

Parts List and Specifications Advance Flasher Assembly Installed by Outside Party

1. One, twelve (12) inch black signal head with post mount hardware and 12" LED indicatoin, five (5) inch black back plate, tunnel visor and hardware.
2. One, four and one-half (4-1/2) inch outside diameter pedestal post and pedestal base. Length of post is to be determined as needed to meet dimensions on the attached drawing. The horizontal distance of the post from the pavement shall be as per the attached drawings.
3. One Type C concrete base.
4. Minimum two inch (2") rigid conduit.
5. Signs and mounting brackets supplied by the Missouri Highway and Transportation Commission. Installation of signs is the responsibility of the outside party. Signs shall be installed using stainless steel straps and sign bracket.
6. One fused slip connector assembly required on each control or power cable conductor in the base of the post. If control enclosure is on the post, the fuse shall be 15 amps, if the control enclosure is remote, the fuse shall be 3 amps.
7. Wiring shall be as follows (120 Volt Systems):

Control Wires From Control Equipment to Beacon

<u>Max. Length of Wire Run</u>	<u>Min. Cable Size</u>
1100 Feet	#12 AWG
1850 Feet	#10 AWG
2830 Feet	#8 AWG

Power Cables From Power Source to Control Enclosure

<u>Max. Length of Wire Run</u>	<u>Min. Cable Size</u>
1220 Feet	#8 AWG
1950 Feet	#6 AWG

8. One NEMA 4 aluminum or stainless steel enclosure that contains the necessary equipment to operate the beacon as shown on the attached wiring diagram specified by the Commission. The enclosure shall be of sufficient size to house all specified equipment. The control enclosure shall be mounted on the control pedestal or on the sign post as specified by the Commission. If the control enclosure is mounted on the sign post, it shall be located directly behind the warning sign.

If a special event is needed, contact MoDOT representative for approval and who could program the event.

9. The power will be provided by the outside party, by a separate power drop to the control pedestal with the meter installed on the control pedestal as approved by the Commission or a 12 Volt DC solar system.
- For 120 Volt power sources, a separate disconnect enclosure shall be provided on the control pedestal. The control pedestal shall be located as close to the right-of-way as possible or, if the power source is on the right-of-way, as close to the power source as possible. Also the meter and power disconnect breaker box shall not be located on the flasher post. The power disconnect breaker shall be located within the right of way as close to the right of way line as possible.
 - For 12 Volt DC solar systems, an 85W (Watt) or greater solar panel and a 100ah (amp hour) or greater battery is required.
10. All applicable equipment shall conform to the Missouri Department of Transportation applicable Standard Specifications and Standard Plans.
- An equipment list of proposed items to be used and a layout of the entire installation shall be submitted to the engineer for approval before ordering equipment. All equipment to be maintained by the Commission shall be located on the right-of-way.

