WKE

AUGUST 2017

PROJECT ID: 1060-34-78

COUNTY: MILWAUKEE

ORDER OF SHEETS

TOTAL SHEETS = 174

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
1060-34-78		

STATE OF WISCONSIN

DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

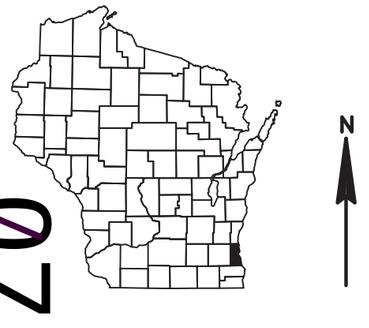
ZOO IC, DETENTION POND

AT NORTH AVENUE INTERCHANGE

NON HWY

MILWAUKEE COUNTY

STATE PROJECT NUMBER
1060-34-78



NORTH AVENUE DETENTION POND
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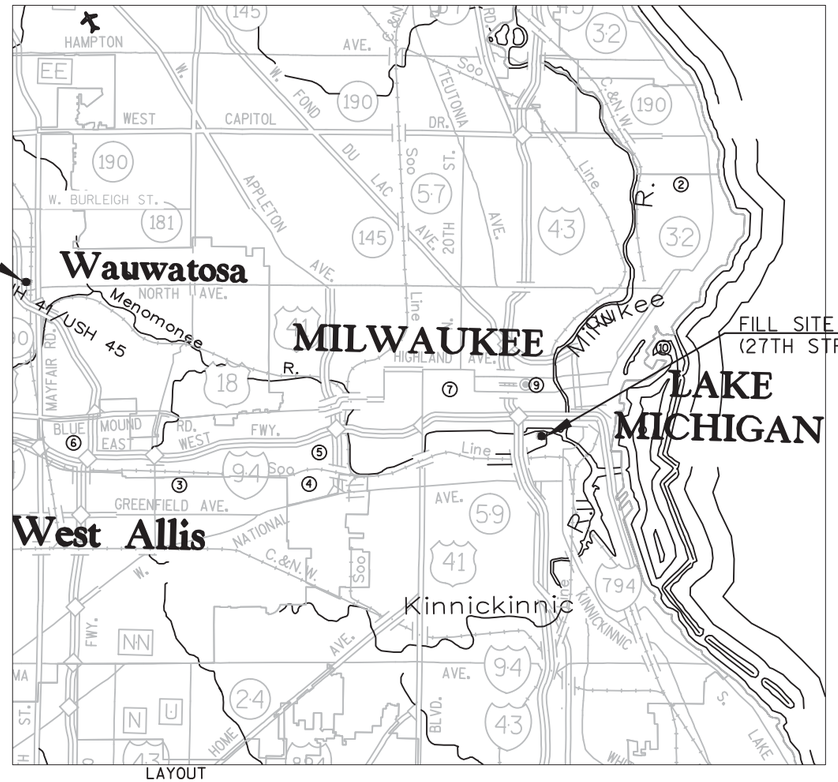
Y-307566.49



LAYOUT

SCALE 0 2 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.000

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, MILWAUKEE COUNTY, NAD83 (2007), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM NAVD88 (2007)

DESIGN DESIGNATION

A.A.D.T.	=	NA
A.A.D.T.	=	NA
D.H.V.	=	NA
D.D.	=	NA
T.	=	NA
DESIGN SPEED	=	NA
ESALS	=	NA

CONVENTIONAL SYMBOLS

PLAN

- CORPORATE LIMITS
- PROPERTY LINE
- LOT LINE
- LIMITED HIGHWAY EASEMENT
- EXISTING RIGHT OF WAY
- PROPOSED OR NEW R/W LINE
- SLOPE INTERCEPT
- REFERENCE LINE — 300'EB'
- EXISTING CULVERT
- PROPOSED CULVERT (Box or Pipe)
- COMBUSTIBLE FLUIDS — CAUTION
- MARSH AREA
- WOODED OR SHRUB AREA

PROFILE

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

UTILITIES

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	FORWARD 45
Designer	WISDOT
Project Manager	CHRIS A. ZACHARIAS, P.E.
Regional Examiner	
Regional Supervisor	WILLIAM S. MOHR, P.E.

APPROVED FOR THE DEPARTMENT

DATE: 6/29/17 Chris A. Zach (Signature)

E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\010101_TI_FINAL.DWG
LAYOUT NAME - ****

PLOT DATE : 4/25/2017 5:18 PM

PLOT BY : MCGILLICUDDY, BENJAMPLOT NAME :

2

STANDARD ABBREVIATIONS

AEW	APRON ENDWALL	PCC	POINT OF COMPOUND CURVE
AGG	AGGREGATE	PE	PRIVATE ENTRANCE
BAD	BASE AGGREGATE DENSE	PI	POINT OF INTERSECTION
BM	BENCHMARK	PLE	PERMANENT LIMITED EASEMENT
C&G	CURB AND GUTTER	PT	POINT OF TANGENT
CL OR $_{L}^{C}$	CENTER LINE OR CONSTRUCTION LINE	R	RADIUS OF CURVE
CMCP	CULVERT PIPE CORRUGATED METAL	R/L	REFERENCE LINE
CONC	CONCRETE	R/W	RIGHT OF WAY
CP	CULVERT PIPE	RC	REVERSE CROWN
CPRC	CULVERT PIPE REINFORCED CONCRETE	RCAEW	APRON END WALL FOR CULVERT PIPE
CPRCHE	CULVERT PIPE REINFORCED CONCRETE HORIZONTAL ELLIPTICAL		REINFORCED CONCRETE
		REQD	REQUIRED
CSD	CONCRETE SURFACE DRAIN	RHF	RIGHT HAND FORWARD
CY	CUBIC YARD	RO	RUN OFF LENGTH
D	DEGREE OF CURVE	RRSP	RAILROAD SPIKE
Δ	DELTA	RT	RIGHT
DISCH	DISCHARGE	SLV	SALVAGED
FE	FIELD ENTRANCE	SB	SOUTHBOUND
HMA	HOT MIX ASPHALTIC	SDD	STANDARD DETAIL DRAWING
INV	INVERT	SE	SUPER ELEVATION
L	LENGTH OF CURVE	SF	SQUARE FOOT
LHF	LEFT HAND FORWARD	STA	STATION
LT	LEFT	SY	SQUARE YARD
MIN	MINIMUM	T	TANGENT LENGTH
M/L	MAINLINE	TLE	TEMPORARY LIMITED EASEMENT
NB	NORTHBOUND	VCL	VERTICAL CURVE LENGTH
NC	NORMAL CROWN	VPC	POINT VERTICAL CURVE
PAVT	PAVEMENT	VPI	POINT OF VERTICAL INTERSECTION
PC	POINT OF CURVE	VPT	POINT OF VERTICAL TANGENT

ORDER OF SECTION 2 DETAIL SHEETS

UTILITY CONTACTS

AMERICAN TRANSMISSION COMPANY (ATC)
MR. IVAN KELLER
W234 N2000 RIDGEVIEW PARKWAY COURT
WAUKESHA, WI 53187
PHONE: (262) 422-0326
IKELLER@ATCLLC.COM

AT&T CORPORATION
C/O MR. KEN NINE
JMC ENGINEERS & ASSOCIATES, INC.
110 N. MAIN STREET
CULVER, IN 46511
PHONE: (574) 842-8830
CELL: (574) 904-6336
KENNETHNINE@ATT.NET

AT&T WISCONSIN
JAY BULANEK
2005 PEWAUKEE RD
WAUKESHA, WI 53188
PHONE: (262) 896-7669
CELL: (414) 491-2855
JB5175@ATT.COM

CHARTER COMUNICATIONS (TIME WARNER CABLE)
STEVEN CRAMER
1320 N DR MARTIN LUTHER KING JR DR.
MILWAUKEE, WI 53212-4002
OFFICE: (414) 277-4045
CELL: (414) 688-2385
STEVE.CRAMER@CHARTER.COM
WIS.ENGINEERING@CHARTER.COM

MILWAUKEE, CITY OF - CABLE
DAVID HENKE
841 N. BROADWAY
MILWAUKEE, WI 53202
PHONE: (414 286-3248
DAVID.HENKE@MILWAUKEE.GOV

MILWAUKEE, CITY OF - CONDUIT
MRS. KAREN ROGNEY
841 N. BROADWAY
MILWAUKEE, WI 53202
PHONE: (414 286-3243
KAREN.ROGNEY@MILWAUKEE.GOV

MILWAUKEE , CITY OF - LIGHTING/SIGNALS
MR. DENNIS MILLER
841 N. BROADWAY, ROOM 920
MILWAUKEE, WI 53202
OFFICE: (414) 286-5942
CELL: (414) 708-4251
DENNIS.MILLER@MILWAUKEE.GOV

MILWAUKEE , CITY OF - SANITARY
MR. JASON BARMAN
841 N. BROADWAY, ROOM 821
MILWAUKEE, WI 53202
PHONE: (414) 286-3267
JASON.BARMAN@MILWAUKEE.GOV

MILWAUKEE WATER WORKS
MR. DAVE GOLDAPP
841 N. BROADWAY, ROOM 409
MILWAUKEE, WI 53202
PHONE: (414) 286-6301
DAVE.M.GOLDAPP@MILWAUKEE.GOV

WAUWATOSA, CITY OF - LIGHTING
RANDY MICHELZ
11100 W WALNUT RD
WAUWATOSA, WI 53226
OFFICE: (414) 471-8429
CELL: (414) 248-0987
RMICHELZ@WAUWATOSA.NET

TO OBTAIN LOCATION OF PARTICIPANTS' UNDERGOURND FACILITIES BEFORE YOU DIG IN WISCONSIN

WIS. STATUTE 182.0175 (1974) REQUIRES MIN. OF 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE

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

(CONTINUED ON NEXT SHEET)

OTHER AGENCIES

CITY OF WAUWATOSA – CITY ENGINEER
WILLIAM WEHRLEY
7725 W NORTH AVE
WAUWATOSA, WI 53213
(414) 479-8929
WWEHRLEY@WAUWATOSA.NET

MILWAUKEE, CITY OF
MR. JEFF POLENSKE, CITY ENGINEER
841 N. BORADWAY, ROOM 701
MILWAUKEE, WI 53202
PHONE: (414) 286-3701
JEFFREY.POLENSKI@MILWAUKEE.GOV

MILWAUKEE COUNTY TRANSIT SYSTEM
MELANIE FLYNN
COORDINATOR OF STREET OPERATIONS
1942 N. 17TH STREET
MILWAUKEE, WI 53205
(414) 343-1764
MMACARTHUR@MCTS.ORG

MILWAUKEE COUNTY TRANSIT SYSTEM – ROUTES
MELANIE FLYNN
1942 N. 17TH ST.
MILWAUKEE, WI 53205
PHONE: (414) 343-1764
MFLYNN@MCTS.ORG

MILWAUKEE COUNTY TRANSIT SYSTEM – BUS STOPS
ANDY TILLMAN
1942 N. 17TH ST.
MILWAUKEE, WI 53205
PHONE: (414) 343-1728
ATILLMAN@MCTS.ORG

MILWAUKEE METROPOLITAN SEWERAGE DISTRICT
MICKI KLAPPA-SULLIVAN
260 W SEEBOTH STREET
MILWAUKEE, WI 53204
PHONE: (414) 225-2178
MKLAPPASULLIVAN@MMSD.COM

SOUTHEASTERN WISONSIN REGIONAL PLANNING COMMISSION
ROB MERRY
W239 N1812 ROCKWOOD DRIVE
P.O. BOX 1607
WAUKESHA, WI 53187-1607
PHONE: (262) 953-4289
CELL: (920) 912-1036
RMERRY@SEWRPC.ORG

STATE AGENCIES

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
MR. MICHAEL THOMPSON, WDNR LIASION
2300 N. MARTIN LUTHER KING JR. DRIVE
MILWAUKEE, WI 53212
PHONE: (414) 263-8648
CELL: (414) 303-3408
MICHAELC.THOMPSON@WISCONSIN.GOV

WISCONSIN DEPARTMENT OF TRANSPORTATION
LINDA MATTHEWS, WETLAND ECOLOGIST
141 NW BARSTOW ST.
WAUKESHA, WI 53187-0798
PHONE: (262) 548-6458, CELL: (414) 750-0163
LINDA.MATTHEWS@DOT.WI.GOV

WISCONSIN DEPARTMENT OF TRANSPORTATION
LACI KAZAN, WETLAND ECOLOGIST
141 NW BARSTOW STREET
WAUKESHA, WI 53187-0798
CELL: (414) 322-1429
LACI.KAZAN@DOT.WI.GOV

WISCONSIN DEPARTMENT OF TRANSPORTATION
HANS HALLNGER, WISDOT SE REGION SWEC ENGINEER LIAISON
141 NW BARSTOW ST.
WAUKESHA, WI 53187-0798
(262) 548-6706
HANS.HALLANGER@DOT.WI.GOV

WISCONSIN DEPARTMENT OF TRANSPORTATION
CHRIS ZACHARIAS, PROJECT MANAGER
141 NW BARSTOW ST.
WAUKESHA, WI 53187-0798
(262) 548-6716
CHRIS.ZACHARIAS@DOT.WI.GOV

WISCONSIN DEPARTMENT OF TRANSPORTATION
GREG BERRY – UTILITY CONSTRUCTION ENGINEER
141 NW BARSTOW STREET
WAUKESHA, WI 53187-0798
(414) 750-7828
GREGORY.BERRY@DOT.WI.GOV

UTILITY CONTACTS (CONTINUED)

2

VERIZON
TOM BUHER
7719 W. 60TH PLACE
SUMMIT, IL 60501
PHONE: (708) 458-6410
CELL: (708) 261-1394
THOMAS.BUHER@VERIZON.COM

WE ENERGIES - ELECTRICITY
SEND ALL CORRESPONDENCE TO:
LATROY BRUMFIELD
ROOM A299
333 WEST EVERETT ST
MILWAUKEE, WI 53203
(414) 221-5617
LATROY.BRUMFIELD@WE-ENERGIES.COM

CONSTRUCTION FIELD CONTACT:
ERICH WUESTENHAGEN
500 S. 116TH ST
WEST ALLIS, WI 53214
OFFICE: (414) 944-5765
CELL: (262) 483-3896
ERICH.WUESTENHAGEN@WE-ENERGIES.COM

WE ENERGIES - GAS
SEND ALL CORRESPONDENCE TO:
LATROY BRUMFIELD
ROOM A299
333 WEST EVERETT ST
MILWAUKEE, WI 53203
(414) 221-5617
LATROY.BRUMFIELD@WE-ENERGIES.COM
DAN.SANDE@WE-ENERGIES.COM

CONSTRUCTION FIELD CONTACT:
ERICH WUESTENHAGEN
500 S. 116TH ST
WEST ALLIS, WI 53214
OFFICE: (414) 944-5780
CELL: (262) 483-3896
ERICH.WUESTENHAGEN@WE-ENERGIES.COM

WISCONSIN DEPARTMENT OF TRANSPORTATION - LIGHTING
ERIC PEREA
141 NW BARSTOW STREET
WAUKESHA, WI 53087-0798
OFFICE: (262) 574-5422
CELL: (414) 750-0935
ERIC.PEREA@DOT.WI.GOV

WISCONSIN DEPARTMENT OF TRANSPORTATION - STOC
JEFF MADSON
STE. 300
433 W. ST. PAUL AVE.
MILWAUKEE, WI 53203-3007
(414) 225-3723
JEFFREY.MADSON@DOT.WI.GOV

PROJECT NO: 1060-34-78	HWY: IH 41 / IH 94	COUNTY: MILWAUKEE	CONTACTS	SHEET: 4	E

2

GENERAL NOTES

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

ANY REINFORCEMENT LOCATED IN EXISTING CONCRETE PAVEMENT SHALL BE CONSIDERED INCIDENTAL TO THE REMOVING PAVEMENT ITEM, AND NO ADDITIONAL COMPENSATION WILL BE GRANTED.

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

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

CURB HEIGHTS AT THE END OF CURB AND GUTTER SHALL BE TAPERED FROM 0 TO 6 INCHES IN 10 FEET.

PROVIDE A TYPICAL SIDEWALK CROSS SLOPE OF 1.5% WITH A CONSTRUCTION TOLERANCE OF +/- 0.5%.

CROSS SECTIONS SHOWN INCLUDE THE THICKNESS OF TOPSOIL WHERE REQUIRED. TOPSOIL SHALL BE REPLACED WITH 6-INCH TYPICAL DEPTH THROUGHOUT THE PROJECT.

REMOVAL OF EROSION CONTROL DEVICES IS INCLUDED IN THE COST OF THEIR RESPECTIVE BID ITEMS.

VERIFY EXISTING PAVEMENT ELEVATIONS AT ALL TIE-INS TO EXISTING PAVEMENT PRIOR TO CONSTRUCTION. IF A DISCREPANCY IS FOUND BETWEEN PROPOSED PLAN ELEVATIONS AND THE EXISTING PAVEMENT ELEVATIONS, CONTRACTOR IS TO NOTIFY THE ENGINEER.

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

INLET PROTECTION IS REQUIRED AT ALL INLETS AS PER DETAIL OR AS DIRECTED BY THE ENGINEER.

CONTACT PROJECT ENGINEER AND THE SOUTHEASTERN WISCONSIN REGINAL PLANNING COMMISSION (SEWRPC) AT LEAST TWO WEEKS PRIOR TO WORK NEAR ANY PUBLIC SURVEY MONUMENT.

FERTILIZER SHALL NOT BE USED WITHIN 100' OF NAVIGABLE WATERWAYS OR WETLANDS.

2

2

N

N. 115TH STREET

N. 114TH STREET

W. MEINECKE AVENUE

CITY OF WAUWATOSA

N. 113TH STREET

IH 41/USH 45

N. 112TH STREET

W. CENTER STREET

DETENTION POND

W. NORTH AVENUE

CITY OF WAUWATOSA

UNION PACIFIC RAILROAD

STH 100/N. MAYFAIR ROAD

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	PROJECT OVERVIEW - NORTH AVENUE DETENTION POND	SHEET 6	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\020201_PO.DWG
LAYOUT NAME - ****

PLOT DATE : 4/25/2017 5:26 PM PLOT BY : MCGILLICUDDY, BENJAMPLOT NAME : PLOT SCALE : 1 IN:300FT

WISDOT/CADDS SHEET 42

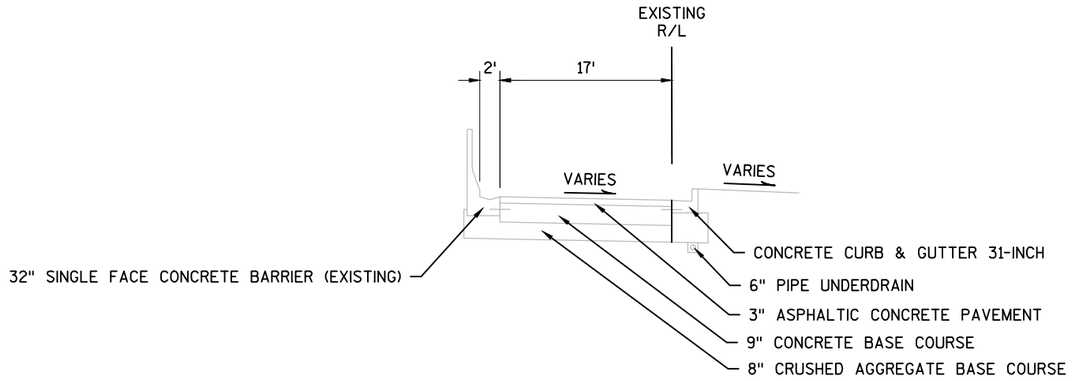
2

W. MT VERNON AVENUE
W. ST PAUL AVENUE
W. PARK HILL AVENUE
N. 28TH STREET
N. 27TH STREET
N. 26TH STREET
N. 25TH STREET
CP RAILROAD
IH 94
W. MT VERNON AVENUE
W. PARK HILL AVENUE
W. CLYBOURN STREET
GREVES STREET
IH 94
CP RAILROAD
ADVANCED FILL LOCATION
W. ST PAUL AVENUE
S. 35TH STREET
CANAL STREET
MENOMONEE RIVER
W. CANAL STREET
N

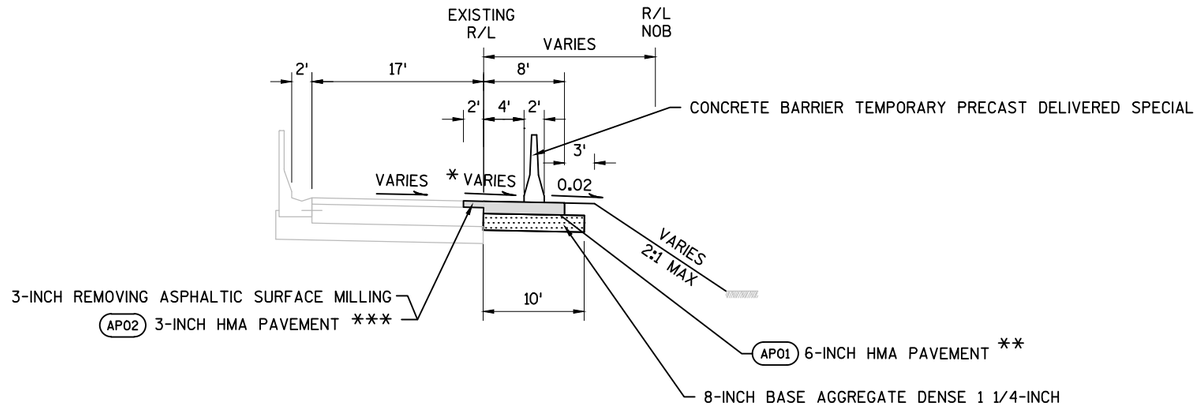
PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	ADVANCED FILL ALONG IH 94 - OVERVIEW	SHEET 7	E

FILE NAME : c:\pw_workdir\den001\gfergus1\d0803601\Red Star 1078.dgn
PLOT DATE : 05-DEC-2016 11:31
PLOT BY : gfergus1
PLOT NAME : $FILE$
PLOT SCALE : 500.000000:1.000000
WISDOT/CADDS SHEET 42

2



TYPICAL EXISTING SECTION
IH 41/USH 45 NB EXIT RAMP TO WB NORTH
AVENUE 1-LANE SECTION



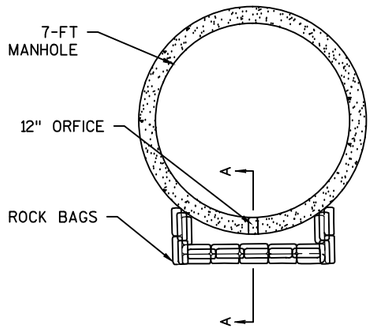
TYPICAL PROPOSED SECTION
IH 41/USH 45 NB EXIT RAMP TO WB NORTH
AVENUE 1-LANE SECTION

NOTES:

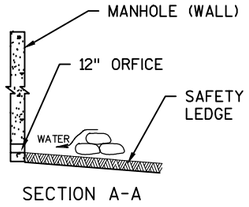
*MATCH ADJACENT CROSS SLOPE

** (AP01) 6-INCH HMA PAVEMENT :
4 MT 58-28 S (3.00" UPPER), 3 MT 58-28 S (3.00" LOWER)

*** (AP02) 3-INCH HMA PAVEMENT :
4 MT 58-28 S (3.00" UPPER)

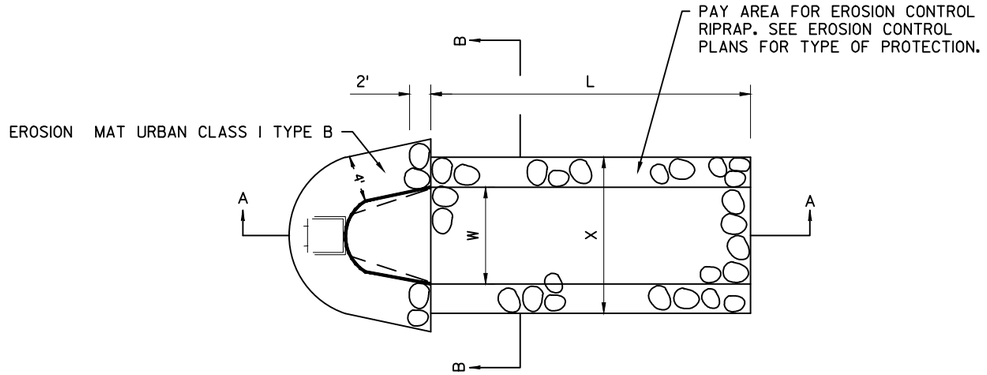


PLAN VIEW

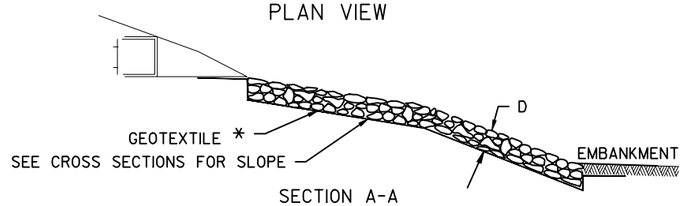


SECTION A-A

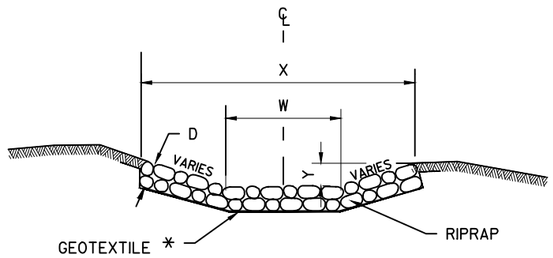
DETENTION POND OUTFALL ROCK BAG CHECK



PLAN VIEW



SECTION A-A



SECTION B-B

L = 3 x W (NOR) OR 10' MIN
OR AS INDICATED IN THE PLANS
OR AS DIRECTED BY THE ENGINEER

D = 12" FOR RIPRAP LIGHT
18" FOR RIPRAP MEDIUM
24" FOR RIPRAP HEAVY

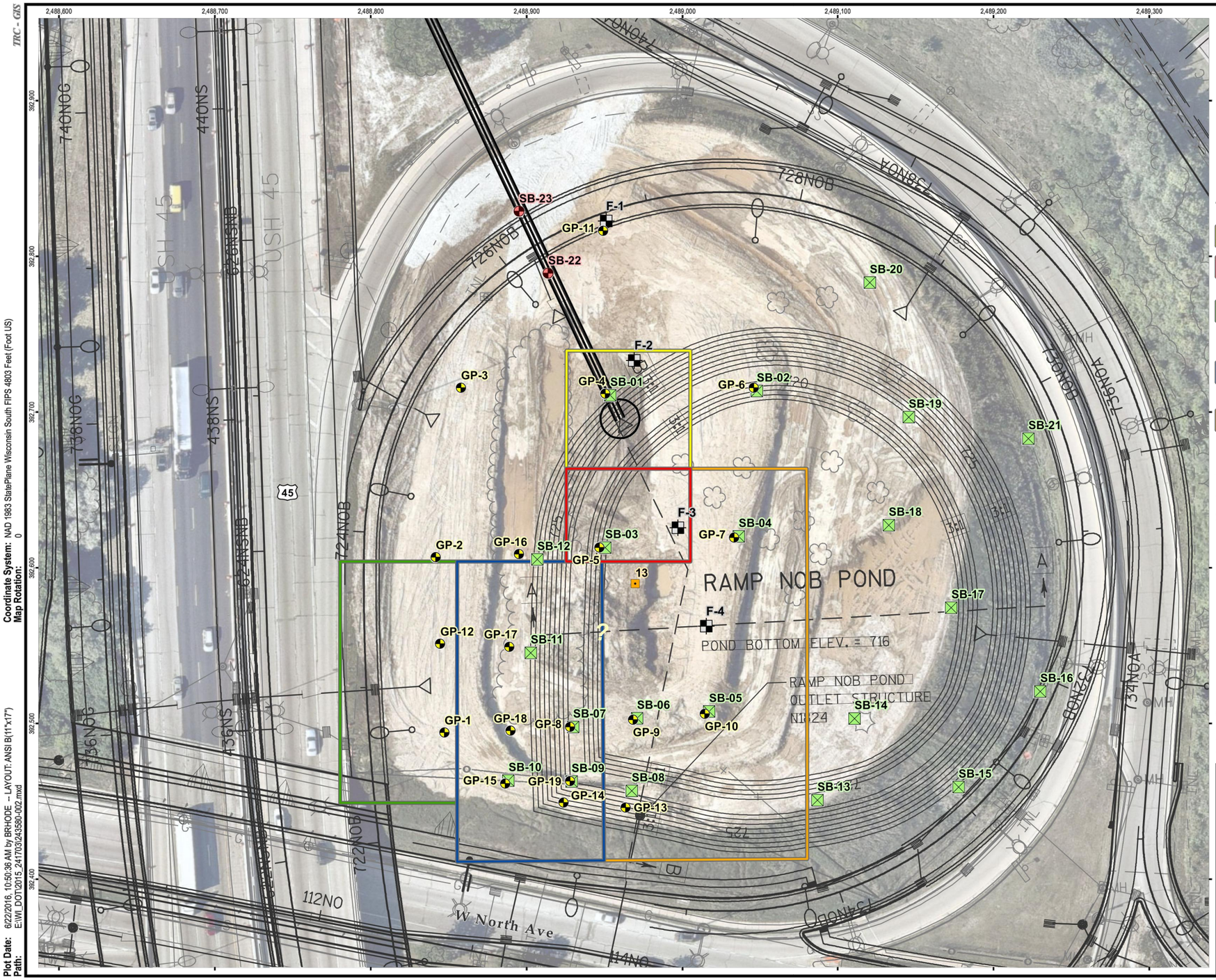
X = W+2' FOR TYPICAL CULVERT
DISCHARGE INTO DITCH
W+5' FOR CULVERT DISCHARGE
DOWN ENBANKMENT SLOPE

Y = 18" FOR RIPRAP MEDIUM
24" FOR RIPRAP HEAVY

* TYPE R (FOR RIPRAP LIGHT ONLY)
TYPE HR (FOR RIPRAP HEAVY AND MEDIUM ONLY)

SOD, RIPRAP AND GEOTEXTILE DETAIL
AT APRON ENDWALLS

SEE EROSION CONTROL PLANS FOR LOCATIONS



LEGEND

- GEOPROBE/TEMPORARY WELL LOCATION (1/29/2016)
- GEOPROBE LOCATION (12/18/2015)
- GEOPROBE LOCATION (8/8/2015)
- SOIL SAMPLE LOCATION (8/12/2015
- FOUNDATION GEOPROBE/TEMPORARY WELL LOCATION (1/29/2016)
- PROPOSED SHAFT & TRENCH LOCATION
- 0'-8' BGS COMMON EXCAVATION 8'-29+' REUSE
- 0'-40.5' BGS REUSE
- 0'-8' BGS COMMON EXCAVATION 8-12+' BGS WILL BE LANDFILLED DUE TO BENZENE EXCEEDING THE GW RCL IN GP-1 AND PID >10 IN GP-1 AND GP-12
- SOIL FROM 0' TO 8' BGS REUSE 8'-27.5+' BGS WILL BE LANDFILLED DUE TO PVOCS EXCEEDING GW RCLS IN GP-18 AND PIDS >10 IN GP-8, GP-18, SB-07, AND SB-09
- 0' TO 8' REUSE BELOW 8' COMMON EXCAVATION

NOTES

1. BASE MAP IMAGERY FROM NEARMAP, 8/22/2015.
2. MAP PROJECTION AND GRID COORDINATES ARE NAD83 STATE PLANE WISCONSIN- SOUTH (US SURVEY FEET).
3. PROPOSED SHAFT/TRENCH LOCATION & CONSTRUCTION PLANS PROVIDED BY WisDOT, LOCATIONS ARE APPROXIMATE.

0 60 120 Feet

1 " = 60 '

1:720

PROJECT:
WISDOT ID# 1060-34-86
ZOO IC – RAMP NOB POND
NE QUADRANT OF USH 45 AND NORTH AVE.
WAUWATOSA, MILWAUKEE COUNTY, WISCONSIN

TITLE:
LOCATIONS OF SOIL FOR LANDFILL DISPOSAL AND POSSIBLE REUSE

DRAWN BY:	RHODE B	PROJ NO.:	243580
CHECKED BY:	BERGMANN B		
APPROVED BY:	MORSE J		
DATE:	JUNE 2016		

FIGURE 5

TRC
150 North Patrick Blvd., Suite 180
Brookfield, WI 53045
Phone: 262.879.1212
www.trcsolutions.com

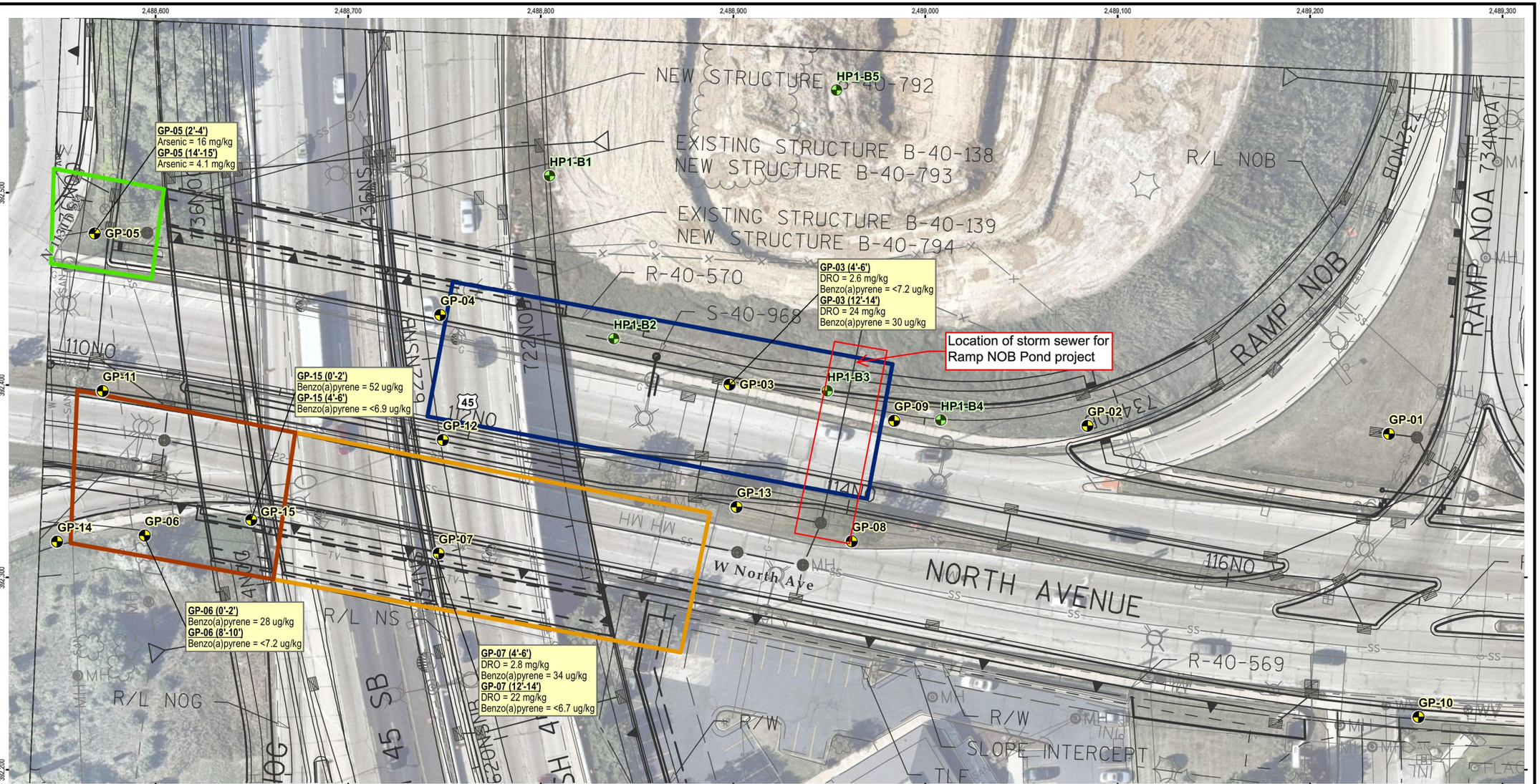
FILE NO.: 243580-002.mxd

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet (Foot US)
Map Rotation: 0
Plot Date: 6/22/2016, 10:50:36 AM by BRHODE – LAYOUT: ANSI B(11"x17")
Path: E:\WI_DOT\2015_241703\243580-002.mxd

PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CONSTRUCTION DETAILS - PETROLEUM CONTAMINATION	SHEET 10 E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\021001_CD.DWG
LAYOUT NAME - ****
PLOT DATE : 2/8/2017 2:08 PM PLOT BY : MCGILLICUDDY, BENJAMPLOT NAME :
PLOT SCALE : 1 IN:10 FT
WISDOT/CADDS SHEET 42

2



Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet (Foot US)
Map Rotation: 0

Plot Date: 6/28/2016, 09:49:13 AM by BRHODE -- LAYOUT: ANSI B(11"x17")
Path: E:\WI_DOT\2016_255233\255233-002.mxd

TRC - GIS

LEGEND

- SOIL BORING LOCATION
- SOIL BORING LOCATION- FORWARD 45 PHASE 2, 2014 SAMPLE RESULTS ARE SUMMARIZED IN TABLE 1 APPENDIX A
- REUSE FOR 0' TO 12' BGS
- REUSE FOR 0' TO 14' BGS
- REUSE FOR 0' TO 4' BGS
- REUSE FOR 6' TO 14'+ BGS

NOTES

1. BASE MAP IMAGERY FROM NEARMAP, 8/22/2015.
2. MAP PROJECTION AND GRID COORDINATES ARE NAD83 STATE PLANE WISCONSIN- SOUTH (US SURVEY FEET).
3. CONSTRUCTION PLANS PROVIDED BY WisDOT, LOCATIONS ARE APPROXIMATE.

0 50 100 Feet
1 " = 50 '
1:600

PROJECT:
WISDOT ID# 1060-33-84
ZOO INTERCHANGE NORTH LEG- USH 45 & NORTH AVE.
WAUWATOSA, MILWAUKEE COUNTY, WISCONSIN

TITLE:
SOIL BORING LOCATION MAP

DRAWN BY:	RHODE B	PROJ NO.:	255233
CHECKED BY:	BERGMANN B		
APPROVED BY:	MORSE J		**FIGURE 2**
DATE:	JUNE 2016		

TRC
150 North Patrick Blvd., Suite 180
Brookfield, WI 53045
Phone: 262.879.1212
www.trcsolutions.com

FILE NO.: 255233-002.mxd

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CONSTRUCTION DETAILS - PETROLEUM CONTAMINATION	SHEET 11 E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\021001_CD.DWG
LAYOUT NAME - ****
PLOT DATE : 2/8/2017 2:08 PM
PLOT BY : MCGILLICUDDY, BENJAMPLOT NAME :
PLOT SCALE : 1 IN:10 FT

2

IH 94 WB

IH 94 EB

30TH ST.

27TH ST.

N. 27TH STREET

GREVES STREET

CP RAILROAD

W. PARK HILL AVE.

ST/PAUL/26TH ST. EXIT

N 297777.50
E 595554.88

14+97

EX R/W

14+00

12+00

10+00

PI 10+00.00

N 297526.89
E 595125.50

9+04

PI 14+97.17

EX R/W

N 297477.49
E 595042.65

PI 9+03.54

EX R/W

REMOVE CONCRETE BASE
(PAID UNDER SITE CLEARANCE ITEM)

PROPOSED GRADING LIMITS

CAUTION

EX R/W

REMOVE CONCRETE WALL
(PAID UNDER SITE CLEARANCE ITEM)

REMOVE EXISTING FENCE

ABANDONED

ABANDONED

ABANDONED HOUSE

HOUSE OBSCURED

POOL

WE ENERGIES
GREVES SUBSTATION

SPEAKER BOX

BOLLARD (4)

BOLLARD (2)

BOLLARD (3)

BOLLARD (9)

LEGEND

- CLEARING & GRUBBING
- REMOVING STORM SEWER
- REMOVING FENCE
- REMOVING MANHOLE
- REMOVING INLETS

N

PROJECT NO:1060-34-78	HWY: IH 94	COUNTY:MILWAUKEE	ADVANCED FILL ALONG IH 94 - REMOVALS	SHEET 12	E

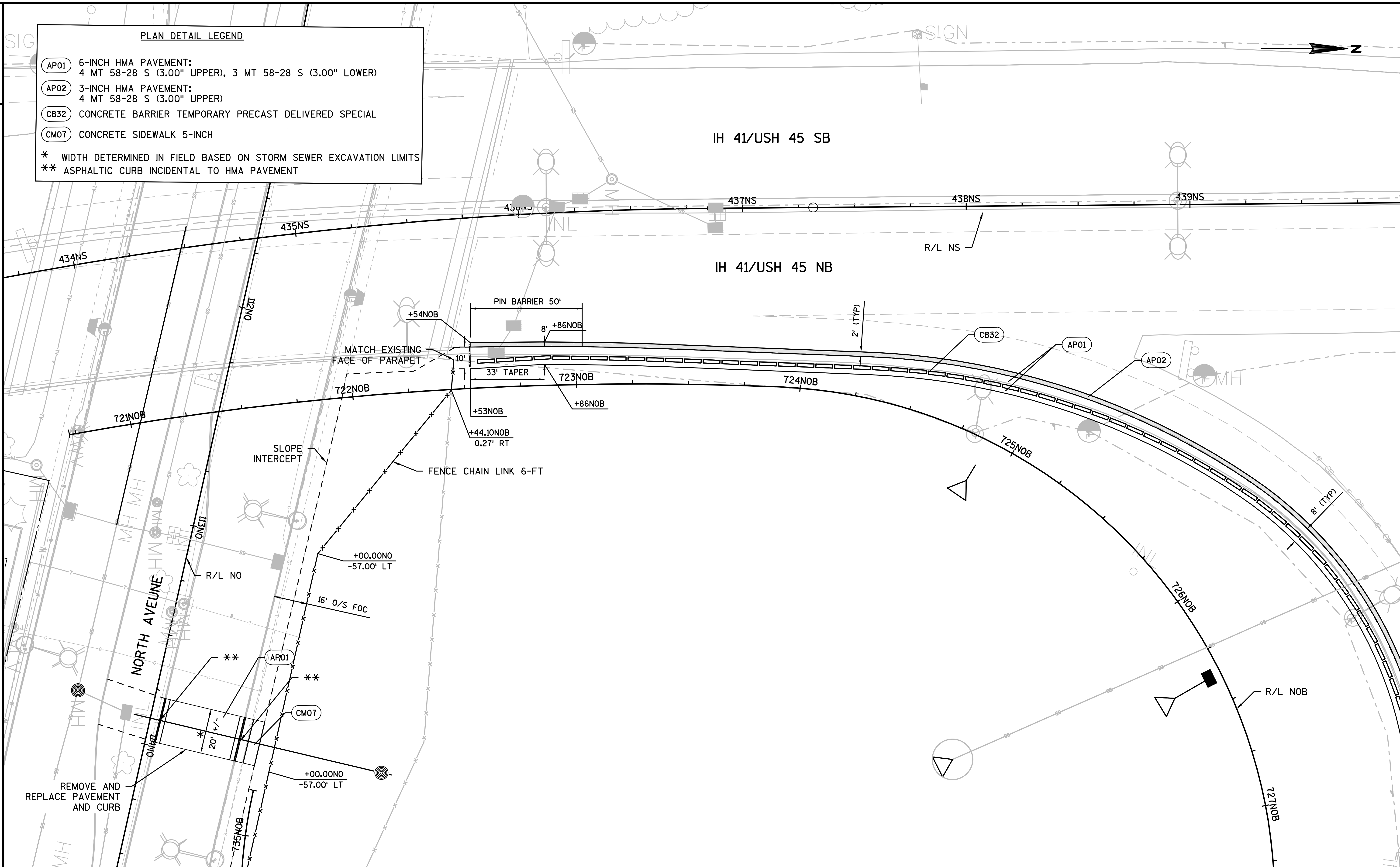
FILE NAME : c:\pw_workdir\den001\gfergus1\d0999960\ADVANCED FILL ALONG IH 94.dgn
PLOT DATE : 31-JAN-2017 11:59
PLOT BY : gfergus1
PLOT NAME : ADVANCED FILL ALONG IH 94
SCALE : 100:1
WISDOT/CADDS SHEET 42

2

PLAN DETAIL LEGEND

- (AP01) 6-INCH HMA PAVEMENT: 4 MT 58-28 S (3.00" UPPER), 3 MT 58-28 S (3.00" LOWER)
- (AP02) 3-INCH HMA PAVEMENT: 4 MT 58-28 S (3.00" UPPER)
- (CB32) CONCRETE BARRIER TEMPORARY PRECAST DELIVERED SPECIAL
- (CM07) CONCRETE SIDEWALK 5-INCH

* WIDTH DETERMINED IN FIELD BASED ON STORM SEWER EXCAVATION LIMITS
** ASPHALTIC CURB INCIDENTAL TO HMA PAVEMENT



IH 41/USH 45 SB
IH 41/USH 45 NB
434NS
435NS
437NS
438NS
439NS
R/L NS
PIN BARRIER 50'
+54NOB
+86NOB
8'
MATCH EXISTING FACE OF PARAPET
10'
33' TAPER
723NOB
724NOB
722NOB
721NOB
+86NOB
+53NOB
+44.10NOB
0.27' RT
2' (TYP)
CB32
AP01
AP02
725NOB
726NOB
727NOB
8' (TYP)
R/L NOB
SLOPE INTERCEPT
FENCE CHAIN LINK 6-FT
112NO
113NO
R/L NO
+00.00NO
-57.00' LT
16' O/S FOC
NORTH AVEUNE
**
AP01
CM07
20' +/-
REMOVE AND REPLACE PAVEMENT AND CURB
735NOB
SIGN

2

2

PLAN DETAIL LEGEND

AP01	6-INCH HMA PAVEMENT: 4 MT 58-28 S (3.00" UPPER), 3 MT 58-28 S (3.00" LOWER)
AP02	3-INCH HMA PAVEMENT: 4 MT 58-28 S (3.00" UPPER)
CB32	CONCRETE BARRIER TEMPORARY PRECAST DELIVERED SPECIAL
CM07	CONCRETE SIDEWALK 5-INCH

* ASPHALTIC CURB INCIDENTAL TO HMA PAVEMENT.
TAPER CURB HEIGHT 0" TO 6" IN 10-FT.

N

TLE

R/W

AP01

AP02

PIN BARRIER 50'

8'

R/L NOB

730NOB

731NOB

732NOB

10'*

BEGIN TAPER
+75.00NOB
1.82' RT

END TAPER
+17.48NOB
-12.58' LT

CB32

2' (TYP)

8' (TYP)

728NOB

729NOB

+00NOB

SLOPE INTERCEPT

16' O/S FOC

733NOB

FENCE CHAIN LINK 6-FT

734NOB

735NOB

NORTH AVENUE

116NO

R/L NO

115NO

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	PLAN DETAILS	SHEET 14	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\021201_PD.DWG
LAYOUT NAME - ****

PLOT DATE : 5/23/2017 1:24 PM PLOT BY : MCGILLICUDDY, BENJAMPLOT NAME : PLOT SCALE : 1 IN:40 FT

WISDOT/CADDS SHEET 42

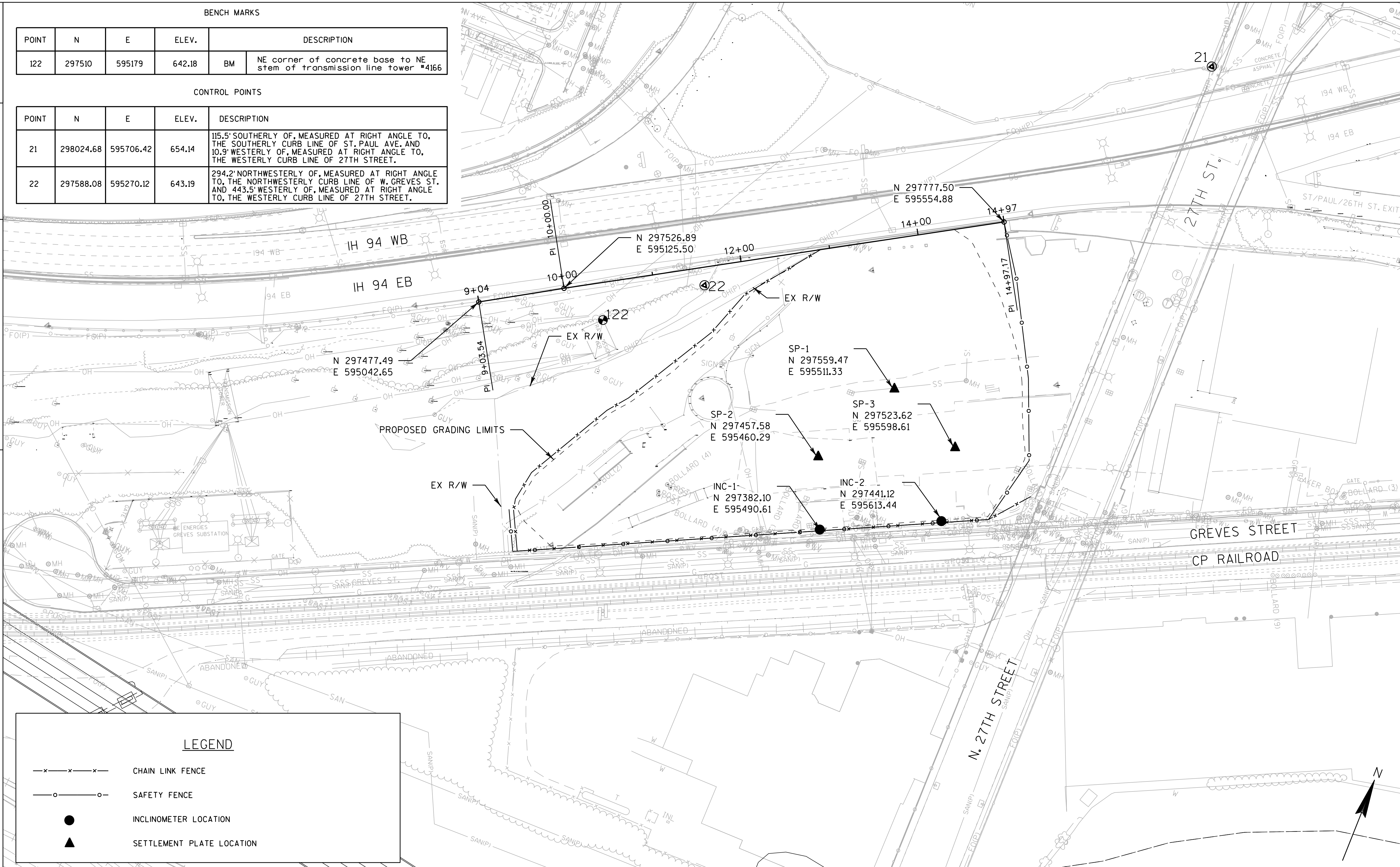
2

BENCH MARKS

POINT	N	E	ELEV.	DESCRIPTION	
122	297510	595179	642.18	BM	NE corner of concrete base to NE stem of transmission line tower #4166

CONTROL POINTS

POINT	N	E	ELEV.	DESCRIPTION
21	298024.68	595706.42	654.14	115.5' SOUTHERLY OF, MEASURED AT RIGHT ANGLE TO, THE SOUTHERLY CURB LINE OF ST. PAUL AVE. AND 10.9' WESTERLY OF, MEASURED AT RIGHT ANGLE TO, THE WESTERLY CURB LINE OF 27TH STREET.
22	297588.08	595270.12	643.19	294.2' NORTHWESTERLY OF, MEASURED AT RIGHT ANGLE TO, THE NORTHWESTERLY CURB LINE OF W. GREVES ST. AND 443.5' WESTERLY OF, MEASURED AT RIGHT ANGLE TO, THE WESTERLY CURB LINE OF 27TH STREET.

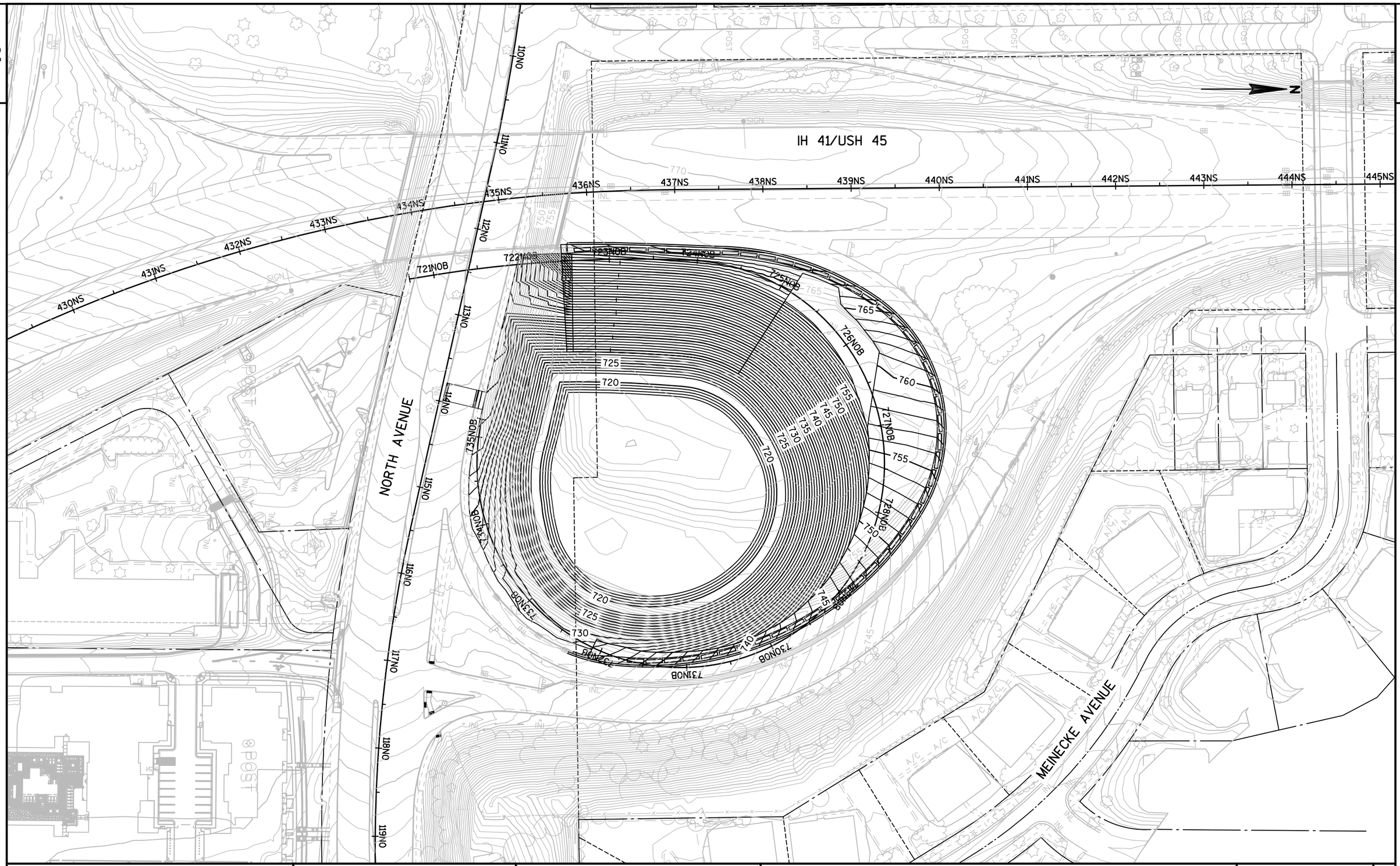


LEGEND

- CHAIN LINK FENCE
- SAFETY FENCE
- INCLINOMETER LOCATION
- SETTLEMENT PLATE LOCATION

2

PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	ADVANCED FILL ALONG IH 94 - PLAN	SHEET 15	E



PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CONTOUR MAP	SHEET 16	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\021601_CM.DWG
LAYOUT NAME - ****

PLOT DATE : 4/25/2017 5:40 PM PLOT BY : MCGILLICUDDY, BENJAMPLOT NAME : PLOT SCALE : 1 IN:100 FT

2

IH 94 WB

IH 94 EB

30TH ST.

27TH ST.

N. 27TH STREET

W. PARK HILL AVE.

GREVES STREET

CP RAILROAD

ST/PAUL/26TH ST. EXIT

ENERGIES
GREVES SUBSTATION

ABANDONED HOUSE

POOL

ABANDONED

N 297777.50
E 595554.88

14+97

EX R/W

14+00

12+00

10+00.00

PI 10+00.00

N 297526.89
E 595125.50

10+00

9+04

PI 14+97.17

PI 9+03.54

N 297477.49
E 595042.65

EX R/W

PROPOSED GRADING LIMITS

EX R/W

620
615
610
605
600
595
590

AVOID AND MAINTAIN
EXISITNG GUY WIRE

NOTE:

ALL EMBANKMENT FILL SHALL BE CONSIDERED ROADWAY FOUNDATION AND SHOULD BE PLACED IN ACCORDANCE WITH THE QMP SUBGRADE SPECIFICATION

N

PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	ADVANCED FILL ALONG IH 94 - PROPOSED CONTOURS	SHEET 17	E

LEGEND

- EROSION MAT URBAN CLASS I TYPE B WITH SEEDING MIXTURE NO. 20 FERTILIZER TYPE B
- SOIL STABILIZER TYPE B
- SILT FENCE
- EROSION BALES
- SURFACE WATER FLOW
- SLOPE INTERCEPT
- (A) INLET PROTECTION TYPE A
- (D) INLET PROTECTION TYPE D
- ROCK BAG OUTLET CHECK
- RIP RAP (SIZE AS NOTED)
- TEMPORARY DITCH CHECK

NOTES

PLACE INLET PROTECTION TYPE A AT ALL NEW INLET LOCATIONS DURING GRADING STAGES.

PLACE INLET PROTECTION TYPE D UNDER INLET COVERS LOCATED IN CURB AND GUTTER UNTIL COMPLETION OF THE PROJECT.

DO NOT STORE MATERIALS OR OPERATE EQUIPMENT WITHIN THE WETLAND LIMITS OUTSIDE THE SLOPE INTERCEPTS.

PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	EROSION CONTROL - LEGEND - NORTH AVE. DETENTION POND	SHEET 18	E

2

N. 113TH ST.

W. MEINECKE AVENUE

IH 41/USH 45

UNION PACIFIC RAILROAD

W. NORTH AVENUE

RIP RAP MEDIUM
THRU SHELF

RIP RAP HEAVY
TO POND BOTTOM

RIP RAP MEDIUM
THRU SHELF

ROCK BAG OUTLET
CHECK

RIP RAP MEDIUM

PRIVATE ENTRANCE

PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	EROSION CONTROL - NORTH AVE. DETENTION POND	SHEET 19	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\022001_EC.DWG
LAYOUT NAME - ****

PLOT DATE : 4/19/2017 6:36 AM PLOT BY : LARKIN, MICHAEL A PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 42

2

IH 94 WB

IH 94 EB

W. PARK HILL AVE.

30TH ST.

27TH ST.

N. 27TH STREET

GREVES STREET

CP RAILROAD

ST/PAUL/26TH ST. EXIT

N 297777.50
E 595554.88

14+97

EX R/W

14+00

12+00

10+00

PI 10+00.00

N 297526.89
E 595125.50

9+04

PI 9+03.54

N 297477.49
E 595042.65

PROPOSED GRADING LIMITS

EX R/W

EX R/W

PI 14+97.17

ENERGIES
GREVES SUBSTATION

ABANDONED

LEGEND

SOIL STABILIZER TYPE B, MULCH & FERTILIZER TYPE B (WITH SEEDING MIXTURE NO. 20)

SOIL STABILIZER TYPE B, EROSION MAT CLASS I TYPE B & FERTILIZER TYPE B (WITH SEEDING MIXTURE NO. 20)

SILT FENCE

TYPE C INLET PROTECTION

N

PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	ADVANCED FILL ALONG IH 94 - EROSION CONTROL	SHEET 20	E

FILE NAME : c:\pw_workdir\den001\gfergus1\d0999960\ADVANCED FILL ALONG IH 94.dgn
PLOT DATE : 21-APR-2017 08:36
PLOT BY : gfergus1
PLOT NAME : ADVANCED FILL ALONG IH 94.plt
PLOT SCALE : 100:1
WISDOT/CADDS SHEET 42

2

GENERAL DRAINAGE NOTES

1. LOCATION OF STRUCTURES IN CURB AND GUTTER OR BARRIER SECTION REFERS TO CURB AND GUTTER OR BARRIER FLOW LINE. LOCATION OF STRUCTURES NOT IN CURB AND GUTTER OR BARRIER SECTION REFERS TO CENTER OF STRUCTURE OR AS NOTED ON PLAN.

2. RIM ELEVATIONS ARE GIVEN AT FLOW LINE OF INLET GRATE OR AT CENTER OF MANHOLE GRATE. SEE STRUCTURE LOCATION DETAIL.

3. PLAN LENGTH REPRESENTS LENGTH OF PIPE MEASURED FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE AND IS USED FOR ESTIMATING. PIPE LENGTH REPRESENTS LENGTH OF PIPE MEASURED FROM INSIDE FACE OF STRUCTURE TO INSIDE FACE OF STRUCTURE AND IS USED TO COMPUTE PIPE SLOPE.

4. INLET AND DISCHARGE ELEVATIONS FOR DRAINAGE STRUCTURES AND PIPES SHOWN ON THE PLANS MAY BE ADJUSTED BY THE ENGINEER TO FIT EXISTING FIELD CONDITIONS.

5. UTILITY INFORMATION SHOWN ON THE PLANS IS APPROXIMATE. LOCATIONS SHOWN ARE TAKEN FROM EXISTING RECORDS AND BEST INFORMATION AVAILABLE FROM EXISTING PLANS. IT IS EXPECTED THAT THERE MAY BE DISCREPANCIES AND OMISSIONS IN THE LOCATION OF UTILITIES AND STRUCTURES SHOWN. VERIFY ALL LOCATIONS IN THE FIELD.

6. COORDINATE WITH DIGGERS HOTLINE TO FIELD LOCATE UTILITIES. SHEETING SHALL NOT GO THROUGH UTILITIES. ANY UTILITIES DAMAGED DUE TO CONTRACTOR ACTIVITIES SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE COMPLETE SATISFACTION OF THE UTILITY FACILITY.

7. VERIFY THE STORM SEWER SYSTEM CONNECTIONS, LOCATIONS, AND ELEVATIONS PRIOR TO ORDERING DRAINAGE STRUCTURES AND PIPES. NOTIFY THE ENGINEER OF ANY DEVIATIONS FROM THE INFORMATION SHOWN ON THE PLANS PRIOR TO INSTALLING THE PROPOSED STORM SEWER.

8. PROVIDE TEMPORARY POSITIVE DRAINAGE THROUGHOUT THE PROJECT DURING ALL PROJECT STAGES. PROVIDING TEMPORARY POSITIVE DRAINAGE IS INCIDENTAL TO CONSTRUCTION.

9. SUPPORTING UTILITIES DURING STORM SEWER CONSTRUCTION IS INCIDENTAL TO STORM SEWER PIPE AND/OR STORM SEWER STRUCTURE.

10. STORM SEWER PLAN & PROFILE NOTE:
PLAN VIEW HIGHLIGHTS CORRESPOND TO PROFILES SHOWN IN PROFILE BELOW PLAN VIEW (SAME SHEET). STORM SEWER STRUCTURES AND PIPES LABELED IN PLAN VIEW WITHOUT HIGHLIGHT ARE SHOWN ON THE NEXT PROFILE ONLY SHEET(S).

STORM SEWER LEGEND

EXISTING NE***	EXISTING DRAINAGE STRUCTURE
N***	PROPOSED DRAINAGE STRUCTURE
NT***	TEMPORARY DRAINAGE STRUCTURE
●	PROPOSED MANHOLE
■	PROPOSED INLET
△	PROPOSED ENDWALL
◄———	PROPOSED STORM SEWER
EXISTING PE***	EXISTING STORM SEWER PIPE
P***	PROPOSED STORM SEWER PIPE
PT***	TEMPORARY STORM SEWER PIPE
∿∿∿	TEMPORARY SHORING

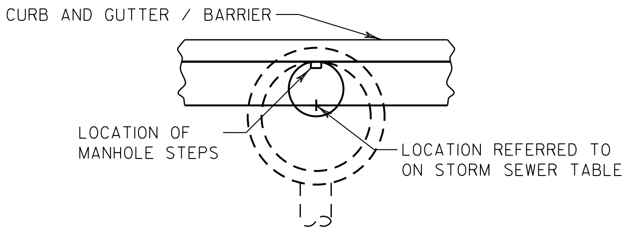
2

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	STORM SEWER - CONSTRUCTION DETAILS	SHEET 21	E

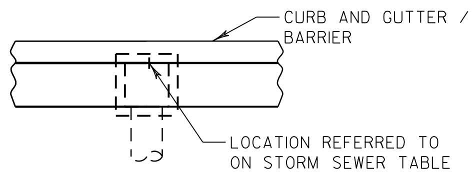
NOTE

1) LOCATION OF STRUCTURE MAY BE ADJUSTED TO FIT FIELD CONDITIONS.

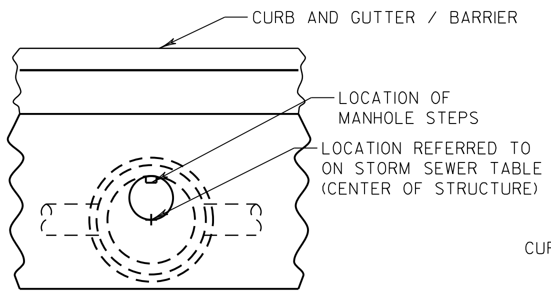
2) LOCATION AND SIZE OF STRUCTURE COVER OPENINGS DEPENDS ON TYPE OF CASTING. CASTING TYPES ARE SHOWN ON THE STORM SEWER TABLE.



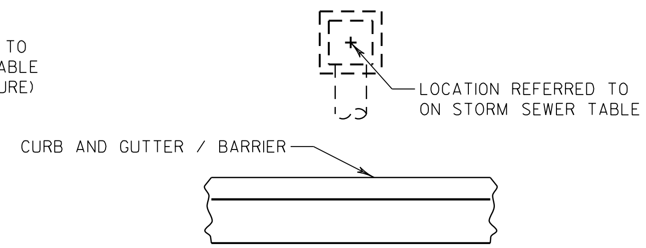
MANHOLE IN CURB AND GUTTER / AT BARRIER



INLET IN CURB AND GUTTER / AT BARRIER

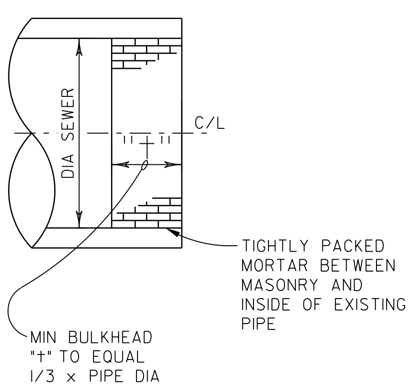


MANHOLE NOT IN CURB AND GUTTER / NOT AT BARRIER



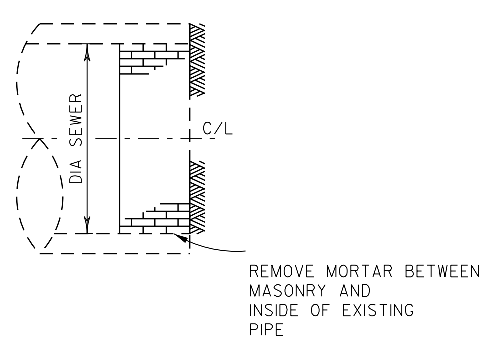
INLET NOT IN CURB AND GUTTER / NOT AT BARRIER

STRUCTURE LOCATION DETAIL



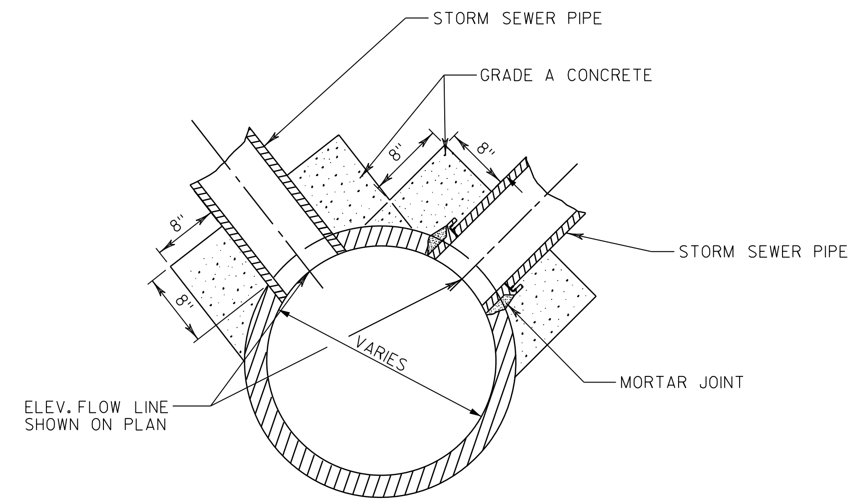
BULKHEAD PIPE MASONRY

ITEM TO BE PAID FOR UNDER ITEM "SEALING PIPES"
FOR LOCATIONS SEE MISCELLANEOUS QUANTITIES SHEETS



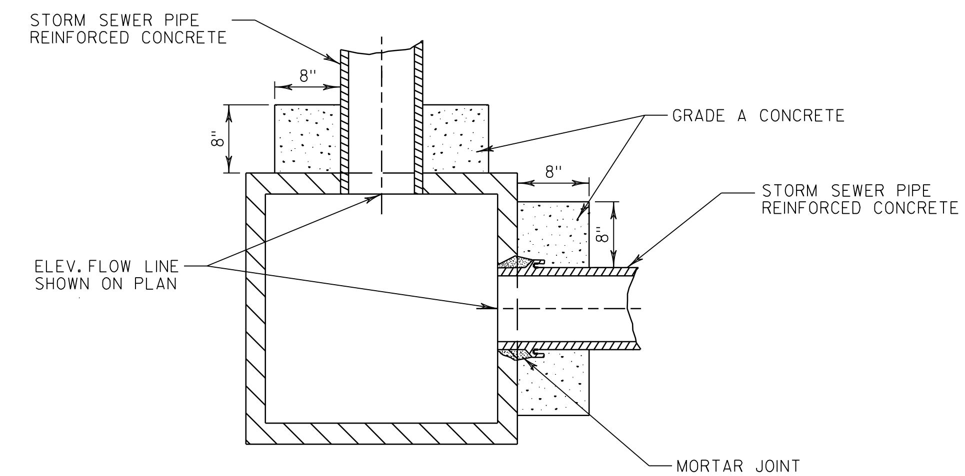
REMOVING BULKHEAD

FOR LOCATIONS SEE MISCELLANEOUS QUANTITIES SHEETS



AT MANHOLE

INCIDENTAL TO NEW STRUCTURE AND NEW PIPE ITEMS



AT STORM SEWER INLET

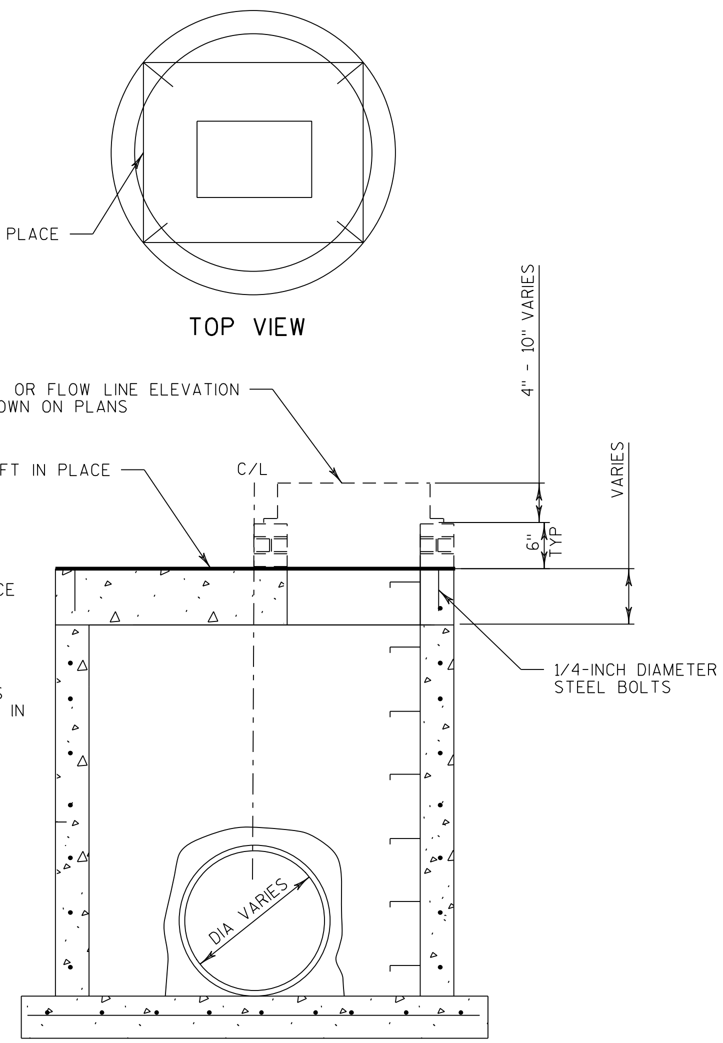
INCIDENTAL TO NEW STRUCTURE AND NEW PIPE ITEMS

NOTE

CONCRETE COLLAR TO BE PAID AS A BID ITEM WHEN CONNECTING AN EXISTING PIPE TO A NEW STRUCTURE.

CONCRETE COLLAR DETAIL

FOR LOCATIONS SEE MISCELLANEOUS QUANTITIES SHEETS

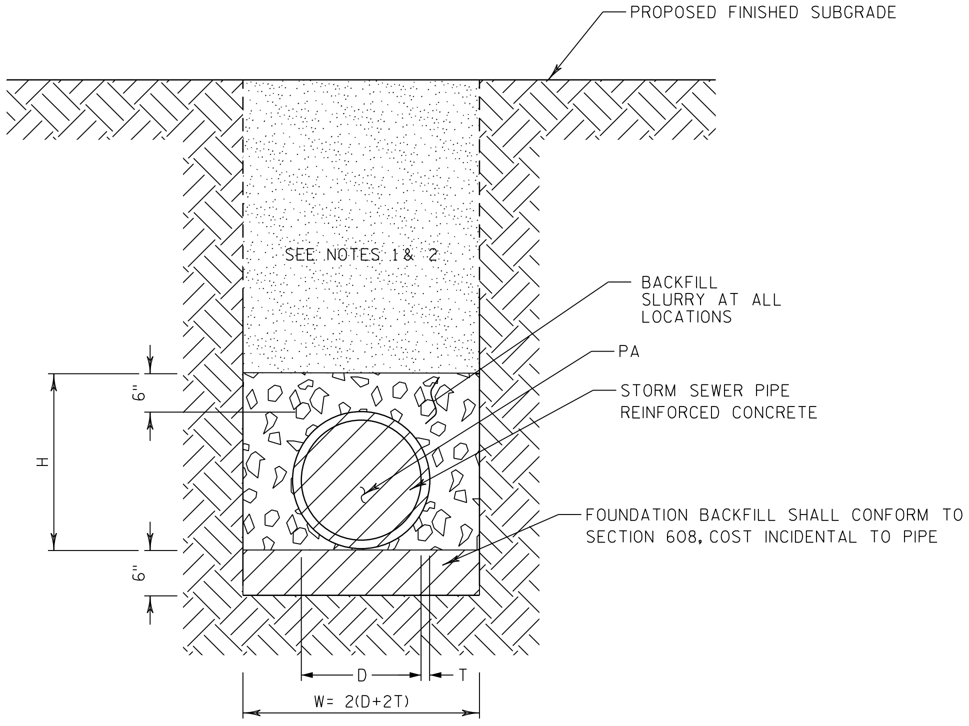


NOTES

COVER PLATES LEFT IN PLACE TO REST FLAT UPON THE DRAINAGE STRUCTURE.

EMBED 1/4-INCH DIAMETER STEEL BOLTS EPOXIED IN PLACE IN THE FOUR CORNERS OF THE COVER PLATES LEFT IN PLACE.

COVER PLATES LEFT IN PLACE



BACKFILL SLURRY DETAIL - STORM SEWER TRENCH

BACKFILL SLURRY

Pipe Diameter PW INCHES	Wall Thickness T Inches	Trench Width W FT	Height of Pipe Zone H (From pipe bottom to 6" above top of pipe)	Area of Pipe Zone SF	Area of Pipe PA SF	Backfill Slurry Area SF
36	4.00	7.33	4.17	30.56	10.56	20.00

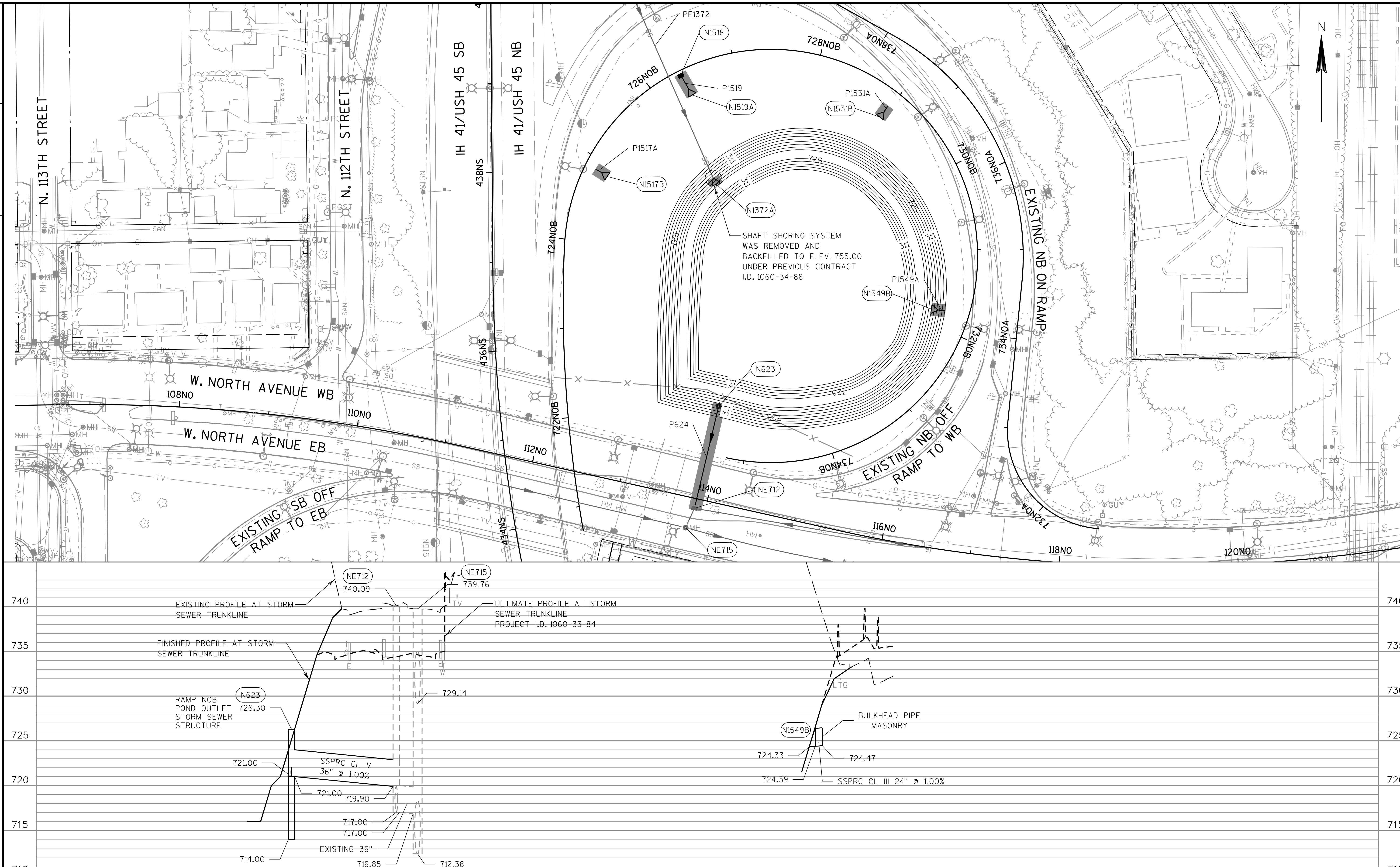
BACKFILL SLURRY VOLUME (CUBIC YARDS) = $\frac{\text{(PIPE ZONE AREA - PIPE AREA) X PIPE PLAN LENGTH}}{27}$

NOTES

(1) IF THE PIPE IS OUTSIDE THE TRAVELED WAY INCLUSIVE OF SHOULDERS, NATIVE BACKFILL MAY BE USED ABOVE BACKFILL SLURRY AND SHALL CONFORM TO SECTION 209.

(2) IF THE PIPE IS WITHIN THE TRAVELED WAY OR MEDIAN INCLUSIVE OF SHOULDERS, BACKFILL ABOVE BACKFILL SLURRY SHALL CONFORM TO SECTION 209.

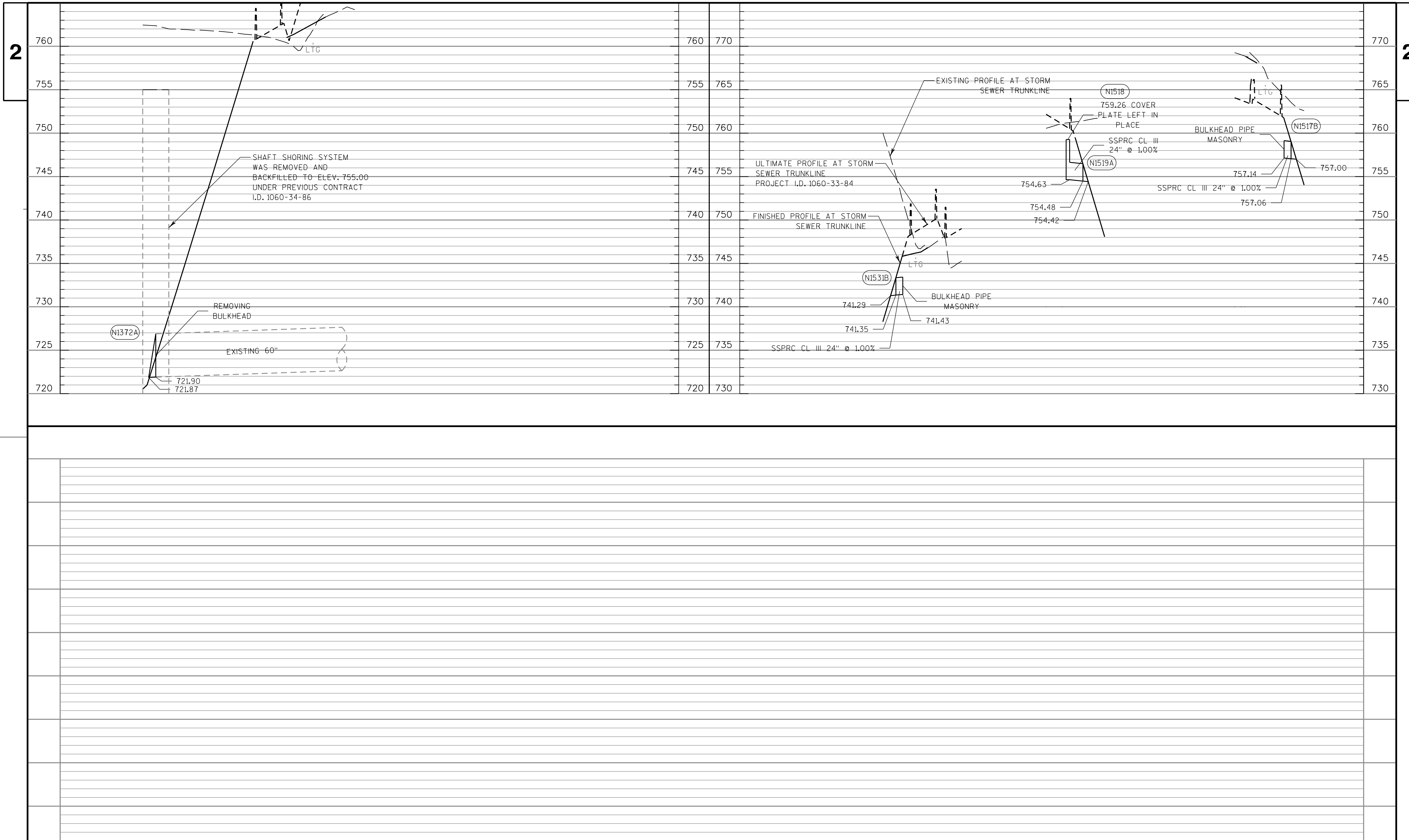
(3) PAYMENT FOR BACKFILL SLURRY QUANTITY IS LIMITED TO THE DETAIL AS SHOWN. BACKFILL SLURRY QUANTITY FOR ANY OVER EXCAVATED AREA IS CONSIDERED PART OF CONSTRUCTION, AND NO ADDITIONAL PAYMENT WILL BE MADE.



