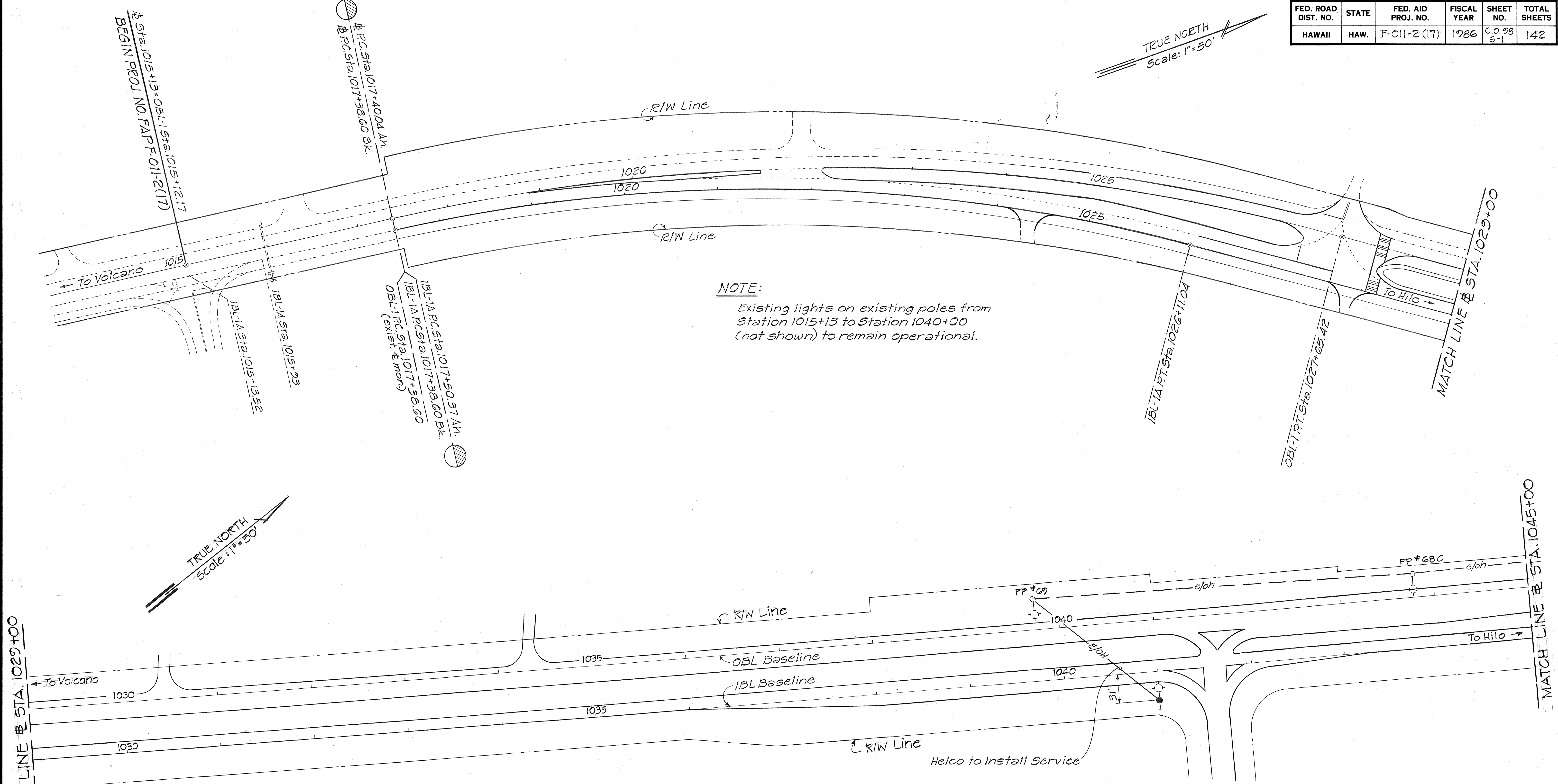


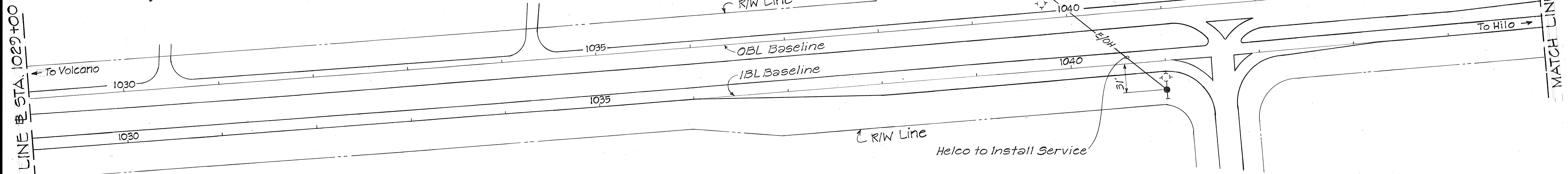
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-011-2 (17)	1986	C.O. 98 S-1	142

TRUE NORTH
Scale: 1"=50'



NOTE:
Existing lights on existing poles from
Station 1015+13 to Station 1040+00
(not shown) to remain operational.

TRUE NORTH
Scale: 1"=50'



STA. 1041+00 R/L
Relocation of Pole w/Anchor
and Luminaire and Required
Electrical Work to be Done
By Contractor for F.A.R.
No. F-011-2 (17)

CONTRACT CHANGE ORDER No. 29

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**HIGHWAY LIGHTING
FOR VOLCANO ROAD**
KEAAU AGRICULTURAL SUBDIVISION
TO SLAUGHTER HOUSE ROAD
F.A.R. No. F-011-2 (17)
Scale: 1"=50' DATE: MAY, 1986
SHEET No. E1 OF 4 SHEETS

5/13/86	Added Highway Lights
Date	Revision

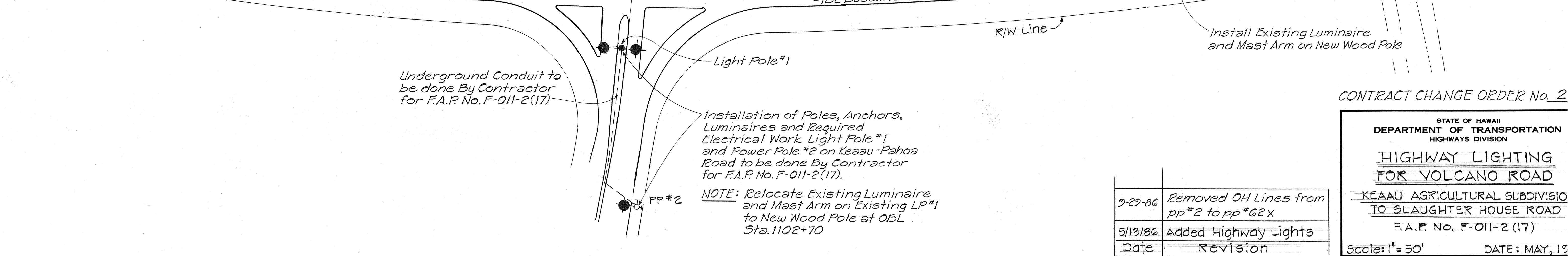
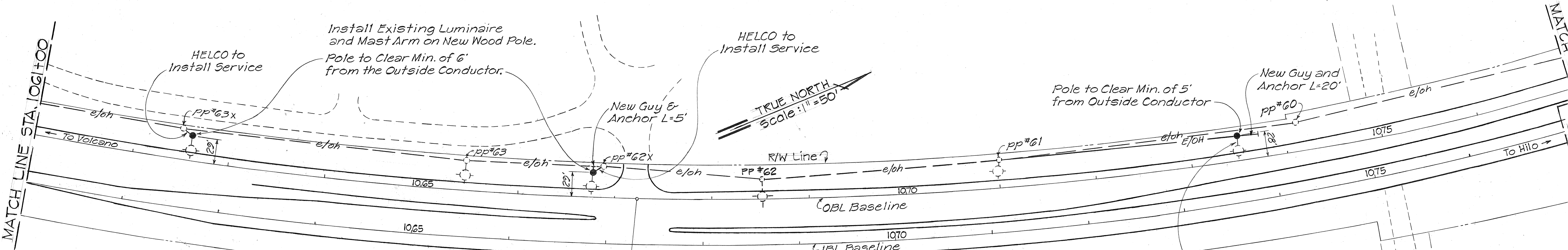
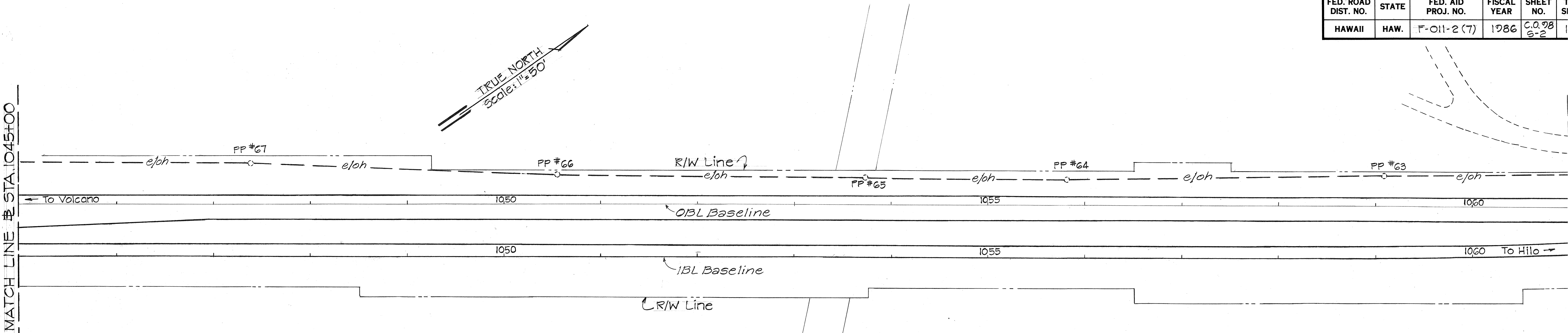
C.O. 98 S-1

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-011-2 (7)	1986	C.O. 98 S-2	142

MATCH LINE STA. 1045+00

MATCH LINE STA. 1061+00



NOTE: Relocate Existing Luminaire and Mast Arm on Existing LP #1 to New Wood Pole at OBL Sta. 1102+70

CONTRACT CHANGE ORDER No. 29

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

HIGHWAY LIGHTING

FOR VOLCANO ROAD

KEAAU AGRICULTURAL SUBDIVISION

TO SLAUGHTER HOUSE ROAD

F.A.P. No. F-011-2 (17)

Scale: 1" = 50'

