

WKE

PROJECT ID: 1000-68-91

WITH:

COUNTY: SE REGION WIDE

MAY 2016

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 2016

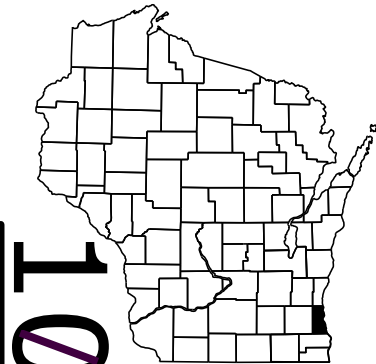
VARIOUS HIGHWAYS

SE REGION - WIDE

TOTAL SHEETS = 28

STATE PROJECT NUMBER
1000-68-91

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
1000-68-91		



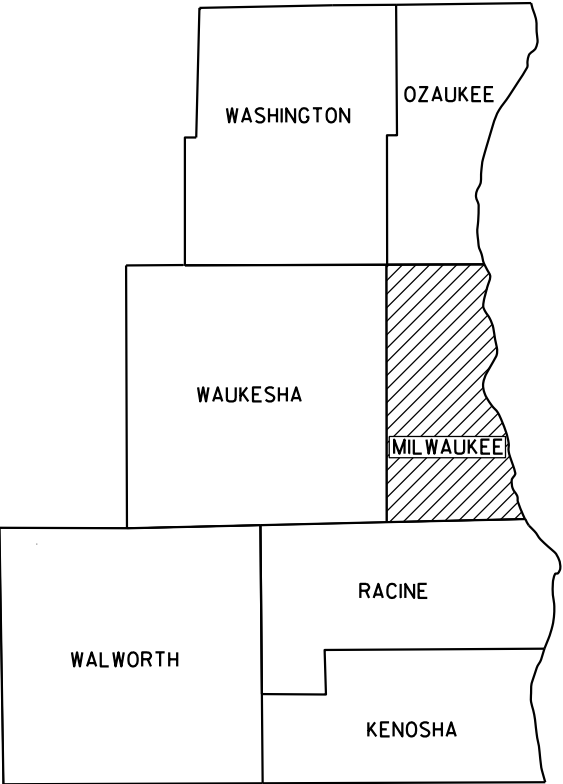
DESIGN DESIGNATION

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	MITZI DOBERSEK
C.O. Examiner	

APPROVED FOR REGION OFFICE

DATE: 1/19/2016

(Signature)

E

UTILITY CONTACTS

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



MILWAUKEE COUNTY - HIGHWAY MAINTENANCE

MR. GREG HEISEL  
HIGHWAY MAINTENANCE MANAGER  
10190 WATERTOWN PLK ROAD  
WAUWATOSA, WI 53266  
414-257-6566  
GREG.HEISEL@MILWCNTY.COM

MILWAUKEE COUNTY - HIGHWAY MAINTENANCE

MILWAUKEE COUNTY - HIGHWAY MAINTENANCE  
MR. STANLEY L. JACKSON  
ELECTRICAL MECHANIC SUPERVISOR  
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WISCONSIN DEPT. OF TRANSPORTATION

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STATE AGENCIES

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

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DNR SOUTHEAST REGION HQ  
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WISCONSIN DEPARTMENT OF TRANPORTATION

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WISCONSIN DEPARTMENT OF TRANSPORTATION

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




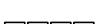






WISCONSIN DEPARTMENT OF TRANSPORTATION

MS. LAURA LONGLEY - SE REGION UTILITY COORDINATOR  
141 NW BARSTOW ST  
WAUKESHA, WI 53187-0798  
(262) 548-6425  
LAURA.LONGLEY@DOT.WI.GOV

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. TEMPORARY STORAGE OF ANY EXCAVATED MATERIAL WILL NOT BE PERMITTED IN WETLANDS

