

APPROVED BY: \_\_\_\_\_  
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: \_\_\_\_\_  
DIRECTOR, BUREAU OF DEVELOPMENT



DEPARTMENT DIRECTOR  
BRADLEY C. WIEFERICH, PE

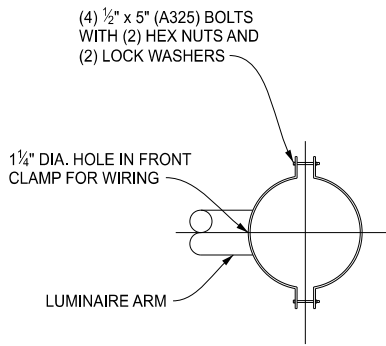
STANDARD PLAN FOR  
LIGHT STANDARD DETAILS

(SPECIAL DETAIL)  
FHWA APPROVAL

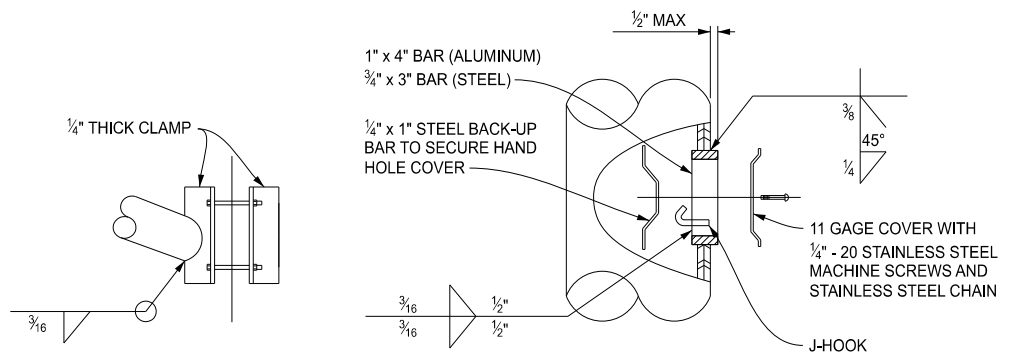
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LUMINAIRE CLAMP DETAILS



4" x 6" HAND HOLE DETAIL

NOTES:

LIGHT STANDARD FOUNDATIONS MUST BE CAST IN PLACE. PRECAST FOUNDATIONS ARE NOT ALLOWED.

ALL MATERIALS AND WORKMANSHIP MUST BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

EACH BRACKET ARM MUST BE SUPPLIED WITH ITS OWN POLE CONNECTION WITH STAINLESS STEEL HARDWARE. HARWARE MUST INCLUDE LOCK WASHERS, MEETING ANSI B18.21.1.

BOLT CIRCLE DIMENSION MUST BE EXACT. ANCHOR BOLTS MUST BE SET BY A TEMPLATE AND CENTERED ON THE FOUNDATION.

IF FOUNDATION IS WITHIN 30 FEET OF HANDHOLE, CONDUIT MAY BE RUN DIRECTLY TO HANDHOLE.

HANDHOLE TO FACE AWAY FROM TRAFFIC, EXCEPT IT MUST FACE ROADWAY WHEN MOUNTED ON BRIDGE OR MEDIAN WALL. USE STAINLESS STEEL HEX HEAD MACHINE SCREWS. THE HANDHOLES MUST BE PLACED SO THEY DO NOT INTERSECT THE LONGITUDINAL SEAM WELD ON THE POLE.

NUT COVERS ARE NOT ALLOWED.

WHEN A FRANGIBLE TRANSFORMER BASE IS CALLED FOR ON THE PLANS, NO LEVELING NUT IS TO BE USED. FRANGIBLE TRANSFORMER BASES SHALL BE MOUNTED FLUSH WITH TOP OF FOUNDATION.

LIGHT STANDARDS MOUNTED ON FRANGIBLE TRANSFORMER BASES MUST HAVE THE SAME DIMENSIONS AS OTHER BASE TYPES, EXCEPT SHAFT LENGTH.

