

MAY 2015		
ORDER OF SHEETS		
Section No.	1	Title
Section No.	3	Estimate of Quantities
Section No.	3	Miscellaneous Quantities
Section No.	6	Standard Detail Drawings

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

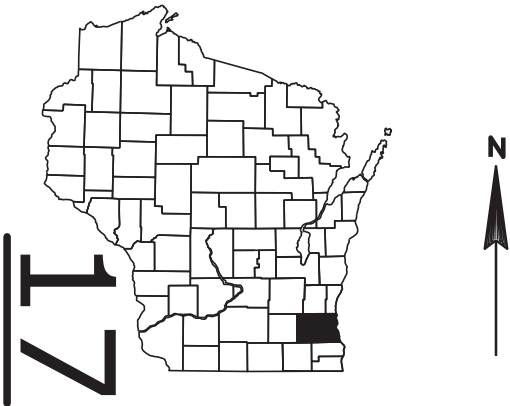
PLAN OF PROPOSED IMPROVEMENT

HIGHWAY LIGHTING MAINTENANCE 2015  
VARIOUS HIGHWAYS  
SE REGION - WIDE

TOTAL SHEETS = 34

STATE PROJECT NUMBER
1000-68-90

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
1000-68-90		



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

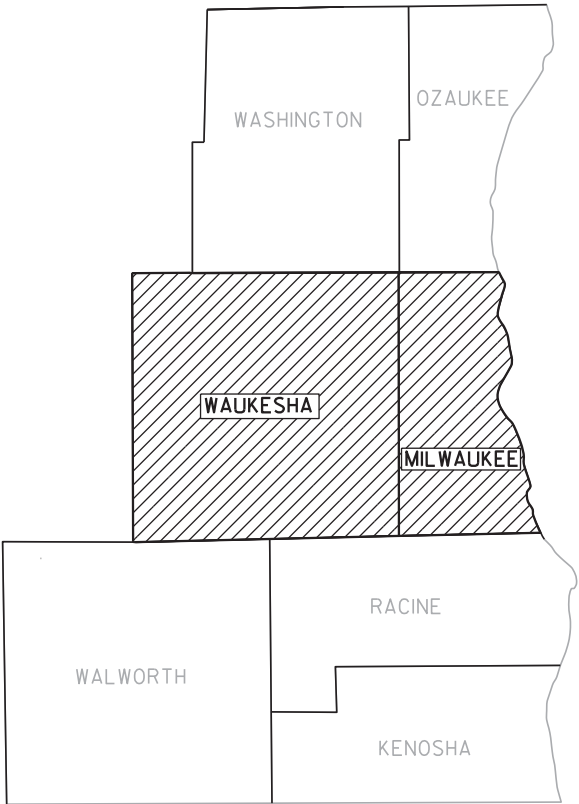
CONVENTIONAL SYMBOLS

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	
MARSH AREA	
WOODED OR SHRUB AREA	

PROFILE

GRADE LINE	
ORIGINAL GROUND	
MARSH OR ROCK PROFILE (To be noted as such)	
SPECIAL DITCH	
GRADE ELEVATION	
CULVERT (Profile View)	
UTILITIES	
ELECTRIC	
FIBER OPTIC	
GAS	
SANITARY SEWER	
STORM SEWER	
TELEPHONE	
WATER	
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	ERIC PEREA
Project Manager	ERIC PEREA
Region Examiner	
Region Supervisor	JOHN HAUG
C.O. Examiner	
APPROVED FOR REGION OFFICE	
DATE: 1/6/2015	
(Signature)	



UTILITY CONTACTS

MILWAUKEE COUNTY - HIGHWAY MAINTENANCE  
MR. GREG HEISEL  
HIGHWAY MAINTENANCE MANAGER  
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WAUWATOSA, WI 53266  
414-257-6566  
GREG.HEISEL@MILWCNTY.COM

MILWAUKEE COUNTY - HIGHWAY MAINTENANCE  
MILWAUKEE COUNTY - HIGHWAY MAINTENANCE  
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WISCONSIN DEPT. OF TRANSPORTATION  
MS. RHONDA MOGILKA  
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414-266-1167  
RHONDA.MOGILKA@DOT.WI.GOV

STATE AGENCIES

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kristina.betzold@wisconsin.gov

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WISCONSIN DEPARTMENT OF TRANSPORTATION  
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(262) 548-6425  
LAURA.LONGLEY@DOT.WI.GOV

TO OBTAIN LOCATION OF PARTICIPANTS’ UNDERGROUND  
FACILITIES BEFORE YOU DIG IN WISCONSIN

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

DIGGERSHOTLINE

Dial 811 or (800) 242-8511



















www.DiggersHotline.com



GENERAL NOTES

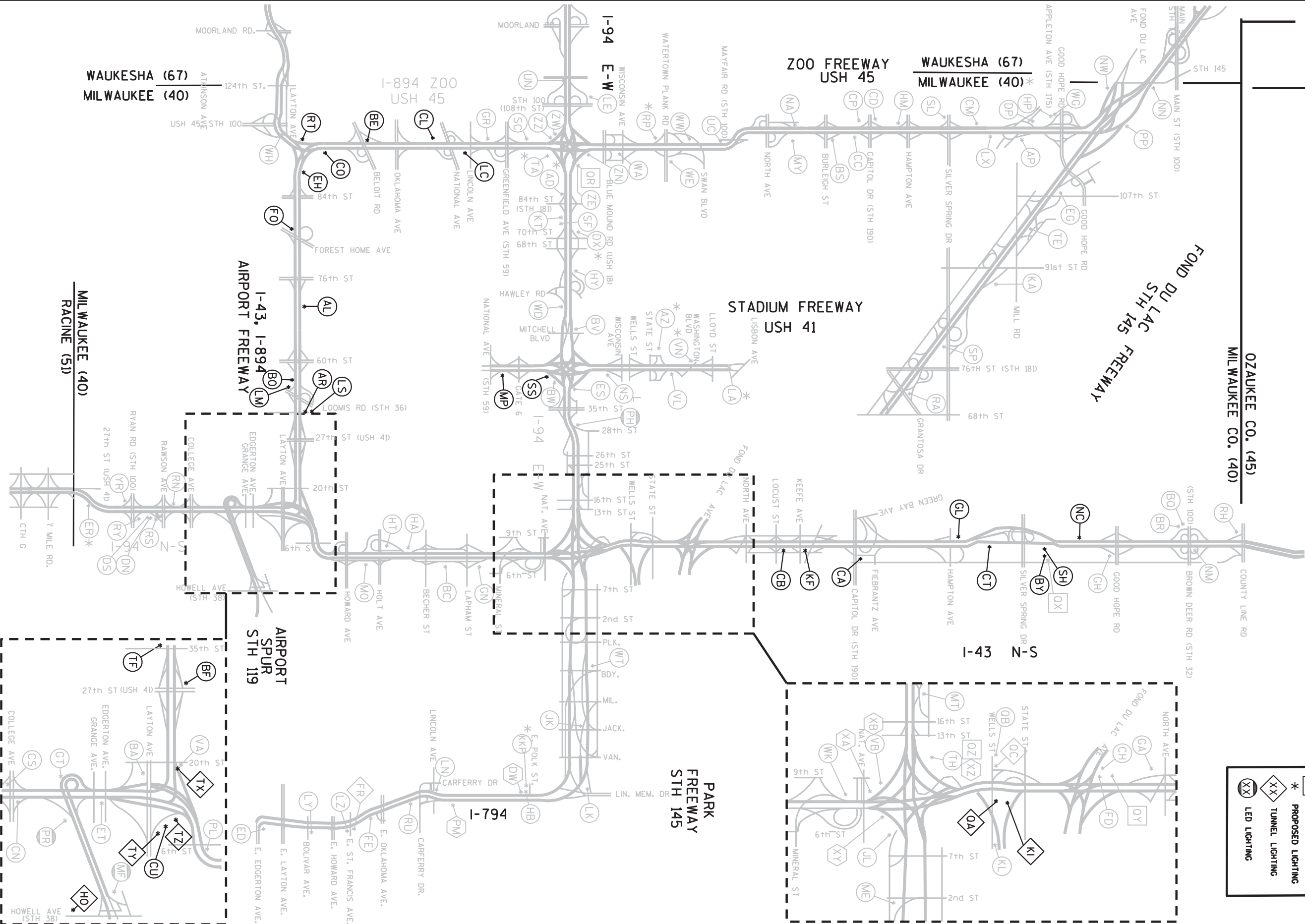
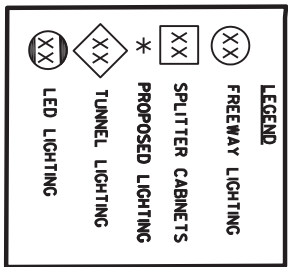
- 1. THE LOCATIONS ON EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. SEE UTILITY OCCUPATION PLANS FOR ADDITIONAL INFORMATION.
- 2. THE CONTRACTOR SHALL NOTIFY DIGGERS HOTLINE AND AFFECTED UTILITIES PRIOR TO THE START OF WORK. ANY LOCAL MUNICIPAL UTILITY WHICH IS NOT A MEMBER OF THE DIGGERS HOTLINE MUST BE CONTACTED SEPARATELY.
- 3. TRAFFIC CONTROL DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
- 4. ALL HOLES OR OPENINGS BELOW SUBGRADE RESULTING FROM ABANDONMENT OR REMOVAL OF EXITING STRUCTURES SHALL BE FILLED WITH GRANULAR SUBGRADE.
- 5. TEMPORARY STORAGE OF ANY EXCAVATED MATERIAL WILL NOT BE PERMITTED IN WETLANDS
- 6. DISTURBED AREAS WITHIN THE RIGHT OF WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, SHALL BE TOPSOILED, FERTILIZED, AND SEEDED WITHIN 7 DAYS AFTER PLACEMENT OF SALVAGED TOPSOIL AS DIRECTED BY THE ENGINEER.
- 7. REMOVAL OF EROSION ONTROL DEVICES IS INCLUDED IN THE COST OF THEIR RESPECTIVE BID ITEMS.
- 8. RE-TOPSOIL OF GRADED AREAS, AS DESIGNATED BY THE ENGINEER, IMMEDIATELY AFTER GRADING IS COMPLETED WITHIN THOSE AREAS. SEED, FERTILIZE, AND MULCH/EROSION MAT TOPSOILED AREAS, AS DESIGNATED BY THE ENGINEER, WITHIN 5 CALENDAR DAYS AFTER PLACEMENT OF TOPSOIL. IF GRADED AREAS ARE LEFT EXPOSED FOR MORE THAN 14 CALENDAR DAYS, SEED THOSE AREAS WITH TEMPORARY SEED.
- 9. STOCKPILE EXCESS MATERIAL OR SPOILS ON UPLAND AREAS AWAY FROM WETLANDS, FLOODPLAINS, AND WATERWAYS. STOCKPILED SOIL SHALL BE PROTECTED AGAINST EROSION. IF STOCKPILED MATERIAL IS LEFT FOR MORE THAN 14 CALENDAR DAYS, SEED THE STOCKPILE WITH TEMPORARY SEED.
- 10. EROSION CONTROL BMP'S ARE AT SUGGESTED LOCATIONS. THE ACTUAL LOCATIONS WILL BE DETERMINED BY THE CONTRACTORS 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.

TRAFFIC CONTROL PLAN LEGEND

	TYPE III BARRICADE
	TYPE III BARRICADE WITH 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
	PORTABLE CHAGEABLE MESSAGE BOARD



## 40





# HIGHWAY LIGHTING DISTRIBUTION CENTERS



LEGEND

XX

FREEMAY LIGHTING

XX

SPLITTER CABINETS

\*

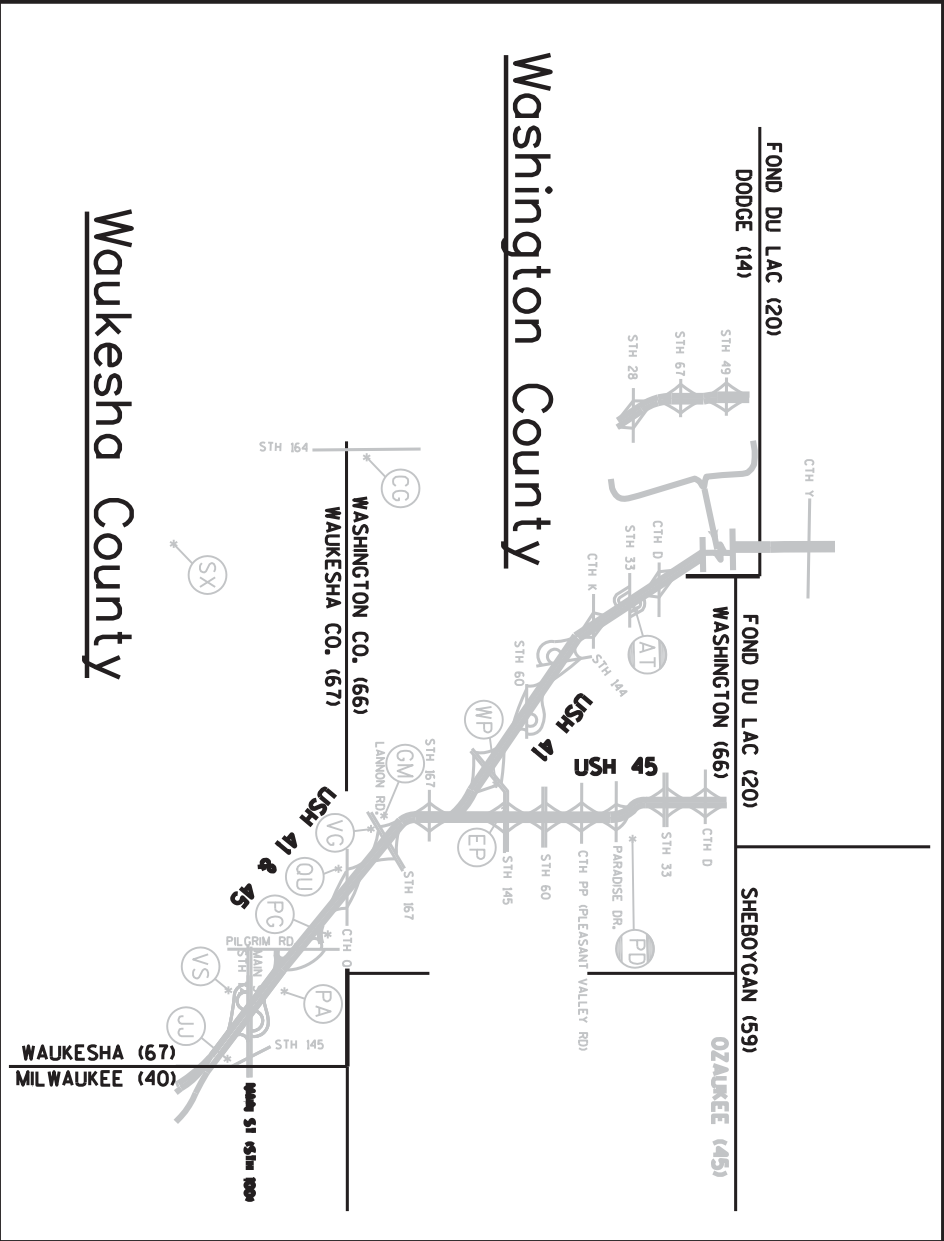
PROPOSED LIGHTING

XX

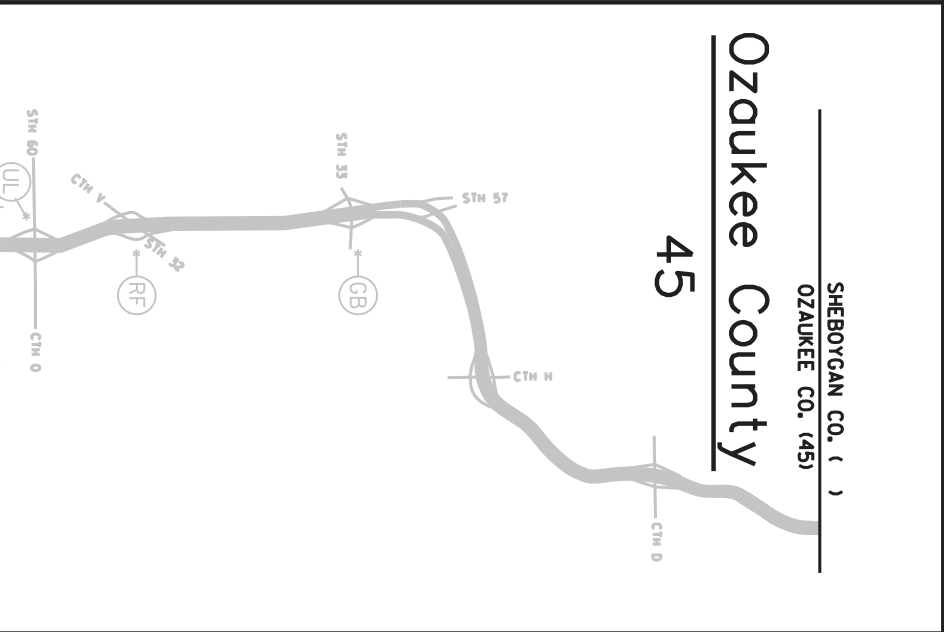
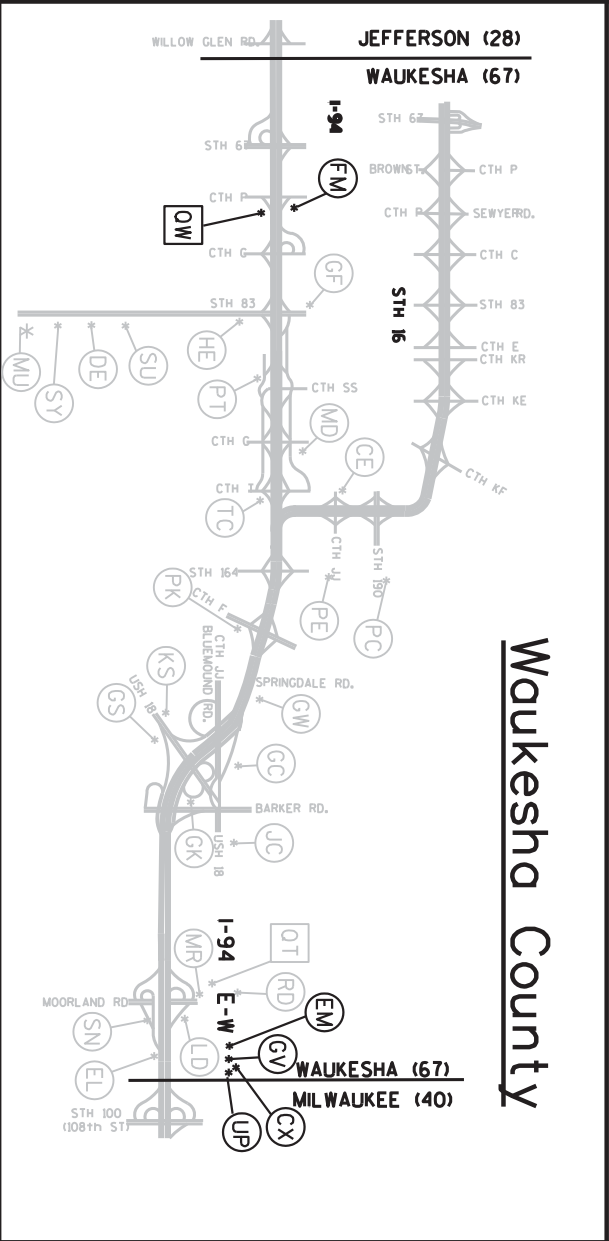
TUNNEL LIGHTING

