

## INDEX OF SHEETS

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TOTAL SHEETS = 21



STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION

## PLAN OF PROPOSED IMPROVEMENT

## C.T.H. "CE" AND RAILROAD STREET INTERSECTION

C.T.H. "CE"  
 OUTAGAMIE COUNTY

"AS BUILT PLAN"

CE-10

STATE PROJECT NUMBER  
 4160-01-71



## PROJECT LOCATION

Y = 159,000  
 X = 2,435,300

## AS BUILT PLAN

## NO.

SUPERVISOR AGRIS ROZITERESIDENT JACK STARRYCONTRACTOR CABLE-LITECOMPLETED 12-20-93

ACCEPTED FOR  
 OUTAGAMIE COUNTY

4/12/93

COMMISSIONER

ORIGINAL PLANS PREPARED BY  
 McMAHON ASSOCIATES INC.



4-9-93

SIGNATURE

STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION

## PREPARED BY

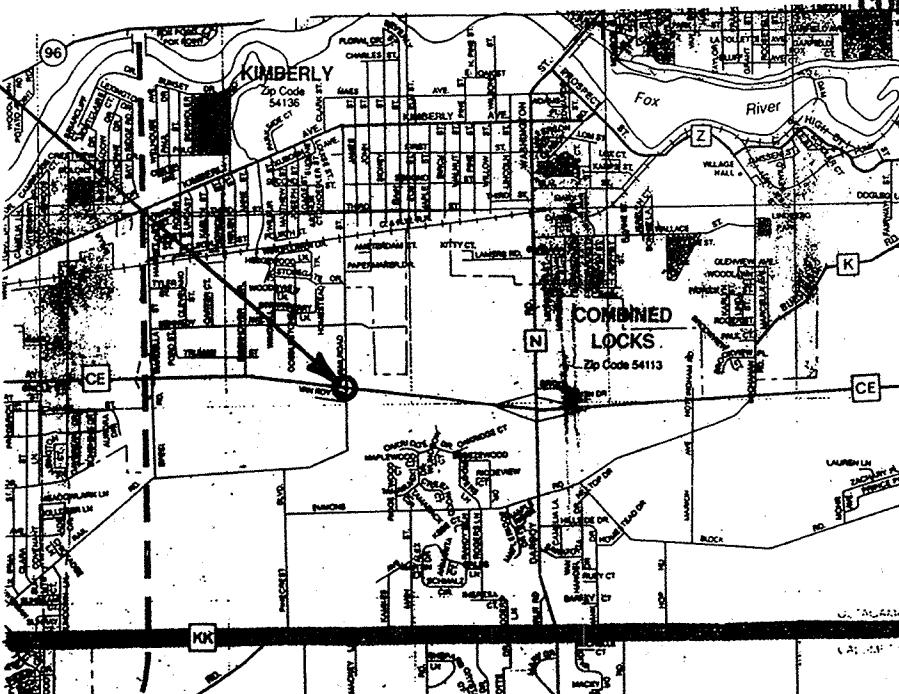
SURVEYOR MCMAHON  
 DESIGNER MCMAHON  
 DISTRICT EXAMINER D. H. CARLSON  
 DISTRICT SUPERVISOR J. C. LAMERS  
 PROJ. DEV. ENGR.   
 CO. EXAMINER

## APPROVED FOR DISTRICT OFFICE

DATE 5-5-93   
 SIGNATURE

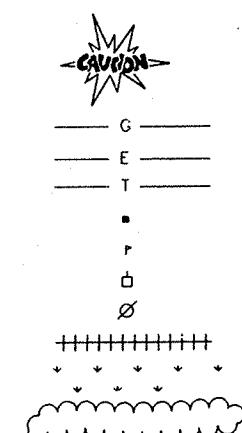
## AUTHORIZED FOR CENTRAL OFFICE TRAFFIC

DATE 5-5-93   
 SIGNATURE



LAYOUT  
 SCALE 0 1/2 MILE

TOTAL NET LENGTH OF CENTERLINE = 0.000 MI.



CONVENTIONAL SIGNS  
 COUNTY LINE  
 CORPORATE LIMITS  
 PROPERTY LINE  
 LOT LINE  
 LIMITED EASEMENT  
 EXISTING RIGHT OF WAY  
 NEW RIGHT OF WAY  
 REFERENCE LINE  
 SLOPE INTERCEPT  
 ORIGINAL GROUND  
 MARSH OR ROCK PROFILE  
 CULVERT IN PLACE  
 CULVERT REQUIRED  
 CULVERT REQUIRED (PROFILE)

COMBUSTIBLE FLUIDS  
 (UNDER PRESSURE)  
 UNDERGROUND UTILITIES  
 GAS G  
 ELECTRIC E  
 TELEPHONE T  
 SERVICE PEDESTAL  
 CABLE MARKER P  
 POWER POLE O  
 TELEPHONE POLE Ø  
 RAILROADS  
 MARSH  
 WOODED AREA

CE-10

STATE PROJECT NUMBER	SHEET NO.
4160-01-71	2.0

TYPICAL SECTION, GENERAL NOTES, STANDARD ABBREVIATIONS AND SYMBOLS, SDD NUMBERS, UTILITIES, LOOP DETECTOR DETAIL

STANDARD ABBREVIATIONS  
AND SYMBOLS

ANGLE	MAX	MAXIMUM
AGG.	AGGREGATE	MINIMUM
AH	AHEAD	NORTH
ASPH	ASPHALT	NC
AVE.	AVENUE	NO.
BK	BACK	P.E.
BIT.	BENCH MARK	PRIVATE ENTRANCE
B.O.W.	BITUMINOUS	P.C.
C.E.	BACK OF WALK	POINT OF CURVATURE
C.B.	COMMERCIAL ENTRANCE	P.I.
C.A.B.C.	CONTROLLER CABINET BASE	POINT OF INTERSECTION
CL	CRUSHED AGGREGATE BASE COURSE	P.T.
CONC.	CENTERLINE	POINT OF VERTICAL CURVATURE
C.M.C.P.	CONCRETE	P.V.I.
C.T.H.	CORRUGATED METAL CULVERT PIPE	POINT OF VERTICAL INTERSECTION
CL.	COUNTY TRUNK HIGHWAY	P.V.T.
CT.	CLASS	POINT OF VERTICAL TANGENCY
CU.YD.	COURT	P/L
DELTA	CUBIC YARD	PROPERTY LINE
D.	DEGREE OF CURVE	PVT.
D.G.	DITCH GRADE	PED.
E.	EAST	P.B.
E.	EXTERNAL DISTANCE	PVC. C.P.
ELEV.	ELEVATION	RADIUS
EXIST.	EXISTING	R.C.C.P.
EXP.	EXPANSION	REO'D.
F.F.	FACE TO FACE	R.H.F.
FL.	FLOWLINE	R/L
FOOT	FOOT PER FOOT	REFERENCE LINE
GV	GAS VALVE	R/W
H	HOUSE	RD.
HYD.	FIRE HYDRANT	RD.W.
INL.	INLET	ROAD
JT.	JOINT	RD.W.
L.	LENGTH OF CURVE	ROADWAY
L.H.F.	LEFT HAND FORWARD	RT.
L.S.	UMP SUM	RIGHT
LA.	LANE	SB.
LIN. FT.	LINEAL FEET	S.
L.V.C.	LENGTH OF VERTICAL CURVE	SE.
LT.	LEFT	SUPERELEVATION RATE
MH	MANHOLE	ST.
W	WATER	STATION
G	GAS	S.T.H.
T	TELEPHONE	SQ. FT.
E	ELECTRIC	SQ. YD.
		STA.
		SIDEWALK
		SQ. YD.
		TRANS-PAD
		T/L
		TRANSIT LINE
		TYP.
		V.C.
		W
		WV
		HYDRANT W/AUXILIARY VALVE
		LIGHT POLE
		PEDESTAL
		POWER POLE
		MANHOLE
		CATCH BASIN

EXISTING CULVERT  
PROPOSED CULVERT

GENERAL NOTES

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

UTILITIES

WISCONSIN ELECTRIC POWER COMPANY (414) 735-0705  
MR. DENNIS J. AERTS  
800 S. LYNNDALE DRIVE  
P.O. BOX 1699  
APPLETON, WI 54914

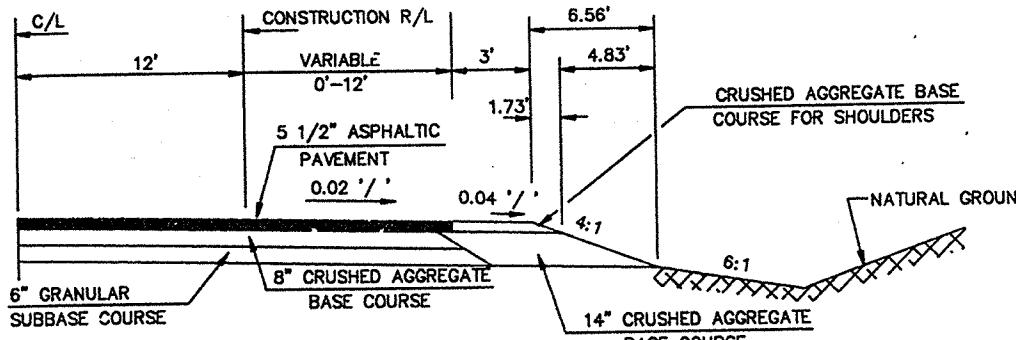
WISCONSIN GAS COMPANY (414) 766-3551  
MR. LYLE NEINHAUS  
601 W. NORTH STREET  
LITTLE CHUTE, WI 54140

CABLEVISION (414) 749-1320  
MR. RANDY HAUGESTUEN  
1001 KENNEDY AVENUE  
KIMBERLY, WI 54136

WISCONSIN BELL (414) 735-3253  
MR. KEITH M. KRISHER  
221 W. WASHINGTON STREET  
P.O. BOX 2159  
APPLETON, WI 54913

DIGGERS HOTLINE 1-800-242-8511  
(TOLL FREE)

STANDARD DETAIL DRAWINGS



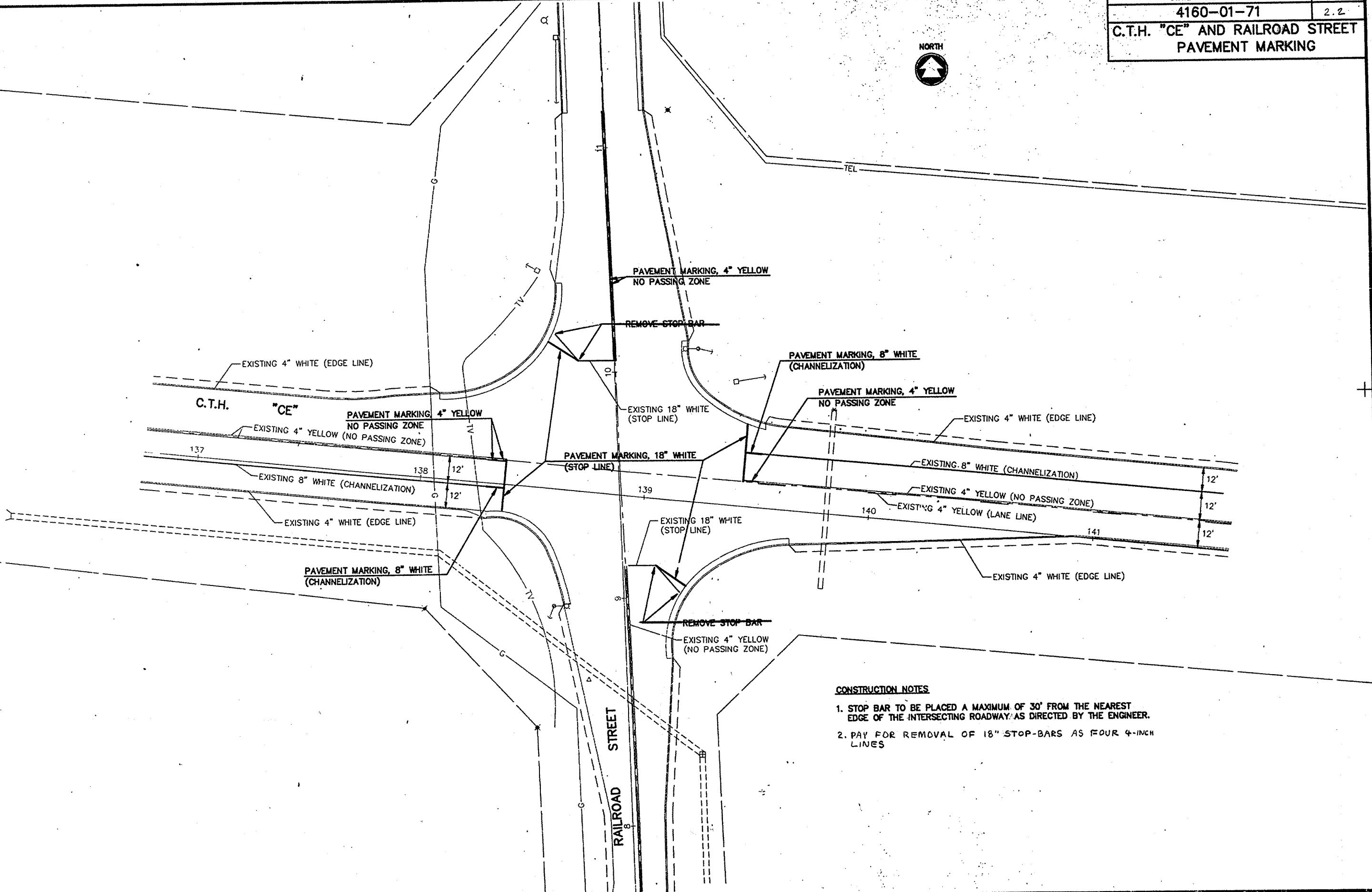
STA. 136+01 TO STA. 144+51 WESTBOUND LT.  
STA. 136+01 TO STA. 14C+66 WESTBOUND RT.  
STA. 8+01 TO STA. 9+46 RAILROAD STREET  
STA. 9+70 TO STA. 11+20 RAILROAD STREET

CONDUIT	9B2-5
CONCRETE BASES	9C2-1
CAST BASES	9C3-1
CONCRETE CONTROL CABINET BASES	9C5-1
PULL BOX	9B4-1
POLE MOUNTINGS FOR TRAFFIC SIGNALS, TYPE 2	9E1-1a
POLE MOUNTINGS FOR TRAFFIC SIGNALS AND LIGHTING UNITS, TYPE 4	9E1-1c
HARDWARE DETAILS FOR POLE MOUNTINGS	9E1-1e
NON-FREEWAY LIGHTING UNIT POLE WIRING	9E3-1
CABINET SERVICE INSTALLATION	9D1-1
TRAFFIC CONTROL FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)	15C12-1

