WKE

MAY 2013

ORDER OF SHEETS

Section No.	1	Title
Section No.	3	Estimate of Quantities
Section No.	3	Miscellaneous Quantities
Section No.	6	Standard Detail Drawings

PROJECT ID: 1000-67-94

WITH:

COUNTY: SE REGION WIDE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

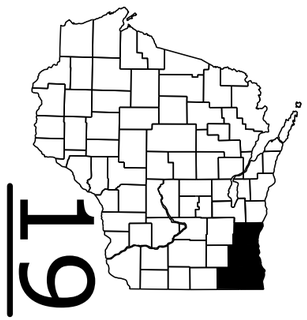
HIGHWAY LIGHTING MAINTENANCE 2013

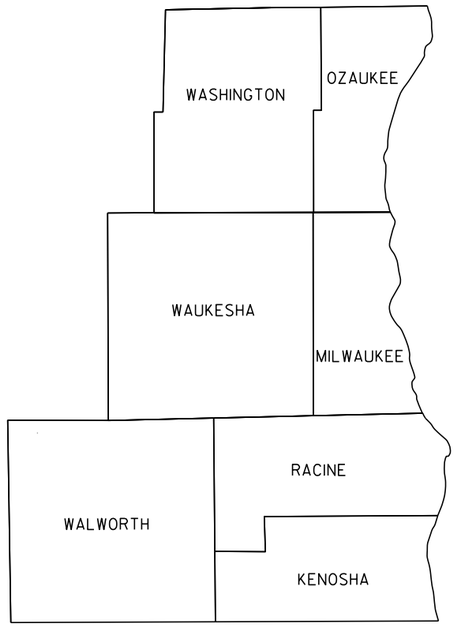
VARIOUS HIGHWAYS
SE REGION - WIDE

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
1000-67-94		

TOTAL SHEETS = 32

STATE PROJECT NUMBER
1000-67-94





DESIGN DESIGNATION

A.D.T.	= N/A
A.D.T.	= N/A
D.H.V.	= N/A
D.D.	= N/A
T.	= N/A
DESIGN SPEED	= N/A
ESALS	= N/A

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

LAYOUT
SCALE 0 * MI.

TOTAL NET LENGTH OF CENTERLINE = 0.000 MI.

-"Coordinates on this plan are referenced to the Wisconsin County Coordinate System (WCCS), 'countyname' County."

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	
Designer	MATT PFEIFER
Project Manager	MATT PFEIFER
Region Examiner	
Region Supervisor	JOHN HAUG
C.O. Examiner	

APPROVED FOR REGION OFFICE

DATE: 12/26/12 MATT PFEIFER (Signature)

E

UTILITIES CONTACT LIST:

DEPARTMENT LIGHTING MAINTENANCE (MILWAUKEE COUNTY)-
STANLEY JACKSON
MILWAUKEE COUNTY ELEC DEPT
10190 WATERTOWN PLK ROAD
MILWAUKEE WI 53266
414-257-6566

DEPARTMENT LIGHTING DESIGN & OPERATION-
MATT PFEIFER
ELECTRICAL OPERATIONS UNIT-LIGHTING
WIS DOT
141 NW BARSTOW ST.
PO BOX 798
WAUKESHA WI 53187-0798
414-750-2836

MS. RHONDA MOGILKA
WISDOT SIGNALS WEST ALLIS
935 S 60TH STREET
WEST ALLIS, WI. 53214
414-266-1167

OTHER CONTACTS

DISTRICT DNR AREA LIAISON
WISCONSIN DEPT. OF NATURAL RESOURCES

2300 N. MARTIN LUTHER KING JR. DRIVE
P.O. BOX 12436
MILWAUKEE, WISCONSIN 53212
MR. MICHAEL THOMPSON
DISTRICT ENVIRONMENTAL ANAYSIS
SUPERVISOR
(414) 263-8648

DESIGN CONTACT

DEPARTMENT LIGHTING DESIGN & OPERATION-
MATT PFEIFER
ELECTRICAL OPERATIONS UNIT-LIGHTING

WIS DOT
141 NW BARSTOW ST.
PO BOX 798
WAUKESHA WI 53187-0798
414-750-2836

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

LIGHTING PLAN LEGEND

PROPOSED	EXISTING	
		REMOTE METER PEDISTAL
		DISTRIBUTION CENTER
		PHOTO CELL POLE
		PULL BOX (600 mm $^{2}24"^{3}$ UNLESS OTHERWISE NOTED)
		LIGHTING SYSTEM MANHOLE
		JUNCTION BOX
= = = = =		CONDUIT (50 mm $^{2}2"^{3}$ UNLESS OTHERWISE NOTED)
- - — · —		CID (CABLE IN DUCT)
— OH —	— OH —	OVER HEAD UTILITY
		LIGHT POLE, POLE TOP LUMINAIRE
		LIGHT POLE
		UDL (UNDER DECK LUMINAIRE)
		SIGN BRIDGE LUMINAIRE
		TUNNEL LUMINAIRE

PROPOSED	EXISTING	
		HIGH MAST LIGHT TOWER (ARROWS INDICATE QUANTITY OF LUMINAIRES AND DIRECTION AIMED)
		CENTER OF CHANNEL NAVIGATION LUMINAIRE
		EDGE OF CHANNEL NAVIGATION LUMINAIRE
		AVIATION OBSTRUCTION LUMINAIRE
=		CONDUIT STUBOUT
PROPOSED	EXISTING	COMPONENT LABELS
A,B,C,...etc.	A,B,C,...etc.	CIRCUIT POLE (ELECTRICAL) DESIGNATION
\\\\	X	REMOVAL/ABANDON
N		NEUTRAL
GND		GROUND
MV		MERCURY VAPOR
HPS		HIGH PRESSURE SODIUM

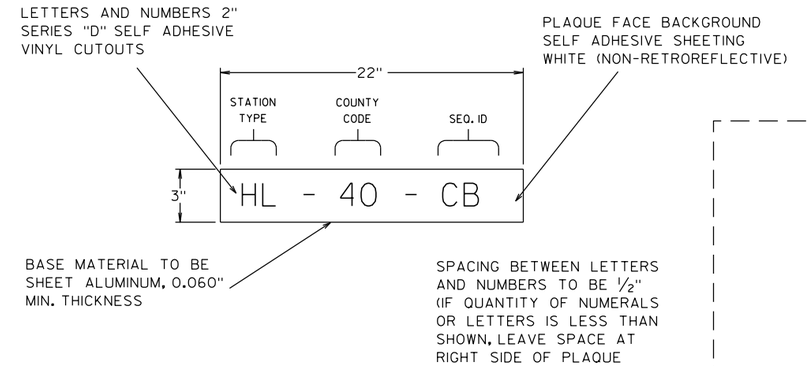
TRAFFIC CONTROL PLAN LEGEND

	TYPE III BARRICADE
	TYPE III BARRICADE WTH ATTACHED SIGN
	TRAFFIC CONTROL DRUM
	TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
	FLASHING ARROW BOARD
	SIGN ON PERMANENT SUPPORT
	SIGN ON TEMPORARY SUPPORT
	DELINEATOR FLEXIBLE/TUBULAR MARKER
Ⓐ	TYPE A WARNING LIGHT (FLASHING)
Ⓑ	TYPE B WARNING LIGHT (HIGH INTENSITY FLASHING)
Ⓒ	TYPE C WARNING LIGHT (STEADY BURN)
	CONCRETE BARRIER TEMPORARY PRECAST
	WORK AREA
	TEMPORARY RAISED PAVEMENT MARKER (ONE WAY REFLECTOR)
	TEMPORARY RAISED PAVEMENT MARKER (TWO WAY REFLECTOR)
	FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF
	DIRECTION OF TRAFFIC
MB	PORTABLE CHANGEABLE MESSAGE BOARD

2

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 SPECIAL PROVISIONS.

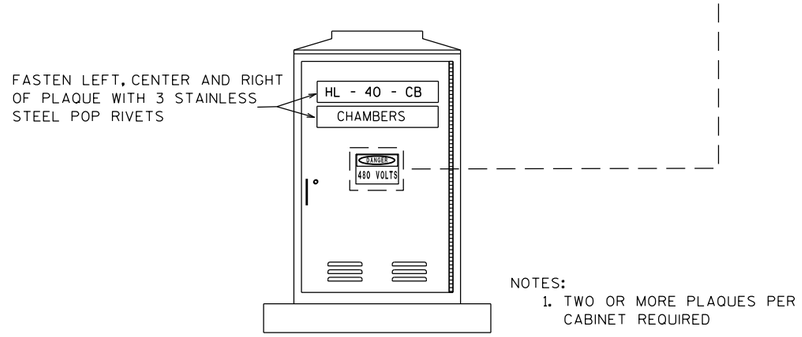


DISTRIBUTION CENTER IDENTIFICATION PLAQUE

APROX. 10 1/2" × 7"
(INCIDENTAL)

CHAMBERS

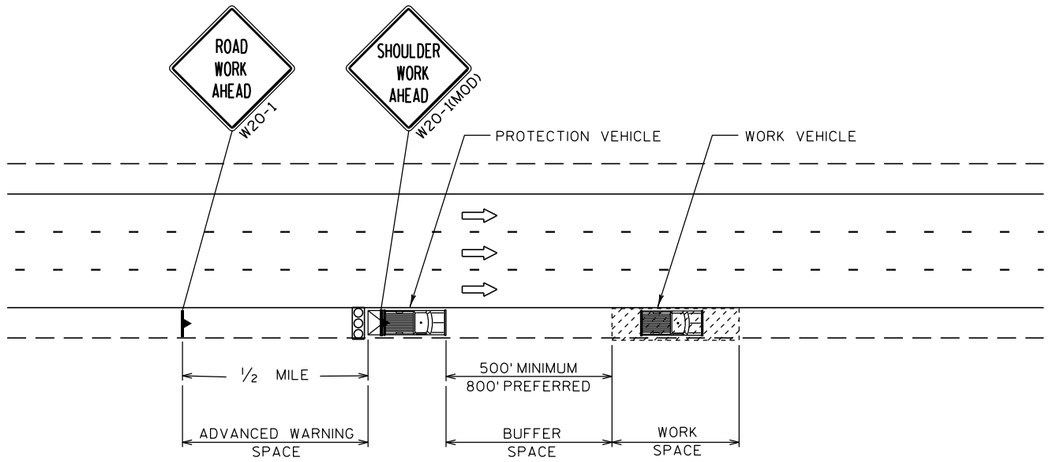
MNEMONIC
(SEE MISC. QTYS.)
(NO. OF CHARACTERS VARIES THIRD PLAQUE MAY BE NECESSARY)



NOTES:
1. TWO OR MORE PLAQUES PER CABINET REQUIRED

DISTRIBUTION CENTER IDENTIFICATION PLAQUE
REQUIREMENTS AND PLACEMENTS
(TYPICAL ALL CONTROL CABINETS)

PROJECT NO: 1000-67-94	HWY: VARIOUS	COUNTY: SE REGION	LIGHTING CONSTRUCTION DETAIL	SHEET 3	E



MOBILE OPERATION ON SHOULDER FOR 10' OR WIDER SHOULDERS ONLY

(RIGHT SHOULDER CLOSURE SHOWN, LEFT SHOULDER CLOSURE SIMILAR)

GENERAL NOTES: TRAFFIC CONTROL

1. THE CONTRACTOR SHALL FURNISH, ERECT, MAINTAIN, MOVE AND REMOVE ALL TRAFFIC CONTROL SIGNS, SIGN SUPPORTS, CHANNELIZING DEVICES, TMAs, ARROW BOARDS, WARNING LIGHTS, ETC. AS SPECIFIED IN THIS DETAIL, THE STANDARD SPECIFICATIONS, THE PLANS AND/OR THE SPECIAL PROVISIONS AND/OR AS DIRECTED BY THE ENGINEER.
2. THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS AND CHANNELIZING DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AND/OR AS DIRECTED BY THE ENGINEER.
3. IF THE HORIZONTAL ALIGNMENT IS SUCH THAT A CURVE REDUCES VISIBILITY, PROTECTION VEHICLE OPERATORS SHOULD INCREASE THE LENGTH OF THE BUFFER SPACE TO MAINTAIN VISIBILITY TO VEHICLES APPROACHING FROM THE REAR.
4. MOBILE OPERATIONS ARE PERMITTED FOR DAYTIME OPERATIONS ONLY.
5. THE ENGINEER IN THE FIELD MAY PROHIBIT MOBILE OPERATIONS DURING RAIN OR WHEN FOGGY.
6. ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.
7. "WO" SIGN DESIGNATIONS ARE THE SAME AS "W" SIGN DESIGNATIONS EXCEPT THAT BACKGROUND IS ORANGE.

LEGEND:

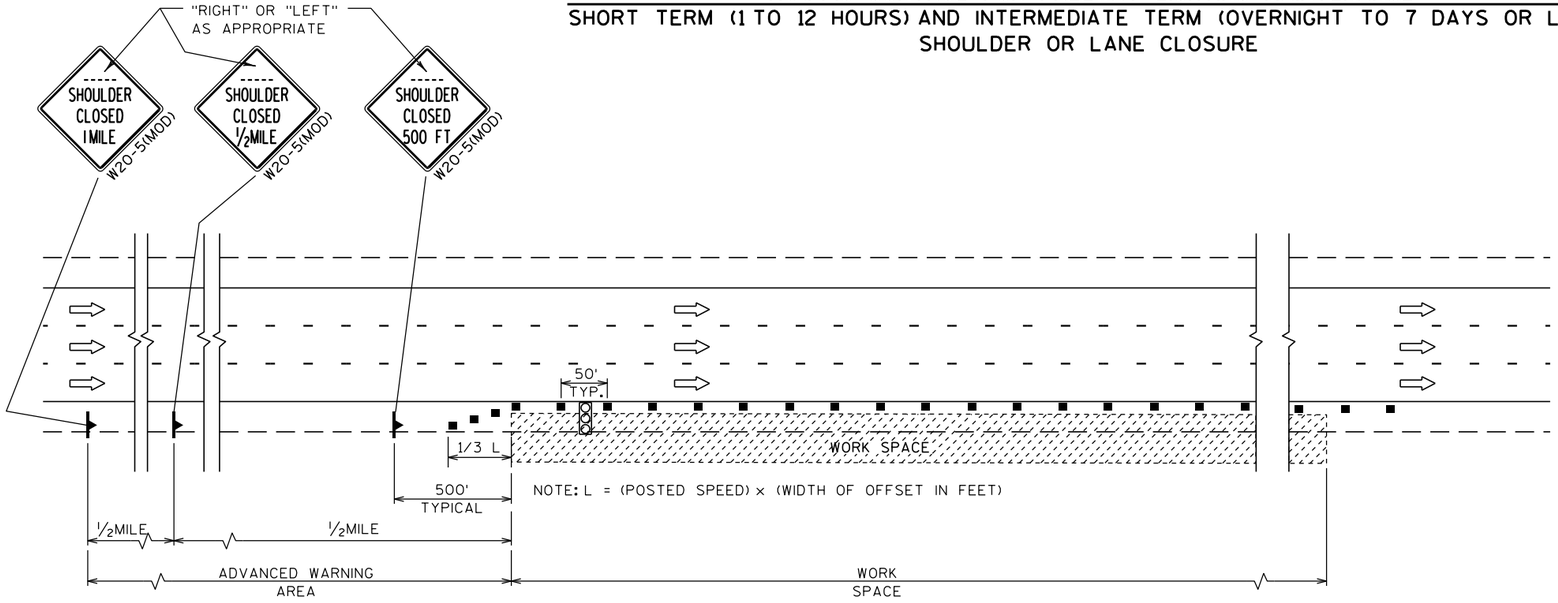
- SIGN ON TEMPORARY SUPPORT
- ARROW BOARD
- TMA (TRUCK MOUNTED ATTENUATOR)
- WORK VEHICLE

TRAFFIC CONTROL FOR FREEWAY LIGHTING MAINTENANCE
MOBILE OPERATIONS - SHOULDER CLOSURE

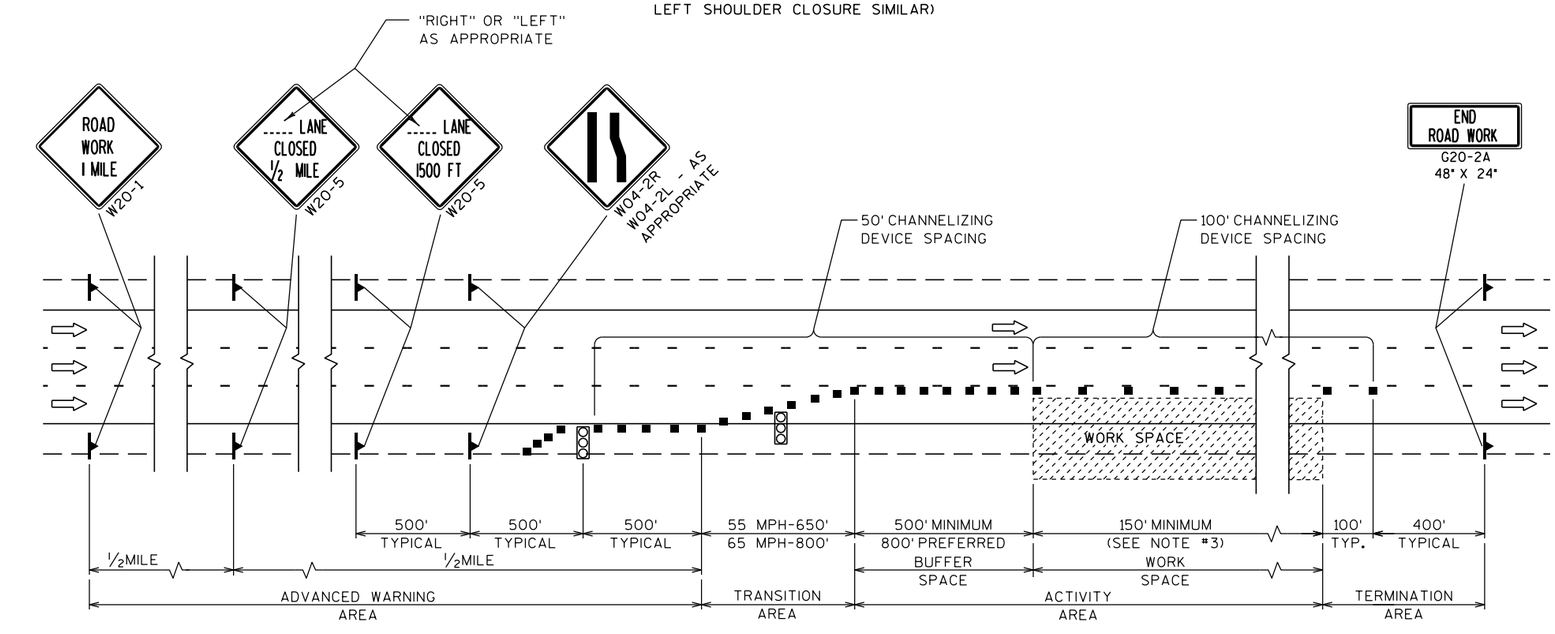
CONTINUOUS OR INTERMITTENT MOVEMENT (STOPS LESS THAN 15 MINUTES)

