### Table of Foundation Dimensions and Quantities

<table>
<thead>
<tr>
<th>Height of High Mount (ft)</th>
<th>Diameter (&quot;C&quot;)</th>
<th>Stirrups</th>
<th>Depth &quot;D&quot; (ft)</th>
<th>V Bars</th>
<th>Reinf. * Steel Lbs</th>
<th>Concrete CY</th>
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<th>Reinf. * Steel Lbs</th>
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</table>

* Includes Stirrups and Vertical Bars (V Bars)

### Notes

- **Anchor Bolts**
  - Conform number, size, and length of anchor bolts, bolt circle diameter "BC", and anchor bolt projection "P" to approved high mount standard drawings.

- **Conduits**
  - Match orientation, quantity, type, and size of conduits to the layout sheets. Stub and cap one spare conduit at each foundation. Project conduit a maximum of 2" above top of foundation. Place conduit 30" beneath finish grade. Include 30" conduit for grounding electrode conductor to ground rod at high mast foundation.

- **Dimensions & Quantities**
  - Dimensions and quantities of concrete and reinforcing steel are given for the purpose of obtaining bid prices only. See standard specifications section 1402, for other structural requirements.

- **Work Area**
  - Provide a level work area around each foundation. Cut/fill slopes may be adjusted as directed by the engineer.

- **Elevation**
  - Set top of foundation at 6" above level work area. See detail "B".

- **Guardrail**
  - Where guardrail is required to be installed as part of lighting work, set guardrail no more than 8' from center of high mast foundation.

---

**3" Clearance**

**Bolt Circle Diameter**

**Anchor Bolt**

**Conduit**

**Top of Foundation**

**Detail "A"**

**Detail "B"**
LIGHT STANDARDS

SINGLE-ARM LIGHT STANDARD

TYPE MTLT/MTLS (MH) SA (AL)

- 7" MAX RISE
- 30'-45' MOUNTING HEIGHT (MH)
- 15' MIN MOUNTING HEIGHT
- 5'-6" BREAKAWAY BASE
- 4'-20' ARM LENGTH (AL)
- 2" SLIPFITTER
- TRUSS ARM
- POLE CAP AND J HOOK
- BOLT COVERS
- ROUND TAPERED CONSTRUCTION

NOTES

- TRANSFORMER BASE SHOWN. OTHER BASES MEETING AASHTO BREAKAWAY REQUIREMENTS MAY BE PROVIDED IF APPROVED BY THE ENGINEER. SEE "BASE DETAILS" ON SHEET 2 OF 3.
- SINGLE-MEMBER ARMS MAY BE PROVIDED IN LIEU OF TRUSS ARMS, WHEN SPECIFIED ARM LENGTH IS 18' OR LESS AND MOUNTING HEIGHT IS 35' OR LESS.
- MOUNTING HEIGHT INCLUDES BREAKAWAY BASE FOR LIGHT STANDARDS WITH TRANSFORMER BASES. SEE "BASE DETAILS" ON SHEET 2 OF 3.
- STANDARD PLACEMENT MAY BE REDUCED TO 3'-6" BEHIND FACE OF GUARDRAIL WHEN POSTS ARE SPACED 3'-11 1/2", OR WHERE SPEED LIMIT IS LESS THAN 55 MPH.
- INSERT MOUNTING HEIGHT (MH) AND ARM LENGTH (AL) FROM PAY ITEM DESCRIPTION TO DETERMINE PROPOSED SINGLE-ARM LIGHT STANDARDS.
- LIGHT STANDARDS MOUNTED ON BRIDGE OUTRIGGERS OR BEHIND RETAINING/BARRIER WALLS DO NOT REQUIRE BREAKAWAY BASES.
MOUNTING HEIGHT INCLUDES BREAKAWAY BASE FOR LIGHT STANDARDS WITH TRANSFORMER BASES.
FIT PROTECTIVE SHROUD SNUGLY AROUND BASE PLATE TO PROTECT CONDUIT AND WIRING AT BASE OF STANDARD.
PROVIDE WASHERS AND SHIMS REQUIRED BY BASE MANUFACTURER.
PROVIDE ACCESSIBLE GROUNDING LUG INSIDE.
LABEL ALL BASES TO SHOW COMPLIANCE WITH AASHTO BREAKAWAY REQUIREMENTS.