Pavement Marking

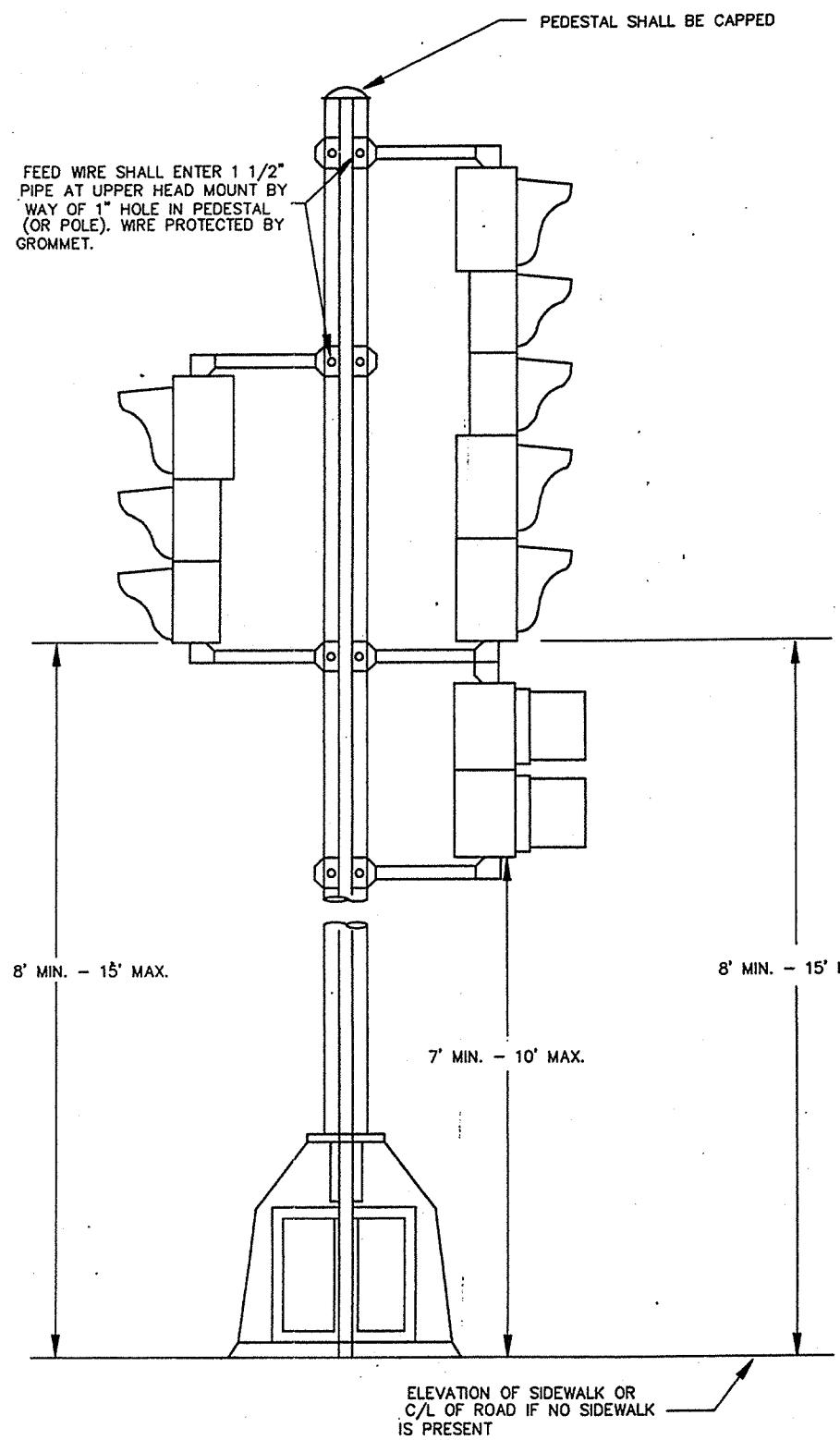
15C8-4a

STATE PROJECT NUMBER	SHEET NO.
4160-01-71	2.2
C.T.H. "CE" AND RAILROAD STREET PAVEMENT MARKING	

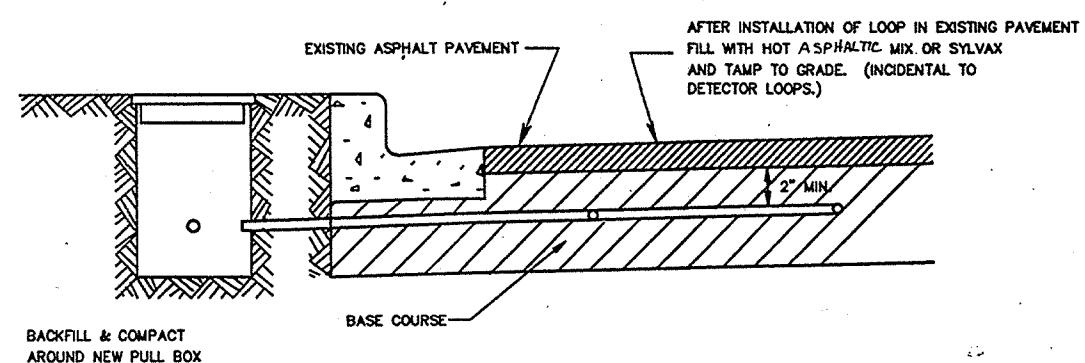
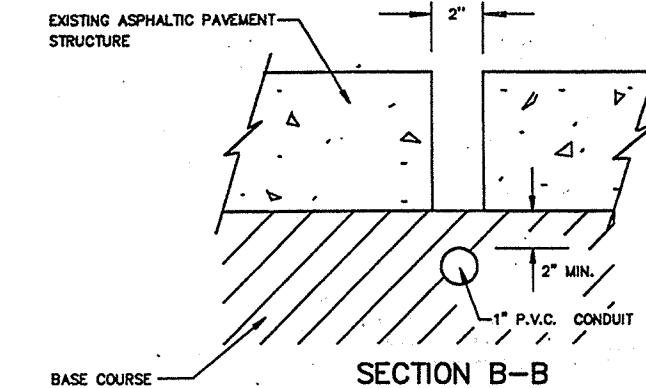


STATE PROJECT NUMBER	SHEET NO.
4160-01-71	2.1

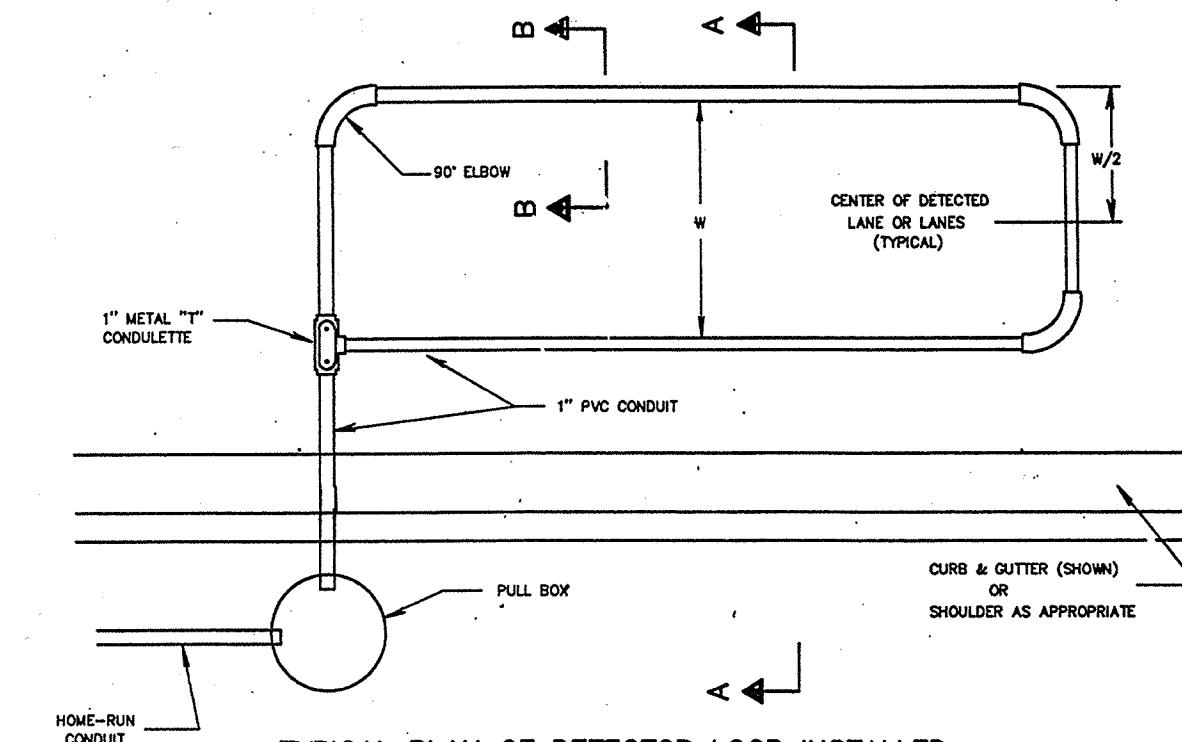
TRAFFIC SIGNAL DETAILS  
C.T.H. "CE" AND RAILROAD STREET



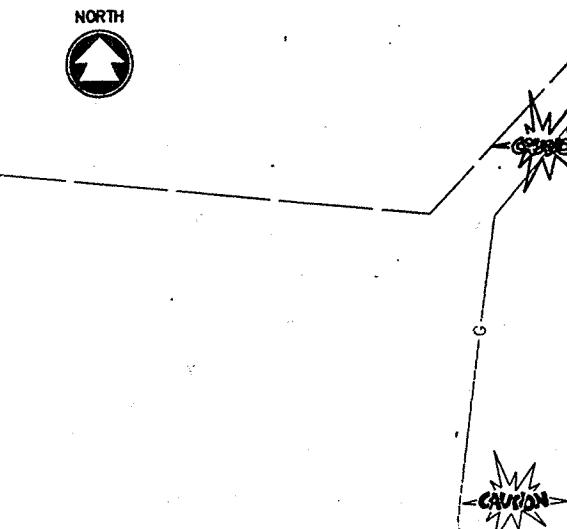
TYPICAL MOUNTING DETAIL  
ADJUST TO CONDITION SHOWN ON THE PLAN  
TRAFFIC SIGNAL STANDARD



SECTION A-A

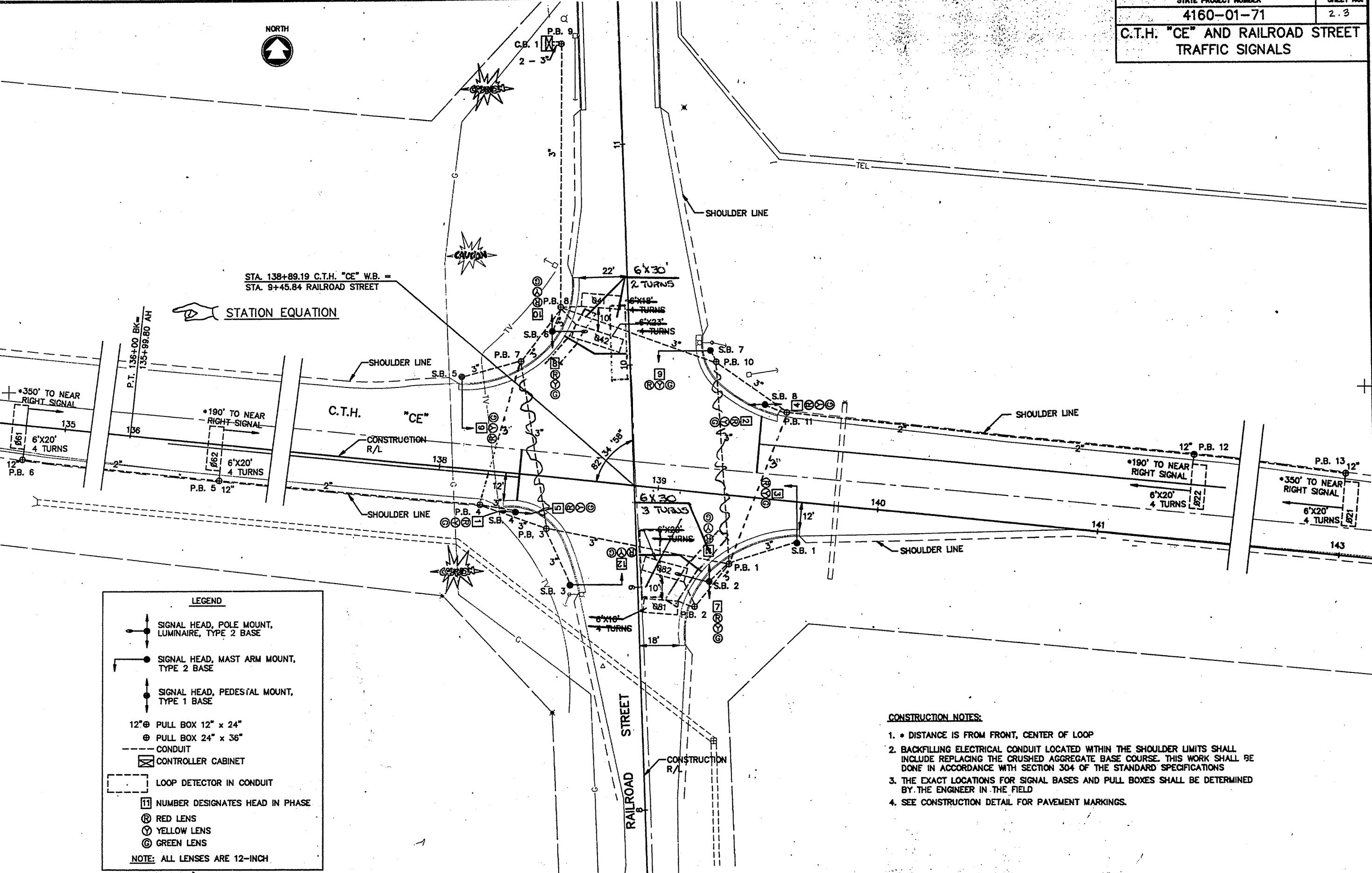


TYPICAL PLAN OF DETECTOR LOOP INSTALLED  
IN EXISTING ASPHALT PAVEMENT



STATION EQUATION

P.T. 136+00 Blk. 135+99.80 AH



## DETECTOR LOGIC

## SEQUENCE OF OPERATION

NOT USED  NOT USED

NOT USED ————— NOT USED

\*\* CLEARANCE TO A PHASE IN CONFLICT WITH THIS PHASE ON (SEE CHART BELOW)

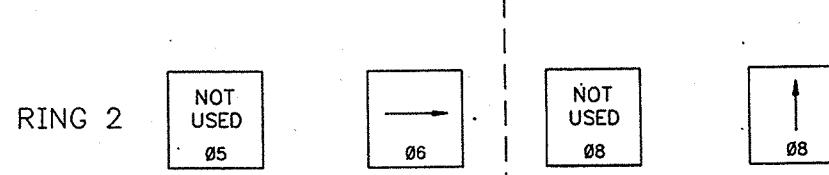
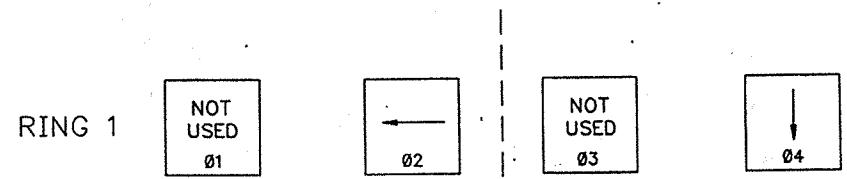
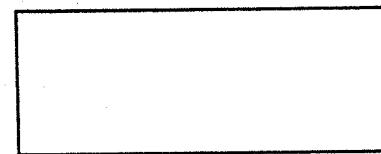
## CHART 1

PHASE ON	NON-CONFLICTING PHASE ALLOWED TO TIME CONCURRENTLY	PHASES IN CONFLICT WITH PHASE ON
01	.	
02	6	4,8
03	.	
04	8	2,6
05	.	
06	2	4,8
07	.	
08	4	2,6

## CONTROLLER LOGIC

PHASE NUMBER	PHASE LOCKING	DUAL ENTRY	PHASE TERMINATION	PHASE RECALL
2	X	W/6		MIN
4		W/8		
6	X	W/2		MIN
8		W/4		

## OVERLAPS



## BARRIER

NOTES:

1. ANY ACTUATED PHASE FOR WHICH THERE IS NO CALL SHALL BE SKIPPED.
2. WHEN ONE PHASE IS ON ALONE, ANY NON-CONFLICTING PHASE MAY START TIMING CONCURRENTLY WITHOUT A CLEARANCE INTERVAL (SEE CHART AT LEFT).
3. DETECTORS ARE MOTORCYCLE SENSITIVE.

DATE 08/03/93

## ESTIMATE OF QUANTITIES

ITEM	ITEM DESCRIPTION	UNIT	TOTAL	4160-01-71 QUANTITY
— 21301	FINISHING ROADWAY	L.S.	1.00	1.00
61334	NONMETALLIC CONDUIT, 2-INCH	L.F.	683.00	683.00
61336	NONMETALLIC CONDUIT, 3-INCH	L.F.	396.00	396.00
61347	CONDUIT, 3-INCH, SPECIAL	L.F.	327.00	327.00
61910	MOBILIZATION	L.S.	1.00	1.00
— 62501	TOPSOIL	S.Y.	200.00	200.00
— 62702	MULCHING	S.Y.	200.00	200.00
— 62902	FERTILIZER, TYPE A	CWT.	.20	.20
— 63002	SEEDING	L.B.	3.60	3.60
64002	POLES, TYPE 2	EACH	4.00	4.00
64004	POLES, TYPE 4	EACH	2.00	2.00
64012	CONCRETE BASES, TYPE 1	EACH	2.00	2.00
64013	CONCRETE BASES, TYPE 2	EACH	6.00	6.00
64034	LUMINAIRES, 250 WATTS, HIGH PRESSURE SODIUM	EACH	2.00	2.00
64056	MAST ARMS, TRUSS TYPE, 12-FOOT	EACH	2.00	2.00
64075	ELECTRICAL WIRE, LIGHTING, NO. 12	L.F.	1,767.00	1,767.00
64202	FIELD OFFICE, TYPE B	L.S.	1.00	1.00
64301	TRAFFIC CONTROL	L.S.	1.00	1.00
— 64406	PAVEMENT MARKING, EPOXY, 4-INCH	L.F.	134.00	134.00
— 64414	PAVEMENT MARKING, CHANNELIZING, EPOXY, 8-INCH	L.F.	15.00	15.00
— 64437	PAVEMENT MARKING, STOP LINE, EPOXY, 18-INCH	L.F.	80.00	80.00
64487	REMOVING PAVEMENT MARKINGS	L.F.	128.00	128.00
90660	ELECTRICAL WIRE, TRAFFIC SIGNALS, NO. 10	L.F.	2,206.00	2,206.00
— 90779	SIGNAL CONTROLLER TRAINING	L.S.	1.00	1.00
— 90785	CONCRETE CONTROL CABINET BASES, TYPE 9	EACH	1.00	1.00
90792	PULL BOXES, 12X24-INCH	EACH	4.00	4.00
90797	PULL BOXES, 24X36-INCH	EACH	9.00	9.00