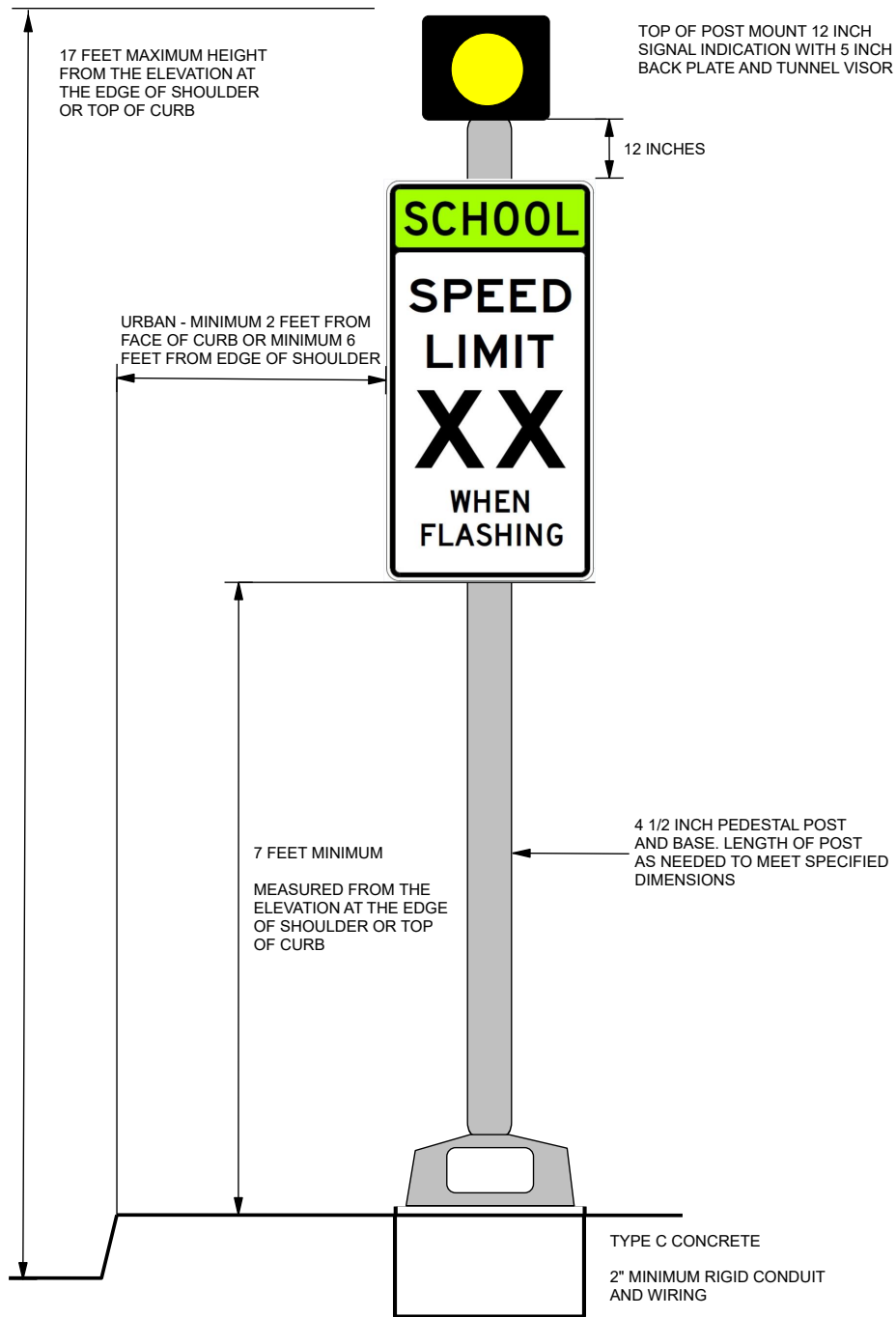
