

Z:\PROJECTS (NUMBERED)\2018\18087\DRAWING FILES\ELECTRICAL\IMPROVEMENT 2 - ROUNDABOUT\AINALOA.E-1-AINALOA.DWG 12/17/2019 5:38 PM KYLE

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0130(27)	2020	ADD.42	50

GENERAL NOTES - ELECTRICAL:

1. The scope of work for this project shall consist of installing new highway lighting and disconnecting and removal of existing street lighting systems.
2. The Contractor is reminded of the requirements of State of Hawaii Department of Transportation 2005 standard subsection 105.16 - Subcontracts, which requires him/her to perform work accounting to not less than 30 percent of the total contract cost less deductible items. Non-compliance with this subsection may be grounds for rejection of bid.
3. The Contractor's attention is directed to the following sections of State of Hawaii Department of Transportation 2005 standard:

a. Subsection 104.11 - Utilities and Services

b. Subsection 107.06 - Contractor Duty Regarding Public Convenience

c. Section 645 - Work Zone Traffic Control
4. All necessary permits shall be obtained by the contractor at his/her own cost.
5. The contractor shall comply with the state of Hawaii's Occupational Safety and Health Law (DOSH).
6. Locations of existing underground structures and utilities such as pipelines, conduits, cables, manholes, monuments and structures shown on the plans are approximate only. It is not the intent of these plans to show the exact location of all underground utilities and structures. It is the responsibility of the contractor to verify the locations of existing utilities with the respective owners. Existing utilities damaged by the contractor shall be repaired by the contractor at his own cost. Prior to any excavation work contractor shall call 'Hawaii One Call Center' at ph. 811 or ph. 1-866-423-7287.
7. All work shall be constructed in accordance with the following construction standards and specifications:

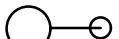
a. Construction standards of Department of Transportation, State of Hawaii.

b. Current standard specifications for road and bridge construction, State of Hawaii.

c. Standard details for public works construction, Department of Public Works, County of Hawaii

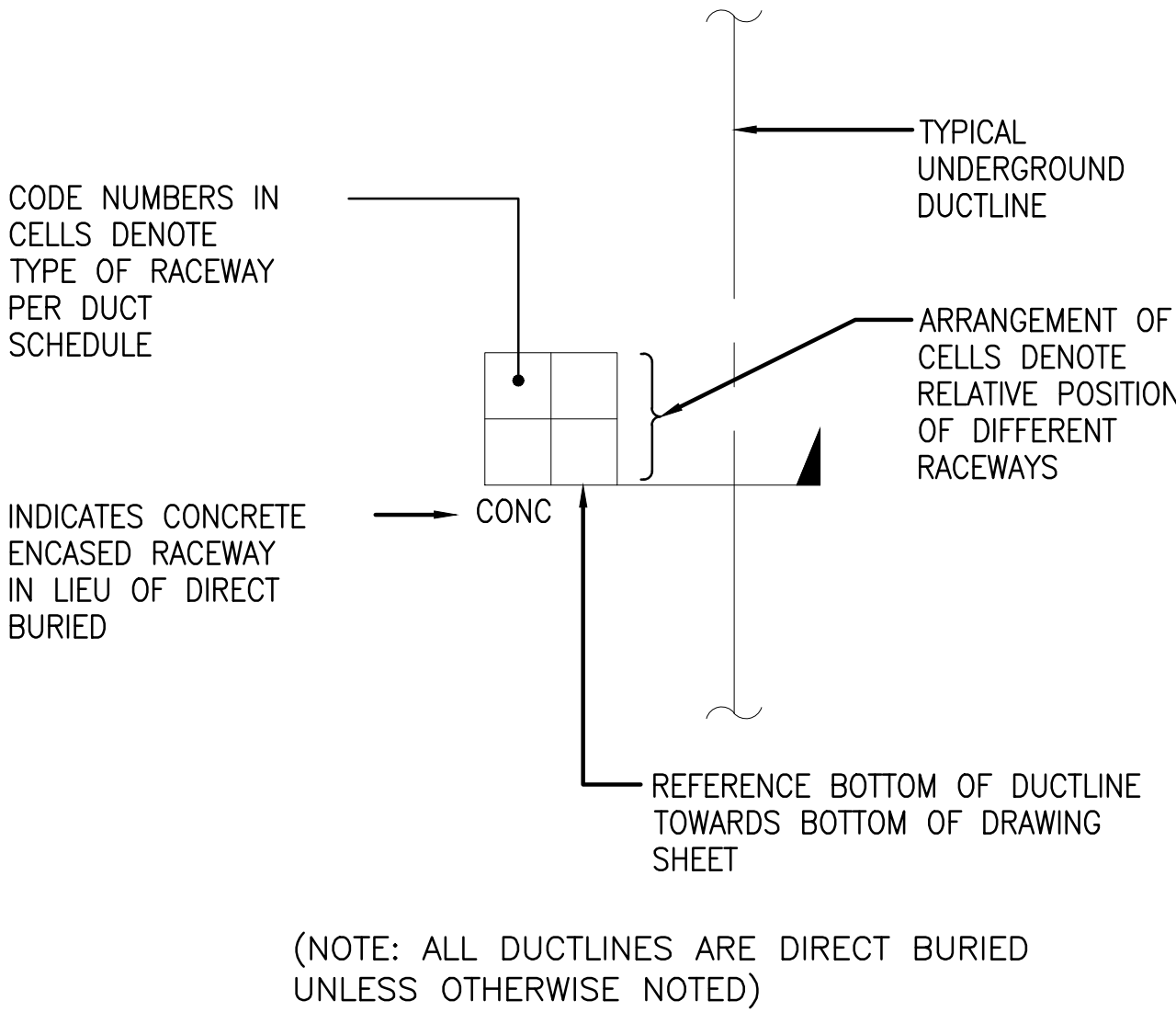
d. Current standard specifications for Public Works construction, Department of Public Works, City and County of Honolulu.

e. Construction standards and specifications of the Hawaii Electric Light Company.
8. It is not the intent of these plans and specifications to indicate all existing utilities. The information on the existing utilities are based on available plans and a limited amount of field work. The locations are approximate only and the contractor shall verify the location and depth of the facilities and exercise proper care in excavating in this area. All existing utilities whether or not shown on the plans shall be protected at all times by the contractor unless specified on the plans to be abandoned or demolished. The contractor shall be responsible for any damages to the facilities whether shown or not shown on plans. Any repair work shall be provided at no additional cost to this project.
9. The contractor shall exercise proper care when excavating in areas with existing underground facilities; damages to the existing facilities shall be immediately reported to the respective utility companies, county or state agency. The repair work shall be provided at no additional cost to this project.
10. Contractor shall install 3 /16" polypropylene fish rope in all empty ducts. Plug all empty ducts with non-corrodible plugs manufactured for this purpose.
11. Refer to County of Hawaii, Department of Public Works, Traffic Division - Street Light Standards, dated October 15, 2019 for additional street light notes and details.

ELECTRICAL SYMBOL LIST / MOUNTING HEIGHT SCHEDULE					
MOUNTING HEIGHT FROM FLOOR TO		(SPECIAL MOUNTING HEIGHTS INDICATED ON PLAN)			
		SYMBOL		DESCRIPTION	
TOP	CL	EXISTING	NEW		
		— — —	— — —	CONCRETE ENCASED UNDERGROUND DUCT LINE, SEE DUCT SECTION INDICATOR AND SCHEDULE.	
				POLE LIGHT ASSEMBLY, SINGLE LUMINAIRE PER POLE (LUMINAIRE AND POLE PER DOT STANDARDS)	
				DUCT SECTION INDICATOR	

1

DUCT SCHEDULE		
NO.	DESCRIPTION	CABLES
	3" PVC SCHEDULE 40 WITH PULLSTRING	PROVIDED BY HELCO
	2" PVC SCHEDULE 80	SEE ONE LINE DIAGRAM
	2" PVC SCHEDULE 80 (SPARE)	WITH PULLSTRING
	NOT USED.	—
	NOT USED.	—
	NOT USED.	—
	NOT USED.	—
	NOT USED.	—
	NOT USED.	—



