WKE

PROJECT ID: 2810-02-71
WITH: N/A

COUNTY: WAUKESHA

MAR 13
ORDER OF SHEETS

TOTAL SHEETS = 44

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

BIG BEND DRIVE

1.2 MILES SOUTH OF BIG BEND

STH 164

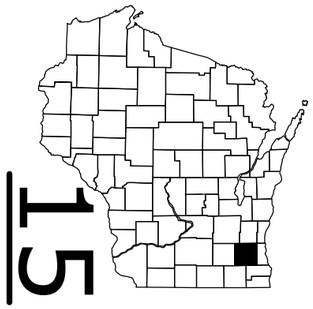
WAUKESHA COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
2810-02-71		

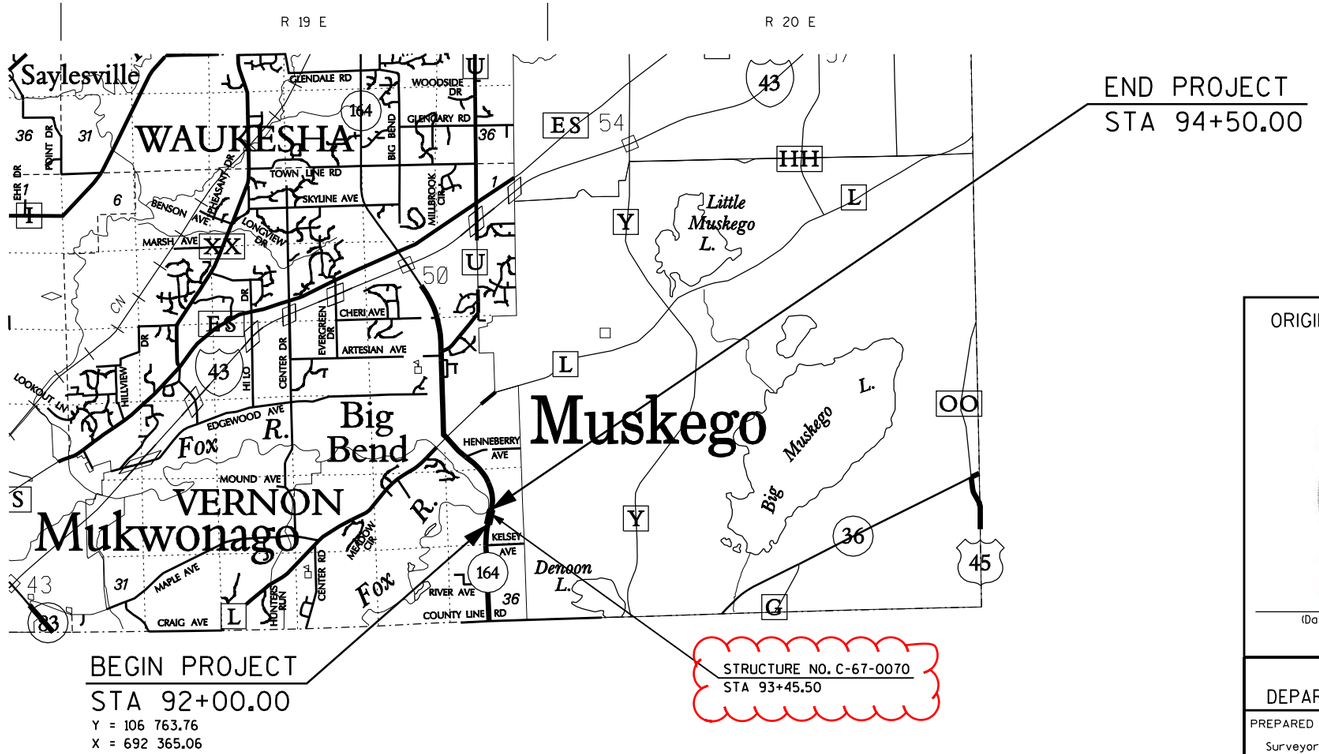
STATE PROJECT NUMBER
2810-02-71

AS-BUILT PLAN

SUPERVISOR: ANITA PUSH
PROJECT MANAGER: TRACI GENGLER
PROJECT LEADER: TONY MINTO
PRIME CONTRACTOR: PHEIFER BROS.
WORK STARTED: 5/1/13
WORK COMPLETED: 8/19/13



SUBCONTRACTOR LIST:
McGuire Inc.
Iverson Construction, LLC
Payne & Dolan, Inc.
JW Schultz Construction Co, Inc.
Mega Rentals, Inc.
JSD Professional Services, Inc.
Century Fence Company



DESIGN DESIGNATION

A.A.D.T. (2011)	=	7770
A.A.D.T. (2031)	=	9780
D.H.V. (2031)	=	
D.D.	=	59/41
T.	=	8.3%
DESIGN SPEED	=	60 MPH
ESALS	=	1,350,500

CONVENTIONAL SYMBOLS

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

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

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

LAYOUT
SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.047 MI.

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), WAUKESHA COUNTY ZONE, NAD 83 (2007).

ELEVATIONS SHOWN ON THIS PLAN AREA REFERRENCED TO THE NORTH AMERICAN VERTICAL DATUM NAVD 88 (2007).

ORIGINAL PLANS PREPARED BY

PATRICK ENGINEERING

WISCONSIN — KURT E. FEUERSTEIN — E-31446 — MILWAUKEE, WI — PROFESSIONAL ENGINEER

11/1/2012
(Date) (Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	PATRICK ENGINEERING, INC.
Designer	PATRICK ENGINEERING, INC.
Project Manager	TRACI GENGLER, P.E.
Regional Examiner	
Regional Supervisor	ANITA PUSCH
C.O. Examiner	

APPROVED FOR THE DEPARTMENT
DATE: _____ Traci Gengler (Signature)

E

FILE NAME : p:\milwaukee\projects\wisdot\21152.009\cadd\sheets\010101_ti.dgn
PLOT DATE : 11/1/2012
PLOT BY : Kurt Feuerstein (Rdwy) PLOT NAME :
PLOT SCALE : 200.0004 ' / IN.

WISDOT/CADDS SHEET 10

GENERAL NOTES

1. NO TREES AND/OR SHRUBS SHALL BE TRIMMED OR REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.

2. THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. SOME UTILITIES SHOWN MAY BE RELOCATED BEFORE THE CONTRACT BEGINS. THE CONTRACTOR IS RESPONSIBLE FOR MAKING DETERMINATIONS AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES NECESSARY TO AVIOD DAMAGE

3. THE CONTRACTOR SHALL CONTACT DIGGERS HOTLINE AND ANY UTILITIES THAT ARE NOT A MEMBER OF DIGGERS HOTLINE PRIOR TO THE START OF THE WORK.

4. DISTURBED AREA WITHIN THE PROJECT LIMITS SHALL BE RESTORED WITH SALVAGED TOPSOIL, SEED, MULCH AND FERTILIZER AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

5. DIMENSIONS GIVEN FOR EXISTING FEATURES SHALL BE CONSIDERED AS APPROXIMATE AND MEASURED IN THE FIELD FOR MATCHING PURPOSES.

6. THE EXISTING MAIL BOXES AND SIGNS SHALL REMAIN IN PLACE. THE CONTRACTOR SHALL PROTECT THEM FROM DAMAGE.

7. THE EXISTING DRIVEWAYS AND FIELD ENTRANCES WILL BE RESTORED IN KIND, EXCEPT AS NOTED OR AS DIRECTED BY THE ENGINEER.

8. TRAFFIC CONTROL DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

9. RESTORATION OF EXPOSED SLOPES AND DITCHES SHALL TAKE PLACE WITHIN THREE CALENDAR DAYS AFTER FINISHED GRADING IS COMPLETE.

UTILITIES

Lawrence Huber
ANR Pipeline Company - Gas/Petroleum
W3925 Pipeline Ln
Eden, WI 53019
(920) 477-2235 x13
lawrence_huber@transcanada.com

Jim Kostuch
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13935 Bishops Dr.
Brookfield, WI 53005
(262) 792-7938
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Steven Cramer
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1320 N Dr Martin Luthern King Dr
Milwaukee, WI 53212-4002
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steve.cramer@twcable.com

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Town of Vernon - Road Facility
W249 S8910 Center Dr
P.O. Box 309
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(262) 662-7785
dpw@townofvernon.org

Dan Sande
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(414) 221-4578
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Milwaukee, WI 53218
(414) 536-2971
KA8421@att.com

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P.O. Box 6113
De Pere, WI 54115-6113
(920) 338-6582
molsen@atcllc.com

Michael Johnson
TDS Telecom - Communication Line
20875 Cross Roads Circle, Suite 800
Waukesha, WI 53186
(262) 754-3052
Michael.Johnson@tdstelecom.com

Tom Johnson
Village of Big Bend Department of Public Works
Water
P.O. Box 130
Big Bend, WI 53103
(262) 662-4903

Dan Sande
We Energies - Gas/Petroleum
333 W Everett St, A299
Milwaukee, WI 53203
(414) 221- 4578
Dan.Sande@we-energies.com

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CRAIG.WEBSTER@WISCONSIN.GOV

TRACI GENGLER
WISDOT PROJECT MANAGER
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WAUKESHA, WI 53187
PHONE: (262) 548-8727
TRACI.GENGLER@DOT.WI.GOV

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UTILITY COORDINATOR
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WAUKESHA, WI 53187
PHONE: (262) 548-5957
PATRICK.STANKIEWICZ@DOT.WI.GOV

DIGGERS HOTLINE

Call 811 3 Work Days Before You Dig
Or Toll Free (800) 242-8511
Hearing Impaired TDD (800) 542-2289
www.DiggersHotline.com

FILE NAME : p:\milwaukee\projects\wisdot\21152.009\cadd\sheets\020101_gn.dgn PLOT DATE : 11/1/2012 3:51:41 PM PLOT BY : Kurt Feuerstein (Rdwy_Wis) Pdf_bw_HS.plt PEI_TextSub.tbl PLOT NAME : PLOT SCALE : 2.0000 sf / IN.

SCHEDULE OF LANDS AND INTERESTS REQUIRED

PARCEL NUMBER	OWNER	INTEREST REQUIRED	R/W ACRES REQUIRED			T.L.E. ACRES	P.L.E. ACRES
			NEW	EXISTING	TOTAL		
1	WAUKESHA COUNTY PARKS DEPARTMENT	P.L.E.	- - -	- - -	- - -	- - -	0.06

NOTES:

1. EXISTING ROADWAY RIGHT-OF-WAY FOR STH 164 IS BASED ON A RIGHT-OF-WAY PLAT FOR PROJECT S 0475(2)
2. COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), WAUKESHA COUNTY ZONE, NAD 83 (2007)

CURVE DATA

P. I. = 81+05.95
I = 195° 53' 43"
Δ = 15° 53' 40"
D = 1° 30'
T = 533.23'
L = 1059.63'
R = 3819.72'

CONCRETE MONUMENT W/ SEWRPC BRASS CAP
N = 104 880.74
E = 692 144.46
ELEV = 816.64

STA 93+45.89
C-67-0070, SINGLE 5'-6" X 8'-0"
REINFORCED CONCRETE BOX CULVERT
42' CLEAR ROADWAY - RT
93.5' CLEAR ROADWAY - RT
SKEW 40° LHF

SEWRPC CONCRETE MONUMENT W/ BRASS CAP
N = 107 545.76
E = 692 108.43

BEGIN PROJECT
STA 92+00.00

(1) WAUKESHA COUNTY PARKS DEPARTMENT

P.L.E., DRAINAGE FACILITIES

S 54° 41' 40" W
30'

S 35° 18' 20" E
102.48'

N 35° 18' 20" W
77.3'

N 88° 35' 28" E
504.26'

429.26'

252.55'

334.51

S 10° 54' 06" W

PI 81+05.95

PI 86+32.34

PI 87+89.43

PI 106+52.22

89+00

96+60

EXISTING R/W

50'

S 14° 40' 59" W

N 14° 40' 59" E

N 14° 40' 59" E
39.17'

STH 164 (BIG BEND DRIVE)

EXISTING R/W

EXISTING R/W

EXISTING R/W

END PROJECT
STA 94+50.00

SET REBAR
N = 106 669.86
E = 692 444.79
ELEV = 784.03

SET REBAR
N = 106 967.57
E = 692 480.55
ELEV = 786.01

SET REBAR
N = 106 661.03
E = 692 950.28
ELEV = 788.08

CAST IRON MONUMNET W/
CITY OF MUSKEGO BRASS CAP
N = 107 611.31
E = 694 772.96
ELEV = 838.62

CURVE DATA

P. I. = 106+52.24
I = 145° 28' 42"
Δ = 33° 31' 18"
D = 2° 00'
T = 862.79'
L = 1676.08'
R = 2864.79'

TOWN OF VERNON

FOX RIVER

UTILITY ROW

P.L.

NW-SE

SW-SE

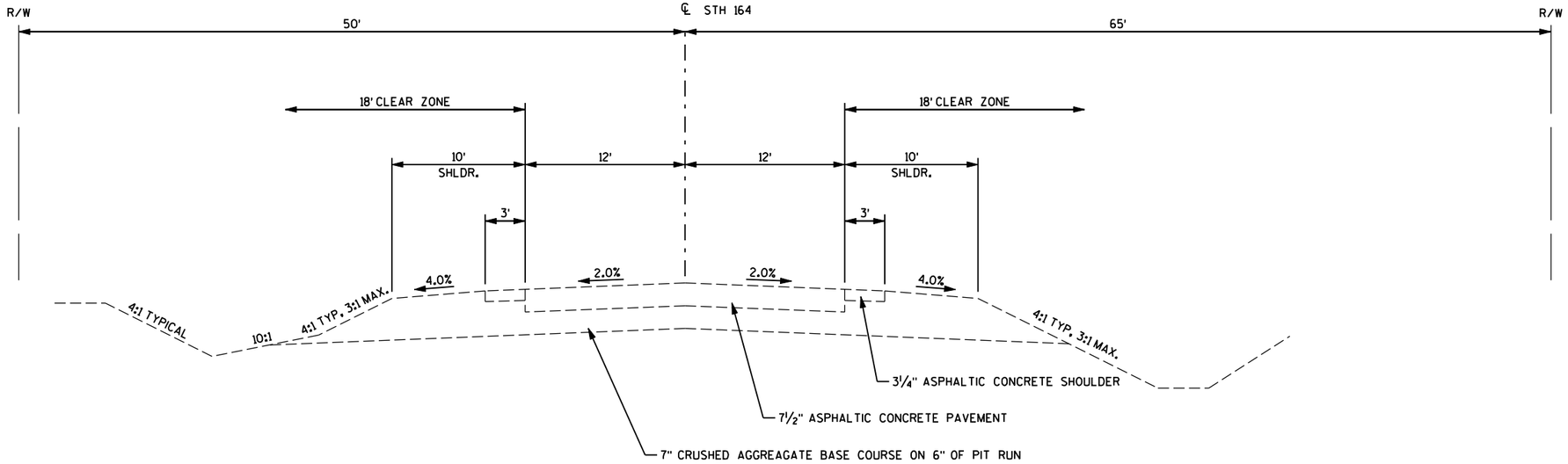
NE-SE

0 100 200 300 FEET
SCALE

PROJECT NO: 2810-02-71	HWY: STH 164	COUNTY: WAUKESHA	PROJECT OVERVIEW / ALIGNMENT PLAN	SHEET 3	E

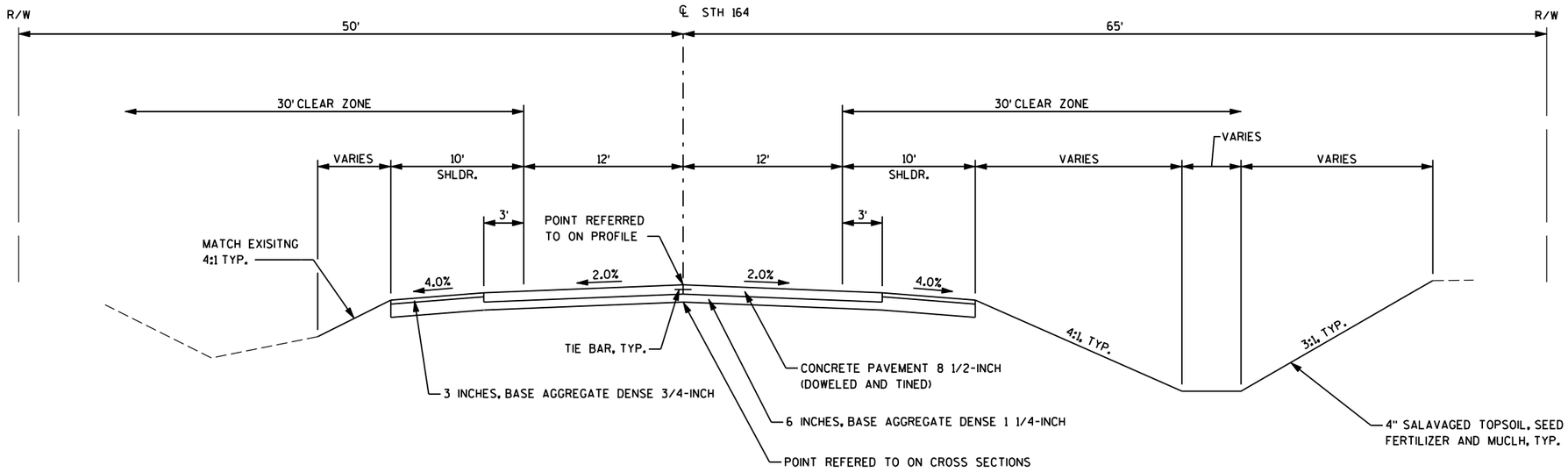
FILE NAME : p:\milwaukee\projects\wisdot\21152.009\cadd\sheets\020201_po.dgn PLOT DATE : 11/1/2012 3:52:11 PM PLOT BY : Kurt Feuerstein (Rdwy_Wis) Pdf_bw_HS.plt PEI_TextSub.tbl PLOT NAME : PLOT SCALE : 199.9996 sf / IN.

WISDOT/CADDS SHEET 42



EXISITING TYPICAL SECTION

(STA 92+00 TO STA 94+50)



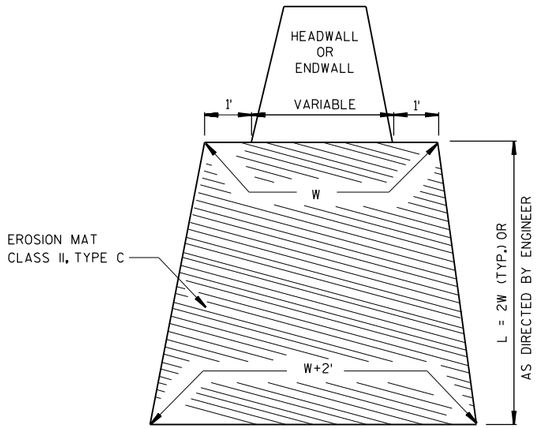
PROPOSED TYPICAL SECTION

(STA 92+00 TO STA 94+50)

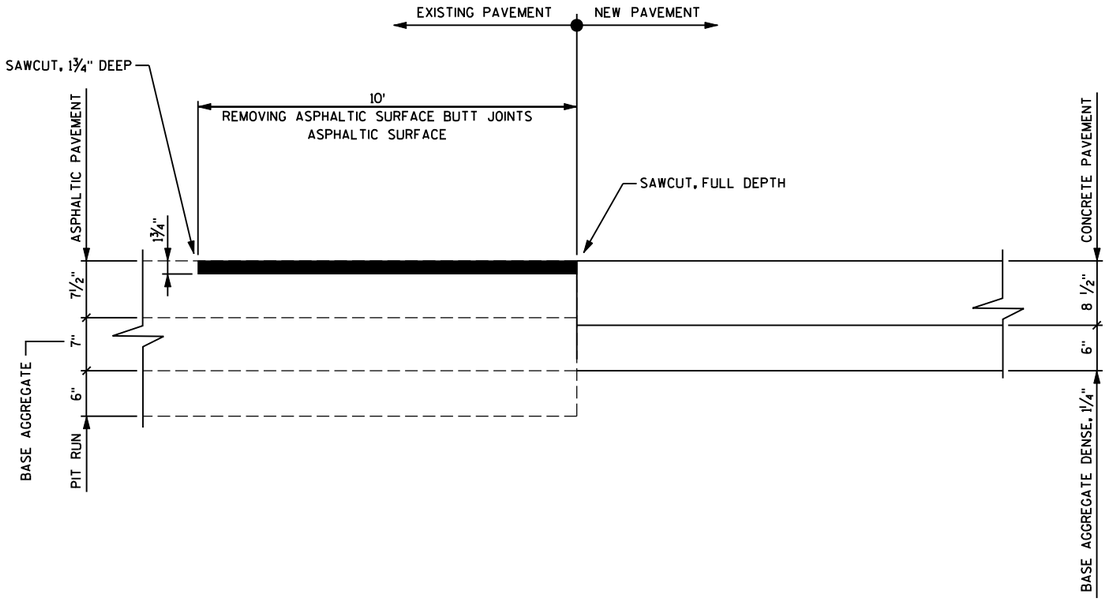
PROJECT NO: 2810-02-71	HWY: STH 164	COUNTY: WAUKESHA	TYPICAL SECTIONS	SHEET 4	E

FILE NAME : P:\Milwaukee\Projects\WisDOT\21152.009\CADD\Sheets\020301_ts.dgn
PLOT DATE : 1/17/2013 2:49:26 PM PLOT BY : Kurt Feuerstein (Rdwy_Wis)
Pdf_bw_HS.plt
PEI_TEXTSUB.TBL
PLOT NAME :
PLOT SCALE : 100.0000 sf / IN.
WISDOT/CADDS SHEET 42

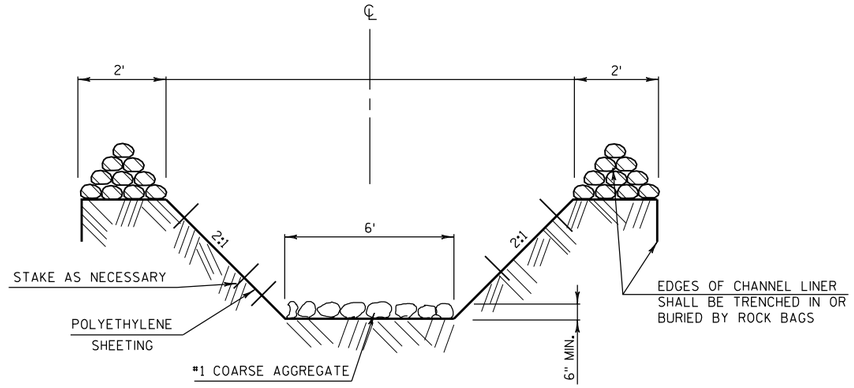
2



EROSION MAT TREATMENT AT ENDWALLS

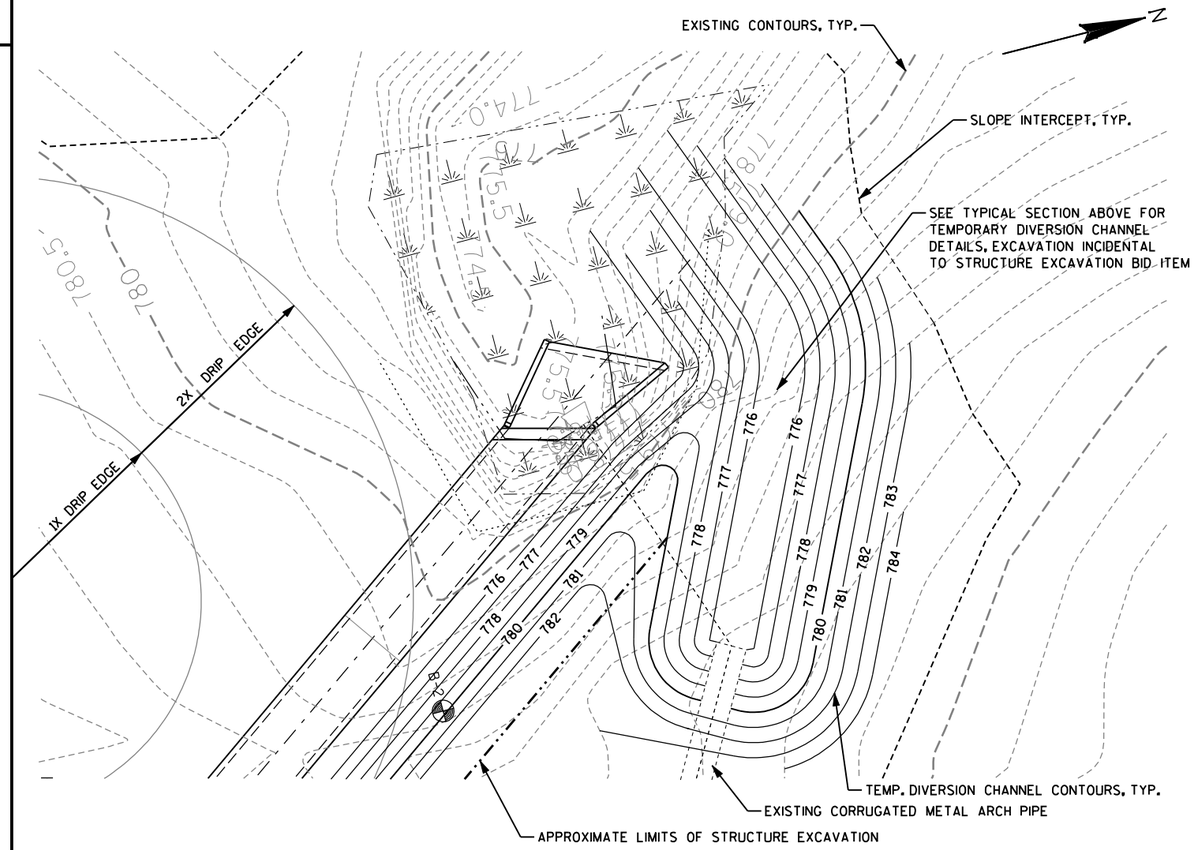


BUTT JOINT AT MATCHES



TYPICAL SECTION OF TEMPORARY DIVERSION CHANNEL (STA 94+49.66'LT)

EXCAVATION FOR TEMPORARY CHANNEL TO BE CONSIDERED
INCIDENTAL TO THE BID ITEM EXCAVATION FOR STRUCTURES



PLAN VIEW OF TEMPORARY DIVERSION CHANNEL (STA 94+49.66'LT)

PROJECT NO: 2810-02-71	HWY: STH 164	COUNTY: WAUKESHA	CONSTRUCTION DETAILS	SHEET 5	E

FILE NAME : P:\Milwaukee\Projects\WisDOT\21152.009\CADD\Sheets\021001_cd.dgn
PLOT DATE : 1/17/2013 2:57:37 PM PLOT BY : Kurt Feuerstein (Rdwy_Wis)
Pdf_bw_HS.plt
PEI_TEXTSUB.TBL
PLOT NAME :
PLOT SCALE : 40.0000 sf / IN.
WISDOT/CADDS SHEET 42

NOTES:

1. CONTRACTOR TO CLEAR AND GRUB AS NECESSARY TO CONSTRUCT PROPOSED GRADING.
2. DISTURBED AREAS SHALL BE RESTORED WITHIN THREE CALENDAR DAYS OF ROUGH GRADING.

   ALL AREAS NOT RESTORED WITH EROSION MAT SHALL BE RESTORED WITH SEED, FERTILIZER AND MULCH.

LEGEND

- EROSION MAT CLASS II, TYPE C
- SILT FENCE
- SLOPE INTERCEPT
- ROCK BAG TEMPORARY DITCH CHECK

STA 93+45.89
C-67-0070, SINGLE 5'-6" X 8'-0"
REINFORCED CONCRETE BOX CULVERT
42' CLEAR ROADWAY RT
93.5 CLEAR ROADWAY LT
SKEW 40°

WAUKESHA COUNTY PARKS & LAND USE

WAUKESHA COUNTY PARKS & LAND USE

SILT FENCE, TYP.

RIP RAP, SEE CULVERT PLANS

EXTENDED RIPRAP 55-FEET TO THE WEST

EXISTING CONTOURS, TYP.

SLOPE INTERCEPT, TYP.

END PROJECT
STA 94+50.00

EXISTING R/W

90+00 91+00 ℄ STH 164 92+00 93+00 94+00 95+00 96+00

STH 164 (BIG BEND DRIVE)

RIP RAP, SEE CULVERT PLANS

BEGIN PROJECT
STA 92+00.00

EXISTING R/W

REPLACED EROSION MAT WITH RIPRAP 70' EAST OF INLET

CROSS SECTION LIMITS

INSTALL ROCK BAG CULVERT PIPE CHECK

WETLANDS, TYP.

