

ORIGINAL PLAN	No.	SURVEY PLOTTED BY	DATE	DRAWN BY	DESIGNED BY	CHECKED BY	NOTED BY

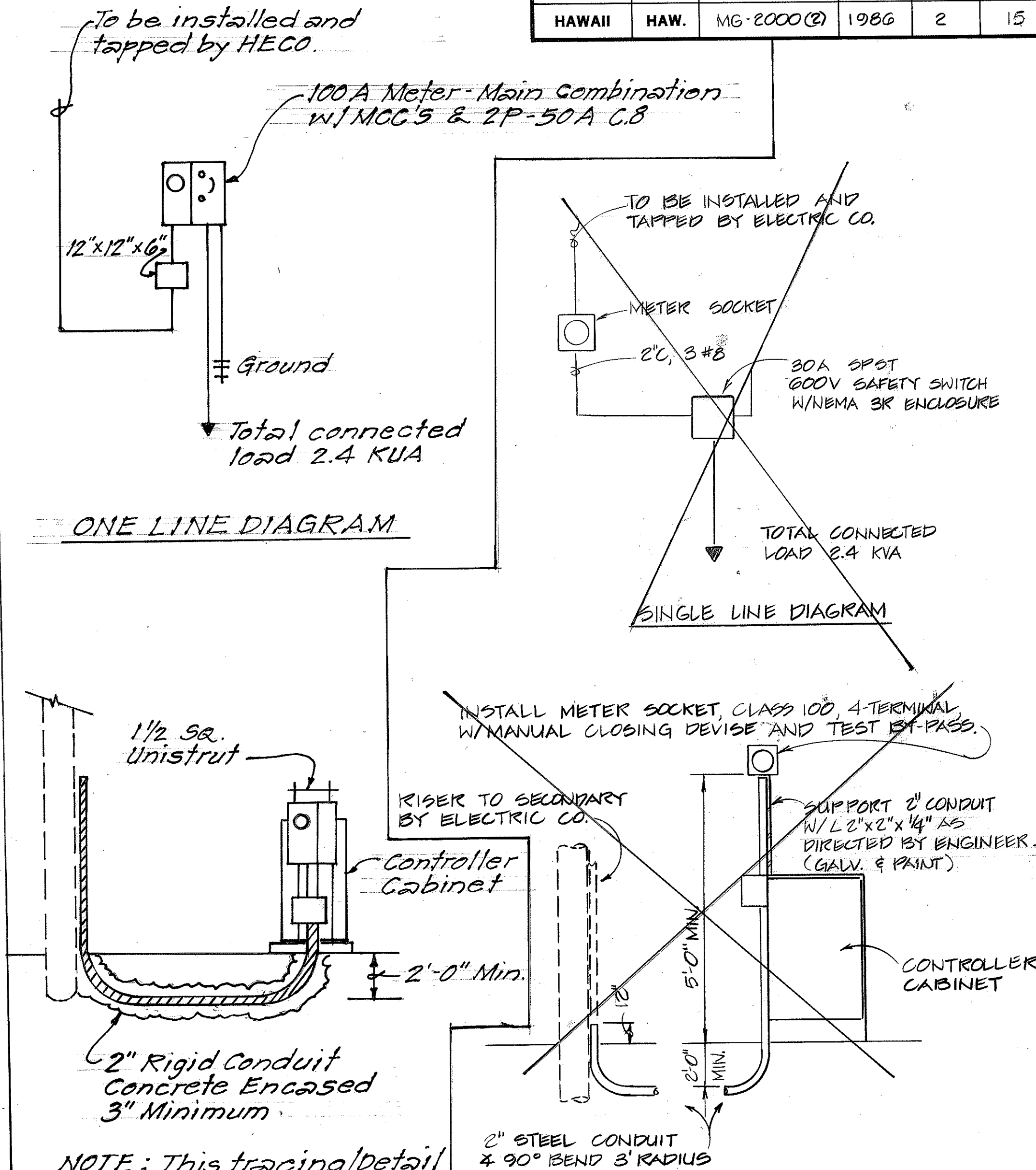
- LEGEND
- 12" RYG STANDARD TRAFFIC SIGNAL HEAD
 - STANDARD TRAFFIC AND PEDESTRIAN SIGNAL HEADS MOUNTED ON TYPE I SIGNAL STANDARD, HEIGHT = 10'
 - TRAFFIC SIGNAL HEAD MOUNTED ON TYPE II SIGNAL STANDARD, ARM SPREAD SHOWN 20'
 - TYPE "A" PULLBOX
 - TYPE "B" PULLBOX
 - LOOP DETECTOR, SERIES-PARALLEL CONNECTED
 - LOOP DETECTOR, SERIES CONNECTED
 - LP LIGHT POLE OR STREET LIGHT STANDARD
 - PP POWER POLE
 - GP GUY POLE
 - EXISTING STRIPING OR CURB TO BE REMOVED
 - NEW A.C. PAVEMENT
 - NEW PAVEMENT ARROW
 - NEW CROSSWALK MARKINGS