XX

LED LIGHTING



## Waukesha County



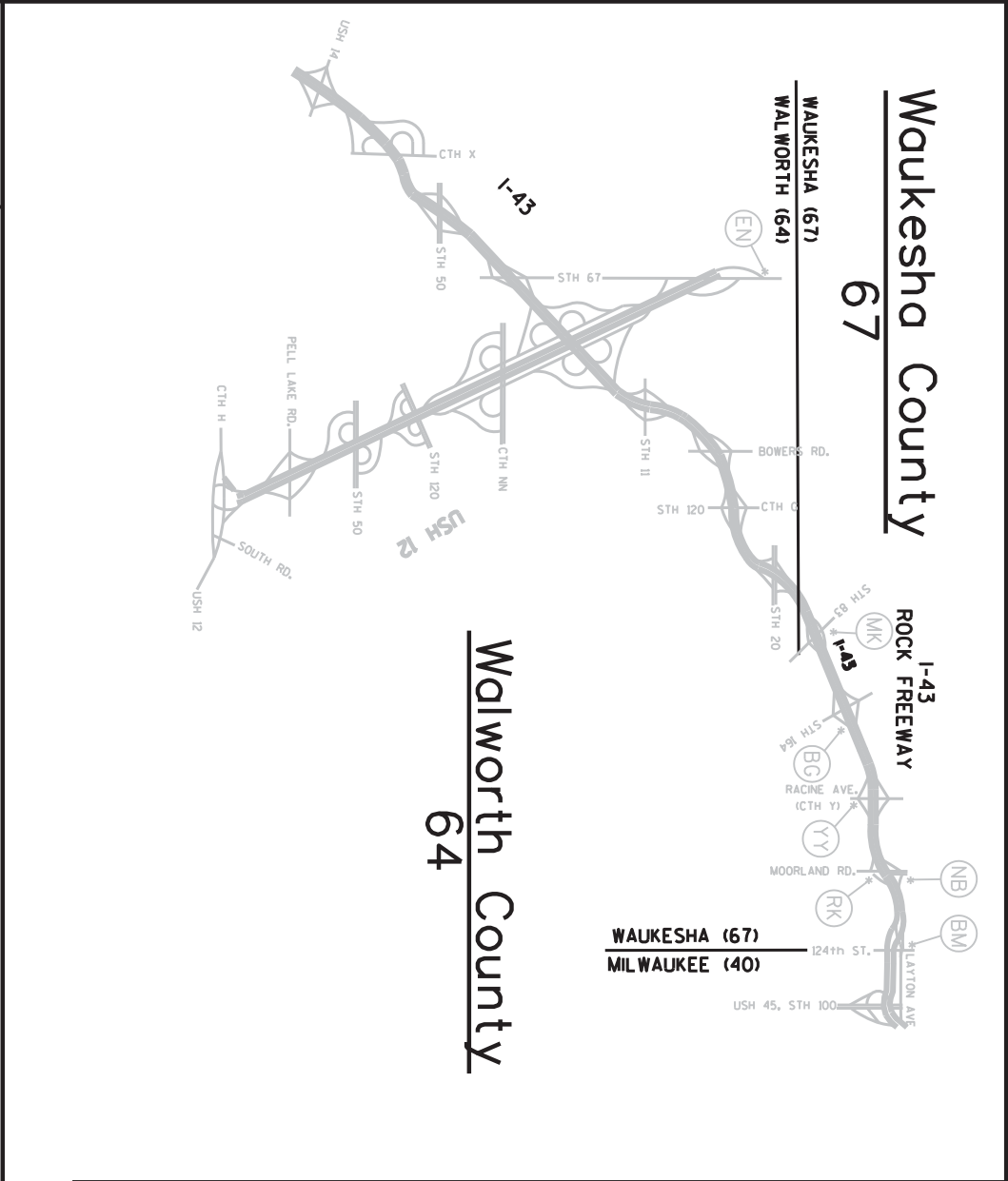
DISTRIBUTION CENTER LOCATIONS

COUNTY: SE REGION

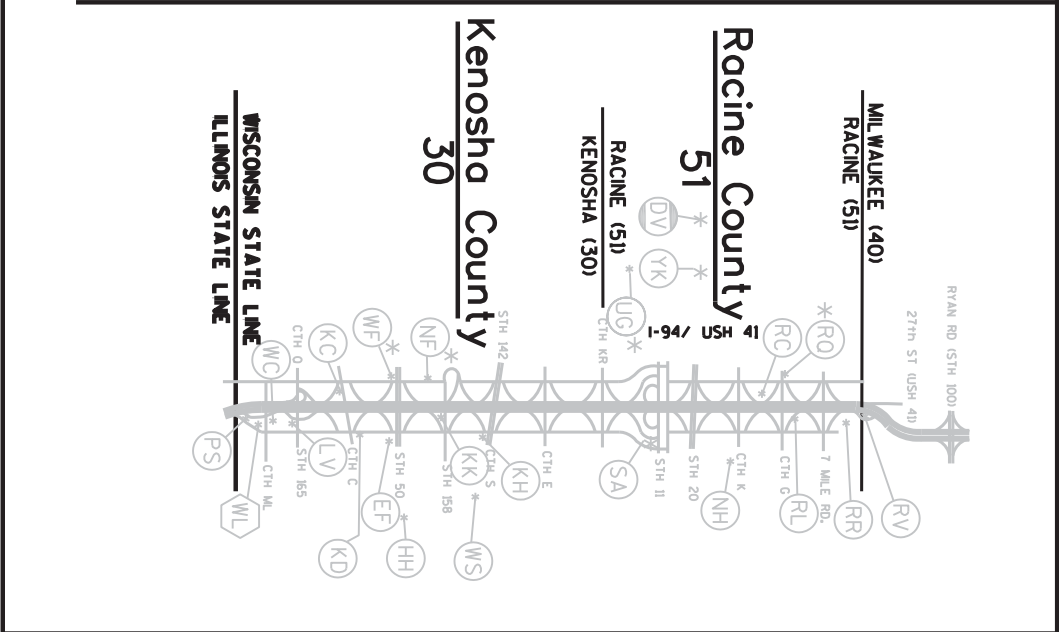
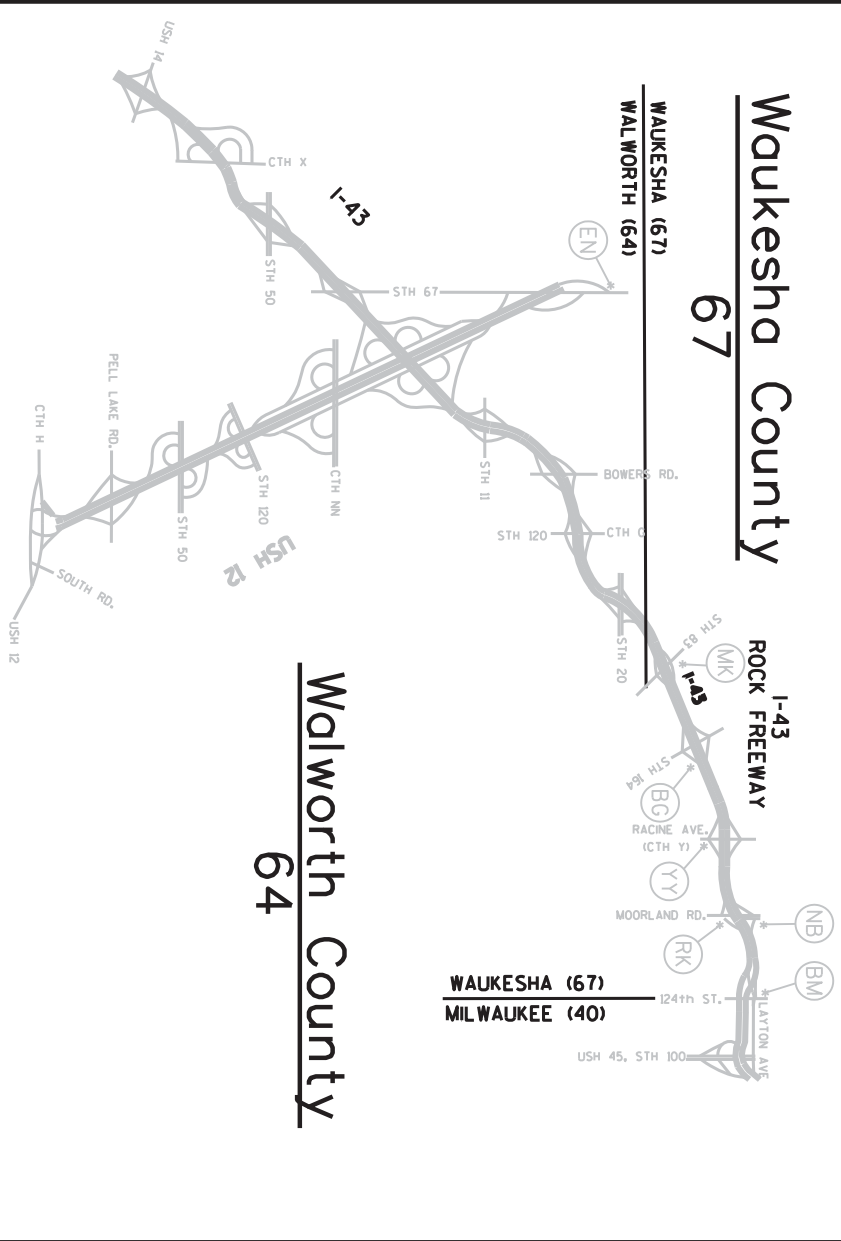
HWY: VARIOUS

PROJECT NO: 1000-68-90

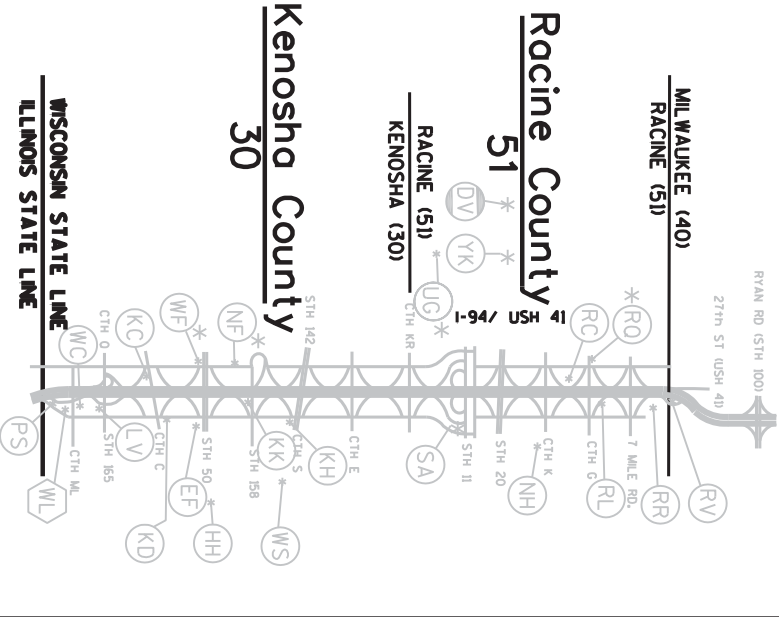
SHEET



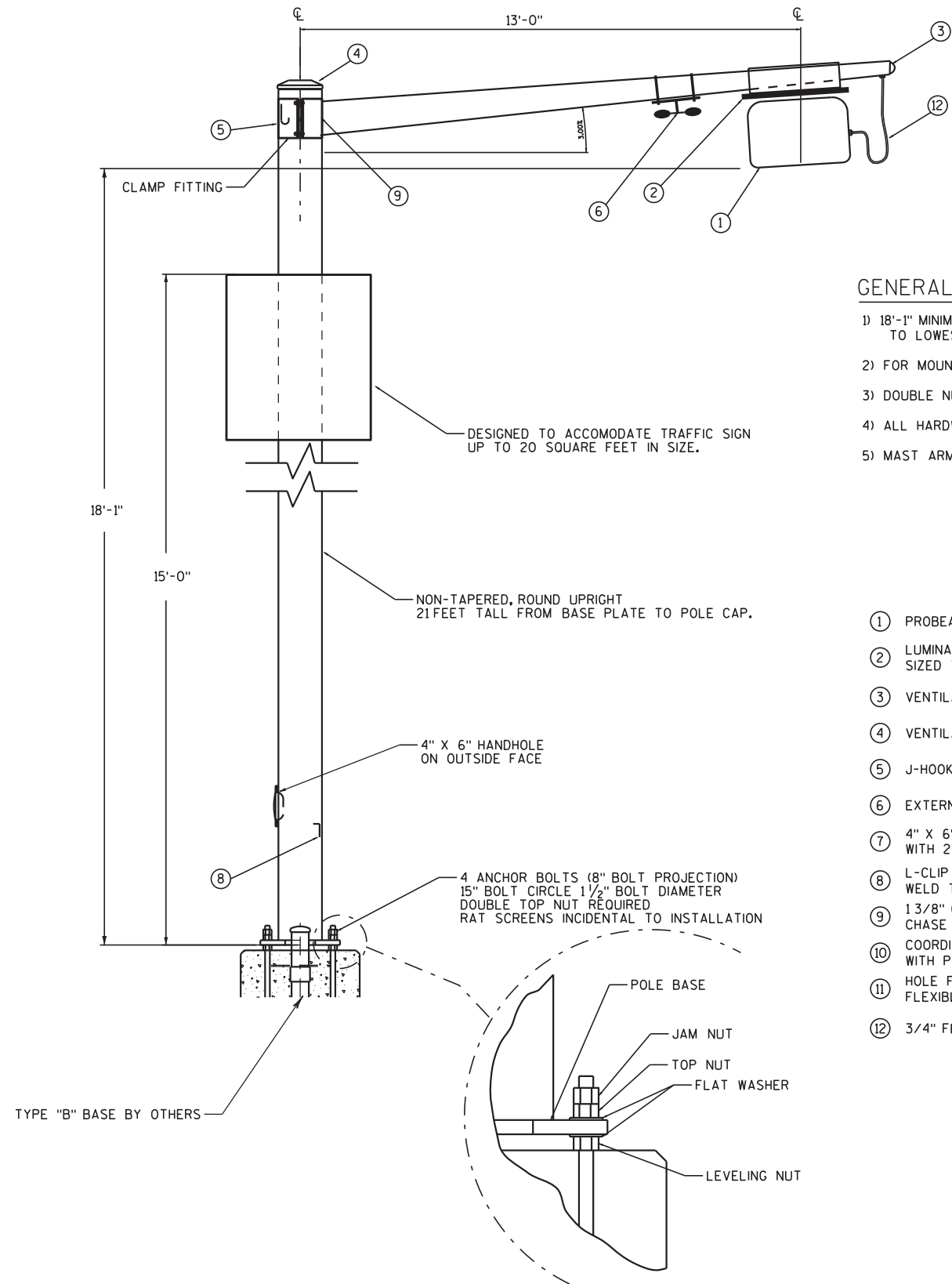
## Walworth County



## Kenosha County







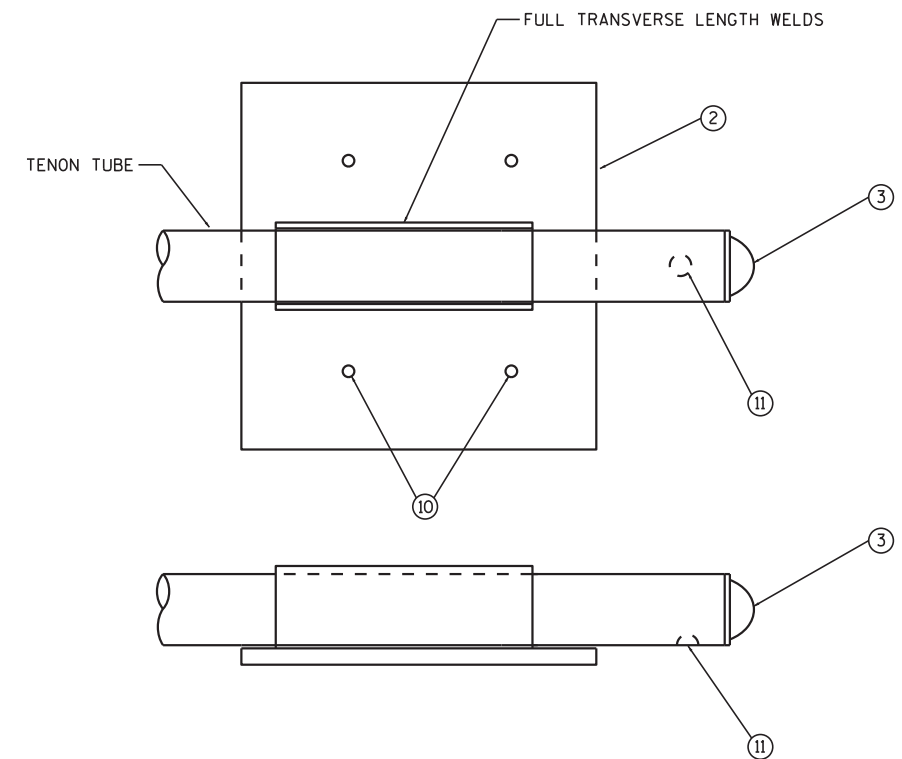
POLE MOUNT FOR PROBEAM LUMINAIRE ON B-BASE

NOT TO SCALE  
SEE ELECTRICAL DRAWINGS  
FOR ADDITIONAL INFORMATION

### GENERAL NOTES

- 1) 18'-1" MINIMUM DISTANCE FROM BOTTOM OF BASE PLATE TO LOWEST POINT ON ARM/LUMINAIRE.
- 2) FOR MOUNTING OF PROBEAM LUMINAIRES ONLY.
- 3) DOUBLE NUT AND RAT SCREENING REQUIRED.
- 4) ALL HARDWARE TO BE STAINLESS STEEL.
- 5) MAST ARM MOUNTED 3% ABOVE HORIZONTAL UNDER LOAD

- ① PROBEAM LUMINAIRE (PAID SEPARATELY)
- ② LUMINAIRE MOUNTING PLATE SIZED TO ACCOMMODATE LUMINAIRE
- ③ VENTILATING, REMOVABLE END CAP
- ④ VENTILATING, REMOVABLE POLE CAP
- ⑤ J-HOOK FOR CABLE STRAIN RELIEF
- ⑥ EXTERNAL VIBRATION DAMPER
- ⑦ 4" X 6" HANDHOLE COVER PLATE WITH 2 - 1/4X20 SS HEX BOLTS
- ⑧ L-CLIP FOR GROUNDING LUG WELD TO POLE PRIOR TO GALVANIZING
- ⑨ 13/8" CABLE HOLE WITH GROMMET OR CHASE NIPPLE, 0° TO HANDHOLE
- ⑩ COORDINATE MOUNTING HOLE PATTERN WITH PROBEAM LUMINAIRE
- ⑪ HOLE FOR 3/4" LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT
- ⑫ 3/4" FLEXIBLE METALLIC CONDUIT

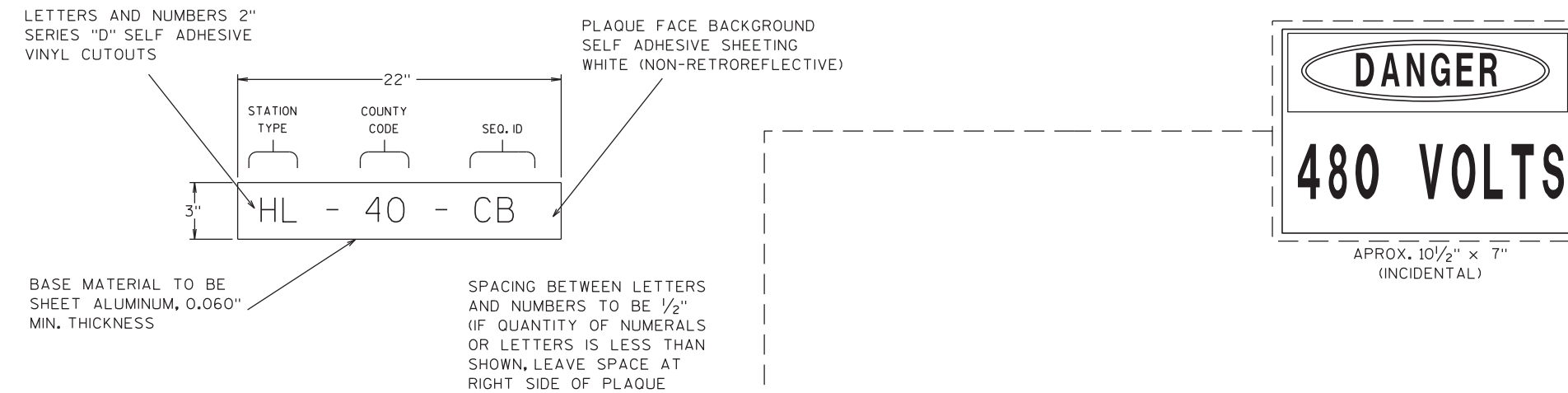


PROBEAM LUMINAIRE POLE MOUNTING DETAIL  
NOT TO SCALE



**GENERAL NOTES:**

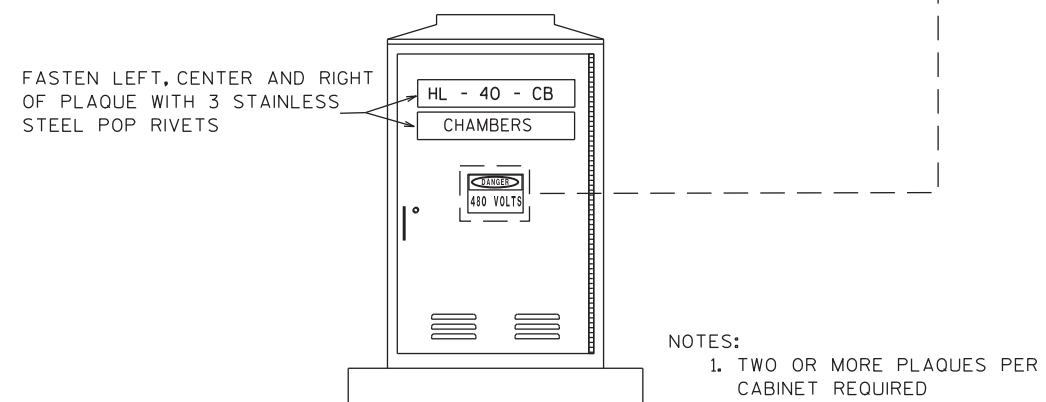
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE SPECIAL PROVISIONS.