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

# HIGHWAY LIGHTING DISTRIBUTION CENTERS

## Milwaukee County

40



LEGEND

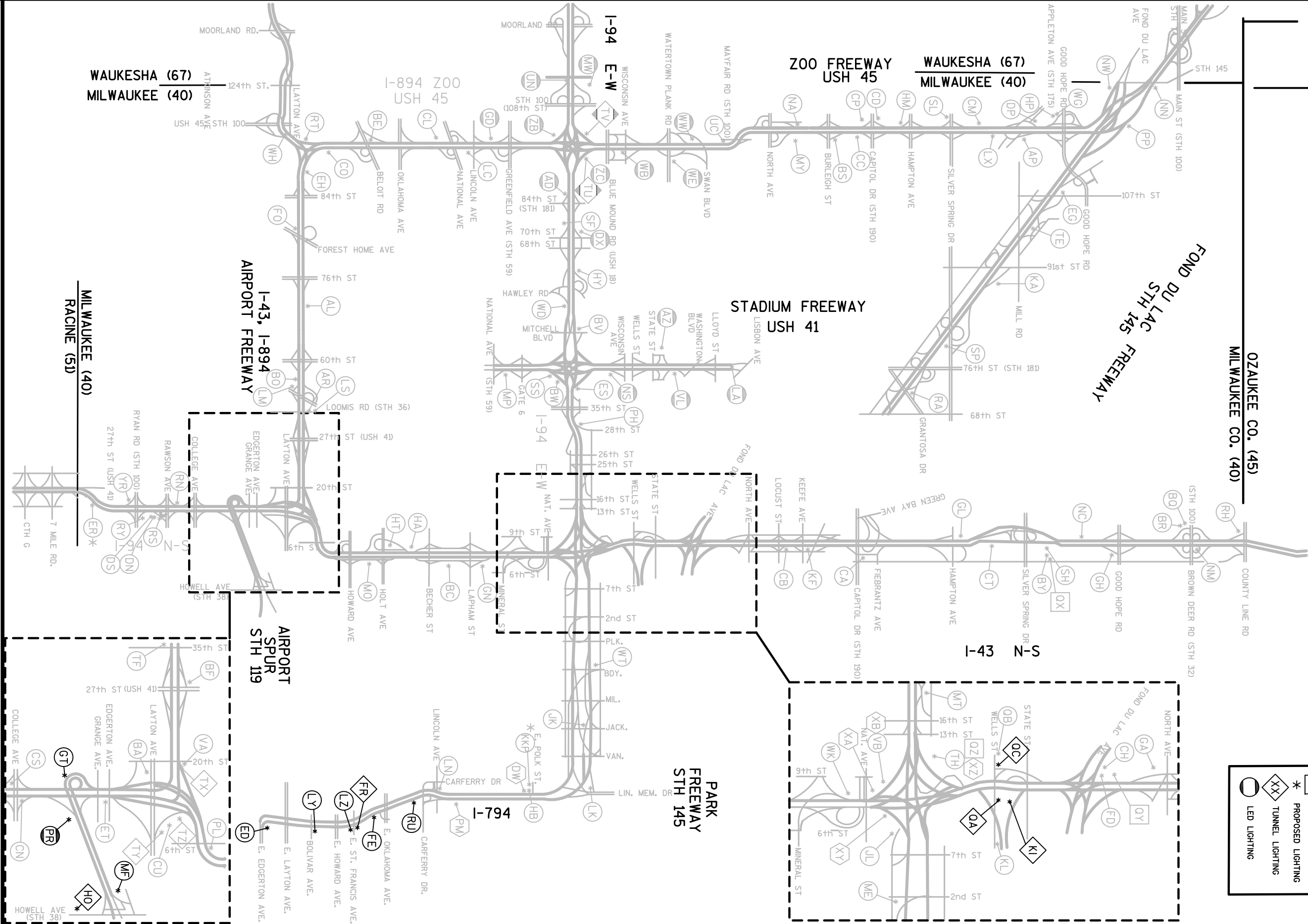
FREEWAY LIGHTING

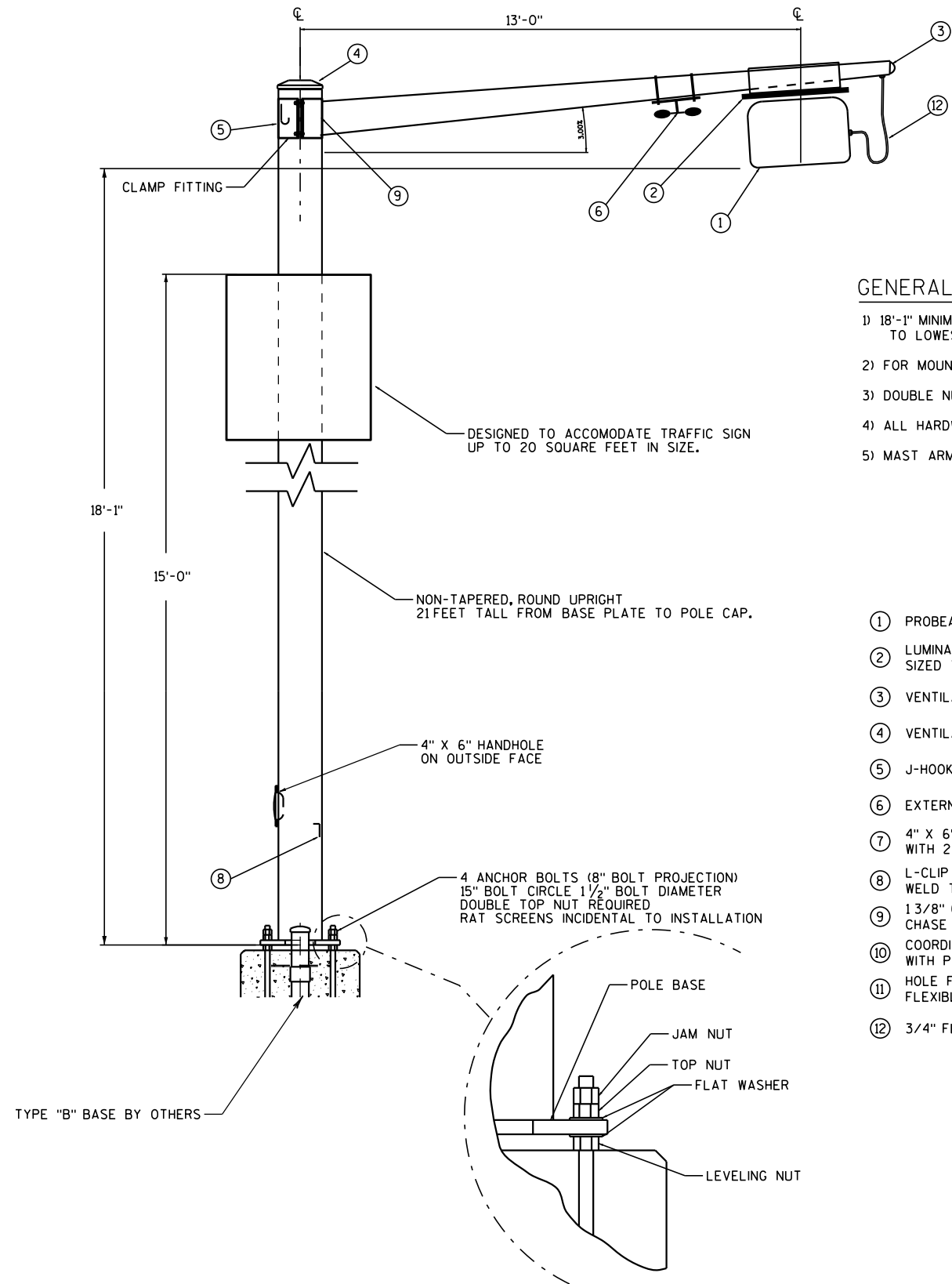
SPLITTER CABINETS

PROPOSED LIGHTING

TUNNEL LIGHTING

LED LIGHTING





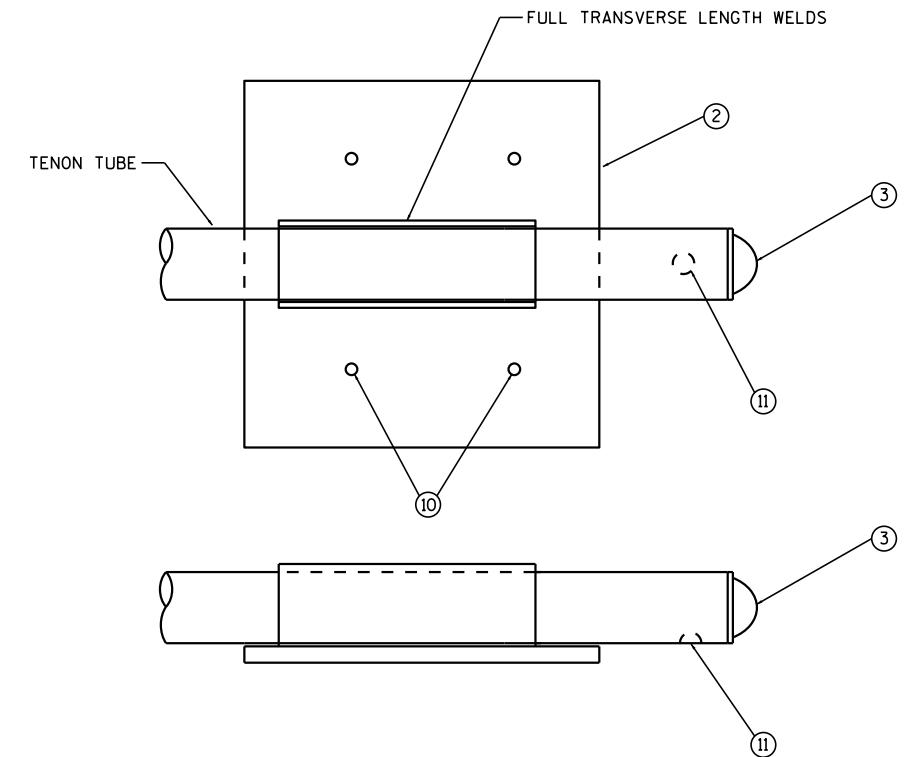
### GENERAL NOTES

- 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

### POLE MOUNT FOR PROBEAM LUMINAIRE ON B-BASE

NOT TO SCALE  
SEE ELECTRICAL DRAWINGS  
FOR ADDITIONAL INFORMATION



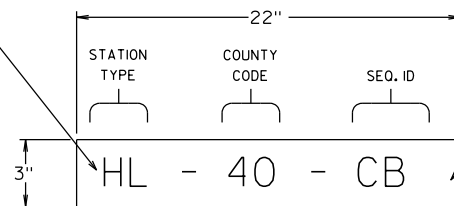
### PROBEAM LUMINAIRE POLE MOUNTING DETAIL

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.

LETTERS AND NUMBERS 2"  
SERIES "D" SELF ADHESIVE  
VINYL CUTOUTS



BASE MATERIAL TO BE  
SHEET ALUMINUM, 0.060"  
MIN. THICKNESS

PLAQUE FACE BACKGROUND  
SELF ADHESIVE SHEETING  
WHITE (NON-RETROREFLECTIVE)

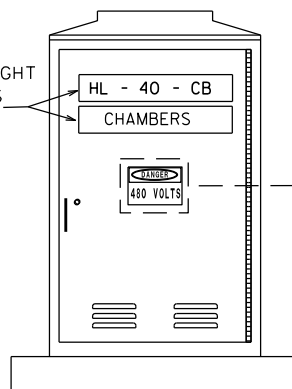
SPACING BETWEEN LETTERS  
AND NUMBERS TO BE 1/2"  
(IF QUANTITY OF NUMERALS  
OR LETTERS IS LESS THAN  
SHOWN, LEAVE SPACE AT  
RIGHT SIDE OF PLAQUE)

DISTRIBUTION CENTER  
IDENTIFICATION PLAQUE

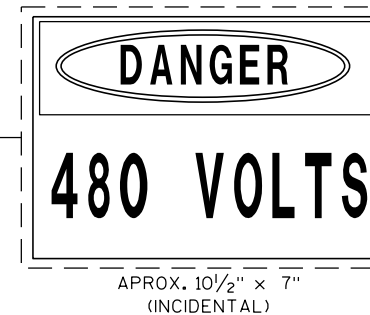
CHAMBERS

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

FASTEN LEFT, CENTER AND RIGHT  
OF PLAQUE WITH 3 STAINLESS  
STEEL POP RIVETS

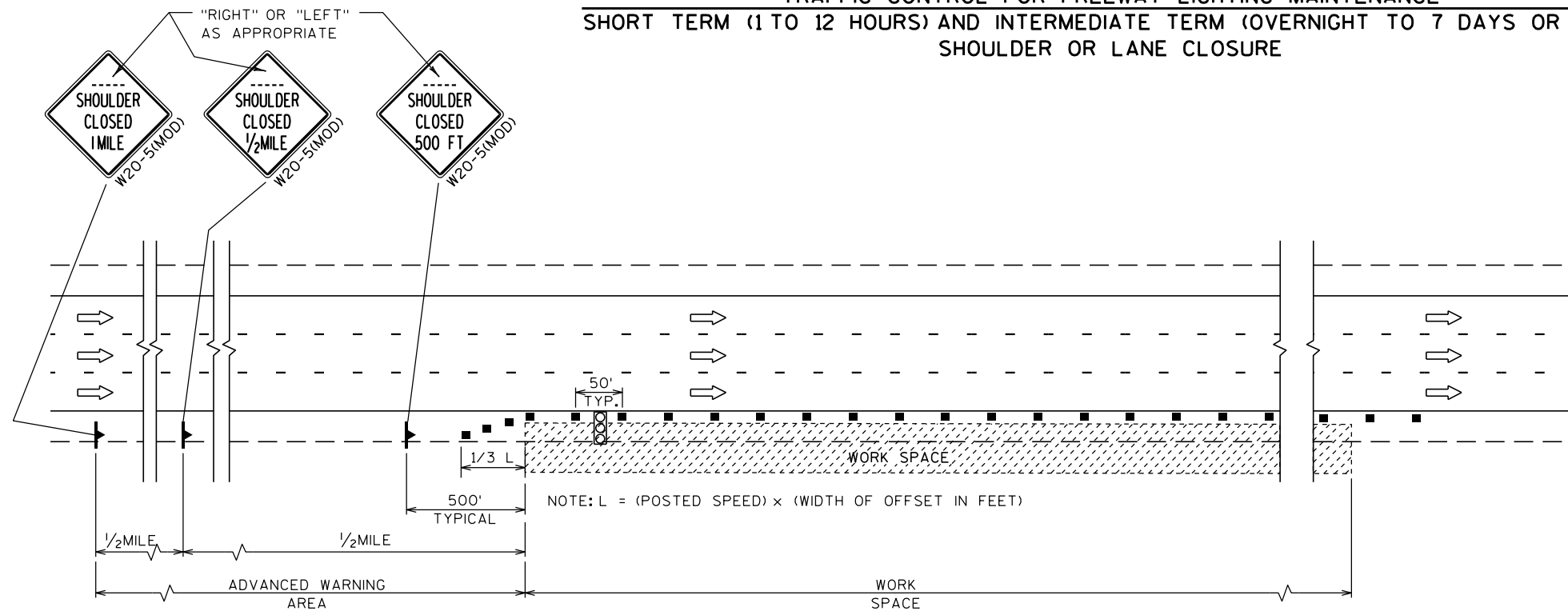


NOTES:  
1. TWO OR MORE PLAQUES PER  
CABINET REQUIRED



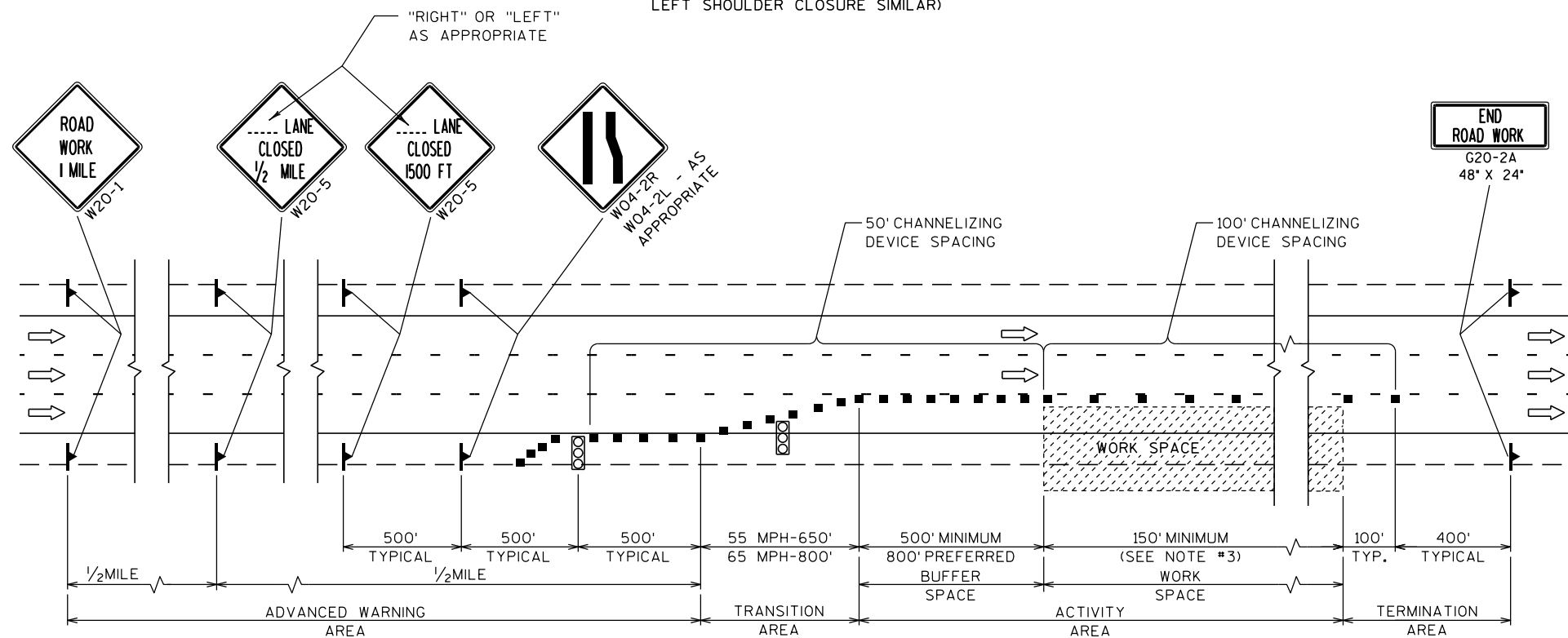
DISTRIBUTION CENTER IDENTIFICATION PLAQUE  
REQUIREMENTS AND PLACEMENTS  
(TYPICAL ALL CONTROL CABINETS)