DATE: MAY, 1986

SHEET No. E2 OF 4 SHEETS

7-29-86	Removed OH Lines from pp #2 to pp #62x
5/13/86	Added Highway Lights
Date	Revision

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

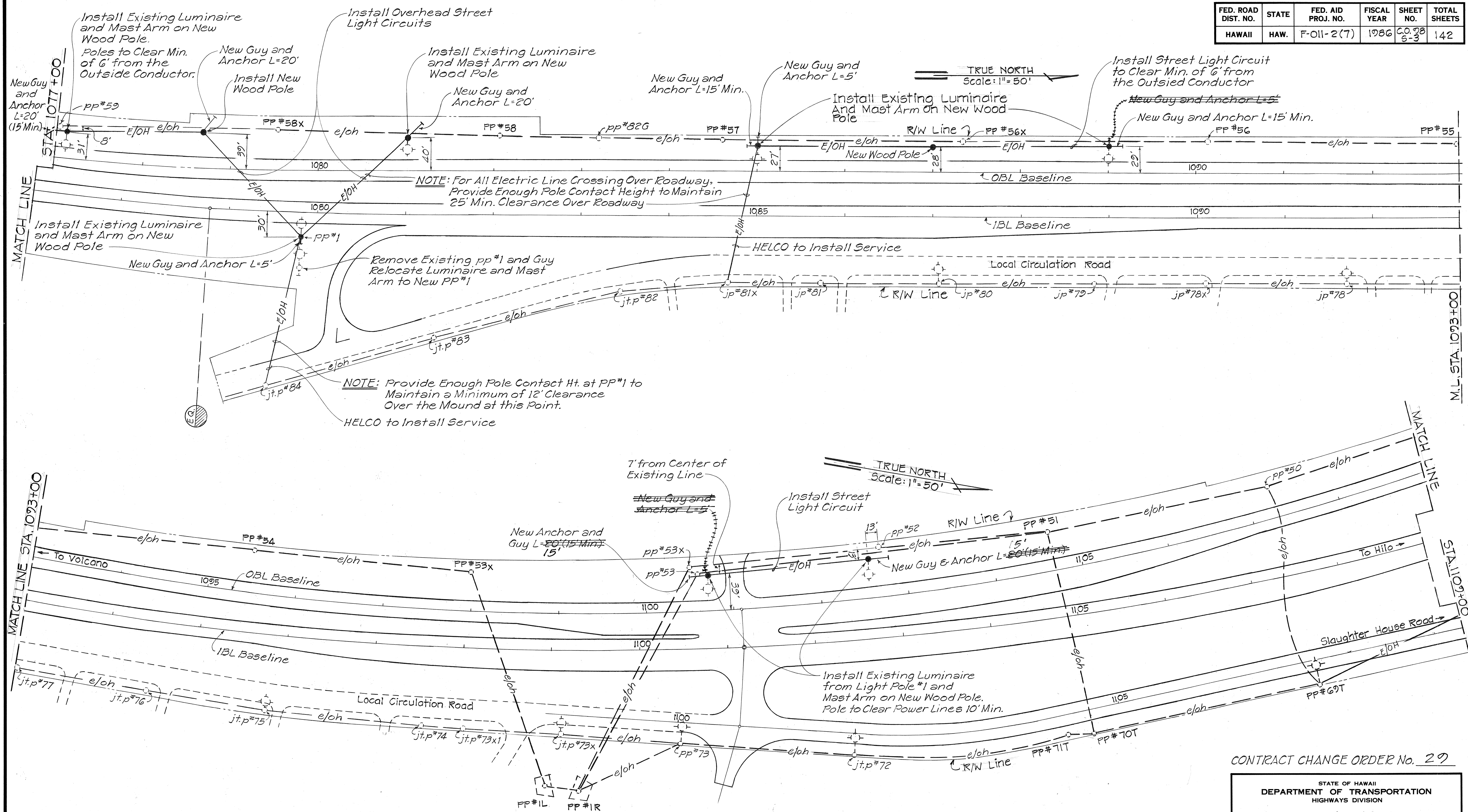
C.O. 98 S-2

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HIGHWAY LIGHTING
FOR VOLCANO ROAD
KEAAU AGRICULTURAL SUBDIVISION
TO SLAUGHTER HOUSE ROAD
E.A.R. No. F-011-2(17)

Scale: 1" = 50' DATE: MAY, 1986

SHEET No. 53 OF SHEETS



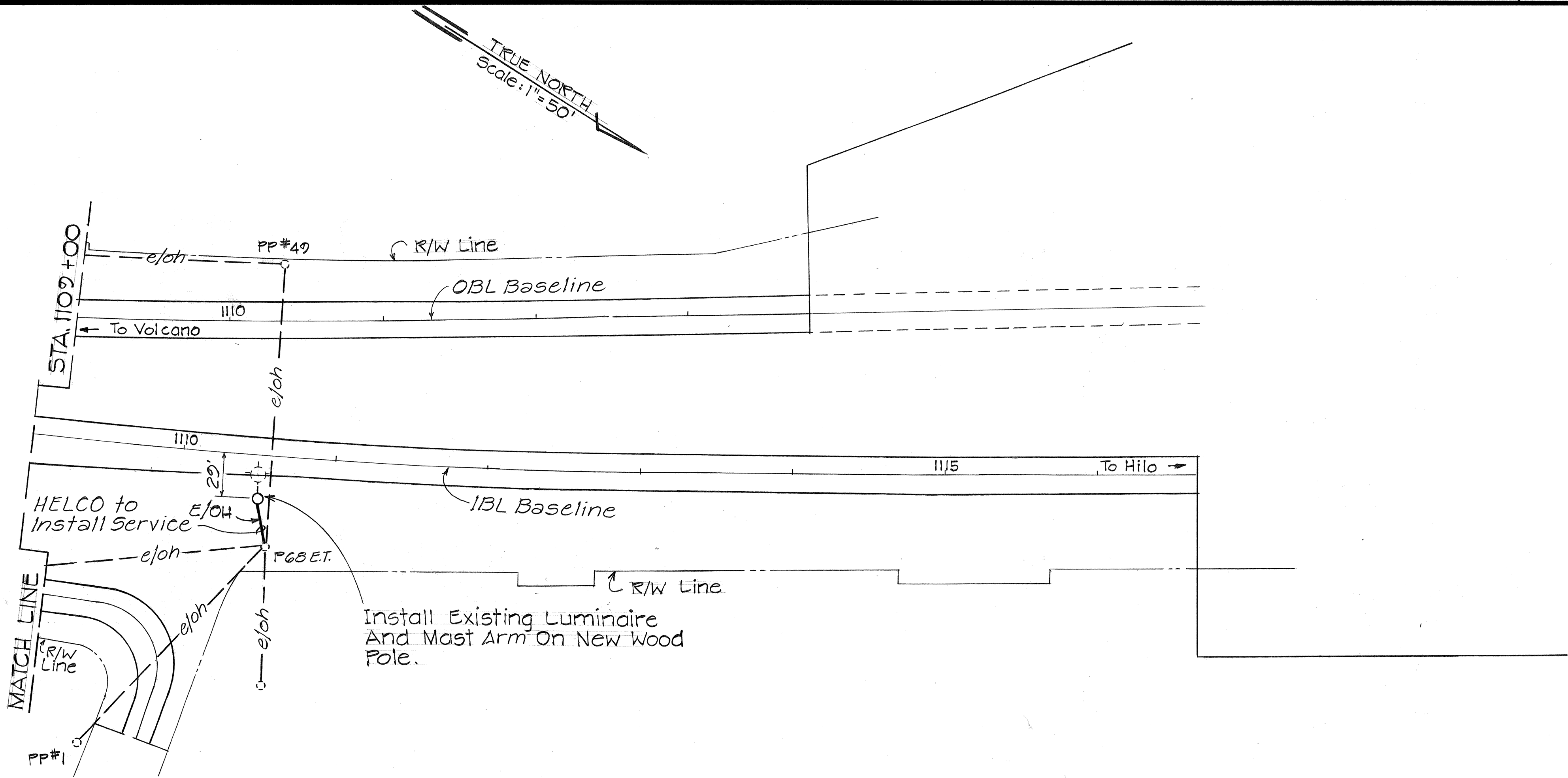
7-05-86	Added New Pole at Sta. 1087+00. Deleted Crossing Over Hwy. at Sta. 1089+00. Added Clearance Notes.
5/13/86	Added Highway Lights
Date	Revision

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-011-2 (17)	1986	C.O. 98 S-4	142

CONSTRUCTION NOTES

- Construction work shall be scheduled to provide street lighting during all hours of darkness with either new or existing luminaires, or a combination thereof. Temporary connections shall be made to accomplish this end. The continuity of street lighting circuits shall be maintained until the existing series street lighting fixtures are ready for removal.
- New pole locations shall be staked and approved by the Engineer prior to excavation is started. Adjustment of pole locations in the field will be required to clear underground and aerial utility lines.
- Contractor shall notify Project Engineer from Dept. of Transportation State Highway Division 72 hours in advance before commencing installation of Highway Lighting System. Phone: 935-3347
- Contractor shall be responsible for coordinating and informing Hilo Electric of light pole location on site prior to installation of their secondary cables.
- Final acceptance and inspection will be undertaken only after all work has been completed.
- Contractor shall at his expense keep the project and surrounding area from dust nuisance and shall be responsible for cleaning and removal of all silt and debris generated by the excavation work and deposited and accumulated within ditches, drain pipes and on public roadways.
- All existing utilities whether or not shown on plans shall be protected at all times during construction and any damages to them shall be repaired and paid for by the contractor



LEGEND

- Existing Wood Pole And Existing Luminaire (No Field Change Unless Noted Otherwise)
- New Wood Pole w/ Relocated Luminaire And Mast Arm
- New Wood Pole
- Existing Wood Pole
- Relocated Wood Pole
- Existing Overhead Electrical Cable
- New Overhead Electrical Cable
- New Metal Light Standard w/ New Luminaire And Mast Arm
- Relocated Pole w/ New Luminaire And Mast Arm w/ New Guy And Anchors
- New Pole w/ New Guy And Anchor

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

5/13/86	Added Highway Lights
Date	Revision

CONTRACT CHANGE ORDER No. 29

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HIGHWAY LIGHTING
FOR VOLCANO ROAD
KEAAU AGRICULTURAL SUBDIVISION
TO SLAUGHTER HOUSE ROAD
F.A.R. No. F-011-2 (17)
Scale: 1"=50' DATE: MAY, 1986

