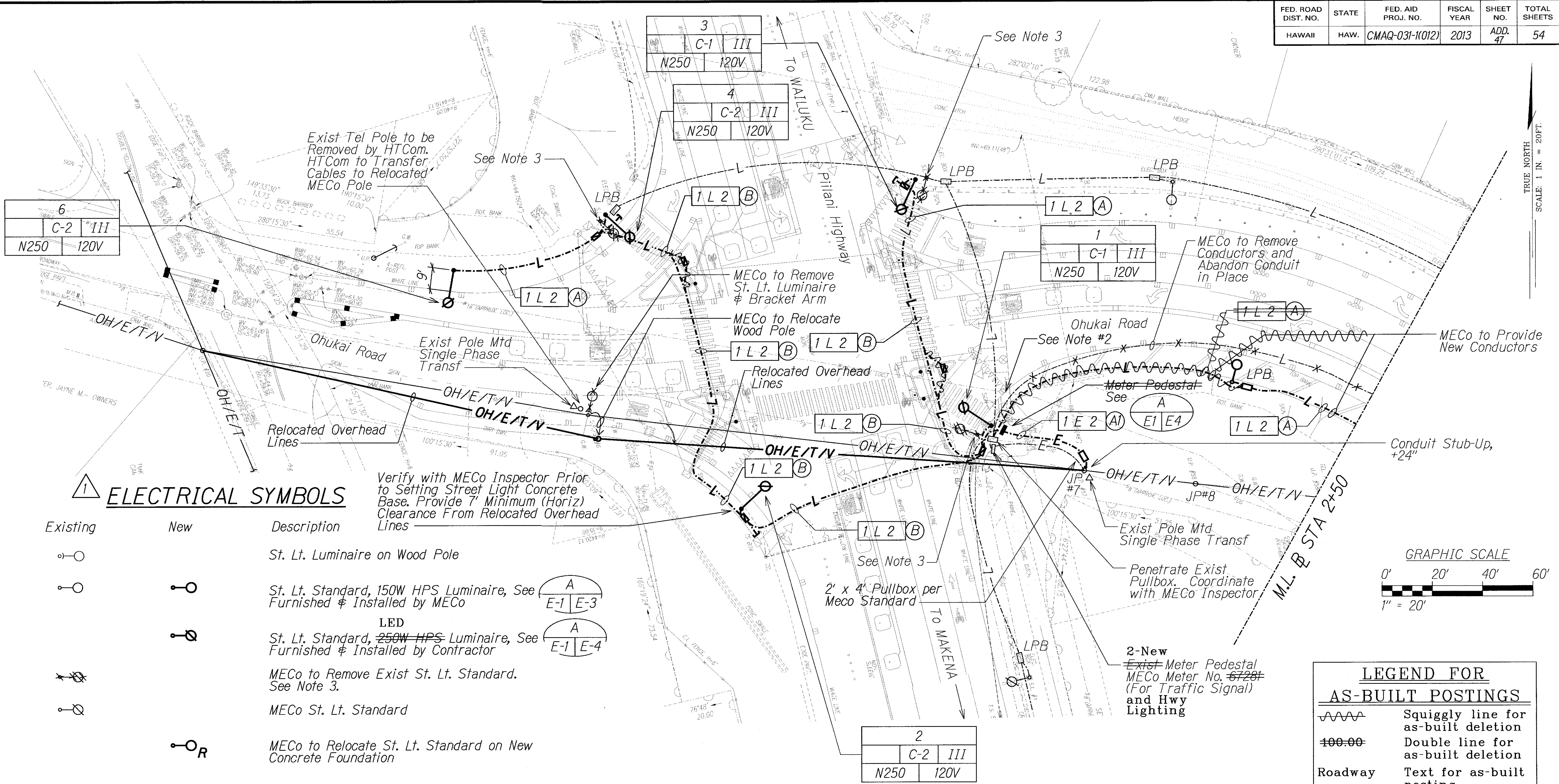


| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | CMAQ-031-1012      | 2013        | ADD. 47   | 54           |



# ELECTRICAL SYMBOLS

| Existing | New | Description                                                                          |
|----------|-----|--------------------------------------------------------------------------------------|
|          |     | St. Lt. Luminaire on Wood Pole                                                       |
|          |     | St. Lt. Standard, 150W HPS Luminaire, See Furnished & Installed by MECO              |
|          |     | LED<br>St. Lt. Standard, 250W HPS Luminaire, See Furnished & Installed by Contractor |
|          |     | MECO to Remove Exist St. Lt. Standard. See Note 3.                                   |
|          |     | MECO St. Lt. Standard                                                                |
|          |     | MECO to Relocate St. Lt. Standard on New Concrete Foundation                         |
|          |     | St. Lt. Pullbox (Similar to MECO 2' x 4' Pullbox)                                    |
|          |     | St. Lt. Type "A" Pullbox, See Standard Plan TE-37a                                   |
|          |     | St. Lt. Ductline with Pullwire                                                       |
|          |     | MECO to Remove Exist Conductors. Exist Conduit to be Abandoned in Place              |
|          |     | Overhead Elec/Telephone/CATV Lines, (Relocation Work by Respective Utility Co.)      |
|          |     | Denote 1-2" Lighting Conduit & Duct Section "A"                                      |
|          |     | Conduit Stub Out w/ Marker, See                                                      |

# SITE ELECTRICAL PLAN - PART A

- NOTES:
- Light Lines Denote Existing Condition  
Bold Lines Denote New Work  
"X" Denotes Removal Work
  - Verify the Location of Existing 16-inch Waterline at Street Light Ductline Crossing. Provide a Minimum of 6-inch Clearance Between Waterline and Ductline at Crossing.
  - Demolish St Lt Pole Conc. Foundation 24" Below Grade. Backfill to Match Finish Grade.

