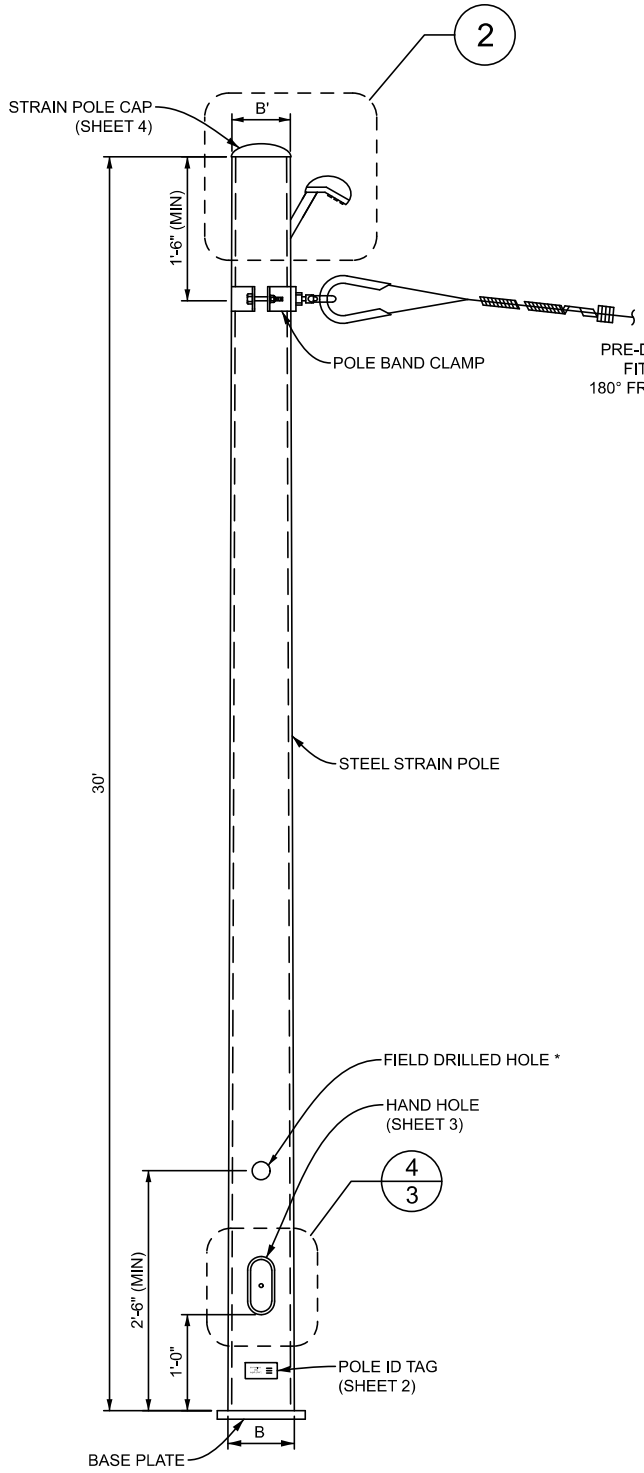
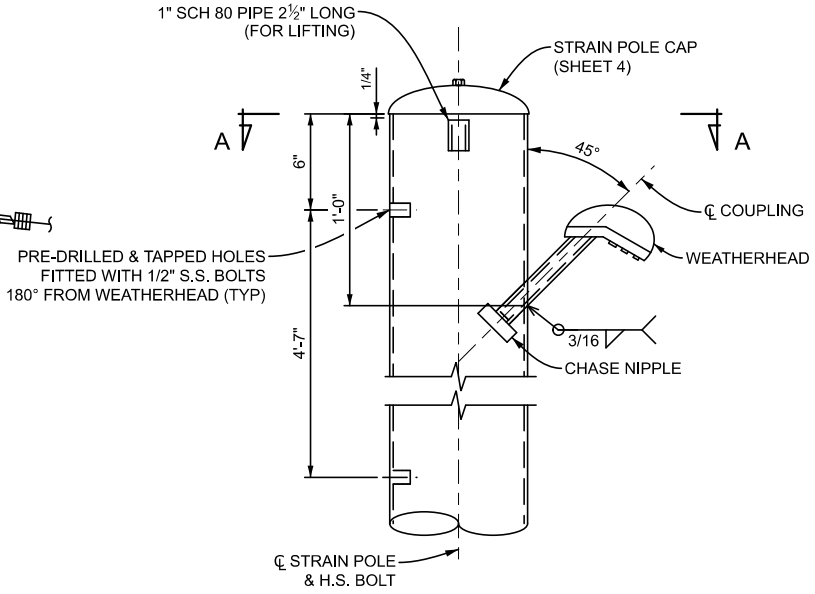
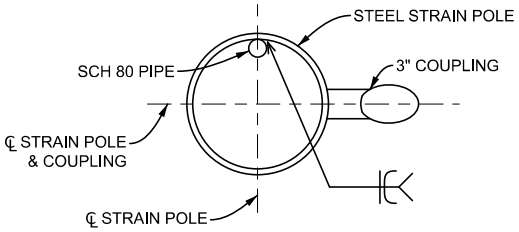