Sheet 3

ITEM	ITEM DESCRIPTION	UNIT	TOTAL	4160-01-71 QUANTITY
90800	PEDESTAL BASES	EACH	2.00	2.00
90801	TRANSFORMER BASES	EACH	6.00	6.00
90810	TRAFFIC SIGNAL STANDARDS, STEEL, 13-FT.	EACH	2.00	2.00
90815	MAST ARMS, TRAFFIC SIGNAL TROMBONE, 25-FT.	EACH	4.00	4.00
90817	TRAFFIC SIGNAL FACES, 3-12 VERTICAL	EACH	8.00	8.00
90823	TRAFFIC SIGNAL FACES, 3-12 HORIZONTAL	EACH	4.00	4.00
90834	TRAFFIC SIGNAL MOUNTING HARDWARE, RAILROAD ST. INTERSECTION	L.S.	1.00	1.00
90838	BACKPLATES	EACH	12.00	12.00
90842	TRAFFIC SIGNAL CABLE, 7 CONDUCTOR, NO. 14	L.F.	3,344.00	3,344.00
90859	TRAFFIC SIGNAL CONTROLLER, FULLY ACTUATED, 8 PHASE	EACH	1.00	1.00
90865	ELECTRICAL SERVICE, TRAFFIC SIGNALS, RAILROAD ST. INTERSECTION	L.S.	1.00	1.00
90869	LOOP DETECTOR SLOTS	L.F.	430.00	430.00
90870	LOOP DETECTOR AMPLIFIER, RAILROAD ST. INTERSECTION	L.S.	1.00	1.00
90871	LOOP DETECTOR CONDUIT, 1-INCH	L.F.	469.00	469.00
90872	LOOP DETECTOR WIRE	L.F.	1,798.00	1,798.00
90873	LOOP DETECTOR LEAD IN CABLE	L.F.	3,034.00	3,034.00

Sheet 3.1

PULL BOXES			ELECTRICAL CONDUIT			STATE PROJECT NUMBER			SHEET NO.
NO.	STATION	LOCATION	12" X 24" EACH	24" X 36" EACH	LOCATION	CONDUIT, 3-INCH, SPECIAL (L.F.)	NONMETALLIC CONDUIT 2-INCH (L.F.)	NONMETALLIC CONDUIT 3-INCH (L.F.)	4160-01-71 3A
PB 1	STA. 139+35	C.T.H. "CE", 30' RT.		1	CB 1 - PB 9		10(2X5)	6 (2 X 3')	
PB 2	STA. 8+91	RAILROAD ST., 25' RT.		1	PB 9 - PB 8			120	
PB 3	STA. 138+51	C.T.H. "CE", 23' RT.		1	PB 8 - SB 6				
PB 4	STA. 138+20	C.T.H. "CE", 16' RT.		1	PB 8 - PB 7				
PB 5	STA. 136+42	C.T.H. "CE", 16' RT.	1		PB 7 - SB 5				
PB 6	STA. 134+82	C.T.H. "CE", 15' RT.	1		PB 7 - PB 3	76			
PB 7	STA. 138+32	C.T.H. "CE", 50' LT.		1	PB 3 - PB 4		13		
PB 8	STA. 10+27	RAILROAD ST., 31' LT.		1	PB 3 - SB 3		14		
PB 9	STA. 11+46	RAILROAD ST., 26' LT.		1	PB 3 - PB 1	85			
PB 10	STA. 10+00	RAILROAD ST., 39' RT.		1	PB 1 - PB 2				
PB 11	STA. 139+55	C.T.H. "CE", 39' LT.		1	PB 1 - SB 2				
PB 12	STA. 141+40	C.T.H. "CE", 38' LT.	1		PB 1 - SB 1				
PB 13	STA. 143+00	C.T.H. "CE", 36' LT.	1		PB 1 - PB 10	90			
			4	9	PB 8 - PB 10	76			
					PB 10 - SB 7				
					PB 10 - PB 11				
					PB 11 - SB 8				
					PB 4 - SB 4				
					PB 11 - PB 12				
					PB 12 - PB 13				
					PB 4 - PB 5				
					PB 5 - PB 6				
						327			
							683		
								396	

TRAFFIC DETECTOR LOOPS							STATION				LOCATION		EACH	
NO.	STATION	LOCATION	LOOP DETECTOR CONDUIT, 1-INCH, (L.F.)	LOOP DETECTOR WIRE, (L.F.)	LOOP DETECTOR LEAD-IN CABLE, (L.F.)	SIZE	TURNS	LOOP DETECTOR SLOTS, (L.F.)	STA. 11+46	RAILROAD ST., 30' LT.	1			
021	143+00	C.T.H. "CE", 23' LT.	57	223	581	6' X 20'	4	53						
022	141+40	C.T.H. "CE", 24' LT.	57	223	431	6' X 20'	4	54						
041	10+27	RAILROAD ST., 12' LT.	58	217	133 6X30	6' X 18'	2	51						
042	10+10	RAILROAD ST., 16' LT.	68	257	133 6X30	6' X 20'	2	61						
061	134+82	C.T.H. "CE", 1' RT.	57	223	609	6' X 20'	4	54						
062	136+42	C.T.H. "CE", 2' RT.	57	223	449	6' X 20'	4	54						
081	8+95	RAILROAD ST., 10' RT.	51	195	349 6X30	6' X 18'	3	47						
082	9+11	RAILROAD ST., 13' RT.	64	237	349 6X30	6' X 20'	3	56						
			469	1,798		3,034		430						

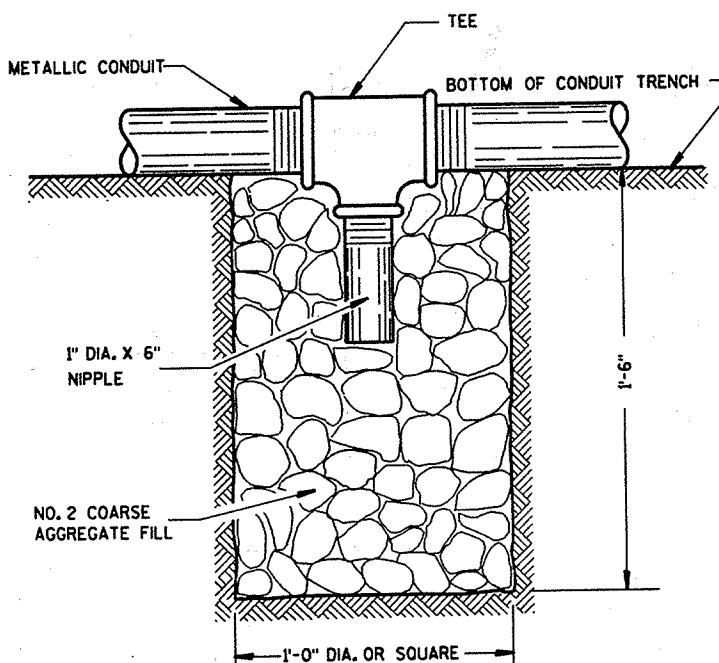
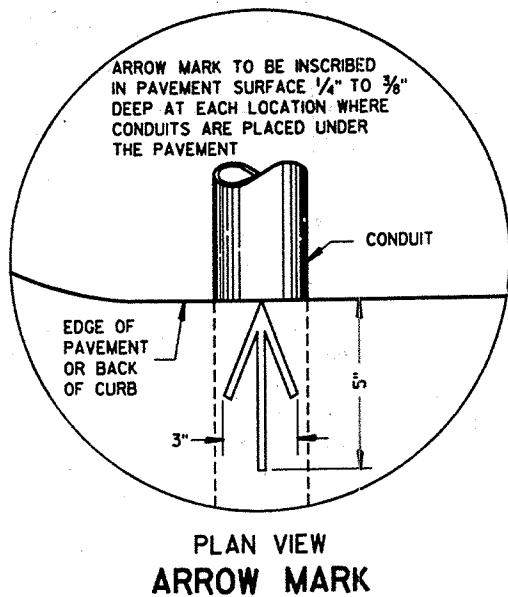
\* LOCATION IS TO FRONT, CENTER OF LOOP

TRAFFIC SIGNAL WIRE AND CABLE, ELECTRICAL WIRE							SIGNAL POLES, MAST ARMS, BASES, SIGNAL FACES, LUMINAIRES						
FROM	ROUTING	TO	HEAD NO.	TRAFFIC SIGNAL CABLE, 7-CONDUCTOR NO. 14, (L.F.)	ELECTRICAL WIRE, LIGHTING #12(UF-2 CONDUCTOR WITH GROUND) (L.F.)	TRAFFIC SIGNALS, ELECTRICAL WIRE, NO. 10,(NEUTRAL & GROUND) (L.F.)	SIGNAL NO.	BASES EACH	TRAFFIC SIGNAL STD, STEEL 13-FT POLES EACH	TRAFFIC SIGNAL TROMBONE MAST ARMS 2.5-FT EACH	TRUSS TYPE MAST ARMS, 12' EACH	* LUMINAIRES, 250 WATTS, HIGH PRESSURE SODIUM EACH	* SIGNAL FACE EACH
CB 1	PB 9, PB 8, PB 10	SB 7	9	234			SB 1	TRANSFORMER	-	TYPE 2	1		ONE 3-12 HORIZ.
CB 1	PB 9, PB 8, PB 10, PB 11	SB 8	2 + 4	556 (278 X 2)			SB 2	TRANSFORMER	-	TYPE 4	1		TWO 3-12 VERT.
CB 1	PB 9, PB 8	SB 6	8 + 10	316 (158 X 2)	558		SB 3	TRANSFORMER	-	TYPE 2	1		ONE 3-12 HORIZ.
CB 1	PB 9, PB 8, PB 7	SB 5	6	209			SB 4	PEDESTAL	1	-	-		TWO 3-12 VERT.
CB 1	PB 9, PB 8, PB 7, PB 3, PB 4	SB 4	1 + 5	634 (317 X 2)			SB 5	TRANSFORMER	-	TYPE 2	1		ONE 3-12 HORIZ.
CB 1	PB 9, PB 8, PB 7, PB 3, PB 4	SB 3	7	290			SB 6	TRANSFORMER	-	TYPE 4	1		TWO 3-12 VERT.
CB 1	PB 9, PB 8, PB 7, PB 3, PB 4	SB 1	1	355			SB 7	TRANSFORMER	-	TYPE 2	1		ONE 3-12 HORIZ.
CB 1	PB 9, PB 8, PB 7, PB 3, PB 4	SB 2	7 + 11	750 (375 X 2)	1209	292 (146X2)	SB 8	PEDESTAL	1	-	-		TWO 3-12 VERT.
CB 1	PB 9, PB 8	SB 6				162 (81X2)							
SB 6	PB 8, PB 7	SB 5				324 (162X2)							
SB 5	PB 7, PB 3, PB 4	SB 4				170 (85X2)							
SB 4	PB 4, PB 3	SB 3				254 (127X2)							
SB 3	PB 3, PB 1	SB 2				94 (47X2)							
SB 2	PB 1	SB 1				354 (177X2)							
SB 1	PB 1, PB 10, PB 11	SB 8				124 (62X2)							
SB 8	PB 11, PB 10	SB 7				432 (216X2)							
SB 7	PB 10, PB 8, PB 9	CB 1											

\* ALL TRAFFIC SIGNAL FACES SHALL HAVE BACKPLATES (12 EACH TOTAL)

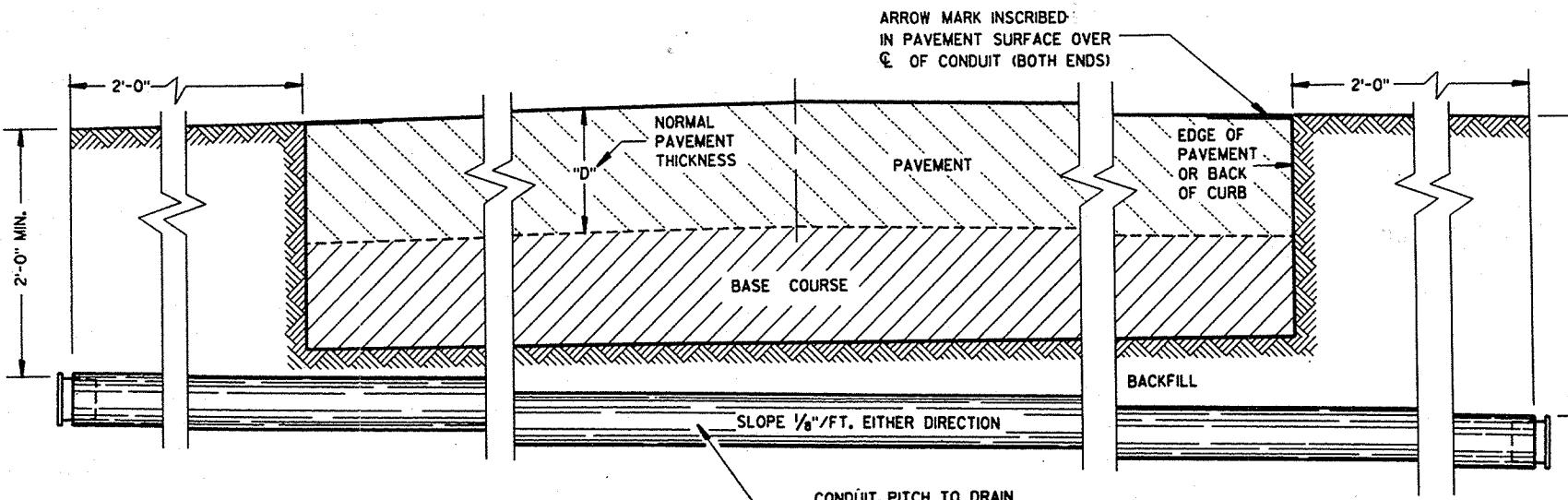
\*\* A PHOTO CELL SHALL BE PROVIDED ON EACH LUMINAIRE

TOPSOIL, SEED, FERTILIZER, MULCH						
LOCATION	TOPSOIL S.Y.	SEED MIX #30 LBS.	FERTILIZER TYPE A CWT.	MULCH S.Y.		
CONDUIT INSTALLATION	200	3.6	.20	200		



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

### DRAIN SUMP FOR CONDUIT



SIDE ELEVATION  
DETAIL FOR CONDUIT UNDER PAVED HIGHWAYS

### GENERAL NOTES

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

METALLIC (STANDARD SPECIFICATION 613.2.2) OR NONMETALLIC (STANDARD SPECIFICATION 613.2.3) CONDUIT SHALL BE FURNISHED AND PLACED AS SHOWN.

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

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

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

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

ALL METALLIC CONDUIT RACEWAY ENDS SHALL BE REAMED AND THREADED.

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

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

ALL NONMETALLIC CONDUIT SHALL BE CAPPED OR PLUGGED IMMEDIATELY AFTER INSTALLATION.

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

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

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

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

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

A #12 GAUGE, GALVANIZED PULL WIRE SHALL BE INSTALLED IN EACH RUN OF CONDUIT THAT DOES NOT RECEIVE CABLE OR WIRE UNDER THIS CONTRACT. THE PULL WIRE SHALL BE DOUBLED BACK 2 FEET AT EACH END CAP OF THE CONDUIT RUN.

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

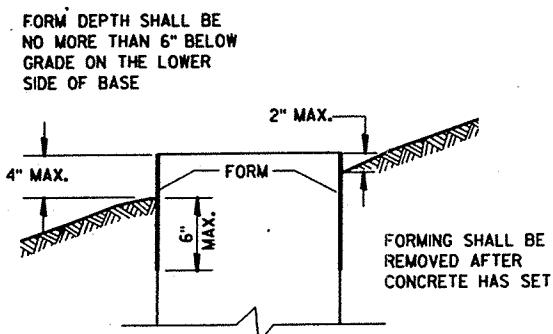
ALL CONDUIT RUNS SHALL BE STRAIGHT (WITHOUT BENDS) FROM PULL BOX TO PULL BOX, PULL BOX TO BASE AND BASE TO BASE AS SHOWN ON THE PLANS UNLESS OTHERWISE APPROVED BY THE PROJECT ENGINEER.