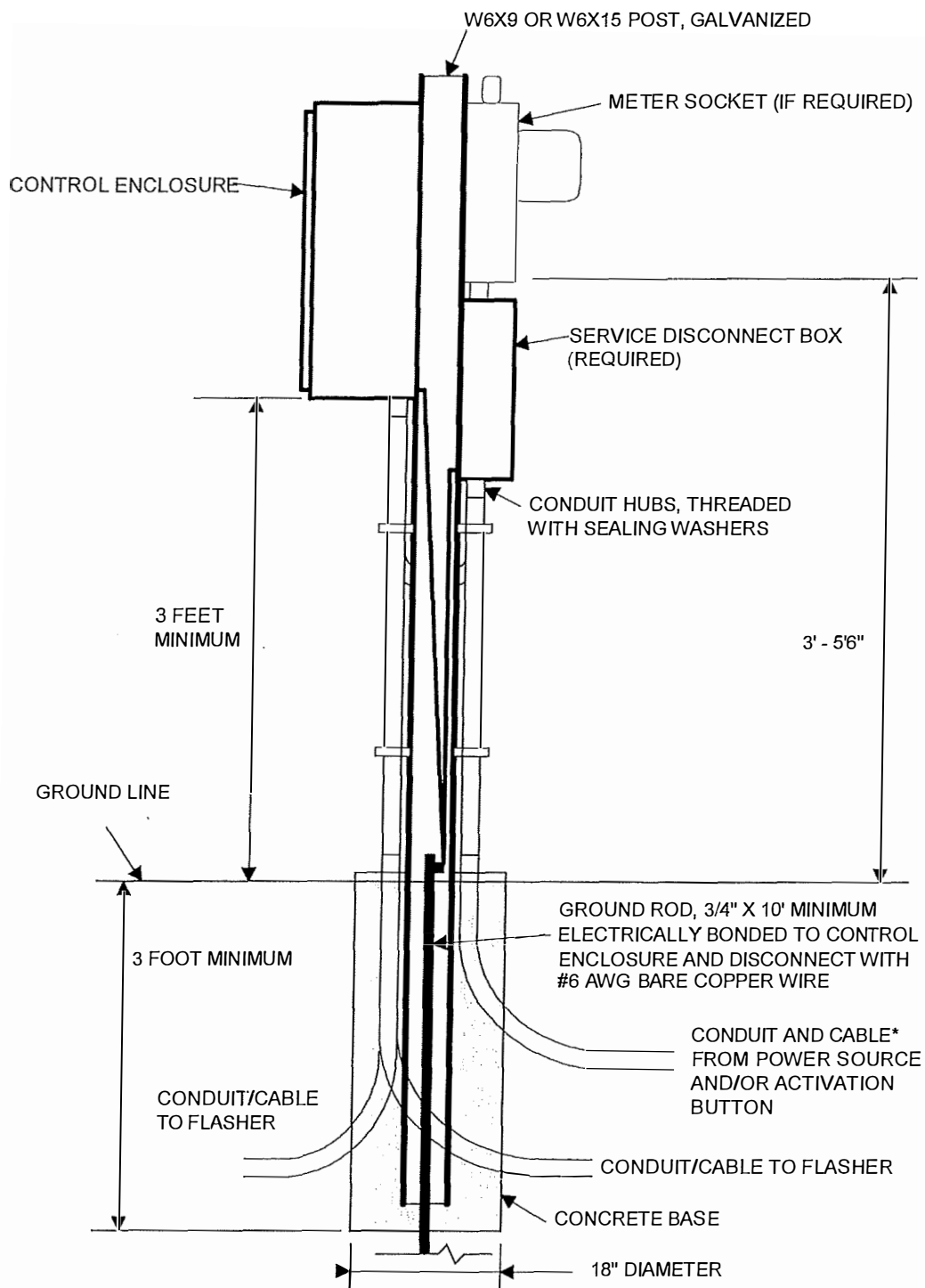


