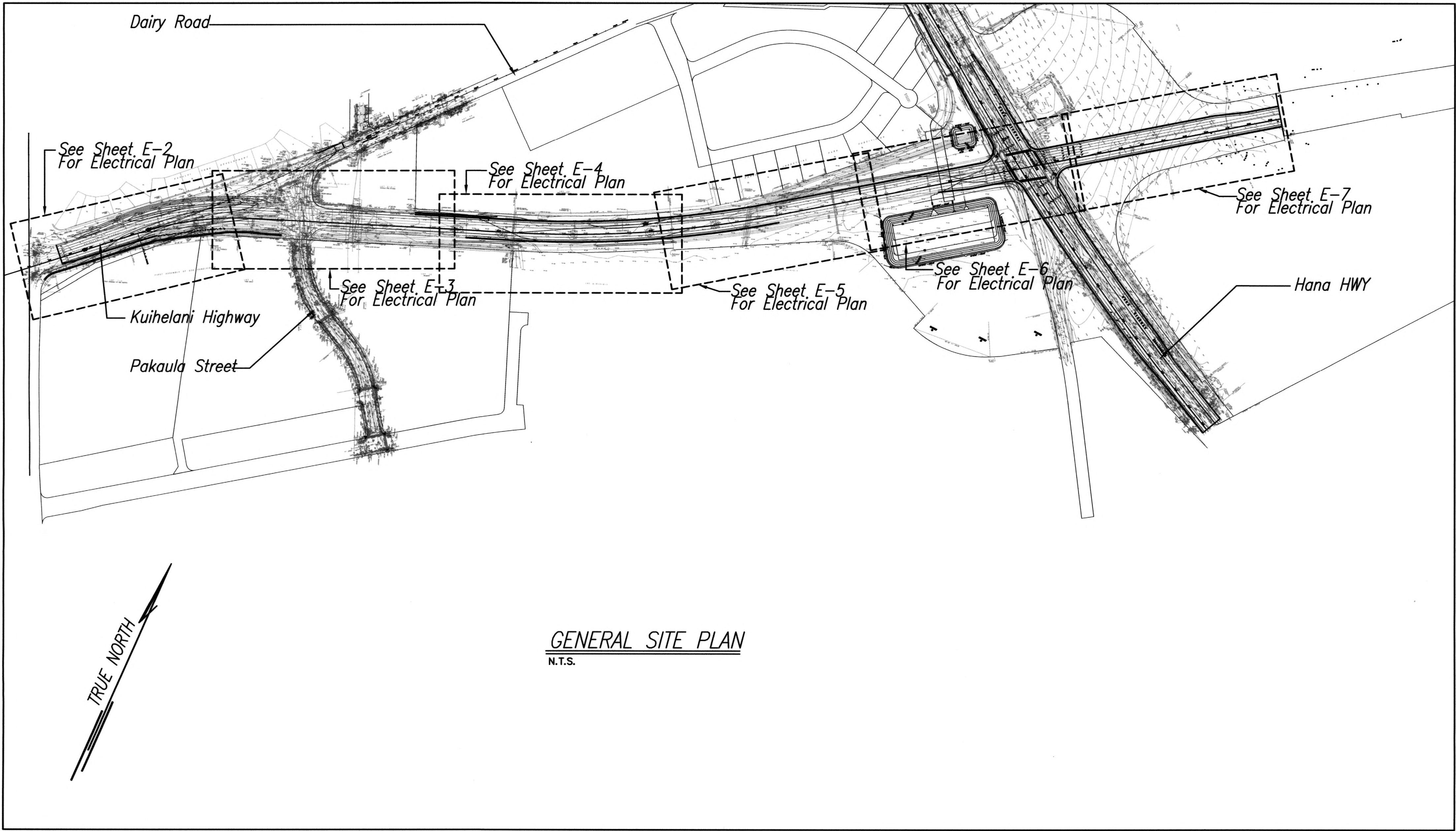


GENERAL NOTES

1. Tone and probe new work area for any existing underground utilities prior to excavation and boring. Toning shall be done with equipment utilizing a dopler effect radar or a combination of devices designed to detect 60hz power lines, low-voltage communication lines, high-frequency video lines, ferrous or other metallic pipes or non-metallic pipes with water. adjust location as required to avoid existing utilities prior to excavation. contractor shall repair any damaged utilities immediately with no additional charge to the state of hawaii.
2. Repair any existing utilities, structures or landscaping damaged during construction immediately with no additional charge to the state of HAWAII.
3. All electrical equipment & wiring shall be weatherproof nema 4x, stainless steel unless indicated otherwise.
4. See sht. e-2 for legend & abbreviations.
5. Manholes, handholes and pullboxes shall be per the following standards:
- a. 4'x6' Tel manhole - gte#4x6.5x6.5 (item id 180014)
 - b. 2'x4' TV handhole - similar to htco type 435tb
 - c. 2'x4' ST. LT pullbox - meco std dwg#30-2005
6. All electrical work shall be in accordance with hawaii administrative rules chapter 6-73: "installation, operation, and maintenance of overhead and underground electrical supply and communication lines". code cited in har 6-73 is the 2008 edition of the national electrical safety code.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(10)	2013	141	166

ELECTRICAL SYMBOLS		
Exst	New	Description
		Street light standard & 2'x4' pullbox
		Traffic signal controller
		TSPB, type A
		TSPB, type B
		HTCO manhole
		MECO handhole
		Street light pb, hh or mh as noted
		Transformer pad
		Elec. service equipment
		Underground ductline, concrete encased
	PB	Pullbox
	HH	Handhole
	MH	Manhole
	TSPB	Traffic signal pullbox
	WP	Weatherproof



DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
TRACED BY	_____
DESIGNED BY	_____
QUANTITY BY	_____
CHECKED BY	_____
ORIGINAL PLAN	_____
NOTE BOOK	_____
No.	_____



exp. 4/30/14

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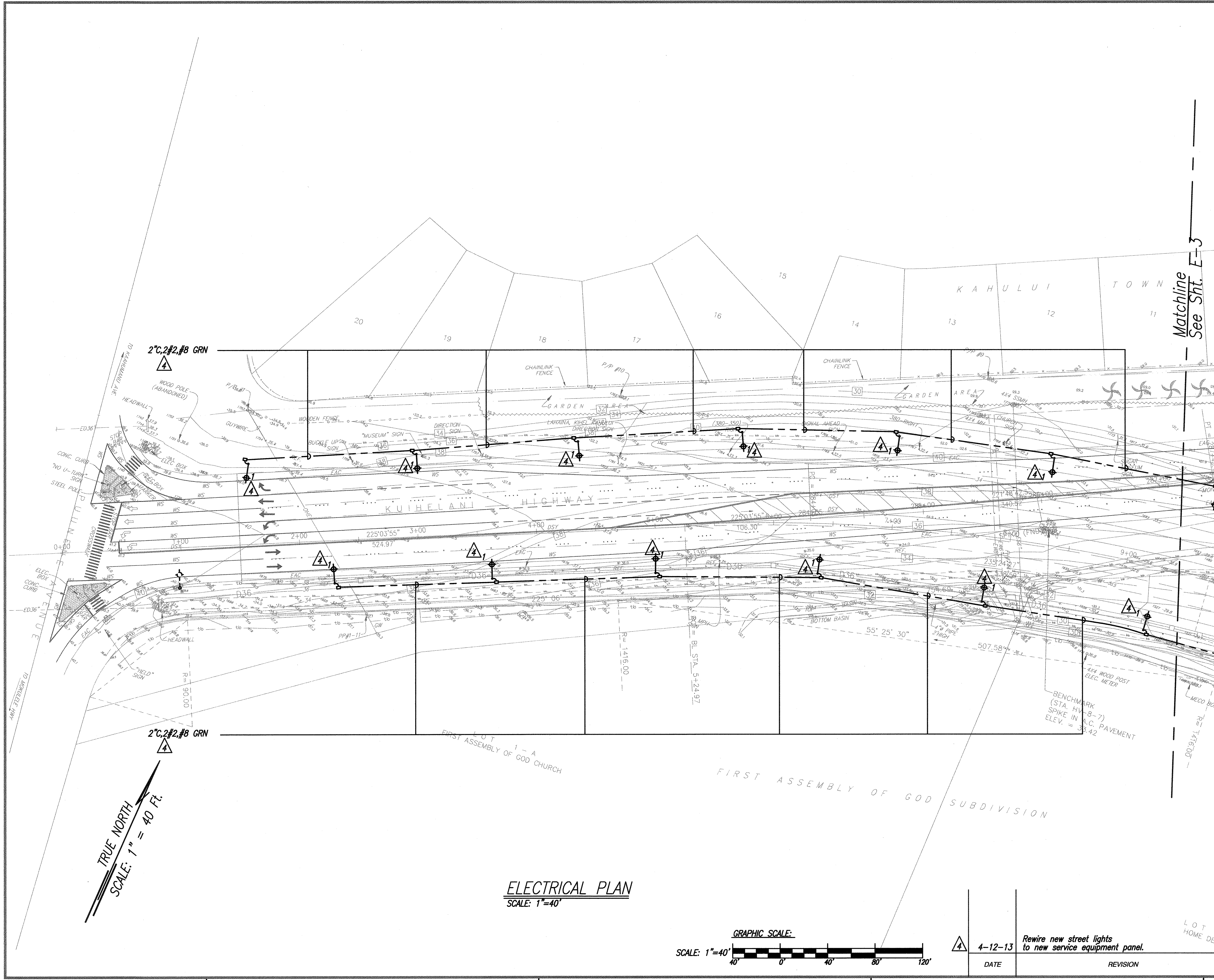
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**GENERAL SITE PLAN,
ELECTRICAL SYMBOLS,
GENERAL NOTES**
KAHULUI AIRPORT
ACCESS ROAD, PHASE I
Federal Aid Project No. NH-0380(10)
Scale: As Shown Date: February 2013