MATERIAL LIST

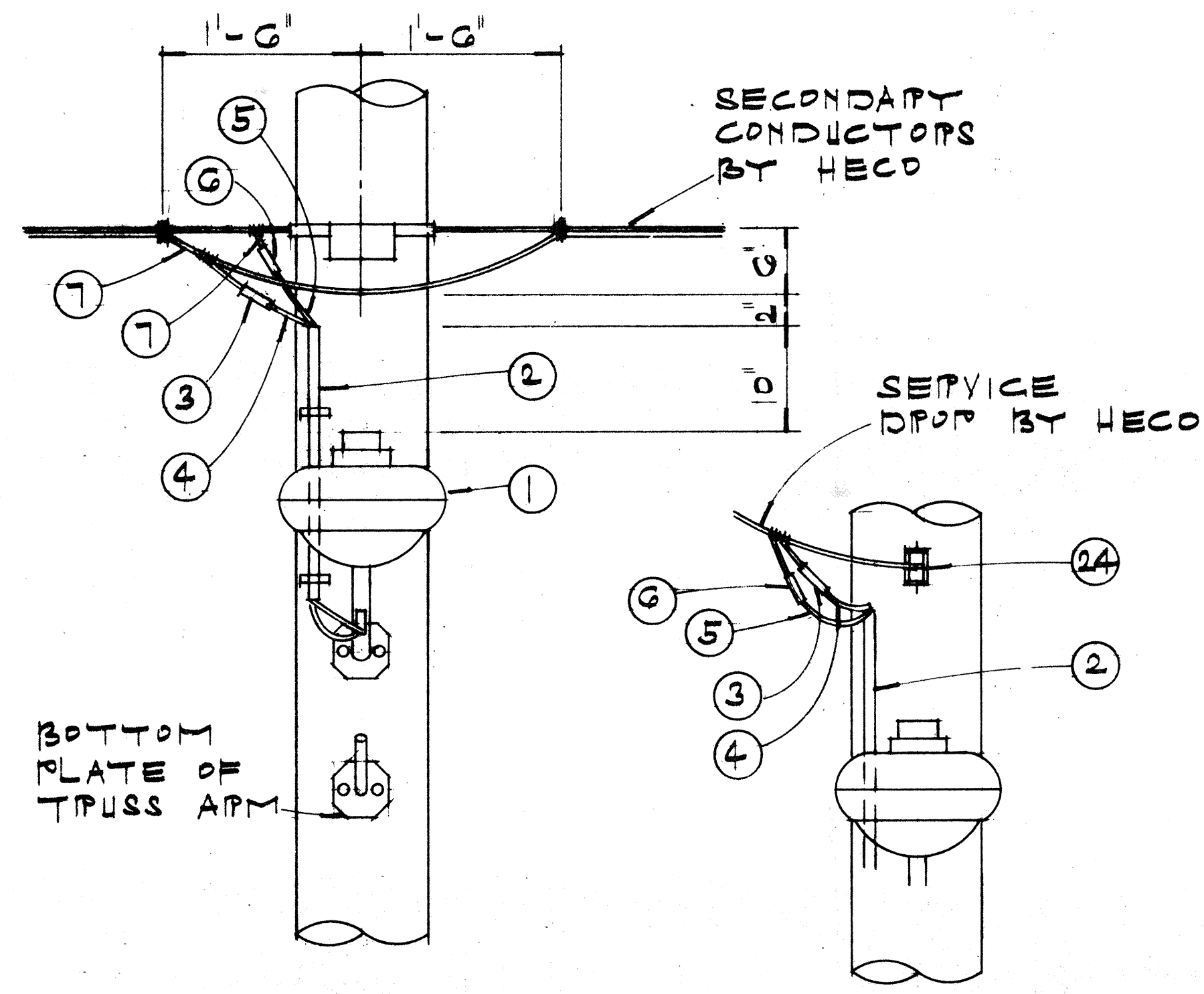
ITEM NO.	DESCRIPTION
1	LUMINAIRE (TYPE AS REQ'D. ON PLANS) & BRACKET (AS REQ'D.) WITH PHOTO-ELECTRIC CONTROL (AS REQ'D.).
2	CONDUIT, 3/4" PVC SCHEDULE 80 & STRAPS.
3	IN LINE FUSE HOLDER W/10A FUSE.
4	WIPE, #10 AWG STRANDED COPPER, TYPE PHW BLACK.
5	WIPE, #10 AWG STRANDED COPPER, TYPE PHW WHITE.
6	IN LINE UNFUSED, INSULATED SEPARABLE CONNECTOR.
7	WIPE #8 AWG 7-STRAND ALUMINUM, TYPE PHW.
8	THIMBLE CLEVIS, ALUM. ALLOY W/ ALUM. ALLOY EYELET.
9	WIRES, 2-#1/0 CROSS-LIMITED POLYETHYLENE ALUM. W/ #3/0 AAAC NEUTRAL MESSENGER.
10	PREFORMED GUY GRIP
11	GUY WIPE, 3/8" EHS, GALV.
12	ANCHOR GUY HOOK W/ 3/4" THRU BOLT & 2 1/4" SQ WASHER.
13	MESSENGER HANGER, CAST ALUM. W/ 5/8" ALUM. ALLOY THRU BOLT & 2 1/4" ALUM. ALLOY SQ. WASHER.
14	ALUM. SHEET WRAP (AROUND MESSENGER)
15	5/8" ALUM. ALLOY THRU BOLT W/ 2 1/2" SQ. ALUM. ALLOY CURVED WASHER (LENGTH AS REQ'D.).
16	ALUM. ALLOY SUSPENSION CLAMPS W/ LINE GUARD & ALUM. ALLOY EYELET.
17	ALUM. ALLOY PREFORMED DEADEND.
18	ANCHOR ROD 1" x 2'-0" COPPER CLAD.
19	CONCRETE DEADMAN 1'-0" x 6" W/ GALV. SQ. WASHER.
20	GUY WIPE GUARD, GALV.
21	INSULATOR, PORCELAIN.
22	LAG SCREW (SIZE AS REQ'D.)
23	5/8" GALV. THRU BOLT W/ 2 1/2" SQ. GALV. WASHER (LENGTH AS REQ'D.).
24	DEADEND SPOOL & FORK
25	ALUM. COMPRESSION TAP CONDUCTOR, #1/0 ALUM.
26	ALUM. COMPRESSION TAP CONDUCTOR, #3/0 ALUM.

NOTE:
ALL HARDWARE, UNLESS INDICATED AS ALUM. OR ALUM. ALLOY, SHALL BE HOT DIPPED GALV. STEEL.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

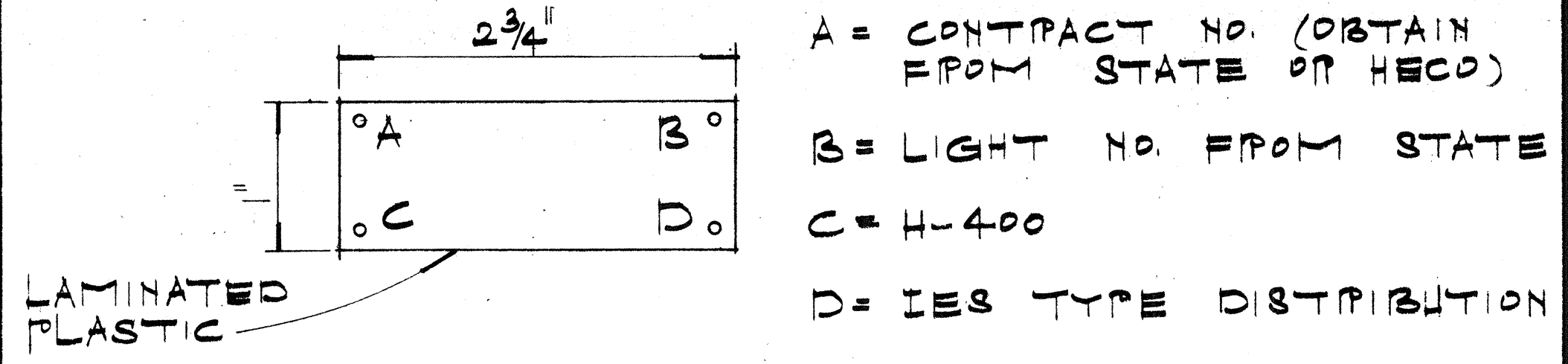
TYPICAL DETAILS
HIGHWAY LIGHTING
LUMINAIRE MOUNTED
ON WOOD POLE

NOT TO SCALE
MAY 1976
SHEET NO. 1 OF 2 SHEETS



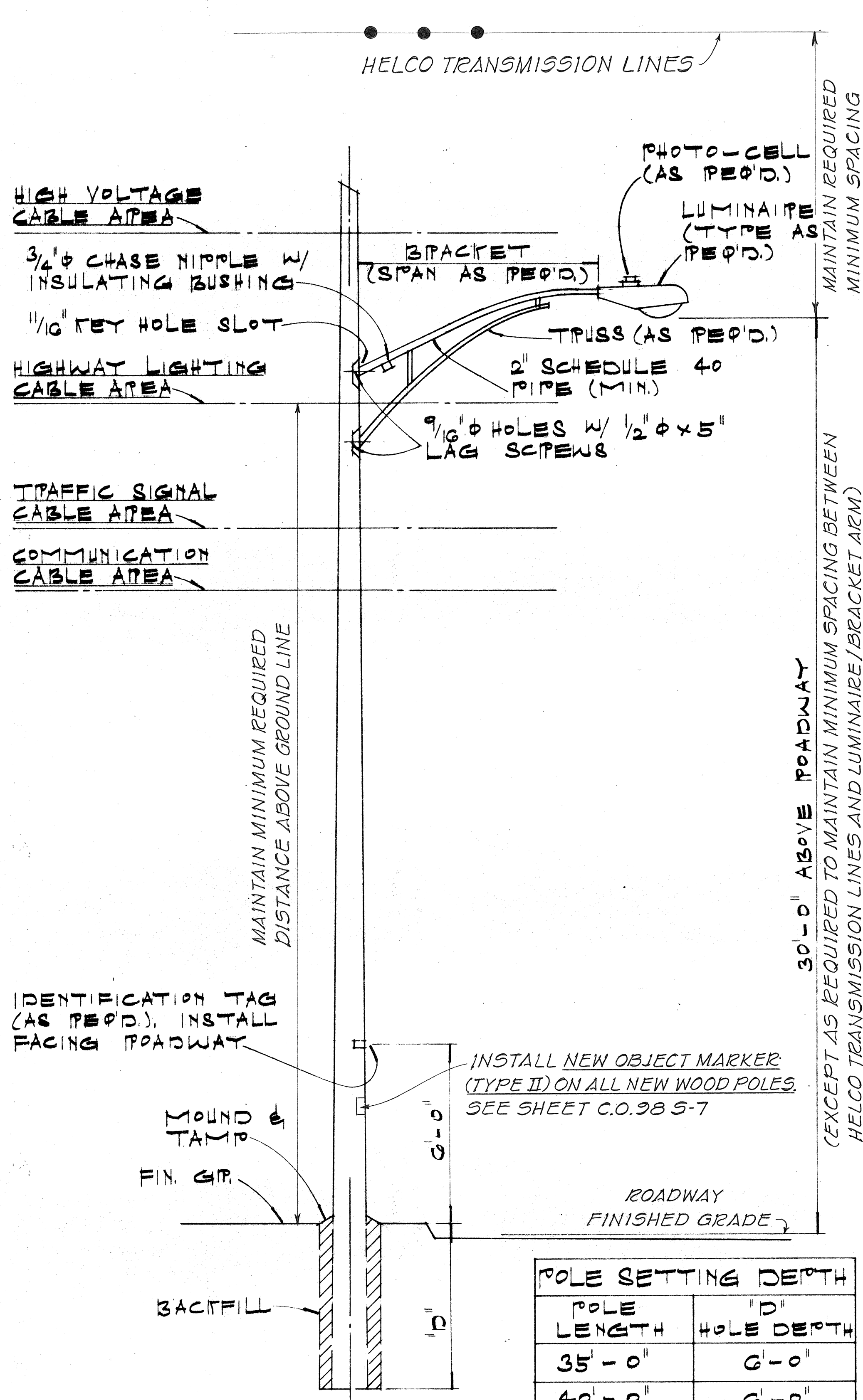
NOTE:
PROVIDE ENOUGH CABLE SLACK FOR HECO TO TAKE UP & MAKE CONNECTION.