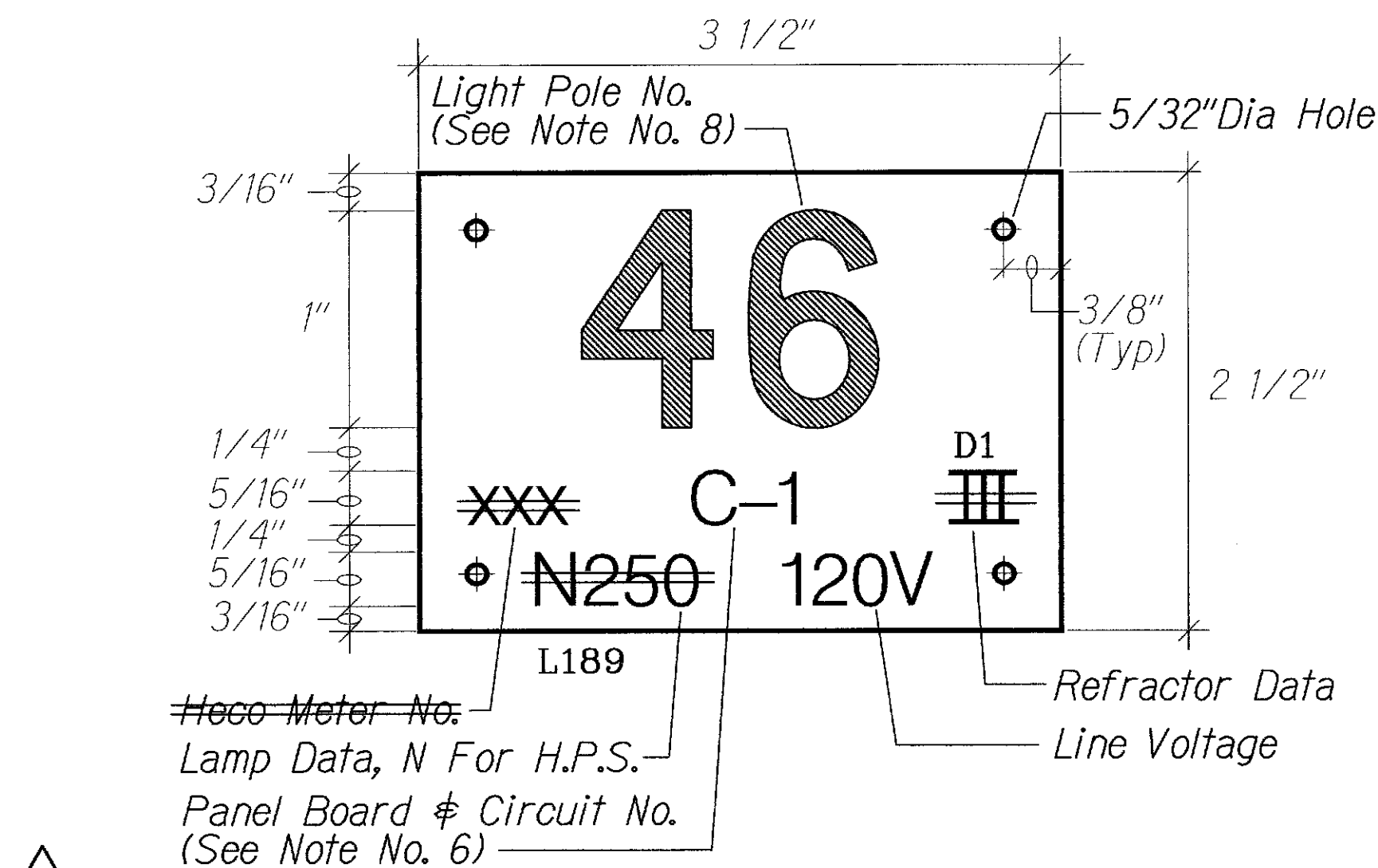
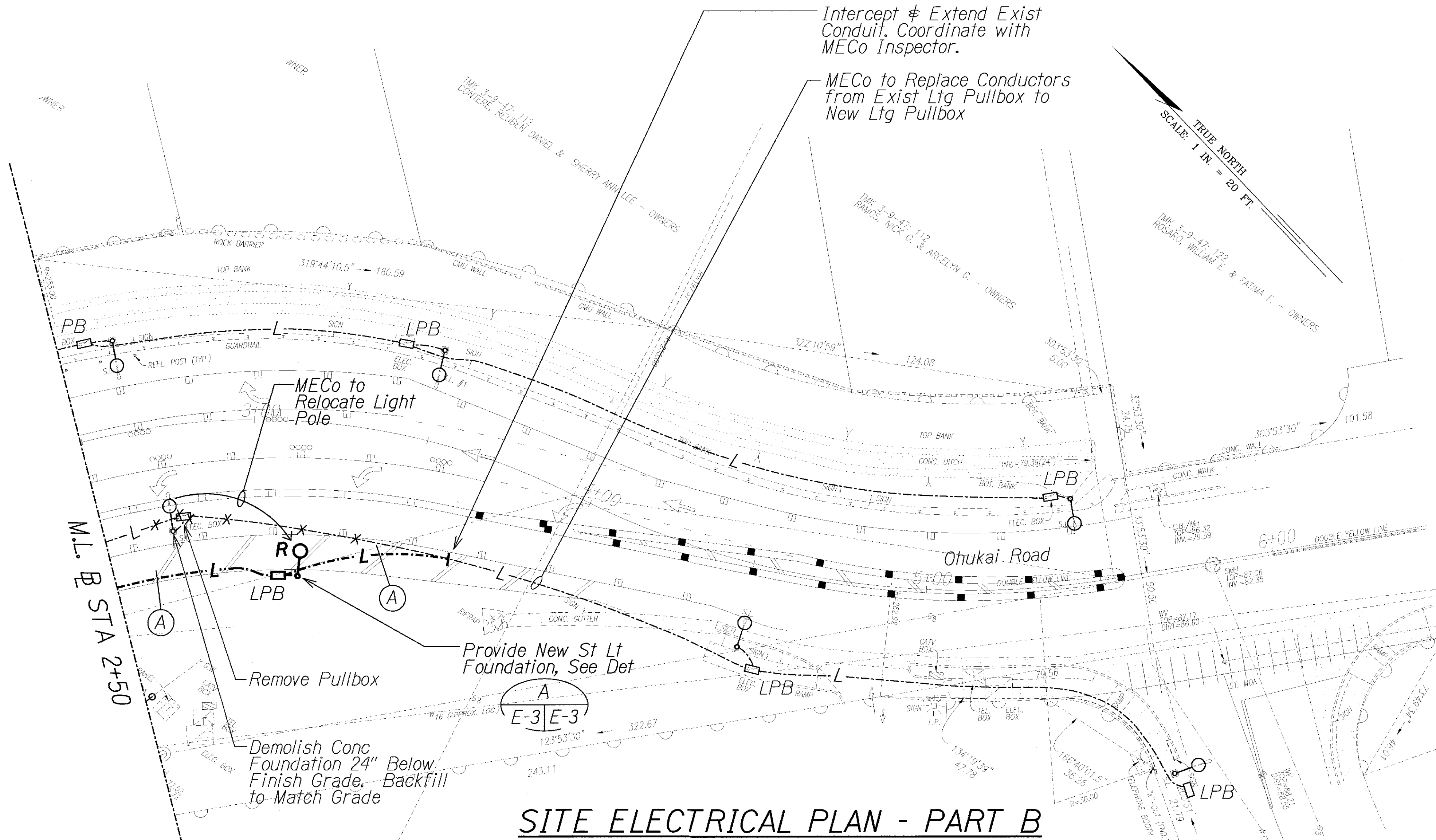
| LEGEND FOR AS-BUILT POSTINGS |                                     |
|------------------------------|-------------------------------------|
|                              | Squiggly line for as-built deletion |
|                              | Double line for as-built deletion   |
| Roadway                      | Text for as-built posting           |

|         |  |                                                                                                                                                                                                                                                                                                                              |
|---------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4/10/13 |  | Revised Lighting Plan & Electrical Symbols                                                                                                                                                                                                                                                                                   |
| DATE    |  | REVISION                                                                                                                                                                                                                                                                                                                     |
|         |  | STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION<br><b>SITE LIGHTING PLAN</b><br><b>PART A</b><br><b>PIILANI HIGHWAY</b><br><b>TRAFFIC OPERATION IMPROVEMENTS AT OHUKAI ROAD</b><br><b>FEDERAL AID PROJECT NO. CMAQ-031-1012</b><br>Scale: 1" = 20'-0" Date: April 11, 2013<br>SHEET No. E-1 OF 4 SHEETS |

"AS-BUILT"

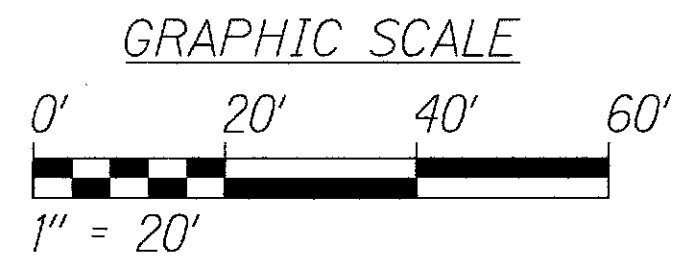
ADD. 47

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | CMAQ-031-1(012)    | 2013        | ADD. 48   | 54           |



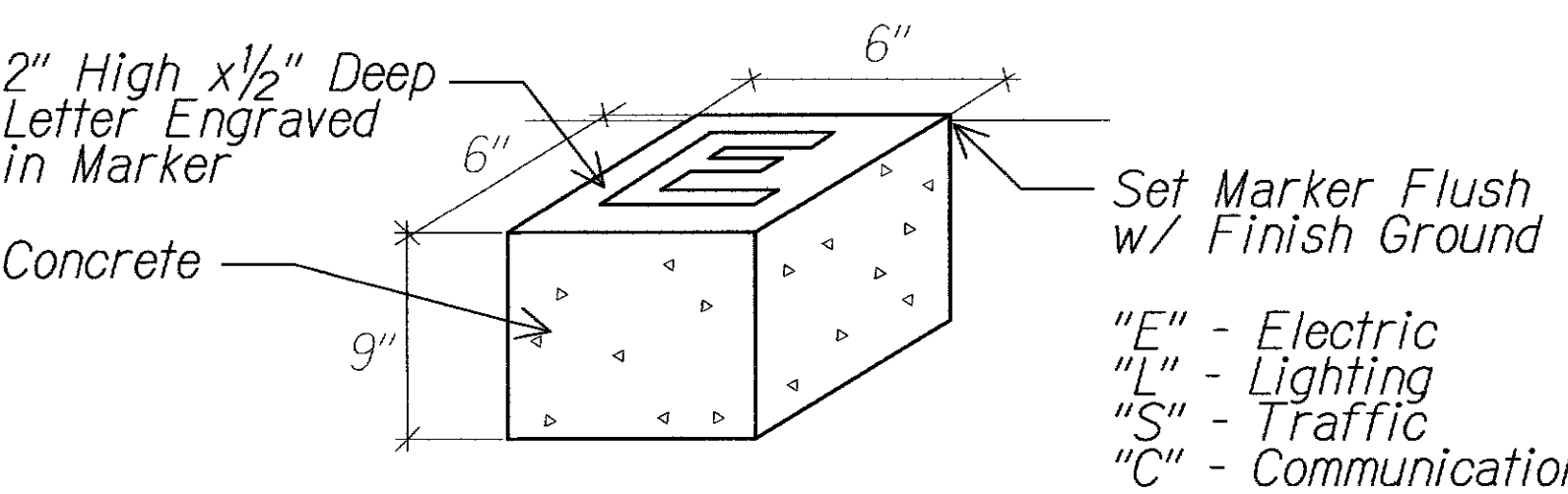
**STREET LIGHT POLE TAG DETAIL**

- NOTES:**
1. Use 3 Ply Laminated Flexible Plastic Black-White-Black Thickness Black Cap Sheet-0.010", White Base Sheet-0.052", Black Base Sheet-0.010".
  2. Light Pole Number Size Shall Be 1" High and Engraved 1/8" Wide, White in Color (Number as Required).
  3. Nomenclature Size Shall be 5/16" High and Engraved 1/32" Wide, White in Color (Heco Meter Number Panel Board and Circuit Number, Line Voltage, Lamp Data and Refractor Data as Required).
  4. Attach to Aluminum and Steel Post with No. 8 Stainless Steel, 1/2" Long Drive Screws in 1/8" Drill Hole. Attach to Wood Poles with 4D Aluminum Nail.
  5. Numbers are Inscribed by Cutting Through "Black Cap Sheet" to Expose "White Letters."
  6. Nomenclature Required for Systems with Two or More Circuits (Letter Indicates Panel Board, Number Indicates Circuit).