2
N. 113TH STREET
N. 112TH STREET
IH 41/USH 45 SB
IH 41/USH 45 NB
438NS
436NS
434NS
W. NORTH AVENUE WB
W. NORTH AVENUE EB
108NO
110NO
112NO
114NO
116NO
118NO
120NO
EXISTING SB OFF RAMP TO EB
EXISTING NB OFF RAMP TO WB
EXISTING NB ON RAMP
722NOB
724NOB
726NOB
728NOB
730NOB
732NOB
734NOB
732NOA
734NOA
736NOA
738NOA
PE1372
N1518
P1519
N1519A
P1531A
N1531B
P1517A
N1517B
N1372A
SHAFT SHORING SYSTEM WAS REMOVED AND BACKFILLED TO ELEV. 755.00 UNDER PREVIOUS CONTRACT I.D. 1060-34-86
P1549A
N1549B
N623
P624
NE712
NE715
720
725
3:1
N
740
735
730
725
720
715
710
NE712
740.09
NE715
739.76
EXISTING PROFILE AT STORM SEWER TRUNKLINE
ULTIMATE PROFILE AT STORM SEWER TRUNKLINE PROJECT I.D. 1060-33-84
FINISHED PROFILE AT STORM SEWER TRUNKLINE
729.14
N623
RAMP NOB POND OUTLET STORM SEWER STRUCTURE
726.30
721.00
SSPRC CL V 36" @ 1.00%
721.00
719.90
717.00
717.00
EXISTING 36"
714.00
716.85
712.38
BULKHEAD PIPE MASONRY
N1549B
724.33
724.47
724.39
SSPRC CL III 24" @ 1.00%
LTG

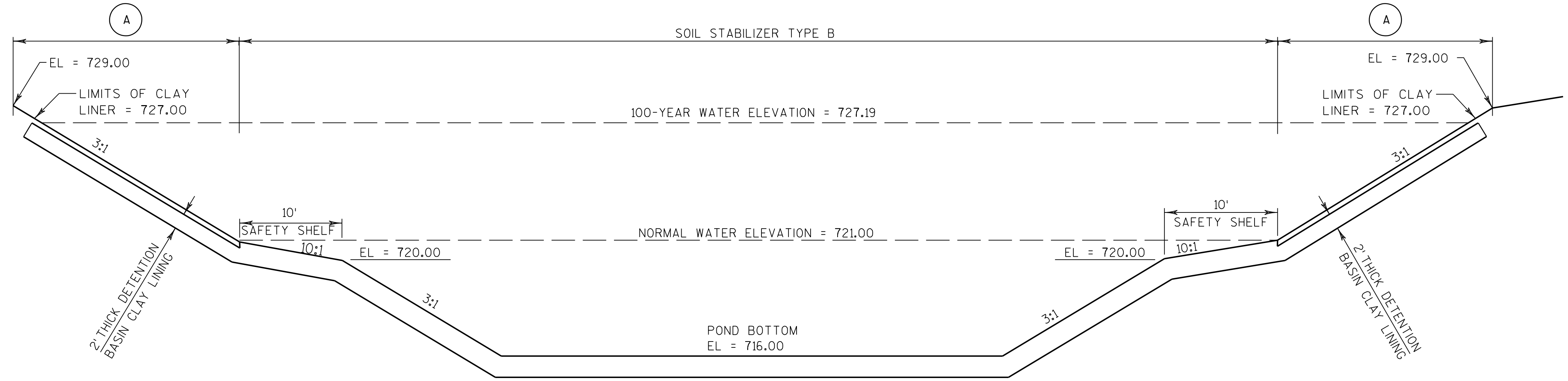
PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	STORM SEWER PLAN AND PROFILE	SHEET	E

FILE NAME : S:\DOT\DOT_SE\120293-Zoo Interchange\DRAINAGE\ZOO_IC_DRAINAGE\ZOO_DESIGN_FILES\North_North_leg\10603478_ZN-POND\Roads\cd... 02/20/2017 PLOT BY : wwolak PLOT NAME : PLOT SCALE : 1:100 WISDOT/CADDS SHEET 41



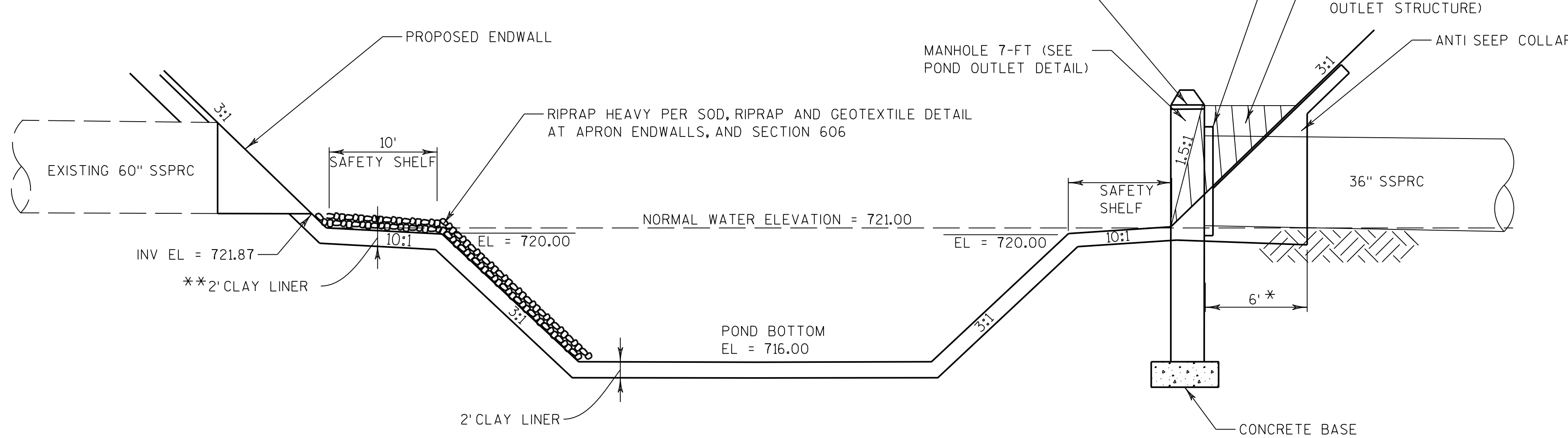
PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	STORM SEWER PLAN AND PROFILE	SHEET 26	E

FILE NAME : S:\DOT\DOT_SE\120293-Zoo Interchange\DRAINAGE\ZOO_IC_DRAINAGE\ZOO_DESIGN_FILES\North_North_leg\10603478_ZN-POND\Roads\cd3072503ZEss.dgn 4/18/2017 PLOT BY : wwolak PLOT NAME : PLOT SCALE : 1:100



SECTION A-A

A 6" TOPSOIL, EROSION MAT CLASS I TYPE B, SEEDING MIXTURE NO. 40 & FERTILIZER TYPE A



SECTION B-B

NOTES

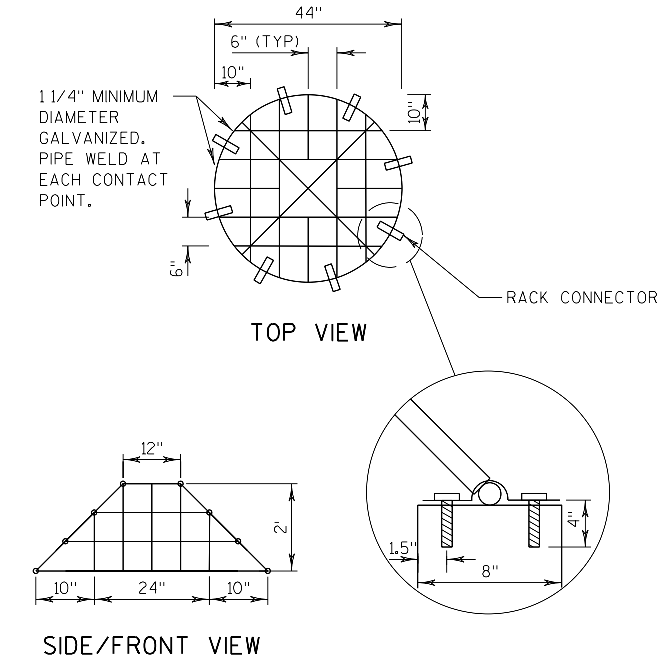
1. REFER TO STANDARD DETAIL DRAWING FOR MANHOLE 7-FT FOR ADDITIONAL INFORMATION.
2. OUTLET STRUCTURE WILL BE PAID FOR AS RAMP NOB POND OUTLET STORM SEWER STRUCTURE.
3. TRASH RACKS WILL BE GALVANIZED OR SIMILARLY PROTECTED FROM CORROSION AND APPROVED BY THE ENGINEER.
4. CONNECTOR DEVICE WILL BE REMOVABLE AND APPROVED BY THE ENGINEER.
5. ANTI-SEEP COLLAR OF CLAY OR BENTONITE REQUIRED AROUND POND OUTLET DISCHARGE PIPE TO PREVENT BACKFLOW OF WATER THROUGH THE SEWER TRENCH. ANTI-SEEP COLLARS MUST EXTEND FROM 1-FOOT ABOVE THE TOP OF PIPE TO THE BOTTOM OF EXCAVATED TRENCH AND BE CONNECTED WITH THE POND LINER PER DETAIL. ANTI-SEEP COLLAR IS INCIDENTAL TO PIPE AND INSTALLATION.
6. RIPRAP PLACED ON TOP OF CLAY LINER NOT TO BE DUG IN.

* ANTI-SEEP COLLAR TO BE MINIMUM 1-FOOT FROM OUTLET PIPE JOINT. ANTI-SEEP COLLAR MAY COVER JOINT, SO LONG AS END OF COLLAR IS A MINIMUM 1-FOOT PAST JOINT. ANTI-SEEP COLLAR TO BE CONNECTED TO POND LINER.

** SHAPE CLAY LINER TO ACCOMODATE FABRIC & RIPRAP PER EROSION CONTROL PLAN

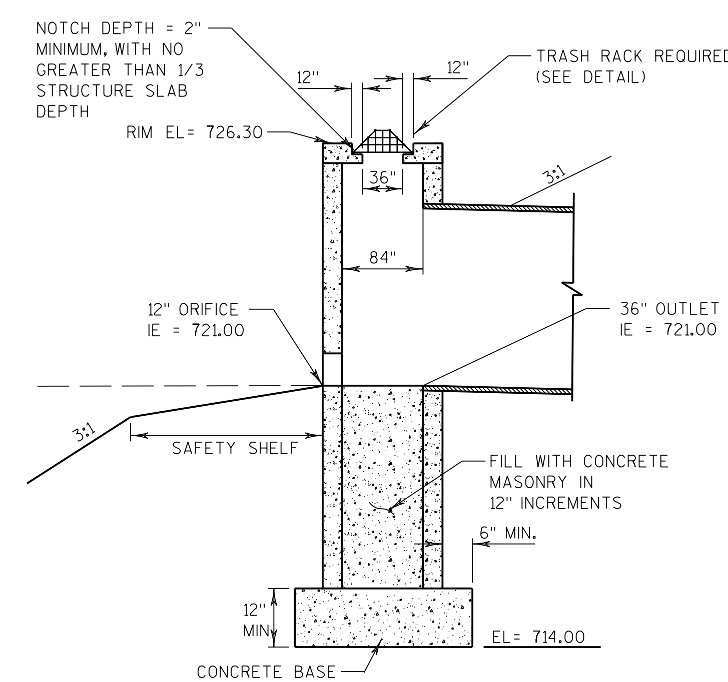
RAMP NOB POND

NTS



TRASH RACK

NTS



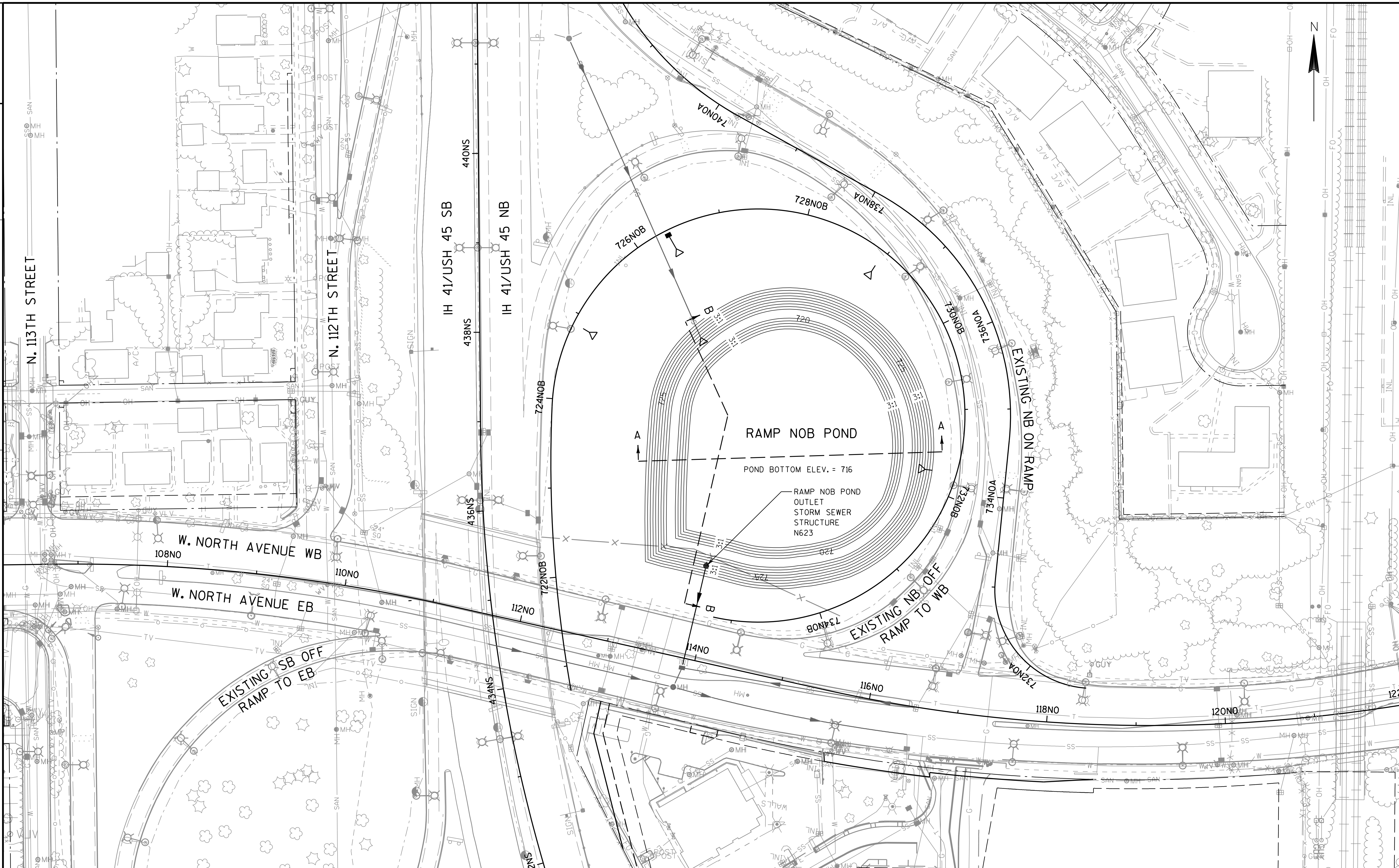
RAMP NOB POND OUTLET
STORM SEWER STRUCTURE DETAIL

N623
MANHOLE 7-FT
NTS

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	STORMWATER MANAGEMENT - CONSTRUCTION DETAILS	SHEET 27	E

FILE NAME : S:\DOT\DOT_SE\120293-Zoo Interchange\DRAINAGE\ZOO_IC_DRAINAGE\ZOO_DESIGN_FILES\North_North_leg\10603478_ZN-POND\Roads\cdsL0229DTsw.dgn 8/2017 PLOT BY : wwolak PLOT NAME : $FILE$ PLOT SCALE : 1:2 WISDOT/CADDS SHEET 42

2

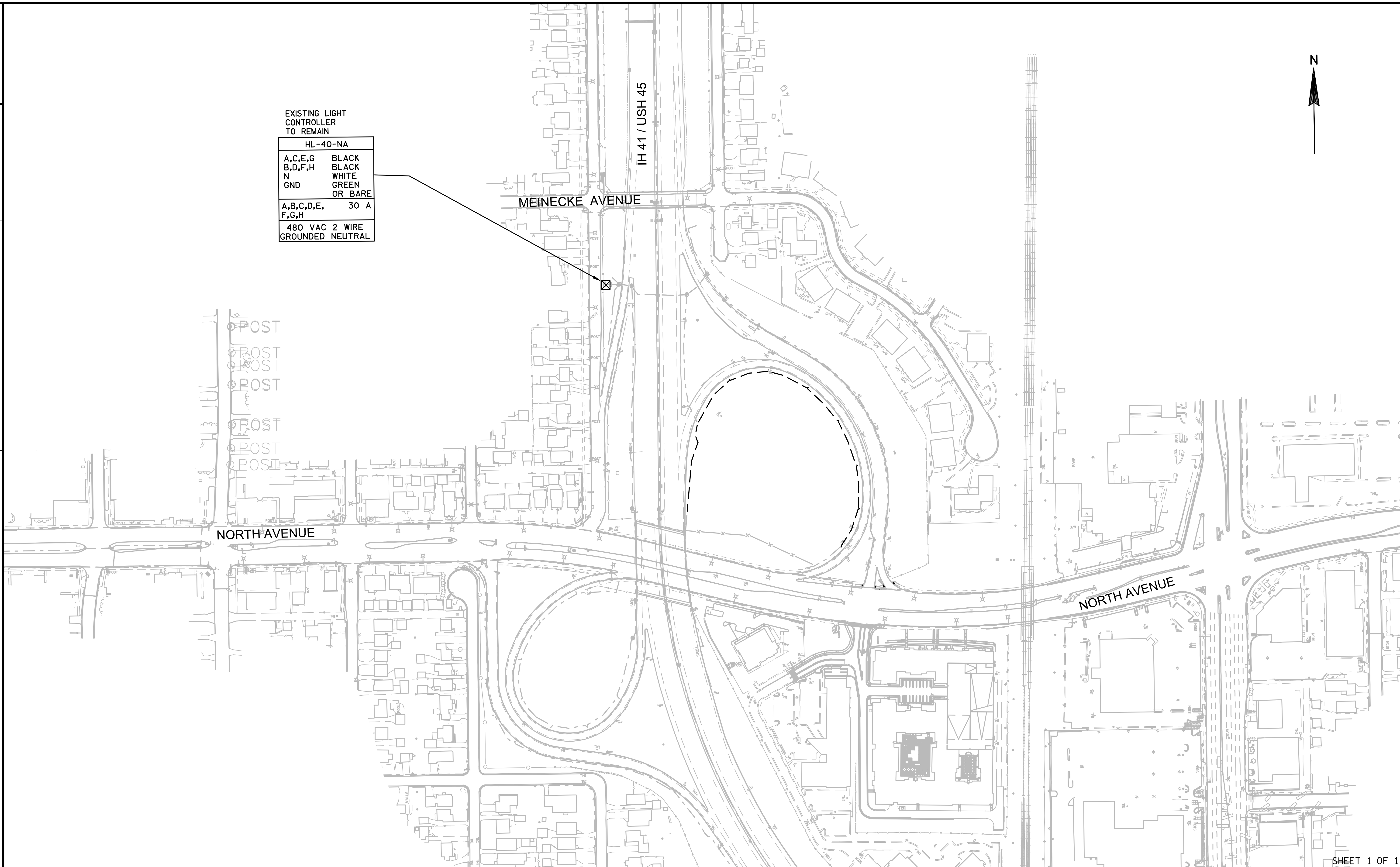

N
N. 113TH STREET
N. 112TH STREET
IH 41/USH 45 SB
IH 41/USH 45 NB
440NS
438NS
436NS
434NS
432NS
740NOA
738NOA
736NOA
734NOA
732NOA
728NOB
726NOB
724NOB
722NOB
730NOB
732NOB
734NOB
RAMP NOB POND
POND BOTTOM ELEV. = 716
RAMP NOB POND
OUTLET
STORM SEWER
STRUCTURE
N623
A
A
B
B
3:1
720
725
EXISTING NB ON RAMP
EXISTING NB OFF
RAMP TO WB
EXISTING SB OFF
RAMP TO EB
W. NORTH AVENUE WB
W. NORTH AVENUE EB
108NO
110NO
112NO
114NO
116NO
118NO
120NO
122NO

2

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	STORMWATER MANAGEMENT - POND	SHEET 28	E

FILE NAME : S:\DOT\DOT_SE\120293-Zoo Interchange\DRAINAGE\ZOO_IC_DRAINAGE\ZOO_DESIGN_FILES\North_North_leg\10603478_ZN-POND\Roads\c PLOT DATE : 4/18/2017 PLOT BY : wwolak PLOT NAME : $FILE$ PLOT SCALE : 1:100

WISDOT/CADDS SHEET 42



SHEET 1 OF 1

PROJECT NO:1060-34-78	HWY:IH 41	COUNTY:MILWAUKEE	PROJECT OVERVIEW - LIGHTING	SHEET 29	E

2

GENERAL NOTES:
HIGHWAY LIGHTING SHALL BE INSTALLED IN COMPLIANCE WITH WISCONSIN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS SECTION 652 TO 657 AND 659 EXCEPT AS MODIFIED BY SPECIAL PROVISION AND AS HEREINAFTER PRIVIDED:

1. DETAILS OF CONSTRUCTION MATERIALS AND WORKMANSHIP NOT SHOWN ON THESE DRAWINGS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

2. LOCATIONS OF THE PVC CONDUITS ARE IDENTIFIED IN THE PLANS WHERE THEY ARE REQUIRED. HOWEVER, INSTALLATION WILL REQUIRE INTEGRATION WITH EXISTING FIELD CONDITIONS. UNDER THE APPROVAL OF THE ENGINEER, APPROPRIATE ADJUSTMENT OF CONDUIT LOCATIONS MAY BE MADE IF THE FIELD CONDITIONS ARE SUCH THAT THE CONDUIT BE INSTALLED AT THE SPECIFIED LOCATIONS. FIELD MARK EACH CONDUIT LOCATION IN RED TO ILLUSTRATE AS-BUILT CONDITIONS.

3. THE TRENCH SHALL NOT BE BACKFILLED PRIOR TO INSPECTION OF THE CONDUIT.

4. ALL OPEN AND UNTERMINATED CONDUITS SHALL BE CAPPED OR PLUGGED WITH ENGINEER APPROVED FITTINGS IMMEDIATELY AFTER INSTALLATION.

5. BENDING OF PVC ELECTRICAL CONDUIT SHALL BE ACCOMPLISHED BY USING A BLANKET OR IMMERSION TYPE TANK DESIGNED FOR THE PURPOSE OF BENDING PVC ELECTRICAL CONDUIT.

6. ALL CUT ENDS SHALL BE TRIMMED INSIDE AND OUTSIDE TO REMOVE ALL ROUGH EDGES ON ALL CONDUITS.

7. PRIOR TO CONDUIT ACCEPTANCE, ALL CONDUIT ENDS SHALL BE THOROUGHLY CLEANED AND BE CAPPED WITH THE APPROPRIATE CAST PLASTIC CAP WHICH FITS SNUGGLY ON THE CONDUIT THAT CAN BE EASILY REMOVED. DUCT TAPE OR ANY OTHER CAPPING METHOD IS NOT ACCEPTABLE.

8. CONDUIT RUNS SHALL BE THE SAME SIZE PIPE FROM ONE END TO THE OTHER (FROM PULL BOX-TO-PULL BOX, JUNCTION BOX OR BASE-TO-BASE, ETC.) UNLESS OTHERWISE NOTED ON PLANS.

9. PULL ROPE (3/8-INCH NYLON) SHALL BE INSTALLED IN ALL NEW CONDUITS.

10. CONTRACTOR SHALL SUPPLY AS-BUILT DRAWINGS (PDF FORMAT) FOR ALL THE WORK BEING DONE.

11. CONDUIT LATERALS SHALL BE TRENCHED UNDER PAVEMENT BEFORE PAVEMENT CONSTRUCTION.

12. PITCH ALL CONDUITS TOWARD PULL BOXES. INSTALL A 2" DRAIN DUCT TO STORM SEWER OR DRAIN SUMP AS REQUIRED FOR DRAINAGE. THE 2" DRAIN DUCT OR SUMP IS INCIDENTAL TO THE PULL BOX BID ITEM AND IS NOT SHOWN.

13. THE LOCATION OF EXISTING AND PROPOSED UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE, IN ADDITION, THERE MAY BE OTHER UTILITIES WITHIN THE PROJECT AREA WHICH ARE NOT SHOWN. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITIES PRIOR TO CONSTRUCTION.

14. HAND DIGGING MAY BE REQUIRED FOR LOCATIONS ADJACENT TO EXISTING GAS AND POWER LINES. HAND EXCAVATION SHOULD BE ANTICIPATED AND WILL BE CONSIDERED INCIDENTAL TO THE CONCRETE BASES BID ITEM. COORDINATE ALL WORK NEAR GAS LINE WITH WE ENERGIES.

15. UNDERGROUND WIRE AND CONDUIT SHOWN ON REMOVAL PLANS FOR REMOVAL SHALL BE ABANDONED IN PLACE UNLESS DIRECTED BY THE ENGINEER. CONTRACTOR MAY CHOOSE TO REMOVE CONDUCTOR AT THEIR OWN EXPENSE.

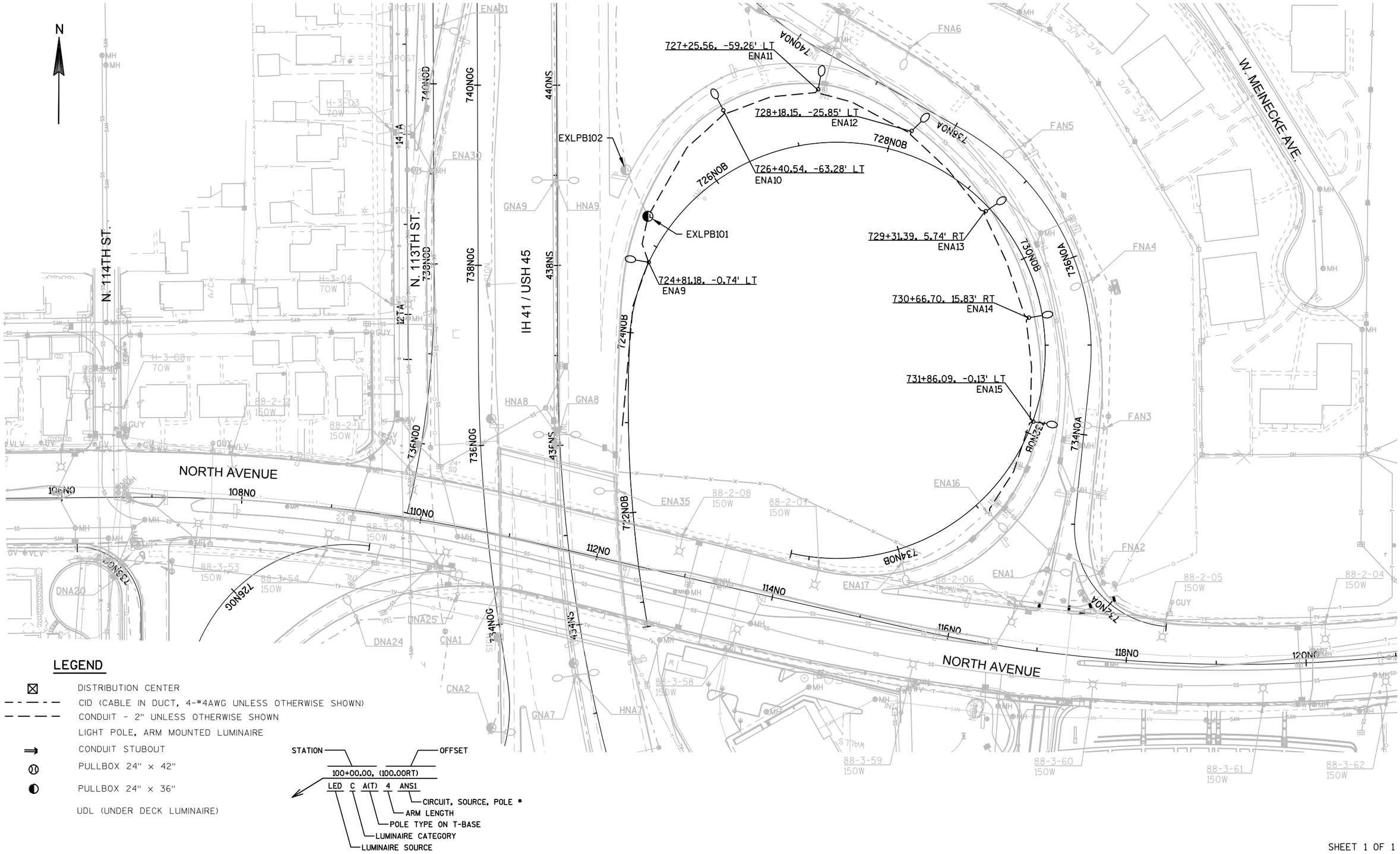
16. EXISTING CONDUIT AND CID NO LONGER BEING USED IS ABANDONED IN PLACE. THE CONTRACTOR MAY REMOVE ABANDONED WIRING AT THE CONTRACTOR'S EXPENSE. ABANDONED PULL BOX REMOVAL IS INCIDENTAL TO THE ROAD CONSTRUCTION.

17. ALL UNDERGROUND WIRING AND CONDUIT FOR POLES BEING REMOVED IS ABANDONED IN PLACE UNLESS NOTED OTHERWISE. CONTRACTOR MAY SALVAGE ABANDONED WIRING AT HIS OWN EXPENSE.

18. PROVIDE REMOVABLE SEALANT SUCH AS DUCT SEAL IN THE CONDUITS AT THE CABINET, PULL BOXES AND JUNCTION BOXES TO AVOID CONDENSATION CAUSED BY AIRFLOW THROUGH THE CONDUITS DUE TO TEMPERATURE DIFFERENCES. THIS WORK SHALL BE INCIDENTAL TO THE ASSOCIATED CONDUIT PAY ITEM.

19. PROVIDE MINIMUM CABLE SLACK AS MENTIONED BELOW:

PULL BOXES:	10-FT
EMBEDDED JUNCTION BOXES:	3-FT
DISTRIBUTION CENTER/LOAD CENTER:	10-FT
POLES:	5-FT IN AND 5-FT OUT



LEGEND

- ⊠ DISTRIBUTION CENTER
- CID (CABLE IN DUCT, 4-#4AWG UNLESS OTHERWISE SHOWN)
- CONDUIT - 2" UNLESS OTHERWISE SHOWN
- LIGHT POLE, ARM MOUNTED LUMINAIRE
- ⇒ CONDUIT STUBOUT
- ⊠ PULLBOX 24" x 42"
- ◐ PULLBOX 24" x 36"
- UDL (UNDER DECK LUMINAIRE)

SHEET 1 OF 1

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	LIGHTING REMOVAL	SHEET 31	E

FILE NAME : W:\PDS\C3D\CAD\10603316\78\LTG\023501_LP.DWG PLOT DATE : 4/20/2017 2:42 PM PLOT BY : DODGE, BRIAN M PLOT NAME : PLOT SCALE : 1" = 100'

WISDOT/CADDS SHEET 42

2

N

IH 41 / USH 45

N. 114TH ST.

N. 113TH ST.

W. MEINECKE AVE.

NORTH AVENUE

727+25.92, -58.39' LT
LED C-5(T)-6-ENA11
(SEE NOTE 1)

728+18.15, -25.14' LT
ENA12
(SEE NOTE 1)

726+40.65, -62.99' LT
LED C-5(T)-6-ENA10
(SEE NOTE 1)

729+31.61, 6.55' RT
LED C-5(T)-6-ENA13
(SEE NOTE 1)

730+66.76, 16.38' RT
LED C-5(T)-6-ENA14
(SEE NOTE 1)

731+86.65, 0.89' RT
LED C-5(T)-6-ENA15
(SEE NOTE 1)

725+23.60, -21.95' LT
LPB101

724+77.10, -18.78' LT
LED D-5(T)-6-ENA9
(SEE NOTE 1)

2 #8 E,N
1 #8 GND

EXISTING LPB102
TO REMAIN

INTERCEPT EXISTING CONDUIT
AND EXTEND TO LPB101

INTERCEPT EXISTING CONDUIT

726NOB
728NOB
730NOB
732NOB
734NOB

ENA30 ENA31 ENA6 FAN5 FNA4 FAN3 ENA16 FNA2 ENA1 ENA17 ENA35 GNA9 HNA9 GNA8 HNA8 GNA7 HNA7 CNA1 CNA2 DNA20 DNA24 DNA25

H-3-03 70W
H-3-04 70W
H-3-08 70W
88-2-12 150W
88-2-11 150W
88-2-08 150W
88-2-07 150W
88-2-06 150W
88-2-05 150W
88-2-04 150W
88-3-53 150W
88-3-54 150W
88-3-55 150W
88-3-58 150W
88-3-59 150W
88-3-60 150W
88-3-61 150W
88-3-62 150W

LEGEND

- DISTRIBUTION CENTER
- CID (CABLE IN DUCT, 4-#4AWG UNLESS OTHERWISE SHOWN)
- CONDUIT - 2" UNLESS OTHERWISE SHOWN
- LIGHT POLE, ARM MOUNTED LUMINAIRE
- CONDUIT STUBOUT
- PULLBOX 24" x 42"
- PULLBOX 24" x 36"
- UDL (UNDER DECK LUMINAIRE)
- JUNCTION BOX

STATION — OFFSET
100+00.00, (100.00RT)
LED C A(T) 4 ANS1
- CIRCUIT, SOURCE, POLE *
- ARM LENGTH
- POLE TYPE ON T-BASE
- LUMINAIRE CATEGORY
- LUMINAIRE SOURCE

NOTE:
1. PROPOSED LIGHTING UNIT SHALL BE 4-FT FROM FACE OF CONCRETE BARRIER.

SHEET 1 OF 1

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	LIGHTING PLAN	SHEET 32	E

2

LEGEND

———	1	PAVEMENT MARKING EPOXY 4-INCH (YELLOW)
———	2	PAVEMENT MARKING EPOXY 4-INCH (WHITE)
— — — — —	3	PAVEMENT MARKING EPOXY 4-INCH (DASHED WHITE) (12.5 FT LINE 37.5 FT SKIP)
- - - - - - - - - - - - - - - - - -	58	PAVEMENT MARKING EPOXY 4-INCH (DOT PATTERN WHITE) (3 FT LINE 9 FT SKIP)

2

N

+44N0B

+70N0B

1

2

3

58

+79N0

110NO

111NO

112NO

113NO

114NO

115NO

116NO

117NO

118NO

721N0B

722N0B

723N0B

724N0B

725N0B

726N0B

727N0B

728N0B

734N0B

735N0B

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	PAVEMENT MARKING	SHEET 34	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\024501_PM.DWG
LAYOUT NAME - ****

PLOT DATE : 2/8/2017 2:27 PM PLOT BY : MCGILLICUDDY, BENJAMPLOT NAME :

PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 42

2

GENERAL NOTES FOR TRAFFIC CONTROL

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

2) A FLAGGER MAY BE REQUIRED WHERE CONSTRUCTION VEHICLES ENTER OR LEAVE WORK AREAS IF WARRANTED BY CONDITIONS OR AS DIRECTED BY THE ENGINEER. FLAGGING IS NOT PERMITTED ON FREEWAY LANES.

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

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

5) FOR NIGHTTIME OPERATION ALL DRUMS IN TAPERS SHALL HAVE A TYPE C STEADY BURN WARNING LIGHT.

6) ALL TYPE III BARRICADES SHALL BE 8' WIDE, UNLESS OTHERWISE NOTED, AND EQUIPPED WITH TWO TYPE "A" (LOW INTENSITY FLASHING) LIGHTS. BARRICADE STRIPES ARE TO BE SLOPED DOWNWARD IN THE DIRECTION OF TRAFFIC FLOW.

7) DIMENSIONS TO CONCRETE BARRIER TEMPORARY PRECAST ARE TO THE FACE OF BARRIER ADJACENT TO TRAFFIC.

8) WORK AREAS SHOWN MAY NOT ILLUSTRATE ALL REMOVALS. SEE REMOVAL SHEETS FOR ADDITIONAL INFORMATION.

9) ALL TRAFFIC CONTROL SIGNS LOCATED IN MEDIANS SHALL BE MOUNTED ON CONCRETE BARRIER UNLESS OTHERWISE NOTED, SEE TRAFFIC CONTROL DETAILS.

10) WHEN A SEGMENT OF THE PROJECT IS NOT SHOWN ON THE STAGING PLANS, USE THE SAME TRAFFIC CONTROL AS THE PREVIOUS STAGE FOR THAT SEGMENT.

11) TRAFFIC CONTROL DRUM SPACING SHALL BE 25' UNLESS OTHERWISE NOTED.

12) 16" X 16" ORANGE FLAGS SHALL BE INCIDENTAL TO TRAFFIC CONTROL SIGN BID ITEM.

13) INSTALL PROPOSED TRAFFIC CONTROL SIGNS ON BOTH OUTSIDE SHOULDER AND MEDIAN SIDE OF ALL DIVIDED ROADWAYS.

14) CONCRETE BARRIER TEMPORARY PRECAST SHALL BE ANCHORED AS DEFINED IN STANDARD DETAIL DRAWING "CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"".

15) LOCATE FIXED MESSAGE SIGNS A MINIMUM OF 400' FROM EXISTING TYPE I SIGN.

16) COVER DETOUR SIGNING WHEN NOT IN USE. INCIDENTAL TO WORK ZONE TRAFFIC CONTROL SIGNING.

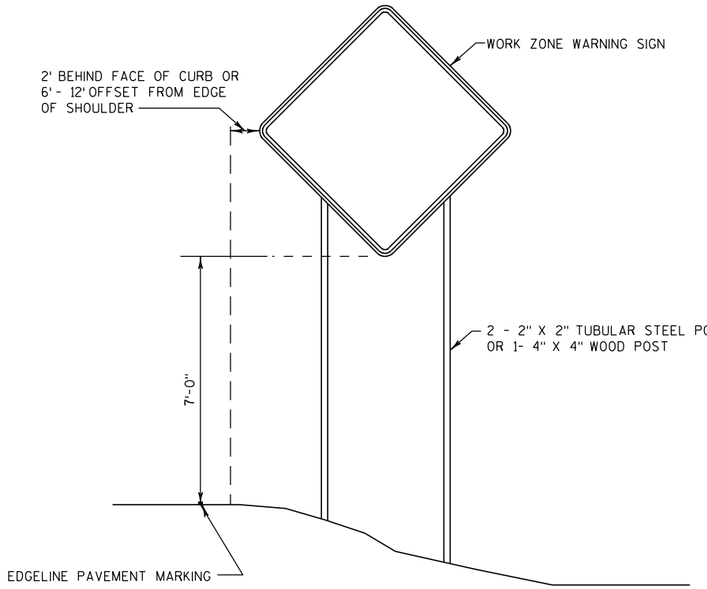
LEGEND

- TRAFFIC CONTROL BARRICADE TYPE III WITH LIGHTS TYPE A
- TRAFFIC CONTROL BARRICADE TYPE III WITH LIGHTS TYPE A AND ATTACHED SIGN
- TRAFFIC CONTROL SIGN
- TRAFFIC CONTROL ARROW BOARD
- CC — CRASH CUSHION TEMPORARY
- PCMS — TRAFFIC CONTROL SIGN PORTABLE CHANGEABLE MESSAGE
- TRAFFIC CONTROL DRUM WITH LIGHT TYPE C
- TRAFFIC CONTROL DRUM
- CONCRETE BARRIER TEMPORARY PRECAST (CBTP)
- TRAFFIC FLOW ARROW
- WORK ZONE THIS STAGE

2

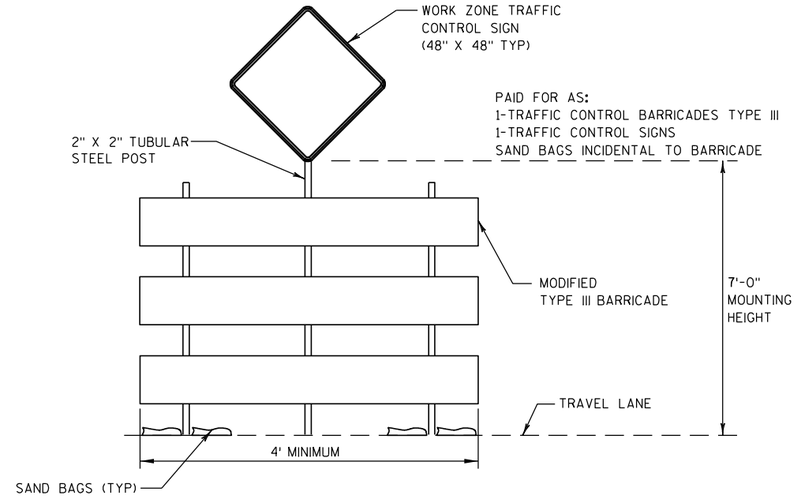
PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL NOTES AND LEGENDS	SHEET 35	E

FILE NAME : W:\PDS\C3D\10603316\78\Dsn\Plan\F45_Traffic_Control\025101_tc.dgn PLOT DATE : 23-MAY-2017 12:12 PLOT BY : MSCJDJ PLOT NAME : 025101_tc PLOT SCALE : 100:1

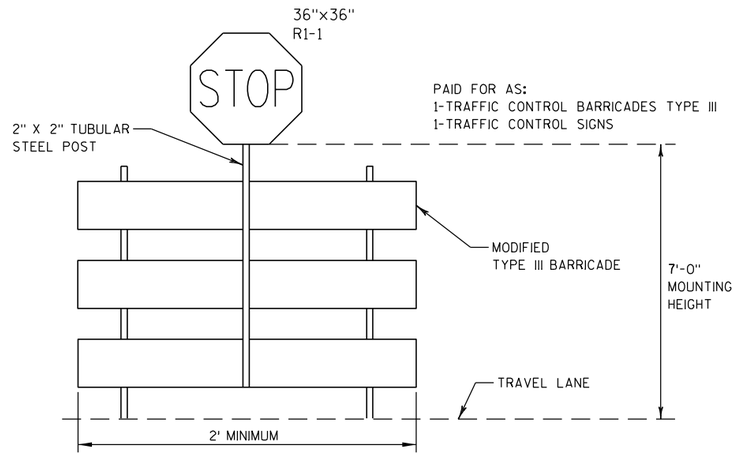


TYPICAL TEMPORARY TRAFFIC CONTROL SIGN
MOUNTING ON FIXED SUPPORT

LONG TERM
7 DAYS OR MORE



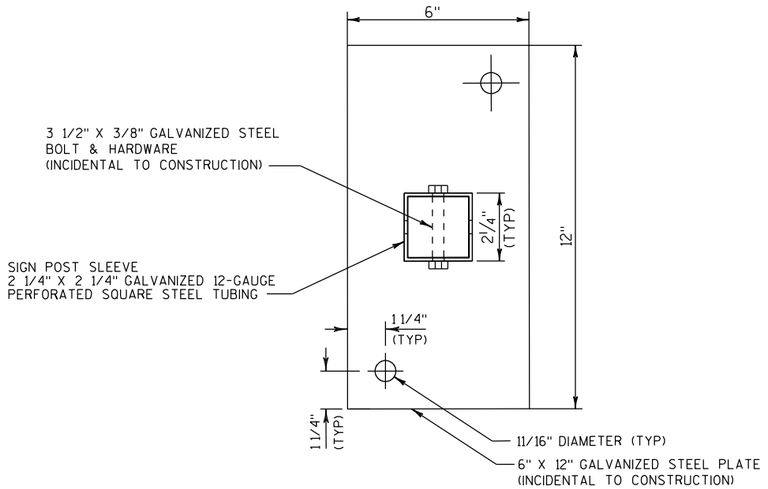
TYPICAL TEMPORARY TRAFFIC CONTROL DETAIL
MOUNTING ON TEMPORARY SUPPORT



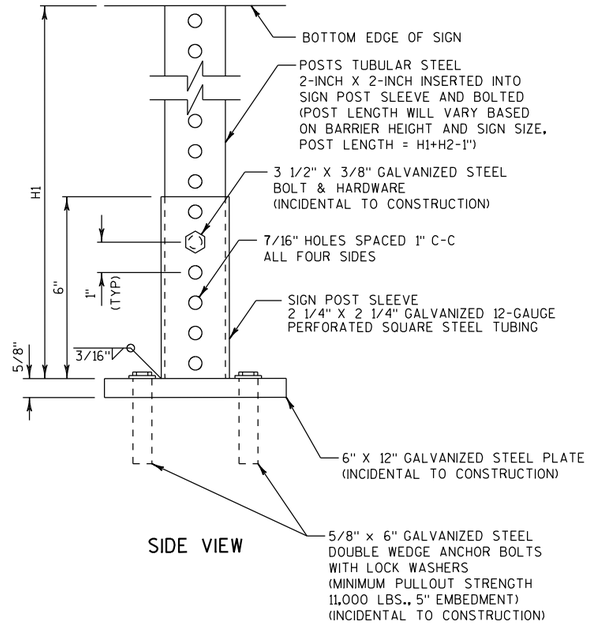
TEMPORARY STOP SIGN

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - CONSTRUCTION DETAIL	SHEET	E

2

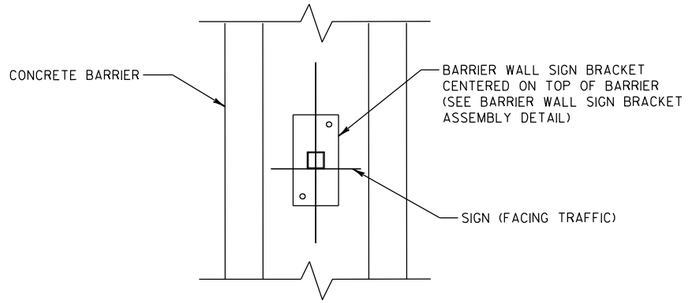


PLAN VIEW

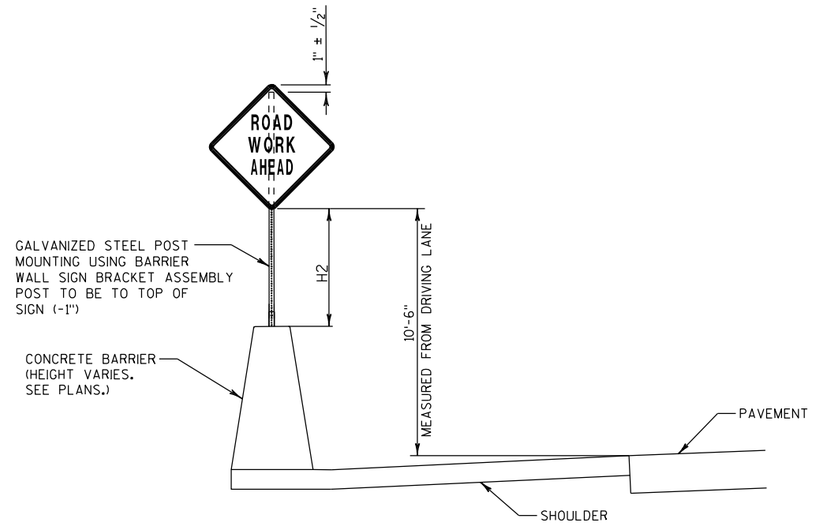


SIDE VIEW

BARRIER WALL SIGN BRACKET ASSEMBLY DETAIL



PLAN VIEW



SIDE VIEW

MEDIAN BARRIER MOUNTING DETAIL

MOUNTING SIGNS TO MEDIAN BARRIER

NOT TO SCALE

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - CONSTRUCTION DETAIL	SHEET	E

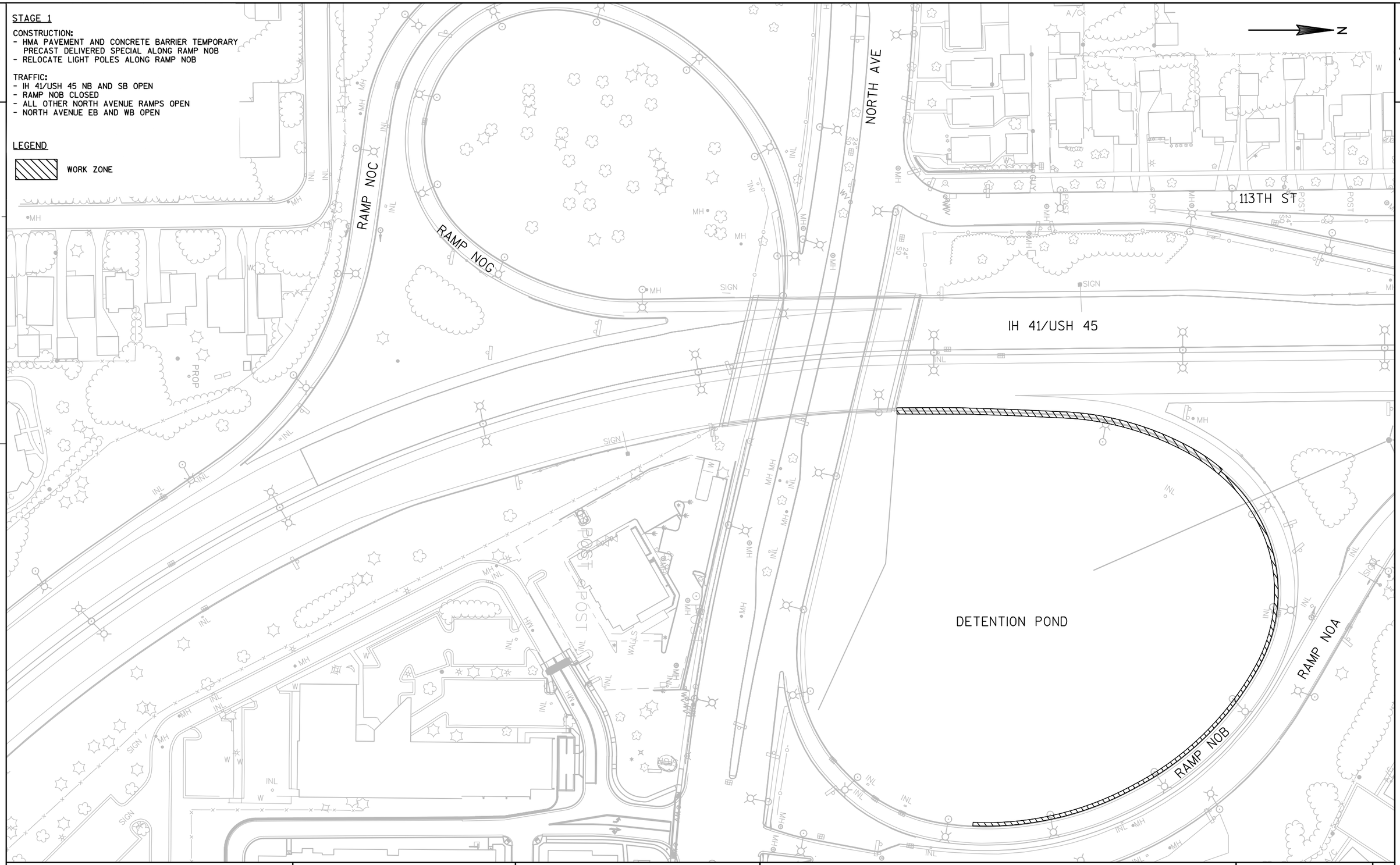
STAGE 1

CONSTRUCTION:
- HMA PAVEMENT AND CONCRETE BARRIER TEMPORARY PRECAST DELIVERED SPECIAL ALONG RAMP NOB
- RELOCATE LIGHT POLES ALONG RAMP NOB

TRAFFIC:
- IH 41/USH 45 NB AND SB OPEN
- RAMP NOB CLOSED
- ALL OTHER NORTH AVENUE RAMPS OPEN
- NORTH AVENUE EB AND WB OPEN

LEGEND

WORK ZONE



PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	STAGING PLAN - STAGE 1 OVERVIEW	SHEET 38	E

2

EXIT 42 B
North Ave
WEST
CLOSED

PLACE G20-60 SIGN OVER MILEAGE ON EXISTING TYPE I SIGN LOCATED ON NB IH41 400' EAST OF UPRR

Watertown Plk Rd 1/2
Mayfair Rd 1 3/4
North Ave WEST CLOSED

PLACE G20-62 SIGN OVER MILEAGE ON EXISTING TYPE I SIGN LOCATED ON NB IH41 300' SOUTH OF BLUEMOUND ROAD

EXIT 42 B
North Ave
WEST
CLOSED

PLACE G20-60 SIGN OVER MILEAGE ON EXISTING TYPE I SIGN LOCATED ON NB IH41 200' SOUTH OF SWAN BOULEVARD

IH 41/USH 45

416NS
418NS
420NS
422NS
424NS
426NS
428NS
430NS
MATCHLINE 431+00NS

200' TAPER

TYP 25'

TRUCKS ENTERING & LEAVING
W8-6A

North Ave WEST CLOSED
Burleigh St 1
Capitol Dr 2 1/4

PLACE G20-62 SIGN OVER MILEAGE ON EXISTING TYPE I SIGN

UPRR

ROAD WORK AHEAD
W20-1-A

RAMP CLOSED AHEAD
W20-53-A

RAMP CLOSED 1000 FT
W20-53-C

1500' 1500'

PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - IH 41/USH 45 STAGE 1	SHEET 39	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\F45_TRAFFIC_CONTROL\026102_S1.DWG
LAYOUT NAME - 01
PLOT DATE : 4/25/2017 10:26 AM PLOT BY : SCHARLAU, DAVID A PLOT NAME : PLOT SCALE : 1 IN:100 FT
WISDOT/CADDS SHEET 42

2

N

NORTH AVENUE

MEINECKE AVENUE

N. 113TH STREET

N. 112TH STREET

RAMP NOG

IH 41/USH 45

MATCHLINE 431+00NS

MATCHLINE 446+00NS

EXIT 42 B
North Ave
WEST
CLOSED

COVER ARROW ON EXISTING TYPE I SIGN (COVERING SIGNS TYPE I)

PLACE G20-61 SIGN UNDER EXISTING TYPE I SIGN

PLACE CONCRETE BARRIER TEMPORARY PRECAST 4' RT OF LANE LINE

END ROAD WORK
G20-2A
48"X24"

20:1 TAPER

CC

25'
TYP

COVER EXISTING EXIT SIGN

CONSTRUCT PAVEMENT WIDENING AND PLACE CONCRETE BARRIER TEMPORARY PRECAST DELIVERED SPECIAL

PCMS MESSAGE
RAMP TO CLOSE LONG TERM
<DATE>

PCMS

RAMP CLOSED
R11-2-R
48"X30"

DETENTION POND

RAMP NOB

RAMP NOA

432NS
434NS
436NS
438NS
440NS
442NS
444NS
446NS
721NOB
722NOB
724NOB
726NOB
728NOB
730NOB
732NOB
734NOB
114NO
116NO
118NO
120NO
122NO
124NO

PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - IH 41/USH 45 STAGE 1	SHEET 40	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\F45_TRAFFIC_CONTROL\026102_S1.DWG
LAYOUT NAME - 02

PLOT DATE : 4/25/2017 10:26 AM PLOT BY : SCHARLAU, DAVID A PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 42

2

STAGE 2

CONSTRUCTION:
- EXCAVATE AND GRADE POND
- ADVANCED FILL ALONG IH 94

TRAFFIC:
- IH 41/USH 45 NB AND SB OPEN
- ALL NORTH AVENUE RAMPS OPEN

STAGE 2A

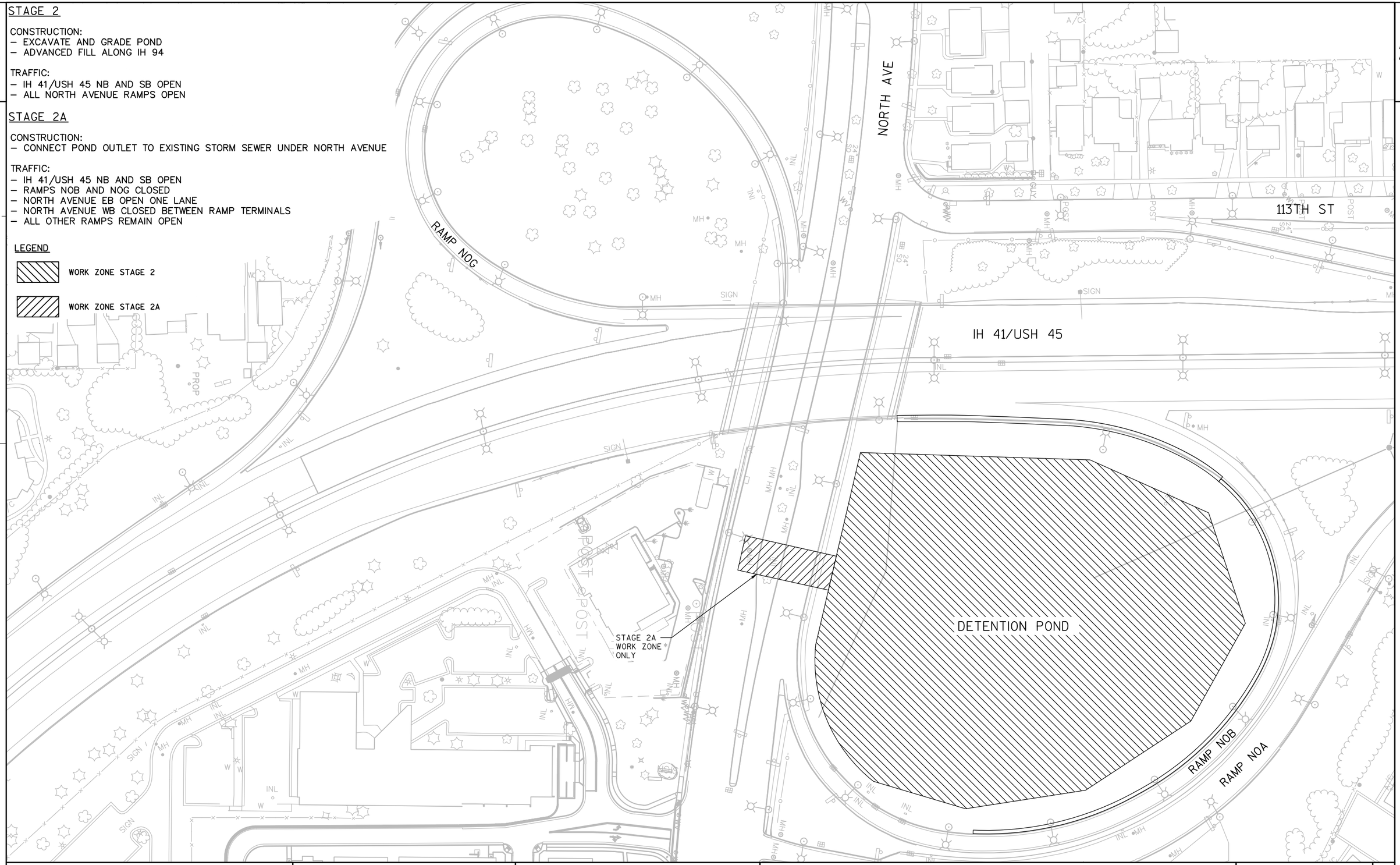
CONSTRUCTION:
- CONNECT POND OUTLET TO EXISTING STORM SEWER UNDER NORTH AVENUE

TRAFFIC:
- IH 41/USH 45 NB AND SB OPEN
- RAMPS NOB AND NOG CLOSED
- NORTH AVENUE EB OPEN ONE LANE
- NORTH AVENUE WB CLOSED BETWEEN RAMP TERMINALS
- ALL OTHER RAMPS REMAIN OPEN

LEGEND

WORK ZONE STAGE 2

WORK ZONE STAGE 2A



2

PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	STAGING PLAN - STAGE 2 OVERVIEW	SHEET 41	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\F45_TRAFFIC_CONTROL\026201_S2.DWG PLOT DATE : 4/21/2017 12:47 PM PLOT BY : SCHARLAU, DAVID A PLOT NAME : PLOT SCALE : 1 IN:100 FT

2

2

IH 41/USH 45

416NS

418NS

420NS

422NS

424NS

426NS

428NS

430NS

431+00NS

MATCHLINE 431+00NS

ROAD WORK AHEAD W20-1-A

RAMP WORK AHEAD W20-1-A (MOD)

TRUCKS ENTERING & LEAVING W8-6A

RAMP 104

RAMP WORK AHEAD W20-1-A (MOD)

1000'

1000'

UPRR

PARKING

PROP

N

PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - IH 41/USH 45 STAGE 2	SHEET 42	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\F45_TRAFFIC_CONTROL\026202_S2.DWG
LAYOUT NAME - 01

PLOT DATE : 4/21/2017 12:10 AM PLOT BY : SCHARLAU, DAVID A PLOT NAME :

PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 42

2

2

N

NORTH AVENUE

MEINECKE AVENUE

N. 113TH STREET

N. 112TH STREET

RAMP NOG

110NO

112NO

114NO

116NO

118NO

TRUCKS ENTERING & LEAVING
W8-6A

END ROAD WORK
G20-2A
48"X24"

IH 41/USH 45

432NS
434NS
436NS
438NS
440NS
442NS
444NS
446NS

431+00NS MATCHLINE

721NOB
722NOB
724NOB
80NO72
134NOB
132NOB
130NOB
128NOB

DETENTION POND

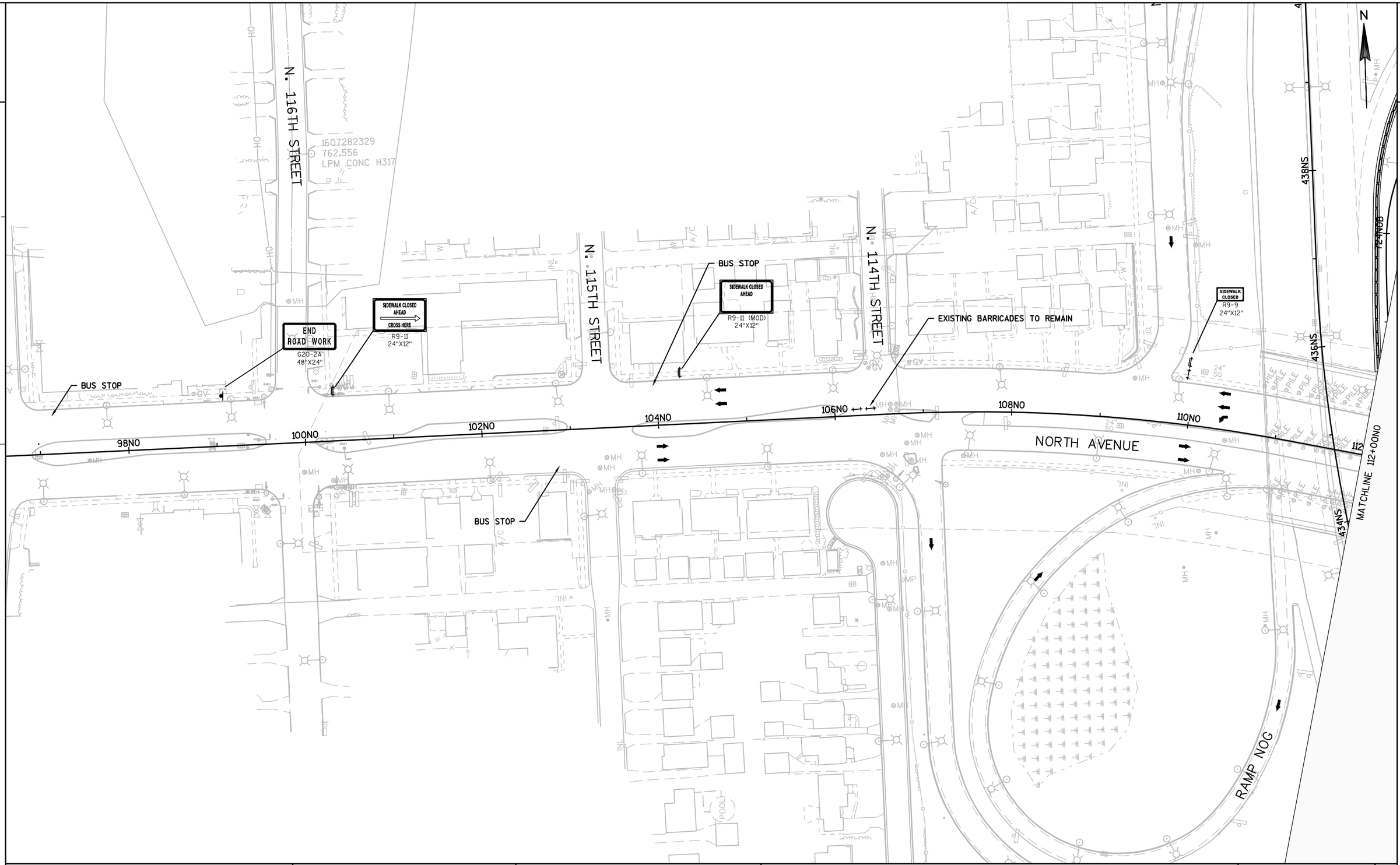
RAMP NOB

RAMP NOA

PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - IH 41/USH 45 STAGE 2	SHEET 43	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\F45_TRAFFIC_CONTROL\026202_S2.DWG
LAYOUT NAME - 02

PLOT DATE : 4/21/2017 12:10 AM PLOT BY : SCHARLAU, DAVID A PLOT NAME : PLOT SCALE : 1 IN:100 FT



2

PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - NORTH AVENUE STAGE 2	SHEET 44	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\F45_TRAFFIC_CONTROL\026202_S2.DWG
LAYOUT NAME - 04
PLOT DATE : 4/21/2017 12:10 AM PLOT BY : SCHARLAU, DAVID A PLOT NAME :
PLOT SCALE : 1 IN:100 FT

2

DETENTION POND

730NOB

732NOB

734NOB

722NOB

721NOB

MATCHLINE 112+00NO

112+00NO

114NO

116NO

118NO

120NO

122NO

124NO

126NO

432NS

430NS

SIDEWALK CLOSED
R9-9
24"X12"

SIDEWALK CLOSED AHEAD
CROSS HERE
R9-11
24"X12"

TRUCKS ENTERING & LEAVING
W8-6A

ROAD WORK AHEAD
W20-1-A

UNION PACIFIC

RAMP

NORTH AVENUE

N. MAYFAIR ROAD

UNION PACIFIC RAILROAD

615

610

N

PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - NORTH AVENUE STAGE 2	SHEET 45	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\F45_TRAFFIC_CONTROL\026202_S2.DWG
LAYOUT NAME - 05

PLOT DATE : 4/21/2017 12:10 AM PLOT BY : SCHARLAU, DAVID A PLOT NAME : PLOT SCALE : 1 IN:100 FT

2

CLYBOURN STREET

28TH STREET

27TH STREET

26TH STREET

25TH STREET

ST. PAUL AVE

GREVES STREET

IH 94

N

ROAD WORK AHEAD
W20-1

TRUCKS ENTERING & LEAVING
W8-6A

SIDEWALK CLOSED
R9-9
24" X 12"

SIDEWALK CLOSED
R9-9
24" X 12"

SUB-STATION

ABANDONED

RIVER

MENOMONEE

PKNG

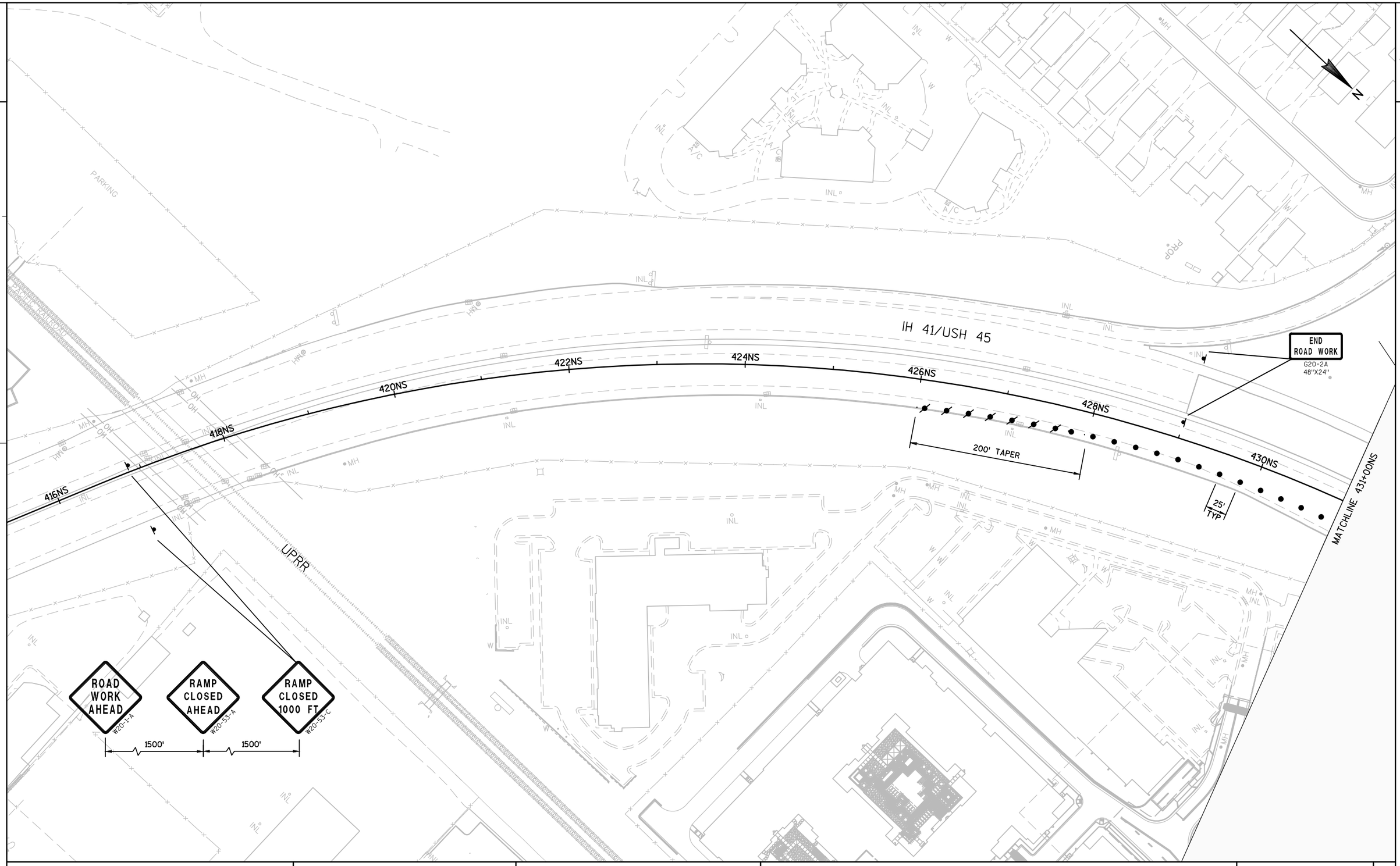
PARKING

CP RAIL SYSTEM

PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	TRAFFIC CONTROL - ADVANCED FILL ALONG IH 94 STAGE 2	SHEET	E

FILE NAME : W:\PDS\C3D\10603316\78\Dsn\Plan\F45_Traffic_Control\026204_s2rs.dgn PLOT DATE : 20-APR-2017 22:03 PLOT BY : MSCD1S PLOT NAME : 026204_s2rs PLOT SCALE : 200:1

2



PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - IH 41/USH 45 STAGE 2A	SHEET 47	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\F45_TRAFFIC_CONTROL\026204_S2A.DWG
LAYOUT NAME - 01
PLOT DATE : 4/21/2017 1:10 PM PLOT BY : SCHARLAU, DAVID A PLOT NAME : PLOT SCALE : 1 IN:100 FT
WISDOT/CADDS SHEET 42

2

NORTH AVENUE

MEINECKE AVENUE

N

COVER EXISTING EXIT SIGN

RAMP CLOSED
R11-2-R
48"X30"

RAMP CLOSED
R11-2-R
48"X30"

RAMP CLOSED
R11-2-R
48"X30"

200' TAPER

END ROAD WORK
G20-2A
48"X24"

IH 41/USH 45

MATCHLINE 431+00NS

MATCHLINE 446+00NS

432NS
434NS
436NS
438NS
440NS
442NS
444NS

110NO
112NO
116NO
118NO

721NOB
722NOB
724NOB
726NOB
728NOB
730NOB
732NOB
734NOB

25'

COVER EXISTING EXIT SIGN

*PCMS

DETENTION POND

N. 112TH STREET

*PLACE PCMS 3 CALENDAR DAYS PRIOR TO CLOSURE OR AS DIRECTED BY THE ENGINEER

PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - IH 41/USH 45 STAGE 2A	SHEET 48	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\F45_TRAFFIC_CONTROL\026204_S2A.DWG
LAYOUT NAME - 02

PLOT DATE : 4/21/2017 1:10 PM PLOT BY : SCHARLAU, DAVID A PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 42

2

2

N

W. CLARK STREET

N. 113TH STREET

RAMP CLOSED 1000 FT W20-53-C

1500'

RAMP CLOSED AHEAD W20-53-A

1500'

ROAD WORK AHEAD W20-1-A

IH 41/USH 45

MATCHLINE 446+00NS

446NS 448NS 450NS 452NS 454NS 456NS 458NS 460NS

N. 112TH STREET

W. CLARK STREET

PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - IH 41/USH 45 STAGE 2A	SHEET 49	E

PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - NORTH AVENUE STAGE 2A	SHEET 50	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\F45_TRAFFIC_CONTROL\026204_S2A.DWG
LAYOUT NAME - 04
PLOT DATE : 4/21/2017 1:10 PM PLOT BY : SCHARLAU, DAVID A PLOT NAME : PLOT SCALE : 1 IN:100 FT
WISDOT/CADDS SHEET 42

2

N

DETENTION POND

730NOB

732NOB

734NOB

722NOB

721NOB

MATCHLINE 112+00NO

114NO

8:1 TAPER

16'

116NO

118NO

120NO

122NO

124NO

126NO

MATCHLINE 127+00NO

432NS

430NS

IH 41/USH 45

ROAD CLOSED
R11-2
48"X30"

SIDEWALK CLOSED
R9-9
24"X12"

ROAD CLOSED
R11-2
48"X30"

SIDEWALK CLOSED AHEAD
CROSS HERE
R9-11
24"X12"

TEMPORARY PAVEMENT MARKING
REMOVABLE TAPE 4-INCH (WHITE)

BEGIN RIGHT TURN LANE
R3-20-R
24"X36"

ROAD CLOSED 500 FT
W20-3-D

385' LANE DROP TAPER

+22.00NO

25'

50'

11'

12'

REDUCE TO SINGLE RIGHT TURN LANE
SB MAYFAIR ROAD

ROAD CLOSED TO THRU TRAFFIC
R11-4
60"X30"

ROAD CLOSED AHEAD
W20-3-A

50'

14'

W104-2R

RIGHT LANE CLOSED AHEAD
W20-5-A

22'

LANE CLOSED
R11-2-L
48"X30"

END ROAD WORK
G20-2A
48"X24"

NORTH AVENUE

10'

N. MAYFAIR ROAD

50'

REDUCE TO SINGLE LEFT TURN LANE
NB MAYFAIR ROAD

POND OUTLET CONNECTION,
SEE STORM SEWER PLANS

BEGIN LEFT TURN LANE
R3-20-L
24"X36"

LANE CLOSED
R11-2-L
48"X30"

TEMPORARY PAVEMENT MARKING
REMOVABLE TAPE 8-INCH (WHITE)

R3-2
24"X24"

LANE CLOSED
R11-2-L
48"X30"

LANE CLOSED
R11-2-L
48"X30"

UNION PACIFIC RAILROAD

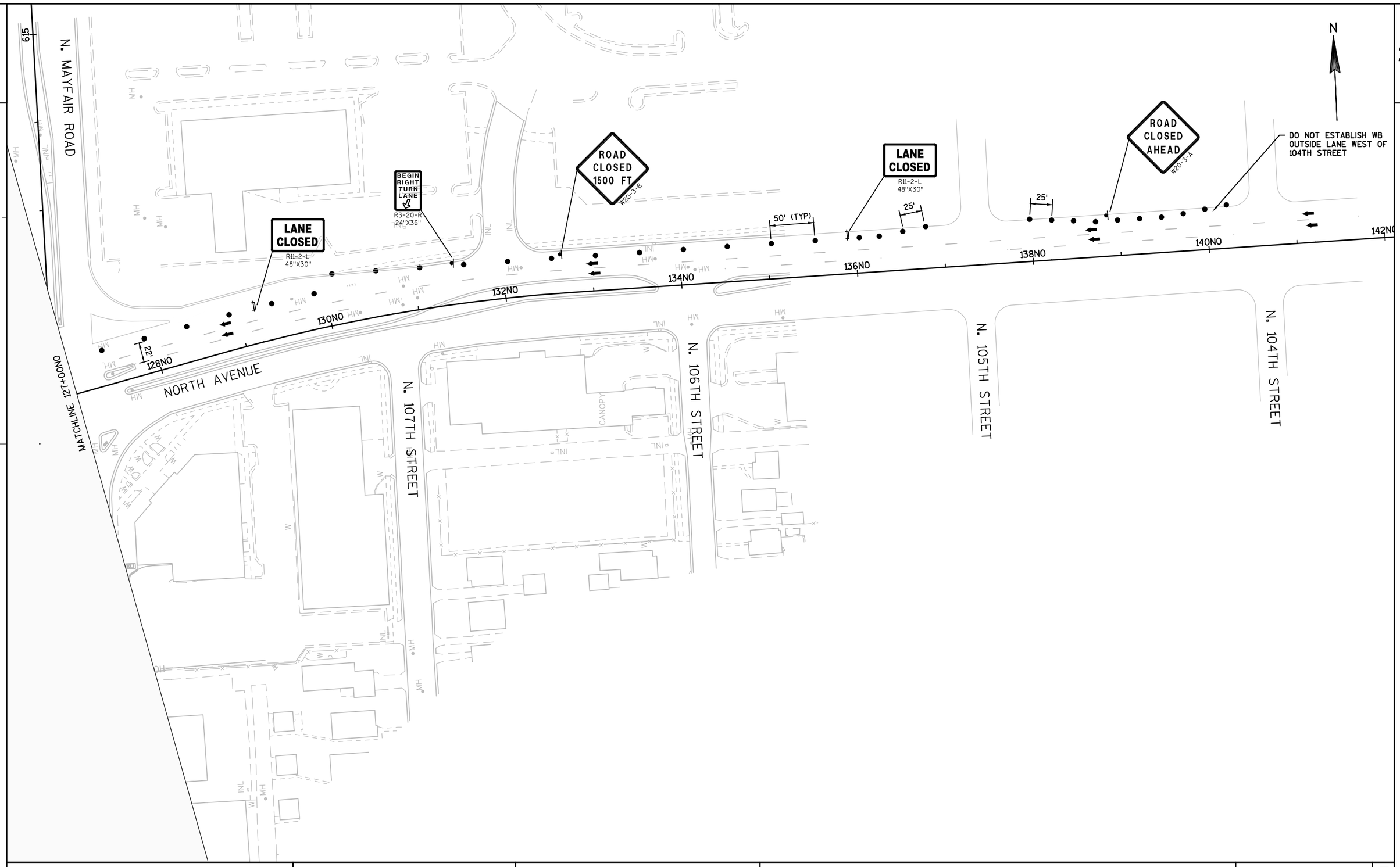
PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - NORTH AVENUE STAGE 2A	SHEET 51	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\F45_TRAFFIC_CONTROL\026204_S2A.DWG
LAYOUT NAME - 05

PLOT DATE : 4/21/2017 1:10 PM PLOT BY : SCHARLAU, DAVID A PLOT NAME :

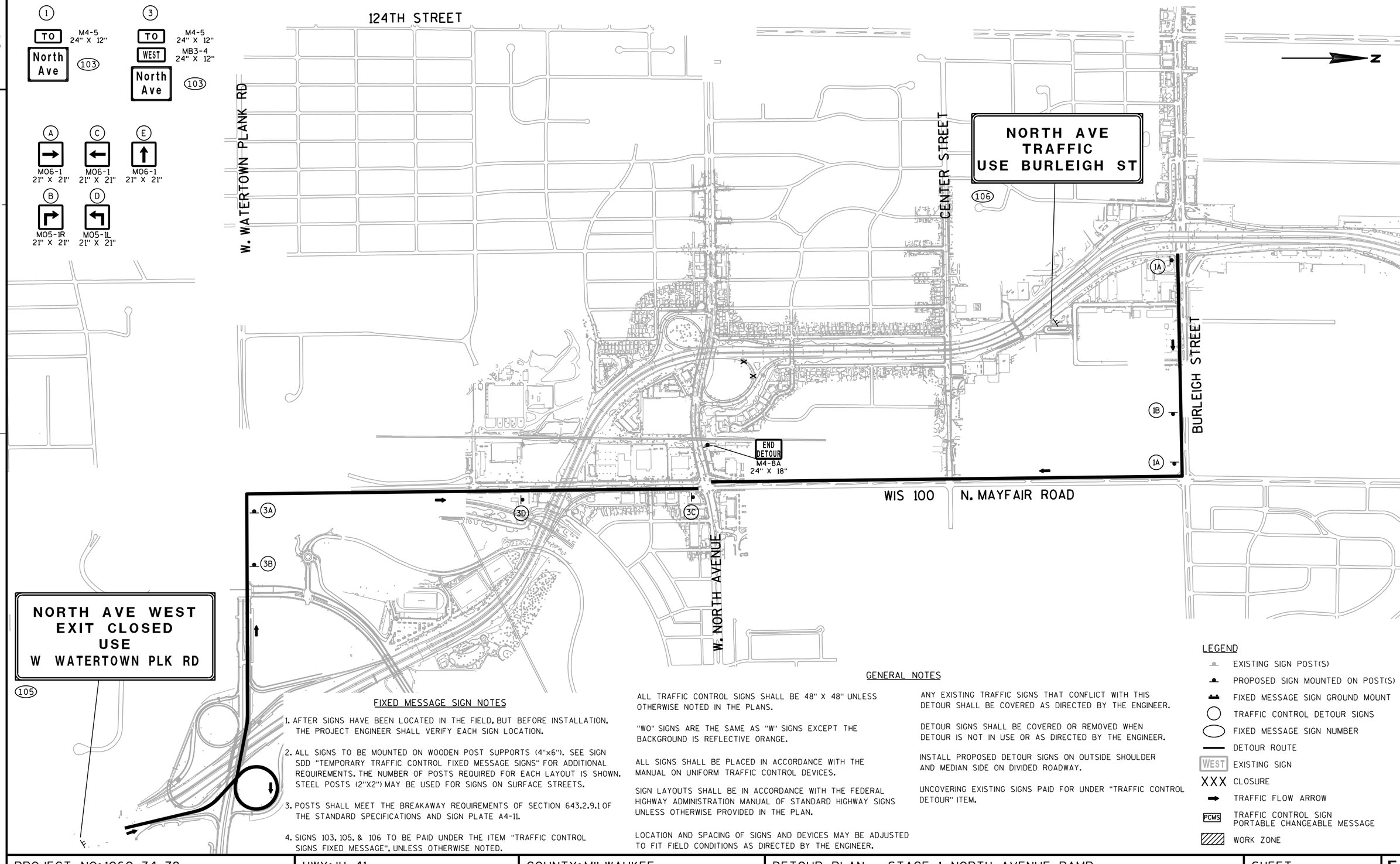
PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 42



PROJECT NO:1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - IH 41/USH 45 STAGE 2A	SHEET 52	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\F45_TRAFFIC_CONTROL\026204_S2A.DWG
LAYOUT NAME - 06
PLOT DATE : 4/21/2017 1:10 PM PLOT BY : SCHARLAU, DAVID A PLOT NAME : PLOT SCALE : 1 IN:100 FT
WISDOT/CADDS SHEET 42



FIXED MESSAGE SIGN NOTES

1. AFTER SIGNS HAVE BEEN LOCATED IN THE FIELD, BUT BEFORE INSTALLATION, THE PROJECT ENGINEER SHALL VERIFY EACH SIGN LOCATION.
2. ALL SIGNS TO BE MOUNTED ON WOODEN POST SUPPORTS (4"x6"). SEE SIGN SDD "TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS" FOR ADDITIONAL REQUIREMENTS. THE NUMBER OF POSTS REQUIRED FOR EACH LAYOUT IS SHOWN. STEEL POSTS (2"X2") MAY BE USED FOR SIGNS ON SURFACE STREETS.
3. POSTS SHALL MEET THE BREAKAWAY REQUIREMENTS OF SECTION 643.2.9.1 OF THE STANDARD SPECIFICATIONS AND SIGN PLATE A4-11.
4. SIGNS 103, 105, & 106 TO BE PAID UNDER THE ITEM "TRAFFIC CONTROL SIGNS FIXED MESSAGE", UNLESS OTHERWISE NOTED.