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

CONDUIT

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

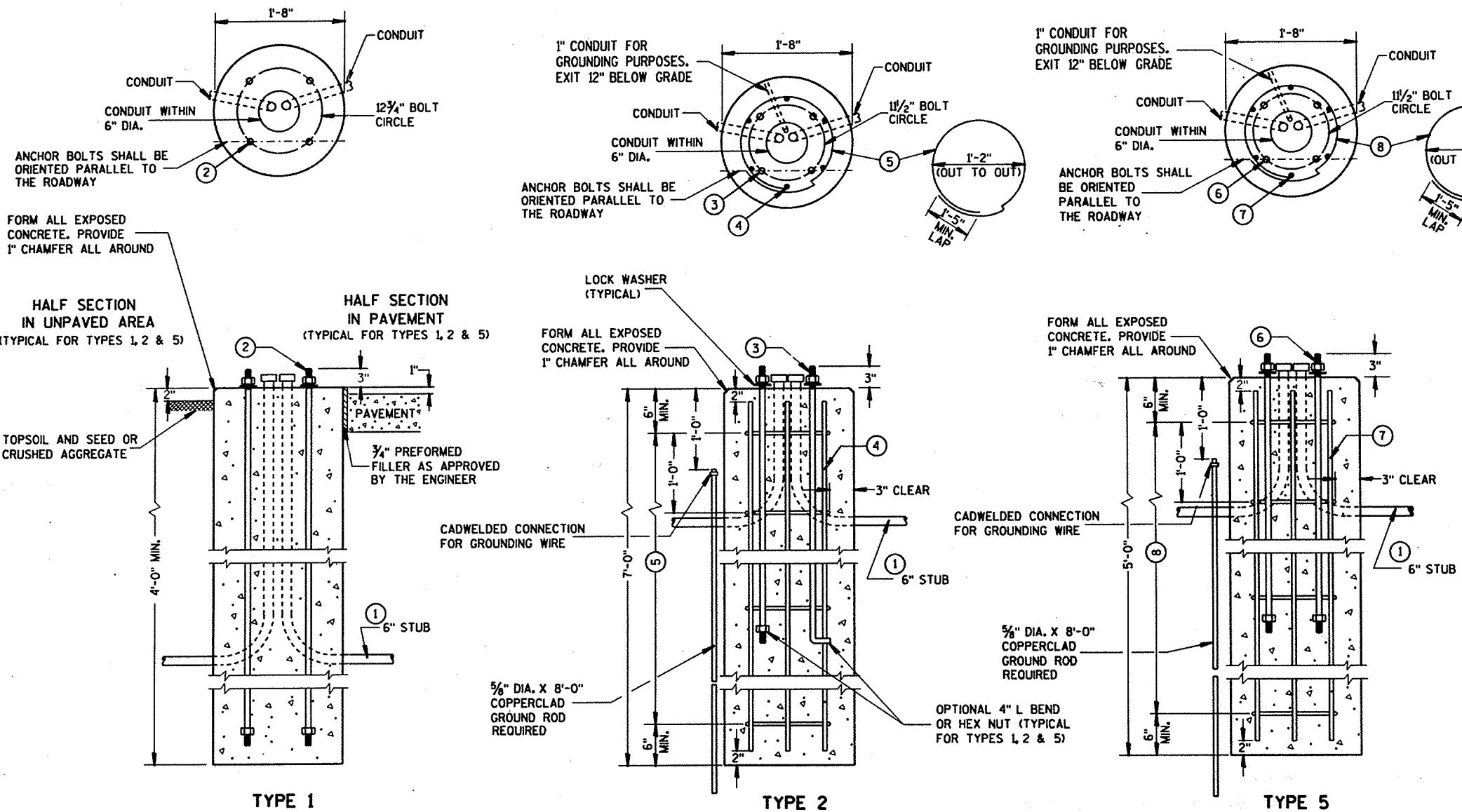
APPROVED	9/10/92	Dale J. Miller
DATE	9/15/92	STATE ELECTRICAL ENGR FOR HWYS
DATE		Robert Rausch
		STATE TRAFFIC ENGINEER FOR HWYS
FHWA		



### FORMING DETAIL

QUANTITY REQUIREMENTS	CONCRETE BASE TYPE		
	1	2	5
APPROX. CUBIC YARDS OF CONCRETE	.32	.57	.40
LBS. OF HOOP BAR STEEL	NONE	23	16
LBS. OF VERTICAL BAR STEEL	NONE	60	18

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



### CONCRETE BASES

### 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 AND LEVEL.

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

MINIMUM BENDING RADIUS OF CONDUIT = 6 X THE DIAMETER.

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

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

ALL NONMETALLIC CONDUITS IN WHICH WIRE OR CABLE IS NOT INSTALLED SHALL BE PLUGGED.

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. 6 AWG. STRANDED COPPER GROUNDING WIRE SHALL BE CADWELDED TO THE GROUND ROD FOR TYPE 2 AND TYPE 5 BASES.

THE GROUNDING WIRE 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 GROUNDING WIRE SHALL BE NEATLY COILED AND THE COILS TIED TOGETHER.

ANCHOR BOLTS SHALL BE THREADED 8" IN LENGTH ON EACH END OF THE BOLT, AND BE MANUFACTURED IN ACCORDANCE WITH SECTION 640.2.9 OF THE STANDARD SPECIFICATIONS, ASTM A-449, OR ASTM A-687 (GRADE 105).

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

(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 BOLTS.

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

(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 BOLTS.

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

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

### CONCRETE BASES

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
4/21/93  
DATE  
4/21/93  
DATE  
FHWA

*John Smith*  
STATE ELECTRICAL ENGR FOR HWYS  
STATE TRAFFIC ENGINEER FOR HWYS

## GENERAL NOTES

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

FOUR (4) BOLTS TO BE FURNISHED WITH EACH TRANSFORMER BASE. BOLTS SHALL BE 1" DIAMETER, 4" IN LENGTH, WITH WASHERS, LOCK WASHERS AND NUTS. BOLTS, NUTS AND WASHERS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM A-449, AND BE GALVANIZED IN ACCORDANCE WITH ASTM A-153, CLASS C.

4" BOLTS SHALL BE IN ACCORDANCE WITH SECTION 640.2.9 OF THE STANDARD SPECIFICATIONS, ASTM A-449 OR ASTM A-687 (GRADE 105).

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

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

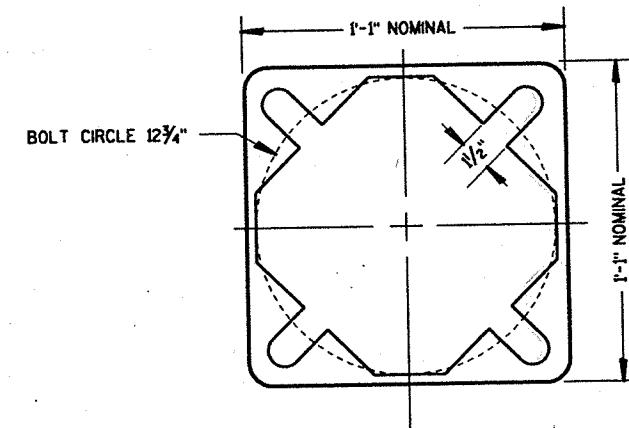
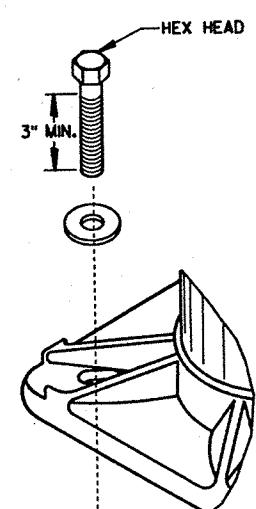
DOUBLE NUTTING IS NOT ACCEPTABLE FOR LEVELING OR MOUNTING PURPOSES.

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

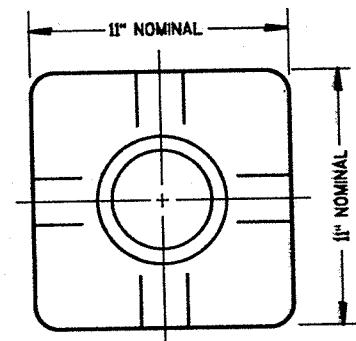
THE MECHANICAL CONNECTOR SHALL BE INSTALLED USING A 1/4" - 20 (TPI) STAINLESS STEEL HEX HEAD BOLT OF SUFFICIENT LENGTH TO FIRMLY ATTACH THE LUG TO THE BASE.

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

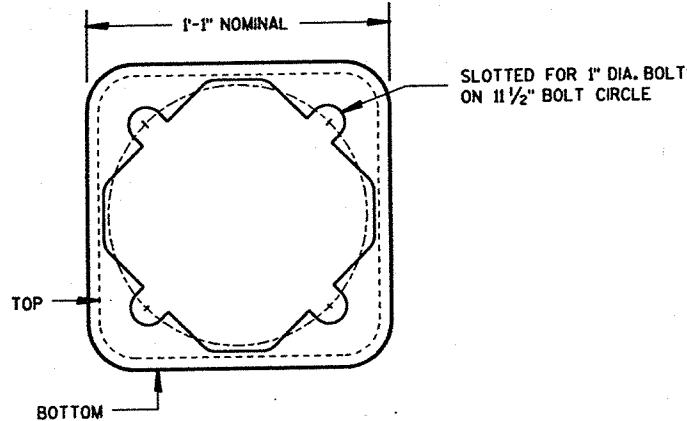
TEST REPORTS FROM AN FHWA APPROVED INDEPENDENT LABORATORY SHALL BE PROVIDED CERTIFYING THAT THE BASE HAS BEEN TESTED AND MEETS OR EXCEEDS ALL OF THE APPLICABLE 1985 AASHTO BREAKAWAY REQUIREMENTS. A STATEMENT OF CERTIFICATION FROM FHWA ATTESTING THAT SUCH TESTS HAVE BEEN ACCEPTED AND APPROVED SHALL BE SUPPLIED ALONG WITH THE BID.



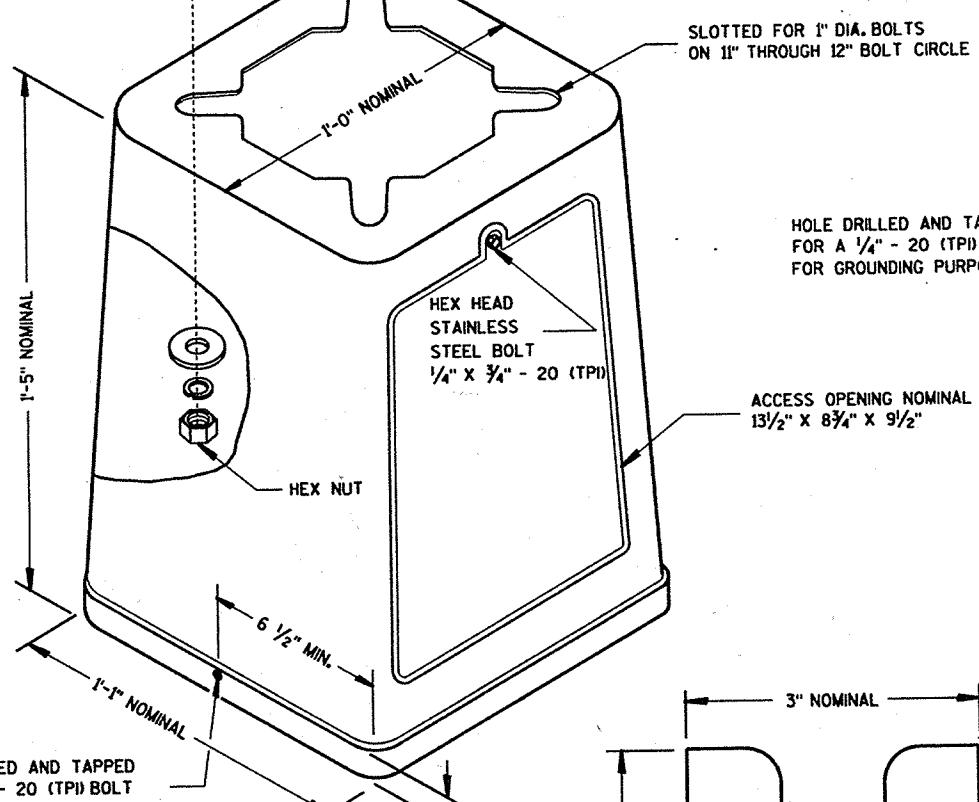
BOTTOM VIEW  
(PEDESTAL BASE)



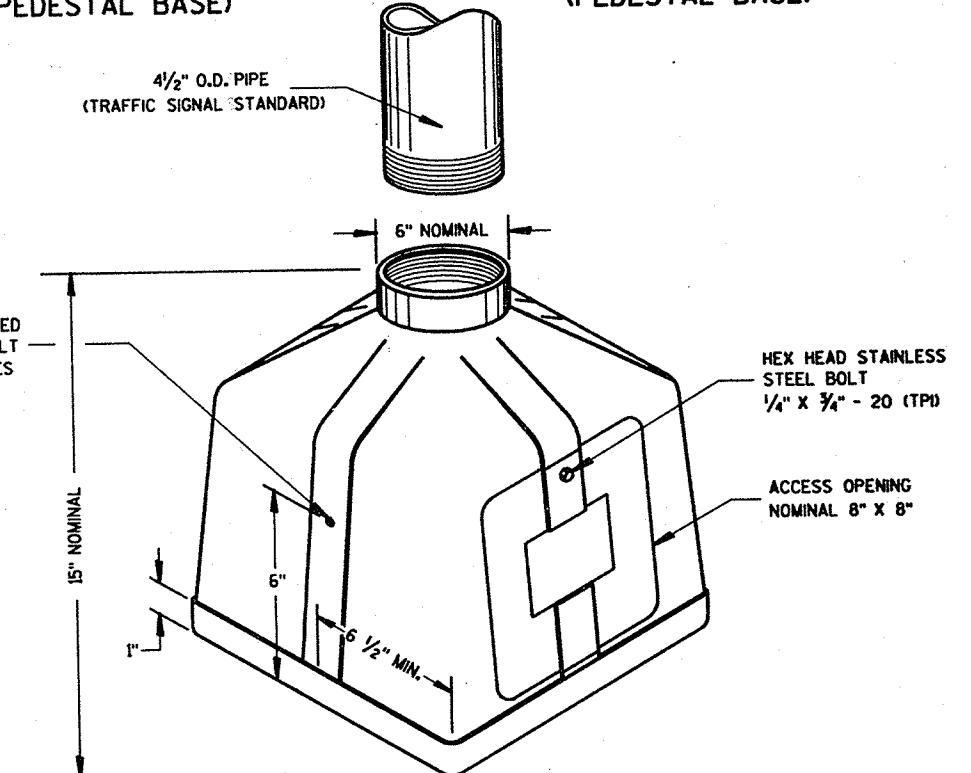
TOP VIEW  
(PEDESTAL BASE)



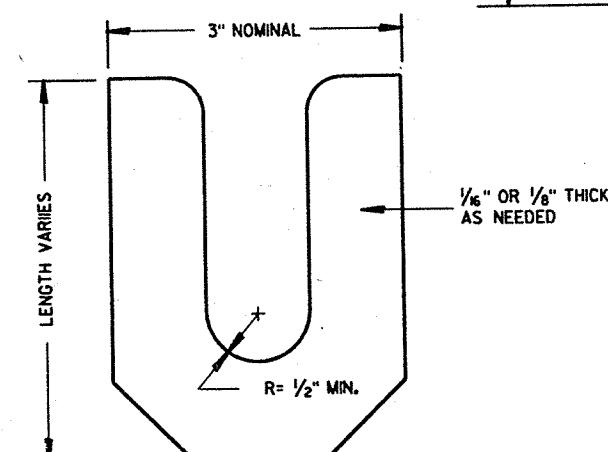
BOTTOM VIEW  
(TRANSFORMER BASE)



ISOMETRIC VIEW



ISOMETRIC VIEW  
PEDESTAL BASE



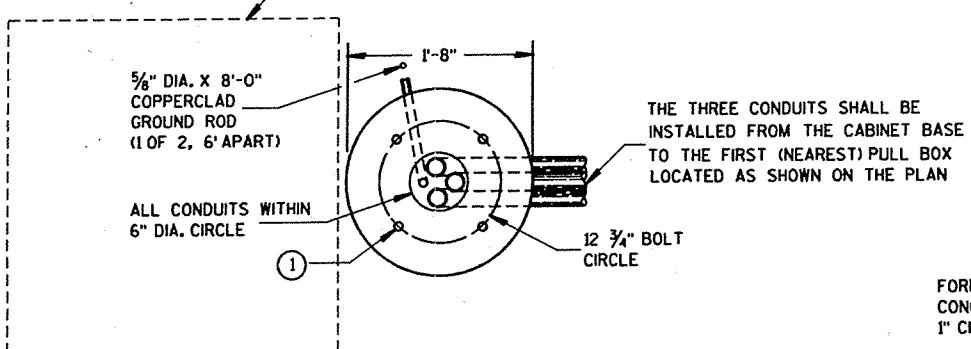
LEVELING SHIM

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

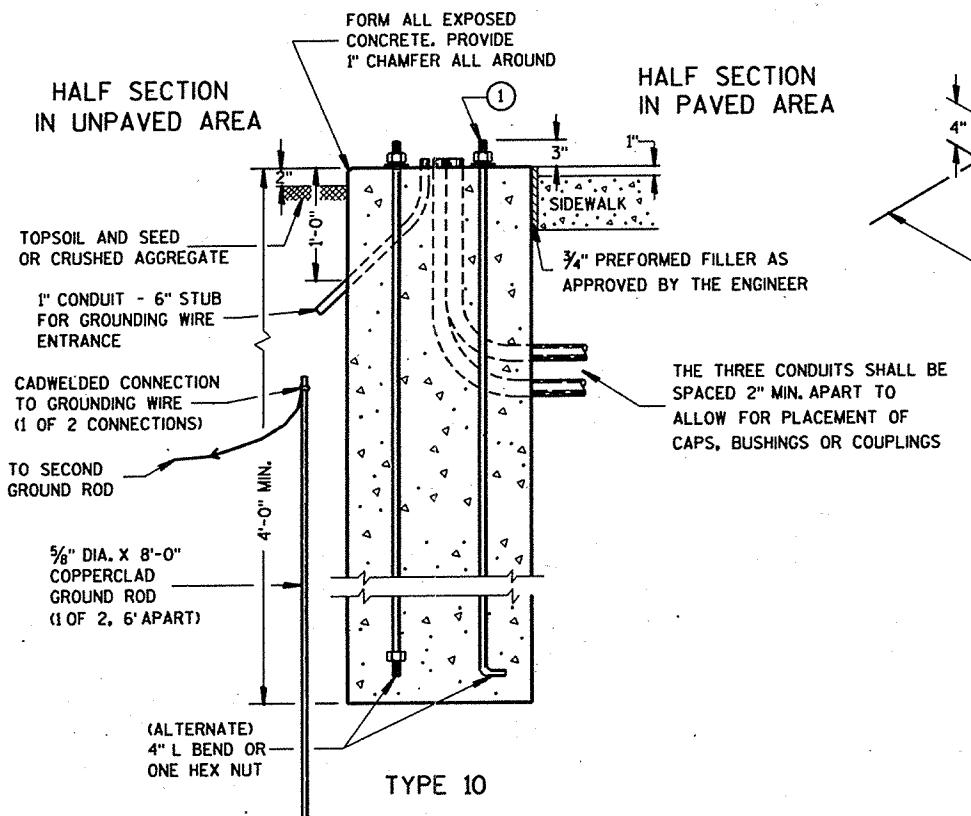
CAST BASES	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 4/21/93 DATE	STATE ELECTRICAL ENGR FOR HWYS John Smith
4/21/93 DATE	STATE TRAFFIC ENGINEER FOR HWYS John Smith
FHWA	