1 DETAIL - STEEL STRAIN POLE



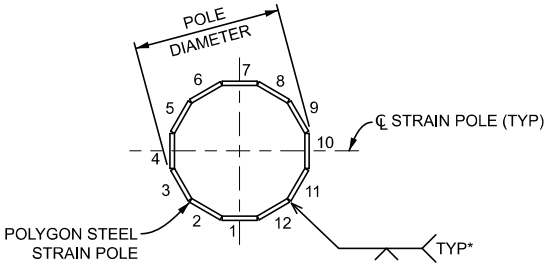
ORIENTATION OF 3" COUPLING TO BE 90° OR 270° FROM POLE HAND HOLE

2 DETAIL - COUPLING



SCH 80 PIPE ORIENTED 180° TO POLE HAND HOLE

A SECTION - ROUND POLE



* LONGITUDINAL WELD JOINT

A' SECTION - 12-SIDED POLYGON (OPTIONAL)

* FIELD DRILLED HOLE ONLY TO BE USED FOR POLE-MOUNTED CABINETS. FIELD DRILLED HOLE REDUCES THE STRUCTURAL CAPACITY OF THE POLE. SEE SIG-022-A FOR ALLOWABLE LOADING.

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT

MDOT
Michigan Department of Transportation

DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR
6 ANCHOR BOLT TRAFFIC SIGNAL STRAIN POLE AND COUPLING DETAILS - 36" DIA FOUNDATION

(SPECIAL DETAIL) FHWA APPROVAL	05/17/24 PLAN DATE	SIG-023-A	SHEET 1 OF 7

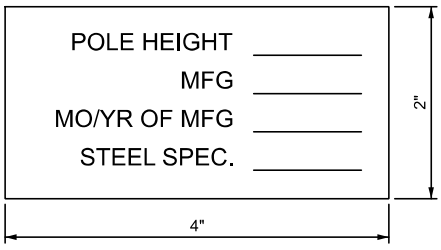
STRAIN POLE REQUIREMENTS				
NOT CONNECTED TO TIE OFF SPANS				
MARK	DESCRIPTION		UNIT	SIZE 6
-	POLE LENGTH		FT	30
W	MIN POLE WALL THICKNESS	GR 50 STEEL	IN	0.429
		GR 65 STEEL	IN	0.375
B'	POLE DIAMETER - TOP *		IN	+1/2 8.8 (MIN) -1/4
B	POLE DIAMETER - BOTTOM *		IN	+1/2 13 -1/4
-	FULL LENGTH TAPER		IN / FT	+0.002 0.14 -0.000
E	POLE BASE FILLET WELD	GR 50 STEEL	IN	5/16
		GR 65 STEEL	IN	5/16
F	POLE BASE LANDING		IN	3/8
-	ANCHOR BOLT DIAMETER		IN	1½
-	ANCHOR BOLT HOLE DIAMETER		IN	1 13/16
-	ANCHOR BOLT CIRCLE DIAMETER		IN	18
C	ANCHOR BOLT CHORD		IN	9
D	BASE PLATE EDGE		IN	12¼
T	BASE PLATE THICKNESS		IN	2
P.O.C.H.	8 ½" POLE BAND CLAMP		FT-IN	25'-6" TO 28'-6"
P.O.C.H.	9 ½" POLE BAND CLAMP		FT-IN	20'-6" TO 25'-0"
* DIAMETERS GIVEN ARE O.D.				

NOTES:

1. SEE SIG-022-A FOR LOADING TABLE AND DESIGN CRITERIA.
2 ROUND OR 12-SIDED SECTIONS ARE ALLOWED.
3. MULTI-PLY SECTIONS ARE NOT ALLOWED.
4. STRAIN POLES USED IN APPLICATIONS OTHER THAN TRAFFIC SIGNALS REQUIRE UNIQUE DESIGN CALCULATIONS FOR THE SPECIFIC LOADING CASE.
5. MINIMUM REQUIRED TENSILE STRENGTH (Fu) FOR WELD CONSUMABLES:
   Fu = 70 KSI FOR GR. 50 POLE
   Fu = 80 KSI FOR GR. 65 POLE EXCEPT Fu = 70 KSI FOR LONGITUDINAL SEAM WELDS QUALIFIED PER AWS D1.1

ABBREVIATIONS:

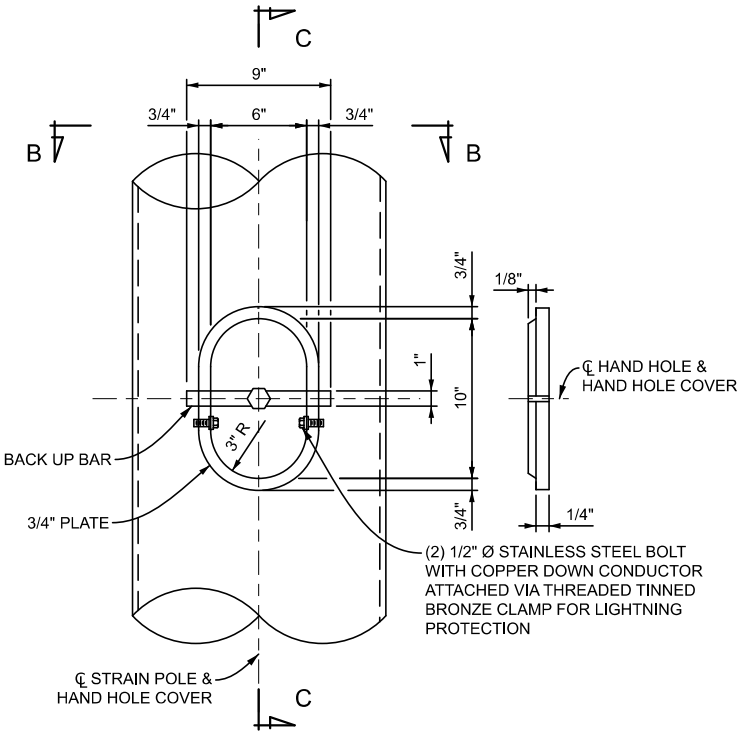
S.S. = STAINLESS STEEL
GA. = GAUGE
GR = GRADE
O.D. = OUTSIDE DIAMETER
I.D. = INSIDE DIAMETER
H.S. = HIGH STRENGTH
SCH. = SCHEDULE
P.O.C.H. = POINT OF CONTACT HEIGHT OF THE POLE BAND CLAMP, MEASURED FROM THE BOTTOM OF THE STRAIN POLE



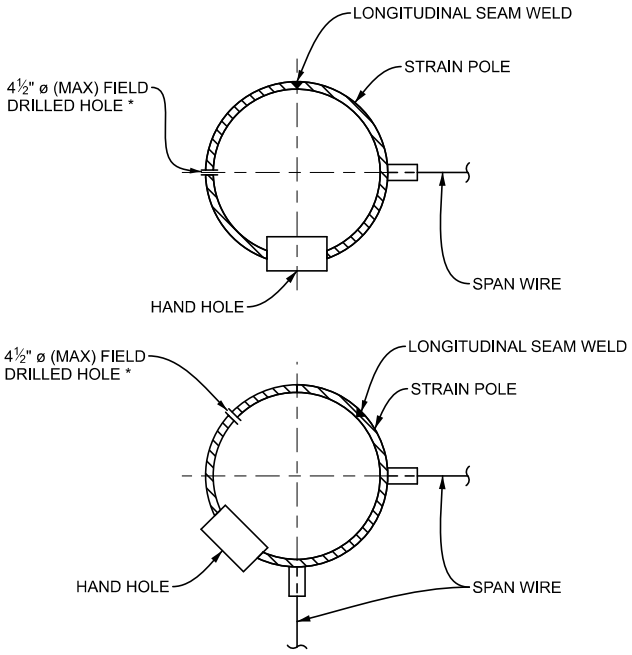
NOTES:

1. ATTACH ID TAG TO STRAIN POLE AT LOCATIONS SHOWN 4" ABOVE BASE OF TUBE, BELOW HANDHOLE,WITH (4) #8 x 3/8" S.S. TYPE U DRIVE SCREWS.
2. STAMP IN LETTERS WITH 3/8" CHARACTERS.
3. STEEL SPEC. REFERS TO THE ASTM SPECIFICATION AND GRADE: "AXXX GR YY"