Figure 3: ADVANCE FLASHER WITH WARNING SIGN OR SPEED LIMIT

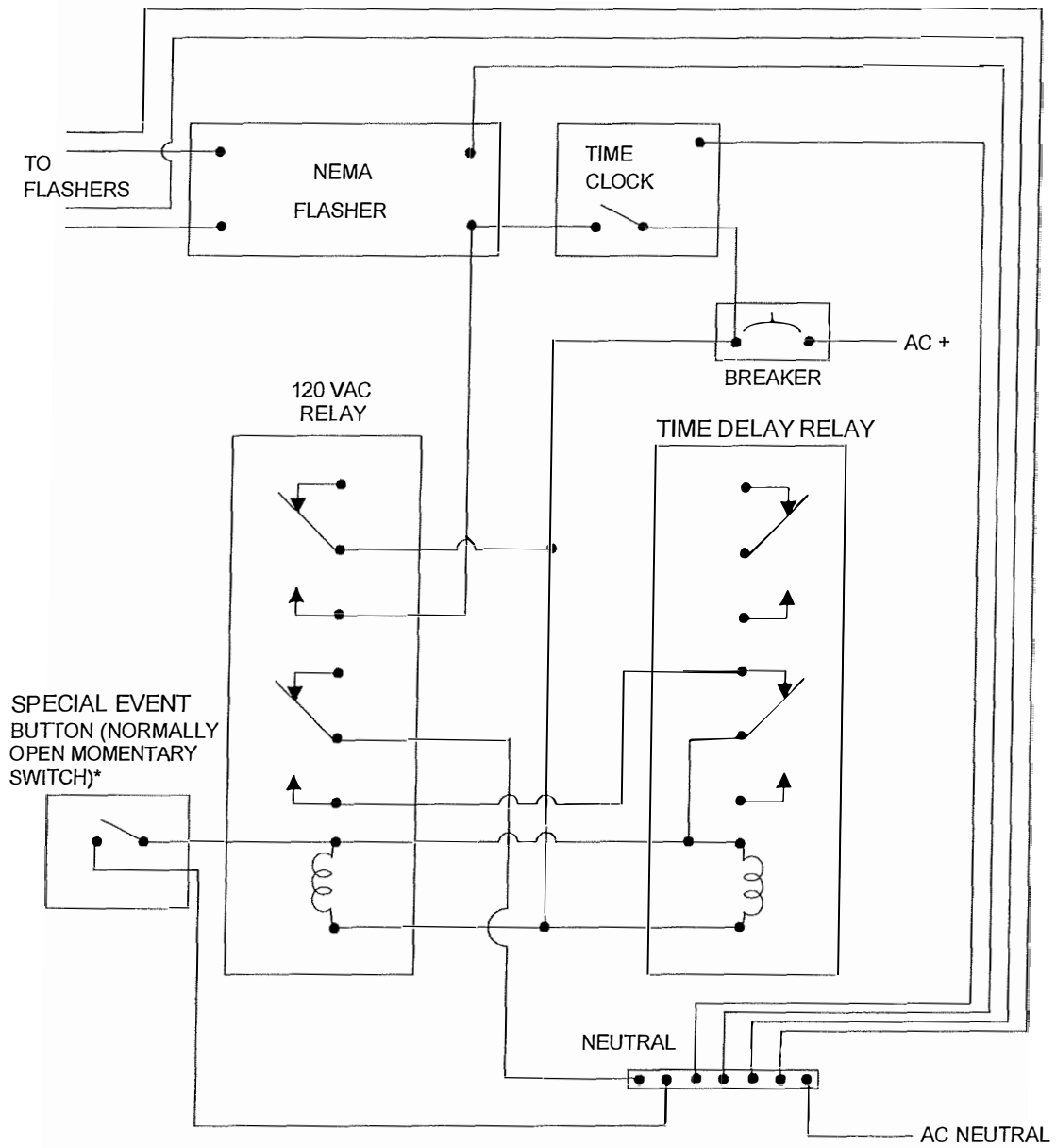


S5-1 SH-FLAT SHEET;
 2.250" Radius, 0.625" Border, White on Black;
 Rounded Rectangle 0.750" Radius Bright yellow green;
 2.250" Radius, 0.625" Border, White on Black;
 Rounded Rectangle 0.750" Radius;