EXISTING SEPTIC MOUND

MANEY RANGE ENTRANCE

TSCHANZ DRIVEWAY

0 20 40 60 FEET
SCALE

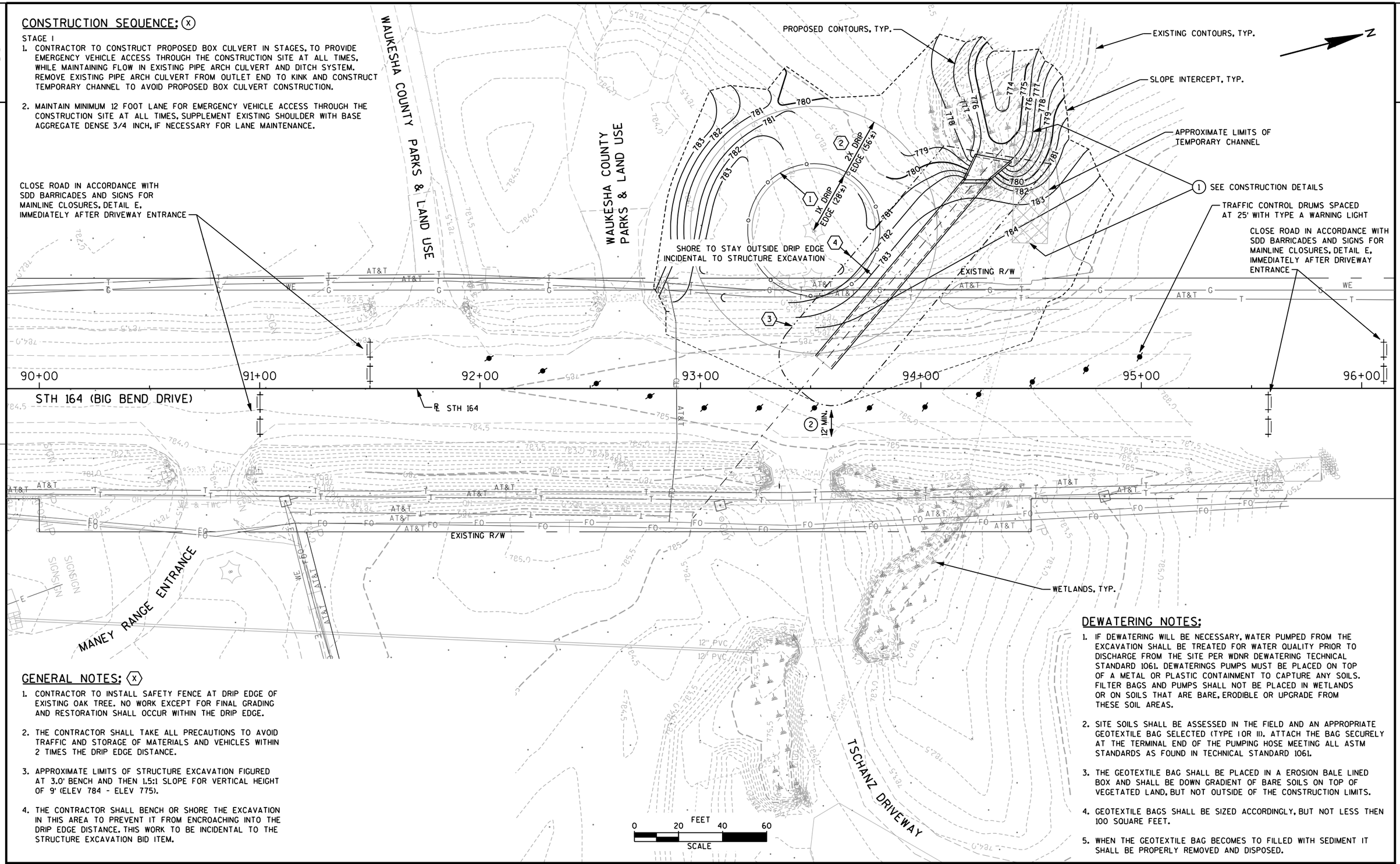
PROJECT NO: 2810-02-71	HWY: STH 164	COUNTY: WAUKESHA	EROSION CONTROL	SHEET 6	E

CONSTRUCTION SEQUENCE: (X)

STAGE I

1. CONTRACTOR TO CONSTRUCT PROPOSED BOX CULVERT IN STAGES, TO PROVIDE EMERGENCY VEHICLE ACCESS THROUGH THE CONSTRUCTION SITE AT ALL TIMES, WHILE MAINTAINING FLOW IN EXISTING PIPE ARCH CULVERT AND DITCH SYSTEM. REMOVE EXISTING PIPE ARCH CULVERT FROM OUTLET END TO KINK AND CONSTRUCT TEMPORARY CHANNEL TO AVOID PROPOSED BOX CULVERT CONSTRUCTION.

2. MAINTAIN MINIMUM 12 FOOT LANE FOR EMERGENCY VEHICLE ACCESS THROUGH THE CONSTRUCTION SITE AT ALL TIMES, SUPPLEMENT EXISTING SHOULDER WITH BASE AGGREGATE DENSE 3/4 INCH, IF NECESSARY FOR LANE MAINTENANCE.



GENERAL NOTES: (X)

1. CONTRACTOR TO INSTALL SAFETY FENCE AT DRIP EDGE OF EXISTING OAK TREE. NO WORK EXCEPT FOR FINAL GRADING AND RESTORATION SHALL OCCUR WITHIN THE DRIP EDGE.

2. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS TO AVOID TRAFFIC AND STORAGE OF MATERIALS AND VEHICLES WITHIN 2 TIMES THE DRIP EDGE DISTANCE.

3. APPROXIMATE LIMITS OF STRUCTURE EXCAVATION FIGURED AT 3.0' BENCH AND THEN 1.5:1 SLOPE FOR VERTICAL HEIGHT OF 9' (ELEV 784 - ELEV 775).

4. THE CONTRACTOR SHALL BENCH OR SHORE THE EXCAVATION IN THIS AREA TO PREVENT IT FROM ENCROACHING INTO THE DRIP EDGE DISTANCE. THIS WORK TO BE INCIDENTAL TO THE STRUCTURE EXCAVATION BID ITEM.

DEWATERING NOTES:

1. IF DEWATERING WILL BE NECESSARY, WATER PUMPED FROM THE EXCAVATION SHALL BE TREATED FOR WATER QUALITY PRIOR TO DISCHARGE FROM THE SITE PER WDNR DEWATERING TECHNICAL STANDARD 1061. DEWATERINGS PUMPS MUST BE PLACED ON TOP OF A METAL OR PLASTIC CONTAINMENT TO CAPTURE ANY SOILS. FILTER BAGS AND PUMPS SHALL NOT BE PLACED IN WETLANDS OR ON SOILS THAT ARE BARE, ERODIBLE OR UPGRADE FROM THESE SOIL AREAS.

2. SITE SOILS SHALL BE ASSESSED IN THE FIELD AND AN APPROPRIATE GEOTEXTILE BAG SELECTED (TYPE I OR II). ATTACH THE BAG SECURELY AT THE TERMINAL END OF THE PUMPING HOSE MEETING ALL ASTM STANDARDS AS FOUND IN TECHNICAL STANDARD 1061.

3. THE GEOTEXTILE BAG SHALL BE PLACED IN A EROSION BALE LINED BOX AND SHALL BE DOWN GRADIENT OF BARE SOILS ON TOP OF VEGETATED LAND, BUT NOT OUTSIDE OF THE CONSTRUCTION LIMITS.

4. GEOTEXTILE BAGS SHALL BE SIZED ACCORDINGLY, BUT NOT LESS THEN 100 SQUARE FEET.

5. WHEN THE GEOTEXTILE BAG BECOMES TO FILLED WITH SEDIMENT IT SHALL BE PROPERLY REMOVED AND DISPOSED.

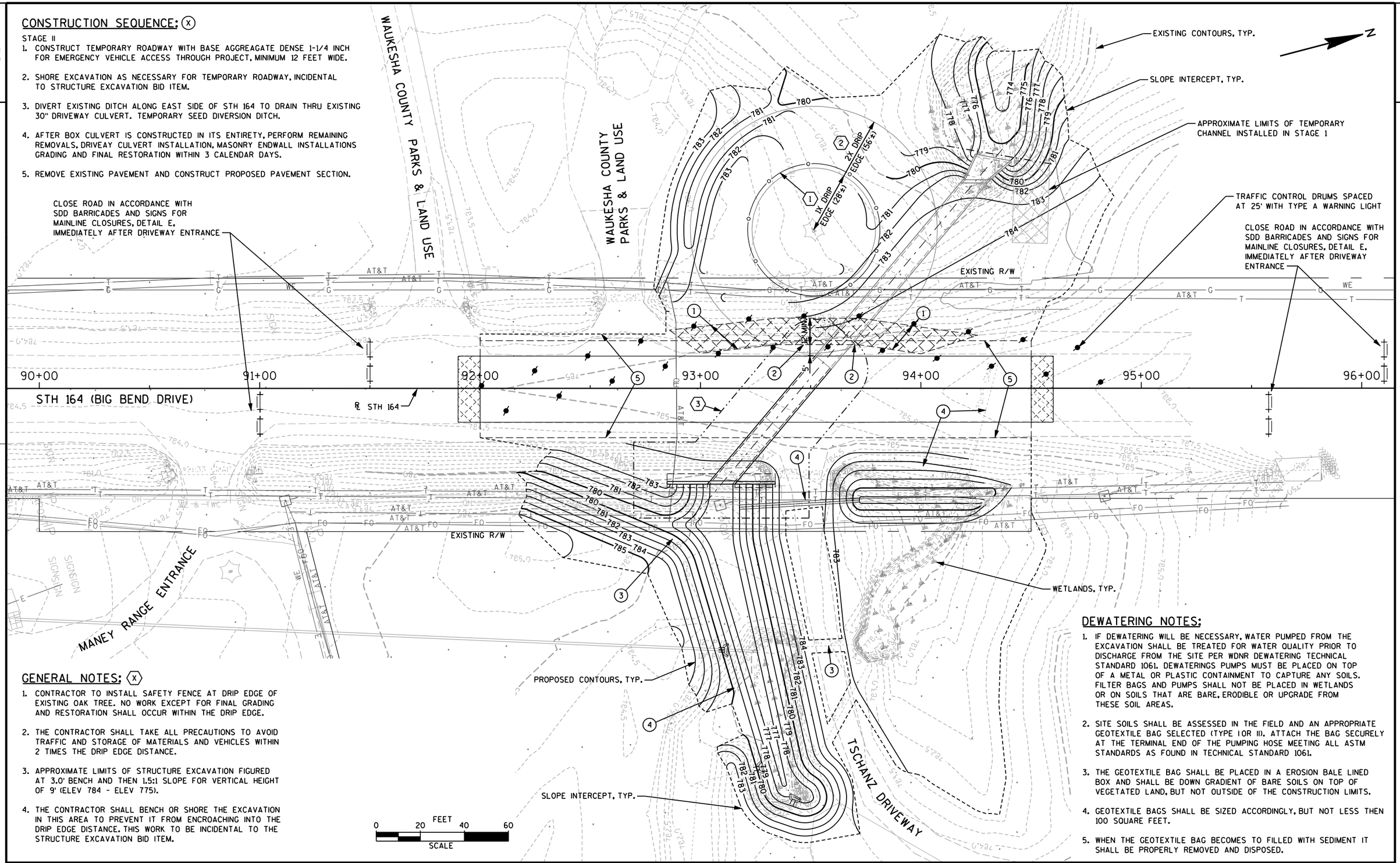
PROJECT NO: 2810-02-71	HWY: STH 164	COUNTY: WAUKESHA	CONSTRUCTION SEQUENCE - STAGE I	SHEET 7	E

FILE NAME : p:\milwaukee\projects\wisdot\21152.009\cadd\sheets\026001_s1.dgn PLOT DATE : 11/1/2012 3:52:27 PM PLOT BY : Kurt Feuerstein (Rdwy_Wis) Pdf_bw_HS.plt PEI_TextSub.tbl PLOT NAME : PLOT SCALE : 39.9999 sf / IN.

CONSTRUCTION SEQUENCE: (X)

STAGE II

1. CONSTRUCT TEMPORARY ROADWAY WITH BASE AGGREAGATE DENSE 1-1/4 INCH FOR EMERGENCY VEHICLE ACCESS THROUGH PROJECT, MINIMUM 12 FEET WIDE.
2. SHORE EXCAVATION AS NECESSARY FOR TEMPORARY ROADWAY, INCIDENTAL TO STRUCTURE EXCAVATION BID ITEM.
3. DIVERT EXISTING DITCH ALONG EAST SIDE OF STH 164 TO DRAIN THRU EXISTING 30" DRIVEWAY CULVERT. TEMPORARY SEED DIVERSION DITCH.
4. AFTER BOX CULVERT IS CONSTRUCTED IN ITS ENTIRETY, PERFORM REMAINING REMOVALS, DRIVEWAY CULVERT INSTALLATION, MASONRY ENDWALL INSTALLATIONS GRADING AND FINAL RESTORATION WITHIN 3 CALENDAR DAYS.
5. REMOVE EXISTING PAVEMENT AND CONSTRUCT PROPOSED PAVEMENT SECTION.



GENERAL NOTES: (X)

1. CONTRACTOR TO INSTALL SAFETY FENCE AT DRIP EDGE OF EXISTING OAK TREE. NO WORK EXCEPT FOR FINAL GRADING AND RESTORATION SHALL OCCUR WITHIN THE DRIP EDGE.
2. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS TO AVOID TRAFFIC AND STORAGE OF MATERIALS AND VEHICLES WITHIN 2 TIMES THE DRIP EDGE DISTANCE.
3. APPROXIMATE LIMITS OF STRUCTURE EXCAVATION FIGURED AT 3.0' BENCH AND THEN 1.5:1 SLOPE FOR VERTICAL HEIGHT OF 9' (ELEV 784 - ELEV 775).
4. THE CONTRACTOR SHALL BENCH OR SHORE THE EXCAVATION IN THIS AREA TO PREVENT IT FROM ENCROACHING INTO THE DRIP EDGE DISTANCE. THIS WORK TO BE INCIDENTAL TO THE STRUCTURE EXCAVATION BID ITEM.

DEWATERING NOTES:

1. IF DEWATERING WILL BE NECESSARY, WATER PUMPED FROM THE EXCAVATION SHALL BE TREATED FOR WATER QUALITY PRIOR TO DISCHARGE FROM THE SITE PER WDNR DEWATERING TECHNICAL STANDARD 1061. DEWATERINGS PUMPS MUST BE PLACED ON TOP OF A METAL OR PLASTIC CONTAINMENT TO CAPTURE ANY SOILS. FILTER BAGS AND PUMPS SHALL NOT BE PLACED IN WETLANDS OR ON SOILS THAT ARE BARE, ERODIBLE OR UPGRADE FROM THESE SOIL AREAS.
2. SITE SOILS SHALL BE ASSESSED IN THE FIELD AND AN APPROPRIATE GEOTEXTILE BAG SELECTED (TYPE I OR II). ATTACH THE BAG SECURELY AT THE TERMINAL END OF THE PUMPING HOSE MEETING ALL ASTM STANDARDS AS FOUND IN TECHNICAL STANDARD 1061.
3. THE GEOTEXTILE BAG SHALL BE PLACED IN A EROSION BALE LINED BOX AND SHALL BE DOWN GRADIENT OF BARE SOILS ON TOP OF VEGETATED LAND, BUT NOT OUTSIDE OF THE CONSTRUCTION LIMITS.
4. GEOTEXTILE BAGS SHALL BE SIZED ACCORDINGLY, BUT NOT LESS THEN 100 SQUARE FEET.
5. WHEN THE GEOTEXTILE BAG BECOMES TO FILLED WITH SEDIMENT IT SHALL BE PROPERLY REMOVED AND DISPOSED.

PROJECT NO: 2810-02-71	HWY: STH 164	COUNTY: WAUKESHA	CONSTRUCTION SEQUENCE - STAGE II	SHEET 8	E

FILE NAME : p:\milwaukee\projects\wisdot\21152.009\cadd\sheets\026001_s2.dgn PLOT DATE : 11/1/2012 3:52:31 PM PLOT BY : Kurt Feuerstein (Rdwy_Wis) PLOT NAME : PLOT SCALE : 39.9999 sf / IN.
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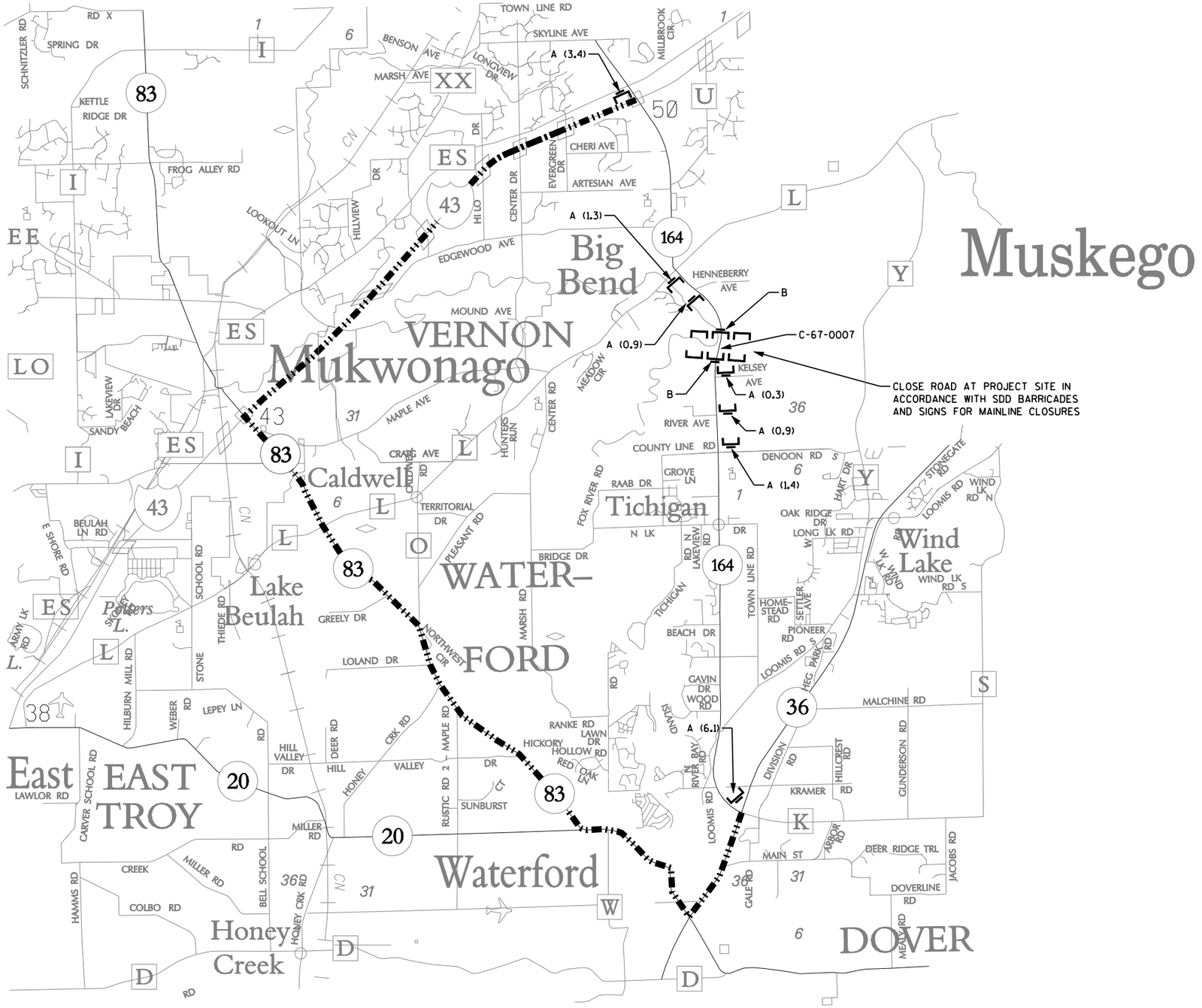
PEI_TextSub.tbl
WISDOT/CADDS SHEET 42



WIS 164

19.4 MILE DETOUR
WIS 83 TO US 43

TRAFFIC CONTROL LEGEND

- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- DETOUR ROUTE SIGNED AND MAINTAINED UNDER PROJECT I.D. 2810-04-70

A(X) =

BRIDGE OUT
XX MILES AHEAD
LOCAL TRAFFIC ONLY

R11-3B
60" X 30"

B =

BRIDGE OUT

R11-2B
48" X 30"

TRAFFIC CONTROL NOTES

1. THE CONTRACTOR SHALL COORDINATE THEIR WORK WITH PROJECT I.D. 2810-04-70 AND PROJECT I.D. 2810-06-70.
2. ALL WORK SHALL BE PERFORMED WHILE THE DETOUR IS IN EFFECT FOR PROJECT I.D. 2810-04-70 AND PROJECT I.D. 2810-06-70.
3. THE EXACT NUMBER, LOCATION AND SPACING OFF ALL TRAFFIC CONTROL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
4. TYPE III BARRICADES SHALL HAVE TWO, TWO-WAY TYPE "A" WARNING LIGHTS ON EACH BARRIER.
5. ALL SIGNS TO BE PROVIDED BY THE CONTRACTOR.

PROJECT NO: 2810-02-71	HWY: STH 164	COUNTY: WAUKESHA	DETOUR ROUTE AND TRAFFIC CONTROL	SHEET 9	E

FILE NAME : p:\milwaukee\projects\wisdot\21152.009\cadd\sheets\027001_dt.dgn PLOT DATE : 11/1/2012 3:52:36 PM PLOT BY : Kurt Feuerstein (Rdwy_Wis) Pdf_bw_HS.plt PEI_TextSub.tbl PLOT NAME : PLOT SCALE : 7999.9840 sf / IN.
WISDOT/CADDS SHEET 42

DATE 22JAN13 — 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	2810-02-71 QUANTITY
0010	201.0120	CLEARING	ID	1.000	1.000
0020	201.0220	GRUBBING	ID	1.000	1.000
0030	203.0100	REMOVING SMALL PIPE CULVERTS	EACH	5.000	5.000
0040	203.0200	REMOVING OLD STRUCTURE (STATION) 01. 94+31.91	LS	1.000	1.000
0050	204.0115	REMOVING ASPHALTIC SURFACE BUTT JOINTS	SY	68.000	68.000
0060	204.0185	REMOVING MASONRY	CY	20.000	20.000
0070	205.0100	EXCAVATION COMMON	CY	1,766.900	1,766.900
0080	206.2000	EXCAVATION FOR STRUCTURES CULVERTS (STRUCTURE) 01. C-67-0070	LS	1.000	1.000
0090	209.0100	BACKFILL GRANULAR	CY	154.000	154.000
0100	209.0300.S	BACKFILL COARSE AGGREGATE (SIZE) 01. NO. 1	CY	25.000	25.000
0110	210.0100	BACKFILL STRUCTURE	CY	920.000	920.000
0120	213.0100	FINISHING ROADWAY (PROJECT) 01. 2810-02-71	EACH	1.000	1.000
0130	305.0110	BASE AGGREGATE DENSE 3/4-INCH	TON	145.000	145.000
0140	305.0120	BASE AGGREGATE DENSE 1 1/4-INCH	TON	710.000	710.000
0150	311.0115	BREAKER RUN	CY	60.000	60.000
0160	415.0085	CONCRETE PAVEMENT 8 1/2-INCH	SY	834.000	834.000
0170	440.4410.S	INCENTIVE IRI RIDE	DOL	188.000	188.000
0180	465.0105	ASPHALTIC SURFACE	TON	6.500	6.500
0190	504.0100	CONCRETE MASONRY CULVERTS	CY	190.000	190.000
0200	504.0900	CONCRETE MASONRY ENDWALLS	CY	2.700	2.700
0210	505.0410	BAR STEEL REINFORCEMENT HS CULVERTS	LB	26,500.000	26,500.000
0220	516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	85.000	85.000
0230	521.0124	CULVERT PIPE CORRUGATED STEEL 24-INCH	LF	54.500	54.500
0240	521.1024	APRON ENDWALLS FOR CULVERT PIPE STEEL 24-INCH	EACH	2.000	2.000
0250	606.0200	RIPRAP MEDIUM	CY	65.000	65.000
0260	612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	40.000	40.000
0270	616.0700.S	FENCE SAFETY	LF	400.000	400.000
0280	619.1000	MOBILIZATION	EACH	1.000	1.000
0290	625.0500	SALVAGED TOPSOIL	SY	7,045.000	7,045.000
0300	627.0200	MULCHING	SY	6,595.000	6,595.000
0310	628.1104	EROSION BALES	EACH	20.000	20.000
0320	628.1504	SILT FENCE	LF	388.000	388.000
0330	628.1520	SILT FENCE MAINTENANCE	LF	388.000	388.000
0340	628.1905	MOBILIZATIONS EROSION CONTROL	EACH	8.000	8.000
0350	628.1910	MOBILIZATIONS EMERGENCY EROSION CONTROL	EACH	4.000	4.000
0360	628.2027	EROSION MAT CLASS II TYPE C	SY	458.000	458.000
0370	628.5505	POLYETHYLENE SHEETING	SY	1,060.000	1,060.000
0380	628.7555	CULVERT PIPE CHECKS	EACH	150.000	150.000
0390	629.0205	FERTILIZER TYPE A	CWT	4.850	4.850
0400	630.0130	SEEDING MIXTURE NO. 30	LB	136.110	136.110
0410	630.0200	SEEDING TEMPORARY	LB	9.000	9.000
0420	643.0100	TRAFFIC CONTROL (PROJECT) 01. 2810-02-71	EACH	1.000	1.000
0430	643.0300	TRAFFIC CONTROL DRUMS	DAY	2,520.000	2,520.000
0440	643.0420	TRAFFIC CONTROL BARRICADES TYPE III	DAY	1,755.000	1,755.000
0450	643.0705	TRAFFIC CONTROL WARNING LIGHTS TYPE A	DAY	6,030.000	6,030.000
0460	643.0900	TRAFFIC CONTROL SIGNS	DAY	1,755.000	1,755.000
0470	645.0105	GEOTEXTILE FABRIC TYPE C	SY	370.000	370.000
0480	645.0120	GEOTEXTILE FABRIC TYPE HR	SY	125.000	125.000
0490	646.0106	PAVEMENT MARKING EPOXY 4-INCH	LF	1,000.000	1,000.000
0500	650.4500	CONSTRUCTION STAKING SUBGRADE	LF	250.000	250.000

3

DATE 22JAN13 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	2810-02-71 QUANTITY
0510	650.6000	CONSTRUCTION STAKING PIPE CULVERTS	EACH	1.000	1.000
0520	650.6500	CONSTRUCTION STAKING STRUCTURE LAYOUT (STRUCTURE) 01. C-67-0070	LS	1.000	1.000
0530	650.7000	CONSTRUCTION STAKING CONCRETE PAVEMENT	LF	250.000	250.000
0540	650.9920	CONSTRUCTION STAKING SLOPE STAKES	LF	250.000	250.000
0550	690.0150	SAWING ASPHALT	LF	120.000	120.000
0560	715.0415	INCENTIVE STRENGTH CONCRETE PAVEMENT	DOL	500.000	500.000
0570	715.0502	INCENTIVE STRENGTH CONCRETE STRUCTURES	DOL	1,140.000	1,140.000

3

LOCATION	201.0120 CLEARING I.D.	201.0220 GRUBBING I.D.
2810-02-71	1	1
TOTAL	1	1

209.0100
BACKFILL GRANULAR

LOCATION	CY
EXISTING CULVERT REMOVAL UNDER ROADWAY	100
93+46 - 41' RT	18
93+58 - 117' RT	22
93+61 - 152' RT	14
TOTAL	154

EARTHWORK SUMMARY

LOCATION	COMMON EXCAVATION CY	25% EXPANDED FILL CY	WASTE CY
STA 92+00 TO STA 94+50	470.83	0	470.83
NORTH DITCH AREA	65	542	0
CULVERT INLET AREA	995.2	168.9	826.3
CULVERT OUTLET AREA	235.9	486.3	0
EXISTING CULVERT REMOVAL OUTSIDE OF PAVEMENT	0	150	0
PROJECT	1766.9	1347.2	419.73

REMOVAL ITEMS

LOCATION	OFFSET	203.0100 REMOVING SMALL PIPE CULVERTS EACH	204.0115 REMOVING ASPHALTIC SURFACE BUTT JOINTS SY	204.0185 REMOVING MASONRY CY
BEGIN PROJECT	LT & RT		34	
93+18	119' RT	1 - TWIN 12" PVC		
93+29	172' RT	1 - 12" CMCP		
93+46	41' RT	1 - 49" x 33" CMAP		10
93+58	117' RT	1 - 30" CMCP		10
93+61	152' RT	1 - 18" CMCP		
END PROJECT	LT & RT		34	
PROJECT TOTAL		5	68	20

STATION	CUT END AREA (SY)	CUT VOLUME (CY)	CUMLATIVE CUT VOLUME (CY)	FILL END AREA (CY)	25% EXPANDED FILL VOLUME (CY)	25% EXPANDED FILL CUMLATIVE VOLUME (CY)
92+00	5.8			0		
		96.67	96.67		0.00	0.00
92+50	5.8			0		
		91.67	188.33		0.00	0.00
93+00	5.2			0		
		90.00	278.33		0.00	0.00
93+50	5.6			0		
		95.00	373.33		0.00	0.00
94+00	5.8			0		
		97.50	470.83		0.00	0.00
94+50	5.9			0		
		END	470.83		END	0.00

305.0115
BASE AGGREGATE DENSE 3/4 INCH

STATION	TO	STATION	LOCATION	TON
92+00		94+50	SHOULDER	70
92+50		94+50	EMERGENCY ACCESS STAGE I	75
TOTAL				145

305.0120
BASE AGGREGATE DENSE 1-1/4 INCH

STATION	TO	STATION		TON
92+00		94+50		600
92+80		94+26	EMERGENCY ACCESS STAGE II	110
TOTAL				710

CONCRETE ITEMS

415.0085
CONCRETE PAVEMENT
8 1/2-INCH

LOCATION	SY
STA 92+00 TO STA 94+50	834
TOTAL	834

CULVERT AND STORM SEWER ITEMS

LOCATON	OFFSET	521.0124 CULVERT PIPE CORRUGATED STEEL 24-INCH LF	521.1024 APRON ENDWALLS FOR CULVERT PIPE STEEL 24-INCH EA	504.0900 CONCRETE MASONRY ENDWALLS CY
93+10.9	118.7' RT			0.9
93+26.7	172.2' RT			0.9
93+42.3	186.6' RT			0.9
93+44.8	52.3' RT	54.5	2	
PROJECT TOTAL		54.5	2	2.7

PROJECT NO: 2810-02-71	HWY: STH 164	COUNTY: WAUKESHA	MISCELLANEOUS QUANTITIES	SHEET 12	E

3

465.0105
ASPHALTIC SURFACE

STATION	TO	STATION	LOCATION	TON
91+90		92+00	PAVEMENT MATCH	3.25
94+50		94+60	PAVEMENT MATCH	3.25
TOTAL				6.50

EROSION CONTROL

LOCATION	OFFSET	209.0300.S BACKFILL COARSE AGGREGATE SIZE NO. 1 CY	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF	628.1104 EROSION BALES EACH	628.1905 MOBILIZATIONS EROSION CONTROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH	628.5505 POLYETHYLENE SHEETING SY	628.7555 CULVERT PIPE CHECKS EACH
PROJECT						8	4		
TEMPORARY CHANNEL	LT	20						850	
91+96	LT		60	60					
93+04 TO 95+00	LT		250	250					
93+51	140' LT								30
94+18.3	52.1' RT								30
94+44	158' LT								60
UNDISTRIBUTED (25%)		5	78	78	20			210	30
PROJECT TOTAL		25	388	388	20	8	4	1060	150

3

RESTORATION ITEMS

LOCATION	OFFSET	625.0500 SALVAGED TOPSOIL SY	627.0200 MULCHING SY	628.2027 EROSION MAT CLASS II TYPE C SY	629.0205 FERTILIZER TYPE A CWT	630.0130 SEEDING MIXTURE NO. 30 LB	630.0200 SEEDING TEMPORARY LB
92+82.8	40.5' LT			2.4	0.01	0.05	
92+00 TO 93+50	RT	360		360.0	0.23	7.0	
93+72.1	50.7' RT			3.6	0.01	0.06	
STAGE II DITCH DIVERSION	RT						7
92+00 TO 94+50	LT	2511	2511		1.6	46.0	
92+00 TO 94+50	RT	2765	2765		2.0	56.0	
UNDISTRIBUTED (25%)		1409	1319	92.0	1.00	27.0	2
PROJECT TOTAL		7045	6595	458.0	4.85	136.11	9

TRAFFIC CONTROL

LOCATION	643.0300 DRUMS DAYS	643.0420 TYPE III BARRICADES DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.0900 SIGNS DAYS
ADVANCE WARNING		819	1638	819
ROAD CLOSURE AT CULVERT		936	1872	936
STAGE I	840		840	
STAGE II	1680		1680	
TOTAL	2520	1755	6030	1755

PAVEMENT MARKINGS

LOCATION	646.0106 PAVEMENT MARKING EPOXY, 4-INCH LF
CENTERLINE	500.0
EDGE LINE	500.0
TOTAL	1000.0

616.0700.S
FENCE SAFETY

LOCATION	LF
AT OAK TREE DRIP LINE	400
TOTAL	400

SURVEY ITEMS

LOCATION	650.4500 CONSTRUCTION STAKING SUBGRADE LF	650.6000 CONSTRUCTION STAKING PIPE CULVERTS EACH	650.6500 CONSTRUCTION STAKING STRUCTURE LAYOUT C-67-0070 LS	650.7000 CONSTRUCTION STAKING CONCRETE PAVEMENT LF	650.992 CONSTRUCTION STAKING SLOPE STAKES LF
93+44.8	0	1	0	0	
92+00 TO 94+50	250	0	1	250	250
TOTAL	250	1	1	250	250

690.0150
SAWING ASPHALT

LOCATION	LF
91+90	30
92+00	30
94+50	30
94+60	30
TOTAL	120

STA 93+45.89
C-67-0070 SINGLE 5'-6" X 8'-0"
REINFORCED CONCRETE BOX CULVERT
42' CLEAR ROADWAY - RT
93.5' CLEAR ROADWAY - LT
SKEW 40° LHF

SLOPE INTERCEPT, TYP.