THE FOUNDATION LENGTHS PROVIDED ARE BASED ON TWO SOIL TYPES: LOOSE COHESIONLESS SOILS WITH A MINIMUM BLOW COUNT OF 5 BLOWS/FT, AND MEDIUM STIFF COHESIVE SOILS WITH A MINIMUM UNDRAINED SHEAR STRENGTH OF 750 PSF. THE CONTRACTOR SHALL VERIFY THE SOIL STRENGTH DURING DRILLING FOR THE SHAFT FOUNDATIONS. SHOULD VERY LOOSE COHESIONLESS SOILS OR SOFT TO VERY SOFT COHESIVE SOILS WITH UNDRAINED SHEAR STRENGTH LESS THAN 750 PSF BE ENCOUNTERED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

THIS STRUCTURE IS DESIGNED FOR THE SPECIFIED LUMINAIRE ONLY. DEVIATIONS FROM THIS STANDARD REQUIRE ADDITIONAL ANALYSIS.

THIS STRUCTURE IS DESIGNED FOR A HEIGHT ABOVE GROUND EQUAL TO THE STRUCTURE'S MOUNTING HEIGHT. STRUCTURES PLACED AT A HIGHER ELEVATION REQUIRE A UNIQUE DESIGN.

FOUNDATIONS SHALL NOT BE BURIED AND SHALL BE REMOVED IF NO LONGER IN USE.

THE DESIGN OF THIS STRUCTURE IS BASED ON THE CATEGORY I FATIGUE REQUIREMENTS FOUND IN AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 1ST EDITION, WITH INTERIM REVISIONS THROUGH 2022.

SHAFT LENGTHS MOUNTED ON TRANSFORMER BASES MUST BE ALTERED TO COMPENSATE FOR THE HEIGHT OF THE TRANSFORMER BASE. THE BOLT CIRCLE ON TOP OF THE TRANSFORMER BASE MUST BE THE SAME AS THE BOLT CIRCLE OF THE LIGHT STANDARD ANCHOR BASE.

THE ENTIRE BOTTOM OF THE FRANGIBLE TRANSFORMER BASE MUST BE SEATED ON THE FOUNDATION. THE DIAMETER OF THE FOUNDATION MAY BE ALTERED TO MEET THIS REQUIREMENT.

ALL HARDWARE COMPONENTS (INCLUDING FLAT AND LOCK WASHERS) MUST BE INSTALLED AS SHOWN IN THE DETAILS ON THIS SHEET.

FRANGIBLE TRANSFORMER BASES SHALL MATCH DARK BRONZE LUMINAIRE ASSEMBLY COLOR.