HECO SECONDARY CONNECTION DETAIL



IDENTIFICATION TAG

- NOTE:
- PROVIDE IDENTIFICATION TAG ON ALL POLES UNLESS OTHERWISE SPECIFIED.
 - HIGHWAY LIGHT NUMBERS ON PLANS MAY NOT CORRESPOND W/ NUMBERS ON IDENTIFICATION TAGS. VERIFY LIGHT NUMBERS W/ STATE OF HAWAII.



POLE SETTING DEPTH	
POLE LENGTH	"D" HOLE DEPTH
35'-0"	6'-0"
40'-0"	6'-0"
45'-0"	6'-6"
*POLES NEXT TO EMBANKMENT	* 9'-0"

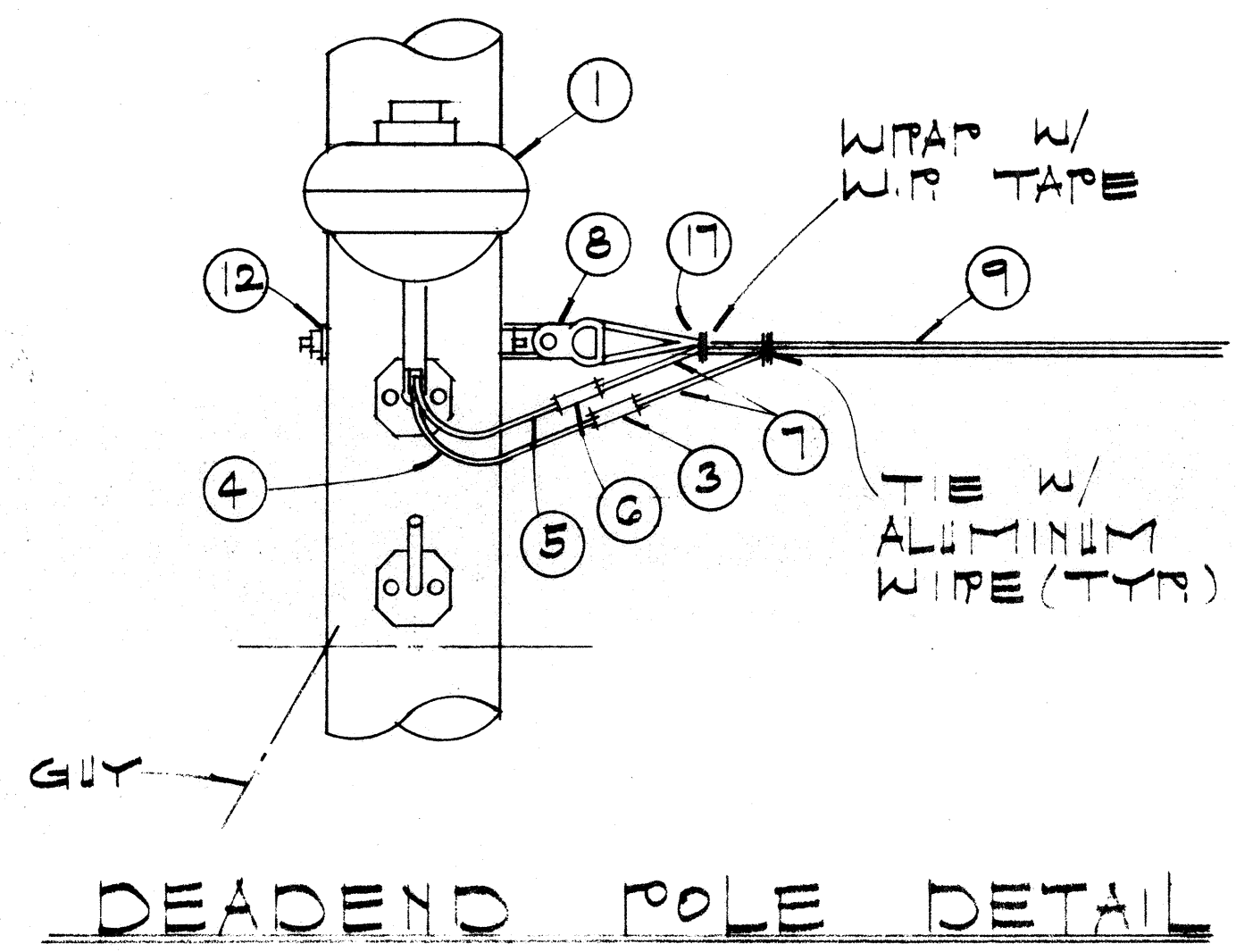
NOTE: AT FILL SLOPES, "D" IS FROM EXISTING GROUNDLINE
(IBL STA. 1079+85 & 1110+50;
OBL STA. 1089+00)

LUMINAIRE MOUNTED ON WOOD POLE

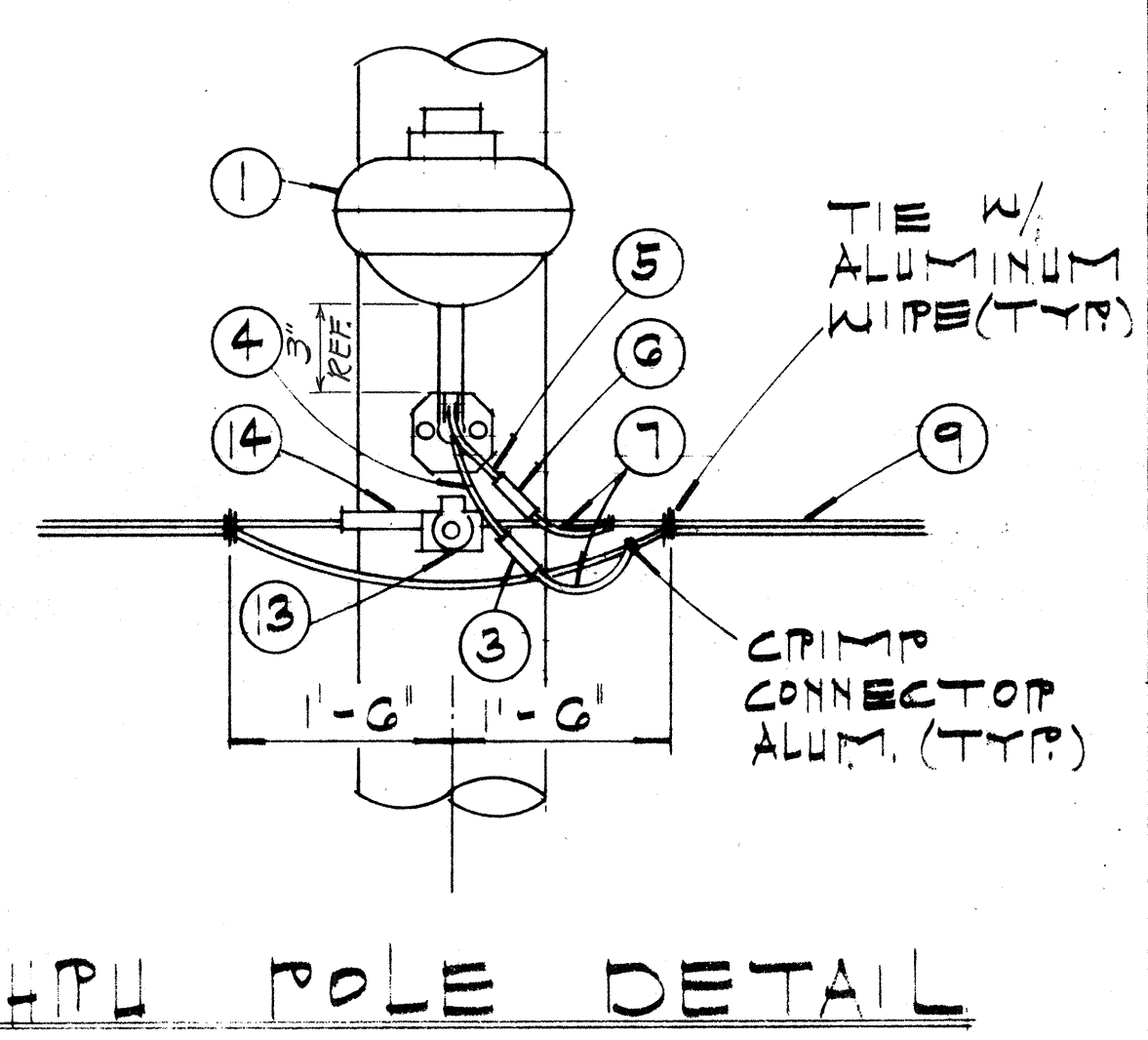
* NEW POLES AT OBL STATIONS: 1077+15, 1081+00, 1100+75, 1102+70