STA 94+31.91
REMOVING OLD STRUCTURE
45" X 73" CORRUGATED METAL
ARCH CULVERT

EXISTING R/W

SAWCUT AND MATCH EXISTING

10' ASPHALT BUTT JOINT SEE CONSTRUCTION DETAILS

STH 164 (BIG BEND DR)

℄ STH 164

	91+00	92+00	93+00	94+00	95+00	96+00
7'		784.66	784.85	785.16	785.57	786.09	786.72
15'		784.96	785.15	785.46	785.87	786.39	787.02
15'		784.66	784.85	785.16	785.57	786.09	786.72
7'							

CAUTION

BEGIN PROJECT
I.D. 2810-02-71
STA 92+00.00
Y = 106 763.76
X = 692 365.06

END PROJECT
I.D. 2810-02-71
STA 94+50.00

240.00' V.C.
K = 229

VPC STA 92+05.00
VPC ELEV 784.98

VPI STA 92+00.00
VPI ELEV 784.96

VPI STA 93+25.00
VPI ELEV 785.34

VPT STA 94+45.00
VPT ELEV 786.95

VPI STA 94+50.00
VPI ELEV 787.02

FINISHED PROFILE AT ℄

0.30% 1.35%

EXISTING GROUND AT ℄

EXISTING GROUND ELEVATIONS AT ℄

FINISHED PROFILE ELEVATIONS AT ℄

	784.67	784.73	784.85	784.96	785.12	785.32	785.76	786.37	787.02	787.87
				784.96	**785.15**	**785.46**	**785.87**	**786.39**	**787.02**	

796 792 788 784 780 776 772 768

91+00 92+00 93+00 94+00 95+00

PROJECT NO: 2810-02-71	HWY: STH 164	COUNTY: WAUKESHA	PLAN & PROFILE	SHEET	E

FILE NAME : p:\milwaukee\projects\wisdot\21152.009\cadd\sheets\050101_pp.dgn PLOT DATE : 11/1/2012 3:52:52 PM PLOT BY : Kurt Feuerstein (Rdwy_Wis) Pdf_bw_HS.plt PEI_TextSub.tbl PLOT NAME : PLOT SCALE : 39.9999 sf / IN.
WISDOT/CADDS SHEET 30

NOTES:

1. CONTRACTOR TO CLEAR AND GRUB AS NECESSARY TO CONSTRUCT PROPOSED GRADING.
2. DISTURBED AREAS SHALL BE RESTORED WITHIN THREE CALENDAR DAYS OF ROUGH GRADING.
3. ALL AREAS NOT RESTORED WITH EROSION MAT SHALL BE RESTORED WITH SEED, FERTILIZER AND MULCH.

3-EX. 8" CLAY DRAIN TILE PIPES
CONNECTED INTO BOX WITH
10" PVC PIPE & FITTINGS
10 PVC INV ELEV = 778.20
(SEE STRUCTURE PLANS FOR LOCATION)

WAUKESHA COUNTY PARKS & LAND USE

WAUKESHA COUNTY PARKS & LAND USE

STA 93+45.89
C-67-0070, SINGLE 5'-6" X 8'-0"
REINFORCED CONCRETE BOX CULVERT
42' CLEAR ROADWAY RT
93.5 CLEAR ROADWAY LT
SKEW 40°

N

EXISTING CONTOURS, TYP.

SLOPE INTERCEPT, TYP.

STA 94+31.91
REMOVING OLD STRUCTURE
45" X 73" CORRUGATED METAL
ARCH CULVERT

END PROJECT
STA 94+50.00

CROSS SECTION LIMITS

1X DRIP EDGE

2X DRIP EDGE

EXISTING R/W

5

90+00 91+00 ℄ STH 164 92+00 93+00 94+00 95+00 96+00

STH 164 (BIG BEND DRIVE)

REMOVE SMALLL PIPE CULVERT (49"x33" CMAP)

24" CSCP WITH APRON ENDWALLS
ESTIMATED LENGTH = 54.5'

EXISTING R/W

BEGIN PROJECT
STA 92+00.00

REMOVE CONCRETE HEADWALL, PAID FOR UNDER REMOVING MASONRY

MANEY RANGE ENTRANCE

PROPOSED CONTOURS, TYP.

REMOVE SMALL PIPE CULVERT, FROM END TO PROPOSED HEADWALL (TWIN 12" PVC)

SLOPE INTERCEPT, TYP.

REMOVE SMALL PIPE CULVERT, FROM END TO PROPOSED HEADWALL (12" CMCP)

CROSS SECTION LIMITS

WETLANDS, TYP.

72.0 L.F. - 6" DRAIN TILE
TIED IN TO EXISTING

REMOVE CONCRETE HEADWALL, PAID FOR UNDER REMOVING MASONRY

REMOVE SMALL PIPE CULVERT (30" CMCP)

TSCHANZ DRIVEWAY

REMOVE SMALL PIPE CULVERT, FROM END TO PROPOSED HEADWALL (18" CMCP)

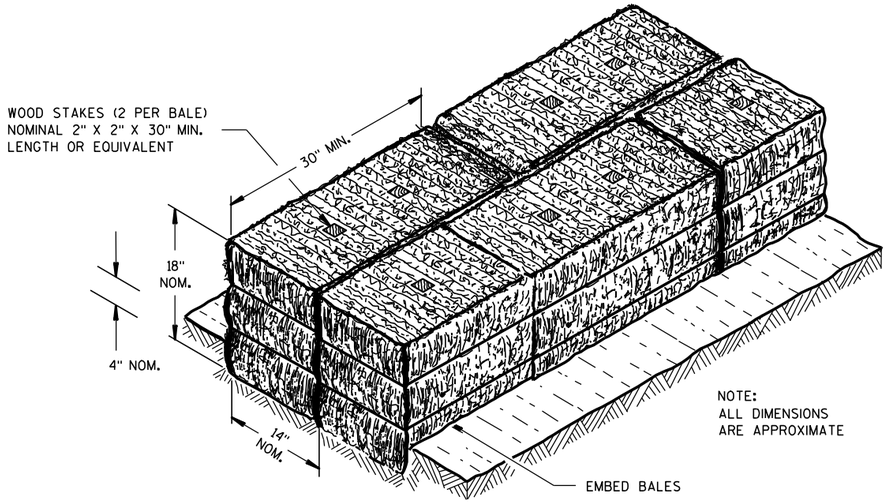
EXISTING SEPTIC MOUND

0 20 40 60 FEET
SCALE

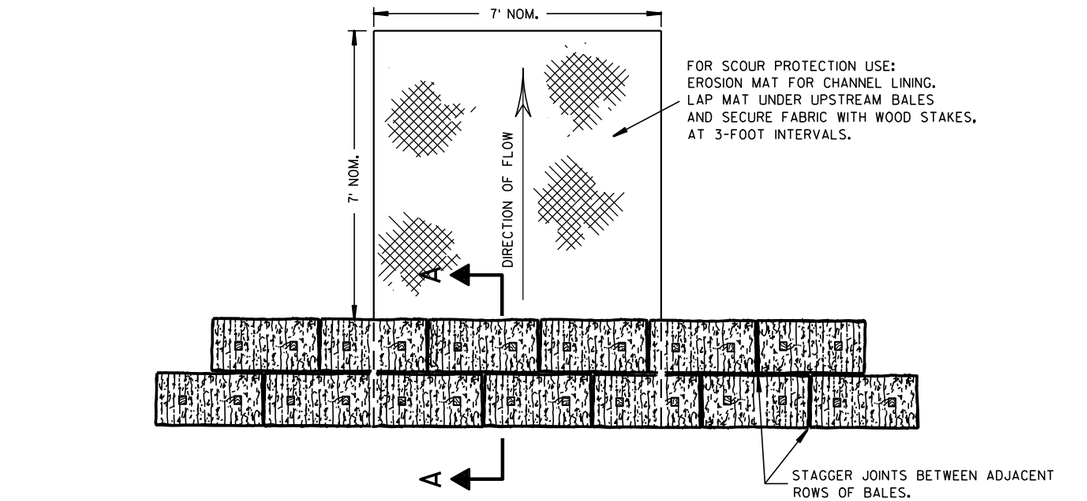
PROJECT NO: 2810-02-71	HWY: STH 164	COUNTY: WAUKESHA	PLAN AND CONTOURS	SHEET 15	E

Standard Detail Drawing List

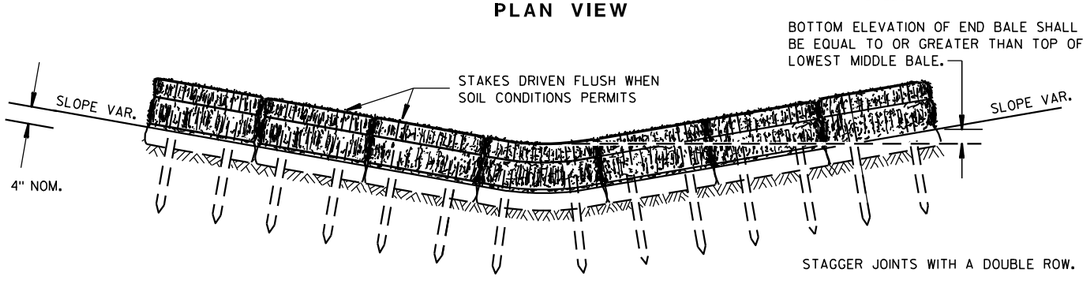
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F05-01	CLASS "B" BEDDING FOR CULVERT PIPE OR STORM SEWER
08F10-01	CONCRETE MASONRY ENDWALLS FOR CULVERT PIPE AND PIPE ARCH
12A03-10	NAME PLATE (STRUCTURES)
13C01-15	CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES
13C11-10A	RURAL DOWELED CONCRETE PAVEMENT
13C11-10B	RURAL DOWELED CONCRETE PAVEMENT
13C18-01A	CONCRETE PAVEMENT JOINTING
13C18-01B	CONCRETE PAVEMENT STEEL REINFORCEMENT
13C18-01C	CONCRETE PAVEMENT JOINT TIES
13C18-01D	CONCRETE PAVEMENT JOINTING AT UTILITY FIXTURES
15C02-04A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-04B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C08-14A	PAVEMENT MARKING (MAINLINE)



SECTION A-A



PLAN VIEW



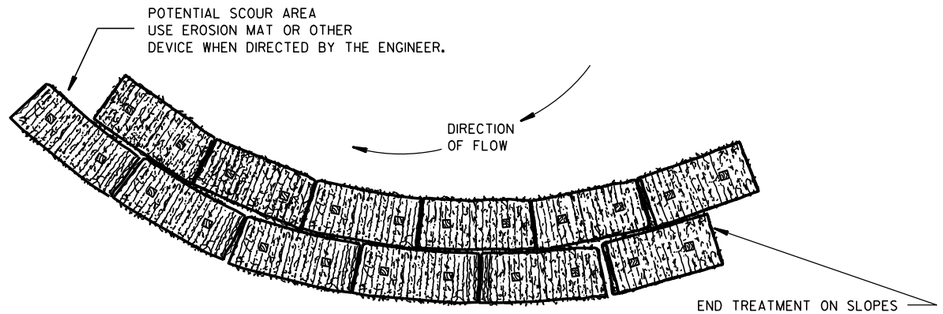
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

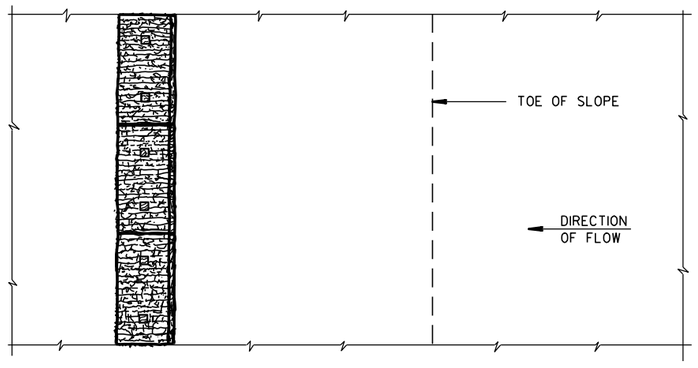
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

① TEMPORARY DITCH CHECKS EITHER EROSION BALES OR MANUFACTURED SHALL BE PAID FOR UNDER THE BID ITEM OF TEMPORARY DITCH CHECK. THE DEPARTMENT WILL NOT PAY FOR TEMPORARY DITCH CHECKS CONSTRUCTED OF A SINGLE ROW OF EROSION BALES.

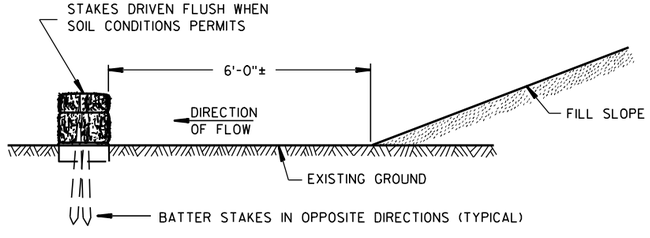


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02 — DATE

/S/ Beth Cannestra — CHIEF ROADWAY DEVELOPMENT ENGINEER

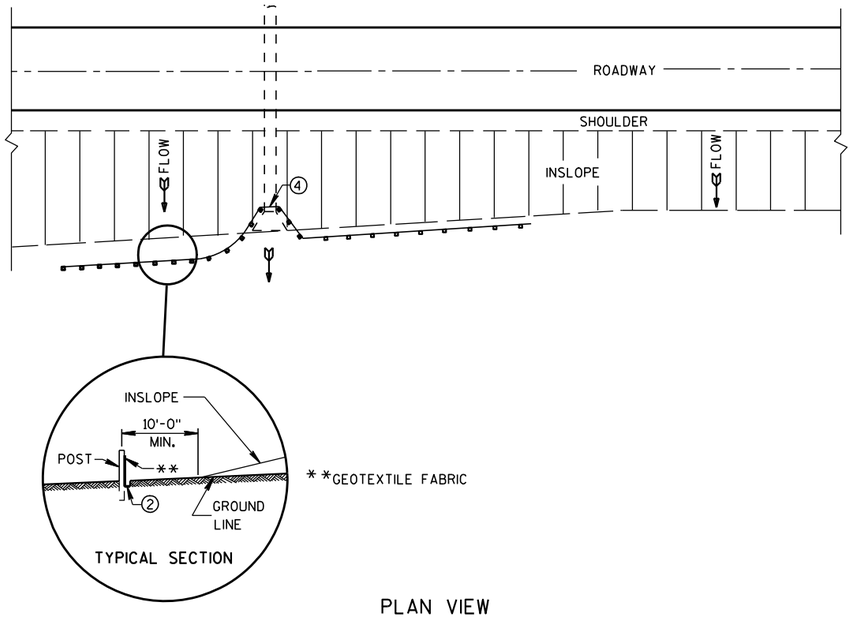
FHWA

6

S.D.D. 8 E 8-3

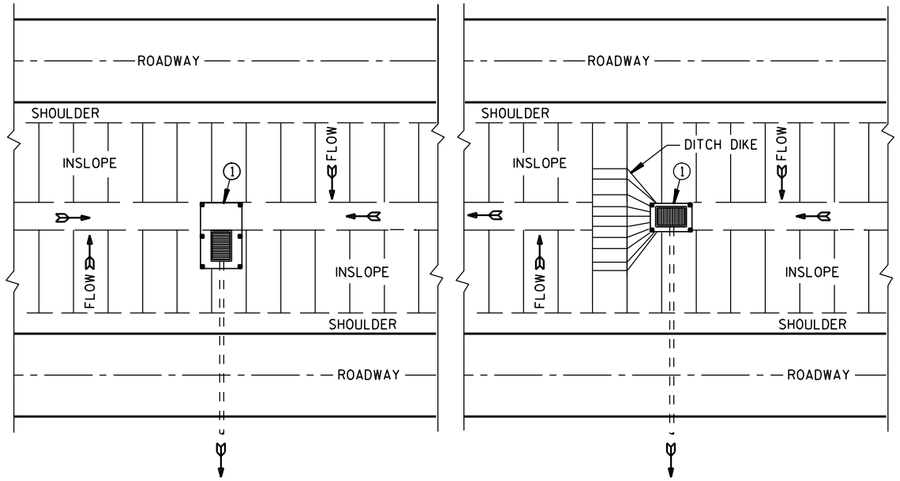
6

S.D.D. 8 E 8-3



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



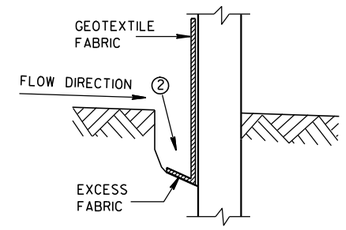
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

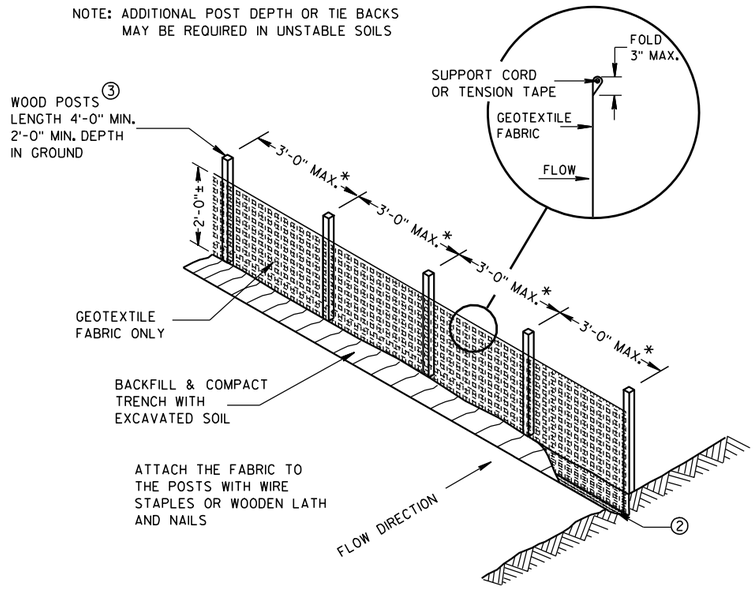
GENERAL NOTES

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

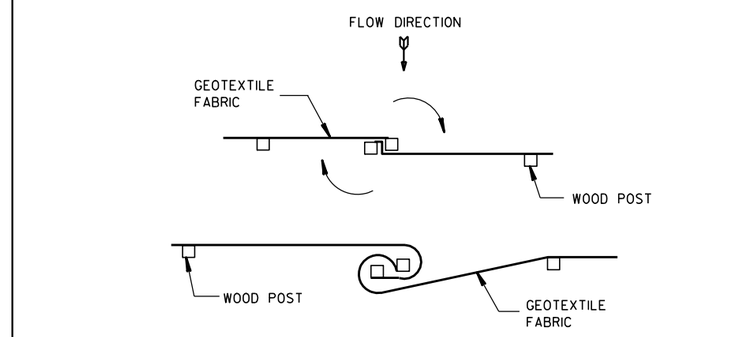
1. HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
2. FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL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



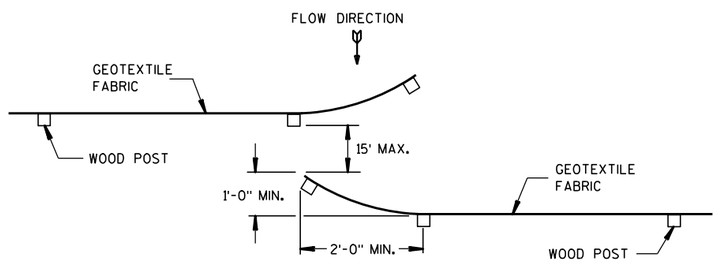
TRENCH DETAIL



SILT FENCE

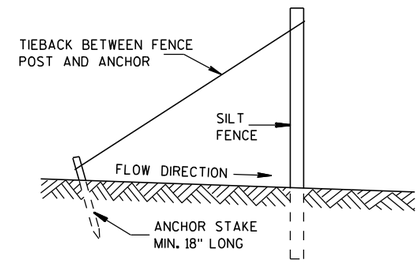


TWIST METHOD



HOOK METHOD

JOINING TWO LENGTHS OF SILT FENCE 5



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6

S.D.D. 8 E 9-6

6

S.D.D. 8 E 9-6

METAL APRON ENDWALLS

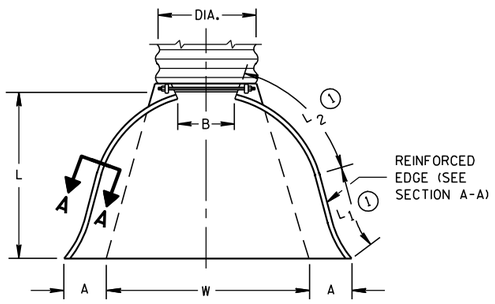
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")		
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to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

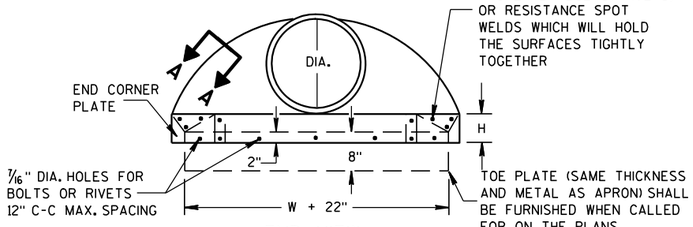
REINFORCED CONCRETE APRON ENDWALLS

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

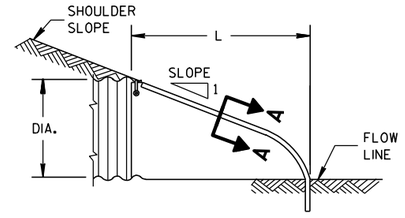
* MINIMUM
** MAXIMUM



PLAN VIEW

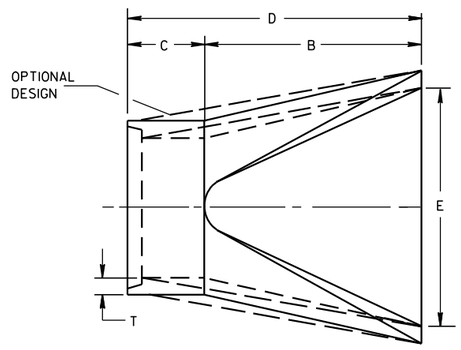


END VIEW

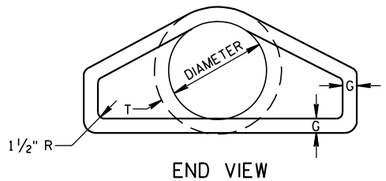


SIDE ELEVATION

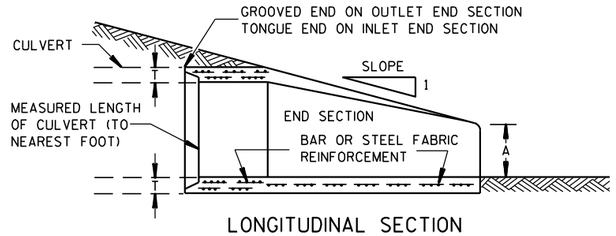
METAL ENDWALLS



PLAN

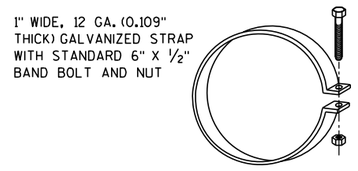


END VIEW



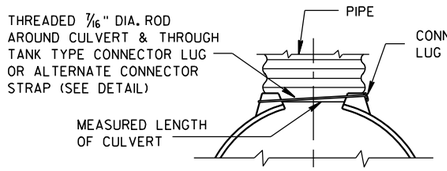
LONGITUDINAL SECTION

CONCRETE ENDWALLS

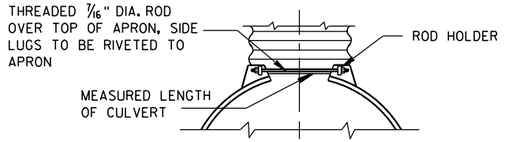


ALTERNATE FOR TYPE 1 CONNECTION

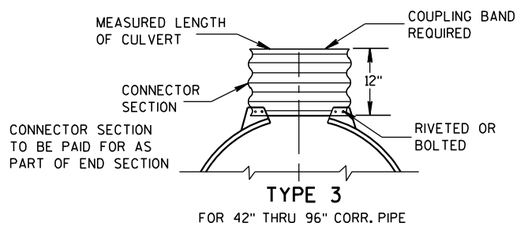
END SECTION CONNECTOR STRAP



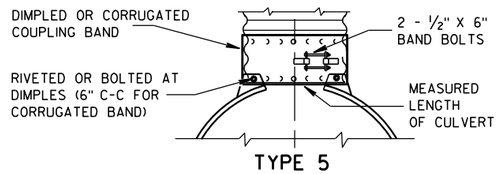
TYPE 1
FOR 12" THRU 24" CORR. PIPE



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

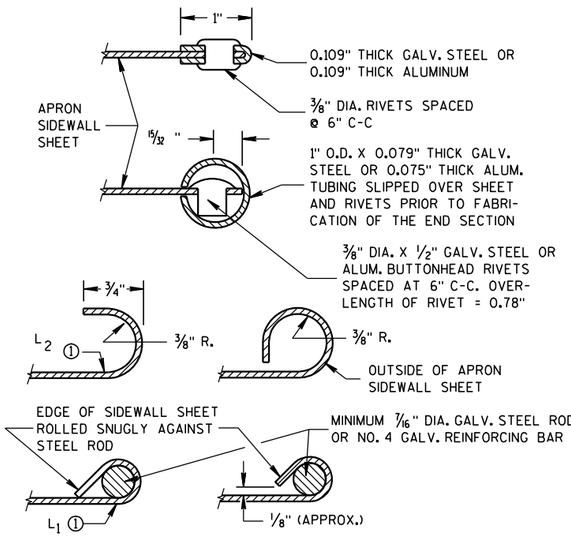
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

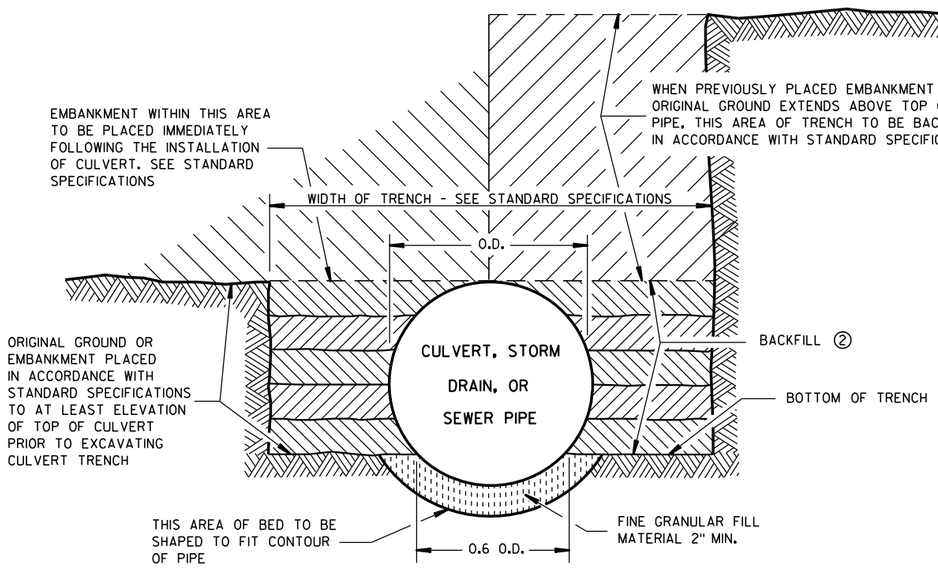
GENERAL NOTES

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

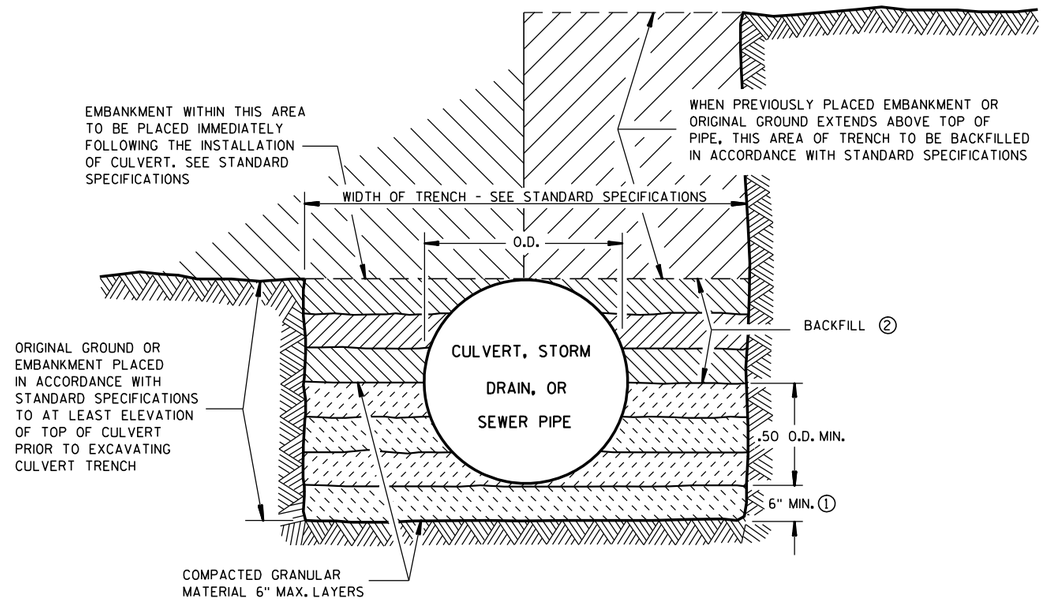
THE SHAPED SUBGRADE WITH GRANULAR FOUNDATION IS AN EQUAL ALTERNATE TO THE GRANULAR FOUNDATION EXCEPT WHERE ROCK IS ENCOUNTERED.