NOTES

BASE DETAILS

- MOUNTING HEIGHT INCLUDES BREAKAWAY BASE FOR LIGHT STANDARDS WITH TRANSFORMER BASES.
- FIT PROTECTIVE SHROUD SNUGLY AROUND BASE PLATE TO PROTECT CONDUIT AND WIRING AT BASE OF STANDARD.
- PROVIDE WASHERS AND SHIMS REQUIRED BY BASE MANUFACTURER.
- PROVIDE ACCESSIBLE GROUNDING LUG INSIDE.
- LABEL ALL BASES TO SHOW COMPLIANCE WITH AASHTO BREAKAWAY REQUIREMENTS.
TWIN-ARM LIGHT STANDARD

BASE PLATE DETAIL

NOTES

1. SINGLE-MEMBER ARMS MAY BE PROVIDED IN LIEU OF TRUSS ARMS, WHEN SPECIFIED ARM LENGTH IS 8' OR LESS AND MOUNTING HEIGHT IS 30' OR LESS.

2. INSERT MOUNTING HEIGHT (MH) AND ARM LENGTH (AL) FROM PAY ITEM DESCRIPTION TO DETERMINE PROPOSED TWIN-ARM LIGHT STANDARDS.

3. SEE SHEET 1 OF 3 FOR DETAIL "I".

4. PROVIDE ACCESSIBLE GROUNDING LUG INSIDE.

5. SQUARE BASE PLATE REQUIRED FOR TWIN-ARM STANDARDS INSTALLED ON TYPE R1 OR R2 FOUNDATION WITH BREAKAWAY BASE. SEE PLANS FOR LOCATIONS.

ARMS

BASE PLATE

MEDIAN BARRIER

POLE CAP AND J HOOK

ROUND TAPERED CONSTRUCTION

30'-45' MOUNTING HEIGHT (MH)

2" SLIPFITTER

4'-20' ARM LENGTH (AL)

7" MAX RISE

ROUND CORNERS

ALL DIMENSIONS ARE EXACT

FINISH GRADE

CENTER HOLES

8 1/4" MINIMUM DIAMETER

11 3/4" DIAMETER

(4 PLCS)

8' DIAMETER

16" DIAMETER

Rounded Corners

BASE PLATE DETAIL

TWIN-ARM LIGHT STANDARD

TYPE MTLT (MH) TA (AL)
**NOTES**

- **ANCHOR BOLT CIRCLE DIAMETER AND PROJECTION:** Anchor bolt circle diameter and projection of anchor bolts as specified by approved base manufacturer, and as shown below in stub height requirements.
- **ADJUST SURROUNDING GRADE AS REQUIRED FOR ANCHOR BOLT PROJECTION TO MEET 4" CLEARANCE REQUIREMENT OVER 60" CHORD.**
- **PROVIDE WASHERS AND SHIMS REQUIRED BY APPROVED BASE MANUFACTURER.**
- **SEE LIGHTING LAYOUT PLANS FOR SIZE AND ORIENTATION OF CONDUIT FOR FEEDER CIRCUITS.**

**SLOPE CONDITIONS**

- **> 4:1**
  - Use Type R2
- **<= 2:1**
  - Use Type R1
- **2:1 OR FLATTER**
  - Use Type R1
ENGLISH STANDARD DRAWING FOR
STANDARD FOUNDATION

TYPE M2 FOUNDATION

ELEVATION VIEW

NOTES

1. Locate expansion or contraction joint 5' minimum from center line of light standard foundation.
2. All specified steel and concrete on this sheet is in addition to that required for the median barrier.
3. Dimensions for #3 stirrups are approximate. Fit stirrups tightly around anchor bolts.
4. Protect anchor bolts and conduit during placement of concrete.
5. Furnish all anchor bolts with heavy hex nuts, leveling nuts, flat washers, lock washers and flat connecting bar.
6. Provide 1/2" radius on all exposed edges similar to top of barrier.
7. Use type M2 standard foundation with type T2 median barrier.
8. See lighting layout plans for size and orientation of conduit for feeder circuits.