CONSTRUCTION NOTES

- LOCATIONS OF EXISTING UNDERGROUND STRUCTURES AND UTILITIES SUCH AS PIPELINES, CONDUITS, CABLES, ETC., SHOWN ON 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 ALL EXISTING UTILITIES WITH THE RESPECTIVE OWNERS. EXISTING UTILITIES DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN COST.
- THE LOCATION OF THE TRAFFIC SIGNAL STANDARDS, TRAFFIC SIGNAL STANDARDS WITH MAST-ARM, PEDESTRIAN PUSH BUTTONS, TRAFFIC CONTROLLER, PULLBOXES, CONDUITS AND LOOP DETECTORS SHALL BE STAKED OUT IN THE FIELD BY THE CONTRACTOR AND APPROVAL OF THE LOCATIONS SHALL BE OBTAINED FROM THE ENGINEER PRIOR TO CONSTRUCTION AND INSTALLATION.
- ALL TRAFFIC SIGNAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", FEDERAL HIGHWAY ADMINISTRATION (1978) AND AMENDMENTS.
- LOCATIONS OF PAVEMENT MARKERS AND MARKINGS (LANE LINES, STOP LINES, CROSSWALK, ETC.) SHOWN ON THE PLANS SHALL BE VERIFIED WITH THE ENGINEER PRIOR TO INSTALLATION OF THE TRAFFIC SIGNAL SYSTEM.
- REMOVAL OF PAVEMENT STRIPING SHALL BE DONE BY THE CONTRACTOR. COST SHALL BE INCIDENTAL TO OTHER ITEMS OF WORK.
- MAINTENANCE OF TRAFFIC THROUGH THE CONSTRUCTION AREA SHALL BE IN ACCORDANCE WITH PART VI OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", FEDERAL HIGHWAY ADMINISTRATION (1978) AND AS SPECIFIED IN THE SPECIAL PROVISIONS. THE CONTRACTOR SHALL FURNISH AND MAINTAIN ADEQUATE BARRICADES, BLINKERS, CONSTRUCTION SIGNS, ETC. FOR THE SAFETY OF THE MOTORING PUBLIC.
- REMOVAL OF EXISTING SIGNS SHALL ALSO INCLUDE THE REMOVAL OF POSTS AND FOUNDATIONS UNLESS OTHERWISE NOTED. ALL SIGN MATERIALS REMOVED BY THE CONTRACTOR SHALL BE DELIVERED TO THE STATE HIGHWAYS MAINTENANCE BASEYARD. COSTS FOR REMOVAL OF SIGNS AND DELIVERY TO THE STATE HIGHWAYS MAINTENANCE BASEYARD SHALL BE CONSIDERED INCIDENTAL TO OTHER ITEMS OF WORK.

TRAFFIC SIGNAL NOTES

- ALL TRAFFIC SIGNAL CONTROLLER EQUIPMENT SHALL BE COMPLETELY WIRED IN THE CABINET AND SHALL CONTROL THE TRAFFIC SIGNALS AS CALLED FOR IN THE PLANS.
- SIGNAL INDICATIONS DURING CLEARANCE INTERVAL:
 - IF A SIGNAL IS G OR \leftarrow AND WILL REMAIN G OR \leftarrow DURING THE NEXT PHASE, IT SHALL BE G OR \leftarrow DURING THE CLEARANCE INTERVAL.
 - IF A SIGNAL IS G OR \leftarrow AND WILL BECOME R OR EXTINGUISHED DURING THE NEXT PHASE, IT SHALL BE Y OR \leftarrow DURING THE CLEARANCE INTERVAL.
 - IF A SIGNAL IS R AND WILL REMAIN R OR BECOMES G DURING THE NEXT PHASE, IT SHALL REMAIN R DURING THE CLEARANCE INTERVAL.
- THE CONTROLLER FURNISHED SHALL BE A 2-4 PHASE CONTROLLER. A COORDINATION UNIT IS NOT REQUIRED FOR THIS PROJECT. HOWEVER, THE CABINET SHALL BE WIRED FOR INSTALLING IN THE FUTURE A COORDINATION UNIT OF THE SAME MANUFACTURER AS THE CONTROLLER UNIT. CONTROLLER SHALL BE MODULAR BY PHASE. NO KEYBOARD ENTRY TYPE OF PROGRAMMING SHALL BE USED.
- MINIMUM CONTROLLER CABINET SIZE SHALL BE 40" HIGH, 24" WIDE AND 14" DEEP.
- CONTRACTOR SHALL FURNISH A 50-AMPERE CIRCUIT BREAKER.
- A SOLID #8 BARE COPPER WIRE SHALL BE PULLED WITH THE TRAFFIC CONTROL CABLE FOR EQUIPMENT GROUND. COST SHALL BE INCIDENTAL TO THE INSTALLATION OF THE CONTROL CABLE.
- THE LOOP AMPLIFIER UNITS FURNISHED FOR THIS PROJECT SHALL BE CAPABLE OF OPERATING THE LOOP DETECTOR CONFIGURATIONS SHOWN ON THE PLANS.