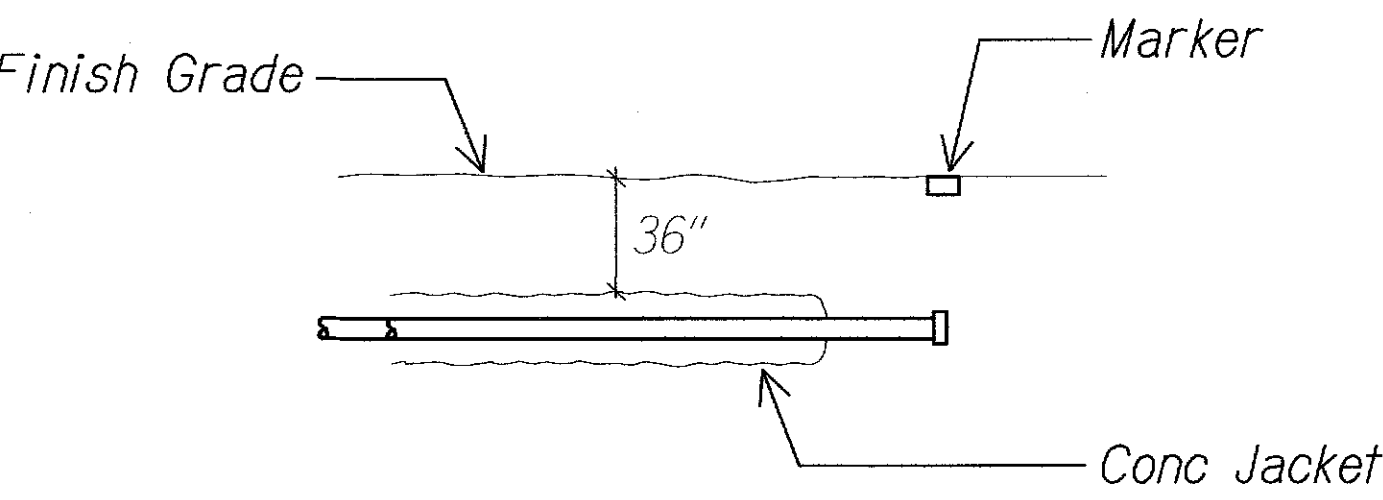


**SITE ELECTRICAL PLAN - PART B**

- NOTES:**
1. ——— Light Lines Denote Existing Condition
  - Bold Lines Denote New Work
  - X — "X" Denotes Removal Work



**MARKER FOR STUB OUT**



**CONDUIT STUB OUT DETAIL**

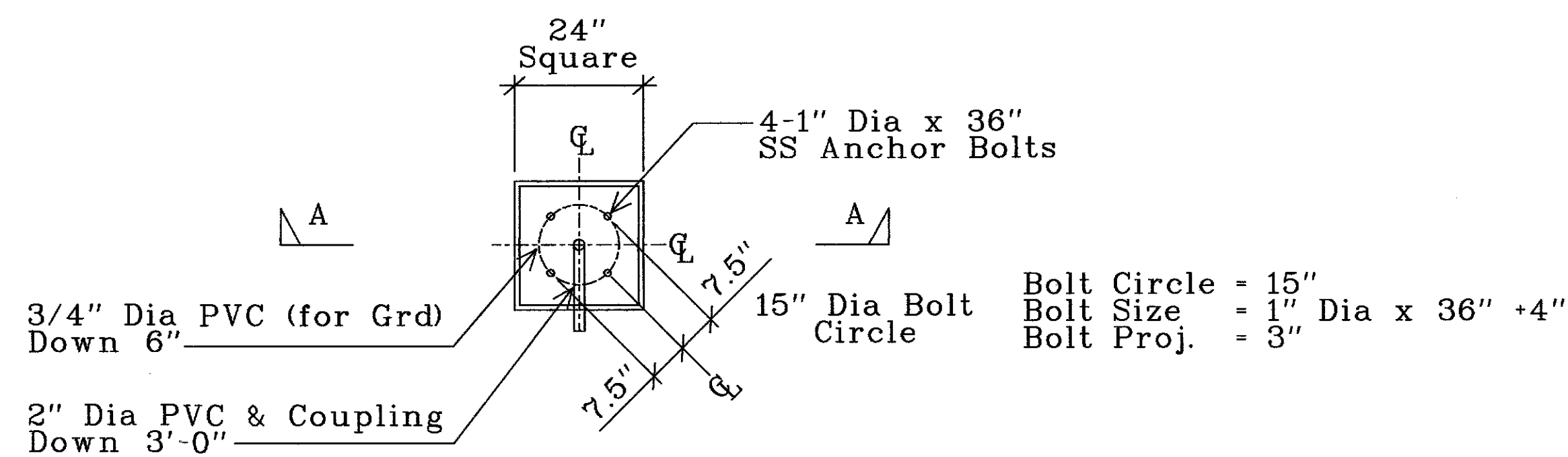
| LEGEND FOR AS-BUILT POSTINGS |                                     |
|------------------------------|-------------------------------------|
|                              | Squiggly line for as-built deletion |
|                              | Double line for as-built deletion   |
|                              | Text for as-built posting           |

**CONDUIT STUB OUT & MARKER DETAILS**

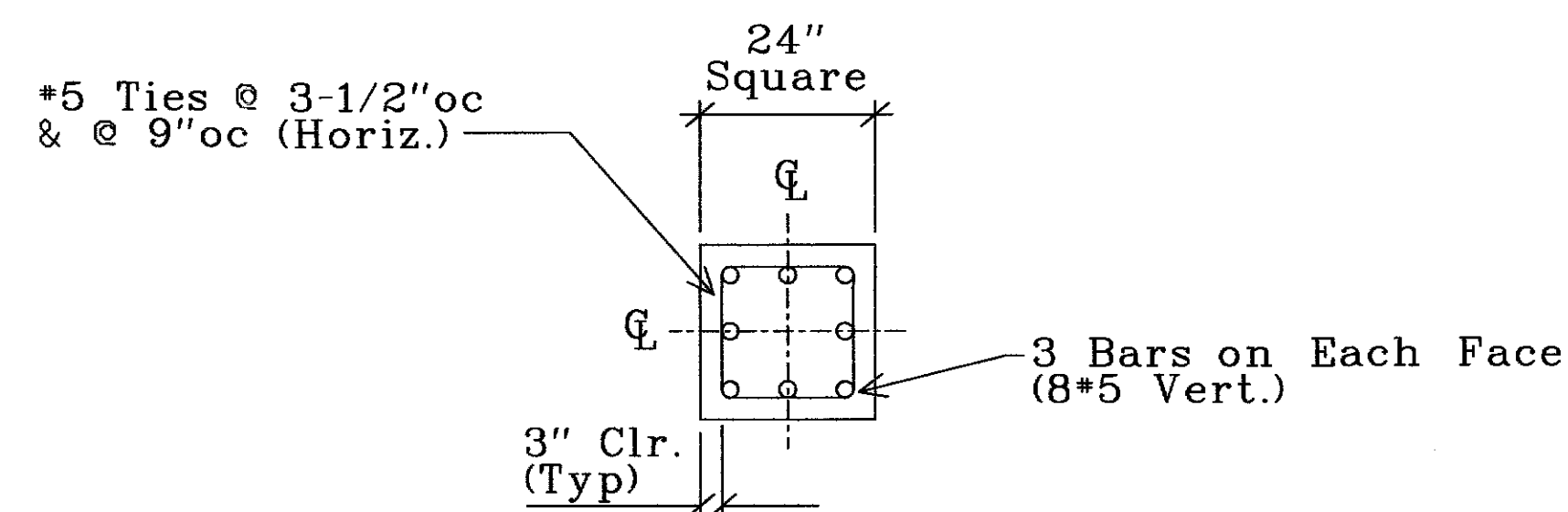
**1** **B** **E-1** **E-2** **NTS**

|                                                                                                                                                                                                                                                                                                                                                                    |          |                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------|
| 4/10/13                                                                                                                                                                                                                                                                                                                                                            | <b>1</b> | Add Pole, Tag Detail & Conduit Stubout & Marker Details |
| DATE                                                                                                                                                                                                                                                                                                                                                               |          | REVISION                                                |
| <div> </div>                                                                                                                                                                                                                                                                                                                                                       |          |                                                         |
| <div> STATE OF HAWAII<br/> DEPARTMENT OF TRANSPORTATION<br/> HIGHWAYS DIVISION<br/> <b>SITE LIGHTING PLAN</b><br/> <b>PART B</b><br/> <b>PIILANI HIGHWAY</b><br/> <b>TRAFFIC OPERATION IMPROVEMENTS AT OHUKAI ROAD</b><br/> <b>FEDERAL AID PROJECT NO. CMAQ-031-1(012)</b><br/> Scale: 1" = 20'-0"      Date: April 11, 2013<br/> SHEET No. E-2 OF 4 SHEETS </div> |          |                                                         |