SECTION A-A

CONCRETE LIGHT STANDARD FOUNTING

#4 BARS Ø 14" CTRS

8 #6 L1 BARS Ø 14" CTRS

FIELD BEND AS REQUIRED

FINISH GRADE

12" Ø 14" CTRS

1'-3'

48" ANCHOR BOLT(S)

TYPE T2 MEDIAN BARRIER (BY OTHERS)

CONDUIT FOR FEEDER CIRCUIT

BOLT PROJECTION

LOCATE EXPANSION OR CONTRACTION JOINT 5' MINIMUM FROM CENTER LINE OF LIGHT STANDARD FOUNDATION.
ALL SPECIFIED STEEL AND CONCRETE ON THIS SHEET IS IN ADDITION TO THAT REQUIRED FOR THE MEDIAN BARRIER.
DIMENSIONS FOR #3 STIRRUPS ARE APPROXIMATE. FIT STIRRUPS TIGHTLY AROUND ANCHOR BOLTS.
PROTECT ANCHOR BOLTS AND CONDUIT DURING PLACEMENT OF CONCRETE.
FURNISH ALL ANCHOR BOLTS WITH HEAVY HEX NUTS, LEVELING NUTS, FLAT WASHERS, LOCK WASHERS AND FLAT CONNECTING BAR.
PROVIDE 1/2" RADIUS ON ALL EXPOSED EDGES SIMILAR TO TOP OF BARRIER.
USE TYPE M2 STANDARD FOUNDATION WITH TYPE T2 MEDIAN BARRIER.
SEE LIGHTING LAYOUT PLANS FOR SIZE AND ORIENTATION OF CONDUIT FOR FEEDER CIRCUITS.
ENGLISH STANDARD DRAWING FOR
STANDARD FOUNDATION

TYPE M2 FOUNDATION

NOTES

1. LOCATE EXPANSION OR CONTRACTION JOINT 5' MINIMUM FROM CENTER LINE OF LIGHT STANDARD FOUNDATION.

2. ALL SPECIFIED STEEL AND CONCRETE ON THIS SHEET IS IN ADDITION TO THAT REQUIRED FOR THE MEDIAN BARRIER.

3. DIMENSIONS FOR #3 STIRRUPS ARE APPROXIMATE. FIT STIRRUPS TIGHTLY AROUND ANCHOR BOLTS.

4. PROTECT ANCHOR BOLTS AND CONDUIT DURING PLACEMENT OF CONCRETE.

5. FURNISH ALL ANCHOR BOLTS WITH HEAVY HEX NUTS, LEVELING NUTS, FLAT WASHERS, LOCK WASHERS AND FLAT CONNECTING BAR.

6. PROVIDE 1" RADIUS ON ALL EXPOSED EDGES SIMILAR TO TOP OF BARRIER.

7. USE TYPE M2 STANDARD FOUNDATION WITH TYPE T2 MEDIAN BARRIER.

8. SEE LIGHTING LAYOUT PLANS FOR SIZE AND ORIENTATION OF CONDUIT FOR FEEDER CIRCUITS.

CONCRETE LIGHT STANDARD FOUNDING

#4 BARS Ø 14" CTRS

8 #6 L1 BARS Ø 14" CTRS

FINISH GRADE

FIELD BEND AS REQUIRED

8 #6 L1 BARS Ø 14" CTRS

3" CLR

3" CLR

A

ELEVATION VIEW

SECTION A-A

HEAVY HEX NUT

LOCK WASHER

FLAT WASHER

LEVELING NUT

(4) 1" DIA X 48" GALVANIZED STEEL ANCHOR BOLT
ASTM F1554, GRADE 55, 55,000 PSI MIN

HEX NUT TOP & BOTTOM

1/2" X 4" X 10" FLAT BAR (2 EA)
ASTM A-36

PROTECTIVE METAL SHROUD

BASE

5 1/2" BOLT PROJECTION

CUT OUT

12" MIN

1-1/2" MAX

A

ANCHOR BOLT DETAIL

BARRIER CUT OUT NOT SHOWN
### Lamps

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<th>Spec</th>
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### Notes