GENERAL NOTES

ALL TRAFFIC CONTROL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED IN THE PLANS.

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

ALL SIGNS SHALL BE PLACED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FEDERAL HIGHWAY ADMINISTRATION MANUAL OF STANDARD HIGHWAY SIGNS UNLESS OTHERWISE PROVIDED IN THE PLAN.

LOCATION AND SPACING OF SIGNS AND DEVICES MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

ANY EXISTING TRAFFIC SIGNS THAT CONFLICT WITH THIS DETOUR SHALL BE COVERED AS DIRECTED BY THE ENGINEER.

DETOUR SIGNS SHALL BE COVERED OR REMOVED WHEN DETOUR IS NOT IN USE OR AS DIRECTED BY THE ENGINEER.

INSTALL PROPOSED DETOUR SIGNS ON OUTSIDE SHOULDER AND MEDIAN SIDE ON DIVIDED ROADWAY.

UNCOVERING EXISTING SIGNS PAID FOR UNDER "TRAFFIC CONTROL DETOUR" ITEM.

LEGEND

- EXISTING SIGN POST(S)
- PROPOSED SIGN MOUNTED ON POST(S)
- FIXED MESSAGE SIGN GROUND MOUNT
- TRAFFIC CONTROL DETOUR SIGNS
- FIXED MESSAGE SIGN NUMBER
- DETOUR ROUTE
- WEST EXISTING SIGN
- XXX CLOSURE
- TRAFFIC FLOW ARROW
- PCMS TRAFFIC CONTROL SIGN PORTABLE CHANGEABLE MESSAGE
- WORK ZONE

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	DETOUR PLAN - STAGE 1 NORTH AVENUE RAMP	SHEET	E

LEGEND

1
TO M4-5 24" X 12"
North Ave 103

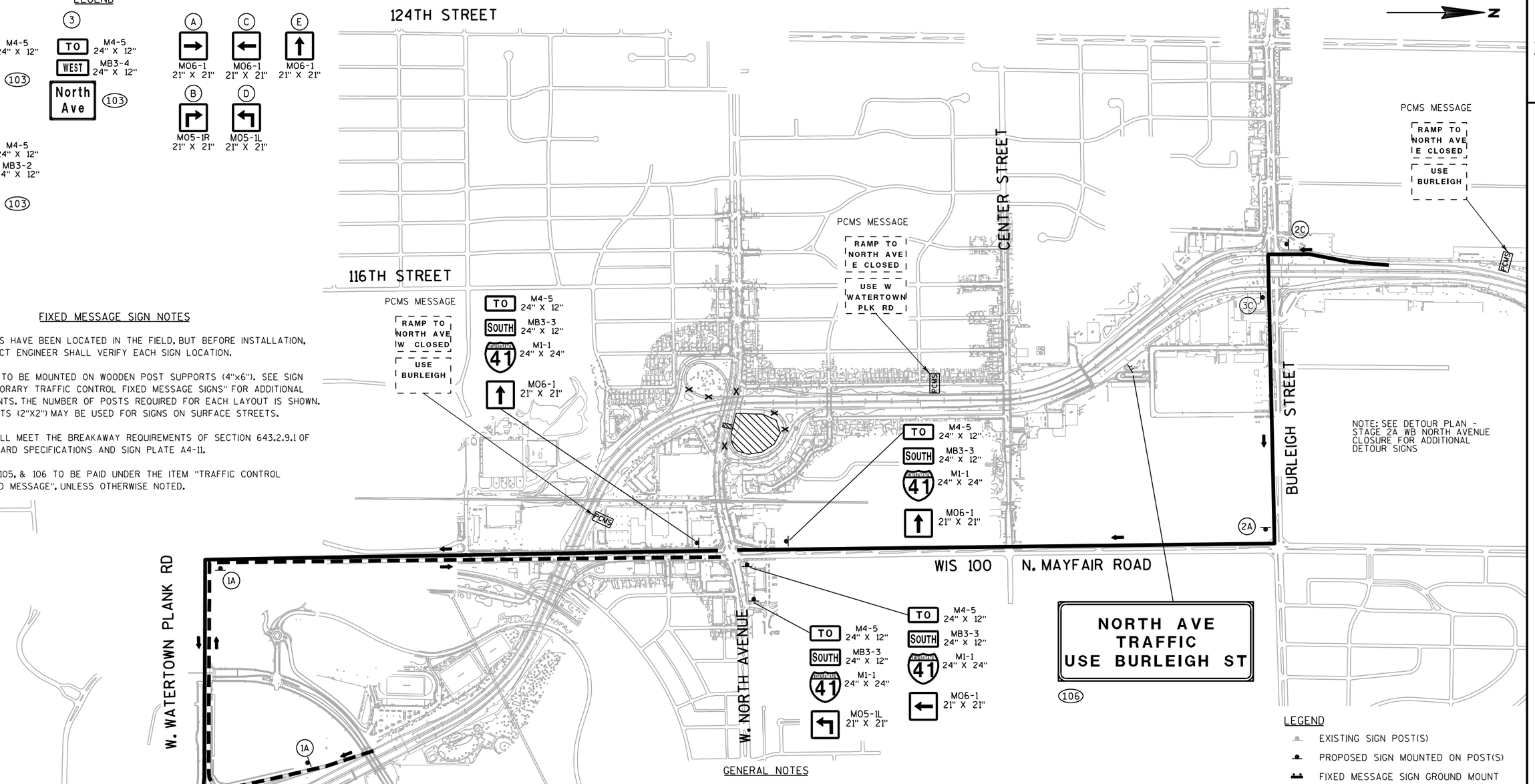
2
TO M4-5 24" X 12"
EAST MB3-2 24" X 12"
North Ave 103

3
TO M4-5 24" X 12"
WEST MB3-4 24" X 12"
North Ave 103

A M06-1 21" X 21"
B M05-1R 21" X 21"
C M06-1 21" X 21"
D M05-1L 21" X 21"
E M06-1 21" X 21"

FIXED MESSAGE SIGN NOTES

1. AFTER SIGNS HAVE BEEN LOCATED IN THE FIELD, BUT BEFORE INSTALLATION, THE PROJECT ENGINEER SHALL VERIFY EACH SIGN LOCATION.
2. ALL SIGNS TO BE MOUNTED ON WOODEN POST SUPPORTS (4"x6"). SEE SIGN SDD "TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS" FOR ADDITIONAL REQUIREMENTS. THE NUMBER OF POSTS REQUIRED FOR EACH LAYOUT IS SHOWN. STEEL POSTS (2"X2") MAY BE USED FOR SIGNS ON SURFACE STREETS.
3. POSTS SHALL MEET THE BREAKAWAY REQUIREMENTS OF SECTION 643.2.9.1 OF THE STANDARD SPECIFICATIONS AND SIGN PLATE A4-11.
4. SIGNS 103, 105, & 106 TO BE PAID UNDER THE ITEM "TRAFFIC CONTROL SIGNS FIXED MESSAGE", UNLESS OTHERWISE NOTED.



GENERAL NOTES

ALL TRAFFIC CONTROL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED IN THE PLANS.

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

ALL SIGNS SHALL BE PLACED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FEDERAL HIGHWAY ADMINISTRATION MANUAL OF STANDARD HIGHWAY SIGNS UNLESS OTHERWISE PROVIDED IN THE PLAN.

LOCATION AND SPACING OF SIGNS AND DEVICES MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

ANY EXISTING TRAFFIC SIGNS THAT CONFLICT WITH THIS DETOUR SHALL BE COVERED AS DIRECTED BY THE ENGINEER.

DETOUR SIGNS SHALL BE COVERED OR REMOVED WHEN DETOUR IS NOT IN USE OR AS DIRECTED BY THE ENGINEER.

INSTALL PROPOSED DETOUR SIGNS ON OUTSIDE SHOULDER AND MEDIAN SIDE ON DIVIDED ROADWAY.

UNCOVERING EXISTING SIGNS PAID FOR UNDER "TRAFFIC CONTROL DETOUR" ITEM.

LEGEND

- EXISTING SIGN POST(S)
- PROPOSED SIGN MOUNTED ON POST(S)
- FIXED MESSAGE SIGN GROUND MOUNT
- TRAFFIC CONTROL DETOUR SIGNS
- FIXED MESSAGE SIGN NUMBER
- DETOUR ROUTE
- DETOUR ROUTE
- WEST EXISTING SIGN
- XXX CLOSURE
- TRAFFIC FLOW ARROW
- PCMS TRAFFIC CONTROL SIGN PORTABLE CHANGEABLE MESSAGE
- WORK ZONE

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	DETOUR PLAN - STAGE 2A NORTH AVENUE RAMPS	SHEET	E

GENERAL NOTES

ALL TRAFFIC CONTROL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED IN THE PLANS.

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

ALL SIGNS SHALL BE PLACED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FEDERAL HIGHWAY ADMINISTRATION MANUAL OF STANDARD HIGHWAY SIGNS UNLESS OTHERWISE PROVIDED IN THE PLAN.

LOCATION AND SPACING OF SIGNS AND DEVICES MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

ANY EXISTING TRAFFIC SIGNS THAT CONFLICT WITH THIS DETOUR SHALL BE COVERED AS DIRECTED BY THE ENGINEER.

DETOUR SIGNS SHALL BE COVERED OR REMOVED WHEN DETOUR IS NOT IN USE OR AS DIRECTED BY THE ENGINEER.

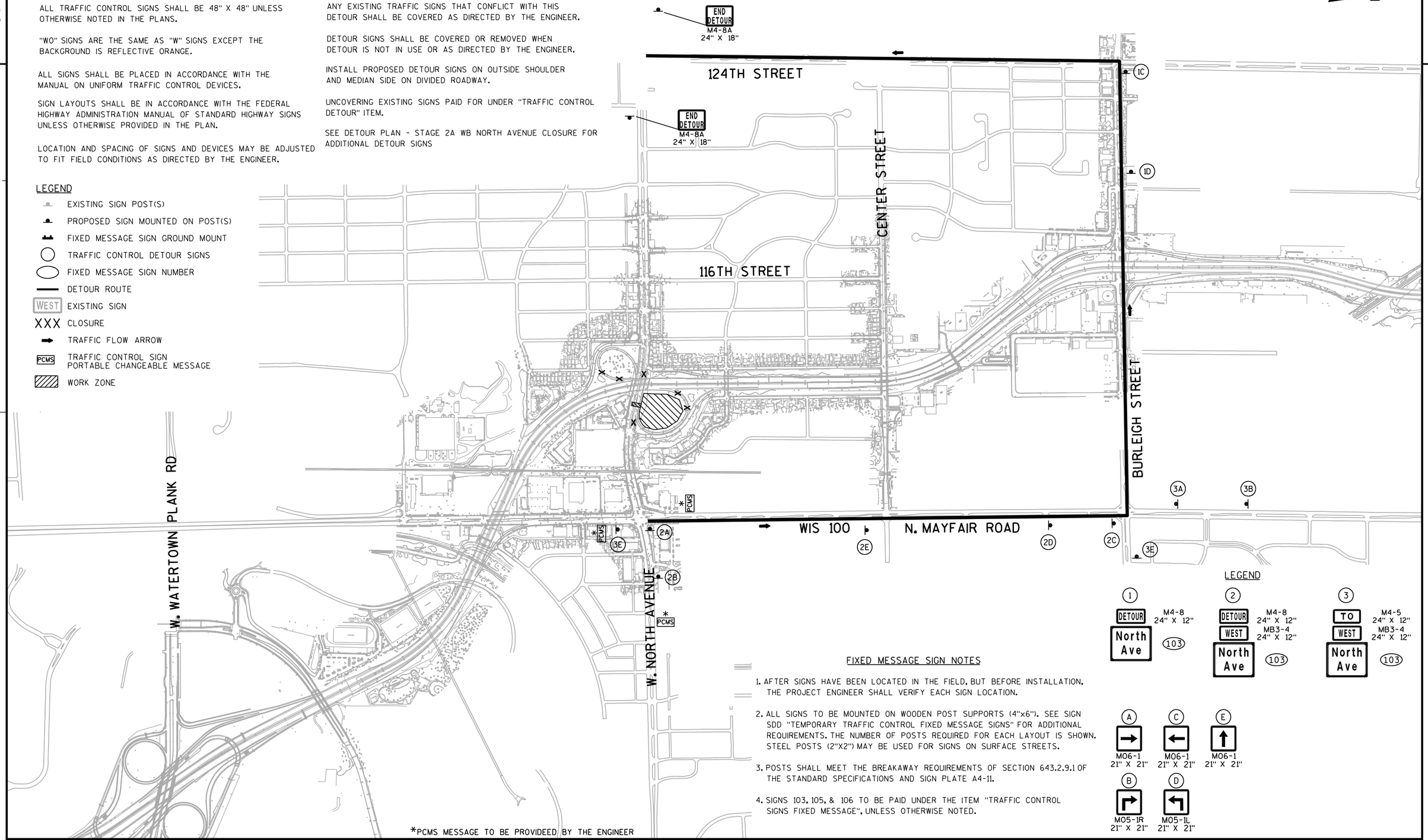
INSTALL PROPOSED DETOUR SIGNS ON OUTSIDE SHOULDER AND MEDIAN SIDE ON DIVIDED ROADWAY.

UNCOVERING EXISTING SIGNS PAID FOR UNDER "TRAFFIC CONTROL DETOUR" ITEM.

SEE DETOUR PLAN - STAGE 2A WB NORTH AVENUE CLOSURE FOR ADDITIONAL DETOUR SIGNS

LEGEND

- EXISTING SIGN POST(S)
- PROPOSED SIGN MOUNTED ON POST(S)
- FIXED MESSAGE SIGN GROUND MOUNT
- TRAFFIC CONTROL DETOUR SIGNS
- FIXED MESSAGE SIGN NUMBER
- DETOUR ROUTE
- WEST EXISTING SIGN
- XXX CLOSURE
- TRAFFIC FLOW ARROW
- PCMS TRAFFIC CONTROL SIGN PORTABLE CHANGEABLE MESSAGE
- WORK ZONE



FIXED MESSAGE SIGN NOTES

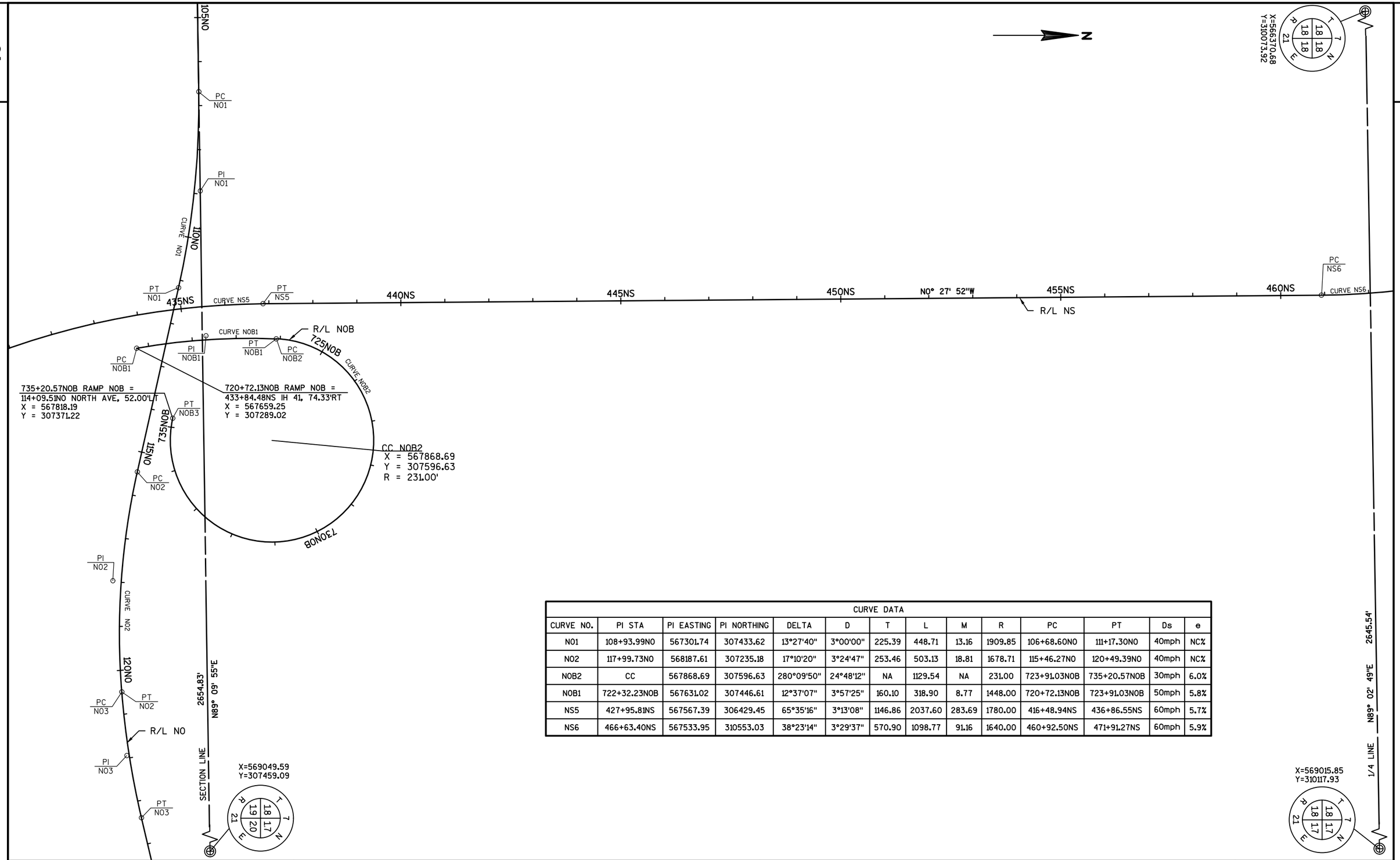
1. AFTER SIGNS HAVE BEEN LOCATED IN THE FIELD, BUT BEFORE INSTALLATION, THE PROJECT ENGINEER SHALL VERIFY EACH SIGN LOCATION.
2. ALL SIGNS TO BE MOUNTED ON WOODEN POST SUPPORTS (4"x6"). SEE SIGN SDD "TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS" FOR ADDITIONAL REQUIREMENTS. THE NUMBER OF POSTS REQUIRED FOR EACH LAYOUT IS SHOWN. STEEL POSTS (2"X2") MAY BE USED FOR SIGNS ON SURFACE STREETS.
3. POSTS SHALL MEET THE BREAKAWAY REQUIREMENTS OF SECTION 643.2.9.1 OF THE STANDARD SPECIFICATIONS AND SIGN PLATE A4-11.
4. SIGNS 103, 105, & 106 TO BE PAID UNDER THE ITEM "TRAFFIC CONTROL SIGNS FIXED MESSAGE", UNLESS OTHERWISE NOTED.

LEGEND

1. DETOUR / North Ave (103) — M4-8 24" X 12"
2. DETOUR / WEST / North Ave (103) — M4-8 24" X 12", MB3-4 24" X 12"
3. TO / WEST / North Ave (103) — M4-5 24" X 12", MB3-4 24" X 12"

A. M06-1 21" X 21"
C. M06-1 21" X 21"
E. M06-1 21" X 21"
B. M05-1R 21" X 21"
D. M05-1L 21" X 21"

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	DETOUR PLAN - STAGE 2A WB NORTH AVENUE CLOSURE	SHEET	E



CURVE DATA													
CURVE NO.	PI STA	PI EASTING	PI NORTHING	DELTA	D	T	L	M	R	PC	PT	Ds	e
NO1	108+93.99NO	567301.74	307433.62	13°27'40"	3°00'00"	225.39	448.71	13.16	1909.85	106+68.60NO	111+17.30NO	40mph	NC%
NO2	117+99.73NO	568187.61	307235.18	17°10'20"	3°24'47"	253.46	503.13	18.81	1678.71	115+46.27NO	120+49.39NO	40mph	NC%
NOB2	CC	567868.69	307596.63	280°09'50"	24°48'12"	NA	1129.54	NA	231.00	723+91.03NOB	735+20.57NOB	30mph	6.0%
NOB1	722+32.23NOB	567631.02	307446.61	12°37'07"	3°57'25"	160.10	318.90	8.77	1448.00	720+72.13NOB	723+91.03NOB	50mph	5.8%
NS5	427+95.81NS	567567.39	306429.45	65°35'16"	3°13'08"	1146.86	2037.60	283.69	1780.00	416+48.94NS	436+86.55NS	60mph	5.7%
NS6	466+63.40NS	567533.95	310553.03	38°23'14"	3°29'37"	570.90	1098.77	91.16	1640.00	460+92.50NS	471+91.27NS	60mph	5.9%

PROJECT NO: 1060-34-84	HWY: IH 41	COUNTY: MILWAUKEE	ALIGNMENT LAYOUT	SHEET 56	E

2

BENCH MARKS				
BM NUMBER	DESCRIPTION	N	E	ELEVATION
1924	SW BOLT OF HYD. WEST OF PRIV. RD. SOUTH SIDE W. NORTH AVE.	307222	568015	733.22
1925	NW BOLT OF HYD. EAST S/114TH ST. NORTH SIDE W. NORTH AVE.	307507	567075	757.66
1926	NE BOLT OF HYD. EAST S/115TH ST. SOUTH SIDE W. NORTH AVE.	307352	566762	763.19

N

W. MEINECKE AVE.

446NS

444NS

442NS

440NS

438NS

436NS

434NS

432NS

430NS

428NS

N. 112TH ST.

CP FENO 641
774.84

N. 113TH ST.

N. 116TH ST.

N. 115TH ST.

BM 1925
757.66

USH 45

IH 41/USH 45

724NOB

726NOB

728NOB

730NOB

732NOB

734NOB

UNION PACIFIC RAILROAD

98NO

100NO

102NO

104NO

106NO

108NO

W. NORTH AVE.

112NO

114NO

116NO

118NO

120NO

122NO

124NO

126NO

128NO

BM 1926
763.19

CP FENO 639
755.00

N. 114TH ST.

BM 1924
733.22

CP FENO 640
740.42

CP FENO 638
723.51

PRIVATE RD.

W. GARFIELD AVE.

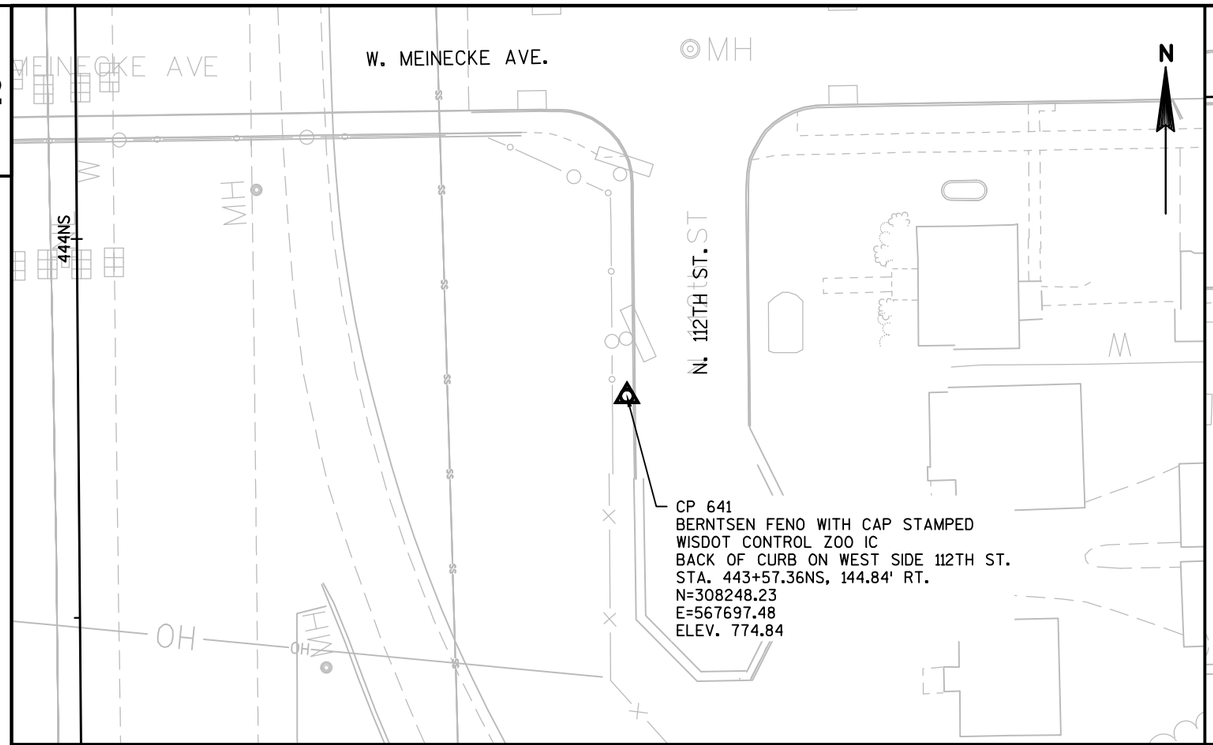
STH 100/N. MAYFAIR RD.

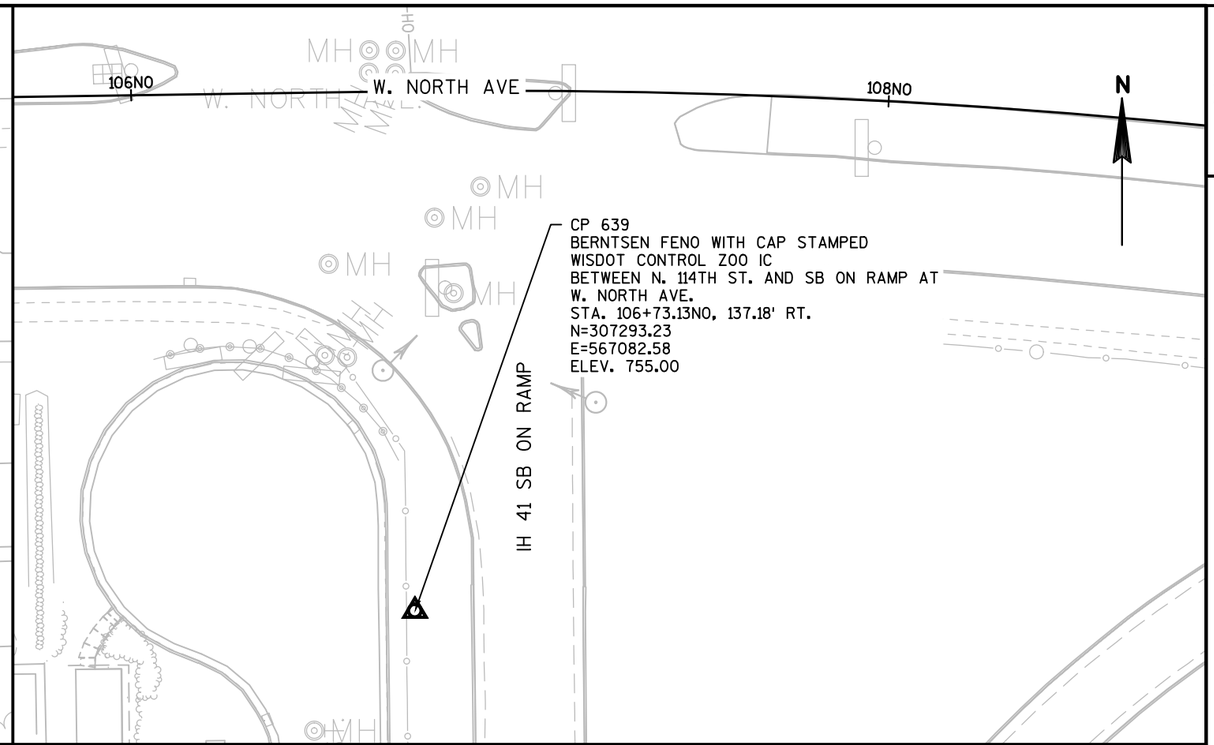
PROJECT NO: 1060-34-78	HWY: IH-41	COUNTY: MILWAUKEE	ALIGNMENT LAYOUT- SURVEY CONTROL OVERVIEW	SHEET 57	E

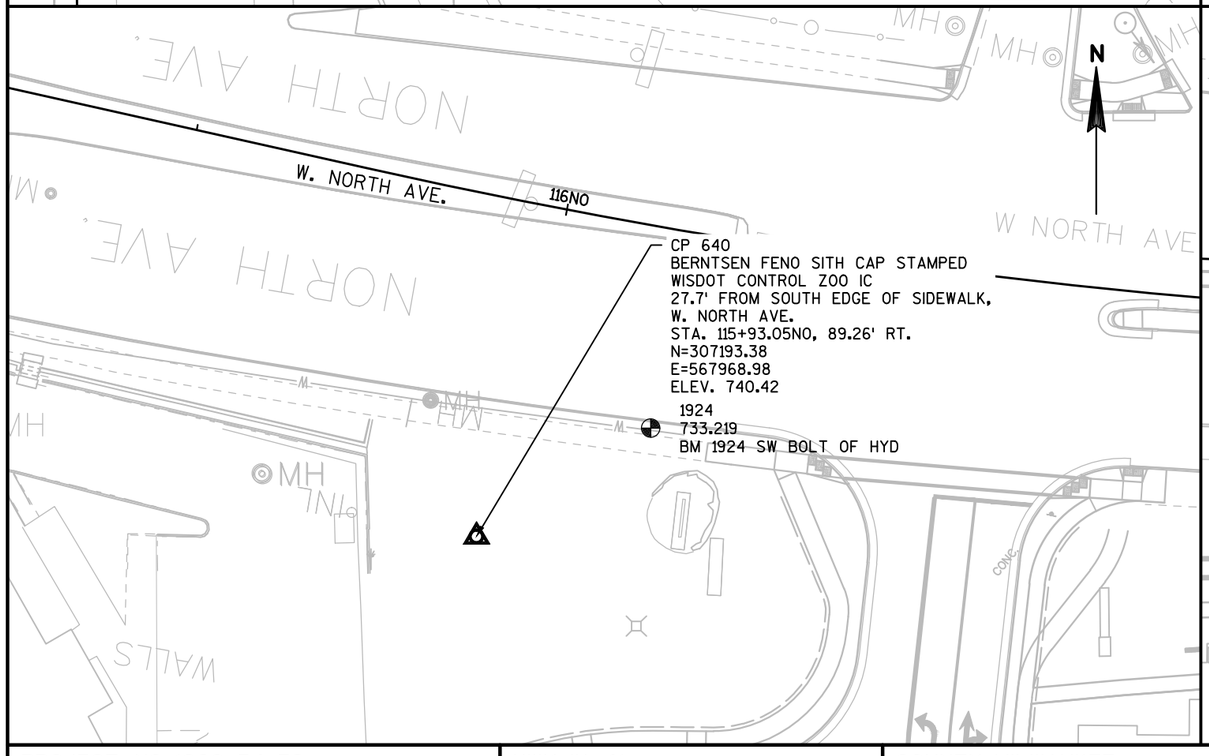
FILE NAME : W:\PDS\C3D\10603316\78\DSN\PLAN\027272_AD.DWG
LAYOUT NAME - ****

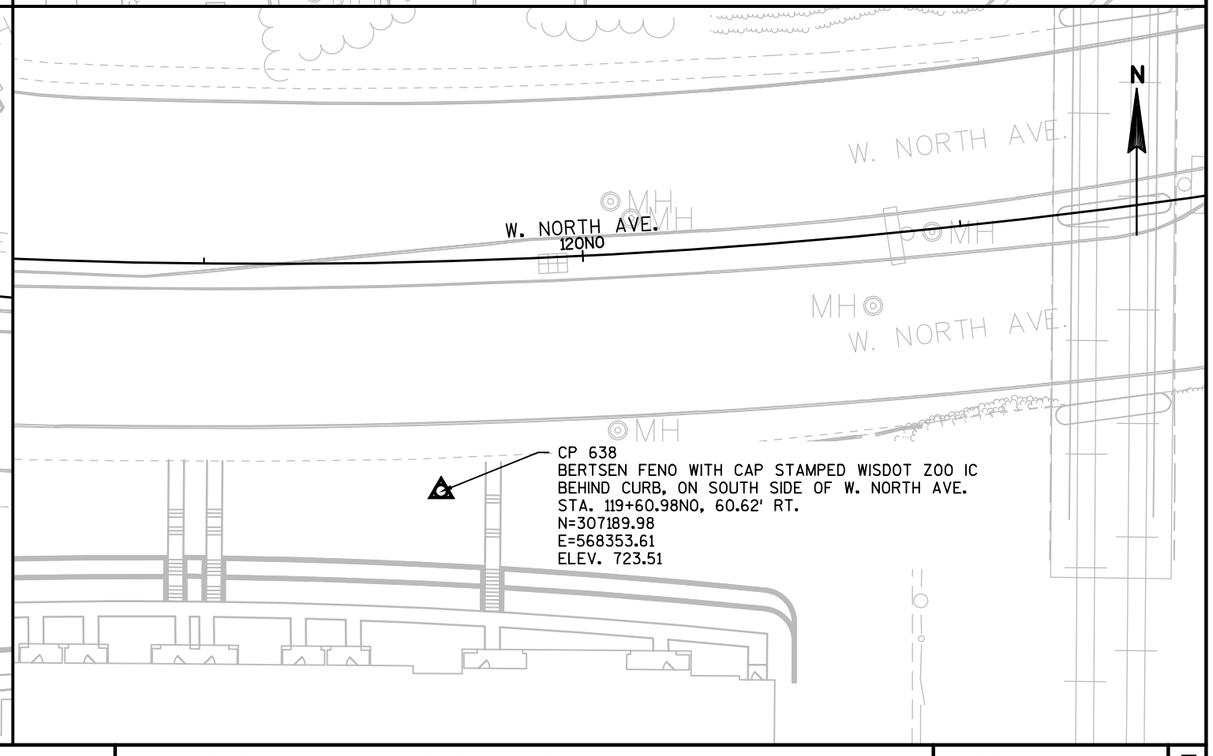
PLOT DATE : 4/18/2017 5:20 PM PLOT BY : LARKIN, MICHAEL A PLOT NAME : PLOT SCALE : 1 IN:200 FT

WISDOT/CADDS SHEET 42


W. MEINECKE AVE.
MEINECKE AVE
444NS
N. 112TH ST.
N
CP 641
BERNTSEN FENO WITH CAP STAMPED
WISDOT CONTROL ZOO IC
BACK OF CURB ON WEST SIDE 112TH ST.
STA. 443+57.36NS, 144.84' RT.
N=308248.23
E=567697.48
ELEV. 774.84


106NO
W. NORTH AVE
108NO
N
CP 639
BERNTSEN FENO WITH CAP STAMPED
WISDOT CONTROL ZOO IC
BETWEEN N. 114TH ST. AND SB ON RAMP AT
W. NORTH AVE.
STA. 106+73.13NO, 137.18' RT.
N=307293.23
E=567082.58
ELEV. 755.00
IH 41 SB ON RAMP


W. NORTH AVE.
116NO
N
W NORTH AVE
CP 640
BERNTSEN FENO SITH CAP STAMPED
WISDOT CONTROL ZOO IC
27.7' FROM SOUTH EDGE OF SIDEWALK,
W. NORTH AVE.
STA. 115+93.05NO, 89.26' RT.
N=307193.38
E=567968.98
ELEV. 740.42
1924
733.219
BM 1924 SW BOLT OF HYD


W. NORTH AVE.
120NO
N
W. NORTH AVE.
W. NORTH AVE.
CP 638
BERTSEN FENO WITH CAP STAMPED WISDOT ZOO IC
BEHIND CURB, ON SOUTH SIDE OF W. NORTH AVE.
STA. 119+60.98NO, 60.62' RT.
N=307189.98
E=568353.61
ELEV. 723.51

Estimate Of Quantities

1060-34-78

Line	Item	Item Description	Unit	Total	Qty
0010	108.4400	CPM Progress Schedule	EACH	1.000	1.000
0020	201.0105	Clearing	STA	4.000	4.000
0030	201.0205	Grubbing	STA	4.000	4.000
0040	204.0100	Removing Pavement	SY	105.000	105.000
0050	204.0120	Removing Asphaltic Surface Milling	SY	256.000	256.000
0060	204.0150	Removing Curb & Gutter	LF	1,098.000	1,098.000
0070	204.0155	Removing Concrete Sidewalk	SY	130.000	130.000
0080	204.0170	Removing Fence	LF	1,431.000	1,431.000
0090	204.0195	Removing Concrete Bases	EACH	7.000	7.000
0100	204.0210	Removing Manholes	EACH	5.000	5.000
0110	204.0220	Removing Inlets	EACH	6.000	6.000
0120	204.0240	Site Clearance (parcel) 0001. IH 94 EW	LS	1.000	1.000
0130	204.0245	Removing Storm Sewer (size) 0001. 12-Inch	LF	222.000	222.000
0140	204.0280	Sealing Pipes	EACH	3.000	3.000
0150	204.9060.S	Removing (item description) 0001. Buried Shaft Support System	EACH	1.000	1.000
0160	204.9060.S	Removing (item description) 1001. Lighting Units	EACH	7.000	7.000
0170	205.0100	Excavation Common	CY	128,275.000	128,275.000
0180	205.0501.S	Excavation, Hauling, and Disposal of Petroleum Contaminated Soil	TON	28,560.000	28,560.000
0190	213.0100	Finishing Roadway (project) 0001. 1060-34-78	EACH	1.000	1.000
0200	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	528.000	528.000
0210	455.0605	Tack Coat	GAL	60.000	60.000
0220	460.2000	Incentive Density HMA Pavement	DOL	203.000	203.000
0230	460.6223	HMA Pavement 3 MT 58-28 S	TON	180.000	180.000
0240	460.6224	HMA Pavement 4 MT 58-28 S	TON	225.000	225.000
0250	522.1024	Apron Endwalls for Culvert Pipe Reinforced Concrete 24-Inch	EACH	4.000	4.000
0260	522.1060	Apron Endwalls for Culvert Pipe Reinforced Concrete 60-Inch	EACH	1.000	1.000
0270	602.0410	Concrete Sidewalk 5-Inch	SF	250.000	250.000
0280	603.8000	Concrete Barrier Temporary Precast Delivered	LF	1,050.000	1,050.000
0290	603.8125	Concrete Barrier Temporary Precast Installed	LF	2,075.000	2,075.000
0300	606.0200	Riprap Medium	CY	225.000	225.000
0310	606.0300	Riprap Heavy	CY	26.000	26.000
0320	608.0324	Storm Sewer Pipe Reinforced Concrete Class III 24-Inch	LF	41.000	41.000
0330	608.0536	Storm Sewer Pipe Reinforced Concrete Class V 36-Inch	LF	117.000	117.000
0340	611.0420	Reconstructing Manholes	EACH	1.000	1.000
0350	611.0535	Manhole Covers Type J-Special	EACH	1.000	1.000
0360	611.3004	Inlets 4-FT Diameter	EACH	1.000	1.000

1060-34-78

Line	Item	Item Description	Unit	Total	Qty
0370	614.0905	Crash Cushions Temporary	EACH	2.000	2.000
0380	616.0206	Fence Chain Link 6-FT	LF	1,518.000	1,518.000
0390	616.0700.S	Fence Safety	LF	1,372.000	1,372.000
0400	619.1000	Mobilization	EACH	1.000	1.000
0410	623.0200	Dust Control Surface Treatment	SY	29,403.000	29,403.000
0420	624.0100	Water	MGAL	282.000	282.000
0430	627.0200	Mulching	SY	12,073.000	12,073.000
0440	628.1104	Erosion Bales	EACH	30.000	30.000
0450	628.1504	Silt Fence	LF	1,510.000	1,510.000
0460	628.1520	Silt Fence Maintenance	LF	1,510.000	1,510.000
0470	628.1905	Mobilizations Erosion Control	EACH	5.000	5.000
0480	628.1910	Mobilizations Emergency Erosion Control	EACH	4.000	4.000
0490	628.2008	Erosion Mat Urban Class I Type B	SY	24,730.000	24,730.000
0500	628.6510	Soil Stabilizer Type B	ACRE	6.000	6.000
0510	628.7005	Inlet Protection Type A	EACH	11.000	11.000
0520	628.7015	Inlet Protection Type C	EACH	15.000	15.000
0530	628.7020	Inlet Protection Type D	EACH	13.000	13.000
0540	628.7504	Temporary Ditch Checks	LF	50.000	50.000
0550	628.7560	Tracking Pads	EACH	5.000	5.000
0560	628.7570	Rock Bags	EACH	50.000	50.000
0570	629.0210	Fertilizer Type B	CWT	23.000	23.000
0580	630.0120	Seeding Mixture No. 20	LB	825.000	825.000
0590	630.0200	Seeding Temporary	LB	751.000	751.000
0600	633.5200	Markers Culvert End	EACH	5.000	5.000
0610	643.0100	Traffic Control (project) 0900. 1060-34-78	EACH	1.000	1.000
0620	643.0300	Traffic Control Drums	DAY	4,000.000	4,000.000
0630	643.0410	Traffic Control Barricades Type II	DAY	2,100.000	2,100.000
0640	643.0420	Traffic Control Barricades Type III	DAY	200.000	200.000
0650	643.0705	Traffic Control Warning Lights Type A	DAY	2,460.000	2,460.000
0660	643.0715	Traffic Control Warning Lights Type C	DAY	1,085.000	1,085.000
0670	643.0800	Traffic Control Arrow Boards	DAY	110.000	110.000
0680	643.0900	Traffic Control Signs	DAY	6,230.000	6,230.000
0690	643.0910	Traffic Control Covering Signs Type I	EACH	1.000	1.000
0700	643.0920	Traffic Control Covering Signs Type II	EACH	3.000	3.000
0710	643.1000	Traffic Control Signs Fixed Message	SF	227.250	227.250
0720	643.1050	Traffic Control Signs PCMS	DAY	115.000	115.000
0730	643.2000	Traffic Control Detour (project) 0001. 1060-34-78	EACH	1.000	1.000
0740	643.3000	Traffic Control Detour Signs	DAY	620.000	620.000
0750	645.0120	Geotextile Type HR	SY	790.000	790.000
0760	646.0106	Pavement Marking Epoxy 4-Inch	LF	2,516.000	2,516.000

1060-34-78

Line	Item	Item Description	Unit	Total	Qty
0770	649.0400	Temporary Pavement Marking Removable Tape 4-Inch	LF	450.000	450.000
0780	649.0801	Temporary Pavement Marking Removable Tape 8-Inch	LF	150.000	150.000
0790	652.0225	Conduit Rigid Nonmetallic Schedule 40 2-Inch	LF	1,440.000	1,440.000
0800	653.0140	Pull Boxes Steel 24x42-Inch	EACH	1.000	1.000
0810	653.0905	Removing Pull Boxes	EACH	1.000	1.000
0820	654.0105	Concrete Bases Type 5	EACH	7.000	7.000
0830	655.0610	Electrical Wire Lighting 12 AWG	LF	819.000	819.000
0840	655.0620	Electrical Wire Lighting 8 AWG	LF	9,040.000	9,040.000
0850	657.0255	Transformer Bases Breakaway 11 1/2-Inch Bolt Circle	EACH	7.000	7.000
0860	657.0322	Poles Type 5-Aluminum	EACH	7.000	7.000
0870	657.0610	Luminaire Arms Single Member 4 1/2-Inch Clamp 6-FT	EACH	7.000	7.000
0880	659.1125	Luminaires Utility LED C	EACH	6.000	6.000
0890	659.1130	Luminaires Utility LED D	EACH	1.000	1.000
0900	690.0150	Sawing Asphalt	LF	1,120.000	1,120.000
0910	690.0250	Sawing Concrete	LF	1,230.000	1,230.000
0920	SPV.0035	Special 0031. Clay Cap	CY	10,200.000	10,200.000
0930	SPV.0035	Special 7000. Excavation, Hauling, and Reuse of Low Level Petroleum Contaminated Soil	CY	29,772.000	29,772.000
0940	SPV.0035	Special 8001. Detention Basin Clay Lining	CY	6,145.000	6,145.000
0950	SPV.0035	Special 8002. Backfill Slurry	CY	82.000	82.000
0960	SPV.0060	Special 0905. Traffic Control Interim Freeway Lane Closure	EACH	25.000	25.000
0970	SPV.0060	Special 0910. Traffic Control Interim Freeway Two Lane Closure	EACH	15.000	15.000
0980	SPV.0060	Special 1001. Lamp Disposal High Intensity Discharge	EACH	7.000	7.000
0990	SPV.0060	Special 8002. Ramp NOB Pond Outlet Storm Sewer Structure	EACH	1.000	1.000
1000	SPV.0060	Special 8005. Cover Plates Left In Place	EACH	1.000	1.000
1010	SPV.0060	Special 8015. Pipe Connection To Existing Structure	EACH	1.000	1.000
1020	SPV.0060	Special 8018. Removing Bulkhead	EACH	1.000	1.000
1030	SPV.0075	Special 0001. Pavement Cleanup	HRS	200.000	200.000
1040	SPV.0090	Special 0004. Concrete Barrier Temporary Precast Delivered Special	LF	1,025.000	1,025.000
1050	SPV.0105	Special 0001. Survey Project 1060-34-78	LS	1.000	1.000
1060	SPV.0105	Special 1001. Maintenance of Lighting Systems	LS	1.000	1.000
1070	SPV.0105	Special 8098. Control of Water	LS	1.000	1.000
1080	SPV.0105	Special 9001. Settlement Plates	LS	1.000	1.000
1090	SPV.0105	Special 9002. Inclinometers	LS	1.000	1.000
1100	SPV.0180	Special 0001. Topsoil Special	SY	18,675.000	18,675.000
1110	SPV.0180	Special 0002. Soil Drying	SY	110,000.000	110,000.000
1120	SPV.0195	Special 0001. Soil Drying Agent	TON	2,340.000	2,340.000

3

CPM PROGRESS SCHEDULE

CATEGORY	STAGE	LOCATION	108.4400 CPM PROGRESS SCHEDULE EACH
1000	ALL	PROJECT	1
		TOTAL:	1

SITE CLEARANCE

CATEGORY	LOCATION	204.0240 SITE CLEARANCE LS
1000	IH-94 EW	1
	TOTALS:	1

3

CLEARING AND GRUBBING ITEMS

CATEGORY	LOCATION	STATION	TO	STATION	201.0105 CLEARING STA	201.0205 GRUBBING STA
1000	NOB RAMP				--	--
	IH-94 EW	9+16		12+40	4	4
	TOTALS:				4	4

EARTH WORK SUMMARY							
		A	B	C	D	E	F
DIVISION	LOCATION	TOTAL CUT VOLUME (CY)	205.0100 EXCAVATION COMMON (CY)	205.0501.S EXCAVATION, HAULING AND DISPOSAL OF PETROLEUM-CONTAMINATED SOIL (TON)	SPV.0035.7000 EXCAVATION, HAULING AND REUSE OF LOW-LEVEL PETROLEUM-CONTAMINATED SOIL (CY)	FILL VOLUME (CY)	EXPANDED FILL VOLUME (FACTOR 1.10) (CY)
		(1)	(2)	(3)	(5)	(4)	(4)
1	NOB RAMP	174,847	128,275	28,560	29,772	6,145	6,760
2	IH-94 EW	0	0	0	0	63,238	69,562
TOTAL		174,847	128,275	28,560	29,772	69,383	76,322

Notes:

1) Total Cut Volume (A) is the total volume of material excavated from the NOB Ramp and is equal to B + (C / 1.7) + D
2) Common Excavation (B) is equal to A - (C / 1.7) - D.
3) Excavation, hauling and disposal (bioremediation) of petroleum-contaminated soil is paid for by the ton. This quantity was calculated by multiplying the estimated quantity in cubic yards (16,800 CY) by the conversion factor of 1.7 tons per cubic yard.
4) Expanded Fill. Factor = 1.10 Expanded Fill = Unexpanded Fill * Fill Factor
   A soil expansion factor of 1.1 was used to generate estimated earthwork quantities. Due to potential soil variability, actual quantities may vary. No quantity adjustments will be made for differing soil expansion factors encountered in the field. Fill volume shown includes caly liner and clay cap material.
5) All Excavation, Hauling, and Re-use Low-Level Petroleum Contaminated Soil (D) shall be placed at the IH-94 EW fill site location and capped with a 2-ft clay cap and Topsoil (Clay Cap and Topsoil paid seperately).

ALL ITEMS CATEGORY 1000

3

3

REMOVAL ITEMS

CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	204.0100 REMOVING PAVEMENT SY	204.0120 REMOVING ASPHALTIC SURFACE MILLING SY	204.0150 REMOVING CURB & GUTTER LF	204.0155 REMOVING CONCRETE SIDEWALK SY	204.0170 REMOVING FENCE LF	204.0210 REMOVING MANHOLES EACH	204.0220 REMOVING INLETS EACH	204.0245 REMOVING STORM SEWER (12-INCH) LF	204.9060.S.0001 REMOVING BURIED SHAFT SUPPORT SYSTEM EACH
1000	NOB RAMP	453+50NS		480+50NS	RT	105	256	1098	28	354	--	--	--	1
	IH-94 EW					--	--	--	102	1077	5	6	222	--
	TOTALS:					105	256	1,098	130	1,431	5	6	222	1

FINISHING ROADWAY PROJECT ID 1060-34-78

CATEGORY	STAGE	LOCATION	213.0100 FINISHING ROADWAY (1060-34-78) EACH
1000	ALL	PROJECT	1
		TOTAL:	1

PAVEMENT CLEANUP

CATEGORY	STAGE	LOCATION	SPV.0075.0001 PAVEMENT CLEANUP HRS
1000	ALL	PROJECT	200
		TOTAL:	200

SURVEY PROJECT

CATEGORY	STAGE	LOCATION	SPV.0105.0001 SURVEY PROJECT 1060-34-78 LS
1000	ALL	PROJECT	1
		TOTAL:	1

3

BASE AGGREGATE ITEMS

CATEGORY	LOCATION	STATION	TO STATION	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON
1000	NOB RAMP	722+53	732+31	528
	TOTALS:			528

ASPHALTIC PAVEMENT ITEMS

CATEGORY	LOCATION	STATION	TO STATION	455.0605 TACK COAT GAL	460.6223 HMA PAVEMENT 3 MT 58-28 S TON	460.6224 HMA PAVEMENT 4 MT 58-28 S TON
1000	NOB RAMP	722+53	732+31	60	180	225
	TOTALS:			60	180	225

3

INCENTIVE DENSITY HMA PAVEMENT

CATEGORY	LOCATION	STATION	TO STATION	460.2000 INCENTIVE DENSITY HMA PAVEMENT DOL
1000	NOB RAMP	722+53	732+31	203
	TOTALS:			203

SAWING

CATEGORY	ROADWAY	STATION	TO STATION	OFFSET	690.0150 SAWING ASPHALT LF	690.0250 SAWING CONCRETE LF
1000	NOB RAMP	722+53	732+31	LT/RT	1,120	1,230
	TOTAL:				1,120	1,230

WATER

CATEGORY		LOCATION	WATER 624.0100 MGAL
1000	ALL	PROJECT	282
		TOTAL:	282

PROJECT NO: 1060-34-78	HWY: IH-41 / IH-94	COUNTY: MILWAUKEE	MISCELLANEOUS QUANTITIES	SHEET:	E

3

CONCRETE SIDEWALK

CATEGORY	LOCATION	602.0410 CONCRETE SIDEWALK 5-INCH SF
1000	NOB RAMP	250
	TOTALS:	250

FENCING ITEMS

CATEGORY	ROADWAY	616.0206 FENCE CHAIN LINK 6-FT LF	616.0700.S FENCE SAFETY LF
1000	NOB RAMP	445	444
	IH-94 EW	1073	928
	TOTALS:	1,518	1,372

3

MOBILIZATION

CATEGORY		LOCATION	619.1000 MOBILIZATION EACH
1000	ALL	PROJECT	1
		TOTAL:	1

INLET PROTECTION

CATEGORY	ROADWAY	628.7005 TYPE A EACH	628.7015 TYPE C EACH	628.7020 TYPE D EACH
1000	NOB RAMP	6	--	8
	IH-94 EW	--	10	--
	UNDISTRIBUTED	5	5	5
	TOTALS:	11	15	13

3

RIPRAP

CATEGORY	ROADWAY	STATION	LOCATION	606.0200 RIPRAP MEDIUM CY	606.0300 RIPRAP HEAVY CY	645.0120 GEOTEXTILE TYPE HR SY
1000	NOB RAMP					
		724NOB+86	26' RT	76	--	239
		725NOB+93	131' RT	--	26	81
		726NOB+39	29' RT	72	--	230
		728NOB+98	32' RT	51	--	153
		731NOB+80	41' RT	23	--	59
		721NOB+98	69' RT	4	--	29
	TOTALS:			225	26	790

DUST CONTROL SURFACE TREATMENT

CATEGORY	LOCATION	623.0200 DUST CONTROL SURFACE TREATMENT SY
1000	NOB RAMP	14,940
	IH-94 EW	14,463
	TOTAL:	29,403

3

RESTORATION ITEMS

CATEGORY	ROADWAY	627.0200 MULCHING SY	628.2008 EROSION MAT URBAN CLASS I TYPE B SY	628.6510 SOIL STABILIZER TYPE B ACRE	629.0210 FERTILIZER TYPE B CWT	630.0120 SEEDING MIXTURE NO. 20 LB	630.0200 SEEDING TEMPORARY LB	SPV.0180.0001 TOPSOIL SPECIAL SY
1000	NOB RAMP	--	14,979	1.5	10	269	405	14,940
	IH-94 EW	9,658	4,805	3.0	9.1	391	196	--
	UNDISTRIBUTED	2,415	4,946	1	5	165	150	3,735
	TOTALS:	12,073	24,730	6	23	825	751	18,675

3

EROSION CONTROL ITEMS

CATEGORY	ROADWAY	628.1104 EROSION BALES EACH	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF	628.1905 MOBILIZATIONS EROSION CONTROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH	628.7504 TEMPORARY DITCH CHECKS LF	628.7560 TRACKING PADS EACH	628.7570 ROCK BAGS EACH
1000	NOB RAMP	--	210	210	2	2	--	2	30
	IH-94 EW	--	1000	1000	1	--	--	3	--
	UNDISTRIBUTED	30	300	300	2	2	50	--	20
	TOTALS:	30	1,510	1,510	5	4	50	5	50

PAVEMENT MARKING ITEMS

CATEGORY	LOCATION	STATION	STATION	646.0106 PAVEMENT MARKING EPOXY 4-INCH 12.5 FT LINE, 37.5 FT SKIP WHITE LF	646.0106 PAVEMENT MARKING EPOXY 4-INCH 3 FT LINE, 9 FT SKIP WHITE LF	WHITE LF	YELLOW LF
1000	NOB RAMP	398+00NS	465+10NS	38	39	1,458	981
	RED STAR	475+47NS	480+50NS	--	--	--	--
	TOTALS:			38	39	1,458	981
					2,516		

3

CLAY CAP

CATEGORY	LOCATION	SPV.0035.0031 CLAY CAP CY	REMARKS
1000	IH-94 EW	5,100	INTERIM CAP WINTER SHUTDOWN
	IH-94 EW	5,100	FINAL CAP
	TOTAL:	10,200	

SETTLEMENT PLATES

CATEGORY	LOCATION	SPV.0105.9001 SETTLEMENT PLATES LS
1000	IH-94 EW	1
	TOTAL:	1

INCLINOMETERS

CATEGORY	LOCATION	SPV.0105.9002 INCLINOMETERS LS
1000	IH-94 EW	1
	TOTAL:	1

3

SOIL DRYING

CATEGORY	LOCATION	SPV.0180.0002 SOIL DRYING SY
1000	IH-94 EW	110,000
	TOTAL:	110,000

SOIL DRYING AGENT

CATEGORY	LOCATION	SPV.0195.0001 SOIIL DRYING AGENT TON
1000	IH-94 EW	2,340
	TOTAL:	2,340

SEALING PIPES

ROADWAY	STATION	OFFSET	PIPE END	PIPE ID	204.0280 SEALING PIPES EACH	NOTES:
RAMP NOB						
	724NOB+88	12' RT	UPSTREAM	P1517A	1	
	728NOB+97	18' RT	UPSTREAM	P1531A	1	
	731NOB+77	27' RT	UPSTREAM	P1549A	1	
TOTAL					3	

CONTROL OF WATER

ROADWAY	SPV.0105.8098 CONTROL OF WATER LS
UNDISTRIBUTED	1
TOTAL	1

ENDWALLS

ROADWAY	PIPE ID	ENDWALL ID	ENDWALL ELEVATION	ENDWALL STATION	ENDWALL OFFSET	522.1024 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 24-INCH EACH	522.1060 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 60-INCH EACH	633.5200 MARKERS CULVERT END EACH
RAMP NOB								
	P1517A	N1517B	757.00	724NOB+86	26' RT	1	--	1
	PE1372	N1372A	721.87	725NOB+93	131' RT	--	1	1
	P1519	N1519A	754.42	726NOB+39	29' RT	1	--	1
	P1531A	N1531B	741.29	728NOB+98	32' RT	1	--	1
	P1549A	N1549B	724.33	731NOB+80	41' RT	1	--	1
TOTALS						4	1	5

NOTES
1) ENDWALL ELEVATION / STATION / OFFSET ARE TO END CENTER OF ENDWALL
2) PIPE LENGTHS AND SLOPES ARE MEASURED TO THE END OF PIPE

RECONSTRUCTING DRAINAGE STRUCTURES

LOCATION	STRUCTURE ID	STATION	OFFSET FT	EXISTING RIM ELEVATION	TO	PROPOSED RIM ELEVATION	611.0420 RECONSTRUCTING MANHOLES EACH
NORTH AVENUE							
	NE712	113NO+88	11' RT	740.09	--	740.09	1
TOTALS							1

DETENTION BASIN CLAY LINING

ROADWAY	LOCATION	SPV.0035.8001 DETENTION BASIN CLAY LINING CY
RAMP NOB		
	RAMP NOB POND	6,145
TOTAL		6,145

RAMP NOB POND OUTLET STORM SEWER STRUCTURE

ROADWAY	STR. NO.	PIPE ID	STATION	OFFSET	SPV.0060.8002 RAMP NOB POND OUTLET STORM SEWER STRUCTURE EACH
NORTH AVENUE					
	N623	P624	113NO+89	106' LT	1
TOTALS					1

COVER PLATES LEFT IN PLACE

ROADWAY	STRUCTURE ID	STATION	OFFSET	FUTURE CASTING	FUTURE CASTING & 0.50' THICKNESS FT	SPV.0060.8005 COVER PLATES LEFT IN PLACE EACH
RAMP NOB						
	N1518	726NOB+37	8' RT	V	1.25'	1
TOTAL						1

PIPE CONNECTION TO EXISTING STRUCTURE

ROADWAY	STATION	OFFSET	SPV.0060.8015 PIPE CONNECTION TO EXISTING STRUCTURE EACH
NORTH AVENUE			
	113NO+88	11' RT	1
TOTAL			1

REMOVING BULKHEAD

ROADWAY	STATION	OFFSET	SPV.0060.8018 REMOVING BULKHEAD EACH
RAMP NOB			
	725NOB+97	123' RT	1
TOTAL			1

STORM SEWER STRUCTURES										STORM SEWER PIPES									
ROADWAY	STRUCTURE NO.	STATION	OFFSET (FT)	LOCATION	RIM OR FLOW ELEV	STRUCTURE TYPE	INLET/MANHOLE COVERS TYPE	DEPTH[1] (FT)	STRUCTURE COMMENTS	PIPE ID	FROM STR	TO STR	INLET ELEV	DISCH ELEV	SLOPE[A] %	PIPE LENGTH[B] (FT)	PLAN LENGTH[C] (FT)	PIPE CLASS	PIPE SIZE (INCH)	PIPE COMMENTS
NORTH AVE	N623	113NO+89.41	106.2	LT	726.30	MANHOLES 7-FT DIAMETER	J-SPECIAL	5.30	RAMP NOB POND OUTLET STORM SEWER STRUCTURE. SEE CONSTRUCTION DETAIL.	P624	N623	NE712	721.00	719.90	1.00	110	117	V	36	CONNECT TO EXISTING STRUCTURE
---	---	---	---	---	---	---	---	--	---	P1517A	P1517	N1517B	757.14	757.06	1.00	8	8	III	24	TO ENDWALL
RAMP NOB	N1518	726NOB+37.29	8.0	RT	760.51	INLETS 4-FT DIAMETER	---	5.88	COVER PLATE LEFT IN PLACE FUTURE V COVER AT BARRIER	P1519	P1518	N1519A	754.63	754.48	1.00	15	17	III	24	TO ENDWALL
---	---	---	---	---	---	---	---	--	---	P1531A	P1531	N1531B	741.43	741.35	1.00	8	8	III	24	TO ENDWALL
---	---	---	---	---	---	---	---	--	---	P1549A	P1549	N1549B	724.47	724.39	1.00	8	8	III	24	TO ENDWALL

[1]DEPTH = RIM OR FLOW ELEV - LOWEST PIPE INVERT ELEVATION

[A] SLOPE CALCULATED BASED ON PIPE LENGTH. PIPE LENGTH REPRESENTS LENGTH OF PIPE MEASURED FROM INSIDE FACE OF STRUCTURE TO INSIDE FACE OF STRUCTURE

[B]PIPE LENGTH SHOWN FOR SLOPE CALCULATION ONLY. NOT INTENDED FOR PAY QUANTITY.

[C]PLAN LENGTH SHOWN FOR PAY QUANTITY.

STORM SEWER STRUCTURE SUMMARY	
611.3004 INLETS	611.0535 MANHOLE COVERS
4-FT DIAMETER EACH	TYPE J SPECIAL EACH
1	1

STORM SEWER PIPE SUMMARY	
608.0324 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 24-INCH LF	608.0536 STORM SEWER PIPE REINFORCED CONCRETE CLASS V 36-INCH LF
41	117

BACKFILL SLURRY

ROADWAY	PIPE ID	FROM STRUCTURE	TO STRUCTURE	PIPE DIAMETER IN	PIPE LENGTH LF	SPV.0035.8002 BACKFILL SLURRY CY
NORTH AVENUE						
	P624	N623	NE712	36	110	82
TOTAL						82

FILE NAME : S:\DOT\DOT_SE\120293-Zoo Interchange\DRAINAGE\ZOO_IC_DRAINAGE\ZOO_DESIGN_FILES\North_North_leg\10603478_ZN-POND\Roads\cds\022591_ss_dt.pptx PLOT DATE : 4/28/2017 11:05:25 AM PLOT BY : BRIAN C. ADAMS PLOT NAME : 022591_ss_dt PLOT SCALE : 1:1

3

TEMPORARY CONCRETE BARRIER ITEMS

CATEGORY	STAGE	LOCATION	STATION	TO	STATION	OFFSET	603.8000 CONCRETE BARRIER TEMPORARY PRECAST DELIVERED LF	603.8125 CONCRETE BARRIER TEMPORARY PRECAST INSTALLED LF	SPV.0090.0004 CONCRETE BARRIER TEMPORARY PRECAST DELIVERED SPECIAL LF
1000	1	IH 41/USH 45 NB							
			431+50 NS	-	439+00NS	RT	750	750	--
		RAMP NOB							
			722+53 NOB	-	731+74 NOB	LT	--	1,025	1,025
	2A	NORTH AVENUE							
			111+58NO	-	114+33NO	RT	275	275	--
		SUBTOTALS					1,025	2,050	1,025
		UNDISTRIBUTED					25	25	--
		TOTALS					1,050	2,075	1,025

TRAFFIC CONTROL ITEMS (DETOUR)

CATEGORY	LOCATION	STAGE DURATION DAYS	643.2000 TRAFFIC CONTROL DETOUR 1060-34-78 EACH	643.3000 TRAFFIC CONTROL DETOUR SIGNS EACH**	643.3000 TRAFFIC CONTROL DETOUR SIGNS DAY
1000	**STAGE 1**	21			
	IH 41/USH 45 NB EXIT RAMP AT NORTH AVENUE		--	18	378
	STAGE 2A	3			
	IH 41/USH 45 RAMPS AT NORTH AVENUE		--	29	87
	NORTH AVENUE WESTBOUND		--	33	99
	SUBTOTALS		--		564
	UNDISTRIBUTED		1		56
	TOTALS		1		620

**FOR INFORMATION ONLY

TEMPORARY CRASH CUSHION

CATEGORY	STAGE	LOCATION	614.0905 CRASH CUSHIONS TEMPORARY EACH	BACK WIDTH FT	OBJECT MARKING PATTERN	CRASH TEST LEVEL	TRAFFIC DIRECTION	TRAFFIC LOCATION	CRASH CUSHIONS SHIELDS
1000	1	IH 41/USH 45 NB							
			1	2	OM-3R (WO5-58R)	TL-3	UNIDIRECTIONAL	LEFT	TEMPORARY CONCRETE BARRIER RIGHT SHOULDER
	2A	NORTH AVENUE							
		111+58NO, 22' RT	1	2	OM-3L (WO5-58L)	TL-2	UNIDIRECTIONAL	RIGHT	TEMPORARY CONCRETE BARRIER IN MEDIAN
		TOTALS	2						

TRAFFIC CONTROL

CATEGORY	ROADWAY	643.0100 TRAFFIC CONTROL 1060-34-78 EACH
1000	1060-34-78	1
	TOTALS	1

TRAFFIC CONTROL ITEMS

CATEGORY	STAGE	LOCATION	STAGE DURATION DAYS	643.0300 TRAFFIC CONTROL DRUMS EACH**	643.0300 TRAFFIC CONTROL DRUMS DAY	643.0410 TRAFFIC CONTROL BARRICADES TYPE II EACH**	643.0410 TRAFFIC CONTROL BARRICADES TYPE II DAY	643.0420 TRAFFIC CONTROL BARRICADES TYPE III EACH**	643.0420 TRAFFIC CONTROL BARRICADES TYPE III DAY	643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A EACH**	643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A DAY	643.0715 TRAFFIC CONTROL WARNING LIGHTS TYPE C EACH**	643.0715 TRAFFIC CONTROL WARNING LIGHTS TYPE C DAY	643.0800 TRAFFIC CONTROL ARROW BOARDS EACH**	643.0800 TRAFFIC CONTROL ARROW BOARDS DAY	643.0900 TRAFFIC CONTROL SIGNS EACH**	643.0900 TRAFFIC CONTROL SIGNS DAY	643.0910 TRAFFIC CONTROL COVERING SIGNS TYPE I EACH*	643.0920 TRAFFIC CONTROL COVERING SIGNS TYPE II EACH*	643.1050 TRAFFIC CONTROL SIGNS PCMS EACH**	643.1050 TRAFFIC CONTROL SIGNS PCMS DAY
1000	1	**STAGE 1**	21																		
		IH 41/ USH 45		29	609	--	--	1	21	2	42	8	168	--	--	16	336	1	1	1	21
		NORTH AVENUE		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		SUBTOTALS			609		--		21		42		168		--		336	1	1		21
	2	**STAGE 2**	209																		
		IH 41/ USH 45		--	--	--	--	--	--	--	--	--	--	--	--	11	2,299	--	--	--	--
		NORTH AVENUE		--	--	7	1,463	--	--	7	1,463	--	--	--	--	8	1,672	--	--	--	--
		ADVANCED FILL ALONG IH 94		--	--	2	418	--	--	2	418	--	--	--	--	4	836	--	--	--	--
		SUBTOTALS			--		1,881		--		1,881		--		--		4,807	--	--		--
	2A	**STAGE 2A**	3																		
		IH 41/ USH 45		97	291	--	--	8	24	13	39	16	48	--	--	20	60	--	2	8	24
		NORTH AVENUE		109	327	7	21	27	81	55	165	30	90	1	3	40	120	--	--	2	6
		SUBTOTALS			618		21		105		204		138		3		180	--	2		30
		INTERIM FREEWAY CLOSURES																			
		ONE LANE		46	1,150	--	--	1	25	2	50	14	350	2	50	7	175	--	--	--	--
		TWO LANE		84	1,260	--	--	2	30	4	60	22	330	3	45	11	165	--	--	--	--
		UNDISTRIBUTED			363		198		19		223		99		12		567	--	--		64
		TOTALS			4,000		2,100		200		2,460		1,085		110		6,230	1	3		115

* TRAFFIC CONTROL COVERING SIGNS TYPE I AND TYPE II ARE FOR ONE CYCLE, TYP

** FOR INFORMATION ONLY

TRAFFIC CONTROL SIGNS FIXED MESSAGE

CATEGORY	STAGE	LOCATION	SIGN NO.	*** NUMBER REQUIRED	SIGN SIZE W X H FT X FT	643.1000 TRAFFIC CONTROL SIGNS FIXED MESSAGE SF	SIGN MESSAGE
1000	1 & 2A	DETOUR	103	16	3 X 2	96.00	NORTH AVE
	2	USH 45 NB	104	1	3.5 X 1.5	5.25	RAMP
	1	USH 45 NB	105	1	12 X 6	72.00	NORTH AVE WEST EXIT CLOSED USE W WATERTOWN PLK RD
	1 & 2A	USH 45 NB	106	1	12 X 4.5	54.00	NORTH AVE TRAFFIC USE BURLEIGH ST
		TOTALS				227.25	

***STAGE 1 SIGNS REUSED FOR STAGE 2A

TEMPORARY PAVEMENT MARKING

CATEGORY	STAGE	LOCATION	649.0400 TEMPORARY PAVEMENT MARKING REMOVABLE TAPE 4-INCH (WHITE) LF	649.0801 TEMPORARY PAVEMENT MARKING REMOVABLE TAPE 8-INCH (WHITE) LF
1000	2A			
		NORTH AVENUE	450	150
		TOTALS	450	150

TRAFFIC CONTROL CLOSURE ITEMS

CATEGORY	ROADWAY	SPV.0060.0905 TRAFFIC CONTROL INTERIM FREEWAY LANE CLOSURE EACH	SPV. 0060.0910 TRAFFIC CONTROL INTERIM FREEWAY TWO LANE CLOSURE EACH
1000	IH 41/USH 45	25	15
	TOTALS	25	15

3

CATEGORY 1100
DISTRIBUTION CENTERS AND SERVICE
480 VAC 2-WIRE GROUNDED NEUTRAL

SPV.0105.1001 MAINTENANCE OF LIGHTING SYSTEMS

SYSTEM	LOCATION	SPV.0105.1001 MAINTENANCE OF LIGHTING SYSTEMS
		LS
HL-40-NA	SOUTH OF MEINECKE AVENUE	1
	TOTAL (1100)	1

3

CATEGORY 1100
LIGHTING - REMOVAL

204.0195 REMOVING CONCRETE BASES
653.0905 REMOVING PULL BOXES
204.9060.S.1001 REMOVING LIGHTING UNITS
SPV.0060.1001 LAMP DISPOSAL HIGH INTENSITY DISCHARGE

SYSTEM	DESCRIPTION	LOCATION	OFFSET	204.0195 REMOVING CONCRETE BASES	653.0905 REMOVING PULL BOXES	204.9060.S.1001 REMOVING LIGHTING UNITS	SPV.0060.1001 LAMP DISPOSAL HIGH INTENSITY DISCHARGE	COMMENTS
				EACH	EACH	EACH	EACH	
HL-40-NA	ENA35	722+25.00	15.00' LEFT	--	--	--	--	EXISTING LIGHTING UNIT TO REMAIN
HL-40-NA	ENA9	724+81.18	0.74' LEFT	1	--	1	1	--
HL-40-NA	LPB101	725+23.60	21.95' LEFT	--	1	--	--	EXISTING LIGHTING PULL BOX
HL-40-NA	ENA10	726+40.54	63.28' LEFT	1	--	1	1	--
HL-40-NA	ENA11	727+25.56	59.26' LEFT	1	--	1	1	--
HL-40-NA	ENA12	728+18.15	25.85' LEFT	1	--	1	1	--
HL-40-NA	ENA13	729+31.39	5.74' RIGHT	1	--	1	1	--
HL-40-NA	ENA14	730+66.70	15.83' RIGHT	1	--	1	1	--
HL-40-NA	ENA15	731+86.09	0.13' LEFT	1	--	1	1	--
HL-40-NA	ENA16	733+00.00	20.00' LEFT	--	--	--	--	EXISTING LIGHTING UNIT TO REMAIN
	TOTAL (1100)			7	1	7	7	

SHEET 1 OF 3

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	MISCELLANEOUS QUANTITIES	SHEET:	E

3

CATEGORY 1100
LIGHTING - WIRE AND CONDUIT - FINAL
480 VAC 2-WIRE GROUNDED NEUTRAL SYSTEM

652.0225 CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH
655.0620 ELECTRICAL WIRE LIGHTING 8 AWG

SYSTEM	FROM	TO	652.0225 CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH	655.0620 ELECTRICAL WIRE LIGHTING 8 AWG	COMMENTS
			LF	LF	
HL-40-NA	HL-40-NA	ENA9	250	3,960	INTERCEPT EX. CONDUIT FROM LPB102 AND EXTEND TO LPB101
HL-40-NA	ENA9	ENA35	270	1,120	INTERCEPT AND CONNECT WITH THE EX. CONDUIT TO THE SOUTH
HL-40-NA	ENA9	ENA10	200	840	--
HL-40-NA	ENA10	ENA11	120	520	--
HL-40-NA	ENA11	ENA12	120	520	--
HL-40-NA	ENA12	ENA13	120	520	--
HL-40-NA	ENA13	ENA14	120	520	--
HL-40-NA	ENA14	ENA15	120	520	--
HL-40-NA	ENA15	ENA16	120	520	INTERCEPT EXISTING CONDUIT AT THE BASE
	TOTAL (1100)		1,440	9,040	

3

CATEGORY 1100
LIGHTING AND MISCELLANEOUS - FINAL

653.0140 PULL BOXES STEEL 24x42-INCH
654.0105 CONCRETE BASES TYPE 5
655.0610 ELECTRICAL WIRE LIGHTING 12 AWG
657.0255 TRANSFORMER BASES BREAKAWAY 11 1/2-INCH BOLT CIRCLE
657.0322 POLES TYPE 5-ALUMINUM
657.0610 LUMINAIRE ARMS SINGLE MEMBER 4 1/2-INCH CLAMP 6-FT
659.1125 LUMINAIRES UTILITY LED C
659.1130 LUMINAIRES UTILITY LED D

SYSTEM	DESCRIPTION	LOCATION	OFFSET	653.0140 PULL BOXES STEEL 24x42-INCH	654.0105 CONCRETE BASES TYPE 5	655.0610 ELECTRICAL WIRE LIGHTING 12 AWG	657.0255 TRANSFORMER BASES BREAKAWAY 11 1/2-INCH BOLT CIRCLE	657.0322 POLES TYPE 5 ALUMINUM	657.0610 LUMINAIRE ARMS SINGLE MEMBER 4 1/2-INCH CLAMP 6-FT	659.1125 LUMINAIRES UTILITY LED C	659.1130 LUMINAIRES UTILITY LED D	COMMENTS
				EACH	EACH	L.F.	EACH	EACH	EACH	EACH	EACH	
HL-40-NA	ENA35	722+25.00	15.00' LEFT	--	--	--	--	--	--	--	--	EXISTING LIGHTING UNIT TO REMAIN
HL-40-NA	LPB-NA-1	725NOB+30	30.00' LEFT	1	--	--	--	--	--	--	--	--
HL-40-NA	ENA9	724+81.18	0.74' LEFT	--	1	117	1	1	1	--	1	--
HL-40-NA	ENA10	726+40.54	63.28' LEFT	--	1	117	1	1	1	1	--	--
HL-40-NA	ENA11	727+25.56	59.26' LEFT	--	1	117	1	1	1	1	--	--
HL-40-NA	ENA12	728+18.15	25.85' LEFT	--	1	117	1	1	1	1	--	--
HL-40-NA	ENA13	729+31.39	5.74' RIGHT	--	1	117	1	1	1	1	--	--
HL-40-NA	ENA14	730+66.70	15.83' RIGHT	--	1	117	1	1	1	1	--	--
HL-40-NA	ENA15	731+86.09	0.13' LEFT	--	1	117	1	1	1	1	--	--
HL-40-NA	ENA16	733+00.00	20.00' LEFT	--	--	--	--	--	--	--	--	EXISTING LIGHTING UNIT TO REMAIN
TOTAL (1100)				1	7	819	7	7	7	6	1	

SHEET 3 OF 3

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	MISCELLANEOUS QUANTITIES	SHEET:	E

Standard Detail Drawing List

08A05-19D	INLET COVER TYPE BW, MANHOLE COVERS, TYPE K, J, J-S, L & M
08B09-02	MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER
08C06-02	INLETS 3-FT AND 4-FT DIAMETER
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
08E14-01	TRACKING PAD
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
09B02-09	CONDUIT
09B04-11	PULL BOX
09C02-07	CONCRETE BASES, TYPES 1, 2, 5, & 6
09C03-04	TRANSFORMER/PEDESTAL BASES
09E01-14D	POLE MOUNTINGS FOR LIGHTING UNITS, TYPE 5 (30 FEET)
09E02-04	FREEWAY LIGHTING UNIT POLE WIRING
10A01-03	ELECTRICAL HANDHOLE WIRING
10A02-03	IDENTIFICATION PLAQUES LIGHT POLES
10A06-02	ELECTRICAL DETAILS GROUND MOUNT LIGHT POLES GROUNDED NEUTRAL SYSTEMS
14B07-14A	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14B	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14C	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14D	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14E	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14F	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14G	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14H	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B08-02A	CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS
14B08-02B	CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS
14B08-02C	CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS
14B08-02D	CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS
14B08-02E	CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15B03-15A	FENCE CHAIN LINK
15B03-15B	FENCE CHAIN LINK
15C02-06A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C03-03	BARRICADES AND SIGNS FOR SIDEROAD CLOSURES
15C08-17A	LONGITUDINAL MARKING (MAINLINE)
15C19-04C	MOVING PAVEMENT MARKING OPERATION MULTI-LANE DIVIDED ROADWAY
15D12-06A	TRAFFIC CONTROL, LANE CLOSURE
15D14-03	TRAFFIC CONTROL, TWO LANE CLOSURE ON FREEWAY OR EXPRESSWAY, SHORT-TERM (LESS THAN 24 HOURS)
15D38-01A	TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS
15D38-01B	ATTACHMENT OF SIGNS TO POSTS

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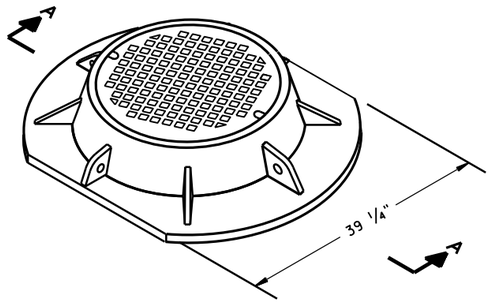
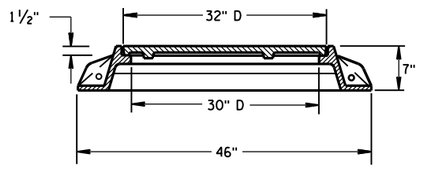
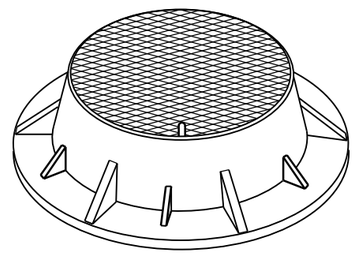
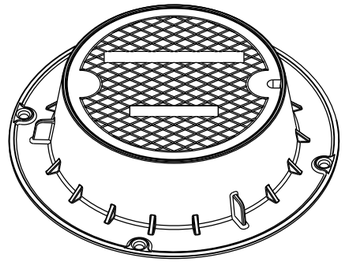
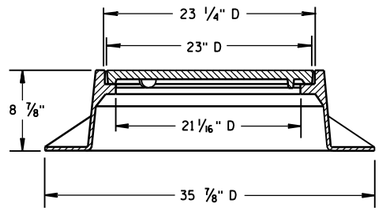


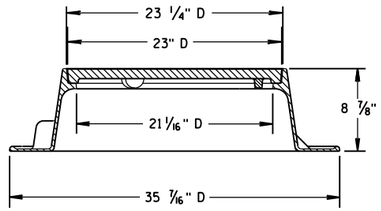


SECTION A-A
TYPE "K"









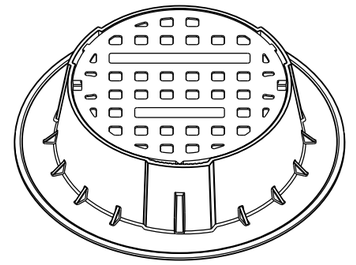
TYPE "J"
NOTE: EITHER CASTING IS ACCEPTABLE

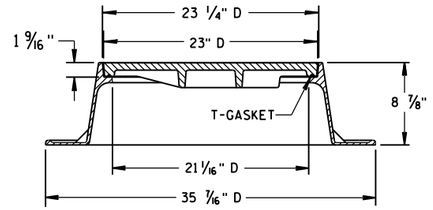
GENERAL NOTES

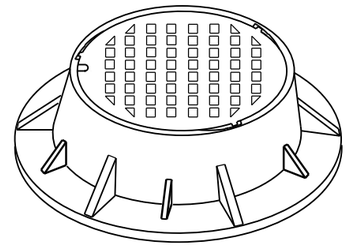
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

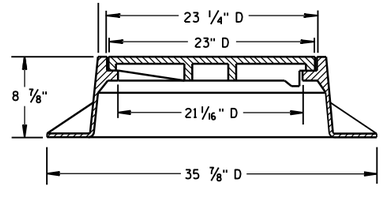
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR MANHOLE COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

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

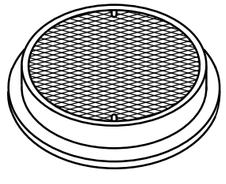


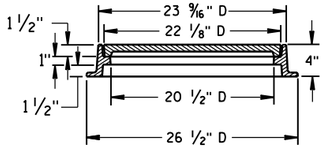




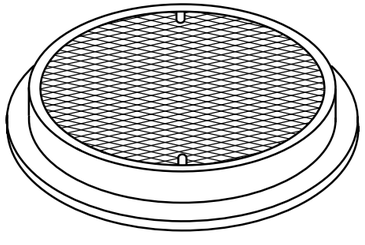


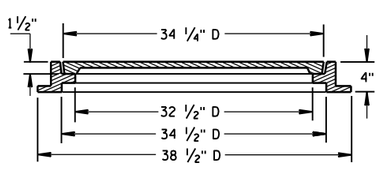
TYPE "J" SPECIAL
TYPE "B" NON-ROCKING SELF-SEAL LID
(NOTED AS TYPE J-S ON THE DRAINAGE TABLE)
NOTE: EITHER CASTING IS ACCEPTABLE



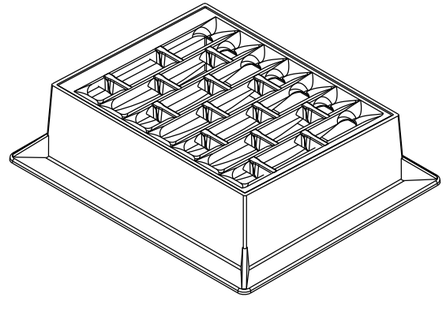


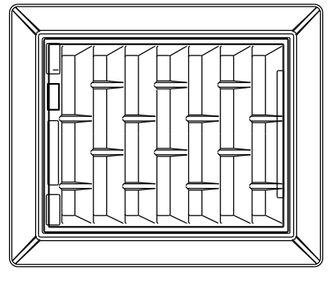
TYPE "L"

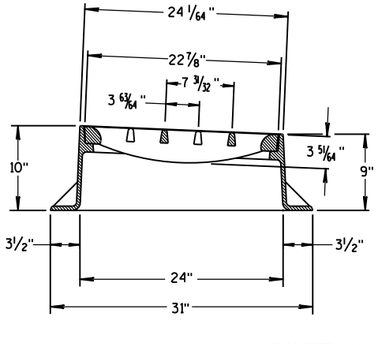


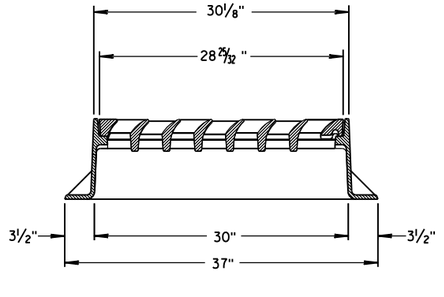


TYPE "M"









INLET COVER TYPE "BW"

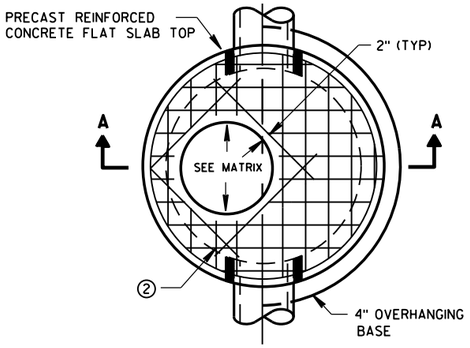
INLET COVER TYPE BW
MANHOLE COVERS, TYPE K, J, J-S, L & M

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

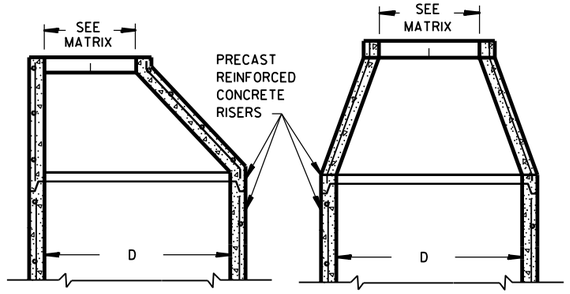
APPROVED
11/27/2013
DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

6

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

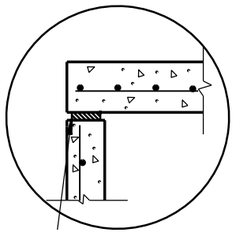


PLAN VIEW CIRCULAR OPENING

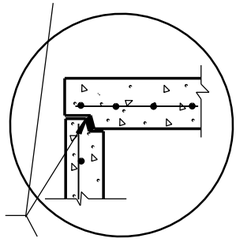


OPTIONAL PRECAST REINFORCED CONCRETE ECCENTRIC TOP

OPTIONAL PRECAST REINFORCED CONCRETE CONCENTRIC TOP

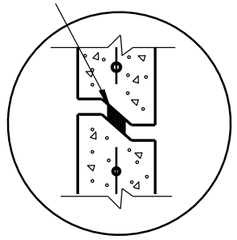


TOP WITH PLAIN END JOINT



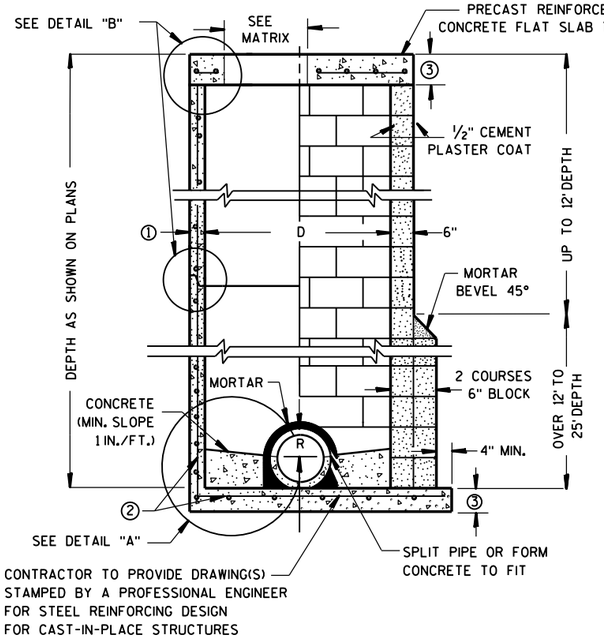
JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C990 (TYP)

TOP WITH TONGUE AND GROOVE JOINT



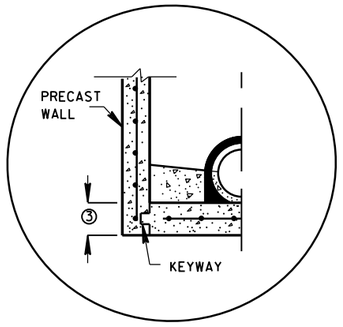
RISER WITH TONGUE AND GROOVE JOINT

DETAIL "B"

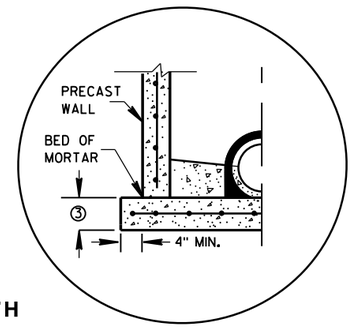


PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE

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

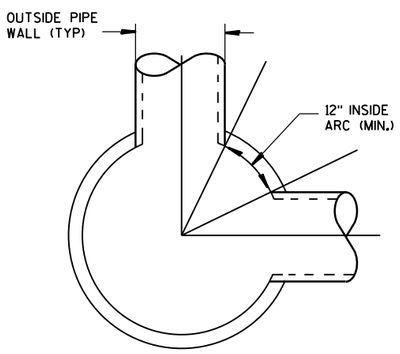


PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION



SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

DETAIL "A"



DETAIL "C"

GENERAL NOTES

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

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

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

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

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

PRECAST REINFORCED CONE TOPS (ECCENTRIC OR CONCENTRIC) OR PRECAST REINFORCED FLAT SLAB TOPS MAY BE USED ON CONCRETE BLOCK STRUCTURES.