SHEET No. E-1 OF 10 SHEETS

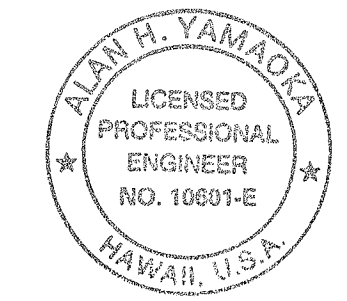
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(10)	2013	ADD.142	166

LEGEND & ABBREVIATIONS:

- 5 Contour
- Top bank
- Bottom bank
- Chain link fence unless noted.
- ED_{36"} Drainline w/ size
- EW_{12"} Waterline w/ size
- ES_{8"} Sewerline w/ size
- EOH_{12"} Overhead electric and telephone
- FH Fire hydrant and water valve
- PP Power pole w/ guy wire
- PP Power pole
- TP Telephone pole w/ guy wire
- TP Telephone pole
- HTEL Hawaiian telephone box
- MECO Maui electric co. box
- CATV Cable TV box
- SMH Sewer manhole
- DMH Drain manhole
- WVH Water valve manhole
- WM Water meter
- EAC Edge of A.C. pavement
- Spot elevation
- Traverse station with elevation



DATE	_____
DESIGNED BY	_____
CHECKED BY	_____
NOTED BY	_____
ORIGINAL PLAN	_____
NO.	_____



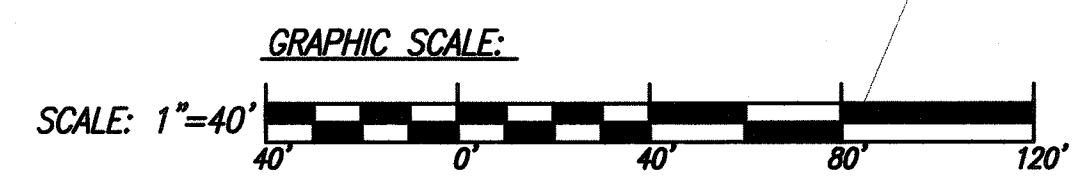
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STATE OF HAWAII
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HIGHWAYS DIVISION
ELECTRICAL PLAN

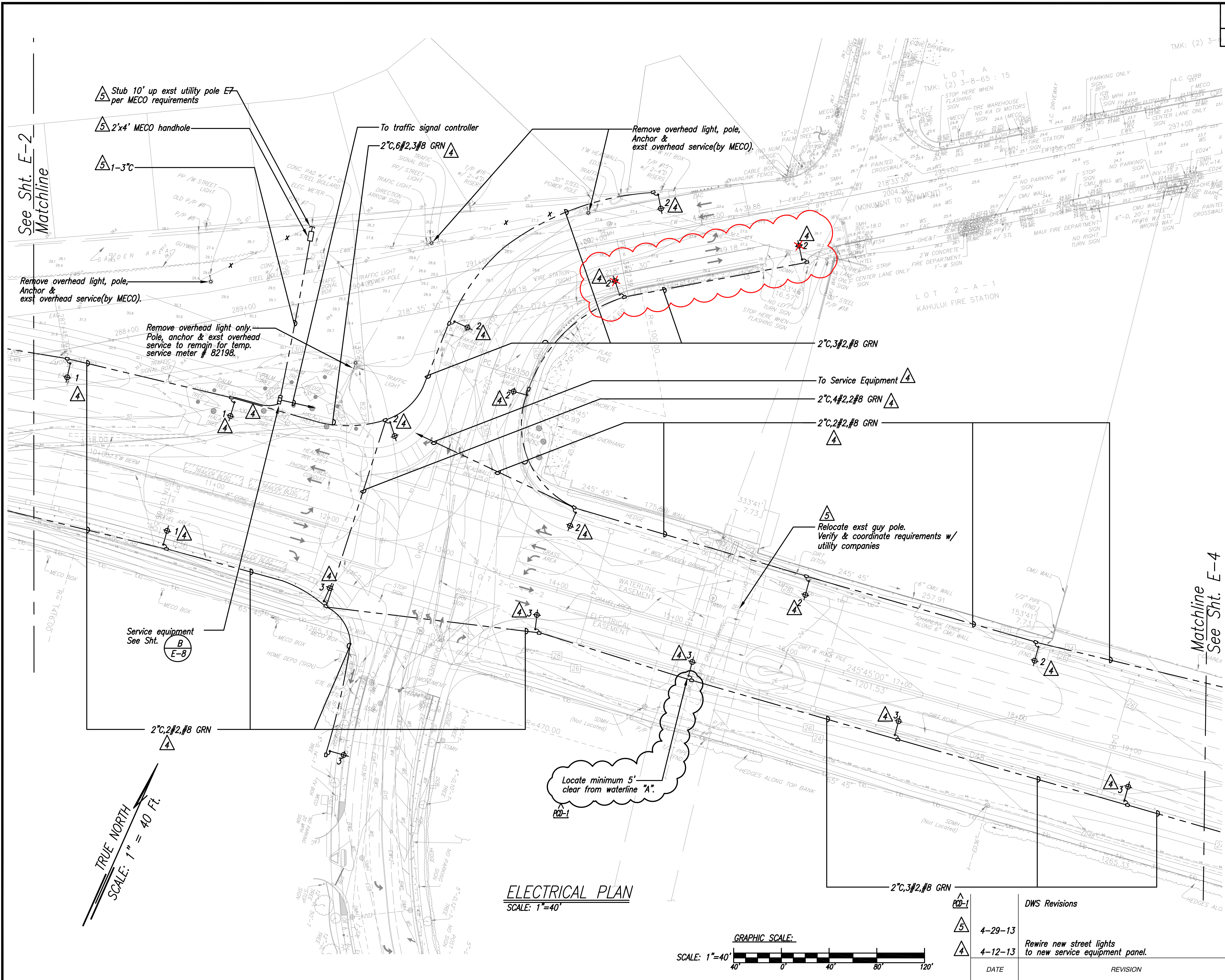
**KAHULUI AIRPORT
ACCESS ROAD, PHASE 1**
Federal Aid Project No. NH-0380(10)
Scale: As Shown Date: February 2013

DATE: 4-12-13
REVISION: Rewire new street lights to new service equipment panel.

SHEET No. E-2 OF 10 SHEETS



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(10)	2013	ADD.143	166



DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
DESIGNED BY	_____
QUANTITIES BY	_____
CHECKED BY	_____
ORIGINAL PLAN	_____
NOTE BOOK	_____
No.	_____

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN

**KAHULUI AIRPORT
ACCESS ROAD, PHASE I**
Federal Aid Project No. NH-0380(10)
Scale: As Shown Date: February 2013

SHEET No. E-3 OF 10 SHEETS

DWS Revisions

4-29-13	Rewire new street lights to new service equipment panel.
4-12-13	
DATE	REVISION

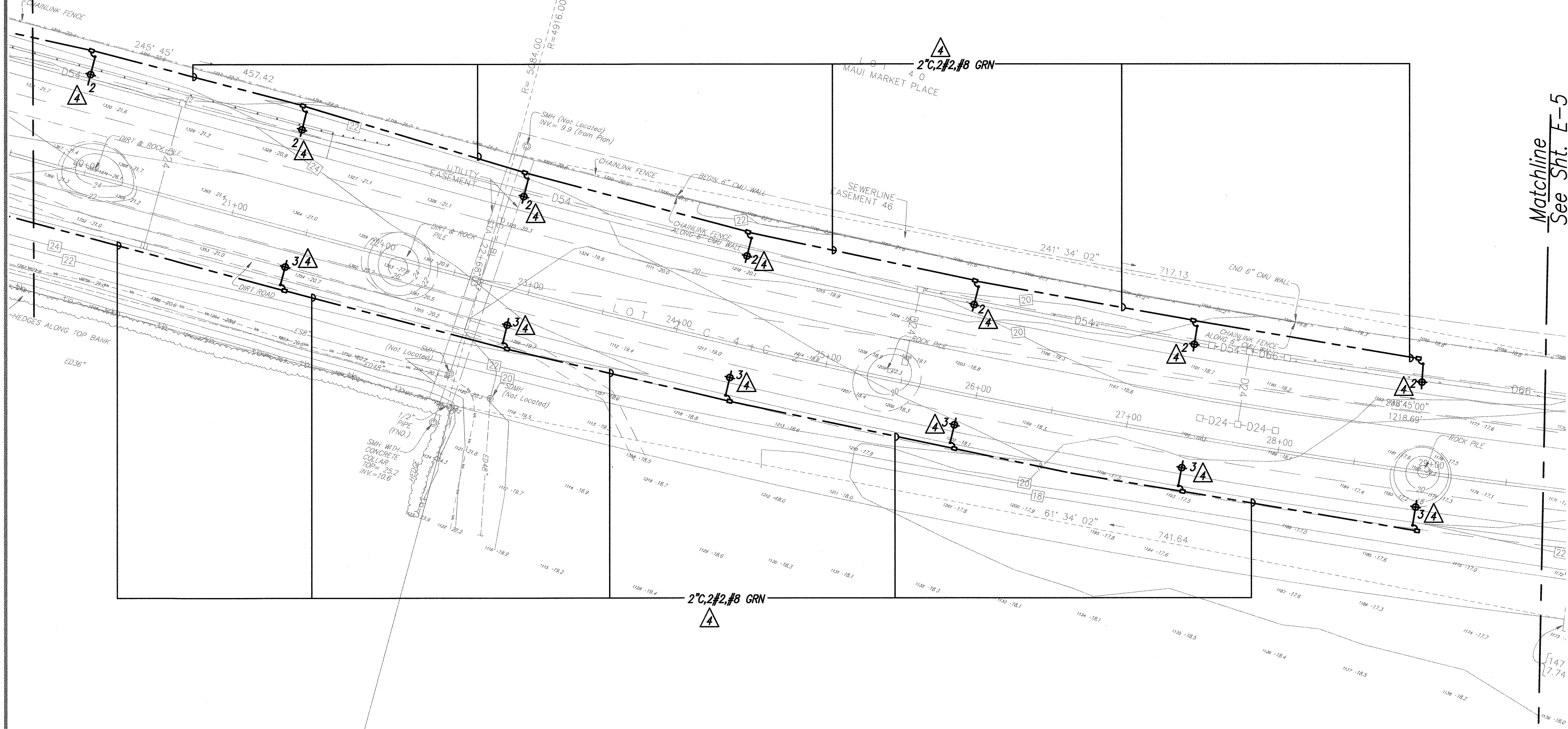
"AS-BUILT"