**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**

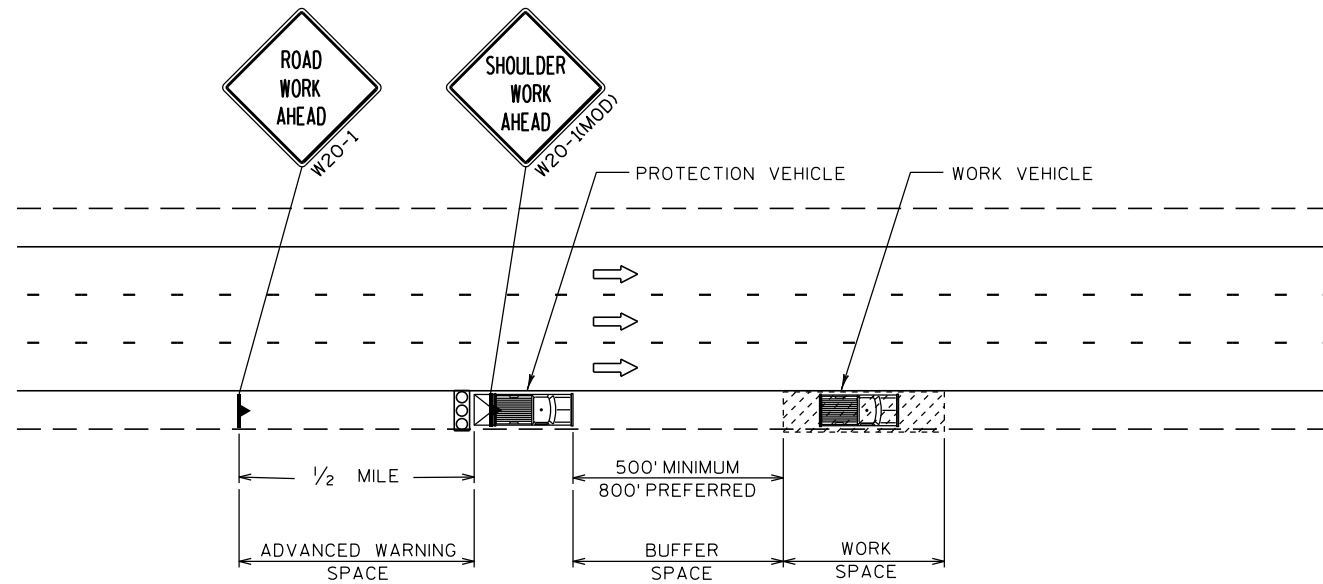
(RIGHT LANE CLOSURE SHOWN,  
LEFT LANE CLOSURE SIMILAR)

**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 21MAR16		E S T I M A T E O F Q U A N T I T I E S				
LINE						1000-68-91
NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	QUANTI TY	
0010	619. 1000	Mobil i zati on	EACH	1. 000	1. 000	
0020	643. 0100	Traffi c Control (project) 01.	EACH	1. 000	1. 000	
0030	643. 0300	Traffi c Control Drums	DAY	200. 000	200. 000	
0040	643. 0420	Traffi c Control Barricades Type III	DAY	25. 000	25. 000	
0050	643. 0705	Traffi c Control Warning Lights Type A	DAY	20. 000	20. 000	
0060	643. 0715	Traffi c Control Warning Lights Type C	DAY	20. 000	20. 000	
0070	643. 0800	Traffi c Control Arrow Boards	DAY	65. 000	65. 000	
0080	643. 0900	Traffi c Control Signs	DAY	150. 000	150. 000	
0090	643. 1050	Traffi c Control Signs PCMS	DAY	10. 000	10. 000	
0100	643. 1055. S	Truck or Trailer Mounted Attenuator	DAY	55. 000	55. 000	
0110	655. 0610	Electrical Wire Lighting 12 AWG	LF	200. 000	200. 000	
0120	SPV. 0060	Speci al 01. Lamp Disposal High Intensi ty Di scharge	EACH	673. 000	673. 000	
0130	SPV. 0060	Speci al 02. Light Tower Rat Screens	EACH	20. 000	20. 000	
0140	SPV. 0060	Speci al 03. Removi ng Lumi nai res	EACH	388. 000	388. 000	
0150	SPV. 0060	Speci al 04. Fuse Holders	EACH	50. 000	50. 000	
0160	SPV. 0060	Speci al 05. Fuse Type FNO	EACH	100. 000	100. 000	
0170	SPV. 0060	Speci al 06. Instal l i ng State-Furni shed Lumi nai res LED	EACH	388. 000	388. 000	
0180	SPV. 0060	Speci al 07. Pl umbi ng Light Pol es	EACH	10. 000	10. 000	
0190	SPV. 0060	Speci al 08. Di stri buti on Center Preventi ve Mai ntenance	EACH	13. 000	13. 000	
0200	SPV. 0060	Speci al 09. Group Lumi nai re Mai ntenance Flood 175W Metal Hal ide	EACH	14. 000	14. 000	
0210	SPV. 0060	Speci al 10. Group Lumi nai re Mai ntenance Sign Light 175W MV	EACH	10. 000	10. 000	
0220	SPV. 0060	Speci al 11. Group Lumi nai re Mai ntenance Sign Light 250W MV	EACH	9. 000	9. 000	
0230	SPV. 0060	Speci al 12. Tunnel Lumi nai re Mai ntenance 100W HP	EACH	35. 000	35. 000	
0240	SPV. 0060	Speci al 13. Tunnel Lumi nai re Mai ntenance 150W HP	EACH	31. 000	31. 000	
0250	SPV. 0060	Speci al 14. Tunnel Lumi nai re Mai ntenance 200W HP	EACH	24. 000	24. 000	
0260	SPV. 0060	Speci al 15. Tunnel Lumi nai re Mai ntenance 250W HP	EACH	8. 000	8. 000	
0270	SPV. 0060	Speci al 16. Tunnel Lumi nai re Mai ntenance 400W HP	EACH	189. 000	189. 000	
0280	SPV. 0060	Speci al 17. Group Clean Tunnel Lumi nai res	EACH	1, 023. 000	1, 023. 000	

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
40-ED	SERVICE	MILW CO\MILW CO	MILW	STH 794	NWQUADRANT IH794 AND PENNSYLVANIA	240/480	ISOL NEUTRAL
40-FE	SERVICE (WITH FLASHER)	MILW CO\MILW CO	MILW	STH 794	EAST SIDE IH 794 FERNWOOD AVENUE	240/480	ISOL NEUTRAL
40-FR	SERVICE	MILW CO\MILW CO	MILW	STH 794	SAINT FRANCIS AVENUE EAST OF IH 794	480Y/277	ISOL NEUTRAL
40-GT	SERVICE	MILW CO\MILW CO	MILW	IH 94	18TH AND GOLDCREST	240/480	ISOL NEUTRAL
40-HO	SERVICE WITH ITS DERIVED	MILW CO\MILW CO	MILW	STH 38	WEST SIDE STH 38 AT NORTH TUNNEL PORTAL	480Y/277	ISOL NEUTRAL
40-KI	SERVICE	MILW CO\MILW CO	MILW	IH 43	CIVIC CENTER GARAGE	480 delta	PHASE-PHASE
40-LY	SERVICE	MILW CO\MILW CO	MILW	STH 794	EAST SIDE STH 794 AT LEROY AVENUE	240/480	ISOL NEUTRAL
40-LZ	SERVICE	MILW CO\MILW CO	MILW	STH 794	EAST SIDE STH 794 AT ELIZABETH AVENUE	240/480	ISOL NEUTRAL
40-MF	SERVICE	MILW CO\MILW CO	MILW	STH 119	NORTH OF STH 119 AT 3RD AND GRANGE	240/480	ISOL NEUTRAL
40-PR	SERVICE	MILW CO\MILW CO	MILW	STH 119	SOUTH SIDE STH 119 AT 14TH STREET	240/480	GRND NEUTRAL
40-QA	SERVICE WITH ITS DERIVED	MILW CO\MILW CO	MILW	IH 43	NORTHEAST QUADRANT IH 43 AND WELL	480Y/277	ISOL NEUTRAL
40-QC	SERVICE	MILW CO\MILW CO	MILW	IH 43	NORWEST QUADRANT IH 43 AND WELLS	480Y/277	ISOL NEUTRAL
40-RU	SERVICE	MILW CO\MILW CO	MILW	STH 794	EAST SIDE IH 794 AT RUSSELL AVENUE	240/480	ISOL NEUTRAL

GROUP CABINET AND LUMINAIRE MAINTENANCE

SPV.0060.01      LAMP DISPOSAL HIGH INTENSITY DISCHARGE \*  
SPV.0060.08      DISTRIBUTION CENTER PREVENTIVE MAINTENANCE  
SPV.0060.09 - .11 GROUP LUMINAIRE MAINTENANCE (VARIOUS)

\* ADDITIONAL QUANTITIES FOUND ELSEWHERE

LABEL HL-	HIGHWAY AND SEGMENT	COMMENTS	SPV.0060.01 LAMP DISPOSAL HIGH INTENSITY DISCHARGE EACH	SPV.0060.08 DISTRIBUTION CENTER MAINTENANCE EACH	SPV.0060.09 FLOOD 175 W METAL HALIDE EACH	SPV.0060.10 SIGN LIGHT 175 MV EACH	SPV.0060.11 SIGN LIGHT 250 MV EACH
40-ED	IH 794	SEE RETROFIT TABLE	--	1	--	--	--
40-FE	IH 794	SEE RETROFIT TABLE	3	1	--	--	3
40-FR	IH 794	SEE TUNNEL TABLE	--	1	--	--	--
40-GT	IH 94	SEE RETROFIT TABLE	14	1	14	--	--
40-HO	STH 38	SEE TUNNEL TABLE	--	1	--	--	--
40-KI	IH 43	SEE TUNNEL TABLE	--	1	--	--	--
40-LY	IH 794	SEE RETROFIT TABLE	2	1	--	--	2
40-LZ	IH 794	SEE RETROFIT TABLE	1	1	--	--	1
40-MF	STH 119	SEE RETROFIT TABLE	8	1	--	8	--
40-PR	STH 119	SEE RETROFIT TABLE	2	1	--	2	--
40-QA	IH 43	SEE TUNNEL TABLE	--	1	--	--	--
40-QC	IH 43	SEE TUNNEL TABLE	--	1	--	--	--
40-RU	IH 794	SEE RETROFIT TABLE	3	1	--	--	3
TOTAL			33	13	14	10	9

\*

RETROFIT HPS LUMINAIRES TO LED LUMINAIRES

- SPV.0060.01
- LAMP DISPOSAL HIGH INTENSITY DISCHARGE \*
- SPV.0060.03
- REMOVING LUMINAIRES
- SPV.0060.06
- INSTALLING STATE FURNISHED LUMINAIRES LED

\* ADDITIONAL QUANTITIES SHOWN ELSEWHERE

SYSTEM	HIGHWAY SEGMENT	SPV.0060.01	SPV.0060.03	SPV.0060.06						COMMENTS
		LAMP DISPOSAL	REMOVING	LUMINAIRES	LUMINAIRES	LUMINAIRES	LUMINAIRES	LUMINAIRES	LUMINAIRES	
		HIGH INTENSITY DISCHARGE EACH	LUMINAIRES EACH	UTILITY LED C EACH	UTILITY LED C BLACK EACH	UTILITY LED D EACH	UTILITY LED D BLACK EACH	UNDERDECK LED B EACH	PROBEAM LED EACH	
HL-40-ED	STH 794	40	40	--	38	--		2	--	E. EDGERTON AVENUE
HL-40-FE	STH 794	54	54	--	50	--	4	--	--	FERNWOOD AVENUE
HL-40-GT	IH 94	49	49	11	--	22	--	16	--	AIRPORT SPUR
HL-40-LY	STH 794	89	89	--	85	--	--	4	--	BOLIVAR AVENUE
HL-40-LZ	STH 794	33	33	--	29	--	--	4	--	HOWARD AVENUE
HL-40-MF	STH 119	29	29	21	--	6	--	2	--	AIRPORT SPUR
HL-40-PR	STH 119	46	46	14	--	27	--	--	5	AIRPORT SPUR
HL-40-RU	STH 794	48	48	--	48	--	--	--	--	RUSELL AVENUE
TOTAL		388	388	46	250	55	4	28	5	

\*

TUNNEL LUMINAIRE MAINTENANCE

SPV.0060.01                    LAMP DISPOSAL HIGH INTENSITY DISCHARGE \*  
SPV.0060.12 TO SPV.0060 .16   TUNNEL LUMINAIRE MAINTENANCE (VARIOUS)  
SPV.0060.17                    GROUP CLEAN TUNNEL LUMINAIRES