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.



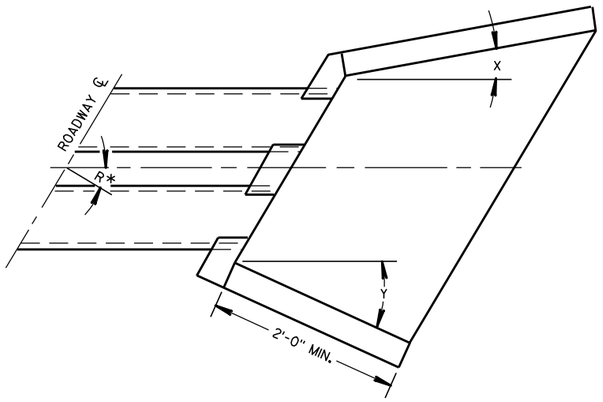
SHAPED SUBGRADE WITH GRANULAR FOUNDATION



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



WINGWALL ANGLE DETAILS

INLET			OUTLET		
R*	X	Y	R*	X	Y
0 - 7°	30°	30°	0 - 15°	15°	15°
8 - 22°	25°	"	16 - 45°	10°	"
23 - 37°	20°	"	46 - 75°	5°	"
38 - 52°	15°	"	OVER 75°	0°	"
53 - 67°	10°	"			
68 - 82°	5°	"			
OVER 82°	0°	"			

*R = NUMBER OF DEGREES RIGHT OR LEFT HAND FORWARD

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.

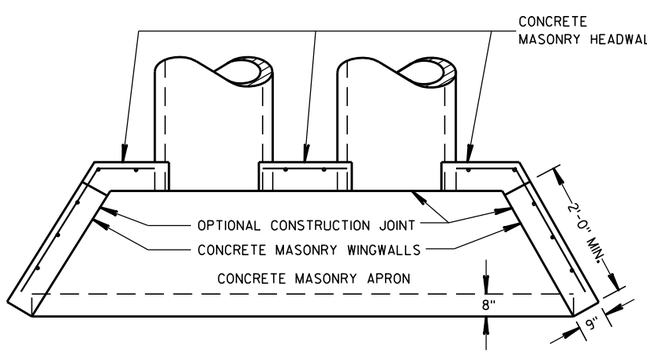
FILL SLOPES FLATTER THAN 2 ½:1 SHALL BE WARPED TO MEET THE TOP OF THE WINGWALLS.

ALL STEEL REINFORCEMENT AND WELDED STEEL WIRE FABRIC SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE NOTED.

(1) MINIMUM REINFORCEMENT SHALL BE 6" X 6" - W4.0 X W4.0 OR NO. 3 BARS SPACED 12" C-C IN BOTH DIRECTIONS.

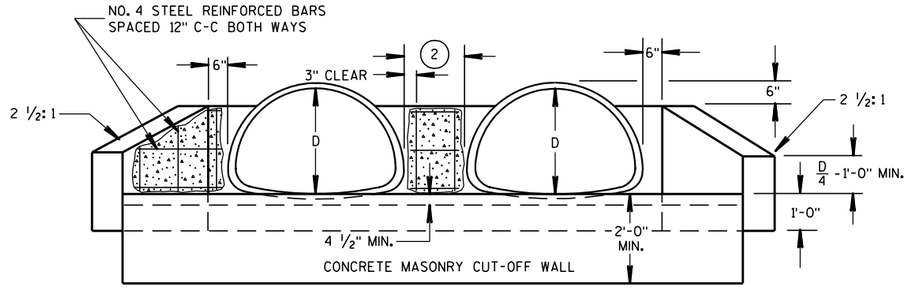
(2) THE SPACE BETWEEN PIPES SHALL BE AS FOLLOWS:

DIAMETER OR SPAN	SPACE
UP TO AND INCLUDING 48"	2'-0"
OVER 48" TO 72"	½ DIA. OR SPAN
OVER 72"	3'-0"



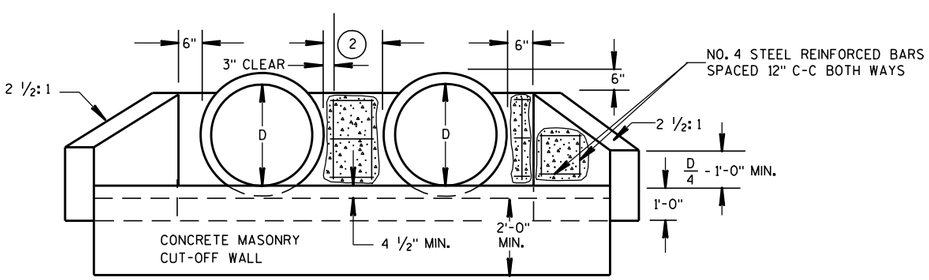
PLAN VIEW

CULVERT PIPE AND PIPE ARCH



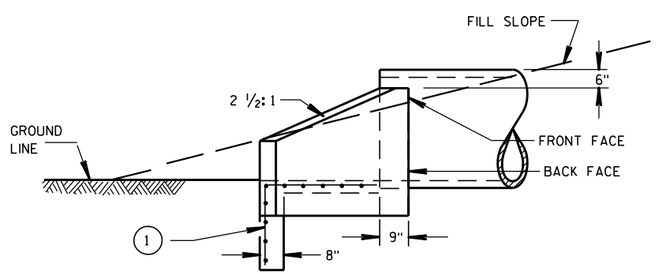
END ELEVATION

PIPE ARCH



END ELEVATION

CULVERT PIPE



SIDE ELEVATION

CULVERT PIPE AND PIPE ARCH

CONCRETE MASONRY ENDWALLS FOR CULVERT PIPE AND PIPE ARCH

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

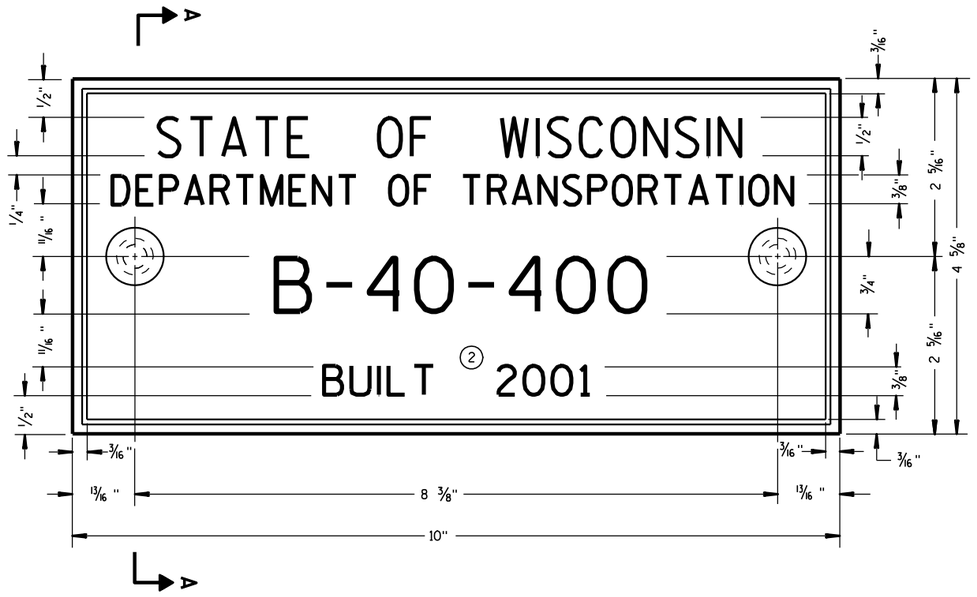
APPROVED
9/14/98 DATE
/S/ Rory L. Rhinesmith
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 8 F 10-1

6

S.D.D. 8 F 10-1



TYPICAL NAME PLATE

(BRIDGES, CULVERTS, AND RETAINING WALLS)

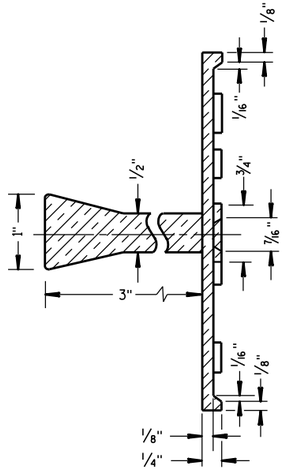
GENERAL NOTES

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.

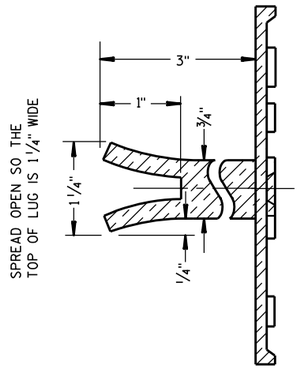
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

(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

FOR MULTI-UNIT STRUCTURES
LINE 3 ABOVE SHALL READ

B = BRIDGE
C = CULVERT
R = RETAINING WALL

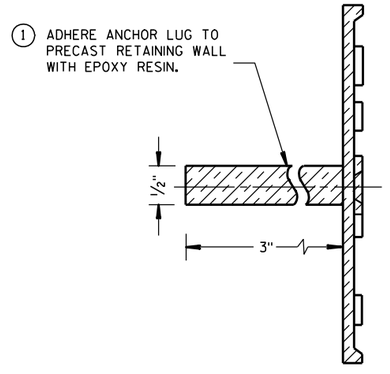
COUNTY NO.

BRIDGE NO.

UNIT NO. FOR MULTIPLE UNIT BRIDGE

B-40-400-1A

NUMBERING DESIGNATION MULTI-UNIT STRUCTURES



ALTERNATE LUG

(FOR ATTACHMENT TO PRECAST STRUCTURES)

NAME PLATE (STRUCTURES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

3/26/10 DATE

/S/ Scot Beck -- CHIEF STRUCTURAL DEVELOP ENGINEER

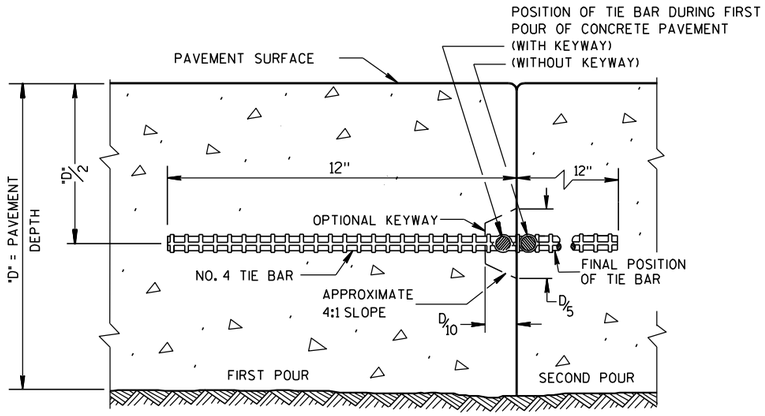
FHWA

6

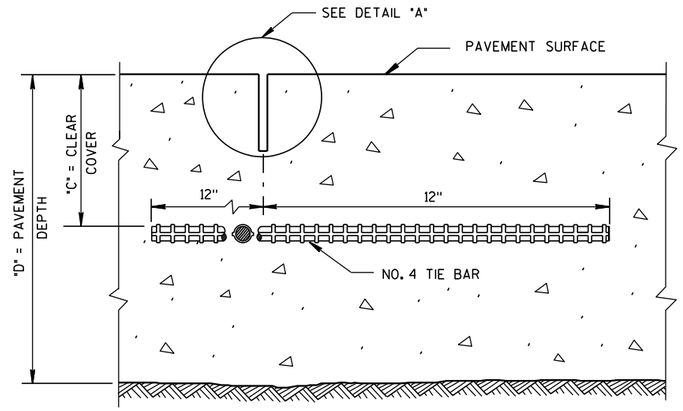
S.D.D. 12 A 3-10

6

S.D.D. 12 A 3-10



CONSTRUCTION JOINT



SAWED JOINT

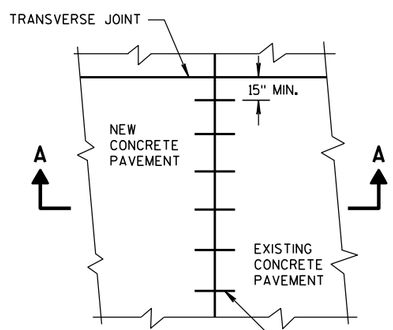
GENERAL NOTES

DO NOT SEAL OR FILL LONGITUDINAL JOINTS.

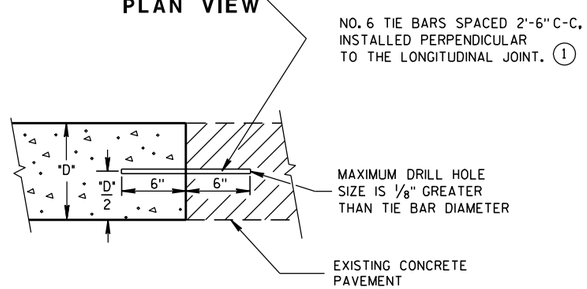
CREATE A LONGITUDINAL JOINT FOR PAVEMENT WIDTHS GREATER THAN 15 FEET.

CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

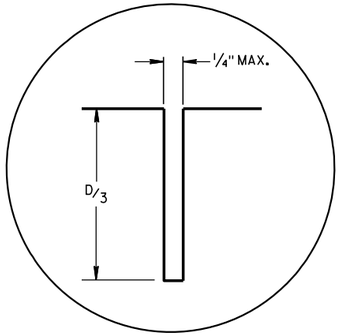
(1) ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.



PLAN VIEW

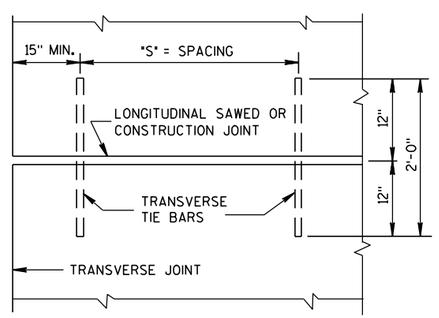


SECTION A-A
LONGITUDINAL CONSTRUCTION JOINT TIE BARS ANCHORED INTO EXISTING PAVEMENT



DETAIL "A"

PAVEMENT DEPTH "D"	CLEAR COVER "C"	MAXIMUM TIE BAR SPACING "S"	
		PAVEMENT WIDTH	
		24' OR 26'	≥ 30'
6, 6 1/2"	3"±1/2"	48"	42"
7, 7 1/2"	3 1/4"±1"	45"	36"
8, 8 1/2"	3 3/4"±1"	39"	30"
9, 9 1/2"	4 1/4"±1"	33"	27"
10, 10 1/2"	4 3/4"±1"	30"	24"
11, 11 1/2"	5 1/4"±1"	27"	21"
12"	5 3/4"±1"	24"	21"



PLAN VIEW
SHOWING LOCATION OF TIE BARS

CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

10-5-2010
DATE

/S/ Deb Bischoff
PAVEMENT POLICY & DI 23 INEER

FHWA

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S.D.D. 13 C 1-15

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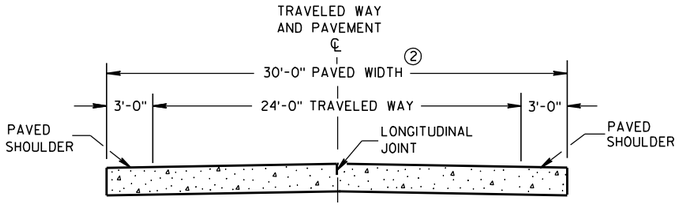
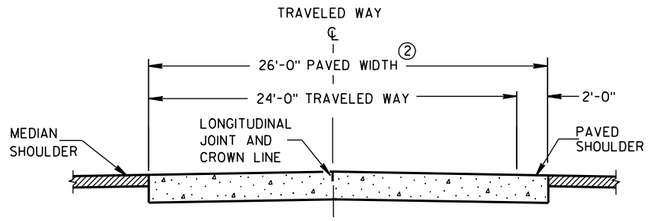
S.D.D. 13 C 1-15

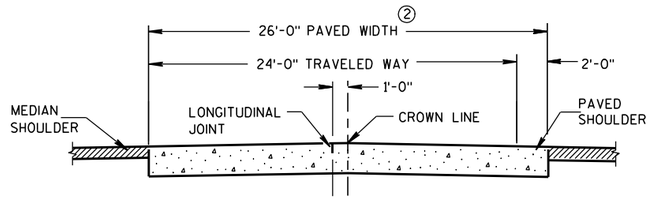


SECTION A-A ①

TWO-LANE TWO-WAY HIGHWAY



SECTION B-B



ALTERNATIVE SECTION B-B

①

DIVIDED HIGHWAY

GENERAL NOTES

CONTRACTION JOINTS

CONSTRUCT CONTRACTION JOINTS NORMAL TO THE CENTERLINE. SHOW THE LOCATION OF CONTRACTION JOINTS THROUGH INTERSECTIONS ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT SEAL OR FILL CONTRACTION JOINTS.

INSTALL DOWEL BARS PARALLEL TO THE PAVEMENT CENTERLINE AND PAVEMENT SURFACE.

FOR PAVEMENT SLABS OF VARYING WIDTHS, CENTER THE DOWEL ASSEMBLY ACROSS THE LANES. LOCATE THE INNER AND OUTER MOST DOWEL BARS SO THAT THE CENTER OF THE BARS ARE A MINIMUM OF 6 INCHES AND A MAXIMUM OF 12 INCHES FROM THE LONGITUDINAL JOINT AND THE EDGE OF PAVEMENT.

CONSTRUCTION JOINTS

LOCATE CONSTRUCTION JOINTS A MINIMUM OF 4 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGN PARALLEL TO CONTRACTION JOINTS.

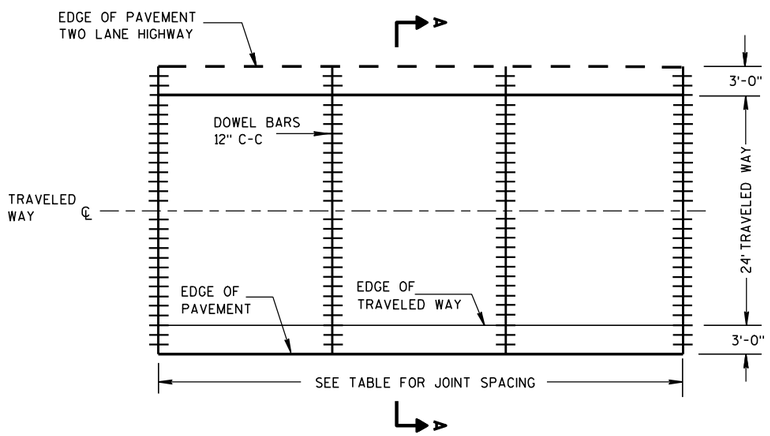
THE CONTRACTOR MAY INSERT TIE BARS THROUGH THE HEADER BOARD AFTER THE CONCRETE HAS BEEN PLACED.

① REFER TO TYPICAL CROSS SECTIONS FOR ADDITIONAL DETAILS.

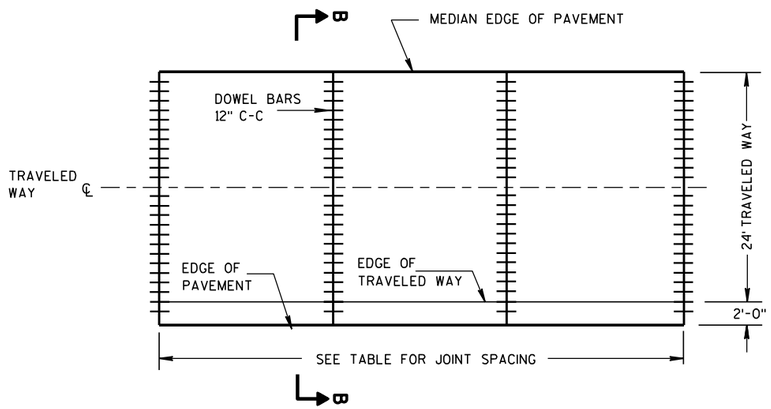
② MEASURE THE ENTIRE PAVED WIDTH INCLUDING THE PORTION(S) LABELED PAVED SHOULDER AS CONCRETE PAVEMENT.

PAVEMENT DEPTH, DOWEL BAR SIZE AND JOINT SPACING TABLE

PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER	CONTRACTION JOINT SPACING
5 ½", 6", 6 ½"	NONE	12'
7", 7 ½"	1"	14'
8", 8 ½"	1 ¼"	15'
9", 9 ½"	1 ¼"	15'
10" & ABOVE	1 ½"	15'



CONTRACTION JOINT LAYOUT FOR TWO-LANE TWO-WAY HIGHWAY



CONTRACTION JOINT LAYOUT FOR DIVIDED HIGHWAY

RURAL DOWELED CONCRETE PAVEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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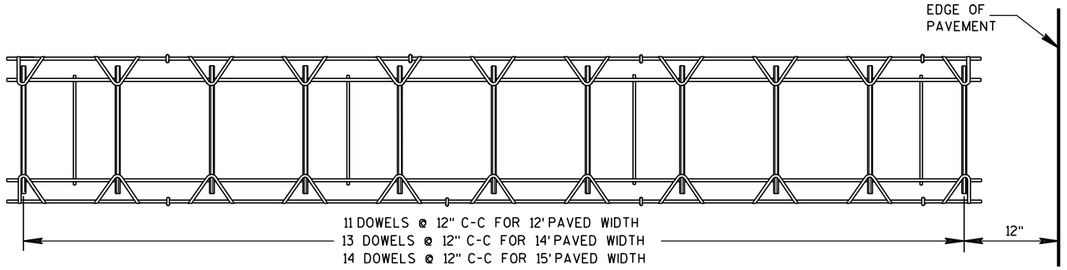
S.D.D. 13 C 11-10a



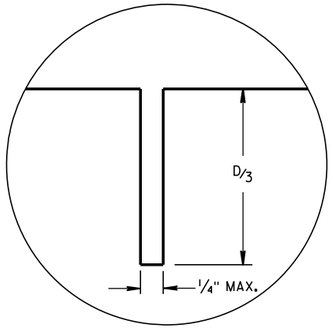
PLAN VIEW

⑤

SIDE VIEW

(NORMAL TO CENTERLINE)

CONTRACTION JOINT DOWEL ASSEMBLY ①



JOINT DETAIL

GENERAL NOTES

① THE ENGINEER MAY APPROVE THE USE OF ALTERNATIVE DESIGNS OF THE DOWEL ASSEMBLY. THE CONTRACTOR MAY USE MECHANICAL DOWEL BAR INSERTERS INSTEAD OF DOWEL ASSEMBLIES.

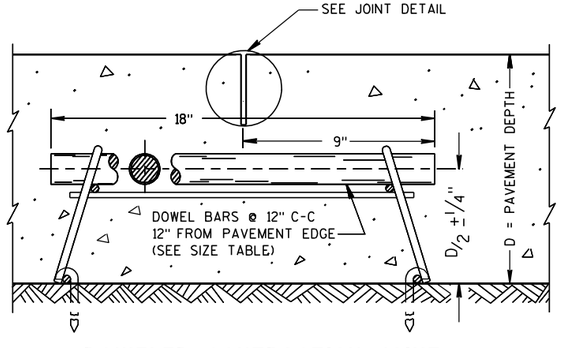
② ANCHOR DOWEL BARS INTO DRILLED HOLES WITH AN EPOXY.

③ APPLY A THIN UNIFORM COATING OF SURFACE TREATMENT TO THE FREE END OF DOWEL BARS TO PREVENT BONDING.

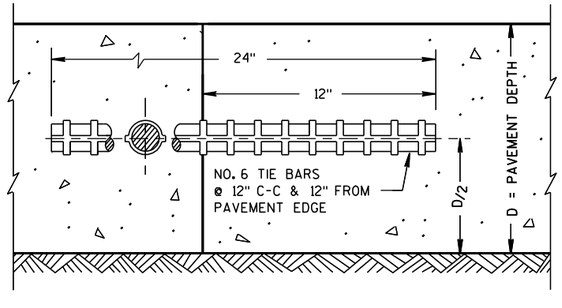
④ SPACE DOWEL BARS INSTALLED BY DRILLING 1'-3" ON CENTER. CENTER THE GROUPING OF DOWEL BARS INSIDE THE SLAB BASED ON ALL THE FOLLOWING SITUATIONS:

BETWEEN THE EDGES OF PAVEMENTS WITHOUT LONGITUDINAL JOINTS OR BETWEEN THE EDGE OF PAVEMENT AND NEAREST LONGITUDINAL JOINT OR BETWEEN TWO ADJACENT LONGITUDINAL JOINTS.

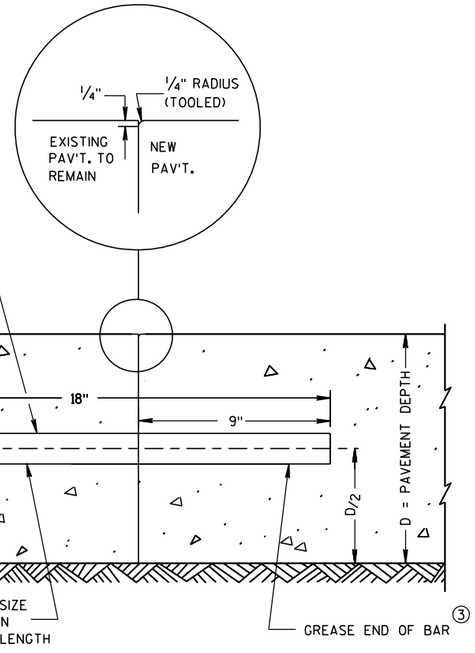
⑤ SECURE BASKETS WITH ANCHORS TO HOLD DOWEL BARS IN THE CORRECT POSITION AND ALIGNMENT. TYPE, LOCATION, NUMBER AND LENGTH OF ANCHORS ARE DEPENDENT UPON FIELD CONDITIONS.