ADD.143

AS-BUILT DRAWINGS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(10)	2013	ADD.144	166

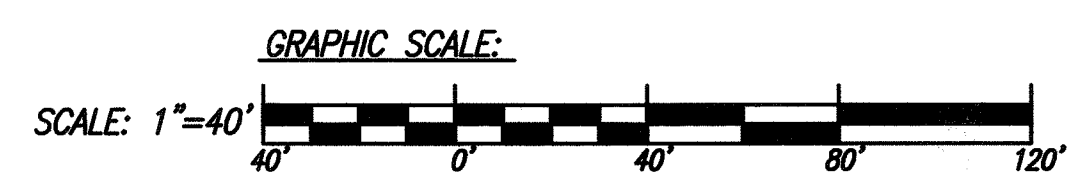
See Sht. E-3
Matchline



Matchline
See Sht. E-5

TRUE NORTH
SCALE: 1" = 40 FT.

ELECTRICAL PLAN
SCALE: 1"=40'

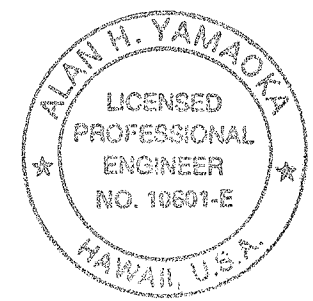


4-12-13

Rewire new street lights
to new service equipment panel.

DATE

REVISION



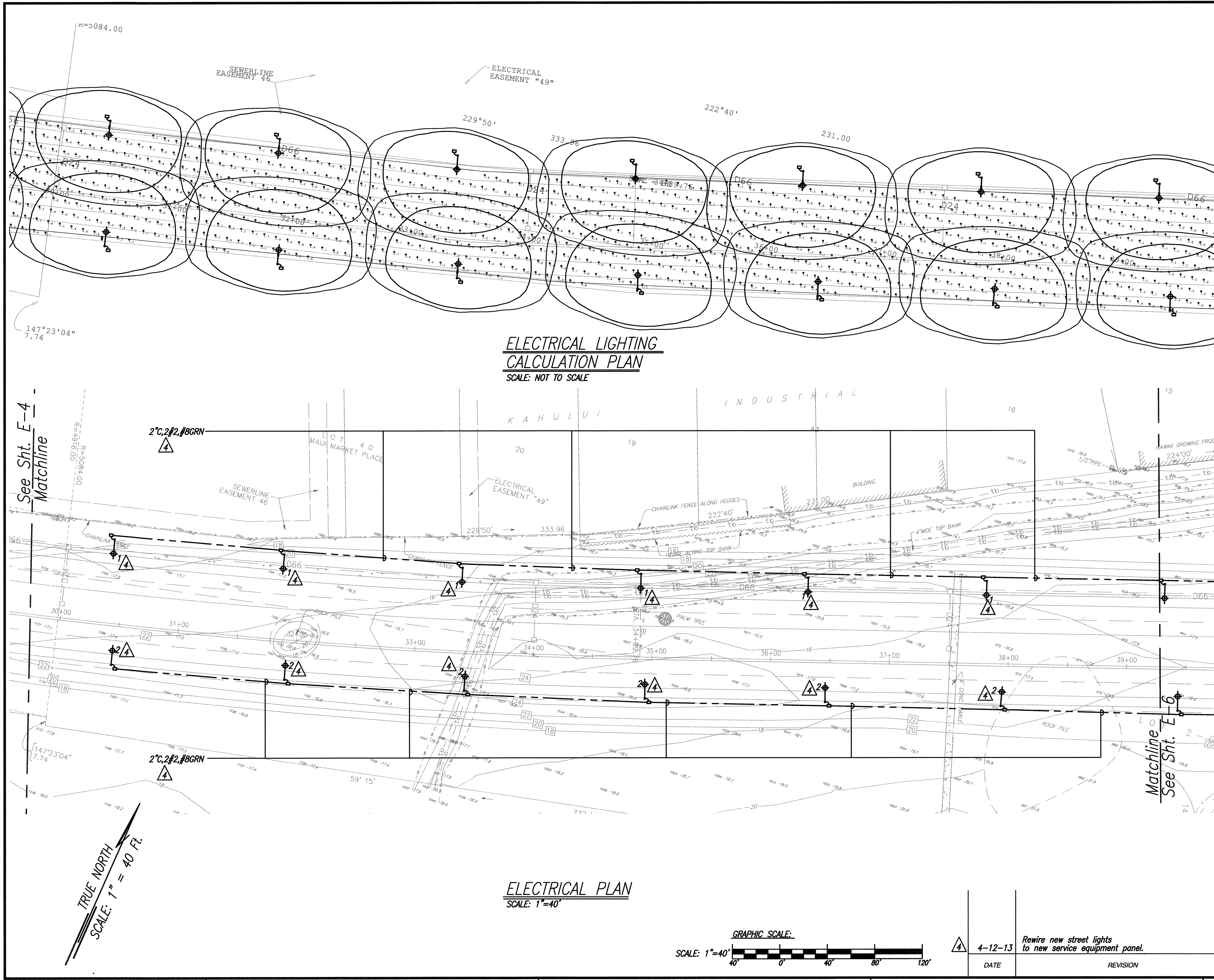
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ELECTRICAL PLAN

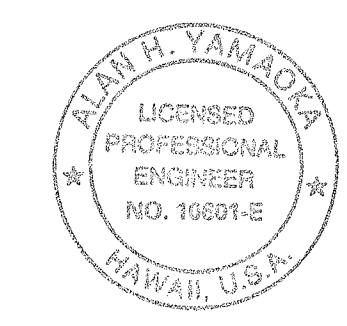
KAHULUI AIRPORT
ACCESS ROAD, PHASE I
Federal Aid Project No. NH-0380(10)
Scale: As Shown Date: February 2013
SHEET No. E-4 OF 10 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(10)	2013	ADD.145	166



DATE	_____
SURVEY PLOTTED BY	_____
ORIGINAL PLAN	_____
DESIGNED BY	_____
TRACED BY	_____
NOTE BOOK	_____
QUANTITIES BY	_____
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No.	_____



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HIGHWAYS DIVISION
ELECTRICAL PLAN