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

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

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

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

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

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

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

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

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

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

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

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

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

MANHOLE COVER OPENING MATRIX

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

PIPE MATRIX

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

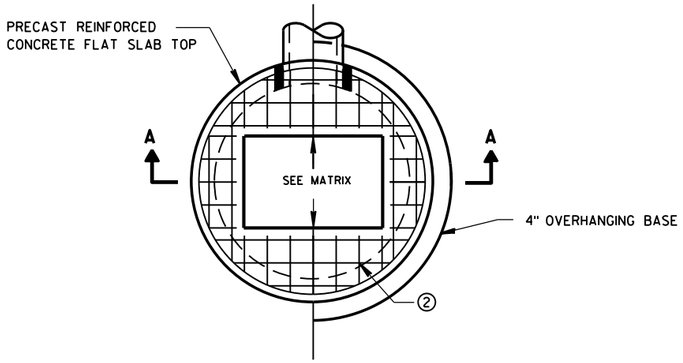
APPROVED

Sept., 2016
DATE

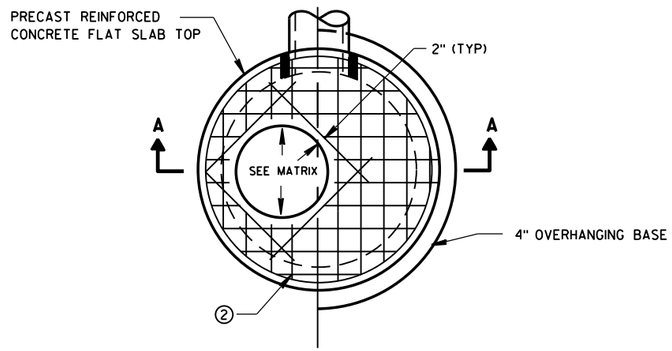
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERV

FHWA

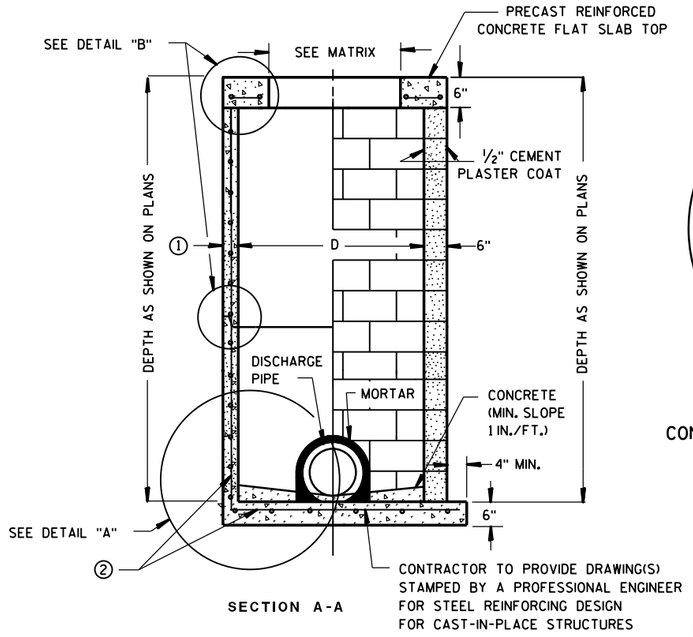
6
S.D.D. 8 B 9-2



PLAN VIEW RECTANGULAR OPENING



PLAN VIEW CIRCULAR OPENING

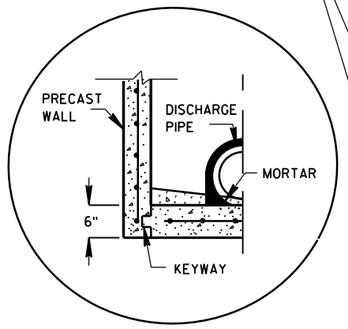


SECTION A-A

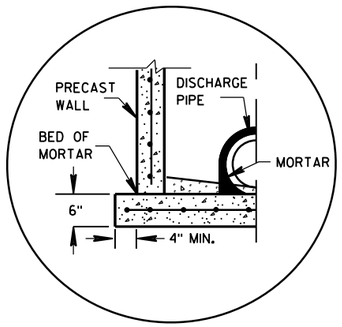
PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE

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

CIRCULAR INLETS W/ FLAT TOP

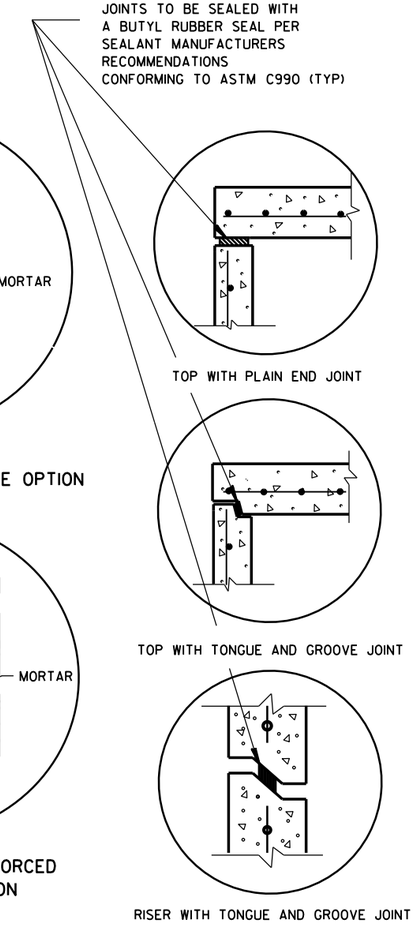


PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION



SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

DETAIL "A"



DETAIL "B"

GENERAL NOTES

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

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

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

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

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

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

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M199.

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

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

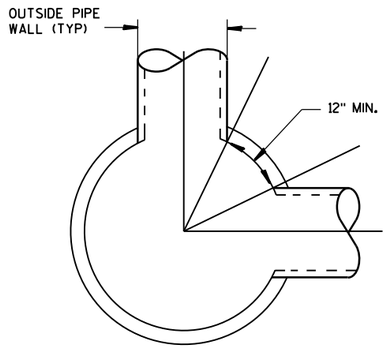
FOR ADDITIONAL CONFIGURATIONS, MAINTAIN A MINIMUM OF 12 INCHES AS MEASURED FROM THE INSIDE OF THE STRUCTURE WALL BETWEEN THE OUTSIDE PIPE WALLS OF ADJACENT PIPES. SEE DETAIL "C".

① MINIMUM WALL THICKNESS SHALL BE 4-IN FOR 3-FT DIAMETER AND 5-IN FOR 4-FT DIAMETER PRECAST INLETS.

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

INLET COVER OPENING MATRIX

	INLET COVER TYPE	ALL A'S	ALL B'S	BW	C	F	ALL H'S	S	T	V	WM	Z
INLET SIZE	OPENING SIZE (FT)											
3-FT	2 DIA.				X							X
	2X2	X	X					X		X		
4-FT	2 DIA.				X							X
	2X2	X	X					X		X		
	2X2.5			X				X	X	X	X	
	2X3						X					
	2.5X3					X						



DETAIL "C"

PIPE MATRIX

INLET SIZE	MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES	
	180° SEPARATION (IN)	90° SEPARATION (IN)
3-FT	15	12
4-FT	24	18

INLETS 3-FT AND 4-FT DIAMETER

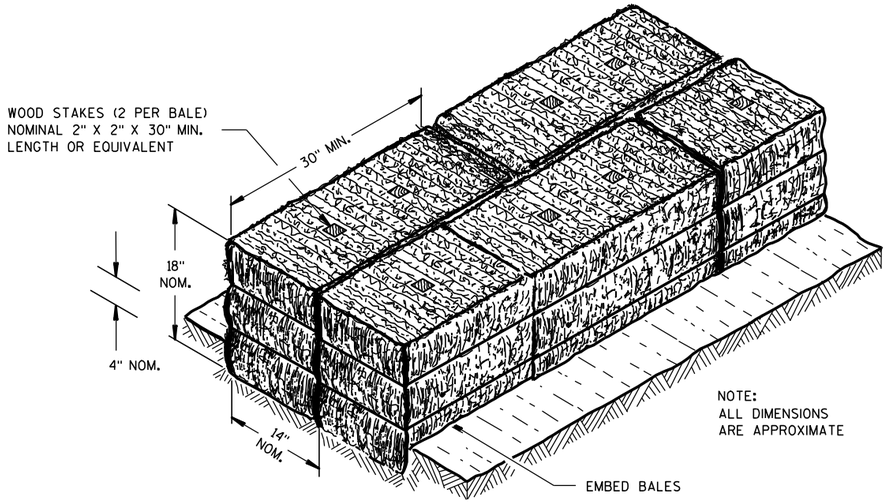
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept.. 2016 — DATE
/S/ Rodney Taylor — ROADWAY STANDARDS | ENT UNIT SUPERVI
FHWA

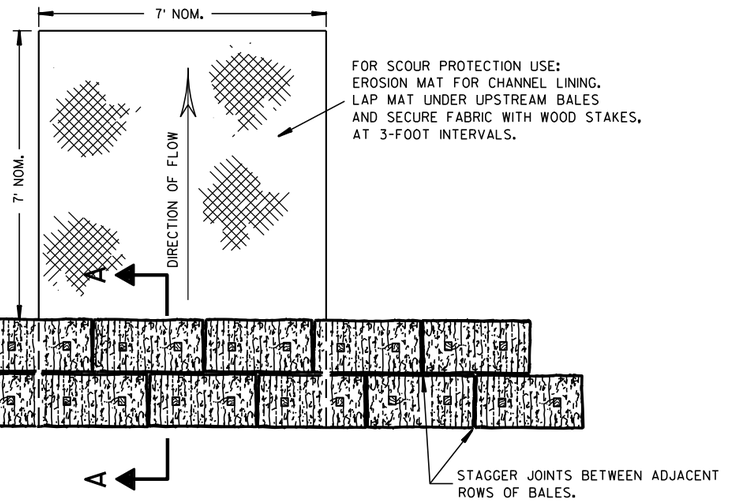
INLETS 3-FT AND 4-FT DIAMETER

6

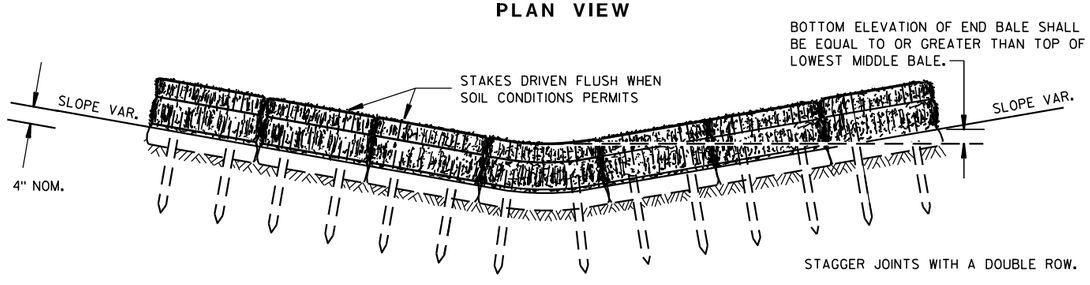
S.D.D. 8 C 6-2



SECTION A-A



PLAN VIEW



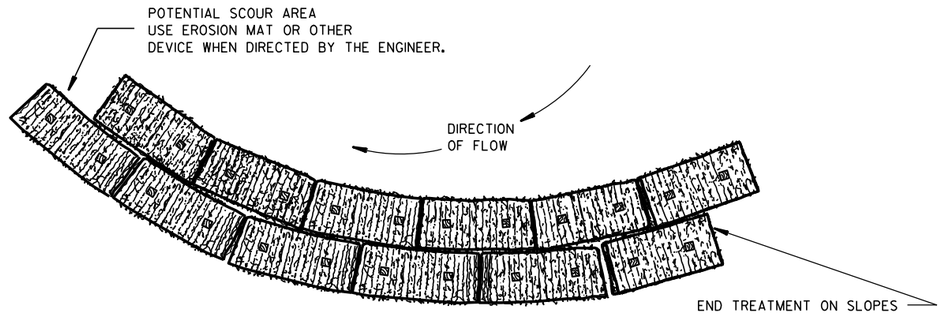
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

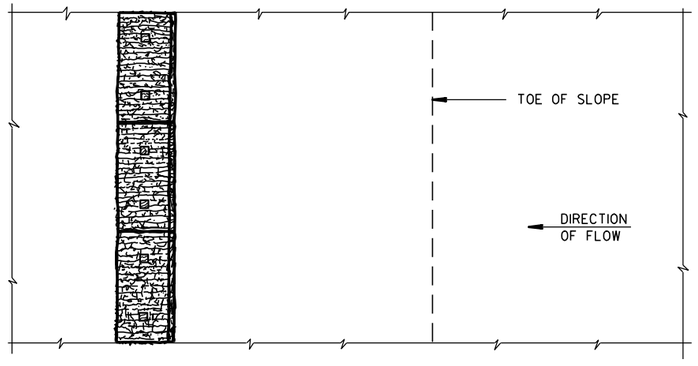
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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.

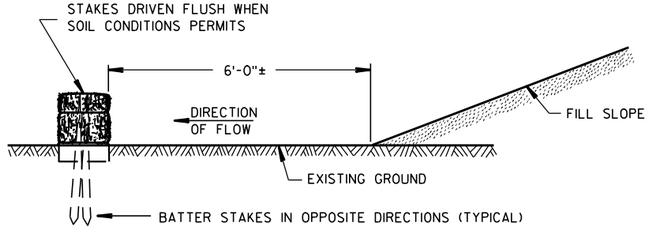


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

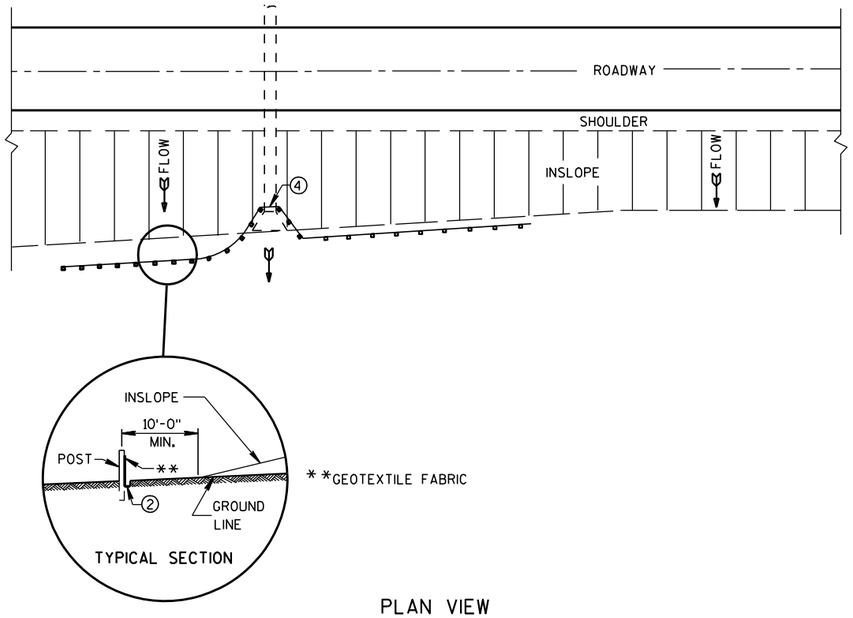
TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

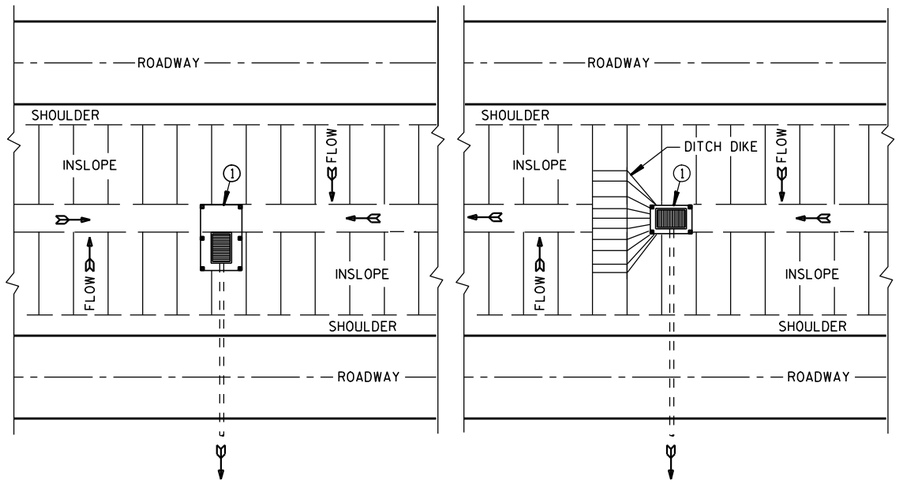
6

S.D.D. 8 E 8-3



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



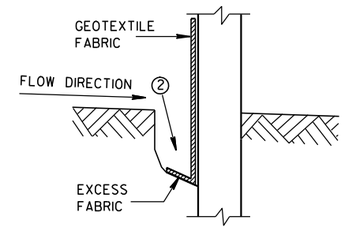
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

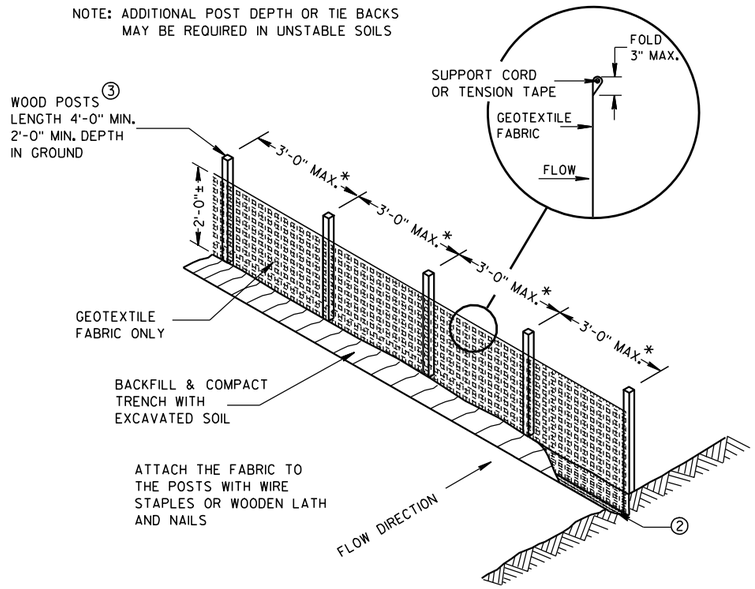
GENERAL NOTES

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

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

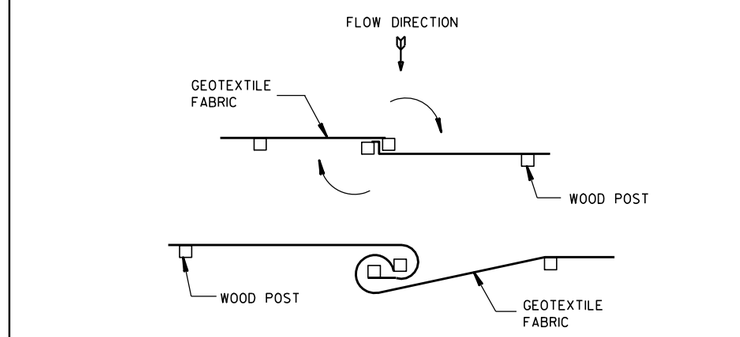


TRENCH DETAIL

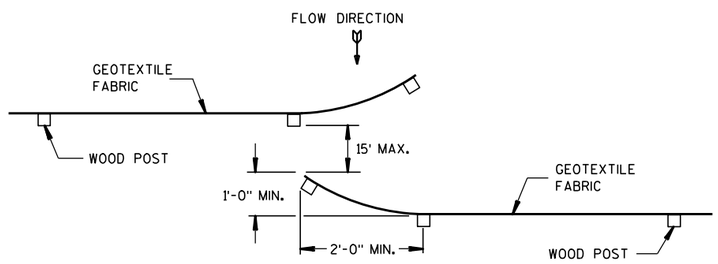


*NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.

SILT FENCE

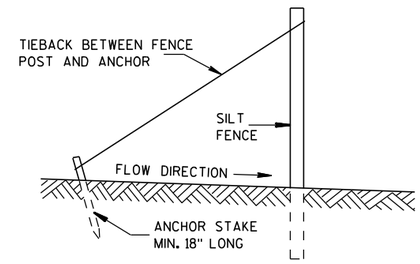


TWIST METHOD



HOOK METHOD

JOINING TWO LENGTHS OF SILT FENCE 5



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

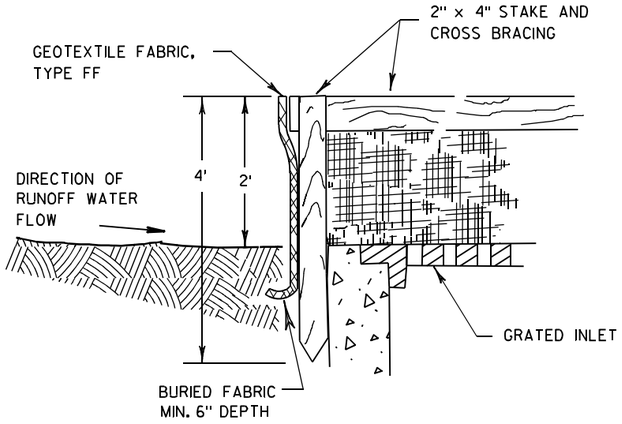
APPROVED
4-29-05 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

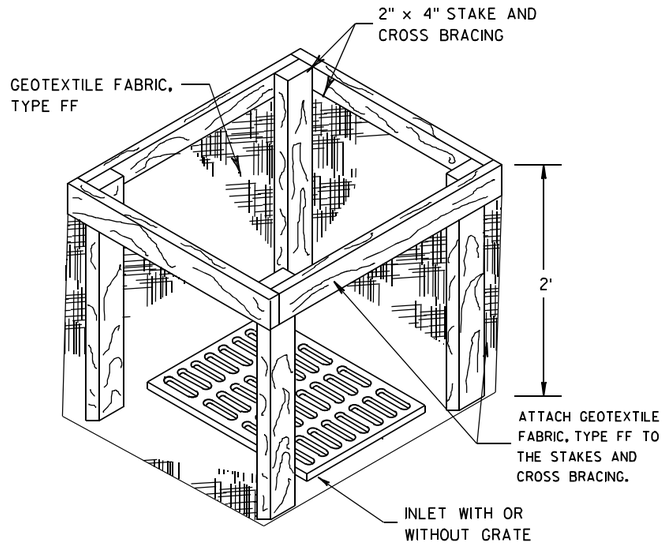
6

S.D.D. 8 E 9-6

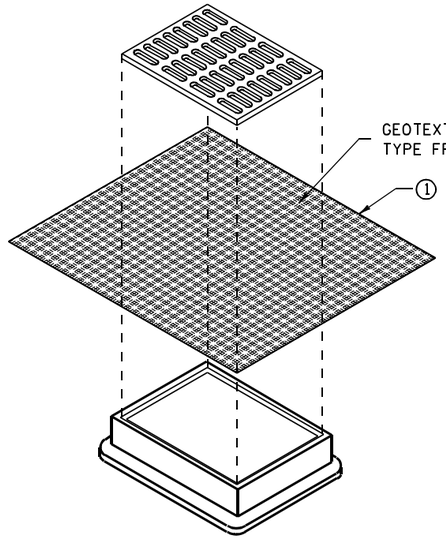
6

S.D.D. 8 E 9-6



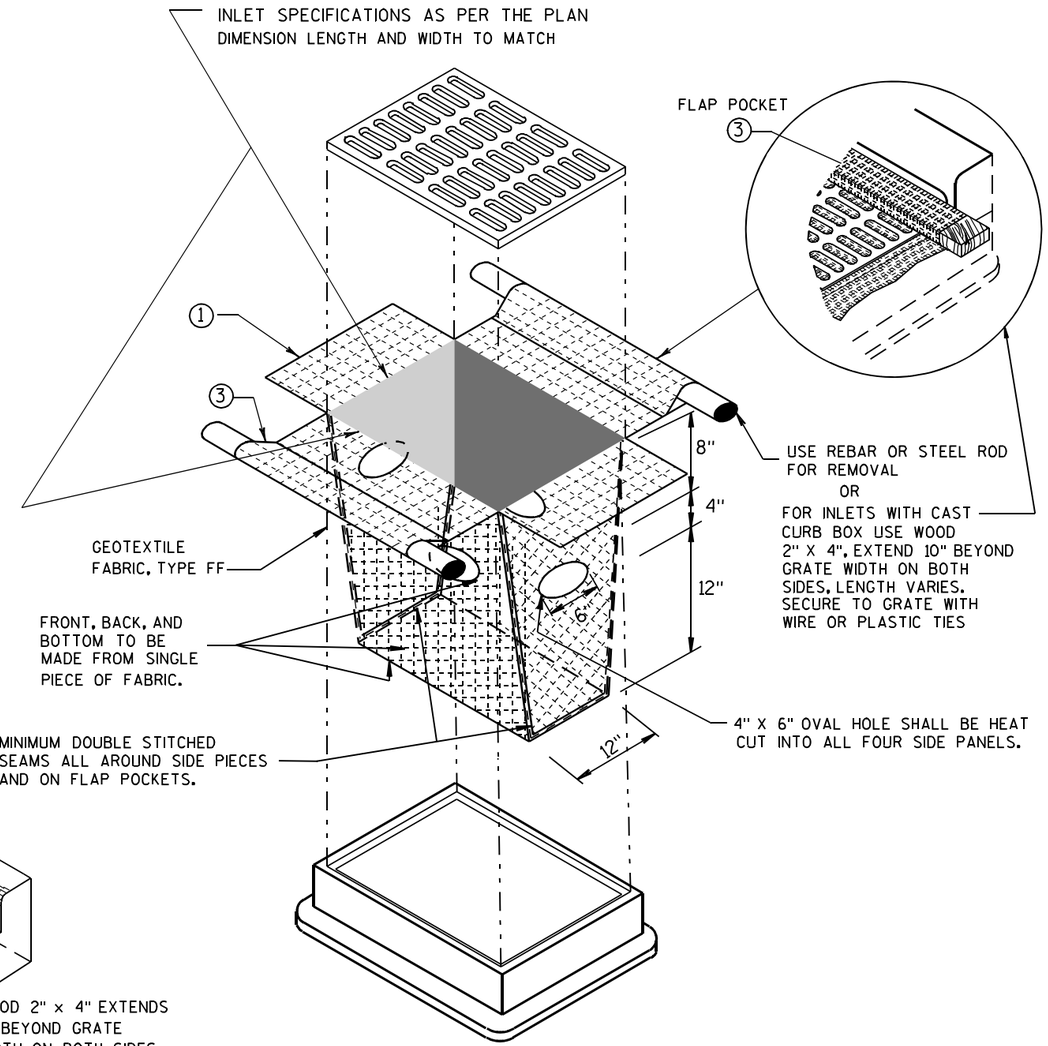


INLET PROTECTION, TYPE A



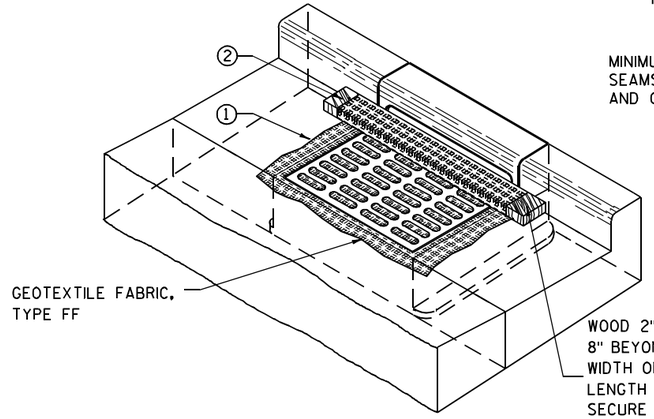
INLET PROTECTION, TYPE B
(WITHOUT CURB BOX)

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



INLET PROTECTION, TYPE D

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



INLET PROTECTION, TYPE C (WITH CURB BOX)

GENERAL NOTES

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

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

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

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

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

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

INSTALLATION NOTES

TYPE B & C

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

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

TYPE D

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

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

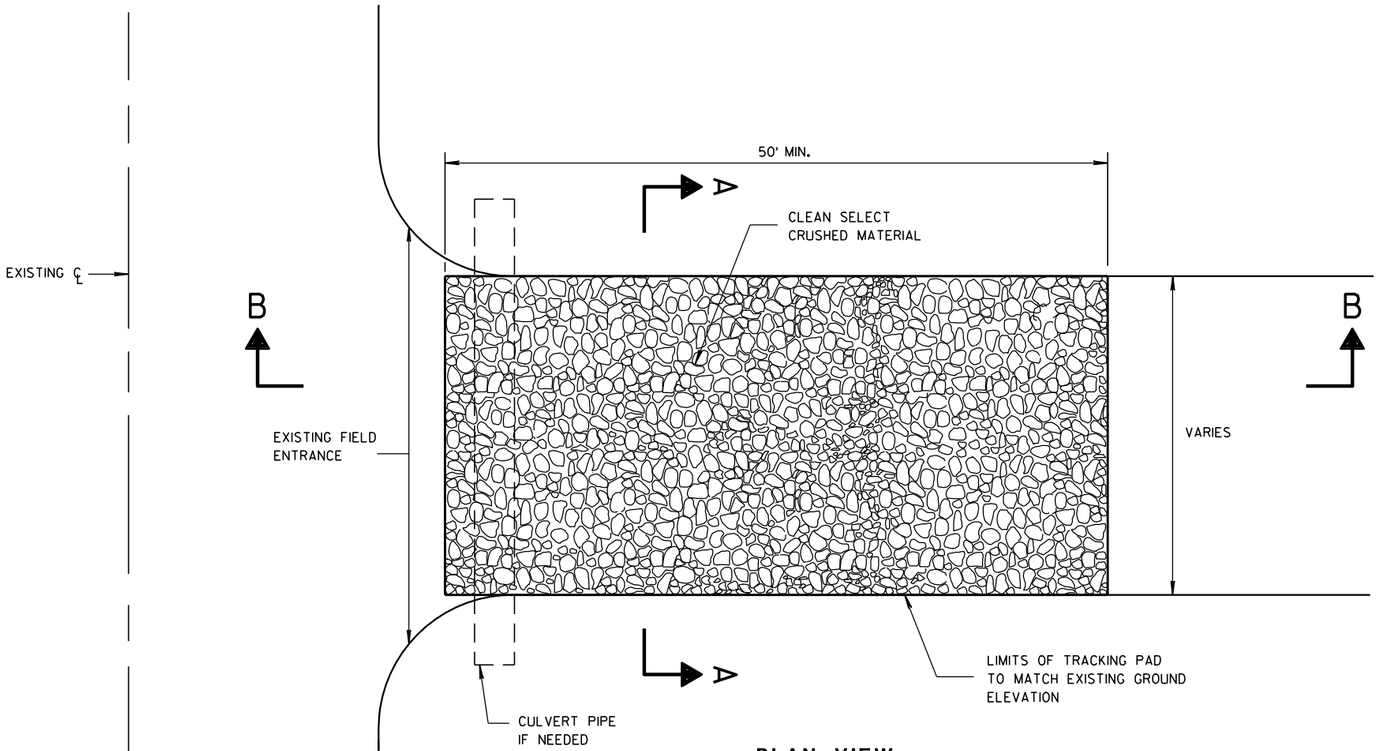
THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE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

INLET PROTECTION
TYPE A, B, C, AND D

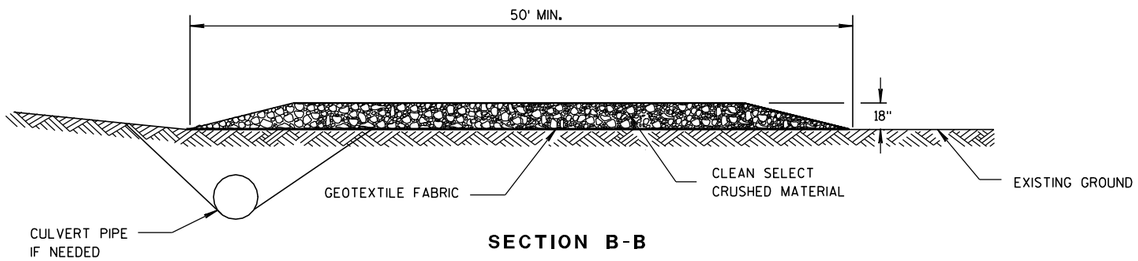
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/16/02
DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

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



PLAN VIEW



SECTION B-B

GENERAL NOTES

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

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

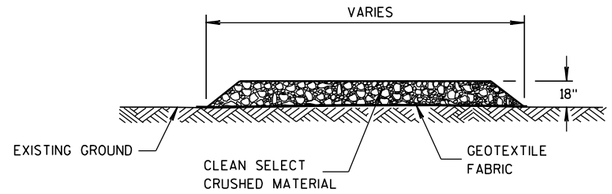
TRACKING PAD TO BE REMOVED AFTER CONSTRUCTION IS COMPLETED.

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

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

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

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



SECTION A-A

TRACKING PAD

TRACKING PAD

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
3/24/2011 — DATE
/S/ Jerry H. Zoda — ROADWAY STANDARDS ENGINEER
FHWA

6

S.D.D. 8 E 14-1

S.D.D. 8 E 14-1

METAL APRON ENDWALLS

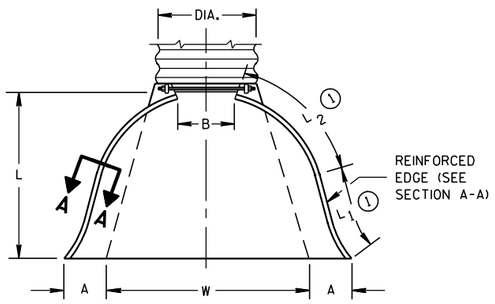
PIPE DIA. (IN.)	MIN. THICK. (Inches) STEEL	MIN. THICK. (Inches) ALUM.	DIMENSIONS (Inches) A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")	APPROX. SLOPE	BODY
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4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

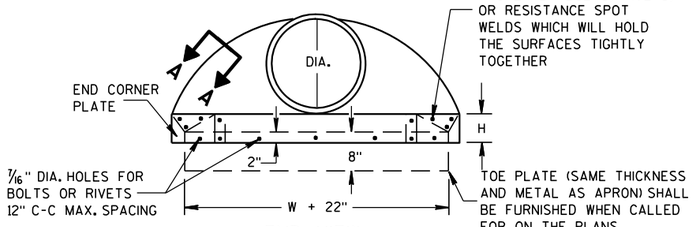
REINFORCED CONCRETE APRON ENDWALLS

PIPE DIA. (IN.)	DIMENSIONS (Inches) T	A	B	C	D	E	G	APPROX. SLOPE
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

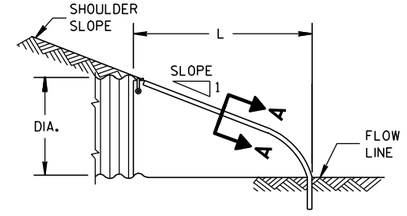
*MINIMUM
**MAXIMUM



PLAN VIEW

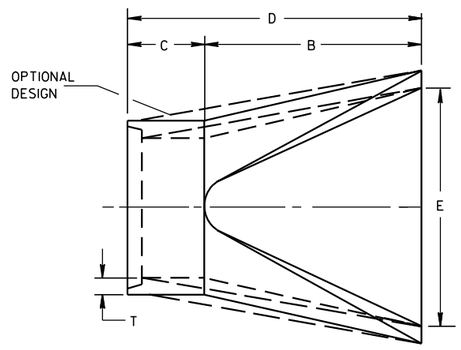


END VIEW

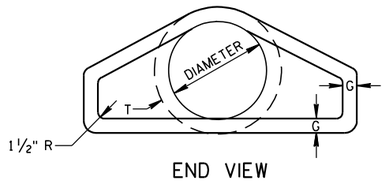


SIDE ELEVATION

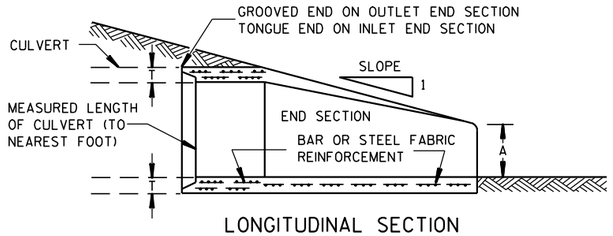
METAL ENDWALLS



PLAN

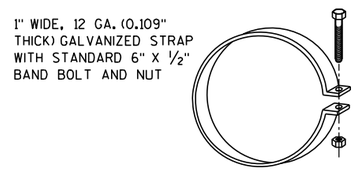


END VIEW



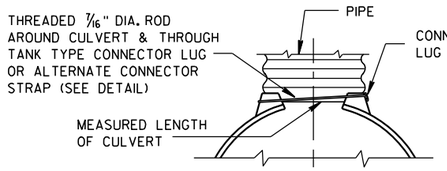
LONGITUDINAL SECTION

CONCRETE ENDWALLS

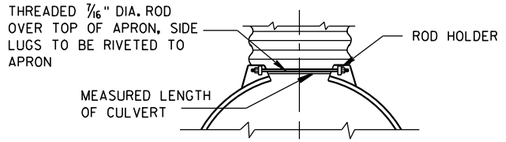


ALTERNATE FOR TYPE 1 CONNECTION

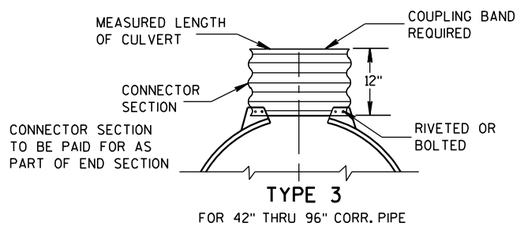
END SECTION CONNECTOR STRAP



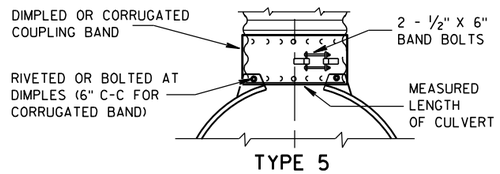
TYPE 1
FOR 12" THRU 24" CORR. PIPE



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

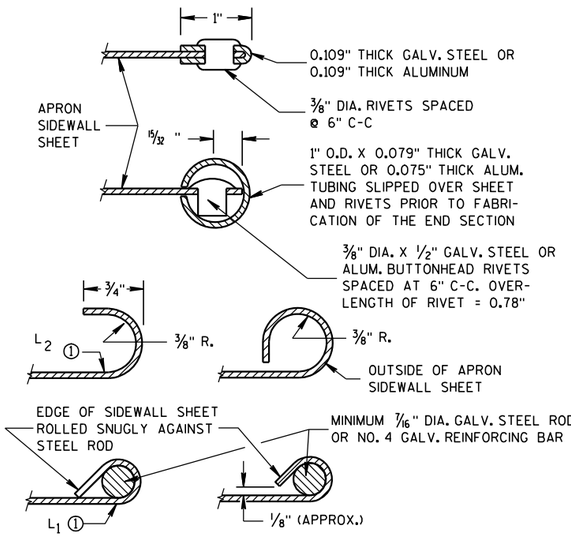
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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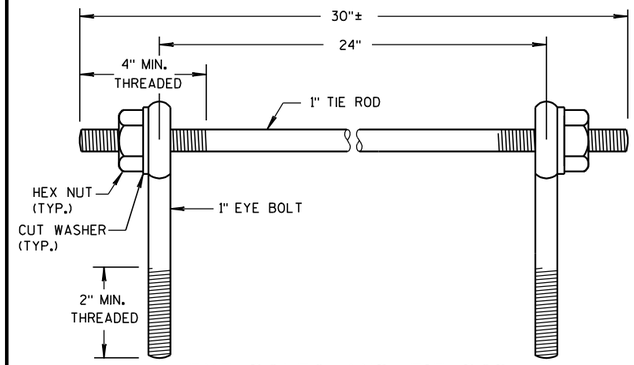
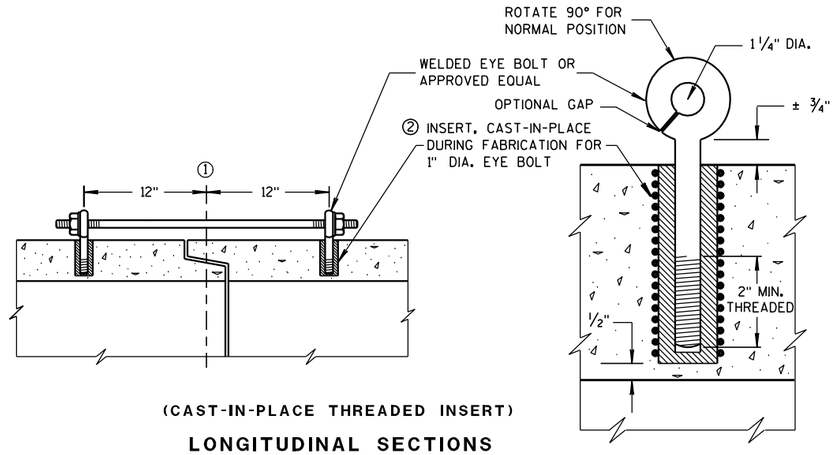
S.D.D. 8 F 1-11



EYE BOLTS AND TIE ROD



(CAST-IN-PLACE THREADED INSERT)

LONGITUDINAL SECTIONS

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

GENERAL NOTES

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

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

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

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

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

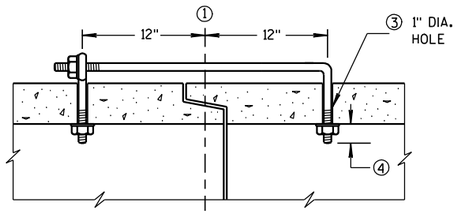
② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.

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

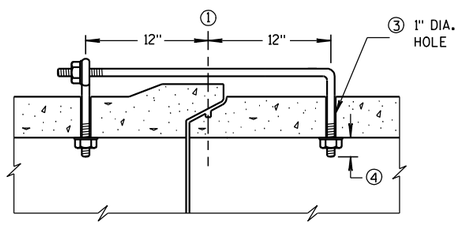
④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.

⑤ OPENING TO BE ROD DIAMETER PLUS 1 INCH.

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



(TONGUE & GROOVE PIPE)

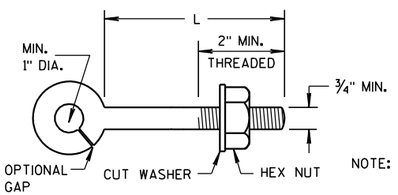


(MODIFIED BELL PIPE)

LONGITUDINAL SECTION

EYE BOLT DIMENSION TABLE

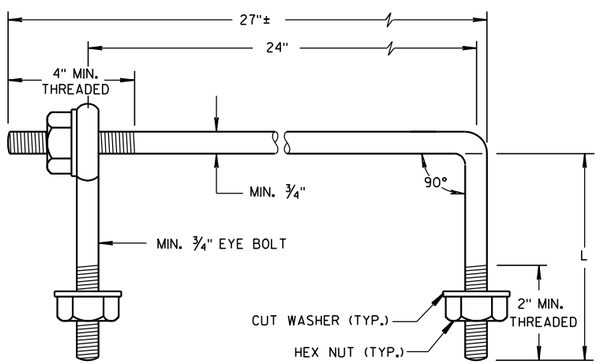
PIPE SIZE	L = LENGTH	
	TONGUE & GROOVE PIPE	MODIFIED BELL PIPE
18" TO 24"	4 1/2"	6 1/4"
30"	5"	7"
36"	5 1/2"	7"
42"	6"	
48"	6 1/2"	
60"	7 1/2"	
66"	8"	



NOTE:

EYE BOLT

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



EYE BOLT AND TIE ROD

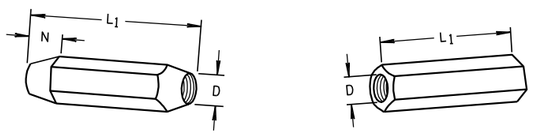
(JOINT TIES FOR 18" TO 66" DIA. CONCRETE PIPE)

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

ADJUSTABLE TIE ROD TABLE

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

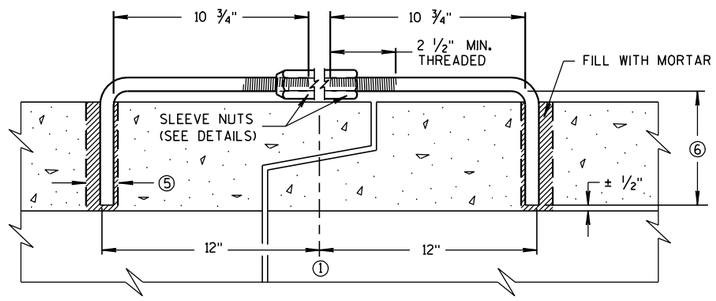
DIMENSIONS SHOWN ARE IN INCHES



TAPERED PLAIN

RIGHT AND LEFT THREADS

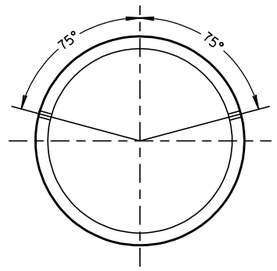
SLEEVE NUTS



LONGITUDINAL SECTION

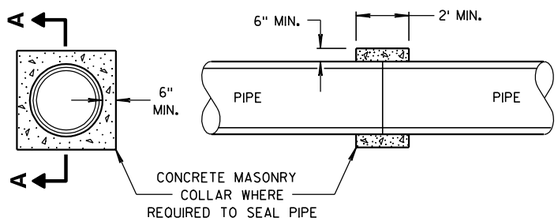
(JOINT TIES FOR 12" TO 108" DIA. CONCRETE PIPE)

ADJUSTABLE TIE ROD (ALTERNATE NO. 3)



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

TRANSVERSE SECTION



SECTION A-A

CONCRETE COLLAR DETAIL

JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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S.D.D. 8 F 4-7

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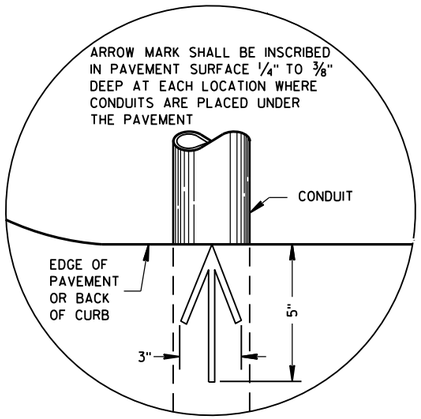
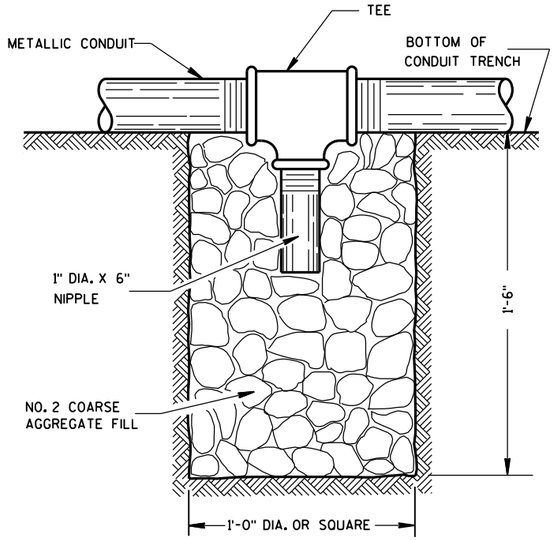
S.D.D. 8 F 4-7



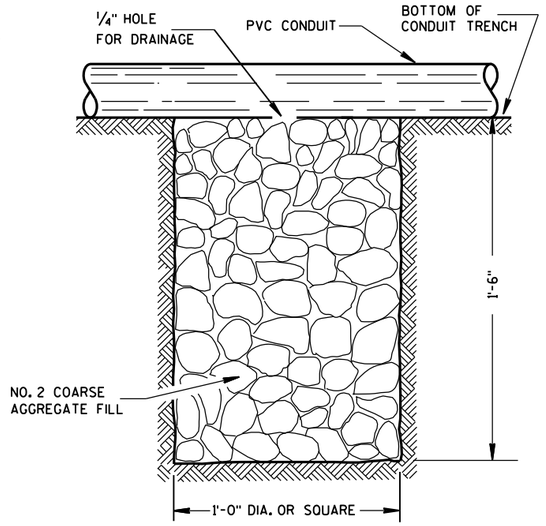
PLAN VIEW

ARROW MARK



NOTE: INSTALL AT LOCATIONS WHERE METALLIC CONDUITS CANNOT BE PITCHED TO DRAIN INTO A PULL BOX.

DRAIN SUMP FOR METALLIC CONDUIT



NOTE: INSTALL AT LOCATIONS WHERE PVC CONDUITS CANNOT BE PITCHED TO DRAIN INTO A PULL BOX.

DRAIN SUMP FOR PVC CONDUIT

GENERAL NOTES

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

METALLIC (STANDARD SPECIFICATION 652.2.2) OR NONMETALLIC (STANDARD SPECIFICATION 652.2.3) CONDUIT SHALL BE FURNISHED AND PLACED AS SHOWN.

DEPTH OF CONDUIT INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES MINIMUM AND 36 INCHES MAXIMUM.

DEPTH OF CONDUIT INSTALLED THAT IS NOT BELOW THE TRAVELED WAY SHALL BE 18 INCHES MINIMUM AND 36 INCHES MAXIMUM.

ANY EXCEPTION TO THE MAXIMUM DEPTH SHALL BE ONLY WITH THE WRITTEN APPROVAL OF THE ENGINEER.

THE TRENCH SHALL NOT BE BACKFILLED PRIOR TO INSPECTION OF THE CONDUIT.

ALL METALLIC CONDUIT RACEWAY ENDS SHALL BE REAMED AND THREADED.

ALL METALLIC CONDUIT IN WHICH WIRE OR CABLE IS TO BE INSTALLED SHALL BE BUSHED WITH APPROVED THREADED BUSHINGS BEFORE INSTALLATION OF THE WIRE OR CABLE.

ALL METALLIC CONDUITS IN WHICH WIRE OR CABLE IS NOT TO BE INSTALLED SHALL BE CAPPED WITH THREADED PROTECTIVE CAPS, AS APPROVED BY THE ENGINEER.

ALL NONMETALLIC CONDUIT SHALL BE CAPPED OR PLUGGED IMMEDIATELY AFTER INSTALLATION AND SHALL REMAIN CAPPED OR PLUGGED UNTIL WIRE/CABLES ARE INSTALLED.

NONMETALLIC CONDUITS IN WHICH WIRE OR CABLE IS NOT BEING INSTALLED SHALL REMAIN CAPPED OR PLUGGED.

BENDING OF PVC ELECTRICAL CONDUIT SHALL BE ACCOMPLISHED BY USING A BLANKET OR EMERSION TYPE TANK DESIGNED FOR THE PURPOSE OF BENDING PVC ELECTRICAL CONDUIT.

ALL CUT ENDS SHALL BE TRIMMED INSIDE AND OUTSIDE TO REMOVE ALL ROUGH EDGES ON NONMETALLIC CONDUIT. (SEE NEC 347.5)

WHEN REQUIRED TO CONNECT NONMETALLIC CONDUIT TO METALLIC CONDUIT, ONLY U.L. LISTED ADAPTER FITTINGS SHALL BE USED.

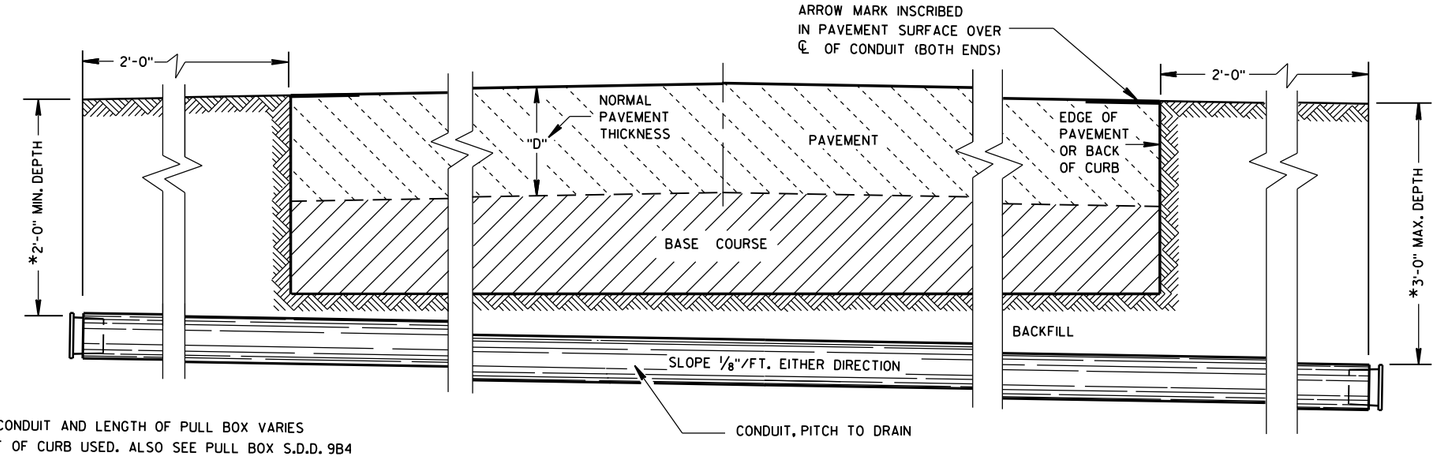
PRIOR TO CONDUIT ACCEPTANCE, CONDUIT CAPS OR PLUGS SHALL BE REMOVED, AND THE CAPS, PLUGS AND CONDUIT ENDS SHALL BE THOROUGHLY CLEANED AND THEN THE CAPS OR PLUGS REINSTALLED TO ENSURE THAT THE CAPS OR PLUGS CAN BE EASILY REMOVED IN THE FUTURE.

ALL CONDUIT BEING FURNISHED AND INSTALLED SHALL HAVE THE U.L. LABEL FIRMLY ATTACHED.

CONDUIT RUNS SHALL BE THE SAME SIZE OF CONDUIT FROM ONE END TO THE OTHER (FROM PULL BOX TO PULL BOX-OR-JUNCTION BOX TO JUNCTION BOX-OR-BASE TO BASE, ETC.).

TRACER WIRE SHALL BE INSTALLED AS STATED IN THE STANDARD SPECIFICATION, ITEM 652.3.1.1.

ALL CONDUIT RUNS SHALL BE STRAIGHT (WITHOUT BENDS) FROM PULL BOX TO PULL BOX, PULL BOX TO BASE AND BASE TO BASE AS SHOWN ON THE PLANS.



*DEPTH OF CONDUIT AND LENGTH OF PULL BOX VARIES WITH HEIGHT OF CURB USED. ALSO SEE PULL BOX S.D.D. 9B4

SIDE ELEVATION

DETAIL FOR CONDUIT UNDER PAVED HIGHWAYS

CONDUIT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 — DATE
/S/ Ahmet Demirbilek — STATE ELECTRICAL
FHWA

6

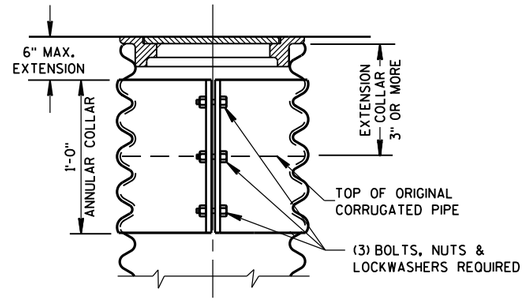
S.D.D. 9 B 2-9

TABLE OF NOMINAL DIMENSIONS AND WEIGHTS

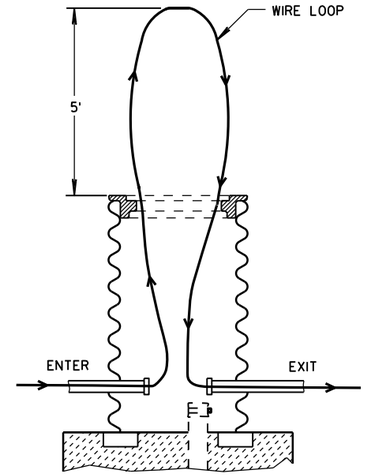
DIMENSION IN INCHES		CORRUGATED STEEL PIPE								
PIPE DIAMETER (INSIDE)	A	12	12	12	18	18	18	24	24	24
PIPE LENGTH **	B	24	30	36	24	30	36	36	42	48
WALL THICKNESS	C	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
COVER	D	10 1/4	10 1/4	10 1/4	16 1/4	16 1/4	16 1/4	22 1/4	22 1/4	22 1/4
FRAME	E	14 1/2	14 1/2	14 1/2	20 1/2	20 1/2	20 1/2	26 1/2	26 1/2	26 1/2
FRAME	F	8 1/2	8 1/2	8 1/2	14 1/2	14 1/2	14 1/2	20 1/2	20 1/2	20 1/2
FRAME	G	11 1/2	11 1/2	11 1/2	17 1/2	17 1/2	17 1/2	23 1/2	23 1/2	23 1/2
WEIGHT IN POUNDS *										
FRAME AND COVER		60	60	60	110	110	110	155	155	155

* THE ACTUAL WEIGHT OF THE MANHOLE FRAME AND COVER MAY VARY WITHIN 5 PERCENT PLUS OR MINUS OF THE WEIGHTS SHOWN.

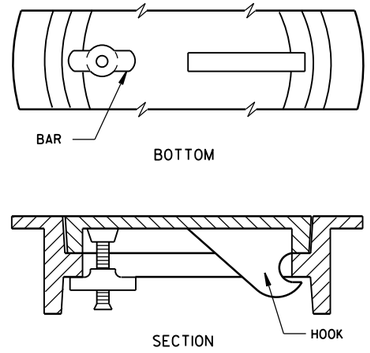
** NORMALLY USED LENGTHS. THE PROJECT ENGINEER SHALL DETERMINE IF PIPE LENGTHS, OTHER THAN THOSE SPECIFIED, SHALL BE USED, TO A MAXIMUM OF 48" (CONTINUOUS LENGTH, NON-SPLICED). THE ADDITIONAL LENGTH SHALL BE INCIDENTAL TO THE PULL BOX BID PRICE.



CORRUGATED PIPE EXTENDER

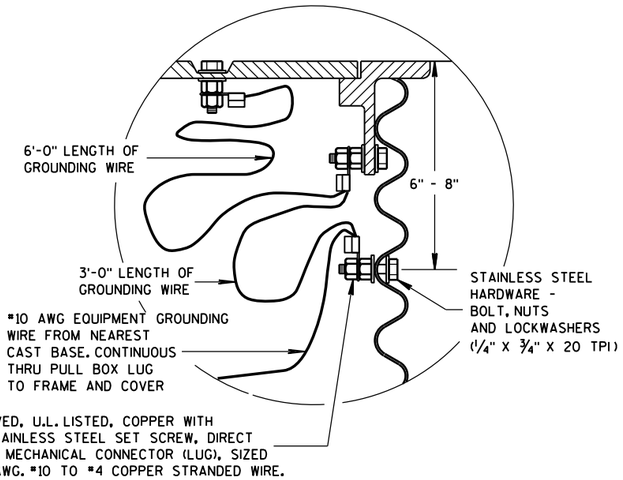


MEASUREMENT DETAIL FOR WIRE/CABLE IN THE PULL BOX

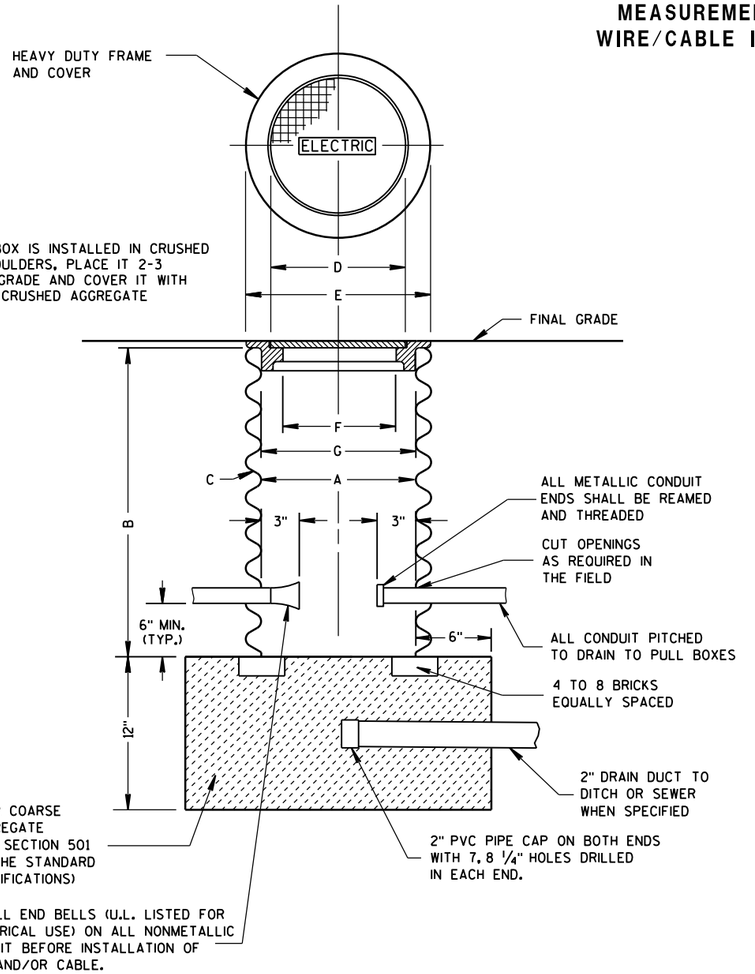


ALTERNATE COVER (LOCKING)

TIGHTENING BAR TYPE



EQUIPMENT GROUNDING LUG AND LOCATION IN STEEL PULL BOXES



PULL BOX

GENERAL NOTES

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

ALL FRAMES AND COVERS SHALL BE HEAVY DUTY TYPE, SUITABLE FOR VEHICULAR TRAFFIC LOADS.

PULL BOXES LOCATED IN THE ROADWAYS SHALL HAVE LOCKING COVERS.

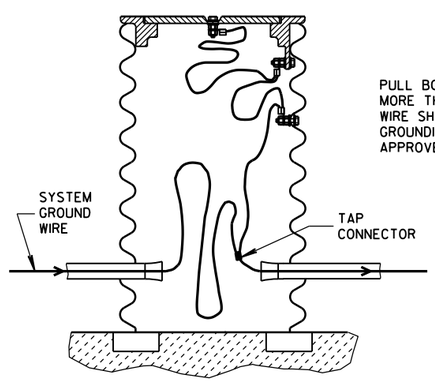
ENTRANCE HOLES INTO PULL BOXES SHALL BE CUT WITH A CIRCULAR HOLE SAW OR HYDRAULIC CONDUIT PUNCH. HOLE SIZE SHALL BE THE OUTSIDE DIAMETER OF THE CONDUIT THAT IS TO FIT IN THE OPENING PLUS NO MORE THAN 1/4".

THE CONTRACTOR SHALL NOT INSTALL WIRE IN ANY PULL BOX UNTIL ITS INSTALLATION HAS BEEN INSPECTED AND ACCEPTED BY THE ENGINEER.

GROUNDING LUGS (MECHANICAL CONNECTORS) SHALL BE U.L. LISTED AND APPROVED FOR USE WITH COPPER WIRE.

ALL METALLIC CONDUIT IN WHICH WIRE AND/OR CABLE IS TO BE INSTALLED, SHALL BE BUSHED BEFORE INSTALLATION OF THE WIRE AND/OR CABLE.

WHEN PULL BOXES ARE INSTALLED FOR FUTURE USE, DO NOT INSTALL THE EQUIPMENT GROUNDING LUG. THE EQUIPMENT GROUNDING LUG, THE EQUIPMENT GROUNDING ELECTRODE AND THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE REQUIRED AND INSTALLED UNDER A FUTURE WIRING CONTRACT.



PULL BOX TO NEAREST BASE DISTANCE MORE THAN 20 FEET. PULL BOX GROUND WIRE SHALL CONNECT AT SYSTEM GROUNDING WIRE. USE DEPARTMENT APPROVED TAP CONNECTOR.

EQUIPMENT GROUNDING LUG AND LOCATION IN STEEL PULL BOXES

PULL BOX

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept. 2014 — DATE
/S/ Ahmet Demirbilek — STATE ELECTRICAL
FHWA

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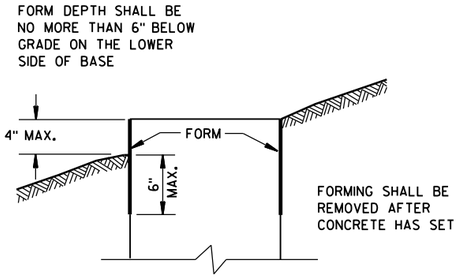
S.D.D. 9 B 4-11



FORMING DETAIL

QUANTITY REQUIREMENTS	CONCRETE BASE TYPE		
	1	2	5 & 6
APPROX. CUBIC YARDS OF CONCRETE	0.40	0.57	0.40
LBS. OF HOOP BAR STEEL	NONE	23	16
LBS. OF VERTICAL BAR STEEL	NONE	60	18

GENERAL NOTES

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

BASES SHALL BE EXCAVATED BY USE OF A CIRCULAR AUGER.

TOP SURFACES OF CONCRETE BASES SHALL BE TROWEL FINISHED SMOOTH AND LEVEL.

CONDUIT SIZES AND LOCATIONS SHALL BE AS SHOWN ON THE PLANS.

THE FINAL OR TERMINATING CONCRETE BASE IN A CONDUIT RUN SHALL HAVE A 6" EXIT STUB INSTALLED FOR FUTURE CABLING USE. THE EXIT STUB SHALL BE SIZED AS USED THROUGHOUT THE CONDUIT RUN AS SHOWN AT THE ENTRANCE OF THE BASE.

MINIMUM BENDING RADIUS OF CONDUIT IS EQUAL TO 6 X THE DIAMETER.

CONDUIT HEIGHT ABOVE CONCRETE BASES SHALL BE 1 INCH. ALL METALLIC CONDUIT ENDS SHALL BE REAMED AND THREADED.

ALL CONDUIT ENDS AT THE TOP OF CONCRETE BASES SHALL BE CAPPED IF METALLIC OR PLUGGED IF NONMETALLIC IMMEDIATELY AFTER PLACEMENT AND BEFORE CONCRETE IS POURED. CONDUITS IN WHICH WIRE OR CABLE IS NOT INSTALLED SHALL REMAIN CAPPED OR PLUGGED.

GENERAL NOTES (CONTINUED)

BELL ENDS SHALL BE INSTALLED ON ALL PVC CONDUIT EXPOSED AT THE TOP OF CONCRETE BASES BEFORE INSTALLATION OF CABLE OR WIRE.

ENDS OF CONDUIT INSTALLED BELOW GRADE FOR FUTURE USE SHALL BE CAPPED IF METALLIC OR PLUGGED IF NONMETALLIC.

WHEN REQUIRED TO CONNECT NONMETALLIC CONDUIT TO METALLIC CONDUIT, ONLY ADAPTER FITTINGS, U.L. LISTED FOR ELECTRICAL USE, SHALL BE USED.

IF A BASE REQUIRES A DEEP FORM BECAUSE OF LOOSE DIRT OR FILL, THE FORM SHALL BE REMOVED BEFORE BACKFILLING AROUND THE BASE. BACKFILL SHALL BE TAMPED TIGHT AGAINST THE BARE CONCRETE BASE IN LAYERS OF 1 FOOT OR LESS.

A NO. 4 AWG, STRANDED COPPER EQUIPMENT GROUNDING CONDUCTOR SHALL BE EXOTHERMICALLY WELDED TO THE EQUIPMENT GROUNDING ELECTRODE (GROUND ROD) FOR TYPE 1, TYPE 2, TYPE 5, AND TYPE 6 BASES.

THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE FURNISHED AND INSTALLED TO ENTER THE BASE OF THE TYPE 2 AND TYPE 5 BASES THROUGH A 1 INCH CONDUIT INSTALLED FOR GROUNDING PURPOSES, LEAVING A 4 FOOT COIL OF WIRE ABOVE THE CONCRETE BASE. THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE NEATLY COILED AND THE COILS TIED TOGETHER.

ANCHOR RODS SHALL BE THREADED 12" IN LENGTH ON EACH END OF THE ROD. ANCHOR RODS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 654.2.1 OF THE STANDARD SPECIFICATIONS.

WASHERS AND LOCK WASHERS ARE REQUIRED ON ALL ANCHOR RODS.

WHEN ANCHOR RODS USING THE ALTERNATE "L" BEND ARE FURNISHED, THE 4" "L" BEND SHALL BE IN ADDITION TO THE SPECIFIED ANCHOR ROD BAR LENGTH. THE "L" BEND END SHALL NOT BE THREADED.

ANCHOR RODS SHALL BE INSTALLED WITH MISALIGNMENTS OF LESS THAN 1:40 FROM VERTICAL.

WELDING OF THE ANCHOR RODS TO THE CAGE IS UNACCEPTABLE. TIE WIRES SHALL BE USED.

BAR STEEL REINFORCEMENT SHALL BE COATED WITH POWDERED EPOXY RESIN IN ACCORDANCE WITH SECTION 505 OF THE STANDARD SPECIFICATIONS (LATEST EDITION).

(1) THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE AND INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES. THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE THAT IS NOT INSTALLED BELOW THE TRAVELED WAY SHALL BE 18 INCHES. THE MAXIMUM DEPTH OF ALL CONDUIT SHALL BE 36 INCHES EXCEPT WITH WRITTEN APPROVAL BY THE ENGINEER.

(2) (4) 1" DIA. X 3'-6" ANCHOR RODS.

(3) (4) 1" DIA. X 5'-0" ANCHOR RODS.

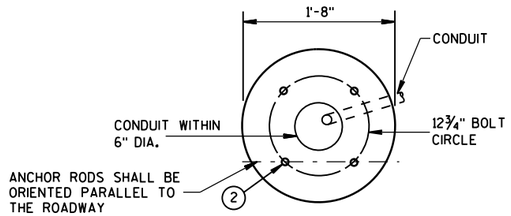
(4) (6) NO. 6 X 6'-8" BAR STEEL REINFORCEMENT.

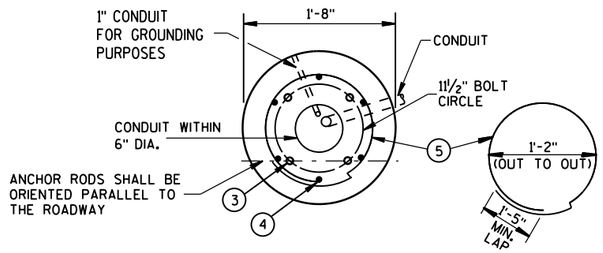
(5) (7) NO. 4 X 5'-1" BAR STEEL REINFORCEMENT @ 1'-0" C-C.

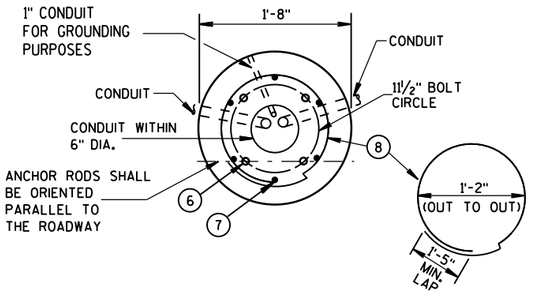
(6) (4) 1" DIA. X 3'-6" ANCHOR RODS.

(7) (6) NO.4 X 4'-8" BAR STEEL REINFORCEMENT.

(8) (5) NO. 4 X 5'-1" BAR STEEL REINFORCEMENT @ 1'-0" C-C.

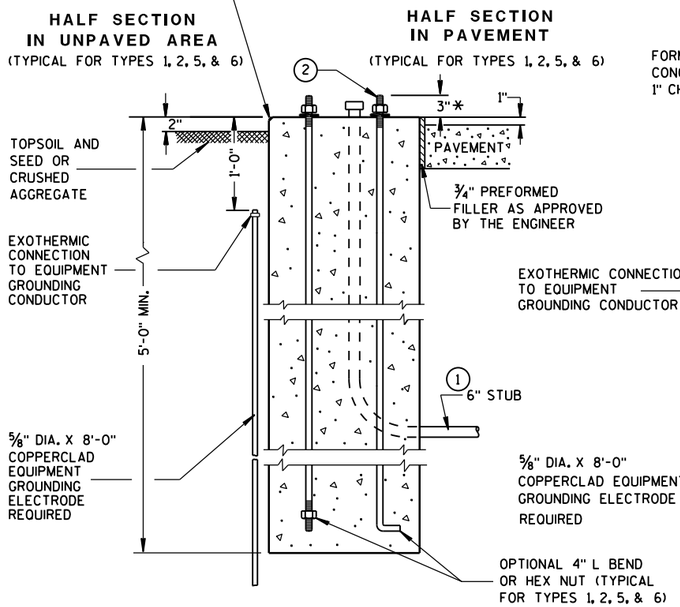






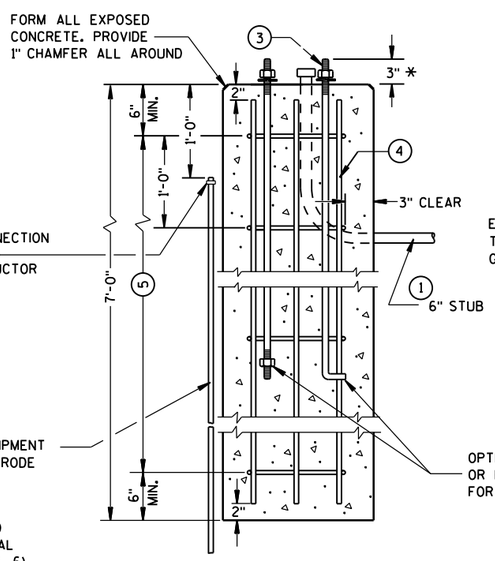
HALF SECTION IN UNPAVED AREA

(TYPICAL FOR TYPES 1, 2, 5, & 6)

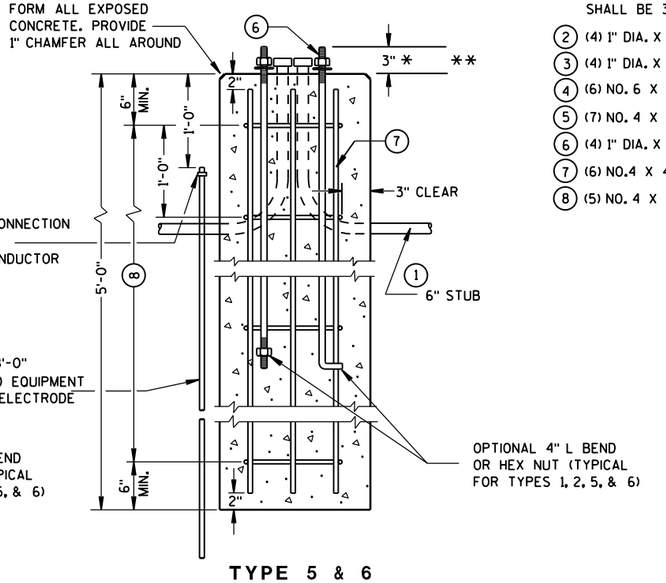


HALF SECTION IN PAVEMENT

(TYPICAL FOR TYPES 1, 2, 5, & 6)



TYPE 2



TYPE 5 & 6

CONCRETE BASES

* ANY ANCHOR ROD PROJECTION SHORTER THAN 2¾" OR LONGER THAN 3¼" SHALL REQUIRE THE BASE TO BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE.