DOWELED CONTRACTION JOINT



CONSTRUCTION JOINT



TRANSVERSE CONTRACTION JOINTS ABUTTING EXISTING PAVEMENT

④ DOWEL BAR DETAIL

RIRAL DOWELED CONCRETE PAVEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

12/11/09 — DATE

/S/ Deb Bischoff — PAVEMENT POLICY & DESIGNER

FHWA

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S.D.D. 13 C 11-10b

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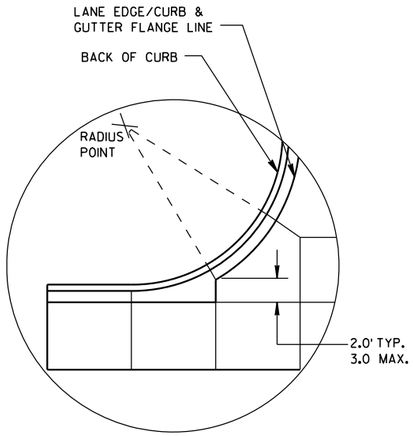
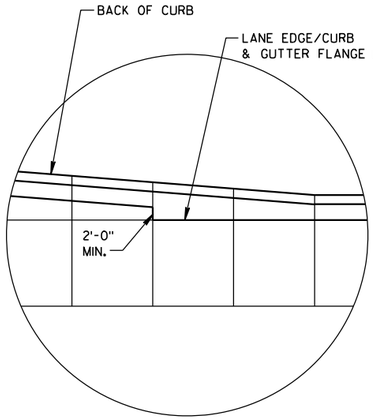
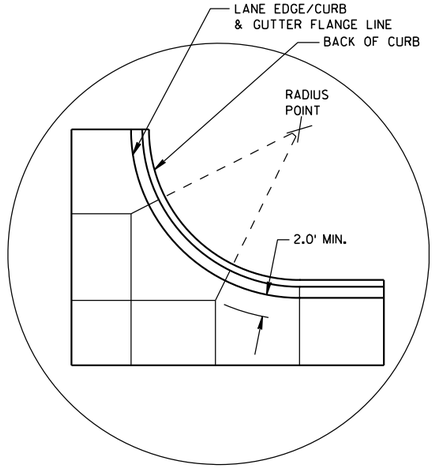
S.D.D. 13 C 11-10b



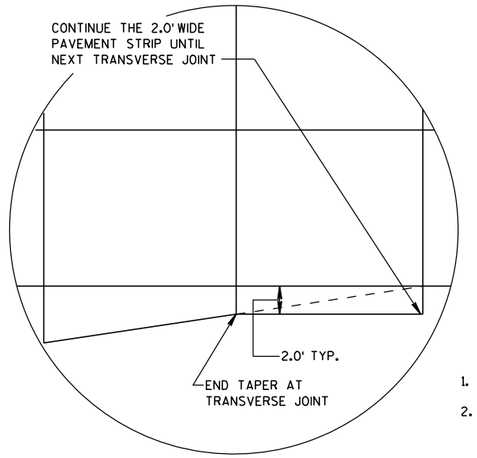
DETAIL "A"



DETAIL "B"



DETAIL "C"



DETAIL "D"

GENERAL NOTES

THE PRIMARY ROADWAY CONTROLS THE TRANSVERSE JOINT PATTERN.

ALIGN NEW JOINTS WITH EXISTING JOINTS OR CRACKS.

CONSTRUCT TRANSVERSE JOINTS PERPENDICULAR TO THE ROADWAY.

ADJUST TRANSVERSE JOINTS TO ALIGN WITH UTILITY FIXTURES (E.G. MANHOLES AND INLETS) IN THE PAVEMENT STRUCTURE WHEN POSSIBLE. WATER VALVES DO NOT REQUIRE JOINT ADJUSTMENT.

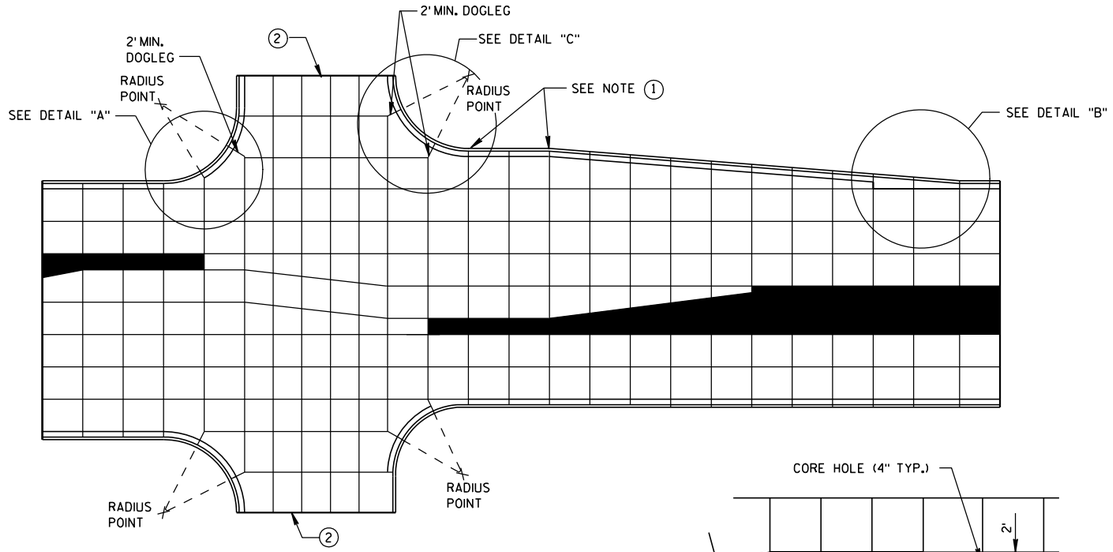
AVOID SLABS LESS THAN 2 FEET WIDE OR GREATER THAN 15 FEET WIDE.

SEE TABLE FOR TRANSVERSE JOINT SPACING. JOINT SPACING SPECIFIED IS MAXIMUM AND ACTUAL SPACING CAN BE ADJUSTED TO ACCOMMODATE INTERSECTIONS.

AVOID ANGLES LESS THAN 60° BY DOGLEGGING JOINTS THROUGH CURVE RADIUS POINTS. USE 90° ANGLES WHEN POSSIBLE.

CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

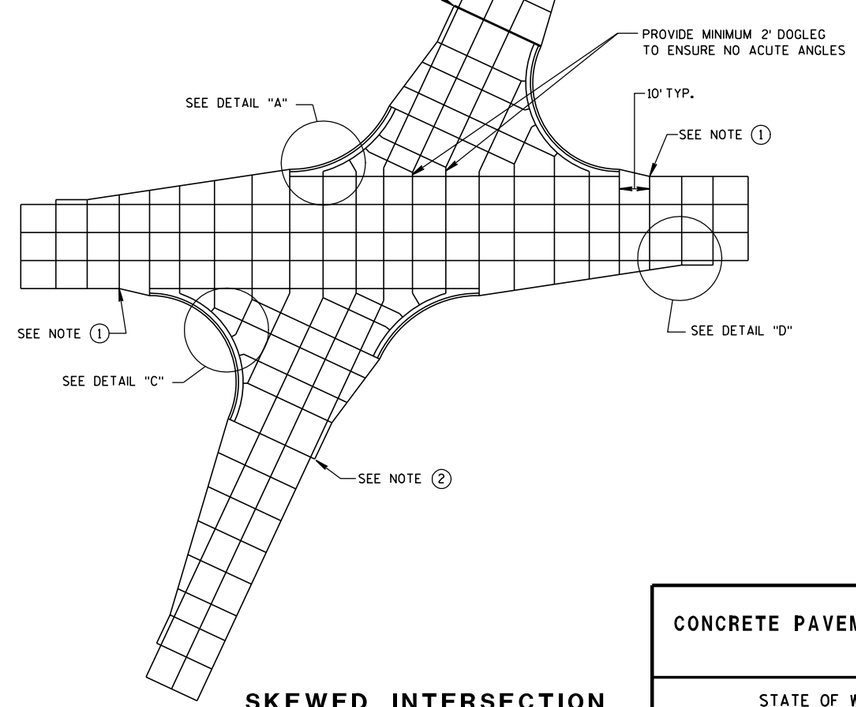
1. PROVIDE TRANSVERSE JOINTS AT ALL PAVEMENT WIDTH CHANGES.
2. CONSTRUCT DOWELED EXPANSION JOINT ON THE SIDE ROAD OF AN INTERSECTION IF THE SIDE ROAD IS CONCRETE PAVEMENT AND GREATER THAN 300 FEET IN LENGTH. ALIGN EXPANSION JOINT WITH EDGE OF RADIUS.
3. THE ENGINEER MAY APPROVE SLIGHT VARIATIONS FROM THESE JOINTING DETAILS.



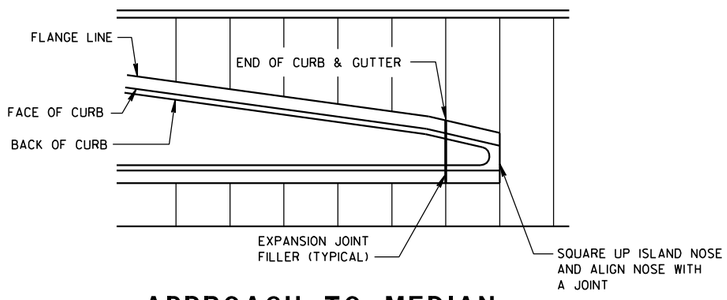
STANDARD INTERSECTION

PAVEMENT DEPTH AND JOINT SPACING TABLE

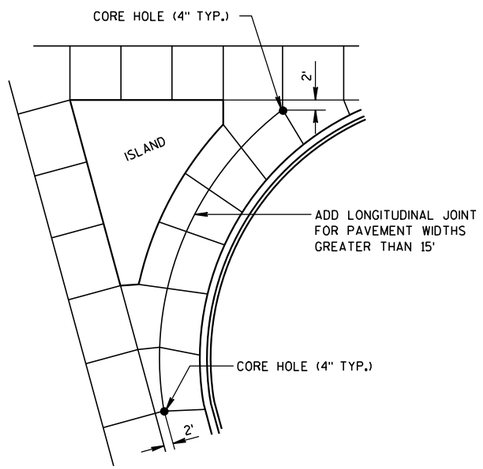
PAVEMENT DEPTH (D)	CONTRACTION JOINT SPACING
6", 6½"	12'
7", 7½"	14'
8" & ABOVE	15'



SKEWED INTERSECTION



APPROACH TO MEDIAN



LARGE RIGHT TURN

CONCRETE PAVEMENT JOINTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

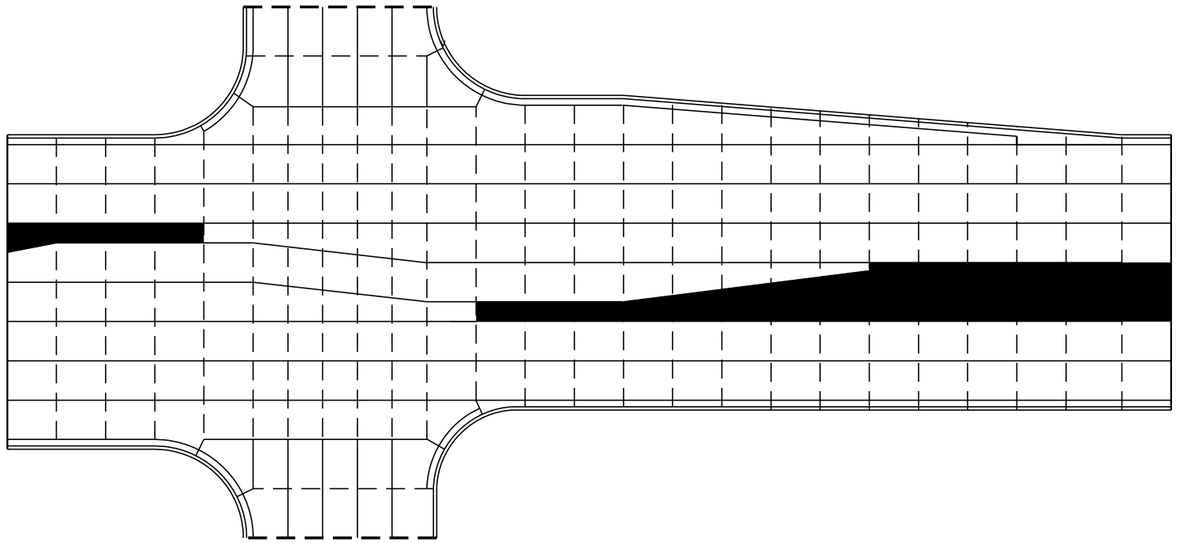
S.D.D. 13 C 18-1a

LEGEND

POTENTIAL DOWELED EXPANSION JOINT

DOWELED JOINT

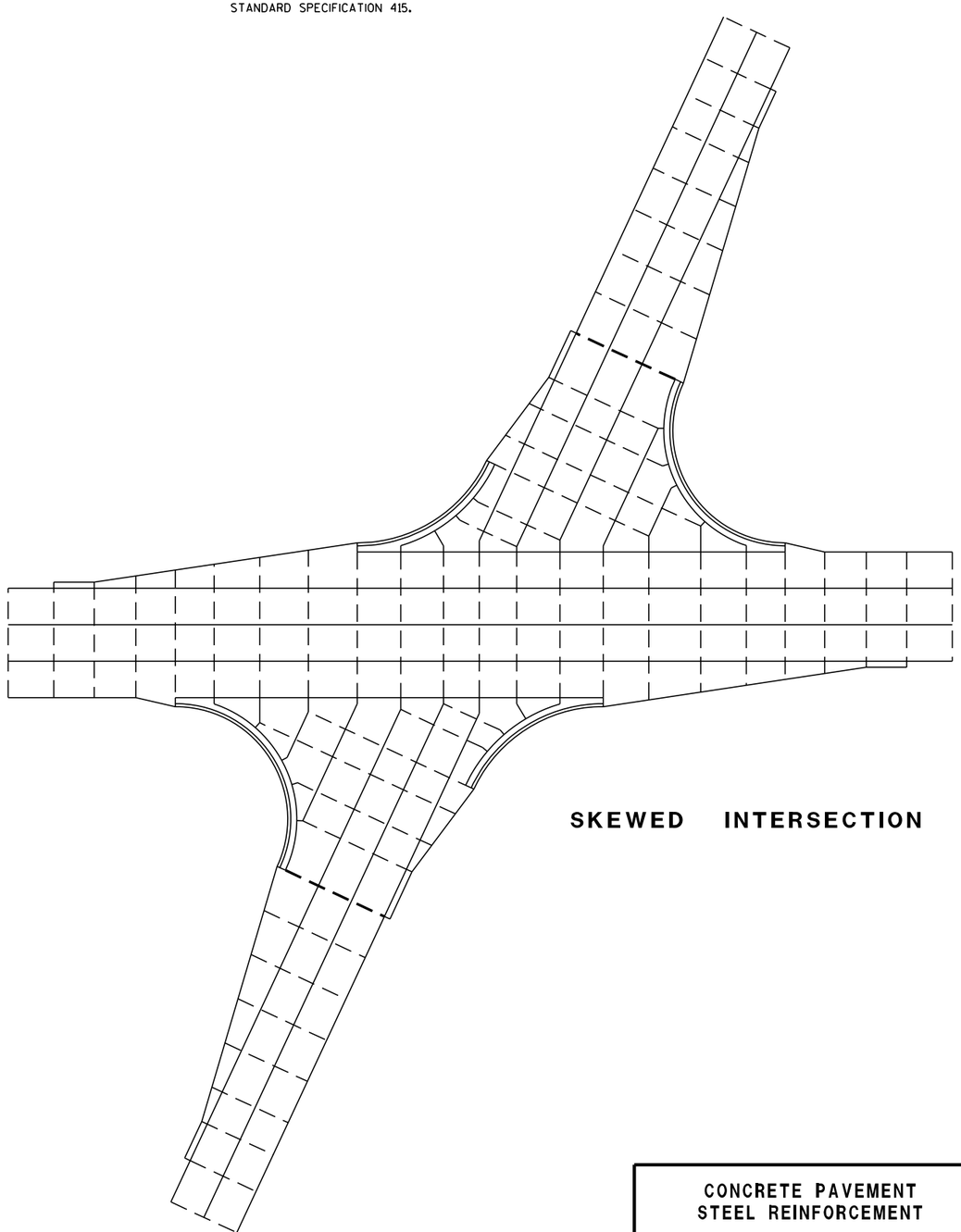
TIED JOINT



STANDARD INTERSECTION

GENERAL NOTES

USE AN EXPANSION JOINT FILLER MEETING THE REQUIREMENTS OF STANDARD SPECIFICATION 415.



SKEWED INTERSECTION

6

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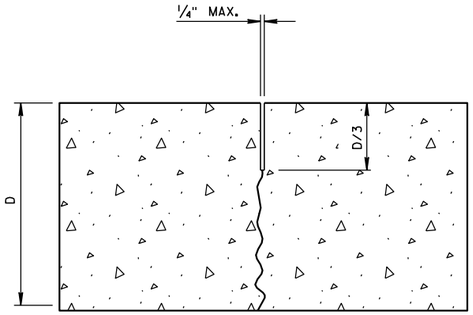
S.D.D. 13 C 18-1b

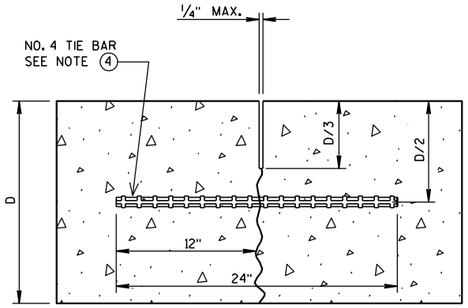
S.D.D. 13 C 18-1b

CONCRETE PAVEMENT
STEEL REINFORCEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



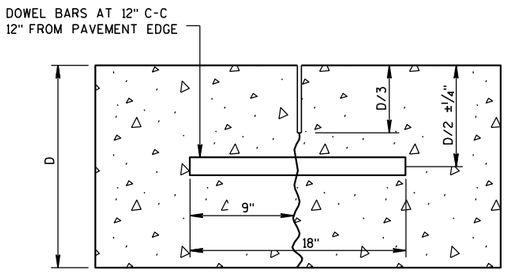
UNDOWELED-TRANSVERSE



TIED LONGITUDINAL

GENERAL NOTES

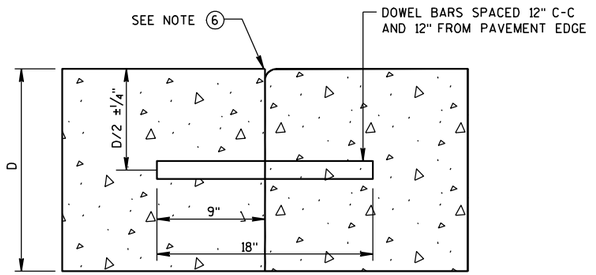
1. USE DOWELED EXPANSION JOINTS ON SIDE ROADS AT INTERSECTIONS (TO ISOLATE THE SIDE ROAD FROM THE THROUGH STREET) IF THE SIDE ROAD IS CONCRETE PAVEMENT AND GREATER THAN 300 FEET IN LENGTH.
2. SPACE CONTRACTION JOINTS IN ACCORDANCE WITH 13C4, 13C11 OR 13C13.
3. LOCATE CONSTRUCTION JOINTS A MINIMUM OF 4 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGN PARALLEL TO THE CONTRACTION JOINTS.
4. SPACE TIE BARS AT LONGITUDINAL CONSTRUCTION OR CONTRACTION JOINTS IN ACCORDANCE WITH SDD 13C1.
5. CONSTRUCTION JOINTS CAN BE FORMED OR SAWED.
6. IF JOINT IS FORMED, PROVIDE A 1/4-INCH RADIUS.



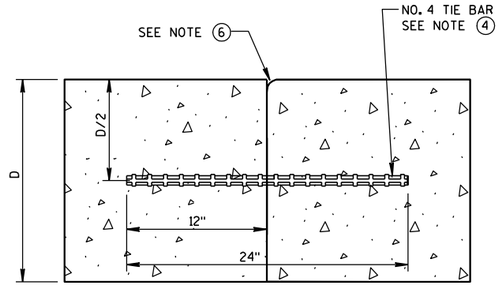
DOWELED-TRANSVERSE

CONTRACTION JOINTS

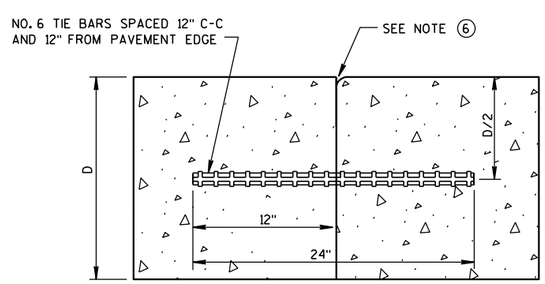
SEE NOTE (2)



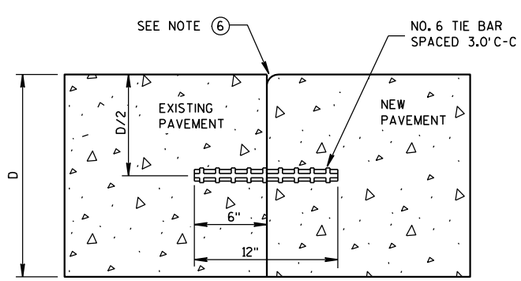
DOWELED TRANSVERSE



TIED LONGITUDINAL



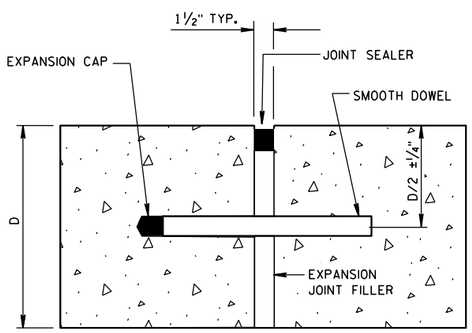
TIED TRANSVERSE
SEE NOTE (3)



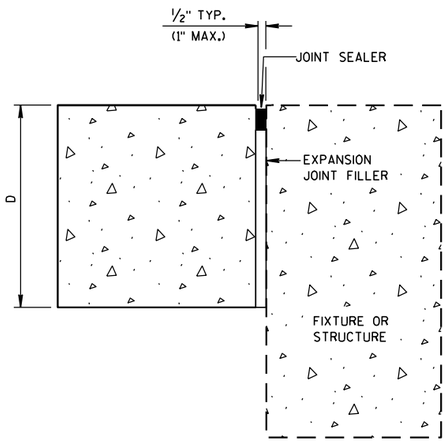
TIED LONGITUDINAL TO EXISTING

CONSTRUCTION JOINTS

SEE NOTE (5)



DOWELED-TRANSVERSE
SEE NOTE (1)



UNTIED-LONGITUDINAL

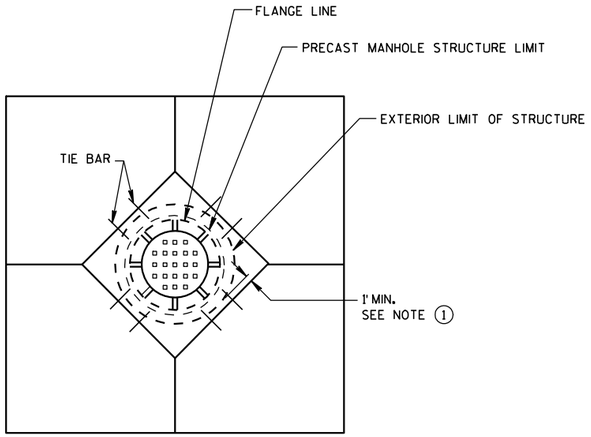
EXPANSION JOINTS

CONCRETE PAVEMENT
JOINT TYPES

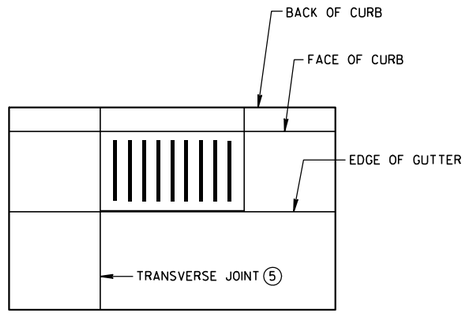
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

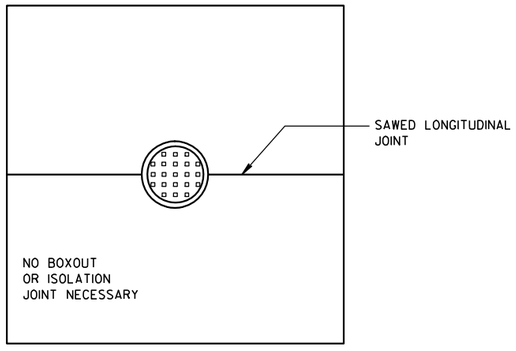
S.D.D. 13 C 18-1c



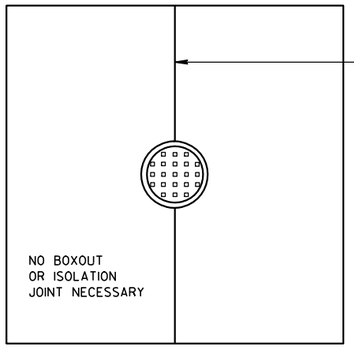
DIAGONAL MANHOLE BOXOUT FOR CONSTRUCTION JOINTS



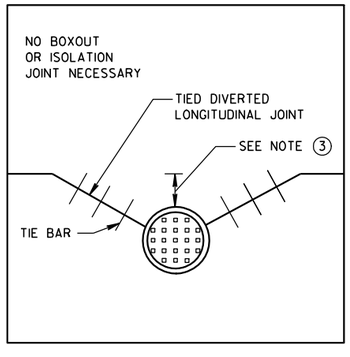
INLET WITH TRANSVERSE JOINT



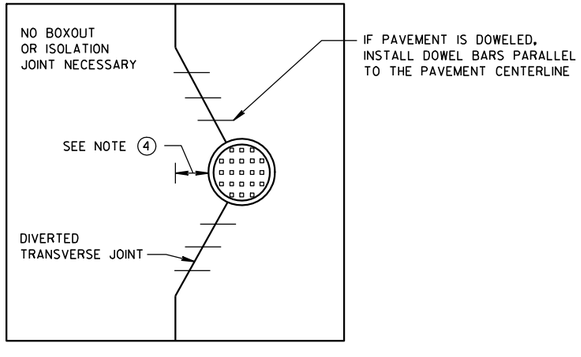
MANHOLE WITH LONGITUDINAL JOINT



MANHOLE WITH TRANSVERSE JOINT



MANHOLE WITH DIVERTED LONGITUDINAL CONTRACTION JOINT



MANHOLE WITH DIVERTED TRANSVERSE CONTRACTION JOINT

GENERAL NOTES

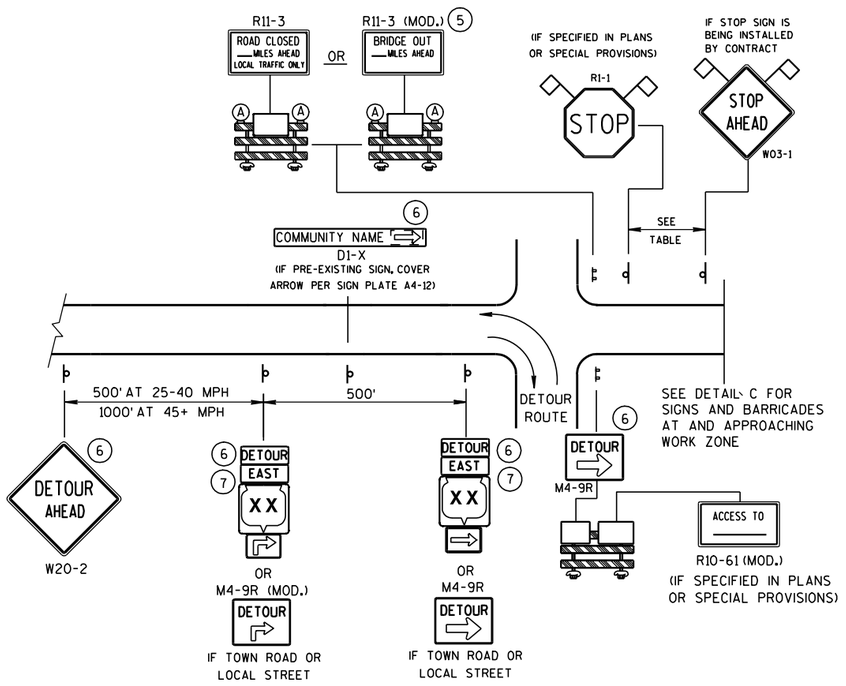
1. USE BOXOUTS WHEN UTILITY STRUCTURE IS IN THE PATH OF CONSTRUCTION JOINTS. PROVIDE A 1 FOOT MINIMUM CLEARANCE BETWEEN THE EXTERIOR LIMIT OF THE STRUCTURE TO THE DIAMOND BOXOUT.
2. ADJUST TRANSVERSE JOINT TO INTERSECT MANHOLE IF POSSIBLE.
3. IF DISTANCE BETWEEN THE LONGITUDINAL JOINT AND THE EDGE OF MANHOLE IS GREATER THAN 2 FEET, DO NOT DIVERT JOINT AND SAW LONGITUDINAL JOINT AS NORMAL. IF DISTANCE IS 2 FEET OR LESS, DIVERT LONGITUDINAL JOINT AT A 2:1 TAPER RATE TO THE CENTER OF THE MANHOLE.
4. IF DISTANCE FROM THE EDGE OF MANHOLE TO THE NEAREST TRANSVERSE JOINT IS GREATER THAN 4 FEET, REDIRECT JOINT TO INTERSECT MANHOLE. IF DISTANCE IS 4 FEET OR LESS, PLACE REBAR REINFORCEMENT AROUND MANHOLE.
5. ALIGN TRANSVERSE JOINT WITH ONE EDGE OF INLET WHEN PRACTICAL.

