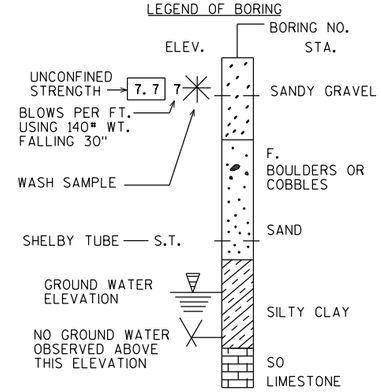
MATERIAL SYMBOLS

TOPSOIL / FILL
SAND
GRAVEL
SILT
PEAT
CLAY
SANDSTONE
LIMESTONE
IGNEOUS ROCK

LEGEND OF PROBING



LEGEND OF BORING



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

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-319

DRAWN BY MM | PLANS CK'D. MR

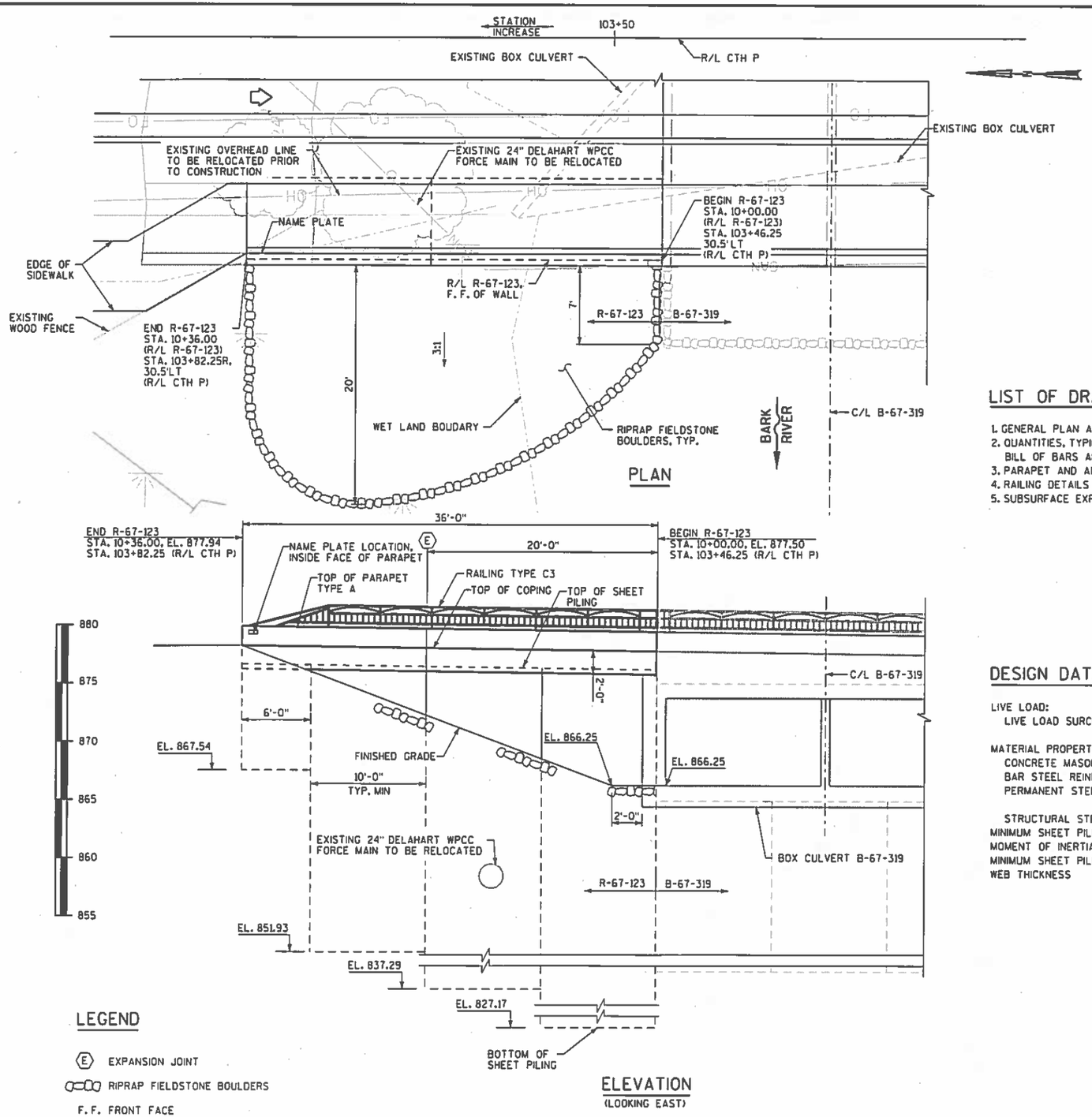
SUBSURFACE EXPLORATION

SHEET 8 OF 8

70

8

8



LEGEND

(E) EXPANSION JOINT

RIPRAP FIELDSTONE BOULDERS

F.F. FRONT FACE

LIST OF DRAWINGS

1. GENERAL PLAN AND ELEVATION
2. QUANTITIES, TYPICAL SECTION, BILL OF BARS AND ELEVATIONS TABLE
3. PARAPET AND ANCHOR SLAB DETAILS
4. RAILING DETAILS
5. SUBSURFACE EXPLORATION

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

ALL STATIONS AND ELEVATIONS ARE IN FEET. ELEVATIONS ARE REFERENCED TO THE NGVD DATUM.

ALL STATIONS ARE ALONG THE R/L FOR R-67-123, ALONG THE FRONT FACE OF THE WALL, UNLESS OTHERWISE SHOWN.

THESE PLANS ARE FOR PERMANENT STEEL SHEET PILE RETAINING WALL R-67-123.

USE 2" CLEAR CONCRETE COVER FOR ALL REINFORCEMENT, UNLESS OTHERWISE SHOWN.

THE EXISTING GROUND LINE SHALL BE THE UPPER LIMITS OF EXCAVATION FOR STRUCTURES.

COLD ROLLED STEEL SHEETING WITH EQUIVALENT SECTION MOMENT OF INERTIA AND SECTION WEB THICKNESS MAY BE UTILIZED.

BEVEL EXPOSED EDGES OF CONCRETE 3/4" UNLESS NOTED OTHERWISE.

ALL BAR STEEL REINFORCEMENT TO BE EPOXY COATED.

THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

SHEET PILING SHALL BE OF STEEL TYPE MEETS ASTM A328 OR A572.

ALL CAST-IN-PLACE CONCRETE IS PAID FOR UNDER ITEM "CONCRETE MASONRY RETAINING WALLS".

THE UTILITY INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL-INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATIONS AS TO TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE. UTILITIES LABELED AS PROPOSED MAY BE INSTALLED BY OTHERS PRIOR TO THIS CONTRACT.

DESIGN DATA

LIVE LOAD:
- LIVE LOAD SURCHARGE = 240 psf

MATERIAL PROPERTIES:
- CONCRETE MASONRY RETAINING WALLS f'c = 4,000 psi
- BAR STEEL REINFORCEMENT fy = 60,000 psi
- PERMANENT STEEL SHEET PILING ASTM A328 OR A572

STRUCTURAL STEEL HS Fy = 50,000 psi
MINIMUM SHEET PILE SECTION MOMENT OF INERTIA Ix = 490.85 in^4/ft
MINIMUM SHEET PILE SECTION WEB THICKNESS Tw = 0.5 in

WISCONSIN
MOHAMMED H. ZAGLOUL
E-26970
MILWAUKEE
WISCONSIN
PROFESSIONAL ENGINEER
7/20/2015

STRUCTURES DESIGN CONTACTS

BRIDGE OFFICE:
WILLIAM DREHER (608) 266-8489
CONSULTANT:
MOHAMMED ZAGLOUL (414) 751-7200

NO.	DATE	REVISION	BY

KAPUR & ASSOCIATES
CONSULTING ENGINEERS
414.751.7200

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher NK 07/23/15
CHIEF STRUCTURES DESIGN ENGINEER DATE

STATE PROJECT NUMBER
2714-04-70

STRUCTURE R-67-123

CTH P OVER BARK RIVER

COUNTY	TOWN/CITY/VILLAGE
WAUKESHA	SUMMIT

DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
MR	MHZ	MM	MHZ

GENERAL PLAN AND ELEVATION

SHEET 1 OF 5

8

8

STATE PROJECT NUMBER

2714-04-70

TOTAL ESTIMATED QUANTITIES

ITEM NO.	BID ITEM	UNIT	TOTAL
206.3000	EXCAVATION FOR STRUCTURES RETAINING WALLS R-40-123	LS	1
504.0500	CONCRETE MASONRY RETAINING WALLS	CY	14
505.0615	BAR STEEL REINFORCEMENT HS COATED RETAINING WALLS	LB	3,538
512.0500	PILING STEEL SHEET PERMANENT DELIVERED	SF	1,174
512.0600	PILING STEEL SHEET PERMANENT DRIVEN	SF	1,174
513.7015	RAILING STEEL TYPE C3 R-67-123	LS	1
516.0500	RUBBERIZED MEMBRAINE WATERPROOFING	SY	4
645.0120	GEOTEXTILE FABRIC TYPE HR	SY	69
SPV.0035.01	RIPRAP FIELDSTONE BOULDERS	CY	46
	NON-BID ITEMS		
	NAME PLATE	EACH	1
	PREFORMED JOINT FILLER	SIZE	1"
	PREFORMED JOINT FILLER	SIZE	1/2"
	CORK FILLER	SIZE	1"
	NON-BITUMINOUS JOINT SEALER	SIZE	1/2"
	NON-BITUMINOUS JOINT SEALER	SIZE	1"

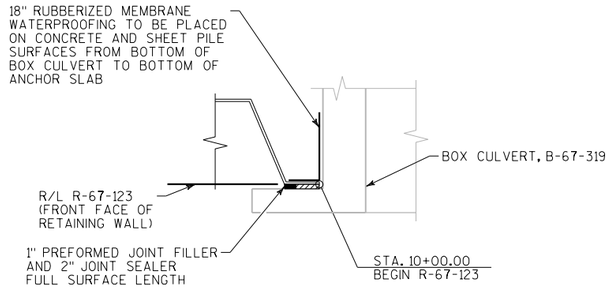
ALL ITEMS CATEGORY NUMBER 0030

ELEVATIONS TABLE

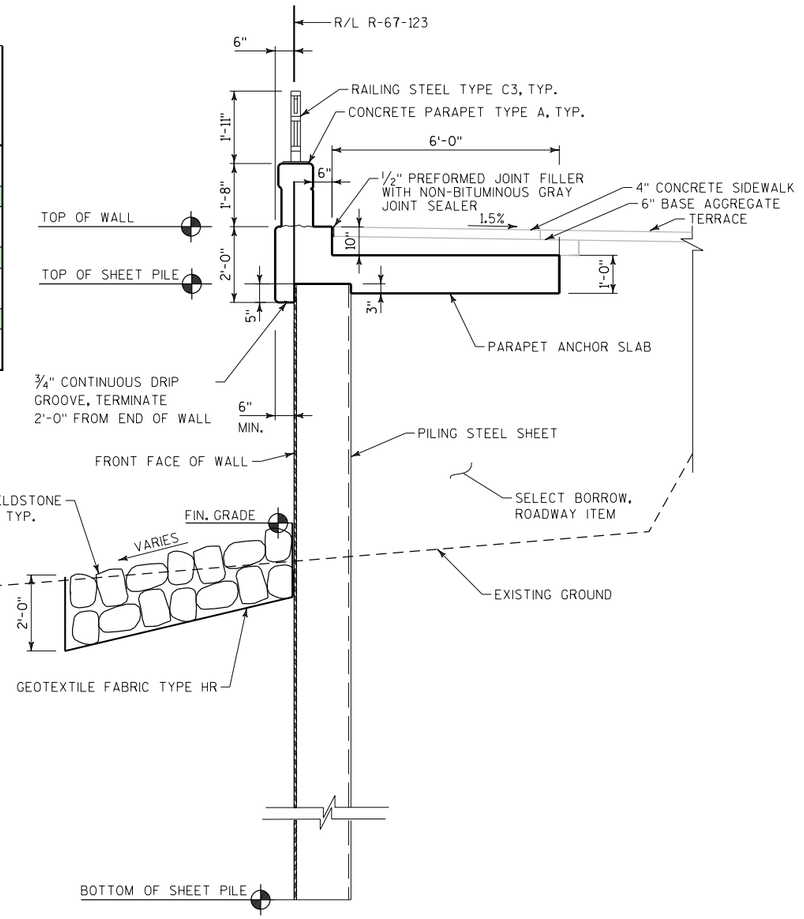
SHEET PILING UNIT	SHEET PILING WALL STATIONS	TOP OF WALL EL., FT	TOP OF SHEET PILE EL., FT	FINISHED GRADE EL., FT	MIN. SHEET PILING SECTION DEPTH, IN	NOMINAL SHEET PILING LENGTH, FT	MIN. BOTTOM OF SHEET PILING EL., FT
BEGIN. STA.	10+00.00	877.50	875.92	866.25	16.1	49	827.17
END STA.	10+10.00	877.62	876.04	868.66			
BEGIN. STA.	10+10.00	877.62	876.04	868.66	16.1	39	837.29
END STA.	10+20.00	877.74	876.16	872.23			
BEGIN. STA.	10+20.00	877.74	876.16	872.23	16.1	25	851.93
END STA.	10+30.00	877.87	876.28	875.80			
BEGIN. STA.	10+30.00	877.87	876.28	875.80	16.1	9	867.54
END STA.	10+36.00	877.94	876.36	877.94			

BILL OF BARS

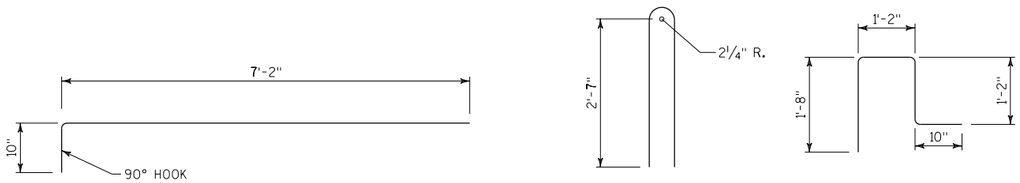
BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
A501	X	56	4'-6"	X	-	ANCHOR SLAB-TRANS.
A402	X	18	19'-7"	-	-	ANCHOR SLAB-LONG.
A403	X	18	15'-7"	-	-	ANCHOR SLAB-LONG.
A504	X	58	4'-3"	-	-	ANCHOR SLAB-TRANS.
A505	X	56	7'-10"	X	-	ANCHOR SLAB-TRANS.
P501	X	38	5'-9"	X	-	PARAPET- VERT.
P402	X	6	19'-7"	-	-	PARAPET- LONG.
P403	X	6	15'-7"	-	-	PARAPET- LONG.



WALL SECTION AT BOX CULVERT



TYPICAL SECTION THRU WALL



A505 P501 A501

BENDING DIAGRAMS

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-67-123

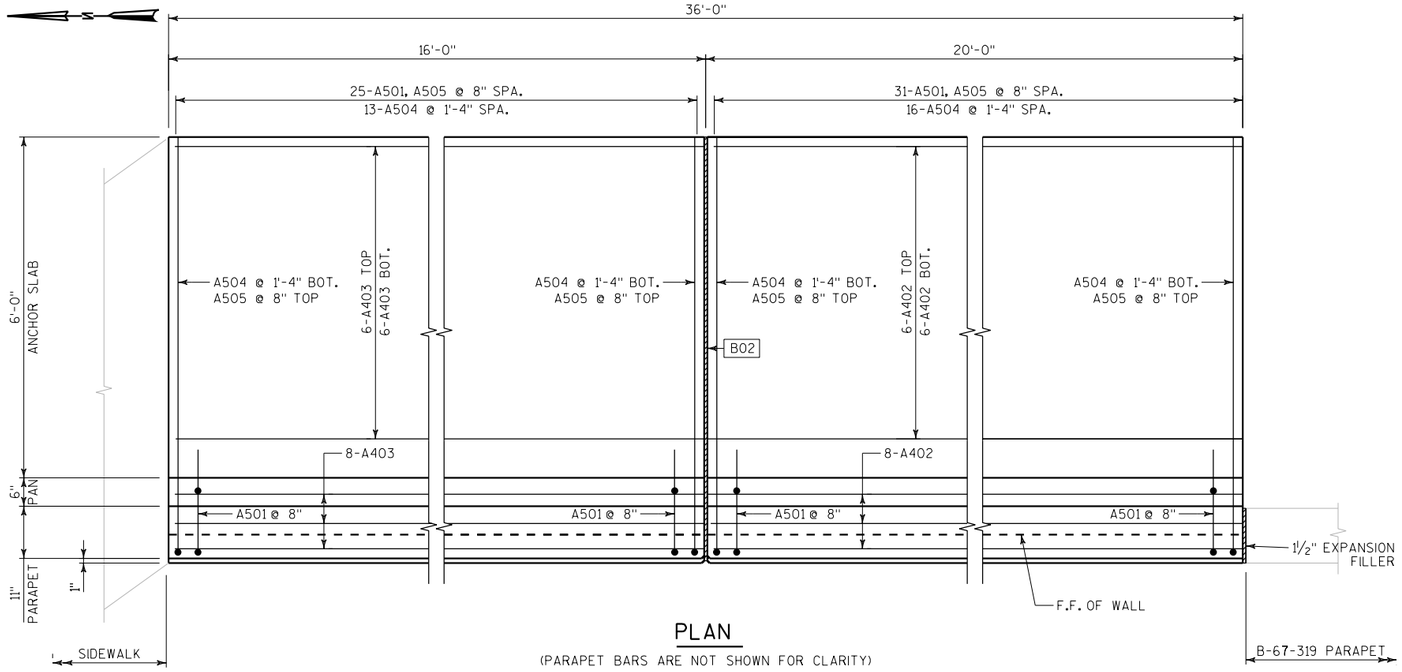
DRAWN BY MM | PLANS CK'D. MHZ

QUANTITIES, TYPICAL SECTION, BILL OF BARS AND ELEVATIONS TABLE

SHEET 2 OF 5

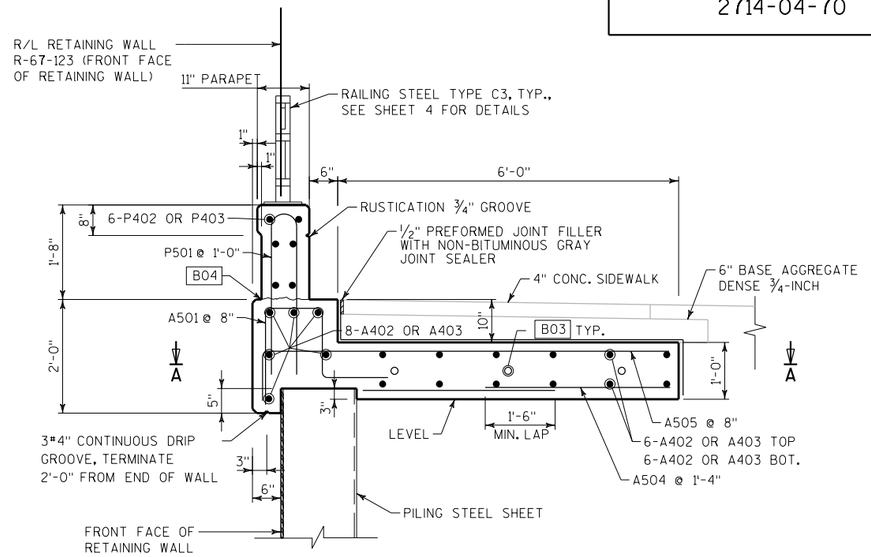
FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Retaining Walls\R-67-123\02_quan_R-67-123.dgn DATE : 7/20/2015 PLOT BY : mraykh PLOT NAME : $FILE$ PLOT SCALE : 1:8

STATE PROJECT NUMBER
2714-04-70

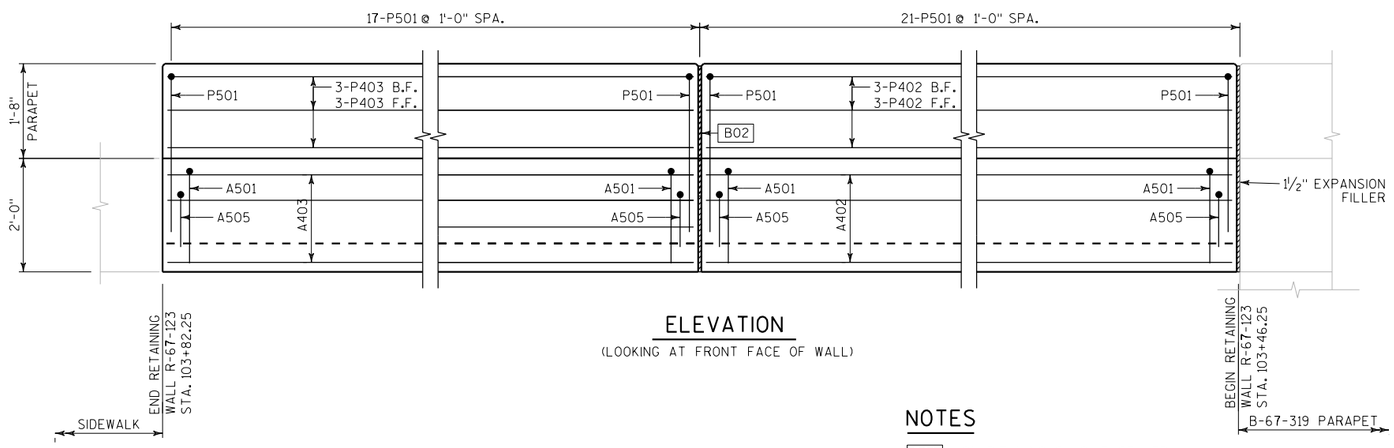


PLAN

(PARAPET BARS ARE NOT SHOWN FOR CLARITY)

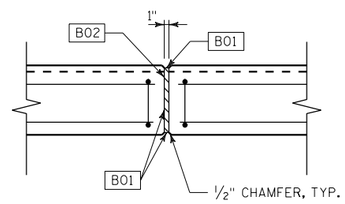


TYPICAL SECTION



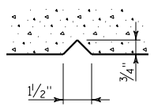
ELEVATION

(LOOKING AT FRONT FACE OF WALL)



PARAPET EXPANSION JOINT

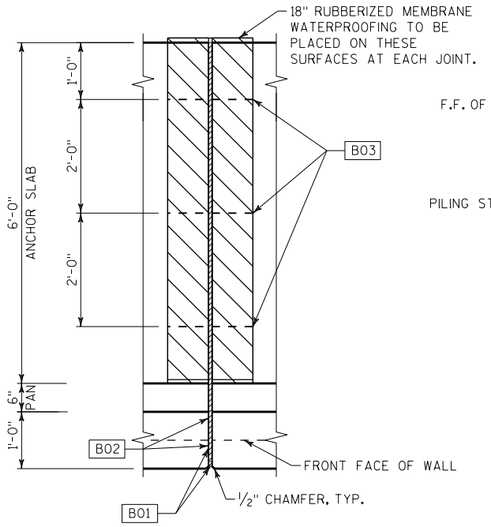
(DO NOT RUN BARS THRU JOINT)



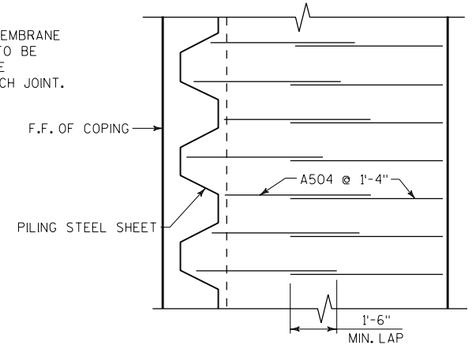
¾" DRIP GROOVE

NOTES

- B01 NON-BITUMINOUS JOINT SEALER, COLOR TO MATCH CONCRETE STAIN. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE)
- B02 1" CORK FILLER
- B03 ¾" DIAMETER x 1'-6" SMOOTH EPOXY COATED DOWELS PLACED AT MID-DEPTH IN THE SLAB. DOWELS SHALL BE LIGHTLY COATED WITH A DEBONDING SURFACE TREATMENT OVER ½ THE DOWEL LENGTH. EMBED 9" INTO ADJACENT SLABS. DOWELS INCLUDED IN THE BID ITEM "CONCRETE MASONRY RETAINING WALLS".
- B04 CONST. JT. STRIKE OFF AS SHOWN AND LEAVE ROUGH