PROJECT NO: 1000-67-94	HWY: VARIOUS	COUNTY: SE REGION	TRAFFIC CONTROL DETAIL	SHEET 4	E

TRAFFIC CONTROL FOR FREEWAY LIGHTING MAINTENANCE
SHORT TERM (1 TO 12 HOURS) AND INTERMEDIATE TERM (OVERNIGHT TO 7 DAYS OR LESS) SHOULDER OR LANE CLOSURE



TYPICAL SHOULDER CLOSURE
(RIGHT SHOULDER CLOSURE SHOWN, LEFT SHOULDER CLOSURE SIMILAR)



TYPICAL ONE-LANE CLOSURE
(RIGHT LANE CLOSURE SHOWN, LEFT LANE CLOSURE SIMILAR)

GENERAL NOTES: TRAFFIC CONTROL

1. THE CONTRACTOR SHALL FURNISH, ERECT, MAINTAIN, MOVE AND REMOVE ALL TRAFFIC CONTROL SIGNS, SIGN SUPPORTS, CHANNELIZING DEVICES, ARROW BOARDS, WARNING LIGHTS, ETC. AS SPECIFIED IN THIS DETAIL, THE STANDARD SPECIFICATIONS, THE PLANS AND/OR THE SPECIAL PROVISIONS AND/OR AS DIRECTED BY THE ENGINEER.
2. THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS AND CHANNELIZING DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AND/OR AS DIRECTED BY THE ENGINEER.
3. IF THE HORIZONTAL ALIGNMENT IS SUCH THAT A CURVE MAY REQUIRE ADDITIONAL DELINEATION, THE CHANNELIZING DEVICE SPACING MAY BE DECREASED TO 50' IN THE WORK SPACE.
4. FOR DAYTIME ONLY OPERATION: WARNING LIGHTS ARE NOT REQUIRED. ALL LANE CLOSURE SIGNS SHALL BE COVERED OR TURNED FROM THE MOTORIST'S VIEW AND CHANNELIZING DEVICES SHALL BE REMOVED BEYOND THE SHOULDER AT THE END OF THE WORKDAY IF THE LANE IS RESTORED TO A SAFE OPERATING CONDITION.
5. FOR NIGHT TIME OPERATION: CHANNELIZING DEVICES IN THE TRANSITION SPACE SHALL HAVE TYPE "C" (STEADY BURN) WARNING LIGHTS, BARRICADES SHIELDING AN ISOLATED HAZARD, SHALL HAVE TYPE "A" (LOW INTENSITY FLASHING) WARNING LIGHTS.
6. ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.
7. "WO" SIGN DESIGNATIONS ARE THE SAME AS "W" SIGN DESIGNATIONS EXCEPT THAT BACKGROUND IS ORANGE.
8. IF LANE CLOSURE IS MORE THAN 1 MILE, PLACE TYPE III BARRICADES APPROXIMATELY EVERY 1000' ACROSS THE CLOSED LANE TO HELP ENFORCE THE DELINEATION.
9. 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' IN FRONT OF DRUMS.

LEGEND:

- SIGN ON TEMPORARY SUPPORT
- CHANNELIZING DEVICE (CONE OR DRUM)
- ARROW BOARD

PROJECT NO: 1000-67-94	HWY: VARIOUS	COUNTY: SE REGION	TRAFFIC CONTROL DETAIL	SHEET 5	E

DATE 13MAR13 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	1000-67-94 QUANTITY
0010	204.0195	REMOVING CONCRETE BASES	EACH	5.000	5.000
0020	619.1000	MOBILIZATION	EACH	1.000	1.000
0030	643.0100	TRAFFIC CONTROL (PROJECT) 01. 1000-67-94	EACH	1.000	1.000
0040	643.0300	TRAFFIC CONTROL DRUMS	DAY	1,000.000	1,000.000
0050	643.0420	TRAFFIC CONTROL BARRICADES TYPE III	DAY	400.000	400.000
0060	643.0800	TRAFFIC CONTROL ARROW BOARDS	DAY	85.000	85.000
0070	643.0900	TRAFFIC CONTROL SIGNS	DAY	1,300.000	1,300.000
0080	643.1050	TRAFFIC CONTROL SIGNS PCMS	DAY	85.000	85.000
0090	652.0225	CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH	LF	1,000.000	1,000.000
0100	652.0235	CONDUIT RIGID NONMETALLIC SCHEDULE 40 3-INCH	LF	250.000	250.000
0110	652.0615	CONDUIT SPECIAL 3-INCH	LF	250.000	250.000
0120	653.0135	PULL BOXES STEEL 24X36-INCH	EACH	2.000	2.000
0130	653.0140	PULL BOXES STEEL 24X42-INCH	EACH	2.000	2.000
0140	653.0905	REMOVING PULL BOXES	EACH	8.000	8.000
0150	654.0105	CONCRETE BASES TYPE 5	EACH	5.000	5.000
0160	654.0107	CONCRETE BASES TYPE 7	EACH	2.000	2.000
0170	654.0108	CONCRETE BASES TYPE 8	EACH	3.000	3.000
0180	655.0610	ELECTRICAL WIRE LIGHTING 12 AWG	LF	1,000.000	1,000.000
0190	655.0620	ELECTRICAL WIRE LIGHTING 8 AWG	LF	1,200.000	1,200.000
0200	655.0625	ELECTRICAL WIRE LIGHTING 6 AWG	LF	1,200.000	1,200.000
0210	655.0630	ELECTRICAL WIRE LIGHTING 4 AWG	LF	1,000.000	1,000.000
0220	655.0635	ELECTRICAL WIRE LIGHTING 2 AWG	LF	1,000.000	1,000.000
0230	659.0125	LUMINAIRES UTILITY HPS 250 WATTS	EACH	4.000	4.000
0240	659.0802	PLAQUES SEQUENCE IDENTIFICATION	EACH	12.000	12.000
0250	SPV.0045	SPECIAL 01 TRUCK MOUNTED ATTENUATOR	DAY	85.000	85.000
0260	SPV.0045	SPECIAL 02 ZONE 2 DISTANCE PREMIUM	DAY	5.000	5.000
0270	SPV.0045	SPECIAL 03 ZONE 3 DISTANCE PREMIUM	DAY	2.000	2.000
0280	SPV.0060	SPECIAL 01 LAMP DISPOSAL HIGH INTENSITY DISCHARGE	EACH	1,996.000	1,996.000
0290	SPV.0060	SPECIAL 02 TIGHTENING LIGHT TOWER NUTS	EACH	18.000	18.000
0300	SPV.0060	SPECIAL 03 LIGHT TOWER RAT SCREENS	EACH	6.000	6.000
0310	SPV.0060	SPECIAL 04 REMOVING LUMINAIRES	EACH	12.000	12.000
0320	SPV.0060	SPECIAL 05 REMOVING LIGHTING UNITS	EACH	7.000	7.000
0330	SPV.0060	SPECIAL 06 PULL BOXES STEEL GROUNDED 24 X 36 INCH	EACH	2.000	2.000
0340	SPV.0060	SPECIAL 07 PULL BOXES STEEL GROUNDED 24 X 42 INCH	EACH	2.000	2.000
0350	SPV.0060	SPECIAL 08 FUSE HOLDERS	EACH	40.000	40.000
0360	SPV.0060	SPECIAL 09 FUSE TYPE FNQ	EACH	40.000	40.000
0370	SPV.0060	SPECIAL 10 INSTALLING STATE FURNISHED LUMINAIRE UTILITY HPS	EACH	4.000	4.000
0380	SPV.0060	SPECIAL 11 LUMINAIRE UTILITY LED CATEGORY C	EACH	4.000	4.000
0390	SPV.0060	SPECIAL 12 INSTALLING STATE FURNISHED LIGHTING UNITS	EACH	5.000	5.000
0400	SPV.0060	SPECIAL 13 PLUMBING LIGHT POLES	EACH	8.000	8.000
0410	SPV.0060	SPECIAL 14 DISTRIBUTION CENTER PREVENTIVE MAINTENANCE	EACH	36.000	36.000
0420	SPV.0060	SPECIAL 15 GROUP LUMINAIRE MAINTENANCE UNDERDECK 100W HPS	EACH	105.000	105.000
0430	SPV.0060	SPECIAL 16 GROUP LUMINAIRE MAINTENANCE SIGN LIGHT 175W MV	EACH	14.000	14.000
0440	SPV.0060	SPECIAL 17 GROUP LUMINAIRE MAINTENANCE SIGN LIGHT 250W MV	EACH	71.000	71.000

3

DATE 13MAR13 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	1000-67-94 QUANTITY
0450	SPV.0060	SPECIAL 18 GROUP LUMINAIRE MAINTENANCE 30-FOOT 100W HPS	EACH	98.000	98.000
0460	SPV.0060	SPECIAL 19 GROUP LUMINAIRE MAINTENANCE 30-FOOT 150W HPS	EACH	130.000	130.000
0470	SPV.0060	SPECIAL 20 GROUP LUMINAIRE MAINTENANCE 30-FOOT 200W HPS	EACH	46.000	46.000
0480	SPV.0060	SPECIAL 21 GROUP LUMINAIRE MAINTENANCE 30-FOOT 250W HPS	EACH	157.000	157.000
0490	SPV.0060	SPECIAL 22 GROUP LUMINAIRE MAINTENANCE 40-FOOT 100W HPS	EACH	3.000	3.000
0500	SPV.0060	SPECIAL 23 GROUP LUMINAIRE MAINTENANCE 40-FOOT 150W HPS	EACH	60.000	60.000
0510	SPV.0060	SPECIAL 24 GROUP LUMINAIRE MAINTENANCE 40-FOOT 200W HPS	EACH	137.000	137.000
0520	SPV.0060	SPECIAL 25 GROUP LUMINAIRE MAINTENANCE 40-FOOT 250W HPS	EACH	79.000	79.000
0530	SPV.0060	SPECIAL 26 GROUP LUMINAIRE MAINTENANCE 40-FOOT 310W HPS	EACH	51.000	51.000
0540	SPV.0060	SPECIAL 27 GROUP LUMINAIRE MAINTENANCE 40-FOOT 400W HPS	EACH	15.000	15.000
0550	SPV.0060	SPECIAL 28 GROUP LUMINAIRE MAINTENANCE 50-FOOT 150W HPS	EACH	2.000	2.000
0560	SPV.0060	SPECIAL 29 GROUP LUMINAIRE MAINTENANCE 50-FOOT 200W HPS	EACH	1.000	1.000
0570	SPV.0060	SPECIAL 30 GROUP LUMINAIRE MAINTENANCE 50-FOOT 250W HPS	EACH	2.000	2.000
0580	SPV.0060	SPECIAL 31 GROUP LUMINAIRE MAINTENANCE 50-FOOT 310W HPS	EACH	259.000	259.000
0590	SPV.0060	SPECIAL 32 GROUP LUMINAIRE MAINTENANCE 50-FOOT 400W HPS	EACH	130.000	130.000
0600	SPV.0060	SPECIAL 33 TUNNEL LUMINAIRE MAINTENANCE 150 WATT HPS	EACH	30.000	30.000
0610	SPV.0060	SPECIAL 34 TUNNEL LUMINAIRE MAINTENANCE 200 WATT HPS	EACH	10.000	10.000
0620	SPV.0060	SPECIAL 35 TUNNEL LUMINAIRE MAINTENANCE 250 WATT HPS	EACH	4.000	4.000
0630	SPV.0060	SPECIAL 36 TUNNEL LUMINAIRE MAINTENANCE 400 WATT HPS	EACH	588.000	588.000
0640	SPV.0060	SPECIAL 37 GROUP CLEAN TUNNEL LUMINAIRES	EACH	2,584.000	2,584.000
0650	SPV.0090	SPECIAL 01 INSTALLING STATE FURNISHED CABLE IN DUCT	LF	1,500.000	1,500.000
0660	SPV.0090	SPECIAL 02 INSTALLING STATE FURNISHED MEDIAN CABLE IN DUCT	LF	1,000.000	1,000.000
0670	SPV.0090	SPECIAL 03 REMOVING MEDIAN CABLE IN DUCT	LF	1,000.000	1,000.000
0680	SPV.0090	SPECIAL 04 REMOVING TEMPORARY OVERHEAD LINES	LF	500.000	500.000

3

Wisconsin Department of Transportation - Southeast Region - Waukesha
HIGHWAY LIGHTING DISTRIBUTION CENTERS

LABEL HL- or as shown	Format	Maintenance \ First Response	County	Highway	Distribution Center Location	Branch Circuit Voltage	Field Wiring Method	Zone
40-CH	Subpanel to QY	Milw Co\ Milw Co	Milw	IH 43	At Car Wash 12th/ Walnut	240/480	Isol Neutral	1
40-EG	Service	Milw Co\ Milw Co	Milw	STH 145	NW Quadrant, STH 145 and 107th. St.	240/480	Grnd Neutral	1
40-ES	Service	Milw Co\ Milw Co	Milw	IH 94	North Side IH 94 West of 42nd Street	240/480	Isol Neutral	1
40-FD	Subpanel to QY	Milw Co\ Milw Co	Milw	IH 43	At Car Wash 12th/ Walnut	240/480	Isol Neutral	1
40-GA	Service	Milw Co\ Milw Co	Milw	IH 43	West Side IH 43 at Garfield	240/480	Isol Neutral	1
40-KL	Service With ITS	Milw Co\ Milw Co	Milw	IH 43	600 W. Kilbourn - South Side of Plaza	208Y/120	Grnd Neutral	1
40-MT	Service	Milw Co\ Milw Co	Milw	IH 94	North Side 19th & Clybourn	240/480	Isol Neutral	1
40-NN	Service	Milw Co\ Milw Co	Milw	USH 41-45	USH 41-45 NB 124th Exit Ramp	240/480	Isol Neutral	1
40-NW	Service	Milw Co\ Milw Co	Milw	USH 41-45	West Side USH 41-45 at Broadway	240/480	Isol Neutral	1
40-PP	Service	Milw Co\ Milw Co	Milw	USH 41-45	East Side STH 145 at Park Place	240/480	Isol Neutral	1
40-QB	Service	Milw Co\ Milw Co	Milw	Marquette	NW Quadrant IH 43 and Wells	240/480	Isol Neutral	1
40-RA	Service	Milw Co\ Milw Co	Milw	STH 145	NW Quadrant, STH 145 and Grantosa	240/480	Grnd Neutral	1
40-SP	Service	Milw Co\ Milw Co	Milw	STH 145	NE Quadrant, STH 145 and Silver Spring	240/480	Grnd Neutral	1
40-UN	Service	Milw Co\ Milw Co	Milw	IH 94	SE Quadrant at Underwood Parkway	240/480	Isol Neutral	1
40-WG	Service	Milw Co\ Milw Co	Milw	USH 41-45	SW Quadrant Good Hope USH 41-45	240/480	Grnd Neutral	1
40-ZZ	Service	Milw Co\ Milw Co	Milw	USH 45	West Side USH 45 N. of Schlinger	480	Grnd Neutral	1
67-EL	Service	Milw Co\ Milw Co	Wauk	IH 94	South Side IH 94 East of Elm Grove Rd.	240/480	Isol Neutral	1
67-GC	Service	Milw Co\ State	Wauk	USH 18	North Side CTH JJ West of USH 18	240/480	Grnd Neutral	1
67-GK	Service	Milw Co\ State	Wauk	IH 94	Goerkes Park-Ride c- Barker Road	480Y/277	Isol Neutral	1
67-GS	Service	Milw Co\ State	Wauk	IH 94	Ramp, EB USH 18 to EB IH 94	240/480	Grnd Neutral	1
67-GW	Service	Milw Co\ State	Wauk	IH 94	800 Larry Court @ IH 94	240/480	Isol Neutral	1
67-SN	Service	Milw Co\ State	Wauk	IH 94	At Water Tower West Of Sunnyslope Road	240/480	Isol Neutral	1
66-CG	Service	State\ State	Wash	STH 164	NE Quadrant STH 164/ CTH Q	240/480	Isol Neutral	3
66-EP	Service	State\ State	Wash	STH 145	STH 145 Hwy 45 Roundabouts	240/480	Isol Neutral	3
66-WP	Service	State\ State	Wash	STH 145	STH 145 Hwy 41 Roundabouts	240/480	Isol Neutral	3
67-CE	Service	State\ State	Wauk	STH 16	SB JJ Off-Ramp	240/480	Isol Neutral	2
67-GF	Service	State\ State	Wauk	STH 83	NW Quadrant, STH 83 and Golf Rd.	480Y/277	Isol Neutral	2
67-HE	Service	State\ State	Wauk	STH 83	NE Quadrant STH 83 and Heritage Drive	240/480	Isol Neutral	2
67-MD	Service	State\ State	Wauk	IH 94	IH 94 at CTH G Meadowbrook Park-Ride	240/480	Isol Neutral	2
67-PC	Service	State\ State	Wauk	STH 164	N36 W23996 Capitol Drive	120/240	Isol Neutral	2
67-PE	Service	State\ State	Wauk	STH 164		120/240	Isol Neutral	2
67-PJ	Service	State\ State	Wauk	IH 94	NW Quadrant IH 94 and Hwys J-164 North	240/480	Isol Neutral	2
67-PK	Service with ITS	State\ State	Wauk	IH 94	Old Quarry Park-Ride STH 164 at IH 94	120/240	Isol Neutral	1
67-PT	Service	State\ State	Wauk	IH 94	SW Quadrant IH 94 at CTH SS	240/480	Isol Neutral	2
67-SX	Service	State\ State	Wauk	STH 74	East Side Roundabout	120/240	Isol Neutral	2
67-TC	Service	State\ State	Wauk	IH 94	SE Quadrant, IH 94 and Hwy T	120/240	Isol Neutral	2

FILE NAME : J:\projects\d2_1_10006794\LTGQTY.dgn PLOT DATE : 12-MAR-2013 07:02 PLOT BY : dotbgw PLOT NAME : PLOT SCALE : 200.000808:1 WISDOT/CADDS SHEET 43

3

GROUP CABINET AND LUMINAIRE MAINTENANCE

SPV.0060.01 LAMP DISPOSAL HIGH INTENSITY DISCHARGE *
SPV.0060.15 DISTRIBUTION CENTER PREVENTIVE MAINTENANCE
SPV.0060.16-.3 GROUP LUMINAIRE MAINTENANCE (VAR.)