CONCRETE PAVEMENT JOINTING AT UTILITY FIXTURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10-5-2010 — DATE
/S/ Deb Bischoff — PAVEMENT POLICY & D29 ENGINEER
FHWA

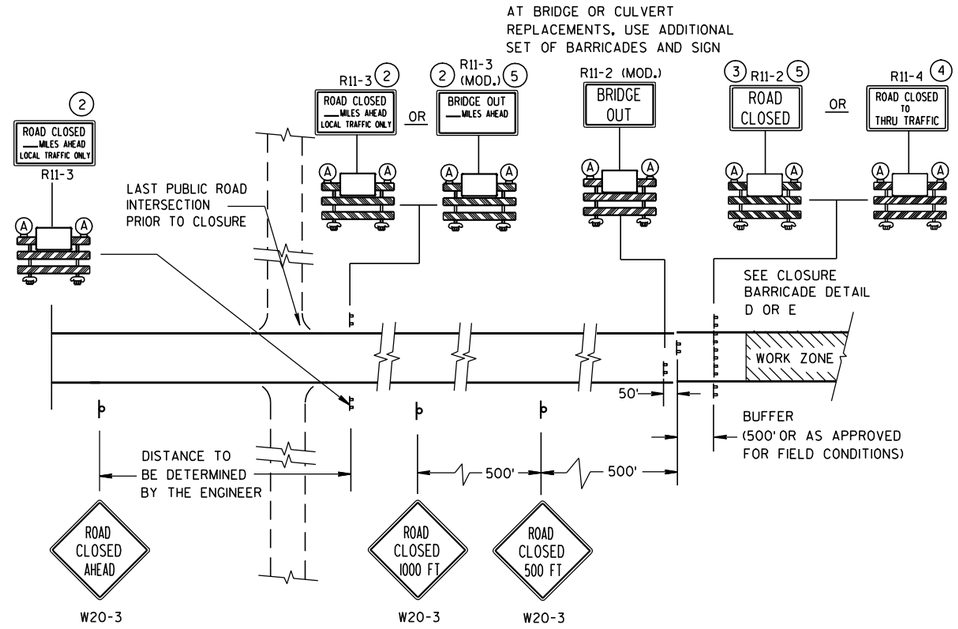
6
S.D.D. 13 C 18-1d



DETAIL A

MAINLINE CLOSURE WITH POSTED DETOUR

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

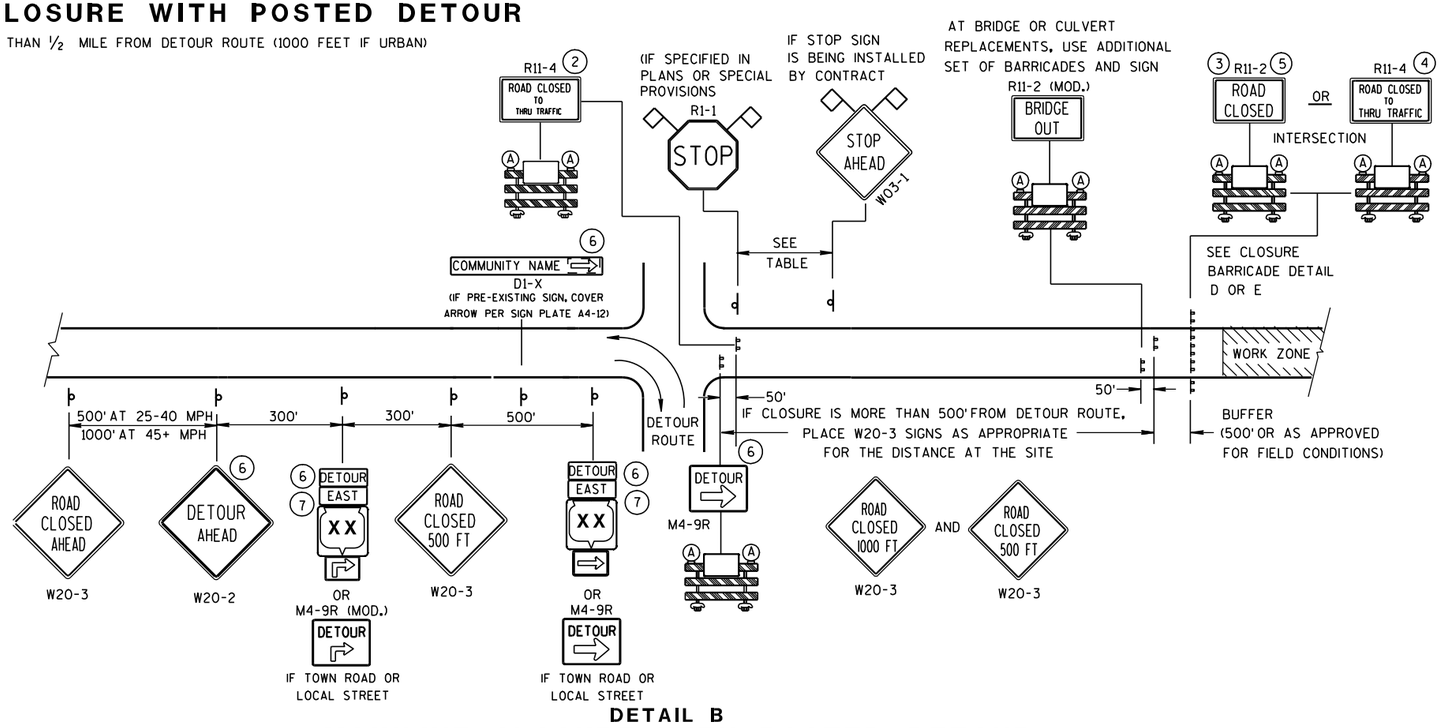


DETAIL C

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



DETAIL B

MAINLINE CLOSURE WITH POSTED DETOUR

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

LEGEND

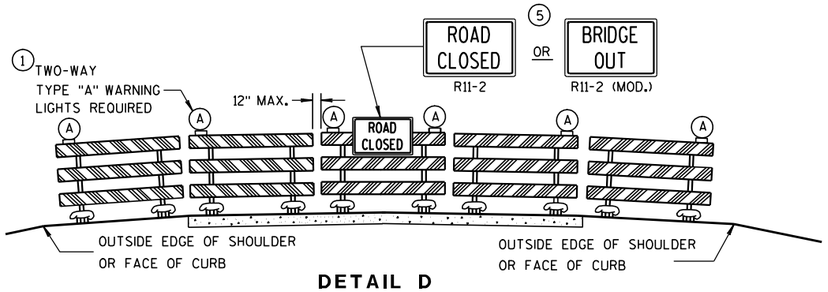
- POST MOUNTED SIGN
- TYPE III BARRICADES
- (A) TYPE "A" LOW INTENSITY FLASHING WARNING LIGHT (FOR NIGHT USE)
- WORK ZONE
- DETOUR / EAST — M4-8 / M3-X
- XX — M1-4; COUNTY XX — M1-5A; XX — M1-6
- M05-1; M06-1
- FLAGS, 16" X 16" MIN., (ORANGE)

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

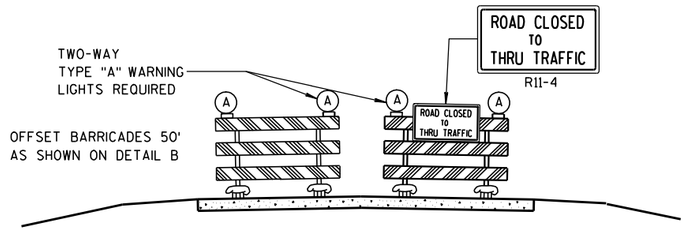
S.D.D. 15 C 2-4a



DETAIL D

ROAD CLOSURE BARRICADE DETAIL

APPROACH VIEW



DETAIL E

LANE CLOSURE BARRICADE DETAIL

APPROACH VIEW

SEE SDD 15C2-4a FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

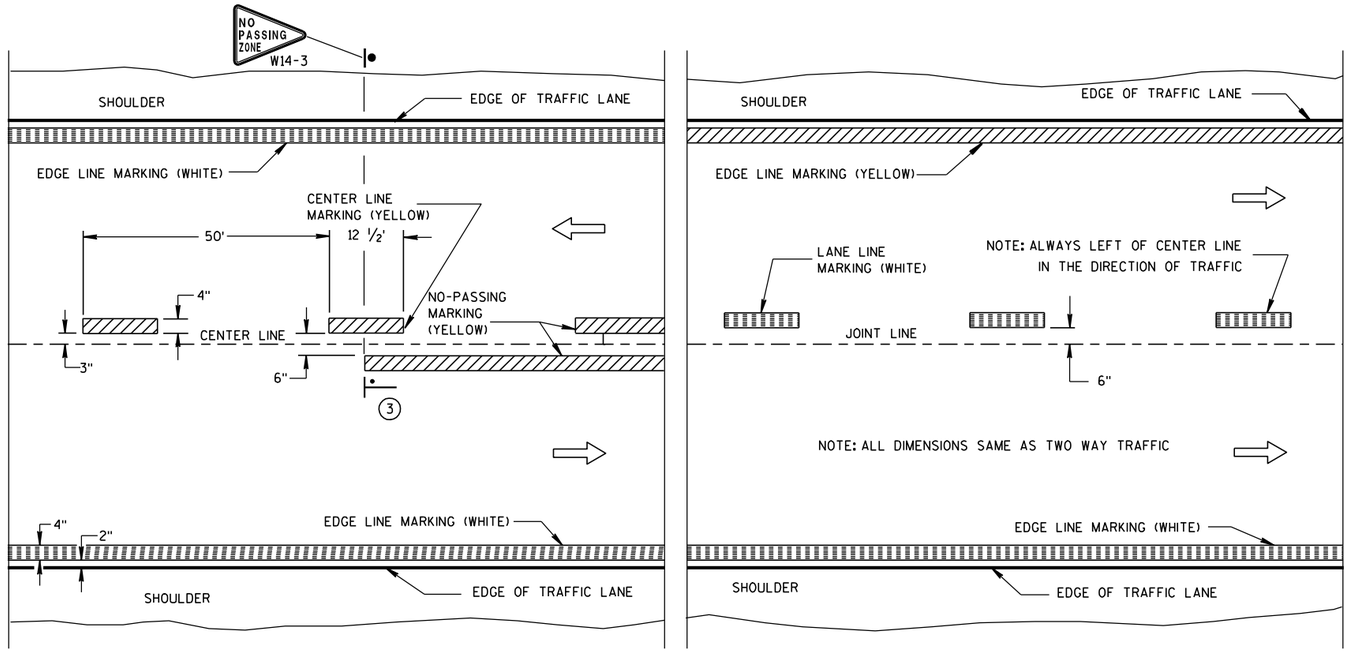
9/16/03
DATE

/S/ Thomas N. N[illegible]
CHIEF SIGNS AND MARKINGS ENGINEER

FHWA

6

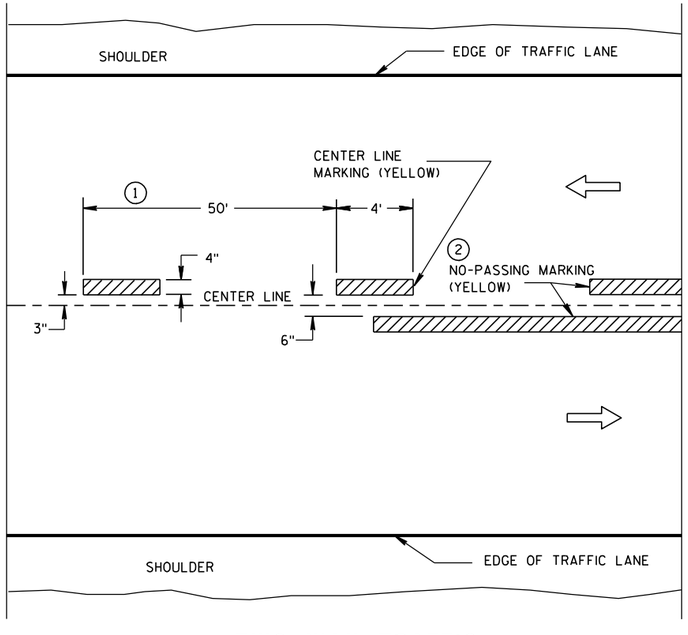
S.D.D. 15 C 2-4b



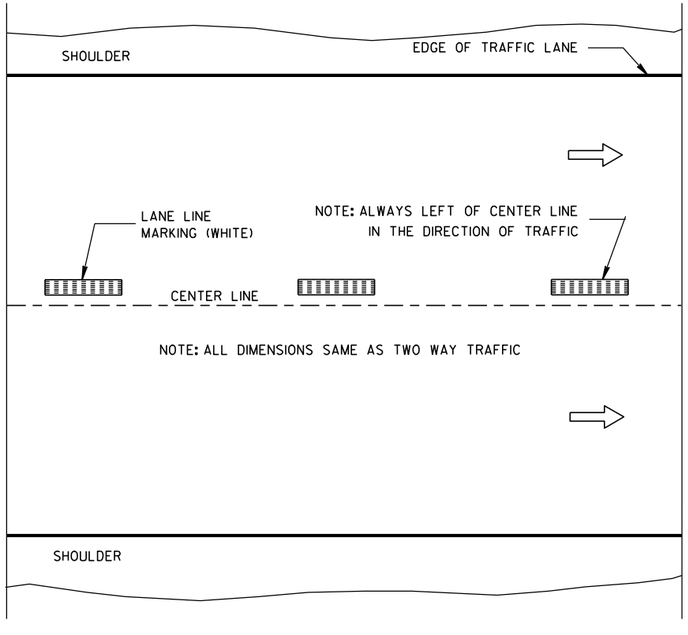
TWO WAY TRAFFIC

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)

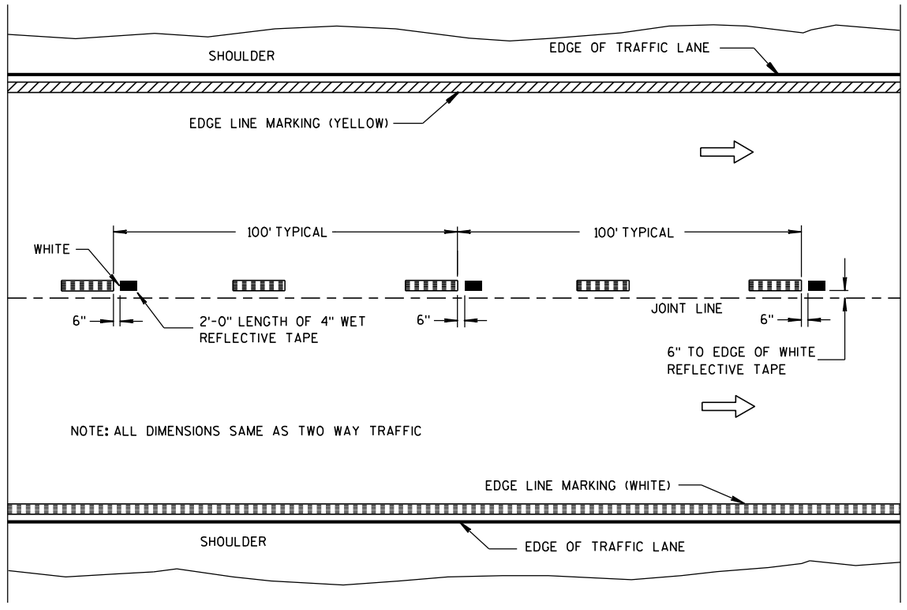
GENERAL NOTES

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.

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
6-23-11 (DATE)
/S/ Thomas N. Notbohm (STATE TRAFFIC ENGINEER)

FHWA

6

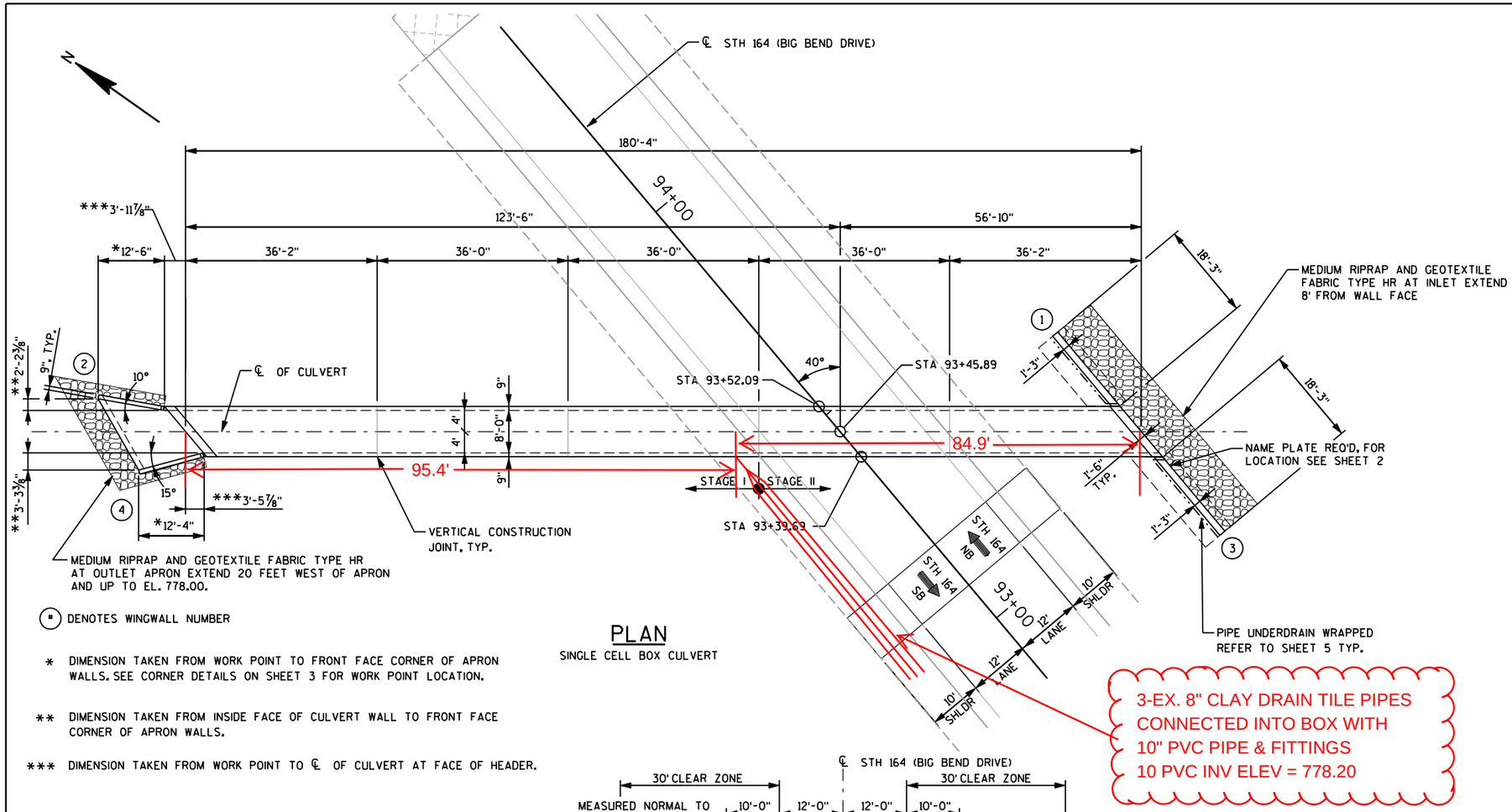
S.D.D. 15 C 8-14a

6

S.D.D. 15 C 8-14a

STATE PROJECT NUMBER

2810-02-71



(1) DENOTES WINGWALL NUMBER

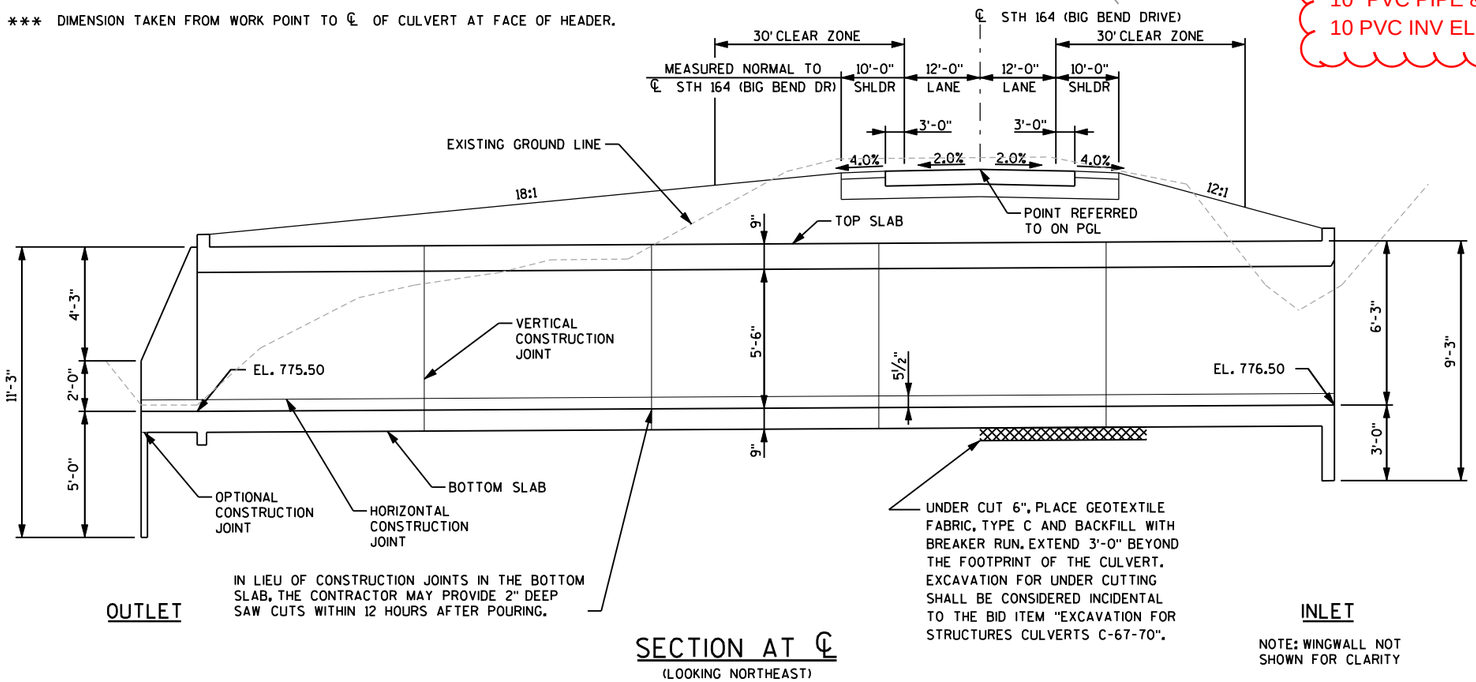
* DIMENSION TAKEN FROM WORK POINT TO FRONT FACE CORNER OF APRON WALLS. SEE CORNER DETAILS ON SHEET 3 FOR WORK POINT LOCATION.

** DIMENSION TAKEN FROM INSIDE FACE OF CULVERT WALL TO FRONT FACE CORNER OF APRON WALLS.

*** DIMENSION TAKEN FROM WORK POINT TO ℄ OF CULVERT AT FACE OF HEADER.

PLAN

SINGLE CELL BOX CULVERT



IN LIEU OF CONSTRUCTION JOINTS IN THE BOTTOM SLAB, THE CONTRACTOR MAY PROVIDE 2" DEEP SAW CUTS WITHIN 12 HOURS AFTER POURING.

UNDER CUT 6", PLACE GEOTEXTILE FABRIC, TYPE C AND BACKFILL WITH BREAKER RUN. EXTEND 3'-0" BEYOND THE FOOTPRINT OF THE CULVERT. EXCAVATION FOR UNDER CUTTING SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "EXCAVATION FOR STRUCTURES CULVERTS C-67-70".

OUTLET

INLET

NOTE: WINGWALL NOT SHOWN FOR CLARITY

SECTION AT ℄

(LOOKING NORTHEAST)

DESIGN DATA

ULTIMATE DESIGN STRESSES:
CONCRETE MASONRY:
f'c = 3,500 psi
BAR STEEL REINFORCEMENT:
fy = 60,000 psi

LIVE LOAD:
DESIGN LOADING: HL-93
EARTH LOAD: DESIGNED FOR 3' OF FILL
INVENTORY RATING FACTOR: RF = 1.05
OPERATING RATING FACTOR: RF = 1.35
MAXIMUM STANDARD PERMIT VEHICLE LOAD = 255 KIPS

FOUNDATION DATA

THE BOX CULVERT SHALL BE SUPPORTED WITH A MAXIMUM NET ALLOWABLE SOIL BEARING PRESSURE OF 3,000 POUNDS PER SQUARE FOOT.

LIST OF DRAWINGS

TRAFFIC

A.A.D.T. (2011) = 7770
A.A.D.T. (2031) = 9780
DESIGN SPEED = 60 MPH

HYDRAULIC DATA

100-YR FREQUENCY

Q(100):	170 cfs
VELOCITY:	8.81 fps
HIGH WATER:	781.00
WATERWAY AREA:	19.0 sf
DRAINAGE AREA:	340 acres (0.5 SQ MI)
SCOUR CODE:	8
Q(2):	50 cfs
HIGH WATER(2):	778.48

WISCONSIN PAUL E. WIRTH 37553 MILWAUKEE, WI PROFESSIONAL ENGINEER

10/02/2012

BUREAU OF STRUCTURES CONTACT: WILLIAM DREHER 608-266-8489

CONSULTANT CONTACT: PAUL WIRTH 262-901-2500

NO.	DATE	REVISION	BY

PATRICK ENGINEERING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher KAR 10/02/12
CHIEF STRUCTURES DESIGN ENGINEER — DATE

STRUCTURE C-67-70

STH 164 OVER DRAINAGE WAY

COUNTY: WAUKESHA
~~TOWN/CITY~~/VILLAGE: BIG BEND

DESIGN SPEC.
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	PEW	DESIGN CK'D.	RDW	DRAWN BY	KEF	PLANS CK'D.	RDW

GENERAL PLAN

SHEET 1 OF 8
33

8

8

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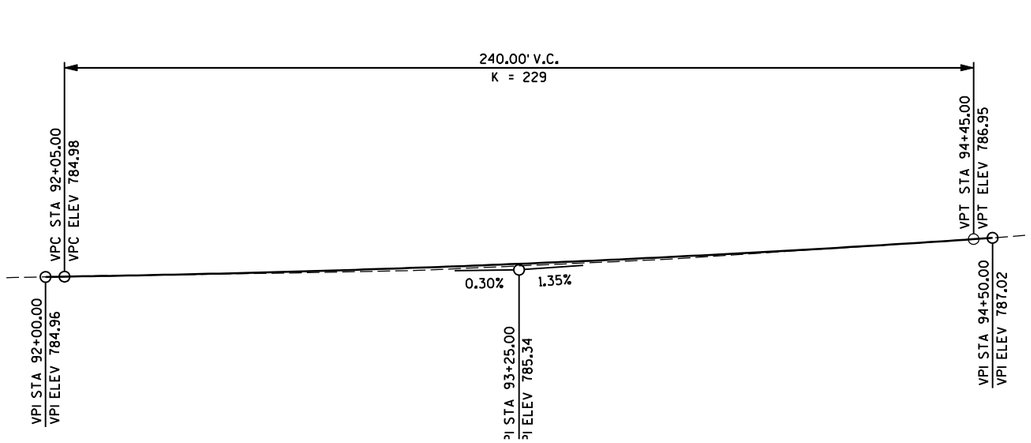
FILE NAME : p:\milwaukee\projects\wisdot\21152.009\cadd\sheets\plst 01.dgn PLOT DATE : 9/28/2012 1:26:26 PM PLOT BY : Paul Wirth (Rdwy_Wis) PLOT NAME : PLOT SCALE : 24.0002 sf / IN.

STATE PROJECT NUMBER
2810-02-71

TOTAL ESTIMATED QUANTITIES

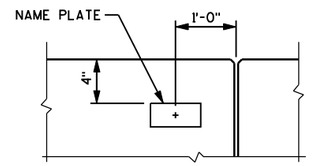
ITEM NO.	BID ITEM	UNIT	TOTAL
203.0200	REMOVING OLD STRUCTURE (STA 94+31.91)	L.S.	1
206.2000	EXCAVATION FOR STRUCTURES CULVERTS (C-67-70)	L.S.	1
210.0100	BACKFILL STRUCTURE	C.Y.	920
311.0115	BREAKER RUN	C.Y.	60
504.0100	CONCRETE MASONRY CULVERTS	C.Y.	190
505.0410	BAR STEEL REINFORCEMENT HS CULVERTS	LB.	26,500
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	S.Y.	85
606.0200	RIPRAP MEDIUM	C.Y.	65
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	L.F.	40
645.0105	GEOTEXTILE FABRIC TYPE C	S.Y.	370
645.0120	GEOTEXTILE FABRIC TYPE HR	S.Y.	125
	NON-BID ITEMS	SIZE	
	FILLER	¾"	



STH 164 PGL

GENERAL NOTES

1. DRAWINGS SHALL NOT BE SCALED.
2. BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS SHOWN OR NOTED OTHERWISE.
3. THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES CULVERTS (C-67-70)" SHALL BE THE EXISTING GROUNDLINE.
4. SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ¾" FILLER WITH NON-STAINING GRAY NON-ASPHALTIC JOINT SEALER.
5. FILLER SHALL CONFORM TO THE REQUIREMENTS OF AASHTO DESIGNATION M153 TYPE I, II, OR III, OR AASHTO DESIGNATION M213.
6. ALL SPACES EXCAVATED AND NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL TO THE TOP OF THE BOX WITHIN THE LENGTH OF THE CULVERT.
7. STRUCTURE BACKFILL IS REQUIRED BEHIND ALL WINGWALLS.
8. THE CONCRETE IN THE CUTOFF WALLS MAY BE PLACED UNDERWATER IF THE EXCAVATION CANNOT BE DEWATERED.
9. PLACE A 18" (MIN.) WIDE SHEET OF 'RUBBERIZED MEMBRANE WATERPROOFING' ON TOP SLAB OVER ALL CONSTRUCTION JOINTS AND EXTEND DOWN TO BOTTOM OF OUSTIDE WALLS.
10. THE CONTRACTOR MAY FURNISH A PRECAST CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE BOX CULVERT WITH THE ACCEPTANCE OF THE SHOP DRAWINGS BY THE STRUCTURES DEVELOPMENT SECTION. THE PRECAST CONCRETE BOX CULVERT SHALL CONFORM TO PRECAST DETAILS ON CHAPTER 36 STANDARDS OF THE CURRENT WISC. DOT BRIDGE MANUAL. PAYMENT FOR THE PRECAST CULVERT SHALL BE BASED ON THE QUANTITIES AND PRICES BID FOR THE ITEMS LISTED IN THE "TOTAL ESTIMATED QUANTITIES".
11. MATERIALS, FABRICATION, CONSTRUCTION AND DESIGN OF PRECAST BOX CULVERTS SHALL BE IN ACCORDANCE WITH THE CURRENT ASTM SPECIFICATION, C1577; AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS; WISCONSIN DOT BRIDGE MANUAL; WISCONSIN DOT STANDARD SPECIFICATIONS, EXCEPT THAT THE CONCRETE MIXTURE SHALL CONTAIN NOT LESS THAN 565 LBS. OF CEMENTITIOUS MATERIALS PER CUBIC YARD.
12. THE CONTRACTOR SHALL BUILD THE APRON AND THE ENDS OF THE BOX LEVEL.