\* ADDITIONAL QUANTITIES SHOWN ELSEWHERE

LABEL	TUNNEL	SPV.0060.01 LAMP DISPOSAL H.I.D.  EACH	SPV.0060.12 TUNNEL LUMINAIRE 100W HPS  EACH	SPV.0060.13 TUNNEL LUMINAIRE 150W HPS  EACH	SPV.0060.14 TUNNEL LUMINAIRE 200W HPS  EACH	SPV.0060.15 TUNNEL LUMINAIRE 250W HPS  EACH	SPV.0060.16 TUNNEL LUMINAIRE 400W HPS  EACH	SPV.0060.17 GROUP CLEAN TUNNEL LUMINAIRES  EACH
HL-40-FR	ST. FRANCIS TUNNEL BOTH WAYS	21	5	--	--	5	17	103
HL-40-HO	HOWELL TUNNEL BOTH WAYS	112	18	18	--	--	94	448
HL-40-KI	KILBOURN NB ENTRANCE	21	13	13	--	3	5	83
HL-40-QA	KILBOURN EB EXIT	59	--	--	22	--	37	235
HL-40-QC	TORY HILL TUNNEL SB	39	--	--	2	--	37	154
TOTAL		252	35	31	24	8	189	1,023

\*

MOBILIZATION ITEMS

ITEM	ITEM	UNIT	QUANTITY
619.1000	MOBILIZATION	EACH	1

WORK ZONE TRAFFIC CONTROL

ITEM	ITEM	UNIT	QUANTITY
643.0100	TRAFFIC CONTROL PROJECT 1000-68-91	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

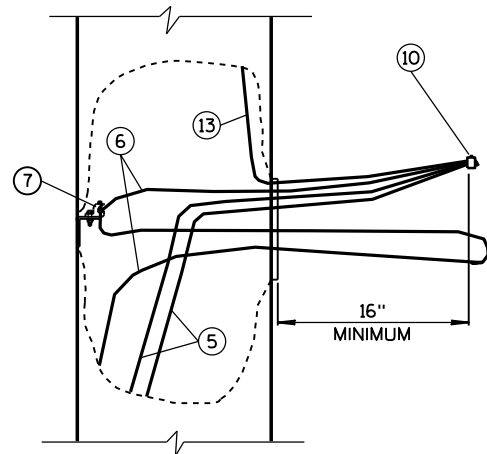
\*\*\* APPROVED TRAFFIC CONES WILL BE ACCEPTED FOR THIS ITEM FOR SHORT-TERM DAYTIME  
WORK, BUT WILL NOT BE MEASURED FOR PAYMENT.  
SEE THE SPECIAL PROVISIONS.

UNDISTRIBUTED HIGHWAY LIGHTING MAINTENANCE

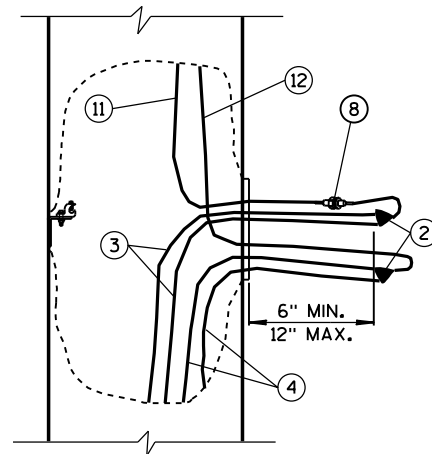
ITEM	QTY.	UNIT	DESCRIPTION
655.0610	200	L.F.	ELECTRICAL WIRE LIGHTING 12 AWG (POLE WIRE)
SPV.0060.02	20	EACH	LIGHT TOWER RAT SCREENS
SPV.0060.04	50	EACH	FUSE HOLDERS
SPV.0060.05	100	EACH	FUSES TYPE FNQ
SPV.0060.07	10	EACH	PLUMBING LIGHT POLES

Standard Detail Drawing List

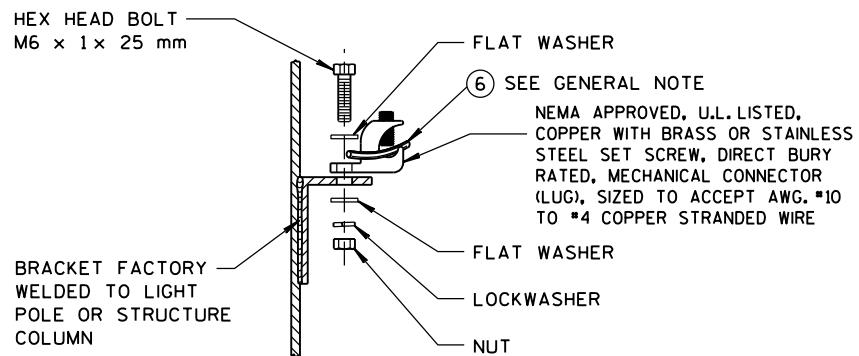
10A01-03	ELECTRICAL HANDHOLE WIRING
10A05-02	ELECTRICAL DETAILS GROUND MOUNT LIGHT POLES ISOLATED NEUTRAL SYSTEMS
10A06-02	ELECTRICAL DETAILS GROUND MOUNT LIGHT POLES GROUNDED NEUTRAL SYSTEMS
15C02-05A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C04-02	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. 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
15D14-03	TRAFFIC CONTROL, TWO LANE CLOSURE ON FREEWAY OR EXPRESSWAY, SHORT-TERM (LESS THAN 24 HOURS)
15D15-02	TRAFFIC CONTROL, EXIT AND ENTRANCE RAMP WITHIN LANE CLOSURE
15D16-03	TRAFFIC CONTROL, EXIT RAMP CLOSURE
15D27-02	TRAFFIC CONTROL, SHOULDER CLOSURE ON DIVIDED ROADWAY, SPEEDS GREATER THAN 40 MPH



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.

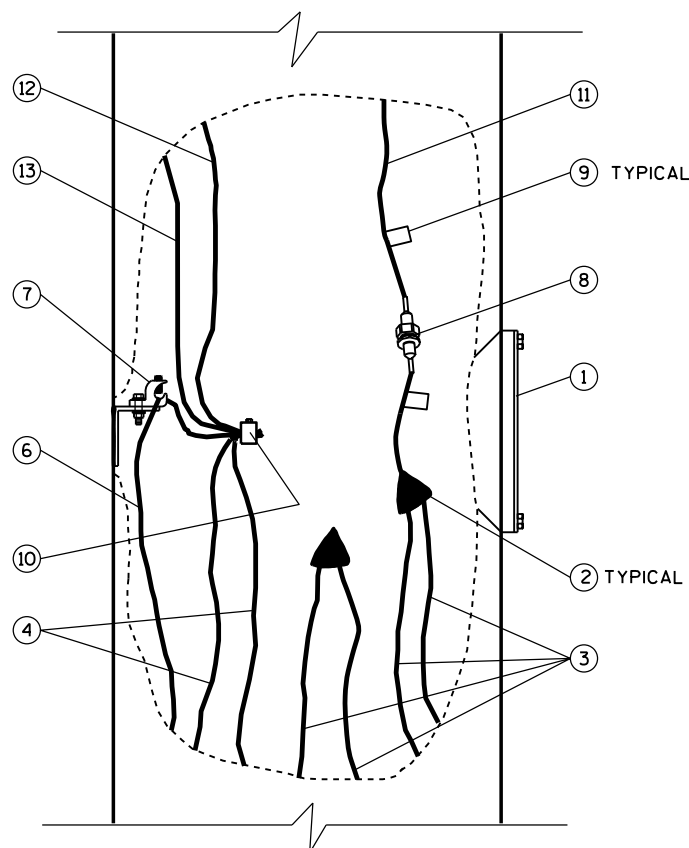
THE GROUNDING ELECTRODE CONDUCTOR SHALL BE CONTINUOUS WITHOUT  
SPICES FROM THE GROUNDING ELECTRODE THROUGH THE HANDHOLE GROUNDING  
LUG TO THE CONNECTOR.

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.

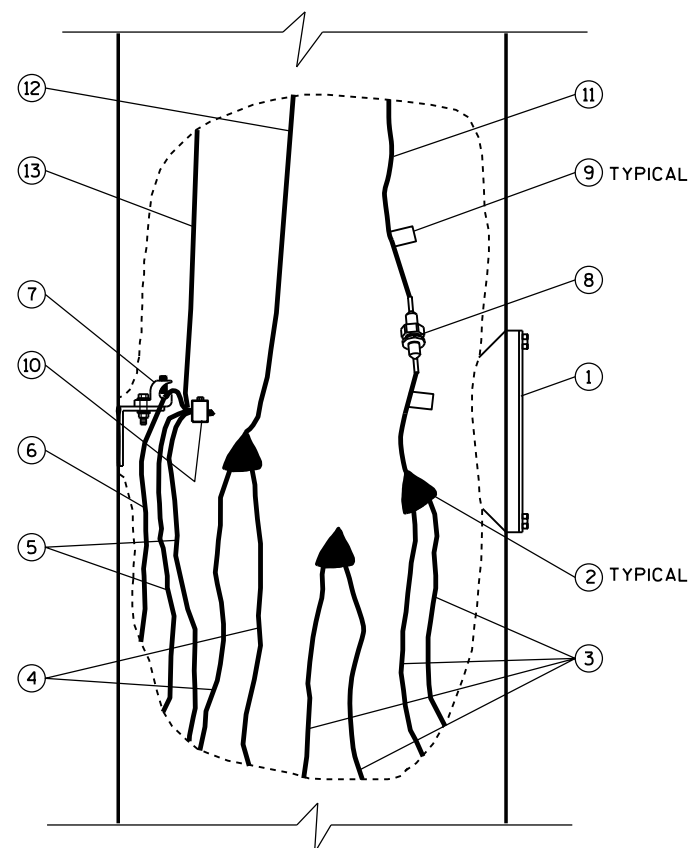
IN 3-PHASE SYSTEMS, THERE WILL BE ONE MORE UNGROUNDED LINE WIRE,  
WHICH IS OMITTED FROM THE DRAWING FOR CLARITY.

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

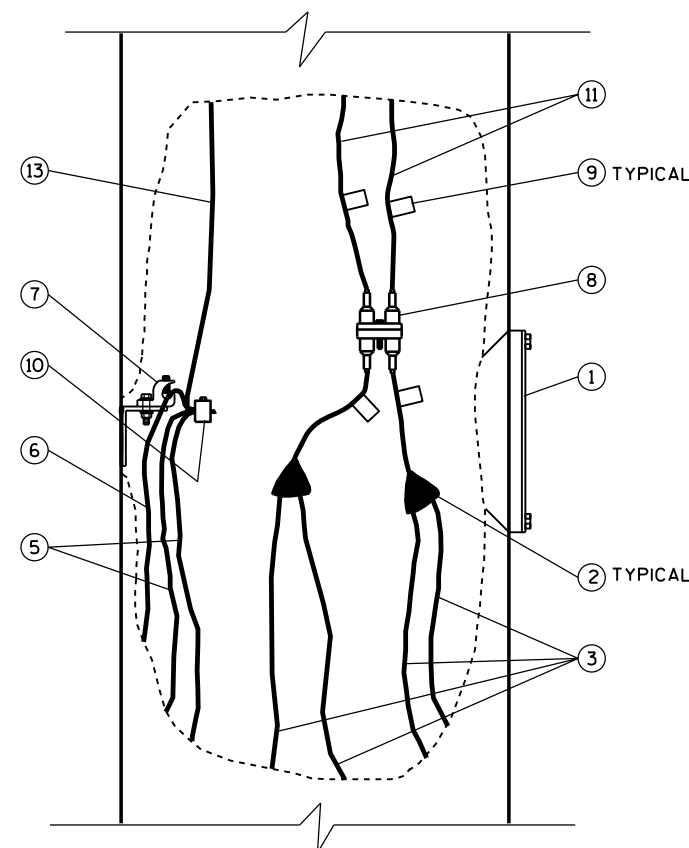
## TYPICAL CONDUCTOR SLACK AT HANDHOLES



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.