Figure 4: Speed Limit Sign Specifications



* IF POWER SOURCE IS THE UTILITY COMPANY, MINIMUM 2" RIGID STEEL CONDUIT CONTROL PEDESTAL FOR ADVANCE FLASHER



RELAYS - 8 PIN OCTAL BASE WITH MINIMUM 5 AMP CONTACTS

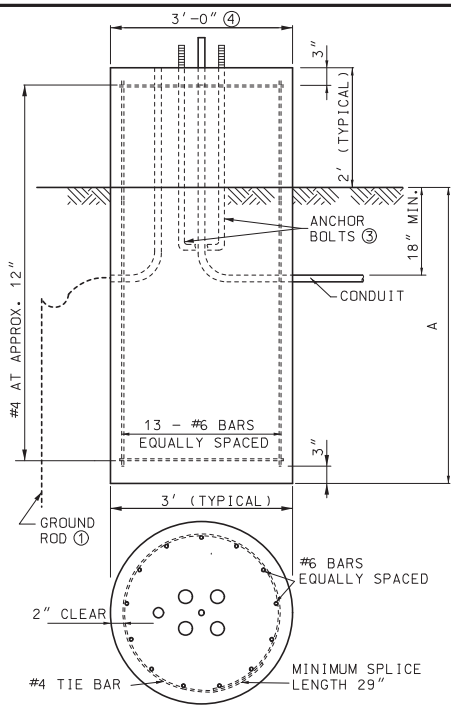
TIME DELAY RELAY - SSAC INC. TUD 120VAC OR EQUIVALENT

ALL WIRING SHALL BE #12 AWG MINIMUM

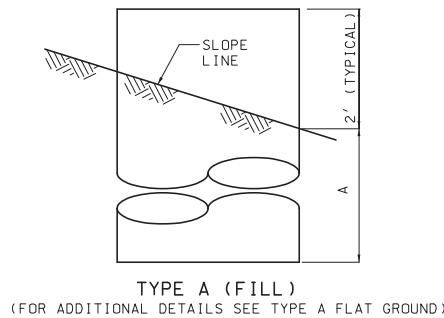
BREAKER - 15 AMP

TIME CLOCK SHALL CONFORM TO APPLICABLE STANDARD SPECIFICATIONS AND THE APPROVED PRODUCTS LIST

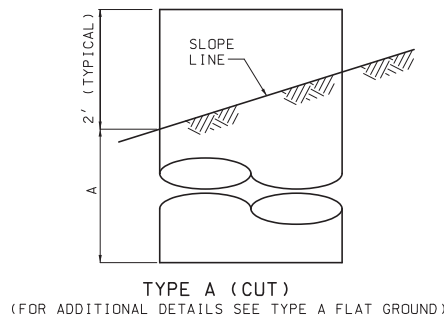
WIRING DIAGRAM FOR ADVANCE FLASHER -TIME CLOCK ACTIVATION



TYPE A (FLAT GROUND)



TYPE A (FILL)
(FOR ADDITIONAL DETAILS SEE TYPE A FLAT GROUND)

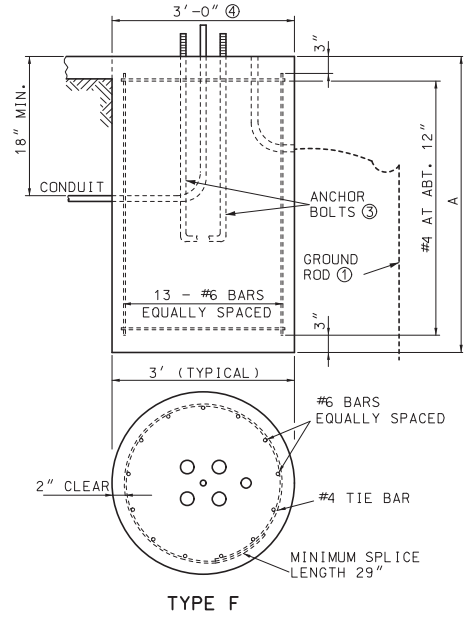


TYPE A (CUT)
(FOR ADDITIONAL DETAILS SEE TYPE A FLAT GROUND)

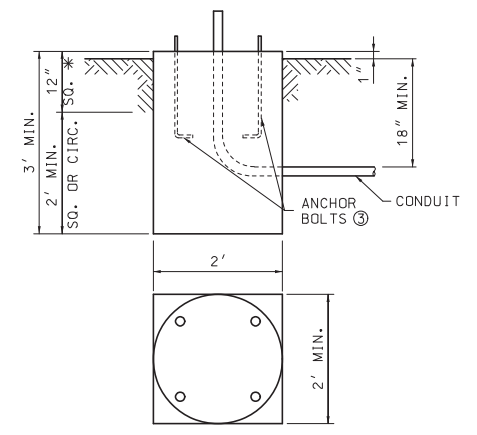
POST BASES

STEEL AND CONCRETE REQUIREMENTS FOR POST BASES ^③				
TYPE	BASES	#6 STEEL BAR LENGTH	WEIGHT LBS. ^⑧	CONC. C.Y.
A-9	9'-0"	10'-6"	300	2.88
A-9.5	9'-6"	11'-0"	310	3.01
A-10	10'-0"	11'-6"	320	3.14
A-10.5	10'-6"	12'-0"	330	3.27
A-11	11'-0"	12'-6"	350	3.40
A-12	12'-0"	13'-6"	380	3.67
F-9	9'-0"	8'-6"	240	2.36
F-9.5	9'-6"	9'-0"	250	2.49
F-10	10'-0"	9'-6"	270	2.62
F-10.5	10'-6"	10'-0"	280	2.75
F-11	11'-0"	10'-6"	300	2.88
F-12	12'-0"	11'-6"	320	3.14
C*				0.44

* SURFACE OF BASE TO BE CONSTRUCTED SQUARE FOR A DEPTH OF 12".