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

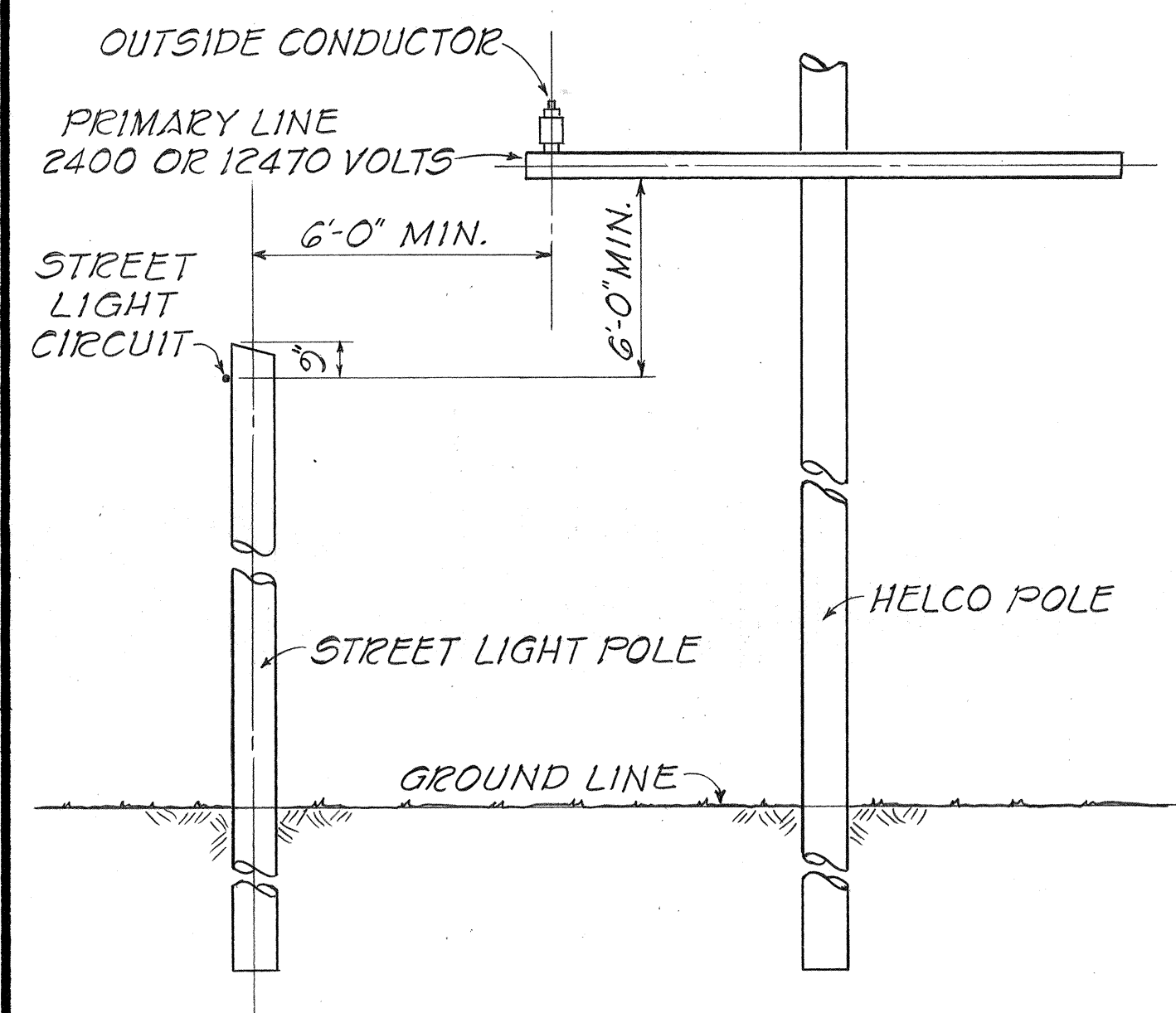
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-011-2(17)	1986	C.O. 98 S-6	142



DEADEND POLE DETAIL



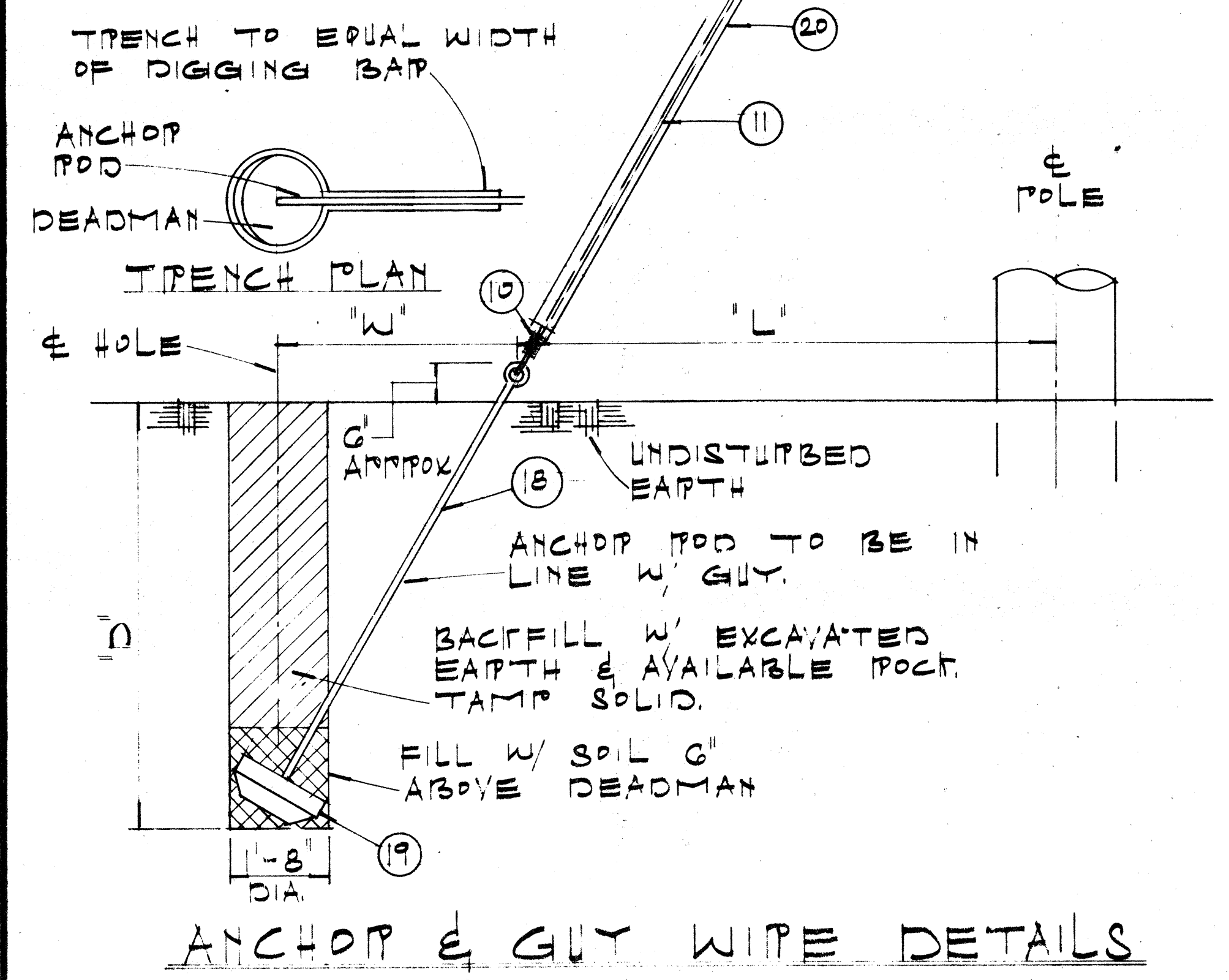
TAP POLE DETAIL



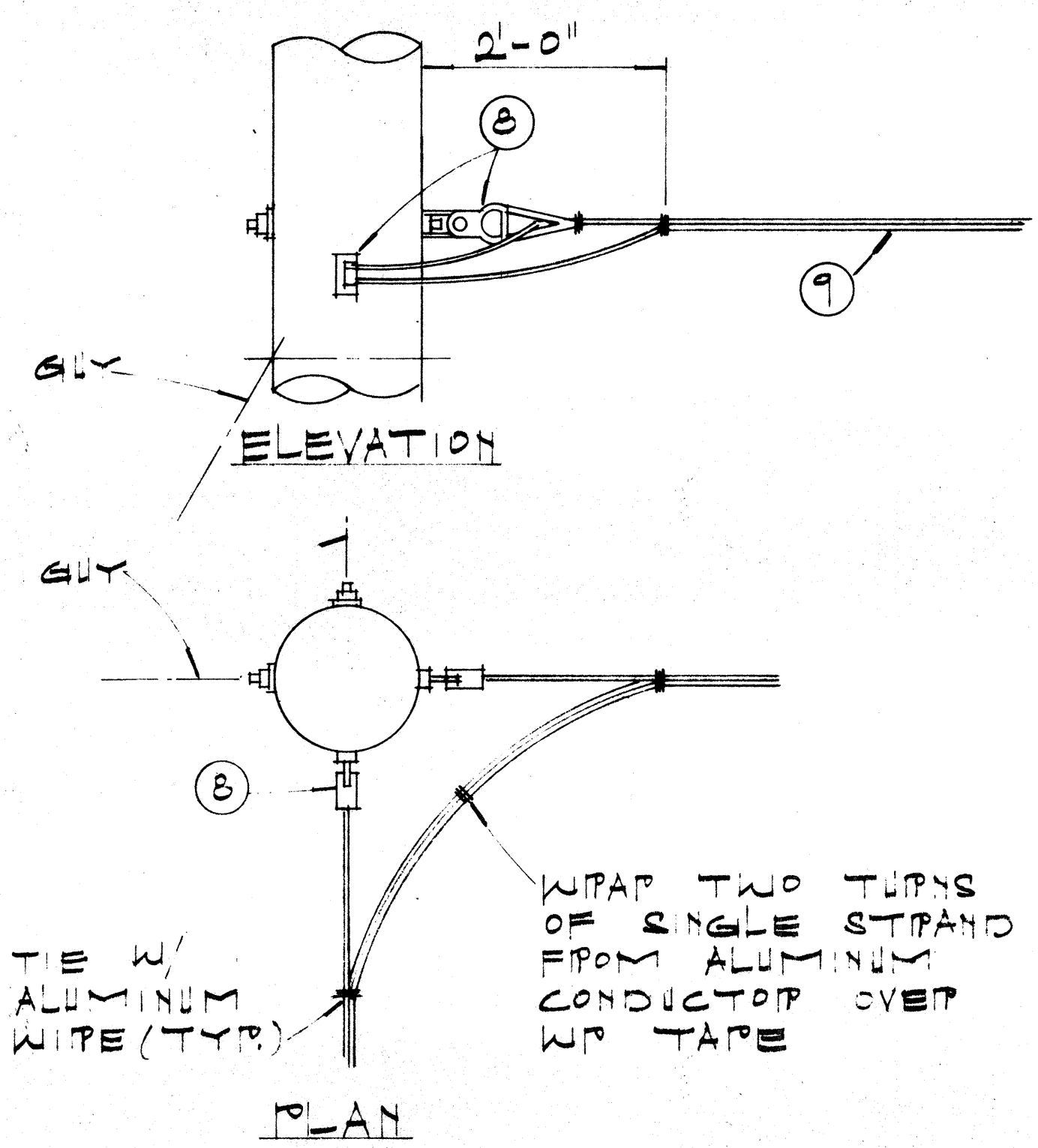
STREET LIGHT POLE MINIMUM CLEARANCE
NOT TO SCALE

ANCHOR ROD & DEADMAN DIM.