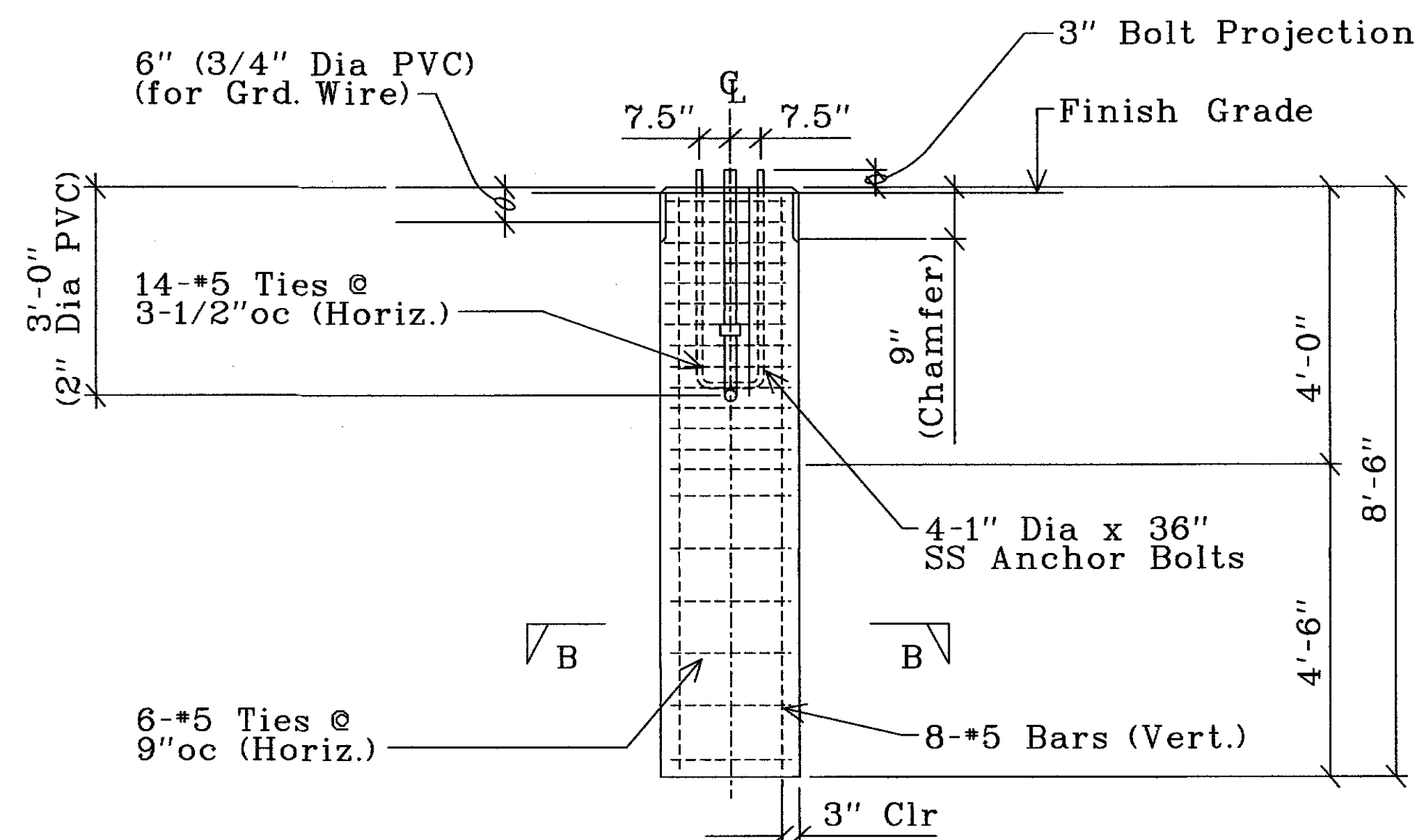
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO.  | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|------------|--------------|
| HAWAII              | HAW.  | CMAQ-031-K012)     | 2013        | ADD. 48S-1 | 54           |



PLAN  
SCALE: 1/2" = 1'-0"



SECTION "B-B"  
SCALE: 1/2" = 1'-0"



LIGHT BASE DETAIL

| LEGEND FOR AS-BUILT POSTINGS |                                     |
|------------------------------|-------------------------------------|
|                              | Squiggly line for as-built deletion |
|                              | Double line for as-built deletion   |
| Roadway                      | Text for as-built posting           |

|                   |      |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY          |      |
| DESIGNED BY       |      |
| QUANTITIES BY     |      |
| CHECKED BY        |      |
| ORIGINAL PLAN     |      |
| NOTE BOOK         |      |
| N <sub>o</sub>    |      |

RUSSELL K. MORI  
LICENSED PROFESSIONAL ENGINEER  
No. 9013-E  
HAWAII, U.S.A.

MR. ENGINEERS, LTD.  
LICENSE EXPIRATION DATE: 4/30/14  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**ROADWAY LIGHTS STANDARD DETAILS**

PIILANI HIGHWAY  
TRAFFIC OPERATION IMPROVEMENTS AT OHUKAI ROAD  
FEDERAL AID PROJECT NO. CMAQ-031-K012)

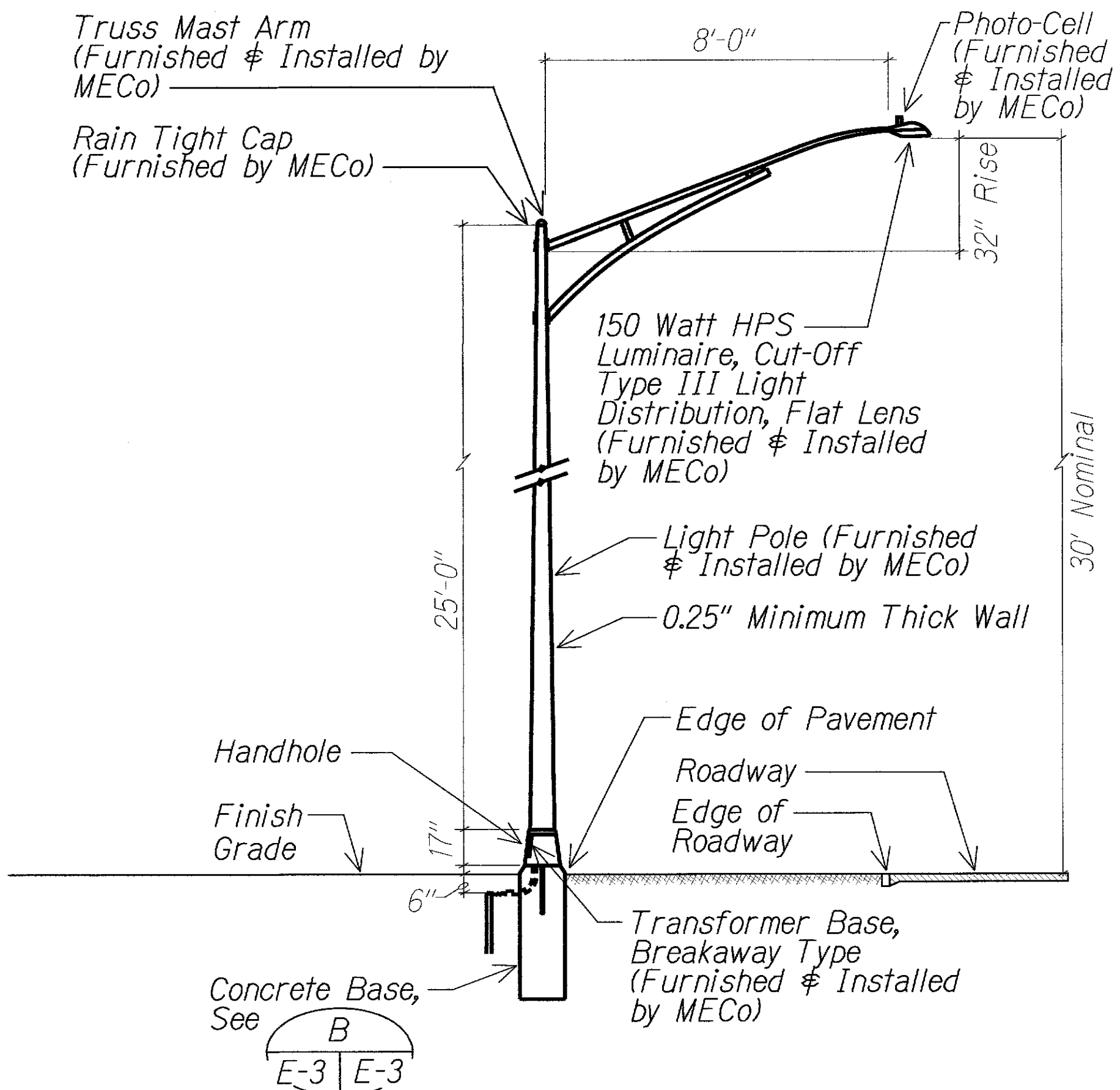
Scale: 1/2" = 1'-0" Date: April 11, 2013