DISTRIBUTION CENTER  
IDENTIFICATION PLAQUE

CHAMBERS

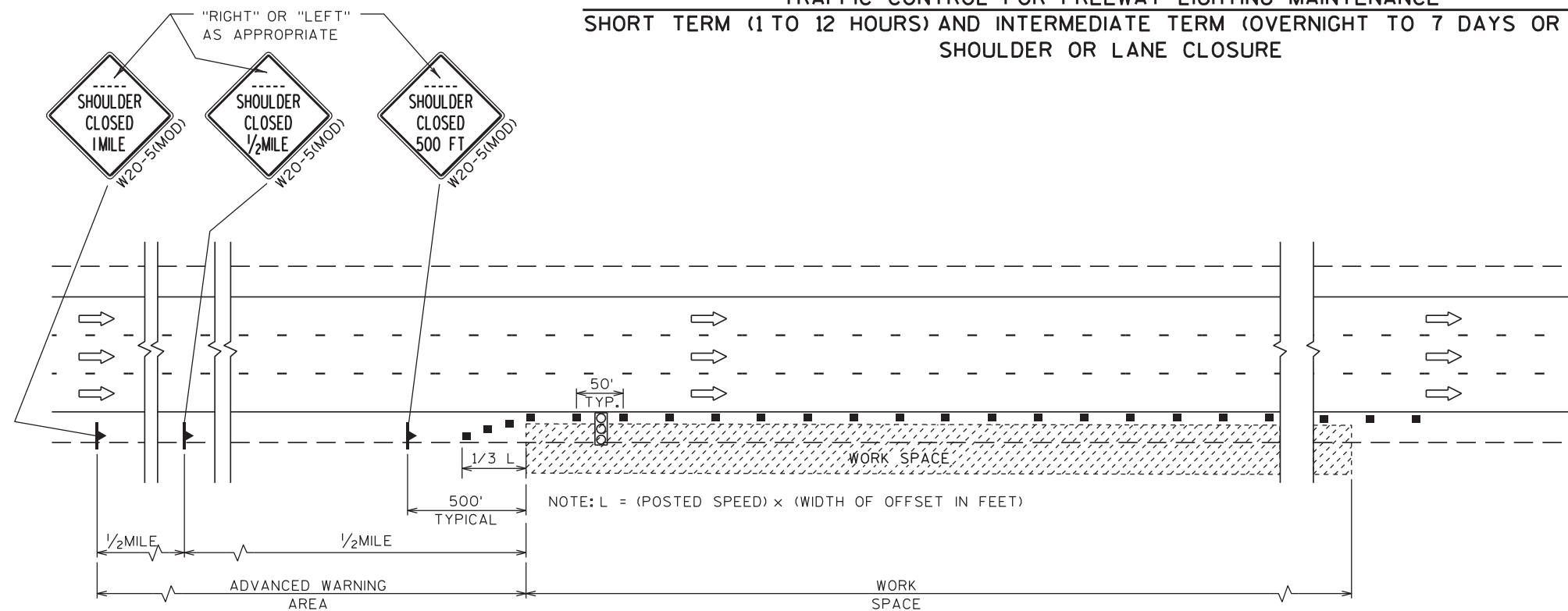
MNEMONIC  
(SEE MISC. QTY'S.)  
(NO. OF CHARACTERS VARIES  
THIRD PLAQUE MAY BE  
NECESSARY)



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

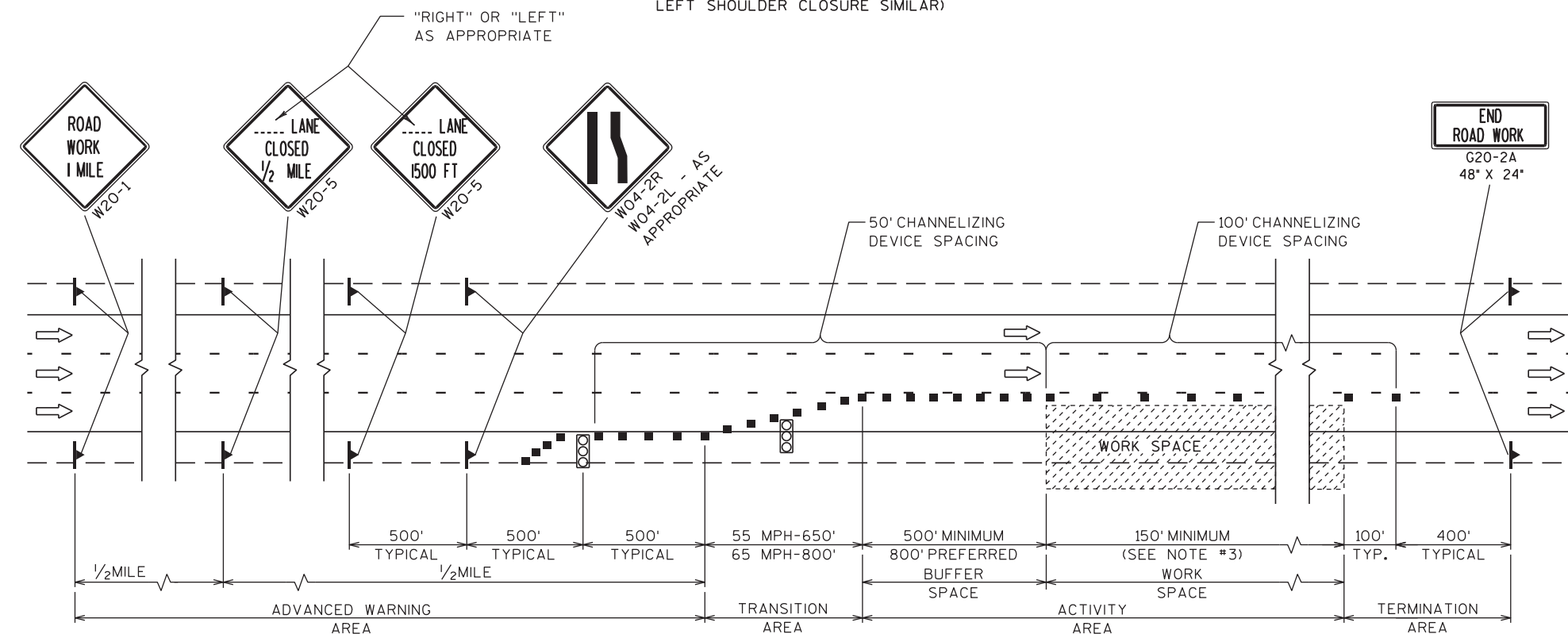


**TRAFFIC CONTROL FOR FREEWAY LIGHTING MAINTENANCE**  
**SHORT TERM (1 TO 12 HOURS) AND INTERMEDIATE TERM (OVERNIGHT TO 7 DAYS OR LESS)**  
**SHOULDER OR LANE CLOSURE**



**TYPICAL SHOULDER CLOSURE**

(RIGHT SHOULDER CLOSURE SHOWN,  
LEFT SHOULDER CLOSURE SIMILAR)



**TYPICAL ONE-LANE CLOSURE**

(RIGHT LANE CLOSURE SHOWN,  
LEFT LANE CLOSURE SIMILAR)

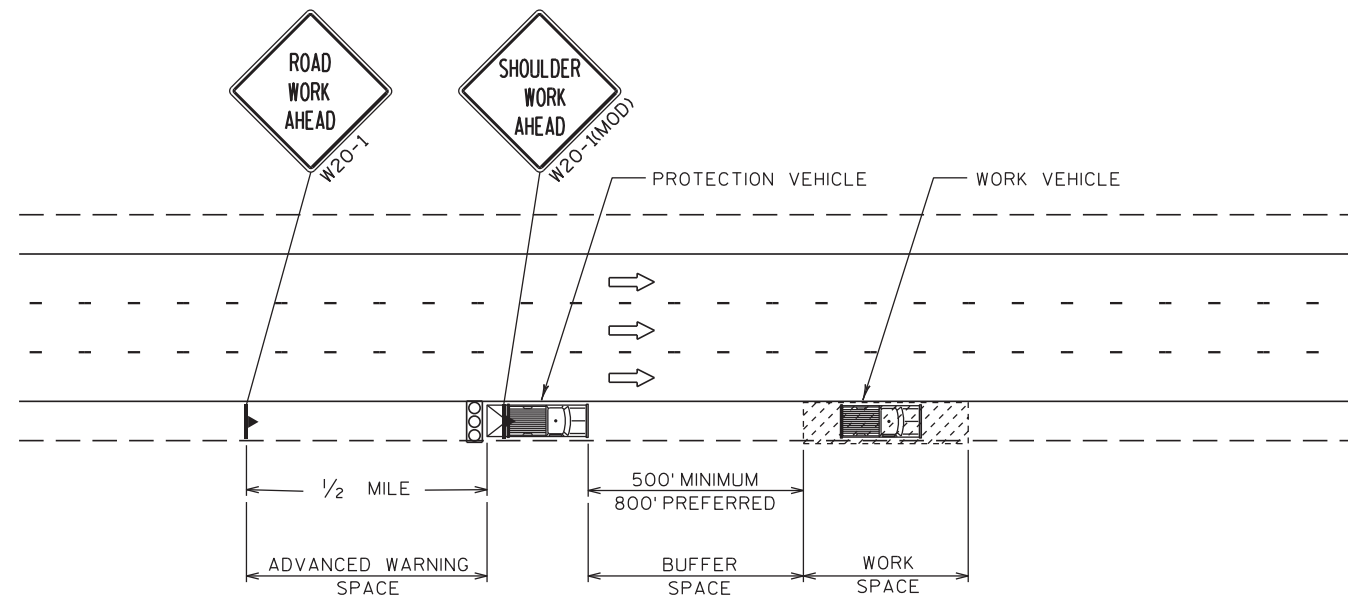
**GENERAL NOTES: TRAFFIC CONTROL**

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









**MOBILE OPERATION ON SHOULDER  
FOR 10' OR WIDER SHOULDERS ONLY**  
(RIGHT SHOULDER CLOSURE SHOWN,  
LEFT SHOULDER CLOSURE SIMILAR)

**TRAFFIC CONTROL FOR FREEWAY LIGHTING MAINTENANCE**  
**MOBILE OPERATIONS - SHOULDER CLOSURE**  
CONTINUOUS OR INTERMITTENT MOVEMENT (STOPS LESS THAN 15 MINUTES)

#### 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



DATE 17MAR15		E S T I M A T E O F Q U A N T I T I E S			
LINE					1000-68-90
NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	QUANTITY
0010	204.0195	Removing Concrete Bases	EACH	11.000	11.000
0020	619.1000	Mobilization	EACH	1.000	1.000
0030	643.0100	Traffic Control (project) 01. 1000-68-90	EACH	1.000	1.000
0040	643.0300	Traffic Control Drums	DAY	200.000	200.000
0050	643.0420	Traffic Control Barricades Type III	DAY	25.000	25.000
0060	643.0705	Traffic Control Warning Lights Type A	DAY	20.000	20.000
0070	643.0715	Traffic Control Warning Lights Type C	DAY	20.000	20.000
0080	643.0800	Traffic Control Arrow Boards	DAY	65.000	65.000
0090	643.0900	Traffic Control Signs	DAY	150.000	150.000
0100	643.1050	Traffic Control Signs PCMS	DAY	10.000	10.000
0110	643.1055.S	Truck or Trailer Mounted Attenuator 01. 1000-68-90	DAY	55.000	55.000
0120	654.0107	Concrete Bases Type 7	EACH	1.000	1.000
0130	654.0108	Concrete Bases Type 8	EACH	10.000	10.000
0140	655.0610	Electrical Wire Lighting 12 AWG	LF	200.000	200.000
0150	659.0125	Luminares Utility HPS 250 Watts	EACH	4.000	4.000
0160	659.0802	Plaques Sequence Identification	EACH	27.000	27.000
0170	659.1125	Luminares Utility LED C	EACH	40.000	40.000
0180	SPV.0045	Special 02. ZONE 2 DISTANCE PREMIUM	DAY	2.000	2.000
0190	SPV.0060	Special 01. LAMP DISPOSAL HIGH INTENSITY DISCHARGE	EACH	1,926.000	1,926.000
0200	SPV.0060	Special 02. LIGHT TOWER RAT SCREENS	EACH	20.000	20.000
0210	SPV.0060	Special 03. REMOVING LUMINAIRES	EACH	52.000	52.000
0220	SPV.0060	Special 04. REMOVING LIGHTING UNITS	EACH	1.000	1.000
0230	SPV.0060	Special 05. FUSE HOLDERS	EACH	20.000	20.000
0240	SPV.0060	Special 06. FUSE TYPE FNO	EACH	90.000	90.000
0250	SPV.0060	Special 07. INSTALLING STATE FURNISHED LUMINAIRES UTILITY HPS	EACH	1.000	1.000
0260	SPV.0060	Special 08. INSTALLING STATE FURNISHED LIGHTING UNITS	EACH	1.000	1.000
0270	SPV.0060	Special 09. PLUMBING LIGHT POLES	EACH	1.000	1.000
0280	SPV.0060	Special 10. DISTRIBUTION CENTER PREVENTIVE MAINTENANCE	EACH	36.000	36.000
0290	SPV.0060	Special 11. GROUP LUMINAIRE MAINTENANCE UNDERDECK 70 W HPS	EACH	24.000	24.000
0300	SPV.0060	Special 12. GROUP LUMINAIRE MAINTENANCE UNDERDECK 100 W HPS	EACH	112.000	112.000
0310	SPV.0060	Special 13. GROUP LUMINAIRE MAINTENANCE SIGN LIGHT 175 W MV	EACH	6.000	6.000
0320	SPV.0060	Special 14. GROUP LUMINAIRE MAINTENANCE SIGN LIGHT 250 W MV	EACH	78.000	78.000
0330	SPV.0060	Special 15. GROUP LUMINAIRE MAINTENANCE PROBEAM 150 W HPS	EACH	12.000	12.000
0340	SPV.0060	Special 16. GROUP LUMINAIRE MAINTENANCE 20-FOOT 150 W HPS	EACH	4.000	4.000
0350	SPV.0060	Special 17. GROUP LUMINAIRE MAINTENANCE 20-FOOT 400 W HPS	EACH	6.000	6.000
0360	SPV.0060	Special 18. GROUP LUMINAIRE MAINTENANCE 30-FOOT 100 W HPS	EACH	117.000	117.000
0370	SPV.0060	Special 19. GROUP LUMINAIRE MAINTENANCE 30-FOOT 150 W HPS	EACH	8.000	8.000
0380	SPV.0060	Special 20. GROUP LUMINAIRE MAINTENANCE 30-FOOT 200 W HPS	EACH	42.000	42.000
0390	SPV.0060	Special 21. GROUP LUMINAIRE MAINTENANCE 30-FOOT 250 W HPS	EACH	39.000	39.000
0400	SPV.0060	Special 22. GROUP LUMINAIRE MAINTENANCE 40-FOOT 100 W HPS	EACH	10.000	10.000



DATE 17MAR15		E S T I M A T E O F Q U A N T I T I E S							
LINE								1000-68-90	
NUMBER	ITEM	ITEM DESCRIPTION					UNIT	TOTAL	QUANTITY
0410	SPV. 0060	Speci al	23.	GROUP	LUMI NAI RE	MAI NTENANCE	EACH	2. 000	2. 000
0420	SPV. 0060	40-FOOT	150	W HPS	Speci al	24.	GROUP	LUMI NAI RE	MAI NTENANCE
0430	SPV. 0060	40-FOOT	200	W HPS	Speci al	25.	GROUP	LUMI NAI RE	MAI NTENANCE
0440	SPV. 0060	40-FOOT	250	W HPS	Speci al	26.	GROUP	LUMI NAI RE	MAI NTENANCE
0450	SPV. 0060	40-FOOT	310	W HPS	Speci al	27.	GROUP	LUMI NAI RE	MAI NTENANCE
		50-FOOT	250	W HPS				299. 000	299. 000
0460	SPV. 0060	Speci al	28.	GROUP	LUMI NAI RE	MAI NTENANCE	EACH	178. 000	178. 000
0470	SPV. 0060	50-FOOT	310	W HPS	Speci al	29.	GROUP	LUMI NAI RE	MAI NTENANCE
0480	SPV. 0060	50-FOOT	400	W HPS	Speci al	30.	TUNNEL	LUMI NAI RE	
0490	SPV. 0060	MAI NTENANCE	150	WATT HPS			EACH	31. 000	31. 000
0500	SPV. 0060	Speci al	31.	TUNNEL	LUMI NAI RE		EACH	22. 000	22. 000
		MAI NTENANCE	200	WATT HPS					
		Speci al	32.	TUNNEL	LUMI NAI RE		EACH	3. 000	3. 000
		MAI NTENANCE	250	WATT HPS					
0510	SPV. 0060	Speci al	33.	TUNNEL	LUMI NAI RE		EACH	626. 000	626. 000
0520	SPV. 0060	MAI NTENANCE	400	WATT HPS	Speci al	34.	GROUP	CLEAN TUNNEL	
0530	SPV. 0060	LUMI NAI RES					EACH	2, 726. 000	2, 726. 000
0540	SPV. 0060	Speci al	35.	LUMI NAI RE	PROBEAM	LED	EACH	2. 000	2. 000
		Speci al	36.	LUMI NAI RES	HIGHMAST		EACH	10. 000	10. 000
0550	SPV. 0090	LIGHTING	LED		Speci al	01.	INSTALLING	STATE FURNISHED	
		CABLE	IN DUCT				LF	400. 000	400. 000
0560	SPV. 0090	Speci al	02.	INSTALLING	STATE FURNISHED		LF	400. 000	400. 000
0570	SPV. 0090	MEDI AN	CABLE	IN DUCT	Speci al	03.	REMOVING	MEDI AN CABLE	IN
0580	SPV. 0090	DUCT					LF	350. 000	350. 000
		Speci al	04.	REMOVING	TEMPORARY	OVERHEAD	LF	250. 000	250. 000
		LINES							