NOTES:

- ELECTRIC CO. SHALL FURNISH AND INSTALL CABLE BETWEEN SECONDARY AND METER SOCKET.
- CONTRACTOR SHALL MAKE ALL ELECTRICAL CONNECTIONS TO CONTROLLER, PROVIDE BREAKER AND GROUND.
- CONTRACTOR SHALL PROVIDE ELECTRIC CO. ONE WEEK ADVANCE NOTICE FOR ANY WORK BY ELECTRIC CO.

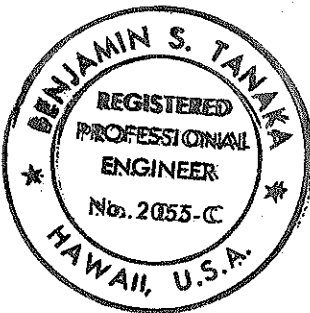
ELECTRICAL SERVICE DETAILS

NO.	DATE	REVISION
1	11/7/89	ADDED SINGLE LINE DIAGRAM
		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

FUAINAKO STREET
TRAFFIC SIGNALS AT IVALANI STREET
PROJECT NO. MG-2000(2)

CONSTRUCTION NOTES



Benjamin S. Tanaka

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

CUSTOMER NOTES

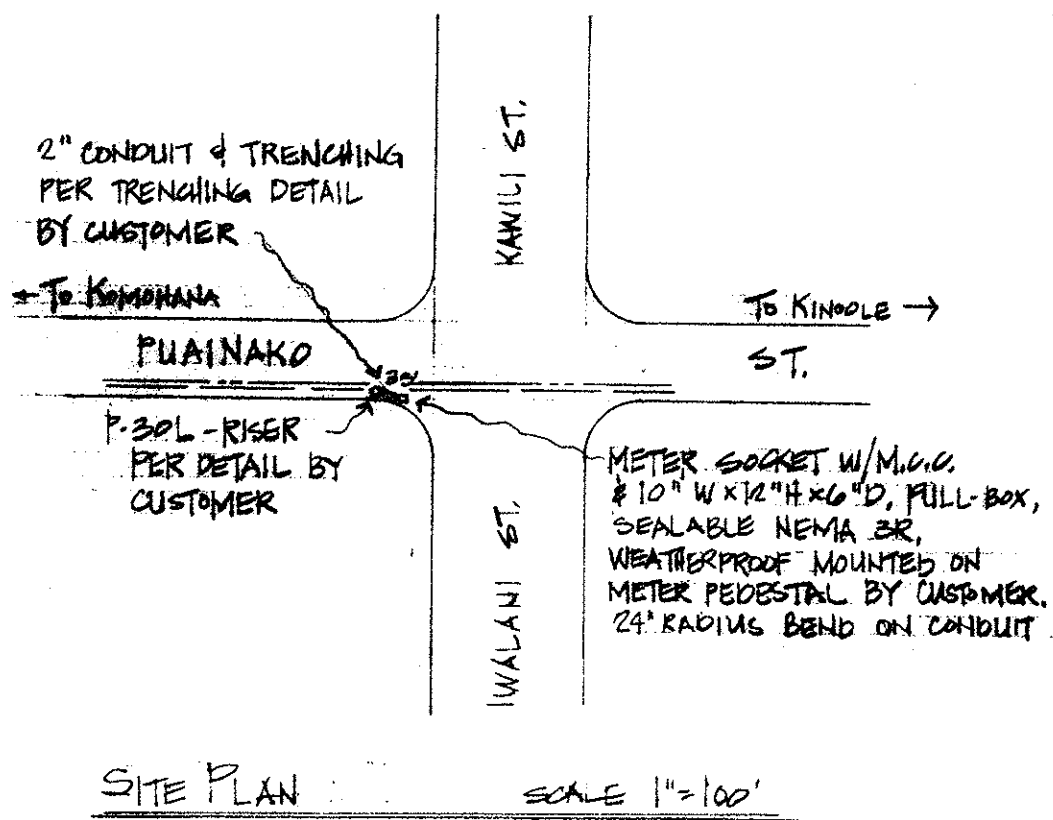
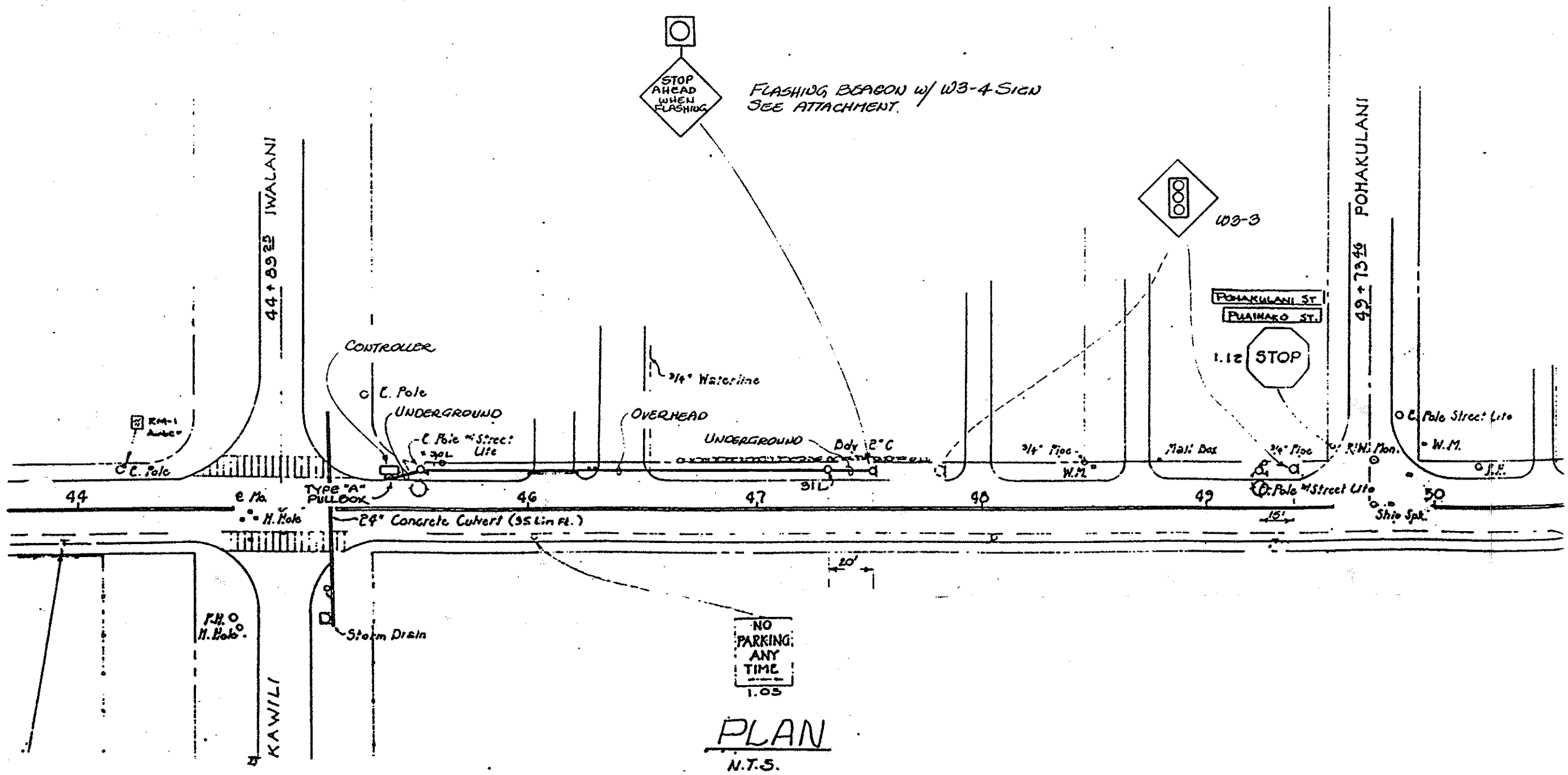
- DO ALL NECESSARY EXCAVATION AND BACKFILLING OF DUCT LINES AS PER DETAIL "A".
- TYPE "A" BEACH SAND, EARTH OR EARTH & GRAVEL. IF EARTH & GRAVEL THE MAXIMUM ROCK SIZE SHALL BE 1" & THE MIXTURE SHALL CONTAIN NOT MORE THAN 50% BY VOLUME OF ROCK PARTICLES.