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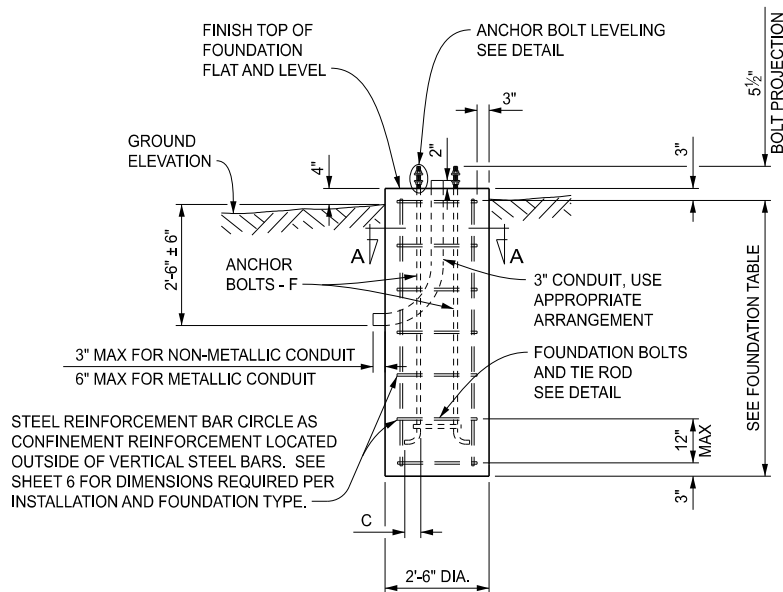
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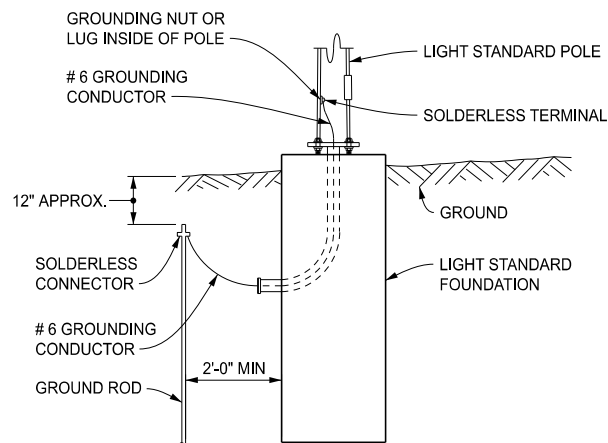
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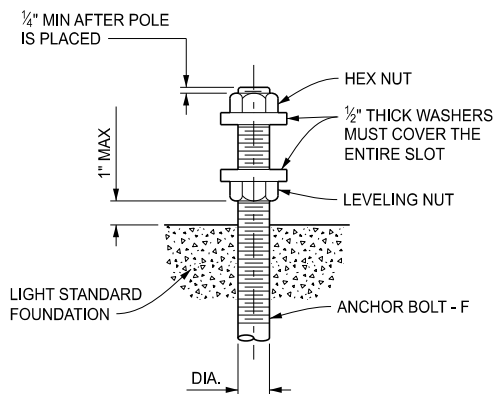


**LIGHT STANDARD FOUNDATION DETAIL**



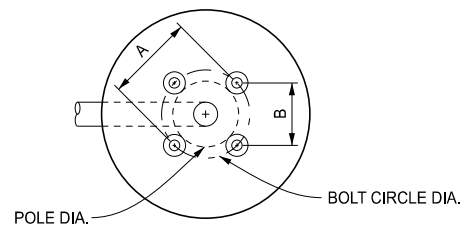
**LIGHT STANDARD GROUNDING DETAIL**

NOTE:  
IF CONDUIT EXTENDS TO HAND HOLE, DRIVE GROUND ROD  
IN OR NEAR HANDHOLE.

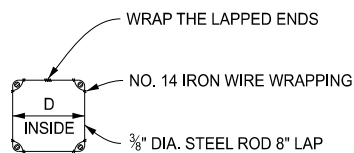


**ANCHOR BOLT LEVELING DETAIL**

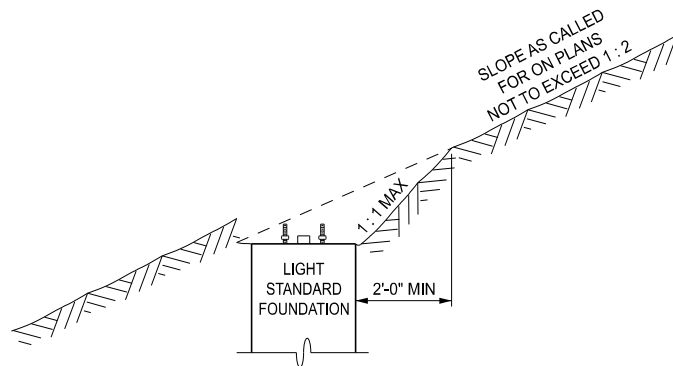
THIS DETAIL DOES NOT APPLY WHEN USING  
FRANGIBLE TRANSFORMER BASE. SEE  
FRANGIBLE TRANSFORMER BASE DETAIL  
ON SHEET 4.



**TOP OF FOUNDATION DETAIL**



**ANCHOR BOLTS AND TIE ROD**



**SLOPE DETAIL AT FOUNDATION**

ON FILL OR CUT SLOPE

NOTE:  
DO NOT COVER HANDHOLES. PLACE PERPENDICULAR  
TO SLOPE AT SAME ELEVATION AS FOUNDATION.

DO NOT PLACE SOIL ABOVE TOP OF FOUNDATION.