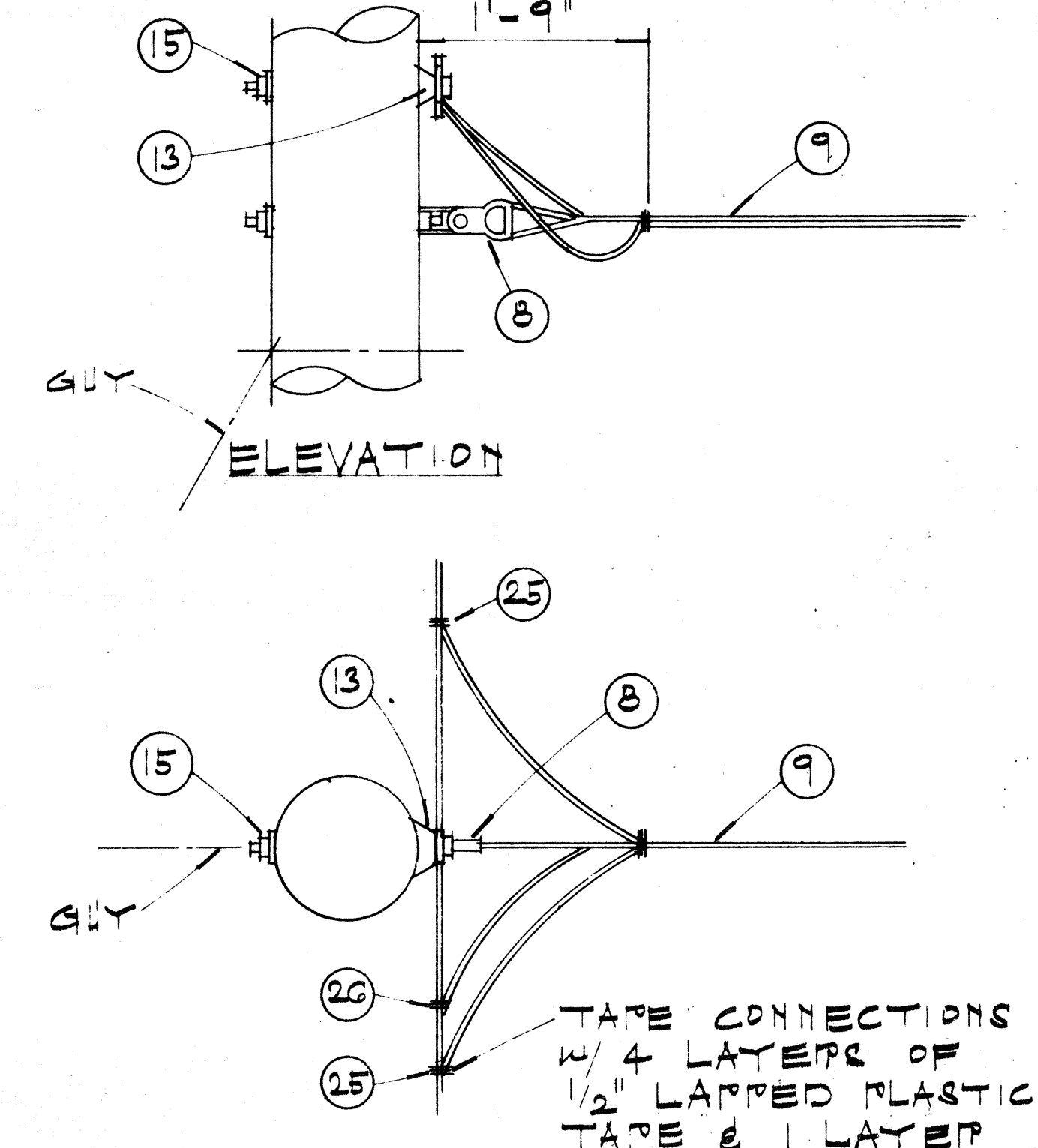
'L' E POLE TO ANCHOR ROD EYE	'W' E POLE TO ANCHOR ROD EYE	'D' VERTICAL DEPTH
20'-0"	4'-8"	5'-0"
15'-0"	4'-0"	6'-1"
10'-0"	3'-0"	6'-7"
5'-0"	1'-8"	7'-1"