3 DETAIL - STRAIN POLE S.S. ID TAG

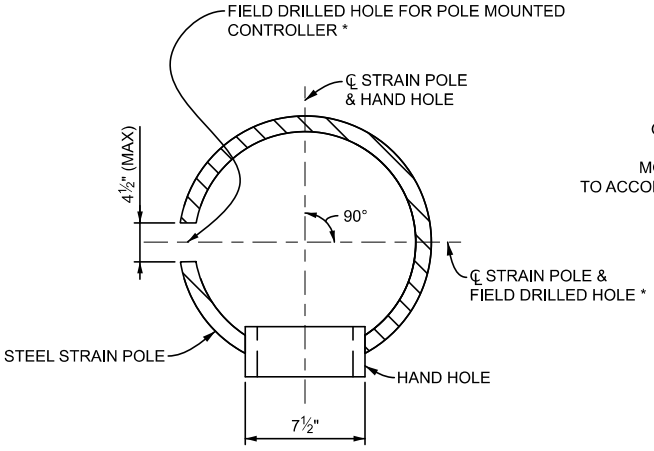


4 DETAIL - HAND HOLE



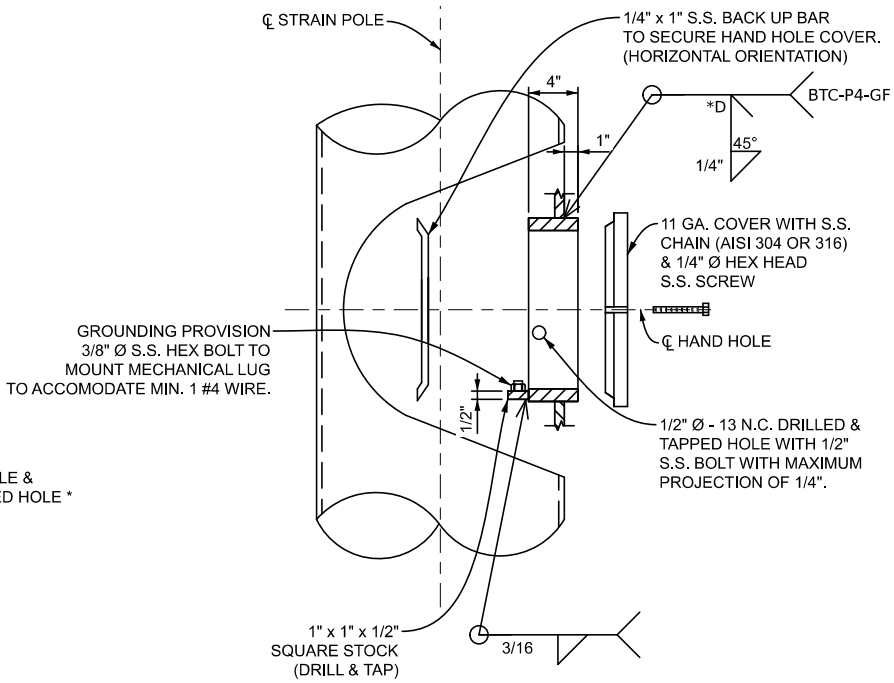
LONGITUDINAL SEAM WELD MUST BE 90° MINIMUM FROM THE HAND HOLE AND 30° MINIMUM FROM THE ℄ COUPLING (SEE SECTION A FOR ℄ COUPLING).

5 DETAIL - STRAIN POLE ORIENTATION



SEE STRAIN POLE ORIENTATION DETAIL

B SECTION - HAND HOLE



*GROOVE DEPTH (D) EQUALS WELD SIZE (S) EQUALS POLE WALL THICKNESS MINUS ⅛ INCH FLAT (1G) OR HORIZONTAL (2G) POSITION

C SECTION - HAND HOLE

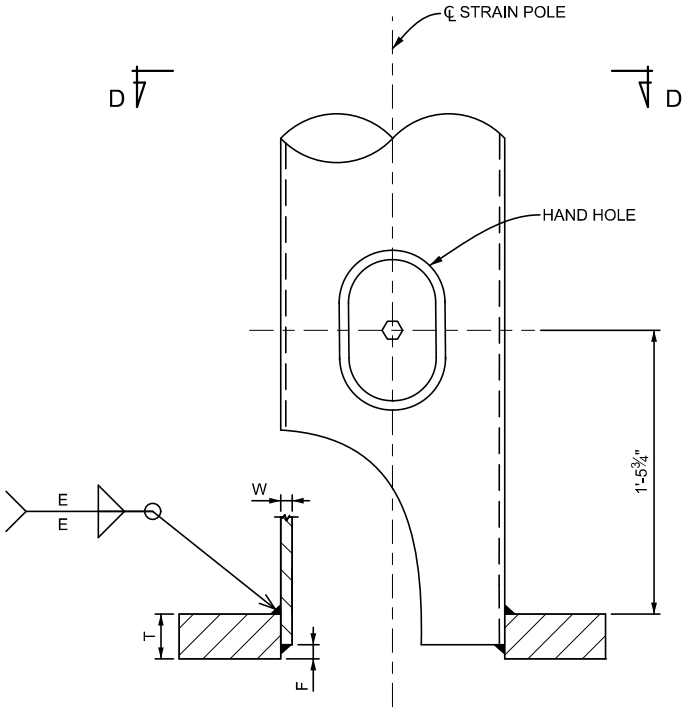
* FIELD DRILLED HOLE ONLY TO BE USED FOR POLE-MOUNTED CABINETS. FIELD DRILLED HOLE REDUCES THE STRUCTURAL CAPACITY OF THE POLE. SEE SIG-022-A FOR ALLOWABLE LOADING.

