WKE

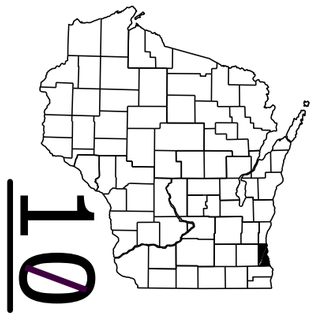
PROJECT ID: 1100-33-70

COUNTY: MILWAUKEE

AUG 2013

ORDER OF SHEETS

TOTAL SHEETS = 182



N

DESIGN DESIGNATION

A.A.D.T. 2010	=	4,500
A.A.D.T. 2030	=	5,300
D.H.V.	=	398
D.D.	=	
T.	=	9%
DESIGN SPEED	=	45 mph
ESALS	=	2,350,600

CONVENTIONAL SYMBOLS

PLAN

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

PROFILE

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

UTILITIES

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

ZOO FREEWAY

GOOD HOPE ROAD INTERCHANGE

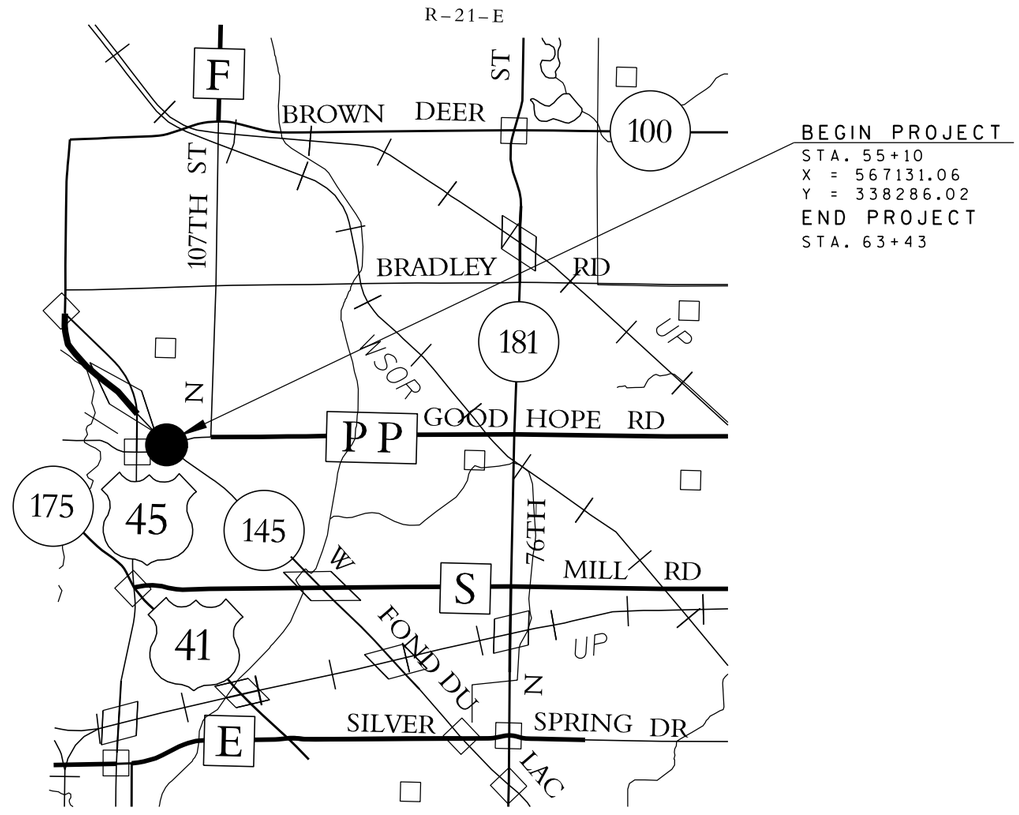
USH 41

MILWAUKEE COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
1100-33-70		

STATE PROJECT NUMBER

1100-33-70



BEGIN PROJECT
STA. 55+10
X = 567131.06
Y = 338286.02
END PROJECT
STA. 63+43

LAYOUT
SCALE 0 1/2 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.158 MI.

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

"ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM NAVD 88 (2007)."

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	WISDOT
Designer	GREG HAFEMAN
Project Manager	EMMANUEL YARTEY
Regional Examiner	
Regional Supervisor	ADETOYE ADENIYI
C.O. Examiner	

APPROVED FOR THE DEPARTMENT

DATE: 5/9/13 (Signature)

E

UTILITY CONTACTS

WE ENERGIES (ELECTRIC)
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333 W EVERETT ST - A299
MILWAUKEE, WI 53203
PHONE: (414) 221 4578
FAX: (414) 221 2336
DAN.SANDE@WE-ENGERGIES.COM
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500 S 116TH ST.
WEST ALLIS, WI 53214
PHONE: 414-944-5690
MOBILE: 414-588-6674
LEONARD.WILSON@WE-ENERGIES.COM

24-HOUR ELECTRIC DISPATCH:
1-800-662-4797

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SEND ALL CORRESPONDENCE TO:
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333 W EVERETT ST - A299
MILWAUKEE, WI 53203
PHONE (414) 221 4578
FAX (414) 221 2336
DAN.SANDE@WE-ENGERGIES.COM
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MOBILE: 262-391-4268
DENNIS.SINJAKOVIC@WE-ENERGIES.COM

24-HOUR GAS DISPATCH:
1-800-261-5325

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FAX: (414) 257 6501
CSMELTZER@MILWCNTY.COM

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1942 N. 17TH STREET
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DZIAREK@MCTC.ORG

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841 N BROADWAY RM 701
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MR. ARLYN JOHNSON
VILLAGE OF MENOMONEE FALLS
W156 N8480 PILGRIM ROAD
MENOMONEE FALLS, WI 53051
PHONE: (262) 532 4402
FAX: (262) 532 4709

WDNR CONTACT

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WDNR SE REGION LIASON
2300 N MARTING LUTHER KING JR DR.
MILWAUKEE, WI 53212
PHONE: (414) 263 8517
KRISTINA.BETZOLD@WISCONSIN.GOV

DIGGERS HOTLINE

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

GENERAL NOTES

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

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

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

ALL DISTURBED AREAS WITHIN THE RIGHT OF WAY THAT ARE NOT A RESULT OF CONTRACT WORK ITEMS SHALL BE FERTILIZED, SEEDED, AND MULCHED AT THE CONTRACTOR'S EXPENSE.

THE CONTRACTOR SHALL NOTIFY DIGGERS HOTLINE AND AFFECTED UTILITIES PRIOR TO THE START OF WORK. ANY LOCAL MUNICIPALITY OR PUBLIC AGENCY WHICH IS NOT A MEMBER OF DIGGERS HOTLINE MUST BE CONTACTED SEPERATELY.

A SAWED JOINT IS REQUIRED WHERE NEW PAVEMENT MEETS EXISTING PAVEMENT.

TRAFFIC CONTROL DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER. NO WORK MAY BEGIN UNTIL PROPER TRAFFIC CONTROL DEVICES ARE PLACED AND APPROVED BY THE ENGINEER.

ELEVATIONS SHOWN FOR CURB AN GUTTER ARE FLANGE ELEVATIONS. DISTANCES SHOWN FOR CURB AND GUTTER RADII ARE MEASURED TO THE FLANGE.

IMMEDIATELY AFTER CONSTRUCTION OF ANY INLETS CONTRACTOR SHALL CONSTRUCT THE INLET PROTECTION TO MINIMIZE SEDIMENTATION IN THE INLET AND STORM SEWER.

PRIOR TO ORDERING DRAINAGE PIPES AND STRUCTURES,THE CONTRACTOR SHALL VERIFY DRAINAGE INFORMATION WITH THE ENGINEER.

CURB HEIGHT AT THE END OF CURB AND GUTTER SHALL BE TAPERED FROM 0 TO 4 INCHES OR 0 TO 6 INCHES IN 10 FEET.

RE-TOPSOIL GRADES AREAS, AS DESIGNATED BY THE ENGINEER, IMMEDIATLEY AFTER GRADING IS COMPLETED WITHIN THOSE AREAS. SEED, FERTILIZER, AND EROSION MAT TOPSOILED AREAS, AS DESIGNATED BY THE ENGINEER WITHIN FIVE (5) CALENDAR DAYS AFTER PLACEMENT OF TOPSOIL. IF GRADED AREAS ARE LEFT EXPOSED FOR MORE THAN FOURTEEN (14) CALENDAR DAYS, SEED THOSE AREAS WITH TEMPORARY SEED.

STOCKPILE EXCESS MATERIAL OR SPOILS ON UPLAND AREAS AWAY FROM WETLANDS, FLOODPLAINS, AND WATERWAYS. STOCKPILED SOIL SHALL BE PROTECTED AGAINST EROSION. IF THE STOCKPILED MATERIAL IS LEFT FOR MORE THAN FOURTEEN (14) CALENDAR DAYS, SEED THE STOCKPILE WITH TEMPORARY SEED.

EROSION CONTROL BMP'S ARE AT SUGGESTED LOCATIONS. THE ACTUAL LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR'S ECIP AND BY THE ENGINEER. EROSION CONTROL BMP'S SHALL BE MAINTAINED UNTIL PERMANENT VEGETATION IS ESTABLISHED OR UNTIL THE ENGINEER DETERMINES THAT THE BMP IS NO LONGER REQUIRED.

HMA PAVING				
	THICKNESS	HMA TYPE	ASPHALTIC MATERIAL	GRADATION
UPPER LAYER	2"	E-3	PG58-28	12.5 mm
LOWER LAYER	2"	E-3	PG58-28	12.5 mm

ORDER OF DETAIL SHEETS

2

N

BEGIN CONSTRUCTION
STA. 55+10

END CONSTRUCTION
STA. 63+43

PC 53+90.81

PT 56+36.36

PI 51+07.73

PI 54+98.94

PC 60+00.00

PI 60+00.00

PT 64+09.41

PI 65+19.13

PI 63+42.42

℄ E

℄ F

GOOD HOPE RD.

GOOD HOPE RD.

USH 41/45/STH 100

USH 41/45/STH 100

/STH 100

5/STH 100

RIPRAP

SIGN

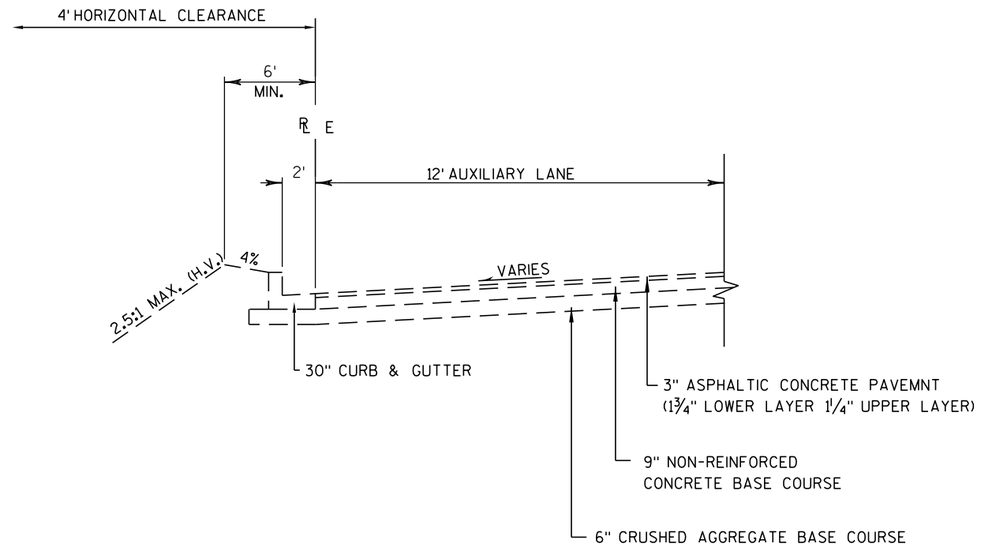
INL

MH

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	PROJECT OVERVIEW	SHEET 4	E

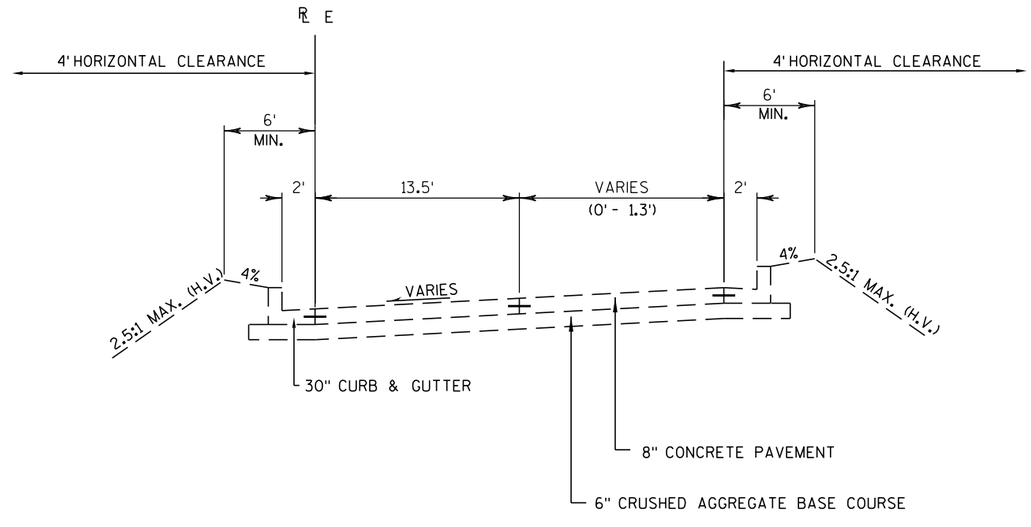
FILE NAME : J:\projects\D2_11003341\020201_po.dgn PLOT DATE : 09-MAY-2013 08:44 PLOT BY : dotr3h PLOT NAME : PLOT SCALE : 140:1

2



EXISTING TYPICAL SECTION EB- SB RAMP (RAMP E)

STA. 55+10 TO STA. 55+91

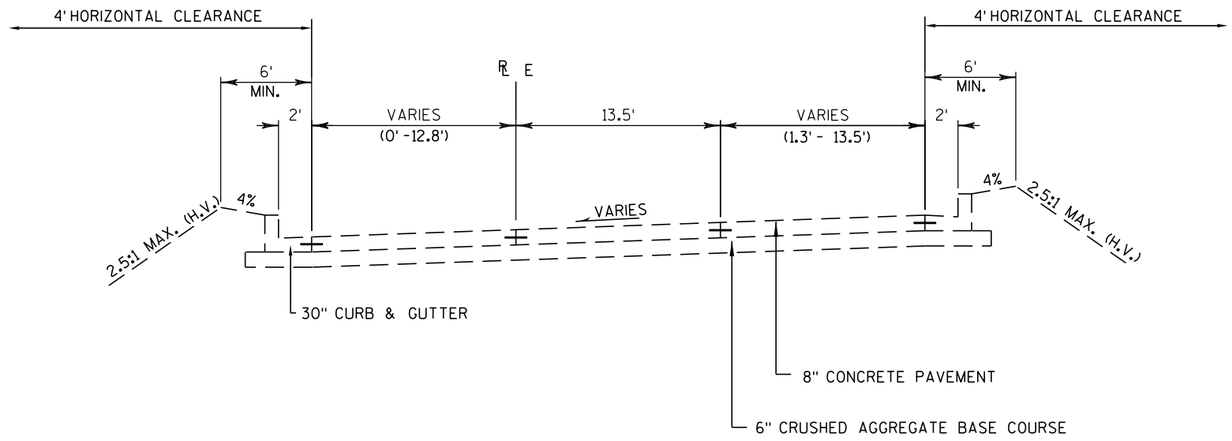


EXISTING TYPICAL SECTION EB- SB RAMP (RAMP E)

STA. 55+91 TO STA. 56+45

PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	TYPICAL SECTION	SHEET 5	E

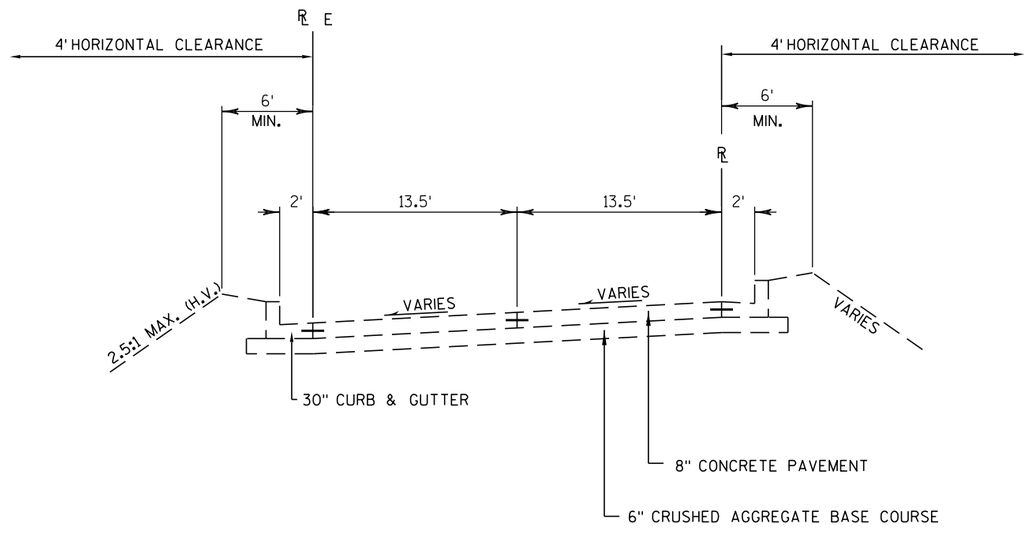
2



EXISTING TYPICAL SECTION EB- SB RAMP (RAMP E)

STA. 56+45 TO STA. 58+99

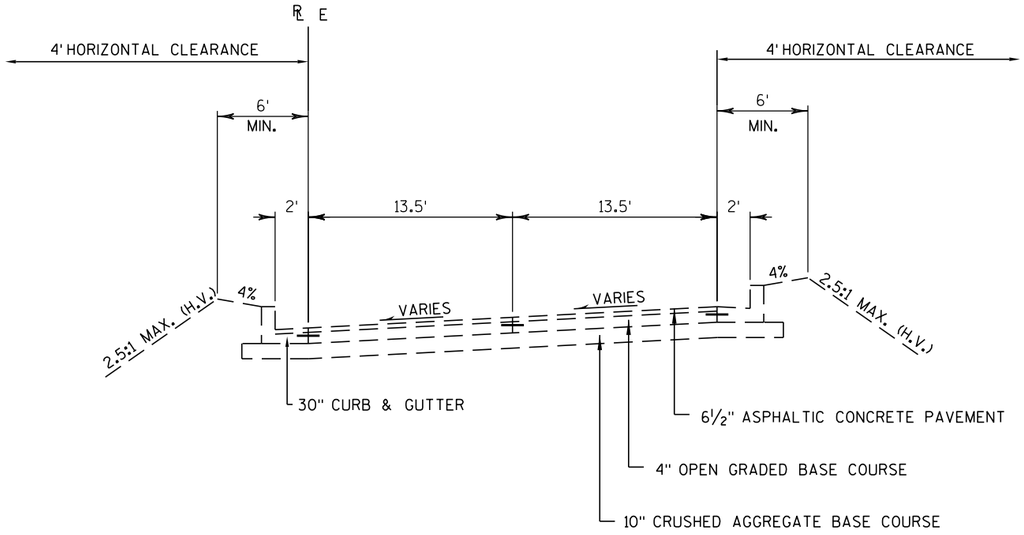
LAW ENFORCEMENT PAD



EXISTING TYPICAL SECTION EB- SB RAMP (RAMP E)

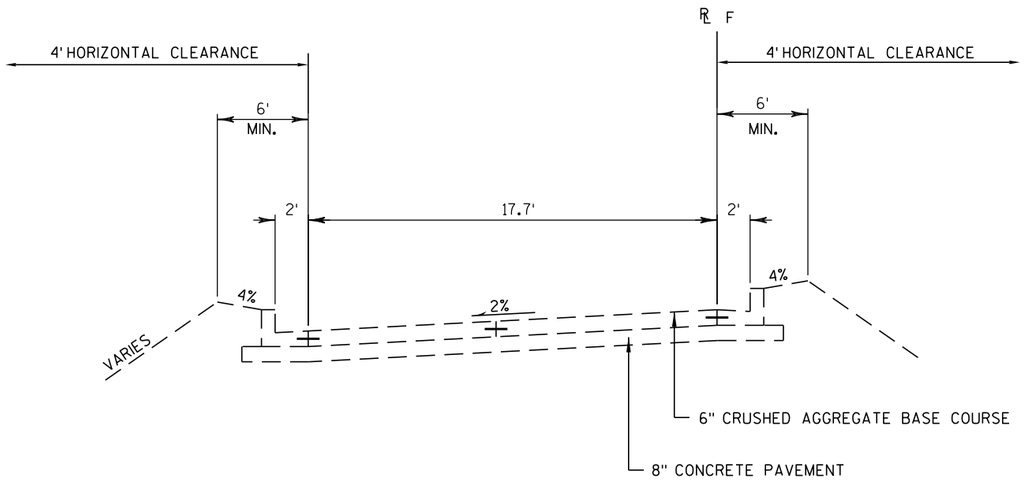
STA. 58+99 TO STA. 63+12

PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	TYPICAL SECTION	SHEET 6	E



EXISTING TYPICAL SECTION EB- SB RAMP (RAMP E)

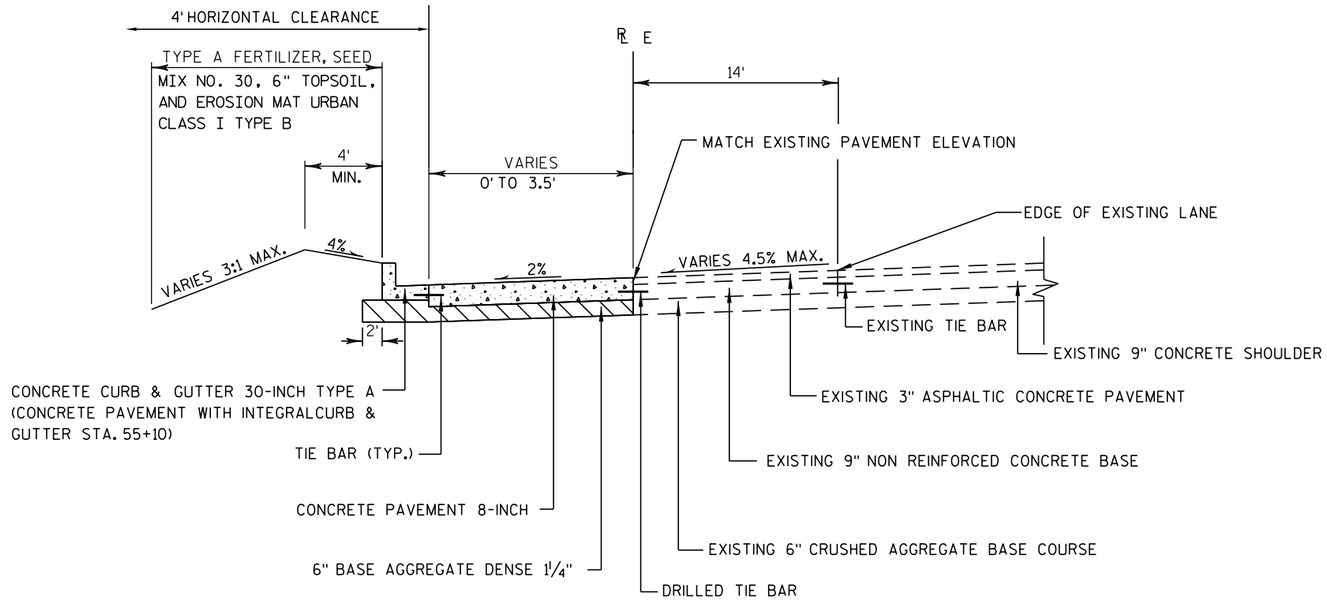
STA. 63+12 TO STA. 63+43



EXISTING TYPICAL SECTION WB- SB RAMP (RAMP F)

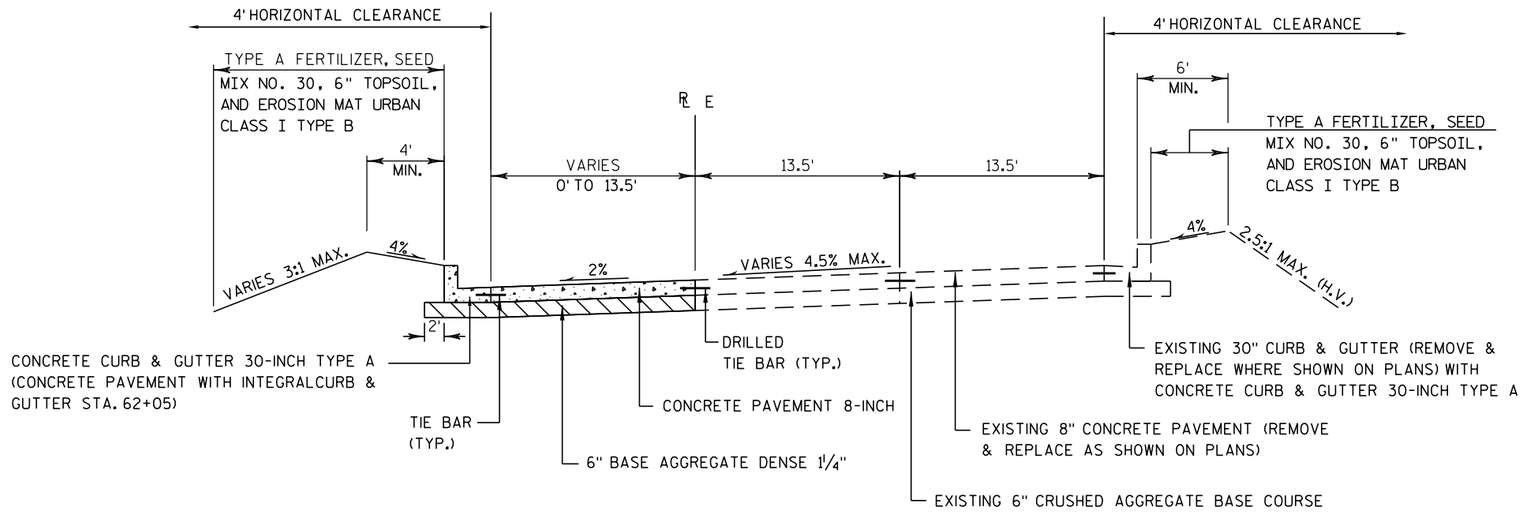
STA. 60+00 - STA. 62+65

2



PROPOSED TYPICAL SECTION - EB - SB ON RAMP (RAMP E)

STA. 55+10 STA. 55+90.80

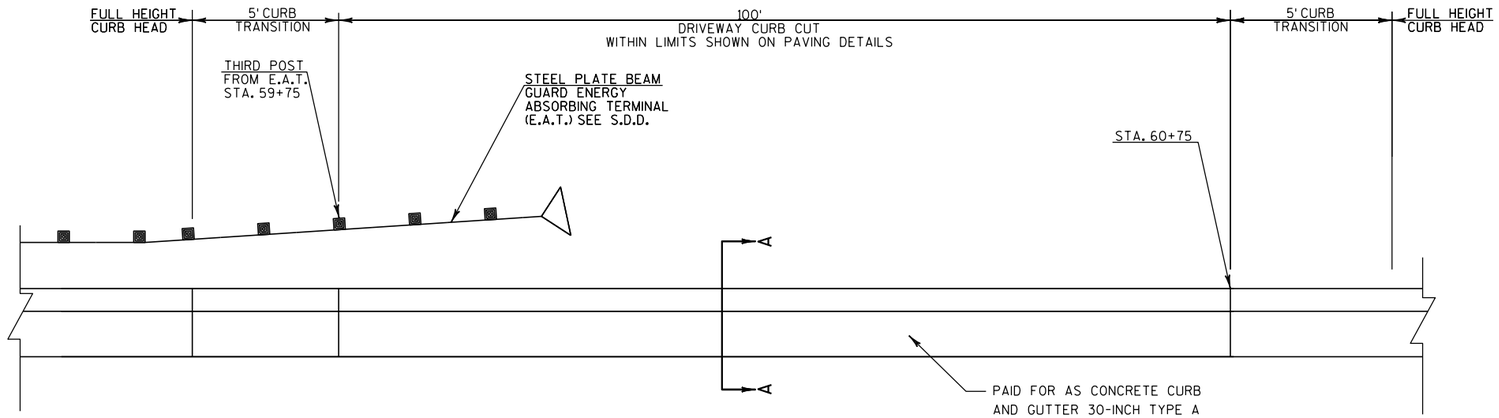


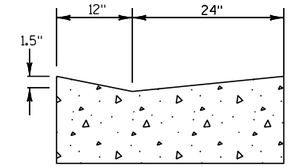
PROPOSED TYPICAL SECTION - EB - SB ON RAMP (RAMPE)

STA. 55+90.80 TO STA. 62+05

PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	TYPICAL SECTION	SHEET 8	E

2



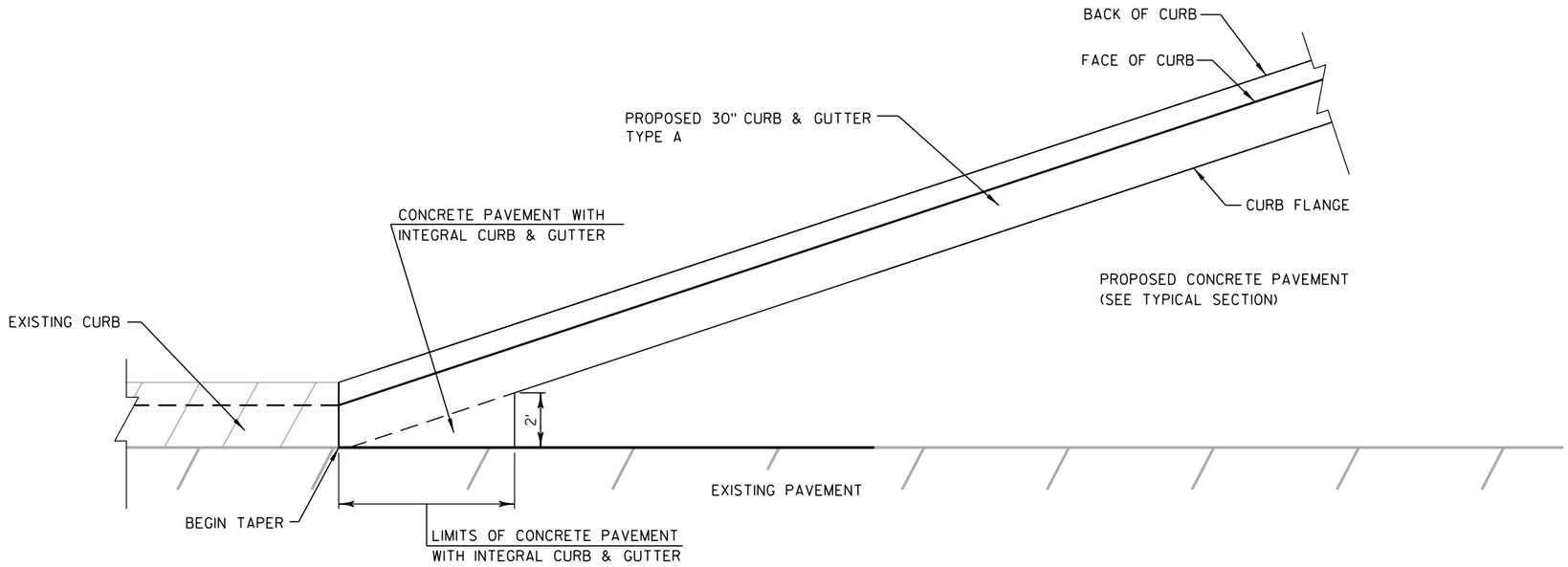


SECTION A-A

DEPRESSED CURB HEAD AT BEAM GUARD TERMINAL

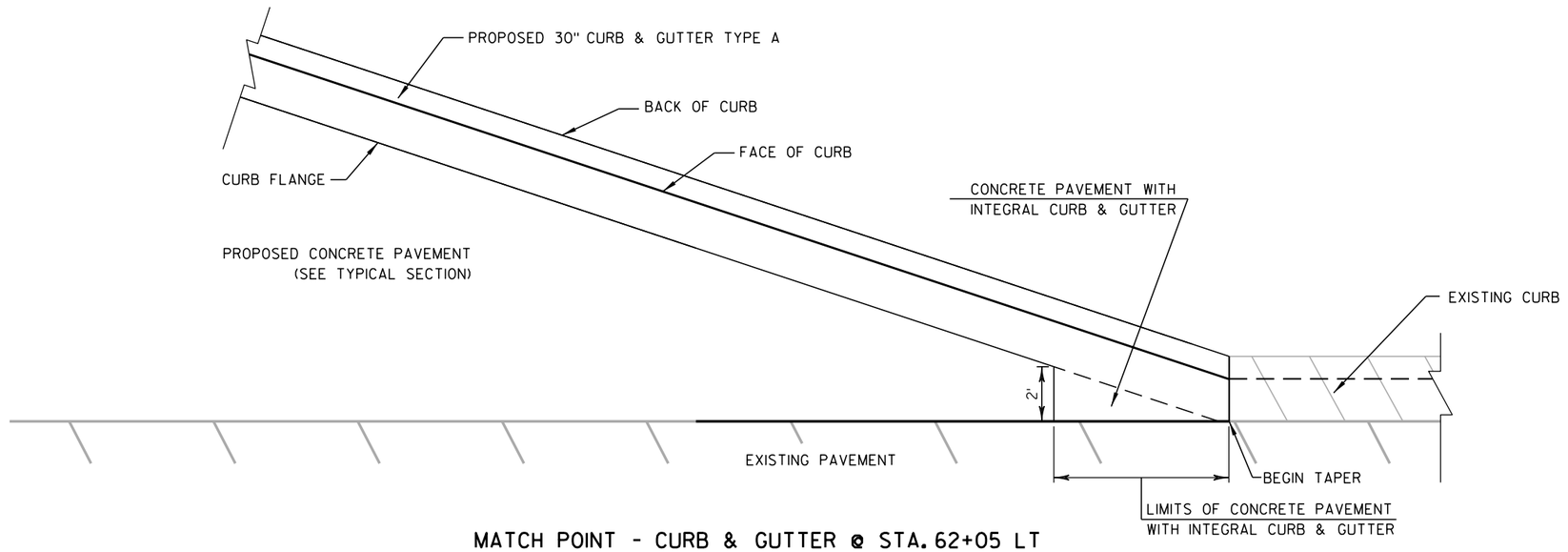
PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	CONSTRUCTION DETAIL	SHEET 9	E

2



MATCH POINT - CURB & GUTTER @ STA. 55+10

NOT TO SCALE

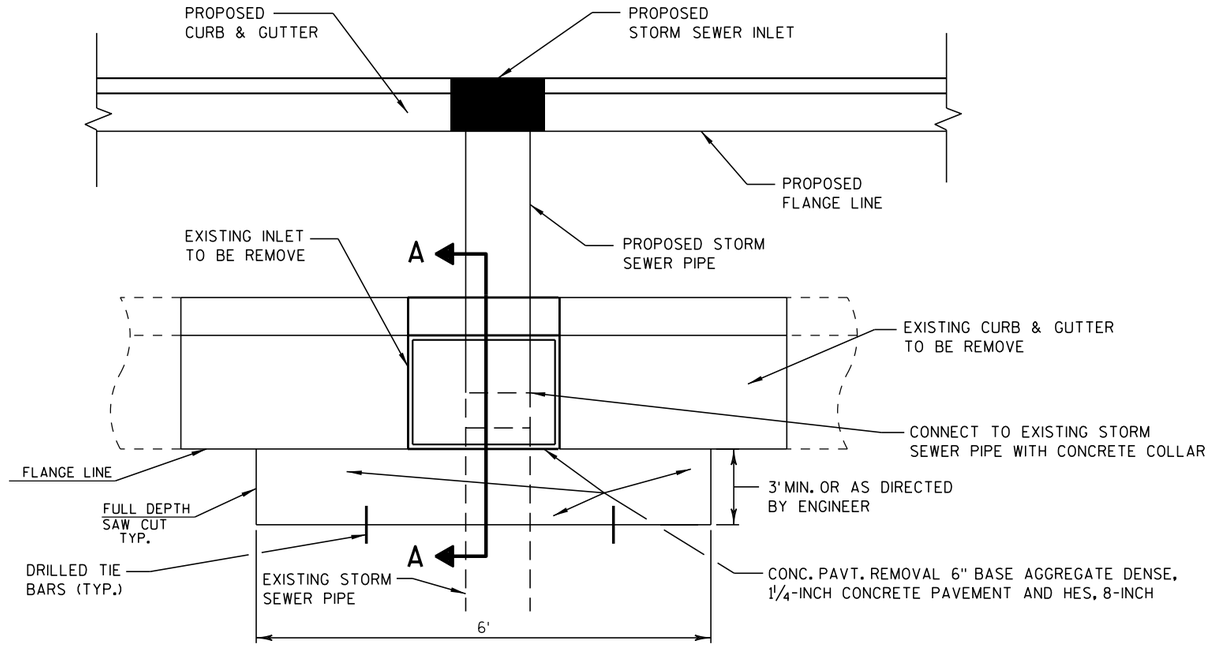


MATCH POINT - CURB & GUTTER @ STA. 62+05 LT

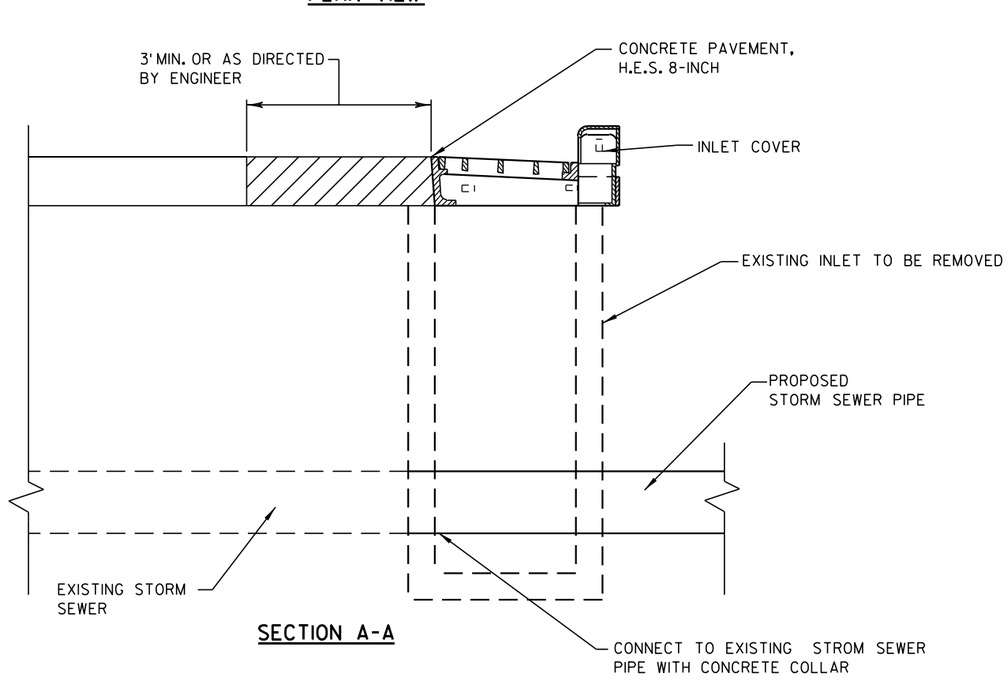
NOT TO SCALE

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	CONSTRUCTION DETAIL	SHEET 10	E

2



PLAN VIEW

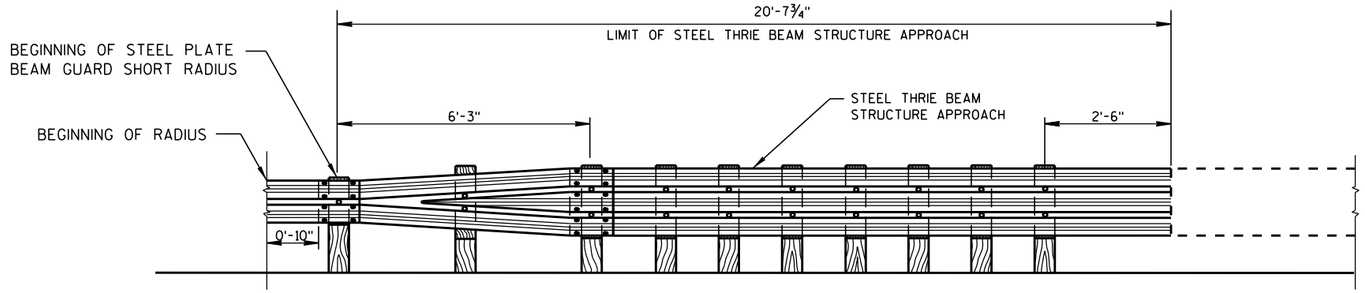


SECTION A-A

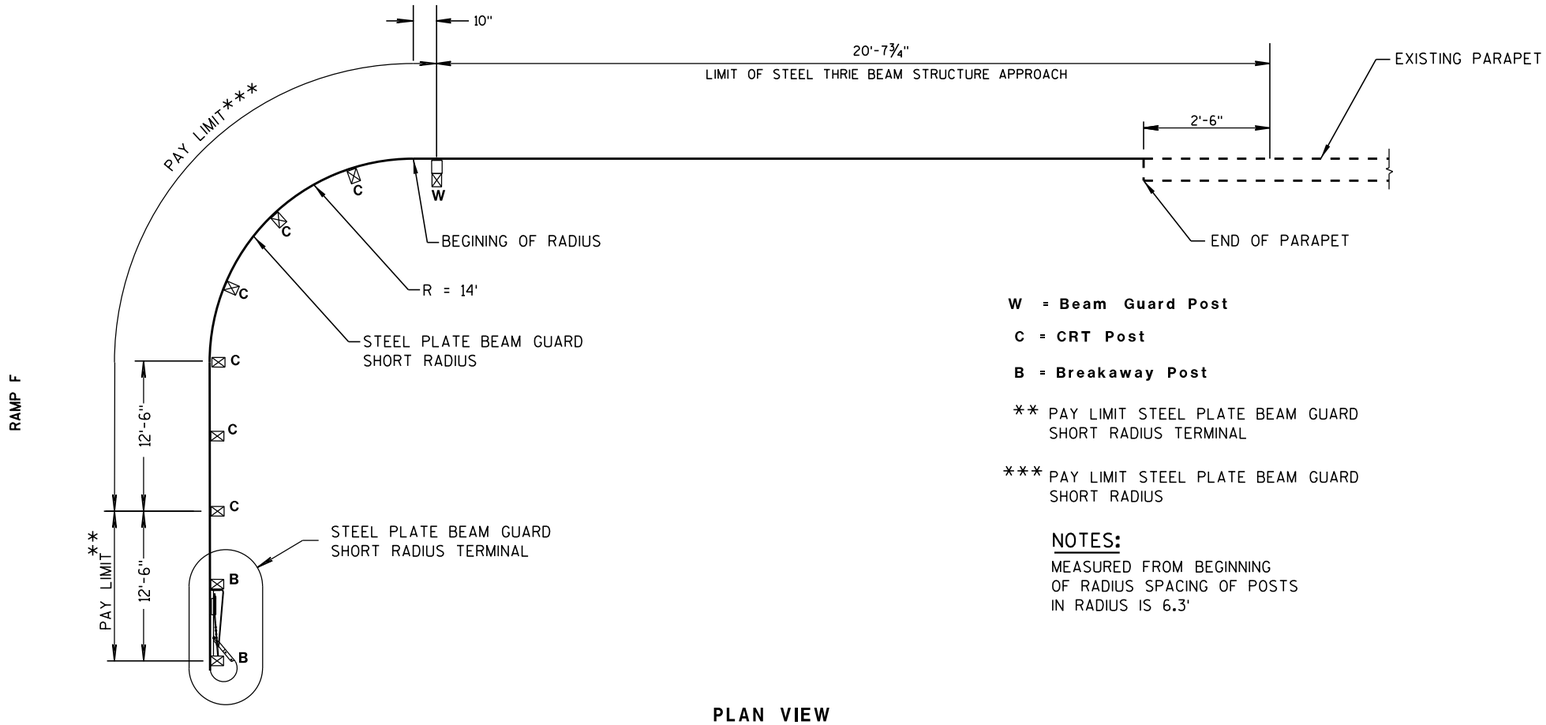
REMOVING EXISTING INLETS AND CONNECTING TO EXISTING PIPE

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	CONSTRUCTION DETAIL	SHEET 11	E

2



FRONT VIEW



W = Beam Guard Post

C = CRT Post

B = Breakaway Post

** PAY LIMIT STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

*** PAY LIMIT STEEL PLATE BEAM GUARD SHORT RADIUS

NOTES:

MEASURED FROM BEGINNING OF RADIUS SPACING OF POSTS IN RADIUS IS 6.3'

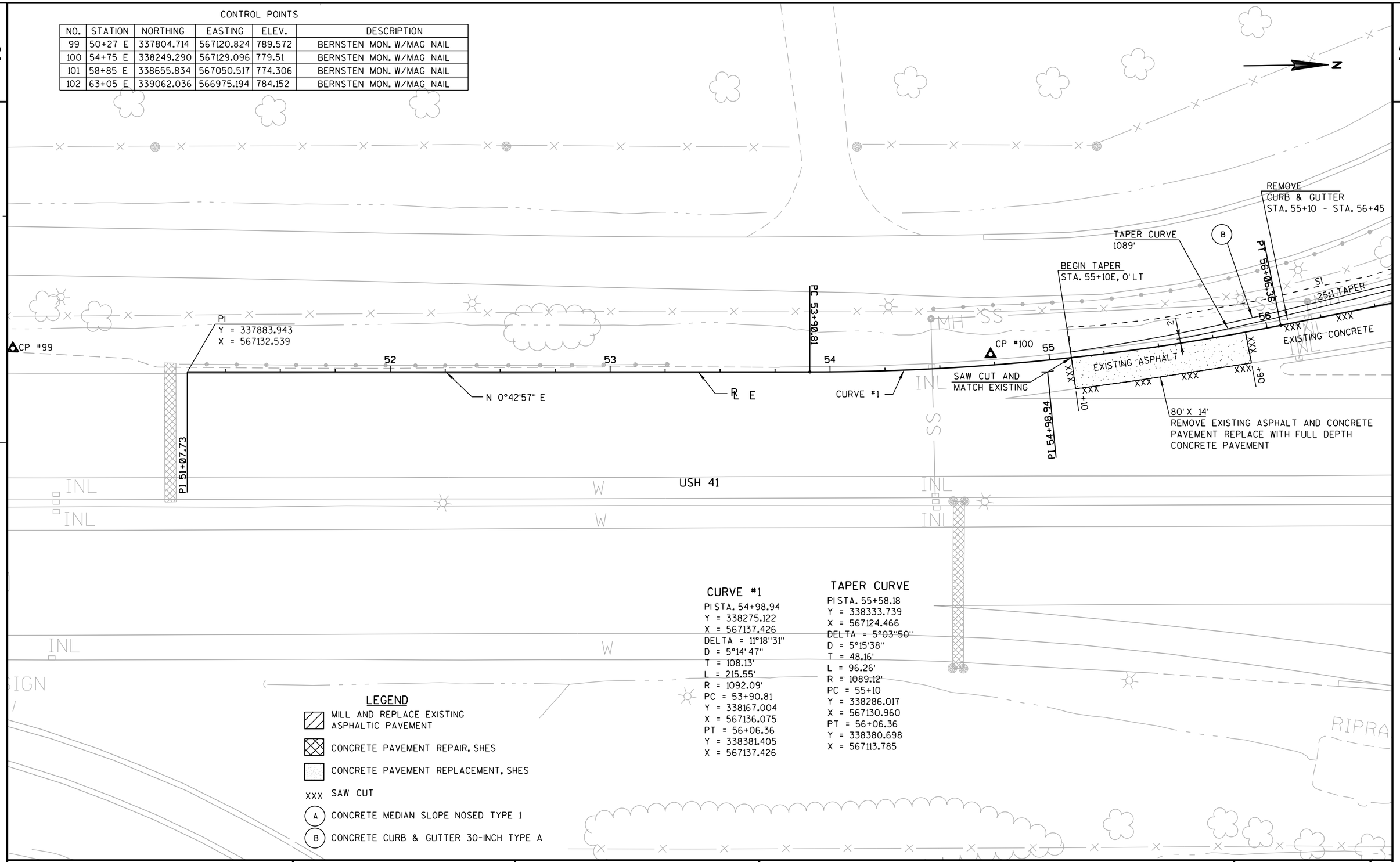
PLAN VIEW

BEAM GUARD DETAIL

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	CONSTRUCTION DETAIL	SHEET 12	E

CONTROL POINTS

NO.	STATION	NORTHING	EASTING	ELEV.	DESCRIPTION
99	50+27 E	337804.714	567120.824	789.572	BERNSTEN MON. W/MAG NAIL
100	54+75 E	338249.290	567129.096	779.51	BERNSTEN MON. W/MAG NAIL
101	58+85 E	338655.834	567050.517	774.306	BERNSTEN MON. W/MAG NAIL
102	63+05 E	339062.036	566975.194	784.152	BERNSTEN MON. W/MAG NAIL



CURVE #1
PI STA. 54+98.94
Y = 338275.122
X = 567137.426
DELTA = 11°18'31"
D = 5°14'47"
T = 108.13'
L = 215.55'
R = 1092.09'
PC = 53+90.81
Y = 338167.004
X = 567136.075
PT = 56+06.36
Y = 338381.405
X = 567137.426

TAPER CURVE
PI STA. 55+58.18
Y = 338333.739
X = 567124.466
DELTA = 5°03'50"
D = 5°15'38"
T = 48.16'
L = 96.26'
R = 1089.12'
PC = 55+10
Y = 338286.017
X = 567130.960
PT = 56+06.36
Y = 338380.698
X = 567113.785

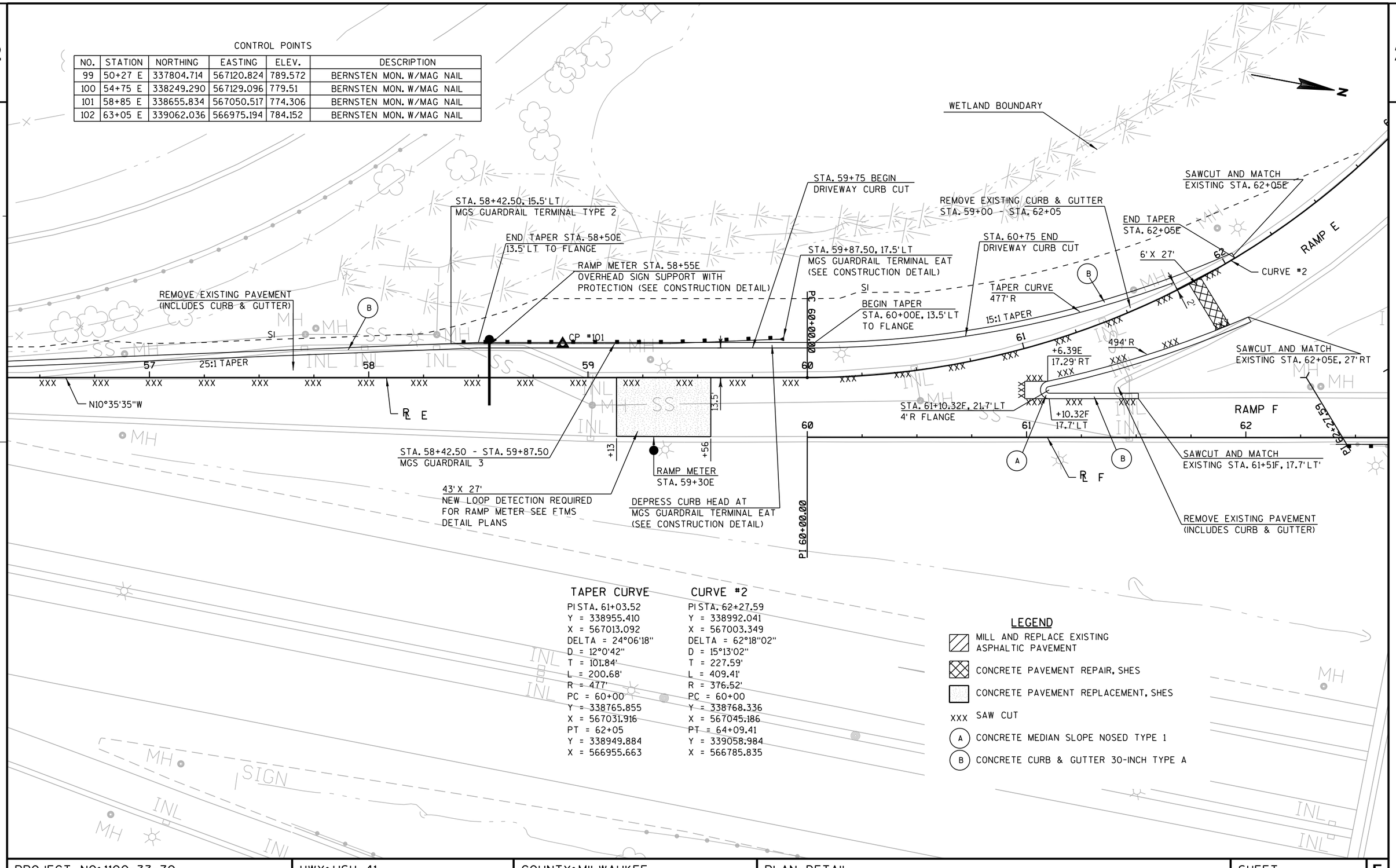
LEGEND

- MILL AND REPLACE EXISTING ASPHALTIC PAVEMENT
- CONCRETE PAVEMENT REPAIR, SHES
- CONCRETE PAVEMENT REPLACEMENT, SHES
- XXX SAW CUT
- (A) CONCRETE MEDIAN SLOPE NOSED TYPE 1
- (B) CONCRETE CURB & GUTTER 30-INCH TYPE A

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	PLAN DETAIL	SHEET 13 E

CONTROL POINTS

NO.	STATION	NORTHING	EASTING	ELEV.	DESCRIPTION
99	50+27 E	337804.714	567120.824	789.572	BERNSTEN MON. W/MAG NAIL
100	54+75 E	338249.290	567129.096	779.51	BERNSTEN MON. W/MAG NAIL
101	58+85 E	338655.834	567050.517	774.306	BERNSTEN MON. W/MAG NAIL
102	63+05 E	339062.036	566975.194	784.152	BERNSTEN MON. W/MAG NAIL



TAPER CURVE	CURVE #2
PI STA. 61+03.52	PI STA. 62+27.59
Y = 338955.410	Y = 338992.041
X = 567013.092	X = 567003.349
DELTA = 24°06'18"	DELTA = 62°18"02"
D = 12°0'42"	D = 15°13'02"
T = 101.84'	T = 227.59'
L = 200.68'	L = 409.41'
R = 477'	R = 376.52'
PC = 60+00	PC = 60+00
Y = 338765.855	Y = 338768.336
X = 567031.916	X = 567045.186
PT = 62+05	PT = 64+09.41
Y = 338949.884	Y = 339058.984
X = 566955.663	X = 566785.835

LEGEND

- MILL AND REPLACE EXISTING ASPHALTIC PAVEMENT
- CONCRETE PAVEMENT REPAIR, SHES
- CONCRETE PAVEMENT REPLACEMENT, SHES
- XXX SAW CUT
- (A) CONCRETE MEDIAN SLOPE NOSED TYPE 1
- (B) CONCRETE CURB & GUTTER 30-INCH TYPE A

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	PLAN DETAIL	SHEET 14	E

2

WETLAND BOUNDARY

CURVE #2

SAWCUT AND MATCH
EXISTING STA. 62+05E

EXISTING CONCRETE RAMP E

EXISTING ASPHALT

PT 64+09.41

N72°53'37"W

PI 65+19.13
Y = 339091.257
X = 566680.973

MILL AND REPLACE
4" ASPHALTIC PAVEMENT

GOOD HOPE RD.

RAMP F

PI 62+27.59

CP #102

STEEL PLATE BEAM GUARD
SHORT RADIUS, TERMINAL
STA. 621+41F, 2.5'RT
SEE CONSTRUCTION DETAIL

REMOVE EXISTING
GUARDRAIL

STEEL THRIE BEAM STRUCTURE
APPROACH SEE CONSTRUCTION DETAIL

STEEL PLATE BEAM GUARD
SHORT RADIUS, RADIUS = 14'
STA. 62+41F, 2.5'RT

PI 63+42.42

CONTROL POINTS

NO.	STATION	NORTHING	EASTING	ELEV.	DESCRIPTION
99	50+27 E	337804.714	567120.824	789.572	BERNSTEN MON. W/MAG NAIL
100	54+75 E	338249.290	567129.096	779.51	BERNSTEN MON. W/MAG NAIL
101	58+85 E	338655.834	567050.517	774.306	BERNSTEN MON. W/MAG NAIL
102	63+05 E	339062.036	566975.194	784.152	BERNSTEN MON. W/MAG NAIL

CURVE #2
PI STA. 62+27.59
Y = 338992.041
X = 567003.349
DELTA = 62°18'02"
D = 15°13'02"
T = 227.59'
L = 409.41'
R = 376.52'
PC = 60+00
Y = 338768.336
X = 567045.186
PT = 64+09.41
Y = 339058.984
X = 566785.835

LEGEND
- MILL AND REPLACE EXISTING ASPHALTIC PAVEMENT
- CONCRETE PAVEMENT REPAIR, SHES
- CONCRETE PAVEMENT REPLACEMENT, SHES
- XXX SAW CUT
- (A) CONCRETE MEDIAN SLOPE NOSED TYPE 1
- (B) CONCRETE CURB & GUTTER 30-INCH TYPE A

2

LEGEND

FTMS CONVENTIONAL SYMBOLS	EXISTING	PROPOSED
CCTV CAMERA AND POLE		
FTMS FIELD CABINET AND BASE		
POLE MOUNTED CABINET		
METER BREAKER PEDESTAL		
24"X36" STEEL PULL BOX		
MANHOLE		
ADVANCE FLASHER ASSEMBLY		
FTMS (ITS) CONDUIT		
BREAKER DISCONNECT BOX		
RAMP METER SIDEMOUNT SIGNAL		
RAMP METER OVERHEAD SIGNAL		
LOOP DETECTOR		
DETECTION ZONE		

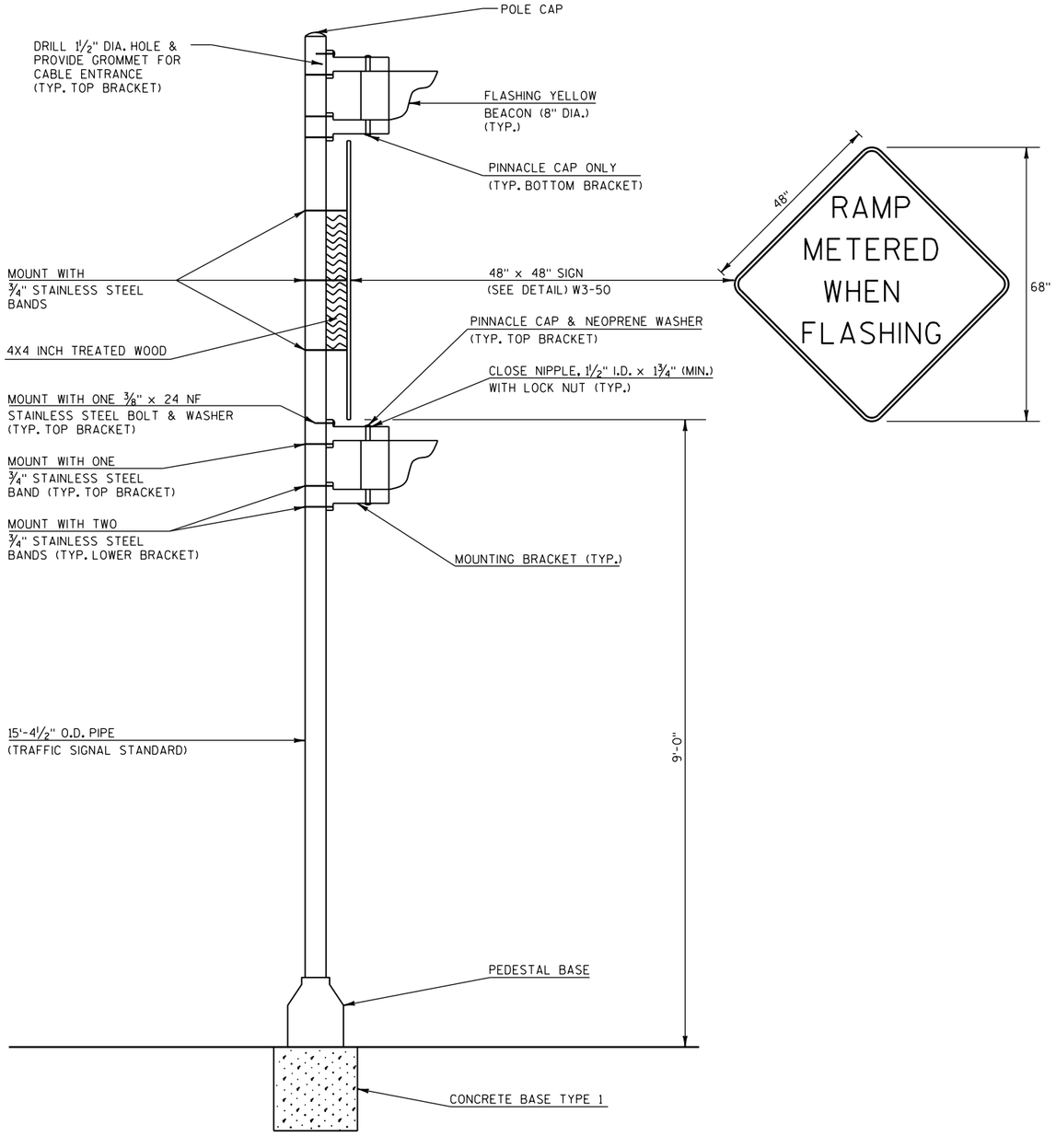
FTMS STANDARD ABBREVIATIONS

CB	CONTROLLER CABINET
CCTV	CLOSED CIRCUIT TELEVISION SITE
CV	COMMUNICATIONS VAULT
DMS	DYNAMIC MESSAGE SIGN
FY	ADVANCE FLASHER (ASSEMBLY)
PB	PULL BOX
MH	MANHOLE
RM	RAMP METER
WTS	WIRELESS TRAFFIC SENSOR
WP	TEMPORARY WOOD POLE
SH	RAMP METER SIGNAL HEAD
VD	TEMPORARY VIDEO DETECTION
SB	SIGN BASE

FTMS GENERAL NOTES

1. THESE PLANS AND THE ASSOCIATED SPECIAL PROVISIONS REFLECT CONDITIONS KNOWN DURING THE DEVELOPMENT OF THE PLANS AND TECHNICAL SPECIAL PROVISIONS. ALL SCALES, DIMENSIONS AND LOCATIONS SHOWN IN THESE PLANS ARE APPROXIMATE. ACTUAL PHYSICAL FIELD CONDITIONS SHALL PROVIDE THE BASIS FOR THE APPLICATION OF WORK SHOWN IN THE PLANS. THE CONTRACTOR IS FULLY RESPONSIBLE FOR THE APPLICATION OF ALL WORK SHOWN IN THE PLANS TO THE ACTUAL PHYSICAL FIELD CONDITIONS TO PROVIDE A COMPLETE AND ACCEPTED PROJECT. IN THE EVENT THAT ACTUAL PHYSICAL FIELD CONDITIONS AFFECT OR PREVENT THE APPLICATION OR PROGRESSION OF ANY WORK SHOWN IN THE PLANS OR TECHNICAL SPECIAL PROVISIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY, AND PRIOR TO ANY FURTHER WORK ACTIVITY. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY LOCATION CHANGES OTHER THAN MINOR ADJUSTMENTS.
2. BE AWARE THAT ALL EXISTING UNDERGROUND AND ABOVE GROUND STRUCTURES AND FACILITIES WITHIN THE SCOPE OF THIS PROJECT MAY NOT BE LOCATED IN THE PLANS. THE CONTRACTOR IS FULLY RESPONSIBLE FOR LOCATING AND AVOIDING ALL UNDERGROUND AND ABOVE GROUND STRUCTURES AND FACILITIES.
3. BE AWARE THAT NO TEST BORINGS WERE MADE WHERE CONDUITS, PULLBOXES, POLES, CABINET FOUNDATIONS, OR OTHER EQUIPMENT IS TO BE INSTALLED. THE CONTRACTOR IS FULLY RESPONSIBLE FOR EXAMINING THE JOB SITE CONDITIONS BEFORE SUBMITTING BID PROPOSALS.
4. NO TREES (AND/OR SHRUBS) SHALL BE REMOVED WITHOUT APPROVAL OF THE ENGINEER.
5. AREAS WITHIN THE RIGHT-OF-WAY DISTURBED SPECIFICALLY FOR FTMS CONSTRUCTION SHALL BE RESTORED TO THE ORIGINAL CONDITION WITH TOPSOIL, FERTILIZER, SEED, AND EROSION MAT, AND SHALL BE INCLUDED IN THE COST OF INSTALLING FTMS ITEMS. RESTORATION FOR AREAS DISTURBED FOR OTHER CONSTRUCTION OPERATIONS BUT ALSO CONTAINING FTMS CONSTRUCTION SHALL BE DONE ACCORDING TO REQUIREMENTS AND PAYMENT PROVISIONS FOR THE OTHER CONSTRUCTION OPERATIONS.
6. THE LOCATION OF EXISTING AND PROPOSED UTILITY INSTALLATIONS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.
7. DUE TO RAMP, LANE, SHOULDER CLOSURE RESTRICTIONS, AND WORK UNDER OTHER CONTRACTS, SOME WORK MAY BE REQUIRED TO BE PERFORMED AT NIGHT.
8. THE CONTRACTOR IS FULLY RESPONSIBLE FOR COORDINATING RAMP, LANE, SHOULDER, AND ROADWAY CLOSURES WITH OTHER CONTRACTS IN THE AREA.
9. THE CONTRACTOR SHALL CONTACT THE WISDOT STATEWIDE TRAFFIC OPERATIONS CENTER AT (414) 227-2166 FIVE (5) WORKING DAYS PRIOR TO ENTERING ANY EXISTING WISDOT FTMS OR ITS CABINET.
10. ALL LOOP DETECTORS ARE STATIONED TO CENTER OF LEADING EDGE AS APPROACHED BY NORMAL VEHICLE PATH.
11. HAND DIG TRENCHES CROSSING EXISTING CONDUIT CONTAINING FIBER OPTIC CABLE.
12. VISUALLY VERIFY DEPTHS OF EXISTING CONDUITS CONTAINING FIBER OPTIC CABLE PRIOR TO CROSSING BY DIRECTIONAL BORE OR SPECIAL METHOD.

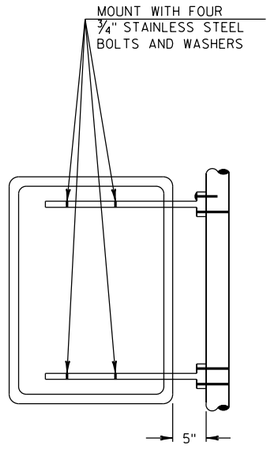
2



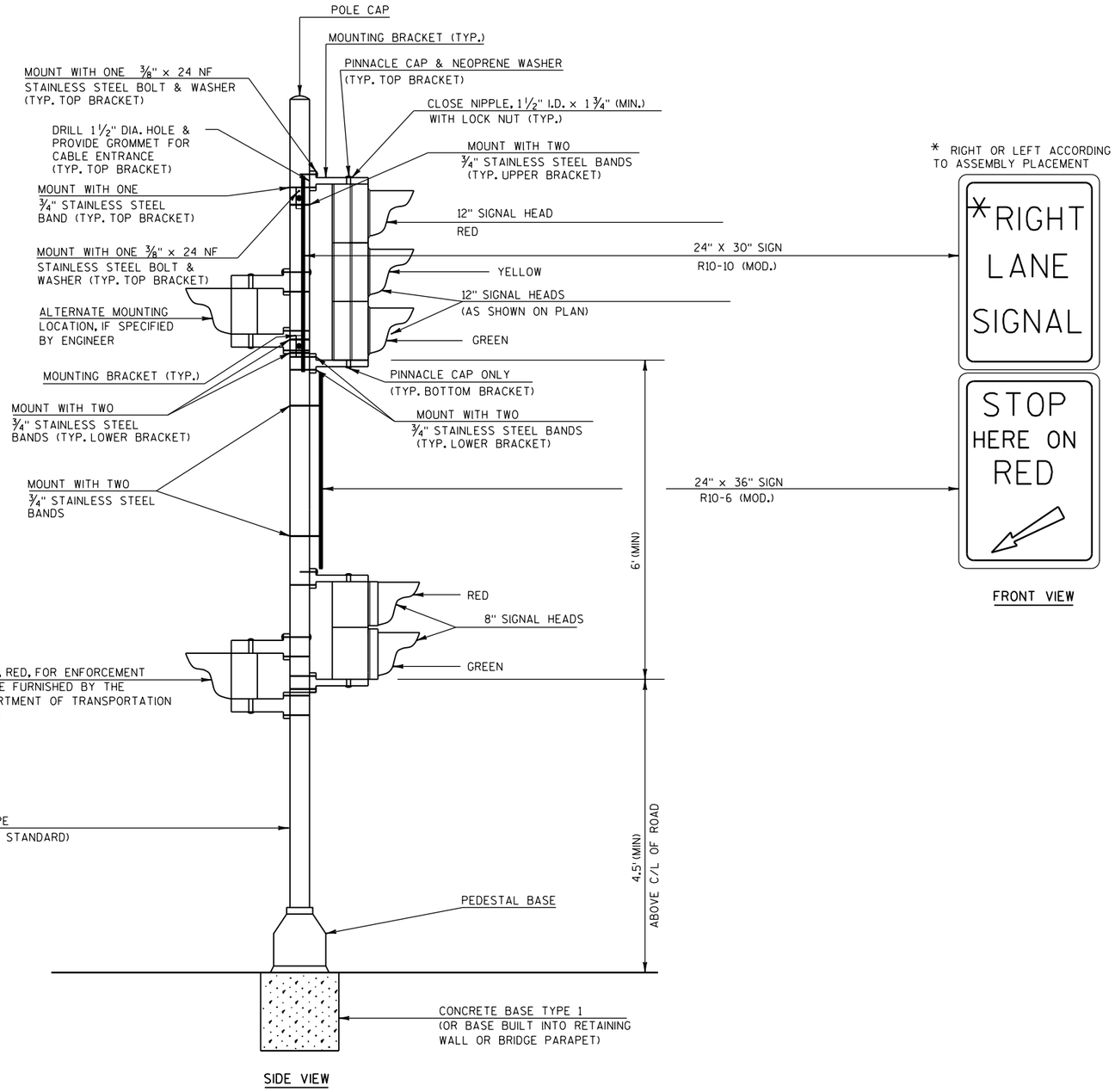
SIGNAL ASSEMBLY ADVANCE FLASHER TYPE 1

NOTE

1) R10-6 SIGN; AN ARROW POINTING LEFT SHALL BE USED ON A RIGHT SIDE SIGNAL & AN ARROW POINTING RIGHT SHALL BE USED ON A LEFT SIDE SIGNAL.



REAR VIEW

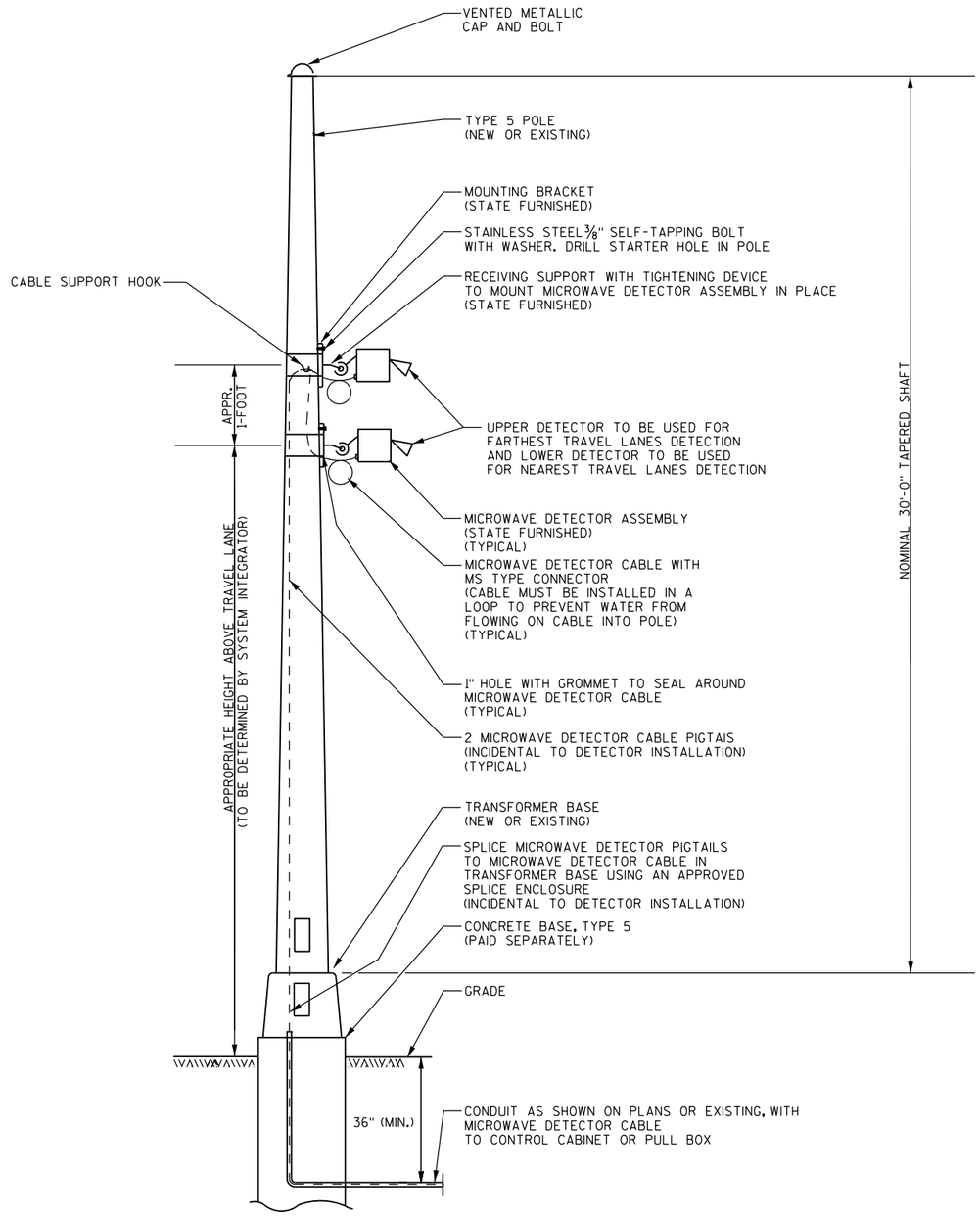


SIDE VIEW

FRONT VIEW

SIGNAL ASSEMBLY RAMP CONTROL SIDEMOUNT

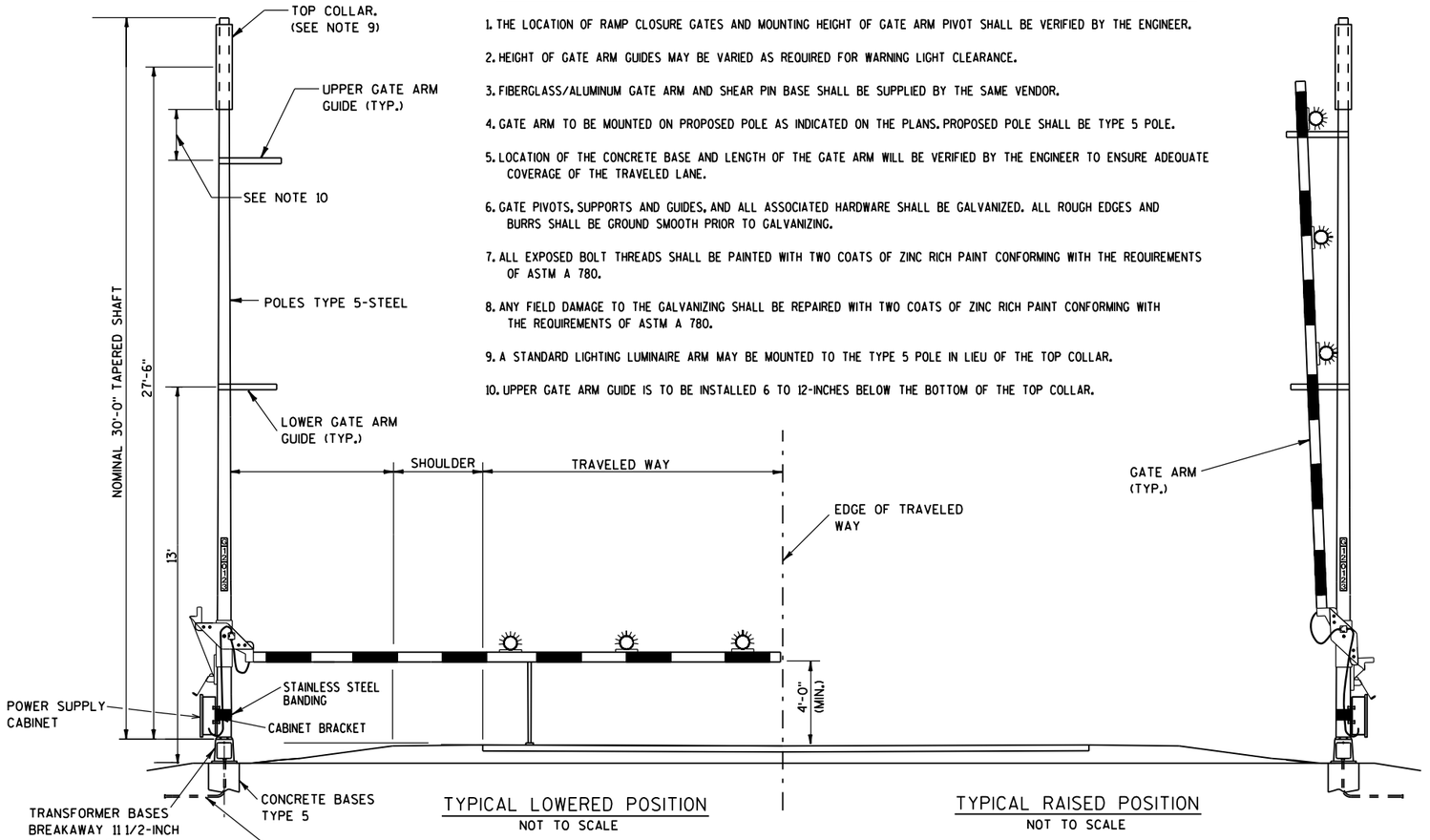
2



MICROWAVE DETECTOR INSTALLATION
ON TYPE 5 POLE

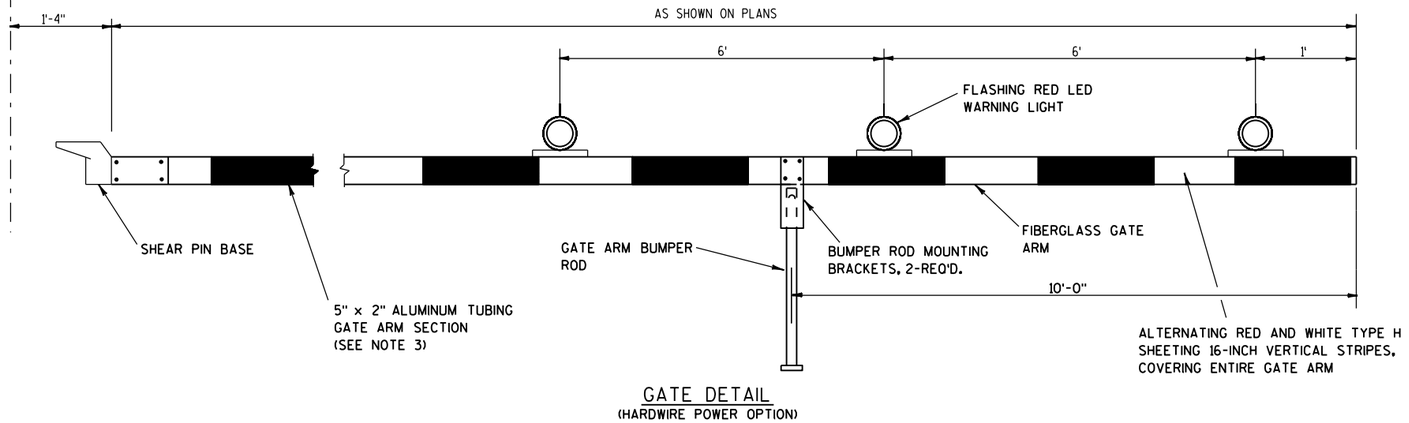
GENERAL NOTES

1. THE LOCATION OF RAMP CLOSURE GATES AND MOUNTING HEIGHT OF GATE ARM PIVOT SHALL BE VERIFIED BY THE ENGINEER.
2. HEIGHT OF GATE ARM GUIDES MAY BE VARIED AS REQUIRED FOR WARNING LIGHT CLEARANCE.
3. FIBERGLASS/ALUMINUM GATE ARM AND SHEAR PIN BASE SHALL BE SUPPLIED BY THE SAME VENDOR.
4. GATE ARM TO BE MOUNTED ON PROPOSED POLE AS INDICATED ON THE PLANS. PROPOSED POLE SHALL BE TYPE 5 POLE.
5. LOCATION OF THE CONCRETE BASE AND LENGTH OF THE GATE ARM WILL BE VERIFIED BY THE ENGINEER TO ENSURE ADEQUATE COVERAGE OF THE TRAVELED LANE.
6. GATE PIVOTS, SUPPORTS AND GUIDES, AND ALL ASSOCIATED HARDWARE SHALL BE GALVANIZED. ALL ROUGH EDGES AND BURRS SHALL BE GROUND SMOOTH PRIOR TO GALVANIZING.
7. ALL EXPOSED BOLT THREADS SHALL BE PAINTED WITH TWO COATS OF ZINC RICH PAINT CONFORMING WITH THE REQUIREMENTS OF ASTM A 780.
8. ANY FIELD DAMAGE TO THE GALVANIZING SHALL BE REPAIRED WITH TWO COATS OF ZINC RICH PAINT CONFORMING WITH THE REQUIREMENTS OF ASTM A 780.
9. A STANDARD LIGHTING LUMINAIRE ARM MAY BE MOUNTED TO THE TYPE 5 POLE IN LIEU OF THE TOP COLLAR.
10. UPPER GATE ARM GUIDE IS TO BE INSTALLED 6 TO 12-INCHES BELOW THE BOTTOM OF THE TOP COLLAR.

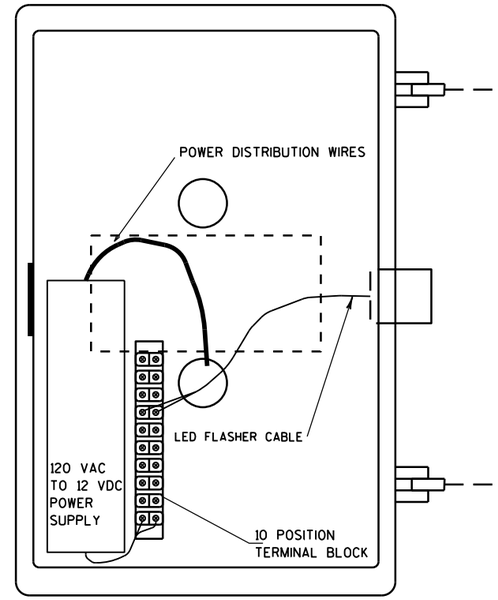


TYPICAL LOWERED POSITION
NOT TO SCALE

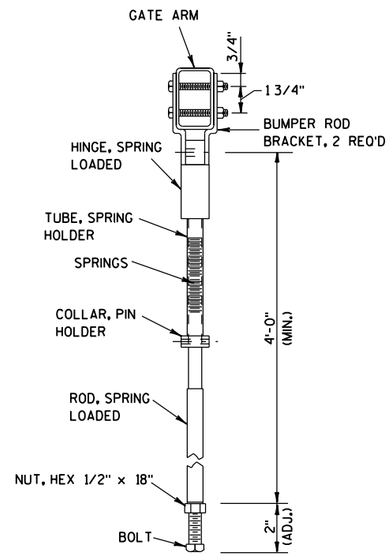
TYPICAL RAISED POSITION
NOT TO SCALE



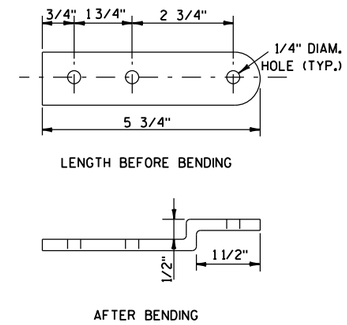
GATE DETAIL
(HARDWIRE POWER OPTION)



POWER SUPPLY CABINET



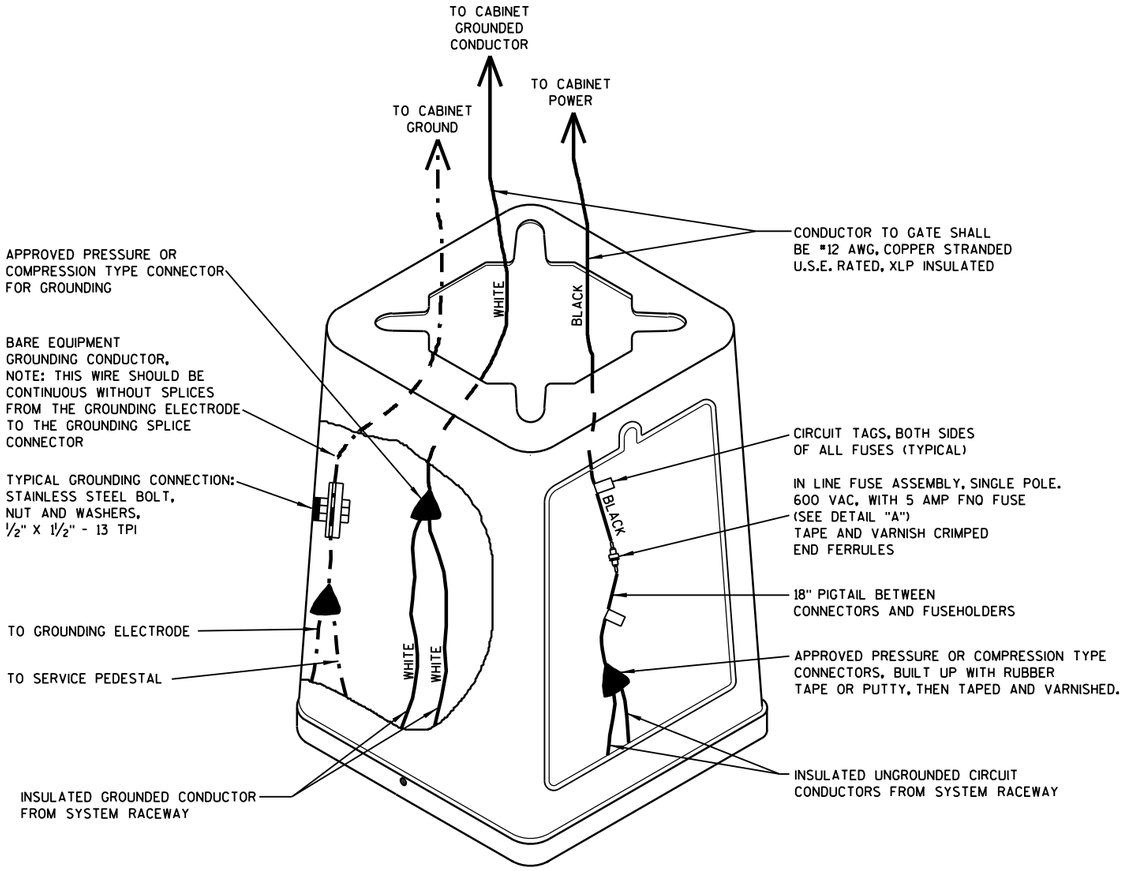
GATE ARM BUMPER ROD DETAIL

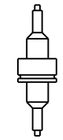


BUMPER ROD MOUNTING BRACKET DETAIL

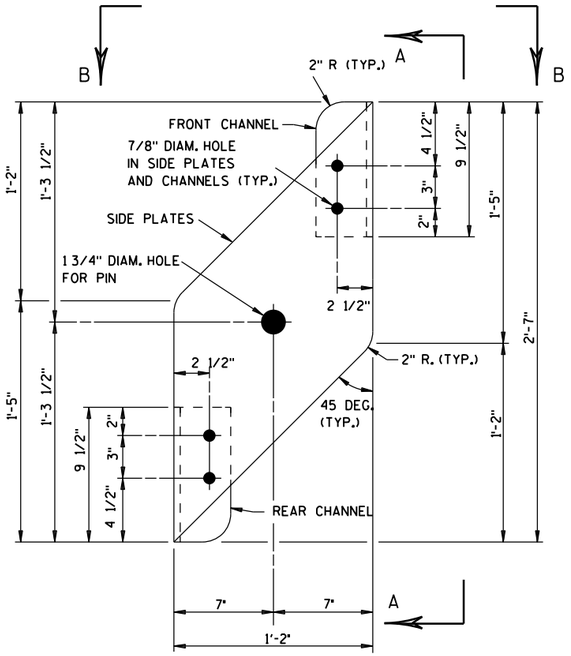
PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	FTMS CONSTRUCTION DETAILS	SHEET 20	E

2

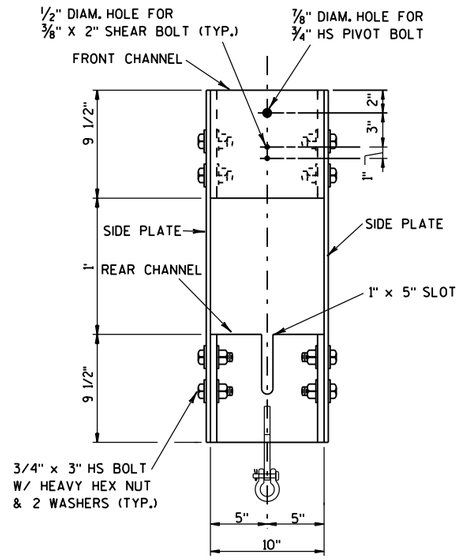




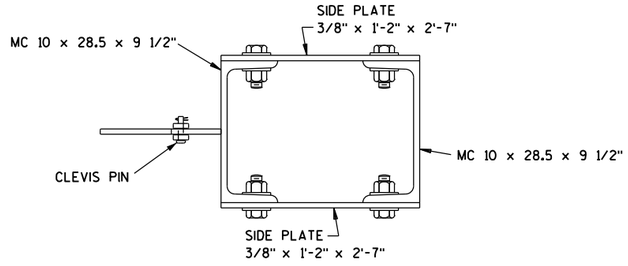
DETAIL "A"
SINGLE POLE



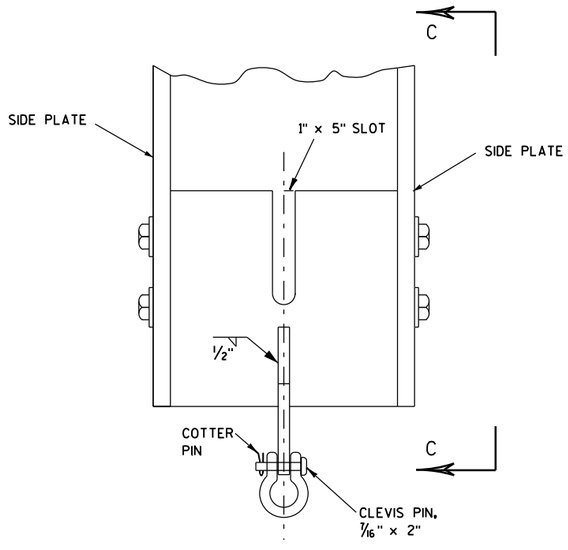
SIDE PLATE DETAIL



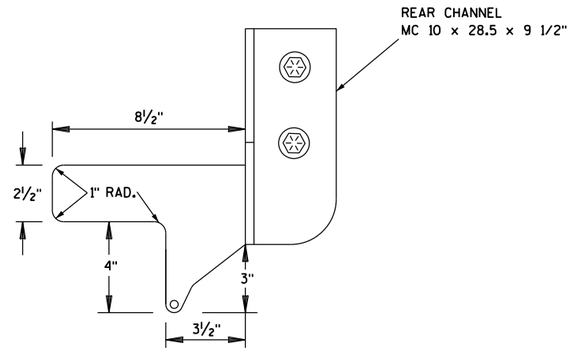
SECTION A-A



SECTION B-B



YOKE ASSEMBLY DETAIL

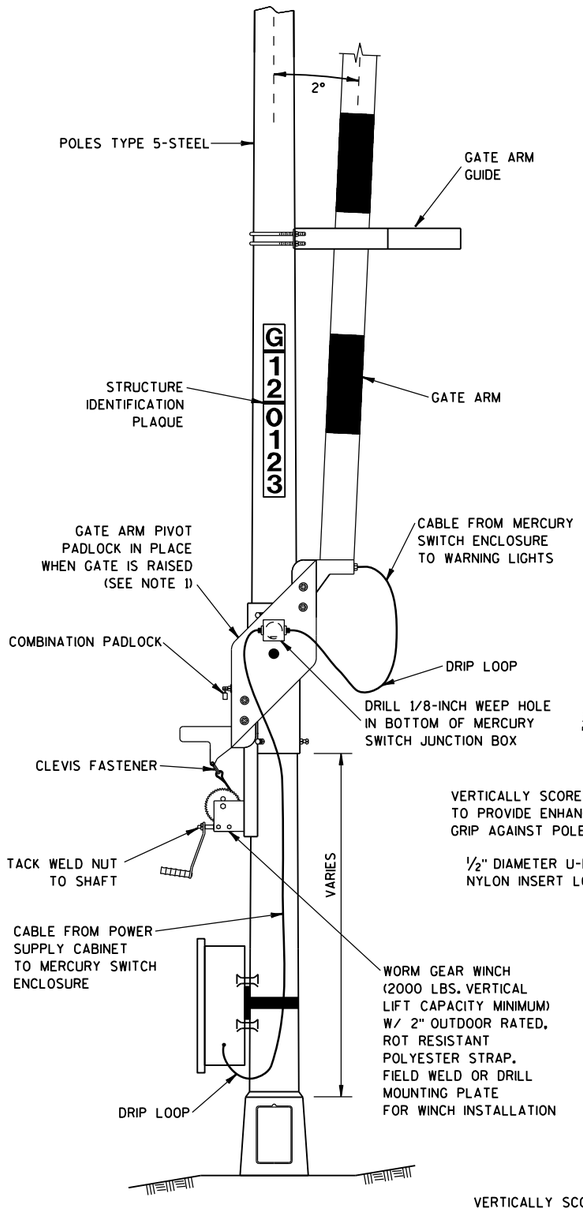


SECTION C-C

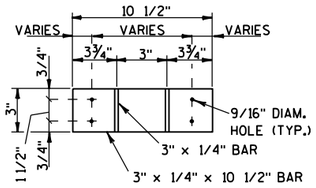
PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	FTMS CONSTRUCTION DETAILS	SHEET 22	E

GENERAL NOTES

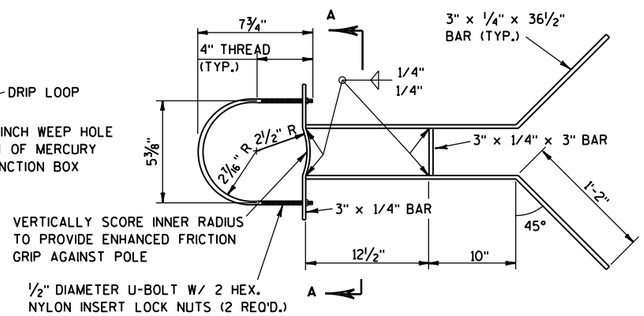
1. WHEN THE GATE IS FULLY RAISED, THE NUT AND WASHER SHALL BE PLACED SNUGLY AGAINST THE OUTSIDE OF THE REAR CHANNEL AND PADLOCKED IN PLACE.
2. WHEN THE GATE IS FULLY LOWERED, THE NUT AND WASHER SHALL BE PLACED SNUGLY AGAINST THE INSIDE OF THE REAR CHANNEL AND PADLOCKED INTO PLACE.
3. ANTI-SEIZE LUBRICATING MATERIAL SHALL BE USED ON ALL BOLT THREADS BEFORE INSTALLATION.
4. ALL BOLTS SHALL BE GALVANIZED AND CONFORM TO ASTM A307, GRADE A, UNLESS DESIGNATED AS HS (HIGH STRENGTH), WHICH SHALL CONFORM TO ASTM A325. BOLTS OF 1/2" NOMINAL DIAMTER OR LESS MAY BE STAINLESS STEEL.



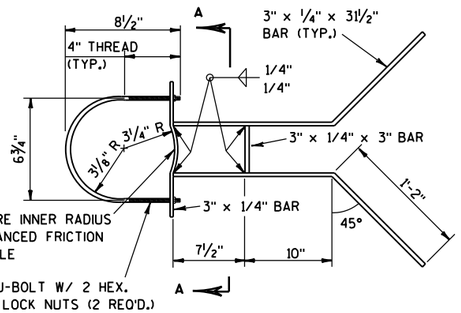
GATE PIVOT ASSEMBLY



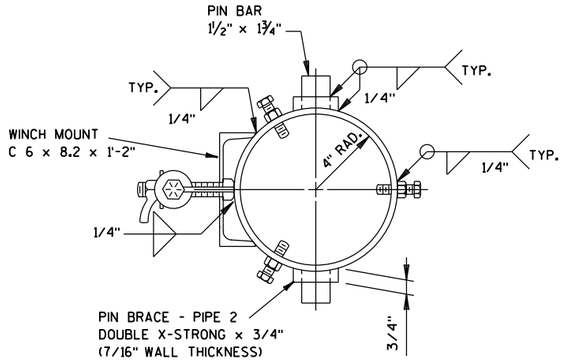
SECTION A-A
U-BOLTS NOT SHOWN



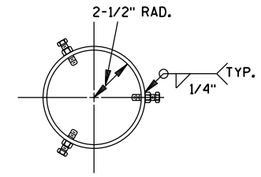
UPPER GATE ARM GUIDE DETAIL



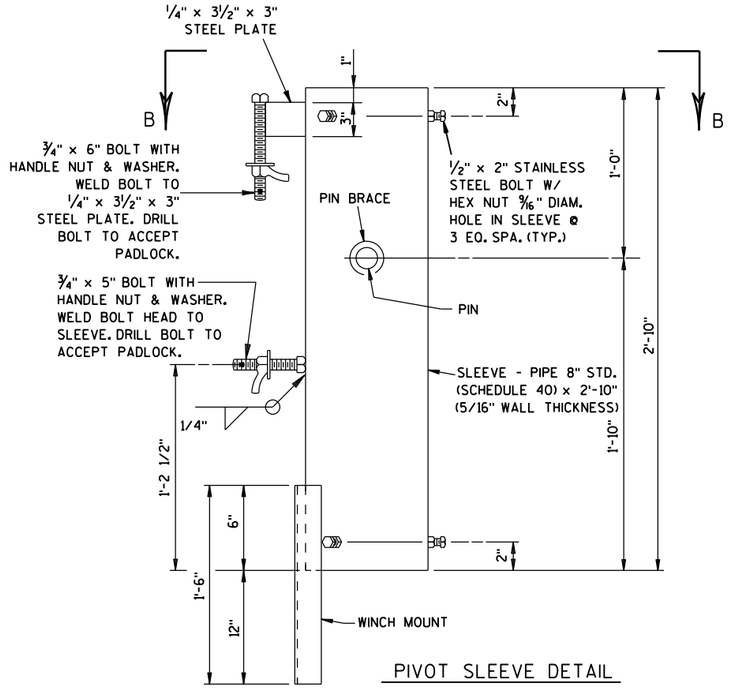
LOWER GATE ARM GUIDE DETAIL



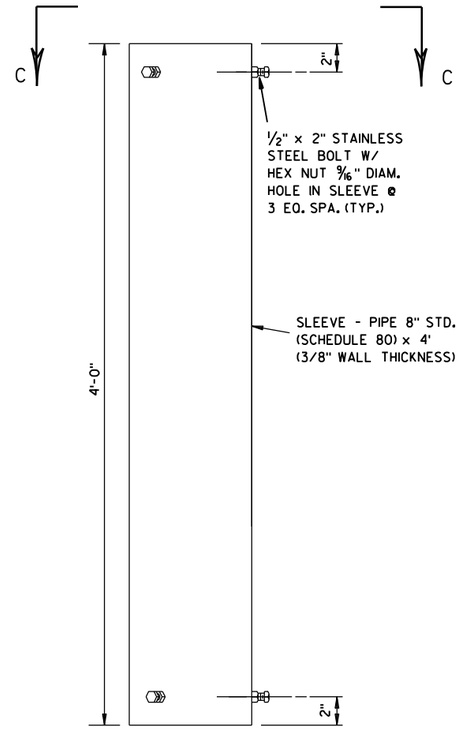
SECTION B-B



SECTION C-C

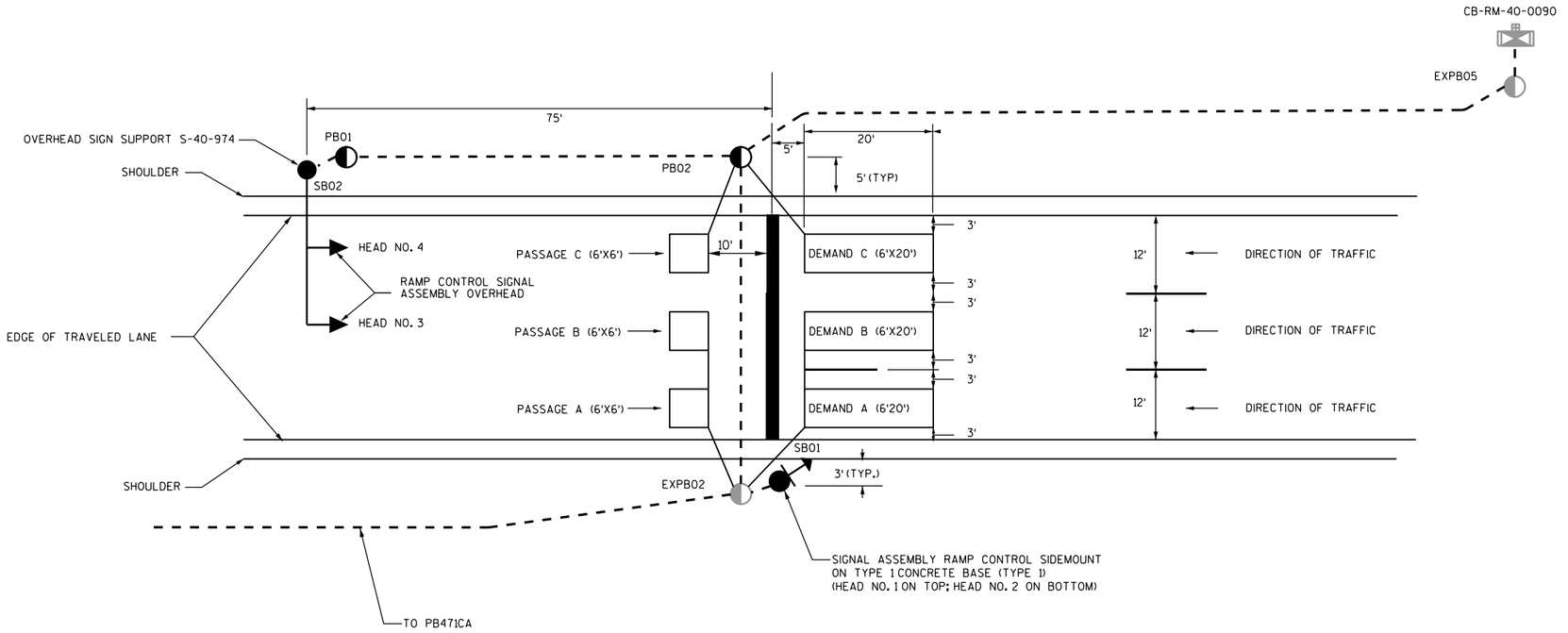


PIVOT SLEEVE DETAIL



TOP COLLAR

2



CONDUCTOR CHART

FROM	TO	CABLE SIZE	HEAD NO.	COLOR CODE
CB-RM-40-0090	SB02	12C	1	RED-BK, ORANGE BK, GREEN BK
CB-RM-40-0090	SB02	12C	2	RED, ORANGE, GREEN
SB02	SB01	7C	3	WHITE, RED, GREEN
SB02	SB01	7C	4	WHITE, GREEN

LOOP DETECTOR CHART

LOOP DETECTOR	LENGTH	WIDTH	NO. TURNS
DEMAND A	20-FEET	6-FEET	4
DEMAND B	20-FEET	6-FEET	5
DEMAND C	20-FEET	6-FEET	4
PASSAGE A	6-FEET	6-FEET	4
PASSAGE B	6-FEET	6-FEET	5
PASSAGE C	6-FEET	6-FEET	4

DEMAND/PASSAGE LAYOUT

GOOD HOPE RD. SB ENTRANCE RAMP
(RM-40-0090)

2

N

REMOVE PULL BOX
EXPB03
REMOVE CABLES
REMOVE RAMP CONTROL SIGNAL ASSEMBLY
REMOVE CONCRETE BASE
EXSB02
PC 60+00.00
REMOVE PULL BOX
EXPB04
RAMP E
RAMP F
REMOVE CABLE AND ABANDON CONDUIT
PI 62+21.59
REMOVE CABLES
EXPB01
EXPB02
EXSB01
REMOVE RAMP CONTROL SIGNAL ASSEMBLY
REMOVE CABLES
PI 60+00.00
57
58
59
60
61
62
MH
SS
INL
SIGN

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	FTMS REMOVAL PLAN	SHEET 25	E

2

2

REMOVE PULL BOX

REMOVE RAMP METER CONTROLLER
(SALVAGE LOOP CARDS)

REMOVE CABLE

EXPB04

EXRM-40-90

EXPB05

EXFY01

REMOVE ADVANCE FLASHER ASSEMBLY
REMOVE CONCRETE BASE

REMOVE CABLE

EXPB06

EXPB07

RAMP E

RAMP F

GOOD HOPE RD.