GENERAL NOTES

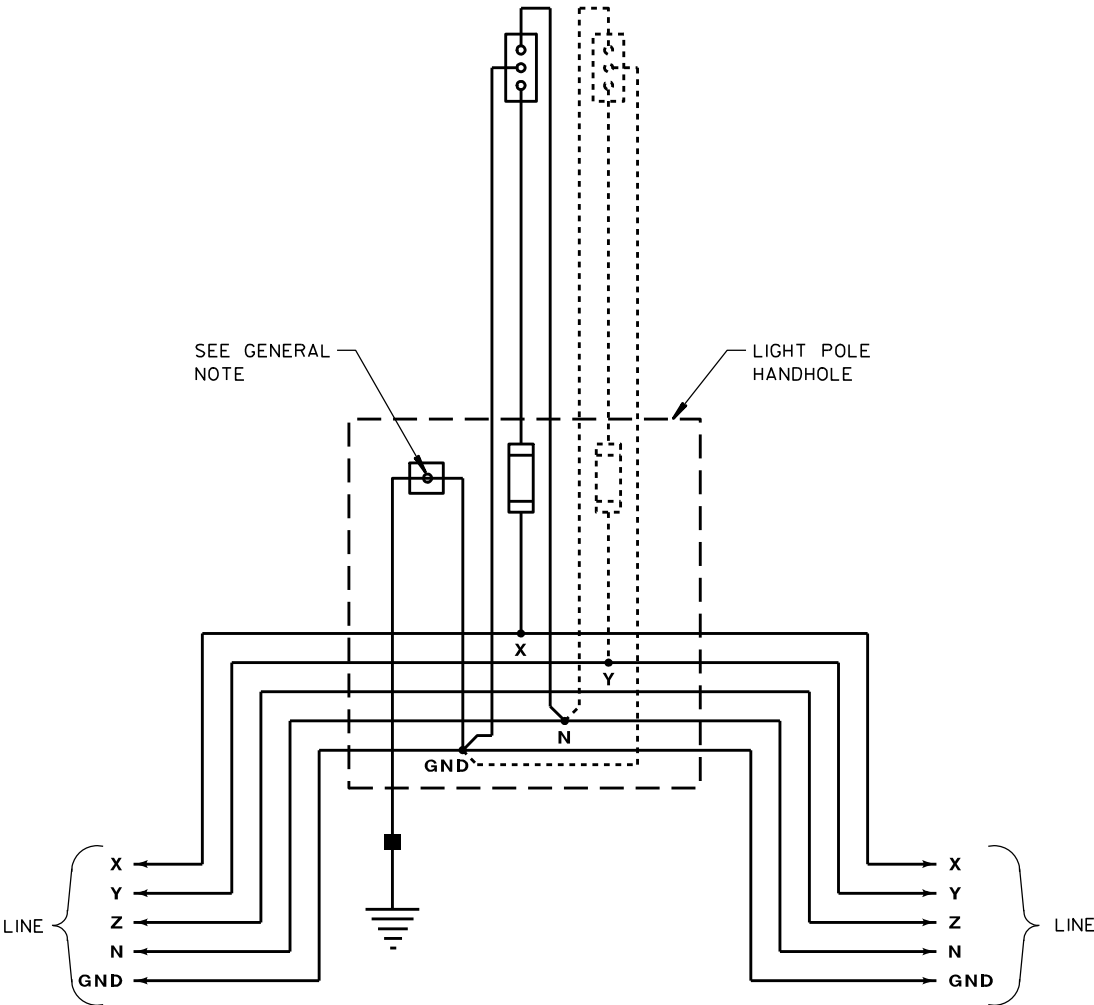
DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN IN THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

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.

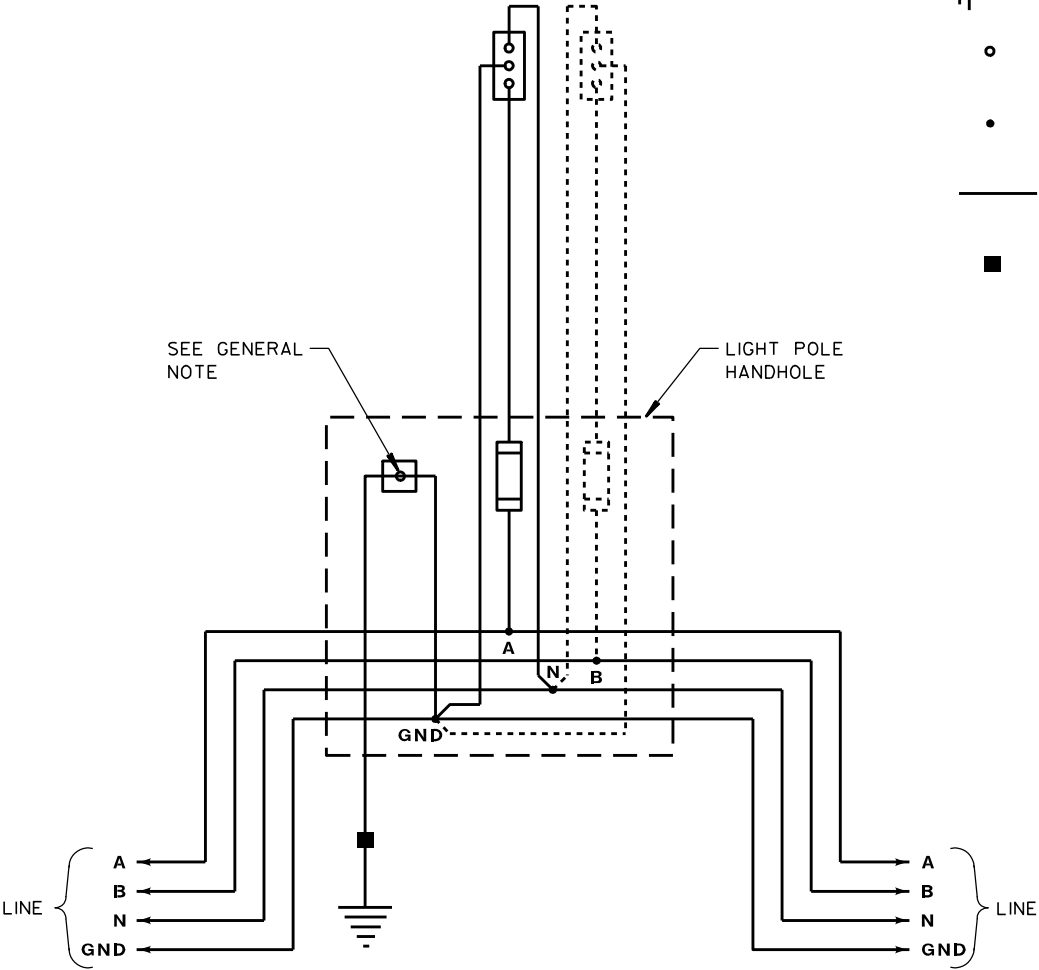
THE PLANS WILL SHOW WHICH CIRCUIT LEG(S) ARE CONNECTED TO EACH INSTALLATION.



**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

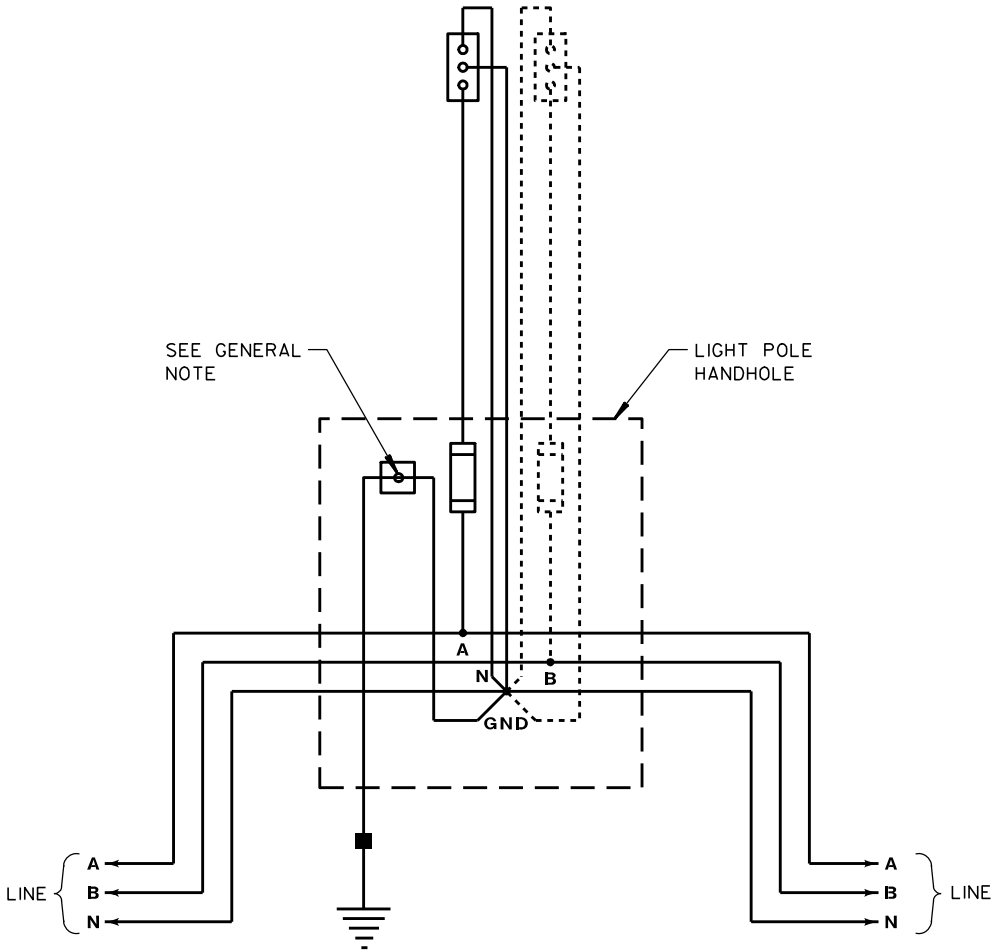
DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN IN THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