ANCHOR SLAB EXPANSION JOINT PLAN



SECTION A-A

(LONGITUDINAL BARS NOT SHOWN FOR CLARITY)

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-67-123

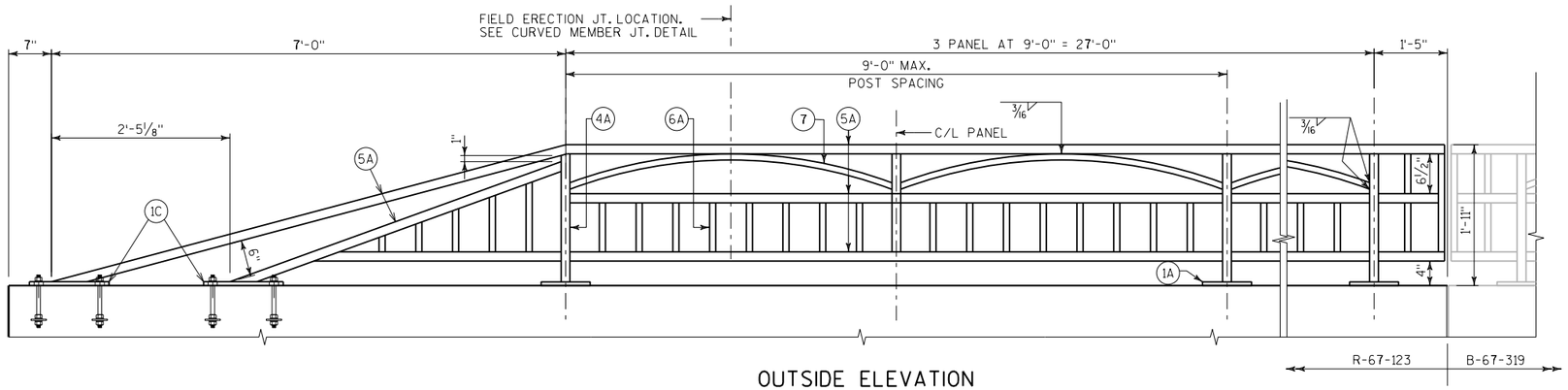
DRAWN BY MR | PLANS CK'D. MHZ

PARAPET AND ANCHOR SLAB DETAILS

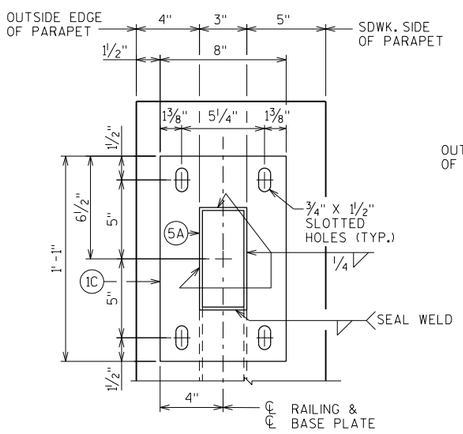
SHEET 3 OF 5

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Retaining Walls\R-67-123\03_det_R-67-123.dgn DATE : 7/20/2015 PLOT BY : mraykh PLOT NAME : $FILE$ PLOT SCALE : 1:8

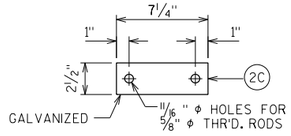
STATE PROJECT NUMBER
2714-04-70



OUTSIDE ELEVATION

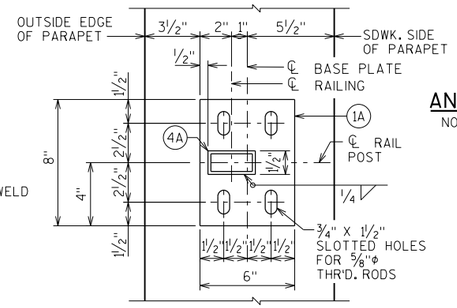


END RAIL BASE PLATE

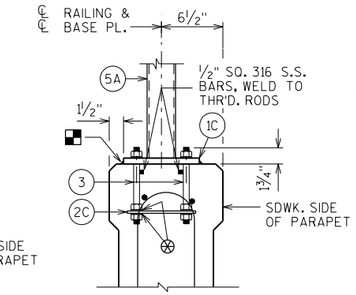


END RAIL ANCHOR PLATE

FOR END RAIL BASE PLATES
2 REQ'D. PER END RAIL BASE PLATE

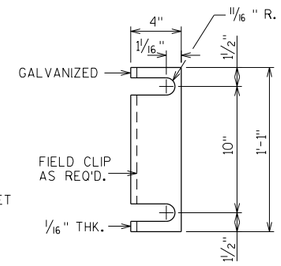


TYPICAL RAIL POST BASE PLATE



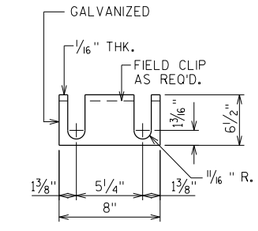
ANCHORAGE FOR END RAIL

NOTE: ANCHOR PLATES NOT REQ'D. WHEN TYPE "S" ANCHORS ARE USED.



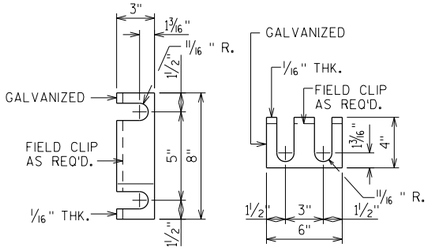
END RAIL SHIM DETAIL

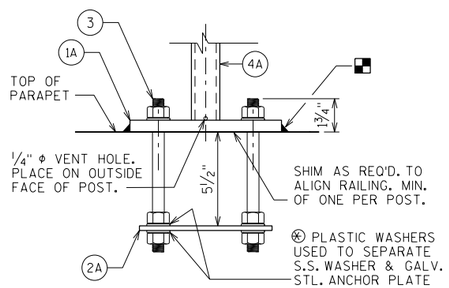
(2 SETS PER POST)



RAIL POST SHIM DETAIL

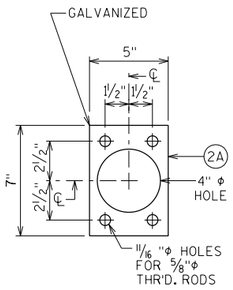
(2 SETS PER POST)



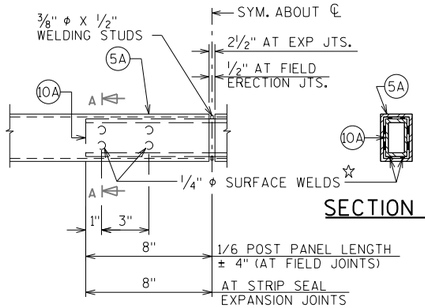


ANCHORAGE FOR RAIL POSTS

NOTE: ANCHOR PLATE NOT REQUIRED WHEN TYPE S ANCHORS ARE USED.



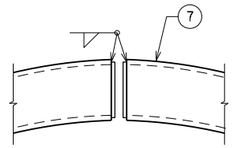
ANCHOR PLATE



SECTION A-A

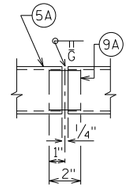
FIELD ERECTION JOINT DETAIL

☆ MIN. 5/8" FLAT SURFACE DIA. PUNCHINGS OR STUDS MAY BE USED AS AN ALTERNATE.



CURVED MEMBER JOINT DETAIL

SEAL ENDS ON CURVED STRUCTURAL TUBING WITH 1/4" PLATE. WELD AND GRIND SMOOTH.



SHOP RAIL SPLICE DETAIL

(LOCATION MUST BE SHOWN ON SHOP DRAWINGS)

RAILING NOTES

BID ITEM SHALL BE "RAILING STEEL TYPE C3 R-67-123", WHICH SHALL INCLUDE ALL STEEL ITEMS SHOWN.

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 CUTS.

ALL PLATES, BARS, AND RECTANGULAR SLEEVES SHALL CONFORM TO ASTM A709 GRADE 36. ALL STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 GRADE B.

ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING. SET NORMAL TO GRADE.

CUT BOTTOM OF POST TO MAKE POST VERTICAL IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTION.

STEEL SHIMS SHALL BE PROVIDED & USED UNDER BASE PLATES WHERE REQUIRED FOR ALIGNMENT, AND SHALL BE GALVANIZED.

■ CAULK AROUND PERIMETER OF BASE PLATES, NO. 1, AND FILL BOLT SLOT OPENINGS IN SHIMS AND BASE PLATES WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.

ALL JOINTS AND RECESSES IN CONCRETE PARAPET ARE TO BE VERTICAL.

ALL MATERIAL (EXCEPT NO. 3 & 12) SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, THE STEEL RAILING SHALL BE GIVEN A NO. 6 BLAST CLEANING PER SSPC SPECIFICATIONS.

VENT HOLES SHALL BE DRILLED IN POST AND RAIL MEMBERS AS REQUIRED TO FACILITATE GALVANIZING AND DRAINAGE.

RAILING SHALL BE FABRICATED IN LENGTHS THAT INCLUDE 3 OR 4 POSTS.

LEGEND

(1A) PLATE 5/8" X 6" X 8" WITH 3/4" X 1 1/2" SLOTTED HOLES.

(2A) 1/4" X 5" X 7" ANCHOR PLATE WITH 11/16 " ϕ HOLES FOR THR'D. RODS NO. 3.

(3) 5/8" DIA. X 9" LONG, TYPE 316 STAINLESS STEEL THREADED RODS (MIN. TENSILE STRENGTH = 70 KSI) WITH NUT AND WASHERS OF SAME ALLOY GROUP. (ALTERNATE RAIL POST ANCHORAGE: 4 EQUIVALENT STAINLESS STEEL CONCRETE MASONRY ANCHORS TYPE S 5/8-INCH. EMBED 7" IN CONCRETE FOR RAIL POSTS. EMBED 5" IN CONCRETE FOR END RAILS.)

(4A) STRUCTURAL TUBING 3" X 1 1/2" X 3/16". PLACE VERTICAL. WELD TO NO. 1 & 5.

(5A) STRUCTURAL TUBING 3" X 1 1/2" X 3/16" RAILS. WELD TO NO. 1 & NO. 4. INSIDE OF TUBE TO BE PAINTED AT ALL FIELD ERECTION & EXPANSION JOINTS.

(6A) BAR 1" X 1" PICKETS. WELD TO NO. 5. PLACE VERTICAL.

(6C) BAR 1" X 1 1/2" PICKETS. WELD TO NO. 11. PLACE VERTICAL.

(7) BAR 1" X 1". BEND TO REQUIRED RADIUS. WELD TO NO. 4 & 5.

(9A) RECTANGULAR SLEEVE FABRICATED FROM 3/16" PLATES. PROVIDE "SLIDING FIT".

(10A) RECTANGULAR SLEEVE FABRICATED FROM 3/16" PLATES. (1'-4" @ FIELD ERECTION JTS.) (1'-4" @ STRIP SEAL EXP. JTS.)

(12) 1/2" DIA. STAINLESS STEEL BOLT WITH NUT AND LOCKWASHER.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-67-123

DRAWN BY MM | PLANS CK'D. MR

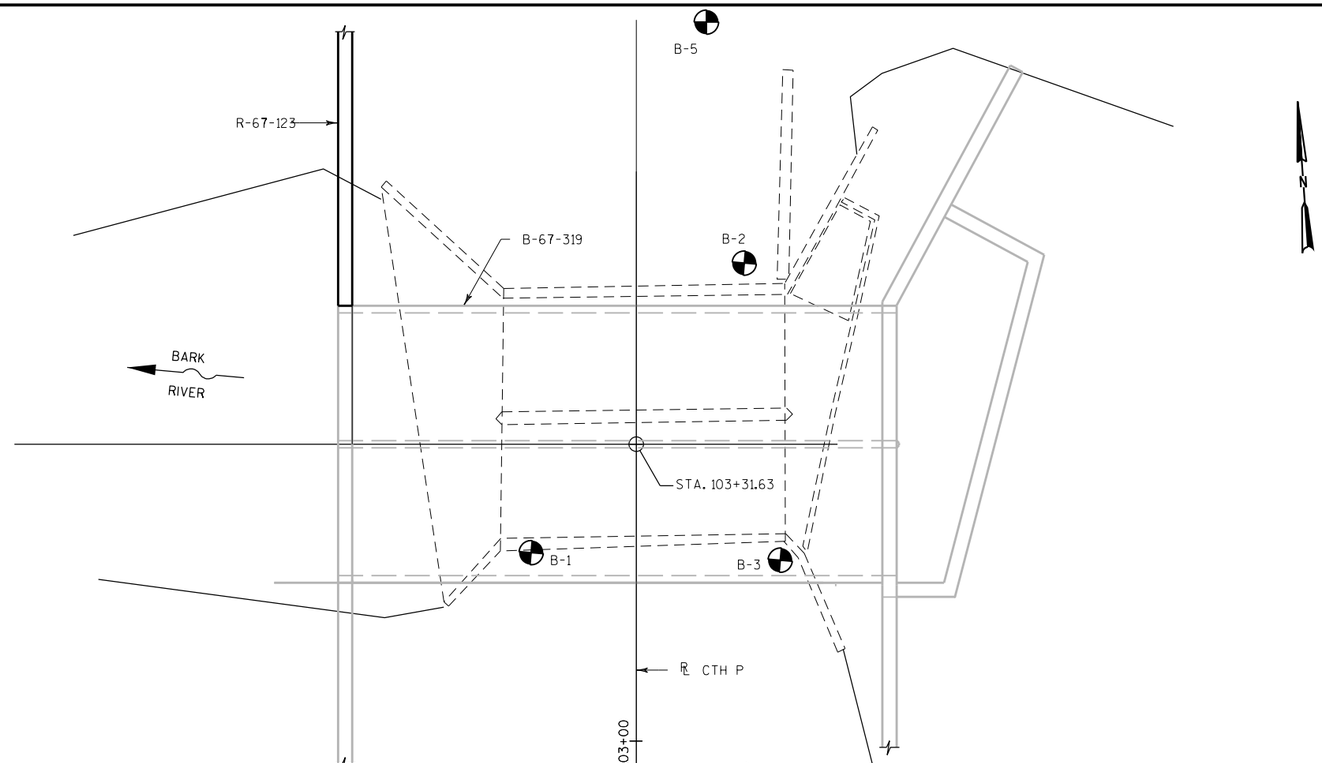
RAILING DETAILS

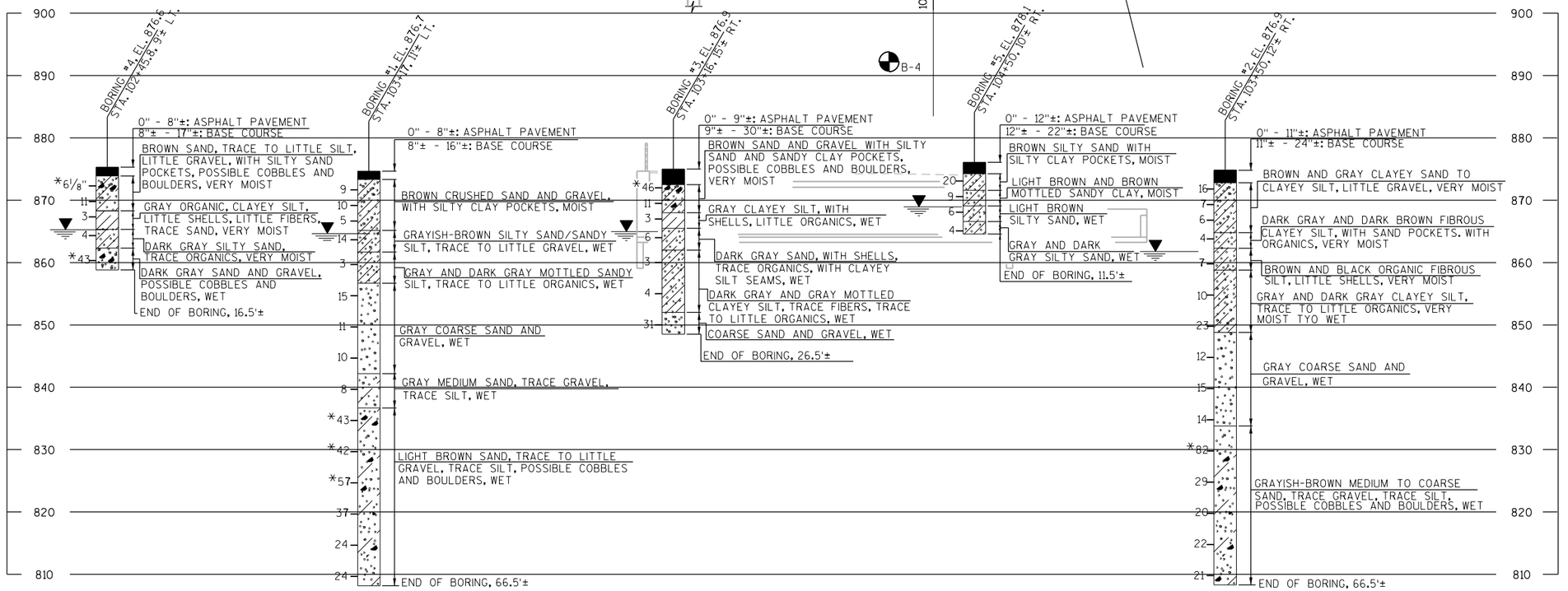
SHEET 4 OF 5

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Retaining Walls\R-67-123\04_ railing_R-67-123.dgn PLOT DATE : 7/20/2015 PLOT BY : mraykh PLOT NAME : $FILE$ PLOT SCALE : 1:4.00001

MIDWEST ENGINEERING SERVICES, INC.
821 CORPORATE COURT, SUITE 102
WAUKESHA, WI 53189

BORING B-1 WAS PERFORMED ON FABRUARY 13, 2008
BORING B-2 WAS PERFORMED ON FABRUARY 13, 2008
BORING B-3 WAS PERFORMED ON FABRUARY 14, 2008
BORING B-4 WAS PERFORMED ON FABRUARY 13, 2008
BORING B-5 WAS PERFORMED ON FABRUARY 14, 2008





* = VALUE MAY BE ELEVATED DUE TO COBBLES AND BOULDERS

STATE PROJECT NUMBER

2714-04-70

ABBREVIATIONS

F — FINE M — MEDIUM C — COARSE
WS — WEATHERED SO — SOUND

MATERIAL SYMBOLS

TOPSOIL / FILL
SAND
GRAVEL
SILT
PEAT
CLAY
SANDSTONE
LIMESTONE
IGNEOUS ROCK

LEGEND OF PROBING

PROBING NO.
STA.
ELEVATION
7 AVERAGE BLOWS PER FOOT
REFUSAL 95/6

95/6=95 BLOWS FOR 6" PENETRATION PROBING TAKEN WITH A 350# WT. FALLING 18" ON A 2" O.D. POINT.

LEGEND OF BORING

BORING NO.
ELEV.
STA.
UNCONFINED STRENGTH
7.7
7
BLOWS PER FT. USING 140# WT. FALLING 30"
WASH SAMPLE
SHELBY TUBE — S.T.
GROUND WATER ELEVATION
NO GROUND WATER OBSERVED ABOVE THIS ELEVATION
SANDY GRAVEL
F. BOULDERS OR COBBLES
SAND
SILTY CLAY
SO LIMESTONE

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

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-67-123

DRAWN BY MM | PLANS CK'D. MHZ

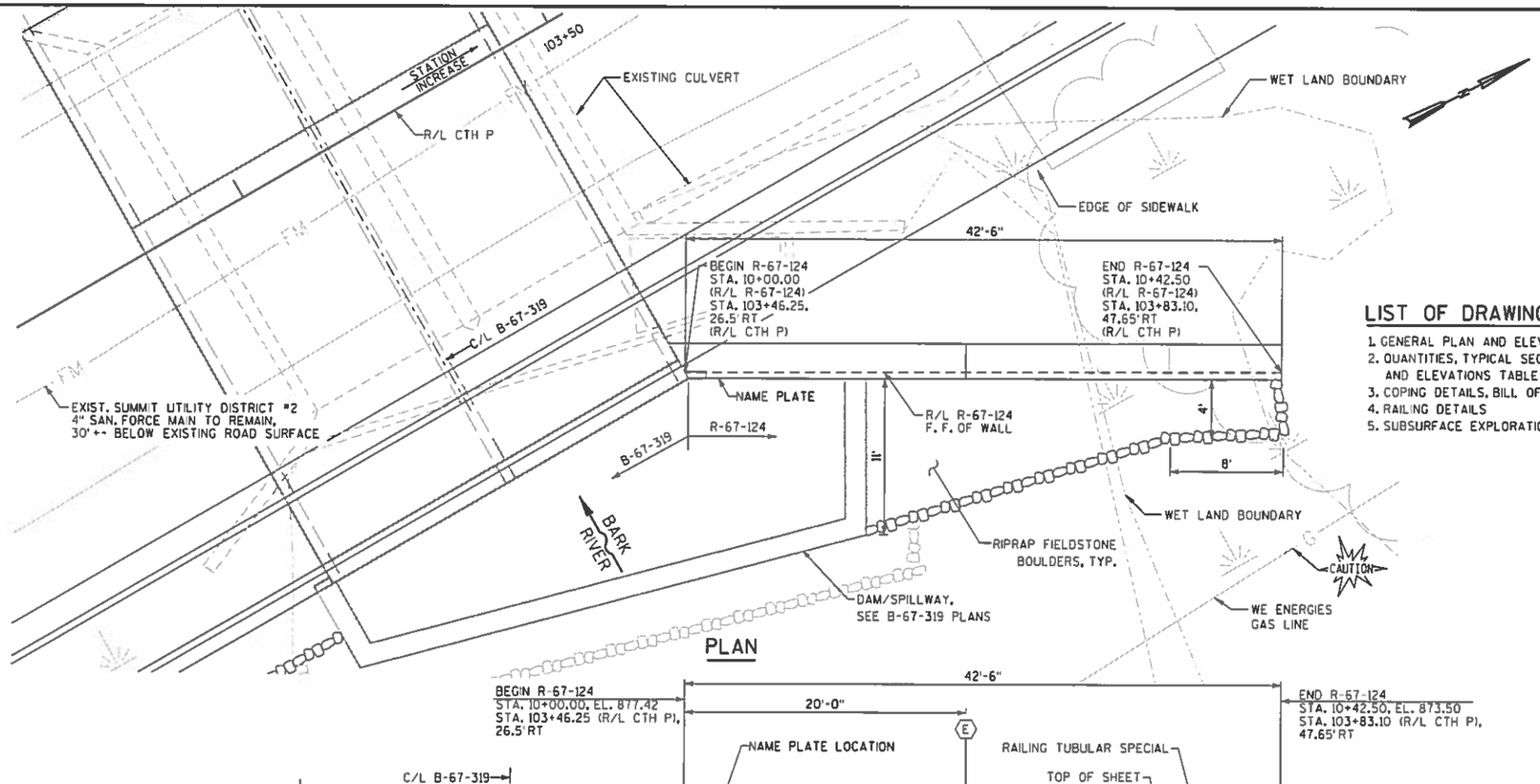
SUBSURFACE EXPLORATION

SHEET 5 OF 5

8

8

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Retaining Walls\R-67-123\05_soils_R-67-123.dgn DATE : 7/20/2015 PLOT BY : mraykh PLOT NAME : $FILE$ PLOT SCALE : 1:16



LIST OF DRAWINGS

1. GENERAL PLAN AND ELEVATION
2. QUANTITIES, TYPICAL SECTIONS AND ELEVATIONS TABLE
3. COPING DETAILS, BILL OF BARS
4. RAILING DETAILS
5. SUBSURFACE EXPLORATION

LEGEND

(E) EXPANSION JOINT

RIPRAP FIELDSTONE BOULDERS

F.F. FRONT FACE

DESIGN DATA

MATERIAL PROPERTIES:	
CONCRETE MASONRY RETAINING WALLS	f'c = 4,000 psi
BAR STEEL REINFORCEMENT	fy = 60,000 psi
PERMANENT STEEL SHEET PILING	ASTM A328 OR A572
STRUCTURAL STEEL HS	Fy = 50,000 psi
MINIMUM SHEET PILE SECTION MOMENT OF INERTIA	Ix = 490.85 in^4/ft
MINIMUM SHEET PILE SECTION WEB THICKNESS	Tw = 0.5 in

STATE PROJECT NUMBER
2714-04-70

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

ALL STATIONS AND ELEVATIONS ARE IN FEET. ELEVATIONS ARE REFERENCED TO THE NGVD DATUM.