PT 64+09.41

PI 65+19.13

PI 62+27.59

PI 63+42.42

61

62

63

64

65

N

MH

INL

SIGN

FY

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	FTMS REMOVAL PLAN	SHEET 26	E

2

2

INSTALL 1-2-INCH AND 1-3-INCH NONMETALLIC CONDUIT
1 WITH 6 LDLIC AND 1 MICROWAVE DETECTOR CABLE
1 WITH 1/12C NO. 14 CABLE

N

EXTEND 3-3" EXISTING
CONDUITS TO PB02

2-3-INCH NONMETALLIC CONDUIT
1 WITH 1/12C NO. 14 CABLE
AND 1/7C NO. 14 CABLE
1 FOR FUTURE USE

PB03

RAMP E

PB01

SB02

PB02

PC 60+00.00

57 58 59 60 61 62

S-40-974
RAMP CONTROL SIGNAL
ASSEMBLY OVERHEAD

RAMP F

PI 62+21.59

INSTALL IN EXISTING CONDUIT
1/7C NO. 14 CABLE
1 MICROWAVE DETECTOR CABLE
4 LDLIC

29'

EXPB02

SB01

SIGNAL ASSEMBLY RAMP
CONTROL SIDE MOUNT
MOUNT ON EXISTING BASE

MD01

INSTALL CONDUIT INTO
EXISTING ITEM

2-2-INCH NONMETALLIC CONDUIT
1 WITH MICROWAVE DETECTOR CABLE
1 FOR FUTURE USE

PI 60+00.00

INSTALL IN EXISTING CONDUIT
1/7C NO. 14 CABLE

TYPE 5 CONCRETE BASE
11½" TRANSFORMER BASE
TYPE 5 ALUMINUM POLE
MICROWAVE DETECTOR (S-F)

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	FTMS PLAN	SHEET 27	E

2

2

IN EXISTING CONDUIT
(2) 2/C NO. 12 AWG
GROUNDED UF CABLE
1/5C NO. 14 CABLE
1/12C NO. 14 CABLE
6 LDLIC & 1 MICROWAVE
DETECTOR CABLE

INSTALL 1-2" NONMETALLIC CONDUIT
WITH 1/5C NO. 14 CABLE

INSTALL 1-3-INCH AND 1-2-INCH NONMETALLIC CONDUIT
1 WITH 6 LDLIC AND 1 MICROWAVE DETECTOR CABLE
1 WITH 1/12C NO. 14 CABLE

EXRM-40-90
INSTALL CONTROLLER RAMP METER
PROCESSOR ASSEMBLY (S-F)
(3) LOOP EMULATION CARDS (S-F)

INTERCEPT EXISTING
CONDUITS

PB03

EXPB05

FY01

PT 64+09.41

PI 65+19.13

61

62

63

64

65

4'

40 FEET

TYPE 1 CONCRETE BASE
ADVANCE FLASHER ASSEMBLY TYPE 1

RG-40-68
RAMP CLOUSURE GATE
HARDWIRED 40-FT

RAMP E

IN EXISTING CONDUIT
(1) 2/C NO. 12 AWG
GROUNDED UF CABLE

1-2" NONMETALLIC CONDUIT
WITH (1) 2/C NO. 12 AWG
GROUNDED UF CABLE

EXPB06

IN EXISTING CONDUIT
(1) 2/C NO. 12 AWG
GROUNDED UF CABLE

RAMP F

62

INSTALL CONTROLLER
INTO EXISTING ITEM

1-2" NONMETALLIC CONDUIT WITH
(1) 2/C NO. 12 AWG
GROUNDED UF CABLE

EXPB07

PI 62+27.59

25'

28-FEET

4'

63

RG-40-69
RAMP CLOUSURE GATE
HARDWIRED 28-FT

PI 63+42.42

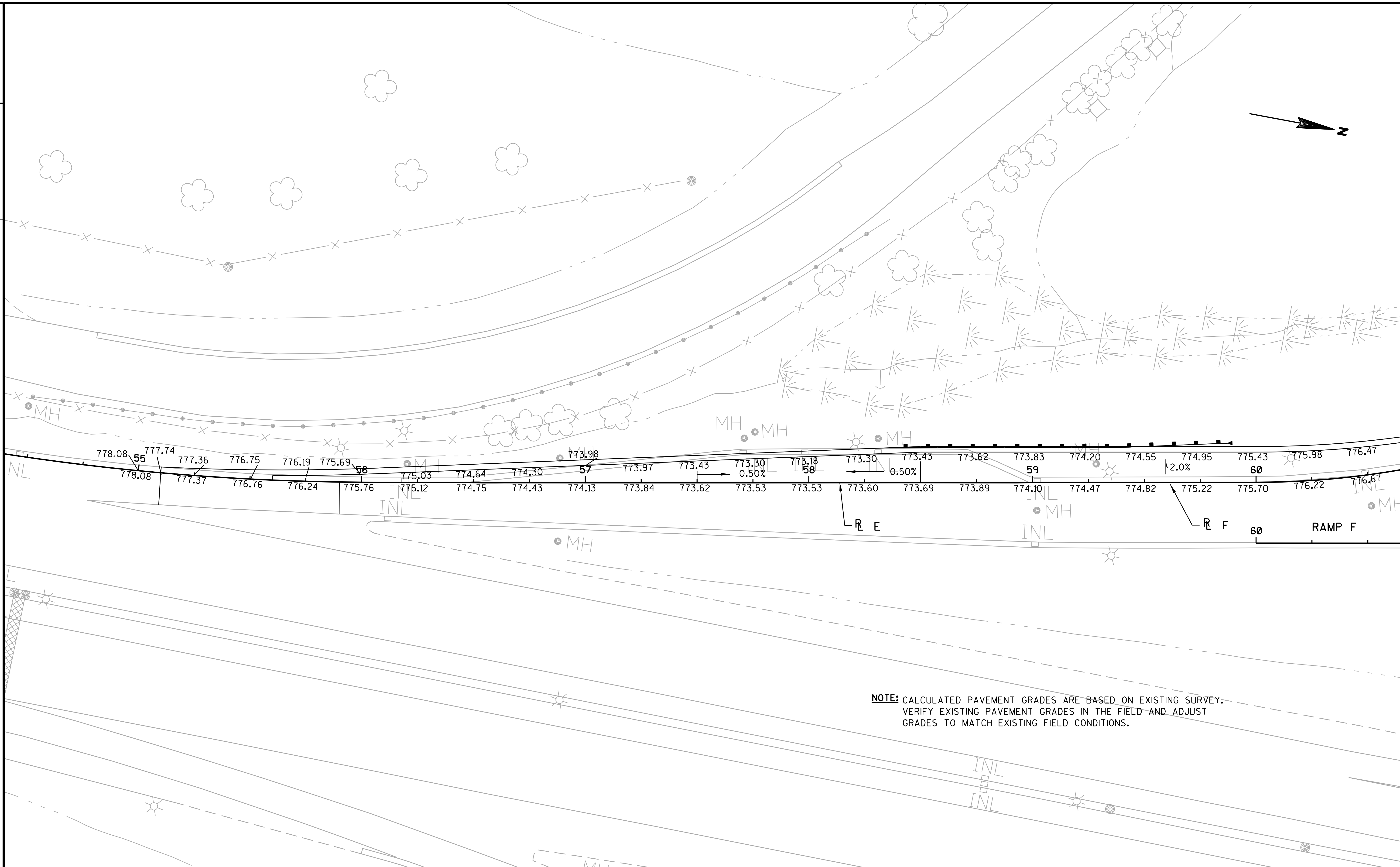
GOOD HOPE RD.

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	FTMS PLAN	SHEET 28	E

FILE NAME : J:\projects\D2_11003341\021404_fm.dgn PLOT DATE : 09-MAY-2013 08:45 PLOT BY : dotr3h PLOT NAME : PLOT SCALE : 40:1

WISDOT/CADDS SHEET 42

2



2

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	PAVING GRADES / DETAIL	SHEET 29	E

2

N

END PROJECT
STA. 62+05

RAMP E

RAMP F

PI 64+09.41

PI 62+21.59

PI 63+42.42

RL F

776.47 776.93 777.61 777.93 778.56 779.25 780.04 780.60 781.74
776.67 777.10 777.75 778.29 778.81 779.40 780.04 780.60 781.17
778.69 779.14 779.69 778.44
779.35 779.79 780.22
780.15 780.73

61 62 63 64

INL MH ISIGN RD.

NOTE: CALCULATED PAVEMENT GRADES ARE BASED ON EXISTING SURVEY. VERIFY EXISTING PAVEMENT GRADES IN THE FIELD AND ADJUST GRADES TO MATCH EXISTING FIELD CONDITIONS.

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	PAVING GRADES / DETAIL	SHEET 30	E

2

N

WETLAND BOUNDARY

PC 53+90.81

PT 56+90.81

PI 54+98.94

PI 60+00.00

RAMP E

54 55 56 57 58 59 60

RP E

USH 45

LEGEND

- INLET PROTECTION TYPE (C) (D)
- SILT FENCE
- EROSION MAT URBAN CLASS 1 TYPE B
- SLOPE INTERCEPT
- CULVERT PIPE CHECK
- SURFACE WATER FLOW
- TEMPORARY DITCH CHECKS

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	EROSION CONTROL	SHEET 31	E

FILE NAME : J:\projects\D2_11003341\022001_ec.dgn PLOT DATE : 09-MAY-2013 08:45 PLOT BY : dotr3h PLOT NAME : PLOT SCALE : 40:1

WISDOT/CADDS SHEET 42

2

N

PT 64+09.41

WETLAND BOUNDARY

GOOD HOPE RD.

RAMP E

RAMP F

PI 62+27.59

PI 60+00.00

PI 63+42.42

RL F

60 61 62 63 64

INL MH SS ISIGN

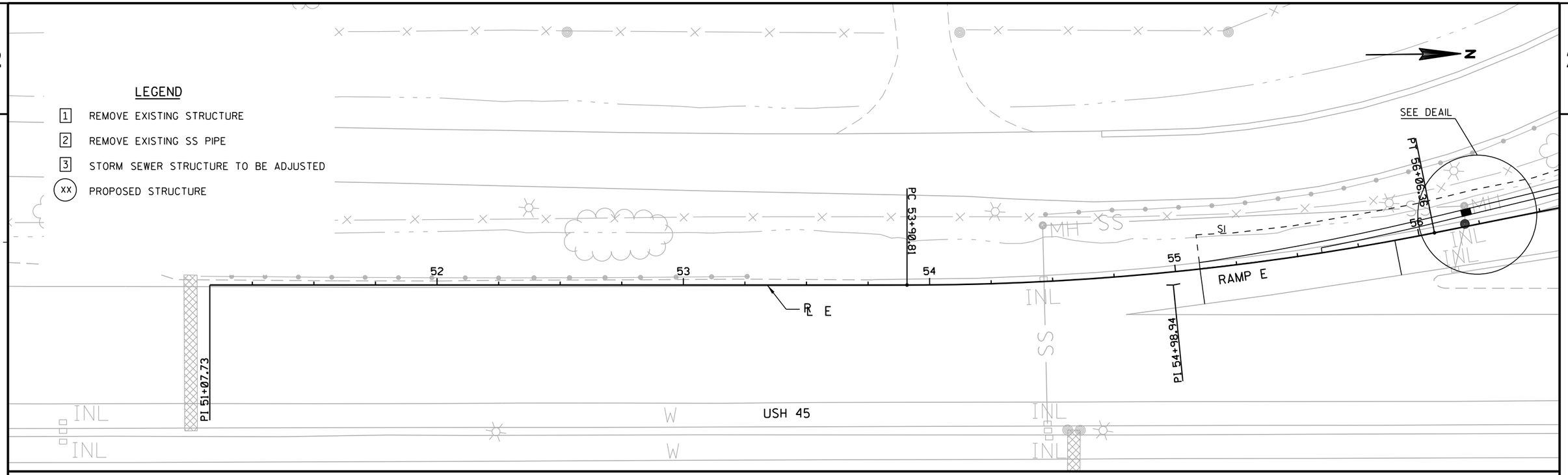
LEGEND

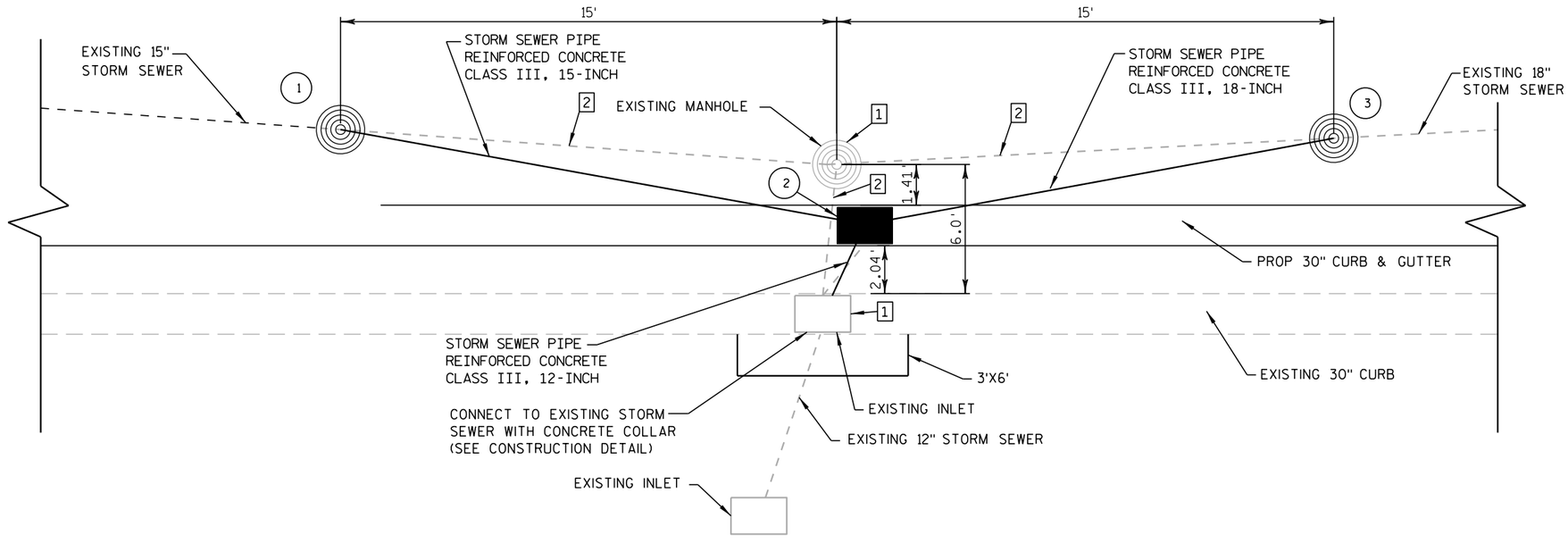
- INLET PROTECTION TYPE (C) (D)
- SILT FENCE
- EROSION MAT URBAN CLASS 1 TYPE B
- SLOPE INTERCEPT
- CULVERT PIPE CHECK
- SURFACE WATER FLOW
- TEMPORARY DITCH CHECKS

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	EROSION CONTROL	SHEET 32	E

LEGEND

- [1] REMOVE EXISTING STRUCTURE
- [2] REMOVE EXISTING SS PIPE
- [3] STORM SEWER STRUCTURE TO BE ADJUSTED
- (XX) PROPOSED STRUCTURE



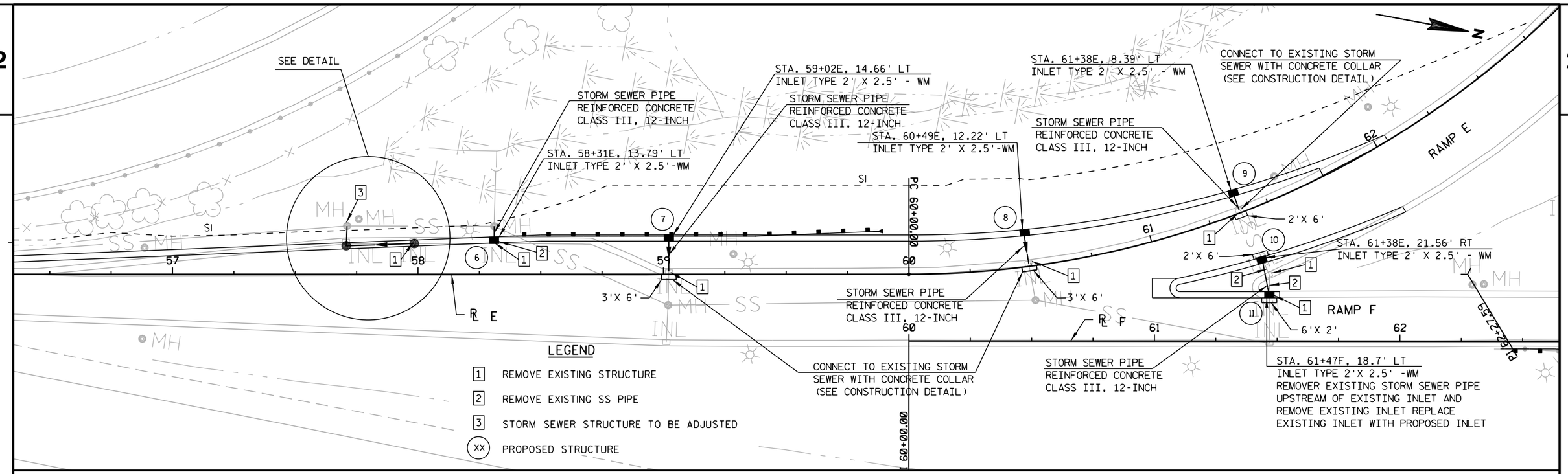


1. STRUCTURE #1
   STA. 56+05.53E, 10.56' LT
   MANHOLE TYPE I-J, 4' DIA.
2. STRUCTURE #2
   STA. 56+22.07E, 5.45' LT
   INLET 4-FT DIA - WM
3. STRUCTURE #3
   STA. 56+35.32, 9.43' LT
   MANHOLE TY I-J, 4' DIA.

DETAIL - NOT TO SCALE

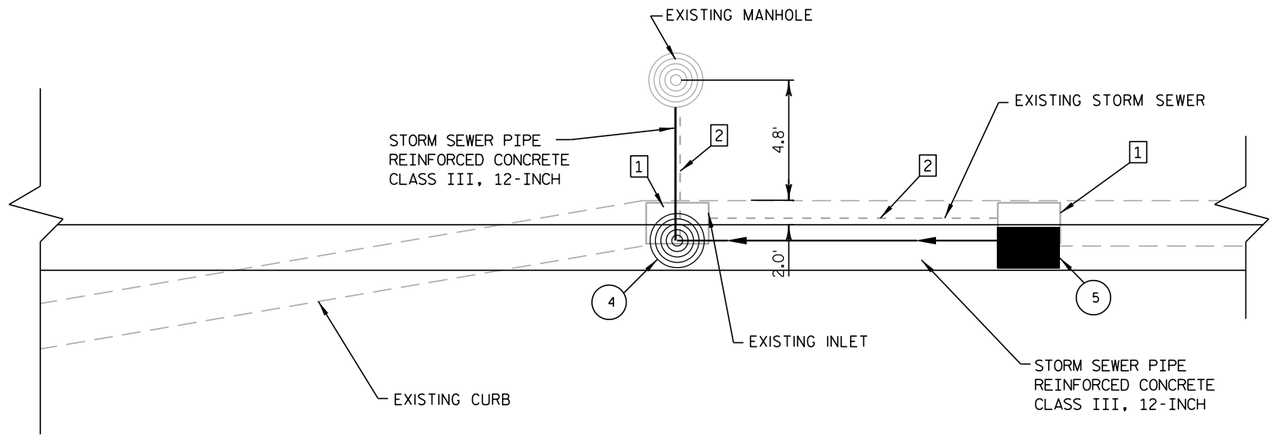
PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	STORM SEWER	SHEET 33	E

2



LEGEND

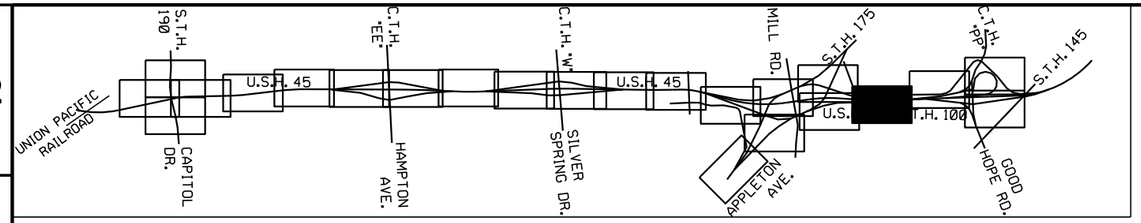
- [1] REMOVE EXISTING STRUCTURE
- [2] REMOVE EXISTING SS PIPE
- [3] STORM SEWER STRUCTURE TO BE ADJUSTED
- (XX) PROPOSED STRUCTURE



(4) STRUCTURE #4
STA. 57+71.10, 11.27' LT
INLET 4 FT DIA. - WM

(5) STRRUCTURE #5
STA. 57+98.16E 12.44' LT
INLET 2' X 2.5' - WM

DETAIL - NOT TO SCALE



2

2

LEGEND

- DISTRIBUTION CENTER
- CID (CABLE IN DUCT)
- CONDUIT - 2" UNLESS OTHERWISE SHOWN
- LIGHT POLE, ARM MOUNTED LUMINAIRE
- CONDUIT STUBOUT
- PULLBOX 24" x 42"
- PULLBOX 24" x 36"
- EOP — EDGE OF PAVEMENT
- B.O.C. — BACK OF CURB
- C.I.M. — CENTER IN MEDIAN
- B.O.S. — BACK OF SIDEWALK
- MUNICIPAL LIGHT POLE

BOLDED REPRESENTS ITEMS TO BE REMOVED

N

115th ST.

114th ST.

USH 41/45/STH 100

#8 D,N
64+23 SB
S-40-304
(SB) 3MV-C/D/DP
(NB) 1MV-C/D/DP
64+50, 30'LT
DDP16
65MX+00
70MX+00
63+82
CDP4
D51
C51
D50
C50
DDP4
#8 C,D,N
66+00
DDP5
CDP5
CDP6
DDP6
#4 G,N
72+00
AWG11
BWG11
A51
74+45
BWG10
AWG10
76+90
AWG9
BWG9
#4 A,B,N
29+80
BWG14
31+30
AWG14
#4 B,N
26+80
BWG15
28+30
AWG15
30+00
17+80
FDP10
65KX+00
19+30
FDP12
20+80
FDP14
20+00
22+30
FDP16
23+80
FDP17
25+00
25+80
FDP18
72+00
S-40-194
1MV-A/WG
FDP9
FDP11
FDP13
FDP15

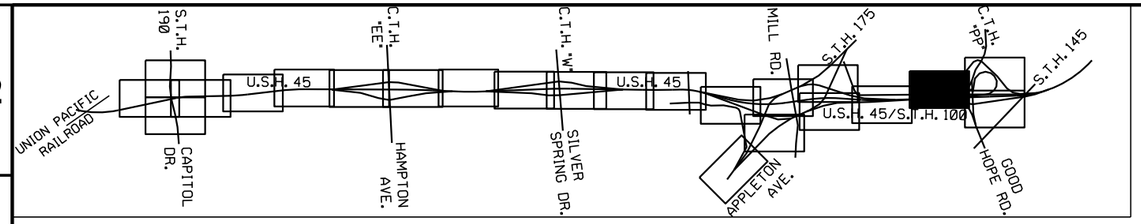
FOR INFORMATION ONLY
NO WORK ON THIS PAGE

SHEET 1 OF 4

LIGHTING PLAN DESIGNED BY
WISDOT SE REGION

PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	LIGHTING REMOVAL PLAN	SHEET NO: 35	E

FILE NAME : J:\projects\D2_11003341\Lighting\rem_023501_lp_rem.dgn PLOT DATE : 20-FEB-2013 07:17 PLOT BY : MSCMWB PLOT NAME : PLOT SCALE : 100.000062:1



LEGEND

⊠	DISTRIBUTION CENTER
- - — - —	CID (CABLE IN DUCT)
- — — —	CONDUIT - 2" UNLESS OTHERWISE SHOWN
●—●	LIGHT POLE, ARM MOUNTED LUMINAIRE
⇉	CONDUIT STUBOUT
ⓧ	PULLBOX 24" x 42"
◐	PULLBOX 24" x 36"
EOP	EDGE OF PAVEMENT
B.O.C.	BACK OF CURB
C.I.M.	CENTER IN MEDIAN
B.O.S.	BACK OF SIDEWALK
✱—●	MUNICIPAL LIGHT POLE

BOLDED REPRESENTS ITEMS TO BE REMOVED

***REMOVE PLAQUES** – INCIDENTAL TO NEW PLAQUES

HL-40-WG	
A,C,E,G,J,L	RED
B,D,F,H,K,M	BLACK
N	WHITE
GND	GREEN
A,C,E,G,J,L	30 A
B,D,F,H,K,M	30 A
240/480VAC 3 WIRE GROUNDED NEUTRAL	

N

USH 41/45/STH 100

79+35 BWG8 AWG8 — 80 — 81+80 BWG7 — 82 — 83+00 S-40-305 2MV-A/B/WG — A50 B50 — 84 — 84+25 BWG6 AWG6 — 86 — 86+57 S-40-376 3MV-B/WG — A53 B53 — 86+70 AWG5 BWG5 B52 — 88 — 89+05 BWG4 AWG4 — 90 — 91+40 *GWG10 — 92 — 93+75 *HWG11 — 94

32+80 BWG13 AWG13 — 34+30 — 35+00 — #4 A,B,N — #4 A,N — 35+85 BWG12 — 37+35 AWG12

1765+00 — 0+00 — 5+00 — 1766+40 *GWG13 400W — 1768+70 *HWG13 400W — 1770+00 — 1770+67 *EWG23 400W — 1772+64 *FWG24 200W — 1774+61 *EWG25 200W — 2099+74 *CWG20 200W — 2100+00 — 2101+21 *DWG21 200W — 99+41 *CWG11 — 101+0 *DWG1

*CWG24 310W — #8 C,N — *CWG16 — *CWG17 — *CWG18 — *CWG21 — *CWG22 — #6 C,N

25+00 — #8 L,M,N *MWG1 — 25+80, 115' RT *LWG1 — #10 L,M,N — 26+80, 50' RT *MWG3 — #10 M,N *LWG2 — #10 L,M,N — 27+30, 115' RT *MWG2 — #8 A,N,

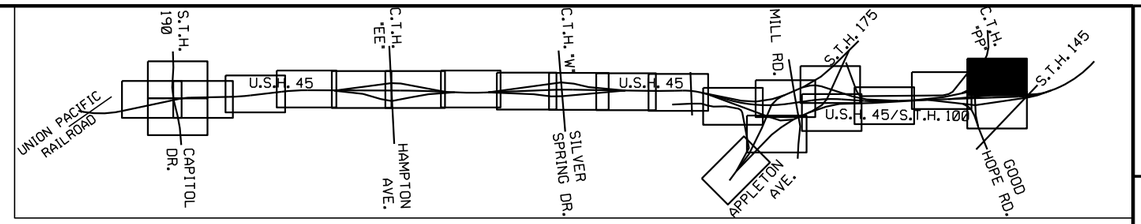
12' GATE — 3" — DISTRIBUTION CENTER HL-40-WG — 2-3" — LPB1 EXISTING — LPB2 EXISTING — 4" — 3" — 2 1/2" — OH — INL — SIGN — W

SHEET 2 OF 4

LIGHTING PLAN DESIGNED BY WISDOT SE REGION

PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	LIGHTING REMOVAL PLAN	SHEET NO: 36	E

FILE NAME : J:\projects\D2_11003341\Lighting\rem_023502_lp_rem.dgn — PLOT DATE : 20-FEB-2013 07:17 — PLOT BY : MSCMWB — PLOT NAME : — PLOT SCALE : 100.000062:1



2

LEGEND

⊠	DISTRIBUTION CENTER
- · — · -	CID (CABLE IN DUCT)
— — —	CONDUIT - 2" UNLESS OTHERWISE SHOWN
●—	LIGHT POLE, ARM MOUNTED LUMINAIRE
⇒	CONDUIT STUBOUT
⊗	PULLBOX 24" x 42"
◐	PULLBOX 24" x 36"
EOP	EDGE OF PAVEMENT
B.O.C.	BACK OF CURB
C.I.M.	CENTER IN MEDIAN
B.O.S.	BACK OF SIDEWALK
✱—	MUNICIPAL LIGHT POLE

BOLDED REPRESENTS ITEMS TO BE REMOVED

*REMOVE PLAQUES - INCIDENTAL TO NEW PLAQUES

SIGN LIGHTING TO REMAIN. REMOVE PLAQUE ONLY.

SHEET 3 OF 4

LIGHTING PLAN DESIGNED BY WISDOT SE REGION

PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	LIGHTING REMOVAL PLAN	SHEET NO: 37	E

2

N

SIGN LIGHTING TO REMAIN.
REMOVE PLAQUE ONLY.

*JWG26 S-40-379 *2MV-J/K/WG *KWG27

105+65 *GWG2 108+15 *HWG3 110+60 *GWG4

*HWG2 *GWG3 *HWG4

*GWG1 103+20 *HWG1 96+40 *GWG12 99+41 *FWG11

2432+87 *EWG1 400W 2435+17 *FWG2 400W

*DWG32 *DWG33 *DWG34 *DWG35

*DWG31 *DWG30 *DWG13 103+02

*CWG13 *CWG19 *CWG21 *CWG22

*DWG14 *CWG23 150W 104+99 *CWG14

106+96 *CWG15

*GWG11 93+75 *HWG11 *CWG11 99+41 *DWG21 200W 2100+00 2101+21

*DWG12 101+05 *EWG12 *HWG12 101+77 S-40-260 NO LIGHTING

108+27 S-40-302 *3MV-C/D/WG

SIGN LIGHTING TO REMAIN.
REMOVE PLAQUE ONLY.

*REMOVE PLAQUES – INCIDENTAL TO NEW PLAQUES

G20 H21 G22 H23 H20 G21 H22 G23

8 UDL *G/H/WG

#4 C,H,N #6 C,N #8 C,N

USH 41/45/STH 100

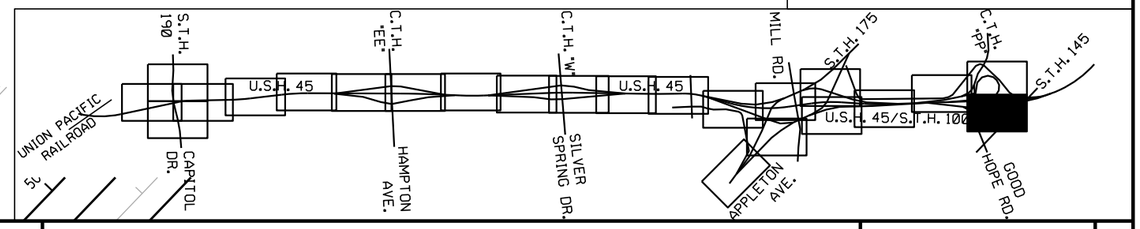
LEGEND

⊠	DISTRIBUTION CENTER
- - — - -	CID (CABLE IN DUCT)
— — — —	CONDUIT - 2" UNLESS OTHERWISE SHOWN
●—	LIGHT POLE, ARM MOUNTED LUMINAIRE
⇉	CONDUIT STUBOUT
⊗	PULLBOX 24" x 42"
◐	PULLBOX 24" x 36"
EOP	EDGE OF PAVEMENT
B.O.C.	BACK OF CURB
C.I.M.	CENTER IN MEDIAN
B.O.S.	BACK OF SIDEWALK
✳—	MUNICIPAL LIGHT POLE

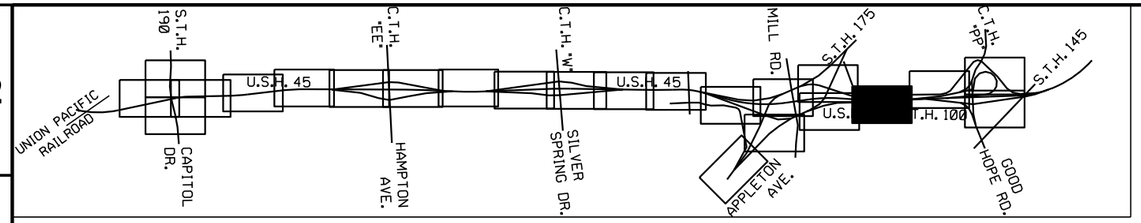
BOLDED REPRESENTS ITEMS TO BE REMOVED

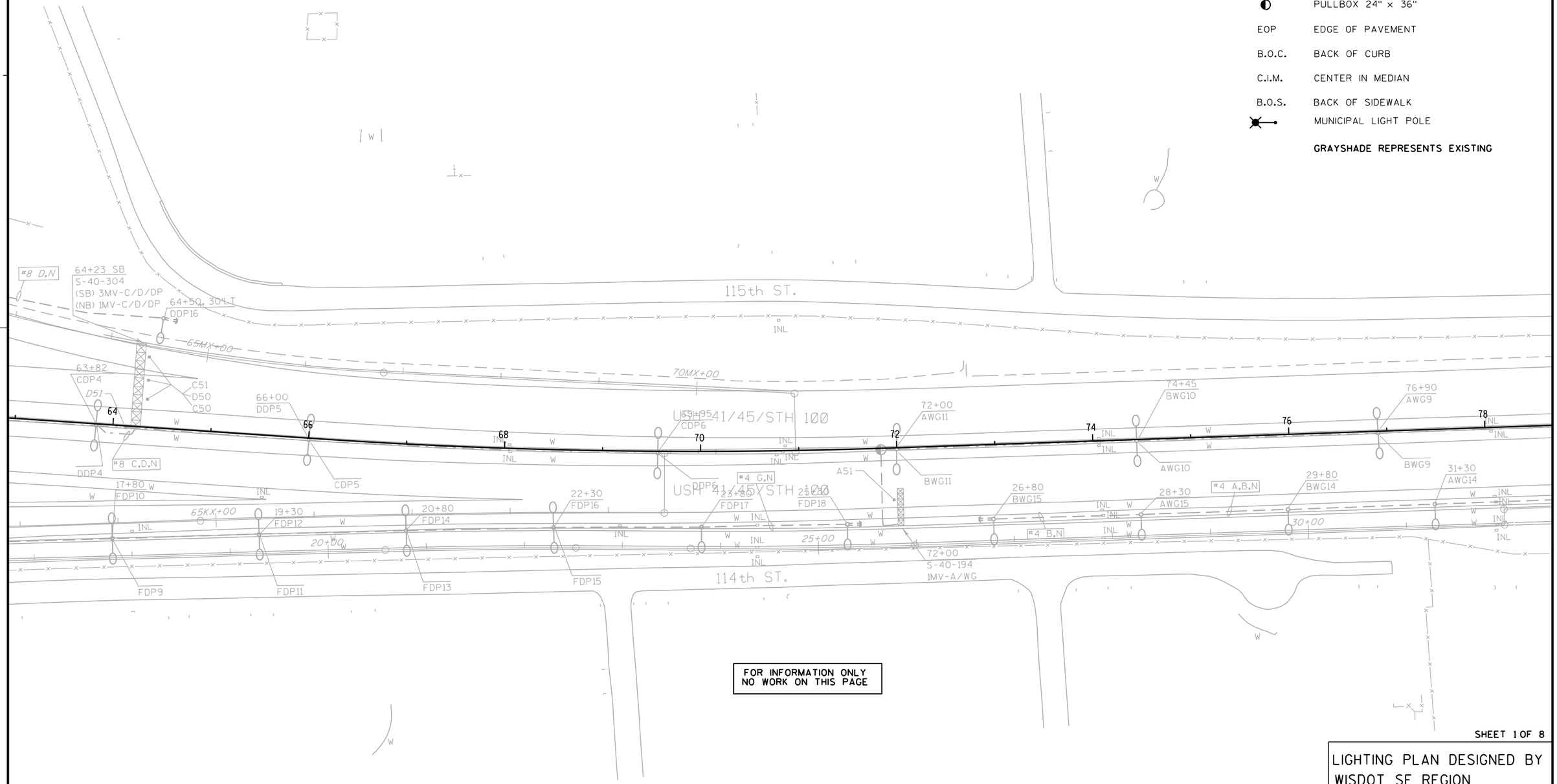
SHEET 4 OF 4

LIGHTING PLAN DESIGNED BY WISDOT SE REGION



PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	LIGHTING REMOVAL PLAN	SHEET NO: 38 E





FOR INFORMATION ONLY
NO WORK ON THIS PAGE

LEGEND

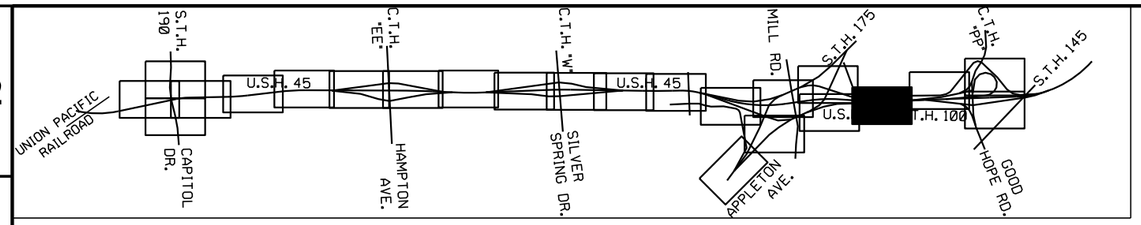
⊠	DISTRIBUTION CENTER
- - — - —	CID (CABLE IN DUCT)
- — — —	CONDUIT - 2" UNLESS OTHERWISE SHOWN
●—	LIGHT POLE, ARM MOUNTED LUMINAIRE
⇒	CONDUIT STUBOUT
⊗	PULLBOX 24" × 42"
◐	PULLBOX 24" × 36"
EOP	EDGE OF PAVEMENT
B.O.C.	BACK OF CURB
C.I.M.	CENTER IN MEDIAN
B.O.S.	BACK OF SIDEWALK
✕●	MUNICIPAL LIGHT POLE

GRAYSHADE REPRESENTS EXISTING

SHEET 1 OF 8

LIGHTING PLAN DESIGNED BY
WISDOT SE REGION

PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	LIGHTING PLAN	SHEET NO: 39	E

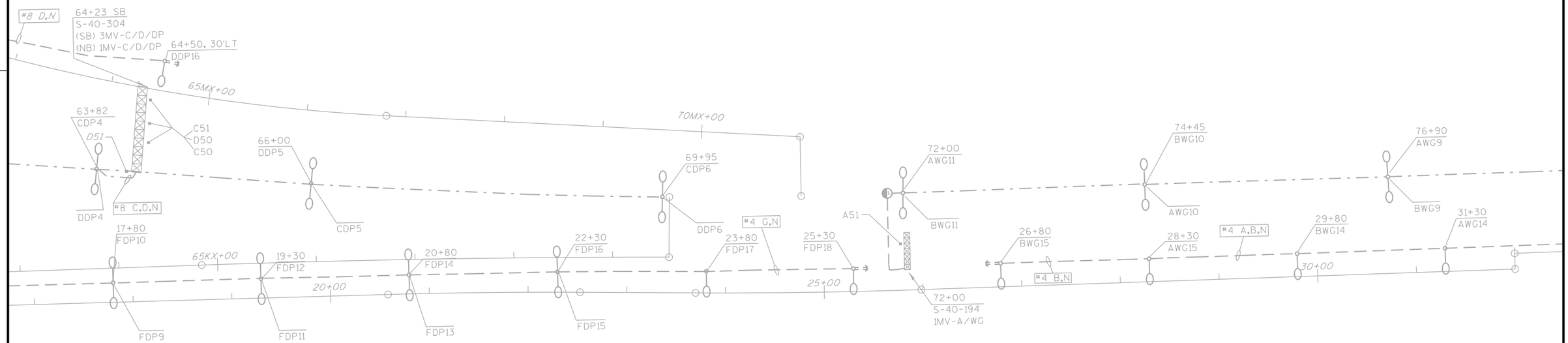


N

LEGEND

- DISTRIBUTION CENTER
- CID (CABLE IN DUCT)
- CONDUIT - 2" UNLESS OTHERWISE SHOWN
- LIGHT POLE, ARM MOUNTED LUMINAIRE
- CONDUIT STUBOUT
- PULLBOX 24" x 42"
- PULLBOX 24" x 36"
- EOP — EDGE OF PAVEMENT
- B.O.C. — BACK OF CURB
- C.I.M. — CENTER IN MEDIAN
- B.O.S. — BACK OF SIDEWALK
- MUNICIPAL LIGHT POLE

GRAYSHADE REPRESENTS EXISTING

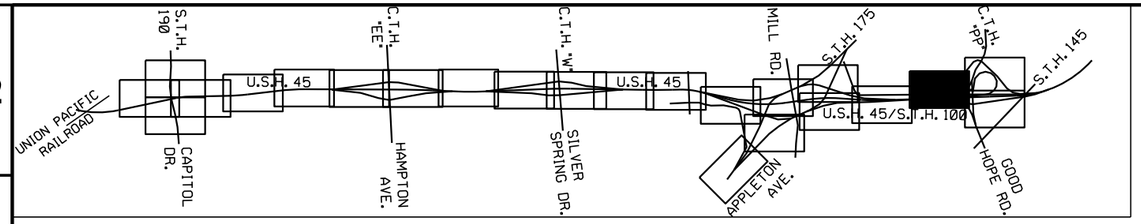


FOR INFORMATION ONLY
NO WORK ON THIS PAGE

SHEET 2 OF 8

LIGHTING PLAN DESIGNED BY
WISDOT SE REGION

PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	LIGHTING PLAN - SCHEMATIC	SHEET NO: 40	E



LEGEND

⊠	DISTRIBUTION CENTER
- - — - —	CID (CABLE IN DUCT)
- — — —	CONDUIT - 2" UNLESS OTHERWISE SHOWN
●—●	LIGHT POLE, ARM MOUNTED LUMINAIRE
⇉	CONDUIT STUBOUT
⊗	PULLBOX 24" x 42"
◐	PULLBOX 24" x 36"
EOP	EDGE OF PAVEMENT
B.O.C.	BACK OF CURB
C.I.M.	CENTER IN MEDIAN
B.O.S.	BACK OF SIDEWALK
✳—●	MUNICIPAL LIGHT POLE

GRAYSHADE REPRESENTS EXISTING

HL-40-HP	
A,C,E	RED
B,D,F	BLACK
N	WHITE
GND	GREEN
A,C,E	30 A
B,D,F	30 A
240/480VAC 3 WIRE GROUNDED NEUTRAL	

HL-40-WG	
A,C,E	RED
B,D,F	BLACK
N	WHITE
GND	GREEN
A,C,E	30 A
B,D,F	30 A
240/480VAC 3 WIRE GROUNDED NEUTRAL	

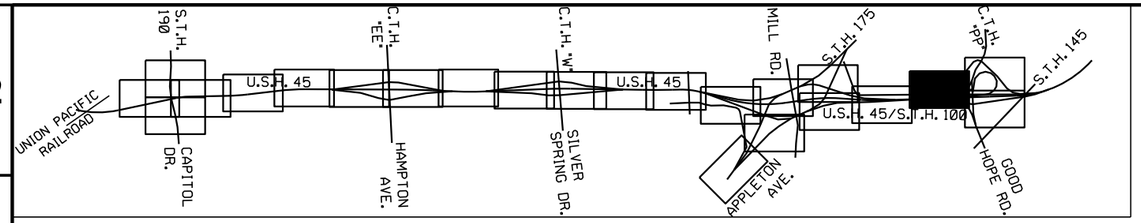
N

#10 C,D,N
27+30, 115' RT
MWG2
#10 C,D
26+80, 50' RT
MWG3
CWG2
#10 C,D,N
#8 A,N,
25+80, 115' RT
CWG1
25+00
#8 C,D,N
DWG1
EXISTING LPB2
1774+61, 10' LT
AHP3
LED(C)
EXISTING LPB1
DISTRIBUTION CENTER HL-40-WG
3"
1772+64, 10' LT
BHP2
LED(C)
DISTRIBUTION CENTER HL-40-HP
3"
EXISTING LPB5
EXISTING LPB6
LPB1
1770+50, 21' LT
AHP1
LED(D)
#4 A,B,N
#4 E,F,N
LPB2
1768+70
EWG1
LED(D)
EXISTING LPB3
2101+21, 15' RT
DHP2
LED(C)
2099+74, 10' RT
CHP1
LED(C)
LPB3
99+41, 5
CHP3
93+75
FWG4
1766+40
FWG2
LED(D)
83+00
S-40-305
2MV-A/B/WG
1765+00
86+57
S-40-376
3MV-B/WG
86+70
AWG5
89+05
BWG4
91+40
EWG3
EXISTING LPB4
FWG3
EWG4
79+35
BWG8
81+80
BWG7
84+25
BWG6
A50
B50
A53
B53
B52
BWG5
AWG4
AWG6
AWG8
USH 41/45/STH 100
80
82
84
86
88
90
92
94
32+80
BWG13
34+30
AWG13
35+00
#4 A,B,N
#4 A,N
35+85
BWG12
37+35
AWG12
0+00
85+45, 90' RT
CHP20
#8 C,N
1+45, 15' RT
CHP19
3+50, 10' RT
CHP18
5+00
5+50, 10' RT
CHP17
7+30, 30' LT
CHP15
8+60, 30' LT
CHP5
#6 C,N
DHP4
101+0
310W
SIGN
INL
OH
W

SHEET 3 OF 8

LIGHTING PLAN DESIGNED BY WISDOT SE REGION

PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	LIGHTING PLAN	SHEET NO: 41	E



LEGEND

⊠	DISTRIBUTION CENTER
- - — - —	CID (CABLE IN DUCT)
- — — —	CONDUIT - 2" UNLESS OTHERWISE SHOWN
●—	LIGHT POLE, ARM MOUNTED LUMINAIRE
⇒	CONDUIT STUBOUT
⊗	PULLBOX 24" x 42"
◐	PULLBOX 24" x 36"
EOP	EDGE OF PAVEMENT
B.O.C.	BACK OF CURB
C.I.M.	CENTER IN MEDIAN
B.O.S.	BACK OF SIDEWALK
✳—	MUNICIPAL LIGHT POLE

GRAYSHADE REPRESENTS EXISTING

HL-40-HP	
A,C,E	RED
B,D,F	BLACK
N	WHITE
GND	GREEN
A,C,E	30 A
B,D,F	30 A
240/480VAC 3 WIRE GROUNDED NEUTRAL	

HL-40-WG	
A,C,E	RED
B,D,F	BLACK
N	WHITE
GND	GREEN
A,C,E	30 A
B,D,F	30 A
240/480VAC 3 WIRE GROUNDED NEUTRAL	

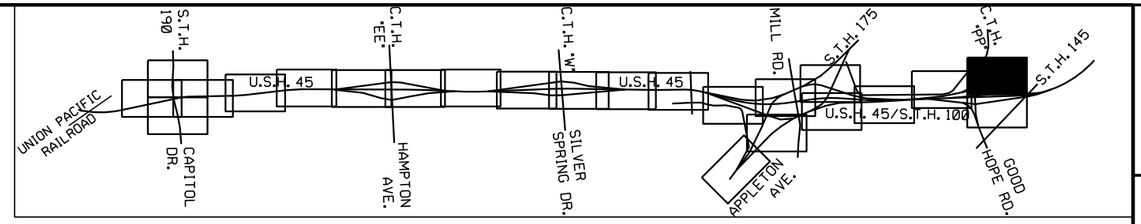
N

#10 C,D,N
27+30, 115' RT
MWG2
#10 C,D
26+80, 50' RT
MWG3
CWG2
#10 C,D,N
#8 A,N,
25+80, 115' RT
CWG1
25+00
#8 C,D,N
DWG1
EXISTING LPB2
1774+61, 10' LT
AHP3
LED(C)
EXISTING LPB1
DISTRIBUTION CENTER HL-40-WG
3"
1772+64, 10' LT
BHP2
LED(C)
DISTRIBUTION CENTER HL-40-HP
3"
EXISTING LPB5
EXISTING LPB6
LPB1
1770+50, 21' LT
AHP1
LED(D)
OH
#4 A,B,N
#4 E,F,N
LPB2
1768+70
EWG1
LED(D)
1770+00
2100+00
2101+21, 15' RT
DHP2
LED(C)
EXISTING LPB3
1766+40
FWG2
LED(D)
OH
OH
OH
1765+00
2099+74, 10' RT
CHP1
LED(C)
99+41, 5
CHP3
LPB3
3"
93+75
FWG4
83+00
S-40-305
2MV-A/B/WG
A50
B50
84+25
BWG6
AWG6
86+57
S-40-376
3MV-B/WG
86+70
AWG5
89+05
BWG4
AWG4
91+40
EWG3
FWG3
EWG4
94
92
90
88
86
84
82
80
EXISTING LPB4
79+35
BWG8
AWG8
81+80
AWG7
BWG7
A53
B53
0+00
BWG5
B52
101+0
DHP4
32+80
BWG13
34+30
AWG13
#4 A,B,N
35+00
#4 A,B,N
35+85
BWG12
#4 A,N
37+35
AWG12
85+45, 90' RT
CHP20
310W
#8 C,N
1+45, 15' RT
CHP19
3+50, 10' RT
CHP18
5+00
5+50, 10' RT
CHP17
7+30, 30' LT
CHP15
8+60, 30' LT
CHP5
#6 C,N

SHEET 4 OF 8

LIGHTING PLAN DESIGNED BY WISDOT SE REGION

PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	LIGHTING PLAN - SCHEMATIC	SHEET NO: 42	E



LEGEND

- DISTRIBUTION CENTER
- CID (CABLE IN DUCT)
- CONDUIT - 2" UNLESS OTHERWISE SHOWN
- LIGHT POLE, ARM MOUNTED LUMINAIRE
- CONDUIT STUBOUT
- PULLBOX 24" × 42"
- PULLBOX 24" × 36"
- EOP — EDGE OF PAVEMENT
- B.O.C. — BACK OF CURB
- C.I.M. — CENTER IN MEDIAN
- B.O.S. — BACK OF SIDEWALK
- MUNICIPAL LIGHT POLE

GRAYSHADE REPRESENTS EXISTING

SHEET 5 OF 8

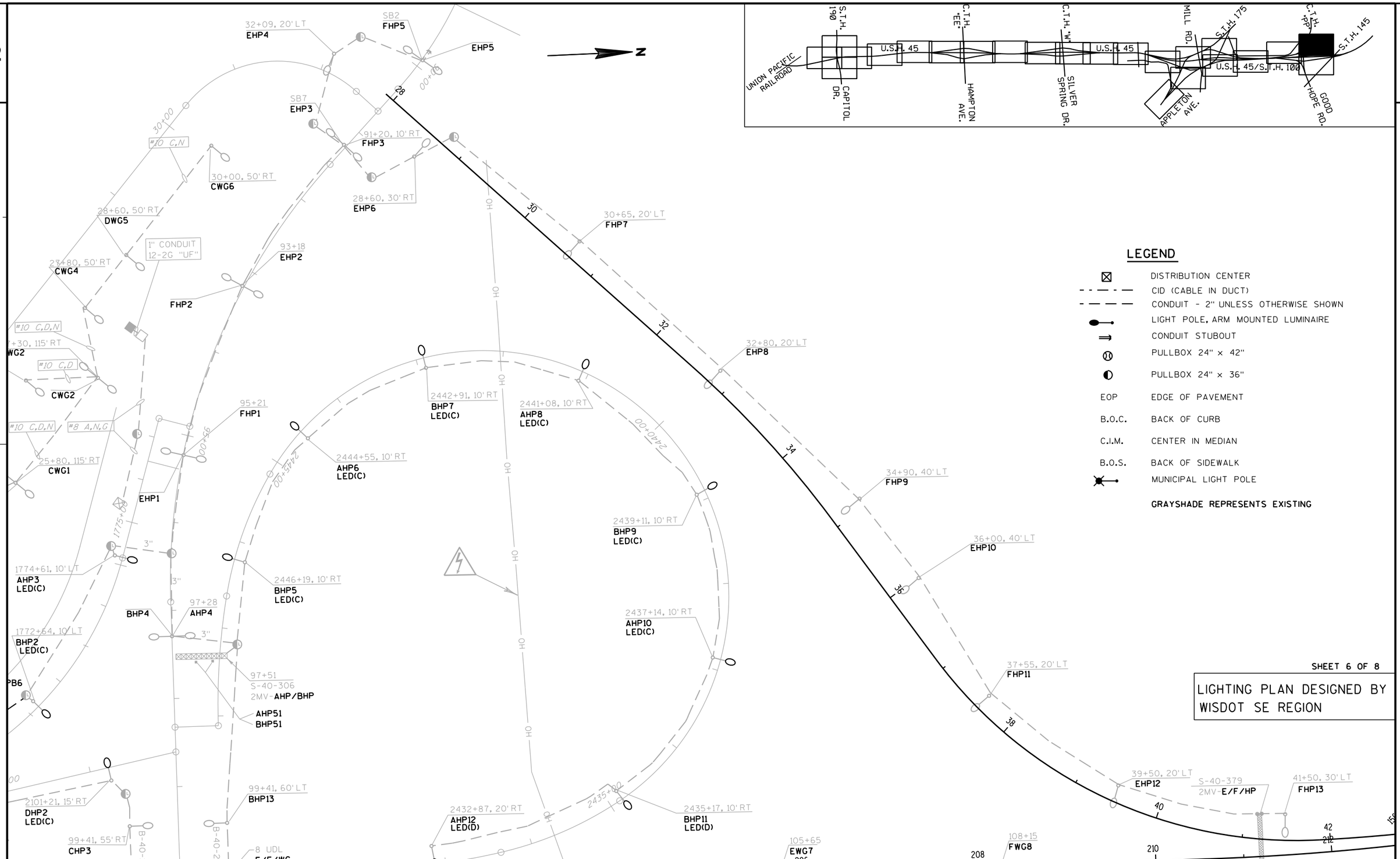
LIGHTING PLAN DESIGNED BY WISDOT SE REGION

PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	LIGHTING PLAN	SHEET NO: 43 E

FILE NAME : J:\projects\D2_11003341\Lighting\023503_lp.dgn PLOT DATE : 20-FEB-2013 07:16 PLOT BY : MSCMWB PLOT NAME : PLOT SCALE : 100.000057:1

WISDOT/CADDS SHEET 42

2



LEGEND

⊠	DISTRIBUTION CENTER
- - - · - -	CID (CABLE IN DUCT)
— — — —	CONDUIT - 2" UNLESS OTHERWISE SHOWN
●—	LIGHT POLE, ARM MOUNTED LUMINAIRE
⇒	CONDUIT STUBOUT
Ⓟ	PULLBOX 24" × 42"
◐	PULLBOX 24" × 36"
EOP	EDGE OF PAVEMENT
B.O.C.	BACK OF CURB
C.I.M.	CENTER IN MEDIAN
B.O.S.	BACK OF SIDEWALK
✱—	MUNICIPAL LIGHT POLE

GRAYSHADE REPRESENTS EXISTING

SHEET 6 OF 8

LIGHTING PLAN DESIGNED BY WISDOT SE REGION

PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	LIGHTING PLAN - SCHEMATIC	SHEET NO: 44	E

LEGEND

⊠	DISTRIBUTION CENTER
- · — · -	CID (CABLE IN DUCT)
— — — —	CONDUIT - 2" UNLESS OTHERWISE SHOWN
●—	LIGHT POLE, ARM MOUNTED LUMINAIRE
⇉	CONDUIT STUBOUT
ⓜ	PULLBOX 24" × 42"
◐	PULLBOX 24" × 36"
EOP	EDGE OF PAVEMENT
B.O.C.	BACK OF CURB
C.I.M.	CENTER IN MEDIAN
B.O.S.	BACK OF SIDEWALK
✳—	MUNICIPAL LIGHT POLE

GRAYSHADE REPRESENTS EXISTING

SIGN LIGHTING TO REMAIN. REMOVE PLAQUE ONLY.

SHEET 7 OF 8

LIGHTING PLAN DESIGNED BY WISDOT SE REGION

PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	LIGHTING PLAN	SHEET NO: 45 E

FILE NAME : J:\projects\D2_11003341\Lighting\023504_lp.dgn | PLOT DATE : 20-FEB-2013 07:16 | PLOT BY : MSCMWB | PLOT NAME : | PLOT SCALE : 100.000057:1

2100+00
2101+21, 15' RT
DHP2
LED(C)
99+74, 10' RT
P1
D(C)
99+41, 55' RT
CHP3
B-40-248
B-40-249
99+41, 60' LT
BHP13
8 UDL
E/F/WG
2430+00
100+00
2432+87, 20' RT
AHP12
LED(D)
2435+00
2435+17, 10' RT
BHP11
LED(D)
OH
93+75
FWG4
94
E10 F11 E12 F13
F10 E11 F12 E13
96
96+40
EWG5
98
103+20
FWG6
EWG4
101+05, 60' LT
EWG12
FWG5
EWG6
101+05
DHP4
204
105+65
EWG7
206
108+15
FWG8
110+60
EWG9
#4 E,F,N
104
106
108
110
FWG7
EWG8
FWG9
112
7+30, 30' LT
CHP15
8+60, 30' LT
CHP5
3"
101+77
S-40-260
NO LIGHTING
#6 C,N
900
902
904
906
908
910
905+40, 25' RT
DHP10
907+40, 30' RT
DHP11
909+55, 15' RT
DHP12
901+60, 25' RT
DHP8
903+55, 25' RT
DHP9
899+90, 30' RT
DHP7
7+55, 15' RT
CHP16
CHP6
103+02
DHP6
#8 C,N
9+60, 10' RT
CHP21
150W
10+00
104+99
CHP13
105+00
DHP13
106+96
CHP14
108+27
S-40-302
3MV-C/D/HP
C50
D50
C51
SIGN LIGHTING TO REMAIN.
REMOVE PLAQUE ONLY.
10+33.70, 33.5' RT AH
= 1005+15.33 AH
CATION
N
2
2
S-40-379
2MV-E/F/HP
EHP12
41+50.3
FHP13
512
510
52
508
50
110Y+00
410
408
DPP1
700
506
48
406
105Y+00
CPP1
504
46
S-40-356
2MV-C/D/PP

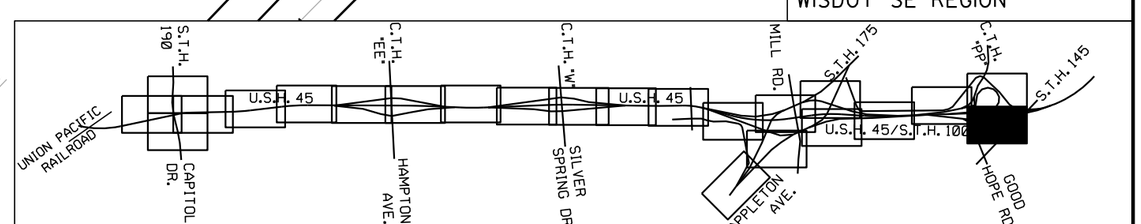
LEGEND

- DISTRIBUTION CENTER
- CID (CABLE IN DUCT)
- CONDUIT - 2" UNLESS OTHERWISE SHOWN
- LIGHT POLE, ARM MOUNTED LUMINAIRE
- CONDUIT STUBOUT
- PULLBOX 24" x 42"
- PULLBOX 24" x 36"
- EOP EDGE OF PAVEMENT
- B.O.C. BACK OF CURB
- C.I.M. CENTER IN MEDIAN
- B.O.S. BACK OF SIDEWALK
- MUNICIPAL LIGHT POLE

GRAYSHADE REPRESENTS EXISTING

SHEET 8 OF 8

LIGHTING PLAN DESIGNED BY
WISDOT SE REGION



PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	LIGHTING PLAN - SCHEMATIC	SHEET NO: 46	E

FILE NAME : J:\projects\D2_11003341\Lighting\023504a_schematic_lp.dgn PLOT DATE : 20-FEB-2013 07:16 PLOT BY : MSCMWB PLOT NAME : PLOT SCALE : 100.000057:1

2

N

PC 60+00.00

PI 60+00.00

PI 56+90.36

PC 54+60.81

PI 54+98.34

RAMP E

RAMP F

60

59

58

57

56

55

54

R E

BEGIN 30' UPSTREAM
OF STOP LINE

1

2

3

4

5

6

7

USH 41

MH

INL

SIGN

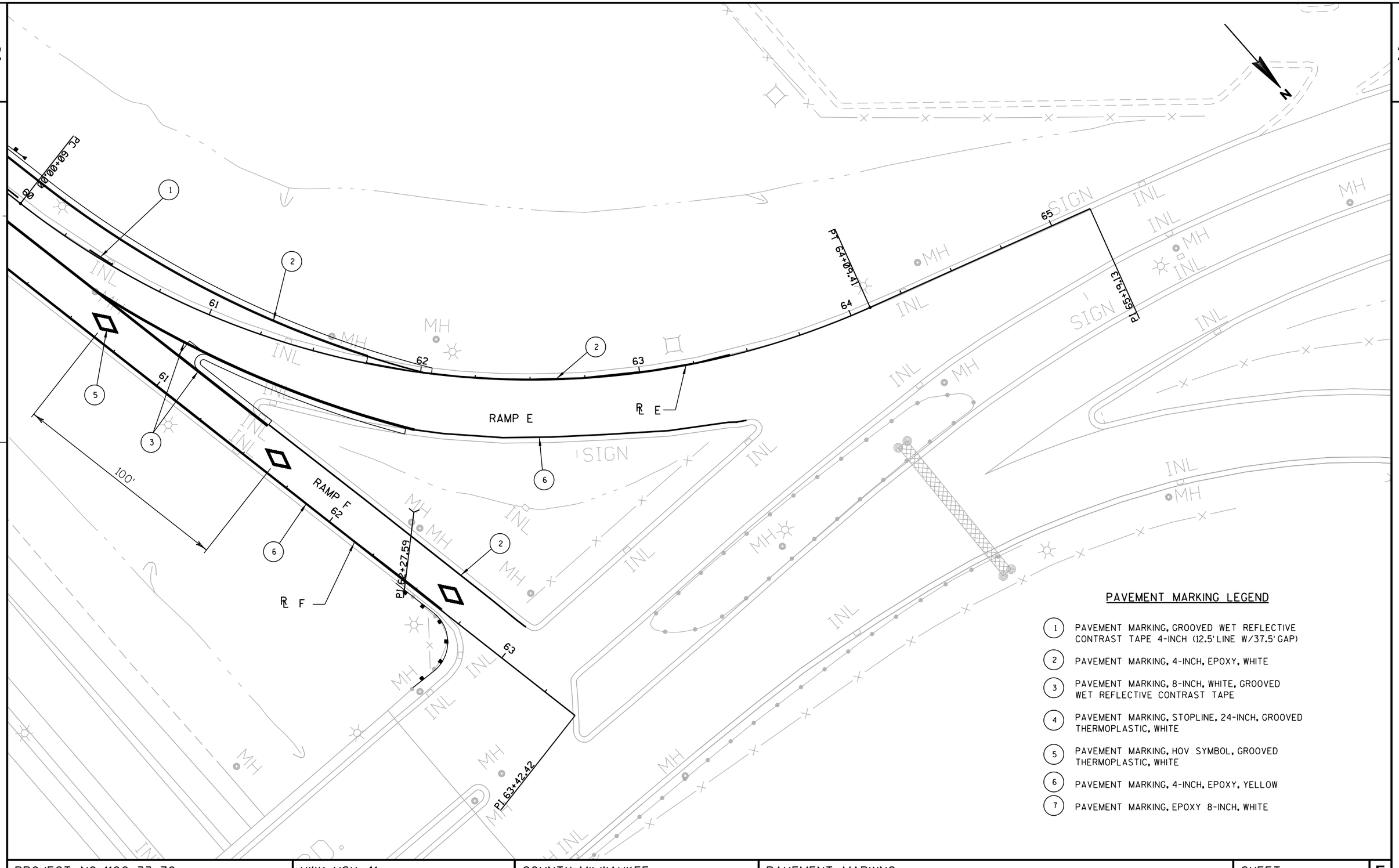
RIPRAP

PAVEMENT MARKING LEGEND

1. PAVEMENT MARKING, GROOVED WET REFLECTIVE CONTRAST TAPE 4-INCH (12.5' LINE W/37.5' GAP)
2. PAVEMENT MARKING, 4-INCH, EPOXY, WHITE
3. PAVEMENT MARKING, 8-INCH, WHITE, GROOVED WET REFLECTIVE CONTRAST TAPE
4. PAVEMENT MARKING, STOPLINE, 24-INCH, GROOVED THERMOPLASTIC, WHITE
5. PAVEMENT MARKING, HOV SYMBOL, GROOVED THERMOPLASTIC, WHITE
6. PAVEMENT MARKING, 4-INCH, EPOXY, YELLOW
7. PAVEMENT MARKING, EPOXY 8-INCH, WHITE

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	PAVEMENT MARKING	SHEET 47	E

2



PAVEMENT MARKING LEGEND

1. PAVEMENT MARKING, GROOVED WET REFLECTIVE CONTRAST TAPE 4-INCH (12.5'LINE W/37.5'GAP)
2. PAVEMENT MARKING, 4-INCH, EPOXY, WHITE
3. PAVEMENT MARKING, 8-INCH, WHITE, GROOVED WET REFLECTIVE CONTRAST TAPE
4. PAVEMENT MARKING, STOPLINE, 24-INCH, GROOVED THERMOPLASTIC, WHITE
5. PAVEMENT MARKING, HOV SYMBOL, GROOVED THERMOPLASTIC, WHITE
6. PAVEMENT MARKING, 4-INCH, EPOXY, YELLOW
7. PAVEMENT MARKING, EPOXY 8-INCH, WHITE

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	PAVEMENT MARKING	SHEET 48	E

2

N

FORM SINGLE LINE (1)
R3-58(2S)
ON LIGHT POLE

RAMP METER STA. 58+55E
OVERHEAD SIGN SUPPORT
WITH SHIELDING

RIGHT LANE SIGNAL (3)
R10-65R(2S)
ON ARM

CENTER LANE SIGNAL (4)
R10-65C(2S)
ON ARM

STOP HERE ON RED (5)
R10-6(2S)

RIGHT LANE SIGNAL (6)
STOP HERE ON RED (7)
REMOVE
ON SIGNAL POLE

PEDESTRIANS BICYCLES NON MOTORIZED TRAFFIC MOTOR BICYCLES PROHIBITED (8)
REMOVE

PC 60+00.00

57 58 59 60 61 62

RAMP E

RAMP F

PI 62+27.59

PI 60+00.00

REMOVE (9)

FORM SINGLE LINE (2)
R3-58(2S)

USH 41/45/STH 100 (SB)

USH 41/45/STH 100 (NB)

LEFT LANE SIGNAL (10)
R10-65L(2S)

STOP HERE ON RED (11)
R10-6(mod)(2S)
ON SIGNAL POLE

LEFT LANE SIGNAL
REMOVE

STOP HERE ON RED
REMOVE

MH

INL

LEGEND

- EXISTING SIGN MOUNTED ON POST(S)
- EXISTING SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
- PROPOSED SIGN MOUNTED ON POST(S)
- PROPOSED SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
- VMS — VARIABLE MESSAGE SIGN
- EXISTING LIGHT OR SIGNAL POLE
- SIGN BRIDGE
- CANTILEVER SIGN BRIDGE
- (XXX) — DENOTES SIGN NUMBER
- (X) — INDICATES SIGN SIZE

SHEET 1 OF 2

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	PERMANENT SIGNING	SHEET 49	E

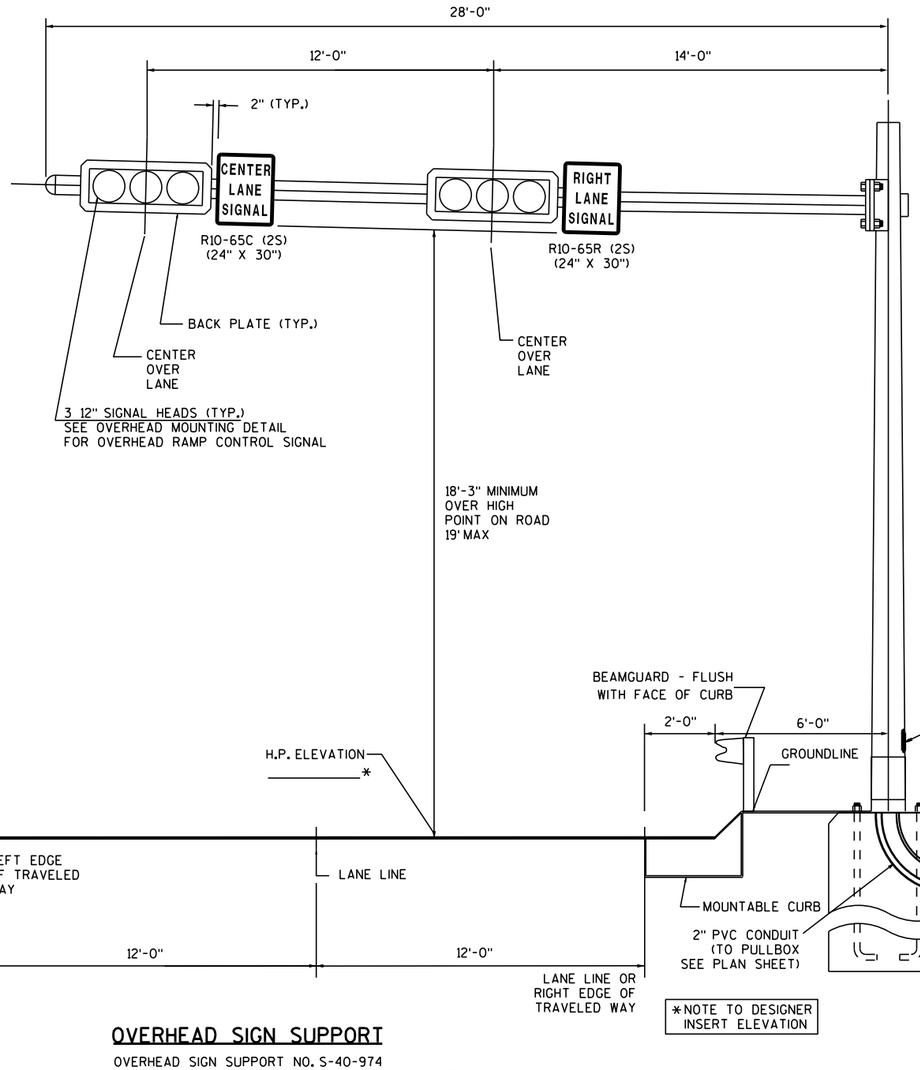
REMOVE
R1-2(3)
12
PEDESTRIANS BICYCLES NON MOTORIZED TRAFFIC MOTOR BICYCLES PROHIBITED
R5-57(5)
13
14
LEFT LANE
BUSES MOTORCYCLES AND 2 OR MORE OCCUPANT CAR POOLS ONLY
R3-51L(2S)
15
LEFT LANE
BUSES MOTORCYCLES AND 2 OR MORE OCCUPANT CAR POOLS ONLY
REMOVE
28
RAMP CLOSED USE ALT ROUTE
R11-54F(2)
17
SOUTH 41 45 SOUTH 100
J3-2
REMOVE
RAMP CLOSURE GATE
END PROJECT STA. 63+43E
PT 64+09.41
PT 65+19.13
61
62
63
64
RAMP E
SIGN
SIGN
SIGN
18
SOUTH MB3-3 INTERSTATE 41 M1-1 MB6-2
SOUTH MB3-3 41 M1-4 45 M1-4 M6-2
SOUTH MB3-3 100 M1-6 MB6-2
M6-2
J3-3(2S)
COVER WITH BLACK PANEL OF SAME MATERIAL
RAMP F
RAMP CLOSURE GATE
23
R3-1(2S)
REMOVE
GOOD HOPE RD.
PI 62+27.59
62
63
NORTH 41 NORTH 100 EAST COUNTY AA 45 145 M6-1 M6-1 M6-1
25
J2-3
REMOVE
NORTH MB3-1 INTERSTATE 41 M1-1 MB6-1
NORTH M3-1 41 M1-4 45 M1-4 M6-1
NORTH M3-1 100 M1-6 145 M1-6 M6-1
EAST M3-2 COUNTY PP M1-5A M6-1
26
J2-4(2S)
COVER WITH BLACK PANEL OF SAME MATERIAL
RAMP METERED WHEN FLASHING
19
W3-8(2S)
WITH FLASHING BEACON ON FLASHER POLE
REMOVE
W5-52R
ESTR
PI 63+42.42
RAMP METERED WHEN FLASHING
16
W3-8(2S)
WITH FLASHING BEACON ON FLASHER POLE
REMOVE
DO NOT ENTER
R5-1(2S)
24
DO NOT ENTER
REMOVE
29
RAMP CLOSED USE ALT ROUTE
R11-54F(2)
21
R4-7(2S)
22
R3-4(2S)
REMOVE
REMOVE
LEFT LANE
BUSES MOTORCYCLES AND 2 OR MORE OCCUPANT CAR POOLS ONLY
20
R3-51L(2S)
LEFT LANE
BUSES MOTORCYCLES AND 2 OR MORE OCCUPANT CAR POOLS ONLY
REMOVE
27
RAMP CLOSED USE ALT ROUTE
R11-54F(2)
OD HOPE RD.
RD.

LEGEND

- EXISTING SIGN MOUNTED ON POST(S)
- EXISTING SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
- PROPOSED SIGN MOUNTED ON POST(S)
- PROPOSED SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
- VMS — VARIABLE MESSAGE SIGN
- EXISTING LIGHT OR SIGNAL POLE
- SIGN BRIDGE
- CANTILEVER SIGN BRIDGE
- XXX — DENOTES SIGN NUMBER
- (X) — INDICATES SIGN SIZE

SHEET 2 OF 2

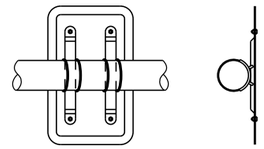
PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	PERMANENT SIGNING	SHEET 50	E



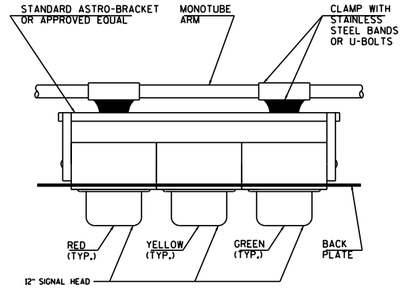
OVERHEAD SIGN SUPPORT

OVERHEAD SIGN SUPPORT NO. S-40-974
LOCATION: USH 41 45 ON RAMP SB FROM GOOD HOPE RD
STATION: 58+55

NOTE: CONTRACTOR SHALL
1) SUBMIT SHOP DRAWINGS OF OVERHEAD SIGN SUPPORT FOOTING. FOOTING IS INCIDENTAL TO OVERHEAD SIGN SUPPORT
2) PROVIDE DESIGN CALCULATION
3) SHOW SIGN ON SHOP DRAWINGS
4) ID PLAQUE INCIDENTAL TO SIGN SUPPORT
5) 6 ANCHOR RODS SHALL BE USED PER SDD



VERTICAL MOUNTING DETAIL FOR OVERHEAD SIGNS



HORIZONTAL MOUNTING DETAIL FOR OVERHEAD RAMP CONTROL SIGNAL

NOTE: SEE "30" DIAMETER CANTILEVER OVERHEAD SIGN SUPPORT BASE" FOR FOOTING DETAIL INCIDENTAL TO STRUCTURE

NOTE: "MOUNTING BRACKETS FOR SIGNS SHALL BE PER APPROVED PRODUCT LIST"

GENERAL NOTES

DRAWINGS NOT TO SCALE

DESIGN ACCORDING TO AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS".

THE SIGN STRUCTURES SHALL BE DESIGNED TO SUPPORT 2 SIGNS WEIGHING 180 LBS EACH PLACED AS SHOWN.

WIND VELOCITIES 85 M/H

BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 3" CLEAR UNLESS DETAILED OTHERWISE.

ALLOWABLE DESIGN STRESSES

CONCRETE MASONRY	FC=3500 PSI
HIGH STRENGTH BAR STEEL REINFORCEMENT, GRADE 60	FY=60,000 PSI

FOUNDATION DATA

ALLOWABLE SOIL BEARING PRESSURE = 3000 PSF

1 ROAD WORK AHEAD W20-1

2 RIGHT LANE CLOSED AHEAD W20-5

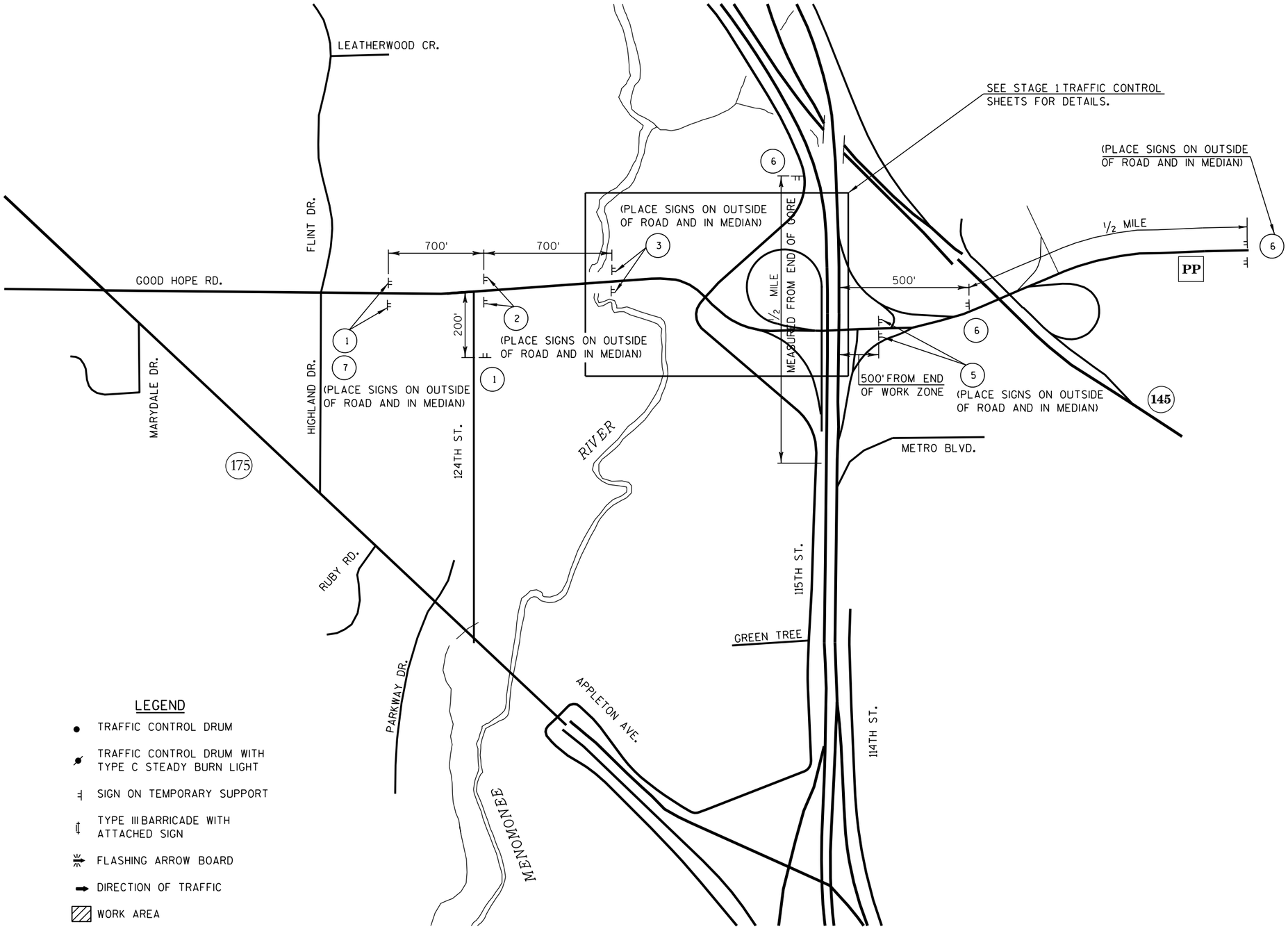
3 W04-2R

4 LANE CLOSED
R11-2(MOD)
48" X 30"

5 END ROAD WORK
G20-2A
48" X 24"

6 RAMP WORK AHEAD W20-1(MOD)

7 ON RAMP
W13-4P



N

LEGEND

- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- SIGN ON TEMPORARY SUPPORT
- TYPE III BARRICADE WITH ATTACHED SIGN
- FLASHING ARROW BOARD
- DIRECTION OF TRAFFIC
- WORK AREA

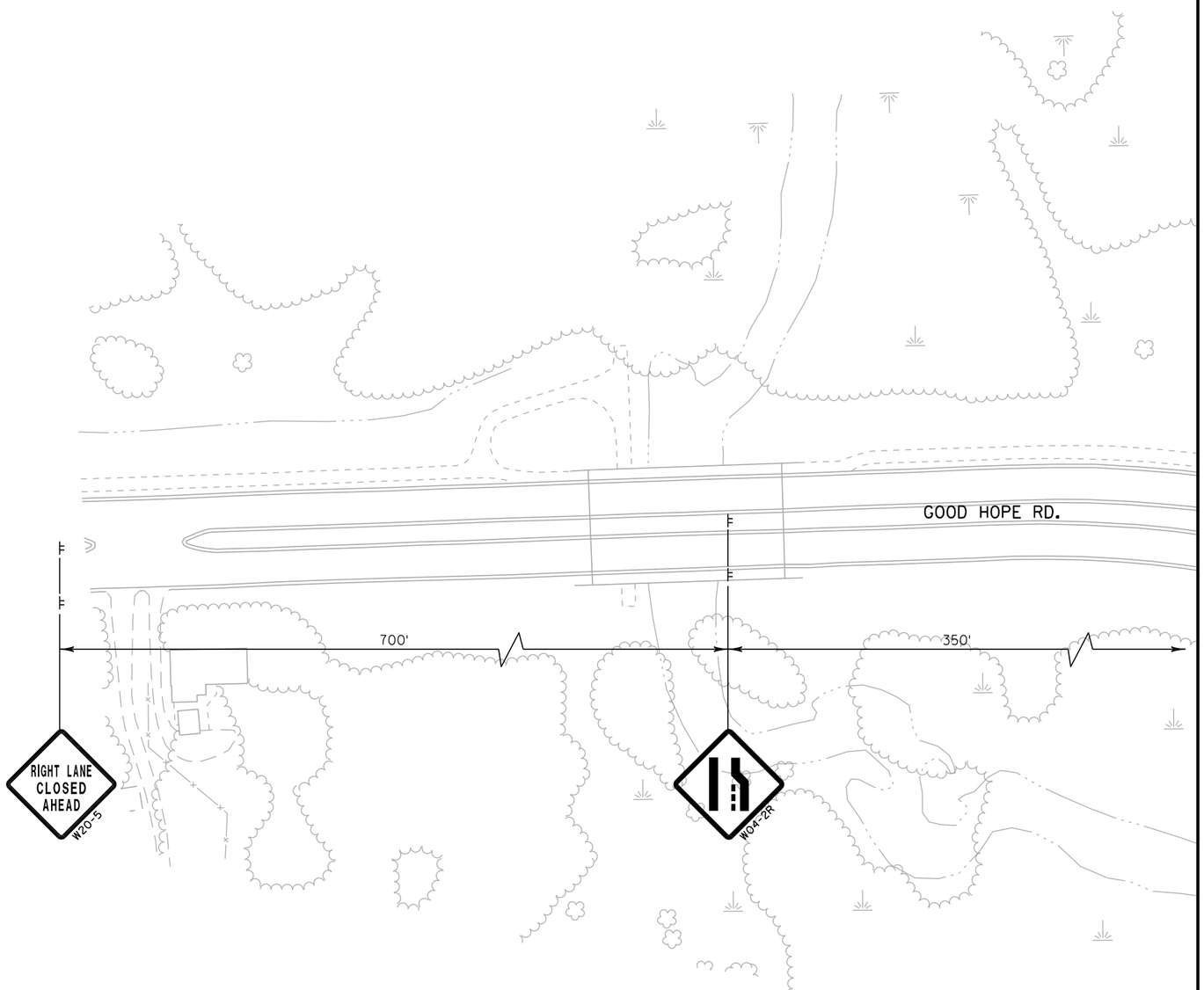
PROJECT NO: 1100-33-70	HWY: USH 45	COUNTY: MILWAUKEE	STAGE 1 - ADVANCED SIGNS OVERVIEW	SHEET 52	E

2

N

LEGEND

- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- SIGN ON TEMPORARY SUPPORT
- TYPE III BARRICADE WITH ATTACHED SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- FLASHING ARROW BOARD



PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - STAGE 1	SHEET 53	E

2

N

10'

25'

ARROW BOARD
WITH DRUMS

320' TAPER

100'

350'

50'

12'

2'

350'

170' BUFFER

25'

12'

25'

100'

R11-2
48" X 30"
LANE
CLOSED

TYPE III BARRICADE

USH 41/45/STH 100

USH 41/45/STH 100

GOOD HOPE RD.

GOOD HOPE RD.

GOOD HOPE RD.

1 ROAD WORK AHEAD W20-1

2 RIGHT LANE CLOSED AHEAD W20-5

3 W04-2R

4 LANE CLOSED
R11-2(MOD)
48" X 30"

5 END ROAD WORK
G20-2A
48" X 24"

6 RAMP WORK AHEAD W20-1(MOD)

LEGEND

- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- SIGN ON TEMPORARY SUPPORT
- TYPE III BARRICADE WITH ATTACHED SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- FLASHING ARROW BOARD

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - STAGE 1	SHEET 54	E

FILE NAME : J:\projects\D2_11003341\026102_s1.dgn PLOT DATE : 09-MAY-2013 08:46 PLOT BY : dotr3h PLOT NAME : PLOT SCALE : 100:1

2

END ROAD WORK AT BOTTOM OF RAMP
(SEE STAGE 1A FOR LOCATION)

END ROAD WORK
G20-2A
48" X 24"

YIELD
R1-2
36" X 31"

PC 60+00.00

PI 60+00.00

RAMP E

RAMP F

PI 62+21.39

57 58 59 60 61 62

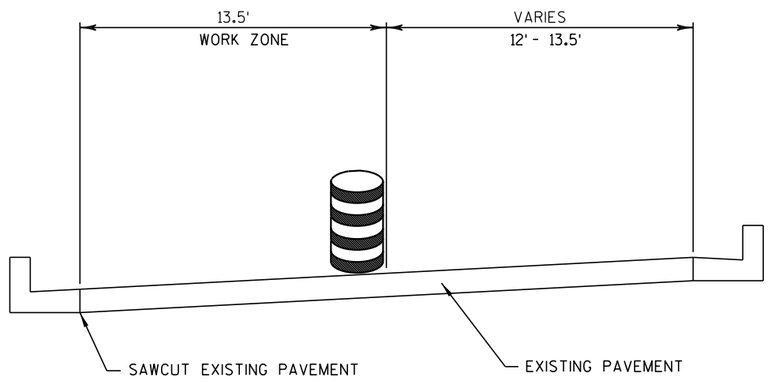
25' 25'

10' 12' 8' 13.5'

STAGE 1

TRAFFIC: THE LEFT LANE WILL BE CLOSED DURING OFF-PEAK HOURS STA. 58+00E TO STA. 63+50E±
THE RIGHT LANE AT EB GOOD HOPE RD. WILL BE CLOSED DURING OFF-PEAK HOURS.

CONSTRUCTION: CONSTRUCTION WORK INCLUDES REMOVAL OF EXISTING RAMP METER, INSTALLATION OF TEMPORARY RAMP METER, REMOVAL OF EXISTING LIGHTING, INSTALLATION OF EROSION CONTROL, SAW CUTTING AND REMOVAL OF EXISTING PAVEMENT AND CURB & GUTTER, CONCRETE PAVEMENT REPAIR/ REPLACEMENT STORM SEWER CONSTRUCTION, CURB & GUTTER AND CONCRETE PAVEMENT CONSTRUCTION, RAMP METER AND LIGHTING WORK, AND RESTORATION. EXISTING GUARD RAIL WILL BE REMOVED AND REPLACE AT THE ENTRANCE TO THE RAMP FROM WB GOOD HOPE RD. TO SB USH 41/45.



TYPICAL SECTION - STAGE 1

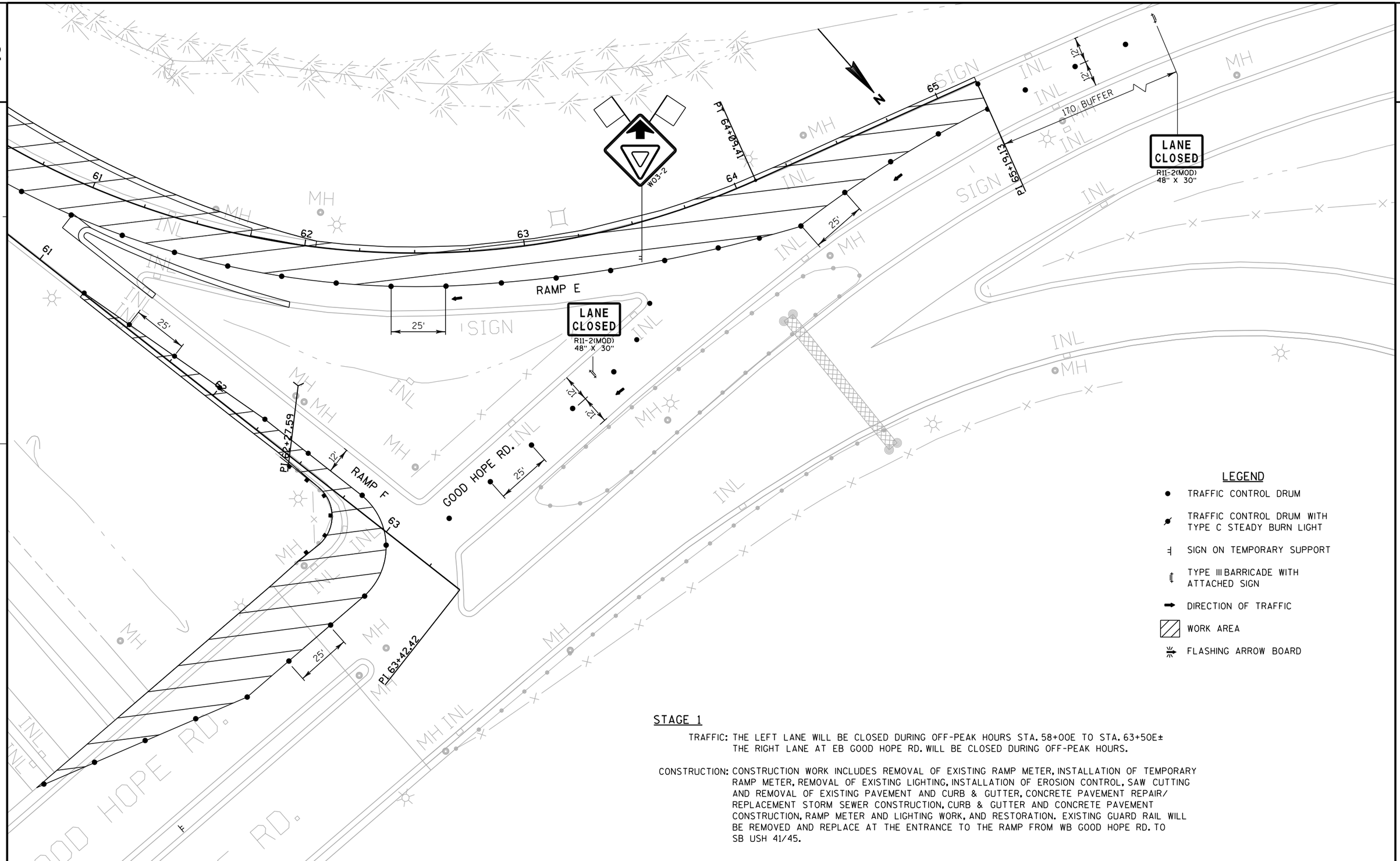
STA. 58+00 TO STA. 63+50 RAMP E

LEGEND

- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- SIGN ON TEMPORARY SUPPORT
- TYPE III BARRICADE WITH ATTACHED SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- FLASHING ARROW BOARD

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - STAGE 1	SHEET 55	E

2



LEGEND

- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- SIGN ON TEMPORARY SUPPORT
- TYPE III BARRICADE WITH ATTACHED SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- FLASHING ARROW BOARD

STAGE 1

TRAFFIC: THE LEFT LANE WILL BE CLOSED DURING OFF-PEAK HOURS STA. 58+00E TO STA. 63+50E± THE RIGHT LANE AT EB GOOD HOPE RD. WILL BE CLOSED DURING OFF-PEAK HOURS.

CONSTRUCTION: CONSTRUCTION WORK INCLUDES REMOVAL OF EXISTING RAMP METER, INSTALLATION OF TEMPORARY RAMP METER, REMOVAL OF EXISTING LIGHTING, INSTALLATION OF EROSION CONTROL, SAW CUTTING AND REMOVAL OF EXISTING PAVEMENT AND CURB & GUTTER, CONCRETE PAVEMENT REPAIR/ REPLACEMENT STORM SEWER CONSTRUCTION, CURB & GUTTER AND CONCRETE PAVEMENT CONSTRUCTION, RAMP METER AND LIGHTING WORK, AND RESTORATION. EXISTING GUARD RAIL WILL BE REMOVED AND REPLACE AT THE ENTRANCE TO THE RAMP FROM WB GOOD HOPE RD. TO SB USH 41/45.

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - STAGE 1	SHEET 56	E

2

N

END
ROAD WORK
G20-2A
48" X 24"

PC 53+90.81

PT 56+05.36

52

53

54

55

56

RAMP F

25'

PI 54+98.94

PI 51+07.73

USH 41

INL

W

SS

MH

RIPRA

LEGEND

- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- SIGN ON TEMPORARY SUPPORT
- TYPE III BARRICADE WITH ATTACHED SIGN
- DIRECTION OF TRAFFIC
- WORK AREA

STAGE 1A

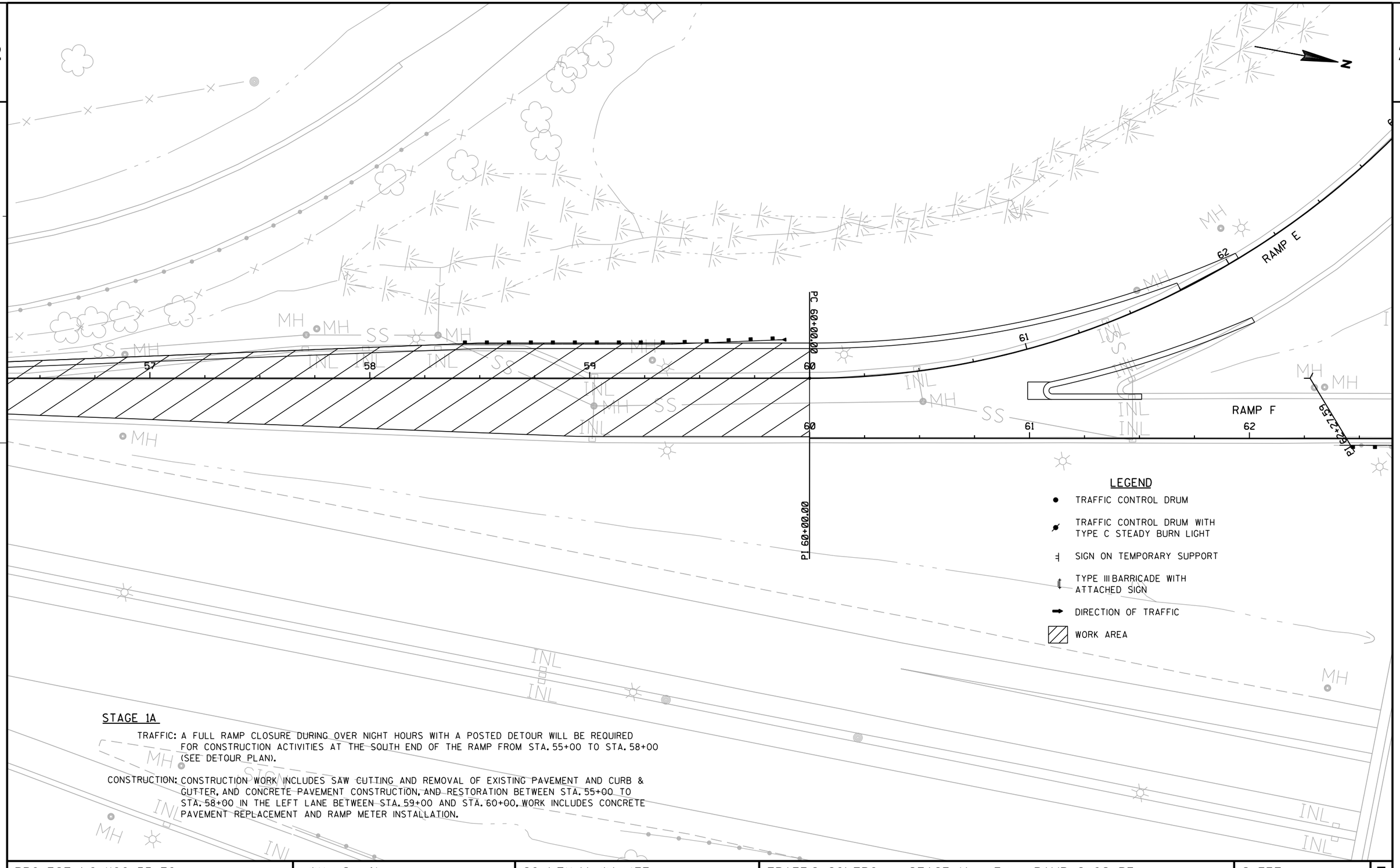
TRAFFIC: A FULL RAMP CLOSURE DURING OVER NIGHT HOURS WITH A POSTED DETOUR WILL BE REQUIRED FOR CONSTRUCTION ACTIVITIES AT THE SOUTH END OF THE RAMP FROM STA. 55+00 TO STA. 58+00 (SEE DETOUR PLAN).

CONSTRUCTION: CONSTRUCTION WORK INCLUDES SAW CUTTING AND REMOVAL OF EXISTING PAVEMENT AND CURB & GUTTER, AND CONCRETE PAVEMENT CONSTRUCTION, AND RESTORATION BETWEEN STA. 55+00 TO STA. 58+00 IN THE LEFT LANE BETWEEN STA. 59+00 AND STA. 60+00, WORK INCLUDES CONCRETE PAVEMENT REPLACEMENT AND RAMP METER INSTALLATION.

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - STAGE 1A - FULL RAMP CLOSURE	SHEET 57	E

FILE NAME : J:\projects\D2_11003341\026201_s1a.dgn PLOT DATE : 09-MAY-2013 08:46 PLOT BY : dotr3h PLOT NAME : PLOT SCALE : 40:1

2



LEGEND

- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- SIGN ON TEMPORARY SUPPORT
- TYPE III BARRICADE WITH ATTACHED SIGN
- DIRECTION OF TRAFFIC
- WORK AREA

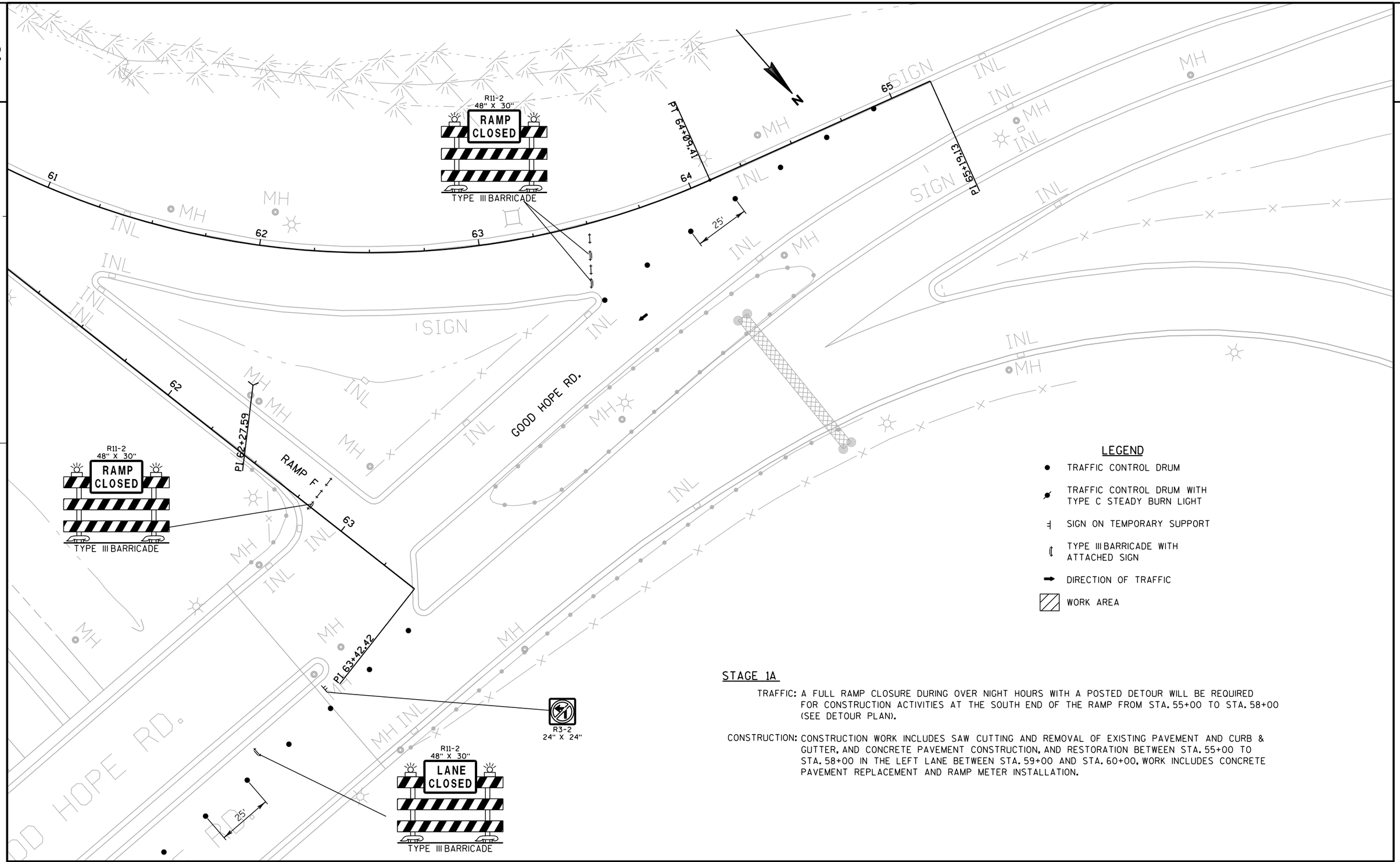
STAGE 1A

TRAFFIC: A FULL RAMP CLOSURE DURING OVER NIGHT HOURS WITH A POSTED DETOUR WILL BE REQUIRED FOR CONSTRUCTION ACTIVITIES AT THE SOUTH END OF THE RAMP FROM STA. 55+00 TO STA. 58+00 (SEE DETOUR PLAN).

CONSTRUCTION: CONSTRUCTION WORK INCLUDES SAW CUTTING AND REMOVAL OF EXISTING PAVEMENT AND CURB & GUTTER, AND CONCRETE PAVEMENT CONSTRUCTION, AND RESTORATION BETWEEN STA. 55+00 TO STA. 58+00 IN THE LEFT LANE BETWEEN STA. 59+00 AND STA. 60+00. WORK INCLUDES CONCRETE PAVEMENT REPLACEMENT AND RAMP METER INSTALLATION.

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - STAGE 1A - FULL RAMP CLOSURE	SHEET 58	E

2



LEGEND

- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- SIGN ON TEMPORARY SUPPORT
- TYPE III BARRICADE WITH ATTACHED SIGN
- DIRECTION OF TRAFFIC
- WORK AREA

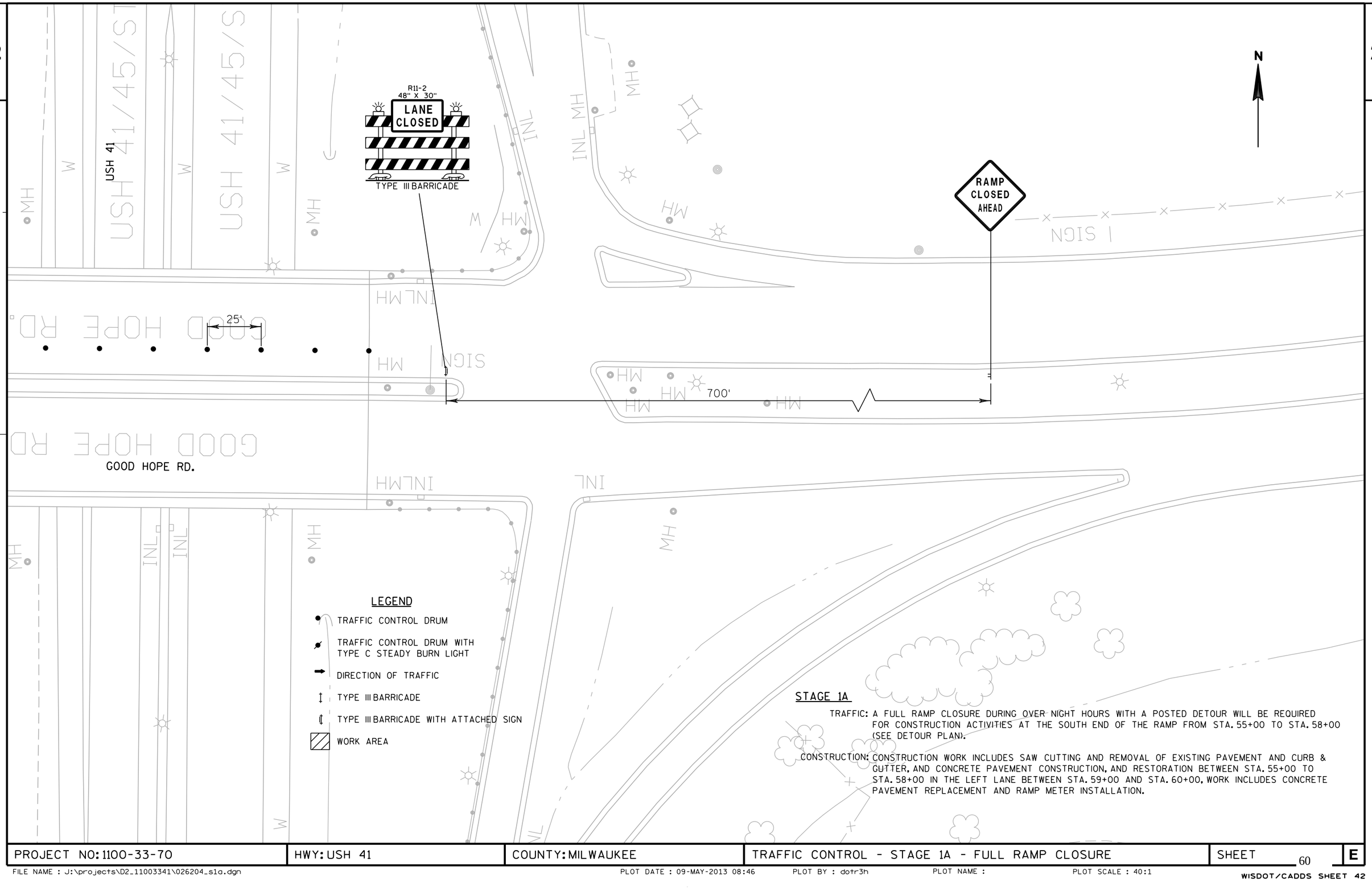
STAGE 1A

TRAFFIC: A FULL RAMP CLOSURE DURING OVER NIGHT HOURS WITH A POSTED DETOUR WILL BE REQUIRED FOR CONSTRUCTION ACTIVITIES AT THE SOUTH END OF THE RAMP FROM STA. 55+00 TO STA. 58+00 (SEE DETOUR PLAN).