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

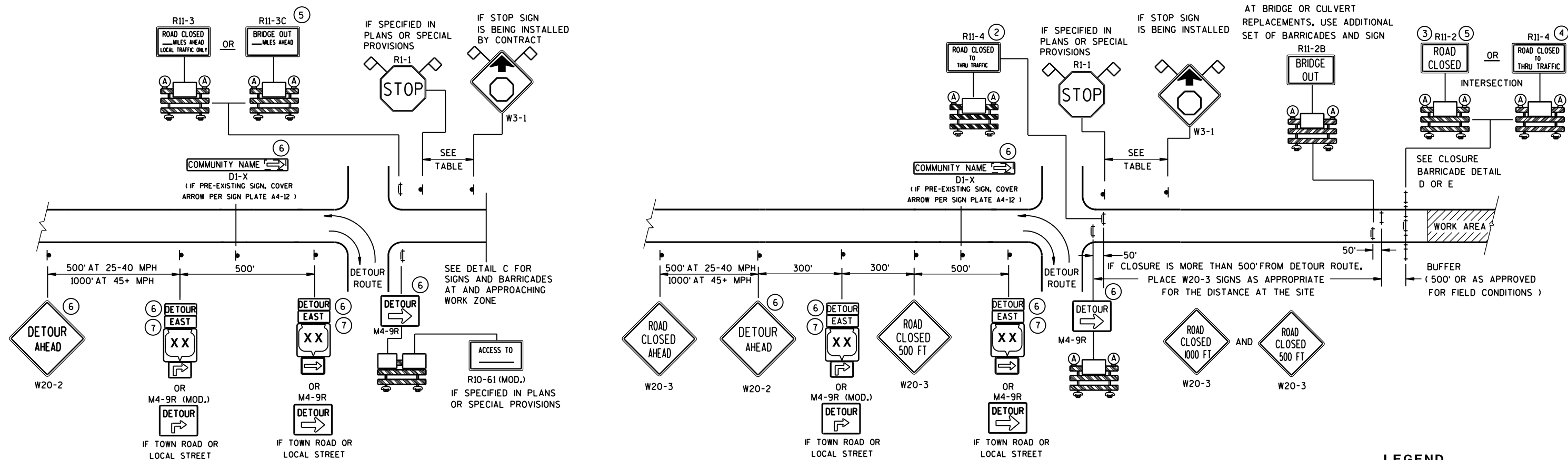
LEGEND

- 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

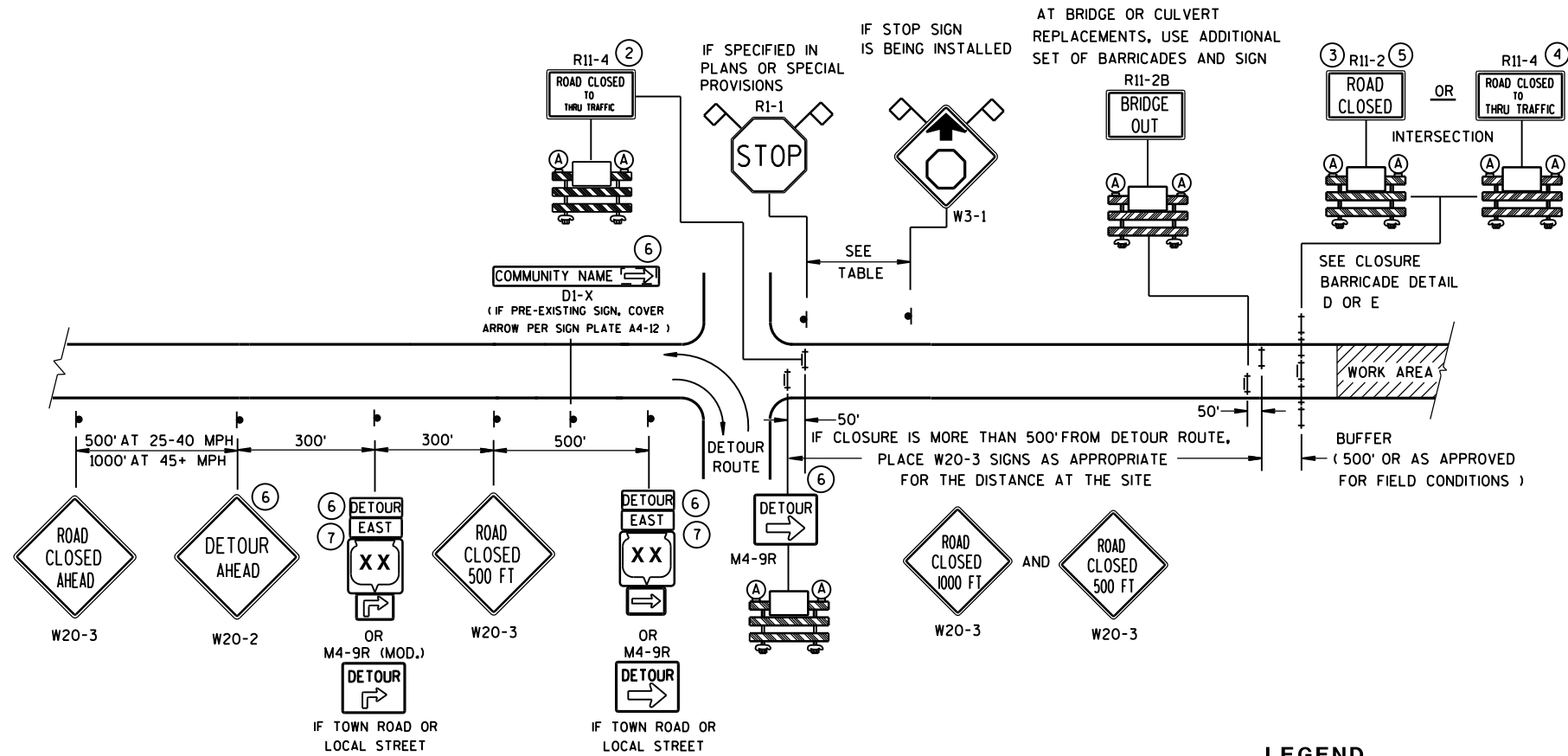
APPROVED  
10/25/2010 /S/ John Corbin  
DATE STATE ELECTRICAL ENGINEER FOR HWYS  
FHWA



DETAIL A

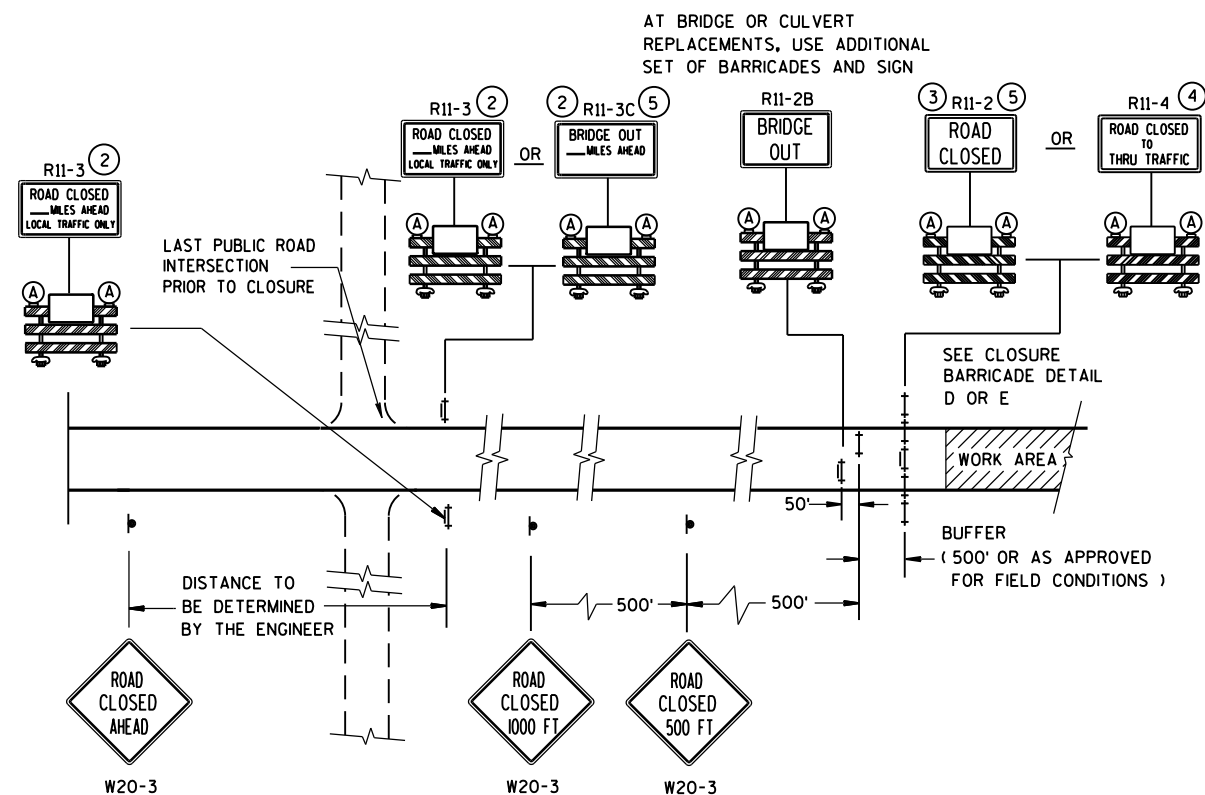
**MAINLINE CLOSURE WITH POSTED DETOUR**

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 )



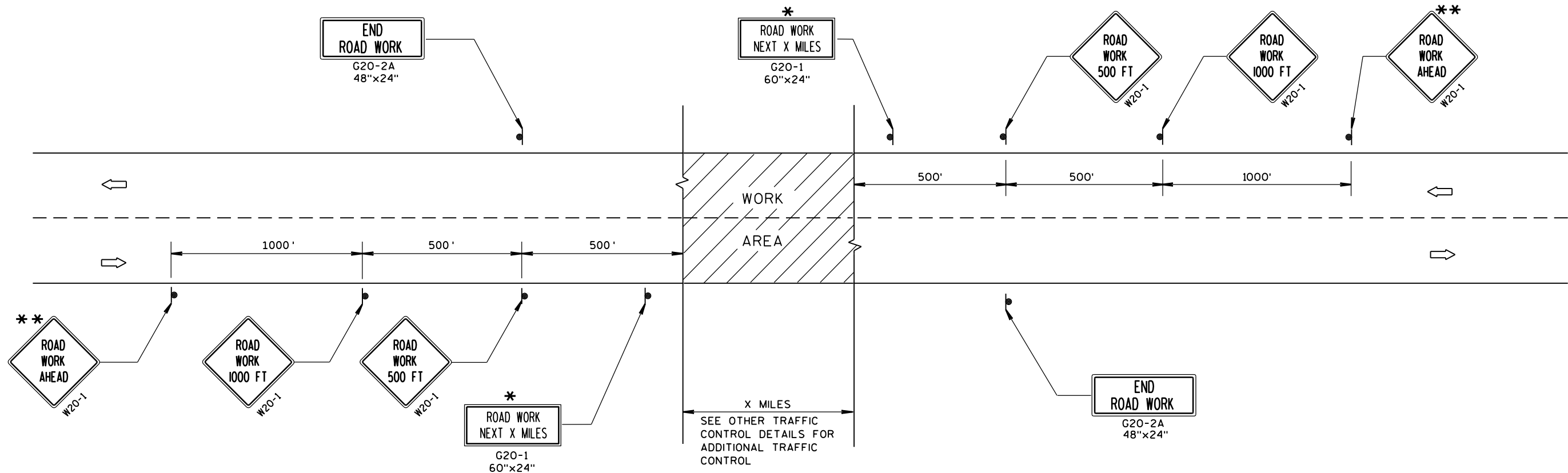
**DETAIL C**  
**MAINLINE CLOSURE, NO POSTED DETOUR**

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.

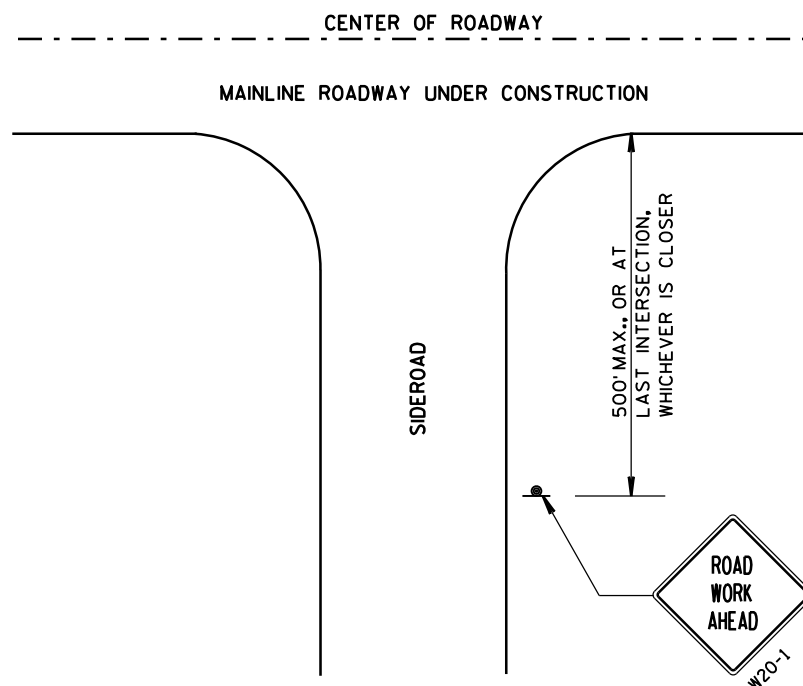
ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.

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.