NAME PLATE LOCATION
WING 3

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE C-67-70

DRAWN BY KEF | PLANS CK'D. RDW

GENERAL NOTES AND QUANTITIES

SHEET 2 OF 8
34

8

8

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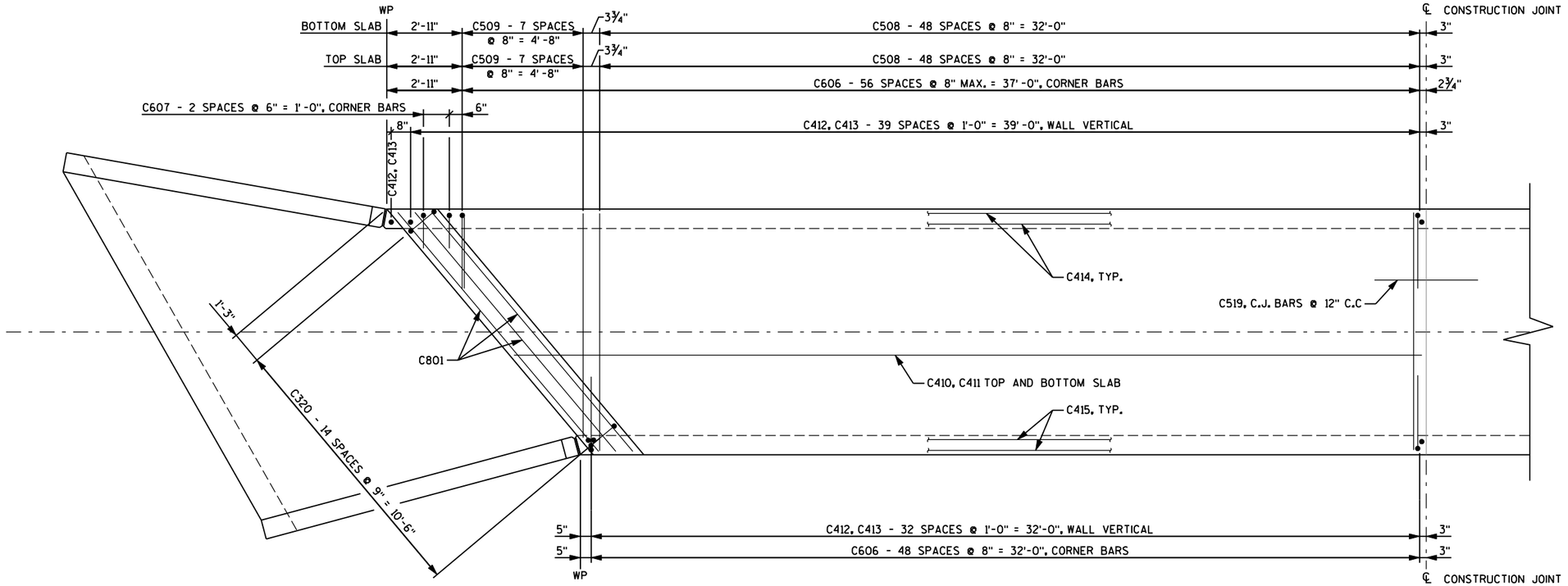
FILE =
SCALE =

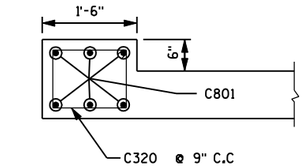
STATE PROJECT NUMBER

2810-02-71

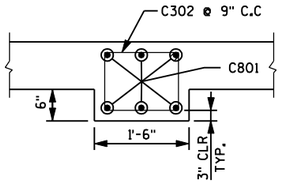


NOTE: BOTTOM HEADER REINFORCEMENT NOT SHOWN

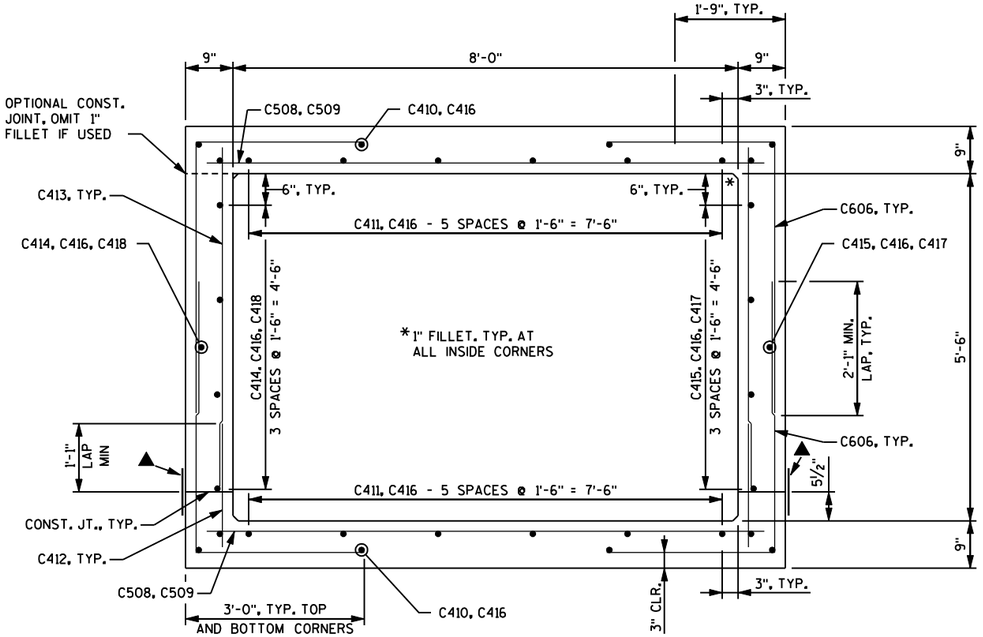
PLAN VIEW OF CULVERT - OUTLET



SECTION THRU TOP HEADER - OUTLET

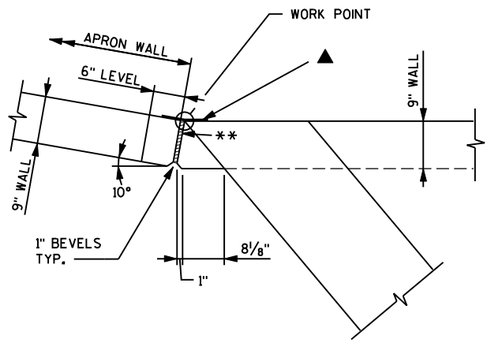


SECTION THRU BOTTOM HEADER - OUTLET

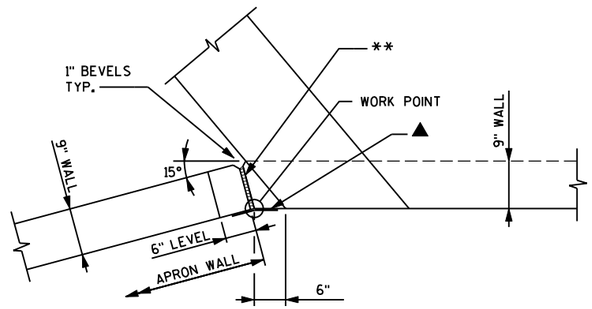


TYPICAL SECTION THRU BOX

(LOOKING SOUTHEAST)



WING 2



WING 4

CORNER DETAILS

** ¾" FILLER EXTEND FROM HORIZ. CONST. JOINT TO TOP OF WING

▲ RUBBERIZED MEMBRANE WATER PROOFING EXTEND FROM HORIZ. CONST. JOINT TO TOP OF WING AT APRON AND ALONG HORIZ. CONST. JOINT OF CULVERT.

TOP CONSTRUCTION JOINT WAS UTILITZED AND RUBBERIZED MEMBRANE APPLIED ALONG HORIZONTAL JOINT OF CULVERT.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE C-67-70

DRAWN BY	KEF	PLANS CK'D.	RDW

BOX DETAILS

SHEET 3 OF 8
35

8

8

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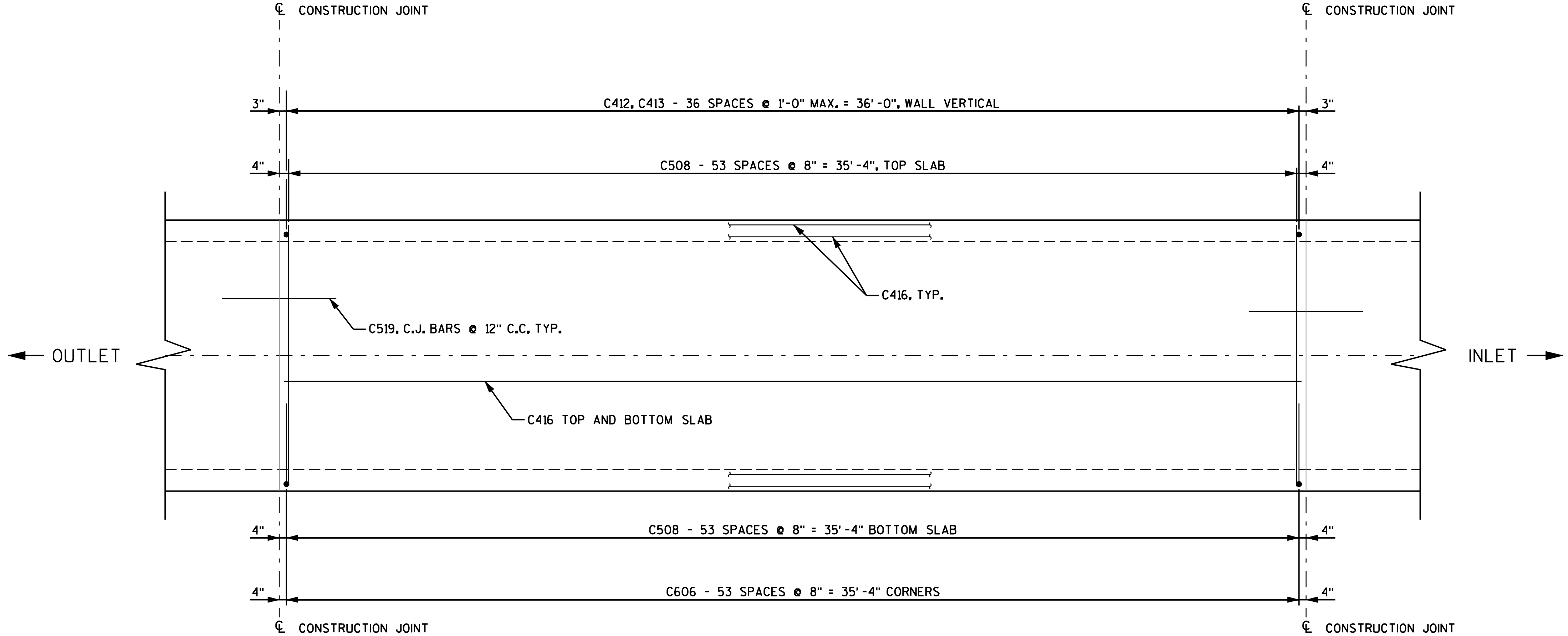
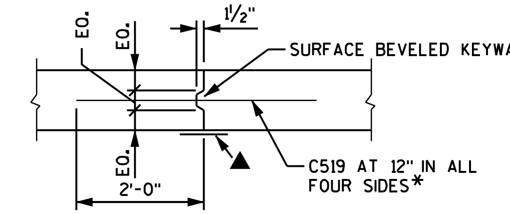


PLAN VIEW OF CULVERT - TYPICAL INTERIOR PANEL

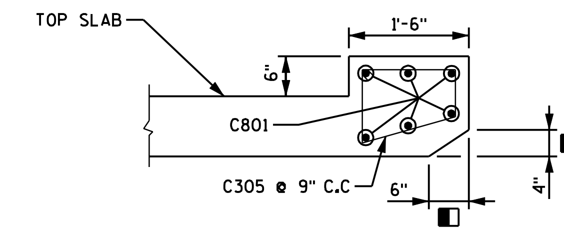
NOTE: USE IDENTICAL REINFORCEMENT IN THE OTHER INTERIOR PANELS WITH THE SAME DISTANCE FROM THE CONSTRUCTION JOINT



*THE CONTRACTOR MAY UTILIZE MASONRY ANCHORS TYPE S (EPOXY ANCHORED), 1/2-INCH WITH A 1'-0" MIN. EMBEDMENT AND A MIN. PULL OUT CAPACITY OF 12 KIPS. ALL WORK AND MATERIALS FOR OPTIONAL JOINT, IF USED, TO BE CONSIDERED INCIDENTAL TO 'BAR STEEL REINFORCEMENT HS CULVERTS'

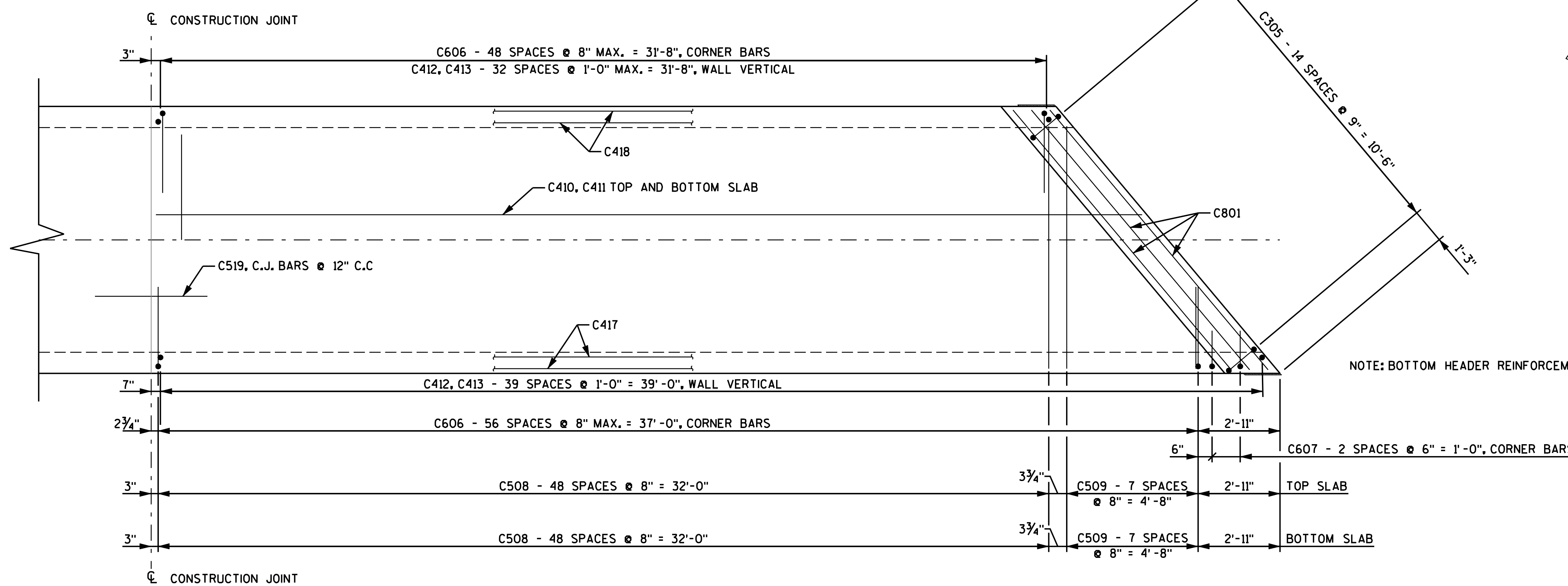
CONSTRUCTION JOINT

▲ RUBBERIZED MEMBRANE WATER PROOFING EXTEND FROM HORIZ. CONST. JOINT UP WALLS AND ACROSS TOP SLAB



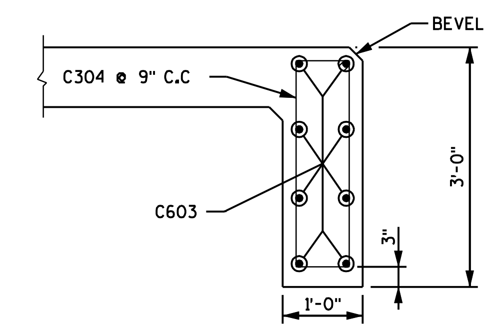
◧ BEVEL TO EXTEND BETWEEN INSIDE FACE OF BOX WALLS

SECTION THRU TOP HEADER - INLET



NOTE: BOTTOM HEADER REINFORCEMENT NOT SHOWN.

PLAN VIEW OF CULVERT - INLET



SECTION THRU BOTTOM HEADER - INLET

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE C-67-70

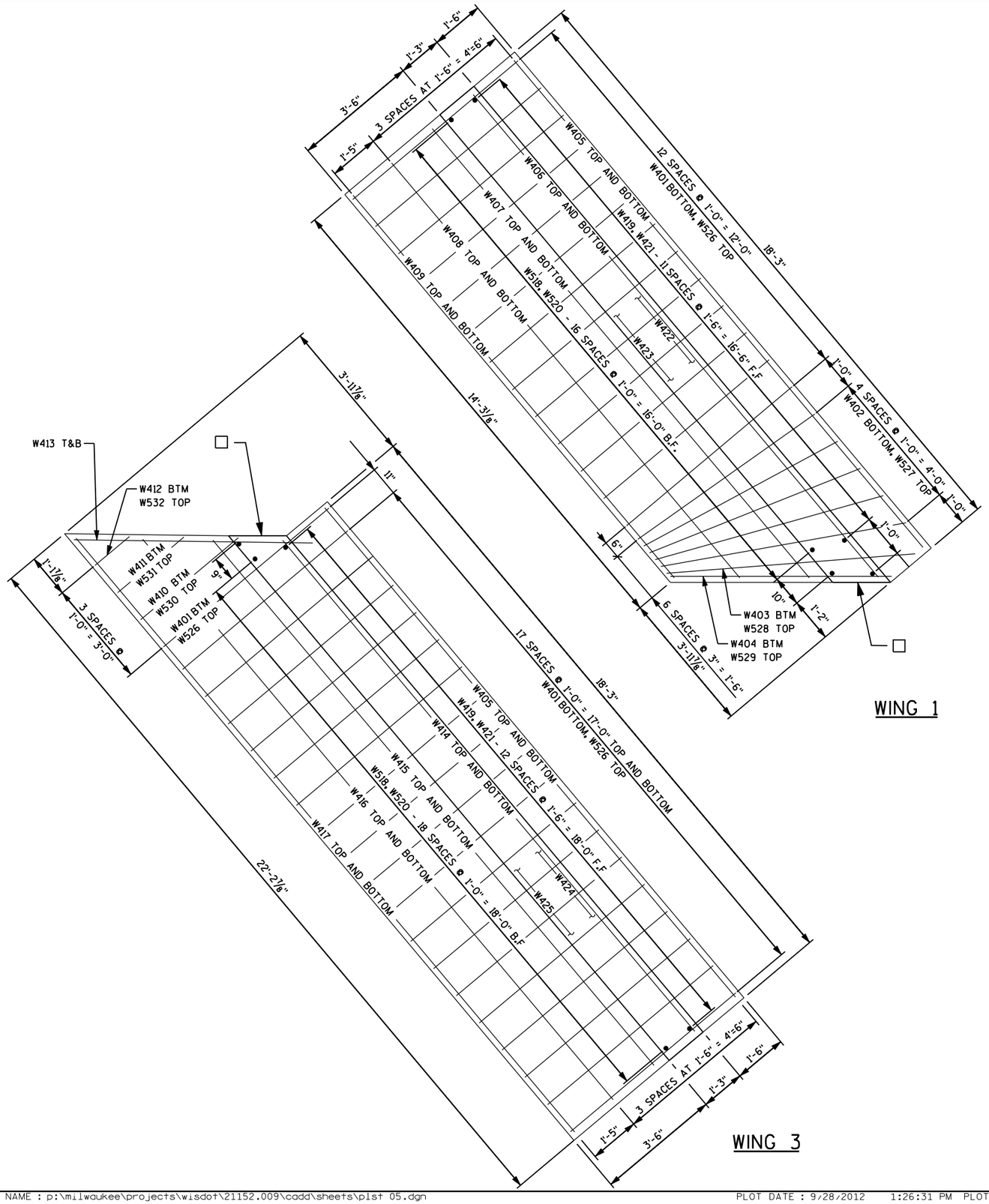
DRAWN BY KEF | PLANS CK'D. RDW

BOX DETAILS

SHEET 4 OF 8

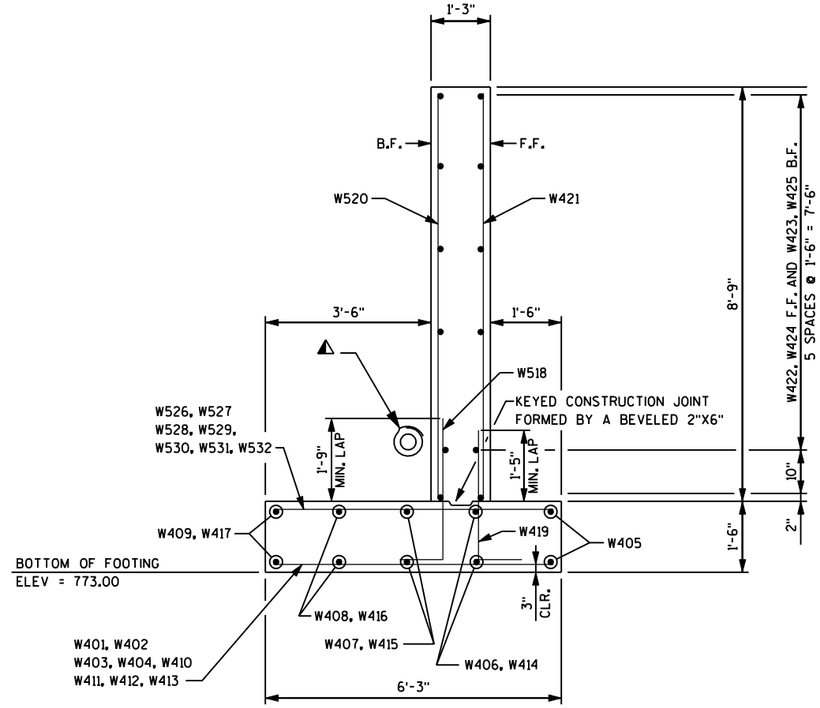
STATE PROJECT NUMBER

2810-02-71



WING 1

WING 3



TYPICAL WINGWALL SECTION

⚠ PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. AND DAYLIGHT PIPE THROUGH WINGWALL 2'-0" CLEAR FROM CULVERT WALL, INVERT EL. 777.50. REFER TO SHEET 1 FOR LOCATION. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN AS DETAILED ON SDD REINFORCED CONCRETE APRON ENDWALL FOR PIPE UNDERDRAIN. RODENT SHIELD IS INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

☐ PROVIDE ¾" FILLER BETWEEN WINGWALL STEM AND CULVERT WALL AND PROVIDE RUBBERIZED MEMBRANE WATER PROOFING ON THE BACKFACE OF THE WINGWALL STEM CENTERED ON THE JOINT BETWEEN THE WINGWALL AND CULVERT. EXTEND THE FILLER AND WATER PROOFING FROM TOP OF WINGWALL FOOTING TO TOP OF WINGWALL STEM.

8

8

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DEPARTMENT OF TRANSPORTATION
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STRUCTURE C-67-70

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WING DETAILS

SHEET 5 OF 8
37

Pdf_Dw_HS.plt
PEI_Text+Sub.tbl

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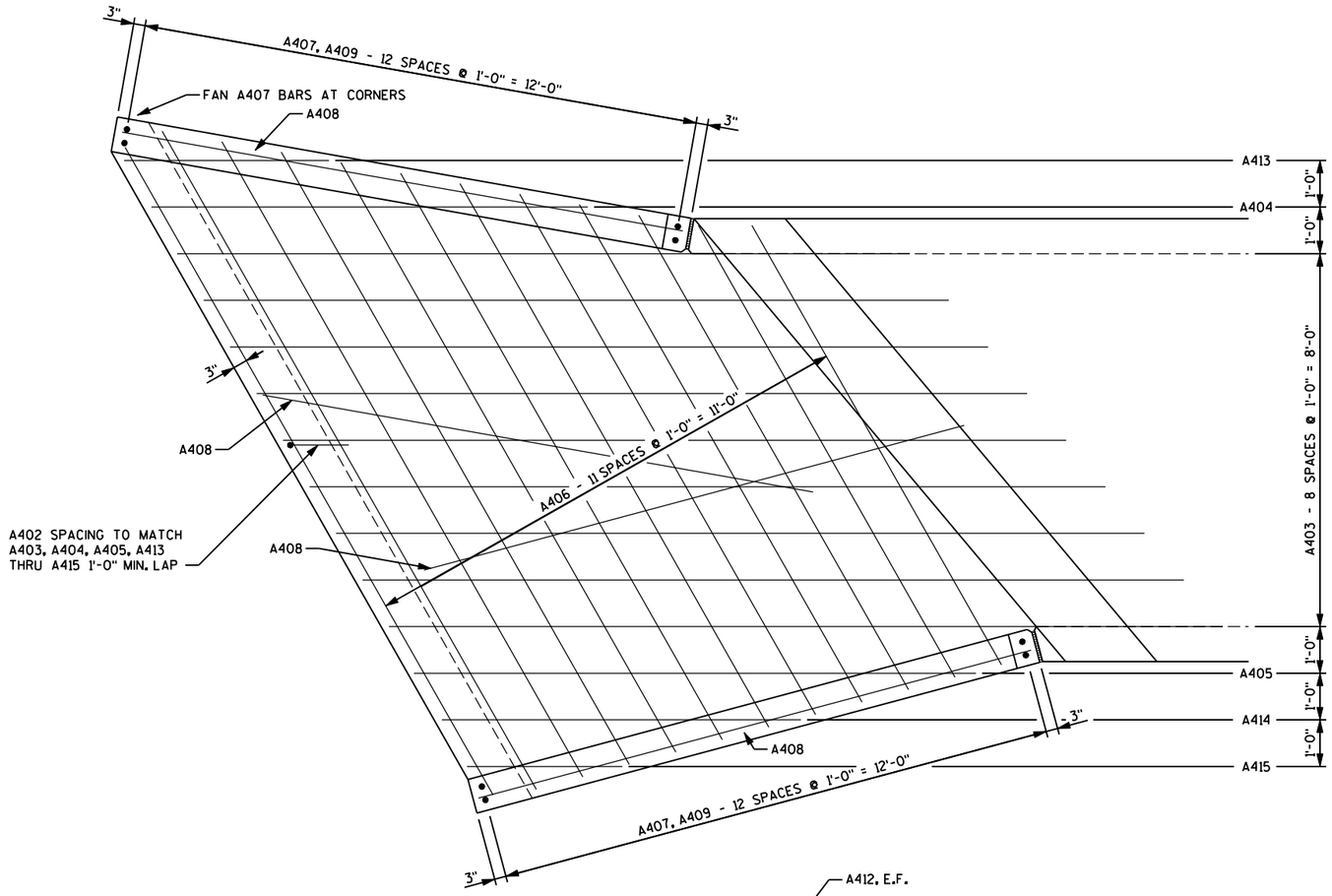
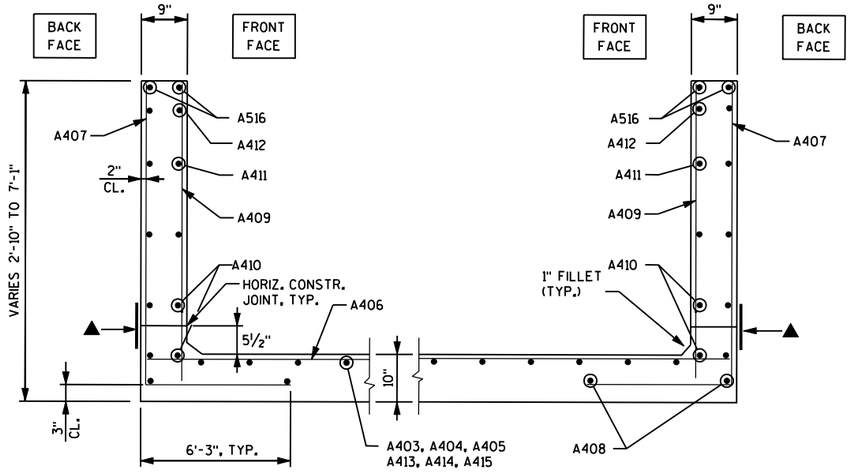
STATE PROJECT NUMBER

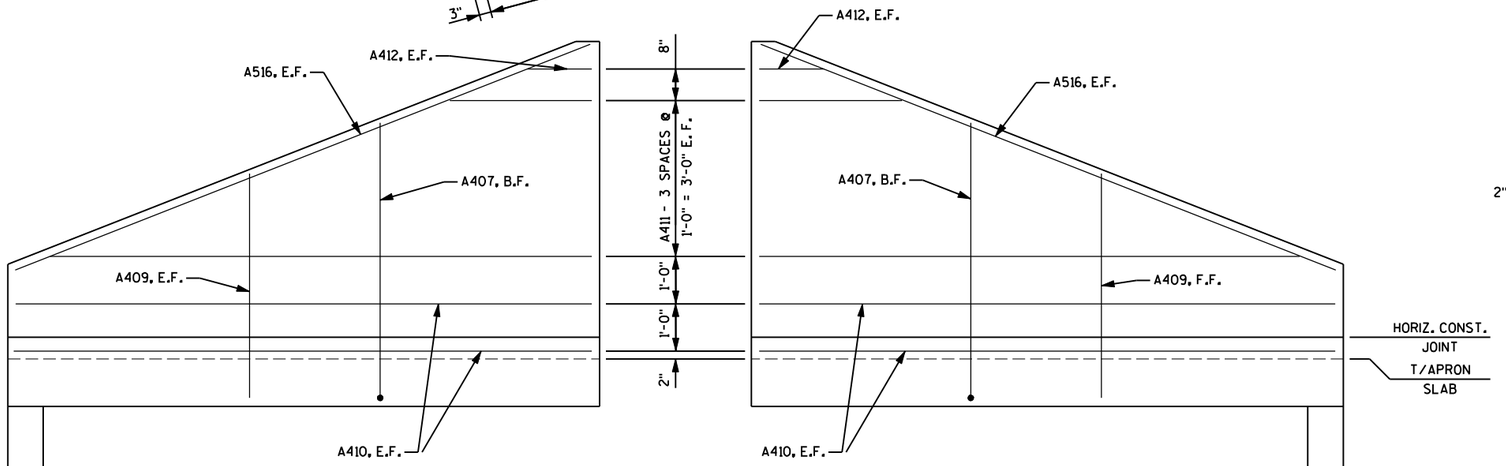
2810-02-71





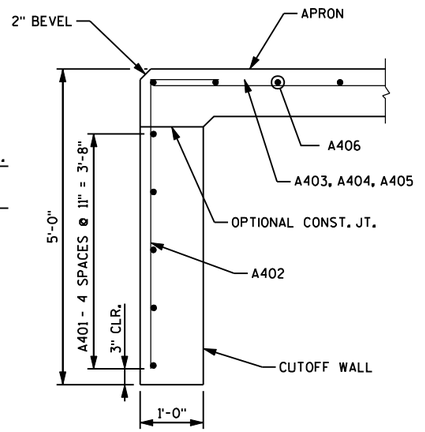
SECTION THRU WINGWALLS

▲ 18" MIN. WIDTH RUBBERIZED MEMBRANE WATERPROOFING ALONG HORIZ. CONSTR. JT. IN WING.