MDOT Michigan Department of Transportation

DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

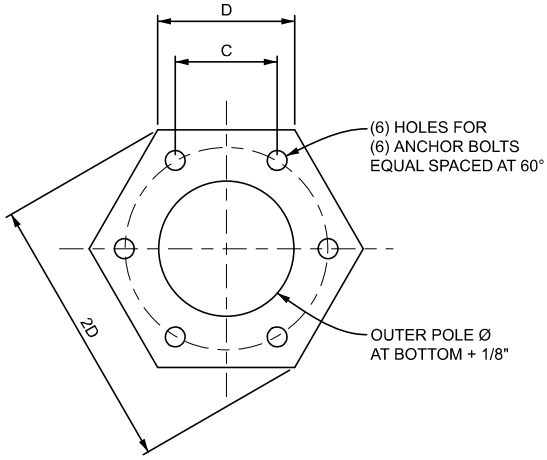
STANDARD PLAN FOR
HAND HOLE & STRAIN POLE
ORIENTATION DETAILS

(SPECIAL DETAIL)	05/17/24	SIG-023-A	SHEET
FHWA APPROVAL	PLAN DATE		3 OF 7



ANCHOR BOLTS NOT SHOWN FOR CLARITY.

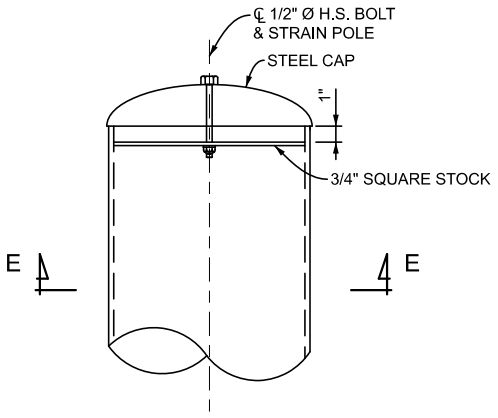
6 DETAIL - BASE PLATE



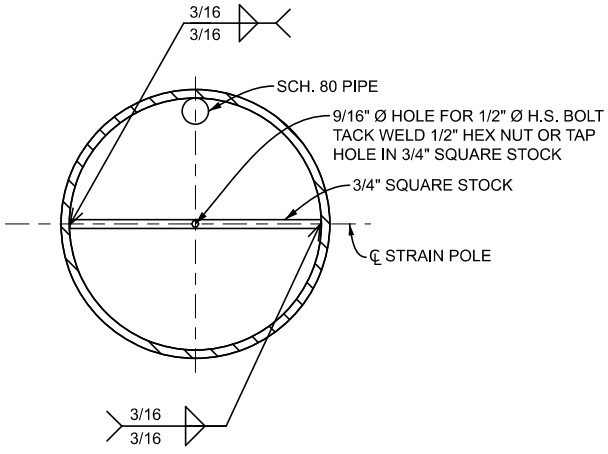
NOTES:

1. STRAIN POLE NOT SHOWN FOR CLARITY.
2. SEE STRAIN POLE REQUIREMENTS TABLE ON SHEET 2 FOR:
   ANCHOR BOLT CIRCLE Ø
   ANCHOR BOLT HOLE Ø
   ANCHOR BOLT Ø

D SECTION - BASE PLATE



7 DETAIL - STRAIN POLE CAP



E SECTION - STRAIN POLE CAP

MDOT Michigan Department of Transportation

DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR
BASE PLATE AND STRAIN
POLE CAP DETAILS

(SPECIAL DETAIL)	05/17/24	SIG-023-A	SHEET
FHWA APPROVAL	PLAN DATE		4 OF 7

STRAIN POLE FOUNDATION REQUIREMENTS		
DESCRIPTION	UNIT	SIZE 6
POLE LENGTH	FT	30
ANCHOR BOLT DIAMETER	IN	1½
ANCHOR BOLT CIRCLE DIAMETER	IN	18
ANCHOR BOLT LENGTH	IN	72
FOUNDATION DIAMETER	IN	36

NOTES:

1. ALL WORK AND MATERIALS MUST BE IN ACCORDANCE WITH THE MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION. CONSTRUCT STRAIN POLE FOUNDATIONS ACCORDING TO SECTION 718.03 OF THE MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

2. IF SOIL CONDITIONS INDICATE THERE IS NO NEED FOR A CASING PAY ITEM AS SHOWN ON THE PLAN, THE CONTRACTOR SHALL REQUEST PERMISSION OF THE ENGINEER TO INSTALL THE FOUNDATION WITHOUT CASING.