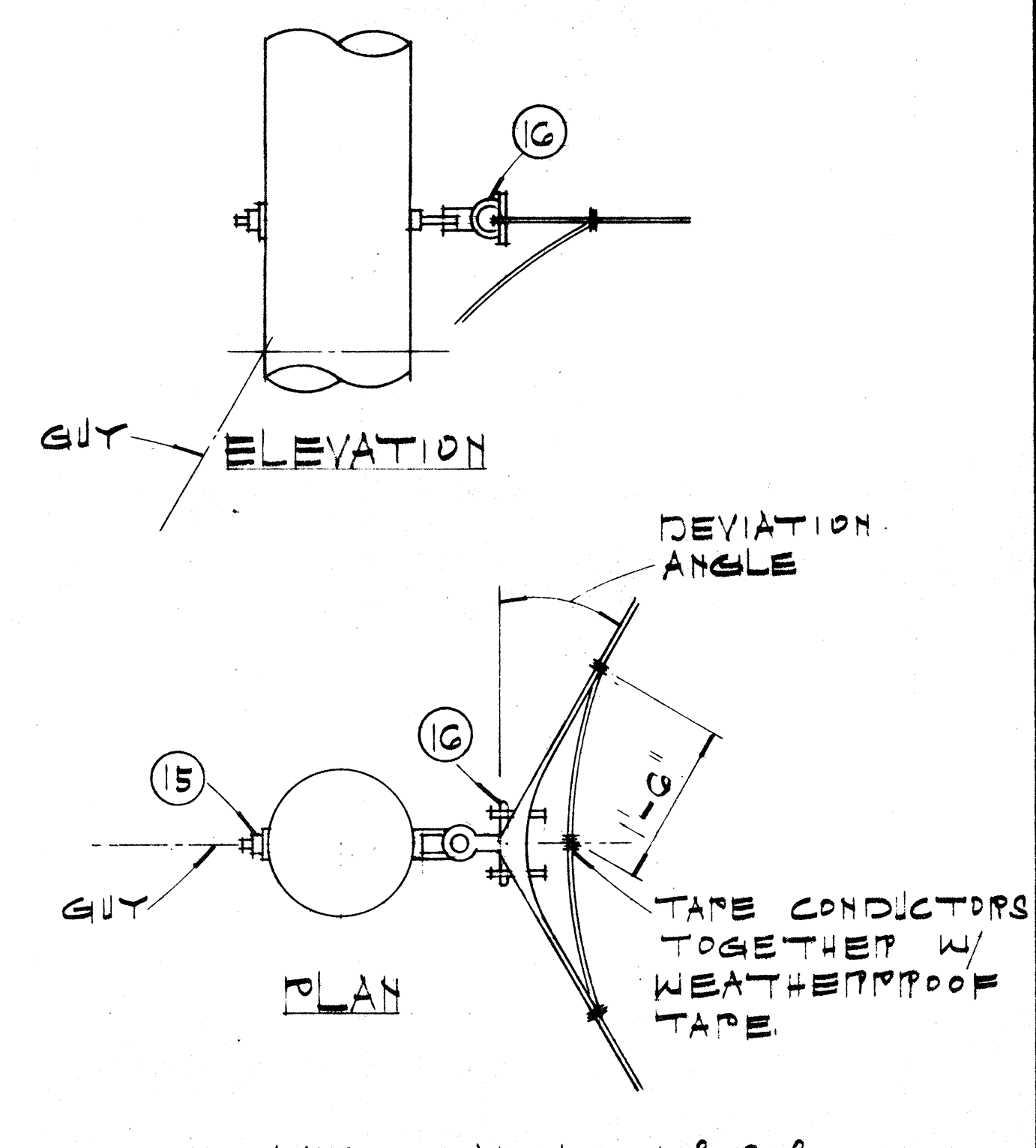
ANCHOR & GUY WIRE DETAILS



DEVIATION ANGLE 30°-90°
ANGLE POLE DETAIL



TEE POLE DETAIL



DEVIATION ANGLE 10°-30°
ANGLE POLE DETAIL

CONTRACT CHANGE ORDER No. 29

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS
HIGHWAY LIGHTING
LUMINAIRE MOUNTED
ON WOOD POLE

NOT TO SCALE MAY 1976
SHEET NO. 2 OF 2 SHEETS

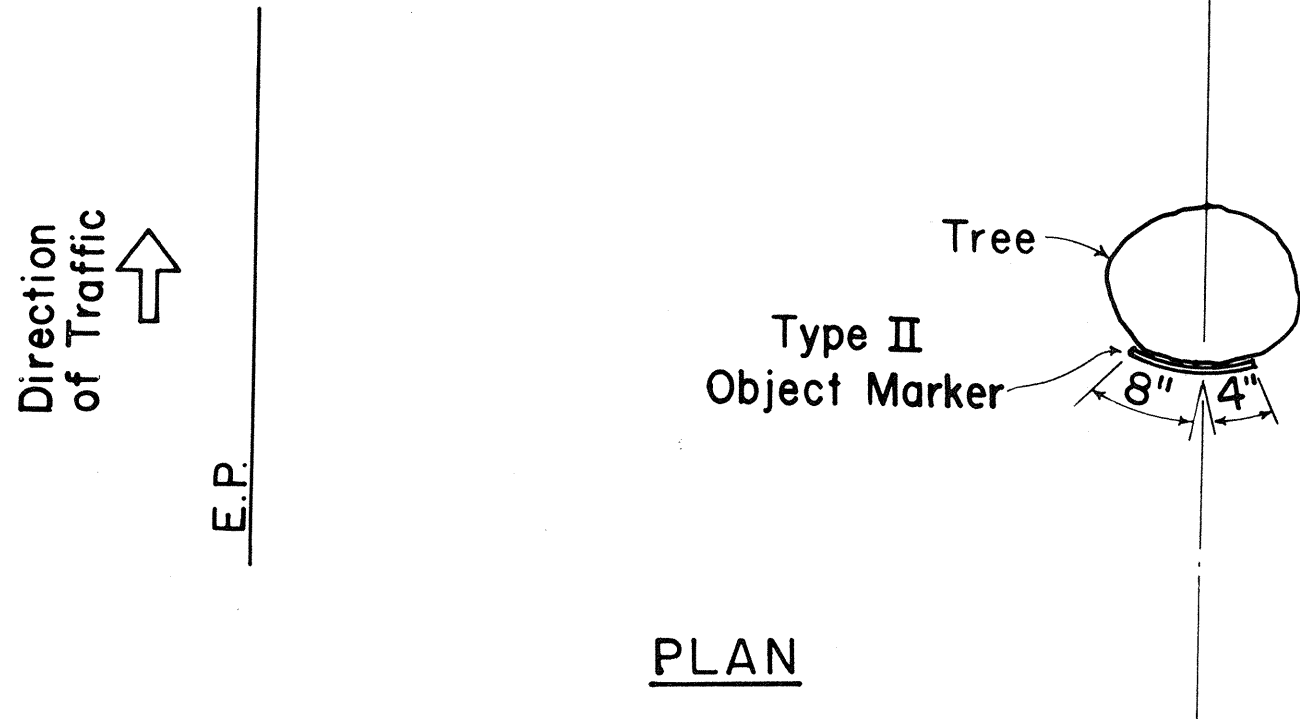
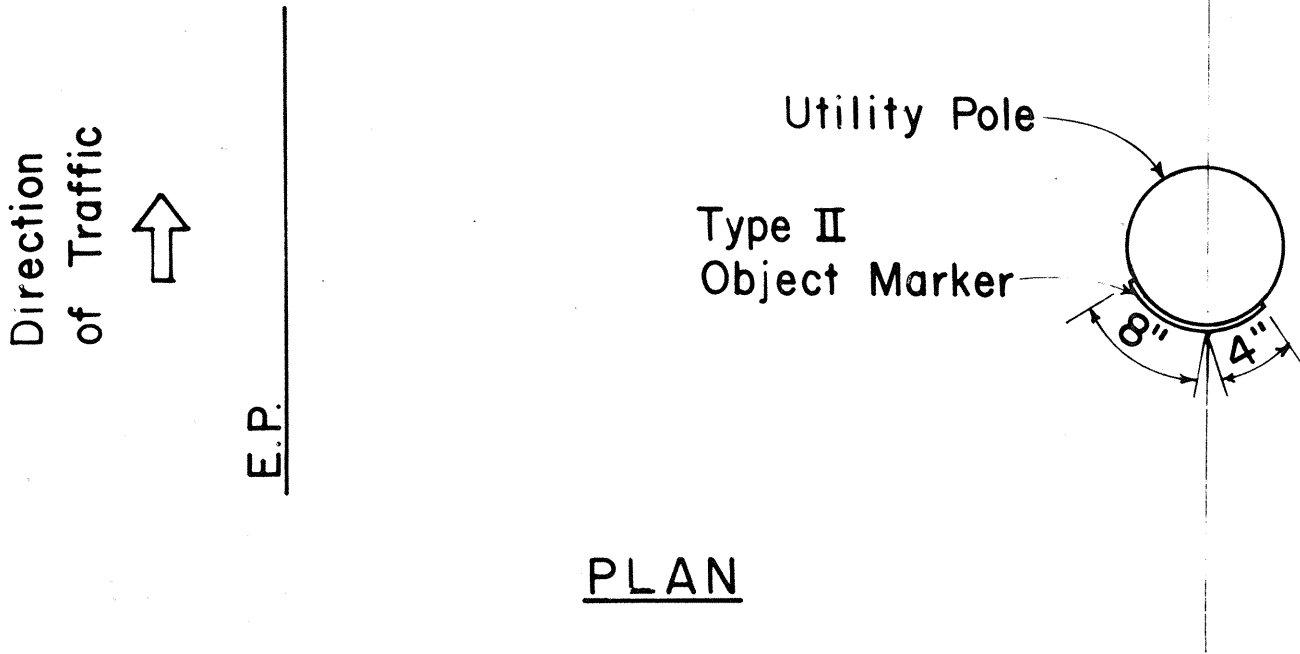
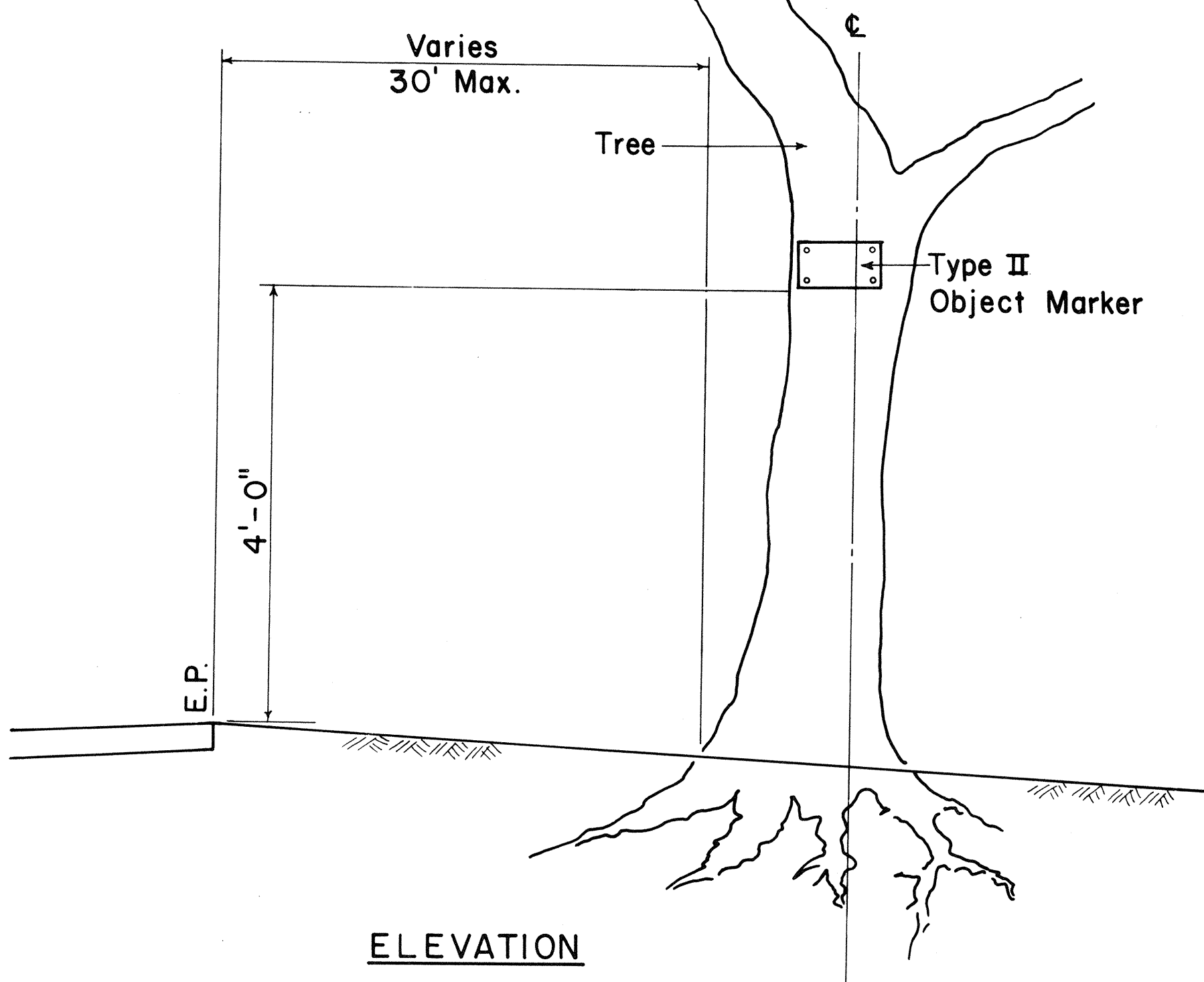
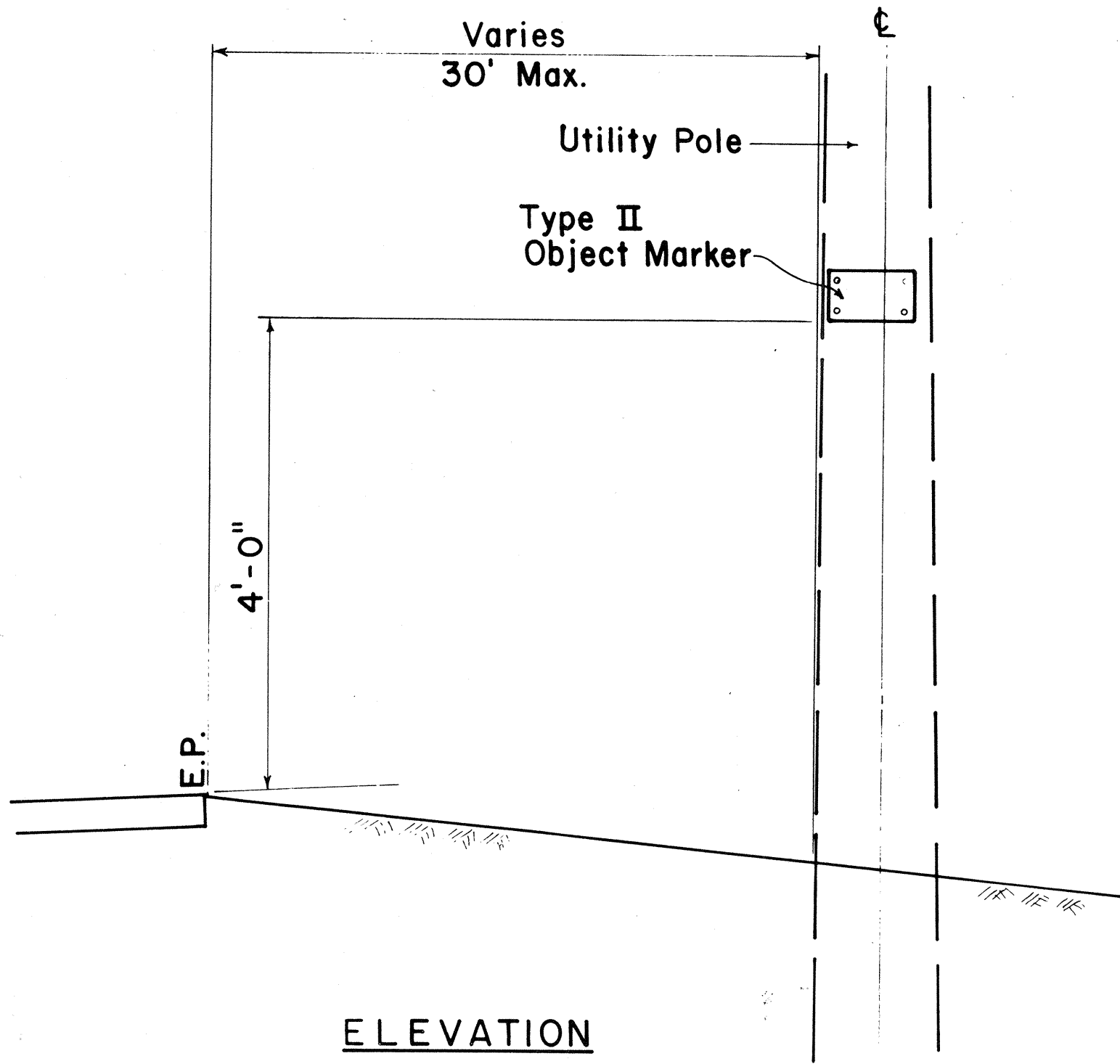
C.O. 98 S-6