CONTROL CABINET BASE TYPE	DIMENSIONS				C.Y. CONCRETE (APPROX.)
	H	I	J	K	
TYPE 6 - 30" CABINET	34"	60"	10"	17"	.64
TYPE 7 - 38" CABINET	42"	60"	10"	21"	.93
TYPE 8 - 38" CABINET	42"	72"	12"	21"	1.29
TYPE 9 - VARIABLE	54"	72"	14"	27"	1.56
TYPE 10 - POST MOUNT	AS SHOWN				.32

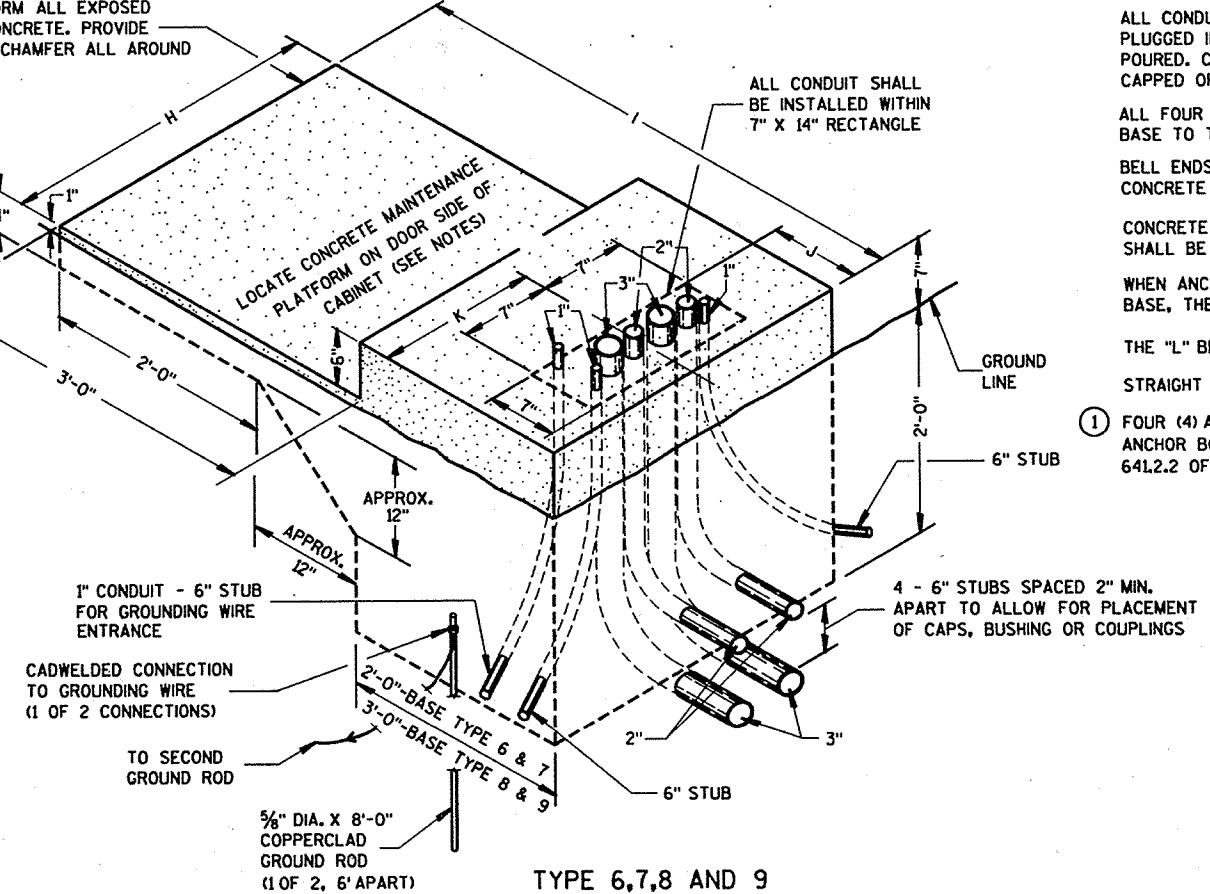
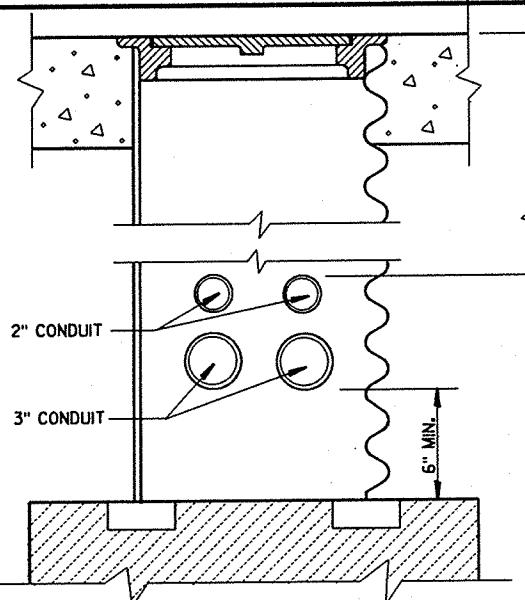
TYPICAL 3'-0" X 3'-0"  
MAINTENANCE PLATFORM.  
LOCATION TO BE DETERMINED  
IN THE FIELD.



CONDUIT LOCATIONS IN 24" X 36" PULL BOX  
(LEADING TO CONTROLLER CABINET BASE TYPE 6, 7, 8 AND 9)



CONCRETE CONTROL CABINET BASES



TYPE 6,7,8 AND 9  
(ISOMETRIC VIEW)

## GENERAL NOTES

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

INSTALL FOUR 1/2 INCH MINIMUM DIAMETER X 4 INCH MINIMUM LENGTH APPROVED CONCRETE MASONRY ANCHORS TO ANCHOR THE CABINET TO TYPE 6, 7, 8, AND 9 BASES. THE ANCHOR BOLTS SHALL BE LOCATED AS DIRECTED BY THE ENGINEER TO PROPERLY ANCHOR THE CONTROL CABINET TO THE BASE.

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

CONDUIT HEIGHT ABOVE THE CONCRETE BASE SHALL BE 1 INCH.

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

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

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

CONTROL CABINET BASE TOP SURFACES SHALL BE TROWEL FINISHED AND LEVEL.

WHEN A TYPE 10 CONTROL CABINET BASE IS USED TO POST MOUNT A CONTROL CABINET, A 36" SQUARE, 4" THICK CONCRETE MAINTENANCE PLATFORM SHALL BE REQUIRED ON THE DOOR SIDE OF THE CABINET. THE TOP 1 INCH SHALL BE ABOVE FINISHED GRADE AND BE BROOM FINISHED AND LEVEL.

MAINTENANCE PLATFORMS ARE NOT REQUIRED WHEN THE SURROUNDING AREA IS PAVED.

MINIMUM BENDING RADIUS OF CONDUIT = 6 X THE DIAMETER.

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 BEING INSTALLED SHALL REMAIN CAPPED OR PLUGGED.

ALL FOUR (TWO INCH AND THREE INCH) CONDUIT SHALL BE INSTALLED FROM THE CABINET BASE TO THE FIRST (NEAREST) PULL BOX LOCATED AS SHOWN ON THE PLANS.

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

CONCRETE FORM DEPTH BELOW FINISHED GRADE SHALL BE 6" MAXIMUM. CONCRETE FORMS SHALL BE REMOVED AFTER CONCRETE HAS SET.

WHEN ANCHOR BOLTS USING THE ALTERNATE L BEND ARE FURNISHED FOR THE TYPE 10 BASE, THE 4" L BEND SHALL BE IN ADDITION TO THE SPECIFIED ANCHOR BOLT BAR LENGTH. THE "L" BEND SHALL NOT BE THREADED.

STRAIGHT ANCHOR BOLTS SHALL BE THREADED 8" IN LENGTH ON EACH END OF THE BOLT.

① FOUR (4) ANCHOR BOLTS, 1" DIA. X 3'-6"  
ANCHOR BOLTS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 640.2.9 AND 641.2.2 OF THE STANDARD SPECIFICATIONS AND IN ACCORDANCE WITH A-449.

## CONCRETE CONTROL CABINET BASES

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

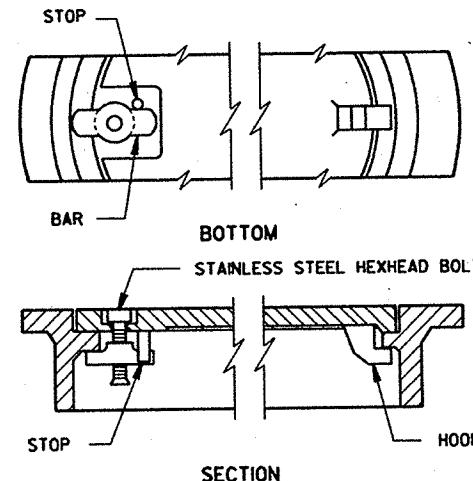
APPROVED  
4/21/93  
DATE  
STATE ELECTRICAL ENGR FOR HWYS  
4/21/93  
DATE  
STATE TRAFFIC ENGINEER FOR HWYS  
FHWA

### TABLE OF NOMINAL DIMENSIONS AND WEIGHTS

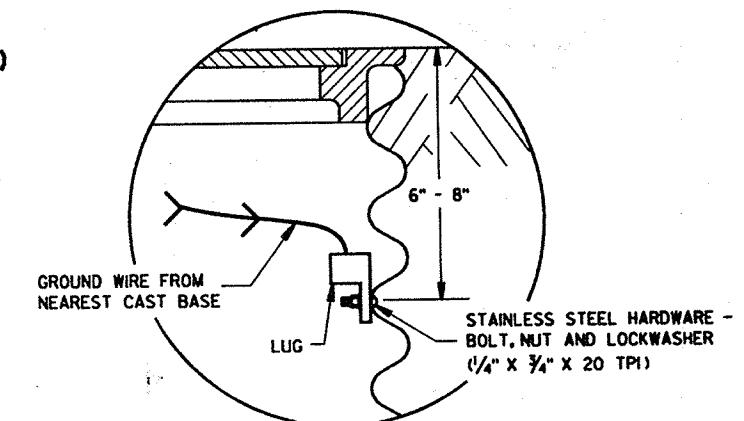
DIMENSION IN INCHES	TYPE OF PIPE						
	CORRUGATED STEEL				POLYETHYLENE SDR 32.5		
PIPE DIAMETER (INSIDE)	A	12	12	18	18	24	24
PIPE LENGTH **	B	24	36	24	36	24	36
WALL THICKNESS	C	0.064	0.064	0.064	0.064	0.064	0.064
COVER	D	10 1/4	10 1/4	16 1/4	16 1/4	22 1/4	22 1/4
FRAME	E	14 1/2	14 1/2	20 1/2	20 1/2	26 1/2	26 1/2
FRAME	F	8 1/2	8 1/2	14 1/2	14 1/2	20 1/2	20 1/2
FRAME	G	11 1/2	11 1/2	17 1/2	17 1/2	23 1/2	23 1/2
WEIGHT IN POUNDS *							
FRAME AND COVER		60	60	110	110	155	155
		60	60	110	110	155	155

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

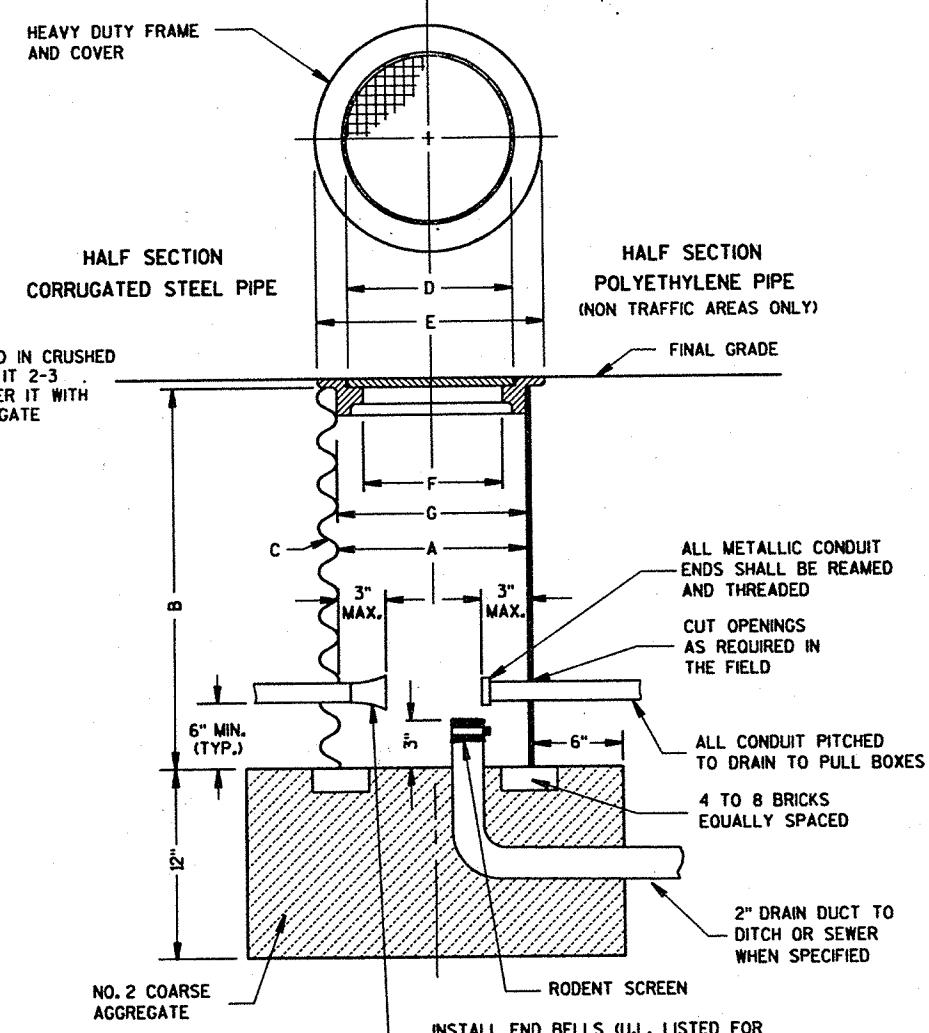
\*\* NORMALLY USED LENGTHS. THE PROJECT ENGINEER SHALL DETERMINE IF PIPE LENGTHS, OTHER THAN THOSE SPECIFIED, SHALL BE USED, TO A MAXIMUM OF 48" (CONTINUOUS LENGTH, NON-SPliced)



### ALTERNATE COVER (LOCKING) TIGHTENING BAR TYPE



### GROUNDING LUG AND LOCATION IN STEEL PULL BOXES



### GENERAL NOTES

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

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

POLYETHYLENE PULL BOXES SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALTIC PAVEMENT. PULL BOXES LOCATED IN THE ROADWAY SHALL HAVE LOCKING COVERS.

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

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

GROUNDING LUGS (MECHANICAL CONNECTORS) SHALL BE U.L. LISTED AND APPROVED FOR USE WITH COPPER WIRE. THE MECHANICAL CONNECTION (INSIDE AND OUTSIDE) TO THE PULL BOX, SHALL BE TOTALLY AND PERMANENTLY SEALED WITH A SILICONE OR RUBBERIZED CAULKING COMPOUND AS APPROVED BY THE ENGINEER.