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-AL	SERVICE	MILW CO\ MILW CO	MILW	IH 43-894	NW QUADRANT, HWY 43-894 AND 68TH ST.	240/480	GRND NEUTRAL	1
40-AR	SERVICE	MILW CO\ MILW CO	MILW	IH 43-894	37TH AND ARMOUR CUL-DE-SAC	240/240	GRND NEUTRAL	1
40-BE	SERVICE	MILW CO\ MILW CO	MILW	USH 45	USH 45 SB EXIT RAMP TO BELOIT	240/480	GRND NEUTRAL	1
40-BF	SERVICE	MILW CO\ MILW CO	MILW	IH 43-894	NW QUADRANT, HWY 43-894 AND 27TH ST.	240/480	ISOL NEUTRAL	1
40-BO	SERVICE	MILW CO\ MILW CO	MILW	IH 43-894	SW QUADRANT, IH 43-894 AND 51ST ST.	240/480	GRND NEUTRAL	1
40-BY	SUBPANEL TO QX; DERIVED FOR ITS	MILW CO\ MILW CO	MILW	IH 43	IH 43 BAYSHORE PARK AND RIDE	240/480	GRND NEUTRAL	1
40-CA	SERVICE	MILW CO\ MILW CO	MILW	IH 43	EAST SIDE IH 43 AT MESSMER	480	GRND NEUTRAL	1
40-CB	SERVICE	MILW CO\ MILW CO	MILW	IH 43	EAST SIDE IH 43 AT CHAMBERS	480	GRND NEUTRAL	1
40-CL	SERVICE	MILW CO\ MILW CO	MILW	USH 45	WEST SIDE USH 45 NORTH OF CLEVELAND	240/480	GRND NEUTRAL	1
40-CO	SERVICE	MILW CO\ MILW CO	MILW	USH 45	SE QUADRANT, USH 45 AND COLD SPRING	240/480	GRND NEUTRAL	1
40-CT	SERVICE	MILW CO\ MILW CO	MILW	IH 43	EAST SIDE IH 43 AT CHATEAU - MARNE	480	GRND NEUTRAL	1
40-EH	SERVICE	MILW CO\ MILW CO	MILW	IH 43-894	NE QUADRANT IH 43-894 AT 92ND STREET	240/480	GRND NEUTRAL	1
40-FO	SERVICE	MILW CO\ MILW CO	MILW	IH 43-894	SW QUADRANT, HWY 43-894 AND FOREST HOME	240/480	GRND NEUTRAL	1
40-GL	SERVICE	MILW CO\ MILW CO	MILW	IH 43	NW QUADRANT, IH 43 AND GLENDALE	480	GRND NEUTRAL	1
40-HO	SERVICE WITH ITS DERIVED	MILW CO\ MILW CO	MILW	STH 38	WEST SIDE STH 38 AT NORTH TUNNEL PORTAL	277/480	ISOL NEUTRAL	1
40-KF	SERVICE	MILW CO\ MILW CO	MILW	IH 43	EAST SIDE IH 43 AT KEEFE AVENUE	480	GRND NEUTRAL	1
40-KI	SERVICE	MILW CO\ MILW CO	MILW	IH 43	CIVIC CENTER GARAGE	480 DELTA	PHASE-PHASE	1
40-LC	SERVICE	MILW CO\ MILW CO	MILW	USH 45	EAST SIDE USH 45 SOUTH OF LINCOLN	240/480	GRND NEUTRAL	1
40-LM	SERVICE	MILW CO\ MILW CO	MILW	IH 43-894	SOUTH SIDE IH 43-894 AT 46TH STREET	240/480	GRND NEUTRAL	1
40-LS	SERVICE	MILW CO\ MILW CO	MILW	IH 43-894	IH 43-894 AT LOOMIS PARK AND RIDE	240/480	ISOL NEUTRAL	1
40-MP	SERVICE	MILW CO\ MILW CO	MILW	STH 341	EAST SIDE HWY 341 AT JOY INDUSTRIES	240/480	ISOL NEUTRAL	1
40-NC	SERVICE	MILW CO\ MILW CO	MILW	IH 43	WEST SIDE IH 43 AT UPRR - JEAN NICOLET	240/480	GRND NEUTRAL	1
40-QA	SERVICE WITH ITS DERIVED	MILW CO\ MILW CO	MILW	MARQUETTE	NE QUADRANT IH43 AND WELLS STREET	277/480	ISOL NEUTRAL	1
40-RT	SERVICE	MILW CO\ MILW CO	MILW	USH 45	WEST SIDE N-SW CONNECTOR RAMP HALE I/C	240/480	GRND NEUTRAL	1
40-SH	SUBPANEL TO QX	MILW CO\ MILW CO	MILW	IH 43	IH 43 BAYSHORE PARK AND RIDE	240/480	GRND NEUTRAL	1
40-SS	SERVICE	MILW CO\ MILW CO	MILW	STH 341	EAST SIDE STH 341 SOUTH OF STADIUM I/C	240/480	GRND NEUTRAL	1
40-TF	SERVICE FORMER HL-40-AR/35TH ST	MILW CO\ MILW CO	MILW	IH 43-894	SW QUADRANT, HWY 43-894 AND 35TH ST.	240/480	ISOL NEUTRAL	1
40-TX	SERVICE WITH DERIVED HUT	MILW CO\ MILW CO	MILW	MITCHELL	20TH STREET WEST SIDE NORTH OF FREEWAY	277/480	ISOL NEUTRAL	1
40-TY	SERVICE WITH DERIVED HUT	MILW CO\ MILW CO	MILW	MITCHELL	15TH PLACE AT VAN NORMAN	277/480	ISOL NEUTRAL	1
40-TZ	SERVICE WITH DERIVED HUT	MILW CO\ MILW CO	MILW	MITCHELL	16TH STREET AND CUDAHY AVENUE	277/481	ISOL NEUTRAL	1
67-CX	SERVICE	STATE\ STATE	WAUK	USH 18	AT UNDERWOOD CROSSING	120/240	ISOL NEUTRAL	1
67-EM	SERVICE	STATE\ STATE	WAUK	USH 18	SW QUADRANT, USH 18 AND SUNNYSLOPE ROAD	120/240	ISOL NEUTRAL	1
67-FM	SUBPANEL TO HL-67-QW; LOW POWER DERIVE	STATE\ STATE	WAUK	IH 94	NE QUADRANT CTH P	240/480	ISOL NEUTRAL	2
67-GV	SERVICE	STATE\ STATE	WAUK	USH 18	NE QUADRANT, USH 18 AND ELM GROVE RD.	120/240	ISOL NEUTRAL	1
67-QW	SERVICE WITH SUBPANEL	STATE\ STATE	WAUK	IH 94	HWY P SOUTH OF IH 94	240/480	ISOL NEUTRAL	2
67-UP	SERVICE	STATE\ STATE	WAUK	USH 18	NW QUADRANT, USH 18 AND UPS DRIVE	120/240	ISOL NEUTRAL	1



GROUP CABINET AND LUMINAIRE MAINTENANCE

SPV.0060.01 LAMP DISPOSAL HIGH INTENSITY DISCHARGE \*  
SPV.0060.10 DISTRIBUTION CENTER PREVENTIVE MAINTENANCE  
SPV.0060.11 - 29 GROUP LUMINAIRE MAINTENANCE (VAR.)

\* ADDITIONAL QUANTITIES FOUND ELSEWHERE

LABEL HL-	HIGHWAY AND SEGMENT	COMMENTS	SPV.0060.01 LAMP DISPOSAL H.I.D. EACH	SPV.0060.10 DISTRIB CENTER MAINT EACH	SPV.0060.11 UDL 70 W HPS EACH	SPV.0060.12 UDL 100 W HPS EACH	SPV.0060.13 SIGN LIGHT 175 MV EACH	SPV.0060.14 SIGN LIGHT 250 MV EACH	SPV.0060.15 PROBEAM 150 W HPS EACH	SPV.0060.16 20 FT 150 W HPS EACH	SPV.0060.17 20 FT 400 W HPS EACH	SPV.0060.18 30 FT 100 W HPS EACH	SPV.0060.19 30 FT 150 W HPS EACH	SPV.0060.20 30 FT 200W 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 50 FT 250 W HPS EACH	SPV.0060.28 50 FT 310 W HPS EACH	SPV.0060.29 50 FT 400 W HPS EACH
40-AL	IH 43-894	--	80	1	--	10	--	5	--	--	--	14	--	--	--	--	--	3	--	--	48	--	--
40-AR	IH 43-894	--	25	1	--	--	--	--	--	--	--	--	--	--	--	--	--	3	3	--	2	16	1
40-BE	USH 45	--	82	1	--	6	--	4	--	--	--	26	--	--	--	--	--	--	--	46	--	--	
40-BF	IH 43-894	--	116	1	24	--	--	--	--	4	6	--	--	--	10	--	--	--	55	--	--	--	17
40-BO	IH 43-894	--	49	1	--	--	--	3	--	--	--	7	1	--	--	--	--	--	--	38	--	--	
40-BY	IH 43	--	7	1	--	--	--	4	--	--	--	--	--	--	--	3	--	--	--	--	--	--	
40-CA	IH 43	--	62	1	--	14	--	4	--	--	--	--	--	--	--	--	--	15	--	3	--	20	6
40-CB	IH 43	--	69	1	--	14	--	2	--	--	--	--	1	--	--	--	--	8	2	1	--	41	--
40-CL	USH 45	--	60	1	--	2	--	2	--	--	--	17	--	--	--	--	--	--	--	--	39	--	--
40-CO	USH 45	--	28	1	--	2	--	4	--	--	--	--	--	--	--	--	--	--	--	--	22	--	--
40-CT	IH 43	--	36	1	--	--	3	2	--	--	--	--	--	--	--	--	--	1	--	--	--	21	9
40-EH	IH 43-894	--	45	1	--	2	--	4	--	--	--	9	--	--	--	--	--	--	--	--	30	--	--
40-FO	IH 43-894	--	52	1	--	16	--	--	--	--	--	12	--	--	--	--	--	--	--	--	24	--	--
40-GL	IH 43	--	35	1	--	--	--	--	--	--	--	--	3	--	--	--	--	4	--	--	--	24	4
40-HO	STH 38	SEE TUNNEL TABLE	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
40-KF	IH 43	--	58	1	--	8	--	6	--	--	--	--	3	--	--	--	--	9	3	--	--	29	--
40-KI	IH 43	SEE TUNNEL TABLE	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
40-LC	USH 45	--	49	1	--	4	--	1	--	--	--	19	--	--	--	--	--	3	2	--	20	--	--
40-LM	IH 43-894	--	35	1	--	4	--	1	--	--	--	13	--	--	--	--	--	5	--	--	12	--	--
40-LS	IH 43-894	SEE RETROFIT TABLE	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
40-MP	STH 341	--	101	1	--	8	--	17	--	--	--	--	--	--	--	--	--	--	76	--	--	--	--
40-NC	IH 43	--	76	1	--	--	3	1	--	--	--	--	--	42	--	--	--	--	--	--	2	24	4
40-QA	MARQUETTE	SEE TUNNEL TABLE	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
40-RT	USH 45	--	4	1	--	--	--	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
40-SH	IH 43	--	26	1	--	8	--	--	--	--	--	--	--	--	--	7	2	--	5	--	--	3	1
40-SS	STH 341	--	22	1	--	--	--	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12
40-TF	IH 43-894	--	22	1	--	2	--	4	--	--	--	--	--	--	--	--	--	--	--	--	16	--	--
40-TX	MITCHELL	SEE TUNNEL TABLE	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
40-TY	MITCHELL	SEE TUNNEL TABLE	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
40-TZ	MITCHELL	SEE TUNNEL TABLE	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
67-CX	USH 18	SEE RETROFIT TABLE	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
67-EM	USH 18	SEE RETROFIT TABLE	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
67-FM	IH 94	SUBPANEL TO QW	53	1	--	12	--	--	12	--	--	--	--	--	29	--	--	--	--	--	--	--	--
67-GV	USH 18	SEE RETROFIT TABLE	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
67-QW	IH 94	CABINET MAINTENANCE	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
67-UP	USH 18	SEE RETROFIT TABLE	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TOTAL			1192	36	24	112	6	78	12	4	6	117	8	42	39	10	2	51	146	4	299	178	54
			*																				



WORK ZONE TRAFFIC CONTROL

ITEM	ITEM	UNIT	QUANTITY
643.0100	TRAFFIC CONTROL PROJECT 1000-68-90	EACH	1
643.0300	TRAFFIC CONTROL DRUMS ***	DAY	200
643.0420	TRAFFIC CONTROL BARRICADES TYPE III	DAY	25
643.0705	TRAFFIC CONTROL WARNING LIGHTS TYPE A	DAY	20
643.0715	TRAFFIC CONTROL WARNING LIGHTS TYPE C	DAY	20
643.0800	TRAFFIC CONTROL ARROW BOARDS	DAY	65
643.0900	TRAFFIC CONTROL SIGNS	DAY	150
643.1050	TRAFFIC CONTROL SIGNS PCMS	DAY	10
643.1055.S	TRUCK OR TRAILER MOUNTED ATTENUATOR	DAY	55

\*\*\* 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.

RETROFIT HPS LUMINAIRES TO LED LUMINAIRES

- 659.1125 LUMINAIRES UTILITY LED C
- SPV.0060.01 LAMP DISPOSAL HIGH INTENSITY DISCHARGE \*
- SPV.0060.03 REMOVING LUMINAIRES
- SPV.0060.35 LUMINAIRE PROBEAM LED
- SPV.0060.36 LUMINAIRES HIGHMAST LIGHTING LED

\* ADDITIONAL QUANTITIES SHOWN ELSEWHERE

SYSTEM	HIGHWAY SEGMENT	659.1125 LUMINAIRES UTILITY LED C EACH	SPV.0060.03 REMOVING LUMINAIRES EACH	SPV.0060.01 LAMP DISPOSAL HIGH INTENSITY DISCHARGE EACH	SPV.0060.35 LUMINAIRE PROBEAM LED EACH	SPV.0060.36 LUMINAIRES HIGHMAST LIGHTING LED EACH	COMMENTS
HL-40-LS	I-894 / I-43	1	11	11	--	10	LOOMIS ROAD PARK & RIDE
HL-67-EM	US-18	13	13	13	--	--	SUNNYSLOPE ROAD
HL-67-GV	US-18	14	14	14	--	--	ELM GROVE ROAD
HL-67-CX	US-18	9	9	9	--	--	UNDERWOOD CROSSING
HL-67-UP	US-18	3	5	5	2	--	124TH STREET
TOTAL		40	52	52	2	10	



TUNNEL LUMINAIRE MAINTENANCE

SPV.0060.01                    LAMP DISPOSAL HIGH INTENSITY DISCHARGE \*  
SPV.0060.30 TO SPV.0060 .33    TUNNEL LUMINAIRE MAINTENANCE (VARIOUS)  
SPV.0060.34                    GROUP CLEAN TUNNEL LUMINAIRES

\* ADDITIONAL QUANTITIES SHOWN ELSEWHERE

LABEL	TUNNEL	SPV.0060.01 LAMP DISPOSAL H.I.D.  EACH	SPV.0060.30 TUNNEL 150 W  EACH	SPV.0060.31 TUNNEL 200 W  EACH	SPV.0060.32 TUNNEL 250 W  EACH	SPV.0060.33 TUNNEL 400 W  EACH	SPV.0060.34 GROUP CLEAN TUNNEL LUMINAIRES  EACH
HL-40-QA	KILBOURN EB EXIT	59	--	22	--	37	235
HL-40-KI	KILBOURN NB ENTRANCE	21	13	--	3	5	83
HL-40-TX	MITCHELL IC TUNNEL #1 W-N	161	--	--	--	161	644
HL-40-TY	MITCHELL IC TUNNEL #2 W-N	151	--	--	--	151	604
HL-40-TZ	MITCHELL IC TUNNEL #3 N-W	178	--	--	--	178	712
HL-40-HO	HOWELL TUNNEL BOTH WAYS	112	18	--	--	94	448
TOTAL		682	31	22	3	626	2,726



MOBILZATION ITEMS

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

UNDISTRIBUTED HIGHWAY LIGHTING MAINTENANCE

ITEM	QTY.	UNIT	DESCRIPTION
204.0195	11	EACH	REMOVING CONCRETE BASES
654.0107	1	EACH	CONCRETE BASES TYPE 7
654.0108	10	EACH	CONCRETE BASES TYPE 8
655.0610	200	L.F.	ELECTRICAL WIRE LIGHTING 12 AWG (POLE WIRE)
659.0125	4	EACH	LUMINAIRES UTILITY HPS 250 WATTS
659.0802	27	EACH	PLAQUES SEQUENCE IDENTIFICATION
SPV.0060.02	20	EACH	LIGHT TOWER RAT SCREENS
SPV.0060.04	1	EACH	REMOVING LIGHTING UNITS
SPV.0060.05	20	EACH	FUSE HOLDERS
SPV.0060.06	90	EACH	FUSES TYPE FNQ
SPV.0060.07	1	EACH	INSTALLING STATE-FURNISHED LUMINAIRES UTILITY HPS
SPV.0060.08	1	EACH	INSTALLING STATE FURNISHED LIGHTING UNITS
SPV.0060.09	1	EACH	PLUMBING LIGHT POLES
SPV.0090.01	400	L.F.	INSTALLING STATE-FURNISHED CABLE IN DUCT
SPV.0090.02	400	L.F.	INSTALLING STATE-FURNISHED MEDIAN CABLE IN DUCT
SPV.0090.03	350	L.F.	REMOVING MEDIAN CABLE IN DUCT
SPV.0090.04	250	L.F.	REMOVING TEMPORARY OVERHEAD LINES

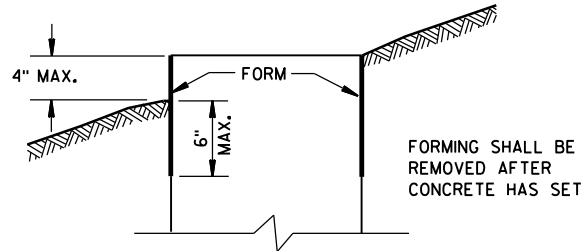


Standard Detail Drawing List

09C02-07	CONCRETE BASES, TYPES 1, 2, 5, & 6
09C08-05	CONCRETE BASE, TYPE 7
09C09-05	CONCRETE BASE, TYPE 8
10A01-03	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
15C02-05A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C04-02	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M. P. H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C05-02	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40 M. P. H. OR LESS
15C12-04	TRAFFIC CONTROL FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)
15D03-02	TRAFFIC CONTROL, LANE CLOSURE, SPEEDS GREATER THAN 40 M. P. H. WITH BARRIER
15D14-02	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
15D16-02	TRAFFIC CONTROL, EXIT RAMP CLOSURE
15D27-02	TRAFFIC CONTROL, SHOULDER CLOSURE ON DIVIDED ROADWAY, SPEEDS GREATER THAN 40 MPH



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



## FORMING DETAIL

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

## GENERAL NOTES

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

BASES SHALL BE EXCAVATED BY USE OF A CIRCULAR AUGER.

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

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

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

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

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

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

## GENERAL NOTES (CONTINUED)

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

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

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

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

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

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

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

WASHERS AND LOCK WASHERS ARE REQUIRED ON ALL ANCHOR RODS.

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

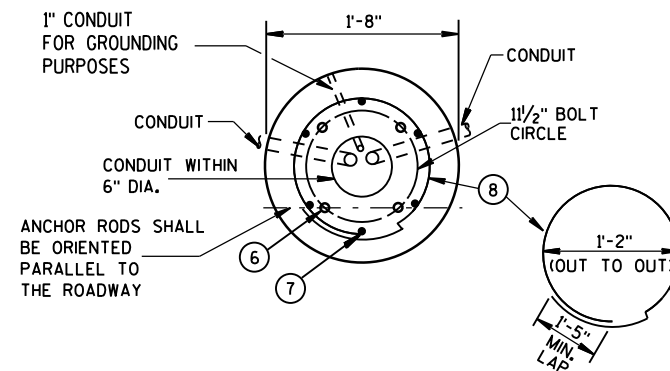
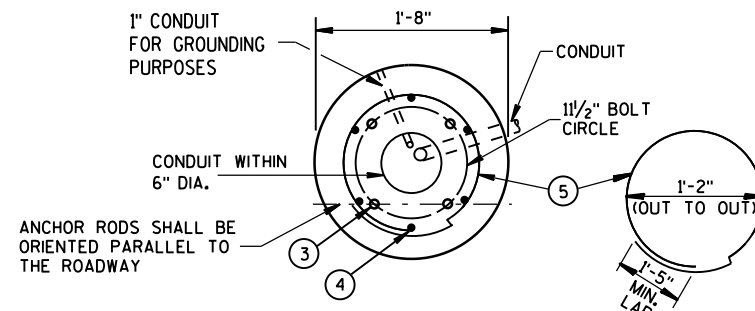
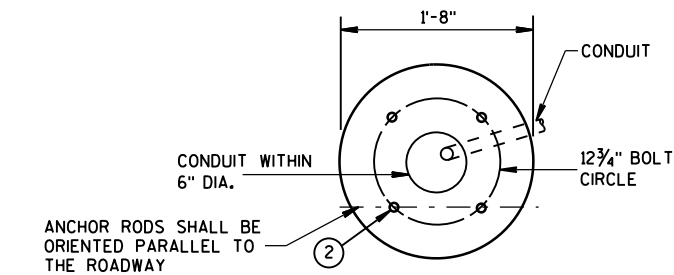
ANCHOR RODS SHALL BE INSTALLED WITH MISALIGNMENTS OF LESS THAN 1:40 FROM VERTICAL.