ALL STATIONS ARE ALONG THE R/L FOR R-67-124, ALONG THE FRONT FACE OF THE WALL, UNLESS OTHERWISE SHOWN.

THESE PLANS ARE FOR PERMANENT STEEL SHEET PILE RETAINING WALL R-67-124.

USE 2" CLEAR CONCRETE COVER FOR ALL REINFORCEMENT, UNLESS OTHERWISE SHOWN.

BACKFILL ALL SPACES EXCAVATED AT THE BACK FACE OF THE PERMANENT STEEL SHEET PILE WALL AND NOT OCCUPIED BY THE NEW STRUCTURE WITH SELECT BORROW, ROADWAY ITEM.

THE EXISTING GROUND LINE SHALL BE THE UPPER LIMITS OF EXCAVATION FOR STRUCTURES.

COLD ROLLED STEEL SHEETING WITH EQUIVALENT SECTION MOMENT OF INERTIA AND SECTION WEB THICKNESS MAY BE UTILIZED.

BEVEL EXPOSED EDGES OF CONCRETE ¾" UNLESS NOTED OTHERWISE.

ALL BAR STEEL REINFORCEMENT TO BE EPOXY COATED.

THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

SHEET PILING SHALL BE OF STEEL TYPE MEETS ASTM A328 OR A572.

ALL CAST-IN-PLACE CONCRETE IS PAID FOR UNDER ITEM "CONCRETE MASONRY RETAINING WALLS".

THIS WALL IS STRUCTURAL COMPONENT OF NEMAHBIN LAKE DAM.

THE UTILITY INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL-INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATIONS AS TO TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE. UTILITIES LABELED AS PROPOSED MAY BE INSTALLED BY OTHERS PRIOR TO THIS CONTRACT.

STRUCTURES DESIGN CONTACTS

BRIDGE OFFICE:
WILLIAM DREHER (608) 266-8489
CONSULTANT:
MOHAMMED ZAGLOUL (414) 751-7200

NO.	DATE	REVISION	BY

KAPUR & ASSOCIATES
CONSULTING ENGINEERS
414.751.7200

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher NK 07/23/15
CHIEF STRUCTURES DESIGN ENGINEER DATE

WISCONSIN
MOHAMMED H. ZAGLOUL
E-26970
MILWAUKEE
WISCONSIN
PROFESSIONAL ENGINEER
7/20/2015

STRUCTURE R-67-124

CTH P OVER BARK RIVER

COUNTY	TOWN/CITY/VILLAGE
WAUKESHA	SUMMIT

DESIGN SPEC.
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
MR	MHZ	MM	MHZ

GENERAL PLAN AND ELEVATION

SHEET 1 OF 5

8

8

STATE PROJECT NUMBER

2714-04-70

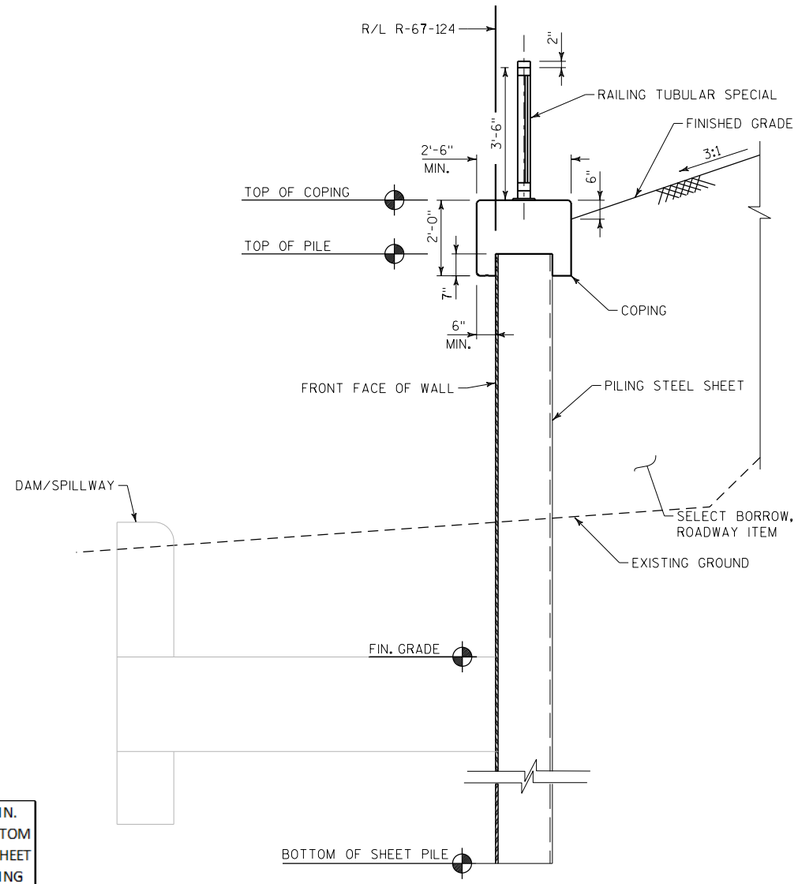
TOTAL ESTIMATED QUANTITIES

ITEM NO.	BID ITEM	UNIT	TOTAL
206.3000	EXCAVATION FOR STRUCTURES RETAINING WALLS R-40-124	LS	1
504.0500	CONCRETE MASONRY RETAINING WALLS	CY	8
505.0615	BAR STEEL REINFORCEMENT HS COATED RETAINING WALLS	LB	467
512.0500	PILING STEEL SHEET PERMANENT DELIVERED	SF	1,375
512.0600	PILING STEEL SHEET PERMANENT DRIVEN	SF	1,375
513.4080	RAILING TUBULAR SPECIAL R-67-124	LS	1
516.0500	RUBBERIZED MEMBRAINE WATERPROOFING	SY	3
645.0120	GEOTEXTILE FABRIC TYPE HR	SY	23
SPV.0035.01	RIPRAP FIELDSTONE BOULDERS	CY	16
	NON-BID ITEMS		
	NAME PLATE	EACH	1
	PREFORMED JOINT FILLER	SIZE	1"
	PREFORMED JOINT FILLER	SIZE	3/4"
	NON-BITUMINOUS JOINT SEALER	SIZE	3/4"

ALL ITEMS CATEGORY NUMBER 0030

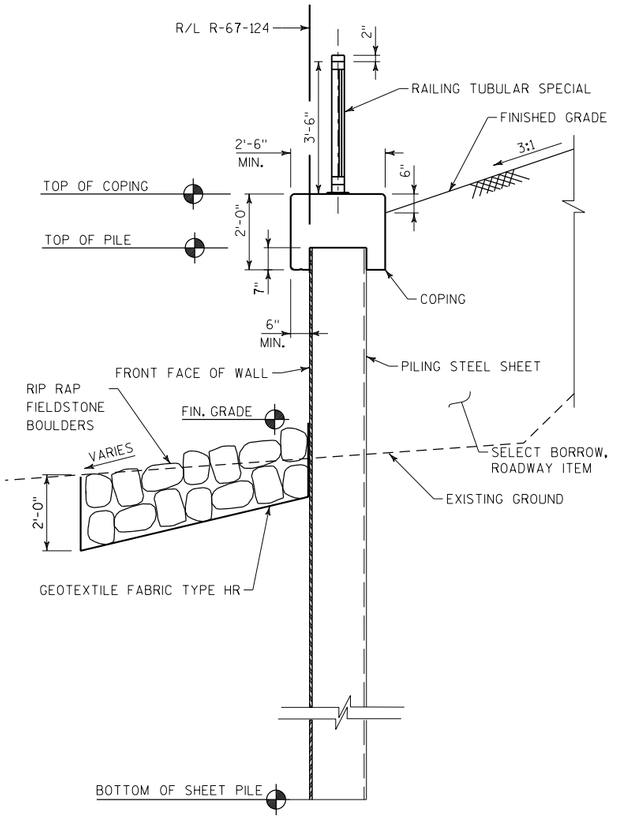
ELEVATION TABLE

SHEET PILING UNIT	SHEET PILING WALL STATIONS	SHEET PILING OFFSET	UNIT LENGTH, FT	TOP OF WALL EL., FT	TOP OF SHEET PILE EL., FT	FINISHED GRADE EL., FT	MIN. SHEET PILING SECTION DEPTH, IN	NOMINAL SHEET PILING LENGTH, FT	MIN. BOTTOM OF SHEET PILING EL., FT
BEGIN. STA.	10+00.00	26.50	10.00	877.42	876.09	866.35	16.1	48	828.31
END STA.	10+10.00	31.48		876.50	875.16	866.35			
BEGIN. STA.	10+10.00	31.48	10.00	876.50	875.16	866.35	16.1	47	828.31
END STA.	10+20.00	36.45		875.58	874.24	870.85			
BEGIN. STA.	10+20.00	36.45	10.00	875.58	874.24	870.85	16.1	35	839.60
END STA.	10+30.00	41.43		874.65	873.32	871.80			
BEGIN. STA.	10+30.00	41.43	10.00	874.65	873.32	871.80	16.1	23	850.79
END STA.	10+40.00	46.40		873.73	872.40	872.75			
BEGIN. STA.	10+40.00	46.40	2.50	873.73	872.40	872.75	16.1	22	850.79
END STA.	10+42.50	47.65		873.50	872.17	873.00			



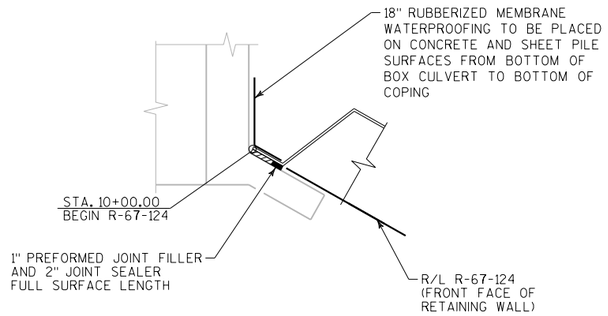
TYPICAL SECTION THRU WALL

STA.103+46.25 TO STA.103+57.21



TYPICAL SECTION THRU WALL

STA.103+57.21 TO STA.103+83.10



WALL SECTION AT BOX CULVERT

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

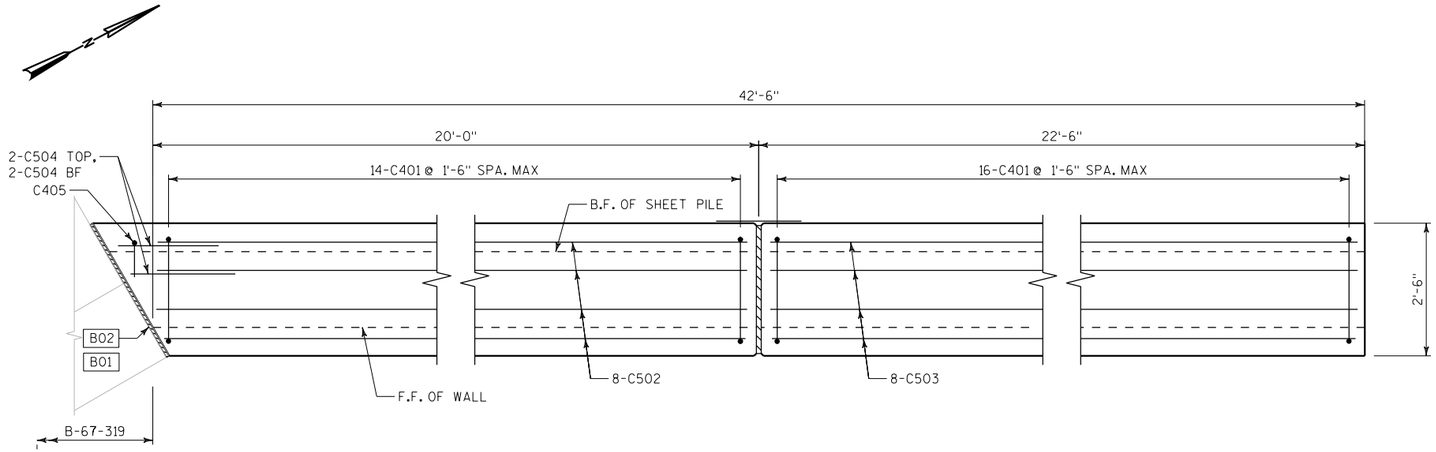
STRUCTURE R-67-124

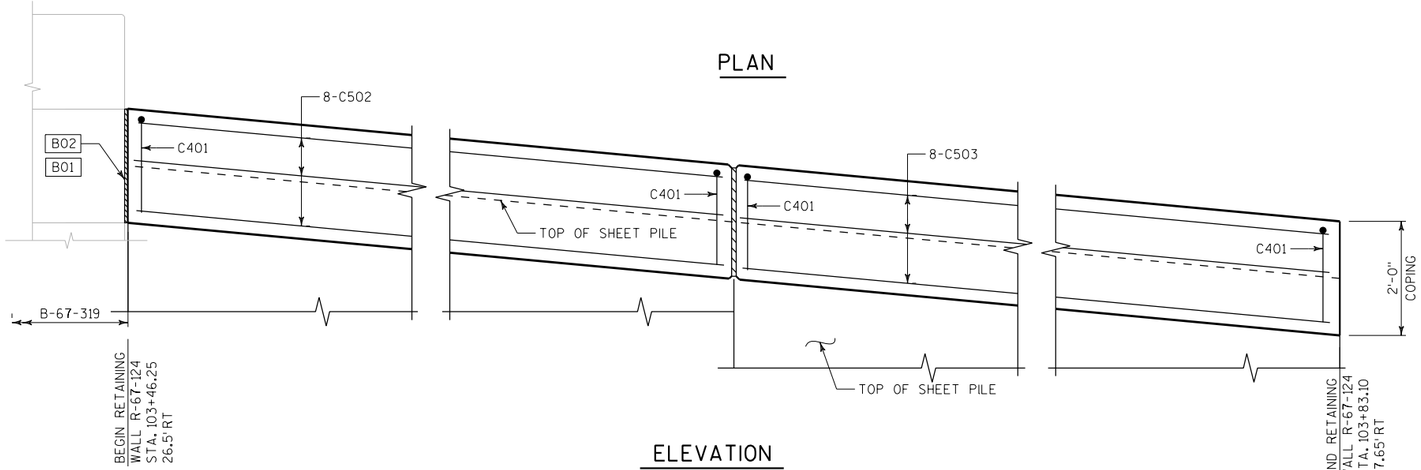
DRAWN BY MM | PLANS CK'D. MHZ

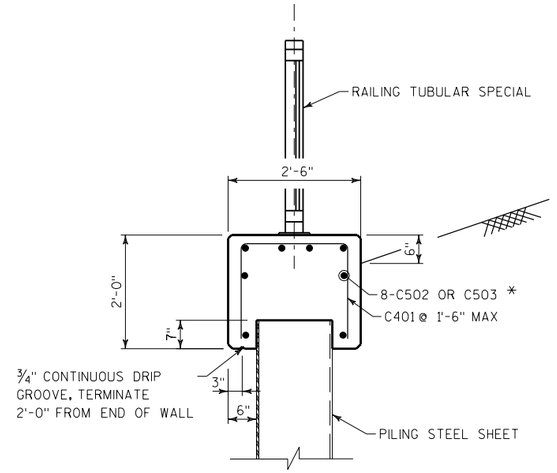
QUANTITIES, TYPICAL SECTIONS AND ELEVATIONS TABLE

SHEET 2 OF 5

STATE PROJECT NUMBER
2714-04-70





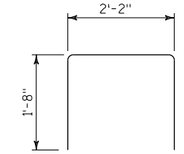


TYPICAL SECTION

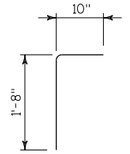
* FOR CORNER BARS AT THE BOX CULVERT SEE PLAN

BILL OF BARS

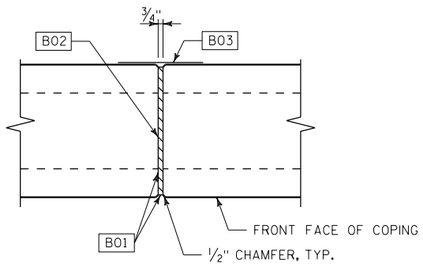
BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
C401	X	30	5'-4"	X	-	COPING- VERT.
C502	X	8	19'-7"	-	-	COPING- LONG.
C503	X	8	22'-1"	-	-	COPING- LONG.
C504	X	4	2'-8"	-	-	COPING - LONG. CORNER
C405	X	1	2'-5"	X	-	COPING - VERT. CORNER



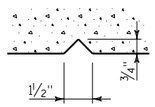
C401



C405



COPING EXPANSION JOINT
(DO NOT RUN BARS THRU JOINT)



¾" DRIP GROOVE

NOTES

B01 NON-BITUMINOUS JOINT SEALER, COLOR TO MATCH CONCRETE STAIN. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE)

B02 ¾" PREFORMED JOINT FILLER

B03 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM TOP OF COPING TO 6" BELOW BOTTOM OF COPING

LEGEND

F.F. FRONT FACE

B.F. BACK FACE

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

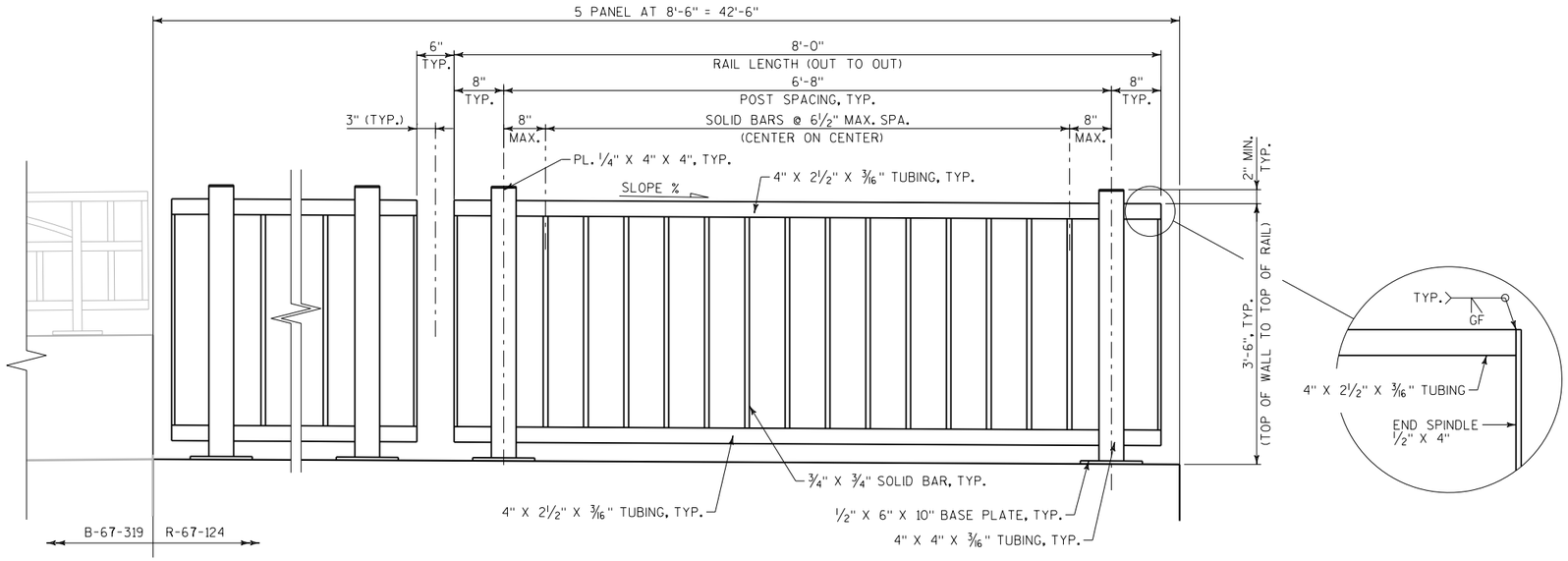
STRUCTURE R-67-124

DRAWN BY MR | PLANS CK'D. MHZ

COPING DETAILS, BILL OF BARS

SHEET 3 OF 5

STATE PROJECT NUMBER
2714-04-70



WALL RAILING ELEVATION

NOTES

BID ITEM SHALL BE "RAILING TUBULAR SPECIAL R-67-124", WHICH SHALL INCLUDE ALL STEEL ITEMS SHOWN, CONCRETE MASONRY ANCHORS, AND PAINTING.

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.

RAILS AND POSTS TO BE ASTM A500, GRADE B. BASE PLATES AND SHIMS TO BE ASTM A709, GRADE 36. ALL GALVANIZED AFTER FABRICATION.

ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING. SET POSTS NORMAL TO GRADE.

ALL POST SPA. ARE TAKEN HORIZ. ALONG CENTER LINE OF RAILING AT BASE OF POST.

SHIMS SHALL BE PROVIDED AND USED UNDER BASE PLATES WHERE REQUIRED FOR ALIGNMENT.

CAULK AROUND PERIMETER OF BASE PLATES AND FILL PORTION OF SLOTTED HOLES AROUND ANCHOR BOLTS WITH NON-STAINING BLACK NON-BITUMINOUS JOINT SEALER.

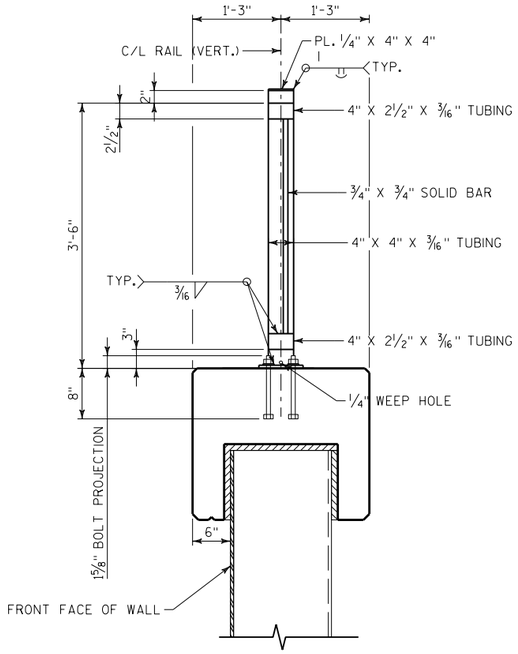
CUT BOTTOM OF POST TO MAKE VERTICAL IN TRANSVERSE AND LONGITUDINAL DIRECTION.

ANCHOR BOLTS, NUTS AND WASHERS SHALL BE EITHER STAINLESS STEEL OR ASTM 307. IF 307 IS USED, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED.

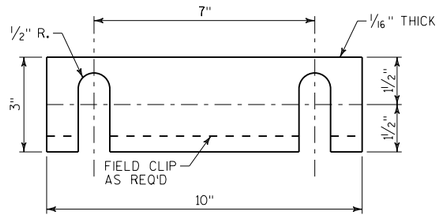
RAILING SHALL BE FABRICATED IN LENGTHS THAT INCLUDE 2 POSTS.

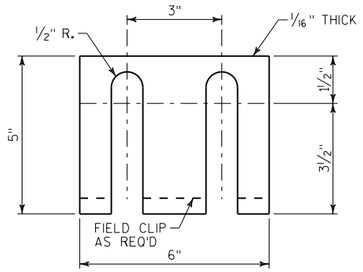
VENT HOLES SHALL BE DRILLED IN MEMBERS AS REQUIRED TO FACILITATE GALVANIZING AND DRAINAGE.

ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS AND STEEL TUBING SHALL BE GIVEN A #6 BLAST CLEANING PER SSPC SPECIFICATIONS. SHIMS SHALL BE GALVANIZED PER ASTM 123.