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

Chris Kuramoto 04/30/20
SIGNATURE EXPIRATION DATE OF THE LICENSE

12/16/191

ADD DUCT SCHEDULE, DUCT FLAG CODE, AND GENERAL NOTE #11

DATE REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

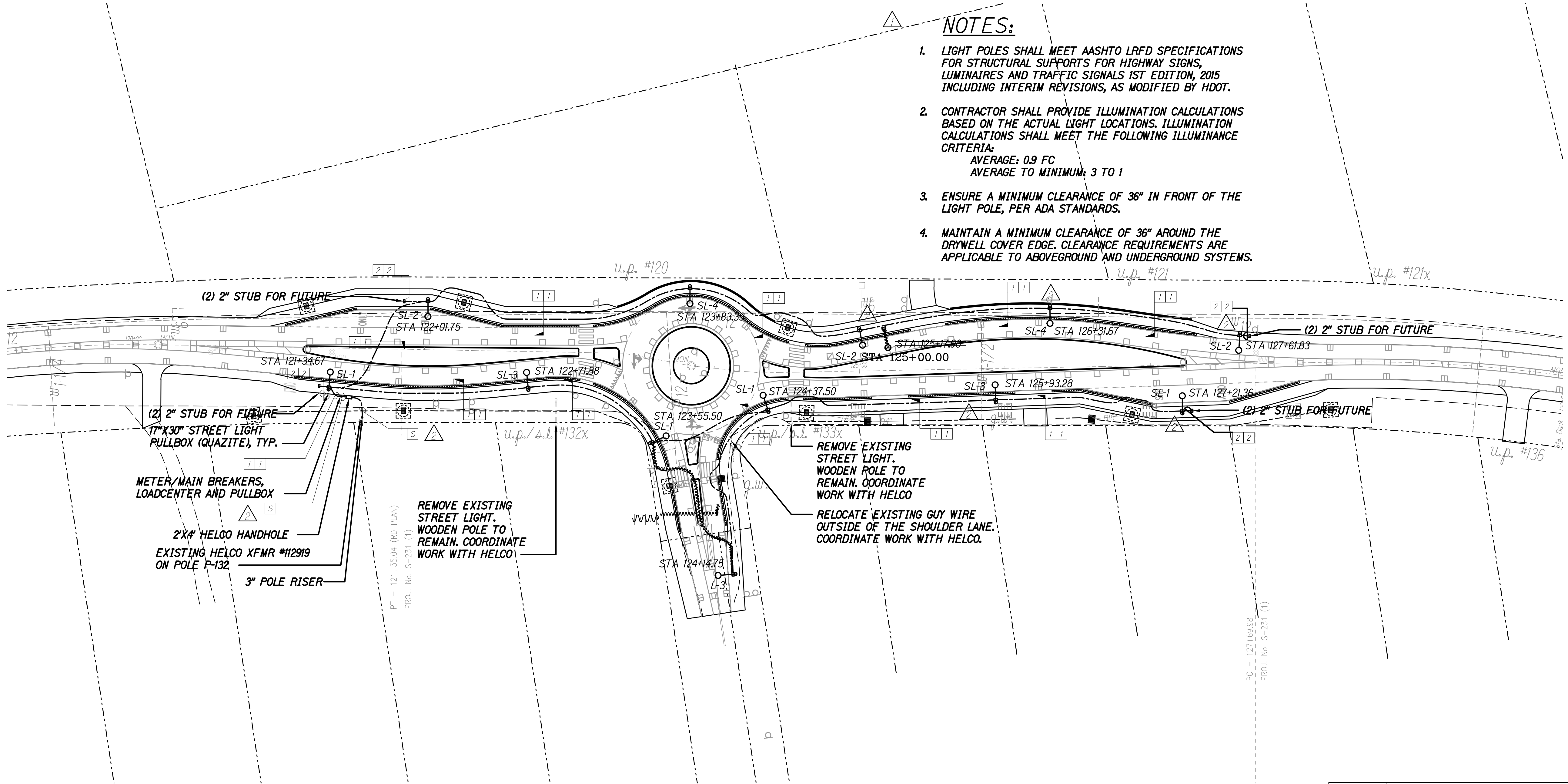
ELECTRICAL GENERAL NOTES
AND SYMBOL LIST

KEAAU-PAHOA ROAD
INTERSECTION IMPROVEMENTS
at Ainaloa Boulevard
Federal-Aid Project No. STP-0130(27)

Scale: Date: July, 2019

SHEET No. 1 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0130(27)	2021	C.O.43	50



NOTES:

- 1. LIGHT POLES SHALL MEET AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS 1ST EDITION, 2015 INCLUDING INTERIM REVISIONS, AS MODIFIED BY HDOT.
- 2. CONTRACTOR SHALL PROVIDE ILLUMINATION CALCULATIONS BASED ON THE ACTUAL LIGHT LOCATIONS. ILLUMINATION CALCULATIONS SHALL MEET THE FOLLOWING ILLUMINANCE CRITERIA:
AVERAGE: 0.9 FC
AVERAGE TO MINIMUM: 3 TO 1
- 3. ENSURE A MINIMUM CLEARANCE OF 36" IN FRONT OF THE LIGHT POLE, PER ADA STANDARDS.
- 4. MAINTAIN A MINIMUM CLEARANCE OF 36" AROUND THE DRYWELL COVER EDGE. CLEARANCE REQUIREMENTS ARE APPLICABLE TO ABOVEGROUND AND UNDERGROUND SYSTEMS.

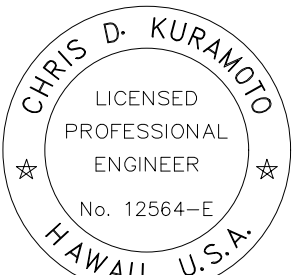
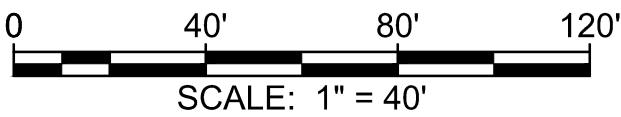
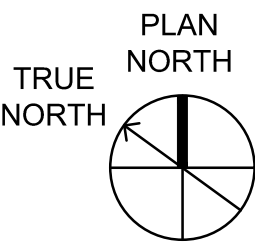
1 ELECTRICAL PLAN AINALOA - NEW WORK
E-2 SCALE: 1"=40'

LEGEND FOR AS-BUILT POSTINGS

Squiggly line for as-built deletion

Double line for as-built deletion

Roadway Text for as-built posting



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

Chris D. Kuramoto
SIGNATURE

04/30/22
EXPIRATION DATE OF THE LICENSE

04/06/20	2	REVISED LIGHT LOCATIONS AND REMOVED DUCT SECTION NOTE
12/16/19	1	REVISED LIGHT LOCATIONS AND UNDERGROUND ELECTRICAL WORK
DATE	REVISION	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN AINALOA -
NEW WORK
KEAAU-PAHOA ROAD
INTERSECTION IMPROVEMENTS
at Ainaloa Boulevard
Federal-Aid Project No. STP-0130(27)

Scale: AS NOTED Date: JUNE 2020

SHEET No. 2 OF 5 SHEETS

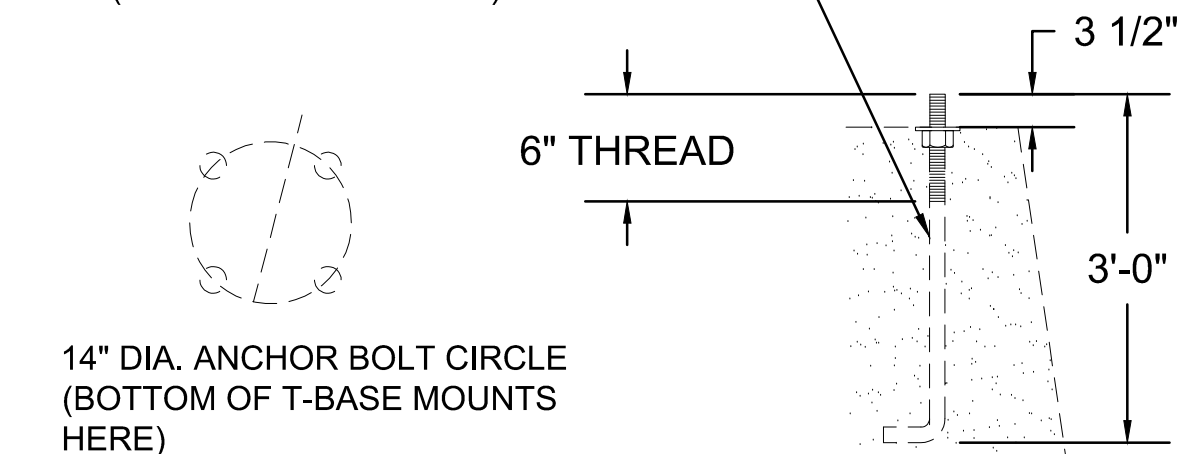
"AS-BUILT"