** FOR NONBREAKAWAY INSTALLATIONS, 4½" ± ANCHOR ROD PROJECTION WITH THE USE OF LEVELING NUTS. RODENT SCREEN REQUIRED.

CONCRETE BASES, TYPES 1, 2, 5, & 6

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GENERAL NOTES

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

FOUR (4) BOLTS SHALL BE FURNISHED WITH EACH TRANSFORMER BASE. BOLTS SHALL BE 1" DIAMETER, 4" IN LENGTH, WITH WASHERS, LOCK WASHERS AND NUTS. BOLTS, NUTS AND WASHERS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 641.2.2 OF THE STANDARD SPECIFICATIONS.

LEVELING SHIMS, IF NEEDED, SHALL BE DESIGNED FOR THE PURPOSE AND USED UNDER CAST BASES WHEN PLUMBING POLES OR STANDARDS DURING INSTALLATION. THE USE OF WASHERS IN LIEU OF PROPER LEVELING SHIMS IS NOT ACCEPTABLE.

SHIM LENGTH SHALL BE LONG ENOUGH TO COMPLETELY COVER THE AREA UNDER THE LENGTH AND WIDTH OF THE BASE MOUNTING FLANGE.

DOUBLE NUTTING IS NOT ACCEPTABLE FOR LEVELING OR MOUNTING PURPOSES.

A NEMA APPROVED, U.L. LISTED, COPPER WITH BRASS OR STAINLESS STEEL SET SCREW, DIRECT BURY RATED, MECHANICAL CONNECTOR (LUG), SIZED TO ACCEPT AWG. #10 TO #4 COPPER STRANDED WIRE SHALL BE FURNISHED AND INSTALLED IN THE PEDESTAL AND TRANSFORMER BASES.

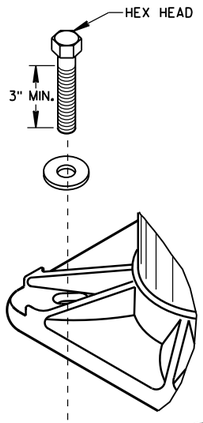
THE MECHANICAL CONNECTOR SHALL BE INSTALLED USING A 1/4" - 20 (TPI) STAINLESS STEEL HEX HEAD BOLT OF SUFFICIENT LENGTH TO FIRMLY ATTACH THE LUG TO THE BASE.

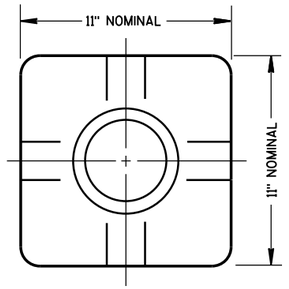
SHOULD THE MANNER OF ATTACHMENT OF THE LUG REQUIRE WASHERS, HEX NUTS, LOCK WASHER - THEY SHALL BE STAINLESS STEEL AS IS THE BOLT. THE MANNER OF ATTACHMENT SHALL NOT BLOCK ACCESSIBILITY TO WIRE PLACEMENT IN THE CONNECTOR.

PEDESTAL BASE COLLAR THREADING SHALL BE TAPERED AND IN ACCORDANCE WITH NATIONAL PIPE THREADING DIMENSIONS.

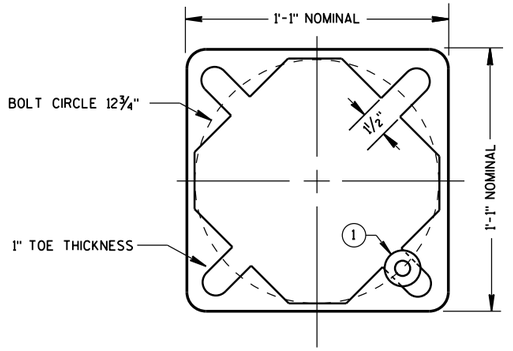
BASE COLLAR THREADING SHALL EXTEND INTO THE BASE COLLAR WITH SUFFICIENT DEPTH TO ACCEPT THE INSTALLATION OF TRAFFIC SIGNAL STANDARDS TO A DEPTH OF 1 1/2", THEN TIGHTENING TO A POINT OF BEING IMMOVABLE.

THE ACCESS DOOR SHALL BE OF THE SAME MATERIAL AS THE BASE.

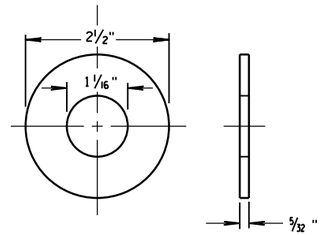




TOP VIEW
(PEDESTAL BASE)

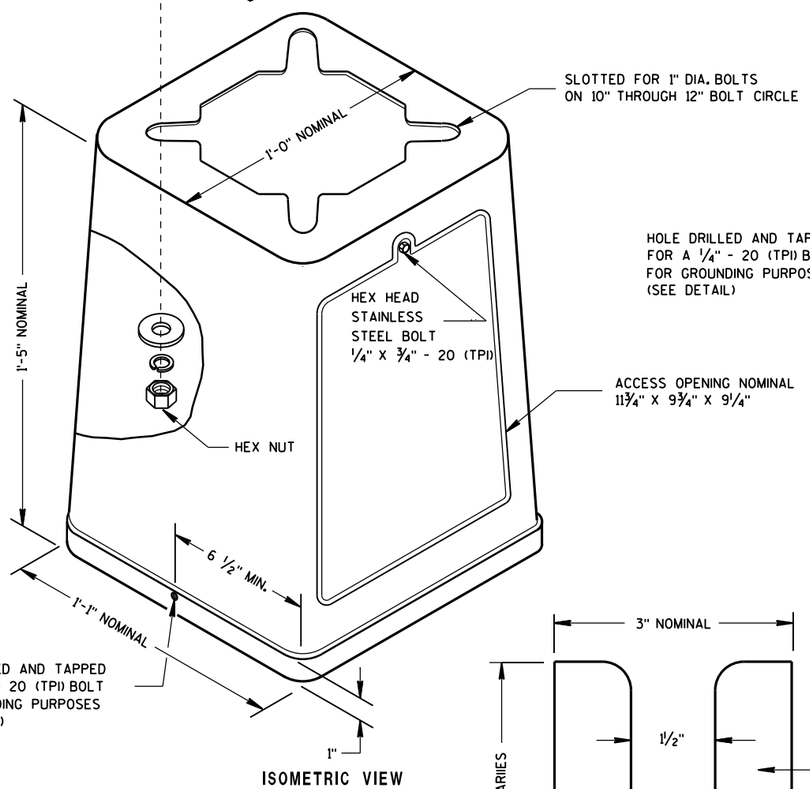


BOTTOM VIEW
(PEDESTAL BASE)

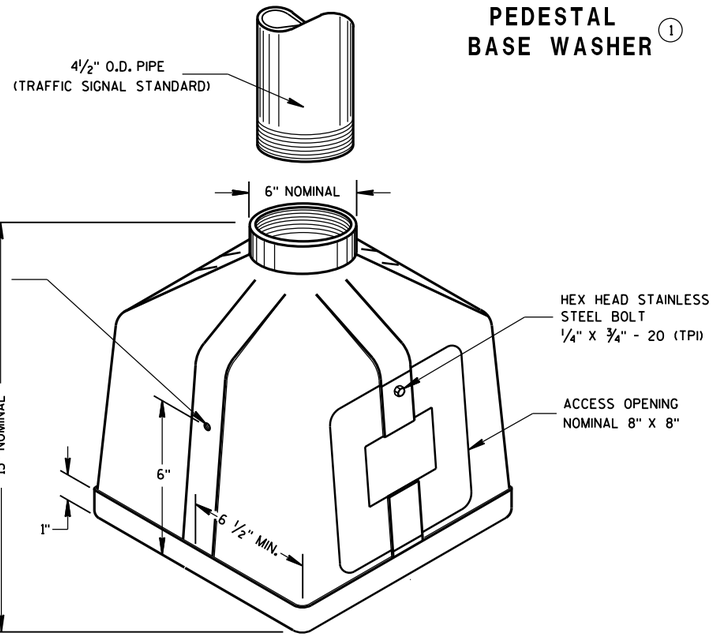


ZINC COATED STEEL WASHER
TO BE PROVIDED BY THE CONTRACTOR

PEDESTAL BASE WASHER (1)

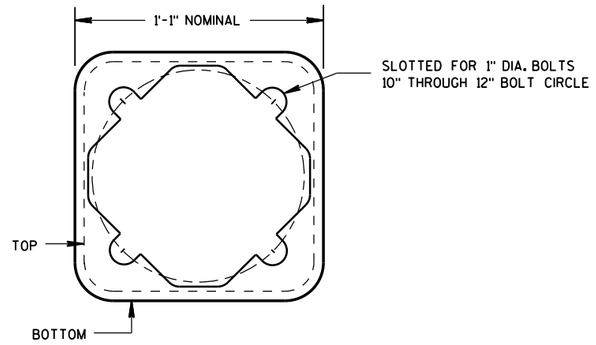


ISOMETRIC VIEW

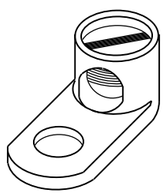


ISOMETRIC VIEW

PEDESTAL BASE



BOTTOM VIEW
(TRANSFORMER BASE)

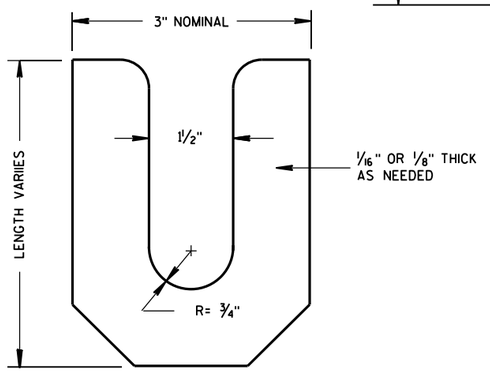


TYPICAL MECHANICAL CONNECTOR LUG

TO BE FURNISHED WITH EACH BASE

TRANSFORMER BASE

INTENDED FOR USE WITH TYPE 2, 3, 4, 5 & 6 POLES



LEVELING SHIM

TRANSFORMER/PEDESTAL BASES

STATE OF WISCONSIN
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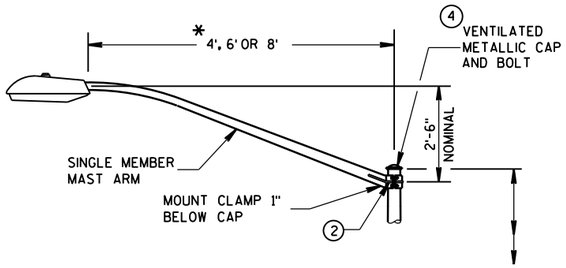
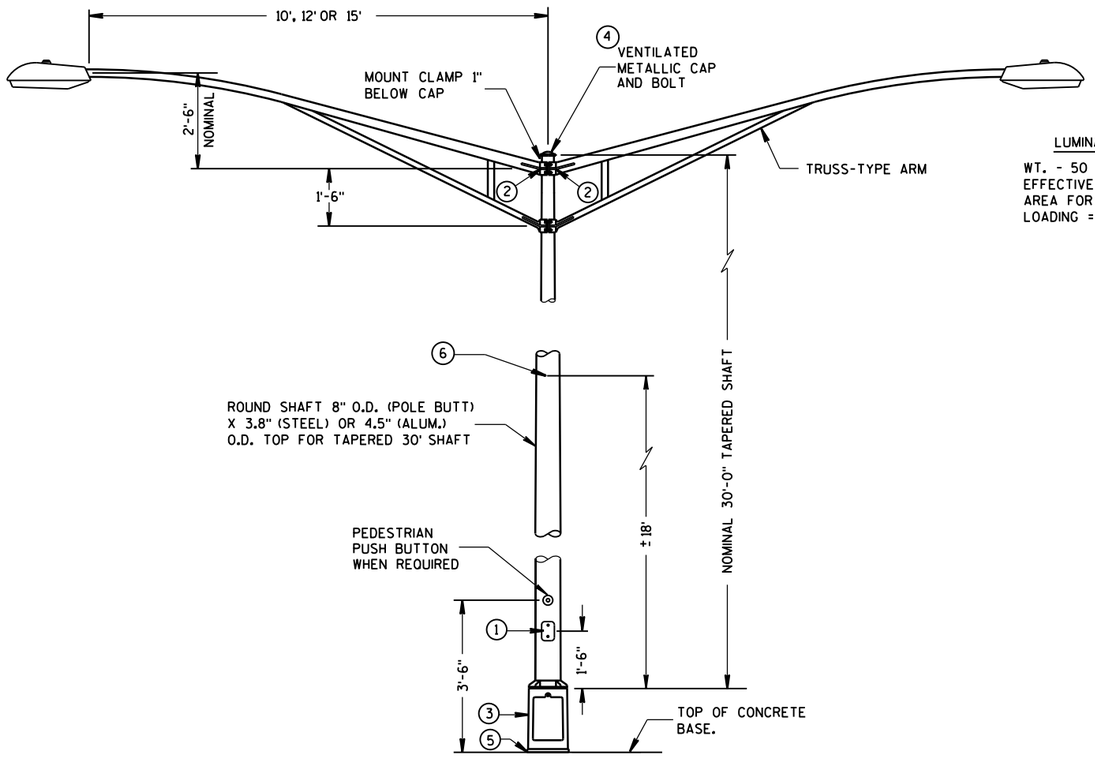
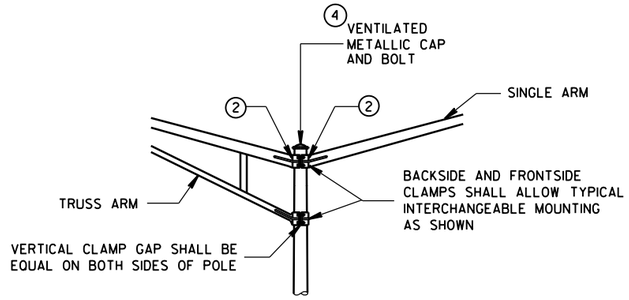
*RISE FOR 4' ARM SHALL BE 2'-0".





TYPE 5 POLE MOUNTING CONFIGURATION
(MAXIMUM LOAD)
LIGHTING ONLY



INTERCHANGEABLE MOUNTING DETAIL

LUMINAIRE

WT. - 50 LBS.
EFFECTIVE PROJECTED
AREA FOR WIND
LOADING = 1.5 SQ. FT.

GENERAL NOTES

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

ALL TYPE 5 POLE MOUNTINGS SHALL BE DESIGNED TO INCLUDE TWIN 15' ARMS WITH LUMINAIRES.

POLES SHALL BE GALVANIZED STEEL OR ALUMINUM, AS CALLED FOR IN THE CONTRACT.

TYPE 5 ALUMINUM POLES SHALL BE CONSTRUCTED OF 6063-T6 ALUMINUM ALLOY. SLEEVING INSIDE THE POLE IS NOT ACCEPTABLE.

THE TYPE 5 ALUMINUM POLES SHALL HAVE A MINIMUM WALL THICKNESS OF 0.188".

TYPE 5 STEEL POLES SHALL HAVE A MINIMUM WALL THICKNESS OF U.S. STANDARD 11 GAGE (.1196").

THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL 2⅜ INCHES IN OUTSIDE DIAMETER. THE STRAIGHT PORTION OF THE SLIPFITTER END OF THE LUMINAIRE ARM SHALL BE A NOMINAL 12 INCHES IN LENGTH.

WHEN TRANSFORMER BASES ARE USED, WIRE CONEECTIONS SHALL BE MADE IN THE TRANSFORMER BASE.

(1) 4" x 6" REINFORCED HANDHOLE & COVER ASSEMBLY WITH 2 (TWO) ¼" X ¾" - 20 TPI HEX HEAD STAINLESS STEEL BOLTS.

(2) GROMMETS, 1" CHASE NIPPLES OR 1" CLOSE CONDUIT NIPPLES WITH BUSHINGS SHALL BE PROVIDED FOR 1⅜" HOLE IN POLE SHAFT FOR WIRING.

(3) CAST ALUMINUM TRANSFORMER BASE, WHEN REQUIRED.

(4) FURNISH AND INSTALL VENTILATED, CAST, METALLIC (ALUMINUM ALLOY) CAPS. FASTEN CAPS WITH ONE (1) ¼" X ¾" - 20 TPI STAINLESS STEEL, HEX HEAD BOLT.

(5) SHIMMING, IF NEEDED, SHALL BE LOCATED BETWEEN THE CONCRETE FOUNDATION AND THE TRANSFORMER BASE.

(6) INTERNAL DUMBBELL-TYPE VIBRATION DAMPER.

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POLE MONTINGS FOR
LIGHTING UNITS, TYPE 5
(30 FEET)

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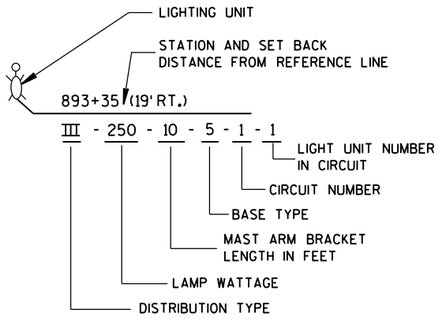
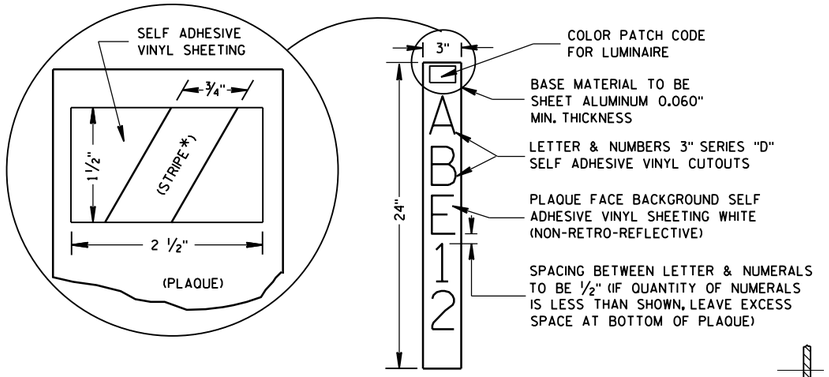


LIGHTING UNIT CODE
(TYPICAL)



COLOR PATCH CODE FOR LUMINAIRES

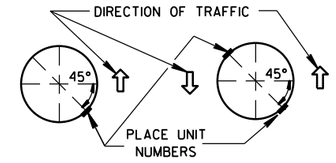
(HIGH PRESSURE SODIUM)

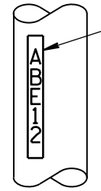
1000 WATT - NO PATCH
400 WATT - ORANGE
310 WATT - BLUE
250 WATT - ORANGE W/WHITE STRIPE*
200 WATT - RED
150 WATT - GREEN
100 WATT - BROWN

(MERCURY VAPOR)

400 WATT - (NO PATCH)
250 WATT - YELLOW

IDENTIFICATION PLAQUE





FASTEN TOP, CENTER AND BOTTOM OF PLAQUE WITH 3 ALUMINUM POP RIVETS (ALUM. POLES) OR STAINLESS STEEL POP RIVETS (STEEL POLES)

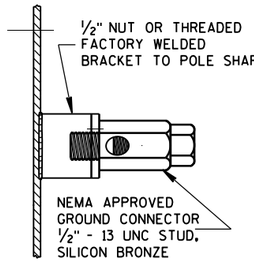
NOTES:

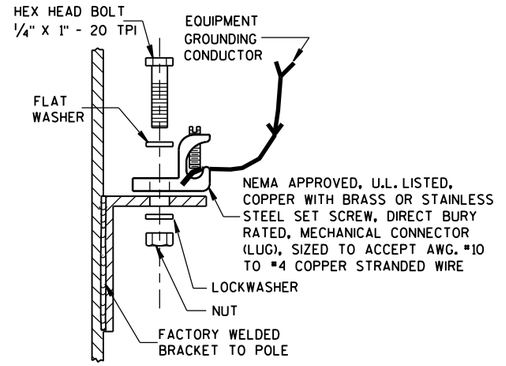
1) PLACE BOTTOM OF UNIT NUMBER PLAQUE 5'-0" ABOVE ELEVATION OF ADJACENT CURB OR SHOULDER.

2) UNIT NUMBERS: ONE REQUIRED FOR SINGLE ARM POLES TWO REQUIRED FOR MEDIAN MOUNT POLES.

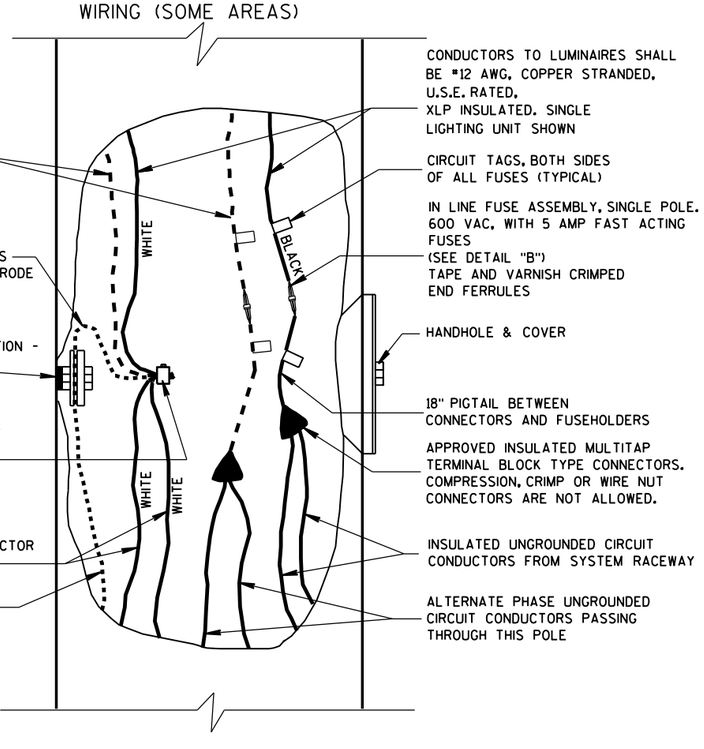
LIGHTING UNIT IDENTIFICATION PLAQUE REQUIREMENTS AND PLACEMENT
(TYPICAL ALL LIGHTING UNITS)

FURNISH PLAQUE WHEN CALLED FOR BY SPECIAL PROVISIONS

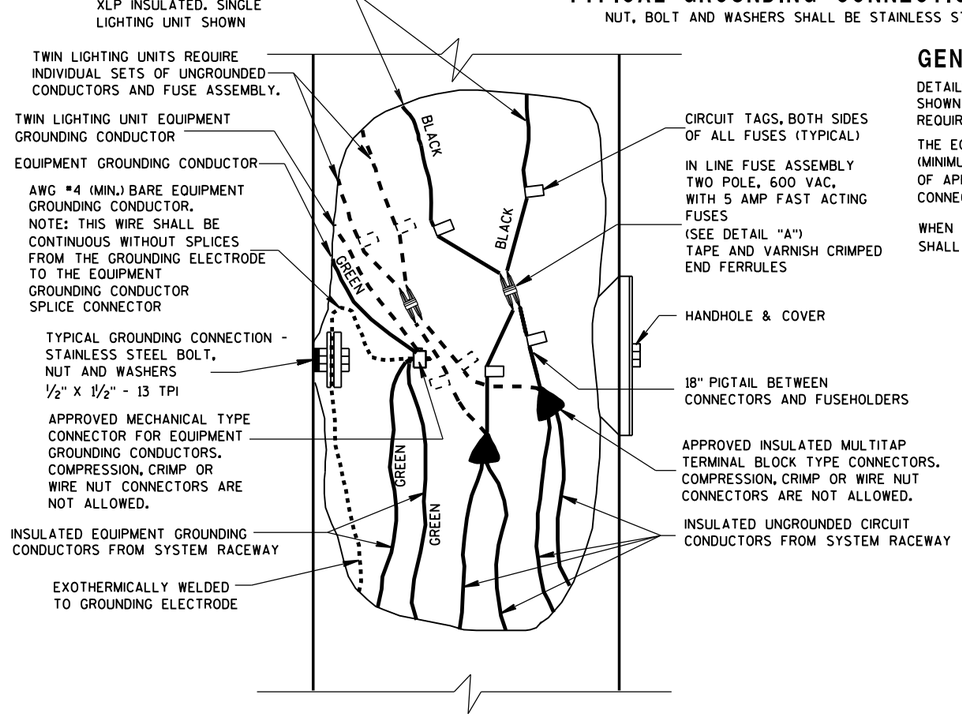




TYPICAL GROUNDING CONNECTIONS
NUT, BOLT AND WASHERS SHALL BE STAINLESS STEEL



2 WIRE - 120, 240 OR 480 VAC TO GROUND



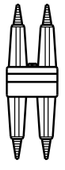
2 WIRE - 240 OR 480 VAC (UNGROUNDED CONDUCTORS) WITH EQUIPMENT GROUNDING CONDUCTOR

GENERAL NOTES

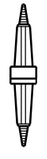
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

THE EQUIPMENT GROUND CONNECTOR SHALL BE TAPED WITH 3 WRAPS (MINIMUM) OF APPROVED RUBBER TAPE AND THEN 3 WRAPS (MINIMUM) OF APPROVED VINYL TAPE TO COVER SHARP WIRE ENDS AFTER THE CONNECTION IS COMPLETED.

WHEN TRANSFORMER BASES ARE USED, ALL WIRING CONNECTIONS SHALL OCCUR WITHIN THE TRANSFORMER BASES.



DETAIL "A"
BREAKAWAY DOUBLE POLE WITH WATERPROOF INSULATING BOOT



DETAIL "B"
BREAKAWAY SINGLE POLE WITH WATERPROOF INSULATING BOOT

FREEWAY LIGHTING UNIT POLE WIRING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept. 2014 — DATE
/S/ Ahmet Demirbilek — STATE ELECTRICAL
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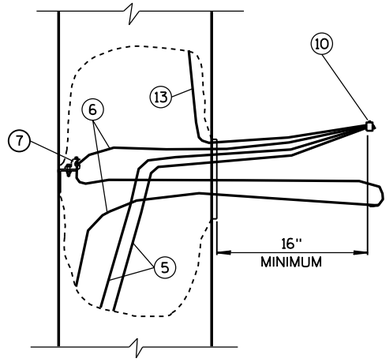
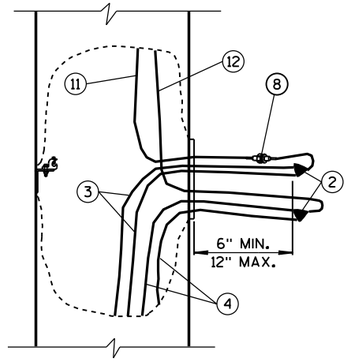
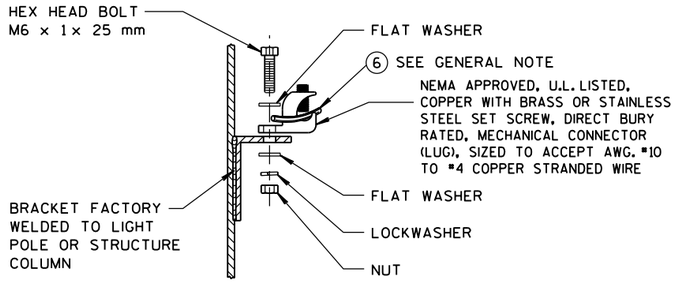


EQUIPMENT GROUNDING CONDUCTOR SLACK



UNGROUNDED CONDUCTOR SLACK (AND GROUNDED NEUTRAL SLACK IN GROUNDED NEUTRAL SYSTEM)

TYPICAL CONDUCTOR SLACK AT HANDHOLES



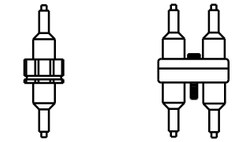
HANDHOLE GROUNDING LUG

(NUT, BOLT, WASHERS, AND LOCK WASHERS SHALL BE STAINLESS STEEL)

CONDUCTOR COLOR CODES

KEY	CONDUCTOR	COLOR
3	UNGROUNDED LINE WIRE	*
4	GROUNDED LINE WIRE	WHITE
5	SYSTEM GROUNDING LINE WIRE	GREEN
6	GROUNDING ELECTRODE CONDUCTOR	BARE
11	UNGROUNDED POLE WIRE	*
12	GROUNDED POLE WIRE	WHITE
13	EQUIPMENT GROUNDING POLE WIRE	GREEN

* FOLLOW COLOR CODING SHOWN IN THE PLANS. WHERE THE PLANS DO NOT SHOW COLOR CODING, USE BLACK FOR SINGLE LUMINAIRE POLES; BLACK AND RED FOR TWIN LUMINAIRE POLES.



1 POLE (1P) 2 POLE (2P)

FUSE ASSEMBLIES

GENERAL NOTES

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

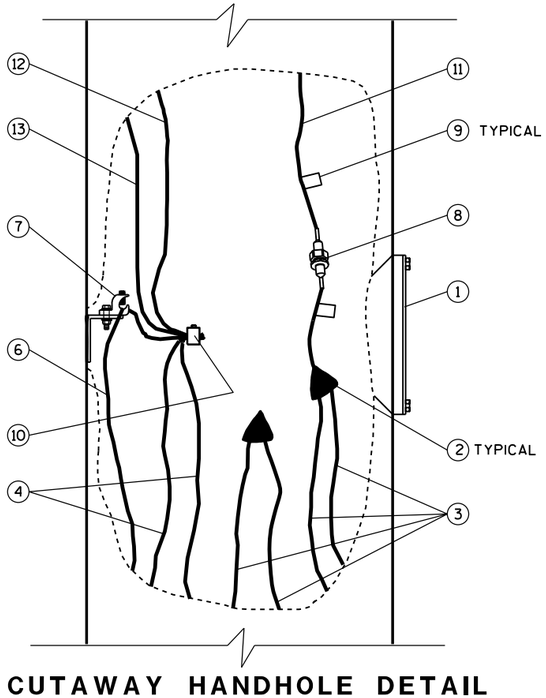
USE THIS DETAIL IN CONJUNCTION WITH THE ELECTRICAL DETAILS FOR THE APPLICATION, WHICH MAY BE A LIGHT POLE, SIGN BRIDGE, ETC.

THE GROUNDING ELECTRODE CONDUCTOR SHALL BE CONTINUOUS WITHOUT SPLICES FROM THE GROUNDING ELECTRODE THROUGH THE HANDHOLE GROUNDING LUG TO THE CONNECTOR.

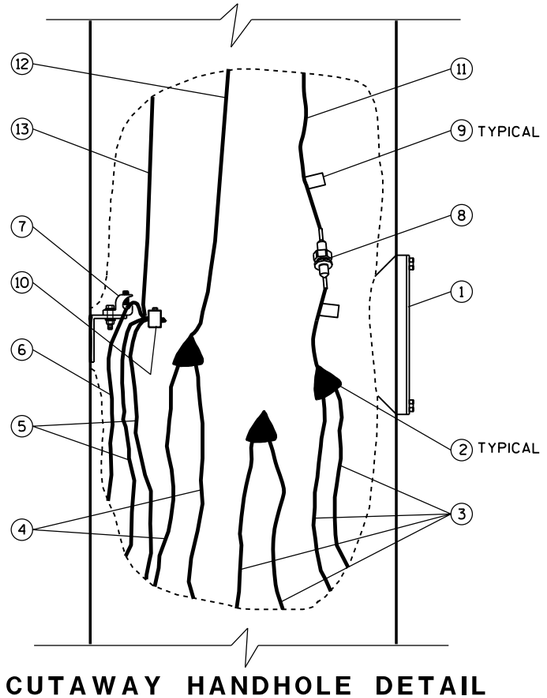
THREE POLE WIRES ARE SHOWN FOR A SINGLE LUMINAIRE LIGHT POLE. THREE ADDITIONAL POLE WIRES REQUIRED FOR TWIN LUMINAIRE LIGHT POLES ARE OMITTED FROM THE DRAWING FOR CLARITY. IN THE TWIN POLE CASE, BUNDLE EACH SET OF THREE WIRES WITH A NYLON CABLE TIE.

IN 3-PHASE SYSTEMS, THERE WILL BE ONE MORE UNGROUNDED LINE WIRE, WHICH IS OMITTED FROM THE DRAWING FOR CLARITY.

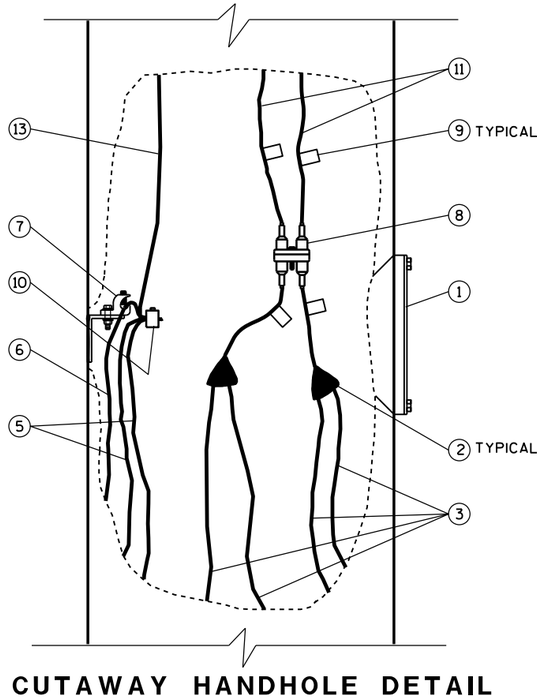
CIRCUIT TAGS SHALL BE INSTALLED ONLY WHERE REQUIRED IN THE SPECIAL PROVISIONS.



CUTAWAY HANDHOLE DETAIL
GROUNDED NEUTRAL SYSTEMS
1-Φ



CUTAWAY HANDHOLE DETAIL
ISOLATED NEUTRAL SYSTEMS
1-Φ SHOWN; 3-Φ WYE SIMILAR
(SEE GENERAL NOTE)



CUTAWAY HANDHOLE DETAIL
PHASE-TO-PHASE SYSTEMS
1-Φ SHOWN; 3-Φ DELTA SIMILAR
(SEE GENERAL NOTE)

NOTE: REQUIRED CONDUCTOR SLACK NOT SHOWN ON "CUTAWAY HAND HOLE" DETAILS FOR DRAWING CLARITY, SEE "TYPICAL CONDUCTOR SLACK AT HANDHOLES" ON THIS SHEET.

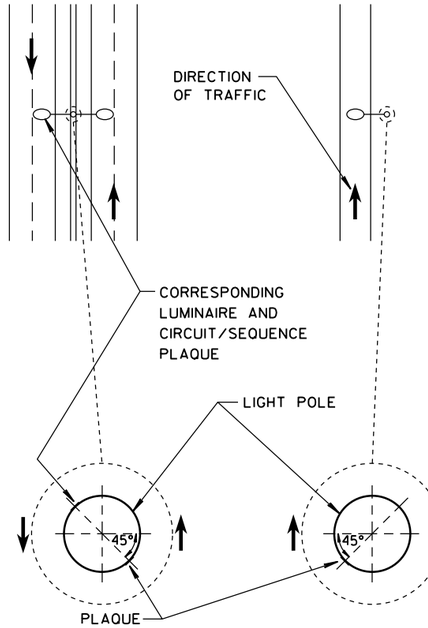
1. HANDHOLE AND COVER
2. INSULATED SPLICE
3. UNGROUNDED LINE WIRE
4. GROUNDED LINE WIRE
5. SYSTEM GROUNDING LINE WIRE
6. GROUNDING ELECTRODE CONDUCTOR
7. HANDHOLE GROUNDING LUG
8. FUSE ASSEMBLY, 1P OR 2P AS REQUIRED
9. CIRCUIT TAG (SEE GENERAL NOTE)
10. REVERSIBLE PRESSURE OR COMPRESSION GROUNDING CONNECTOR (NOT INSULATED)
11. UNGROUNDED POLE WIRE
12. GROUNDED POLE WIRE
13. EQUIPMENT GROUNDING POLE WIRE

ELECTRICAL HANDHOLE WIRING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept. 2014 — DATE
/S/ Ahmet Demirbilek — STATE ELECTRICAL
FHWA

6
S.D.D. 10 A 1-3



MEDIAN POLE SINGLE ARM POLE

LOCATION OF LIGHT POLE CIRCUIT/SEQUENCE PLAQUE

GENERAL NOTES

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

PLAQUES SHALL BE INCIDENTAL TO ALL NEW INSTALLATIONS.

WHERE SHOWN IN THE PLANS, REPLACEMENT PLAQUES WILL BE MEASURED AND PAID SEPARATELY.

FASTEN TOP, CENTER AND BOTTOM OF PLAQUE TO POLE OR OTHER LOCATION AS FOLLOWS:

GALVANIZED STEEL SHAFT - STAINLESS STEEL POP RIVETS

A588 STEEL SHAFT - SHIM FOR DRAINAGE WITH STAINLESS WASHERS; FASTEN WITH STAINLESS SELF-TAPPING SCREWS

ALUMINUM SHAFTS - ALUMINUM POP RIVETS

MOUNTING HEIGHT SHALL BE APPROXIMATELY 5.0' ABOVE CURB OR SHOULDER. ADJUST IF IT IS KNOWN THAT REQUIRED TRAFFIC SIGNS WILL OBSTRUCT.

PLAQUE MATERIALS:

BASE - SHEET ALUMINUM, 0.060" THICK.

FACE - WHITE, SELF-ADHESIVE VINYL SHEETING, NON-RETRORFLECTIVE

LINES - BLACK, 1/2" WIDE, SELF-ADHESIVE

CHARACTERS - BLACK, SELF-ADHESIVE, SERIES "D", SIZE AS SHOWN

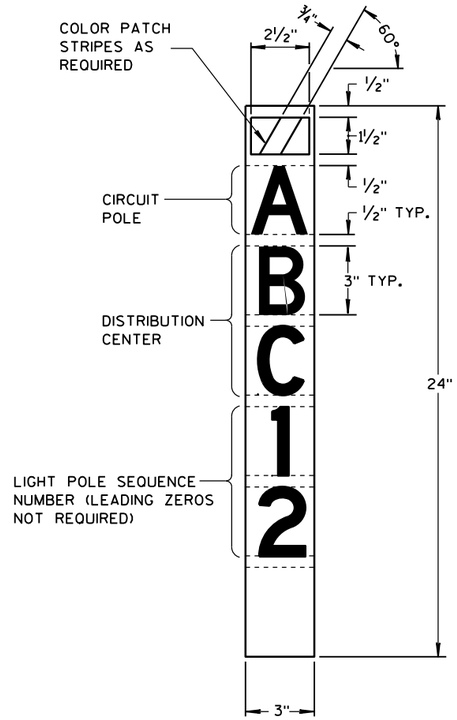
COLOR PATCHES - VARIOUS COLORS, SELF-ADHESIVE VINYL SHEETING

WITH THE APPROVAL OF THE ENGINEER, THE BASE MATERIAL MAY BE OMITTED AND THE FACE ADHERED DIRECTLY TO THE SURFACE, IN CASES SUCH AS SMOOTH, CLEAN ALUMINUM POLES.

ALTERNATIVE COMPUTER-GENERATED SIGN LETTERING MAY BE ACCEPTED IF THE ENGINEER FINDS IT TO BE EQUIVALENT.

COLOR PATCH CODE FOR HPS AND LED LUMINAIRES

HPS	LED	COLOR PATCH CODE
1000 WATT		NO PATCH
400 WATT	CATEGORY D	ORANGE
310 WATT		BLUE
250 WATT	CATEGORY C	ORANGE WITH WHITE STRIPE
200 WATT		RED
150 WATT	CATEGORY B	GREEN
100 WATT	CATEGORY A	BROWN
70 WATT	CATEGORY UDL	BROWN WITH WHITE STRIPE



LIGHT POLE CIRCUIT/SEQUENCE PLAQUE

IDENTIFICATION PLAQUES LIGHT POLES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Feb. 2015 — DATE
/S/ Ahmet Demirbilek — STATE ELECTRICAL
FHWA

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S.D.D. 10 A 2-3

GENERAL NOTES

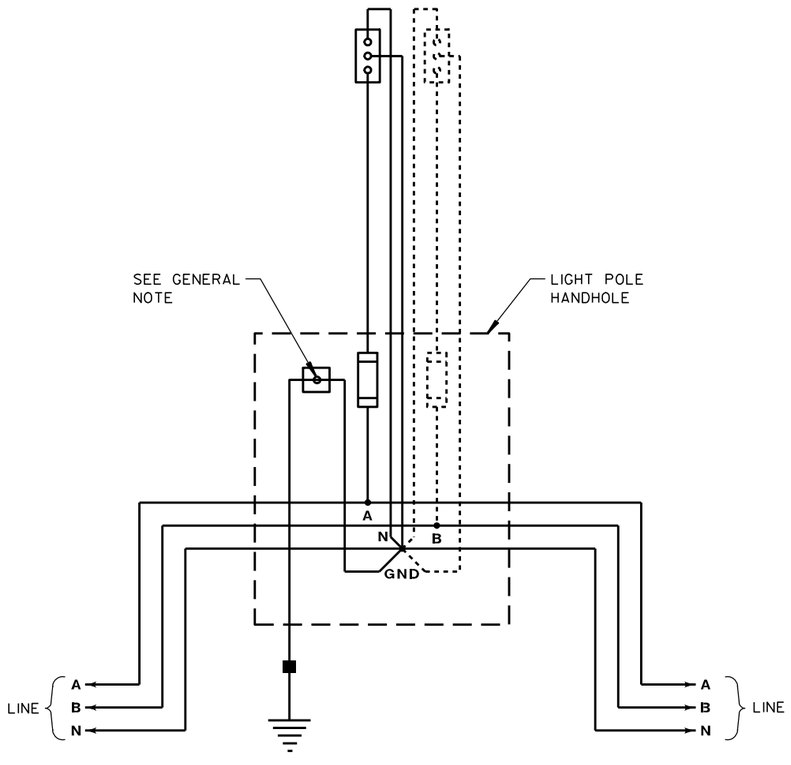
DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN IN THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

USE THIS DETAIL IN CONJUNCTION WITH THE DETAIL FOR ELECTRICAL HANDHOLE WIRING.

THE GROUNDING ELECTRODE CONDUCTOR SHALL BE CONTINUOUS WITHOUT SPLICES FROM THE GROUNDING ELECTRODE THROUGH THE HANDHOLE GROUNDING LUG TO THE CONNECTOR.

WIRING FOR SINGLE LUMINAIRE POLES IS SHOWN WITH SOLID LINES. WIRING FOR THE SECOND LUMINAIRE OF TWIN LUMINAIRE POLES IS SHOWN WITH DOTTED LINES.

THE PLANS WILL SHOW WHICH CIRCUIT LEG(S) ARE CONNECTED TO EACH INSTALLATION.



TYPICAL WIRING DIAGRAM
GROUNDED NEUTRAL SYSTEM
1-ϕ 240/480VAC 3 WIRE OR 480VAC 2 WIRE

HANDHOLE FUSE SCHEDULES

LINE VOLTAGE ϕ-GROUND	BALLAST WATTAGE 70-200 W	250-400 W
120 VAC	5 A	10 A
240 VAC	5 A	5 A
277 VAC	5 A	5 A
480 VAC	3 A	5 A

LEGEND

A,B,X,Y,Z	UNGROUNDED CIRCUIT CONDUCTORS
N	GROUNDED CIRCUIT CONDUCTORS
GND	EQUIPMENT GROUNDING CONDUCTOR
P	POLE (ELECTRICAL CIRCUIT)
ϕ	PHASE (ELECTRICAL CURRENT)
	HANDHOLE GROUND LUG
	SINGLE-POLE (1P) FUSE ASSEMBLY
	TWO-POLE (2P) FUSE ASSEMBLY
	UNFUSED LUMINAIRE
	EQUIPMENT GROUNDING ELECTRODE
	TERMINAL
	SPLICE
	CONDUCTOR
	EXOTHERMIC WELD

ELECTRICAL DETAILS
GROUND MOUNT LIGHT POLES
GROUNDED NEUTRAL SYSTEMS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/25/2010 DATE
/S/ John Corbin STATE ELECTRICAL ENGI
FHWA HWYS

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S.D.D. 10 A 6-2

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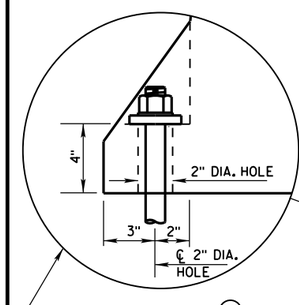
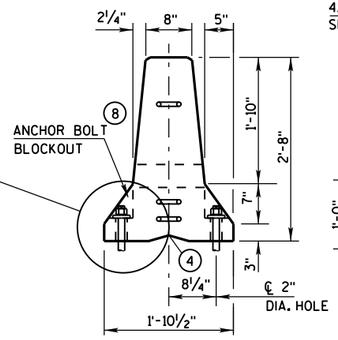
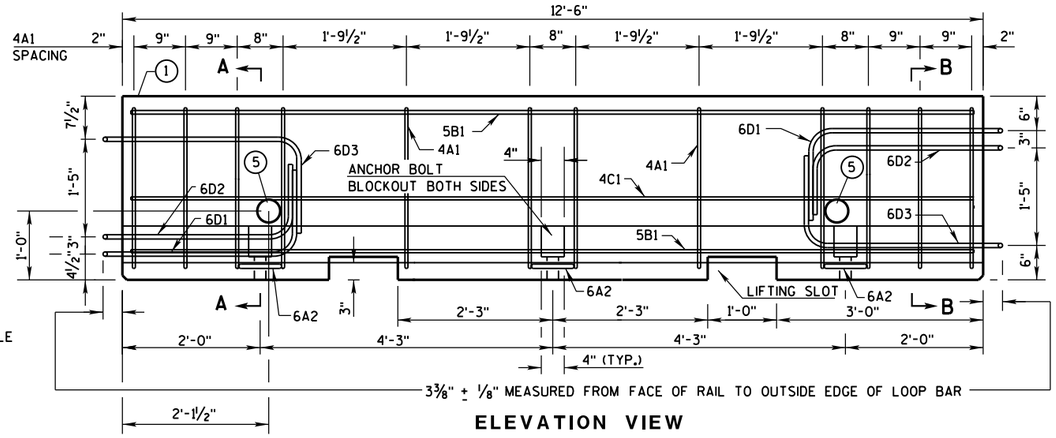
S.D.D. 10 A 6-2



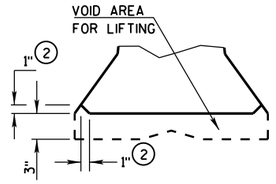
ANCHOR ON TRAFFIC SIDE ONLY WHEN REQUIRED (SEE SHEET D FOR ADDITIONAL ANCHOR DETAIL) (8)



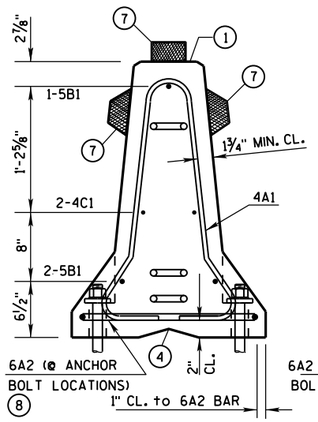
END VIEW



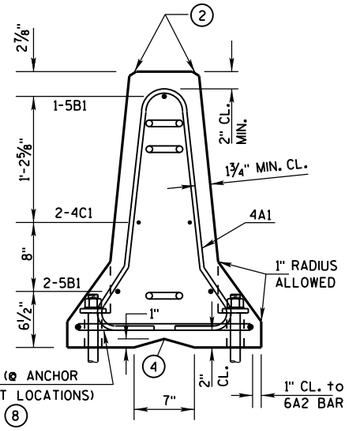
ELEVATION VIEW



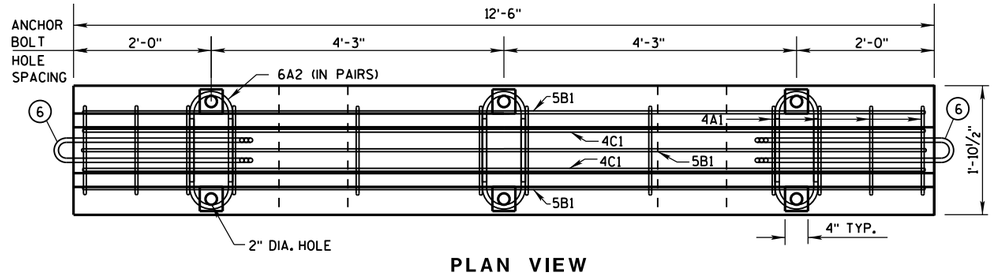
DETAIL "B" LIFTING SLOT DETAIL



SECTION A-A
(STIRRUP PLACEMENT)



SECTION B-B
(STIRRUP PLACEMENT)



PLAN VIEW

DETAILS OF BARRIER SECTION

GENERAL NOTES

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

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

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

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

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

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

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

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

(2) 1" CHAMFER TO PREVENT SPALLING.

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

(4) "V" NOTCH IS OPTIONAL.

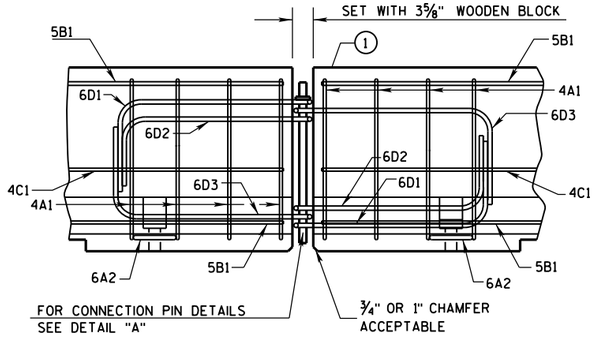
(5) THE 4" DIAMETER, 11 GAUGE STEEL, ROUND MECHANICAL TUBING SLEEVE FOR LIFTING (OPTIONAL).

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

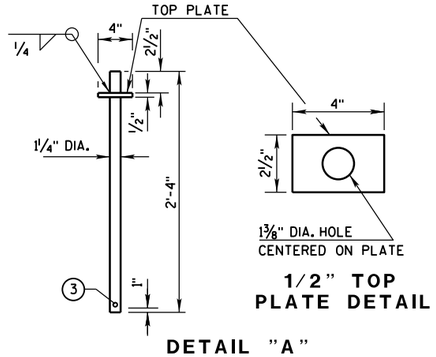
(7) USE DELINEATORS CONFORMING TO SECTION 633 OF THE STANDARD SPECIFICATIONS. CONTRACTOR MAY USE ALTERNATE SHAPES AND HOUSING. INSTALL DELINEATORS ACCORDING TO MANUFACTURES INSTRUCTION. INSTALL YELLOW REFLECTORS WHEN BARRIER IS LOCATED TO THE LEFT OF TRAFFIC AND WHITE REFLECTORS WHEN BARRIER IS LOCATED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

(8) SEE SHEET D FOR ANCHORING CRITERIA.

(9) 1" CHAMFER OPTIONAL.

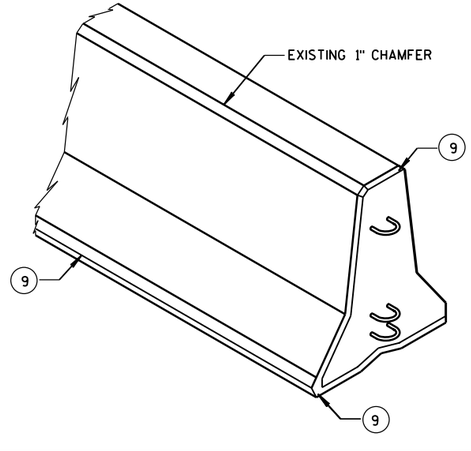


DETAILS OF BARRIER CONNECTION



1/2" TOP PLATE DETAIL

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



CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"

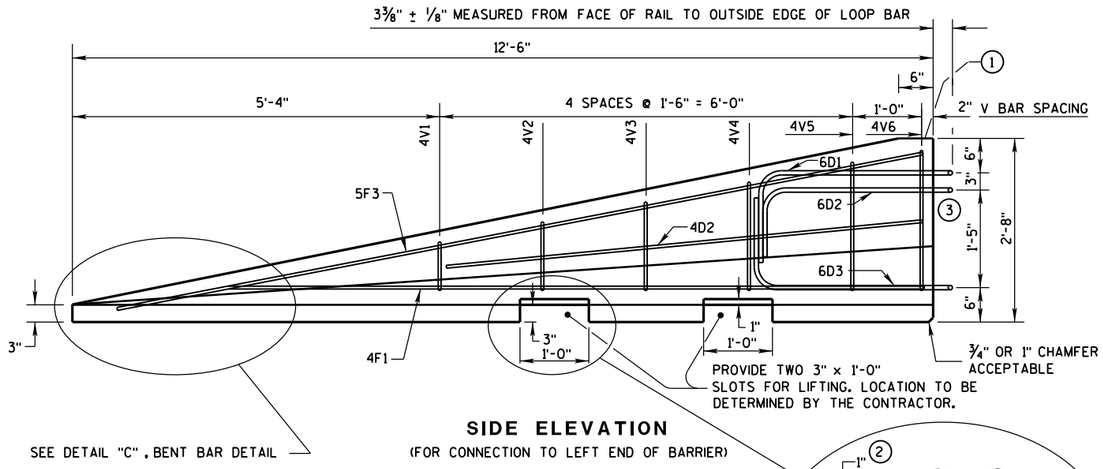
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR 97

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

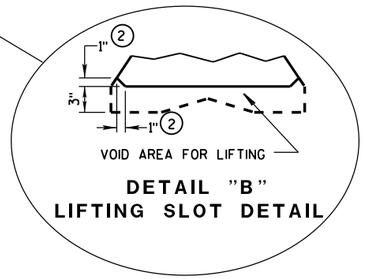
6

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

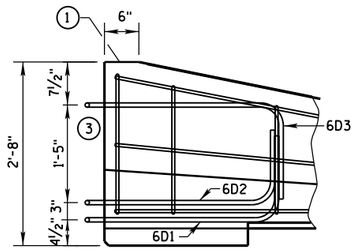
6



SIDE ELEVATION
(FOR CONNECTION TO LEFT END OF BARRIER)



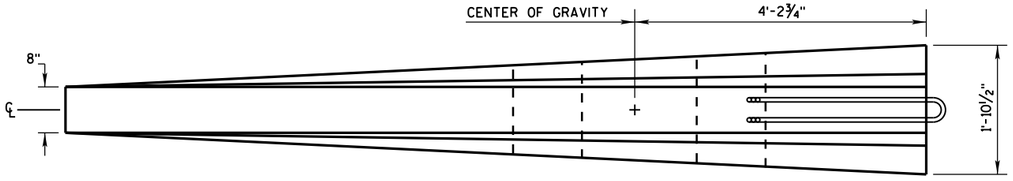
DETAIL "B"
LIFTING SLOT DETAIL



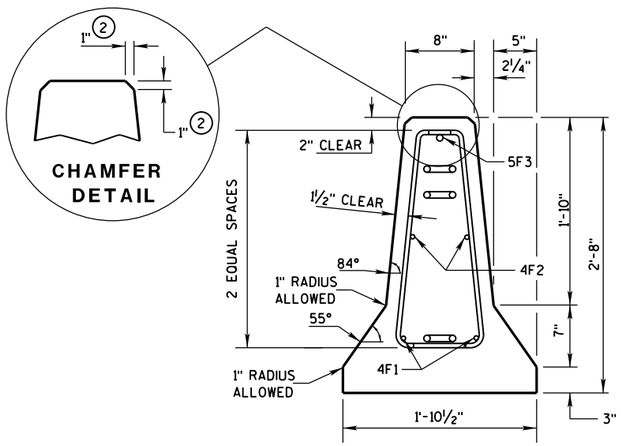
SIDE ELEVATION
LOOP BAR ASSEMBLY INVERTED
FOR OPPOSITE END.
(FOR CONNECTION TO RIGHT END OF BARRIER)

GENERAL NOTES

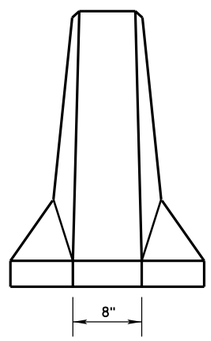
1. MARK ONE END OF EACH BARRIER PERMANENTLY BY FORMING INTO THE BARRIER THE FOLLOWING INFORMATION:
   a. TYPE WICBTP
   b. MANUFACTURER
   c. DATE MANUFACTURED (MONTH AND YEAR)
2. 1" CHAMFER TO PREVENT SPALLING.
3. NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.



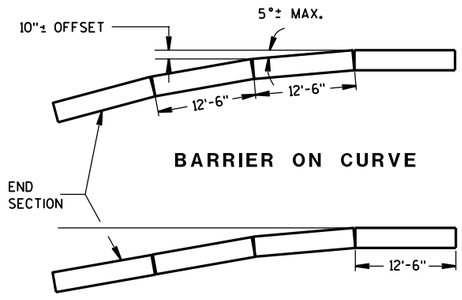
PLAN VIEW



END SECTION



FRONT ELEVATION



BARRIER ON CURVE

FLARE AT BARRIER END

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

DETAILS OF BARRIER TAPER SECTION

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

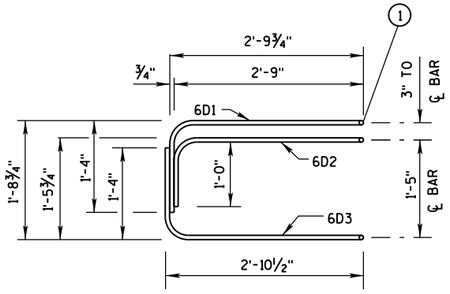
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

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

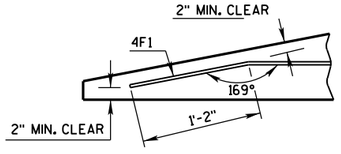
BARRIER TAPER SECTION BILL OF MATERIALS

(PER 12'-6" BARRIER TAPER SECTION)

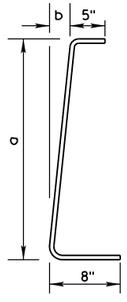
BAR	BAR SIZE	NO. OF BARS	LENGTH FT.
4V1	4	2	1'-11"
4V2	4	2	2'-2"
4V3	4	2	2'-6"
4V4	4	2	2'-9"
4V5	4	2	3'-2"
4V6	4	2	3'-4"
4F1	4	2	12'-0"
4F2	4	2	7'-6"
5F3	5	1	11'-9"
LOOP ASSEMBLY			
6D1	6	1	8'-5"
6D2	6	1	7'-7"
6D3	6	1	8'-6"



ELEVATION
LOOP BAR ASSEMBLY



DETAIL "C"
BENT BAR DETAIL



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

4V BARS
2 AT EACH SIZE REQUIRED
FOR STIRRUP ASSEMBLY

TAPER BARRIER SECTION

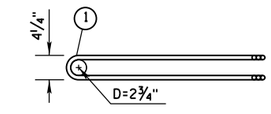
GENERAL NOTES

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

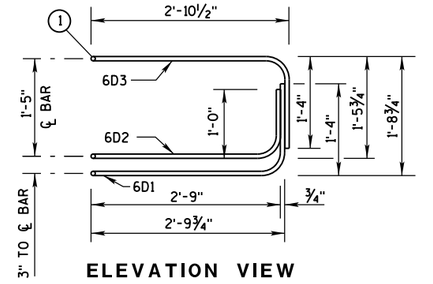
BARRIER SECTION BILL OF MATERIALS

(PER 12'-6" BARRIER SECTION)

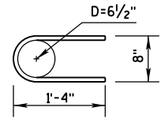
BAR	BAR SIZE	NO. OF BARS	LENGTH FT.
4A1	4	12	6'-0"
6A2	6	6	2'-11"
5B1	5	3	12'-2"
4C1	4	2	12'-2"
LOOP ASSEMBLY			
6D1	6	2	8'-5"
6D2	6	2	7'-7"
6D3	6	2	8'-6"



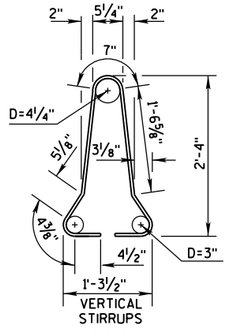
PLAN VIEW
LOOP BAR ASSEMBLY
(MARKED END SHOWN, INVERT FOR OTHER END)



ELEVATION VIEW



6A2



4A1

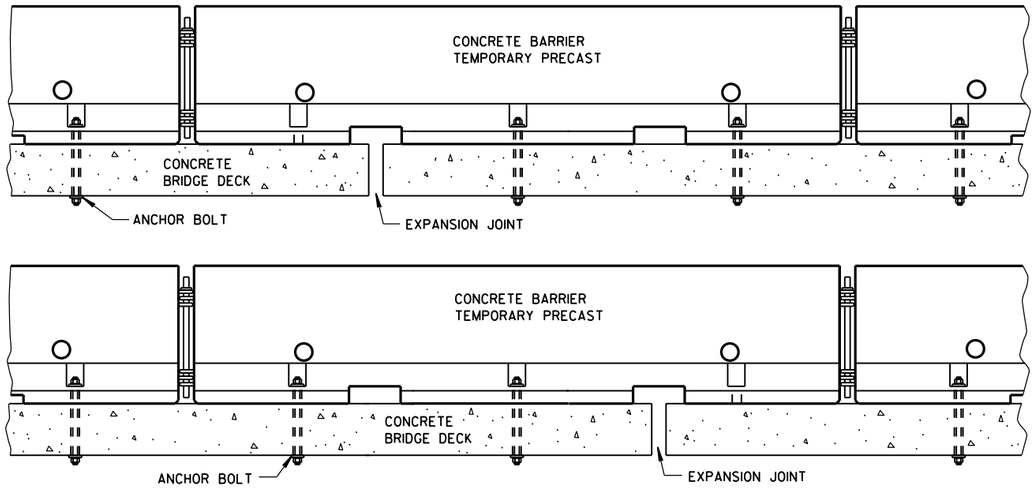
BARRIER SECTION

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

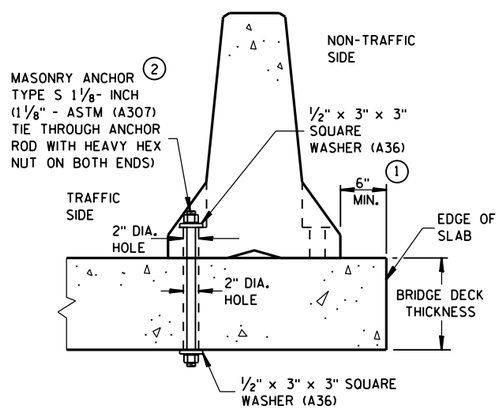
6

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



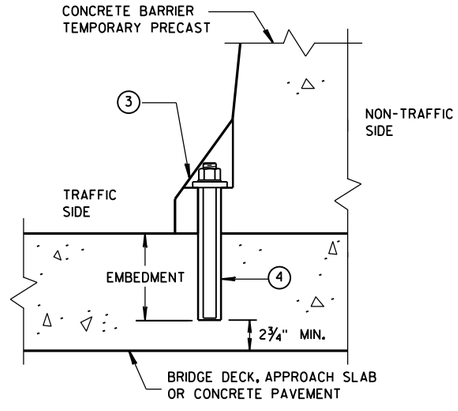
TREATMENT AT BRIDGE DECK EXPANSION JOINTS

(NO SINGLE CONCRETE BARRIER SECTION SHALL BE ANCHORED TO BOTH THE BRIDGE DECK AND THE APPROACH SLAB. ALL ANCHOR BOLT LOCATIONS SHALL BE ANCHORED TO THE DECK IN ACCORDANCE WITH THE DETAIL. NO MORE THAN ONE ANCHOR BOLT SHALL BE ELIMINATED FROM A BARRIER SECTION WHEN SPANNING AN EXPANSION JOINT.)



THROUGH BOLTED ANCHOR INSTALLATION ON BRIDGE DECK

(DO NOTUSE ON CONCRETE BRIDGE DECK WITH ASPHALT OVERLAY)



REMOVABLE ADHESIVE BONDED ANCHOR ② INSTALLATION ON CONCRETE BRIDGE DECK, CONCRETE APPROACH SLAB, OR CONCRETE PAVEMENT

(DO NOT USE ON CONCRETE WITH AN ASPHALTIC OVERLAY)

GENERAL NOTES

① CONCRETE BARRIER TEMPORARY PRECAST, 12'-6" SHALL BE ANCHORED IF:
THE DISTANCE TO A 2 FOOT OR GREATER DROPOFF THAT IS STEEPER THAN 3H : 1V, FOR EXAMPLE THE EDGE OF A BRIDGE DECK OR A DROPOFF AT THE EDGE OF PAVEMENT, IS LESS THAN 4 FEET FROM THE SIDE OF THE BARRIER CLOSEST TO THE DROPOFF AND THE POSTED SPEED IS 45 MPH OR GREATER, OR

THE DISTANCE TO A 2 FOOT OR GREATER DROPOFF THAT IS STEEPER THAN 3H : 1V, FOR EXAMPLE THE EDGE OF A BRIDGE DECK OR A DROPOFF AT THE EDGE OF PAVEMENT, IS LESS THAN 2 FEET FROM THE SIDE OF THE BARRIER CLOSEST TO THE DROPOFF AND THE POSTED SPEED IS 40 MPH OR LESS.

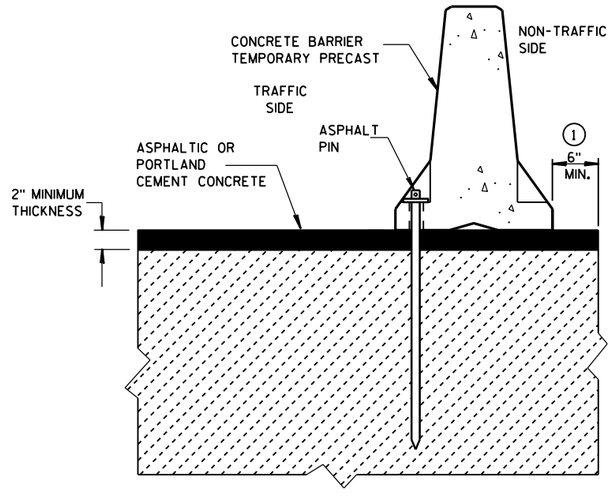
② ANCHORING IS INCIDENTAL TO CONCRETE BARRIER TEMPORARY PRECAST.

WITH THE APPROVAL OF THE ENGINEER, REMOVABLE ADHESIVE BONDED ANCHOR BOLT INSTALLATION MAY BE USED IN LIEU OF THROUGH BOLTED ANCHOR INSTALLATION. THE ADHESIVE BONDED ANCHOR BOLT MUST BE REMOVABLE. USE ASTM (A307) MASONRY ANCHORS TYPE S 1⅛-INCH, EMBEDDED TO A DEPTH SUFFICIENT TO DEVELOP THE ULTIMATE CAPACITY OF THE ANCHOR BOLT AND PROVIDE DOCUMENTATION TO CONFIRM THIS.

UPON REMOVAL OR RELOCATION OF THE BARRIER UNITS, REMOVE ALL ANCHOR BOLTS AND COMPLETELY FILL IN THE REMAINING HOLES IN CONCRETE BRIDGE DECKS, CONCRETE APPROACH SLABS AND CONCRETE PAVEMENTS THAT ARE TO REMAIN, WITH A NON-SHRINK COMMERICAL GROUT OR MATERIAL IDENTIFIED ON THE CURRENT WISDOT APPROVED PRODUCTS LIST.

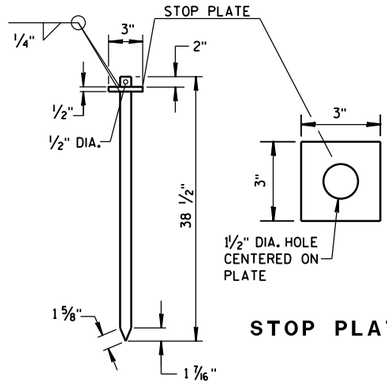
③ 1⅛" DIAMENTER A307 THREADED ROD, ½" X 3" X 3" SQUARE PLATE WASHER WITH ASTM A36 STEEL, ASTM A563A HEAVY HEX NUT.

④ ADHESIVE ANCHORS WITH A MINIMUM BOND STRENGTH OF 1,800 PSI AND 5¼" EMBEDMENT. SEE 603.2 AND 603.3.1.2 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR MORE INFORMATION ON ADHESIVE ANCHORS.



STAKE DOWN INSTALLATION FOR ASPHALTIC OR PORTLAND CEMENT CONCRETE SURFACE

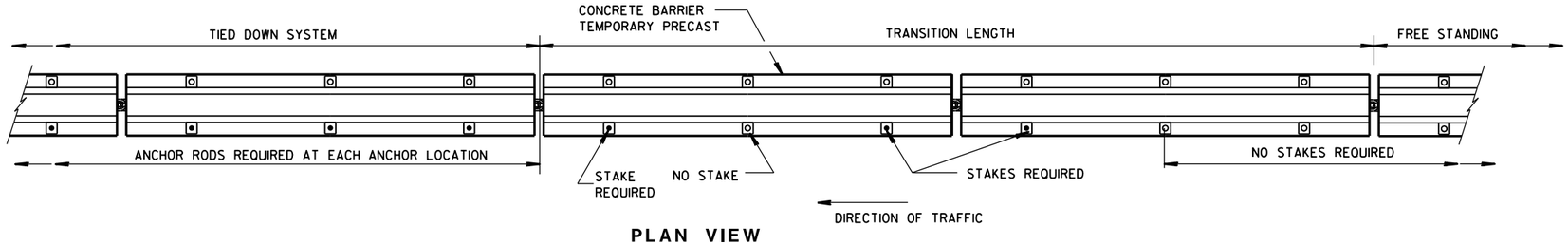
(STAKING IS INCIDENTAL TO CONCRETE BARRIER TEMPORARY PRECAST)



STOP PLATE

ASPHALT PIN

(ASTM A36 STEEL)



PLAN VIEW

FREE STANDING TRANSITION TO TIED-DOWN SYSTEM

(PLACE TRANSITION IN A TANGENT SECTION OF BARRIER PARALLEL TO THE ROADWAY. IF TRANSITION OCCURS ON STRUCTURAL SLAB, ANCHOR AS SHOWN.)

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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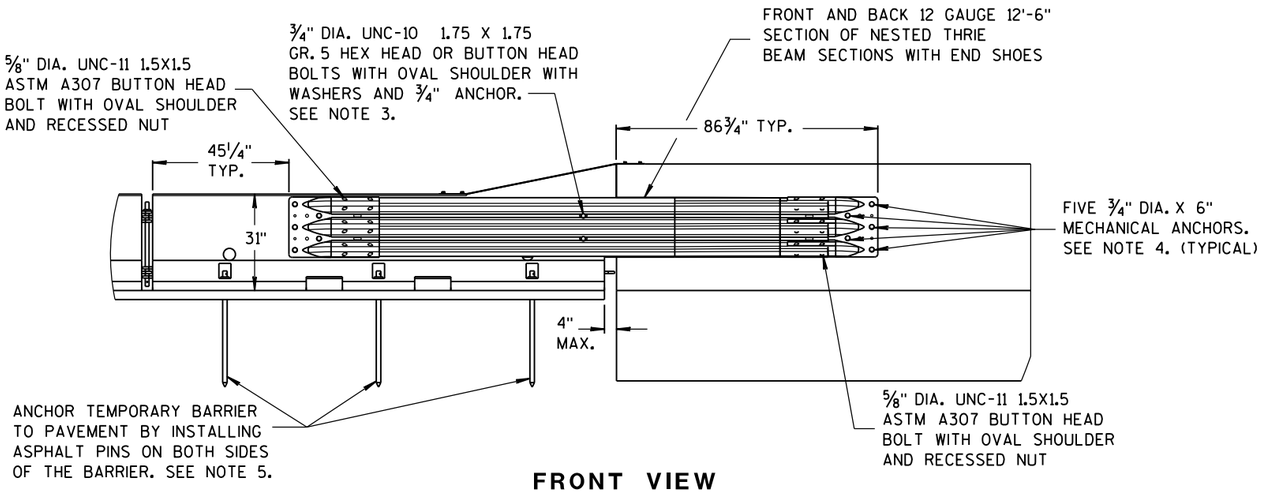
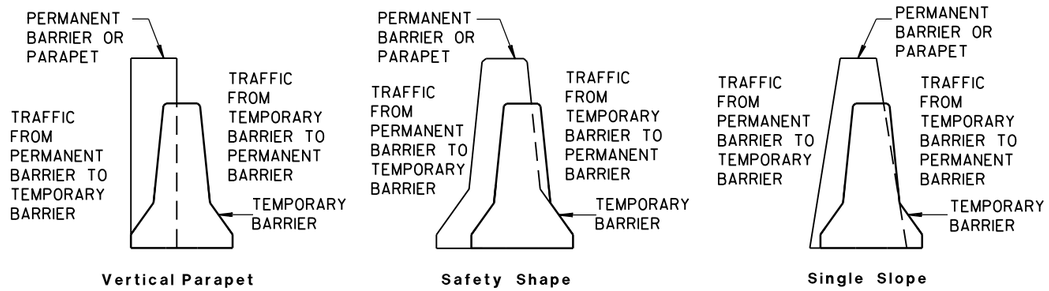
S.D.D. 14 B 7-14d



FRONT VIEW

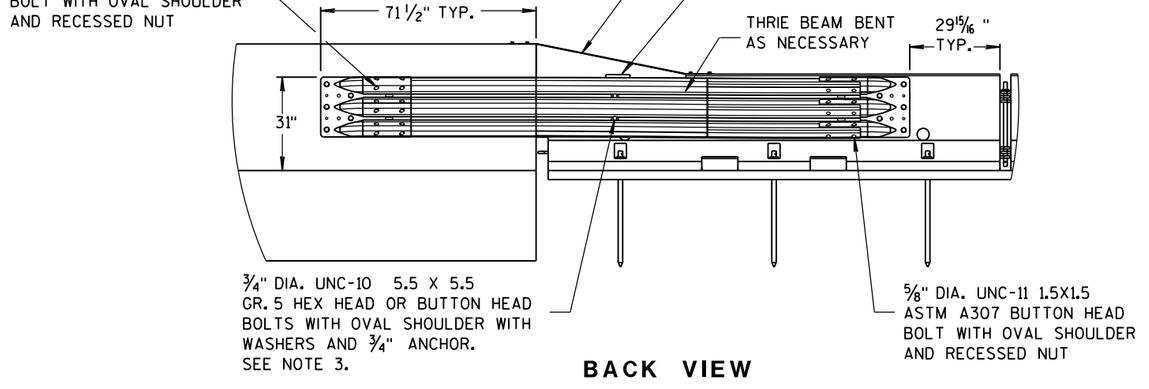


TEMPORARY BARRIER PLACEMENT FOR BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM

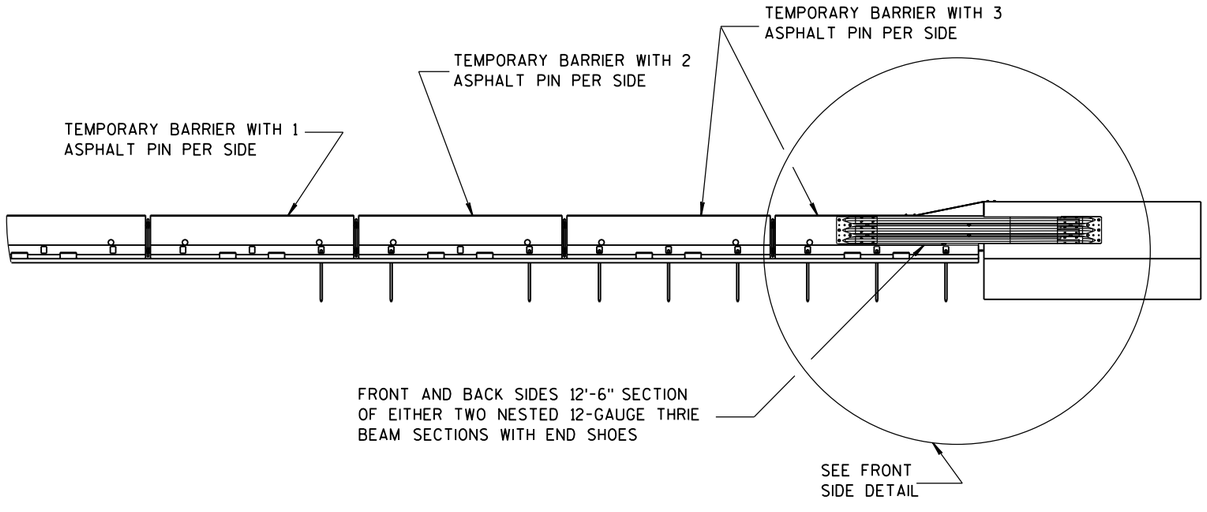
NOTES

NESTED THRIE BEAM IS REQUIRED ON BOTH SIDES OF THE TEMPORARY BARRIER FOR ALL INSTALLATIONS.

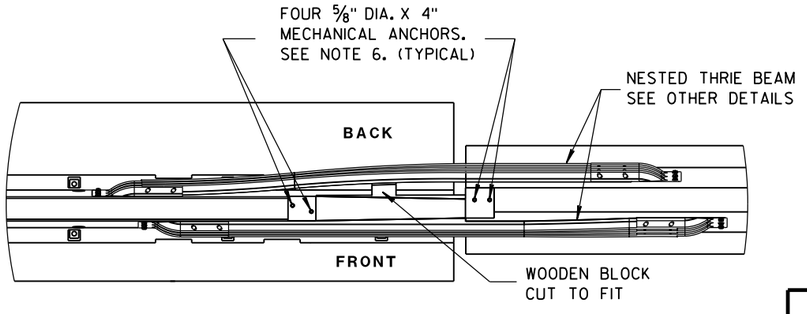
1. CAP END PLATE PLACED FLUSH WITH UPSTREAM END OF PERMANENT BARRIER OR PARAPET.
2. THRIE BEAM PIECES ARE OFFSET 15 1/4" TO PREVENT INTERFERENCE FROM THE ANCHORS ON OPPOSING SIDES.
3. MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 9.48 KIPS AND ULTIMATE SHEAR LOAD 10.48 KIPS.
4. MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 17.9 KIPS AND ULTIMATE SHEAR LOAD 21.96 KIPS.
5. MAY BE USED ON CONCRETE OR ASPHALT PAVEMENTS. ASPHALT OPTION SHOWN. FOR CONCRETE OPTION SEE OTHER DETAILS.
6. MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 12.14 KIPS AND ULTIMATE SHEAR LOAD 17.5 KIPS.



BACK VIEW



FRONT VIEW



PLAN VIEW

BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

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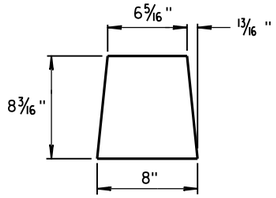
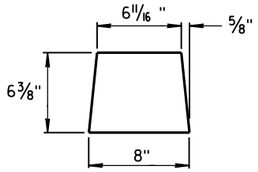
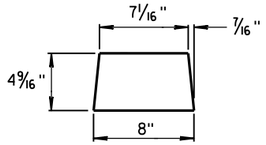


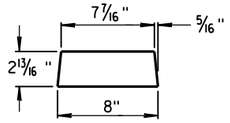
GUSSET 1



GUSSET 2

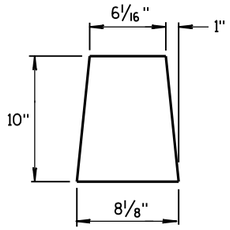


GUSSET 3

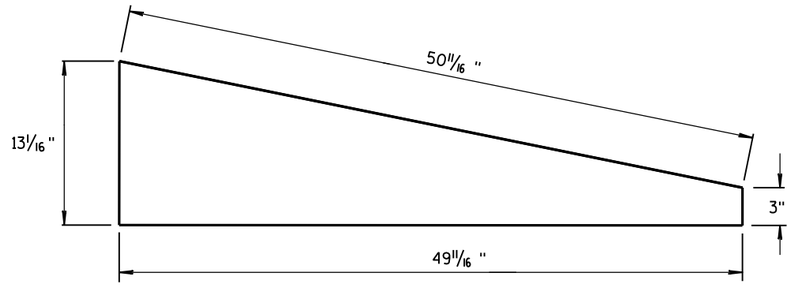


GUSSET 4

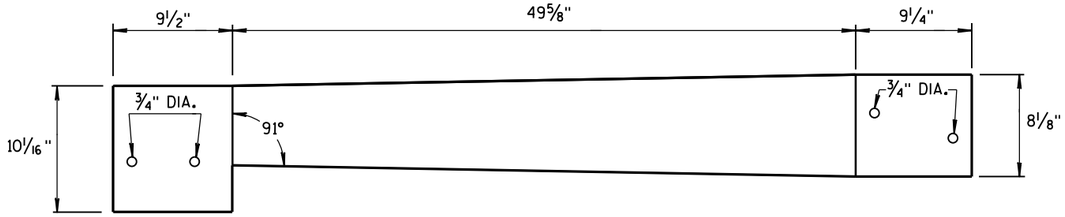
GUSSETS

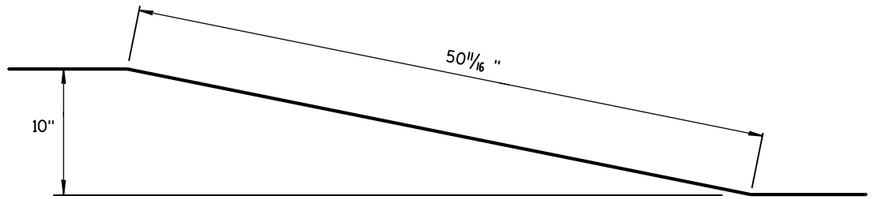


END PLATE



SIDE PLATE

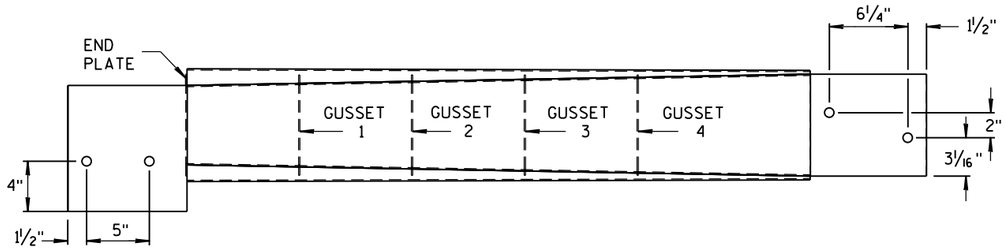


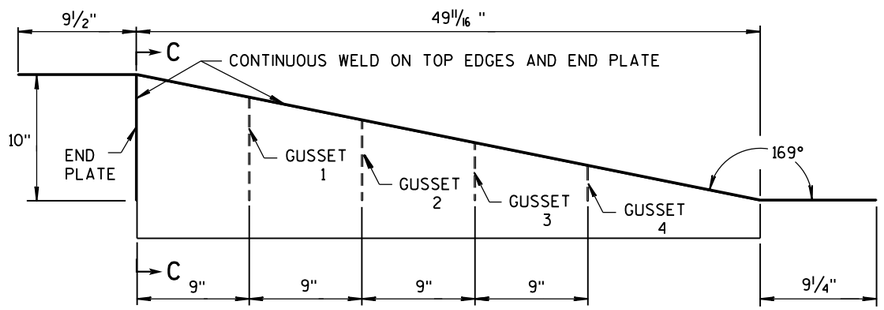


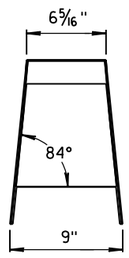
TOP PLATE

SIDE, TOP AND END PLATES FOR CAP FROM TEMPORARY CONCRETE BARRIER TO 42" PERMANENT CONCRETE BARRIER

SIDE PLATES, TOP PLATE, END PLATE AND GUSSETS ARE 12 GAUGE ASTM A36 GALVANIZED STEEL.