CONSTRUCTION: CONSTRUCTION WORK INCLUDES SAW CUTTING AND REMOVAL OF EXISTING PAVEMENT AND CURB & GUTTER, AND CONCRETE PAVEMENT CONSTRUCTION, AND RESTORATION BETWEEN STA. 55+00 TO STA. 58+00 IN THE LEFT LANE BETWEEN STA. 59+00 AND STA. 60+00. WORK INCLUDES CONCRETE PAVEMENT REPLACEMENT AND RAMP METER INSTALLATION.

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - STAGE 1A - FULL RAMP CLOSURE	SHEET 59	E

2



STAGE 1A

TRAFFIC: A FULL RAMP CLOSURE DURING OVER NIGHT HOURS WITH A POSTED DETOUR WILL BE REQUIRED FOR CONSTRUCTION ACTIVITIES AT THE SOUTH END OF THE RAMP FROM STA. 55+00 TO STA. 58+00 (SEE DETOUR PLAN).

CONSTRUCTION: CONSTRUCTION WORK INCLUDES SAW CUTTING AND REMOVAL OF EXISTING PAVEMENT AND CURB & GUTTER, AND CONCRETE PAVEMENT CONSTRUCTION, AND RESTORATION BETWEEN STA. 55+00 TO STA. 58+00 IN THE LEFT LANE BETWEEN STA. 59+00 AND STA. 60+00, WORK INCLUDES CONCRETE PAVEMENT REPLACEMENT AND RAMP METER INSTALLATION.

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - STAGE 1A - FULL RAMP CLOSURE	SHEET 60	E

2

1 ROAD WORK AHEAD W20-1

2 RIGHT LANE CLOSED AHEAD W20-5

3 W04-2R

4 LANE CLOSED
R11-2(MOD)
48" X 30"

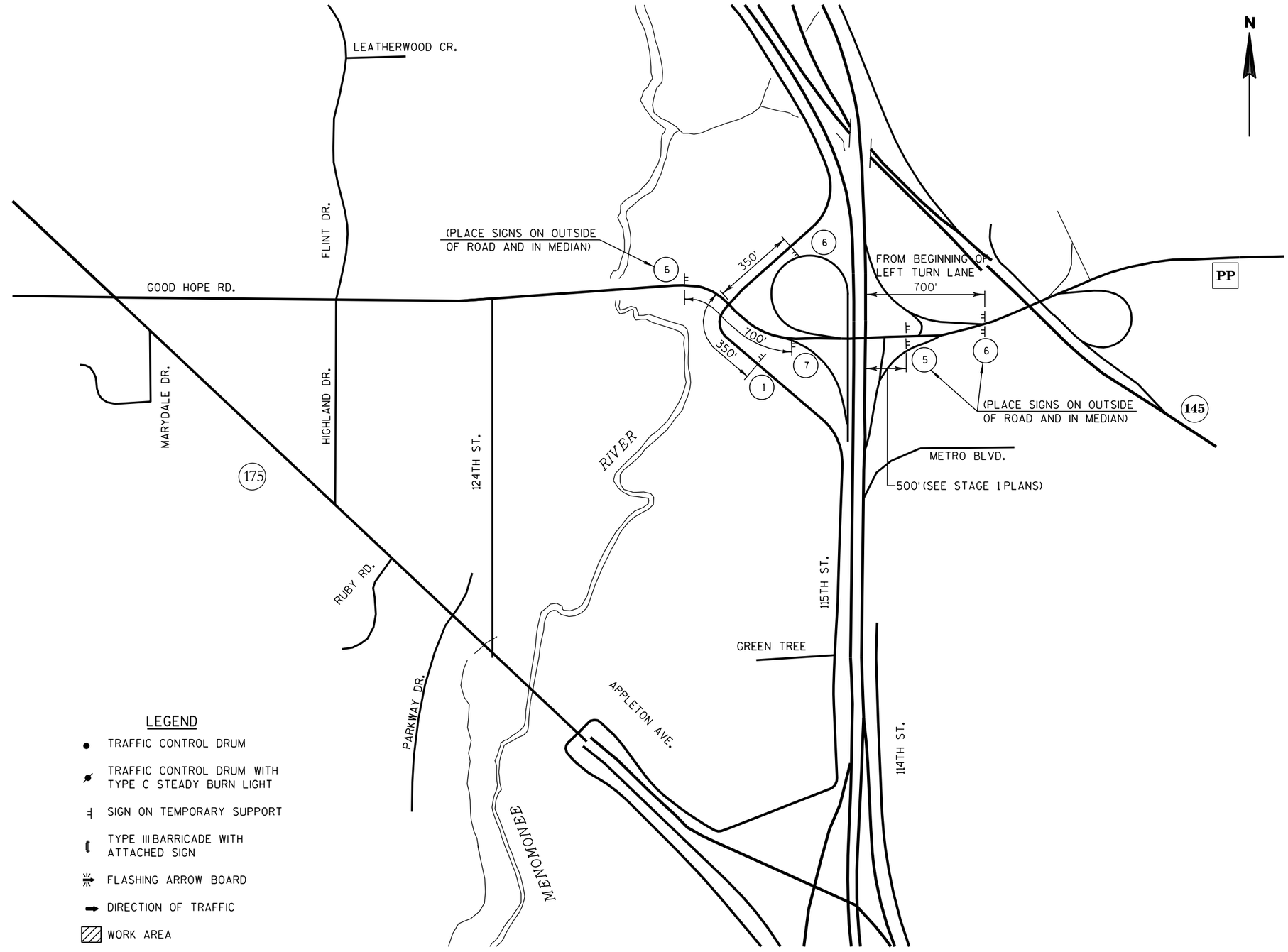
5 END ROAD WORK
G20-2A
48" X 24"

6 RAMP WORK AHEAD W20-1(MOD)

7 RAMP NARROWS W05-1(MOD)

LEGEND

- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- SIGN ON TEMPORARY SUPPORT
- TYPE III BARRICADE WITH ATTACHED SIGN
- FLASHING ARROW BOARD
- DIRECTION OF TRAFFIC
- WORK AREA



PROJECT NO: 1100-33-70	HWY: USH 45	COUNTY: MILWAUKEE	STAGE 2 - ADVANCED SIGNS	SHEET 61	E

2

END ROAD WORK AT BOTTOM OF RAMP
(SEE STAGE 1A FOR LOCATION)

END ROAD WORK
G20-2A
48" X 24"

PC 60+00.00

RAMP E

RAMP F

PI 62+21.39

57 58 59 60 61 62

60 61 62

25'

13.5'

13.5'

LEGEND

- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- SIGN ON TEMPORARY SUPPORT
- TYPE III BARRICADE WITH ATTACHED SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- FLASHING ARROW BOARD

STAGE 2

TRAFFIC: THE LEFT LANE OF RAMP E WILL BE CLOSED FROM STA. 60+50 TO STA. 63+50 DURING OFF-PEAK HOURS.

CONSTRUCTION: CONSTRUCTION WORK INCLUDES SAW CUTTING AND REMOVAL OF EXISTING PAVEMENT AND CURB CONCRETE PAVEMENT REPAIR, STORM SEWER CONSTRUCTION, CURB & GUTTER AND CONCRETE PAVEMENT CONSTRUCTION, AND RESTORATION.

PI 60+00.00

℄ RAMP E

VARIES
0' - 12.5'

13.5'

13.5'
WORK ZONE

SAWCUT EXISTING PAVEMENT

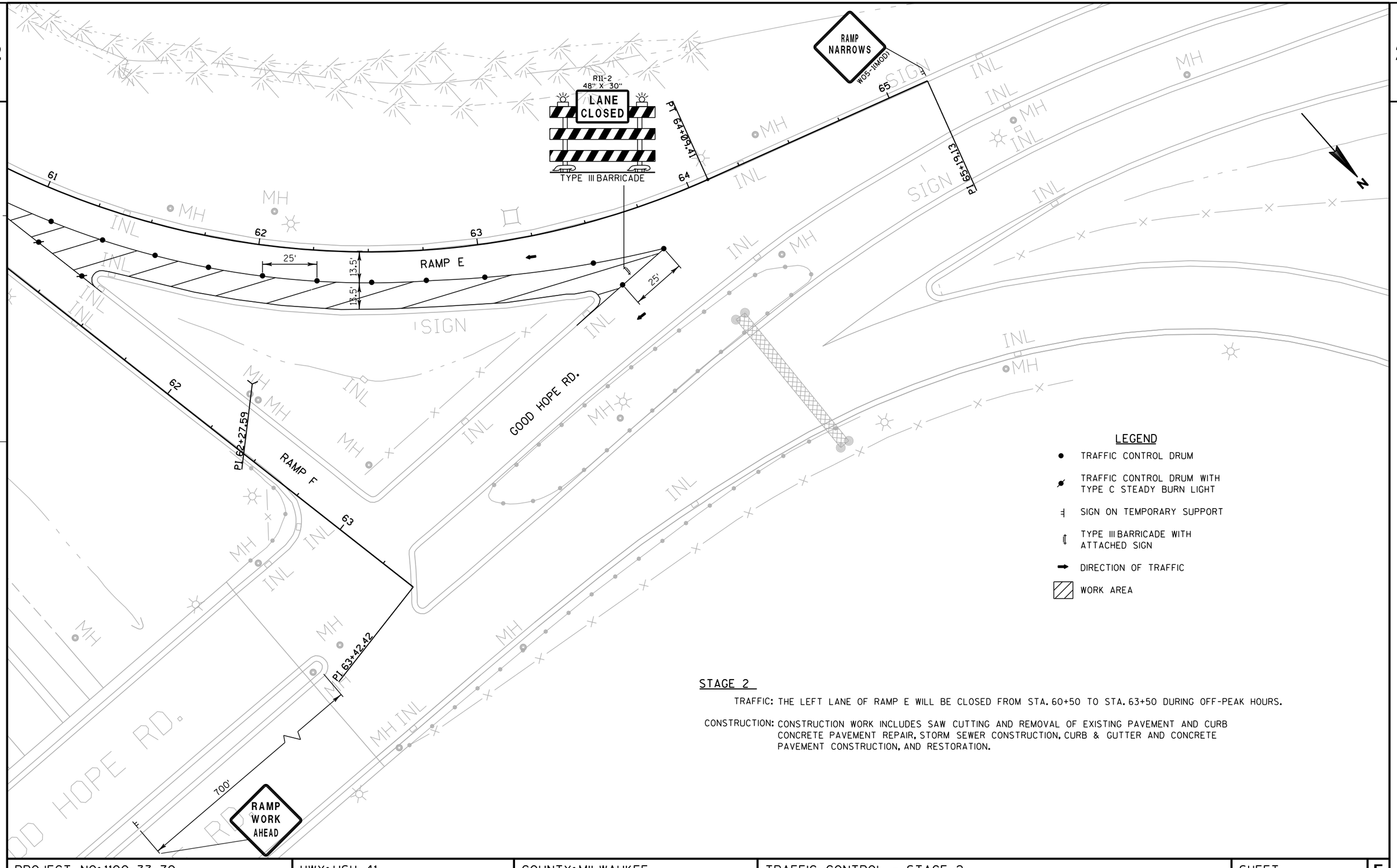
PERMANENT PAVEMENT CONSTRUCTED IN STAGE 1

TYPICAL SECTION - STAGE 1

STA. 60+50 TO STA. 63+50 RAMP E

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - STAGE 2	SHEET 62	E

2



LEGEND

- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- SIGN ON TEMPORARY SUPPORT
- TYPE III BARRICADE WITH ATTACHED SIGN
- DIRECTION OF TRAFFIC
- WORK AREA

STAGE 2

TRAFFIC: THE LEFT LANE OF RAMP E WILL BE CLOSED FROM STA. 60+50 TO STA. 63+50 DURING OFF-PEAK HOURS.

CONSTRUCTION: CONSTRUCTION WORK INCLUDES SAW CUTTING AND REMOVAL OF EXISTING PAVEMENT AND CURB CONCRETE PAVEMENT REPAIR, STORM SEWER CONSTRUCTION, CURB & GUTTER AND CONCRETE PAVEMENT CONSTRUCTION, AND RESTORATION.

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	TRAFFIC CONTROL - STAGE 2	SHEET 63	E

2

NOTES:

REMOVE OR COVER ALL TEMPORARY OR EXISTING SIGNS WHICH CONFLICT WITH THE TRAFFIC CONTROL IN USE AND AS APPROVED BY THE ENGINEER.

SIGN LOCATION MAY BE ADJUSTED IN THE FIELD AS APPROVED BY THE ENGINEER.

PORTABLE CHANGEABLE MESSAGE BOARDS SHALL BE LOCATED AT THE ENTRANCES TO BOTH THE EB-SB AND WB-SB RAMP TO PROVIDE NOTIFICATION OF DATE(S) AND TIME(S) OF THE RAMP CLOSURE. THE BOARDS SHALL BE OPERATING FOR FIVE DAYS LEADING UP TO THE CLOSURE OF THE RAMP.

DURING RAMP CLOSURE, PORTABLE CHANGEABLE MESSAGE BOARDS SHALL BE LOCATED AT THE FOLLOWING LOCATION TO PROVIDE NOTIFICATION OF THE RAMP CLOSURE:

EB GOOD HOPE ROAD 700' WEST OF THE INTERSECTION APPLETON AVENUE AND GOOD HOPE ROAD

WB GOOD HOPE ROAD 300' WEST OF 107TH STREET.

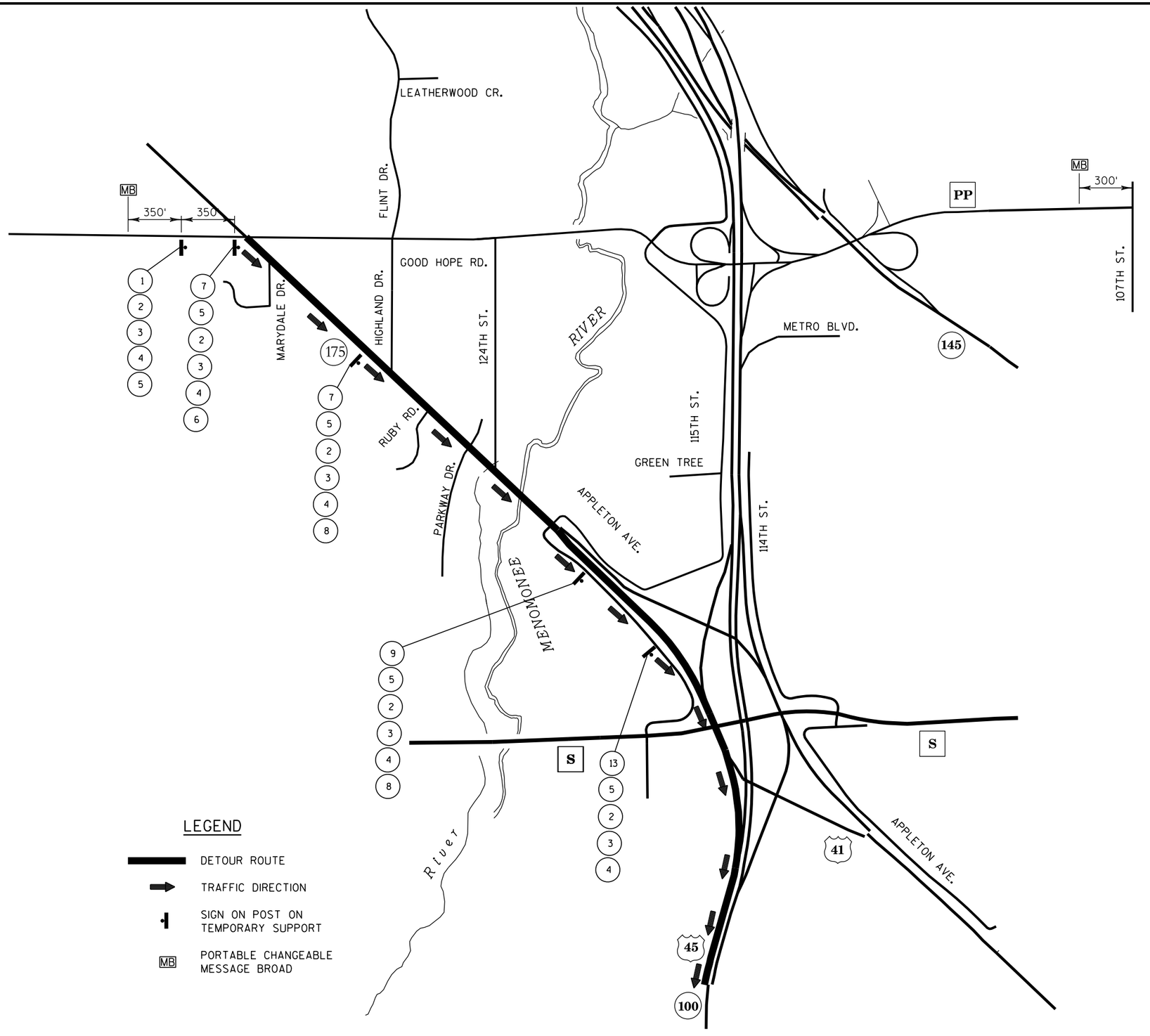
DETOUR

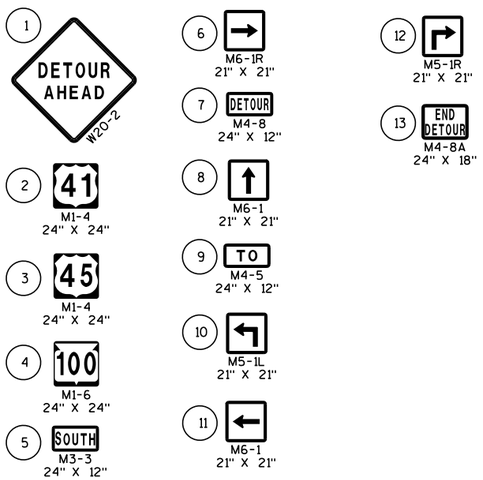
TRAFFIC WILL BE MAINTAINED ON ALL EXISTING LANES OF THE RAMP DURING PEAK HOURS.

DETOUR WILL ONLY BE PERMITTED DURING FULL FREEWAY AND RAMP CLOSURE HOURS AS SPECIFIED IN THE CONTRACT SPECIAL PROVISIONS.

WESTBOUND GOOD HOPE ROAD TRAFFIC - ACCESS SB USH 41/45 VIA SB LOOP RAMP.

EASTBOUND GOOD HOPE ROAD TRAFFIC - FOLLOW POSTED DETOUR, APPLETON AVENUE SOUTH TO USH 45.





LEGEND

- DETOUR ROUTE
- TRAFFIC DIRECTION
- SIGN ON POST ON TEMPORARY SUPPORT
- MB — PORTABLE CHANGEABLE MESSAGE BROAD

PROJECT NO: 1100-33-70	HWY: USH 45	COUNTY: MILWAUKEE	DETOUR	SHEET 64 E

DATE 10JUN13 E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	1100-33-70 QUANTITY
0010	204.0100	REMOVING PAVEMENT	SY	427.000	427.000
0020	204.0120	REMOVING ASPHALTIC SURFACE MILLING	SY	93.000	93.000
0030	204.0150	REMOVING CURB & GUTTER	LF	440.000	440.000
0040	204.0165	REMOVING GUARDRAIL	LF	65.000	65.000
0050	204.0195	REMOVING CONCRETE BASES	EACH	4.000	4.000
0060	204.0210	REMOVING MANHOLES	EACH	1.000	1.000
0070	204.0220	REMOVING INLETS	EACH	9.000	9.000
0080	204.0245	REMOVING STORM SEWER (SIZE) 01. 12-INCH	LF	66.000	66.000
0090	204.0245	REMOVING STORM SEWER (SIZE) 02. 15-INCH	LF	15.000	15.000
0100	204.0245	REMOVING STORM SEWER (SIZE) 03. 18-INCH	LF	15.000	15.000
0110	205.0100	EXCAVATION COMMON	CY	417.000	417.000
0120	305.0120	BASE AGGREGATE DENSE 1 1/4-INCH	TON	234.000	234.000
0130	415.0080	CONCRETE PAVEMENT 8-INCH	SY	681.000	681.000
0140	415.1080	CONCRETE PAVEMENT HES 8-INCH	SY	19.000	19.000
0150	416.0610	DRILLED TIE BARS	EACH	370.000	370.000
0160	416.0620	DRILLED DOWEL BARS	EACH	80.000	80.000
0170	416.1715	CONCRETE PAVEMENT REPAIR SHES	SY	18.000	18.000
0180	416.1725	CONCRETE PAVEMENT REPLACEMENT SHES	SY	253.000	253.000
0190	455.0105	ASPHALTIC MATERIAL PG58-28	TON	1.100	1.100
0200	455.0605	TACK COAT	GAL	2.000	2.000
0210	460.1103	HMA PAVEMENT TYPE E-3	TON	20.000	20.000
0220	520.8000	CONCRETE COLLARS FOR PIPE	EACH	4.000	4.000
0230	601.0409	CONCRETE CURB & GUTTER 30-INCH TYPE A	LF	603.000	603.000
0240	601.0452	CONCRETE CURB & GUTTER INTEGRAL 30-INCH TYPE D	LF	80.000	80.000
0250	608.0312	STORM SEWER PIPE REINFORCED CONCRETE CLASS III 12-INCH	LF	93.000	93.000
0260	608.0315	STORM SEWER PIPE REINFORCED CONCRETE CLASS III 15-INCH	LF	17.000	17.000
0270	608.0318	STORM SEWER PIPE REINFORCED CONCRETE CLASS III 18-INCH	LF	14.000	14.000
0280	611.0530	MANHOLE COVERS TYPE J	EACH	2.000	2.000
0290	611.0660	INLET COVERS TYPE WM	EACH	9.000	9.000
0300	611.2004	MANHOLES 4-FT DIAMETER	EACH	2.000	2.000
0310	611.3004	INLETS 4-FT DIAMETER	EACH	2.000	2.000
0320	611.3225	INLETS 2X2.5-FT	EACH	7.000	7.000
0330	611.8110	ADJUSTING MANHOLE COVERS	EACH	1.000	1.000
0340	614.0200	STEEL THRIE BEAM STRUCTURE APPROACH	LF	21.000	21.000
0350	614.0345	STEEL PLATE BEAM GUARD SHORT RADIUS	LF	38.000	38.000
0360	614.0390	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL	EACH	1.000	1.000
0370	614.2300	MGS GUARDRAIL 3	LF	148.000	148.000
0380	614.2610	MGS GUARDRAIL TERMINAL EAT	EACH	1.000	1.000
0390	614.2620	MGS GUARDRAIL TERMINAL TYPE 2	EACH	1.000	1.000
0400	619.1000	MOBILIZATION	EACH	1.000	1.000
0410	620.0300	CONCRETE MEDIAN SLOPED NOSE	SF	15.000	15.000
0420	625.0100	TOPSOIL	SY	334.000	334.000
0430	625.0500	SALVAGED TOPSOIL	SY	1,112.000	1,112.000
0440	628.1504	SILT FENCE	LF	856.000	856.000
0450	628.1520	SILT FENCE MAINTENANCE	LF	428.000	428.000
0460	628.1905	MOBILIZATIONS EROSION CONTROL	EACH	2.000	2.000
0470	628.1910	MOBILIZATIONS EMERGENCY EROSION CONTROL	EACH	2.000	2.000
0480	628.2008	EROSION MAT URBAN CLASS I TYPE B	SY	1,283.000	1,283.000
0490	628.7015	INLET PROTECTION TYPE C	EACH	6.000	6.000
0500	628.7020	INLET PROTECTION TYPE D	EACH	8.000	8.000

3

DATE 10JUN13 E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	1100-33-70 QUANTITY
0510	628.7504	TEMPORARY DITCH CHECKS	LF	30.000	30.000
0520	628.7555	CULVERT PIPE CHECKS	EACH	1.000	1.000
0530	629.0205	FERTILIZER TYPE A	CWT	1.000	1.000
0540	630.0130	SEEDING MIXTURE NO. 30	LB	26.000	26.000
0550	630.0200	SEEDING TEMPORARY	LB	8.000	8.000
0560	634.0618	POSTS WOOD 4X6-INCH X 18-FT	EACH	21.000	21.000
0570	637.0202	SIGNS REFLECTIVE TYPE II	SF	266.750	266.750
0580	637.0402	SIGNS REFLECTIVE FOLDING TYPE II	SF	30.000	30.000
0590	638.2602	REMOVING SIGNS TYPE II	EACH	17.000	17.000
0600	638.3000	REMOVING SMALL SIGN SUPPORTS	EACH	14.000	14.000
0610	641.8100	OVERHEAD SIGN SUPPORT (STRUCTURE) 01. S-40-974	LS	1.000	1.000
0620	642.5001	FIELD OFFICE TYPE B	EACH	1.000	1.000
0630	643.0200	TRAFFIC CONTROL SURVEILLANCE AND MAINTENANCE (PROJECT) 01. 1100-33-70	DAY	28.000	28.000
0640	643.0300	TRAFFIC CONTROL DRUMS	DAY	2,770.000	2,770.000
0650	643.0420	TRAFFIC CONTROL BARRICADES TYPE III	DAY	159.000	159.000
0660	643.0705	TRAFFIC CONTROL WARNING LIGHTS TYPE A	DAY	318.000	318.000
0670	643.0715	TRAFFIC CONTROL WARNING LIGHTS TYPE C	DAY	419.000	419.000
0680	643.0800	TRAFFIC CONTROL ARROW BOARDS	DAY	23.000	23.000
0690	643.0900	TRAFFIC CONTROL SIGNS	DAY	772.000	772.000
0700	643.0910	TRAFFIC CONTROL COVERING SIGNS TYPE I	EACH	10.000	10.000
0710	643.1050	TRAFFIC CONTROL SIGNS PCMS	DAY	20.000	20.000
0720	643.2000	TRAFFIC CONTROL DETOUR (PROJECT) 01. 1100-33-70	EACH	1.000	1.000
0730	643.3000	TRAFFIC CONTROL DETOUR SIGNS	DAY	140.000	140.000
0740	646.0106	PAVEMENT MARKING EPOXY 4-INCH	LF	1,724.000	1,724.000
0750	646.0126	PAVEMENT MARKING EPOXY 8-INCH	LF	370.000	370.000
0760	646.0600	REMOVING PAVEMENT MARKINGS	LF	1,113.000	1,113.000
0770	646.0841.S	PAVEMENT MARKING GROOVED WET REFLECTIVE CONTRAST TAPE 4-INCH	LF	38.000	38.000
0780	646.0843.S	PAVEMENT MARKING GROOVED WET REFLECTIVE CONTRAST TAPE 8-INCH	LF	375.000	375.000
0790	652.0225	CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH	LF	770.000	770.000
0800	652.0235	CONDUIT RIGID NONMETALLIC SCHEDULE 40 3-INCH	LF	785.000	785.000
0810	652.0615	CONDUIT SPECIAL 3-INCH	LF	100.000	100.000
0820	652.0700.S	INSTALL CONDUIT INTO EXISTING ITEM	EACH	2.000	2.000
0830	652.0800	CONDUIT LOOP DETECTOR	LF	313.000	313.000
0840	653.0135	PULL BOXES STEEL 24X36-INCH	EACH	3.000	3.000
0850	653.0905	REMOVING PULL BOXES	EACH	4.000	4.000
0860	654.0101	CONCRETE BASES TYPE 1	EACH	1.000	1.000
0870	654.0105	CONCRETE BASES TYPE 5	EACH	3.000	3.000
0880	654.0108	CONCRETE BASES TYPE 8	EACH	1.000	1.000
0890	655.0230	CABLE TRAFFIC SIGNAL 5-14 AWG	LF	20.000	20.000
0900	655.0240	CABLE TRAFFIC SIGNAL 7-14 AWG	LF	160.000	160.000
0910	655.0260	CABLE TRAFFIC SIGNAL 12-14 AWG	LF	475.000	475.000
0920	655.0305	CABLE TYPE UF 2-12 AWG GROUNDED	LF	275.000	275.000
0930	655.0610	ELECTRICAL WIRE LIGHTING 12 AWG	LF	225.000	225.000
0940	655.0620	ELECTRICAL WIRE LIGHTING 8 AWG	LF	1,280.000	1,280.000
0950	655.0630	ELECTRICAL WIRE LIGHTING 4 AWG	LF	3,280.000	3,280.000
0960	655.0640	ELECTRICAL WIRE LIGHTING 1 AWG	LF	36.000	36.000
0970	655.0700	LOOP DETECTOR LEAD IN CABLE	LF	2,710.000	2,710.000

3

DATE 10JUN13 E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	1100-33-70 QUANTITY
0980	655.0800	LOOP DETECTOR WIRE	LF	1,156.000	1,156.000
0990	656.0200	ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 01. HL-40-WG	LS	1.000	1.000
1000	656.0200	ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 02. HL-40-HP	LS	1.000	1.000
1010	657.0210	TRANSFORMER BASES BREAKAWAY 15-17 INCH BOLT CIRCLE	EACH	1.000	1.000
1020	657.0255	TRANSFORMER BASES BREAKAWAY 11 1/2-INCH BOLT CIRCLE	EACH	3.000	3.000
1030	657.0322	POLES TYPE 5-ALUMINUM	EACH	1.000	1.000
1040	657.0380	POLES TYPE E	EACH	1.000	1.000
1050	657.0720	LUMINAIRE ARMS TRUSS TYPE 6-INCH CLAMP 20-FT	EACH	1.000	1.000
1060	659.0802	PLAQUES SEQUENCE IDENTIFICATION	EACH	95.000	95.000
1070	670.0100	FIELD SYSTEM INTEGRATOR	LS	1.000	1.000
1080	670.0200	ITS DOCUMENTATION	LS	1.000	1.000
1090	674.0200	CABLE MICROWAVE DETECTOR	LF	530.000	530.000
1100	674.0300	REMOVE CABLE	LF	725.000	725.000
1110	675.0100	INSTALL CONTROLLER RAMP METER PROCESSOR ASSEMBLY	EACH	1.000	1.000
1120	675.0300	INSTALL MOUNTED CONTROLLER MICROWAVE DETECTOR ASSEMBLY	EACH	1.000	1.000
1130	676.0100	SIGNAL ASSEMBLY RAMP CONTROL SIDEMOUNT	EACH	2.000	2.000
1140	676.0105	SIGNAL ASSEMBLY RAMP CONTROL OVERHEAD	EACH	2.000	2.000
1150	676.0300	SIGNAL ASSEMBLY ADVANCE FLASHER TYPE 1	EACH	1.000	1.000
1160	676.9001.S	REMOVING ADVANCE FLASHER ASSEMBLIES TYPE 1	EACH	1.000	1.000
1170	690.0250	SAWING CONCRETE	LF	1,070.000	1,070.000
1180	SPV.0060	SPECIAL 01. REMOVING LUMINAIRES	EACH	14.000	14.000
1190	SPV.0060	SPECIAL 02. REMOVING LIGHTING UNITS	EACH	1.000	1.000
1200	SPV.0060	SPECIAL 03. LAMP DISPOSAL HIGH INTENSITY DISCHARGE	EACH	15.000	15.000
1210	SPV.0060	SPECIAL 04. REMOVING DISTRIBUTION CENTERS	EACH	1.000	1.000
1220	SPV.0060	SPECIAL 05. PULL BOXES 24X42-INCH GROUNDED	EACH	3.000	3.000
1230	SPV.0060	SPECIAL 06. LIGHITING DISTRIBUTION CENTERS	EACH	2.000	2.000
1240	SPV.0060	SPECIAL 07. LUMINAIRES LED CATEGORY C	EACH	10.000	10.000
1250	SPV.0060	SPECIAL 08. LUMINAIRES LED CATEGORY D	EACH	5.000	5.000
1260	SPV.0060	SPECIAL 09. CONCRETE CONTROL CABINET BASES, SPECIAL	EACH	2.000	2.000
1270	SPV.0060	SPECIAL 10. REMOVING RAMP METER CONTROLLER	EACH	1.000	1.000
1280	SPV.0060	SPECIAL 11. REMOVING RAMP CONTROL SIGNAL ASSEMBLY SIDEMOUNT	EACH	2.000	2.000
1290	SPV.0060	SPECIAL 12. RAMP CLOSURE GATES HARDWIRED 28-FT	EACH	1.000	1.000
1300	SPV.0060	SPECIAL 13. RAMP CLOSURE GATE HARDWIRED 40-FT	EACH	1.000	1.000
1310	SPV.0060	SPECIAL 14. PAVEMENT MARKING GROOVED PREFORMED THERMOPLASTIC SYMBOLS	EACH	4.000	4.000
1320	SPV.0090	SPECIAL 01. PAVEMENT MARKING GROOVED PRE FORMED THERMOPLASTIC STOP LINE 24-INCH	LF	40.000	40.000
1330	SPV.0105	SPECIAL 01. LIGHTING SYSTEM INTEGRATOR	LS	1.000	1.000

3

3

RAMP E

Division	From/To Station	Location	Common Excavation (1) (item # 205.0100)		Salvaged/Unusable Pavement Material (4)	Available Material (5)	Unexpanded Fill	Expanded Fill (13)	Mass Ordinate +/- (14)	Waste	Borrow	Comment:
			Cut (2)	EBS Excavation (3)				Factor 1.25			(item #208.0100)	
1	55+10 - 62+05	Proposed Lane	417	0	164	253	149	186	66	66		
Division 1 Subtotal			417	0	164	253	149	186	66	66		
Grand Total			417	0	164	253	149	186	66	66	0	
		Total Common Exc	417									

1) Common Excavation is the sum of the Cut and EBS Excavation columns. Item number 205.0100
2) Salvaged/Unsuable Pavement Material is included in Cut.
3) EBS Excavation to be backfilled with Select Borrow material.
4) Salvaged/Unusable Pavement Material
5) Available Material = Cut - Salvaged/Unusuable Pavement Material
13) Expanded Fill. Factor = 1.25

Expanded Fill = (Unexpanded Fill) * Fill Factor

14) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material within the Division. Minus indicates a shortage of material within the Division.

3

REMOVING PAVEMENT

ROADWAY	STATION	TO	STATION	204.0100 REMOVING PAVEMENT SY	204.0120 REMOVING ASPHALTIC SURFACE MILLING SY
CATEGORY 0010					
RAMP E	56+20 RT			2	--
	56+45	-	59+00	317	--
	59+00 RT			2	--
	60+49 RT			2	--
	61+38 RT			2	--
	61+38 21' RT			2	--
	60+90 RT	-	62+05 RT	98	--
	63+12	-	63+43	--	93
RAMP F	61+47 LT			2	--
			TOTAL	427	93

REMOVING CURB AND GUTTER

ROADWAY	STATION	TO	STATION	204.0150 REMOVING CURB & GUTTER LF
CATEGORY 0010				
RAMP E	55+10 LT	-	56+45 LT	135
	59+00 LT	-	62+05 RT	305
			TOTAL	440

REMOVING GUARDRAIL

ROADWAY	STATION	TO	STATION	204.0165 REMOVING GUARDRAIL LF
CATEGORY 0010				
	62+38 RAMP F	-	62+80 RAMP F	65
			TOTAL	65

3

REMOVING STORM SEWER STRUCTURES

ROADWAY	STATION	LOCATION	204.0210 REMOVING MANHOLES EA	204.0220 REMOVING INLETS EA
CATEGORY 0010				
RAMP E	56+19	1.0' LT	--	1
	56+20	8.3' LT	1	--
	57+70	11.3' LT	--	1
	57+98	12.4' LT	--	1
	58+31	13.8' LT	--	1
	59+02	14.7' LT	--	1
	60+49	12.2' LT	--	1
	61+38	8.4' LT	--	1
	61+38	28' RT	--	1
RAMP F	61+47	18.5' LT	--	1
	TOTAL		1	9

REMOVING STORM SEWER ITEMS

ROADWAY	STATION	OFFSET TO	STATION	OFFSET	204.0245.01 REMOVING STORM SEWER 12-INCH LF	204.0245.02 REMOVING STORM SEWER 15-INCH LF	204.0245.03 REMOVING STORM SEWER 18-INCH LF
CATEGORY 0010							
RAMP E	56+05	10.6' LT	56+20	8' LT	--	15	--
	56+19	1' LT	56+20	8' LT	9	--	--
	56+20	8' LT	56+35	9.6' LT	--	--	15
	57+70	11.3' LT	57+70	19.4' LT	8	--	--
	57+70	11.3' LT	57+98	12.4' LT	28	--	--
	58+31	13.8' LT	58+31	19.7' LT	6	--	--
	61+38	21.5' LT	61+38	28' LT	7	--	--
RAMP F	61+47	19' LT	61+47	27' LT	8		
	TOTAL				66	15	15

BASE AGGREGATE DENSE ITEMS

ROADWAY	STATION	TO	STATION	305.0120 BASE AGGREGATE DENSE 1 1/4 INCH TON
CATEGORY 0010				
RAMP E	55+10		62+05	227
	56+20		-	1
	59+00		-	1
	60+49		-	1
	61+38		-	1
	61+38, 21' RT		-	1
RAMP F	61+00, 18' LT		61+11, 18' LT	2
RAMP F	61+47		-	1
			TOTAL	234

CONCRETE ITEMS

ROADWAY	STATION	TO	STATION	415.0080 CONCRETE PAVEMENT 8-INCH SY	415.1080 CONCRETE PAVEMENT HES 8-INCH SY	416.1715 CONCRETE PAVMENT REPAIR SHES SY	416.1725 CONCRETE PAVEMENT REPLACEMENT SHES SY	601.0409 CONCRETE CURB & GUTTER 30-INCH TYPE A LF	601.0452 CONCRETE CURB & GUTTER INTEGRAL 30-INCH TYPE D LF	620.0300 CONCRETE MEDIAN SLOPE NOSE SF
CATEGORY 0010										
RAMP E	55+10 LT		62+05 LT	681	--	--	--	--	--	--
	55+10 LT		55+60 LT	--	--	--	--	--	50	--
	55+10 RT		55+90 RT	--	--	--	124	--	--	--
	55+60 LT		61+75 LT	--	--	--	--	459	--	--
	56+20		-	--	2	--	--	--	--	--
	59+00		-	--	2	--	--	--	--	--
	59+13 RT		59+56 RT	--	--	--	129	--	--	--
	60+49		-	--	2	--	--	--	--	--
	61+00 RT		62+05 RT	--	--	--	--	144	--	--
	61+38		-	--	2	--	--	--	--	--
	61+38, 21' RT		-	--	2	--	--	--	--	--
	61+75 LT		62+05 LT	--	--	--	--	--	30	--
	61+81 RT		61+87 RT	--	--	18	--	--	--	--
RAMP F	61+00 LT		61+11 LT	--	7	--	--	--	--	15
	61+47, 18' LT		-	--	2	--	--	--	--	--
			TOTAL	681	19	18	253	603	80	15

3

DRILLED TIE AND DOWEL BAR SUMMARY

ROADWAY	STATION	TO	STATION	416.0610 DRILLED TIE BARS EA	416.0620 DRILLED DOWEL BARS EA	COMMENTS
CATEGORY 0010						
RAMP E	55+10 LT		62+05 LT	278	--	CONCRETE PAV'T 8-INCH
	55+10 RT		55+90 RT	32	16	CONC. PAV'T REPLACEMENT SHES
	56+20 RT			2	--	INLET REMOVAL
	59+00 RT			2	--	INLET REMOVAL
	59+13 RT		59+56 RT	--	32	CONC. PAV'T REPLACEMENT SHES
	60+49 RT			2	--	INLET REMOVAL
	61+00 RT	-	62+05 RT	48	--	CURB & GUTTER 30-INCH TYPE A
	61+38 RT			2	--	INLET REMOVAL
	61+38 21' RT			2	--	NEW INLET
	62+81 RT	-	62+87 RT	--	32	CONC. PAV'T REPAIR SHES
RAMP F	61+47 18' LT			2	--	NEW INLET
			TOTAL	370	80	

ASPHALT ITEMS

ROADWAY	STATION	TO	STATION	455.0105 ASPHALTIC MATERIAL PG 58-28 TON	460.1103 HMA PAVEMENT TYPE E-1 TON	455.0605 TACK COAT GAL
CATEGORY 0010						
RAMP E	62+12	-	62+43	1.1	20	2
			TOTAL	1.1	20	2

STORM SEWER PIPE SUMMARY

ROADWAY	STATION	OFFSET FEET	FROM STR	TO STR	INLET ELEV	DISCH ELEV	SLOPE	608.0312 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 12-INCH LF	608.0315 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 15-INCH LF	608.0318 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 18-INCH LF	520.8000 CULVERT PIPE CONCRETE COLLAR EA	REMARKS
CATEGOTY 0010												
RAMP E	56+05	10.56 LT	1	2	771.40	771.06	2.00%	--	17	--	--	MATCH EXIST. PIPE INVERT
	56+19	1.0' LT	PROP. CONCRETE COLLAR	2	771.37	771.32	1.00%	5	--	--	1	MATCH EXIST. INVERT AT COLLAR
	56+22.07	5.45' LT	2	3	771.04	770.90	1.00%	--	--	14	--	MATCH EXIST. PIPE INVERT
	57+70	11.3' LT	4	EXIST. MANHOLE	769.71	769.67	0.50%	8	--	--	--	
	57+98	12.44' LT	5	4	769.85	769.71	0.50%	28	--	--	--	
	58+31	13.79' LT	6	EXIST. MANHOLE	769.21	769.01	2.00%	5	--	--	--	MATCH INV. AT EXIST. STR.
	59+02	1.0 ' LT	7	PROP. CONCRETE COLLAR	770.64	770.57	0.50%	14	--	--	1	MATCH EXIST. INVERT AT COLLAR
	60+49	1.0' LT	8	PROP. CONCRETE COLLAR	773.31	773.20	0.91%	12	--	--	1	MATCH EXIST. INVERT AT COLLAR
	61+38	1.0' LT	9	PROP. CONCRETE COLLAR	775.05	775.01	1.72%	7	--	--	1	MATCH EXIST. INVERT AT COLLAR
	61+38	21.56' RT	10	11	774.63	774.36	1.93%	14	--	--	--	
			TOTAL					93	17	14	4	

NOTES

1) STATIONS AND OFFSETS ARE TO THE FLANGE FOR THE CURB INLETS AND THE CENTER OF STRUCTURE FOR MANHOLES.

2) CALCULATED GRADES ARE BASED ON EXISTING SURVEY. VERIFY EXISTING STORM SEWER ELEVATIONS AND ADJUST GRADES TO MATCH EXISTING CONDITIONS.

STORM SEWER STRUCTURE SUMMARY

ROADWAY	STRUCTURE NUMBER	STATION	OFFSET FEET	RIM ELEV.	STR. DEPTH	611.2004 MANHOLES 4' DIAMETER EA	611.3004 INLETS 4-FT DIAMETER EA	611.3225 INLETS 2X2.5-FT EA	611.0530 MANHOLE COVERS TYPE J EA	611.0660 INLET COVERS TYPE WM EA	611.8110 ADJUSTING MANHOLE COVERS EA	REMARKS
CATEGORY 0010												
RAMP E	1	56+05.53	10.56 LT	775.81	3.41	1	--	--	1	--	--	
	2	56+22.07	5.45 LT	775.11	2.61	--	1	--	--	1	--	
	3	56+35.32	9.43 LT	775.07	3.19	1	--	--	1	--	--	
	4	57+71.10	11.27 LT	773.32	2.48	--	1	--	--	1	--	
	5	57+98.16	12.44 LT	773.18	2.20	--	--	1	--	1	--	
	6	58+31	13.79 LT	773.33	2.99	--	--	1	--	1	--	
	--	58+31	19.00 LT	773.30	--	--	--	--	--	--	1	EXISTING MH
	7	59+02	14.66 LT	773.86	2.09	--	--	1	--	1	--	
	8	60+49	12.22 LT	776.45	2.02	--	--	1	--	1	--	
	9	61+38	8.39 LT	778.41	2.15	--	--	1	--	1	--	
	10	61+38	21.56 RT	779.43	3.67	--	--	1	--	1	--	
RAMP F	11	61+47	19' LT	780.05	4.56	--	--	1	--	1	--	
		TOTAL				2	2	7	2	9	1	

NOTES

1) STATIONS AND OFFSETS ARE TO THE FLANGE FOR THE CURB INLETS AND THE CENTER OF STRUCTURE FOR MANHOLES.

2) RIM ELEVATIONS ARE GIVEN AT THE FLANGE LINE FOR CURB INLETS AND CENTER OF STRUCTURE FOR MANHOLE COVERS.

3) STRUCTURE DEPTH EQUALS RIM ELEVATION MINUS LOWEST INVERT PLUS PIPE THICKNESS MINUS CASTING HEIGHT MINUS ADJUSTMENT RING
CASTING HEIGHT EQUALS 0.75 FT FOR TYPE J COVERS; 0.8542 FT FOR TYPE WM COVERS.
ADJUSTMENT RING HEIGHT EQUALS 0.5 FT

4) CONSTRUCTION OF STURCTURES SPECIFIED AS CAST-IN-PLACE MAY COMBINE CAST-IN-PLACE AS WELL AS PRECAST CONSTRUCTION AT THE AUTHORIZATION OF THE DESIGN ENGINEER.

5) CALCULATED GRADES ARE BASED ON EXISTING SURVEY. VERIFY EXISTING STORM SEWER ELEVATIONS AND ADJUST GRADES TO MATCH EXISTING CONDITIONS.

ROADWAY BARRIER ITEMS

ROADWAY	STATION	TO	STATION	614.0200 STEEL THRIE BEAM STURCTURE APPROACH LF	614.0345 STEEL PLATE BEAM GUARD SHORT RADIUS LF	614.0390 STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL EA	614.2300 MGS GUARDRAIL 3 LF	614.2610 MGS GUARDRAIL TERMINAL EAT EA	614.2620 MGS GUARDRAIL TERMINAL TYPE 2 EA
CATEGORY 0010									
RAMP E	58+42.5, 15.5' LT			--	--	--	--	--	1
	58+42.5	-	59+87.5	--	--	--	148	--	--
	59+87.5, 17.5' LT			--	--	--	--	1	--
RAMP F	62+41.3, 2.5' RT			--	--	1	--	--	--
	62+53.9, 2.5' RT	-	62+80	--	38	--	--	--	--
	62+80.10, 18.7'RT			21	--	--	--	--	--
			TOTAL	21	38	1	148	1	1

MOBILIZATION

ROADWAY	619.1000 MOBILIZATION EA
CATEGORY 0010	
PROJECT	1
TOTAL	1

3

EROSION CONTROL ITEMS

ROADWAY	STATION	TO	STATION	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF	628.1905 MOBILIZATIONS EROSION CONTROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH	628.2008 EROSION MAT URBAN CLASS I TYPE B SY	628.7015 INLET PROTECTION TYPE C EACH	628.7020 INLET PROTECTION TYPE D EACH	628.7504 TEMPORARY DITCH CHECKS LF	628.7555 CULVERT PIPE CHECKS EACH
CATEGORY 0010												
RAMP E	55+10 LT	-	60+00 LT	506	253	--	--	577	--	5	--	--
	55+10 RT	-	60+00 RT	--	--	--	--	--	2	--	--	--
	60+00 LT	-	62+05 LT	272	136	--	--	533	--	2	--	--
	60+00 RT	-	62+05 RT	--	--	--	--	--	3	--	--	--
	61+00 RT	-	62+05 RT	--	--	--	--	56	--	--	--	--
	58+31, 42' LT			--	--	--	--	--	--	--	--	1
			UNDISTRIBUTED	78	39	2	2	117	1	1	30	--
				856	428	2	2	1,283	6	8	30	1

RESTORATION ITEMS

ROADWAY	STATION	TO	STATION	625.0100 TOPSOIL SY	625.0500 SALVAGED TOPSOIL SY	629.0205 FERTILIZER TYPE A CWT	630.0130 SEEDING MIX NO. 30 LB	630.0200 SEEDING TEMPORARY LB
CATEGORY 0010								
RAMP E	55+10 LT	-	60+00 LT	--	577	.4	10	3
	56+50	-	62+05	--	535	.3	10	3
	61+00 RT	-	62+05 RT	56	--	.1	1	
			UNDISTRIBUTED	278			5	2
				334	1,112	1	26	8

TRAFFIC CONTROL ITEMS

ROADWAY	STATION	TO	STATION	STAGE DURATION DAYS	643.0200 TRAFFIC CONTROL SURVEILLANCE AND MAINTENANCE 1100-33-70 DAYS	643.0300 TRAFFIC CONTROL DRUMS EACH*	643.0300 DAYS	643.0420 TRAFFIC CONTROL BARRICADES TYPE III EACH*	643.0420 DAYS	643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A EACH*	643.0705 DAYS	643.0715 TRAFFIC CONTROL WARNING LIGHTS TYPE C EACH*	643.0715 DAYS	643.0800 TRAFFIC CONTROL ARROW BOARDS EACH*	643.0800 DAYS	643.0900 TRAFFIC CONTROL SIGNS EACH*	643.0900 DAYS
CATEGORY 0010																	
STAGE 1				11													
ADVANCED SIGNING - LANE CLOSURE						36	396	1	11	2	22	14	154	1	11	16	176
RAMP E	57+00	-	61+00			17	187	--	--	--	--	--	--	--	--	2	22
RAMP E	61+00	-	65+19			19	209	--	--	--	--	--	--	--	--	1	11
RAMP F	61+25	-	63+00			7	77	--	--	--	--	--	--	--	--	--	--
GOOD HOPE ROAD						16	176	1	11	2	22	--	--	--	--	--	--
STAGE 1 SUBTOTAL							1,045		22		44		154		11		209
STAGE 1A				5													
RAMP E						7	35	4	20	8	40	--	--	--	--	2	10
RAMP E	63+50	-	65+00			--	--	--	--	--	--	--	--	--	--	--	--
GOOD HOPE ROAD	WB-SB LEFT TURN LANE					12	60	2	10	4	20	--	--	--	--	4	20
RAMP F	ENTRANCE TO RAMP					--	--	3	15	6	30	--	--	--	--	1	5
STAGE 1A SUBTOTAL							95		45		90		--		--		35
STAGE 2				12													
ADVANCED SIGNING						--	--	--	--	--	--	--	--	--	--	9	108
RAMP E	55+10	-	62+00			10	120	--	--	--	--	4	48	--	--	1	12
RAMP E	62+00	-	64+00			8	96	1	12	2	24	--	--	--	--	1	12
STAGE 2 SUBTOTAL							216		12		24		48		--		132
UNDISTRIBUTED						--	58	--	1	--	2	--	15	--	1	--	20
					28		2,770		159		318		419		23		772

*FOR INFORMATION ONLY

FIELD OFFICE FACILITIES

	642.5001 FIELD OFFICE TYPE B EA
CATEGORY 0010	
PROJECT	1
TOTAL	1

DETOUR

DETOUR	DETOUR DURATION DAYS	643.0910 TRAFFIC CONTROL COVERING SIGNS TYPE 1 EACH	NUMBER OF CYCLES	NUMBER OF SIGNS	643.1050 TRAFFIC CONTROL SIGNS PCMS EACH*	DAYS	643.2000 TRAFFIC CONTROL DETOUR 1100-33-70 EACH	643.3000 TRAFFIC CONTROL DETOUR SIGNS NO.	DAYS	REMARKS
CATEGORY 0010										
RAMP E	5	--	--	--	1	5	1	--	--	PCMS LOCATED AT RAMP ENTRANCE PRIOR TO DETOUR
RAMP F					1	5	--	--	--	PCMS LOCATED AT RAMP ENTRANCE PRIOR TO DETOUR
GOOD HOPE ROAD		10	5	2	2	10	--	--	--	
APPLETON AVE.		--	--	--	--	--	--	28	140	
		10				20	1	28	140	

* FOR INFORMATION ONLY

3

PAVEMENT MARKINGS

ROADWAY	STATION TO	STATION	646.0106 PAVEMENT MARKING EPOXY 4-INCH WHITE LF	646.0106 PAVEMENT MARKING EPOXY 4-INCH YELLOW LF	646.0126 PAVEMENT MARKING EPOXY 8-INCH LF	646.0841.S PAVEMENT MARKING GROOVED WET REFLECTIVE CONTRAST TAPE 4-INCH LF	646.0843.S PAVEMENT MARKING GROOVED WET REFLECTIVE CONTRAST TAPE 8-INCH LF	SPV.0090.001 PAVEMENT MARKING GROOVED PREFORMED THERMOPLASTIC STOP LINE 24-INCH WHITE LF	SPV.0060.14 PAVEMENT MARKING GROOVED PREFORMED THERMOPLASTIC SYMBOLS WHITE EA
CATEGORY 0010									
RAMP E	55+10	60+00	490	337	370	--	70	--	--
	60+00	63+50	336	145	--	--	205	--	--
	59+30	60+55	--	--	--	38	--	--	1
		59+30	--	--	--	--	--	40	--
RAMP F	60+00	63+00	150	266	--	--	100	--	3
		TOTAL	976	748	370	38	375	40	4

PAVEMENT MARKING REMOVALS

ROADWAY	STATION TO	STATION	646.0600 REMOVING PAVEMENT MARKINGS LF	REMARKS
CATEGORY 0010				
RAMP E	55+90	59+30	340	4" WHITE EDGE LINE
	59+56	62+05	249	4" WHITE EDGE LINE
	59+56	63+12	362	8" CHANNELIZATION LINE
	59+30	60+00	27	HOV SYMBOLS
	60+00	63+50	81	HOV SYMBOLS
RAMP F	60+00	62+75	54	HOV SYMBOLS
		TOTAL	1,113	

SAWING

ROADWAY	STATION TO		STATION	690.0250 SAWING CONCRETE LF
CATEGORY 0010				
RAMP E	55+10 RT	-	55+90 RT	108
	55+90	-	56+50	60
	-		56+20	12
	56+50	-	62+05	555
	-		59+02	12
	59+13 RT	-	59+56 RT	54
	-		60+49	12
	-		61+38	12
	-		61+38, 21' RT	12
	61+00 RT	-	62+05 RT	115
	61+81 RT	-	61+87 RT	54
RAMP F	61+00	-	61+47	52
	-		61+47, 18' LT	12
			TOTAL	1,070

3

ITS PULL BOX ITEMS

STATION	OFFSET	ITEM ID	652.0700.S INSTALL CONDUIT INTO EXISTING ITEM EACH	653.0135 PULL BOXES STEEL 24 X 36 - INCH EACH	* 653.0905 REMOVING PULL BOXES EACH
58E+55	23' LT	PB01	--	1	--
59E+18	23' LT	PB02	--	1	--
61E+55	16' LT	PB03	--	1	--
59E+18	17' LT	EXPB02	1	--	--
59E+18	35' RT	EXPB03	--	--	1
61E+60	10' LT	EXPB04	--	--	1
62F+60	25' LT	EXPB07	1	--	--
TOTALS			2	3	2

* ADDITIONAL QUANTITIES LISTED ELSEWHERE

ITS CABINET ITEMS

ITEM ID	LOCATION	OFFSET	675.0100 INSTALLING CONTROLLER RAMP METER PROCESSOR ASSEMBLY EACH	SPV.0060.10 REMOVING RAMP METER CONTROLLER EACH
EXRM-40-90	63E+15	15' LT	1	1
TOTALS			1	1

3

ITS CABLE AND CONDUIT ITEMS

ITEM ID	LINEAR DISTANCE	* 652.0225 CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH LF	* 652.0235 CONDUIT RIGID NONMETALLIC SCHEDULE 40 3-INCH LF	655.0230 CABLE TRAFFIC SIGNAL 5-14 AWG LF	655.0240 CABLE TRAFFIC SIGNAL 7-14 AWG LF	655.0260 CABLE TRAFFIC SIGNAL 12-14 AWG LF	655.0305 CABLE TYPE UF 2-12 AWG GROUNDED LF	655.0700 LOOP DETECTOR LEAD IN CABLE LF	674.0200 CABLE MICROWAVE DETECTOR LF	674.0300 REMOVE CABLE LF
EXPB01/EXPB02	265	--	--	--	--	--	--	--	--	265
EXPB02/EXSB01	5	--	--	--	--	--	--	--	--	5
EXPB02/EXPB03	40	--	--	--	--	--	--	--	--	40
EXPB03/EXSB02	5	--	--	--	--	--	--	--	--	5
EXPB03/EXPB04	235	--	--	--	--	--	--	--	--	235
EXPB04/EXPB05	160	--	--	--	--	--	--	--	--	160
EXPB05/EXRM-40-90	5	--	--	20	--	20	40	60	20	5
EXPB05/EXFY01	10	--	--	--	--	--	--	--	--	10
SB02/PB01	10	--	20	--	25	25	--	--	--	--
PB01/PB02	60	--	120	--	60	25	--	--	--	--
PB02/EXPB02	55	--	60	--	55	--	--	220	55	--
EXPB02/SB01	5	--	--	--	20	--	--	--	--	--
EXPB02/MD01	25	50	--	--	--	--	--	--	40	--
PB02/PB03	225	225	225	--	--	225	--	1350	235	--
PB03/EXPB05	170	110	110	--	--	180	--	1080	180	--
EXPB05/RG-40-68	5	5	--	--	--	--	20	--	--	--
EXPB05/EXPB06	45	--	--	--	--	--	55	--	--	--
EXPB06/EXPB07	120	--	--	--	--	--	130	--	--	--
EXPB07/RG-40-69	15	--	--	--	--	--	30	--	--	--
TOTALS		390	535	20	160	475	275	2710	530	725

* ADDITIONAL QUANTITIES LISTED ELSEWHERE

3

ITS BASES AND POLES

ITEM ID	LOCATION	OFFSET	* 204.0195 REMOVING CONCRETE BASES EACH	654.0101 CONCRETE BASES TYPE 1 EACH	654.0105 CONCRETE BASES TYPE 5 EACH	657.0255 TRANSFORMER BASES STANDARD 11 1/2-INCH BOLT CIRCLE EACH	657.0322 POLES TYPE 5 ALUMINUM EACH	675.0300 INSTALL MOUNTED CONTROLLER MICROWAVE DETECTOR ASSEMBLY EACH	676.0100 SIGNAL ASSEMBLY RAMP CONTROL SIDEMOUNT EACH	676.0105 SIGNAL ASSEMBLY RAMP CONTROL OVERHEAD EACH	676.0300 SIGNAL ASSEMBLY ADVANCE FLASHER TYPE 1 EACH	676.9001.S REMOVING ADVANCED FLASHER ASSEMBLIES TYPE 1 EACH	SPV.0060.11 REMOVING RAMP CONTROL SIGNAL ASSEMBLY SIDEMOUNT EACH
EXSB01	59E+30	35' RT	--	--	--	--	--	--	--	--	--	--	1
EXSB02	59E+30	5' LT	1	--	--	--	--	--	1	--	--	--	1
EXFY01	63E+40	5' LT	1	--	--	--	--	--	--	--	--	1	--
SB02	58E+50	23' LT	--	--	--	--	--	--	--	2	--	--	--
SB01	59E+30	35' RT	--	--	--	--	--	--	1	--	--	--	--
MD01	59E+30	57' RT	--	--	1	1	1	1	--	--	--	--	--
FY01	63E+75	6' LT	--	1	--	--	--	--	--	--	1	--	--
RG-40-68	63E+35	6' LT	--	--	1	1	--	--	--	--	--	--	--
RG-40-69	62F+75	24' LT	--	--	1	1	--	--	--	--	--	--	--
TOTALS			2	1	3	3	1	1	2	2	1	1	2

* ADDITIONAL QUANTITIES LISTED ELSEWHERE

ITS LOOP DETECTOR ITEMS

ITEM ID	STATION	OFFSET	LOOP NUMBER	LANE NUMBER	SIZE	NUMBER OF TURNS	652.0800 CONDUIT LOOP DETECTOR LF	655.0800 LOOP DETECTOR WIRE LF
EXRM-40-90	59E+55	6' RT	DEMAND A	1	6X20	4	62	228
EXRM-40-90	59E+20	6' RT	PASSAGE A	1	6X6	4	35	116
EXRM-40-90	59E+55	18' RT	DEMAND B	2	6X20	5	74	304
EXRM-40-90	59E+20	18' RT	PASSAGE B	2	6X6	5	45	164
EXRM-40-90	59E+55	24' RT	DEMAND C	3	6X20	4	62	228
EXRM-40-90	59E+20	24' RT	PASSAGE C	3	6X6	4	35	116
TOTALS							313	1156

RAMP GATES

ITEM ID	LOCATION	STATION	SPV.0060.12 RAMP CLOSURE GATES HARDWIRED 28-FT EACH	SPV.0060.13 RAMP CLOSURE GATES HARDWIRED 40-FT EACH
RG-40-68	GOOD HOPE SB ON-RAMP	63E+35	--	1
RG-40-69	GOOD HOPE SB ON-RAMP (HOV)	62F+75	1	--
TOTALS			1	1

TYPE II PERMANENT SIGNING - CATEGORY CODE 0010 1100-33-70 US 41/45

SIGN NO.	SIGN CODE & SIZE	SIGN MESSAGE	SIGN SIZE W [IN.] x	x H [IN.]	**637.0202** SIGNS REFLC TYPE II [SF]	**638.2602** REM SIGNS TYPE II (EA)	**638.3000** REM SMALL SIGN SUP (EA)	**634.0618** WOOD POSTS 4"X 6"x18' [EA]	**637.0402** SIGNS REFLECTIVE FOLDING TYPE II [SF]	**638.2102** MOVE SIGNS TYPE II [EA]	MOUNT ON SAME POST AS SIGN #	REMARKS / NEW SIGN LOCATION
1	R3-58 (2S)	FORM SINGLE LINE	24 x	30	5.000	--	--	--	--	--	--	ON SIGNAL POLE
2	R3-58 (2S)	FORM SINGLE LINE	24 x	30	5.000	--	--	1	--	--	--	--
3	R10-65R (2S)	RIGHT LANE SIGNAL	24 x	30	5.000	--	--	--	--	--	--	ON S-40-974 OVERHEAD SIGN SUPPORT ARM - BRACKETS INCIDENTAL
4	R10-65C (2S)	CENTER LANE SIGNAL	24 x	30	5.000	--	--	--	--	--	--	ON S-40-974 OVERHEAD SIGN SUPPORT ARM - BRACKETS INCIDENTAL
5	R10-6 (2S)	STOP HERE ON RED	24 x	36	6.000	--	--	1	--	--	--	--
6	R10-65R (2S)	RIGHT LANE SIGNAL	-- x	--	--	1	--	--	--	--	--	ON SIGNAL POLE
7	R10-6 (2S)	STOP HERE ON RED	-- x	--	--	1	--	--	--	--	--	ON SIGNAL POLE
8	R5-57 (5)	PEDS PROHIBITED	-- x	--	--	1	1	--	--	--	--	--
9	W4-2L (2S)	(LEFT LANE DROP)	-- x	--	--	1	1	--	--	--	--	--
10	R10-65L (2S)	LEFT LANE SIGNAL	24 x	30	5.000	1	--	--	--	--	--	ON SIGNAL POLE
11	R10-6(MOD) (2S)	STOP HERE ON RED	24 x	36	6.000	1	--	--	--	--	--	ON SIGNAL POLE - ARROW DOWN RIGHT
12	R1-2 (3)	YIELD	48 x	42	14.000	1	1	1	--	--	--	--
13	R5-57 (5)	PEDS PROHIBITED	36 x	36	9.000	--	--	1	--	--	--	--
14	R5-57 (5)	PEDS PROHIBITED	36 x	36	9.000	--	--	1	--	--	--	--
15	R3-51L (2S)	HOV LEFT LANE	48 x	78	26.000	1	2	2	--	--	--	--
16	W3-8 (2S)	RAMP METERED WHEN FLASHING	48 x	48	16.000	1	--	--	--	--	--	ON FLASHER POLE
17	J3-2	S - 41/45/100	-- x	--	--	1	2	--	--	--	--	--
18	J3-3 (2S)	--	72 x	81	40.500	--	--	2	--	--	--	--
	MB3-3	SOUTH	24 x	12	--	--	--	--	--	--	--	COVER BLACK - INCIDENTAL
	M1-1	41	24 x	24	--	--	--	--	--	--	--	COVER BLACK - INCIDENTAL
	MB6-2	(ARROW)	21 x	21	--	--	--	--	--	--	--	COVER BLACK - INCIDENTAL
	M3-3	SOUTH	24 x	12	--	--	--	--	--	--	--	--
	M1-4	41	24 x	24	--	--	--	--	--	--	--	--
	M1-4	45	24 x	24	--	--	--	--	--	--	--	--
	M6-2	(ARROW)	21 x	21	--	--	--	--	--	--	--	--
	M3-3	SOUTH	24 x	12	--	--	--	--	--	--	--	--
	M1-6	100	24 x	24	--	--	--	--	--	--	--	--
	M6-2	(ARROW)	21 x	21	--	--	--	--	--	--	--	--
19	W3-8 (2S)	RAMP METERED WHEN FLASHING	48 x	48	16.000	1	--	--	--	--	--	ON FLASHER POLE
20	R3-51L (2S)	HOV LEFT LANE	48 x	78	26.000	1	2	2	--	--	--	--
21	R4-7 (2S)	(KEEP RIGHT)	24 x	30	5.000	1	1	1	--	--	--	--
22	R3-4 (2S)	(NO U-TURN)	24 x	24	4.000	1	--	--	--	--	21	--
23	R3-1 (2S)	(NO RIGHT)	24 x	24	4.000	1	1	1	--	--	--	--
24	R5-1 (2S)	DO NOT ENTER	30 x	30	6.250	1	1	--	--	--	23	--
25	J2-3 (2S)	--	-- x	--	--	1	2	--	--	--	--	--
26	J2-4 (2S)	--	96 x	81	54.000	--	--	2	--	--	--	--
	MB3-1	NORTH	24 x	12	--	--	--	--	--	--	--	COVER BLACK - INCIDENTAL
	M1-1	41	24 x	24	--	--	--	--	--	--	--	COVER BLACK - INCIDENTAL
	MB6-1	(ARROW)	21 x	21	--	--	--	--	--	--	--	COVER BLACK - INCIDENTAL
	M3-1	NORTH	24 x	12	--	--	--	--	--	--	--	--
	M1-4	41	24 x	24	--	--	--	--	--	--	--	--
	M1-4	45	24 x	24	--	--	--	--	--	--	--	--
	M6-1	(ARROW)	21 x	21	--	--	--	--	--	--	--	--
	M3-1	NORTH	24 x	12	--	--	--	--	--	--	--	--
	M1-6	100	24 x	24	--	--	--	--	--	--	--	--
	M1-6	145	24 x	24	--	--	--	--	--	--	--	--
	M6-1	(ARROW)	21 x	21	--	--	--	--	--	--	--	--
	M3-2	EAST	24 x	12	--	--	--	--	--	--	--	--
	M1-5A	PP	24 x	24	--	--	--	--	--	--	--	--
	M6-1	(ARROW)	21 x	21	--	--	--	--	--	--	--	--
27	R11-54F(2)	--	48 x	30	--	--	--	2	10.000	--	--	--
28	R11-54F(2)	--	48 x	30	--	--	--	2	10.000	--	--	--
29	R11-54F(2)	--	48 x	30	--	--	--	2	10.000	--	--	--
	TOTALS				266.750	17	14	21	30	0	--	--

SHEET 1 OF 1

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	PERMANENT SIGNING QUANTITIES	SHEET:	E

3

3

OVERHEAD SIGN SUPPORTS - MISC QUANTITIES CATEGORY CODE 0010 PROJECT 1100-33-70

LOCATION	OVERHEAD SIGN SUPPORT STRUCTURE S-40-974 L.S. 641.8100.01
SB ON RAMP FROM GOOD HOPE ROAD	1
TOTAL	1

PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	OVERHEAD SIGN SUPPORT QUANTITIES	SHEET:	**E**

CATEGORY 0010
LIGHTING REMOVAL ITEMS

204.0195 REMOVING CONCRETE BASES
653.0905 REMOVING PULL BOXES
SPV.0060.01 REMOVING LUMINAIRES
SPV.0060.02 REMOVING LIGHTING UNITS
SPV.0060.03 LAMP DISPOSAL HIGH INTENSITY DISCHARGE
SPV.0060.04 REMOVING DISTRIBUTION CENTERS

SYSTEM	LOCATION	OFFSET	ITEM	204.0195 REMOVING CONCRETE BASES EACH	653.0905 REMOVING PULL BOXES EACH	SPV.0060.01 REMOVING LUMINAIRES EACH	SPV.0060.02 REMOVING LIGHTING UNITS EACH	SPV.0060.03 LAMP DISPOSAL H.I.D. EACH	SPV.0060.04 REMOVING DISTRIBUTION CENTERS EACH
HL-40-WG	1770+55	10' LT	PULL BOX	--	1	--	--	--	--
HL-40-WG	1770+55	40' RT	PULL BOX	--	1	--	--	--	--
HL-40-WG	1770+67	5' LT	LIGHT POLE (EWG23)	1	--	--	1	1	--
HL-40-WG	1772+64	10' LT	LUMINAIRE	--	--	1	--	1	--
HL-40-WG	1774+61	10' LT	LUMINAIRE	--	--	1	--	1	--
HL-40-WG	2099+74	10' RT	LUMINAIRE	--	--	1	--	1	--
HL-40-WG	2101+21	15' RT	LUMINAIRE	--	--	1	--	1	--
HL-40-WG	2437+14	10' LT	LUMINAIRE	--	--	1	--	1	--
HL-40-WG	2439+11	10' LT	LUMINAIRE	--	--	1	--	1	--
HL-40-WG	2441+08	10' LT	LUMINAIRE	--	--	1	--	1	--
HL-40-WG	2442+91	10' LT	LUMINAIRE	--	--	1	--	1	--
HL-40-WG	2444+55	10' LT	LUMINAIRE	--	--	1	--	1	--
HL-40-WG	2446+19	10' LT	LUMINAIRE	--	--	1	--	1	--
HL-40-WG	1769+95	150' LT	CONTROL CABINET	1	--	--	--	--	1
HL-40-WG	1768+70	20' LT	LUMINAIRE	--	--	1	--	1	--
HL-40-WG	1766+40	20' LT	LUMINAIRE	--	--	1	--	1	--
HL-40-WG	2435+17	10' LT	LUMINAIRE	--	--	1	--	1	--
HL-40-WG	2432+87	20' LT	LUMINAIRE	--	--	1	--	1	--
	TOTALS			2	2	14	1	15	1

CATEGORY 0010
LIGHTING PULL BOX QUANTITIES

SPV.0060.05 PULL BOXES STEEL 24X42-INCH GROUNDED **

** MODIFIED IN THE SPECIAL PROVISIONS

SYSTEM	STATION	OFFSET	LABEL	SPV.0060.05 PULL BOX GROUNDED 24x42 EACH
HL-40-WG	1769+50	140' LT	LPB1	1
HL-40-HP	1770+30	40' LT	LPB2	1
HL-40-HP	1770+30	50' RT	LPB3	1
	TOTAL			3

CATEGORY 0010
LIGHTING BRANCH CIRCUIT CONDUIT

652.0225 CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH
652.0235 CONDUIT RIGID NONMETALLIC SCHEDULE 40 3-INCH
652.0615 CONDUIT SPECIAL 3-INCH

SYSTEM	LOCATION TO LOCATION	652.0225 CONDUIT 2-INCH SCHEDULE 40 LF	652.0235 CONDUIT 3-INCH SCHEDULE 40 LF	652.0615 CONDUIT SPECIAL 3-INCH LF
HL-40-WG	HL-40-WG TO LPB1	--	50	--
HL-40-WG	HL-40-WG TO EXISTING LPB1	--	50	--
HL-40-HP	HL-40-HP TO EXISTING LPB5	--	50	--
HL-40-HP	EXISTING LPB5 TO LPB2	--	100	--
HL-40-HP	LPB2 TO EXISTING LPB6	220	--	--
HL-40-HP	LPB2 TO POLE AHP1	30	--	--
HL-40-HP	LPB2 TO LPB3	--	--	100
HL-40-HP	LPB3 TO POLE CHP1	130	--	--
	TOTALS	380	250	100

CATEGORY 0010
LIGHTING WIRE QUANTITIES
240/480 VAC 3-WIRE GROUNDED NEUTRAL SYSTEM

655.0620 ELECTRICAL WIRE LIGHTING 8 AWG
655.0630 ELECTRICAL WIRE LIGHTING 4 AWG

SYSTEM	NETWORK	LOCATION TO LOCATION	DISTANCE	655.0620 8 AWG LF	655.0630 4 AWG LF
HL-40-WG	A/B/N/G	HL-40-WG TO LPB1 TO EXISTING LPB3 TO EXISTING LPB4 TO POLE AWG4/BWG4	505	--	2020
HL-40-WG	C/D/N/G	HL-40-WG TO EXISTING LPB1 TO EXISTING LPB2 TO POLE CWG1/DWG1	320	1,280	--
HL-40-WG	E/F/N/G	HL-40-WG TO LPB1 TO EXISTING LPB3 TO POLE EWG1	280	--	1120
HL-40-WG	E/F/N/G	POLE EWG1 TO EXISTING LPB3 TO EXISTING LPB4 TO POLE EWG3/FWG3	765	--	3060
HL-40-HP	A/B/N/G	HL-40-HP TO EXISTING LPB5 TO LPB2 TO POLE AHP1	180	--	720
HL-40-HP	A/B/N/G	POLE AHP1 TO LPB2 TO EXISTING LPB6 TO POLE BHP2	260	--	1,040
HL-40-HP	C/D/N/G	HL-40-HP TO EXISTING LPB5 TO LPB2 TO LPB3 TO POLE CHP1	380	--	1,520
		TOTALS		1,280	3,280

CATEGORY 0010
MISCELLANEOUS LIGHTING ITEMS

ITEM NO	UNIT	QUANTITY	ITEM
SPV.0105.01	LS	1	LIGHTING SYSTEM INTEGRATOR

CATEGORY 0010
LIGHTING DISTRIBUTION CENTERS - TOWN OF BROOKFIELD

655.0640 ELECTRICAL WIRE LIGHTING 1 AWG
656.0200.01 ELECTRICAL SERVICE METER BREAKER PEDESTAL HL-40-WG
656.0200.02 ELECTRICAL SERVICE METER BREAKER PEDESTAL HL-40-HP
659.0802 PLAQUES SEQUENCE IDENTIFICATION *
SPV.0060.06 LIGHTING DISTRIBUTION CENTERS
SPV.0060.09 CONCRETE CONTROL CABINET BASES SPECIAL

* ADDITIONAL QUANTITIES FOUND ELSEWHERE

SEQUENCE	LOCATION	655.0640 ELECTRICAL WIRE 1 AWG L.F	656.0200 SERVICE LUMP SUM	659.0802 PLAQUES SEQUENCE IDENT. EACH	SPV.0060.06 LIGTHING DISTRIBUTION CENTERS EACH	SPV.0060.09 CONCRETE CONTROL CABINET BASES SPECIAL EACH
HL-40-WG	1769+80, 130' LT	18	1	5	1	1
HL-40-HP	1770+80, 130' LT	18	1	5	1	1
	TOTALS	36	2	10 *	2	2

PLAQUE TEXT 480 VAC (2 REQUIRED PER LOCATION; METER PEDESTAL AND CABINET DOOR)

PLAQUE TEXT HL-40-WG
GOOD HOPE ROAD
480 VAC WARNING DECAL (METER PEDESTAL AND CABINET DOOR)

PLAQUE TEXT HL-40-HP
GOOD HOPE ROAD
480 VAC WARNING DECAL (METER PEDESTAL AND CABINET DOOR)

CATEGORY 0010
LIGHT POLE QUANTITIES
240/480 VAC 3-WIRE GROUNDED NEUTRAL SYSTEMS

655.0610 ELECTRICAL WIRE LIGHTING 12 AWG
657.0210 TRANSFORMER BASES BREAKAWAY 15-17 INCH BOLT CIRCLE
657.0340 POLES TYPE E
657.0720 LUMINAIRE ARMS TRUSS TYPE 6-INCH CLAMP 20-FOOT
SPV.0060.07 LUMINAIRES LED CATEGORY C
SPV.0060.08 LUMINAIRES LED CATEGORY D
659.0802 PLAQUES SEQUENCE IDENTIFICATION

SYSTEM	SEQUENCE I. D.	STATION	OFFSET	BOLT PROJECTION	654.0108 CONCRETE BASES TYPE 8 EACH	655.0610 WIRE NO. 12 L.F.	657.0210 TRANSFRMR BASES 15-17 B/C EACH	657.0340 POLES TYPE E EACH	657.0720 LUMINAIRE ARMS TRUSS TYPE 6-INCH CLAMP 20-FOOT EACH	SPV.0060.07 LUMINAIRES LED CATEGORY C EACH	SPV.0060.08 LUMINAIRES LED CATEGORY D EACH	659.0802 SEQUENCE PLAQUES EACH
HL-40-WG	CWG1/DWG1	25+80	115' RIGHT	--	--	--	--	--	--	--	--	2
HL-40-WG	DWG2/CWG2	27+30	115' RIGHT	--	--	--	--	--	--	--	--	2
HL-40-WG	DWG3	26+80	50' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-WG	CWG4	27+30	50' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-WG	DWG5	28+60	50' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-WG	CWG6	30+00	50' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-WG	EWG1	1768+70	20' LEFT	--	--	--	--	--	--	--	1	1
HL-40-WG	FWG2	1766+40	20' LEFT	--	--	--	--	--	--	--	1	1
HL-40-WG	EWG3/FWG3	91+40	CL	--	--	--	--	--	--	--	--	2
HL-40-WG	FWG4/EWG4	93+75	CL	--	--	--	--	--	--	--	--	2
HL-40-WG	EWG5/FWG5	96+40	CL	--	--	--	--	--	--	--	--	2
HL-40-WG	FWG6/EWG6	103+20	CL	--	--	--	--	--	--	--	--	2
HL-40-WG	EWG7/FWG7	105+65	40' LEFT	--	--	--	--	--	--	--	--	2
HL-40-WG	FWG8/EWG8	108+15	40' LEFT	--	--	--	--	--	--	--	--	2
HL-40-WG	EWG9/FWG9	110+60	40' LEFT	--	--	--	--	--	--	--	--	2
HL-40-HP	AHP1	1770+50	21' LEFT	3-INCH	1	225	1	1	1	--	1	1
HL-40-HP	BHP2	1772+64	10' LEFT	--	--	--	--	--	--	1	--	1
HL-40-HP	AHP3	1774+61	10' LEFT	--	--	--	--	--	--	1	--	1
HL-40-HP	BHP4/AHP4	97+28	10' LEFT	--	--	--	--	--	--	--	--	2
HL-40-HP	BHP5	2246+19	10' RIGHT	--	--	--	--	--	--	1	--	1
HL-40-HP	AHP6	2444+55	10' RIGHT	--	--	--	--	--	--	1	--	1
HL-40-HP	BHP7	2442+91	10' RIGHT	--	--	--	--	--	--	1	--	1
HL-40-HP	AHP8	2441+08	10' RIGHT	--	--	--	--	--	--	1	--	1
HL-40-HP	BHP9	2439+11	10' RIGHT	--	--	--	--	--	--	1	--	1
HL-40-HP	AHP10	2437+14	10' RIGHT	--	--	--	--	--	--	1	--	1
HL-40-HP	BHP11	2435+17	10' RIGHT	--	--	--	--	--	--	--	1	1
HL-40-HP	AHP12	2432+87	20' RIGHT	--	--	--	--	--	--	--	1	1
HL-40-HP	2MV-AHP/BHP	97+51	SIGN BRIDGE	--	--	--	--	--	--	--	--	2
HL-40-HP	BHP13	99+41	60' LEFT	--	--	--	--	--	--	--	--	1
HL-40-HP	AHP14	101+05	60' LEFT	--	--	--	--	--	--	--	--	1
HL-40-HP	CHP1	2099+74	10' RIGHT	--	--	--	--	--	--	1	--	1
HL-40-HP	DHP2	2101+21	15' RIGHT	--	--	--	--	--	--	1	--	1
HL-40-HP	CHP3	99+41	55' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-HP	DHP4	101+05	55' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-HP	CHP5	8+60	30' LEFT	--	--	--	--	--	--	--	--	1
HL-40-HP	CHP6/DHP6	103+02	5' LEFT	--	--	--	--	--	--	--	--	2
HL-40-HP	DHP7	899+90	30' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-HP	DHP8	901+60	25' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-HP	DHP9	903+55	25' RIGHT	--	--	--	--	--	--	--	--	1

SYSTEM	SEQUENCE I. D.	STATION	OFFSET	BOLT PROJECTION	654.0108 CONCRETE BASES TYPE 8 EACH	655.0610 WIRE NO. 12 L.F.	657.0210 TRANSFRMR BASES 15-17 B/C EACH	657.0340 POLES TYPE E EACH	657.0720 LUMINAIRE ARMS TRUSS TYPE 6-INCH CLAMP 20-FOOT EACH	SPV.0060.07 LUMINAIRES LED CATEGORY C EACH	SPV.0060.08 LUMINAIRES LED CATEGORY D EACH	659.0802 SEQUENCE PLAQUES EACH
HL-40-HP	DHP10	905+40	25 RIGHT	--	--	--	--	--	--	--	--	1
HL-40-HP	DHP11	907+40	30' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-HP	DHP12	909+55	15' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-HP	DHP13/CHP13	104+99	CL	--	--	--	--	--	--	--	--	2
HL-40-HP	CHP14	106+96	CL	--	--	--	--	--	--	--	--	1
HL-40-HP	3MV-CHP/DHP/CHP	108+27	SIGN BRIDGE	--	--	--	--	--	--	--	--	3
HL-40-HP	CHP15	7+30	30' LEFT	--	--	--	--	--	--	--	--	1
HL-40-HP	CHP16	7+55	15' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-HP	CHP17	5+50	10' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-HP	CHP18	3+50	10' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-HP	CHP19	1+45	15' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-HP	CHP20	85+45	90' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-HP	EHP1/FHP1	95+21	10' LEFT	--	--	--	--	--	--	--	--	2
HL-40-HP	FHP2/EHP2	93+18	2.5' LEFT	--	--	--	--	--	--	--	--	2
HL-40-HP	EHP3/FHP3	91+20	10' RIGHT	--	--	--	--	--	--	--	--	2
HL-40-HP	EHP4	32+09	20' LEFT	--	--	--	--	--	--	--	--	1
HL-40-HP	FHP5/EHP5	89+90	CL	--	--	--	--	--	--	--	--	2
HL-40-HP	EHP6	28+60	30' RIGHT	--	--	--	--	--	--	--	--	1
HL-40-HP	FHP7	30+65	20' LEFT	--	--	--	--	--	--	--	--	1
HL-40-HP	EHP8	32+80	20' LEFT	--	--	--	--	--	--	--	--	1
HL-40-HP	FHP9	34+90	40' LEFT	--	--	--	--	--	--	--	--	1
HL-40-HP	EHP10	36+00	40' LEFT	--	--	--	--	--	--	--	--	1
HL-40-HP	FHP11	37+55	20' LEFT	--	--	--	--	--	--	--	--	1
HL-40-HP	EHP12	39+50	20' LEFT	--	--	--	--	--	--	--	--	1
HL-40-HP	2MV-EHP/FHP	41+50	SIGN BRIDGE	--	--	--	--	--	--	--	--	2
HL-40-HP	FHP13	41+50	30' LEFT	--	--	--	--	--	--	--	--	1
				TOTALS	1	225	1	1	1	10	5	85

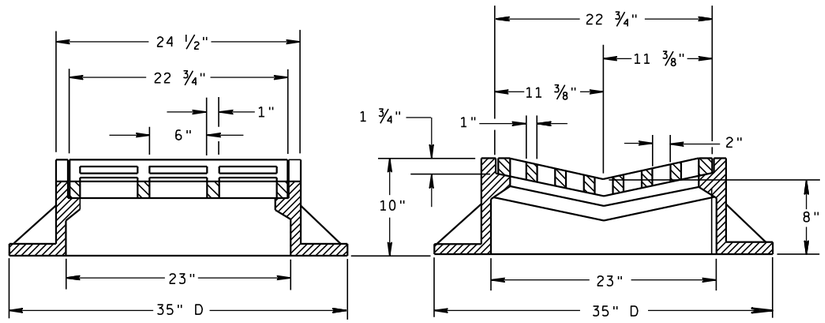
SHEET 4 OF 4

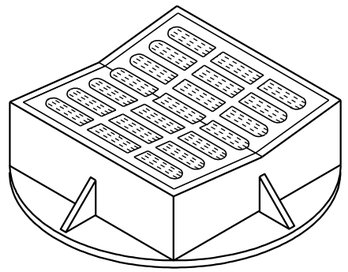
PROJECT NO: 1100-33-70	HWY: USH 41/45	COUNTY: MILWAUKEE	MISCELLANEOUS QUANTITIES	SHEET 82	E

Standard Detail Drawing List

08A05-18B	INLET COVERS TYPE B, B-A, C, MS, MS-A, & WM
08A05-18D	INLET COVER, TYPE BW, Z MANHOLE COVERS, TYPE K, J, J-S, L & M
08B09-01	MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER
08C06-01	INLETS 3-FT AND 4-FT DIAMETER
08C07-01	INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT
08D01-17	CONCRETE CURB, CONCRETE CURB AND GUTTER AND TIES
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
08F05-01	CLASS "B" BEDDING FOR CULVERT PIPE OR STORM SEWER
09B02-07	CONDUIT
09B04-10	PULL BOX
09C02-06	CONCRETE BASES, TYPES 1, 2 & 5
09C03-03	TRANSFORMER/PEDESTAL BASES
09C09-04	CONCRETE BASE, TYPE 8
09C10-02	TRANSFORMER BASE FOR 15" BOLT CIRCLE
09D01-04	CABINET SERVICE INSTALLATION (METER BREAKER PEDESTAL)
09E01-12D	POLE MOUNTINGS FOR LIGHTING UNITS, TYPE 5 (30 FEET)
09E02-03	FREEWAY LIGHTING UNIT POLE WIRING
09F15-03B	LOOP DETECTOR INSTALLED IN BASE COURSE WITH PULL (SPLICE) BOX OFF ROADWAY (OPTION 2)
10A17-03C	POLES, TYPES E, EBR, E2 ALUMINUM 49'-0" SHAFT
10A18-04B	LUMINAIRE ARMS, TRUSS TYPE 6-INCH CLAMP
11B02-02	CONCRETE MEDIAN NOSE
12A04-03	STRUCTURE IDENTIFICATION PLAQUES, RAMP GATES, SIGN BRIDGES & OVERHEAD SIGN SUPPORTS & TRAFFIC SIGNALS
13C01-15	CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES
13C09-09A	CONCRETE PAVEMENT REPAIR AND REPLACEMENT
13C09-09B	CONCRETE PAVEMENT REPAIR AND REPLACEMENT
13C09-09C	CONCRETE PAVEMENT REPAIR AND REPLACEMENT
13C13-07	URBAN DOWELED CONCRETE PAVEMENT
13C18-01A	CONCRETE PAVEMENT JOINTING
13C18-01B	CONCRETE PAVEMENT STEEL REINFORCEMENT
13C18-01C	CONCRETE PAVEMENT JOINT TIES
13C18-01D	CONCRETE PAVEMENT JOINTING AT UTILITY FIXTURES
14B15-07A	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-07B	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B18-06A	STEEL PLATE BEAM GUARD, CLASS "A" (AT BRIDGES, OBSTACLES AND SIDEROADS/DRIVEWAYS)
14B20-11A	STEEL THRIE BEAM STRUCTURE APPROACH
14B20-11B	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO SQUARE END PARAPETS
14B20-11G	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTOR PLATE DETAIL
14B27-01A	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B27-01B	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B27-01C	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B42-02A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-02B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-02C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-01A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-01B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-01C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B47-01A	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-01B	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-01C	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
15C02-04A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-04B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-04C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C05-01	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40 M.P.H. OR LESS
15C07-12A	PAVEMENT MARKING SYMBOLS
15C08-15A	PAVEMENT MARKING (MAINLINE)
15C08-15F	PAVEMENT MARKING (ISLANDS, STOP LINE & CROSS WALK)
15C23-02	30" DIAMETER CANTILEVER OVERHEAD SIGN SUPPORT BASE
15C31-01A	PAVEMENT MARKING (RAMPS AND GORES)
15D12-02	TRAFFIC CONTROL, LANE CLOSURE, SPEEDS GREATER THAN 40 M.P.H.
15D20-01	TRAFFIC CONTROL, SINGLE LANE CLOSURE, NON-FREEWAY/EXPRESSWAY

6

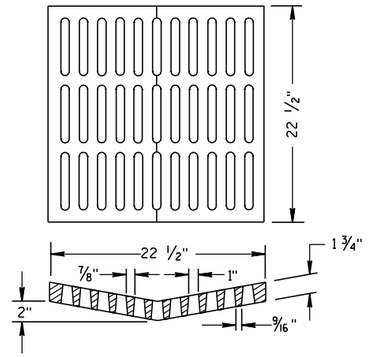




TYPE "B"

(APPROXIMATE WEIGHT 405 LBS.)

FRAME..... 294 LBS.
GRATE..... 111 LBS.

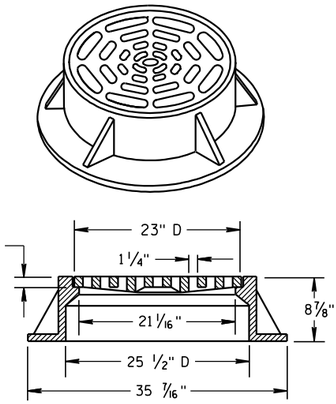


ALTERNATIVE GRATE FOR TYPE "B" COVER

(APPROXIMATE GRATE WEIGHT 134 LBS.)

USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS POSSIBLE.

NOTED AS TYPE B-A ON THE DRAINAGE TABLE



TYPE "C"

(APPROXIMATE WEIGHT 259 LBS.)

FRAME..... 152 LBS.
GRATE..... 107 LBS.

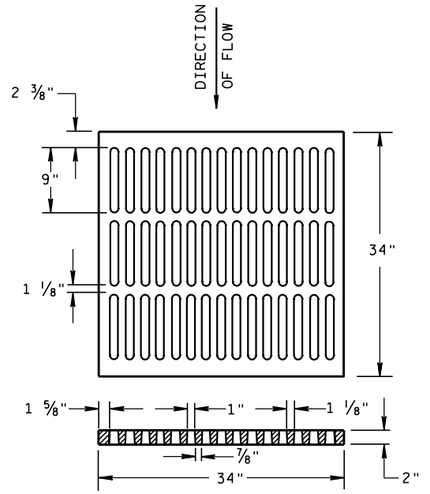
GENERAL NOTES

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

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

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

THE ACTUAL WEIGHT OF COVERS MAY VARY WITHIN 5 PERCENT, PLUS OR MINUS, OF THE APPROXIMATE WEIGHT.

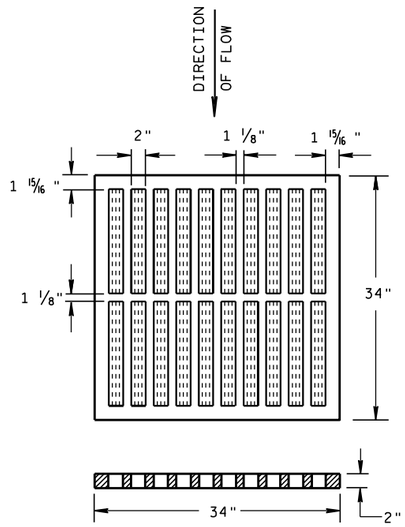


ALTERNATIVE TYPE "MS"

(APPROXIMATE GRATE WEIGHT 329 LBS.)

USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS PERMITTED

NOTED AS TYPE MS-A ON THE DRAINAGE TABLE

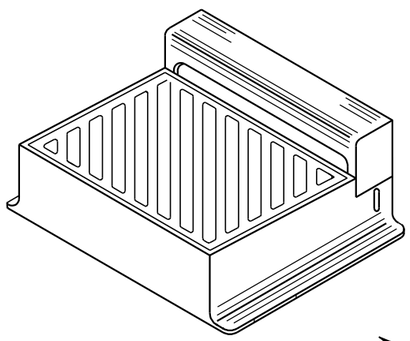


TYPE "MS"

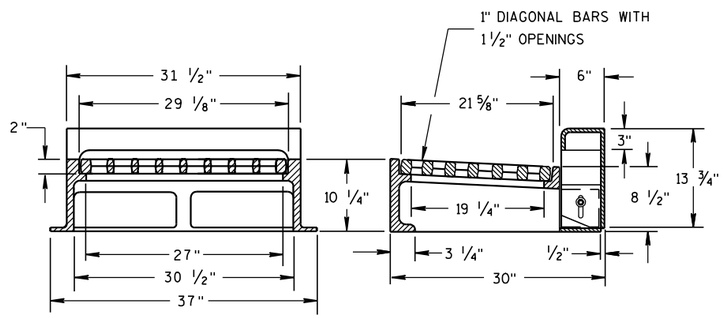
(APPROXIMATE GRATE WEIGHT 268 LBS.)

USE ON FREEWAYS AND EXPRESSWAYS

NOTED AS TYPE MS ON DRAINAGE TABLE



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



NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"

TYPE "WM"

(APPROXIMATE WEIGHT 648 LBS.)

FRAME..... 355 LBS.
GRATE..... 156 LBS.
CURB BOX..... 137 LBS.

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6/5/2012 DATE

/S/ Jerry H. [illegible]
ROADWAY STANDARDS ENGINEER

84 ENT

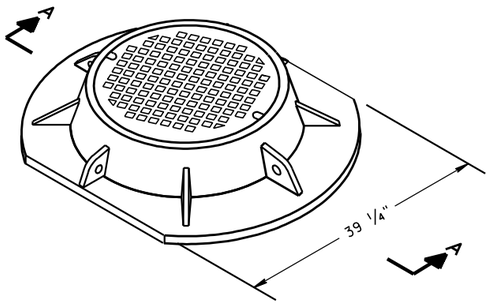
FHWA

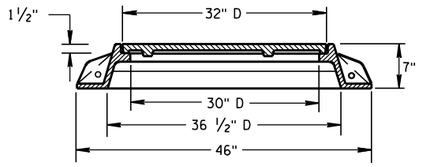
6

S.D.D. 8 A 5-18b

6

S.D.D. 8 A 5-18b



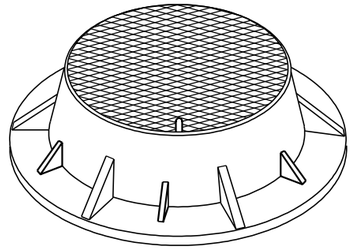


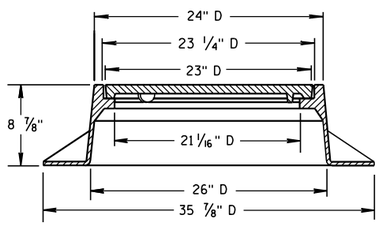
SECTION A-A

TYPE "K"

(APPROXIMATE WEIGHT 439 LBS.)

FRAME.....216 LBS.
LID.....223 LBS.

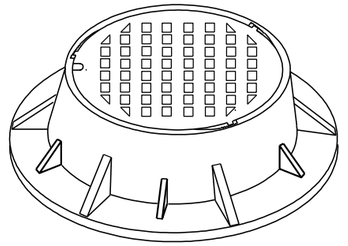


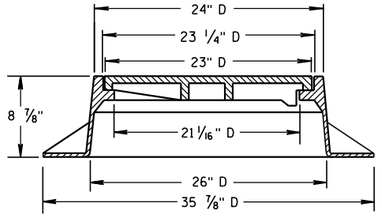


TYPE "J"

(APPROXIMATE WEIGHT 267 LBS.)

FRAME.....152 LBS.
LID.....115 LBS.





TYPE "J" SPECIAL

TYPE "B" NON-ROCKING SELF-SEAL LID

(APPROXIMATE WEIGHT 267 LBS.)

FRAME.....158 LBS.
LID.....109 LBS.

(NOTED AS TYPE J-S ON THE DRAINAGE TABLE)

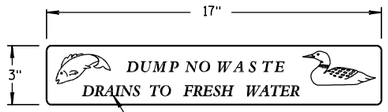
GENERAL NOTES

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.

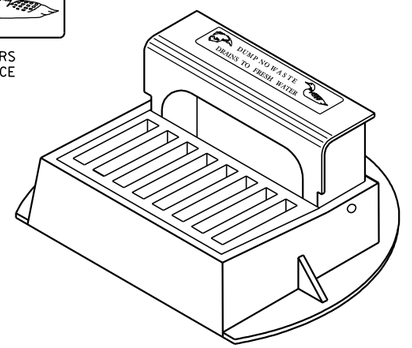
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR MANHOLE COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

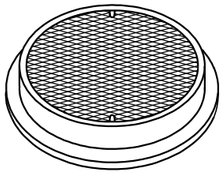
ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.

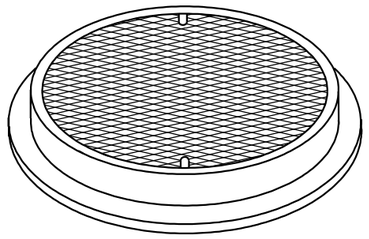
THE ACTUAL WEIGHT OF COVERS MAY VARY WITH 5 PERCENT, PLUS OR MINUS, OF THE APPROXIMATE WEIGHT.

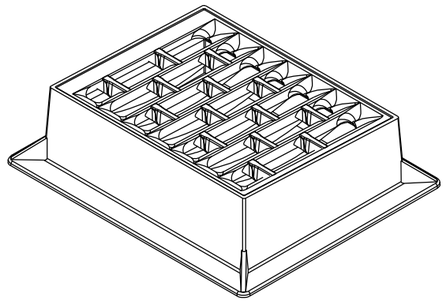


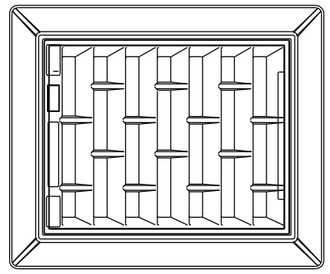
LOGO DETAIL

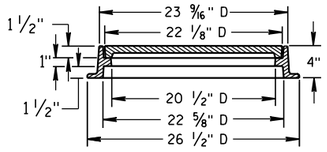








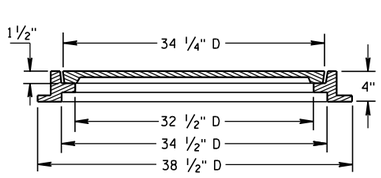




TYPE "L"

(APPROXIMATE WEIGHT 158 LBS.)

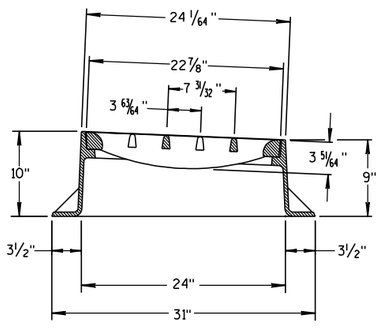
FRAME.....81 LBS.
LID.....77 LBS.

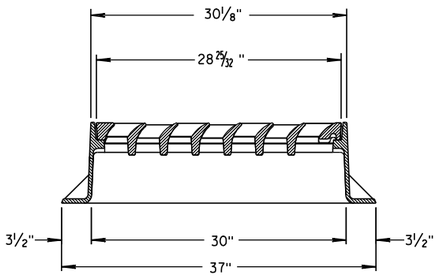


TYPE "M"

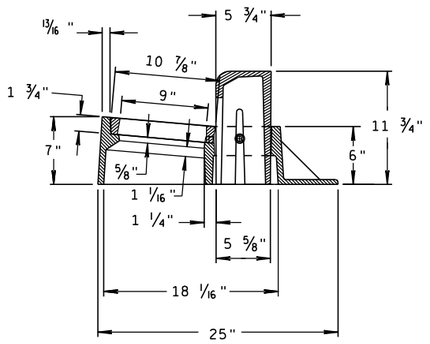
(APPROXIMATE WEIGHT 377 LBS.)

FRAME..... 125 LBS.
LID..... 252 LBS.





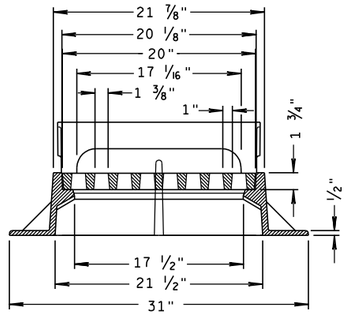
INLET COVER TYPE "BW"



INLET COVER TYPE "Z"

(APPROXIMATE WEIGHT 344 LBS.)

FRAME.....206 LBS.
GRATE..... 46 LBS.
CURB BOX..... 92 LBS.



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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6/5/2012
DATE

/S/ Jerry H. Zaas
ROADWAY STANDARDS ENGINEER

FHWA

NT

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S.D.D. 8 A 5-18d

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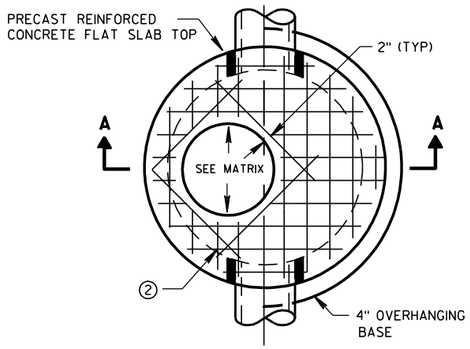
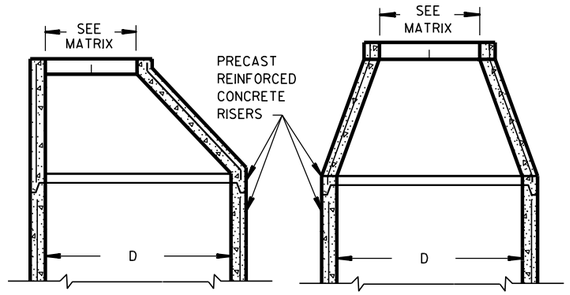
S.D.D. 8 A 5-18d

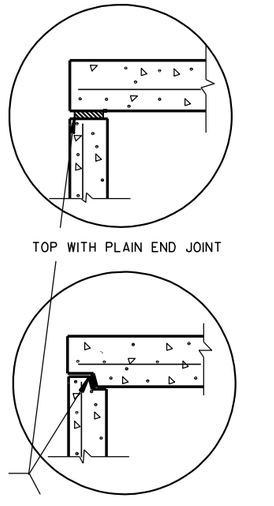


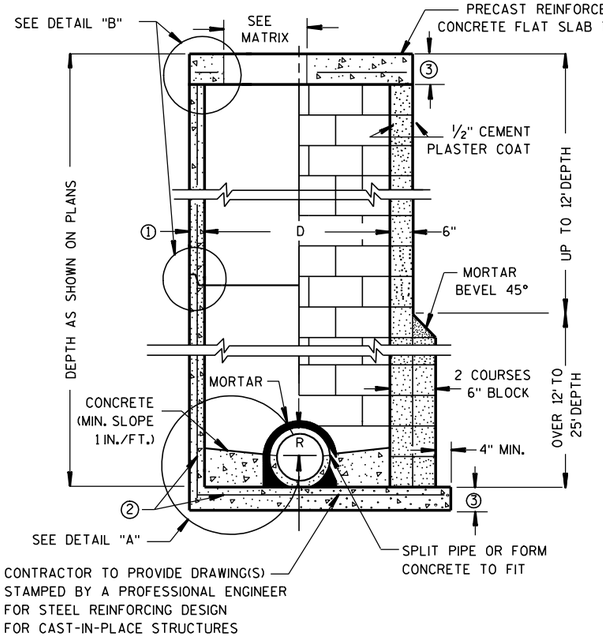
PLAN VIEW CIRCULAR OPENING



OPTIONAL PRECAST REINFORCED CONCRETE ECCENTRIC TOP

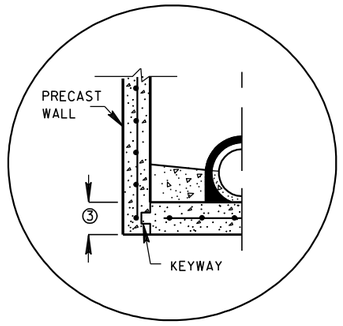
OPTIONAL PRECAST REINFORCED CONCRETE CONCENTRIC TOP



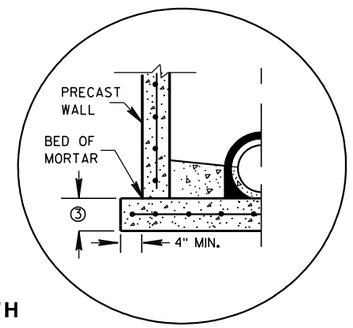


PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE

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

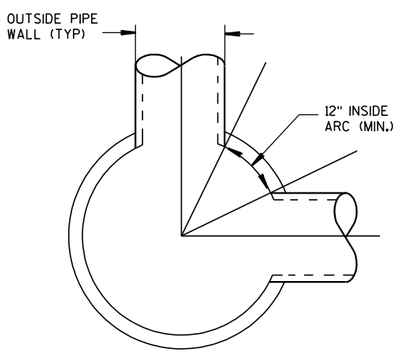


PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION

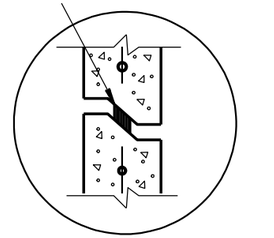


SEPERATE PRECAST REINFORCED CONCRETE BASE OPTION

DETAIL "A"



DETAIL "C"



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 MANHOLE UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MANHOLE COVER OPENING MATRIX

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

PIPE MATRIX

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

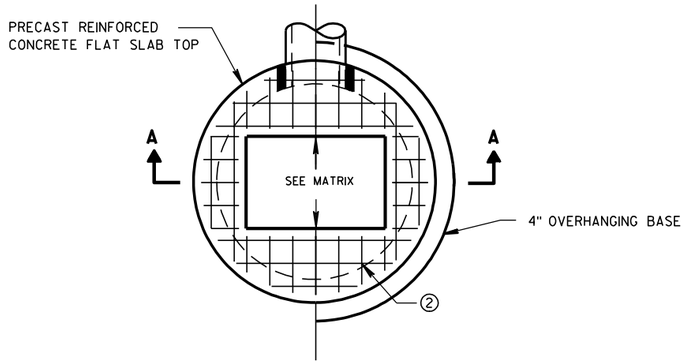
6/5/2012
DATE

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT ENGINEER

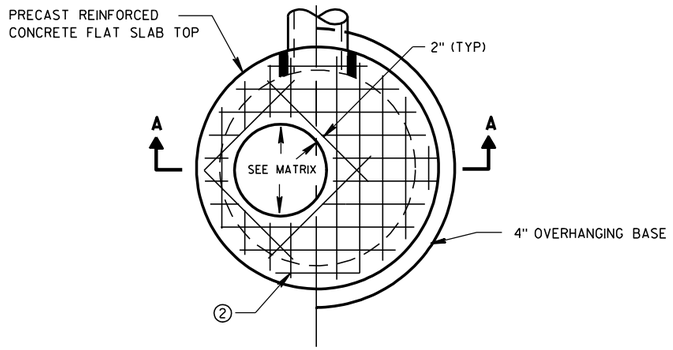
FHWA

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

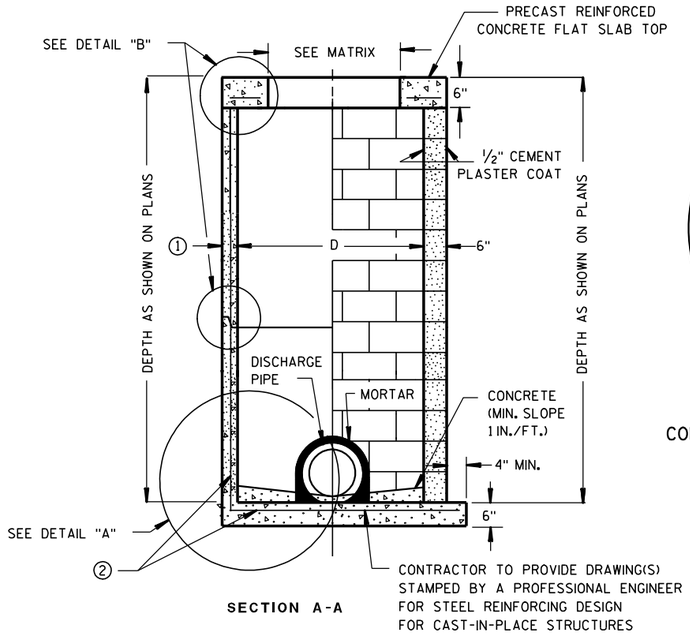
6
S.D.D. 8 B 9-1



PLAN VIEW RECTANGULAR OPENING



PLAN VIEW CIRCULAR OPENING

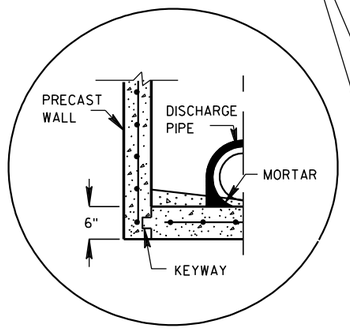


SECTION A-A

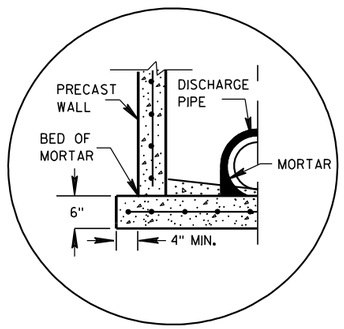
PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE

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

CIRCULAR INLETS W/ FLAT TOP

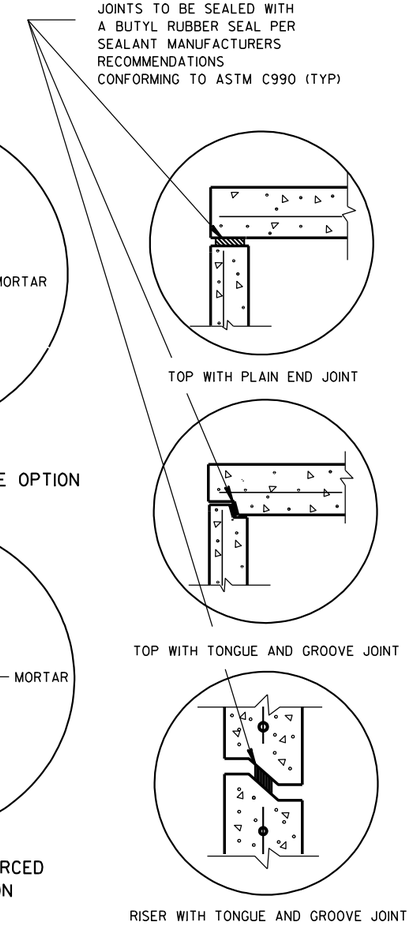


PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION



SEPERATE 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.