**KAHULUI AIRPORT
ACCESS ROAD, PHASE 1**
Federal Aid Project No. NH-0380(10)
Scale: As Shown Date: February 2013

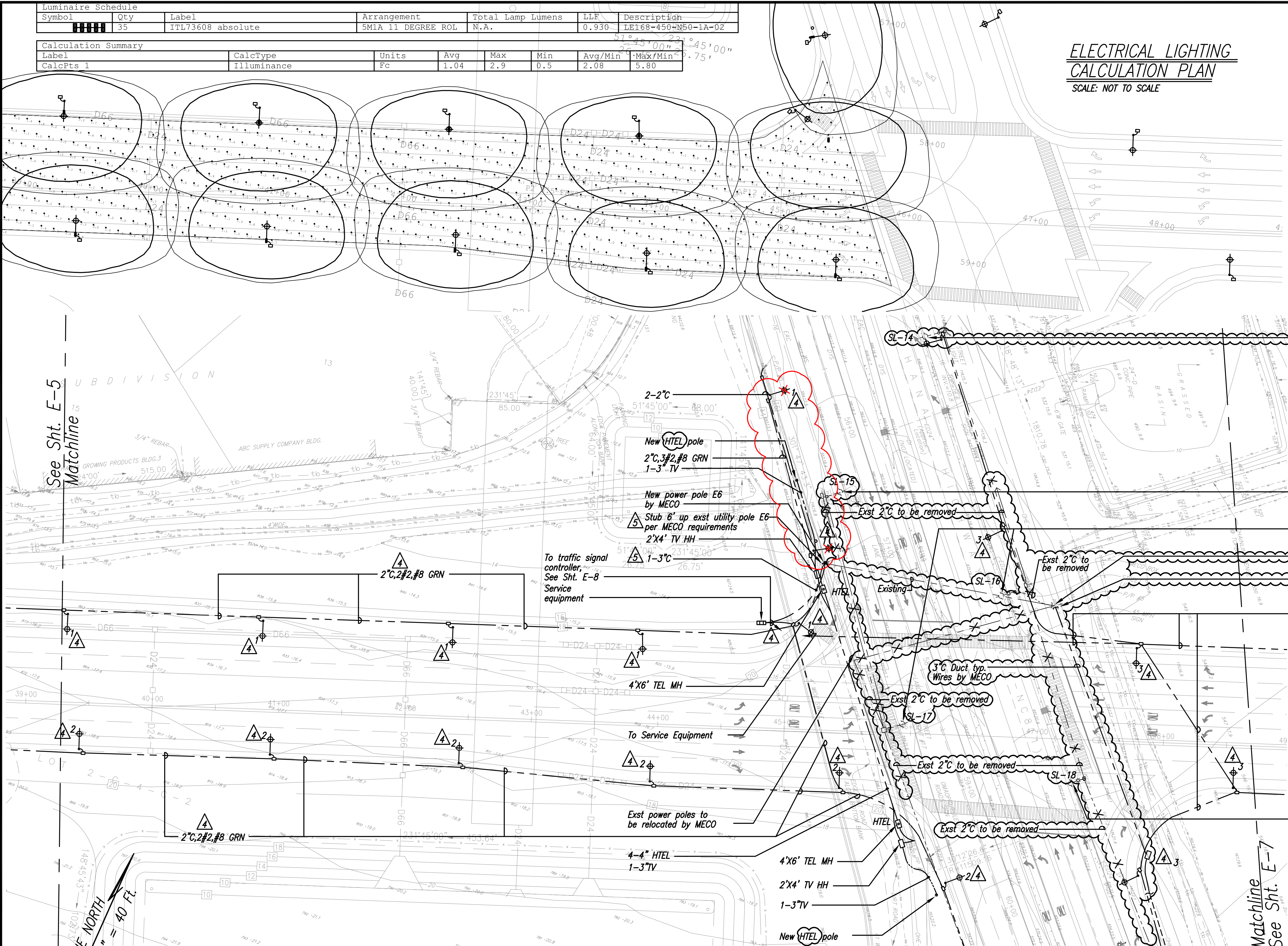
DATE: _____ REVISION: _____

SHEET No. E-5 OF 10 SHEETS

Luminaire Schedule							
Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description	
	35	ITL73608 absolute	5MIA 11 DEGREE ROL	N.A.	0.930	LE168-450-N50-1A-02	
Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
CalcPts 1	Illuminance	Fc	1.04	2.9	0.5	2.08	5.80

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(10)	2013	ADD.146	166

ELECTRICAL LIGHTING
CALCULATION PLAN
SCALE: NOT TO SCALE



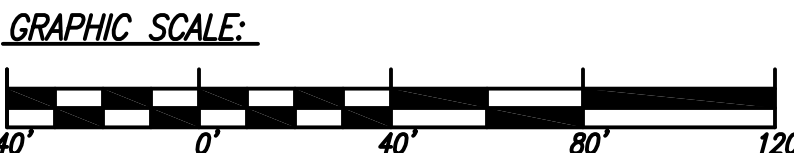
remove roadway light (by MECO)
demolish footing, stub out,
and pull box.

remove roadway light SL-15 (by MECO)
demolish footing, stub out,
and pull box.
remove roadway light SL-16 and SL-17
(by MECO) demolish footing, PB, and stub out
Exst power pole E5X to remain
Stub up exst power pole E5X for
exst roadway lights to remain

Remove roadway
light sl-18 (by MECO)
demolish footing, PB,
and stub out.

ELECTRICAL PLAN
SCALE: 1"=40'

Note: Disconnect & remove exst utility lines as required & noted.
Coordinate work with utility companies for removal &
installation of utility lines.



4-29-13	Rewire new street lights to new service equipment panel.
4-12-13	
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN

KAHULUI AIRPORT
ACCESS ROAD, PHASE I
Federal Aid Project No. NH-0380(10)
Scale: As Shown Date: February 2013

SHEET No. E-6 OF 10 SHEETS

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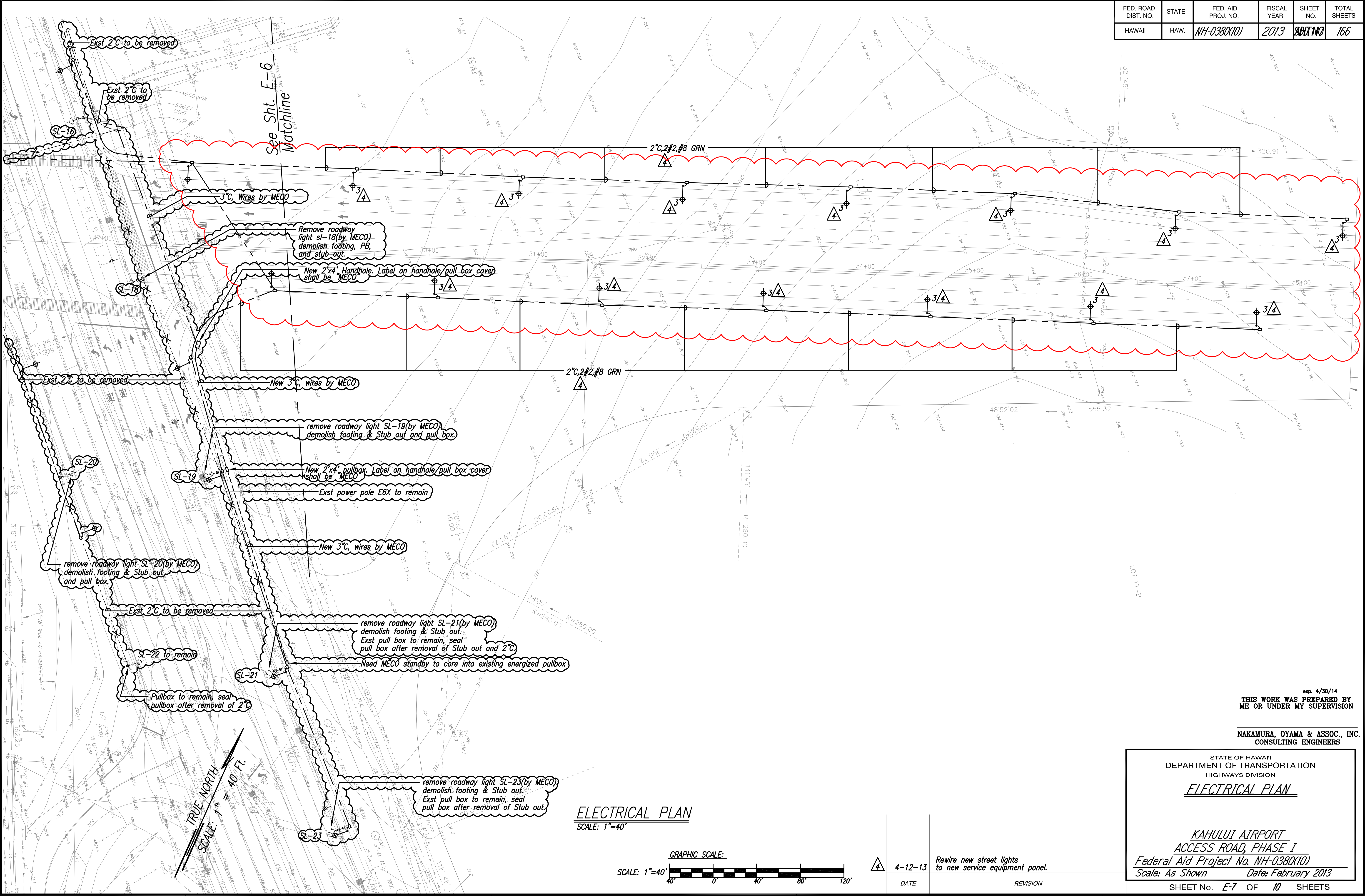
NAKAMURA, OYAMA & ASSOC., INC.
CONSULTING ENGINEERS

DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
DESIGNED BY	_____
QUANTITIES BY	_____
CHECKED BY	_____
ORIGINAL PLAN	_____
NOTE BOOK	_____
No.	_____

"AS-BUILT"

ADD.146

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(10)	2013	ADD.147	166



ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	...
No.	DESIGNED BY	...
	QUANTITIES BY	...
	CHECKED BY	...

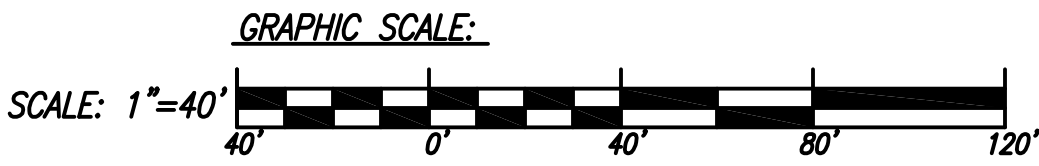
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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN

KAHULUI AIRPORT
ACCESS ROAD, PHASE I
Federal Aid Project No. NH-0380(10)
Scale: As Shown Date: February 2013