* ADDITIONAL QUANTITIES FOUND ELSEWHERE

LABEL HL-	HIGHWAY AND SEGMENT	COMMENTS	SPV.0060.01 LAMP DISPOSAL H.I.D. EACH	SPV.0060.14 DISTRIB CENTER MAINT EACH	SPV.0060.15 UDL 100 W HPS EACH	SPV.0060.16 SIGN LIGHT 175 MV EACH	SPV.0060.17 SIGN LIGHT 250 MV EACH	SPV.0060.18 30 FT 100 W HPS EACH	SPV.0060.19 30-FT 150 W HPS EACH	SPV.0060.20 30-FT 200 W HPS EACH	SPV.0060.21 30-FT 250 W HPS EACH	SPV.0060.22 40 FT 100 W HPS EACH	SPV.0060.23 40 FT 150 W HPS EACH	SPV.0060.24 40 FT 200 W HPS EACH	SPV.0060.25 40 FT 250 W HPS EACH	SPV.0060.26 40 FT 310 W HPS EACH	SPV.0060.27 40 FT 400 W HPS EACH	SPV.0060.28 50 FT 150 W HPS EACH	SPV.0060.29 50 FT 200 W HPS EACH	SPV.0060.30 50 FT 250 W HPS EACH	SPV.0060.31 50 FT 310 W HPS EACH	SPV.0060.32 50 FT 400 W HPS EACH
40-CH	IH 43		48	1	4	0	4	0	15	8	0	0	0	0	0	3	0	0	0	0	14	0
40-EG	STH 145		85	1	10	3	3	34	0	0	0	0	0	3	0	0	0	0	0	0	32	0
40-ES	IH 94		14	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
40-FD	IH 43	SEE HALIDE TABLE	60	1	4	0	5	0	1	28	2	0	0	0	0	18	0	0	0	0	0	0
40-GA	IH 43	SEE HALIDE TABLE	77	1	9	0	4	0	13	2	9	0	0	3	0	0	0	0	1	0	12	22
40-KL	IH 43		8	1	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0
40-MT	IH 94		100	1	4	0	18	0	30	0	6	0	0	0	0	0	0	0	0	0	42	0
40-NN	USH 41-45		60	1	6	0	4	0	0	0	0	0	0	13	8	0	0	0	0	0	29	0
40-NW	USH 41-45		100	1	16	0	0	0	0	0	0	0	0	37	40	0	0	0	0	0	7	0
40-PP	USH 41-45		38	1	2	0	4	0	0	0	0	0	0	13	0	0	0	0	0	0	19	0
40-QB	Marquette		23	1	4	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0
40-RA	STH 145		101	1	20	3	0	32	0	0	0	0	0	6	0	0	10	0	0	0	30	0
40-SP	STH 145		77	1	8	0	4	32	0	0	0	0	0	5	0	0	0	0	0	0	28	0
40-UN	IH 94		34	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34
40-WG	USH 41-45	ENGINEER TO PROVIDE LIMITS OF WORK	124	1	8	0	13	0	8	0	0	0	2	43	12	0	1	0	0	0	33	4
40-ZZ	USH 45		3	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
67-EL	IH 94		24	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
67-GC	USH 18		26	1	0	8	0	0	0	0	0	1	3	0	4	4	4	0	0	2	0	0
67-GK	IH 94		17	1	2	0	3	0	0	0	0	0	5	0	3	2	0	2	0	0	0	0
67-GS	IH 94		3	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
67-GW	IH 94		6	1	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
67-SN	IH 94		32	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32
66-CG	STH 164		24	1	0	0	0	0	10	0	14	0	0	0	0	0	0	0	0	0	0	0
66-EP	STH 145		29	1	0	0	0	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0
66-WP	STH 145		29	1	0	0	0	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0
67-CE	STH 16		20	1	0	0	0	0	16	0	4	0	0	0	0	0	0	0	0	0	0	0
67-GF	STH 83		49	1	8	0	0	0	0	0	13	2	3	11	12	0	0	0	0	0	0	0
67-HE	STH 83		26	1	0	0	0	0	0	0	26	0	0	0	0	0	0	0	0	0	0	0
67-MD	IH 94		27	1	0	0	0	0	6	0	0	0	21	0	0	0	0	0	0	0	0	0
67-PC	STH 164		16	1	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0
67-PE	STH 164		8	1	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0
67-PJ	IH 94		24	1	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0
67-PK	IH 94		3	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
67-PT	IH 94		19	1	0	0	0	0	2	0	0	0	17	0	0	0	0	0	0	0	0	0
67-SX	STH 74		10	1	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0
67-TC	IH 94		20	1	0	0	0	0	19	0	1	0	0	0	0	0	0	0	0	0	0	0
Total			1364 *	36	105	14	71	98	130	46	157	3	60	137	79	51	15	2	1	2	259	130

PROJECT NO: 1000-67-94	HWY: VARIOUS	COUNTY: SE REGION	MISCELLANEOUS QUANTITIES	SHEET 9	E

FILE NAME : J:\projects\d2_1_10006794\LTGQTY.dgn PLOT DATE : 12-MAR-2013 07:02 PLOT BY : dotbgw PLOT NAME : PLOT SCALE : 200.000808:1
WISDOT/CADDS SHEET 43

UNDISTRIBUTED HIGHWAY LIGHTING MAINTENANCE

* ADDITIONAL QUANTITIES FOUND ELSEWHERE

ITEM	QTY.		UNIT	DESCRIPTION
204.0195	5		EACH	REMOVING CONCRETE BASES
652.0225	1,000		L.F.	CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH
652.0235	250		L.F.	CONDUIT RIGID NONMETALLIC SCHEDULE 40 3-INCH
652.0615	250		L.F.	CONDUIT SPECIAL 3-INCH
653.0135	2		EACH	PULL BOXES STEEL 24X36-INCH
653.0140	2		EACH	PULL BOXES STEEL 24X42-INCH
653.0905	8		EACH	REMOVING PULL BOXES
654.0105	5		EACH	CONCRETE BASES TYPE 5
654.0107	2		EACH	CONCRETE BASES TYPE 7
654.0108	3		EACH	CONCRETE BASES TYPE 8
655.0610	1,000		L.F.	ELECTRICAL WIRE LIGHTING 12 AWG (POLE WIRE)
655.0620	1,200		L.F.	ELECTRICAL WIRE LIGHTING 8 AWG
655.0625	1,200		L.F.	ELECTRICAL WIRE LIGHTING 6 AWG
655.0630	1,000		L.F.	ELECTRICAL WIRE LIGHTING 4 AWG
655.0635	1,000		L.F.	ELECTRICAL WIRE LIGHTING 2 AWG
659.0125	4		EACH	LUMINAIRES UTILITY HPS 250 WATTS
659.0802	8	*	EACH	PLAQUES SEQUENCE IDENTIFICATION
SPV.0060.02	18		EACH	TIGHTENING LIGHT TOWER NUTS
SPV.0060.03	6		EACH	LIGHT TOWER RAT SCREENS
SPV.0060.04	8	*	EACH	REMOVING LUMINAIRES
SPV.0060.05	7		EACH	REMOVING LIGHTING UNITS
SPV.0060.06	2		EACH	PULL BOXES STEEL GROUNDED 24X36-INCH
SPV.0060.07	2		EACH	PULL BOXES STEEL GROUNDED 24X42-INCH
SPV.0060.08	40		EACH	FUSE HOLDERS
SPV.0060.09	40		EACH	FUSES TYPE FNQ
SPV.0060.10	4		EACH	INSTALLING STATE-FURNISHED LUMINAIRES
SPV.0060.12	5		EACH	INSTALLING STATE FURNISHED LIGHTING UNITS
SPV.0060.13	8		EACH	PLUMBING LIGHT POLES
SPV.0090.01	1,500		L.F.	INSTALLING STATE-FURNISHED CABLE IN DUCT
SPV.0090.02	1,000		L.F.	INSTALLING STATE-FURNISHED MEDIAN CABLE IN DUCT
SPV.0090.03	1,000		L.F.	REMOVING MEDIAN CABLE IN DUCT
SPV.0090.04	500		L.F.	REMOVING TEMPORARY OVERHEAD LINES

WORK ZONE TRAFFIC CONTROL

ITEM	ITEM	UNIT	QUANTITY
643.0100	TRAFFIC CONTROL PROJECT 1000-67-94	LS	1
643.0300	TRAFFIC CONTROL DRUMS ***	DAY	1,000
643.0420	TRAFFIC CONTROL BARRICADES TYPE III	DAY	400
643.0800	TRAFFIC CONTROL ARROW BOARDS	DAY	85
643.0900	TRAFFIC CONTROL SIGNS	DAY	1,300
643.1050	TRAFFIC CONTROL SIGNS PORTABLE CHANGEABLE MESSAGE	DAY	85
SPV.0045.01	TRUCK MOUNTED ATTENUATOR	DAY	85

*** APPROVED TRAFFIC CONES WILL BE ACCEPTED FOR THIS ITEM FOR SHORT-TERM DAYTIME WORK, BUT WILL NOT BE MEASURED FOR PAYMENT.
SEE THE SPECIAL PROVISIONS.

MOBILZATION ITEMS

ITEM	ITEM	UNIT	QUANTITY
619.1000	MOBILIZATION	EACH	1
SPV.0045.02	ZONE 2 DISTANCE PREMIUM	DAY	5
SPV.0045.03	ZONE 3 DISTANCE PREMIUM	DAY	2

CHANGEOUT OF METAL HALIDE LUMINAIRES

659.0802 PLAQUES SEQUENCE IDENTIFICATION *
SPV.0060.01 LAMP DISPOSAL HIGH INTENSITY DISCHARGE *
SPV.0060.04 REMOVING LUMINAIRES *
SPV.0060.11 LUMINAIRES UTILITY LED CATEGORY C

* ADDITIONAL QUANTITIES FOUND ELSEWHERE

SYSTEM	HIGHWAY SEGMENT	RAMP OR PARK-RIDE	SPV.0060.11 LUMINAIRES UTILITY LED CATEGORY C EACH	659.0802 PLAQUES SEQUENCE IDENTIFICATION EACH	SPV.0060.01 LAMP DISPOSAL H.I.D. EACH	SPV.0060.04 REMOVING LUMINAIRES EACH
HL-40-FD	IH 43 NB	IH 43 NB EXIT RAMP TO FDL AVE	2	2	2- INCLUDED IN GROUP CABINET TABLE	2
HL-40-GA	IH 43 NB	IH 43 AT GARFIELD AVE	2	2	2 - INCLUDED IN GROUP CABINET TABLE	2
		TOTALS	4	4 *	0 *	4 *

TUNNEL LUMINAIRE MAINTENANCE

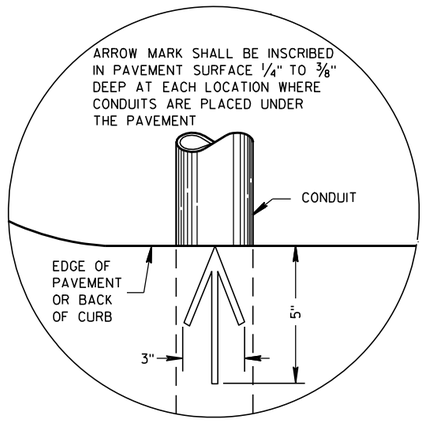
SPV.0060.01 LAMP DISPOSAL HIGH INTENSITY DISCHARGE *
SPV.0060.33 TO SPV.006 TUNNEL LUMINAIRE MAINTENANCE (VARIOUS)
SPV.0060.37 GROUP CLEAN TUNNEL LUMIANIRES

* ADDITIONAL QUANTITIES SHOWN ELSEWHERE

LABEL	TUNNEL	SPV.0060.01 LAMP DISPOSAL H.I.D. EACH	SPV.0060.33 TUNNEL 150 W EACH	SPV.0060.34 TUNNEL 200 W EACH	SPV.0060.35 TUNNEL 250 W EACH	SPV.0060.36 TUNNEL 400 W EACH	SPV.0060.37 TUNNEL GROUP CLEAN EACH
HL-40-QA	KILBOURN EB EXIT	40	0	10	0	30	195
HL-40-KI	KILBOURN NB ENTRANCE	27	15	0	4	8	56
HL-40-TX	MITCHELL IC TUNNEL #1 W-N	161	0	0	0	161	644
HL-40-TY	MITCHELL IC TUNNEL #2 W-N	151	0	0	0	151	604
HL-40-TZ	MITCHELL IC TUNNEL #3 N-W	178	0	0	0	178	712
HL-40-HO	HOWELL TUNNEL BOTH WAYS	75	15	0	0	60	373
	TOTALS	632 *	30	10	4	588	2584

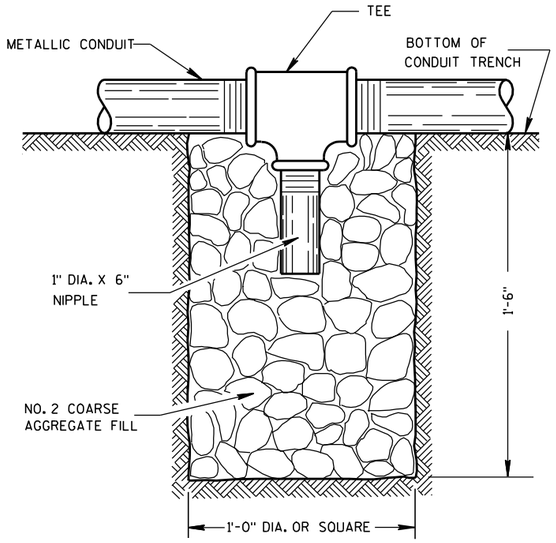
Standard Detail Drawing List

09B02-07	CONDUIT
09B04-10	PULL BOX
09C02-06	CONCRETE BASES, TYPES 1, 2 & 5
09C08-04	CONCRETE BASE, TYPE 7
09C09-04	CONCRETE BASE, TYPE 8
10A01-02	ELECTRICAL HANDHOLE WIRING
10A02-02	IDENTIFICATION PLAQUES LIGHT POLES
10A05-02	ELECTRICAL DETAILS GROUND MOUNT LIGHT POLES ISOLATED NEUTRAL SYSTEMS
10A06-02	ELECTRICAL DETAILS GROUND MOUNT LIGHT POLES GROUNDED NEUTRAL SYSTEMS
15C02-04A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-04B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C04-01	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C05-01	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40 M.P.H. OR LESS
15C12-03	TRAFFIC CONTROL FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)
15D12-02	TRAFFIC CONTROL, LANE CLOSURE, SPEEDS GREATER THAN 40 M.P.H.
15D14-01	TRAFFIC CONTROL, TWO LANE CLOSURE ON FREEWAY OR EXPRESSWAY, SHORT-TERM (LESS THAN 24 HOURS)
15D15-01	TRAFFIC CONTROL, EXIT AND ENTRANCE RAMP WITHIN LANE CLOSURE
15D16-01	TRAFFIC CONTROL, EXIT RAMP CLOSURE
15D27-01	TRAFFIC CONTROL, SHOULDER CLOSURE ON DIVIDED ROADWAY, SPEEDS GREATER THAN 40 MPH



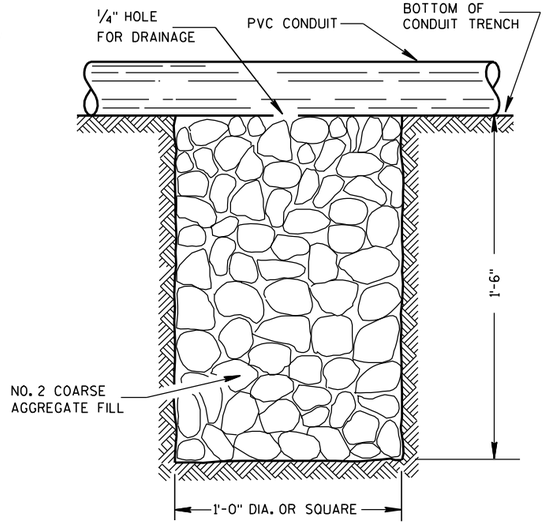
PLAN VIEW

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.