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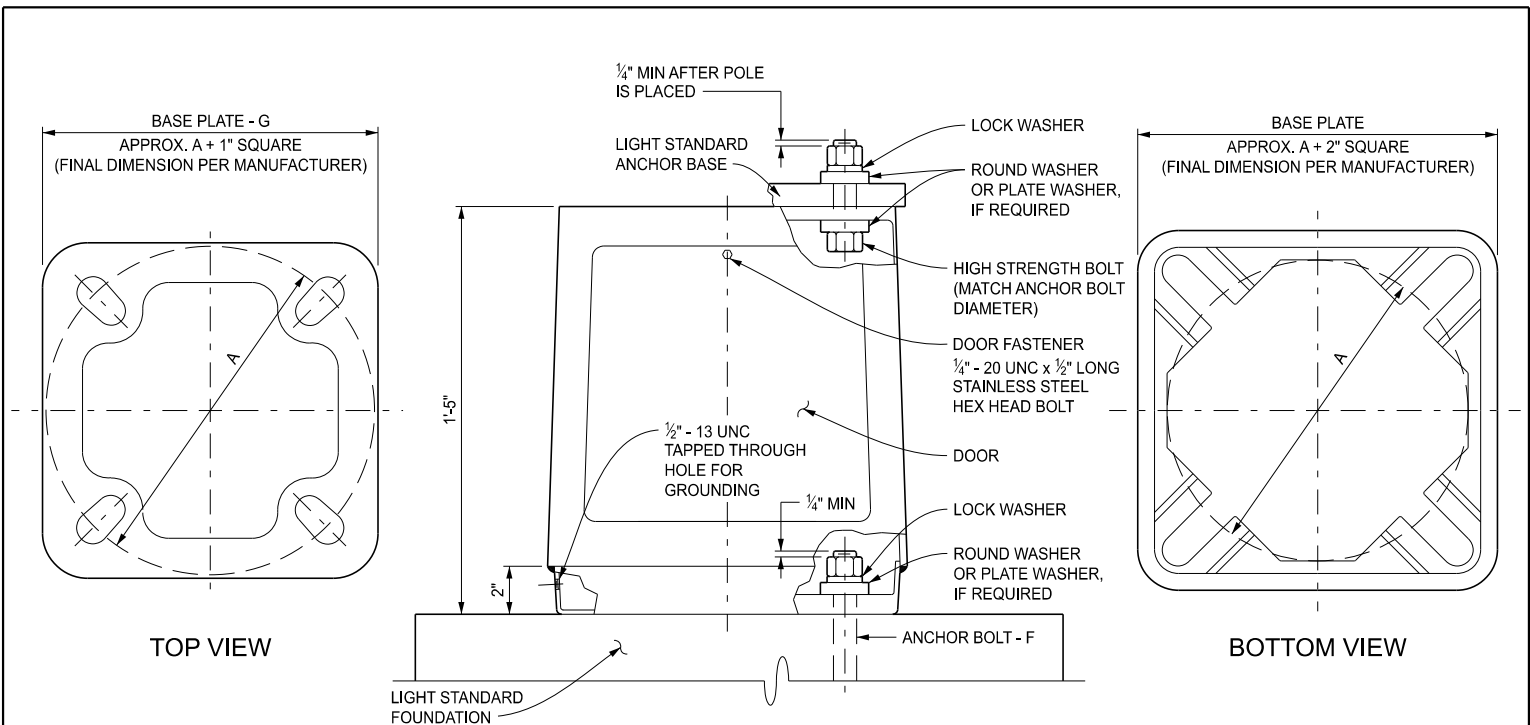
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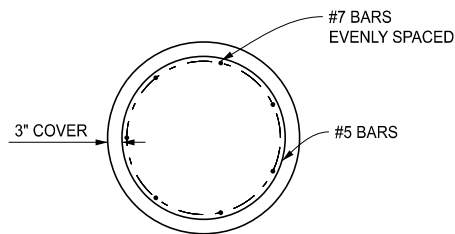
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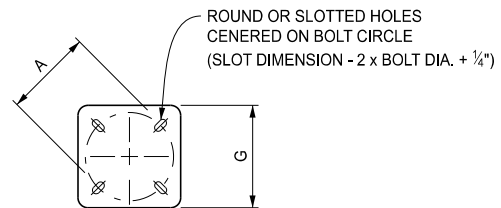
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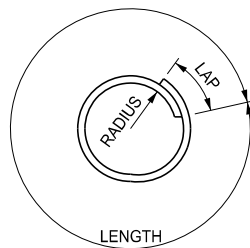
**FRANGIBLE TRANSFORMER BASE FOR POLES WITH BOLT CIRCLE DIAMETER - A**