SHEET No. E-7 OF 10 SHEETS



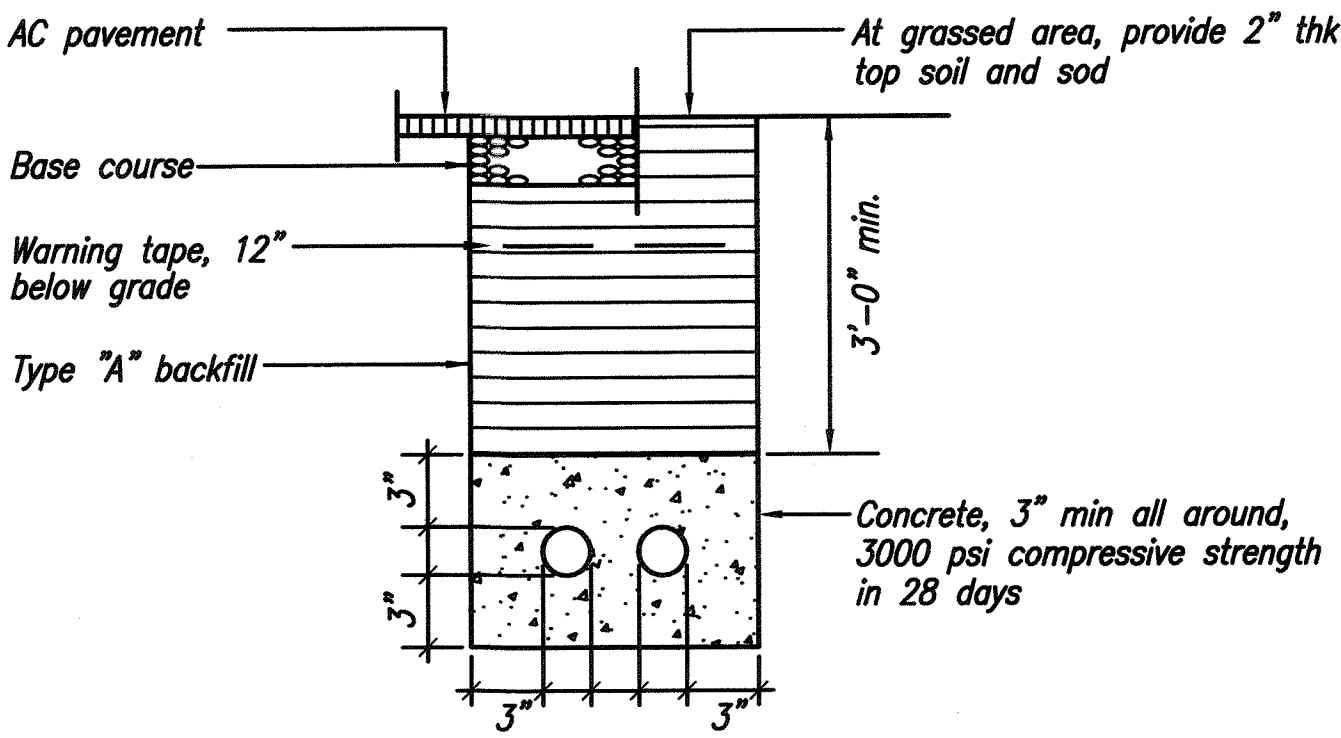
4-12-13	Rewire new street lights to new service equipment panel.
DATE	REVISION

"AS-BUILT"

ADD.147

AS-BUILT DRAWINGS

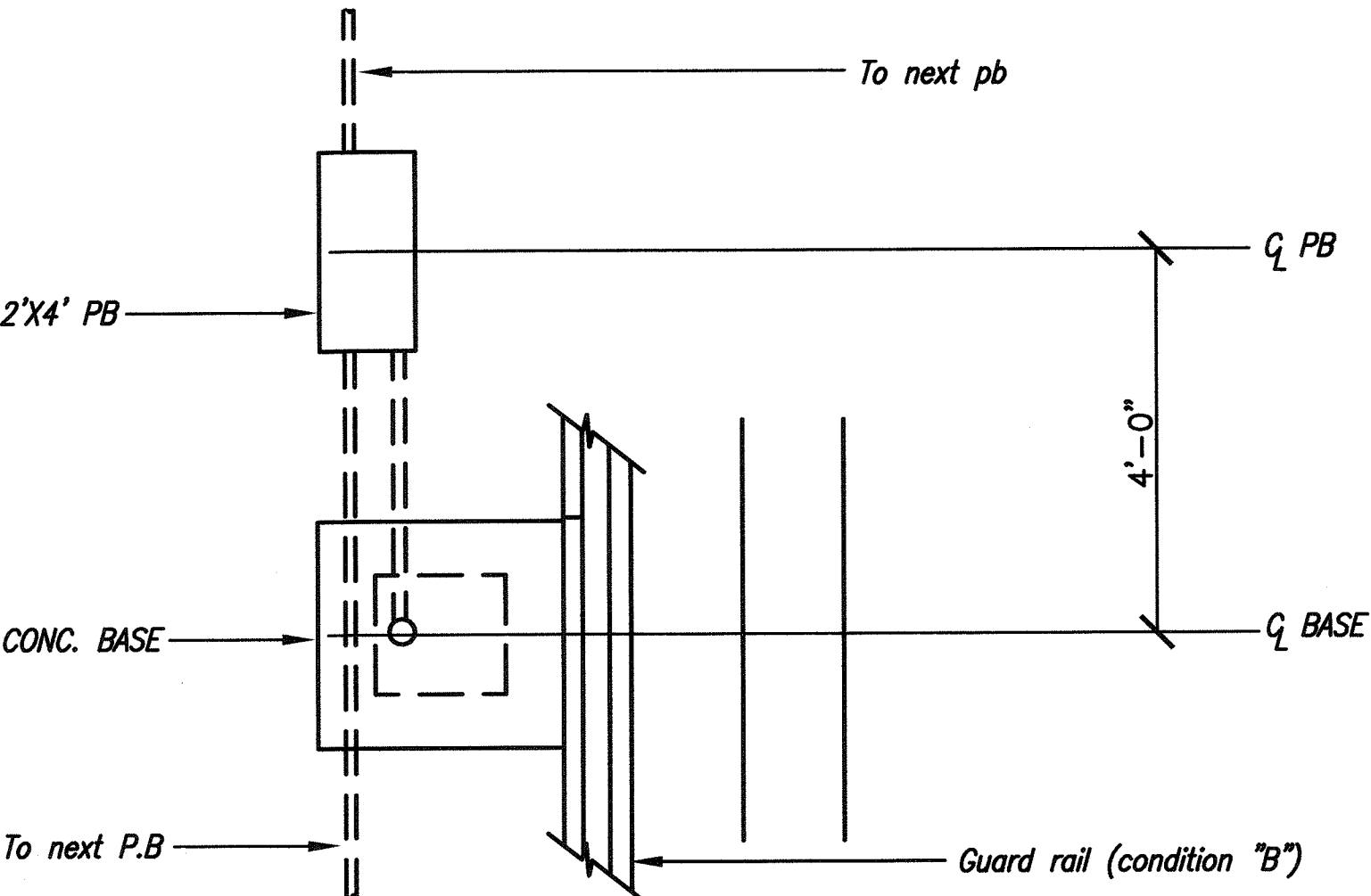
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(10)	2013	ADD.148	166