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

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

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

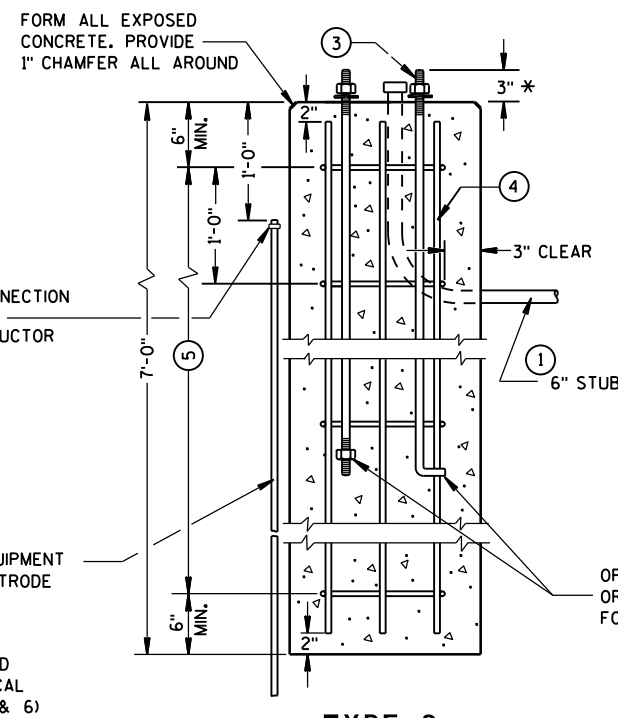
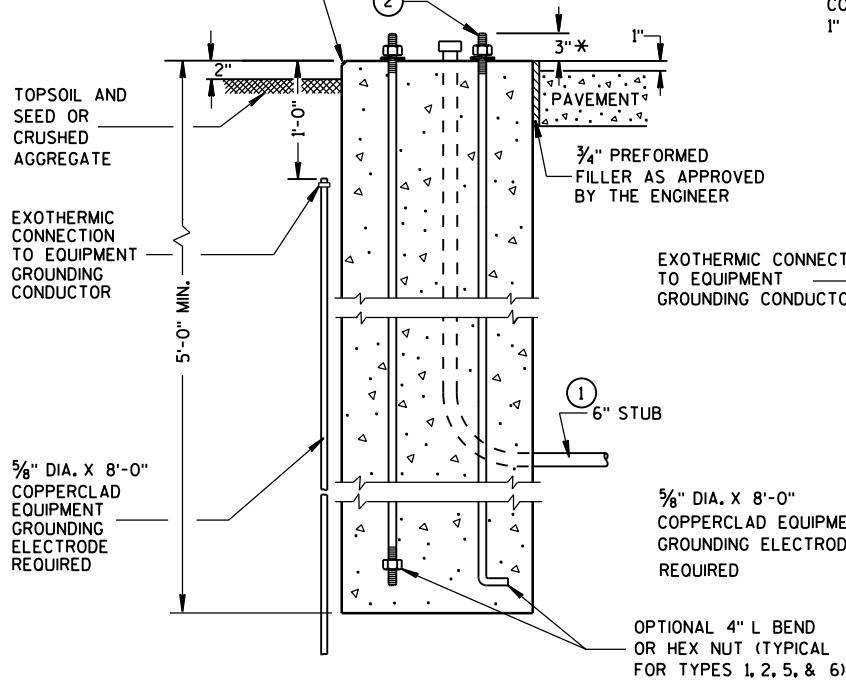
- 2 (4) 1" DIA. X 3'-6" ANCHOR RODS.  
3 (4) 1" DIA. X 5'-0" ANCHOR RODS.  
4 (6) NO. 6 X 6'-8" BAR STEEL REINFORCEMENT.  
5 (7) NO. 4 X 5'-1" BAR STEEL REINFORCEMENT @ 1'-0" C-C.  
6 (4) 1" DIA. X 3'-6" ANCHOR RODS.  
7 (6) NO. 4 X 4'-8" BAR STEEL REINFORCEMENT.  
8 (5) NO. 4 X 5'-1" BAR STEEL REINFORCEMENT @ 1'-0" C-C.



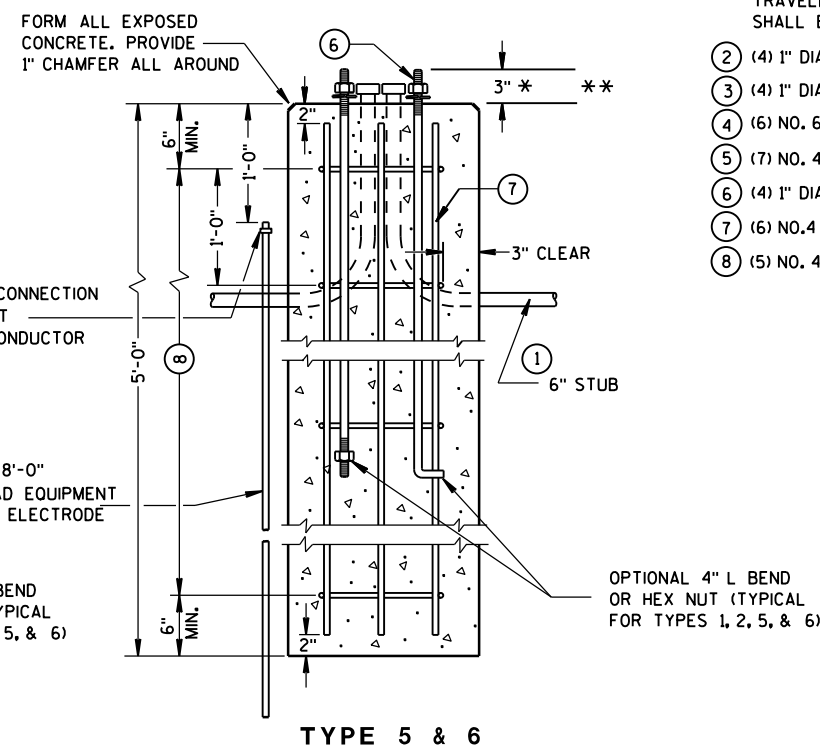
FORM ALL EXPOSED CONCRETE. PROVIDE 1" CHAMFER ALL AROUND

## HALF SECTION IN UNPAVED AREA (TYPICAL FOR TYPES 1, 2, 5, & 6)

## HALF SECTION IN PAVEMENT (TYPICAL FOR TYPES 1, 2, 5, & 6)



## TYPE 2 CONCRETE BASES



## TYPE 5 & 6

\* ANY ANCHOR ROD PROJECTION SHORTER THAN 2 3/4" OR LONGER THAN 3 3/4" SHALL REQUIRE THE BASE TO BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE.

\*\* FOR NONBREAKAWAY INSTALLATIONS, 4 1/2" ± ANCHOR ROD PROJECTION WITH THE USE OF LEVELING NUTS. RODENT SCREEN REQUIRED.

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

Sept. 2014

DATE

/S/ Ahmet Demirbilek

STATE ELECTRICAL ENGINEER

FHWA



## 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 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.

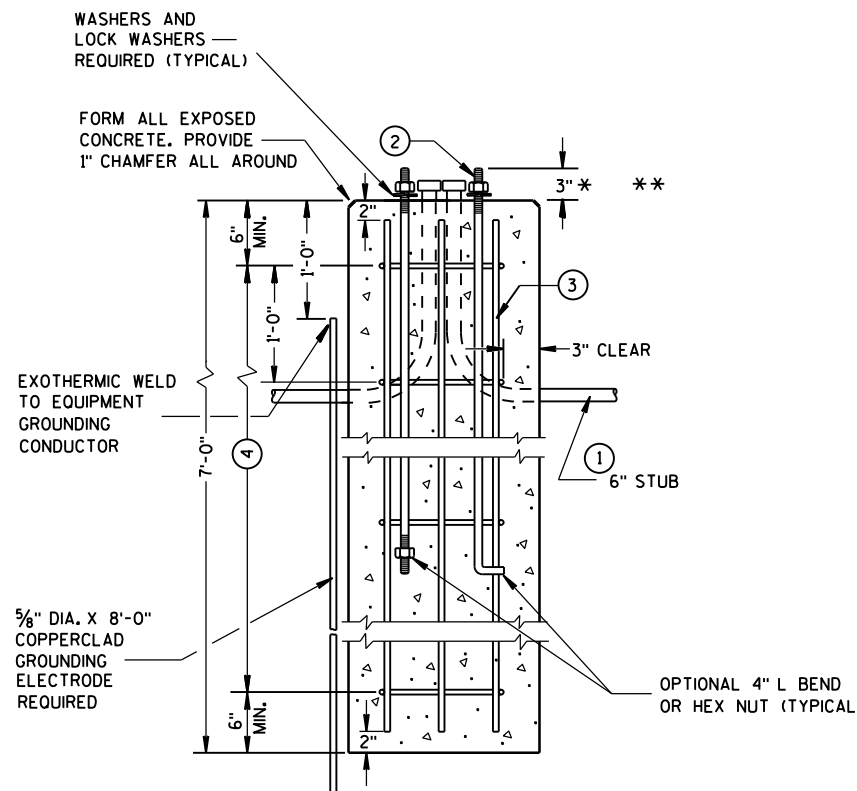
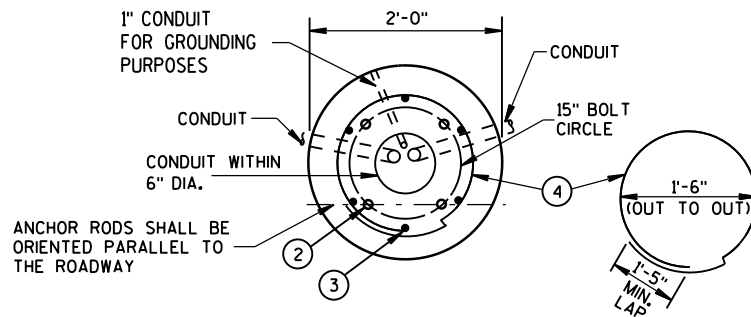
BAR STEEL REINFORCEMENT SHALL BE COATED WITH POWDERED EPOXY RESIN IN ACCORDANCE WITH SECTION 505 OF THE STANDARD SPECIFICATIONS (LATEST EDITION).

- 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.

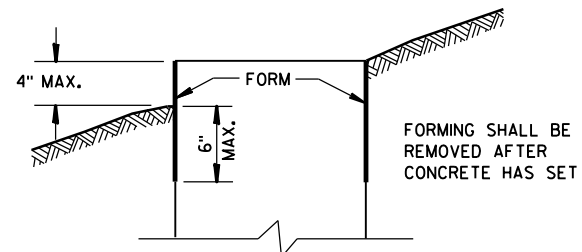
- ④ (7) NO. 4 X 6'-2" BAR STEEL REINFORCEMENT @ 1'-0" C-C.



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

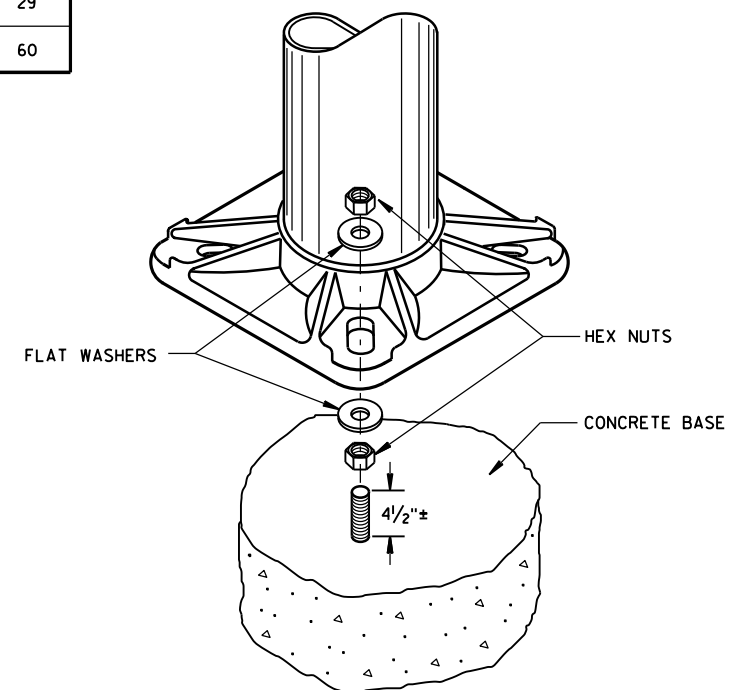
- \* ANY ANCHOR ROD PROJECTION SHORTER THAN 2 3/4" OR LONGER THAN 3 1/4" SHALL REQUIRE THE BASE TO BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE.
- \*\* FOR NONBREAKAWY INSTALLATIONS, 4 1/2" ± ANCHOR ROD PROJECTION WITH THE USE OF LEVELING NUTS, RODENT SCREEN REQUIRED.

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  
Sept. 2014  
DATE  
FHWA

/S/ Ahmet Demirbilek  
STATE ELECTRICAL ENGINEER



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.

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

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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.

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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.

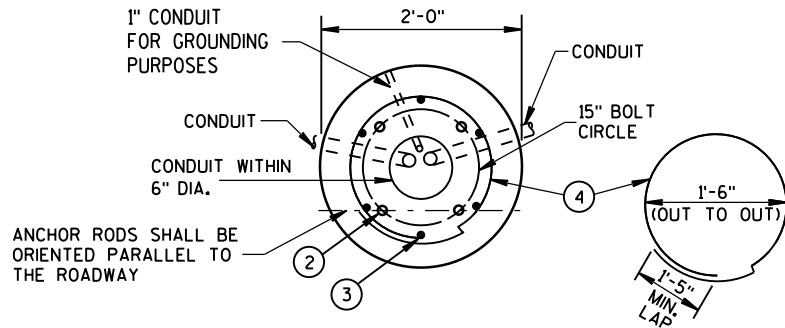
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② (4) 1" DIA. X 5'-0" ANCHOR RODS

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

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



WASHERS AND LOCK WASHERS REQUIRED (TYPICAL)

FORM ALL EXPOSED CONCRETE. PROVIDE 1" CHAMFER ALL AROUND

EXOTHERMIC WELD TO EQUIPMENT GROUNDING CONDUCTOR

5/8" DIA. X 8'-0" COPPERCLAD EQUIPMENT GROUNDING ELECTRODE REQUIRED

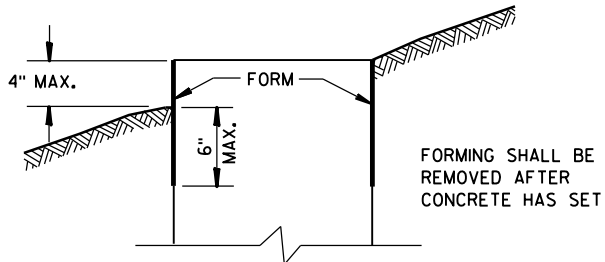
OPTIONAL 4" L BEND OR HEX NUT (TYPICAL)

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

\* ANY ANCHOR ROD PROJECTION SHORTER THAN 2 3/4" OR LONGER THAN 3 1/4" SHALL REQUIRE THE BASE TO BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE.

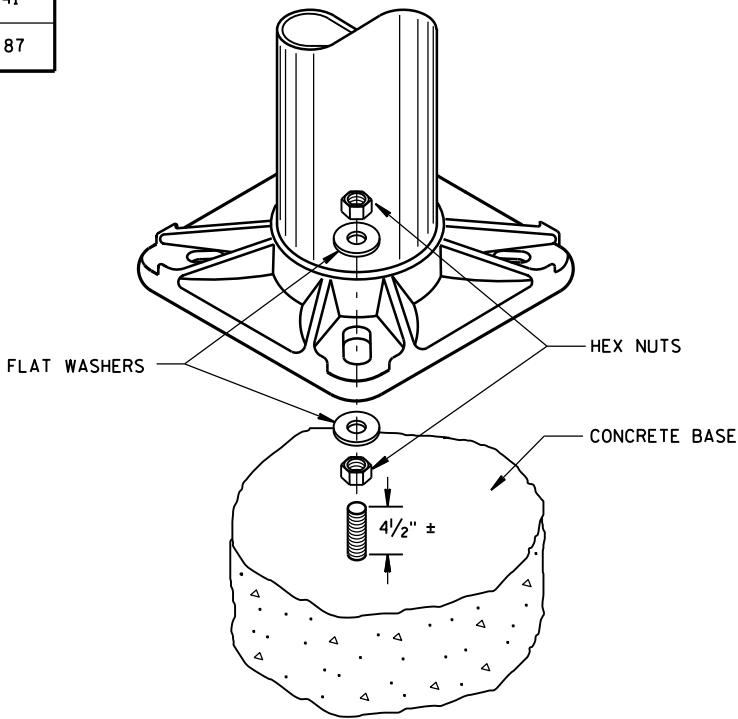
\*\* FOR NONBREAKAWY INSTALLATIONS, 4 1/2" ± ANCHOR ROD PROJECTION WITH THE USE OF LEVELING NUTS. RODENT SCREEN REQUIRED.

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



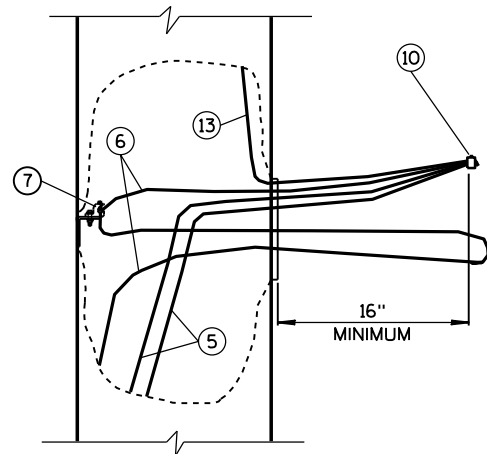
NON-BREAKAWAY INSTALLATION  
(LEVELING NUT)

CONCRETE BASE, TYPE 8

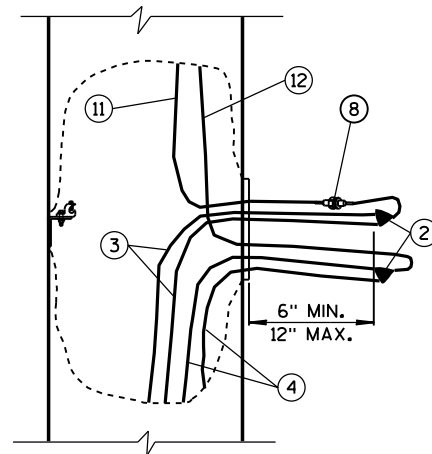
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

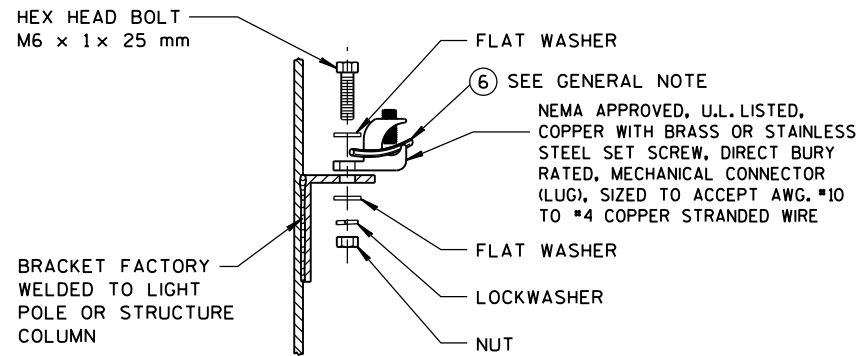




EQUIPMENT GROUNDING  
CONDUCTOR SLACK



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



## HANDHOLE GROUNDING LUG

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

### CONDUCTOR COLOR CODES

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

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



1 POLE (1P)



2 POLE (2P)

## FUSE ASSEMBLIES

## GENERAL NOTES

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

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

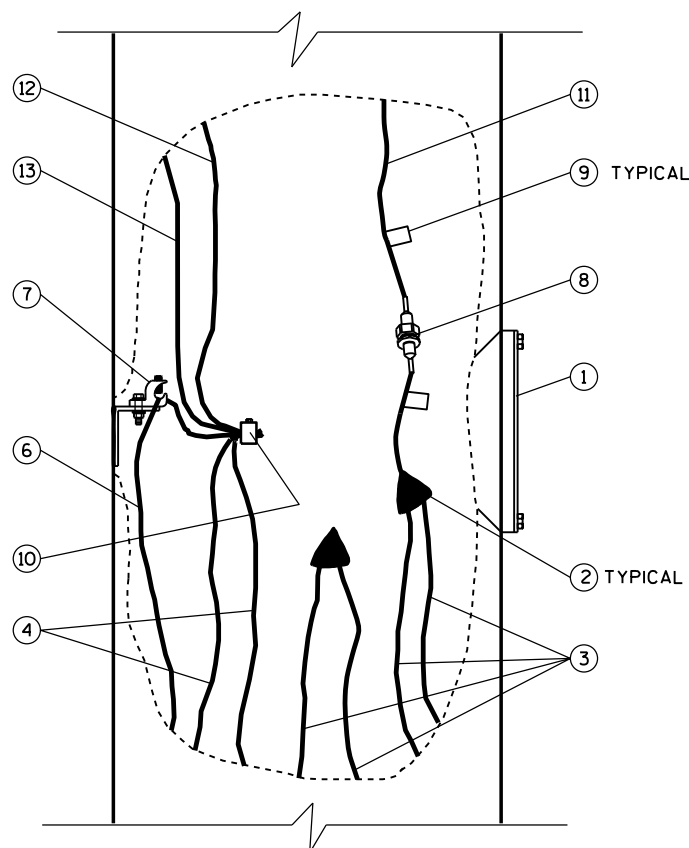
THE GROUNDING ELECTRODE CONDUCTOR SHALL BE CONTINUOUS WITHOUT  
SPICES FROM THE GROUNDING ELECTRODE THROUGH THE HANDHOLE GROUNDING  
LUG TO THE CONNECTOR.

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.