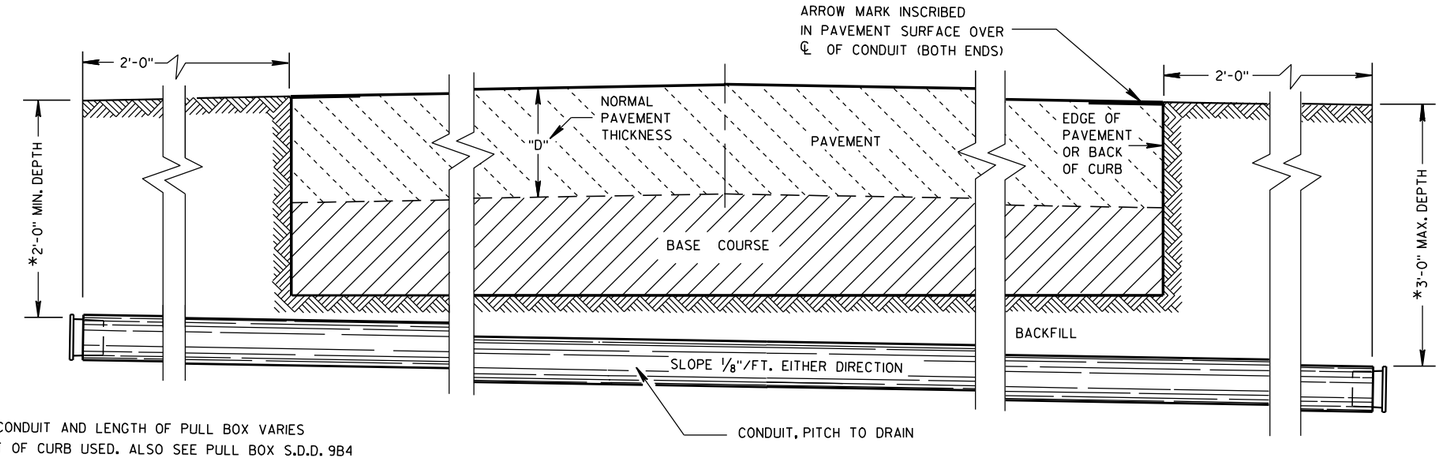
PRIOR TO CONDUIT ACCEPTANCE, CONDUIT CAPS OR PLUGS SHALL BE REMOVED, AND THE CAPS, PLUGS AND CONDUIT ENDS SHALL BE THOROUGHLY CLEANED AND THEN THE CAPS OR PLUGS REINSTALLED TO ENSURE THAT THE CAPS OR PLUGS CAN BE EASILY REMOVED IN THE FUTURE.

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

13

HWYS

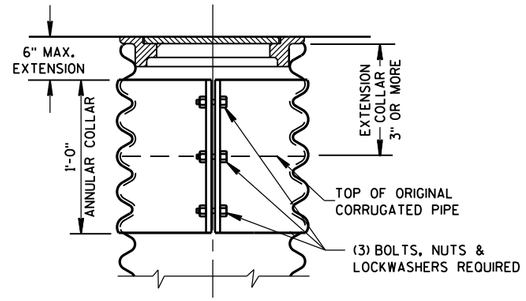
FHWA

TABLE OF NOMINAL DIMENSIONS AND WEIGHTS

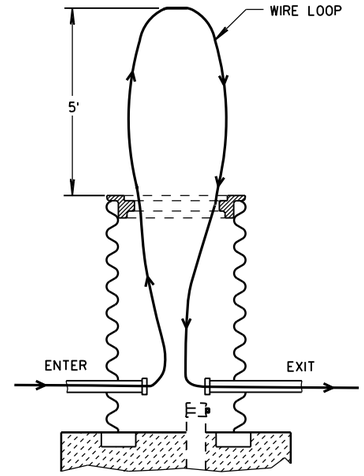
DIMENSION IN INCHES		CORRUGATED STEEL PIPE								
PIPE DIAMETER (INSIDE)	A	12	12	12	18	18	18	24	24	24
PIPE LENGTH **	B	24	30	36	24	30	36	36	42	48
WALL THICKNESS	C	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
COVER	D	10 1/4	10 1/4	10 1/4	16 1/4	16 1/4	16 1/4	22 1/4	22 1/4	22 1/4
FRAME	E	14 1/2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

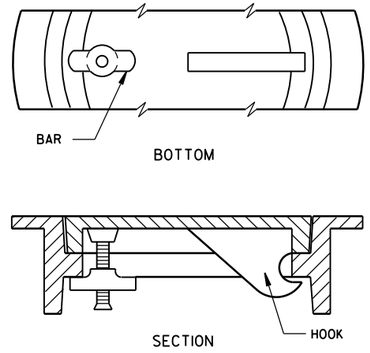
** NORMALLY USED LENGTHS. THE PROJECT ENGINEER SHALL DETERMINE IF PIPE LENGTHS, OTHER THAN THOSE SPECIFIED, SHALL BE USED, TO A MAXIMUM OF 48" (CONTINUOUS LENGTH, NON-SPLICED). THE ADDITIONAL LENGTH SHALL BE INCIDENTAL TO THE PULL BOX BID PRICE.



CORRUGATED PIPE EXTENDER

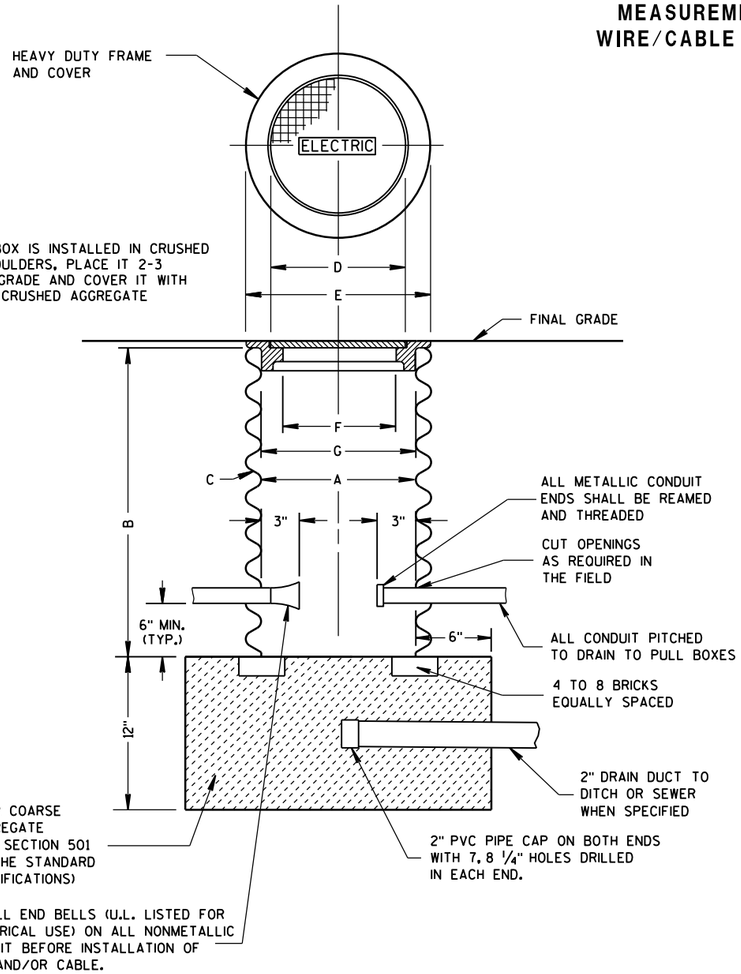


MEASUREMENT DETAIL FOR WIRE/CABLE IN THE PULL BOX



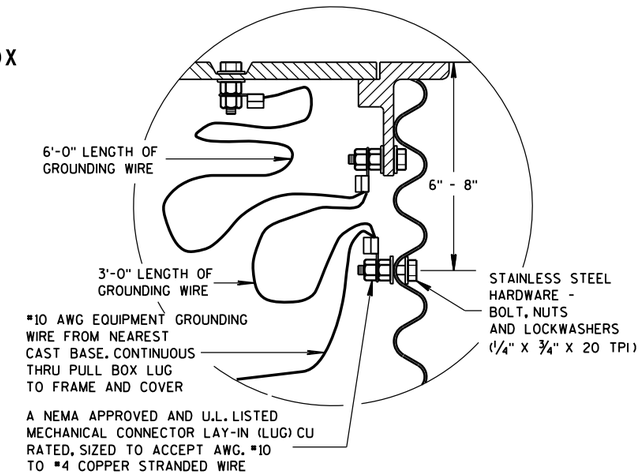
ALTERNATE COVER (LOCKING)

TIGHTENING BAR TYPE

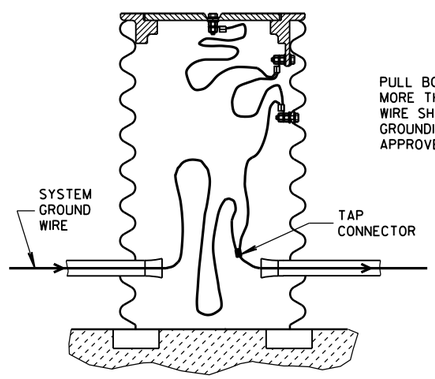


WHEN A PULL BOX IS INSTALLED IN CRUSHED AGGREGATE SHOULDERS, PLACE IT 2-3 INCHES BELOW GRADE AND COVER IT WITH 2-3 INCHES OF CRUSHED AGGREGATE

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.

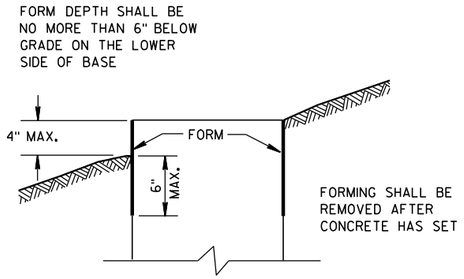
S.D.D. 9B2, "CONDUIT", APPLIES TO THIS DRAWING.

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	

6

S.D.D. 9 B 4-10



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.

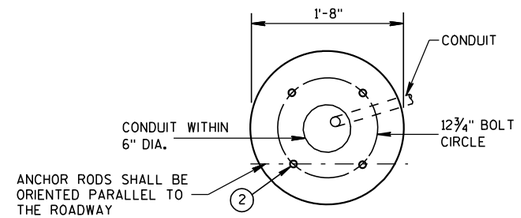
(4) (6) NO. 6 X 6'-8" BAR STEEL REINFORCEMENT.

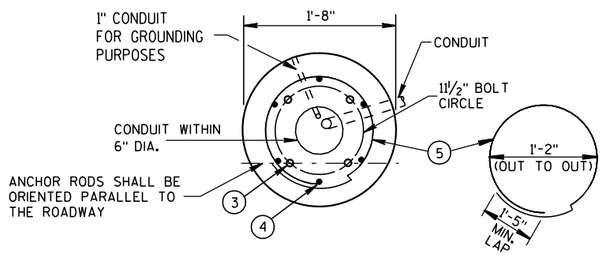
(5) (7) NO. 4 X 5'-1" BAR STEEL REINFORCEMENT @ 1'-0" C-C.

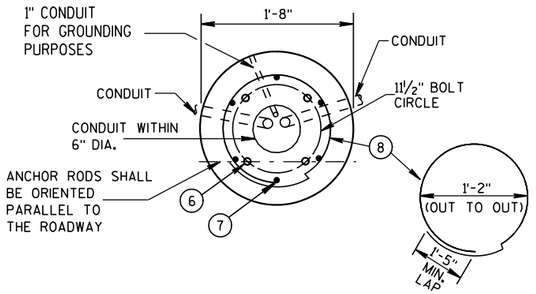
(6) (4) I" DIA. X 3'-6" ANCHOR RODS.

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

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



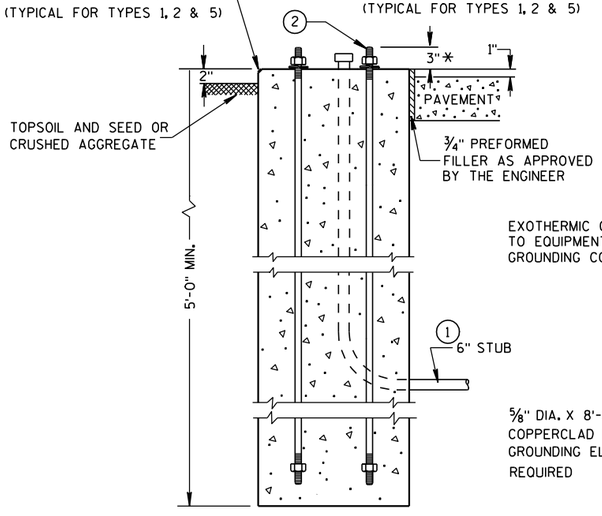




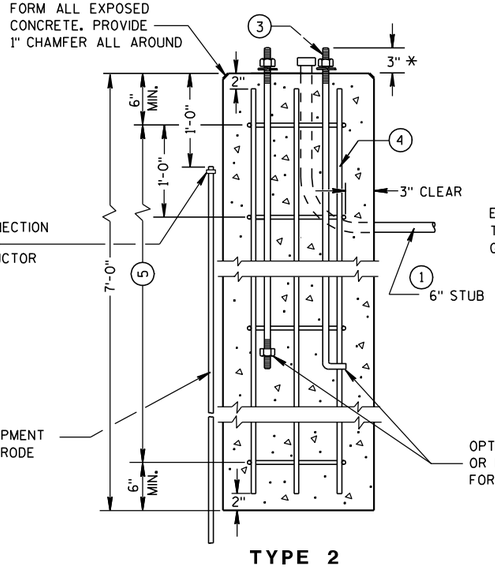
FORM ALL EXPOSED CONCRETE. PROVIDE 1" CHAMFER ALL AROUND

HALF SECTION IN UNPAVED AREA
(TYPICAL FOR TYPES 1, 2 & 5)

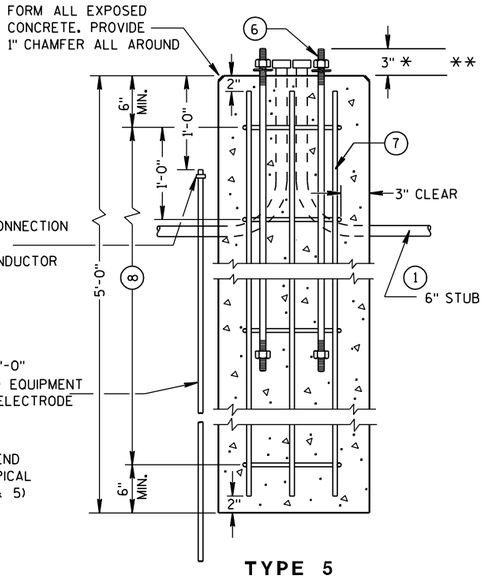
HALF SECTION IN PAVEMENT
(TYPICAL FOR TYPES 1, 2 & 5)



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
HWYS
FHWA

S.D.D. 9 C 2-6

S.D.D. 9 C 2-6

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.

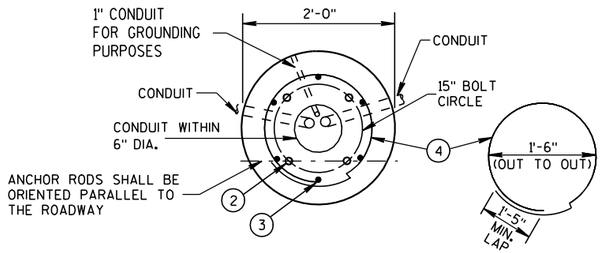
BAR STEEL REINFORCEMENT SHALL BE COATED WITH POWDERED EPOXY RESIN IN ACCORDANCE WITH SECTION 505 OF THE STANDARD SPECIFICATIONS (LATEST EDITION).