SHEET No. E-2a OF 4 SHEETS

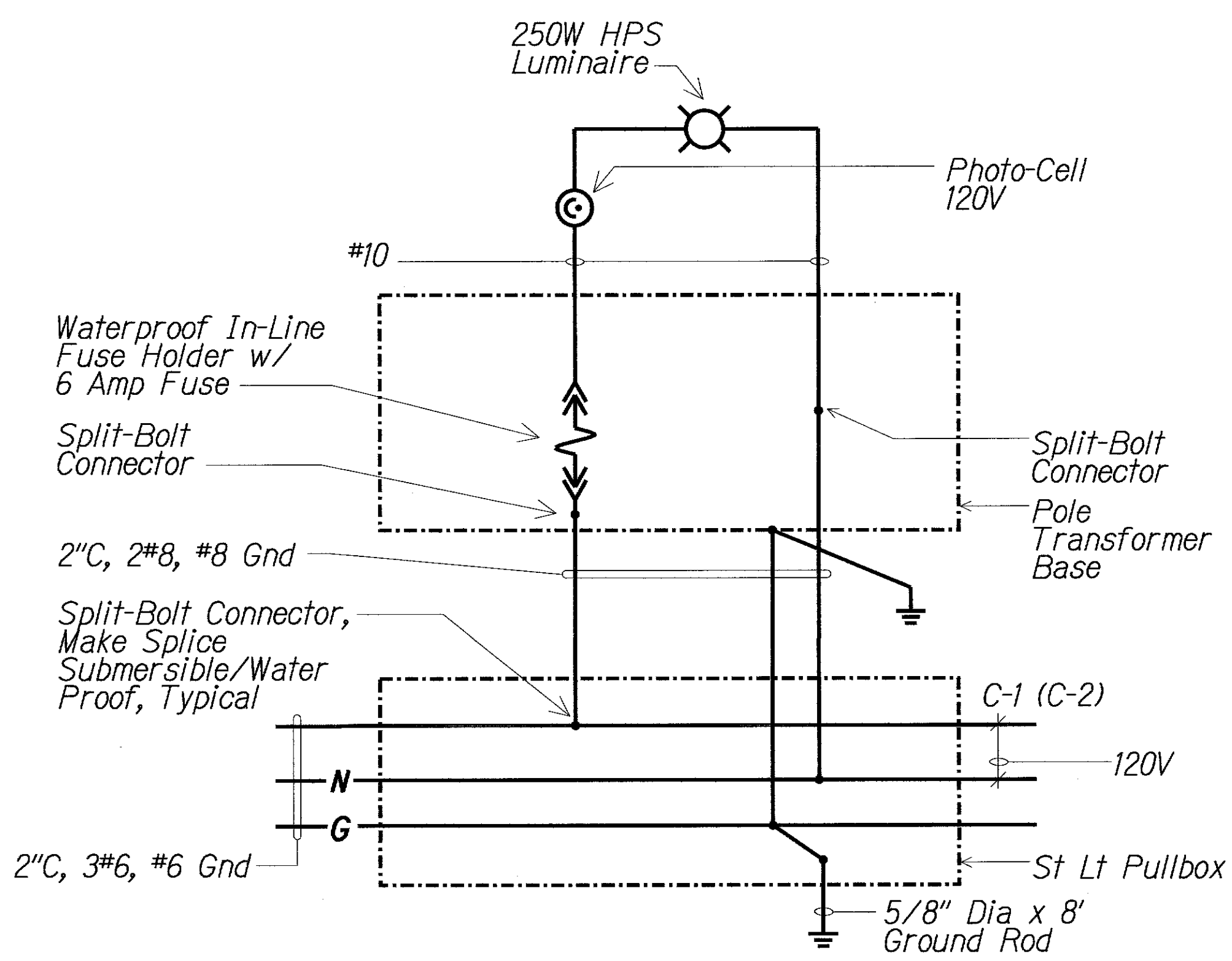
"AS-BUILT"

ADD. 48S-1

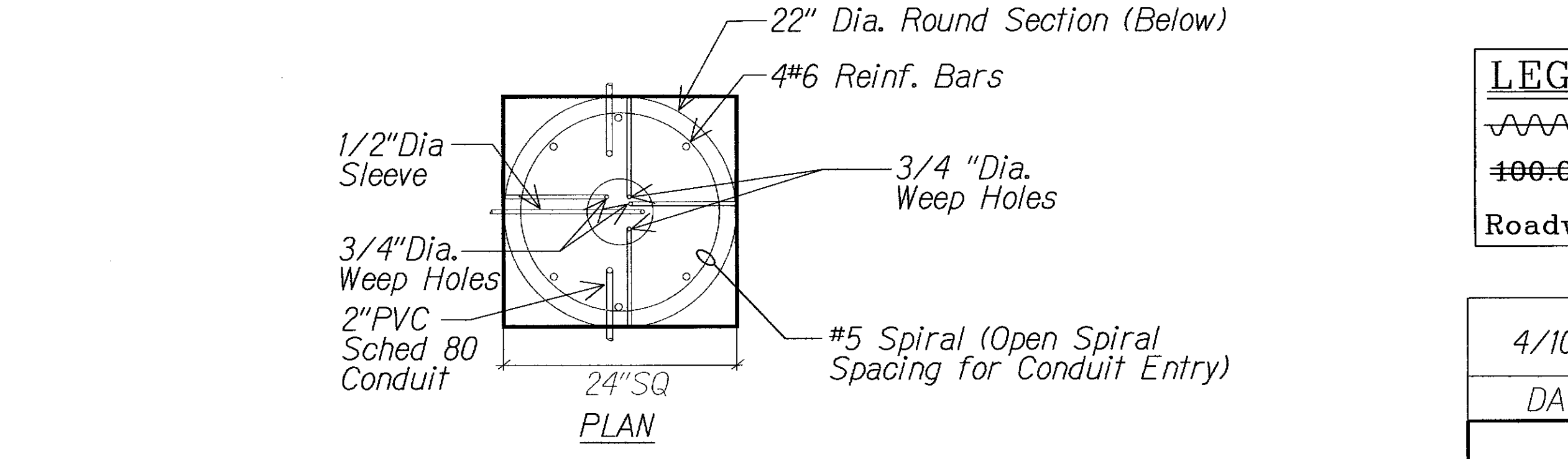
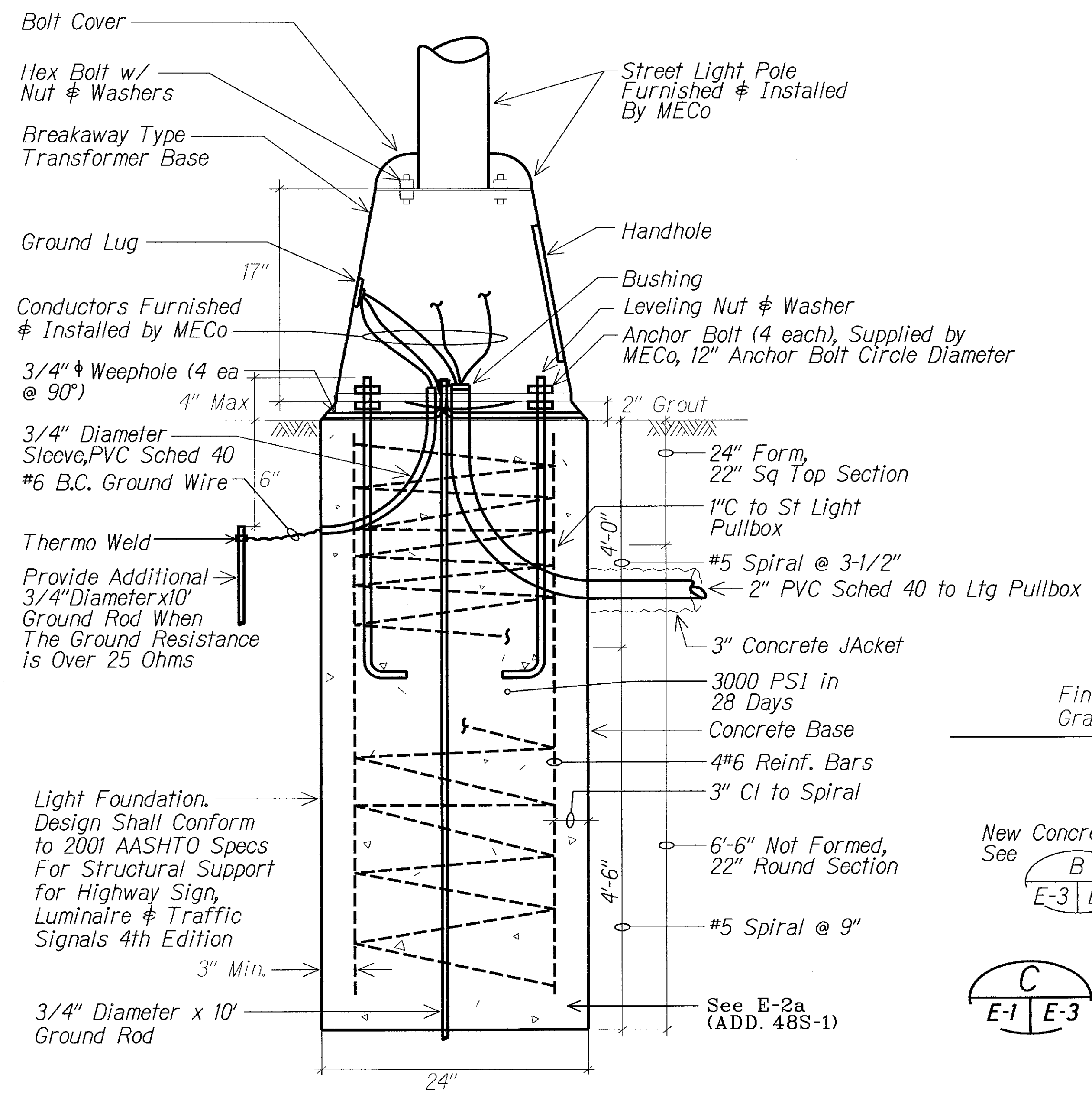
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | CMAQ-031-1(012)    | 2013        | ADD. 49   | 54           |