Z:\PROJECTS (NUMBERED)\2018\18087\CONSTRUCTION DOCUMENTS\ANALOAE-2-ANALOAE.DWG 3/11/2021 4:45 PM KHANAOKA

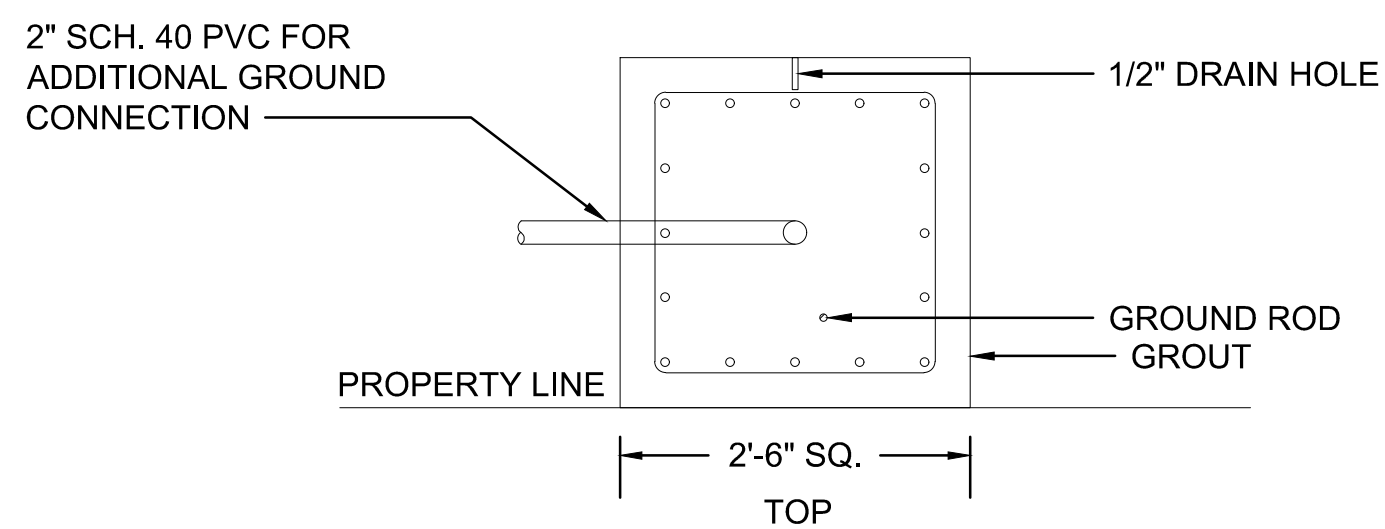
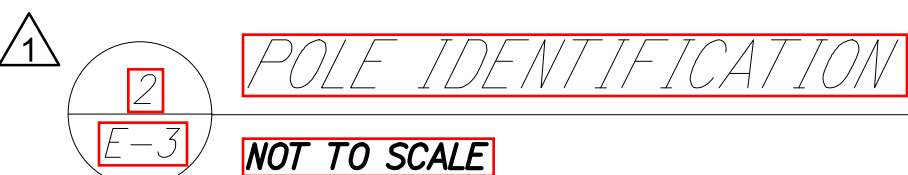
BACKFILL TYPES ARE:



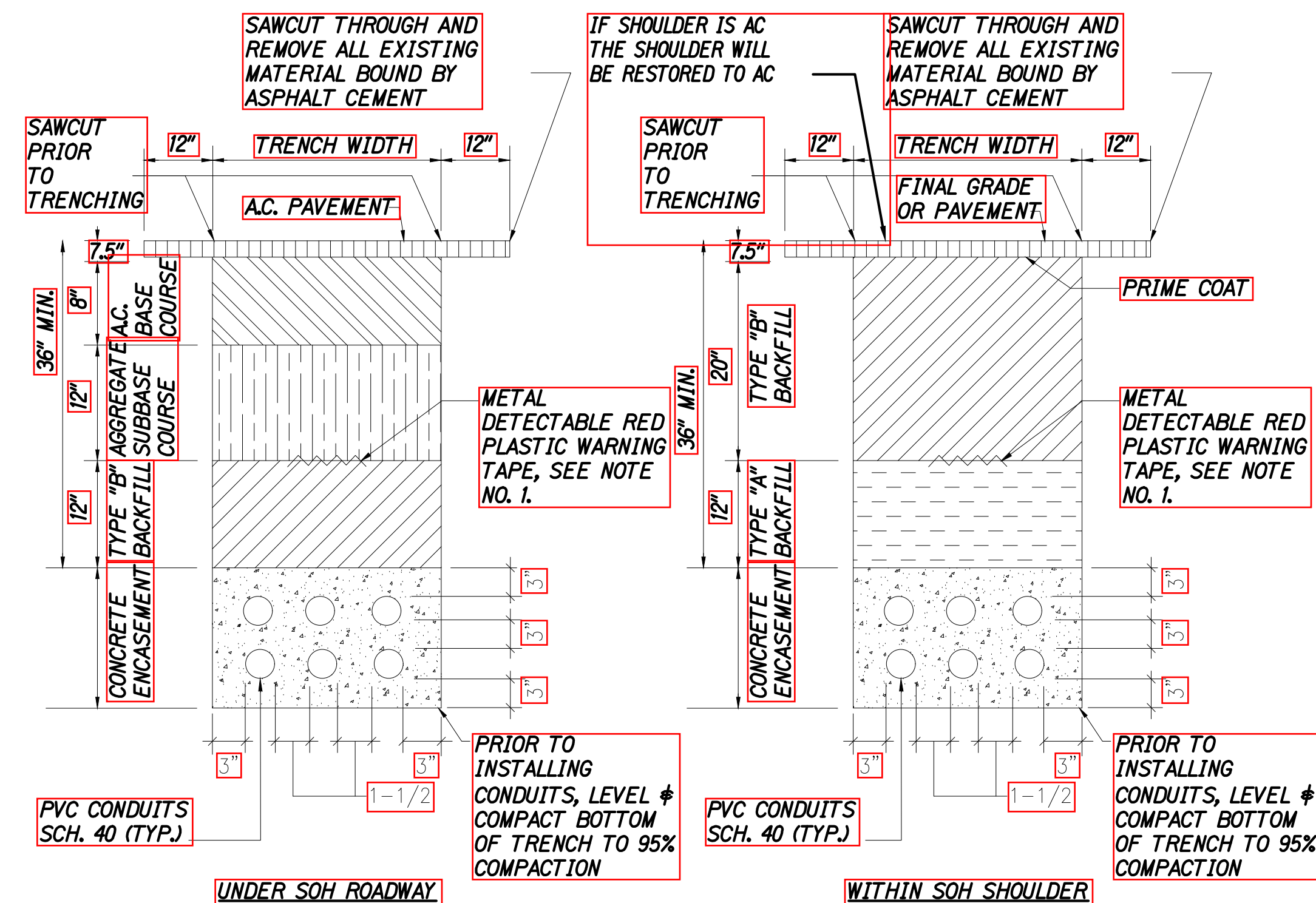
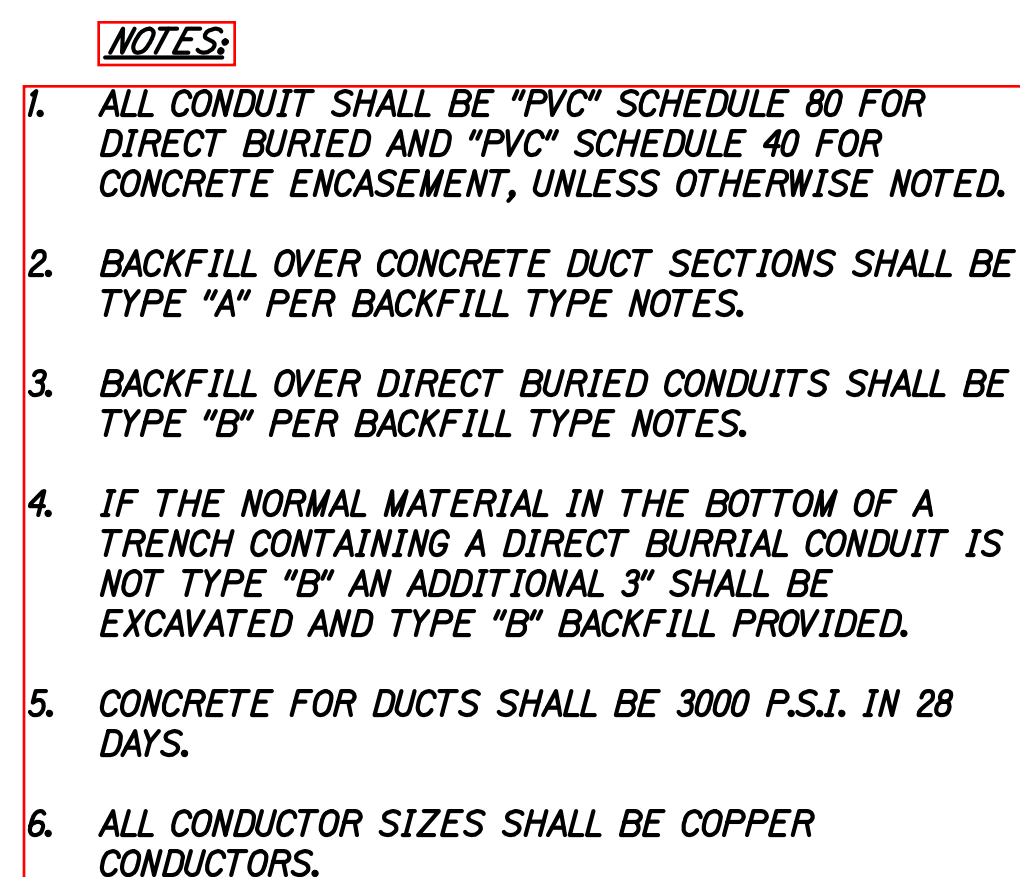
1. POLE TYPE: HAPCO PART #RTA30D8BFT1*-GC OR APPROVED EQUAL.
2. PHOTOELECTRIC CELLS: FISHER PIERCE FP-7790B-SPS OR APPROVED EQUAL.
3. PROVIDE A TYPE II POST MOUNTED OBJECT MARKER ON EACH LIGHT POLE, PER STANDARD PLAN TE-15