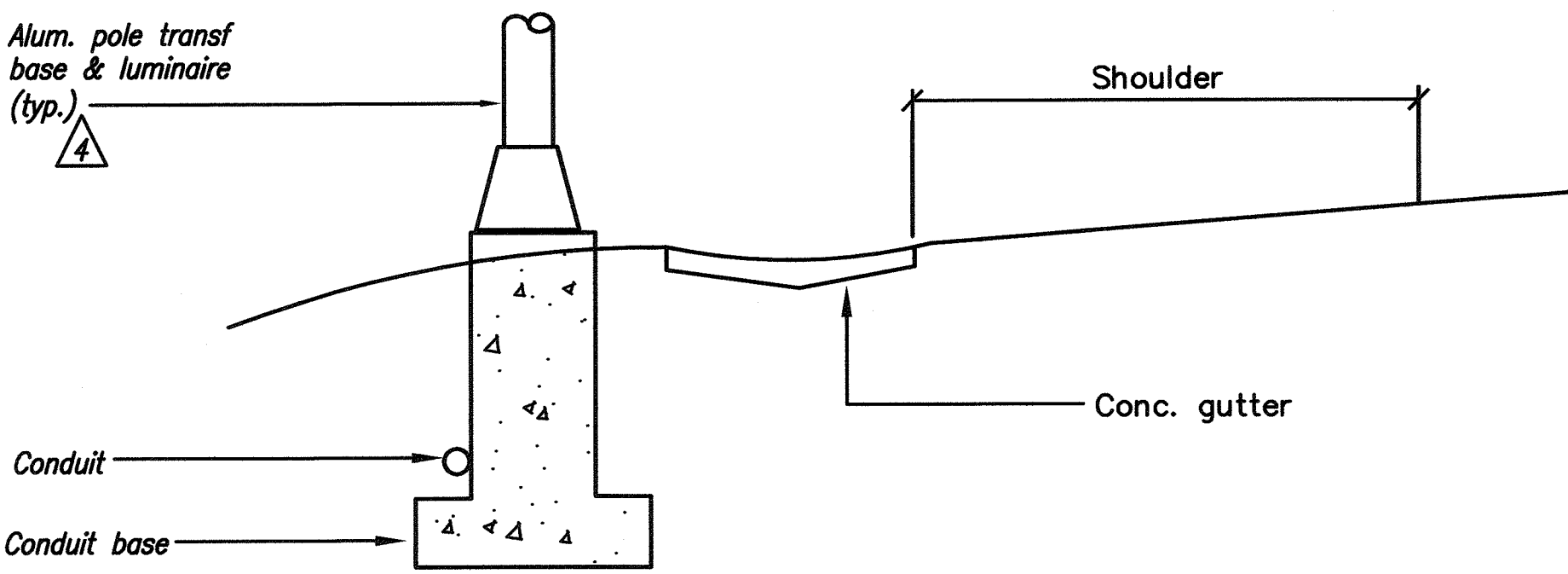
TYPICAL DUCT SECTION

N.T.S.
NOTES

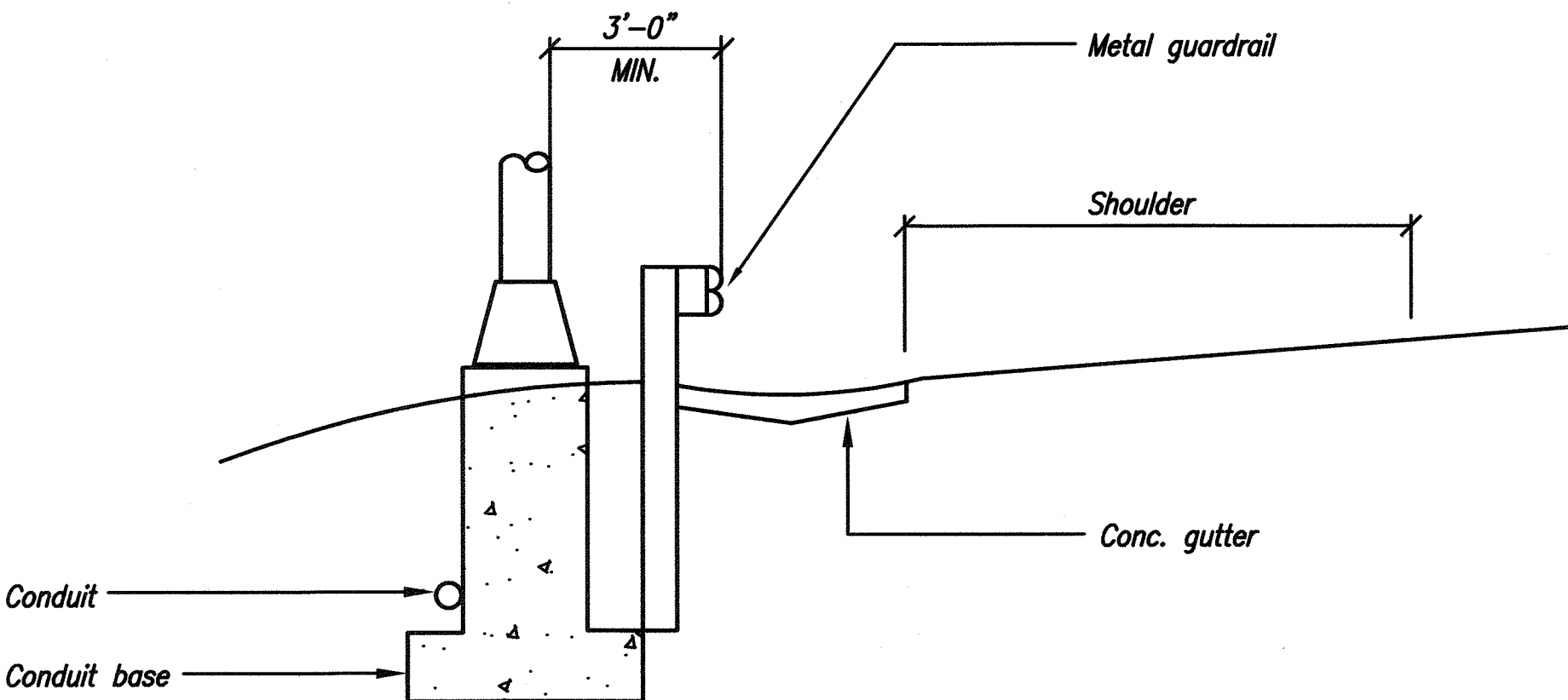
- BACKFILL DATA**
Type "A" backfill: earth and gravel, maximum rock size shall be 1" and the mixture shall contain not more than 50% by volume of rock particles, 95% compaction
Type "B" backfill: earth and gravel, mixture must pass a 1/2" mesh screen & contain not more than 20% by volume of rock particles, 95% compaction. If material at bottom of trench is not type "B", an additional 3" shall be excavated and type "B" backfill provided
- DUCT SEPARATION REQUIREMENTS**
ELEC - ELEC 2"
ELEC - TEL 3"
TEL - TEL 2"
ST LT - TEL 2"
ST LT - ST LT 2"
- Asphalt pavement and/or concrete sidewalk restoration shall be equal or better than original in quality and thickness.
- Where grassed areas and plants have been damaged during construction, restore the areas to as close as their original condition as practicable.
- Comply with eia/tia 569 & applicable utility company requirements. perform a mandrel test after ducts are installed.
- Excess excavated material shall be hauled and disposed by the contractor.
- It is not the intent of these plans and specifications to imply that all existing utilities are shown on the plans. only those known to exist by the engineer from his search of records at the time of design are indicated on these plans.
- Investigate, probe, and tone traverse of new ductline. expose, locate and protect the existing underground utilities including irrigation, drainage, sewage, electrical, communication and water system lines on affected by this project.
- Operate the existing irrigation, drainage, sewage, electrical, communication and water systems to help determine the location and condition of the various systems prior to start of construction.
- The contractor to arrange with the respective utility companies to tone and mark the location and depth of the existing utilities.
- Exercise proper care by hand trenching when excavating in areas nearby existing underground facilities. the contractor to be responsible to repair and/or pay any damages to the existing facilities. damages to the existing facilities to be reported immediately to all concerned parties. all repair work shall be done within 36 hours to match its original condition and in accordance with the standards of the various utility companies and agencies.
- Pavement and/of concrete sidewalk restoration shall be equal or better than original in quality and thickness. cut pavement 6" beyond trench.
- Grassed areas and plants damaged during construction shall be restored to as close as their original condition as practicable. suitable topsoil shall be provided for top 6" of backfill.
- Contractor shall use heavy machine equipment to excavate if basalt and large rocks are encountered.
- Contractor shall shore, brace and dewater within the excavated trenches as required.



PLAN

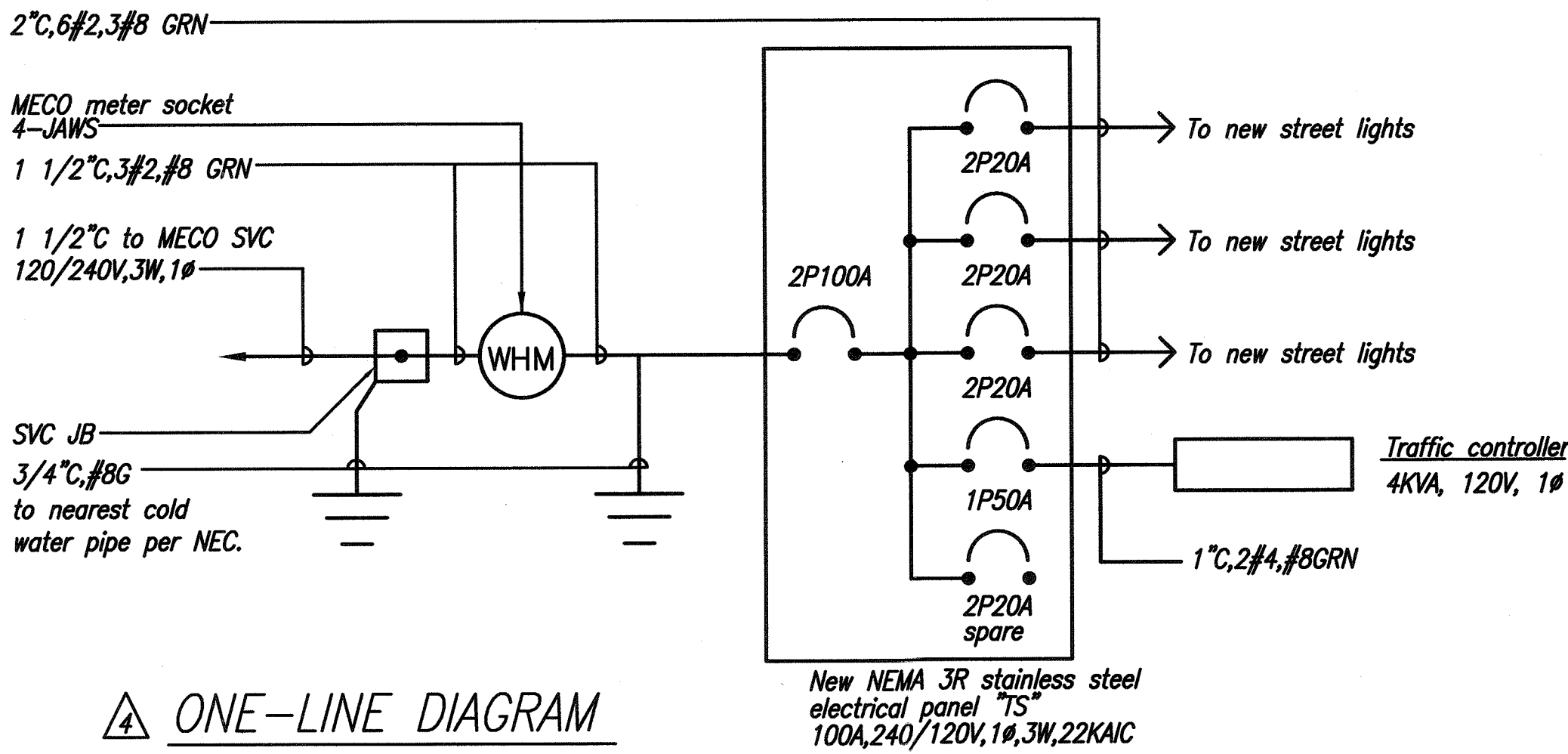


ELEVATION-SECTION (CONDITION "A")



ELEVATION-SECTION (CONDITION "B")