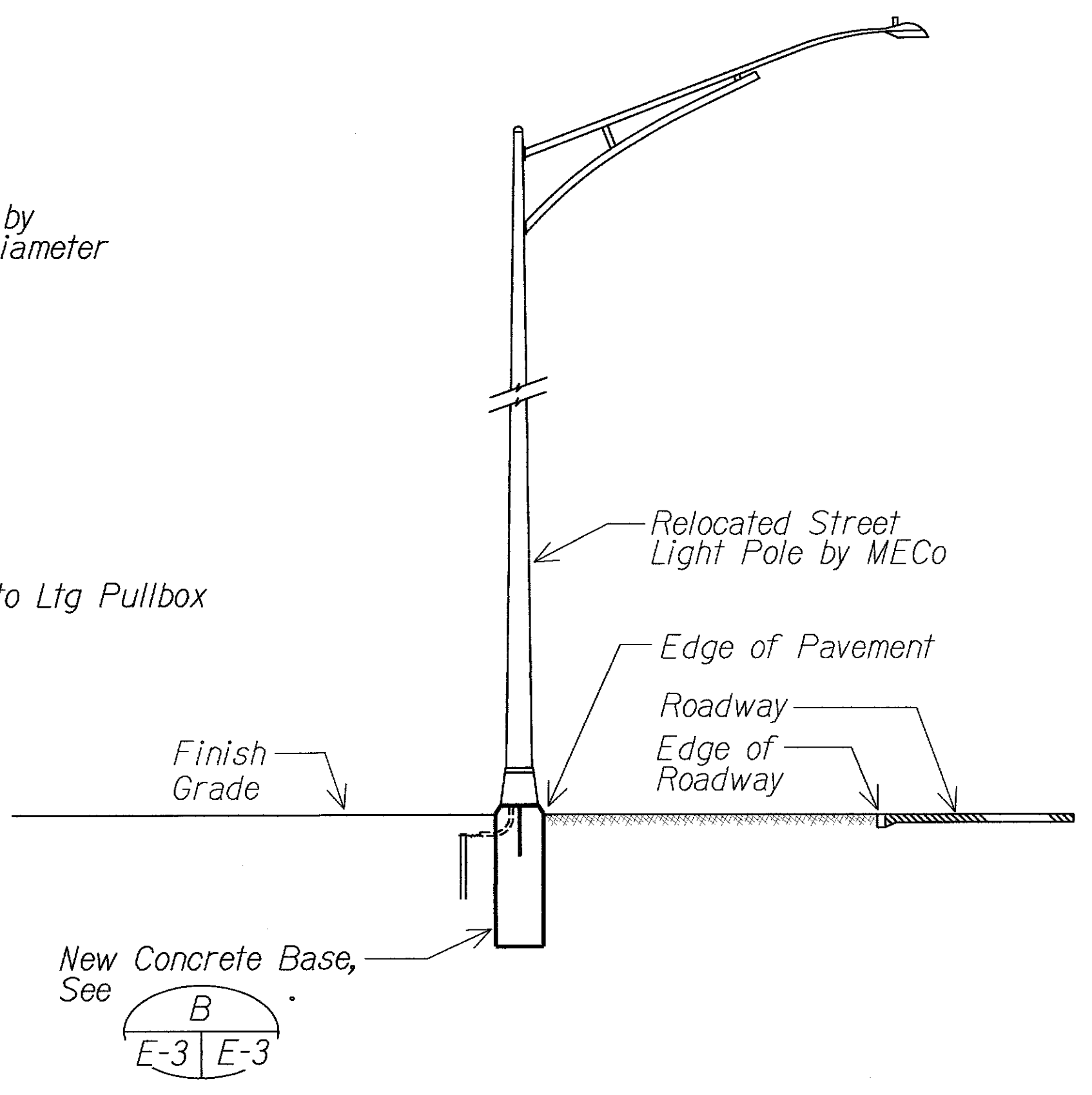
**A**  
E-1 E-3  
**STREET LIGHT STANDARD DETAIL**  
**(150 WATT HPS)**  
NTS



**I**  
**TYPICAL STREET LIGHT WIRING DIAGRAM**  
No Scale



**B**  
E-3 E-3  
**TYPICAL TRANSFORMER BASE DETAIL**

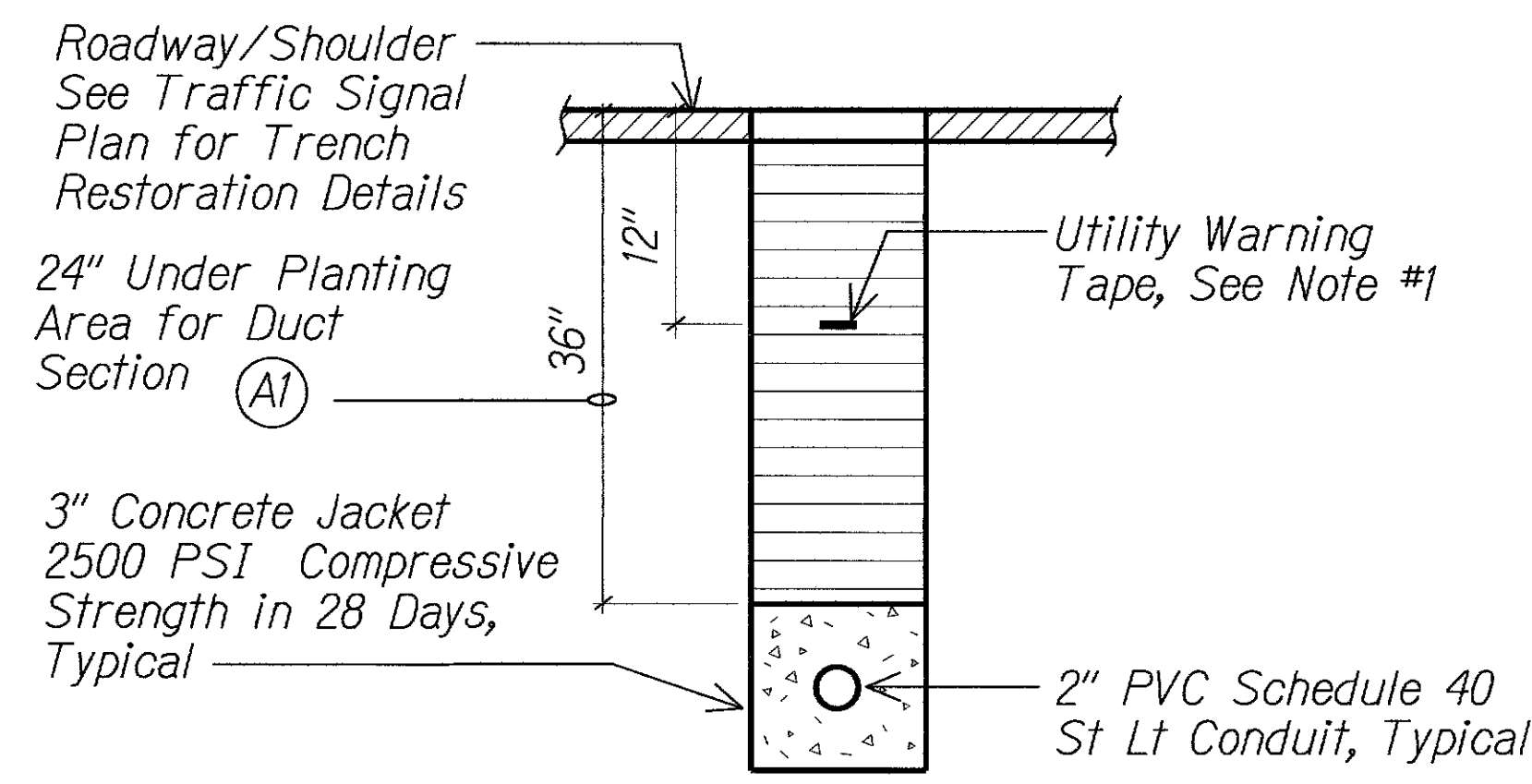


**C**  
E-1 E-3  
**STREET LIGHT STANDARD RELOCATION DETAIL**  
NTS

| LEGEND FOR AS-BUILT POSTINGS |                                     |
|------------------------------|-------------------------------------|
|                              | Squiggly line for as-built deletion |
|                              | Double line for as-built deletion   |
|                              | Text for as-built posting           |

|                                                                                                                                                                                                                                                                                                                                   |  |                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------|
| 4/10/13                                                                                                                                                                                                                                                                                                                           |  | Added Typ St Lt Wiring Diagram |
| DATE                                                                                                                                                                                                                                                                                                                              |  | REVISION                       |
| <div> </div>                                                                                                                                                                                                                                                                                                                      |  |                                |
| <div> STATE OF HAWAII<br/>DEPARTMENT OF TRANSPORTATION<br/>HIGHWAYS DIVISION<br/><b>ROADWAY LIGHTS STANDARD DETAILS</b><br/><b>PILANI HIGHWAY</b><br/>TRAFFIC OPERATION IMPROVEMENTS AT OHUKAI ROAD<br/>FEDERAL AID PROJECT NO. CMAQ-031-1(012)<br/>Scale: Not to Scale Date: April 11, 2013<br/>SHEET No. E-3 OF 4 SHEETS </div> |  |                                |