- PROVIDE ACCESS TO FUSEHOLDERS FROM HANDHOLE OR TRANSFORMER BASE.
- SEE STANDARD SPECIFICATIONS SECTION 1400-4F FOR WIRING METHODS AND COLOR CODE OF CONDUCTORS.
- PROVIDE SEPARATE BRANCH CIRCUIT AND FUSEHOLDER FOR EACH LUMINAIRE AT TWIN-ARM LIGHT STANDARDS.
- BREAKAWAY FUSEHOLDERS REQUIRED AT ALL BREAKAWAY LIGHT STANDARDS.
- SEE LIGHTING LAYOUT PLANS FOR NUMBER AND SIZE OF FEEDER CIRCUITS REQUIRED AT EACH LIGHT STANDARD.
- SEE STANDARD SPECIFICATIONS SECTION 1400-2E FOR FEEDER CIRCUITS REQUIRED AT EACH LIGHT STANDARD.
- SEE STANDARD SPECIFICATIONS SECTION 1400-2G FOR FUSEHOLDERS.
- SEE STANDARD SPECIFICATIONS SECTION 1400-2G FOR LAMPS.
- INSERT STYLE AND SIZE FROM PAY ITEM DESCRIPTION TO DETERMINE PROPOSED LUMINAIRES.
ELECTRIC SERVICE POLE AND LATERAL

NOTES

- CURRENT TRANSFORMER (CT) CABINET AND METER MAY BE MOUNTED ON BACK OF LIGHT CONTROL SYSTEM ENCLOSURE.
- SEE SECTION 1408 OF THE STANDARD SPECIFICATIONS FOR LIGHT CONTROL SYSTEM.

18' MIN
5' MIN

WEATHERHEAD
SERVICE LATERAL
3 #1/0 USE
2" RGC

CT CABINET & METER

SERVICE GROUND
#6 CU
3/4" RGC

GROUND ROD

SERVICE LATERAL
3 #1/0 USE
2" RGC

TO LIGHT CONTROL SYSTEM

C/A FENCE

FROM UTILITY COMPANY

SERVICE POLE

10' MAX
2' MAX

5'-6"

16' MIN

30' POLE
CLASS 4

ENGLISH STANDARD DRAWING FOR ELECTRIC SERVICE POLE AND LATERAL

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS
RALEIGH, N.C.

NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS
RALEIGH, N.C.
PHOTOCELL CONNECTIONS

INTERIOR PANEL
COMPONENT LIST

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<th>DESCRIPTION</th>
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<td>1</td>
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<td>MOUNTING BRACKETS OR SCREW STUDS</td>
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NOTES

- EQUIPMENT Grounds (G) SHALL BE SIZED ACCORDING TO CIRCUIT DESCRIPTION. See Plans.
- SYSTEM Ground (SG) SHALL BE CONTINUOUS FROM THE NEUTRAL BAR TO THE GROUNDING ELECTRODE (GROUND ROD).
- THE NEUTRAL BAR SHALL BE BONDED TO THE PANEL.
- FEEDER CIRCUITS NOT SHOWN ON THE PLANS SHALL NOT BE INSTALLED, BUT CONDUIT SHALL BE INSTALLED AND CAPPED.
- INSTALL A GROUNDING BUSHING ON EACH METAL CONDUIT. CONNECT BONDING JUMPER AS REQUIRED BY NEC.
- SEE SHEET 3 OF 3 FOR ENCLOSURE.
- THE CONTROL SYSTEM MUST BE LABELED "SUITABLE FOR USE AS SERVICE EQUIPMENT." REFER TO STANDARD SPECIFICATION 1408-2 FOR OTHER REQUIREMENTS.
- SEE PLANS FOR BREAKER SIZES.
- PROVIDE MULTI-TAP LOAD LUGS OR POWER DISTRIBUTION BLOCKS.
- PROVIDE MANUFACTURER SUPPLIED MOUNTING BRACKETS OR SCREW STUDS PERMANENTLY ATTACHED TO THE BACK PANEL, FOR MOUNTING COMPONENTS.
- INSTALL LIGHTNING ARRESTER ON OUTSIDE OF CABINET ASSEMBLY.

COMPONENT LAYOUT

SCHEMATIC

SEE SHEET 3 OF 3 FOR ENCLOSURE.

POWER DISTRIBUTION LUGS OR BLOCKS.

PROVIDE MULTI-TAP LOAD LUGS OR POWER DISTRIBUTION BLOCKS.