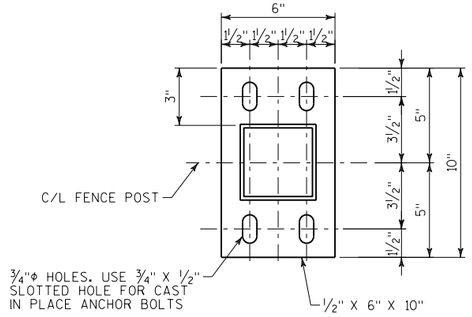
WALL RAILING SECTION





SHIM PLATE DETAILS

TWO SHIMS OF EACH SIZE REQUIRED PER POST



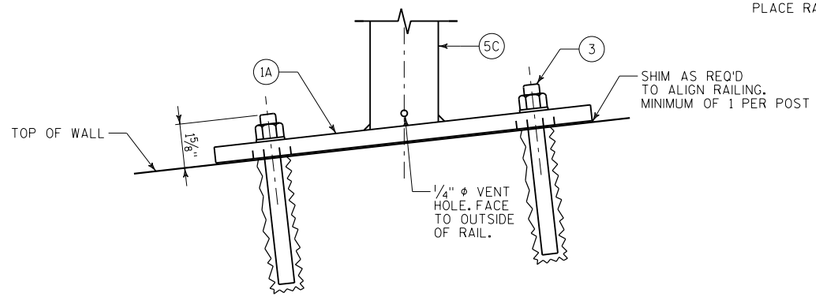
BASE PLATE

LEGEND

(1A) PLATE ½" X 6" X 10" WITH ¾" X 1½" SLOTTED HOLES.

(3) STAINLESS STEEL CONCRETE MASONRY ANCHORS, TYPE S (EPOXY), ⅝" DIA, MINIMUM PULLOUT CAPACITY OF 20 KIPS. EMBED A MIN OF 7".

(5C) 4" X 4" X 3/16" STRUCTURAL TUBE. PLACE POSTS VERTICAL. WELD TO 1A. PLACE RAILS PARALLEL TO TOP OF COPING. WELD TO 5C.



ANCHOR BOLTS FOR RAIL POST

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-67-124

DRAWN BY	MR	PLANS CK'D.	MHZ

RAILING DETAILS

SHEET 4 OF 5

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Retaining Walls\R-67-124\04_railing_R-67-124.dgn PLOT DATE : 7/20/2015 PLOT BY : mraykh PLOT NAME : $FILE$ PLOT SCALE : 1:2

MIDWEST ENGINEERING SERVICES, INC.
821 CORPORATE COURT, SUITE 102
WAUKESHA, WI 53189

BORING B-1 WAS PERFORMED ON FABRUARY 13, 2008
BORING B-2 WAS PERFORMED ON FABRUARY 13, 2008
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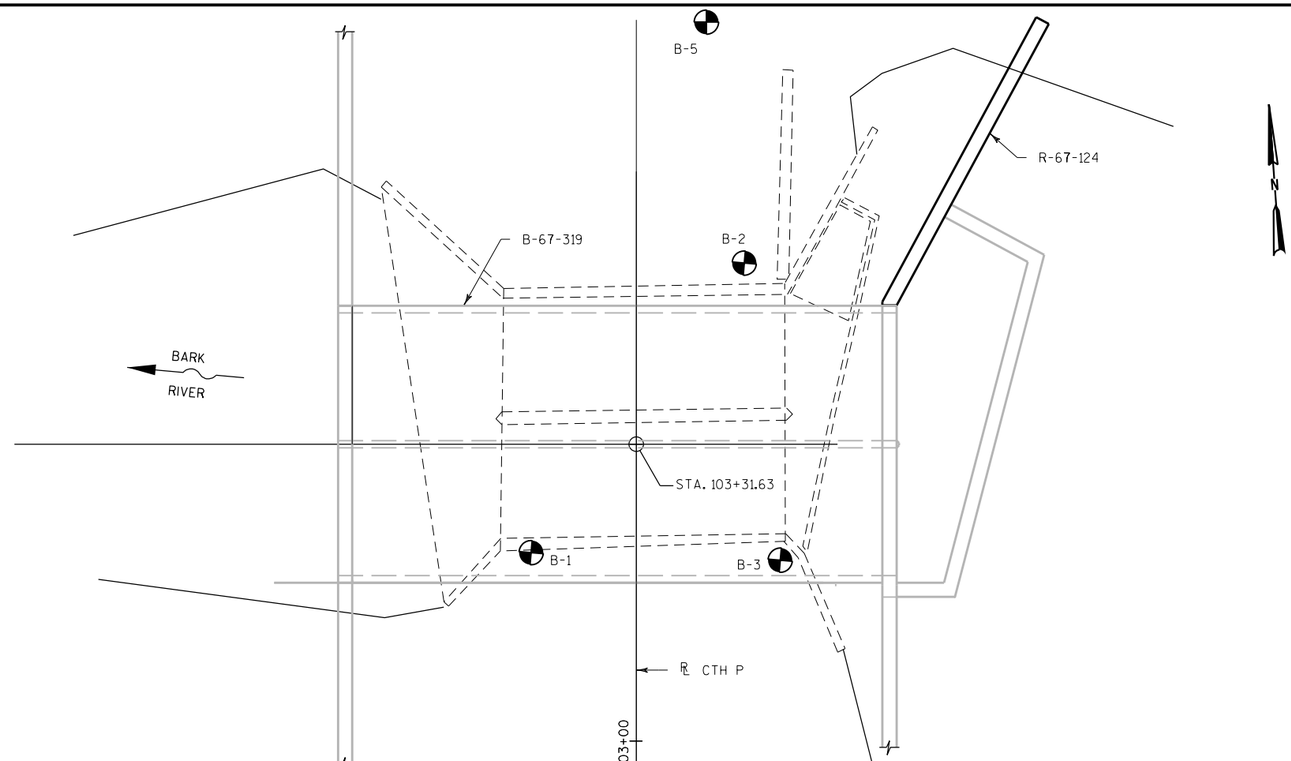
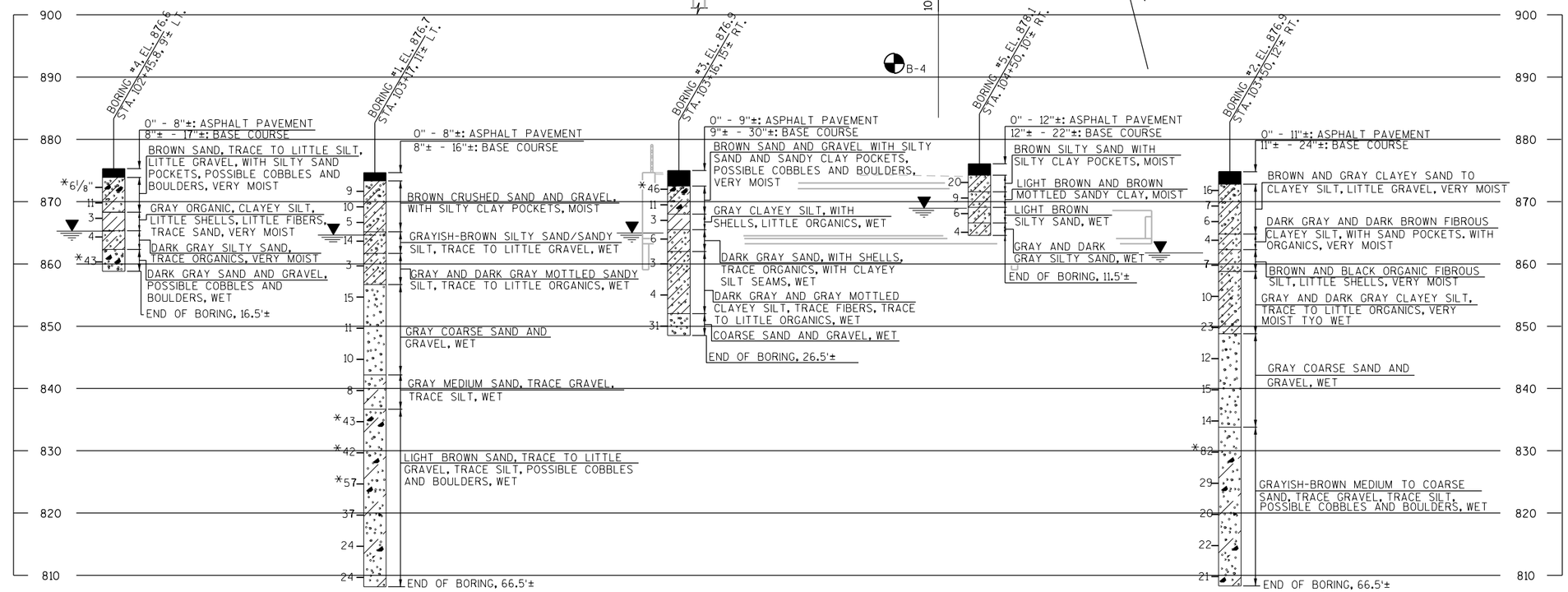




* = VALUE MAY BE ELEVATED DUE TO COBBLES AND BOULDERS

STATE PROJECT NUMBER

2714-04-70

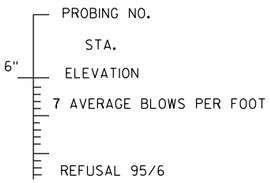
ABBREVIATIONS

F — FINE M — MEDIUM C — COARSE
WS — WEATHERED SO — SOUND

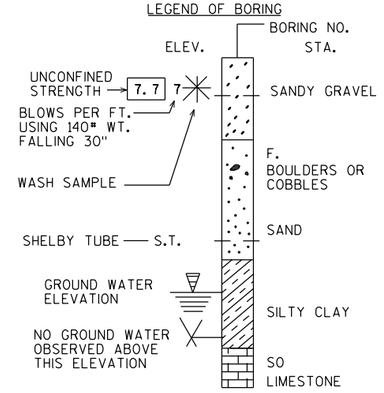
MATERIAL SYMBOLS

TOPSOIL / FILL, SILT, SANDSTONE
SAND, PEAT, LIMESTONE
GRAVEL, CLAY, IGNEOUS ROCK

LEGEND OF PROBING



LEGEND OF BORING



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

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-67-124

DRAWN BY MM | PLANS CK'D. MHZ

SUBSURFACE EXPLORATION

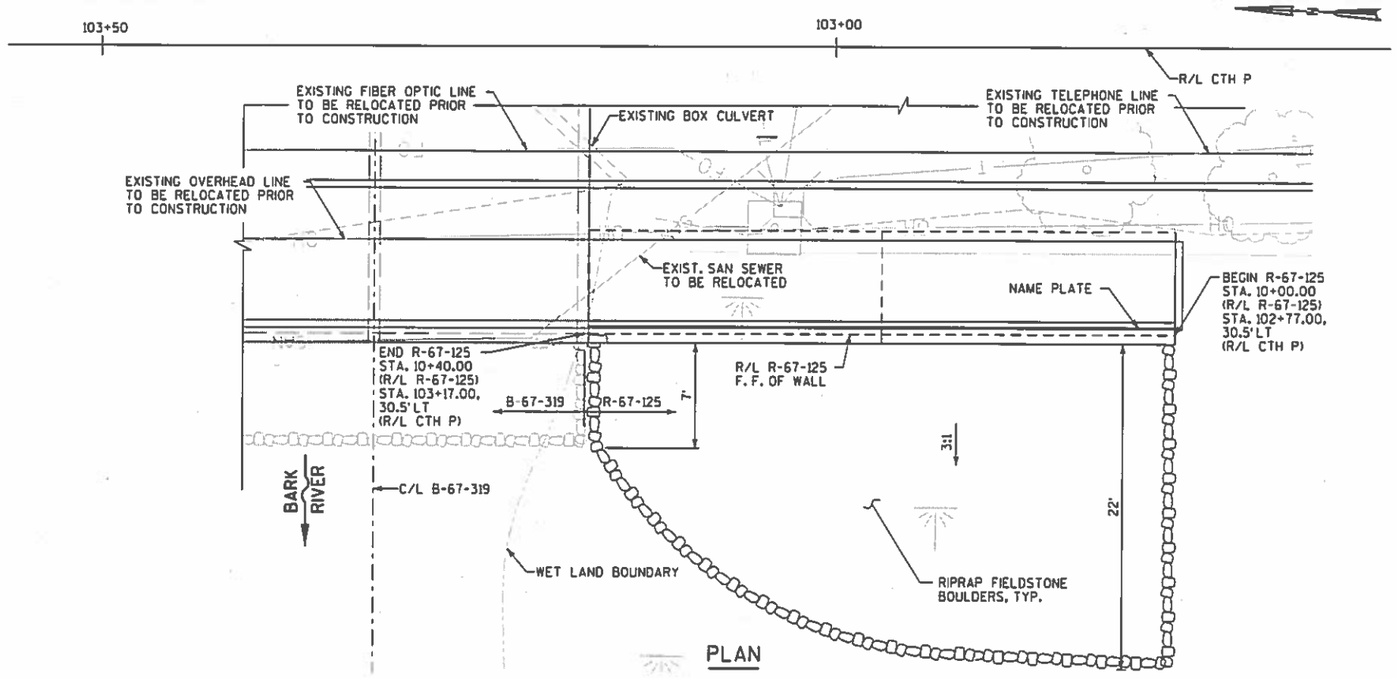
SHEET 5 OF 5

80

8

8

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Retaining Walls\R-67-124\05_soils_R-67-124.dgn DATE : 7/20/2015 PLOT BY : mraykh PLOT NAME : $FILE$ PLOT SCALE : 1:16



STATE PROJECT NUMBER

2714-04-70

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

ALL STATIONS AND ELEVATIONS ARE IN FEET. ELEVATIONS ARE REFERENCED TO THE NGVD DATUM.

ALL STATIONS ARE ALONG THE R/L FOR R-67-125, ALONG THE FRONT FACE OF THE WALL, UNLESS OTHERWISE SHOWN.

THESE PLANS ARE FOR PERMANENT STEEL SHEET PILE RETAINING WALL R-67-125.

USE 2" CLEAR CONCRETE COVER FOR ALL REINFORCEMENT, UNLESS OTHERWISE SHOWN.

THE EXISTING GROUND LINE SHALL BE THE UPPER LIMITS OF EXCAVATION FOR STRUCTURES.

COLD ROLLED STEEL SHEETING WITH EQUIVALENT SECTION MOMENT OF INERTIA AND SECTION WEB THICKNESS MAY BE UTILIZED.

BEVEL EXPOSED EDGES OF CONCRETE ¾" UNLESS NOTED OTHERWISE.

ALL BAR STEEL REINFORCEMENT TO BE EPOXY COATED.

THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

SHEET PILING SHALL BE OF STEEL TYPE MEETS ASTM A328 OR A572.

ALL CAST-IN-PLACE CONCRETE IS PAID FOR UNDER ITEM "CONCRETE MASONRY RETAINING WALLS".

THE UTILITY INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL-INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATIONS AS TO TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE. UTILITIES LABELED AS PROPOSED MAY BE INSTALLED BY OTHERS PRIOR TO THIS CONTRACT.

DESIGN DATA

LIVE LOAD:
LIVE LOAD SURCHARGE = 240 psf

MATERIAL PROPERTIES:
CONCRETE MASONRY RETAINING WALLS f'c = 4,000 psi
BAR STEEL REINFORCEMENT fy = 60,000 psi
PERMANENT STEEL SHEET PILING ASTM A328 OR A572

STRUCTURAL STEEL HS Fy = 50,000 psi
MINIMUM SHEET PILE SECTION MOMENT OF INERTIA Ix = 490.85 in⁴/ft
MINIMUM SHEET PILE SECTION WEB THICKNESS Tw = 0.5 in

LIST OF DRAWINGS

1. GENERAL PLAN AND ELEVATION
2. QUANTITIES, TYPICAL SECTION, BILL OF BARS AND ELEVATIONS TABLE
3. PARAPET AND ANCHOR SLAB DETAILS
4. RAILING DETAILS
5. SUBSURFACE EXPLORATION

LEGEND

(E) EXPANSION JOINT

RIPRAP FIELDSTONE BOULDERS

F.F. FRONT FACE

STRUCTURES DESIGN CONTACTS

BRIDGE OFFICE:
WILLIAM DREHER (608) 266-8489
CONSULTANT:
MOHAMMED ZAGLOUL (414) 751-7200

NO.	DATE	REVISION	BY

KAPUR & ASSOCIATES
CONSULTING ENGINEERS
414.751.7200

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher NK 07/23/15
CHIEF STRUCTURES DESIGN ENGINEER DATE

WISCONSIN
MOHAMMED H. ZAGLOUL
E-26970
MILWAUKEE
WISCONSIN
PROFESSIONAL ENGINEER
7/20/2015

STRUCTURE R-67-125

CTH P OVER BARK RIVER

COUNTY	TOWN/CITY/VILLAGE
WAUKESHA	SUMMIT

DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	MR	DESIGN CK'D.	MHZ	DRAWN BY	MM	PLANS CK'D.	MHZ

GENERAL PLAN AND ELEVATION

SHEET 1 OF 5

8

8

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Sawyer Road over Bark River Box Culvert\Structural\Retaining Walls\R-67-125\01_genplan_R-67-125.dgn : 7/20/2015 PLOT BY : mraykh PLOT NAME : *FILE* PLOT SCALE : 1:9.99998

STATE PROJECT NUMBER
2714-04-70

TOTAL ESTIMATED QUANTITIES

ITEM NO.	BID ITEM	UNIT	TOTAL
206.3000	EXCAVATION FOR STRUCTURES RETAINING WALLS R-40-125	LS	1
504.0500	CONCRETE MASONRY RETAINING WALLS	CY	16
505.0615	BAR STEEL REINFORCEMENT HS COATED RETAINING WALLS	LB	3,922
512.0500	PILING STEEL SHEET PERMANENT DELIVERED	SF	1,240
512.0600	PILING STEEL SHEET PERMANENT DRIVEN	SF	1,240
513.7015	RAILING STEEL TYPE C3 R-67-125	LS	1
516.0500	RUBBERIZED MEMBRAINE WATERPROOFING	SY	4
645.0120	GEOTEXTILE FABRIC TYPE HR	SY	83
SPV.0035.01	RIPRAP FIELDSTONE BOULDERS	CY	56
	NON-BID ITEMS		
	NAME PLATE	EACH	1
	PREFORMED JOINT FILLER	SIZE	1"
	PREFORMED JOINT FILLER	SIZE	1/2"
	CORK FILLER	SIZE	1"
	NON-BITUMINOUS JOINT SEALER	SIZE	1/2"
	NON-BITUMINOUS JOINT SEALER	SIZE	1"

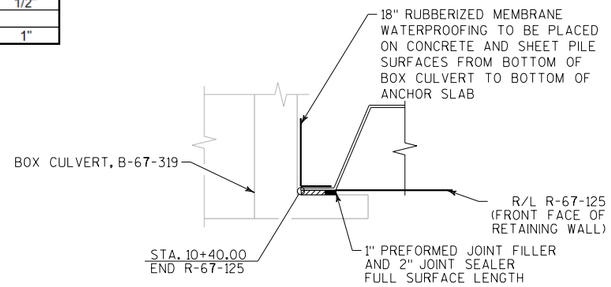
ALL ITEMS CATEGORY NUMBER 0030

BILL OF BARS

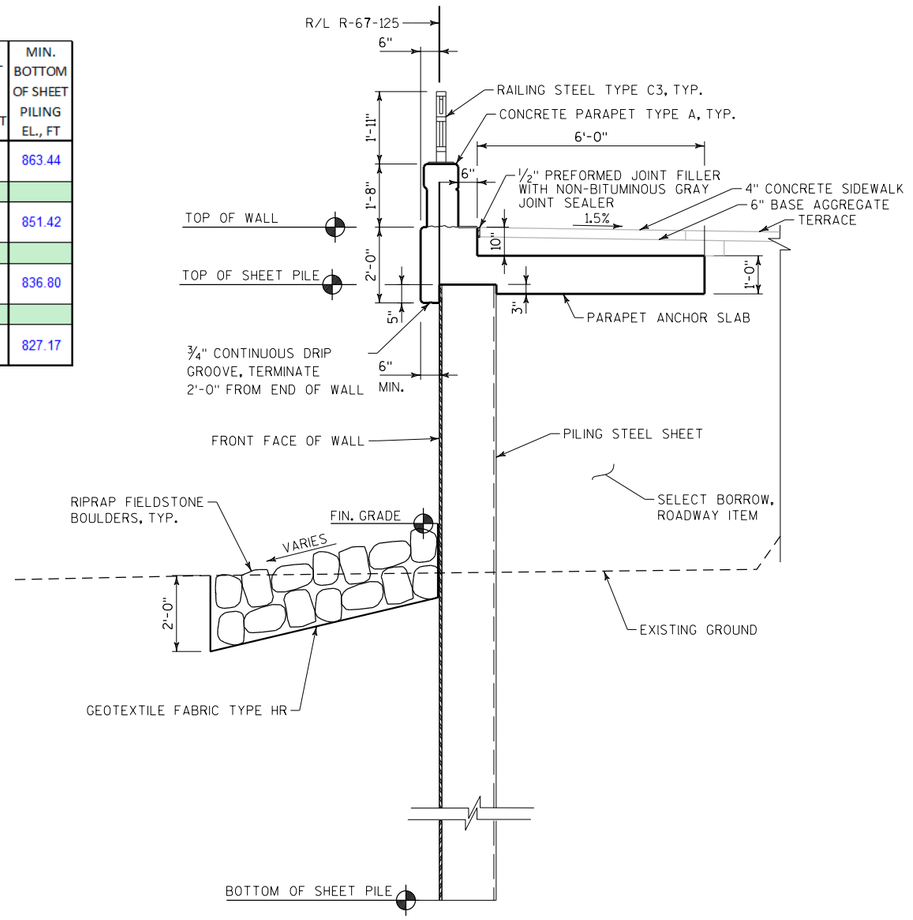
BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
A501	X	62	4'-6"	X	-	ANCHOR SLAB-TRANS.
A402	X	36	19'-7"	-	-	ANCHOR SLAB-LONG.
A504	X	64	4'-3"	-	-	ANCHOR SLAB-TRANS.
A505	X	62	7'-10"	X	-	ANCHOR SLAB-TRANS.
P501	X	42	5'-9"	X	-	PARAPET- VERT.
P402	X	12	19'-7"	-	-	PARAPET- LONG.