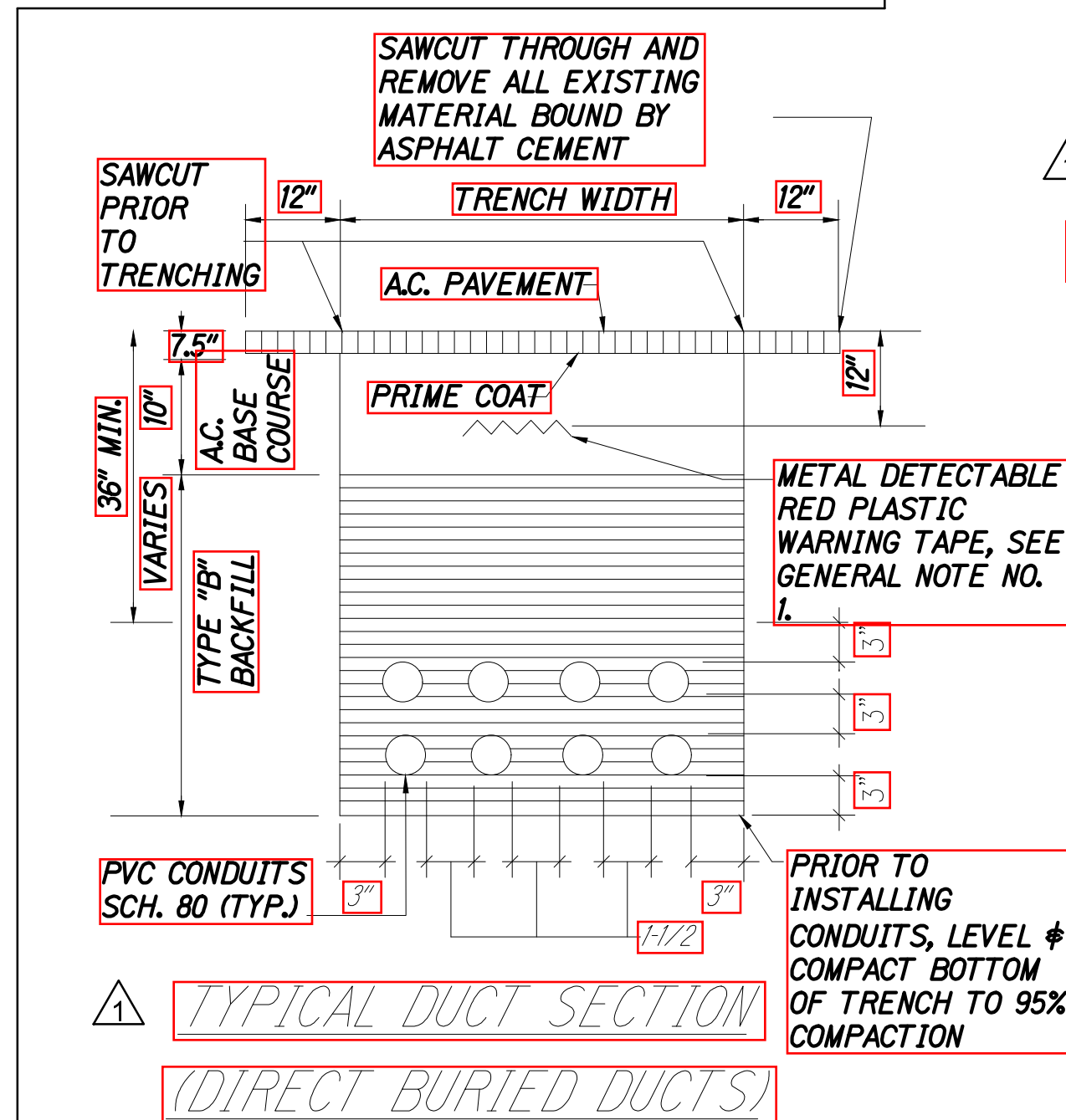
- NOTES:**
1. **FONT STYLE: STANDARD HIGHWAY**
 2. **FONT SIZE: 3" (HEIGHT)**
 3. **MACHINE CUT ON BLACK ADHESIVE SCOTCHLITE (OR EQUAL) SHEETING.**
 4. **AFFIX NUMBER TO CLEAN SURFACE OF POLE 6'-0" ABOVE FINISHED GRADE.**
 5. **STREET LIGHT NUMBER TO FACE STREET.**



1. IF FOUNDATIONS ARE PRECAST, MANUFACTURER AND MATERIALS SUPPLIERS SHALL BE IN COMPLIANCE WITH THE MOST CURRENT EDITION OF THE HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND PUBLIC WORKS CONSTRUCTION AND WHERE APPLICABLE THE NATIONAL PRECAST CONCRETE ASSOCIATION.
2. 3,000 PSI 28-DAY COMPRESSION STRENGTH CONCRETE SHALL BE USED.
3. EACH FOUNDATION SHALL NOT BE HANDLED OR TRANSPORTED UNTIL AT LEAST 80% OF THE 28-DAY CONCRETE COMPRESSION STRENGTH HAS BEEN REACHED.
4. EACH FOUNDATION SHALL NOT BE INSTALLED UNTIL THE 28-DAY CONCRETE COMPRESSION STRENGTH HAS BEEN ACHIEVED.
5. CLSM OR EQUIVALENT SHALL BE USE TO BACKFILL AROUND EACH FOUNDATION (CAST-IN-PLACE OR PRECAST).
6. FOR INSPECTIONS, CONTACT THE TRAFFIC DIVISION AT 808-961-8341 AND PLAN FOR 3-DAY MINIMUM LEAD TIME.



7. THE METAL DETECTABLE RED PLASTIC WARNING TAPE SHALL BE A MINIMUM 5 MILS THICK AND 4" WIDE WITH A CONTINUOUS METALLIC BACKING AND CORROSION RESISTANT 1/2 MIL THICK FOIL CORE. THE MESSAGE ON THE TAPE SHALL READ, "CAUTION - STATE TRAFFIC SIGNAL AND/OR HWY LIGHTING BURIED BELOW," UTILIZING 1/2 INCHES SERIES "C" BLACK LETTERING. THE MESSAGE WILL BE REPEATED WITH A 4-1/4" SPACING BETWEEN TOP LINE OF MESSAGE AND START OF NEXT TEXT.



1 TYPICAL DUCT SECTION
(CONCRETE ENCASED DUCTS)

THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION AND
CONSTRUCTION OF THIS PROJECT
WILL BE UNDER MY OBSERVATION.

Chris Karamuto 04/30/20
SIGNATURE EXPIRATION DATE
OF THE LICEN.

12/16/19 **1** **ADDED STREET LIGHT DETAILS**

<i>DATE</i>	<i>REVISION</i>
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL STREET LIGHT DETAIL

KEAAU-PAHOA ROAD
INTERSECTION IMPROVEMENTS
at Ainaloa Boulevard

Federal-Aid Project No. STP-0130(27)

Scale: _____ Date: July, 2019

SHEET No. 3 OF 5 SHEETS

ADD. 44

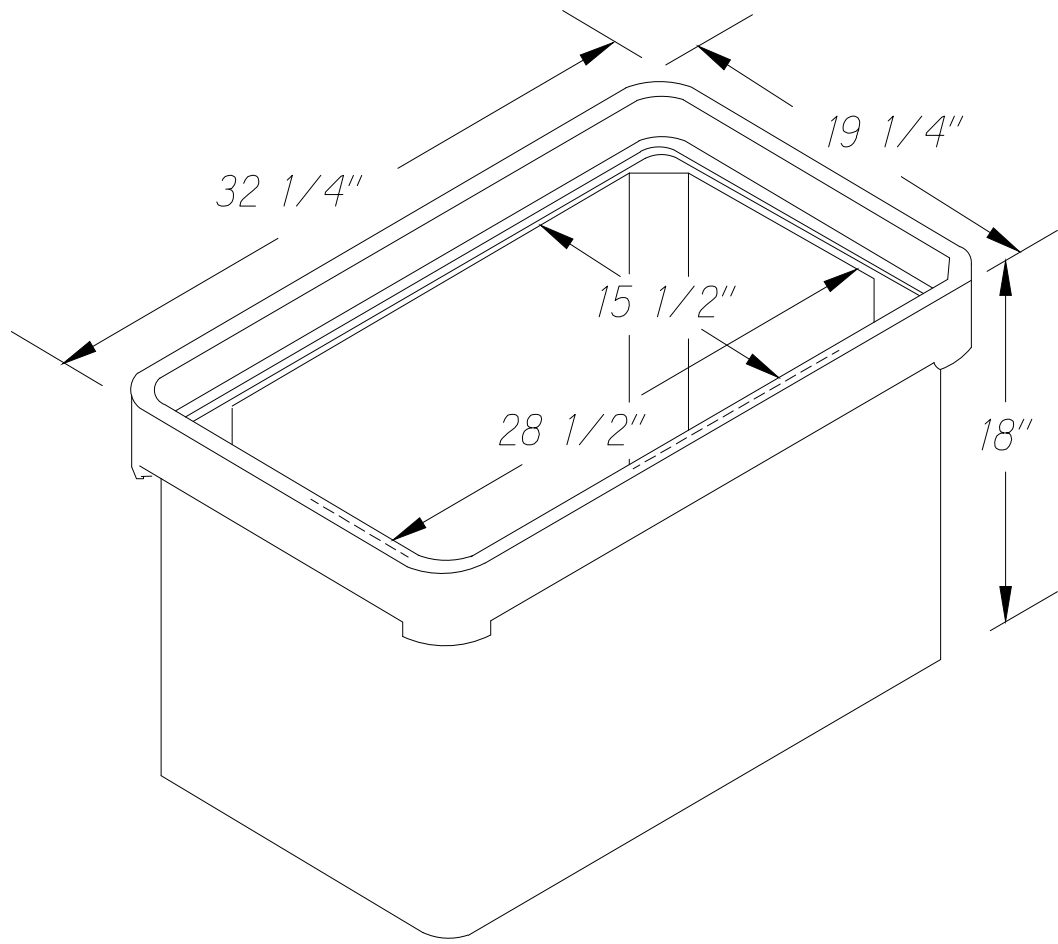
FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0130(27)	2020	ADD.44S-1	50