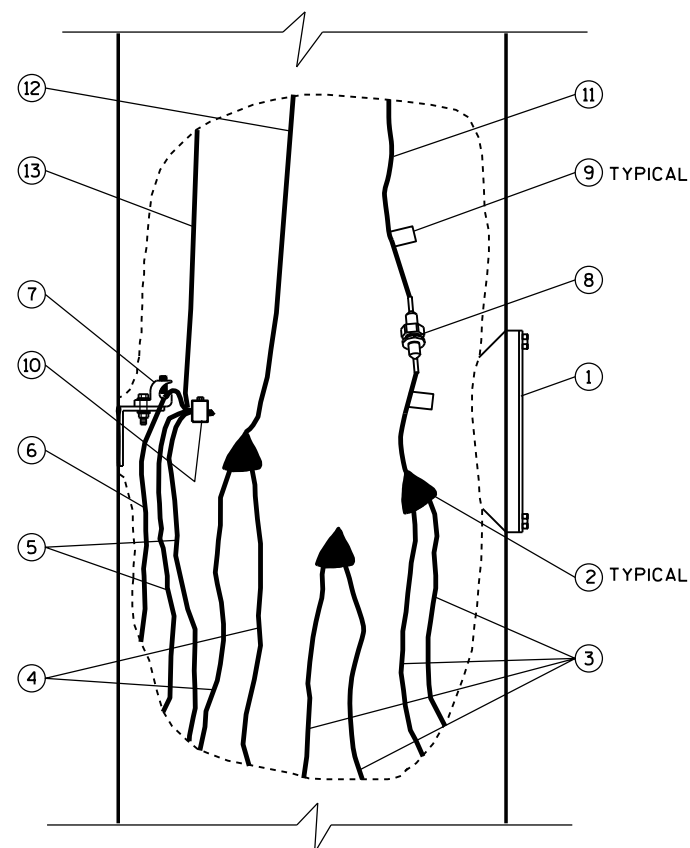
IN 3-PHASE SYSTEMS, THERE WILL BE ONE MORE UNGROUNDED LINE WIRE,  
WHICH IS OMITTED FROM THE DRAWING FOR CLARITY.

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

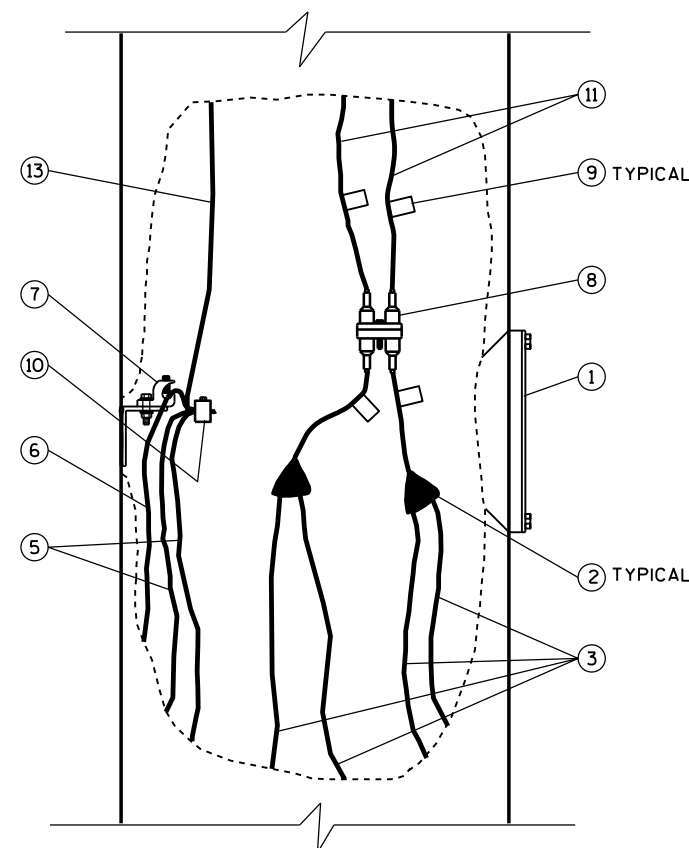
## TYPICAL CONDUCTOR SLACK AT HANDHOLES



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)

- HANDHOLE AND COVER
- INSULATED SPLICE
- UNGROUND LINE WIRE
- GROUNDED LINE WIRE
- SYSTEM GROUNDING LINE WIRE
- GROUNDING ELECTRODE CONDUCTOR
- HANDHOLE GROUNDING LUG
- FUSE ASSEMBLY, 1P OR 2P AS REQUIRED
- CIRCUIT TAG (SEE GENERAL NOTE)
- REVERSIBLE PRESSURE OR COMPRESSION  
GROUNDING CONNECTOR (NOT INSULATED)
- UNGROUND POLE WIRE
- GROUNDED POLE WIRE
- EQUIPMENT GROUNDING POLE WIRE

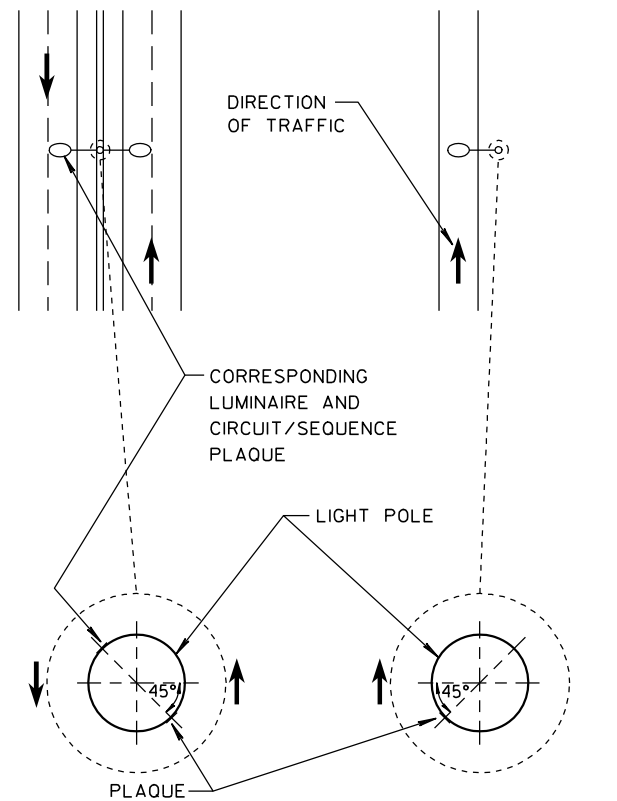
## ELECTRICAL HANDHOLE WIRING

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

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





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-RETROREFLECTIVE

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

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

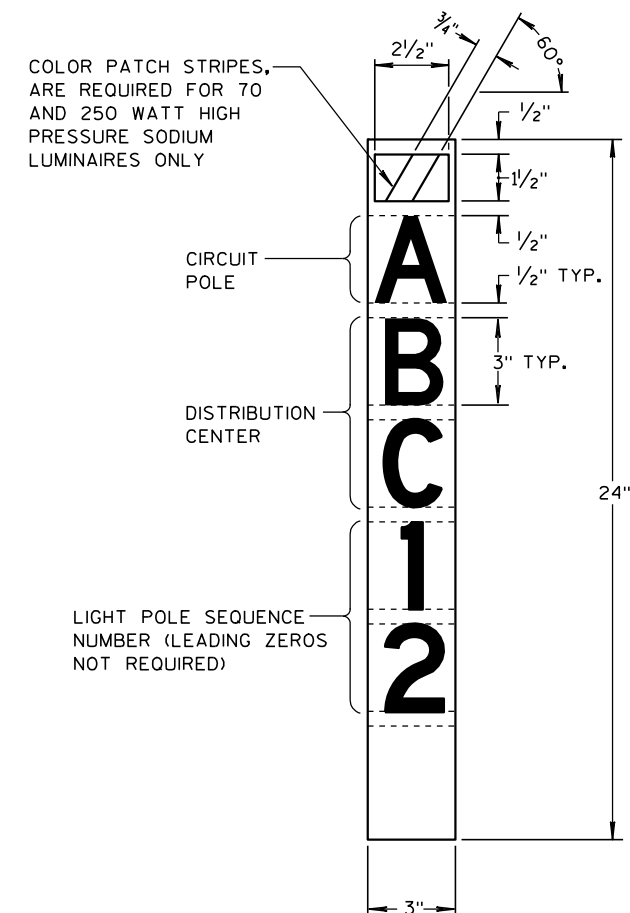
COLOR PATCHES - VARIOUS COLORS, SELF-ADHESIVE VINYL SHEETING

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

APPROVED  
10/25/2010

DATE

FHWA

/S/ John Corbin

STATE ELECTRICAL ENGINEER FOR HWYS



GENERAL NOTES

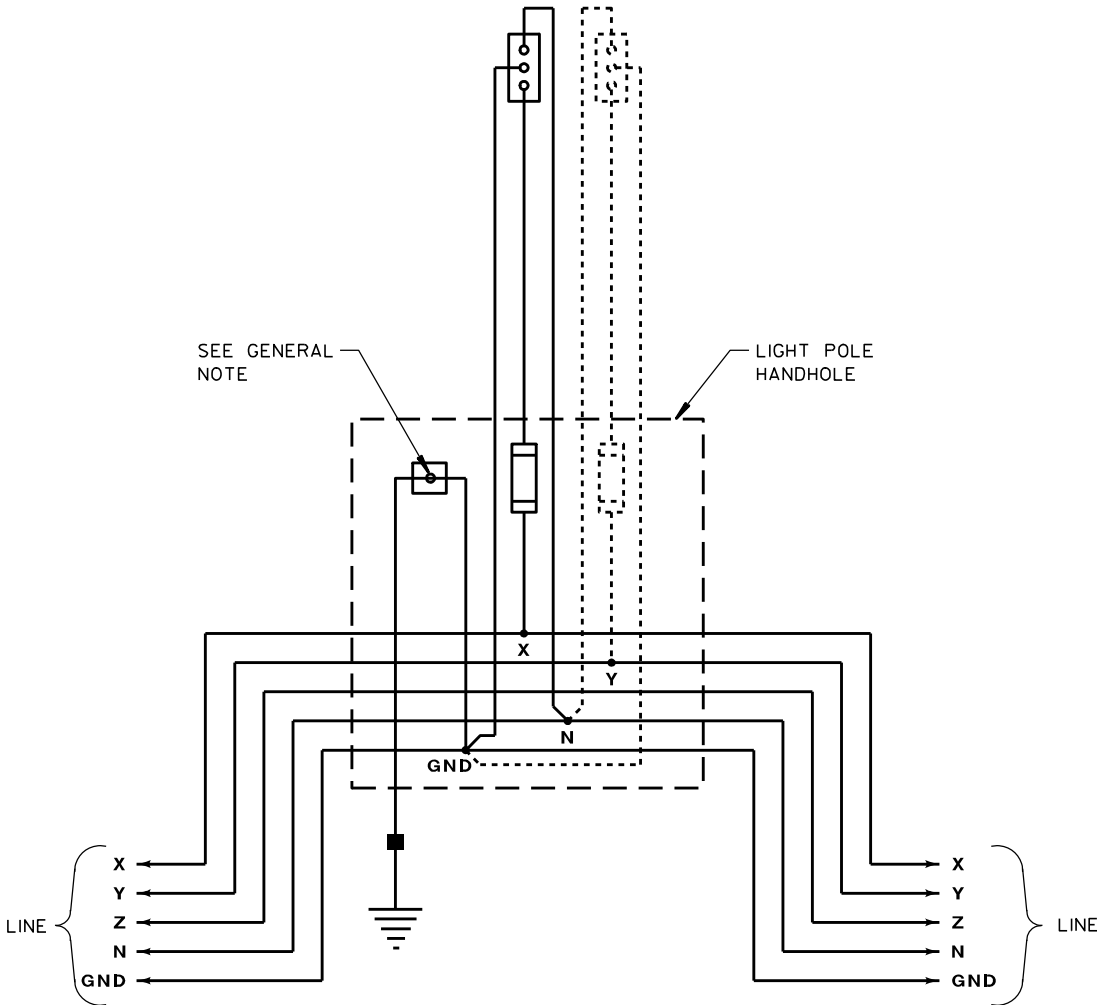
DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN IN THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

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.

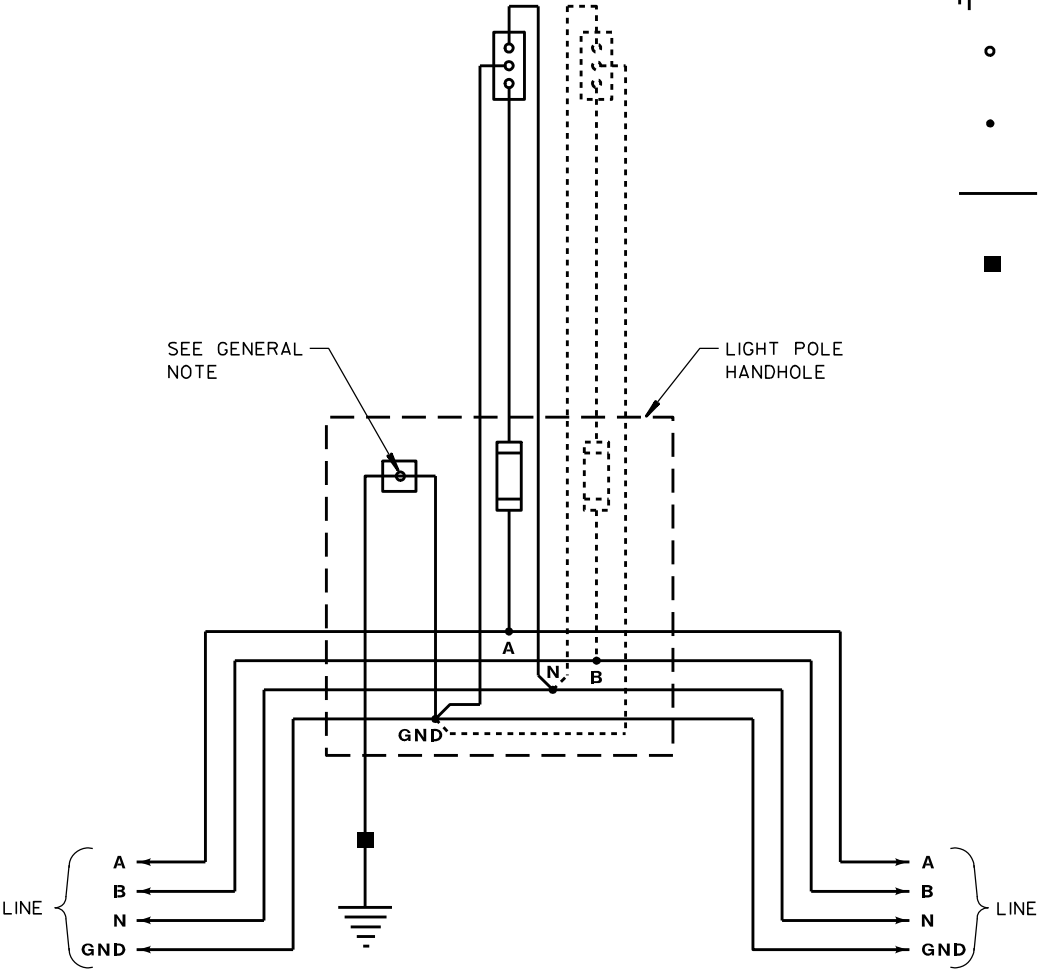
THE PLANS WILL SHOW WHICH CIRCUIT LEG(S) ARE CONNECTED TO EACH INSTALLATION.



**TYPICAL WIRING DIAGRAM**  
**ISOLATED NEUTRAL SYSTEM**  
**3- $\phi$  208Y/120VAC OR 480Y/277VAC 4 WIRE**

HANDHOLE FUSE SCHEDULES

LINE VOLTAGE $\phi$ -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



**TYPICAL WIRING DIAGRAM**  
**ISOLATED NEUTRAL SYSTEM**  
**1- $\phi$  120/240VAC OR 240/480VAC 3 WIRE**

LEGEND

- A, B, X, Y, Z UNGROUNDED CIRCUIT CONDUCTORS
- N GROUNDED CIRCUIT CONDUCTORS
- GND EQUIPMENT GROUNDING CONDUCTOR
- P POLE (ELECTRICAL CIRCUIT)
- $\phi$  PHASE (ELECTRICAL CURRENT)
- [Symbol: circle with cross] HANDHOLE GROUND LUG
- [Symbol: rectangle with horizontal line] SINGLE-POLE (1P) FUSE ASSEMBLY
- [Symbol: rectangle with two horizontal lines] TWO-POLE (2P) FUSE ASSEMBLY
- [Symbol: rectangle with two circles] UNFUSED LUMINAIRE
- [Symbol: vertical line with three horizontal bars] EQUIPMENT GROUNDING ELECTRODE
- [Symbol: small circle] TERMINAL
- [Symbol: small dot] SPLICE
- [Symbol: solid line] CONDUCTOR
- [Symbol: solid square] EXOTHERMIC WELD

**ELECTRICAL DETAILS**  
**GROUND MOUNT LIGHT POLES**  
**ISOLATED NEUTRAL SYSTEM**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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



GENERAL NOTES

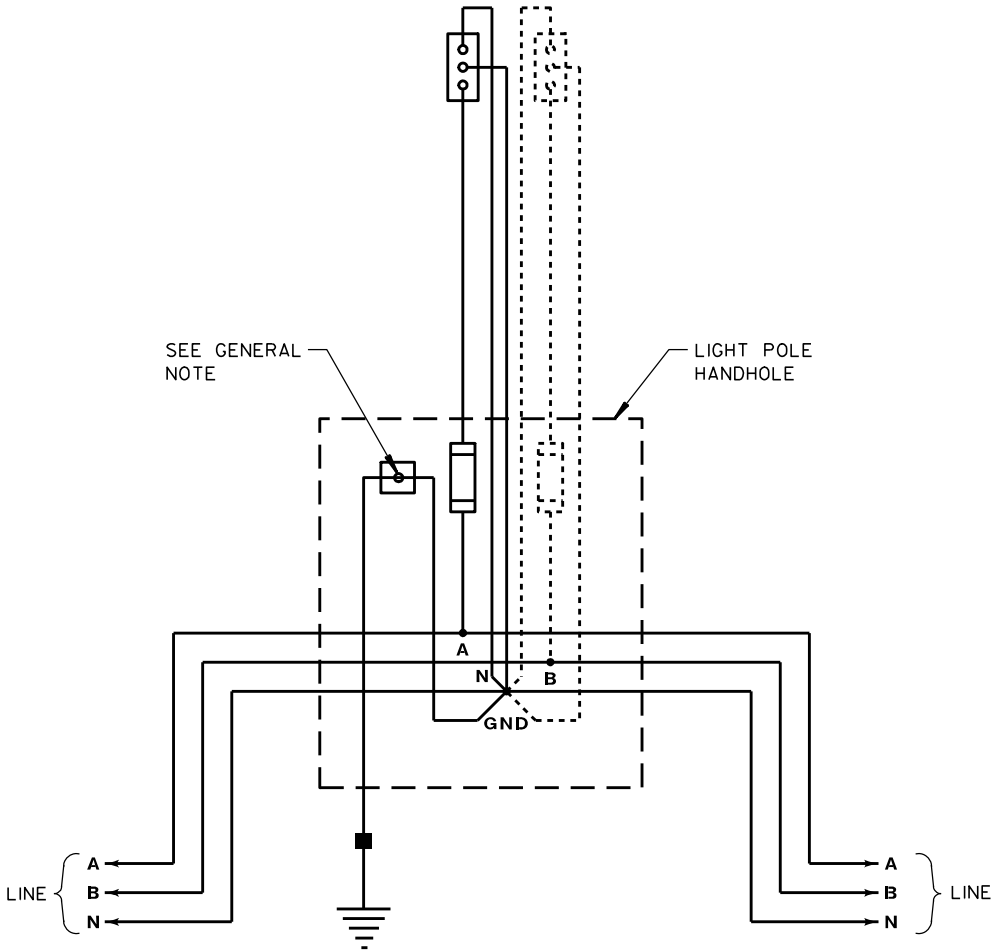
DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN IN THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

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- $\phi$  240/480VAC 3 WIRE OR 480VAC 2 WIRE