ELEVATIONS TABLE

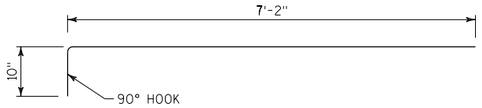
SHEET PILING UNIT	SHEET PILING WALL STATIONS	TOP OF WALL EL., FT	TOP OF SHEET PILE EL., FT	FINISHED GRADE EL., FT	MIN. SHEET PILING SECTION DEPTH, IN	NOMINAL SHEET PILING LENGTH, FT	MIN. BOTTOM OF SHEET PILING EL., FT
BEGIN. STA.	10+00.00	876.66	875.08	876.66	16.1	12	863.44
END STA.	10+10.00	876.78	875.20	873.85			
BEGIN. STA.	10+10.00	876.78	875.20	873.85	16.1	24	851.42
END STA.	10+20.00	876.90	875.32	871.04			
BEGIN. STA.	10+20.00	876.90	875.32	871.04	16.1	39	836.80
END STA.	10+30.00	877.03	875.44	868.23			
BEGIN. STA.	10+30.00	877.03	875.44	868.23	16.1	49	827.17
END STA.	10+40.00	877.14	875.56	866.35			



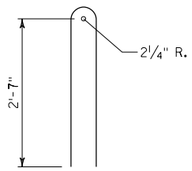
WALL SECTION AT BOX CULVERT



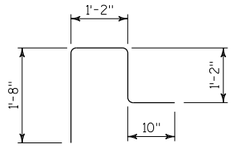
TYPICAL SECTION THRU WALL



A505



P501



A501

BENDING DIAGRAMS

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-67-125

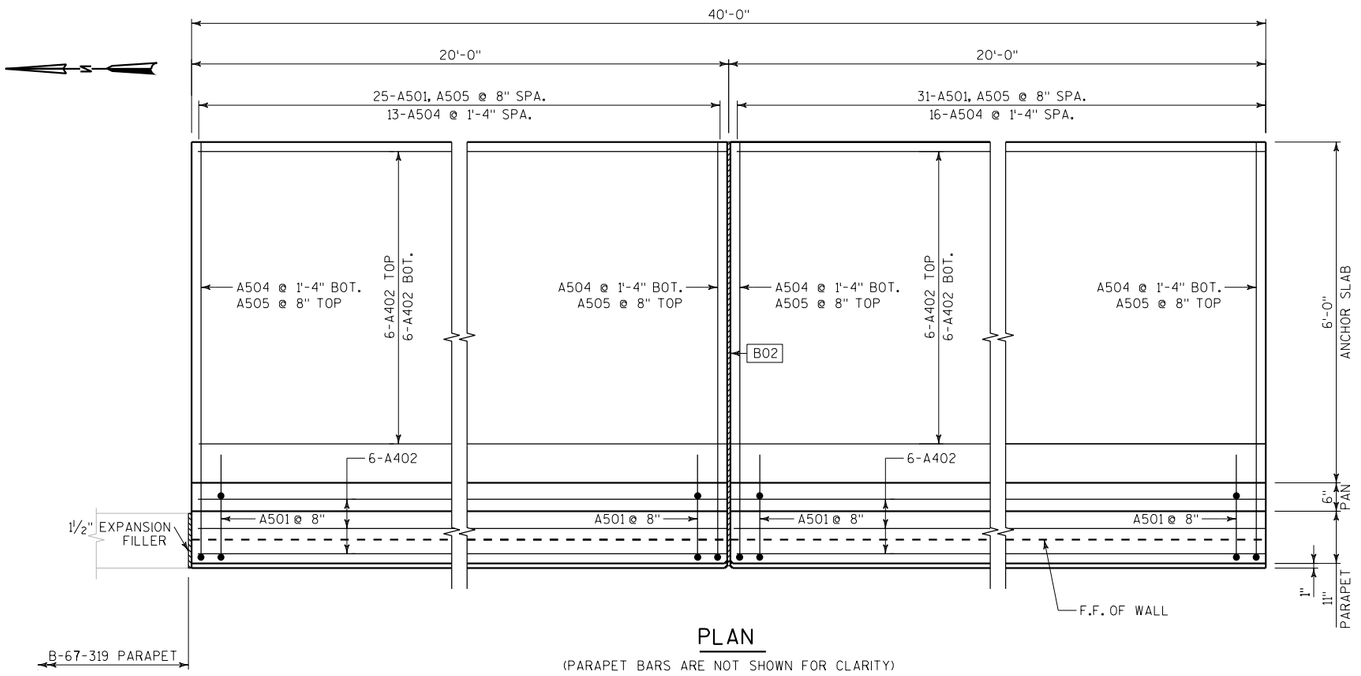
DRAWN BY MM | PLANS CK'D. MHZ

QUANTITIES, TYPICAL SECTION, BILL OF BARS AND ELEVATIONS TABLE

SHEET 2 OF 3

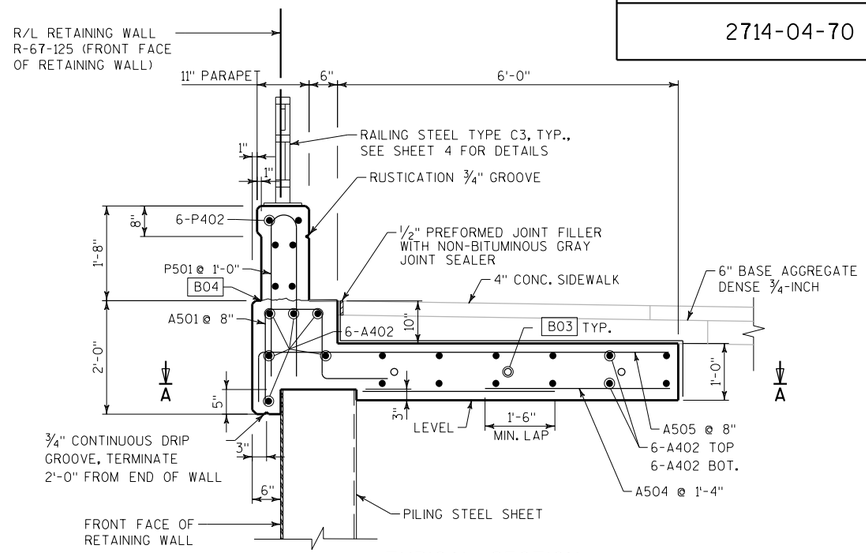
FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Retaining Walls\R-67-125\02_quan_R-67-125.dgn DATE : 7/20/2015 PLOT BY : mraykh PLOT NAME : $FILE$ PLOT SCALE : 1:8

STATE PROJECT NUMBER
2714-04-70

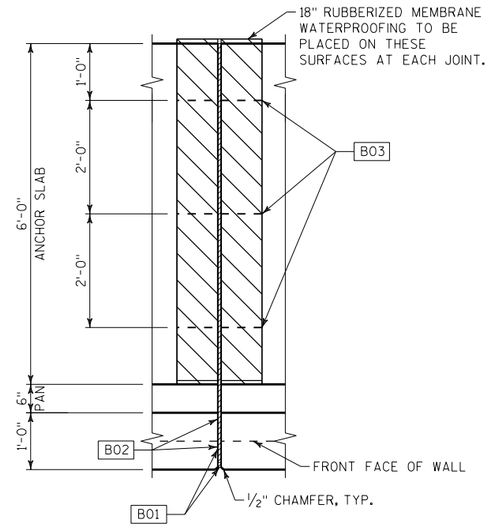


PLAN

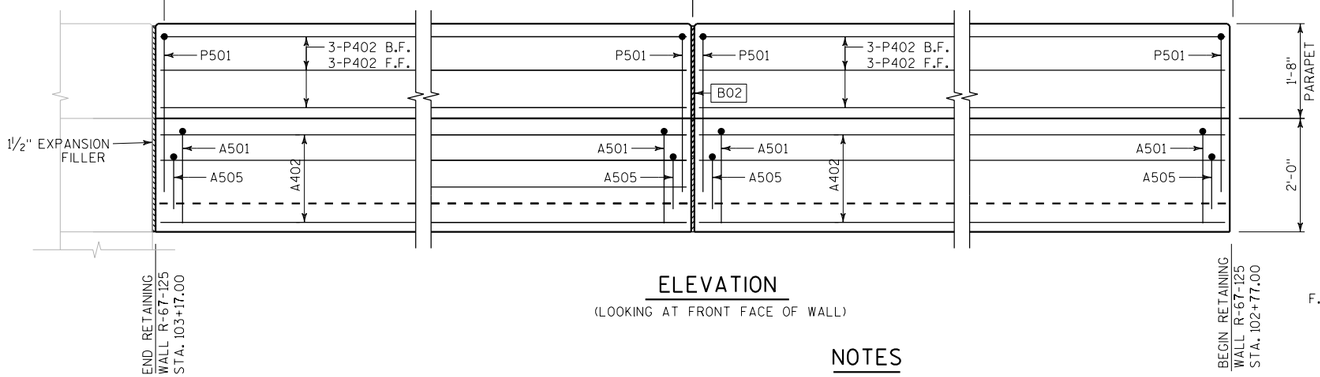
(PARAPET BARS ARE NOT SHOWN FOR CLARITY)



TYPICAL SECTION

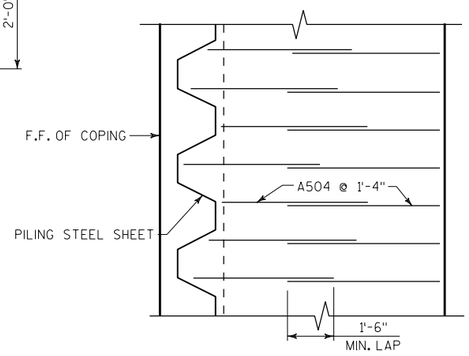


ANCHOR SLAB EXPANSION JOINT PLAN



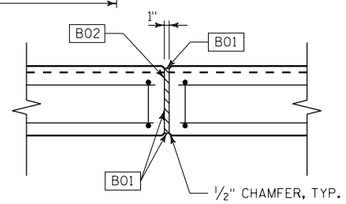
ELEVATION

(LOOKING AT FRONT FACE OF WALL)



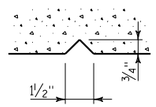
SECTION A-A

(LONGITUDINAL BARS NOT SHOWN FOR CLARITY)



PARAPET EXPANSION JOINT

(DO NOT RUN BARS THRU JOINT)



¾" DRIP GROOVE

NOTES

- B01 NON-BITUMINOUS JOINT SEALER, COLOR TO MATCH CONCRETE STAIN. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE)
- B02 1" CORK FILLER
- B03 ¾" DIAMETER x 1'-6" SMOOTH EPOXY COATED DOWELS PLACED AT MID-DEPTH IN THE SLAB. DOWELS SHALL BE LIGHTLY COATED WITH A DEBONDING SURFACE TREATMENT OVER ½ THE DOWEL LENGTH. EMBED 9" INTO ADJACENT SLABS. DOWELS INCLUDED IN THE BID ITEM "CONCRETE MASONRY RETAINING WALLS".
- B04 CONST. JT. STRIKE OFF AS SHOWN AND LEAVE ROUGH

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-67-125

DRAWN BY MR | PLANS CK'D. MHZ

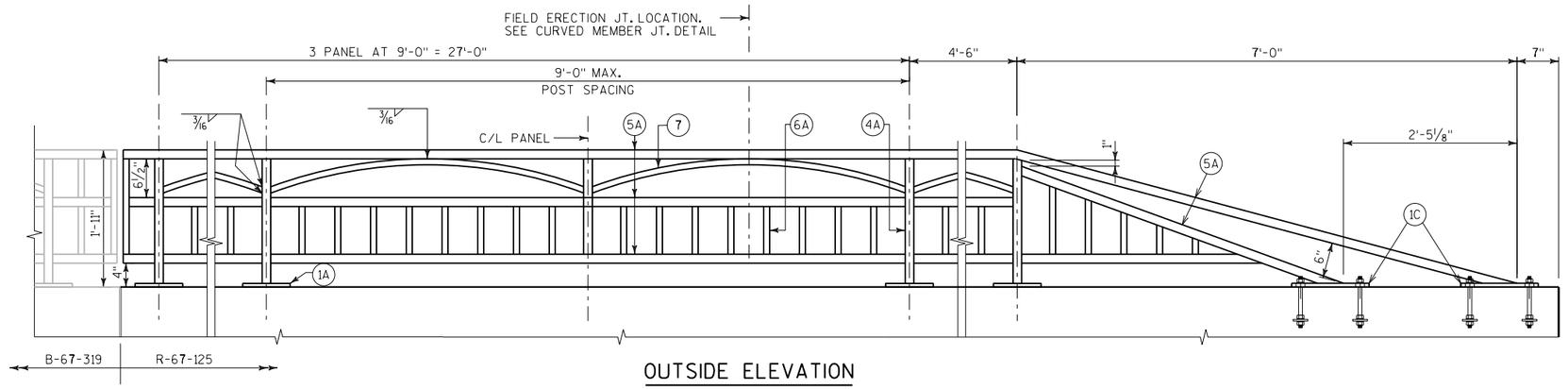
PARAPET AND ANCHOR SLAB DETAILS

SHEET 3 OF 5

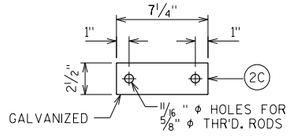
83

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Retaining Walls\R-67-125\03_det_R-67-125.dgn DATE : 7/20/2015 PLOT BY : mraykh PLOT NAME : $FILE$ PLOT SCALE : 1:8

STATE PROJECT NUMBER
2714-04-70

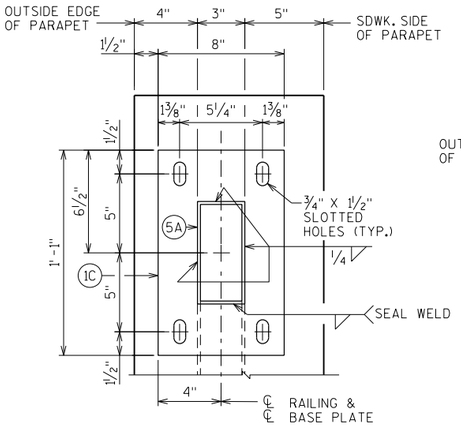


OUTSIDE ELEVATION

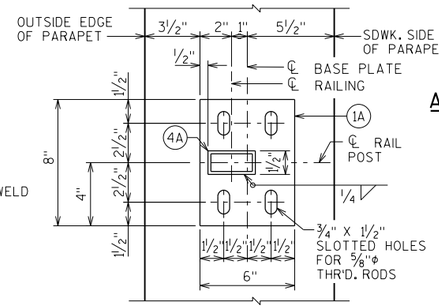


END RAIL ANCHOR PLATE

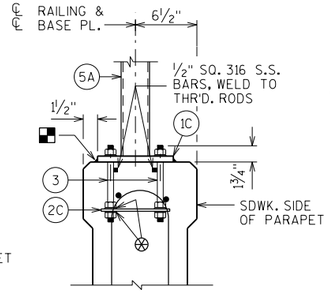
FOR END RAIL BASE PLATES
2 REQ'D. PER END RAIL BASE PLATE



END RAIL BASE PLATE

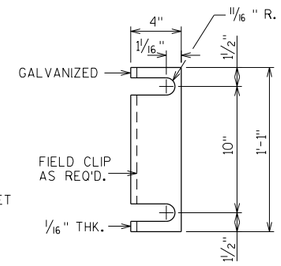


TYPICAL RAIL POST BASE PLATE



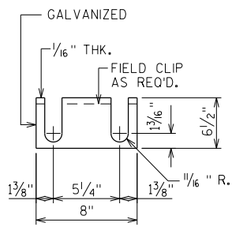
ANCHORAGE FOR END RAIL

NOTE: ANCHOR PLATES NOT REQ'D. WHEN TYPE "S" ANCHORS ARE USED.



END RAIL SHIM DETAIL

(2 SETS PER POST)



RAILING NOTES

BID ITEM SHALL BE "RAILING STEEL TYPE C3 R-67-125", WHICH SHALL INCLUDE ALL STEEL ITEMS SHOWN.

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 CUTS.

ALL PLATES, BARS, AND RECTANGULAR SLEEVES SHALL CONFORM TO ASTM A709 GRADE 36. ALL STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 GRADE B.

ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING. SET NORMAL TO GRADE.

CUT BOTTOM OF POST TO MAKE POST VERTICAL IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTION.

STEEL SHIMS SHALL BE PROVIDED & USED UNDER BASE PLATES WHERE REQUIRED FOR ALIGNMENT, AND SHALL BE GALVANIZED.

■ CAULK AROUND PERIMETER OF BASE PLATES, NO. 1, AND FILL BOLT SLOT OPENINGS IN SHIMS AND BASE PLATES WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.

ALL JOINTS AND RECESSES IN CONCRETE PARAPET ARE TO BE VERTICAL.

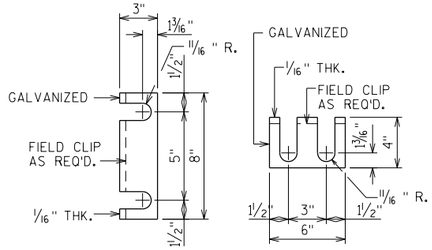
ALL MATERIAL (EXCEPT NO. 3 & 12) SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, THE STEEL RAILING SHALL BE GIVEN A NO. 6 BLAST CLEANING PER SSPC SPECIFICATIONS.

VENT HOLES SHALL BE DRILLED IN POST AND RAIL MEMBERS AS REQUIRED TO FACILITATE GALVANIZING AND DRAINAGE.

RAILING SHALL BE FABRICATED IN LENGTHS THAT INCLUDE 3 OR 4 POSTS.

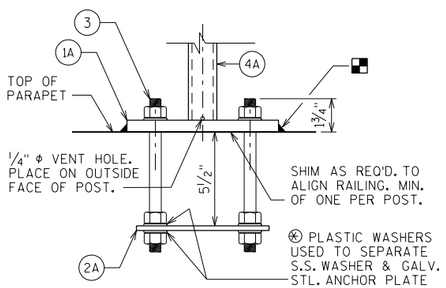
LEGEND

- (1A) PLATE 5/8" X 6" X 8" WITH 3/4" X 1 1/2" SLOTTED HOLES.
- (2A) 1/4" X 5" X 7" ANCHOR PLATE WITH 11/16 " φ HOLES FOR THR'D. RODS NO. 3.
- (3) 5/8" DIA. X 9" LONG, TYPE 316 STAINLESS STEEL THREADED RODS (MIN. TENSILE STRENGTH = 70 KSI) WITH NUT AND WASHERS OF SAME ALLOY GROUP. (ALTERNATE RAIL POST ANCHORAGE: 4 EQUIVALENT STAINLESS STEEL CONCRETE MASONRY ANCHORS TYPE S 5/8-INCH. EMBED 7" IN CONCRETE FOR RAIL POSTS. EMBED 5" IN CONCRETE FOR END RAILS.)
- (4A) STRUCTURAL TUBING 3" X 1 1/2" X 3/16". PLACE VERTICAL. WELD TO NO. 1 & 5.
- (5A) STRUCTURAL TUBING 3" X 1 1/2" X 3/16" RAILS. WELD TO NO. 1 & NO. 4. INSIDE OF TUBE TO BE PAINTED AT ALL FIELD ERECTION & EXPANSION JOINTS.
- (6A) BAR 1" X 1" PICKETS. WELD TO NO. 5. PLACE VERTICAL.
- (6C) BAR 1" X 1 1/2" PICKETS. WELD TO NO. 11. PLACE VERTICAL.
- (7) BAR 1" X 1". BEND TO REQUIRED RADIUS. WELD TO NO. 4 & 5.
- (9A) RECTANGULAR SLEEVE FABRICATED FROM 3/16" PLATES. PROVIDE "SLIDING FIT".
- (10A) RECTANGULAR SLEEVE FABRICATED FROM 3/16" PLATES. (1'-4" @ FIELD ERECTION JTS.) (1'-4" @ STRIP SEAL EXP. JTS.)
- (12) 1/2" DIA. STAINLESS STEEL BOLT WITH NUT AND LOCKWASHER.



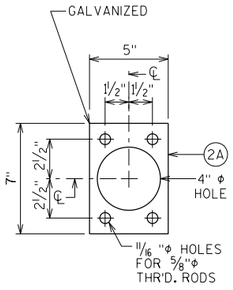
RAIL POST SHIM DETAIL

(2 SETS PER POST)

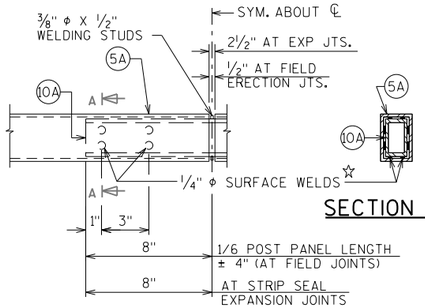


ANCHORAGE FOR RAIL POSTS

NOTE: ANCHOR PLATE NOT REQUIRED WHEN TYPE S ANCHORS ARE USED.



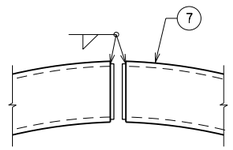
ANCHOR PLATE



SECTION A-A

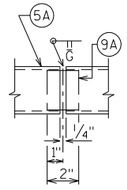
FIELD ERECTION JOINT DETAIL

☆ MIN. 5/8" FLAT SURFACE DIA. PUNCHINGS OR STUDS MAY BE USED AS AN ALTERNATE.



CURVED MEMBER JOINT DETAIL

SEAL ENDS ON CURVED STRUCTURAL TUBING WITH 1/4" PLATE. WELD AND GRIND SMOOTH.



SHOP RAIL SPLICE DETAIL

(LOCATION MUST BE SHOWN ON SHOP DRAWINGS)

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-67-125

DRAWN BY MM | PLANS CK'D. MR

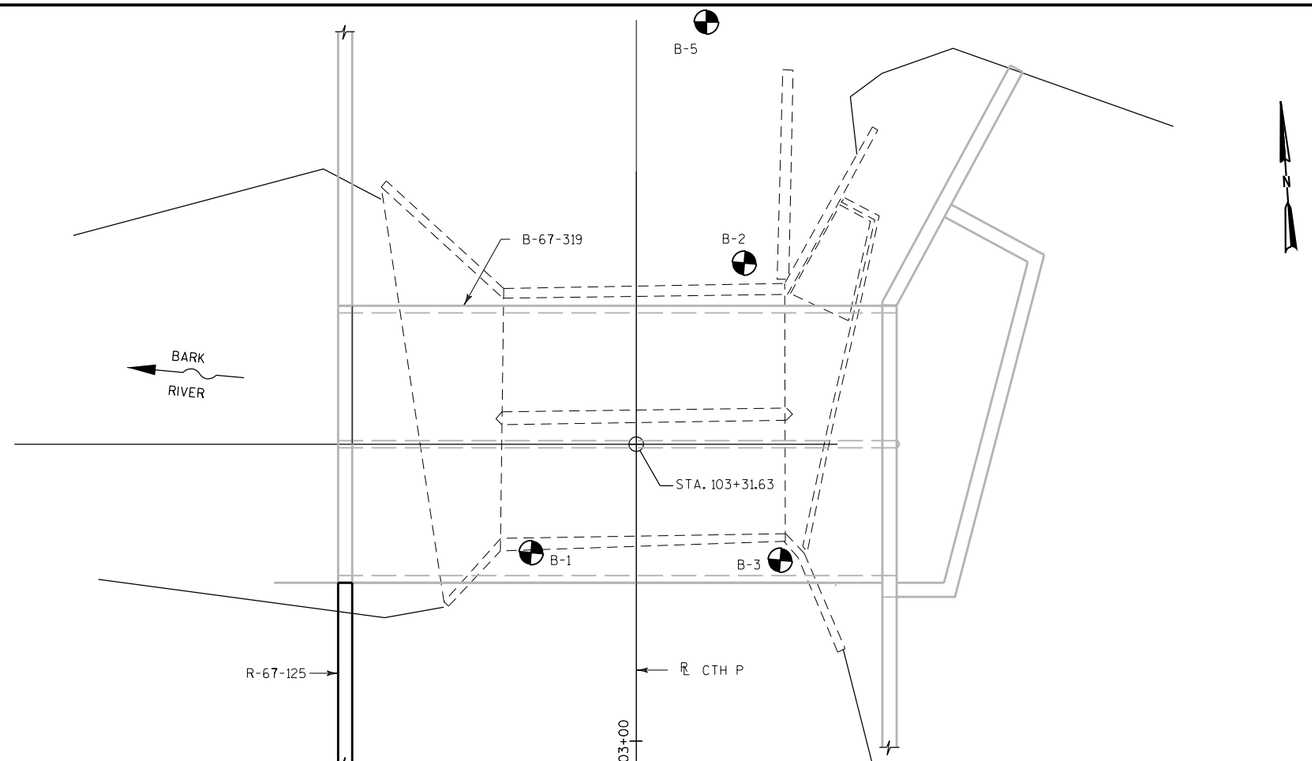
RAILING DETAILS

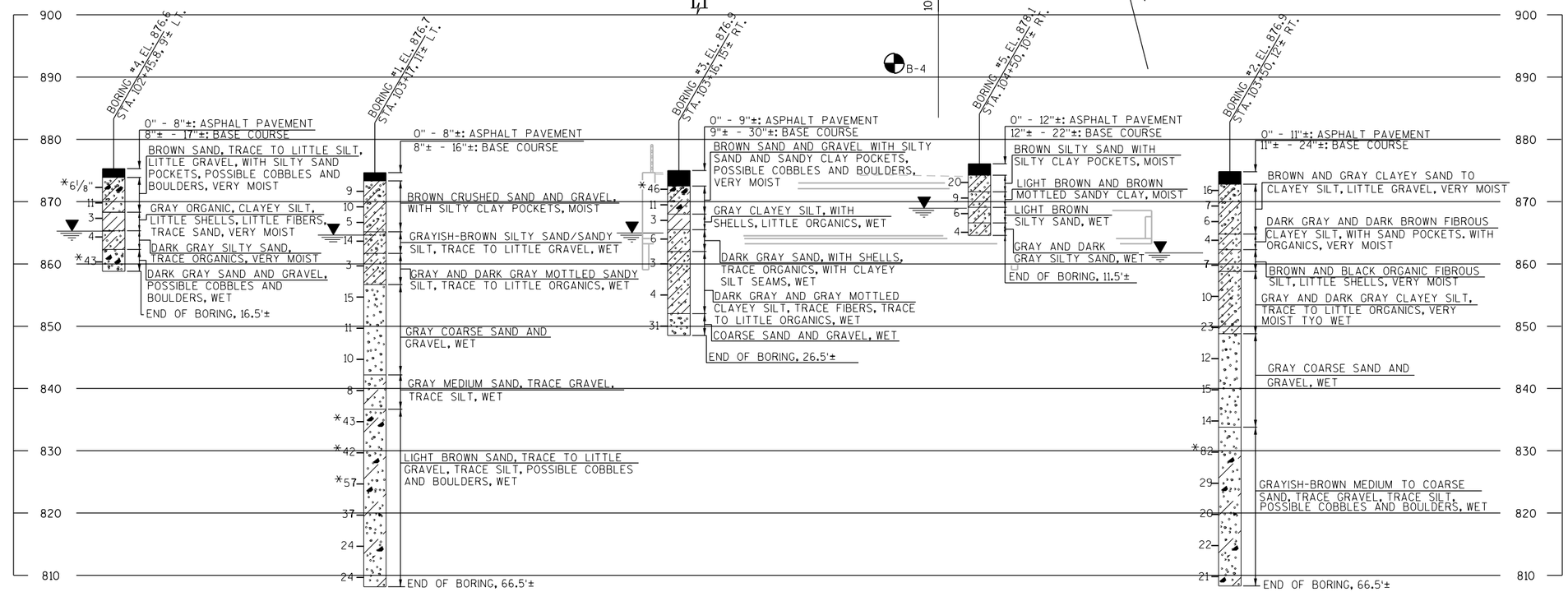
SHEET 4 OF 5

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Retaining Walls\R-67-125\04_rail_R-67-125.dgn DATE : 7/20/2015 PLOT BY : mraykh PLOT NAME : $FILE$ PLOT SCALE : 1:4.00001