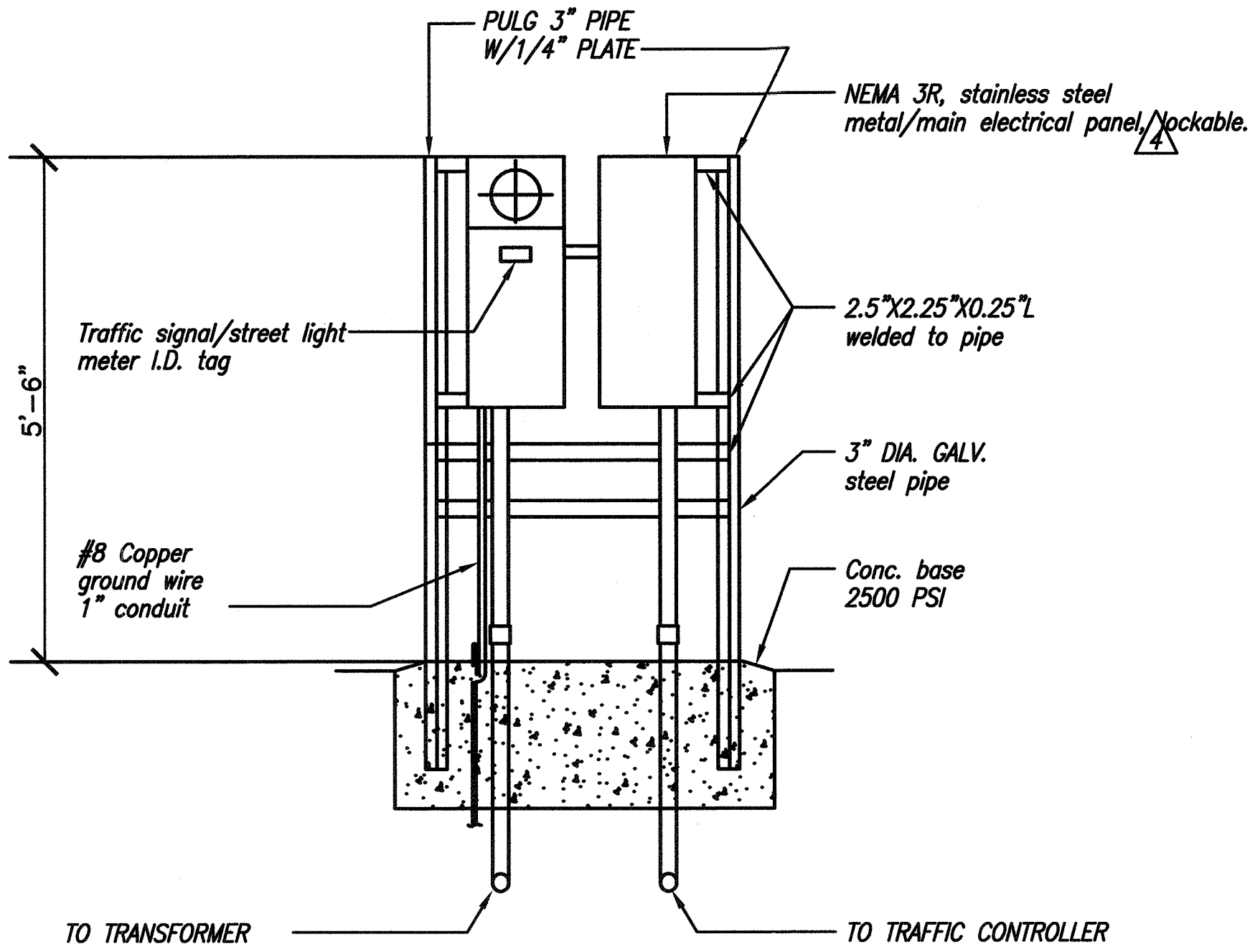
A LIGHT POLE PLACEMENT DETAIL
E-8 N.T.S.



ONE-LINE DIAGRAM

N.T.S.
NOTES

- Verify reqmts w/ meco
- Verify & locate exact location of traffic signal controllers with civil

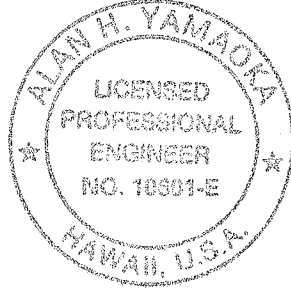


B SERVICE EQUIPMENT DETAILS (TRAFFIC SIGNALS)
E-8 N.T.S.

NOTES

- Pedestal shall be hot dipped galv. after fabrication.
- All fastening bolts, nuts, and washers shall be stainless steel.
- Provide 4 ft. clearance in front of meter.
- Verify & coordinate requirements with meco

4 4-12-13 Rewire new street lights to new service equipment panel.

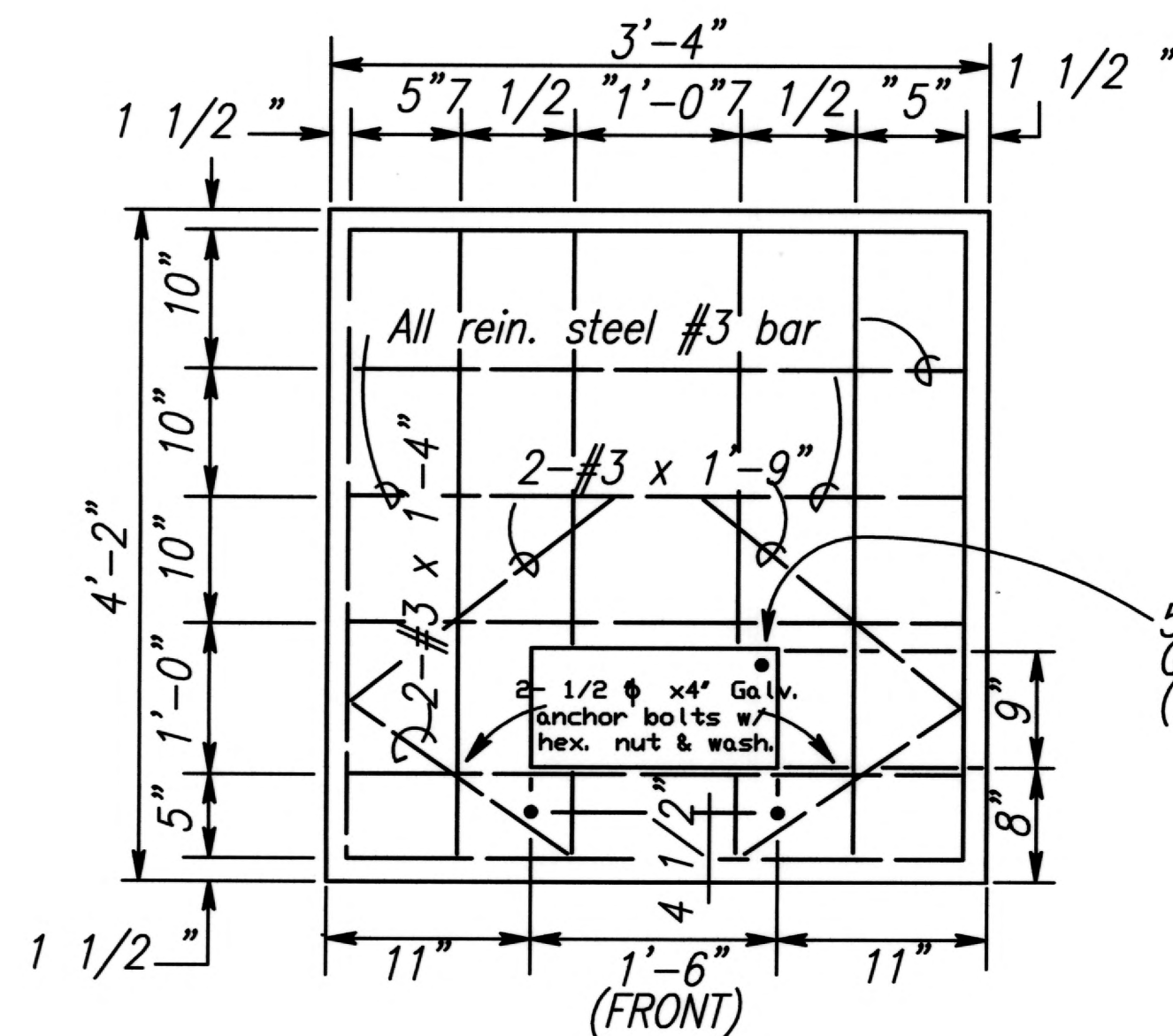


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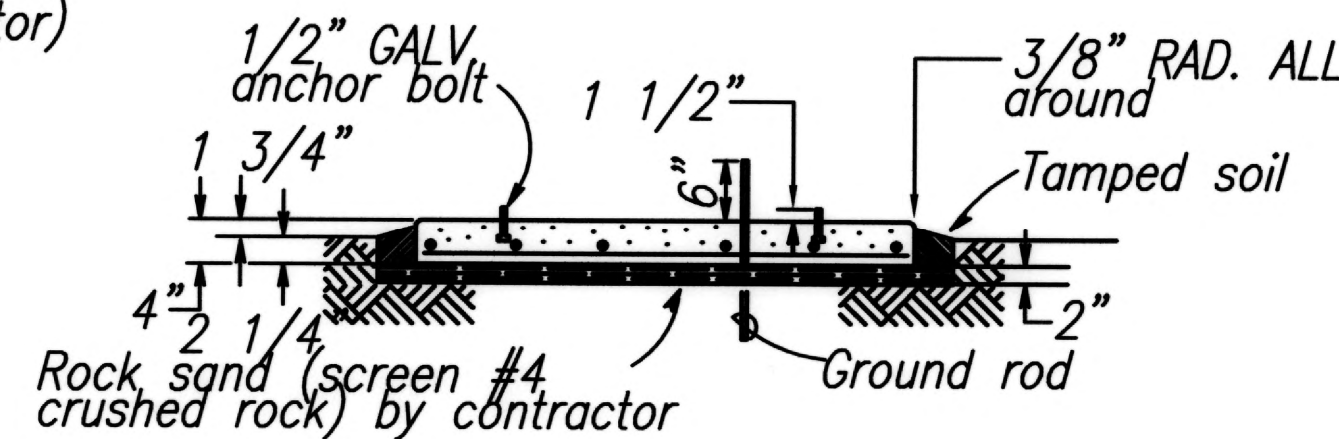
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ONE LINE DIAGRAM, CONCRETE BASE, SERVICE EQUIPMENT, DUCT SECTION DETAILS
KAHULUI AIRPORT
ACCESS ROAD, PHASE I
Federal Aid Project No. NH-0380(10)
Scale: As Shown Date: February 2013

SHEET No. E-8 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(10)	2013	149	166



PLAN PRECAST PAD
N.T.S.