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

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

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 SEPERATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

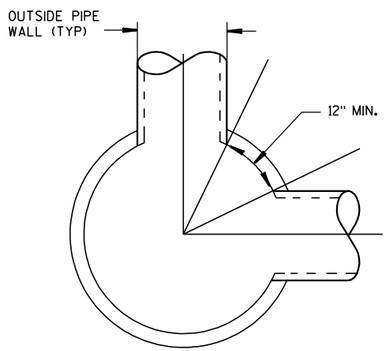
FOR ADDITIONAL CONFIGURATIONS, MAINTAIN A MINIMUM OF 12 INCHES AS MEASURED FROM THE INSIDE OF THE STRUCTURE WALL BETWEEN THE OUTSIDE PIPE WALLS OF ADJACENT PIPES. SEE DETAIL "C".

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

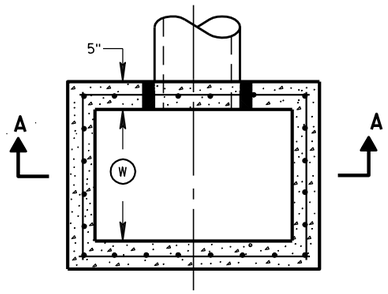
INLET SIZE	MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES	
	180° SEPARATION (IN)	90° SEPARATION (IN)
3-FT	15	12
4-FT	24	18

INLETS 3-FT AND 4-FT DIAMETER

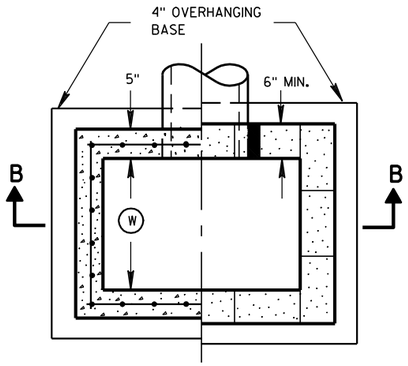
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

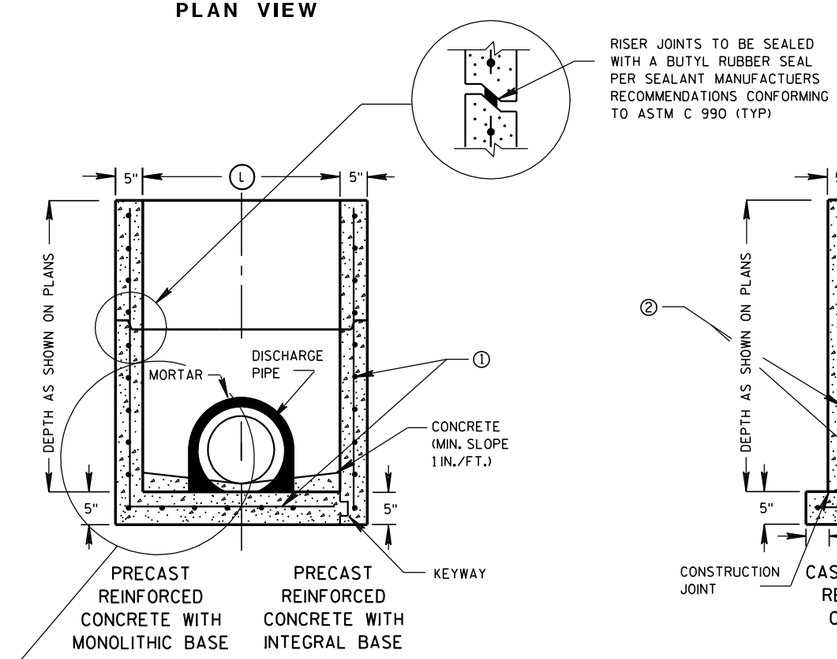
6
S.D.D. 8 C 6-1



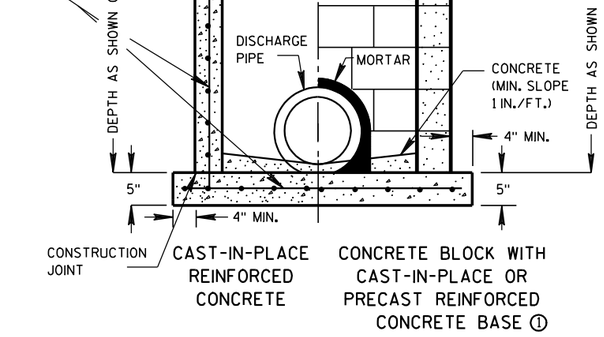
PLAN VIEW



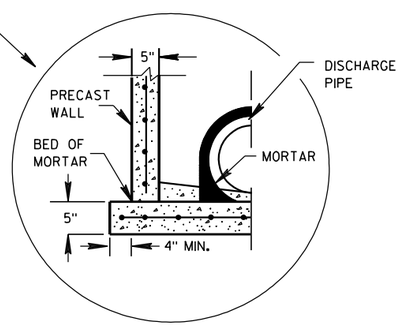
PLAN VIEW



SECTION A-A



SECTION B-B



SEPERATE PRECAST REINFORCED CONCRETE BASE OPTION

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

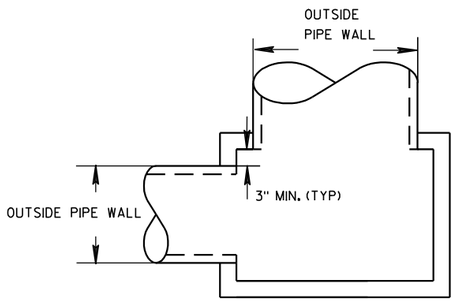
② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

INLET COVER MATRIX

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

PIPE MATRIX

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

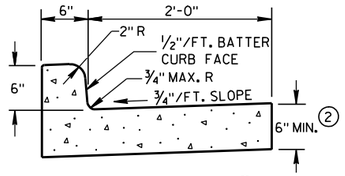


DETAIL "A"

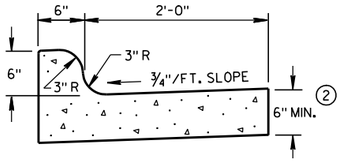
INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

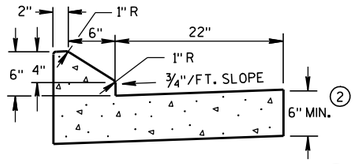
APPROVED
6/5/2012 — DATE
/S/ Jerry H. Zoda — ROADWAY STANDARDS DIRECTOR
FHWA — ENGINEER



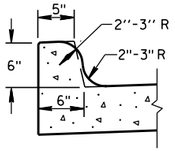
TYPES A & D (1)



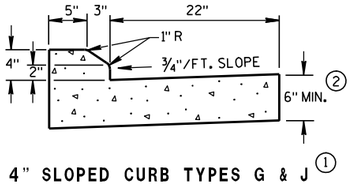
TYPES K & L (1)



6" SLOPED CURB TYPES G & J (1)

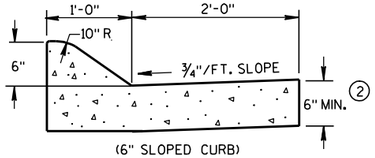


OPTIONAL CURB SHAPE FOR TYPES K & L (1)

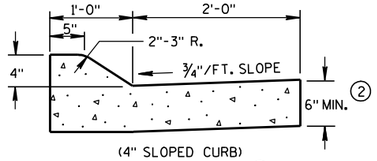


4" SLOPED CURB TYPES G & J (1)

CONCRETE CURB & GUTTER 30"

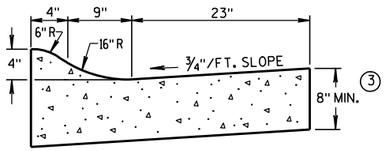


(6" SLOPED CURB)



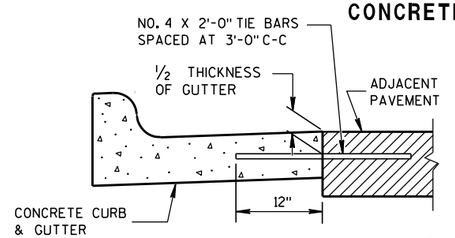
(4" SLOPED CURB)

TYPES A & D (1)

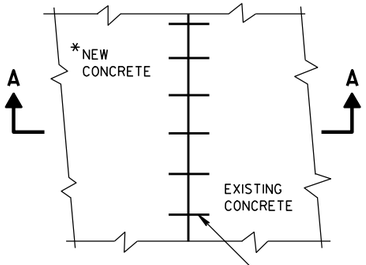


4" SLOPED CURB TYPES R & T (1) (4)

CONCRETE CURB & GUTTER 36"

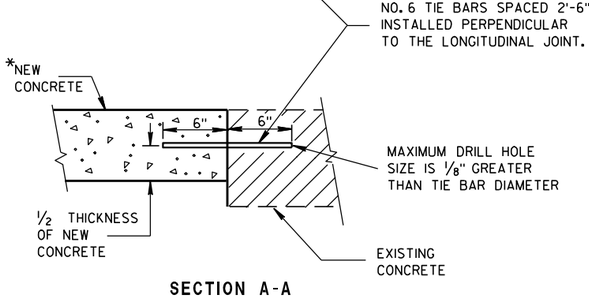


TYPICAL TIE BAR LOCATION (1)



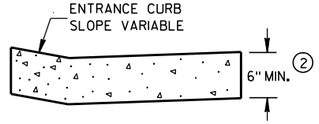
*NEW CURB & GUTTER, SURFACE DRAINS, CONCRETE PAVEMENT OR OTHER NEW CONCRETE.

PLAN VIEW



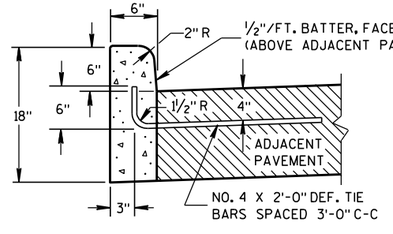
SECTION A-A

TIE BARS DRILLED INTO EXISTING PAVEMENT



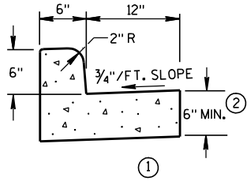
DRIVEWAY ENTRANCE CURB

(WHEN DIRECTED BY THE ENGINEER)



(1)

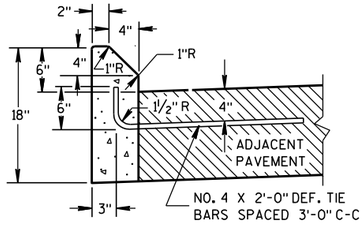
TYPES A & D



(1)

TYPES A & D

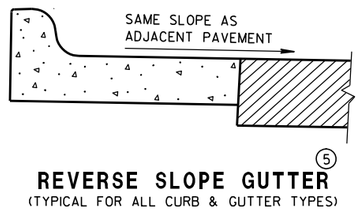
CONCRETE CURB & GUTTER 18"



(1)

TYPES G & J

CONCRETE CURB



REVERSE SLOPE GUTTER (5)

(TYPICAL FOR ALL CURB & GUTTER TYPES)

GENERAL NOTES

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

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

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

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

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

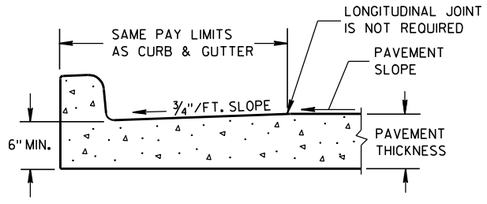
(1) TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, G, K AND R.

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

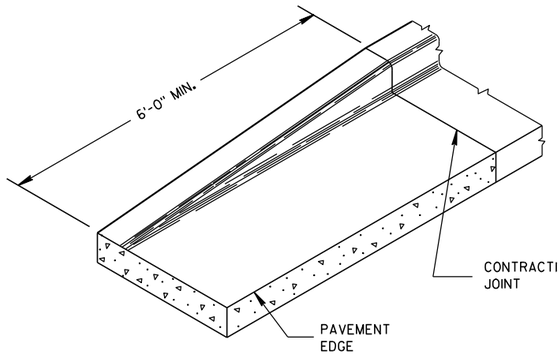
(3) THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.

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

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



PARTIAL SECTION OF PAVEMENT WITH INTEGRAL CURB & GUTTER



END SECTION CURB & GUTTER

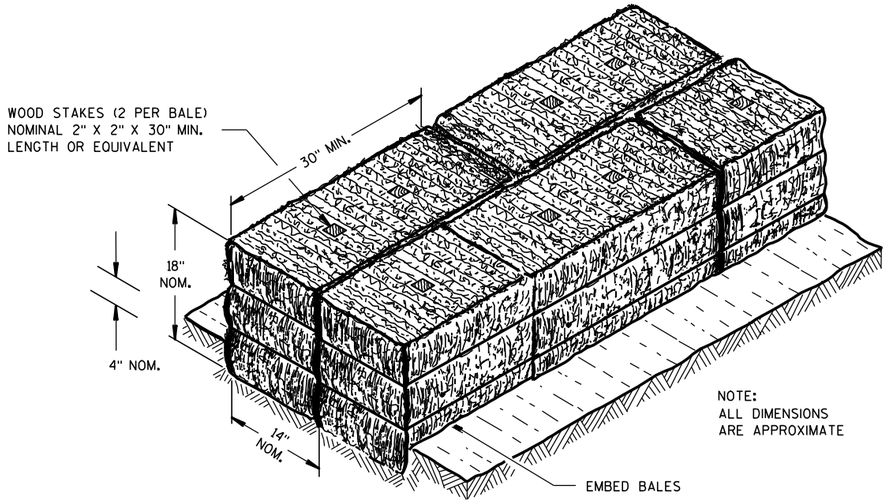
CONCRETE CURB, CONCRETE CURB & GUTTER AND TIES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

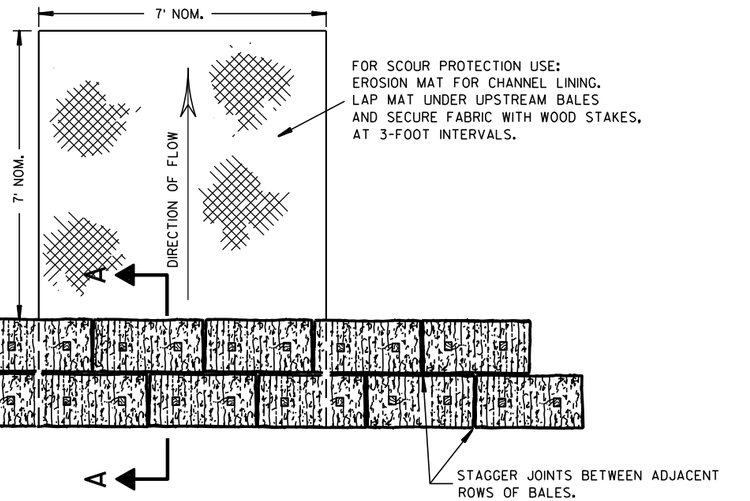
APPROVED
9/4/08 DATE
/S/ Jerry H. [illegible] ROADWAY STANDARDS ENGINEER
FHWA

6

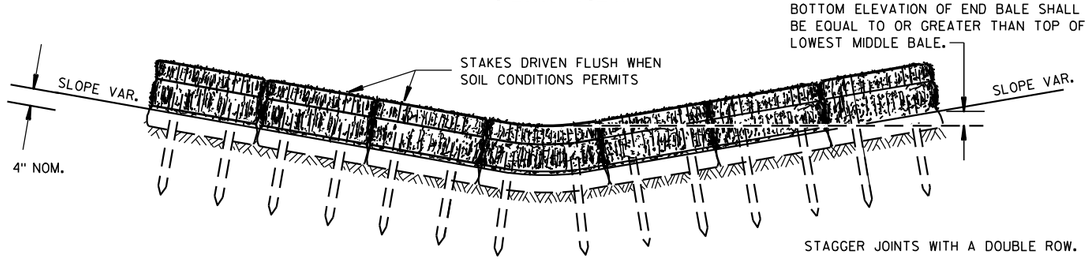
S.D.D. 8 D 1-17



SECTION A-A



PLAN VIEW



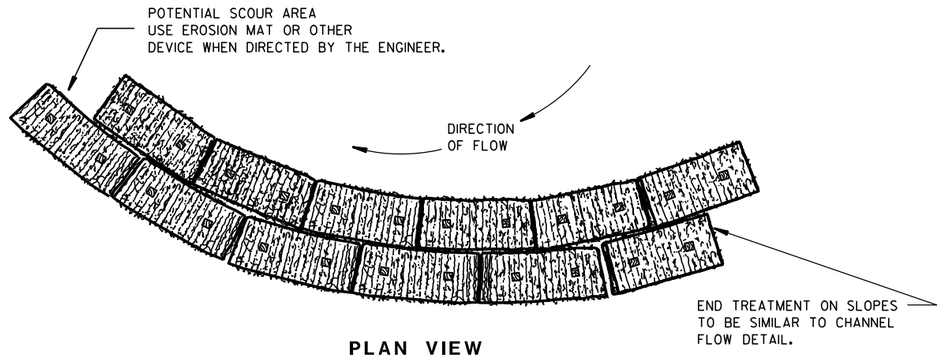
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES (1)

GENERAL NOTES

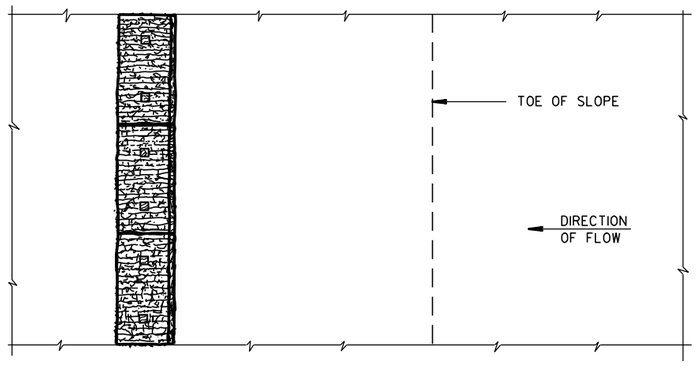
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

(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.

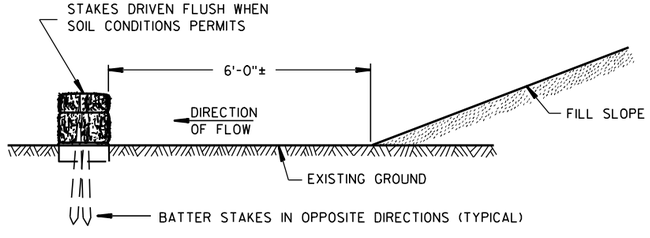


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

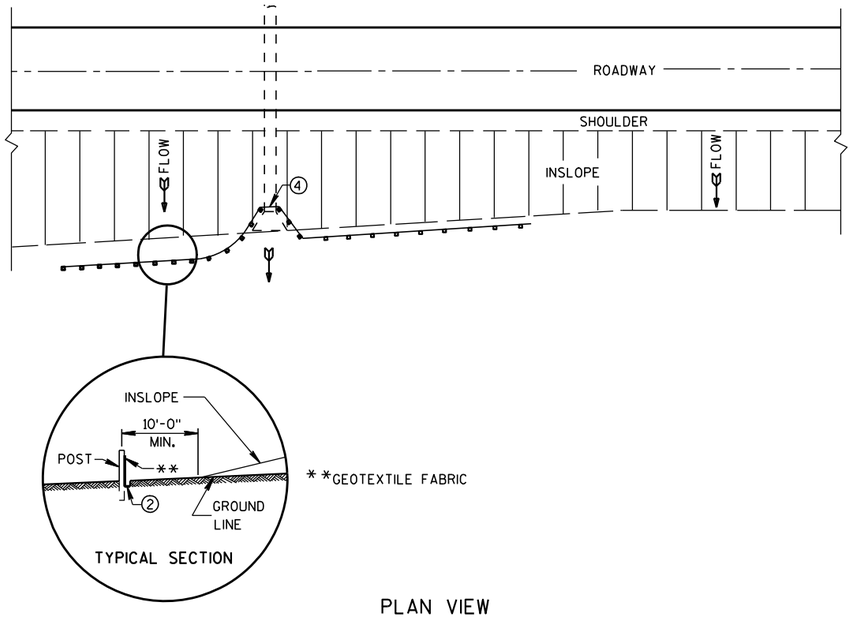
WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

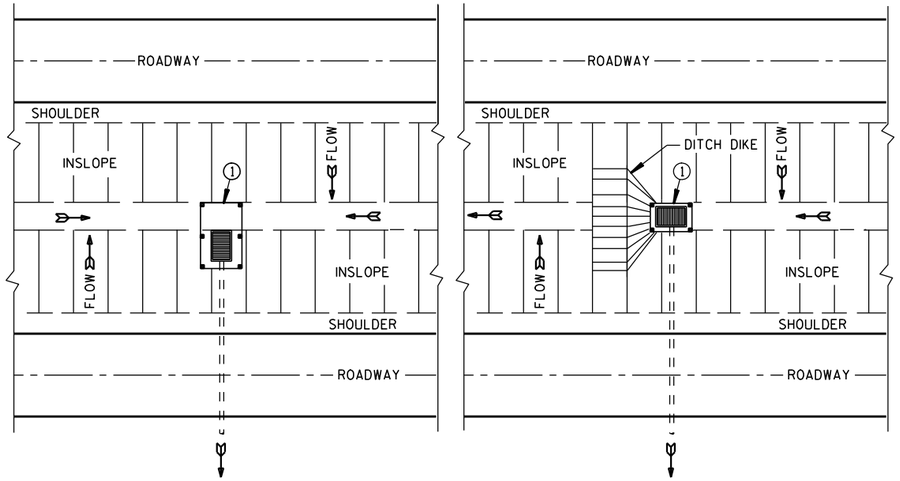
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



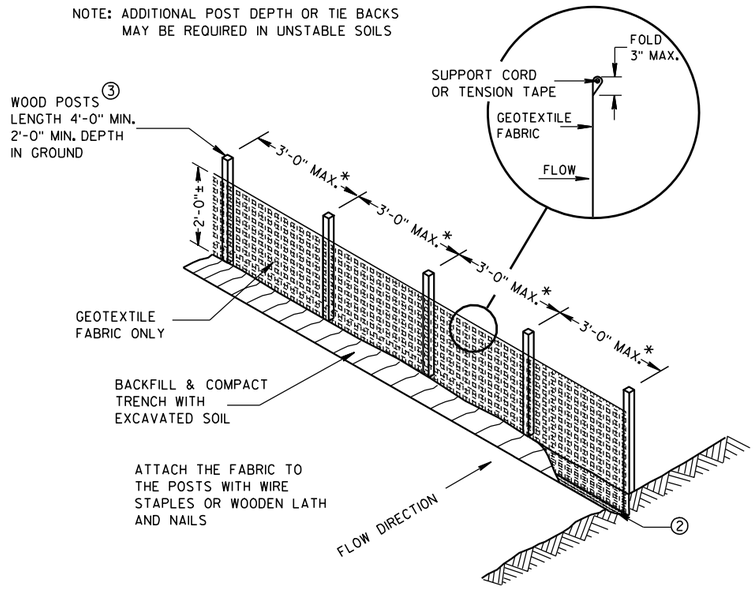
PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



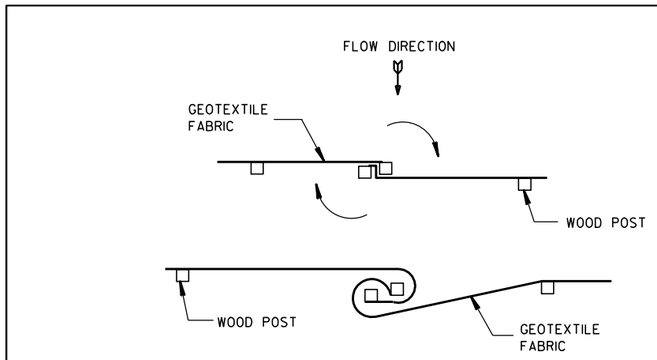
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS



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

SILT FENCE

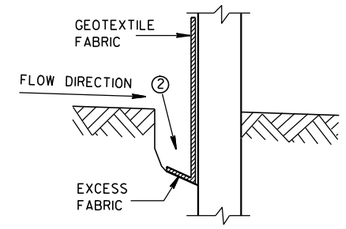


JOINING TWO LENGTHS OF SILT FENCE 5

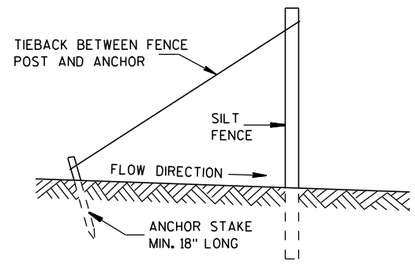
GENERAL NOTES

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

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



TRENCH DETAIL



SILT FENCE 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

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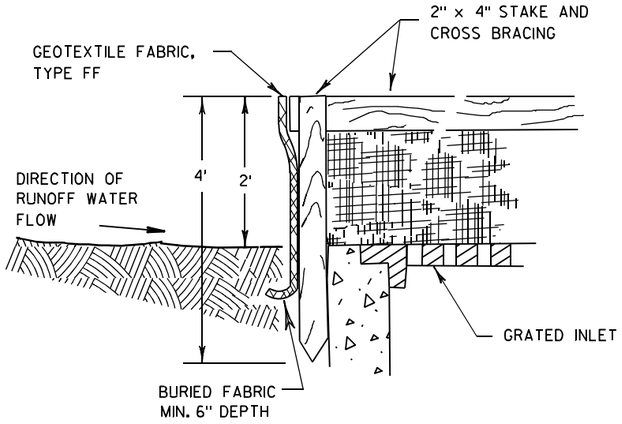
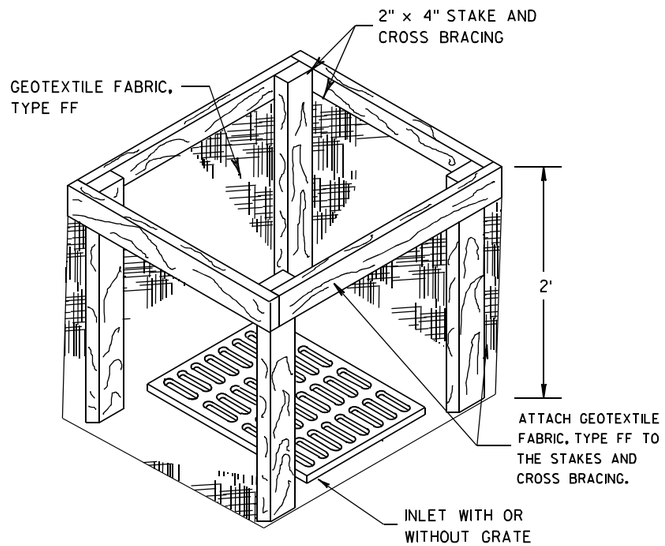
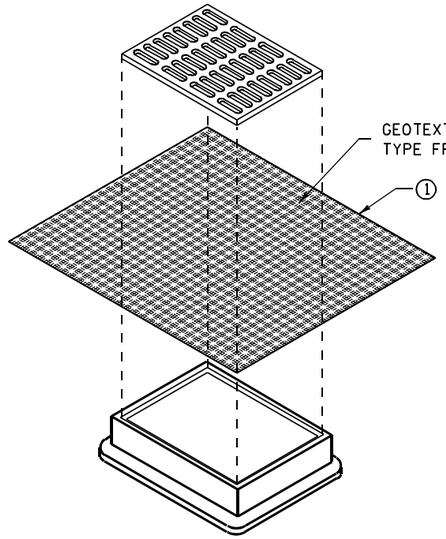
S.D.D. 8 E 9-6



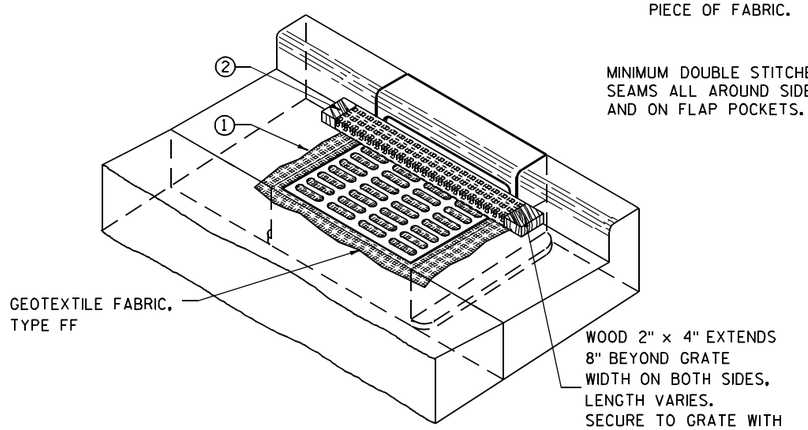


INLET PROTECTION, TYPE A

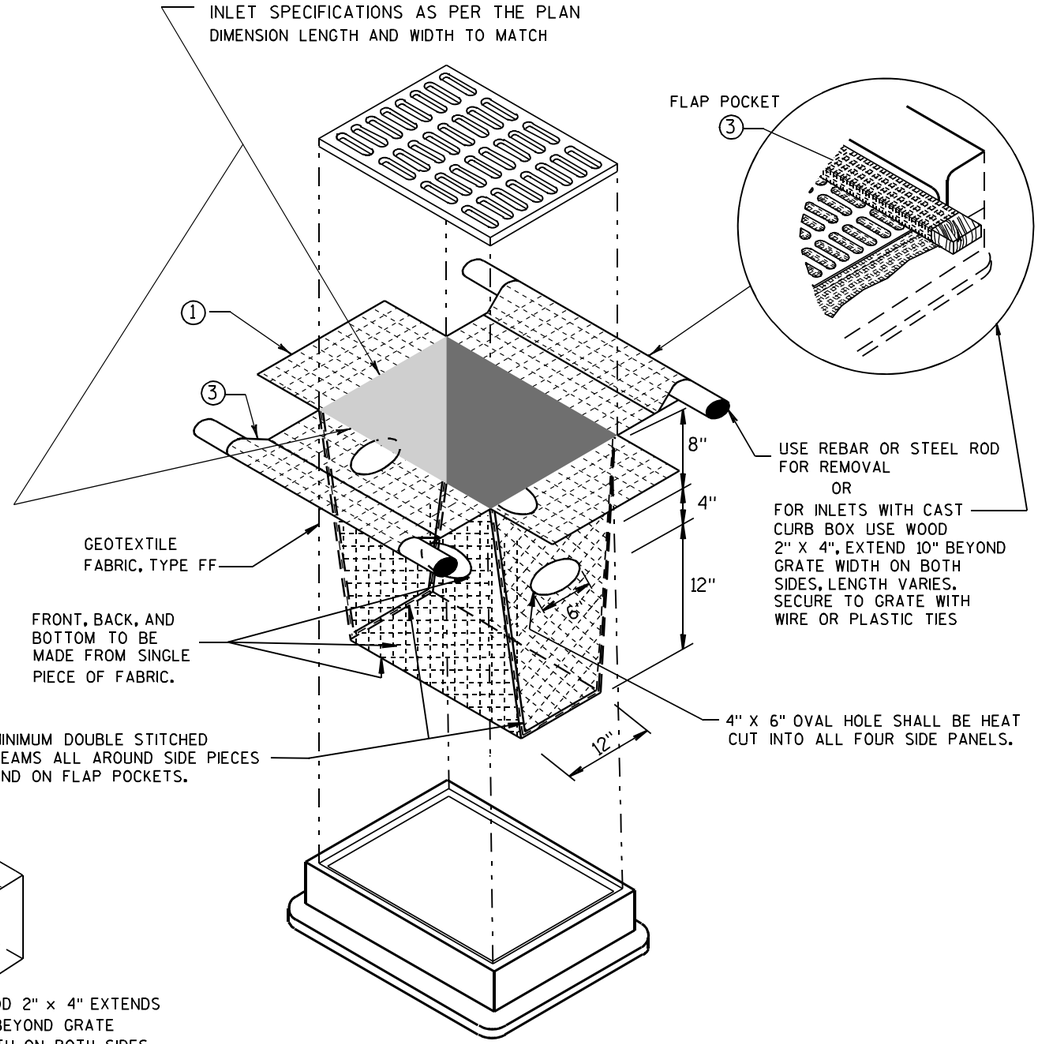


INLET PROTECTION, TYPE B
(WITHOUT CURB BOX)

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



INLET PROTECTION, TYPE C (WITH CURB BOX)



INLET PROTECTION, TYPE D

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

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

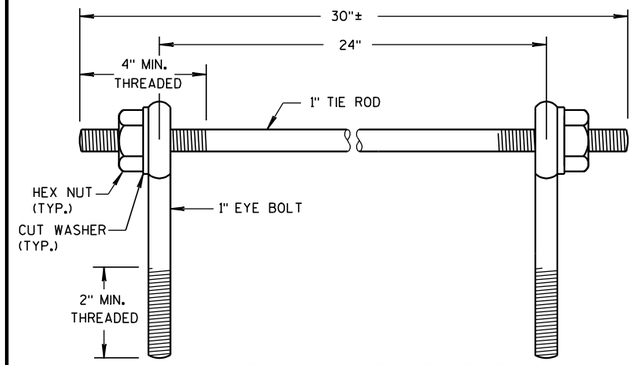
FHWA

6

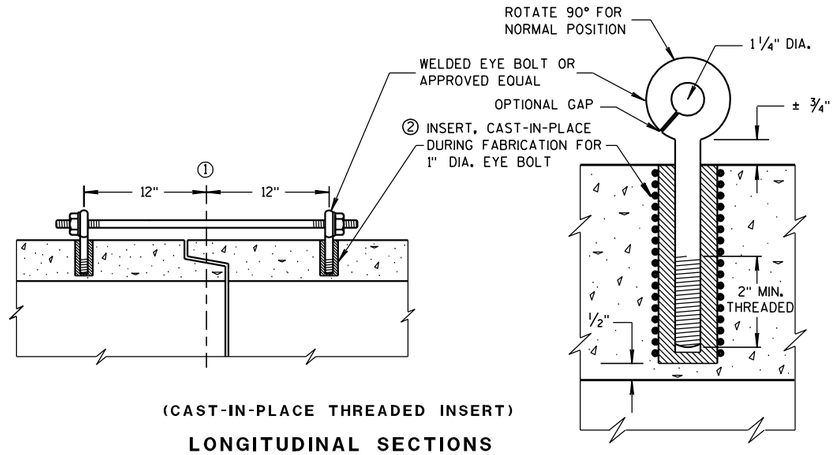
S.D.D. 8 E 10-2

6

S.D.D. 8 E 10-2



EYE BOLTS AND TIE ROD



(CAST-IN-PLACE THREADED INSERT)

LONGITUDINAL SECTIONS

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

GENERAL NOTES

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

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

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

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

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

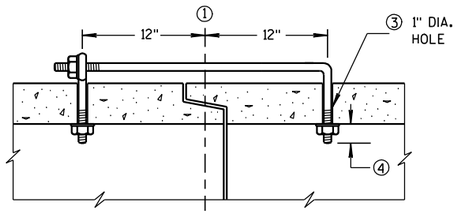
② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.

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

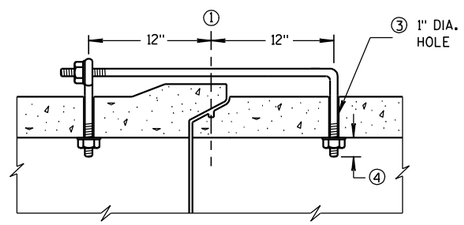
④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.

⑤ OPENING TO BE ROD DIAMETER PLUS 1 INCH.

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



(TONGUE & GROOVE PIPE)

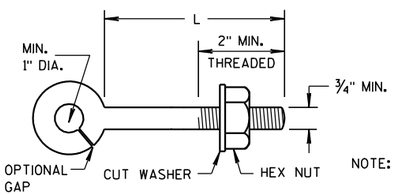


(MODIFIED BELL PIPE)

LONGITUDINAL SECTION

EYE BOLT DIMENSION TABLE

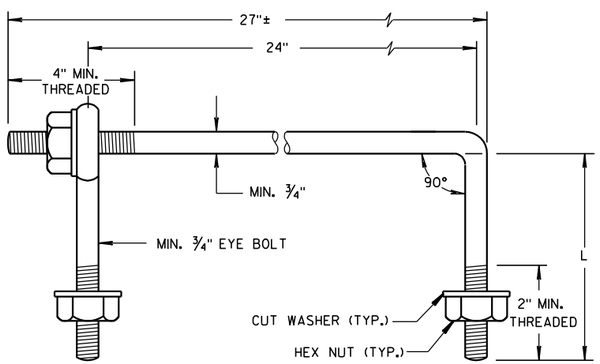
PIPE SIZE	L = LENGTH	
	TONGUE & GROOVE PIPE	MODIFIED BELL PIPE
18" TO 24"	4 1/2"	6 1/4"
30"	5"	7"
36"	5 1/2"	7"
42"	6"	
48"	6 1/2"	
60"	7 1/2"	
66"	8"	



NOTE:

EYE BOLT

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



EYE BOLT AND TIE ROD

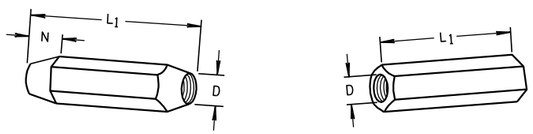
(JOINT TIES FOR 18" TO 66" DIA. CONCRETE PIPE)

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

ADJUSTABLE TIE ROD TABLE

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

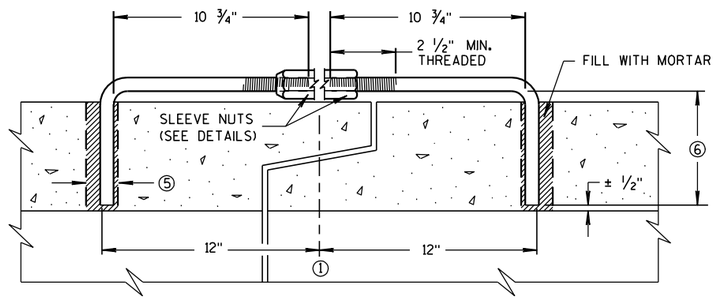
DIMENSIONS SHOWN ARE IN INCHES



TAPERED PLAIN

RIGHT AND LEFT THREADS

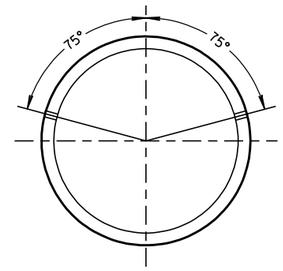
SLEEVE NUTS



LONGITUDINAL SECTION

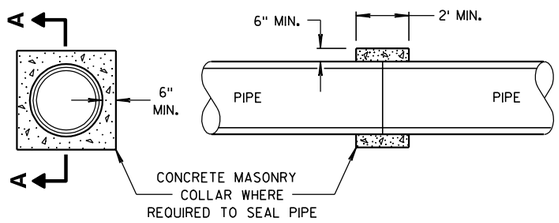
(JOINT TIES FOR 12" TO 108" DIA. CONCRETE PIPE)

ADJUSTABLE TIE ROD (ALTERNATE NO. 3)



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

TRANSVERSE SECTION



SECTION A-A

CONCRETE COLLAR DETAIL

JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6/5/2012 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
93
FHWA

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S.D.D. 8 F 4-7

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S.D.D. 8 F 4-7

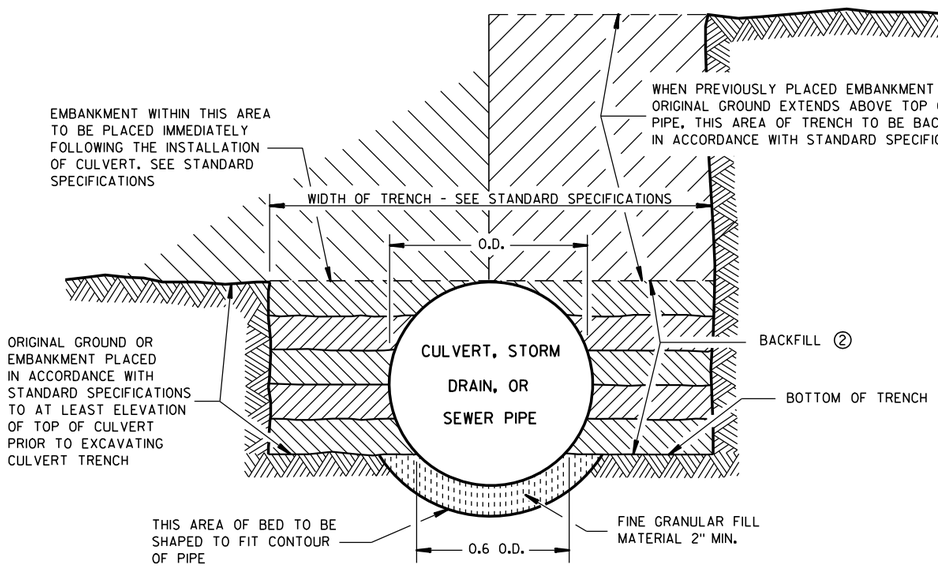
GENERAL NOTES

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

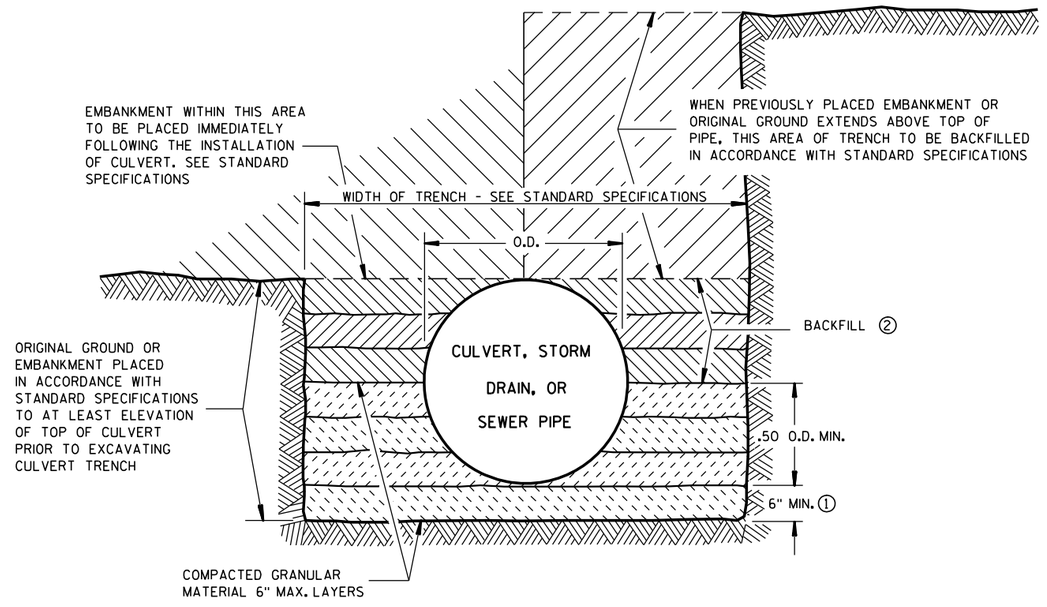
THE SHAPED SUBGRADE WITH GRANULAR FOUNDATION IS AN EQUAL ALTERNATE TO THE GRANULAR FOUNDATION EXCEPT WHERE ROCK IS ENCOUNTERED.

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

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



SHAPED SUBGRADE WITH GRANULAR FOUNDATION

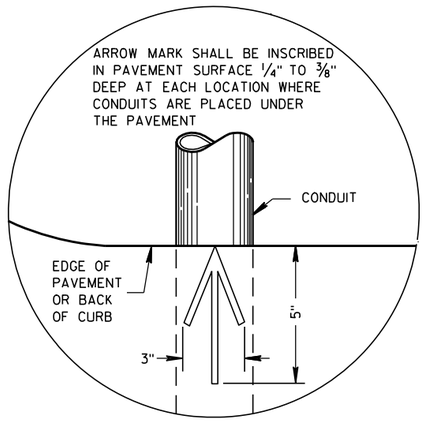


GRANULAR FOUNDATION

CLASS "B" BEDDING

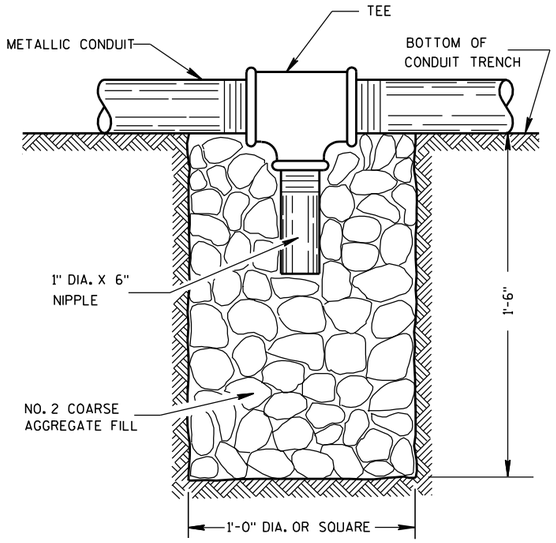
CLASS "B" BEDDING FOR CULVERT PIPE OR STORM SEWER	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	
4/7/83 DATE	/S/ D. L. Strand STATE DESIGN ENGINEER
FHWA	HWYS

6
S.D.D. 8 F 5-1



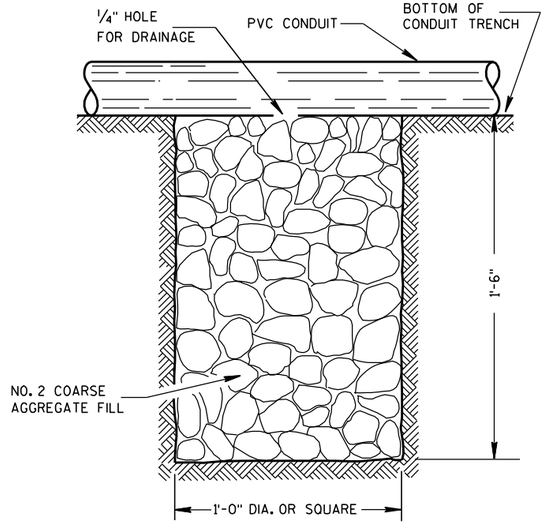
PLAN VIEW

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.

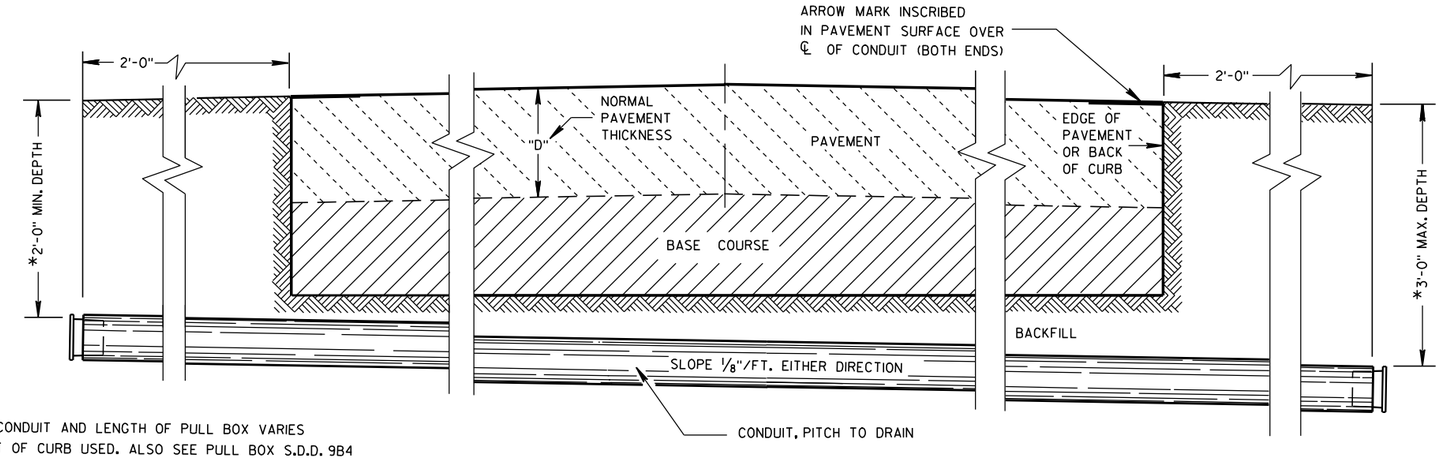
PRIOR TO CONDUIT ACCEPTANCE, CONDUIT CAPS OR PLUGS SHALL BE REMOVED, AND THE CAPS, PLUGS AND CONDUIT ENDS SHALL BE THOROUGHLY CLEANED AND THEN THE CAPS OR PLUGS REINSTALLED TO ENSURE THAT THE CAPS OR PLUGS CAN BE EASILY REMOVED IN THE FUTURE.

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.).

POLY ROPE OR A PULL 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

10/23/03 — DATE

/S/ Balu Ananthanarayanan — STATE ELECTRICAL ENGI

95 HWYS

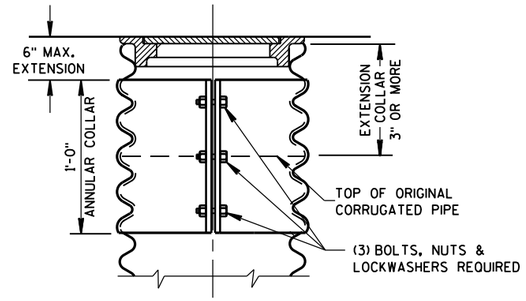
FHWA

TABLE OF NOMINAL DIMENSIONS AND WEIGHTS

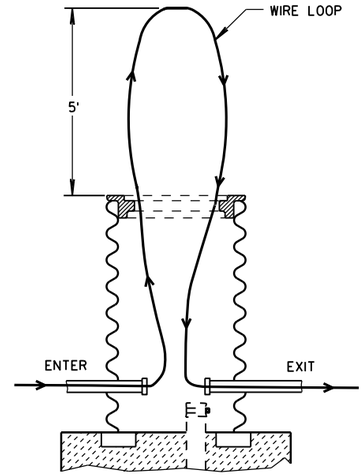
DIMENSION IN INCHES		CORRUGATED STEEL PIPE								
PIPE DIAMETER (INSIDE)	A	12	12	12	18	18	18	24	24	24
PIPE LENGTH **	B	24	30	36	24	30	36	36	42	48
WALL THICKNESS	C	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
COVER	D	10 1/4	10 1/4	10 1/4	16 1/4	16 1/4	16 1/4	22 1/4	22 1/4	22 1/4
FRAME	E	14 1/2	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.

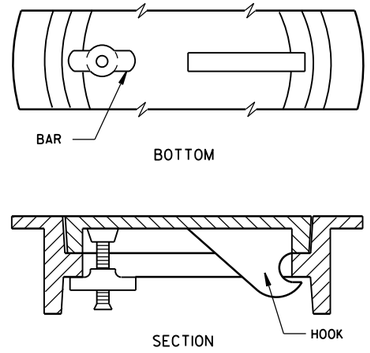
** NORMALLY USED LENGTHS. THE PROJECT ENGINEER SHALL DETERMINE IF PIPE LENGTHS, OTHER THAN THOSE SPECIFIED, SHALL BE USED, TO A MAXIMUM OF 48" (CONTINUOUS LENGTH, NON-SPLICED). THE ADDITIONAL LENGTH SHALL BE INCIDENTAL TO THE PULL BOX BID PRICE.



CORRUGATED PIPE EXTENDER

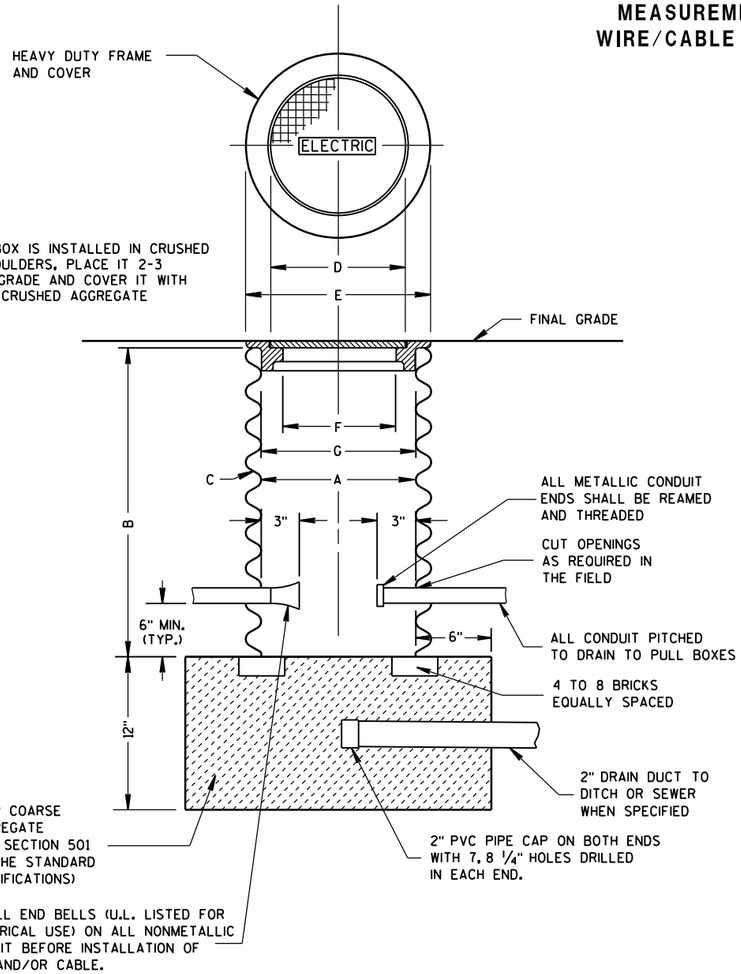


MEASUREMENT DETAIL FOR WIRE/CABLE IN THE PULL BOX



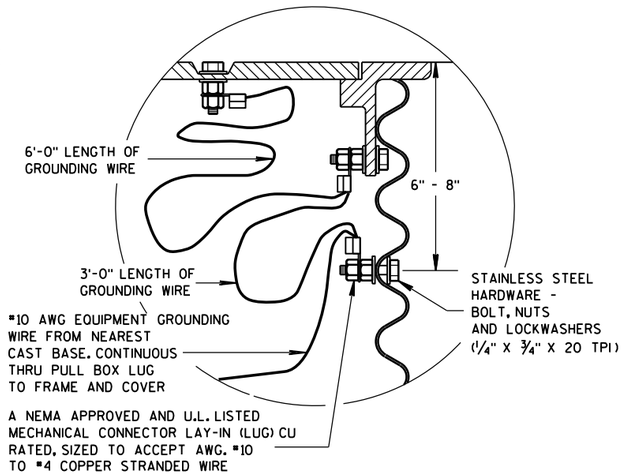
ALTERNATE COVER (LOCKING)

TIGHTENING BAR TYPE

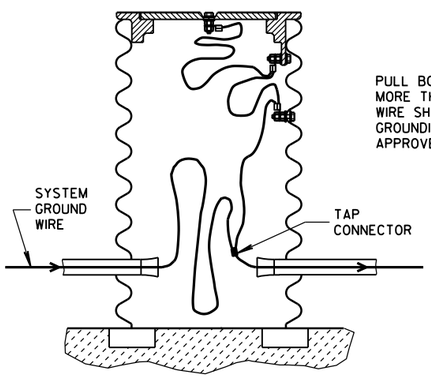


WHEN A PULL BOX IS INSTALLED IN CRUSHED AGGREGATE SHOULDERS, PLACE IT 2-3 INCHES BELOW GRADE AND COVER IT WITH 2-3 INCHES OF CRUSHED AGGREGATE

PULL BOX



EQUIPMENT GROUNDING LUG AND LOCATION IN STEEL PULL BOXES



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

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.

GROUNDING LUGS ARE NOT REQUIRED IN PULL BOXES WHEN VOLTAGES OF LESS THAN 50 VOLTS AC ARE THE ONLY VOLTAGES ENCOUNTERED IN THE BOXES.

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

S.D.D. 9B2, "CONDUIT", APPLIES TO THIS DRAWING.

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	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	
2-7-2013 DATE	/S/ Ahmet Demirbilek STATE ELECTRICAL
FHWA	

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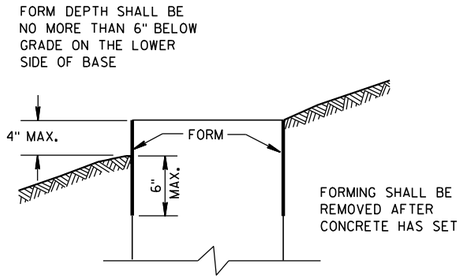


FORMING DETAIL

QUANTITY REQUIREMENTS	CONCRETE BASE TYPE		
	1	2	5
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 2 AND TYPE 5 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 AND 641.2.2 OF THE STANDARD SPECIFICATIONS, ASTM A-449, OR ASTM A-687 (GRADE 105).

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) I" DIA. X 3'-6" ANCHOR RODS.

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

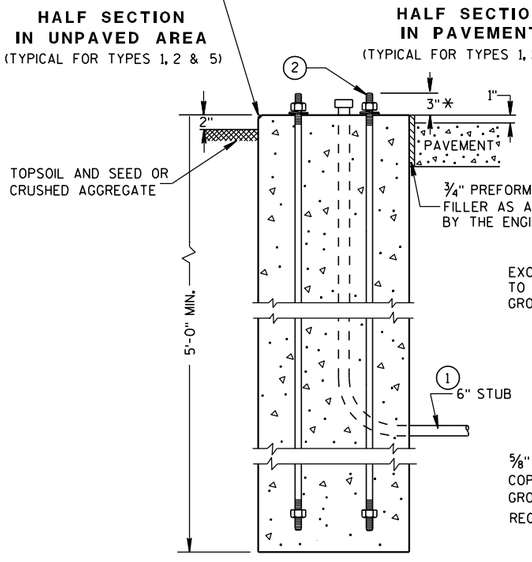
(4) (6) NO. 6 X 6'-8" BAR STEEL REINFORCEMENT.

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

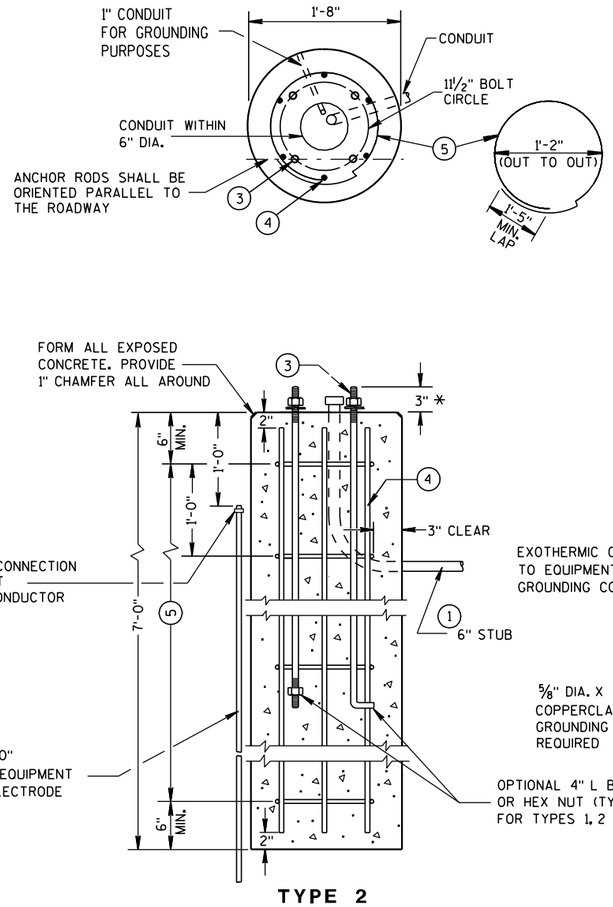
(6) (4) I" DIA. X 3'-6" ANCHOR RODS.

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

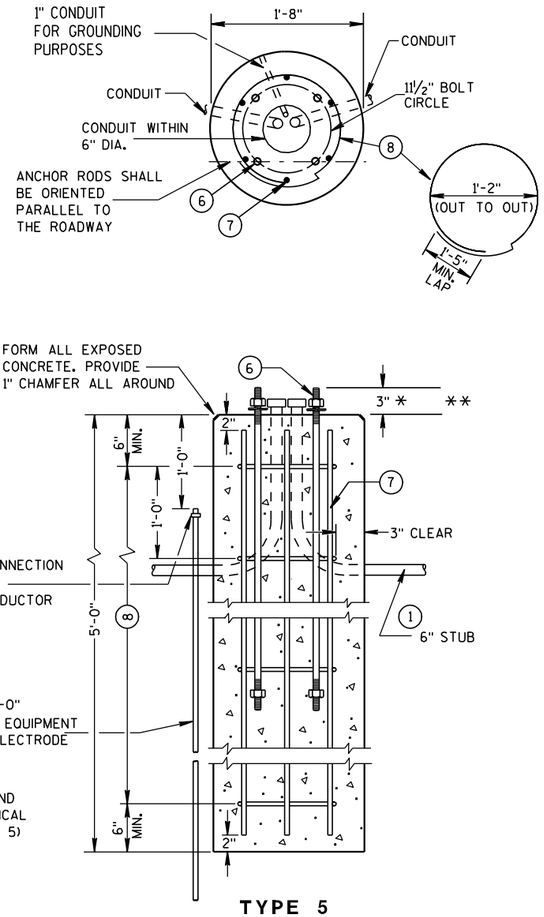
(8) (5) NO. 4 X 5'-1" BAR STEEL REINFORCEMENT @ 1'-0" C-C.



TYPE 1



TYPE 2



TYPE 5

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
3/3/10 — DATE
/S/ Joanna L. Rush — STATE ELECTRICAL ENGI
97 — HWYS
FHWA

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S.D.D. 9 C 2-6

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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, ASTM A-325, (92,000 YIELD) HEAVY HEX NUT AND BE GALVANIZED IN ACCORDANCE WITH ASTM A-153, CLASS C.

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 AND U.L. LISTED MECHANICAL CONNECTOR (LUG) AL/CU RATED AND SIZED TO ACCEPT #10 AWG STRANDED WIRE, SHALL BE FURNISHED AND INSTALLED IN THE PEDESTAL AND TRANSFORMER BASES.

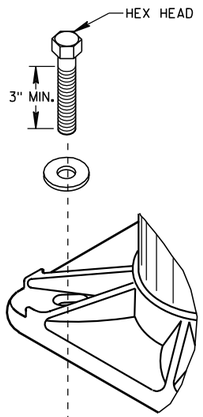
THE MECHANICAL CONNECTOR SHALL BE INSTALLED USING A 1/4" - 20 (TPI) STAINLESS STEEL HEX HEAD BOLT OF SUFFICIENT LENGTH TO FIRMLY ATTACH THE LUG TO THE BASE.

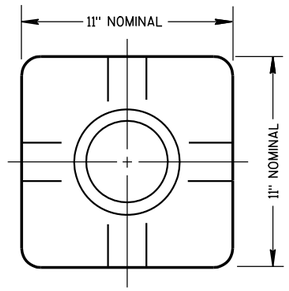
SHOULD THE MANNER OF ATTACHMENT OF THE LUG REQUIRE WASHERS, HEX NUTS, LOCK WASHER - THEY SHALL BE STAINLESS STEEL AS IS THE BOLT. THE MANNER OF ATTACHMENT SHALL NOT BLOCK ACCESSIBILITY TO WIRE PLACEMENT IN THE CONNECTOR.

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

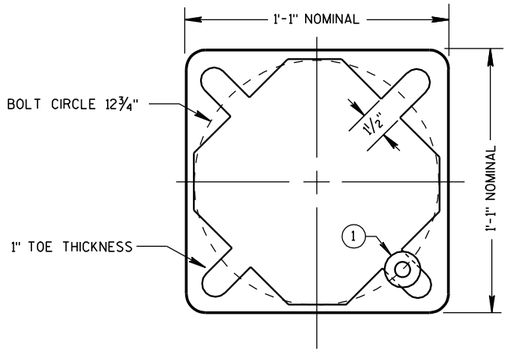
BASE COLLAR THREADING SHALL EXTEND INTO THE BASE COLLAR WITH SUFFICIENT DEPTH TO ACCEPT THE INSTALLATION OF TRAFFIC SIGNAL STANDARDS TO A DEPTH OF 1½", THEN TIGHTENING TO A POINT OF BEING IMMOVABLE.

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

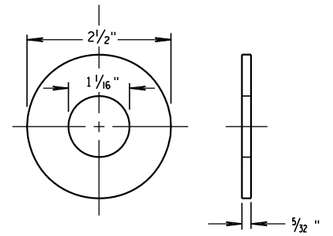




TOP VIEW
(PEDESTAL BASE)

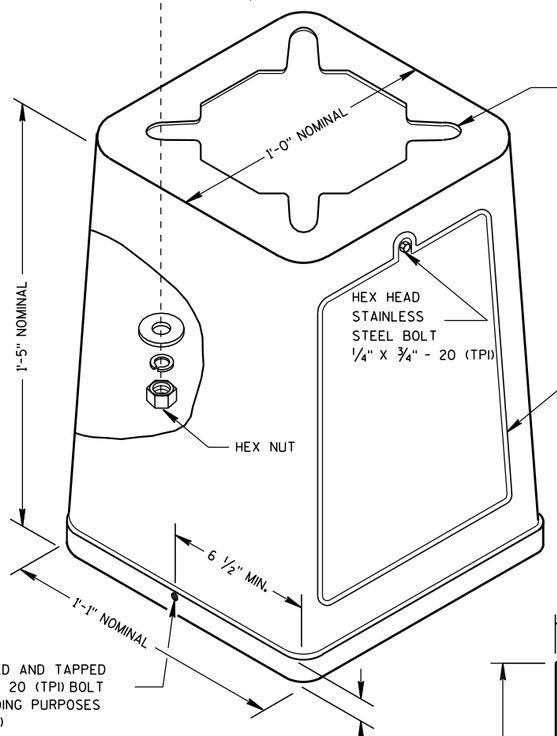


BOTTOM VIEW
(PEDESTAL BASE)

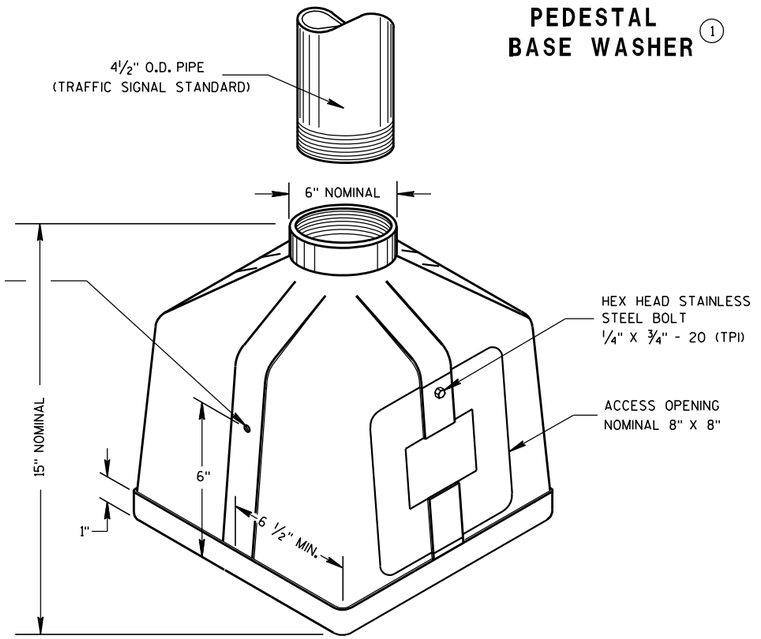


ZINC COATED STEEL WASHER
TO BE PROVIDED BY THE CONTRACTOR

PEDESTAL BASE WASHER (1)

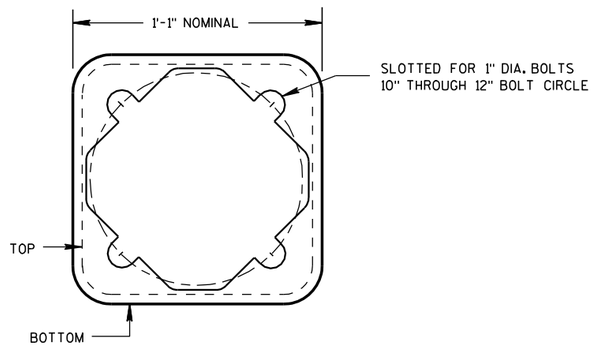


ISOMETRIC VIEW

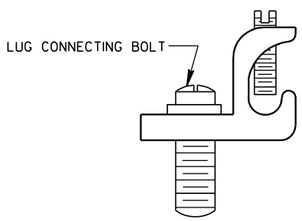


ISOMETRIC VIEW

PEDESTAL BASE



BOTTOM VIEW
(TRANSFORMER BASE)

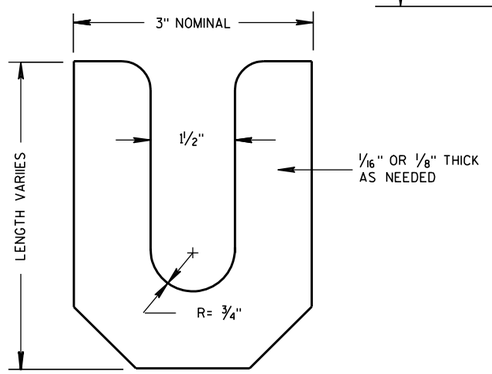


TYPICAL MECHANICAL CONNECTOR LUG

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
DEPARTMENT OF TRANSPORTATION

APPROVED
10/27/09 — DATE
/S/ Joanna L. Rich — STATE ELECTRICAL ENGI
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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.

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.

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).

THE EQUIPMENT GROUNDING CONDUCTOR SHALL ENTER THE BASE 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 1" X 60".

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 AND 641.2.2 OF THE STANDARD SPECIFICATIONS.

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.

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

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

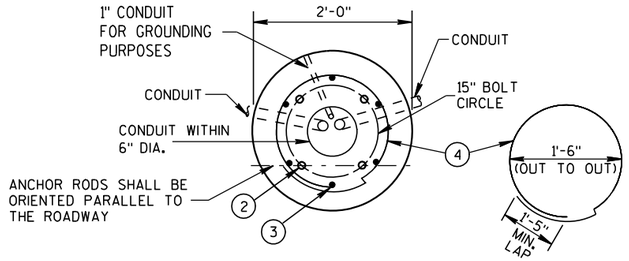
BAR STEEL REINFORCEMENT SHALL BE COATED WITH POWDERED EPOXY RESIN IN ACCORDANCE WITH SECTION 505 OF THE STANDARD SPECIFICATIONS (LATEST EDITION).

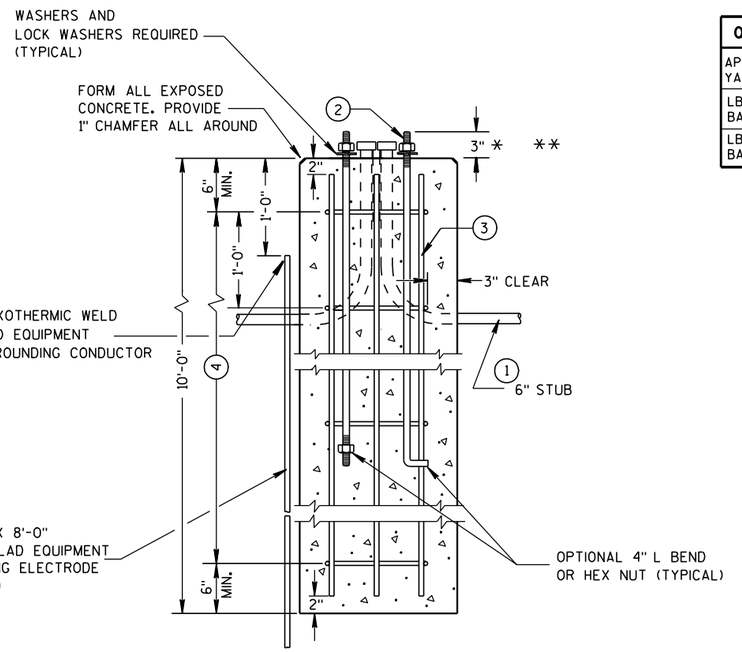
(1) THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE AND INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES. THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE THAT IS NOT INSTALLED BELOW THE TRAVELED WAY SHALL BE 18 INCHES. THE MAXIMUM DEPTH OF ALL CONDUIT SHALL BE 36 INCHES EXCEPT WITH WRITTEN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

(2) (4) 1" DIA. X 5'-0" ANCHOR RODS

(3) (6) NO. 6 X 9'-8" BAR STEEL REINFORCEMENT.

(4) (10) NO. 4 X 6'-2" BAR STEEL REINFORCEMENT @ 1'-0" C-C.



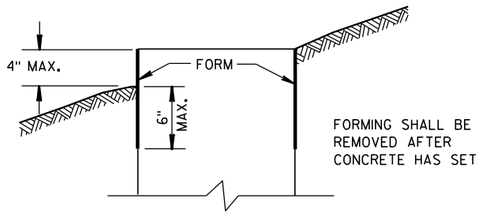


CONCRETE BASE, TYPE 8 (FOR 50' LIGHT POLES)

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

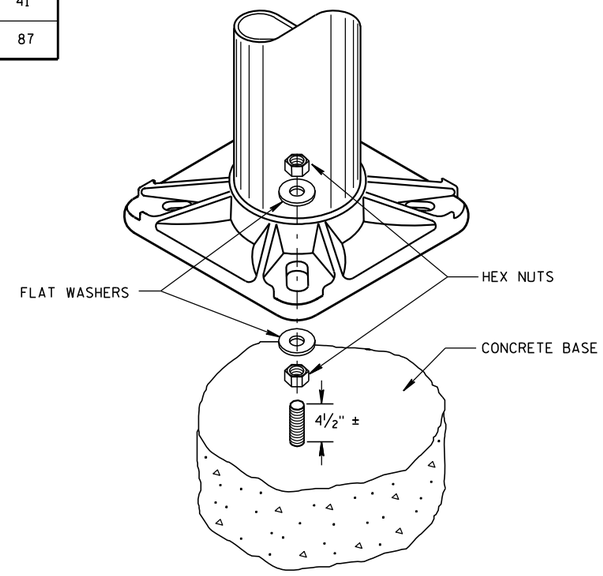
** FOR NONBREAKAWY INSTALLATIONS, 4½" ± ANCHOR ROD PROJECTION WITH THE USE OF LEVELING NUTS. RODENT SCREEN REQUIRED.

FORM DEPTH SHALL BE NO MORE THAN 6" BELOW GRADE ON THE LOWER SIDE OF BASE



FORMING DETAIL

QUANTITY REQUIREMENTS	
APPROX. CUBIC YARDS OF CONCRETE	1.2
LBS. OF HOOP BAR STEEL	41
LBS. OF VERTICAL BAR STEEL	87



NON-BREAKAWAY INSTALLATION (LEVELING NUT)

CONCRETE BASE, TYPE 8

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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3/3/10 — DATE
/S/ Joanna L. Bush — STATE ELECTRICAL ENGI
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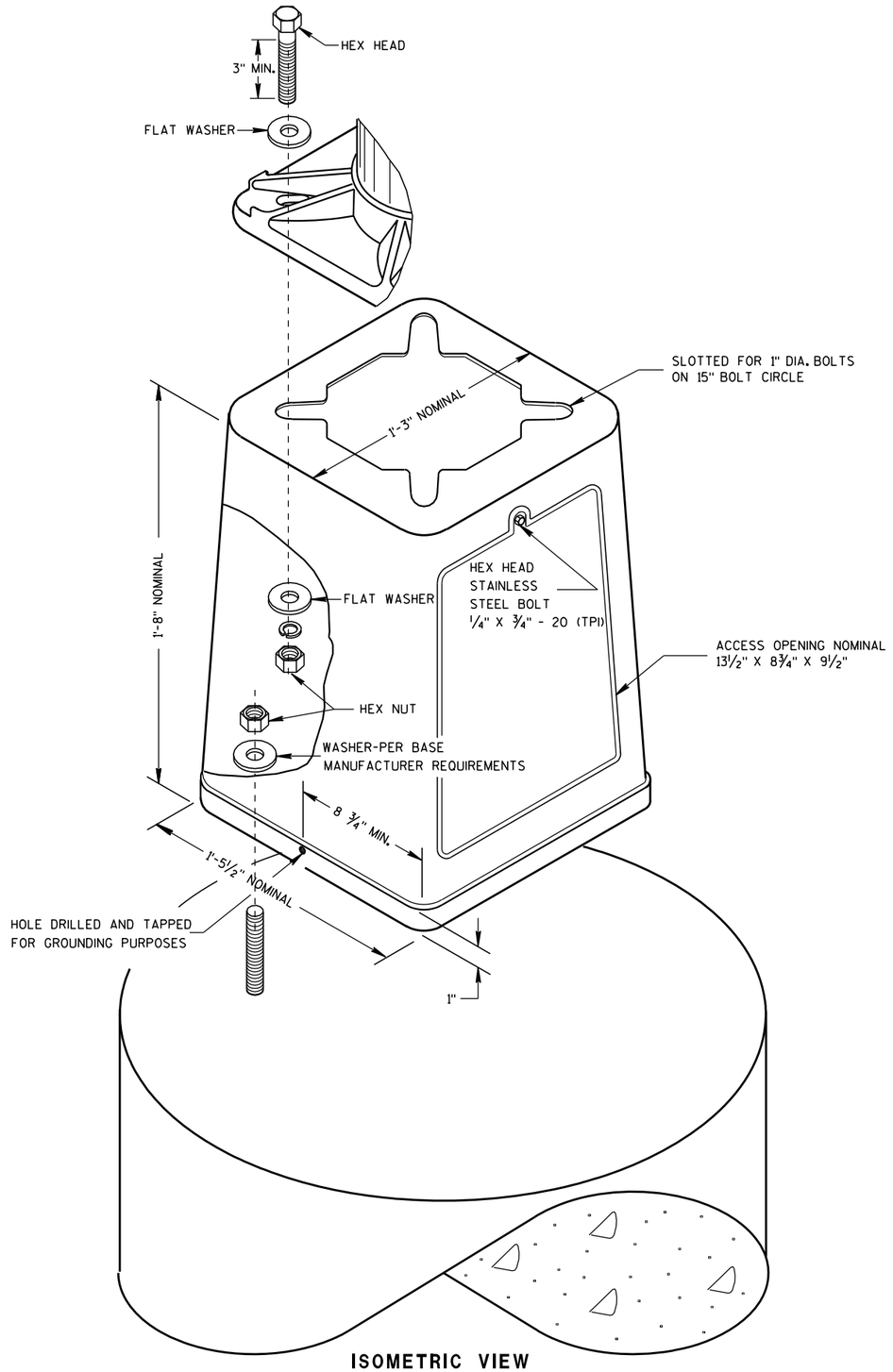
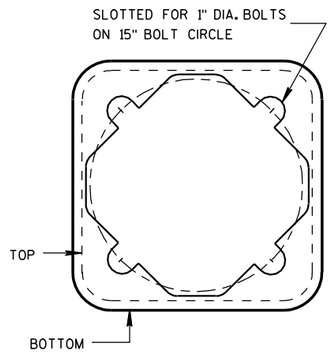
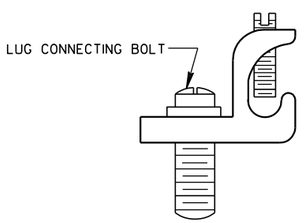


ISOMETRIC VIEW

TRANSFORMER BASE



BOTTOM VIEW



TYPICAL MECHANICAL
CONNECTOR LUG

TO BE FURNISHED WITH EACH BASE

GENERAL NOTES

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

BREAKAWAY BASES (WHERE REQUIRED) WILL BE MEASURED AND PAID AS SEPARATE ITEMS OF WORK IN ADDITION TO THE LIGHT POLE.

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, ASTM A-325, (92,000 YIELD), HEAVY HEX NUT AND BE GALVANIZED IN ACCORDANCE WITH ASTM A-153, CLASS C.

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

SHIMS SHALL BE SIZED TO COMPLETELY COVER THE AREA UNDER THE LENGTH AND WIDTH OF THE BASE MOUNTING FLANGE.

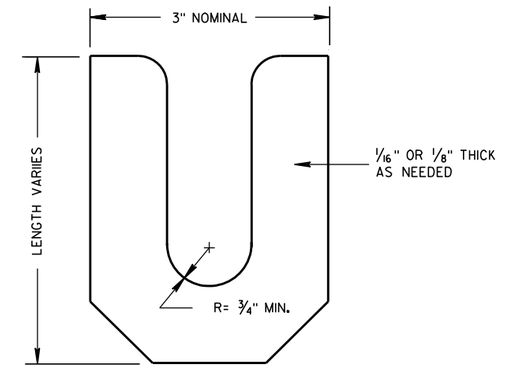
A NEMA APPROVED AND U.L. LISTED MECHANICAL CONNECTOR (LUG) AL/CU RATED AND SIZED TO ACCEPT #10 AWG STRANDED WIRE, SHALL BE FURNISHED AND INSTALLED IN THE TRANSFORMER BASES.

THE MECHANICAL CONNECTOR (GROUNDING LUG) SHALL BE INSTALLED USING THE TAPPED HOLE PROVIDED BY THE MANUFACTURER. THE MOUNTING BOLT HEXHEAD), NUT, WASHER AND LOCK WASHER SHALL BE STAINLESS STEEL, SIZED TO FIT THE THREADING AND HOLE SIZE, AND BE OF SUFFICIENT LENGTH TO FIRMLY ATTACH THE LUG TO THE BASE.

SHOULD A GROUNDING LUG MOUNTING HOLE NOT BE PROVIDED, THE MECHANICAL CONNECTOR SHALL BE INSTALLED USING A 1/4" X 3/4" - 20 (TPI) STAINLESS STEEL HEX HEAD BOLT OF SUFFICIENT LENGTH TO FIRMLY ATTACH THE LUG TO THE BASE. IT SHALL BE MOUNTED IN THE SAME LOCATION AS IS SHOWN ON THE DRAWING.

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

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



LEVELING SHIM

TRANSFORMER BASE FOR 15" BOLT CIRCLE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	
3/2/07 DATE	/S/ Balu Ananthanarayanan STATE ELECTRICAL ENGI
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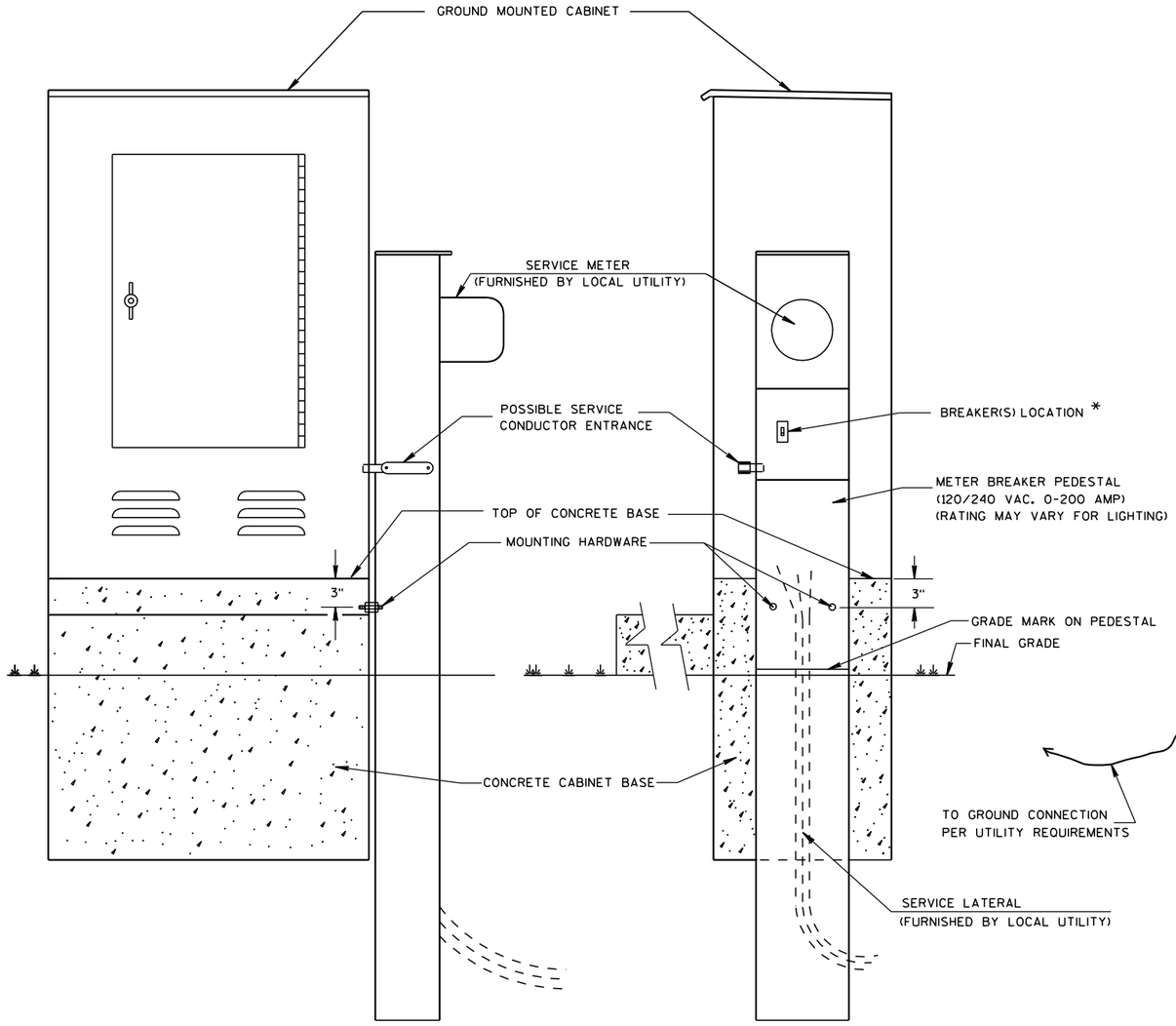

TYPICAL CABINET SERVICE INSTALLATION

GENERAL NOTES

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

THE EXACT LOCATION OF THE METER BREAKER PEDESTAL SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

THE TYPE OF CONCRETE CABINET BASE TO BE INSTALLED SHALL BE AS CALLED FOR IN THE PLANS.

TO FACILITATE FLUSH MOUNTING OF THE METER BREAKER PEDESTAL AGAINST THE SIDE OF THE CABINET BASE (IF FLUSH MOUNTING POSSIBLE. CONFER WITH THE LOCAL UTILITY TO DETERMINE WHICH SIDE OF THE CONCRETE BASE THE ELECTRICAL SERVICE LATERAL WILL APPROACH. THEN FORM THAT INDICATED SIDE FOR FULL SIDE DEPTH.

WHILE FLUSH MOUNTING IS THE MOST DESIRABLE MOUNTING CONFIGURATION UTILITY REQUIREMENTS MAY PRECLUDE THIS OPTION. CONTRACTOR MUST PROVIDE UTILITY APPROVED PEDESTAL AND INSTALL PER UTILITY AND MANUFACTURERS REQUIREMENTS.

SERVICE CONDUCTOR ENTRANCES SHALL BE RIGID METALLIC CONDUIT, NIPPLES AND/OR CONDULETS AS REQUIRED.

SERVICE CONDUCTOR ENTRANCES SHALL BE SIZED AND LOCATED AS REQUIRED BY THE LOCAL UTILITY AND IN ACCORDANCE WITH APPROPRIATE ARTICLES OF THE LATEST ACCEPTED NATIONAL ELECTRICAL CODE.

IF MORE THAN ONE GROUNDING ELECTRODE IS REQUIRED, THE DISTANCE APART SHALL BE 6 FEET OR PER LOCAL UTILITY REGULATIONS.

* SOME PEDESTAL LIGHTING PLANS SHOW MAIN LUGS ONLY.

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CABINET SERVICE INSTALLATION (METER BREAKER PEDESTAL)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/27/09 DATE
/S/ Joanna L. Bush STATE ELECTRICAL ENGI
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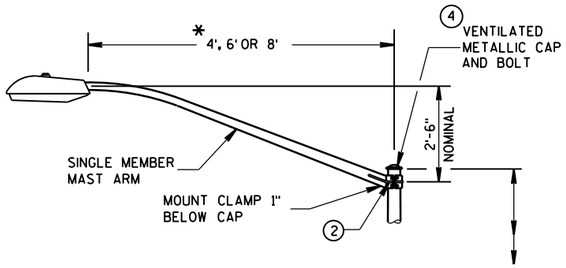
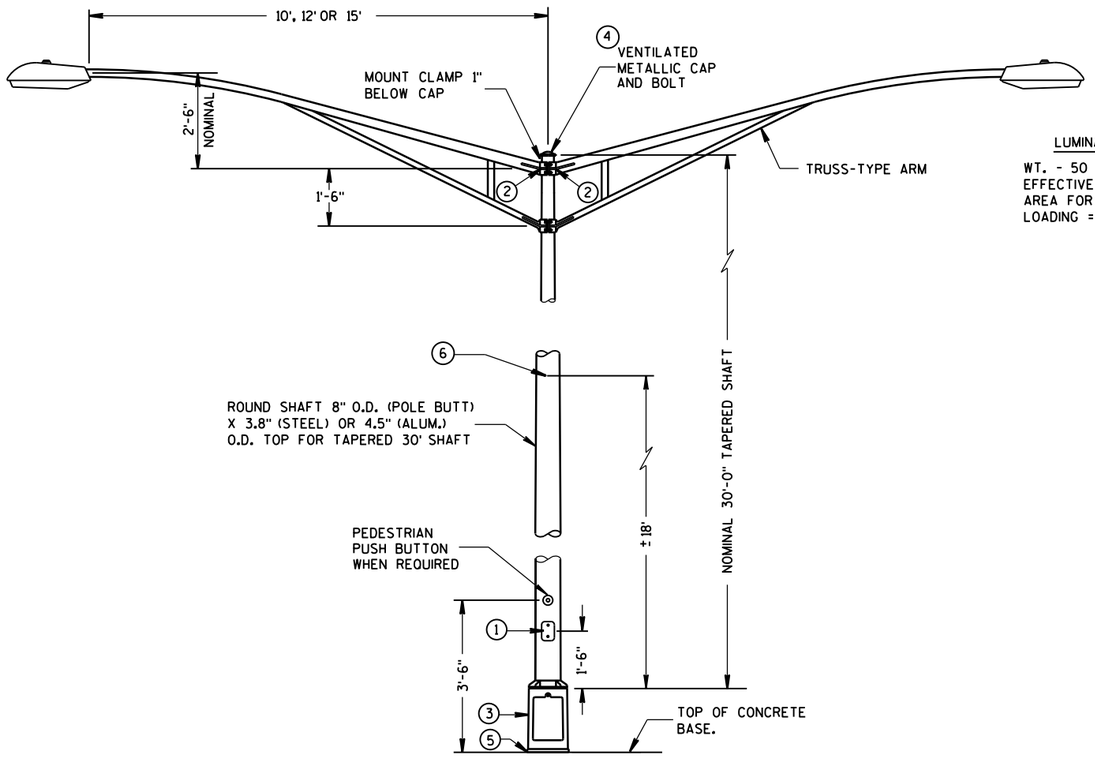
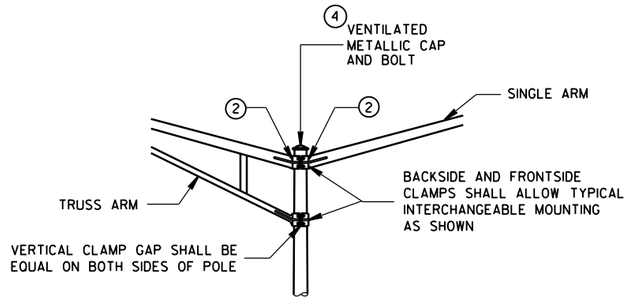
*RISE FOR 4' ARM SHALL BE 2'-0".





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)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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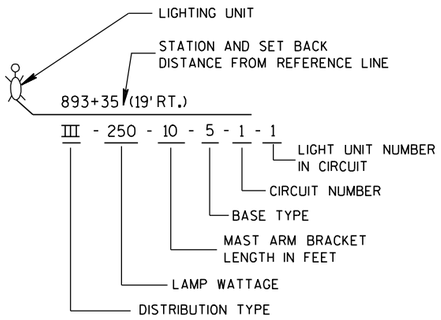
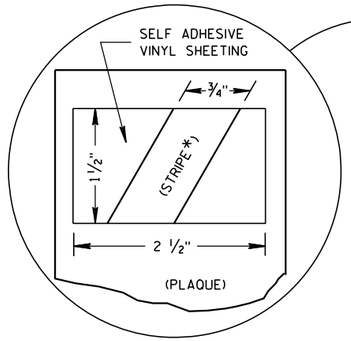


LIGHTING UNIT CODE
(TYPICAL)



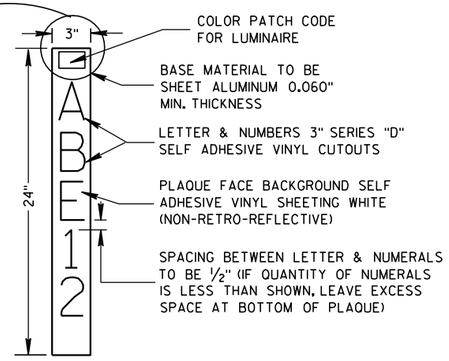
COLOR PATCH CODE FOR LUMINAIRES

(HIGH PRESSURE SODIUM)

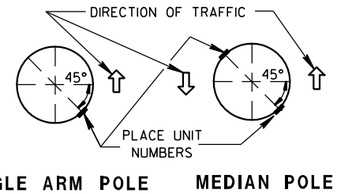
1000 WATT - NO PATCH
400 WATT - ORANGE
310 WATT - BLUE
250 WATT - ORANGE W/WHITE STRIPE*
200 WATT - RED
150 WATT - GREEN
100 WATT - BROWN

(MERCURY VAPOR)

400 WATT - (NO PATCH)
250 WATT - YELLOW



IDENTIFICATION PLAQUE



SINGLE ARM POLE MEDIAN POLE

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

NOTES:

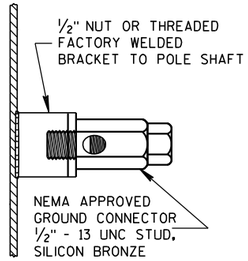
1) PLACE BOTTOM OF UNIT NUMBER PLAQUE 5'-0" ABOVE ELEVATION OF ADJACENT CURB OR SHOULDER.

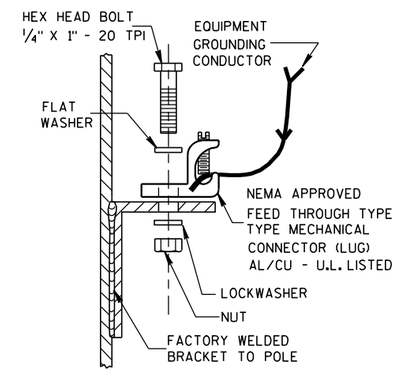
2) UNIT NUMBERS: ONE REQUIRED FOR SINGLE ARM POLES TWO REQUIRED FOR MEDIAN MOUNT POLES.

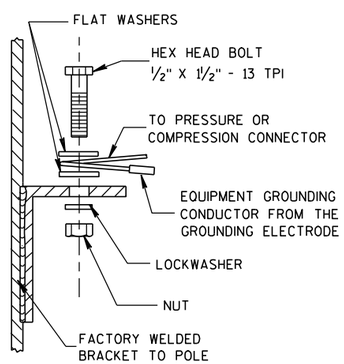
LIGHTING UNIT IDENTIFICATION PLAQUE REQUIREMENTS AND PLACEMENT

(TYPICAL ALL LIGHTING UNITS)

FURNISH PLAQUE WHEN CALLED FOR BY SPECIAL PROVISIONS

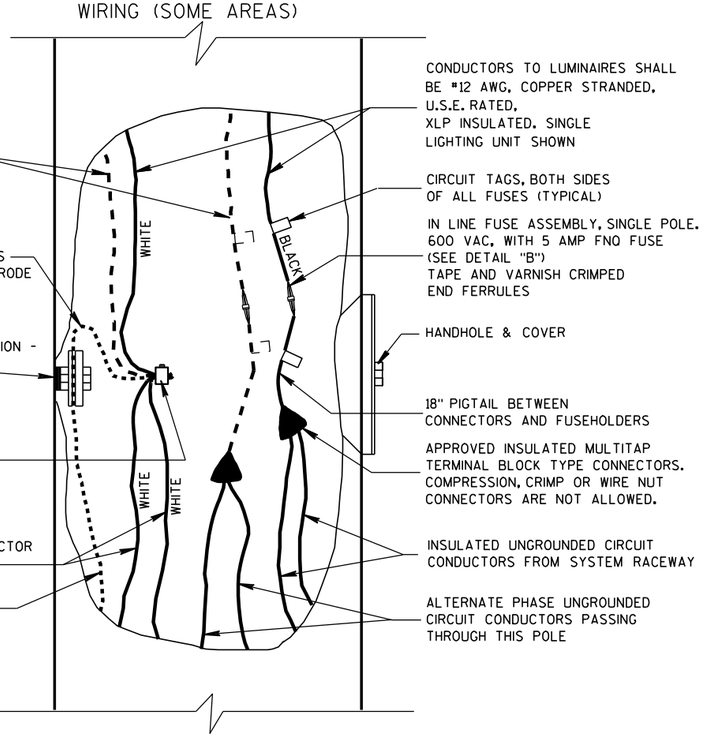




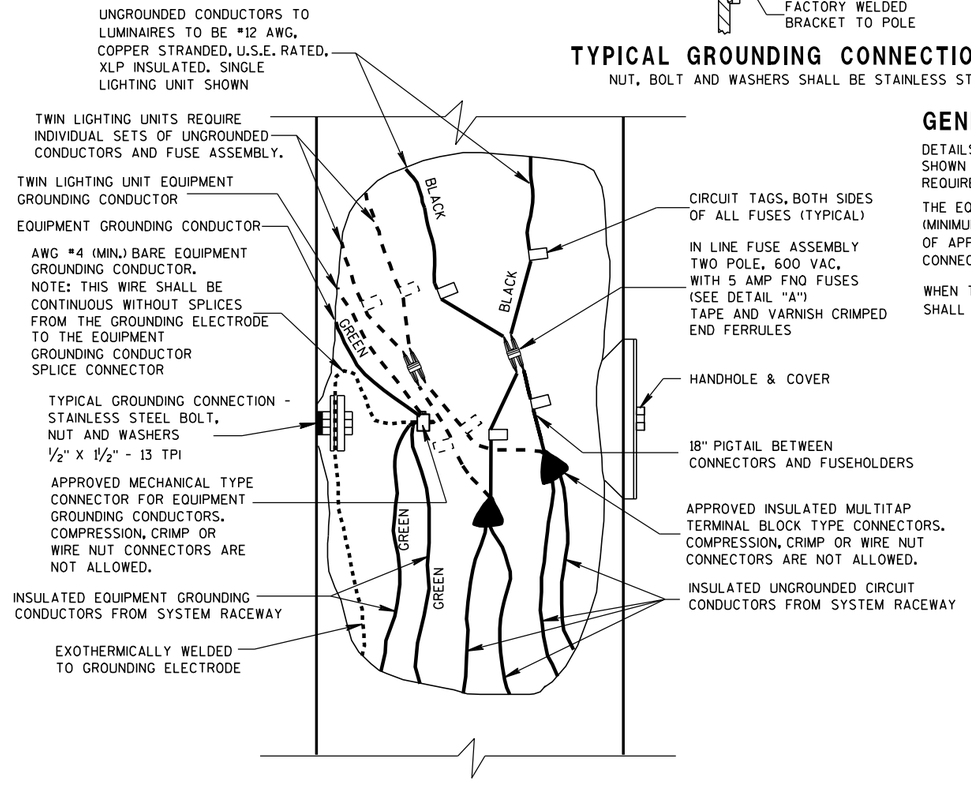


TYPICAL GROUNDING CONNECTIONS

NUT, BOLT AND WASHERS SHALL BE STAINLESS STEEL



2 WIRE - 120, 240 OR 480 VAC TO GROUND



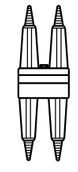
2 WIRE - 240 OR 480 VAC (UNGROUNDED CONDUCTORS) WITH EQUIPMENT GROUNDING CONDUCTOR

GENERAL NOTES

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

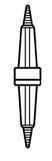
THE EQUIPMENT GROUND CONNECTOR SHALL BE TAPED WITH 3 WRAPS (MINIMUM) OF APPROVED RUBBER TAPE AND THEN 3 WRAPS (MINIMUM) OF APPROVED VINYL TAPE TO COVER SHARP WIRE ENDS AFTER THE CONNECTION IS COMPLETED.

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

3/2/2011
DATE

/S/ Thomas J. Gorrlee
STATE ELECTRICAL ENGI

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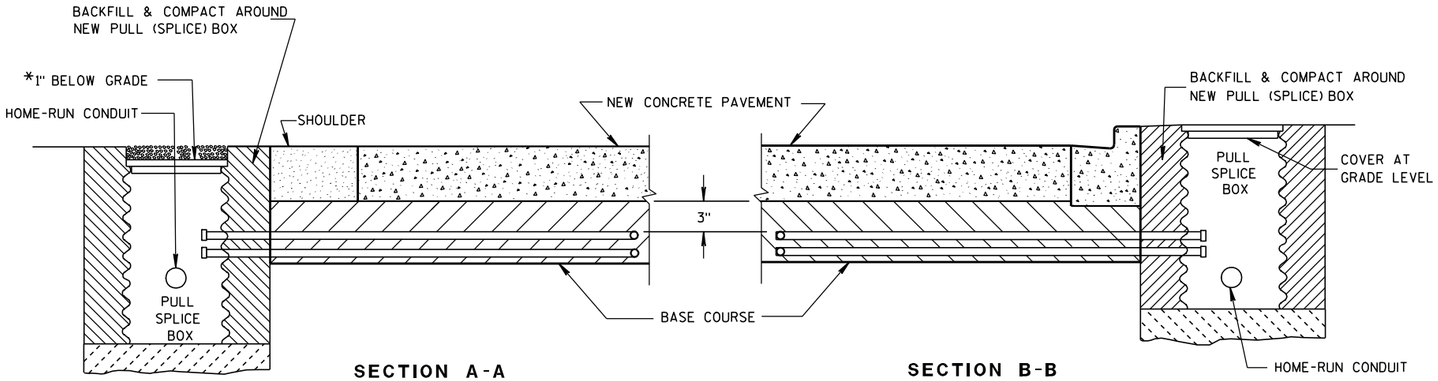


SECTION A-A
NO CURB & GUTTER

SECTION B-B
CURB & GUTTER

*RECESS PULL (SPLICE) BOX SO THAT THE COVER IS 3" BELOW GRADE IN SHOULDER AREAS OF CRUSHED AGGREGATE. BACKFILL OVER COVER WITH THE CRUSHED AGGREGATE TO BRING THE AREA TO GRADE LEVEL.