- TYPE "B" BEACH SAND, EARTH OR EARTH & GRAVEL. IF EARTH & GRAVEL THE MIXTURE MUST PASS A 1/2" MESH SCREEN AND CONTAIN NOT MORE THAN 20% BY VOLUME OF ROCK PARTICLES. CORAL OR CORAL WASTE MATERIAL WILL NOT BE ACCEPTABLE.
- IF THE NORMAL MATERIAL IN THE BOTTOM OF THE TRENCH IS NOT TYPE "B" AN ADDITIONAL 3" SHALL BE EXCAVATED AND THE TYPE "B" BACKFILL SHALL BE PROVIDED.
- CONCRETE NOTES
 - CONCRETE STRENGTH 3000 PSI IN 28 DAYS.
 - MAXIMUM AGGREGATE FOR DUCTLINE CONCRETE 3/4".
 - DO NOT DROP CONCRETE A DISTANCE OF MORE THAN FIVE (5) FEET.
 - CURE DUCTLINE FOR 72 HOURS.
- FURNISH AND INSTALL TYPE "DB" ACRYLONITRILE-BUTADIENE-STYRENE (ABS) CONDUITS OR TYPE "DB" POLYVINYL CHLORIDE (PVC) CONDUITS OR SCHEDULE 40 PVC PIPES IN 3" CONCRETE ENCASUREMENT.
- FURNISH AND INSTALL ALL MANHOLES OR PULLBOXES AS NOTED ON THIS DRAWING.