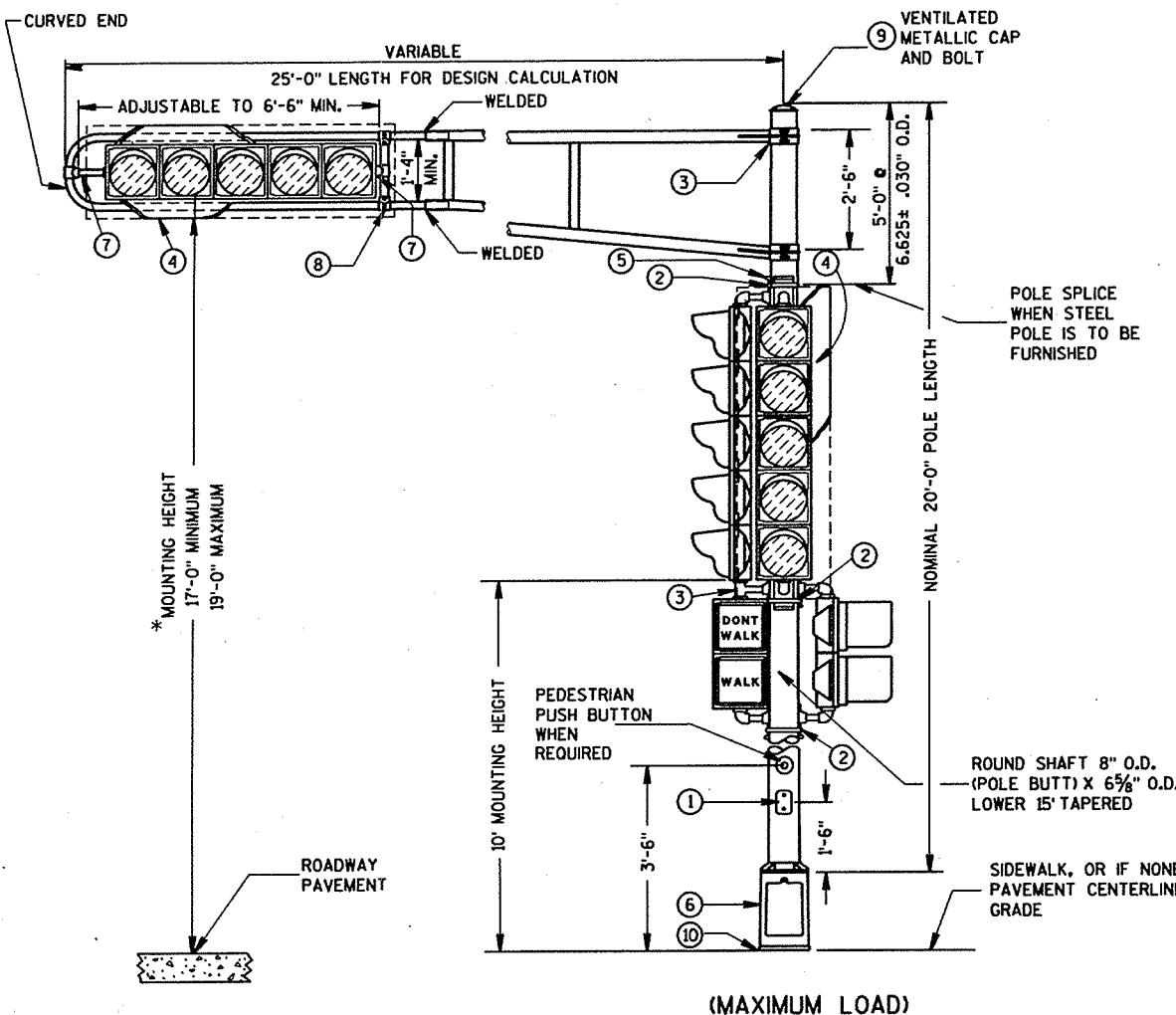
GROUNDING LUGS ARE NOT REQUIRED IN PULL BOXES WHEN VOLTAGES OF LESS THAN 50 VOLTS AC ARE THE ONLY VOLTAGES ENCOUNTERED IN THE BOXES.

DRAIN DUCT SHALL BE MEASURED AND PAID FOR SEPARATELY.

RODENT SCREEN SHALL BE 1/8" GALVANIZED STEEL MESH AND BE INSTALLED WITH A STAINLESS STEEL HOSE CLAMP OF SUFFICIENT SIZE.

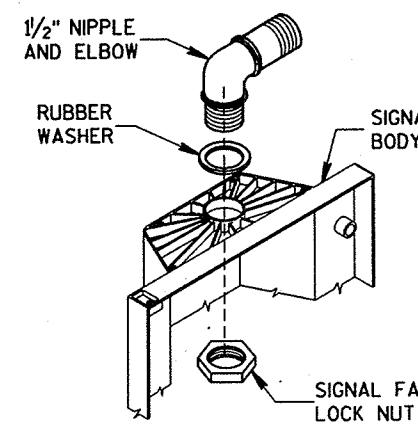
ALL METALLIC CONDUIT IN WHICH WIRE AND/OR CABLE IS TO BE INSTALLED, SHALL BE BUSHED BEFORE INSTALLATION OF THE WIRE AND/OR CABLE.

PULL BOX	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	<i>John A. W.</i>
DATE	4/21/93
APPROVED	<i>John A. W.</i>
DATE	4/21/93
STATE ELECTRICAL ENGR FOR HWYS	
STATE TRAFFIC ENGR FOR HWYS	
FHWA	

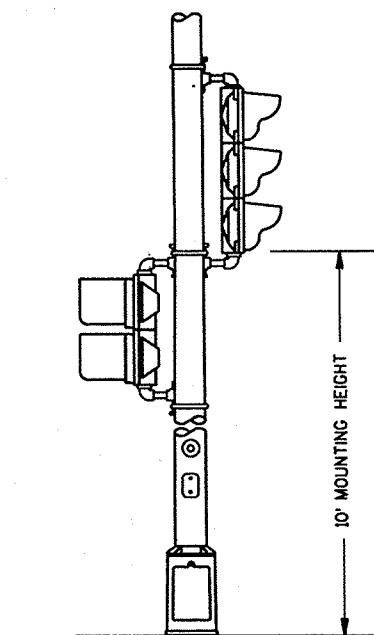
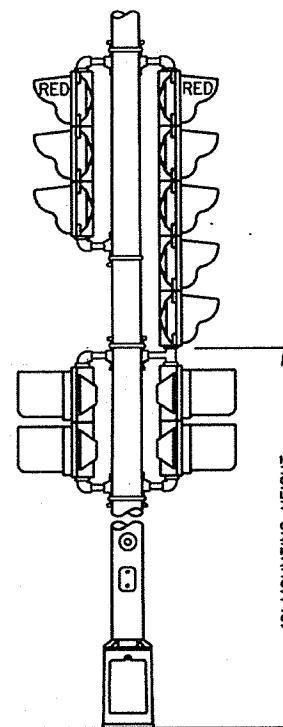


TYPICAL MOUNTING OF BACK TO BACK  
3 AND 5 SECTION SIGNAL FACES

TYPE 2 POLE MOUNTING CONFIGURATION

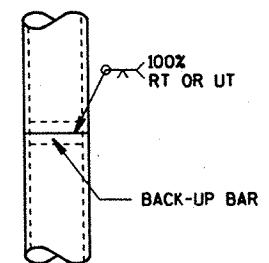


SIGNAL FACE MOUNTING DETAIL



TYPICAL MOUNTING OF 3 SECTION  
SIGNAL FACE

WELD TO BE 100% R.T. OR U.T. TESTED AS PER THE REQUIREMENTS OF AWS D 15-88. RECORDS OF CERTIFICATION OF COMPLIANCE OF SUCH TESTING SHALL BE FURNISHED TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO SHIPMENT OF THE POLES. VERIFICATION AND APPROVAL OF THE TESTING CERTIFICATION FROM THE MANUFACTURER SHALL BE COMPLETED BY THE CENTRAL OFFICE BRIDGE SECTION.



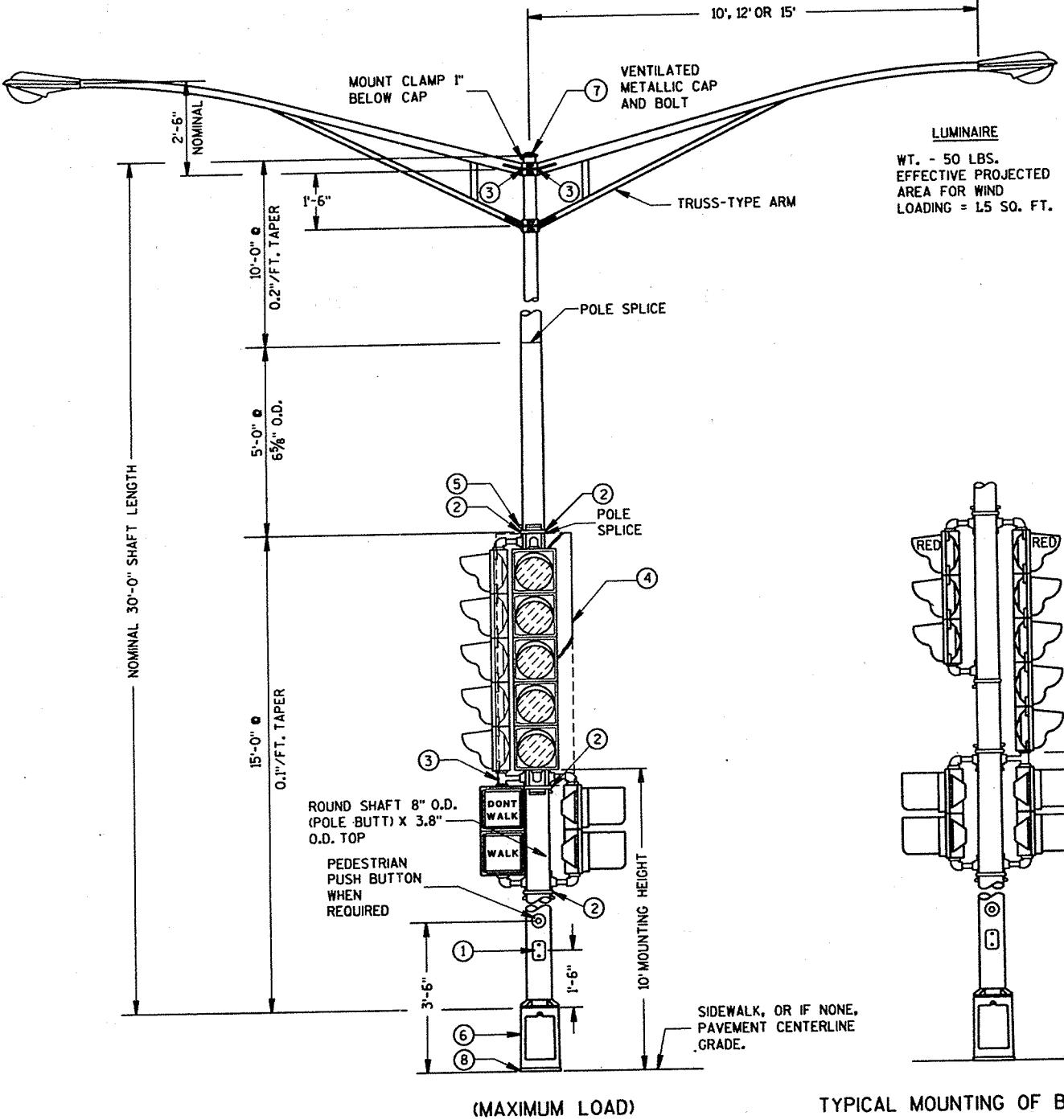
NOTE:  
SHEET SDD 9 E 1-10 IS REQUIRED WHEN THIS DRAWING IS CALLED FOR IN THE PLANS.

DESIGN NOTE: (WILL NOT APPEAR ON CONTRACT PLANS)  
THIS DETAIL IS APPLICABLE WHEN SIGNALS ARE MOUNTED ON A TROMBONE ARM. DO NOT USE FOR LIGHTING.

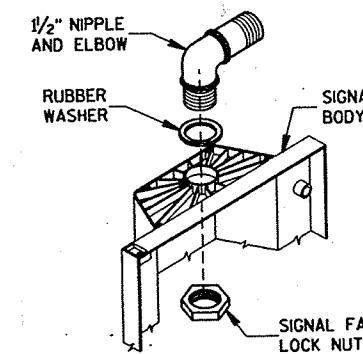
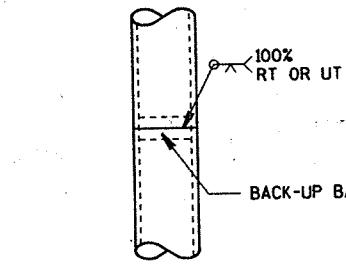
POLE MOUNTINGS FOR  
TRAFFIC SIGNALS  
TYPE 2

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

WELD TO BE 100% R.T. OR U.T. TESTED AS PER THE REQUIREMENTS OF AWS D 15-88. RECORDS OF CERTIFICATION OF COMPLIANCE OF SUCH TESTING SHALL BE FURNISHED TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO THE SHIPMENT OF THE POLES. VERIFICATION AND APPROVAL OF THE TESTING CERTIFICATION FROM THE MANUFACTURER SHALL BE COMPLETED BY THE CENTRAL OFFICE BRIDGE SECTION.



TYPE 4 POLE MOUNTING CONFIGURATION



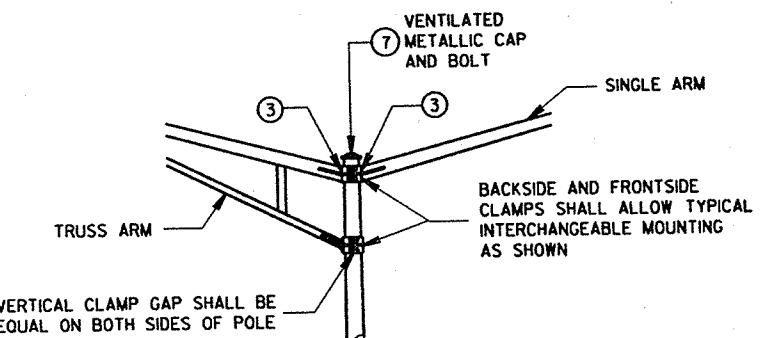
#### GENERAL NOTES

THE POLE USED IN THE TYPE 4 MOUNTING CONFIGURATION SHALL BE INTERCHANGEABLE WITH, AND MEET THE LOADING REQUIREMENTS OF A TYPE 3 POLE.

ALL LUMINAIRE POLE MOUNTINGS SHALL BE DESIGNED FOR TWIN 15' ARMS WITH LUMINAIRES.

THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL 2 3/8 INCHES IN OUTSIDE DIAMETER. THE STRAIGHT PORTION OF THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL 12 INCHES IN LENGTH.