DATE: _____
SURVEY PLOTTED BY: _____
DRAWN BY: _____
DESIGNED BY: _____
CHECKED BY: _____
ORIGINAL PLAN No. _____

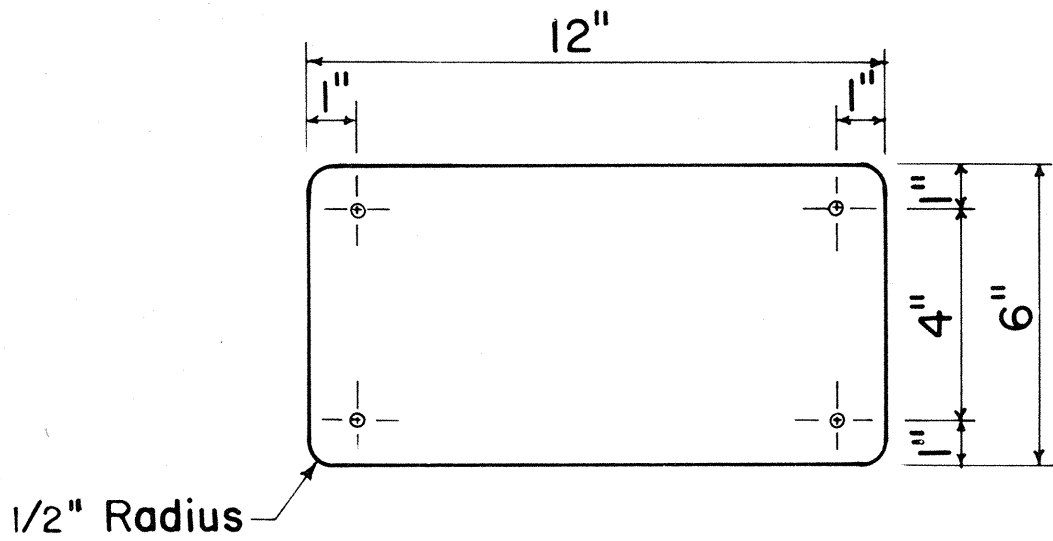
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.				

GENERAL NOTES

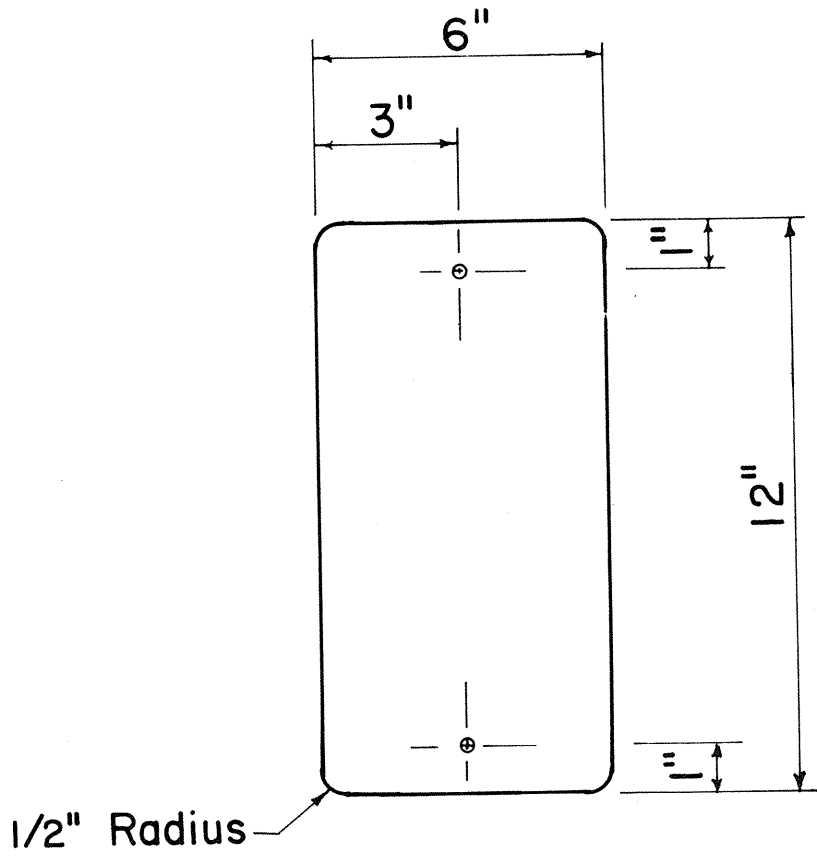
1. All objects (utility poles or trees) that are within the State highway right of way and within 30 feet of the roadway edge of pavement shall be marked as directed by the Engineer.
2. The Contractor shall prepare the mounting surface of each object as directed by the Engineer and place the Type II Object Marker as shown on this plan.
3. Type II Object Markers shall be mounted on utility poles and trees with 1 3/4" galv. roofing nails (4 ea.).
4. Branches of trees which obscure the object markers shall be trimmed. (Payment shall be incidental to Type II Object Markers as shown in the proposal).
5. Type II Object Markers for utility poles and trees, etc., shall be made of amber reflective sheeting material overlayed on 0.020" aluminum sheeting.
6. Objects such as concrete posts, concrete or rock walls and boxes, metal posts (greater than 2" in diameter), or metal boxes shall be marked with post mounted object markers. Post mounted Type II Object Markers shall conform to the following requirements:
 - a. It shall consist of amber reflective sheeting material overlayed on 0.063" thick sheet aluminum backing of the dimensions shown on the plans.
 - b. It shall be mounted on either metal posts or flexible delineator posts with 1/4"x2" galv. bolts, nuts and washers. Metal posts shall be galvanized and shall be either 1 1/2"x1 1/2", 12 gage square tube posts or 1.12 lbs. per ft. flanged channel posts.



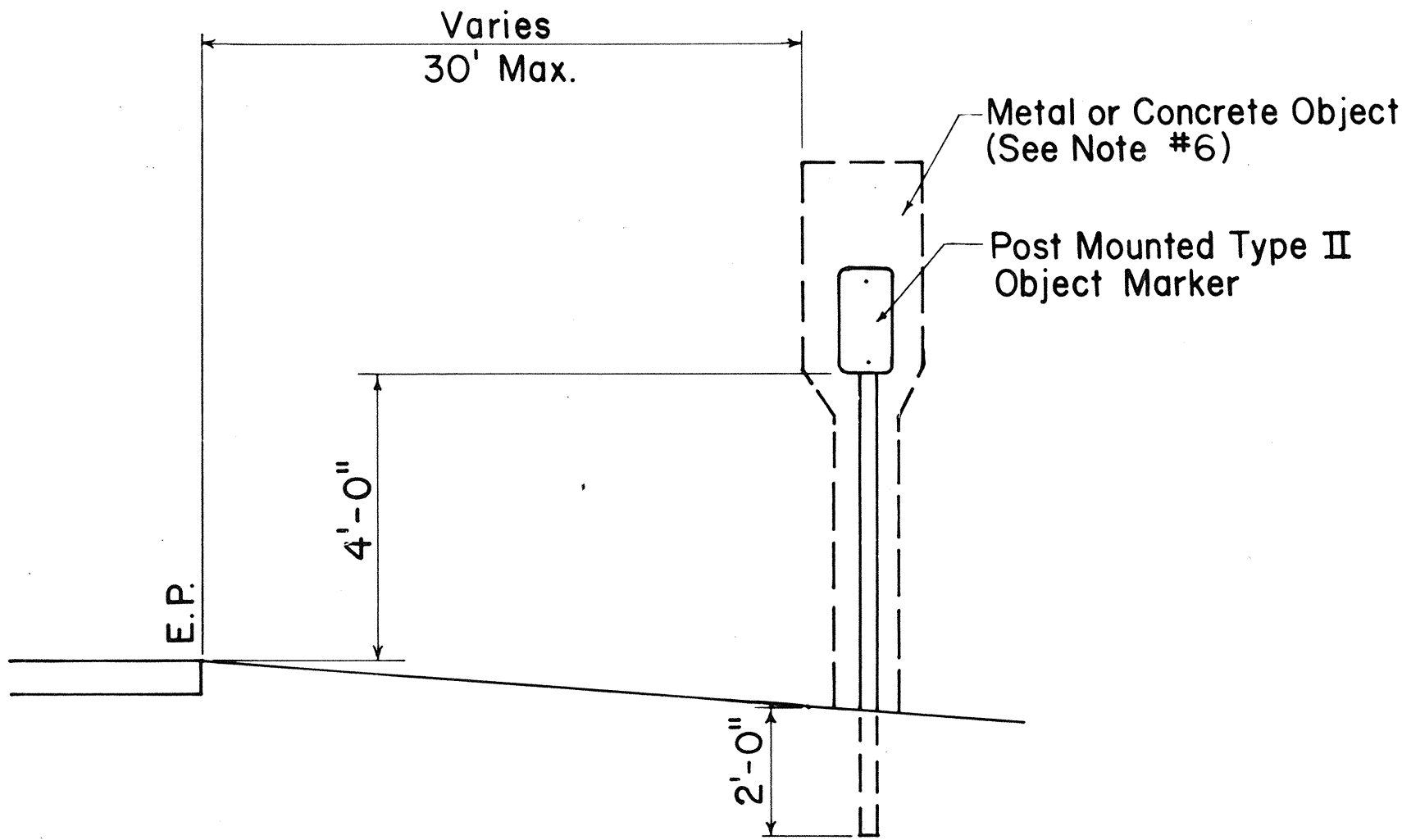
TYPICAL TYPE II OBJECT MARKER MOUNTING DETAIL



TYPE II OBJECT MARKER



TYPE II OBJECT MARKER
POST MOUNTED



POST MOUNTED TYPE II OBJECT MARKER DETAIL

CONTRACT CHANGE ORDER No. 29

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
STANDARD PLAN TE-17	
TYPE II OBJECT MARKERS	
APPROVED <i>Eichi Tanaka</i>	DATE 1/31/86
SHEET NO. OF SHEETS	

DATE	REVISION	APP'D.