- AS THE DESIGN OF THIS DISTRIBUTION SYSTEM WAS MADE FROM PRELIMINARY PROJECT DRAWINGS, ANY ADDITIONAL PULLBOXES OR MANHOLES REQUIRED DUE TO CHANGES IN GRADE WILL BE FURNISHED AND INSTALLED BY THE CUSTOMER.
- ALL DUCT LINES SHALL CONTAIN A NO. 12 AWG STEEL PULLING WIRE OR A POLYETHYLENE PULL LINE. (SEE LINE CAT. NO. 232 OR EQUIVALENT).
- ALL WORK SHALL BE SUBJECT TO HELCO INSPECTION. CONTRACTOR SHALL GIVE HELCO THREE (3) WORKING DAYS INSPECTION NOTICE PRIOR TO POURING OF CONCRETE OR BACKFILLING OF TRENCHES.
- ALL CONDUITS SHALL BE REAMED WITH HANDREL 1/2" SMALLER IN DIAMETER THAN THE CONDUIT. DUCTS SHALL BE SAGGED AND CLEARED OF ALL BURRS AND FOREIGN MATERIAL.
- ALL BENDS DUE TO CHANGE IN GRADE SHALL HAVE A RADIUS OF NOT LESS THAN 20'-0".
- RISER ON POLE SHALL PER "RISER DETAIL".
- ANY QUESTIONS AS TO THE RESPONSIBILITY OF ANY WORK SPECIFICALLY COVERED IN THESE SPECIFICATIONS SHALL BE CLEARED WITH HELCO'S ENGINEERING DEPARTMENT.
- ALL WORK MUST BE COORDINATED WITH HELCO'S DISTRIBUTION DEPARTMENT.