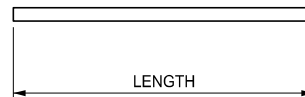
**SECTION A-A**  
ANCHOR RODS NOT SHOWN FOR CLARITY



**ANCHOR BASE DETAIL**




**CONFINEMENT  
REINFORCEMENT**



**VERTICAL  
REINFORCEMENT**

**REINFORCEMENT DETAILS**

 Michigan Department of Transportation  DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR <b>LIGHT STANDARD DETAILS</b>		
	(SPECIAL DETAIL) FHWA APPROVAL	11/13/2024 PLAN DATE	<b>R-130-A</b>  SHEET 4 OF 6

## BASE AND POLE DATA TABLE

LIGHT STANDARD FOR	A	B	C	D	E	STEEL POLES GAGE (MIN)	** F	ALUM. POLES GAGE (MIN)	POLE DIAMETER AT BASE	G
20 FT NOMINAL MOUNTING HEIGHT (WITHOUT TRANSFORMER BASE)	11"	7¾"			2"		1" Ø x 3'-4"	0.188"		12.2"
20 FT NOMINAL MOUNTING HEIGHT (WITH TRANSFORMER BASE)	* 11"	7¾"			2"		1" Ø x 3'-4"	0.188"		12.2"
30 FT MOUNTING HEIGHT WITH 4 OR 6 FT SINGLE OR DOUBLE BRACKET ARM	1'-3" (A) 1'-0" (S)	10⅝" (A) 8½" (S)	5⅝"	11⅞" (A) 9¾" (S)	2"	7	1¼" Ø x 3'-4"	0.188"	9" ±½"	15.38" (A) *** 13.26" (S)
30 FT MOUNTING HEIGHT WITH 8, 10 OR 12 FT SINGLE OR DOUBLE BRACKET ARM	1'-3" (A) 1'-0" (S)	10⅝" (A) 8½" (S)	5⅝"	11⅞" (A) 9¾" (S)	2"	7	1¼" Ø x 5'-0"	0.188"	9" ±½"	15.38" (A) *** 13.26" (S)
30 FT MOUNTING HEIGHT WITH 15 FT SINGLE OR DOUBLE BRACKET ARM	1'-3" (A) 1'-0" (S)	10⅝" (A) 8½" (S)	6¾"	1'-0⅞" (A) 10" (S)	2"	7	1½" Ø x 5'-0"	0.25"	9" ±½"	15.73" (A) *** 13.61" (S)
30 FT MOUNTING HEIGHT WITH 17 FT SINGLE OR DOUBLE BRACKET ARM	1'-3" (A) 1'-0" (S)	10⅝" (A) 8½" (S)	6¾"	1'-0⅞" (A) 10" (S)	2"	7	1½" Ø x 5'-0"	0.25"	9" ±½"	15.73" (A) *** 13.61" (S)
40 FT MOUNTING HEIGHT WITH 4, 6, 8, 10, 12, 15 OR 17 FT SINGLE OR DOUBLE BRACKET ARM	1'-4" (A) 1'-3" (S)	11⅜" (A) 10⅝" (S)	7⅞"	1'-1⅞" (A) 1'-0⅞" (S)	2"	7	1¾" Ø x 5'-0"	0.313"	10" ±½"	16.79" (A) *** 16.09" (S)
45 FT MOUNTING HEIGHT WITH 4, 6, 8, 10, 12, 15 OR 17 FT SINGLE OR DOUBLE BRACKET ARM	1'-5" (A) 1'-6" (S)	1'-0" (A) 1'-0¾" (S)	7⅞"	1'-1¾" (A) 1'-2½" (S)	2" (A) 2⅜" (S)	7	1¾" Ø x 5'-0"	0.375"	11" ±½" (A) 10" ±½" (S)	17.5" (A) *** 18.21" (S)

\* THE 11" BOLT CIRCLE SHALL APPLY FOR BOTH THE POLE TO TRANSFORMER BASE AND FOR THE TRANSFORMER BASE TO FOUNDATION.