TYPE F



TYPE C

* SURFACE OF BASE TO BE CONSTRUCTED SQUARE FOR A DEPTH OF 12".

- ① APPLICABLE ONLY WHERE CONTROLLER IS MOUNTED TO A SIGNAL POLE.
- ② BASE PLATE SHALL STAY WITHIN THE TOP OF THE POST BASE DIAMETER.
- ③ ANCHOR BOLT DIMENSIONS ARE SHOWN ON THE MANUFACTURER'S APPROVED DRAWINGS.
- ④ MAXIMUM BOLT CIRCLE DIAMETER IS 26". BASE PLATE SHALL STAY WITHIN THE TOP OF THE POST BASE DIAMETER.
- ⑤ ARM LENGTH DETERMINED BY LENGTH OF LONGEST ARM FOR TYPE B & BL SIGNAL POSTS.
- ⑥ BASE TYPE A OR F DETERMINED BY LOCATION OF POST BASE.
- ⑦ SOIL DEPTH, NO ROCK.
- ⑧ WEIGHT INCLUDES #4 TIE BARS.
- ⑨ WHEN CONCRETE BASE IS LOCATED WITHIN 8" CONCRETE DIVISIONAL ISLAND, EMBEDMENT LENGTH MAY BE REDUCED BY 1/2 DIAMETER OF THE DRILLED SHAFT.

BASE EMBEDMENT IN SOLID ROCK

SOLID ROCK ENCOUNTER POINT	REQUIRED EMBEDMENT FOR BASE TYPE
AT SURFACE	4'-9"
AT ONE-FOURTH NORMAL DEPTH	4'-0"
AT ONE-HALF NORMAL DEPTH	3'-3"
AT THREE-FOURTHS NORMAL DEPTH	1'-3"

1. REQUIRED EMBEDMENT DEPTHS CAN BE INTERPOLATED BETWEEN ENCOUNTER POINTS FOR OTHER SOLID ROCK ENCOUNTER DEPTHS.
2. NORMAL LENGTHS FOR ANCHOR BOLTS AND REINFORCING STEEL WILL BE REQUIRED.
3. CORE DRILL HOLES FOR ANCHOR BOLTS AND REINFORCING STEEL IN SOLID ROCK SHALL BE PROVIDED. CORE DRILL HOLES SHALL BE TWICE THE DIAMETER OF THE ANCHOR BOLT AND REINFORCING STEEL DIAMETER AND TO WITHIN 3 INCHES OF THE NORMAL BASE DEPTH.
4. IF SOIL, SHALE, GRAVEL, FRACTURED ROCK, OR VOIDS ARE ENCOUNTERED DURING CORE DRILLING, THE ROCK SHALL BE REMOVED TO THE POINT OF ENCOUNTER.
5. ANCHOR BOLTS AND REINFORCING STEEL SHALL BE GROUTED IN THE CORE DRILL HOLES WITH NON-SHRINK GROUT HAVING A MINIMUM STRENGTH OF 9,000 POUNDS IN 24 HOURS.
6. STRAIGHT ANCHOR BOLTS OF THE LENGTH SHOWN IN THE ANCHOR BOLT TABLE UNDER THE COLUMN "BOLT LENGTH" ARE ADEQUATE FOR USE IN GROUTED CORE DRILLED HOLES.

POST BASES		
POST TYPE	ARM LENGTH (FEET) ^⑤	BASE TYPE ^⑥
C OR CL	15 - 25	A-9 OR F-9
C OR CL	30 - 35	A-9.5 OR F-9.5
C OR CL	40 - 55	A-10.5 OR F-10.5
B OR BL	15 - 25	A-10 OR F-10
B OR BL	30 - 35	A-11 OR F-11
B OR BL	40 - 55	A-12 OR F-12

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
NOCLE A
KOLB ROAD
NUMBER
PC-200019754
INTERIOR
DESIGNER

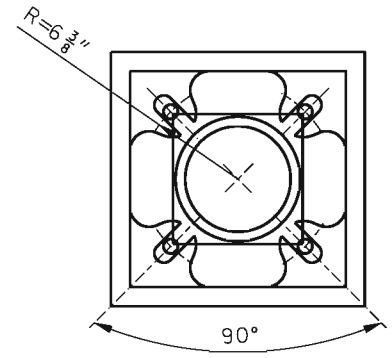
THIS SHEET HAS BEEN
SIGNED, SEALED AND DATED
ELECTRONICALLY.