MIDWEST ENGINEERING SERVICES, INC.
821 CORPORATE COURT, SUITE 102
WAUKESHA, WI 53189

BORING B-1 WAS PERFORMED ON FABRUARY 13, 2008
BORING B-2 WAS PERFORMED ON FABRUARY 13, 2008
BORING B-3 WAS PERFORMED ON FABRUARY 14, 2008
BORING B-4 WAS PERFORMED ON FABRUARY 13, 2008
BORING B-5 WAS PERFORMED ON FABRUARY 14, 2008





* = VALUE MAY BE ELEVATED DUE TO COBBLES AND BOULDERS

STATE PROJECT NUMBER

2714-04-70

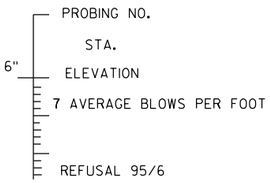
ABBREVIATIONS

F — FINE M — MEDIUM C — COARSE
WS — WEATHERED SO — SOUND

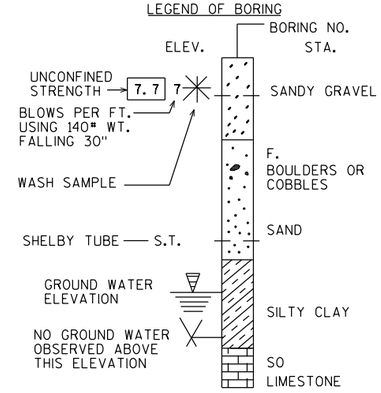
MATERIAL SYMBOLS

TOPSOIL / FILL, SILT, SANDSTONE
SAND, PEAT, LIMESTONE
GRAVEL, CLAY, IGNEOUS ROCK

LEGEND OF PROBING



LEGEND OF BORING



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

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-67-125

DRAWN BY MM | PLANS CK'D. MHZ

SUBSURFACE EXPLORATION

SHEET 5 OF 5

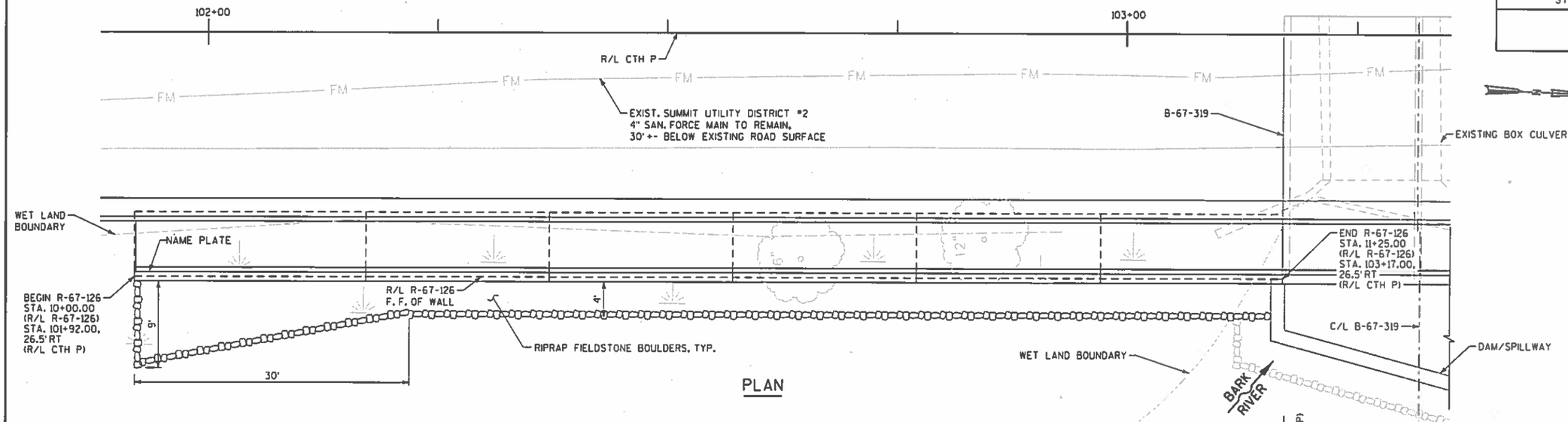
85

8

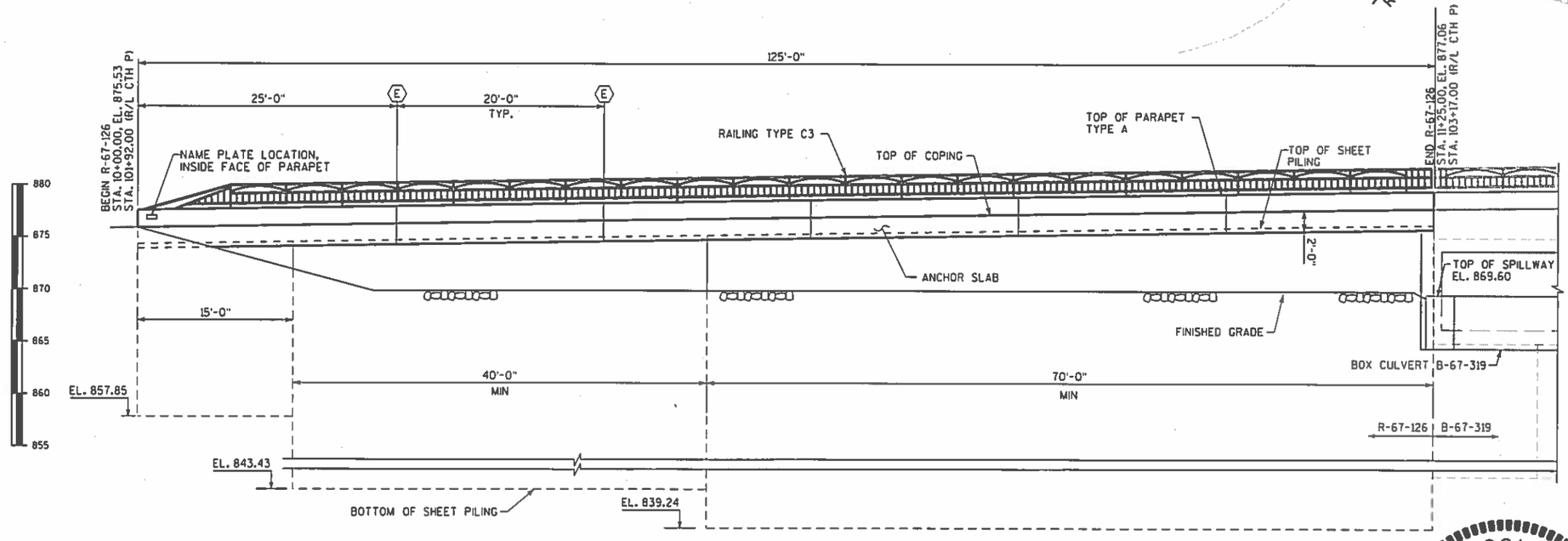
8

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Retaining Walls\R-67-125\05_soils_R-67-125.dgn DATE : 7/20/2015 PLOT BY : mraykh PLOT NAME : $FILE$ PLOT SCALE : 1:16

STATE PROJECT NUMBER
2714-04-70



PLAN



ELEVATION
(LOOKING WEST)

DESIGN DATA

LIVE LOAD:
LIVE LOAD SURCHARGE = 240 psf

MATERIAL PROPERTIES:

CONCRETE MASONRY RETAINING WALLS	f'c = 4,000 psi
BAR STEEL REINFORCEMENT	fy = 60,000 psi
PERMANENT STEEL SHEET PILING	ASTM A328 or A572
STRUCTURAL STEEL HS	Fy = 50,000 psi
MINIMUM SHEET PILE SECTION MOMENT OF INERTIA	Ix = 490.85 in⁴/ft
MINIMUM SHEET PILE SECTION WEB THICKNESS	Tw = 0.5 in

NOTE:

SEE SHEET 2 FOR GENERAL NOTES AND DESIGN DATA

LEGEND

(E) EXPANSION JOINT
RIPRAP HEAVY
F.F. FRONT FACE

LIST OF DRAWINGS

STRUCTURES DESIGN CONTACTS

BRIDGE OFFICE:
WILLIAM DREHER (608) 266-8489
CONSULTANT:
MOHAMMED ZAGLOUL (414) 751-7200

NO.	DATE	REVISION	BY

KAPUR & ASSOCIATES
CONSULTING ENGINEERS
414.751.7200

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher NK 07/23/15
CHIEF STRUCTURES DESIGN ENGINEER DATE

WISCONSIN
MOHAMMED H. ZAGLOUL
E-26970
MILWAUKEE
WISCONSIN
PROFESSIONAL ENGINEER
7/20/2015

STRUCTURE R-67-126

CTH P OVER BARK RIVER

COUNTY	TOWN/CITY/VILLAGE
WAUKESHA	SUMMIT

DESIGN SPEC.
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
MR	MHZ	MM	MHZ

GENERAL PLAN AND ELEVATION

SHEET 1 OF 5

8

8

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Retaining Walls\R-67-126\01_genplan_R-67-126.dgn : 7/20/2015 PLOT BY : mraykh PLOT NAME : *FILE* PLOT SCALE : 1:12

STATE PROJECT NUMBER
2714-04-70

TOTAL ESTIMATED QUANTITIES

ITEM NO.	BID ITEM	UNIT	TOTAL
206.3000	EXCAVATION FOR STRUCTURES RETAINING WALLS R-40-126	LS	1
504.0500	CONCRETE MASONRY RETAINING WALLS	CY	55
505.0615	BAR STEEL REINFORCEMENT HS COATED RETAINING WALLS	LB	13,291
512.0500	PILING STEEL SHEET PERMANENT DELIVERED	SF	4,055
512.0600	PILING STEEL SHEET PERMANENT DRIVEN	SF	4,055
513.7015	RAILING STEEL TYPE C3 R-67-126	LS	1
516.0500	RUBBERIZED MEMBRAINE WATERPROOFING	SY	11
645.0120	GEOTEXTILE FABRIC TYPE HR	SY	63
SPV.0035.01	RIPRAP FIELDSTONE BOULDERS	CY	43
	NON-BID ITEMS		
	NAME PLATE	EACH	1
	PREFORMED JOINT FILLER	SIZE	1"
	PREFORMED JOINT FILLER	SIZE	1/2"
	CORK FILLER	SIZE	1"
	NON-BITUMINOUS JOINT SEALER	SIZE	1/2"
	NON-BITUMINOUS JOINT SEALER	SIZE	1"

ALL ITEMS CATEGORY NUMBER 0030

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

ALL STATIONS AND ELEVATIONS ARE IN FEET. ELEVATIONS ARE REFERENCED TO THE NGVD DATUM.

ALL STATIONS ARE ALONG THE R/L FOR R-67-126, ALONG THE FRONT FACE OF THE WALL, UNLESS OTHERWISE SHOWN.

THESE PLANS ARE FOR PERMANENT STEEL SHEET PILE RETAINING WALL R-67-126.

USE 2" CLEAR CONCRETE COVER FOR ALL REINFORCEMENT, UNLESS OTHERWISE SHOWN.

THE EXISTING GROUND LINE SHALL BE THE UPPER LIMITS OF EXCAVATION FOR STRUCTURES.

COLD ROLLED STEEL SHEETING WITH EQUIVALENT MOMENT OF INERTIA AND SECTION WEB THICKNESS MAY BE UTILIZED.

BEVEL EXPOSED EDGES OF CONCRETE ¾" UNLESS NOTED OTHERWISE.

ALL BAR STEEL REINFORCEMENT TO BE EPOXY COATED.

THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

SHEET PILING SHALL BE OF STEEL TYPE MEETS ASTM A328 OR A572. AND SHELL NOT BE PAINTED.

ALL CAST-IN-PLACE CONCRETE IS PAID FOR UNDER ITEM "CONCRETE MASONRY RETAINING WALLS".

THIS WALL IS STRUCTURAL COMPONENT OF LOWER NEMAHBIN LAKE

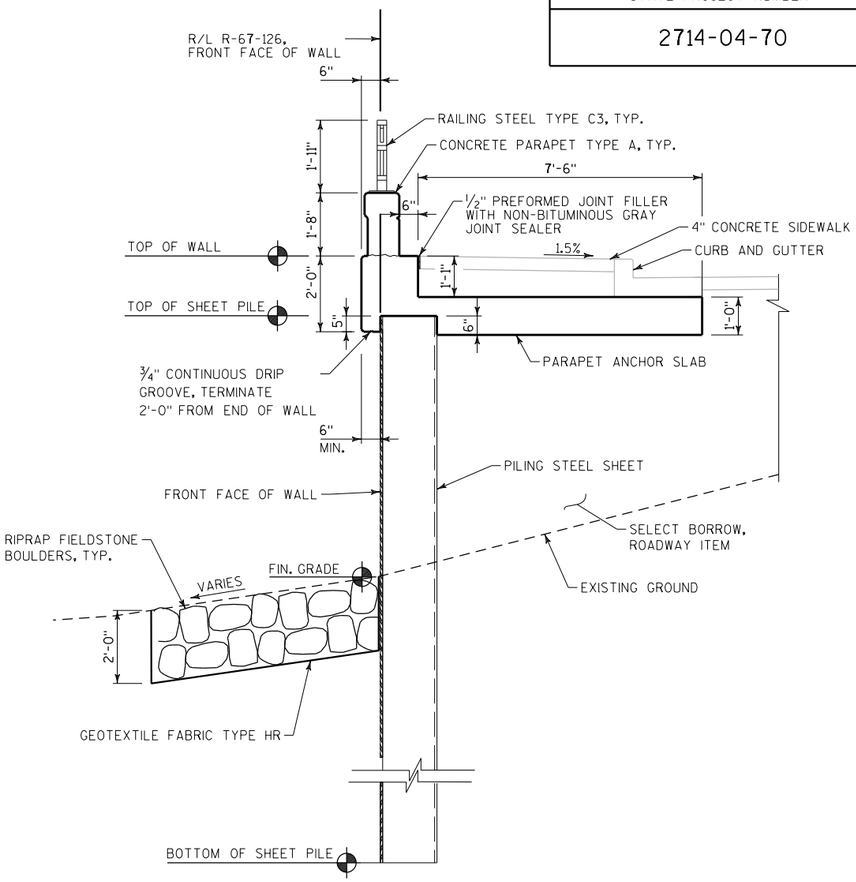
THE UTILITY INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL-INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATIONS AS TO TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE. UTILITIES LABELED AS PROPOSED MAY BE INSTALLED BY OTHERS PRIOR TO THIS CONTRACT.

ELEVATIONS TABLE

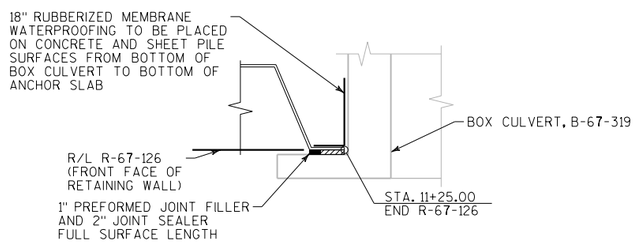
SHEET PILING UNIT	SHEET PILING WALL STATIONS	TOP OF WALL EL., FT	TOP OF SHEET PILE EL., FT	FINISHED GRADE EL., FT	MIN. SHEET PILING SECTION DEPTH, IN	NOMINAL SHEET PILING LENGTH, FT	MIN. BOTTOM OF SHEET PILING EL., FT
BEGIN. STA.	10+00.00	875.53	873.95	875.53	16.1	17	857.85
END STA.	10+05.00	875.59	874.01	873.87			
BEGIN. STA.	10+05.00	875.59	874.01	873.87	16.1	17	857.85
END STA.	10+15.00	875.72	874.13	870.54			
BEGIN. STA.	10+15.00	875.72	874.13	870.54	16.1	31	843.43
END STA.	10+25.00	875.84	874.26	869.90			
BEGIN. STA.	10+25.00	875.84	874.26	869.90	16.1	31	843.43
END STA.	10+35.00	875.96	874.38	869.90			
BEGIN. STA.	10+35.00	875.96	874.38	869.90	16.1	32	843.43
END STA.	10+45.00	876.08	874.50	869.90			
BEGIN. STA.	10+45.00	876.08	874.50	869.90	16.1	32	843.43
END STA.	10+55.00	876.20	874.62	869.90			
BEGIN. STA.	10+55.00	876.20	874.62	869.90	16.1	36	839.24
END STA.	10+65.00	876.33	874.74	869.90			
BEGIN. STA.	10+65.00	876.33	874.74	869.90	16.1	36	839.24
END STA.	10+75.00	876.45	874.87	869.90			
BEGIN. STA.	10+75.00	876.45	874.87	869.90	16.1	36	839.24
END STA.	10+85.00	876.57	874.99	869.90			
BEGIN. STA.	10+85.00	876.57	874.99	869.90	16.1	36	839.24
END STA.	10+95.00	876.69	875.11	869.90			
BEGIN. STA.	10+95.00	876.69	875.11	869.90	16.1	36	839.24
END STA.	11+05.00	876.81	875.23	869.90			
BEGIN. STA.	11+05.00	876.81	875.23	869.90	16.1	37	839.24
END STA.	11+15.00	876.94	875.35	869.90			
BEGIN. STA.	11+15.00	876.94	875.35	869.90	16.1	37	839.24
END STA.	11+25.00	877.06	875.48	869.60			

BILL OF BARS

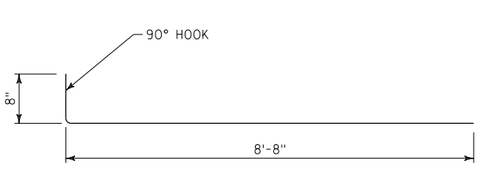
BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
A501	X	193	4'-6"	X	-	ANCHOR SLAB-TRANS.
A402	X	100	19'-7"	-	-	ANCHOR SLAB-LONG.
A403	X	20	24'-7"	-	-	ANCHOR SLAB-LONG.
A504	X	198	4'-10"	-	-	ANCHOR SLAB-TRANS.
A505	X	193	9'-1"	X	-	ANCHOR SLAB-TRANS.
P501	X	131	5'-9'	X	-	PARAPET- VERT.
P402	X	30	19'-7"	-	-	PARAPET- LONG.
P403	X	6	24'-7"	-	-	PARAPET- LONG.



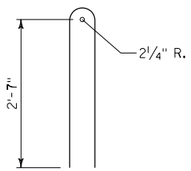
TYPICAL SECTION THRU WALL



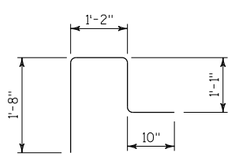
WALL SECTION AT BOX CULVERT



A505



P501



A501

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-67-126

DRAWN BY MM | PLANS CK'D. MHZ

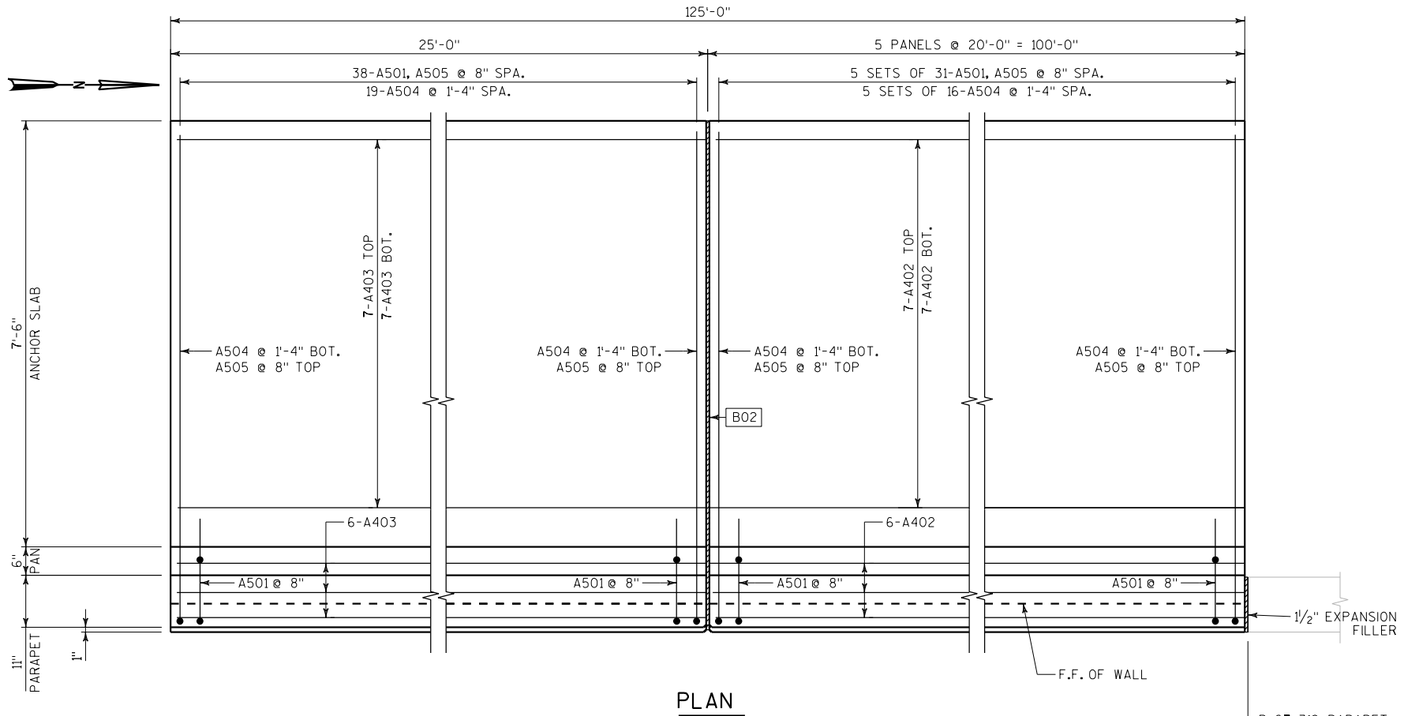
QUANTITIES, TYPICAL SECTION, BILL OF BARS AND ELEVATIONS TABLE

SHEET 2 OF 5

87

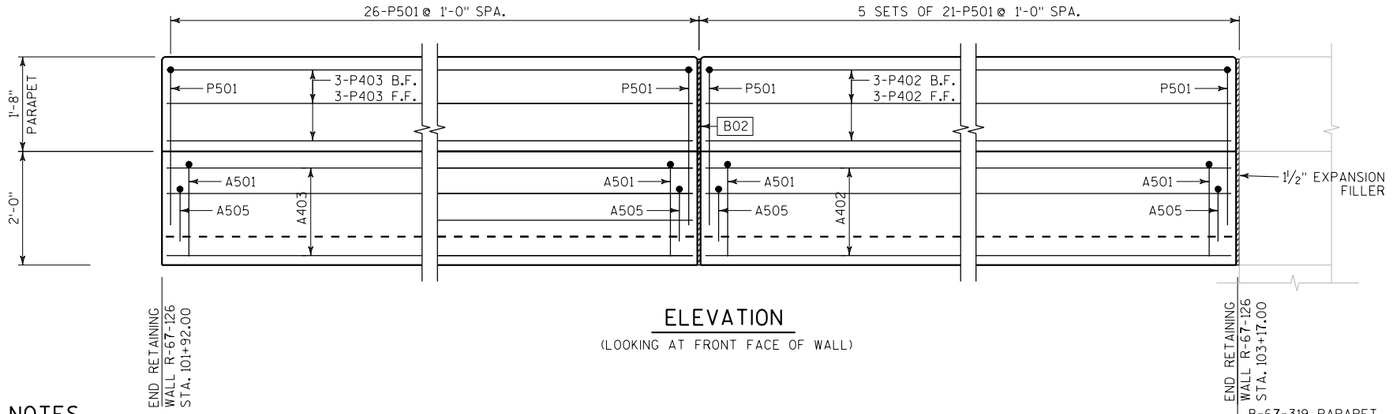
STATE PROJECT NUMBER

2714-04-70



PLAN

(PARAPET BARS ARE NOT SHOWN FOR CLARITY)



ELEVATION

(LOOKING AT FRONT FACE OF WALL)

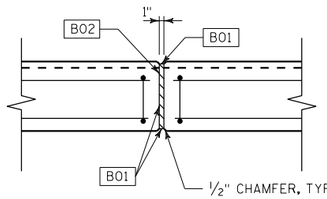
NOTES

B01 NON-BITUMINOUS JOINT SEALER, COLOR TO MATCH CONCRETE STAIN. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE)

B02 1" CORK FILLER

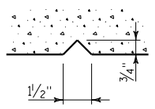
B03 ¾" DIAMETER x 1'-6" SMOOTH EPOXY COATED DOWELS PLACED AT MID-DEPTH IN THE SLAB. DOWELS SHALL BE LIGHTLY COATED WITH A DEBONDING SURFACE TREATMENT OVER ½ THE DOWEL LENGTH. EMBED 9" INTO ADJACENT SLABS. DOWELS INCLUDED IN THE BID ITEM "CONCRETE MASONRY RETAINING WALLS".