\*\* LENGTH GIVEN IS LENGTH PRIOR TO BENDING.

\*\*\* FINAL BASEPLATE WIDTHS FOR ALUMINUM STRUCTURES ARE PER MANUFACTURER

(A) = DIMENSION CORRESPONDS TO ALUMINUM

(S) = DIMENSION CORRESPONDS TO STEEL

## FOUNDATION DATA TABLE

GROUND SLOPE	SINGLE ARM MAXIMUM LUMINAIRE STRUCTURE SIZE	30 FT MOUNTING HEIGHT, 6 FT ARM	30 FT MOUNTING HEIGHT, 17 FT ARM	45 FT MOUNTING HEIGHT, 17 FT ARM
		L (FT)	L (FT)	L (FT)
	HORIZONTAL	8.5	9	10
	SLOPED	16.5	17.5	18.5

GROUND * SLOPE	DOUBLE ARM MAXIMUM LUMINAIRE STRUCTURE SIZE	30 FT MOUNTING HEIGHT, 6 FT ARM	30 FT MOUNTING HEIGHT, 17 FT ARM	45 FT MOUNTING HEIGHT, 17 FT ARM
		L (FT)	L (FT)	L (FT)
	HORIZONTAL	9	10	11

L = EMBEDDED LENGTH OF THE SHAFT FOUNDATION

\* SLOPED GROUND SLOPE CASE NOT TO BE USED FOR DOUBLE ARM LUMINAIRE STRUCTURE.

## BRACKET ARM TABLE

	BRACKET LENGTH, L	6'-0"	12'-0"	15'-0"	17'-0"
	STEEL	2" DIA.	2½" DIA.	2½" DIA.	3¼" DIA.
ALUMINUM	TOP MEMBER O.D.	2" DIA.	2½" DIA.	2" DIA.	2" DIA.
	BOTTOM MEMBER O.D.	1½" DIA.	1½" DIA.	2" DIA.	2" DIA.
	TOP MEMBER O.D.	2" DIA.	3" DIA.	3" DIA.	3" DIA.
	BOTTOM MEMBER O.D.	1½" DIA.	2" DIA.	2¼" DIA.	2¼" DIA.



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REINFORCEMENT DATA TABLE

MAXIMUM LUMINAIRE STRUCTURE SIZE	FOUNDATION DIAMETER (IN)	VERTICAL REINFORCEMENT				CONFINEMENT REINFORCEMENT			
		BAR SIZE	NUMBER OF BARS	BAR LENGTH		BAR RADIUS	BAR SIZE	BAR SPACING	BAR LENGTH
				HORIZONTAL	SLOPED				
30 FT MOUNTING HEIGHT, 6 FT ARM	30	7	12	8'-0" (SINGLE ARM) 8'-6" (DOUBLE ARM)	16'-0"	12"	5	12" (MAX)	6'-4"
30 FT MOUNTING HEIGHT, 17 FT ARM				8'-6" (SINGLE ARM) 9'-6" (DOUBLE ARM)	17'-0"				
45 FT MOUNTING HEIGHT, 17 FT ARM				9'-6" (SINGLE ARM) 10'-6" (DOUBLE ARM)	18'-0"				

PROVIDE A 2'-8" LAP FOR #5 BAR CIRCLES.