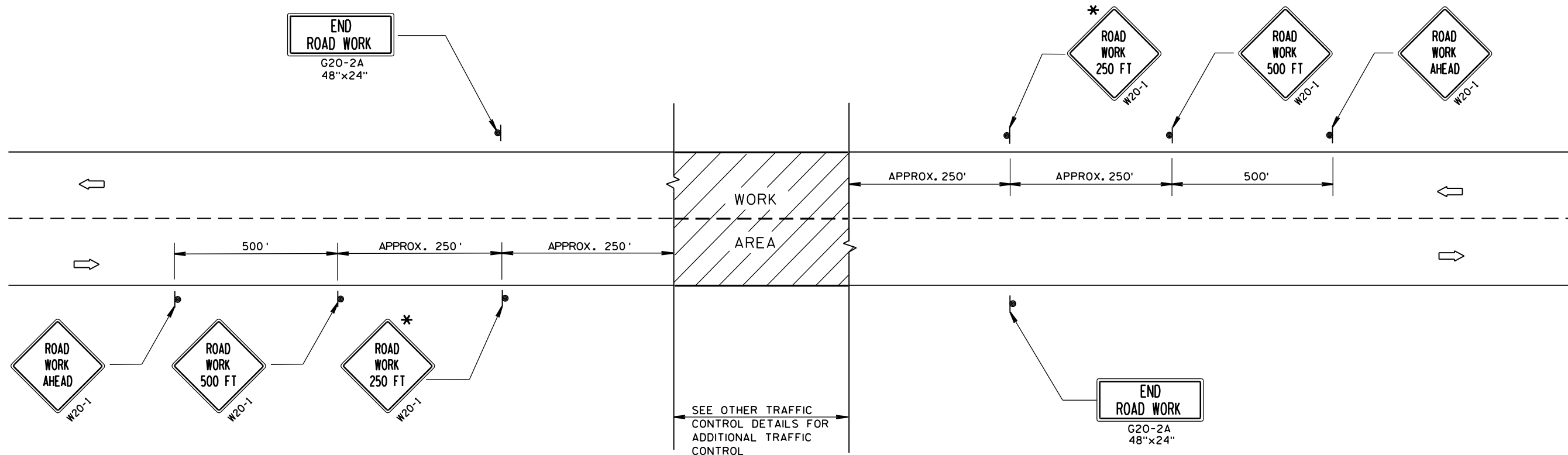
## LEGEND

- 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 /S/ Travis Feltes  
DATE STATE TRAFFIC ENGINEER OF DESIGN  
FHWA



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.

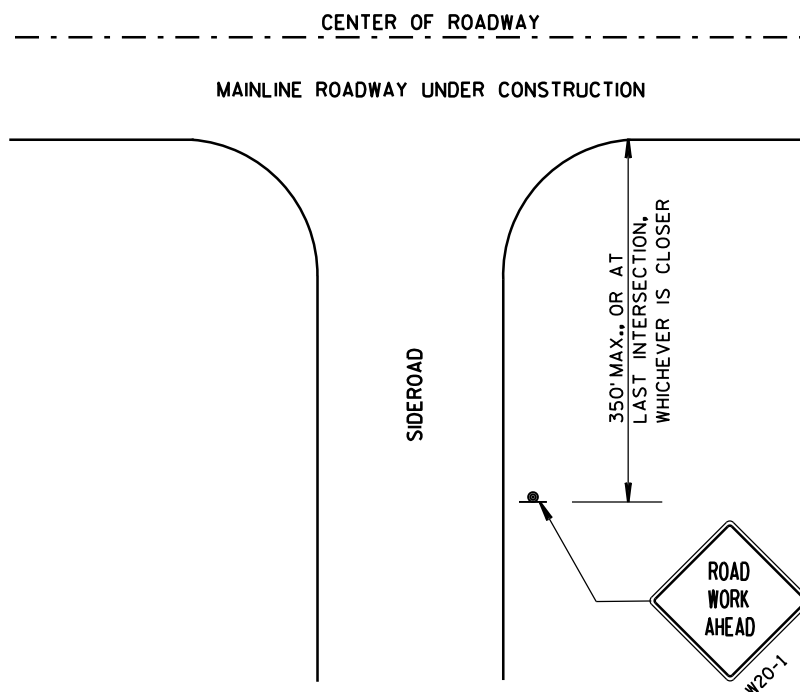
THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

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

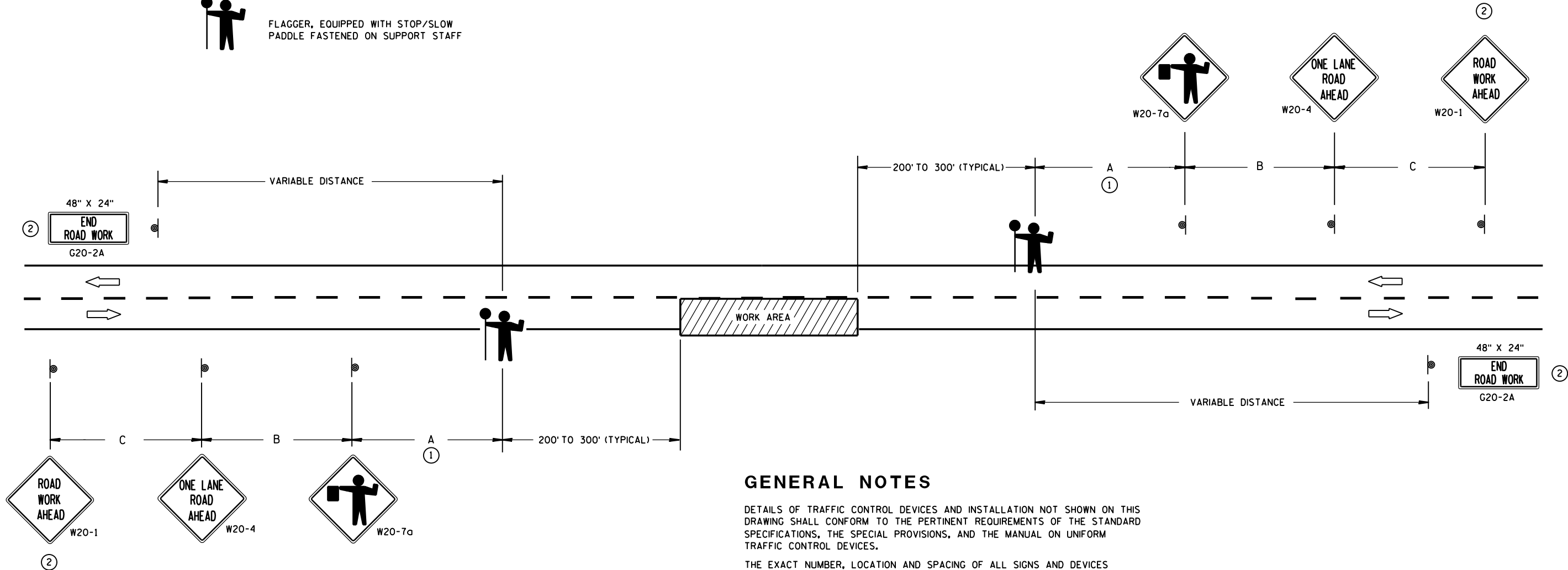
-  SIGN ON PORTABLE OR PERMANENT SUPPORT
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

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.



- 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, COVER OR REMOVE ALL TEMPORARY TRAFFIC CONTROL SIGNS.

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  
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.

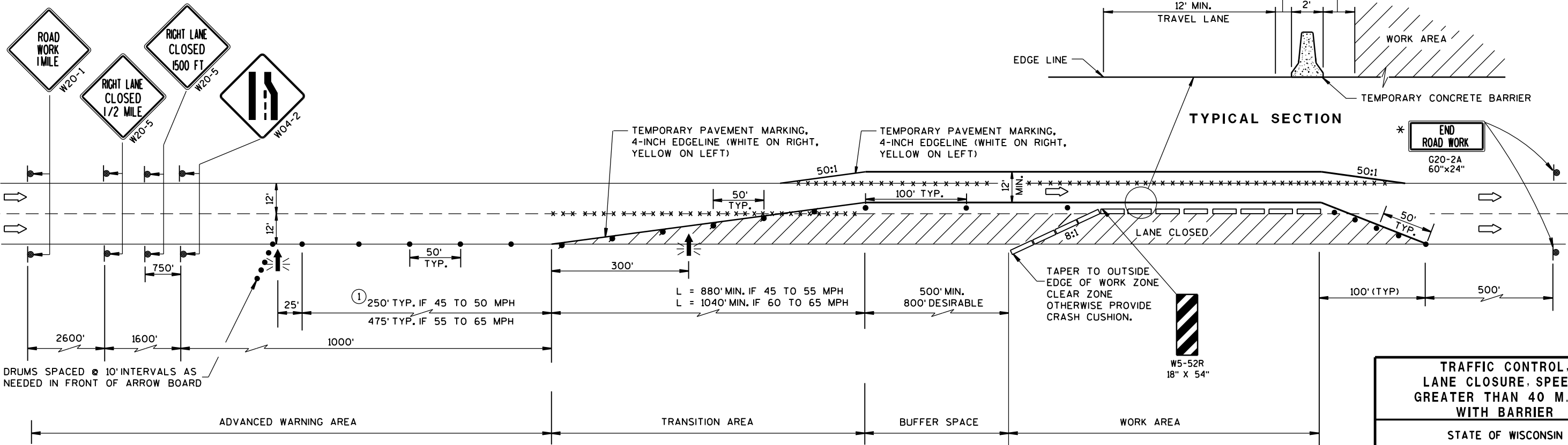
- ① CONSIDER ROADWAY GEOMETRICS WHEN LOCATING SIGNS AND ARROW BOARD SO THE DRIVER HAS A CLEAR VIEW OF THE ARROW BOARD AND LANE CLOSURE DRUMS FOR A MINIMUM 1500 FEET IN FRONT OF DRUM TAPER.

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.











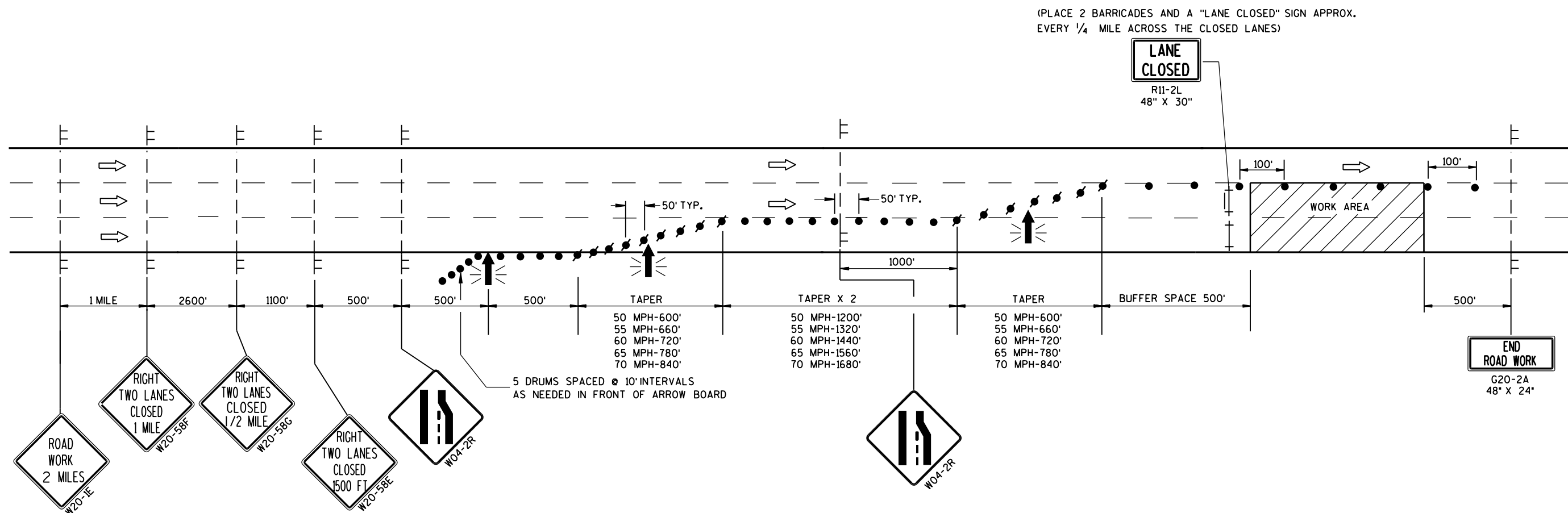
TRAFFIC CONTROL,  
LANE CLOSURE, SPEEDS  
GREATER THAN 40 M.P.H.  
WITH BARRIER

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.