PROVIDE MANUFACTURER SUPPLIED MOUNTING BRACKETS OR SCREW STUDS PERMANENTLY ATTACHED TO THE BACK PANEL, FOR MOUNTING COMPONENTS.

INSTALL LIGHTNING ARRESTER ON OUTSIDE OF CABINET ASSEMBLY.

GROUNDING BUSHING

FEEDER CIRCUIT NO.

1  2  3  4  5  SPARE

SIMPLIFIED SCHEMATIC

PHOTOCELL RECEPTACLE

COMPONENT LIST

#  | DESCRIPTION                                      | SPECIFICATIONS                  |
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MOUNTING BRACKETS OR SCREW STUDS

PROVIDE MANUFACTURER SUPPLIED MOUNTING BRACKETS OR SCREW STUDS PERMANENTLY ATTACHED TO THE BACK PANEL, FOR MOUNTING COMPONENTS.
LIGHT CONTROL SYSTEM

NOTES

- CURRENT TRANSFORMER (CT) CABINET AND METER MAY BE MOUNTED ON SERVICE POLE OR BACK OF CONTROL ENCLOSURE.
- SEE SECTION 1407 OF THE STANDARD SPECIFICATIONS FOR SERVICE POLE AND SERVICE LATERAL.
- SEE PLANS FOR SIZE OF CONDUITS AND/OR ELECTRICAL DUCT.
- STUB FEEDER CIRCUIT CONDUITS INTO JUNCTION BOX. CAP UNUSED CONDUITS. FEEDER CIRCUITS MUST BE MINIMUM 30" BELOW GRADE

- LIGHTNING ARRESTOR INSTALLED OUTSIDE OF CABINET, NOT SHOWN FOR CLARITY.

- SEE SECTION 1411 OF THE STANDARD SPECIFICATIONS FOR JUNCTION BOX INSTALLATION.
- ALL ABOVE GROUND CIRCUITY TO BE INSTALLED IN RIGID GALVANIZED CONDUIT. UNDERGROUND FEEDER CIRCUITS TO BE INSTALLED IN SCH 40 PVC CONDUIT.

- INSTALLED IN SCH 40 PVC CONDUIT.
- UNDERGROUND FEEDER CIRCUITS TO BE INSTALLED IN RIGID GALVANIZED CONDUIT.
- ALL ABOVE GROUND CIRCUITRY TO BE INSTALLED IN RIGID GALVANIZED CONDUIT.

- SERVICE LATERAL 3 #1/0 USE 2" RGC
- TO SERVICE POLE (IF REQUIRED)
- ALTERNATE SERVICE LATERAL 3 #1/0 USE 2" RGC

- 240/480 VOLT SERVICE (BY UTILITY CO.)

- PC36 JUNCTION BOX
- CONDUIT BODY
- CONDUIT BODY
- 2" RGC
- 3/4" RGC
- 6 RGC

- GROUND ROD

- 4" RGC

- 12" MAX

- 7"
**Light Control System**

- **NEMA Type 3R Stainless Steel Enclosure**

- **Mounting Flange**
  - 3" CLR
  - 12" O.C.

- **Continuous Hinge**
  - 6" O.C.

- **Drip Shield**
  - 6" (MIN)
  - 12" (APPROX)

- **Service Circuit Breaker Handle**
  - 36" (MIN)

- **Padlockable Door Handle**

- **Type 304 Stainless Steel**

**Notes**

- Permanently attach a label to the enclosure door showing the work order number, control system letter designation and location description shown in the load schedule at each control system in the plans.
- See Sheet 1 of 3 for interior panel and component layout.
- Provide door closing mechanism interlocked with service circuit breaker handle. See standard specifications for details.

**Foundation and Enclosure**

- 12" (APPROX)

- 6"

- 30" O.C.

- 10" O.C.

- 4 #4 Rebar
  - 10" O.C.
  - 10½" O.C.

- 5 #4 Rebar
  - 3" CLR

- 1" CLR

- 10" (APROX)

- 400 Volts

- Project (TIP #) CONTROL SYSTEM "(LTH)

- Door Showing the Work Order Number, Control System Letter Designation and Location Description Shown in the Load Schedule at Each Control System in the Plans.
ELECTRICAL DUCT INSTALLATION

- For guard rail, minimum 24" from edge.
- For paved shoulder, minimum 30" from edge.
- Jacked, drilled or buried duct (or circuit in conduit).
- Buried duct (or circuit in conduit) within travel lane up to 30' from edge.