3/8-16 UNC STAINLESS STEEL
HEX HEAD BOLT W/ WASHER (2)

1/2" X 4" PULL SLOT

EQUIVALENCY REFERENCE:
QUAZITE PRECAST POLYMER
CONCRETE COVER, PART
#PG1730HH00P

COVER



HEAVY DUTY PULL BOX (OPEN BOTTOM)

NOTE: PROVIDE 6 INCH MINIMUM 3/4"
CRUSHED GRAVEL BASE COURSE,
WELL COMPACTED

EQUIVALENCY REFERENCE:
QUAZITE PRECAST POLYMER
CONCRETE BOX, PART #PG1730BA18

NOTES:

1. ALL CONDUITS SHALL ENTER VERTICALLY AT THE BOTTOM OF THE PULLBOXES.
2. ALL DIMENSIONS AND LINES ARE APPROXIMATE.
3. FIELD-ADJUST PULLBOX LOCATIONS AND CONDUIT CLEARANCES AS REQUIRED.
4. CONDUIT 90 DEGREE BEND RADII SHALL BE A MINIMUM OF 18".
5. PULLBOX COVERS SHALL BE LABELED "TRAFFIC SIGNALS" OR "STREET LIGHTS" AS APPROPRIATE.
6. PULLBOX COVERS SHALL USE PENTA HEAD BOLTS.
7. INSTALL GROUND RODS IN EACH PULLBOX.
8. ALL PULLBOXES SHALL BE QUAZITE WITH TIER 22 RATING.
9. USE OF 12"X12" PULLBOXES ARE FOR REPAIRING EXISTING 12"X12" PULLBOXES, NEW ISNTALLATIONS SHALL BE APPROVED BY THE TRAFFIC DIVISION.
10. FOR MORE INFORMATION, CONTACT TRAFFIC DIVISION AT 808-961-8341.

1 12"X30"X18"D STREETLIGHT PULLBOX
E-4 NOT TO SCALE



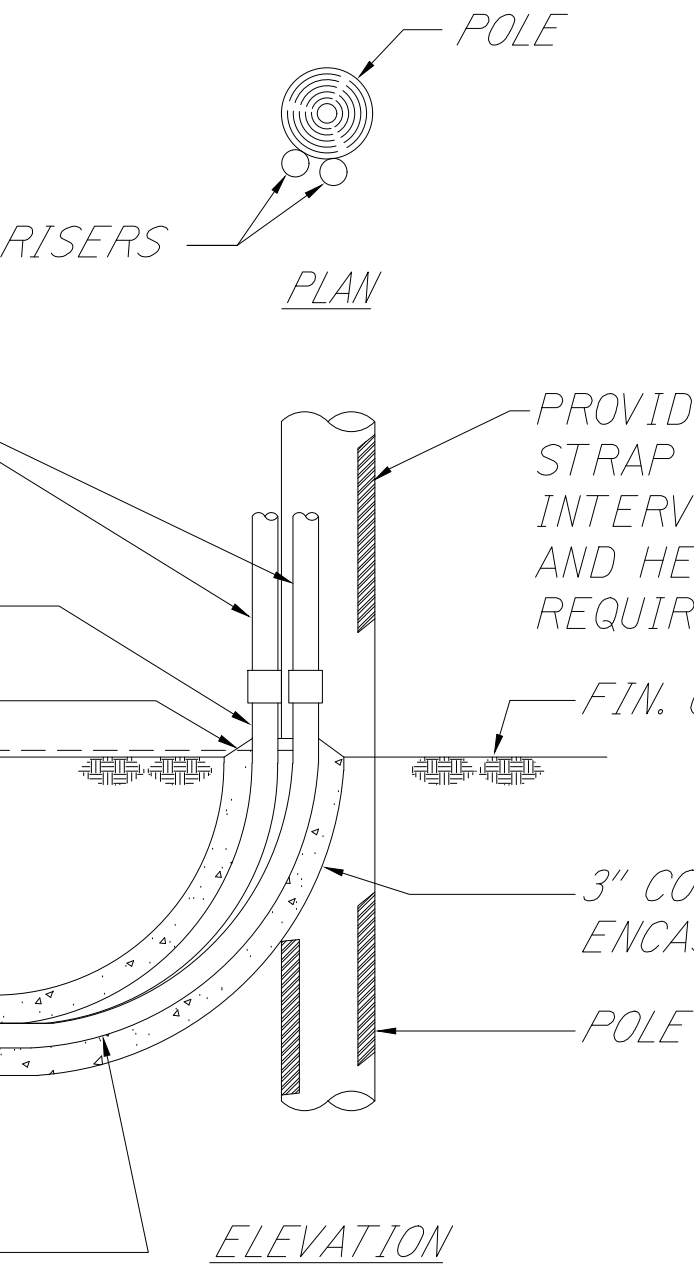
1'-LENGTH 3" PVC SCH40
CONDUIT UP POLE COMPLETE
WITH COUPLING AT TOP END
FOR EACH RISER AND PLUG
OR CAP AT TOP

TOP OF BEND TO BE
A MIN. OF 6" ABOVE
GROUND LEVEL

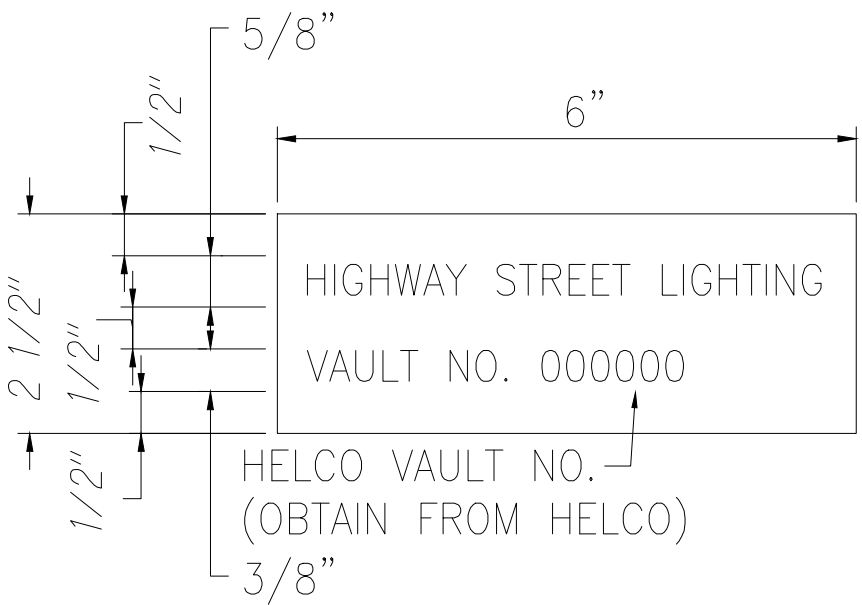
SLOPE

R = 36" MIN.