LOOP DETECTOR INSTALLATION DETAIL

GENERAL NOTES

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

LOOP SIZE, CONFIGURATION LOCATION, NUMBER OF TURNS OF WIRE AND ASSOCIATED SIGNAL PHASE SHALL BE AS SHOWN ON THE PLANS.

PITCH LEAD OUT CONDUIT TO DRAIN TO ROADSIDE PULL (SPLICE) BOX.

SPLICES SHALL BE INSTALLED BY USING CAST IN PLACE SPLICE KITS SUCH AS 3M TYPE 82A1 OR APPROVED EQUAL. NON-INSULATED BUTT SPLICES TO FIT #12 AWG STRANDED WIRE SHALL BE USED. SPLICES SHALL BE SOLDERED AND INSULATED FROM EACH OTHER AS PER INSTRUCTIONS INCLUDED IN THE SPLICE KIT.

MEASURE GROUND RESISTANCE USING A MEGGER. REPLACE LOOP WIRE NOT ATTAINING A READING OF INFINITY TO GROUND.

AFTER SPLICING THE LOOP WIRE TO THE LOOP LEAD-IN CABLE, THE CONTRACTOR SHALL MEASURE INDUCTANCE, GROUND RESISTANCE AND WIRE RESISTANCE AT THE CABINET END OF THE LEAD-IN CABLE AND FURNISH A COPY OF THE READINGS TO THE PROJECT ENGINEER FOR EVALUATION.

LOOP DETECTOR LEADS SHALL BE IDENTIFIED WITH THEIR ASSOCIATED LOOP BY USE OF WATERPROOF TAGS AT BOTH ENDS OF THE CABLE. A LISTING OF THE CABLE IDENTIFICATION PER INDIVIDUAL LOOP LEAD-IN SHALL BE PLACED IN THE CABINET.

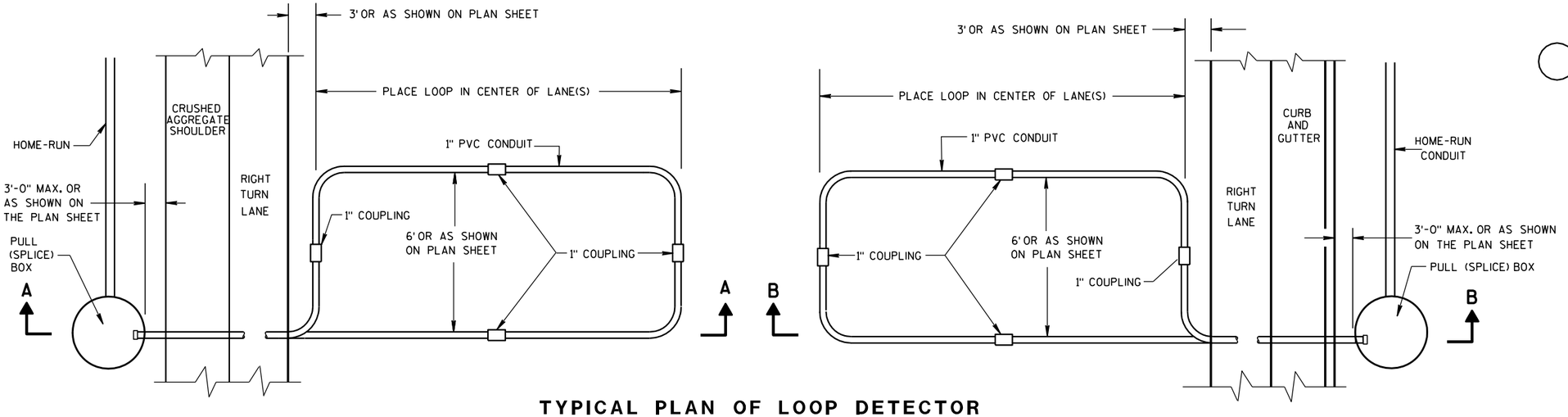
THE #12 AWG. LOOP WIRE IN THE PULL (SPLICE) BOX SHALL BE HAND TWISTED AT LEAST 3 TWISTS PER FOOT BEFORE BEING SPLICED TO THE LOOP LEAD-IN CABLE.

SPLICES OF LOOP WIRE TO LEAD-IN CABLE SHALL BE MADE ONLY IN PULL (SPLICE) BOXES AT THE SIDE OF THE ROAD.

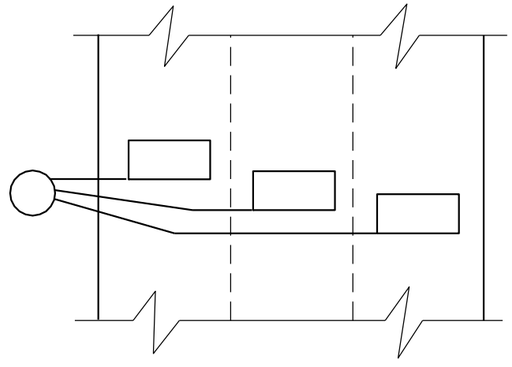
THE #12 AWG LOOP WIRE SHALL BE INSTALLED FROM THE ROADSIDE PULL (SPLICE) BOX, THROUGH THE LOOP CONDUIT, BACK TO THE ROADSIDE PULL (SPLICE) BOX, AND BE INSTALLED IN ONE, NON-SPLICED CONTINUOUS LENGTH.

PROTECTION OF THE CONDUITS IN THE BASE COURSE SHALL BE REQUIRED AFTER INSTALLATION AND BEFORE NEW PAVEMENT IS INSTALLED.

SHOULD INSTALLATION REPAIR BE REQUIRED, IT SHALL BE DONE UNDER THE DIRECTION OF THE PROJECT ENGINEER.



TYPICAL PLAN OF LOOP DETECTOR WITH 24" PULL (SPLICE) BOX



MULTI-LANE INSTALLATION

LOOP DETECTOR INSTALLED IN BASE COURSE WITH PULL (SPLICE) BOX OFF ROADWAY (OPTION 2)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6/7/06 DATE
/S/ Balu Anantharaman
STATE ELECTRICAL ENGI
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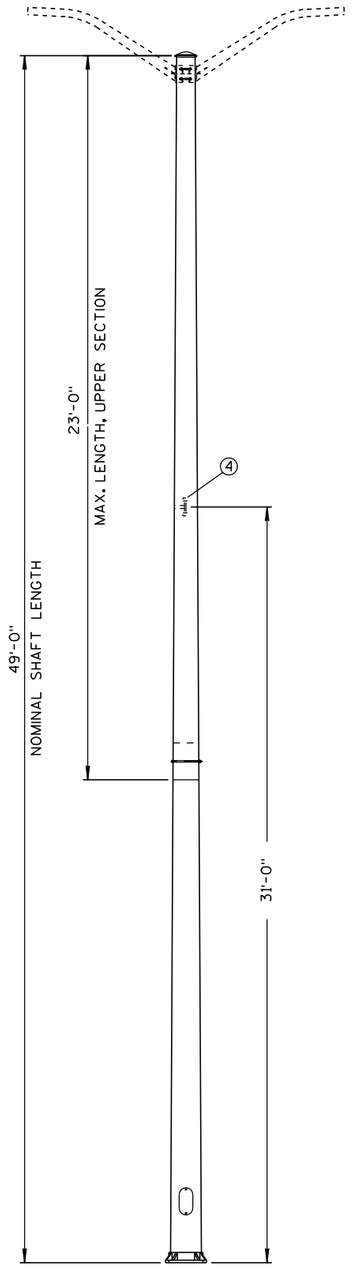
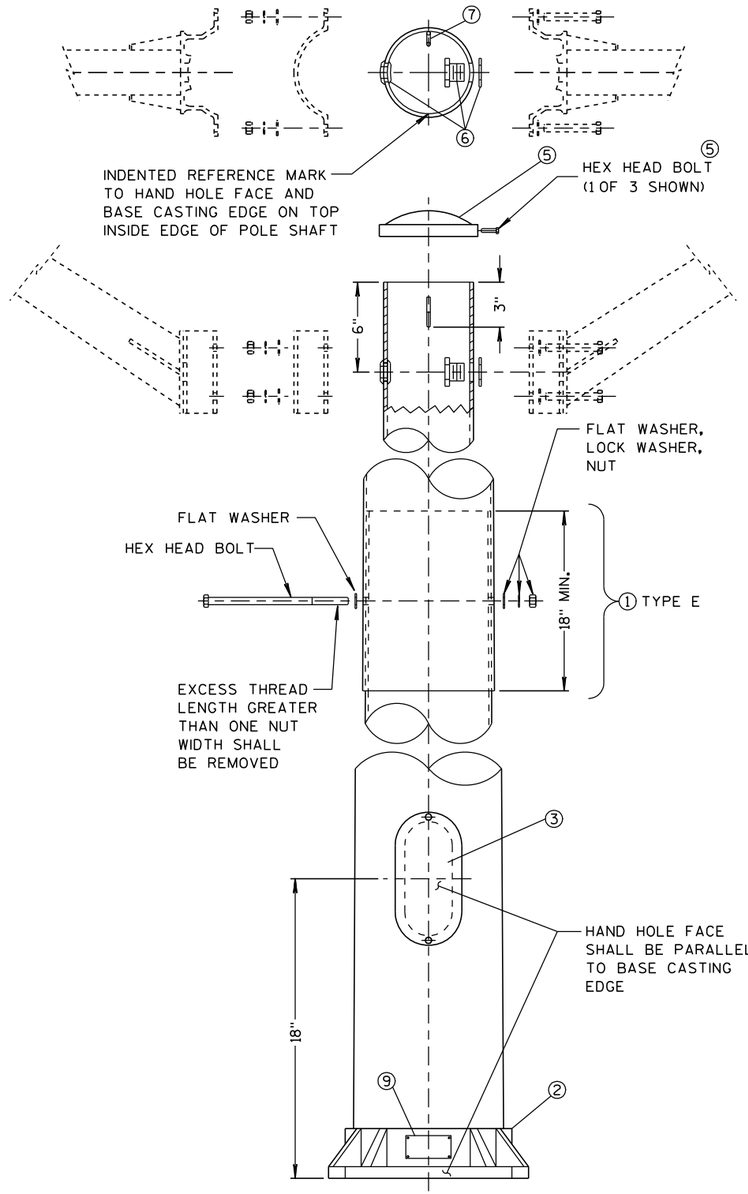
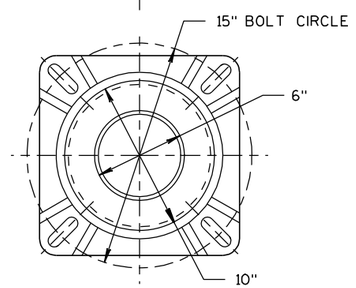
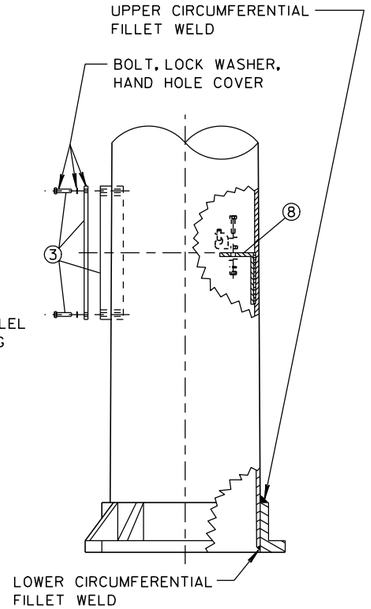


POLE, TYPE E





(TOP VIEW)



POLES COVERED BY THIS DRAWING	
TYPE E	NATURAL FINISH, SLOTTED FOR 1" ANCHOR RODS
TYPE EBR	DARK BROWN ANODIZED, SLOTTED FOR 1" ANCHOR RODS
TYPE E2	NATURAL FINISH, SLOTTED FOR 1¼" ANCHOR RODS

GENERAL NOTES

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

POLES SHALL BE CONSTRUCTED OF 6063-T6 ALUMINUM. EXCEPT THAT BASE CASTINGS SHALL BE CONSTRUCTED OF 356-T6 ALUMINUM.

HEAT TREATMENT OF WELDMENTS IN STRUCTURAL AREAS (e.g. BASE CASTING, HAND HOLE, BRACKET FOR GROUNDING LUG) REQUIRED.

ALL THREADED FASTENER COMPONENTS SHALL BE STAINLESS STEEL. NUTS SHALL BE HEX NUTS. BOLTS SHALL BE HEX HEAD. ALL THREADED SURFACES SHALL BE COATED WITH ANTI-SEIZE COMPOUND PRIOR TO INSTALLATION.

LUMINAIRE ARMS AND CLAMP ASSEMBLIES SHOWN FOR INFORMATION ONLY (PAID SEPARATELY).

LUMINAIRE LOADING FOR DESIGN CALCULATION SHALL BE 50 LBS. IN WEIGHT AND 1.5 SQ. FT. E.P.A..

① OPTIONAL TELESCOPING FIELD JOINT SECURED BY A ⅝"-11 TPI THROUGH BOLT OR STUD.

THE OVERLAP OF THE UPPER AND LOWER SECTIONS SHALL BE NOT LESS THAN 18".

② SHOE BASE.

③ 4" × 6" REINFORCED HANDHOLE & COVER ASSEMBLY SECURED BY TWO (2) ¼" X ¾" - 20 TPI STAINLESS STEEL HEX HEAD BOLTS.

HANDHOLE SHALL BE 90 DEGREES FROM LUMINAIRE ARMS OF TWIN LUMINAIRE POLES; 180 DEGREES FROM LUMINAIRE ARM OF SINGLE LUMINAIRE POLES; 0 DEGREES FROM LUMINAIRE ARM FOR STRUCTURE MOUNTED POLES.

④ INTERNAL DUMBBELL-TYPE VIBRATION DAMPER.

⑤ FURNISH AND INSTRALL CAST OR METALLIC (ALUMINUM ALLOY) POLE CAP. FASTEN CAP WITH THREE ¼" X ¾" - 20 TPI STAINLESS STEEL HEX HEAD BOLTS.

⑥ 1⅜" FIELD DRILLED HOLE WITH 1" CHASE NIPPLE AND NUT (OR NEOPRENE GROMMET), PER EACH REQUIRED LUMINAIRE ARM.

⑦ FACTORY-WELDED "J" HOOK FOR POLE WIRE STRAIN RELIEF.

⑧ FACTORY-WELDED BRACKET FOR GROUNDING LUG, OPPOSITE HANDHOLE. (LUG AND HARDWARE PAID UNDER SEPARATE ITEMS; SHOWN FOR INFORMATION ONLY). PROVIDE HOLE IN BRACKET FOR ¼" X ¾" - 20 TPI STAINLESS STEEL HEX HEAD BOLTS.

⑨ MANUFACTURER'S PLATE SHOWING WisDOT POLE TYPE, MANUFACTURER, AND DATE.

POLE TYPE (NOM. SHAFT LENGTH)	TYPICAL APPLICATION	ARM & LUMINAIRE LOADS (MAX.)	ADDITIONAL (MAX.) LOADS
TYPE E, EBR, E2 (49')	FREEWAY SLOPE MOUNT	SINGLE ARM, UP TO 20 FT., TRUSS TYPE OR TWIN ARMS UP TO 10' SINGLE MEMBER	UP TO 20 SQ. FT. OF TRAFFIC SIGNS, MOUNTED AS HIGH AS 15 FT. TO TOP OF SIGN

POLES, TYPES E, EBR, E2
ALUMINUM 49'-0" SHAFT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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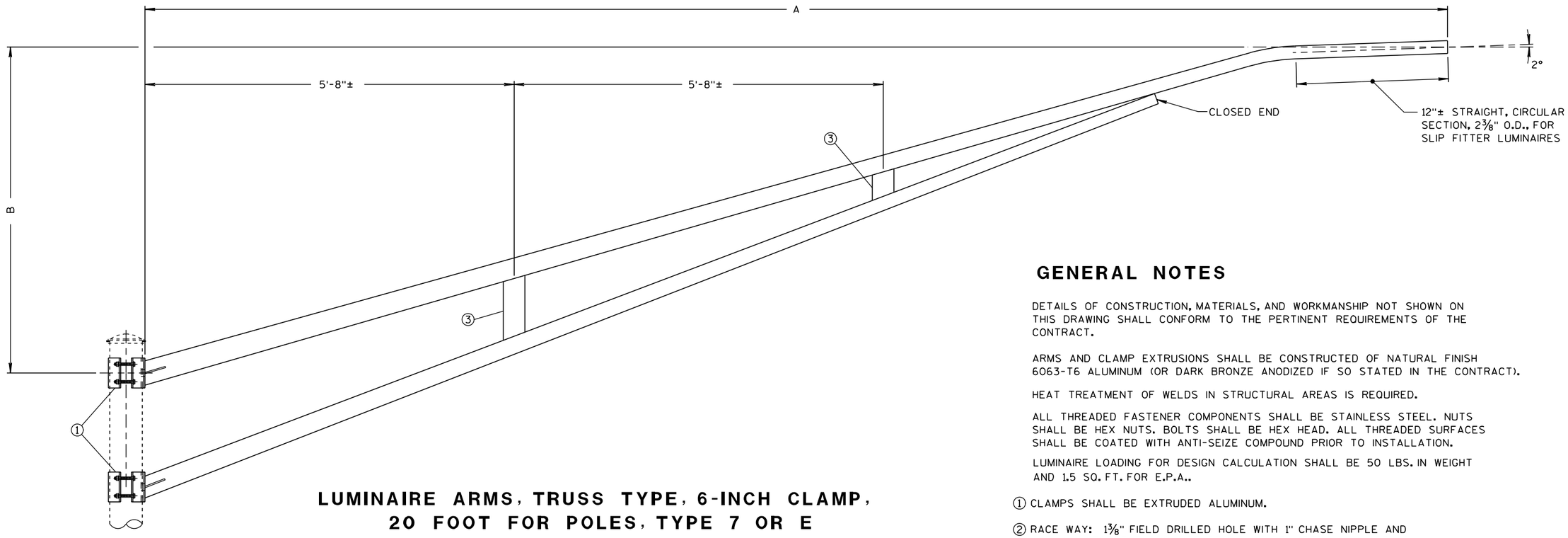

LUMINAIRE ARMS, TRUSS TYPE, 6-INCH CLAMP, 20 FOOT FOR POLES, TYPE 7 OR E

UPPER AND LOWER TRUSS CHORD CLAMPS SIMILIAR

TYPE	DIM. A NOMINAL ARM LENGTH (FT)	DIM. B APPROX. RISE (FT)
TRUSS TYPE	20.0	5.0

GENERAL NOTES

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

ARMS AND CLAMP EXTRUSIONS SHALL BE CONSTRUCTED OF NATURAL FINISH 6063-T6 ALUMINUM (OR DARK BRONZE ANODIZED IF SO STATED IN THE CONTRACT).

HEAT TREATMENT OF WELDS IN STRUCTURAL AREAS IS REQUIRED.

ALL THREADED FASTENER COMPONENTS SHALL BE STAINLESS STEEL. NUTS SHALL BE HEX NUTS. BOLTS SHALL BE HEX HEAD. ALL THREADED SURFACES SHALL BE COATED WITH ANTI-SEIZE COMPOUND PRIOR TO INSTALLATION.

LUMINAIRE LOADING FOR DESIGN CALCULATION SHALL BE 50 LBS. IN WEIGHT AND 1.5 SQ. FT. FOR E.P.A..

① CLAMPS SHALL BE EXTRUDED ALUMINUM.

② RACE WAY: 1⅜" FIELD DRILLED HOLE WITH 1" CHASE NIPPLE AND NUT (OR NEOPRENE GROMMET) PER EACH REQUIRED LUMINAIRE ARM. PROVIDE 1½" HOLE IN CLAMP EXTRUSION TO CONTINUE RACEWAY. NOTE: NO RACEWAY ON LOWER TRUSS CORD CLAMP. FOR INFORMATION ONLY.

③ STIFFENER.

④ GUSSETS REQUIRED.

⑤ CLAMP BOLT ASSEMBLY (BOLT - ½"-13 UNC, 2 EACH - FLAT WASHER, LOCK WASHER, NUT) - 4 EACH PER CLAMP.

LUMINAIRE ARMS, TRUSS TYPE 6-INCH CLAMP

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

10/25/2010 DATE

/S/ John Corbin
STATE ELECTRICAL ENGI

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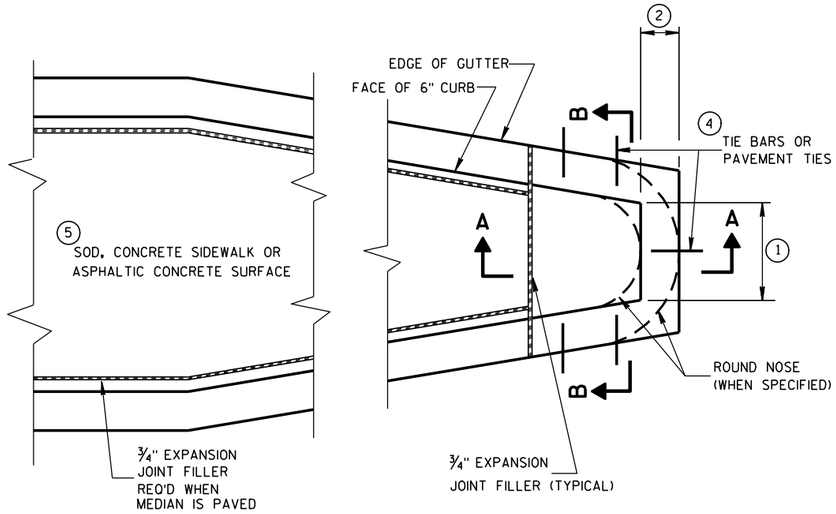
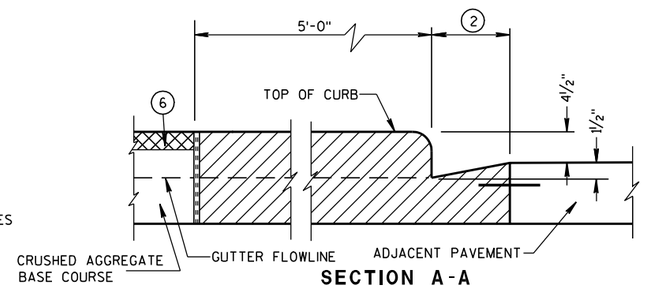
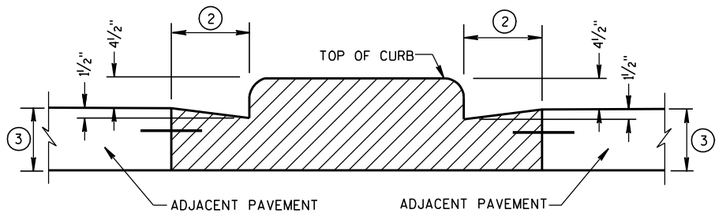




SECTION A-A



SECTION B-B

CONCRETE MEDIAN BLUNT NOSE DETAIL

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) SEE PLAN FOR MEDIAN NOSE WIDTH AND RADIUS (FOR ROUND NOSE ALTERNATE).

(2) WIDTH OF GUTTER TO MATCH EXISTING ADJACENT GUTTER OR AS SPECIFIED ELSEWHERE IN THE PLAN.

(3) DEPTH EQUAL TO ADJACENT PAVEMENT. ADJACENT PAVEMENT STRUCTURE DETAILS ARE SHOWN ON THE PLAN. TYPICAL OPTIONS ARE:

(1) NEW OR EXISTING CONCRETE PAVEMENT.

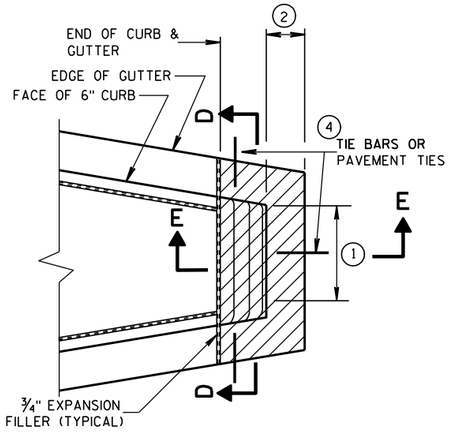
(2) ASPHALTIC CONCRETE PAVEMENT OVER NEW OR EXISTING CONCRETE BASE COURSE.

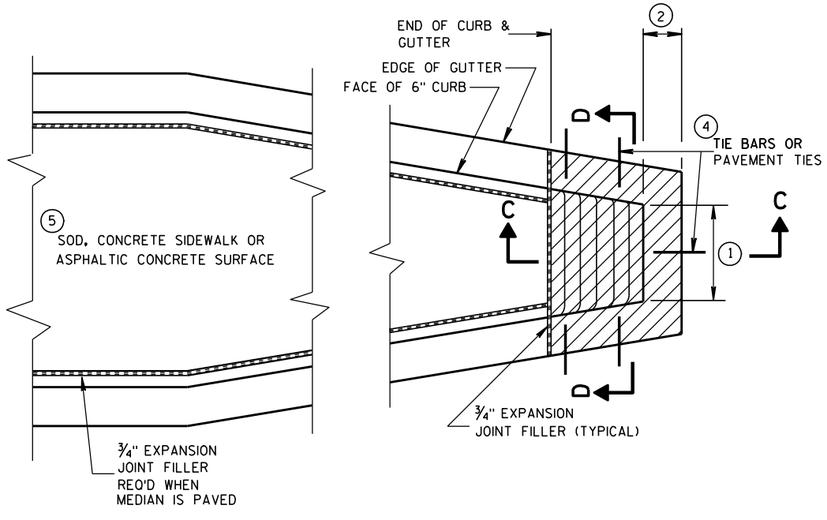
(3) ASPHALTIC CONCRETE PAVEMENT OVER CRUSHED AGGREGATE BASE COURSE.

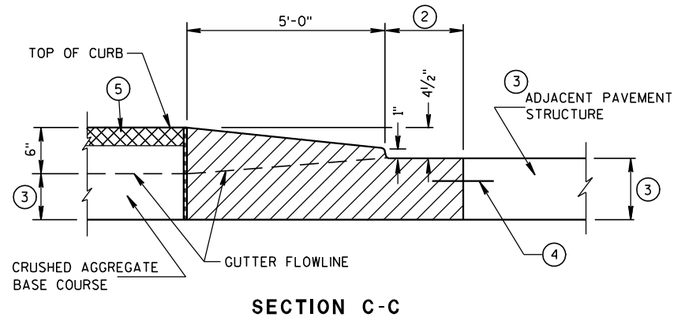
(4) TIE BARS OR PAVEMENT TIES REQUIRED IN NEW CONCRETE PAVEMENT OR CONCRETE BASE COURSE. TIE BARS SHALL BE NO. 4 X 2'-0" SPACED AT 2'-0" C-C.

PAVEMENT TIES REQUIRED IN EXISTING CONCRETE BASE COURSE. PAVEMENT TIES SHALL BE NO. 6 X 1'-0" SPACED AT 3'-0" C-C INSTALLED ON A HORIZONTAL SKEW OF 6:1. THE DIRECTION OF SKEW SHALL ALTERNATE AFTER EVERY ONE OR TWO BARS.

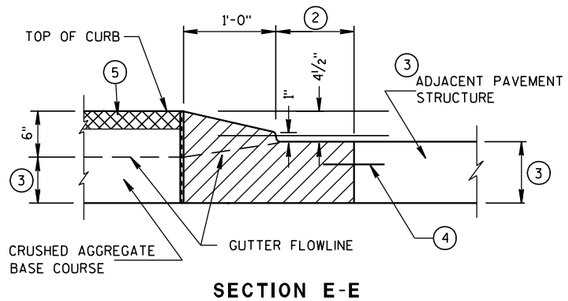
(5) SURFACE TYPE AND DETAILS ARE SHOWN ELSEWHERE IN THE PLAN.







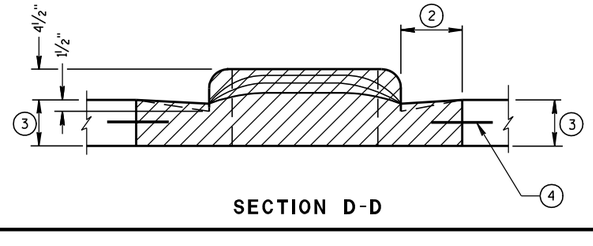
SECTION C-C



SECTION E-E

CONCRETE MEDIAN SLOPED NOSE TYPE 1

CONCRETE MEDIAN SLOPED NOSE TYPE 2



SECTION D-D

CONCRETE MEDIAN NOSE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 6/8/2006 DATE FHWA	/S/ Jerry H. [illegible] ROADWAY STANDARDS ENGINEER 107 NT

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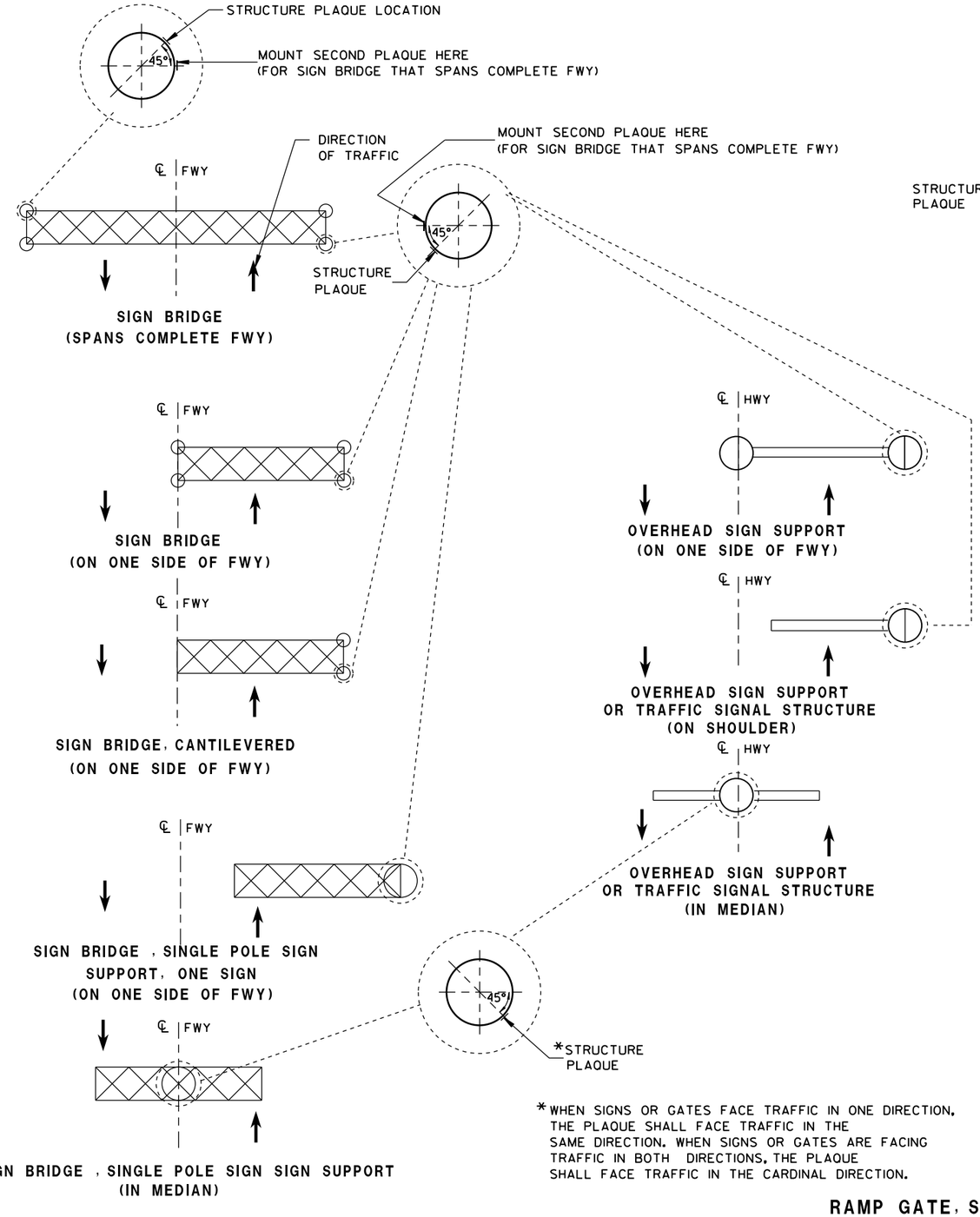
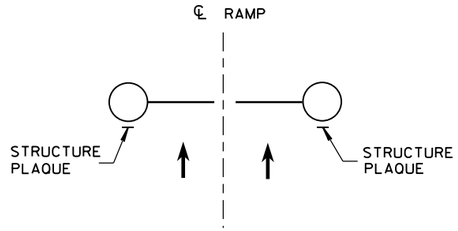
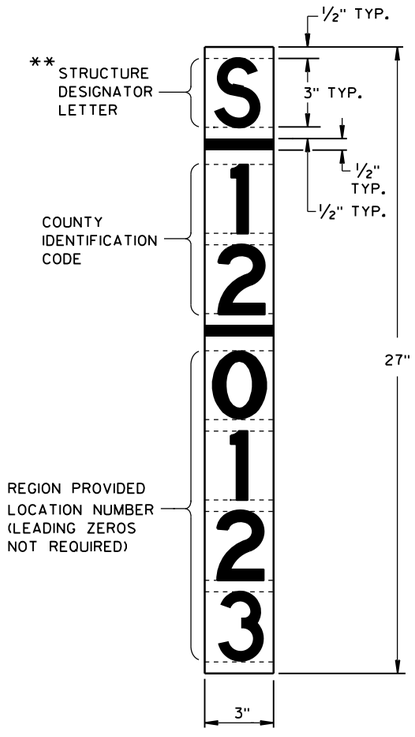


*WHEN SIGNS OR GATES FACE TRAFFIC IN ONE DIRECTION, THE PLAQUE SHALL FACE TRAFFIC IN THE SAME DIRECTION. WHEN SIGNS OR GATES ARE FACING TRAFFIC IN BOTH DIRECTIONS, THE PLAQUE SHALL FACE TRAFFIC IN THE CARDINAL DIRECTION.

LOCATION OF RAMP GATE, SIGN BRIDGE, OVERHEAD SIGN SUPPORT & TRAFFIC SIGNAL STRUCTURE PLAQUES



**RAMP GATE
(ACROSS FWY ON-RAMP)**



** LETTER "G" UTILIZED FOR RAMP GATES. LETTER "S" UTILIZED FOR SIGN BRIDGES, OVERHEAD SIGN SUPPORTS, AND TRAFFIC SIGNALS.

RAMP GATE, SIGN BRIDGE, OVERHEAD SIGN SUPPORT AND TRAFFIC SIGNAL STRUCTURE PLAQUE FOR SIGN BRIDGES AND OVERHEAD SIGN SUPPORT WHICH ARE NOT STRUCTURE MOUNTED

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.

IF THE PROPOSED SIGN BRIDGE OR OVERHEAD SIGN SUPPORT IS REPLACING AN EXISTING SIGN BRIDGE OR OVERHEAD SIGN SUPPORT, A NEW IDENTIFICATION PLAQUE WILL BE REQUIRED.

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

GALVANIZED STEEL SHAFT - 3 STAINLESS STEEL POP RIVETS

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

ALUMINUM SHAFTS - 3 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.

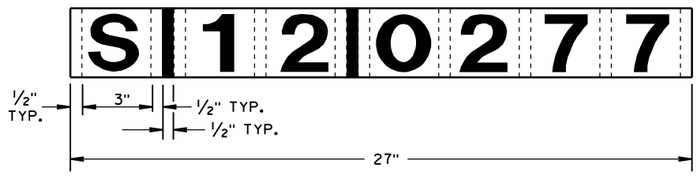
FACE - WHITE, SELF-ADHESIVE VINYL SHEETING, NON-RETROREFLECTIVE

LINES - BLACK, ½" WIDE, SELF-ADHESIVE

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

FOR SIGN BRIDGES, STRUCTURE MOUNTED, THE STRUCTURE PLAQUE SHALL BE MOUNTED HORIZONTALLY AS SHOWN ON THE DRAWING. THE STRUCTURE PLAQUE SHALL BE MOUNTED HORIZONTALLY TO THE BACK OF THE SIGN, BETWEEN THE ALUMINUM EXTRUSIONS, NEAR THE TOP LEFT HAND CORNER OF THE SIGN. THE BASE MATERIAL SHALL BE OMITTED AND THE FACE ADHERED DIRECTLY TO THE ALUMINUM SURFACE. PRIOR TO ADHERING THE MATERIAL, THE ALUMINUM SURFACE SHALL BE SMOOTH, CLEAN AND DRY.

WHERE SIGN BRIDGE ILLUMINATION IS PROVIDED, THE STRUCTURE MUST ALSO HAVE A SIGN BRIDGE CIRCUIT PLAQUE AS SHOWN IN THE ELECTRICAL DETAILS.



IDENTIFICATION PLAQUE FOR SIGN BRIDGE, STRUCTURE MOUNTED

STRUCTURE IDENTIFICATION PLAQUES, RAMP GATES, SIGN BRIDGES, OVERHEAD SIGN SUPPORTS, & TRAFFIC SIGNALS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
12/4/2012 — DATE
/S/ Travis Feltes — STATE TRAFFIC ENGINEER
FHWA

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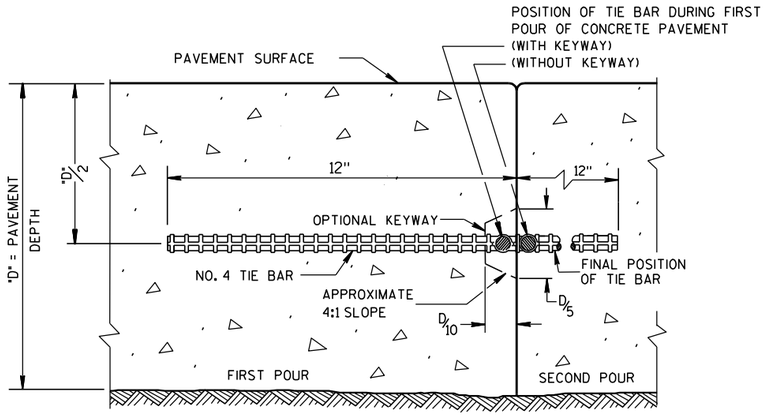
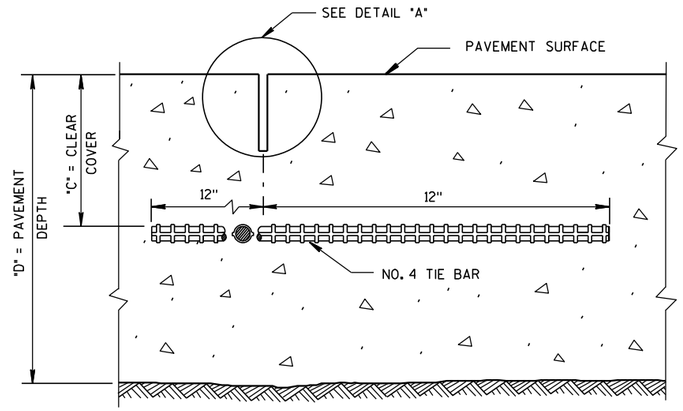


CONSTRUCTION JOINT



SAWED JOINT

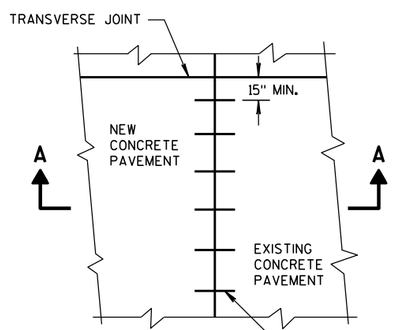
GENERAL NOTES

DO NOT SEAL OR FILL LONGITUDINAL JOINTS.

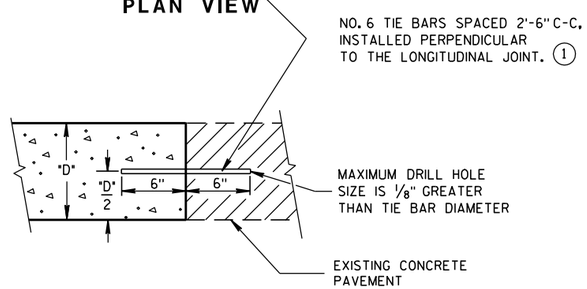
CREATE A LONGITUDINAL JOINT FOR PAVEMENT WIDTHS GREATER THAN 15 FEET.

CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

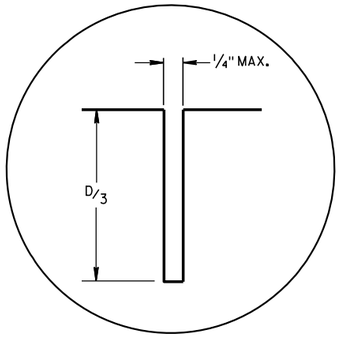
(1) ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.



PLAN VIEW

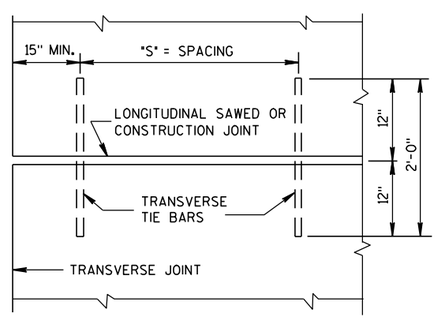


SECTION A-A
LONGITUDINAL CONSTRUCTION JOINT TIE BARS ANCHORED INTO EXISTING PAVEMENT



DETAIL "A"

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



PLAN VIEW
SHOWING LOCATION OF TIE BARS

CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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S.D.D. 13 C 1-15

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S.D.D. 13 C 1-15

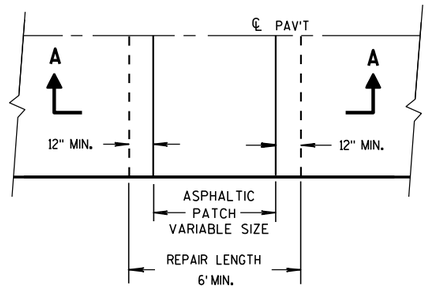
GENERAL NOTES

SAW CUT, DRILL, AND LIFT OUT EXISTING CONCRETE PAVEMENT WITHIN THE BOUNDARIES OF CONCRETE REPAIR AREAS. THE CONTRACTOR MAY MAKE ADDITIONAL SAW CUTS INSIDE THE REPAIR LIMITS TO REDUCE WEIGHT AND SIZE OF CONCRETE PIECES. ADDITIONAL SAW CUTS ARE NOT PAID FOR BY THE DEPARTMENT.

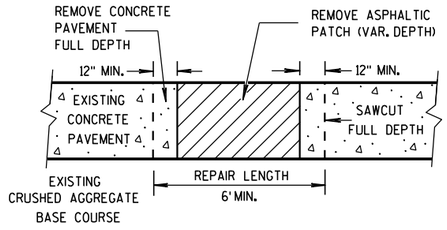
PROVIDE 6-FOOT MINIMUM DISTANCE FROM BOUNDARIES OF CONCRETE REPAIR AREAS TO ADJACENT TRANSVERSE JOINT OR CRACK IN THE SAME LANE.

THE LENGTH OF THE REPAIRS MAY VARY FROM THE DIMENSIONS SHOWN IF THE EXISTING CONCRETE PAVEMENT IS NONDOWELED AND THE PAVEMENT IS TO BE OVERLAID AFTER REPAIRING.

(1) DOWEL BARS MIGHT NOT EXIST.

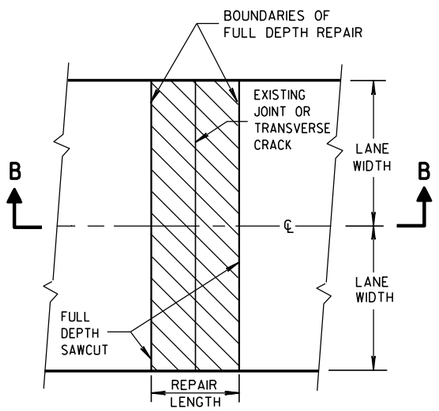


PLAN VIEW

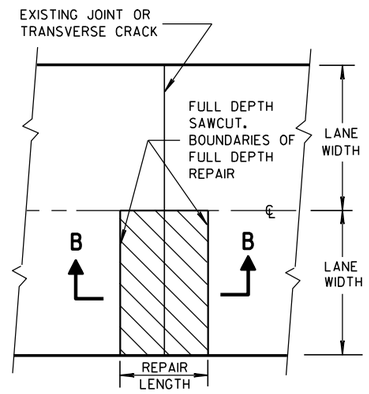


SECTION A-A

HMA PATCH REMOVAL



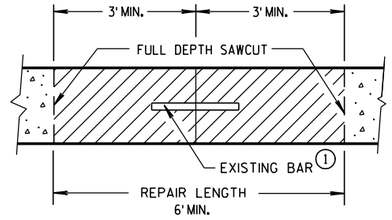
PLAN VIEW
(DOUBLE LANE REPAIR)



PLAN VIEW
(SINGLE LANE REPAIR)

FULL DEPTH CONCRETE PAVEMENT REMOVAL

(SEE NOTE)



SECTION B-B

CONCRETE REMOVAL

6

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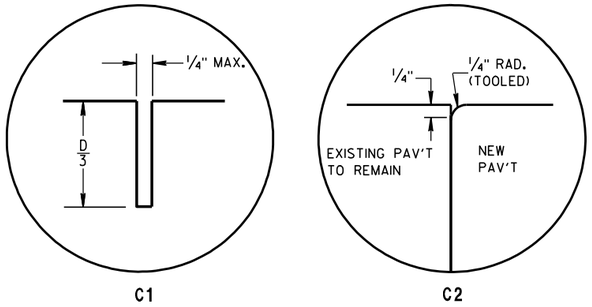
S.D.D. 13 C 9-9a

S.D.D. 13 C 9-9a

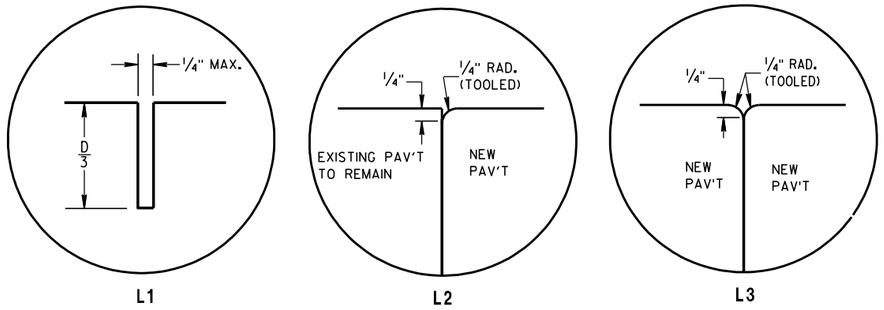
CONCRETE PAVEMENT REPAIR AND REPLACEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



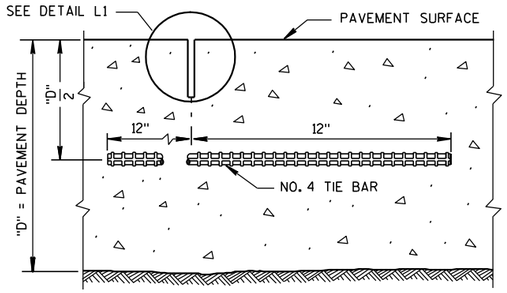
C1 C2

TRANSVERSE JOINTS



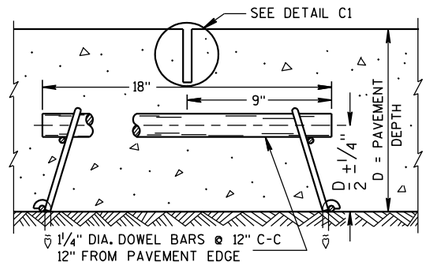
L1 L2 L3

LONGITUDINAL JOINTS



SECTION C-C

SAWED LONGITUDINAL JOINT



SECTION F-F

CONTRACTION JOINT

GENERAL NOTES

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

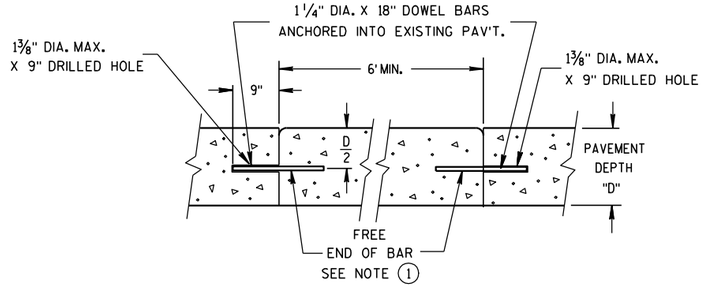
CONCRETE PAVEMENT REPAIRS OF EXISTING NONDOWELED CONCRETE PAVEMENTS DO NOT NEED TO BE DOWELED.

DO NOT SEAL OR FILL JOINTS.

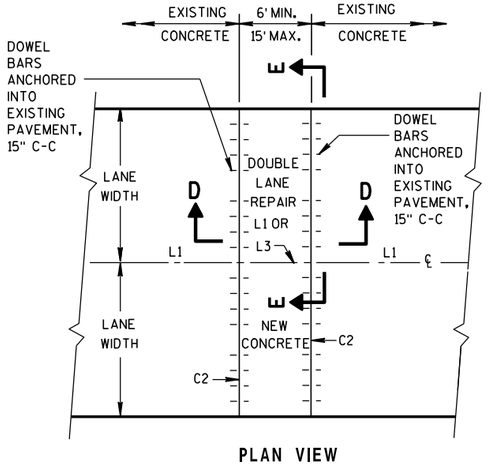
ANCHOR DOWEL BARS AND TIE BARS INTO DRILLED HOLES WITH AN EPOXY.

PROVIDE A MINIMUM DISTANCE OF 24 INCHES FROM AN EXISTING TRANSVERSE JOINT OR THE EDGE OF REPLACEMENT TO THE CENTER OF THE TIE BAR NEAREST THAT JOINT OR EDGE.

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

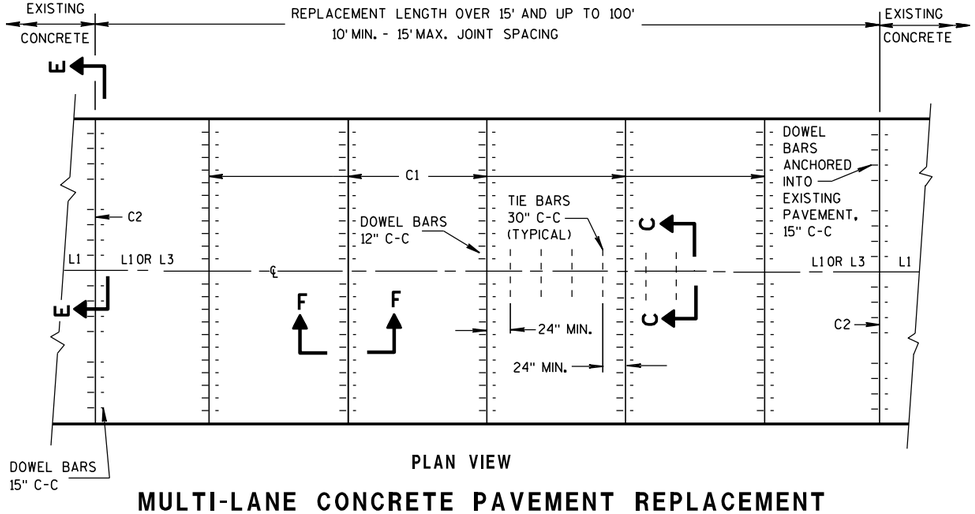


SECTION D-D



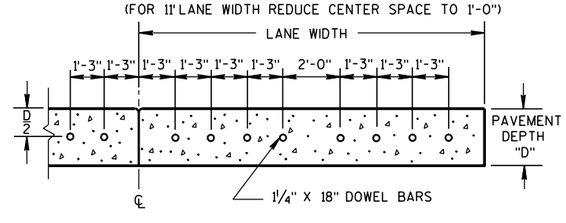
PLAN VIEW

MULTI-LANE CONCRETE PAVEMENT REPAIR



PLAN VIEW

MULTI-LANE CONCRETE PAVEMENT REPLACEMENT



SECTION E-E

SPACING OF DOWEL BARS ANCHORED INTO EXISTING PAVEMENT

CONCRETE PAVEMENT REPAIR AND REPLACEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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S.D.D. 13 C 9-9b

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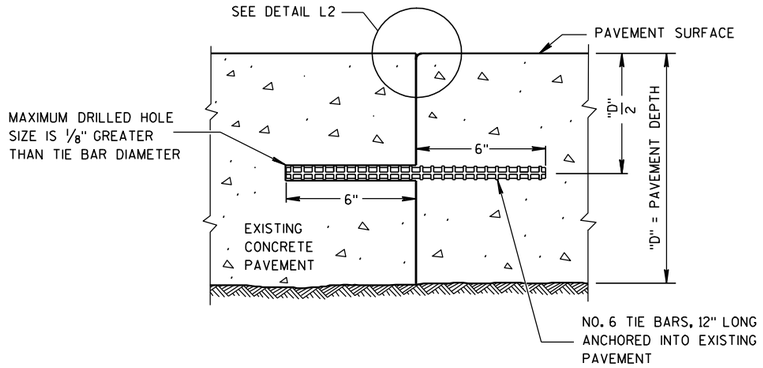
S.D.D. 13 C 9-9b



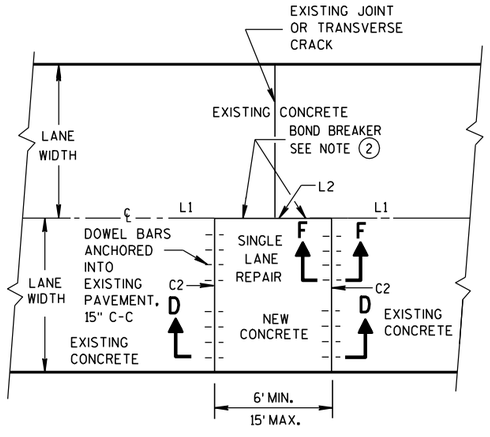
SECTION G-G

TIE BARS ANCHORED INTO EXISTING PAVEMENT

GENERAL NOTES

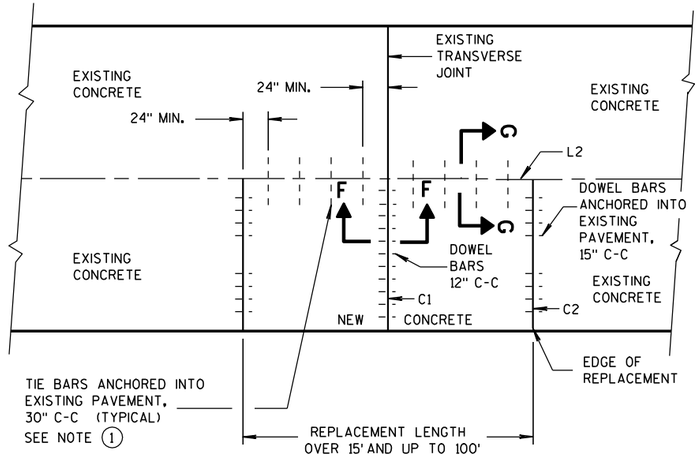
(1) WITH THE APPROVAL OF THE ENGINEER, FOR SINGLE LANE PAVEMENT REPLACEMENTS LESS THAN 30 FEET IN LENGTH, THE CONTRACTOR MAY INSTALL DRILLED TIE BARS ON 6:1 SKEW HORIZONTALLY, DIRECTION OF SKEW ALTERNATING WITH EACH SUCCESSIVE BAR. DRIVE SKEWED TIE BARS TO A DEPTH OF 6 INCHES AND TO SUCH A DIAMETER AS TO PROVIDE A TIGHT DRIVEN FIT.

(2) USE AN ENGINEER-APPROVED BOND BREAKER (E.G. RELEASE AGENT, CURING COMPOUND) FOR SINGLE LANE REPAIRS UP TO 15 FEET IN LENGTH.



PLAN VIEW

SINGLE LANE CONCRETE PAVEMENT REPAIR



PLAN VIEW

SINGLE LANE CONCRETE PAVEMENT REPLACEMENT

CONCRETE PAVEMENT REPAIR AND REPLACEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

11-1-2011 DATE — /S/ Deb Bischoff PAVEMENT POLICY & DESIGN ENGINEER

FHWA

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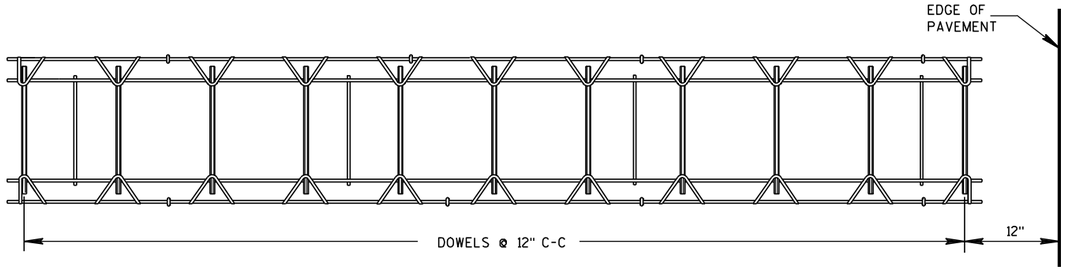
S.D.D. 13 C 9-9c



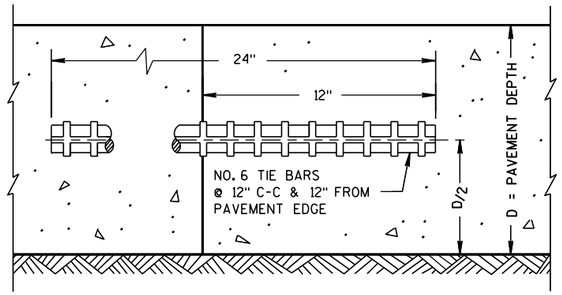
PLAN VIEW

SIDE VIEW

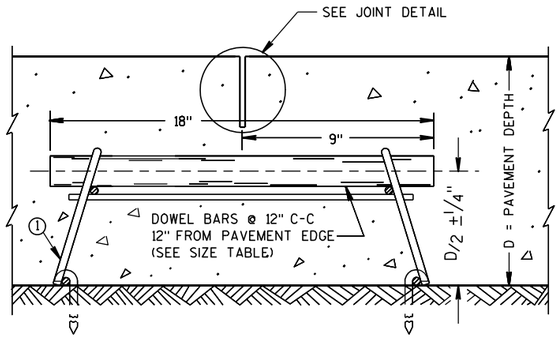
CONTRACTION JOINT DOWEL ASSEMBLY ①

PAVEMENT DEPTH, DOWEL BAR SIZE AND JOINT SPACING TABLE

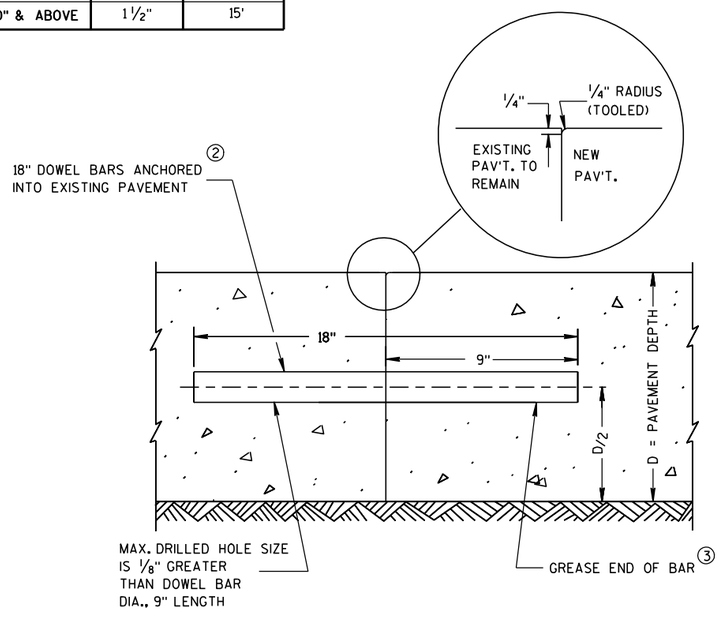
PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER	CONTRACTION JOINT SPACING
5 ½", 6",6 ½"	NONE	12'
7",7 ½"	1"	14'
8",8 ½"	1 ¼"	15'
9",9 ½"	1 ¼"	15'
10" & ABOVE	1 ½"	15'



TRANSVERSE CONSTRUCTION JOINT

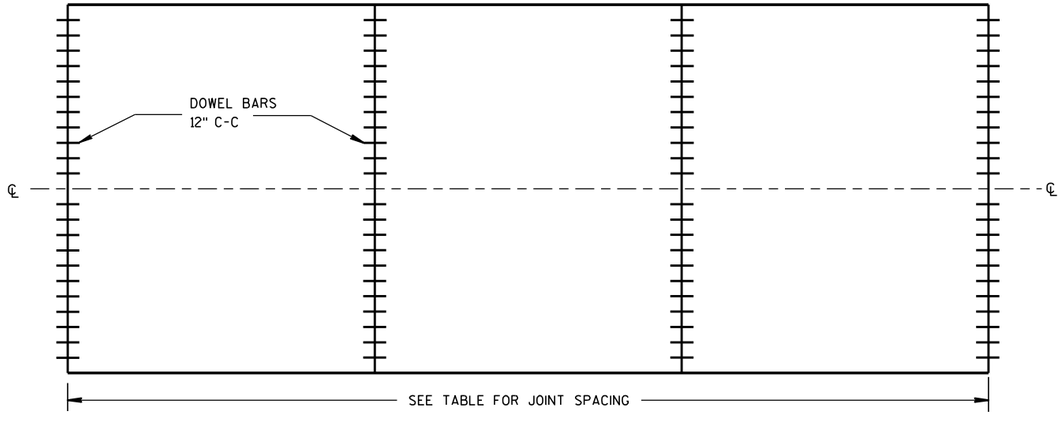


DOWELED CONTRACTION JOINT



TRANSVERSE CONTRACTION JOINTS ABUTTING EXISTING PAVEMENT

④ DOWEL BAR DETAIL



CONTRACTION JOINT LOCATIONS

GENERAL NOTES

CONTRACTION JOINTS

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

DO NOT SEAL OR FILL CONTRACTION JOINTS.

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

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

CONSTRUCTION JOINTS

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

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

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

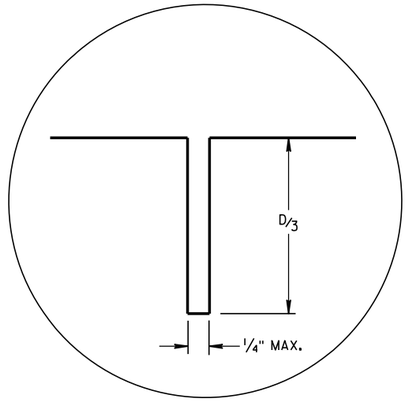
② ANCHOR DOWEL BARS INTO DRILLED HOLES WITH AN EPOXY.

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

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

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

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



JOINT DETAIL

URBAN DOWELED CONCRETE PAVEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

12/11/2009 — DATE

/S/ Deb Bischoff — PAVEMENT POLICY & DE — NEER

FHWA

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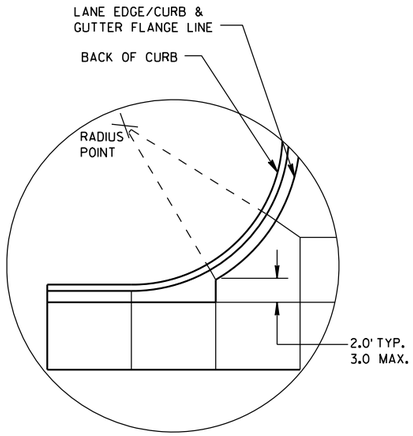
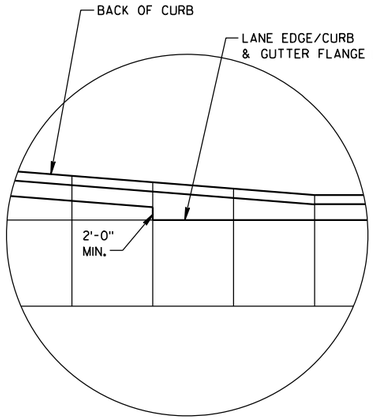
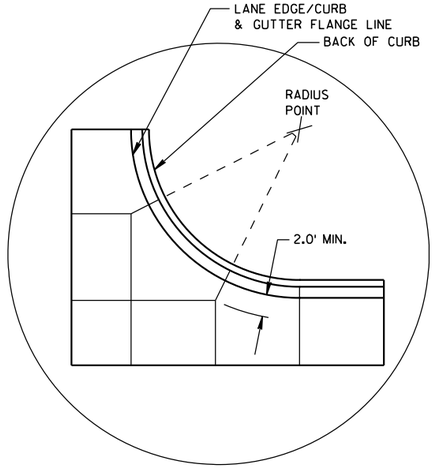
S.D.D. 13 C 13-7



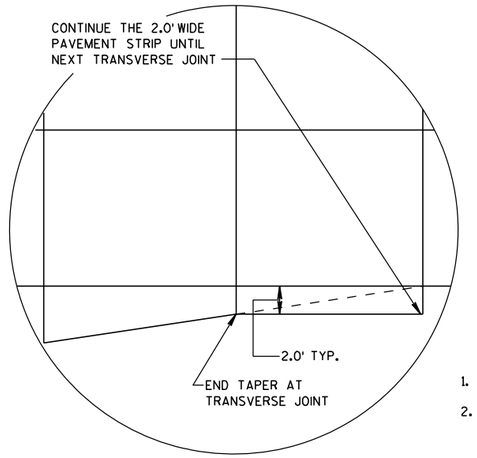
DETAIL "A"



DETAIL "B"



DETAIL "C"



DETAIL "D"

GENERAL NOTES

THE PRIMARY ROADWAY CONTROLS THE TRANSVERSE JOINT PATTERN.

ALIGN NEW JOINTS WITH EXISTING JOINTS OR CRACKS.

CONSTRUCT TRANSVERSE JOINTS PERPENDICULAR TO THE ROADWAY.

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

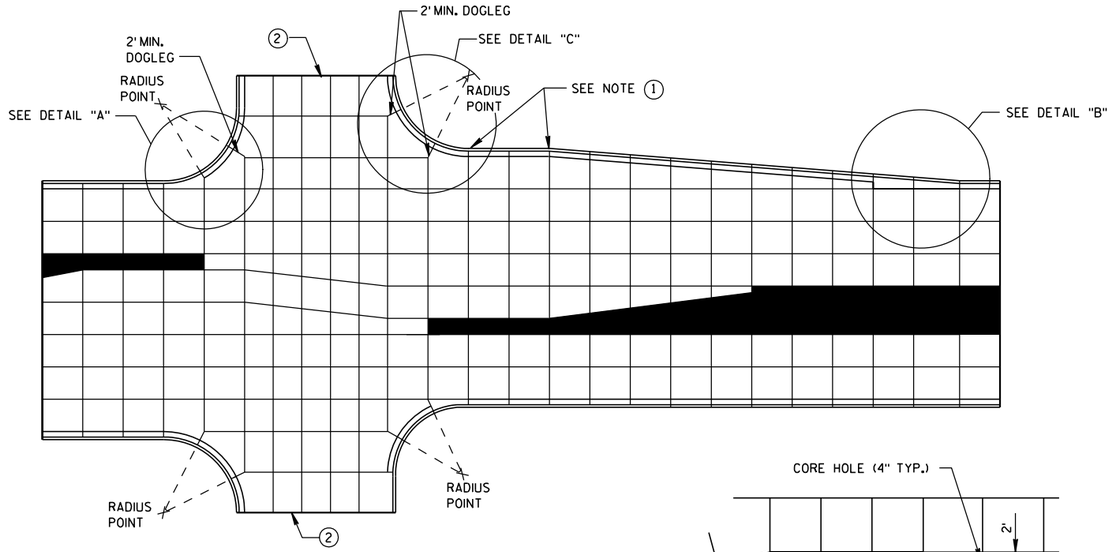
AVOID SLABS LESS THAN 2 FEET WIDE OR GREATER THAN 15 FEET WIDE.

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

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

CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

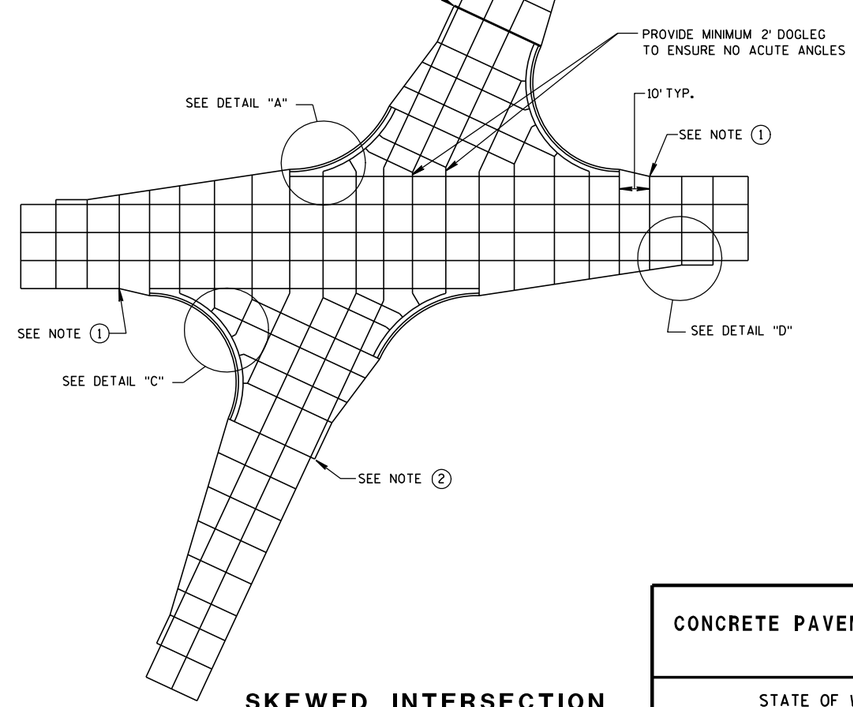
1. PROVIDE TRANSVERSE JOINTS AT ALL PAVEMENT WIDTH CHANGES.
2. CONSTRUCT DOWELED EXPANSION JOINT ON THE SIDE ROAD OF AN INTERSECTION IF THE SIDE ROAD IS CONCRETE PAVEMENT AND GREATER THAN 300 FEET IN LENGTH. ALIGN EXPANSION JOINT WITH EDGE OF RADIUS.
3. THE ENGINEER MAY APPROVE SLIGHT VARIATIONS FROM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



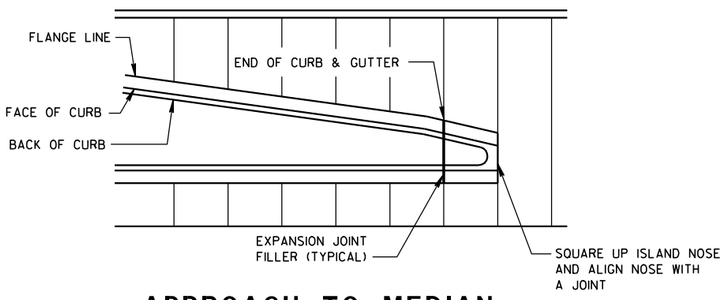
STANDARD INTERSECTION

PAVEMENT DEPTH AND JOINT SPACING TABLE

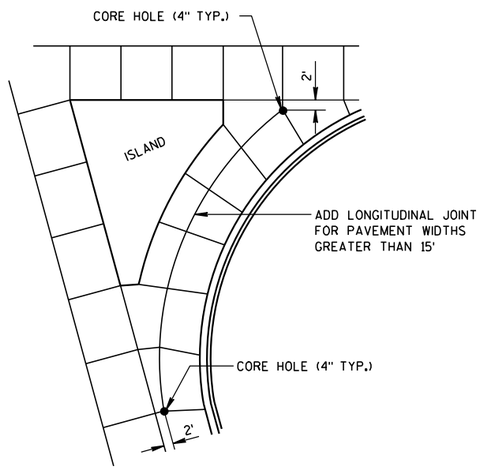
PAVEMENT DEPTH (D)	CONTRACTION JOINT SPACING
6", 6½"	12'
7", 7½"	14'
8" & ABOVE	15'



SKEWED INTERSECTION



APPROACH TO MEDIAN



LARGE RIGHT TURN

CONCRETE PAVEMENT JOINTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

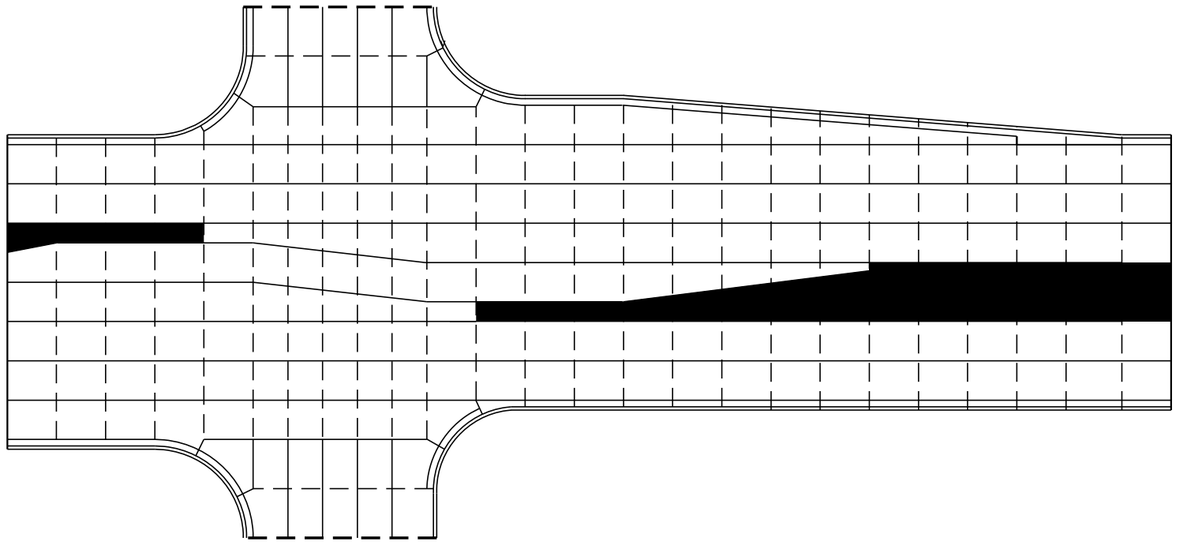
6
S.D.D. 13 C 18-1a

LEGEND

POTENTIAL DOWELED EXPANSION JOINT

DOWELED JOINT

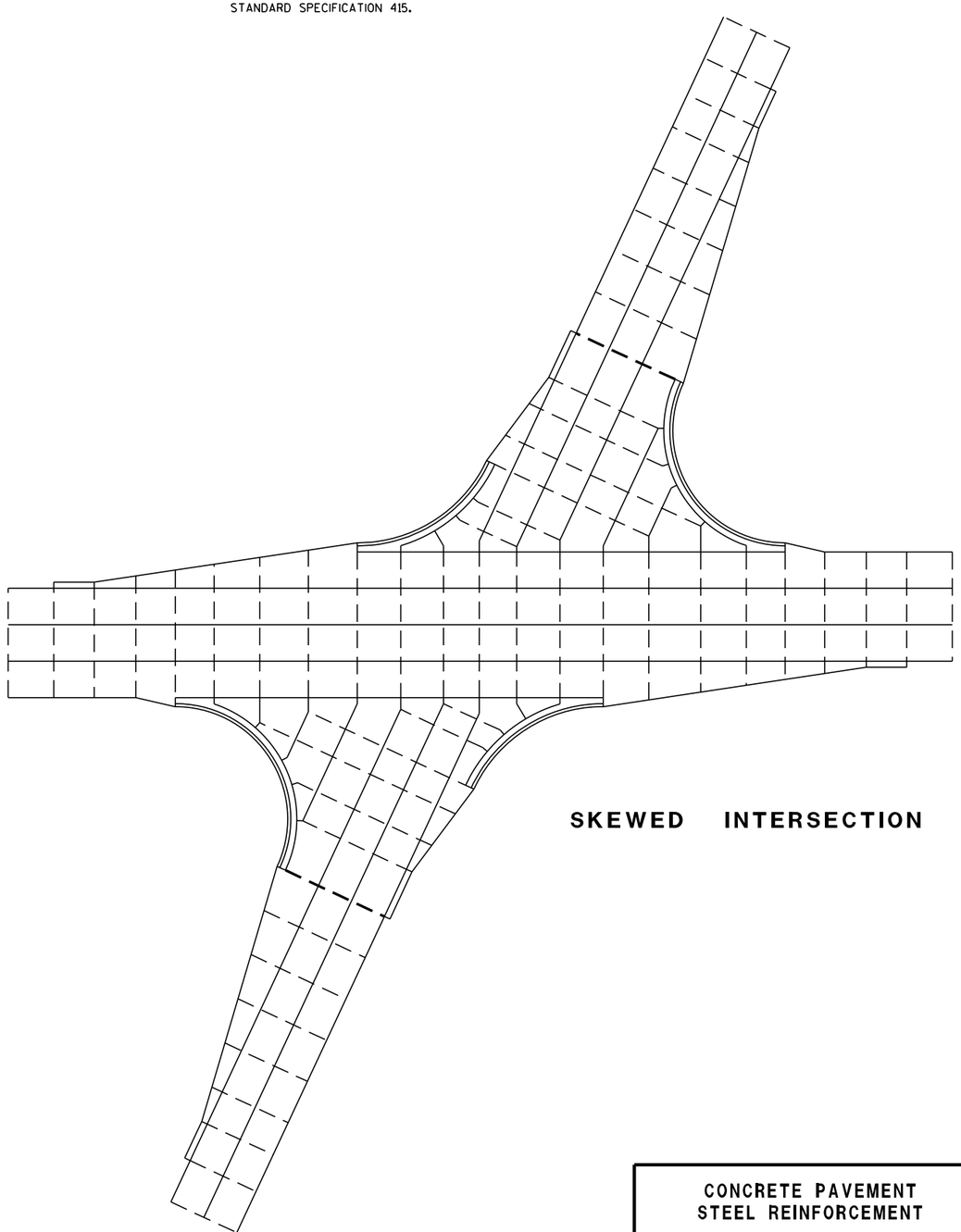
TIED JOINT



STANDARD INTERSECTION

GENERAL NOTES

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



SKEWED INTERSECTION

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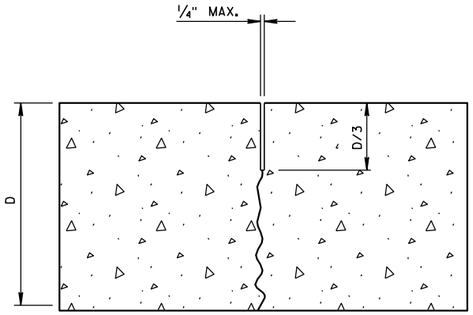
S.D.D. 13 C 18-1b

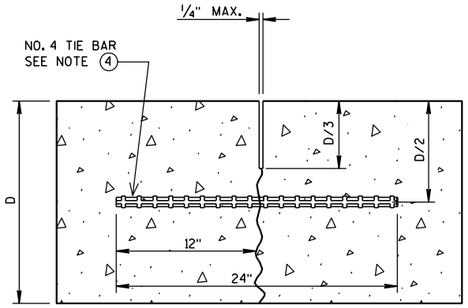
S.D.D. 13 C 18-1b

CONCRETE PAVEMENT
STEEL REINFORCEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



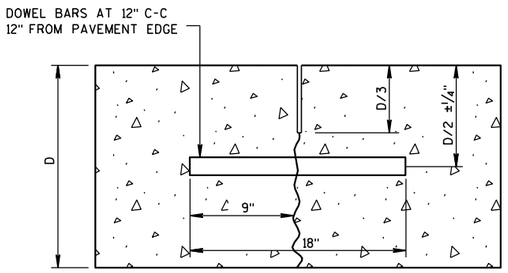
UNDOWELED-TRANSVERSE



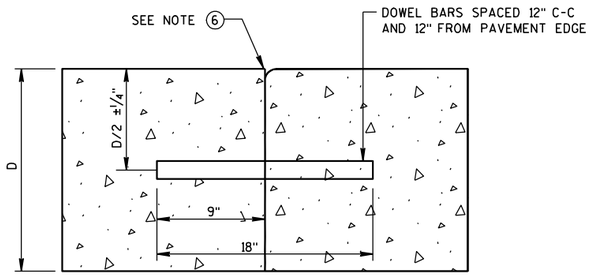
TIED LONGITUDINAL

GENERAL NOTES

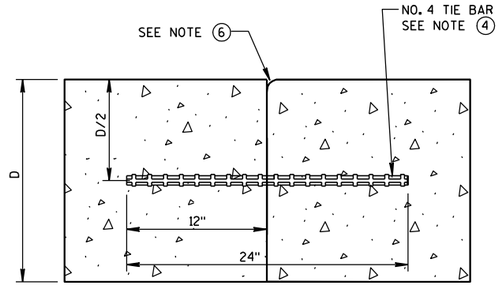
1. USE DOWELED EXPANSION JOINTS ON SIDE ROADS AT INTERSECTIONS (TO ISOLATE THE SIDE ROAD FROM THE THROUGH STREET) IF THE SIDE ROAD IS CONCRETE PAVEMENT AND GREATER THAN 300 FEET IN LENGTH.
2. SPACE CONTRACTION JOINTS IN ACCORDANCE WITH 13C4, 13C11 OR 13C13.
3. LOCATE CONSTRUCTION JOINTS A MINIMUM OF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



DOWELED-TRANSVERSE



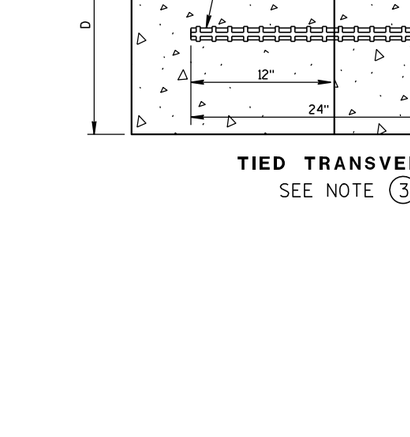
DOWELED TRANSVERSE



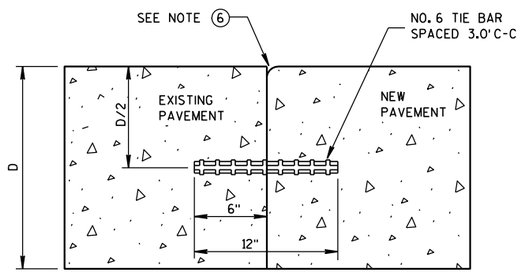
TIED LONGITUDINAL

CONTRACTION JOINTS

SEE NOTE (2)



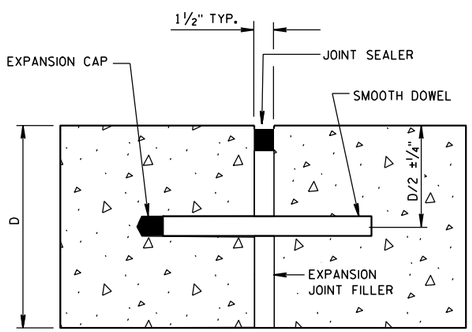
TIED TRANSVERSE
SEE NOTE (3)



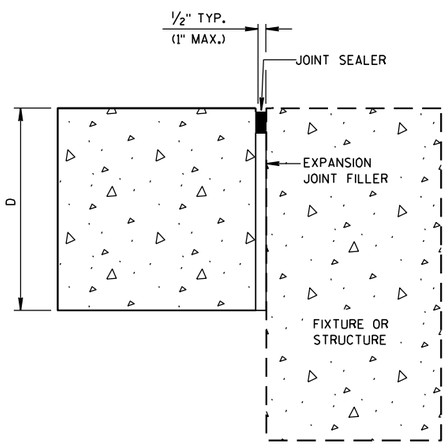
TIED LONGITUDINAL TO EXISTING

CONSTRUCTION JOINTS

SEE NOTE (5)



DOWELED-TRANSVERSE
SEE NOTE (1)



UNTIED-LONGITUDINAL

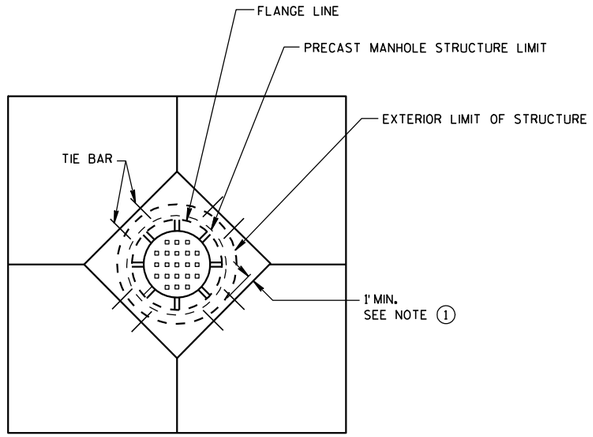
EXPANSION JOINTS

CONCRETE PAVEMENT
JOINT TYPES

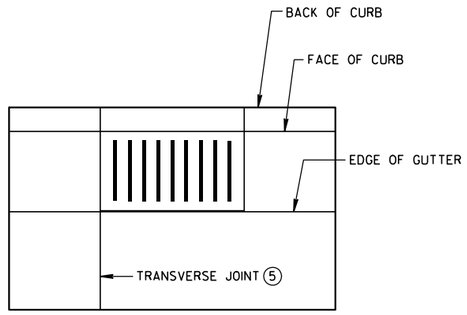
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

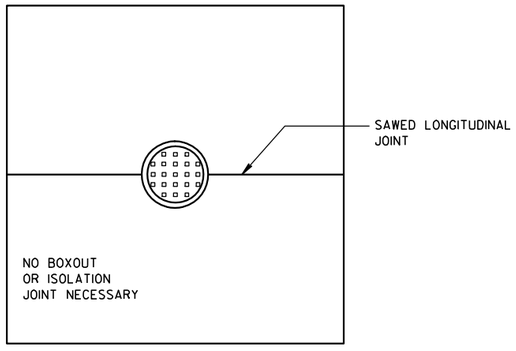
S.D.D. 13 C 18-1c



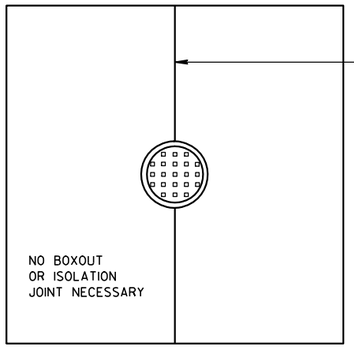
DIAGONAL MANHOLE BOXOUT FOR CONSTRUCTION JOINTS



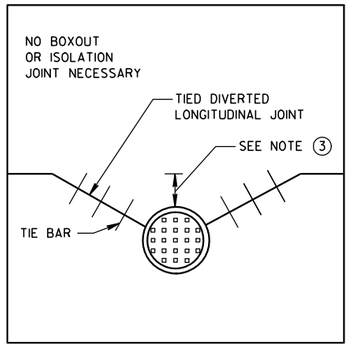
INLET WITH TRANSVERSE JOINT



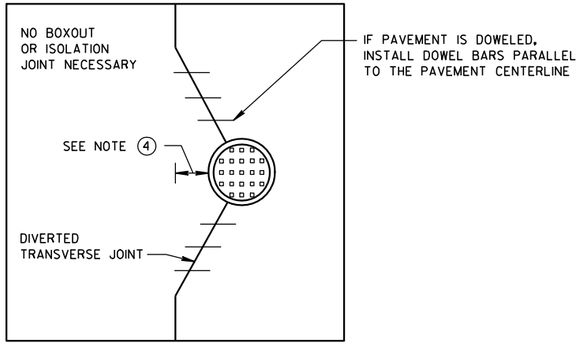
MANHOLE WITH LONGITUDINAL JOINT



MANHOLE WITH TRANSVERSE JOINT



MANHOLE WITH DIVERTED LONGITUDINAL CONTRACTION JOINT



MANHOLE WITH DIVERTED TRANSVERSE CONTRACTION JOINT

GENERAL NOTES

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

CONCRETE PAVEMENT JOINTING AT UTILITY FIXTURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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

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) W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS. APPROVED PLASTIC BLOCKOUT DESIGNS MAY VARY FROM THIS TYPICAL DETAIL WHEN USED IN CONJUNCTION WITH STEEL POSTS.

DO NOT MIX STEEL POSTS AND WOOD POSTS IN A SINGLE INSTALLATION.

(2) USE STRUCTURAL STEEL POSTS CONFORMING TO ASTM A 36. GALVANIZED POSTS ACCORDING TO AASHTO M 111. EITHER SET THE POSTS IN DRILLED HOLES OR DRIVE TO GRADE. REMOVE MUSHROOMING CAUSED BY DRIVING AND REPAIR DAMAGED SPELTER COATING ON GALVANIZED POSTS.

(3) INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

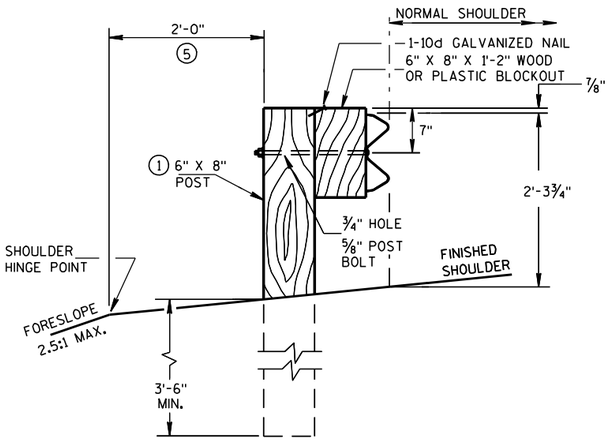
(4) USE EITHER WOOD OR APPROVED PLASTIC BLOCKOUTS ON WOOD POSTS.

(5) IF THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING, W BEAM (LHW).

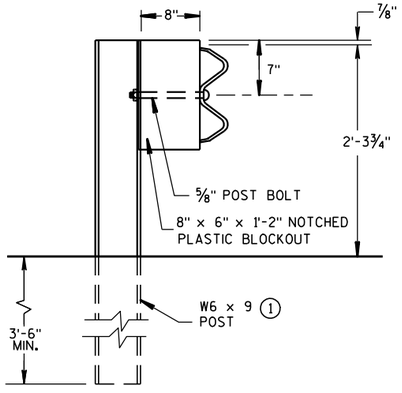
(6) IF ROCK IS ENCOUNTERED DURING EXCAVATION, THE ENGINEER MAY APPROVE USING A 12 INCH DIAMETER POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE APPROXIMATELY 2½ INCHES DEEP. CUT THE POSTS TO LENGTH AND PLACE IN YHE HOLE. BACKFILL WITH MATERIAL EXCAVATED FROM THE HOLE AND COMPACT ADEQUATEY.

INSTALL BEAM GUARD SECTIONS AND ALL NECESSARY HARDWARE ACCORDING TO THE APPLICABLE PLAN AND CURRENT STANDARD AND SUPPLEMENTAL SPECIFICATIONS.

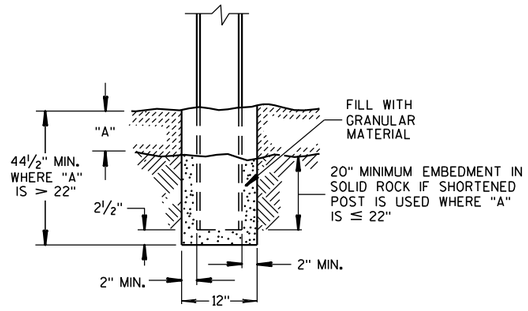
ALL DIMENSIONS ARE SUBJECT TO MANUFACTURER'S TOLERANCES EXCEPT WHERE ALLOWABLE TOLERANCES ARE SHOWN.



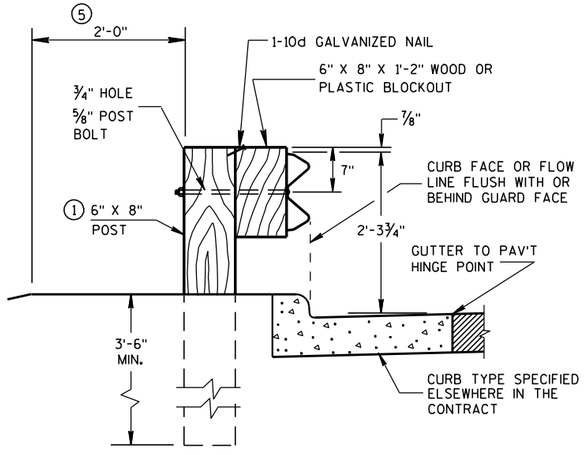
END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



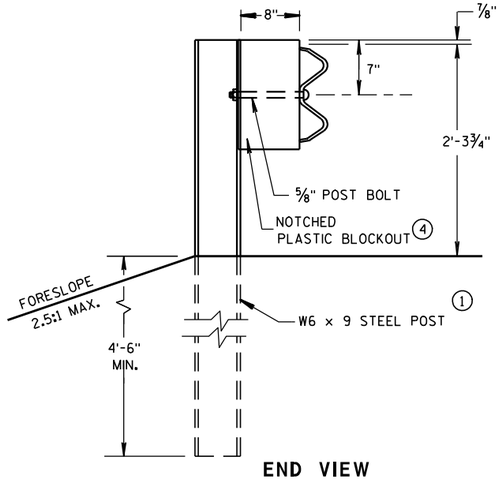
END VIEW
STEEL POST & NOTCHED
PLASTIC BLOCKOUT ALTERNATIVE
STANDARD INSTALLATION



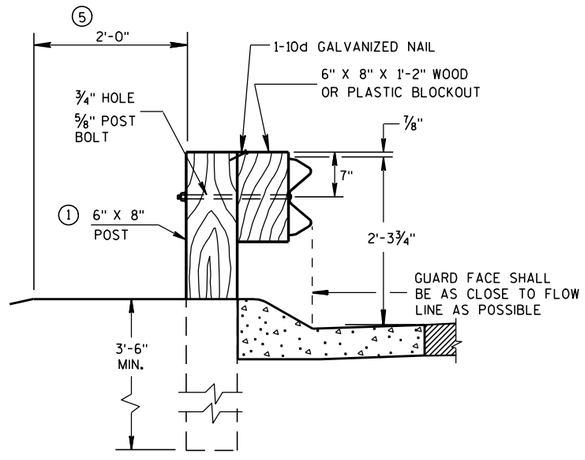
END VIEW
SETTING STEEL OR WOOD POST IN ROCK (6)



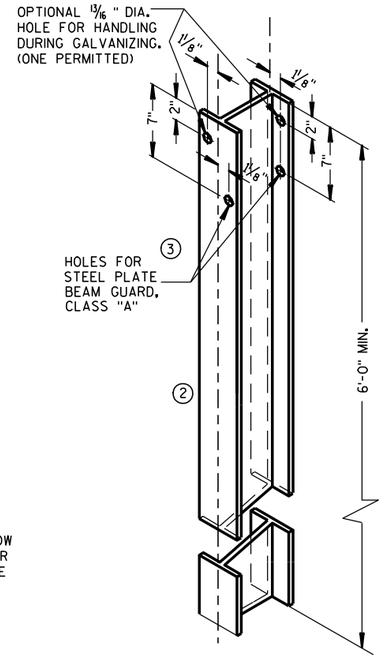
END VIEW
LOCATED ALONG A CURBED ROADWAY



END VIEW
LONGER POST AT HALF
POST SPACING W BEAM
(LHW)

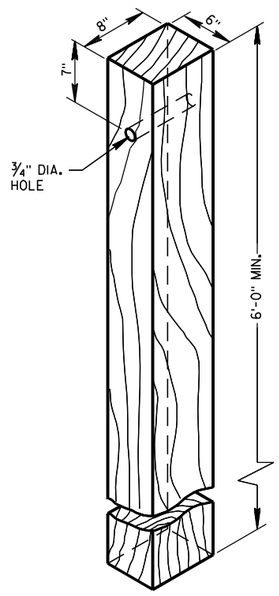


END VIEW
LOCATED ALONG A
MOUNTABLE CURBED ROADWAY

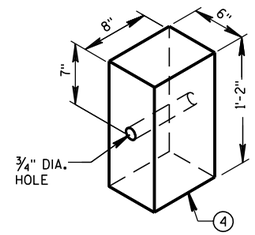


STEEL POST &
HOLE PUNCHING DETAIL
(W6 X 9) (1)

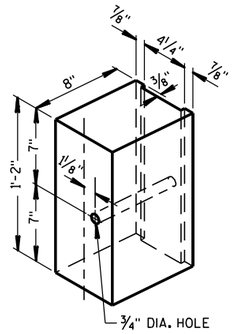
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED



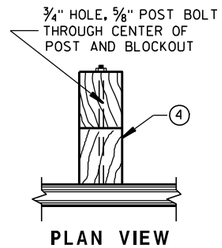
WOOD POST
(6"X8") NOMINAL



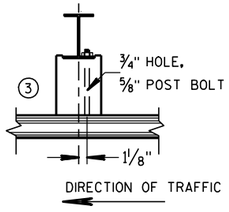
WOOD OR PLASTIC
BLOCKOUT FOR
WOOD POSTS



TYPICAL NOTCHED (1)
PLASTIC BLOCKOUT
FOR STEEL POSTS



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



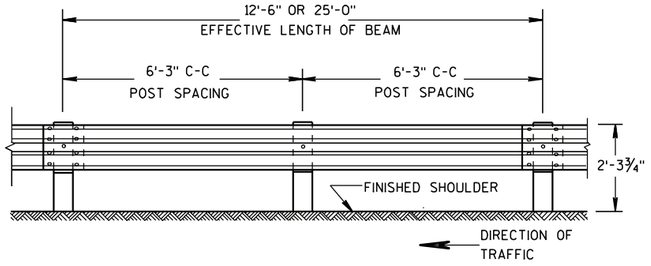
PLAN VIEW
STEEL POST, NOTCHED
PLASTIC BLOCKOUT & BEAM

TYPICAL INSTALLATION OF STEEL PLATE BEAM GUARD

STEEL PLATE BEAM GUARD,
CLASS "A"
INSTALLATION & ELEMENTS

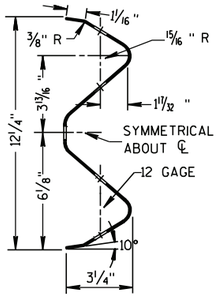
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6
S.D.D. 14 B 15-7a

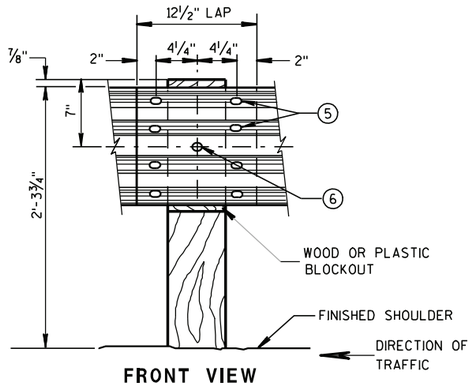


FRONT VIEW

POST SPACING STANDARD INSTALLATION



SECTION THRU W BEAM

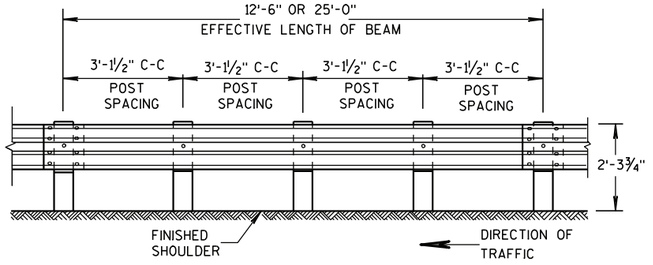


FRONT VIEW

BEAM SPLICE AT WOOD POST AND POST MOUNTING DETAIL

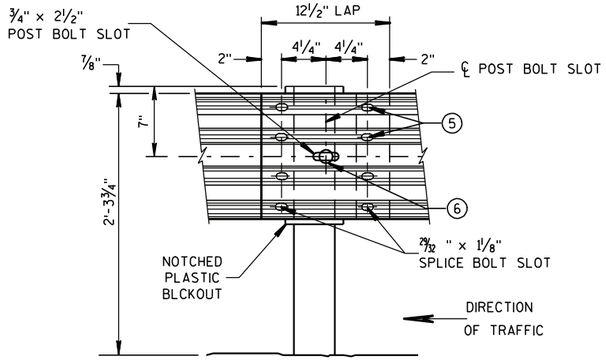
GENERAL NOTES

1. PROVIDE TYPE "H" SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH TYPE "H" YELLOW REFLECTIVE SHEETING.
2. DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
3. REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.
4. PROVIDE AN ANGLE OF BEND OF 90° ± 1° FOR TWO-SIDED REFLECTORS.
5. 8 - 5/8" ϕ X 2 " BUTTON HEAD BOLTS WITH OVAL SHOULDERS & RECESS NUTS.
6. 5/8" ϕ X 1'-6" BUTTON HEAD BOLT AND AND RECESS NUT WITH ROUND WASHER UNDER NUT.



FRONT VIEW

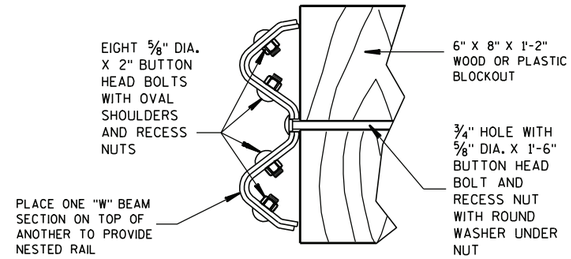
POST SPACING FOR LONGER POST AT HALF POST SPACING W BEAM (LHW)



FRONT VIEW

BEAM SPLICE AT STEEL POST

TYPICAL SPLICING DETAILS OF STEEL PLATE BEAM GUARD

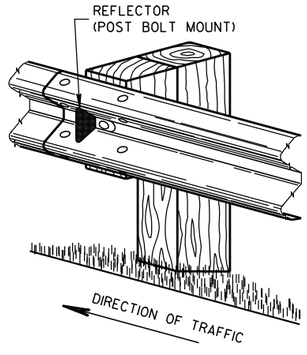


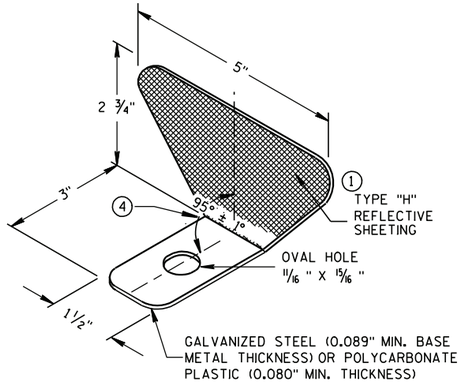
NESTED W BEAM (NW)

USE ALL OTHER STANDARD BEAM GUARD DETAILS FOR CONSTRUCTING NESTED W BEAM (NW)

REFLECTOR SPACING (2)

	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200'	50' C-C	1	3
	> 200'	100' C-C	1	
TWO WAY TRAFFIC	< 200'	25' C-C	1 (3)	6
	> 200'	50' C-C	1	
TWO WAY TRAFFIC	< 200'	50' C-C	2	3
	> 200'	100' C-C	2 (4)	



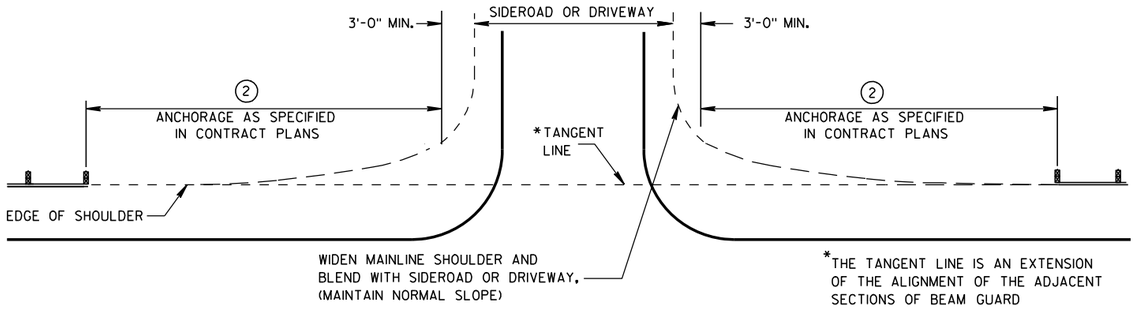


ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION (1)

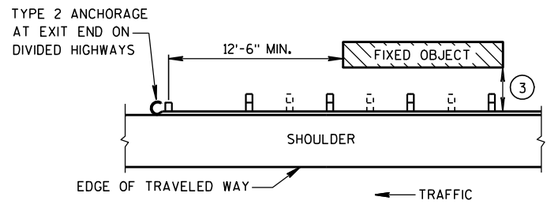
STEEL PLATE BEAM GUARD,
CLASS "A",
INSTALLATION & ELEMENTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6
S.D.D. 14 B 15-7b



BEAM GUARD AT SIDEROADS OR DRIVEWAYS



BEAM GUARD AT OBSTACLES EXIT END - ONE WAY TRAFFIC

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE PERTINENT STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

W6 X 9 OR W6 X 8.5 STEEL POSTS WITH NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

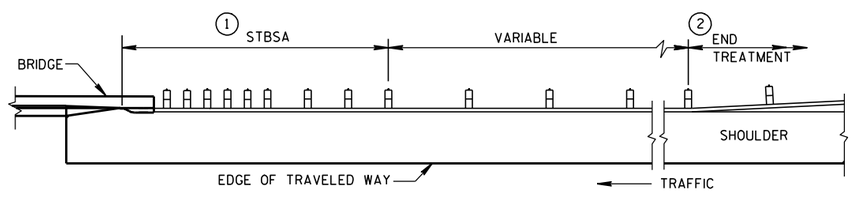
THE LOCATIONS AND LENGTHS OF BEAM GUARD ARE SHOWN ELSEWHERE IN THE PLAN.

(1) STEEL THRIE BEAM STRUCTURAL APPROACH (STBSA) - SEE CURRENT SDD 14B20.

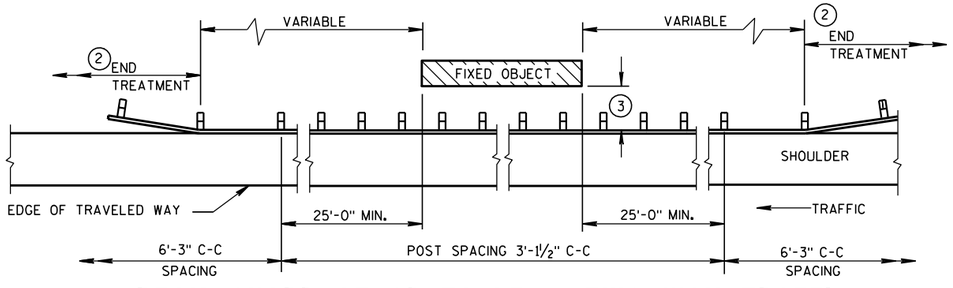
(2) USE AN APPROVED END TREATMENT FOR THE TRAFFIC APPROACH SIDE OF BRIDGE/OBSTACLES. USE TYPE 2 ANCHORAGE ONLY AT THE DOWNSTREAM ENDS OF BEAM GUARD LOCATED ALONG ROADWAYS WITH ONE WAY TRAFFIC.