B04 CONST. JT. STRIKE OFF AS SHOWN AND LEAVE ROUGH

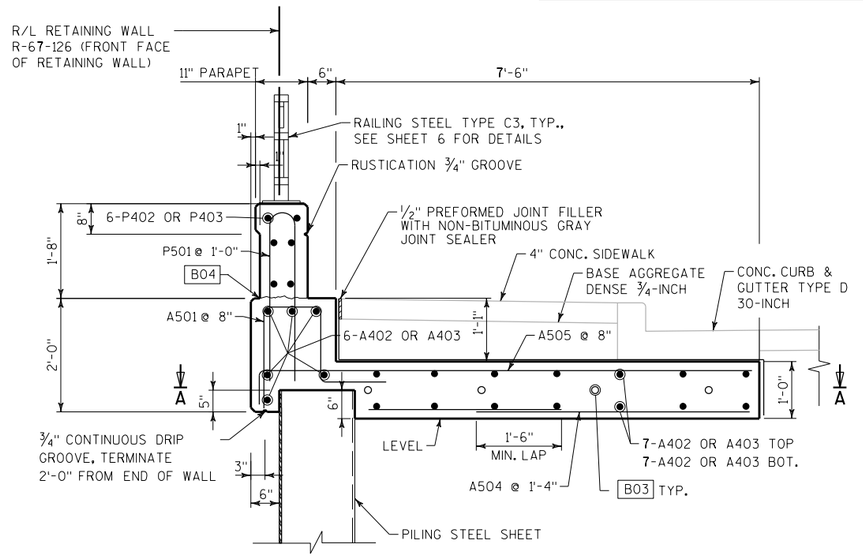


PARAPET EXPANSION JOINT

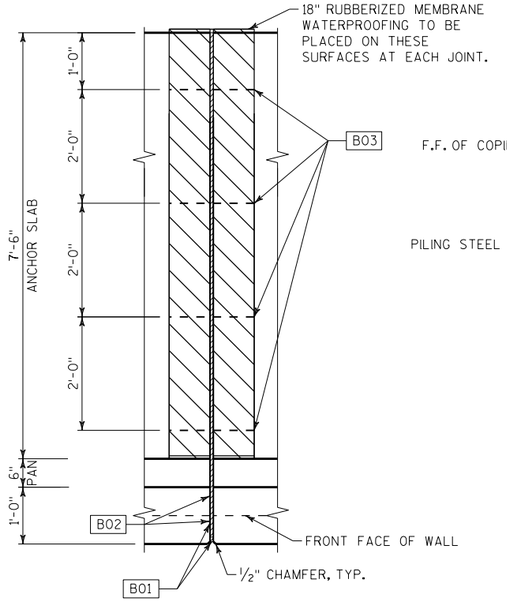
(DO NOT RUN BARS THRU JOINT)



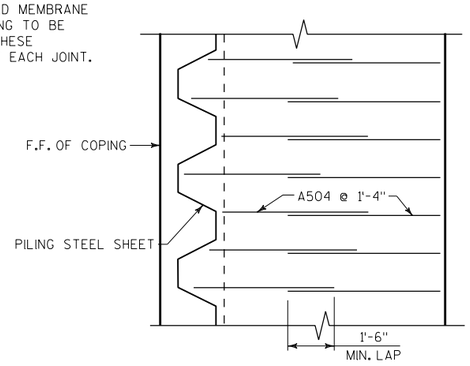
¾" DRIP GROOVE



TYPICAL SECTION



ANCHOR SLAB EXPANSION JOINT PLAN



SECTION A-A

(LONGITUDINAL BARS NOT SHOWN FOR CLARITY)

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-67-126

DRAWN BY MR | PLANS CK'D. MHZ

PARAPET AND ANCHOR SLAB DETAILS

SHEET 3 OF 5

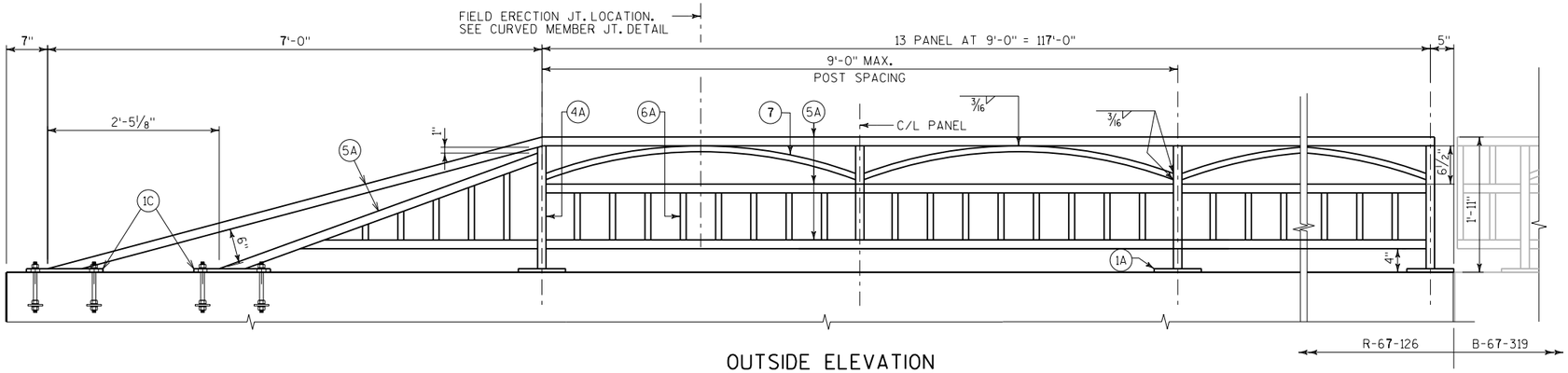
88

8

8

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Retaining Walls\R-67-126\03_det_R-67-126.dgn DATE : 7/20/2015 PLOT BY : mraykh PLOT NAME : $FILE$ PLOT SCALE : 1:8

STATE PROJECT NUMBER
2714-04-70



OUTSIDE ELEVATION

RAILING NOTES

BID ITEM SHALL BE "RAILING STEEL TYPE C3 B-67-126", WHICH SHALL INCLUDE ALL STEEL ITEMS SHOWN.

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 CUTS.

ALL PLATES, BARS, AND RECTANGULAR SLEEVES SHALL CONFORM TO ASTM A709 GRADE 36. ALL STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 GRADE B.

ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING. SET NORMAL TO GRADE.

CUT BOTTOM OF POST TO MAKE POST VERTICAL IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTION.

STEEL SHIMS SHALL BE PROVIDED & USED UNDER BASE PLATES WHERE REQUIRED FOR ALIGNMENT, AND SHALL BE GALVANIZED.

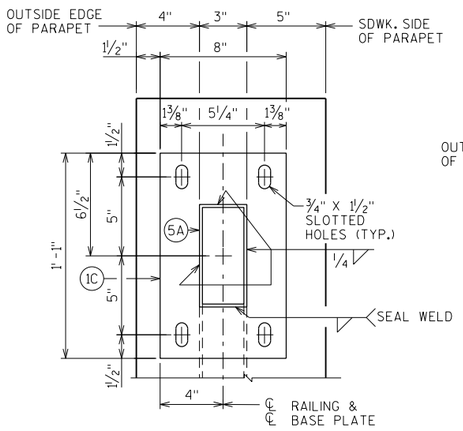
CAULK AROUND PERIMETER OF BASE PLATES, NO. 1, AND FILL BOLT SLOT OPENINGS IN SHIMS AND BASE PLATES WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.

ALL JOINTS AND RECESSES IN CONCRETE PARAPET ARE TO BE VERTICAL.

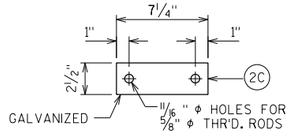
ALL MATERIAL (EXCEPT NO. 3 & 12) SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, THE STEEL RAILING SHALL BE GIVEN A NO. 6 BLAST CLEANING PER SSPC SPECIFICATIONS.

VENT HOLES SHALL BE DRILLED IN POST AND RAIL MEMBERS AS REQUIRED TO FACILITATE GALVANIZING AND DRAINAGE.

RAILING SHALL BE FABRICATED IN LENGTHS THAT INCLUDE 3 OR 4 POSTS.

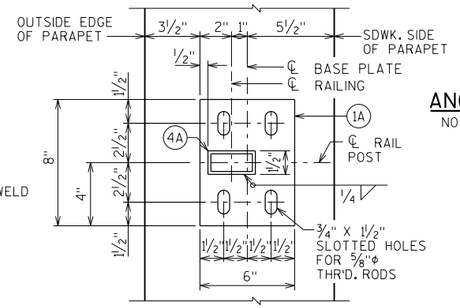


END RAIL BASE PLATE

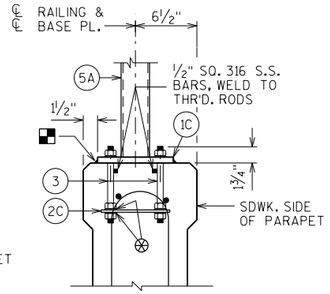


END RAIL ANCHOR PLATE

FOR END RAIL BASE PLATES
2 REQ'D. PER END RAIL BASE PLATE

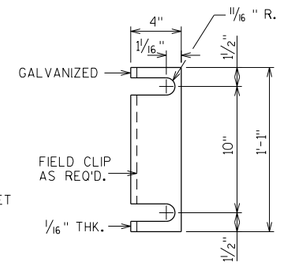


TYPICAL RAIL POST BASE PLATE



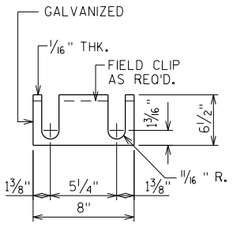
ANCHORAGE FOR END RAIL

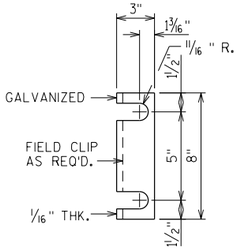
NOTE: ANCHOR PLATES NOT REQ'D. WHEN TYPE "S" ANCHORS ARE USED.

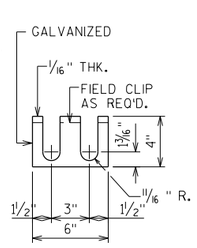


END RAIL SHIM DETAIL

(2 SETS PER POST)





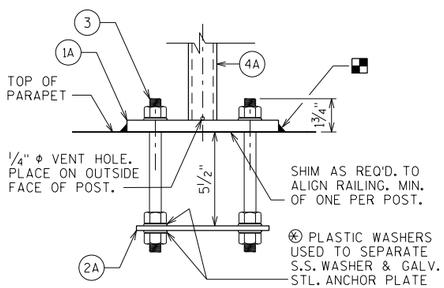


RAIL POST SHIM DETAIL

(2 SETS PER POST)

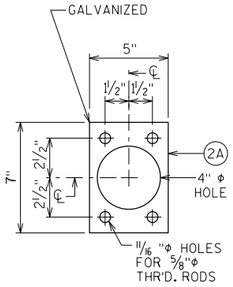
LEGEND

- (1A) PLATE 5/8" X 6" X 8" WITH 3/4" X 1 1/2" SLOTTED HOLES.
- (2A) 1/4" X 5" X 7" ANCHOR PLATE WITH 11/16 " ϕ HOLES FOR THR'D. RODS NO. 3.
- (3) 5/8" DIA. X 9" LONG, TYPE 316 STAINLESS STEEL THREADED RODS (MIN. TENSILE STRENGTH = 70 KSI) WITH NUT AND WASHERS OF SAME ALLOY GROUP. (ALTERNATE RAIL POST ANCHORAGE: 4 EQUIVALENT STAINLESS STEEL CONCRETE MASONRY ANCHORS TYPE S 5/8-INCH. EMBED 7" IN CONCRETE FOR RAIL POSTS. EMBED 5" IN CONCRETE FOR END RAILS.)
- (4A) STRUCTURAL TUBING 3" X 1 1/2" X 3/16". PLACE VERTICAL. WELD TO NO. 1 & 5.
- (5A) STRUCTURAL TUBING 3" X 1 1/2" X 3/16" RAILS. WELD TO NO. 1 & NO. 4. INSIDE OF TUBE TO BE PAINTED AT ALL FIELD ERECTION & EXPANSION JOINTS.
- (6A) BAR 1" X 1" PICKETS. WELD TO NO. 5. PLACE VERTICAL.
- (6C) BAR 1" X 1 1/2" PICKETS. WELD TO NO. 11. PLACE VERTICAL.
- (7) BAR 1" X 1". BEND TO REQUIRED RADIUS. WELD TO NO. 4 & 5.
- (9A) RECTANGULAR SLEEVE FABRICATED FROM 3/16" PLATES. PROVIDE "SLIDING FIT".
- (10A) RECTANGULAR SLEEVE FABRICATED FROM 3/16" PLATES. (1'-4" @ FIELD ERECTION JTS.) (1'-4" @ STRIP SEAL EXP. JTS.)
- (12) 1/2" DIA. STAINLESS STEEL BOLT WITH NUT AND LOCKWASHER.

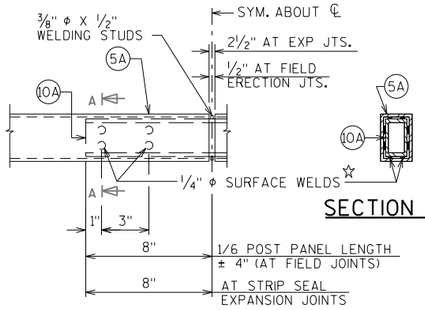


ANCHORAGE FOR RAIL POSTS

NOTE: ANCHOR PLATE NOT REQUIRED WHEN TYPE S ANCHORS ARE USED.



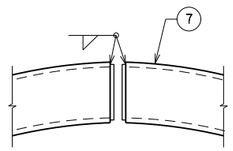
ANCHOR PLATE



SECTION A-A

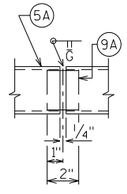
FIELD ERECTION JOINT DETAIL

MIN. 5/8" FLAT SURFACE DIA. PUNCHINGS OR STUDS MAY BE USED AS AN ALTERNATE.



CURVED MEMBER JOINT DETAIL

SEAL ENDS ON CURVED STRUCTURAL TUBING WITH 1/4" PLATE. WELD AND GRIND SMOOTH.



SHOP RAIL SPLICE DETAIL

(LOCATION MUST BE SHOWN ON SHOP DRAWINGS)

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-67-126

DRAWN BY MM | PLANS CK'D. MR

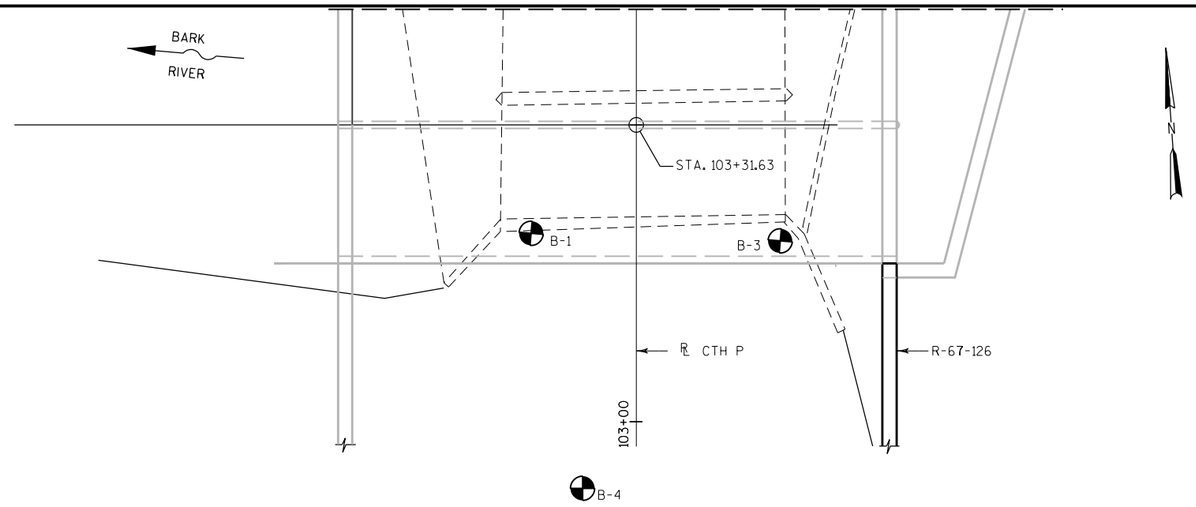
RAILING DETAILS

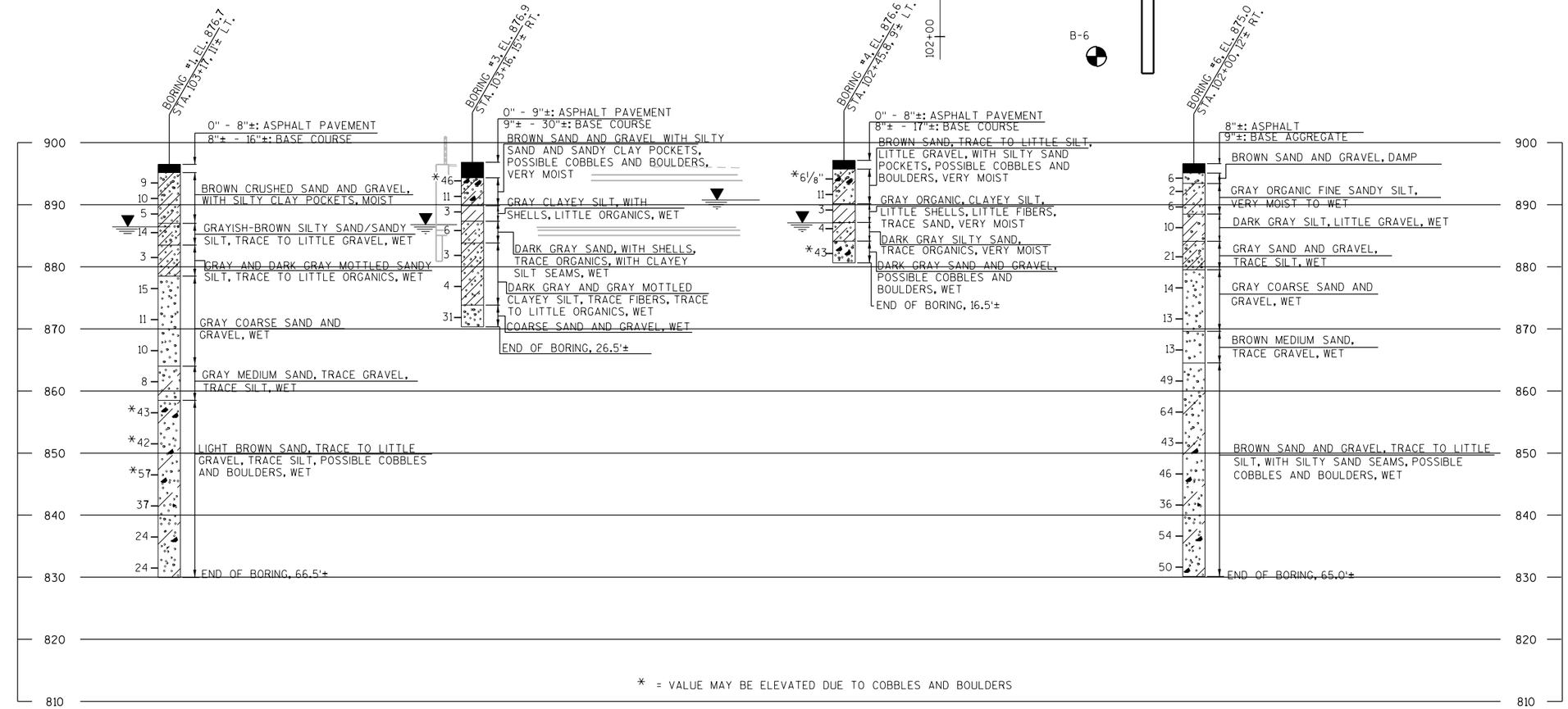
SHEET 4 OF 5

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Retaining Walls\R-67-126\04_rail_R-67-126.dgn DATE : 7/20/2015 PLOT BY : mraykh PLOT NAME : $FILE$ PLOT SCALE : 1:4.00001

MIDWEST ENGINEERING SERVICES, INC.
821 CORPORATE COURT, SUITE 102
WAUKESHA, WI 53189

BORING B-1 WAS PERFORMED ON FABRUARY 13, 2008
BORING B-2 WAS PERFORMED ON FABRUARY 13, 2008
BORING B-3 WAS PERFORMED ON FABRUARY 14, 2008
BORING B-4 WAS PERFORMED ON FABRUARY 13, 2008
BORING B-5 WAS PERFORMED ON FABRUARY 14, 2008





* = VALUE MAY BE ELEVATED DUE TO COBBLES AND BOULDERS

Qp = CALIBRATED HAND PENETROMETER RESISTANCE (TONS PER SQUARE FOOT)