NO.	DATE	REVISIONS	BY	CHK'D	APP'D
SH DOT HWYS					
TRAFFIC SIGNALS, PUAINAKO ST., SO. HILO					
PERMANENT UNDERGROUND SERVICE					
DESIGNED BY	DATE	SCALE	AS NOTED		
CHECKED BY			ENGINEERING DEPARTMENT		
APPROVAL			HAWAII ELECTRIC LIGHT CO. INC.		
			HILO, HAWAII		
			DRAWING NUMBER		
			B6-B-635		
NO. NO. WTR02	J.P. NO.	HILO/REG NO.	2-4-14	T.M.K.	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SHEET NO. OF SHEETS

28-1

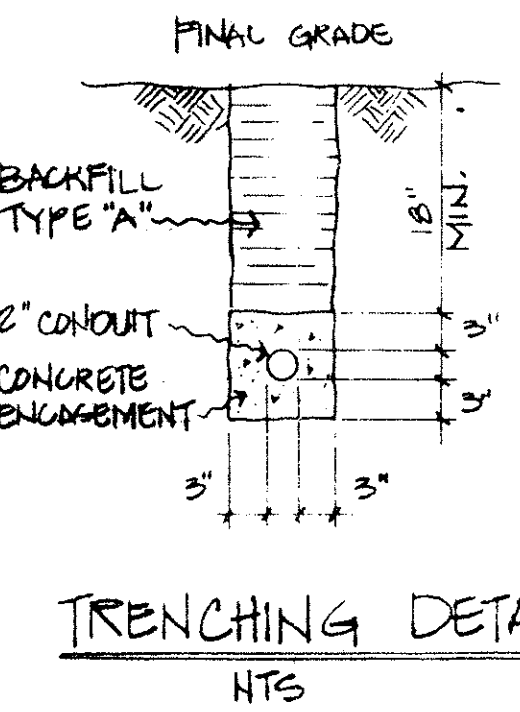
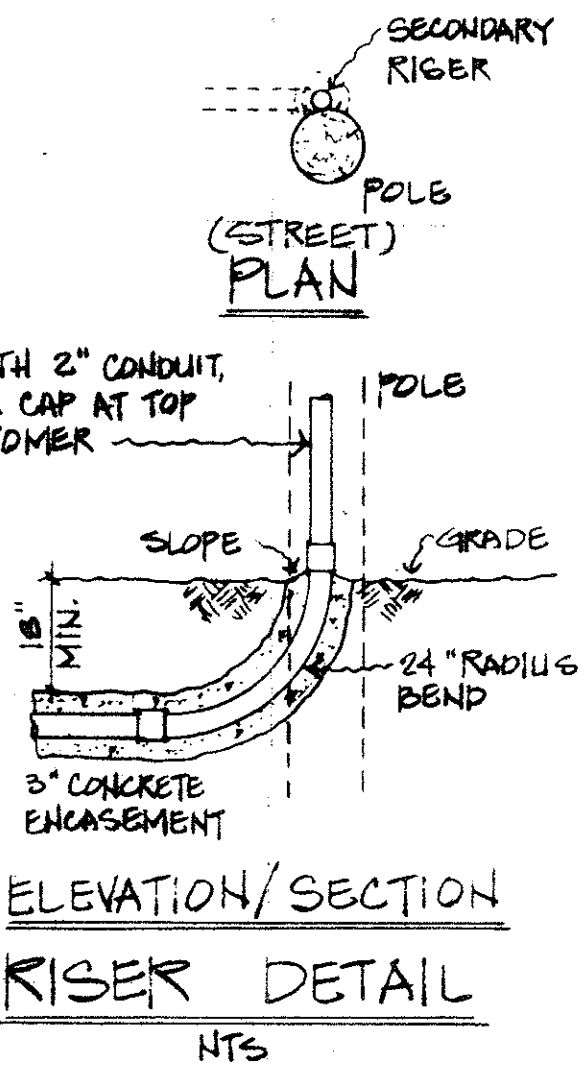