(3)

MINIMUM LATERAL DISTANCE FROM FACE OF BEAM GUARD TO FIXED OBJECT	POST SPACING
3'-6"	3' - 1½"
4'-6"	6' - 3"

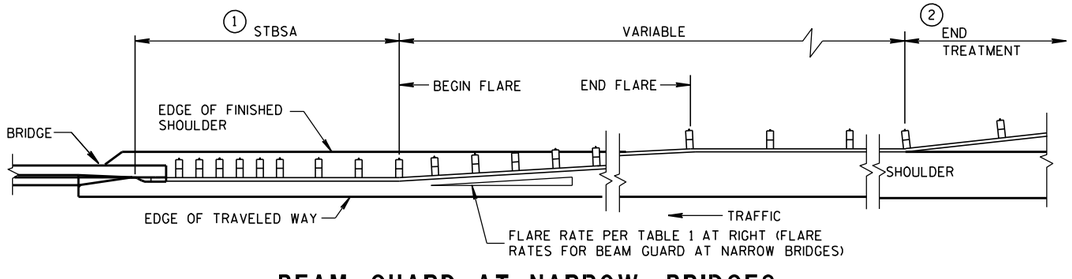


BEAM GUARD AT FULL WIDTH BRIDGES



BEAM GUARD AT OBSTACLES - TWO WAY TRAFFIC

(RAIL TO OBSTACLE CLEARANCE 3'-6" TO 4'-6")



BEAM GUARD AT NARROW BRIDGES
(FLARED TO SHOULDER EDGE, THEN PARALLEL TO ROADWAY)

TABLE 1
FLARE RATES FOR BEAM GUARD AT NARROW BRIDGES

POSTED SPEED (MPH)	FLARE RATE
25	13:1
30	15:1
35	16:1
40	18:1
45	21:1
50	24:1
55	26:1
65	30:1

STEEL PLATE BEAM GUARD CLASS "A" AT BRIDGES, OBSTACLES AND SIDEROADS/DRIVEWAYS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

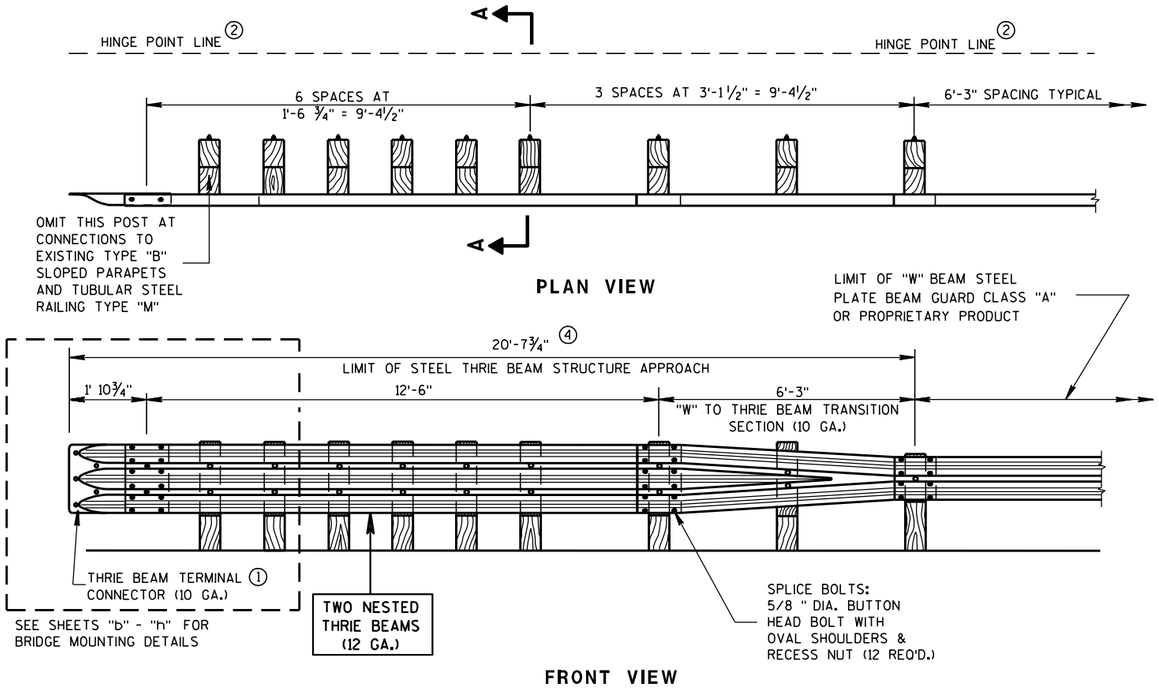
8-21-07
DATE

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT ENGINEER

FHWA

6

S.D.D. 14 B 18-6a



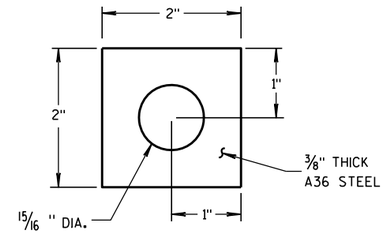


PLATE WASHER DETAIL

GENERAL NOTES

BOLT THE THRIE BEAM TO ALL POSTS AND BLOCKOUTS. DRILL OR PUNCH BOLT HOLES IN THE BEAM IF THE POST SPACING IS LESS THAN 6'-3".

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.

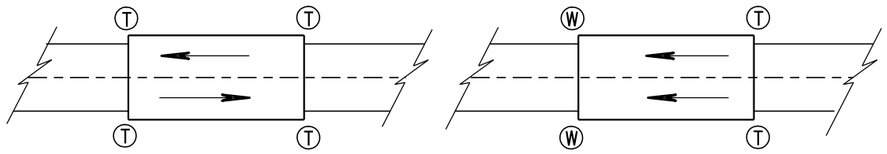
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2" , AND 12" DIAMETER AROUND POST. SEE 14B15 FOR MORE DETAILS.

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

② MINIMUM EMBEDMENT SHALL BE 4'-0". WHERE EXISTING CONDITIONS DO NOT PERMIT THE APPROPRIATE EARTHWORK SHOWN ON THE PLAN TYPICAL SECTIONS OR DETAILS, THE ENGINEER MAY ALLOW THE REDUCTION OR ELIMINATION OF THE 2 FOOT DISTANCE TO THE HINGE POINT. OTHERWISE BUILD AS THE PLAN SHOWS OR AS THE ENGINEER DIRECTS. IF THE 2 FOOT DISTANCE TO THE HINGE POINT IS REDUCED OR ELIMINATED, INCREASE THE POST EMBEDMENT DEPTH TO 4'-6" OR MORE.

③ POST BOLTS ARE 5/8" DIAMETER ASTM A307 BUTTON HEAD BOLT. A POST BOLT REQUIRES A 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX AND A 5/8" DIAMETER F844 FLAT WASHER. LENGTH OF POST BOLT MAY VARY.

④ ALL WOOD POSTS MUST BE 6" X 8" AND AT LEAST 7'-0" LONG.



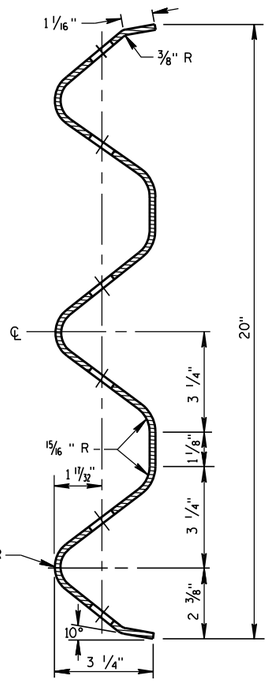
TWO WAY TRAFFIC

ONE WAY TRAFFIC

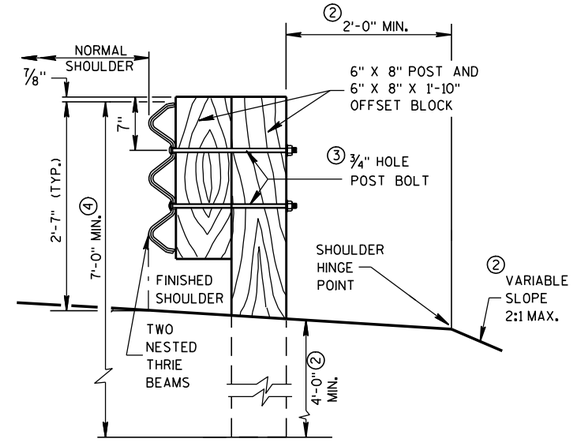
(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

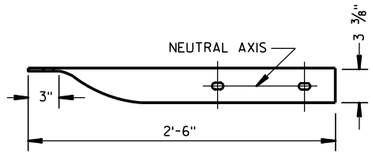
TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE

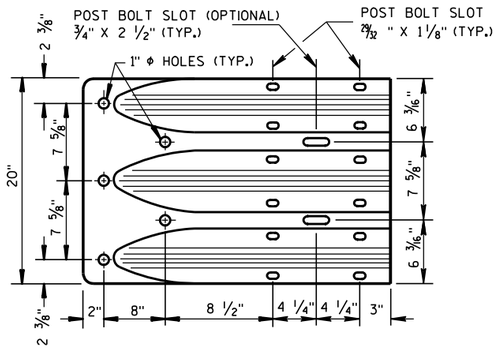


SECTION THRU THRIE BEAM RAIL ELEMENT

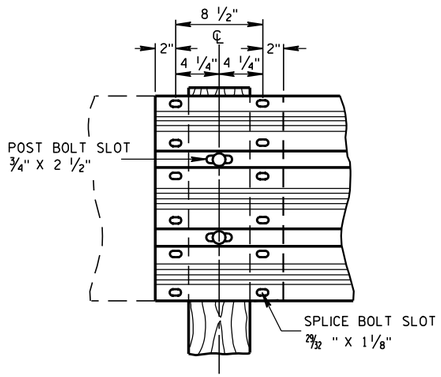


SECTION A-A





THRIE BEAM TERMINAL CONNECTOR



THRIE BEAM SPLICE

STEEL THRIE BEAM STRUCTURE APPROACH

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012
DATE

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT ENGINEER

FHWA

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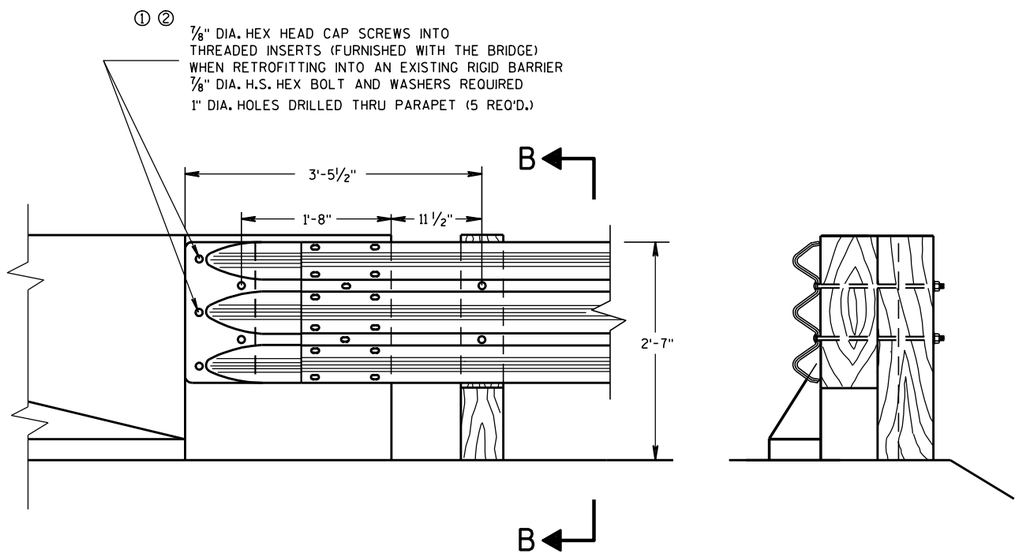
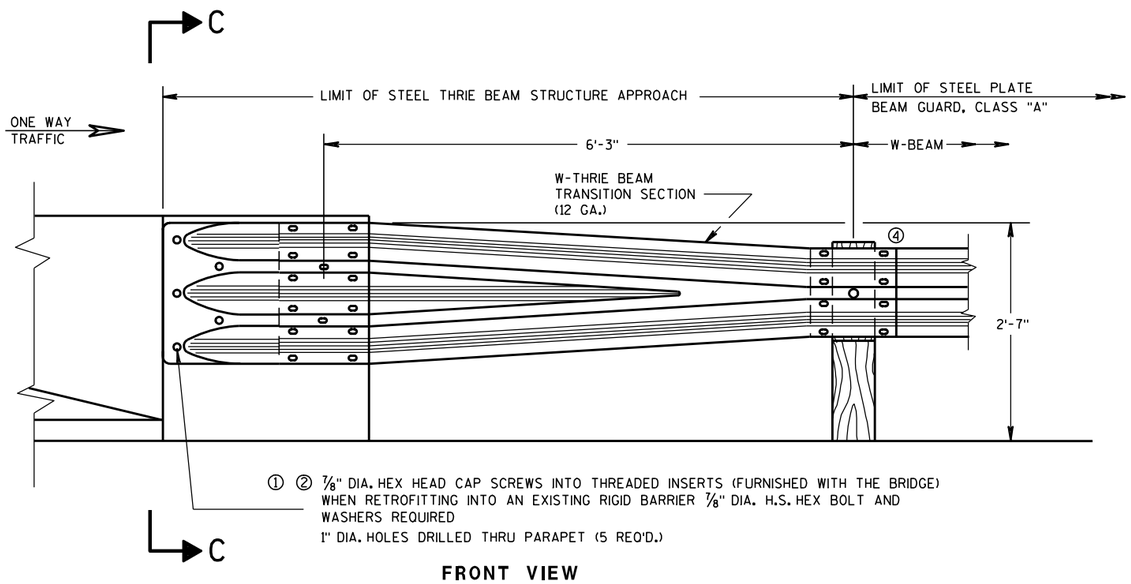
S.D.D. 14 B 20-11a



FRONT VIEW

SECTION B-B

THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS



① ② ⅞" DIA. HEX HEAD CAP SCREWS INTO THREADED INSERTS (FURNISHED WITH THE BRIDGE) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER ⅞" DIA. H.S. HEX BOLT AND WASHERS REQUIRED
1" DIA. HOLES DRILLED THRU PARAPET (5 REQ'D.)

FRONT VIEW

W BEAM TRANSITION AND CONNECTION TO BRIDGE PARAPETS WITH SQUARE ENDS

(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

GENERAL NOTES

THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A325, A449 AND GALVANIZED PER STANDARD SPECIFICATIONS 614.

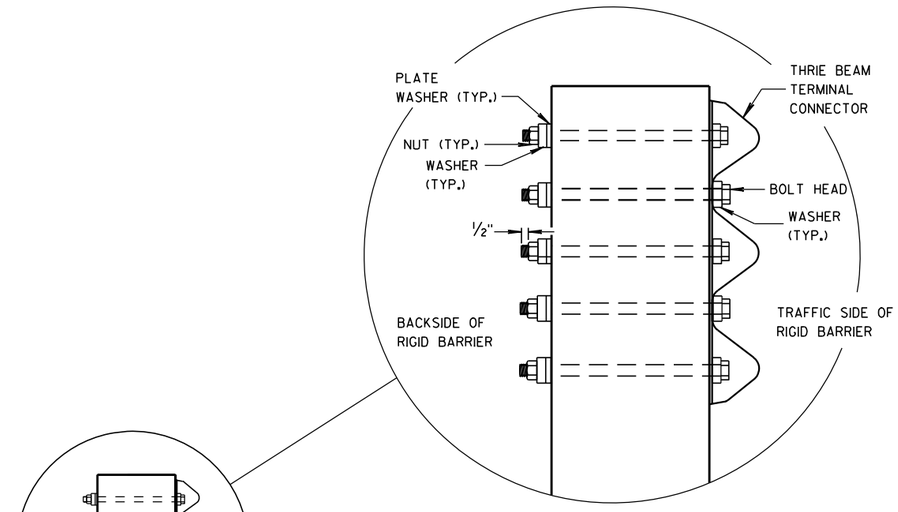
① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

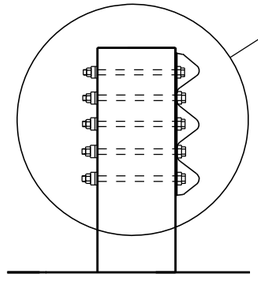
② BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM TERMINAL CONNECTOR. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X ⅝" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

③ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 ½".

④ W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POST WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.





SECTION C-C

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO SQUARE END PARAPETS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/31/2012
DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

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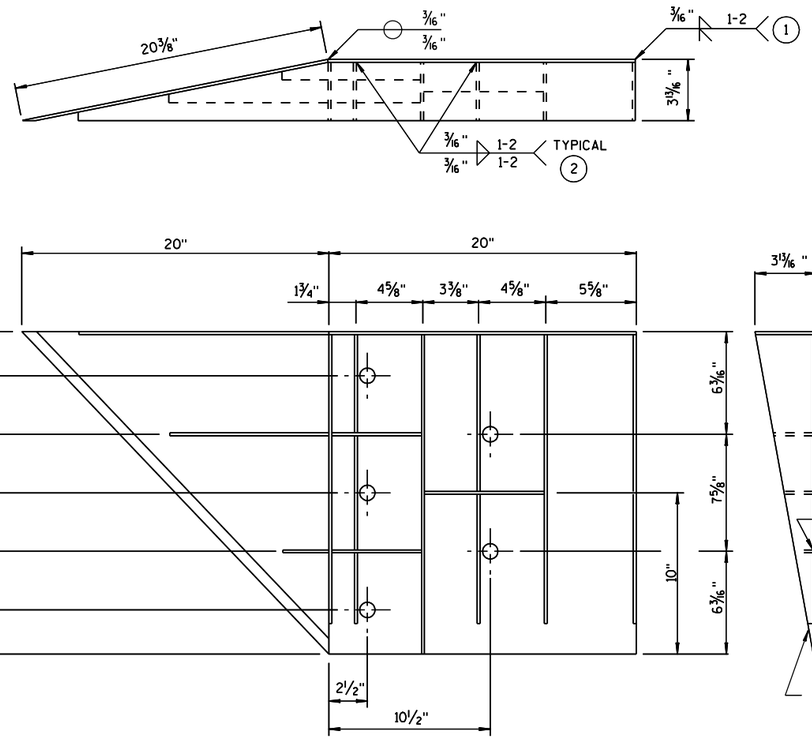

WELDING INSTRUCTION

(VIEWED FROM BACK SIDE OF PLATE)

PLATE AND STIFFENER IDENTIFICATION

(VIEWED FROM BACK SIDE OF PLATE)

GENERAL NOTES

COVER PLATE PANELS ARE 3/16" THICK.

ALL STIFFENERS ARE 1/4" THICK.

CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.

FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.

ALL HOLE DIAMETERS SHALL BE 1".

FOR OPPOSITE SIDE INSTALLATION MIRROR DRAWINGS.

(1) STIFFENERS LOCATED AT THE OUTSIDE EDGES OF THE COVER PLATES SHALL BE WELDED AS FOLLOWS:
SINGLE BEVEL GROOVE WELD ON EXTERNAL SIDES AND 3/16" FILLET WELD BY 1" LONG SPACED AT 2" ON INTERNAL SIDES.

(2) STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
3/16" FILLET WELD BY 1" LONG SPACED AT 2".

CONNECTOR PLATE DIMENSION (PER ASSEMBLY)

PLATE	QUANTITY	SHAPE	SIZE (A x B x C x D)	THICKNESS
P1	1		20" x 20"	3/16"
P2	1		20" x 20" x 28 9/16"	3/16"
P3	1		39" x 3 5/8" x 20" x 19 5/16"	3/16"
S1	4		18 7/16" x 3 5/8" x 18 3/4"	1/4"
S2	1		10 1/4" x 2 7/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 1/8" x 1/2"	1/4"
S4	1		6 1/8" x 2 7/16"	1/4"
S5	1		6 1/8" x 1 1/16"	1/4"
S6	1		7 3/4" x 1 3/4"	1/4"
S7	1		2 9/16" x 6" x 3 5/8" x 5 7/8"	1/4"
S8	1		1 5/32" x 7 1/2" x 2 1/2" x 7 3/8"	1/4"
S9	1		6 1/16" x 6 3/16" x 1 3/32"	1/4"
S10	1		1 7/8" x 9 7/8" x 3 5/8" x 9 11/16"	1/4"
S11	1		8 1/2" x 8 3/4" x 1 13/16"	1/4"

STEEL THRIE BEAM STRUCTURE APPROACH

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTOR PLATE DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/31/2012 — DATE
/S/ Jerry H. [illegible] — ROADWAY STANDARDS ENGINEER
FHWA

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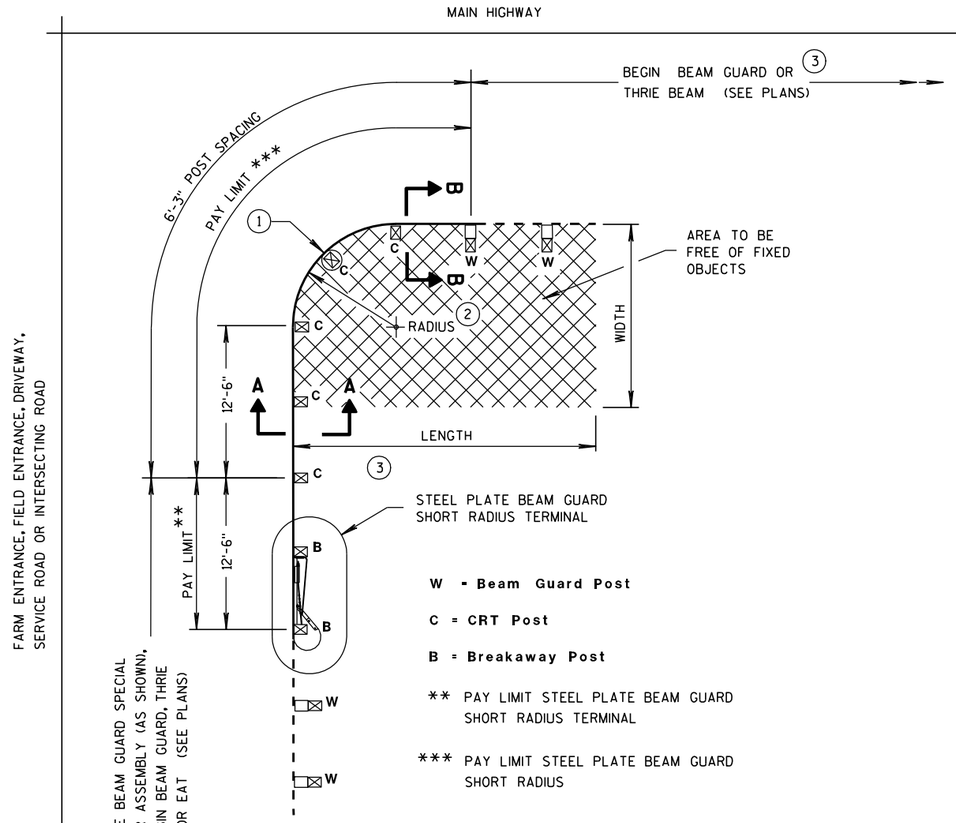
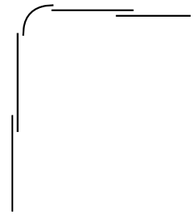


TYPICAL LAYOUT
(8' RADIUS SHOWN)



TYPICAL LAP SPLICES
(8' RADIUS SHOWN)

GENERAL NOTES

ALL ANGLES, CHANNELS, AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36 AND THE STRUCTURAL TUBING SHALL CONFORM TO ASTM A 500. WELDING SHALL MEET THE CURRENT REQUIREMENTS OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE ANSI/AWS D1.1. ALL STRUCTURAL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A 123. PUNCHING, DRILLING, CUTTING, OR WELDING WILL NOT BE PERMITTED AFTER GALVANIZING. FURNISH AND INSTALL HARDWARE PER STANDARD SPECIFICATION 614.2. UNLESS NOTED OTHERWISE.

SHOP BEND CURVED RAIL SECTIONS.

SEE STANDARD DETAIL DRAWING 14 B 15 FOR OTHER DETAIL.

(1) ON THE 8 FOOT RADIUS INSTALLATION, DO NOT INSTALL BUTTON HEAD BOLT AT CENTER CRT POST.

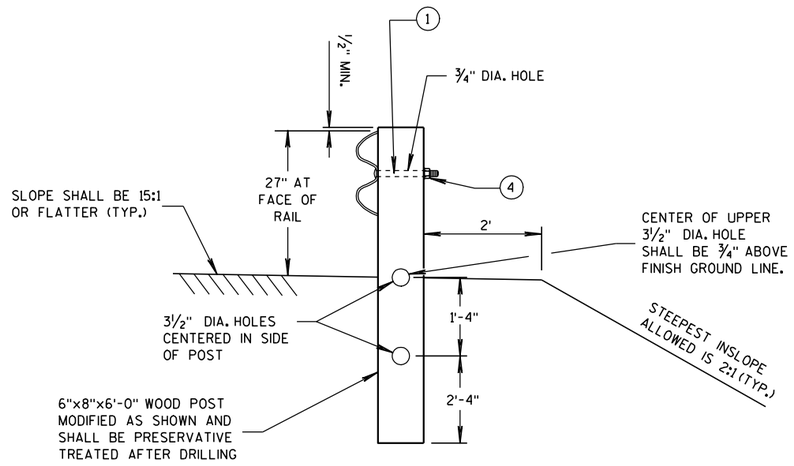
(2) RADIUS FROM 8' - 36'. SEE PLAN.

(3) HEIGHT TRANSITION MAY BE REQUIRED. SEE PLAN OR PROJECT ENGINEER.

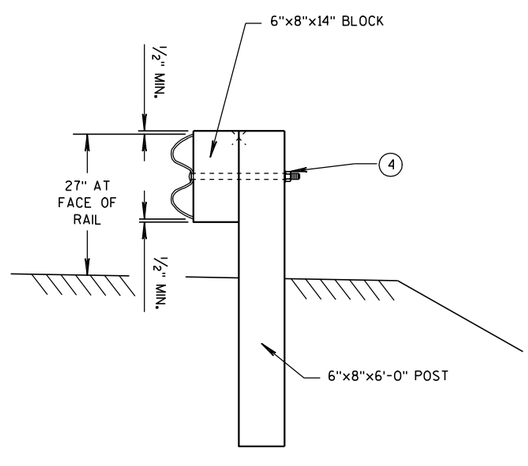
(4) 5/8" ø X 1'-6" BUTTON HEAD BOLT AND RECESS NUT WITH ROUND WASHER UNDER NUT.

RADIUS	NUMBER OF CRT POSTS	*NUMBER AND LENGTH OF CURVED RAILS	REQUIRED AREA FREE OF FIXED OBJECTS (LENGTH x WIDTH)
8'	5	1 at 12.5'	25' x 15'
16'	7	1 at 25'	30' x 15'
24'	9	1 at 25' and 1 at 12.5'	40' x 20'
32'	11	2 at 25'	50' x 20'

* THE NUMBER OF RAILS IS BASED ON A 90° INTERSECTION. SEE PLAN FOR NON 90° INSTALLATIONS.



SECTION A-A
(CRT POST)



SECTION B-B
(BEAM GUARD POST)

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

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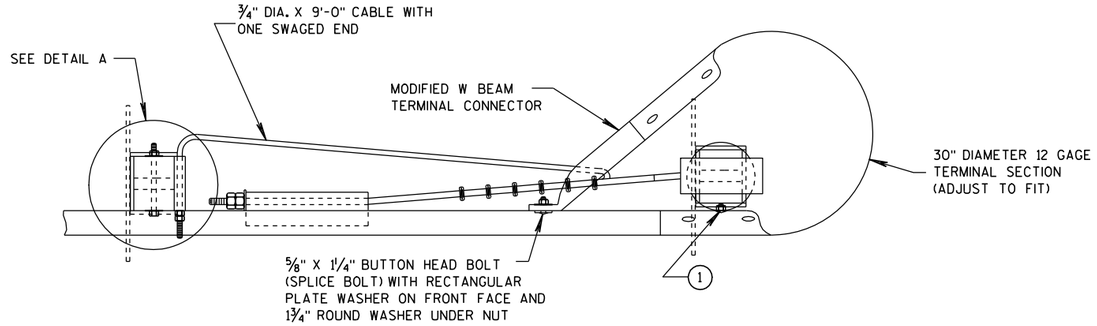
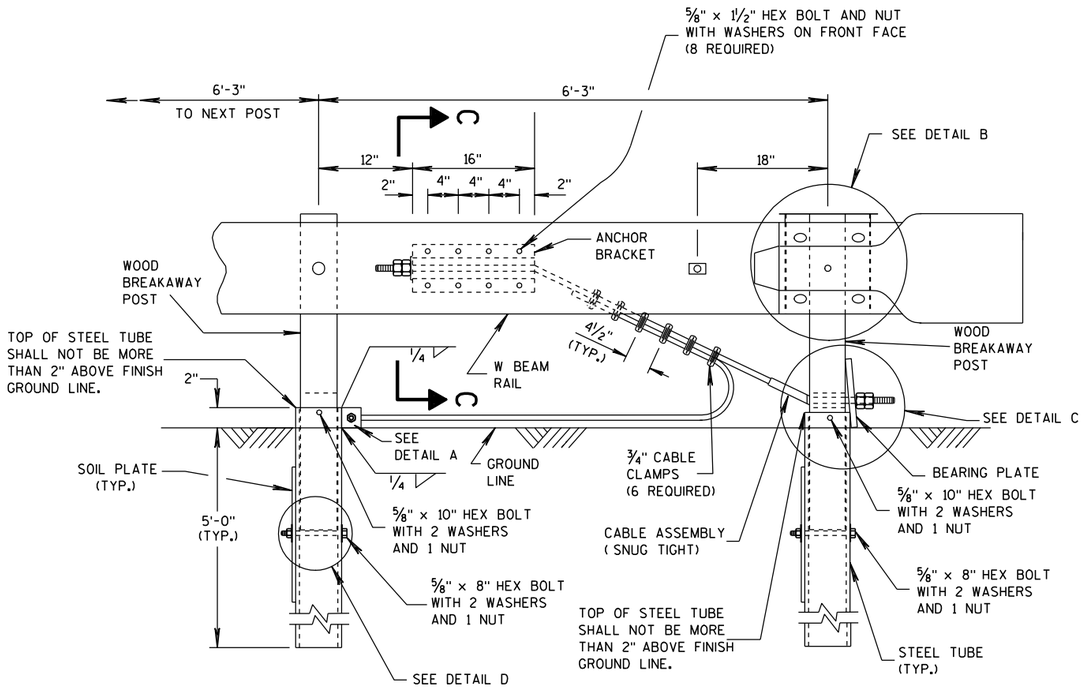
S.D.D. 14 B 27-1a



PLAN VIEW



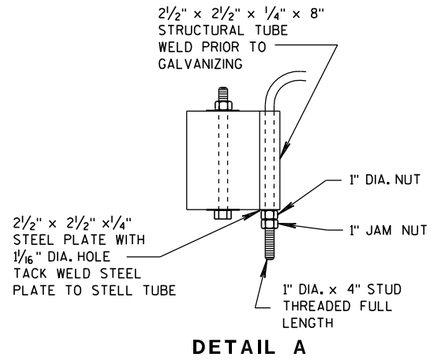
ELEVATION VIEW

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

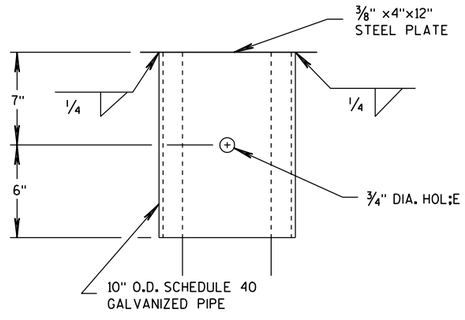
GENERAL NOTES

(1) ATTACH W BEAM RAIL TO THE STEEL PIPE WITH A ⅝" X 2" BUTTON HEAD BOLT WITH NO WASHER. CONNECTION TO THE POST IS NOT REQUIRED.

INSTALL GALVANIZED ¾" (6X19) PREFORMED WIRE OR INDEPENDENT WIRE ROPE CORE CONFORMING TO AASHTO M 30. MANUFACTURE WIRE ROPE OUT OF IMPROVED PLOW STEEL WITH A MINIMUM BREAKING STRENGTH OF 42,800 PSI.



DETAIL A



DETAIL B

(BEAM GUARD AND TERMINAL SECTION NOT SHOWN)

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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S.D.D. 14 B 27-1b

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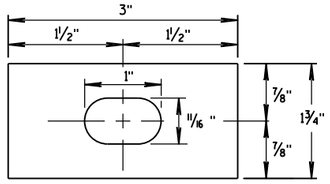
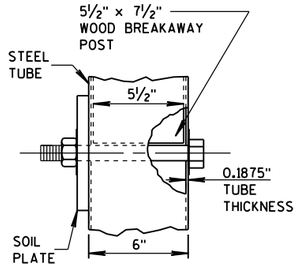
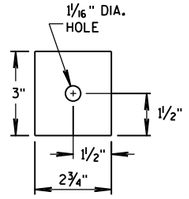
S.D.D. 14 B 27-1b



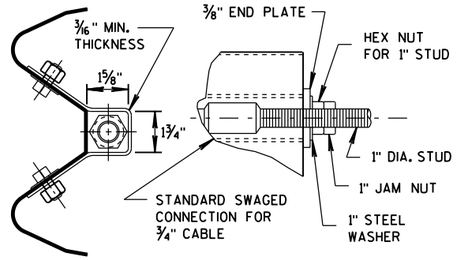
RECTANGULAR PLATE WASHER



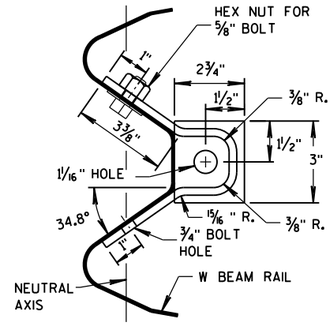
DETAIL D



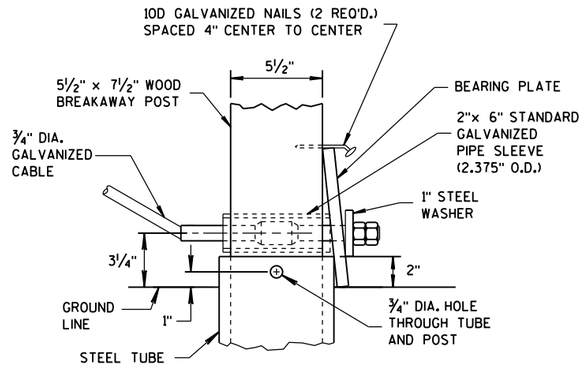
END PLATE



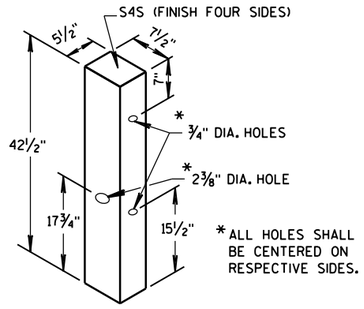
SECTION C-C
(END PLATE REMOVED)



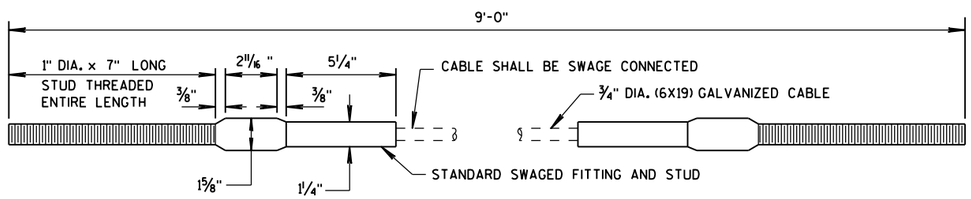
ANCHOR BRACKET



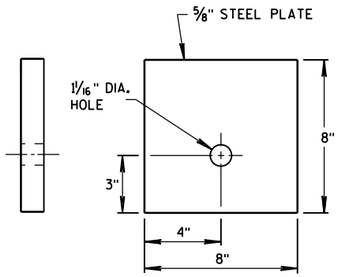
DETAIL C



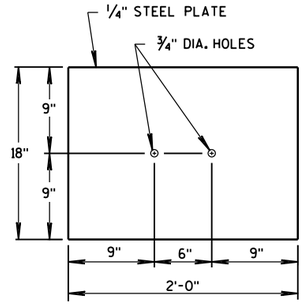
WOOD BREAKAWAY POST



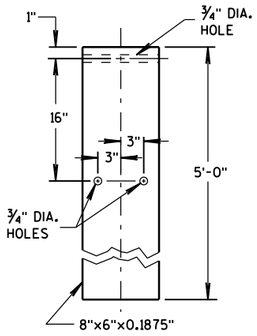
CABLE ASSEMBLY



BEARING PLATE



SOIL PLATE



STEEL TUBE

STEEL PLATE BEAM GUARD
SHORT RADIUS TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
12/18/08 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

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S.D.D. 14 B 27-1c

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S.D.D. 14 B 27-1c

GENERAL NOTES

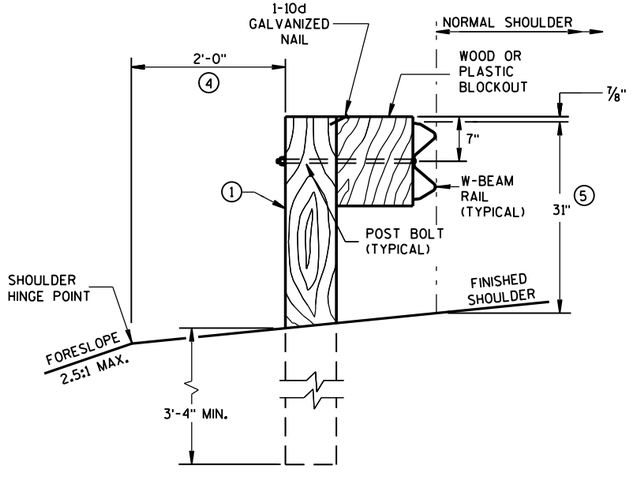
1. WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

2. USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.

3. IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2½INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.

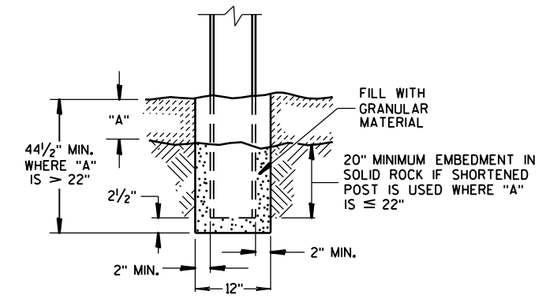
4. WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).

5. FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ± 1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27¾" TO 32".



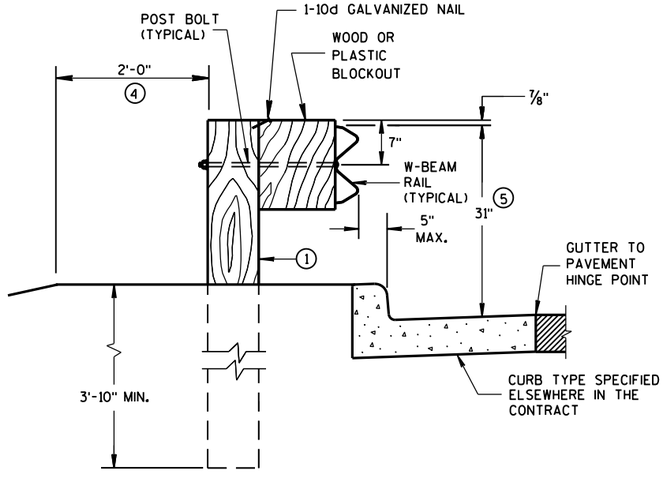
END VIEW

LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



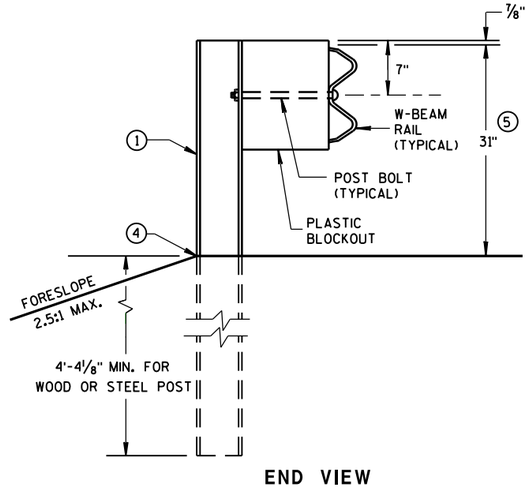
END VIEW

SETTING STEEL OR WOOD POST IN ROCK ③



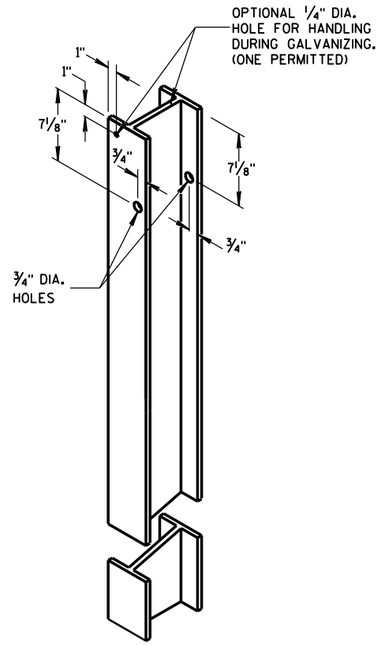
END VIEW

LOCATED ALONG A CURBED ROADWAY

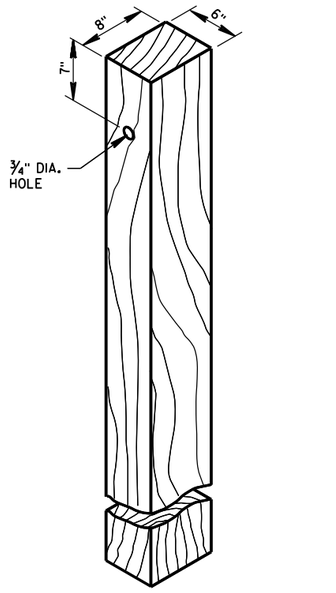


END VIEW

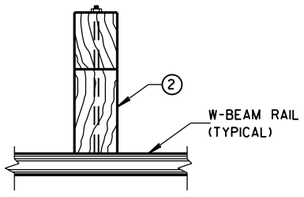
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



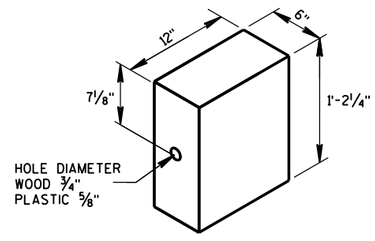
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) ①



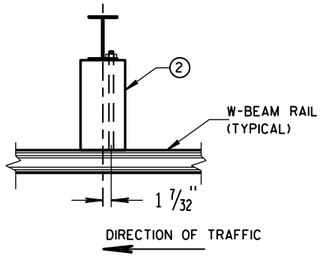
WOOD POST
(6" X 8") NOMINAL ①



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



WOOD OR
PLASTIC BLOCKOUT ②

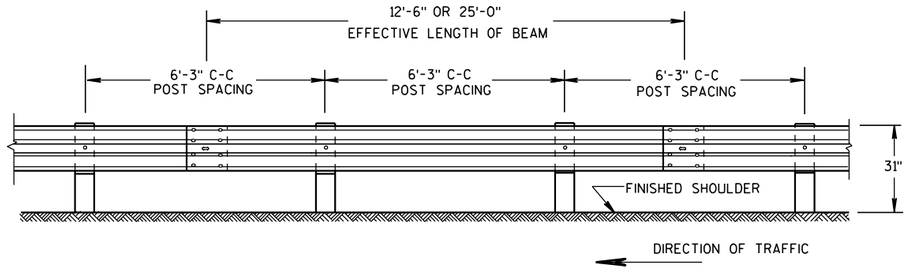


PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

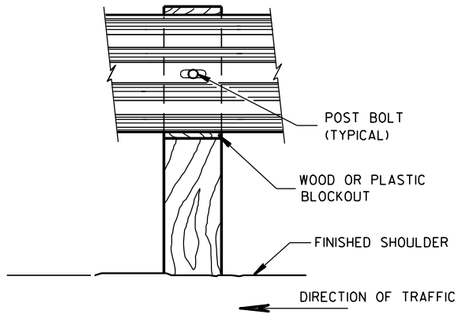
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6
S.D.D. 14 B 42-2a



FRONT VIEW

POST SPACING STANDARD INSTALLATION



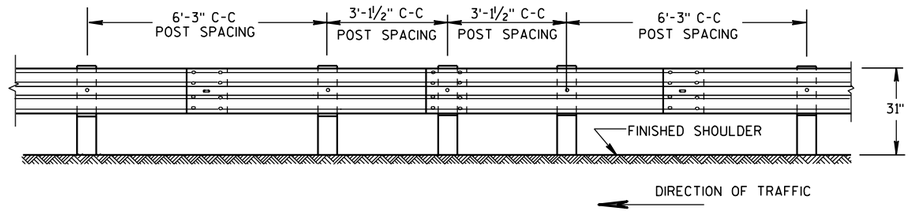
FRONT VIEW AT WOOD POST

GENERAL NOTES

1. PROVIDE TYPE "H" SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH TYPE "H" YELLOW REFLECTIVE SHEETING.
2. DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.
3. REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.
4. PROVIDE AN ANGLE OF BEND OF 90° ± 1° FOR TWO-SIDED REFLECTORS.
5. 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

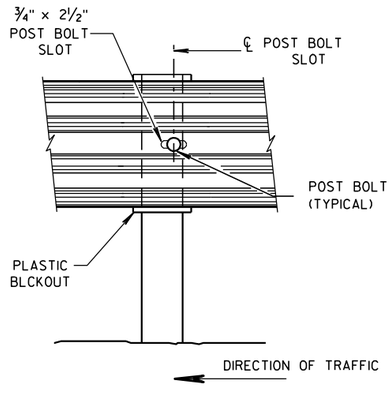
POST BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 5/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

GUARD RAIL SPLICE BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.

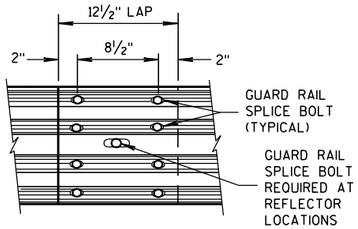


FRONT VIEW

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

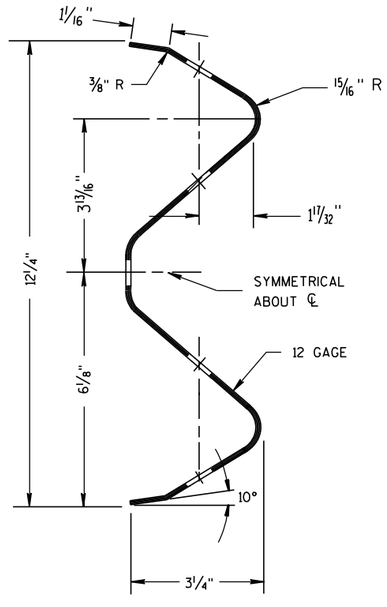


FRONT VIEW AT STEEL POST

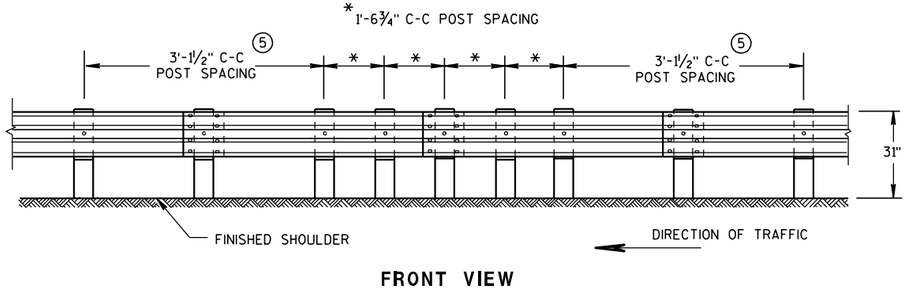


FRONT VIEW

MID-SPAN BEAM SPLICE

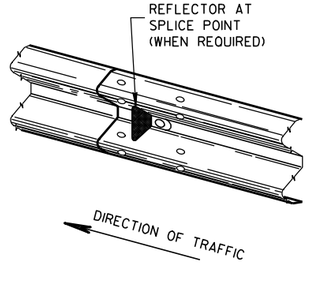


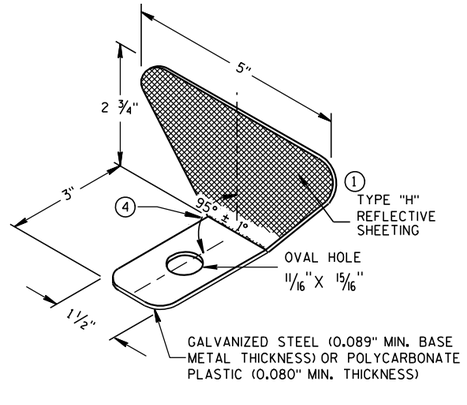
SECTION THRU W-BEAM RAIL



FRONT VIEW

QUARTER POST SPACING (QS)





ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION ①

REFLECTOR SPACING ②

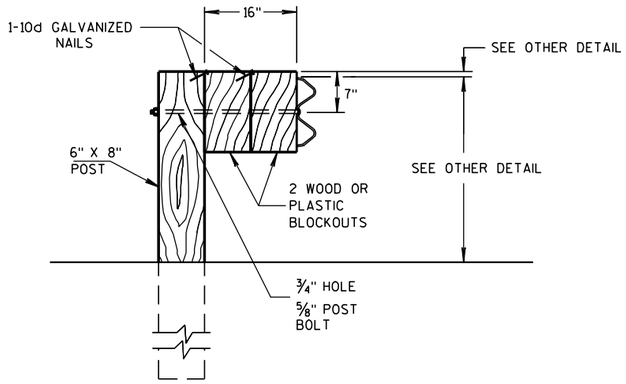
	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200' > 200'	50' C-C 100' C-C	1 1	3
TWO WAY TRAFFIC	< 200' > 200'	25' C-C 50' C-C	1 ③ 1	6
TWO WAY TRAFFIC	< 200' > 200'	50' C-C 100' C-C	2 ④ 2	3

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

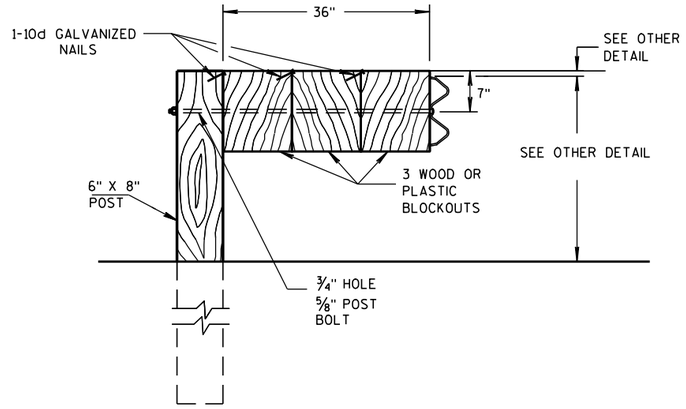
S.D.D. 14 B 42-2b

S.D.D. 14 B 42-2b



DETAIL FOR 16" BLOCKOUT DEPTH

IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.

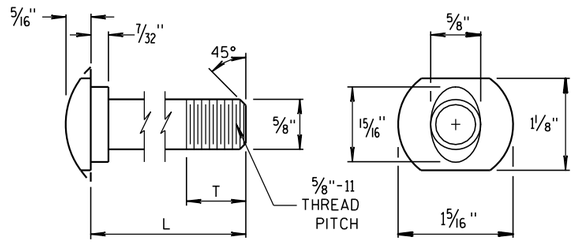


DETAIL FOR 36" BLOCKOUT DEPTH

NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.

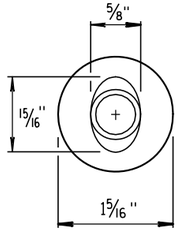
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

NOTE: 1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF 1/16".
2. IF THE BOLT EXTENDS MORE THAN 1/4" FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.

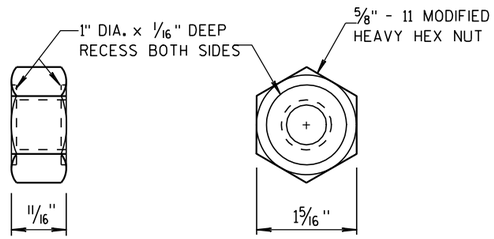


POST BOLT TABLE

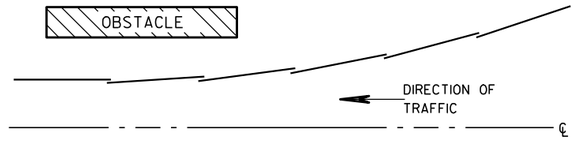
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

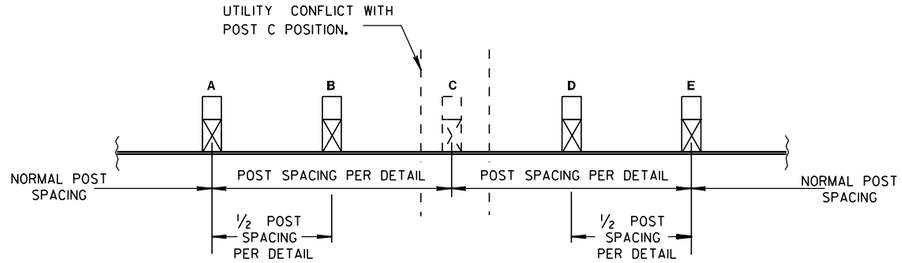


POST BOLT AND RECESS NUT

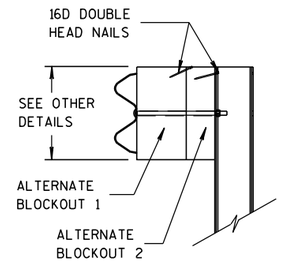


PLAN VIEW

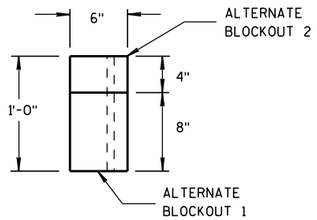
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

11/15/2011
DATE

/S/ Jerry H. [illegible]
ROADWAY STANDARDS ENGINEER

FHWA

ENT

6

S.D.D. 14 B 42-2c

GENERAL NOTES

(A) THE SLOPE IN THE AREA BOUNDED BY THE EXTENDED VEHICLE RUNOUT PATH (EVRP), THE HINGE POINT LINE (HPL),AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.

(B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED.

(C) DIFFERENT MANUFACTURES REQUIRE DIFFERENT PERFORATED W-BEAM RAIL END PANELS. SEE MANUFACTURES INFORMATION.

(D) THE TOP OF THE STEEL TUBE ON POST 1 AND POST 2 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.

(F) SHEETING IS ATTACHED TO 0.040 ALUMINUM SHEET AND ATTACHED TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS. ONE SCREW PER CORNER OF E.A.T.

(G) ½" DIAMETER X 3" LONG LAG BOLT AND WASHER.

(H) HARDWARE VARIES BETWEEN DIFFERENT MANUFACTURES. SEE MANUFACTURE'S DRAWING FOR INFORMATION.

(I) DIMENSIONS MAY VARY. SEE MANUFACTURE'S INFORMATION.

SEE SDD 14B42 FOR MORE INFORMATION.

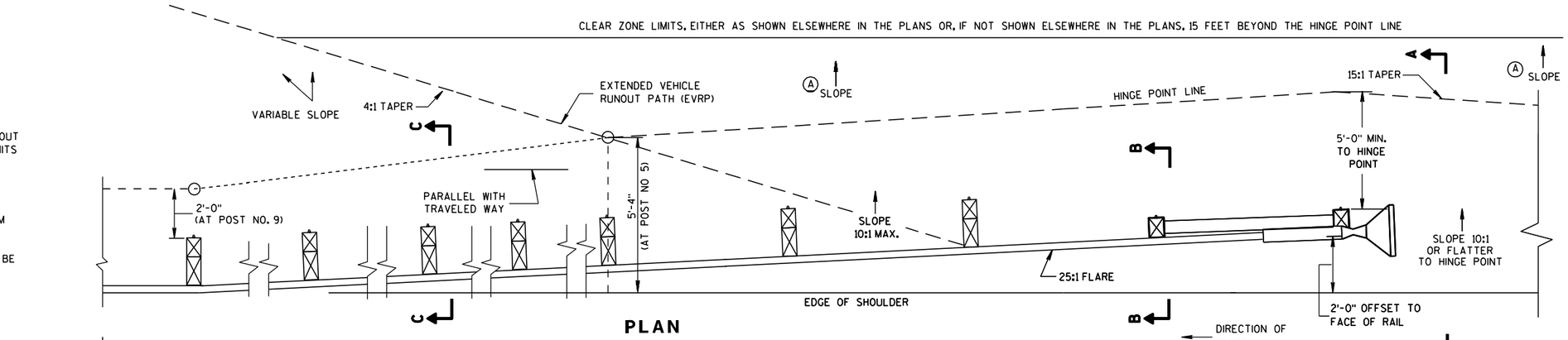
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

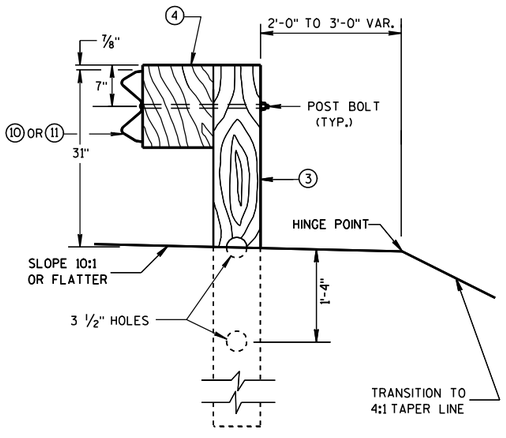
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

W-BEAM RAIL SPLICES ARE LOCATED AT POST NUMBER 3, AND BETWEEN POST 5 AND 6, BETWEEN POSTS 7 AND 8, AND MIDDLE OF THE SPAN AFTER POST 9.

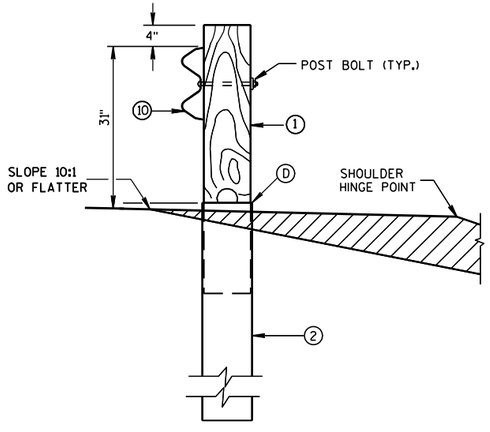
PATTERN AND COLORS ON REFLECTIVE SHEETING TYPE H ARE TO CONFORM TO OM3-L OR OM3-R OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE (± ¾")

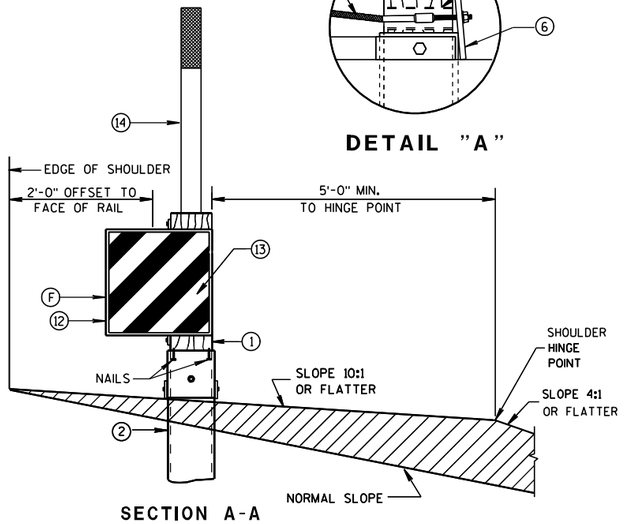




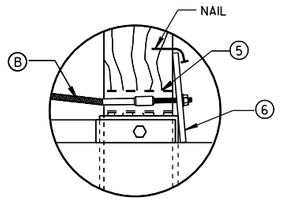
SECTION C-C
TYPICAL AT POST NOS. 3-9



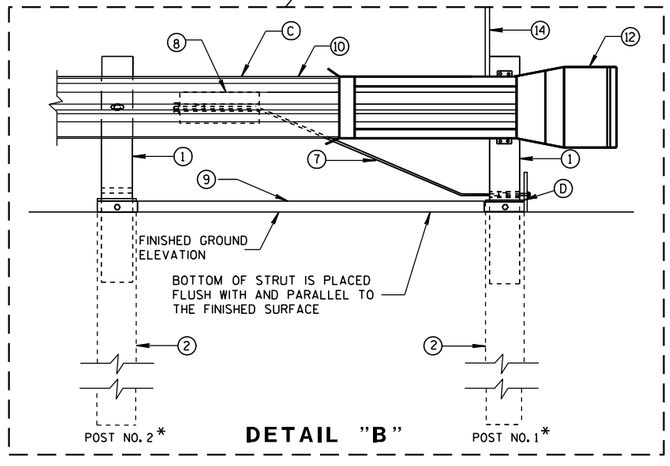
SECTION B-B
TYPICAL AT POST NO. 2*



SECTION A-A
TYPICAL AT POST NO. 1*



DETAIL "A"



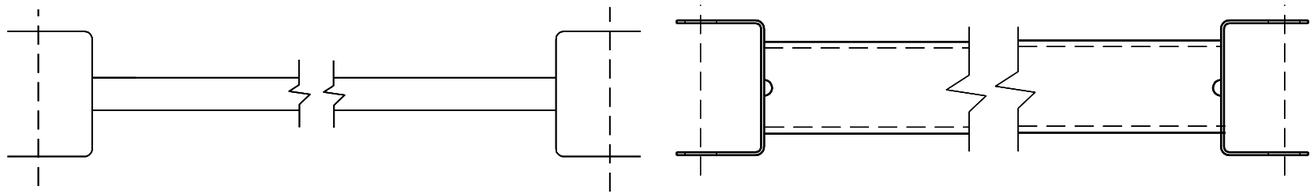
DETAIL "B"

MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

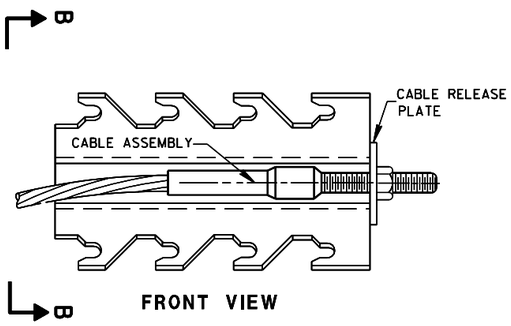
S.D.D. 14 B 44-1a



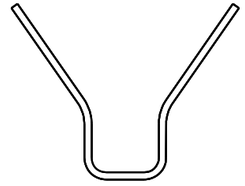
GENERIC GROUND STRUT (9) (H)

BILL OF MATERIALS

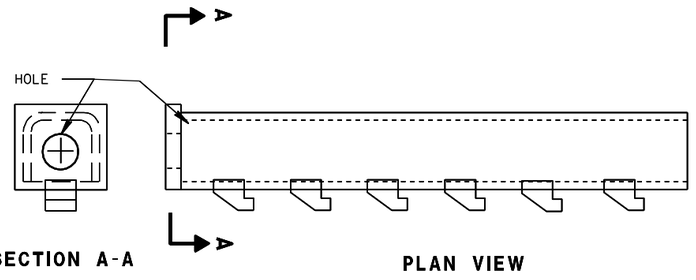
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
(1)	WOOD BREAKAWAY POST
(2)	6" X 8" X 0.188", 6'-0" LONG FOUNDATION TUBE AT POSTS 1 AND 2
(3)	WOOD CRT
(4)	WOOD BLOCKOUT
(5)	PIPE SLEEVE
(6)	BEARING PLATE
(7)	BCT CABLE ASSEMBLY
(8)	ANCHOR CABLE BOX
(9)	GROUND STRUT
(10)	PERFORATED W-BEAM RAIL END PANEL, 12'-6" LONG.
(11)	STANDARD W-BEAM RAIL. MULTIPLE SECTIONS REQUIRED. SECTIONS VARY IN LENGTH.
(12)	END SECTION EAT
(13)	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE H (ONLY THE SHEETING IS SUPPLIED BY THE MANUFACTURER)
(14)	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)



FRONT VIEW



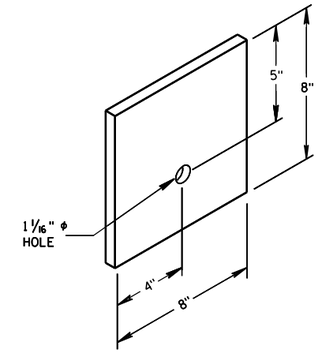
SECTION B-B



SECTION A-A

PLAN VIEW

GENERIC ANCHOR CABLE BOX (8) (H)



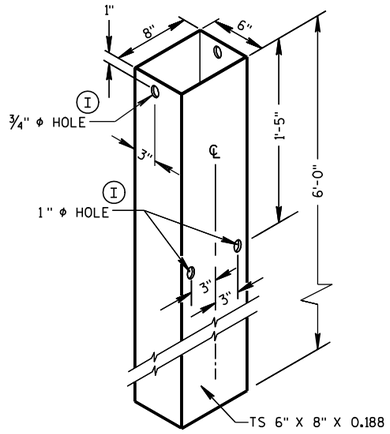
BEARING PLATE (6)

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

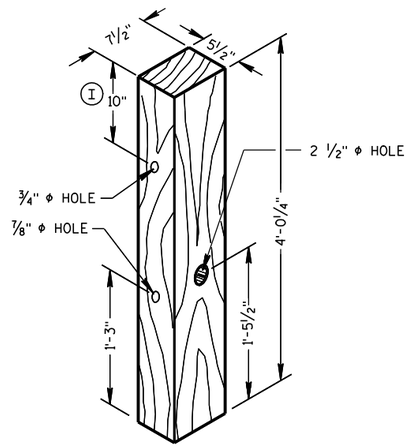
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

S.D.D. 14 B 44-1b

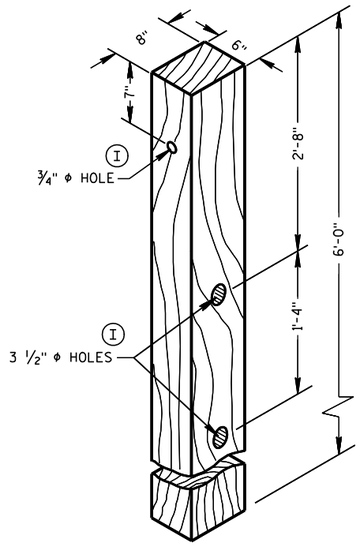


FOUNDATION TUBE (2)



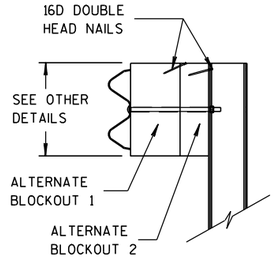
POSTS NUMBER 1 AND 2

WOOD BREAKAWAY POST (1)

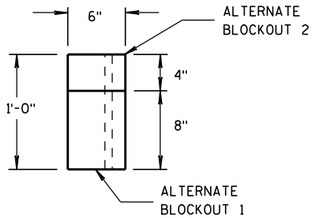


POSTS NUMBER 3-9

WOOD CRT POST (3)

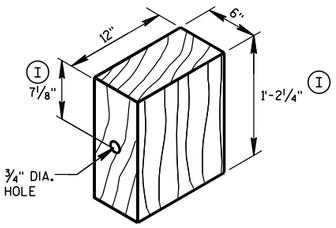


SIDE VIEW



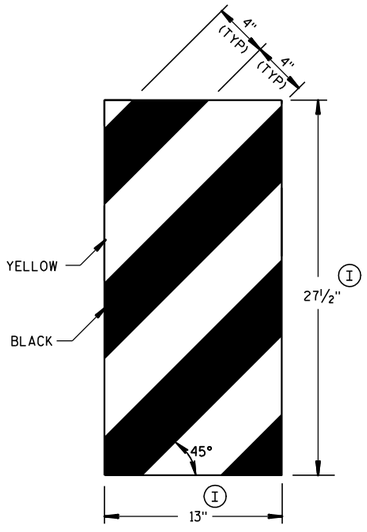
TOP VIEW

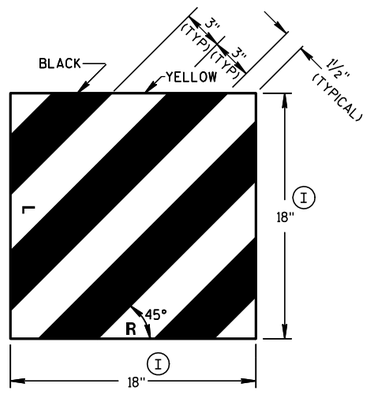
ALTERNATE WOOD BLOCKOUT DETAIL



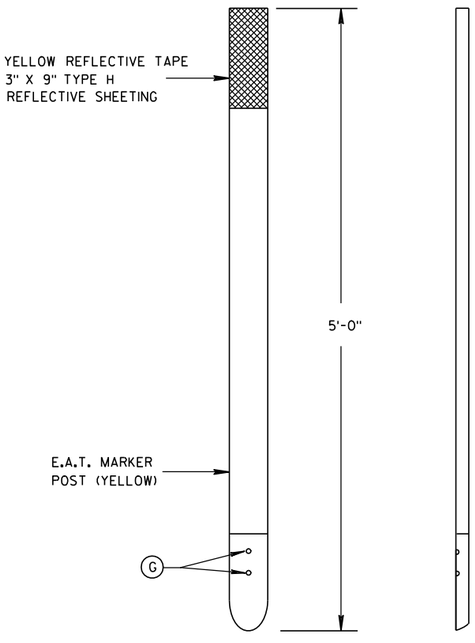
WOOD BLOCKOUT (4)

REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



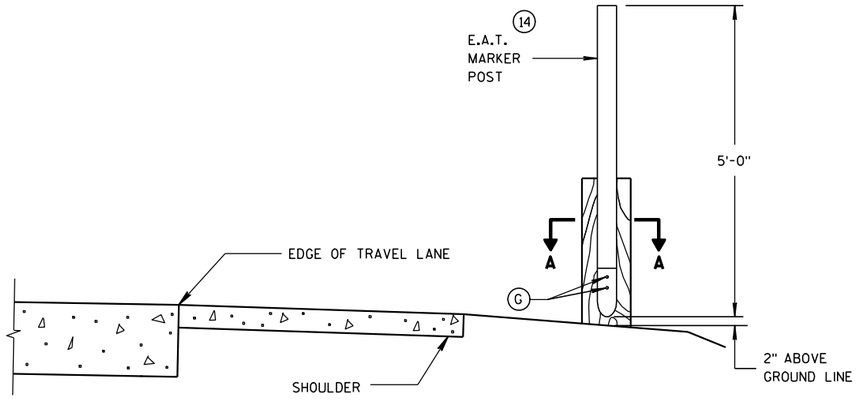


GENERIC REFLECTIVE SHEETING (13) (H)



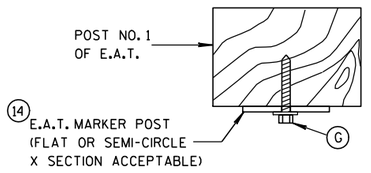
FRONT VIEW **SIDE VIEW**

E.A.T. MARKER POST (14)



TYPICAL INSTALLATION OF E.A.T. MARKER POST BACKSIDE OF POST NO. 1

(E.A.T. AND RAIL REMOVED FOR CLARITY)



SECTION A-A

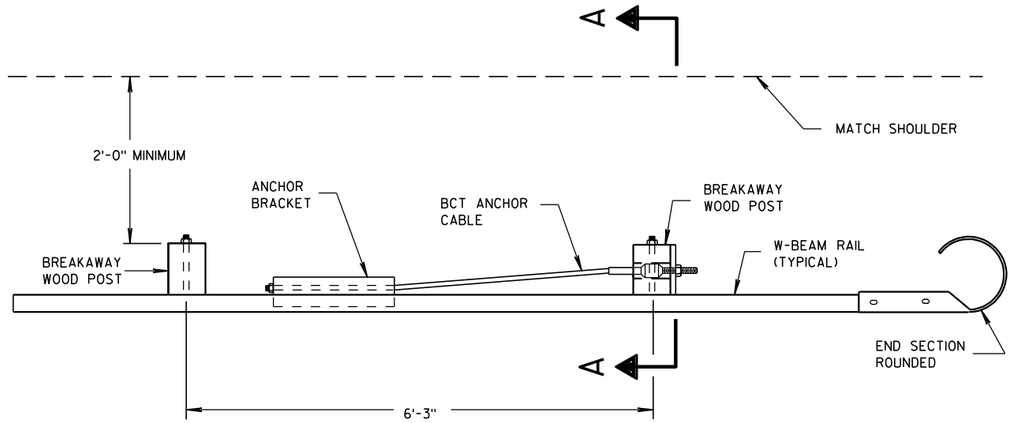
MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

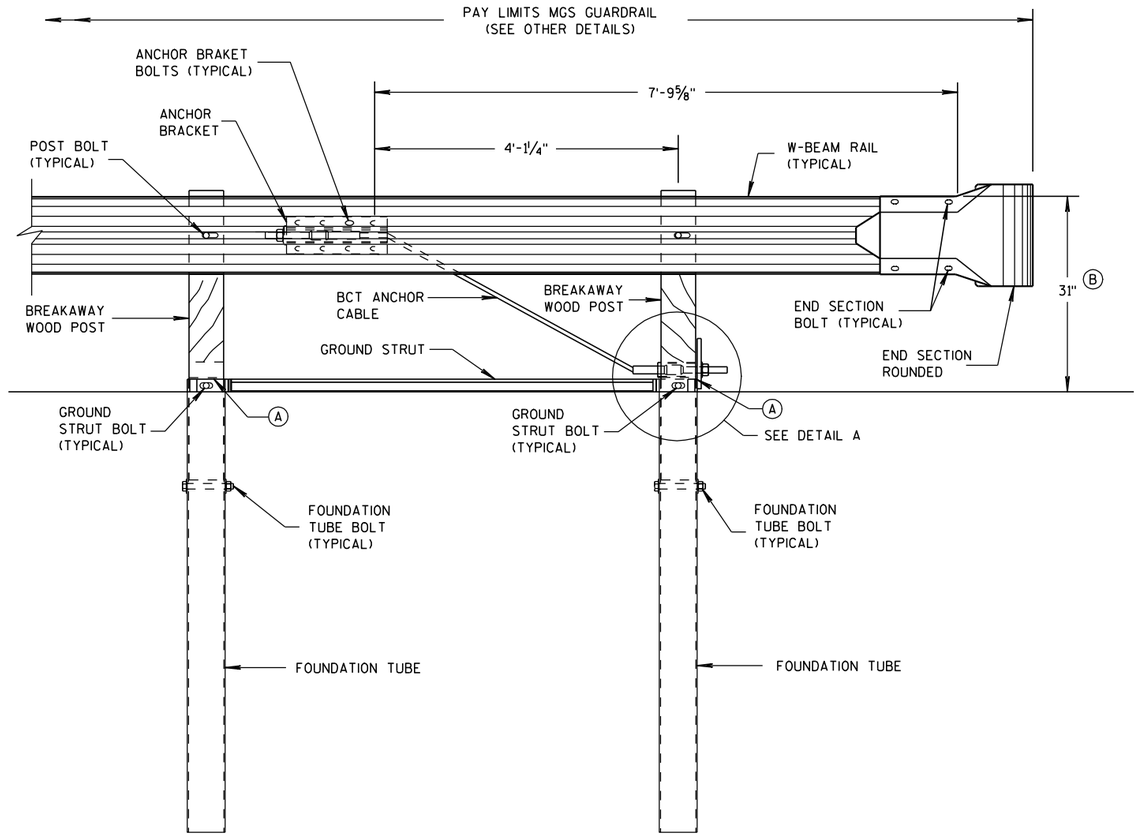
APPROVED
5/23/2011 — DATE
/S/ Jerry H. [illegible] — ROADWAY STANDARDS ENGINEER
FHWA

6

S.D.D. 14 B 44-1c

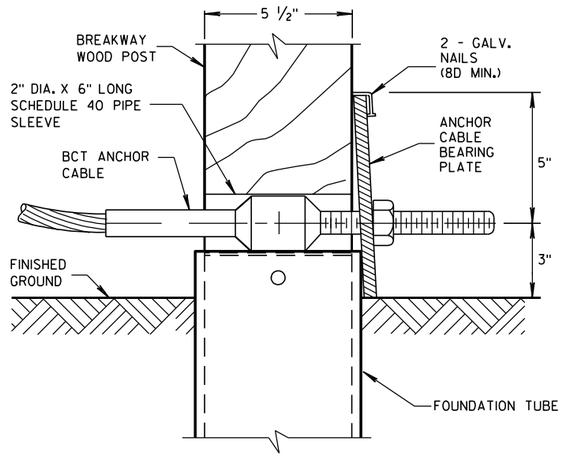


PLAN VIEW



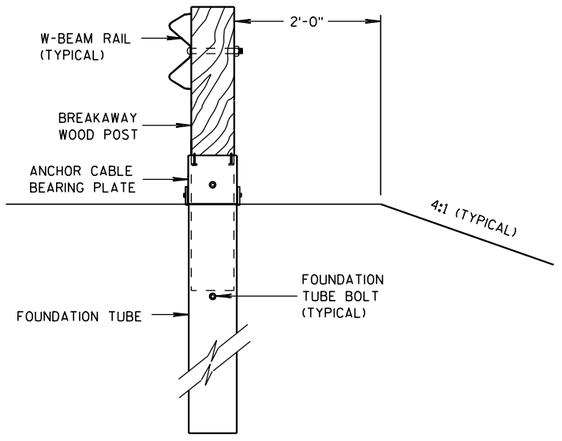
FRONT VIEW

END RAIL DETAIL



DETAIL A

POST NO. 1
GROUNG STRUT NOT SHOWN FOR CLARITY.



SECTION A-A

GENERAL NOTES

SEE SDD 14 B 42 FOR MORE INFORMATION.

POST BOLTS ARE A ⅝" DIAMETER X 10" LONG GUARDRAIL BOLT. A POST BOLT REQUIRES A ⅝" DIAMETER DH MODIFIED (RECESSED) HEAVY HEX NUT AND ⅝" DIAMETER FLAT WASHER.

FOUNDATION TUBE BOLTS ARE A ⅞" DIAMETER X 7½" LONG HEAVY HEX HEAD BOLT. A FOUNDATION TUBE BOLT REQUIRES A ⅞" DIAMETER DH HEAVY HEX NUT AND A ⅝" DIAMETER FLAT WASHER.

GROUND STRUT BOLTS ARE A ⅝" DIAMETER X 10" LONG HEAVY HEX HEAD BOLT. A GROUND STRUT BOLT REQUIRES A ⅝" DIAMETER DH HEAVY HEX NUT AND A ⅝" DIAMETER FLAT WASHER.

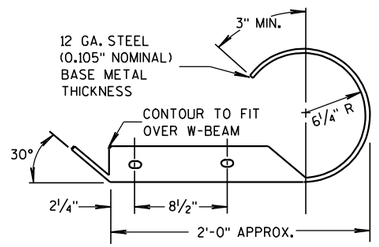
ANCHOR BRAKET BOLTS ARE A ⅝" DIAMETER X 1½" LONG HEAVY HEX HEAD BOLT. AN ANCHOR BRAKET BOLT REQUIRES A ⅝" DIAMETER DH HEAVY HEX NUT AND A FLAT WASHER.

END SECTION BOLTS ARE A ⅝" DIAMETER X 1½" HEAVY HEX HEAD BOLT. AN END SECTION BOLT REQUIRES ⅝" DIAMETER DH HEAVY HEX NUT AND A ⅝" DIAMETER FLAT WASHER.

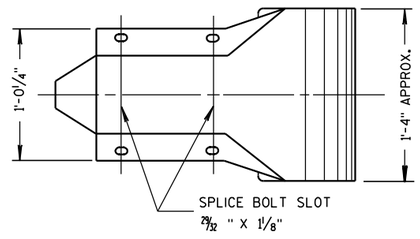
W-BEAM END SECTION ROUNDED HAS THE SAME MATERIAL PROPERTIES AS STANDARD STEEL RAIL.

(A) TOP OF FOUNDATION TUBE SHALL BE NO MORE THAN 3" ABOVE FINISHED GROUND.

(B) FOR NEW CONSTRUCTION TOP OF RAIL IS 31" ± 1".
FOR EXISTING INSTALLATIONS TOP OF RAIL IS BETWEEN 27¾" TO 32" ± 1".



PLAN VIEW



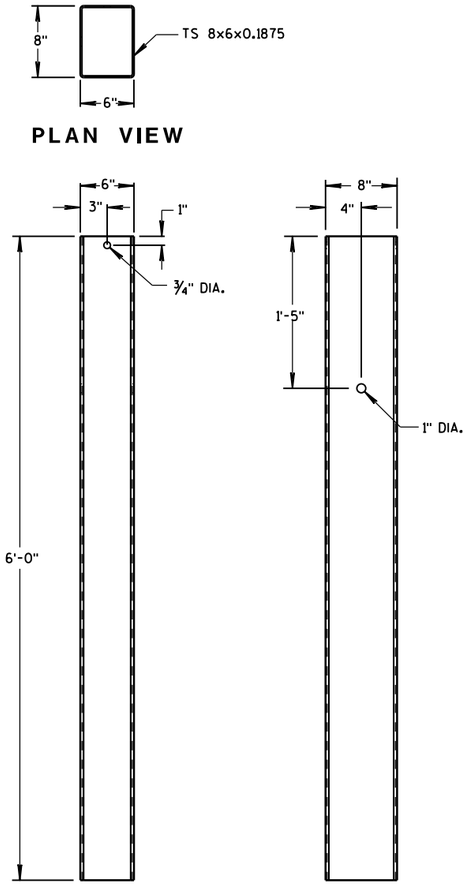
FRONT VIEW

W BEAM END SECTION ROUNDED

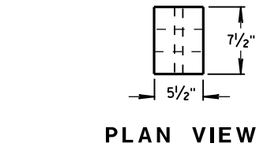
MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL

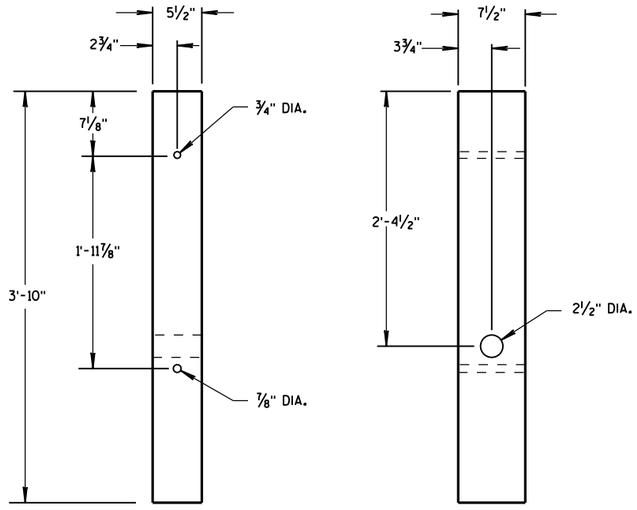
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6
S.D.D. 14 B 47-1a



FOUNDATION TUBE



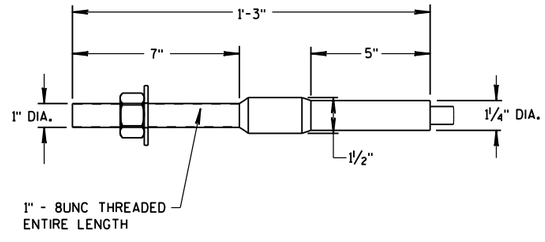


BREAKAWAY WOOD POST

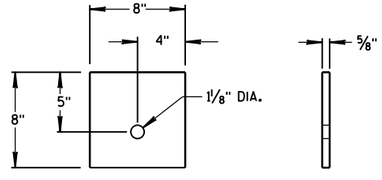
GENERAL NOTES

BCT ANCHOR CABLE IS A ⅜" DIAMETER 6X19 IWRC IPS GALVANIZED WIRE ROPE. THE SWAGED FITTINGS AND STUD ARE REQUIRED. THE END FITTING SHALL BE MACHINED FROM HOT-ROLLED CARBON STEEL CONFORMING TO ASTM A576 GRADE 1035 AND GALVANIZED ACCORDING TO ASTM A123. THE TREADED STUD SHOULD CONFORM TO ASTM A325 OR SAE GRADE 5. MINIMUM BREAKING STRENGTH OF WIRE ROPE IS 43,000 LB. WIRE ROPE IS TO BE TAUT.

BCT ANCHOR CABLE



DETAIL B



ANCHOR CABLE
BEARING PLATE

MIDWEST GUARDRAIL
SYSTEM (MGS) TYPE 2 TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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S.D.D. 14 B 47-1b

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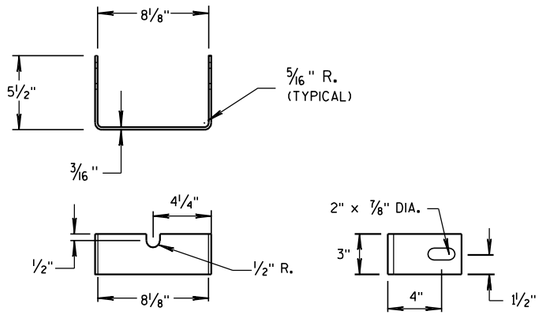
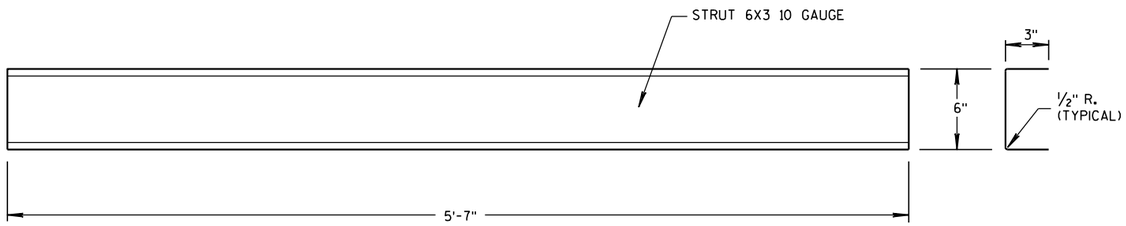
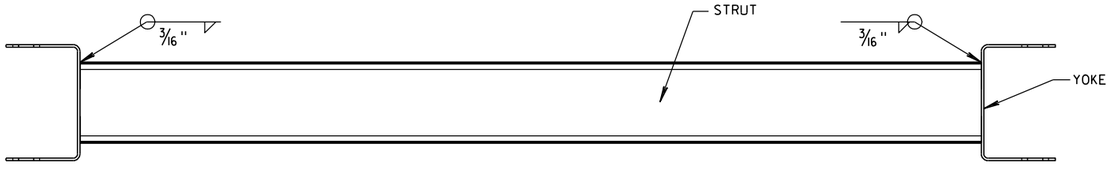
S.D.D. 14 B 47-1b



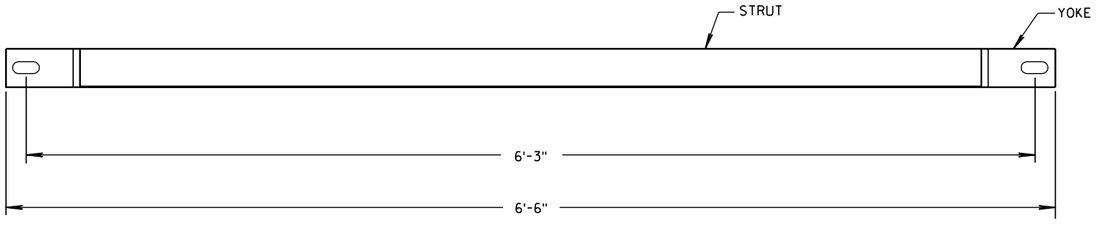
YOKE DETAIL



STRUT DETAIL

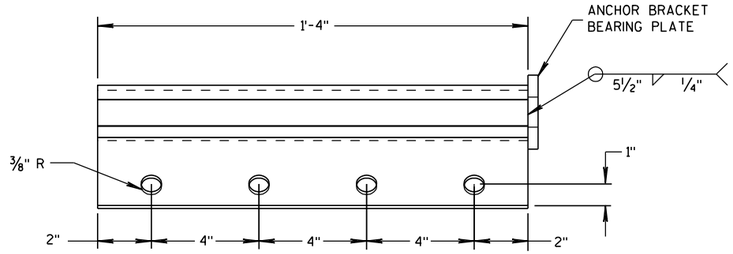


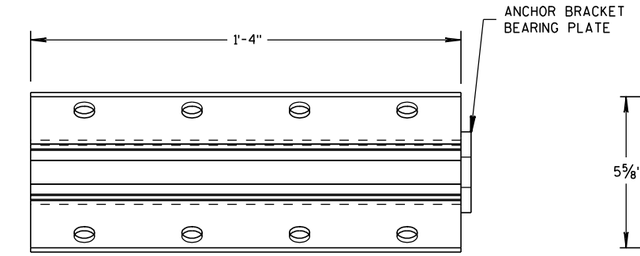
PLAN VIEW

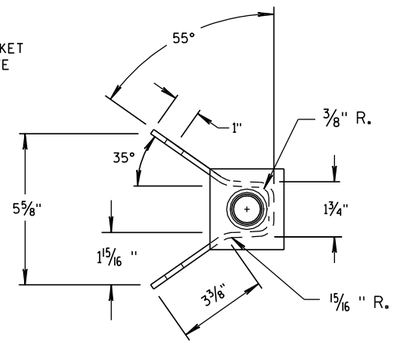


FRONT VIEW

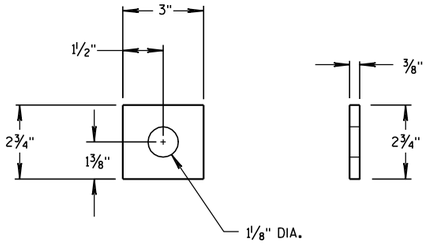
GROUND STRUT DETAIL







ANCHOR BRACKET



ANCHOR BRACKET BEARING PLATE

MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

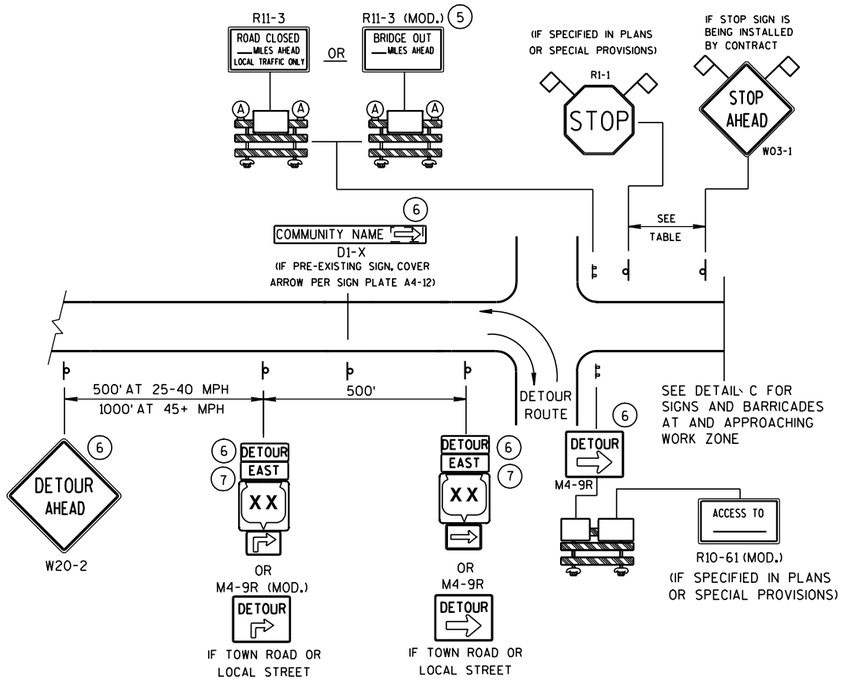
5/23/2011
DATE

/S/ Jerry H. [illegible]
ROADWAY STANDARDS ENGINEER

FHWA

6

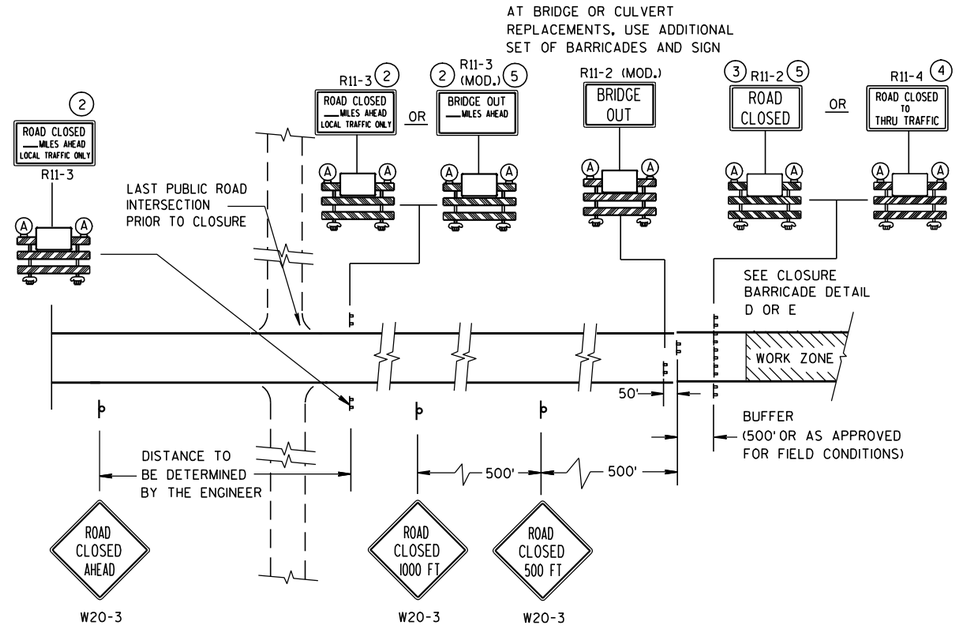
S.D.D. 14 B 47-1c



DETAIL A

MAINLINE CLOSURE WITH POSTED DETOUR

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

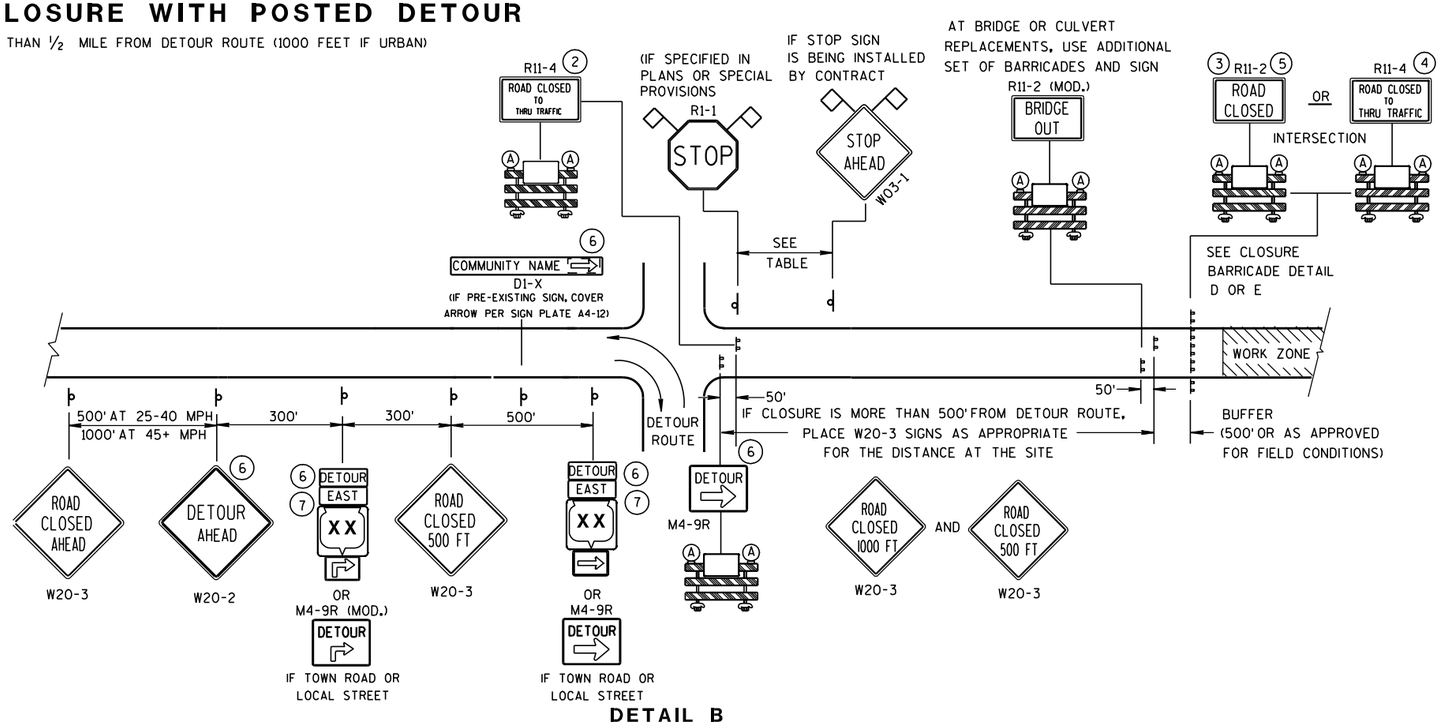


DETAIL C

MAINLINE CLOSURE, NO POSTED DETOUR

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

SEE SDD 15C2-4b
FOR GENERAL NOTES
AND FOOTNOTES (1) THROUGH (7)



DETAIL B

MAINLINE CLOSURE WITH POSTED DETOUR

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

LEGEND

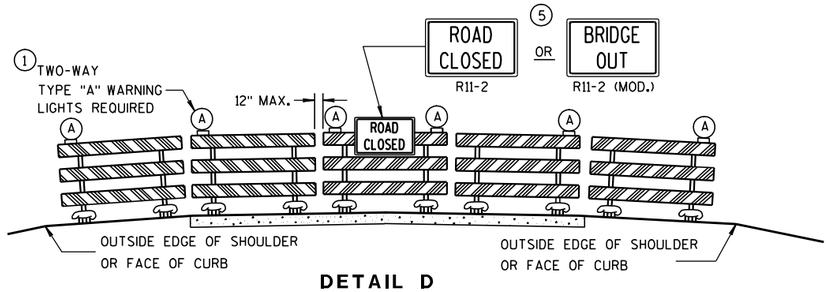
- POST MOUNTED SIGN
- TYPE III BARRICADES
- (A) TYPE "A" LOW INTENSITY FLASHING WARNING LIGHT (FOR NIGHT USE)
- WORK ZONE
- DETOUR / EAST — M4-8 / M3-X
- XX — M1-4; COUNTY XX — M1-5A; XX — M1-6
- M05-1; M06-1
- FLAGS, 16" X 16" MIN., (ORANGE)

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

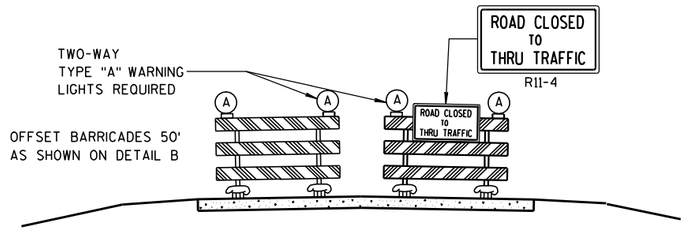
S.D.D. 15 C 2-4a



DETAIL D

ROAD CLOSURE BARRICADE DETAIL

APPROACH VIEW



DETAIL E

LANE CLOSURE BARRICADE DETAIL

APPROACH VIEW

SEE SDD 15C2-4a FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

9/16/03
DATE

/S/ Thomas N. N[illegible]
CHIEF SIGNS AND MAR[illegible]INEER

FHWA

6

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

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

GENERAL NOTES

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

IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. MODIFY EXISTING SIGNS WHERE POSSIBLE.

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

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

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

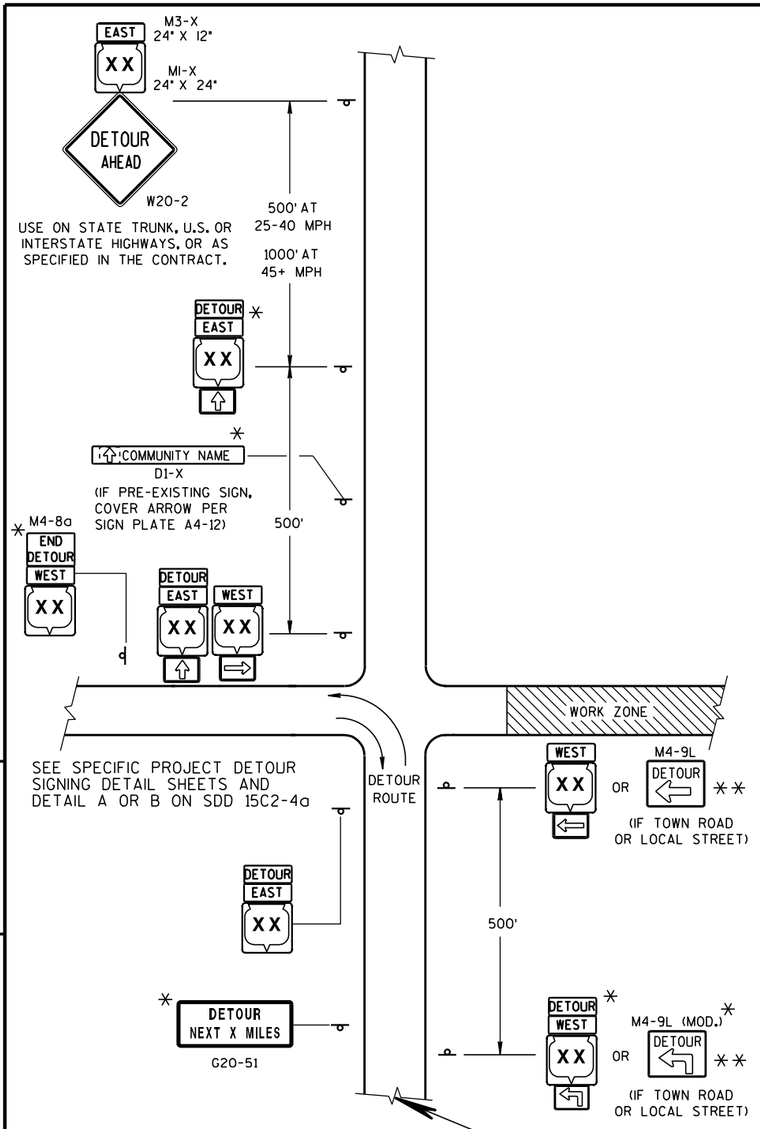
"MO" SIGNS ARE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGN SIZES SHALL BE AS FOLLOWS:

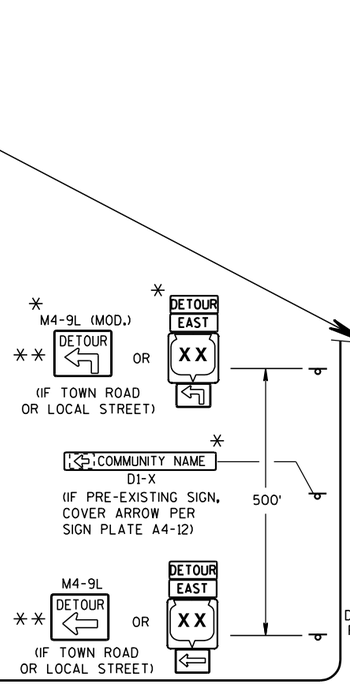
M3-X AND M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
M4-9 SHALL BE 30" X 24".
M4-8a SHALL BE 24" X 18".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

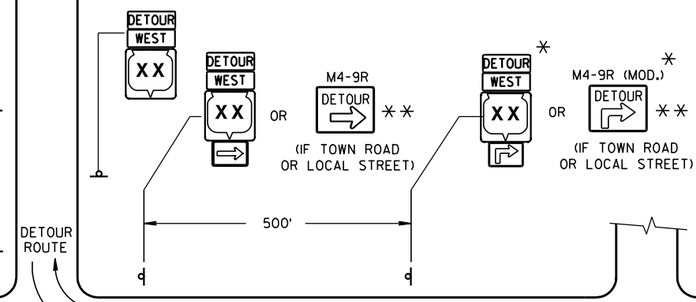
* OPTIONAL SIGNS. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS.

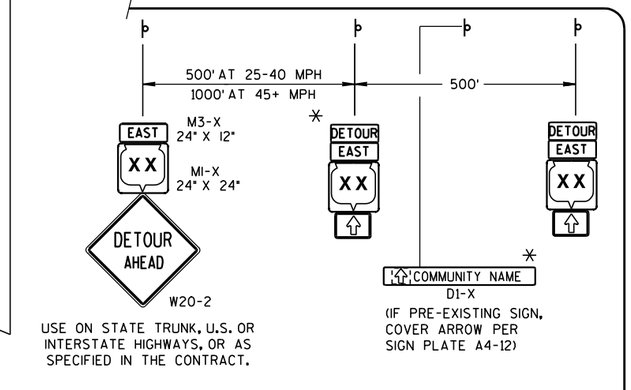
** FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.