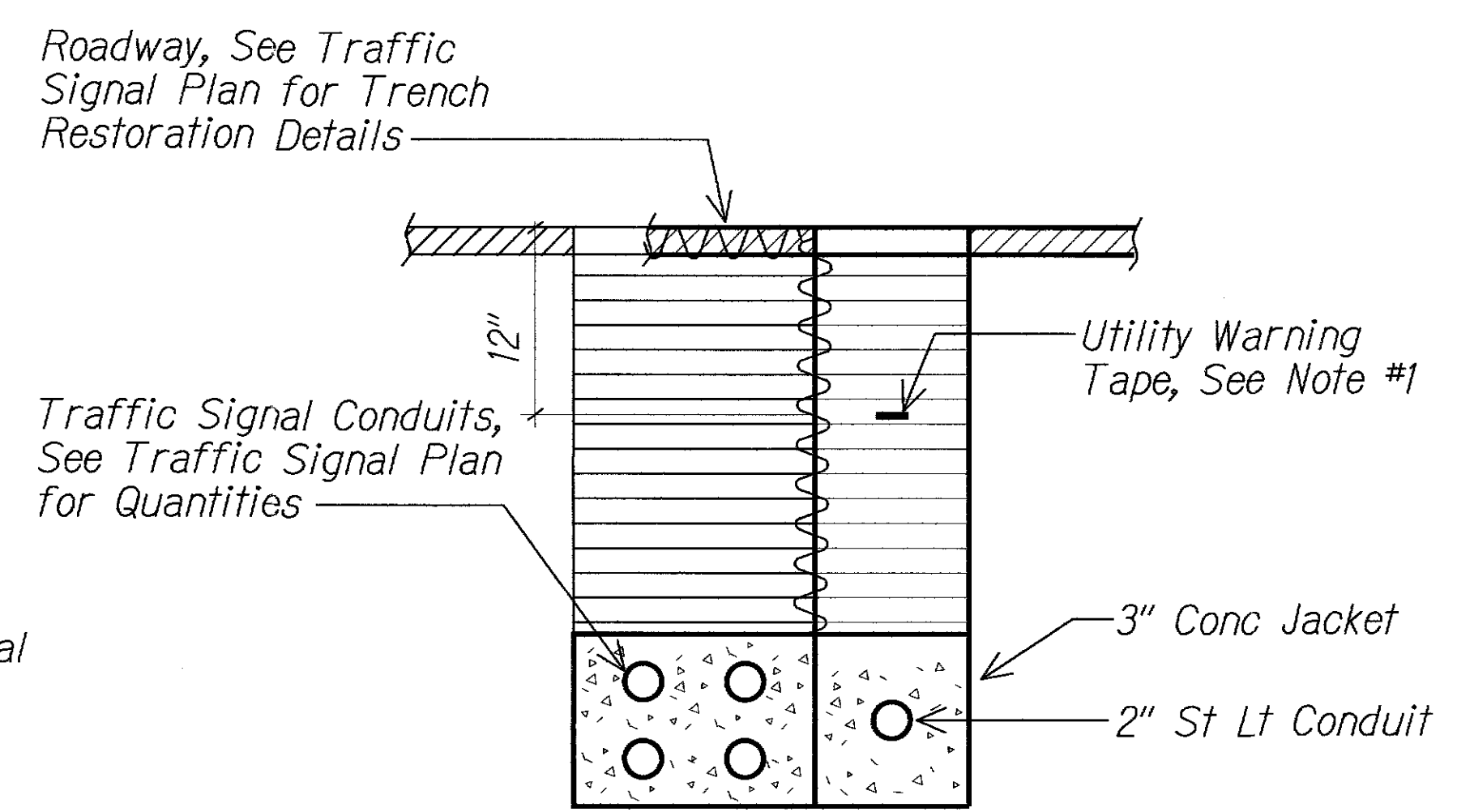
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | CMAQ-03F-1(012)    | 2013        | ADD. 50   | 54           |



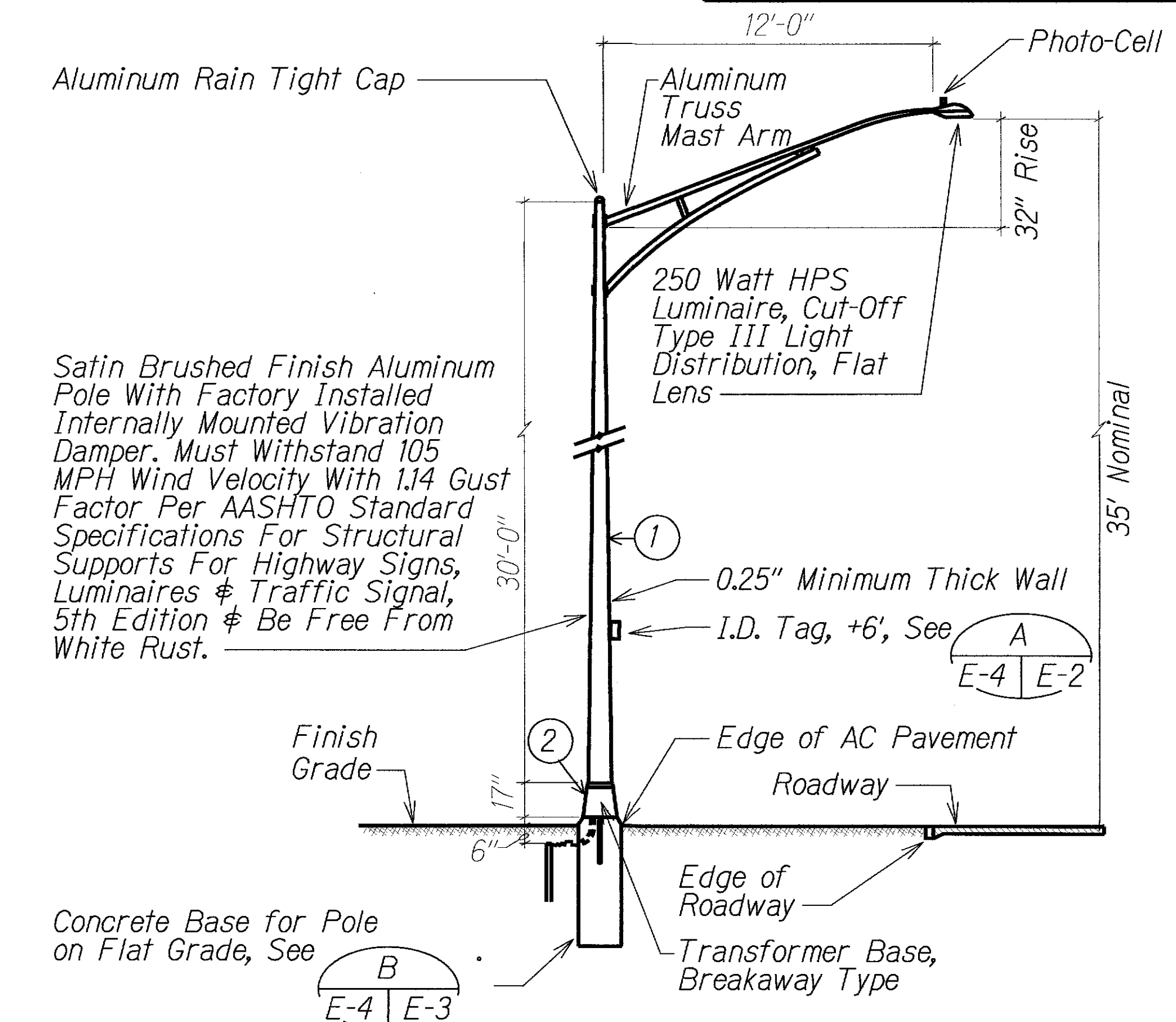
DUCT SECTION (A)