HANDHOLE FUSE SCHEDULES

LINE VOLTAGE $\phi$ -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

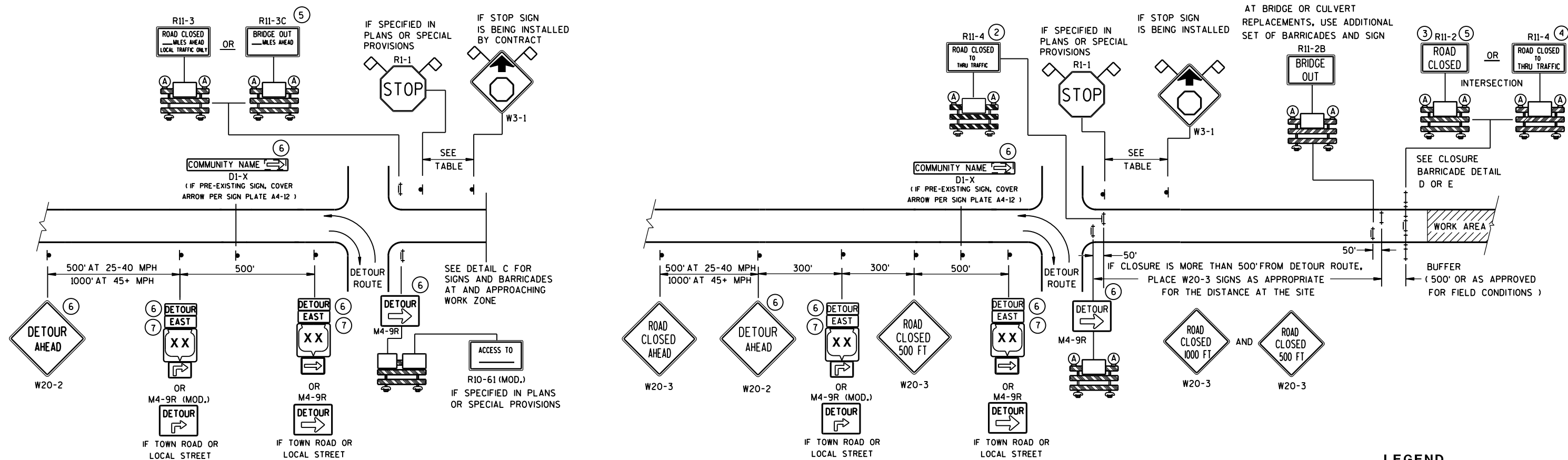
- A, B, X, Y, Z UNGROUNDED CIRCUIT CONDUCTORS
- N GROUNDED CIRCUIT CONDUCTORS
- GND EQUIPMENT GROUNDING CONDUCTOR
- P POLE (ELECTRICAL CIRCUIT)
- $\phi$  PHASE (ELECTRICAL CURRENT)
- [Symbol] HANDHOLE GROUND LUG
- [Symbol] SINGLE-POLE (1P) FUSE ASSEMBLY
- [Symbol] TWO-POLE (2P) FUSE ASSEMBLY
- [Symbol]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

ELECTRICAL DETAILS  
GROUND MOUNT LIGHT POLES  
GROUNDED NEUTRAL SYSTEMS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

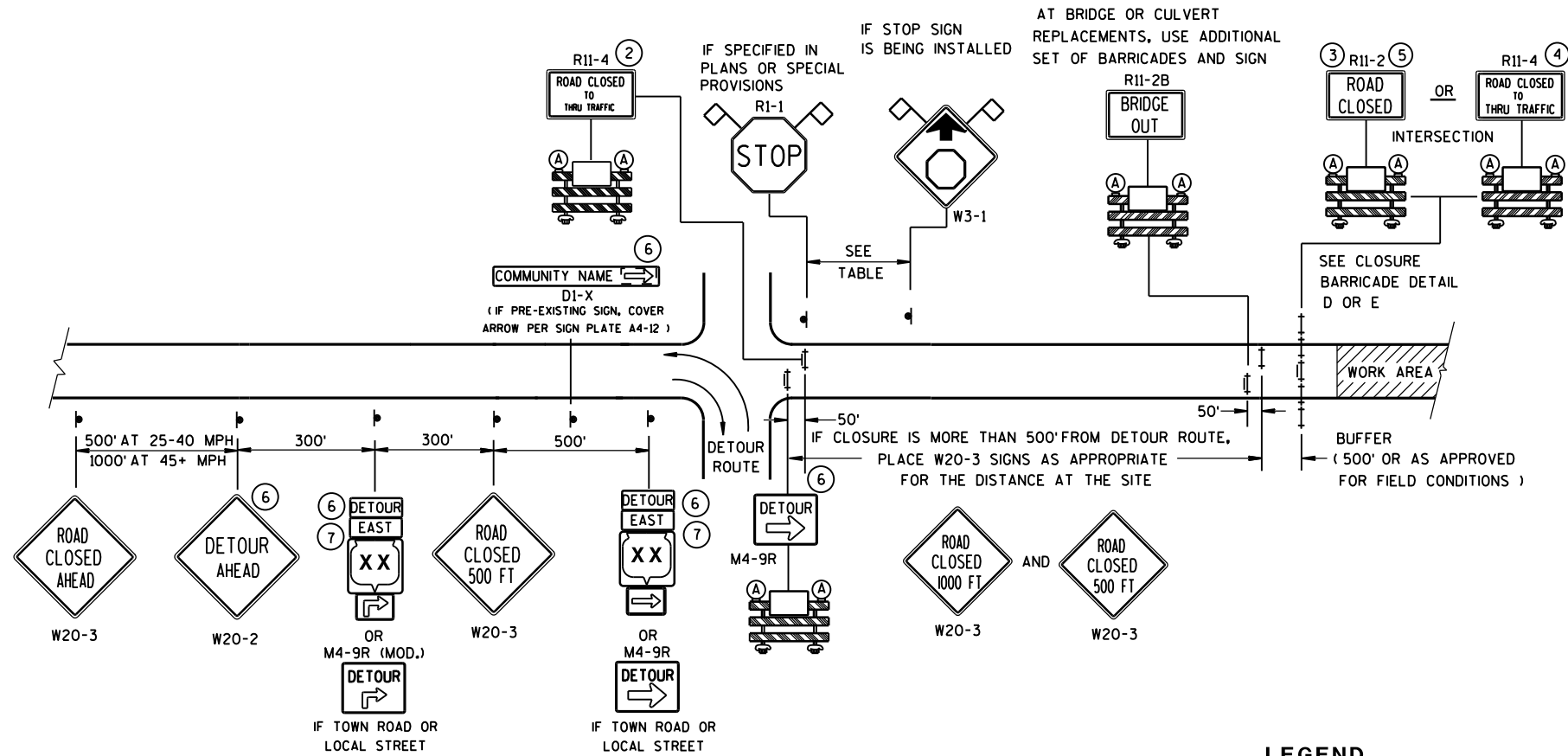
APPROVED  
10/25/2010 /S/ John Corbin  
DATE STATE ELECTRICAL ENGINEER FOR HWYS  
FHWA





DETAIL A  
MAINLINE CLOSURE WITH POSTED DETOUR

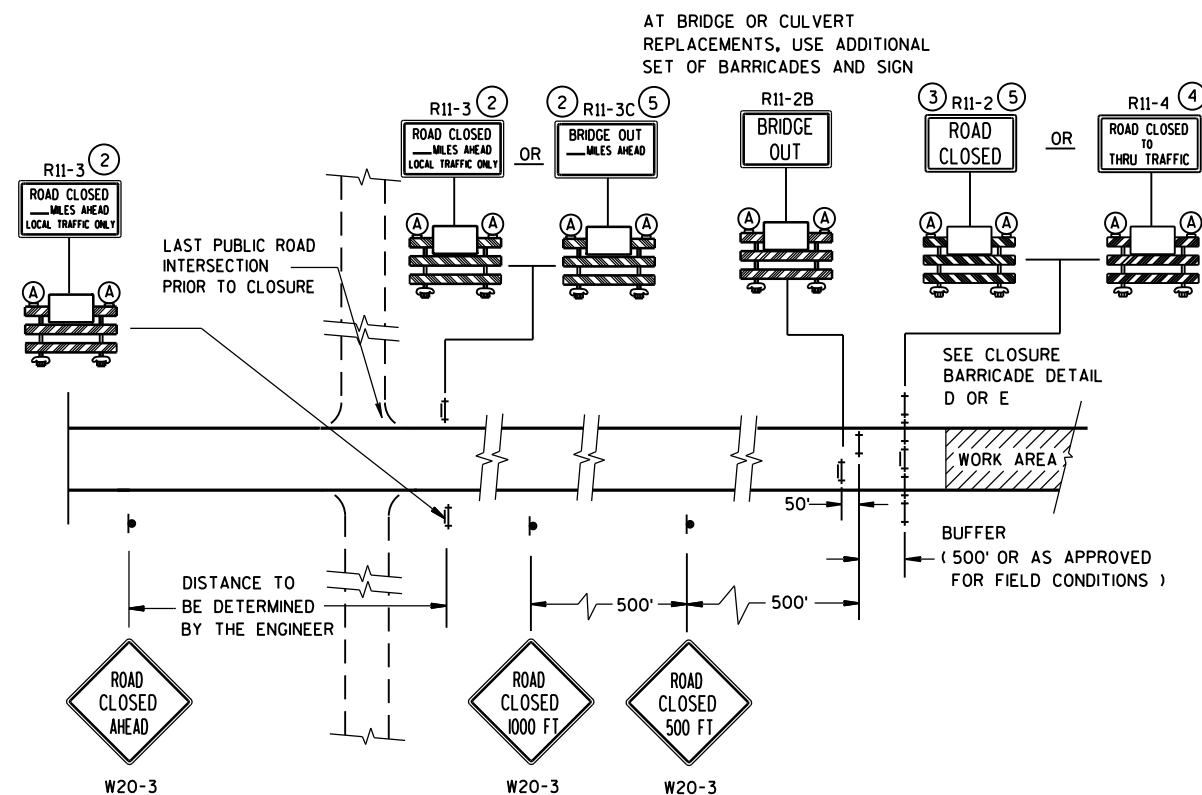
WORK ZONE GREATER THAN 1/2 MILE FROM DETOUR ROUTE (1000 FEET IF URBAN )



DETAIL B













**MAINLINE CLOSURE WITH POSTED DETOUR**

WORK ZONE LESS THAN 1/2 MILE FROM DETOUR ROUTE (1000 FEET IF URBAN )



DETAIL C  
MAINLINE CLOSURE, NO POSTED DETOUR

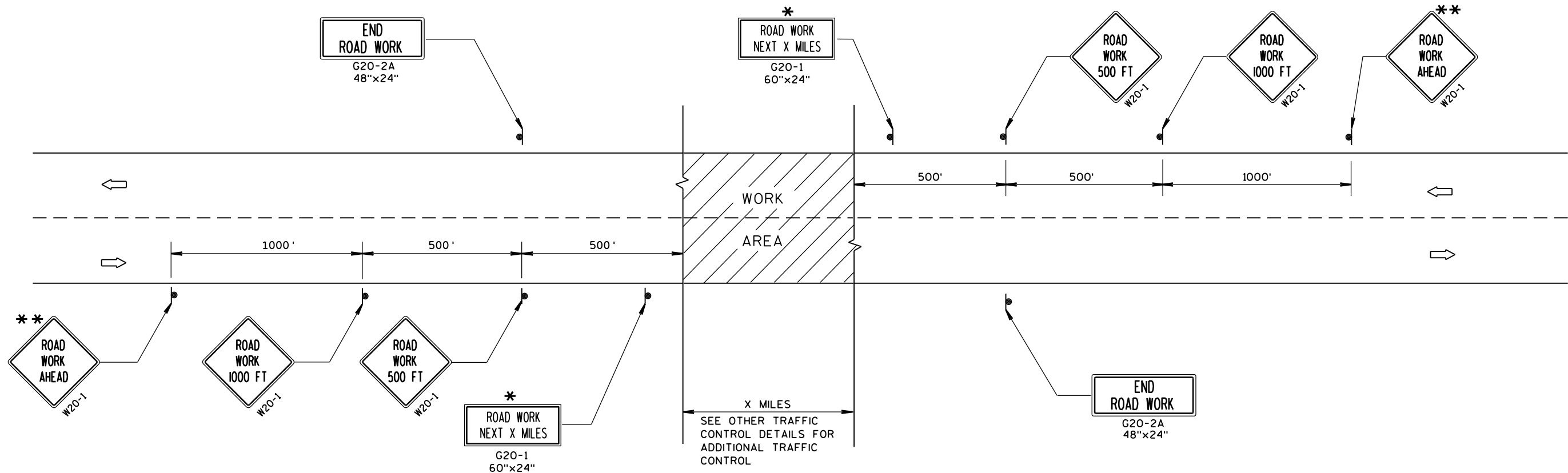
SPEED LIMIT (MPH)	"STOP AHEAD" ADVANCE WARNING DISTANCE (FT)
25	200
30	200
35	350
40	350
45	500
50	550
55	750

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

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

<b>BARRICADES AND SIGNS FOR MAINLINE CLOSURES</b>	
<b>STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION</b>	
<u>8/2013</u> DATE	<u>/S/ Travis Feites</u> STATE TRAFFIC ENGINEER OF DESIGN





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.

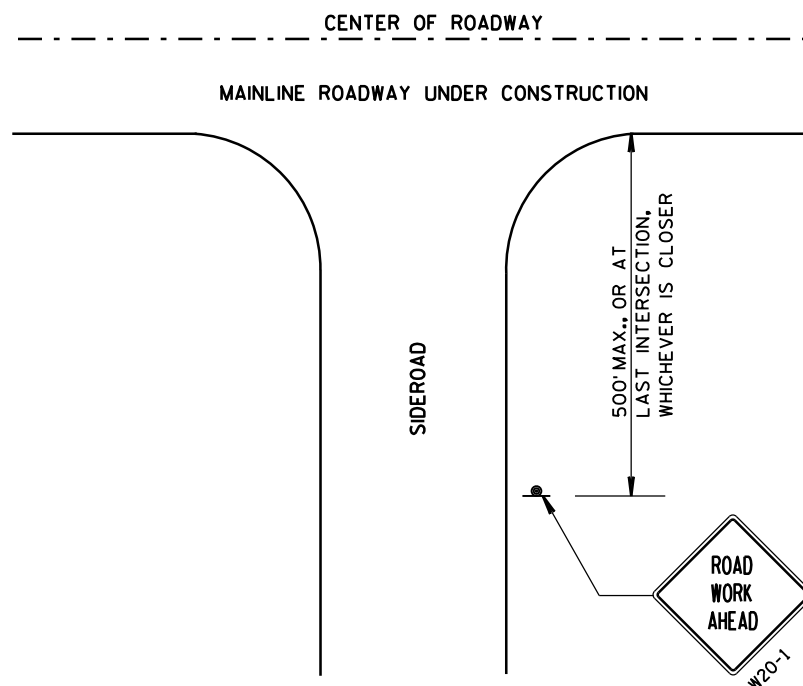
ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.

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.



## LEGEND

- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA

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

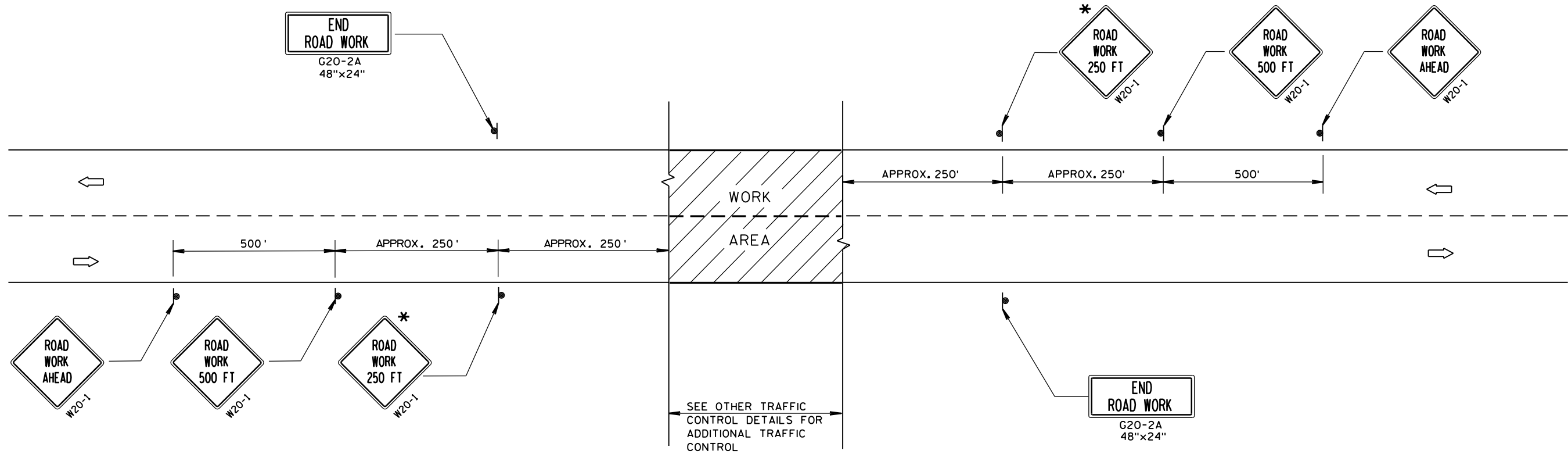
8/2013

DATE

FHWA

/S/ Travis Feltes  
STATE TRAFFIC ENGINEER OF DESIGN





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.

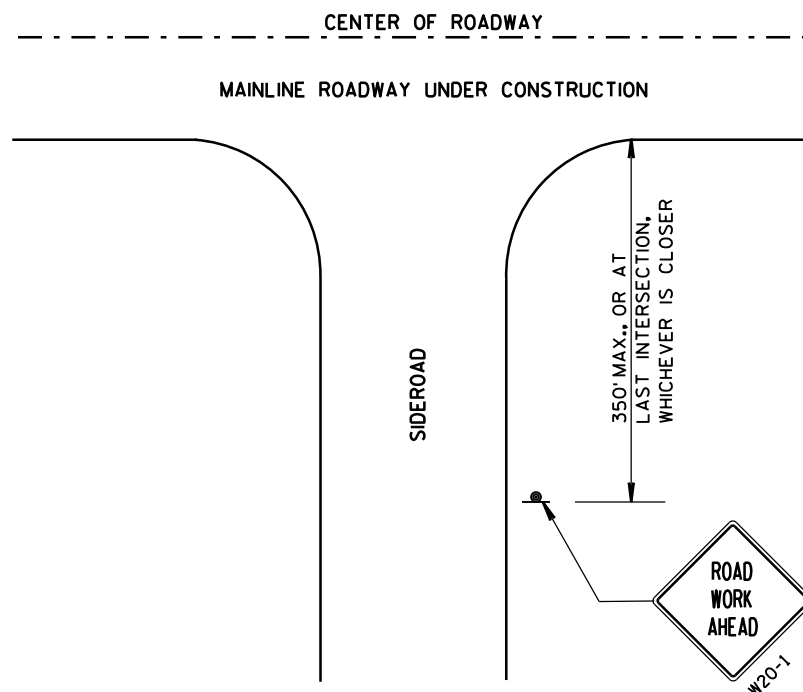
THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

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.

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

- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA

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  
8/2013 /S/ Travis Feltes  
DATE STATE TRAFFIC ENGINEER OF DESIGN  
FHWA



LEGEND

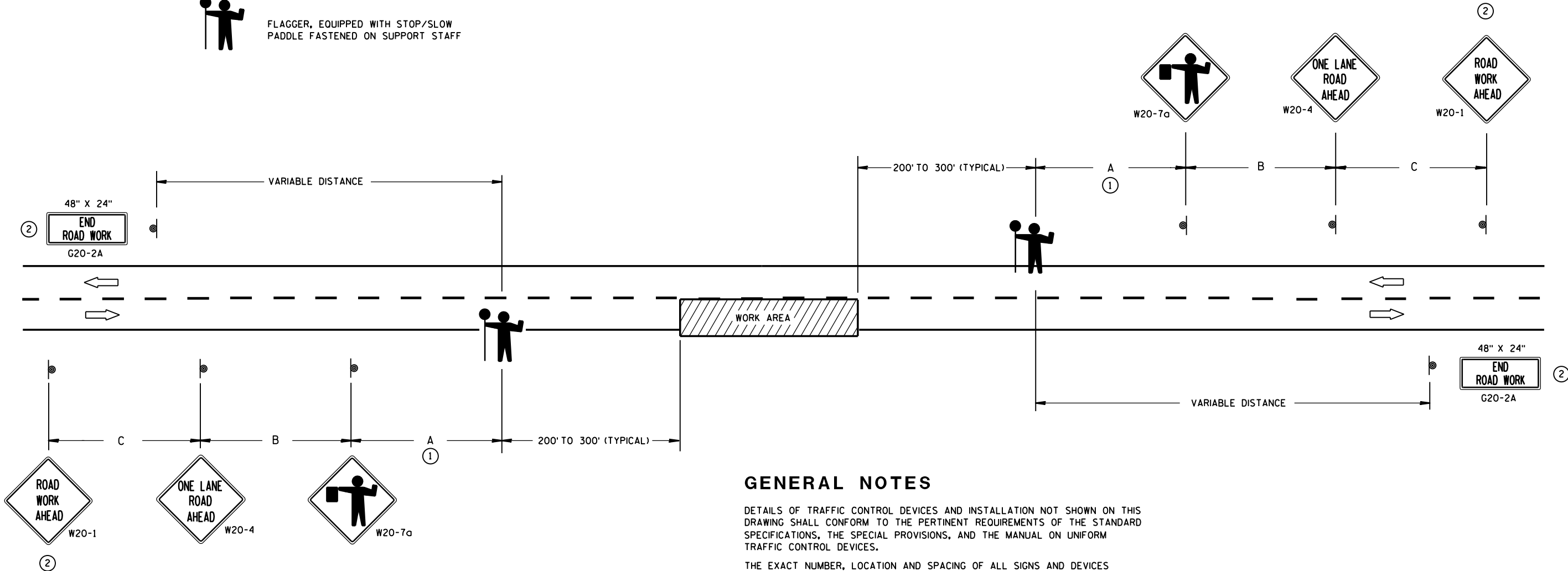
-  SIGN ON PORTABLE OR PERMANENT SUPPORT
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

SIGN SPACING TABLE

SPEED LIMIT	SIGN SPACING A,B,C
25-35 MPH	200'
35-40 MPH	350'
45-55 MPH	500'



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.