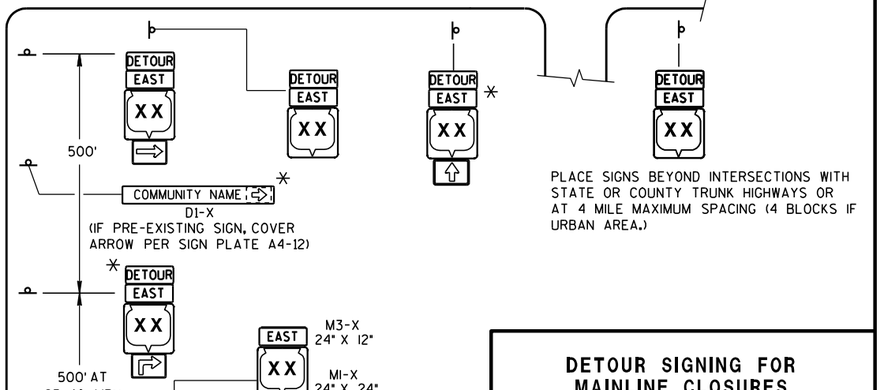


MATCH POINT









LEGEND

- POST MOUNTED SIGN
- WORK ZONE
- DETOUR EAST — M4-8 / M3-X
- XX OR COUNTY XX OR XX — M1-4 / M1-5A / M1-6
- M05-1 OR M06-1 OR M06-1

DETAIL F

DETOUR SIGNING

DETOUR SIGNING FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

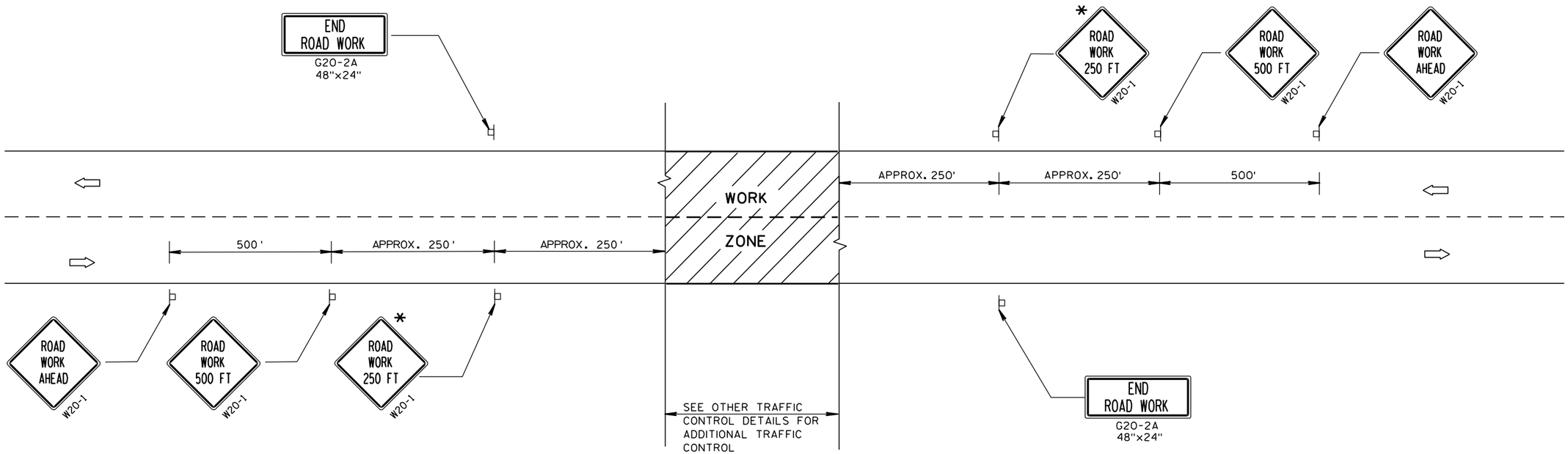
APPROVED
9-16-03 DATE
/S/ Thomas N. [illegible] CHIEF SIGNS AND MAR 138 INEER
FHWA

6

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

6

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



GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS.

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.

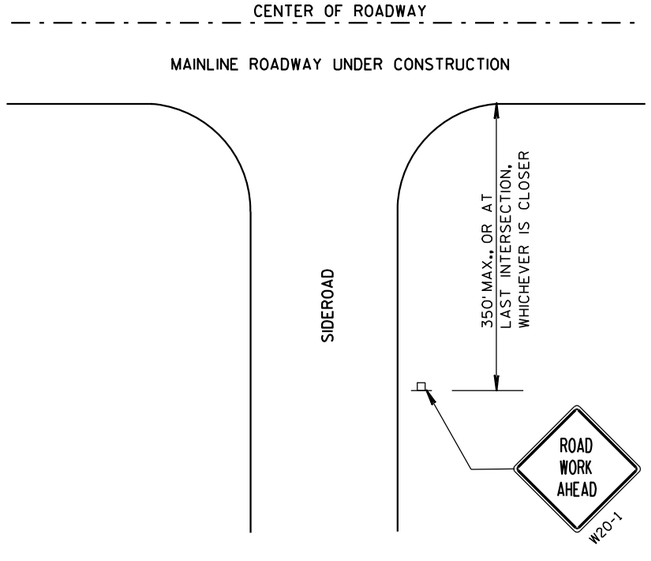
ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS, 36"x36" SIGNS MAY BE USED INSTEAD OF 48"x48" SIGNS, IF APPROVED BY DISTRICT TRAFFIC UNIT.

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

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.

* THE THIRD W20-1 SIGN IS REQUIRED ONLY IF THERE IS AN INTERSECTION BETWEEN THE "ROAD WORK 500 FT" SIGN AND THE WORK ZONE. ADJUST THE PLACEMENT OF THIS SIGN BASED ON INTERSECTION LOCATION AND OTHER FIELD CONDITIONS.

TYPICAL SIDEROAD APPROACH WARNING SIGN DETAIL



LEGEND

POST MOUNTED SIGN

DIRECTION OF TRAFFIC FLOW

TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40 M.P.H. OR LESS TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

5/23/00
DATE

/S/ Chester J. [illegible]
CHIEF SIGNS AND MARKING ENGINEER

FHWA

6

S.D.D. 15 C 5-1

6

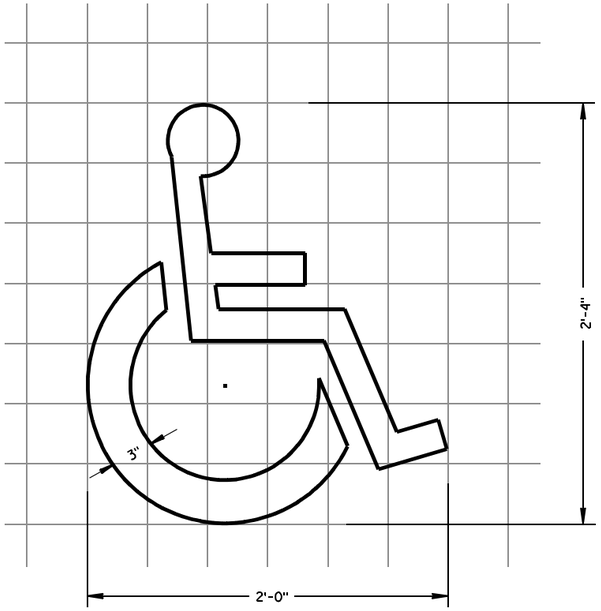
S.D.D. 15 C 5-1

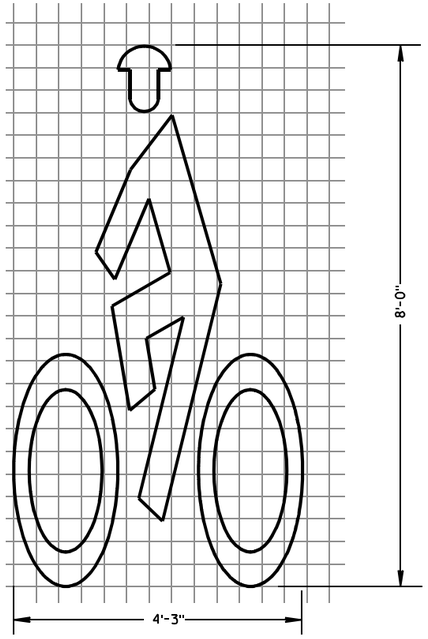
GENERAL NOTES

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

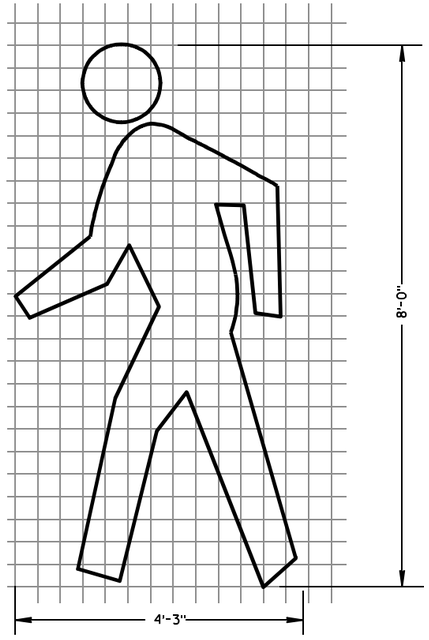
ALL LETTERS, ARROWS AND SYMBOLS SHALL BE IN CONFORMANCE WITH REQUIREMENTS INCLUDED IN "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKING" BOOK BY THE FEDERAL HIGHWAY ADMINISTRATION. ALL LETTERS, ARROWS AND SYMBOLS SHALL BE WHITE AND REFLECTORIZED. SMALL DIFFERENCES IN DIMENSIONS WITHIN THE TOLERANCES OF THAT BOOK ARE ACCEPTABLE.

A DETAILED DRAWING OF THE HANDICAPPED PARKING SYMBOL IS ILLUSTRATED IN THE "STANDARD HIGHWAY SIGNS MANUAL" BY THE FEDERAL HIGHWAY ADMINISTRATION.

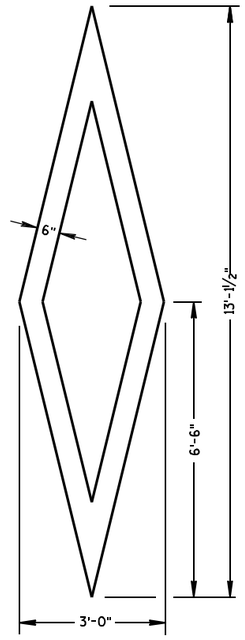




BIKE CROSSING SYMBOL



PEDESTRIAN SYMBOL



PREFERENTIAL LANE SYMBOL

PAVEMENT MARKING SYMBOLS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

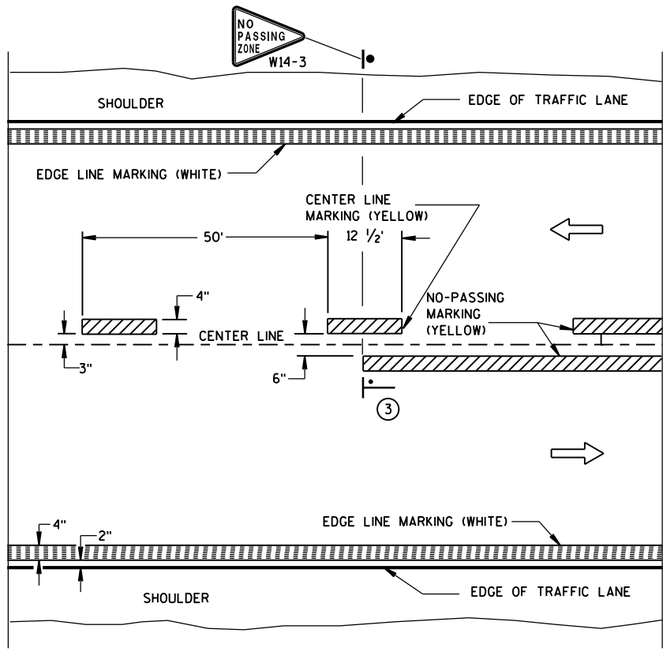
7/1/11 DATE

/S/ Thomas N Nathan
STATE TRAFFIC ENGINEER

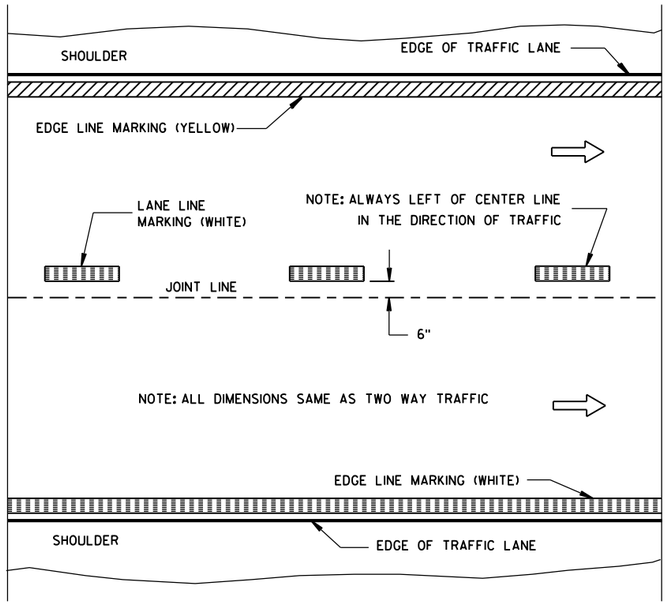
FHWA

6

S.D.D. 15 C 7-12a

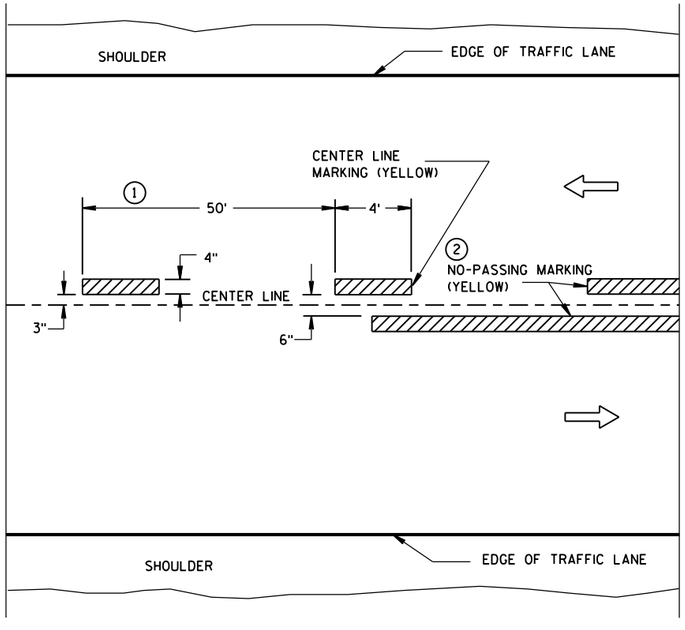


TWO WAY TRAFFIC

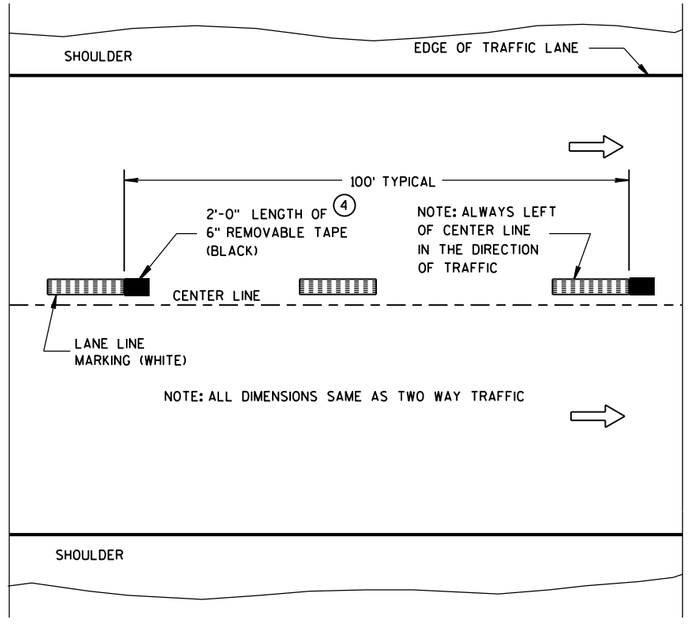


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY (INTERMEDIATE) PAVEMENT MARKING

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

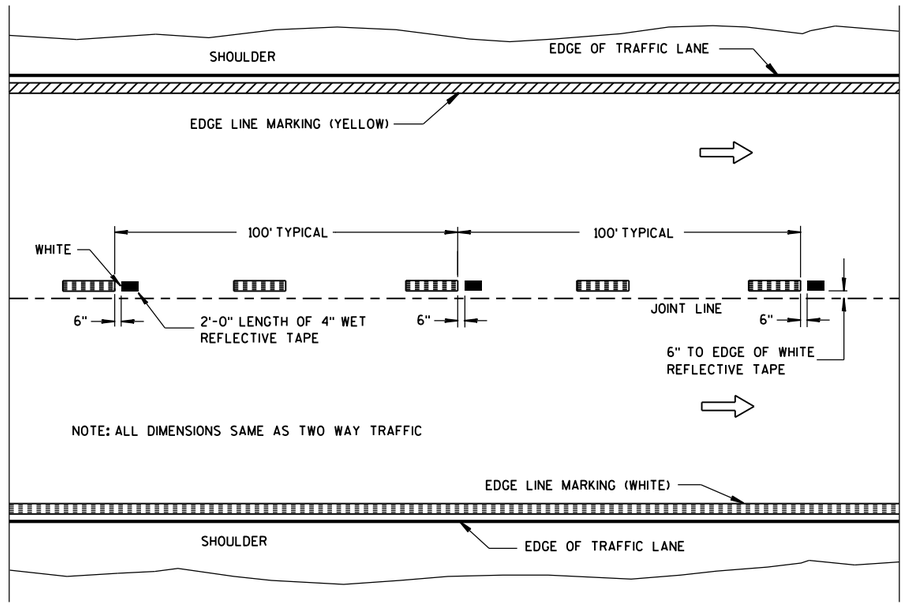
GENERAL NOTES

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

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

NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL



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

LEGEND

"T" MARKING

POST MOUNTED SIGN

PAVEMENT MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

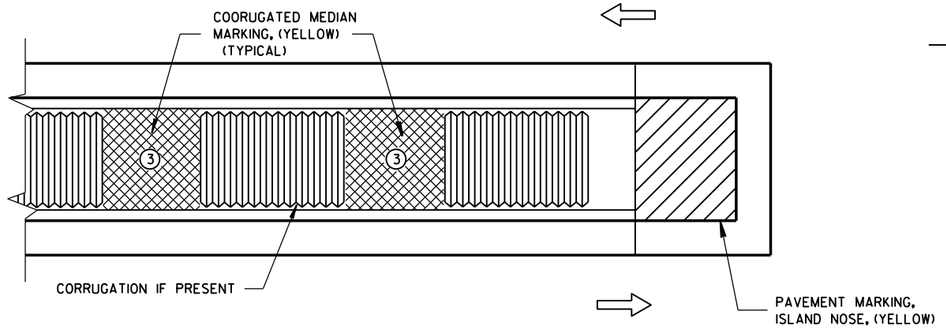
APPROVED
10-1-2012 — DATE
/S/ Travis Feltes — STATE TRAFFIC ENGINEER
FHWA

6

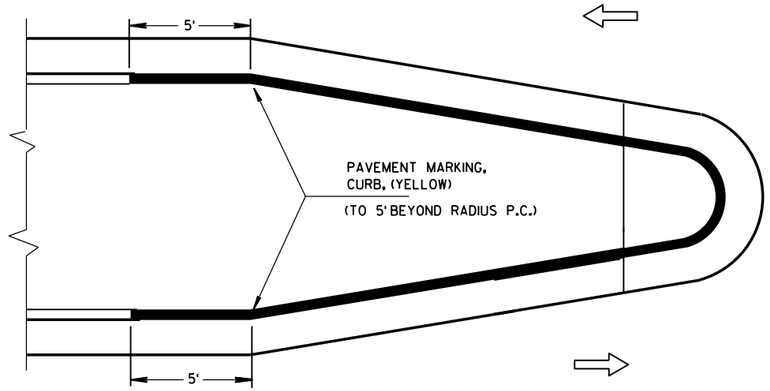
S.D.D. 15 C 8-15a

6

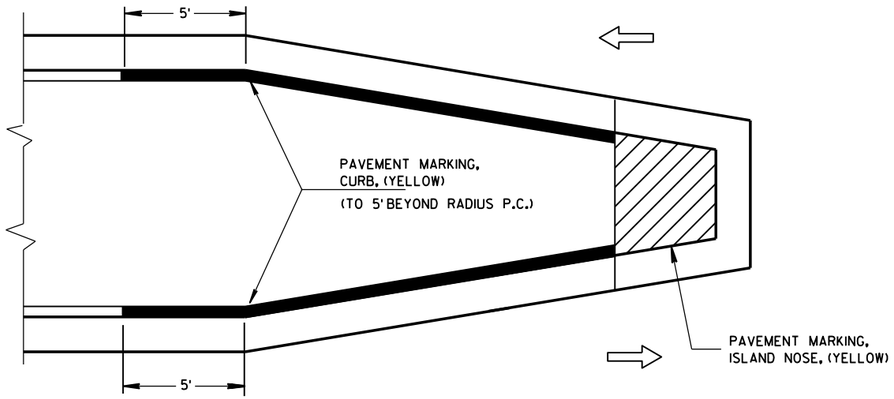
S.D.D. 15 C 8-15a



MEDIAN ISLAND WITH SQUARE BLUNT NOSE

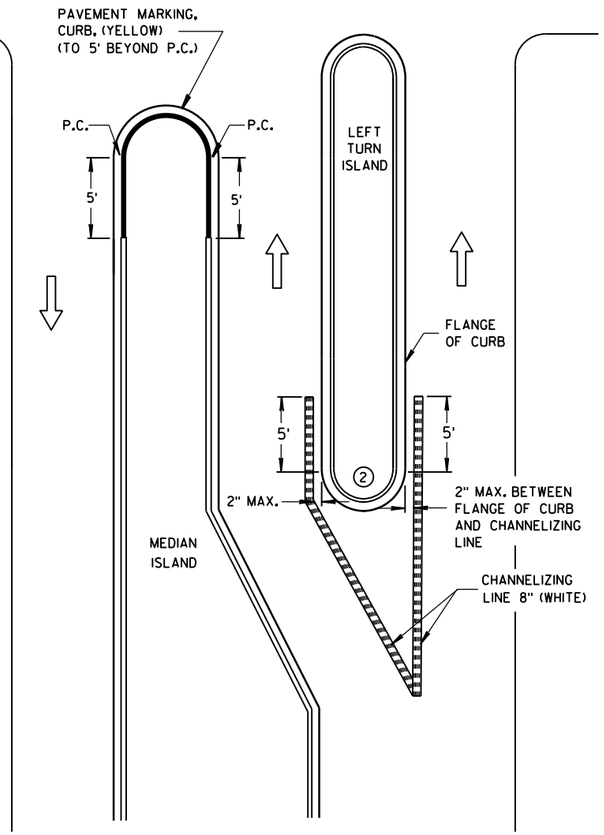


MEDIAN ISLAND WITH ROUND BLUNT NOSE



MEDIAN ISLAND WITH SLOPED NOSE

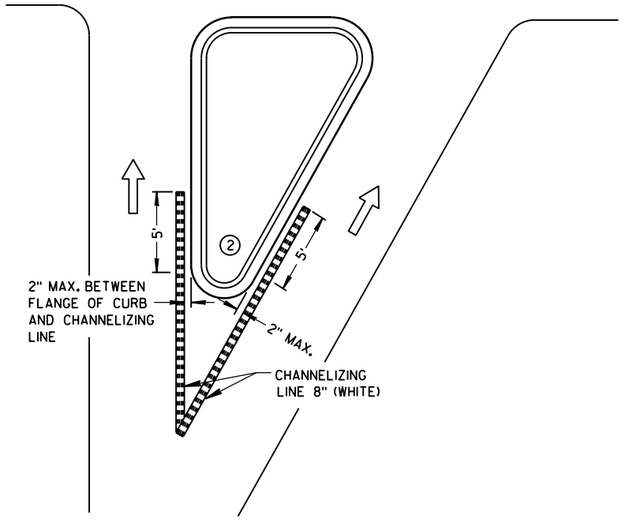
TYPICAL PLACEMENT OF PAVEMENT MARKING ON MEDIAN ISLANDS



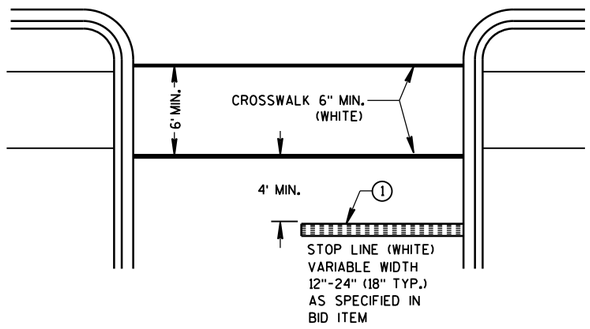
LEFT TURN & MEDIAN ISLAND

GENERAL NOTES

1. STOP LINE IS REQUIRED ONLY WHEN SPECIFIED IN THE CONTRACT.
2. DO NOT MARK CURB NOSES THAT SEPARATE LANES OF TRAFFIC TRAVELING IN THE SAME DIRECTION.
3. WHEN CONCRETE CORRUGATED MEDIAN IS CONSTRUCTED TO SEPARATE TRAFFIC OPERATING IN THE OPPOSING DIRECTION YELLOW PAVEMENT MARKING SHALL BE APPLIED TO THE FLAT PORTION OF THE CONCRETE CORRUGATED MEDIAN. THE ITEM OF PAVEMENT MARKING, CONCRETE CORRUGATED MEDIAN, WILL BE MEASURED IN PLACE AND AND ACCEPTED IN ACCORDANCE WITH THE CONTRACT AND PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE FOOT.



RIGHT TURN ISLAND



STOP LINE AND CROSSWALK

LEGEND

- ISLAND NOSE MARKING
- CURB MARKING
- CORRUGATED MEDIAN MARKING
- DIRECTION OF TRAVEL

PAVEMENT MARKING
(ISLANDS, STOP LINE &
CROSS WALK)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

S.D.D. 15 C 8-15f

6

S.D.D. 15 C 8-15f

GENERAL NOTES

ORIENT ANCHOR BOLTS IN FOOTING AND PROVIDE ANCHOR BOLT STICK OUT ABOVE TOP OF CONCRETE FOOTING BASE PER FABRICATION DRAWING.

BENDING DIMENSIONS FOR REINFORCING BARS ARE OUT TO OUT.

USE 3" CLEAR FOR ALL REINFORCEMENT UNLESS NOTED OTHERWISE.

SIGN SUPPORTS SHALL BE LOCATED NORMAL TO ROADWAY.

THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.

WELDING OF ANCHOR BOLTS TO THE CAGE IS UNACCEPTABLE. TEMPLATES SHALL BE USED.

BAR CAGE TO BE ASSEMBLED USING TIE WIRES ONLY, NO WELDING.

BASES (SHAFT) SHALL BE EXCAVATED BY THE USE OF A CIRCULAR AUGER. IF A BASE REQUIRES A DEEP FORM BECAUSE OF LOOSE SOIL, THE FORM SHALL BE REMOVED BEFORE BACK FILLING AROUND THE BASE. ANY REQUIRED BACKFILL SHALL BE WELL COMPACTED IN LAYERS OF 1 FOOT OR LESS. COMPACTION SHALL BE BY MECHANICAL MEANS. CARE SHALL BE TAKEN SO NO DAMAGE OCCURS TO THE CONCRETE BASE DURING COMPACTION.

EXCAVATION OF MATERIALS NOT OCCUPIED BY CONCRETE SHALL BE MINIMIZED TO REDUCE DISTURBANCE OF THE SURROUNDING SOILS.

THE BOTTOM OF THE DRILLED HOLE SHALL BE FIRM AND THOROUGHLY CLEANED SO NO LOOSE OR COMPRESSIBLE MATERIALS ARE PRESENT AT THE TIME OF THE CONCRETE PLACEMENT.

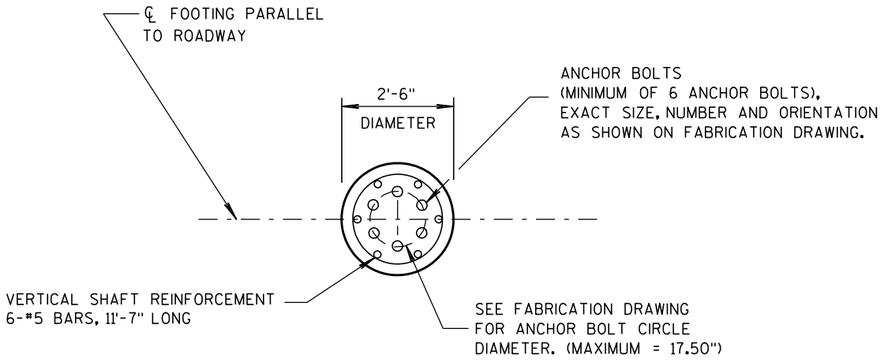
IF THE DRILLED HOLE CONTAINS STANDING WATER, THE CONCRETE SHALL BE PLACED USING A TREMIE TO DISPLACE THE WATER.

THE REINFORCEMENT AND ANCHOR BOLTS SHALL BE ADEQUATELY SUPPORTED IN THE PROPER POSITIONS SO NO MOVEMENT OCCURS DURING CONCRETE PLACEMENT.

ANY DAMAGE TO THE CONCRETE BASE DURING CONSTRUCTION OPERATIONS SHALL BE REPAIRED AT THE ENGINEER'S DIRECTION, AT THE EXPENSE OF THE CONTRACTOR.

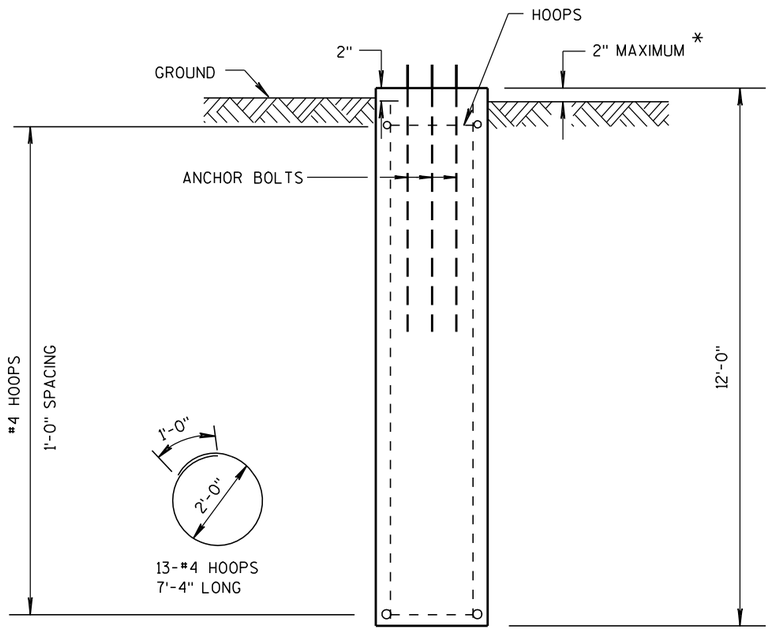
CONCRETE MASONRY	fc=3,500 p.s.i.
HIGH STRENGTH BAR STEEL REINFORCEMENT, GRADE 60	fy=60,000 p.s.i.
ANCHOR BOLTS	AASHTO M314 GRADE 55

THIS FOOTING HAS BEEN DESIGNED FOR SITES WHERE SOILS EXHIBIT A PHI-ANGLE GREATER THAN OR EQUAL TO 20 DEGREES (GRANULAR SOILS), OR A COHESION VALUE GREATER THAN OR EQUAL TO 350 PSF (COHESIVE SOILS).



PLAN VIEW

* FOR OVERHEAD SIGN SUPPORTS THAT ARE INSTALLED ADJACENT TO SIDEWALKS, THE TOP OF THE BASE SHALL BE POURED FLUSH WITH THE GROUND.



ELEVATION VIEW

CONCRETE - 2.2 C.Y. PER FOOTING
H.S. REINFORCEMENT - 136 LBS. PER FOOTING

30" DIAMETER CANTILEVER OVERHEAD SIGN SUPPORT BASE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

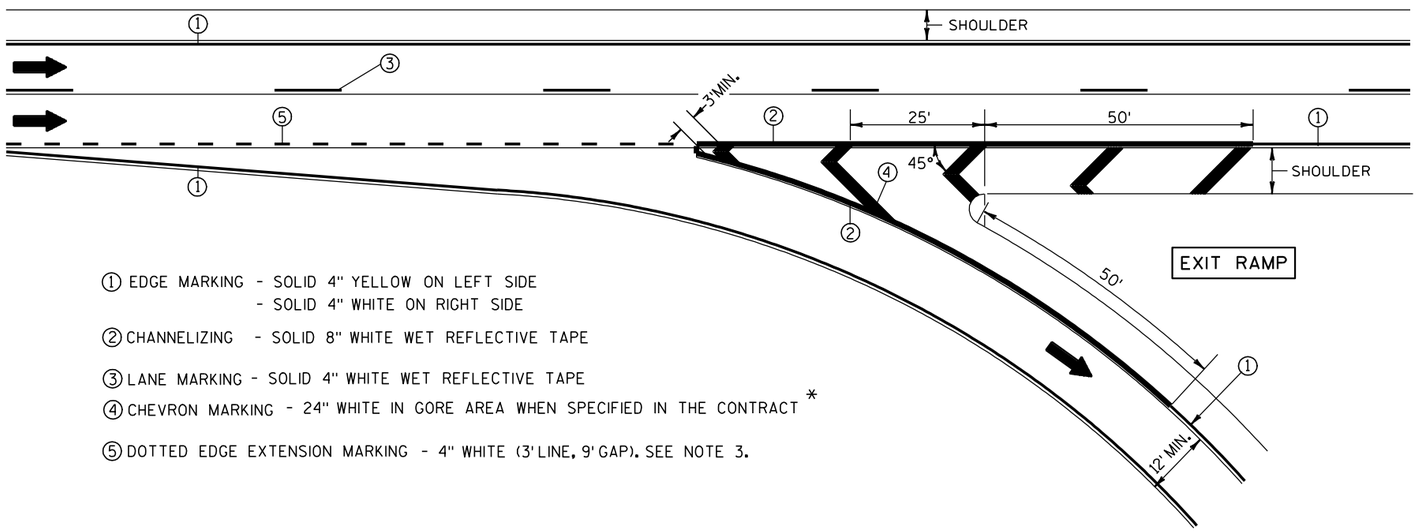
APPROVED
4/17/2009 DATE
/S/ Thomas N. N[illegible] STATE TRAFFIC ENGINEER
FHWA

6

S.D.D. 15 C 23-2

6

S.D.D. 15 C 23-2



① EDGE MARKING - SOLID 4" YELLOW ON LEFT SIDE
- SOLID 4" WHITE ON RIGHT SIDE

② CHANNELIZING - SOLID 8" WHITE WET REFLECTIVE TAPE

③ LANE MARKING - SOLID 4" WHITE WET REFLECTIVE TAPE

④ CHEVRON MARKING - 24" WHITE IN GORE AREA WHEN SPECIFIED IN THE CONTRACT *

⑤ DOTTED EDGE EXTENSION MARKING - 4" WHITE (3' LINE, 9' GAP). SEE NOTE 3.

NOTES:

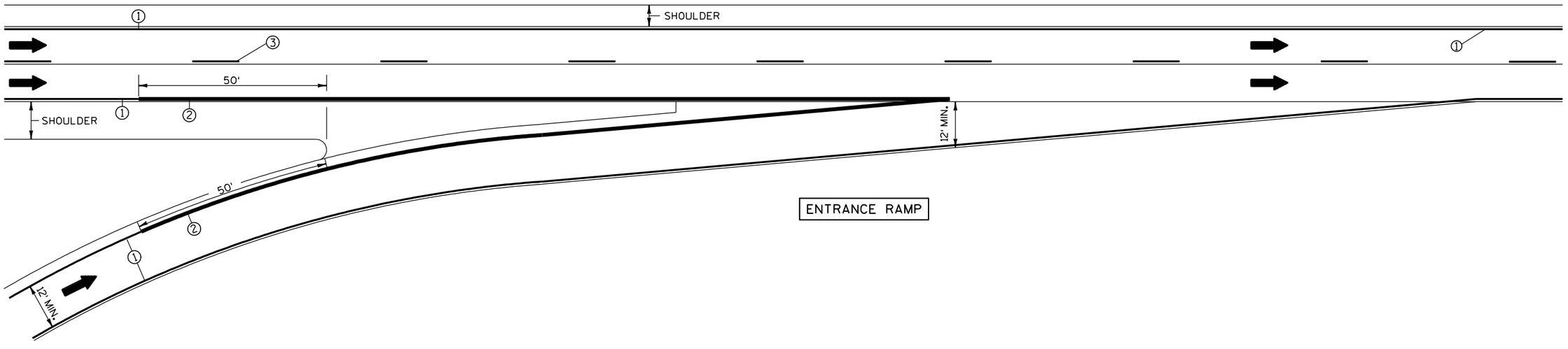
1. ARROWS SHOWN ON THIS MARKING PLAN DESIGNATE TRAFFIC FLOW, AND SHALL NOT BE TAKEN AS PROPOSED PAVEMENT MARKINGS.

2. PLACE WHITE EDGE OF TAPE 6" LEFT FROM JOINT.

3. 3' LINE 9' GAP, EXCEPT RETRACE THE EXISTING LINE-GAP PATTERN WHERE EXISTING MARKINGS ARE IN PLACE.

4. RETRACE EXISTING DIAGONAL MARKINGS.

* REFER TO DESIGN NOTES.



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S.D.D. 15 C 31-1a

PAVEMENT MARKING (RAMPS AND GORES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

S.D.D. 15 C 31-1a

LEGEND

- POST WITH ATTACHED SIGN
- POST WITH ATTACHED SIGN IN DRUM
- DRUM WITH WARNING LIGHT (TYPE C)
- DRUM
- ARROW BOARD
- 8' TYPE III BARRICADE
- REMOVING PAVEMENT MARKING
- DIRECTION OF TRAFFIC

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.

(1) 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.

GENERAL NOTES CONTINUED:

REMOVE PAVEMENT MARKINGS IF LANE CLOSURE IS TO BE IN PLACE FOR LONGER THAN 7 CONTINUOUS DAYS AND NIGHTS.

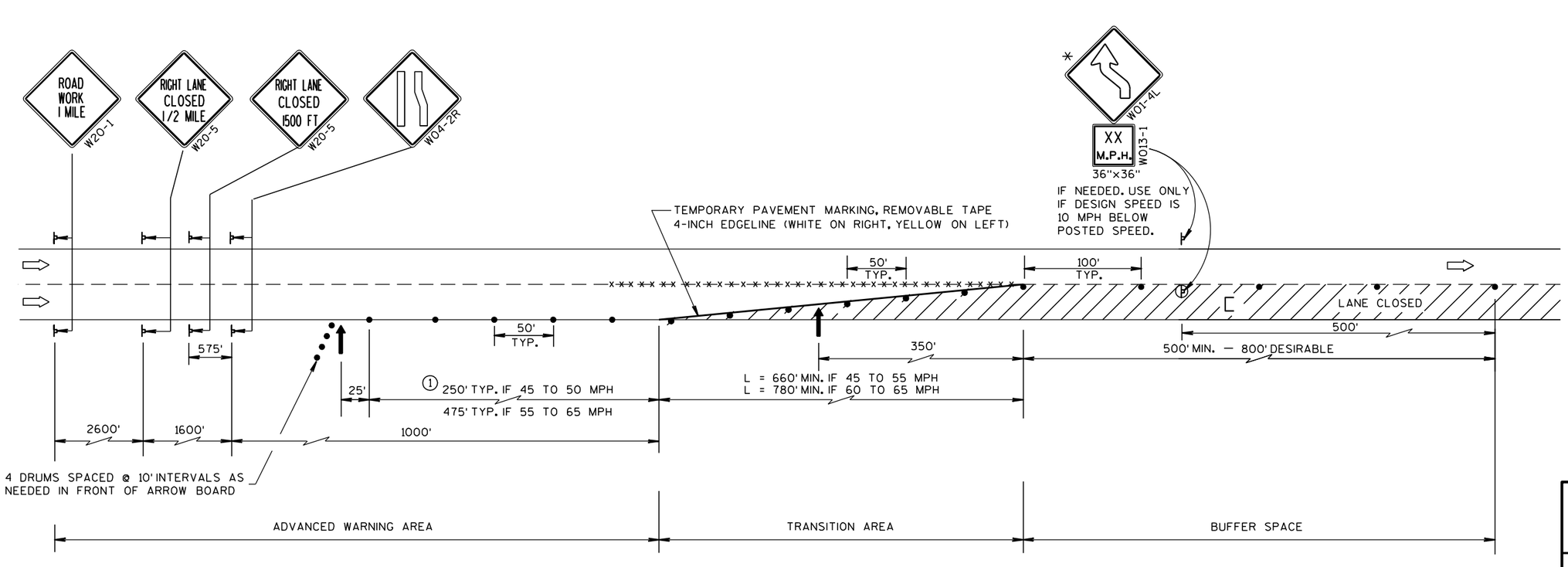
WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

IF THE HORIZONTAL ALIGNMENT IS SUCH THAT A CURVE MAY REQUIRE ADDITIONAL DELINEATION, THE DEVICE SPACING MAY BE DECREASED TO 50 FEET.

IF LANE CLOSURE IS MORE THAN 1 MILE, PLACE A TYPE III BARRICADE APPROXIMATELY EVERY 1/4 MILE ACROSS THE CLOSED LANE TO HELP ENFORCE THE DRUM LINE.

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, SPEEDS GREATER THAN 40 M.P.H.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

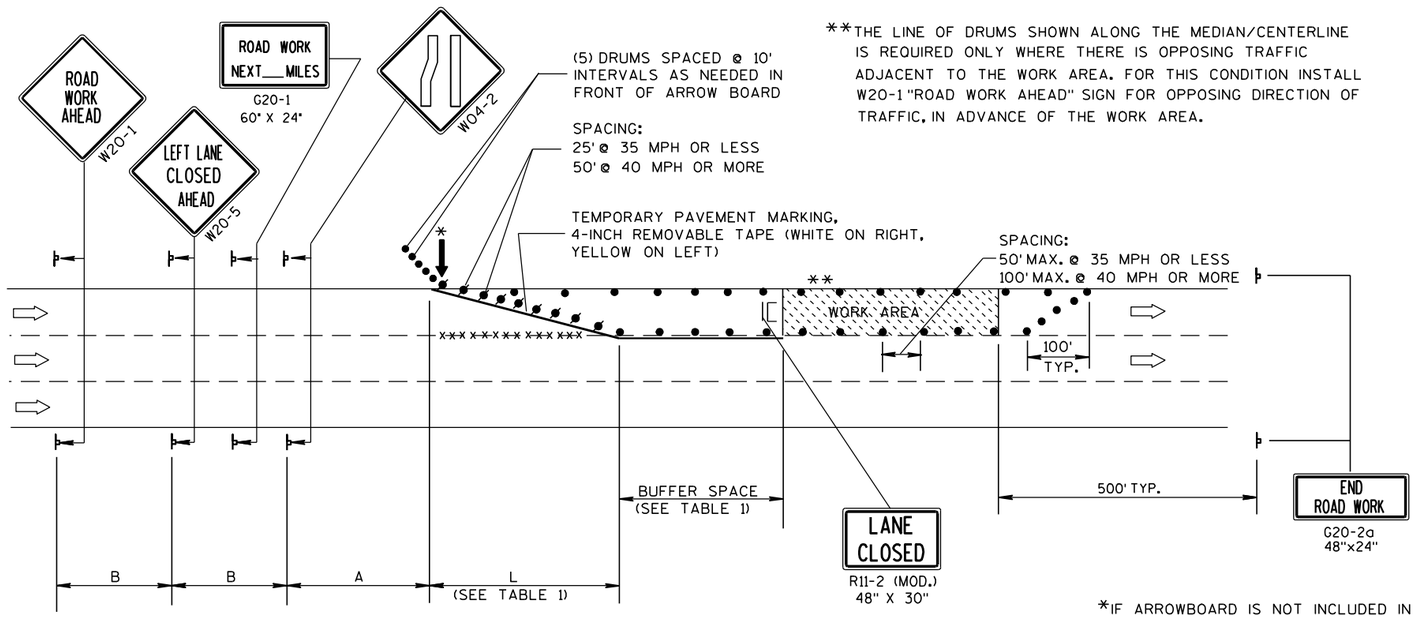
APPROVED
8-7-95 DATE
/S/ Chester J. [illegible]
DIRECTOR, OFFICE O
FHWA

6

S.D.D. 15 D 12-2

6

S.D.D. 15 D 12-2



**THE LINE OF DRUMS SHOWN ALONG THE MEDIAN/CENTERLINE IS REQUIRED ONLY WHERE THERE IS OPPOSING TRAFFIC ADJACENT TO THE WORK AREA. FOR THIS CONDITION INSTALL W20-1 "ROAD WORK AHEAD" SIGN FOR OPPOSING DIRECTION OF TRAFFIC, IN ADVANCE OF THE WORK AREA.

B=400' AT 25-30 MPH
700' AT 35-40 MPH
1000' AT 45-55 MPH

A=200' AT 25-30 MPH
350' AT 35-40 MPH
500' AT 45-55 MPH

(PLACE BARRICADE AND SIGN APPROX. EVERY 1000' ACROSS THE CLOSED LANE)

*IF ARROWBOARD IS NOT INCLUDED IN MISCELLANEOUS QUANTITIES, SUBSTITUTE A TYPE III BARRICADE WITH W01-6 SIGN IN THE LANE CLOSURE TAPER.

W01-6
48"x24"

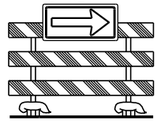


TABLE 1
TAPER AND BUFFER SPACE FOR 12' LANE WIDTH

S	L	BUFFER SPACE
25	125'	55'
30	180'	85'
35	245'	120'
40	320'	170'
45	540'	220'
50	600'	280'
55	660'	335'

FOR LANE WIDTH OTHER THAN 12':

L = WS AT 45 MPH OR GREATER

$L = \frac{WS^2}{60}$ AT 40 MPH OR LESS

L = TAPER LENGTH IN FEET

S = NON-CONSTRUCTION SPEED LIMIT (MPH)

W = WIDTH OF LANE CLOSURE

LEGEND

- DRUM WITH/WITHOUT WARNING LIGHT, TYPE C (STEADY-BURN)
- POST MOUNTED SIGN
- ARROW BOARD
- TYPE III BARRICADE (8' EQUIVALENT) AND WARNING LIGHTS, TYPE A (FLASHING) WITH/WITHOUT SIGN
- DIRECTION OF TRAFFIC FLOW
- xxxx REMOVING PAVEMENT MARKING (SEE GENERAL NOTES)

GENERAL NOTES

THIS LANE CLOSURE DETAIL IS TYPICAL FOR CLOSING THE LEFT LANE. FOR A RIGHT LANE CLOSURE, REVERSE THE TRAFFIC CONTROL.

THIS DETAIL MAY BE USED FOR ROADWAYS WITH EITHER TWO OR THREE LANES IN EACH DIRECTION.

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 DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" SIGNS MAY BE USED IF APPROVED BY DISTRICT TRAFFIC UNIT.

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

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, OR THAT WILL BE PLACED IN A CLOSED LANE, MAY BE MOUNTED ON PORTABLE SUPPORTS.

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.

REMOVE PAVEMENT MARKINGS AND PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF LANE CLOSURE IS TO BE IN PLACE FOR 7 OR MORE CONTINUOUS DAYS AND NIGHTS.

ON UNDIVIDED ROADWAYS, OMIT THE SIGNS SHOWN ON LEFT SIDE OF ROAD.

W20-1, G20-1 AND G20-2A SIGNS ARE NOT REQUIRED IF THE LANE CLOSURE IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT.

OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS.

CONSIDER GEOMETRICS WHEN LOCATING SIGNS AND ARROWBOARDS SO THE APPROACHING DRIVER HAS A CLEAR VIEW OF THE ARROWBOARDS AND LANE CLOSURE DRUMS.

PLACE THE ARROWBOARD AS CLOSE AS POSSIBLE TO THE BEGINNING OF THE LANE CLOSURE TAPER, PREFERABLY ON THE SHOULDER OR TERRACE.

CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

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.

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

TRAFFIC CONTROL, SINGLE LANE CLOSURE, NON-FREEWAY/EXPRESSWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

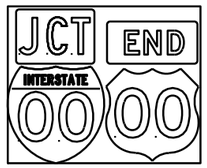
APPROVED
5/23/00 DATE
/S/ Chester J. [illegible]
CHIEF SIGNS AND MARI[illegible]INEER

FHWA

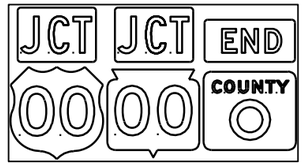
6
S.D.D. 15 D 20-1

TYPICAL ASSEMBLIES

J1-1

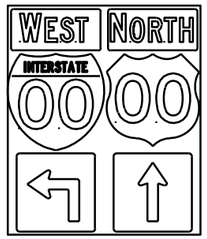


J1-2

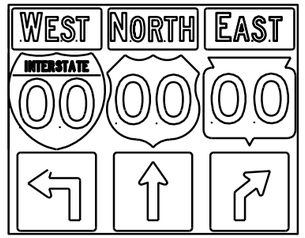


J1-3

J2-1



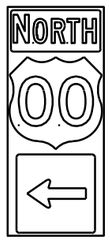
J2-2



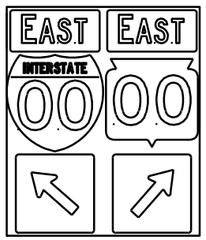
J2-3

JV

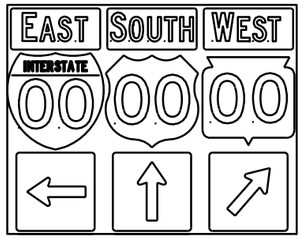
(Typical Vertical J-Assembly
See Note 10 and 11)



J3-1

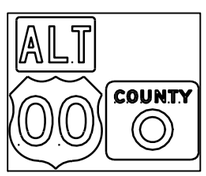


J3-2

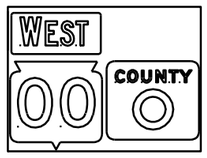


J3-3

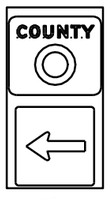
J4-1



J4-2



J4-2



J13-1

J12-1

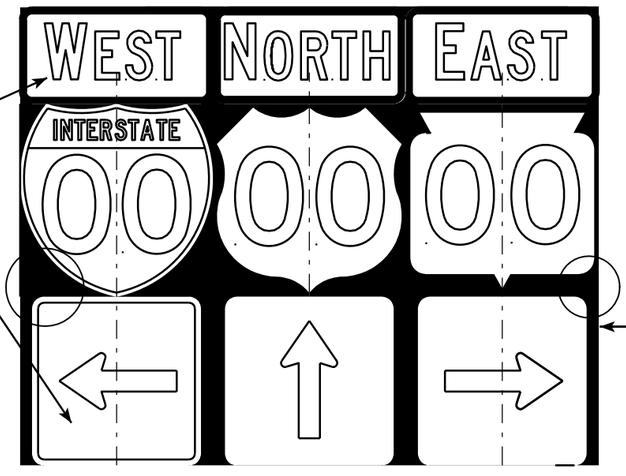
J32-1

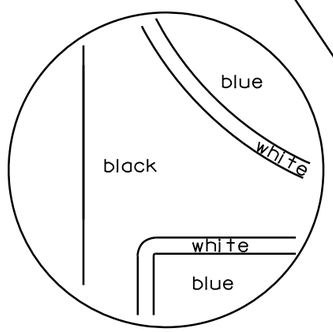
J33-1

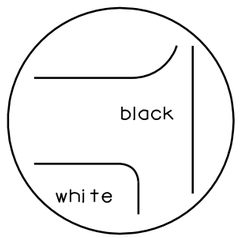
J23-1

J22-1

blue background with interstate







black background

NOTES

1. Signs are Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Black Non-reflective
   Message - see Note 5
3. Message Series - See Note 5
4. Corners shall be square or rounded if base material is plywood. If base material is metal the corners shall be rounded.
5. The colors and message spacing on each marker shall be according to the applicable route marker panel specifications.
6. Certain marker heads require the component pieces to be the same color. As an example, all the components used with an M1-1 interstate marker shall be blue.
7. Single panel j-assemblies shall only be used with route marker shields that are same size. If the route marker shields are different size use multiple piece component.
8. Route assemblies that have 24 inch route shields and have dimensions greater than 48 inches (both vertical and horizontal) shall have one horizontal splice between the arrows and route shields. Vertical splices shall not be used on route assemblies with a horizontal dimension of 144 inches or less. The contractor shall not use more than one vertical joint per sign and the joint shall be between route shields.
9. Route assemblies that have 36 inch shields and have dimensions greater than 48 inchs (both vertical and horizontal) shall have two horizontal splices. One horizontal splice shall be between the cardinal direction and route shields and the other horizontal splice shall be between the arrows and route shields. Vertical splices shall not be used on route assemblies with a horizontal dimension of 144 or less. The contractor shall not use more than one vertical joint per sign and the joint shall be between route shields.
10. All Vertical J Assemblies are given a Sign Code of JV
11. For JV Assemblies that have a mixture of interstate and non interstate shields, arrows and cardinals shall be white on blue.

ROUTE MARKERS & COMPONENTS IN TYPICAL ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

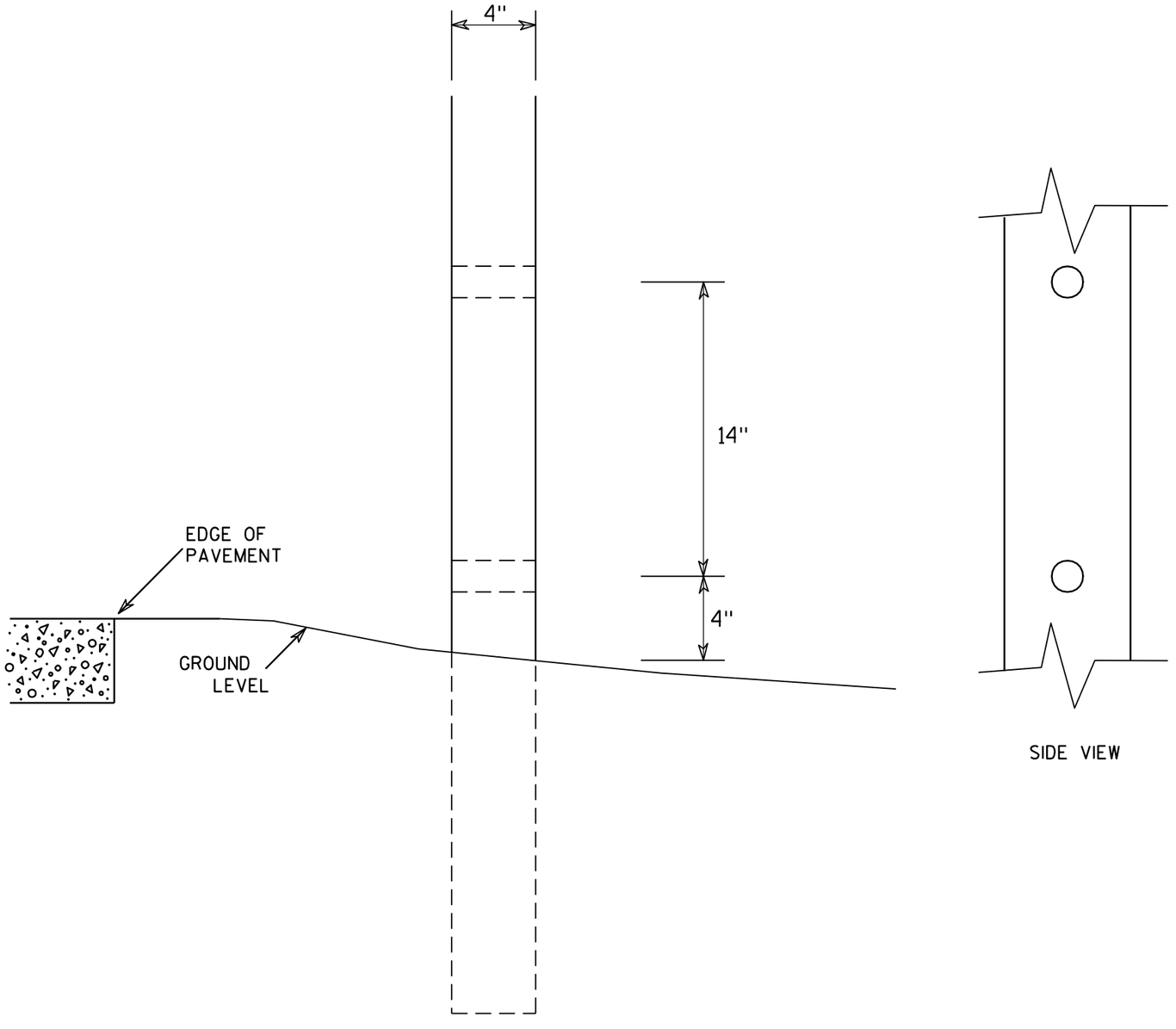
DATE 3/25/13 PLATE NO. A2-1S.7

7

7

PROJECT NO:

SHEET NO: 147 E



SIDE VIEW

GENERAL NOTES

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

4 X 6 WOOD POST MODIFICATIONS

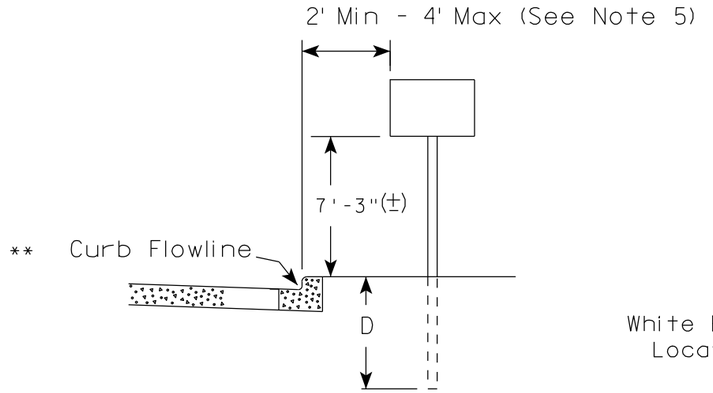
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Chester J Spang for State Traffic Engineer

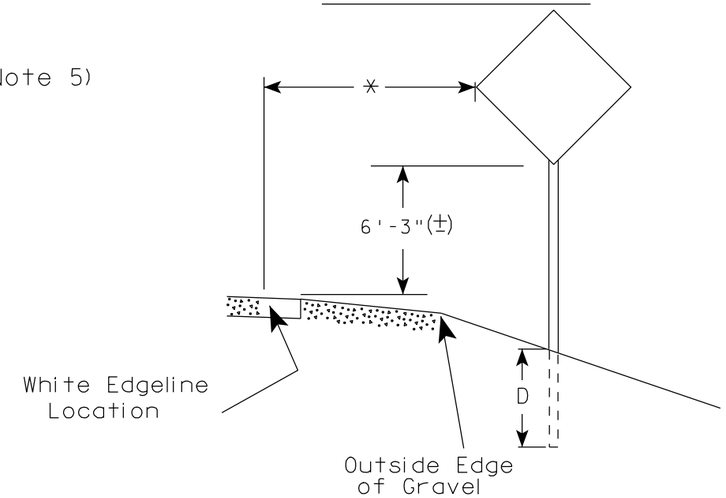
DATE 3/27/97 PLATE NO. A4-11.2

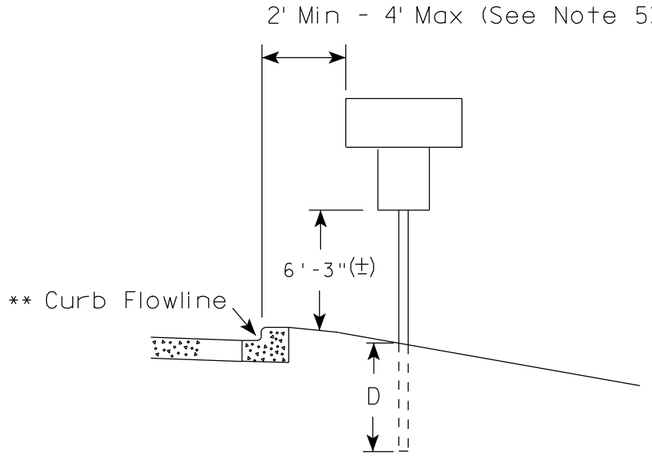
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 148	E

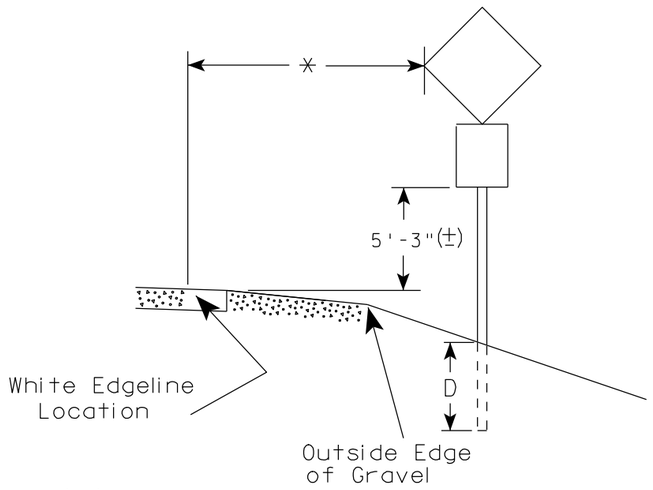
URBAN AREA



RURAL AREA (See Note 2)







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

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

GENERAL NOTES

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

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

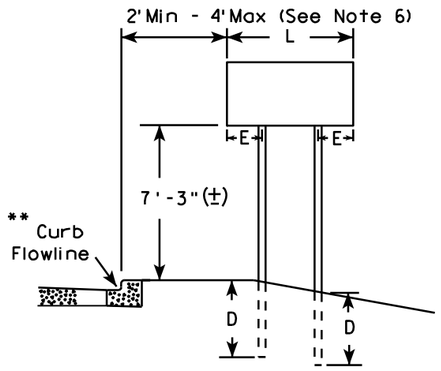
DATE 9/21/2011 PLATE NO. A4-3.16

7

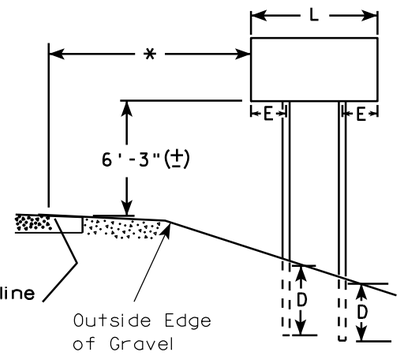
7

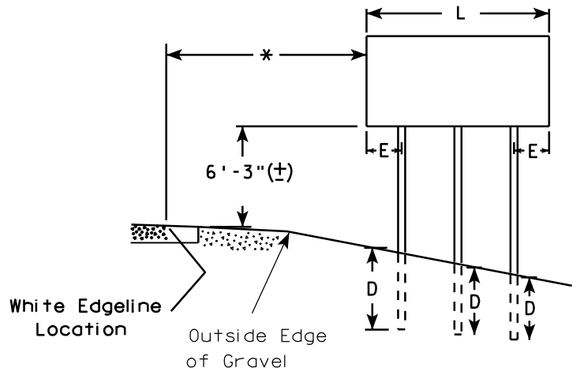
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 149	E

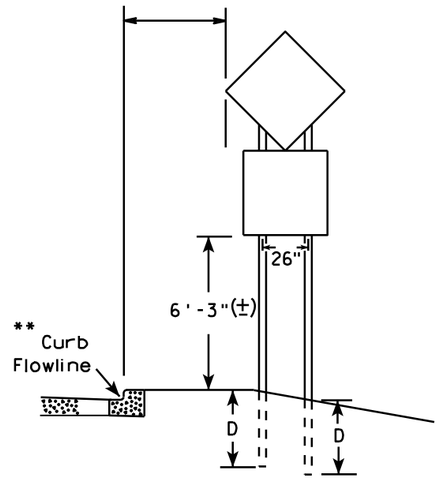
URBAN AREA



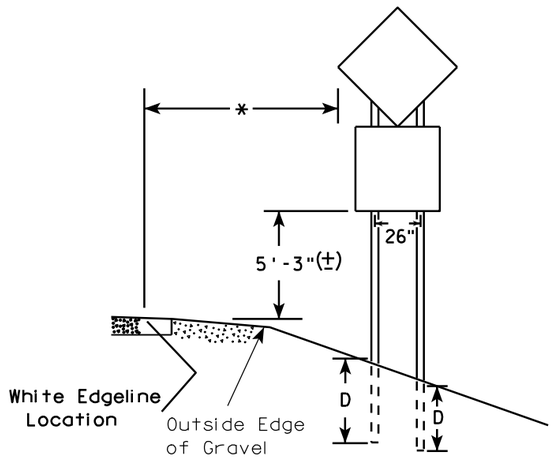
RURAL AREA (See Note 3)







48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

***	SIGN SHAPE OTHER THAN DIAMOND (TWO POSTS REQUIRED)	
	L	E
	Greater than 48" Less than 60"	12"
	60" to 120"	L/5

SIGN SHAPE OTHER THAN DIAMOND (THREE POSTS REQUIRED)	
L	E
Greater than 120" less than 168"	12"

SIGN SHAPE OTHER THAN DIAMOND (FOUR POSTS REQUIRED)	
L	E
168" and greater	12"

POST EMBEDMENT DEPTH

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

GENERAL NOTES

1. For multiple post installations, individual post spacing shall be greater than 3'-6".
2. See tables below for required number of posts.
3. For expressways and freeways, mounting height is 7'-3" (±) or 6'-3" (±) depending upon existence of sub-sign.
4. The (±) tolerance for mounting height is 3 inches.
5. Minimum mounting height for J assemblies (A4-5) is 7'-3" (±) or 6'-3" (±) per urban or rural detail respectively.
6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
7. Folding stop signs (R1-1F) shall be mounted at a height of 5'-3" (±) or as directed by the engineer.
8. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Clearance Markers (W5-52), Mile Markers (D10 series) & End of Road Markers (W5-56 & W5-56A) shall be mounted at a height of 4"-3" (±).

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

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

*** See A4-3 sign plate for signs 4' or less in width or 20 S.F. or less in area.

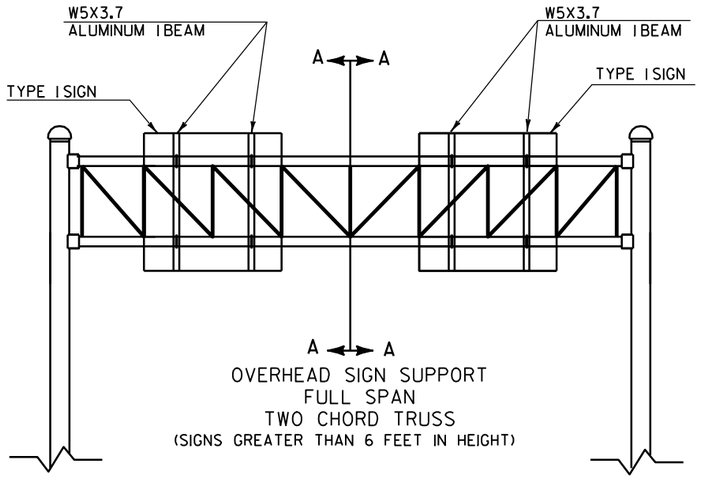
TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

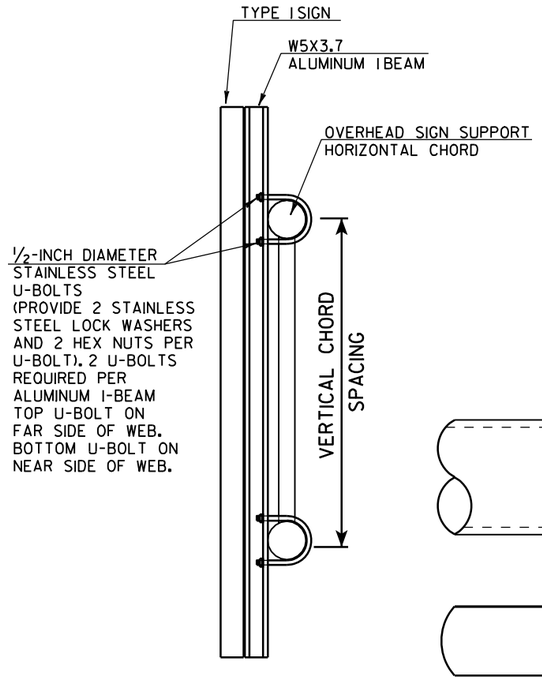
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 9/21/2011 PLATE NO. A4-4.11

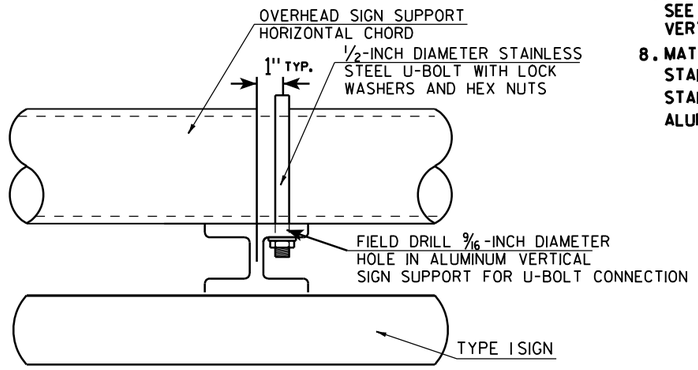
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 150	E



OVERHEAD SIGN SUPPORT
FULL SPAN
TWO CHORD TRUSS
(SIGNS GREATER THAN 6 FEET IN HEIGHT)



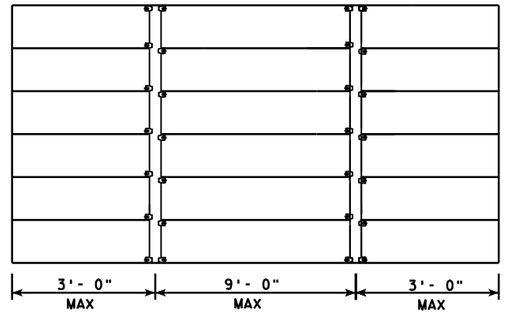
CUT SECTION A-A



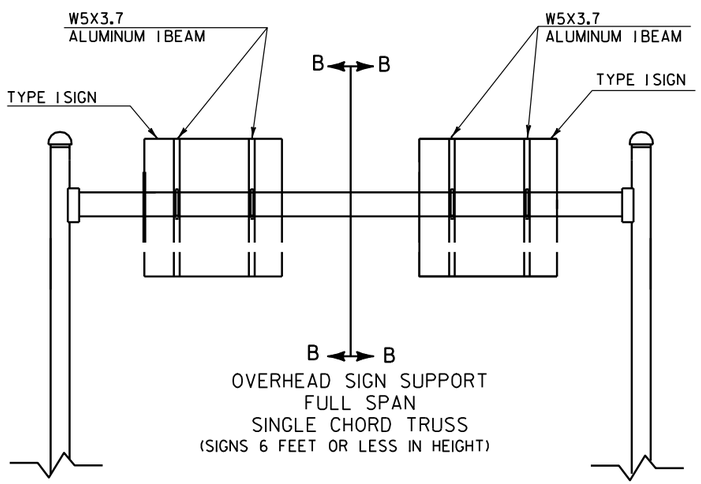
TYPICAL SIGN CONNECTION FOR
TWO CHORD TRUSS
PLAN VIEW

GENERAL NOTES

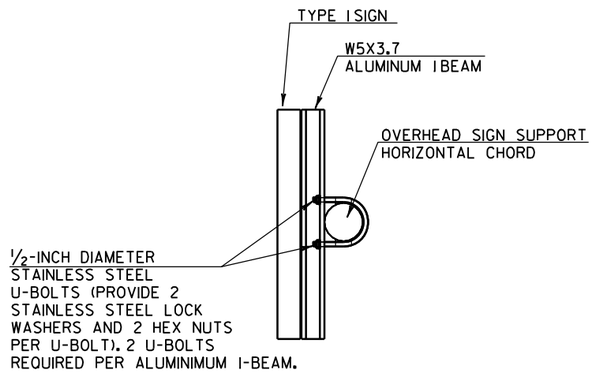
1. USE STAINLESS STEEL U-BOLTS, WASHERS, AND NUTS.
2. USE CLIPS ON EVERY EXTRUDED PANEL JOINT PER SIGN PLATE A4-6.
3. USE ALUMINUM VERTICAL SIGN SUPPORT BEAMS HAVING A 5 INCH BEAM DEPTH AND WEIGHT OF 3.7 LBS PER FOOT.
4. U-BOLTS SHALL BE STAINLESS STEEL AND MANUFACTURED TO THE PROPER SIZE TO FIT THE CHORDS OF THE OVERHEAD SIGN STRUCTURE.
5. DIAMETER OF U-BOLTS SHALL BE AS SHOWN.
6. THE LENGTH OF THE ALUMINUM VERTICAL SIGN SUPPORT BEAMS SHALL BE THE SAME AS THE HEIGHT OF THE SIGN THEY ARE SUPPORTING. BEAM LENGTHS MAY BE LONGER FOR PROPER ATTACHMENT TO CHORDS.
7. MINIMUM NUMBER OF BRACKETS PER SIGN IS TWO. SEE DETAIL BELOW FOR SPACING OF ALUMINUM VERTICAL SIGN SUPPORTS
8. MATERIAL NOTES:
   STAINLESS STEEL U-BOLTS AND LOCKWASHERS ASTM 304.
   STAINLESS STEEL HEX NUTS ASTM A276.
   ALUMINUM I-BEAMS ARE 6061-T6.



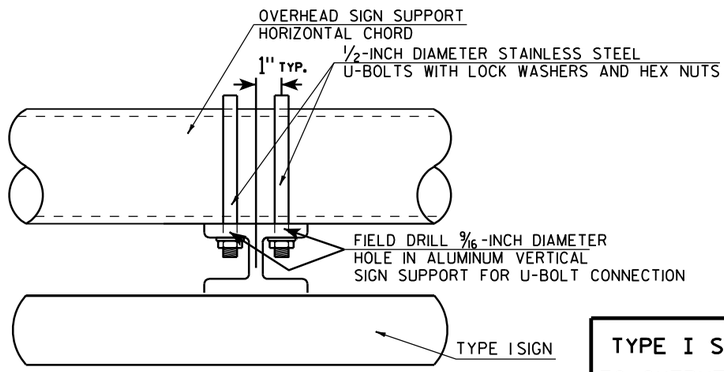
SPACING OF W5X3.7 ALUMINUM
VERTICAL SIGN SUPPORT



OVERHEAD SIGN SUPPORT
FULL SPAN
SINGLE CHORD TRUSS
(SIGNS 6 FEET OR LESS IN HEIGHT)



CUT SECTION B-B



TYPICAL SIGN CONNECTION FOR
SINGLE CHORD TRUSS
PLAN VIEW

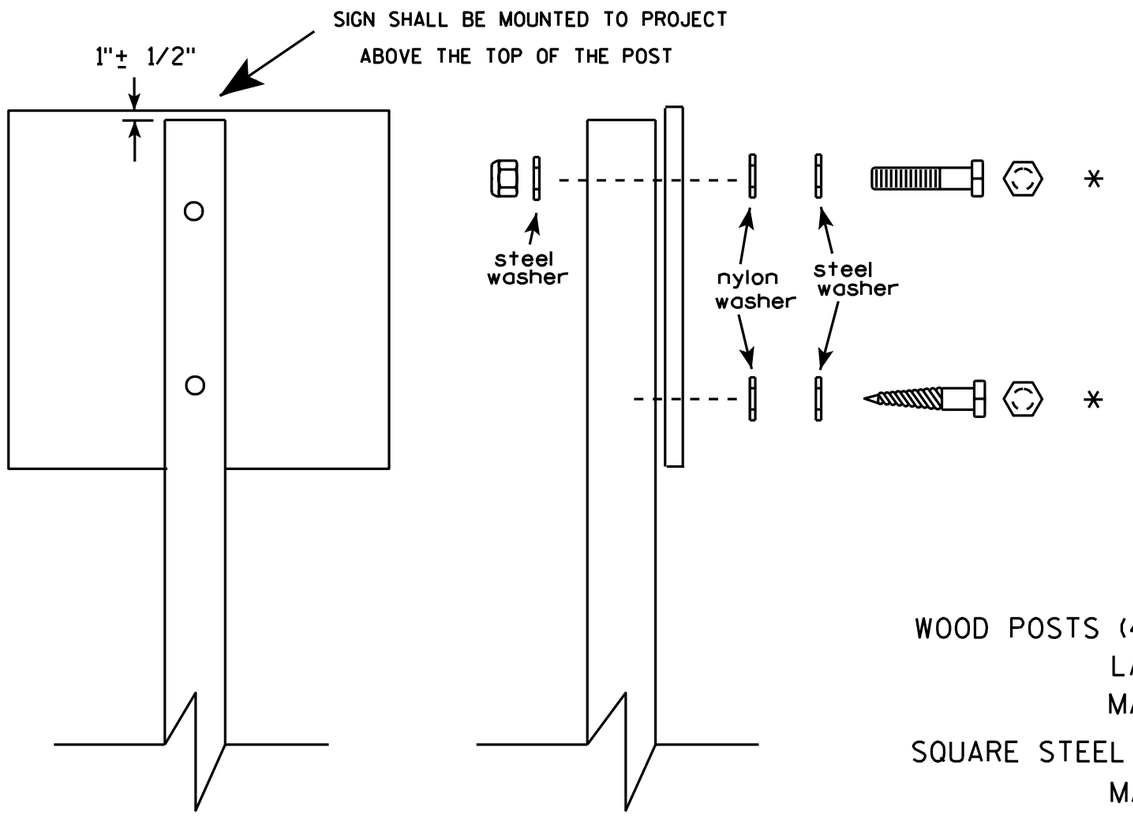
TYPE I SIGN CONNECTION TO OVERHEAD SIGN SUPPORT

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch for State Traffic Engineer

DATE 11/12/12 PLATE NO. A4-7.3

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 151	E



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

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

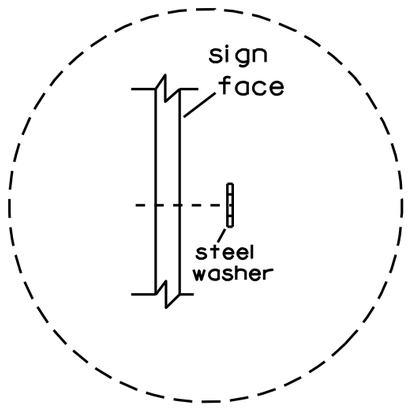
b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

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

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

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

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



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

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

ATTACHMENT OF SIGNS TO POSTS

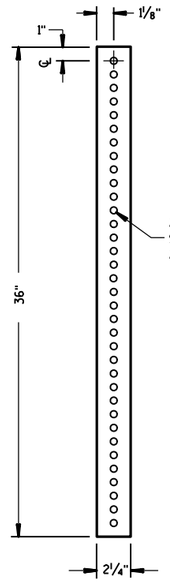
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

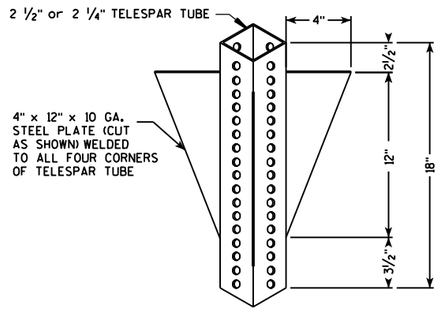
DATE 3/23/10 PLATE NO. A4-8.7

TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM

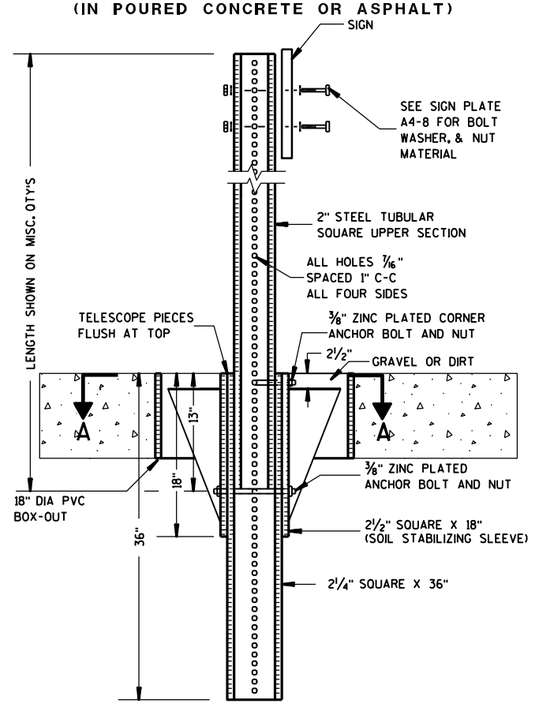
2 1/4 " SQUARE
12 GAUGE
PERFORATED
GALVANIZED FINISH



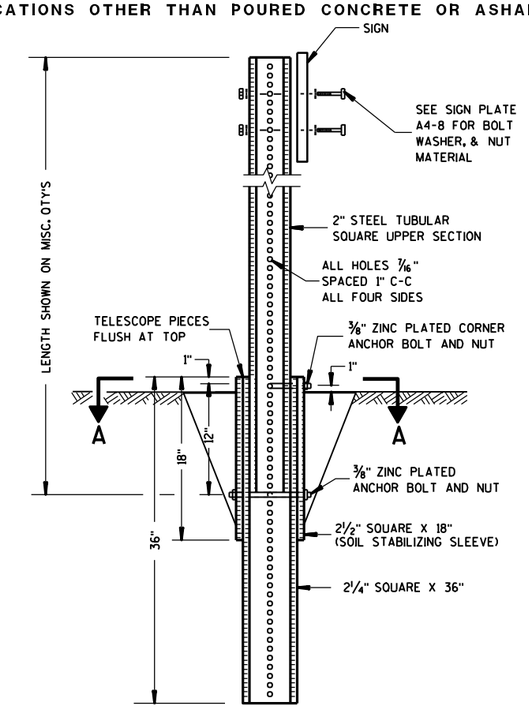
2 1/2 " SQUARE
12 GAUGE
OMNI-DIRECTIONAL
PERFORATED
SOIL STABILIZING SLEEVE
GALVANIZED FINISH

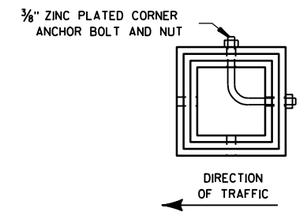


DETAIL OF TUBULAR STEEL SIGN POST
(IN POURED CONCRETE OR ASPHALT)



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





SECTION A-A

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

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

TUBULAR STEEL SIGN POST A4-9

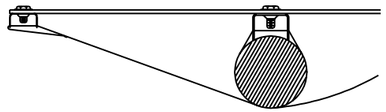
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

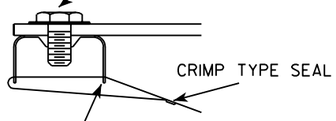
DATE 5/30/12 PLATE NO. A4-9.7

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 153	E

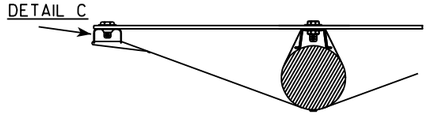
BRACE BANDING

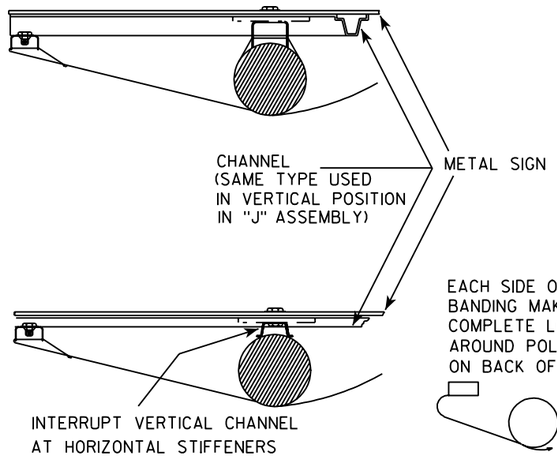


DETAIL C
CADMIUM PLATED STEEL BOLT
THROUGH BLACK BORDER



DETAIL C

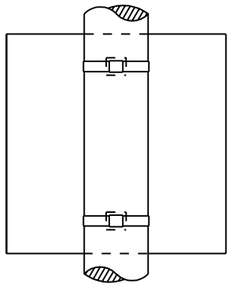


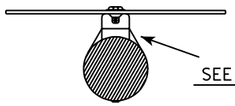


EACH SIDE OF BRACE
BANDING MAKES ONE
COMPLETE LOOP
AROUND POLE-SEAL
ON BACK OF POLE

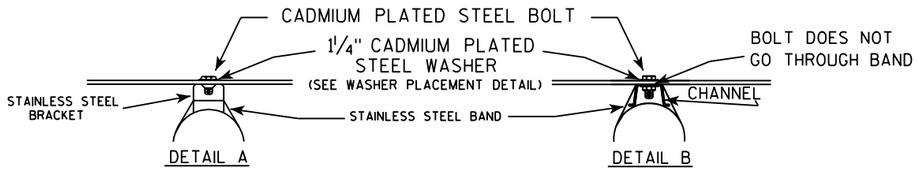
BRACKET BANDING

SINGLE SIGN





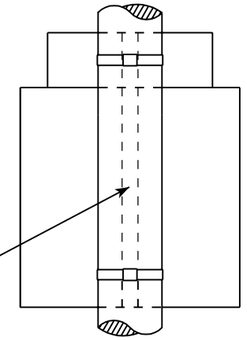
SEE DETAIL A



DETAIL A

DETAIL B

"J" ASSEMBLY

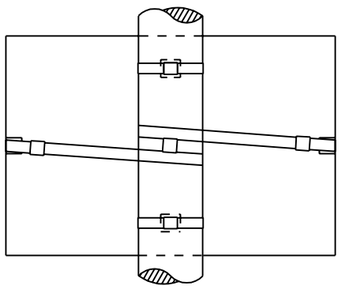


CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET

SEE DETAIL B

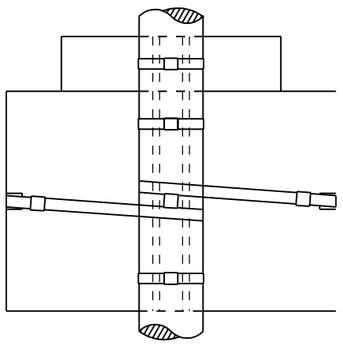
GENERAL NOTES

1. Signs 4' or greater in width shall have one brace band installed at the center of the sign.
2. Signs 3' or greater in height shall have three bracket bands installed. Signs less than 3' in height shall have two bracket bands installed.
3. Banding and assembly bracket shall be stainless steel. All bands shall be ¾" in width and 0.025" thickness.

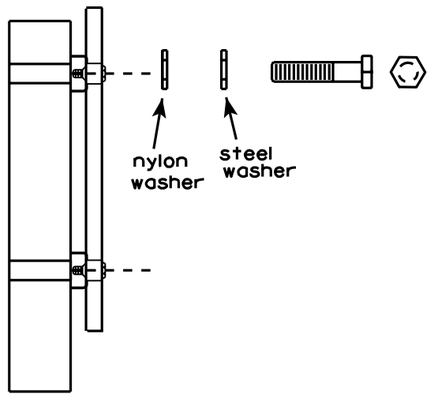


BRACE BANDING

BRACE BANDING SHALL BE TIGHTENED FIRMLY BUT NOT SO TIGHT AS TO APPRECIABLY CURVE FACE OF SIGN.



WASHER PLACEMENT



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

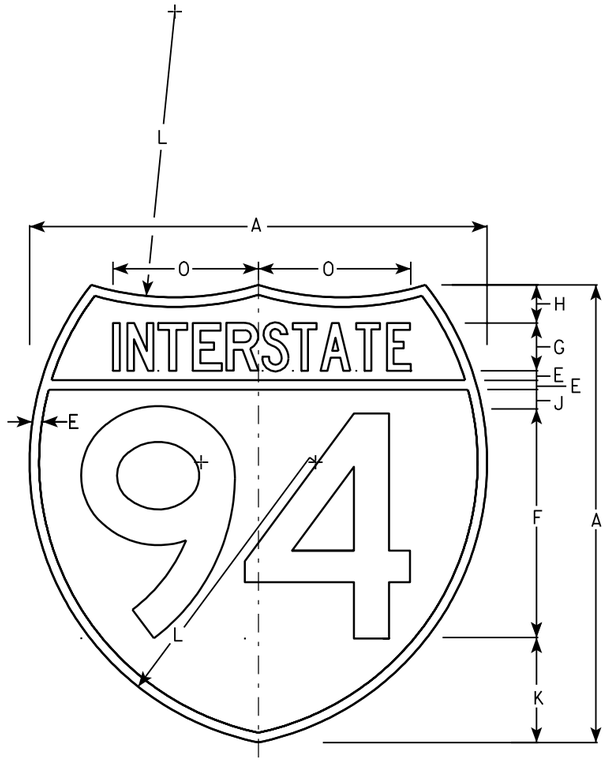
STANDARD SIGN
SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

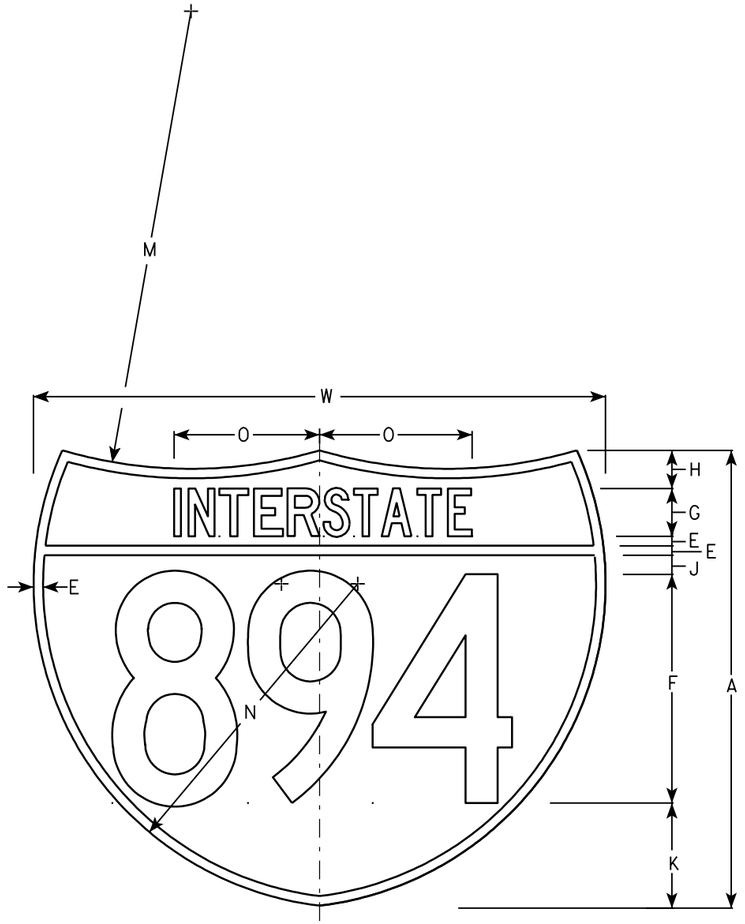
APPROVED *Matthew R Rauch*
for State Traffic Engineer

DATE 11/08/05 PLATE NO. A5-9.2

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 154	E



M1-1



M1-1A

NOTES

1. Sign is Type II - See Note 6 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Top Red - Bottom Blue (See Note 6)
   Message - White - See Note 6
3. Message Series - See note 5
4. Substitute appropriate numerals & ajust spacing as per plate A10-1.
5. M1-1 - Numerals - D
   Interstate - C
   M1-1A - All copy - C
6. Permanent Signs
   Message - Type H Reflective
   Detour or other temporary signs
   Background - Reflective
   Message - Reflective

Metric equivalent for these signs are:

SIZE	M1-1	SIZE	M1-1A
1			
2	600 mm X 600 mm	2	600 mm X 750 mm
3	900 mm X 900 mm	3	900 mm X 1125 mm
4	900 mm X 900 mm	4	900 mm X 1125 mm
5	900 mm X 900 mm	5	900 mm X 1125 mm

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	M1-1 Area sq. ft.	M1-1A Area sq. ft.	M1-1 Area m2	M1-1A Area m2
1																													
2	24				1/2	12	2 1/2	2		1	5 1/2	15	24	17	7 7/8								30			3.13	3.91	.36	.46
3	36				3/4	18	3 3/4	3		1 1/2	8 1/4	22 1/2	36	25 1/2	11 3/4								45			7.03	8.79	.81	1.05
4	36				3/4	18	3 3/4	3		1 1/2	8 1/4	22 1/2	36	25 1/2	11 3/4								45			7.03	8.79	.81	1.05
5	36				3/4	18	3 3/4	3		1 1/2	8 1/4	22 1/2	36	25 1/2	11 3/4								45			7.03	8.79	.81	1.05

INTERSTATE ROUTE MARKER
M1-1 FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

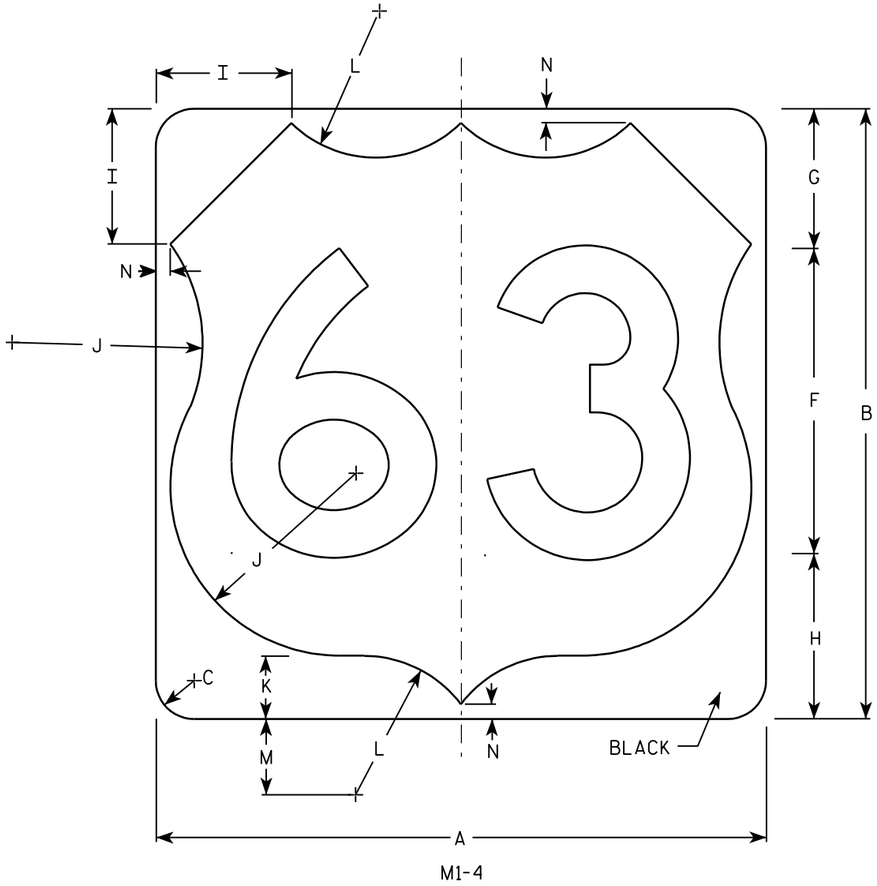
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 08/23/05 PLATE NO. M1-1.8

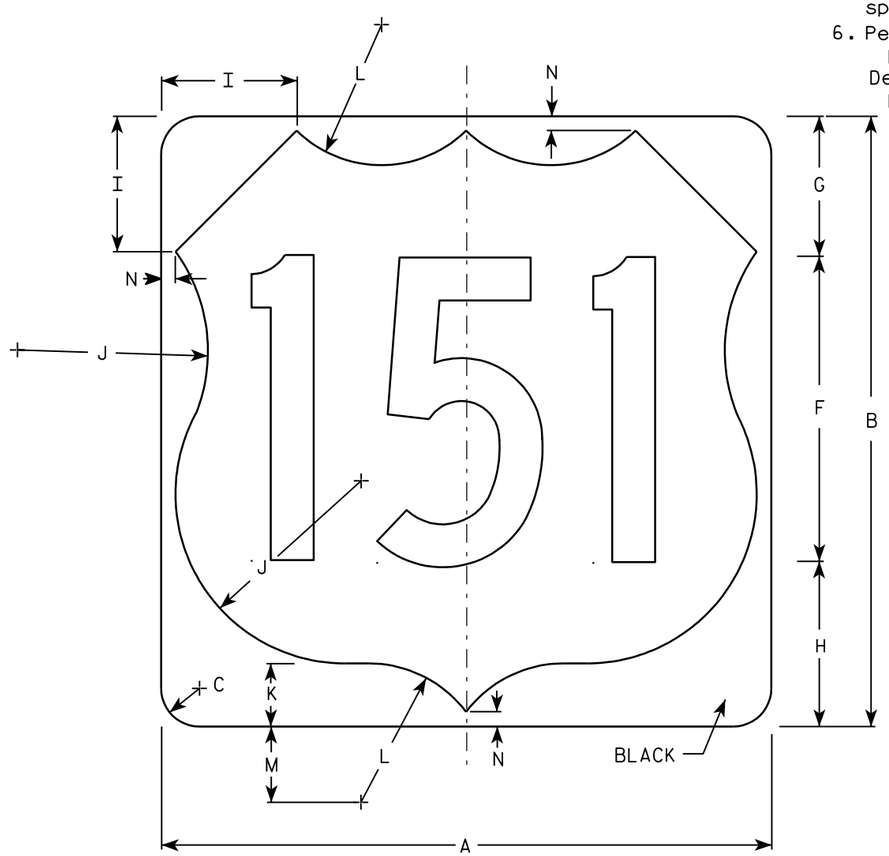
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 155	E

NOTES

1. Sign is Type II - See Note 6 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - White & Black - See Note 6
   Message - Black
3. Message Series - See note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Substitute appropriate numerals and adjust spacing as per Plate A10-1.
6. Permanent Signs
   Background - Type H Reflective
   Detour or other temporary signs
   Background - Reflective



M1-4



M1-4

7

7

Metric equivalent for this sign is:

SIZE	
1	
2	600 mm X 600 mm
3	900 mm X 900 mm
4	900 mm X 900 mm
5	900 mm X 900 mm

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m2
1																												
2	24	24	1 1/2			12	5 1/2	6 1/2	5	7 1/2	2 1/2	5 1/2	3	1/2													4.0	.36
3	36	36	2 1/4			18	8 1/4	9 1/4	7 1/4	11 1/4	3 3/4	8 1/4	4 1/2	3/4													9.0	.81
4	36	36	2 1/4			18	8 1/4	9 1/4	7 1/4	11 1/4	3 3/4	8 1/4	4 1/2	3/4													9.0	.81
5	36	36	2 1/4			18	8 1/4	9 1/4	7 1/4	11 1/4	3 3/4	8 1/4	4 1/2	3/4													9.0	.81

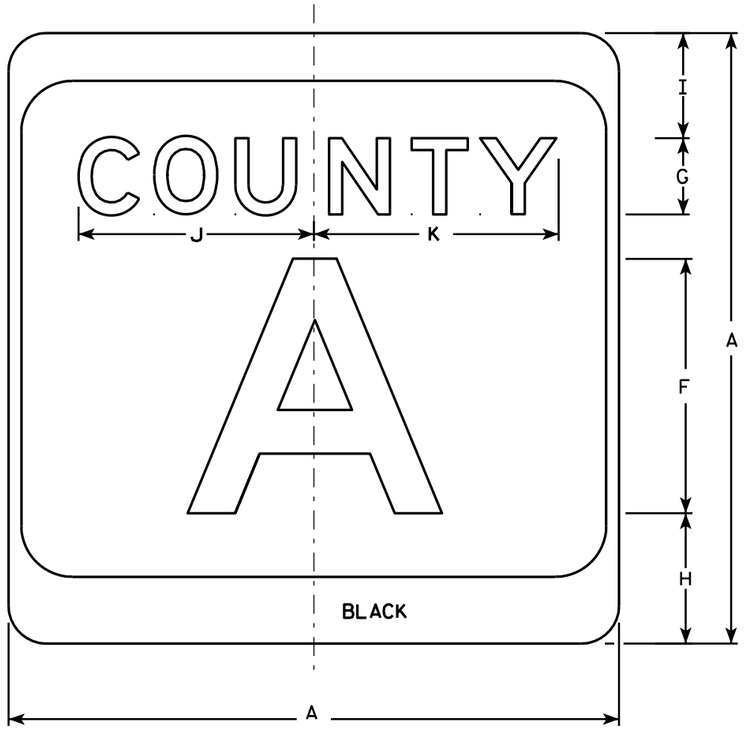
USH MARKER
M1-4 FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

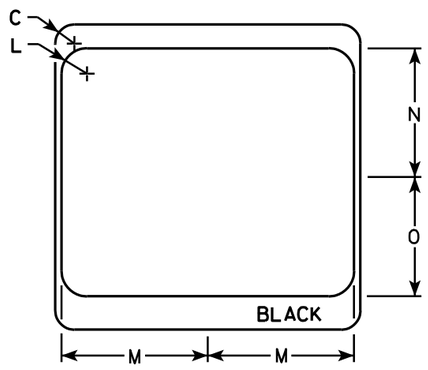
APPROVED Matthew R Rauch
for State Traffic Engineer

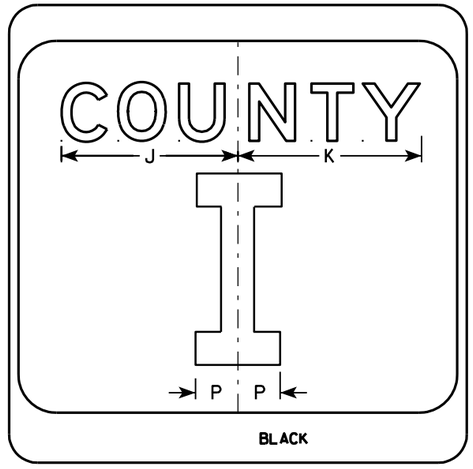
DATE 08/25/05 PLATE NO. M1-4.9

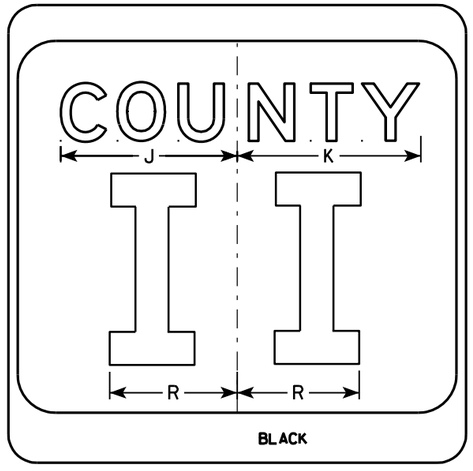
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 156	E



M1-5A







NOTES

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

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

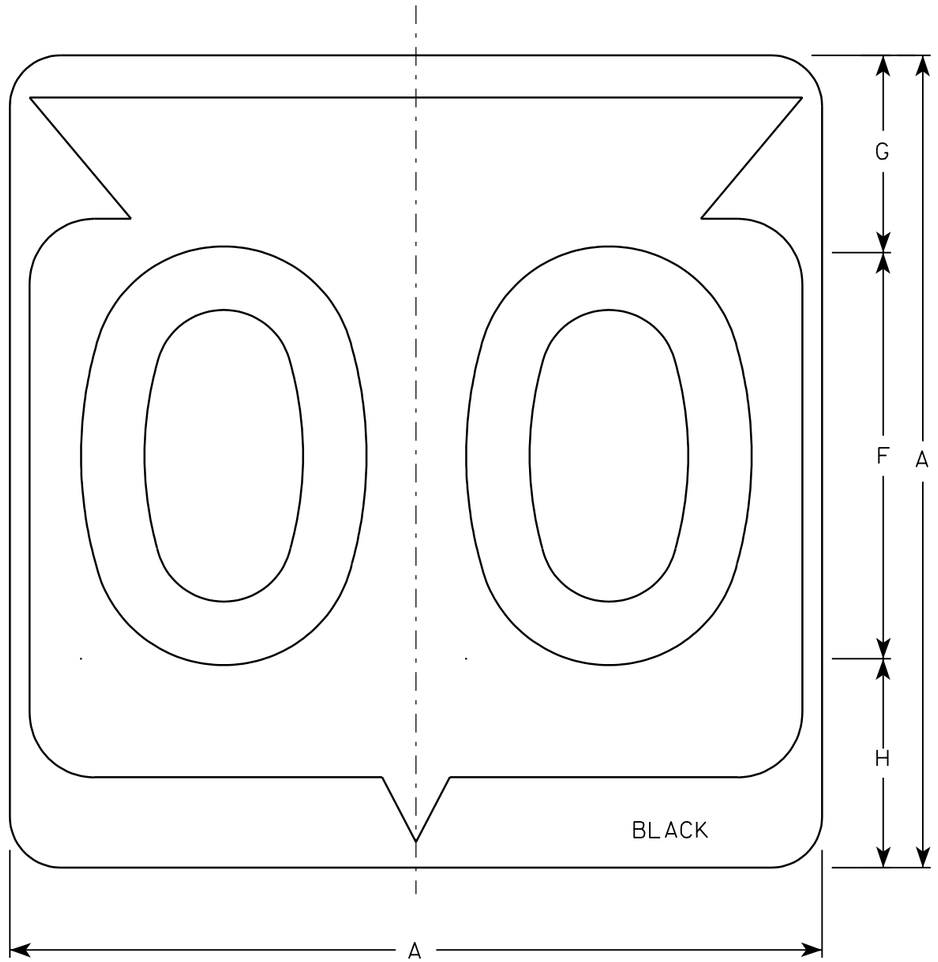
CTH MARKER
M1-5A FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

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

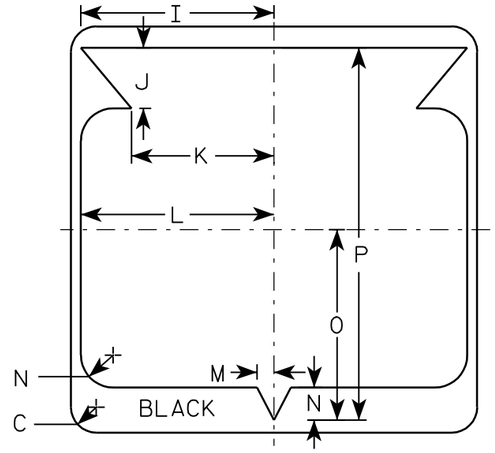
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 157	E



M1-6

NOTES

1. Sign is Type II - See Note 6 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - White & Black - See Note 6
   Message - Black
3. Message Series - See note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Substitute appropriate Series numerals and adjust spacing as per plate A10-1.
6. Permanent Signs
   Background - Type H Reflective
   Detour or temporary Signs
   Background - Reflective



Metric equivalent for this sign is:

SIZE	
1	
2	600 mm X 600 mm
3	900 mm X 900 mm
4	900 mm X 900 mm
5	900 mm X 900 mm

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m2
1																												
2	24		1 1/2			12	5 1/2	6 1/2	10 1/4	2 1/2	8 7/8	11 1/2	1	1 7/8	11 1/4	21 7/8											4.0	.36
3	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0	.81
4	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0	.81
5	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0	.81

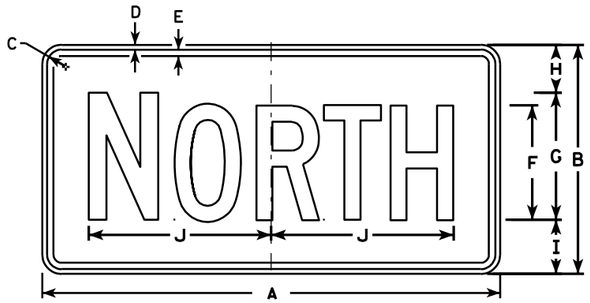
STATE ROUTE MARKER
M1-6 FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