Guard rail and paved shoulder requirements mentioned.
FEEDER CIRCUIT INSTALLATION

- 30" MIN. COVER FOR NORMAL SOIL
- 15" MIN. COVER BY ENGINEER PER DIRECTION
- CLEAN BACKFILL
- MATERIAL TO COMPACT SURROUNDING EARTH
- FEEDER CIRCUIT

RALEIGH, N.C.
DIVISION OF HIGHWAYS
DEPT. OF TRANSPORTATION
NORTH CAROLINA
STATE OF RALEIGH, N.C.
ELECTRICAL JUNCTION BOX TYPE PC (SIZE)  

ELECTRICAL JUNCTION BOX TYPE BR (SIZE)  

NOTES

SEE STANDARD SPECIFICATIONS SECTION 1400-2H FOR SEALER AND MASTIC.

INSERT PAY ITEM DESCRIPTION FOR (SIZE) TO DETERMINE PROPOSED JUNCTION BOX.

SET TOP OF BOX FLUSH WITH CONCRETE IF REQUIRED TO BE PLACED IN SIDEWALKS OR OTHER CONCRETE STRUCTURES.

SIZE IS SPECIFIED AS NOMINAL INSIDE DIMENSIONS FOR WIDTH (W), LENGTH (L), AND DEPTH (D). SEE PLANS FOR PROPOSED DIMENSIONS.

SEE LAYOUT SHEETS FOR NUMBER AND SIZE OF FEEDER CIRCUITS AND ELECTRICAL DUCT.
TYPE PM LUMINAIRE AND CIRCUITRY

COMPONENTS

1. ELECTRICAL DISCONNECT MOUNTING RECEPTACLE
2. SAFETY CHAIN
3. ALUMINUM BALLAST HOUSING
4. ACRYLIC PRISMATIC REFRACTOR
5. ALUMINUM REFLECTOR
6. SS SPRING LATCHES
7. QUICK DISCONNECT WIRING COMPARTMENT
8. 3/4" THREADED CONDUIT CONNECTION
9. 3/4" RGC CONDUIT
10. 3/4" PVC CONDUIT
11. ROUND PVC BOX W/4-3/4" HUBS AND GASKETED COVER
12. HOOK, FEMALE
13. CORD GRIP
14. 3 COND. "SO" CORD (12 AWG 600 VAC)
15. SEALER
16. 3/4" RGC CONDUIT
17. 3/4" GALV. EYE NUT
18. 3/4" SS THREADED ROD AND DROP IN OR EXPANSION ANCHOR
19. 3/4" SS FLAT WASHER
20. 3/4" SS HEX NUT
21. CHAIN "S" LINK
22. SAFETY CHAIN
23. SEALER

NOTES

- MOUNT TYPE PM LUMINAIRE FLUSH WITH BOTTOM OF BEAMS.
- PROVIDE EXPANSION FITTINGS AT EACH BRIDGE EXPANSION JOINT. PROVIDE AT LEAST 1 EXPANSION JOINT IN SECTIONS OF CONDUIT GREATER THAN 20' BETWEEN JUNCTION BOXES OR LIGHT FIXTURES, AND 1 EXPANSION JOINT EVERY 80' FOR LONGER RUNS.
- REFER TO STANDARD SPECIFICATION 1074-2 FOR EXPANSION ANCHOR UNITS.
NOTES

- MOUNT TYPE WM LUMINAIRES APPROX. 15' ABOVE ROADWAY.
- PROVIDE EXPANSION FITTINGS IN EACH SECTION OF CONDUIT THAT IS GREATER THAN 20' LONG BETWEEN TERMINALS AT JUNCTION BOXES ON PIER CAP.
- EXTEND AWAY FROM PIER SO THAT GROUND ROD WILL MISS FOOTING.
- INSTALL INSULATED GROUNDING RUSHING FOR INCOMING FEEDER CIRCUIT IN RGC.

COMPONENTS

- DIE CAST ALUMINUM HOUSING, DOOR & HINGE
- PRISMATIC REFRACTOR
- SINGLE SCREW LATCH

TYPE WM LUMINAIRES AND CIRCUITRY