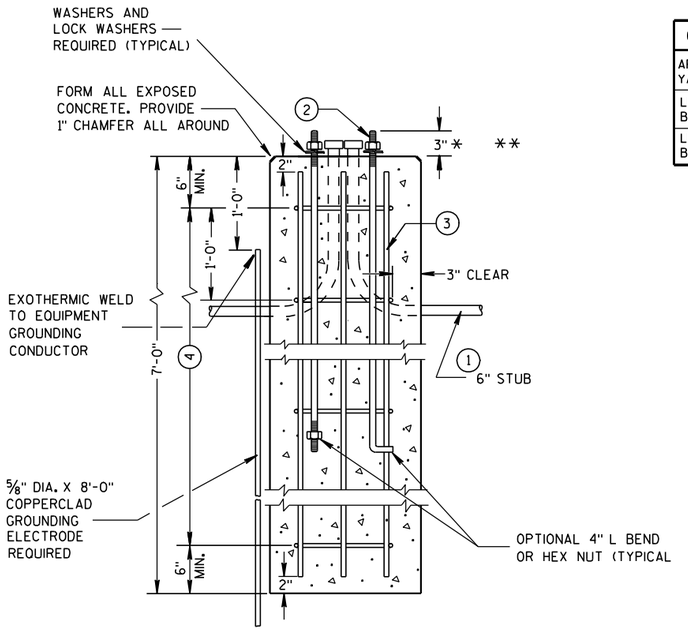
(1) THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE AND INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES. THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE THAT IS NOT INSTALLED BELOW THE TRAVELED WAY SHALL BE 18 INCHES. THE MAXIMUM DEPTH OF ALL CONDUIT SHALL BE 36 INCHES EXCEPT WITH WRITTEN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

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

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

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



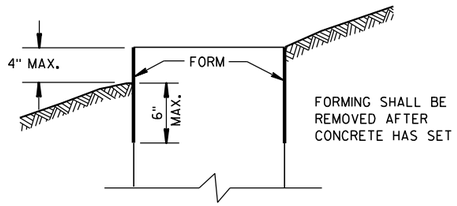


CONCRETE BASE, TYPE 7 (FOR 40' LIGHT POLES)

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

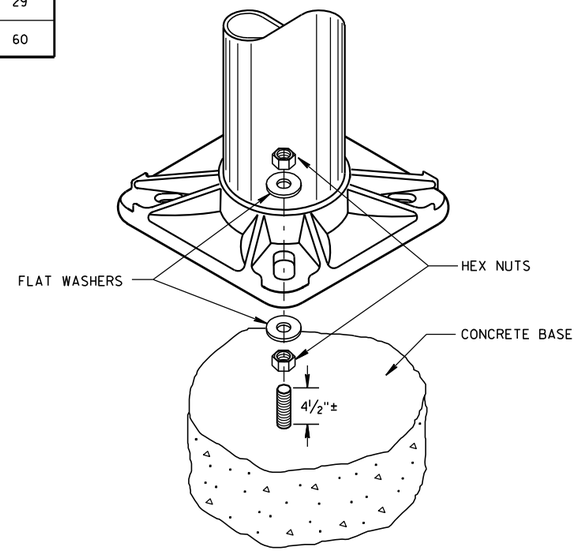
** FOR NONBREAKAWAY INSTALLATIONS, 4½" ± ANCHOR ROD PROJECTION WITH THE USE OF LEVELING NUTS. RODENT SCREEN REQUIRED.

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	0.8
LBS. OF HOOP BAR STEEL	29
LBS. OF VERTICAL BAR STEEL	60



NON-BREAKAWAY INSTALLATION (LEVELING NUT)

CONCRETE BASE, TYPE 7

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

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

FHWA

6

S.D.D. 9 C 8-4

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.

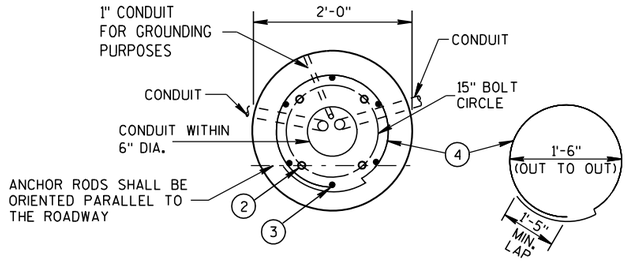
BAR STEEL REINFORCEMENT SHALL BE COATED WITH POWDERED EPOXY RESIN IN ACCORDANCE WITH SECTION 505 OF THE STANDARD SPECIFICATIONS (LATEST EDITION).

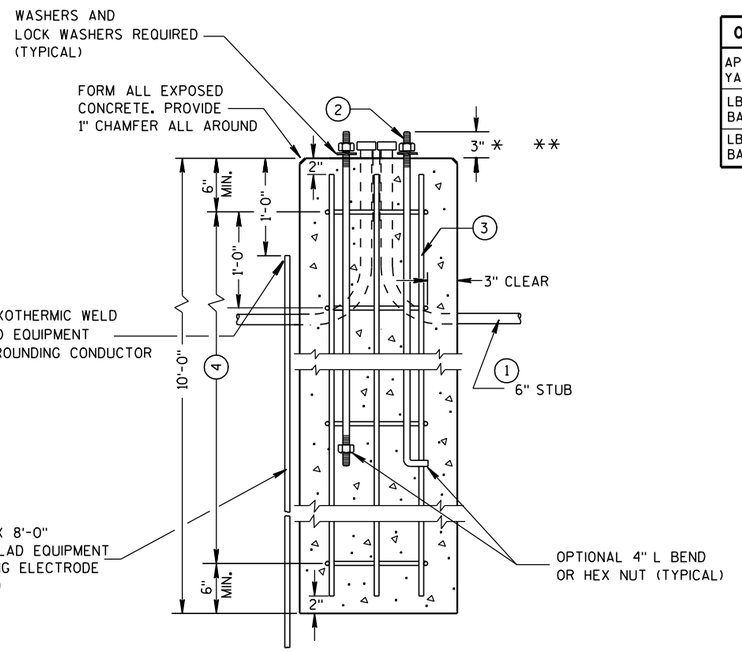
(1) THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE AND INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES. THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE THAT IS NOT INSTALLED BELOW THE TRAVELED WAY SHALL BE 18 INCHES. THE MAXIMUM DEPTH OF ALL CONDUIT SHALL BE 36 INCHES EXCEPT WITH WRITTEN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



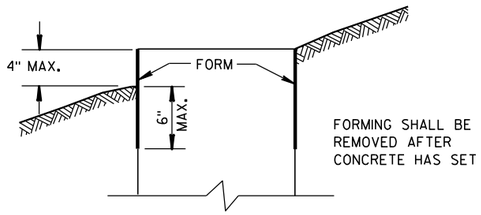


CONCRETE BASE, TYPE 8 (FOR 50' LIGHT POLES)

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

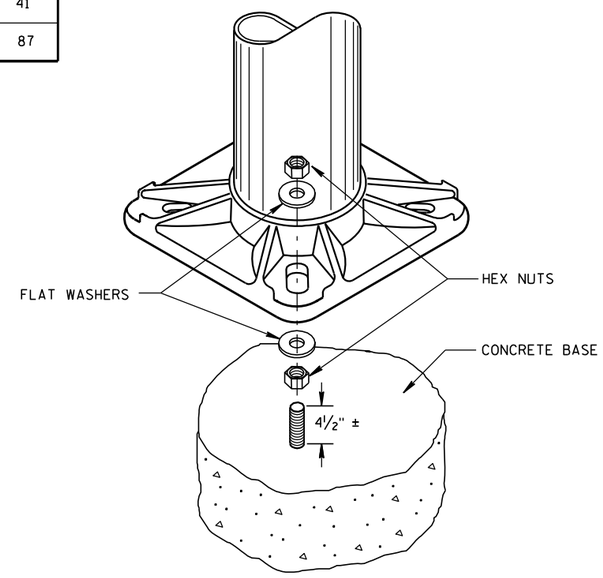
** FOR NONBREAKAWY INSTALLATIONS, 4½" ± ANCHOR ROD PROJECTION WITH THE USE OF LEVELING NUTS. RODENT SCREEN REQUIRED.

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



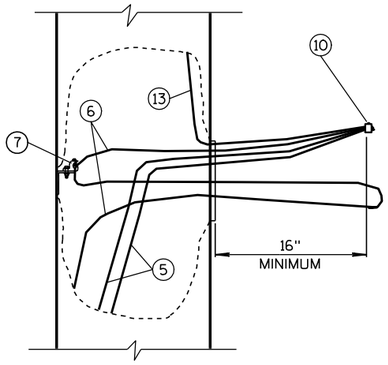
NON-BREAKAWAY INSTALLATION (LEVELING NUT)

CONCRETE BASE, TYPE 8

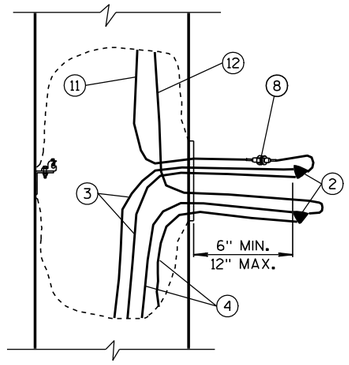
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
3/3/10 DATE
/S/ Joanna L. Bush STATE ELECTRICAL ENGI
HWYS
FHWA

6
S.D.D. 9 C 9-4

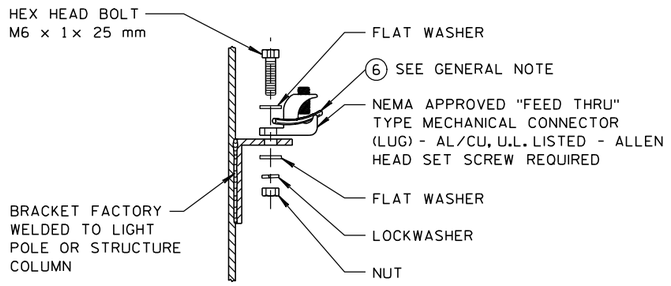


EQUIPMENT GROUNDING CONDUCTOR SLACK



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

TYPICAL CONDUCTOR SLACK AT HANDHOLES



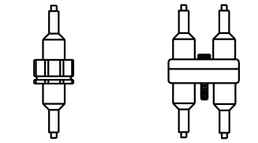
HANDHOLE GROUNDING LUG

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

CONDUCTOR COLOR CODES

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

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



FUSE ASSEMBLIES

GENERAL NOTES

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

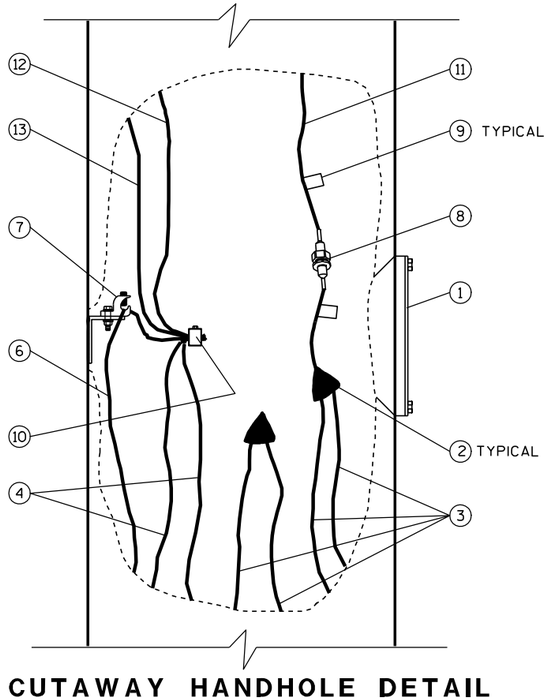
USE THIS DETAIL IN CONJUNCTION WITH THE ELECTRICAL DETAILS FOR THE APPLICATION, WHICH MAY BE A LIGHT POLE, SIGN BRIDGE, ETC.

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

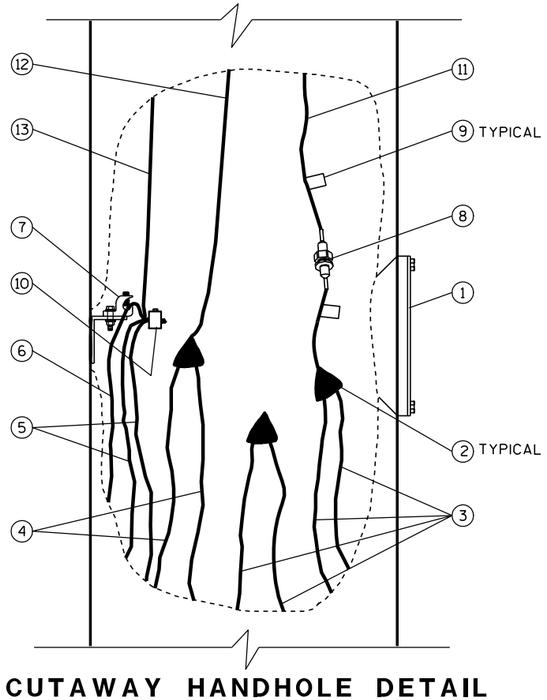
THREE POLE WIRES ARE SHOWN FOR A SINGLE LUMINAIRE LIGHT POLE. THREE ADDITIONAL POLE WIRES REQUIRED FOR TWIN LUMINAIRE LIGHT POLES ARE OMITTED FROM THE DRAWING FOR CLARITY. IN THE TWIN POLE CASE, BUNDLE EACH SET OF THREE WIRES WITH A NYLON CABLE TIE.

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

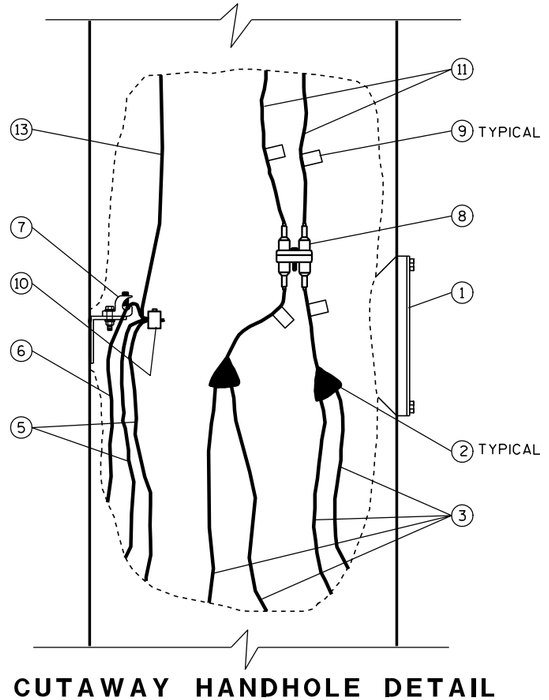
CIRCUIT TAGS SHALL BE INSTALLED ONLY WHERE REQUIRED IN THE SPECIAL PROVISIONS.



CUTAWAY HANDHOLE DETAIL
GROUNDED NEUTRAL SYSTEMS
1-φ



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



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

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

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

ELECTRICAL HANDHOLE WIRING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/25/2010 DATE
/S/ John Corbin STATE ELECTRICAL ENGI
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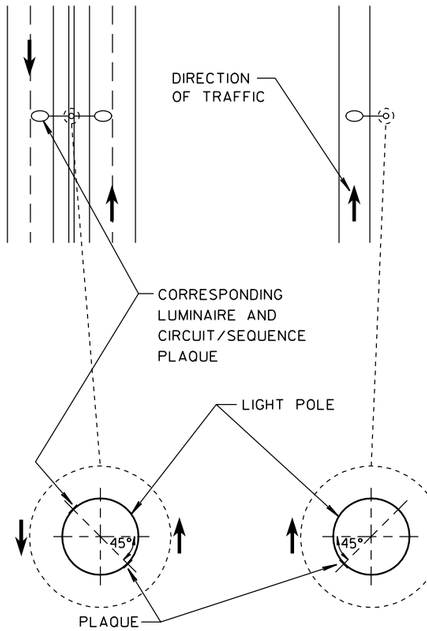
S.D.D. 10 A 1-2



MEDIAN POLE SINGLE ARM POLE

LOCATION OF LIGHT POLE CIRCUIT/SEQUENCE PLAQUE

GENERAL NOTES

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

PLAQUES SHALL BE INCIDENTAL TO ALL NEW INSTALLATIONS.

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

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

GALVANIZED STEEL SHAFT - STAINLESS STEEL POP RIVETS

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

ALUMINUM SHAFTS - ALUMINUM POP RIVETS

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

PLAQUE MATERIALS:

BASE - SHEET ALUMINUM, 0.060" THICK.

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

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

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

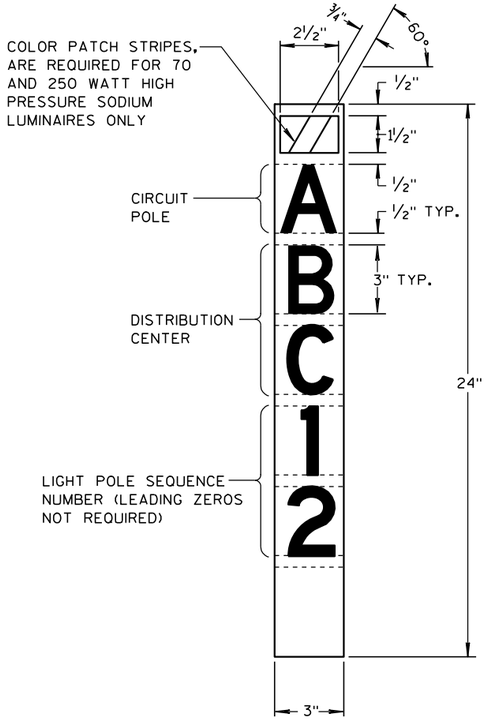
COLOR PATCHES - VARIOUS COLORS, SELF-ADHESIVE VINYL SHEETING

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

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

COLOR PATCH CODE FOR HPS LUMINAIRES

1000 WATT - NO PATCH
400 WATT - ORANGE
310 WATT - BLUE
250 WATT - ORANGE WITH WHITE STRIPE
200 WATT - RED
150 WATT - GREEN
100 WATT - BROWN
70 WATT - BROWN WITH WHITE STRIPE



LIGHT POLE CIRCUIT/SEQUENCE PLAQUE

IDENTIFICATION PLAQUES LIGHT POLES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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10/25/2010 — DATE
/S/ John Corbin — STATE ELECTRICAL ENGI
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GENERAL NOTES

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

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

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

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

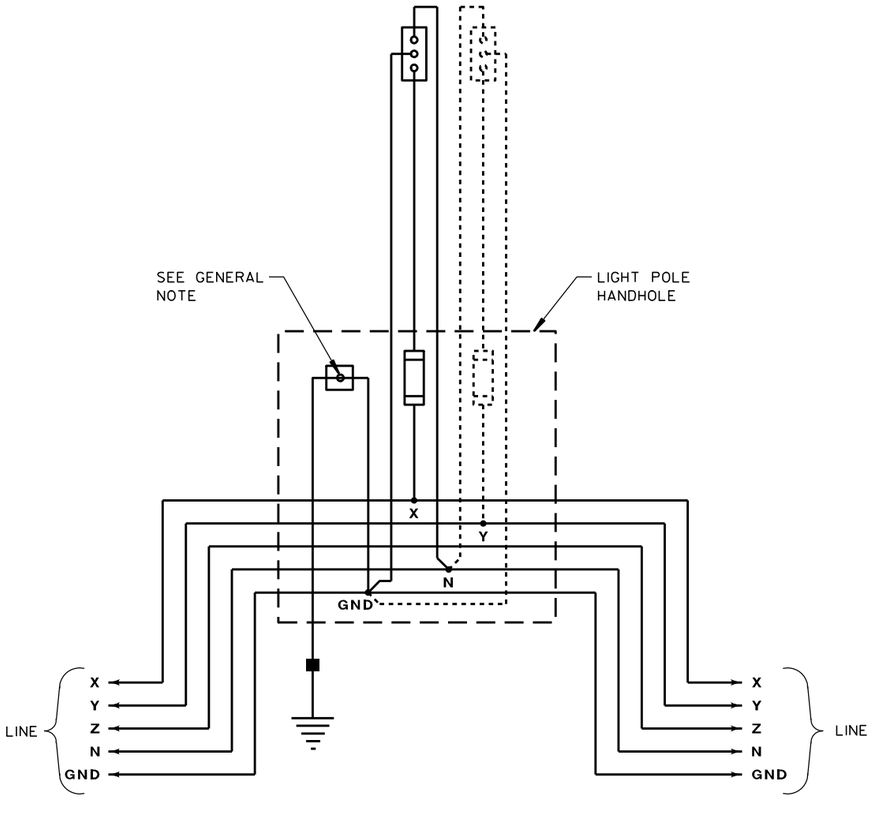
THE PLANS WILL SHOW WHICH CIRCUIT LEG(S) ARE CONNECTED TO EACH INSTALLATION.