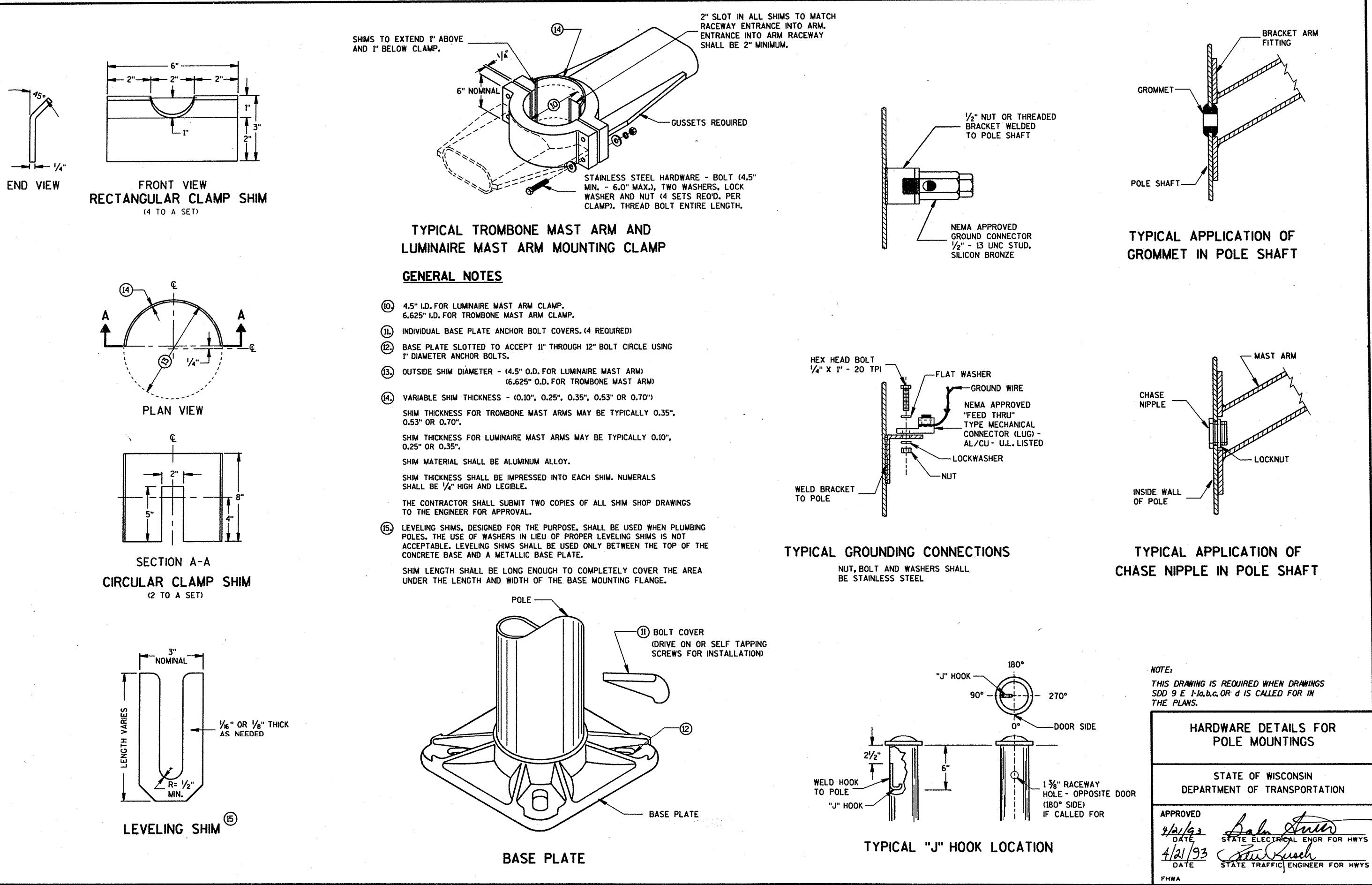
- ① 4" X 6" REINFORCED HANDBORE & COVER ASSEMBLY WITH 2 (TWO) 1/4" X 3/4" - 20 TPI HEX HEAD STAINLESS STEEL BOLTS.
- ② SIGNAL FACE MOUNTING BRACKETS, MOUNT WITH CAP SCREWS AND BANDING. (SEE SPECIAL PROVISIONS).
- ③ GROMMETS, 1" CHASE NIPPLES OR 1" CLOSE CONDUIT NIPPLES WITH BUSHINGS SHALL BE PROVIDED FOR 1 1/8" HOLE IN POLE SHAFT FOR WIRING.
- ④ VERTICAL MOUNTED SIGNAL FACES WITH BACKBOARDS REQUIRED ARE LOCATED AS SHOWN ON THE PLANS. BACKBOARDS ARE REQUIRED TO SURROUND SIGNAL FACES. BACKBOARDS SHALL EXTEND 5" BEYOND EXTREMITIES OF SIGNAL FACE.
- ⑤ POLE MOUNTED SIGNAL FACES SHALL REQUIRE 1 OR MORE MOUNTING SPACERS UNDER THE TOP MOUNTING BRACKET(S) AS REQUIRED, TO PLUMB THE SIGNAL FACE.
- ⑥ CAST ALUMINUM TRANSFORMER BASE, WHEN REQUIRED.
- ⑦ FURNISH AND INSTALL VENTILATED, CAST, METALLIC (ALUMINUM ALLOY CAPS. FASTEN CAPS WITH ONE (1) 1/4" X 3/4" - 20 TPI STAINLESS STEEL, HEX HEAD BOLT.
- ⑧ SHIMMING, IF NEEDED, SHALL BE LOCATED BETWEEN THE CONCRETE FOUNDATION AND THE TRANSFORMER BASE.

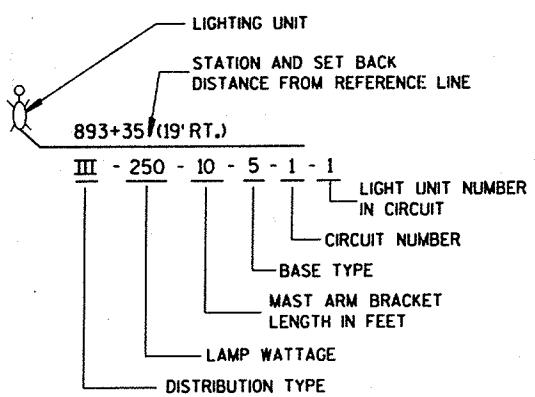


NOTE:  
SHEET SDD 9 E1-16 IS REQUIRED WHEN THIS DRAWING IS CALLED FOR IN THE PLANS.

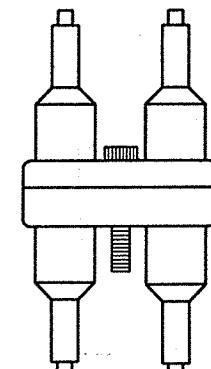
POLE MOUNTINGS FOR  
TRAFFIC SIGNALS AND  
LIGHTING UNITS, TYPE 4

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

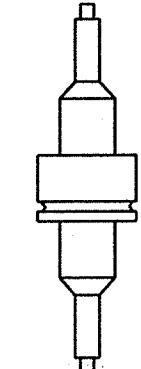




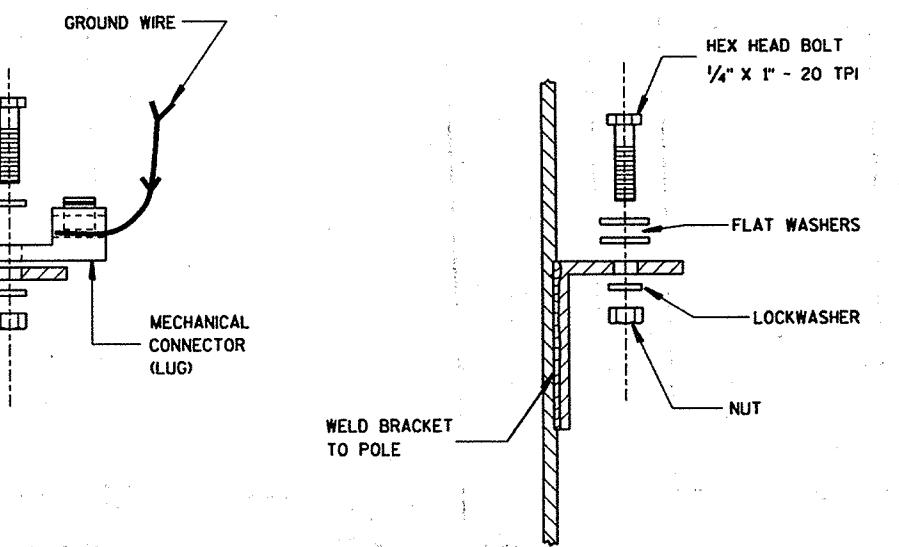
LIGHTING UNIT CODE



DETAIL "A"  
DOUBLE POLE



DETAIL "B"  
SINGLE POLE

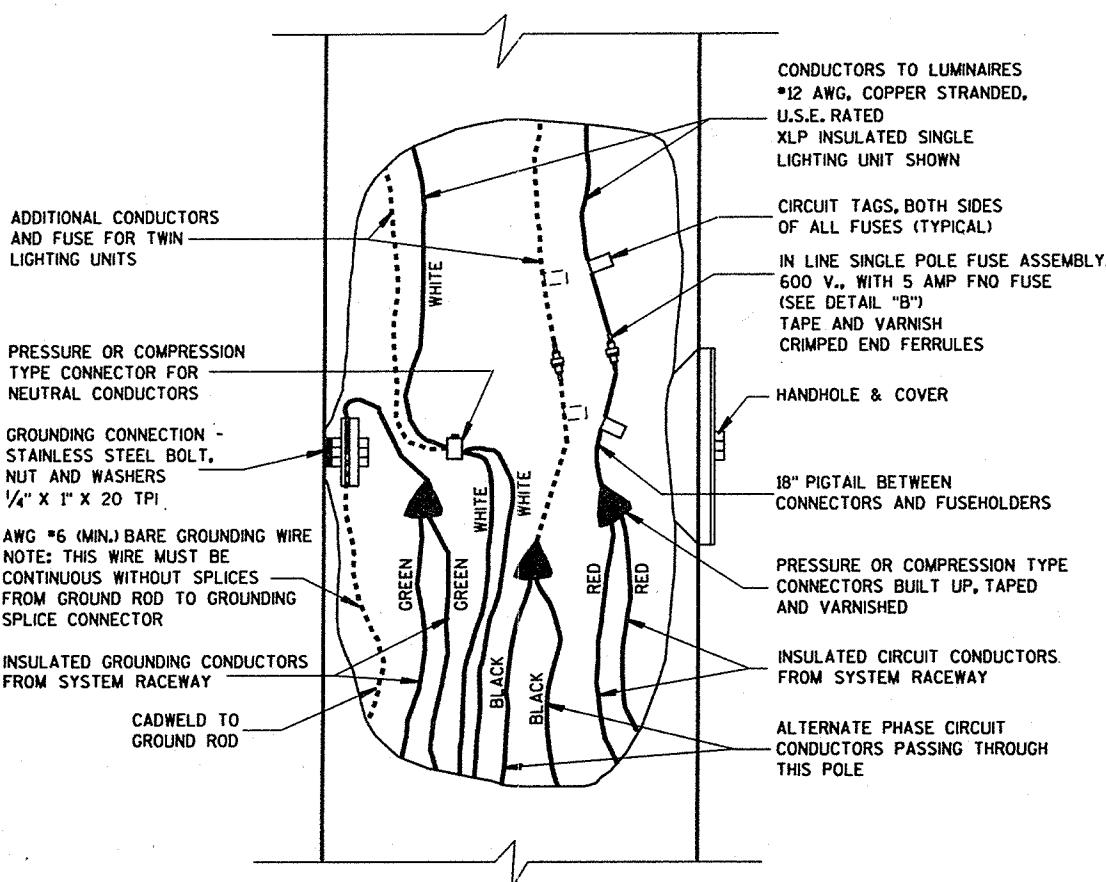


### TYPICAL GROUNDING CONNECTIONS

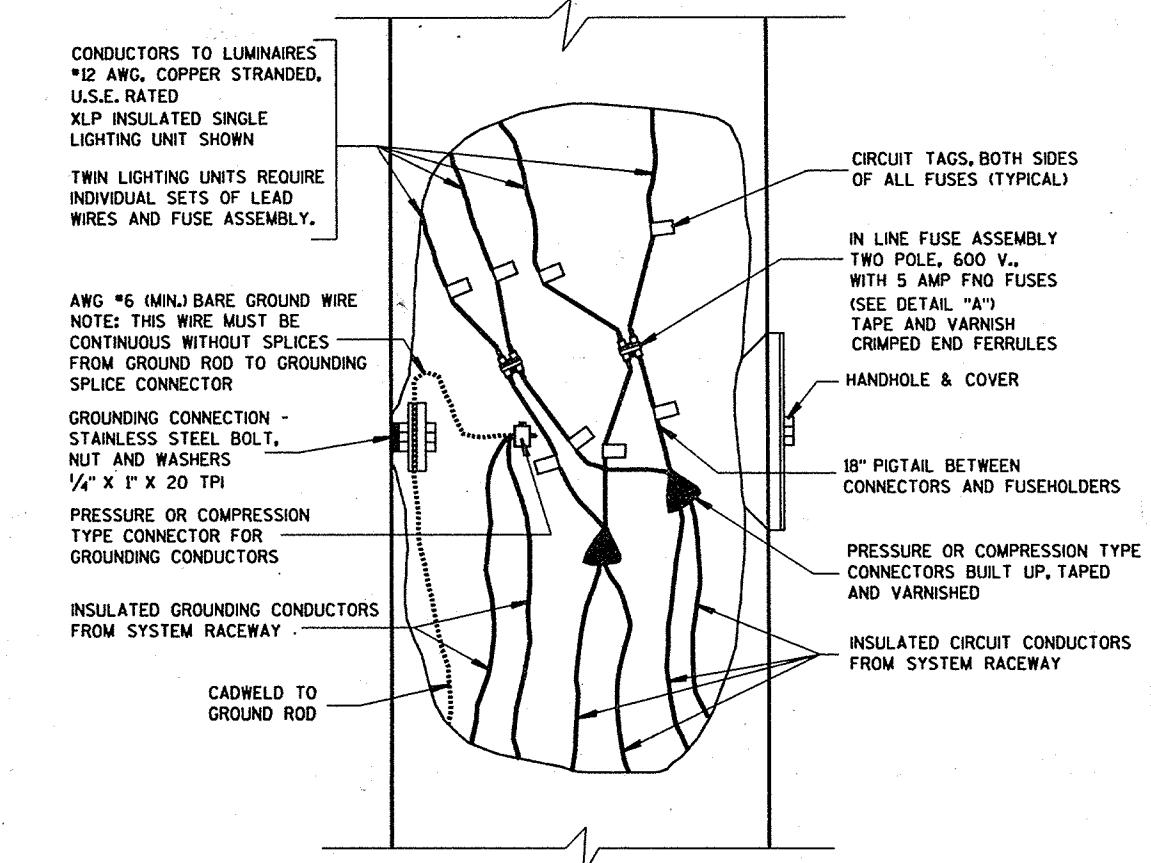
NUT, BOLT AND WASHERS SHALL BE STAINLESS STEEL

### GENERAL NOTES

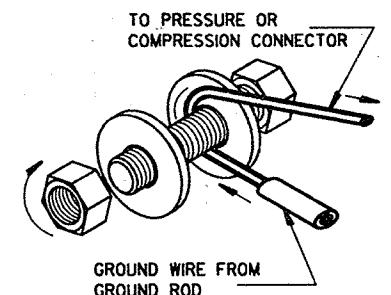
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.



3 WIRE - 120, 240 OR 480 VOLTS TO GROUND  
2 WIRE - 120 VOLTS TO GROUND



2 WIRE - 240 OR 480 VOLTS (UNGROUND)



### GROUND WIRE INSTALLATION BETWEEN TWO WASHERS

#### NON-FREWAY LIGHTING UNIT POLE WIRING

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
4/21/93  
DATE  
STATE ELECTRICAL ENGR FOR HWYS  
4/21/93  
DATE  
STATE TRAFFIC ENGINEER FOR HWYS  
FHWA

## GENERAL NOTES

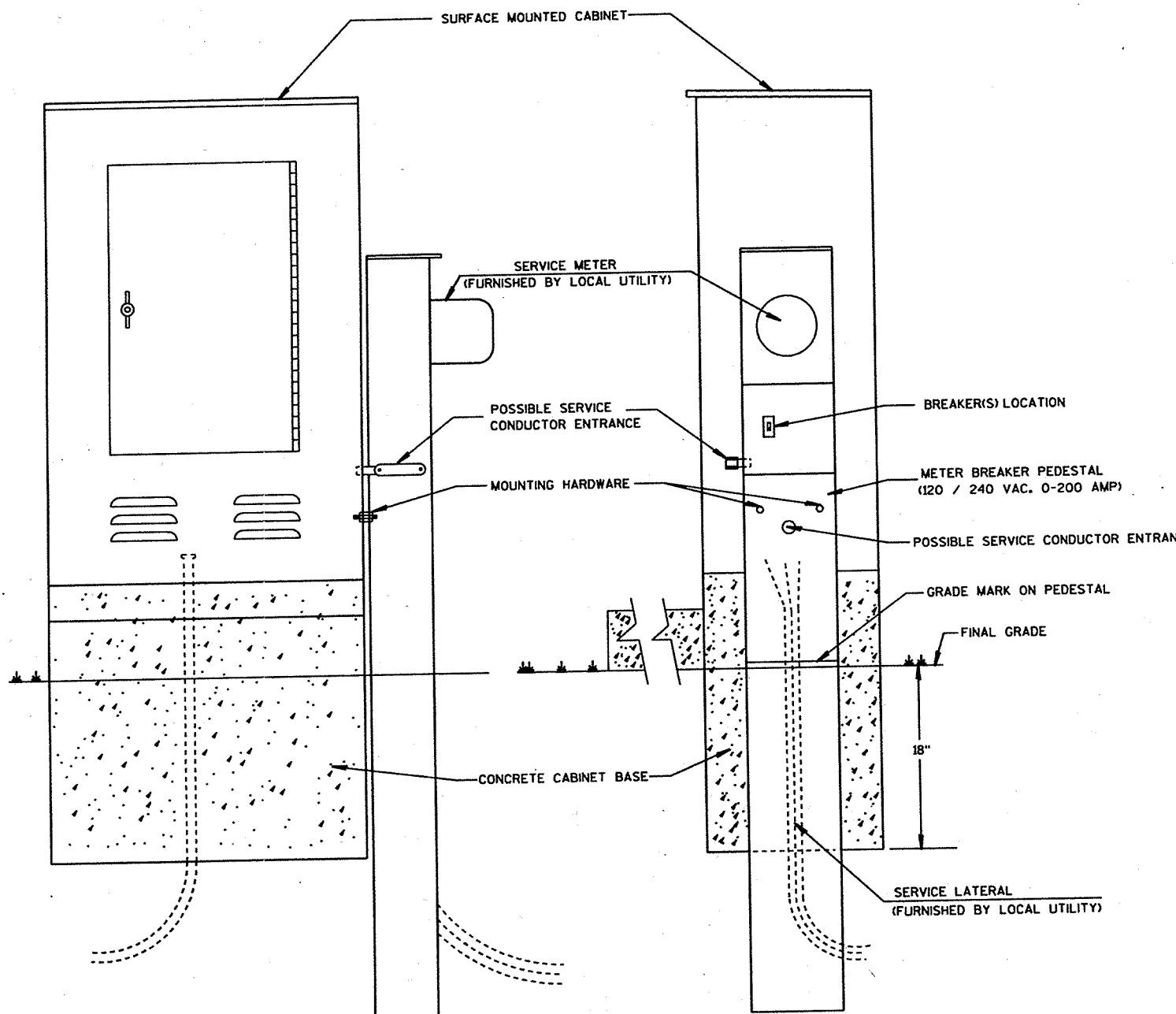
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