STATE PROJECT NUMBER

2714-04-70

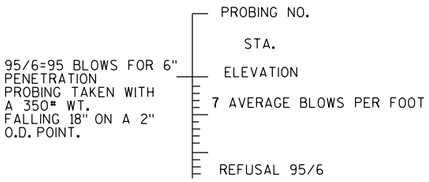
ABBREVIATIONS

F — FINE M — MEDIUM C — COARSE
WS — WEATHERED SO — SOUND

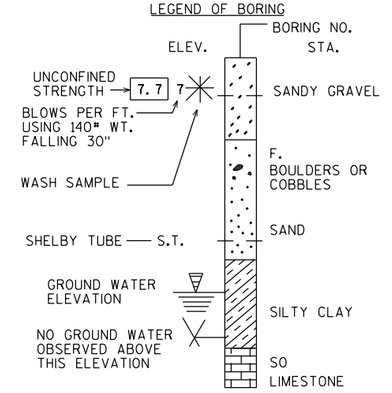
MATERIAL SYMBOLS

TOPSOIL / FILL, SILT, SANDSTONE
SAND, PEAT, LIMESTONE
GRAVEL, CLAY, IGNEOUS ROCK

LEGEND OF PROBING



LEGEND OF BORING



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

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE R-67-126

DRAWN BY MM | PLANS CK'D. MHZ

SUBSURFACE EXPLORATION

SHEET 5 OF 5

FILE NAME : S:\Wauk_Co\CO_Gov\14.0335.01 Swayer Roard over Bark River Box Culvert\Structural\Retaining Walls\R-67-126\05_soils_R-67-126.dgn DATE : 7/20/2015 PLOT BY : mraykh PLOT NAME : $FILE$ PLOT SCALE : 1:16

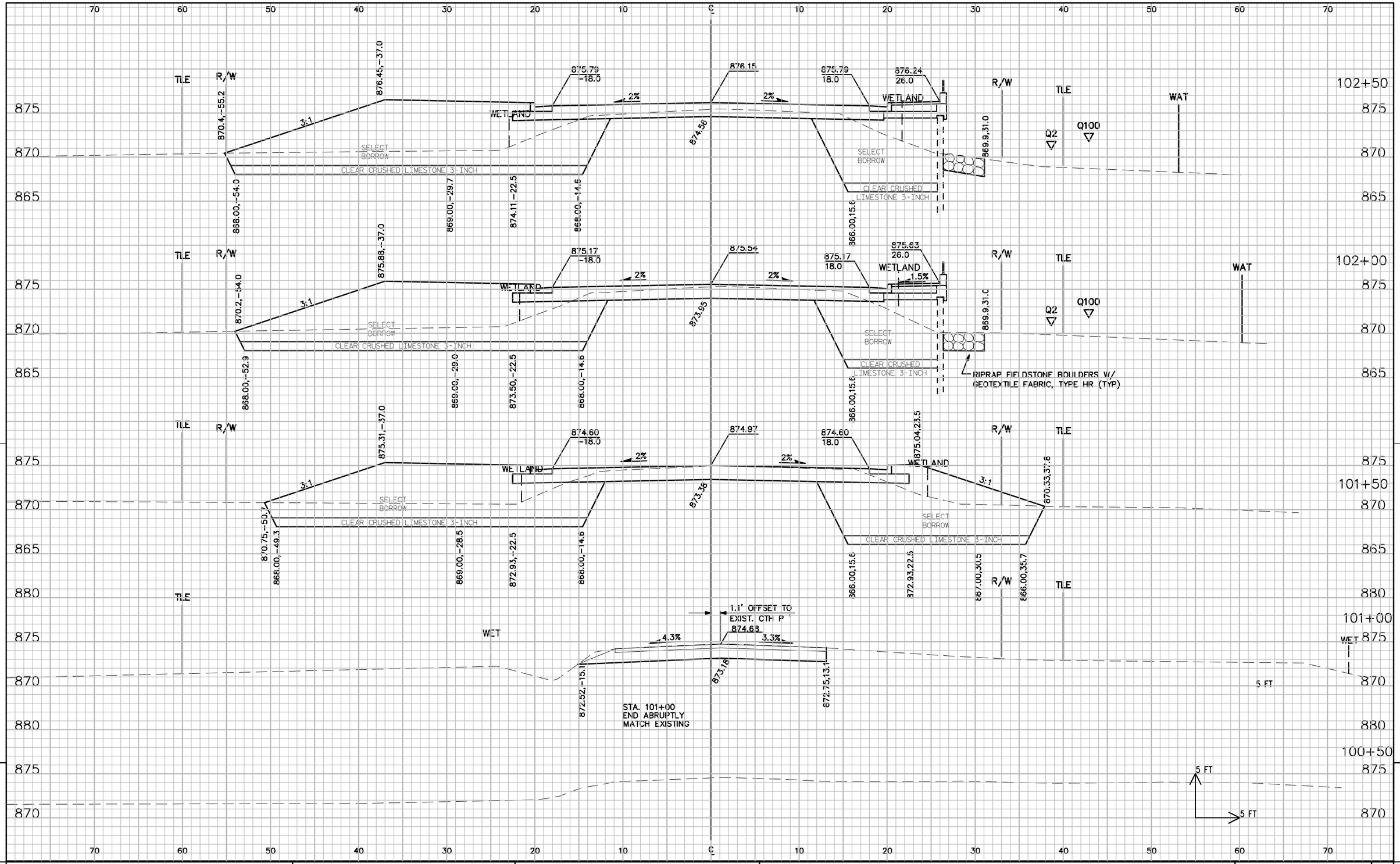
SAWYER ROAD (CTH P)

STATION	Distance	AREA (SF)					Incremental Vol (CY) (Unadjusted)					Cumulative Vol (CY)	
		Cut	Select Borrow	Backfill Structure	Clear Crushed Limestone	Fill	Cut	Select Borrow	Backfill Structure	Clear Crushed Limestone	Fill	Cut	Expanded Fill
							Note 1				Note 3	1.00 Note 1	1.30
101+00		43	0	0	0	0							
101+50	50	288	327	0	56	0	306	303	0	52	0	306	0
102+00	50	234	295	0	49	0	483	576	0	97	0	790	0
102+50	50	233	330	0	50	0	432	579	0	92	0	1222	0
103+00	50	166	203	0	26	6	369	494	0	70	6	1592	7
103+31	31	469	157	168	63	0	538	180	193	72	0	NOT FOR YARDAGE	
103+50	19	129	265	0	29	10	91	186	0	20	7	1682	16
104+00	50	233	396	0	68	8	335	612	0	90	17	2018	38
104+50	50	7	223	0	0	0	222	573	0	0	7	2240	48
105+00	50	27	0	0	0	24	31	206	0	0	22	2271	77
105+50	50	148	0	0	0	3	162	0	0	0	25	2433	109
106+00	50	104	0	0	0	0	233	0	0	0	3	2667	113
106+35	35	111	0	0	0	0	139	0	0	0	0	2806	113
							3345	3709	193	494	87	2806	113

BYPASS CHANNEL, CATEGORY 0020

STATION	Distance	AREA (SF)			Incremental Vol (CY) (Unadjusted)		
		Cut	Select Borrow	Fill	Cut	Select Borrow	Fill
					Note 1		Note 3
10+50		0	0	0			
10+80	30	339	339	0	188	188	0
11+10	30	108	108	0	248	248	0
11+43	33	66	66	0	106	106	0
11+60	17	46	46	0	35	35	0
					578	578	0

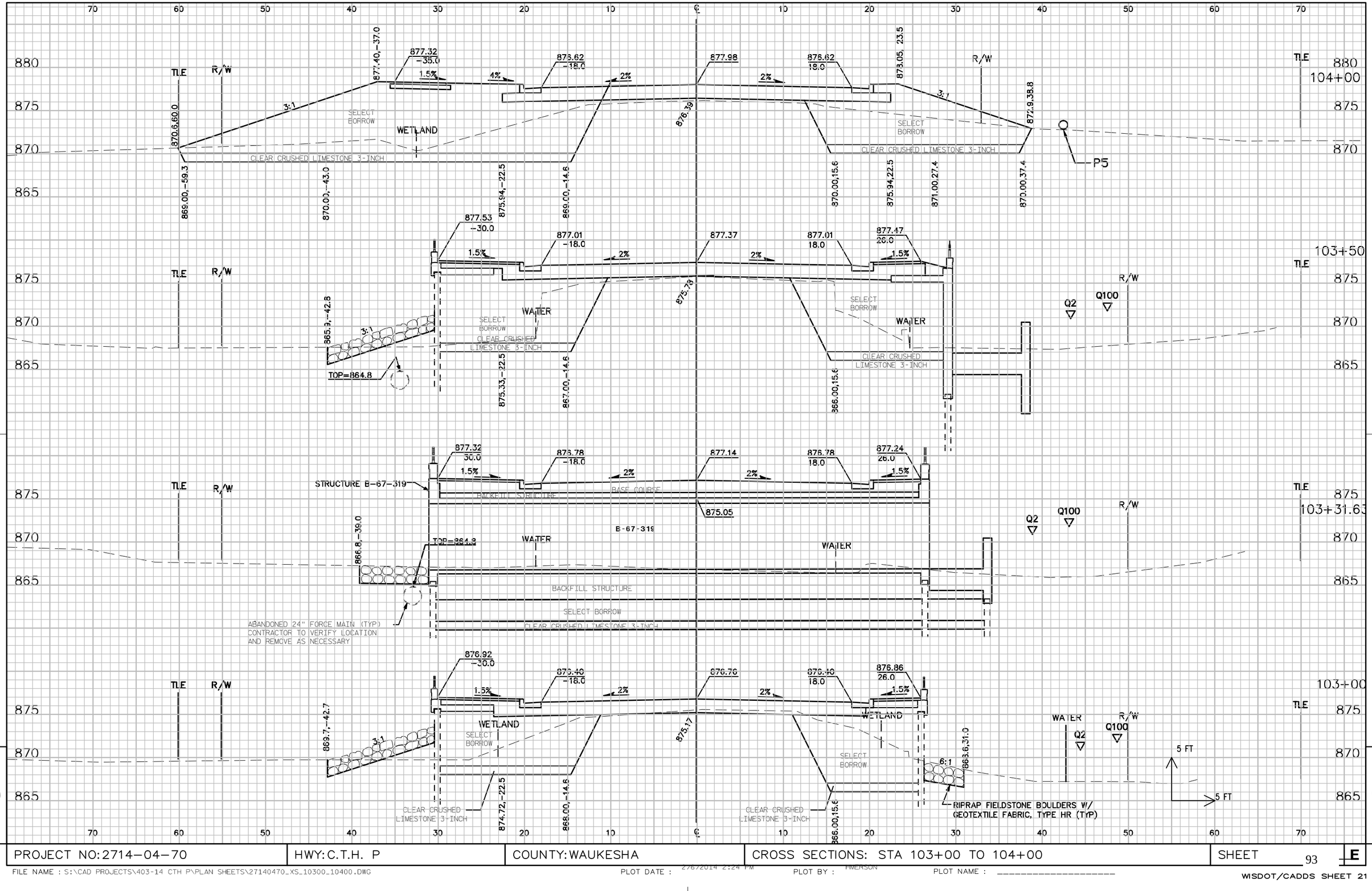
ALL ITEMS ARE CATEGORY 0010
UNLESS OTHERWISE NOTED.



PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	CROSS SECTIONS: STA 101+00 TO 102+50	SHEET E

FILE NAME : S:\CAD PROJECTS\403-14 CTH P\PLAN SHEETS\27140470_XS_10050_10250.DWG PLOT DATE : 2/6/2014 2:48 PM PLOT BY : HMERSON PLOT NAME : _____

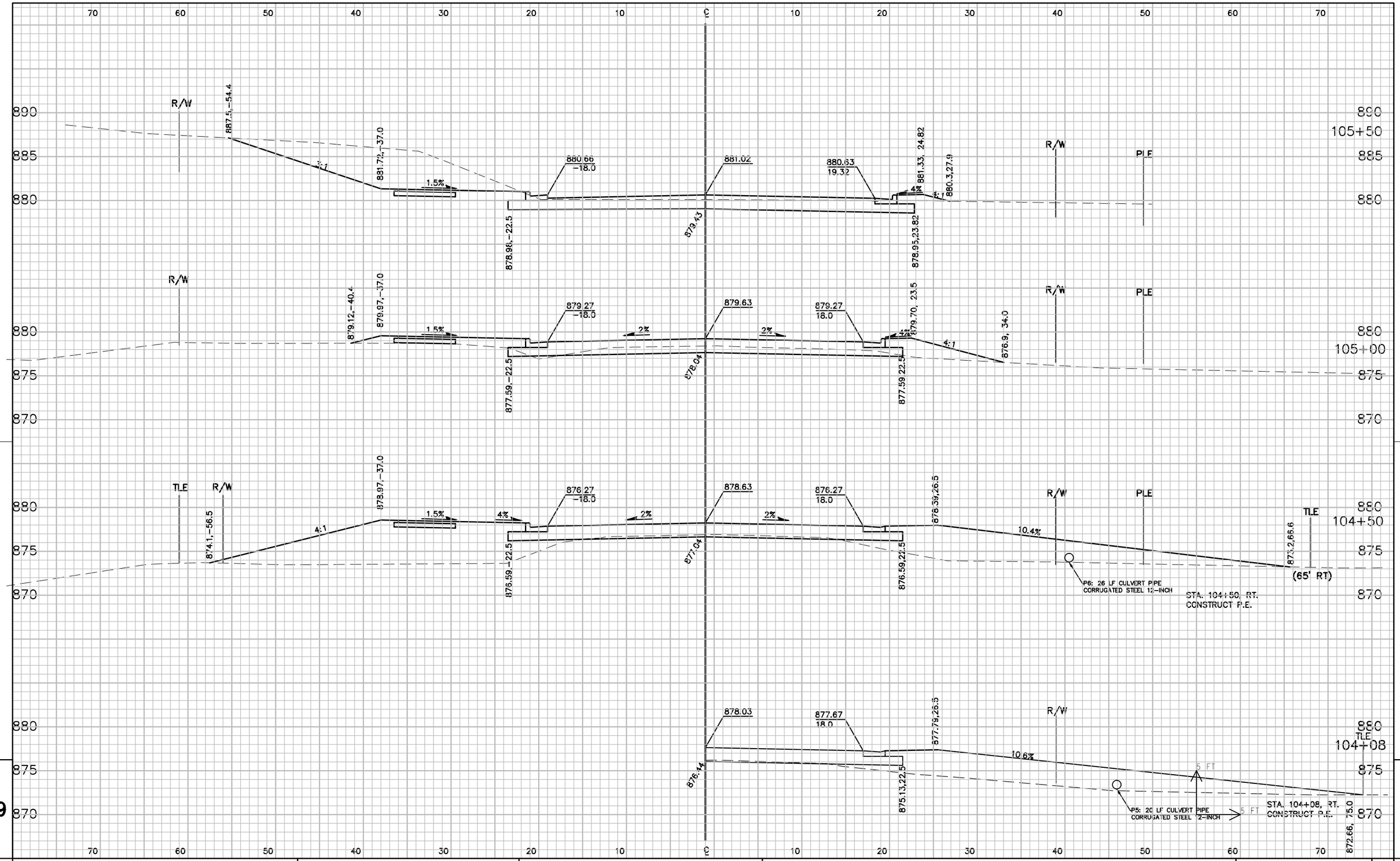
WISDOT/CADDS SHEET 21



PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	CROSS SECTIONS: STA 103+00 TO 104+00	SHEET 93 E

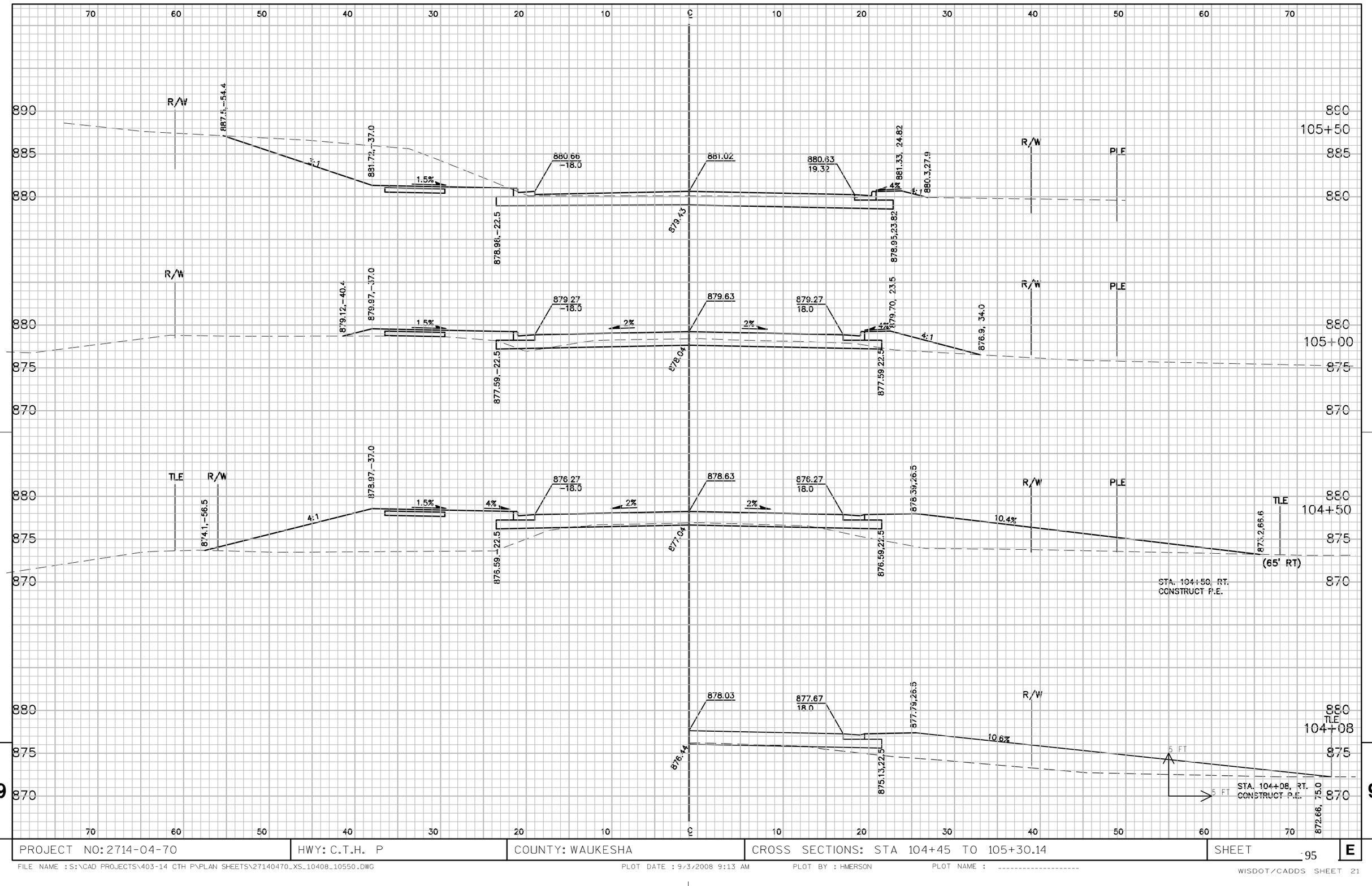
FILE NAME : S:\CAD PROJECTS\403-14 CTH P\PLAN SHEETS\27140470_XS_10300_10400.DWG PLOT DATE : 2/6/2014 2:24 PM PLOT BY : HMERSON PLOT NAME : _____

WISDOT/CADDS SHEET 21

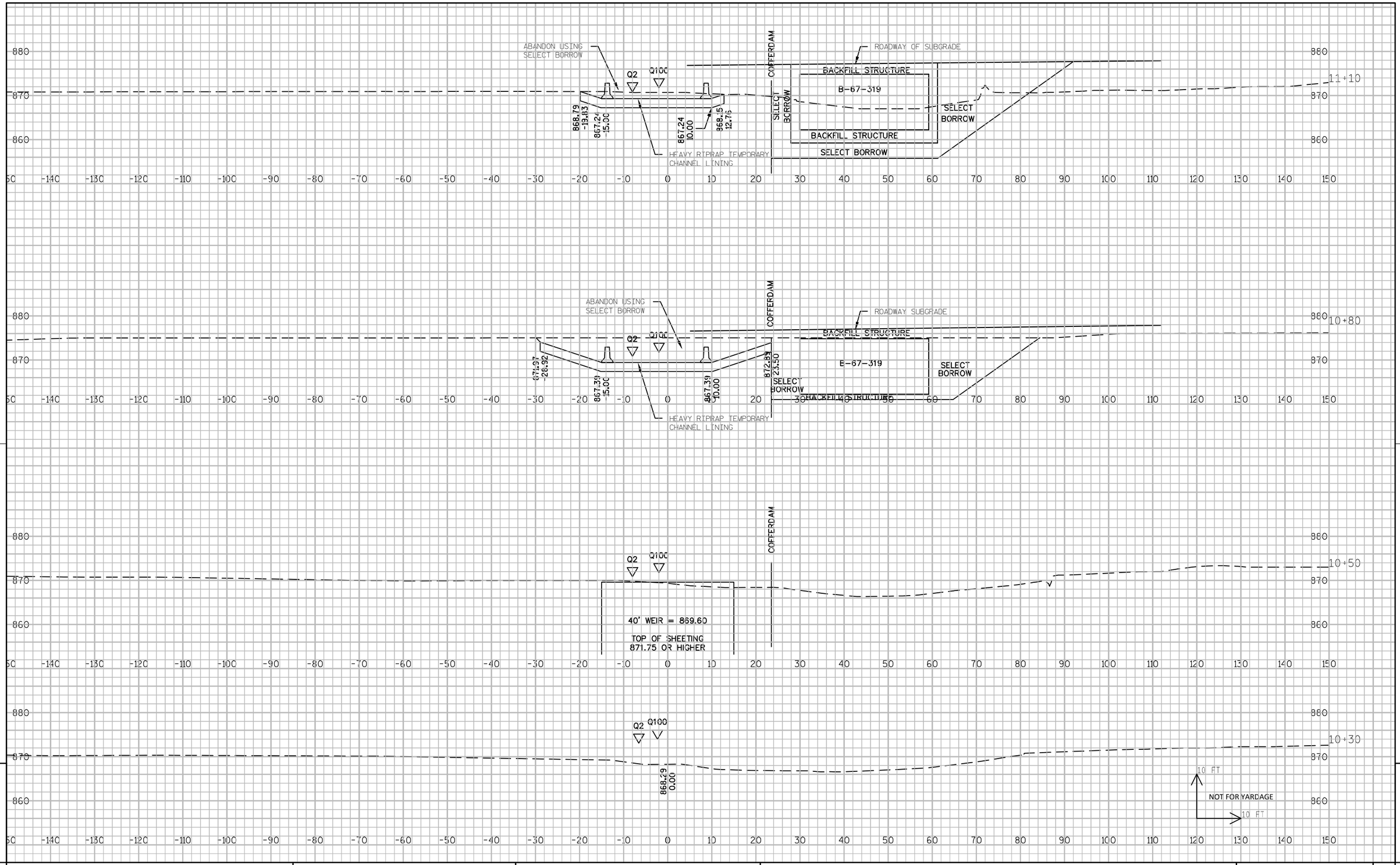


9 9

PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	CROSS SECTIONS: STA 104+45 TO 105+30.14	SHEET 94 E



PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	CROSS SECTIONS: STA 104+45 TO 105+30.14	SHEET 95 E



9

9

PROJECT NO: 2714-04-70	HWY: C.T.H. P	COUNTY: WAUKESHA	CROSS SECTIONS: BYPASS CHANNEL - STA 10+30 TO 11+10	SHEET 96	E

FILE NAME : S:\CAD PROJECTS\403-14 CTH P\PLAN SHEETS\27140470_XS_BYPASS.DWG PLOT DATE : 2/6/2014 2:48 PM PLOT BY : HMERSON PLOT NAME : ----------

WISDOT/CADDS SHEET 21

Notes

Wisconsin Department of Transportation

Dedicated people creating transportation solutions
through innovation and exceptional service.

http://www.dot.wisconsin.gov