1 TYPICAL DUCT SECTIONS

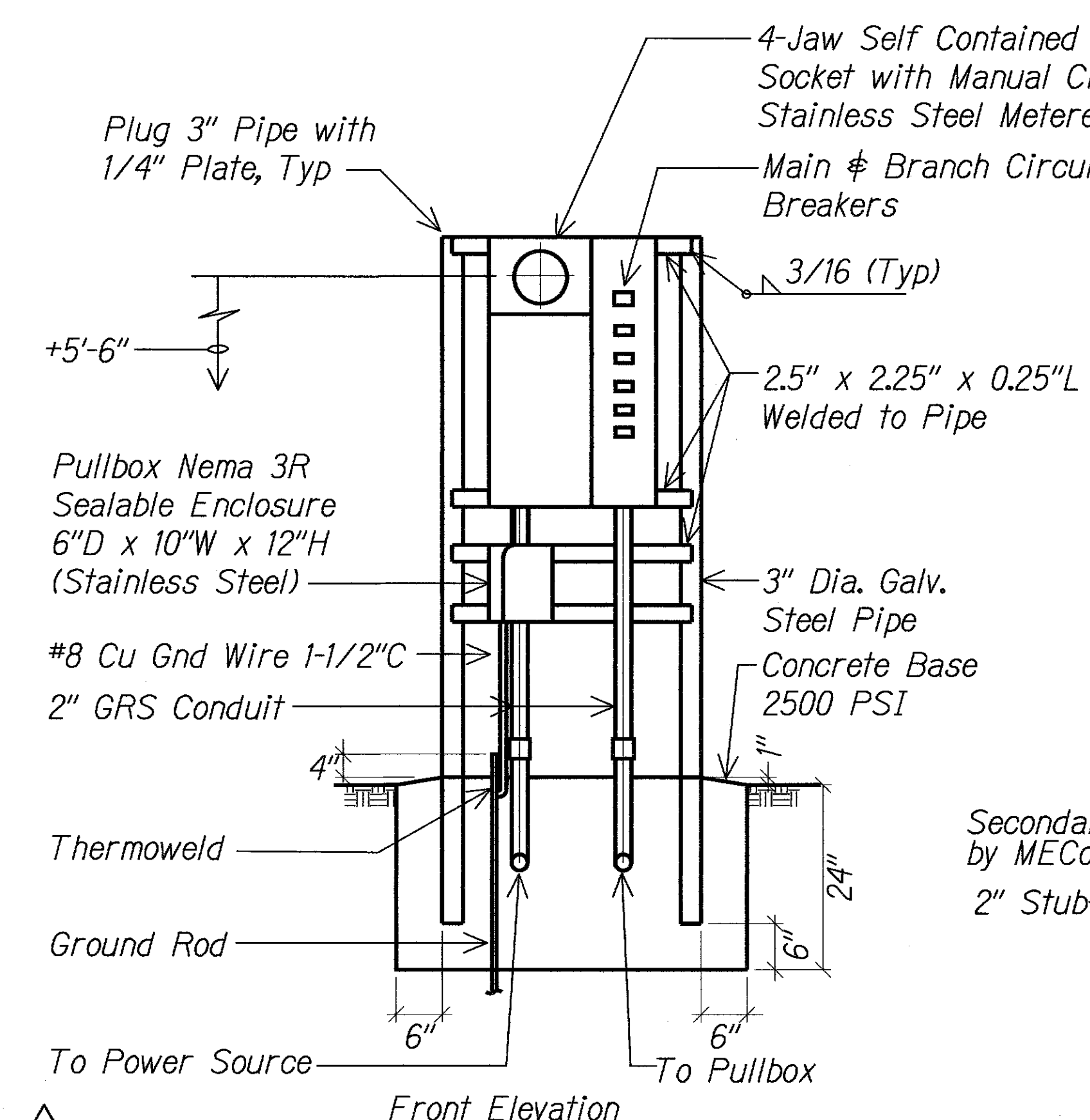
- NTS
- NOTES:
- 8 MIL Thick Red Colored Plastic Warning Tape 3" Wide, Entire Length of Duct. Tape to Have Continuous Metallic Backing and Corrosion Resistant Foil Core. Warning and Identification to be Imprinted on Tape and Shall Read "Caution Buried Electric Cable Below". Message Shall Be Repeated Approximately Every Ten Feet.



DUCT SECTION (B)

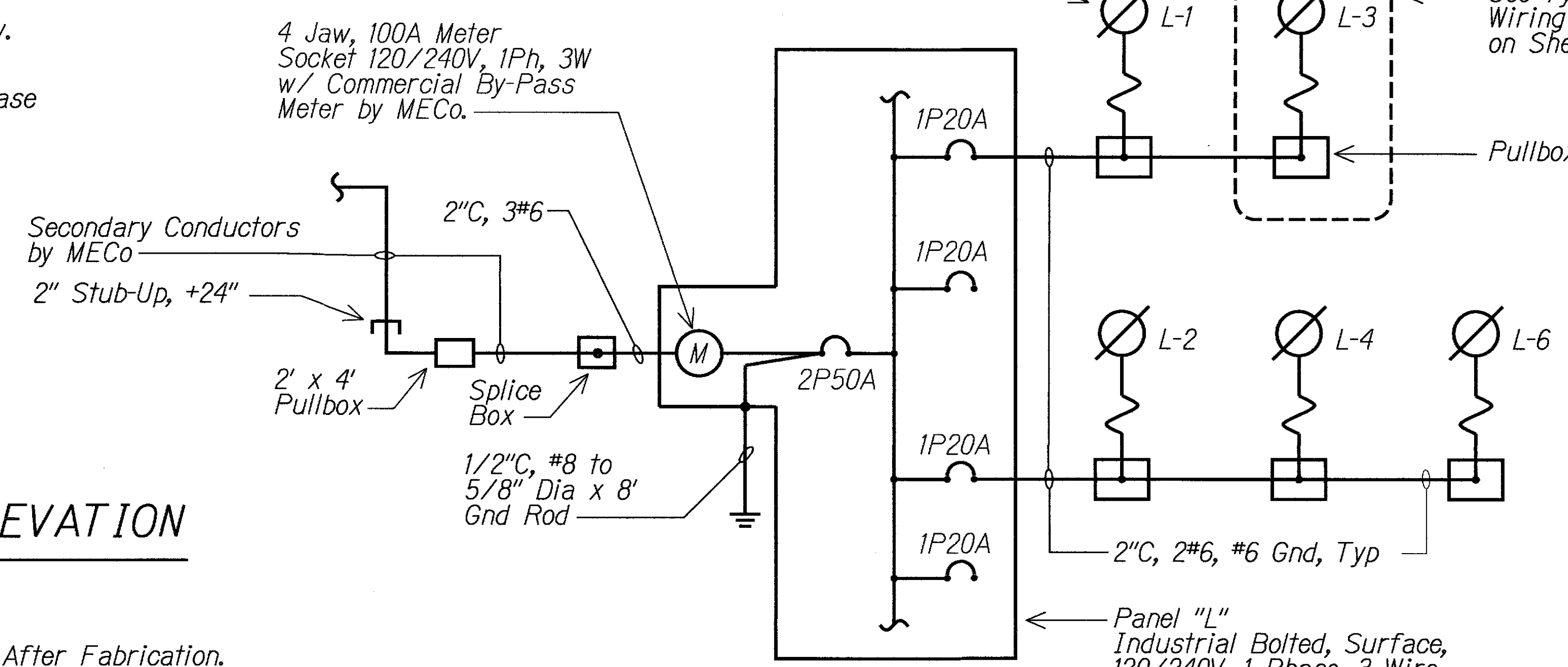


1 A STREET LIGHT STANDARD DETAIL (250 WATT HPS) NTS



1 B SERVICE EQUIPMENT ELEVATION NTS

- NOTES:
- Pedestal Shall be Hot Dipped Galvanized After Fabrication.
  - All Fastening Bolts, Nuts, and Washers Shall be Stainless Steel.
  - Provide 4 Feet Clearance in Front of Meter.



1 ONE-LINE DIAGRAM

| LEGEND FOR AS-BUILT POSTINGS |                                     |
|------------------------------|-------------------------------------|
|                              | Squiggly line for as-built deletion |
|                              | Double line for as-built deletion   |
| Roadway                      | Text for as-built posting           |

|                                                                                                                                                                                                                                                                                                                                                                   |   |                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------------------------------------------------------------|
| 4/10/13                                                                                                                                                                                                                                                                                                                                                           | 1 | Add Service Equipment Elevation, Duct Sections & St. Lt. Detail |
| DATE                                                                                                                                                                                                                                                                                                                                                              |   | REVISION                                                        |
| <div> </div>                                                                                                                                                                                                                                                                                                                                                      |   |                                                                 |
| <div> STATE OF HAWAII<br/>DEPARTMENT OF TRANSPORTATION<br/>HIGHWAYS DIVISION<br/><b>TYPICAL STREET LIGHT WIRING<br/>DIAGRAM &amp; DUCT SECTIONS</b><br/><br/>PIILANI HIGHWAY<br/>TRAFFIC OPERATION IMPROVEMENTS AT OHUKAI ROAD<br/>FEDERAL AID PROJECT NO. CMAQ-03F-1(012)<br/>Scale: Not to Scale      Date: April 11, 2013<br/>SHEET No. E-4 OF 4 SHEETS </div> |   |                                                                 |