TRAFFIC SIGNALS

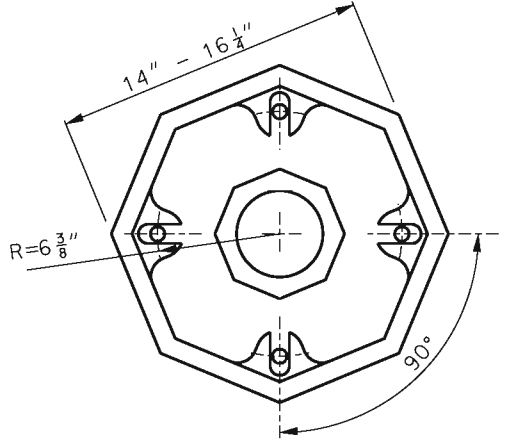
POST BASES

DATE EFFECTIVE: 07/01/2019	902.30P	SHEET NO. 1 OF 2
DATE PREPARED: 5/20/2019		

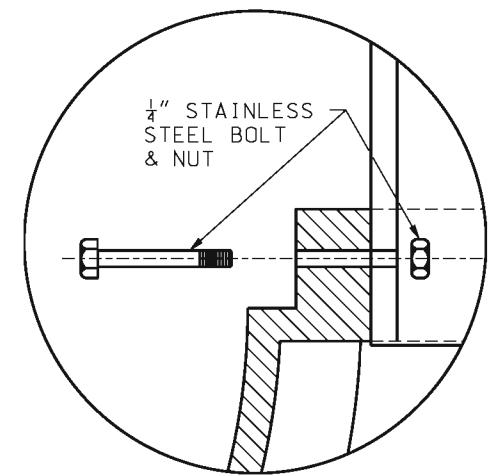
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