SECTION C-C

NOTES

1. FOUR GUSSETS AND END PLATE ARE STITCH WELDED ON THREE SIDES.
2. TWO TRIANGULAR SIDE PLATES ARE STITCH WELDED TO TOP PLATE, END PLATE, AND GUSSETS.

CAP DETAILS FOR TEMPORARY CONCRETE BARRIER TO 42" PERMANENT CONCRETE BARRIER

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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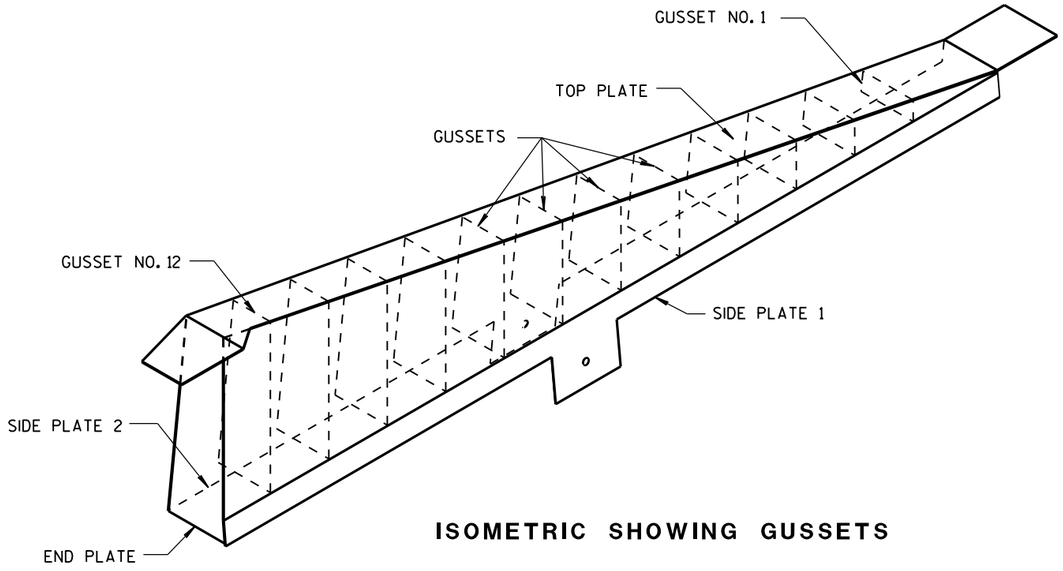
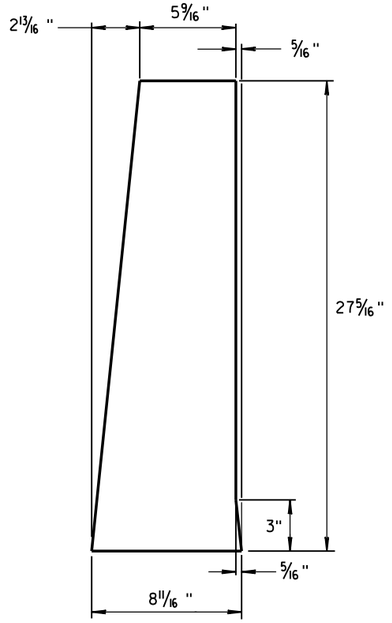
S.D.D. 14 B 7-14f

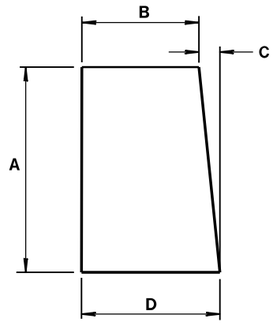


ISOMETRIC SHOWING GUSSETS



END PLATE

1/8" STEEL PLATE



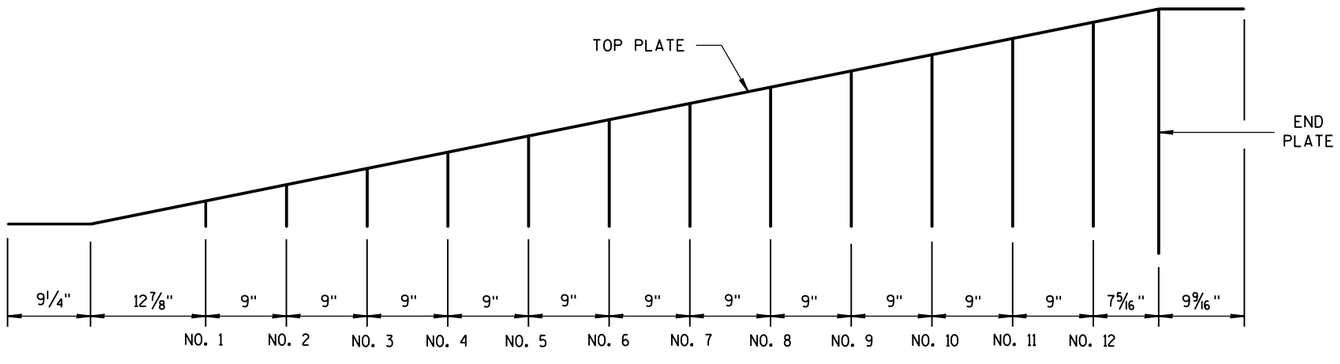
GUSSETS 1 - 12

ALL GUSSETS 1/8" STEEL PLATE

GUSSET DIMENSIONS				
GUSSET NO.	A	B	C	D
1	2 7/8"	7 3/4"	1/4"	8
2	4 11/16 "	7 9/16 "	1/2"	8
3	6 1/2"	7 3/8"	11/16 "	8 1/16 "
4	8 5/16 "	7 3/16 "	7/8"	8 1/16 "
5	10 1/8"	7"	1 1/16 "	8 1/16 "
6	11 15/16 "	6 13/16 "	1 1/4"	8 1/16 "
7	13 3/4"	6 5/8"	1 7/16 "	8 1/16 "
8	15 9/16 "	6 7/16 "	1 9/16 "	8 1/16 "
9	17 3/8"	6 1/4"	1 13/16 "	8 1/16 "
10	19 3/16 "	6 1/16 "	1 15/16 "	8 1/16 "
11	21"	5 7/8"	2 3/16 "	8 1/16 "
12	22 13/16 "	5 11/16 "	2 5/16 "	8 1/16 "

SIDE PLATES, TOP PLATE, END PLATE AND GUSSETS ARE 12 GAUGE ASTM A36 STEEL AND GALVANIZED.

GUSSETS AND END PLATE ARE STITCH WELDED ON 3 SIDES. TWO TRIANGULAR SIDE PLATES ARE STITCH WELDED TO TOP PLATE, END PLATE AND GUSSETS.



GUSSET LOCATION

CAP DETAILS FOR TEMPORARY CONCRETE BARRIER TO 56" PERMANENT CONCRETE BARRIER

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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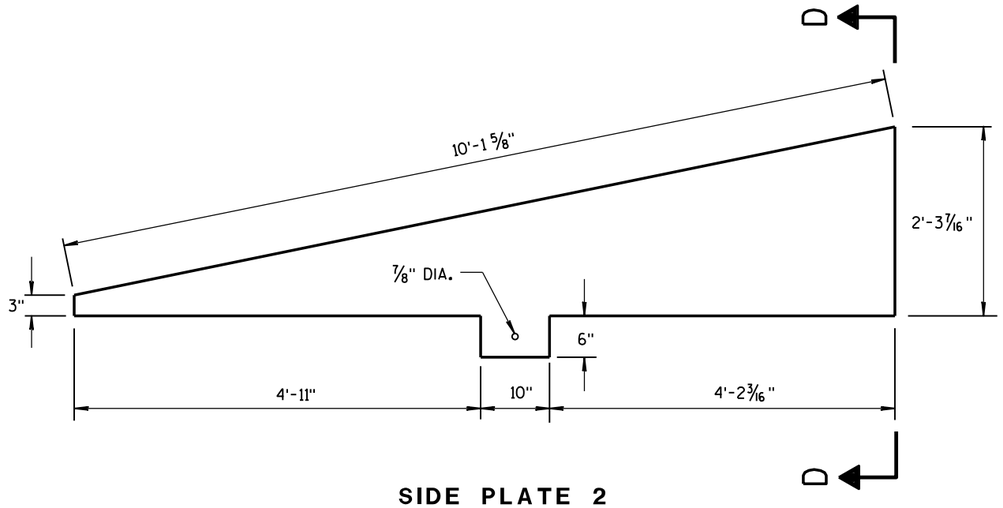
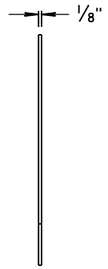
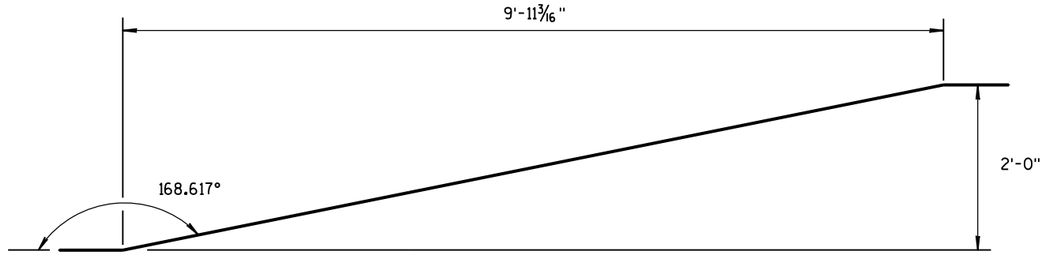
S.D.D. 14 B 7-14g



SIDE PLATE 2

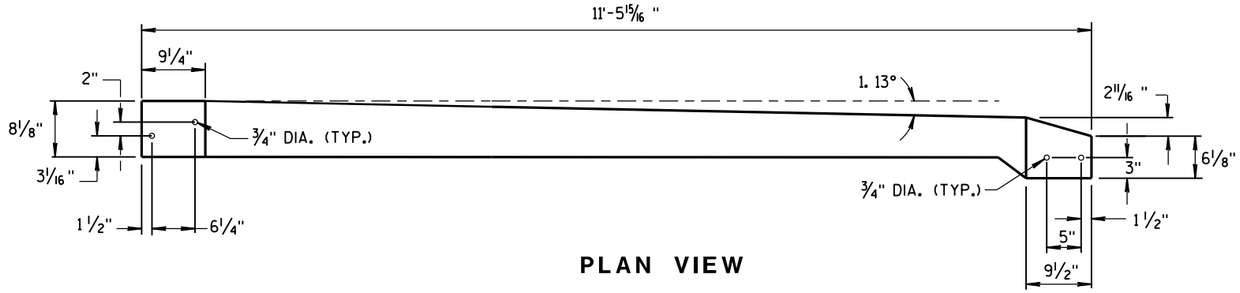


END VIEW



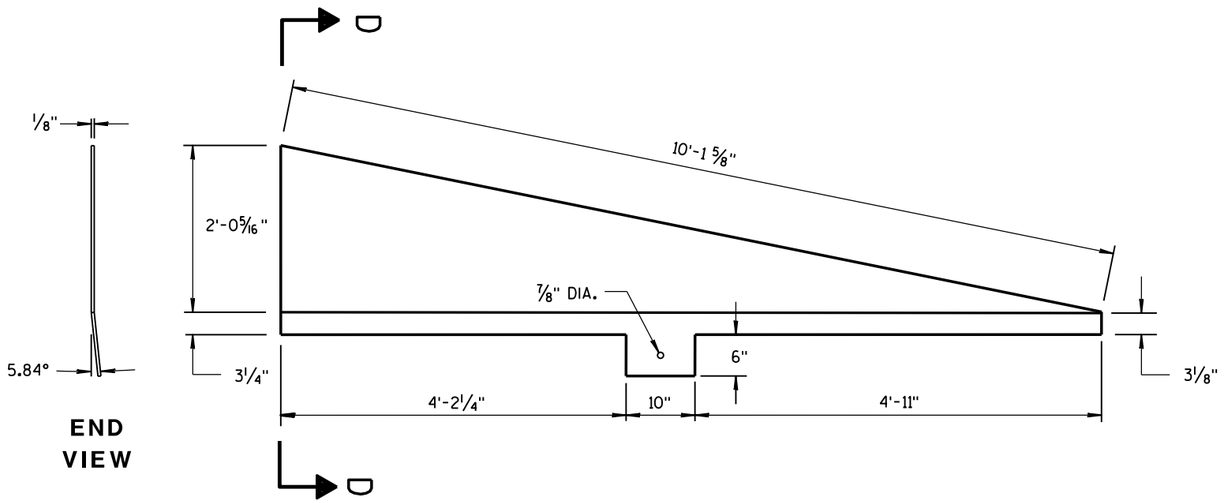
SIDE VIEW

TOP PLATE



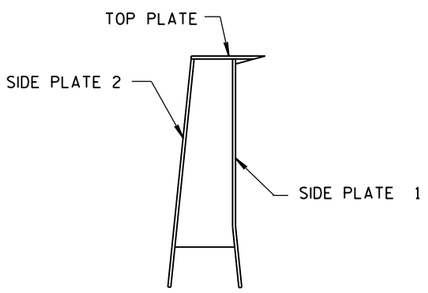
PLAN VIEW

TOP PLATE



END VIEW

SIDE PLATE 1



SECTION D-D

CAP DETAILS FOR TEMPORARY CONCRETE BARRIER TO 56" PERMANENT CONCRETE BARRIER

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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S.D.D. 14 B 7-14h

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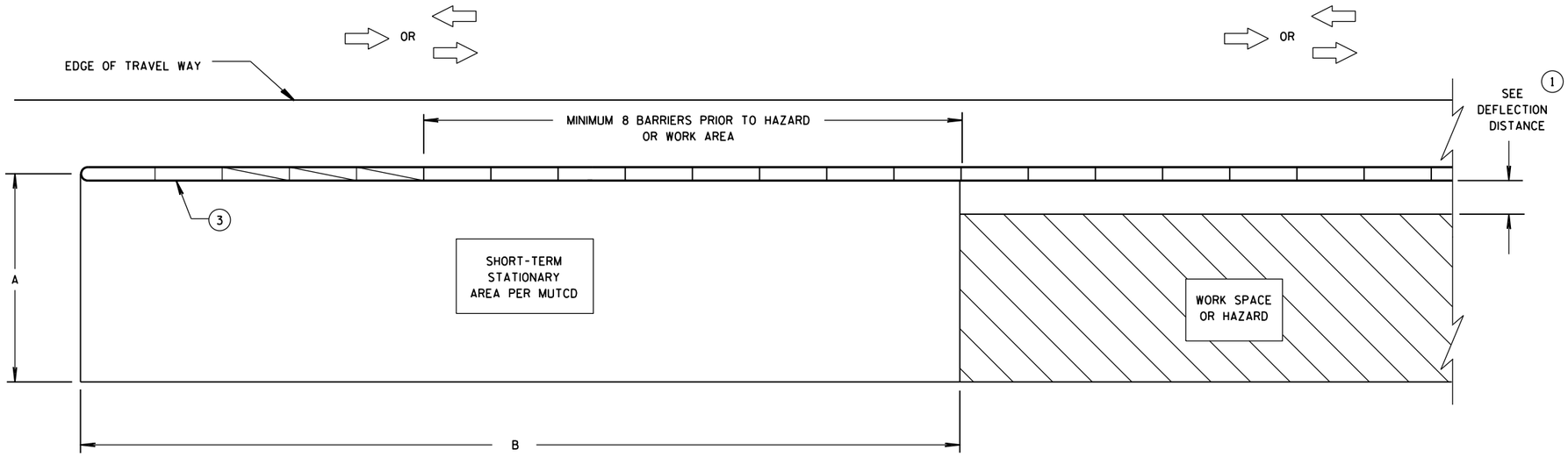
S.D.D. 14 B 7-14h



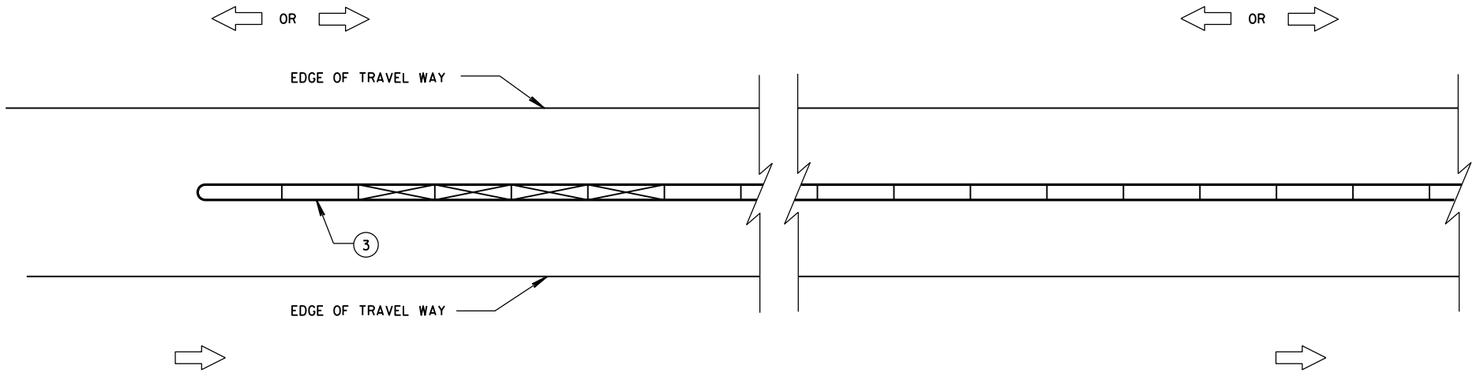
CRASH CUSHION/SAND BARREL ARRAY AND TEMPORARY BARRIER INSTALLATION FOR TRAFFIC ON ONE SIDE OF BARRIER

DIMENSION A TABLE (2)

FACILITY	POSTED SPEED MPH	DIMENSION A	
		MIN. FT	MAX. FT
FREEWAY/EXPRESSWAY	ALL	15	20
NON-FREEWAY/EXPRESSWAY	GREATER THAN OR EQUAL TO 45	10	15
NON-FREEWAY/EXPRESSWAY	LESS THAN 45	8	10
AADT LESS THAN 1,500	ALL	8	10

DIMENSION B TABLE (2)

POSTED SPEEDS MPH	DIMENSION B FT
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645



CRASH CUSHION/SAND BARREL ARRAY AND TEMPORARY BARRIER INSTALLATION FOR TRAFFIC ON BOTH SIDES OF BARRIER

LEGEND

DIRECTION OF TRAVEL

CRASH CUSHION OR SAND BARREL ARRAY

SEE FREE STANDING TRANSITION TO TIED-DOWN SYSTEM DETAILS

SEE BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM DETAILS

3 PINS PLACED ON TRAFFIC SIDE OF BARRIER

PERMANENT CONCRETE BARRIER OR CONCRETE PARAPET

FREE STANDING TEMPORARY BARRIER

GENERAL NOTES

SEE STANDARD DETAIL DRAWING 14B7 FOR MORE INFORMATION.

DETAILS PROVIDE A GENERAL LAYOUT OF TEMPORARY CONCRETE BARRIER, CRASH CUSHIONS, SAND BARREL ARRAYS AND TIE DOWN TRANSITIONS. DETAILS PROVIDED MAY NOT FIT ALL POSSIBLE SITUATIONS OR SITE CONDITIONS. SEE OTHER SECTIONS OF THE CONTRACT OR PROJECT ENGINEER FOR MORE DETAILS.

ADDITIONAL TEMPORARY BARRIER MAY BE REQUIRED TO PROTECT TRAVELING PUBLIC FROM HAZARDS, CONTRACTOR'S OPERATIONS OR TO CONTROL TRAFFIC.

TEMPORARY BARRIER MAY BE REQUIRED TO BE ANCHORED TO PAVEMENT OR BRIDGE DECK.

FOR DETAILS ON CRASH CUSHION OR SAND BARREL ARRAYS SEE OTHER SECTIONS OF THE PLAN AND MANUFACTURE'S DETAILS.

SLOPES LEADING TO TEMPORARY BARRIER, CRASH CUSHION OR SAND BARREL ARRAY ARE 10:1 OR LESS.

(1) FOR DEFLECTION INFORMATION SEE STANDARD DETAIL DRAWING 14B7.

(2) VALUES PROVIDED MAY NOT FIT ALL POSSIBLE SITUATIONS OR SITE CONDITIONS. SEE OTHER SECTIONS OF THE CONTRACT OR PROJECT ENGINEER FOR MORE DETAILS.

(3) ANCHOR TEMPORARY BARRIER ACCORDING TO CRASH CUSHION OR SAND BARREL MANUFACTURER'S RECOMMENDATIONS. IF MANUFACTURER'S RECOMMENDATIONS ARE NOT PROVIDED, ANCHOR 3 PINS ON TRAFFIC SIDE.

CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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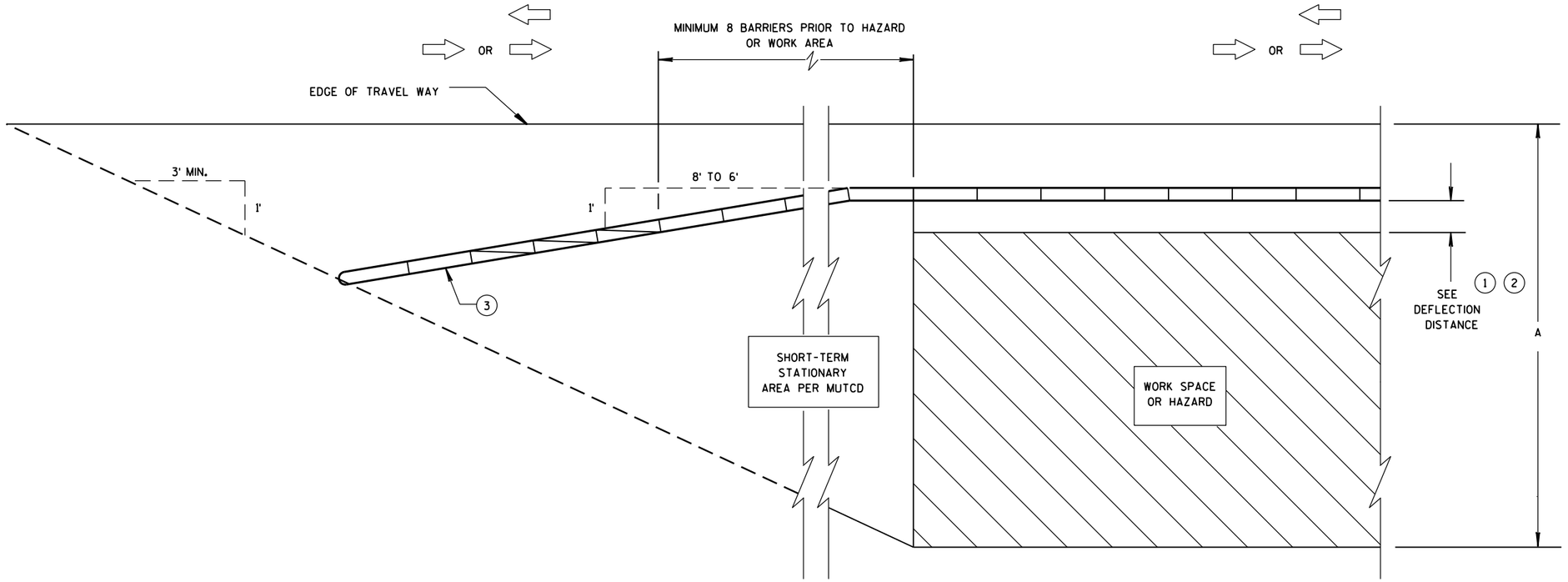
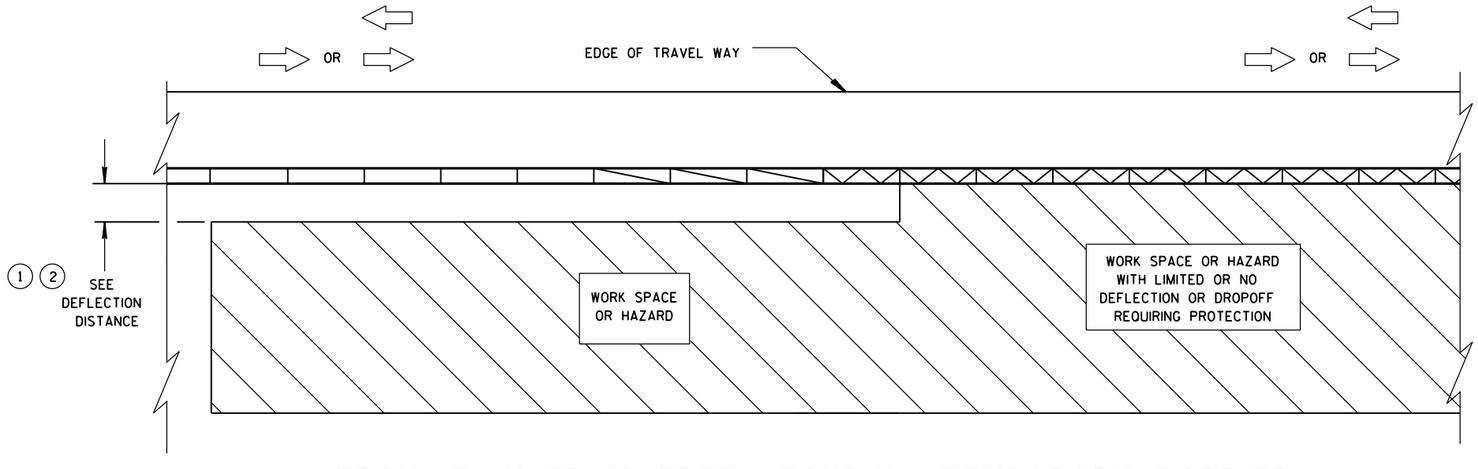


CRASH CUSHION/SAND BARREL ARRAY AND TEMPORARY BARRIER INSTALLATION FOR TRAFFIC ON ONE SIDE - FLARED INSTALLATION



TRANSITION FROM FREE STANDING TEMPORARY BARRIER TO ANCHORED BARRIER

LEGEND

- DIRECTION OF TRAVEL
- CRASH CUSHION OR SAND BARREL ARRAY
- SEE FREE STANDING TRANSITION TO TIED-DOWN SYSTEM DETAILS
- SEE BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM DETAILS
- 3 PINS PLACED ON TRAFFIC SIDE OF BARRIER
- PERMANENT CONCRETE BARRIER OR CONCRETE PARAPET
- FREE STANDING TEMPORARY BARRIER

CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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S.D.D. 14 B 8-2b

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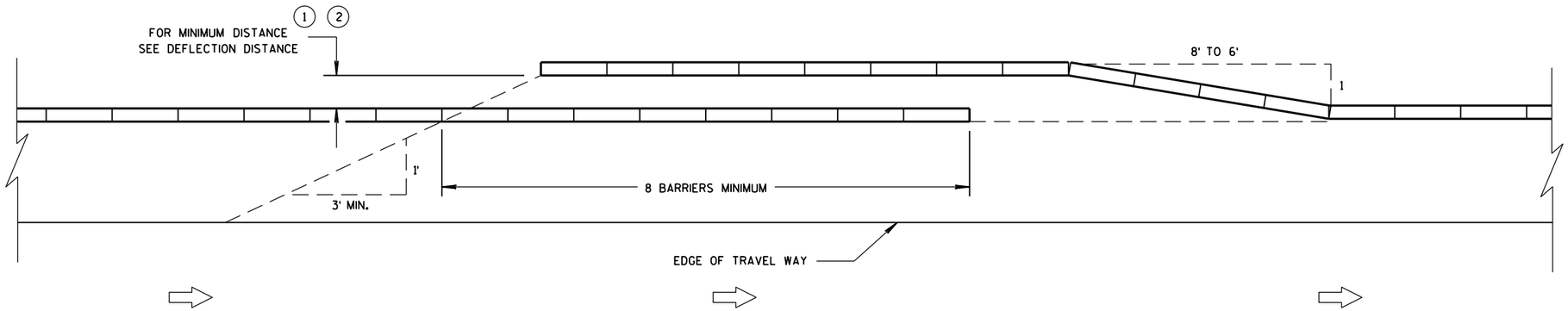
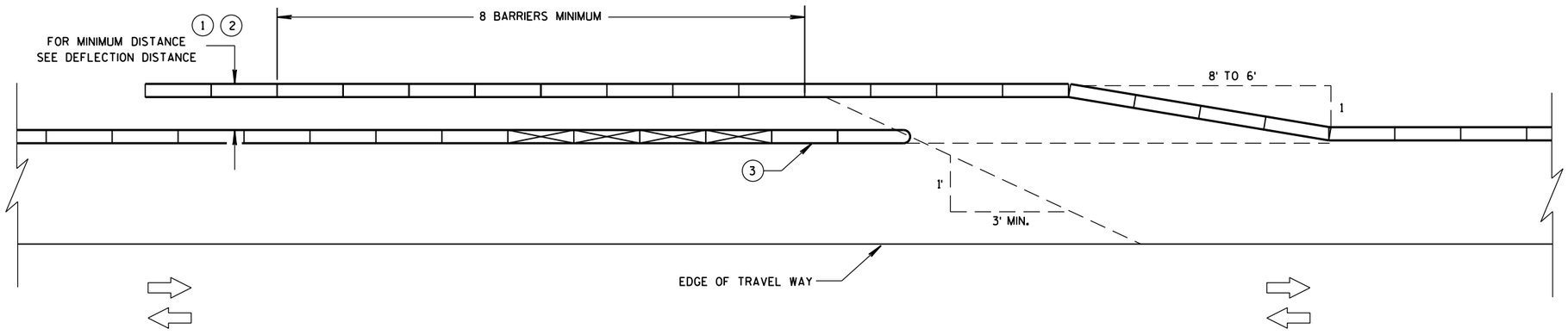
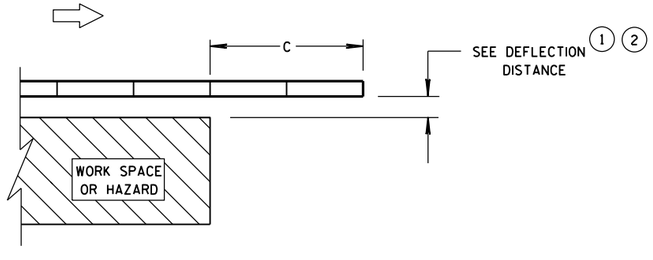
S.D.D. 14 B 8-2b



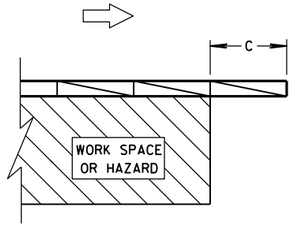
TEMPORARY BARRIER OVERLAP - ONE-WAY TRAFFIC



TEMPORARY BARRIER OVERLAP - TWO-WAY TRAFFIC



ENDING TEMPORARY BARRIER DOWNSTREAM - UNANCHORED



ENDING TEMPORARY BARRIER DOWNSTREAM - ANCHORED

LEGEND

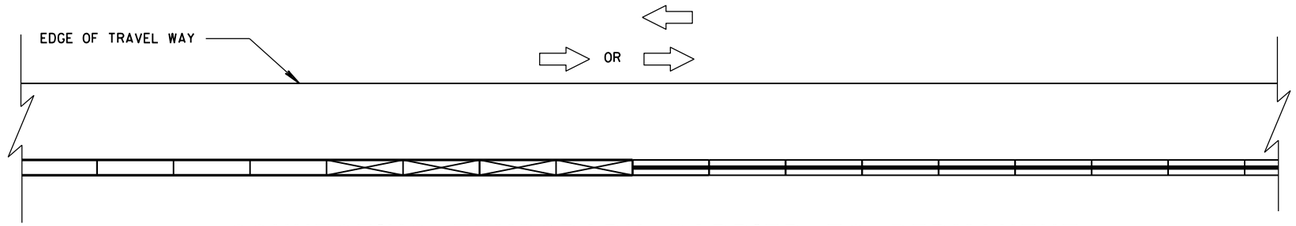
- DIRECTION OF TRAVEL
- CRASH CUSHION OR SAND BARREL ARRAY
- SEE FREE STANDING TRANSITION TO TIED-DOWN SYSTEM DETAILS
- SEE BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM DETAILS
- 3 PINS PLACED ON TRAFFIC SIDE OF BARRIER
- PERMANENT CONCRETE BARRIER OR CONCRETE PARAPET
- FREE STANDING TEMPORARY BARRIER

CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS

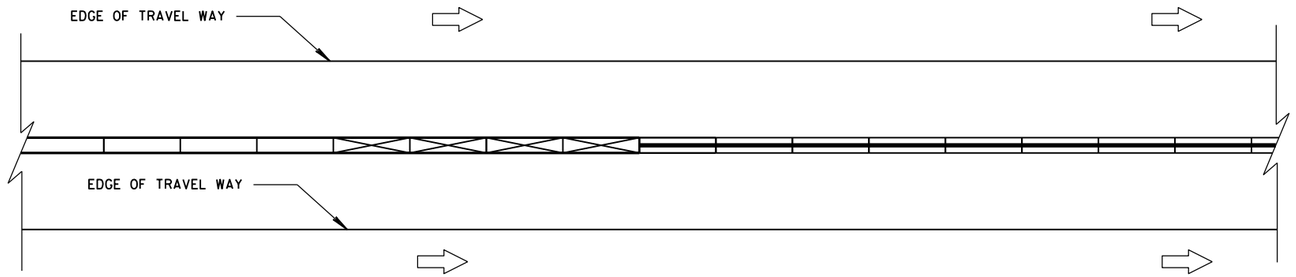
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

S.D.D. 14 B 8-2c



CONNECTING TEMPORARY BARRIER TO PERMANENT
CONCRETE BARRIER-TRAFFIC ON ONE SIDE



CONNECTING TEMPORARY BARRIER TO PERMANENT
CONCRETE BARRIER-TRAFFIC ON BOTH SIDES

LEGEND

DIRECTION OF TRAVEL

CRASH CUSHION OR
SAND BARREL ARRAY

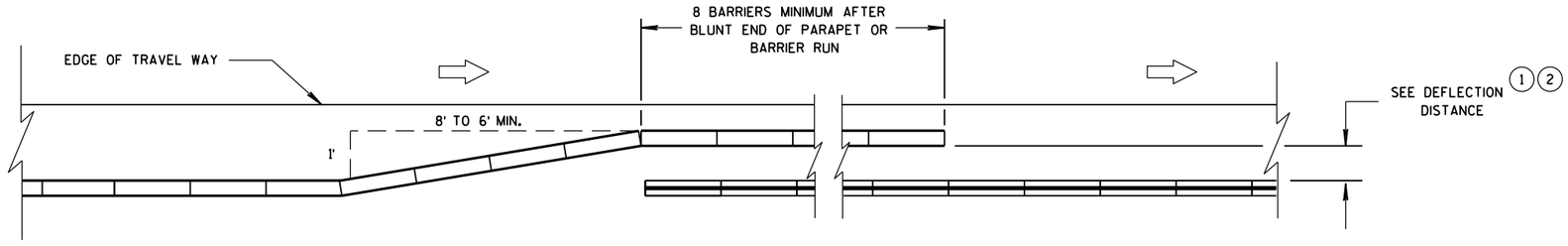
SEE FREE STANDING TRANSITION
TO TIED-DOWN SYSTEM DETAILS

SEE BI-DIRECTIONAL TRANSITION
TO TIED-DOWN SYSTEM DETAILS

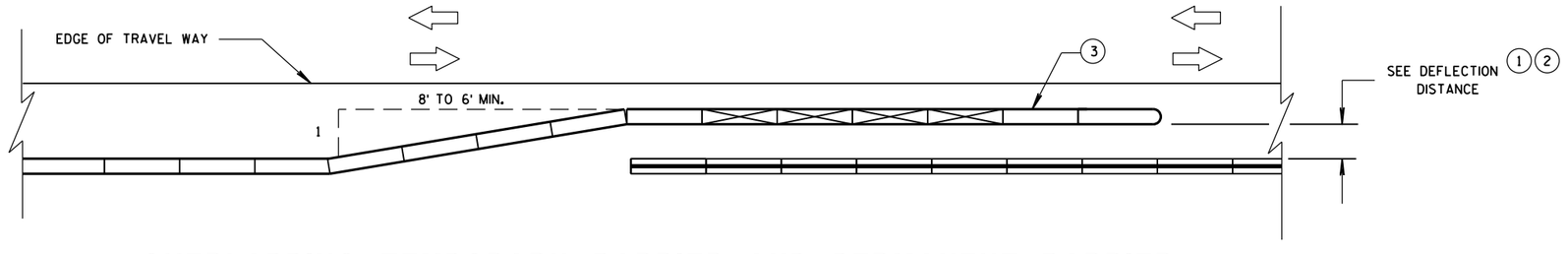
3 PINS PLACED ON
TRAFFIC SIDE OF BARRIER

PERMANENT CONCRETE BARRIER
OR CONCRETE PARAPET

FREE STANDING TEMPORARY
BARRIER



OVERLAPPING TEMPORARY BARRIER AND PERMANENT BARRIER -
ONE WAY TRAFFIC



OVERLAPPING TEMPORARY BARRIER AND PERMANENT BARRIER -
TWO WAY TRAFFIC

CRASH CUSHION/SAND BARREL
ARRAY AND OTHER TEMPORARY
BARRIER LAYOUT DETAILS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

S.D.D. 14 B 8-2d

LEGEND

DIRECTION OF TRAVEL

CRASH CUSHION OR SAND BARREL ARRAY

SEE FREE STANDING TRANSITION TO TIED-DOWN SYSTEM DETAILS

SEE BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM DETAILS

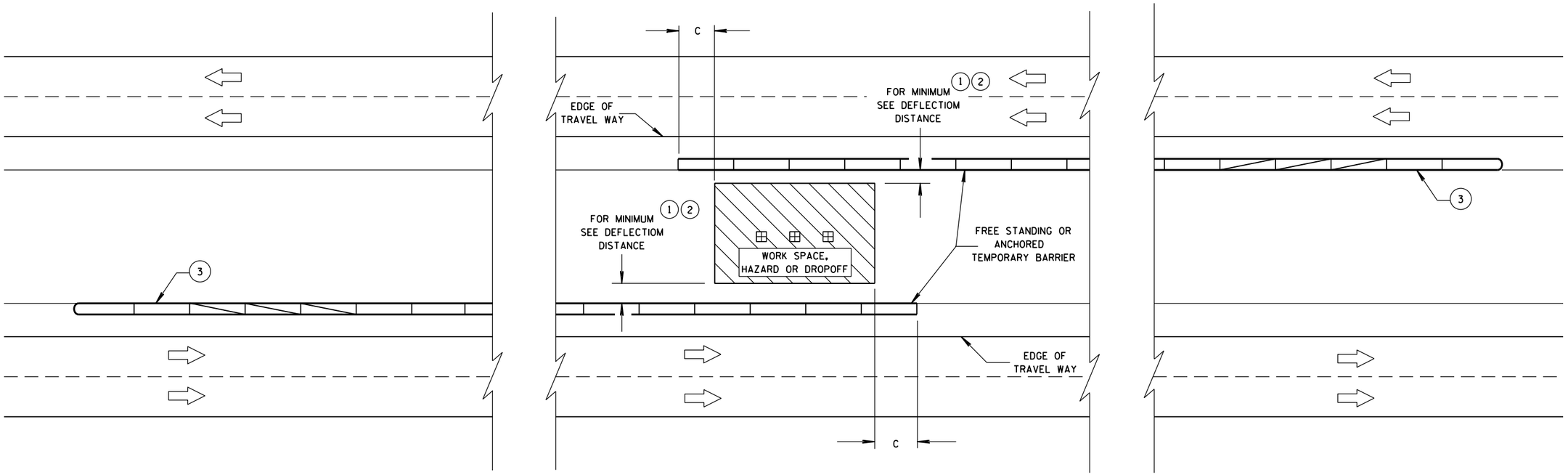
3 PINS PLACED ON TRAFFIC SIDE OF BARRIER

PERMANENT CONCRETE BARRIER OR CONCRETE PARAPET

FREE STANDING TEMPORARY BARRIER

DIMENSION C TABLE (2)

AVAILABLE DEFLECTION DISTANCE	MINIMUM LENGTH OF BARRIER BEYOND HAZARD FT
GREATER THAN 8'	12.5
LESS THAN OR EQUAL TO 8' BUT GREATER THAN 4'	50
LESS THAN OR EQUAL TO 4'	100



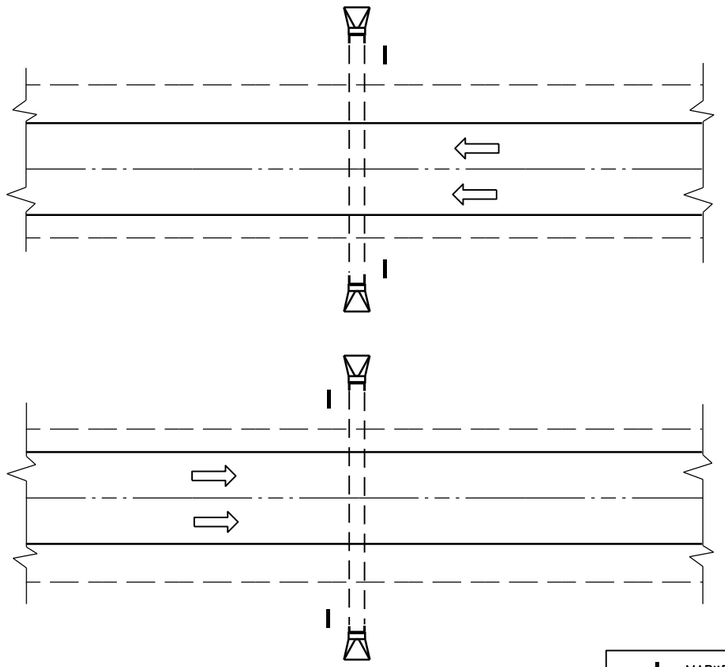
CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015
DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINNER
FHWA

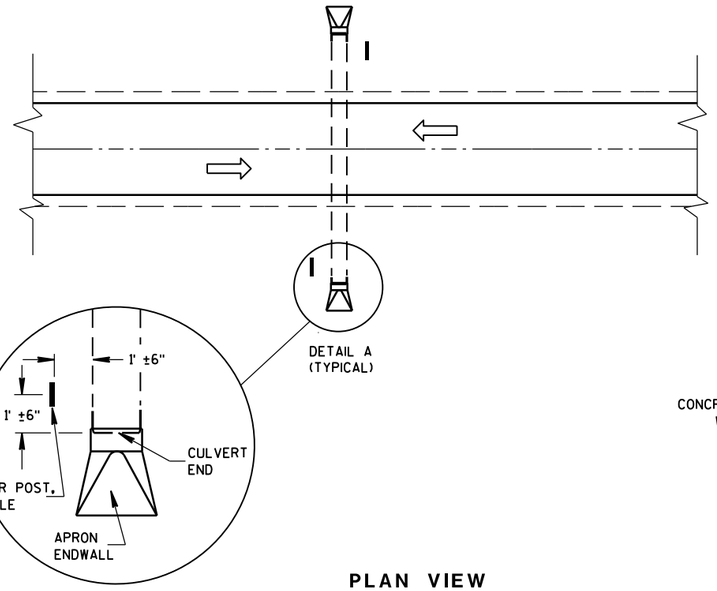
6

S.D.D. 14 B 8-2e



PLAN VIEW

DIVIDED HIGHWAY



DETAIL A
(TYPICAL)

PLAN VIEW

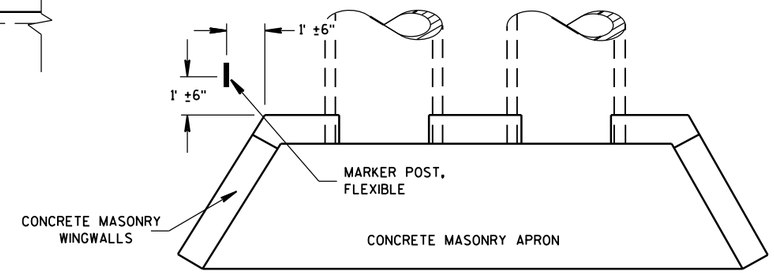
UNDIVIDED HIGHWAY

MARKER POST, FLEXIBLE

DIRECTION OF TRAFFIC FLOW

GENERAL NOTES

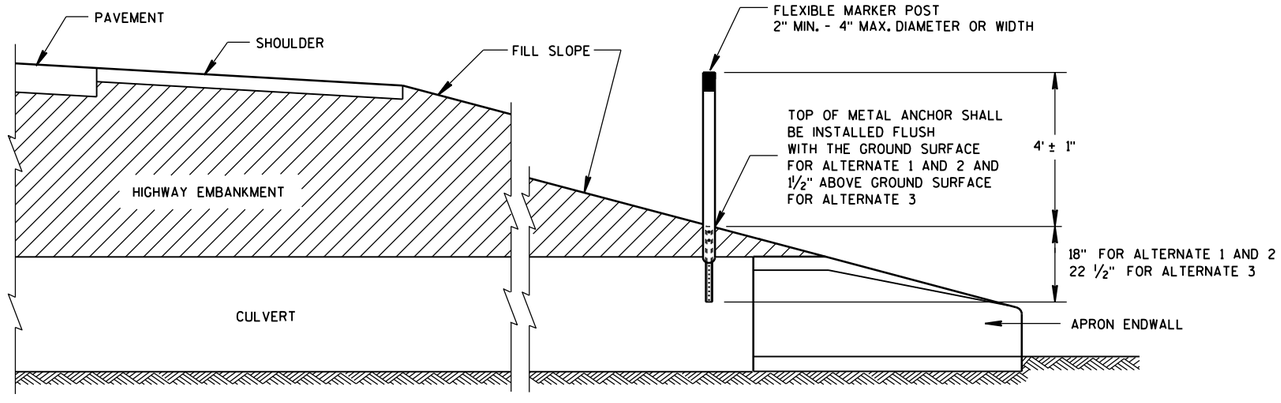
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.



PLAN VIEW

CONCRETE MASONRY ENDWALLS FOR CULVERT PIPE AND PIPE ARCH

FLEXIBLE MARKER POST LOCATION



CROSS SECTION

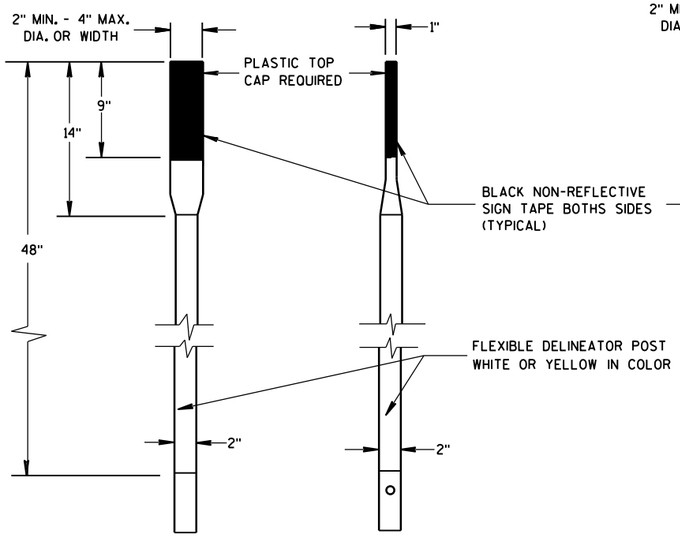
FLEXIBLE MARKER POST

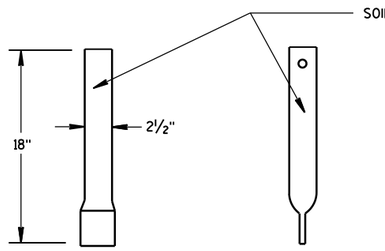
FLEXIBLE MARKER POST
FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

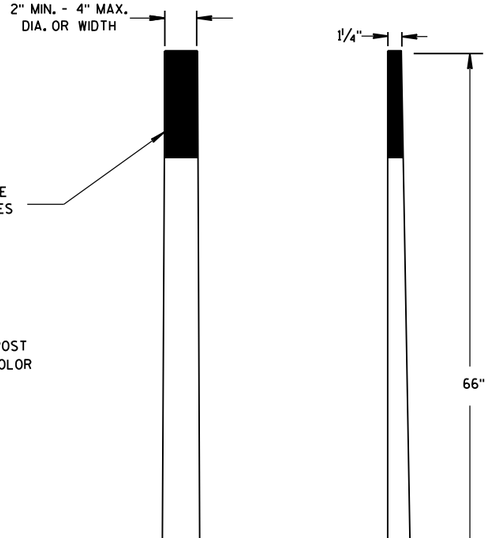
S.D.D. 15 A 3-2a





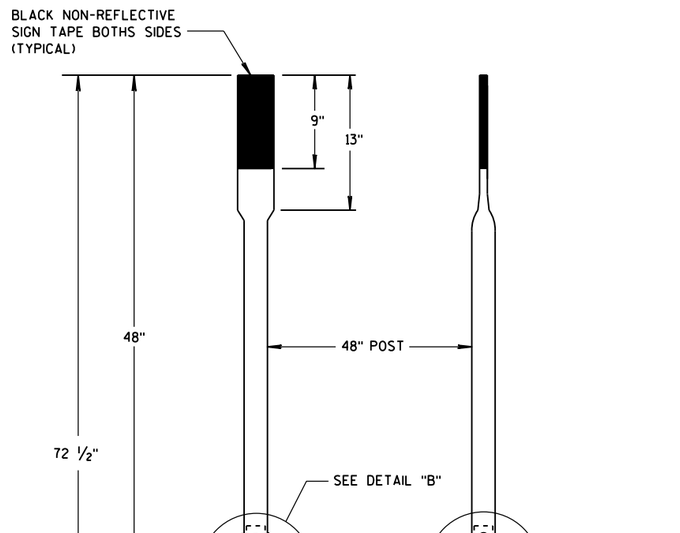
FRONT VIEW SIDE VIEW

ALTERNATE 1



FRONT VIEW SIDE VIEW

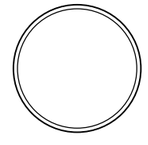
ALTERNATE 2



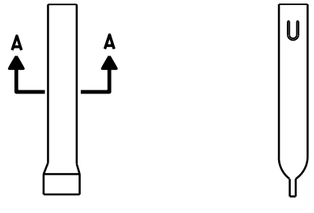
FRONT VIEW SIDE VIEW

ALTERNATE 3

FLEXIBLE MARKER POSTS

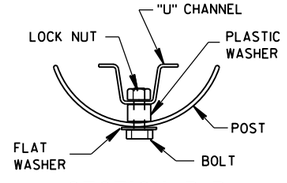


SECTION A-A

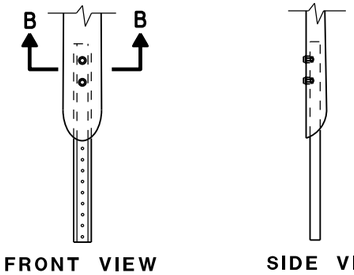


FRONT VIEW SIDE VIEW

ALTERNATE 1

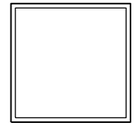


SECTION B-B

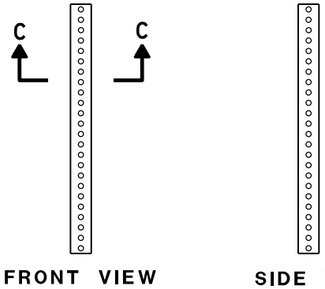


FRONT VIEW SIDE VIEW

ALTERNATE 2



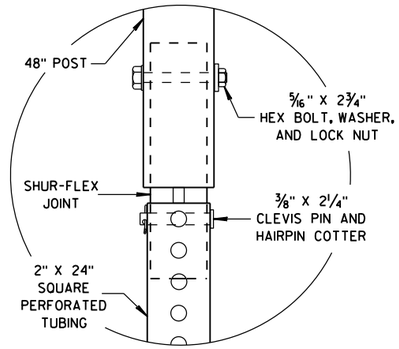
SECTION C-C



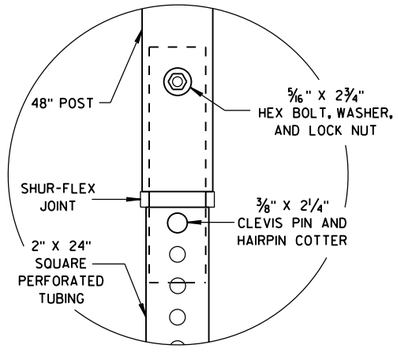
FRONT VIEW SIDE VIEW

ALTERNATE 3

FLEXIBLE MARKER POST ANCHORS



DETAIL B



DETAIL C

FLEXIBLE MARKER POST
FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

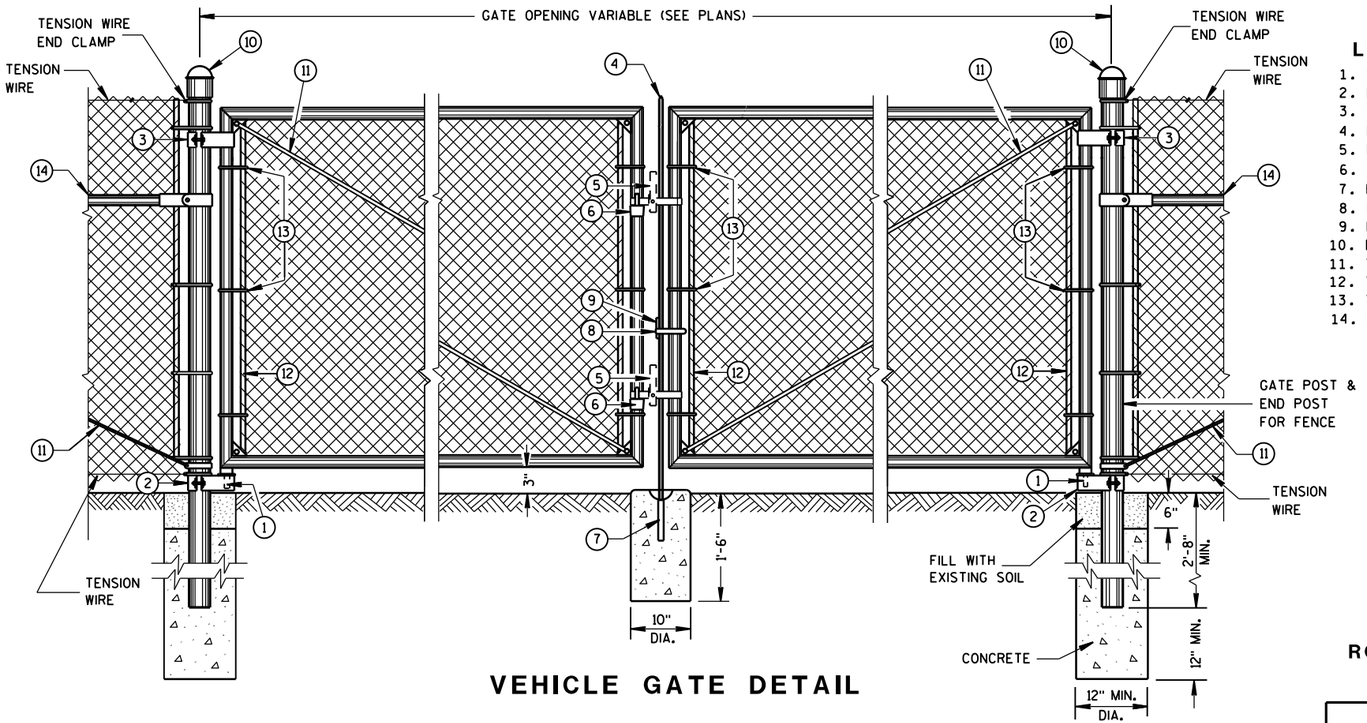
APPROVED
10/1/2012 — DATE
/S/ Travis Feltes — STATE TRAFFIC ENGINEER
FHWA

6

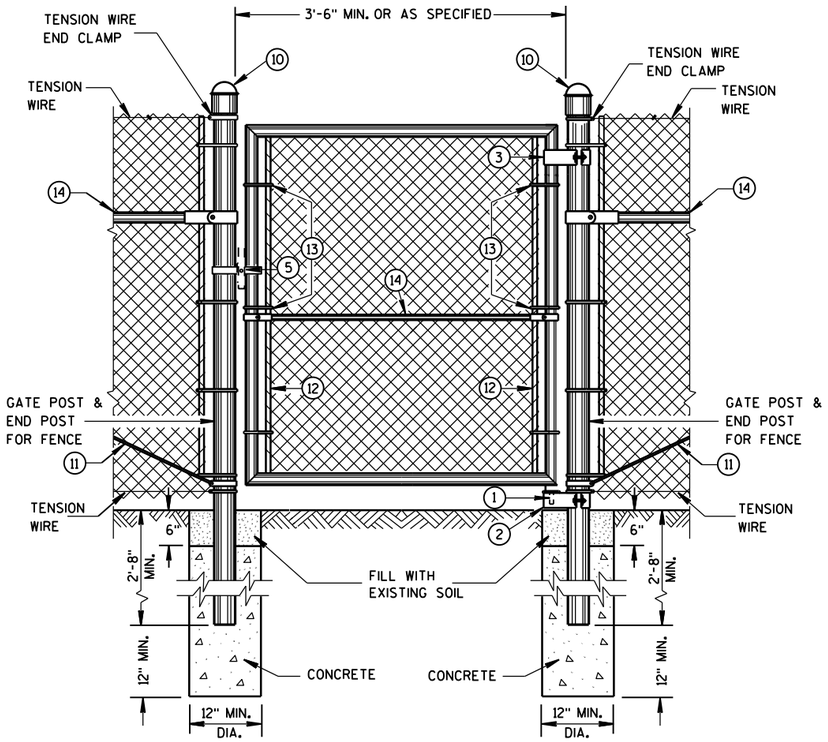
S.D.D. 15 A 3-2b

6

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



VEHICLE GATE DETAIL



PEDESTRIAN GATE DETAIL

LEGEND

1. STRAIGHT PLUG
2. BOTTOM HINGE
3. TOP HINGE
4. PLUNGER ROD
5. FULCRUM LATCH
6. FORK CATCH *
7. PLUNGER ROD CATCH
8. LOCK KEEPER GUIDE
9. LOCK KEEPER
10. DOME TOPS
11. TRUSS RODS
12. TENSION BAR
13. TENSION BANDS
14. BRACE RAIL

*NOT REQUIRED ON SINGLE SWING PEDESTRIAN GATE

GENERAL NOTES

FENCE POSTS INSTALLED ON CONCRETE WALLS SHALL BE ANCHORED INTO EMBEDDED METAL SLEEVES OR CORED HOLE BY FILLING THE ANNULAR SPACE WITH PEA GRAVEL FOLLOWED BY AN EPOXY RESIN ADHESIVE. THE EPOXY RESIN ADHESIVE SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 235, CLASS A, B OR C.

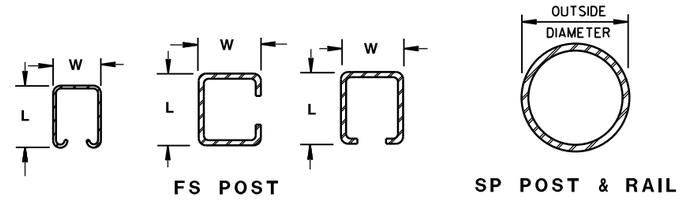
USE FENCE FABRIC KNUCKLED AT BOTH SELVAGES.

FOR LEAF GATES GREATER THAN 8 FEET WIDE, INSTALL INTERIOR VERTICAL BRACE RAIL AT 8 FOOT INTERVALS.

FOR FABRIC HEIGHTS GREATER THAN 8 FEET, INSTALL INTERIOR HORIZONTAL BRACE RAILS TO LEAF GATE.

MAXIMUM SAG FOR OUTER GATE MEMBER SHALL NOT EXCEED THE GREATER OF 1% OF THE LEAF GATE WIDTH OR 2 INCHES.

USE TYPE 2, CLASS 3, MARCELLED/CRIMPED, TENSION WIRE PER ASTM A 817.



FS POST

SP POST & RAIL

CROSS SECTIONS OF POSTS AND RAILS

ROLLED-FORMED STEEL FENCE POST (2.0 OZ./SQ. FT. COATING)

POST TYPE	LENGTH (L) INCH	WIDTH (W) INCH	WEIGHT LBS/FT
FS1	1.625	1.25	1.35
FS2†	1.875	1.625	1.850
FS2	1.875	1.625	2.400
FS3	2.250	1.700	2.780

ROUND STEEL FENCE POST (1.8 OZ./SQ. FT. COATING)

POST TYPE	OUTSIDE DIMENSION INCH	WALL THICKNESS INCH	WEIGHT LBS/FT
SP1	1.660	0.140	2.270
SP2	1.900	0.145	2.720
SP3	2.375	0.154	3.650
SP4	2.875	0.203	5.800
SP5	4.000	0.226	9.120
SP6	6.625	0.280	18.990
SP7	8.625	0.322	28.580

REQUIRED FENCE POST SIZES

USE	FABRIC HEIGHTS FEET	POST TYPE
TERMINAL POSTS **	LESS THAN OR EQUAL TO 6 FT.	SP3
	GREATER THAN OR EQUAL TO 6 FT.	SP4
LINE POSTS	LESS THAN OR EQUAL TO 6 FT.	SP2
	LESS THAN OR EQUAL TO 8 FT.	SP3
	GREATER THAN OR EQUAL TO 8 FT.	SP4
	LESS THAN OR EQUAL TO 8 FT.	FS2 OR FS2†
	GREATER THAN OR EQUAL TO 8 FT.	FS3

REQUIRED POST SIZE FOR GATES

USE	LEAF WIDTHS FEET	POST TYPE
GATES	LESS THAN OR EQUAL TO 6 FT.	SP4
	LESS THAN OR EQUAL TO 13 FT.	SP5
	LESS THAN OR EQUAL TO 18 FT.	SP6
	LESS THAN OR EQUAL TO 23 FT.	SP7

BRACE RAIL TYPES

USE		TYPE
BRACE RAIL		SP1 OR FS1

** INCLUDES END, CORNER, ANGLE, INTERSECTION AND INTERMEDIATE BRACED POSTS

FENCE CHAIN LINK

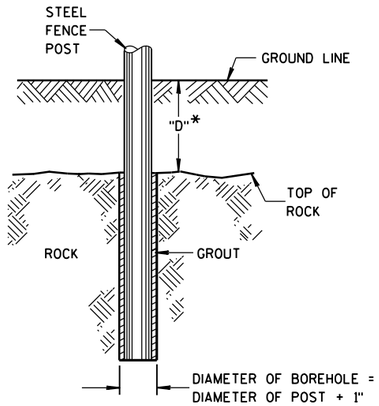
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

S.D.D. 15 B 3-15a

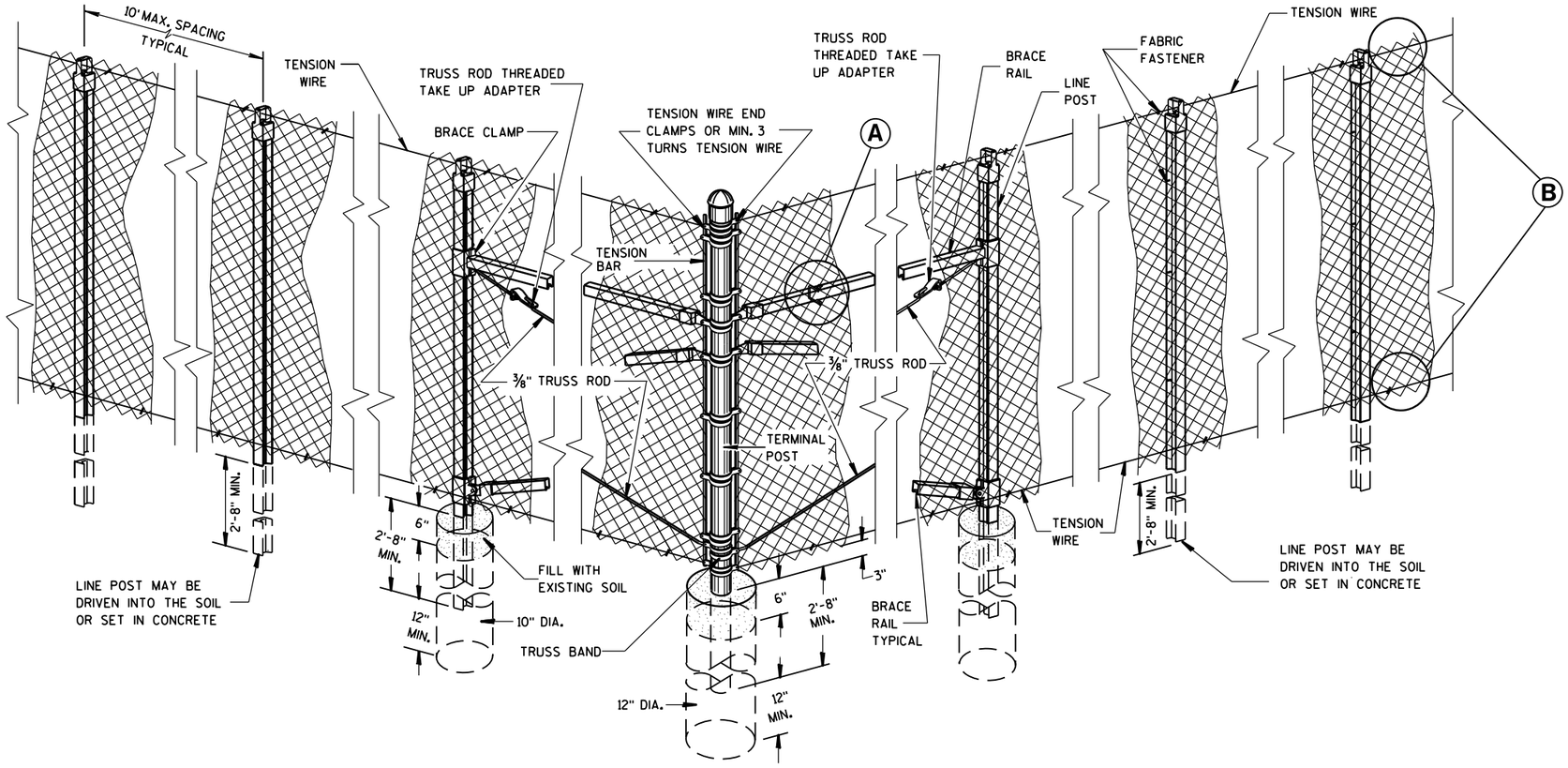
6

S.D.D. 15 B 3-15a

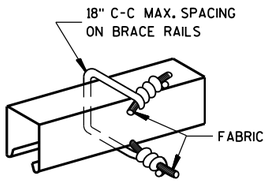


*IF "D" IS LESS THAN 2'-6", DRILL ROCK AND INSTALL GROUT

ROCK INSTALLATION OF LINE POST



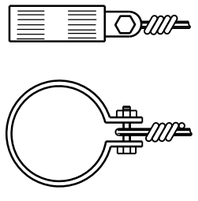
END, CORNER, ANGLE INTERSECTION & INTERMEDIATE BRACED POSTS



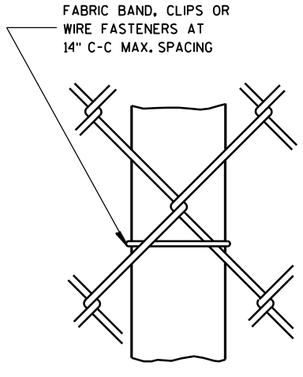
BRACE RAIL

FABRIC FASTENER

Ⓐ



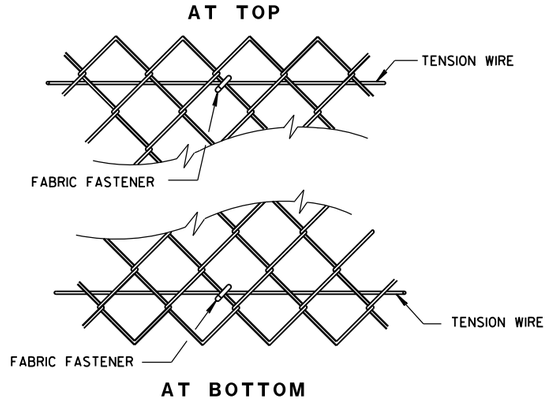
TENSION WIRE END CLAMP



LINE POST

FABRIC FASTENER

AT TOP



AT BOTTOM

SELVAGES

Ⓑ

FENCE CHAIN LINK

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

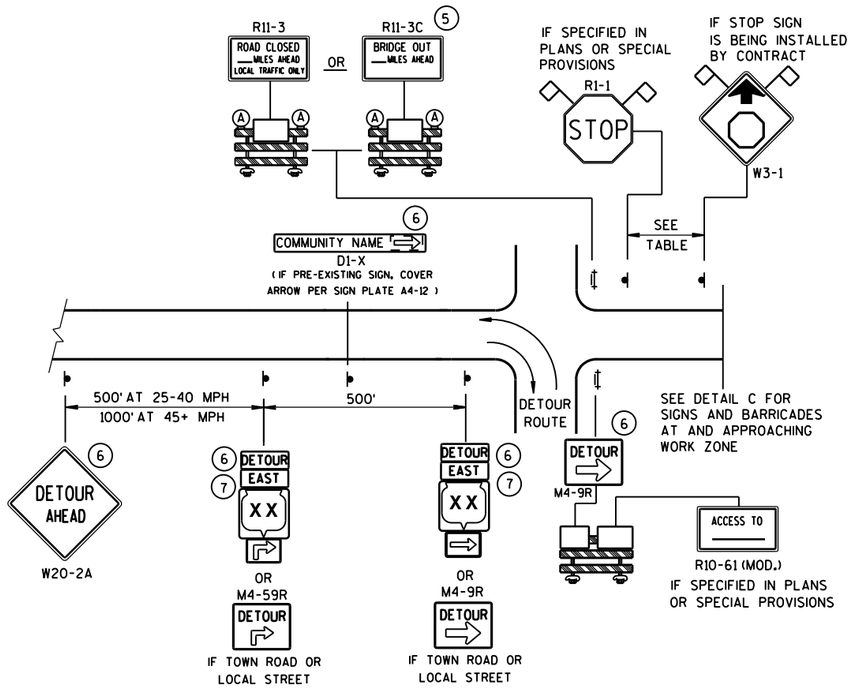
APPROVED
FEB. 2015 DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 15 B 3-15b

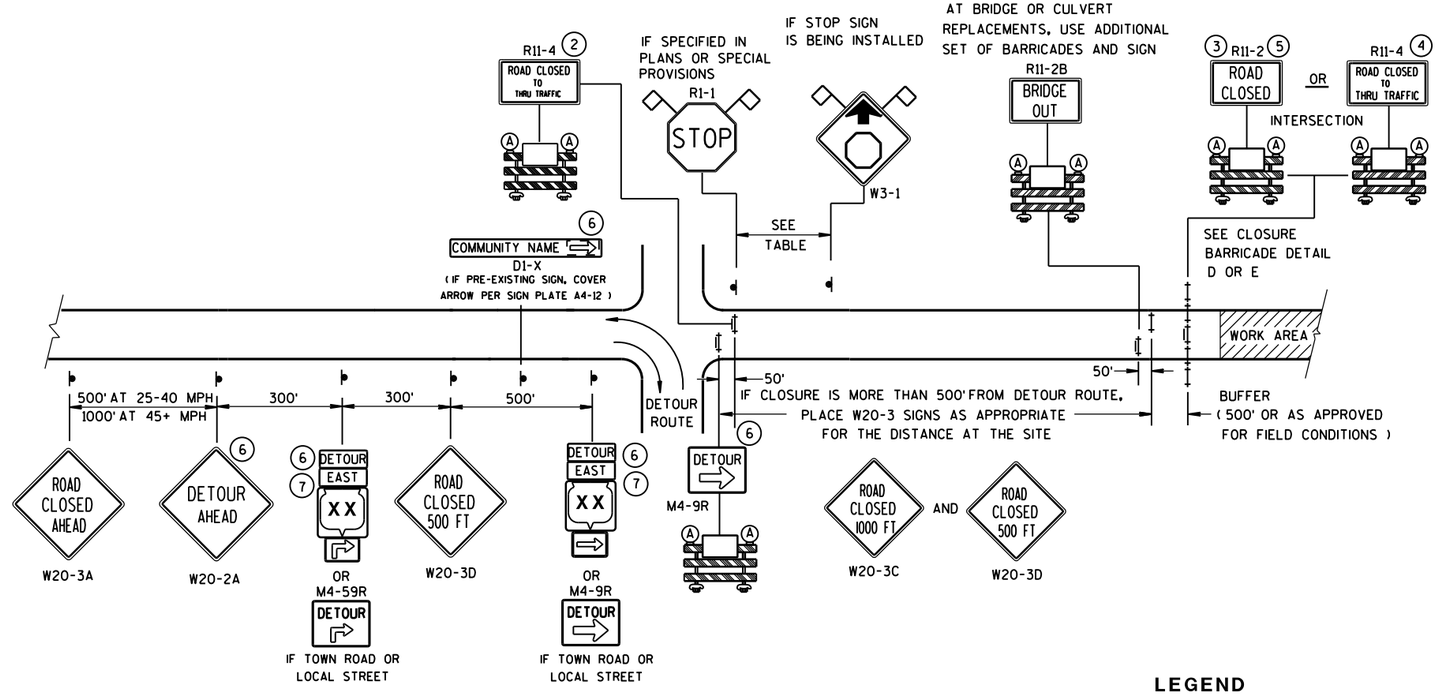
6

S.D.D. 15 B 3-15b



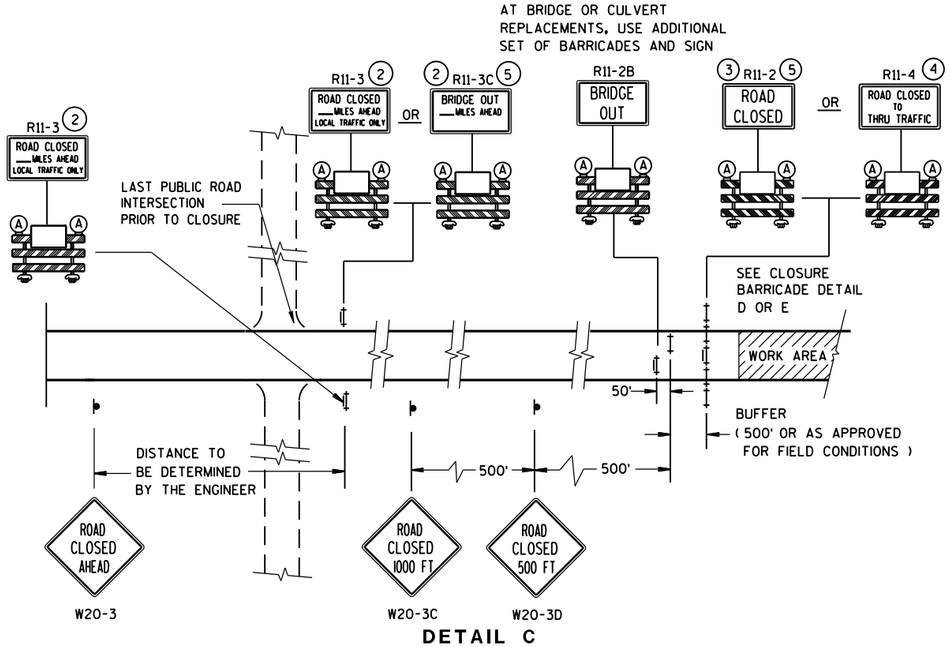
DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

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



DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR

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



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

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

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

LEGEND

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

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

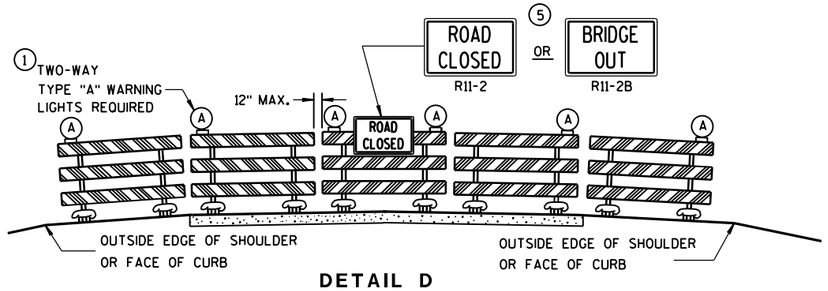
Sept. 2015 — DATE
/S/ Peter Amakobe Atepe
STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER
FHWA

6

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

6

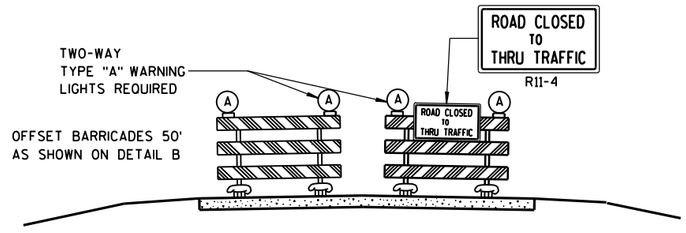
S.D.D. 15 C 2-6a



DETAIL D

ROAD CLOSURE BARRICADE DETAIL

APPROACH VIEW



DETAIL E

LANE CLOSURE BARRICADE DETAIL

APPROACH VIEW

SEE SDD 15C2-SHEET "**a**" FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

Sept. 2015 — DATE

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

FHWA

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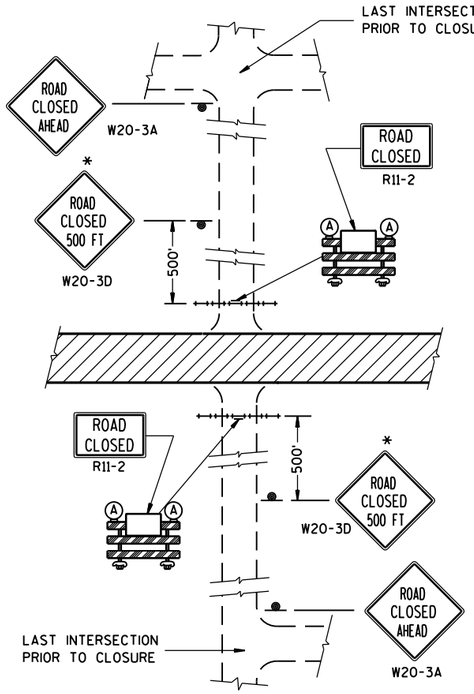
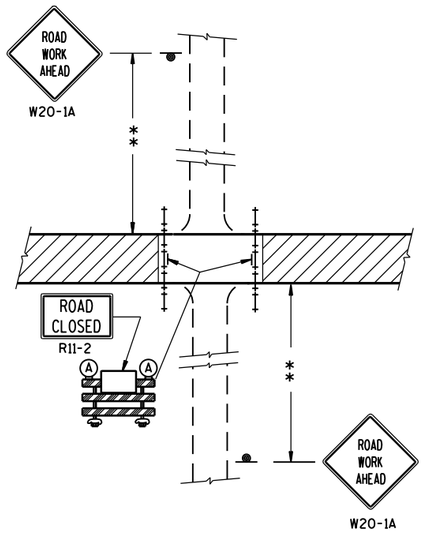
S.D.D. 15 C 2-6b



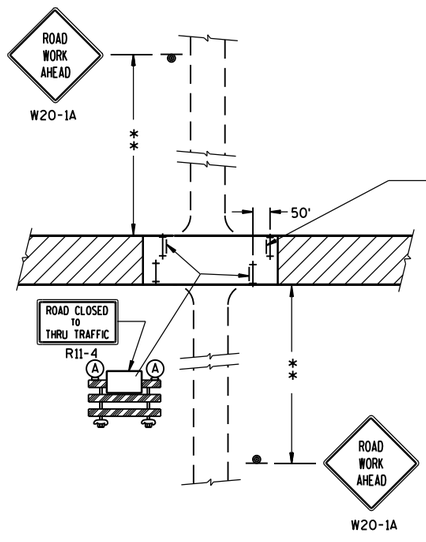
DETAIL 1

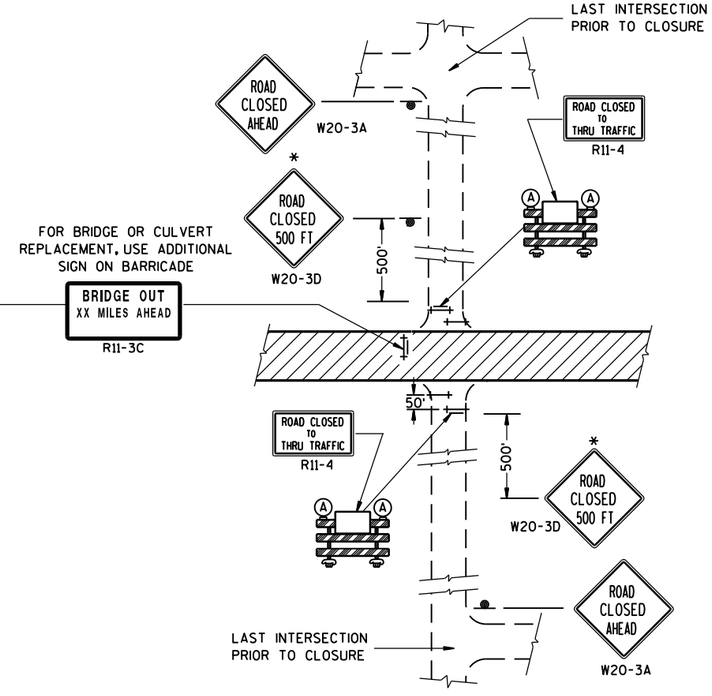
(NO ACCESS TO PROJECT)



DETAIL 2

(PUBLIC CROSS-TRAFFIC MAINTAINED. NO ACCESS TO PROJECT).





DETAIL 3

(PUBLIC CROSS-TRAFFIC MAINTAINED. CONTRACTOR, LOCAL BUSINESS AND RESIDENT ACCESS).

DETAIL 4

(CONTRACTOR, LOCAL BUSINESS AND RESIDENT ACCESS TO PROJECT)

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.

IF A "STOP" SIGN MUST BE REMOVED FOR A WORK OPERATION, A TEMPORARY "STOP" SIGN SHALL BE PLACED PRIOR TO THE SIGN REMOVAL, OR A FLAGGER SHALL BE PROVIDED UNTIL THE SIGN IS RE-ESTABLISHED.

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 AND R11-4 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.

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
R11-2 SHALL BE 48" X 30".
R11-4 AND R11-3 SHALL BE 60" X 30".

*OMIT THE "ROAD CLOSED 500 FT." SIGN IF THE LAST INTERSECTION IS 500 FT. OR LESS FROM THE WORK ZONE.