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, COVER OR REMOVE ALL TEMPORARY TRAFFIC CONTROL SIGNS.

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

- 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.

TRAFFIC CONTROL FOR LANE  
CLOSURE (SUITABLE FOR  
MOVING OPERATIONS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
8/2013 /S/ Travis Feltes  
DATE STATE TRAFFIC ENGINEER OF DESIGN  
FHWA



LEGEND

- SIGN ON PERMANENT SUPPORT
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- TRAFFIC CONTROL DRUM
- FLASHING ARROW BOARD
- REMOVING PAVEMENT MARKING
- CONCRETE BARRIER TEMPORARY PRECAST
- DIRECTION OF TRAFFIC
- WORK AREA



INSTALL ON EACH APPROACH AT THE CLOSEST INTERSECTION WITH A STATE OR COUNTY TRUNK HIGHWAY, OR AS DIRECTED BY THE ENGINEER. WIDTH ON SIGN TO BE APPROX. 1 FOOT LESS THAN AVAILABLE WIDTH (OMIT IF AVAILABLE WIDTH IS MORE THAN 16 FEET).



LOCATED 500 FEET IN ADVANCE OF R2-1 SIGN AND 500 FEET BEYOND THE "ROAD WORK 1 MILE" SIGN.



R2-1  
48"x60"  
(BLACK AND WHITE)

IF THE REGULATORY SPEED HAS BEEN REDUCED, A SPEED LIMIT SIGN SHALL BE LOCATED 1500 FEET BEYOND THE END OF THE ACCELERATION LANE OF EACH ENTRANCE RAMP. THERE SHOULD BE A SPEED LIMIT SIGN INCORPORATED A MINIMUM OF EVERY 2 OR 3 MILES.

\* INCLUDE RESUME SPEED LIMIT SIGN A MINIMUM OF 200 FEET (500 FEET DESIRABLE) AFTER END ROAD WORK SIGNS.

GENERAL NOTES

THIS LANE CLOSURE IS TYPICAL FOR CLOSING RIGHT LANE - REVERSE FOR CLOSING LEFT LANE.

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 DESIRABLE) CLEARANCE TO EXISTING SIGNS.

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 OR AS APPROVED BY THE ENGINEER.

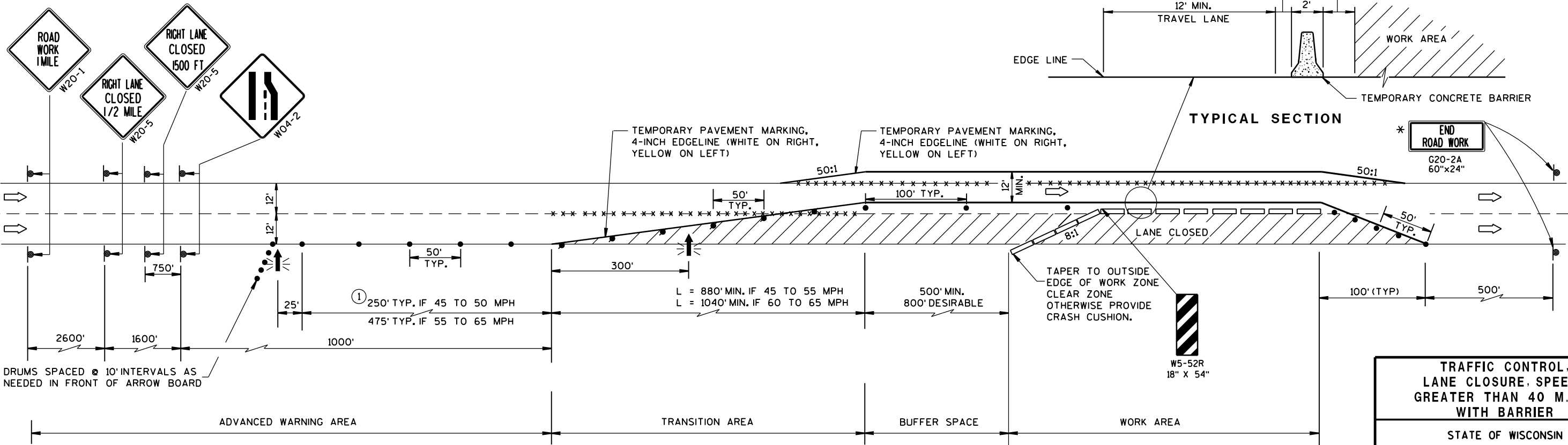
- ① CONSIDER ROADWAY GEOMETRICS WHEN LOCATING SIGNS AND ARROW BOARD SO THE DRIVER HAS A CLEAR VIEW OF THE ARROW BOARD AND LANE CLOSURE DRUMS FOR A MINIMUM 1500 FEET IN FRONT OF DRUM TAPER.

FOR A LANE CLOSURE THAT IS IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, THE ADVANCED WARNING SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS.

REMOVE PAVEMENT MARKINGS IF LANE CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

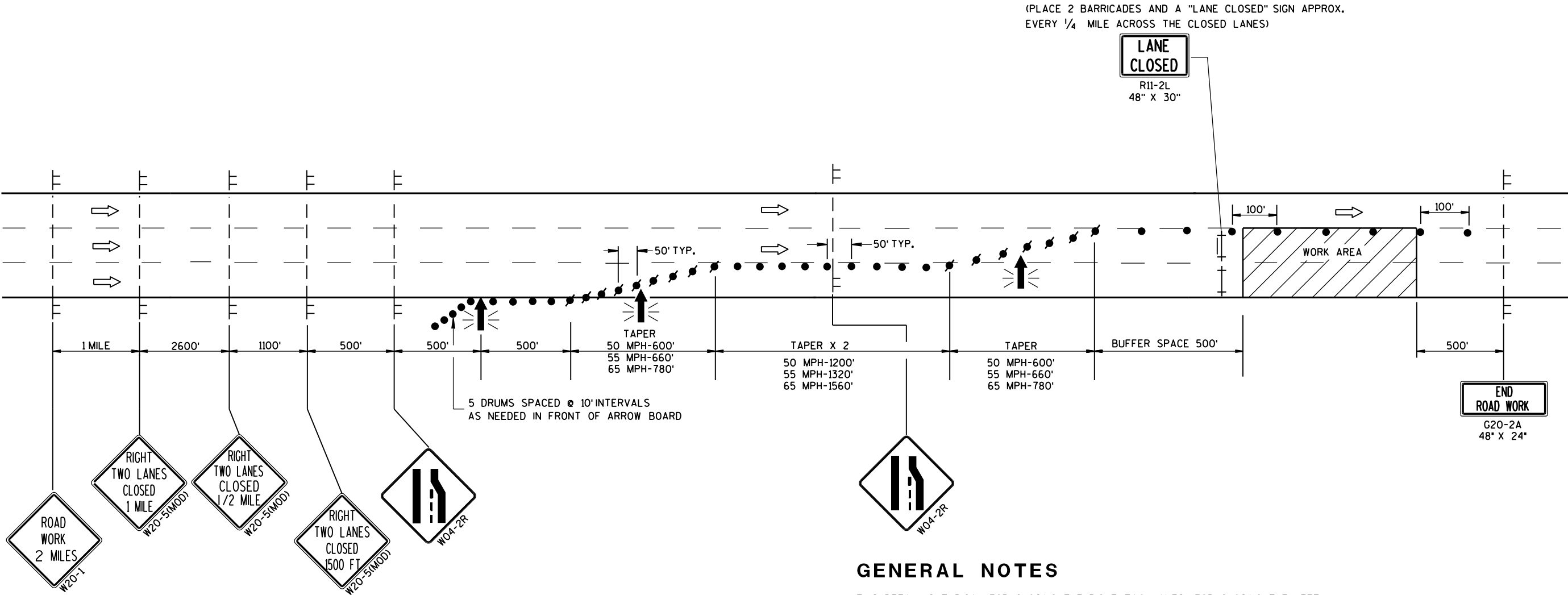
IF THE HORIZONTAL ALIGNMENT IS SUCH THAT A CURVE MAY REQUIRE ADDITIONAL DELINEATION, THE DEVICE SPACING MAY BE DECREASED TO 50 FEET.

ADJUSTMENTS IN BUFFER SPACE NEED TO BE INCORPORATED WHEN THE LANE CLOSURE OCCURS NEAR AN INTERCHANGE EXIT OR ENTRANCE RAMP OR INTERSECTION. THE LANE CLOSURE 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.



TRAFFIC CONTROL, LANE CLOSURE, SPEEDS GREATER THAN 40 M.P.H. WITH BARRIER	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 8/2013	/S/ Travis Feltes
DATE	STATE TRAFFIC ENGINEER OF DESIGN
FHWA	





LEGEND

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

GENERAL NOTES

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

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

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

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

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

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

W20-1 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.

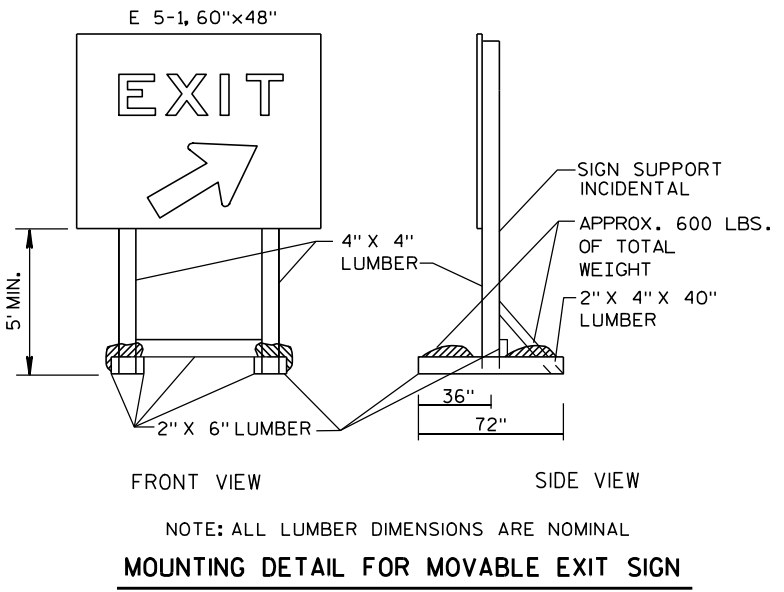
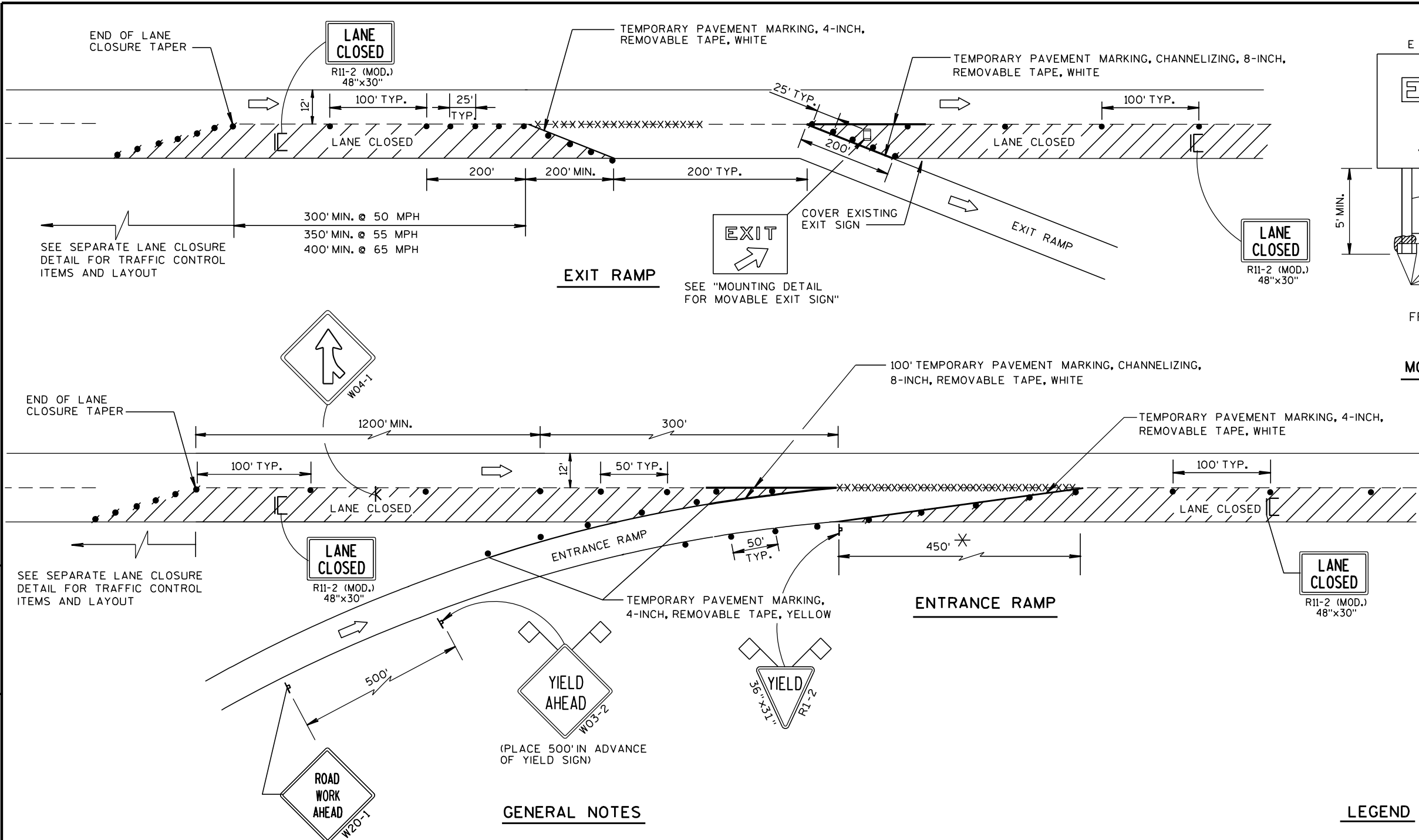
BARRICADES IN A CLOSED LANE THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY RE-ESTABLISHED UPON COMPLETION OF THE OPERATION OR, FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

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 8/2013 DATE	/S/ Travis Feltes STATE TRAFFIC ENGINEER OF DESIGN
FHWA	





**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. Spang CHIEF SIGNS AND MARKING ENGINEER
FHWA	



## LEGEND

-  TYPE III BARRICADE
-  TYPE III BARRICADE WITH ATTACHED SIGN
-  TRAFFIC CONTROL DRUM
-  SIGN ON PERMANENT SUPPORT
-  TYPE "A" WARNING LIGHT (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.

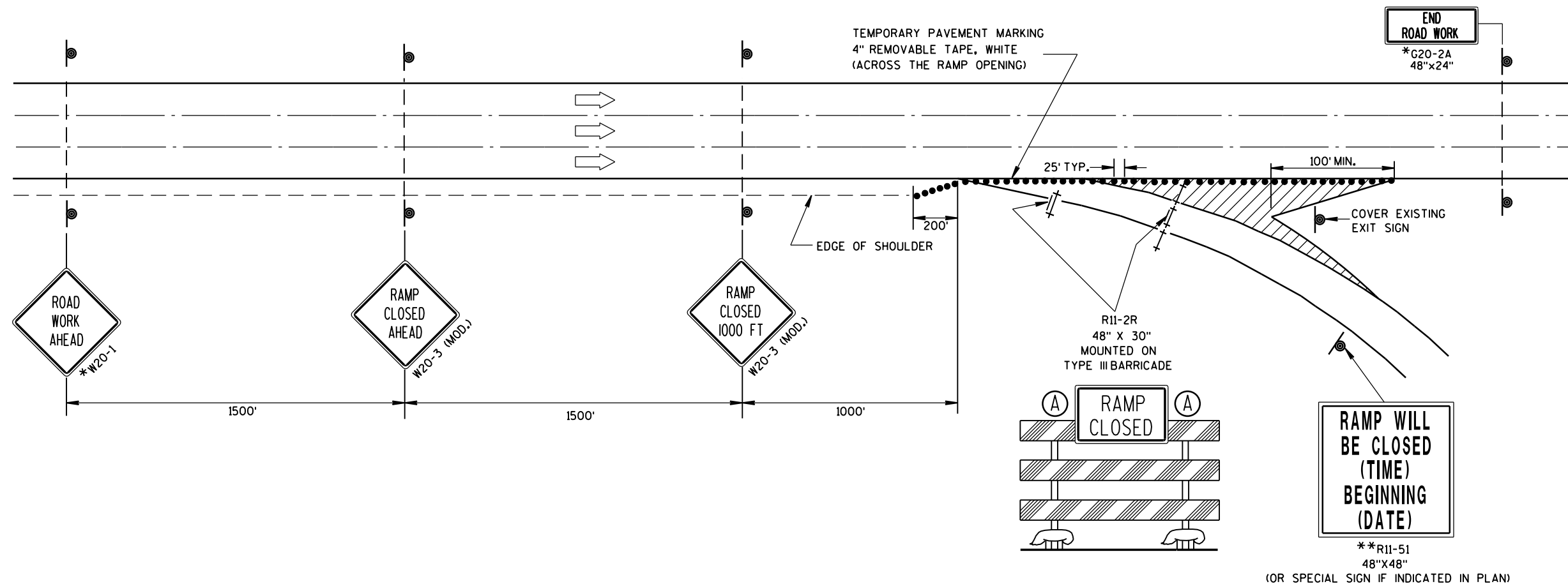
PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF RAMP CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

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.

\*\* PLACE "RAMP WILL BE CLOSED" SIGN 10 CALENDAR DAYS PRIOR TO CLOSURE OR AS DIRECTED BY THE ENGINEER. SEE WISCONSIN STANDARD SIGN PLATES FOR SIGN LAYOUT.



TRAFFIC CONTROL,  
EXIT RAMP CLOSURE

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

8/2013

DATE

FHWA

/S/ Travis Feltes  
STATE TRAFFIC ENGINEER OF DESIGN



LEGEND

- TRAFFIC CONTROL DRUM
- ⦿ SIGN ON PERMANENT SUPPORT
- ➡ DIRECTION OF TRAFFIC
- ⚡➡ FLASHING ARROW BOARD
- ▨ WORK AREA

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.

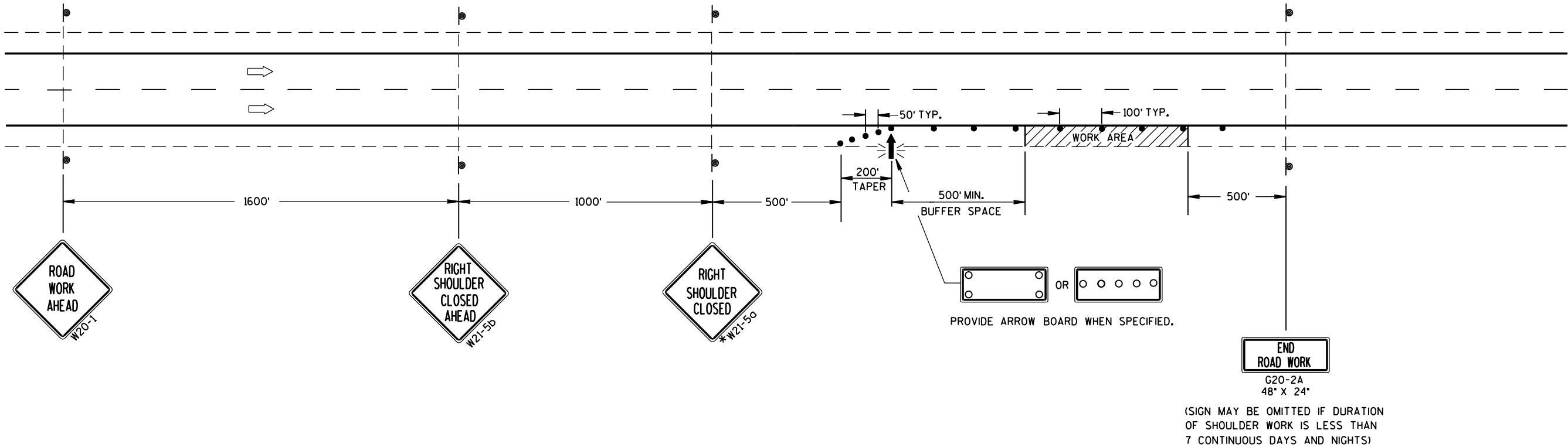
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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  
8/2013 /S/ Travis Feltz  
DATE STATE TRAFFIC ENGINEER OF DESIGN  
FHWA





## *Wisconsin Department of Transportation*

Dedicated people creating transportation solutions  
through innovation and exceptional service.

<http://www.dot.wisconsin.gov>