HANDHOLE FUSE SCHEDULES

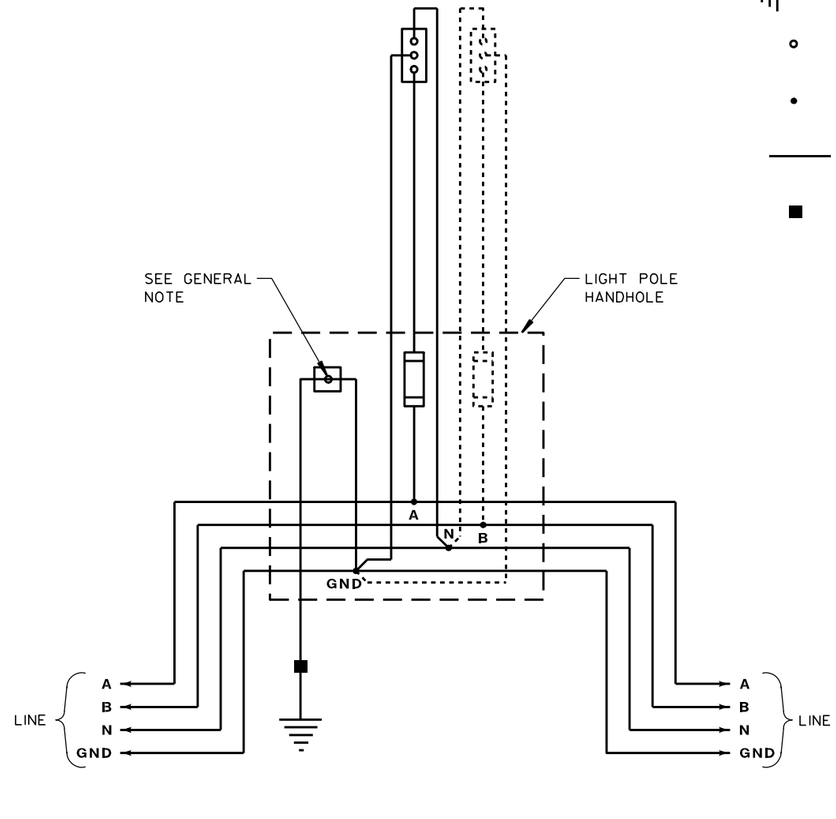
LINE VOLTAGE	BALLAST WATTAGE	
φ-GROUND	70-200 W	250-400 W
120 VAC	5 A	10 A
240 VAC	5 A	5 A
277 VAC	5 A	5 A
480 VAC	3 A	5 A

LEGEND

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



TYPICAL WIRING DIAGRAM
ISOLATED NEUTRAL SYSTEM
3-φ 208Y/120VAC OR 480Y/277VAC 4 WIRE



TYPICAL WIRING DIAGRAM
ISOLATED NEUTRAL SYSTEM
1-φ 120/240VAC OR 240/480VAC 3 WIRE

ELECTRICAL DETAILS
GROUND MOUNT LIGHT POLES
ISOLATED NEUTRAL SYSTEM

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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S.D.D. 10 A 5-2

GENERAL NOTES

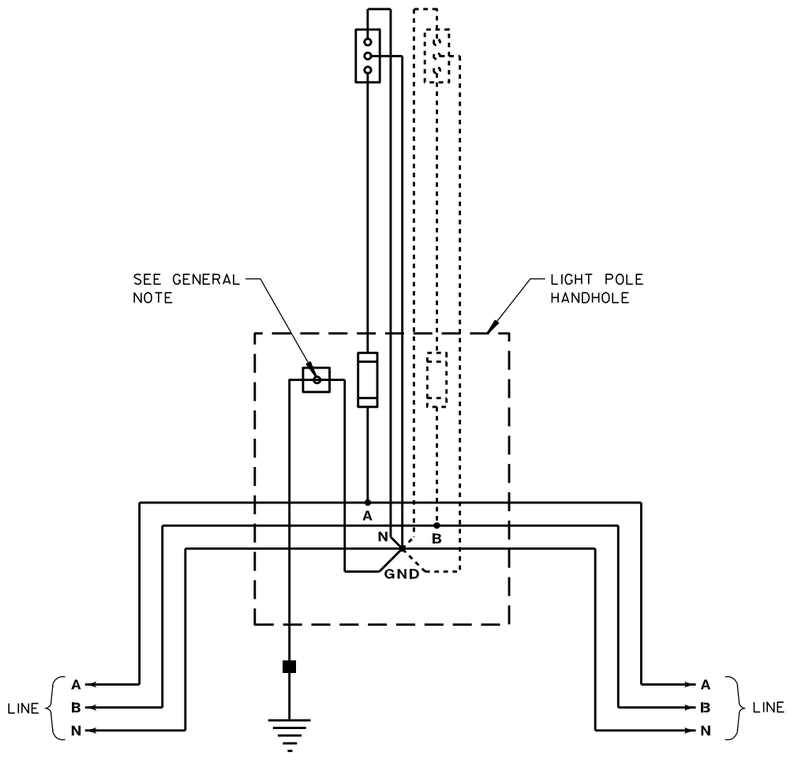
DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN IN THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

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

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

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

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



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

HANDHOLE FUSE SCHEDULES

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

LEGEND

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

ELECTRICAL DETAILS
GROUND MOUNT LIGHT POLES
GROUNDED NEUTRAL SYSTEMS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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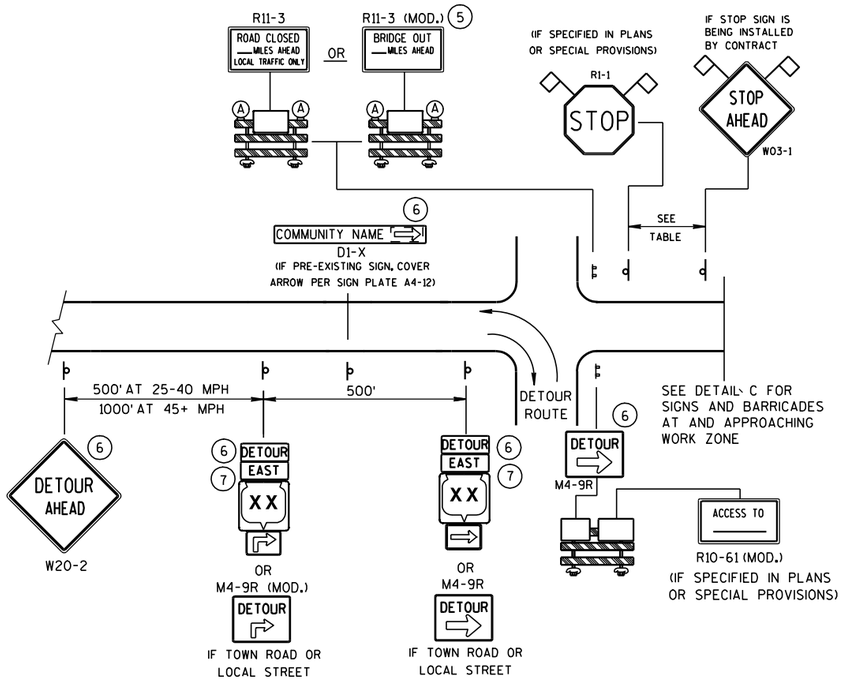
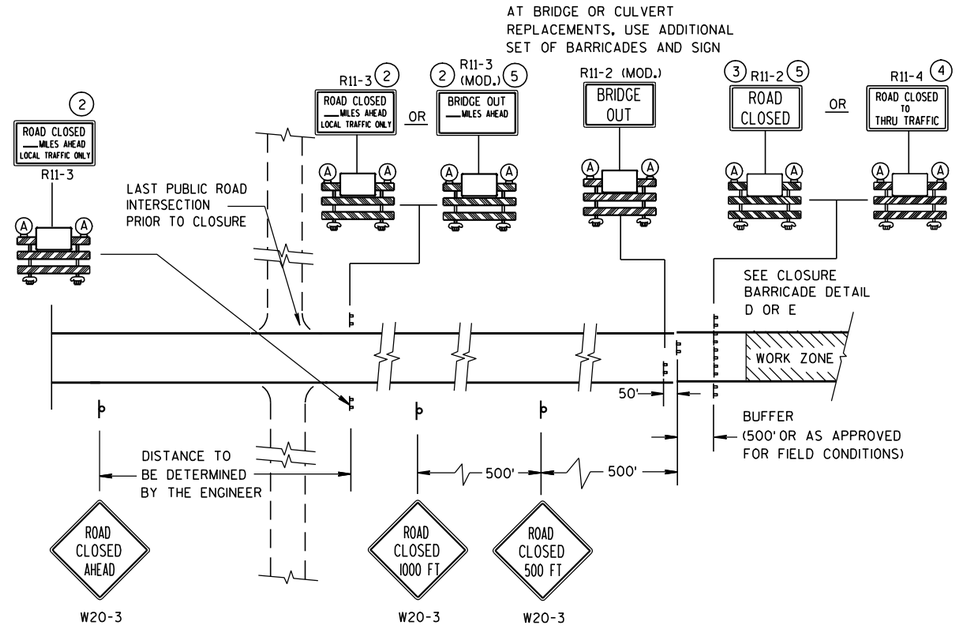
S.D.D. 10 A 6-2



DETAIL A

MAINLINE CLOSURE WITH POSTED DETOUR

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

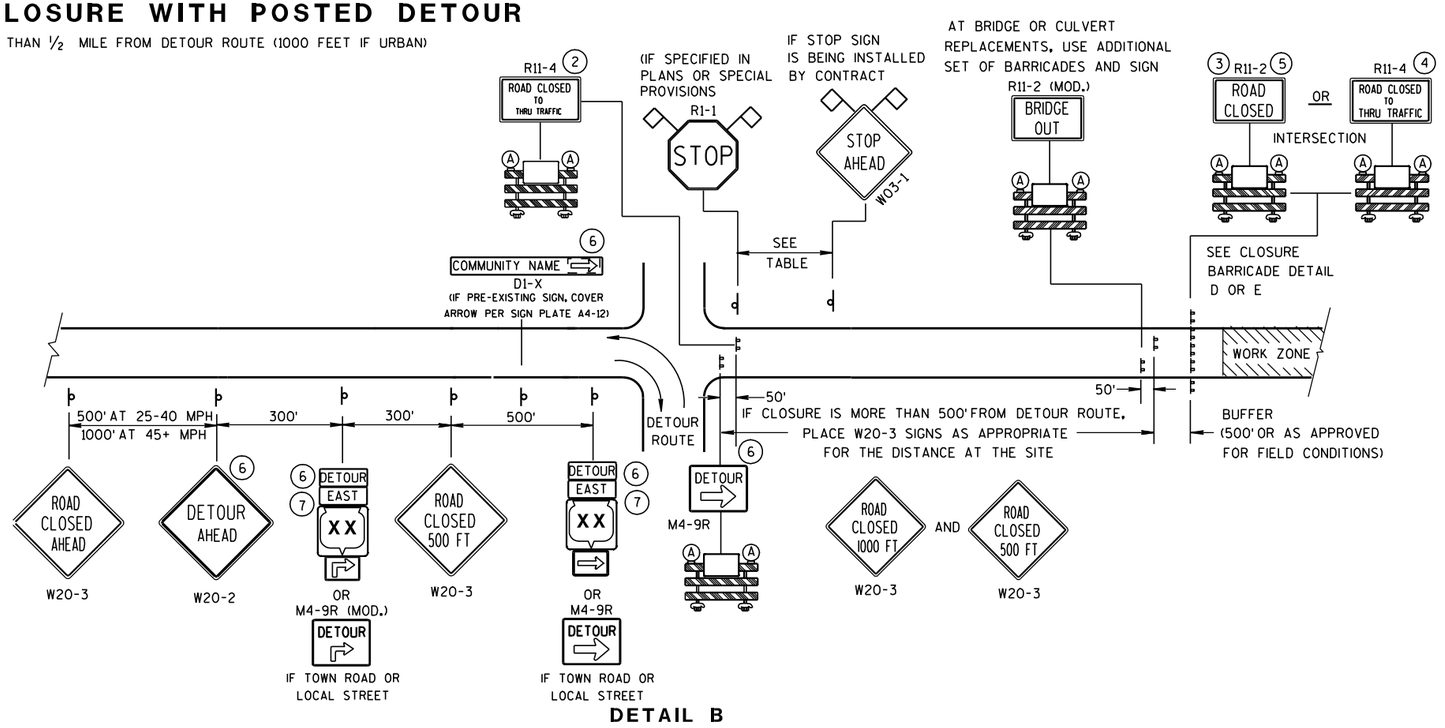


DETAIL C

MAINLINE CLOSURE, NO POSTED DETOUR

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

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



DETAIL B

MAINLINE CLOSURE WITH POSTED DETOUR

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

LEGEND

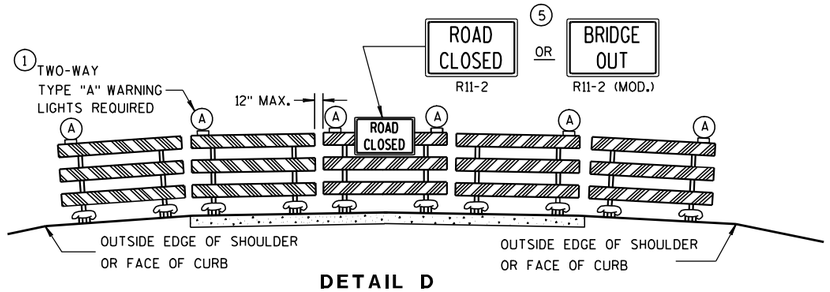
- POST MOUNTED SIGN
- TYPE III BARRICADES
- (A) TYPE "A" LOW INTENSITY FLASHING WARNING LIGHT (FOR NIGHT USE)
- WORK ZONE
- DETOUR / EAST — M4-8 / M3-X
- XX — M1-4; COUNTY XX — M1-5A; XX — M1-6
- M05-1; M06-1
- FLAGS, 16" X 16" MIN., (ORANGE)