MATERIALS TABLE (ANCHOR BASE)


MATERIAL	SPECIFICATION	DIMENSIONS	QUANTITY (PER FOUNDATION)
ANCHOR BOLTS	MDOT 908.14	DETERMINED BY LIGHT STANDARD CHART	4
ANCHOR NUTS	MDOT 908.14	DETERMINED BY ANCHOR BOLT DIAMETER	8
FLAT WASHERS **** (1¼" DIA. ANCHOR BOLT)	MDOT 908.14	2¾" O.D. x 1⅝" I.D. x ½" THICK	8 (IF REQUIRED ****)
FLAT WASHERS **** (1½" DIA. ANCHOR BOLT)	MDOT 908.14	2¾" O.D. x 1⅝" I.D. x ½" THICK	8 (IF REQUIRED ****)
FLAT WASHERS **** (1¾" DIA. ANCHOR BOLT)	MDOT 908.14	4" O.D. x 1⅞" I.D. x ½" THICK	8 (IF REQUIRED ****)
PLATE WASHERS **** (1¼" DIA. ANCHOR BOLT)	ASTM A1018	1⅝" I.D. x ½" THICK	8 (IF REQUIRED ****)
PLATE WASHERS **** (1½" DIA. ANCHOR BOLT)	ASTM A1018	1⅝" I.D. x ½" THICK	8 (IF REQUIRED ****)
PLATE WASHERS **** (1¾" DIA. ANCHOR BOLT)	ASTM A1018	1⅞" I.D. x ½" THICK	8 (IF REQUIRED ****)

MATERIALS TABLE (FRANGIBLE BASE)

MATERIAL	SPECIFICATION	DIMENSIONS	QUANTITY (PER FOUNDATION)
ANCHOR BOLTS	MDOT 908.14	DETERMINED BY LIGHT STANDARD CHART	4
ANCHOR NUTS	MDOT 908.14	DETERMINED BY ANCHOR BOLT DIAMETER	4
FLAT WASHERS **** (1¼" DIA. ANCHOR BOLT)	MDOT 908.14	2¾" O.D. x 1⅝" I.D. x ½" THICK	12 OR 14 (****)
FLAT WASHERS **** (1½" DIA. ANCHOR BOLT)	MDOT 908.14	2¾" O.D. x 1⅝" I.D. x ½" THICK	12 OR 14 (****)
FLAT WASHERS **** (1¾" DIA. ANCHOR BOLT)	MDOT 908.14	4" O.D. x 1⅞" I.D. x ½" THICK	12 OR 14 (****)
LOCK WASHERS	ANSI B18.21.1	¼" THICK	8
HIGH STRENGTH BOLTS	MDOT 906.07	LENGTH DETERMINED BY THE CONTRACTOR DIAMETER TO BE SAME AS ANCHOR BOLT	4
CONNECTING NUTS	MDOT 906.07	DETERMINED BY HIGH STRENGTH BOLT DIAMETER	4
PLATE WASHERS **** (1¼" DIA. ANCHOR BOLT)	ASTM A1018	1⅝" I.D. x ½" THICK	8 (IF REQUIRED)
PLATE WASHERS **** (1½" DIA. ANCHOR BOLT)	ASTM A1018	1⅝" I.D. x ½" THICK	8 (IF REQUIRED)
PLATE WASHERS **** (1¾" DIA. ANCHOR BOLT)	ASTM A1018	1⅞" I.D. x ½" THICK	8 (IF REQUIRED)
FRANGIBLE TRANSFORMER BASE	SELECT FROM THE MDOT QUALIFIED PRODUCTS LIST	ACCESS DOOR OPENING: 8½" x 9" x 11"	1

\*\*\*\* IF LIGHT STANDARDS BASE PLATE HAS SLOTTED HOLES, PLATE WASHERS ARE REQUIRED IN LIEU OF CIRCULAR WASHERS AND MUST COVER ENTIRE SLOT.

ALL ANCHOR BOLTS, NUTS, WASHERS AND PLATE WASHERS MUST BE HOT DIP GALVANIZED ACCORDING TO AASHTO M232.

 Michigan Department of Transportation	STANDARD PLAN FOR LIGHT STANDARD DETAILS		
	(SPECIAL DETAIL) FHWA APPROVAL	11/13/2024 PLAN DATE	R-130-A SHEET 6 OF 6