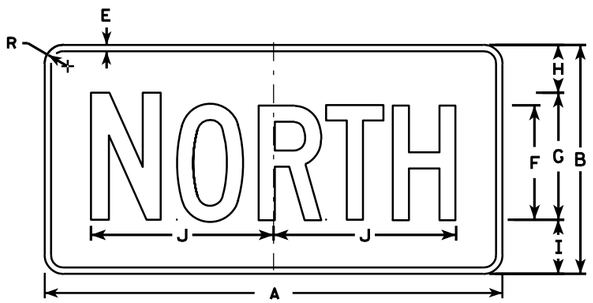
APPROVED Chester J Spang for State Traffic Engineer

DATE 3/20/02 PLATE NO. M1-6.9

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 158	E

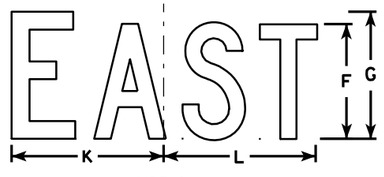


M3-1
MK3-1
MO3-1



MB3-1
MG3-1
MM3-1
MN3-1

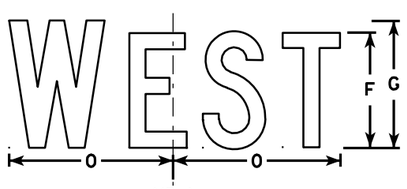
M3-2
MK3-2
MO3-2



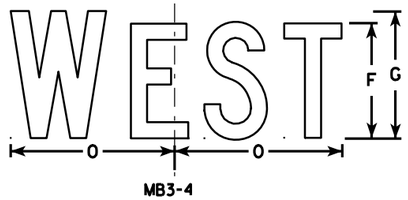
MB3-2
MG3-2
MM3-2
MN3-2

M3-3
MK3-3
MO3-3

MB3-3
MG3-3
MM3-3
MN3-3



M3-4
MK3-4
MO3-4



MB3-4
MG3-4
MM3-4
MN3-4

NOTES

1. All Signs Type II - See Note 5 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - See note 5
   Message - See note 5
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. M3-1 thru M3-4 Background - White - Type H Reflective (Detour or temporary signs - Reflective) Message - Black
   MB3-1 thru MB3-4 Background - Blue Message - White - Type H Reflective (Detour or temporary signs - Reflective)
   MG3-1 thru MG3-4 Background - Green Message - White - Type H Reflective
   MK3-1 thru MK3-4 Background - Green Message - White - Type H Reflective
   MM3-1 thru MM3-4 Background - White - Type H Reflective Message - Green
   MN3-1 thru MN3-4 Background - Brown Message - White - Type H Reflective
   M03-1 thru M03-4 Background - Orange - Reflective Message - Black
6. Note the first letter of each direction is larger than the remainder of the message.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	12	1 1/8	3/8	3/8	6	7	2 1/4	2 3/4	10 1/4	7 7/8	8 3/8	10 1/4	9 3/4	8 3/4			1 1/2									2.00
3	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
4	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
5	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5

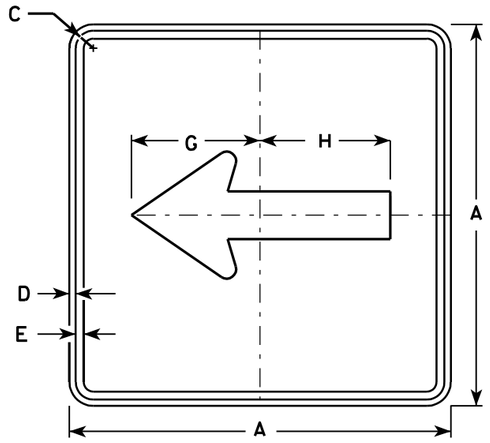
STANDARD SIGNS
M3-1 thur M3-4
SERIES

WISCONSIN DEPT OF TRANSPORTATION

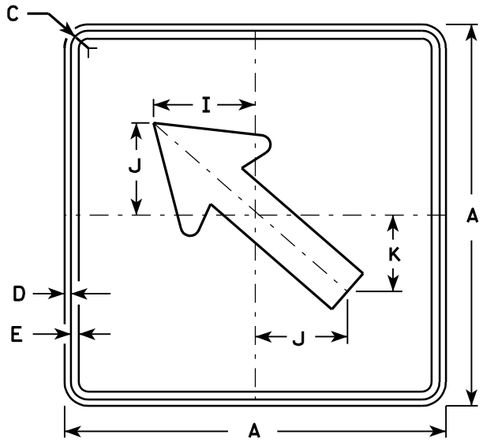
APPROVED Matthew R Rauch for State Traffic Engineer

DATE 11/10/10 PLATE NO. M3-1.12

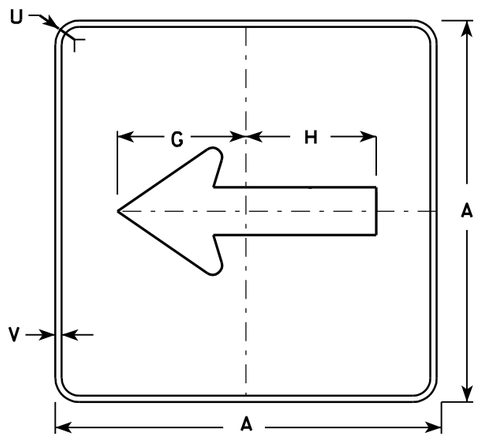
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 159	E



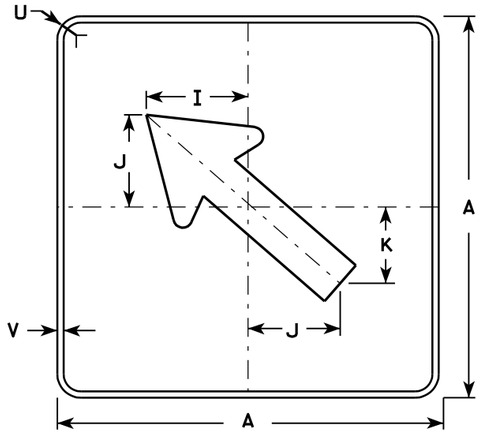
M6-1
MK6-1
MM6-1
MO6-1
MR6-1



M6-2
MK6-2
MM6-2
MO6-2
MR6-2



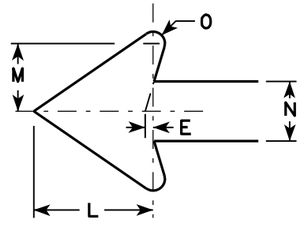
MB6-1
MG6-1
MN6-1



MB6-2
MG6-2
MN6-2

NOTES

1. Signs are Type II - See Note 4 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - See note 4
   Message - See note 4
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. M6-1 and M6-2 Background - White - Type H Reflective
   (Detour or temporary Signs - Reflective)
   Message - Black
   MB6-1 and MB6-2 Background - Blue
   Message - White - Type H Reflective
   (Detour or temporary Signs - Reflective)
   MG6-1 and MG6-2 Background - Green
   Message - White - Type H Reflective
   MK6-1 and MK6-2 Background - Green
   Message - White - Type H Reflective
   MM6-1 and MM6-2 Background - White - Type H Reflective
   Message - Green
   MN6-1 and MN6-2 Background - Brown
   Message - White - Type H Reflective
   MO6-1 and MO6-2 Background - Orange - Reflective
   Message - Black
   MR6-1 and MR6-2 Background - Brown
   Message - Yellow - Type H Reflective



Metric equivalent for this sign is:

SIZE	
1	
2	525 mm X 525 mm
3	750 mm X 750 mm
4	750 mm X 750 mm
5	750 mm X 750 mm

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m2
1																												
2	21		1 1/8	3/8	3/8		7 1/2	7 1/8	5 5/8	5	4 1/4	5 1/4	3	2 5/8	1/2						1 1/2	1/2					3.06	0.28
3	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25	0.56
4	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25	0.56
5	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25	0.56

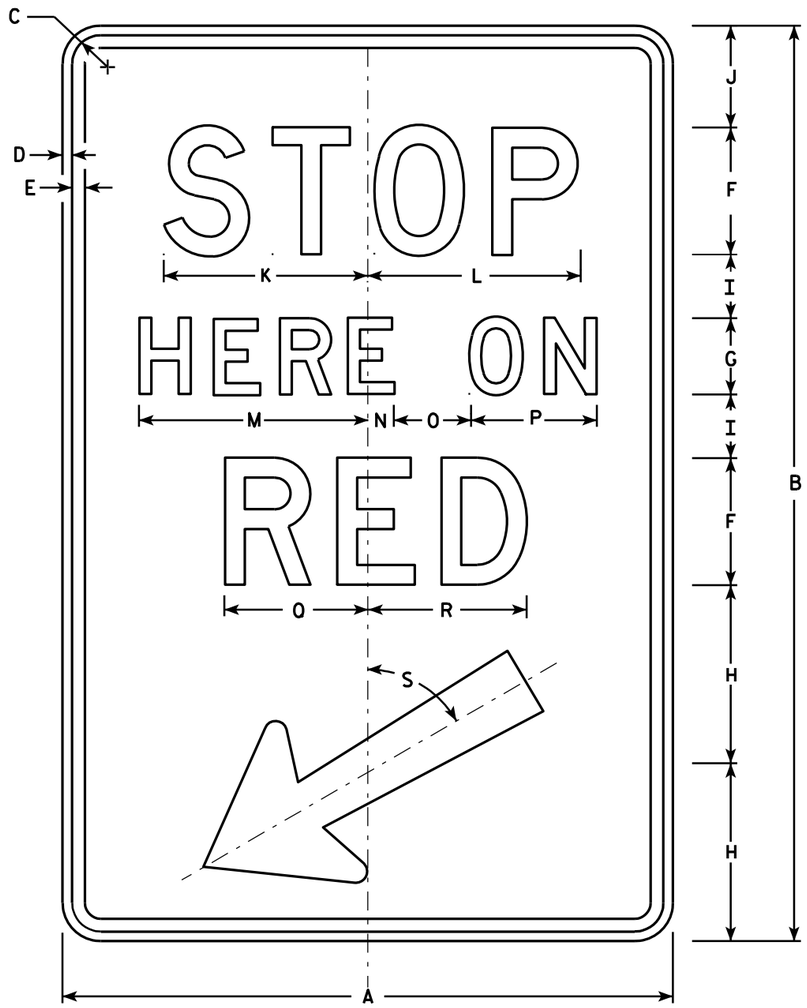
STANDARD SIGN M6-1 & M6-2 SERIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/16/10 PLATE NO. M6-1.12

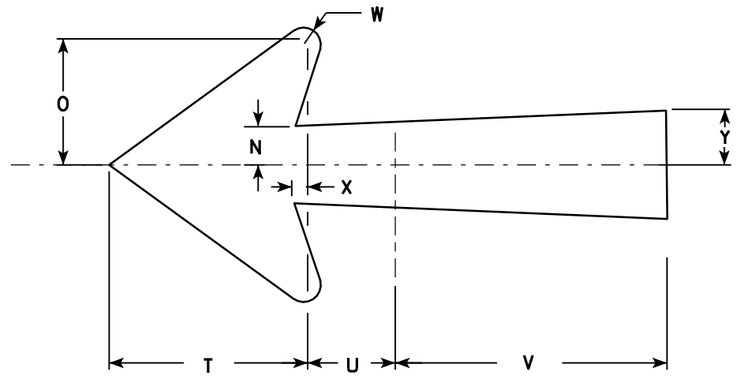
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 160	E



R10-6

NOTES

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



Arrow Detail

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	O	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	24	36	1 1/8	3/8	1/2	5	3	7	2 1/2	4	8	8 3/8	9	1	3	5	5 5/8	6 1/4	60°	5 1/4	2 1/4	7 1/8	1/2	3/8	1 3/8		6.0
2M	24	36	1 1/8	3/8	1/2	5	3	7	2 1/2	4	8	8 3/8	9	1	3	5	5 5/8	6 1/4	60°	5 1/4	2 1/4	7 1/8	1/2	3/8	1 3/8		6.0
3																											
4																											
5																											

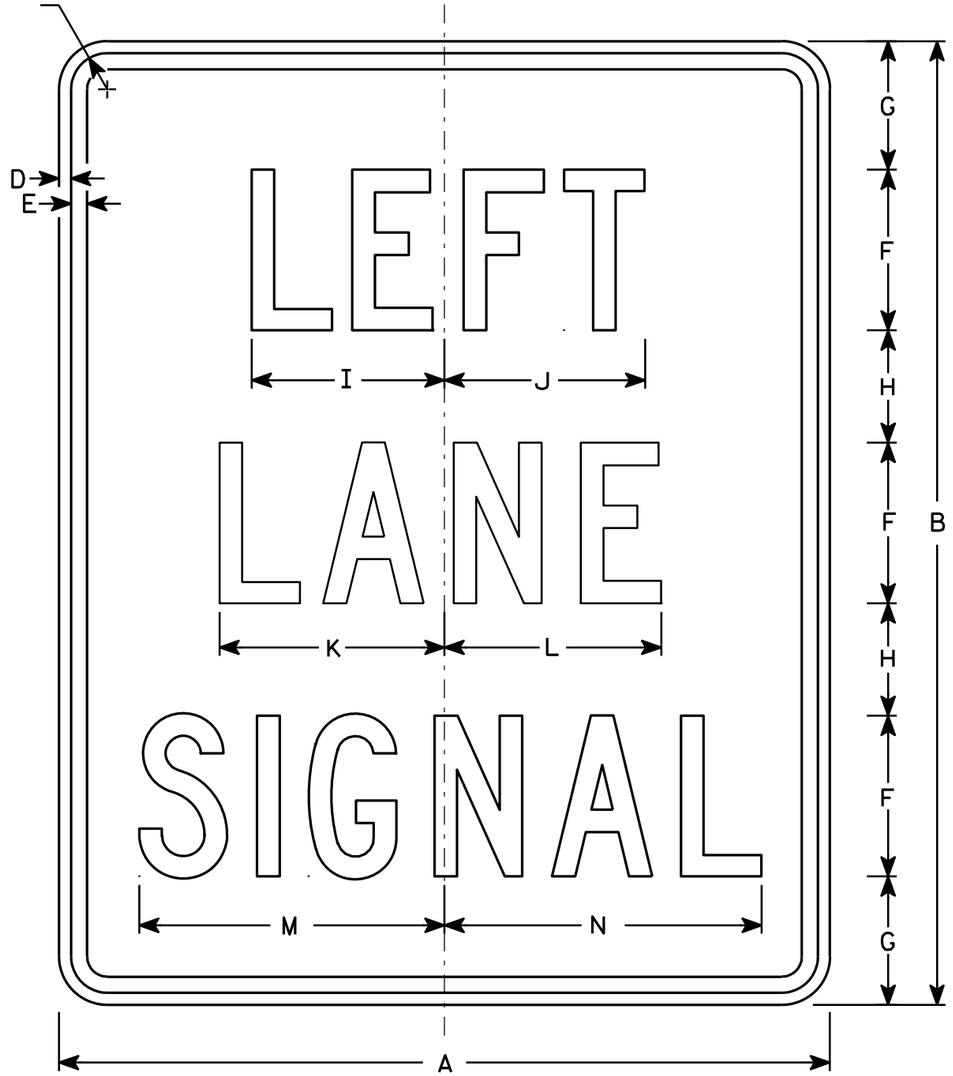
STANDARD SIGN
R10-6

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 4/5/11 PLATE NO. R10-6.6

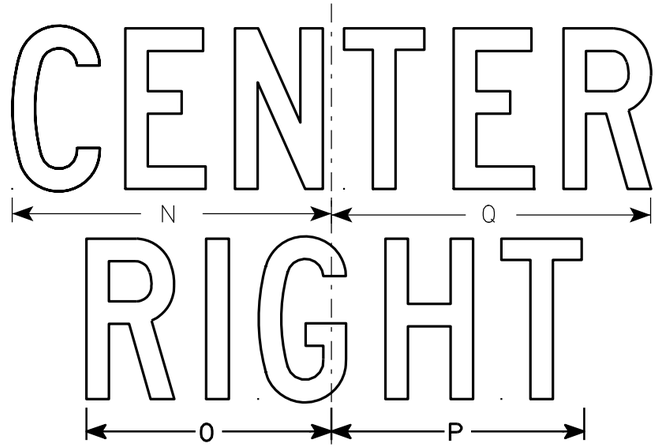
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 161	E



R10-65L

NOTES

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



R10-65C

R10-65R

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	24	30	1 1/8	3/8	1/2	5	4	3 1/2	6	6 1/4	7	6 3/4	9 1/2	9 7/8	7 5/8	7 7/8	10										5.0
2M	24	30	1 1/8	3/8	1/2	5	4	3 1/2	6	6 1/4	7	6 3/4	9 1/2	9 7/8	7 5/8	7 7/8	10										5.0
3																											
4																											
5																											

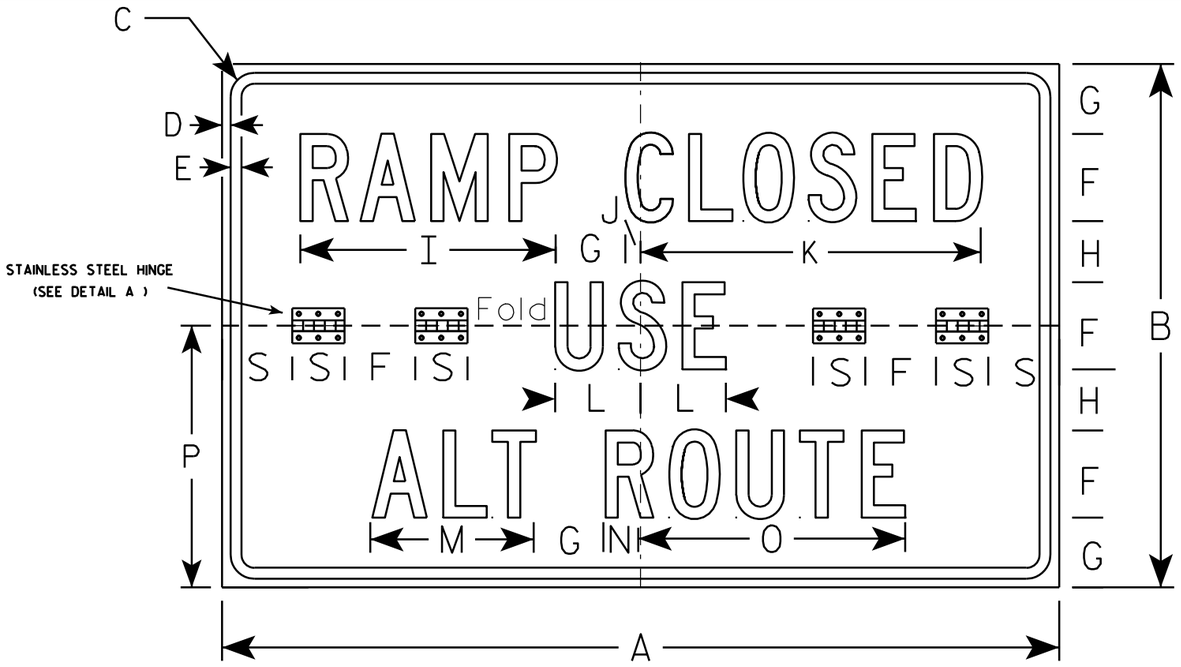
STANDARD SIGN
R10-65

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

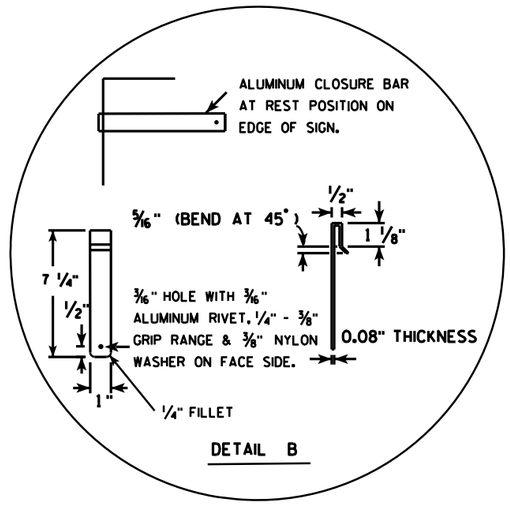
DATE 4/4/11 PLATE NO. R10-65.2

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 162 | E



R11-54F

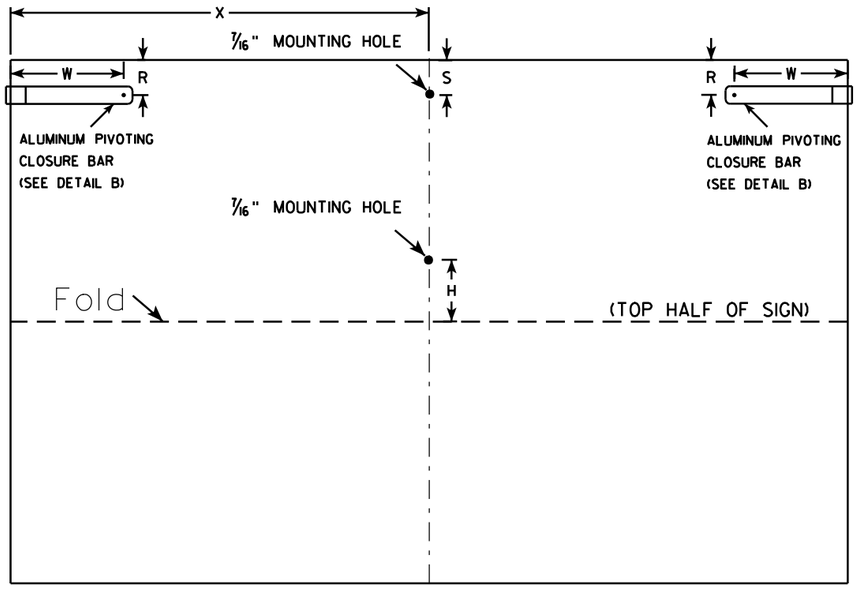
DETAIL A



DETAIL B

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - WHITE
   Message - BLACK
3. Message Series - C
4. Sign Base Material shall be aluminum corners and borders shall be rounded.
5. All hardware used on the folding sign installation shall conform to 637.2.4 of the WIS DOT Standard Specification.



(BACK VIEW)

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48	30	1 3/8	1/2	5/8	5	4	3 1/2	14 5/8	7/8	19 1/2	4 7/8	9 3/8	2	15 1/4	15		2	3	2 5/8	1 1/4	11/16	6 1/2	24			10.0
2M	48	30	1 3/8	1/2	5/8	5	4	3 1/2	14 5/8	7/8	19 1/2	4 7/8	9 3/8	2	15 1/4	15		2	3	2 5/8	1 1/4	11/16	6 1/2	24			10.0
3																											
4																											
5																											

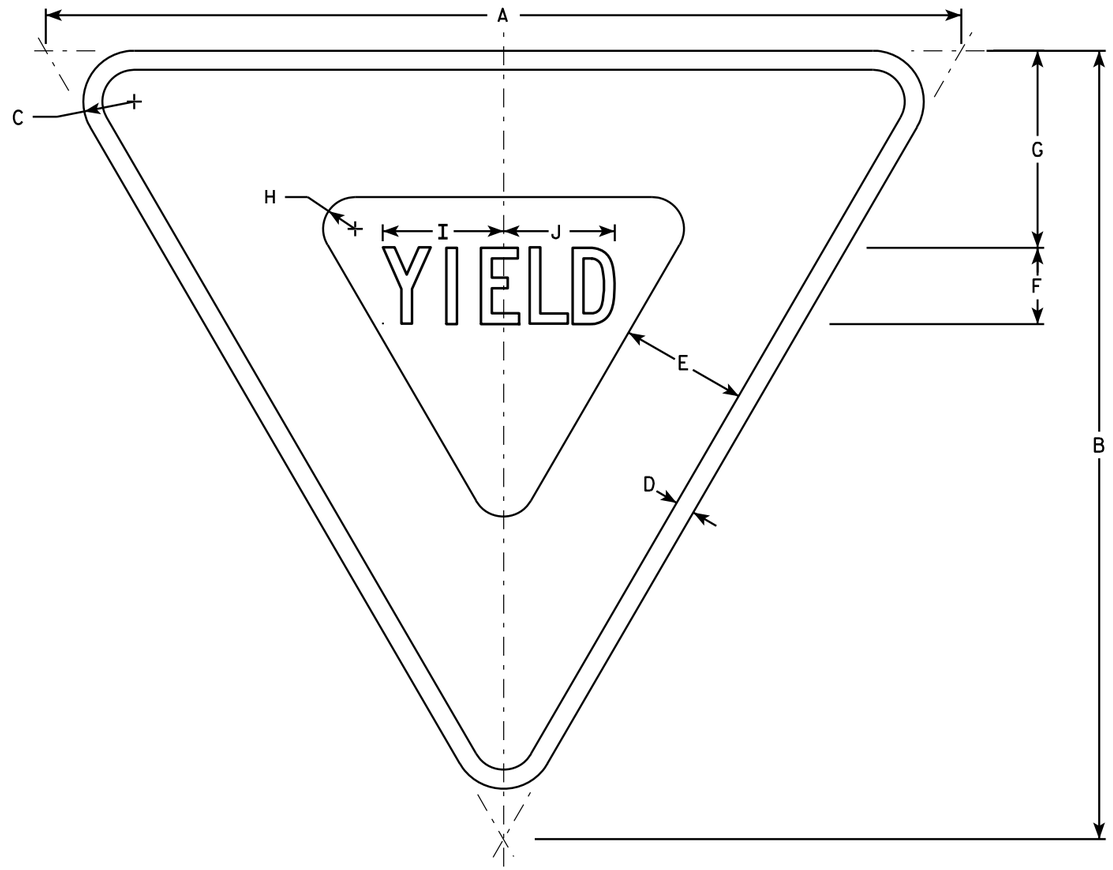
STANDARD SIGN
R11-54F

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 4/1/11 PLATE NO. R11-54F.2

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 163	E



R1-2

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - White
   Message - See note 5
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. The border strip and word message are reflectorized red.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	30	26	1 1/2	5/8	4	2 1/2	6 3/8	7/8	4	3 5/8																	2.71
2S	36	31	2	3/4	5	3	7 3/4	1 1/4	4 3/4	4 3/8																	3.88
2M	48	42	3	1	6	4	9 3/4	2	6 1/4	5 7/8																	7.00
3	48	42	3	1	6	4	9 3/4	2	6 1/4	5 7/8																	7.00
4	48	42	3	1	6	4	9 3/4	2	6 1/4	5 7/8																	7.00
5	60	52	3	1 1/2	8	5	13	2 1/2	7 7/8	7 1/4																	10.83
6	24	21	1 1/2	3/8	3	2	4 3/4	7/8	3 1/4	3																	1.75
7	18	15 1/2	1	3/8	2 1/2	1 1/2	3 7/8	5/8	2 3/8	2 1/4																	0.97

STANDARD SIGN
R1-2

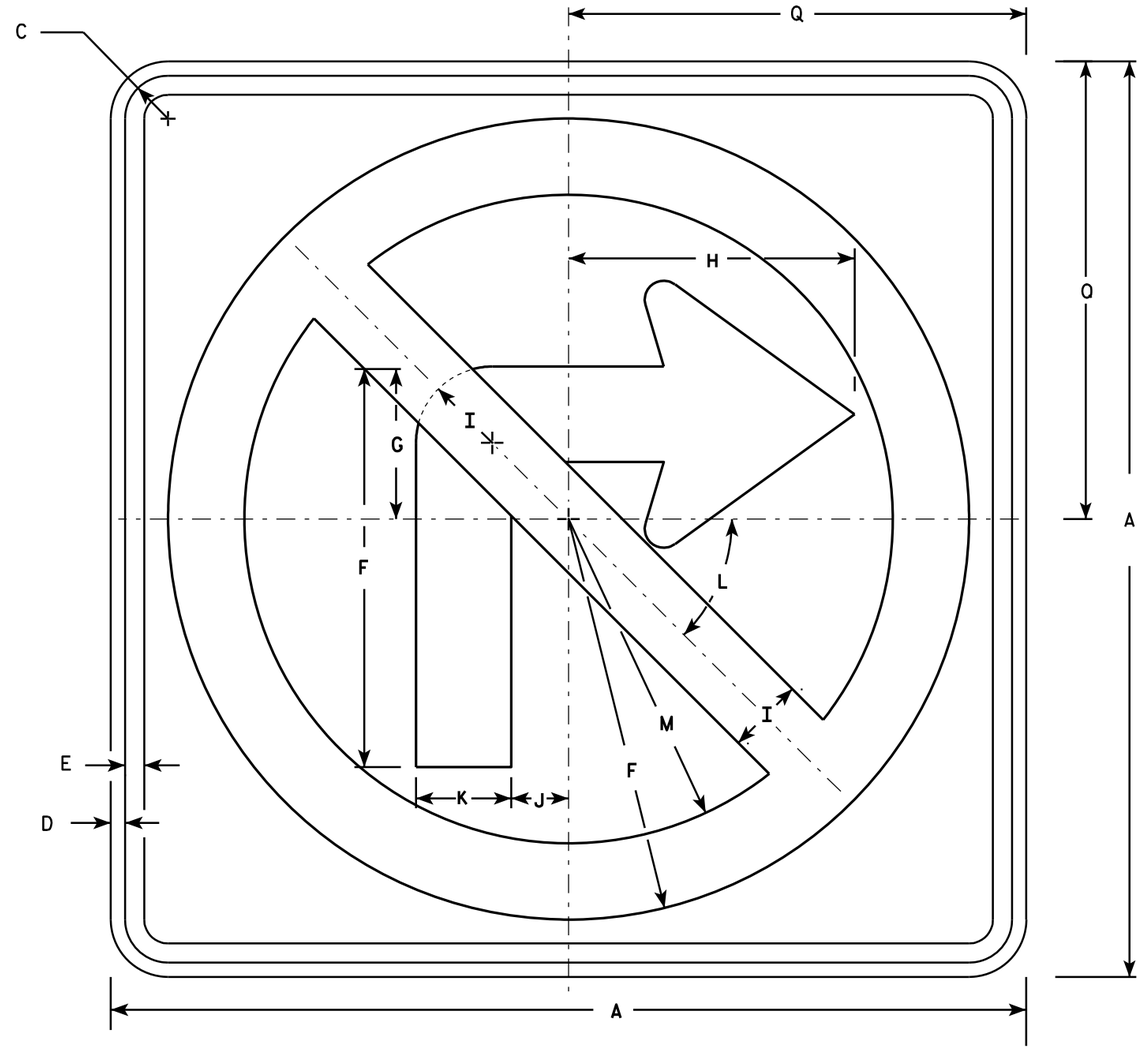
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 11/02/10 PLATE NO. R1-2.11

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 164 | E

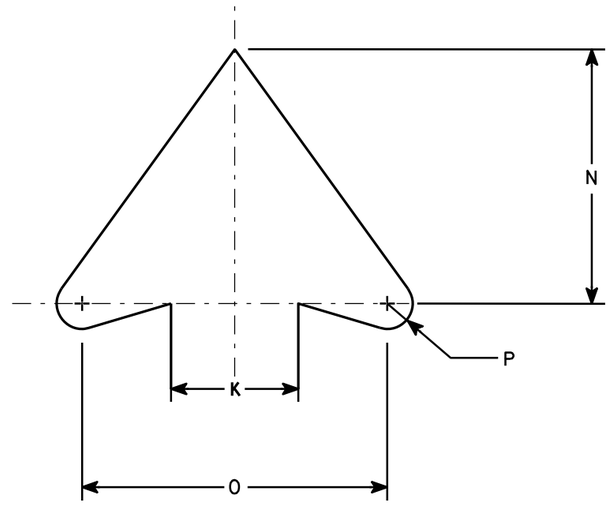
FILE NAME : C:\Users\PROJECTS\tr_stdplate\R12.DGN PLOT DATE : 02-NOV-2010 10:38 PLOT BY : dotsja PLOT NAME : PLOT SCALE : 5.959043:1.000000
WISDOT/CADDS SHEET 42



R3-1

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - White
   Message - See note 4
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. Border & Arrow are non reflective black, the circle with diagonal bar is reflective red.



ARROW DETAIL

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	24		1 1/8	3/8	1/2	10 1/2	4	7 1/2	2	1 1/2	2 1/2	45	8 1/2	5	6	1/2	12										4.0
2S	24		1 1/8	3/8	1/2	10 1/2	4	7 1/2	2	1 1/2	2 1/2	45°	8 1/2	5	6	1/2	12										4.0
2M	36		1 5/8	5/8	3/4	15 3/4	6	11 1/4	3	2 1/4	3 3/4	45	12 3/4	7 1/2	9	3/4	18										9.0
3	36		1 5/8	5/8	3/4	15 3/4	6	11 1/4	3	2 1/4	3 3/4	45	12 3/4	7 1/2	9	3/4	18										9.0
4	36		1 5/8	5/8	3/4	15 3/4	6	11 1/4	3	2 1/4	3 3/4	45°	12 3/4	7 1/2	9	3/4	18										9.0
5	48		2 1/4	3/4	1	21	8	15	4	3	5	45°	17	10	12	1	24										16.0

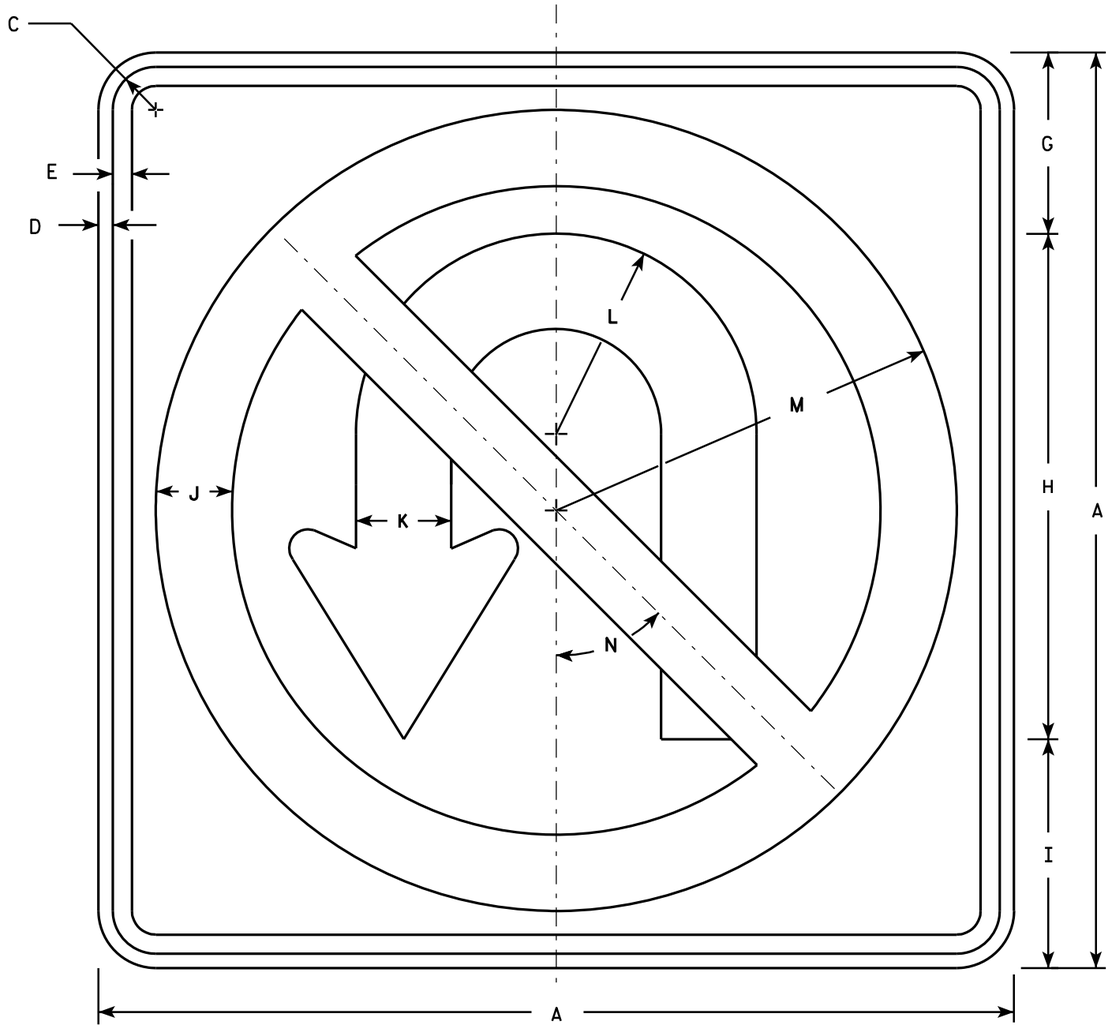
STANDARD SIGN
R3-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 12/08/10 PLATE NO. R3-1.5

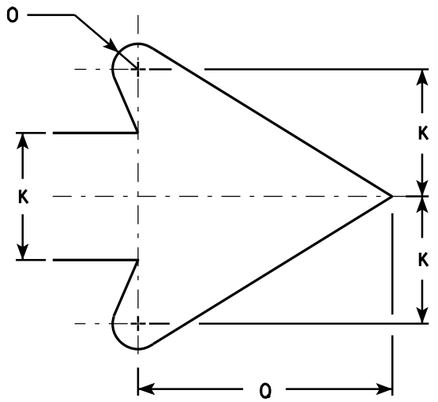
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 165	E



R3-4

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - White
   Message - See note 4
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. Border & Arrow are non reflective black, the circle with diagonal bar is reflective red.



ARROW DETAIL

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	24		1 1/8	3/8	1/2		4 3/4	13 1/4	6	2	2 1/2	5 1/4	10 1/2	45°	1/2		5										4.0
2M	36		1 5/8	5/8	3/4		7 1/8	19 7/8	9	3	3 3/4	7 7/8	15 3/4	45°	3/4		7 5/8										9.0
3	36		1 5/8	5/8	3/4		7 1/8	19 7/8	9	3	3 3/4	7 7/8	15 3/4	45°	3/4		7 5/8										9.0
4	36		1 5/8	5/8	3/4		7 1/8	19 7/8	9	3	3 3/4	7 7/8	15 3/4	45°	3/4		7 5/8										9.0
5	36		1 5/8	5/8	3/4		7 1/8	19 7/8	9	3	3 3/4	7 7/8	15 3/4	45°	3/4		7 5/8										9.0

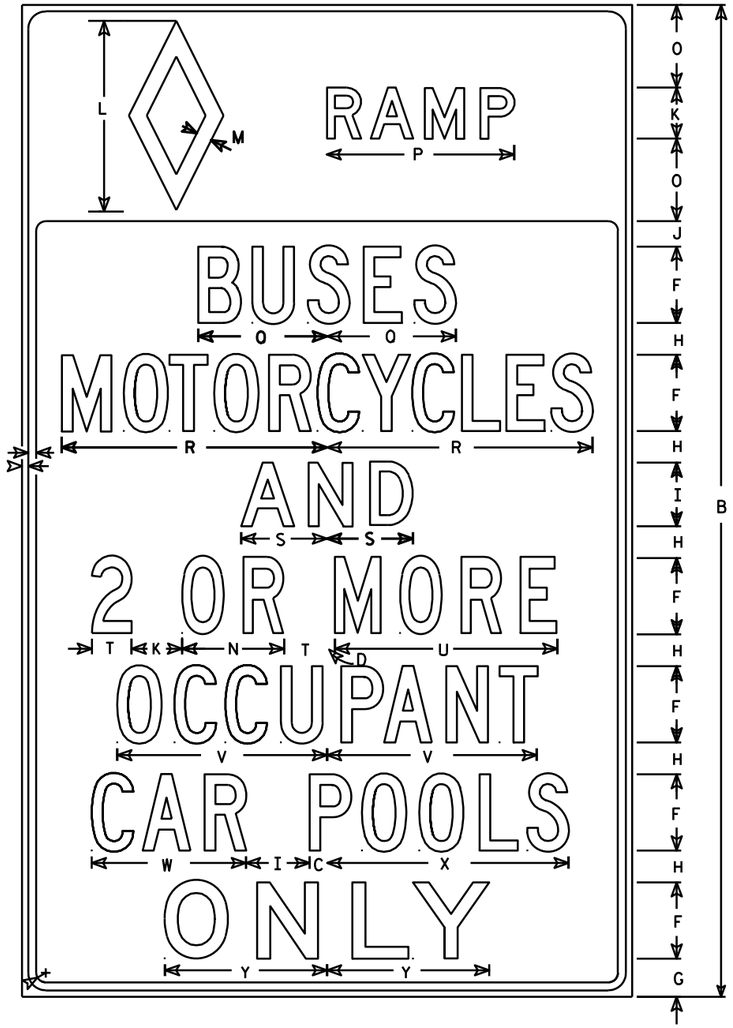
STANDARD SIGN
R3-4

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 12/08/10 PLATE NO. R3-4.11

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 166	E



R3-51

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - See Note 5
   Message - See Note 5
3. Message Series - See Note 6
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Top symbol and legend are white Type H Reflective with Black background.
   Bottom legend is Black with White Type H Reflective background.
6. Lines 1 and 4 are Series D.
   Lines 2, 5, 6 and 7 are Series C.
   Line 3 is Series B.
   Bottom Line is Series E.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	O	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48	78	1 3/8	5/8	1/2	6	3	2 1/2	5	2	4	15	1 1/4	8	6 1/2	14 3/4	10 1/8	20 7/8	6 3/4	3 1/8	17 1/2	16 1/2	12 1/8	19	12 3/4	3 3/4	26.0
2M	48	78	1 3/8	5/8	1/2	6	3	2 1/2	5	2	4	15	1 1/4	8	6 1/2	14 3/4	10 1/8	20 7/8	6 3/4	3 1/8	17 1/2	16 1/2	12 1/8	19	12 3/4	3 3/4	26.0
3																											
4																											
5																											

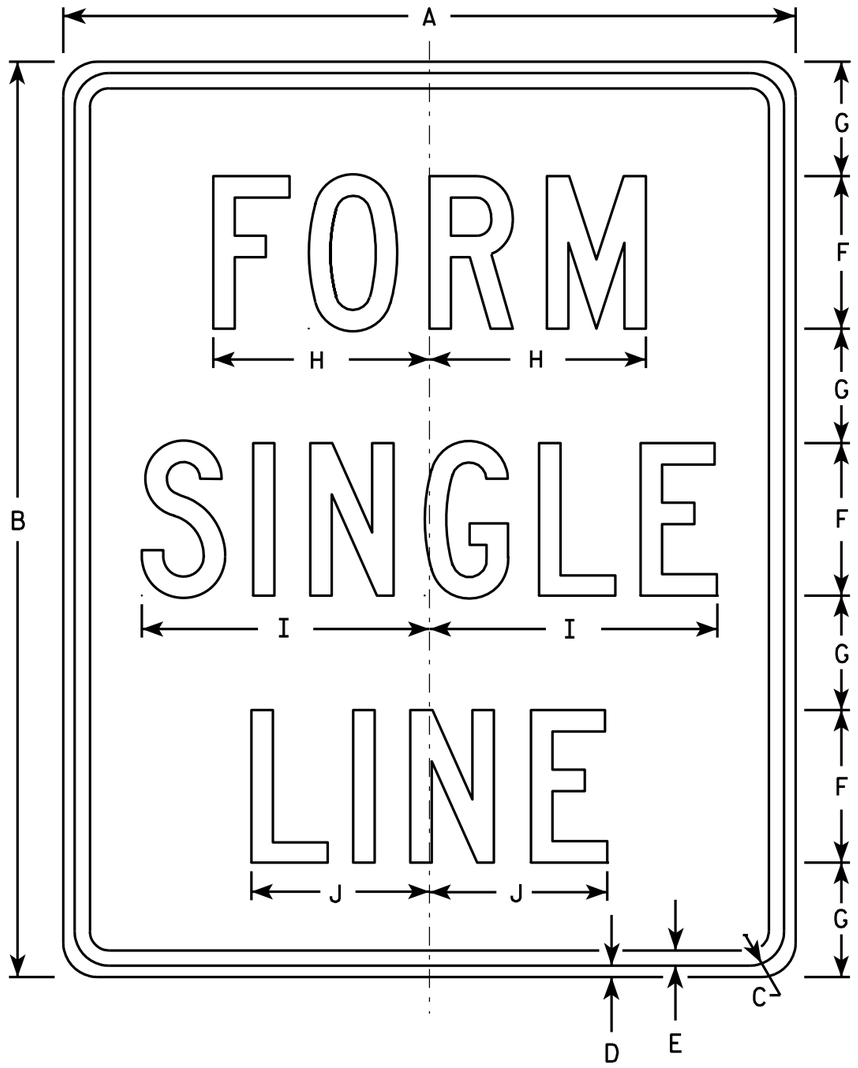
STANDARD SIGN
R3-51

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/24/2011 PLATE NO. R3-51.5

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 167



R3-58

NOTES

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

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	24	30	1 1/8	3/8	1/2	5	3 3/4	7 1/8	9 3/8	5 7/8																	5.0
2S	24	30	1 1/8	3/8	1/2	5	3 3/4	7 1/8	9 3/8	5 7/8																	5.0
2M	24	30	1 1/8	3/8	1/2	5	3 3/4	7 1/8	9 3/8	5 7/8																	5.0
3	36	48	1 3/8	1/2	5/8	8	6	11 3/8	15 1/8	9 3/8																	12.0
4	36	48	1 3/8	1/2	5/8	8	6	11 3/8	15 1/8	9 3/8																	12.0
5																											

STANDARD SIGN
R3-58

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/24/2011 PLATE NO. R3-58.7

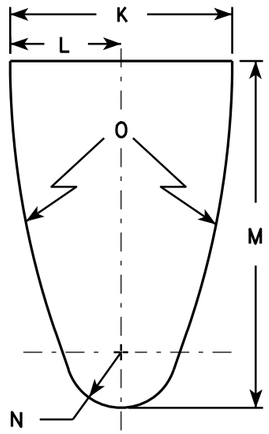
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 168	E

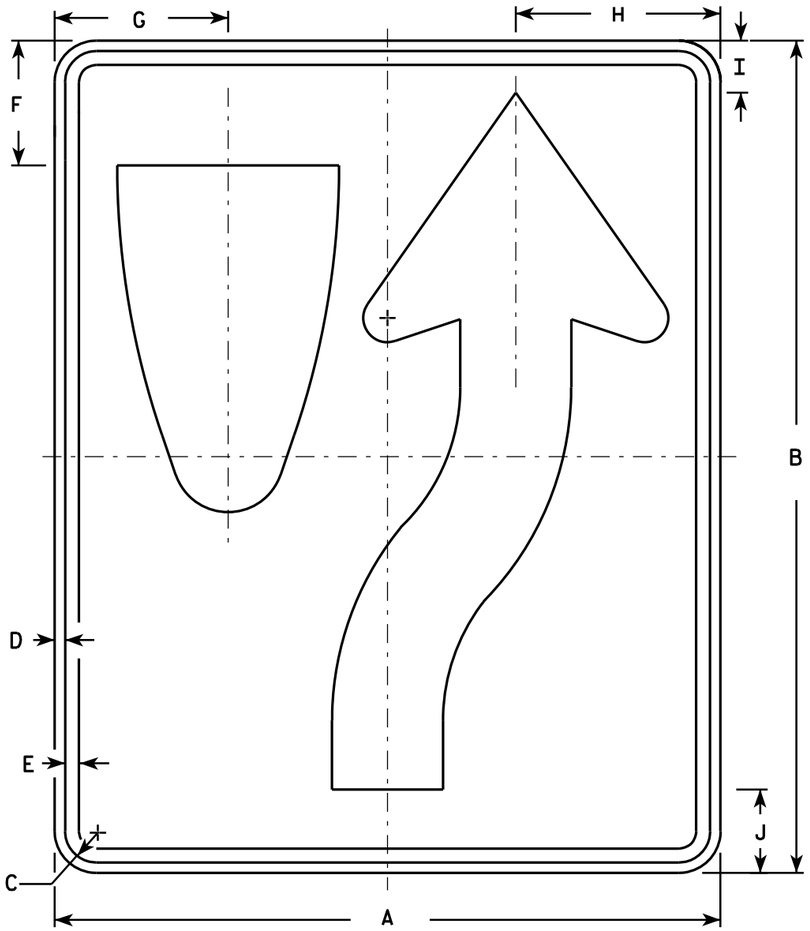
FILE NAME : C:\Users\PROJECTS\tr_stdplate\R358.DGN PLOT DATE : 24-MAR-2011 15:27 PLOT BY : mscsja PLOT NAME : PLOT SCALE : 4.965868:1.000000

WISDOT/CADDS SHEET 42

7

7

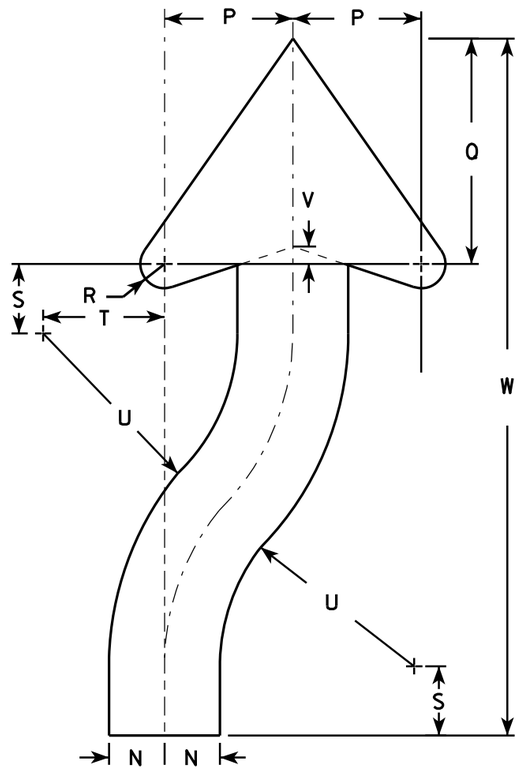




R4-7

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition. material is plywood but borders shall be rounded
2. Color:
   Background - White
   Message - Black
3. Corners may be square or rounded when base as shown. When base material is metal, the corners and borders shall be rounded.
4. R4-8 is the same as R4-7 except Legend is reversed.



ARROW DETAIL

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	18	24	1 1/8	3/8	1/2	3 3/8	4 3/4	5 1/2	1 3/8	2 1/4	6	3	9 3/8	1 1/2	22 1/2	3 1/2	6 1/8	5/8	1 7/8	3 1/4	6 3/4	1/2	20 3/8				3.0
2S	24	30	1 1/8	3/8	1/2	4 1/2	6 1/4	7 3/8	1 7/8	3	8	4	12 1/2	2	30	4 5/8	8 1/8	7/8	2 1/2	4 3/8	9	5/8	25 1/8				5.0
2M	24	30	1 1/8	3/8	1/2	4 1/2	6 1/4	7 3/8	1 7/8	3	8	4	12 1/2	2	30	4 5/8	8 1/8	7/8	2 1/2	4 3/8	9	5/8	25 1/8				5.0
3	36	48	1 3/4	1/2	5/8	6 3/4	9 3/8	11 1/8	2 7/8	4 1/2	12	6	18 3/4	3	45	6 7/8	12 1/4	1 1/4	3 3/4	6 5/8	13 1/2	1	40 3/4				12.0
4	36	48	1 3/4	1/2	5/8	6 3/4	9 3/8	11 1/8	2 7/8	4 1/2	12	6	18 3/4	3	45	6 7/8	12 1/4	1 1/4	3 3/4	6 5/8	13 1/2	1	40 3/4				12.0
5	48	60	2 1/4	3/4	1	9	12 1/2	14 3/4	3 3/4	6	16	8	25	4	60	9 1/4	16 1/4	1 5/8	5	8 3/4	18	1 1/4	50 1/4				20.0

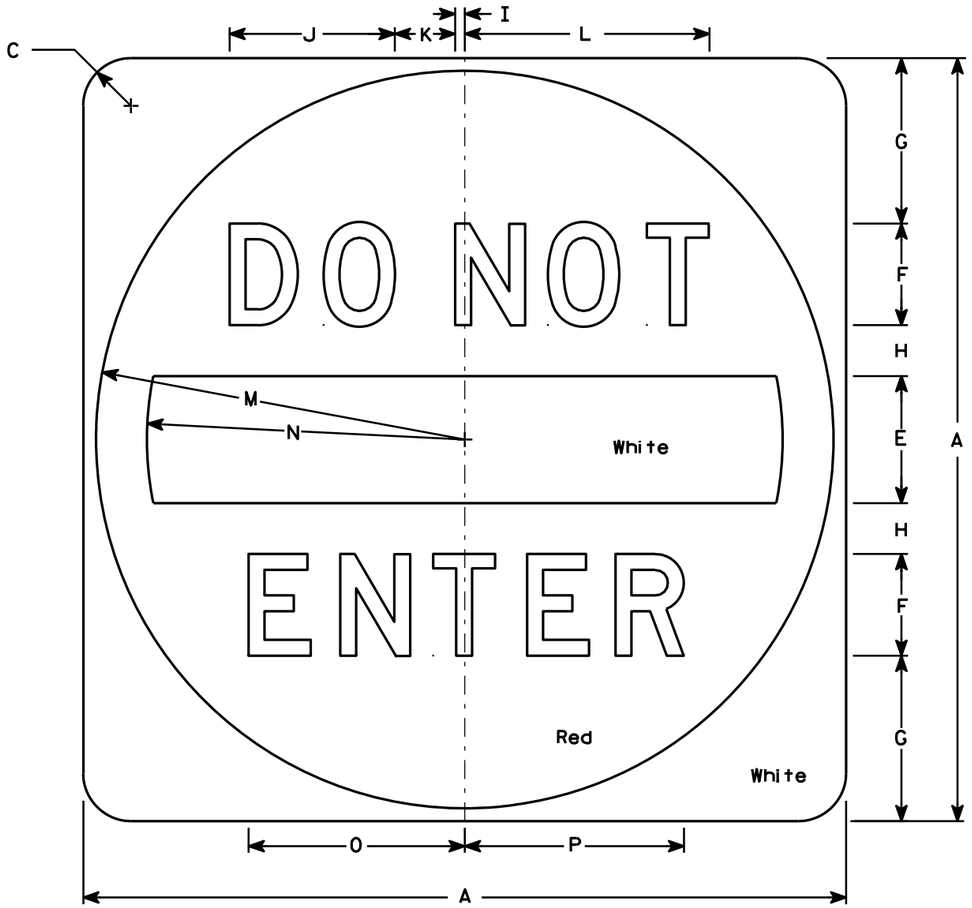
STANDARD SIGN
R4-7 & R4-8

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch for State Traffic Engineer

DATE 3/25/2011 PLATE NO. R4-7.8

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 169	E



R5-1

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - See detail
   Message - White - Type H Reflective
3. Message Series - D
4. Corners may be square or rounded when base material is plywood but when base material is metal, the cornors shall be rounded.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	30		1 7/8		5	4	6 1/2	2	3/8	6 1/2	2 3/8	9 5/8	14 1/2	12 1/2	8 1/2	8 5/8											6.26
2M	36		2 1/4		6	5	7 1/2	2 1/2	1/2	8 1/8	3	12 1/8	17 1/2	15	10 5/8	10 3/4											9.0
3	36		2 1/4		6	5	7 1/2	2 1/2	1/2	8 1/8	3	12 1/8	17 1/2	15	10 5/8	10 3/4											9.0
4	36		2 1/4		6	5	7 1/2	2 1/2	1/2	8 1/8	3	12 1/8	17 1/2	15	10 5/8	10 3/4											9.0
5	48		3		8	6	11	3	5/8	9 3/4	3 5/8	14 1/2	23 1/2	20	12 3/4	12 7/8											16.0

STANDARD SIGN
R5-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 12/17/10 PLATE NO. R5-1.15

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 170 | E

R5-57

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - White
   Message - Black
3. Message Series - Lines 1, 2, and 5 are Series C.
   Lines 3 and 4 are Series B.
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S																											
2M																											
3																											
4	36		1 5/8	5/8	3/4	4	3	2	3 1/2	14 1/4	14 7/8	11	11 1/2	4 3/4	1 3/4	9		1 3/8	10	11	2 1/2	1 3/4	15 1/2	13	13 5/8		9.0
5	36		1 5/8	5/8	3/4	4	3	2	3 1/2	14 1/4	14 7/8	11	11 1/2	4 3/4	1 3/4	9		1 3/8	10	11	2 1/2	1 3/4	15 1/2	13	13 5/8		9.0

STANDARD SIGN
R5-57

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/29/2011 PLATE NO. R5-57.10

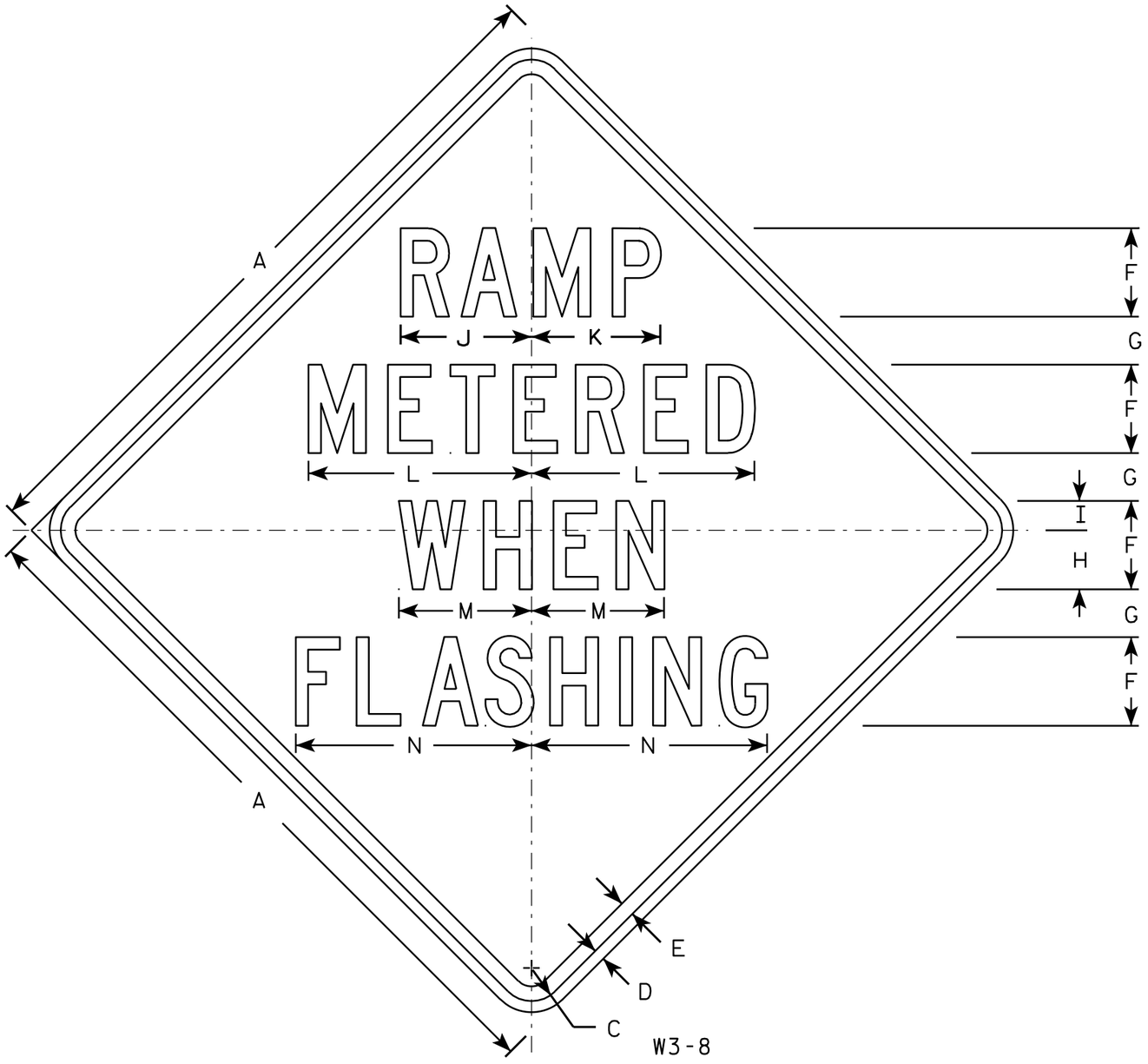
PROJECT NO: | HWY: | COUNTY: | SHEET NO: 171 | E

FILE NAME : C:\Users\PROJECTS\tr_stdplate\R557.DGN PLOT DATE : 29-MAR-2011 14:38 PLOT BY : mscsja PLOT NAME : PLOT SCALE : 5.959043:1.000000

WISDOT/CADDS SHEET 42

7

7



NOTES

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

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48		2 1/4	3/4	1	6	3 3/4	4	2	8 7/8	8 3/4	15 1/8	9	16													16.0
2M	48		2 1/4	3/4	1	6	3 3/4	4	2	8 7/8	8 3/4	15 1/8	9	16													16.0
3	48		2 1/4	3/4	1	6	3 3/4	4	2	8 7/8	8 3/4	15 1/8	9	16													16.0
4	48		2 1/4	3/4	1	6	3 3/4	4	2	8 7/8	8 3/4	15 1/8	9	16													16.0
5	48		2 1/4	3/4	1	6	3 3/4	4	2	8 7/8	8 3/4	15 1/8	9	16													16.0

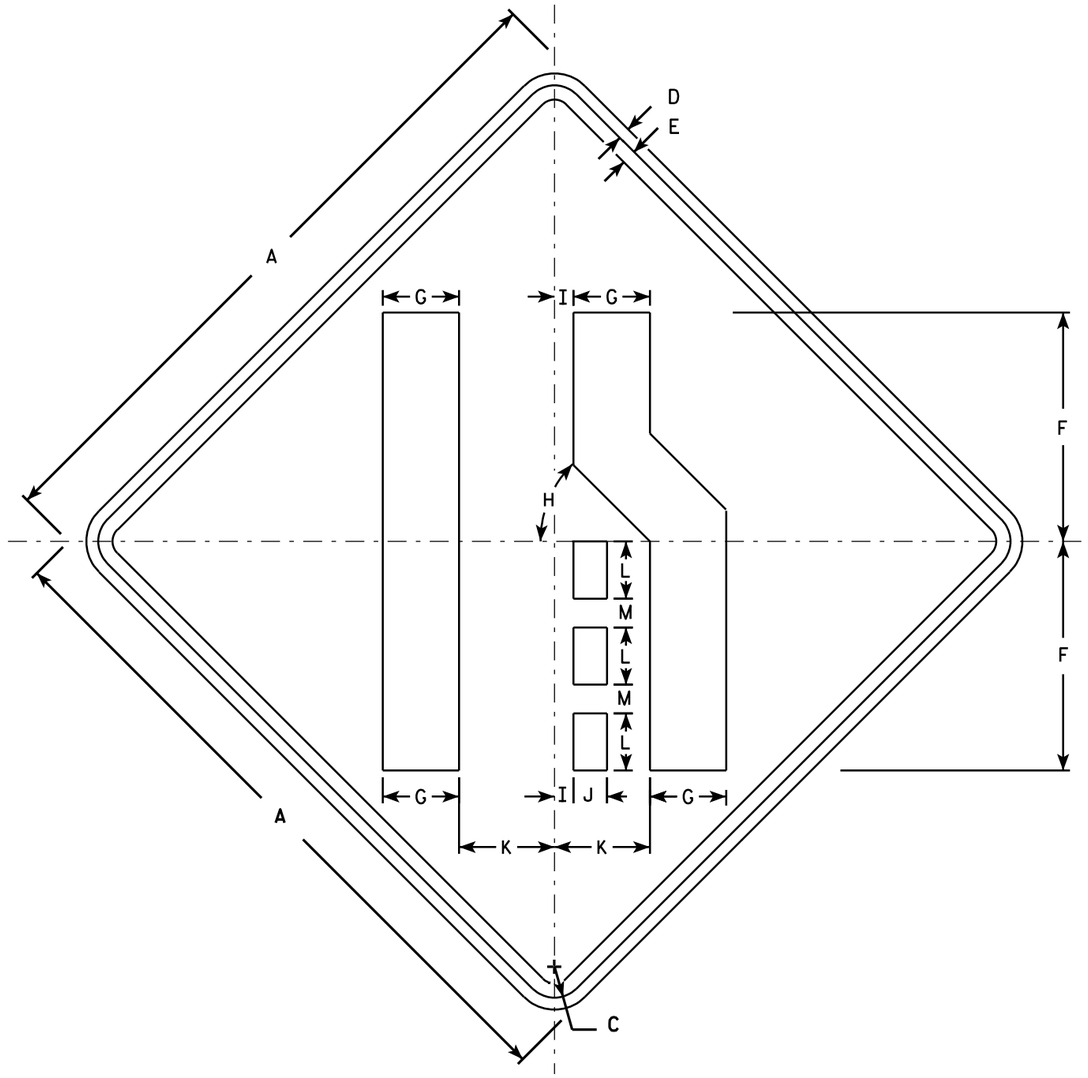
STANDARD SIGN
W3-8

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 03/12/13 PLATE NO. W3-8.2

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 172	E



W4-2R

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Yellow
   Message - Black
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. W4-2L is the same as W4-2R except the symbol is reversed along the vertical centerline.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	30		1 3/8	1/2	5/8	10	3 3/8	45°	7/8	1 1/2	4 1/4	2 1/2	1 1/4														6.25
2S	36		1 5/8	5/8	3/4	12	4	45°	1	1 3/4	5	3	1 1/2														9.0
2M	36		1 5/8	5/8	3/4	12	4	45°	1	1 3/4	5	3	1 1/2														9.0
3	36		1 5/8	5/8	3/4	12	4	45°	1	1 3/4	5	3	1 1/2														9.0
4	48		2 1/4	3/4	1	16	5 3/8	45°	1 1/4	2 3/8	6 3/4	4	2														16.0
5	48		2 1/4	3/4	1	16	5 3/8	45°	1 1/4	2 3/8	6 3/4	4	2														16.0

STANDARD SIGN
W4-2

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/12/13 PLATE NO. W4-2.14

PROJECT NO:

SHEET NO: 173 E

FILE NAME : C:\CAEFiles\Projects\tr_stdplate\W42.DGN PLOT DATE : 12-MAR-2013 11:09 PLOT BY : mscsja

WISDOT/CADDS SHEET 42

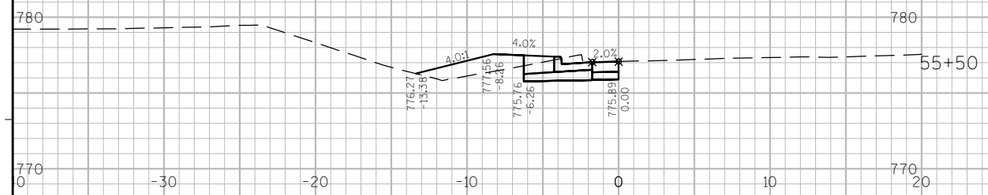
RAMP E

STATION	Real Station	Distance	AREA (SF) Cut	AREA (SF) Salvaged/Unusable Pavement Material	AREA (SF) Fill	Incremental Vol (CY) (Unadjusted) Cut Note 1	Incremental Vol (CY) (Unadjusted) Salvaged/Unusable Pavement Material Note 2	Incremental Vol (CY) (Unadjusted) Fill Note 3	Cumulative Vol (CY) Cut 1.00 Note 1	Cumulative Vol (CY) Expanded Fill 1.25	Mass Ordinate Note 8
55+00.00	5500		0	0.0	0.0	0	0	0	0	0	0
55+10.00	5510	10	5.7	2.9	6.1	1	1	1	1	1	-1
55+25.00	5525	15	6.4	2.9	7.3	3	2	4	4	6	-4
55+50.00	5550	25	8.1	2.9	6.0	7	3	6	11	14	-7
55+75.00	5575	25	9.4	2.9	6.1	8	3	6	19	21	-9
56+00.00	5600	25	9.7	2.6	6.5	9	3	6	28	28	-10
56+06.36	5606	6	9.8	2.6	6.8	2	1	2	30	30	-10
56+25.00	5625	19	11.6	2.6	5.5	7	2	4	38	35	-10
56+50.00	5650	25	12.8	3.3	3.5	11	3	4	49	40	-7
56+75.00	5675	25	14.7	6.6	4.2	13	5	4	62	45	-3
57+00.00	5700	25	18.0	9.9	0.4	15	8	2	77	48	2
57+25.00	5725	25	16.6	11.9	0.6	16	10	0	93	48	7
57+50.00	5750	25	16.5	14.6	0.8	15	12	1	108	49	10
57+75.00	5775	25	15.4	15.4	1.9	15	14	1	123	51	9
58+00.00	5800	25	16.9	15.4	1.0	15	14	1	138	52	8
58+25.00	5825	25	19.2	16.1	0.9	17	15	1	155	53	9
58+50.00	5850	25	21.1	16.5	1.8	19	15	1	173	55	11
58+75.00	5875	25	21.4	14.3	1.8	20	14	2	193	57	14
59+00.00	5900	25	23.6	2.4	3.3	21	8	2	214	60	24
59+25.00	5925	25	24.9	2.7	4.8	22	2	4	236	65	40
59+50.00	5950	25	23.0	2.8	9.2	22	3	7	258	73	51
59+75.00	5975	25	20.0	2.8	11.0	20	3	9	278	84	57
60+00.00	6000	25	20.6	3.0	13.7	19	3	11	297	99	59
60+00.003	6000	0	20.6	3.0	13.7	0	0	0	297	99	59
60+25.00	6025	25	19.4	3.4	17.4	19	3	14	316	117	56
60+50.00	6050	25	18.7	3.0	18.6	18	3	17	333	137	50
60+75.00	6075	25	17.2	2.8	12.0	17	3	14	350	155	46
61+00.00	6100	25	14.6	2.9	5.5	15	3	8	364	165	48
61+25.00	6125	25	14.8	3.0	5.8	14	3	5	378	172	53
61+50.00	6150	25	14.2	3.1	5.8	13	3	5	392	179	57
61+75.00	6175	25	12.5	3.3	2.6	12	3	4	404	183	61
62+00.00	6200	25	7.6	3.6	1.3	9	3	2	413	186	65
62+04.708	6205	5	6.2	4.1	1.0	1	1	0	414	186	65
62+25.00	6225	20	0.0	0.0	0.0	2	2	0	417	186	66
62+50.00	6250	25	0.0	0.0	0.0	0	0	0	417	186	66
62+75.00	6275	25	0.0	0.0	0.0	0	0	0	417	186	66
63+00	6300	25	0.0	0.0	0.0	0	0	0	417	186	66
						417	165	149			

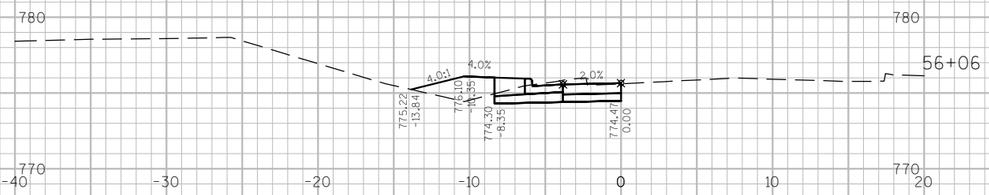
NOTES:

1 Cut includes Salvaged/Unusable Pavement material

2 This does not show up in cross sections



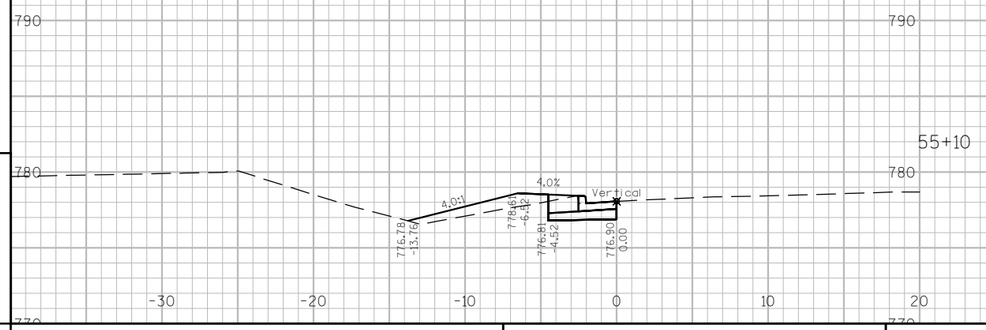
55+50



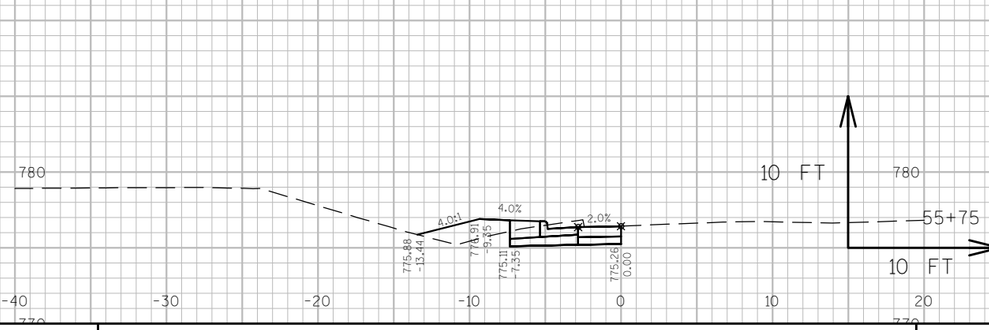
56+06

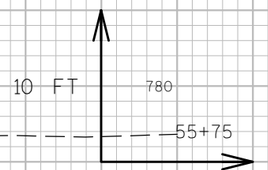
55+25

56+00



55+10



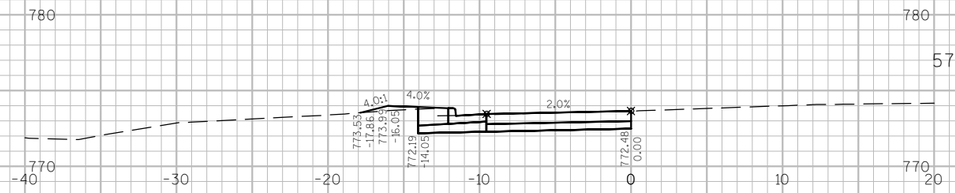


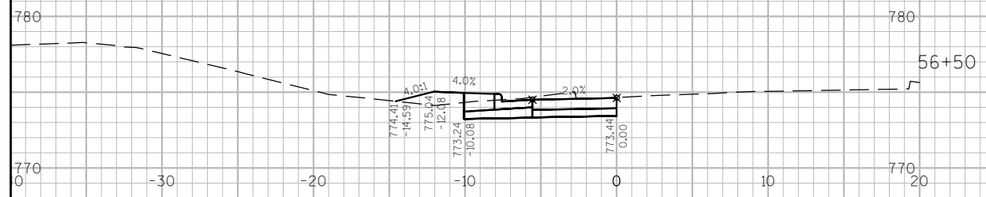
55+75

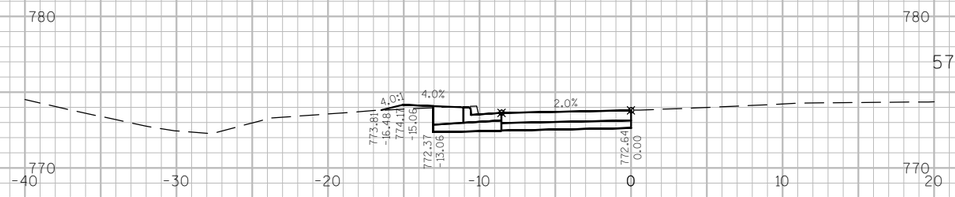
9

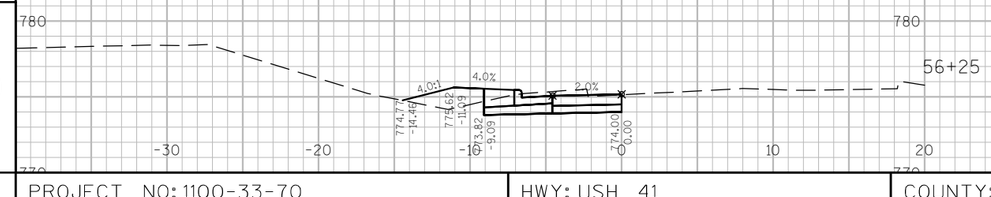
9

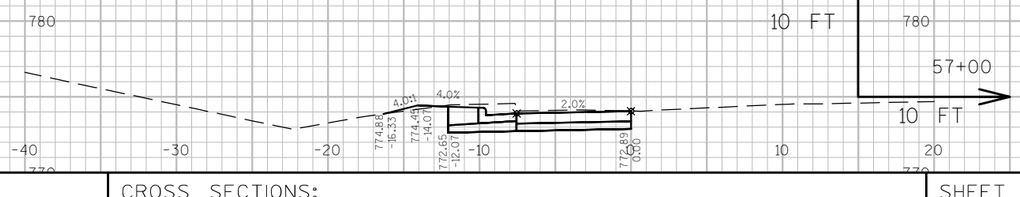
PROJECT NO: 1100-33-70	HWY: XXX	COUNTY: MILWAUKEE	CROSS SECTIONS:	SHEET 175	E







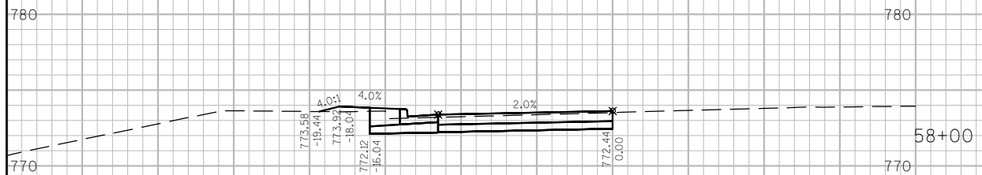


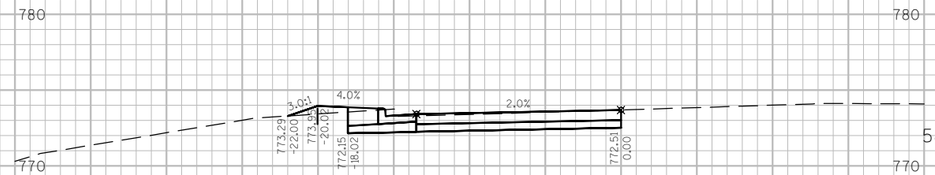


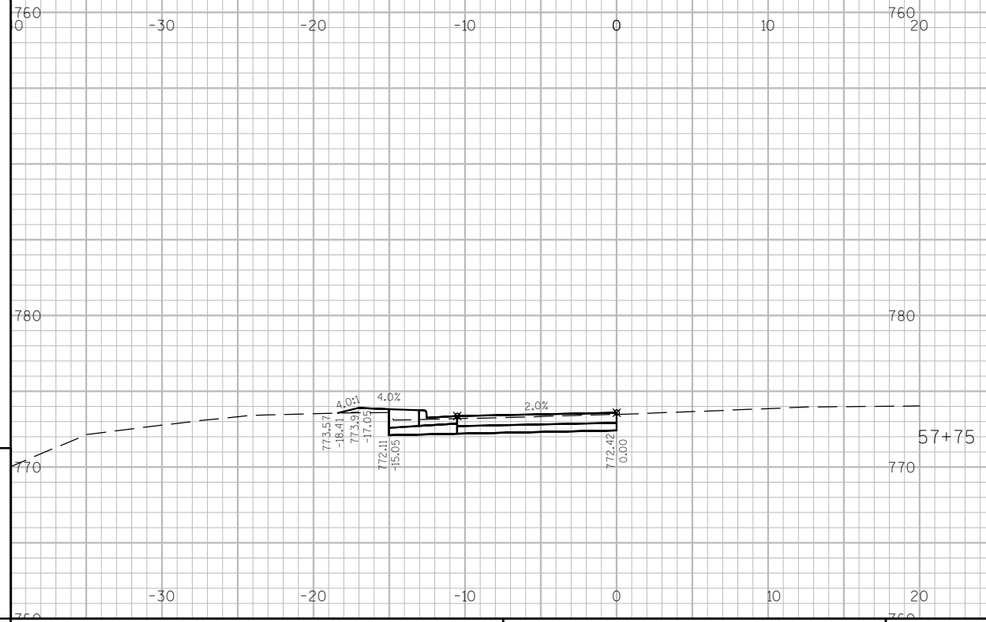
9

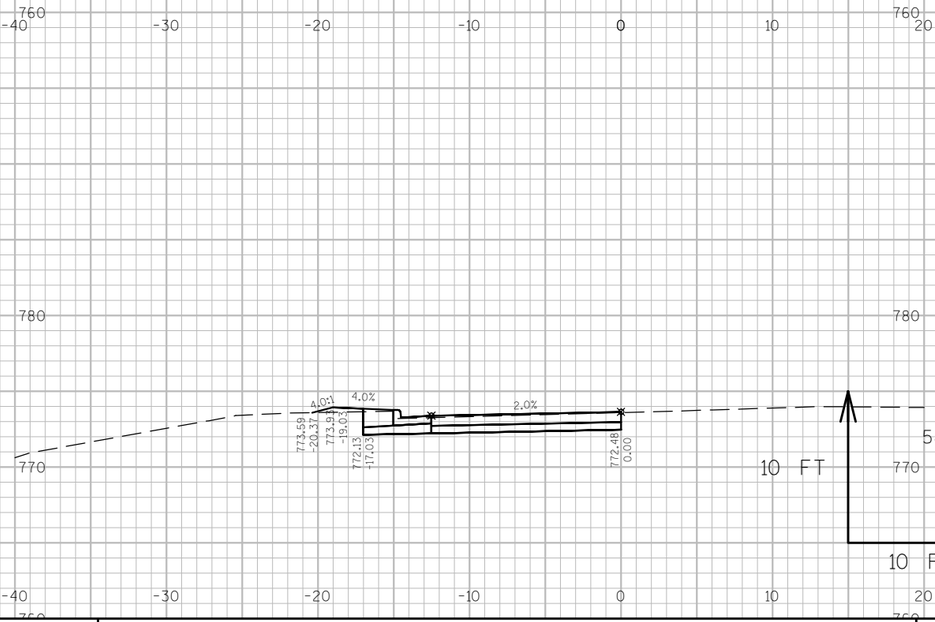
9

PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	CROSS SECTIONS:	SHEET 176	E









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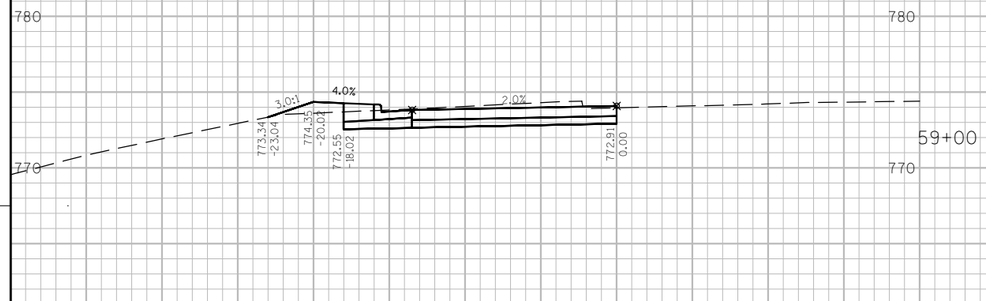
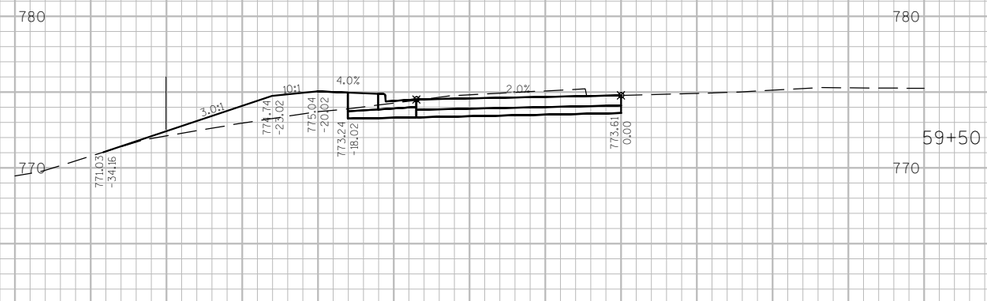
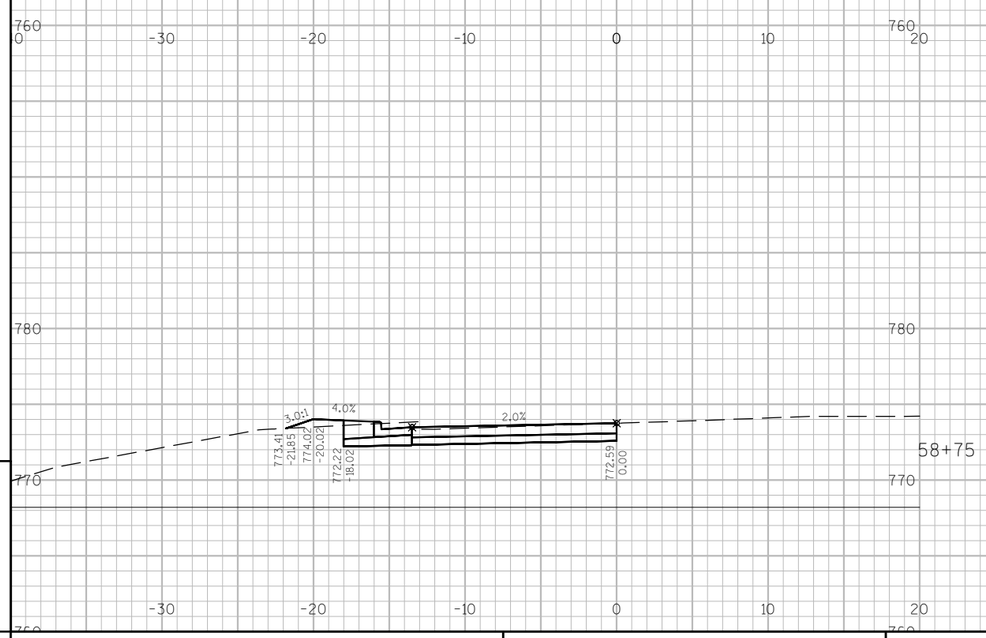
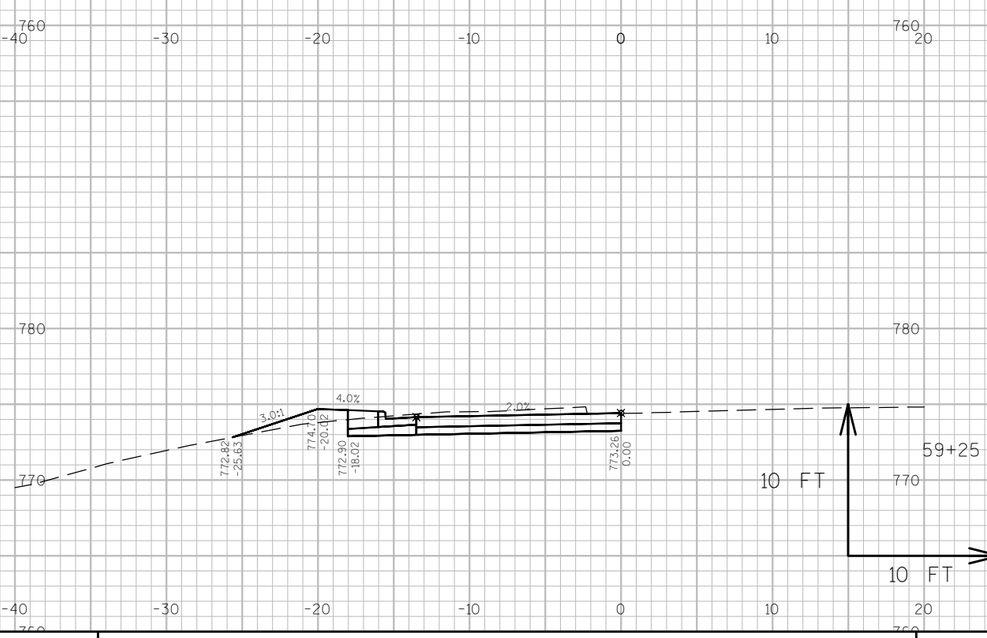
PROJECT NO: XXXX-XX-XX	HWY: XXX	COUNTY: MILWAUKEE	CROSS SECTIONS:	SHEET 177	E









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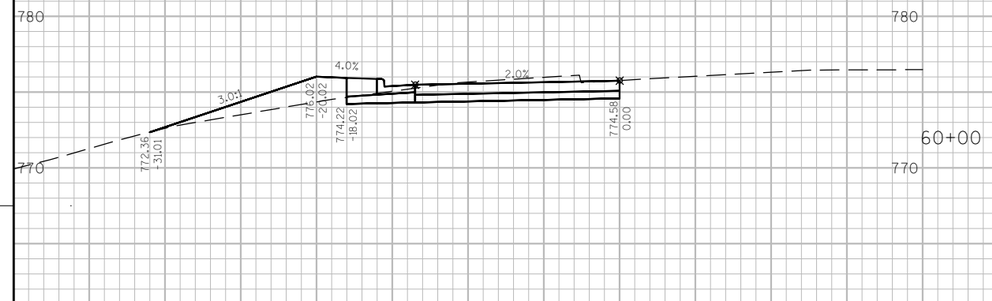
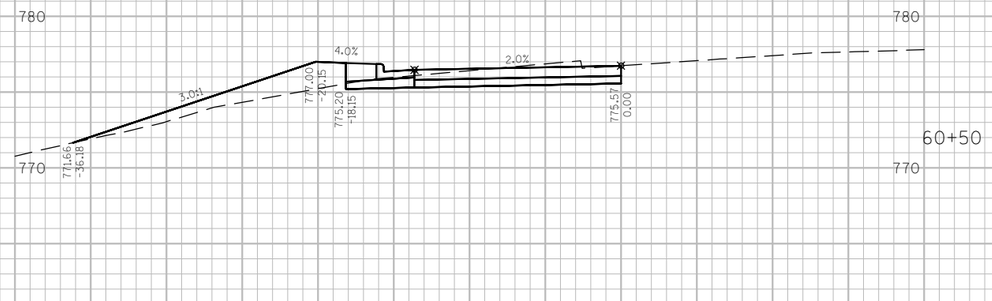
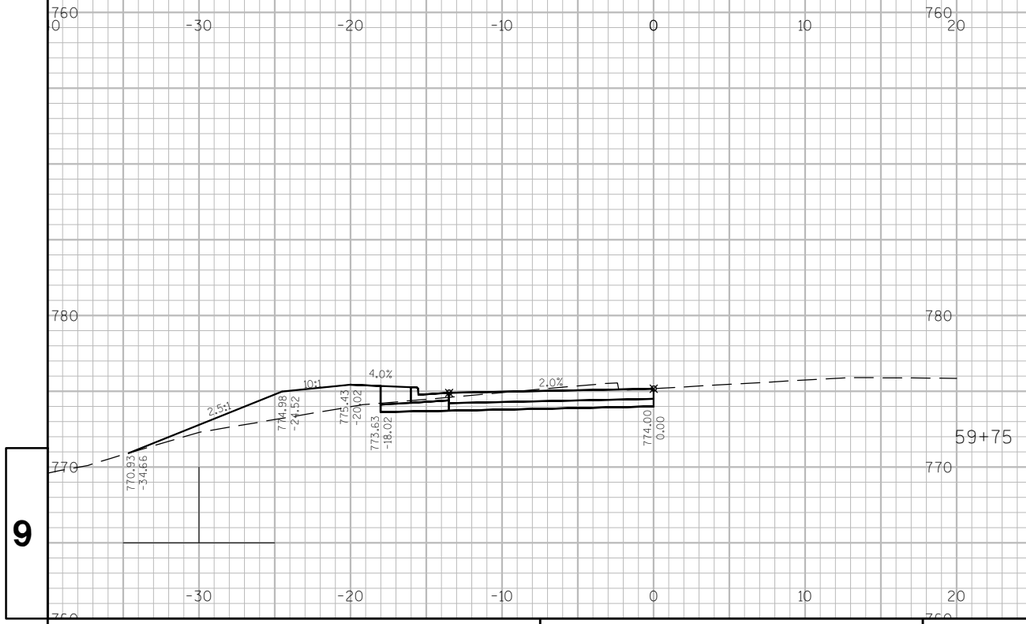
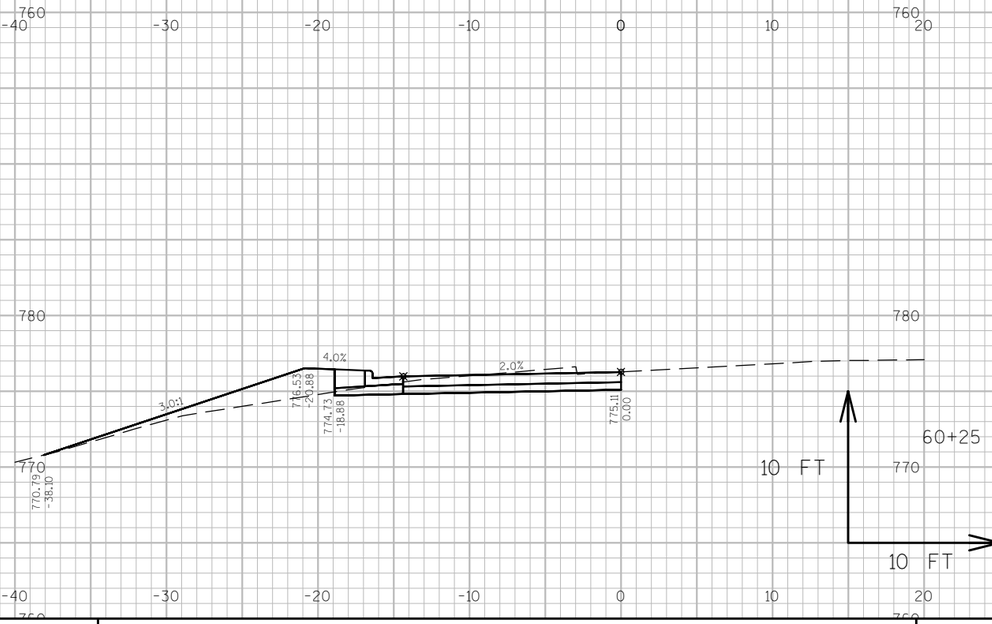
PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	CROSS SECTIONS:	SHEET 178	E









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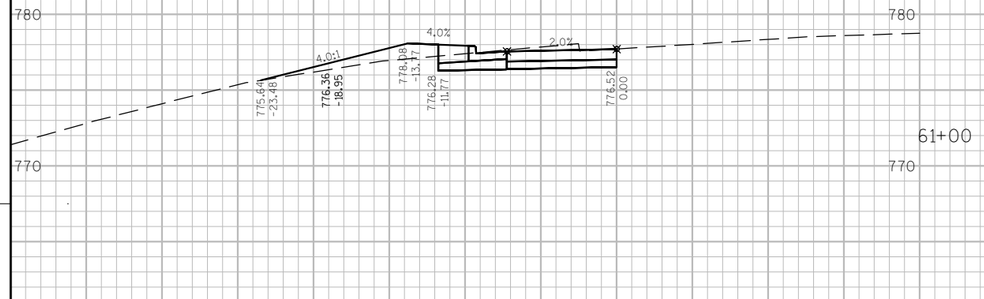
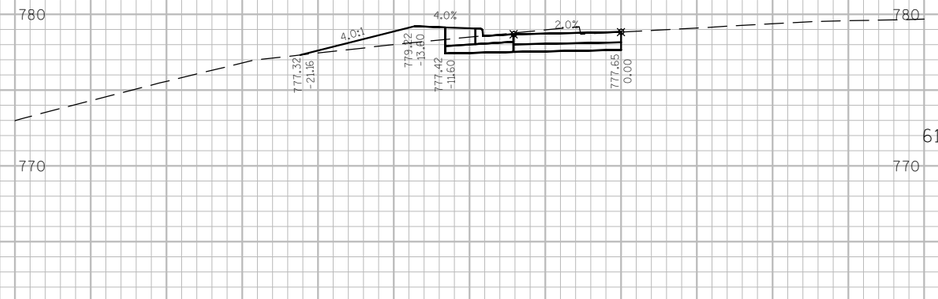
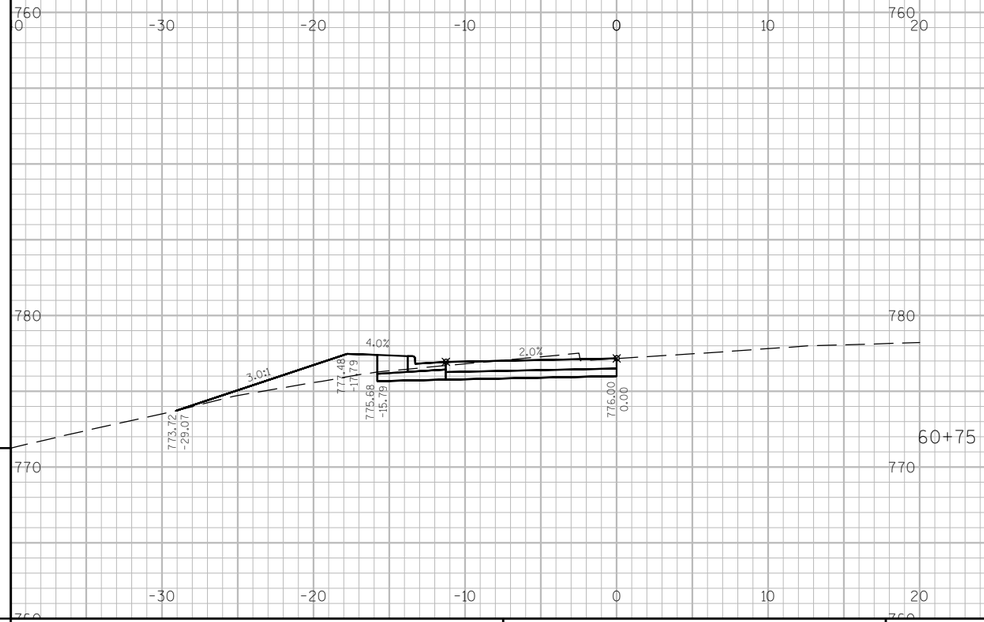
PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	CROSS SECTIONS:	SHEET 179	E

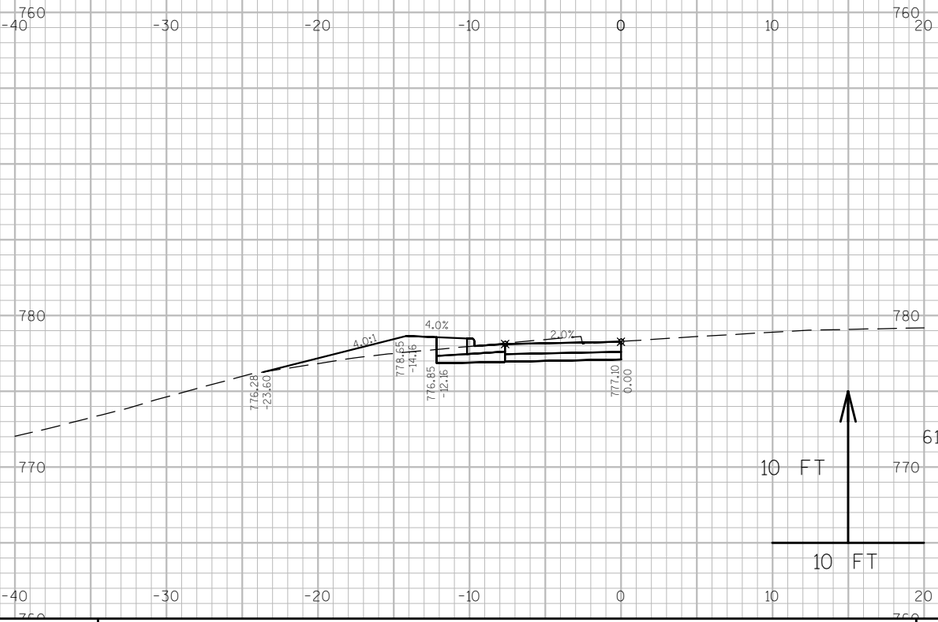
FILE NAME : N:\PDS\C3D\11003300\DESIGN\XSECTIONS\CROSS SECTIONS 04-17-13.DWG PLOT DATE : 4/25/2013 4:15 PM PLOT BY : HAFEMAN, GREGORY ALL PLOT NAME : ---------- PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49









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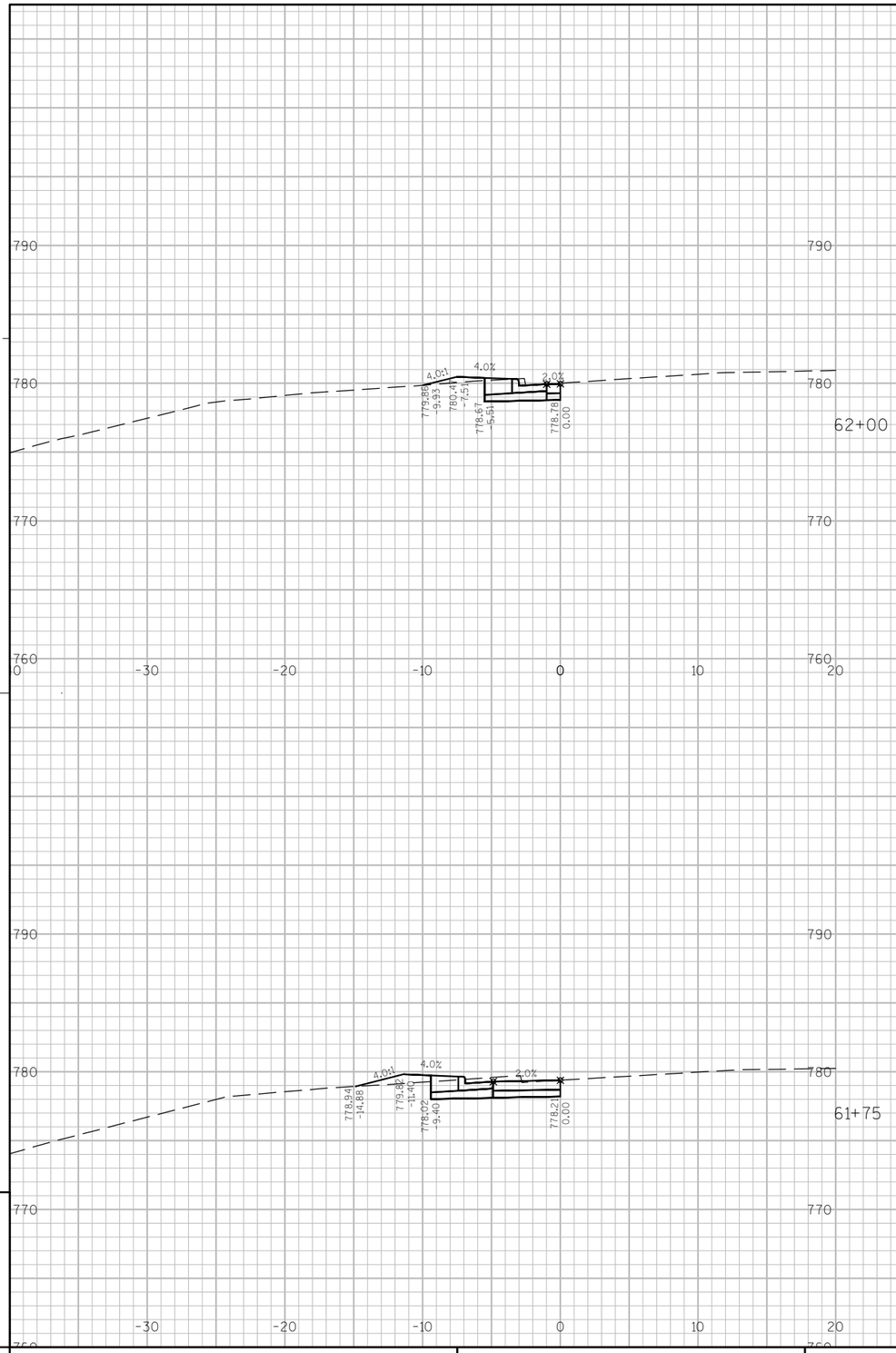
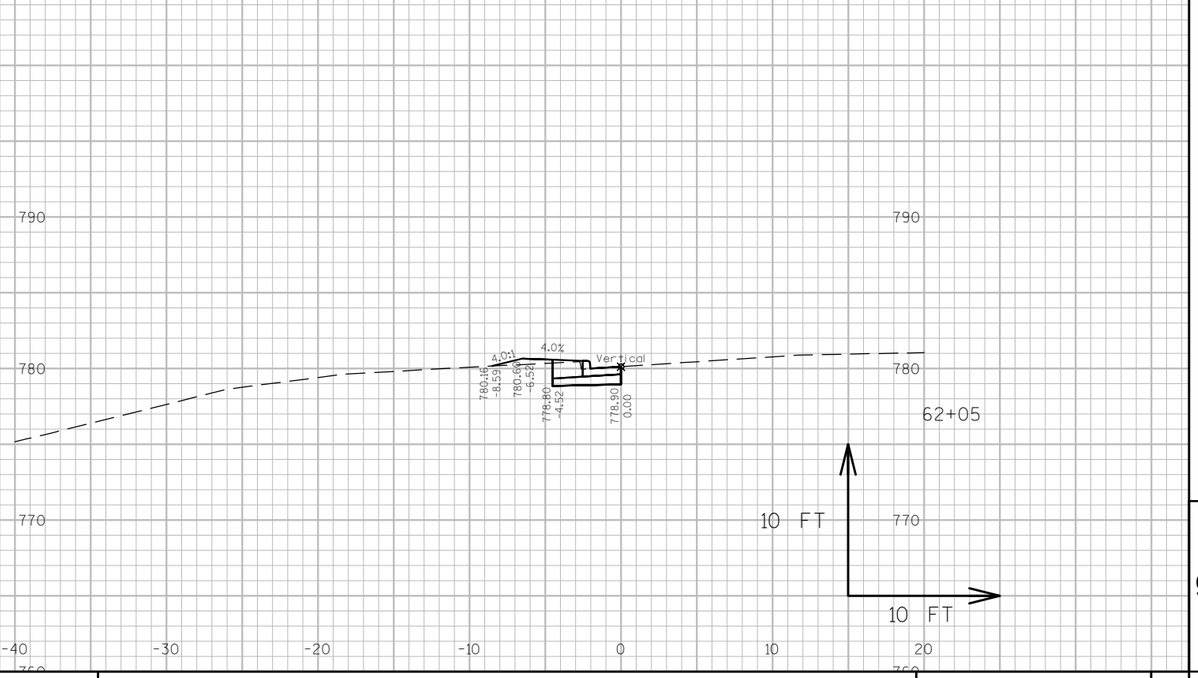
PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	CROSS SECTIONS:	SHEET 180	E





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PROJECT NO: 1100-33-70	HWY: USH 41	COUNTY: MILWAUKEE	CROSS SECTIONS:	SHEET 181	E

Wisconsin Department of Transportation

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