3. WHEN THE CASING PAY ITEM IS INCLUDED ON THE PLANS FOR A FOUNDATION (DUE TO GRANULAR SOILS, A WET HOLE OR OTHER UNSTABLE CONDITIONS), STEEL CASING (SMOOTH WALLED) IS TO BE INSTALLED TO ENABLE THE FOUNDATION TO BE POURED. THE THICKNESS OF THE STEEL CASING IS TO BE DETERMINED BY THE CONTRACTOR. THE STEEL MUST BE LEFT IN PLACE. SMOOTH WALLED STEEL CASING OUTSIDE DIAMETER TO MEET OR EXCEED FOUNDATION DIAMETER. IF SOIL EXTENDING LATERALLY WITHIN 6 FEET OF THE DRILLED SHAFT FOUNDATION IS LOOSENED OR OTHERWISE DISTURBED, SCARIFY MATERIAL AT THE BASE OF THE EXCAVATION BELOW THE DEPTH OF DISTURBANCE AND RECOMPACT IN ACCORDANCE WITH 206.03.B OF THE MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION. COMPACT ALL BACKFILL PLACED ABOVE THE RECOMPACTED BASE OF EXCAVATION IN ACCORDANCE WITH 206.03.B OF THE MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

4. WHEN THE CASING PAY ITEM IS CALLED FOR ON THE PLANS, THE STEEL CASING MAY STOP AT THE CONDUIT ENTRANCE TO FOUNDATION. TOP OF FOUNDATION MUST THEN BE FORMED SEPARATELY, EVEN THOUGH THE STEEL CASING STOPS AT THE CONDUIT ENTRANCE. THE CASING PAY ITEM QUANTITY WILL BE PAID FOR BASED ON ACTUAL LINEAR FEET INSTALLED.

5. CONSTRUCT STRAIN POLE FOUNDATIONS, CASED OR UNCASED, ACCORDING TO SUBSECTION 820.03.A AND 718 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION. ALL WORK AND MATERIALS MUST BE IN ACCORDANCE WITH THE MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

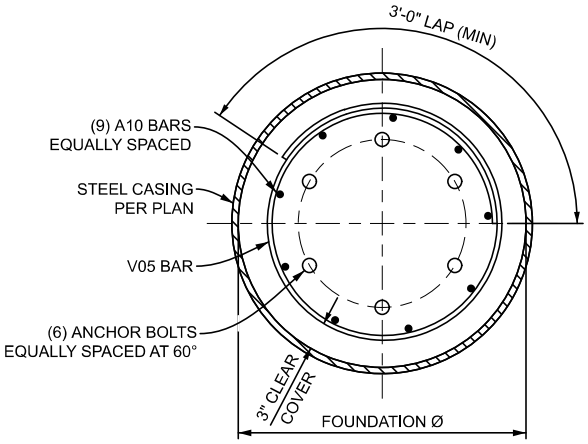
6. STEEL REINFORCEMENT MUST CONFORM TO SECTION 905 OF THE MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

7. EXPOSED CONCRETE SURFACES MUST BE CAST IN FORMS.

8. CONDUITS AND ANCHOR BOLTS MUST BE RIGIDLY INSTALLED BEFORE CONCRETE IS PLACED. ANCHOR BOLTS MUST BE SPACED BY MEANS OF A TEMPLATE. THE CENTER OF THE TEMPLATE MUST COINCIDE WITH THE CENTER OF THE FOUNDATION.