3" PVC SCH40 36" LONG
RADIUS BEND BY
CUSTOMER

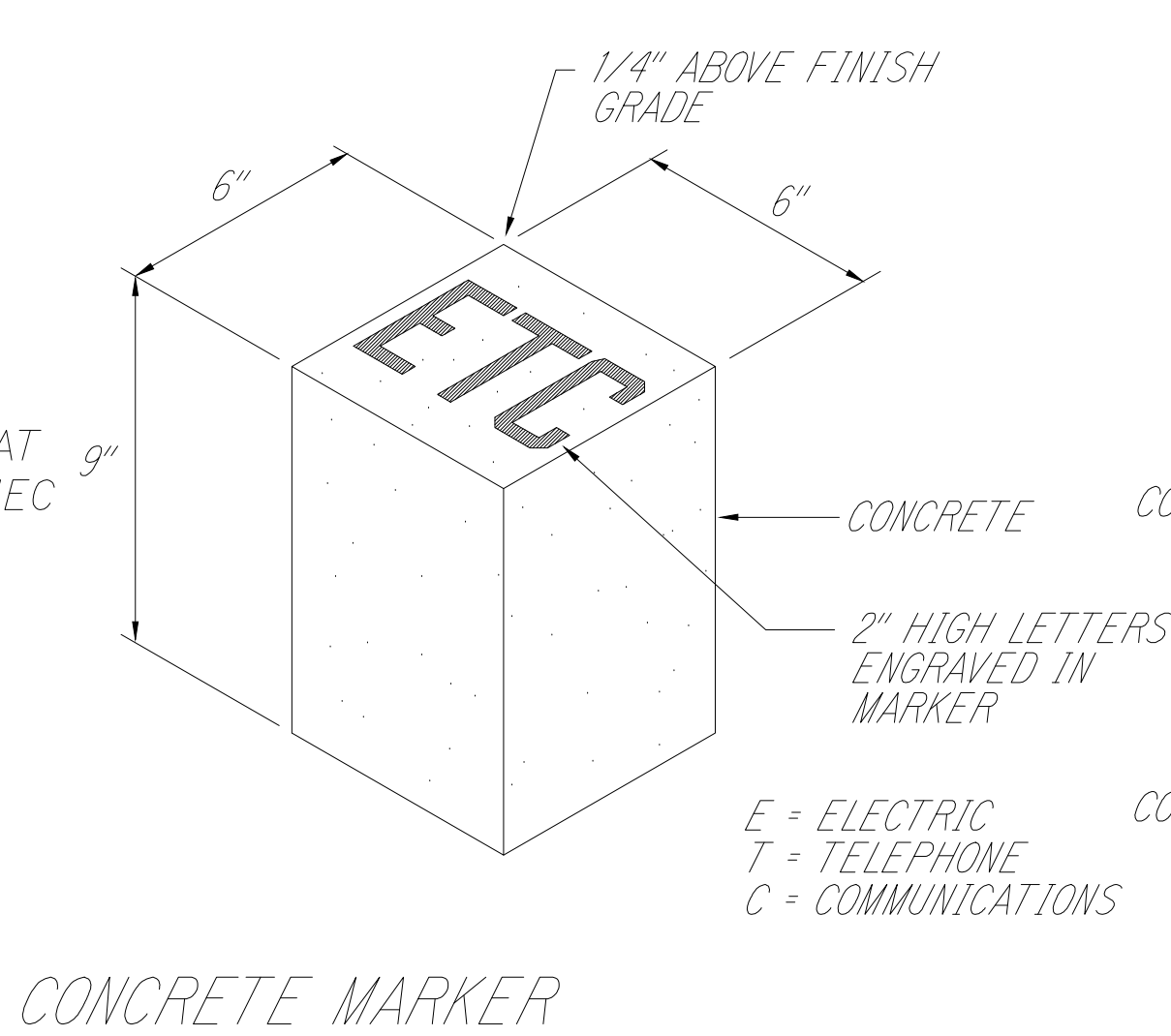


2 TYPICAL RISER DETAIL
E-4 NOT TO SCALE



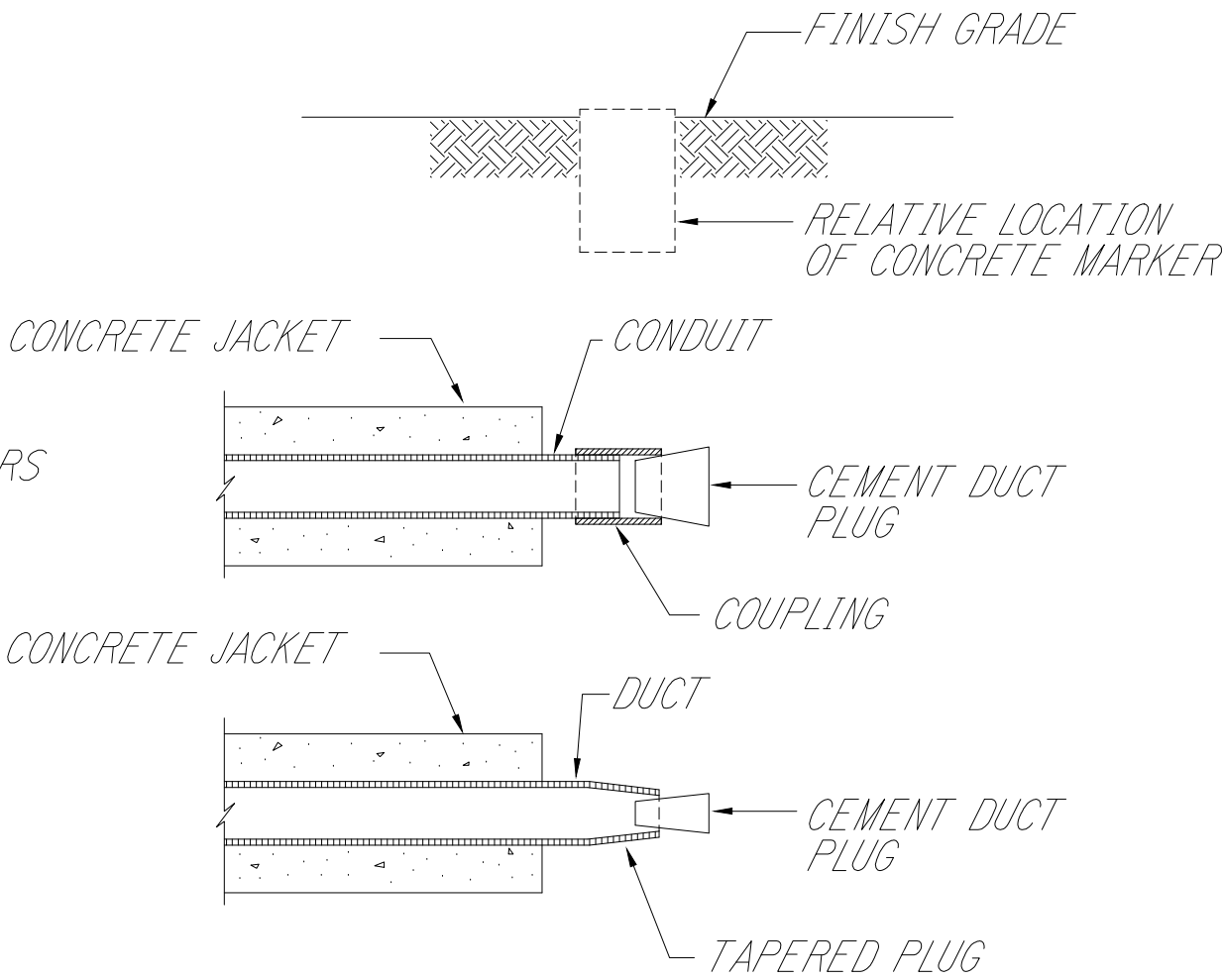
- NOTES:
1. USE 3-PLY LAMINATED FLEXIBLE PLASTIC, BLACK-WHITE-BLACK. THICKNESS:
0.010"-BLACK CAP SHEET
0.052"-WHITE BASE SHEET
0.010"-BLACK BASE SHEET
 2. ATTACH TO METER SOCKET USING SCOTCH 3M BRAND VERY HIGH BOND (VHB) DOUBLE COATED ACRYLIC FOAM TAPE OR EQUIVALENT.
 3. LETTERS/NUMBERS SHALL BE 1/16" STROKE, (WHITE IN COLOR).
 4. LETTERS/NUMBERS AREA INSCRIBED BY CUTTING THROUGH "BLACK CAP SHEET" TO EXPOSE WHITE LETTERS/NUMBERS.