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

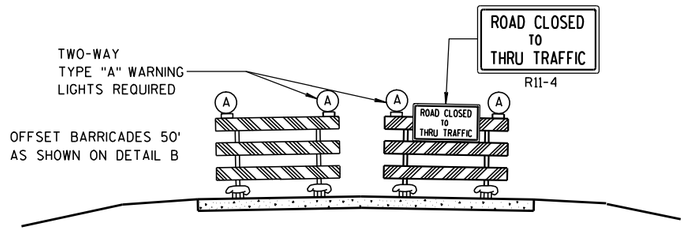
S.D.D. 15 C 2-4a



DETAIL D

ROAD CLOSURE BARRICADE DETAIL

APPROACH VIEW



DETAIL E

LANE CLOSURE BARRICADE DETAIL

APPROACH VIEW

SEE SDD 15C2-4a FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

9/16/03
DATE

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

FHWA

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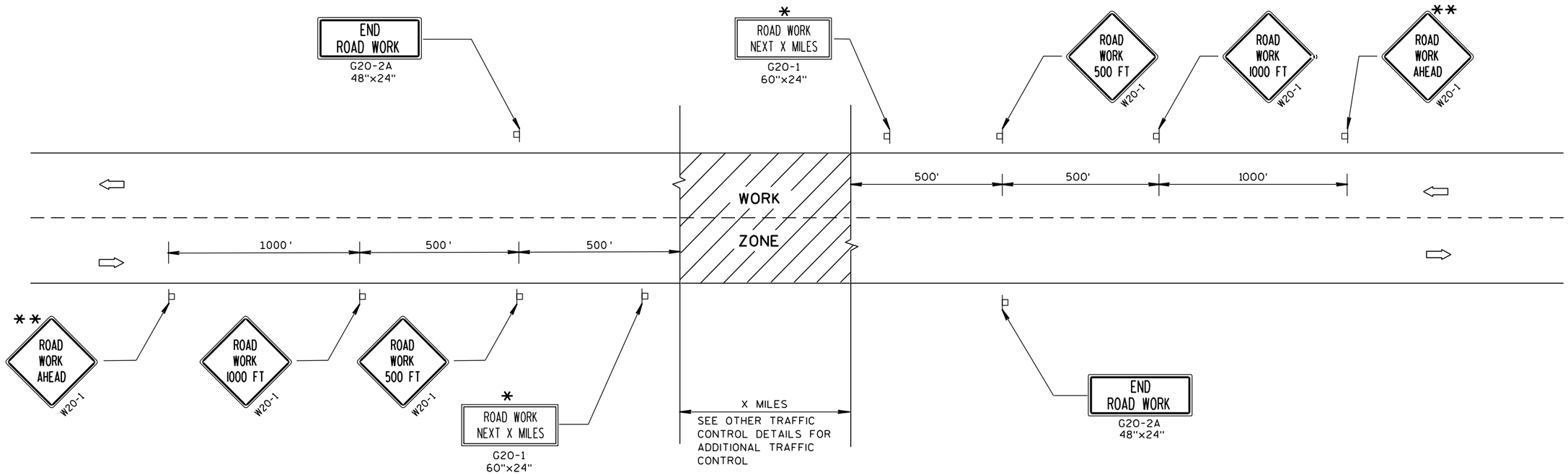
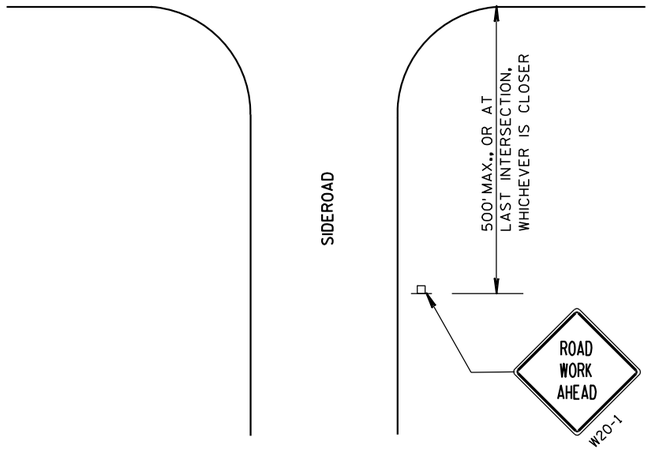
S.D.D. 15 C 2-4b



TYPICAL SIDEROAD APPROACH WARNING SIGN DETAIL



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 MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.

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.

* OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS.

** PLACE ADDITIONAL W20-1 "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA OR SIGNING.

LEGEND

POST MOUNTED SIGN

DIRECTION OF TRAFFIC FLOW

TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER 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

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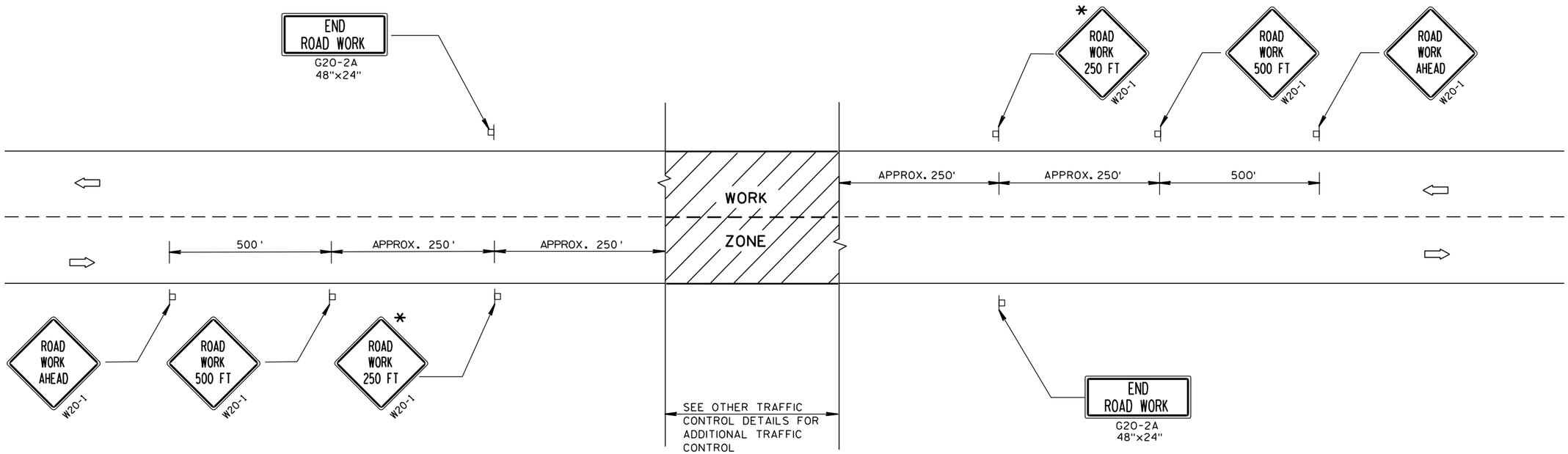
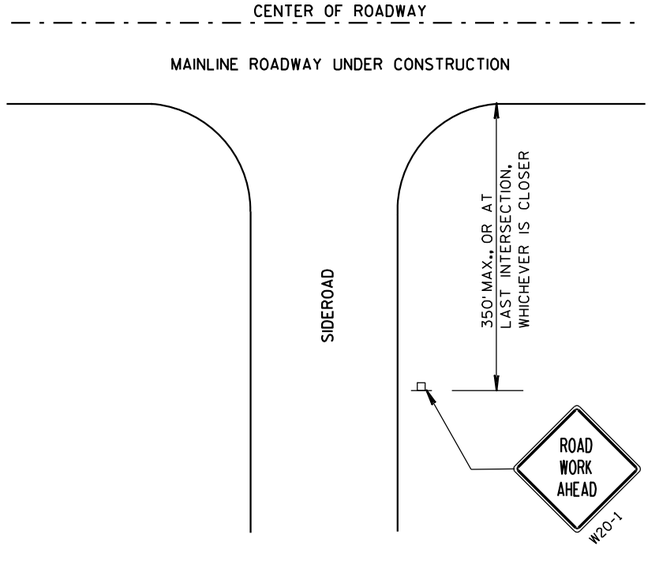
S.D.D. 15 C 4-1



TYPICAL SIDEROAD APPROACH WARNING SIGN DETAIL



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.

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

TWO-LANE ROADWAY

SYMBOLS

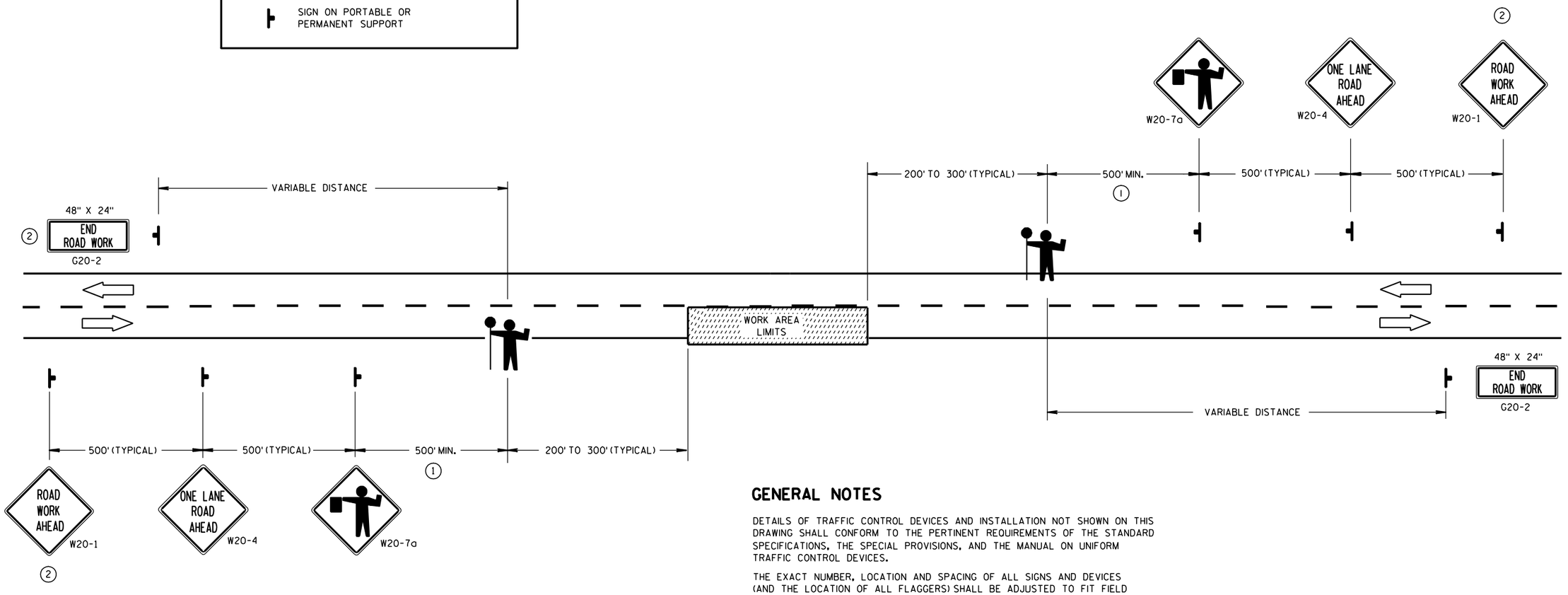
WORK AREA

FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

SIGN ON PORTABLE OR PERMANENT SUPPORT

W3-4

USE OF THE "BE PREPARED TO STOP" SIGN IS OPTIONAL. WHEN USED, THIS SIGN SHALL BE LOCATED BETWEEN THE W20-7a AND W20-4 SIGNS. A 500' TYPICAL SPACING SHALL BE PROVIDED BETWEEN THE SIGNS.



(1) FOR A MOVING WORK OPERATION,
SIGNING FOR BOTH DIRECTIONS SHALL BE REESTABLISHED (AS SIMULTANEOUSLY AS PRACTICAL) AT APPROXIMATELY 3500 FOOT INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.

(2) SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.

GENERAL NOTES

DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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

THE FIRST ADVANCE WARNING SIGN SHOULD TYPICALLY BE LOCATED IN ADVANCE OF THE ANTICIPATED TRAFFIC BACKUP OR QUEUE.

WHEN A SIDE ROAD OR RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT, THE "FLAGGER AHEAD", THE "ROAD WORK AHEAD" AND THE ONE LANE ROAD AHEAD" SIGNS SHALL BE COVERED OR REMOVED AND THE HIGHWAY RESTORED TO NORMAL OPERATION.

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

TRAFFIC CONTROL FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

9/5/06 — DATE

/S/ Thomas N. Nathaam — STATE TRAFFIC ENGINEER

FHWA

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S.D.D. 15 C 12-3

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.

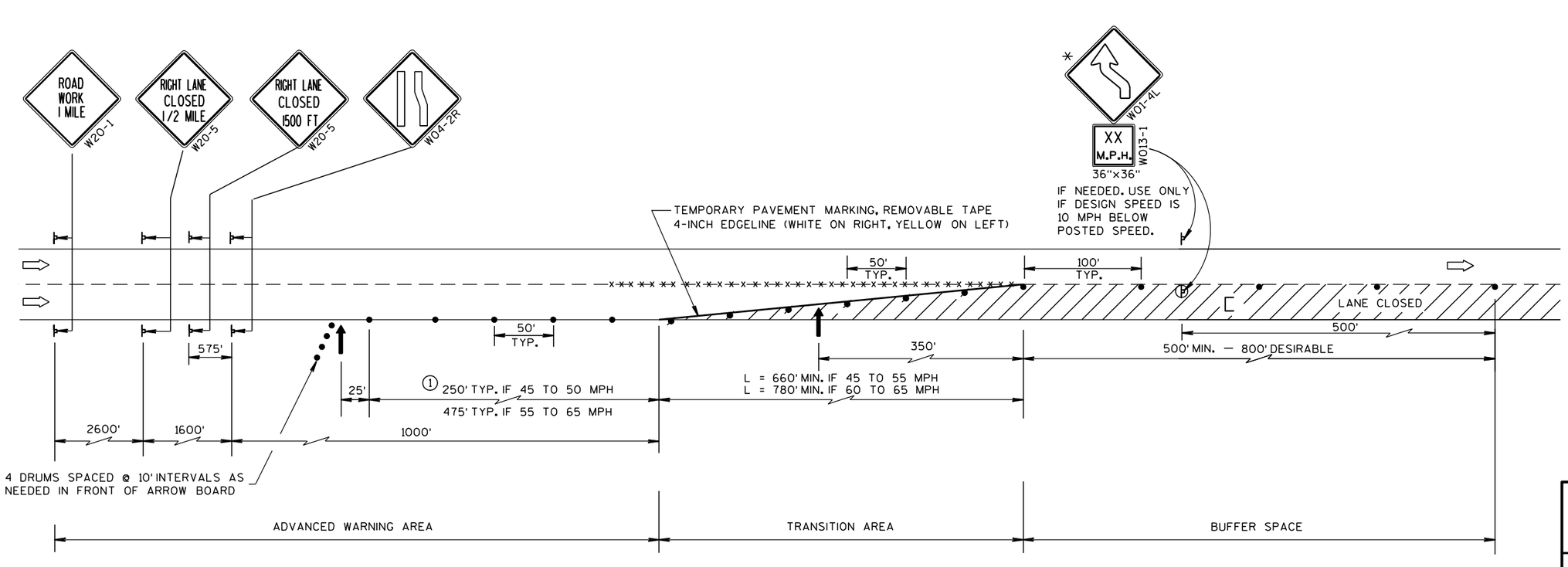
WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

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 27 C
FHWA

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S.D.D. 15 D 12-2

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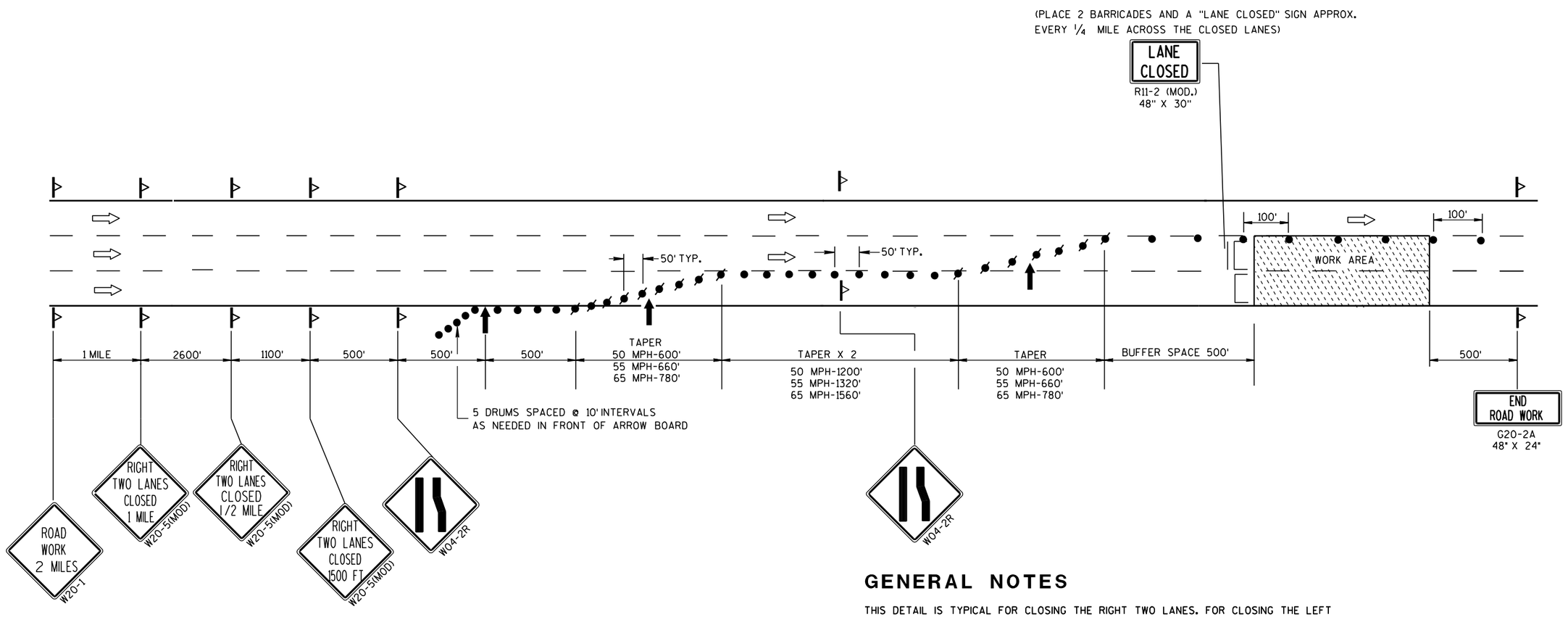
S.D.D. 15 D 12-2



LEGEND

- DRUM WITH/WITHOUT WARNING LIGHT, TYPE C (STEADY BURN)
- SIGN ON POST OR PORTABLE SUPPORT
- FLASHING ARROW BOARD
- TYPE III BARRICADE (8' EQUIVALENT) WITH/WITHOUT SIGN
- DIRECTION OF TRAFFIC FLOW

GENERAL NOTES

THIS DETAIL IS TYPICAL FOR CLOSING THE RIGHT TWO LANES. FOR CLOSING THE LEFT TWO LANES, REVERSE THE TRAFFIC CONTROL.