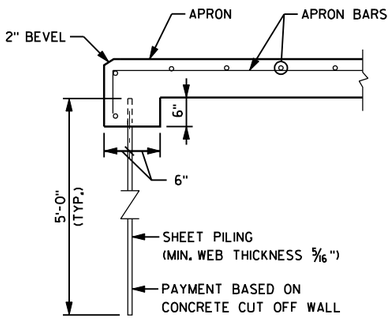


REINFORCEMENT WING 4

REINFORCEMENT WING 2



OUTLET CUTOFF WALL SECTION



ALTERNATE CUTOFF WALL

THE ABOVE APRON MAY BE USED IN LIEU OF CAST-IN-PLACE CONCRETE CUTOFF WALLS.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE C-67-70

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APRON DETAILS

SHEET 6 OF 8
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Pdf_bw_HS.plt
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FILE NAME : p:\milwaukee\projects\wisdot\21152.009\cadd\sheets\plst 06.dgn PLOT DATE : 9/28/2012 1:26:32 PM PLOT BY : Paul Wirth (Rdwy_Wis) PLOT NAME : PLOT SCALE : 24.0003 sf / IN.

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STATE PROJECT NUMBER

2810-02-71

BILL OF BARS - APRON

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

BAR MARK	COATED	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
A401		5	16'-1"			APRON CUTOFF WALL HORIZONTAL
A402		14	5'-5"	▲		APRON CUTOFF WALL VERTICAL
A403		9	15'-6"			APRON SLAB LONGITUDNIAL
A404		1	9'-3"			APRON SLAB LONGITUDINAL
A405		1	11'-10"			APRON SLAB LONGITUDINAL
A406		12	13'-4"		Δ	APRON SLAB TRANSVERSE
A407		26	10'-6"	▲	Δ	APRON WALL VERTICAL BACK FACE
A408		4	12'-2"			APRON SLAB LONGITUDINAL
A409		26	4'-7"		Δ	APRON WALL VERTICAL FRONT FACE
A410		8	12'-2"			APRON WALL HORIZONTAL
A411		16	7'-2"		Δ	APRON WALL HORIZONTAL
A412		4	1'-0"			APRON WALL HORIZONTAL
A413		1	4'-2"			APRON SLAB LONGITUDINAL
A414		1	7'-6"			APRON SLAB LONGITUDINAL
A415		1	3'-3"			APRON SLAB LONGITUDINAL
A516		4	12'-7"			APRON WALL HORIZONTAL

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

BILL OF BARS - CULVERT

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

BAR MARK	COATED	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
C801		18	12'-1"			INLET TOP HEADER, OUTLET TOP AND BOTTOM HEADER HORIZ
C302		15	4'-1"	▲		OUTLET BOTTOM HEADER STIRRUP
C603		8	12'-1"			INLET CUTOFF WALL HORIZONTAL
C304		15	6'-5"	▲		INLET CUTOFF WALL STIRRUP
C305		15	4'-5"	▲		INLET HEADER STIRRUP
C606		1072	7'-1"	▲		CORNER BARS
C607		12	6'-0"	▲	Δ	CORNER BARS
C508		520	9'-2"			TOP AND BOTTOM SLAB TRANSVERSE BAR
C509		32	5'-9"		Δ	TOP AND BOTTOM SLAB TRANSVERSE BAR
C410		16	35'-10"		Δ	BOTTOM AND TOP SLAB LONGITUDINAL
C411		32	35'-10"		Δ	BOTTOM AND TOP SLAB LONGITUDINAL
C412		369	2'-1"			WALL VERTICAL DOWEL
C413		369	5'-7"			WALL VERTICAL
C414		5	39'-10"			WALL LONGITUDINAL
C415		5	32'-4"			WALL LONGITUDINAL
C416		102	35'-8"			BOTTOM SLAB, TOP SLAB, WALL LONGITUDINAL
C417		5	39'-2"			WALL LONGITUDINAL
C418		5	31'-10"			WALL LONGITUDINAL
C519		128	4'-0"			CONSTRUCTION JOINT
C320		15	4'-7"	▲		OUTLET TOP HEADER STIRRUP

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

BILL OF BARS - WINGWALLS

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

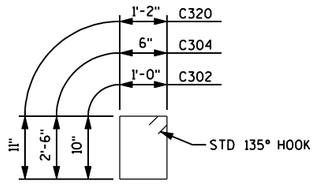
BAR MARK	COATED	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
W401		32	5'-11"			WING 1 AND 3 BOTTOM OF FOOTING TRANSVERSE
W402		5	6'-5"		Δ	WING 1 BOTTOM FOOTING TRANSVERSE
W403		1	7'-0"			WING 1 BOTTOM OF FOOTING TRANSVERSE
W404		1	5'-11"			WING 1 BOTTOM OF FOOTING TRANSVERSE
W405		4	17'-11"			WING 1 AND 3 BOTTOM AND TOP OF FOOTING LONGITUDINAL
W406		2	17'-9"			WING 1 BOTTOM AND TOP OF FOOTING LONGITUDINAL
W407		2	16'-6"			WING 1 BOTTOM AND TOP OF FOOTING LONGITUDINAL
W408		2	15'-3"			WING 1 BOTTOM AND TOP OF FOOTING LONGITUDINAL
W409		2	14'-1"			WING 1 BOTTOM AND TOP OF FOOTING LONGITUDINAL
W410		1	3'-4"			WING 3 BOTTOM OF FOOTING TRANSVERSE
W411		1	2'-1"			WING 3 BOTTOM OF FOOTING TRANSVERSE
W412		1	1'-0"			WING 3 BOTTOM OF FOOTING TRANSVERSE
W413		2	7'-1"			WING 3 BOTTOM AND TOP OF FOOTING TRANSVERSE
W414		2	18'-1"			WING 3 BOTTOM AND TOP OF FOOTING LONGITUDINAL
W415		2	19'-4"			WING 3 BOTTOM AND TOP OF FOOTING LONGITUDINAL
W416		2	20'-7"			WING 3 BOTTOM AND TOP OF FOOTING LONGITUDINAL
W417		2	21'-9"			WING 3 BOTTOM AND TOP OF FOOTING LONGITUDINAL
W518		38	3'-9"	▲		WING 1 AND 3 BACK FACE DOWEL
W419		26	3'-2"	▲		WING 1 AND 3 FRONT FACE DOWEL
W520		38	8'-7"			WING 1 AND 3 STEM BACK FACE VERTICAL
W421		26	8'-7"			WING 1 AND 3 STEM FRONT FACE VERTICAL
W422		7	17'-9"			WING 1 STEM FRONT FACE HORIZONTAL
W423		7	16'-11"			WING 1 STEM BACK FACE HORIZONTAL
W424		7	18'-1"			WING 3 STEM FRONT FACE HORIZONTAL
W425		7	18'-10"			WING 3 STEM BACK FACE HORIZONTAL
W526		32	5'-11"			WING 1 AND 3 TOP OF FOOTING TRANSVERSE
W527		5	6'-5"		Δ	WING 1 TOP FOOTING TRANSVERSE
W528		1	7'-0"			WING 1 TOP OF FOOTING TRANSVERSE
W529		1	5'-11"			WING 1 TOP OF FOOTING TRANSVERSE
W530		1	3'-4"			WING 3 TOP OF FOOTING TRANSVERSE
W531		1	2'-1"			WING 3 TOP OF FOOTING TRANSVERSE
W532		1	1'-0"			WING 3 TOP OF FOOTING TRANSVERSE

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

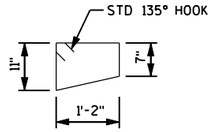
BAR SERIES TABLE

MARK	NO. REQ'D	LENGTH		
A406	1 SERIES OF 12	10'-6"	TO	16'-2"
A407	2 SERIES OF 13	8'-5"	TO	12'-8"
A409	2 SERIES OF 13	2'-5"	TO	6'-8"
A411	4 SERIES OF 4	2'-11"	TO	11'-4"
C607	4 SERIES OF 3	5'-3"	TO	6'-8"
C509	4 SERIES OF 8	2'-10"	TO	8'-7"
C410	4 SERIES OF 4	31'-10"	TO	39'-10"
C411	4 SERIES OF 8	31'-10"	TO	39'-10"
W402	1 SERIES OF 5	5'-11"	TO	6'-10"
W527	1 SERIES OF 5	5'-11"	TO	6'-10"

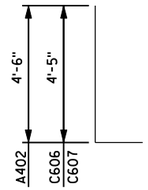
BUNDLE AND TAG EACH SERIES SEPARATELY.



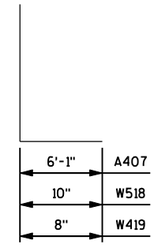
C302, C304, C320



C305



A402, C606, C607



A407, W419, W518

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE C-67-70

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BAR DETAILS

SHEET 7 OF 8
39

8

8

Pdf_bw_HS.plt
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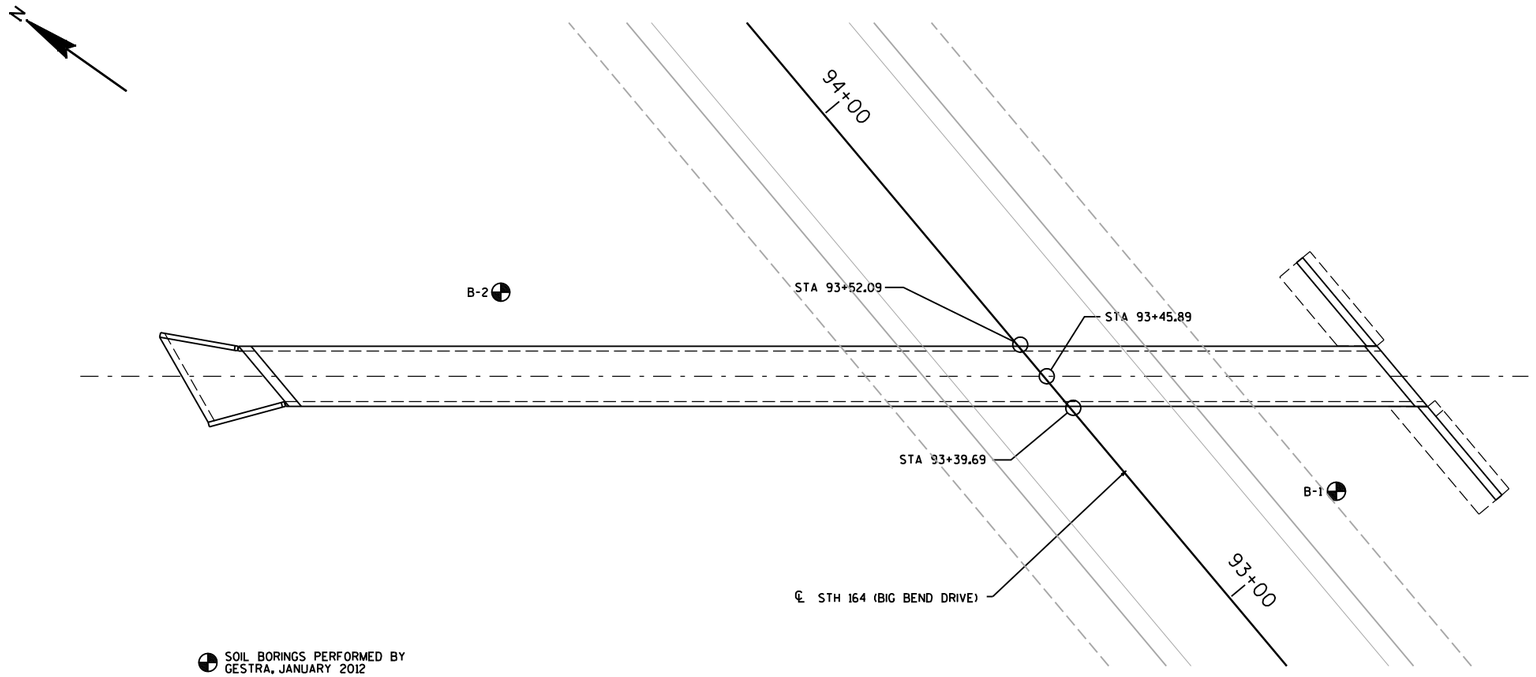


STATE PROJECT NUMBER

2810-02-71

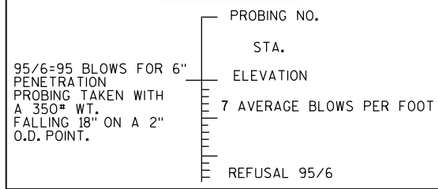
ABBREVIATIONS

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

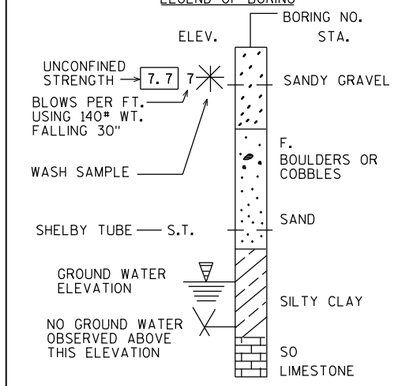
MATERIAL SYMBOLS

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

LEGEND OF PROBING



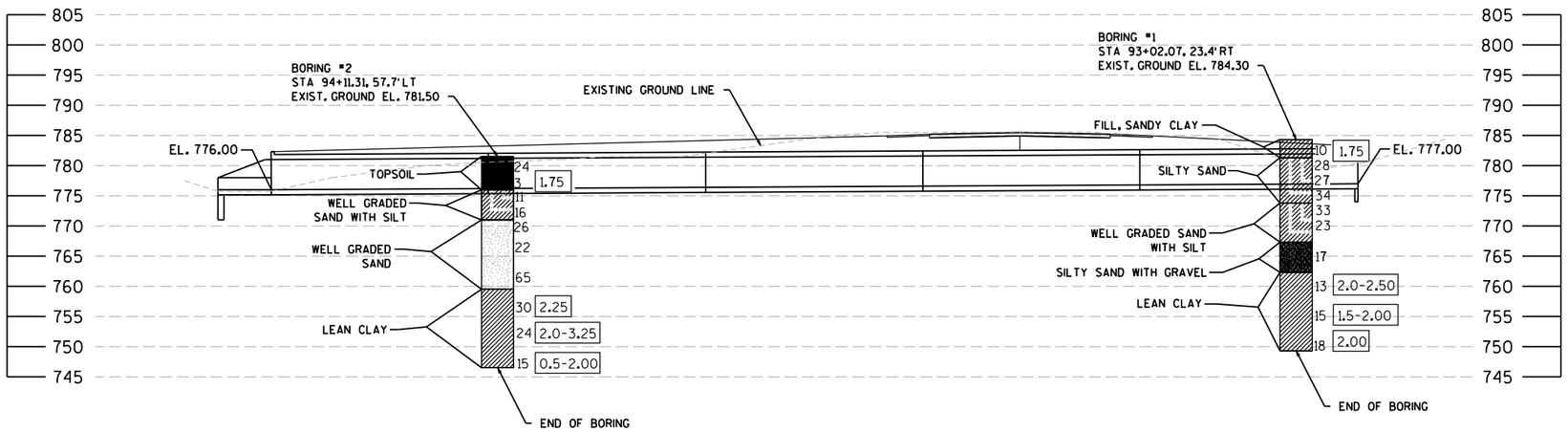
LEGEND OF BORING



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 SOUDNINGS 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
STRUCTURES DESIGN SECTION

STRUCTURE C-67-70

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SUBSURFACE EXPLORATION

SHEET 8 OF 8
40

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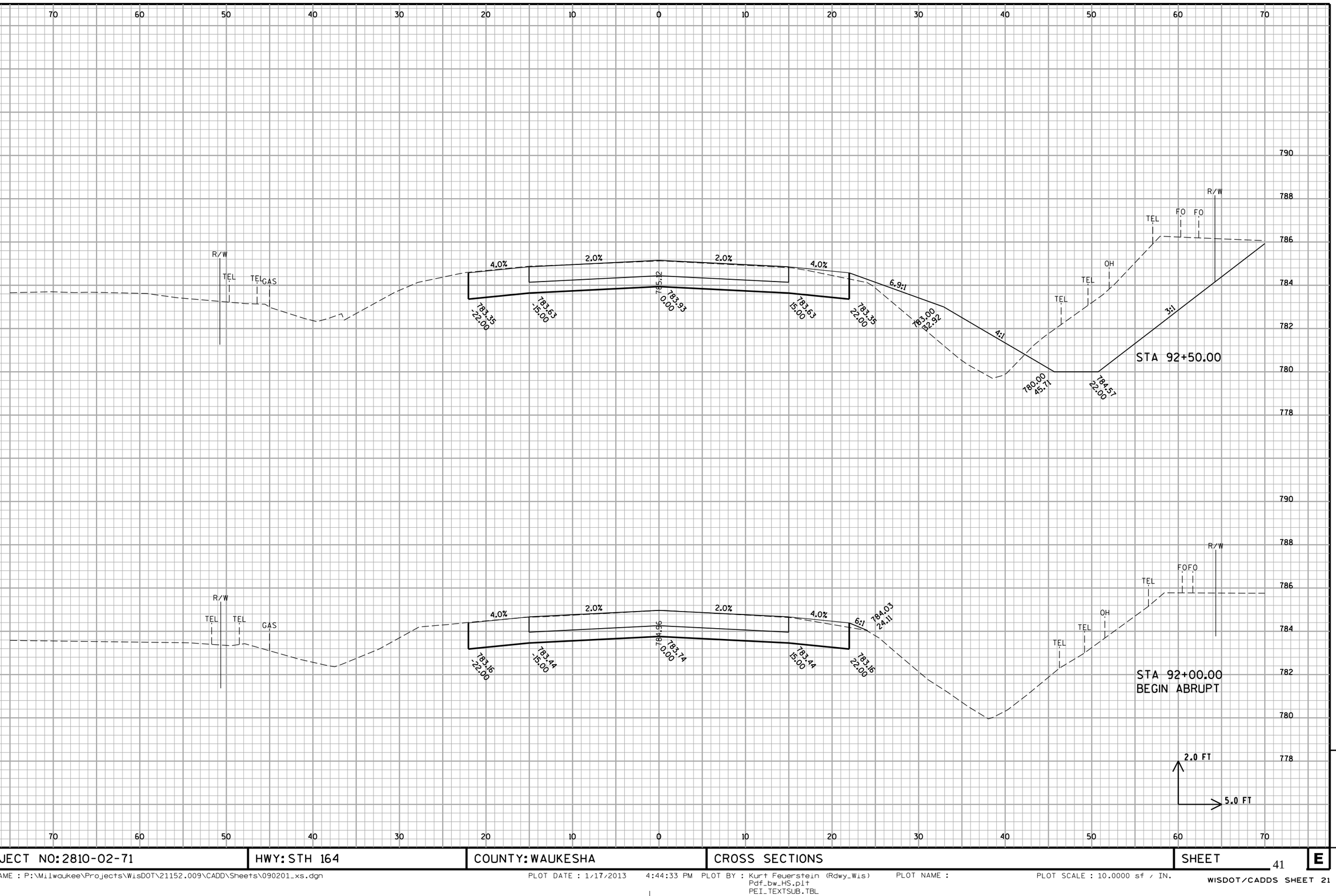

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PROJECT NO: 2810-02-71	HWY: STH 164	COUNTY: WAUKESHA	CROSS SECTIONS	SHEET	E

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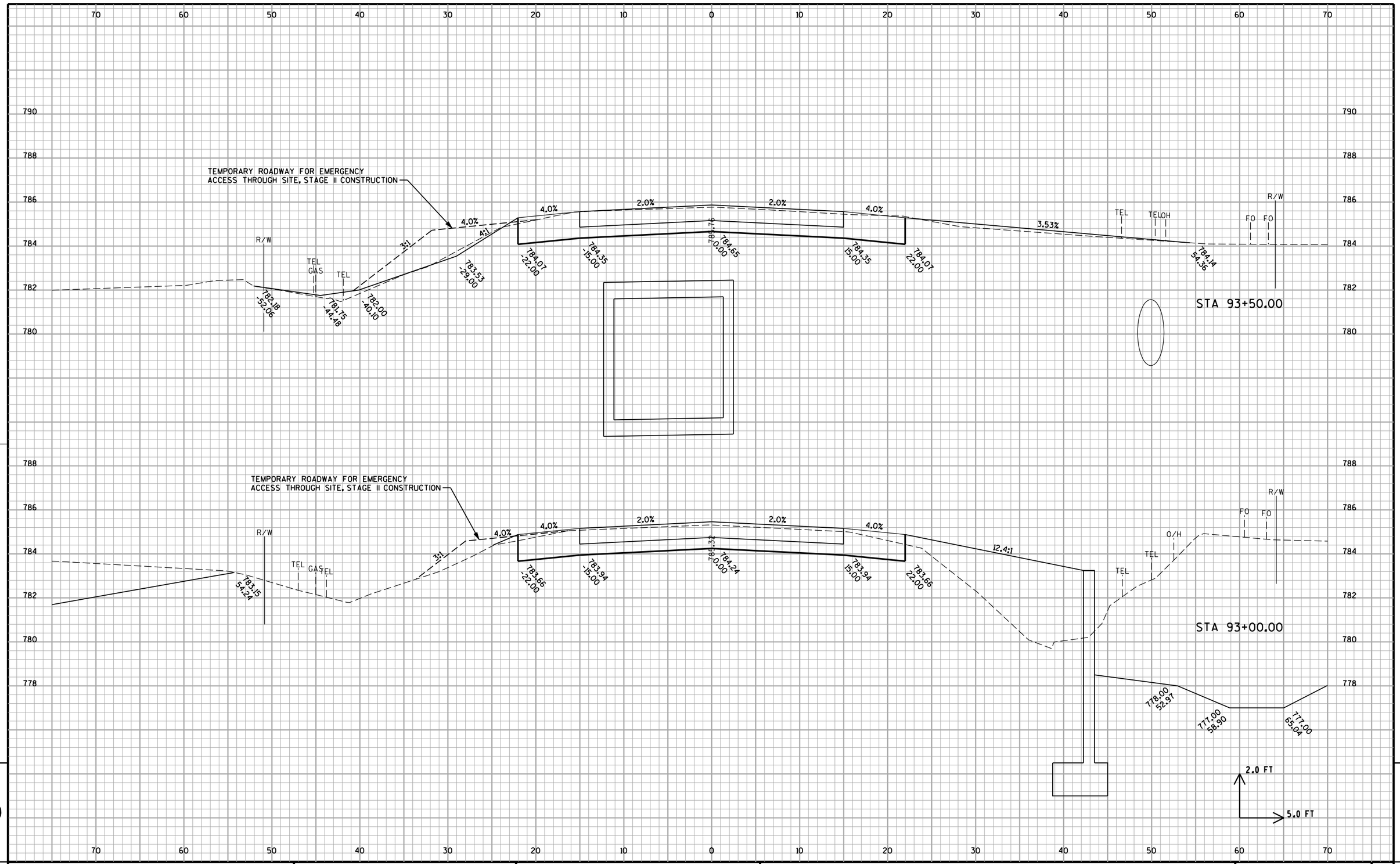
WISDOT/CADDS SHEET 21



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PROJECT NO: 2810-02-71	HWY: STH 164	COUNTY: WAUKESHA	CROSS SECTIONS	SHEET	E

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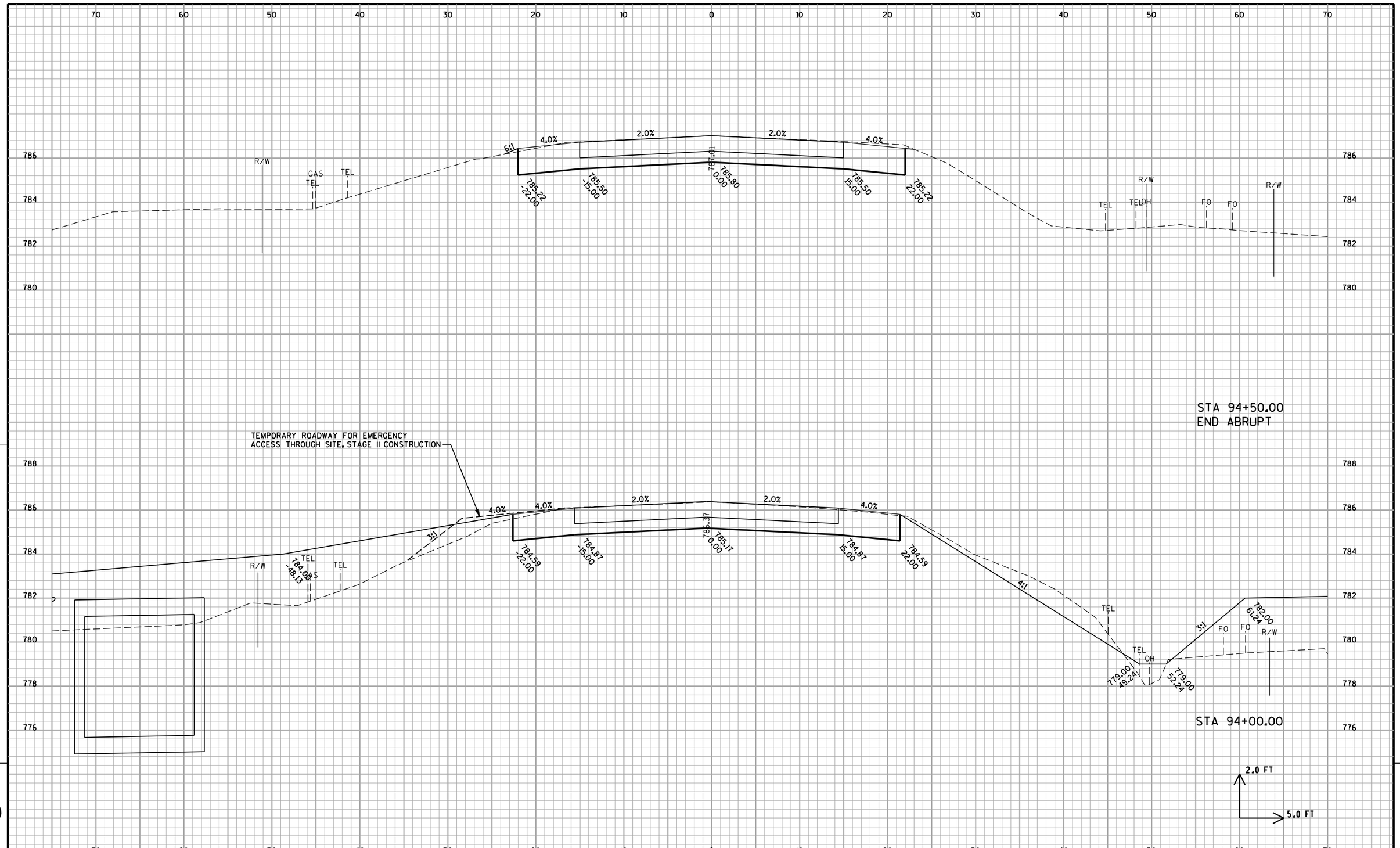

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9

PROJECT NO: 2810-02-71	HWY: STH 164	COUNTY: WAUKESHA	CROSS SECTIONS	SHEET 43 E

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