4 METER I.D. TAG
E-4 NOT TO SCALE



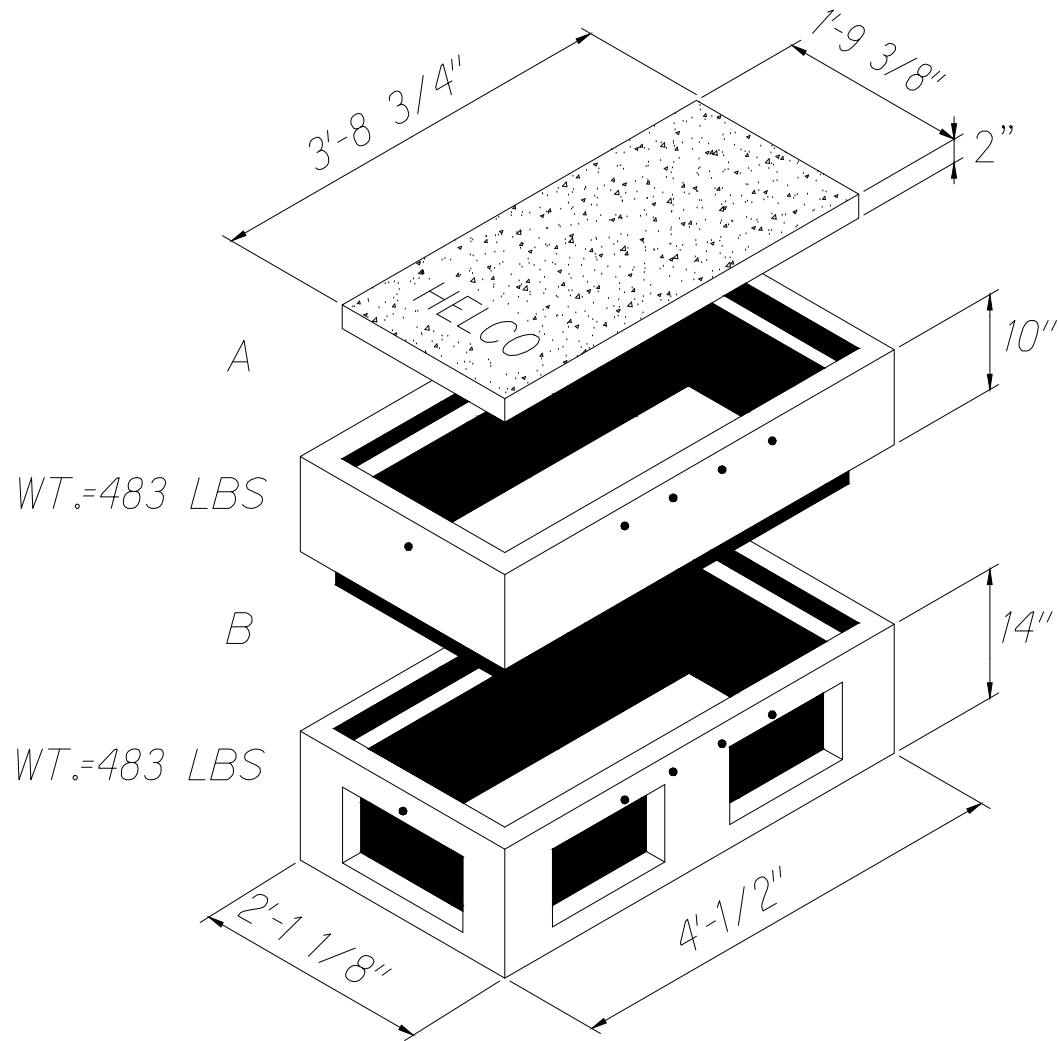
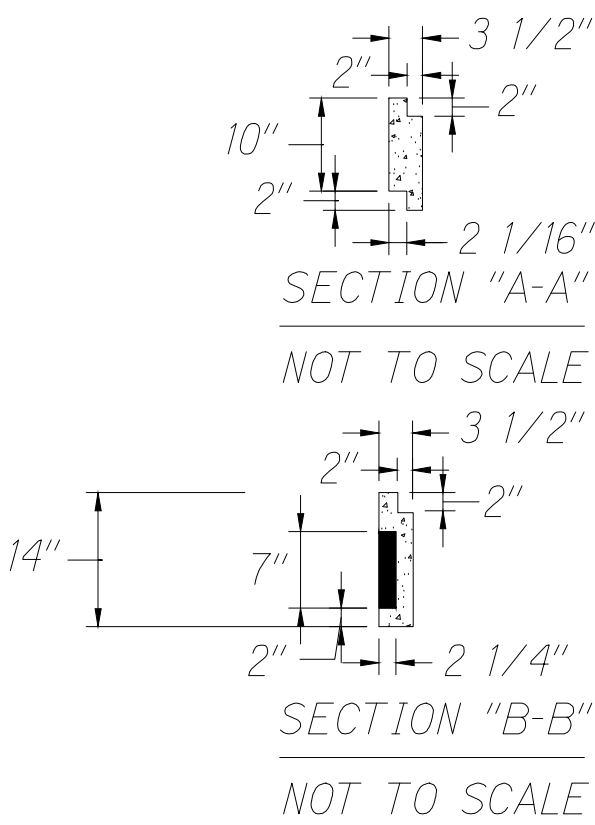
CONCRETE MARKER

E = ELECTRIC
T = TELEPHONE
C = COMMUNICATIONS

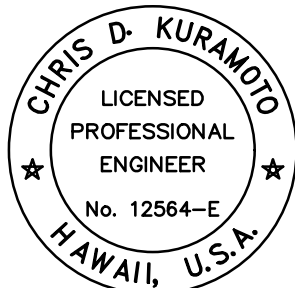


STUB-OUT DETAIL

3 STUB OUT CONCRETE MARKER DETAIL
E-4 NOT TO SCALE



5 2' x 4' ELECTRIC PULLBOX ASSEMBLY
E-4 NOT TO SCALE



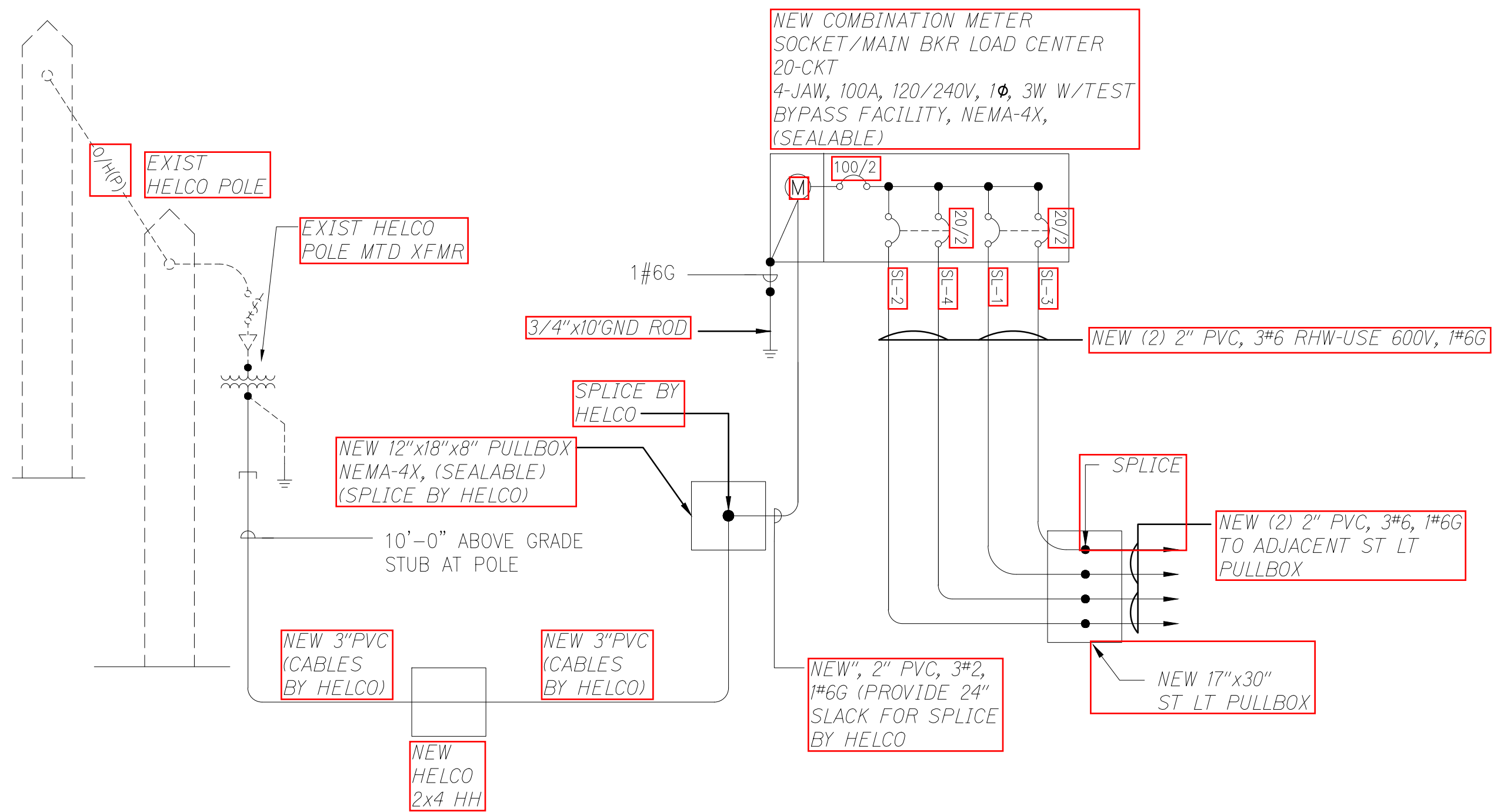
THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION AND
CONSTRUCTION OF THIS PROJECT
WILL BE UNDER MY OBSERVATION.

Chris Kuramoto 04/30/20
SIGNATURE EXPIRATION DATE
OF THE LICENSE

12/16/19	1 ADDED PULLBOX, RISER, STUB, # METER ID TAG DETAILS
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION ELECTRICAL STREET LIGHT DETAIL KEAAU-PAHOA ROAD INTERSECTION IMPROVEMENTS at Ainaloa Boulevard Federal-Aid Project No. STP-0130(27) Scale: Date: July, 2019	
SHEET No. 4 OF 5 SHEETS	