**500' MAX. OR AT LAST INTERSECTION WHICHEVER IS CLOSER.

LEGEND

- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- (A) TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA

BARRICADES AND SIGNS FOR SIDEROAD CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept. 2015 — DATE
/S/ Peter Amakobe Atepe
STATEWIDE WORK ZO[illegible]FIC SAFETY ENGI[illegible]
FHWA

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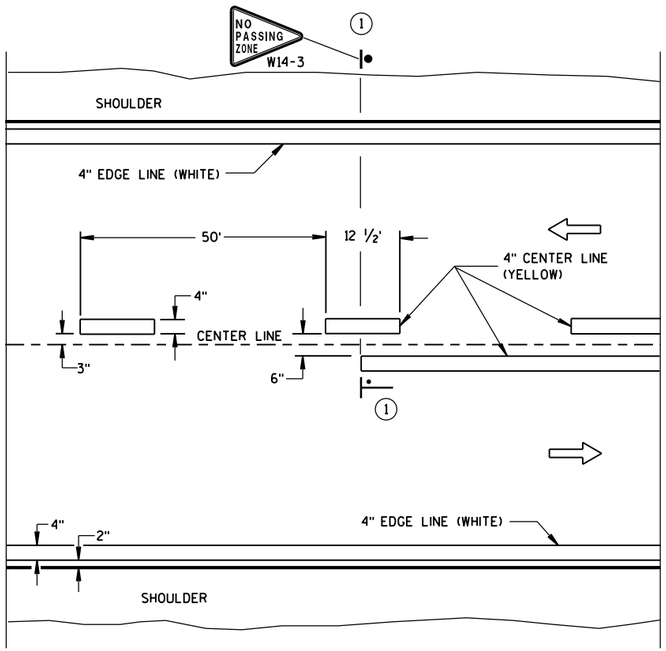
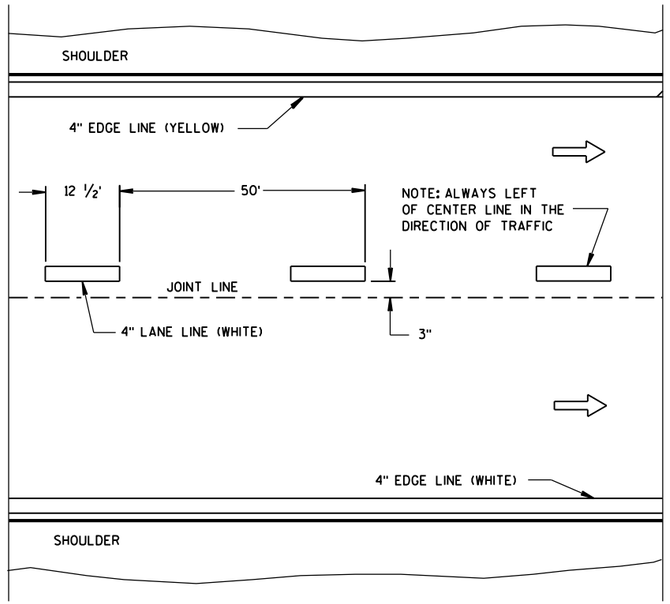
S.D.D. 15 C 3-3



TWO WAY TRAFFIC



ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING

GENERAL NOTES

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

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

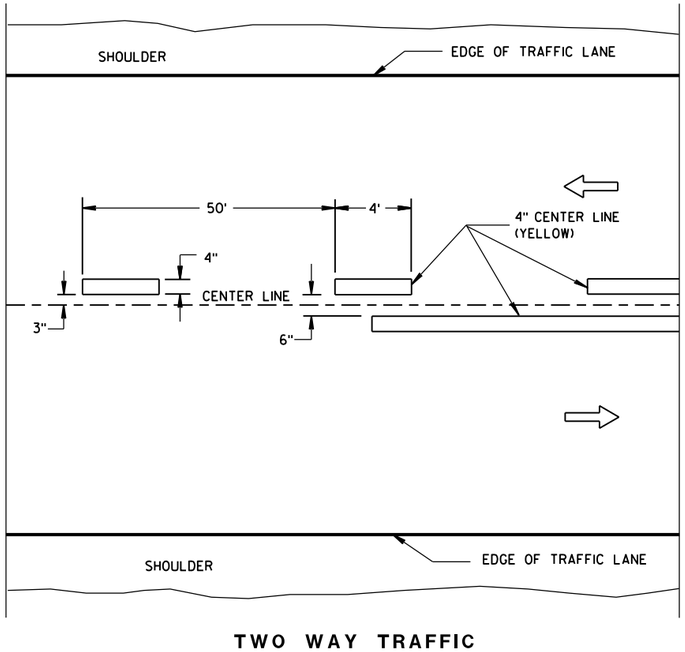
NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL

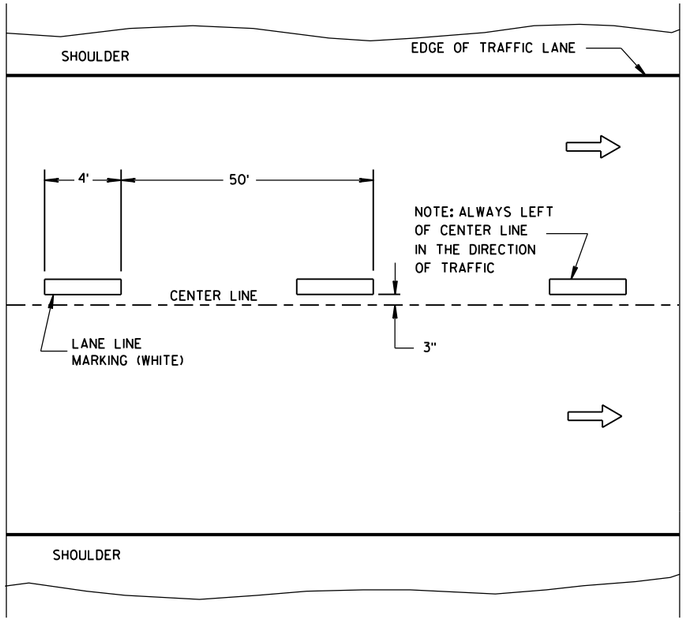
LEGEND

"T" MARKING

POST MOUNTED SIGN



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

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

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

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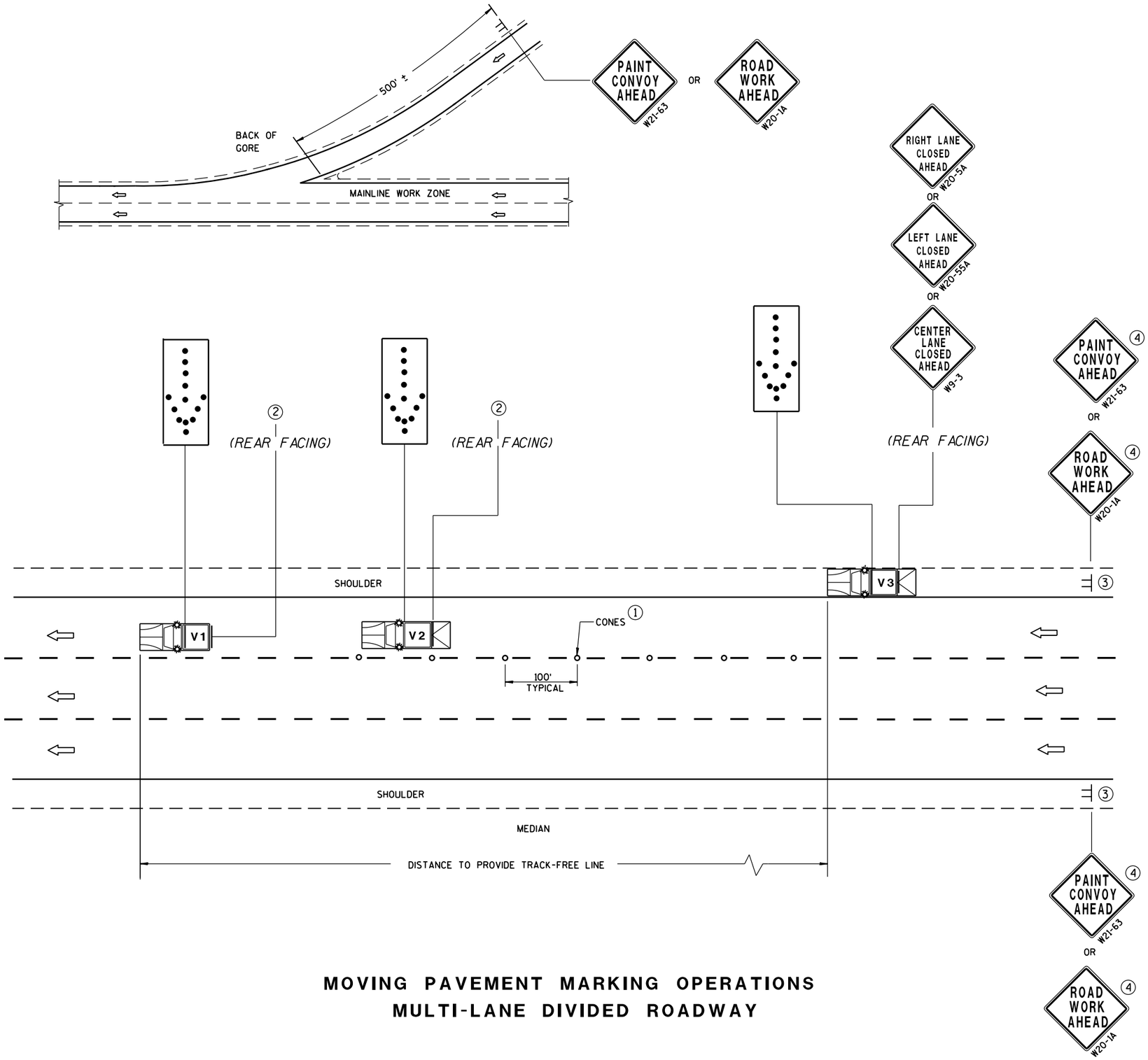
S.D.D. 15 C 8-17a



MOVING PAVEMENT MARKING OPERATIONS
MULTI-LANE DIVIDED ROADWAY

GENERAL NOTES

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

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

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

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

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

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

WHEN WORK ACTIVITY BLOCKS THE LEFT LANE, REVERSE TRAFFIC CONTROL.

WHEN A RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, PROVIDE ADDITIONAL TRAFFIC CONTROLS AS SPECIFIED IN THE CONTRACT OR AS APPROVED BY THE ENGINEER.

USE AN ATTENUATOR ON THE REARMOST VEHICLE THAT BLOCKS ALL OR PART OF THE TRAFFIC LANE.

FOR EDGELINE MARKING OR IF CONES ARE NOT USED, POSITION THE REARMOST SHADOW VEHICLE ON THE SHOULDER AS SHOWN IN THE MUTCD IF THE SHOULDER HAS ADEQUATE WIDTH. USE DOUBLE ARROWS WHEN CONVOY IS IN CENTER LANE ONLY.

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

THIS DRAWING SHALL BE USED FOR EDGELINE OR LANELINE MARKING FOR MULTILANE DIVIDED ROADWAYS.

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

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

WET PAINT W21-64 OR WET PAINT W21-64

(3) SIGNS SHALL BE REPEATED AFTER EVERY ON RAMP OR EVERY THREE MILES.

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

LEGEND

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

MOVING PAVEMENT MARKING OPERATION
MULTI-LANE DIVIDED ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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

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

LEGEND

- TYPE III BARRICADE WITH ATTACHED SIGN
- SIGN ON PERMENENT SUPPORT
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- TRAFFIC CONTROL DRUM
- FLASHING ARROW BOARD
- (A) TYPE "A" WARNING LIGHT (FLASHING)
- REMOVING PAVEMENT MARKING
- DIRECTION OF TRAFFIC
- WORK AREA

GENERAL NOTES

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

THE SPACING BETWEEN SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A MINIMUM OF 200 FEET, (500 FEET DESIREABLE) DISTANCE TO EXISTING SIGNS.

THIS LANE CLOSURE IS TYPICAL FOR CLOSING RIGHT LANE - REVERSE FOR CLOSING LEFT LANE.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.

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

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. NO WARNING LIGHTS SHALL BE WORKING ON "COVERED" OR "DOWNED" SIGNS.

CONSIDER GEOMETRICS WHEN LOCATING SIGNS AND ARROW BOARD SO THE DRIVER HAS A CLEAR VIEW OF THE ARROW BOARD AND LANE CLOSURE DRUMS FOR A MINIMUM 1500 FEET IN FRONT OF DRUMS.

FOR A LANE CLOSURE THAT IS IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, THE ADVANCED WARNING SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS.

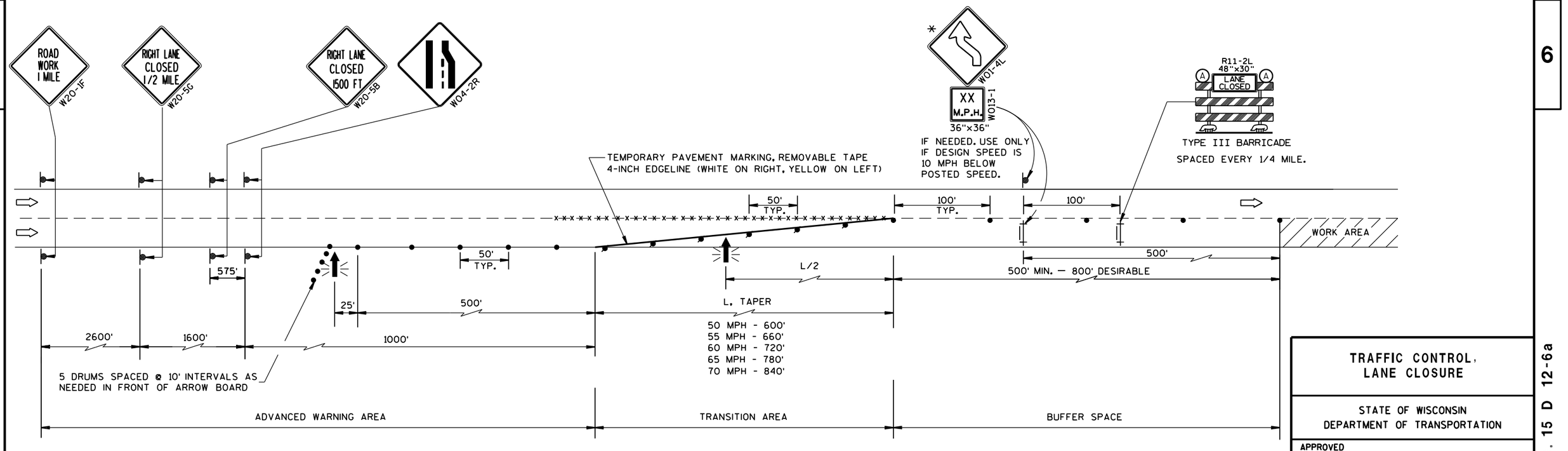
REMOVE PAVEMENT MARKINGS IF LANE CLOSURE IS TO BE IN PLACE FOR LONGER THAN 4 OR MORE DAYS AND NIGHTS.

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

IF THE HORIZONTAL ALIGNMENT IS SUCH THAT A CURVE MAY REQUIRE ADDITIONAL DELINEATION, THE DEVICE SPACING MAY BE DECREASED TO 50 FEET.

ADJUSTMENTS IN BUFFER SPACE NEED TO BE INCORPORATED WHEN THE LANE CLOSURE OCCURS NEAR AN INTERCHANGE EXIT OR ENTRANCE RAMP. THE LANE CLOSURE MUST MUST TAKE PLACE FAR ENOUGH IN ADVANCE OF AN EXIT OR ENTRANCE RAMP TO STILL ALLOW FOR ADEQUATE BUFFER SPACE. THE MINIMUM LENGTH OF THE BUFFER SPACE BEFORE AN EXIT RAMP SHOULD BE 1/2 THE LENGTH OF THE TRANSITION AREA. THE ENTRANCE RAMP SHOULD BE FOLLOWED BY THE ORIGINAL BUFFER SPACE LENGTH OF 800 FEET DESIRABLE PRIOR TO ANOTHER TRAFFIC CONTROL CHANGE SUCH AS A CROSSOVER MANEUVER.

* THE LEFT REVERSE CURVE SIGN (WO1-4L) IS ONLY REQUIRED WHEN THIS DETAIL IS USED IN COMBINATION WITH "SINGLE LANE CROSSOVER" DETAIL.



TRAFFIC CONTROL, LANE CLOSURE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2016 — DATE
/S/ Peter Amakobe Atepe
STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER
FHWA

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S.D.D. 15 D 12-6a

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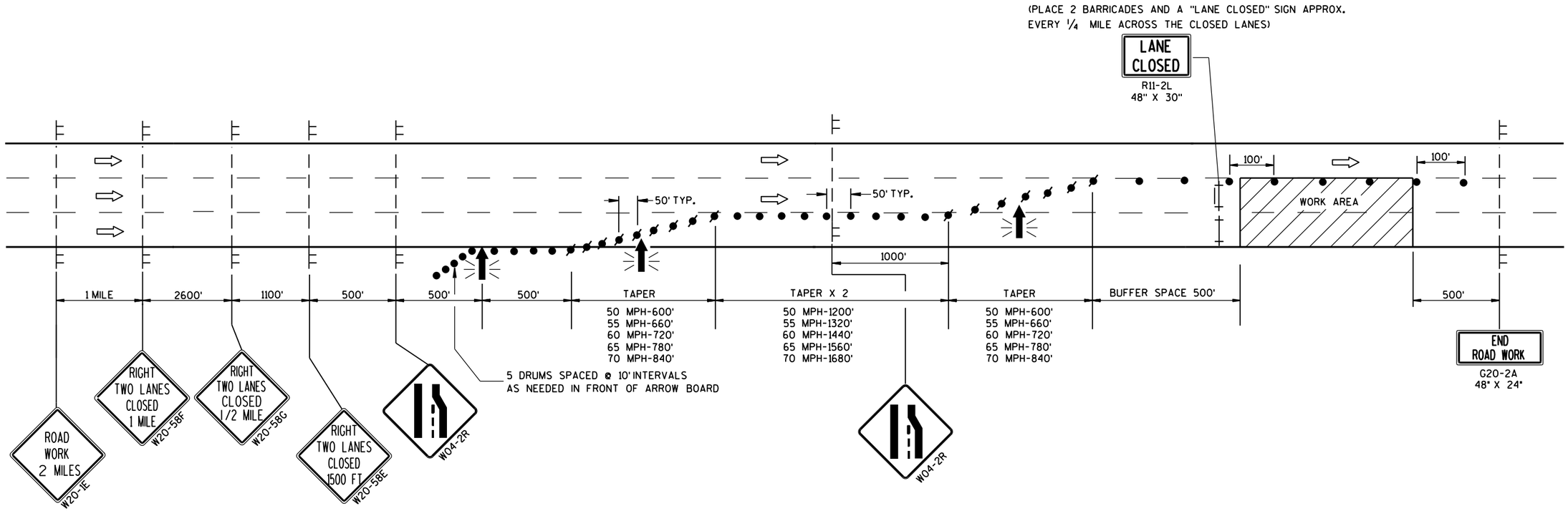
S.D.D. 15 D 12-6a



LEGEND

- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- SIGN ON TEMPORARY SUPPORT
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- TRAFFIC CONTROL DRUM
- FLASHING ARROW BOARD
- DIRECTION OF TRAFFIC
- WORK AREA

GENERAL NOTES

THIS DETAIL IS TYPICAL FOR CLOSING THE RIGHT TWO LANES. FOR CLOSING THE LEFT TWO LANES, REVERSE THE TRAFFIC CONTROL.

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

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

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

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

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

W20-1E AND G20-2A SIGNS ARE NOT REQUIRED IF THE LANE CLOSURE IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT.

CONSIDER GEOMETRICS WHEN LOCATING SIGNS AND ARROWBOARDS SO THE APPROACHING DRIVER HAS A CLEAR VIEW OF THE ARROWBOARDS AND LANE CLOSURE DRUMS FOR A MINIMUM 1500 FEET IN FRONT OF DRUMS.

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

BARRICADES IN A CLOSED LANE 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.

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

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

TRAFFIC CONTROL, TWO LANE CLOSURE ON FREEWAY OR EXPRESSWAY, SHORT TERM (LESS THAN 24 HOURS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
July 14, 2015 — DATE
/S/ Peter Amakobe Atepe — STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER
FHWA

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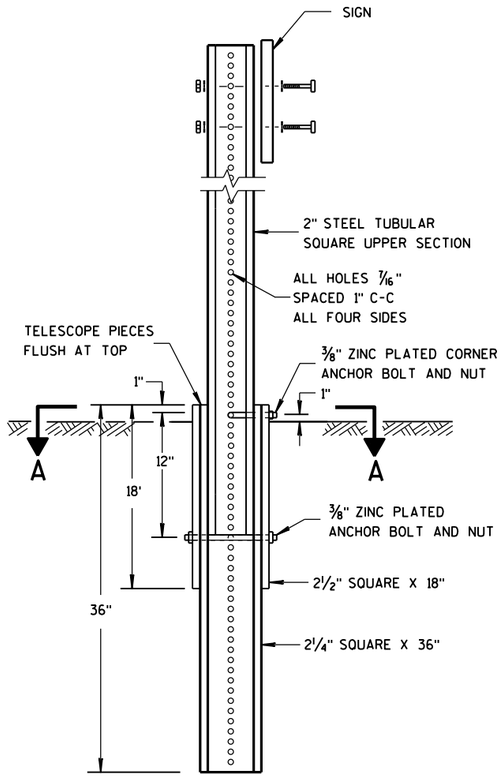
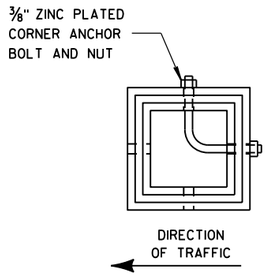
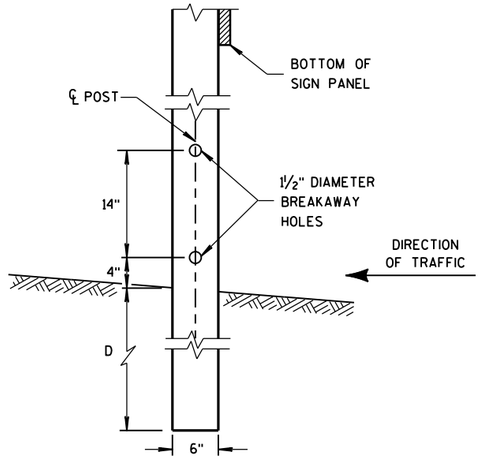


DETAIL OF TUBULAR STEEL SIGN POST



SECTION A-A



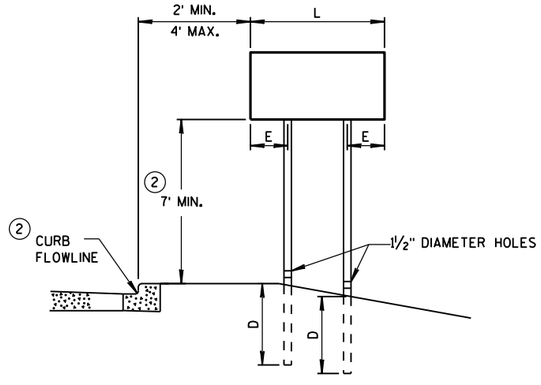
4"x6" WOOD POST MODIFICATION

GENERAL NOTES

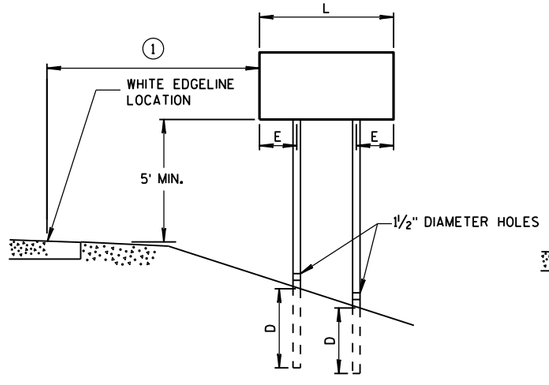
(1) 6 FEET FROM THE EDGE OF PAVEMENT (EDGE LINE LOCATION) UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER. LATERAL OFFSET SHOULD BE ADJUSTED TO AVOID THE DITCH FLOWLINE.

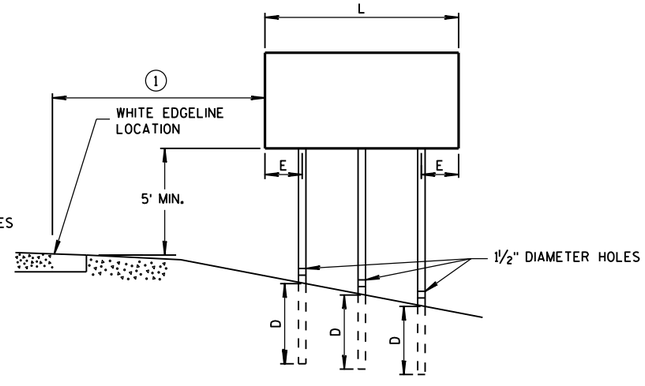
(2) THE EXISTENCE OF CURB AND GUTTER DOES NOT IN ITSELF MANDATE THE VERTICAL CLEARANCE ILLUSTRATED. THAT HEIGHT IS TYPICALLY MEASURED WHERE THERE IS SIDEWALK ADJACENT TO THE ROADWAY OR PARKING IS PERMITTED. IN THE ABSENCE OF SIDEWALK, VERTICAL CLEARANCE IS MEASURED FROM THE TOP OF THE CURB. IF NO SIDEWALK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

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



URBAN AREA





RURAL AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

TUBULAR STEEL POSTS

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

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

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

WOOD POST EMBEDMENT DEPTH

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

4" X 6" WOOD POST

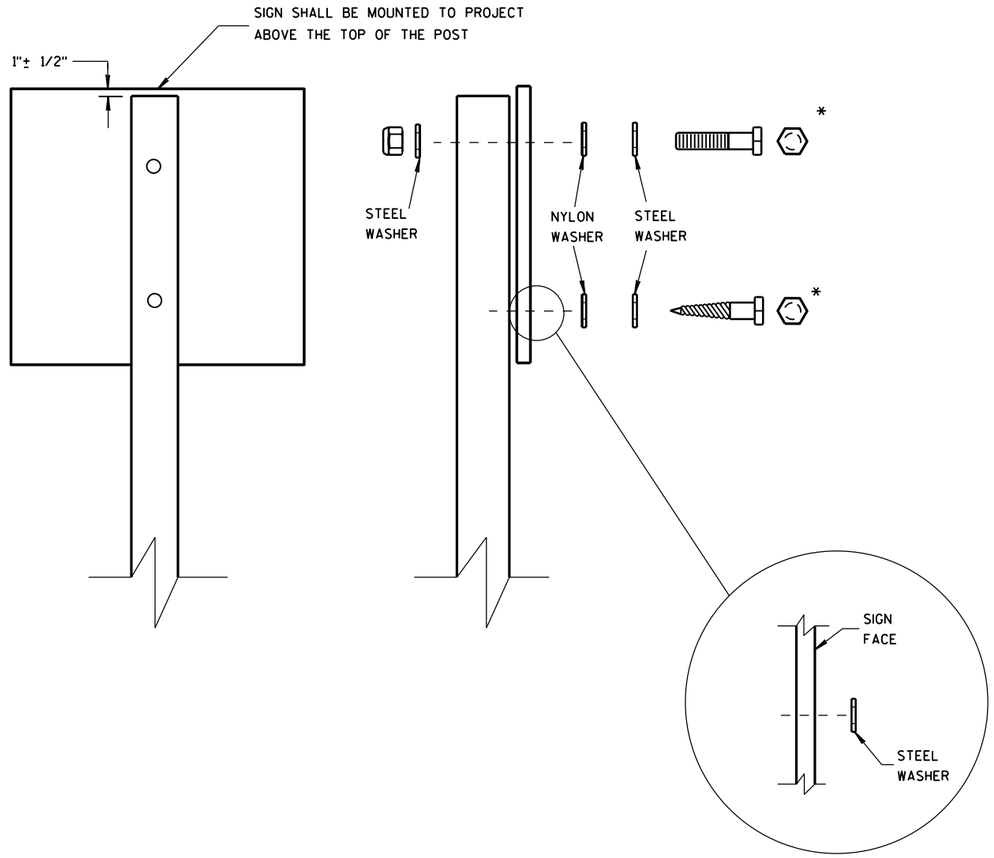
POST SPACING REQUIREMENTS		NUMBER OF WOOD POSTS REQUIRED
L	E	
48" OR LESS AND LESS THAN 20 SQ. FT.	-	1
LESS THAN 60"	12"	2
60" TO 120"	L/5	2
GREATER THAN 120" LESS THAN 168"	12"	3
168" AND GREATER	12"	4

SEE NOTE (3)

TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

STATE OF WISCONSIN DEPARTMENT OF TRANSPOI

6
S.D.D. 15 D 38-1a



WASHER PLACEMENT WHEN SIGN HAS OTHER THAN TYPE H OR TYPE F FACE

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

A. HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: A 153, CLASS D, OR SC 3

B. ELECTRO-GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: B 633, TYPE III, SC 3

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

WOOD POSTS (4" x 4" or 4" x 6")

LAG SCREWS - 3/8" X 3"

MACHINE BOLTS - 5/16" X 6-1/2" OR 7" LENGTH W/ NUTS

SQUARE STEEL POSTS (2" x 2")

MACHINE BOLTS - 3/8" X 3-1/4" LENGTH W/ NUTS

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

WASHERS (ALL POSTS) -

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

1-1/4" O.D. X 3/8" I.D. X .080 NYLON FOR ALL TYPE H SIGNS

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

6

6

S.D.D. 15 D 38-1b

S.D.D. 15 D 38-1b

ATTACHMENT OF SIGNS TO POSTS

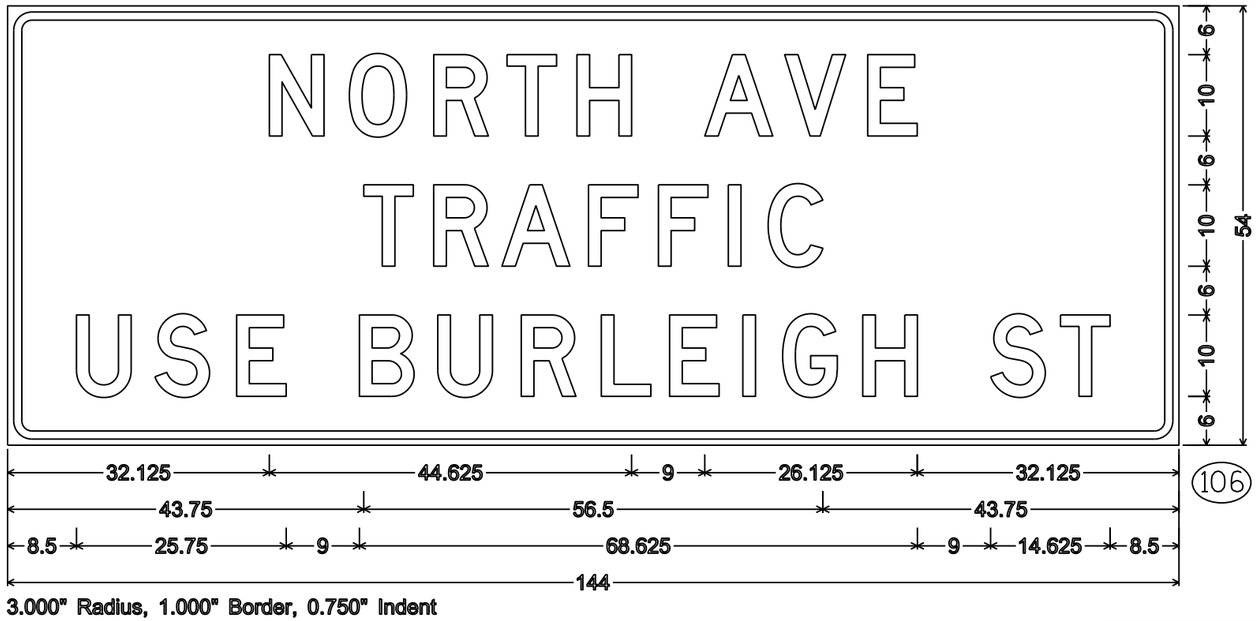
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Feb. 2015
DATE

/S/ Travis Feltes
STATE TRAFFIC ENGINEER

FHWA

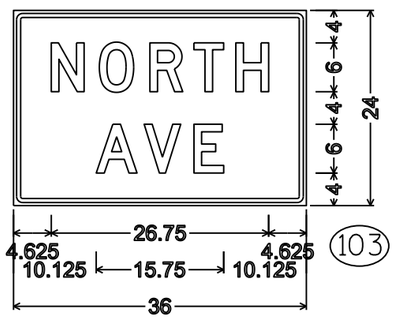
SIGN



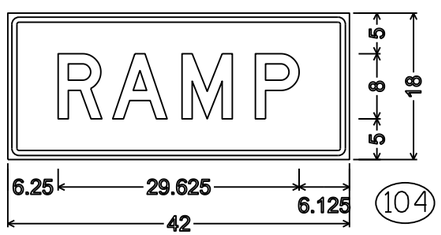
3.000" Radius, 1.000" Border, 0.750" Indent

NOTES

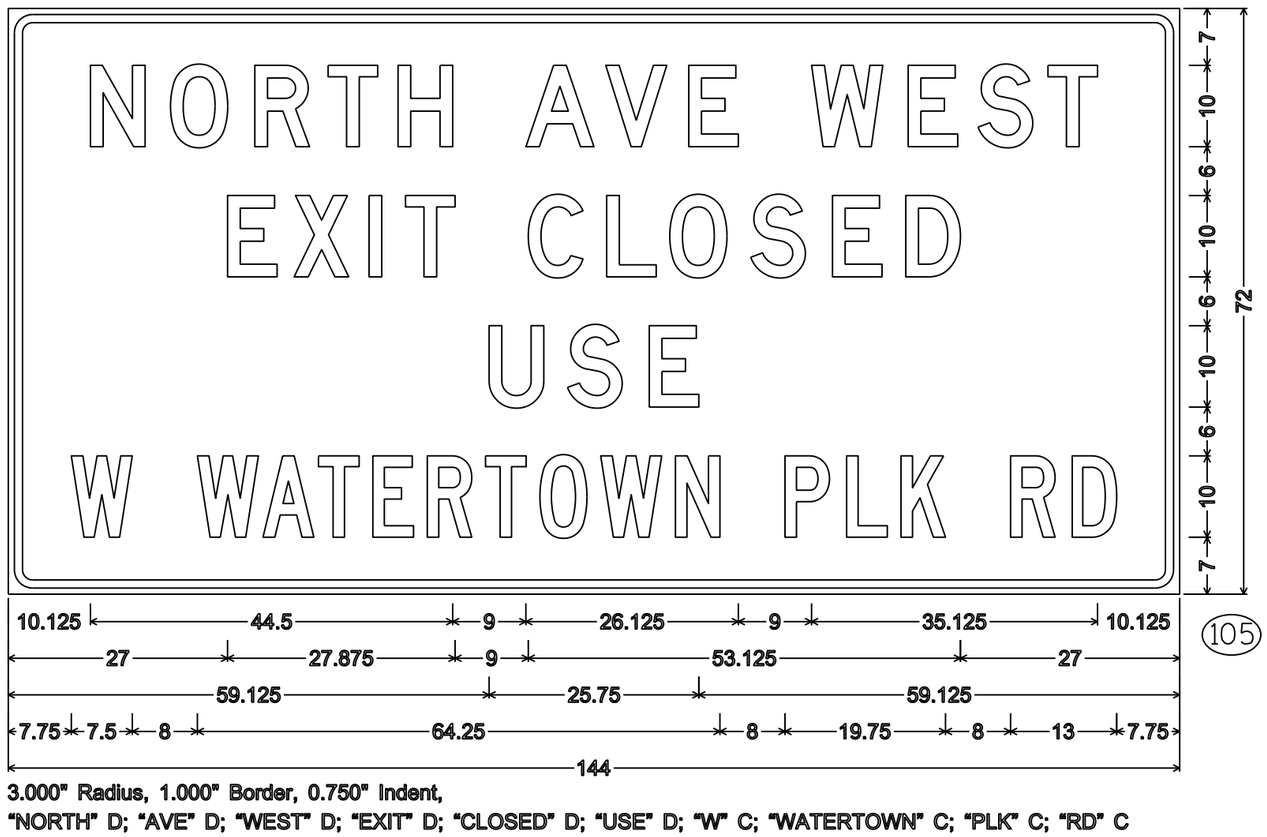
1. Fixed Message Type II Signs - Type F Reflective
2. Color:
   Background - Orange
   Message - Black
3. Message Series - D except as noted



1.125" Radius, 0.500" Border, 0.375" Indent



1.375" Radius, 0.625" Border, 0.500" Indent



3.000" Radius, 1.000" Border, 0.750" Indent,
"NORTH" D; "AVE" D; "WEST" D; "EXIT" D; "CLOSED" D; "USE" D; "W" C; "WATERTOWN" C; "PLK" C; "RD" C

0'-8' BGS COMMON EXCAVATION
8'-29+' REUSE

0'-40.5' BGS REUSE

0'-8' BGS COMMON EXCAVATION 8-12+'
BGS WILL BE LANDFILLED DUE TO
BENZENE EXCEEDING THE GW RCL IN
GP-1 AND PID>10 IN GP-1 AND GP-12

SOIL FROM 0' TO 8' BGS REUSE

8'-27.5+' BGS WILL BE LANDFILLED DUE
TO PVOCS EXCEEDING GW RCLS IN
GP-18 AND PIDS>10 IN GP-8, GP-18,
SB-07, AND SB-09

0' TO 8' REUSE
BELOW 8' COMMON EXCAVATION

9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: CROSS SECTION HAZMAT LEGEND	SHEET 124	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - ****

PLOT DATE : 1/31/2017 7:57 AM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1" = 20'_XREF

WISDOT/CADDS SHEET 49

770
760
750
740
730
720
710

722+00

8.3:1
8.3:1
3.5:1

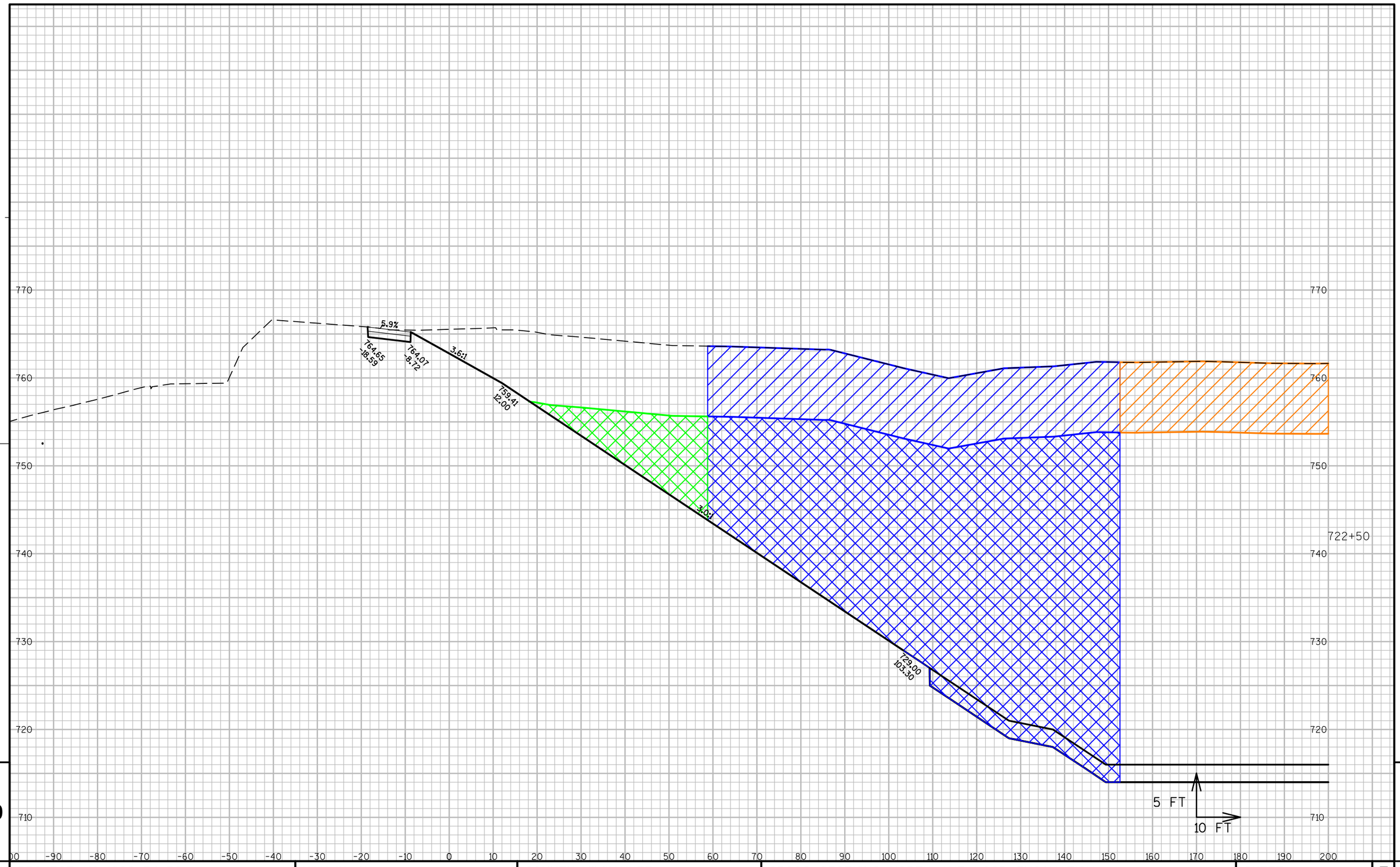
5 FT
10 FT

-90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200

9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 125	E



9

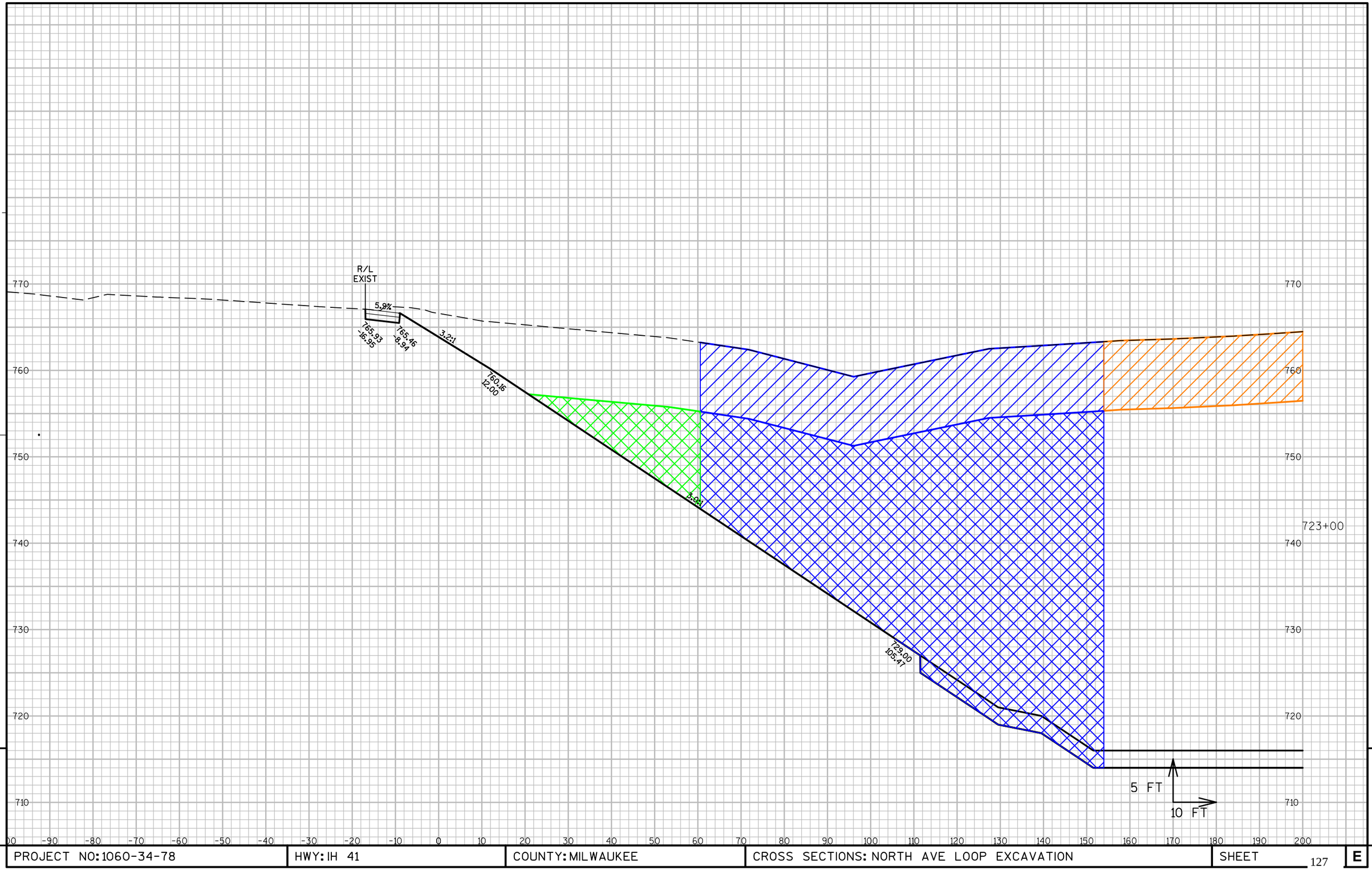
9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 126	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (2)

PLOT DATE : 4/13/2017 3:28 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



9

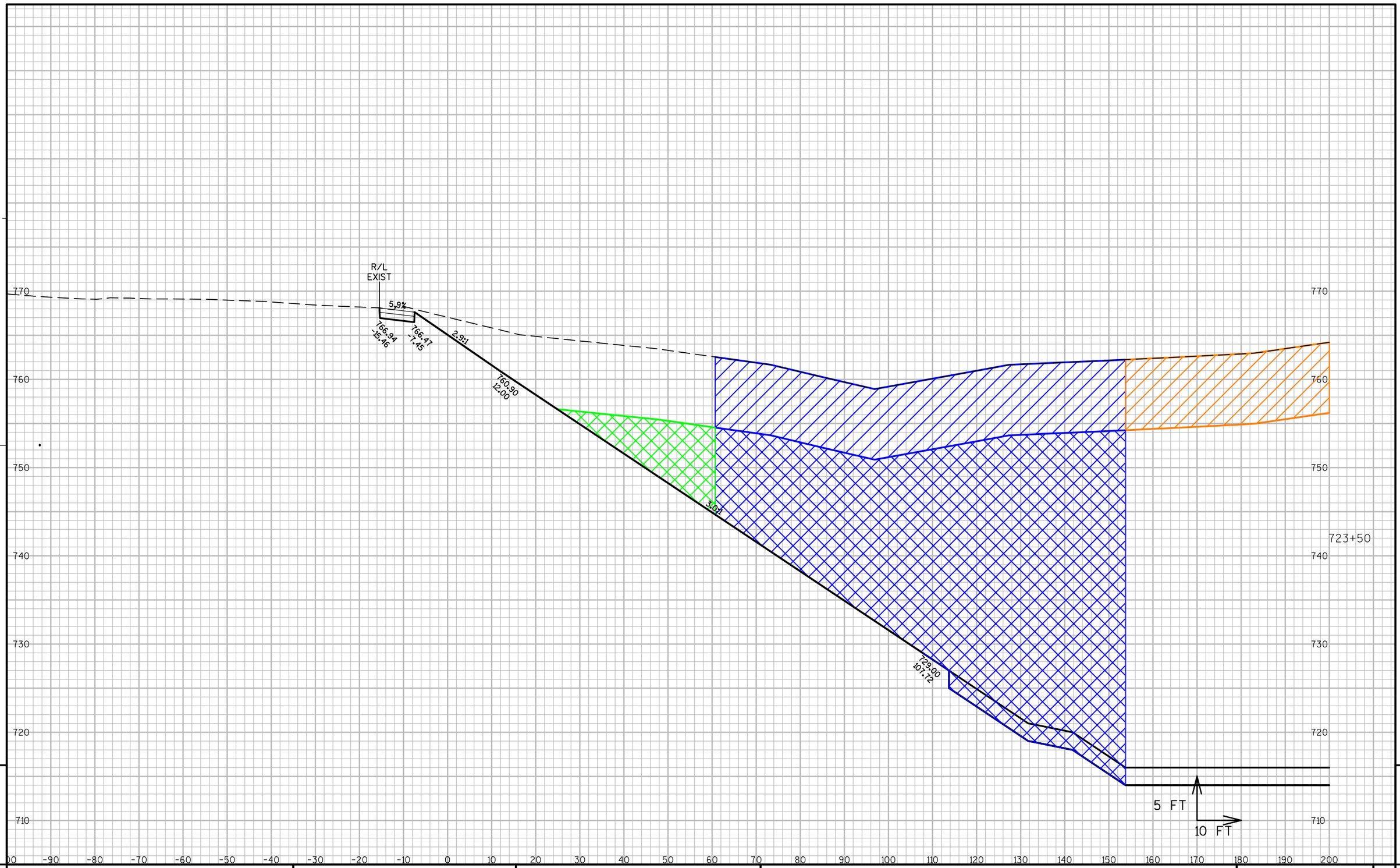
9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 127	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (3)

PLOT DATE : 4/13/2017 3:28 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



9

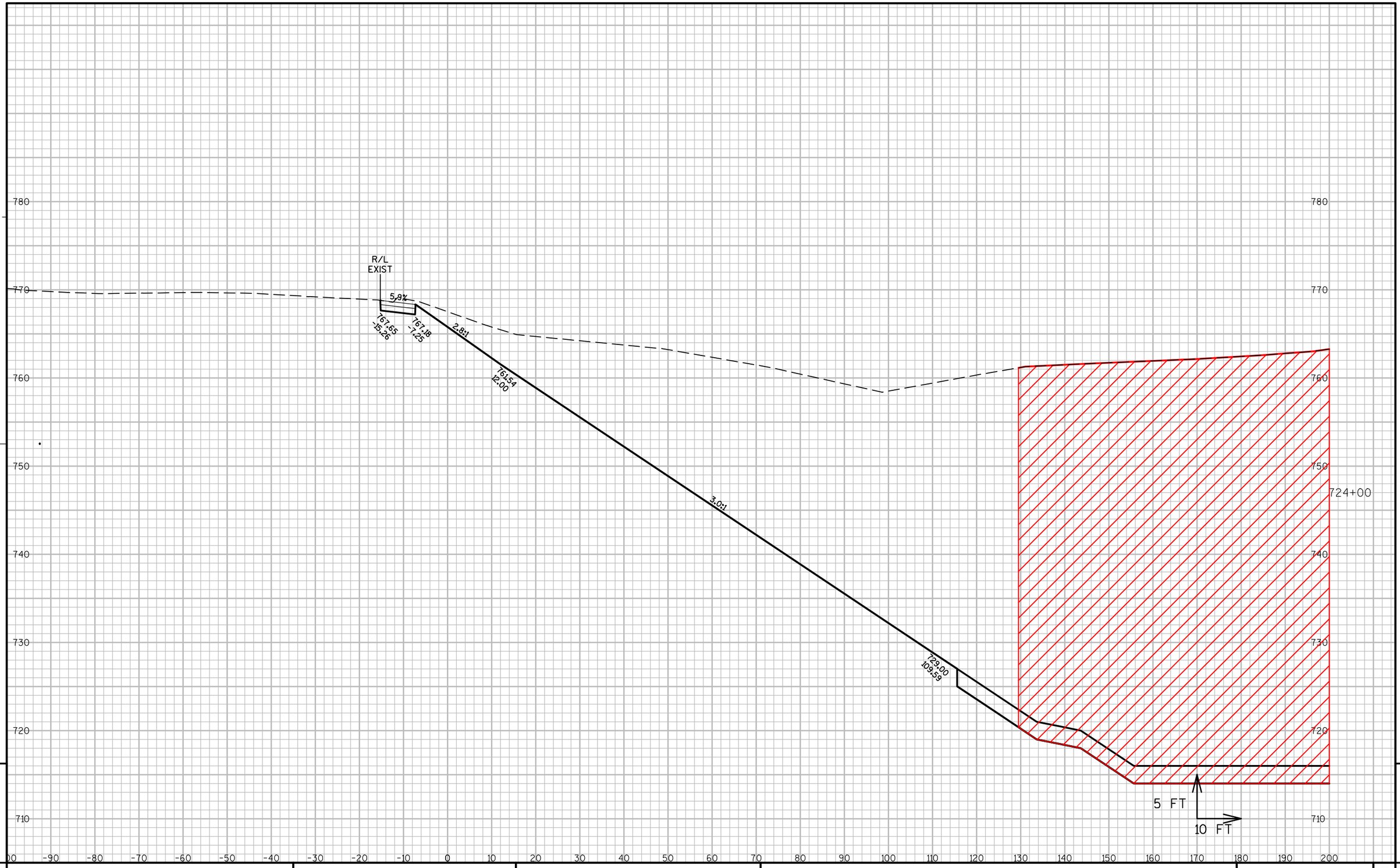
9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 128	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (4)

PLOT DATE : 4/13/2017 3:28 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



9

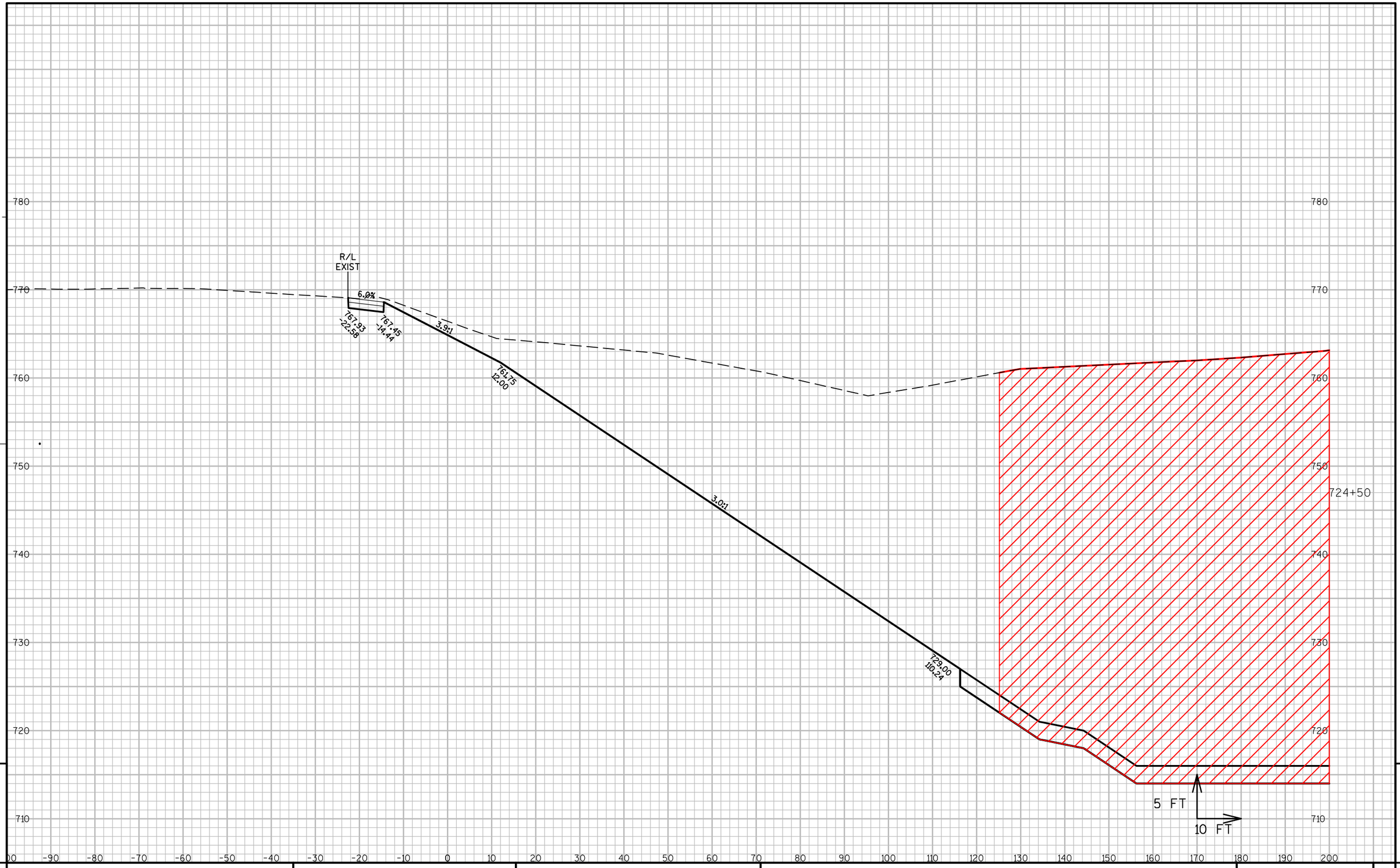
9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 129	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (5)

PLOT DATE : 4/13/2017 3:28 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



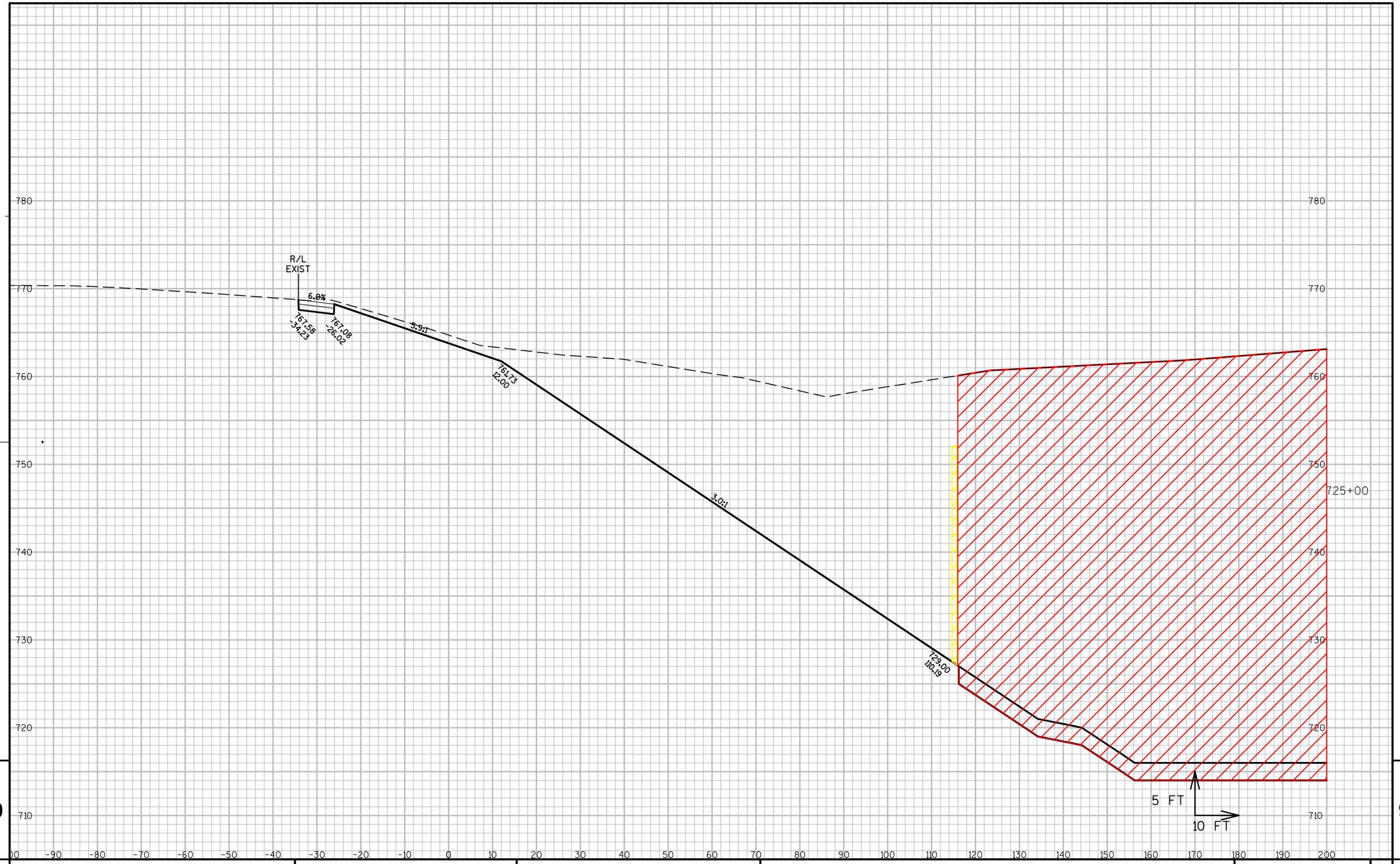
9 9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 130	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (6)

PLOT DATE : 4/13/2017 3:28 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



9

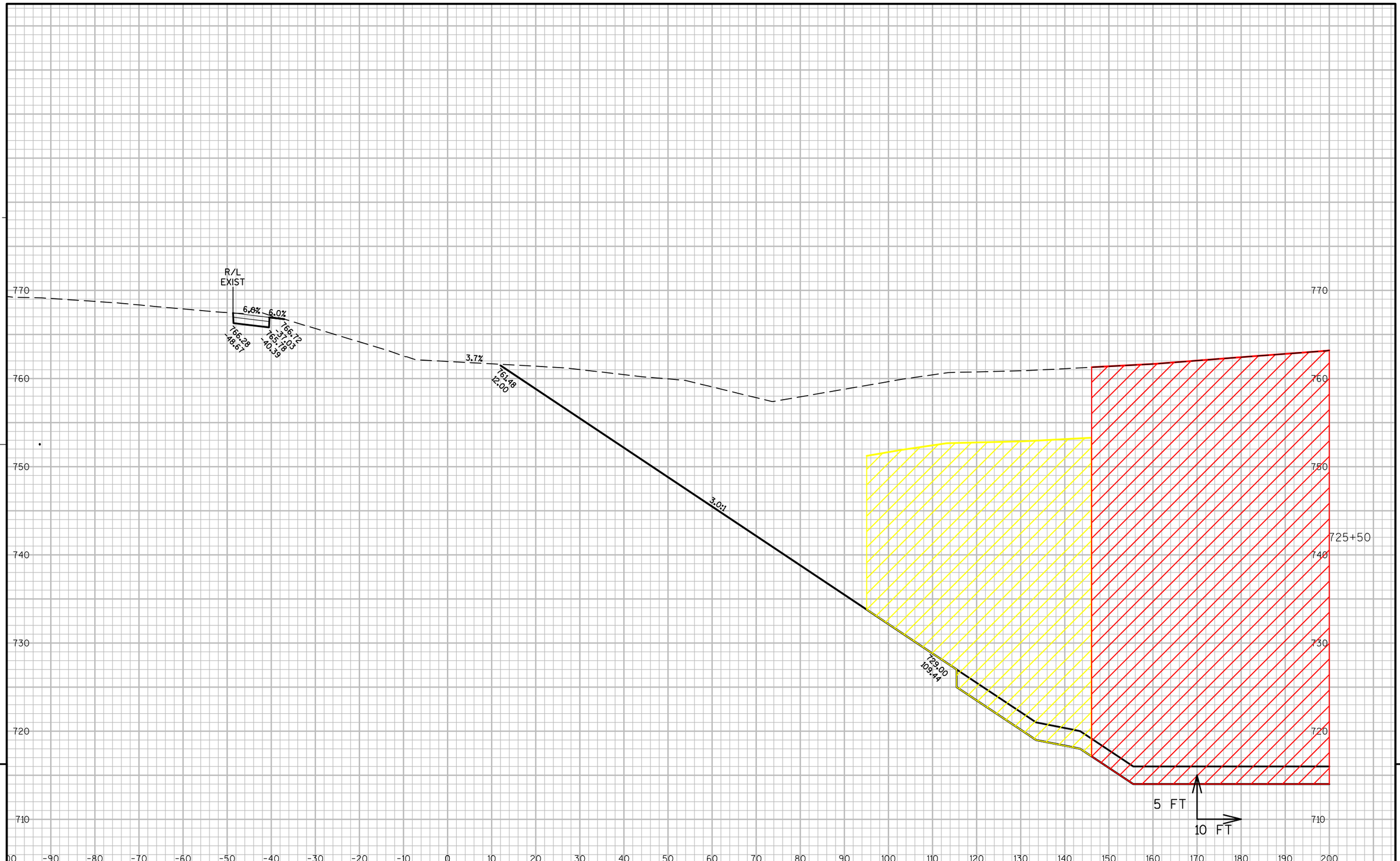
9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 131	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (7)

PLOT DATE : 4/13/2017 3:28 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 132	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (8)

PLOT DATE : 4/13/2017 3:28 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 133	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (9)

PLOT DATE : 4/13/2017 3:28 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49

9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 134	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (10)

PLOT DATE : 4/13/2017 3:28 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

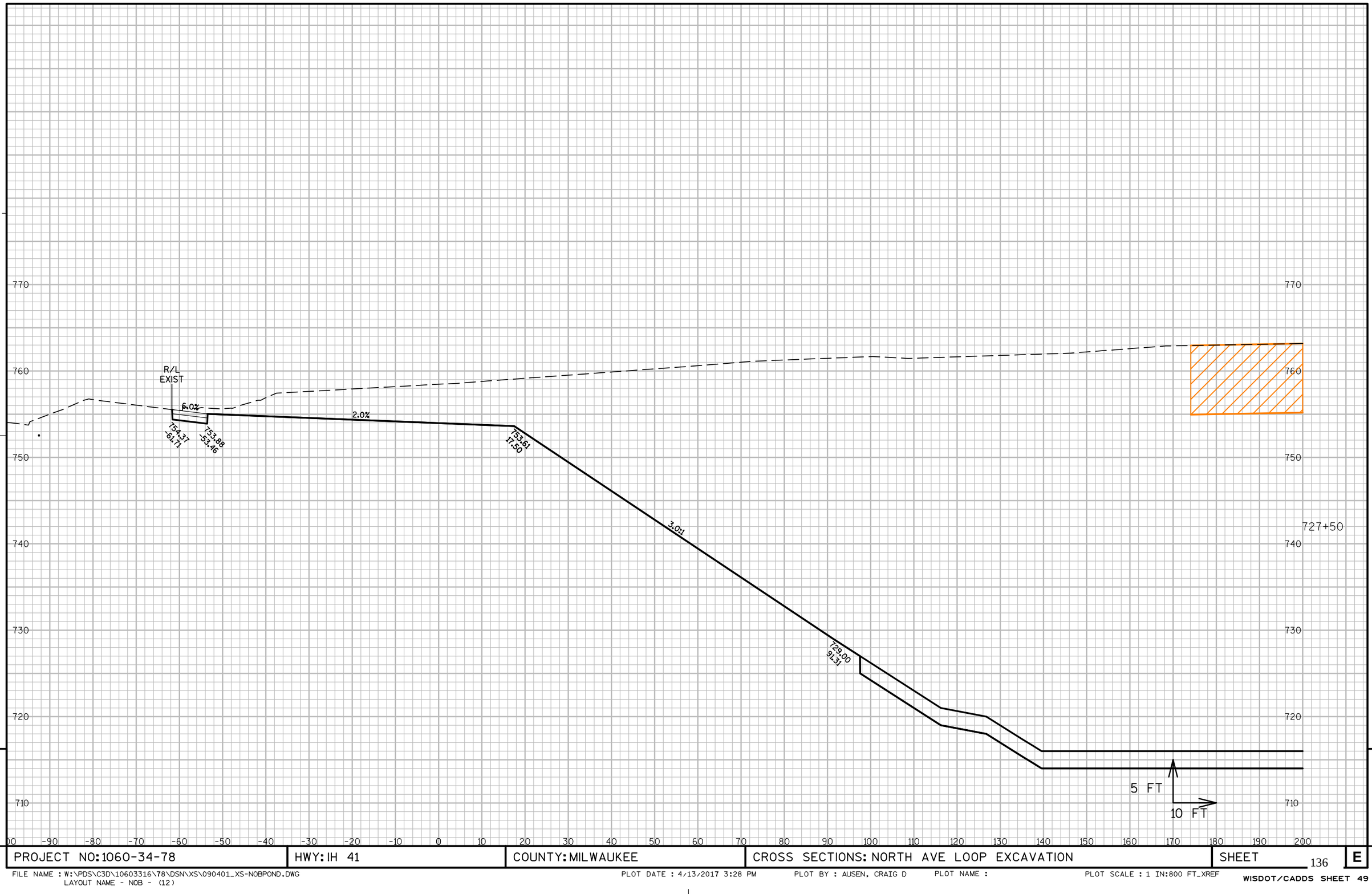
WISDOT/CADDS SHEET 49

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 135 E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (11)

PLOT DATE : 4/13/2017 3:28 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (12)

PLOT DATE : 4/13/2017 3:28 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

770

760

750

740

730

720

710

R/L
EXIST

6.0%

2.0%

3.0:1

751.24
-42.39

750.73
-33.91

750.83
18.31

729.00
83.81

728+00

5 FT

10 FT

-90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200

9

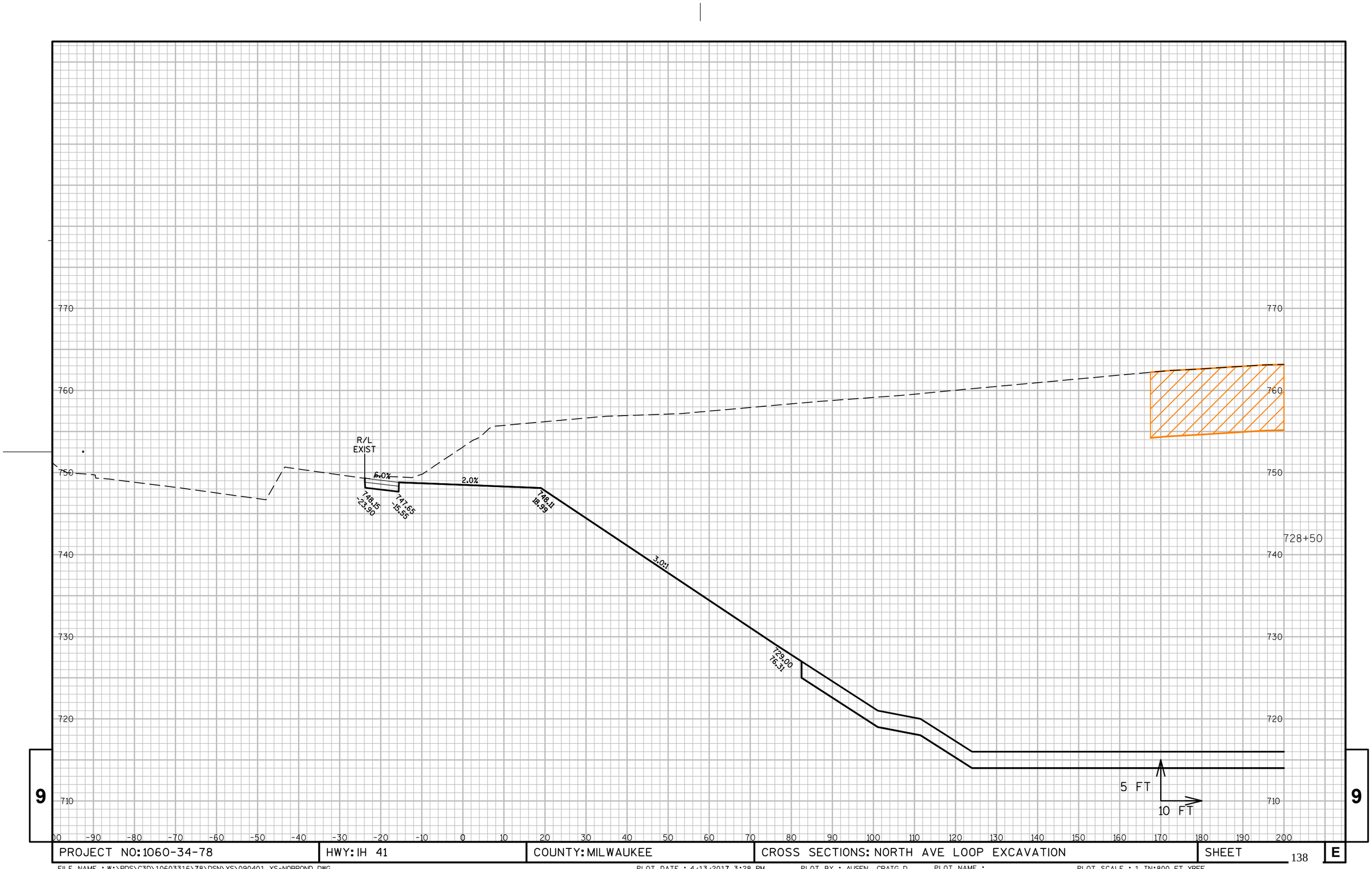
9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 137	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (13)

PLOT DATE : 4/13/2017 3:28 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



9

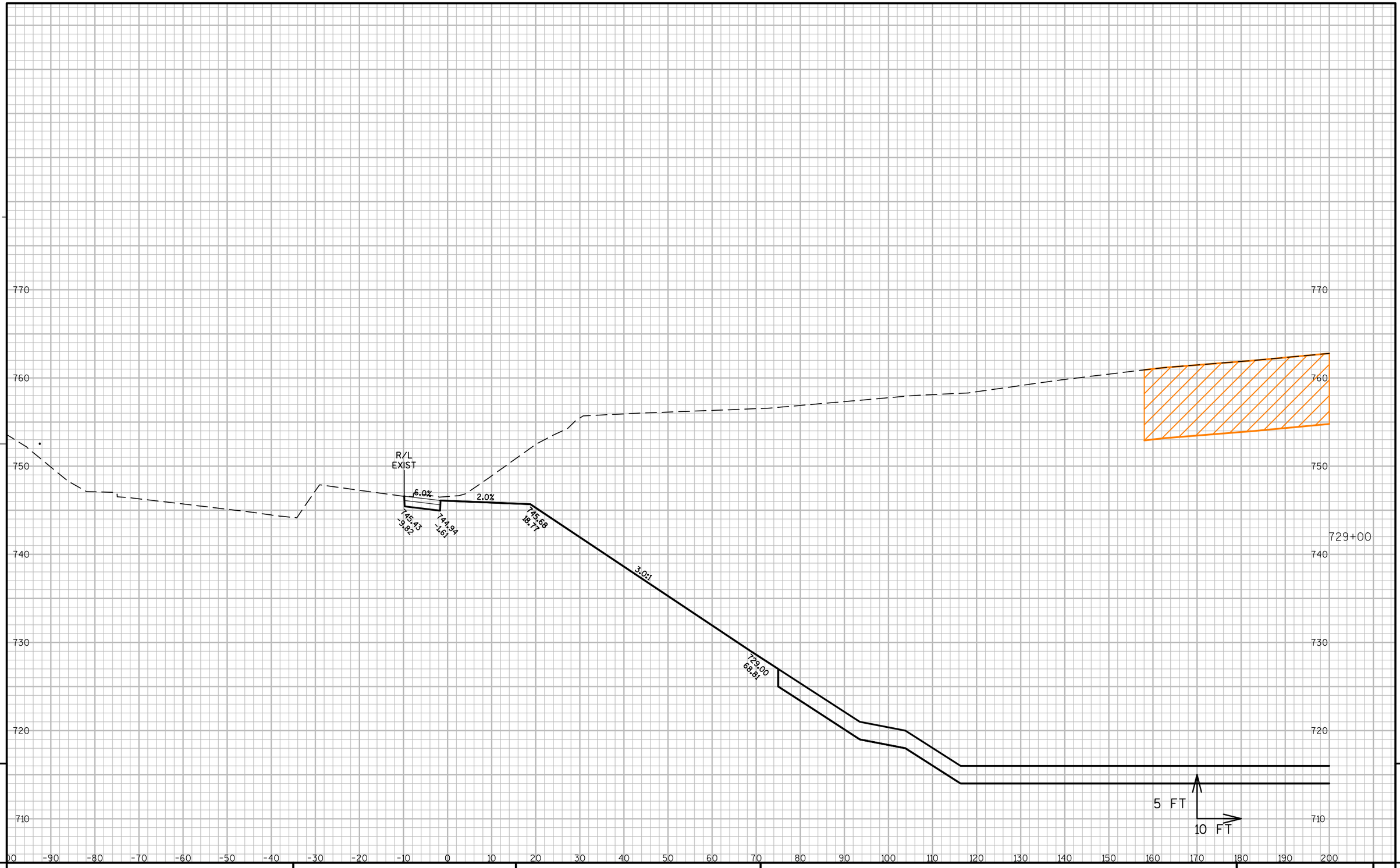
9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 138	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (14)

PLOT DATE : 4/13/2017 3:28 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



9

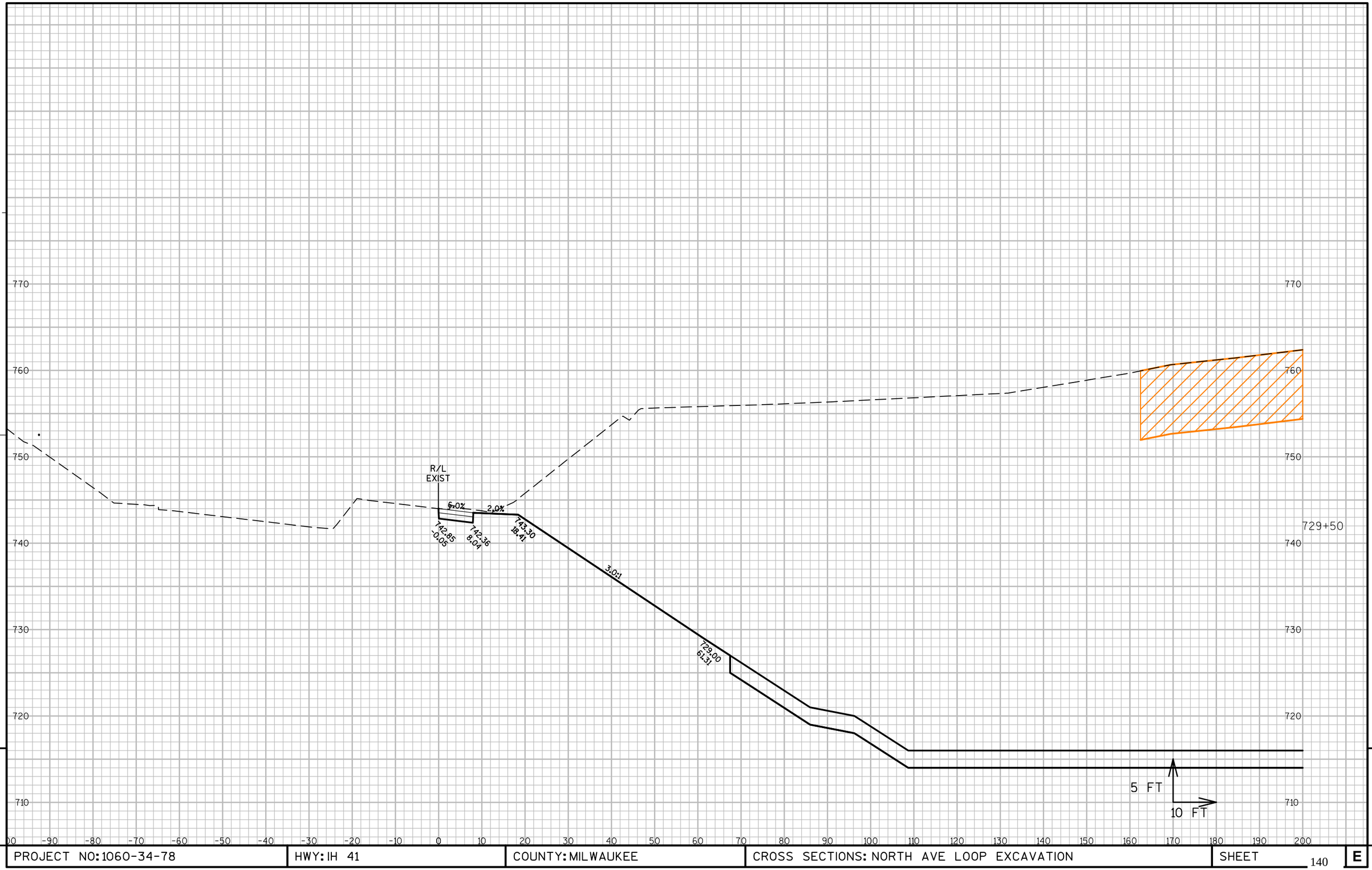
9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 139	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (15)

PLOT DATE : 4/13/2017 3:28 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



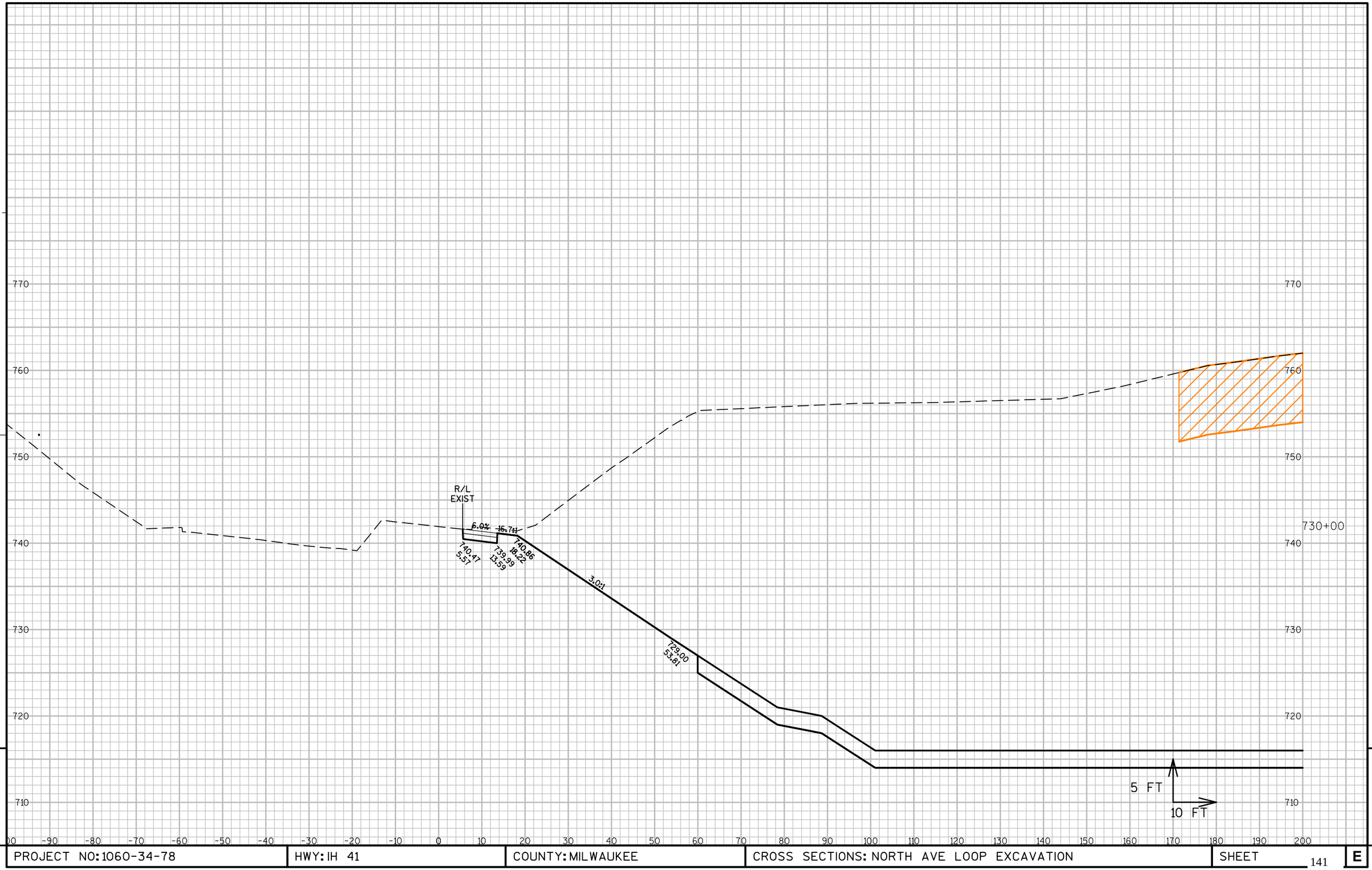
9 9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 140	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (16)