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

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

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

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



TYPICAL CABINET SERVICE INSTALLATION

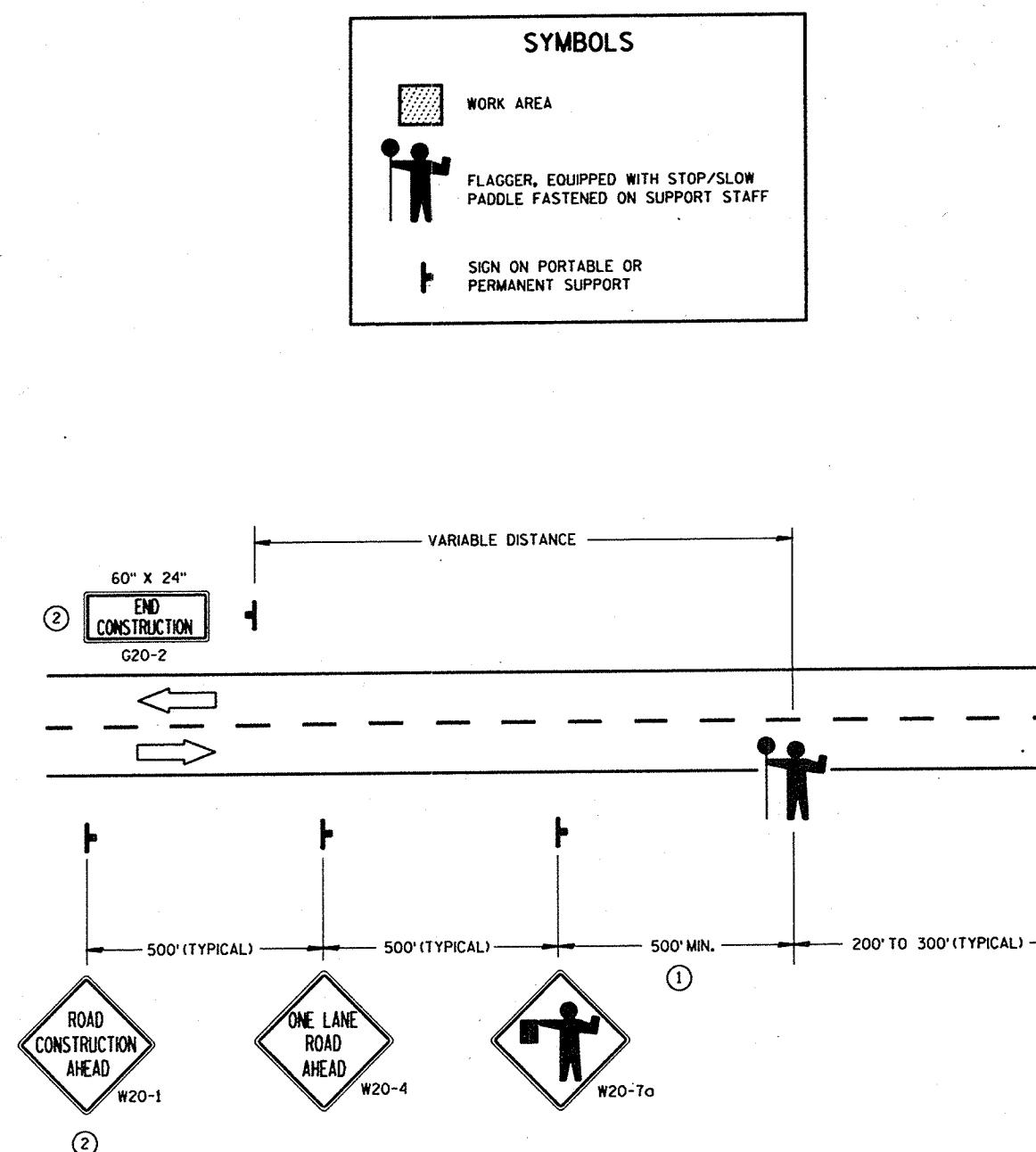
### CABINET SERVICE INSTALLATION

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
4/21/93  
DATE  
4/21/93  
DATE  
FHWA

*Boles*  
STATE ELECTRICAL ENGR FOR HWYS  
*Steve Smith*  
STATE TRAFFIC ENGINEER FOR HWYS

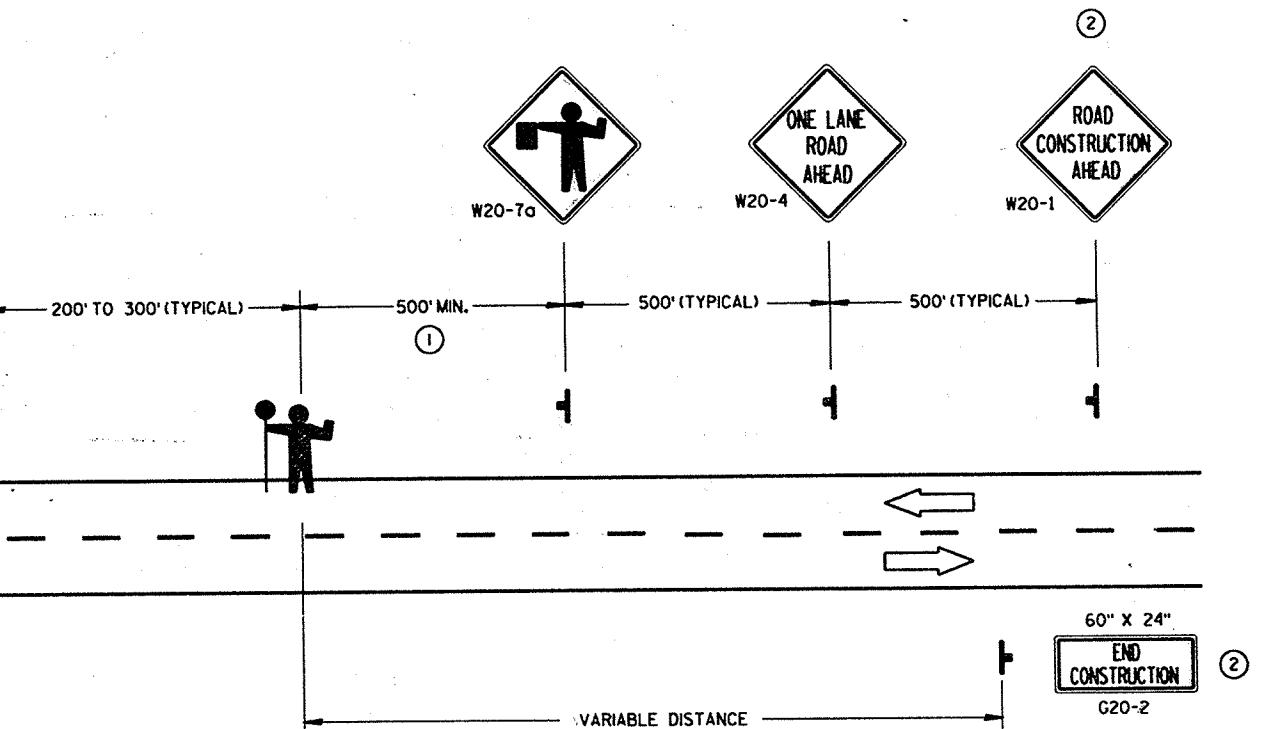
## TWO-LANE ROADWAY



- (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 DIRECTED BY THE ENGINEER.
- (2) SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD CONSTRUCTION WORK ZONE AREA.



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 DIRECTED 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 DIRECTED BY THE ENGINEER.

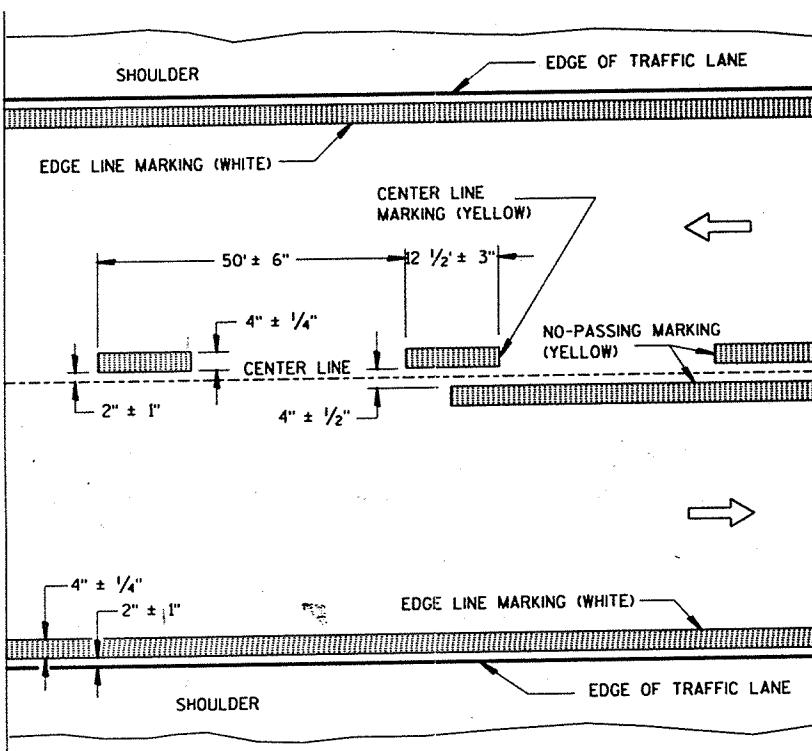
FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT, THE "FLAGGER AHEAD", "ROAD CONSTRUCTION AHEAD" AND THE "ONE LANE ROAD AHEAD" SIGNS SHALL BE COVERED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

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

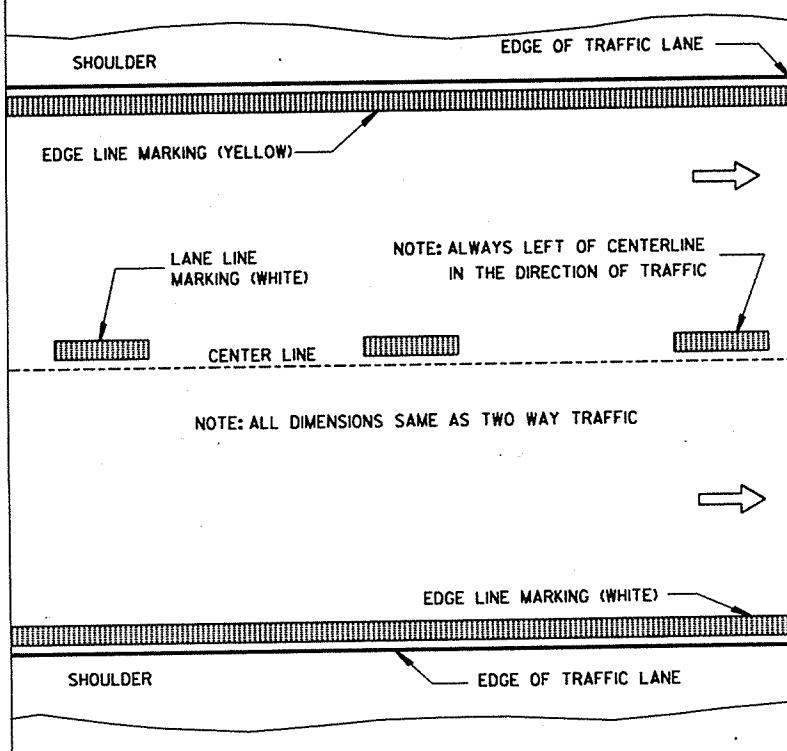
TRAFFIC CONTROL FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

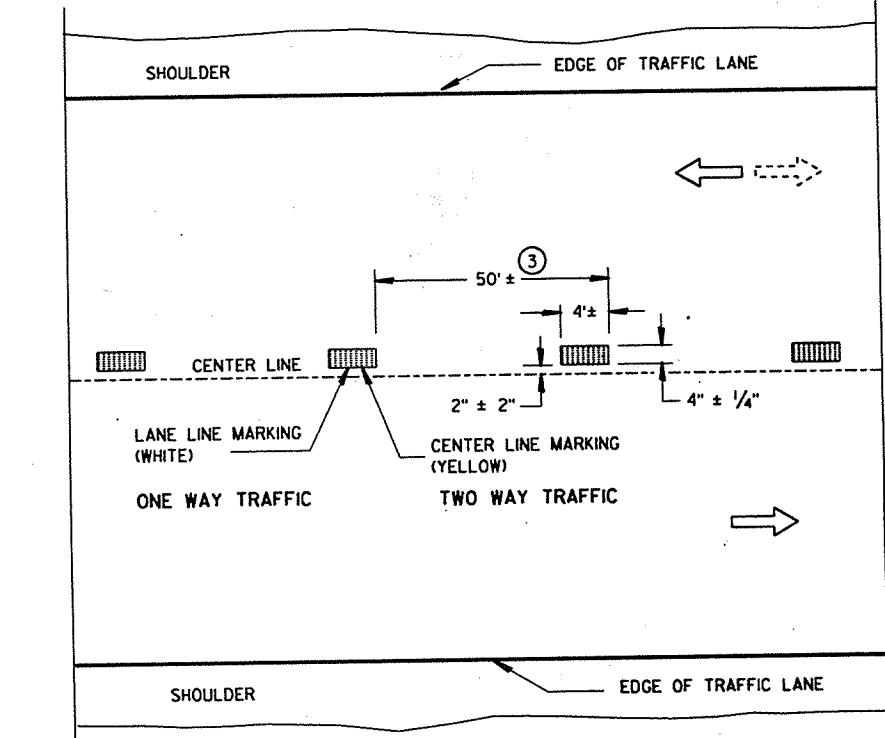
APPROVED  
2-12-91  
DATE  
STATE TRAFFIC ENGINEER FOR HWYS  
FHWA



TWO WAY TRAFFIC



ONE WAY TRAFFIC



TEMPORARY PAVEMENT MARKING

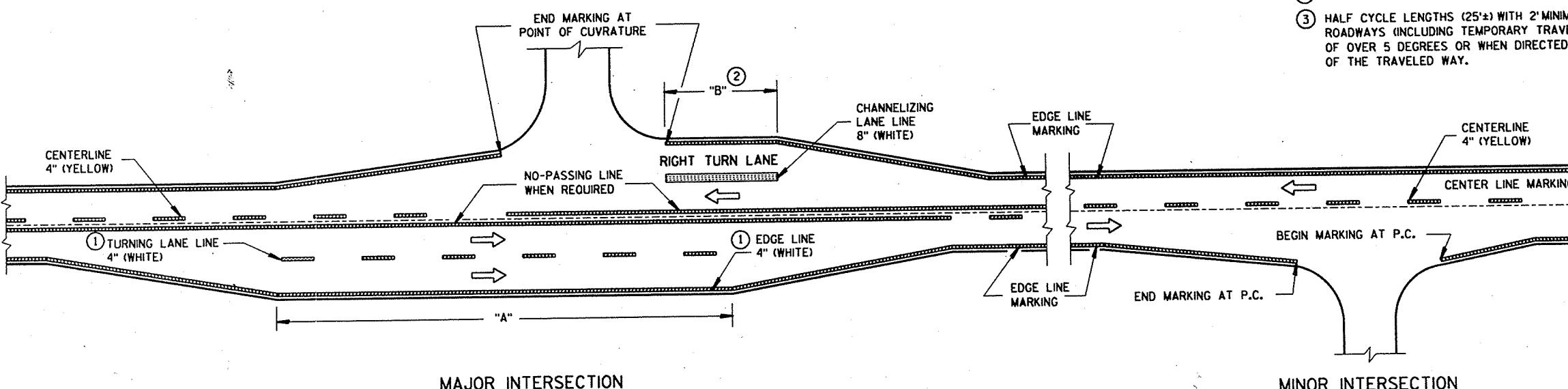
### PERMANENT PAVEMENT MARKING

### GENERAL NOTES

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

EDGE LINES SHALL BE OMITTED THROUGH INTERSECTIONS. EDGE LINES SHALL BE CONTINUED THROUGH DRIVEWAYS.

- ① WHEN DISTANCE "A" IS LESS THAN 250 FEET, OMIT TURNING LANE MARKING.
- ② WHEN DISTANCE "B" IS LESS THAN 100 FEET, OMIT CHANNELIZING LANE LINE.
- ③ HALF CYCLE LENGTHS (25' ± 2') WITH 2' MINIMUM STRIPE LENGTHS SHALL BE PROVIDED ON ROADWAYS (INCLUDING TEMPORARY TRAVELED WAYS) WITH REVERSE CURVATURE, CURVATURE OF OVER 5 DEGREES OR WHEN DIRECTED BY THE ENGINEER TO MARK UNUSUAL ALIGNMENT OF THE TRAVELED WAY.



MAJOR INTERSECTION

TYPICAL PAVEMENT MARKING FOR RURAL INTERSECTIONS

PAVEMENT MARKING (MAINLINE & INTERSECTIONS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 3/17/92 DATE	<i>Steve J. Rusch</i> STATE TRAFFIC ENGINEER FOR HWYS
FHWA	