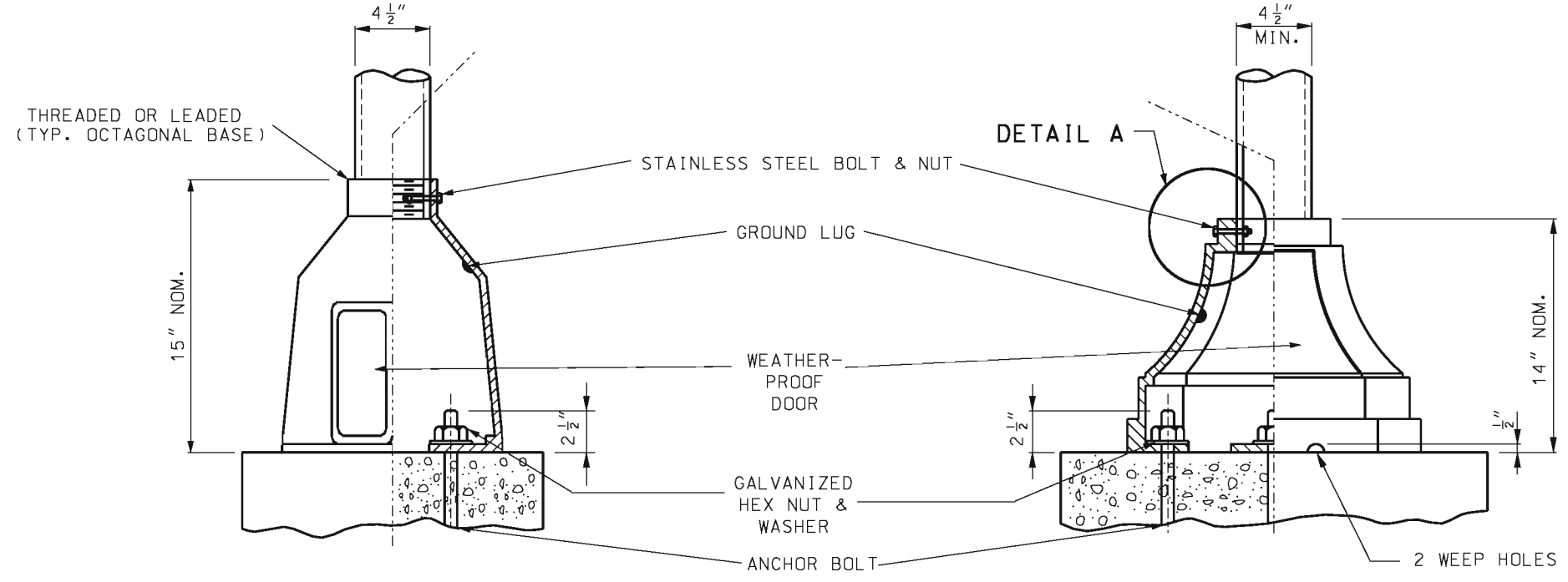
BOLT CIRCLE



BOLT CIRCLE



DETAIL A

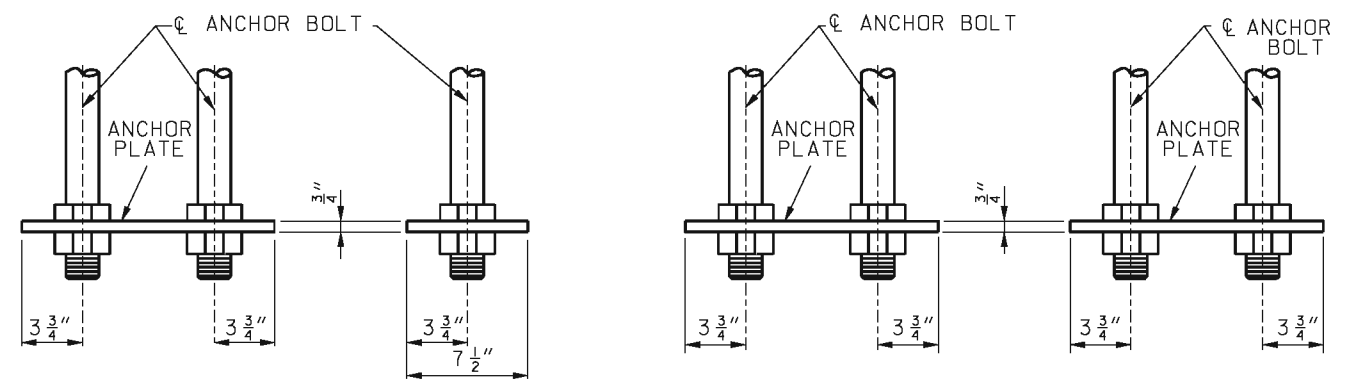


SQUARE

OCTAGONAL

CAST BASE

BOLT LENGTH INCHES	VERT. HT. A INCHES	THREAD LEN. B INCHES	DIA. C INCHES
19	17	1.50	0.625
57	51	7.00	1.250
79	73	7.50	1.500
94	88	8.00	1.750
121	115	8.50	2.000
120	114	9.00	2.250
146	140	9.50	2.500

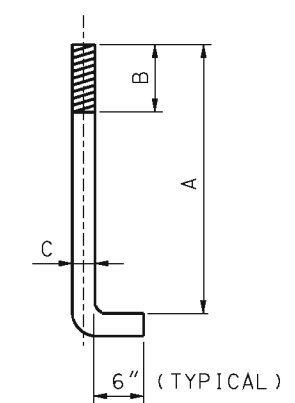


SIDE VIEW

END VIEW

SIDE VIEW

END VIEW



ANCHOR BOLT

TWO BOLTS PER PLATE
HEX NUT OR 5/16" FILLET WELD ALL AROUND BOTH SIDES

FOUR BOLTS PER PLATE
HEX NUT OR 5/16" FILLET WELD ALL AROUND BOTH SIDES

OPTIONAL STEEL PLATE FOR ANCHOR BOLTS

NOTE:
ALL ANCHOR BOLTS SHALL BE FULLY GALVANIZED.

MoDOT MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
KATHRYN PHILLIPS HARVEY
NUMBER PE-23751
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

**TRAFFIC SIGNALS
POST BASES**

DATE EFFECTIVE: 02/01/2008
DATE PREPARED: 8/26/2009

902.30P

SHEET NO.
2 OF 2

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.