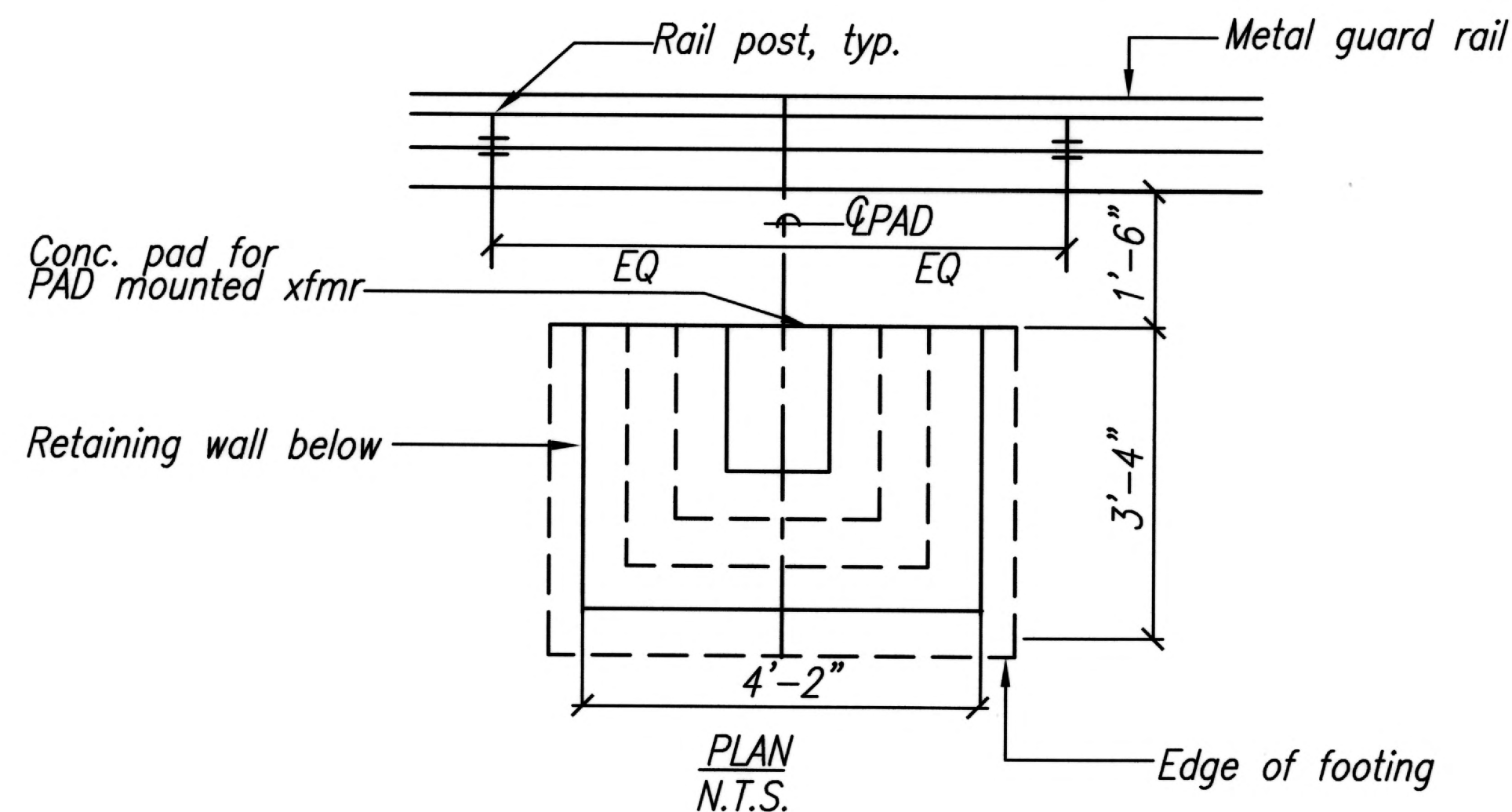


ELEVATION
N.T.S.

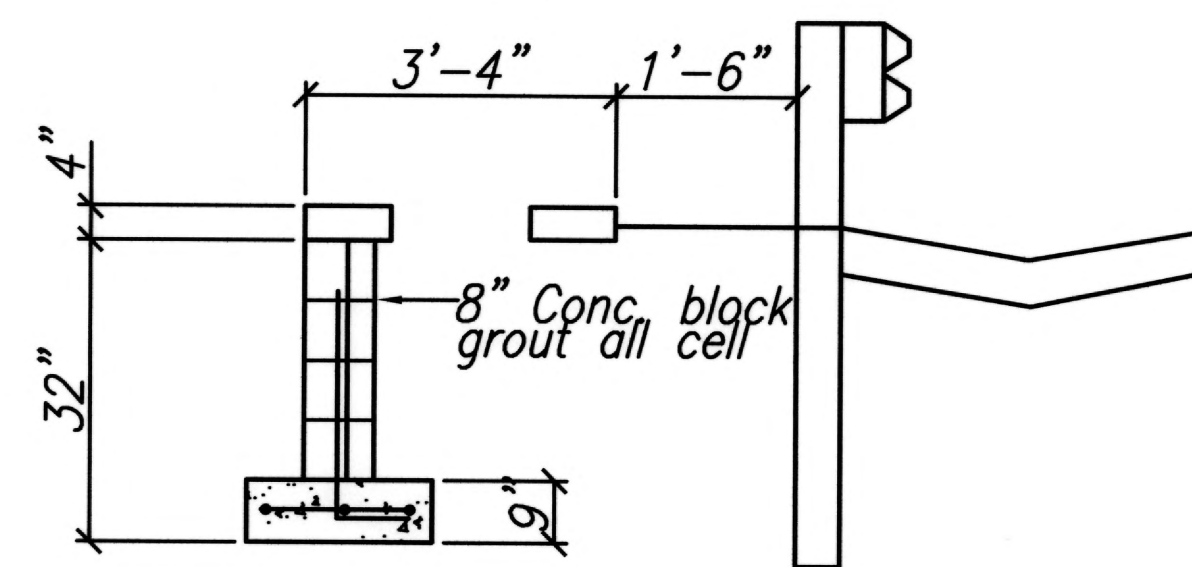
A CONCRETE PAD FOR PADMOUNT TRANSFORMER

NOTES:

1. Compressive strength of concrete shall be 3,000 p.s.i. at 28 days
2. Top of pad shall be smooth, true, level and other exposed surfaces shall be smooth and free from defects.
3. Concrete shall be cured by approved method (astm a15).
4. Reinf. bars shall be clean deformed bars.
5. All items shall be furnished in place complete by contractor.



PLAN
N.T.S.



SECTION "A"
N.T.S.

B GRADE ADJUSTMENT WALL @ XFMR PAD DETAIL

CUSTOMER NOTES

1. The contractor is to furnish materials & construct the facilities for the padmount transformer including the concrete pad, primary & secondary ducts and anchor bolts, concrete curb & rock fill around the pad, when required, shall also be furnished & installed by the contractor.
2. Grade sufficiently around the lot site to prevent future filling in of the lot. when required, the contractor shall construct a retaining wall of suitable material to prevent future filling in of the lot.
3. Compact by rolling the site in accordance with county of maui std. specifications for compacting sidewalk areas.
4. MECO shall have 24-hour access to the transformer without going through locked areas.
5. MECO shall have a minimum of 10 ft. wide vehicular access to the transformer installation.
6. Bends due to changes of grade are to have minimum radius of 20'-0". the duct is to be pvc schedule 40 pipe. the contractor is to install the duct from the pad to the riser pole or handhole as designated on the plan.
7. One copperweld ground rod 5/8" ϕ x 8'-0" long is to be provided and installed by the contractor. the rod is to extend 6" above the finished pad. tie the rod to a water pipe with #1/0 copper wire. this tie may be eliminated where the water pipe is more than 25' away.
8. No permanent or temporary structure or object shall be erected or placed within two feet of the edge of the concrete pad and 8ft. in front.
9. When the concrete pad is located in the vicinity of exist'g. or future combustible material, combustible buildings, the contractor shall provide safeguards as outlined in paragraph 450-25 of the national electrical code latest revision subject to the approval of the county building inspectors.
10. The front side of the concrete pad shall always be located to face the vehicular access (see notes #4 & #5) and shall be free of any obstruction at all times.
11. When parts of building or structures are located directly over the concrete pad, a minimum clearance of 9'-0" from the pad grade is required. the contractor shall provide adequate safeguards as outlined in paragraph 450-25 & 450-42 of the national electrical code, latest revision, and is subject to approval of the county building inspectors.
12. All ductlines shall contain a "mule tape" pull line (wesco cat. #0725-92000 or equivalent.)
13. After the conduits are installed, the customer shall pass a smooth bullet-shaped wooden test mandrel through the entire length of each conduit to test for freedom of burrs and obstructions.
14. Select backfill: as specified in meco's service installation manual.
15. Inspection: three working days advance notice required by the utility company for any inspection service. call meco--ph: 871-7777



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CONSULTING ENGINEERS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**CONCRETE FOOTING,
TRANSFORMER PAD
DETAILS**

KAHULUI AIRPORT
ACCESS ROAD, PHASE 1

Federal Aid Project No. NH-0380(10)

Scale: As Shown Date: February 2013

SHEET No. E-9 OF 10 SHEETS