ESTIMATED DEMAND LOAD 2 KW
12/24/01

LINE	SMU	QUANTITY
1	PERM. U.G. SVC.	1

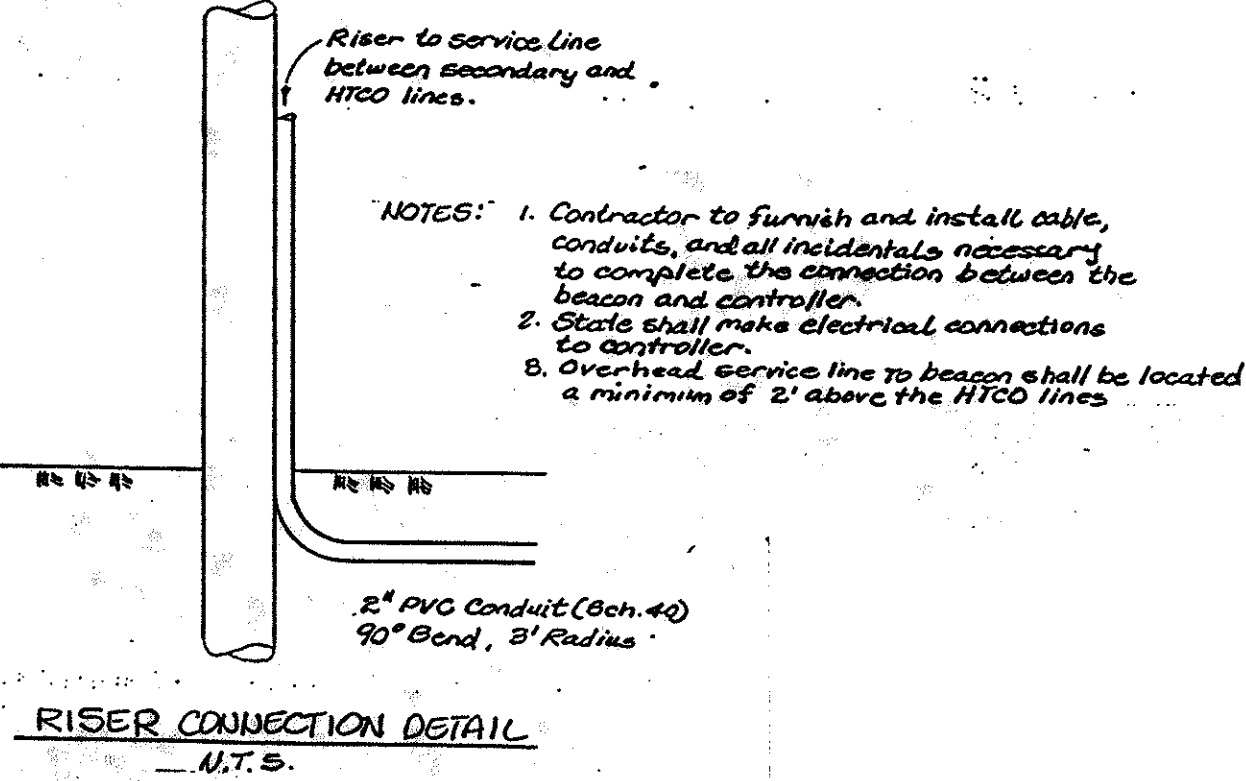
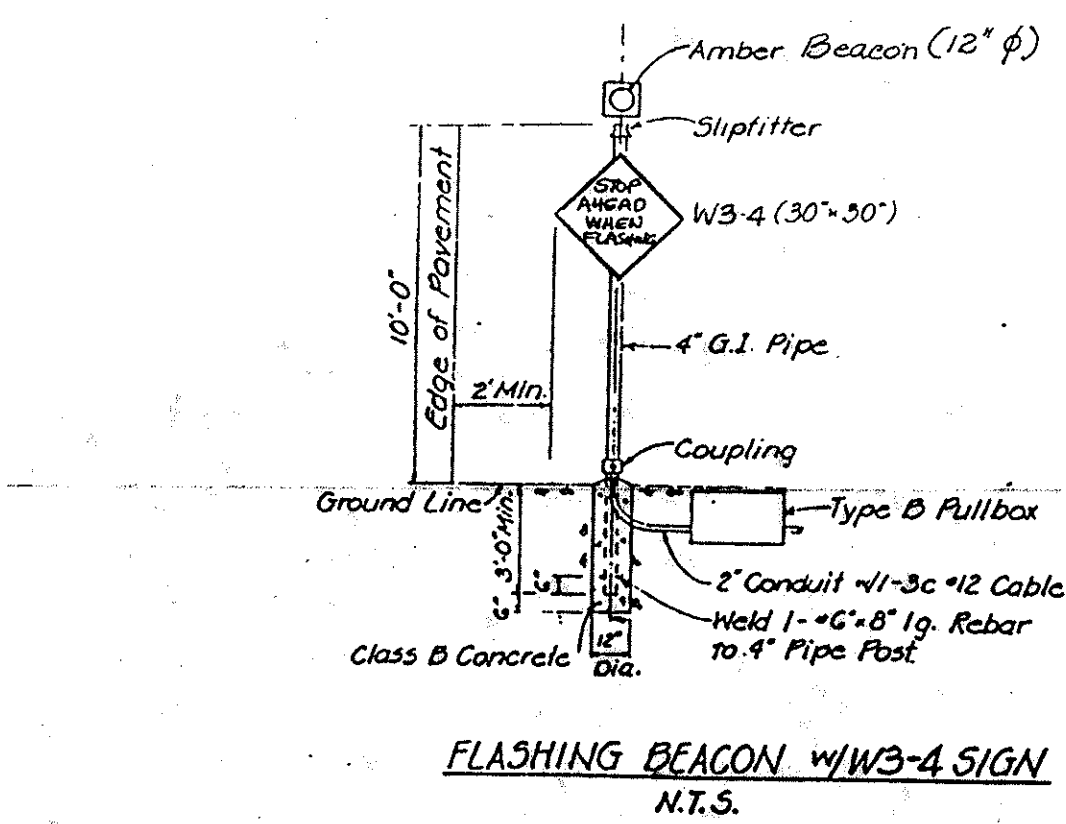
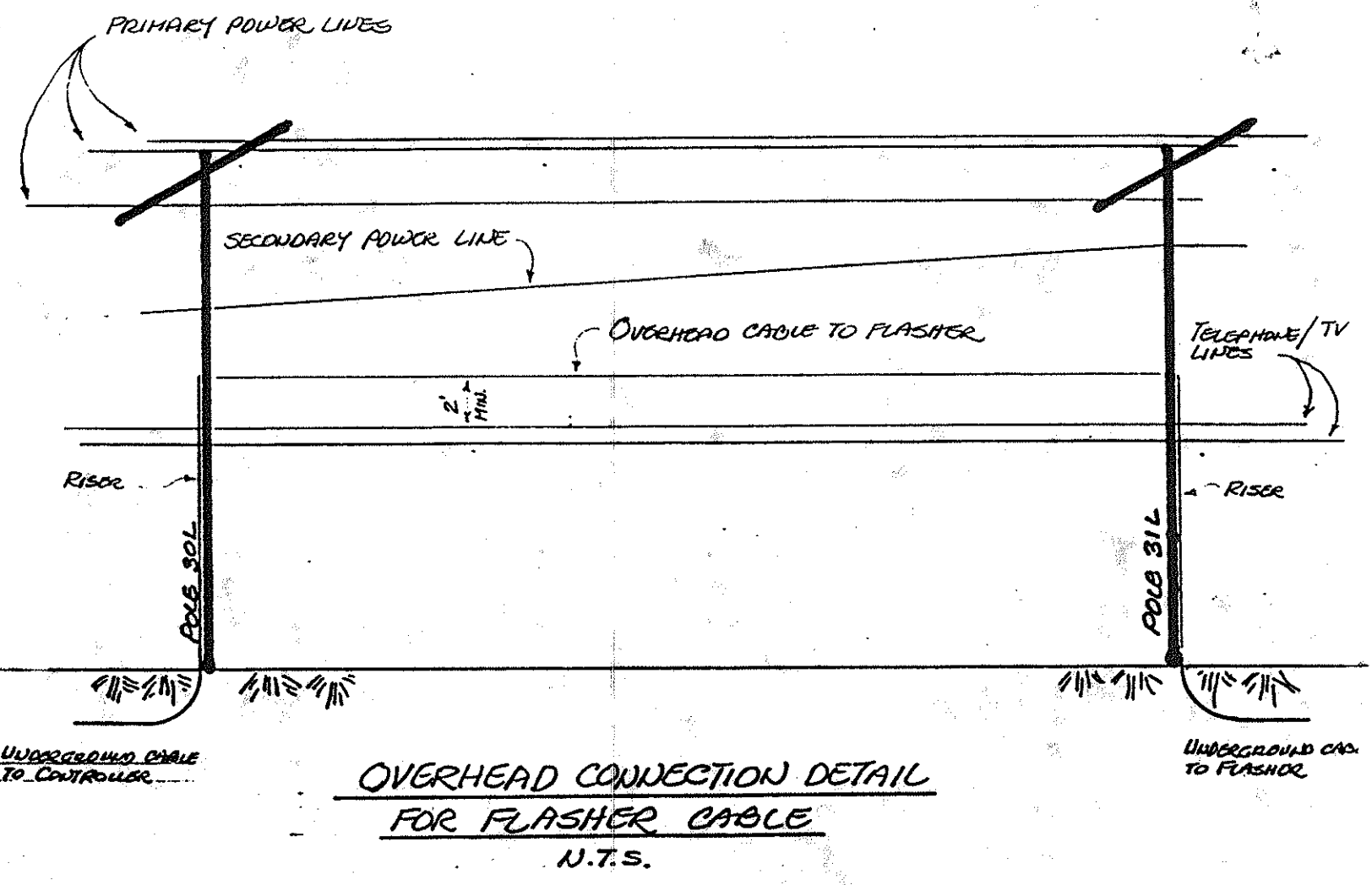
CONSTRUCTION NOTES

- INSTALL 35 FT. OF 2-1/2" #2 AL. & 1-#2 AL. NEUTRAL TRIPLEX UNDERGROUND CABLE FROM P-30 TO PULLBOX.



CONTRACT CHANGE ORDER NO.4

NOTE: THIS TRACING/DETAIL
PREPARED DURING
"AS-BUILT" POSTING



- NOTES:
- Contractor to furnish and install cable, conduits, and all incidentals necessary to complete the connection between the beacon and controller.
 - Starts shall make electrical connections to controller.
 - Overhead service line to beacon shall be located a minimum of 2' above the HTCO lines.

DATE	
DESIGNED BY	
DRAWN BY	
CHECKED BY	
NOTED BY	
ORIGINAL	
PLAN	
NOTE BOOK	
No.	