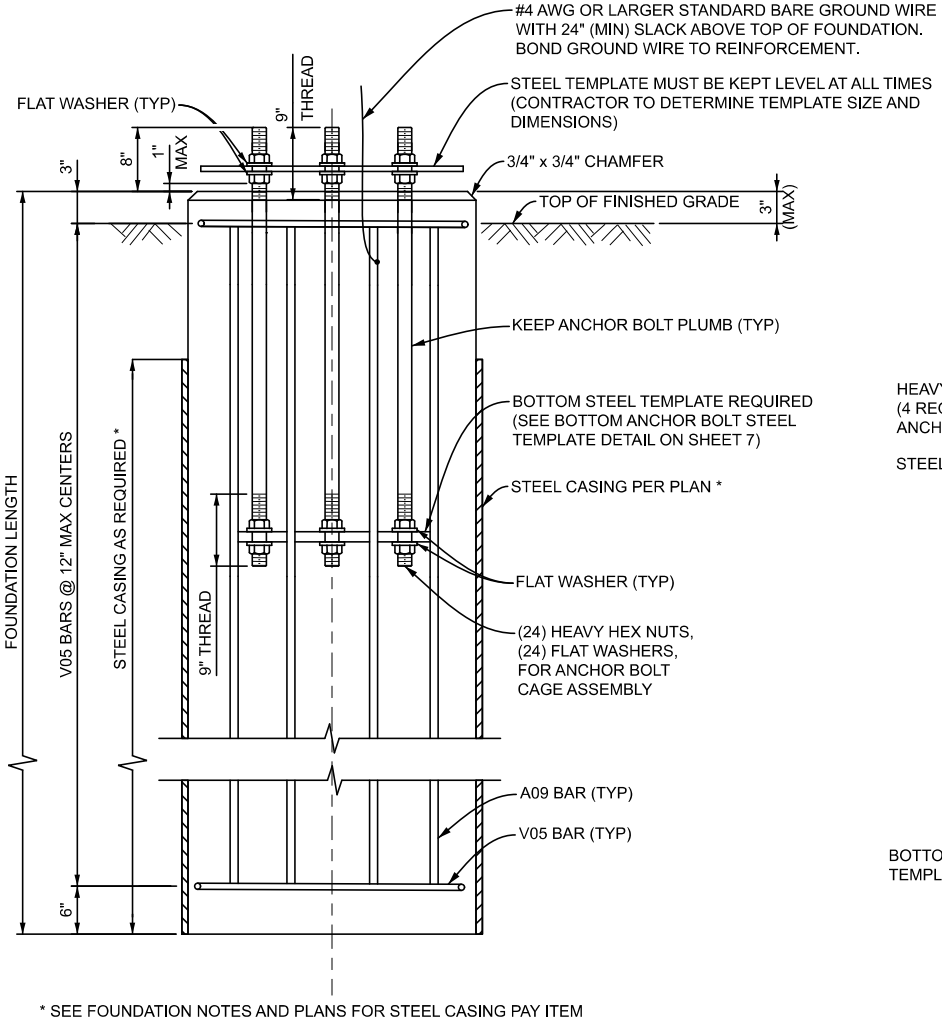
9. GROUNDING OF POLE INCLUDES ADDING #4 BARE COPPER GROUND WIRE BONDED BY LISTED MECHANICAL CONNECTION TO FOUNDATION REINFORCING STEEL AND HAVING 24" OF SLACK ABOVE THE TOP OF FOUNDATION.

10. INSTALL COPPER CLAD GROUND ROD(S) AS DIRECTED BY ENGINEER AND IN ACCORDANCE WITH CURRENT N.E.C. ALL GROUNDS MUST PROVIDE LESS THAN 10 OHM RESISTANCE TO GROUND.



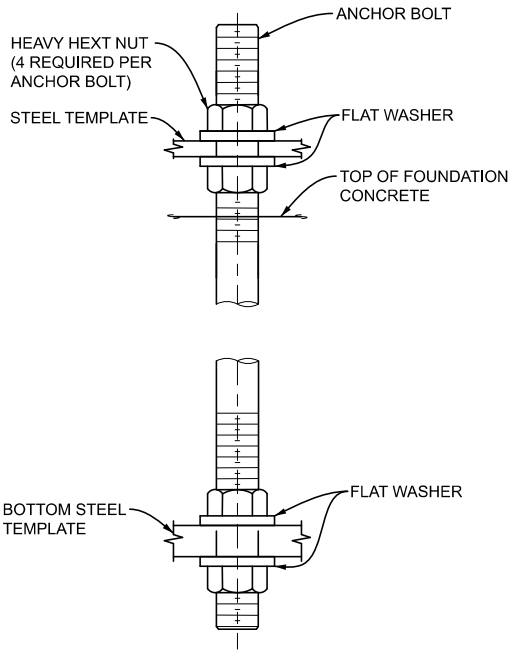
SEE STRAIN POLE FOUNDATION REQUIREMENTS TABLE ON PAGE 5 FOR:
ANCHOR BOLT CIRCLE Ø, ANCHOR BOLT Ø, & FOUNDATION Ø