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

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

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

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

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

W20-1 AND G20-2A SIGNS ARE NOT REQUIRED IF THE LANE CLOSURE IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT.

CONSIDER GEOMETRICS WHEN LOCATING SIGNS AND ARROWBOARDS SO THE APPROACHING DRIVER HAS A CLEAR VIEW OF THE ARROWBOARDS AND LANE CLOSURE DRUMS FOR A MINIMUM 1500 FEET IN FRONT OF DRUMS.

WHEN A RAMP OR SIDE ROAD INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

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

CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

TRAFFIC CONTROL, TWO LANE CLOSURE ON FREEWAY OR EXPRESSWAY, SHORT-TERM (LESS THAN 24 HOURS)

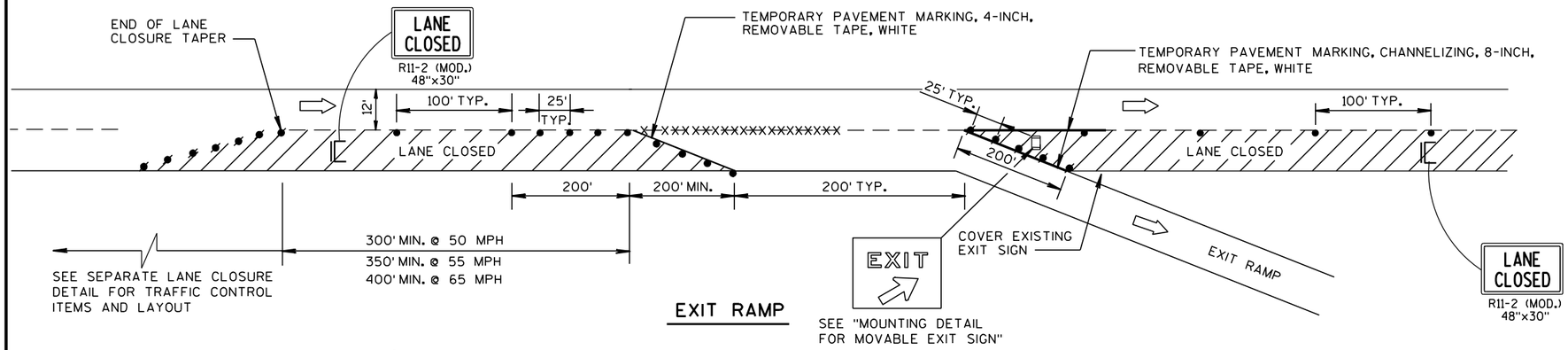
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

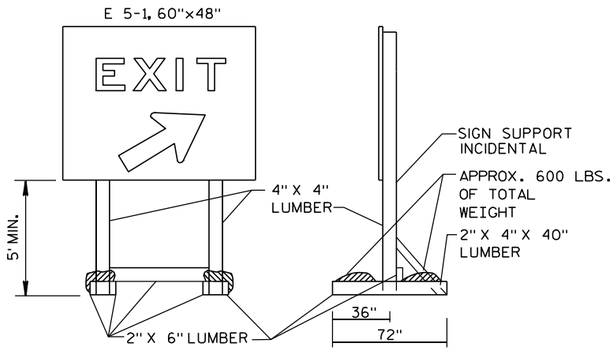
5/23/2000
DATE

/S/ Chester J. [illegible]
CHIEF SIGNS AND MAR 28 INEER

FHWA

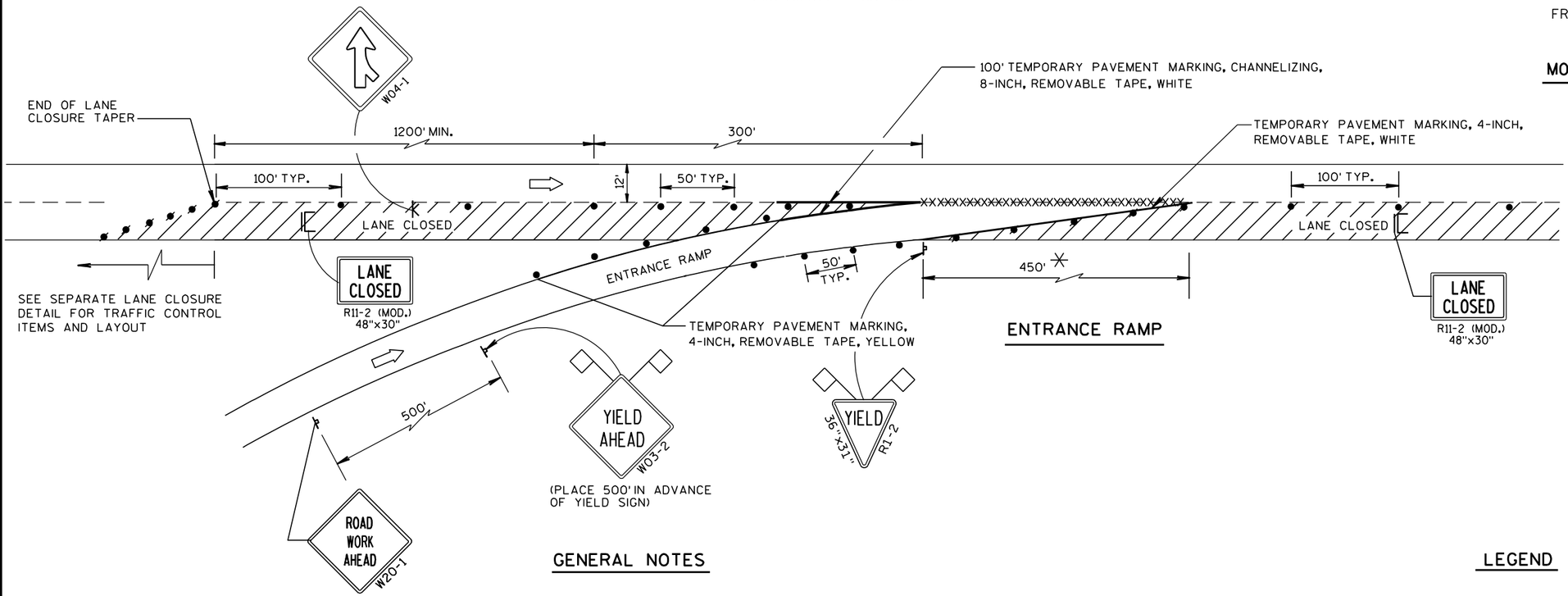


EXIT RAMP



NOTE: ALL LUMBER DIMENSIONS ARE NOMINAL

MOUNTING DETAIL FOR MOVABLE EXIT SIGN



ENTRANCE RAMP

GENERAL NOTES

THE INSTALLATIONS SHOWN ON THIS SHEET ARE TYPICAL EXAMPLES AND ARE NOT INTENDED TO REPRESENT ANY PARTICULAR RAMP. AT SPECIFIC FIELD LOCATIONS, SIMILAR INSTALLATIONS SHALL BE USED AND ADJUSTED TO THE GEOMETRICS OF THE RAMP AS COORDINATED WITH THE ENGINEER.

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

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET, (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.

"WO" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.

SEE SEPARATE LANE CLOSURE DETAIL FOR TYPICAL SPACING OF TYPE III BARRICADES AND R11-2 (MOD.) "LANE CLOSED" SIGNS.

YIELD SIGN AND WARNING SIGNS ON ENTRANCE RAMP ARE ALSO APPROPRIATE FOR CLOSURE OF THE MAINLINE LEFT LANE. OMIT THE YIELD SIGN IF MORE THAN ONE LANE REMAINS OPEN ON THE MAINLINE AND THE RAMP TAPER IS AT LEAST AS LONG AS THE NORMAL ENTRANCE RAMP TAPER AT THE SITE.

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.

IF INDICATED IN MISCELLANEOUS QUANTITIES, SUBSTITUTE FLEXIBLE TUBULAR MARKERS FOR DRUMS IN THE GORE BETWEEN THE ENTRANCE RAMP AND MAINLINE TRAFFIC.

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.

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

✳ LENGTH OF OPENING MAY BE REDUCED TO 150 FEET DURING STAGING OF WORK IN IMMEDIATE AREA OF RAMP TAPER.

LEGEND

- POST MOUNTED SIGN
- SIGN ON PORTABLE SUPPORT
- TRAFFIC CONTROL, DRUM
- TRAFFIC CONTROL, DRUM WITH WARNING LIGHT, TYPE C (STEADY-BURN)
- REMOVING PAVEMENT MARKING (SEE GENERAL NOTES)
- TYPE III BARRICADE (8' EQUIVALENT) WITH SIGN
- FLAGS, 16"x16" MIN., ORANGE
- DIRECTION OF TRAFFIC FLOW

TRAFFIC CONTROL, EXIT AND ENTRANCE RAMP WITHIN LANE CLOSURE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
5/24/2000 DATE
/S/ Chester J. [illegible]
CHIEF SIGNS AND MARKINGS ENGINEER
FHWA

S.D.D. 15 D 15-1

SYMBOLS

IC/C	TYPE III BARRICADE (8' EQUIVALENT) WITH/WITHOUT SIGN
•	DRUM
⊢	POST MOUNTED SIGN
(A)	WARNING LIGHT, TYPE A (FLASHING)
⇨	DIRECTION OF TRAFFIC

GENERAL NOTES

THIS RAMP CLOSURE DETAIL IS TYPICAL FOR CLOSING A RIGHT SIDE EXIT RAMP. FOR A LEFT SIDE EXIT RAMP, REVERSE THE TRAFFIC CONTROL.

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

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

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

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS 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.

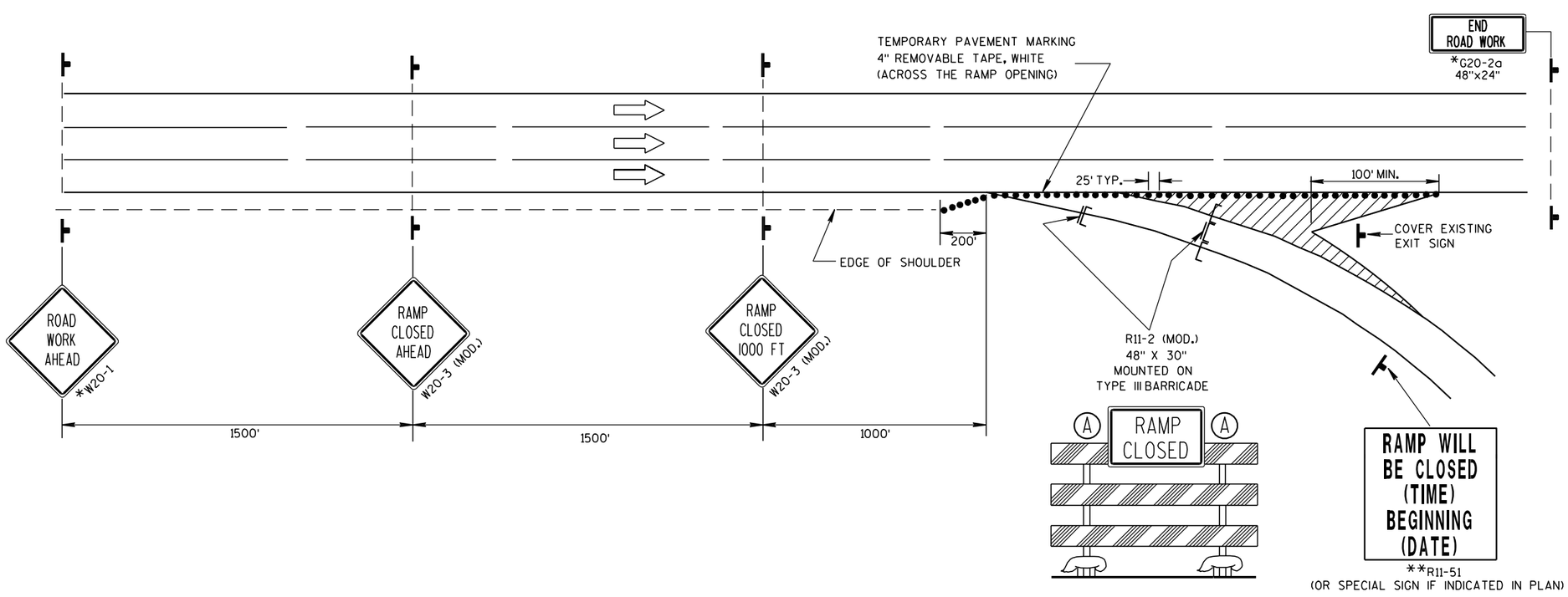
PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF RAMP CLOSURE IS TO BE IN PLACE FOR 7 OR MORE CONTINUOUS DAYS AND NIGHTS.

WORK AREAS WITH A DROPOFF ALONG THE EDGE OF AN OPEN TRAVEL LANE SHALL BE LEVELED WITH TEMPORARY FILL WHEN THE CONTRACTOR IS NOT WORKING ADJACENT TO THE TRAVEL LANE. DRUMS SHALL BE PLACED ENTIRELY OUTSIDE THE TRAVEL LANE, ALLOWING THE FULL UNOBSTRUCTED LANE WIDTH, WHEN THE WORK IS NOT IN PROGRESS.

WHERE MEDIAN BARRIER IS IN PLACE, SIGNS SHOWN ON LEFT SIDE OF ROADWAY MAY BE OMITTED FOR RIGHT SIDE RAMP CLOSURES OF LESS THAN 12-HOUR DURATION.

*W20-1 AND G20-2A SIGNS ARE NOT REQUIRED IF THE RAMP CLOSURE IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT.

**USE THE "RAMP WILL BE CLOSED" SIGN IF INDICATED IN MISCELLANEOUS QUANTITIES. PLACE 10 CALENDAR DAYS PRIOR TO CLOSURE OR AS DIRECTED BY THE ENGINEER. SEE WISCONSIN STANDARD SIGN PLATES FOR SIGN LAYOUT.



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TRAFFIC CONTROL, EXIT RAMP CLOSURE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

5/23/2000
DATE

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

FHWA

SYMBOLS

- TRAFFIC CONTROL DRUM
- POST MOUNTED SIGN
- DIRECTION OF TRAFFIC FLOW
- ARROW BOARD IN CAUTION MODE

GENERAL NOTES

THIS DETAIL IS TYPICAL FOR CLOSING THE RIGHT SHOULDER. FOR CLOSING THE LEFT SHOULDER, REVERSE THE TRAFFIC CONTROL.

THIS DETAIL MAY BE USED FOR DIVIDED ROADWAYS WITH ANY NUMBER OF TRAVEL LANES.

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

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

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FHWA'S MANUAL OF STANDARD HIGHWAY SIGNS OR THE WISCONSIN STANDARD SIGN PLATES.

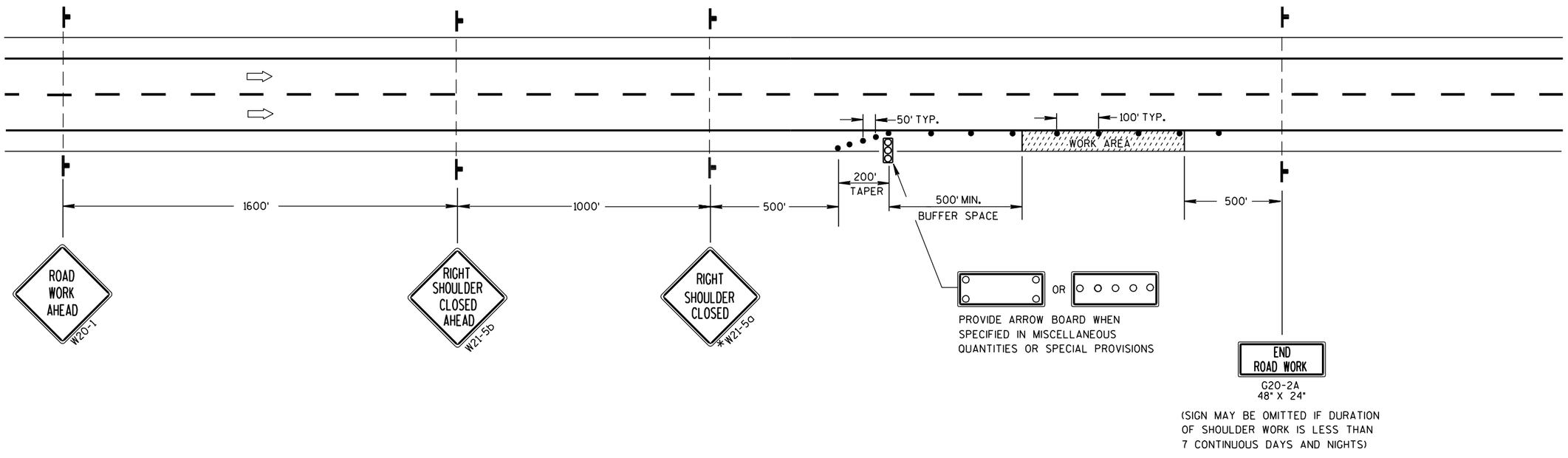
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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.

CHANNELIZING DEVICES PLACED ADJACENT TO THE WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

WHEN A RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

*FOR SHORT DURATION SHOULDER WORK OF LESS THAN ONE HOUR, THE W21-5a SIGN MAY BE OMITTED.



TRAFFIC CONTROL SHOULDER CLOSURE ON DIVIDED ROADWAY, SPEEDS GREATER THAN 40 MPH

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

5/23/00
DATE

/S/ Chester J Sapas
CHIEF SIGNS AND MARKINGS ENGINEER

FHWA

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Wisconsin Department of Transportation

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