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

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

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

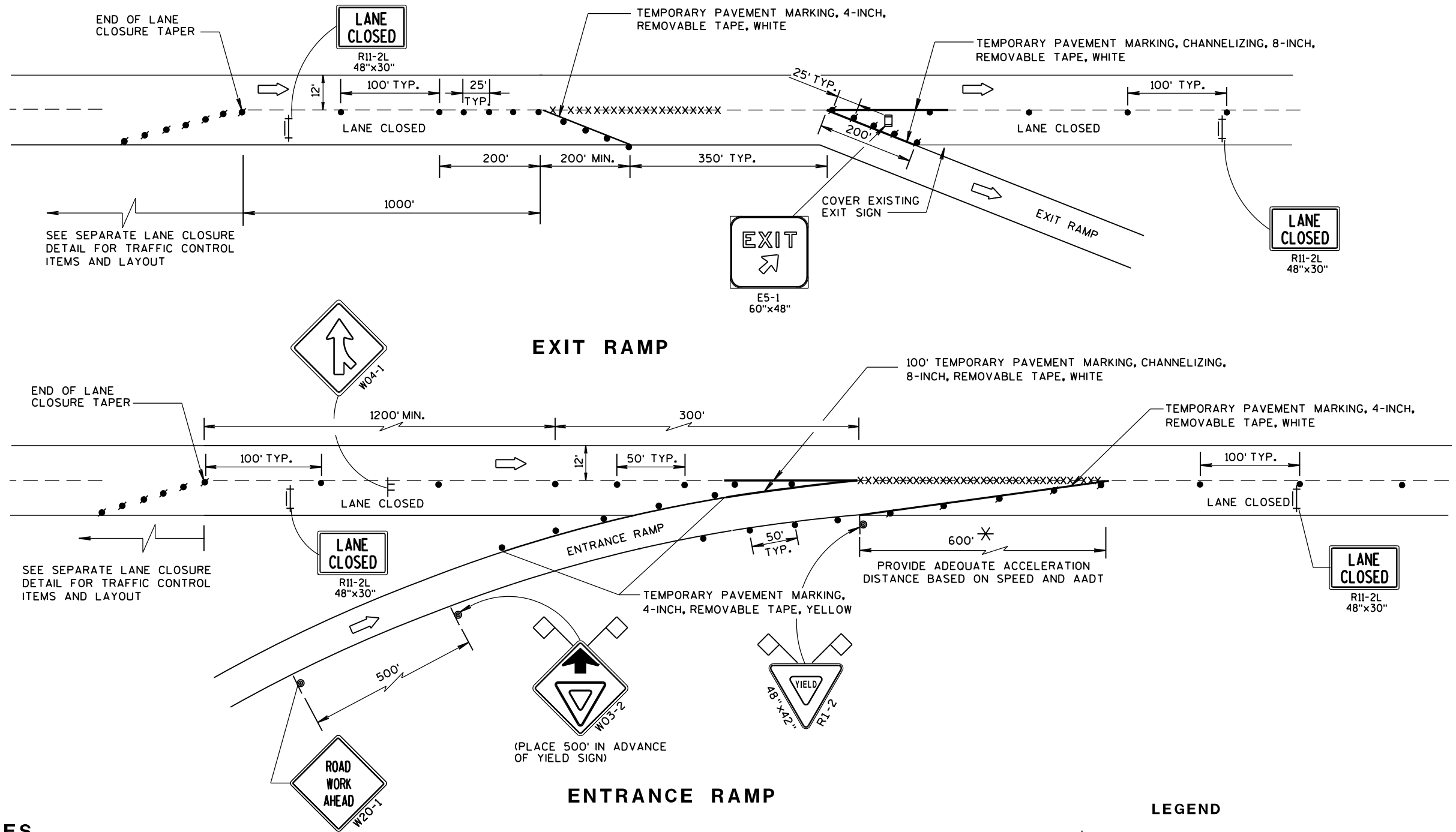
BARRICADES IN A CLOSED LANE THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY RE-ESTABLISHED UPON COMPLETION OF THE OPERATION OR, FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

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

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

<b>TRAFFIC CONTROL.</b> <b>TWO LANE CLOSURE ON</b> <b>FREEWAY OR EXPRESSWAY.</b> <b>SHORT TERM (LESS THAN 24 HOURS)</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
<b>APPROVED</b> July 14, 2015 DATE	/S/ Peter Amakobe Atepe STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER
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 R11-2L "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

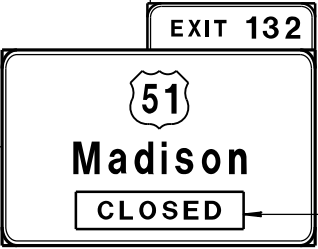
- ⊙ SIGN ON PERMANENT SUPPORT
- ┌ SIGN ON TEMPORARY SUPPORT
- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- XXXXX REMOVING PAVEMENT MARKING (SEE GENERAL NOTES)
- ┌ TYPE III BARRICADE WITH ATTACHED SIGN
- FLAGS, 16" x 16" MIN., (ORANGE)
- ➡ DIRECTION OF TRAFFIC

TRAFFIC CONTROL, EXIT AND ENTRANCE RAMP WITHIN LANE CLOSURE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED Sept. 2015 DATE	/S/ Peter Amokobe Atepe STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER
FHWA	



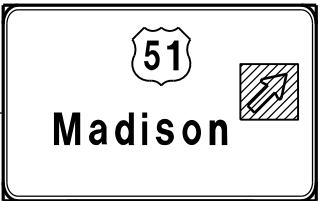
G20-60  
108"x24"

OR



G20-60  
108"x24"

PLACE SIGN G20-60 OVER MILEAGE  
ON EXISTING E1-1A SIGN



COVER ARROW ON  
EXISTING E4-1A  
SIGN (COVERING  
SIGNS TYPE I)

G20-61  
120"x30"

## 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.

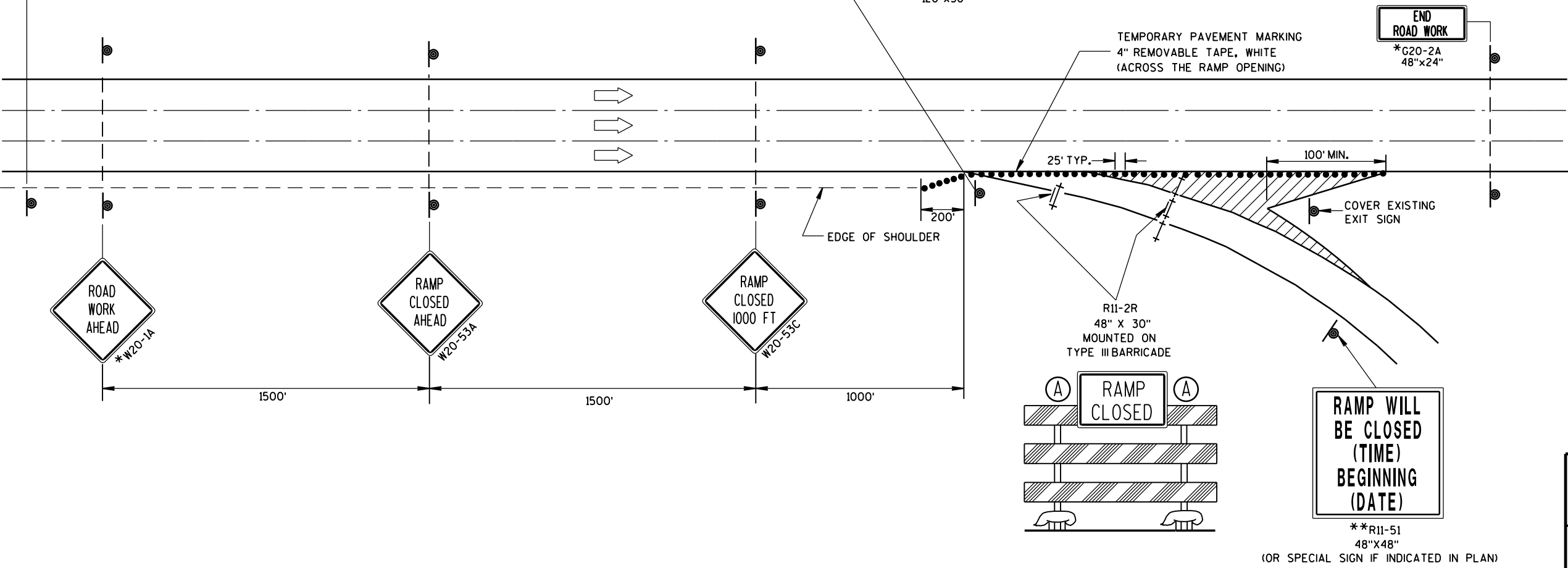
WHERE MEDIAN BARRIER IS IN PLACE, SIGNS SHOWN ON LEFT SIDE OF ROADWAY MAY BE OMITTED FOR RIGHT SIDE RAMP CLOSURES OF LESS THAN 12-HOUR DURATION.

\* 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 7 CALENDAR DAYS PRIOR TO CLOSURE OR AS DIRECTED BY THE ENGINEER. SEE WISCONSIN STANDARD SIGN PLATES FOR SIGN LAYOUT.

6

6



## 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

## TRAFFIC CONTROL, EXIT RAMP CLOSURE

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

S.D.D. 15 D 16-3

S.D.D. 15 D 16-3

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.

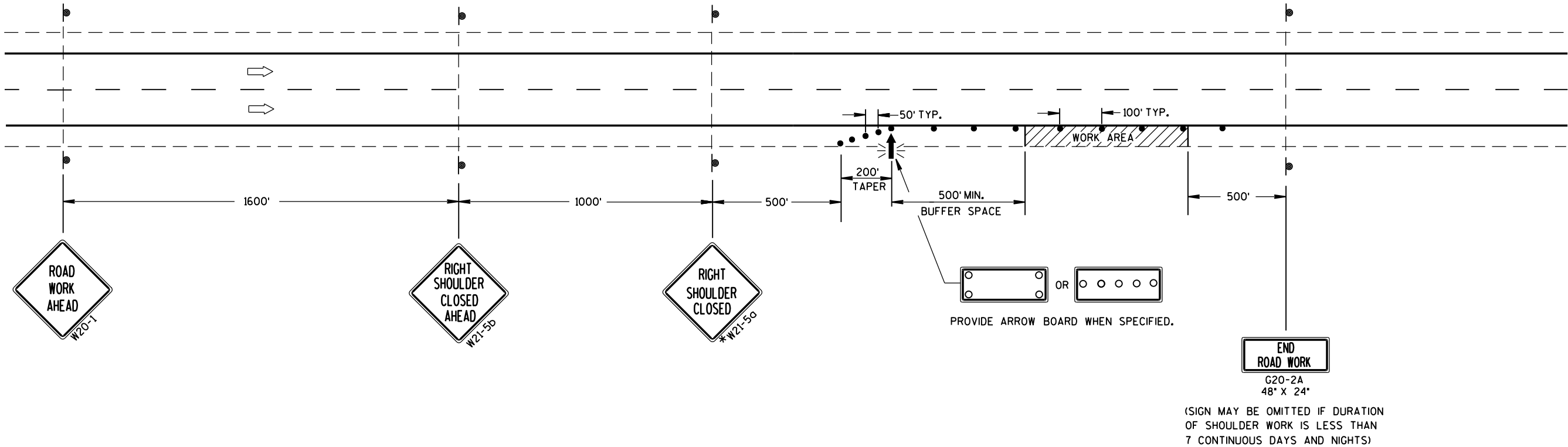
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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>