PLOT DATE : 4/13/2017 3:28 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



9

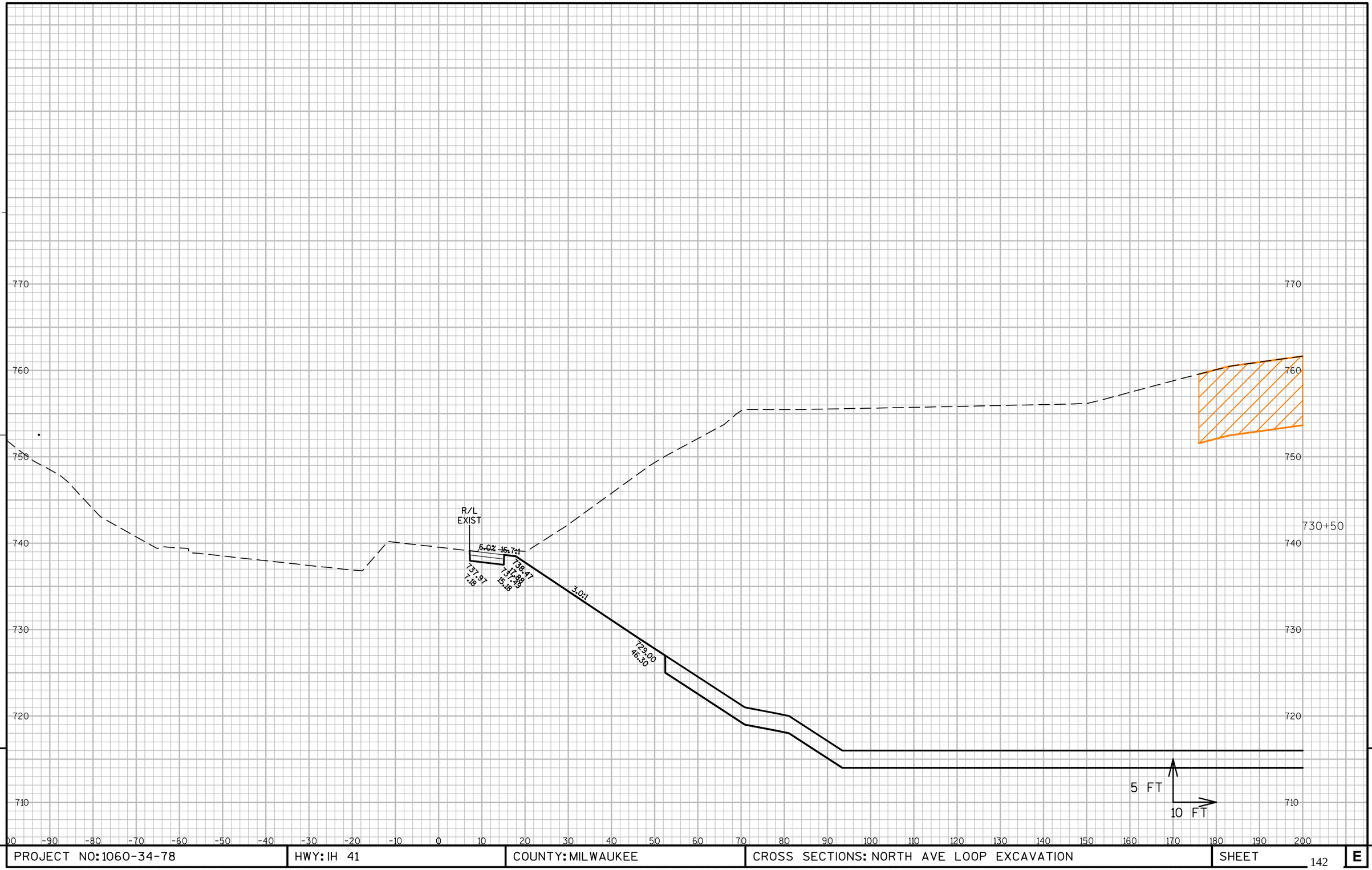
9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 141	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (17)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



9

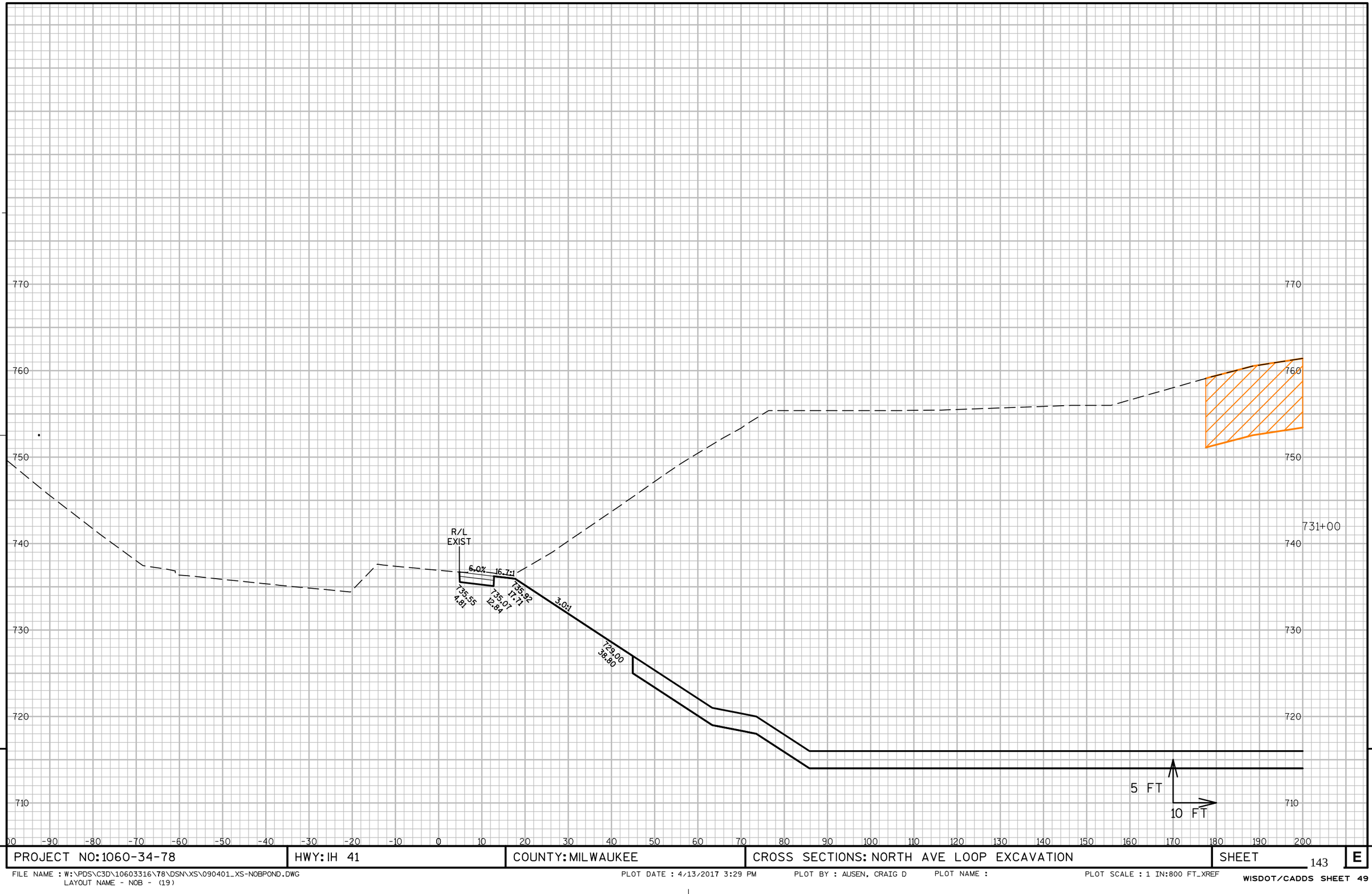
9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 142	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (18)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



9

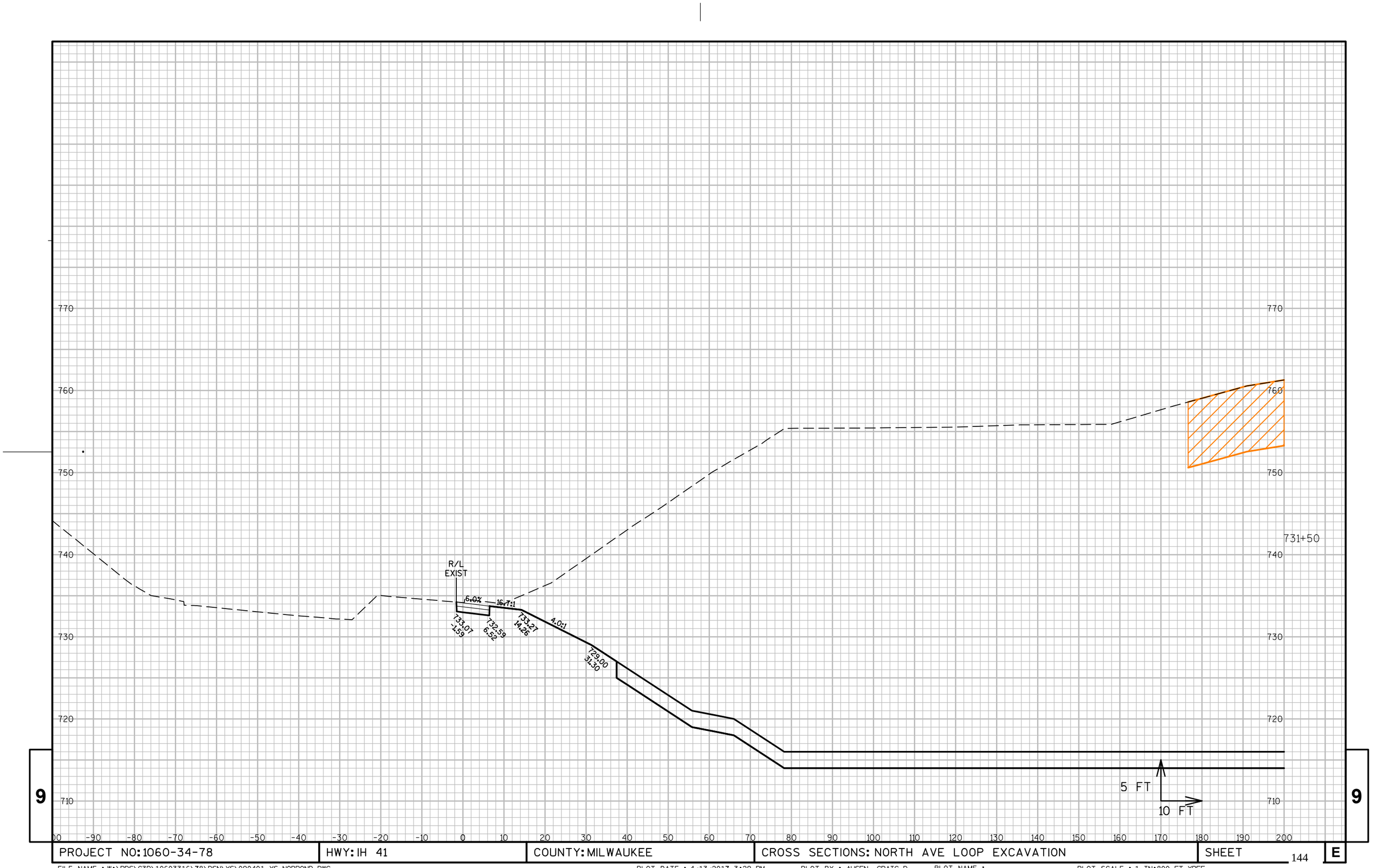
9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 143	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (19)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 144	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (20)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

770

760

750

740

730

720

710

R/L
EXIST

6.0%

16.7:1

731.01
-11.62

730.64
-5.46

730.64
10.33

732+00

5 FT

10 FT

-100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200

9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 145	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (21)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

770

760

750

740

730

720

710

R/L
EXIST

6.1%

730.78
-11.20

16.4:1

729.98
1.89

729.00
18.01

732+50

5 FT

10 FT

-100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200

9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 146	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (22)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

770

760

750

740

730

720

710

R/L
EXIST

4.0%

15.0:1

731.03
16.65

730.53
3.99

729.00
19.97

733+00

5 FT

10 FT

-90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200

9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 147	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (23)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

770

760

750

740

730

720

710

R/L
EXIST

4.0%

732.15
-14.37

731.84
-6.35

10.5:1

729.00
23.42

733+50

5 FT

10 FT

-90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200

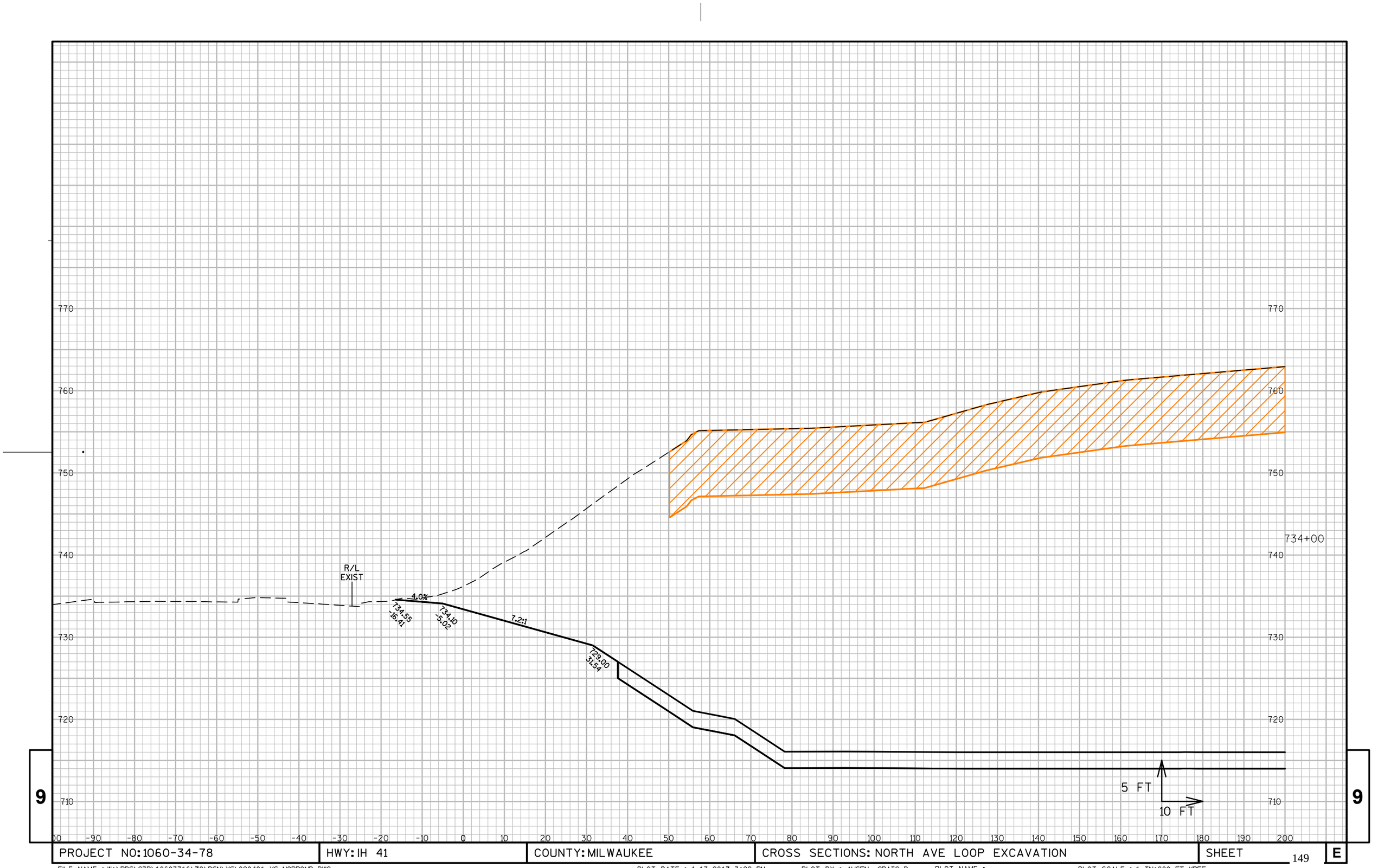
9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 148	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (24)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF



9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 149	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (25)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

770

760

750

740

730

720

710

R/L
EXIST

4.0%

736.59
-10.39

736.27
-0.10

5.0:1

729.00
36.62

734+50

5 FT

10 FT

-90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200

9

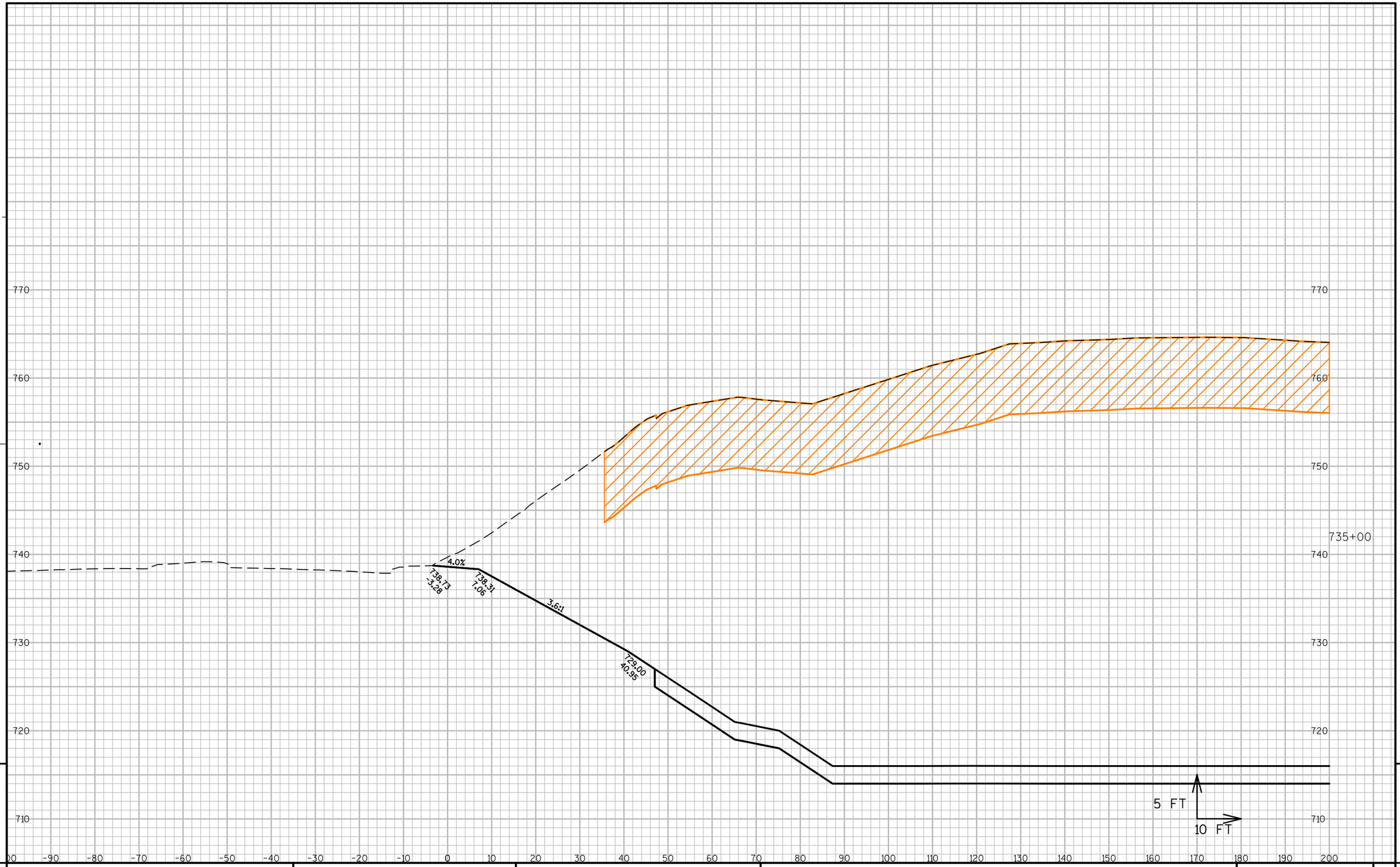
9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 150	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (26)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 151	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (27)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

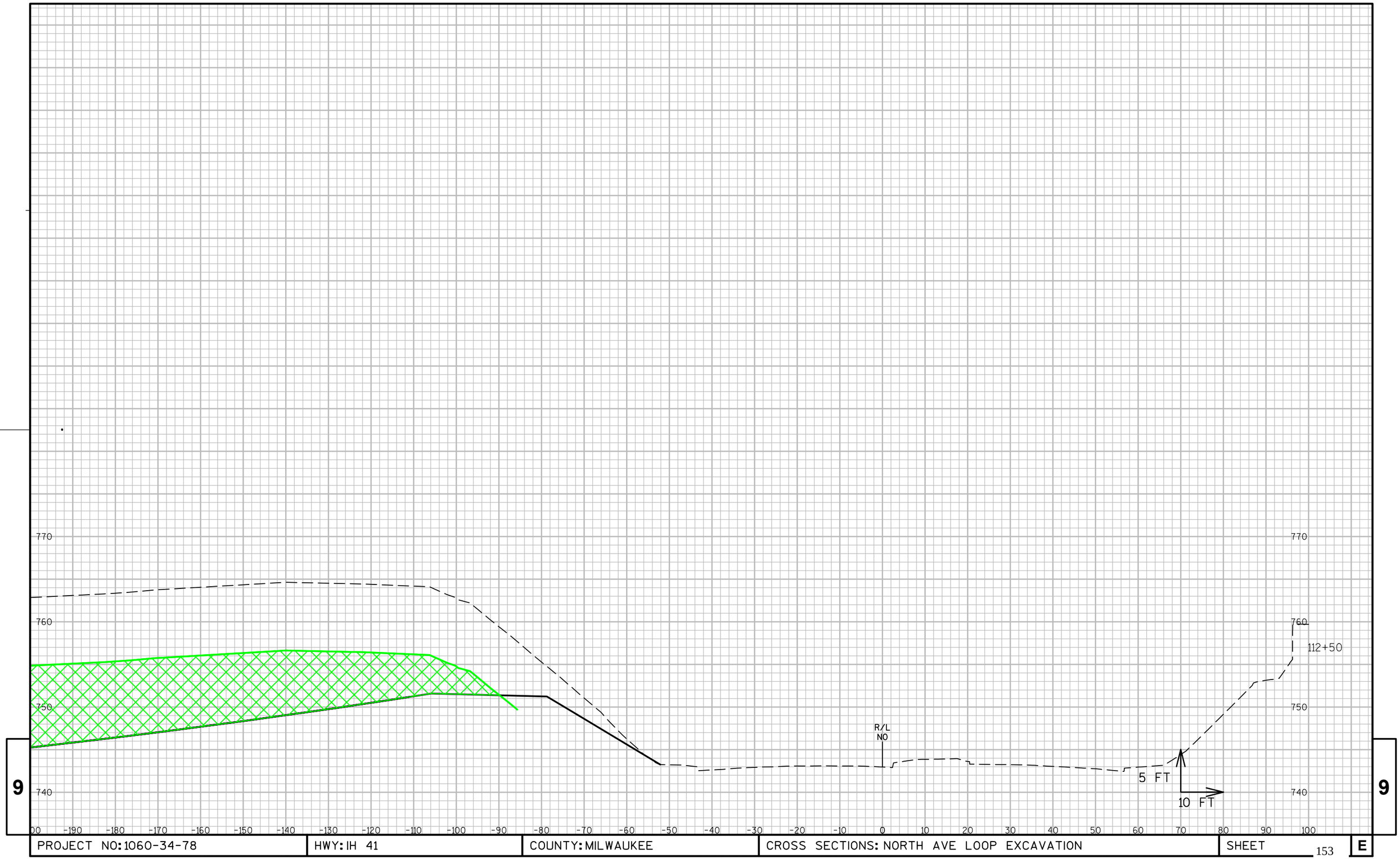
9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 152	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NOB - (28)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF



9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 153	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NO - (34)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49

770

760

750

740

730

720

R/L
NO

113+00

5 FT
10 FT

-200 -190 -180 -170 -160 -150 -140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100

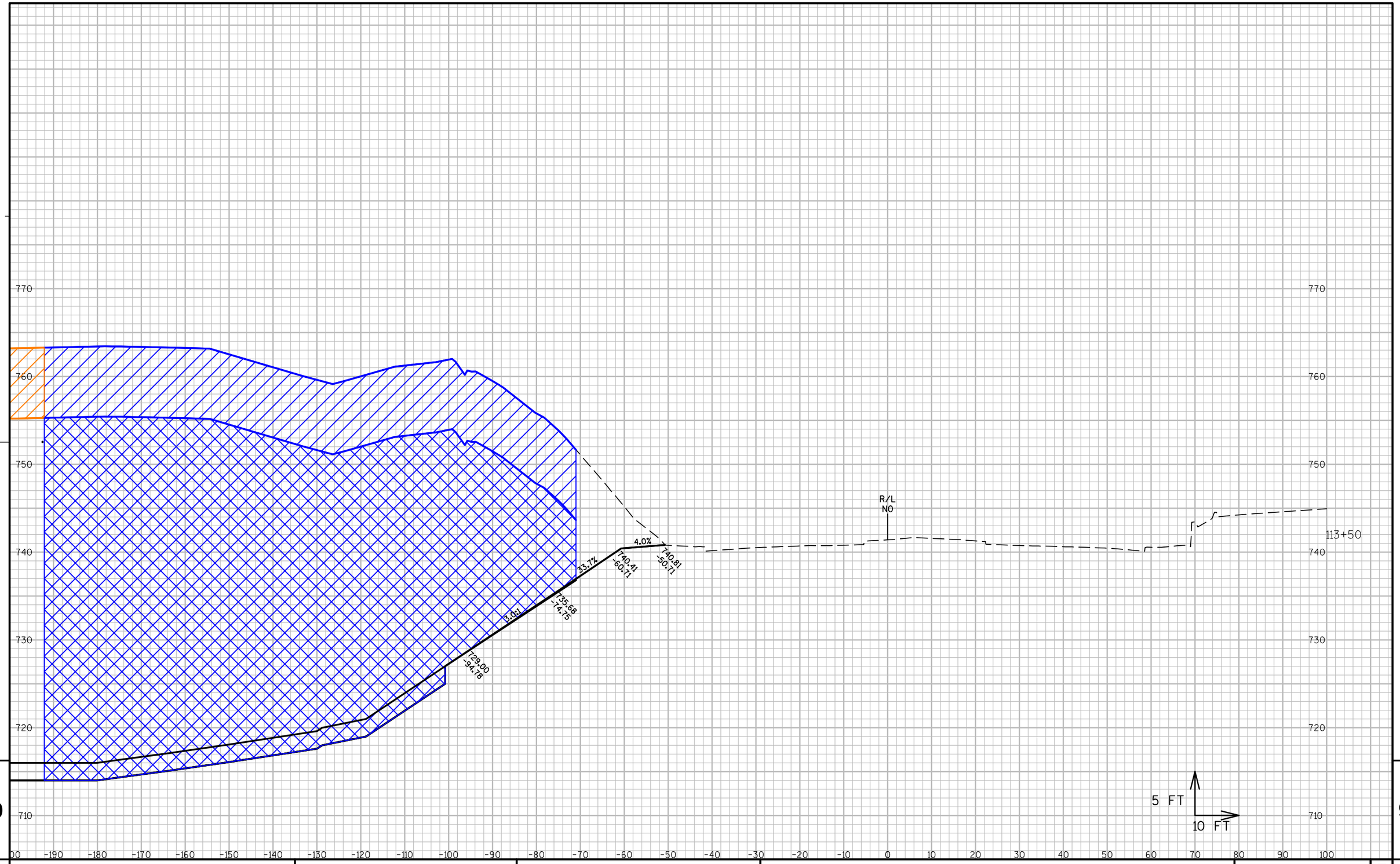
9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 154	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NO - (35)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF



9

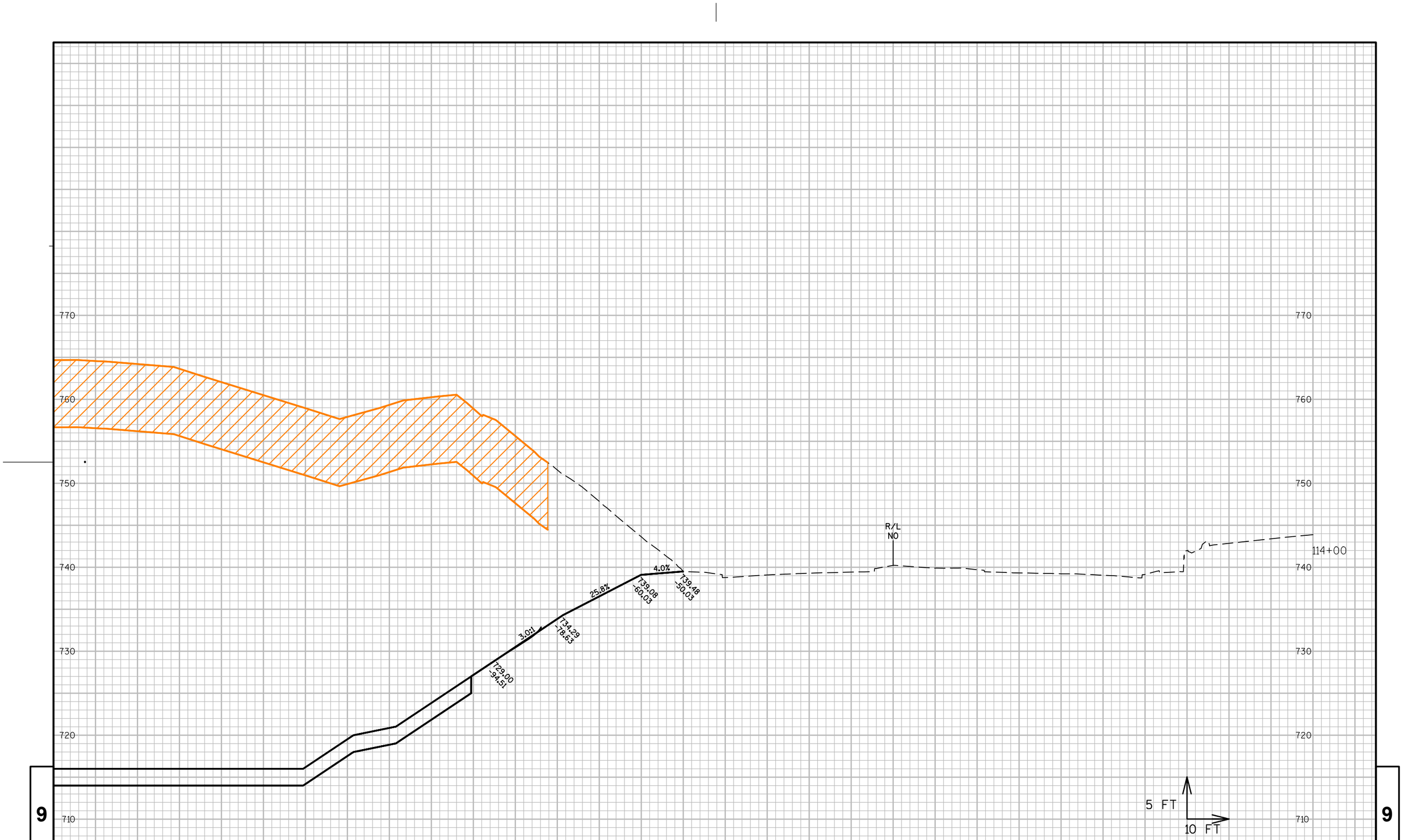
9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 155	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NO - (36)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49



9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 156	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NO - (37)

PLOT DATE : 4/13/2017 3:29 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49

770

760

750

740

730

720

710

770

760

750

740

730

720

710

R/L
NO

114+50

4.9%

3.9:1

4.2:1

5 FT

10 FT

-200 -190 -180 -170 -160 -150 -140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100

9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 157	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NO - (38)

PLOT DATE : 4/13/2017 3:30 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

760

750

740

730

720

710

R/L
NO

115+00

5.7%

5.6:1

6.6:1

7.0:1

5 FT

10 FT

-200 -190 -180 -170 -160 -150 -140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100

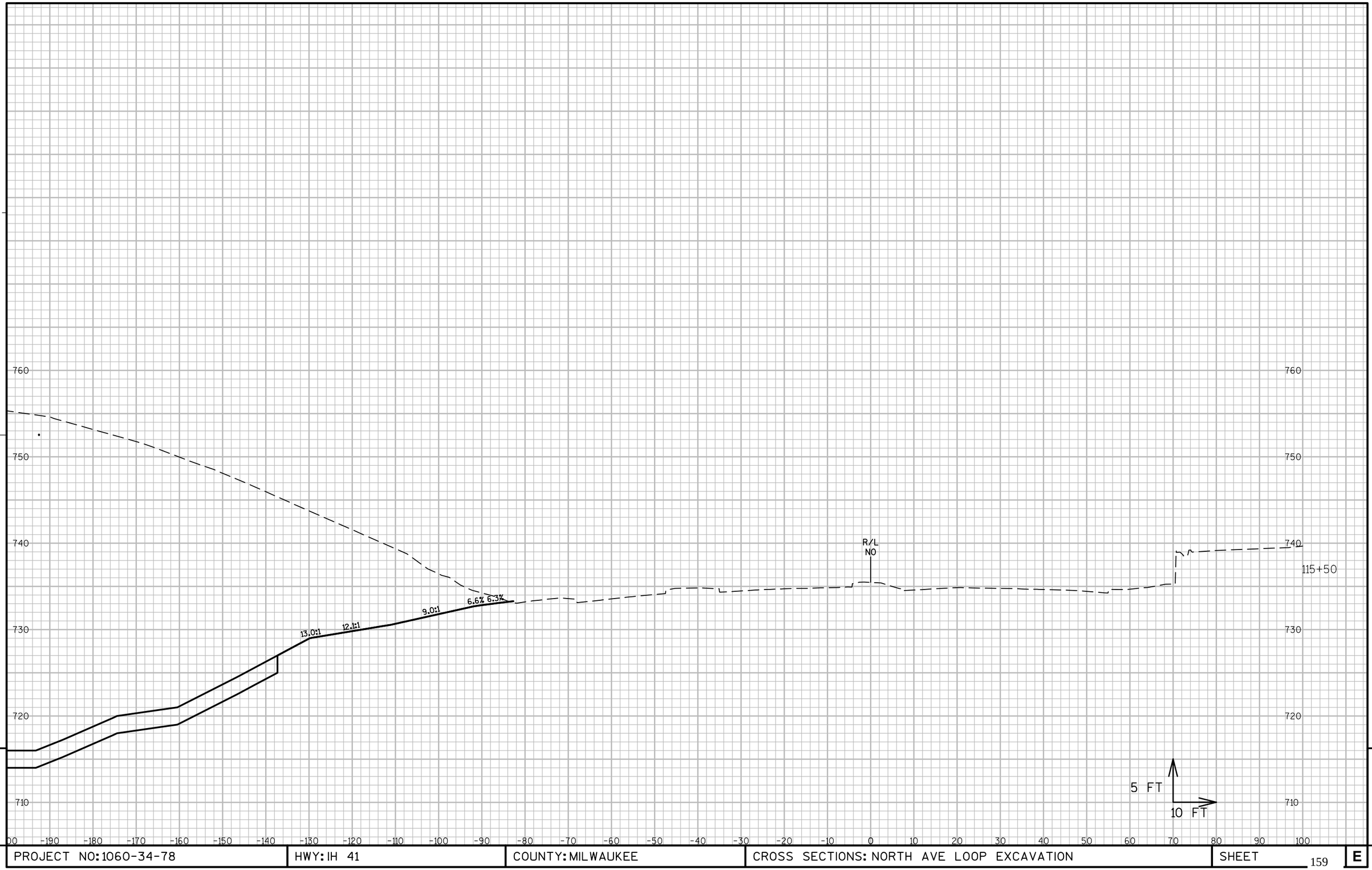
9

9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 158	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NO - (39)

PLOT DATE : 4/13/2017 3:30 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF



9

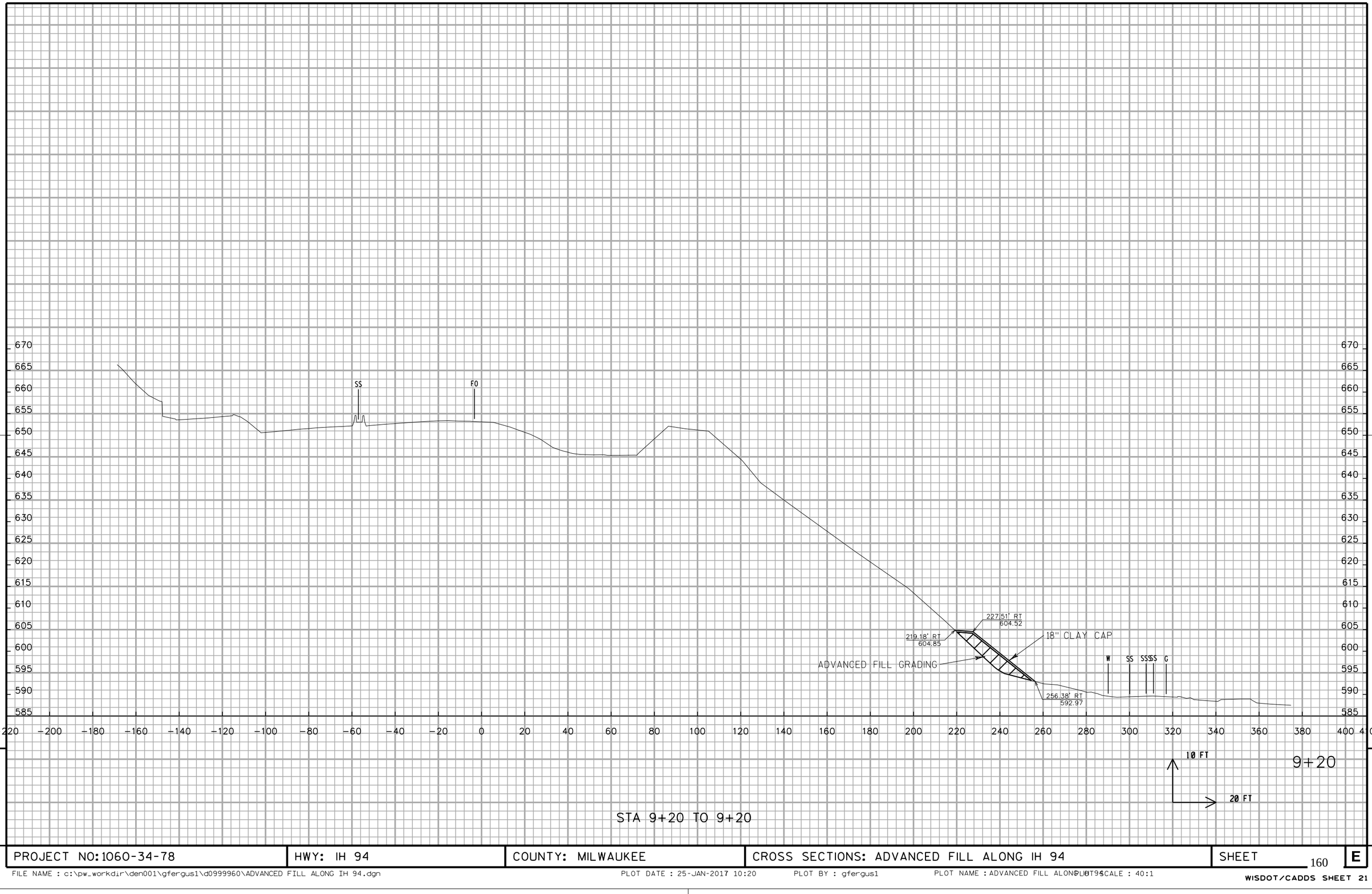
9

PROJECT NO: 1060-34-78	HWY: IH 41	COUNTY: MILWAUKEE	CROSS SECTIONS: NORTH AVE LOOP EXCAVATION	SHEET 159	E

FILE NAME : W:\PDS\C3D\10603316\78\DSN\XS\090401_XS-NOBPOND.DWG
LAYOUT NAME - NO - (40)

PLOT DATE : 4/13/2017 3:30 PM PLOT BY : AUSEN, CRAIG D PLOT NAME : PLOT SCALE : 1 IN:800 FT_XREF

WISDOT/CADDS SHEET 49

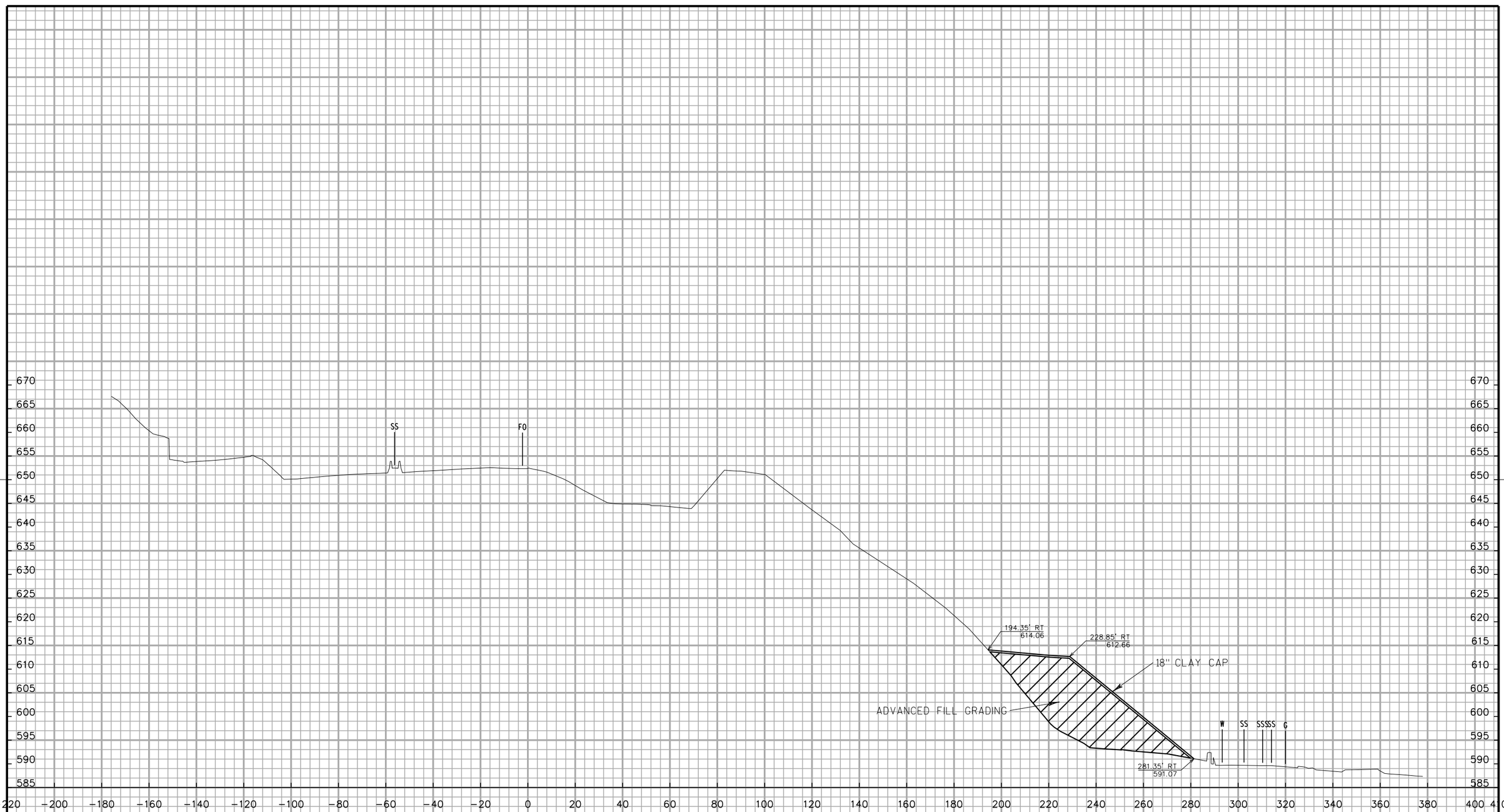


9

STA 9+20 TO 9+20

9

PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	CROSS SECTIONS: ADVANCED FILL ALONG IH 94	SHEET 160	E

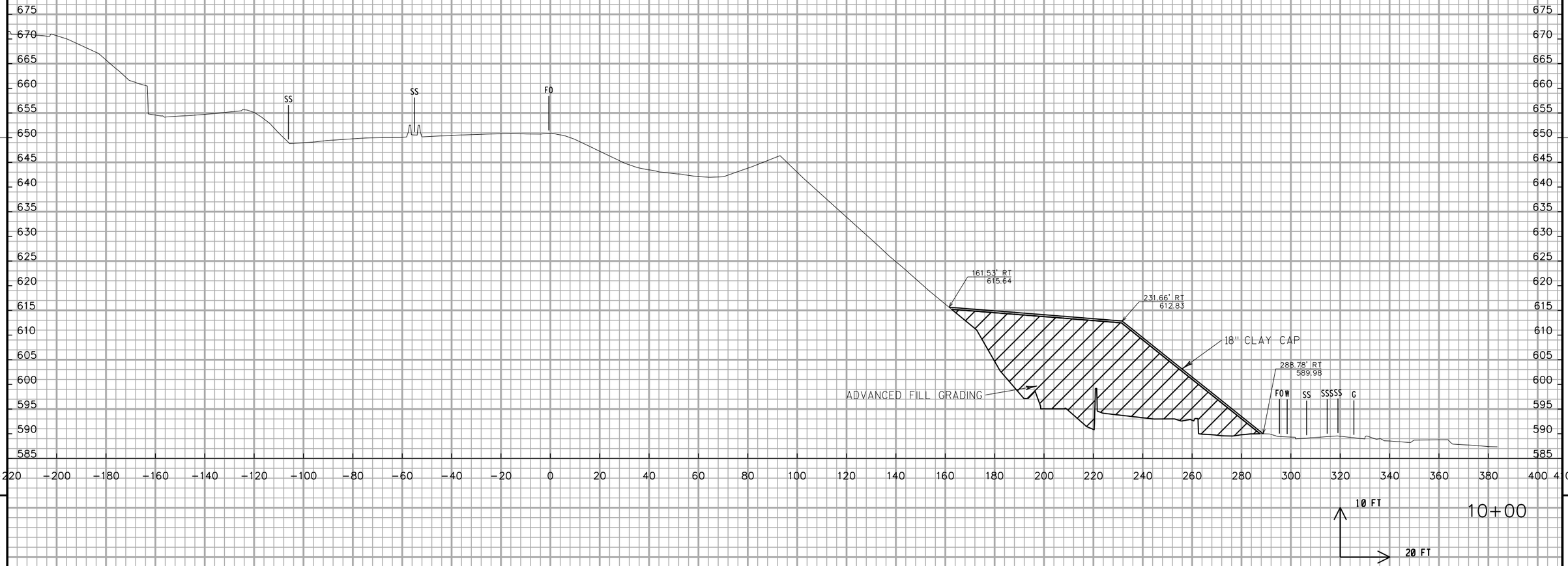


9

STA 9+50 TO 9+50

9

PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	CROSS SECTIONS: ADVANCED FILL ALONG IH 94	SHEET 161	E



9

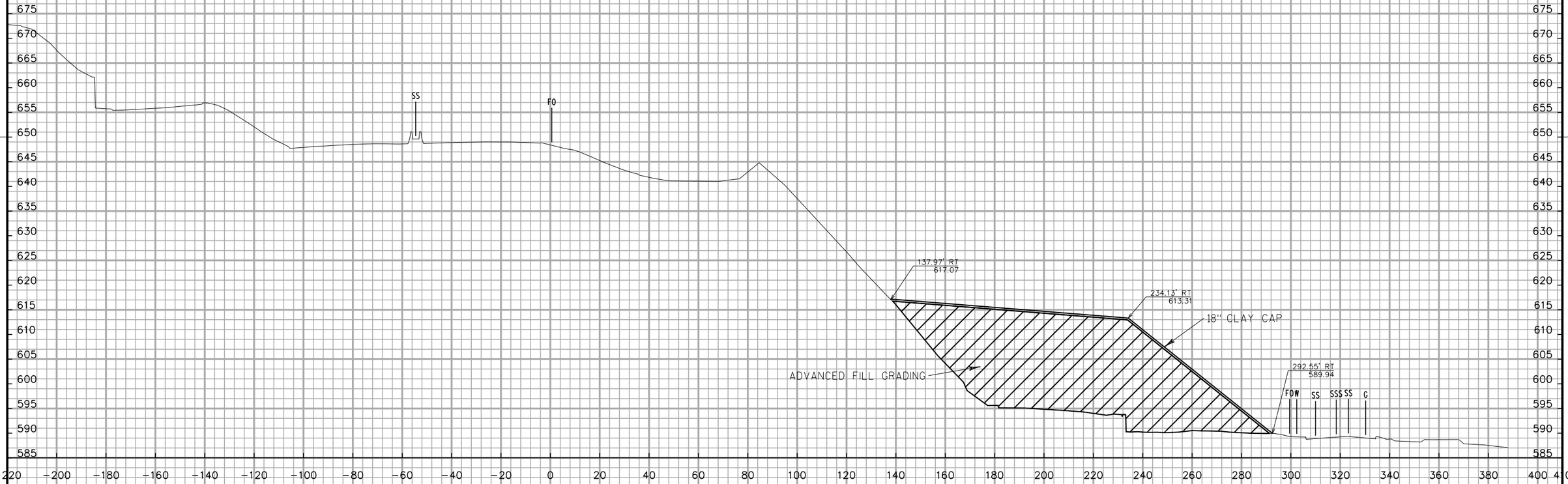
STA 10+00 TO 10+00

9

PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	CROSS SECTIONS: ADVANCED FILL ALONG IH 94	SHEET	E

FILE NAME : c:\pw_workdir\den001\gfergus1\d0999960\ADVANCED FILL ALONG IH 94.dgn PLOT DATE : 25-JAN-2017 10:22 PLOT BY : gfergus1 PLOT NAME : ADVANCED FILL ALONG IH 94 PLOT SCALE : 40:1

WISDOT/CADDS SHEET 21

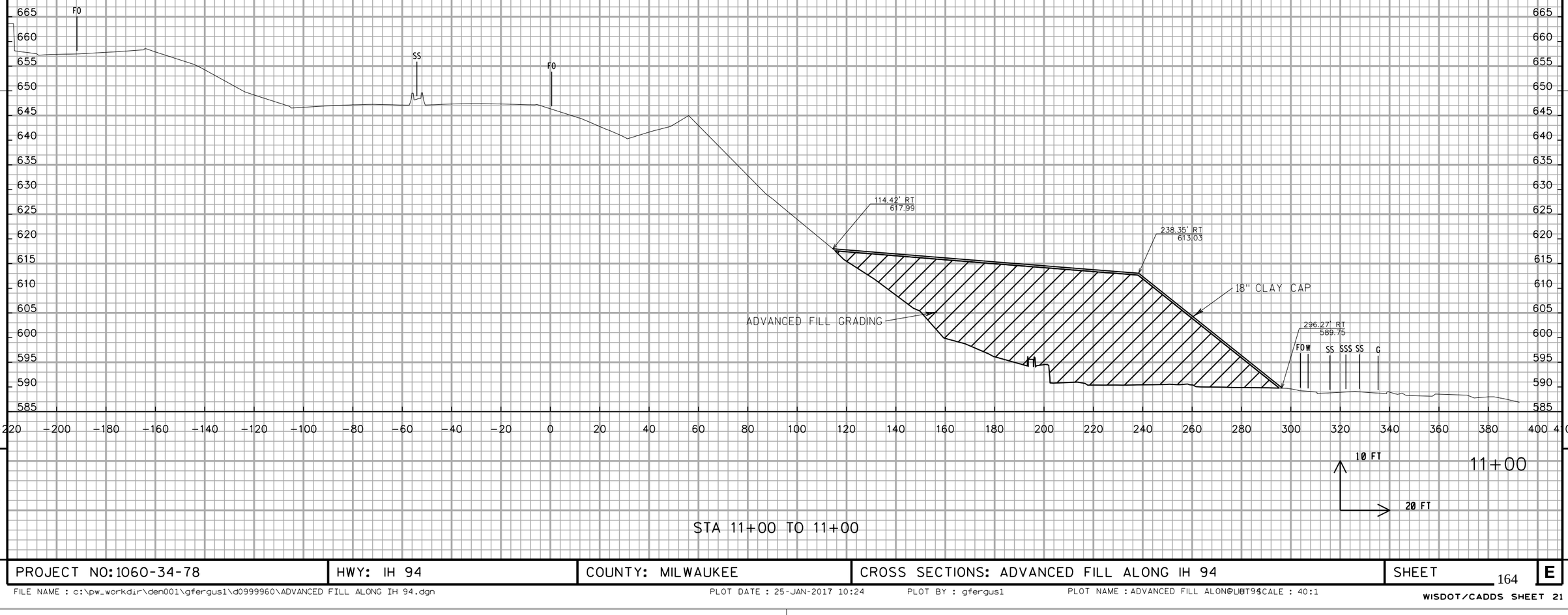


9

STA 10+50 TO 10+50

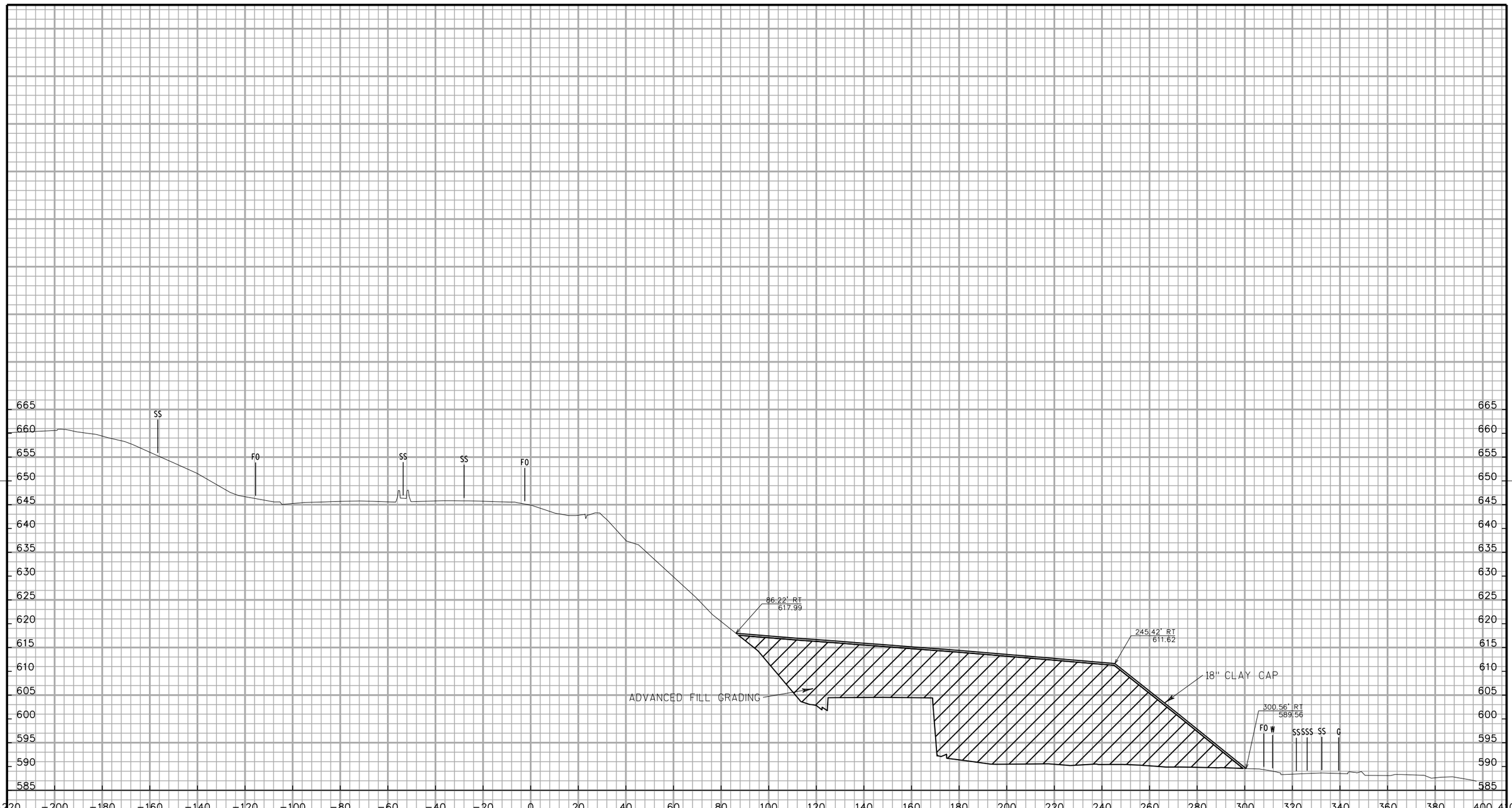
9

PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	CROSS SECTIONS: ADVANCED FILL ALONG IH 94	SHEET 163	E



STA 11+00 TO 11+00

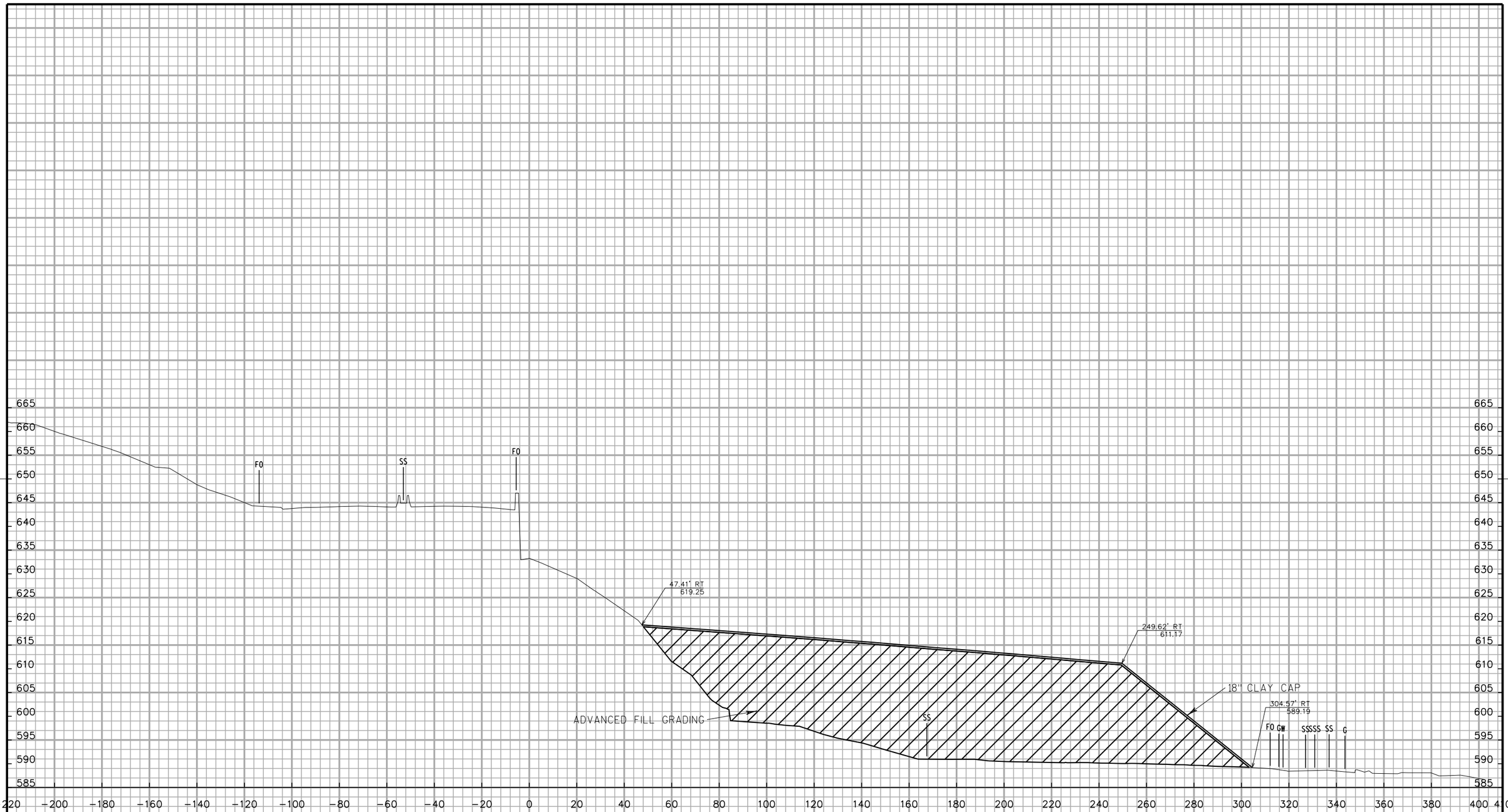
PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	CROSS SECTIONS: ADVANCED FILL ALONG IH 94	SHEET 164	E



STA 11+50 TO 11+50

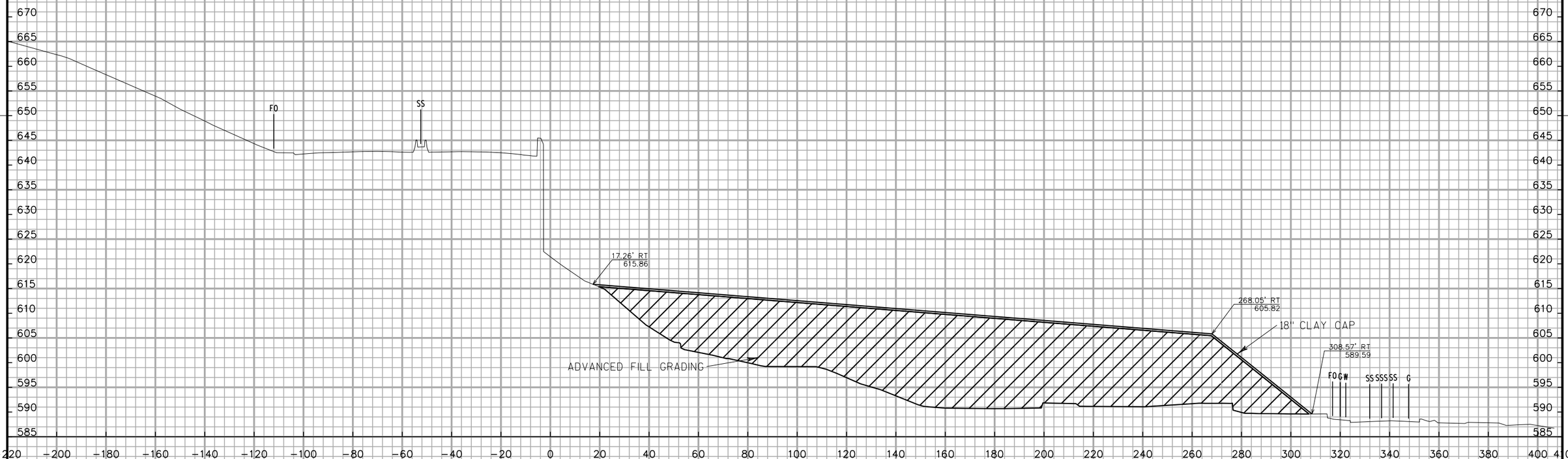
PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	CROSS SECTIONS: ADVANCED FILL ALONG IH 94	SHEET	E

FILE NAME : c:\pw_workdir\den001\gfergus1\d0999960\ADVANCED FILL ALONG IH 94.dgn PLOT DATE : 25-JAN-2017 10:24 PLOT BY : gfergus1 PLOT NAME : ADVANCED FILL ALONG IH 94.plt SCALE : 40:1



STA 12+00 TO 12+00

PROJECT NO:1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	CROSS SECTIONS: ADVANCED FILL ALONG IH 94	SHEET 166	E



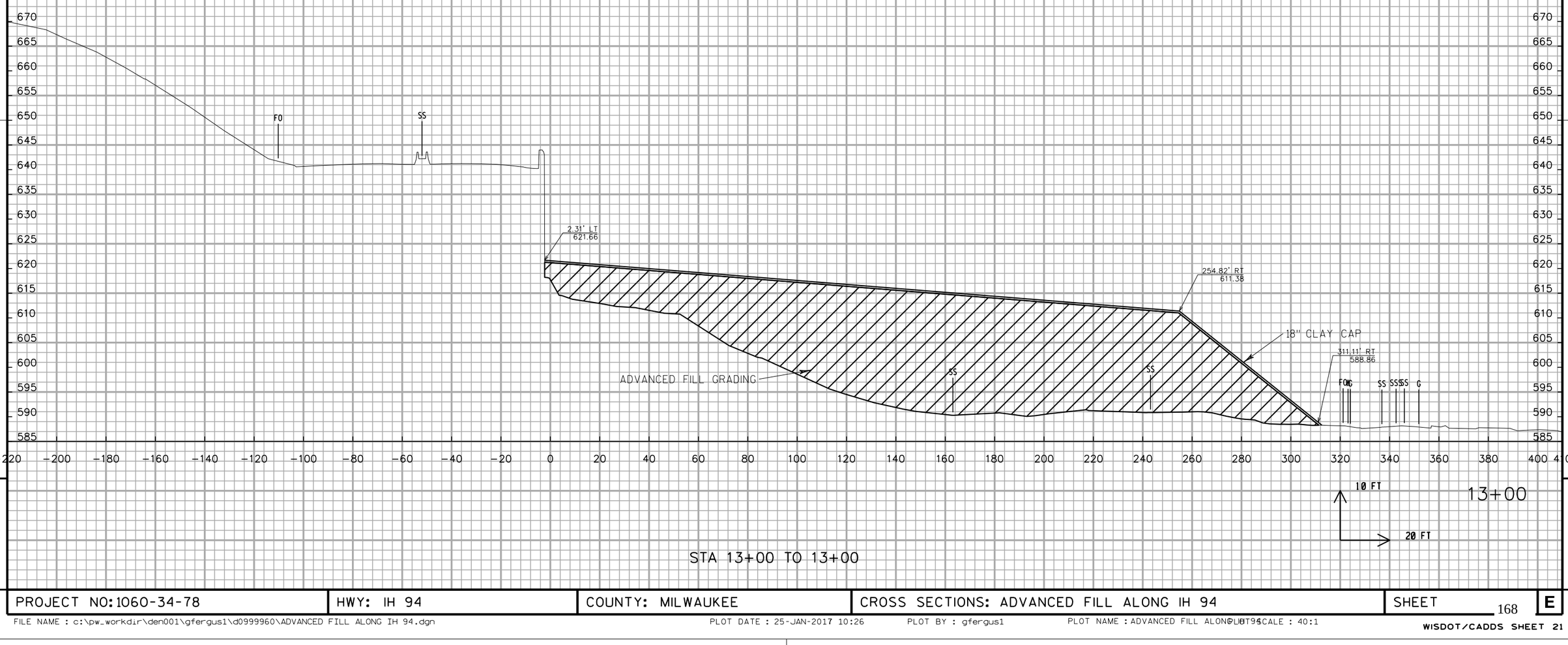
9

STA 12+50 TO 12+50

9

PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	CROSS SECTIONS: ADVANCED FILL ALONG IH 94	SHEET	E

FILE NAME : c:\pw_workdir\den001\gfergus1\d0999960\ADVANCED FILL ALONG IH 94.dgn PLOT DATE : 25-JAN-2017 10:25 PLOT BY : gfergus1 PLOT NAME : ADVANCED FILL ALONG IH 94 PLOT SCALE : 40:1

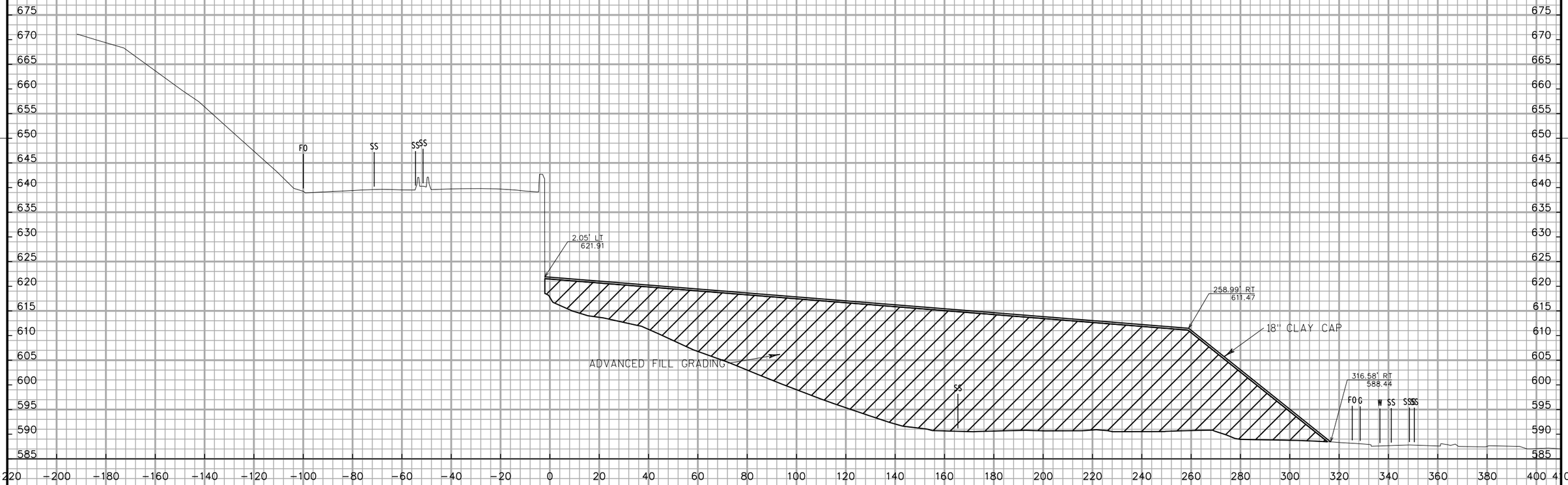


9

STA 13+00 TO 13+00

9

PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	CROSS SECTIONS: ADVANCED FILL ALONG IH 94	SHEET 168	E



9

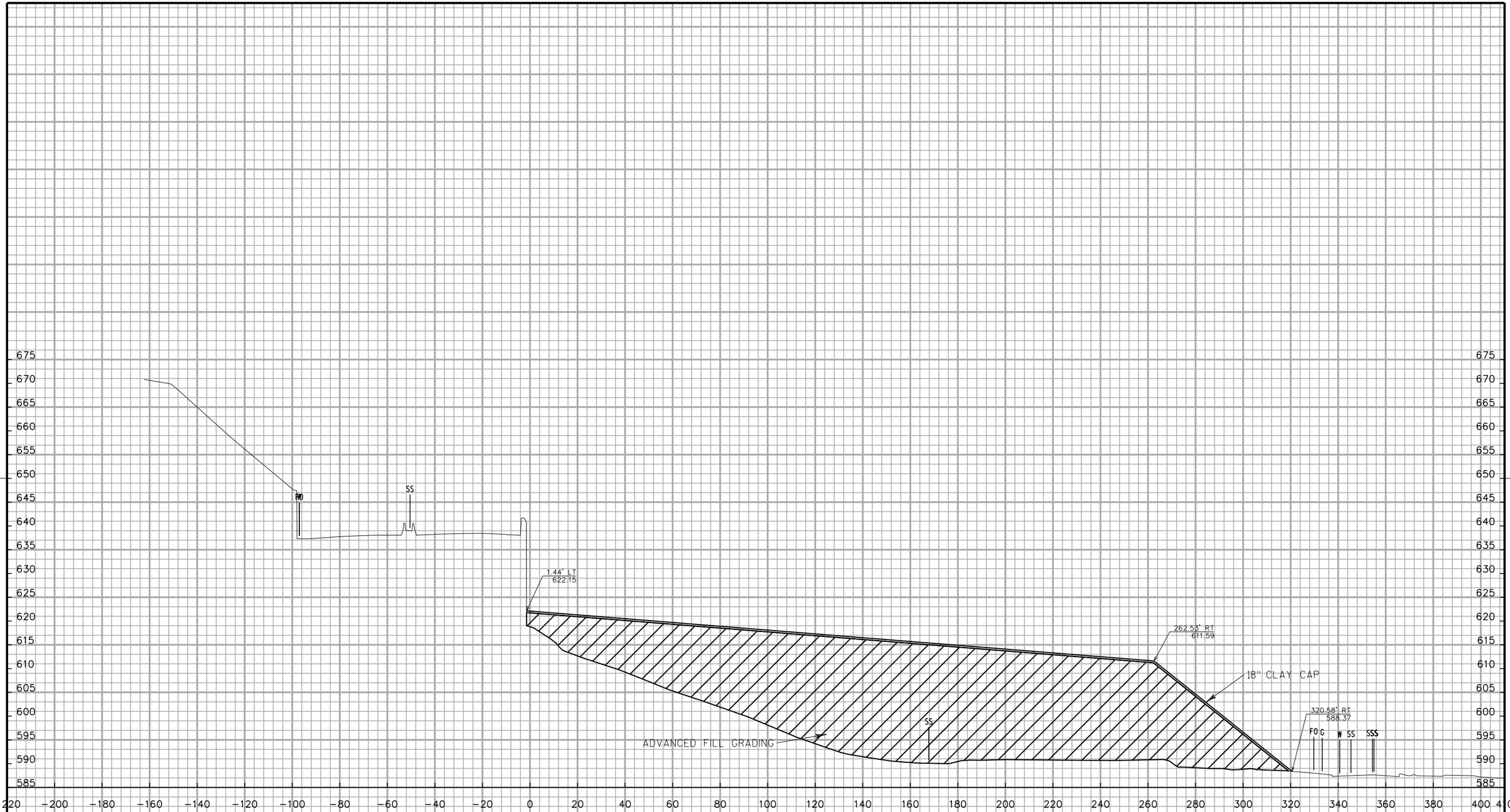
STA 13+50 TO 13+50

9

PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	CROSS SECTIONS: ADVANCED FILL ALONG IH 94	SHEET 169	E

FILE NAME : c:\pw_workdir\den001\gfergus1\d0999960\ADVANCED FILL ALONG IH 94.dgn PLOT DATE : 25-JAN-2017 10:26 PLOT BY : gfergus1 PLOT NAME : ADVANCED FILL ALONG IH 94 PLOT SCALE : 40:1

WISDOT/CADDS SHEET 21

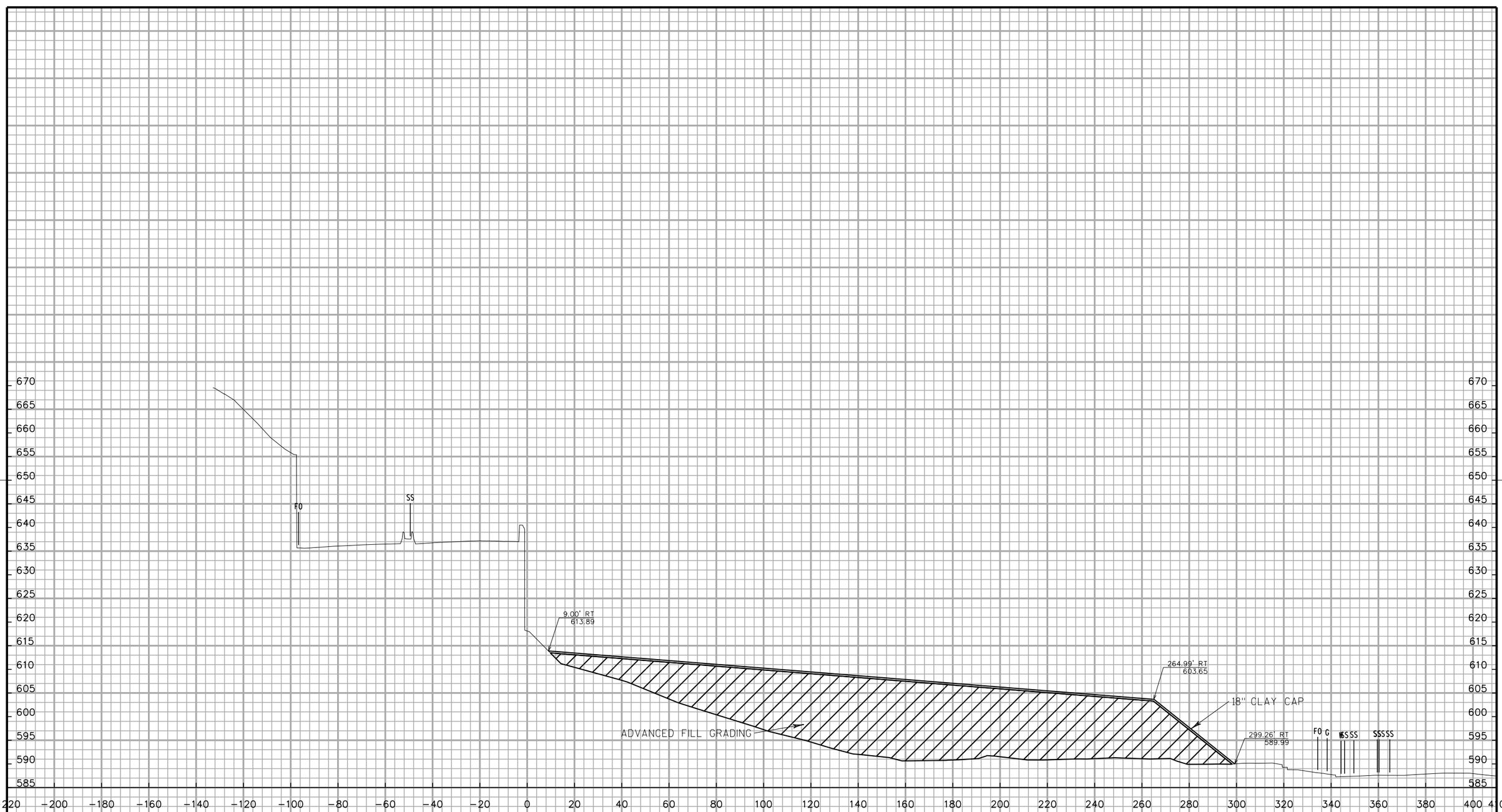


9

STA 14+00 TO 14+00

9

PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	CROSS SECTIONS: ADVANCED FILL ALONG IH 94	SHEET 170	E

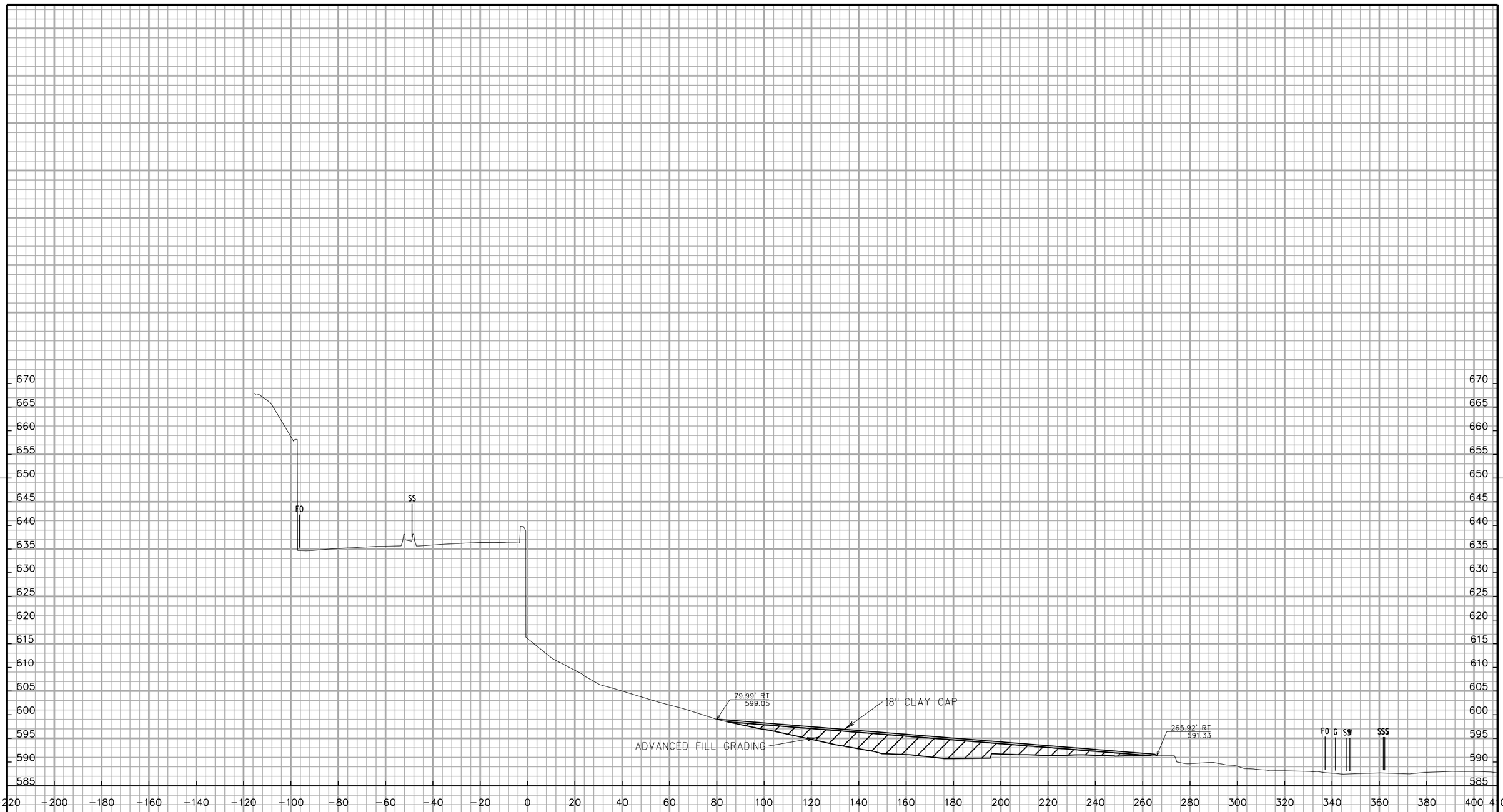


9

STA 14+50 TO 14+50

9

PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	CROSS SECTIONS: ADVANCED FILL ALONG IH 94	SHEET 171	E



9

STA 14+80 TO 14+80

9

PROJECT NO: 1060-34-78	HWY: IH 94	COUNTY: MILWAUKEE	CROSS SECTIONS: ADVANCED FILL ALONG IH 94	SHEET	E

FILE NAME : c:\pw_workdir\den001\gfergus1\d0999960\ADVANCED FILL ALONG IH 94.dgn PLOT DATE : 25-JAN-2017 10:28 PLOT BY : gfergus1 PLOT NAME : ADVANCED FILL ALONG IH 94.plt SCALE : 40:1

Notes

Wisconsin Department of Transportation

Dedicated people creating transportation solutions
through innovation and exceptional service.

http://www.dot.wisconsin.gov