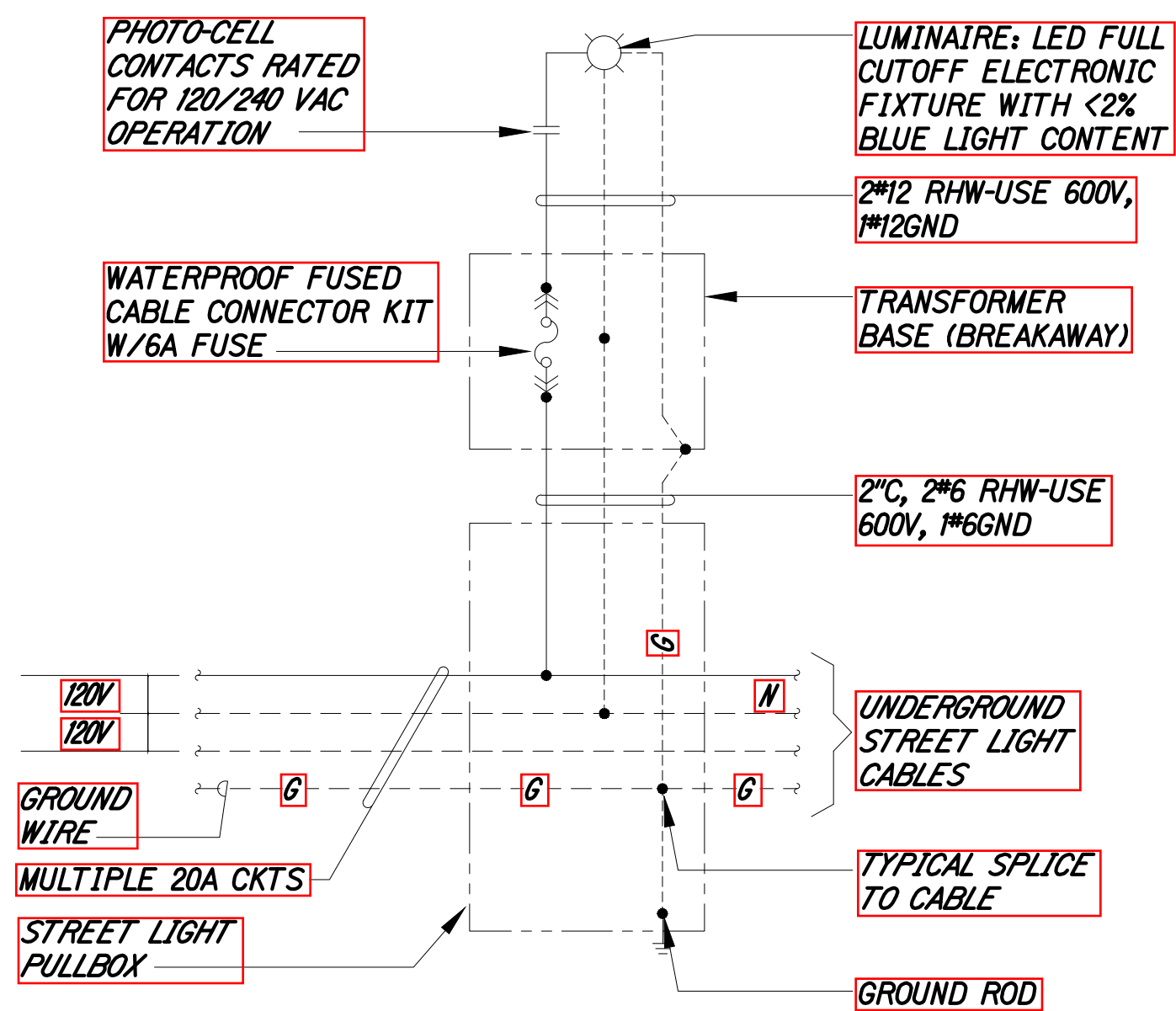
ADD. 44S-1

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0130(27)	2020	ADD.44S-2	50

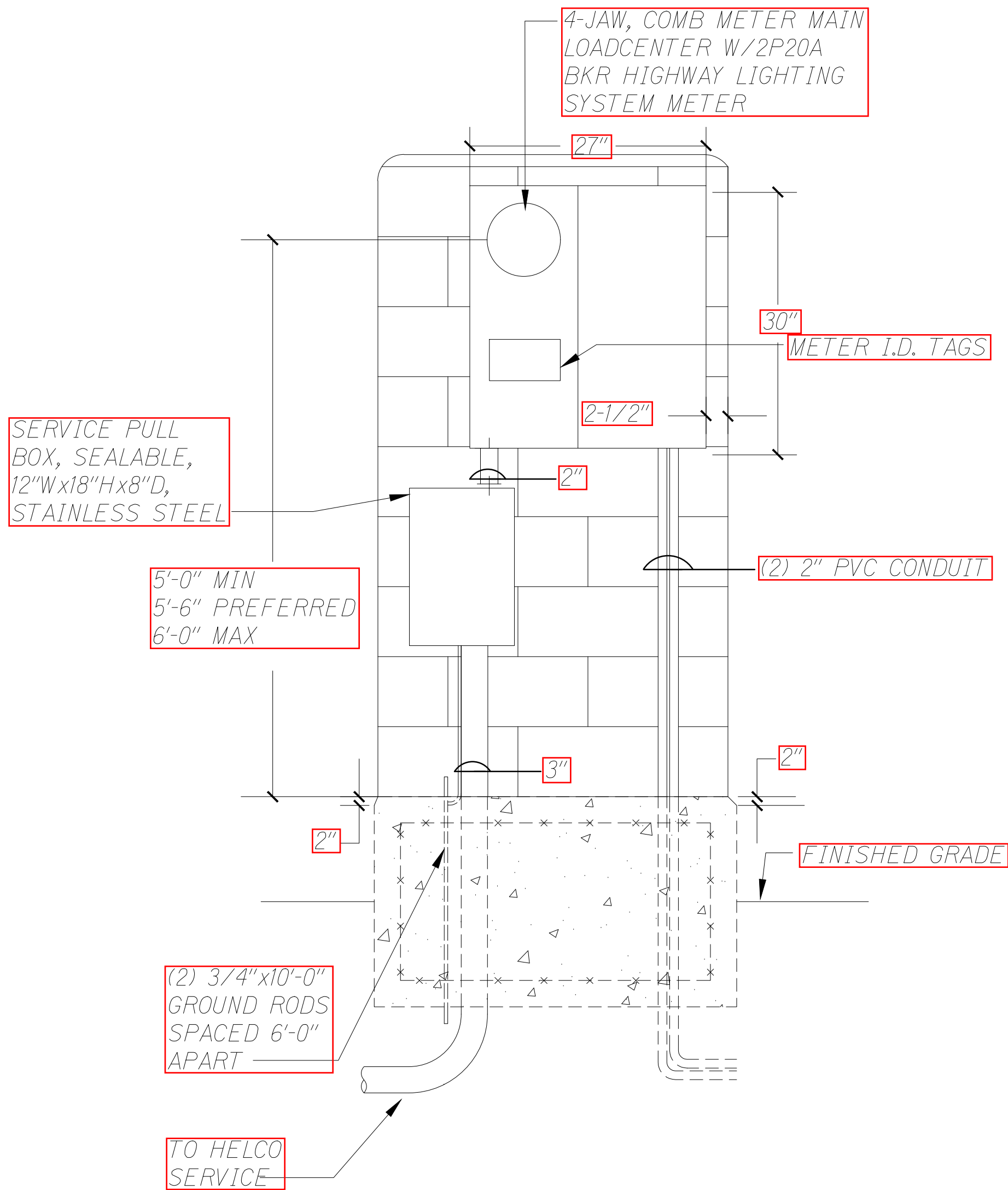


NOTE:
1. PHASE WORK TO MAINTAIN EXISTING TRAFFIC SIGNALS AND STREET LIGHTS IN OPERATION AS REQUIRED
2. ALL NEW CONDUCTORS SHALL BE COPPER

1 AINALOA BLVD ONE-LINE DIAGRAM
NOT TO SCALE

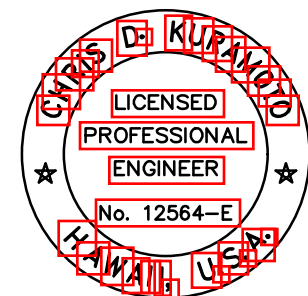


2 STREET LIGHT CONNECTION DIAGRAM
NOT TO SCALE



3 METER PEDESTAL ELEVATION
NOT TO SCALE

- NOTES:
1. CONTRACTOR SHALL VERIFY ALL CONDUIT REQUIREMENTS PRIOR TO INSTALLATION.
 2. CONFIRM LOCATION OF CONDUITS WITH ACTUAL CABINETS.
 3. CONCRETE ENCASED ELECTRODE (UFER GROUND) PER SECTION 250-50(C) OF THE NATIONAL ELECTRICAL CODE.
 4. CONTROLLER CABINET SHALL BE LOCATED SO THAT PERSONNEL FACING THE FRONT DOOR OF THE CONTROLLER CABINET HAVE A CLEAR VIEW OF THE INTERSECTION.
 5. ANCHOR BOLTS (SIZE AND QUANTITY) SHALL BE PER THE CABINET MANUFACTURES RECOMMENDATIONS.



THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION AND
CONSTRUCTION OF THIS PROJECT
WILL BE UNDER MY OBSERVATION.

Chris Kurekawa
SIGNATURE

04/30/20
EXPIRATION DATE
OF THE LICENSE

DATE	REVISION
12/16/19	1 ADDED STREET LIGHT DIAGRAMS AND METER PEDESTAL ELEVATION

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
ELECTRICAL STREET LIGHT DETAIL
KEAAU-PAHOA ROAD INTERSECTION IMPROVEMENTS at Ainaloa Boulevard Federal-Aid Project No. STP-0130(27)
Scale: Date: July, 2019

SHEET No. 5 OF 5 SHEETS

ADD. 44S-2

Z:\PROJECTS (NUMBERED)\2018\18087 DRAWING FILES\ELECTRICAL IMPROVEMENT 2 - ROUNDABOUT\AINALOA\E-5 - AINALOA.DWG 12/17/2019 5:39 PM KYL