8 DETAIL - FOUNDATION PLAN



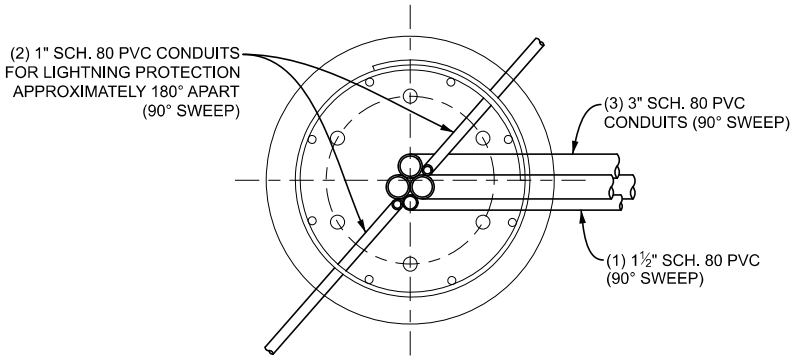
* SEE FOUNDATION NOTES AND PLANS FOR STEEL CASING PAY ITEM

9 DETAIL - FOUNDATION ELEVATION



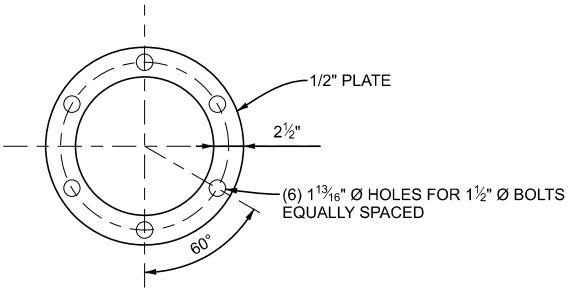
10 DETAIL - ANCHOR BOLT WASHER PLACEMENT

MDOT Michigan Department of Transportation DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR FOUNDATION DETAILS		
(SPECIAL DETAIL) FHWA APPROVAL	05/17/24 PLAN DATE	SIG-023-A	SHEET 6 OF 7



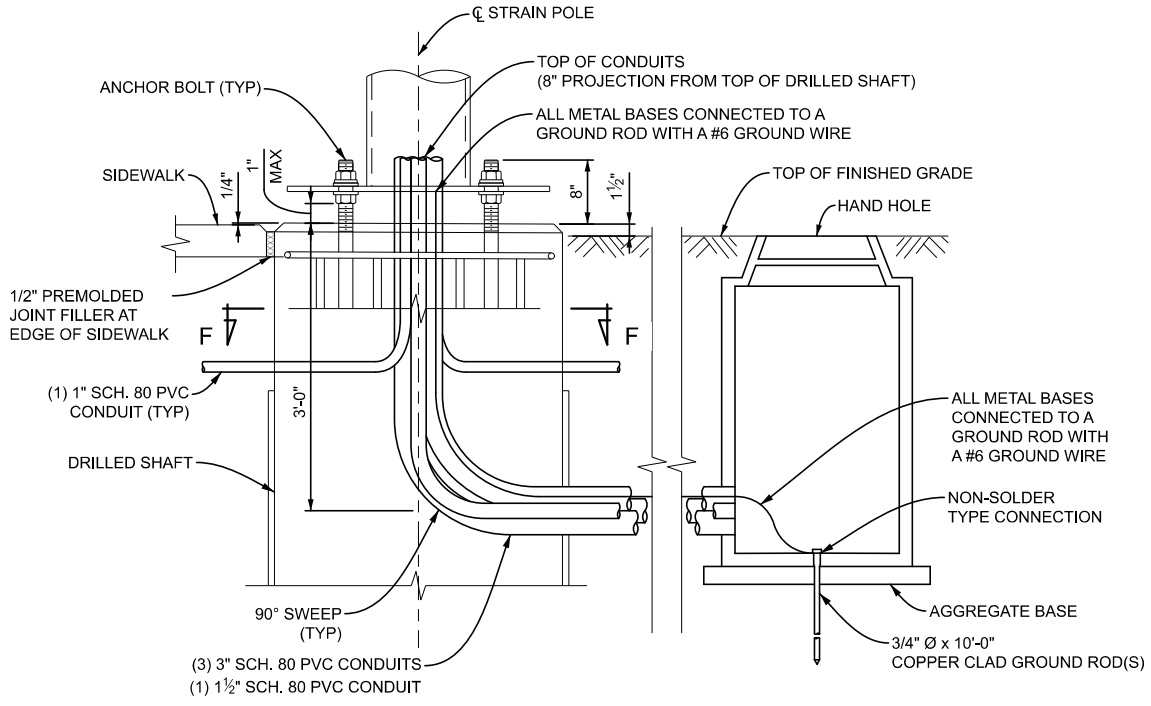
SECURE CONDUITS TOGETHER WITH SUITABLE BANDING TO ENSURE PLACEMENT TOGETHER PRIOR TO CONCRETE POUR.

F SECTION-CONDUIT LAYOUT



SEE STRAIN POLE FOUNDATION REQUIREMENTS TABLE ON SHEET 5 FOR:
ANCHOR BOLT CIRCLE Ø
ANCHOR BOLT HOLE Ø
FOUNDATION Ø

12 DETAIL - BOTT. ANCHOR BOLT STEEL TEMPLATE



11 DETAIL - CONDUIT LAYOUT

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT

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DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR
CONDUIT DETAILS

(SPECIAL DETAIL) FHWA APPROVAL	05/17/24 PLAN DATE	SIG-023-A	SHEET 7 OF 7